

GENERAL CATALOGUE
SUPPLEMENT
VERSION

KII/ KIS Series

US2 Series

DSC Series

BMU Series

BLE2 Series

AZ Series

PKP Series

EAC Series

DRS2 Series

DGI Series

2019
2020

Oriental Motor

Orientalmotor

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For India: 1800-1201995 (Toll Free)

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ORIENTAL MOTOR CO., LTD.

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Specifications are subject to change without notice.

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For more information please contact:

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2019Q 10K Printed in Singapore

HOW TO USE THIS CATALOGUE

HOW TO READ PRODUCT PAGES

The information necessary to select the product are mainly shown in this catalogue. For detailed information and handling precautions of the product, refer to the operating manual. To obtain the operating manual, download it from the Oriental Motor website or contact the Oriental Motor sales office.

PRODUCT INFORMATION

① Information on Safety Standards

Products conforming to safety standards are indicated with a standards marking.

● Safety standards [Page 03](#)

For product names, applicable standards and certified component of file number, refer to the website. For descriptions and reading method on the website, refer to General Information.

● How to Use the Website [Page 08](#)

(Sample of a page)

Standard Type Frame Size 42 mm, 60 mm, 85 mm

Specifications

Motor	Single Shaft	AZM66A-C	AZM84A-C	AZM66A-C	AZM69A-C	AZM98A-C	AZM91A-C
Product Name	Single Shaft	AZM66A-C	AZM84A-C	AZM66A-C	AZM69A-C	AZM98A-C	AZM91A-C
Product Name	With Electromagnetic Brake	AZM66M-C	AZM84M-C	AZM66M-C	AZM69M-C	AZM98M-C	AZM91M-C
Product Name	With Inverter	AZD-AD	AZD-AX	AZD-CD	AZD-CX	AZD-CD	AZD-CX
Product Name	With Inverter	AZD-AX	AZD-AX	AZD-CD	AZD-CX	AZD-CD	AZD-CX
Product Name	With Inverter	AZD-AX	AZD-AX	AZD-CD	AZD-CX	AZD-CD	AZD-CX
Maximum Holding Torque	N.m	0.3	0.77	1.2	2	2	4
Holding Torque at Motor Standstill	N.m	0.15	0.38	0.6	1	1	2
Motor Standstill	Electromagnetic Brake	N.m	0.15	0.6	1	1	2
Resolution	Resolution Setting: 1000 P/R	3.7	2.7	2.9	3.4	3.5	6.4
Power Input	Single-Phase 100-120 VAC	3.7	2.7	2.9	3.4	3.5	6.4
Supply Current	Single-Phase 200-240 VAC	1.7	1.6	2.3	3.3	3.3	3.9
Input A	Three-Phase 200-240 VAC	1.0	1.0	1.4	2.0	2.0	2.3
Control Power Source	24 VDC ±5% 0.1 A	24 VDC ±5% 0.1 A	24 VDC ±5% 0.25 A	24 VDC ±5% 0.25 A	24 VDC ±5% 0.25 A	24 VDC ±5% 0.25 A	24 VDC ±5% 0.25 A

① Either ① (Straight) or ② (With a key) indicating the configuration is entered where the box □ is located within the product name. For AZM66, straight only.
For single-sided setting, no character is entered into the □ mark.
For details of the standards, check the Oriental Motor website.
① The values in the () are those measured when a motor with electromagnetic brake is connected.
② For the electromagnetic brake type, the 24 VDC ±5% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

② Product Name

The product name uses both numbers and letters. In this catalogue, product names are written in bold.

Example: **AZM46AC**

③ CAD Data

CAD data (DXF format) is available for items denoted by **CAD** (or CAD). CAD data can be downloaded from the Oriental Motor website.

● How to Use the Website [Page 08](#)

CD-ROMs (Dimension Data for CAD) are also available.

Product Line

The motor, driver, and connection cables need to purchase separately.

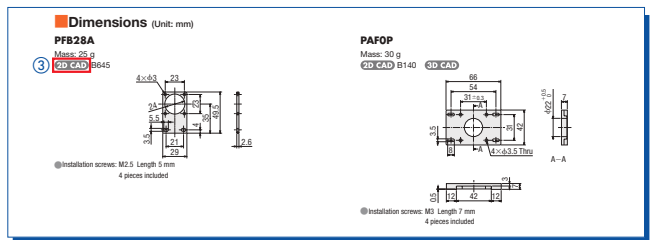
● Motors

◇ Standard Type

Frame Size	Product Name	List Price
42 mm	AZM46AC	S60340
	AZM46AC CAD	S60340
	AZM46AC	S60353
	AZM46AC CAD	S60353
	AZM46AC	S60365

◇ Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC	S60315
	AZM46MC CAD	S60315
	AZM46MC	S60325
	AZM46MC CAD	S60325
	AZM46MC	S60338



HOW TO READ PRODUCT SEARCH INFORMATION

(Sample of a page)

Induction Motors

6 W

60 mm

K11 Series Parallel Shaft Gearhead GV Gear Round Shaft Type

Lead Wire Type

Specifications - Continuous Rating

Product Name	Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Output W	Voltage V	Frequency Hz	Current* A	Starting Torque %	Rated Torque %	Rated Speed rpm	Capacitor μF	Overheat Protection Device
2IK6A-□	Lead Wire Type	6	Single-Phase 110	60	0.185 (0.179)	40	41	1450	2.5	ZP
2IK6A-UA	Single-Phase 115									
2IK6A-GC	Single-Phase 220	6	Single-Phase 220	50	0.089	32	49	1150	0.6	
2IK6A-UC	Single-Phase 220									
2IK6A-□	Single-Phase 230	6	Single-Phase 230	60	0.093 (0.090)	40	41	1450	0.6	
2IK6A-UC	Single-Phase 230									

① () indicates the value of the round shaft type.
② The values in the table are characteristics for the motor only.
ZP: These products are impedance protected.

The following items are included with each product.
Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
2IK6A-UA	S60368
2IK6A-GC	S60370
2IK6A-UC	S60370

The following items are included with each product.
Motor, Capacitor, Capacitor Cap, Operating Manual

⑤ A number indicating the gear ratio is entered where the box □ is located within the product name.

01-10 | REFERENCE PAGE | K11 / K15 Series | Features 01-02 | System Configuration 01-08 | Lineup 01-03 | Accessories 01-19

④ Header Information, Index

Product category and series names are indicated at the side of right pages. At the top of left pages, the series name of the current page is indicated. It is convenient to check the category and series on the current page in one glance.

⑤ Footer Information

The location of various information for the same series is shown at the bottom of the page.

Product Categories and Colors

- Standard AC Motors
- AC Speed Control Motors / Brushless Motors
- Stepping Motors
- Linear & Rotary Actuators

CONFIRMATION BEFORE SELECTING A PRODUCT

■ Coverage of Products

Our products are designed and manufactured for use in general-industrial applications. They are not intended for use in nuclear power generation, aerospace, railway, vehicle, entertainment machinery, safety device, medical equipment or any other applications that will significantly impact human life or property. If you intend to use our products in any of the above applications, please contact us regarding the specific application and operating environment before doing so. Please note, however, that our warranty only covers items specified in "Product Warranty."

■ Note on Safety

To ensure correct operation, carefully read the "Operating Manual" that comes with the product before using it.

■ Returning Products and Replacing Products after Delivery

- If you find that the delivered product has sustained damage due to an accident or some other incident during transport or the product is different than the one you ordered, Oriental Motor will replace it with a new product or the correct product.
- If you need to replace or return a product, contact your Oriental Motor sales office or distributor.
Note, we do not replace products or accept returned products that have been used.

■ Product Upgrades

The content listed in this catalogue such as product names, specifications, appearance of the products and delivery period are subject to change without notice for the purpose of improvement. We recommend that you check with our sales office before you examine or order any of our products.

■ Product Warranty

Oriental Motor will repair free of charge any defects found in our product during the warranty period of the products.

Warranty repair covers our products only. (However, for circuit products, the warranty covers both our product and our software installed in our product.)

We will not be liable for any damages that occur or lost opportunities for the user in connection with a defect in our product.

This warranty will not cover defects resulting from the expiration of the product's life or replacement of consumable parts.

- **Warranty Period**
The warranty period of our product is two years after delivery to your desired location.
- **Exclusions**
Problems arising from any one of the following reasons are excluded from the scope of this warranty:
 - ① Any condition, environment, handling or use not specified in our product catalogue or other product specifications
 - ② Any cause of an accident that is not associated with our product
 - ③ Any modification or repair to our product not performed by Oriental Motor
 - ④ Any use other than the intended use of our product
 - ⑤ Any condition not foreseeable based on the science and technology available at the time of delivery from Oriental Motor
 - ⑥ Any act of nature, disaster or any other cause or reason beyond control of Oriental Motor

The content of this catalogue is based on purchasing, sale and usage of products in the Asia Pacific. For more information, please contact our-nearest sales office.

MARKINGS



Products that conform to the RoHS Directive (2002/95/EC).



Recognized by UL Standards.



Certified by CSA Standards.



Certified by CSA Standards. UL has certified that the product meets CSA Standards.



Recognized by UL and CSA Standards. UL certified.



Product of Supplier's Declaration of Conformity based on EU Directive.



Certified by EN Standards. VDE has certified that the product meets EN Standards.



Certified by EN Standards. TÜV Rheinland has certified that the product meets EN Standards.



Certified by EN Standards. DEMKO has certified that the product meets EN Standards.



Certified under the China Compulsory Certification System (CCC System).



Certified under China Certificate for Energy Conservation Product.



Products of Supplier's Declaration of Conformity on Electrical Appliance and Material Safety Law.



Certified by Japan Electrical Safety & Environment Technology Laboratories (JET) based on Electrical Appliance and Material Safety Law.



Certified by Japan Electrical Safety & Environment Technology Laboratories (JET) based on the Provision in Section 2 of the Ministerial Ordinance for Electrical Appliance.

SALES NETWORK

In Southeast Asia, Oriental Motor has sales offices in Singapore, Malaysia, Thailand and India selling industrial motors, controllers, motorized actuators, and thermal management products.



Singapore

- Singapore

Malaysia

- Kuala Lumpur
- Penang

Thailand

- Bangkok
- Lamphun
- Ayutthaya
- Chonburi

India

- Bangalore
- New Delhi
- Ahmedabad
- Pune
- Mumbai
- Grugaon

For more information, kindly contact us at:

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Lamphun Office Ayutthaya Office Chonburi Office

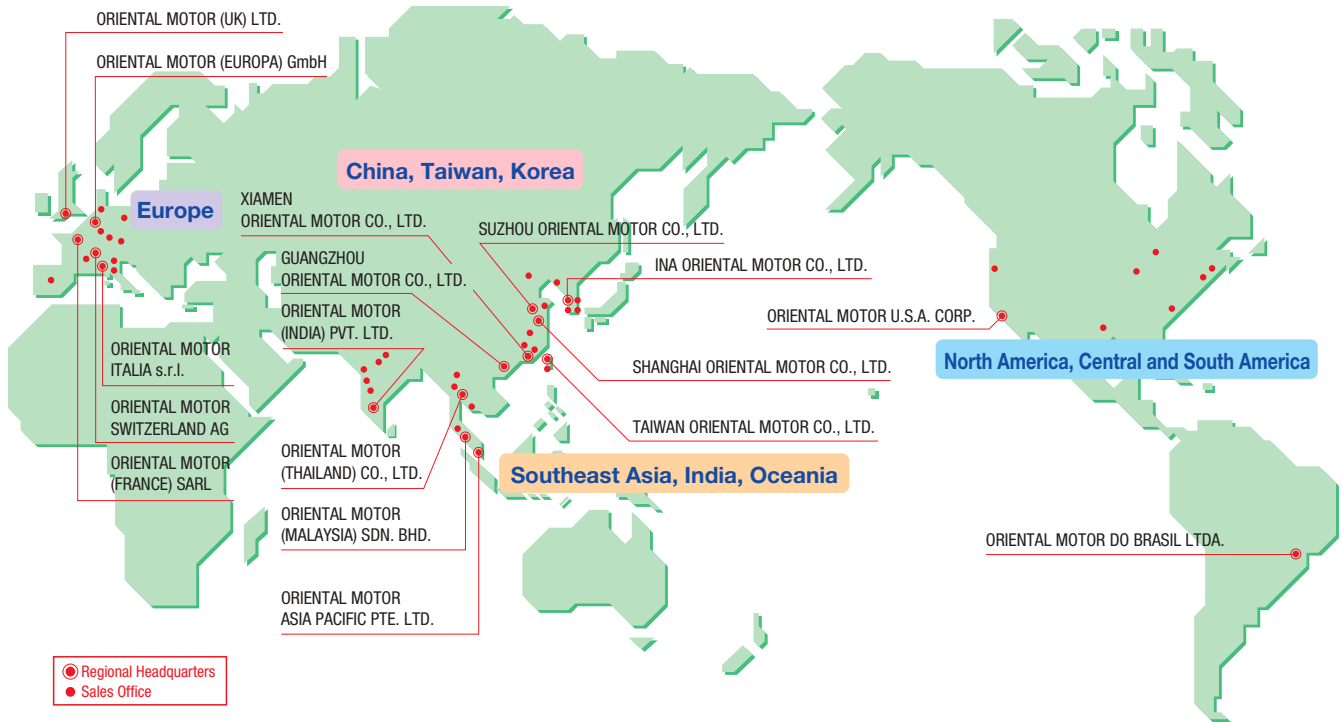
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GLOBAL SUPPORT

In order to ensure that Oriental Motor products are used without any worries anywhere in the world, we have established local corporations and business bases all over the world. We support our customer's overseas business with a full range of service frameworks before and after the sales.



■ Global Sales Network on 64 Business Bases in 15 Countries

We have established direct sales networks by local corporation at 64 business bases in 15 countries. You can order our products directly from local corporations. Minimum order is one item.

■ Full Range of Service Framework

We respond to customers' demands with the enhanced service frameworks, such as catalogues, technical seminars, exhibitions, field services, etc.



Technical Seminar




Field Service

SERVICE AND SUPPORT

BEFORE THE SALE

INQUIRIES

 "I have no idea how to use or connect the product ..."
"Do you have the product named ○○?"

First, please contact the
Customer Support Centre.



▶ Customer Support Centre

Dedicated staff can assist you with any inquiries regarding product selection, use of motors, and any other technical issues by phone, e-mail, or fax.


For Singapore : 1800-8420280 (Toll Free)
For Malaysia : 1800-806161 (Toll Free)
For Thailand : 1800-888-881 (Toll Free)
For India : 1800-1201995 (Toll Free)
For Other Countries: +65-6745-7344

Operation Hours: 9:00am to 5:30pm
E-mail Address : support@orientalmotor.com.sg

日本語お客様ご相談センター
Tel: +65-6745-3008

Operation Hours: 9:00am to 5:30pm
E-mail Address : j-support@orientalmotor.com.sg

SELECTION

 "Which one is suitable for this application?"
"It's a hassle to calculate torque for selection."

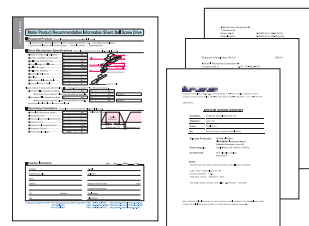
Please use our Sizing
Selection Service.




▶ Sizing Selection Service

We provide motor selection service, such as calculation of torque, to assist our customers in selecting the right product.

* Motor selection software available for download at Oriental Motor website.



TECHNICAL SEMINARS

 "I want to know how the motor operates"
"I want to use motors appropriately depending on their application."

Please attend our Technical Seminar.




▶ Technical Seminars

Dedicated trainers will go through from basic motor knowledge to the applied technology and selection of the right motor. In addition, on-site seminars are also available.

You can register for our seminars from our website.

DEMONSTRATION, CONFIRMATION AND OPERATION OF REAL PRODUCTS

 "I want to know about the latest models."
"I want to check the actual movements and sounds."
"Can I check the operations with a sample?"

You can check our products at
Showrooms, Technical Fairs and
Exhibitions.



▶ Showroom

An exhibit on the wide array of products is available here. With demonstrations provided, we can also provide technical advice and assist you to select the motor required.

* Showroom is available at ORIENTAL MOTOR ASIA PACIFIC PTE LTD.

▶ Exhibitions

We participate in major exhibitions in order to reach our customers and make our products better known. For information on exhibition schedules, feel free to contact us.

ORDER

You can purchase our products on the telephone, FAX, the Internet from one item!

INQUIRIES FOR ORDER AND QUOTATION



"I want estimates of price and delivery."
"I want to order a product."
"I want to ask about payment."

For inquiries on purchase and modes of transaction, and for orders, please contact or use below:

Customer Support Centre
Website
Sales Offices



► Internet

You can make a quotation with "Personal Web Catalogue" on the website.



► Sales Office

For orders, please contact the nearest Oriental Motor sales office.

Page 04

AFTER THE SALE

TECHNICAL SUPPORT



"Suddenly the motor stopped working."
"An error seems to have occurred, but I have no idea of the cause and how to handle it."

To avail a visit from a service engineer and for inspection and troubleshooting, please use below:

Field Service
Inspection and Repair



► Field Service

Dedicated service engineers will visit you when assistance is required on the usage of our products.

Please feel free to contact the customer support centre or your nearest sales offices.



► Inspection and Repair

Oriental Motor offers free inspection services. Feel free to contact us if you have encountered any problems with or damage to Oriental Motor products. If repair is required, we will advise on the applicable charges. Kindly note that free repair is available if products are used in accordance with the warranty conditions.



SERVICE AND SUPPORT

HOW TO USE THE WEBSITE

1 Other Web Services

Latest updated demo videos, news letters, brochure download, online seminar videos and technical support is made available to you.

2 Benefit for Members' Account

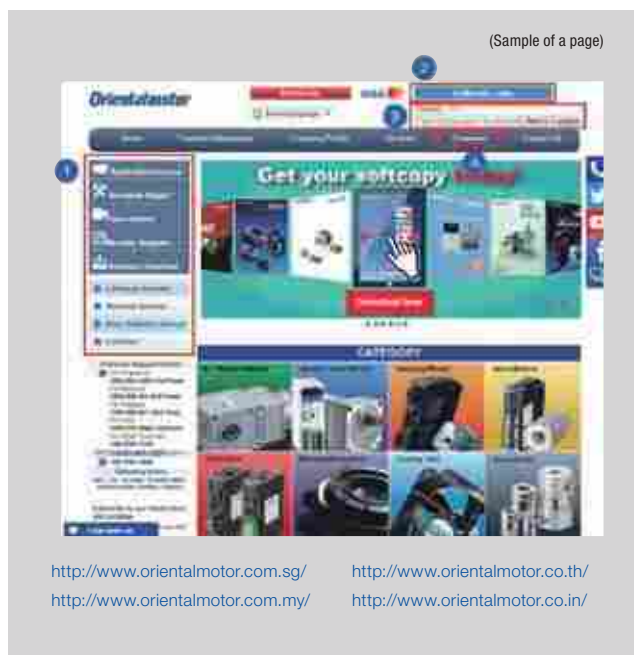
Able to download various category Series brochure and software data setting, and make online web quotation.

3 Search Window

Use the search window at upper-right of the screen to search the product with a product name or series name. (At least 3 characters must be input.)

4 Data Download

You can search and download CAD data, operating manuals, etc. (User registration is required.)



OTHER WEB SERVICES

You can check the following information for each product: product name, price, delivery period, specifications, characteristics, dimensions and available accessories. In addition to downloading CAD data and operating manuals, you can also purchase the product directly from the purchase screen.

The product can be searched by the following methods.

● Search by Product Name

Enter the product name in the search window at upper-right of the screen. (At least 3 characters must be input.)

● Select from Product Categories

Select the corresponding category, series or type from the product category at upper-left of the screen.



DATA DOWNLOAD

● Catalogue PDF

You can search and download the latest separated catalogue (PDF format) with a product name or series name.

● CAD Data

You can search and download CAD data (DXF format) from the product name or CAD number indicated on this catalogue.

For 3D CAD data, check the screen showing the details in the Personal Web Catalogue.

● Operating Manual

You can search and download the latest operating manual (PDF format) with a product name or series name.

● Control Motor Sizing Software

This software can perform selection of a motor easily by having the details of mechanism or operating condition keyed into the software.

● Data Setting Software

The software can be used with Oriental Motor's stepping motor drivers, servo motor drivers, brushless motor drivers and network converters etc.





GROWING YOUR MOTION

Growing your motion
To respond to “motion” needs,
anytime, anywhere.

Motion needs, growing ever more diverse as our societies develop.

Needs for various kinds of motion arise in various industries, such as medical care, food, environmental energy and transport

Oriental Motor has always developed the optimal motors to produce the right motion for all these industries and respond to the needs of continuous development.

As a creator of future motion, we will continue to work all around the world, always moving together with our customers.

POWER

High Torque Low Heat Generation

**Power sources that can bring automation and power saving to a whole range of industries.
Compact and precision motors - that is our standard.**

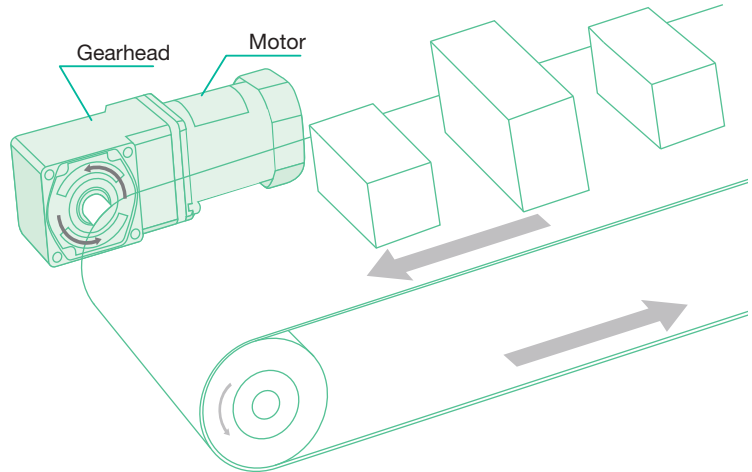
Just plug any one of our small standard AC motor and it is ready to go. These motors rotate at a constant speed, and can carry a wide range of things. Use in a conveyor to obtain horizontal motion. For vertical motion, use in a lifter. With a lineup ranging from small to large motors, our products can easily realize a whole variety of motions, and widely used as a power source for automated equipment. Gearheads can be attached to the motors for even better performance. Various types of gearheads are available, including products providing high torque, high strength, low heat generation, long life and space-saving.

AC Motors

MAIN APPLICATIONS

Conveying power for various mechatronic equipment

- Manufacturing equipment for display panels
- Medical devices
- Laboratory devices
- Financial equipment
- Measuring instruments
- Packaging equipment
- Food manufacturing equipment
- Transport equipment
- Factory automation



Single-Phase Motors

KII Series

Three-Phase

High-Efficiency Motors

KIS Series

Page 01-02



Watertight,
Dust-Resistant Motors,
FPW Series



see WEBSITE



Brake Pack



see WEBSITE



SPEED CONTROL

Higher Efficiency, Greater Ease of Use

**Our speed control motors help
save both power and energy.**

All our speed control motors allow you to change the rotational speed. By controlling the speed to meet the requirement, you can generate gentle "motion", such as slow and quiet operation of a conveyor belt or gently opening and closing a door. Oriental Motor provides natural types of motion for today's requirements. Wiring is simple, operation is easy, and installation and data settings are completely straightforward. Furthermore, in all our products we strive for compact size, high power output and high efficiency which today's markets require.

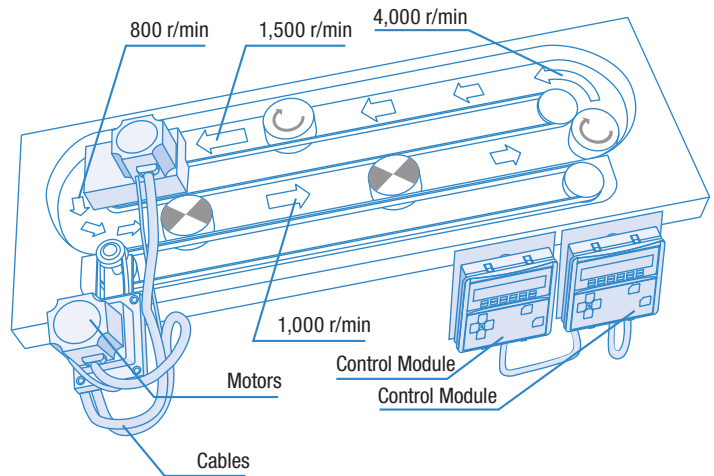


Speed Control Motors

MAIN APPLICATIONS

Speed control of transportation systems for variable loads and speed

- Manufacturing equipment for display panels
- Manufacturing equipment for electronic devices
- Environment-related devices
- Medical devices
- Laboratory devices
- Financial equipment
- Measuring instruments
- Packaging equipment
- Food manufacturing equipment
- Transport equipment
- Factory automation



AC Speed Control Motors
US2 Series

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AC Speed Control Motors
DSC Series

Page 03-02



Brushless Motors
BMU Series

Page 04-02



Brushless Motors
BLE2 Series

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POSITION CONTROL

High Precision Low Vibration

**High-speed, high-precision positioning control.
Supporting the positioning and
driving mechanisms, in the most advanced fields.**

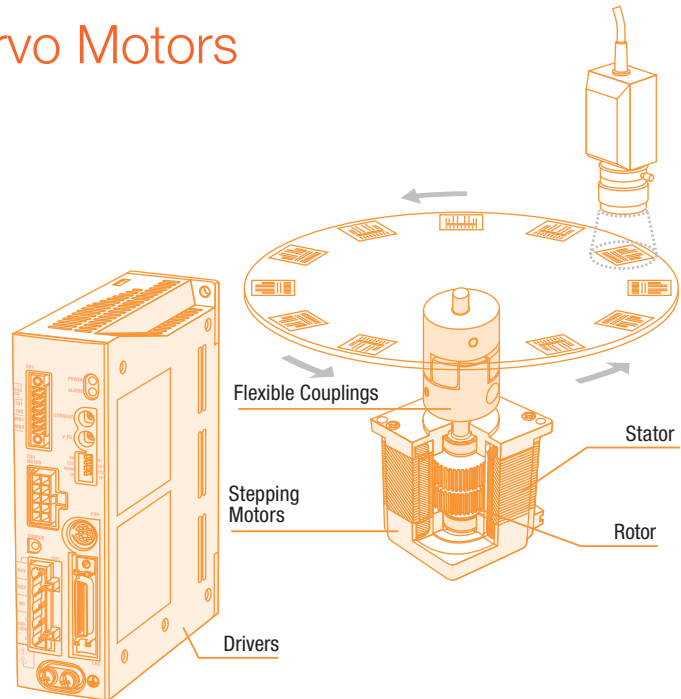
Stepping Motors achieve precise positioning with ease. With stators and rotors engineered and assembled to the highest standards of precision, these motors offer positioning capability in a micron-sized world. From highly sensitive instrumentation to factory automation and robotics technology, there is no limit to the variety of needs for position control; applications include semiconductor manufacturing equipment which requires extremely precise motion; machines which need to achieve repetitive positioning, such as and medical and analytical equipment where reliability is paramount.

Stepping Motors / AC Servo Motors

MAIN APPLICATIONS

Positioning Drive with High Speed and Precision

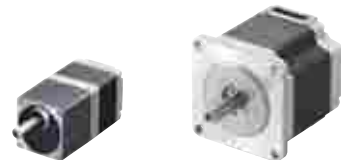
- Semiconductors manufacturing equipment
- Manufacturing equipment for display panels
- Manufacturing equipment for electronic devices
- Medical devices
- Laboratory devices
- Financial equipment
- Measuring instruments
- Food manufacturing equipment
- Transport equipment
- Office automation devices
- Factory automation



Stepping Motors
QSTEP AZ Series
With Battery-Free Absolute Sensor
Page 06-02

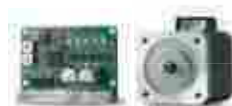


2-Phase / 5-Phase
Stepping Motors
PKP Series
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5-Phase Stepping Motors
RKII Series

see WEBSITE



2-Phase / 5-Phase Stepping Motors
CVK Series

see WEBSITE



Tuning-Free AC Servo Motor
and Driver Packages
NX Series

see WEBSITE



MECHANICAL CONTROL

Easy to Choose, Easy to Use

**A complete Motion Control System of
Motor and Mechanism, engineered to precision.**

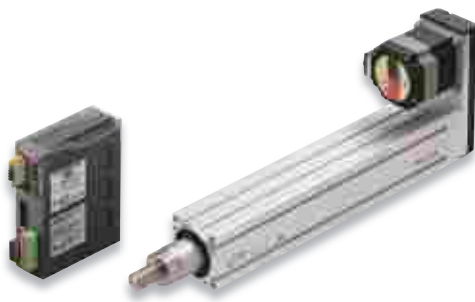
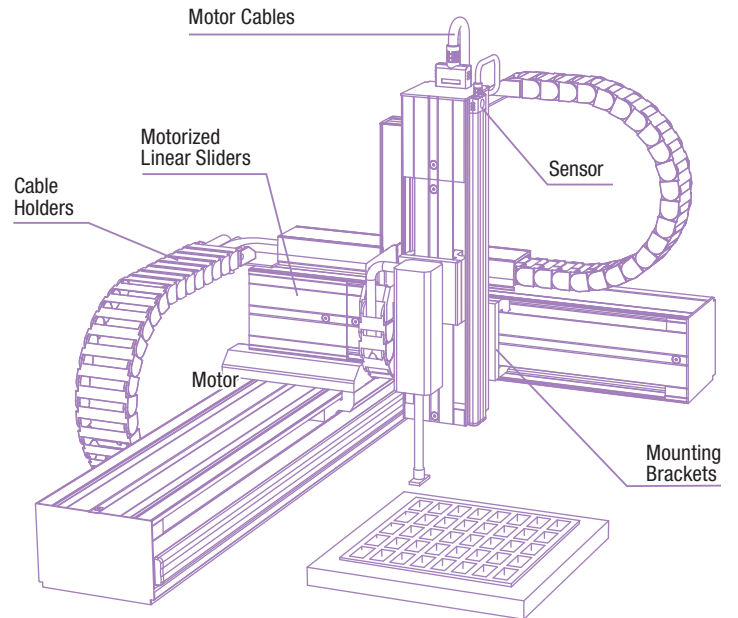
Conveying, pushing, pulling, elevating, lowering and rotating: electric actuators can easily achieve a wide variety of motion. Combine ball screws, belts, pulleys, racks, pinions, rotation table machinery etc. with high precision motors to achieve better motion. In any age, development requires speed. Through the use of electric actuators, design work becomes more efficient, manufacturing time is reduced and production quality will improve.

Linear & Rotary Actuators

MAIN APPLICATIONS

Driver systems for linear and rotary motion

- Semiconductors manufacturing equipment
- Manufacturing equipment for display panels
- Manufacturing equipment for electronic devices
- Medical devices
- Laboratory devices
- Factory automation



Motorized Cylinders
EAC Series
Side-Mounted Type

Page 08-02



Compact Linear Actuators
DR52 Series

Page 09-02



Hollow Rotary Actuators
DGII Series

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ORIENTAL MOTOR GENERAL CATALOGUE
SUPPLEMENT VERSION 2019-2020

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Standard AC Motors

Single-Phase Induction Motors
01-KII Series

Three-Phase High-Efficiency Induction Motors
KIIS Series



AC Speed Control Motors / Brushless Motors

■ AC Speed Control Motors

02-US2 Series

03-DSC Series

■ Brushless Motors

04-BMU Series

05-BLE2 Series



Stepping Motors

06-AZ Series *αSTEP* Battery-Free Absolute Sensor Equipped

07-PKP Series 2-Phase / 5-Phase Stepping Motors



Linear & Rotary Actuators

Motorized Cylinders
08-EAC Series

Compact Linear Actuators
09-DRS2 Series

Hollow Rotary Actuators
10-DGI Series



STANDARD AC MOTORS

Single-Phase Induction Motors

KII Series

Three-Phase High-Efficiency Induction Motors

KIS Series



CHALLENGE FOR STANDARDIZATION OF

**NEXT-GENERATION
MOTORS**

Challenge for Standardization of Next-Generation Motors

Oriental Motor has been positioned as the global benchmark of the Standard AC Motors for half a century. New products are now available with the performance and usability required for compact standard AC motors of the new generation. These products reflect our legendary advanced technology and the voices of countless customers. High-Strength gears stretch the limits of the motor, while highly efficient motors are designed specially for the new generation. In addition, prices are kept affordable with great usability for our customers. The **KII** and **KIIS** Series are setting a new benchmark for Standard AC Motors all over the world.



Scan me

Lineup

KII Series

Induction Motors ▶ Product Line:Page 01-07

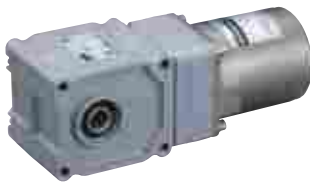


IP66

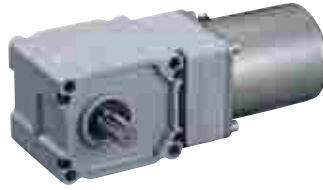
Parallel Shaft Gearhead **GV** Gear
Terminal Box Type
25 W | 40 W | 60 W | 90 W



Parallel Shaft Gearhead **GV** Gear
Lead Wire Type
6 W | 15 W | 25 W | 40 W | 60 W | 90 W



Hypoid Right-Angle
Hollow Shaft **JH** Gear
40 W | 60 W | 90 W



Hypoid Right-Angle
Solid Shaft **JL** Gear
40 W | 60 W | 90 W

Reversible Motors ▶ Product Line:Page 01-43

Electromagnetic Brake Motors ▶ Product Line:Page 01-63



Parallel Shaft Gearhead **GV** Gear
Terminal Box Type
25 W | 40 W | 60 W | 90 W



Parallel Shaft Gearhead **GV** Gear
Lead Wire Type
6 W | 15 W | 25 W | 40 W | 60 W | 90 W



Parallel Shaft Gearhead **GV** Gear
Terminal Box Type
40 W | 60 W | 90 W



Parallel Shaft Gearhead **GV** Gear
Lead Wire Type
6 W | 15 W | 25 W | 40 W | 60 W | 90 W

KIS Series

▶ Product Line:Page 01-94

IP66

*Terminal Box Type only

Induction Motors

Electromagnetic Brake Motors



Hypoid Right-Angle
Hollow Shaft **JH** Gear
Terminal Box Type
30 W | 40 W | 100 W



Parallel Shaft Gearhead **GV** Gear
Terminal Box/Lead Wire Type
60 W | 100 W

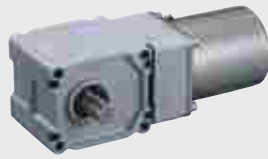


Parallel Shaft Gearhead **GV** Gear
Terminal Box/Cable Type
60 W | 100 W

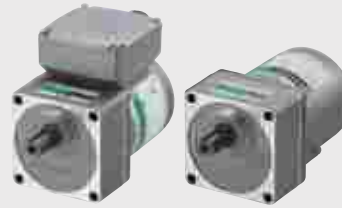
Standard AC Motors KII Series Induction Motors



Hypoid Right-Angle
Hollow Shaft **JH** Gear
Lead Wire Type
25 W/40 W/60 W/90 W



Hypoid Right-Angle
Solid Shaft **JL** Gear
Lead Wire Type
25 W/40 W/60 W/90 W



Parallel Shaft Gearhead **GV** Gear
Terminal Box/Lead Wire Type
6 W/15 W/25 W/40 W/60 W/90 W



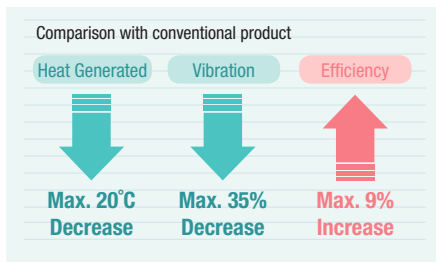
Parallel Shaft Gearhead
GV Gear
Terminal Box Type
Stainless Steel Shaft
25 W/40 W/60 W

Features

High Efficiency Motor

The magnetic balance for each input voltage has been re-examined and the motors have been specially designed to optimize their characteristics.

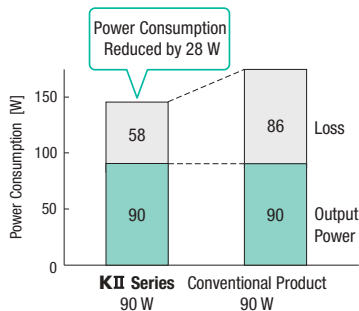
Designing specifically for each voltage not only improves efficiency, but also contributes to equipment reliability by reducing heat and vibration generated by the motor.



Energy Savings

Energy Savings
Max 28 W Reduction

[Output power 90 W,
single-phase 200 VAC
60 Hz, no load]



IP66 Compliant Water Resistance Specification (Terminal Box Type)

Degree of Protection IP66.

The seal structure for the motor, gearhead and terminal box components has been strengthened. The terminal box type* is compliant with the IP66 degree of protection.

*Excluding installation surface of round shaft type

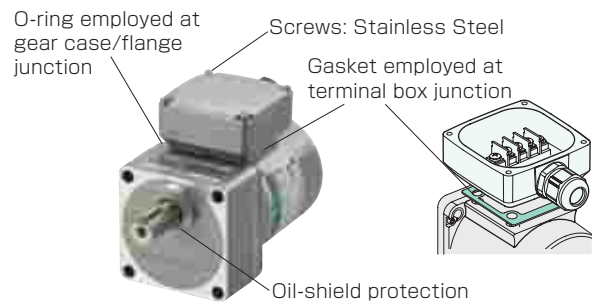
IP66:

The IP indication that shows the watertight and dust-resistant performance are specified under IEC 60529 and IEC 60034-5.

IP66

- 6: Protection against strong water jet such as ocean waves
- 6: Completely dust-proof structure

Parallel Shaft Gearhead GV Gear, Round Shaft Type



Refer to "General Specifications" on page 01-40 for the materials and surface treatments.

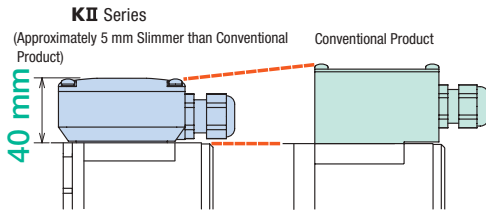
About Stainless Steel Shaft Products

The output shaft on the stainless steel shaft products uses SUS303 material, which provides excellent rust prevention and anti-corrosion properties. Uses a parallel key and installation screws made of stainless steel.

Built-In Slim Body Terminal Box (Terminal Box Type)

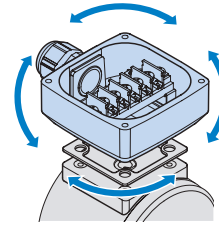
● Easy-to-Wire Slim Body Terminal Box

A slim terminal box was designed to make wiring the terminal block easier. Uses captive screws to attach the terminal box and terminal cover.



● 4 Possible Cable Outlet Directions

The cable outlet that can be rotated in 90° increments for 4 possible directions.



Equipped with a High Performance Gearhead

Hypoid Right-Angle Gear



The new right-angle hypoid gearhead uses high strength hypoid gears that increases torque and reduces noise compared to conventional products. This also increases the radial load and axial load at the output shaft and improves equipment compactness and reliability.

Parallel Shaft Gearhead **GV** Gear



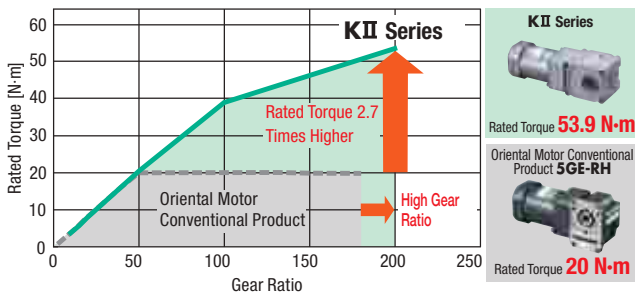
By increasing the size of the output shaft bearing and the use of carburized gears, the permissible radial load and the permissible axial load are up to twice of that of conventional products.

● High Permissible Torque

◇ Right-Angle Hypoid Gear

The permissible torque is up to 2.7 times that of conventional products.

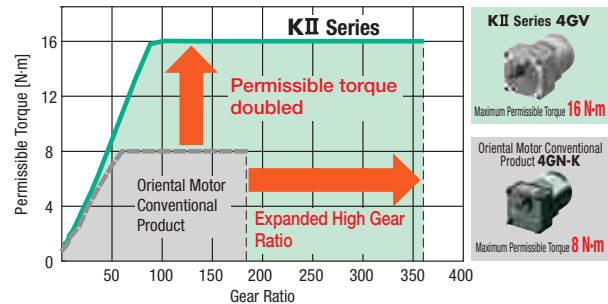
● 90 W Hollow Shaft Type Rated Torque



◇ Parallel Shaft Gearhead **GV** Gear

The permissible torque is up to twice that of conventional products.

● 25 W Gearhead Output Torque (Permissible)

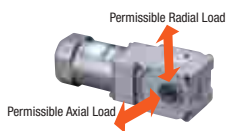


● High Strength

◇ Hypoid Right-Angle Gear

Compared to a conventional product, the permissible radial load is 2.3 times greater, the permissible axial load is 1.3 times greater and the permissible inertia is 9.6 times greater.

KII Series
Gearhead Gear Ratio 200



Permissible Radial Load **1291 N**
Permissible Axial Load **343 N**
Permissible Inertia J **26667**
[$\times 10^{-4} \text{kg} \cdot \text{m}^2$]

Oriental Motor Conventional Product **5GE-RH**
Gearhead Gear Ratio 180

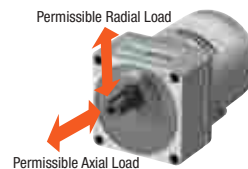


Permissible Radial Load **560 N**
Permissible Axial Load **250 N**
Permissible Inertia J **2750**
[$\times 10^{-4} \text{kg} \cdot \text{m}^2$]

◇ Parallel Shaft Gearhead **GV** Gear

The permissible radial load and the permissible axial load are up to twice that of conventional products.

KII Series 4GV



Permissible Radial Load **450 N**
Permissible Axial Load **100 N**

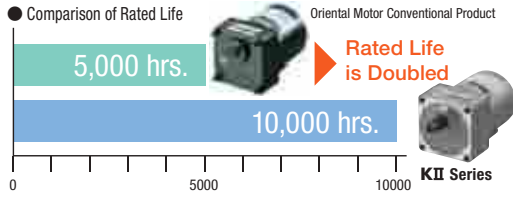
Oriental Motor Conventional Product **4GN-K**



Permissible Radial Load **200 N**
Permissible Axial Load **50 N**

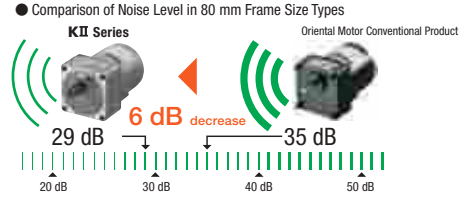
● Long-Life

By using a large diameter bearing, the rated life of the gearhead is 10,000 hours, which is twice that of a conventional model.
 *Right-angle hypoid gear life is 5000 hours.



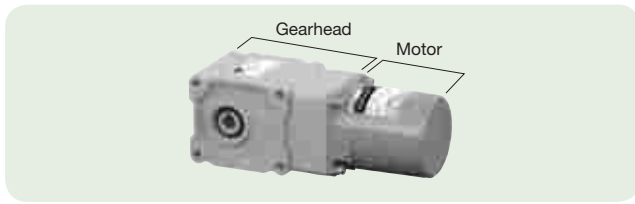
● Noise Reduction

The contact noise of the motor and gearhead is approximately 6 dB less compared to a conventional product.



Pre-Assembled Motor and Gearhead (Hypoid Right-Angle Gear, Parallel Shaft Gearhead **GV** Gear)

The motor and gearhead are delivered pre-assembled. This reduces the time required for assembly by the client, and allows for immediate installation on the equipment.



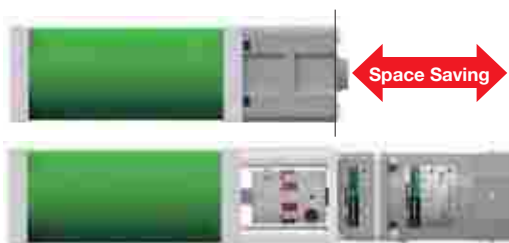
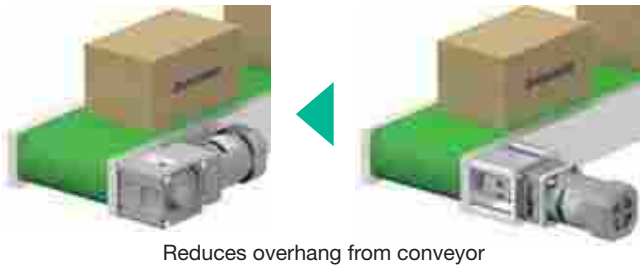
The gearhead is removable. The motor position can be rotated in 90° increments, and the lead wire outlet direction can also be changed. In addition, the gearhead can be purchased separately, allowing for changes to the gear ratio or maintenance replacement.



Smaller Space and Reduced Cost

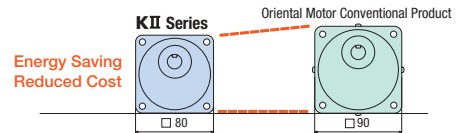
● Hypoid Right-Angle Gear

Motor mounted perpendicular to the drive shaft in order to save space.



● Parallel Shaft Gearhead **GV** Gear

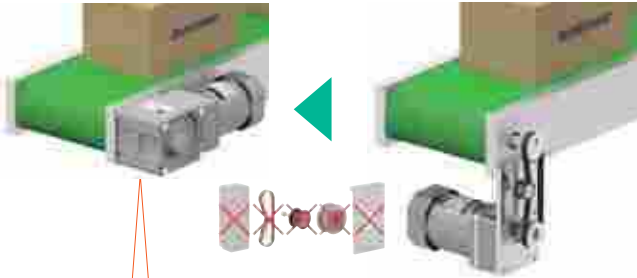
Downsizing is possible by replacing conventional products with the **KII** Series. If a smaller size motor can be selected, the power consumption and purchase cost can be reduced.



Frame size	□ 80 mm	□ 90 mm
Motor Output Power	25 W	40 W
Power Supply	Single-Phase 230 VAC 60 Hz	
Maximum Permissible Torque	16 N · m	10 N · m
Power Consumption	47 W	72 W
List Price	SGD180	SGD197

Energy Savings
Reduced Cost

Reduce costs by using direct connection to the hypoid right-angle hollow shaft gear drive shaft.



- Reduced Number of Parts
 - Reduced Assembly Time
 - Reduced Design & Assembly Time
- ▶ **Reduced Cost**
▶ **Increased Efficiency**

Use of a torque arm (accessory → page 01-119) allows for even greater reductions in installation time and effort. (Hollow Shaft Type)



Application Example



Advantages of installation with a torque arm

- Easy centering with equipment
- Combines connection to equipment with an anti-spin mechanism

Torque Arm Installation Plate

For a video showing the installation method when using a torque arm, please see the Oriental Motor website.

Product Line of KII Series Induction Motors

● Parallel Shaft Gearhead **GV** Gear, Round Shaft Type → Page 01-10

Voltage [VAC]	Type	Motor Frame Size [mm], Output Power					
		□60 6 W	□70 15 W	□80 25 W	□90 40 W	□90 60 W	□90 90 W
Single-Phase 110/115	Terminal Box	—	—	●	●	●	●
	Lead Wire	●	●	●	●	●	●
Single-Phase 220/230	Terminal Box	—	—	●	●	●	●
	Lead Wire	●	●	●	●	●	●

● Gear Ratio of Gearhead*1

Type	Output Power	Gear Ratio					
		2	3	5 ~ 360	360 ~ 3000	—	—
Lead Wire Type	6 W/15 W	2	3	5 ~ 360	360 ~ 3000	—	500 ~ 3600
	25 W	2	3	5 ~ 360	360 ~ 3000	—	500 ~ 3600
	40 W	2	3	5 ~ 300	360 ~ 3000	—	—
	60 W	2	3	5 ~ 300	—	—	—
	90 W	—	3	5 ~ 180	—	—	—
Terminal Box Type	25 W	2	3	5 ~ 360	—	—	—
	40 W/60 W	2	3	5 ~ 300	—	—	—
	90 W*2	2	3	5 ~ 180	—	—	—
Speed*3 [r/min]	50 Hz	750	500	300 ~ 4.1	—	—	3 ~ 0.4
	60 Hz	900	600	360 ~ 5	—	—	3.6 ~ 0.5
Configuration Example							

*1 For gear ratio of the gearhead for three-phase motor, refer to the page where each product is listed.

*2 Gear ratio 2 is available only with three-phase motor.

*3 The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

● Hypoid Right-Angle Gear → Page 01-32

Voltage [VAC]	Type	Motor Frame Size [mm], Output Power					
		□60 6 W	□70 15 W	□80 25 W	□90 40 W	□90 60 W	□90 90 W
Single-Phase 110/115	Hollow Shaft JH Gear Lead Wire Type	—	—	—	●	●	●
	Solid Shaft JL Gear Lead Wire Type	—	—	—	●	●	●
Single-Phase 220/230	Hollow Shaft JH Gear Lead Wire Type	—	—	—	●	●	●
	Solid Shaft JL Gear Lead Wire Type	—	—	—	●	●	●

System Configuration

01

KII / KIIS Series

KII Series Induction Motor

Hypoid Right-Angle Gear



or

Parallel Shaft Gearhead **GV** Gear
(Motor - Gearhead)



Capacitor Cap
(Included)

Capacitor
(Included)

AC Power Supply
(Main power supply)

Brake Pack

SB50W

→ WEB Site

Can be used to Parallel Shaft Gearhead **GV** gears and Round Shaft types.



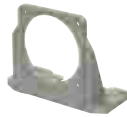
Accessories



Torque Arms

→ Page 01-119

Can be used to Hypoid Right-Angle Hollow Shaft **JH** gears.



Mounting Brackets

→ Page 01-119

Can be used to Parallel Shaft Gearhead **GV** gears and Round Shaft types.



Flexible Couplings

→ Page 01-120



Capacitor Mounting Bracket

→ Page 01-119



Capacitor Lead Wires

→ Page 01-120

● System Configuration Example

Induction Motor Hypoid Right-Angle Hollow Shaft JH Gear 5IK40KR-5H10B SGD358	+	Sold Separately	
		Torque Arm	Capacitor Mounting Bracket
		TAF2S-15-NS	PADP01C
		SGD26	SGD6

● The system configuration shown above is an example. Other combinations are available.

Product Number Code

● Hypoid Right-Angle Gear

5 I K 90 K KR - 5 H 10 B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Motor Product Name		Gearhead Product Name	
Motor Product Name	① Motor Frame Size	4: 80 mm	5: 90 mm
	② Motor Type	I: Induction Motor	
	③ Series	K: KII Series	
	④ Output Power (W)	(Example) 90: 90 W	
	⑤ Motor Shaft Type	K: Round Shaft Type (with Key)	
	⑥ Power Supply Voltage/ Number of Poles	KF: Single-Phase 110/115 VAC 4-Pole KG: Single-Phase 220/230 VAC, 50 Hz 4-Pole KR: Single-Phase 220/230 VAC, 60 Hz 4-Pole	
Gearhead Product Name	⑦ Gearhead Frame Size	4: 80 mm	5: 90 mm
	⑧ Type of Gearhead	H: Hypoid Right-Angle Hollow Shaft JH Gear L: Hypoid Right-Angle Solid Shaft JL Gear	
	⑨ Gear Ratio	Number: Gear Ratio for Gearhead	
	⑩ Materials of Output Shaft	B: Steel	

● Parallel Shaft Gearhead GV Gear

5 I K 40 UC T2 - 100

① ② ③ ④ ⑤ ⑥ ⑦

① Motor Frame Size	2: 60 mm	3: 70 mm	4: 80 mm	5: 90 mm
② Motor Type	I: Induction Motor			
③ Series	K: KII Series			
④ Output Power (W)	(Example) 40: 40 W			
⑤ Power Supply Voltage/ Number of Poles	SW: Three-Phase 200/220/230 VAC 4-Pole UA: Single-Phase 110/115 VAC 4-Pole GC: Single-Phase 220/230 VAC(50 Hz) 4-Pole UC: Single-Phase 220/230 VAC(60 Hz) 4-Pole			
⑥ T2: Terminal Box Type Blank: Lead Wire Type				
⑦ Gear Ratio, Motor Shaft Type	Number: Gear Ratio for Gearhead		A: Round Shaft Type	

● Round Shaft Type

5 I K 40 A - UC T2

① ② ③ ④ ⑦ ⑤ ⑥

Induction Motors

6 W

□ 60 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Output	Voltage	Frequency	Current*	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type	W	V	Hz	A	mN·m	mN·m	r/min	μF	
2IK6UA -□ 2IK6A-UA	6	Single-Phase 110	60	0.185 (0.179)	40	41	1450	2.5	ZP
		Single-Phase 115		0.189 (0.184)					
2IK6GC -□ 2IK6A-GC	6	Single-Phase 220	50	0.088	32	49	1150	0.6	
		Single-Phase 230		0.090			1200		
2IK6UC -□ 2IK6A-UC	6	Single-Phase 220	60	0.093 (0.090)	40	41	1450	0.6	
		Single-Phase 230		0.096 (0.093)					

* () indicates the value of the round shaft type.

● The values in the table are characteristics for the motor only.

ZP: These products are impedance protected.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
2IK6UA -□	2, 3	SGD144
	5, 6, 7.5, 9, 12.5, 15, 18	SGD139
	25, 30, 36	SGD146
	50, 60, 75, 90, 100, 120, 150, 180	SGD155
	250, 300, 360	SGD193
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD226
2IK6GC -□	2, 3	SGD146
	5, 6, 7.5, 9, 12.5, 15, 18	SGD141
	25, 30, 36	SGD149
	50, 60, 75, 90, 100, 120, 150, 180	SGD158
	250, 300, 360	SGD195
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD228
2IK6UC -□	2, 3	SGD146
	5, 6, 7.5, 9, 12.5, 15, 18	SGD141
	25, 30, 36	SGD149
	50, 60, 75, 90, 100, 120, 150, 180	SGD158
	250, 300, 360	SGD195
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD228
	2500, 3000, 3600	SGD266

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

Product Name	List Price
2IK6A-UA	SGD69
2IK6A-GC	SGD71
2IK6A-UC	SGD71

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speedr/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2IK6GC -□		0.069	0.12	0.22	0.26	0.33	0.40	0.55	0.66	0.79	1.1	1.3	1.5	2.1	2.5	3.2	3.8	4.2	5.1	6	6	6	6	6

Product Name	Speedr/min	3	2.5	2	1.6	1.5	1.2	1	0.8	0.6	0.5	0.4
	Gear Ratio	500	600	750	900	1000	1200	1500	1800	2500	3000	3600
2IK6GC -□		6	6	6	6	6	6	6	6	6	6	6

60 Hz

Unit: N·m

Product Name	Speedr/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2IK6U ■-□		0.057	0.10	0.18	0.22	0.28	0.33	0.46	0.55	0.66	0.92	1.1	1.3	1.8	2.1	2.6	3.2	3.5	4.2	5.0	6	6	6	6

Product Name	Speedr/min	3.6	3	2.4	2	1.8	1.5	1.2	1	0.7	0.6	0.5
	Gear Ratio	500	600	750	900	1000	1200	1500	1800	2500	3000	3600
2IK6U ■-□		6	6	6	6	6	6	6	6	6	6	6

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

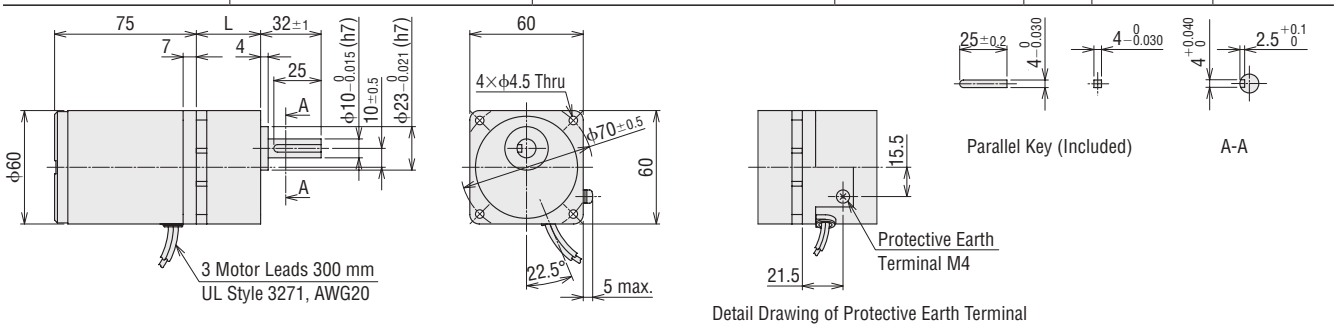
- Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead GV Gear

- Lead Wire Type
- Gear Ratio **2~360**

2D & 3D CAD

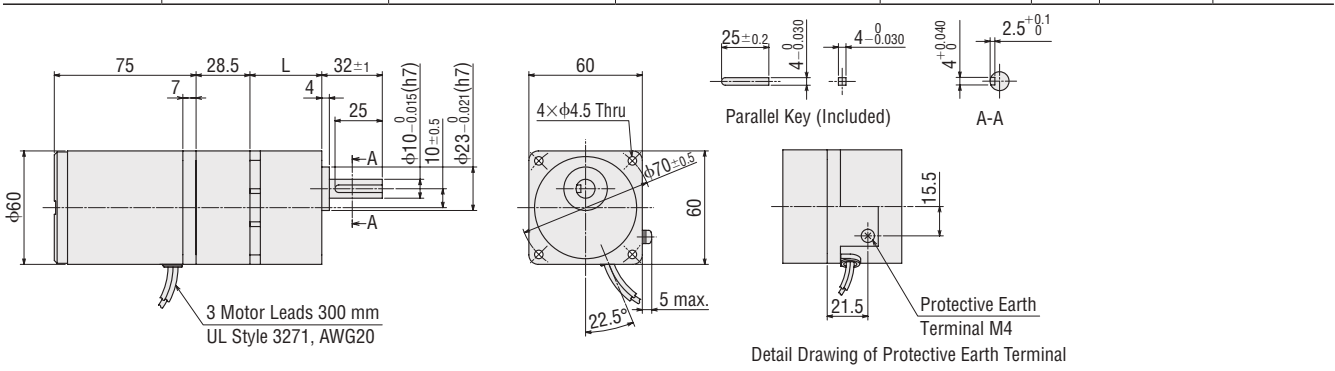
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
2IK6U ■-□	2IK6GV-U■	2GV□B	5~25	34	1.2	A1229A
2IK6GC -□	2IK6GV-GC		2, 3, 30~120	38		A1229B
			150~360	43		A1229C



Gear Ratio 500~3600

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Decimal Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
2IK6U ■-□	2IK6GV-U■	2GV□B	2GV10X	500~1200	38	1.5	A1229D
2IK6GC -□	2IK6GV-GC			1500~3600	43		A1229E



- Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

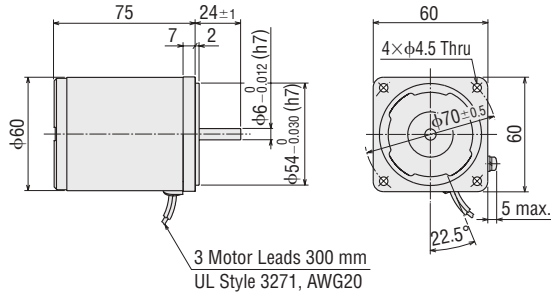
Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

● Round Shaft Type

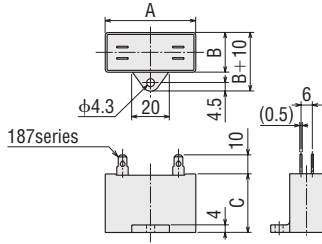
2IK6A-U **2IK6A-GC**

Mass: 0.7 kg **2D CAD** A444 **3D CAD**



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
2IK6UA - <input type="checkbox"/>	2IK6A-UA	CH25FAUL2	31	17	27	21
2IK6GC - <input type="checkbox"/>	2IK6A-GC	CH06BFAUL	31	14.5	23.5	18
2IK6UC - <input type="checkbox"/>	2IK6A-UC	CH06BFAUL	31	14.5	23.5	18

Unit: mm

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

Induction Motors

15 W

□ 70 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Lead Wire Type

01

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type	W	V	Hz	A	mN·m	mN·m	r/min	μF	
3IK15UA -□ 3IK15A-UA	15	Single-Phase 110	60	0.31	65	105	1450	4.0	TP
		Single-Phase 115		0.31					
3IK15GC -□ 3IK15A-GC	15	Single-Phase 220	50	0.156	80	125	1200	1.2	
		Single-Phase 230		0.157					
3IK15UC -□ 3IK15A-UC	15	Single-Phase 220	60	0.154	65	105	1450	1.0	
		Single-Phase 230		0.155					

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
3IK15UA -□	2, 3	SGD154
	5, 6, 7.5, 9, 12.5, 15, 18	SGD151
	25, 30, 36	SGD158
	50, 60, 75, 90, 100, 120, 150, 180	SGD167
	250, 300, 360	SGD202
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD243
	2500, 3000, 3600	SGD278
3IK15GC -□	2, 3	SGD157
	5, 6, 7.5, 9, 12.5, 15, 18	SGD153
	25, 30, 36	SGD161
	50, 60, 75, 90, 100, 120, 150, 180	SGD169
	250, 300, 360	SGD204
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD245
	2500, 3000, 3600	SGD280
3IK15UC -□	2, 3	SGD157
	5, 6, 7.5, 9, 12.5, 15, 18	SGD153
	25, 30, 36	SGD161
	50, 60, 75, 90, 100, 120, 150, 180	SGD169
	250, 300, 360	SGD204
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD245
	2500, 3000, 3600	SGD280

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
3IK15A-UA	SGD74
3IK15A-GC	SGD77
3IK15A-UC	SGD77

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
3IK15GC-□		0.18	0.30	0.56	0.68	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10

Product Name	Speed r/min	3	2.5	2	1.6	1.5	1.2	1	0.8	0.6	0.5	0.4
	Gear Ratio	500	600	750	900	1000	1200	1500	1800	2500	3000	3600
3IK15GC-□		10	10	10	10	10	10	10	10	10	10	10

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
3IK15U-□		0.15	0.26	0.47	0.57	0.71	0.85	1.2	1.4	1.7	2.4	2.7	3.3	4.5	5.4	6.8	8.1	9.0	10	10	10	10	10	10

Product Name	Speed r/min	3.6	3	2.4	2	1.8	1.5	1.2	1	0.7	0.6	0.5
	Gear Ratio	500	600	750	900	1000	1200	1500	1800	2500	3000	3600
3IK15U-□		10	10	10	10	10	10	10	10	10	10	10

Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117

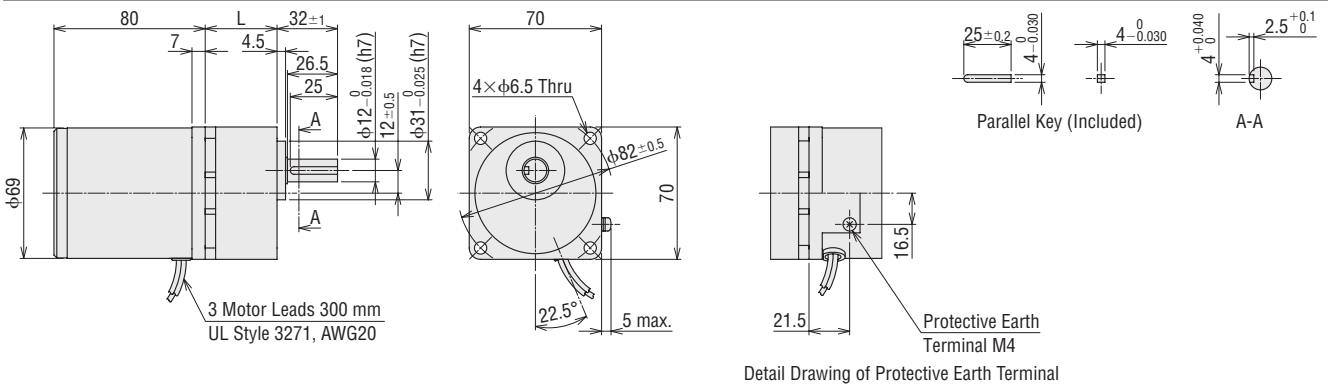
Parallel Shaft Gearhead GV Gear

◇ Lead Wire Type

- Gear Ratio **2~360**

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
3IK15U-□ 3IK15GC-□	3IK15GV-U 3IK15GV-GC	3GV□B	5~25	38	1.7	A1230A
			2, 3, 30~120	43		A1230B
			150~360	48		A1230C

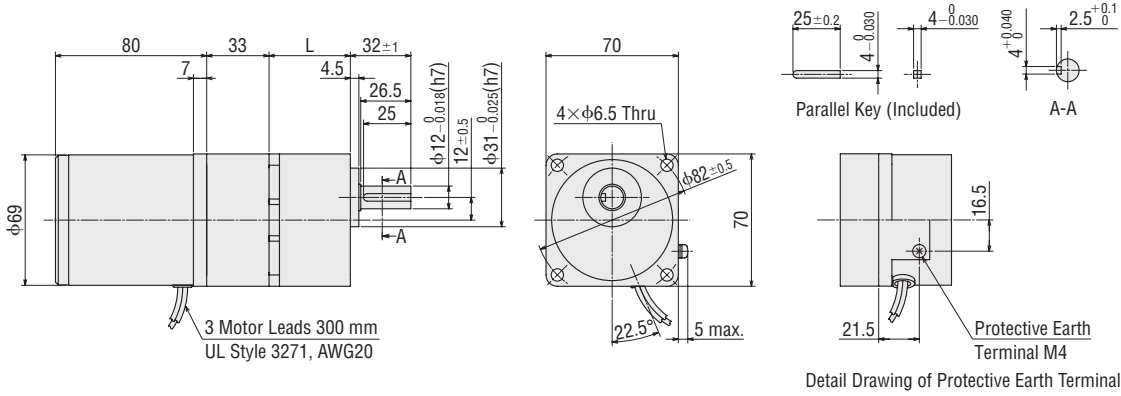


- Either **A** or **C** indicating the power supply voltage is entered where the box **■** is located within the product name.
A number indicating the gear ratio is entered where the box **□** is located within the product name.

● Gear Ratio 500~3600

2D & 3D CAD

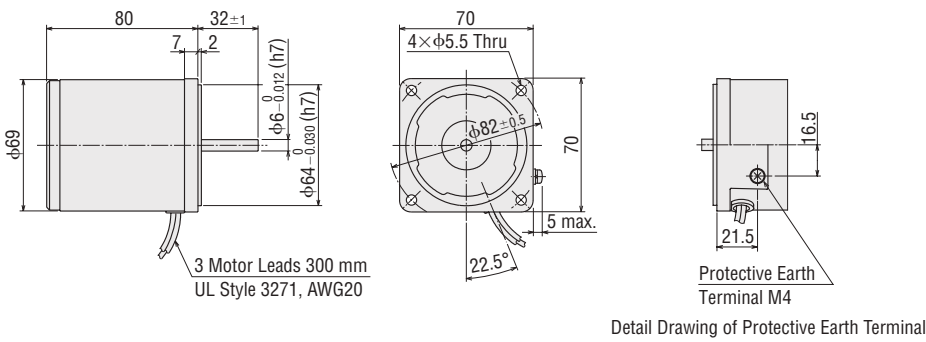
Product Name	Motor Product Name	Gearhead Product Name	Decimal Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
3IK15U <input type="checkbox"/>	3IK15GV-U <input type="checkbox"/>	3GV <input type="checkbox"/> B	3GV10X	500~1200	43	2.1	A1230D
3IK15GC <input type="checkbox"/>	3IK15GV-GC			1500~3600	48		A1230E



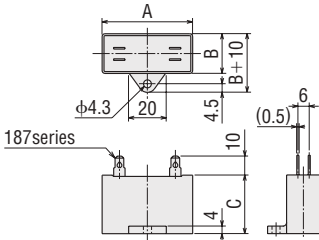
● Round Shaft Type

3IK15A-U , **3IK15A-GC**

Mass: 1.1 kg 2D CAD A448 3D CAD



● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
3IK15UA <input type="checkbox"/>	3IK15A-UA	CH40FAUL2	37	18	27	26
3IK15GC <input type="checkbox"/>	3IK15A-GC	CH12BFAUL	37	18	27	28
3IK15UC <input type="checkbox"/>	3IK15A-UC	CH10BFAUL	37	18	27	27

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

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For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Induction Motors

25 W

80 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIS Series

Specifications - Continuous Rating



Product Name		Output W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Terminal Box Type									
4IK25UAT2 -□ 4IK25A-UAT2	4IK25UA -□ 4IK25A-UA	25	Single-Phase 110	60	0.44	120	170	1450	6.0	TP
			Single-Phase 115		0.43					
4IK25GCT2 -□ 4IK25A-GCT2	4IK25GC -□ 4IK25A-GC	25	Single-Phase 220	50	0.23	120	205	1200	1.8	
			Single-Phase 230		0.23					
4IK25UCT2 -□ 4IK25A-UCT2	4IK25UC -□ 4IK25A-UC	25	Single-Phase 220	60	0.22	110	170	1450	1.5	
			Single-Phase 230		0.22					

The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Terminal Box Type

Product Name	Gear Ratio	List Price
4IK25UAT2 -□	2, 3	SGD187
	5, 6, 7.5, 9, 12.5, 15, 18	SGD183
	25, 30, 36	SGD191
	50, 60, 75, 90, 100, 120, 150, 180	SGD199
4IK25GCT2 -□	2, 3	SGD237
	5, 6, 7.5, 9, 12.5, 15, 18	SGD191
	25, 30, 36	SGD187
	50, 60, 75, 90, 100, 120, 150, 180	SGD194
4IK25UCT2 -□	25, 30, 360	SGD203
	2, 3	SGD241
	5, 6, 7.5, 9, 12.5, 15, 18	SGD191
	25, 30, 36	SGD187
4IK25A-UCT2	25, 30, 36	SGD194
	50, 60, 75, 90, 100, 120, 150, 180	SGD203
	250, 300, 360	SGD241
	250, 300, 360	SGD241

The following items are included with each product.
Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Lead Wire Type

Product Name	Gear Ratio	List Price
4IK25UA -□	2, 3	SGD164
	5, 6, 7.5, 9, 12.5, 15, 18	SGD160
	25, 30, 36	SGD168
	50, 60, 75, 90, 100, 120, 150, 180	SGD176
4IK25GC -□	250, 300, 360	SGD214
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD254
	2500, 3000, 3600	SGD292
	2, 3	SGD168
4IK25UC -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD164
	25, 30, 36	SGD171
	50, 60, 75, 90, 100, 120, 150, 180	SGD180
	250, 300, 360	SGD218
4IK25UA -□	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD258
	2500, 3000, 3600	SGD296
	2, 3	SGD168
	5, 6, 7.5, 9, 12.5, 15, 18	SGD164
4IK25GC -□	25, 30, 36	SGD171
	50, 60, 75, 90, 100, 120, 150, 180	SGD180
	250, 300, 360	SGD218
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD258
4IK25UC -□	2500, 3000, 3600	SGD296
	2, 3	SGD168
	5, 6, 7.5, 9, 12.5, 15, 18	SGD164
	25, 30, 36	SGD171
4IK25UA -□	50, 60, 75, 90, 100, 120, 150, 180	SGD180
	250, 300, 360	SGD218
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD258
	2500, 3000, 3600	SGD296

The following items are included with each product.
Motor, Capacitor, Capacitor Cap, Operating Manual

Round Shaft Type

Terminal Box Type

Product Name	List Price
4IK25A-UAT2	SGD106
4IK25A-GCT2	SGD109
4IK25A-UCT2	SGD109

Lead Wire Type

Product Name	List Price
4IK25A-UA	SGD83
4IK25A-GC	SGD86
4IK25A-UC	SGD86

A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
Product Name	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
4IK25GC □-□		0.32	0.50	0.92	1.1	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16
4IK25GC □-□		16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
Product Name	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
4IK25U □-□		0.27	0.41	0.77	0.92	1.1	1.4	1.9	2.3	2.8	3.8	4.4	5.3	7.3	8.8	11.0	13.2	14.6	16	16	16	16	16	16
4IK25U □-□		16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

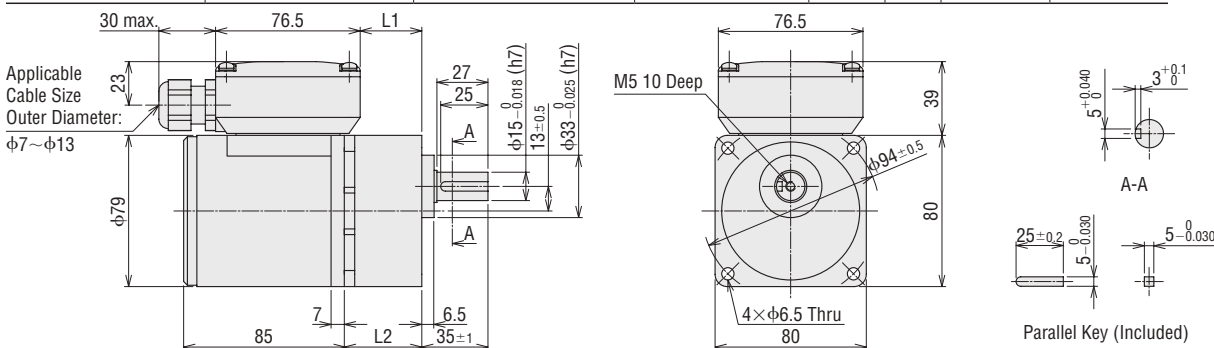
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead **GV** Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
4IK25U □ T2 -□	4IK25GV-U□ T2	4GV□B	5~25	32.6	41	2.75	A1304A
4IK25GCT2 -□	4IK25GV-GCT2		2, 3, 30~120	37.6	46		A1304B
			150~360	42.6	51		A1304C



- Either **A** or **C** indicating the power supply voltage is entered where the box □ is located within the product name.
- A code (**T2**) indicating the terminal box type is entered where the box □ is located within the product name.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

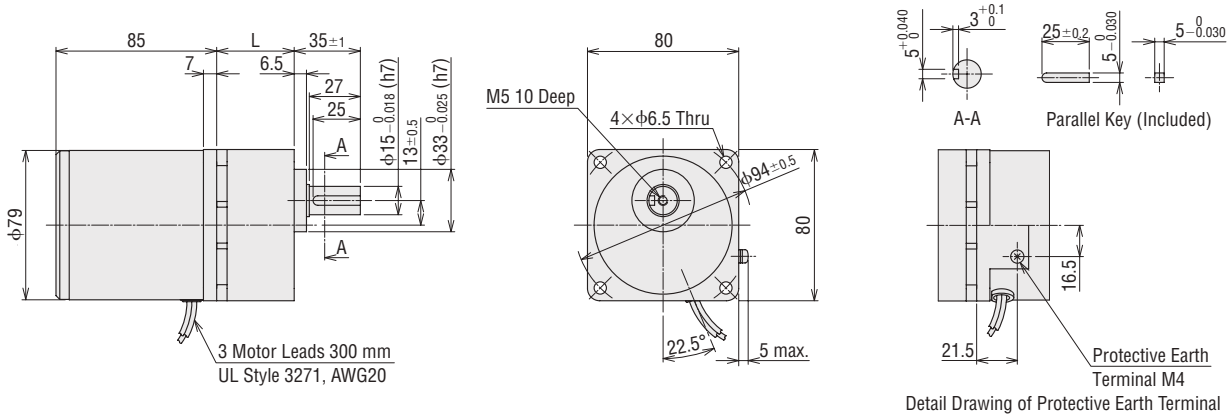
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ Lead Wire Type

● Gear Ratio 2~360

2D & 3D CAD

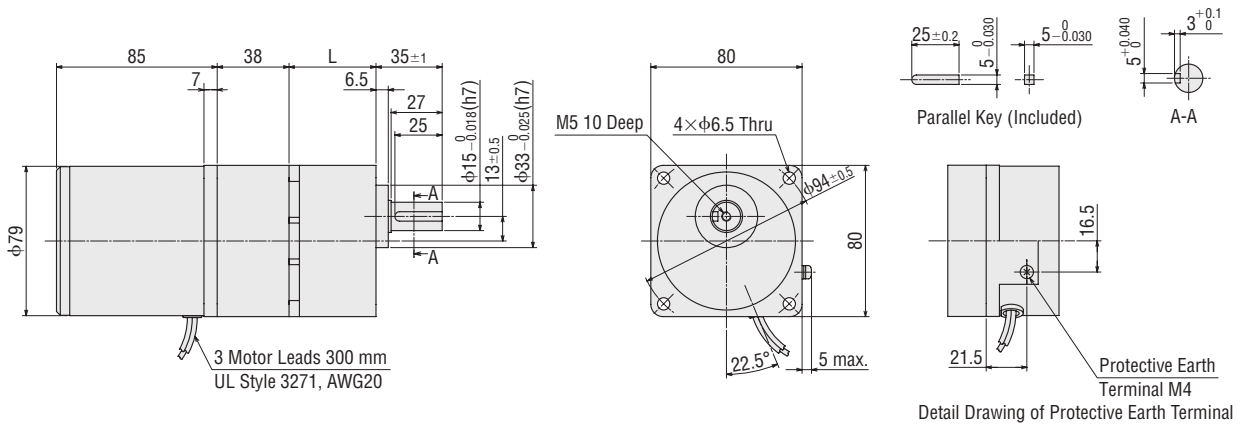
Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~25		Gear Ratio 2, 3, 30~120		Gear Ratio 150~360	
				L	2D CAD	L	2D CAD	L	2D CAD
4IK25U-□ 4IK25GC-□	4IK25GV-U■ 4IK25GV-GC	4GV□B	2.45	41	A1231A	46	A1231B	51	A1231C



● Gear Ratio 500~3600

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Decimal Gearhead Product Name	Mass kg	Gear Ratio 500~1200		Gear Ratio 1500~3600	
					L	2D CAD	L	2D CAD
4IK25U-□ 4IK25GC-□	4IK25GV-U■ 4IK25GV-GC	4GV□B	4GV10X	3.0	46	A1231D	51	A1231E

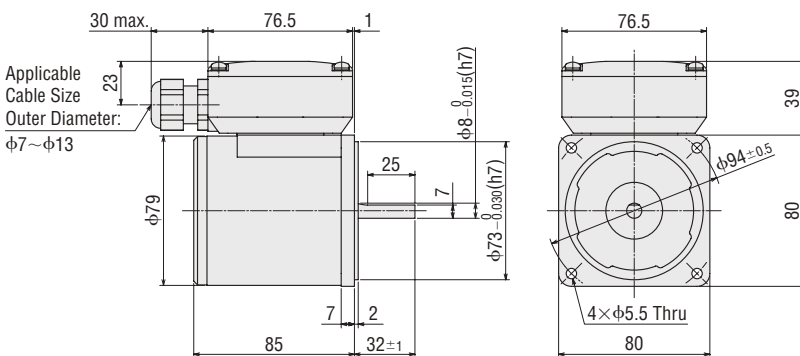


● Round Shaft Type

◇ Terminal Box Type

4IK25A-U■T2, 4IK25A-GCT2

Mass: 1.8 kg 2D CAD A1308 3D CAD

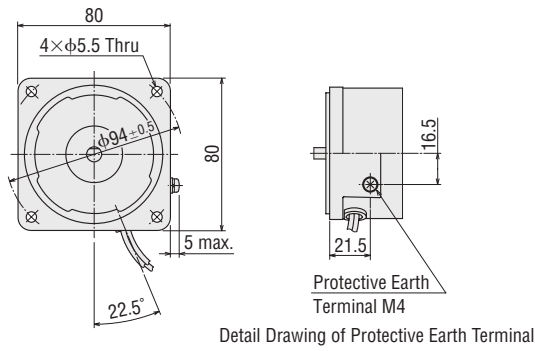
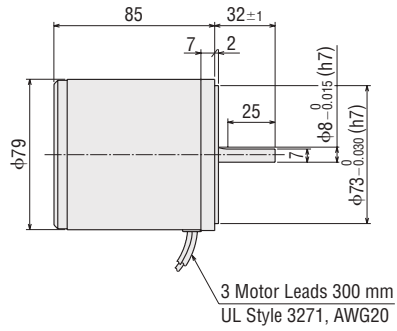


● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

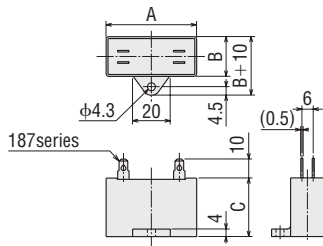
◇ Lead Wire Type

4IK25A-U **4IK25A-GC**

Mass: 1.5 kg **2D CAD** A450 **3D CAD**



● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
4IK25UAT2- <input type="checkbox"/> 4IK25UA- <input type="checkbox"/>	4IK25A-UAT2 4IK25A-UA	CH60CFAUL2	38	21	31	35
4IK25GCT2- <input type="checkbox"/> 4IK25GC- <input type="checkbox"/>	4IK25A-GCT2 4IK25A-GC	CH18BFAUL	38	21	31	37
4IK25UCT2- <input type="checkbox"/> 4IK25UC- <input type="checkbox"/>	4IK25A-UCT2 4IK25A-UC	CH15BFAUL	38	21	31	37

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

[Click Here](#)

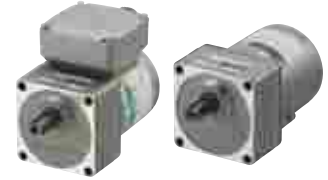
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Induction Motors

40 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Terminal Box Type	Lead Wire Type	W	V	Hz	A	mN·m	mN·m	r/min	μF	
5IK40UAT2 -□ 5IK40A-UAT2	5IK40UA -□ 5IK40A-UA	40	Single-Phase 110	60	0.66	200	260	1500	9.0	TP
			Single-Phase 115		0.65					
5IK40GCT2 -□ 5IK40A-GCT2	5IK40GC -□ 5IK40A-GC	40	Single-Phase 220	50	0.34	170	315	1250	2.5	
			Single-Phase 230		0.33					
5IK40UCT2 -□ 5IK40A-UCT2	5IK40UC -□ 5IK40A-UC	40	Single-Phase 220	60	0.33	200	260	1500	2.0	
			Single-Phase 230		0.32					

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5IK40UAT2 -□	2, 3	SGD219
	5, 6, 7.5, 9, 12.5, 15, 18	SGD216
	25, 30, 36	SGD225
	50, 60, 75, 90, 100, 120, 150, 180	SGD233
5IK40GCT2 -□	250, 300	SGD303
	2, 3	SGD223
	5, 6, 7.5, 9, 12.5, 15, 18	SGD220
	25, 30, 36	SGD229
5IK40UCT2 -□	50, 60, 75, 90, 100, 120, 150, 180	SGD236
	250, 300	SGD306
	2, 3	SGD223
	5, 6, 7.5, 9, 12.5, 15, 18	SGD220
5IK40UA -□	25, 30, 36	SGD229
	50, 60, 75, 90, 100, 120, 150, 180	SGD236
	250, 300	SGD306
	2, 3	SGD223
5IK40GC -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD220
	25, 30, 36	SGD229
	50, 60, 75, 90, 100, 120, 150, 180	SGD236
	250, 300	SGD306
5IK40UC -□	2, 3	SGD223
	5, 6, 7.5, 9, 12.5, 15, 18	SGD220
	25, 30, 36	SGD229
	50, 60, 75, 90, 100, 120, 150, 180	SGD236
5IK40UA -□	250, 300	SGD306
	360	SGD299
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD306
	2500, 3000	SGD376
5IK40GC -□	2500, 3000	SGD376
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206
5IK40UC -□	50, 60, 75, 90, 100, 120, 150, 180	SGD213
	250, 300	SGD283
	360	SGD303
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD310
5IK40UA -□	2500, 3000	SGD380
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206
5IK40GC -□	50, 60, 75, 90, 100, 120, 150, 180	SGD213
	250, 300	SGD283
	360	SGD303
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD310
5IK40UC -□	2500, 3000	SGD380
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5IK40UA -□	2, 3	SGD196
	5, 6, 7.5, 9, 12.5, 15, 18	SGD193
	25, 30, 36	SGD202
	50, 60, 75, 90, 100, 120, 150, 180	SGD209
5IK40GC -□	250, 300	SGD279
	360	SGD299
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD306
	2500, 3000	SGD376
5IK40UC -□	2500, 3000	SGD380
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206
5IK40UA -□	50, 60, 75, 90, 100, 120, 150, 180	SGD213
	250, 300	SGD283
	360	SGD303
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD310
5IK40GC -□	2500, 3000	SGD380
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206
5IK40UC -□	50, 60, 75, 90, 100, 120, 150, 180	SGD213
	250, 300	SGD283
	360	SGD303
	500, 600, 750, 900, 1000, 1200, 1500, 1800	SGD310
5IK40UA -□	2500, 3000	SGD380
	2, 3	SGD199
	5, 6, 7.5, 9, 12.5, 15, 18	SGD197
	25, 30, 36	SGD206

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5IK40A-UAT2	SGD124
5IK40A-GCT2	SGD128
5IK40A-UCT2	SGD128

◇ Lead Wire Type

Product Name	List Price
5IK40A-UA	SGD101
5IK40A-GC	SGD104
5IK40A-UC	SGD104

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
		Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250
5IK40GC □-□ (Single-Phase 230 VAC)		0.47	0.73	1.4	1.6	2.0	2.4	3.4	4.1	4.9	6.5	7.7	9.3	12.9	15.5	19.4	23.2	25.8	29.2	30	30	30	30
5IK40GC □-□ (Single-Phase 220 VAC)		0.49	0.77	1.4	1.7	2.1	2.6	3.5	4.3	5.1	6.8	8.1	9.8	13.5	16.3	20.3	24.4	27.1	30	30	30	30	30
Product Name	Speed r/min	4.1	3	2.5	2	1.6	1.5	1.2	1	0.8	0.6	0.5											
	Gear Ratio	360	500	600	750	900	1000	1200	1500	1800	2500	3000											
5IK40GC -□		20	30	30	30	30	30	30	30	30	30	30											

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
		Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250
5IK40U □-□		0.41	0.63	1.2	1.4	1.8	2.1	2.9	3.5	4.2	5.6	6.7	8.0	11.2	13.4	16.8	20.1	22.4	25.3	30	30	30	30
Product Name	Speed r/min	5	3.6	3	2.4	2	1.8	1.5	1.2	1	0.7	0.6											
	Gear Ratio	360	500	600	750	900	1000	1200	1500	1800	2500	3000											
5IK40U □-□		20	30	30	30	30	30	30	30	30	30	30											

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

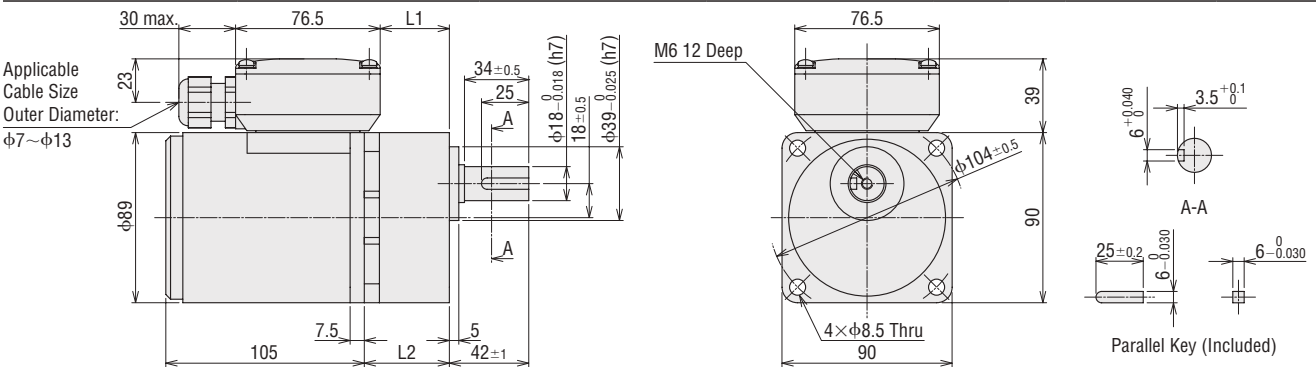
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead GV Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5IK40U □T2-□ 5IK40GCT2 -□	5IK40GV-U □ T2 5IK40GV-GCT2	5GV□B	5~18	36.6	45	4.3	A1305A
			2, 3, 25~100	49.6	58		A1305B
			120~300	55.6	64		A1305C



- Either **A** or **C** indicating the power supply voltage is entered where the box **□** is located within the product name.
A code (**T2**) indicating the terminal box type is entered where the box **□** is located within the product name.
A number indicating the gear ratio is entered where the box **□** is located within the product name.

Click Here

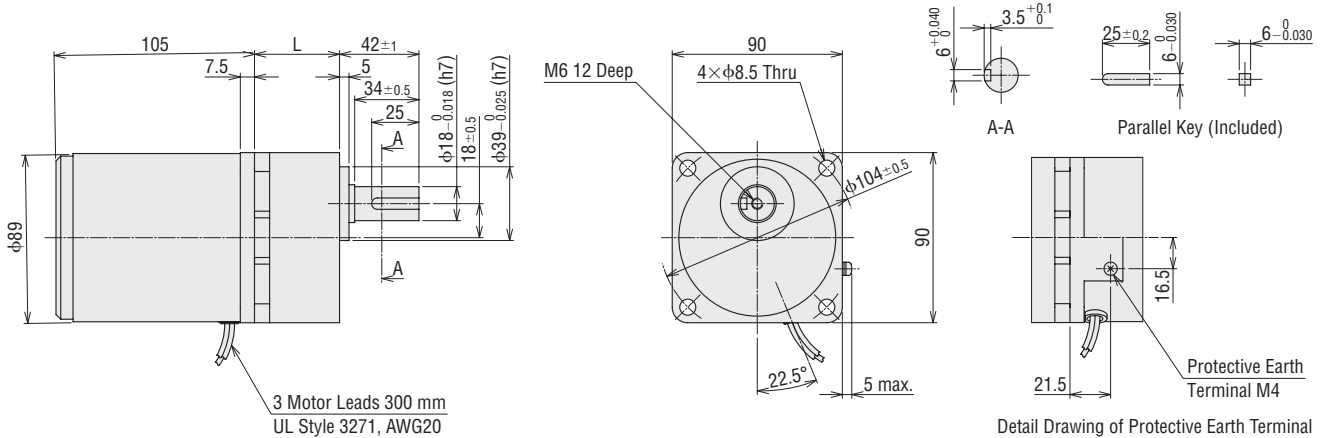
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ Lead Wire Type

● Gear Ratio 2~300

2D & 3D CAD

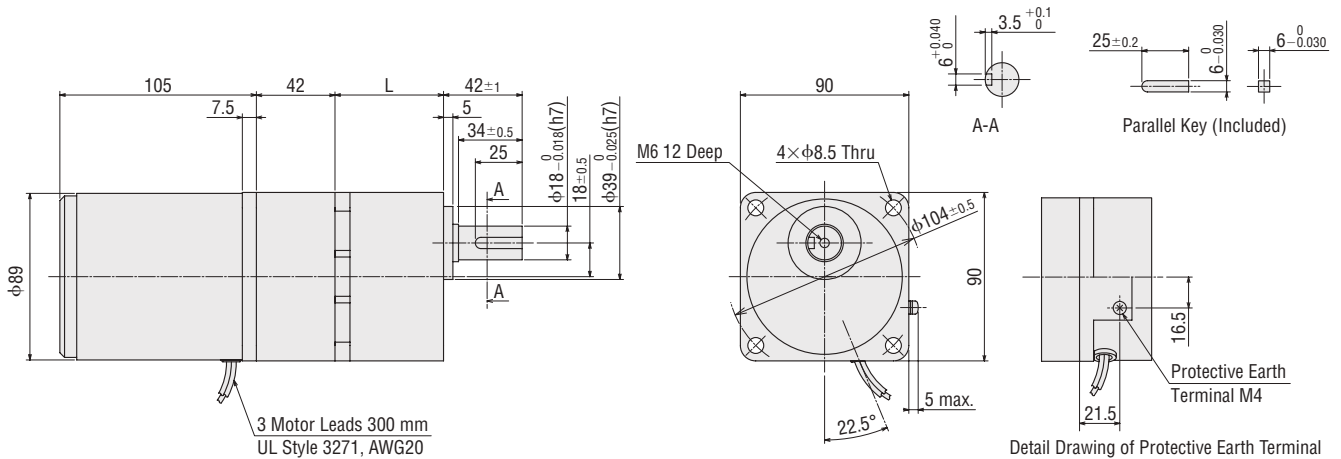
Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~18		Gear Ratio 2, 3, 25~100		Gear Ratio 120~300	
				L	2D CAD	L	2D CAD	L	2D CAD
5IK40U-□ 5IK40GC-□	5IK40GV-U 5IK40GV-GC	5GV□B	4.0	45	A1233A	58	A1233B	64	A1233C



● Gear Ratio 360~3000

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Decimal Gearhead Product Name	Mass kg	Gear Ratio 360~1000		Gear Ratio 1200~3000	
					L	2D CAD	L	2D CAD
5IK40U-□ 5IK40GC-□	5IK40GV-U 5IK40GV-GC	5GV□B	5GV10X	4.7	58	A1233D	64	A1233E

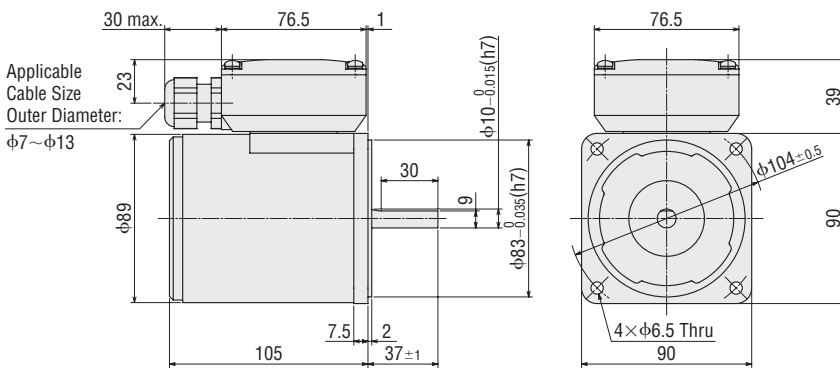


● Round Shaft Type

◇ Terminal Box Type

5IK40A-U□T2, 5IK40A-GCT2

Mass: 2.8 kg 2D CAD A1309 3D CAD

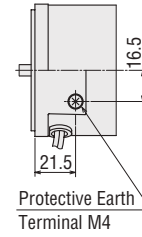
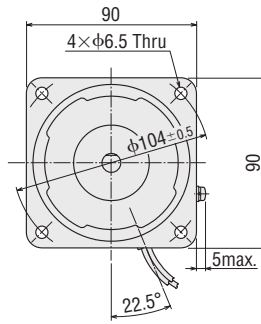
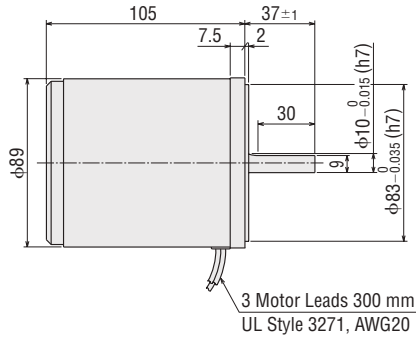


● Either **A** or **C** indicating the power supply voltage is entered where the box **■** is located within the product name.
A number indicating the gear ratio is entered where the box **□** is located within the product name.

◇ Lead Wire Type

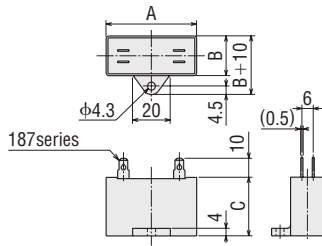
5IK40A-U **5IK40A-GC**

Mass: 2.5 kg **2D CAD** A453 **3D CAD**



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5IK40UAT2- <input type="checkbox"/> 5IK40UA- <input type="checkbox"/>	5IK40A-UAT2 5IK40A-UA	CH90CFAUL2	48	22.5	31.5	45
5IK40GCT2- <input type="checkbox"/> 5IK40GC- <input type="checkbox"/>	5IK40A-GCT2 5IK40A-GC	CH25BFAUL	48	21	31	42
5IK40UCT2- <input type="checkbox"/> 5IK40UC- <input type="checkbox"/>	5IK40A-UCT2 5IK40A-UC	CH20BFAUL	48	19	29	36

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

[Click Here](#)

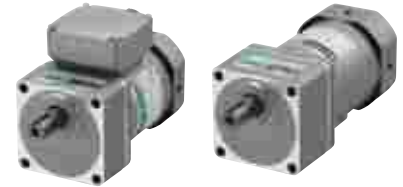
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Induction Motors

60 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Lead Wire Type									
5IK60UAT2 -□ 5IK60A-UAT2	5IK60UA -□ 5IK60A-UA	60	Single-Phase 110	60	1.09	320	405	1450	16	TP
			Single-Phase 115		1.09					
5IK60GCT2 -□ 5IK60A-GCT2	5IK60GC -□ 5IK60A-GC	60	Single-Phase 220	50	0.49	290	490	1200	4.0	
			Single-Phase 230		0.49					
5IK60UCT2 -□ 5IK60A-UCT2	5IK60UC -□ 5IK60A-UC	60	Single-Phase 220	60	0.53	320	405	1450	4.0	
			Single-Phase 230		0.52					

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5IK60UAT2 -□	2, 3	SGD274
	5, 6, 7.5, 9, 12.5, 15, 18	SGD263
	25, 30, 36, 50, 60, 75, 90, 100	SGD274
	120, 150, 180	SGD285
	250, 300	SGD321
5IK60GCT2 -□	2, 3	SGD279
	5, 6, 7.5, 9, 12.5, 15, 18	SGD268
	25, 30, 36, 50, 60, 75, 90, 100	SGD279
	120, 150, 180	SGD290
	250, 300	SGD326
5IK60UCT2 -□	2, 3	SGD279
	5, 6, 7.5, 9, 12.5, 15, 18	SGD268
	25, 30, 36, 50, 60, 75, 90, 100	SGD279
	120, 150, 180	SGD290
	250, 300	SGD326

The following items are included with each product.
Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5IK60UA -□	2, 3	SGD251
	5, 6, 7.5, 9, 12.5, 15, 18	SGD239
	25, 30, 36, 50, 60, 75, 90, 100	SGD251
	120, 150, 180	SGD262
	250, 300	SGD298
5IK60GC -□	2, 3	SGD256
	5, 6, 7.5, 9, 12.5, 15, 18	SGD244
	25, 30, 36, 50, 60, 75, 90, 100	SGD256
	120, 150, 180	SGD267
	250, 300	SGD303
5IK60UC -□	2, 3	SGD256
	5, 6, 7.5, 9, 12.5, 15, 18	SGD244
	25, 30, 36, 50, 60, 75, 90, 100	SGD256
	120, 150, 180	SGD267
	250, 300	SGD303

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5IK60A-UAT2	SGD143
5IK60A-GCT2	SGD148
5IK60A-UCT2	SGD148

◇ Lead Wire Type

Product Name	List Price
5IK60A-UA	SGD119
5IK60A-GC	SGD124
5IK60A-UC	SGD124

The following items are included with each product.
Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5IK60GC □-□		0.79	1.2	2.2	2.6	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5IK60U □-□		0.66	0.98	1.8	2.2	2.7	3.3	4.6	5.5	6.6	8.7	10.4	12.5	17.4	20.9	26.1	30	30	30	30	30	30	30

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead **GV** Gear

Terminal Box Type

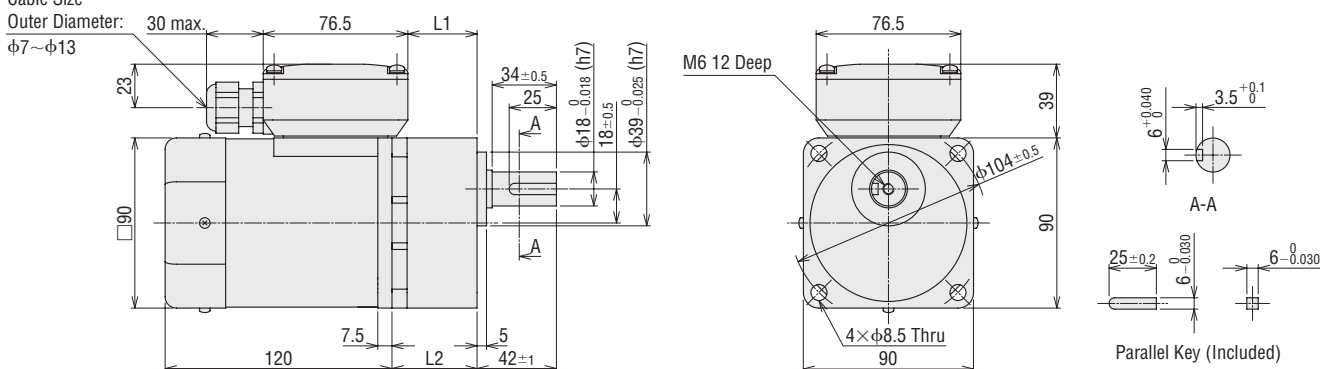
2D & 3D CAD

Dimension Number	Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~18			Gear Ratio 2, 3, 25~100			Gear Ratio 120~300		
					L1	L2	2D CAD	L1	L2	2D CAD	L1	L2	2D CAD
①	5IK60U □ T2 -□	5IK60GVH-U□ T2	5GVH□B	4.5	36.6	45	A1306A	49.6	58	A1306B	55.6	64	A1306C
②	5IK60GCT2 -□	5IK60GVH-GCT2		4.7			A1312A			A1312B			A1312C

Dimensions ①

Applicable Cable Size

Outer Diameter: $\phi 7 \sim \phi 13$

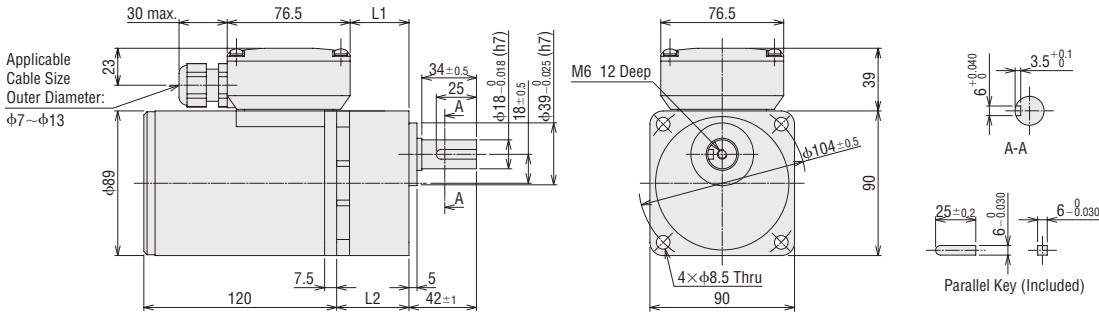


- Either **A** or **C** indicating the power supply voltage is entered where the box □ is located within the product name.
- A code (**T2**) indicating the terminal box type is entered where the box □ is located within the product name.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

● Dimensions ②

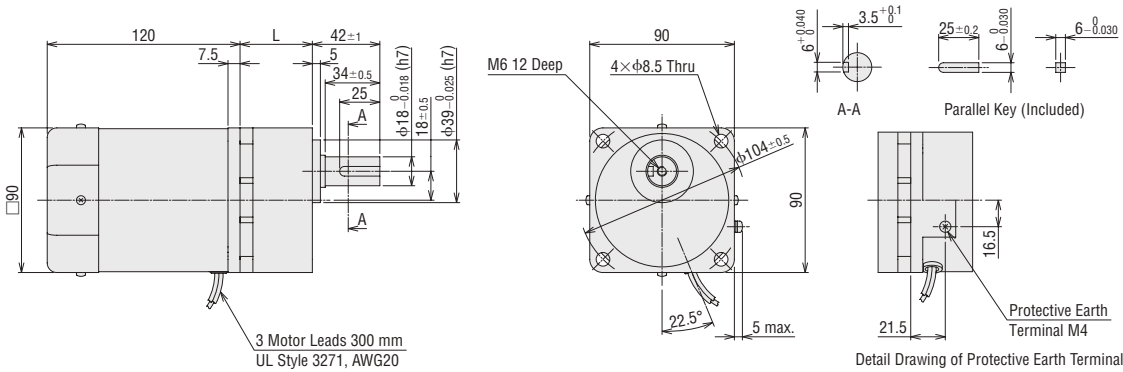


◇ Lead Wire Type

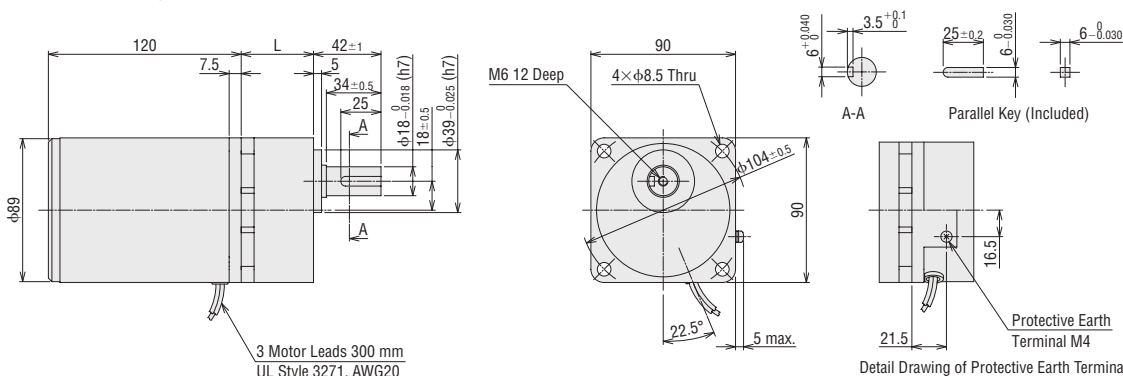
2D & 3D CAD

Dimension Number	Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~18		Gear Ratio 2, 3, 25~100		Gear Ratio 120~300	
					L	2D CAD	L	2D CAD	L	2D CAD
③	5IK60U	5IK60GVH-U	5GVH	4.2	45	A1235A	58	A1235B	64	A1235C
④	5IK60GC	5IK60GVH-GC	5GVH	4.4	45	A1328A	58	A1328B	64	A1328C

● Dimensions ③



● Dimensions ④

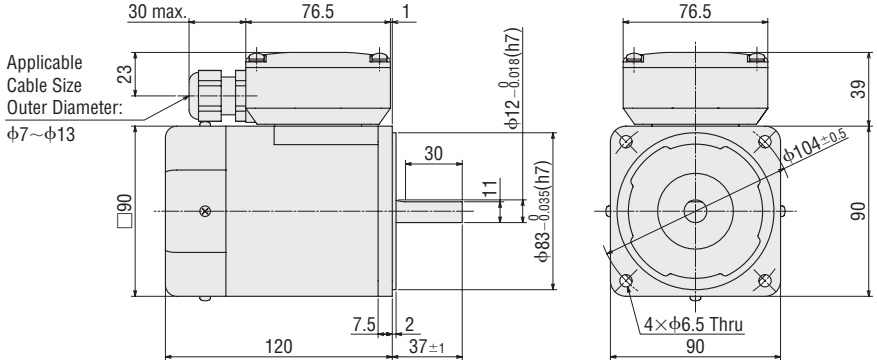


● Round Shaft Type

◇ Terminal Box Type

5IK60A-U

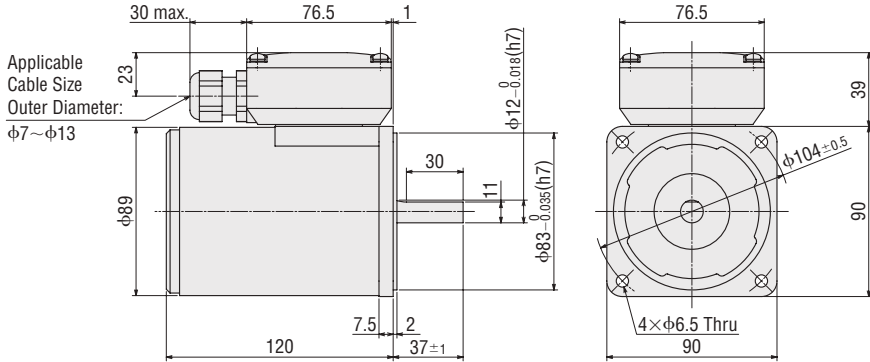
Mass: 3.0 kg 2D CAD A1310 3D CAD



● Either A or C indicating the power supply voltage is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

5IK60A-GCT2

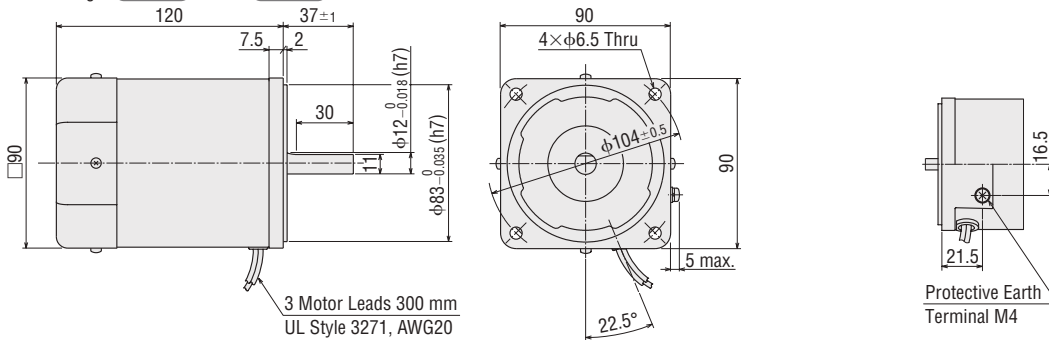
Mass: 3.2 kg **2D CAD** A1313 **3D CAD**



◆ **Lead Wire Type**

5IK60A-U

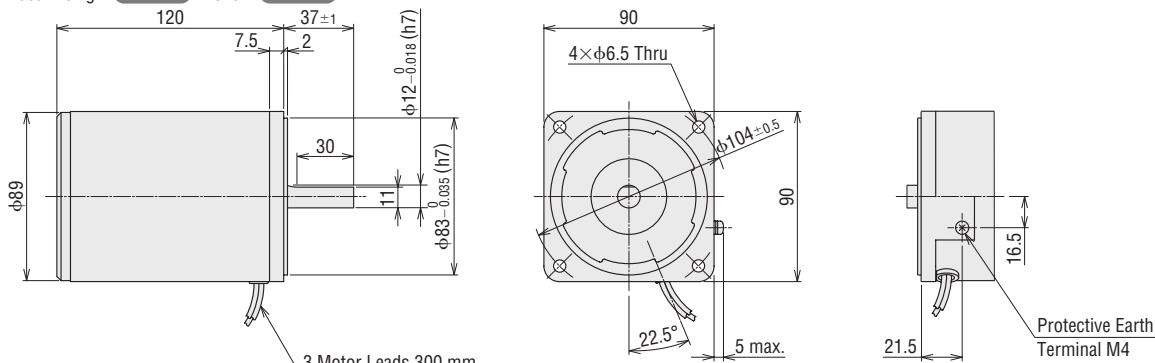
Mass: 2.7 kg **2D CAD** A456 **3D CAD**



Detail Drawing of Protective Earth Terminal

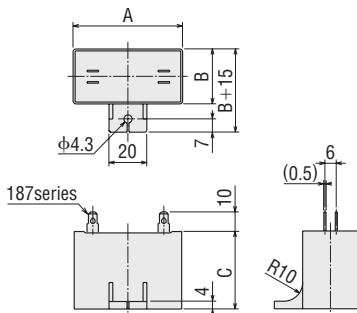
5IK60A-GC

Mass: 2.9 kg **2D CAD** A1329 **3D CAD**



Detail Drawing of Protective Earth Terminal

● **Capacitor (Included)**



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5IK60UAT2 -□	5IK60A-UAT2	CH160CFAUL2	58	23.5	37	71
5IK60UA -□	5IK60A-UA					
5IK60GCT2 -□	5IK60A-GCT2	CH40BFAUL	58	23.5	37	73
5IK60GC -□	5IK60A-GC					
5IK60UCT2 -□	5IK60A-UCT2	CH40BFAUL	58	23.5	37	73
5IK60UC -□	5IK60A-UC					

● A capacitor cap is included.

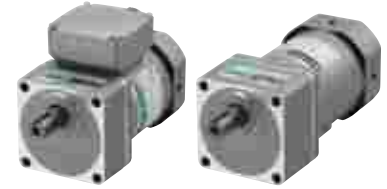
● Either **A** or **C** indicating the power supply voltage is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Induction Motors

90 W

□ 90 mm

KII Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Lead Wire Type									
5IK90UAT2 -□ 5IK90A-UAT2	5IK90UA -□ 5IK90A-UA	90	Single-Phase 110	60	1.44	450	585	1500	20	TP
			Single-Phase 115		1.44					
5IK90GCT2 -□ 5IK90A-GCT2	5IK90GC -□ 5IK90A-GC	90	Single-Phase 220	50	0.70	480	730	1200	6.0	
			Single-Phase 230		0.70					
5IK90UCT2 -□ 5IK90A-UCT2	5IK90UC -□ 5IK90A-UC	90	Single-Phase 220	60	0.71	450	605	1450	5.0	
			Single-Phase 230		0.71					

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5IK90UAT2 -□	3	SGD304
	5, 6, 7.5, 9, 12.5, 15, 18	SGD283
	25, 30, 36, 50, 60	SGD304
	75, 90, 100, 120, 150, 180	SGD314
5IK90GCT2 -□	3	SGD309
	5, 6, 7.5, 9, 12.5, 15, 18	SGD288
	25, 30, 36, 50, 60	SGD309
	75, 90, 100, 120, 150, 180	SGD319
5IK90UCT2 -□	3	SGD309
	5, 6, 7.5, 9, 12.5, 15, 18	SGD288
	25, 30, 36, 50, 60	SGD309
	75, 90, 100, 120, 150, 180	SGD319

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5IK90UA -□	3	SGD281
	5, 6, 7.5, 9, 12.5, 15, 18	SGD260
	25, 30, 36, 50, 60	SGD281
	75, 90, 100, 120, 150, 180	SGD291
5IK90GC -□	3	SGD286
	5, 6, 7.5, 9, 12.5, 15, 18	SGD265
	25, 30, 36, 50, 60	SGD286
	75, 90, 100, 120, 150, 180	SGD296
5IK90UC -□	3	SGD286
	5, 6, 7.5, 9, 12.5, 15, 18	SGD265
	25, 30, 36, 50, 60	SGD286
	75, 90, 100, 120, 150, 180	SGD296

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5IK90A-UAT2	SGD162
5IK90A-GCT2	SGD167
5IK90A-UCT2	SGD167

◇ Lead Wire Type

Product Name	List Price
5IK90A-UA	SGD139
5IK90A-GC	SGD144
5IK90A-UC	SGD144

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max.30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK90GC		-	1.8	3.3	3.9	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK90UA		-	1.4	2.6	3.2	3.9	4.7	6.6	7.9	9.1	12.6	15.1	18.1	25.2	30.2	35.5	40	40	40	40	40
5IK90UC		-	1.5	2.7	3.3	4.1	4.9	6.8	8.2	9.4	13.0	15.6	18.7	26.0	31.2	36.8	40	40	40	40	40

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

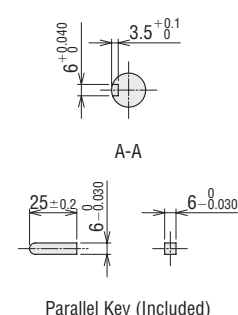
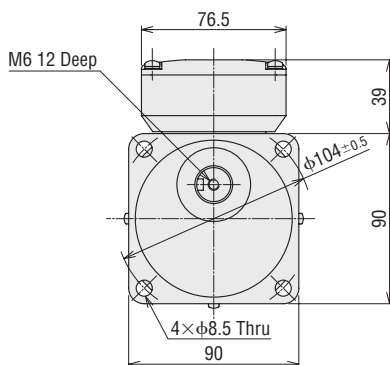
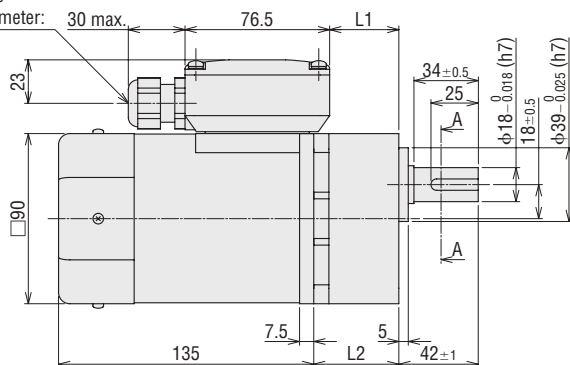
Parallel Shaft Gearhead GV Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5IK90U	5IK90GVR-U	5GVR	5~15	36.6	45	5.0	A1307A
5IK90GCT	5IK90GVR-GCT		2, 3, 18~36	49.6	58		A1307B
			50~180	61.6	70		A1307C

Applicable Cable Size
Outer Diameter: 30 max.
φ7~φ13



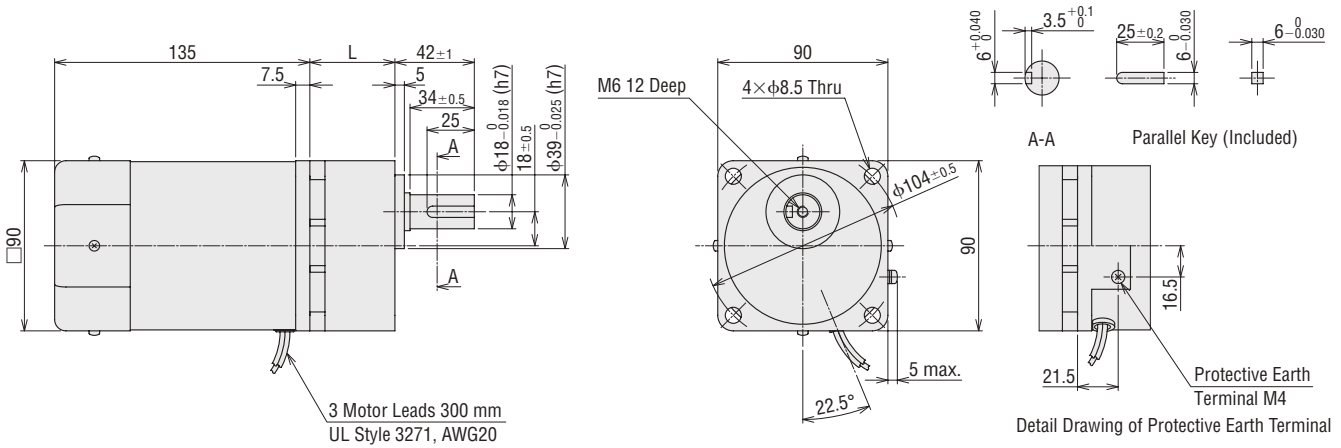
- Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
A code (**T2**) indicating the terminal box type is entered where the box is located within the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ Lead Wire Type

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~15		Gear Ratio 3, 18~36		Gear Ratio 50~180	
				L	2D CAD	L	2D CAD	L	2D CAD
5IK90U □ □ 5IK90GC □ □	5IK90GVR-U □ □ 5IK90GVR-GC □ □	5GVR □ B	4.7	45	A1237A	58	A1237B	70	A1237C

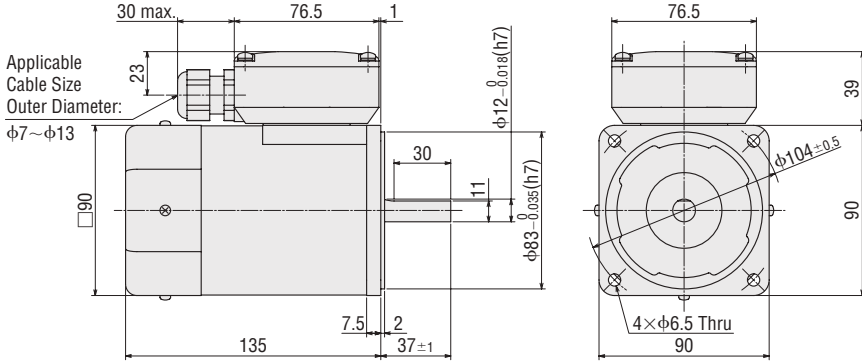


● Round Shaft Type

◇ Terminal Box Type

5IK90A-U T2, **5IK90A-GCT2**

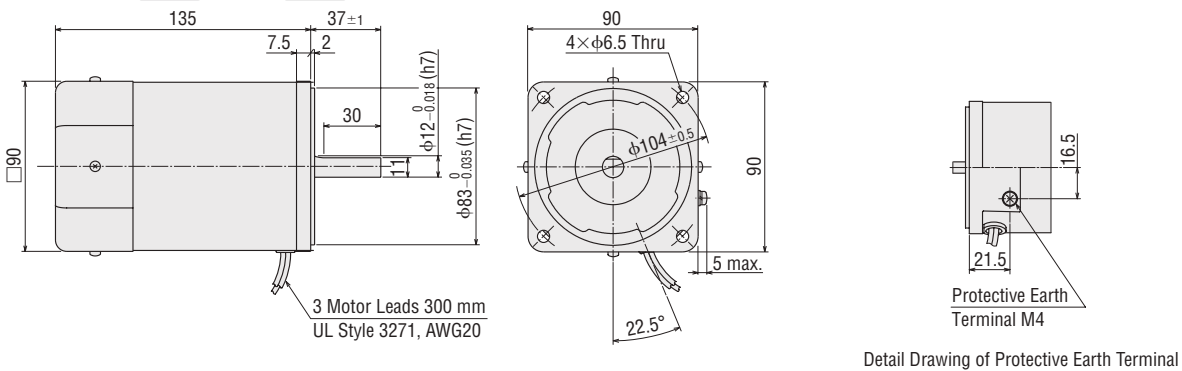
Mass: 3.5 kg 2D CAD A1311 3D CAD



◇ Lead Wire Type

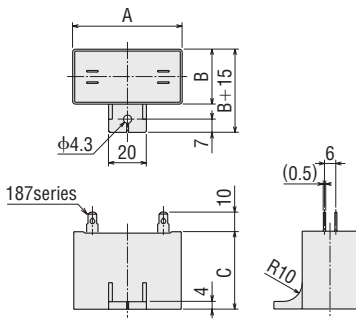
5IK90A-U □ □, **5IK90A-GC** □ □

Mass: 3.2 kg 2D CAD A459 3D CAD



● Either **A** or **C** indicating the power supply voltage is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

● Capacitor (Included)



Unit: mm

Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
51K90UAT2- □ 51K90UA- □	51K90A-UAT2 51K90A-UA	CH200CFAUL2	58	29	41	91
51K90GCT2- □ 51K90GC- □	51K90A-GCT2 51K90A-GC	CH60BFAUL	58	29	41	92
51K90UCT2- □ 51K90UC- □	51K90A-UCT2 51K90A-UC	CH50BFAUL	58	29	41	93

● A capacitor cap is included.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Induction Motors

40 W

90 mm

KII Series Hypoid Right-Angle Shaft Gear



Hypoid Right-Angle Hollow Shaft
JH Gear



Hypoid Right-Angle Solid Shaft
JL Gear

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Lead Wire Type		Output Power W	Voltage VAC	Frequency Hz	Current A	Capacitor μF	Overheat Protection Device
Hollow Shaft Type	Solid Shaft Type						
5IK40KF-5H □B	5IK40KF-5L □B	40	Single-Phase 110	60	0.66	9.0	TP
			Single-Phase 115		0.65		
5IK40KG-5H □B	5IK40KG-5L □B		Single-Phase 220	50	0.34	2.5	TP
			Single-Phase 230		0.33		
5IK40KR-5H □B	5IK40KR-5L □B		Single-Phase 220	60	0.33	2.0	TP
			Single-Phase 230		0.32		

Gear Ratio		10	15	20	25	30	40	50	60	80	100	120	160	200	240	
Speed [r/min]	50 Hz	150	100	75	60	50	37	30	25	18.7	15	12.5	9.3	7.5	6.2	
	60 Hz	180	120	90	72	60	45	36	30	22	18	15	11.2	9	7.5	
Rated Torque [N·m]	Single-Phase 110/115 VAC 60 Hz	1.3	2.0	2.7	3.3	4.0	5.3	6.7	8.0	11.7	14.7	17.6	23.5	29.3	35.2	
	Single-Phase 220/230 VAC 60 Hz	1.6	2.4	3.2	4.0	4.8	6.5	8.1	9.7	14.2	17.8	21.3	28.4	35.5	42.6	
	Single-Phase 230 VAC 50 Hz	1.5	2.3	3.1	3.8	4.6	6.2	7.7	9.2	13.5	16.9	20.3	27.1	33.8	40.6	
Starting Torque [N·m]	Single-Phase 110/115 VAC 60 Hz	1.0	1.5	2.1	2.6	3.1	4.1	5.1	6.2	9.0	11.3	13.5	18.0	22.6	27.1	
	Single-Phase 220 VAC 50 Hz	0.87	1.3	1.7	2.2	2.6	3.5	4.4	5.2	7.7	9.6	11.5	15.3	19.2	23.0	
	Single-Phase 230 VAC 50 Hz	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.8	11.0	13.2	17.6	22.0	26.4	
Permissible Load Inertia J [× 10 ⁻⁴ kg·m ²]		200	450	800	1250	1800	3200	5000	7200	12800	20000	28800	51200	80000	115200	
	At Instantaneous Stop	66.7	150	267	417	600	1067	1667	2400	4267	6667	9600	17067	26667	38400	
Permissible Radial Load [N]	Hollow Shaft*	10 mm from installation surface	415	554	692	831	923	1017	1112	1196		1291				
		20 mm from installation surface	363	484	605	726	806	889	971	1045		1127				
	Solid Shaft	10 mm from output shaft end	378	504	630	756	840	926	1011	1089		1174				
		20 mm from output shaft end	481	641	802	962	1069	1178	1287	1385		1495				
Permissible Axial Load [N]		108	147	186	226	245	275	294	324		343					

*The radial load at each distance can also be calculated with a formula → Page 01-118

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

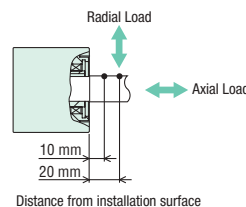
When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

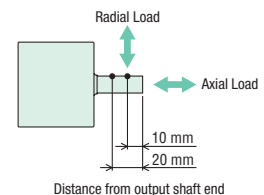
The actual speed is up to 30% less depending on the load.

◇ About Load Position

● Hollow Shaft



● Solid Shaft



Product Line

● Hypoid Right-Angle Hollow Shaft JH Gear

Product Name	Gear Ratio	List Price
5IK40KF-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD354
	80, 100, 120 160, 200, 240	SGD383
5IK40KG-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD358
	80, 100, 120 160, 200, 240	SGD387
5IK40KR-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD358
	80, 100, 120 160, 200, 240	SGD387

The following items are included in each product.

Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Stainless steel), Safety cover, Operating manual

● A number in the box □ in the product name indicates the gear ratio.

● Hypoid Right-Angle Solid Shaft JL Gear

Product Name	Gear Ratio	List Price
5IK40KF-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD319
	80, 100, 120 160, 200, 240	SGD334
5IK40KG-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD323
	80, 100, 120 160, 200, 240	SGD338
5IK40KR-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD323
	80, 100, 120 160, 200, 240	SGD338

The following items are included in each product.

Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Iron), Operating manual

Dimensions (Unit: mm)

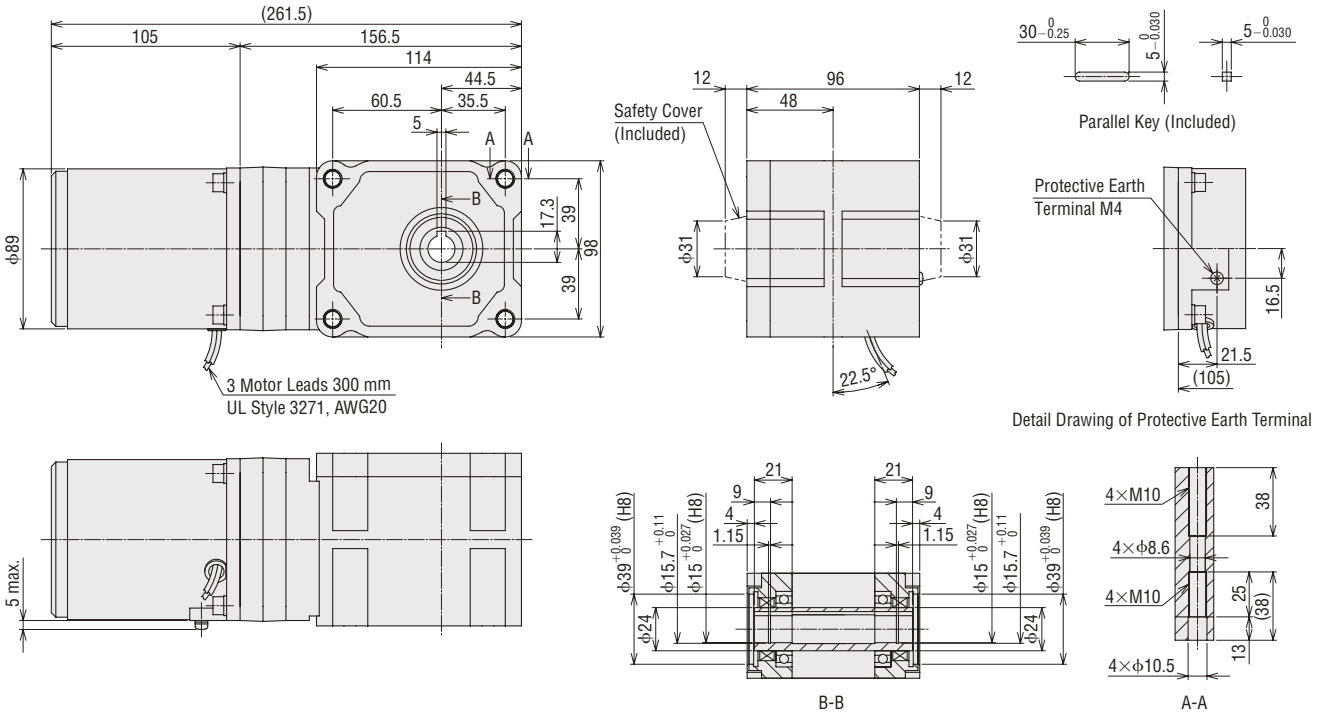
- "Mounting screws" are included. Dimensions of installation screws → Page O1-117
- A capacitor is included. Dimensions for capacitor → Page O1-39
- A number in the box □ in the product name indicates the gear ratio.

Lead Wire Type

◇ Hypoid Right-Angle Hollow Shaft **JH** Gear

2D & 3D CAD

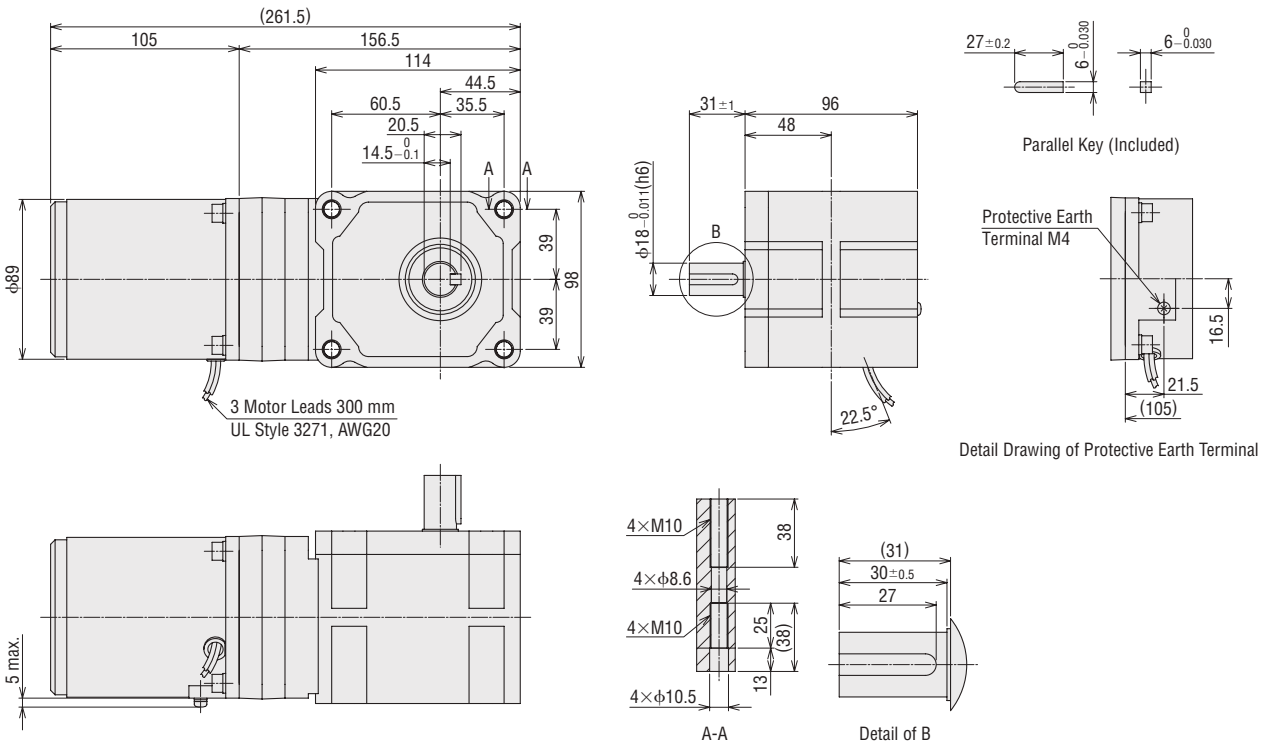
Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
5IK40KF-5H□B	5IK40KF	5H□B	5.5	A1509
5IK40KG-5H□B	5IK40KG			
5IK40KR-5H□B	5IK40KR			



◇ Hypoid Right-Angle Solid Shaft **JL** Gear

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
5IK40KF-5L□B	5IK40KF	5L□B	5.5	A1510
5IK40KG-5L□B	5IK40KG			
5IK40KR-5L□B	5IK40KR			



- At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

Induction Motors

60 W

□90 mm

KII Series Hypoid Right-Angle Shaft Gear



Hypoid Right-Angle Hollow Shaft
JH Gear



Hypoid Right-Angle Solid Shaft
JL Gear

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Lead Wire Type		Output Power W	Voltage VAC	Frequency Hz	Current A	Capacitor μF	Overheat Protection Device
Hollow Shaft Type	Solid Shaft Type						
5IK60KF-5H □B	5IK60KF-5L □B	60	Single-Phase 110	60	1.09	16	TP
			Single-Phase 115		1.09		
5IK60KG-5H □B	5IK60KG-5L □B		Single-Phase 220	50	0.49	4.0	TP
			Single-Phase 230		0.49		
5IK60KR-5H □B	5IK60KR-5L □B		Single-Phase 220	60	0.53	4.0	TP
			Single-Phase 230		0.52		

Gear Ratio		10	15	20	25	30	40	50	60	80	100	120	160	200	240	
Speed [r/min]	50 Hz	150	100	75	60	50	37	30	25	18.7	15	12.5	9.3	7.5	6.2	
	60 Hz	180	120	90	72	60	45	36	30	22	18	15	11.2	9	7.5	
Rated Torque [N·m]	Single-Phase 110/115 VAC 60 Hz	2.5	3.7	5.0	6.2	7.5	10.0	12.5	14.9	21.6	27.0	32.4	43.2	53.9	53.9	
	Single-Phase 220/230 VAC 60 Hz	3.0	4.5	6.0	7.5	9.0	12.1	15.1	18.1	26.1	32.6	39.2	52.2	53.9	53.9	
	Single-Phase 220/230 VAC 50 Hz	2.0	3.0	3.9	4.9	5.9	7.9	9.8	11.8	17.1	21.3	25.6	34.1	42.6	51.2	
Starting Torque [N·m]	Single-Phase 220 VAC 50 Hz	1.8	2.7	3.6	4.5	5.4	7.1	8.9	10.7	15.5	19.3	23.2	30.9	38.6	46.4	
	At Instantaneous Stop	66.7	150	267	417	600	1067	1667	2400	4267	6667	9600	17067	26667	38400	
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]	At Instantaneous Stop	200	450	800	1250	1800	3200	5000	7200	12800	20000	28800	51200	80000	115200	
	At Instantaneous Stop	66.7	150	267	417	600	1067	1667	2400	4267	6667	9600	17067	26667	38400	
Permissible Radial Load [N]	Hollow Shaft*	10 mm from installation surface	415	554	692	831	923	1017	1112	1196	1291	1385	1479	1573	1667	1761
		20 mm from installation surface	363	484	605	726	806	889	971	1054	1137	1220	1303	1385	1467	1550
	Solid Shaft	10 mm from output shaft end	378	504	630	756	840	926	1011	1096	1181	1266	1351	1436	1521	1606
		20 mm from output shaft end	481	641	802	962	1069	1178	1287	1396	1505	1614	1723	1832	1941	2050
Permissible Axial Load [N]		108	147	186	226	245	275	294	324	353	383	412	441	470	500	

*The radial load at each distance can also be calculated with a formula → Page 01-118

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

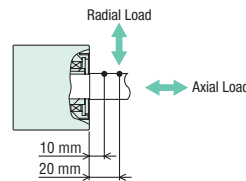
When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

The actual speed is up to 30% less depending on the load.

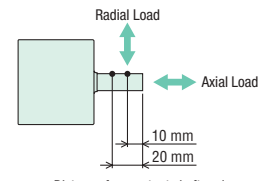
◇ About Load Position

● Hollow Shaft



Distance from installation surface

● Solid Shaft



Distance from output shaft end

Product Line

● Hypoid Right-Angle Hollow Shaft JH Gear

Product Name	Gear Ratio	List Price
5IK60KF-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD389
	80, 100, 120 160, 200, 240	SGD418
5IK60KG-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD393
	80, 100, 120 160, 200, 240	SGD422
5IK60KR-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD393
	80, 100, 120 160, 200, 240	SGD422

The following items are included in each product.

Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Stainless steel), Safety cover, Operating manual

● Hypoid Right-Angle Solid Shaft JL Gear

Product Name	Gear Ratio	List Price
5IK60KF-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD354
	80, 100, 120 160, 200, 240	SGD369
5IK60KG-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD358
	80, 100, 120 160, 200, 240	SGD373
5IK60KR-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD358
	80, 100, 120 160, 200, 240	SGD373

The following items are included in each product.

Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Iron), Operating manual

- A number in the box □ in the product name indicates the gear ratio.

Dimensions (Unit: mm)

- "Mounting screws" are included. Dimensions of installation screws → Page O1-117
- A capacitor is included. Dimensions for capacitor → Page O1-39
- A number in the box □ in the product name indicates the gear ratio.

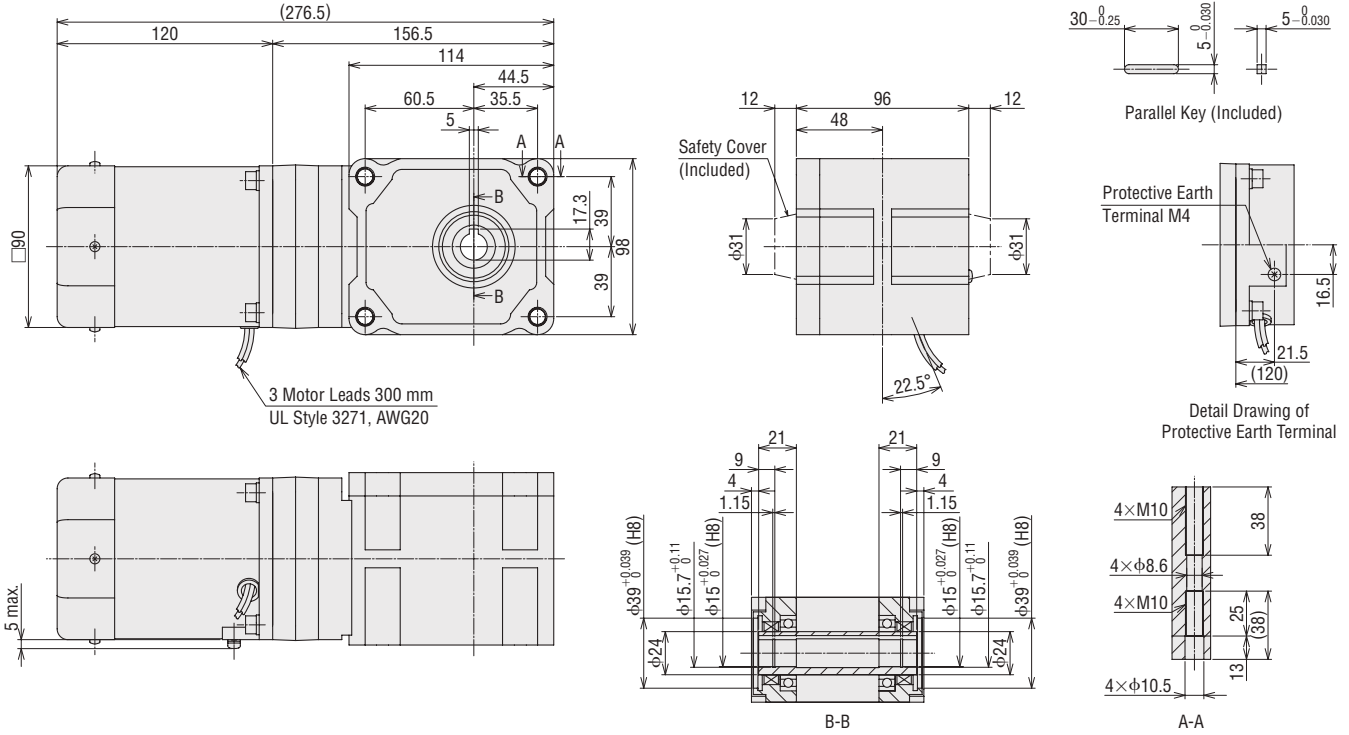
Lead Wire Type

◇ Hypoid Right-Angle Hollow Shaft JH Gear

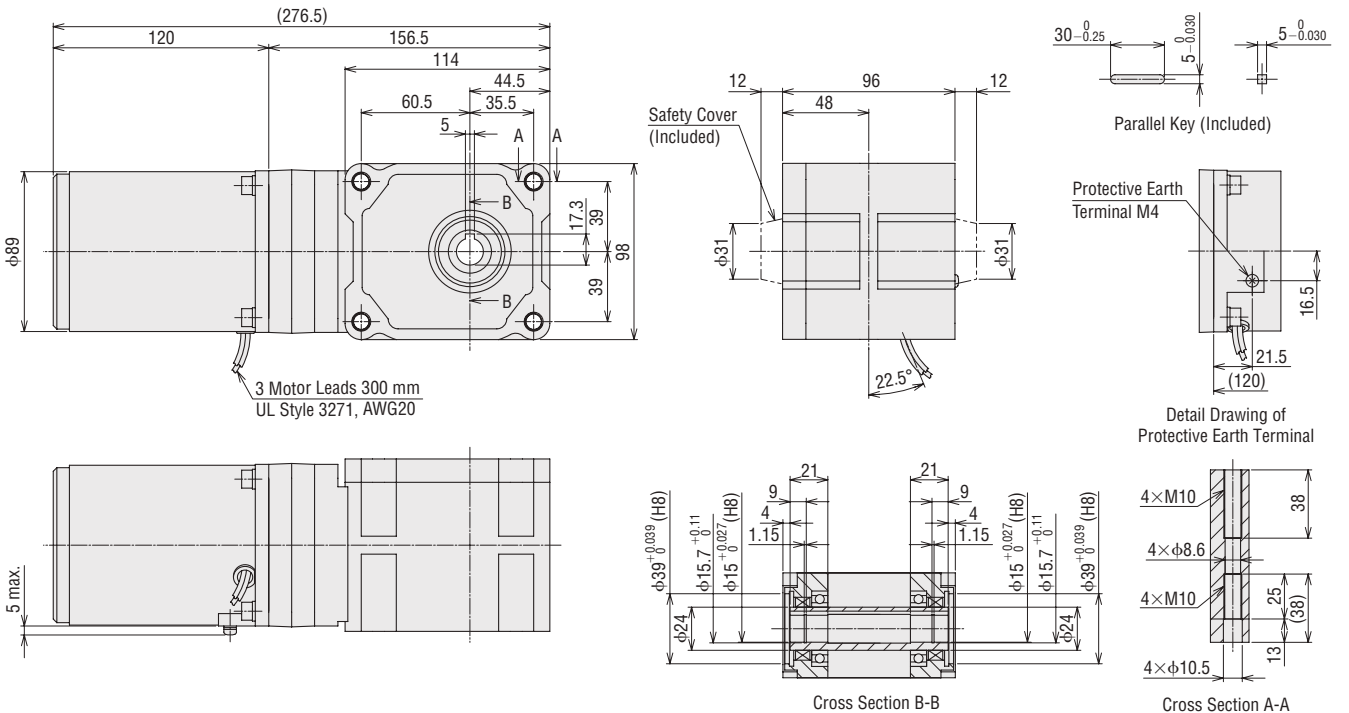
2D & 3D CAD

Dimensions No.	Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
①	5IK60KF-5H□B	5IK60KF	5H□B	5.7	A1573
	5IK60KR-5H□B	5IK60KR			
②	5IK60KG-5H□B	5IK60KG		5.9	A1511

• Dimensions ①



• Dimensions ②

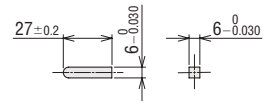
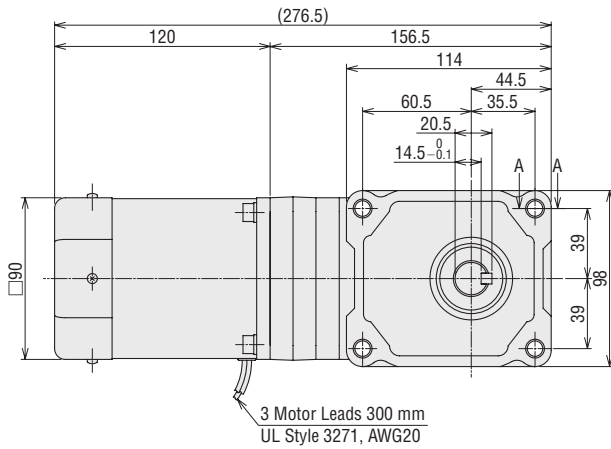


◇ Hypoid Right-Angle Solid Shaft JL Gear

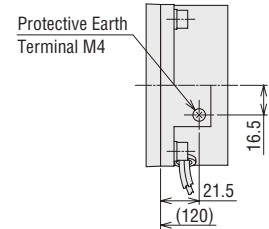
2D & 3D CAD

Dimensions No.	Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
①	5IK60KF-5L□B	5IK60KF	5L□B	5.7	A1574
	5IK60KR-5L□B	5IK60KR		5.9	A1512
②	5IK60KG-5L□B	5IK60KG			

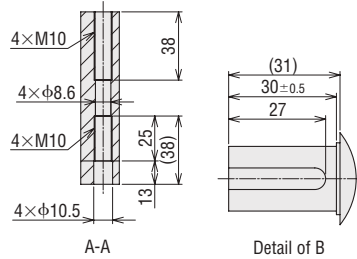
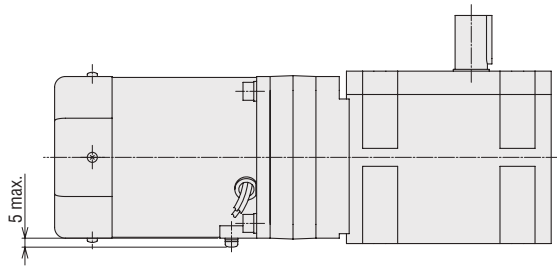
• Dimensions ①



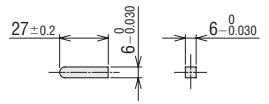
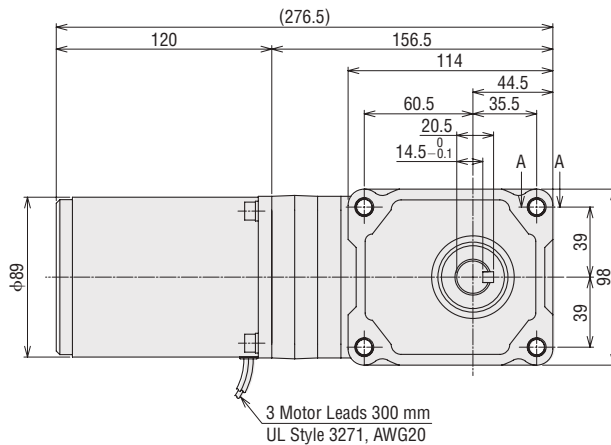
Parallel Key (Included)



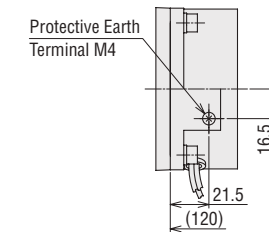
Detail Drawing of Protective Earth Terminal



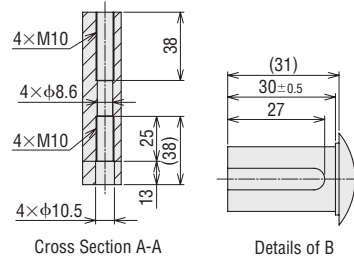
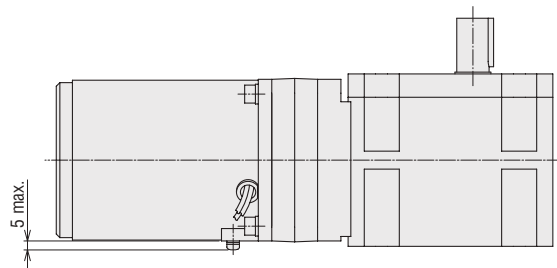
• Dimensions ②



Parallel Key (Included)



Detail Drawing of Protective Earth Terminal



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

Induction Motors

90 W

□ 90 mm

KII Series Hypoid Right-Angle Shaft Gear



Hypoid Right-Angle Hollow Shaft
JH Gear



Hypoid Right-Angle Solid Shaft
JL Gear

01

KII / KII Series

Specifications - Continuous Rating



Product Name Lead Wire Type		Output Power W	Voltage VAC	Frequency Hz	Current A	Capacitor μF	Overheat Protection Device
Hollow Shaft Type	Solid Shaft Type						
5IK90KF-5H □B	5IK90KF-5L □B	90	Single-Phase 110	60	1.44	20	TP
			Single-Phase 115		1.44		
5IK90KG-5H □B	5IK90KG-5L □B		Single-Phase 220	50	0.70	6.0	TP
			Single-Phase 230		0.70		
5IK90KR-5H □B	5IK90KR-5L □B		Single-Phase 220	60	0.71	5.0	TP
			Single-Phase 230		0.71		

Gear Ratio		10	15	20	25	30	40	50	60	80	100	120	160	200	240
Speed [r/min]	50 Hz	150	100	75	60	50	37	30	25	18.7	15	12.5	9.3	7.5	6.2
	60 Hz	180	120	90	72	60	45	36	30	22	18	15	11.2	9	7.5
Rated Torque [N·m]	Single-Phase 110/115 VAC 60 Hz	4.1	6.1	8.3	10.5	12.6	16.7	20.6	24.5	31.4	39.2	47.0	53.9	53.9	53.9
	Single-Phase 220/230 VAC	4.1	6.1	8.3	10.8	12.7	16.7	20.6	24.5	31.4	39.2	47.0	53.9	53.9	53.9
Starting Torque [N·m]	Single-Phase 110/115 VAC 60 Hz	3.2	4.8	6.5	8.1	9.7	12.9	16.1	19.4	25.8	32.3	38.7	51.7	53.9	53.9
	Single-Phase 220/230 VAC 60 Hz	3.2	4.8	6.5	8.1	9.7	12.9	16.1	19.4	25.8	32.3	38.7	51.7	53.9	53.9
	Single-Phase 220 VAC 50 Hz	3.4	5.2	6.9	8.6	10.3	13.8	17.2	20.7	27.6	34.4	41.3	53.9	53.9	53.9
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]	At Instantaneous Stop	200	450	800	1250	1800	3200	5000	7200	12800	20000	28800	51200	80000	115200
		66.7	150	267	417	600	1067	1667	2400	4267	6667	9600	17067	26667	38400
Permissible Radial Load [N]	Hollow Shaft*	10 mm from installation surface	415	554	692	831	923	1017	1112	1196				1291	
		20 mm from installation surface	363	484	605	726	806	889	971	1045				1127	
	Solid Shaft	10 mm from output shaft end	378	504	630	756	840	926	1011	1089				1174	
		20 mm from output shaft end	481	641	802	962	1069	1178	1287	1385				1495	
Permissible Axial Load [N]		108	147	186	226	245	275	294		324			343		

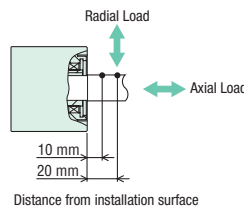
*The radial load at each distance can also be calculated with a formula → Page 01-118

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

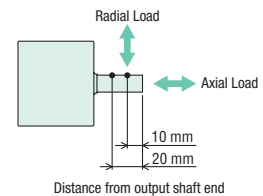
● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is up to 30% less depending on the load.

◇ About Load Position

● Hollow Shaft



● Solid Shaft



Product Line

● Hypoid Right-Angle Hollow Shaft JH Gear

Product Name	Gear Ratio	List Price
5IK90KF-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD404
	80, 100, 120 160, 200, 240	SGD433
5IK90KG-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD409
	80, 100, 120 160, 200, 240	SGD438
5IK90KR-5H □B	10, 15 20, 25, 30 40, 50, 60	SGD409
	80, 100, 120 160, 200, 240	SGD438

● Hypoid Right-Angle Solid Shaft JL Gear

Product Name	Gear Ratio	List Price
5IK90KF-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD369
	80, 100, 120 160, 200, 240	SGD384
5IK90KG-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD374
	80, 100, 120 160, 200, 240	SGD389
5IK90KR-5L □B	10, 15 20, 25, 30 40, 50, 60	SGD374
	80, 100, 120 160, 200, 240	SGD389

The following items are included in each product.
Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Stainless steel), Safety cover, Operating manual

The following items are included in each product.
Motor, Gearhead, Capacitor, Capacitor cap, Installation screws, Parallel key (Iron), Operating manual

● A number in the box □ in the product name indicates the gear ratio.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Dimensions (Unit: mm)

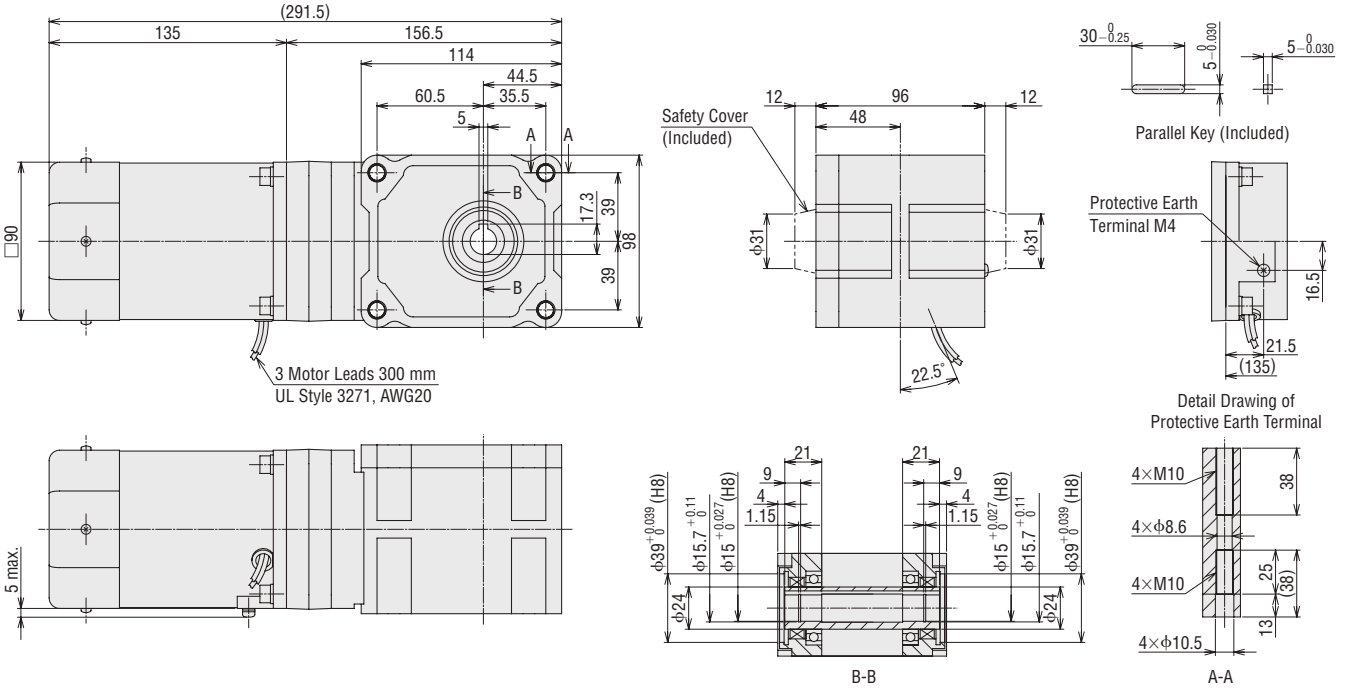
- "Mounting screws" are included. Dimensions of installation screws → Page 01-117
- A capacitor is included. Dimensions for capacitor → Page 01-39
- A number in the box □ in the product name indicates the gear ratio.

● Lead Wire Type

◇ Hypoid Right-Angle Hollow Shaft JH Gear

2D & 3D CAD

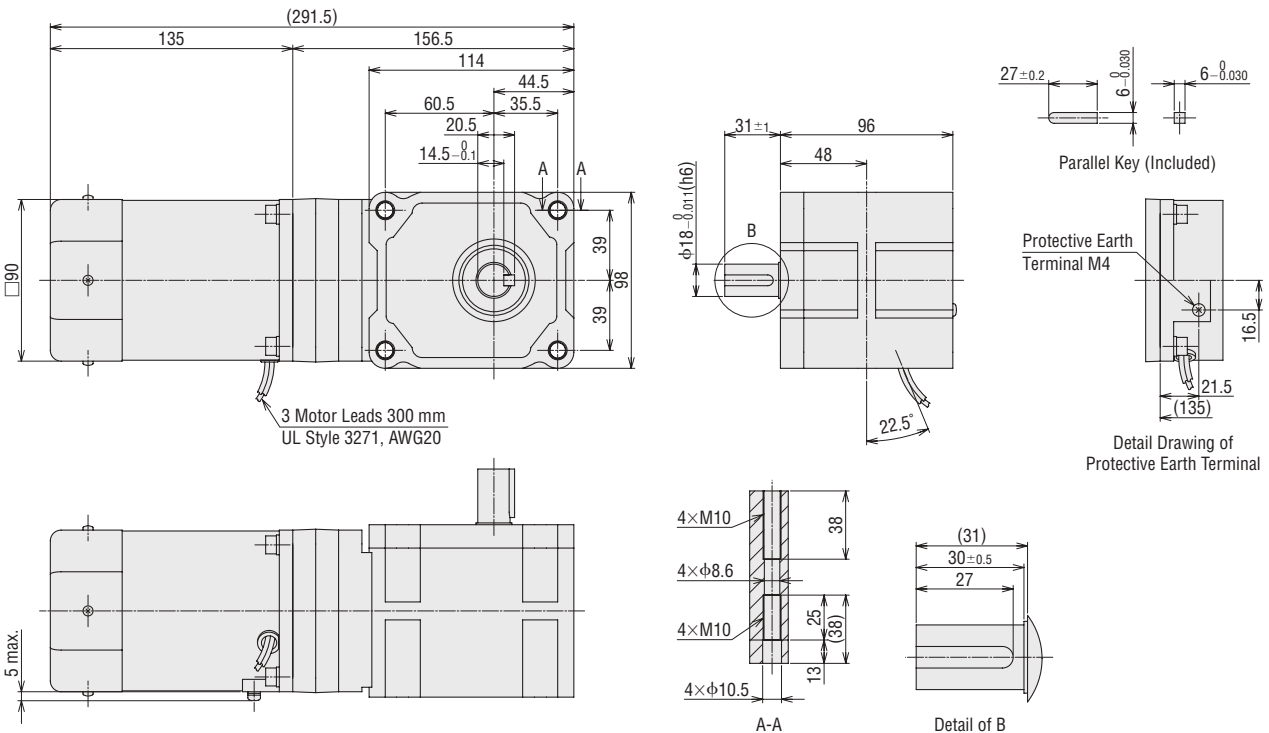
Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
5IK90KF-5H□B	5IK90KF	5H□B	6.2	A1513
5IK90KG-5H□B	5IK90KG			
5IK90KR-5H□B	5IK90KR			



◇ Hypoid Right-Angle Solid Shaft JL Gear

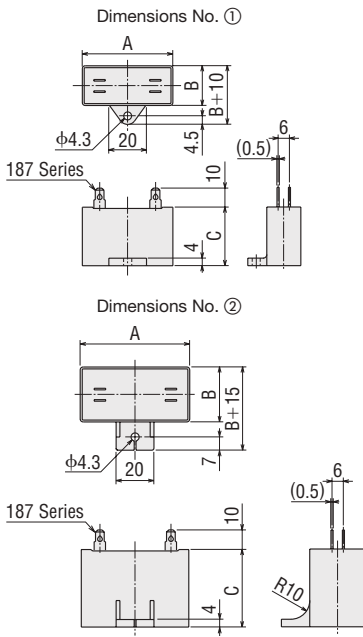
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
5IK90KF-5L□B	5IK90KF	5L□B	6.2	A1514
5IK90KG-5L□B	5IK90KG			
5IK90KR-5L□B	5IK90KR			



- At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

■ Dimensions of Capacitor (Included)



Unit: mm

Product Name	Capacitor Product Name	A	B	C	Mass g	Dimensions No.
5IK40KF-5H□B 5IK40KF-5L□B	CH90CFAUL2	48	22.5	31.5	45	①
5IK40KG-5H□B 5IK40KG-5L□B	CH25BFAUL	48	21	31	42	
5IK40KR-5H□B 5IK40KR-5L□B	CH20BFAUL	48	19	29	36	
5IK60KF-5H□B 5IK60KF-5L□B	CH160CFAUL2	58	23.5	37	71	②
5IK60KG-5H□B 5IK60KG-5L□B	CH40BFAUL	58	23.5	37	73	
5IK60KR-5H□B 5IK60KR-5L□B	CH40BFAUL	58	23.5	37	73	
5IK90KF-5H□B 5IK90KF-5L□B	CH200CFAUL2	58	29	41	91	
5IK90KG-5H□B 5IK90KG-5L□B	CH60BFAUL	58	29	41	92	
5IK90KR-5H□B 5IK90KR-5L□B	CH50BFAUL	58	29	41	93	

- A capacitor cap is included with the capacitor.
- A number in the box □ in the product name indicates the gear ratio.

01

KII / KIS Series

General Specifications

Parallel Shaft Gearhead **GV** Gear, Round Shaft Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 80°C or less (70°C or less with three-phase motor) measured by the resistance change method after rated operation under normal ambient temperature and humidity with connecting a gearhead or equivalent heat radiation plate*1.
Thermal Class	130 (B)
Overheat Protection	6 W type has impedance protection. Other Types Built-In thermal protector (automatic return type) Open: 130 ± 5°C, Close: 85 ± 20°C
Ambient Temperature	- 10~+ 40°C (non-freezing) With the gear ratio 2 and 3 , the lowest limit temperature is 0°C.
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	Lead Wire Type: IP20 Terminal Box Type: 25 W, 40 W types IP66*2 (Except for installation surface of round shaft type) : 60 W, 90 W types IP54 (Except for installation surface of round shaft type) : GC types IP66*2 (Except for installation surface of round shaft type)

*1 Heat radiation plate (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W Type	115 × 115	5
15 W Type	125 × 125	
25 W Type	135 × 135	
40 W Type	165 × 165	
60 W, 90 W Types	200 × 200	

*2 Materials and surface treatment

Terminal Box Type: IP66

Type	Output	Material	Surface Treatment
Parallel Shaft Gearhead GV Gear Round Shaft Type	25 W, 40 W, 60 W (GC type)	Case and terminal box: Aluminum Output shaft: S45C Screws: Stainless steel (externally facing screws only)	Case and terminal box: Painted (excluding installation surface)

Hypoid Right-Angle Gear

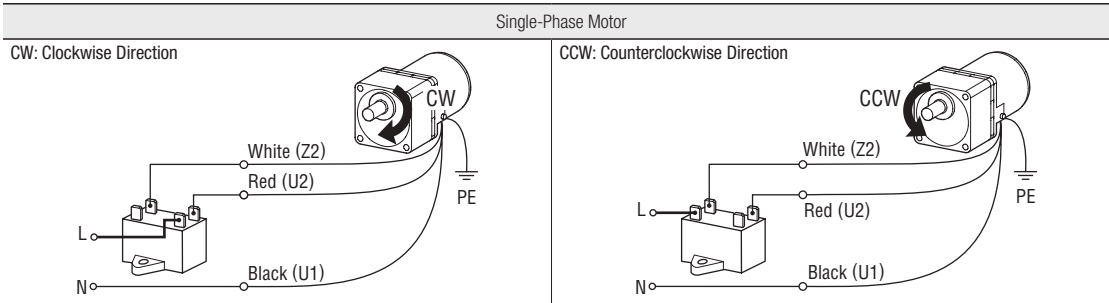
Item	Specifications
Insulation Resistance	100 MΩ or more when a 500 VDC megger is applied between the motor windings and the case after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the motor windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings is 80°C or less measured by the resistance change method after rated load continuous operation under normal ambient temperature and humidity.
Thermal Class	130 (B)
Overheat Protection	Built-In thermal protector (automatic return type) Open: 130 ± 5°C, Close: 85 ± 20°C
Ambient Temperature	0~+ 40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	IP20

Connection Diagrams

- The rotation direction of the motor is indicated when viewed from the output shaft side of the motor.
CW is used to indicate clockwise rotation and CCW is used for counterclockwise rotation.
- The rotation direction varies according to the gear ratio.
Units with gear ratio [] and round shaft types rotate as shown in the figure.
Units with gear ratio [] rotate in the opposite direction to the figure.
- Connection diagram is for lead wire type units. The code inside the () brackets indicates the terminal code for the terminal box type.

Parallel Shaft Gearhead GV Gear, Round Shaft Type

Output Power	Gear Ratio																					
6 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
15 W	360	500	600	750	900	1000	1200	1500	1800	2500	3000	3600	-									
25 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
40 W	360	500	600	750	900	1000	1200	1500	1800	2500	3000	-										
60 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
90 W	-	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	-	

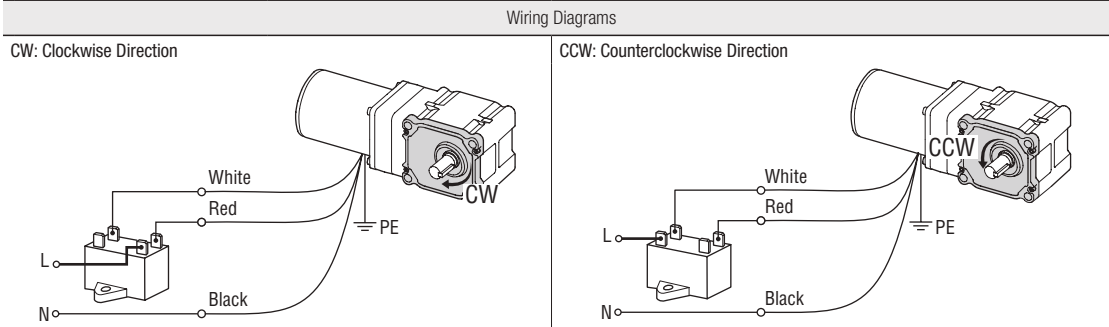


Note

- Change the direction of single-phase motor rotation only after bringing the motor to a stop.
If an attempt is made to change the direction of rotation while the motor is rotating, the motor may ignore the reversing command or change its direction of rotation after some delay.

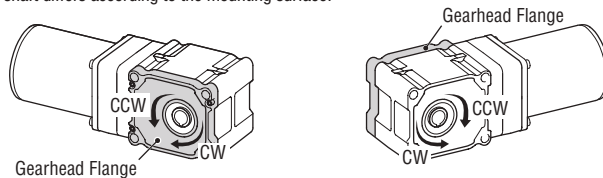
Hypoid Right-Angle Gear

Output Power	Gear Ratio													
40 W, 60 W, 90 W	10	15	20	25	30	40	50	60	80	100	120	160	200	240



With Hollow Shaft Type Gears

The rotating direction of the output shaft differs according to the mounting surface.



Note

- Change the direction of single-phase motor rotation only after bringing the motor to a stop.
If an attempt is made to change the direction of rotation while the motor is rotating, the motor may ignore the reversing command or change its direction of rotation after some delay.

Standard AC Motors KII Series Reversible Motors

01

KII / KIIS Series



Parallel Shaft Gearhead **GV** Gear
Terminal Box Type
25 W/40 W/60 W/90 W

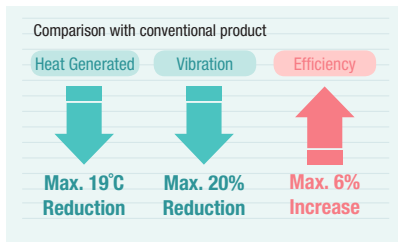


Parallel Shaft Gearhead **GV** Gear
Lead Wire Type
6 W/15 W/25 W/40 W/60 W/90 W

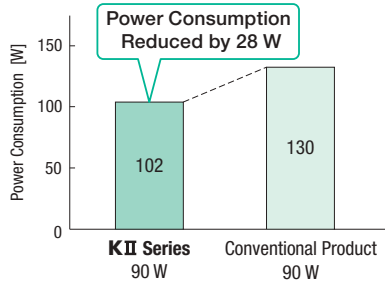
Features

High Efficiency Motor

The motors have been specially designed to optimize their characteristics for each voltage specification. The motor power consumption has been reduced by a maximum of 28 W, which also allows for reductions in heat generation and vibration.

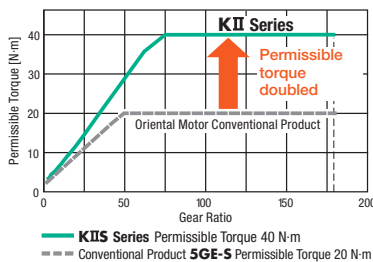


Energy Savings
Max 28 W Reduction
[Output power 90 W, single-phase 200 VAC 60 Hz, no load]



Equipped with a High Performance Gearhead

The motor is equipped with a high performance high strength and long life (10,000 hours) gearhead with double the permissible torque.



- Carburized Shaft and Gears
- Large Diameter Bearing



[Internal Gearhead Structure]

Ideal for Bi-Directional Operation

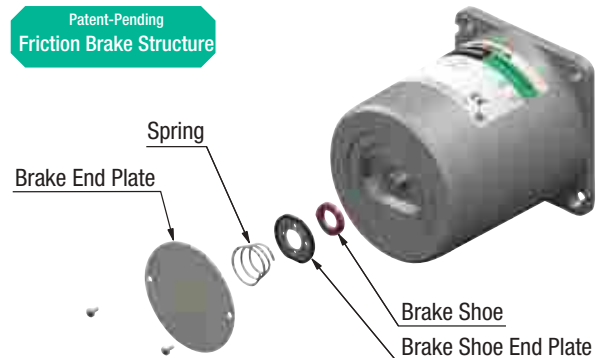
The motor has a built-in friction brake mechanism (friction brake) at its rear. This is ideal for the following applications:

- To repeatedly use the instantaneous bi-directional operation.
- To reduce overrun.

New Friction Brake Structure

The friction brake structure has been changed to reduce deterioration from wear and tear. The brake shoe has been changed to an integrated structure, and uses highly abrasion-resistant materials.

Patent-Pending Friction Brake Structure



Easier to Use

High Performance Gearhead

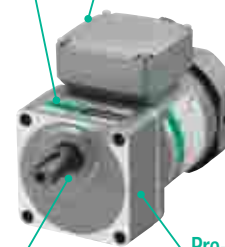
- Tap output shaft
- Pilot holes improves ease of installation

Easier to Install

Slim Body Terminal Box Type

4 Possible Cable Outlet Directions

Easier to Wire



Sealed Gearhead

Oil seal applied to final stage of the output shaft

Grease Leak Prevention

Pre-Assembled Gearhead

Easy installation thanks to the pre-assembled motor and gearhead

Reduces Assembly Time

Product Line of Reversible Motors

Parallel Shaft Gearhead **GV** Gear, Round Shaft Type

Voltage [VAC]	Type	Motor Frame Size, Output Power					
		□ 60		□ 70		□ 80	
		6 W	15 W	25 W	40 W	60 W	90 W
Single-Phase 110/115	Terminal Box	—	—	●	●	●	●
Single-Phase 220/230		—	—	●	●	●	●
Single-Phase 110/115	Lead Wire	●	●	●	●	●	●
Single-Phase 220/230		●	●	●	●	●	●

● Gear Ratio

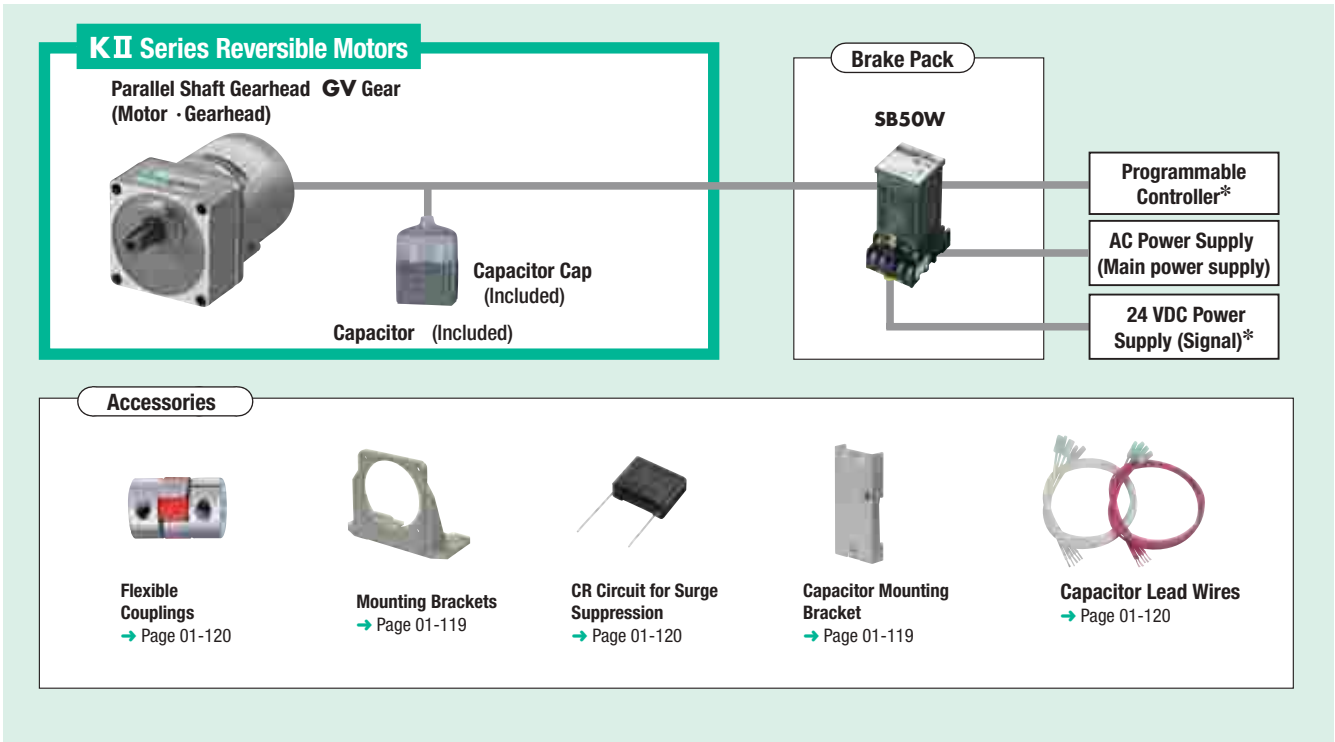
Two gear ratios, **2** and **3**, are newly added to the product lines for the gear ratio.

Gear ratio* 2~360

*Varies according to gear ratio.

System Configuration

*Please prepare by customer



● System Configuration Example

Reversible Motors	+	Sold Separately		
		Mounting Bracket	Flexible Couplings	CR Circuit for Surge Suppression
		5RK40UC-25 SGD212	SOL5M8F SGD31	MCL551818 SGD124

● The system configuration shown above is an example. Other combinations are available.

Product Number Code

● Parallel Shaft Gearhead **GV** Gear

5 R K 40 UC T2 - 100

① ② ③ ④ ⑤ ⑥ ⑦

● Round Shaft Type

5 R K 40 A - UC T2

① ② ③ ④ ⑦ ⑤ ⑥

①	Motor Frame Size	2 : 60 mm 3 : 70 mm 4 : 80 mm 5 : 90 mm
②	Motor Type	R : Reversible Motor
③	Series	K : KII Series
④	Output Power	(Example) 40 : 40 W
⑤	Power Supply Voltage/ Number of Poles	UA : Single-Phase 110/115VAC 4-Pole GC : Single-Phase 220/230VAC (50 Hz) 4-Pole UC : Single-Phase 220/230VAC (60 Hz) 4-Pole
⑥	T2 : Terminal Box Type Blank: Lead Wire Type	
⑦	Gear Ratio, Motor Shaft Type	Number: Gear Ratio for Combination Types A : Round Shaft Type

Reversible Motors

6 W

□ 60 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Lead Wire Type

01

KII / KIIS Series

Specifications - 30 Minute Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type	W	V	Hz	A	mN-m	mN-m	r/min	μF	
2RK6UA -□ 2RK6A-UA	6	Single-Phase 110	60	0.220	40	39	1490	3.0	ZP
		Single-Phase 115		0.225	45		1490		
2RK6GC -□ 2RK6A-GC	6	Single-Phase 220	50	0.111	40	50	1150	0.8	
		Single-Phase 230		0.113	45		1200		
2RK6UC -□ 2RK6A-UC	6	Single-Phase 220	60	0.117	40	39	1490	0.8	
		Single-Phase 230		0.121	45		1490		

● The values in the table are characteristics for the motor only.

ZP: These products are impedance protected.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
2RK6UA -□	2, 3	SGD148
	5, 6, 7.5, 9, 12.5, 15, 18	SGD143
	25, 30, 36	SGD151
	50, 60, 75, 90, 100, 120, 150, 180	SGD159
	250, 300, 360	SGD197
2RK6GC -□	2, 3	SGD151
	5, 6, 7.5, 9, 12.5, 15, 18	SGD146
	25, 30, 36	SGD153
	50, 60, 75, 90, 100, 120, 150, 180	SGD162
	250, 300, 360	SGD199
2RK6UC -□	2, 3	SGD151
	5, 6, 7.5, 9, 12.5, 15, 18	SGD146
	25, 30, 36	SGD153
	50, 60, 75, 90, 100, 120, 150, 180	SGD162
	250, 300, 360	SGD199

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
2RK6A-UA	SGD73
2RK6A-GC	SGD76
2RK6A-UC	SGD76

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2RK6GC -□		0.070	0.12	0.23	0.27	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2RK6U ■-□		0.055	0.095	0.18	0.21	0.26	0.32	0.44	0.53	0.63	0.88	1.0	1.2	1.7	2.0	2.5	3.0	3.4	4.0	4.7	5.7	6	6	6

Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

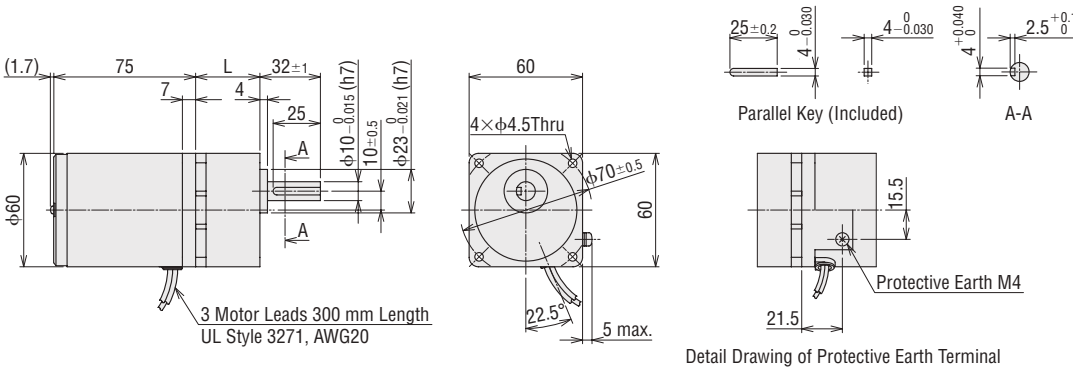
Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead GV Gear

2D & 3D CAD

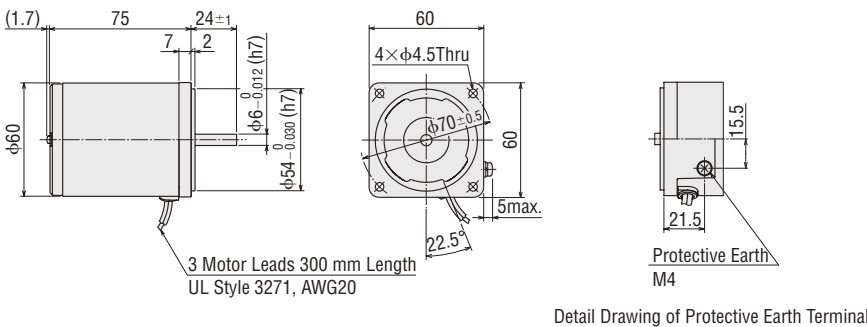
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
2RK6U ■-□	2RK6GV-U■	2GV□B	5~25	34	1.25	A1495A
2RK6GC -□	2RK6GV-GC		2, 3, 30~120	38		A1495B
			150~360	43		A1495C



Round Shaft Type

2RK6A-U■, 2RK6A-GC

Mass: 0.75 kg 2D CAD A1499 3D CAD



Capacitor (Included)

Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
2RK6UA -□	2RK6A-UA	CH30FAUL2	31	17	27	22
2RK6GC -□	2RK6A-GC	CH08BFAUL	31	17	27	23
2RK6UC -□	2RK6A-UC	CH08BFAUL	31	17	27	23

● A capacitor cap is included.

- Either **A** or **C** indicating the power supply voltage is specified where the box ■ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Reversible Motors

15 W

□70 mm

KII Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Lead Wire Type

01

KII / KIIS Series

Specifications - 30 Minute Rating



Product Name Upper Level:Parallel Shaft Gearhead GV Gear Lower Level:Round Shaft Type	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type	W	V	Hz	A	mN-m	mN-m	r/min	μF	
3RK15UA -□ 3RK15A-UA	15	Single-Phase 110	60	0.38	100	94	1530	5.5	TP
		Single-Phase 115		0.38	115		1530		
3RK15GC -□ 3RK15A-GC	15	Single-Phase 220	50	0.187	105	113	1270	1.5	
		Single-Phase 230		0.193	115		1270		
3RK15UC -□ 3RK15A-UC	15	Single-Phase 220	60	0.191	80	94	1530	1.3	
		Single-Phase 230		0.191	90		1530		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
3RK15UA -□	2, 3	SGD159
	5, 6, 7.5, 9, 12.5, 15, 18	SGD156
	25, 30, 36	SGD163
	50, 60, 75, 90, 100, 120, 150, 180	SGD172
	250, 300, 360	SGD207
3RK15GC -□	2, 3	SGD162
	5, 6, 7.5, 9, 12.5, 15, 18	SGD158
	25, 30, 36	SGD166
	50, 60, 75, 90, 100, 120, 150, 180	SGD174
	250, 300, 360	SGD209
3RK15UC -□	2, 3	SGD162
	5, 6, 7.5, 9, 12.5, 15, 18	SGD158
	25, 30, 36	SGD166
	50, 60, 75, 90, 100, 120, 150, 180	SGD174
	250, 300, 360	SGD209

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

Product Name	List Price
3RK15A-UA	SGD79
3RK15A-GC	SGD82
3RK15A-UC	SGD82

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
3RK15GC -□		0.16	0.27	0.51	0.61	0.76	0.92	1.3	1.5	1.8	2.5	2.9	3.5	4.9	5.8	7.3	8.7	9.7	10	10	10	10	10	10

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
3RK15U ■-□		0.13	0.23	0.42	0.51	0.63	0.76	1.1	1.3	1.5	2.1	2.4	2.9	4.0	4.9	6.1	7.3	8.1	9.7	10	10	10	10	10

Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

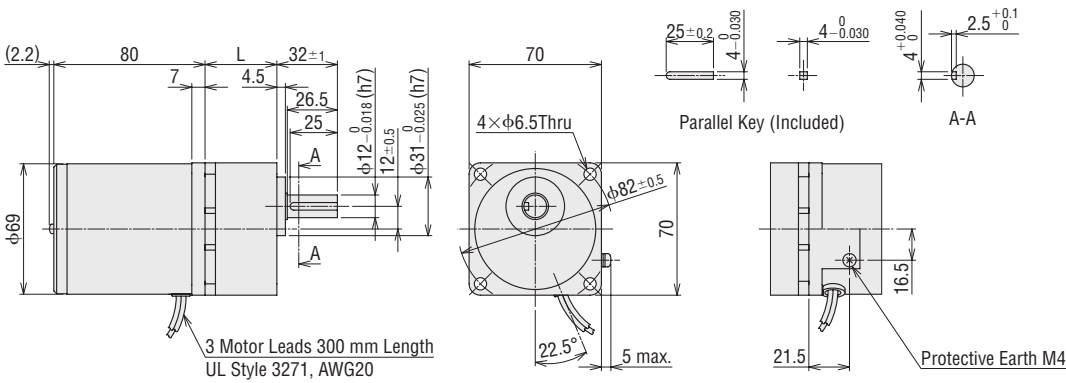
Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead GV Gear

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
3RK15U ■-□ 3RK15GC -□	3RK15GV-U■ 3RK15GV-GC	3GV□B	5~25	38	1.7	A1496A
			2, 3, 30~120	43		A1496B
			150~360	48		A1496C

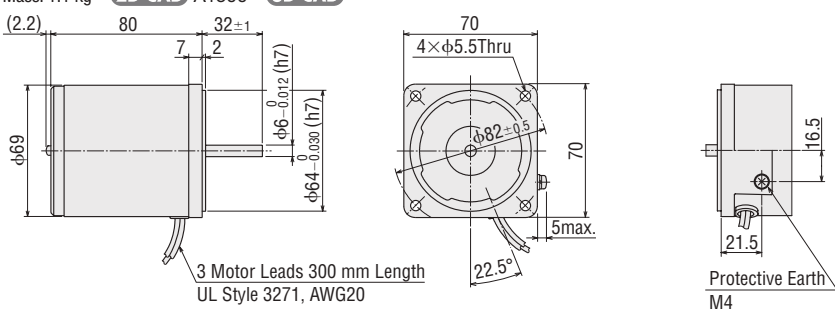


Detail Drawing of Protective Earth Terminal

Round Shaft Type

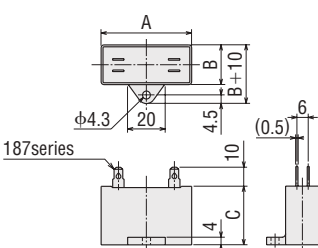
3RK15A-U■, **3RK15A-GC**

Mass: 1.1 kg 2D CAD A1500 3D CAD



Detail Drawing of Protective Earth Terminal

Capacitor (Included)



Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
3RK15UA -□	3RK15A-UA	CH55FAUL2	38	21	31	35
3RK15GC -□	3RK15A-GC	CH15BFAUL	38	21	31	37
3RK15UC -□	3RK15A-UC	CH13BFAUL	38	19	29	32

- A capacitor cap is included.

- Either **A** or **C** indicating the power supply voltage is specified where the box ■ is located in the product name. A number indicating the gear ratio is entered where the box □ is located within the product name.

Reversible Motors

25 W

□ 80 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type



Lead Wire Type

01

KII / KIIS Series

Specifications - 30 Minute Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN-m	Rated Torque mN-m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Lead Wire Type									
4RK25UAT2 -□ 4RK25A-UAT2	4RK25UA -□ 4RK25A-UA	25	Single-Phase 110	60	0.54	150	150	1610	8.0	TP
			Single-Phase 115		0.55	170		1610		
4RK25GCT2 -□ 4RK25A-GCT2	4RK25GC -□ 4RK25A-GC	25	Single-Phase 220	50	0.26	160	190	1280	2.0	
			Single-Phase 230		0.26	180		1280		
4RK25UCT2 -□ 4RK25A-UCT2	4RK25UC -□ 4RK25A-UC	25	Single-Phase 220	60	0.27	150	150	1610	2.0	
			Single-Phase 230		0.28	170		1610		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
4RK25UAT2 -□	2, 3	SGD193
	5, 6, 7.5, 9, 12.5, 15, 18	SGD189
	25, 30, 36	SGD196
	50, 60, 75, 90, 100, 120, 150, 180	SGD205
	250, 300, 360	SGD243
4RK25GCT2 -□	2, 3	SGD196
	5, 6, 7.5, 9, 12.5, 15, 18	SGD193
	25, 30, 36	SGD200
	50, 60, 75, 90, 100, 120, 150, 180	SGD209
	250, 300, 360	SGD246
4RK25UCT2 -□	2, 3	SGD196
	5, 6, 7.5, 9, 12.5, 15, 18	SGD193
	25, 30, 36	SGD200
	50, 60, 75, 90, 100, 120, 150, 180	SGD209
	250, 300, 360	SGD246

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
4RK25UA -□	2, 3	SGD169
	5, 6, 7.5, 9, 12.5, 15, 18	SGD166
	25, 30, 36	SGD173
	50, 60, 75, 90, 100, 120, 150, 180	SGD182
	250, 300, 360	SGD219
4RK25GC -□	2, 3	SGD173
	5, 6, 7.5, 9, 12.5, 15, 18	SGD169
	25, 30, 36	SGD177
	50, 60, 75, 90, 100, 120, 150, 180	SGD186
	250, 300, 360	SGD223
4RK25UC -□	2, 3	SGD173
	5, 6, 7.5, 9, 12.5, 15, 18	SGD169
	25, 30, 36	SGD177
	50, 60, 75, 90, 100, 120, 150, 180	SGD186
	250, 300, 360	SGD223

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
4RK25A-UAT2	SGD111
4RK25A-GCT2	SGD115
4RK25A-UCT2	SGD115

◇ Lead Wire Type

Product Name	List Price
4RK25A-UA	SGD88
4RK25A-GC	SGD92
4RK25A-UC	SGD92

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min Gear Ratio	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1	
		2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
4RK25GC	□□	0.30	0.46	0.86	1.0	1.3	1.5	2.1	2.6	3.1	4.3	4.9	5.9	8.2	9.8	12.3	14.7	16	16	16	16	16	16	16	16

60 Hz

Unit: N·m

Product Name	Speed r/min Gear Ratio	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5	
		2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
4RK25U	□□	0.23	0.36	0.68	0.81	1.0	1.2	1.7	2.0	2.4	3.4	3.9	4.6	6.5	7.7	9.7	11.6	12.9	15.5	16	16	16	16	16	16

Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

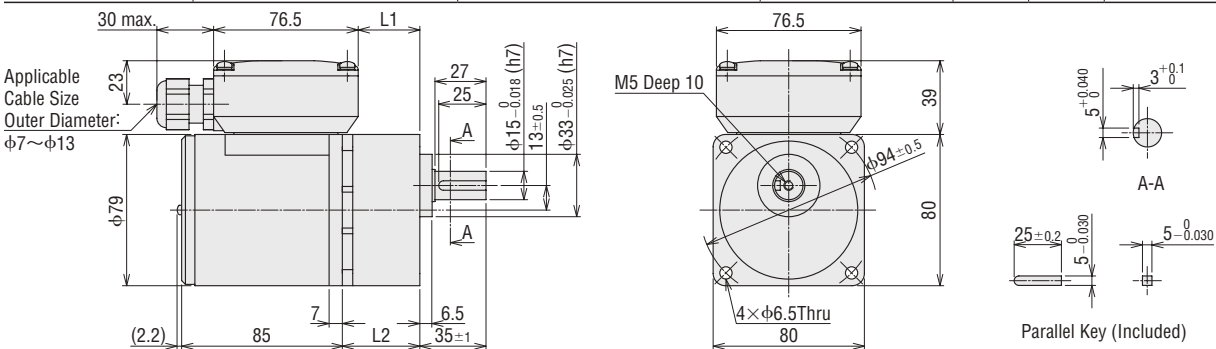
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions

Parallel Shaft Gearhead **GV** Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
4RK25U □ T2 □ 4RK25GCT2 □	4RK25GV-U □ T2 4RK25GV-GCT2	4GV □ B	5 ~ 25	32.6	41	2.8	A1498A
			2, 3, 30 ~ 120	37.6	46		A1498B
			150 ~ 360	42.6	51		A1498C



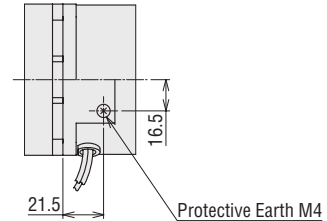
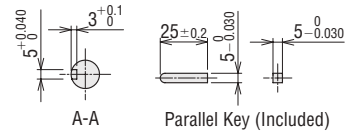
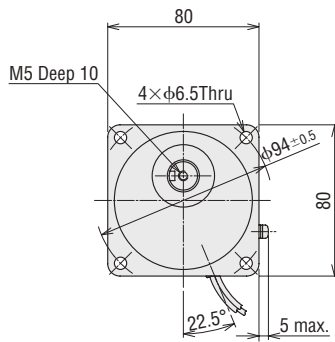
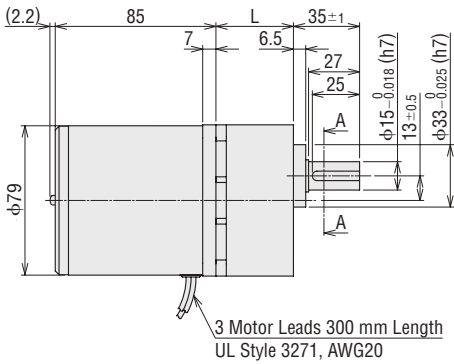
- Either **A** or **C** indicating the power supply voltage is specified where the box □ is located in the product name.
- A code (**T2**) indicating the terminal box type is specified where the box □ is located in the product name.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◆ Lead Wire Type

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
4RK25U-□ 4RK25GC-□	4RK25GV-U■ 4RK25GV-GC	4GV□B	5~25	41	2.5	A1497A
			2, 3, 30~120	46		A1497B
			150~360	51		A1497C



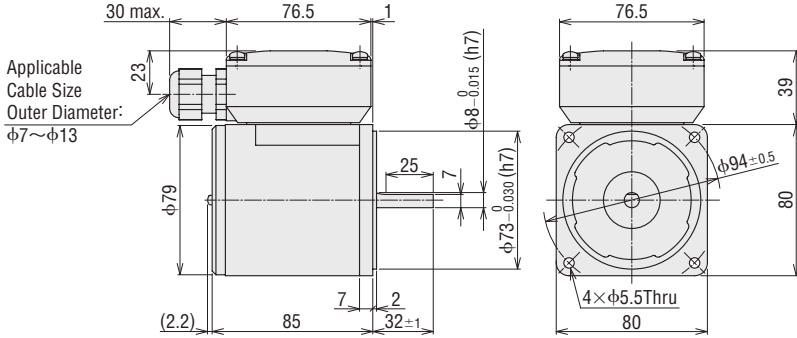
Detail Drawing of Protective Earth Terminal

● Round Shaft Type

◆ Terminal Box Type

4RK25A-U■T2, 4RK25A-GCT2

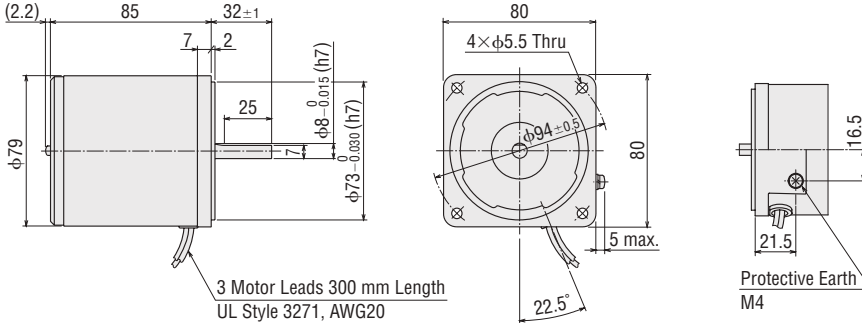
Mass: 1.85 kg 2D CAD A1525 3D CAD



◆ Lead Wire Type

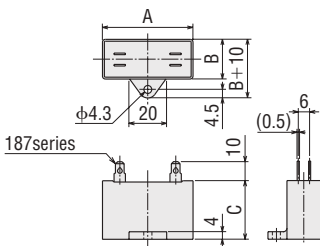
4RK25A-U■, 4RK25A-GC

Mass: 1.55 kg 2D CAD A1501 3D CAD



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
4RK25UAT2-□ 4RK25UA-□	4RK25A-UAT2 4RK25A-UA	CH80CFAUL2	48	21	31	41
4RK25GCT2-□ 4RK25GC-□	4RK25A-GCT2 4RK25A-GC	CH20BFAUL	48	19	29	36
4RK25UCT2-□ 4RK25UC-□	4RK25A-UCT2 4RK25A-UC	CH20BFAUL	48	19	29	36

● A capacitor cap is included.

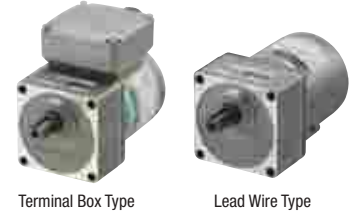
● Either **A** or **C** indicating the power supply voltage is specified where the box ■ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Reversible Motors

40 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIS Series

Specifications - 30 Minute Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN-m	Rated Torque mN-m	Rated Speed r/min	Capacitor Capacity μF	Overheat Protection Device
Terminal Box Type	Lead Wire Type									
5RK40UAT2-□ 5RK40A-UAT2	5RK40UA-□ 5RK40A-UA	40	Single-Phase 110	60	0.81	240	250	1570	12	TP
			Single-Phase 115		0.81	275		1570		
5RK40GCT2-□ 5RK40A-GCT2	5RK40GC-□ 5RK40A-GC	40	Single-Phase 220	50	0.41	310	305	1270	3.5	
			Single-Phase 230		0.41	320		1270		
5RK40UCT2-□ 5RK40A-UCT2	5RK40UC-□ 5RK40A-UC	40	Single-Phase 220	60	0.40	250	250	1570	3.0	
			Single-Phase 230		0.40	280		1570		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead GV Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK40UAT2-□	2, 3	SGD225
	5, 6, 7.5, 9, 12.5, 15, 18	SGD223
	25, 30, 36	SGD231
	50, 60, 75, 90, 100, 120, 150, 180	SGD239
	250, 300	SGD309
5RK40GCT2-□	2, 3	SGD229
	5, 6, 7.5, 9, 12.5, 15, 18	SGD226
	25, 30, 36	SGD235
	50, 60, 75, 90, 100, 120, 150, 180	SGD243
	250, 300	SGD313
5RK40UCT2-□	2, 3	SGD229
	5, 6, 7.5, 9, 12.5, 15, 18	SGD226
	25, 30, 36	SGD235
	50, 60, 75, 90, 100, 120, 150, 180	SGD243
	250, 300	SGD313

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5RK40UA-□	2, 3	SGD202
	5, 6, 7.5, 9, 12.5, 15, 18	SGD199
	25, 30, 36	SGD208
	50, 60, 75, 90, 100, 120, 150, 180	SGD216
	250, 300	SGD286
5RK40GC-□	2, 3	SGD206
	5, 6, 7.5, 9, 12.5, 15, 18	SGD203
	25, 30, 36	SGD212
	50, 60, 75, 90, 100, 120, 150, 180	SGD219
	250, 300	SGD289
5RK40UC-□	2, 3	SGD206
	5, 6, 7.5, 9, 12.5, 15, 18	SGD203
	25, 30, 36	SGD212
	50, 60, 75, 90, 100, 120, 150, 180	SGD219
	250, 300	SGD289

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK40A-UAT2	SGD130
5RK40A-GCT2	SGD134
5RK40A-UCT2	SGD134

◇ Lead Wire Type

Product Name	List Price
5RK40A-UA	SGD107
5RK40A-GC	SGD111
5RK40A-UC	SGD111

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK40GC □ □		0.48	0.74	1.4	1.6	2.1	2.5	3.4	4.1	4.9	6.6	7.9	9.4	13.1	15.7	19.7	23.6	26.2	29.6	30	30	30	30

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK40U □ □ □		0.39	0.61	1.1	1.4	1.7	2.0	2.8	3.4	4.1	5.4	6.5	7.7	10.8	12.9	16.1	19.4	21.5	24.3	30	30	30	30

Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

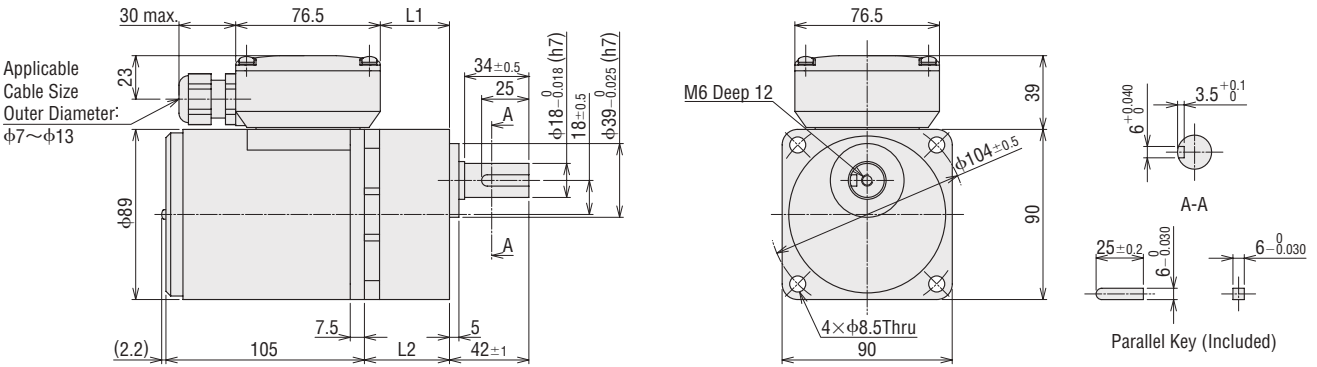
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead GV Gear

◇ Terminal Box Type

2D & 3D CAD

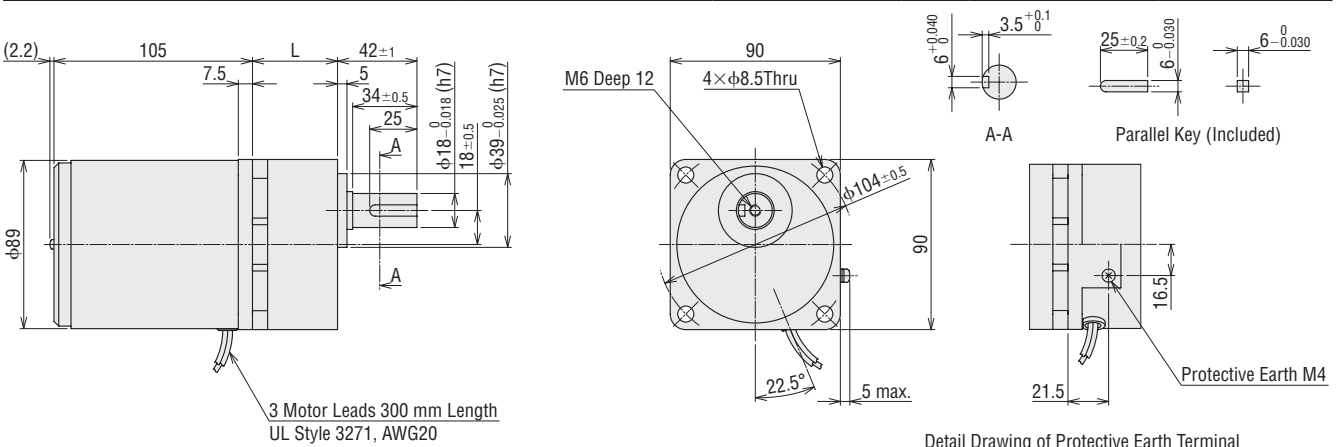
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5RK40U □ □ □ □ 5RK40GC □ □ □ □	5RK40GV-U □ □ □ □ 5RK40GV-GCT2	5GV □ □ B	5~18	36.6	45	4.3	A1420A
			2, 3, 25~100	49.6	58		A1420B
			120~300	55.6	64		A1420C



◇ Lead Wire Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK40U □ □ □ □ 5RK40GC □ □ □ □	5RK40GV-U □ □ □ □ 5RK40GV-GC	5GV □ □ B	5~18	45	4.0	A1419A
			2, 3, 25~100	58		A1419B
			120~300	64		A1419C



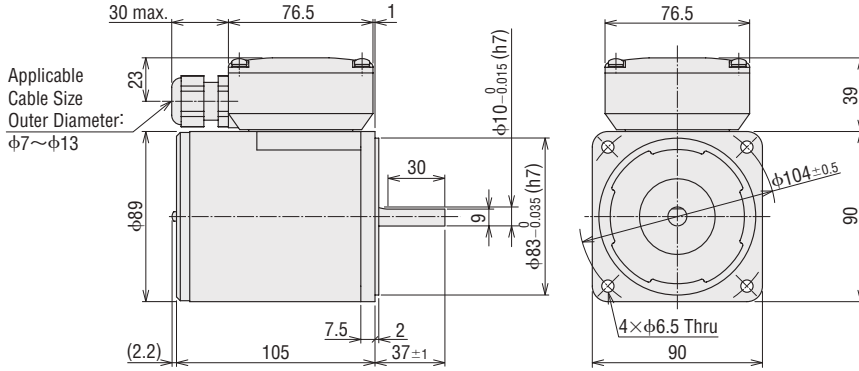
- Either **A** or **C** indicating the power supply voltage is specified where the box □ is located in the product name.
A code (**T2**) indicating the terminal box type is specified where the box □ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

● Round Shaft Type

◇ Terminal Box Type

5RK40A-U T2, **5RK40A-GCT2**

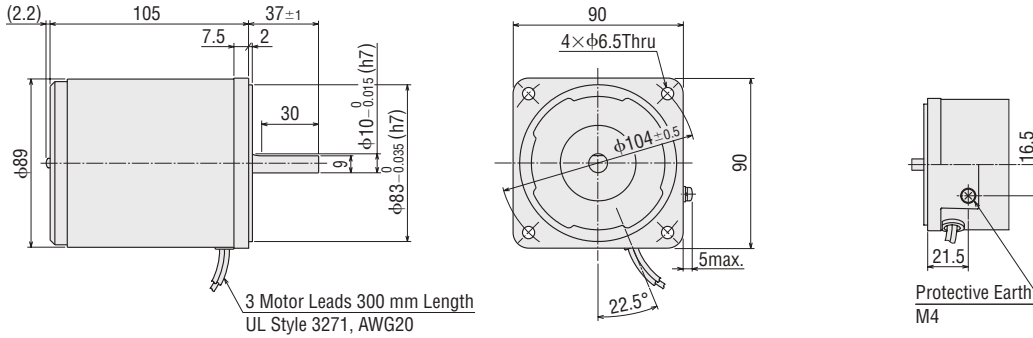
Mass: 2.8 kg **2D CAD** A1526 **3D CAD**



◇ Lead Wire Type

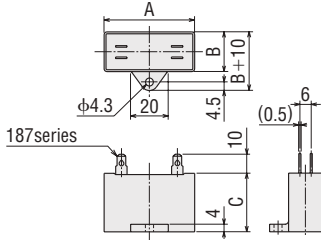
5RK40A-U , **5RK40A-GC**

Mass: 2.5 kg **2D CAD** A1421 **3D CAD**



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5RK40UAT2- <input type="checkbox"/>	5RK40A-UAT2	CH120CFAUL2	58	22	35	60
5RK40UA- <input type="checkbox"/>	5RK40A-UA					
5RK40GCT2- <input type="checkbox"/>	5RK40A-GCT2	CH35BFAUL	58	22	35	59
5RK40GC- <input type="checkbox"/>	5RK40A-GC					
5RK40UCT2- <input type="checkbox"/>	5RK40A-UCT2	CH30BFAUL	58	21	31	50
5RK40UC- <input type="checkbox"/>	5RK40A-UC					

● A capacitor cap is included.

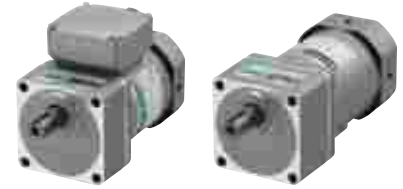
● Either **A** or **C** indicating the power supply voltage is specified where the box is located in the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

Reversible Motors

60 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

Specifications - 30 Minute Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Terminal Box Type	Lead Wire Type	W	V	Hz	A	mN·m	mN·m	r/min	μF	
5RK60UAT2 -□ 5RK60A-UAT2	5RK60UA -□ 5RK60A-UA	60	Single-Phase 110	60	1.21	445	360	1610	20	TP
			Single-Phase 115		1.24	490		1610		
5RK60GCT2 -□ 5RK60A-GCT2	5RK60GC -□ 5RK60A-GC	60	Single-Phase 220	50	0.58	440	450	1290	5.0	
			Single-Phase 230		0.60	490		1290		
5RK60UCT2 -□ 5RK60A-UCT2	5RK60UC -□ 5RK60A-UC	60	Single-Phase 220	60	0.60	460	360	1610	5.0	
			Single-Phase 230		0.61	490		1610		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK60UAT2 -□	2, 3	SGD280
	5, 6, 7.5, 9, 12.5, 15, 18	SGD269
	25, 30, 36, 50, 60, 75, 90, 100	SGD280
	120, 150, 180	SGD291
	250, 300	SGD328
5RK60GCT2 -□	2, 3	SGD285
	5, 6, 7.5, 9, 12.5, 15, 18	SGD274
	25, 30, 36, 50, 60, 75, 90, 100	SGD285
	120, 150, 180	SGD296
	250, 300	SGD333
5RK60UCT2 -□	2, 3	SGD285
	5, 6, 7.5, 9, 12.5, 15, 18	SGD274
	25, 30, 36, 50, 60, 75, 90, 100	SGD285
	120, 150, 180	SGD296
	250, 300	SGD333

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5RK60UA -□	2, 3	SGD257
	5, 6, 7.5, 9, 12.5, 15, 18	SGD246
	25, 30, 36, 50, 60, 75, 90, 100	SGD257
	120, 150, 180	SGD268
	250, 300	SGD304
5RK60GC -□	2, 3	SGD262
	5, 6, 7.5, 9, 12.5, 15, 18	SGD251
	25, 30, 36, 50, 60, 75, 90, 100	SGD262
	120, 150, 180	SGD273
	250, 300	SGD309
5RK60UC -□	2, 3	SGD262
	5, 6, 7.5, 9, 12.5, 15, 18	SGD251
	25, 30, 36, 50, 60, 75, 90, 100	SGD262
	120, 150, 180	SGD273
	250, 300	SGD309

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK60A-UAT2	SGD149
5RK60A-GCT2	SGD154
5RK60A-UCT2	SGD154

◇ Lead Wire Type

Product Name	List Price
5RK60A-UA	SGD126
5RK60A-GC	SGD131
5RK60A-UC	SGD131

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK60GC		0.73	1.1	2.0	2.4	3.0	3.6	5.1	6.1	7.3	9.7	11.6	13.9	19.4	23.2	29.0	30	30	30	30	30	30	30

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK60U		0.58	0.87	1.6	1.9	2.4	2.9	4.1	4.9	5.8	7.7	9.3	11.1	15.5	18.6	23.2	27.9	30	30	30	30	30	30

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead GV Gear

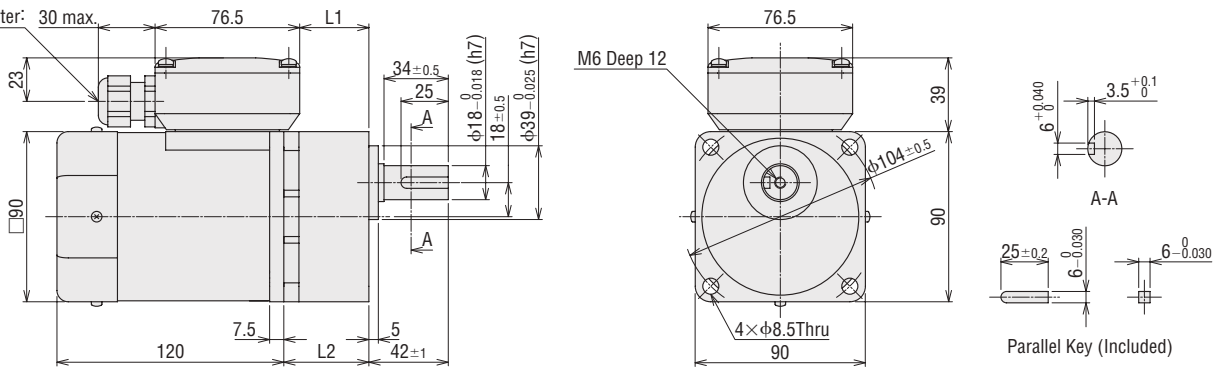
Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5RK60U	5RK60GVH-U	5GVH	5~18	36.6	45	4.5	A1306A
5RK60GC	5RK60GVH-GC		2, 3, 25~100	49.6	58		A1306B
			120~300	55.6	64		A1306C

Applicable Cable Size

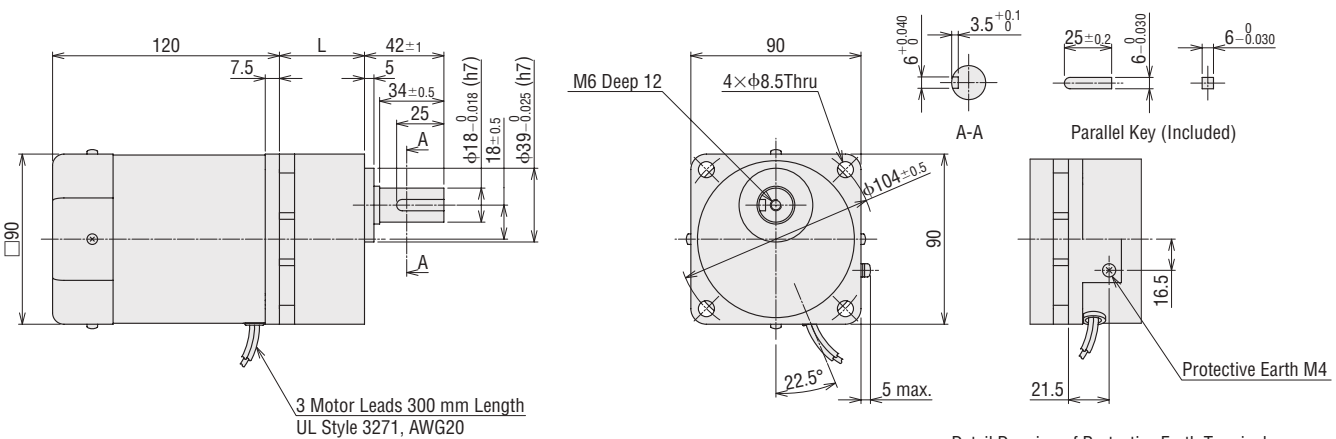
Outer Diameter: 30 max.
φ7~φ13



Lead Wire Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK60U	5RK60GVH-U	5GVH	5~18	45	4.2	A1235A
5RK60GC	5RK60GVH-GC		2, 3, 25~100	58		A1235B
			120~300	64		A1235C



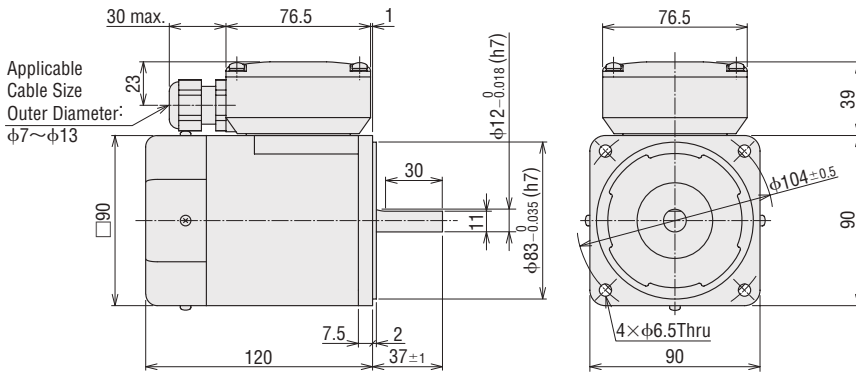
- Either **A** or **C** indicating the power supply voltage is specified where the box is located in the product name.
A code (**T2**) indicating the terminal box type is specified where the box is located in the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

● Round Shaft Type

◇ Terminal Box Type

5RK60A-U □ **T2**, **5RK60A-GCT2**

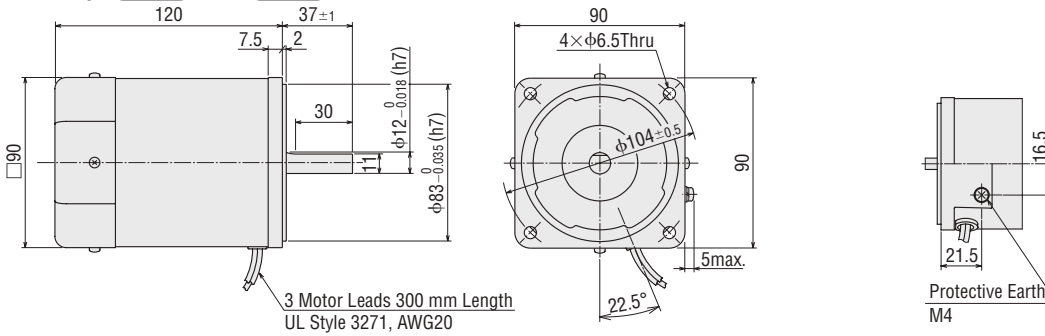
Mass: 3.0 kg **2D CAD** A1310 **3D CAD**



◇ Lead Wire Type

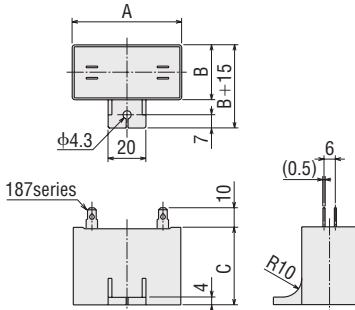
5RK60A-U □ **5RK60A-GC**

Mass: 2.7 kg **2D CAD** A456 **3D CAD**



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5RK60UAT2 -□ 5RK60UA -□	5RK60A-UAT2 5RK60A-UA	CH200CFAUL2	58	29	41	91
5RK60GCT2 -□ 5RK60GC -□	5RK60A-GCT2 5RK60A-GC	CH50BFAUL	58	29	41	93
5RK60UCT2 -□ 5RK60UC -□	5RK60A-UCT2 5RK60A-UC	CH50BFAUL	58	29	41	93

● A capacitor cap is included.

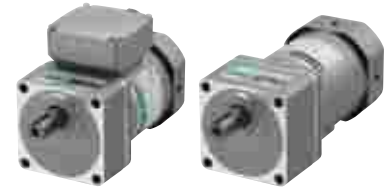
● Either **A** or **C** indicating the power supply voltage is specified where the box □ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Reversible Motors

90 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIS Series

Specifications - 30 Minute Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN-m	Rated Torque mN-m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Lead Wire Type									
5RK90UAT2 -□ 5RK90A-UAT2	5RK90UA -□ 5RK90A-UA	90	Single-Phase 110	60	1.65	690	560	1540	25	TP
			Single-Phase 115		1.66	730		1540		
5RK90GCT2 -□ 5RK90A-GCT2	5RK90GC -□ 5RK90A-GC	90	Single-Phase 220	50	0.81	650	730	1180	6.0	
			Single-Phase 230		0.81	725		1180		
5RK90UCT2 -□ 5RK90A-UCT2	5RK90UC -□ 5RK90A-UC	90	Single-Phase 220	60	0.80	665	560	1540	6.0	
			Single-Phase 230		0.81	730		1540		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK90UAT2 -□	3	SGD311
	5, 6, 7.5, 9, 12.5, 15, 18	SGD289
	25, 30, 36, 50, 60	SGD311
	75, 90, 100, 120, 150, 180	SGD321
5RK90GCT2 -□	3	SGD316
	5, 6, 7.5, 9, 12.5, 15, 18	SGD294
	25, 30, 36, 50, 60	SGD316
	75, 90, 100, 120, 150, 180	SGD326
5RK90UCT2 -□	3	SGD316
	5, 6, 7.5, 9, 12.5, 15, 18	SGD294
	25, 30, 36, 50, 60	SGD316
	75, 90, 100, 120, 150, 180	SGD326

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Lead Wire Type

Product Name	Gear Ratio	List Price
5RK90UA -□	3	SGD288
	5, 6, 7.5, 9, 12.5, 15, 18	SGD266
	25, 30, 36, 50, 60	SGD288
	75, 90, 100, 120, 150, 180	SGD298
5RK90GC -□	3	SGD293
	5, 6, 7.5, 9, 12.5, 15, 18	SGD271
	25, 30, 36, 50, 60	SGD293
	75, 90, 100, 120, 150, 180	SGD303
5RK90UC -□	3	SGD293
	5, 6, 7.5, 9, 12.5, 15, 18	SGD271
	25, 30, 36, 50, 60	SGD293
	75, 90, 100, 120, 150, 180	SGD303

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK90A-UAT2	SGD168
5RK90A-GCT2	SGD173
5RK90A-UCT2	SGD173

◇ Lead Wire Type

Product Name	List Price
5RK90A-UA	SGD145
5RK90A-GC	SGD150
5RK90A-UC	SGD150

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
	Gear Ratio	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5RK90GC-□		1.8	3.3	3.9	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40

60 Hz

Unit: N·m

Product Name	Speed r/min	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5RK90U-□		1.4	2.5	3.0	3.8	4.5	6.3	7.6	8.7	12.0	14.4	17.3	24.1	28.9	34.0	40	40	40	40	40

Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead GV Gear

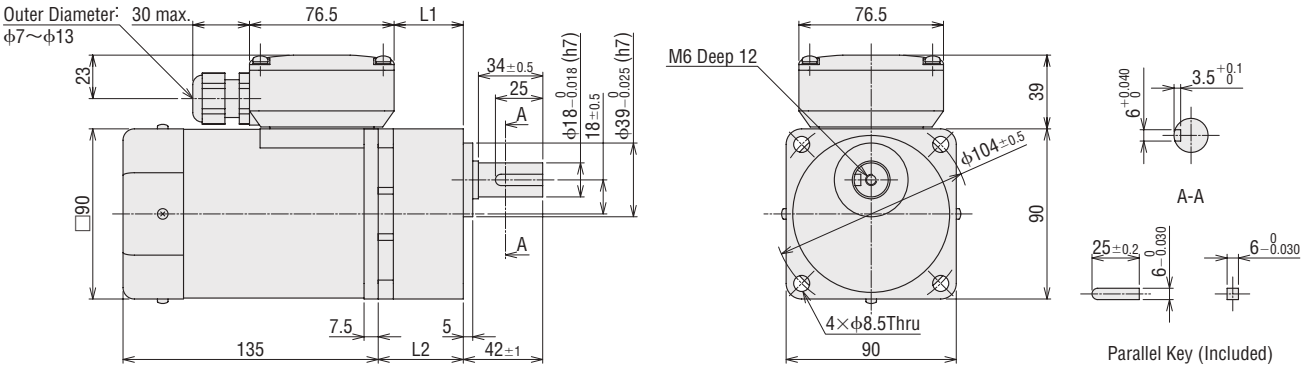
Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5RK90U-□ 5RK90GCT2-□	5RK90GVR-U-□ 5RK90GVR-GCT2	5GVR-□B	5~15	36.6	45	5.0	A1427A
			3, 18~36	49.6	58		A1427B
			50~180	61.6	70		A1427C

Applicable
Cable Size

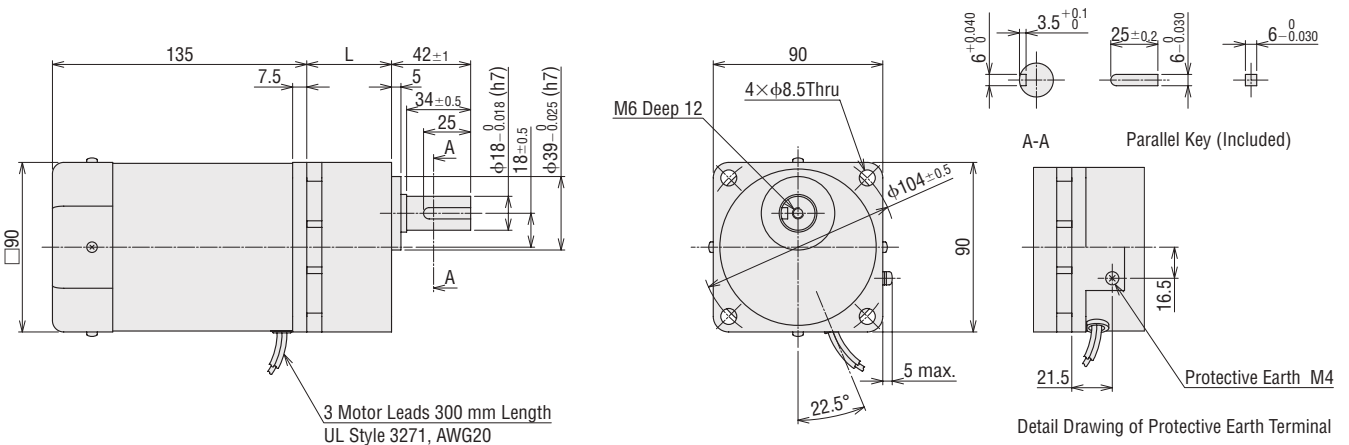
Outer Diameter: 30 max.
φ7~φ13



Lead Wire Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK90U-□ 5RK90GC-□	5RK90GVR-U-□ 5RK90GVR-GC	5GVR-□B	5~15	45	4.7	A1426A
			3, 18~36	58		A1426B
			50~180	70		A1426C



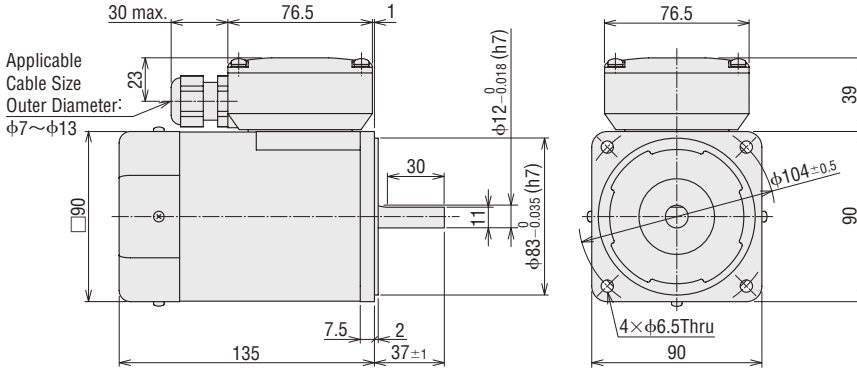
- Either **A** or **C** indicating the power supply voltage is specified where the box □ is located in the product name.
A code (**T2**) indicating the terminal box type is specified where the box □ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

● Round Shaft Type

◇ Terminal Box Type

5RK90A-U□T2, 5RK90A-GCT2

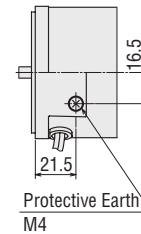
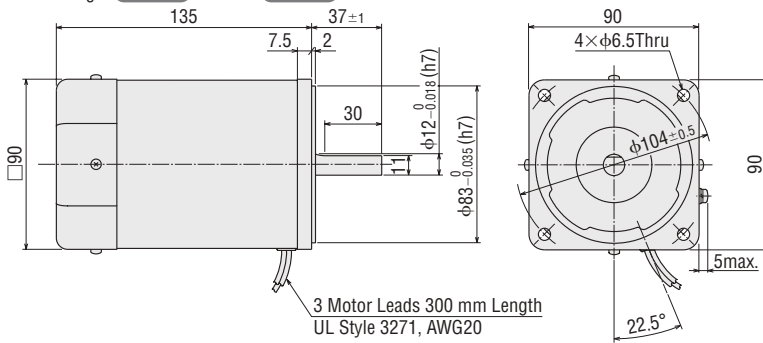
Mass: 3.5 kg **2D CAD** A1528 **3D CAD**



◇ Lead Wire Type

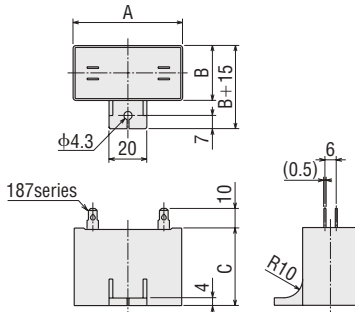
5RK90A-U□, 5RK90A-GC

Mass: 3.2 kg **2D CAD** A1428 **3D CAD**



Detail Drawing of Protective Earth Terminal

● Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5RK90UAT2-□ 5RK90UA-□	5RK90A-UAT2 5RK90A-UA	CH250CFAUL2	58	35	50	140
5RK90GCT2-□ 5RK90GC-□	5RK90A-GCT2 5RK90A-GC	CH60BFAUL	58	29	41	92
5RK90UCT2-□ 5RK90UC-□	5RK90A-UCT2 5RK90A-UC	CH60BFAUL	58	29	41	92

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is specified where the box □ is located in the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

General Specifications

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 80°C or less measured by the resistance change method after rated operation under normal ambient temperature and humidity with connecting a gearhead or equivalent heat radiation plate*.
Thermal Class	130 (B)
Overheat Protection	6 W type has impedance protection. Other Types Built-In thermal protector (automatic return type) Open: 130±5°C, Close: 85±20°C
Ambient Temperature	-10~+40°C (non-freezing) For the gearhead ratio 2 and 3 , the lower limit temperature is 0°C.
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	Terminal Box Type: IP40 (25W, 40W) : IP20 (60W, 90W) Lead Wire Type: IP20

*Heat radiation plate (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W type	115 × 115	5
15 W type	125 × 125	
25 W type	135 × 135	
40 W type	165 × 165	
60 W, 90 W types	200 × 200	

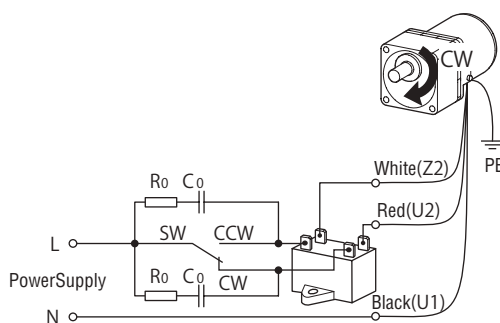
Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- The rotation direction varies according to the gear ratio.
 - Units with gear ratio [] and round shaft types rotate as shown in the figure.
 - Units with gear ratio [] rotate in the opposite direction to the figure.
- Connection diagram is for lead wire type units. The code inside the () brackets indicates the terminal code for the terminal box type.

Output Power	Gear Ratio																						
	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
6 W 15 W 25 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
40 W 60 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	-
90 W	-	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	-	-	-

Single-Phase Motor

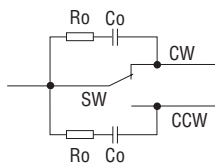
CW: Rotation



- Rotating clockwise when SW is set to CW side. When SW is set to CCW side, it rotates counterclockwise.

Contact Capacity

To protect the contact, connect a CR circuit for surge suppression to the forward/reverse rotation select switch, as shown in the figure.



Symbol	Contact capacity, Other	Remarks
SW	AC125V 5A or more or AC250V 5A or more (inductive load)	-
Ro · Co	Ro=5~200 Ω Co=0.1~0.2 μF 250 VAC	Accessories EPCR1201-2 Page 01-120

Standard AC Motors KII Series Electromagnetic Brake Motors

01

KII / KIIS Series



Parallel Shaft Gearhead **GV** Gear
Terminal Box Type
40 W/60 W/90 W



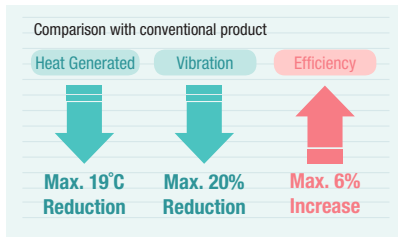
Parallel Shaft Gearhead **GV** Gear
Lead Wire Type
6 W/15 W/25 W/40 W/60 W/90 W

Features

High Efficiency Motor

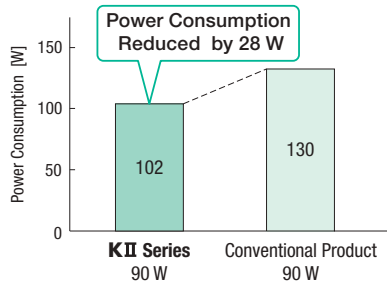
The motors have been specially designed to optimize their characteristics for each voltage specification.

The motor power consumption has been reduced by a maximum of 28 W, which also allows for reductions in heat generation and vibration.



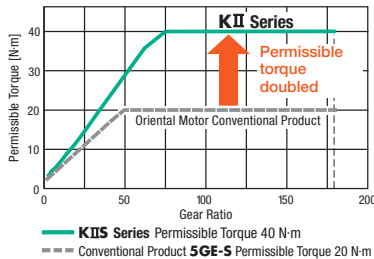
Energy Savings
Max 28 W Reduction

[Output power 90 W, single-phase 200 VAC 60 Hz, no load]



Equipped with a High Performance Gearhead

The motor is equipped with a high performance high strength and long life (10,000 hours) gearhead with double the permissible torque.



- Carburized Shaft and Gears
- Large Diameter Bearing

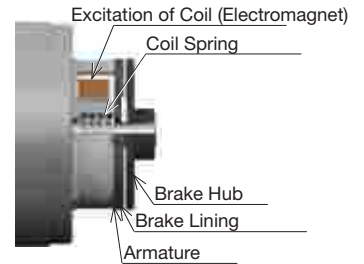


[Internal Gearhead Structure]

Ideal for Load Holding Applications

Equipped with Power-Off Activated Electromagnetic Brake Type

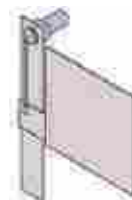
An AC power-off activated electromagnetic brake type is equipped. When the power source is turned OFF, the motor stops instantaneously and holds the load.



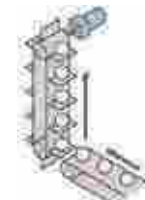
[Structural Drawing]

Application

Ideal for vertical operation applications in which the load must be held.



[Open/Close Shutter]



[Elevator (Holding)]

Easier to Use

High Performance Gearhead

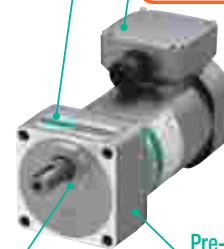
- Tap output shaft
- Pilot holes improves ease of installation

Easier to Install

Slim Body Terminal Box Type

4 Possible Cable Outlet Directions

Easier to Wire



Sealed Gearhead

Oil seal applied to final stage of the output shaft

Prevents Grease Leaks

Pre-Assembled Gearhead

Easy installation thanks to the pre-assembled motor and gearhead

Reduces Assembly Time

Product Line of KII Series Electromagnetic Brake Motors

Parallel Shaft Gearhead GV Gear, Round Shaft Type

Voltage [VAC]	Type	Motor Frame Size, Output Power					
		□60	□70	□80	□90		
		6 W	15 W	25 W	40 W	60 W	90 W
Single-Phase 110/115	Terminal Box	—	—	—	●	●	●
Single-Phase 220/230		—	—	—	●	●	●
Single-Phase 110/115	Lead Wire/ Cable	●	●	●	●	●	●
Single-Phase 220/230		●	●	●	●	●	●

Gear Ratio

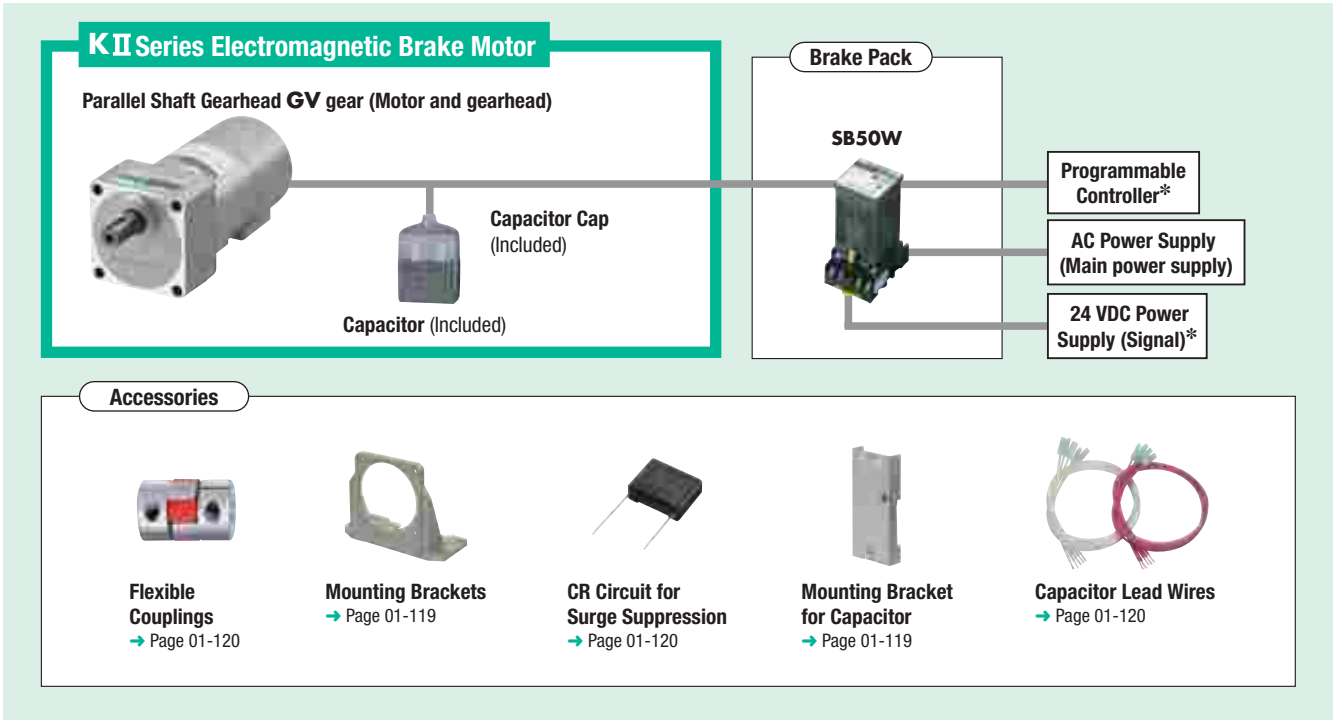
Two gear ratios, **2** and **3**, are newly added to the product lines for the gear ratio.

Gear ratio* **2~360**

*Varies according to gear ratio.

System Configuration

*Not supplied.



System Configuration Example

Electromagnetic Brake Motors	+	Sold Separately		
		Mounting Bracket	Flexible Couplings	CR Circuit for Surge Suppression
		5RK40UCM-25 SGD331	SOL5M8F SGD31	MCL551818 SGD124

The system configuration shown above is an example. Other combinations are available.

Product Number Code

Parallel Shaft Gearhead GV Gear

5 R K 40 UC M T2 - 100

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Round Shaft Type

5 R K 40 A - UC M T2

① ② ③ ④ ⑧ ⑤ ⑥ ⑦

①	Motor Frame Size	2: 60 mm 3: 70 mm 4: 80 mm 5: 90 mm
②	Motor Type	I: Induction Motor R: Reversible Motor
③	Series	K: KII Series
④	Output Power	(Example) 40: 40 W
⑤	Power Supply Voltage/Number of Poles	UA: Single-Phase 110/115 VAC 4-Pole GC: Single-Phase 220/230 VAC (50 Hz) 4-Pole UC: Single-Phase 220/230 VAC (60 Hz) 4-Pole
⑥	M: Power Off Activated Type Electromagnetic Brake	
⑦	T2: Terminal Box Type Blank: Lead Wire Type or Cable Type	
⑧	Gear Ratio, Motor Shaft Type	Number: Gear Ratio of Gearhead A: Round Shaft Type

Electromagnetic Brake Motors

6 W

□ 60 mm

KII Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Lead Wire Type

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type		W	V	Hz	A	mN·m	mN·m	r/min	μF	
2RK6UAM-□ 2RK6A-UAM	30 minutes	6	Single-Phase 110	60	0.211	50	36	1600	3.0	ZP
			Single-Phase 115		0.218	50	36	1600		
2RK6GCM-□ 2RK6A-GCM	30 minutes	6	Single-Phase 220	50	0.105	50	45	1280	0.8	
			Single-Phase 230		0.109	50	45	1280		
2RK6UCM-□ 2RK6A-UCM	30 minutes	6	Single-Phase 220	60	0.112	50	36	1600	0.8	
			Single-Phase 230		0.116	50	36	1600		

● The values in the table are characteristics for the motor only.
ZP: These products are impedance protected.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Voltage	Frequency	Current	Power Consumption	Static Friction Torque
Lead Wire Type	V	Hz	A	W	mN·m
2RK6UAM-□ 2RK6A-UAM	Single-Phase 110	60	0.03	3	30
	Single-Phase 115				
2RK6GCM-□ 2RK6A-GCM	Single-Phase 220	50	0.02	3	30
	Single-Phase 230				
2RK6UCM-□ 2RK6A-UCM	Single-Phase 220	60	0.02	3	30
	Single-Phase 230				

● The values in the table are characteristics for the motor only.

Product Line

Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
2RK6UAM-□	2, 3	SGD229
	5, 6, 7.5, 9, 12.5, 15, 18	SGD224
	25, 30, 36	SGD232
	50, 60, 75, 90, 100, 120, 150, 180	SGD241
	250, 300, 360	SGD278
2RK6GCM-□	2, 3	SGD232
	5, 6, 7.5, 9, 12.5, 15, 18	SGD227
	25, 30, 36	SGD234
	50, 60, 75, 90, 100, 120, 150, 180	SGD243
	250, 300, 360	SGD281
2RK6UCM-□	2, 3	SGD232
	5, 6, 7.5, 9, 12.5, 15, 18	SGD227
	25, 30, 36	SGD234
	50, 60, 75, 90, 100, 120, 150, 180	SGD243
	250, 300, 360	SGD281

The following items are included with each product.
Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
2RK6A-UAM	SGD154
2RK6A-GCM	SGD157
2RK6A-UCM	SGD157

The following items are included with each product.
Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

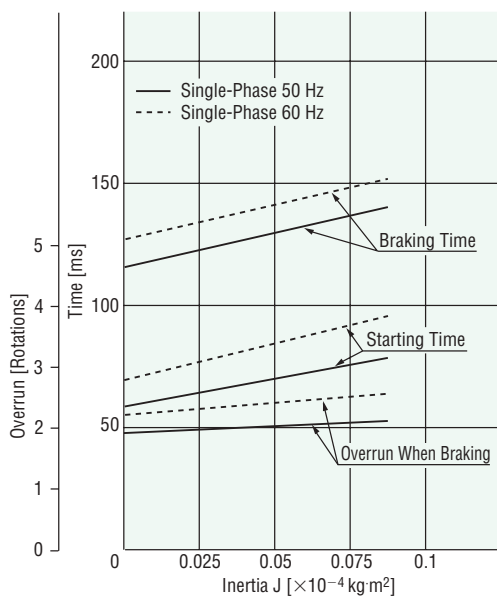
Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2RK6GCM -□	0.063	0.11	0.20	0.24	0.30	0.36	0.51	0.61	0.73	1.0	1.2	1.4	1.9	2.3	2.9	3.5	3.9	4.6	5.5	6	6	6	6	6

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
2RK6U ■M-□	0.050	0.087	0.16	0.19	0.24	0.29	0.41	0.49	0.58	0.81	0.93	1.1	1.5	1.9	2.3	2.8	3.1	3.7	4.4	5.2	6	6	6	6

Starting and Braking Characteristics (Reference Values, Motor alone)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name. A number indicating the gear ratio is entered where the box □ is located within the product name.

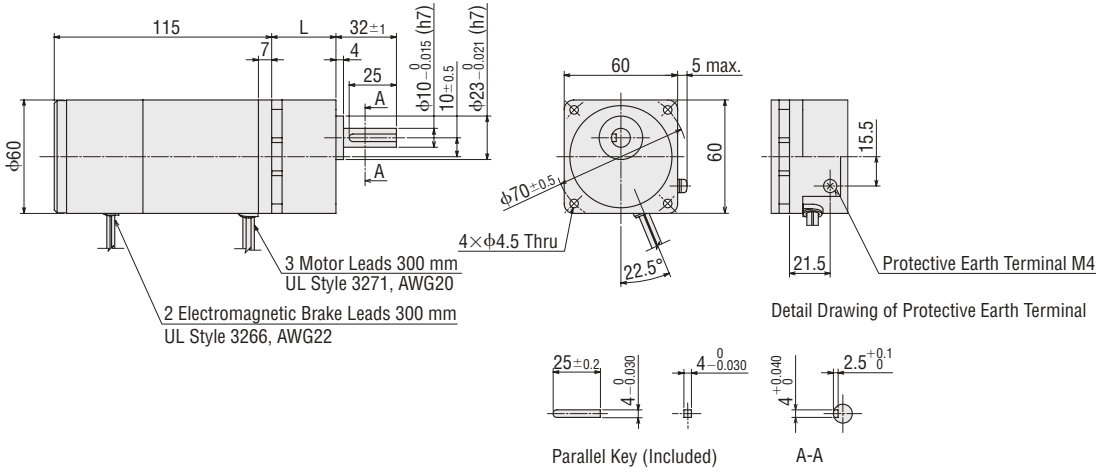
Dimensions (Unit: mm)

● Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead **GV** Gear

2D & 3D CAD

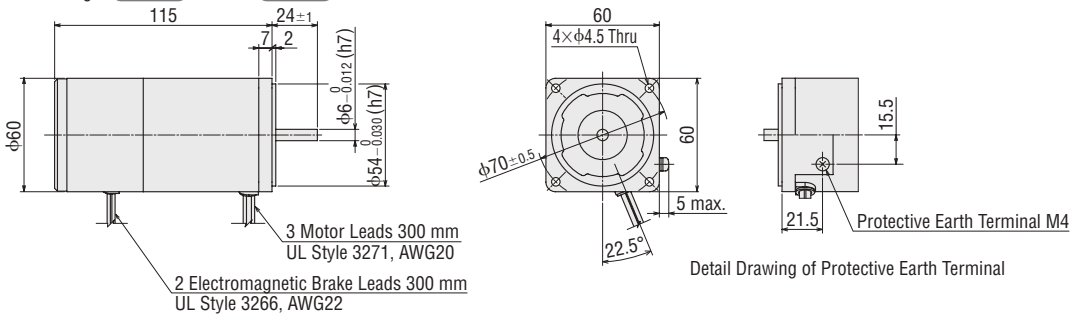
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
2RK6U ■M-□ 2RK6GCM -□	2RK6GV-U■M 2RK6GV-GCM	2GV□B	5~25	34	1.5	A1503A
			2, 3, 30~120	38		A1503B
			150~360	43		A1503C



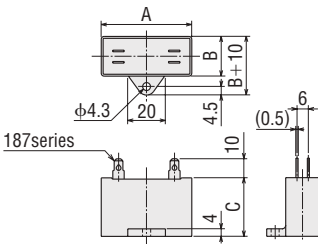
Round Shaft Type

2RK6A-U■M, **2RK6A-GCM**

Mass: 1.0 kg 2D CAD A1506 3D CAD



Capacitor (Included)



Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
2RK6UAM -□	2RK6A-UAM	CH30FAUL2	31	17	27	22
2RK6GCM -□	2RK6A-GCM	CH08BFAUL	31	17	27	23
2RK6UCM -□	2RK6A-UCM	CH08BFAUL	31	17	27	23

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Electromagnetic Brake Motors

15 W

□ 70 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Lead Wire Type

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
Lead Wire Type		W	V	Hz	A	mN·m	mN·m	r/min	μF	
3RK15UAM-□ 3RK15A-UAM	30 minutes	15	Single-Phase 110	60	0.35	110	90	1610	5.5	TP
			Single-Phase 115		0.35	120		1610		
3RK15GCM-□ 3RK15A-GCM	30 minutes	15	Single-Phase 220	50	0.177	110	109	1330	1.5	
			Single-Phase 230		0.184	125		1330		
3RK15UCM-□ 3RK15A-UCM	30 minutes	15	Single-Phase 220	60	0.173	90	90	1610	1.3	
			Single-Phase 230		0.177	100		1610		

● The values in the table are characteristics for the motor only.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type	Voltage	Frequency	Current	Power Consumption	Static Friction Torque
Lead Wire Type	V	Hz	A	W	mN·m
3RK15UAM-□ 3RK15A-UAM	Single-Phase 110	60	0.09	7	80
	Single-Phase 115				
3RK15GCM-□ 3RK15A-GCM	Single-Phase 220	50	0.05	7	80
	Single-Phase 230				
3RK15UCM-□ 3RK15A-UCM	Single-Phase 220	60	0.05	7	80
	Single-Phase 230				

● The values in the table are characteristics for the motor only.

Product Line

Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
3RK15UAM-□	2, 3	SGD241
	5, 6, 7.5, 9, 12.5, 15, 18	SGD237
	25, 30, 36	SGD244
	50, 60, 75, 90, 100, 120, 150, 180	SGD253
	250, 300, 360	SGD288
3RK15GCM-□	2, 3	SGD243
	5, 6, 7.5, 9, 12.5, 15, 18	SGD239
	25, 30, 36	SGD247
	50, 60, 75, 90, 100, 120, 150, 180	SGD256
	250, 300, 360	SGD291
3RK15UCM-□	2, 3	SGD243
	5, 6, 7.5, 9, 12.5, 15, 18	SGD239
	25, 30, 36	SGD247
	50, 60, 75, 90, 100, 120, 150, 180	SGD256
	250, 300, 360	SGD291

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
3RK15A-UAM	SGD161
3RK15A-GCM	SGD163
3RK15A-UCM	SGD163

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

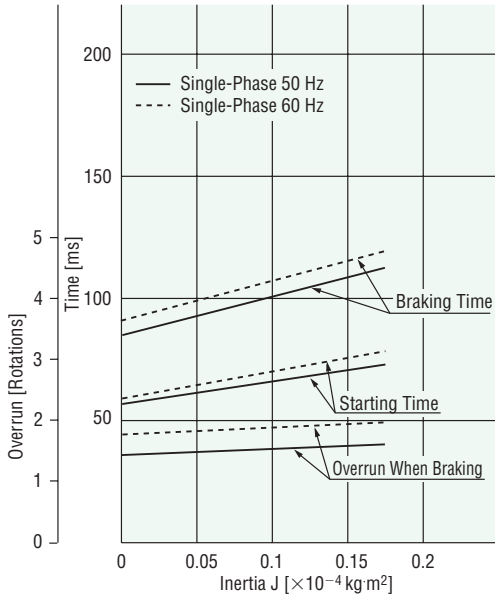
Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1	
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
3RK15GCM -□		0.15	0.26	0.49	0.59	0.74	0.88	1.2	1.5	1.8	2.5	2.8	3.4	4.7	5.6	7.0	8.4	9.4	10	10	10	10	10	10	10

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5	
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
3RK15U ■□		0.13	0.22	0.41	0.49	0.61	0.73	1.0	1.2	1.5	2.0	2.3	2.8	3.9	4.6	5.8	7.0	7.7	9.3	10	10	10	10	10	10

Starting and Braking Characteristics (Reference Values, Motor only)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name. A number indicating the gear ratio is entered where the box □ is located within the product name.

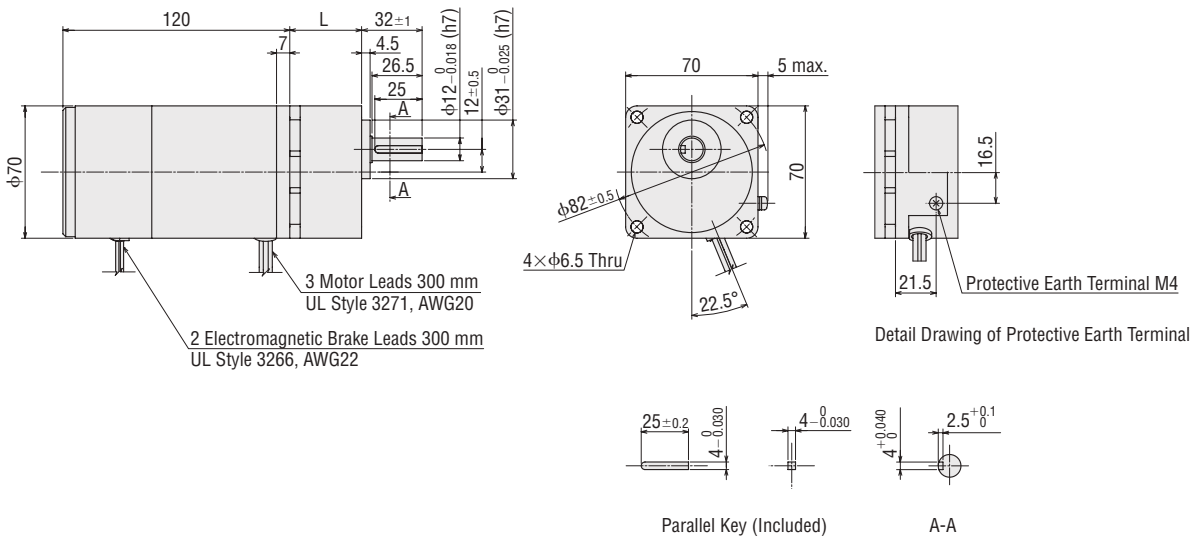
Dimensions (Unit: mm)

● Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead **GV** Gear

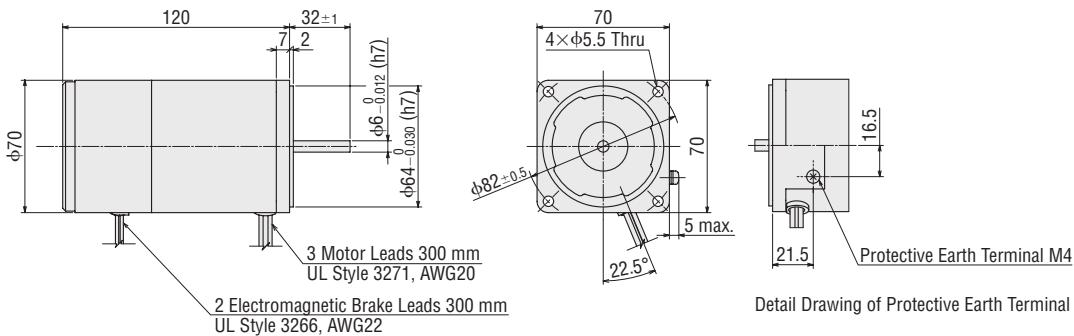
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
3RK15U ■M-□ 3RK15GCM -□	3RK15GV-U■M 3RK15GV-GCM	3GV□B	5~25	38	2.0	A1504A
			2, 3, 30~120	43		A1504B
			150~360	48		A1504C

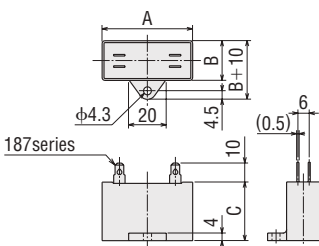


Round Shaft Type **3RK15A-U**■M, **3RK15A-GCM**

Mass: 1.4 kg 2D CAD A1507 3D CAD



Capacitor (Included)



Product Name		Unit: mm				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
3RK15UAM -□	3RK15A-UAM	CH55FAUL2	38	21	31	35
3RK15GCM -□	3RK15A-GCM	CH15BFAUL	38	21	31	37
3RK15UCM -□	3RK15A-UCM	CH13BFAUL	38	19	29	32

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

For more information, please visit [ORIENTAL MOTOR Website: https://www.orientalmotor.com.sg/om/tp/index.html](https://www.orientalmotor.com.sg/om/tp/index.html)

Electromagnetic Brake Motors

25 W

□ 80 mm

KII Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Lead Wire Type

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type Lead Wire Type	Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor	Overheat Protection Device
		W	V	Hz	A	mN·m	mN·m	r/min	μF	
4RK25UAM -□ 4RK25A-UAM	30 minutes	25	Single-Phase 110	60	0.50	160	145	1650	8.0	TP
			Single-Phase 115		0.51	180		1650		
4RK25GCM -□ 4RK25A-GCM	30 minutes	25	Single-Phase 220	50	0.24	170	180	1330		
			Single-Phase 230		0.25	190		1330		
4RK25UCM -□ 4RK25A-UCM	30 minutes	25	Single-Phase 220	60	0.25	160	145	1650		
			Single-Phase 230		0.26	180		1650		

● The values in the table are characteristics for the motor only.

● This type of motor does not contain a built-in friction brake mechanism similar to the reversible motors.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type Lead Wire Type	Voltage	Frequency	Current	Power Consumption	Static Friction Torque
	V	Hz	A	W	mN·m
4RK25UAM -□ 4RK25A-UAM	Single-Phase 110	60	0.09	6	100
	Single-Phase 115				
4RK25GCM -□ 4RK25A-GCM	Single-Phase 220	50	0.05	7	100
	Single-Phase 230				
4RK25UCM -□ 4RK25A-UCM	Single-Phase 220	60	0.05	7	100
	Single-Phase 230				

● The values in the table are characteristics for the motor only.

Product Line

Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

Product Name	Gear Ratio	List Price
4RK25UAM -□	2, 3	SGD276
	5, 6, 7.5, 9, 12.5, 15, 18	SGD272
	25, 30, 36	SGD279
	50, 60, 75, 90, 100, 120, 150, 180	SGD288
	250, 300, 360	SGD326
4RK25GCM -□	2, 3	SGD279
	5, 6, 7.5, 9, 12.5, 15, 18	SGD276
	25, 30, 36	SGD283
	50, 60, 75, 90, 100, 120, 150, 180	SGD292
	250, 300, 360	SGD329
4RK25UCM -□	2, 3	SGD279
	5, 6, 7.5, 9, 12.5, 15, 18	SGD276
	25, 30, 36	SGD283
	50, 60, 75, 90, 100, 120, 150, 180	SGD292
	250, 300, 360	SGD329

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Product Name	List Price
4RK25A-UAM	SGD194
4RK25A-GCM	SGD198
4RK25A-UCM	SGD198

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is max. 30% less, depending on the load.

50 Hz

Unit: N·m

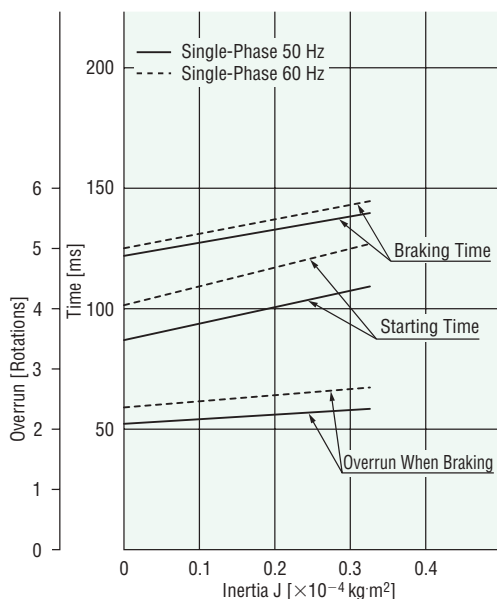
Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	4.1	
Gear Ratio		2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
4RK25GCM -□		0.28	0.44	0.81	0.97	1.2	1.5	2.0	2.4	2.9	4.1	4.6	5.6	7.7	9.3	11.6	13.9	15.5	16	16	16	16	16	16	16

60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	5	
Gear Ratio		2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
4RK25U ■□		0.23	0.35	0.65	0.78	0.98	1.2	1.6	2.0	2.3	3.3	3.7	4.5	6.2	7.5	9.4	11.2	12.5	15.0	16	16	16	16	16	16

Starting and Braking Characteristics (Reference Values)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name. A number indicating the gear ratio is entered where the box □ is located within the product name.

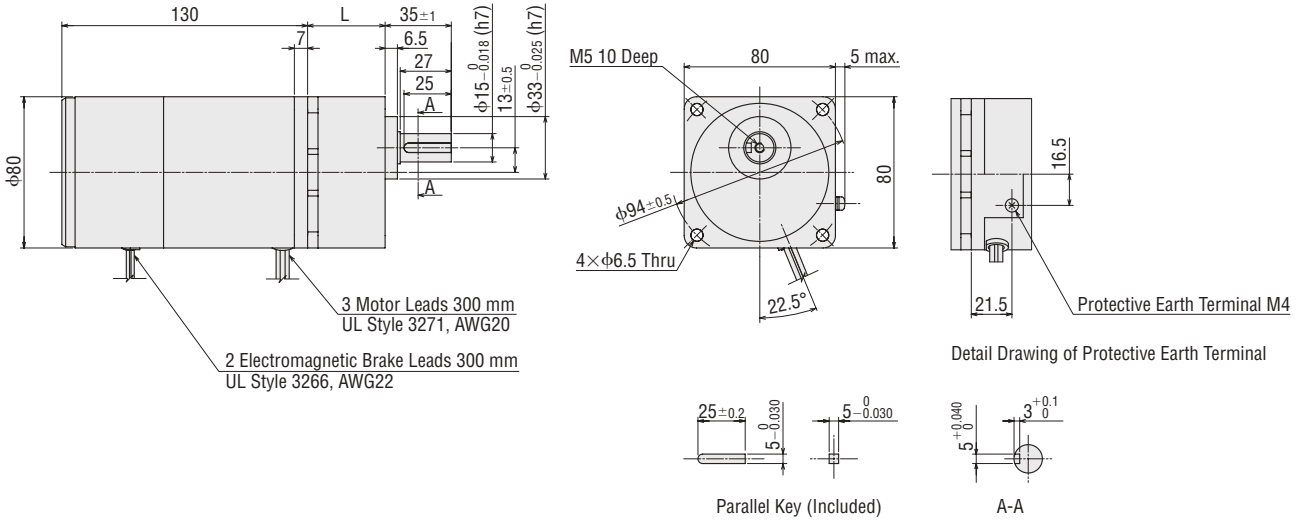
Dimensions (Unit: mm)

● Installation screws are included. Dimensions for installation screws → Page 01-117

Parallel Shaft Gearhead **GV** Gear

2D & 3D CAD

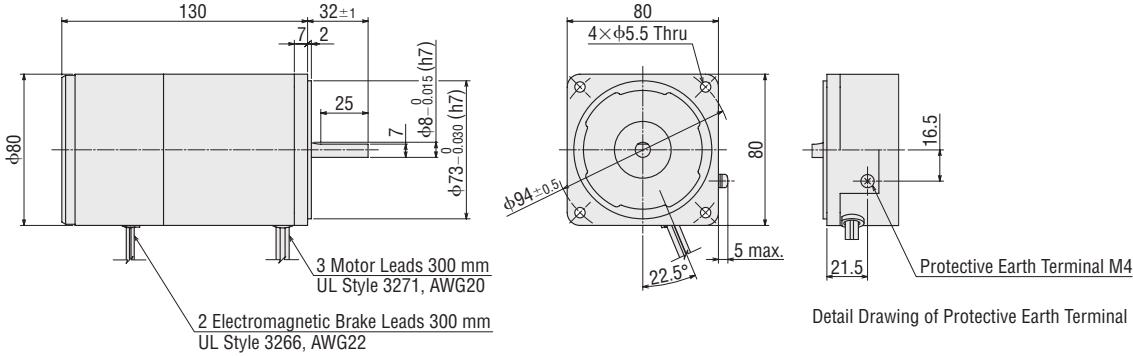
Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~25		Gear Ratio 2, 3, 30~120		Gear Ratio 150~360	
				L	2D CAD	L	2D CAD	L	2D CAD
4RK25U ■□ 4RK25GCM □	4RK25GV-U ■□ 4RK25GV-GCM	4GV □ B	3.05	41	A1505A	46	A1505B	51	A1505C



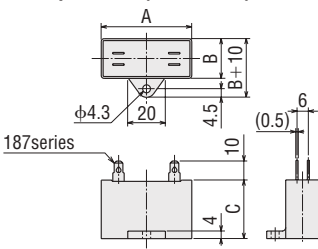
Round Shaft Type

4RK25A-U■□**M**, **4RK25A-GCM**

Mass: 2.1 kg 2D CAD A1508 3D CAD



Capacitor (Included)



Product Name		Capacitor Product Name			Mass g	
Parallel Shaft Gearhead GV Gear	Round Shaft Type	A	B	C		
4RK25UAM □	4RK25A-UAM	CH80CFAUL2	48	21	31	41
4RK25GCM □	4RK25A-GCM	CH20BFAUL	48	19	29	36
4RK25UCM □	4RK25A-UCM	CH20BFAUL	48	19	29	36

● A capacitor cap is included.

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Electromagnetic Brake Motors

40 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Cable Type

01

KII / KII Series

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Rating	Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN-m	Rated Torque mN-m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Cable Type										
5RK40UAMT2 -□ 5RK40A-UAMT2	5RK40UAM -□ 5RK40A-UAM	30 minutes	40	Single-Phase 110	60	0.71	285	240	1640	12	TP
				Single-Phase 115		0.71	320	240	1640		
5RK40GCMT2 -□ 5RK40A-GCMT2	5RK40GCM -□ 5RK40A-GCM	30 minutes	40	Single-Phase 220	50	0.37	320	290	1330	3.5	
				Single-Phase 230		0.37	320	290	1330		
5RK40UCMT2 -□ 5RK40A-UCMT2	5RK40UCM -□ 5RK40A-UCM	30 minutes	40	Single-Phase 220	60	0.36	295	240	1640	3.0	
				Single-Phase 230		0.36	320	240	1640		

● The values in the table are characteristics for the motor only.

● This type of motor does not contain a built-in friction brake mechanism similar to the reversible motors.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Voltage V	Frequency Hz	Current A	Power Consumption W	Static Friction Torque mN-m
Terminal Box Type	Cable Type					
5RK40UAMT2 -□ 5RK40A-UAMT2	5RK40UAM -□ 5RK40A-UAM	Single-Phase 110	60	0.09	7	200
		Single-Phase 115				
5RK40GCMT2 -□ 5RK40A-GCMT2	5RK40GCM -□ 5RK40A-GCM	Single-Phase 220	50	0.04	6	200
		Single-Phase 230				
5RK40UCMT2 -□ 5RK40A-UCMT2	5RK40UCM -□ 5RK40A-UCM	Single-Phase 220	60	0.04	6	200
		Single-Phase 230				

● The values in the table are characteristics for the motor only.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Click Here

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<https://www.orientalmotor.com.sg/om/tp/index.html>

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK40UAMT2 -□	2, 3	SGD344
	5, 6, 7.5, 9, 12.5, 15, 18	SGD341
	25, 30, 36	SGD350
	50, 60, 75, 90, 100, 120, 150, 180	SGD358
	250, 300	SGD428
5RK40GCMT2 -□	2, 3	SGD348
	5, 6, 7.5, 9, 12.5, 15, 18	SGD345
	25, 30, 36	SGD354
	50, 60, 75, 90, 100, 120, 150, 180	SGD361
	250, 300	SGD431
5RK40UCMT2 -□	2, 3	SGD348
	5, 6, 7.5, 9, 12.5, 15, 18	SGD345
	25, 30, 36	SGD354
	50, 60, 75, 90, 100, 120, 150, 180	SGD361
	250, 300	SGD431

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

◇ Cable Type

Product Name	Gear Ratio	List Price
5RK40UAM -□	2, 3	SGD321
	5, 6, 7.5, 9, 12.5, 15, 18	SGD318
	25, 30, 36	SGD327
	50, 60, 75, 90, 100, 120, 150, 180	SGD334
	250, 300	SGD404
5RK40GCM -□	2, 3	SGD324
	5, 6, 7.5, 9, 12.5, 15, 18	SGD322
	25, 30, 36	SGD331
	50, 60, 75, 90, 100, 120, 150, 180	SGD338
	250, 300	SGD408
5RK40UCM -□	2, 3	SGD324
	5, 6, 7.5, 9, 12.5, 15, 18	SGD322
	25, 30, 36	SGD331
	50, 60, 75, 90, 100, 120, 150, 180	SGD338
	250, 300	SGD408

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK40A-UAMT2	SGD249
5RK40A-GCMT2	SGD253
5RK40A-UCMT2	SGD253

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

◇ Cable Type

Product Name	List Price
5RK40A-UAM	SGD226
5RK40A-GCM	SGD229
5RK40A-UCM	SGD229

Permissible Torque

● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

The actual speed is max. 30% less, depending on the load.

● 50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK40GCM □-□		0.45	0.70	1.3	1.6	2.0	2.3	3.3	3.9	4.7	6.2	7.5	9.0	12.5	15.0	18.7	22.4	24.9	28.2	30	30	30	30

● 60 Hz

Unit: N·m

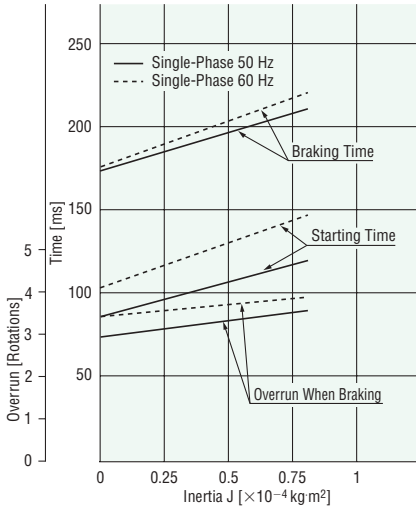
Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK40U ■□-□		0.37	0.58	1.1	1.3	1.6	1.9	2.7	3.2	3.9	5.2	6.2	7.4	10.3	12.4	15.5	18.6	20.6	23.3	29.2	30	30	30

● Either **A** or **C** indicating the power supply voltage is specified where the box ■ is located in the product name.

A code (**T2**) indicating the terminal box type is specified where the box □ is located in the product name.

A number indicating the gear ratio is entered where the box □ is located within the product name.

Starting and Braking Characteristics (Reference Values, Motor only)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

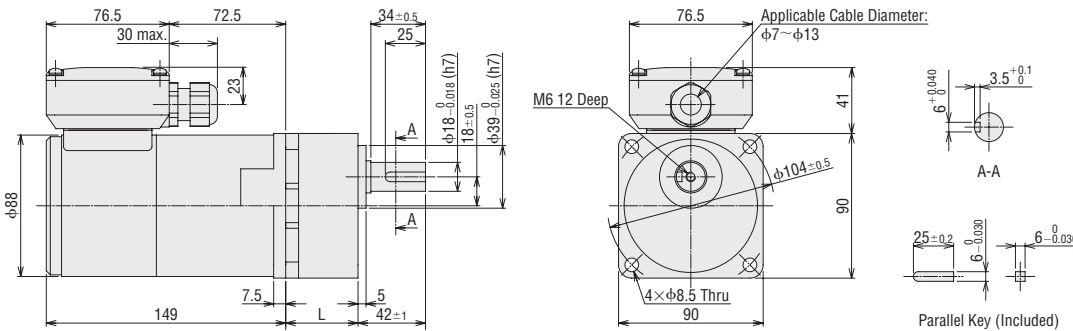
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead **GV** Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK40U <input type="checkbox"/> MT2 - <input type="checkbox"/> 5RK40GCMT2 - <input type="checkbox"/>	5RK40GV-U <input type="checkbox"/> MT2 5RK40GV-GCMT2	5GV <input type="checkbox"/> B	5~18	45	5.0	A1432A
			2, 3, 25~100	58		A1432B
			120~300	64		A1432C



- Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
- A number indicating the gear ratio is entered where the box is located within the product name.

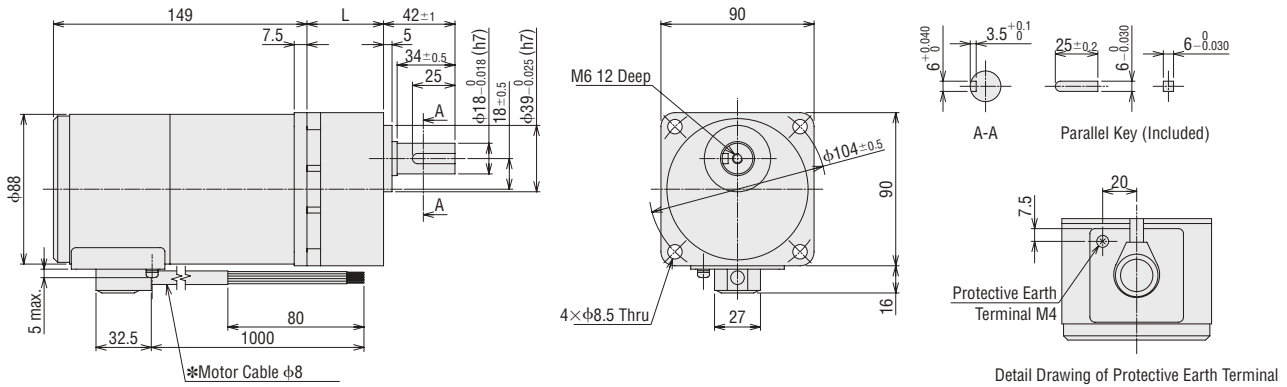
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◇ Cable Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK40U□M-□ 5RK40GCM-□	5RK40GV-U□M 5RK40GV-GCM	5GV□B	5~18	45	4.7	A1431A
			2, 3, 25~100	58		A1431B
			120~300	64		A1431C



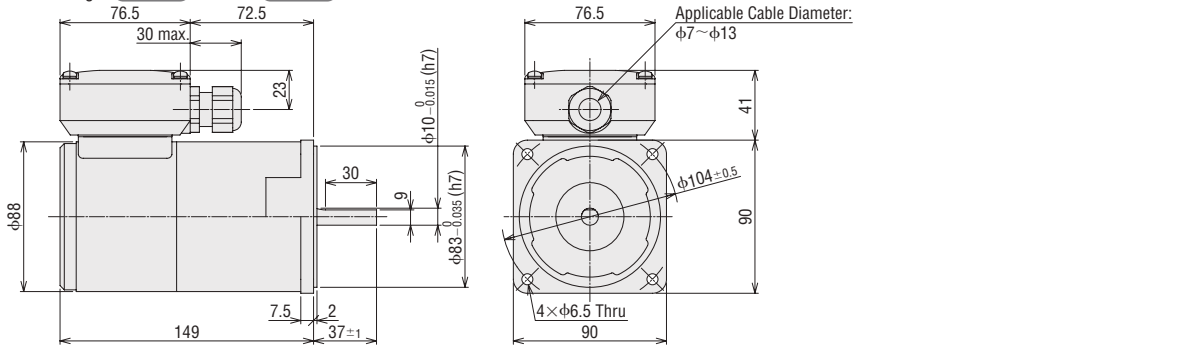
*Motor Cable Cores
3 Motor Leads UL Style 3271, AWG20
2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Round Shaft Type

◇ Terminal Box Type

5RK40A-U□MT2, 5RK40A-GCMT2

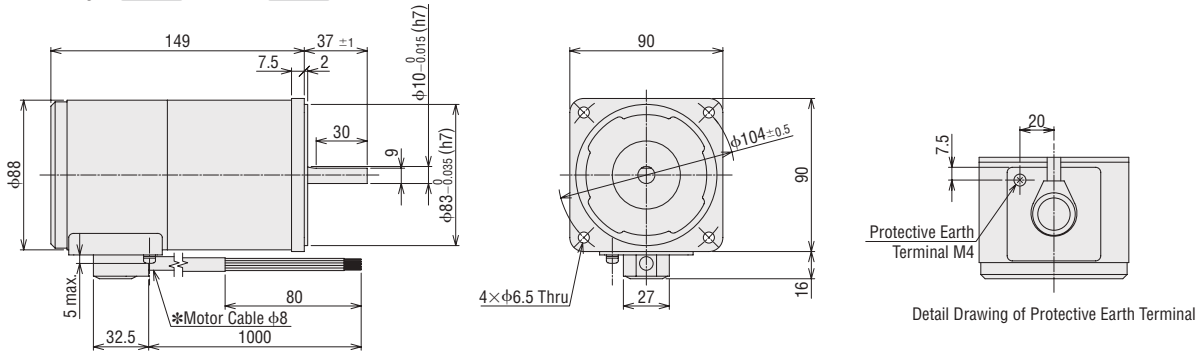
Mass: 3.5 kg 2D CAD A1438 3D CAD



◇ Cable Type

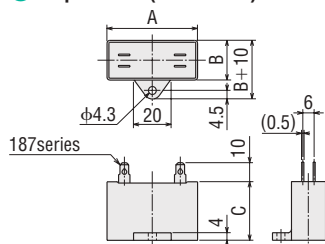
5RK40A-U□M, 5RK40A-GCM

Mass: 3.2 kg 2D CAD A1437 3D CAD



*Motor Cable Cores
3 Motor Leads UL Style 3271, AWG20
2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Capacitor (Included)



Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
5RK40UAMT2-□ 5RK40UAM-□	5RK40A-UAMT2 5RK40A-UAM	CH120CFAUL2	58	22	35	60
5RK40GCMT2-□ 5RK40GCM-□	5RK40A-GCMT2 5RK40A-GCM	CH35BFAUL	58	22	35	59
5RK40UCMT2-□ 5RK40UCM-□	5RK40A-UCMT2 5RK40A-UCM	CH30BFAUL	58	21	31	50

● A capacitor cap is included.

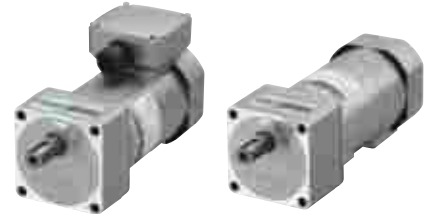
● Either **A** or **C** indicating the power supply voltage is entered where the box \square is located within the product name.
A number indicating the gear ratio is entered where the box \square is located within the product name.

Electromagnetic Brake Motors

60 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Cable Type

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Rating	Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN-m	Rated Torque mN-m	Rated Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Cable Type										
5RK60UAMT2-□ 5RK60A-UAMT2	5RK60UAM-□ 5RK60A-UAM	30 minutes	60	Single-Phase 110	60	1.13	470	350	1650	20	TP
				Single-Phase 115		1.17	490		1650		
5RK60GCMT2-□ 5RK60A-GCMT2	5RK60GCM-□ 5RK60A-GCM	30 minutes	60	Single-Phase 220	50	0.55	465	430	1340	5.0	
				Single-Phase 230		0.57	490		1340		
5RK60UCMT2-□ 5RK60A-UCMT2	5RK60UCM-□ 5RK60A-UCM	30 minutes	60	Single-Phase 220	60	0.56	485	350	1650	5.0	
				Single-Phase 230		0.57	490		1650		

● The values in the table are characteristics for the motor only.

● This type of motor does not contain a built-in friction brake mechanism similar to the reversible motors.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Voltage V	Frequency Hz	Current A	Power Consumption W	Static Friction Torque mN-m
Terminal Box Type	Cable Type					
5RK60UAMT2-□ 5RK60A-UAMT2	5RK60UAM-□ 5RK60A-UAM	Single-Phase 110	60	0.09	7	500
		Single-Phase 115				
5RK60GCMT2-□ 5RK60A-GCMT2	5RK60GCM-□ 5RK60A-GCM	Single-Phase 220	50	0.04	6	500
		Single-Phase 230				
5RK60UCMT2-□ 5RK60A-UCMT2	5RK60UCM-□ 5RK60A-UCM	Single-Phase 220	60	0.04	6	500
		Single-Phase 230				

● The values in the table are characteristics for the motor only.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

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<https://www.orientalmotor.com.sg/om/tp/index.html>

Product Line

● Parallel Shaft Gearhead **GV** Gear Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK60UAMT2 -□	2, 3	SGD418
	5, 6, 7.5, 9, 12.5, 15, 18	SGD406
	25, 30, 36, 50, 60, 75, 90, 100	SGD418
	120, 150, 180	SGD429
	250, 300	SGD465
5RK60GCMT2 -□	2, 3	SGD423
	5, 6, 7.5, 9, 12.5, 15, 18	SGD411
	25, 30, 36, 50, 60, 75, 90, 100	SGD423
	120, 150, 180	SGD434
	250, 300	SGD470
5RK60UCMT2 -□	2, 3	SGD423
	5, 6, 7.5, 9, 12.5, 15, 18	SGD411
	25, 30, 36, 50, 60, 75, 90, 100	SGD423
	120, 150, 180	SGD434
	250, 300	SGD470

The following items are included with each product.

Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK60A-UAMT2	SGD286
5RK60A-GCMT2	SGD291
5RK60A-UCMT2	SGD291

The following items are included with each product.

Motor, Capacitor, Capacitor Cap, Operating Manual

◇ Cable Type

Product Name	Gear Ratio	List Price
5RK60UAM -□	2, 3	SGD394
	5, 6, 7.5, 9, 12.5, 15, 18	SGD383
	25, 30, 36, 50, 60, 75, 90, 100	SGD394
	120, 150, 180	SGD406
	250, 300	SGD442
5RK60GCM -□	2, 3	SGD399
	5, 6, 7.5, 9, 12.5, 15, 18	SGD388
	25, 30, 36, 50, 60, 75, 90, 100	SGD399
	120, 150, 180	SGD411
	250, 300	SGD447
5RK60UCM -□	2, 3	SGD399
	5, 6, 7.5, 9, 12.5, 15, 18	SGD388
	25, 30, 36, 50, 60, 75, 90, 100	SGD399
	120, 150, 180	SGD411
	250, 300	SGD447

◇ Cable Type

Product Name	List Price
5RK60A-UAM	SGD263
5RK60A-GCM	SGD268
5RK60A-UCM	SGD268

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 30% less, depending on the load.

● 50 Hz

Unit: N·m

Product Name	Speed r/min	750	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK60GCM □-□		0.70	1.0	1.9	2.3	2.9	3.5	4.8	5.8	7.0	9.2	11.1	13.3	18.5	22.2	27.7	30	30	30	30	30	30	30

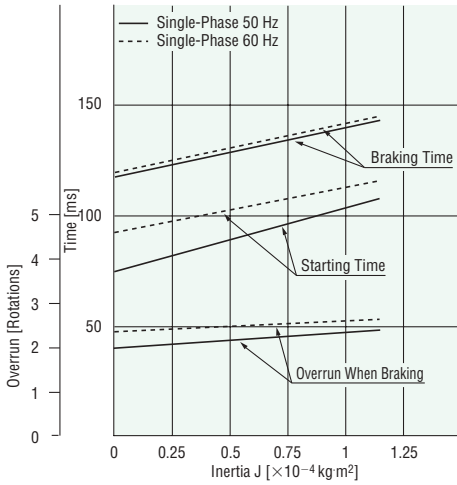
● 60 Hz

Unit: N·m

Product Name	Speed r/min	900	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5RK60UAM □-□		0.57	0.85	1.6	1.9	2.4	2.8	3.9	4.7	5.7	7.5	9.0	10.8	15.1	18.1	22.6	27.1	30	30	30	30	30	30

- Either **A** or **C** indicating the power supply voltage is specified where the box is located in the product name.
A code (**T2**) indicating the terminal box type is specified where the box is located in the product name.
A number indicating the gear ratio is entered where the box is located within the product name.

Starting and Braking Characteristics (Reference values, Motor only)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

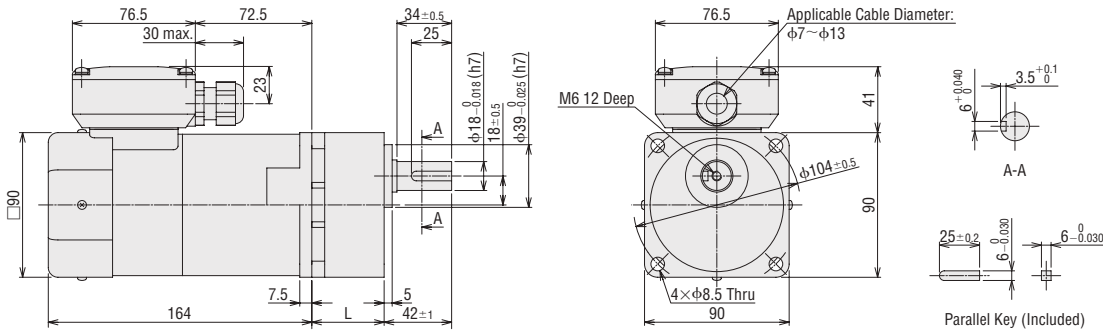
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead **GV** Gear

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK60U □ MT2 -□ 5RK60GCMT2 -□	5RK60GVH-U□ MT2 5RK60GVH-GCMT2	5GVH□ B	5~18	45	5.2	A1434A
			2, 3, 25~100	58		A1434B
			120~300	64		A1434C

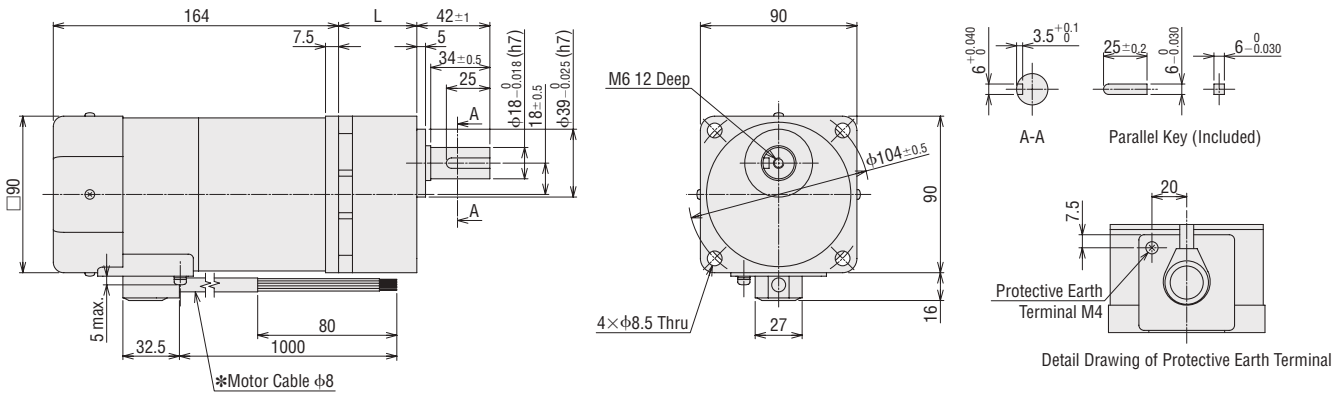


- Either **A** or **C** indicating the power supply voltage is entered where the box □ is located within the product name.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

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For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~18		Gear Ratio 2, 3, 25~100		Gear Ratio 120~300	
				L	2D CAD	L	2D CAD	L	2D CAD
5RK60U ■□ 5RK60GCM □	5RK60GVH-U■□ 5RK60GVH-GCM	5GVH□B	4.9	45	A1433A	58	A1433B	64	A1433C



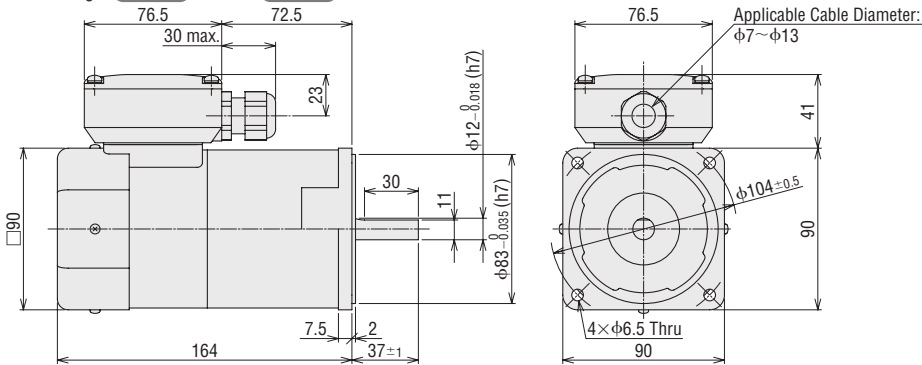
*Motor Cable Cores
 3 Motor Leads UL Style 3271, AWG20
 2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Round Shaft Type

◇ Terminal Box Type

5RK60A-U■□**MT2**, **5RK60A-GCMT2**

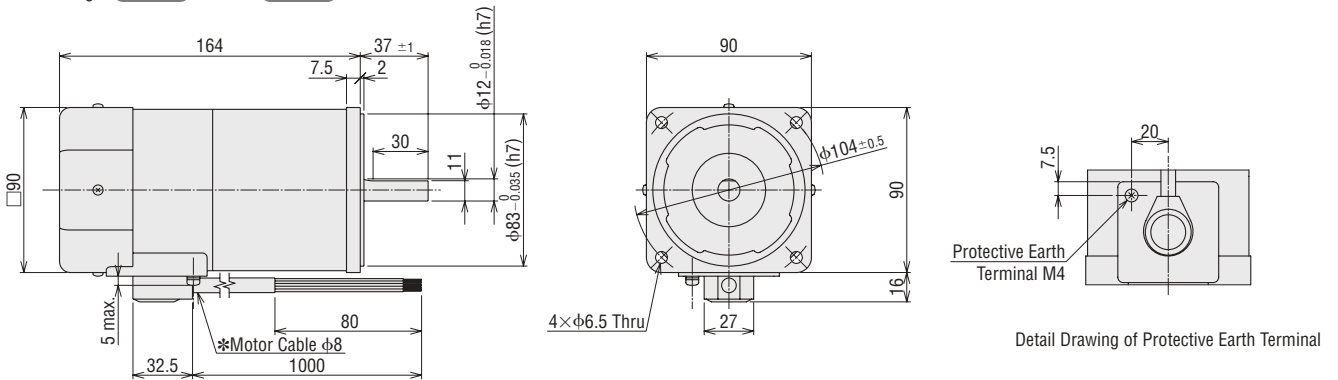
Mass: 3.7 kg **2D CAD** A1440 **3D CAD**



◇ Cable Type

5RK60A-U■□**M**, **5RK60A-GCM**

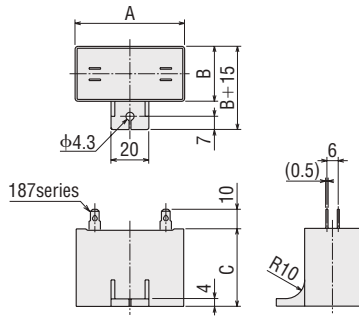
Mass: 3.4 kg **2D CAD** A1439 **3D CAD**



*Motor Cable Cores
 3 Motor Leads UL Style 3271, AWG20
 2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
 A number indicating the gear ratio is entered where the box □ is located within the product name.

● Capacitor (Included)



Product Name		Unit: N·m				
Parallel Shaft Gearhead GV Gear	Round Shaft Type	Capacitor Product Name	A	B	C	Mass g
5RK60UAMT2 -□ 5RK60UAM -□	5RK60A-UAMT2 5RK60A-UAM	CH200CFAUL2	58	29	41	91
5RK60GCMT2 -□ 5RK60GCM -□	5RK60A-GCMT2 5RK60A-GCM	CH50BFAUL	58	29	41	93
5RK60UCMT2 -□ 5RK60UCM -□	5RK60A-UCMT2 5RK60A-UCM	CH50BFAUL	58	29	41	93

● A capacitor cap is included.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

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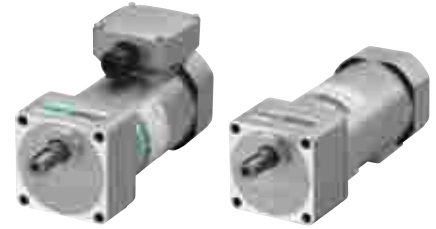
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Electromagnetic Brake Motors

90 W

□ 90 mm

KII Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Cable Type

Specifications

Motor



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Rating	Output Power W	Voltage V	Frequency Hz	Current A	Starting Torque mN·m	Rated Torque mN·m	Speed r/min	Capacitor μF	Overheat Protection Device
Terminal Box Type	Cable Type										
5RK90UAMT2 -□ 5RK90A-UAMT2	5RK90UAM -□ 5RK90A-UAM	30 minutes	90	Single-Phase 110	60	1.55	690	550	1570	25	TP
				Single-Phase 115		1.57			730		
5RK90GCMT2 -□ 5RK90A-GCMT2	5RK90GCM -□ 5RK90A-GCM	30 minutes	90	Single-Phase 220	50	0.77	655	710	1220	6.0	
				Single-Phase 230		0.78			720		
5RK90UCMT2 -□ 5RK90A-UCMT2	5RK90UCM -□ 5RK90A-UCM	30 minutes	90	Single-Phase 220	60	0.76	670	550	1570	6.0	
				Single-Phase 230		0.77			730		

● The values in the table are characteristics for the motor only.

● This type of motor does not contain a built-in friction brake mechanism similar to the reversible motors.

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts automatically. Be sure to turn the power supply off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Voltage V	Frequency Hz	Current A	Power Consumption W	Static Friction Torque mN·m
Terminal Box Type	Cable Type					
5RK90UAMT2 -□ 5RK90A-UAMT2	5RK90UAM -□ 5RK90A-UAM	Single-Phase 110	60	0.09	7	500
		Single-Phase 115				
5RK90GCMT2 -□ 5RK90A-GCMT2	5RK90GCM -□ 5RK90A-GCM	Single-Phase 220	50	0.04	6	500
		Single-Phase 230				
5RK90UCMT2 -□ 5RK90A-UCMT2	5RK90UCM -□ 5RK90A-UCM	Single-Phase 220	60	0.04	6	500
		Single-Phase 230				

● The values in the table are characteristics for the motor only.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Product Line

● Parallel Shaft Gearhead **GV Gear** Price includes motor and gearhead.

◇ Terminal Box Type

Product Name	Gear Ratio	List Price
5RK90UAMT2 -□	3	SGD448
	5, 6, 7.5, 9, 12.5, 15, 18	SGD427
	25, 30, 36, 50, 60	SGD448
	75, 90, 100, 120, 150, 180	SGD458
5RK90GCMT2 -□	3	SGD453
	5, 6, 7.5, 9, 12.5, 15, 18	SGD432
	25, 30, 36, 50, 60	SGD453
	75, 90, 100, 120, 150, 180	SGD463
5RK90UCMT2 -□	3	SGD453
	5, 6, 7.5, 9, 12.5, 15, 18	SGD432
	25, 30, 36, 50, 60	SGD453
	75, 90, 100, 120, 150, 180	SGD463

— The following items are included with each product.
 Motor, Gearhead, Capacitor, Capacitor Cap, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

◇ Terminal Box Type

Product Name	List Price
5RK90A-UAMT2	SGD306
5RK90A-GCMT2	SGD311
5RK90A-UCMT2	SGD311

— The following items are included with each product.
 Motor, Capacitor, Capacitor Cap, Operating Manual

◇ Cable Type

Product Name	Gear Ratio	List Price
5RK90UAM -□	3	SGD425
	5, 6, 7.5, 9, 12.5, 15, 18	SGD404
	25, 30, 36, 50, 60	SGD425
	75, 90, 100, 120, 150, 180	SGD435
5RK90GCM -□	3	SGD430
	5, 6, 7.5, 9, 12.5, 15, 18	SGD409
	25, 30, 36, 50, 60	SGD430
	75, 90, 100, 120, 150, 180	SGD440
5RK90UCM -□	3	SGD430
	5, 6, 7.5, 9, 12.5, 15, 18	SGD409
	25, 30, 36, 50, 60	SGD430
	75, 90, 100, 120, 150, 180	SGD440

◇ Cable Type

Product Name	List Price
5RK90A-UAM	SGD283
5RK90A-GCM	SGD288
5RK90A-UCM	SGD288

Permissible Torque

● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
 The actual speed is max. 30% less, depending on the load.

● 50 Hz

Product Name	Speed r/min	500	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
	Gear Ratio	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5RK90GCM □-□		1.7	3.2	3.8	4.8	5.8	8.0	9.6	11.0	15.3	18.3	22.0	30.5	36.6	40	40	40	40	40	40

Unit: N·m

● 60 Hz

Product Name	Speed r/min	600	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5RK90U ■ M □-□		1.3	2.5	3.0	3.7	4.5	6.2	7.4	8.5	11.8	14.2	17.0	23.7	28.4	33.4	40	40	40	40	40

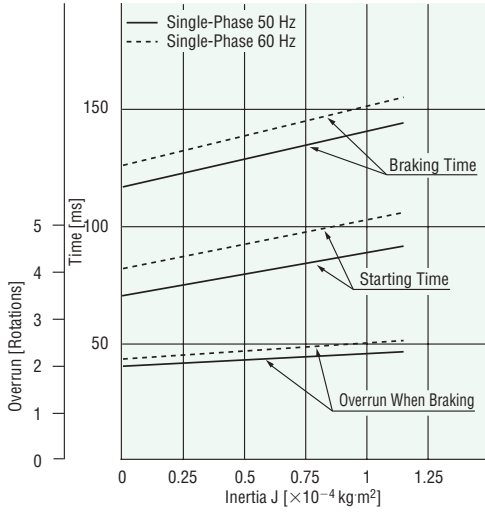
Unit: N·m

● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
 A code (**T2**) indicating the terminal box type is entered where the box □ is located within the product name.
 A number indicating the gear ratio is entered where the box □ is located within the product name.

[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Starting and Braking Characteristics (Reference values)



Permissible Radial Load and Permissible Axial Load

→ Page 01-116

Permissible Inertia J

→ Page 01-116

Dimensions (Unit: mm)

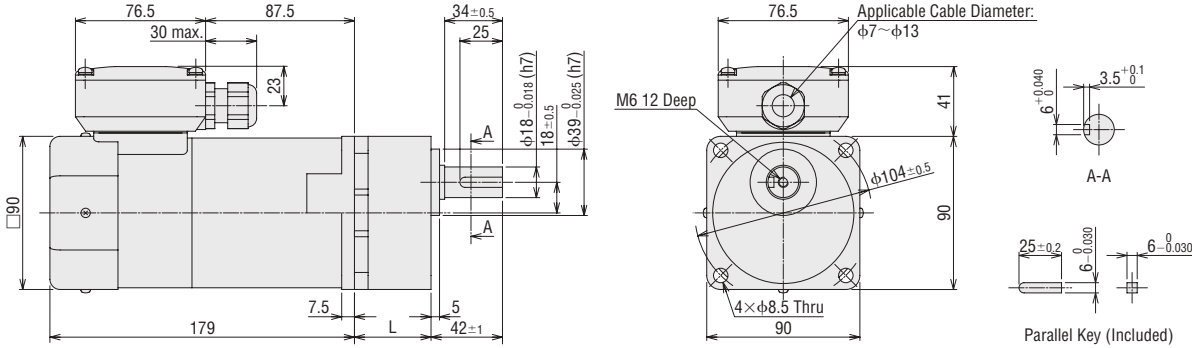
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.

Parallel Shaft Gearhead **GV** Gear

◇ Terminal Box Type

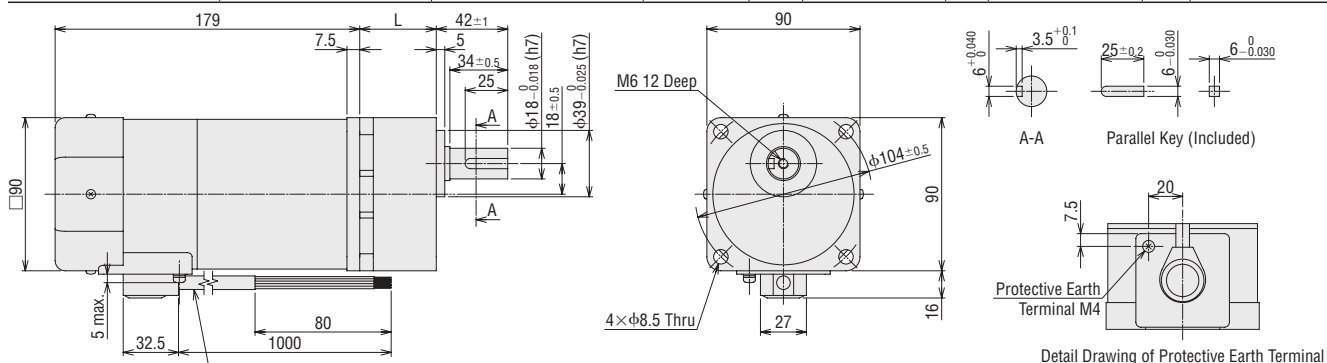
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5RK90U ■ MT2 -□ 5RK90GCMT2 -□	5RK90GVR-U ■ MT2 5RK90GVR-GCMT2	5GVR□B	5~15	45	5.7	A1436A
			3, 18~36	58		A1436B
			50~180	70		A1436C



● Either **A** or **C** indicating the power supply voltage is entered where the box ■ is located within the product name.
A number indicating the gear ratio is entered where the box □ is located within the product name.

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	Gear Ratio 5~15		Gear Ratio 3, 18~36		Gear Ratio 50~180	
				L	2D CAD	L	2D CAD	L	2D CAD
5RK90U <input type="checkbox"/> M <input type="checkbox"/> 5RK90GCM <input type="checkbox"/>	5RK90GVR-U <input type="checkbox"/> M 5RK90GVR-GCM	5GVR <input type="checkbox"/> B	5.4	45	A1435A	58	A1435B	70	A1435C



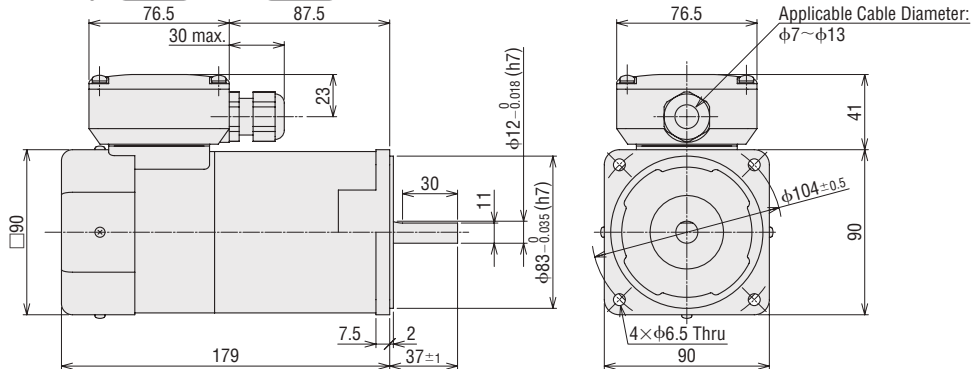
*Motor Cable Cores
 3 Motor Leads UL Style 3271, AWG20
 2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Round Shaft Type

◇ Terminal Box Type

5RK90A-U **MT2**, **5RK90A-GCMT2**

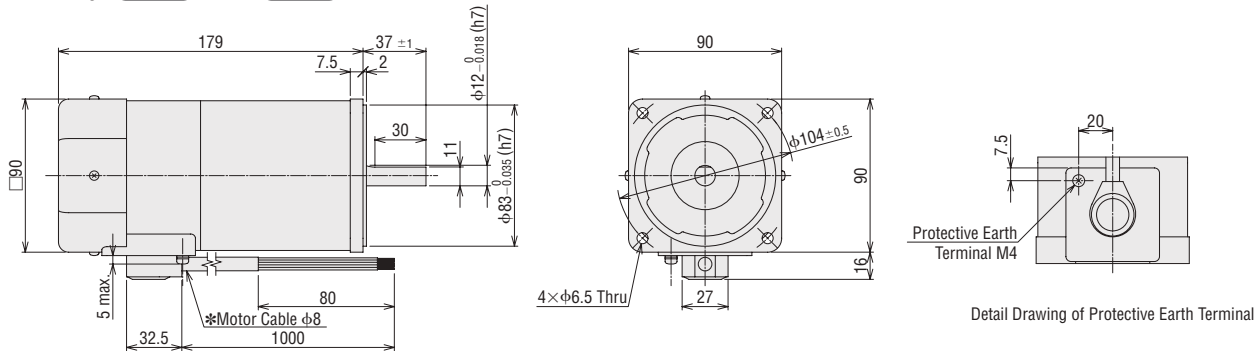
Mass: 4.2 kg **2D CAD** A1442 **3D CAD**



◇ Cable Type

5RK90A-U **M**, **5RK90A-GCM**

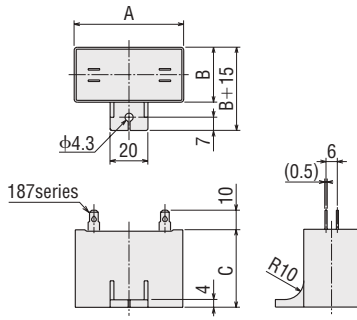
Mass: 3.9 kg **2D CAD** A1441 **3D CAD**



*Motor Cable Cores
 3 Motor Leads UL Style 3271, AWG20
 2 Electromagnetic Brake Leads UL Style 3266, AWG22

● Either **A** or **C** indicating the power supply voltage is entered where the box is located within the product name.
 A number indicating the gear ratio is entered where the box is located within the product name.

● Capacitor (Included)



Product Name		Capacitor Product Name	A	B	C	Mass g
Parallel Shaft Gearhead GV Gear	Round Shaft Type					
5RK90UAMT2 -□ 5RK90UAM -□	5RK90A-UAMT2 5RK90A-UAM	CH250CFAUL2	58	35	50	140
5RK90GCMT2 -□ 5RK90GCM -□	5RK90A-GCMT2 5RK90A-GCM	CH60BFAUL	58	29	41	92
5RK90UCMT2 -□ 5RK90UCM -□	5RK90A-UCMT2 5RK90A-UCM	CH60BFAUL	58	29	41	92

Unit: mm

● A capacitor cap is included.

General Specifications

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 80°C (Three-Phase type 70°C) or less measured by the resistance change method after rated operation under normal ambient temperature and humidity with connecting a gearhead or equivalent heat radiation plate*1.
Thermal Class	130 (B)
Overheat Protection	6 W type has impedance protection. Other Types Built-In thermal protector (automatic return type) Open: 130 ± 5°C, Close: 85 ± 20°C
Ambient Temperature	- 10 ~ + 40°C (non-freezing) For the gearhead ratio 2 and 3, the lower limit temperature is 0°C.
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	Terminal Box Type : IP66*2 (40 W excluding the installation surface of the round shaft type) : IP20 (60 W, 90 W) Lead Wire Type : IP20 (6 W, 15 W, 25 W) Cable Type : IP40 (40 W) : IP20 (60 W, 90 W)

*1 Heat radiation plate (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W type	115 × 115	5
15 W type	125 × 125	
25 W type	135 × 135	
40 W type	165 × 165	
60 W, 90 W types	200 × 200	

*2 Materials and Surface Treatment

Type	Output Power	Material	Surface Treatment
Parallel Shaft Gearhead GV Gear Round Shaft Type	40 W	Case and terminal box: Aluminum Output shaft: S45C Screws: Stainless steel (externally facing screws only)	Case and terminal box: Painted (excluding installation surface)

● A number indicating the gear ratio is entered where the box □ is located within the product name.

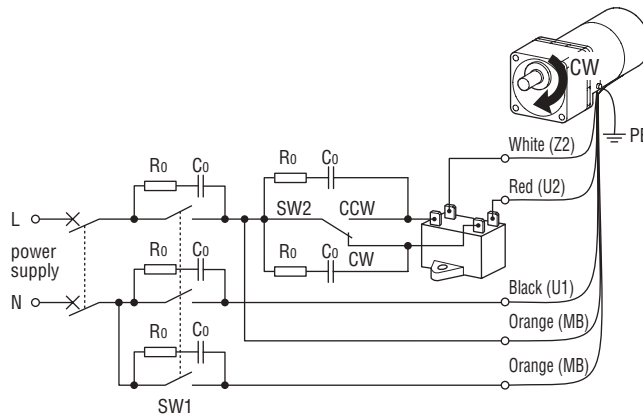
Connection Diagrams

- The rotation direction of the motor is indicated when viewed from the output shaft side of the motor. CW is used to indicate clockwise rotation and CCW is used for counterclockwise rotation.
- The rotation direction varies according to the gear ratio.
Units with gear ratio [] and round shaft types rotate as shown in the figure.
Units with gear ratio [] rotate in the opposite direction to the figure.
- Connection diagram is for lead wire type and cable type units. The code inside the () brackets indicates the terminal code for the terminal box type.

Output Power	Gear Ratio																						
6 W 15 W 25 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
40 W 60 W	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	-
90 W	-	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	-	-	-

Single-Phase Motor

CW : Clockwise



SW1 operates both motor and electromagnetic brake action.
The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

To release the electromagnetic brake while the motor is stopped,
SW1 is not interlocked and only the orange lead wire is ON.

- Contact Capacity of Switch SW1 and SW2

Run/Stop	Motor Output Power	Contact Capacity of Switch	
		Single-Phase 110/115 VAC	Single-Phase 220/230 VAC
	6 W 15 W 25 W	125 VAC 3 A or more Inductive load	250 VAC 1.5 A or more Inductive load
	40 W 60 W 90 W	125 VAC 5 A or more Inductive load	250 VAC 5 A or more Inductive load

To protect the contact, connect a CR circuit (RoCo) for surge suppression as shown on the connection diagram.

$R_0=5\sim 200\ \Omega$ $C_0=0.1\sim 0.2\ \mu\text{F}$ 250 VAC

We also offer the **EPCR1201-2** (sold separately) as an accessory. → Page 01-120

Standard AC Motors High-Efficiency Three-Phase Induction Motors KII S Series

01

KII / KII S Series



Induction Motors
Hypoid Right-Angle
Hollow Shaft **JH** Gear
Terminal Box Type
Stainless Steel Shaft
30 W/40 W/100 W



Induction Motors
Parallel Shaft Gearhead **GV**
Gear
Terminal Box/Lead Wire
Type
60 W/100 W



Electromagnetic Brake
Motors
Parallel Shaft Gearhead **GV**
Gear
Terminal Box/Cable Type
60 W/100 W

Features

High Efficiency Three-Phase Motors through Optimal Design

Maximum Efficiency is 74%

Specialized components and an optimal magnetic design are used to make high efficiency three-phase motors with a maximum efficiency of 74%. Motors are fanless with increased motor torque.

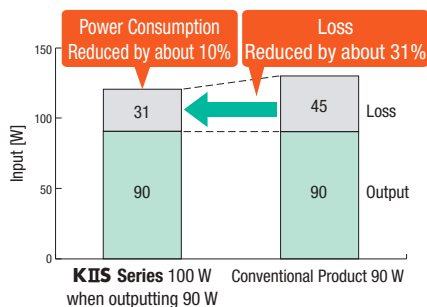
Comparison of Maximum Efficiency (Reference values)

	30 W	60 W	100 W
KII S Series	63.8%	69.8%	74.1%
Conventional Product	53.9% (25 W)	60.5%	64.7% (90 W)

Rated Output Power at 60 Hz

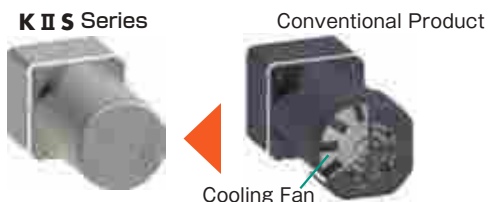
Power Consumption Reduced by up to 10%

Compared to a conventional 90 W motor under the same conditions, power consumption is reduced by a maximum of about 10%, contributing to the equipment's energy savings.



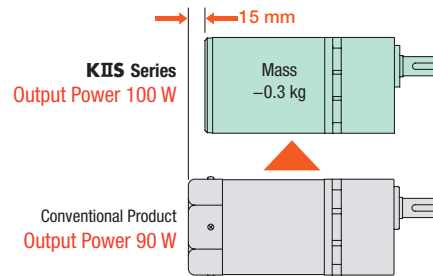
Fan-less Structure

With reduced loss, there is less heat generation in the motor. Because of this, the cooling fan that was incorporated into the conventional 60 W min. products is no longer included.



Increased Motor Output Power

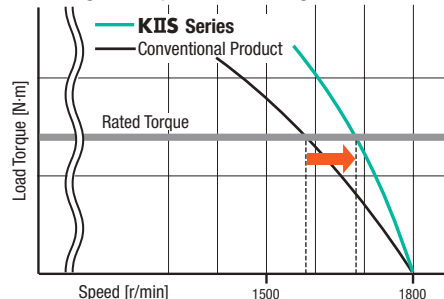
Output power of 100 W in a 90 mm frame size is achieved through increased efficiency. An overall length 15 mm shorter than the conventional motor contributes to equipment downsizing.



High Performance

Characteristics have been improved through pursuit of the specifications required for the three-phase motor and a review of the design. This has created a high-performance motor with little speed reduction even with a large load.

Changes in Speed according to Load



No Dust

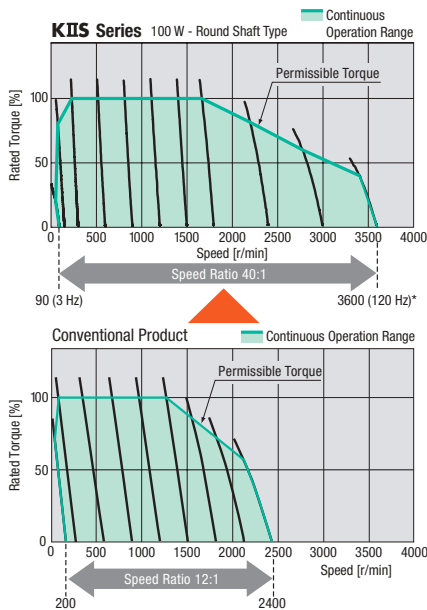
With no cooling fan, dust is not blown around.

Best Characteristics Achieved when Combined with an Inverter

Wide Speed Range

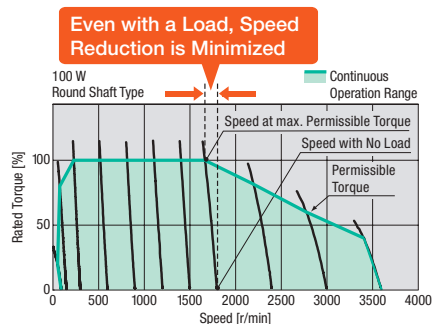
Speed can be controlled over a wide range using an inverter, from 3~120 Hz*. Also, with improved characteristics, high torque can be exerted even at low speeds.

*For right-angle shaft type, see Page 01-115 " Usage with Inverter."



Improved Speed Stability

Because it is a high performance motor with little speed reduction even with a large load, stabilized speed control is possible.

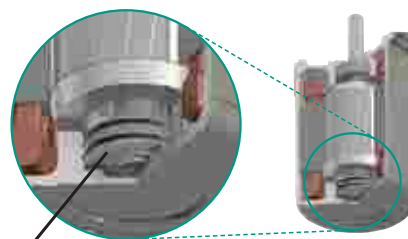


Reduced Motor Drive Noise

On a conventional motor with a fan, noise is generated, such as fan noise during rotation and resonance if the motor is driven by an inverter. By removing the fan, the motor operates quieter.

Handles High-Speed Rotation (Round shaft type)

Creep-free bearings are used in the round shaft type, and components capable of handling high-speed rotation have been selected and designed for inverter control.



Uses Creep-Free Bearings (Round shaft type only)

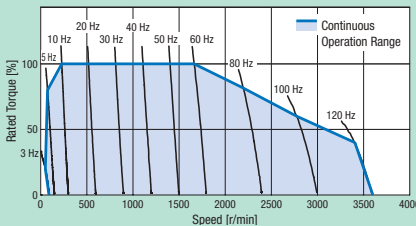
Using Third Party Inverters

"Speed - Torque Characteristics" and "Inverter Parameter Settings" reference materials have been prepared to simplify the use of the KIIS Series with a third party inverter.

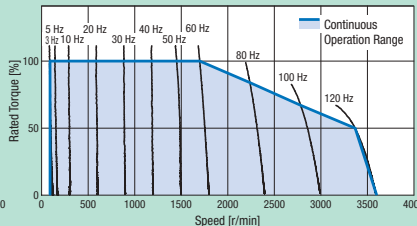
For details, please see the Oriental Motor website.

Example of characteristics when using a general inverter with a KIIS Series 100 W round shaft type motor (Reference values)

V/F control



Vector control



Note

No built-in overheat protection device (thermal protector). When the output shaft is locked for any reason, use the electromagnetic switch or the inverter's electronic thermal function to prevent motor burnout. For details on electromagnetic switches, refer to page 01-115 .

[Click Here](#)

For more information, please visit [ORIENTAL MOTOR Website: https://www.orientalmotor.com.sg/om/tp/index.html](https://www.orientalmotor.com.sg/om/tp/index.html)

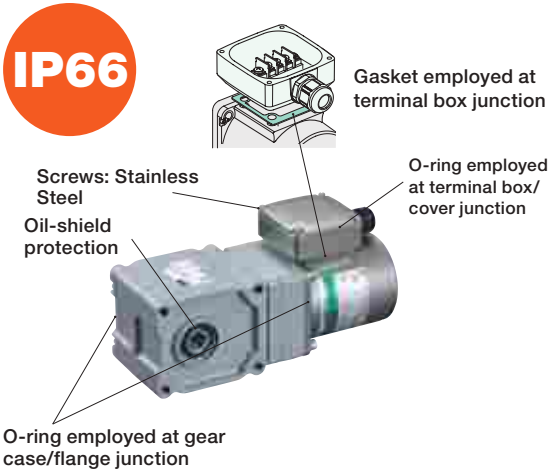
IP66 Compliant Water-Resistance Specification (Terminal Box Type)

- The seal structure for the motor, gearhead and terminal box components has been strengthened.
- The IP indication that shows the watertight and dust-resistant performance are specified under IEC 60529 and IEC 60034-5.

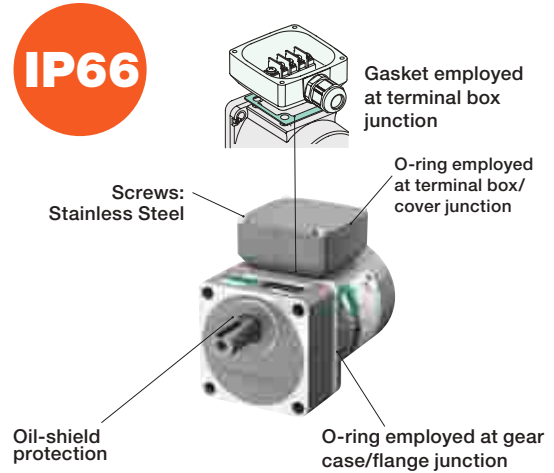
IP66

- 6: Protection against strong water jet such as ocean waves
- 6: Completely dust-proof structure

● Hypoid Right-Angle Hollow Shaft **JH** Gear



● Parallel Shaft Gearheads **GV** Gear, Round Shaft Type



Stainless Steel Shaft Is Included as Standard*

● Output Shaft Uses Stainless Steel to Provides Excellent Rust Prevention & Anti-Corrosion Properties

Uses a parallel key and installation screws made of stainless steel.

Output Shaft: Stainless Steel



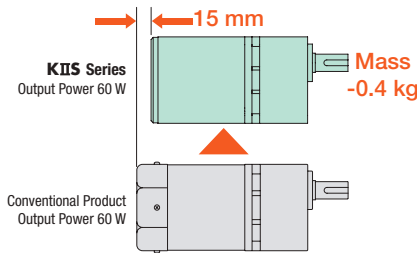
*Some products does not use a stainless steel shaft.

For details, refer to the product line on page 01-94 or the " ■ General Specifications" on page 01-112.

Compact and Lightweight Design

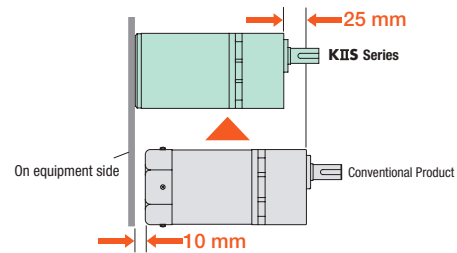
Shorter Length and Lighter Weight

Higher efficiency has allowed the removal of the fan found on a conventional product, which has resulted in a smaller and lighter unit. For a 60 W motor, the overall length is 15 mm shorter, and the weight is 0.4 kg lighter.



Equipment Space is Smaller Too

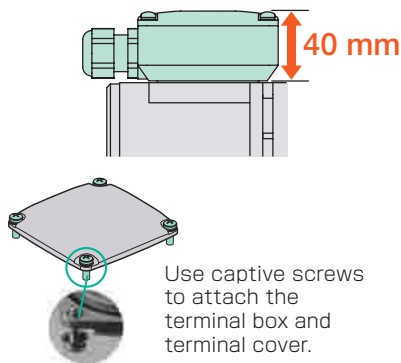
When a motor with a fan is installed, space must be left behind the motor to allow for air flow, but because these are fanless, it is possible to save a maximum of 25 mm compared to a conventional product.



Slim Body Terminal Box (Terminal Box Type)

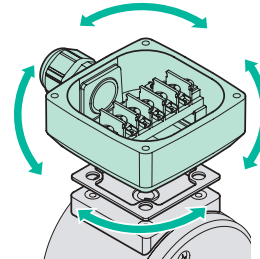
Easy-to-Wire Slim Body Terminal Box

A slim terminal box was designed to make wiring the terminal block easier.



4 Possible Cable Outlet Directions

The cable outlet can be rotated in 90° increments for 4 possible directions.



Cost Effective

High Performance at Reasonable Prices

Despite its high performance and many features, the **KIIS** Series is more cost effective than a similar conventional product.



KIIS Series
Motor: 60 W
Terminal Box Type
Gearhead: Gear
Ratio 1/30
SGD274
(List price)



Oriental Motor Conventional Product
World K Series
Motor: 60 W
Terminal Box Type
Gearhead: Gear Ratio 1/30
SGD304
(List price)

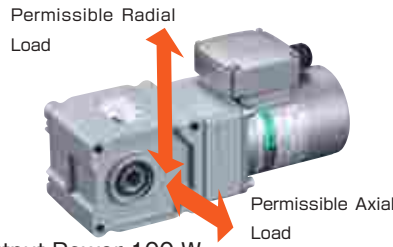
International Standards

This series conforms to the UL/CSA Standards and the China Compulsory Certification System (CCC System), and also have the CE Marking (Low Voltage Directive) affixed.



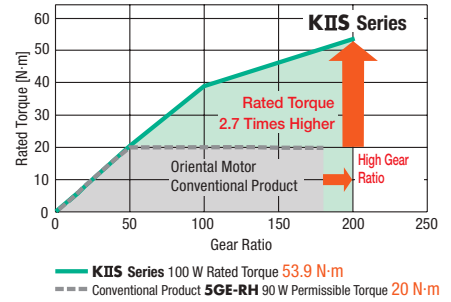
Utilizes a Gearhead with Excellent Permissible Torque and Strength

● Hypoid Right-Angle Hollow Shaft **JH** Gear



Output Power 100 W
 Permissible Radial Load (10 mm from installation surface) 1291 N
 Permissible Axial Load 343 N

The new hypoid right-angle gearhead uses high strength hypoid gears. This also increases the radial load and axial load at the output shaft and improves equipment compactness and reliability.

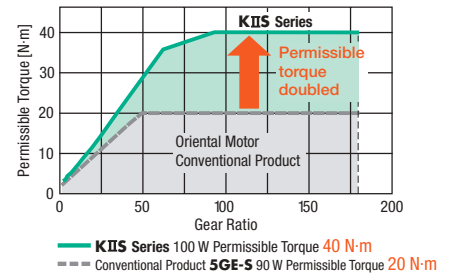


● Parallel Shaft Gearhead **GV** Gear



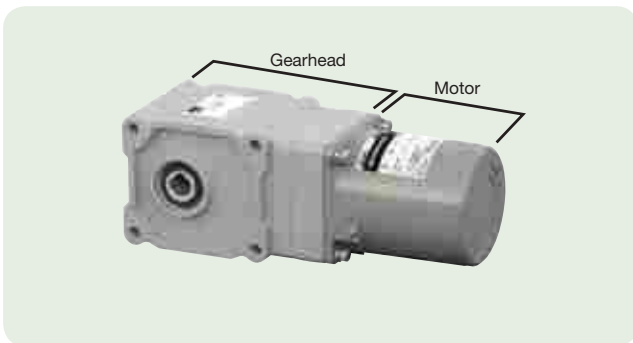
Output Power 100 W
 Permissible Radial Load 500 N (10 mm from the end of the output shaft)
 Permissible Axial Load 150 N

By increasing the size of the output shaft bearing and the use of carburized gears, the permissible radial load and the permissible axial load are up to twice of that of conventional products.

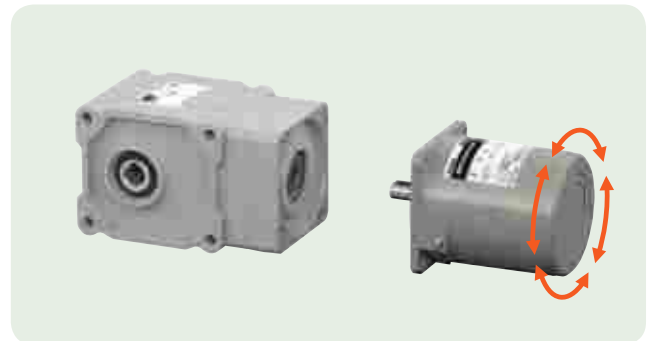


Pre-Assembled Motor and Gearhead (Hypoid Right-Angle Hollow Shaft **JH** Gear, Parallel Shaft Gearhead **GV** Gear)

The motor and gearhead are delivered pre-assembled. This reduces the time required for assembly by the client, and allows for immediate installation on the equipment.



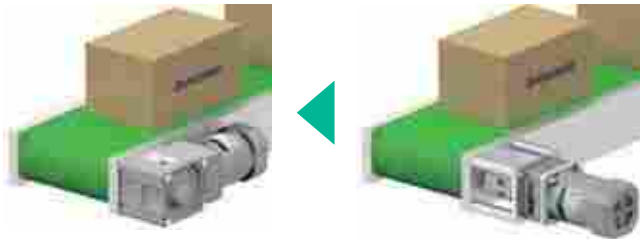
The gearhead is removable. The motor position can be rotated in 90° increments, and the lead wire outlet direction can also be changed. In addition, the gearhead can be purchased separately, allowing for changes to the gear ratio or maintenance replacement.



Cost and Space Saving

● Hypoid Right-Angle Hollow Shaft **JH** Gear

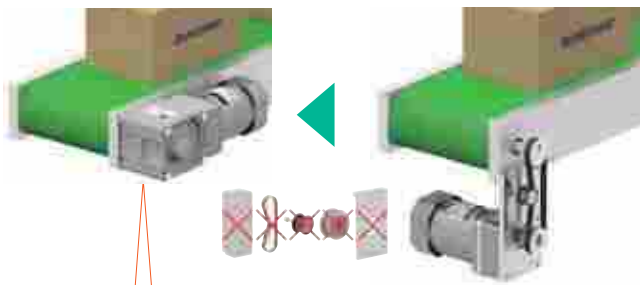
Motor mounted perpendicular to the drive shaft in order to save space.



Reduces overhang from conveyor

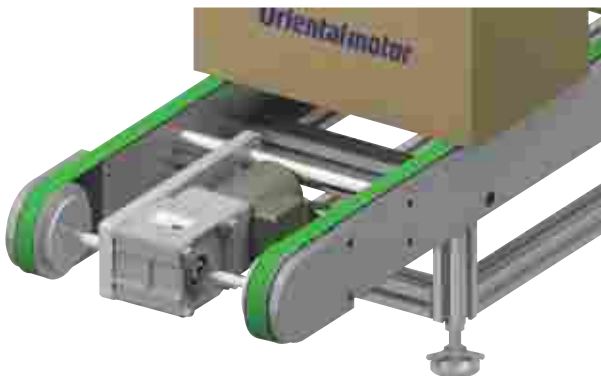


Reduce costs by using direct connection to the hypoid right-angle hollow shaft **JH** gear drive shaft.



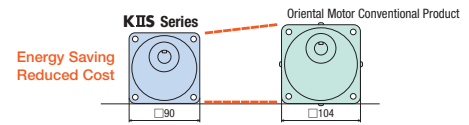
- Reduced Number of Parts
 - Reduced Assembly Time
 - Reduced Design & Assembly Time
- ▶ Reduced Cost
Higher Design Efficiency

Conveyor drive rollers can be installed on both ends of the load shaft of a hollow shaft type. The equipment can be made even smaller compared to when the motor is installed on the side of the conveyor.



● Parallel Shaft Gearhead **GV** Gear

Downsizing is possible by replacing conventional products with the **KIIS** Series. If a smaller size motor can be selected, the power consumption and purchase cost can be reduced.

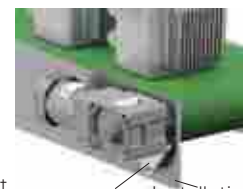


Frame size	□ 90 mm	□ 104 mm
Motor Output Power	100 W	200 W
Power Supply	Three-Phase 230 VAC 60 Hz	
Maximum Permissible Torque	40 N · m	40 N · m
Power Consumption	140 W	310 W
Output Shaft Material	Stainless Steel	Iron
List Price	SGD291	SGD409

Use of a torque arm (accessory → page 01-119) allows for even greater reductions in installation time and effort. (Hollow Shaft Type)



Application Example




Advantages of installation with a torque arm

- Easy centering with equipment
- Combines connection to equipment with an anti-spin mechanism

For a video showing the installation method when using a torque arm, please see the Oriental Motor website.



Product Line of KIIS Series

● Induction Motors Hypoid Right-Angle JH Gear → Page 01-96



Voltage [VAC]	Type	Appearance, Material of Output Shaft	Motor Frame Size [mm], Output Power			
			□ 80		□ 90	
			30 W	40 W	60 W	100 W
Three-Phase 220/230/240	Terminal Box Type	 Stainless Steel Shaft	●	●	—	●*

*100 W product is not compatible with three-phase 240 VAC.

● Induction Motors Parallel Shaft Gearhead GV Gear, Round Shaft Type → Page 01-102

Voltage [VAC]	Type	Appearance, Material of Output Shaft	Motor Frame Size [mm], Output Power			
			□ 80		□ 90	
			30 W	40 W	60 W	100 W
Three-Phase 200 Three-Phase 220/230	Terminal Box Type	 Steel Shaft	—	—	●	●
	Lead Wire Type	 Steel Shaft	—	—	●	●

● Electromagnetic Brake Motors Parallel Shaft Gearhead GV Gear, Round Shaft Type → Page 01-106

Voltage [VAC]	Type	Appearance, Material of Output Shaft	Motor Frame Size [mm], Output Power			
			□ 80		□ 90	
			30 W	40 W	60 W	100 W
Three-Phase 200 Three-Phase 220/230	Terminal Box Type	 Steel Shaft	—	—	●	●
	Cable Type	 Steel Shaft	—	—	●	●

System Configuration

KIIS Series Induction Motor

Hypoid Right-Angle Hollow Shaft **JH** Gear



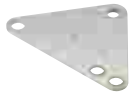
or

Parallel Shaft Gearhead **GV** Gear (Motor · Gearhead)

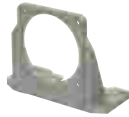


AC Power Supply (Main power supply)

Accessories



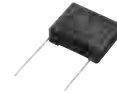
Torque Arms
→ Page 01-119
Can be used to Right-Angle Hollow Shaft Hypoid **JH** gears.



Mounting Brackets
→ Page 01-119
Can be used to Parallel Shaft Gearhead **GV** gears and Round Shaft types.



Flexible Couplings
→ Page 01-120



CR Circuit for Surge Suppression
→ Page 01-120

System Configuration Example

Induction Motor Hypoid Right-Angle Hollow Shaft JH Gear 5IK100VKEST-5H10S SGD481	+	Sold Separately <table border="1"> <tr> <td style="text-align: center;">Torque Arm TAF2S-15-NS SGD26</td> <td style="text-align: center;">CR Circuit for Surge Suppression EPCR1201-2 SGD4</td> </tr> </table>	Torque Arm TAF2S-15-NS SGD26	CR Circuit for Surge Suppression EPCR1201-2 SGD4
Torque Arm TAF2S-15-NS SGD26	CR Circuit for Surge Suppression EPCR1201-2 SGD4			

The system configuration shown above is an example. Other combinations are available.

Product Number Code

Hypoid Right-Angle Hollow Shaft **JH** Gear

5 I K 100 V K E S T - 5 H 10 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

Motor Product Name		Gearhead Product Name	
①	Motor Frame Size	4: 80 mm	5: 90 mm
②	Motor Type	I: Induction Motor	
③	Series	K: KII Series	
④	Output Power (W)	(Example) 100: 100 W	
⑤	Motor Shaft Type	V: Three-Phase High Efficiency Motor	
⑥	Power Supply Voltage/ Number of Poles	K: Round Shaft Type (with Key)	
⑦	Terminal Box Type	ES: Three-Phase 220/230/240 VAC 4-Pole	
⑧	Motor Shaft Type	T: Terminal Box Type	
⑨	Gearhead Frame Size	4: 80 mm	5: 90 mm
⑩	Type of Gearhead	H: Hypoid Right-Angle Hollow Shaft JH Gear	
⑪	Gear Ratio	Number: Gear Ratio for Gearhead	
⑫	Materials of Output Shaft	S: Stainless Steel	

Parallel Shaft Gearhead **GV** Gear

5 I K 100 V E S 2 T2 - 15

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Motor Frame Size	4: 80 mm	5: 90 mm
②	Motor Type	I: Induction Motor	
③	Series	K: KII Series	
④	Output Power (W)	(Example) 100: 100 W	
⑤	Motor Shaft Type	V: Three-Phase High Efficiency Motor	
⑥	Power Supply Voltage/ Number of Poles	ES: Three-Phase 220/230/240 VAC 4-Pole	
⑦	Terminal Box Type	2: RoHS-Compliant	
⑧	Motor Shaft Type	M: Power Off Activated Electromagnetic Brake Type	
⑨	Terminal Box Type	Blank: Lead Wire Type or Cable Type	
⑩	Gear Ratio and Shaft Configuration	Number: Gear Ratio for Gearhead A: Round Shaft Type	

Round Shaft Type

5 I K 100 V A - E S 2 T2

① ② ③ ④ ⑤ ⑩ ⑥ ⑦ ⑧ ⑨

①	Motor Frame Size	4: 80 mm	5: 90 mm
②	Motor Type	I: Induction Motor	
③	Series	K: KII Series	
④	Output Power (W)	(Example) 100: 100 W	
⑤	Motor Shaft Type	V: Three-Phase High Efficiency Motor	
⑥	Power Supply Voltage/ Number of Poles	ES: Three-Phase 220/230/240 VAC 4-Pole	
⑦	Terminal Box Type	2: RoHS-Compliant	
⑧	Motor Shaft Type	M: Power Off Activated Electromagnetic Brake Type	
⑨	Terminal Box Type	Blank: Lead Wire Type or Cable Type	
⑩	Gear Ratio and Shaft Configuration	Number: Gear Ratio for Gearhead A: Round Shaft Type	

Induction Motors

30 W

□80 mm

KIIS Series Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft



Terminal Box Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Terminal Box Type	Output W	Voltage V	Frequency Hz	Current A
4IK30VKEST-4H□S	30	Three-Phase 220	50	0.23
			60	0.20
		Three-Phase 230	50	0.24
			60	0.20
		Three-Phase 240	50	0.25
			60	0.20

Gear Ratio		10	15	20	30	50	100	200
Speed [r/min]	50 Hz	150	100	75	50	30	15	7.5
	60 Hz	180	120	90	60	36	18	9
Rated Torque [N·m]	50 Hz	1.13	1.69	2.3	3.4	5.6	11.3	20.6
	60 Hz	0.94	1.4	1.87	2.8	4.7	9.4	18.7
Starting Torque [N·m]	50 Hz	1.35	2.0	2.7	4.1	6.8	13.5	20.6
	60 Hz	0.9	1.35	1.8	2.7	4.5	9.0	18.0
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]		100	225	400	900	2500	10000	40000
Permissible Radial Load [N]*	Instantaneous Stop	33.3	75	133	300	833	3333	13333
	10 mm from Installation Surface	311	400	488	622	799	888	978
	20 mm from Installation Surface	265	341	417	531	682	758	836
Permissible Axial Load [N]		88	108	137	177	226	245	275

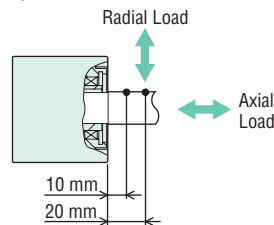
*The radial load at each distance can be calculated with a formula. → Page 1-118

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is up to 15% less, depending on the load.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 100 Hz or less when driving in combination with the inverter.

Note

- Do not perform instantaneous bi-directional operations.

◇ Load Position



Distance from Installation Surface

Product Line

● Terminal Box Type

Product Name	Gear Ratio	List Price
4IK30VKEST-4H□S	10, 15, 20	SGD426
	30, 50, 100	SGD438
	200	SGD449

● Other Product Line

Terminal Box Type
Terminal Box Position: 2 positions selectable

- For details on these products, please contact technical support or your nearest Oriental Motor sales office.

Included

Installation Screws	Parallel Key (Stainless Steel)	Safety Cover	Operating Manual
1 set	1 piece	1 piece	1 copy

- A number indicating the gear ratio is entered where the box □ is located within the product name.

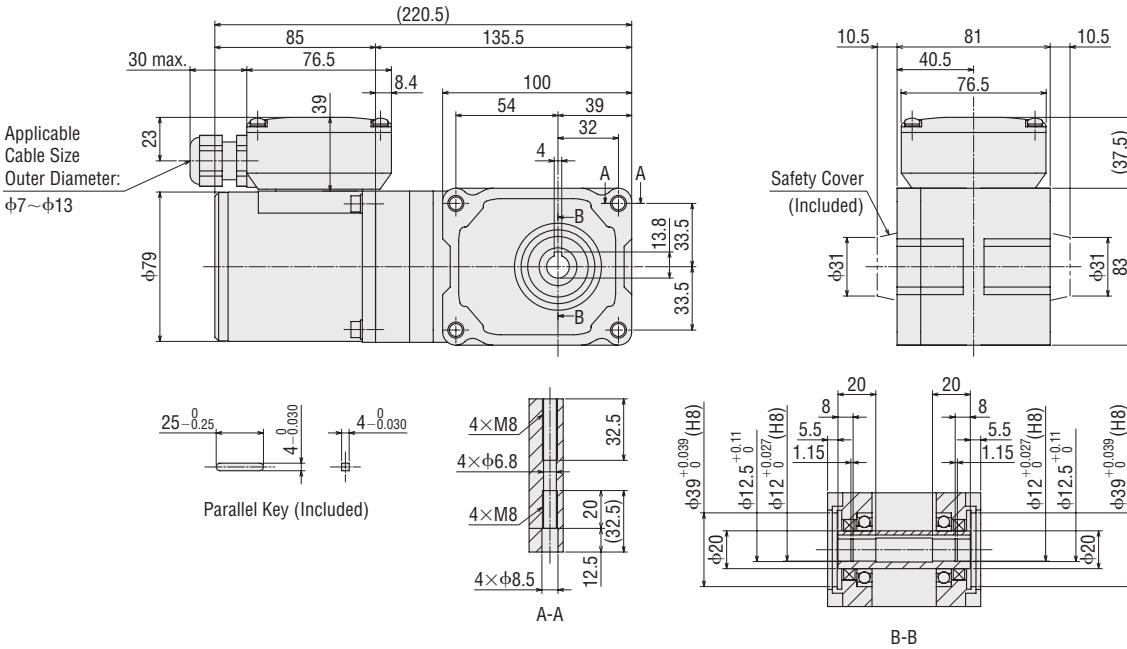
Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
4IK30VKEST-4H□S	4IK30VKEST	4H□S	3.7	A1673



Induction Motors

40 W

□ 90 mm

KIIS Series Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft



Terminal Box Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Terminal Box Type	Output W	Voltage V	Frequency Hz	Current A
5IK40VKEST-5H□S	40	Three-Phase 220	50	0.27
			60	0.24
		Three-Phase 230	50	0.29
			60	0.24
		Three-Phase 240	50	0.30
			60	0.25

Gear Ratio		10	15	20	30	50	100	200
Speed [r/min]	50 Hz	150	100	75	50	30	15	7.5
	60 Hz	180	120	90	60	36	18	9
Rated Torque [N·m]	50 Hz	1.38	2.1	2.8	4.1	6.9	15.1	30.3
	60 Hz	1.15	1.73	2.3	3.5	5.8	12.7	25.3
Starting Torque [N·m]	50 Hz	2.0	3.0	4.0	6.0	10.0	22.0	44.0
	60 Hz	1.3	1.95	2.6	3.9	6.5	14.3	28.6
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	Instantaneous Stop	200	450	800	1800	5000	20000	80000
	10 mm from Installation Surface	66.7	150	267	600	1667	6667	26667
Permissible Radial Load [N]*	10 mm from Installation Surface	415	554	692	923	1112	1196	1291
	20 mm from Installation Surface	363	484	605	806	971	1045	1127
Permissible Axial Load [N]		108	147	186	245	294	324	343

*The radial load at each distance can be calculated with a formula.

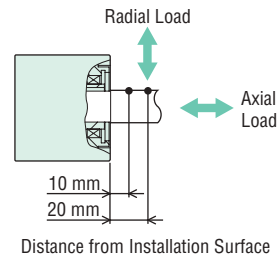
→ Page 01-118

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is up to 15% less, depending on the load.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 80 Hz or less (60 Hz or less with gear ratio 10) when driving in combination with the inverter.

Note

- Do not perform instantaneous bi-directional operations.

◇ Load Position



Product Line

● Terminal Box Type

Product Name	Gear Ratio	List Price
5IK40VKEST-5H□S	10, 15, 20	SGD443
	30, 50, 100	SGD454
	200	SGD466

● Other Product Line

Terminal Box Type Terminal Box Position: 2 positions selectable
--

- For details on these products, please contact technical support or your nearest Oriental Motor sales office.

Included

Installation Screws	Parallel Key (Stainless Steel)	Safety Cover	Operating Manual
1 set	1 piece	1 piece	1 copy

- A number indicating the gear ratio is entered where the box □ is located within the product name.

Induction Motors

100 W

□ 90 mm

KIIS Series Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft



Terminal Box Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Terminal Box Type	Output W	Voltage V	Frequency Hz	Current A
5IK100VKEST-5H□S	100	Three-Phase 220	50	0.49
			60	0.46
		Three-Phase 230	50	0.49
			60	0.45

Gear Ratio		10	15	20	30	50	100	200
Speed [r/min]	50 Hz	150	100	75	50	30	15	7.5
	60 Hz	180	120	90	60	36	18	9
Rated Torque [N·m]	50 Hz	4.1	6.1	8.3	12.7	20.6	39.2	53.9
	60 Hz	4.1	6.1	8.2	12.4	20.6	39.2	53.9
Starting Torque [N·m]	50 Hz	4.1	6.1	8.3	12.7	20.6	39.2	53.9
	60 Hz							
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]		200	450	800	1800	5000	20000	80000
	Instantaneous Stop	66.7	150	267	600	1667	6667	26667
Permissible Radial Load [N]*	10 mm from Installation Surface	415	554	692	923	1112	1196	1291
	20 mm from Installation Surface	363	484	605	806	971	1045	1127
Permissible Axial Load [N]		108	147	186	245	294	324	343

*The radial load at each distance can be calculated with a formula.

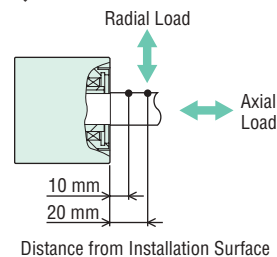
→ Page 01-118

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is up to 15% less, depending on the load.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Note

- Do not perform instantaneous bi-directional operations.

◇ Load Position



Product Line

● Terminal Box Type

Product Name	Gear Ratio	List Price
5IK100VKEST-5H□S	10, 15, 20	SGD481
	30, 50, 100	SGD493
	200	SGD504

● Other Product Line

Terminal Box Type Terminal Box Position: 2 positions selectable
--

- For details on these products, please contact technical support or your nearest Oriental Motor sales office.

Included

Installation Screws	Parallel Key (Stainless Steel)	Safety Cover	Operating Manual
1 set	1 piece	1 piece	1 copy

● A number indicating the gear ratio is entered where the box □ is located within the product name.

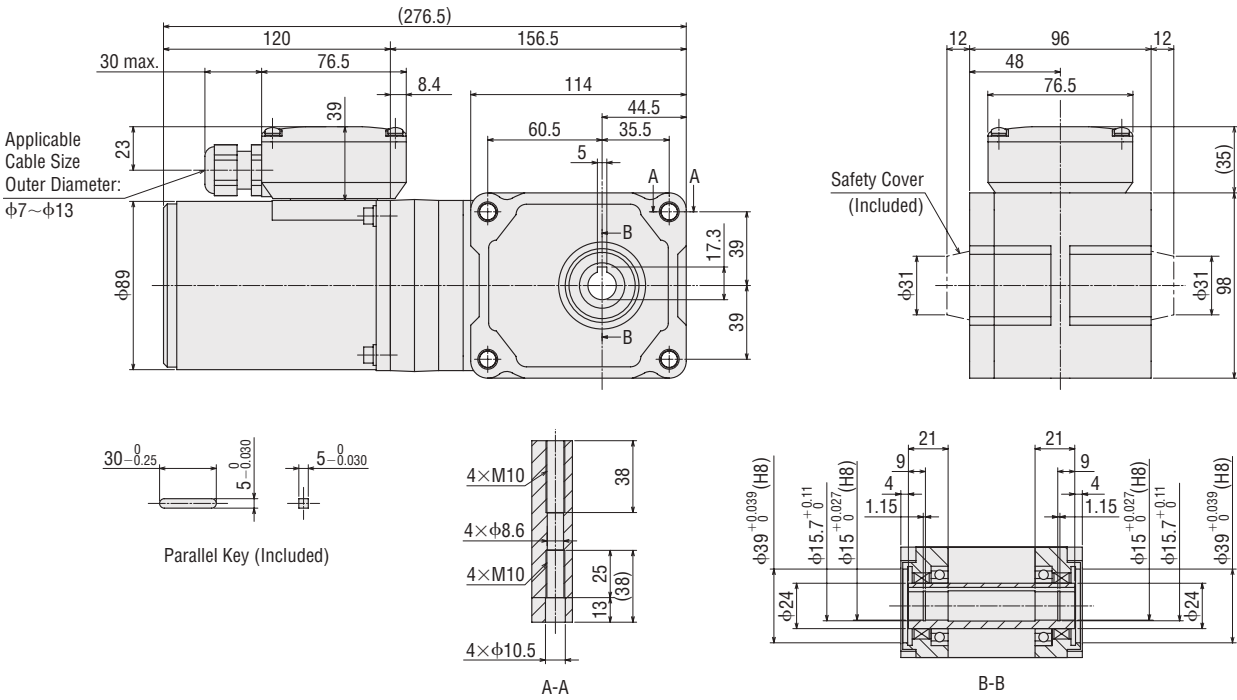
Dimensions (Unit: mm)

- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Terminal Box Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD
5IK100VKEST-5H□S	5IK100VKEST	5H□S	6.0	A1675



Induction Motors

60 W

□ 90 mm

KIIS Series Parallel Shaft Gearhead GV Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed
Terminal Box Type	Lead Wire Type	W	V	Hz	A	mN·m	mN·m	r/min
5IK60VEST2-□ 5IK60VA-EST2	5IK60VES-□ 5IK60VA-ES	60	Three-Phase 220	50	0.37	600	410	1400
				60	0.33	500	350	1670
		60	Three-Phase 230	50	0.38	600	410	1400
				60	0.33	500	350	1670

***5IK60VA-EST2** is compliant with the Electrical Appliance and Material Safety Law.

● The values in the table are characteristics for the motor only.

● No built-in overheat protection device (thermal protector).

When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.

● Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Product Line

● Parallel Shaft Gearhead **GV** Gear

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	5IK60VEST2-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD263
		25, 30, 36, 50, 60, 75, 90, 100	SGD274
		120, 150, 180	SGD285
		250, 300	SGD321
Lead Wire Type	5IK60VES-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD239
		25, 30, 36, 50, 60, 75, 90, 100	SGD251
		120, 150, 180	SGD262
		250, 300	SGD298

The following items are included with each product.

Motor, Gearhead, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

Type	Product Name	List Price
Terminal Box Type	5IK60VA-EST2	SGD143
Lead Wire Type	5IK60VA-ES	SGD119

The following items are included with each product.

Motor, Operating Manual

Permissible Torque

● The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.

The actual speed is max. 10% less, depending on the load.

● 50 Hz

Unit: N·m

Product Name	Speed r/min	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5	
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	
5IK60VEST2-□, 5IK60VES-□		1.8	2.2	2.8	3.3	4.6	5.5	6.6	8.8	10.6	12.7	17.6	21.2	26.4	30	30	30	30	30	30	30	30

● 60 Hz

Unit: N·m

Product Name	Speed r/min	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6	
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	
5IK60VEST2-□, 5IK60VES-□		1.6	1.9	2.4	2.8	3.9	4.7	5.7	7.5	9.0	10.8	15.1	18.1	22.6	27.1	30	30	30	30	30	30	30

● A number indicating the gear ratio is entered where the box □ is located within the product name.

■ Dimensions (Unit: mm)

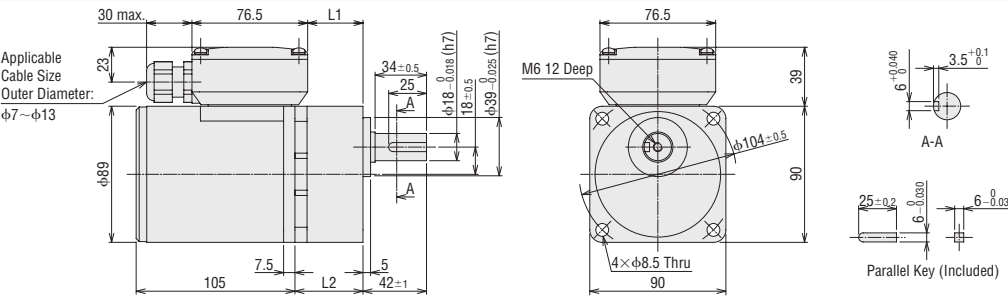
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

● Parallel Shaft Gearhead **GV** Gear

◇ Terminal Box Type

2D & 3D CAD

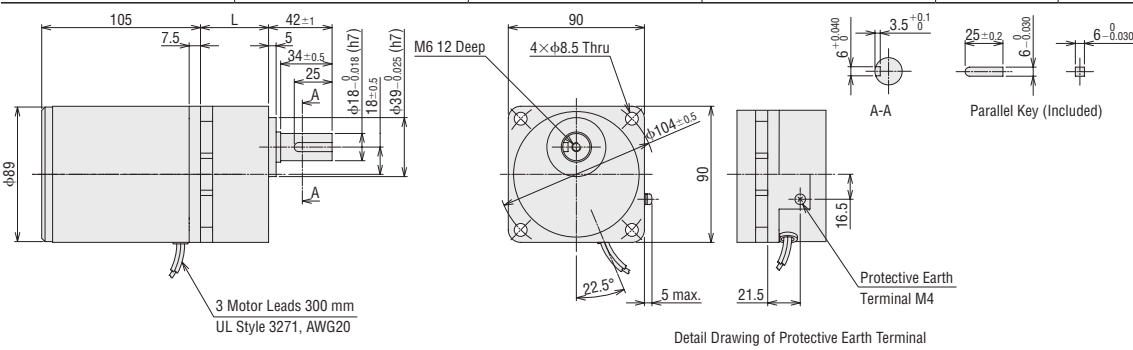
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5IK60VEST2 -□	5IK60GVGH-EST2	5GVH□B	5~18	36.6	45	4.1	A1314A
			25~100	49.6	58		A1314B
			120~300	55.6	64		A1314C



◇ Lead Wire Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK60VES -□	5IK60GVGH-ES	5GVH□B	5~18	45	3.8	A1221A
			25~100	58		A1221B
			120~300	64		A1221C

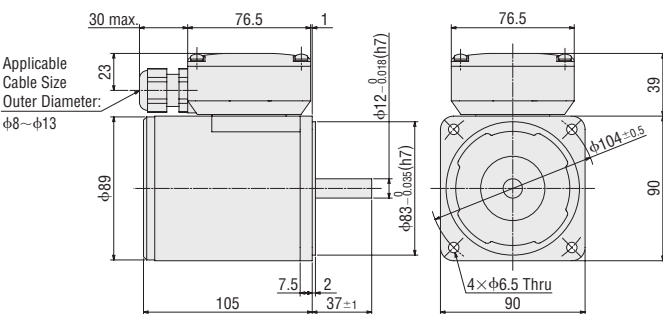


● Round Shaft Type

◇ Terminal Box Type

5IK60VA-EST2

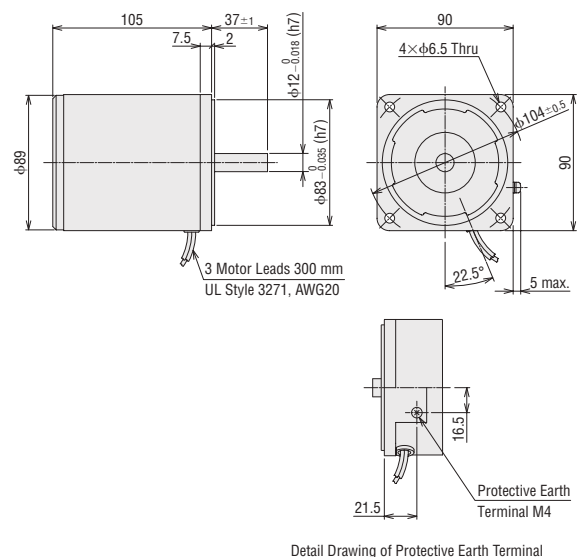
Mass: 2.6 kg 2D CAD A1315 3D CAD



◇ Lead Wire Type

5IK60VA-ES

Mass: 2.3 kg 2D CAD A1226 3D CAD



Induction Motors

100 W

□ 90 mm

KIIS Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Terminal Box Type

Lead Wire Type

01

KII / KIIS Series

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed
Terminal Box Type	Lead Wire Type	W	V	Hz	A	mN-m	mN-m	r/min
5IK100VEST2-□ 5IK100VA-EST2	5IK100VES-□ 5IK100VA-ES	100	Three-Phase 220	50	0.55	850	690	1400
				60	0.48	700	570	1680
		100	Three-Phase 230	50	0.57	850	690	1400
				60	0.48	700	570	1680

***5IK100VA-EST2** is compliant with the Electrical Appliance and Material Safety Law.

- The values in the table are characteristics for the motor only.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Product Line

● Parallel Shaft Gearhead **GV** Gear

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	5IK100VEST2-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD283
		25, 30, 36, 50, 60	SGD304
		75, 90, 100, 120, 150, 180	SGD314
Lead Wire Type	5IK100VES-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD260
		25, 30, 36, 50, 60	SGD281
		75, 90, 100, 120, 150, 180	SGD291

The following items are included with each product.
Motor, Gearhead, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

Type	Product Name	List Price
Terminal Box Type	5IK100VA-EST2	SGD162
Lead Wire Type	5IK100VA-ES	SGD139

The following items are included with each product.
Motor, Operating Manual

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 10% less, depending on the load.

● 50 Hz

Unit: N-m

Product Name	Speed r/min	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VEST2-□, 5IK100VES-□		3.1	3.7	4.7	5.6	7.8	9.3	10.7	14.8	17.8	21.4	29.7	35.6	40	40	40	40	40	40

● 60 Hz

Unit: N-m

Product Name	Speed r/min	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VEST2-□, 5IK100VES-□		2.6	3.1	3.8	4.6	6.4	7.7	8.8	12.3	14.7	17.6	24.5	29.4	34.6	40	40	40	40	40

- A number indicating the gear ratio is entered where the box □ is located within the product name.

■ Dimensions (Unit: mm)

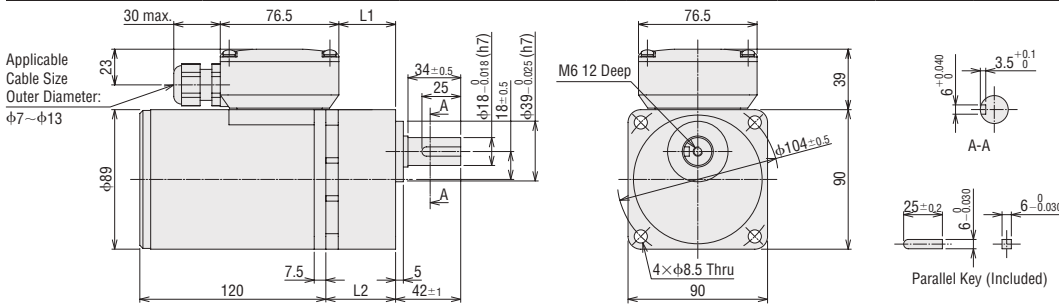
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

● Parallel Shaft Gearhead **GV** Gear

◇ Terminal Box Type

2D & 3D CAD

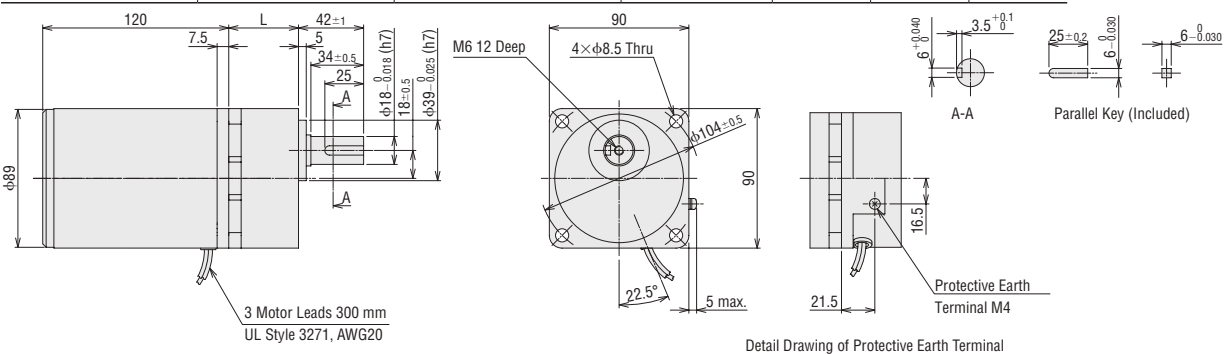
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L1	L2	Mass kg	2D CAD
5IK100VEST2 -□	5IK100VGVR-EST2	5GVR□B	5~15	36.6	45	4.7	A1316A
			18~36	49.6	58		A1316B
			50~180	61.6	70		A1316C



◇ Lead Wire Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK100VES -□	5IK100VGVR-ES	5GVR□B	5~15	45	4.4	A1223A
			18~36	58		A1223B
			50~180	70		A1223C

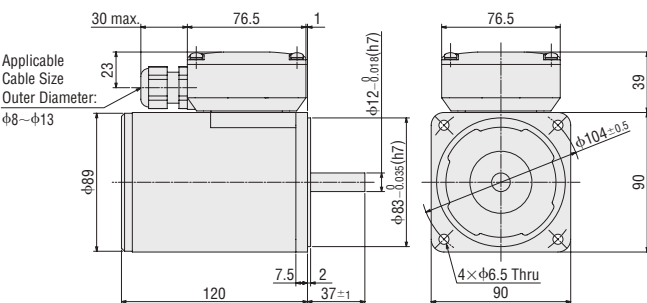


● Round Shaft Type

◇ Terminal Box Type

5IK100VA-EST2

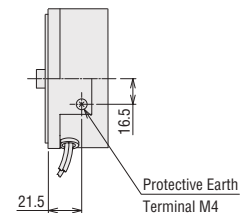
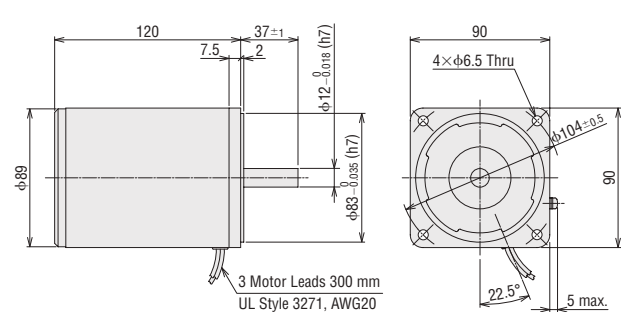
Mass: 3.2 kg 2D CAD A1317 3D CAD



◇ Lead Wire Type

5IK100VA-ES

Mass: 2.9 kg 2D CAD A1228 3D CAD



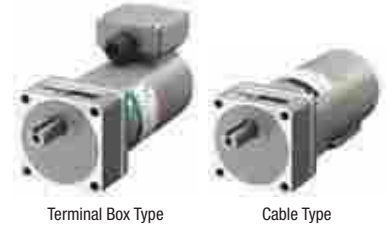
Detail Drawing of Protective Earth Terminal

Electromagnetic Brake Motors

60 W

□ 90 mm

KIIS Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Terminal Box Type

Cable Type

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed
Terminal Box Type	Cable Type	W	V	Hz	A	mN·m	mN·m	r/min
5IK60VESMT2-□ 5IK60VA-ESMT2	5IK60VESM-□ 5IK60VA-ESM	60	Three-Phase 220	50	0.37	600	410	1400
				60	0.33	500	350	1670
		60	Three-Phase 230	50	0.38	600	410	1400
				60	0.33	500	350	1670

***5IK60VA-ESMT2** is compliant with the Electrical Appliance and Material Safety Law.

- The values in the table are characteristics for the motor only.
- No built-in overheat protection device (thermal protector).
- When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

● Electromagnetic Brake (Power off activated type)

Product Name		Voltage	Frequency	Current	Input	Static Friction Torque
Terminal Box Type	Cable Type	V	Hz	A	W	mN·m
5IK60VESMT2-□ 5IK60VA-ESMT2	5IK60VESM-□ 5IK60VA-ESM	Three-Phase 220	50	0.04	6	500
			60			
		Three-Phase 230	50	0.04	6	500
			60			

● The values in the table are characteristics for the motor only.

Product Line

● Parallel Shaft Gearhead **GV** Gear

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	5IK60VESMT2-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD400
		25, 30, 36, 50, 60, 75, 90, 100	SGD411
		120, 150, 180	SGD423
		250, 300	SGD459
Cable Type	5IK60VESM-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD377
		25, 30, 36, 50, 60, 75, 90, 100	SGD388
		120, 150, 180	SGD399
		250, 300	SGD436

The following items are included with each product.
Motor, Gearhead, Installation Screws, Parallel Key, Operating Manual

● Round Shaft Type

Type	Product Name	List Price
Terminal Box Type	5IK60VA-ESMT2	SGD280
Cable Type	5IK60VA-ESM	SGD257

The following items are included with each product.
Motor, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 10% less, depending on the load

50 Hz

Unit: N·m

Product Name	Speed r/min	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3	6	5
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5IK60VESMT2-□ 5IK60VESM-□		1.8	2.2	2.8	3.3	4.6	5.5	6.6	8.8	10.6	12.7	17.6	21.2	26.4	30	30	30	30	30	30	30

60 Hz

Unit: N·m

Product Name	Speed r/min	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	7.2	6
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
5IK60VESMT2-□ 5IK60VESM-□		1.6	1.9	2.4	2.8	3.9	4.7	5.7	7.5	9.0	10.8	15.1	18.1	22.6	27.1	30	30	30	30	30	30

- A number indicating the gear ratio is entered where the box □ is located within the product name.

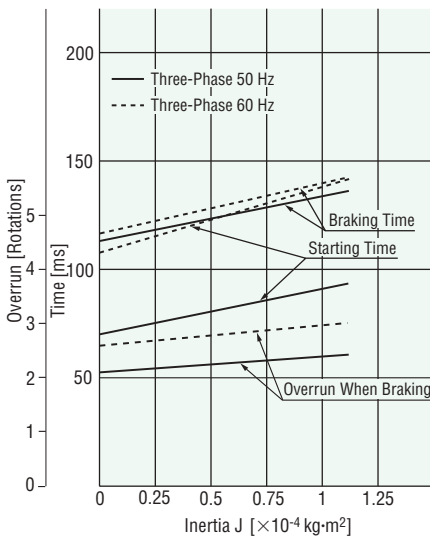
Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Starting and Braking Characteristics (Reference values - motor only)



Dimensions (Unit: mm)

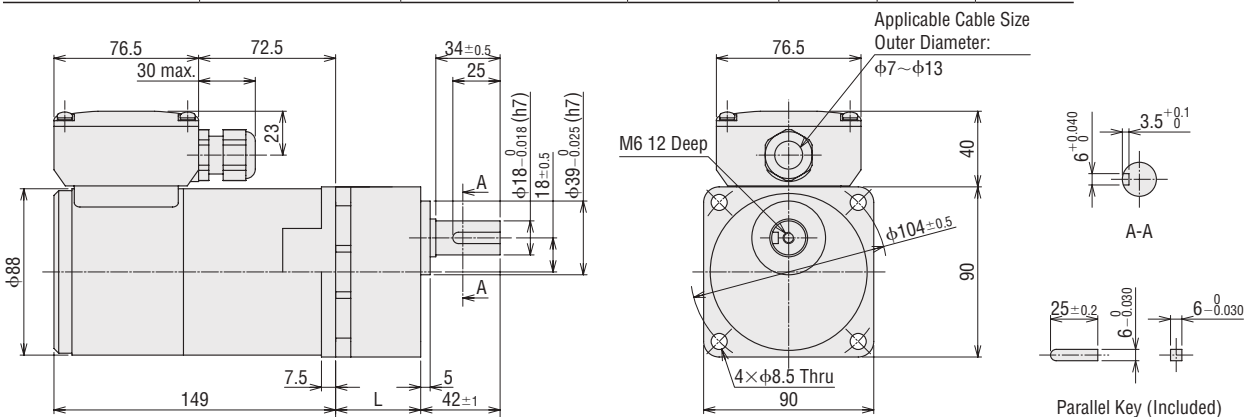
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions, and the cable type cable outlet in 2 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Parallel Shaft Gearhead GV Gear

Terminal Box Type

2D & 3D CAD

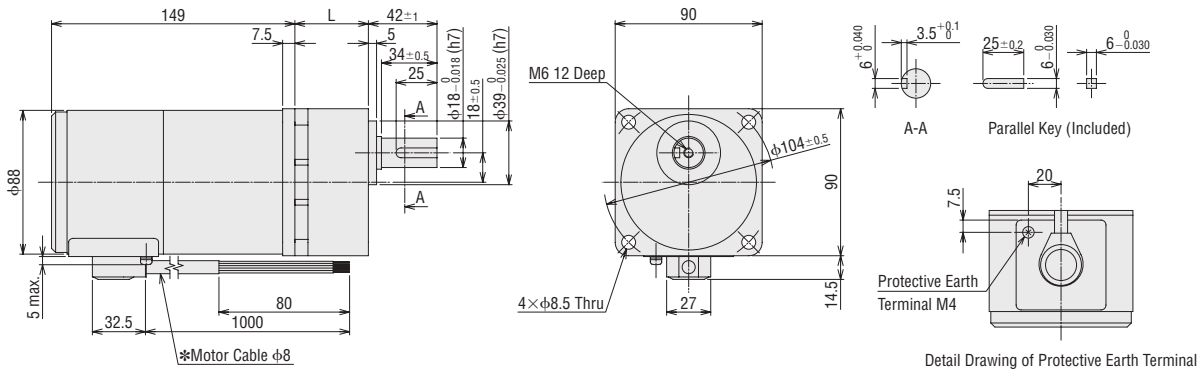
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK60VESMT2-□	5IK60VGVH-ESMT2	5GVH□B	5~18	45	4.8	A1321A
			25~100	58		A1321B
			120~300	64		A1321C



◇ Cable Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK60VESM-□	5IK60GVGH-ESM	5GVH□B	5~18	45	4.5	A1281A
			25~100	58		A1281B
			120~300	64		A1281C



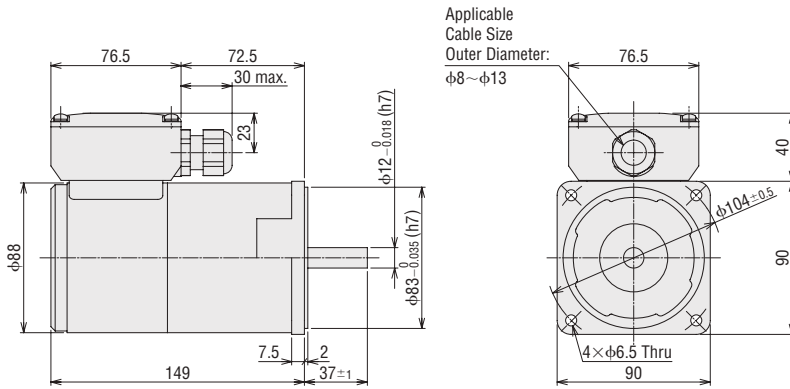
*Motor Cable Cores
 3 Motor Leads, UL Style 3271, AWG20
 2 Magnetic Brake Leads, UL Style 3266, AWG22

● Round Shaft Type

◇ Terminal Box Type

5IK60VA-ESMT2

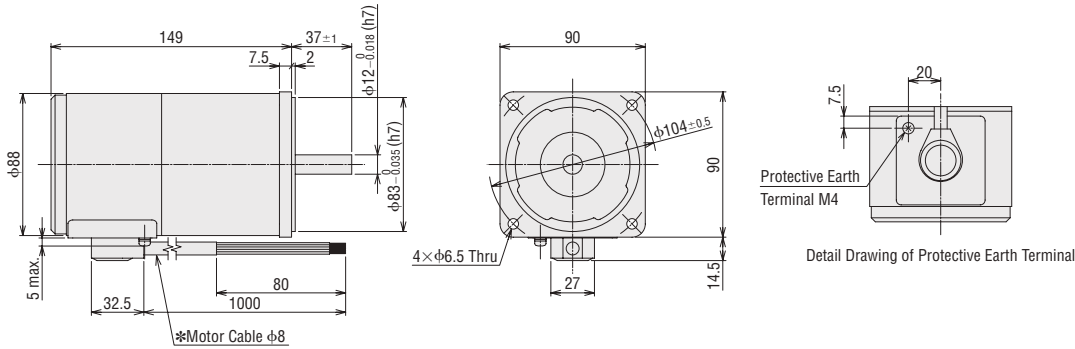
Mass: 3.3 kg 2D CAD A1322 3D CAD



◇ Cable Type

5IK60VA-ESM

Mass: 3.0 kg 2D CAD A1283 3D CAD



*Motor Cable Cores
 3 Motor Leads, UL Style 3271, AWG20
 2 Magnetic Brake Leads, UL Style 3266, AWG22

Electromagnetic Brake Motors

100 W

□ 90 mm

KIIS Series Parallel Shaft Gearhead **GV** Gear Round Shaft Type



Terminal Box Type

Cable Type

Specifications - Continuous Rating



Product Name Upper Level: Parallel Shaft Gearhead GV Gear Lower Level: Round Shaft Type		Output	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed
Terminal Box Type	Cable Type	W	V	Hz	A	mN·m	mN·m	r/min
5IK100VESMT2-□ 5IK100VA-ESMT2	5IK100VESM-□ 5IK100VA-ESM	100	Three-Phase 220	50	0.55	850	690	1400
				60	0.48	700	570	1680
		100	Three-Phase 230	50	0.57	850	690	1400
				60	0.48	700	570	1680

***5IK100VA-ESMT2** is compliant with the Electrical Appliance and Material Safety Law.

- The values in the table are characteristics for the motor only.
- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
- Use an inverter setting frequency of 120 Hz or less when driving in combination with the inverter.

Electromagnetic Brake (Power off activated type)

Product Name		Voltage	Frequency	Current	Input	Static Friction Torque
Terminal Box Type	Cable Type	V	Hz	A	W	mN·m
5IK100VESMT2-□ 5IK100VA-ESMT2	5IK100VESM-□ 5IK100VA-ESM	Three-Phase 220	50	0.04	6	500
			60			
		Three-Phase 230	50	0.04	6	500
			60			

● The values in the table are characteristics for the motor only.

Product Line

Parallel Shaft Gearhead **GV** Gear

Type	Product Name	Gear Ratio	List Price
Terminal Box Type	5IK100VESMT2-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD421
		25, 30, 36, 50, 60	SGD442
		75, 90, 100, 120, 150, 180	SGD452
Cable Type	5IK100VESM-□	5, 6, 7.5, 9, 12.5, 15, 18	SGD398
		25, 30, 36, 50, 60	SGD419
		75, 90, 100, 120, 150, 180	SGD429

The following items are included with each product.
Motor, Gearhead, Installation Screws, Parallel Key, Operating Manual

Round Shaft Type

Type	Product Name	List Price
Terminal Box Type	5IK100VA-ESMT2	SGD299
Cable Type	5IK100VA-ESM	SGD276

The following items are included with each product.
Motor, Operating Manual

● A number indicating the gear ratio is entered where the box □ is located within the product name.

Permissible Torque

- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is max. 10% less, depending on the load.

50 Hz

Unit: N·m

Product Name	Speed r/min	300	250	200	166	120	100	83	60	50	41	30	25	20	16.6	15	12.5	10	8.3
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VESMT2-□ 5IK100VESM-□		3.1	3.7	4.7	5.6	7.8	9.3	10.7	14.8	17.8	21.4	29.7	35.6	40	40	40	40	40	40

60 Hz

Unit: N·m

Product Name	Speed r/min	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
5IK100VESMT2-□ 5IK100VESM-□		2.6	3.1	3.8	4.6	6.4	7.7	8.8	12.3	14.7	17.6	24.5	29.4	34.6	40	40	40	40	40

- A number indicating the gear ratio is entered where the box □ is located within the product name.

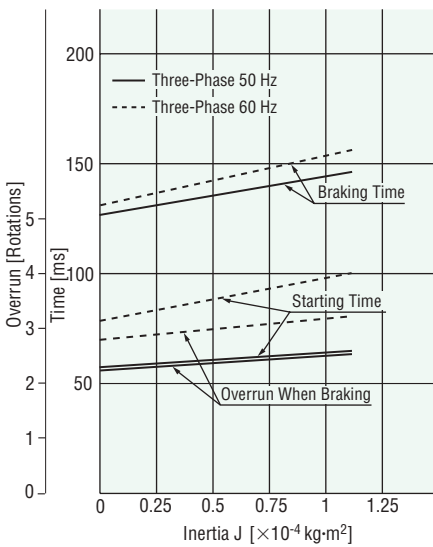
Permissible Radial Load and Permissible Axial Load

Permissible Inertia J

→ Page 01-116

→ Page 01-116

Starting and Braking Characteristics (Reference values - motor only)



Dimensions (Unit: mm)

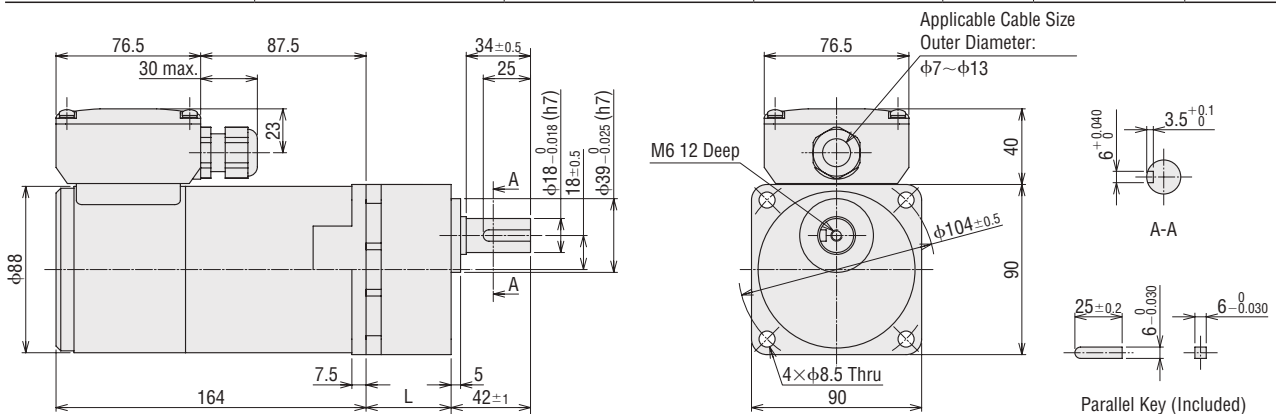
- Installation screws are included. Dimensions for installation screws → Page 01-117
- The terminal box cable outlet can be rotated and affixed in 4 possible directions, and the cable type cable outlet in 2 possible directions.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

Parallel Shaft Gearhead GV Gear

Terminal Box Type

2D & 3D CAD

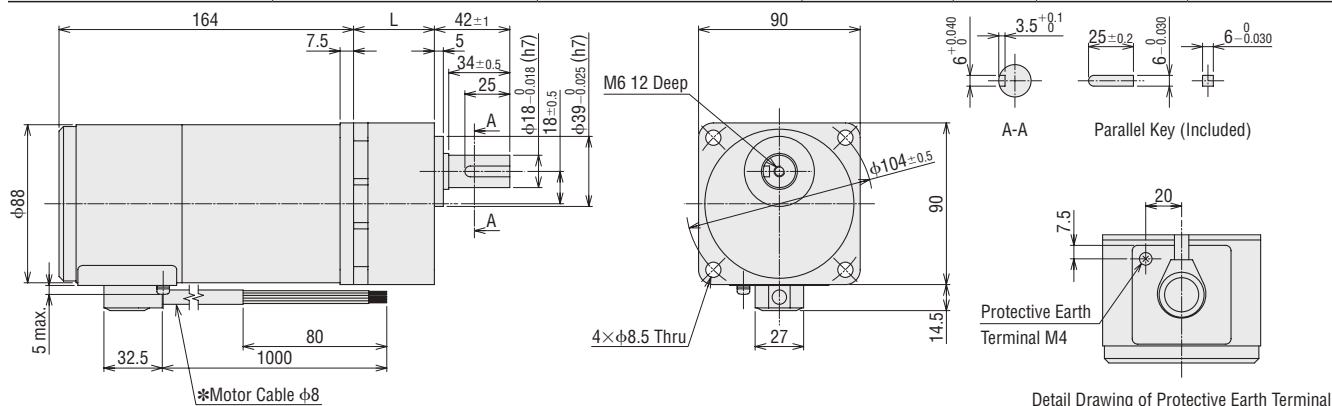
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK100VESMT2-□	5IK100VGVR-ESMT2	5GVR□B	5~15	45	5.4	A1323A
			18~36	58		A1323B
			50~180	70		A1323C



◇ Cable Type

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
5IK100VESM-□	5IK100VGVR-ESM	5GVR□B	5~15	45	5.1	A1285A
			18~36	58		A1285B
			50~180	70		A1285C



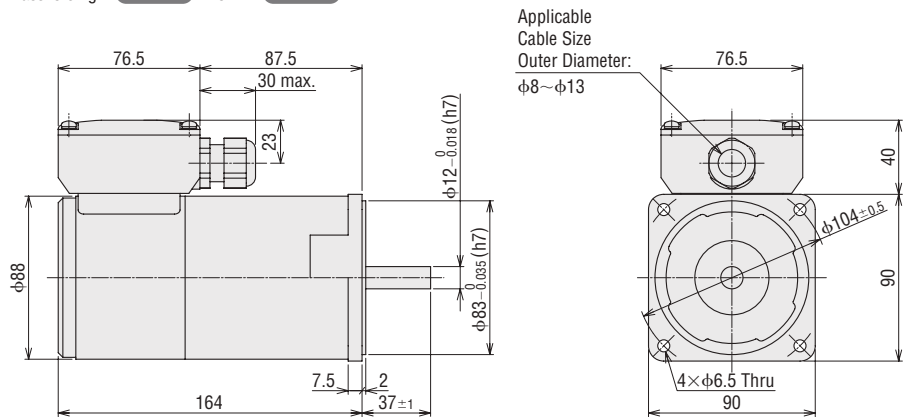
*Motor Cable Cores
 3 Motor Leads, UL Style 3271, AWG20
 2 Magnetic Brake Leads, UL Style 3266, AWG22

● Round Shaft Type

◇ Terminal Box Type

5IK100VA-ESMT2

Mass: 3.9 kg 2D CAD A1324 3D CAD

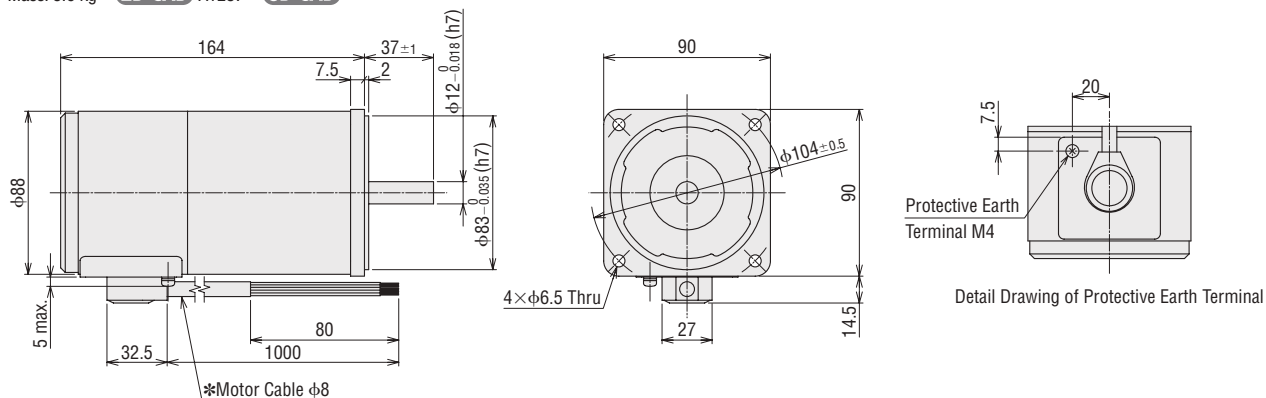


Applicable Cable Size
 Outer Diameter:
 $\phi 8 \sim \phi 13$

◇ Cable Type

5IK100VA-ESM

Mass: 3.6 kg 2D CAD A1287 3D CAD



*Motor Cable Cores
 3 Motor Leads, UL Style 3271, AWG20
 2 Magnetic Brake Leads, UL Style 3266, AWG22

General Specifications

Hypoid Right-Angle Hollow Shaft **JH** Gear

Item	Specifications
Insulation Resistance	100 MΩ or more when a 500 VDC megger is applied between the motor windings and the case after continuous operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the motor windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity
Temperature Rise	Temperature rise of windings is 80°C or less measured by the resistance change method after rated load continuous operation under normal ambient temperature and humidity.
Thermal Class	130 (B)
Ambient Temperature	0 ~ + 40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	IP66*2

Note

- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.

Parallel Shaft Gearhead **GV** Gear, Round Shaft Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	A gearhead or equivalent heat sink*1 is connected to the motor and the winding temperature rise is measured at 80°C or less using the resistance change method after rated load continuous operation under normal ambient temperature and humidity.
Thermal Class	130 (B)
Ambient Temperature	- 10 ~ + 40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)
Degree of Protection	Terminal Box Type: IP66*2 (Except for installation surface of round shaft type) Lead Wire Type: IP20 Cable Type: IP40

*1 Heat radiation plate (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
60 W Type 100 W Type	200×200	5

*2 Materials and Surface Treatments

Terminal Box Type: IP66

Type	Output	Material	Surface Treatment
Stainless Steel Shaft Hypoid Right-Angle Hollow Shaft JH Gear	30 W, 40 W, 100 W	Case and terminal box: Aluminum Output shaft: Stainless Steel Screws: Stainless steel (externally facing screws only)	Case and terminal box: Painted (excluding installation surface)
Type	Output	Material	Surface Treatment
Parallel Shaft Gearhead GV Gear Round Shaft Type	60 W, 100 W	Case and terminal box: Aluminum Output shaft: S45C Screws: Stainless steel (externally facing screws only)	Case and terminal box: Painted (excluding installation surface)

Note

- No built-in overheat protection device (thermal protector).
When there is an overload or the output shaft is locked, use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.

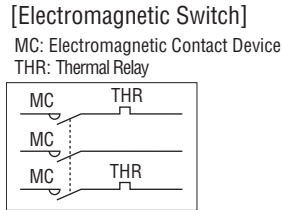
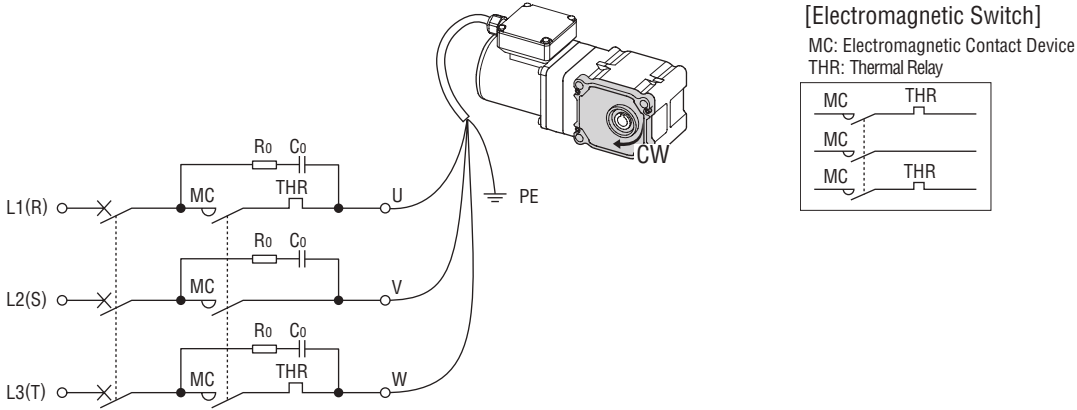
Connection Diagrams

- The rotation direction of the motor is indicated when viewed from the output shaft side of the motor.
CW is used to indicate clockwise rotation and CCW is used for counterclockwise rotation.
- The rotation direction varies according to the gear ratio.
Units with gear ratio [] and round shaft types rotate as shown in the figure.
Units with gear ratio [] rotate in the opposite direction to the figure.

Induction Motors Hypoid Right-Angle Hollow Shaft JH Gear

Output	Gear Ratio						
30 W, 40 W, 100 W	10	15	20	30	50	100	200

Induction Motors Right-Angle Hollow Shaft Hypoid **JH** Gear

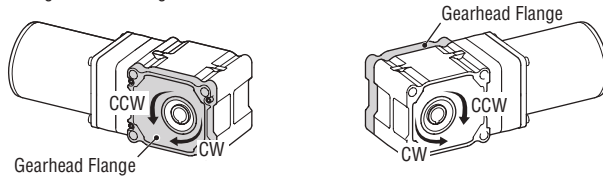


To change the rotation to the opposite direction, switch any 2 connections between R, S and T.

- Connect the CR circuit for surge suppression (Ro, Co).
Ro=5~200 Ω, Co=0.1~0.2 μF 250 VAC

We also offer the **EPCR1201-2** (sold separately) as an accessory. → Page 01-120

The rotating direction of the output shaft differs according to the mounting surface.



Note

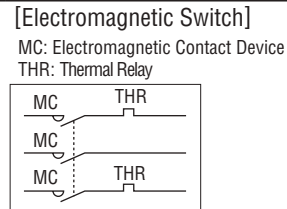
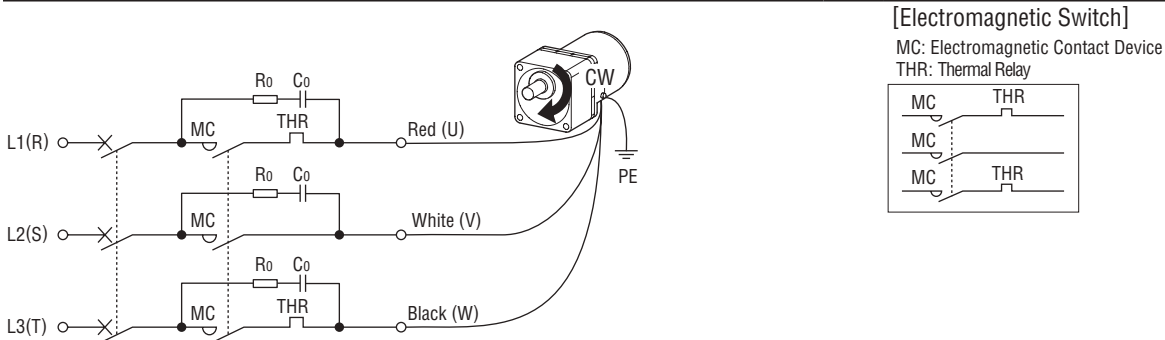
- When there is an overload or the output shaft is locked, always use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
Recommended electromagnetic switch → Page 01-115

Induction Motors Parallel Shaft Gearhead GV Gear, Round Shaft Type

- Connection diagram is for lead wire type units. The code inside the () brackets indicates the terminal code for the terminal box type.

Output	Gear Ratio															
60 W	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
	150	180	250	300												
100 W	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
	150	180														

Induction Motors Parallel Shaft Gearhead **GV** Gear, Round Shaft Type



To change the rotation to the opposite direction, switch any 2 connections between R, S and T.

- Connect the CR circuit for surge suppression (Ro, Co).
Ro=5~200 Ω, Co=0.1~0.2 μF 250 VAC

We also offer the **EPCR1201-2** (sold separately) as an accessory. → Page 01-120

Note

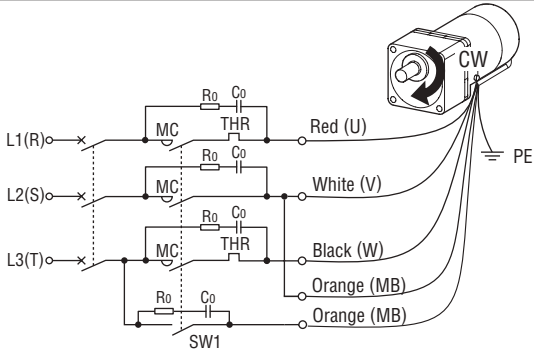
- When there is an overload or the output shaft is locked, always use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
Recommended electromagnetic switch → Page 01-115

● Electromagnetic Brake Type Motors Parallel Shaft Gearhead **GV** Gear, Round Shaft Type

● Connection diagram is for lead wire type units. The code inside the () brackets indicates the terminal code for the terminal box type.

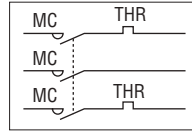
Output	Gear Ratio															
	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
60 W	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
	150	180	250	300												
100 W	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
	150	180														

Electromagnetic Brake Type Motors Parallel Shaft Gearhead **GV** Gear, Round Shaft Type



[Electromagnetic Switch]

MC: Electromagnetic Contact Device
THR: Thermal Relay



To change the rotation to the opposite direction, switch any 2 connections between R, S and T.

- Connect the CR circuit for surge suppression (Ro,Co).
Ro=5~200 Ω, Co=0.1~0.2 μF 250 VAC
We also offer the **EPCR1201-2** (sold separately) as an accessory. → Page 01-120
- Contact Capacity of Switch SW1
250 VAC, Inductive load: 5 A min. (Interlocking)

Note

- When there is an overload or the output shaft is locked, always use the electromagnetic switch and the inverter's electronic thermal function to prevent motor burnout.
Recommended electromagnetic switch → Page 01-115

Recommended Electromagnetic Switch

Always connect an electromagnetic switch when connecting the motor power supply.

Use an electromagnetic switch from the following list, or an equivalent.

Set the rated current of the motor for the stabilized current of the thermal relay.

For the rated current of the motor, check the specifications for each product.

- Fuji Electric FA Components & Systems Co., Ltd.

Product Name		Electromagnetic Switch Product Name
Parallel Shaft Gearhead GV Gear Round Shaft Type	Hypoid Right-Angle Hollow Shaft JH Gear	
—	4IK30VKES 5IK40VKES	SC11AAN-□10TD
5IK60	—	SC11AAN-□10TF
5IK100	—	SC11AAN-□10TH
—	5IK100VKES	SC11AAN-□10TG

- A letter indicating the winding code is specified where the box □ is located in the product name.

Use a product with the winding code that corresponds with the rated voltage of the motor.

Rated Voltage		Winding Code
50 Hz	60 Hz	
—	200-220 V	2
200-220 V	220-240 V	M
220-240 V	240-260 V	P

- Mitsubishi Electric Corporation

Product Name		Electromagnetic Switch Product Name			
Parallel Shaft Gearhead GV Gear Round Shaft Type	Hypoid Right-Angle Hollow Shaft JH Gear				
—	4IK30VKES 5IK40VKES	MSO-T10	0.24 A	200 V	AC200 V
5IK60	—	MSO-T10	0.35 A	200 V	AC200 V
5IK100	5IK100VKES	MSO-T10	0.5 A	200 V	AC200 V

Usage with Inverter

When using in combination with an inverter, the setting frequency conditions of the inverter are as follows.

Refer to the operating manual for motor settings and precautions.

Type	Product Name	Frequency
Hypoid Right-Angle Hollow Shaft JH Gear	4IK30	100 Hz or less
	5IK40	80 Hz or less (60 Hz or less with gear ratio 10)
	5IK100	120 Hz or less
Parallel Shaft Gearhead GV Gear Round Shaft Type	5IK60 5IK100	120 Hz or less

Permissible Radial Load and Permissible Axial Load

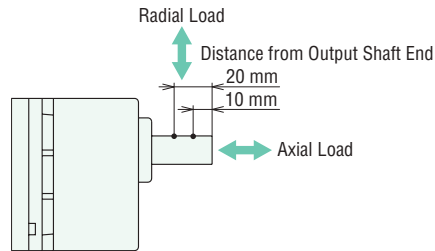
Parallel Shaft Gearhead GV Gear

Output Power	Gear Ratio	Permissible Radial Load N		Permissible Axial Load N
		10 mm from Output Shaft End	20 mm from Output Shaft End	
6 W	2	100	150	15
	3	100	150	30
	5~25	150	200	40
	30~3600	200	300	
15 W	2	150	250	20
	3	150	250	40
	5~25	200	300	80
	30~3600	300	400	
25 W	2	300	350	25
30 W	3	300	350	50
	5~25	300	350	
	30~3600	450	550	100

Output Power	Gear Ratio	Permissible Radial Load N		Permissible Axial Load N
		10 mm from Output Shaft End	20 mm from Output Shaft End	
40 W	2	250	350	100
	3~9	400	500	150
	12.5~18	450	600	
	25~3000	500	700	
60 W	2	250	350	100
	3~9	400	500	150
	12.5~18	450	600	
	25~300	500	700	
90 W	2	250	350	100
100 W	3~9	400	500	150
	12.5~18	450	600	
	25~180	500	700	

Round Shaft Type

Output Power	Permissible Radial Load N		Permissible Axial Load
	10 mm from Output Shaft End	20 mm from Output Shaft End	
6 W	50	110	No greater than half the motor mass*
15 W	40	60	
25 W	90	140	
30 W			
40 W	140	200	
60 W	240	270	
90 W			
100 W			



*Avoid axial load as much as possible. If axial load is unavoidable, keep it to half or less of the motor mass.

Permissible Inertia J

Gear ratio 2~120

Unit: $\times 10^4 \text{kg} \cdot \text{m}^2$

Output Power	Gear Ratio	2	3	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120
		6 W	When performing instantaneous stop	0.25	0.56	1.55	2.23	3.49	5.02	9.69	14	20.1	38.8	55.8	80.4	155			
15 W	When performing instantaneous stop	0.6	1.3	3.5	5.04	7.88	11.3	21.9	31.5	45.4	87.5	126	181	350					
25 W	When performing instantaneous stop	3	8	22	32	50	72	150	220	310	550	800	1100	2200	3200	4000	5000	6200	8900
30 W		1.24	2.79	7.75	11.2	17.4	25.1	48.4	69.8	100	194	279	402	775					
40 W	When performing instantaneous stop	7	16	45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000
60 W		4.4	9.9	27.5	39.6	61.9	89.1	172	248	356	688	990	1426	2750					
90 W		100 W																	

Gear ratio 150~3600

Unit: $\times 10^4 \text{kg} \cdot \text{m}^2$

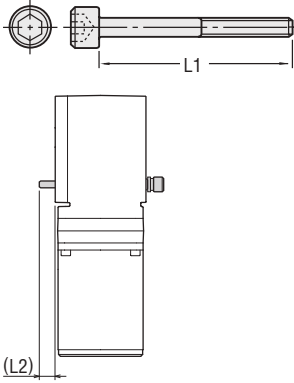
Output Power	Gear Ratio	150	180	250	300	360	500	600	750	900	1000	1200	1500	1800	2500	3000	3600
		6 W	When performing instantaneous stop	5000													
15 W	When performing instantaneous stop	8000															
	When performing instantaneous stop	350															
25 W	When performing instantaneous stop	12000															
30 W		775															
40 W	When performing instantaneous stop	25000														-	
60 W	When performing instantaneous stop	2750												-			
	When performing instantaneous stop	25000															
90 W	When performing instantaneous stop	2750															
100 W		-															

Note

● Do not perform instantaneous bi-directional operations on three-phase motors.

Dimensions for Installation Screws

Hypoid Right-Angle Gears



◆ KII Series

Gearhead Product Name	Gear Ratio	Installation Screw		L2 (mm)
		Size	L1 (mm)	
5H□B 5L□B	10~200	M8	110	10

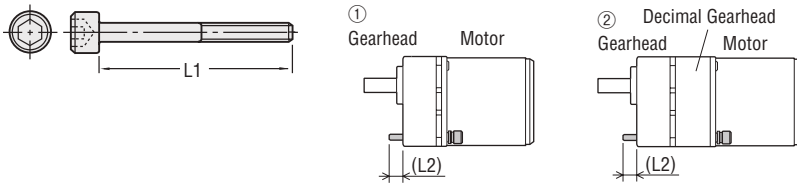
- Installation screws: 4 each of flat washers and spring washers are included.
- The installation screw material is stainless steel.

◆ KII S Series

Gearhead Product Name	Gear Ratio	Installation Screw		L2 (mm)
		Size	L1 (mm)	
4H□S 5H□S	10~200	M6 M8	95 110	11 10

- Installation screws: 4 each of flat washers and spring washers are included.
- The installation screw material is stainless steel.

Parallel Shaft Gearhead GV Gear



◆ KII Series Single-Phase Motors, Three-Phase Motors (Terminal Box Type)

Gearhead Product Name	Gear Ratio	Installation Screw		L2 (mm)
		Size	L1 (mm)	
2GV□B	①	2, 3	55	8
		5~25	50	7
		30~120	55	8
	②	150~360	60	8
		500~1200	90	14
		1500~3600	90	9
3GV□B	①	2, 3	65	12
		5~25	60	12
		30~120	65	12
	②	150~360	70	12
		500~1200	100	13
		1500~3600	100	8
4GV□B	①	2, 3	65	9
		5~25	60	9
		30~120	65	9
	②	150~360	70	9
		500~1200	110	15
		1500~3600	110	10
5GV□B	①	2, 3	85	16
		5~18	70	14
		25~100	85	16
	②	120~300	90	15
		360~1000	130	18
		1200~3000	130	12
5GVH□B	①	2, 3	85	16
		5~18	70	14
		25~100	85	16
		120~300	90	15
5GVR□B	①	2, 3	85	16
		5~15	70	14
		18~36	85	16
		50~180	95	14
4GV□BS	①	5~25	60	9
		30~120	65	9
		150~360	70	9
5GV□BS, 5GVH□BS	①	5~18	70	14
		25~100	85	16
		120~300	90	15

- Installation screws: 4 each of flat washers and spring washers are included.
- The installation screw material is stainless steel.

◆ KII Series Three-Phase Motors (Lead Wire Type)

Gearhead Product Name	Gear Ratio	Installation Screw		L2 (mm)
		Size	L1 (mm)	
4GV□	①	5~25	65	14
		30~120	70	14
		150~360	75	14
5GV□, 5GVH□	①	5~18	75	19
		25~100	90	21
		120~300	95	20
5GVR□	①	5~15	75	19
		18~36	90	21
		50~180	100	19

- Installation screws: 4 each of flat washers, spring washers and hexagonal nuts are included.

◆ KII S Series

Gearhead Product Name	Gear Ratio	Installation Screw		L2 (mm)
		Size	L1 (mm)	
5GVH□B	①	5~18	70	14
		25~100	85	16
		120~300	90	15
5GVR□B	①	5~15	70	14
		18~36	85	16
		50~180	95	14

- Installation screws: 4 each of flat washers and spring washers are included.
- The installation screw material is stainless steel.

Hollow Shaft Type; Mounting the Load Shaft

Mounting Example of the Load Shaft

Installation of the load shaft varies according to the fixing method. Please install as shown below.

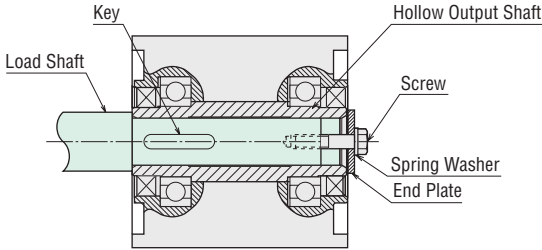
- The hollow output shaft finishes the inner diameter tolerance to H8, and has a key slot to secure the load shaft.
- The recommended tolerance of the load shaft is h7.

Note

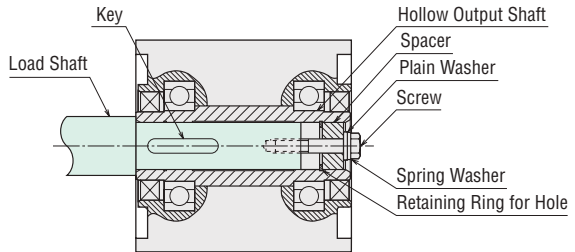
- To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.

Stepped Load Shaft

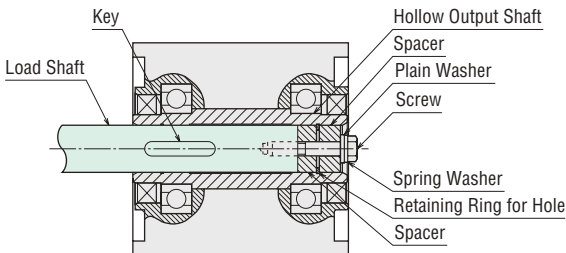
Fixing Method Using an End Plate



Fixing Method Using a Retaining Ring for Hole



Straight Load Shaft



Recommended Load Shaft Installation Dimensions

		Unit: mm	
Output Power		25 W, 30 W	40 W, 60 W, 90 W, 100 W
Inner Diameter of Hollow Shaft (H8)		$\phi 12^{+0.027}_0$	$\phi 15^{+0.027}_0$
Inner Diameter of Load Shaft (h7)		$\phi 12^0_{-0.018}$	$\phi 15^0_{-0.018}$
Screw Size		M5	M6
Spacer Dimensions	Outer Diameter	$\phi 11.5$	$\phi 14.5$
	Inner Diameter	$\phi 6$	$\phi 7$
	Width	3	3
Nominal Hole Diameter of Retaining Ring		$\phi 12$	$\phi 15$
End Plate Thickness		3	3
Length of Stepped Shaft L_a		55	72

- Retaining rings for holes, spacers, screws and other parts used to install the load shaft are not included.

Calculating the Permissible Radial Load for Hollow Shaft Type

The calculation formula of the permissible radial load varies depending on the mechanism.

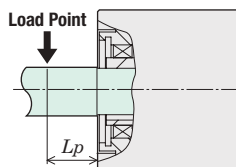
When End of Load Shaft is Not Supported by Bearing

25 W, 30 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{58.5}{48.5 + L_P} \times F_0$$

40 W, 60 W, 90 W, 100 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{69}{59 + L_P} \times F_0$$



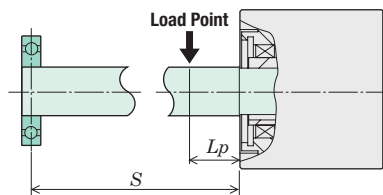
When End of Load Shaft is Supported by Bearing

25 W, 30 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{58.5 (S + 5.5)}{53 (S - L_P)} \times F_0$$

40 W, 60 W, 90 W, 100 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{69 (S + 4)}{65 (S - L_P)} \times F_0$$



F_0 [N]: Permissible Radial Load at 10 mm from Flange Mounting Surface

L_P [mm]: Distance from Flange Mounting Surface to Radial Load Point

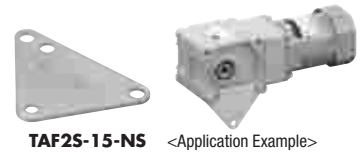
S [mm]: Distance from Flange Mounting Surface to Bearing

- For the permissible radial load at 10 mm from flange mounting surface, refer to the specification table where each product is listed.

Accessories (Sold Separately)

Torque Arms

In order to prevent gearheads from rotating due to the rotational force of the shaft being driven, the torque arm acts as an anti-spin mechanism when a right-angle, hollow shaft type gearhead is installed.



TAF2S-15-NS <Application Example>

Product Line

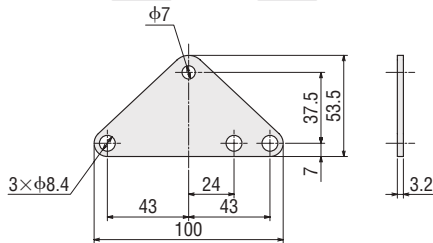
Product Name	List Price	Applicable Product	Materials and Surface Treatment
TAF2S-12-NS	SGD25	4IK30VK□T-4H□S	Material: SS400 Surface Treatment: Trivalent chromate
TAF2S-15-NS	SGD26	5IK40K□-5H□B, 5IK40VK□T-5H□S 5IK60K□-5H□B 5IK90K□-5H□B, 5IK100VK□T-5H□S	

● A code indicating the power supply voltage (KII Series: ES KII Series: F, G, R) is entered where the box □ is located within the applicable product.
A number indicating the gear ratio is entered where the box □ is located within the applicable product.

Dimensions (Unit: mm)

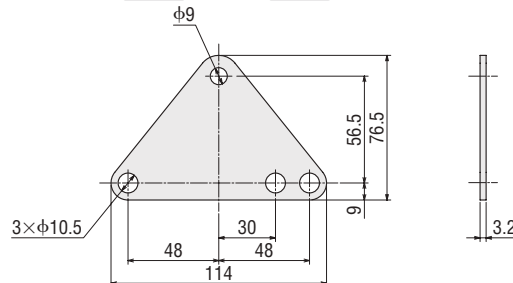
TAF2S-12-NS

Mass: 75 g 2D CAD A1608 3D CAD



TAF2S-15-NS

Mass: 125 g 2D CAD A1609 3D CAD

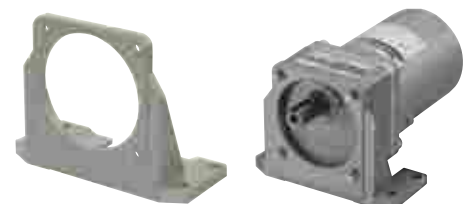


Motor/Gearhead Mounting Brackets

This is a mounting bracket for gearheads and geared motors.

Product Line

Product Name	List Price	Applicable Product
SOL2M4F	SGD24	2IK6, 2RK6 Round Shaft Type 2IK6, 2RK6 Parallel Shaft Gearhead GV Gear
SOL3M5F	SGD26	3IK15, 3RK15 Round Shaft Type
SOL3M6F	SGD26	3IK15, 3RK15 Parallel Shaft Gearhead GV Gear
SOL4M5F	SGD29	4IK25, 4IK30, 4RK25 Round Shaft Type
SOL4M6F	SGD29	4IK25, 4IK30, 4RK25 Parallel Shaft Gearhead GV Gear
SOL5M6F	SGD31	5IK40, 5IK60, 5IK90, 5IK100, 5RK40, 5RK60, 5RK90 Round Shaft Type
SOL5M8F	SGD31	5IK40, 5IK60, 5IK90, 5IK100, 5RK40, 5RK60, 5RK90 Parallel Shaft Gearhead GV Gear
SOL4M5	SGD35	4IK25 Round Shaft Type
SOL4M6	SGD35	4IK25 Parallel Shaft Gearhead GV Gear
SOL5M6	SGD38	5IK40, 5IK60, 5IK90 Round Shaft Type
SOL5M8	SGD38	5IK40, 5IK60, 5IK90 Parallel Shaft Gearhead GV Gear



<Application Example>

Note

- Product names with an "F" on the end are painted the same misty gray metallic as the KII Series and KII Series. Choose the products after confirming the products to be assembled.
- Make sure that the terminal box interferes with the mounting bracket and the mounting surface when fixing a terminal box type motor with the mounting bracket.

Capacitor Mounting Bracket

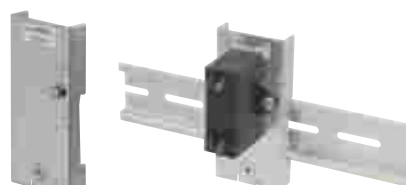
Use this mounting bracket when installing the capacitor to a DIN rail.

- The anti-spin mechanism of the capacitor is dimpled
- No horizontal slip even without an end plate

Product Line

Material: SPCC Surface treatment: Trivalent chromate

Product Name	List Price
PADP01C	SGD6



<Application Example>

Flexible Couplings

These products are clamp type couplings used to connect a motor or gearhead shaft to the shaft of the equipment.

Once the motor or gearhead is determined, the proper coupling can be selected.

- Couplings are also available for round shaft motors, if a shaft diameter matches.



MCL Couplings

◇ Right-Angle Solid Shaft Hypoid JL Gear

● For KII Series Induction Motors

Applicable Product	Load Type	Coupling Model	List Price
5IK40K <input type="checkbox"/> - 5L <input type="checkbox"/> B	Uniform Load	MCL55	SGD124
5IK60K <input type="checkbox"/> - 5L <input type="checkbox"/> B			
5IK90K <input type="checkbox"/> - 5L <input type="checkbox"/> B	Impact Load	MCL65	SGD197

- Either **JA** or **JC** indicating the power supply voltage is entered where the box is located within the product name.

A number indicating the gear ratio is entered where the box is located within the product name.

◇ Parallel Shaft Gearhead GV Gear

● For KIIS Series and KII Series Induction Motors, KII Series Reversible Motors

Applicable Product	Load Type	Coupling Model	List Price
2IK6, 2RK6	Uniform Load	MCL30	SGD61
	Impact Load		
3IK15, 3RK15	Uniform Load	MCL30	SGD61
	Impact Load	MCL40	SGD93
4IK25, 4RK25	Uniform Load	MCL40	SGD93
	Impact Load	MCL55	SGD124
5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90	Uniform Load	MCL55	SGD124
	Impact Load		

● For KII Series Electromagnetic Brake Motors

Applicable Product	Load Type	Coupling Model	List Price
2RK6	Impact Load	MCL30	SGD61
3RK15	Impact Load	MCL40	SGD93
4IK25, 4RK25 5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90	Impact Load	MCL55	SGD124

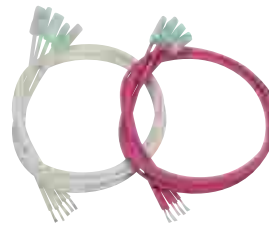
Capacitor Lead Wires

These are lead wires with a terminal that can be directly connected to the capacitor terminal.

● Product Line

Product Name	List Price	Package Contents
LCCN0510	SGD15	5 White Wires 5 Red Wires

- This Package contains 10 lead wires.



<Application Example>

It is also recommended to use with a capacitor cap.

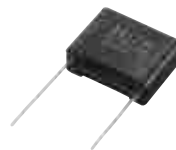
CR Circuit for Surge Suppression

This product is used to protect the contacts of the relay or switch used in the forward/reverse circuit section or the instantaneous stop circuit section of a motor.

● Product Line

250 VAC (120 Ω, 0.1 μF)

Product Name	List Price
EPCR1201-2	SGD4



US2 Series

US2 S E R I E S



Easy-to-use Functions

Easy Operation

● "Spin and Push" Operation

Turn the dial to set desired value and the speed.
Just push the dial to determine the speed.



● Start/Stop/Switching the Rotation Direction

You can switch start/stop or rotation direction by just one switch operation. No external switch is required.



Simple Wiring

● Maximum Extension Length 10 m

Simple connection using the connector between the motor and the speed controller.
The distance between the motor and the speed controller can be extended up to 10 m.



● Built-in Capacitor

The built-in capacitor do not require wire connection, hence saving space.

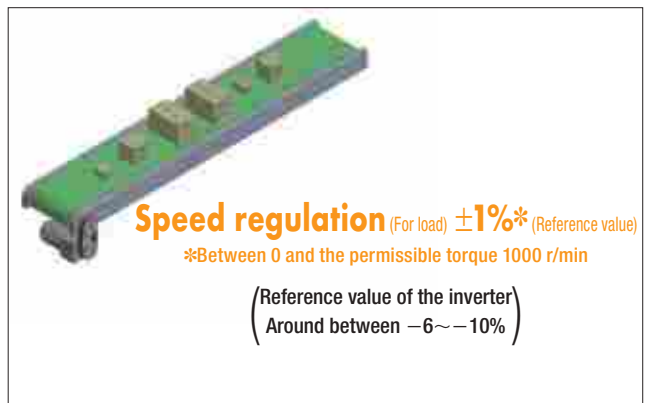


Speed Control by the Closed Loop Control

● Stable Operation Even with Fluctuated Load

The rate generator installed in the AC motor always check the speed, thus maintaining the set speed even when the load fluctuates.

In addition, digitization of the control circuit has improved the speed regulation from -5% to $\pm 1\%*$ (reference value).



Speed regulation (For load) $\pm 1\%*$ (Reference value)
*Between 0 and the permissible torque 1000 r/min
(Reference value of the inverter)
(Around between $-6\sim-10\%$)

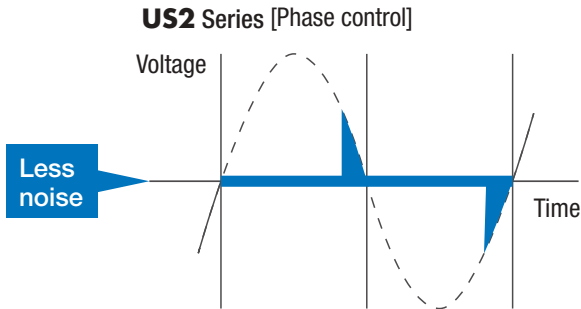


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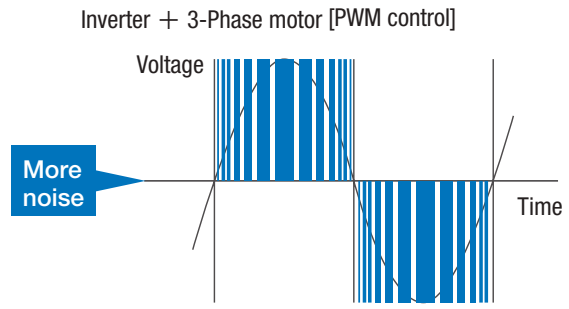
High Reliability

● Simple System Configuration with Low Noises

The motor and speed controller used for the **US2** Series can emit little inherent noises. No peripherals require to reduce noise, hence able to achieve space saving and reduce installation work and cost.



Control of Voltage
2 switchings per cycle
[Condition] ● Power supply frequency: 50 Hz



Control of Voltage and Frequency
300 switchings per cycle
[Condition] ● Carrier frequency: 15 kHz
● Set frequency: 50 Hz

Useful Functions

● Open the Front Panel, you can Set Variety of Functions.



Digital Display

Monitoring details and alarm codes can be displayed.

Built-in Indicators

You can set the display settings of the gear output shaft speed and conveyor transportation speed.

Selection of Moving Direction

You can select which one to use for operation: the switch on the front panel or external instructions.

Data Protection (Lock)

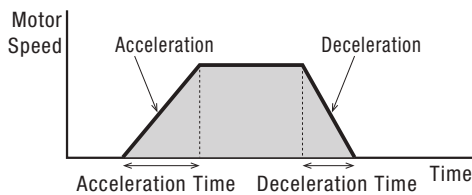
The data setting can be locked to prevent the set speed from changing.

● Smooth Operation When Starting/Stopping

Acceleration/deceleration time can be set with the use of acceleration/deceleration time potentiometer.

Setting time: 0.1 ~ 15.0 seconds (By factory default, fixed to 1 second)

- The acceleration/deceleration time potentiometer must be enabled in advance by the FUNCTION key.
- The instantaneous stop function is not available.



● Protection of Speed Controller

When overheating, connection failure, or locking occurs in the motor, an alarm is displayed to protect the motor speed controller.



Gearhead with High Permissible Torque and High Strength

Models in the **US2** Series use a gearhead with high permissible torque and strength.

This gearhead uses our unique side plate, increasing the case rigidity. The gear is also strengthened by heat treatment (Carburizing and quenching).

Parallel Shaft Combination Type

Gearhead Internal Structure

For Gearhead with Holding Angle of 80 mm

Permissible Radial Load 450 N
(10 mm from the tip of the output shaft)
Permissible Axial Load 100 N

Conventional model **4GN-K** Permissible torque 8 N·m
US2 Series Permissible torque 16 N·m

Lineup

Motor

Type/Shape	Output Power [W]	Power Supply Voltage [VAC]	Maximum Permissible Torque [N·m]
Parallel Shaft Combination Type → Page 02-06	6 15 25 40 60 90	Single-Phase 110/115 Single-Phase 220/230	40
Round Shaft Type → Page 02-07			0.73

Speed Controller

Shape	Output Power [W]	Power Supply Voltage [VAC]
	6 15 25 40 60 90	Single-Phase 110/115 Single-Phase 220/230

Connection Cable

Cable Type
Connection Cable Flexible Connection Cable 1~10 m

Product Number Code

Motor

◇ Parallel Shaft Combination Type

SCM 4 25 EC - 15

① ② ③ ④ ⑤

◇ Round Shaft Type

SCM 4 25 A - EC

① ② ③ ⑤ ④

Speed Controller

US2D 25 - EC - CC

① ② ③ ④

Connection Cable, Flexible Connection Cable

CC 01 SC R

① ② ③ ④

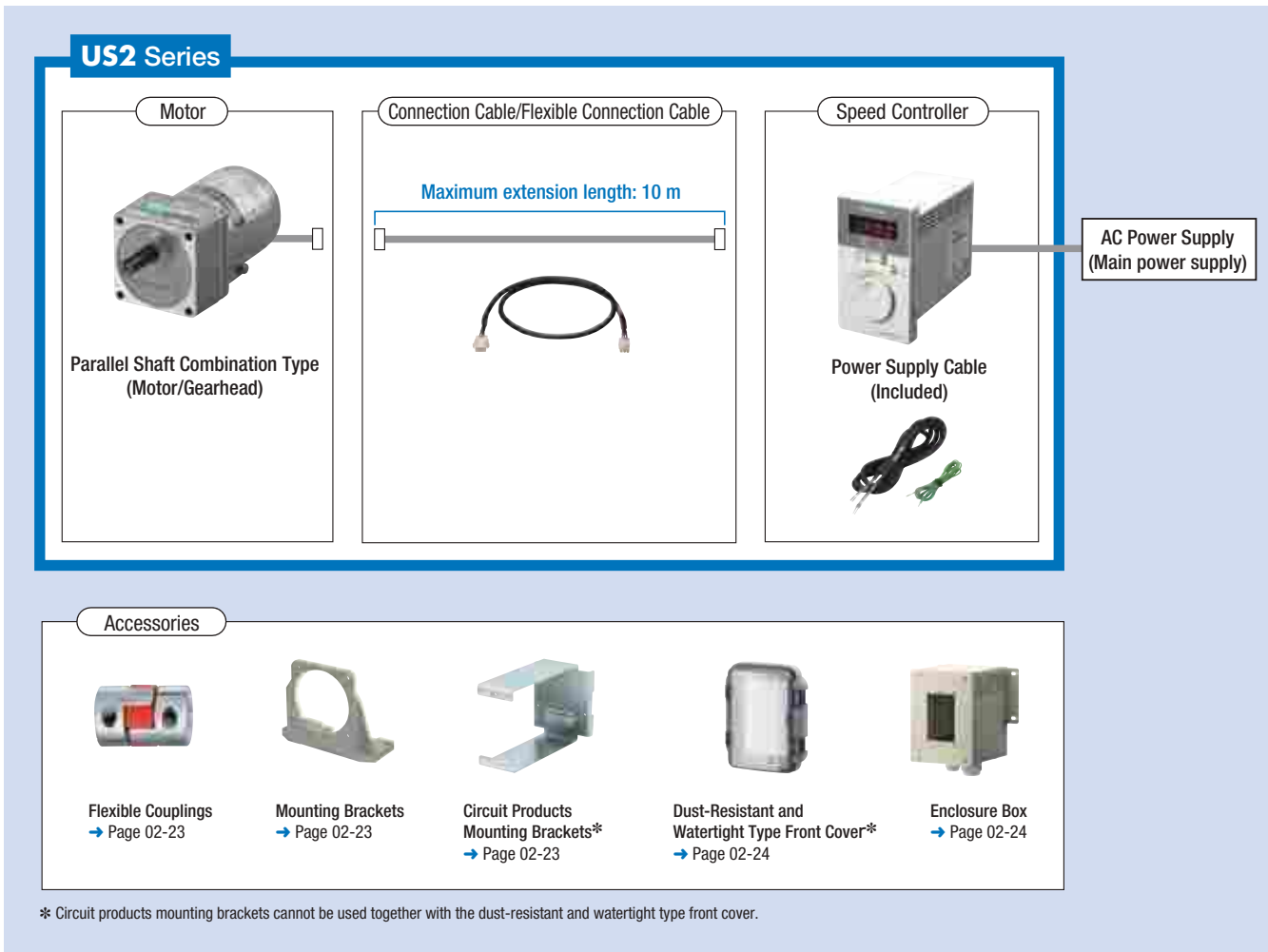
① Motor Type	SCM: Speed Control Motor
② Frame Size	2: 60 mm 3: 70 mm 4: 80 mm 5: 90 mm
③ Output Power (W)	(Example) 25: 25 W
④ Power Supply Voltage	UA: Single-Phase 110/115 VAC EC: Single-Phase 220/230 VAC
⑤ Gear Ratio/Shaft Configuration	Number: Gear Ratio for Combination Type A: Round Shaft Type

① Speed Controller Type	US2D: US2 Series Speed Controller
② Output Power (W)	(Example) 25: 25 W
③ Power Supply Voltage	UA: Single-Phase 110/115 VAC EC: Single-Phase 220/230 VAC
④ Included	CC: Power Supply Cable

① Cable Type	CC: Connection Cable
② Length	01: 1 m 02: 2 m 03: 3 m 05: 5 m 10: 10 m
③ Applied Model	SC: Speed Control Motor
④ None: Connection Cable	R: Flexible Connection Cable

System Configuration

The motor, speed controller, and connection cables need to be purchase separately.



System Configuration Example

US2 Series			Sold Separately	
Motor Parallel Shaft Combination Type	Speed Controller	Connection Cable (5 m)	+	Mounting Brackets
SCM425EC-25	US2D25-EC-CC	CC05SC		SOL4M6F
SGD191	SGD126	SGD70		MCL401515
				SGD29
				SGD93

The system configuration shown above is an example. Other combinations are available.

Parallel Shaft Combination Type Round Shaft Type



Parallel Shaft Combination Type

02

Product Line

Parallel Shaft Combination Type

The price includes the prices of the motor and gearhead.



Speed Controller



US2 Series

Output Power	Power Supply Voltage	Product Name	Gear Ratio	List Price
6 W	Single-Phase 110/115 VAC	SCM26UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD158
			25, 30, 36	SGD166
			50, 60, 75, 90, 100, 120, 150, 180	SGD174
	Single-Phase 220/230 VAC	SCM26EC -□	250, 300, 360	SGD212
			5, 6, 7.5, 9, 12.5, 15, 18	SGD161
			25, 30, 36	SGD168
15 W	Single-Phase 110/115 VAC	SCM315UA -□	50, 60, 75, 90, 100, 120, 150, 180	SGD177
			250, 300, 360	SGD214
			5, 6, 7.5, 9, 12.5, 15, 18	SGD170
	Single-Phase 220/230 VAC	SCM315EC -□	25, 30, 36	SGD178
			50, 60, 75, 90, 100, 120, 150, 180	SGD186
			250, 300, 360	SGD221
25 W	Single-Phase 110/115 VAC	SCM425UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD173
			25, 30, 36	SGD180
			50, 60, 75, 90, 100, 120, 150, 180	SGD189
	Single-Phase 220/230 VAC	SCM425EC -□	250, 300, 360	SGD224
			5, 6, 7.5, 9, 12.5, 15, 18	SGD180
			25, 30, 36	SGD188
40 W	Single-Phase 110/115 VAC	SCM540UA -□	50, 60, 75, 90, 100, 120, 150, 180	SGD196
			250, 300, 360	SGD234
			5, 6, 7.5, 9, 12.5, 15, 18	SGD184
	Single-Phase 220/230 VAC	SCM540EC -□	25, 30, 36	SGD191
			50, 60, 75, 90, 100, 120, 150, 180	SGD200
			250, 300, 360	SGD238
60 W	Single-Phase 110/115 VAC	SCM560UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD214
			25, 30, 36	SGD223
			50, 60, 75, 90, 100, 120, 150, 180	SGD230
	Single-Phase 220/230 VAC	SCM560EC -□	250, 300	SGD300
			5, 6, 7.5, 9, 12.5, 15, 18	SGD218
			25, 30, 36	SGD226
90 W	Single-Phase 110/115 VAC	SCM590UA -□	50, 60, 75, 90, 100, 120, 150, 180	SGD234
			250, 300	SGD304
			5, 6, 7.5, 9, 12.5, 15, 18	SGD259
	Single-Phase 220/230 VAC	SCM590EC -□	25, 30, 36, 50, 60, 75, 90, 100	SGD270
			120, 150, 180	SGD281
			250, 300	SGD318
90 W	Single-Phase 110/115 VAC	SCM590UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD264
			25, 30, 36, 50, 60, 75, 90, 100	SGD275
			120, 150, 180	SGD286
	Single-Phase 220/230 VAC	SCM590EC -□	250, 300	SGD323
			5, 6, 7.5, 9, 12.5, 15, 18	SGD279
			25, 30, 36, 50, 60	SGD300
90 W	Single-Phase 110/115 VAC	SCM590UA -□	75, 90, 100, 120, 150, 180	SGD310
			5, 6, 7.5, 9, 12.5, 15, 18	SGD284
			25, 30, 36, 50, 60	SGD305
	Single-Phase 220/230 VAC	SCM590EC -□	75, 90, 100, 120, 150, 180	SGD315
			5, 6, 7.5, 9, 12.5, 15, 18	SGD284
			25, 30, 36, 50, 60	SGD305

Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	US2D6-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D6-EC-CC	SGD126
15 W	Single-Phase 110/115 VAC	US2D15-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D15-EC-CC	SGD126
25 W	Single-Phase 110/115 VAC	US2D25-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D25-EC-CC	SGD126
40 W	Single-Phase 110/115 VAC	US2D40-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D40-EC-CC	SGD126
60 W	Single-Phase 110/115 VAC	US2D60-UA-CC	SGD128
	Single-Phase 220/230 VAC	US2D60-EC-CC	SGD128
90 W	Single-Phase 110/115 VAC	US2D90-UA-CC	SGD128
	Single-Phase 220/230 VAC	US2D90-EC-CC	SGD128

● A number in the box □ in the product name indicates the gear ratio.

● Round Shaft Type



Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	SCM26A-UA	SGD88
	Single-Phase 220/230 VAC	SCM26A-EC	SGD91
15 W	Single-Phase 110/115 VAC	SCM315A-UA	SGD94
	Single-Phase 220/230 VAC	SCM315A-EC	SGD96
25 W	Single-Phase 110/115 VAC	SCM425A-UA	SGD103
	Single-Phase 220/230 VAC	SCM425A-EC	SGD106
40 W	Single-Phase 110/115 VAC	SCM540A-UA	SGD121
	Single-Phase 220/230 VAC	SCM540A-EC	SGD125
60 W	Single-Phase 110/115 VAC	SCM560A-UA	SGD139
	Single-Phase 220/230 VAC	SCM560A-EC	SGD144
90 W	Single-Phase 110/115 VAC	SCM590A-UA	SGD158
	Single-Phase 220/230 VAC	SCM590A-EC	SGD163

● Speed Controller



Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	US2D6-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D6-EC-CC	SGD126
15 W	Single-Phase 110/115 VAC	US2D15-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D15-EC-CC	SGD126
25 W	Single-Phase 110/115 VAC	US2D25-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D25-EC-CC	SGD126
40 W	Single-Phase 110/115 VAC	US2D40-UA-CC	SGD126
	Single-Phase 220/230 VAC	US2D40-EC-CC	SGD126
60 W	Single-Phase 110/115 VAC	US2D60-UA-CC	SGD128
	Single-Phase 220/230 VAC	US2D60-EC-CC	SGD128
90 W	Single-Phase 110/115 VAC	US2D90-UA-CC	SGD128
	Single-Phase 220/230 VAC	US2D90-EC-CC	SGD128

● Connection Cables



Length	Product Name	List Price
1 m	CC01SC	SGD35
2 m	CC02SC	SGD40
3 m	CC03SC	SGD50
5 m	CC05SC	SGD70
10 m	CC10SC	SGD120

● Flexible Connection Cables



Length	Product Name	List Price
1 m	CC01SCR	SGD70
2 m	CC02SCR	SGD80
3 m	CC03SCR	SGD100
5 m	CC05SCR	SGD140
10 m	CC10SCR	SGD240

■ Accessories

● Motor

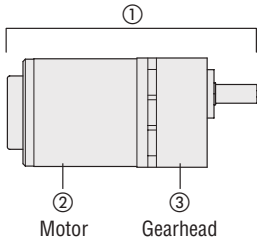
Type	Parallel Key	Installation Screws	Operating Manual
Parallel Shaft Combination Type	1 piece	1 set	1 copy
Round Shaft Type	–	–	

● Speed Controller

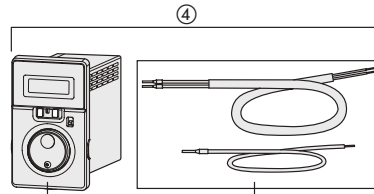
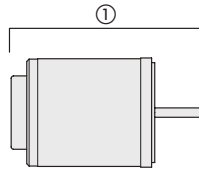
Power Supply Cable (2 m)	Operating Manual
1 piece	1 copy

Combination List

Parallel Shaft Combination Type



Round Shaft Type



Speed Controller

Power Supply Cable

Combination Type

The combination type comes with a motor and a gearhead pre-assembled. The combination of the motor and the gearhead can be changed. They are also available separately. You can remove the gearhead to change the installation position by 90°.

Parallel Shaft Combination Type

Output Power	Power Supply Voltage	Speed Control Motor			Speed Controller		
		Product Name	Component Product Name		Product Name	Component Product Name	
		①	②	③	④	⑤	⑥
6 W	Single-Phase 110/115 VAC	SCM26UA -□	SCM26GV-UA	2GV□B	US2D6-UA-CC	US2D6-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM26EC -□	SCM26GV-EC		US2D6-EC-CC	US2D6-EC	
15 W	Single-Phase 110/115 VAC	SCM315UA -□	SCM315GV-UA	3GV□B	US2D15-UA-CC	US2D15-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM315EC -□	SCM315GV-EC		US2D15-EC-CC	US2D15-EC	
25 W	Single-Phase 110/115 VAC	SCM425UA -□	SCM425GV-UA	4GV□B	US2D25-UA-CC	US2D25-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM425EC -□	SCM425GV-EC		US2D25-EC-CC	US2D25-EC	
40 W	Single-Phase 110/115 VAC	SCM540UA -□	SCM540GV-UA	5GV□B	US2D40-UA-CC	US2D40-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM540EC -□	SCM540GV-EC		US2D40-EC-CC	US2D40-EC	
60 W	Single-Phase 110/115 VAC	SCM560UA -□	SCM560GVH-UA	5GVH□B	US2D60-UA-CC	US2D60-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM560EC -□	SCM560GVH-EC		US2D60-EC-CC	US2D60-EC	
90 W	Single-Phase 110/115 VAC	SCM590UA -□	SCM590GVR-UA	5GVR□B	US2D90-UA-CC	US2D90-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM590EC -□	SCM590GVR-EC		US2D90-EC-CC	US2D90-EC	

● A number in the box □ in the product name indicates the gear ratio.

Round Shaft Type

Output Power	Power Supply Voltage	Speed Control Motor		Speed Controller		
		Product Name		Product Name	Component Product Name	
		①	②	④	⑤	⑥
6 W	Single-Phase 110/115 VAC	SCM26A-UA		US2D6-UA-CC	US2D6-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM26A-EC		US2D6-EC-CC	US2D6-EC	
15 W	Single-Phase 110/115 VAC	SCM315A-UA		US2D15-UA-CC	US2D15-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM315A-EC		US2D15-EC-CC	US2D15-EC	
25 W	Single-Phase 110/115 VAC	SCM425A-UA		US2D25-UA-CC	US2D25-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM425A-EC		US2D25-EC-CC	US2D25-EC	
40 W	Single-Phase 110/115 VAC	SCM540A-UA		US2D40-UA-CC	US2D40-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM540A-EC		US2D40-EC-CC	US2D40-EC	
60 W	Single-Phase 110/115 VAC	SCM560A-UA		US2D60-UA-CC	US2D60-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM560A-EC		US2D60-EC-CC	US2D60-EC	
90 W	Single-Phase 110/115 VAC	SCM590A-UA		US2D90-UA-CC	US2D90-UA	CC02AC02N2
	Single-Phase 220/230 VAC	SCM590A-EC		US2D90-EC-CC	US2D90-EC	

Specifications Continuous Rating



Product Name Upper Level: Parallel Shaft Combination Type Lower Level: Round Shaft Type		Speed Controller	Maximum Output Power W	Voltage VAC	Frequency Hz	Variable Speed Range r/min	Permissible Torque		Starting Torque mN·m	Current A	Power Consumption W	Motor Overheat Protection Device
							1200 r/min (50Hz)	90 r/min				
							1450 r/min (60Hz)					
							mN·m	mN·m				
SCM26UA-□ SCM26A-UA	US2D6-UA-CC	6	Single-Phase 110 Single-Phase 115	60	90~1600	50	38	40	0.31	29	ZP	
												Single-Phase 220 Single-Phase 230
SCM26EC-□ SCM26A-EC	US2D6-EC-CC	6	Single-Phase 220 Single-Phase 230	50 60	90~1400 90~1600	46 50	37 39	44 50	0.17	29	ZP	
												Single-Phase 110 Single-Phase 115
SCM315UA-□ SCM315A-UA	US2D15-UA-CC	15	Single-Phase 220	50 60	90~1400 90~1600	125 110	40	67 72	0.26	43 46	TP	
												Single-Phase 230
SCM315EC-□ SCM315A-EC	US2D15-EC-CC	15	Single-Phase 110 Single-Phase 115	60	90~1600	205	45	125 135	0.78	58 69	TP	
												Single-Phase 220
SCM425UA-□ SCM425A-UA	US2D25-UA-CC	25	Single-Phase 220	50 60	90~1400 90~1600	205	40	110 120	0.40	70	TP	
												Single-Phase 230
SCM540UA-□ SCM540A-UA	US2D40-UA-CC	40	Single-Phase 110 Single-Phase 115	60	90~1600	320	70	180 190	1.1	107	TP	
												Single-Phase 220
SCM540EC-□ SCM540A-EC	US2D40-EC-CC	40	Single-Phase 230	50 60	90~1400 90~1600	320	65 70	190	0.58	99 105	TP	
												Single-Phase 110 Single-Phase 115
SCM560UA-□ SCM560A-UA	US2D60-UA-CC	60	Single-Phase 220	50 60	90~1400 90~1600	490 460	80 75	280 290	0.74 0.77	129 143	TP	
												Single-Phase 230
SCM560EC-□ SCM560A-EC	US2D60-EC-CC	60	Single-Phase 110 Single-Phase 115	60	90~1600	730	85	400 440	2.4 2.5	224 227	TP	
												Single-Phase 220
SCM590UA-□ SCM590A-UA	US2D90-UA-CC	90	Single-Phase 230	50 60	90~1400 90~1600	730	95	520 530	1.2 1.3	204 228	TP	
												Single-Phase 110 Single-Phase 115
SCM590EC-□ SCM590A-EC	US2D90-EC-CC	90	Single-Phase 220	50 60	90~1400 90~1600	730	95	500 520	1.3 1.2	226 204	TP	
												Single-Phase 230

● The specifications apply to the motor only. The variable speed ranges shown are under no load conditions.

ZP: These products are impedance protected.

TP: This indicates that there is a built-in thermal protector (Automatic return type).

● A number in the box □ in the product name indicates the gear ratio.

Common Specifications

Item	Specifications
Speed Setting Methods	Digital setting by the dial (Speed can be set in 1 r/min increments)
Variable Speed Range	50 Hz: 90~1400 r/min 60 Hz: 90~1600 r/min Initial setting: 90 r/min
Acceleration/Deceleration Time	0.1~15.0 seconds (Initial setting: Fixed to 1.0 second) Acceleration time/deceleration time varies with the load condition of the motor.
Function	Parameters
	Monitoring
	Others
Input Signals	Photocoupler input Input resistance 2 kΩ Two input points: FWD input and REV input
Protective Functions	When the following protective functions are activated, the motor will coast to a stop, and the alarm code will appear on the control panel. Alarm types: Motor overheat, motor lock, improper motor connection, EEPROM error, prohibition of operation at the initial setting
Maximum Extension Length	Motor and speed controller distance 10 m

General Specifications

Item	Motor	Speed Controller
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the motor windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the main circuit terminal and the input signal terminal, between the main circuit terminal and the case, and between the main circuit terminal and FG, after continuous operation under normal ambient temperature and humidity.
Dielectric Strength Voltage	No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.9 kVAC at 50 Hz or 60 Hz between the main circuit terminal and the input signal terminal and between the main circuit terminal and the case, and 1.5 kVAC at 50 Hz or 60 Hz between the main circuit terminal and FG for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	A gearhead or equivalent heat sink*1 is connected to the motor and the winding temperature rise is measured at 80°C or less using the resistance change method after continuous operation with no load under normal ambient temperature and humidity.	—
Overheat Protection Device	The 6 W type is impedance protected. All other motors have a built-in thermal protector (Automatic return type). Open: 130±5°C Close: 85±20°C	—
Operating Environment	Ambient Temperature	—
	Ambient Humidity	—
	Altitude	—
	Atmosphere	—
	Vibration	—
Storage Condition*2	Ambient Temperature	—
	Ambient Humidity	—
	Altitude	—
	Atmosphere	—
Heat-resistant Class	130 (B)	—
Degree of Protection	IP20	IP20

*1 Heat sink size (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W	115×115	5
15 W	125×125	
25 W	135×135	
40 W	165×165	
60 W	200×200	
90 W	200×200	

*2 The storage condition applies to a short period such as a period during transportation.

Note

- Do not measure insulation resistance or perform the dielectric strength test while the motor and speed controller are connected.

Output Shaft Speed of the Combination Type

● Motor Shaft Speed

Low speed: 90 r/min, High speed 50 Hz: 1400 r/min, High speed 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
High 50 Hz	280	233	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6	4.6	3.8
Speed 60 Hz	320	266	213	177	128	106	88	64	53	44	32	26	21	17.7	16	13.3	10.6	8.8	6.4	5.3	4.4
Low Speed	18	15	12	10	7.2	6	5	3.6	3	2.5	1.8	1.5	1.2	1	0.9	0.75	0.6	0.5	0.36	0.3	0.25

Permissible Torque of Combination Type

● A colored □ background indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.

● A number in the box □ in the product name indicates the gear ratio.

● Single-Phase 110/115 VAC

Unit: N·m

Product Name	Gear Ratio																						
	Motor Shaft Speed r/min		5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
SCM26UA-□	1450		0.23	0.27	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6
	90		0.17	0.21	0.26	0.31	0.43	0.51	0.62	0.86	0.98	1.2	1.6	2.0	2.5	2.9	3.3	3.9	4.6	5.5	6	6	6
SCM315UA-□	1450	110 VAC	0.54	0.65	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10	10	10	10	10	10	10
		115 VAC	0.56	0.68	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10
SCM425UA-□	1450		0.20	0.24	0.30	0.36	0.51	0.61	0.73	1.0	1.2	1.4	1.9	2.3	2.9	3.5	3.9	4.6	5.5	6.6	9.1	10	10
	90		0.20	0.24	0.30	0.36	0.51	0.61	0.73	1.0	1.2	1.4	1.9	2.3	2.9	3.5	3.9	4.6	5.5	6.6	9.1	10.9	13.1
SCM540UA-□	1450		1.4	1.7	2.2	2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30	-
	90		0.32	0.38	0.47	0.57	0.79	0.95	1.1	1.5	1.8	2.2	3.0	3.6	4.5	5.4	6.0	6.8	8.5	10.2	14.2	17.0	-
SCM560UA-□	1450	110 VAC	2.1	2.5	3.1	3.7	5.2	6.2	7.5	9.9	11.9	14.2	19.8	23.7	29.7	30	30	30	30	30	30	30	-
		115 VAC	2.2	2.6	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	-
SCM590UA-□	1450		0.36	0.43	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	-
	90		3.3	3.9	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40	-	-	-
	1450		0.38	0.46	0.57	0.69	0.96	1.1	1.3	1.8	2.2	2.6	3.7	4.4	5.2	6.2	6.9	8.3	10.3	12.4	-	-	-
	90		0.38	0.46	0.57	0.69	0.96	1.1	1.3	1.8	2.2	2.6	3.7	4.4	5.2	6.2	6.9	8.3	10.3	12.4	-	-	-

● Single-Phase 220/230 VAC

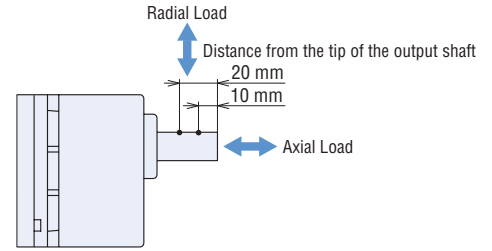
Unit: N·m

Product Name	Gear Ratio																							
	Motor Shaft Speed r/min		5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
SCM26EC-□	1200	220 VAC 50 Hz	0.19	0.23	0.28	0.34	0.47	0.57	0.68	0.95	1.1	1.3	1.8	2.2	2.7	3.3	3.6	4.3	5.1	6	6	6	6	
		230 VAC 50 Hz	0.21	0.25	0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	
		220 VAC 60 Hz	0.21	0.25	0.31	0.37	0.52	0.62	0.75	1.0	1.2	1.4	2.0	2.4	3.0	3.6	4.0	4.7	5.6	6	6	6	6	
	1450	230 VAC 60 Hz	0.23	0.27	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6	
		90	220 VAC 50/60 Hz	0.18	0.22	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6
			230 VAC 60 Hz	0.17	0.20	0.25	0.30	0.42	0.50	0.60	0.83	0.95	1.1	1.6	1.9	2.4	2.9	3.2	3.8	4.5	5.4	6	6	6
SCM315EC-□	1200	50 Hz	0.56	0.68	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10	
		60 Hz	0.50	0.59	0.74	0.89	1.2	1.5	1.8	2.5	2.8	3.4	4.7	5.7	7.1	8.5	9.5	10	10	10	10	10	10	
	1450	230 VAC 60 Hz	0.54	0.65	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10	10	10	10	10	10	10	
SCM425EC-□	90		0.18	0.22	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	8.1	9.7	10	
	1200	50 Hz	0.92	1.1	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16	
SCM540EC-□	1450	60 Hz	1.4	1.7	2.2	2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30	-	
	90	50 Hz	0.29	0.35	0.44	0.53	0.73	0.88	1.1	1.4	1.7	2.0	2.8	3.4	4.2	5.0	5.6	6.3	7.9	9.5	13.2	15.8	-	
		60 Hz	0.32	0.38	0.47	0.57	0.79	0.95	1.1	1.5	1.8	2.2	3.0	3.6	4.5	5.4	6.0	6.8	8.5	10.2	14.2	17.0	-	
SCM560EC-□	1200	50 Hz	2.2	2.6	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	-	
		60 Hz	2.1	2.5	3.1	3.7	5.2	6.2	7.5	9.9	11.9	14.2	19.8	23.7	29.7	30	30	30	30	30	30	30	-	
	1450	220 VAC 50 Hz	0.36	0.43	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	-	
		230 VAC 60 Hz	0.34	0.41	0.51	0.61	0.84	1.0	1.2	1.6	1.9	2.3	3.2	3.9	4.8	5.8	6.5	7.3	9.1	10.9	15.2	18.2	-	
		220 VAC 60 Hz	0.38	0.46	0.57	0.69	0.96	1.1	1.4	1.8	2.2	2.6	3.7	4.4	5.5	6.6	7.3	8.3	10.3	12.4	17.2	20.7	-	
SCM590EC-□	1200	50 Hz	3.3	3.9	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	40	-	-	-	
	1450	60 Hz	0.43	0.51	0.64	0.77	1.1	1.3	1.5	2.0	2.5	2.9	4.1	4.9	5.8	6.9	7.7	9.2	11.5	13.9	-	-	-	
	90		0.43	0.51	0.64	0.77	1.1	1.3	1.5	2.0	2.5	2.9	4.1	4.9	5.8	6.9	7.7	9.2	11.5	13.9	-	-	-	

Permissible Radial Load/Permissible Axial Load

Parallel Shaft Combination Type

Output Power	Gear Ratio	Permissible Radial Load N		Permissible Axial Load N
		Distance from the tip of the gearhead output shaft 10 mm	20 mm	
6 W	5~25	150	200	40
	30~360	200	300	
15 W	5~25	200	300	80
	30~360	300	400	
25 W	5~25	300	350	100
	30~360	450	550	
40 W 60 W	5~9	400	500	150
	12.5~18	450	600	
	25~300	500	700	
90 W	5~9	400	500	150
	12.5~18	450	600	
	25~180	500	700	



Round Shaft Type

Output Power	Permissible Radial Load N		Permissible Axial Load
	Distance from the tip of the motor output shaft 10 mm	20 mm	
6 W	50	110	Half of motor mass or less*
15 W	40	60	
25 W	90	140	
40 W	140	200	
60 W	240	270	
90 W			

*Avoid axial loads as much as possible.

If axial load is unavoidable, keep it at half or less of the motor mass.

Gearhead Transmission Efficiency

Product Name	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
		2GV□B, 3GV□B, 4GV□B		90%									86%						81%			
5GV□B, 5GVH□B		90%									86%						81%					
5GVR□B		90%									86%						81%					

Permissible Load Inertia J of Combination Types

Unit: $\times 10^{-4} \text{kg}\cdot\text{m}^2$

Output Power	Gear Ratio	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
		6 W		12	18	28	40	78	110	160	260	370	540	920	1300	1700	2000	2500	3600	5000	5000	5000
15 W		20	28	45	65	120	180	260	440	630	900	1500	2100	2800	3200	4000	5700	8000	8000	8000	8000	8000
25 W		22	32	50	72	150	220	310	550	800	1100	2200	3200	4000	5000	6200	8900	12000	12000	12000	12000	12000
40 W 60 W		45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	25000	25000	—
90 W		45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	—	—	—

How to Read Speed – Torque Characteristics

The characteristics diagram on the right shows the relationship between each setting speed and torque when a speed control motor is operated.

① 50 Hz Safe-Operation Line ② 60 Hz Safe-Operation Line

The safe-operation line is the permissible line of the torque that is limited according to the permissible temperature.

Motors can be operated at a continuous rating within the safe-operation line.

The safe-operation line is determined under the most severe condition where there is no heat conduction. Therefore, the motor can be operated depending on installation conditions of the motor.

Note

● When operating beyond the safe-operation line, make sure the motor case temperature is kept at 90°C or less.

③ Starting Torque

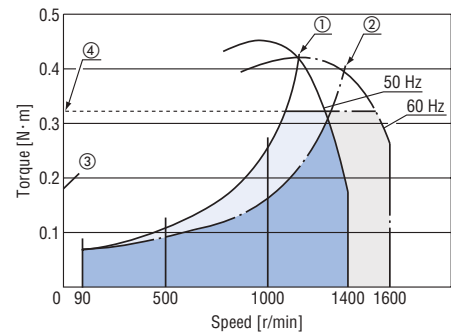
This refers to the size of torque with which the motor can start.

④ Combination Type Permissible Torque

This refers to the permissible value of the motor torque when operating with the gearhead installed.

The permissible torque of the combination type varies according to the gear ratio.

Use the motor without exceeding the value on the list of permissible torques.



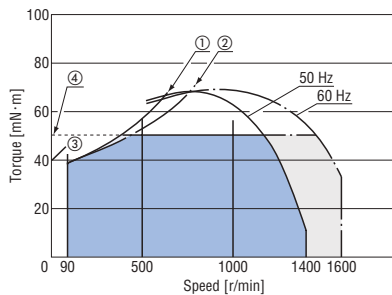
Speed – Torque Characteristics (Reference)

① 50 Hz Safe-Operation Line ② 60 Hz Safe-Operation Line ③ Starting Torque ④ Combination Type Permissible Torque

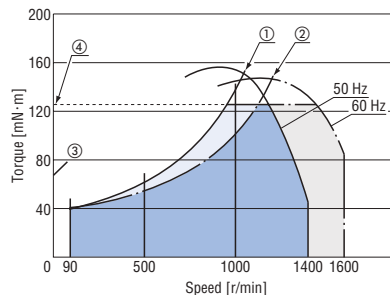
● The characteristics of each output are their representatives. (For motor only)

The permissible torque and starting torque of the motor vary according to the voltage. Check the specifications and the permissible torque of the combination type when using the motor.

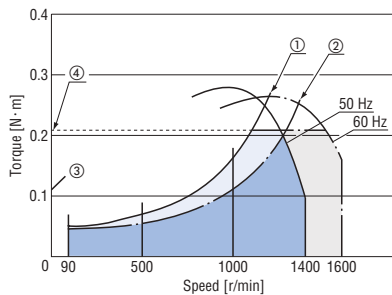
◇ 6 W



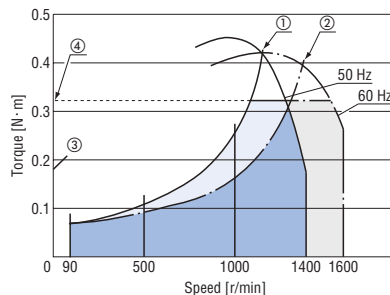
◇ 15 W



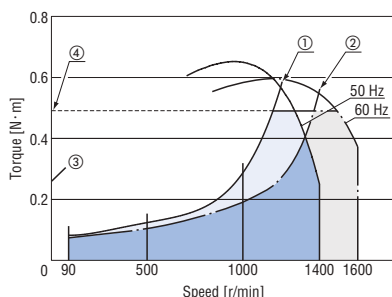
◇ 25 W



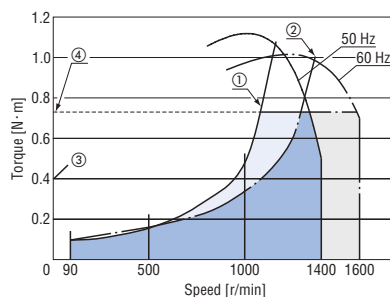
◇ 40 W



◇ 60 W



◇ 90 W



Dimensions (Unit: mm)

● "Mounting screws" are included with the combination type. Dimensions of installation screws → Page 02-19

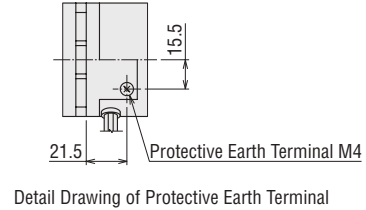
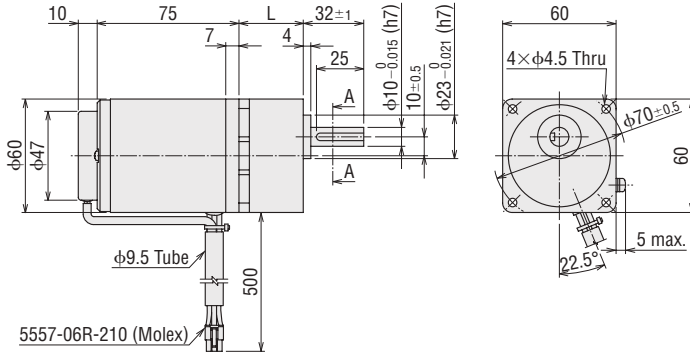
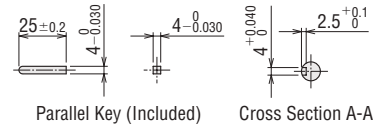
● A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Combination Type

◇ 6 W

2D & 3D CAD

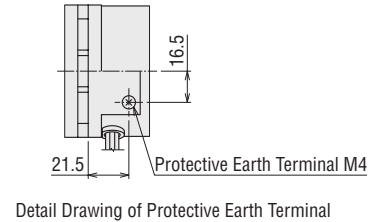
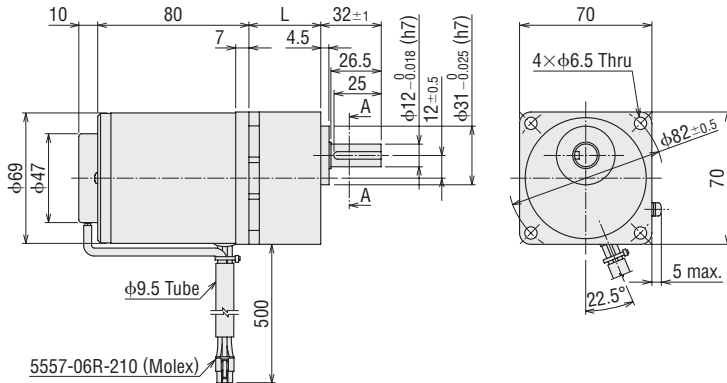
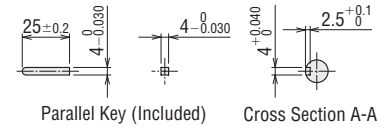
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM26UA -□ SCM26EC -□	SCM26GV-UA SCM26GV-EC	2GV□B	5~25	34	1.1	A1214A
			30~120	38	1.1	A1214B
			150~360	43	1.2	A1214C



◇ 15 W

2D & 3D CAD

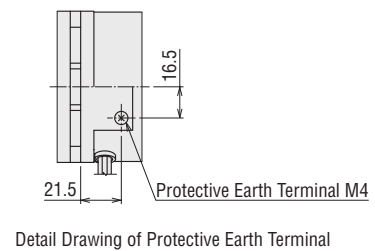
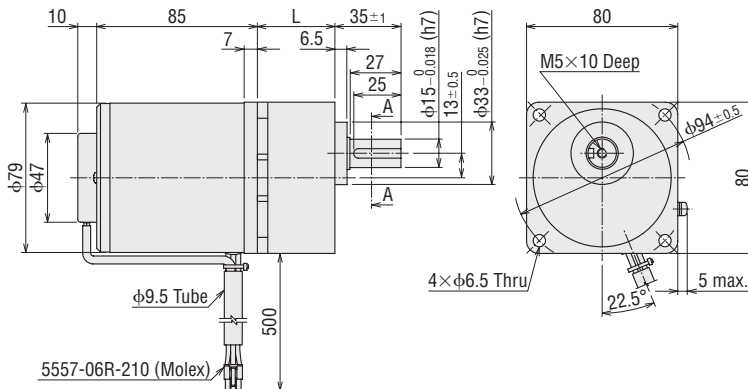
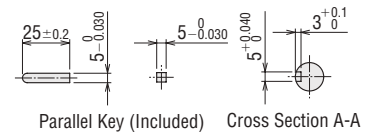
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM315UA -□ SCM315EC -□	SCM315GV-UA SCM315GV-EC	3GV□B	5~25	38	1.6	A1215A
			30~120	43	1.7	A1215B
			150~360	48	1.8	A1215C



◇ 25 W

2D & 3D CAD

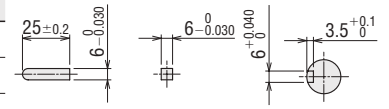
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM425UA -□ SCM425EC -□	SCM425GV-UA SCM425GV-EC	4GV□B	5~25	41	2.3	A1216A
			30~120	46	2.4	A1216B
			150~360	51	2.5	A1216C



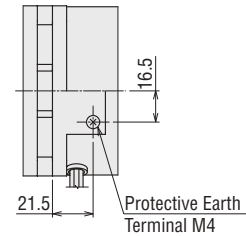
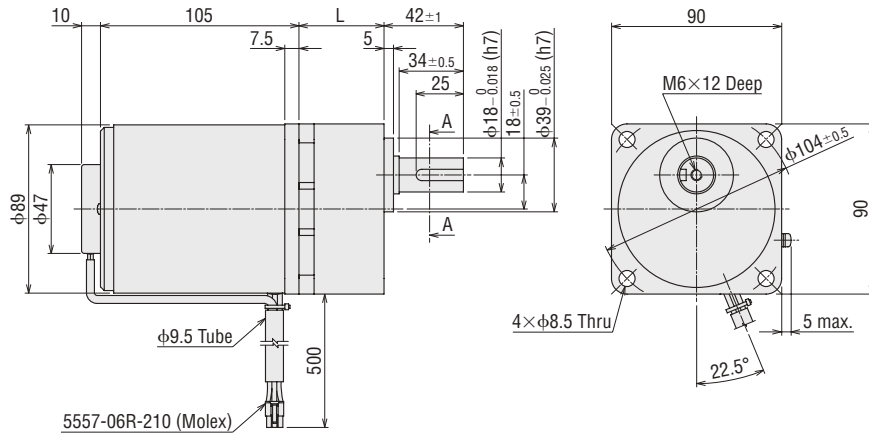
◇ 40 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM540UA -□ SCM540EC -□	SCM540GV-UA SCM540GV-EC	5GV□B	5~18	45	3.6	A1217A
			25~100	58	3.9	A1217B
			120~300	64	4.0	A1217C



Parallel Key (Included) Cross Section A-A

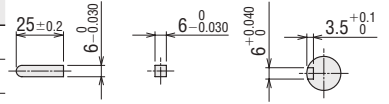


Detail Drawing of Protective Earth Terminal

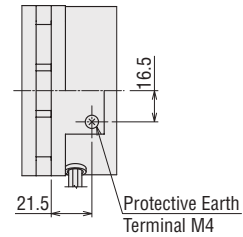
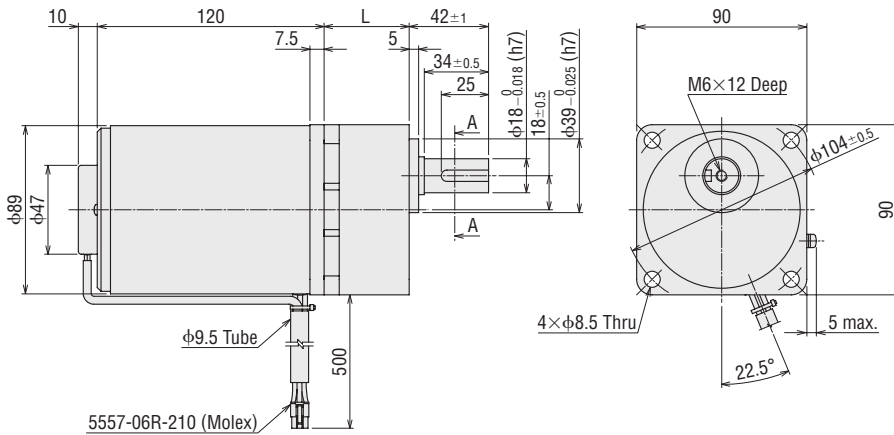
◇ 60 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM560UA -□ SCM560EC -□	SCM560GVH-UA SCM560GVH-EC	5GVH□B	5~18	45	4.1	A1218A
			25~100	58	4.4	A1218B
			120~300	64	4.5	A1218C



Parallel Key (Included) Cross Section A-A

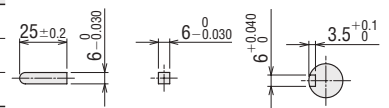


Detail Drawing of Protective Earth Terminal

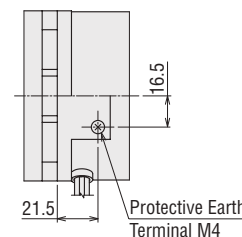
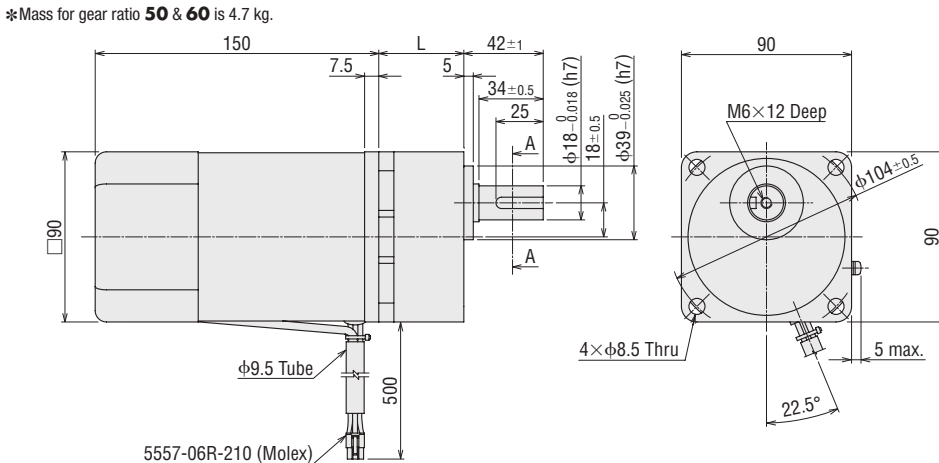
◇ 90 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM590UA -□ SCM590EC -□	SCM590GVR-UA SCM590GVR-EC	5GVR□B	5~15	45	4.3	A1219A
			18~36	58	4.7	A1219B
			50~180	70	4.8*	A1219C



Parallel Key (Included) Cross Section A-A



Detail Drawing of Protective Earth Terminal

*Mass for gear ratio 50 & 60 is 4.7 kg.

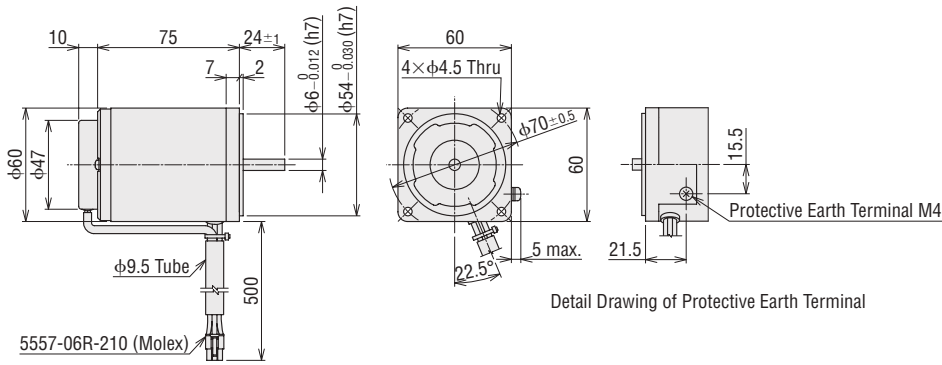
● Round Shaft Type

◇ 6 W

SCM26A-UA, SCM26A-EC

Mass: 0.8 kg

2D CAD A1256 3D CAD

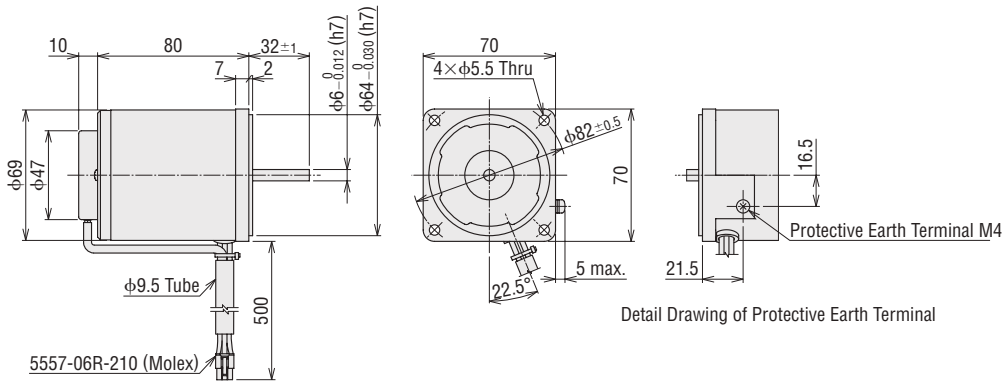


◇ 15 W

SCM315A-UA, SCM315A-EC

Mass: 1.2 kg

2D CAD A1257 3D CAD

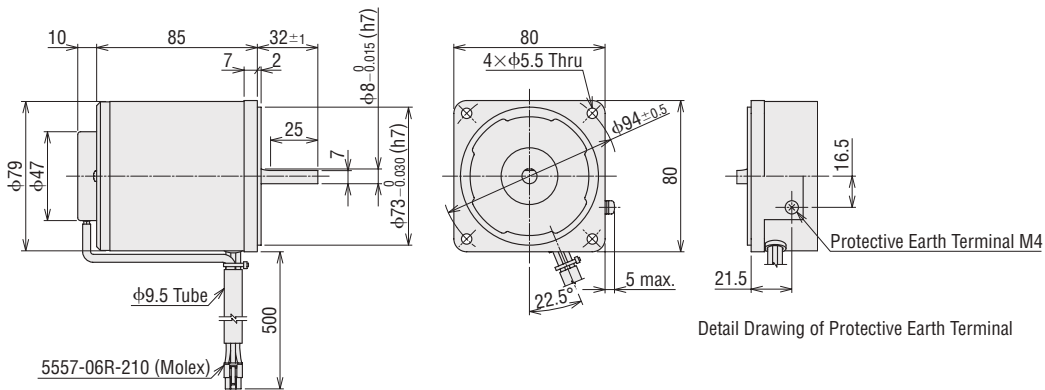


◇ 25 W

SCM425A-UA, SCM425A-EC

Mass: 1.6 kg

2D CAD A1258 3D CAD

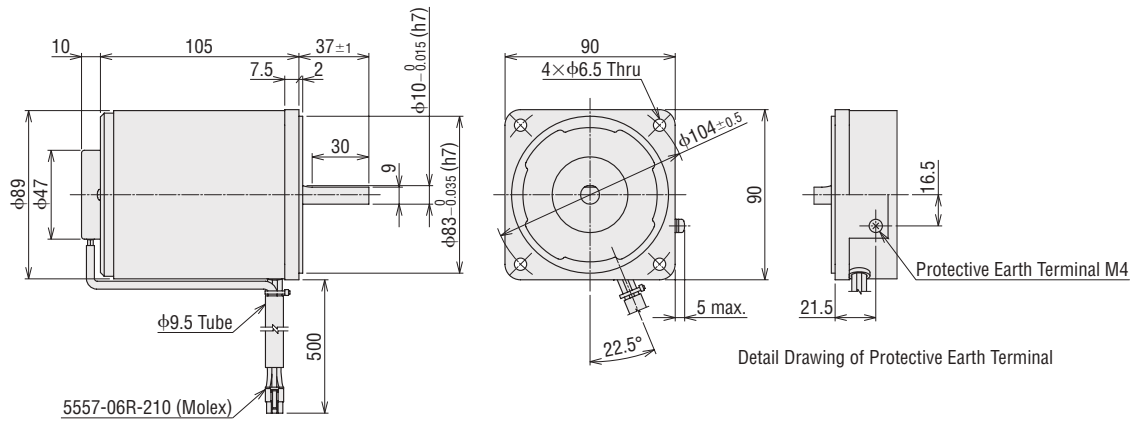


◇ 40 W

SCM540A-UA, SCM540A-EC

Mass: 2.6 kg

2D CAD A1259 3D CAD

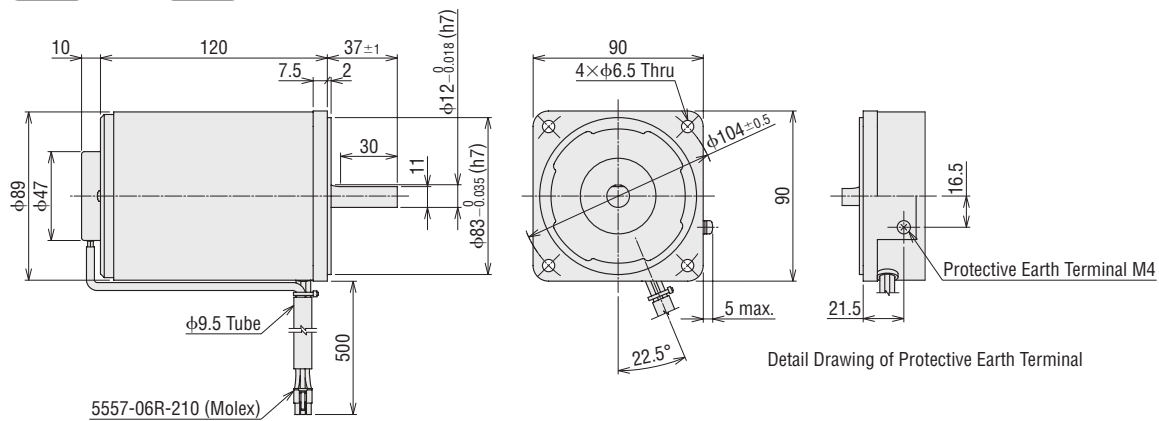


◇ 60 W

SCM560A-UA, SCM560A-EC

Mass: 3.1 kg

2D CAD A1260 3D CAD

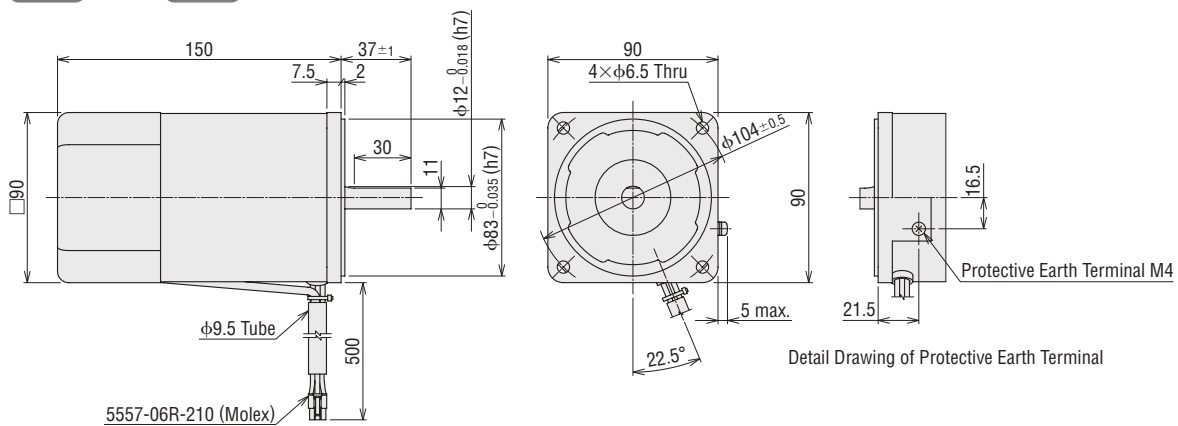


◇ 90 W

SCM590A-UA, SCM590A-EC

Mass: 3.3 kg

2D CAD A1261 3D CAD



● Speed Controller (Common to all types)

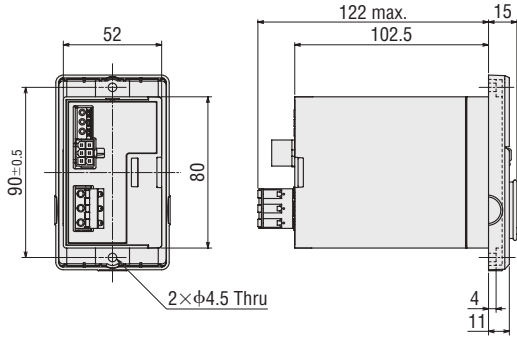
US2D6-UA, US2D6-EC, US2D15-UA, US2D15-EC,
US2D25-UA, US2D25-EC, US2D40-UA, US2D40-EC

Mass: 0.3 kg

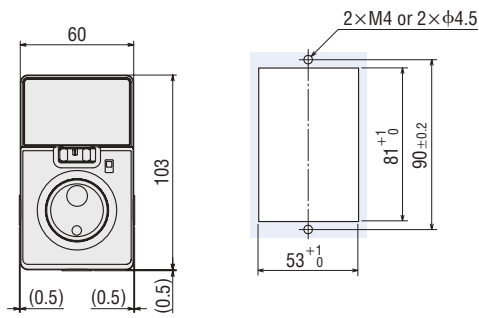
US2D60-UA, US2D60-EC, US2D90-UA, US2D90-EC

Mass: 0.4 kg

2D CAD A1430 3D CAD



◇ Panel Cut-Out for Speed Controller

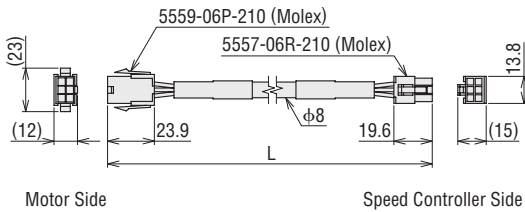


● Connection Cables

Product Name	Length L (m)
CC01SC	1
CC02SC	2
CC03SC	3
CC05SC	5
CC10SC	10

● Flexible Connection Cables

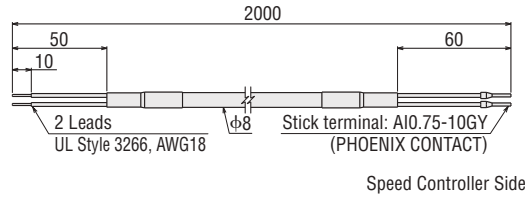
Product Name	Length L (m)
CC01SCR	1
CC02SCR	2
CC03SCR	3
CC05SCR	5
CC10SCR	10



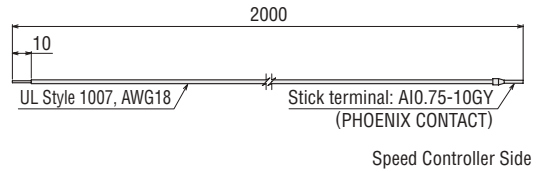
● Power Supply Cable (Included with speed controller)

◇ CC02AC02N2

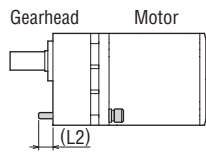
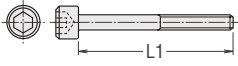
● Power Supply Cable



● Lead for Connecting FG



■ Dimensions of Installation Screws



Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
2GV□B	5~25	M4	50	7
	30~120		55	8
	150~360		60	8
3GV□B	5~25	M6	60	12
	30~120		65	12
	150~360		70	12
4GV□B	5~25	M6	60	9
	30~120		65	9
	150~360		70	9
5GV□B	5~18	M8	70	14
	25~100		85	16
	120~300		90	15
5GVH□B	5~18	M8	70	14
	25~100		85	16
	120~300		90	15
5GVR□B	5~15	M8	70	14
	18~36		85	16
	50~180		95	14

- Installation screws: 4 plain washers and 4 spring washers are included.
- The installation screw material is stainless steel.

Connection and Operation

Names and Functions of Speed Controller Parts

Display

Displays speed, alarm, etc.

Dial

Changes the speed and parameters. The value is set when the dial is pressed after changes are made.

Operating Switch

Placing the switch to "RUN" rotates the motor. Setting it to the "STAND-BY" position stops the motor.

Rotation Direction Switch

Changes the rotation direction of the motor.

Front Panel



[Front]

Input Signal Terminals

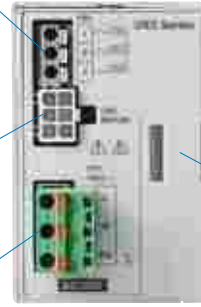
Connect to it only when operating by external signals.

Motor Connector

Connect the connector of the motor.

Power Connector

Connect the AC power supply.



[Back]

Cable Holding Hook

The motor cables can be bundled with the included belt.

When Front Panel is Removed

ESC Key

Go back to the previous function.

FUNCTION Key

Switch the function.

Acceleration/Deceleration Time Potentiometer

Set the acceleration/deceleration time. Setting range: 0.1~15.0 seconds

Installation Holes (2 places)



Extended Functions

Remove the front panel to be able to perform various settings by operating the keys.

Operating Mode	Details
Monitoring	Rotation speed, input signals
Parameters	Gear ratio, speed up ratio, fixed display of the lower first digit, prohibition alarm of operation at the initial setting, upper and lower limits of speed, acceleration and deceleration time, external operating signals input, data initialization
Others	Locking of data editing

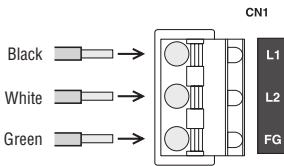
Main Power Connector (CN1)

Connect the AC power supply to CN1. Use the FG terminal to connect to a ground.

(The colors in the following figures apply when using the power supply cable.)

• Single-Phase 110/115 VAC, Single-Phase 220/230 VAC

• Applicable Lead Wire Size AWG18~14 (0.75~2.0 mm²)



● Operation with the Driver only

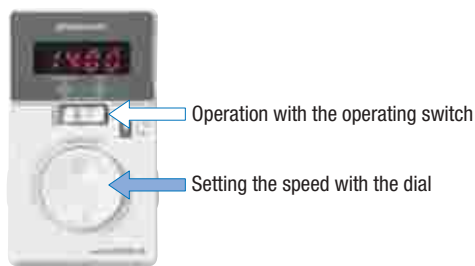
◇ Run/Stop

When the operating switch is set to the "RUN" position, the motor will start. When it is returned to the "STAND-BY" position, the motor decelerates to a stop.

◇ Speed Setting Method

Set the motor speed by using the dial.
 Setting range: 90~1400 r/min (50Hz)
 90~1600 r/min (60Hz)

Turning the dial slowly to the right increases the speed by 1 r/min increments, while turning it to the left reduces the speed by 1 r/min increments. Turning the dial fast produces a great variation in speed. Pressing the dial sets the speed.



● Operating Switch



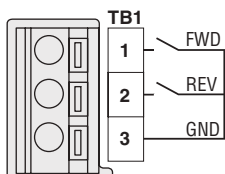
● Operation by External Signals

◇ Operating Method

• To perform run/stop by external signals, connect input signals to TB1.

• Input Signal Terminals (TB1)

Indication	Signal Name	Description
1	FWD	Forward input
2	REV	Reverse input
3	GND	Input signal common

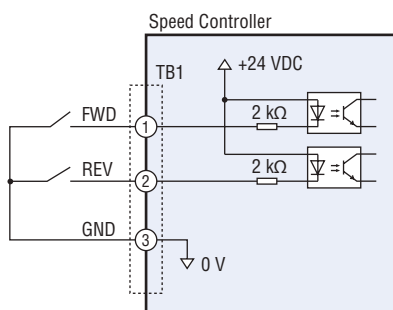


• Applicable Lead Wire

AWG24~16 (0.2~1.25 mm²)

◇ Example for Connection Using Switches, Relays, etc.

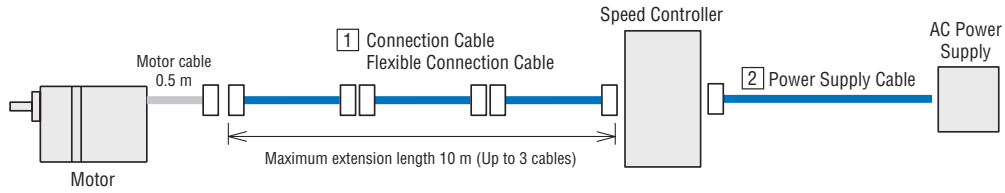
The figure shows a connection example for the operation of the motor using relays or switches.



Accessories (Sold Separately)

Cable

Cable System Configuration



1 Connection Cables/Flexible Connection Cables

This is a connection cable for connecting the motor and the speed controller. The maximum extension length of cables used between products is 10 m (up to 3 cables). Use the flexible connection cable in applications where the cable is bent and flexed.

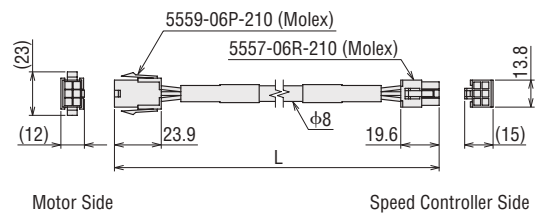
Product Line

◇ Connection Cables

Product Name	Length L (m)	List Price
CC01SC	1	SGD35
CC02SC	2	SGD40
CC03SC	3	SGD50
CC05SC	5	SGD70
CC10SC	10	SGD120



Dimensions (Unit: mm)



◇ Flexible Connection Cables

Product Name	Length L (m)	List Price
CC01SCR	1	SGD70
CC02SCR	2	SGD80
CC03SCR	3	SGD100
CC05SCR	5	SGD140
CC10SCR	10	SGD240



2 Power Supply Cable

This cable is used for connecting the speed controller and the power supply. The cable comes without the power supply plug.

Product Line

Product Name	List Price	Type	Power Supply Voltage	Length (m)
CC02AC02N2	SGD26	Plug not included	Single-Phase 110/115 VAC Single-Phase 220/230 VAC	2

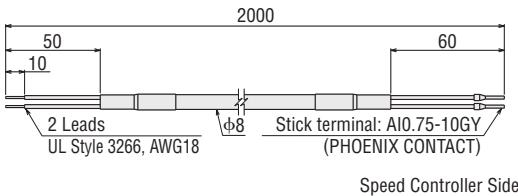


Dimensions (Unit: mm)

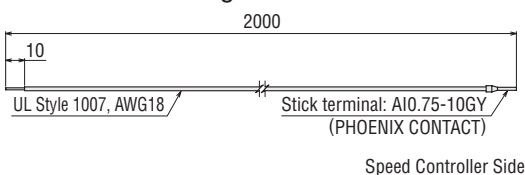
◇ For Single-Phase 110/115 VAC, Single-Phase 220/230 VAC

CC02AC02N2

• Power Supply Cable



• Lead for Connecting FG



Flexible Couplings

These are clamp type couplings for connecting the motor and gearhead shaft with the driven shaft.

Once the gearhead is determined, the coupling can be selected.

● Couplings can also be used with round shaft types.

Select a coupling with the same inner diameter size as the motor shaft diameter.

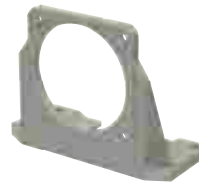


Applicable Product	Load Type	Coupling Type	List Price
SCM26	Uniform load	MCL30	SGD61
	Shock load		
SCM315	Uniform load	MCL30	SGD61
	Shock load	MCL40	SGD93
SCM425	Uniform load	MCL40	SGD93
	Shock load	MCL55	SGD124
SCM540 SCM560 SCM590	Uniform load	MCL55	SGD124
	Shock load		

Motor and Gearhead Mounting Brackets

These dedicated mounting brackets are for mounting motors and gearheads.

Product Name	List Price	Applicable Product
SOL2M4F	SGD24	SCM26 Round Shaft Type
		SCM26 Parallel Shaft Combination Type
SOL3M5F	SGD26	SCM315 Round Shaft Type
SOL3M6F	SGD26	SCM315 Parallel Shaft Combination Type
SOL4M5F	SGD29	SCM425 Round Shaft Type
SOL4M6F	SGD29	SCM425 Parallel Shaft Combination Type
SOL5M6F	SGD31	SCM540, SCM560, SCM590 Round Shaft Type
SOL5M8F	SGD31	SCM540, SCM560, SCM590 Parallel Shaft Combination Type



Circuit Products Mounting Brackets

Mounting brackets for installing the driver are available.

Mounting brackets have product lines for different applications such as for DIN rail installation, installation on the wall surface, and for conveyor guide installation.

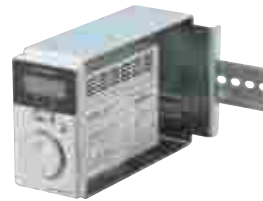
Product Line

Material: SPCC Surface treatment: Electroless nickel plating

Product Name	Application	List Price
MADP05-15	For DIN rail installation	SGD23
MAFP04-15	For wall surface installation	SGD23
MAFP05V	For conveyor guide installation	SGD12
MAFP05H		SGD12

Note

Circuit products mounting brackets cannot be used together with the dust-resistant and watertight type front cover.



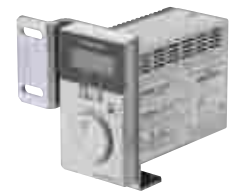
MADP05-15 <Application example>



MAFP04-15 <Application example>



MAFP05V <Application example>



MAFP05H <Application example>

Dust-Resistant and Watertight Type Front Cover

This cover protects the front panel of the speed controller.
The degree of protection conforms to the IP64 specification.
The cover can also be used to prevent operation errors on the front panel.



Product Line

Product Name	List Price
PCF12-B	SGD31

Note

The dust-resistant and watertight type front cover cannot be used together with circuit products mounting bracket.

Enclosure Box

This box is useful for when a driver is installed.
The box provides protection to the driver and wiring.



Product Line

Enclosure Box

Product Name	List Price
PCD12	SGD206

Cable Gland (For I/O signals)

Use when using input/output signals to perform operations.

Product Name	List Price
MPG	SGD8



Entry Model of Speed Control Motors



D-loop

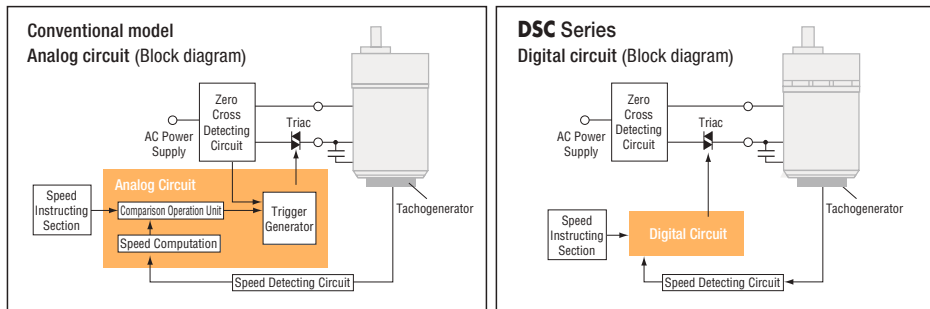


Actual size

Entry Model of Speed Control Motors

Speed Control by the Closed Loop Control

The tachogenerator installed in the AC motor will monitor the rotation speed. This speed controller controls the rotation speed kept at the set speed even if the load changes.



● Speed regulation $\pm 1\%$ (Reference value)

Digitization of circuit

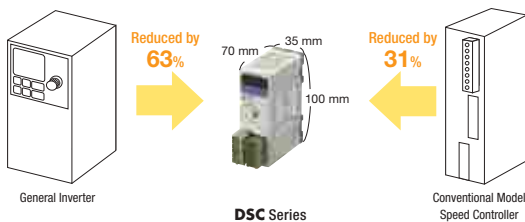
Most of the conventional analog circuits have been replaced with software, which are now run by the CPU. This has drastically reduced the number of circuit components and has produced the smallest circuit ever offered at low prices. In addition, by the digitization, the deviation between the speed command value and the speed detection value can become closer to zero, improving the speed variation from -5% to $\pm 1\%*$.

*0 to permissible torque at 1,000 r/min

Space Savings and Easier Installation

● Compact

The volume is reduced by 63% compared with the general inverter.



● Space Saving by Coherent Installation

The width of the body is 35 mm. The units use multiple shafts that can be installed nearly in contact with each other.



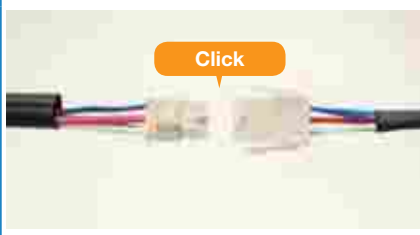
● For Thin Control Board

Depth: 90 mm
Can be installed in a thin control board.



● Simple Connection Using the Connector Between the Motor and the Driver

The wiring between the speed controller and the motor uses the connector connection method, enable easy installation and removal.



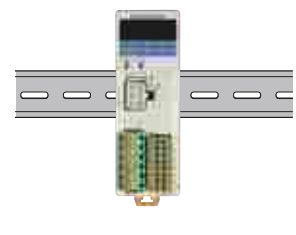
● Screwless Wiring for I/O, Unnecessary of Pressure Joining or Thread Fastening

Soldering, crimp tools and torque control for thread fastening are not necessary. Less time is required for wiring and maintenance.



● Easy Installation onto the DIN Rail

The speed controller can be installed directly onto the DIN rail.



Extensive Functions in Compact Body

Direct Display/Input of Speed and Settings



Monitoring Mode

Real-time monitoring of speed (motor, gear axis, conveyor speed);
Monitoring of alarm, warning and I/O status

Data Mode

Speed Setting

Parameter Mode

I/O allocation, parameters setting

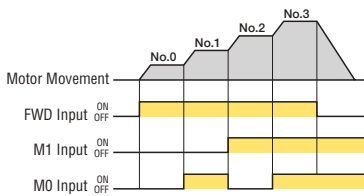
Test Mode

Test operation available without data setting

● The operation lock can prevent wrong operations.

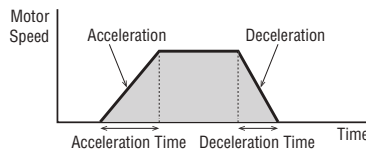
Speed Control (4-speed)

4 operation data can be set and switched among each other by I/O during operation.



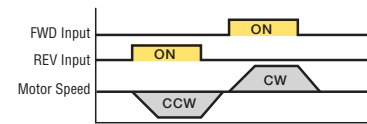
Acceleration/Deceleration

Makes the motor movement at start/stop smoother. Different acceleration/deceleration rates can be set for each of the 4-speed data.



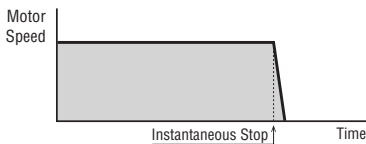
Bi-directional Operation

Performs the operation according to the command for rotation direction.



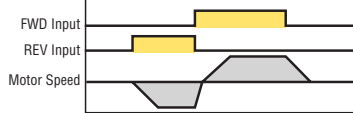
Instantaneous Stop

Stops the operating motor instantaneously. (Short-cycle start/stop is possible subject to certain conditions.)

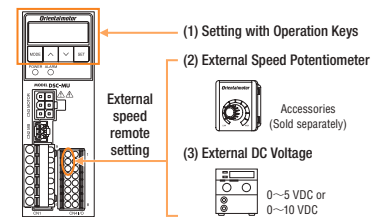


Instantaneous Bi-directional Operation

Switch instantaneously for rotation direction of the motor during operation. (Short-cycle switching is possible subject to certain conditions.)

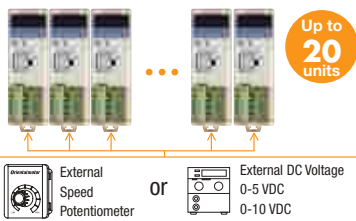


Settable External Speed



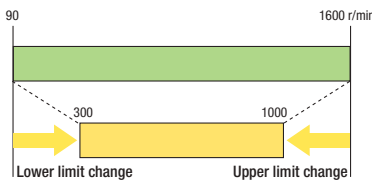
Parallel Operation (Up to 20 units)

For one external speed potentiometer, up to 20 units can be operated in parallel. The speed of each motor can be finely adjusted by changing the parameter of the controller.



Limitation of Rotation Speed Range

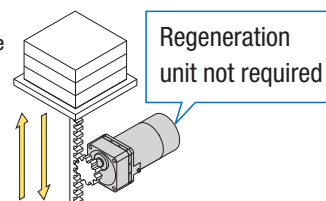
Speed range for speed setting can be limited in advance.



Vertical Driving Available with an Electromagnetic Brake

The speed control in vertical driving is possible for deceleration control. (For details on the deceleration control and the driving condition on the deceleration control, → page 03-21.)

Speed Control Range
[50 Hz]
300~1400 r/min
[60 Hz]
300~1600 r/min



Gearhead with High Permissible Torque and High Strength

DSC Series adopts the motor gearhead with high permissible torque and high strength.

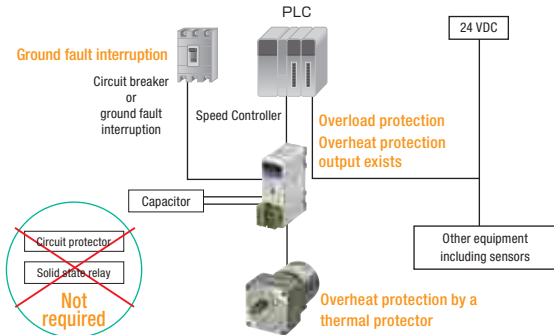
This gearhead uses our unique side plate, increasing the case rigidity. The gear is also strengthened by heat treatment (carburizing and quenching).

Parallel Shaft Combination Type

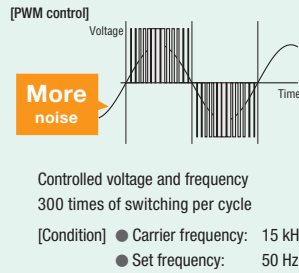


High Reliability

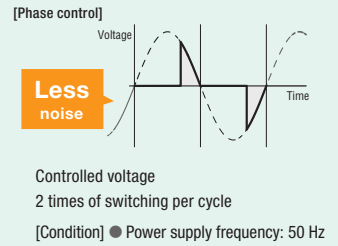
The System Configuration is Simple, with a Reassuring Low Noise Level



Inverter + 3-Phase motor

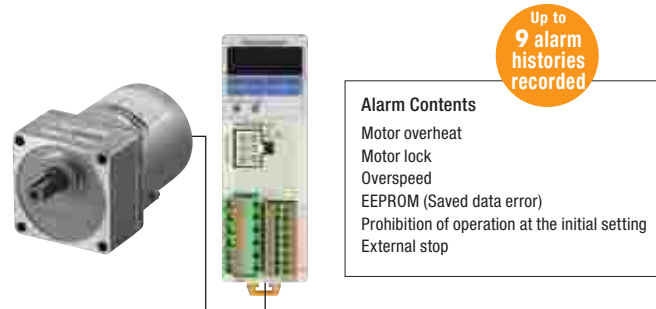


DSC Series



Reliability Enhanced by Alarm Output

The closed loop control feedback the status of the motor to the controller in real time. If an error occurs, such as motor lock due to overloading, the unit output will trigger an alarm signal and stops the power supply to the motor.



Lineup

Motor

Type	Output Power [W]	Power Supply Voltage [VAC]	Maximum Permissible Torque [N·m]
Standard Type Parallel Shaft Combination Type → Page 03-07	6 15 25 40	Single-Phase 110/115 Single-Phase 220/230	40
Standard Type Round Shaft Type → Page 03-08	60 90		0.73
With Electromagnetic Brake Type Parallel Shaft Combination Type → Page 03-20	6 15 25 40 60 90	Single-Phase 110/115 Single-Phase 220/230	40

Speed Controller

Type	Output Power [W]	Power Supply Voltage [VAC]
Standard Type	6 15 25 40 60 90	Single-Phase 110/115 Single-Phase 220/230
With Electromagnetic Brake Type	6 15 25 40 60 90	Single-Phase 110/115 Single-Phase 220/230

Connection Cable

Cable Type
Connection Cable Flexible Connection Cable 1~10 m
Connection Cable Flexible Connection Cable 1~10 m

Product Number Code

Motor

◇ Parallel Shaft Combination Type

SCM 4 25 EC - 15

① ② ③ ④ ⑤ ⑥

◇ Round Shaft Type

SCM 4 25 A - EC

① ② ③ ④ ⑤

Speed Controller

DSCD 25 EC

① ② ③ ④

Connection Cable, Flexible Connection Cable

CC 01 SC R

① ② ③ ④ ⑤

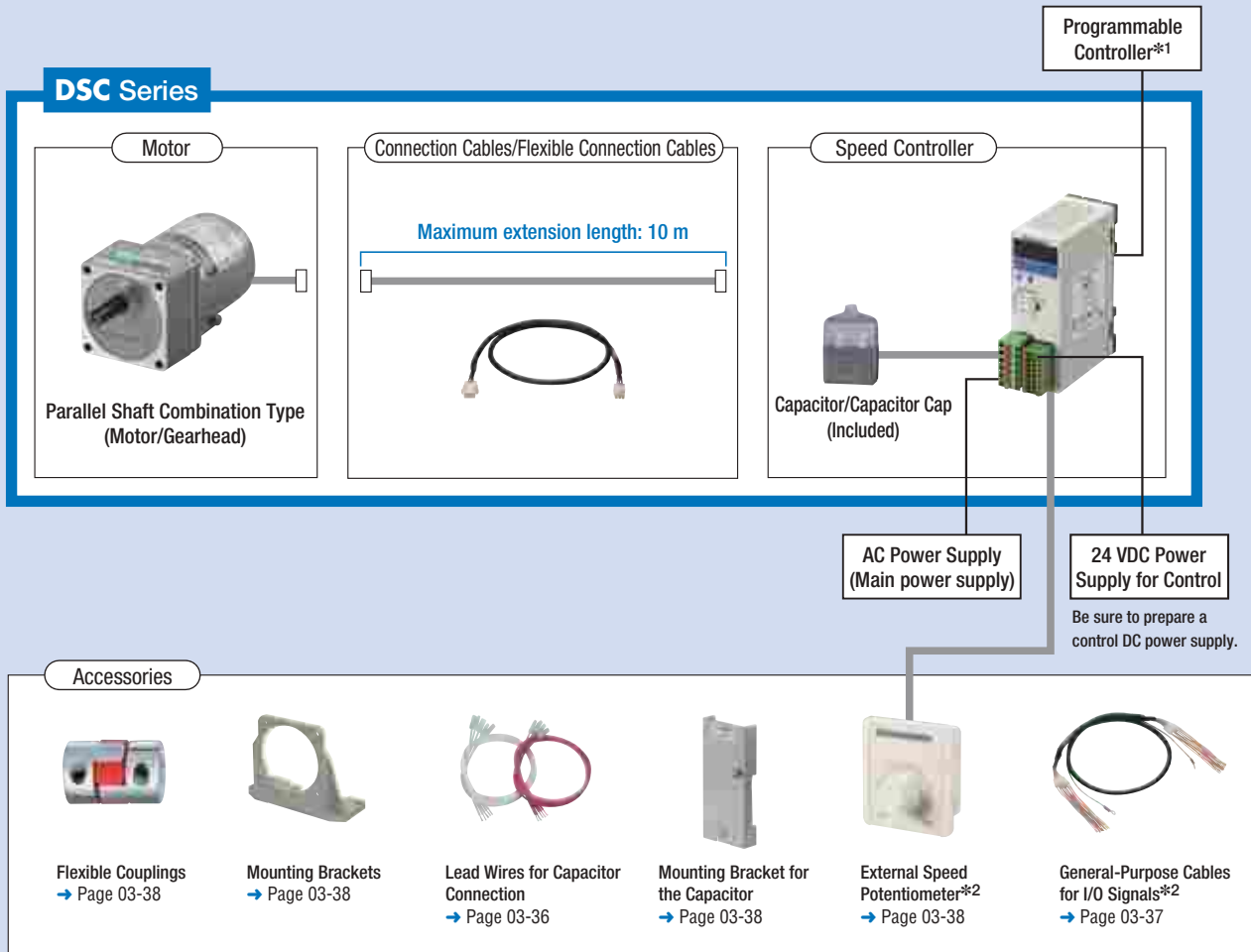
①	Motor Type	SCM : Speed Control Motor
②	Frame Size	2 : 60 mm 3 : 70 mm 4 : 80 mm 5 : 90 mm
③	Output Power (W)	(Example) 25 : 25 W
④	Power Supply Voltage	UA : Single-Phase 110/115 VAC EC : Single-Phase 220/230 VAC
⑤		M : Power Off Activated Type Electromagnetic Brake
⑥	Gear Ratio/Shaft Configuration	Number: Gear Ratio for Combination Type A : Round Shaft Type

①	Speed Controller Type	DSCD : DSC Series Speed Controller
②	Output Power (W)	(Example) 25 : 25 W
③	Power Supply Voltage	UA : Single-Phase 110/115 VAC EC : Single-Phase 220/230 VAC
④		M : Power Off Activated Type Electromagnetic Brake

①	Cable Type	CC : Connection Cable
②	Length	01 : 1 m 02 : 2 m 03 : 3 m 05 : 5 m 10 : 10 m
③	Applied Model	SC : Speed Control Motor
④		M : Power Off Activated Type Electromagnetic Brake
⑤	None: Connection Cable	R : Flexible Connection Cable

System Configuration

The motor, speed controller, and connection cables need to be purchase separately.



*1 Not supplied.

*2 The external speed potentiometer (**PAVR2-20K**) cannot be used together with the general-purpose cable for I/O signals.

System Configuration Example

DSC Series			Sold Separately	
Motor Parallel Shaft Combination Type	Speed Controller	Connection Cable (5 m)	Mounting Brackets	Flexible Couplings
SCM425EC-25	DSCD25EC	CC05SC	SOL4M6F	MCL401515
SGD191	SGD126	SGD70	SGD29	SGD93

The system configuration shown above is an example. Other combinations are available.

Standard Type

Parallel Shaft Combination Type

Round Shaft Type



Parallel Shaft Combination Type

Product Line

Parallel Shaft Combination Type

The price includes the prices of the motor and gearhead.



Speed Controller

The price includes the prices of the speed controller and capacitor.



Output Power	Power Supply Voltage	Product Name	Gear Ratio	List Price		
6 W	Single-Phase 110/115 VAC	SCM26UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD158		
			25, 30, 36	SGD166		
			50, 60, 75, 90, 100, 120, 150, 180	SGD174		
			250, 300, 360	SGD212		
		Single-Phase 220/230 VAC	SCM26EC -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD161	
				25, 30, 36	SGD168	
	50, 60, 75, 90, 100, 120, 150, 180			SGD177		
	250, 300, 360			SGD214		
	15 W		Single-Phase 110/115 VAC	SCM315UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD170
					25, 30, 36	SGD178
		50, 60, 75, 90, 100, 120, 150, 180			SGD186	
		250, 300, 360			SGD221	
Single-Phase 220/230 VAC		SCM315EC -□		5, 6, 7.5, 9, 12.5, 15, 18	SGD173	
				25, 30, 36	SGD180	
			50, 60, 75, 90, 100, 120, 150, 180	SGD189		
			250, 300, 360	SGD224		
		25 W	Single-Phase 110/115 VAC	SCM425UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD180
					25, 30, 36	SGD188
50, 60, 75, 90, 100, 120, 150, 180					SGD196	
250, 300, 360					SGD234	
Single-Phase 220/230 VAC	SCM425EC -□			5, 6, 7.5, 9, 12.5, 15, 18	SGD184	
				25, 30, 36	SGD191	
			50, 60, 75, 90, 100, 120, 150, 180	SGD200		
			250, 300, 360	SGD238		
	40 W		Single-Phase 110/115 VAC	SCM540UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD214
					25, 30, 36	SGD223
50, 60, 75, 90, 100, 120, 150, 180					SGD230	
250, 300					SGD300	
Single-Phase 220/230 VAC		SCM540EC -□		5, 6, 7.5, 9, 12.5, 15, 18	SGD218	
				25, 30, 36	SGD226	
			50, 60, 75, 90, 100, 120, 150, 180	SGD234		
			250, 300	SGD304		
		60 W	Single-Phase 110/115 VAC	SCM560UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD259
					25, 30, 36, 50, 60, 75, 90, 100	SGD270
120, 150, 180					SGD281	
250, 300					SGD318	
Single-Phase 220/230 VAC	SCM560EC -□			5, 6, 7.5, 9, 12.5, 15, 18	SGD264	
				25, 30, 36, 50, 60, 75, 90, 100	SGD275	
			120, 150, 180	SGD286		
			250, 300	SGD323		
	Single-Phase 110/115 VAC		SCM590UA -□	5, 6, 7.5, 9, 12.5, 15, 18	SGD279	
				25, 30, 36, 50, 60	SGD300	
75, 90, 100, 120, 150, 180				SGD310		
5, 6, 7.5, 9, 12.5, 15, 18				SGD284		
Single-Phase 220/230 VAC		SCM590EC -□	25, 30, 36, 50, 60	SGD305		
			75, 90, 100, 120, 150, 180	SGD315		

Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	DSCD6UA	SGD126
		DSCD6EC	SGD126
	Single-Phase 220/230 VAC	DSCD15UA	SGD126
		DSCD15EC	SGD126
25 W	Single-Phase 110/115 VAC	DSCD25UA	SGD126
		DSCD25EC	SGD126
	Single-Phase 220/230 VAC	DSCD40UA	SGD126
		DSCD40EC	SGD126
60 W	Single-Phase 110/115 VAC	DSCD60UA	SGD128
		DSCD60EC	SGD128
	Single-Phase 220/230 VAC	DSCD90UA	SGD128
		DSCD90EC	SGD128

● A number in the box □ in the product name indicates the gear ratio.

[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

● Round Shaft Type



Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	SCM26A-UA	SGD88
	Single-Phase 220/230 VAC	SCM26A-EC	SGD91
15 W	Single-Phase 110/115 VAC	SCM315A-UA	SGD94
	Single-Phase 220/230 VAC	SCM315A-EC	SGD96
25 W	Single-Phase 110/115 VAC	SCM425A-UA	SGD103
	Single-Phase 220/230 VAC	SCM425A-EC	SGD106
40 W	Single-Phase 110/115 VAC	SCM540A-UA	SGD121
	Single-Phase 220/230 VAC	SCM540A-EC	SGD125
60 W	Single-Phase 110/115 VAC	SCM560A-UA	SGD139
	Single-Phase 220/230 VAC	SCM560A-EC	SGD144
90 W	Single-Phase 110/115 VAC	SCM590A-UA	SGD158
	Single-Phase 220/230 VAC	SCM590A-EC	SGD163

● Speed Controller

The price includes the prices of the speed controller and capacitor.



Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	DSCD6UA	SGD126
	Single-Phase 220/230 VAC	DSCD6EC	
15 W	Single-Phase 110/115 VAC	DSCD15UA	SGD126
	Single-Phase 220/230 VAC	DSCD15EC	
25 W	Single-Phase 110/115 VAC	DSCD25UA	SGD126
	Single-Phase 220/230 VAC	DSCD25EC	
40 W	Single-Phase 110/115 VAC	DSCD40UA	SGD126
	Single-Phase 220/230 VAC	DSCD40EC	
60 W	Single-Phase 110/115 VAC	DSCD60UA	SGD128
	Single-Phase 220/230 VAC	DSCD60EC	
90 W	Single-Phase 110/115 VAC	DSCD90UA	SGD128
	Single-Phase 220/230 VAC	DSCD90EC	

● Connection Cables



Length	Product Name	List Price
1 m	CC01SC	SGD35
2 m	CC02SC	SGD40
3 m	CC03SC	SGD50
5 m	CC05SC	SGD70
10 m	CC10SC	SGD120

● Flexible Connection Cables



Length	Product Name	List Price
1 m	CC01SCR	SGD70
2 m	CC02SCR	SGD80
3 m	CC03SCR	SGD100
5 m	CC05SCR	SGD140
10 m	CC10SCR	SGD240

■ Accessories

● Motor

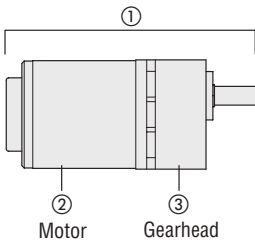
Type	Parallel Key	Installation Screws	Operating Manual
Parallel Shaft Combination Type	1 piece	1 set	1 copy
Round Shaft Type	—	—	

● Speed Controller

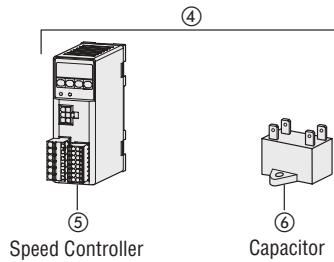
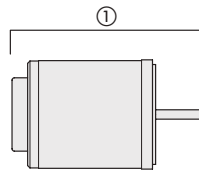
Capacitor	Capacitor Cap	Operating Manual
1 piece	1 piece	1 copy

Combination List

Parallel Shaft Combination Type



Round Shaft Type



Combination Type

The combination type comes with a motor and a gearhead pre-assembled. The combination of the motor and the gearhead can be changed. They are also available separately. You can remove the gearhead to change the installation position by 90°.

Parallel Shaft Combination Type

Output Power	Power Supply Voltage	Speed Control Motor			Speed Controller		
		Product Name	Component Product Name		Product Name	Component Product Name	
		①	②	③	④	⑤	⑥
6 W	Single-Phase 110/115 VAC	SCM26UA -□	SCM26GV-UA	2GV□B	DSCD6UA	DSC-U	CH25FAUL2
	Single-Phase 220/230 VAC	SCM26EC -□	SCM26GV-EC		DSCD6EC		CH06BFAUL
15 W	Single-Phase 110/115 VAC	SCM315UA -□	SCM315GV-UA	3GV□B	DSCD15UA		CH45FAUL2
	Single-Phase 220/230 VAC	SCM315EC -□	SCM315GV-EC		DSCD15EC		CH10BFAUL
25 W	Single-Phase 110/115 VAC	SCM425UA -□	SCM425GV-UA	4GV□B	DSCD25UA		CH65CFAUL2
	Single-Phase 220/230 VAC	SCM425EC -□	SCM425GV-EC		DSCD25EC		CH15BFAUL
40 W	Single-Phase 110/115 VAC	SCM540UA -□	SCM540GV-UA	5GV□B	DSCD40UA		CH90CFAUL2
	Single-Phase 220/230 VAC	SCM540EC -□	SCM540GV-EC		DSCD40EC		CH23BFAUL
60 W	Single-Phase 110/115 VAC	SCM560UA -□	SCM560GVH-UA	5GVH□B	DSCD60UA		CH120CFAUL2
	Single-Phase 220/230 VAC	SCM560EC -□	SCM560GVH-EC		DSCD60EC		CH30BFAUL
90 W	Single-Phase 110/115 VAC	SCM590UA -□	SCM590GVR-UA	5GVR□B	DSCD90UA	CH200CFAUL2	
	Single-Phase 220/230 VAC	SCM590EC -□	SCM590GVR-EC		DSCD90EC	CH60BFAUL	

● A capacitor cap is included with the capacitor.

Round Shaft Type

Output Power	Power Supply Voltage	Speed Control Motor	Speed Controller		
		Product Name	Product Name	Component Product Name	
		①	④	⑤	⑥
6 W	Single-Phase 110/115 VAC	SCM26A-UA	DSCD6UA	DSC-U	CH25FAUL2
	Single-Phase 220/230 VAC	SCM26A-EC	DSCD6EC		CH06BFAUL
15 W	Single-Phase 110/115 VAC	SCM315A-UA	DSCD15UA		CH45FAUL2
	Single-Phase 220/230 VAC	SCM315A-EC	DSCD15EC		CH10BFAUL
25 W	Single-Phase 110/115 VAC	SCM425A-UA	DSCD25UA		CH65CFAUL2
	Single-Phase 220/230 VAC	SCM425A-EC	DSCD25EC		CH15BFAUL
40 W	Single-Phase 110/115 VAC	SCM540A-UA	DSCD40UA		CH90CFAUL2
	Single-Phase 220/230 VAC	SCM540A-EC	DSCD40EC		CH23BFAUL
60 W	Single-Phase 110/115 VAC	SCM560A-UA	DSCD60UA		CH120CFAUL2
	Single-Phase 220/230 VAC	SCM560A-EC	DSCD60EC		CH30BFAUL
90 W	Single-Phase 110/115 VAC	SCM590A-UA	DSCD90UA	CH200CFAUL2	
	Single-Phase 220/230 VAC	SCM590A-EC	DSCD90EC	CH60BFAUL	

● A capacitor cap is included with the capacitor.

● A number in the box □ in the product name indicates the gear ratio.

Specifications Continuous Rating



Product Name		Maximum Output Power	Voltage	Frequency	Variable Speed Range	Permissible Torque		Starting Torque	Current	Power Consumption	Capacitor	Motor Overheat Protection Device
						1200 r/min (50 Hz)	90 r/min					
Upper Level: Parallel Shaft Combination Type	Speed Controller	W	VAC	Hz	r/min	1450 r/min (60 Hz)	mN·m	mN·m	A	W	μF	
Lower Level: Round Shaft Type												
SCM26UA-□ SCM26A-UA	DSCD6UA	6	Single-Phase 110	60	90~1600	50	38	40	0.28	29	2.5	ZP
			Single-Phase 115									
SCM26EC-□ SCM26A-EC	DSCD6EC	6	Single-Phase 220	50	90~1400	42	40	44	0.135	29	0.6	ZP
			Single-Phase 230	60	90~1600	46						
			Single-Phase 220	50	90~1400	46	37	44				
			Single-Phase 230	60	90~1600	50						
SCM315UA-□ SCM315A-UA	DSCD15UA	15	Single-Phase 110	60	90~1600	120	45	84	0.48	46	4.5	TP
			Single-Phase 115			125		90				
SCM315EC-□ SCM315A-EC	DSCD15EC	15	Single-Phase 220	50	90~1400	125	40	67	0.23	43	1.0	TP
			Single-Phase 230	60	90~1600	110		72		46		
			Single-Phase 220	50	90~1400	125	81			44		
			Single-Phase 230	60	90~1600	120		81		47		
SCM425UA-□ SCM425A-UA	DSCD25UA	25	Single-Phase 110	60	90~1600	205	45		125	0.75	58	6.5
			Single-Phase 115					135	69			
SCM425EC-□ SCM425A-EC	DSCD25EC	25	Single-Phase 220	50	90~1400	205	40	110	0.37	70	1.5	TP
			Single-Phase 230	60	90~1600			120				
			Single-Phase 220	50	90~1400	120	81	44				
			Single-Phase 230	60	90~1600			120		81		
SCM540UA-□ SCM540A-UA	DSCD40UA	40	Single-Phase 110	60	90~1600	320	70		180		1.1	107
			Single-Phase 115					190				
SCM540EC-□ SCM540A-EC	DSCD40EC	40	Single-Phase 220	50	90~1400	320	65	190	0.55	96	2.3	TP
			Single-Phase 230	60	90~1600					70		
			Single-Phase 220	50	90~1400	65	99					
			Single-Phase 230	60	90~1600			70		105		
SCM560UA-□ SCM560A-UA	DSCD60UA	60	Single-Phase 110	60	90~1600	460	80		260		1.5	144
			Single-Phase 115			490		280	145			
SCM560EC-□ SCM560A-EC	DSCD60EC	60	Single-Phase 220	50	90~1400	490	80	280	0.71	129	3.0	TP
			Single-Phase 230	60	90~1600	460		75		290		
			Single-Phase 220	50	90~1400	490	85			290		
			Single-Phase 230	60	90~1600			490		80		
SCM590UA-□ SCM590A-UA	DSCD90UA	90	Single-Phase 110	60	90~1600	730	85		400		2.4	224
			Single-Phase 115					440	227			
SCM590EC-□ SCM590A-EC	DSCD90EC	90	Single-Phase 220	50	90~1400	730	95	490	1.2	201	6.0	TP
			Single-Phase 230	60	90~1600			500		226		
			Single-Phase 220	50	90~1400	520	1.2	204				
			Single-Phase 230	60	90~1600			530		1.3		

● The specifications apply to the motor only. The variable speed ranges shown are under no load conditions.

ZP: These products are impedance protected.

TP: This indicates that there is a built-in thermal protector (Automatic return type).

● A number in the box □ in the product name indicates the gear ratio.

Common Specifications

Item	Specifications
Speed Setting Methods	Set in either of the following methods. <ul style="list-style-type: none"> Setting using the control panel Up to 4 patterns of operation data can be set. External speed potentiometer External DC voltage: 0~5 VDC or 0~10 VDC
Acceleration and Deceleration Time Setting Range	0.0~15.0 seconds Acceleration time/deceleration time varies with the load condition of the motor.
Monitoring Mode	Rotation speed, operation data No., alarm code, warning code, I/O monitor
Data Mode	Rotation speed, acceleration time, deceleration time, initialization
Function	Parameter Mode
	Gear ratio, speed up ratio, fixed display of the lower first digit, prohibition alarm of operation at the initial setting, external speed instruction input, external speed instruction voltage selection, external speed instruction offset, Upper and lower limits of speed, input function selection, output function selection, motor lock detection time, motor rotation direction, initialization
	Test Mode
	JOG operation
	Others
	Locking of data editing
Control Power Source	24 VDC±10% 0.15 A or more
Input Signals	Photocoupler input Input resistance 4.7 kΩ Signals can be optionally allocated to IN0~IN5 inputs (6 points) []: Initial setting [FWD], [REV], [MO], [M1], [ALARM-RESET], [FREE], EXT-ERROR Sink input/source input ... Switchable by the selection switch: The factory setting is Sink input
Output Signals	Photocoupler and open collector output External power source: 4.5~30 VDC 40 mA or less Signals can be optionally allocated to OUT0 or OUT1 (2 points) []: Initial setting [SPEED-OUT], [ALARM-OUT], TH-OUT, WNG Sink output/source output ... Supplied through external wiring
Protective Functions	When the following protective functions are activated, the motor will coast to a stop, and the ALARM output will be turned OFF. At the same time, the alarm code is indicated in the operating panel and ALARM LED lights. Alarm types: Motor overheat, motor lock, overspeed, EEPROM error, prohibition of operation at the initial setting, external stop
Maximum Extension Length	Motor and speed controller distance 10 m

General Specifications

Item	Motor	Speed Controller
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the motor windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the main circuit terminal and the input signal terminal, between the main circuit terminal and the case, and between the main circuit terminal and FG, after continuous operation under normal ambient temperature and humidity.
Dielectric Strength Voltage	No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.9 kVAC at 50 Hz or 60 Hz between the main circuit terminal and the input signal terminal and between the main circuit terminal and the case, and 1.5 kVAC at 50 Hz or 60 Hz between the main circuit terminal and FG for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	A gearhead or equivalent heat sink*1 is connected to the motor and the winding temperature rise is measured at 80°C or less using the resistance change method after continuous operation with no load under normal ambient temperature and humidity.	—
Overheat Protection Device	The 6 W type is impedance protected. All other motors have a built-in thermal protector (Automatic return type) Open: 130±5°C Close: 85±20°C	—
Operating Environment	Ambient Temperature	-10~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 1000 m above sea level
	Atmosphere	No corrosive gases or dust. Not exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.
Vibration	Not subject to continuous vibration or excessive shock Conforms to JIS C 60068-2-6 "Sine-wave vibration test method" Frequency range: 10~55 Hz, Pulsating amplitude: 0.15 mm Sweep direction: 3 directions (X, Y, Z) Number of sweeps: 20 times	
Storage Condition*2	Ambient Temperature	-25~+70°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 3000 m above sea level
	Atmosphere	No corrosive gases or dust. Not exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.
Heat-resistant Class	130 (B)	—
Degree of Protection	IP20	IP20

*1 Heat sink size (Material: Aluminum)

Motor Output Power	Size (mm)	Thickness (mm)
6 W	115×115	5
15 W	125×125	
25 W	135×135	
40 W	165×165	
60 W	200×200	
90 W	200×200	

*2 The storage condition applies to a short period such as a period during transportation.

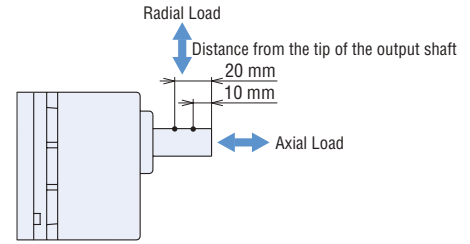
[Note]

● Do not measure insulation resistance or perform the dielectric strength test while the motor and speed controller are connected.

Permissible Radial Load/Permissible Axial Load

Parallel Shaft Combination Type

Output Power	Gear Ratio	Permissible Radial Load N		Permissible Axial Load N
		Distance from the tip of the gearhead output shaft 10 mm	20 mm	
6 W	5~25	150	200	40
	30~360	200	300	
15 W	5~25	200	300	80
	30~360	300	400	
25 W	5~25	300	350	100
	30~360	450	550	
40 W 60 W	5~9	400	500	150
	12.5~18	450	600	
	25~300	500	700	
90 W	5~9	400	500	150
	12.5~18	450	600	
	25~180	500	700	



Round Shaft Type

Output Power	Permissible Radial Load N		Permissible Axial Load
	Distance from the tip of the motor output shaft 10 mm	20 mm	
6 W	50	110	Half of motor mass or less*
15 W	40	60	
25 W	90	140	
40 W	140	200	
60 W	240	270	
90 W			

*Avoid axial loads as much as possible.

If axial load is unavoidable, keep it at half or less of the motor mass.

Gearhead Transmission Efficiency

Product Name	Gear Ratio	Efficiency (%)																			
		5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300
2GV□B, 3GV□B, 4GV□B		90%									86%						81%				
5GV□B, 5GVH□B		90%									86%						81%				
5GVR□B		90%									86%						81%				

Permissible Load Inertia J of Combination Types

Unit: $\times 10^{-4} \text{kg}\cdot\text{m}^2$

Output Power	Gear Ratio	Permissible Load Inertia J																				
		5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
6 W		12	18	28	40	78	110	160	260	370	540	920	1300	1700	2000	2500	3600	5000	5000	5000	5000	5000
	When instantaneous stop or instantaneous bi-directional operation*	1.55	2.23	3.49	5.02	9.69	14	20.1	38.8	55.8	80.4	155	155	155	155	155	155	155	155	155	155	155
15 W		20	28	45	65	120	180	260	440	630	900	1500	2100	2800	3200	4000	5700	8000	8000	8000	8000	8000
	When instantaneous stop or instantaneous bi-directional operation*	3.5	5.04	7.88	11.3	21.9	31.5	45.4	87.5	126	181	350	350	350	350	350	350	350	350	350	350	350
25 W		22	32	50	72	150	220	310	550	800	1100	2200	3200	4000	5000	6200	8900	12000	12000	12000	12000	12000
	When instantaneous stop or instantaneous bi-directional operation*	7.75	11.2	17.4	25.1	48.4	69.8	100	194	279	402	775	775	775	775	775	775	775	775	775	775	775
40 W 60 W		45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	25000	25000	—
	When instantaneous stop or instantaneous bi-directional operation*	27.5	39.6	61.9	89.1	172	248	356	688	990	1426	2750	2750	2750	2750	2750	2750	2750	2750	2750	2750	—
90 W		45	65	100	150	300	420	620	1100	1600	2300	4500	6000	8000	10000	12000	17000	25000	25000	—	—	—
	When instantaneous stop or instantaneous bi-directional operation*	27.5	39.6	61.9	89.1	172	248	356	688	990	1426	2750	2750	2750	2750	2750	2750	2750	2750	—	—	—

*If the type includes a DSC Series electromagnetic brake, this is the value when deceleration control is ON.

How to Read Speed – Torque Characteristics

The characteristics diagram on the right shows the relationship between each setting speed and torque when a speed control motor is operated.

① 50 Hz Safe-Operation Line

② 60 Hz Safe-Operation Line

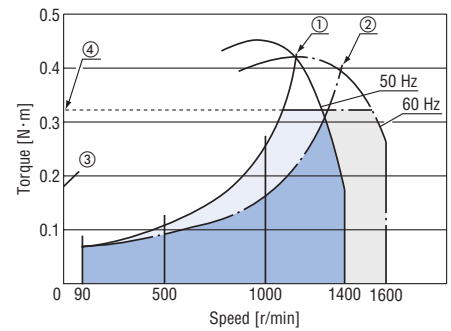
The safe-operation line is the permissible line of the torque that is limited according to the permissible temperature.

Motors can be operated at a continuous rating within the safe-operation line.

The safe-operation line is determined under the most severe condition where there is no heat conduction. Therefore, the motor can be operated depending on installation conditions of the motor.

Note

● When operating beyond the safe-operation line, make sure the motor case temperature is kept at 90°C or less.



③ Starting Torque

This refers to the size of torque with which the motor can start.

④ Combination Type Permissible Torque

This refers to the permissible value of the motor torque when operating with the gearhead installed.

The permissible torque of the combination type varies according to the gear ratio. Use the motor without exceeding the value on the list of permissible torques.

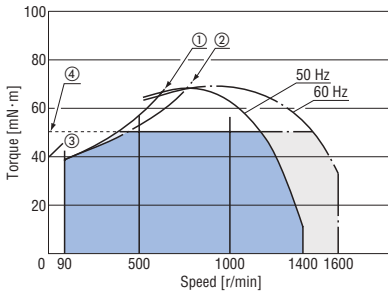
Speed – Torque Characteristics (Reference)

① 50 Hz Safe-Operation Line ② 60 Hz Safe-Operation Line ③ Starting Torque ④ Combination Type Permissible Torque

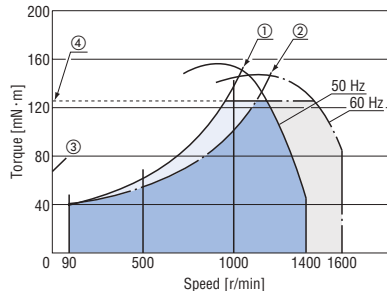
● The characteristics of each output are their representatives. (For motor only)

The permissible torque and starting torque of the motor vary according to the voltage. Check the specifications and the permissible torque of the combination type when using the motor.

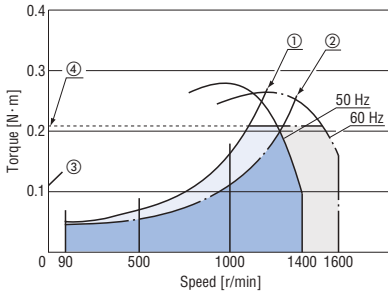
◇ 6 W



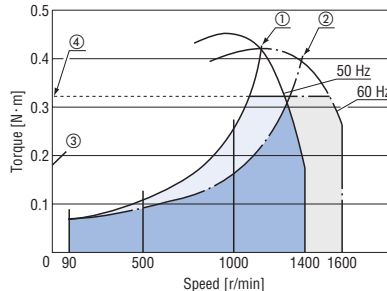
◇ 15 W



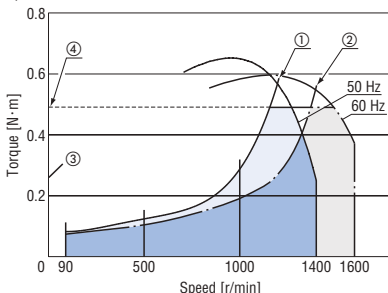
◇ 25 W



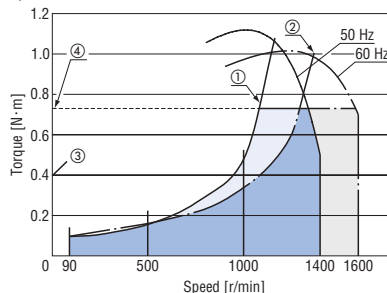
◇ 40 W



◇ 60 W



◇ 90 W



Dimensions (Unit: mm)

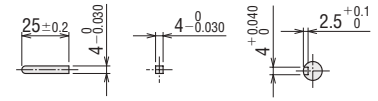
- "Mounting screws" are included with the parallel shaft combination type. Dimensions of installation screws → Page 03-31
- A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Combination Type

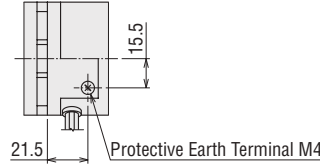
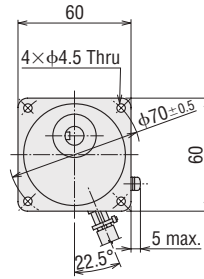
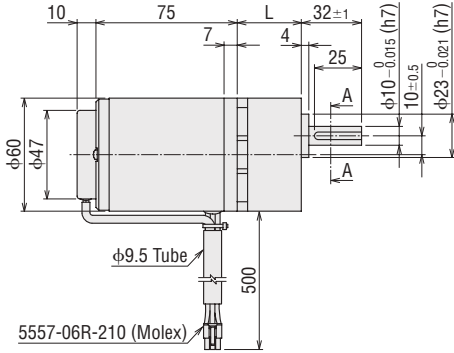
◇ 6 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM26UA -□ SCM26EC -□	SCM26GV-UA SCM26GV-EC	2GV□B	5~25	34	1.1	A1214A
			30~120	38	1.1	A1214B
			150~360	43	1.2	A1214C



Parallel Key (Included) Cross Section A-A

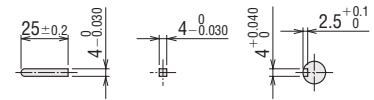


Detail Drawing of Protective Earth Terminal

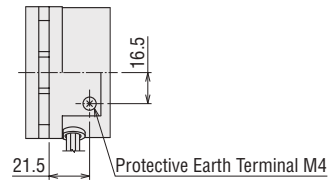
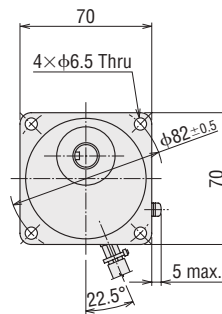
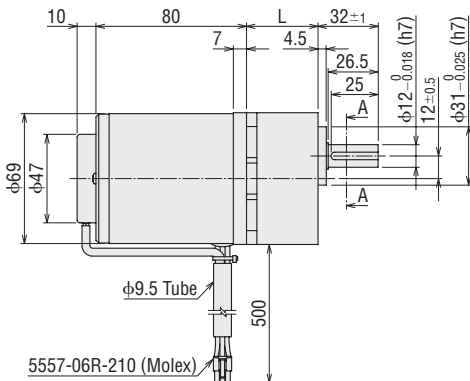
◇ 15 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM315UA -□ SCM315EC -□	SCM315GV-UA SCM315GV-EC	3GV□B	5~25	38	1.6	A1215A
			30~120	43	1.7	A1215B
			150~360	48	1.8	A1215C



Parallel Key (Included) Cross Section A-A

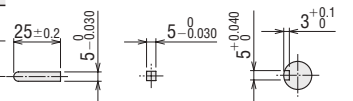


Detail Drawing of Protective Earth Terminal

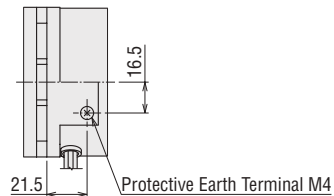
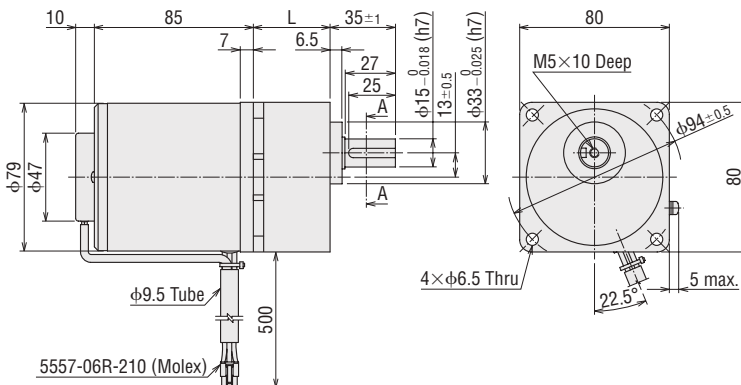
◇ 25 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM425UA -□ SCM425EC -□	SCM425GV-UA SCM425GV-EC	4GV□B	5~25	41	2.3	A1216A
			30~120	46	2.4	A1216B
			150~360	51	2.5	A1216C



Parallel Key (Included) Cross Section A-A

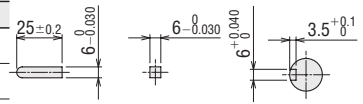


Detail Drawing of Protective Earth Terminal

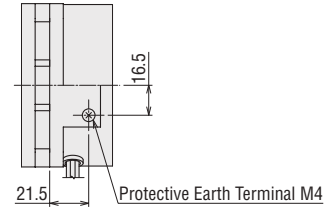
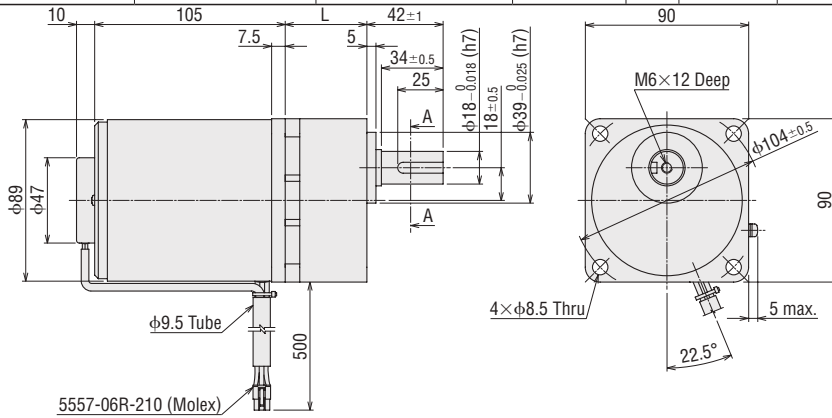
◇ 40 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM540UA-□ SCM540EC-□	SCM540GV-UA SCM540GV-EC	5GV□B	5~18	45	3.6	A1217A
			25~100	58	3.9	A1217B
			120~300	64	4.0	A1217C



Parallel Key (Included) Cross Section A-A

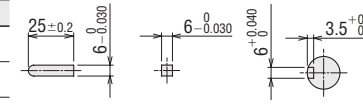


Detail Drawing of Protective Earth Terminal

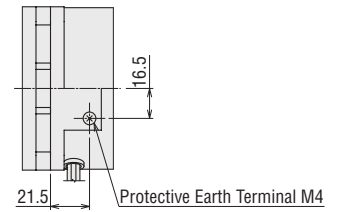
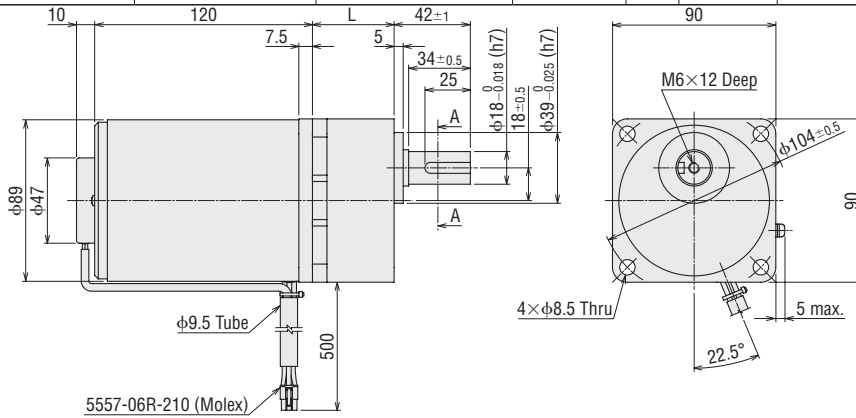
◇ 60 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM560UA-□ SCM560EC-□	SCM560GVH-UA SCM560GVH-EC	5GVH□B	5~18	45	4.1	A1218A
			25~100	58	4.4	A1218B
			120~300	64	4.5	A1218C



Parallel Key (Included) Cross Section A-A

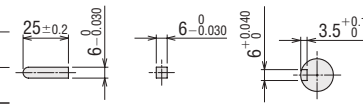


Detail Drawing of Protective Earth Terminal

◇ 90 W

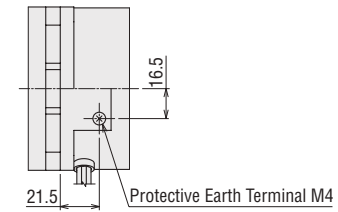
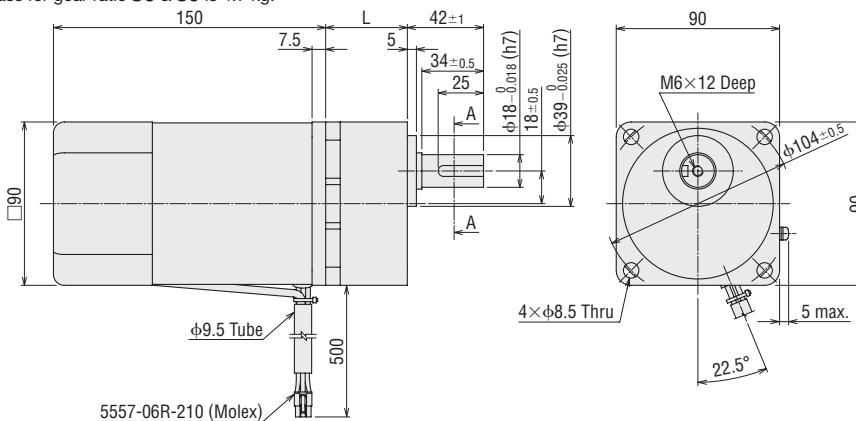
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM590UA-□ SCM590EC-□	SCM590GVR-UA SCM590GVR-EC	5GVR□B	5~15	45	4.3	A1219A
			18~36	58	4.7	A1219B
			50~180	70	4.8*	A1219C



Parallel Key (Included) Cross Section A-A

*Mass for gear ratio 50 & 60 is 4.7 kg.



Detail Drawing of Protective Earth Terminal

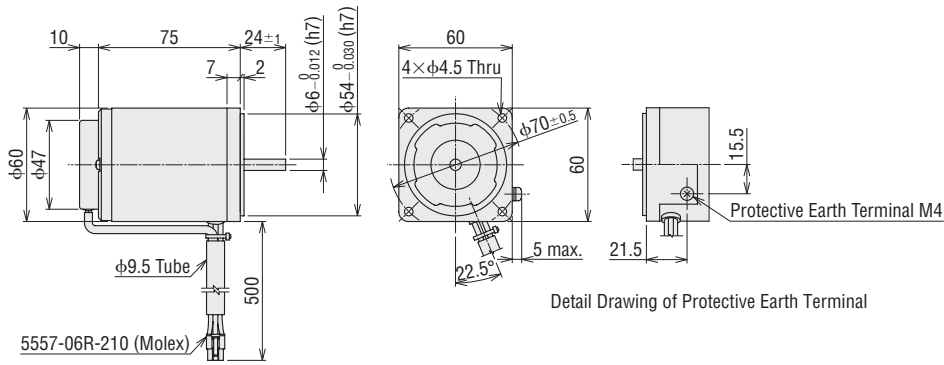
● Round Shaft Type

◇ 6 W

SCM26A-UA, SCM26A-EC

Mass: 0.8 kg

2D CAD A1256 3D CAD

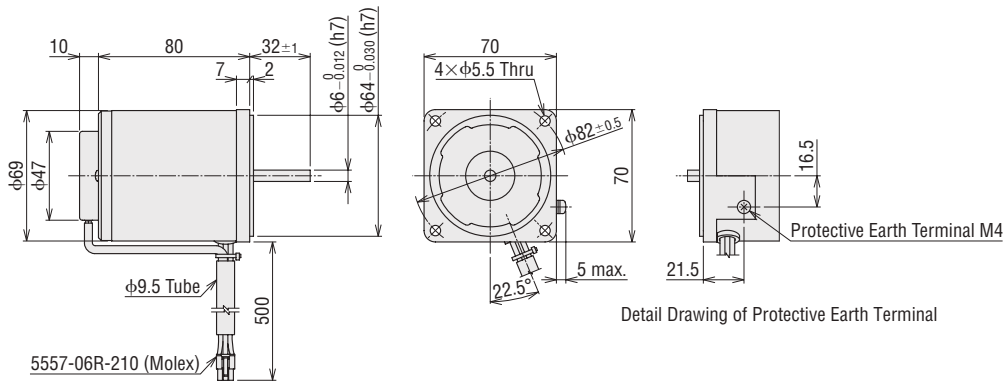


◇ 15 W

SCM315A-UA, SCM315A-EC

Mass: 1.2 kg

2D CAD A1257 3D CAD

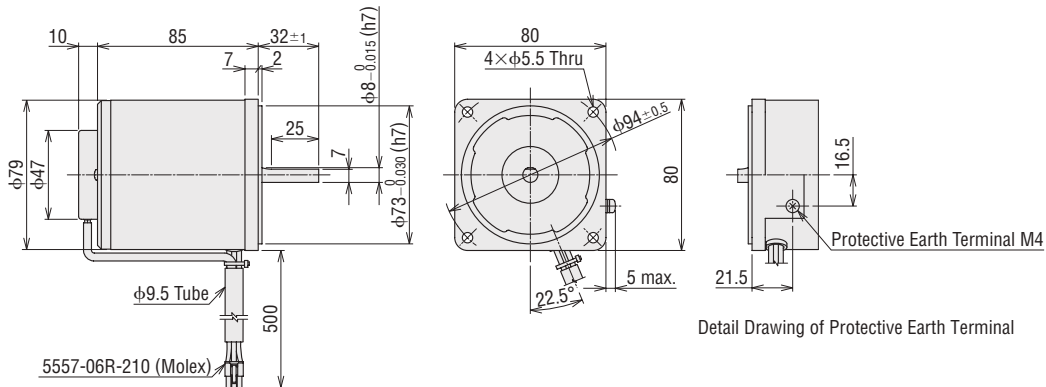


◇ 25 W

SCM425A-UA, SCM425A-EC

Mass: 1.6 kg

2D CAD A1258 3D CAD

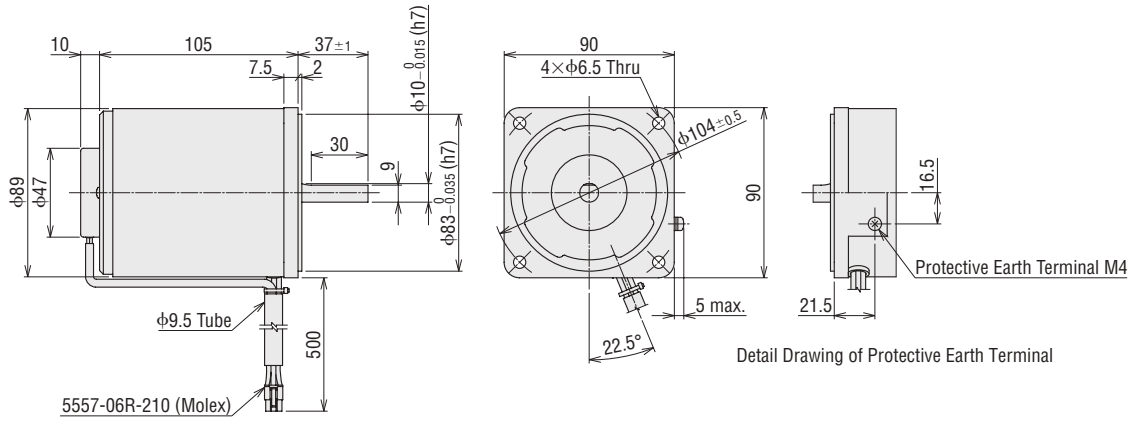


◇ 40 W

SCM540A-UA, SCM540A-EC

Mass: 2.6 kg

2D CAD A1259 3D CAD

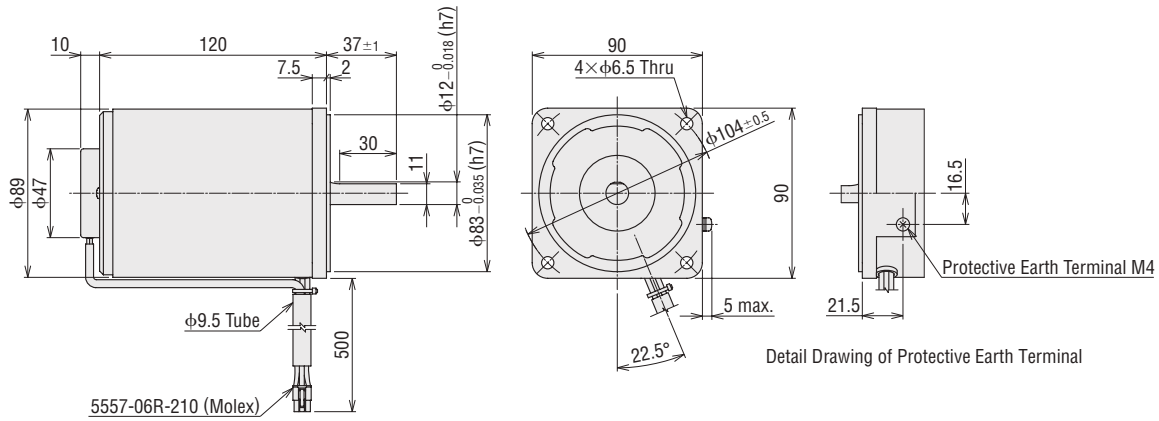


◇ 60 W

SCM560A-UA, SCM560A-EC

Mass: 3.1 kg

2D CAD A1260 3D CAD

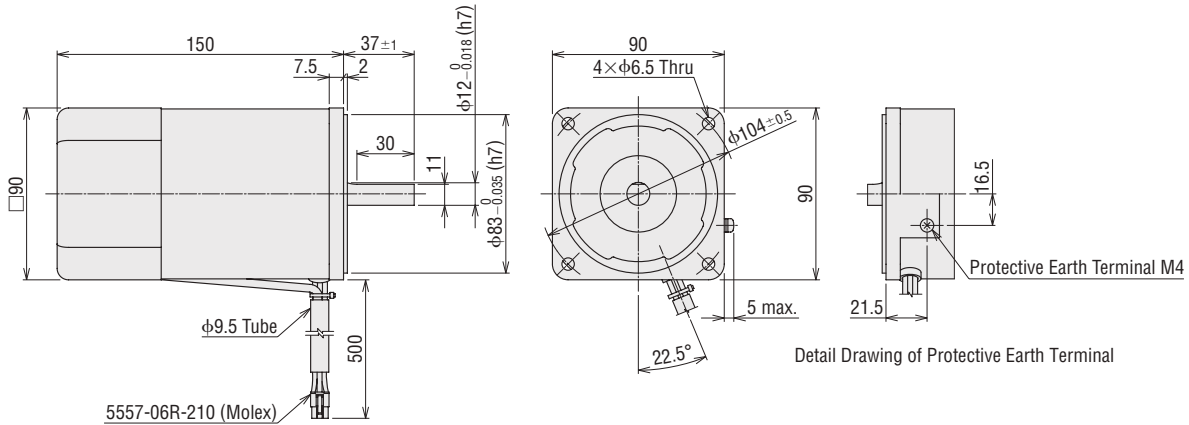


◇ 90 W

SCM590A-UA, SCM590A-EC

Mass: 3.3 kg

2D CAD A1261 3D CAD



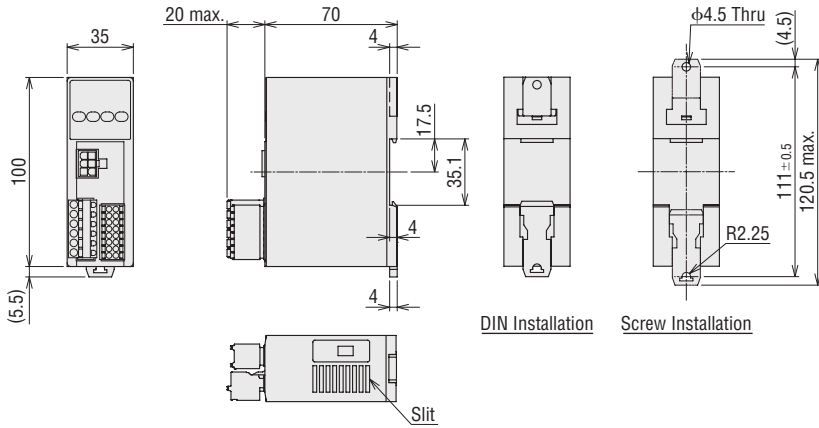
Speed Controller

DSC-U

Mass: 0.2 kg

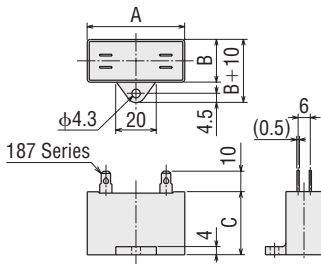
2D CAD A1262

3D CAD

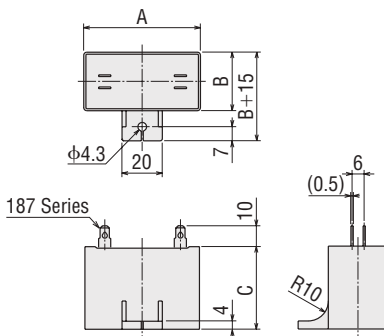


Capacitor (Included)

Dimensions No. ①



Dimensions No. ②



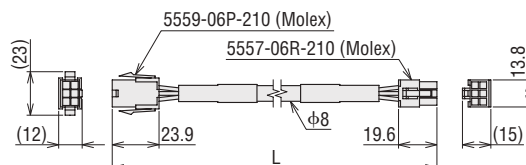
Capacitor Dimensions (Unit: mm)

Speed Controller Product Name	Capacitor					Dimensions No.
	Product Name	A	B	C	Mass g	
DSCD6UA	CH25FAUL2	31	17	27	21	①
DSCD6EC	CH06BFAUL	31	14.5	23.5	18	
DSCD15UA	CH45FAUL2	37	18	27	26	
DSCD15EC	CH10BFAUL	37	18	27	27	
DSCD25UA	CH65CFAUL2	48	19	29	35	
DSCD25EC	CH15BFAUL	38	21	31	37	
DSCD40UA	CH90CFAUL2	48	22.5	31.5	45	
DSCD40EC	CH23BFAUL	48	21	31	43	
DSCD60UA	CH120CFAUL2	58	22	35	60	
DSCD60EC	CH30BFAUL	58	21	31	50	
DSCD90UA	CH200CFAUL2	58	29	41	91	②
DSCD90EC	CH60BFAUL	58	29	41	92	

● A capacitor cap is included with the capacitor.

Connection Cables

Product Name	Length L (m)
CC01SC	1
CC02SC	2
CC03SC	3
CC05SC	5
CC10SC	10

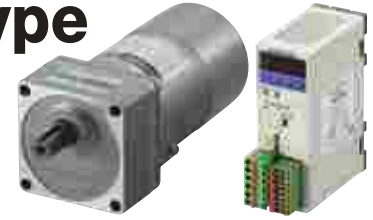


Flexible Connection Cables

Product Name	Length L (m)
CC01SCR	1
CC02SCR	2
CC03SCR	3
CC05SCR	5
CC10SCR	10

With Electromagnetic Brake Type

Parallel Shaft Combination Type



Parallel Shaft Combination Type

Product Line

Parallel Shaft Combination Type

The price includes the prices of the motor and gearhead.



Speed Controller

The price includes the prices of the speed controller and capacitor.



03

DSC Series

Output Power	Power Supply Voltage	Product Name	Gear Ratio	List Price
6 W	Single-Phase 110/115 VAC	SCM26UAM -□	7.5, 9, 12.5, 15, 18	SGD239
			25, 30, 36	SDD247
			50, 60, 75, 90, 100, 120, 150, 180	SGD256
	Single-Phase 220/230 VAC	SCM26ECM -□	250, 300, 360	SGD293
			7.5, 9, 12.5, 15, 18	SGD242
			25, 30, 36	SGD249
			50, 60, 75, 90, 100, 120, 150, 180	SGD258
			250, 300, 360	SGD296
			7.5, 9, 12.5, 15, 18	SGD251
15 W	Single-Phase 110/115 VAC	SCM315UAM -□	25, 30, 36	SGD259
			50, 60, 75, 90, 100, 120, 150, 180	SGD268
			250, 300, 360	SGD303
	Single-Phase 220/230 VAC	SCM315ECM -□	7.5, 9, 12.5, 15, 18	SGD254
			25, 30, 36	SGD261
			50, 60, 75, 90, 100, 120, 150, 180	SGD270
			250, 300, 360	SGD305
			7.5, 9, 12.5, 15, 18	SGD286
			25, 30, 36	SGD294
25 W	Single-Phase 110/115 VAC	SCM425UAM -□	50, 60, 75, 90, 100, 120, 150, 180	SGD303
			250, 300, 360	SGD340
			7.5, 9, 12.5, 15, 18	SGD290
	Single-Phase 220/230 VAC	SCM425ECM -□	25, 30, 36	SGD298
			50, 60, 75, 90, 100, 120, 150, 180	SGD306
			250, 300, 360	SGD344
40 W	Single-Phase 110/115 VAC	SCM540UAM -□	7.5, 9, 12.5, 15, 18	SGD333
			25, 30, 36	SGD341
			50, 60, 75, 90, 100, 120, 150, 180	SGD349
	Single-Phase 220/230 VAC	SCM540ECM -□	250, 300	SGD419
			7.5, 9, 12.5, 15, 18	SGD336
			25, 30, 36	SGD345
			50, 60, 75, 90, 100, 120, 150, 180	SGD353
			250, 300	SGD423
			7.5, 9, 12.5, 15, 18	SGD396
60 W	Single-Phase 110/115 VAC	SCM560UAM -□	25, 30, 36, 50, 60, 75, 90, 100	SGD408
			120, 150, 180	SGD419
			250, 300	SGD455
	Single-Phase 220/230 VAC	SCM560ECM -□	7.5, 9, 12.5, 15, 18	SGD401
			25, 30, 36, 50, 60, 75, 90, 100	SGD413
			120, 150, 180	SGD424
			250, 300	SGD460
			7.5, 9, 12.5, 15, 18	SGD416
			25, 30, 36, 50, 60	SGD438
90 W	Single-Phase 110/115 VAC	SCM590UAM -□	75, 90, 100, 120, 150, 180	SGD448
			7.5, 9, 12.5, 15, 18	SGD421
	Single-Phase 220/230 VAC	SCM590ECM -□	25, 30, 36, 50, 60	SGD443
			75, 90, 100, 120, 150, 180	SGD453

Output Power	Power Supply Voltage	Product Name	List Price
6 W	Single-Phase 110/115 VAC	DSCD6UAM	SGD133
	Single-Phase 220/230 VAC	DSCD6ECM	SGD133
15 W	Single-Phase 110/115 VAC	DSCD15UAM	SGD133
	Single-Phase 220/230 VAC	DSCD15ECM	SGD133
25 W	Single-Phase 110/115 VAC	DSCD25UAM	SGD133
	Single-Phase 220/230 VAC	DSCD25ECM	SGD133
40 W	Single-Phase 110/115 VAC	DSCD40UAM	SGD133
	Single-Phase 220/230 VAC	DSCD40ECM	SGD133
60 W	Single-Phase 110/115 VAC	DSCD60UAM	SGD134
	Single-Phase 220/230 VAC	DSCD60ECM	SGD134
90 W	Single-Phase 110/115 VAC	DSCD90UAM	SGD135
	Single-Phase 220/230 VAC	DSCD90ECM	SGD135

● A number in the box □ in the product name indicates the gear ratio.

● Connection Cables



Length	Product Name	List Price
1 m	CC01SCM	SGD48
2 m	CC02SCM	SGD53
3 m	CC03SCM	SGD63
5 m	CC05SCM	SGD83
10 m	CC10SCM	SGD133

● Flexible Connection Cables



Length	Product Name	List Price
1 m	CC01SCMR	SGD95
2 m	CC02SCMR	SGD105
3 m	CC03SCMR	SGD125
5 m	CC05SCMR	SGD165
10 m	CC10SCMR	SGD265

■ Accessories

● Motor

Type	Parallel Key	Installation Screws	Operating Manual
Parallel Shaft Combination Type	1 piece	1 set	1 copy

● Speed Controller

Capacitor	Capacitor Cap	Operating Manual
1 piece	1 piece	1 copy

The deceleration control function implemented in the electromagnetic brake type

The electromagnetic brake type has the deceleration control function implemented. This enables speed control at the time of vertical driving or lowering operation.

"What is the deceleration control function?"

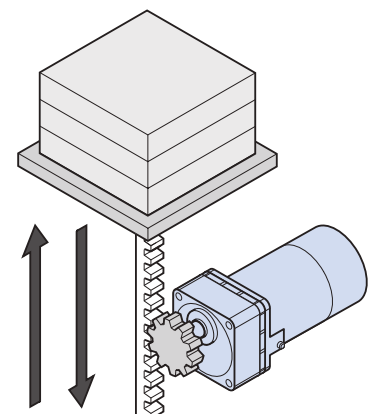
This is the function that adjusts the speed by applying the brake current automatically to the motor when it rotates at a speed faster than the set speed. For operation by vertical driving or even when force is applied to the direction where the motor output shaft rotates due to the inertial load, this function controls the motor to rotate at the set speed.

"Deceleration Control" ON (Factory setting): For vertical driving, lowering operation, horizontal driving and position keeping

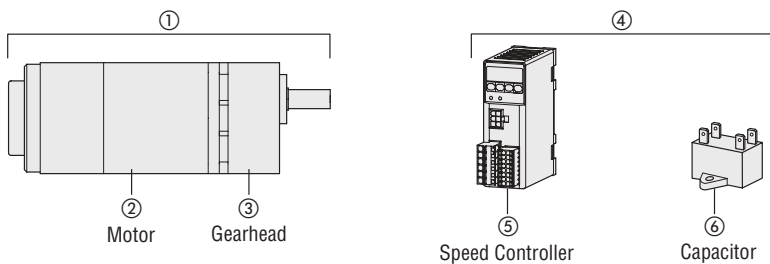
"Deceleration Control" OFF: For horizontal driving and position keeping (Variable speed range is extended.)

● The specification values and permissible torque differ between the "Deceleration Control" ON and OFF.

Item	"Deceleration Control" Parameter ON (Factory setting)	"Deceleration Control" Parameter OFF
Deceleration Control Function	Enabled	Disabled
Variable Speed Range	300~1400 r/min (50 Hz) 300~1600 r/min (60 Hz)	90~1400 r/min (50 Hz) 90~1600 r/min (60 Hz)
Acceleration Time/Deceleration Time Range	0.2~15.0 seconds	0.0~15.0 seconds



Combination List



Combination Type

The combination type comes with a motor and a gearhead pre-assembled. The combination of the motor and the gearhead can be changed. They are also available separately. You can remove the gearhead to change the installation position by 90°.

Output Power	Power Supply Voltage	Speed Control Motor			Speed Controller		
		Product Name	Component Product Name		Product Name	Component Product Name	
		①	②	③	④	⑤	⑥
6 W	Single-Phase 110/115 VAC	SCM26UAM -□	SCM26GV-UAM	2GV□B	DSCD6UAM	DSC-MU	CH25FAUL2
	Single-Phase 220/230 VAC	SCM26ECM -□	SCM26GV-ECM		DSCD6ECM		CH06BFAUL
15 W	Single-Phase 110/115 VAC	SCM315UAM -□	SCM315GV-UAM	3GV□B	DSCD15UAM		CH45FAUL2
	Single-Phase 220/230 VAC	SCM315ECM -□	SCM315GV-ECM		DSCD15ECM		CH10BFAUL
25 W	Single-Phase 110/115 VAC	SCM425UAM -□	SCM425GV-UAM	4GV□B	DSCD25UAM		CH65CFAUL2
	Single-Phase 220/230 VAC	SCM425ECM -□	SCM425GV-ECM		DSCD25ECM		CH15BFAUL
40 W	Single-Phase 110/115 VAC	SCM540UAM -□	SCM540GV-UAM	5GV□B	DSCD40UAM		CH90CFAUL2
	Single-Phase 220/230 VAC	SCM540ECM -□	SCM540GV-ECM		DSCD40ECM		CH23BFAUL
60 W	Single-Phase 110/115 VAC	SCM560UAM -□	SCM560GVH-UAM	5GVH□B	DSCD60UAM		CH120CFAUL2
	Single-Phase 220/230 VAC	SCM560ECM -□	SCM560GVH-ECM		DSCD60ECM		CH30BFAUL
90 W	Single-Phase 110/115 VAC	SCM590UAM -□	SCM590GVR-UAM	5GVR□B	DSCD90UAM		CH200CFAUL2
	Single-Phase 220/230 VAC	SCM590ECM -□	SCM590GVR-ECM		DSCD90ECM		CH60BFAUL

● A capacitor cap is included with the capacitor.

● A number in the box □ in the product name indicates the gear ratio.

Specifications Continuous Rating



Product Name		Maximum Output Power W	Voltage VAC	Frequency Hz	Variable Speed Range* r/min	Current A	Power Consumption W	Capacitor μF	Motor Overheat Protection Device	Electromagnetic Brake (Power off activated type)
Parallel Shaft Combination Type	Speed Controller									Static Friction Torque mN·m
SCM26UAM-□	DSCD6UAM	6	Single-Phase 110	60	300 (90)~1600	0.28	29	2.5	ZP	30
			Single-Phase 115							
SCM26ECM-□	DSCD6ECM		Single-Phase 220	50	300 (90)~1400	0.135	29	0.6	ZP	
			Single-Phase 230	60	300 (90)~1600					
			Single-Phase 230	60	300 (90)~1600					
SCM315UAM-□	DSCD15UAM		15	Single-Phase 110	60	300 (90)~1600	0.48	46	4.5	
		Single-Phase 115								
SCM315ECM-□	DSCD15ECM	Single-Phase 220		50	300 (90)~1400	0.23	43	1.0	TP	
		Single-Phase 220		60	300 (90)~1600					
		Single-Phase 230		50	300 (90)~1400					
		Single-Phase 230		60	300 (90)~1600					
SCM425UAM-□	DSCD25UAM	25	Single-Phase 110	60	300 (90)~1600	0.75	58	6.5	TP	100
			Single-Phase 115				69			
SCM425ECM-□	DSCD25ECM		Single-Phase 220	50	300 (90)~1400	0.37	70	1.5	TP	
			Single-Phase 220	60	300 (90)~1600					
			Single-Phase 230	50	300 (90)~1400					
			Single-Phase 230	60	300 (90)~1600					
SCM540UAM-□	DSCD40UAM	40	Single-Phase 110	60	300 (90)~1600	1.1	107	9.0	TP	200
			Single-Phase 115				96			
SCM540ECM-□	DSCD40ECM		Single-Phase 220	50	300 (90)~1400	0.55	96	2.3	TP	
			Single-Phase 220	60	300 (90)~1600					
			Single-Phase 230	50	300 (90)~1400					
			Single-Phase 230	60	300 (90)~1600					
SCM560UAM-□	DSCD60UAM	60	Single-Phase 110	60	300 (90)~1600	1.5	144	12	TP	500
			Single-Phase 115				145			
SCM560ECM-□	DSCD60ECM		Single-Phase 220	50	300 (90)~1400	0.71	129	3.0	TP	
			Single-Phase 220	60	300 (90)~1600					
			Single-Phase 230	50	300 (90)~1400					
			Single-Phase 230	60	300 (90)~1600					
SCM590UAM-□	DSCD90UAM	90	Single-Phase 110	60	300 (90)~1600	2.4	224	20	TP	500
			Single-Phase 115				2.5			
SCM590ECM-□	DSCD90ECM		Single-Phase 220	50	300 (90)~1400	1.2	201	6.0	TP	
			Single-Phase 220	60	300 (90)~1600					
			Single-Phase 230	50	300 (90)~1400					
			Single-Phase 230	60	300 (90)~1600					

*The value of () can be set when used with deceleration control OFF.

● When the deceleration control is ON, the rated specification is different. For details, see "Continuous Operation Time with Deceleration Control ON" under Common Specifications (→ Page 03-24).

● The specifications apply to the motor only. The variable speed ranges shown are under no load conditions.

ZP: These products are impedance protected. TP: This indicates that there is a built-in thermal protector (Automatic return type).

● A number in the box □ in the product name indicates the gear ratio.

[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Common Specifications

Item	Specifications	
Speed Setting Methods	<ul style="list-style-type: none"> Set in either of the following methods. Setting using the control panel <ul style="list-style-type: none"> Up to 4 patterns of operation data can be set. External speed potentiometer External DC voltage: 0~5 VDC or 0~10 VDC 	
Acceleration and Deceleration Time Setting Range	0.2~15.0 seconds (0.0~15.0 seconds: This value can be set when using the motor with the deceleration control OFF) Acceleration time/deceleration time varies with the load condition of the motor.	
Function	Monitoring Mode	Rotation speed, operation data No., alarm code, warning code, I/O monitor
	Data Mode	Rotation speed, acceleration time, deceleration time, initialization
	Parameter Mode	Gear ratio, speed up ratio, fixed display of the lower first digit, prohibition alarm of operation at the initial setting, external speed instruction input, external speed instruction voltage selection, external speed instruction offset, upper and lower limits of speed, deceleration control, brake type, input function selection, output function selection, motor lock detection time, motor rotation direction, initialization
	Test Mode	JOG operation, release of the electromagnetic brake
	Others	Locking of data editing
Control Power Source	24 VDC±10% 0.15 A or more	
Input Signals	Photocoupler input Input resistance 4.7 kΩ Signals can be optionally allocated to IN0~IN5 inputs (6 points) []: Initial setting [FWD], [REV], [MO], [M1], [ALARM-RESET], [FREE], EXT-ERROR Sink input/source input ... Switchable by the selection switch: The factory setting is Sink input	
Output Signals	Photocoupler and open collector output External power source: 4.5~30 VDC 40 mA or less Signals can be optionally allocated to OUT0 or OUT1 (2 points) []: Initial setting [SPEED-OUT], [ALARM-OUT], TH-OUT, WNG Sink output/source output ... Supplied through external wiring	
Protective Functions	When the following protective function is activated, the output to the motor is blocked and the electromagnetic brake operates to stop the motor. The alarm output is turned OFF. At the same time, the alarm code is indicated in the operating panel and ALARM LED lights. Alarm types: Motor overheat, motor lock, overspeed, EEPROM error, prohibition of operation at the initial setting, external stop	
Continuous Operation Time with Deceleration Control ON	6 W	Continuous operation time: Continuous Operating duty: Continuous
	15 W, 25 W, 40 W	Continuous operation time: 1 minute Operating duty: 50% or less (Example: Operation for 1 minute, stop for 1 minute)
	60 W, 90 W	Continuous operation time: 1 minute Operating duty: 33% or less (Example: Operation for 1 minute, stop for 2 minute)
Maximum Extension Length	Motor and speed controller distance 10 m	

General Specifications

Item	Motor	Speed Controller	
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the motor windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the main circuit terminal and the input signal terminal, between the main circuit terminal and the case, and between the main circuit terminal and FG, after continuous operation under normal ambient temperature and humidity.	
Dielectric Strength Voltage	No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.9 kVAC at 50 Hz or 60 Hz between the main circuit terminal and the input signal terminal and between the main circuit terminal and the case, and 1.5 kVAC at 50 Hz or 60 Hz between the main circuit terminal and FG for 1 minute after continuous operation under normal ambient temperature and humidity.	
Temperature Rise	The measurement of the windings temperature rise in the resistance method is 80°C or less after no-load continuous operation under normal ambient temperature and humidity.	—	
Overheat Protection Device	The 6 W type is impedance protected. All other motors have a built-in thermal protector (Automatic return type) Open: 130±5°C Close: 85±20°C	—	
Operating Environment	Ambient Temperature	-10~+40°C (Non-freezing)	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)	
	Altitude	Up to 1000 m above sea level	
	Atmosphere	No corrosive gases or dust. Not exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.	
	Vibration	Not subject to continuous vibration or excessive shock Conforms to JIS C 60068-2-6 "Sine-wave vibration test method" Frequency range: 10~55 Hz, Pulsating amplitude: 0.15 mm Sweep direction: 3 directions (X, Y, Z) Number of sweeps: 20 times	
Storage Condition*	Ambient Temperature	-25~+70°C (Non-freezing)	
	Ambient Humidity	85% or less (Non-condensing)	
	Altitude	Up to 3000 m above sea level	
	Atmosphere	No corrosive gases or dust. Not exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.	
Heat-resistant Class	130 (B)	—	
Degree of Protection	IP20	IP20	

*The storage condition applies to a short period such as a period during transportation.

Note

Do not measure insulation resistance or perform the dielectric strength test while the motor and speed controller are connected.

Output Shaft Speed with Deceleration Control ON (Factory Setting), Permissible Torque, Starting Torque

Description on the deceleration control → Page 03-21

Output Shaft Speed

● Motor Shaft Speed

Low speed: 300 r/min, High speed 50 Hz: 1400 r/min, High speed 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
High Speed	50 Hz	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6	4.6	3.8
	60 Hz	213	177	128	106	88	64	53	44	32	26	21	17.7	16	13.3	10.6	8.8	6.4	5.3	4.4
Low Speed		40	33	24	20	16	12	10	8.3	6	5	4	3.3	3	2.5	2	1.6	1.2	1	0.83

Permissible Torque and Starting Torque

- Permissible torque and Starting Torque are fixed within the variable speed range (50 Hz: 300~1400 r/min, 60 Hz: 300~1600 r/min).
- In the case of horizontal driving, even if the deceleration control is ON, the torques with the deceleration control OFF are available. Permissible torque and starting torque when deceleration control is OFF → Page 03-26
- A colored background indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.
- A number in the box in the product name indicates the gear ratio.

Unit: N·m

Product Name	Gear Ratio	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
SCM26UAM- SCM26ECM- 		0.20	0.24	0.34	0.41	0.49	0.68	0.77	0.93	1.3	1.5	1.9	2.3	2.6	3.1	3.6	4.4	6	6	6
SCM315UAM- SCM315ECM- 		0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6.1	7.3	10	10	10
SCM425UAM- SCM425ECM- 		0.54	0.65	0.90	1.1	1.3	1.8	2.1	2.5	3.4	4.1	5.2	6.2	6.9	8.3	9.7	11.7	16	16	16
SCM540UAM- SCM540ECM- 		0.95	1.1	1.6	1.9	2.3	3.0	3.6	4.3	6.0	7.2	9.0	10.8	12.0	13.6	17.0	20.4	28.4	30	—
SCM560UAM- SCM560ECM- 		1.4	1.7	2.4	2.8	3.4	4.5	5.4	6.5	9.0	10.8	13.5	16.3	18.1	20.4	25.5	30	30	30	—
SCM590UAM- SCM590ECM- 		2.2	2.6	3.6	4.3	5.0	6.9	8.3	9.9	13.8	16.5	19.4	23.3	25.9	31.1	38.9	40	—	—	—

03

DSC Series

Output Shaft Speed with Deceleration Control OFF, Permissible Torque, Starting Torque

Description on the deceleration control → Page 03-21

Output Shaft Speed

● Motor Shaft Speed

Low speed: 90 r/min, High speed 50 Hz: 1400 r/min, High speed 60 Hz: 1600 r/min

Unit: r/min

Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360
High Speed	50 Hz	186	155	112	93	77	56	46	38	28	23	18.6	15.5	14	11.6	9.3	7.7	5.6	4.6	3.8
	60 Hz	213	177	128	106	88	64	53	44	32	26	21	17.7	16	13.3	10.6	8.8	6.4	5.3	4.4
Low Speed		12	10	7.2	6	5	3.6	3	2.5	1.8	1.5	1.2	1	0.9	0.75	0.6	0.5	0.36	0.3	0.25

Permissible Torque and Starting Torque

● A colored background indicates gear shaft rotation in the same direction as the motor shaft. Others rotate in the opposite direction.

● A number in the box in the product name indicates the gear ratio.

● Single-Phase 110/115 VAC

Unit: N·m

Product Name	Gear Ratio		7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	250	300	360	
	Motor Shaft Speed r/min																					
SCM26UAM-□	Permissible	1450	0.34	0.41	0.56	0.68	0.81	1.1	1.3	1.5	2.2	2.6	3.2	3.9	4.3	5.2	6	6	6	6	6	6
		90	0.26	0.31	0.43	0.51	0.62	0.86	0.98	1.2	1.6	2.0	2.5	2.9	3.3	3.9	4.6	5.5	6	6	6	6
	Starting		0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	6
SCM315UAM-□	Permissible	1450	110 VAC	0.81	0.97	1.4	1.6	1.9	2.7	3.1	3.7	5.2	6.2	7.7	9.3	10	10	10	10	10	10	10
			115 VAC	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10	10	10	10	10	10	10
		90	0.30	0.36	0.51	0.61	0.73	1.0	1.2	1.4	1.9	2.3	2.9	3.5	3.9	4.6	5.5	6.6	9.1	10	10	10
	Starting	110 VAC	0.57	0.68	0.95	1.1	1.4	1.9	2.2	2.6	3.6	4.3	5.4	6.5	7.2	8.7	10	10	10	10	10	10
			115 VAC	0.61	0.73	1.0	1.2	1.5	2.0	2.3	2.8	3.9	4.6	5.8	7.0	7.7	9.3	10	10	10	10	10
		90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	6
SCM425UAM-□	Permissible	1450	110 VAC	1.4	1.7	2.3	2.8	3.3	4.6	5.3	6.3	8.8	10.6	13.2	15.9	16	16	16	16	16	16	16
			115 VAC	0.84	1.0	1.4	1.7	2.0	2.8	3.2	3.9	5.4	6.5	8.1	9.7	10.8	12.9	15.2	16	16	16	16
		90	0.30	0.36	0.51	0.61	0.73	1.0	1.2	1.4	1.9	2.3	2.9	3.5	3.9	4.6	5.5	6.6	9.1	10.9	13.1	
	Starting	110 VAC	0.57	0.68	0.95	1.1	1.4	1.9	2.2	2.6	3.6	4.3	5.4	6.5	7.2	8.7	10	10	10	10	10	
			115 VAC	0.61	0.73	1.0	1.2	1.5	2.0	2.3	2.8	3.9	4.6	5.8	7.0	7.7	9.3	10	10	10	10	
		90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	
SCM540UAM-□	Permissible	1450	110 VAC	2.2	2.6	3.6	4.3	5.2	6.9	8.3	9.9	13.8	16.5	20.6	24.8	27.5	30	30	30	30	30	—
			115 VAC	0.91	1.1	1.5	1.8	2.2	3.0	3.5	4.2	5.8	7.0	8.7	10.4	11.6	13.9	16	16	16	16	
		90	0.47	0.57	0.79	0.95	1.1	1.5	1.8	2.2	3.0	3.6	4.5	5.4	6.0	6.8	8.5	10.2	14.2	17	—	
	Starting	110 VAC	1.2	1.5	2.0	2.4	2.9	3.9	4.6	5.6	7.7	9.3	11.6	13.9	15.5	17.5	21.9	26.2	30	30	—	
			115 VAC	1.3	1.5	2.1	2.6	3.1	4.1	4.9	5.9	8.2	9.8	12.3	14.7	16.3	18.5	23.1	27.7	30	—	
		90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	
SCM560UAM-□	Permissible	1450	110 VAC	3.1	3.7	5.2	6.2	7.5	9.9	11.9	14.2	19.8	23.7	29.7	30	30	30	30	30	30	30	—
			115 VAC	3.3	4.0	5.5	6.6	7.9	10.5	12.6	15.2	21.1	25.3	30	30	30	30	30	30	30	30	
		90	0.54	0.65	0.90	1.1	1.3	1.7	2.1	2.5	3.4	4.1	5.2	6.2	6.9	7.8	9.7	11.7	16.2	19.4	—	
	Starting	110 VAC	1.8	2.1	2.9	3.5	4.2	5.6	6.7	8.0	11.2	13.4	16.8	20.1	22.4	25.3	30	30	30	30	—	
			115 VAC	1.9	2.3	3.2	3.8	4.5	6.0	7.2	8.7	12.0	14.4	18.1	21.7	24.1	27.2	30	30	30	30	
		90	0.27	0.32	0.45	0.54	0.65	0.90	1.0	1.2	1.7	2.1	2.6	3.1	3.4	4.1	4.9	5.8	6	6	6	
SCM590UAM-□	Permissible	1450	110 VAC	4.9	5.9	8.2	9.9	11.3	15.7	18.8	22.6	31.4	37.7	40	40	40	40	40	—	—	—	
			115 VAC	0.57	0.69	0.96	1.1	1.3	1.8	2.2	2.6	3.7	4.4	5.2	6.2	6.9	8.3	10.3	12.4	—	—	
	Starting	110 VAC	2.7	3.2	4.5	5.4	6.2	8.6	10.3	12.4	17.2	20.6	24.3	29.2	32.4	38.9	40	40	—	—		
115 VAC			3.0	3.6	5.0	5.9	6.8	9.5	11.4	13.6	18.9	22.7	26.7	32.1	35.6	40	40	—	—			

Dimensions (Unit: mm)

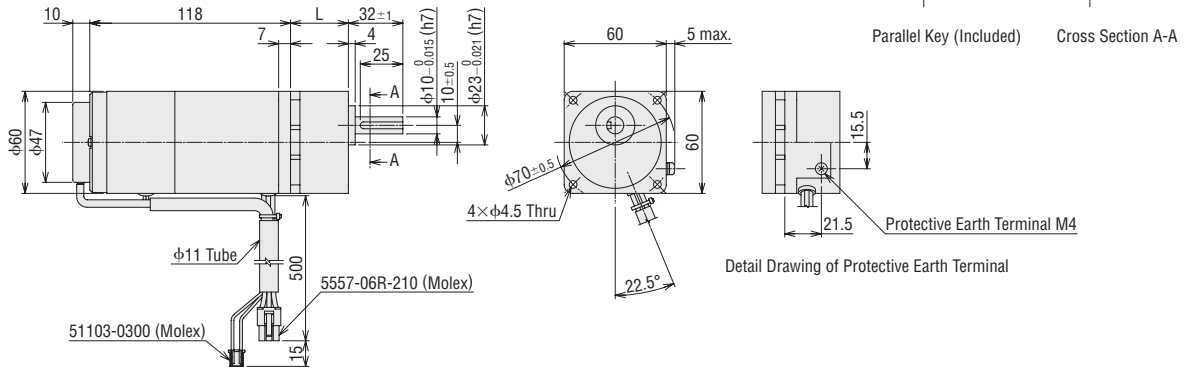
- "Mounting screws" are included with the combination type. Dimensions of installation screws → Page 03-31
- A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Combination Type

◇ 6 W

2D & 3D CAD

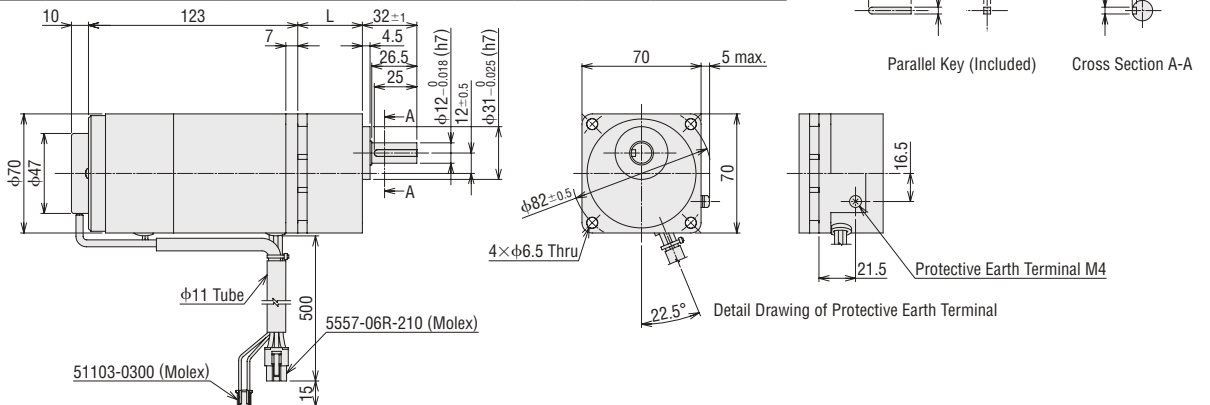
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM26UAM -□ SCM26ECM -□	SCM26GV-UAM SCM26GV-ECM	2GV□B	7.5~25	34	1.5	A1297A
			30~120	38	1.5	A1297B
			150~360	43	1.6	A1297C



◇ 15 W

2D & 3D CAD

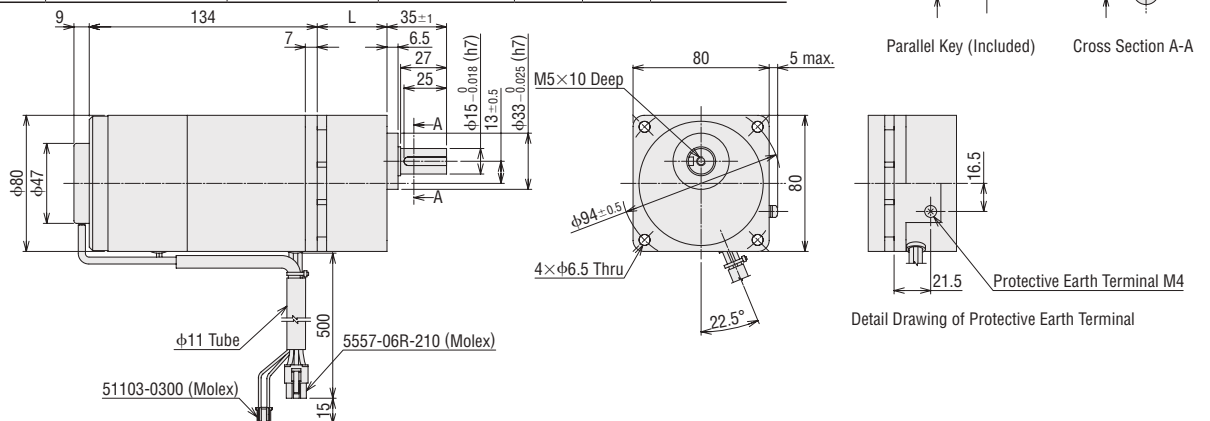
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM315UAM -□ SCM315ECM -□	SCM315GV-UAM SCM315GV-ECM	3GV□B	7.5~25	38	2.0	A1298A
			30~120	43	2.1	A1298B
			150~360	48	2.2	A1298C



◇ 25 W

2D & 3D CAD

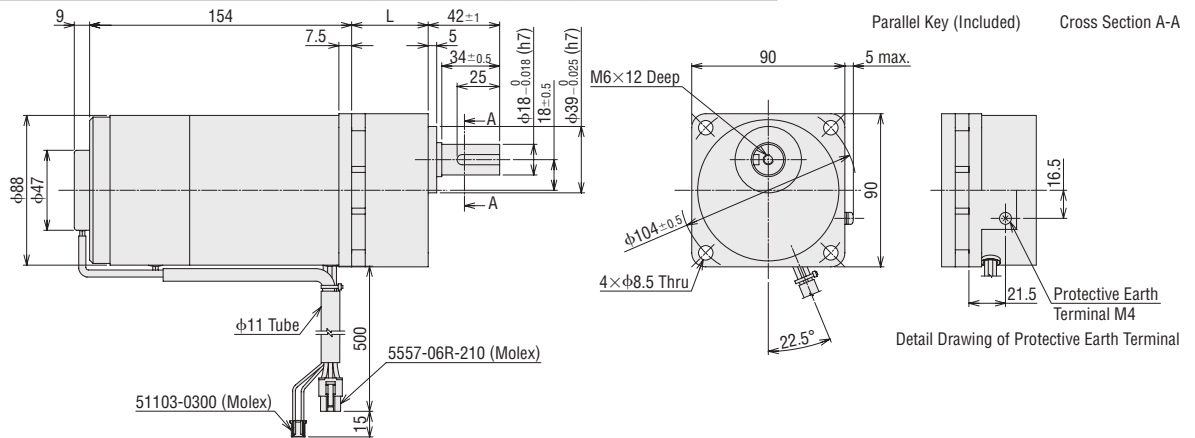
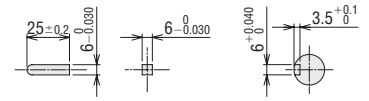
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM425UAM -□ SCM425ECM -□	SCM425GV-UAM SCM425GV-ECM	4GV□B	7.5~25	41	3.0	A1299A
			30~120	46	3.1	A1299B
			150~360	51	3.2	A1299C



◇ 40 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM540UAM-□ SCM540ECM-□	SCM540GV-UAM SCM540GV-ECM	5GV□B	7.5~18	45	4.2	A1300A
			25~100	58	4.5	A1300B
			120~300	64	4.6	A1300C



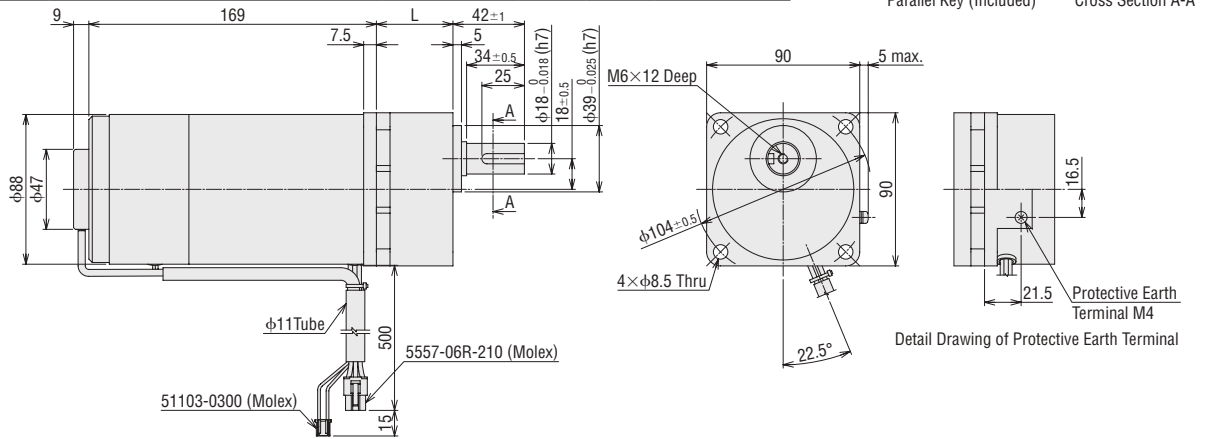
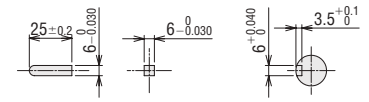
Parallel Key (Included) Cross Section A-A

Detail Drawing of Protective Earth Terminal

◇ 60 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM560UAM-□ SCM560ECM-□	SCM560GVH-UAM SCM560GVH-ECM	5GVH□B	7.5~18	45	4.8	A1301A
			25~100	58	5.1	A1301B
			120~300	64	5.2	A1301C



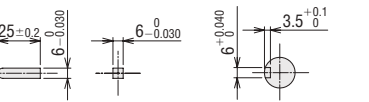
Parallel Key (Included) Cross Section A-A

Detail Drawing of Protective Earth Terminal

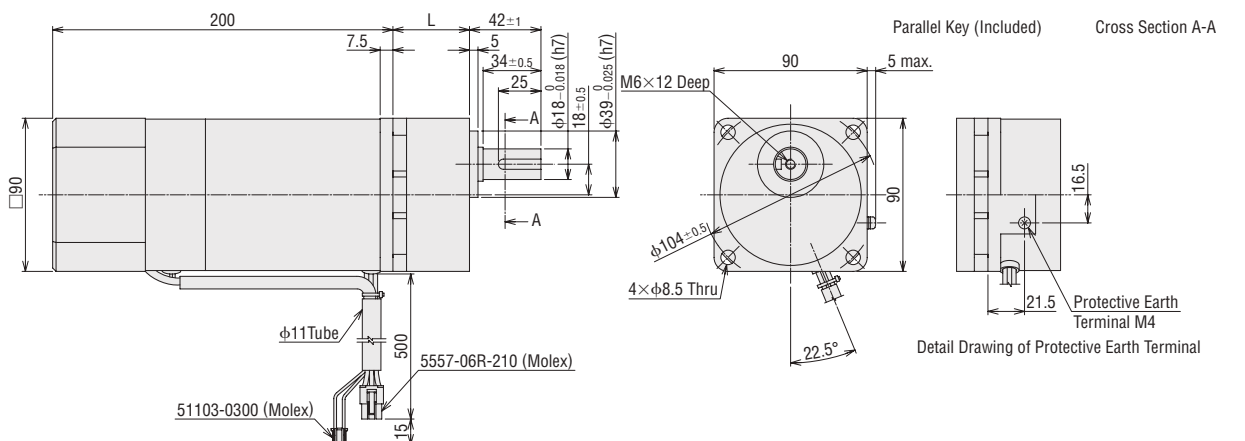
◇ 90 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
SCM590UAM-□ SCM590ECM-□	SCM590GVR-UAM SCM590GVR-ECM	5GVR□B	7.5~15	45	5.0	A1302A
			18~36	58	5.4	A1302B
			50~180	70	5.5*	A1302C



*Mass for gear ratio 50 & 60 is 5.4 kg.



Parallel Key (Included) Cross Section A-A

Detail Drawing of Protective Earth Terminal

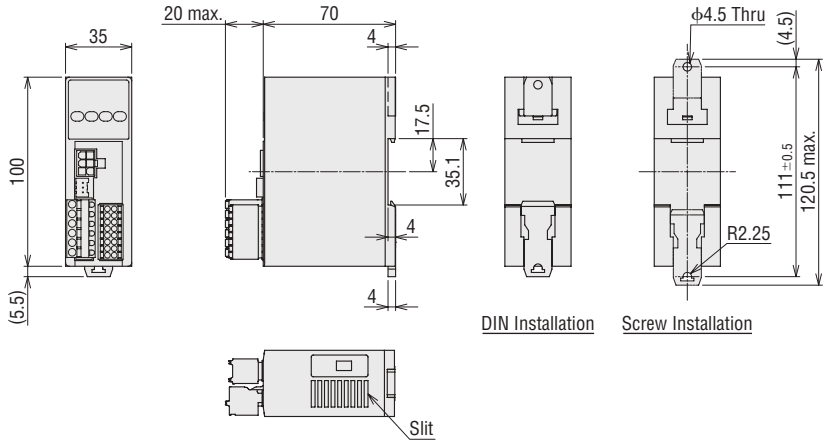
Speed Controller

DSC-MU

Mass: 0.2 kg

2D CAD A1303

3D CAD

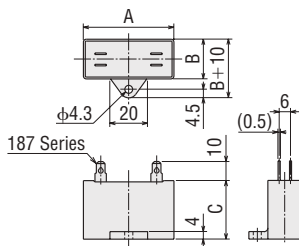


03

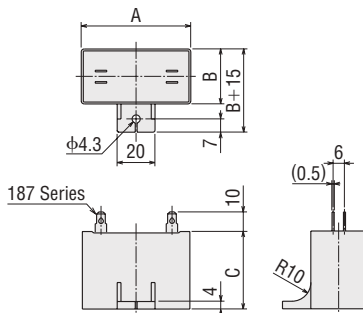
DSC Series

Capacitor (Included)

Dimensions No. ①



Dimensions No. ②



Capacitor Dimensions (Unit: mm)

Speed Controller Product Name	Capacitor					Dimensions No.
	Product Name	A	B	C	Mass g	
DSCD6UAM	CH25FAUL2	31	17	27	21	①
DSCD6ECM	CH06BFAUL	31	14.5	23.5	18	
DSCD15UAM	CH45FAUL2	37	18	27	26	
DSCD15ECM	CH10BFAUL	37	18	27	27	
DSCD25UAM	CH65CFAUL2	48	19	29	35	
DSCD25ECM	CH15BFAUL	38	21	31	37	
DSCD40UAM	CH90CFAUL2	48	22.5	31.5	45	
DSCD40ECM	CH23BFAUL	48	21	31	43	
DSCD60UAM	CH120CFAUL2	58	22	35	60	
DSCD60ECM	CH30BFAUL	58	21	31	50	
DSCD90UAM	CH200CFAUL2	58	29	41	91	②
DSCD90ECM	CH60BFAUL	58	29	41	92	

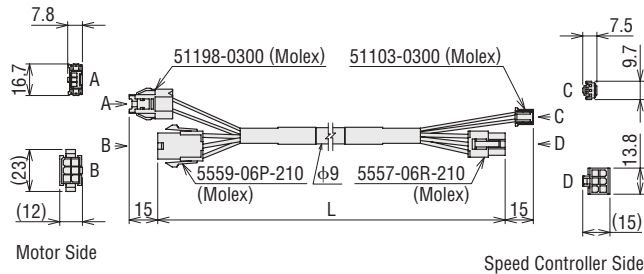
● A capacitor cap is included with the capacitor.

Connection Cables

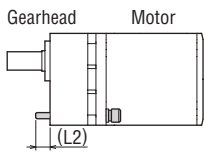
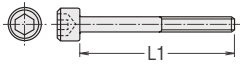
Product Name	Length L (m)
CC01SCM	1
CC02SCM	2
CC03SCM	3
CC05SCM	5
CC10SCM	10

Flexible Connection Cables

Product Name	Length L (m)
CC01SCMR	1
CC02SCMR	2
CC03SCMR	3
CC05SCMR	5
CC10SCMR	10



■ Dimensions of Installation Screws

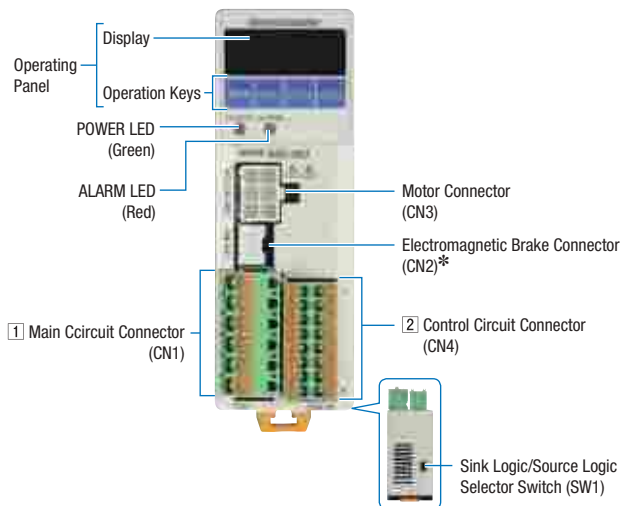


Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
2GV□B	5~25	M4	50	7
	30~120		55	8
	150~360		60	8
3GV□B	5~25	M6	60	12
	30~120		65	12
	150~360		70	12
4GV□B	5~25	M6	60	9
	30~120		65	9
	150~360		70	9
5GV□B	5~18	M8	70	14
	25~100		85	16
	120~300		90	15
5GVH□B	5~18	M8	70	14
	25~100		85	16
	120~300		90	15
5GVR□B	5~15	M8	70	14
	18~36		85	16
	50~180		95	14

- Installation Screws: 4 plain washers and 4 spring washers are included.
- The installation screw material is stainless steel.

Connection and Operation

Names and Functions of Speed Controller Parts



Name		Overview
Operating Panel	Display (4-digit LED)	Displays speed, parameter, alarm, etc.
	Operation Keys	Switches the operation mode or changes the setting or parameter of the operation data.
POWER LED (Green)		Lights while the AC power supply is provided to the speed controller.
ALARM LED (Red)		Lights when the alarm is generated.
Motor Connector (CN3)		Connect the connector of the motor.
Electromagnetic Brake Connector (CN2)*		Connects the connector of the electromagnetic brake.
Main Circuit Connector (CN1)		Connects the AC power source, capacitor and FG.
Control Circuit Connector (CN4)		Connects the DC power supply for control and I/O signals.
Sink Logic/Source Logic Selector Switch		Switches between the sink logic and source logic for the input signals.

*Only the electromagnetic brake type is connected.

1 Main Circuit Connector (CN1)

Pin No.	Description	Description
1	Capacitor	Connects the capacitor.
2		
3	N.C.	No connection.
4	AC Power Supply	Connects the live side.
5		Connects the neutral side.
6	FG	Connects the ground wire.

2 Control Circuit Connector (CN4)

Pin No.	Signal Name	Function*1	Description
1	+24 V	DC Power Supply for Control	Connects the 24 VDC power supply for control.
2	0 V (GND)		
3	IN0	[FWD]	The motor rotates in the FWD direction when "ON".*2
4	IN1	[REV]	The motor rotates in the REV direction when "ON".*2
5	IN2	[MO]	Select the operating data.
6	IN3	[M1]	
7	IN4	[ALARM-RESET]	Alarms are reset.
8	IN5	[FREE]	When turning the FREE Input to "ON" during the motor operation, the motor automatically stops. With the FREE Input "ON", even if the FWD Input or REV Input is turned "ON", the motor does not rotate. For electromagnetic brake types, turn the FREE Input to "ON" to release the electromagnetic brake.
9	VH	External Speed Setting Input	Connects this to externally set the speed by using an external speed potentiometer or external DC voltage.
10	VM		
11	VL		
12	N.C.	—	No connection.
13	OUT0+	[SPEED-OUT]	For every rotation of the motor output shaft, 12 pulses are output.
14	OUT0-		
15	OUT1+	[ALARM-OUT]	This signal is output when an alarm is generated. (Normally closed)
16	OUT1-		

*1 The [] indicates the functions assigned in the factory. From the following signals, necessary signals can be assigned to any of the 6 input signal terminals (IN0~IN5) and 2 output signal terminals (OUT0, OUT1).

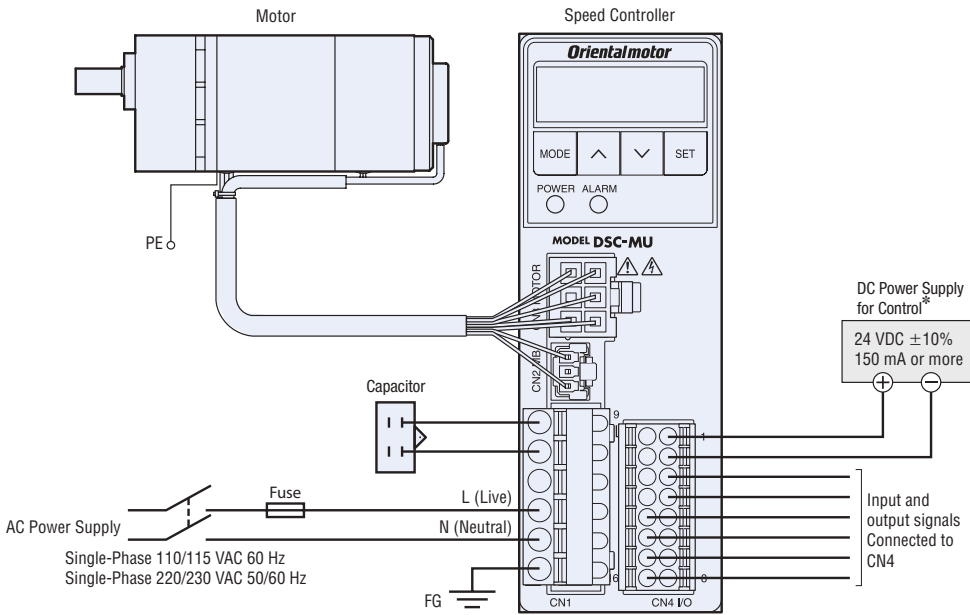
6 points for any of the 7 input signals (FWD, REV, MO, M1, ALARM-RESET, FREE, EXT-ERROR)

2 points for any of the 4 output signals (SPEED-OUT, ALARM-OUT, TH-OUT, WNG)

*2 The rotation direction varies depending on the gear ratio of the gearhead or parameter setting.

● Connection Diagram

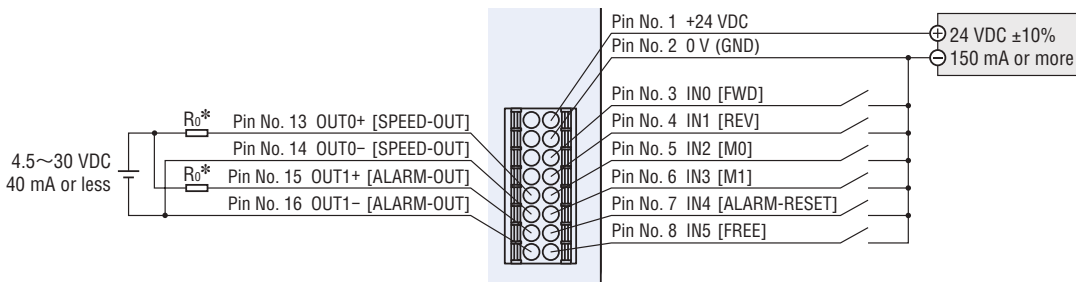
The figure shows a connection example of a motor with an electromagnetic brake. Be sure to connect the DC power supply for control in addition to the AC power supply when operating the motor.



*For the DC power supply for control, use the power supply with reinforced insulation provided on the primary and secondary sides.

◇ Connection Example of Input and Output Signals (CN4)

The figure shows a connection example for the operation of the motor using switches having contacts, such as relays or switches, in the sink logic setting.



*Recommended resistance value

For 24 VDC: 680 Ω~4.7 kΩ (2 W) For 5 VDC: 150 Ω~1 kΩ (0.5 W)

Note

● Connect the controlling resistance R0 according to the power supply voltage to use so that the current applied to the output signals does not exceed 40 mA.

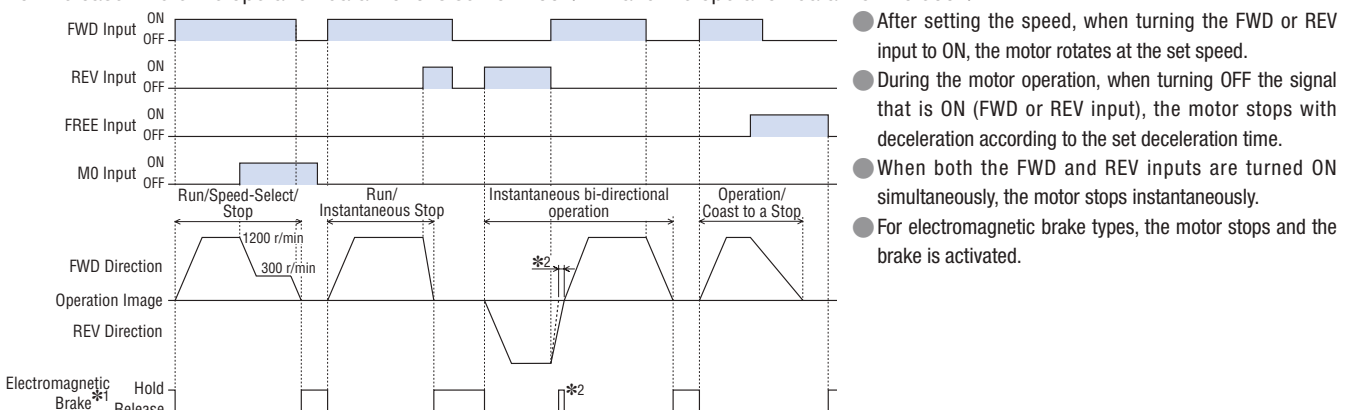
◇ Rating of Fuse

For overcurrent protection, be sure to insert a fuse into the AC power supply line.

Rating of Fuse	Single-Phase 110/115 VAC	216 Series (Littelfuse, Inc.) 10 A or equivalent
	Single-Phase 220/230 VAC	216 Series (Littelfuse, Inc.) 6.3 A or equivalent

● Timing Chart

For the case where the operation data No. 0 is set to 1200 r/min and the operation data No.1 to 300 r/min.



*1 Only for electromagnetic brake types.

*2 Only for electromagnetic brake types. This is retained when the "Deceleration Control" parameter is ON and a time lag (around 0.1 seconds) occurs due to the stop of the motor. When the "Deceleration Control" parameter is OFF, this is not retained. There is no time lag either.

Note

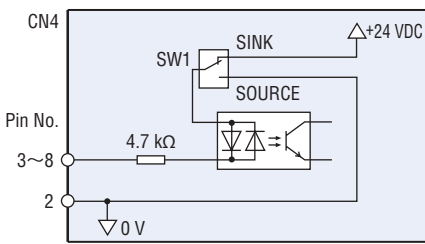
● The duration of ON for each signal must be 10 ms or more.

I/O Signal Circuits

Select sink logic or source logic according to the external control device you will be using.

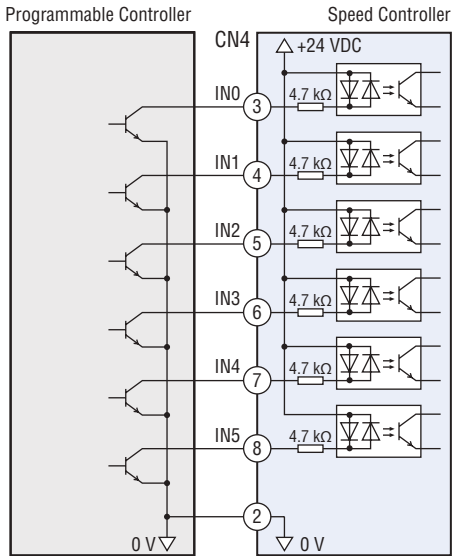
◇ Input Circuit

IN0~IN5

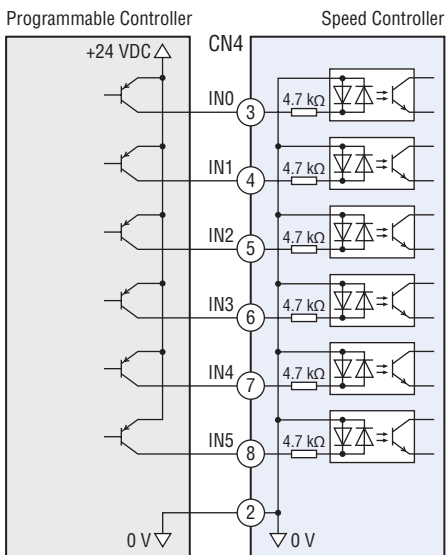


◇ Connecting to the Host Controller

● Sink Logic

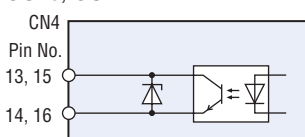


● Source Logic



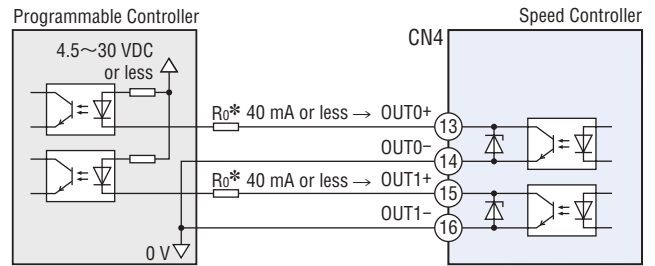
◇ Output Circuit

OUT0, OUT1

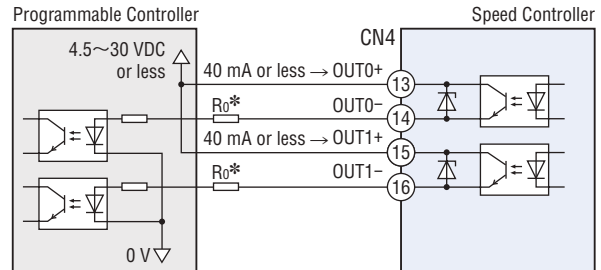


◇ Connecting to the Host Controller

● Sink Logic



● Source Logic



*Recommended resistance value

For 24 VDC: 680 Ω~4.7 kΩ (2 W) For 5 VDC: 150 Ω~1 kΩ (0.5 W)

Note

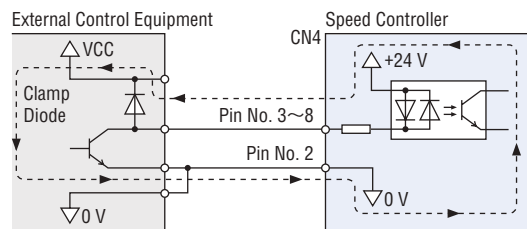
● The current applied to OUT0 and OUT1 must be 40 mA or less. If this value is exceeded, connect the limiting resistor R0.

◇ When an External Control Device with a Built-In Clamp Diode is Used

With external control equipment with built-in clamping diodes connected, if the power of the external control equipment is turned off with the speed controller turned on, the motor may rotate due to current flowing around. Also, depending on the speed controller and the external control equipment used, the motor may rotate even if the power is simultaneously turned ON/OFF. To turn ON/OFF the power, follow the procedure below.

To turn OFF: Speed controller → External control equipment

To turn ON: External control equipment → Speed controller



◇ Speed Output

Pulse signals of 12 pulses are output at every rotation of the motor output shaft in synchronization with the motor rotation.

You can measure the SPEED-OUT frequency and calculate the motor speed.

$$\text{Motor Shaft Speed [r/min]} = \frac{\text{Speed Output Frequency [Hz]}}{12} \times 60$$

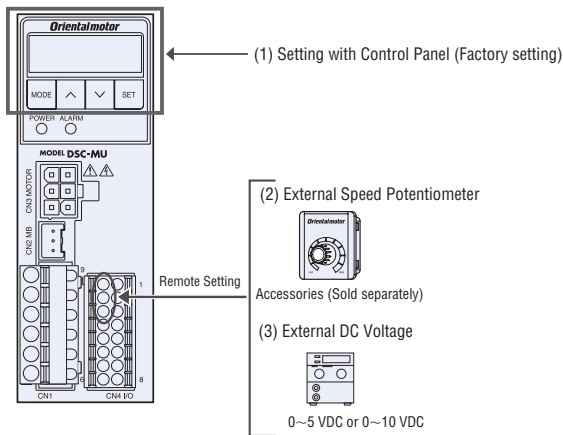
$$\text{Speed Output Frequency [Hz]} = \frac{1}{T[\text{s}]}$$

Speed Output Waveform



Speed Setting Method

There are following 3 methods to set the speed.



Setting with Control Panel

Up to 4 patterns of operating data can be set.

Select a pattern by switching the ON/OFF of the M0 and M1 inputs for operation.

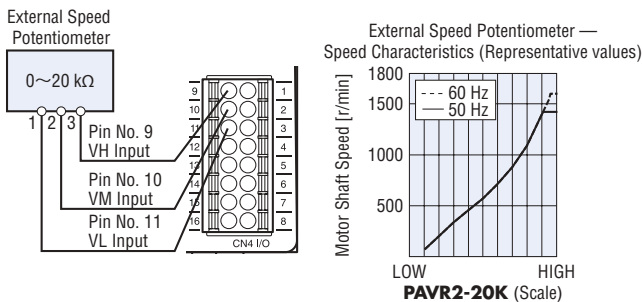
Operating Data No.	M1	M0	Description
0	OFF	OFF	Setting with control panel/remote setting*
1	OFF	ON	Setting with control panel
2	ON	OFF	
3	ON	ON	

*When the "External Speed Instruction Input" parameter is "ON (enabled)" (Default: OFF), the speed can be set with an external speed potentiometer or external DC voltage.

Setting with External Speed Potentiometer

Connect an external speed potentiometer to CN4.

Setting of the "External Speed Instruction Voltage Selection" parameter: "0-5" (Default)



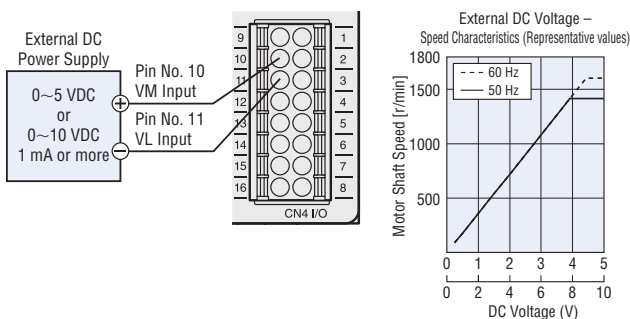
Setting with External DC Voltage

Connect an external DC power (0~5 VDC or 0~10 VDC) to CN4.

Setting of the "External Speed Instruction Voltage Selection" parameter:

For 0~5 VDC: "0-5" (Default)

For 0~10 VDC: "0-10"



Note

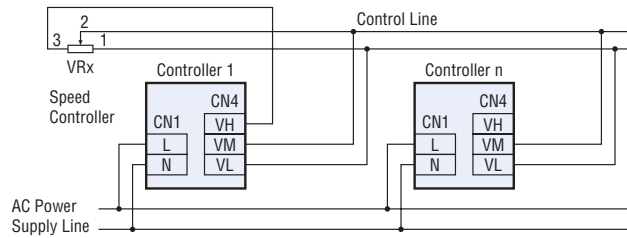
● The external DC voltage must be 10 VDC or less. Also, when connecting the external DC voltage, make sure not to connect to the wrong polarity. This may damage the speed controllers.

Multi-Motor Control

Multiple motors can be operated at the same speed by using one external speed potentiometer or an external DC voltage.

When Using an External Speed Potentiometer

Parallel-motor operation using the external speed potentiometer (VRx) should be performed with 20 speed controllers or less.



● The calculation method of the resistance value (VRx) when the number of speed controllers is connected is n

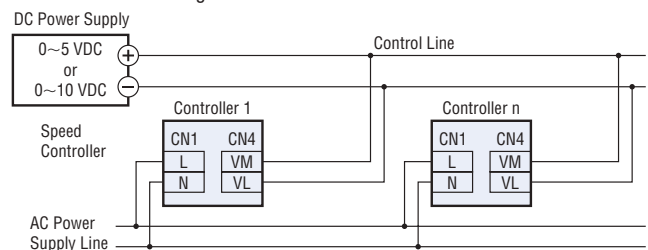
Resistance value (VRx) = 20/n (kΩ), Allowable dissipation = n/4 (W)

Example: When connecting 2 speed controllers

Resistance value = 20/2 = 10 (kΩ), Allowable dissipation = 2/4 = 1/2 (W)

When using External DC Voltage

The number of connected controllers is limited according to the current capacity of the external DC voltage.



● The calculation method of the current capacity of the external DC power supply (I) when the number of speed controllers connected is n

Current Capacity (I) = 1 × n (mA)

Example: When connecting 2 speed controllers

Current Capacity (I) = 1 × 2 = 2 (mA)

Repeated Operation Cycle

When repeating the motor operation in a short cycle, refer to the following cycle to set the motor housing temperature to 90°C or less.

Instantaneous Stop	6 W ~ 40 W	For repetition of operation and instantaneous stop 2 seconds or more, 50% or less of operation duty (Example: Run for 1 second., stop for 1 second)
	60 W, 90 W	For repetition of operation and instantaneous stop 4 seconds or more, 50% or less of operation duty (Example: Run for 2 seconds, stop for 2 seconds)
Instantaneous bi-directional operation	6 W ~ 40 W	For repetition of switching of rotation direction during operation Switching every 2 seconds or more
	60 W, 90 W	For repetition of switching of rotation direction during operation Switching every 4 seconds or more

● When using a motor having electromagnetic brake with the "Deceleration Control" parameter ON, the conditions on the continuous operation are applied. See also "Continuous Operation Time with Deceleration Control ON" under Common Specifications for the electromagnetic brake type (→ Page 03-24).

Braking Current

For instantaneous stop, instantaneous bi-directional operation and operation by vertical driving*, a large half-wave rectified braking current flows in the AC power supply line for around 0.4 seconds. For this sort of operation, consider the braking current (peak value) in the following table when selecting the capacity of the breaker and AC power supply for the equipment.

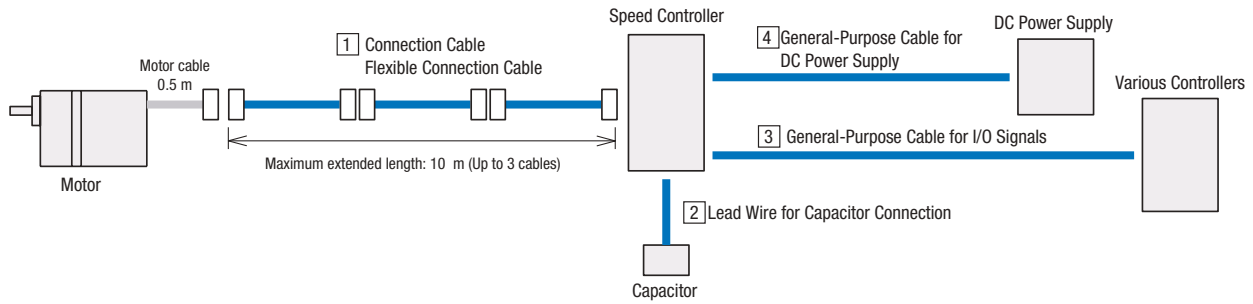
Motor Output Power	Braking Current (Peak value)	
	Single-Phase 110/115 VAC	Single-Phase 220/230 VAC
6 W	2 A	1 A
15 W	4 A	3 A
25 W	8 A	4 A
40 W	12 A	7 A
60 W	21 A	10 A
90 W	29 A	13 A

*Only for electromagnetic brake types

Accessories (Sold Separately)

Cable

Cable System Configuration



1 Connection Cables Flexible Connection Cables

This is a connection cable for connecting the motor and the speed controller. The maximum extension length of cables used between products is 10 m (up to 3 cables). Use the flexible connection cable in applications where the cable is bent and flexed.

Product Line

Connection Cables For Standard Type (CC_SC)

Product Name	Length L (m)	List Price
CC01SC	1	SGD35
CC02SC	2	SGD40
CC03SC	3	SGD50
CC05SC	5	SGD70
CC10SC	10	SGD120



Connection Cables For Electromagnetic Brake Type (CC_SCM)

Product Name	Length L (m)	List Price
CC01SCM	1	SGD48
CC02SCM	2	SGD53
CC03SCM	3	SGD63
CC05SCM	5	SGD83
CC10SCM	10	SGD133



Flexible Connection Cables For Standard Type (CC_SCR)

Product Name	Length L (m)	List Price
CC01SCR	1	SGD70
CC02SCR	2	SGD80
CC03SCR	3	SGD100
CC05SCR	5	SGD140
CC10SCR	10	SGD240



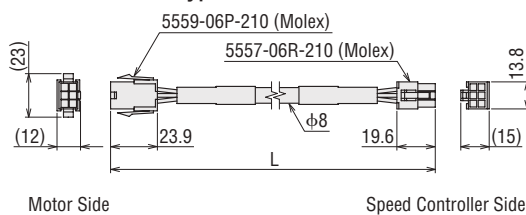
Flexible Connection Cables For Electromagnetic Brake Type (CC_SCMR)

Product Name	Length L (m)	List Price
CC01SCMR	1	SGD95
CC02SCMR	2	SGD105
CC03SCMR	3	SGD125
CC05SCMR	5	SGD165
CC10SCMR	10	SGD265

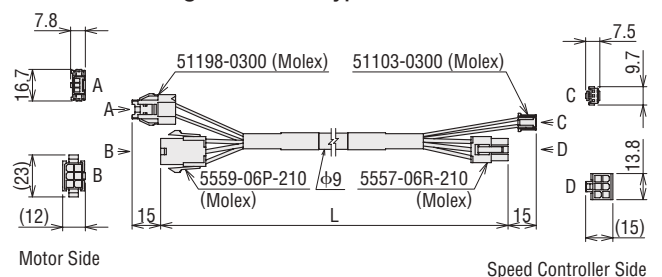


Dimensions (Unit: mm)

For Standard Type



For Electromagnetic Brake Type

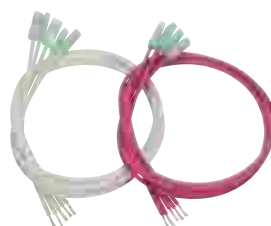


2 Lead Wires for Capacitor Connection

Includes lead wire with a terminal that can be connected to the capacitor terminal as it is.

Product Line

Product Name	Set Details	List Price
LCCN0510	White: 5 leads Red: 5 leads	SGD15



Use with the capacitor cap

Application example

3 General-Purpose Cables for I/O Signals

These cables are useful for connecting the I/O signals of the speed controller. Up to 2 m is available.



Product Name	Length (m)	List Price
CC16D005B-1	0.5	SGD22
CC16D010B-1	1	SGD25
CC16D015B-1	1.5	SGD28
CC16D020B-1	2	SGD31

● The available general-purpose cable for I/O signals are those with 6 cores (**CC06D□B-1**), 10 cores (**CC10D□B-1**) and 12 cores (**CC12D□B-1**). Select the cable with most suitable number of cores according to the function you will use. For details on the products, contact with Oriental Motor sales office.

4 General-Purpose Cables for DC Power Supply

These cables connect the speed controller and DC power supply.

● Product Line

Product Name	Length (m)	List Price
CC02D005-3	0.5	SGD11
CC02D010-3	1	SGD12
CC02D015-3	1.5	SGD13
CC02D020-3	2	SGD14
CC02D050-3	5	SGD23



Flexible Couplings

These are clamp type couplings for connecting the motor and gearhead shaft with the driven shaft. Once the gearhead is determined, the coupling can be selected.

● Couplings can also be used with round shaft types. Select a coupling with the same inner diameter size as the motor shaft diameter.

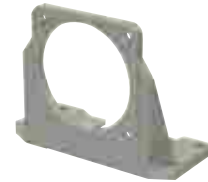


Applicable Product	Load Type	Coupling Type	List Price
SCM26	Uniform load	MCL30	SGD61
	Shock load		
SCM315	Uniform load	MCL30	SGD61
	Shock load	MCL40	SGD93
SCM425	Uniform load	MCL40	SGD93
	Shock load	MCL55	SGD124
SCM540 SCM560 SCM590	Uniform load	MCL55	SGD124
	Shock load		

Motor and Gearhead Mounting Brackets

These dedicated mounting brackets are for mounting motors and gearheads.

Product Name	List Price	Applicable Product
SOL2M4F	SGD24	SCM26 Round Shaft Type
		SCM26 Parallel Shaft Combination Type
SOL3M5F	SGD26	SCM315 Round Shaft Type
SOL3M6F	SGD26	SCM315 Parallel Shaft Combination Type
SOL4M5F	SGD29	SCM425 Round Shaft Type
SOL4M6F	SGD29	SCM425 Parallel Shaft Combination Type
SOL5M6F	SGD31	SCM540, SCM560, SCM590 Round Shaft Type
SOL5M8F	SGD31	SCM540, SCM560, SCM590 Parallel Shaft Combination Type



Mounting Bracket for the Capacitor

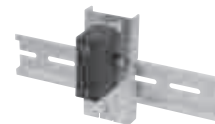
Allows you to connect capacitors on DIN rails.

Material: SPCC

Surface treatment: Trivalent chromate

Product Line

Product Name	List Price
PADP01C	SGD6



<Application example>

External Speed Potentiometer

Features

- Potentiometer which allows the adjustment of rotation speed and torque.
- Easy installation
Simply insert the potentiometer into the mounting hole. No tools are required. It can be removed.
- Easy wiring
A terminal block is employed. Lead wire connection or soldering is not required. The efficiency of wiring is improved.



(Front)



(Back)

Product Line

Product Name	List Price
PAVR2-20K	SGD25

The following items are included in each product.
External speed potentiometer, operating manual

Note

- The external speed potentiometer (**PAVR2-20K**) cannot be used together with a general-purpose cable for I/O signals.

Specifications

Resistance: 0~20 kΩ
Rate power: 0.05 W
Resistance change characteristics: B curve

Applicable Lead Wire Size

AWG22~18 (0.3~0.75 mm²)

BRUSHLESS MOTORS
BMU Series

EASY SPEED CONTROL

WITH SPIN AND PUSH



Lineup Added





Hypoid Right-Angle
Hollow Shaft Gear and
Various Gears

Gearheads Supporting
Food Machinery Grease H1

Introduction of the NEW Lineup

4 Types of Selectable Gearheads

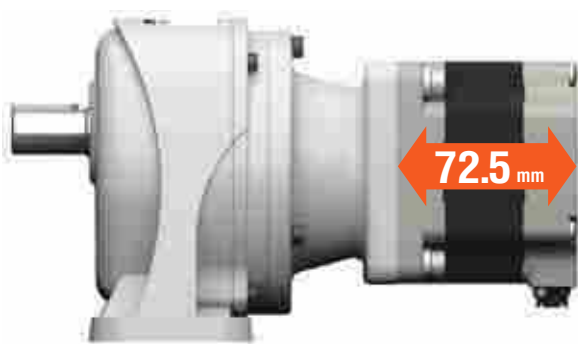
The connector types of the **BMU** Series suit more variations of gears. You can choose to meet your usage or method of installation. For types and features of each gearhead, see pages 04-08 and 04-09.

 <p>IP66</p>	 <p>IP44</p>	 <p>IP66</p>	 <p>IP66</p>
<p>Hypoid Right-Angle Hollow Shaft JH Gear 60 W, 120 W, 200 W, 400 W</p>	<p>Legged Gearhead JB Gear 200 W, 400 W</p>	<p>Parallel Shaft Gearhead GFV Gear 30 W, 60 W, 120 W, 200 W, 400 W</p>	<p>Parallel Shaft Gearhead JV Gear 200 W, 400 W</p>
<p>Space saving Cost saving Stainless steel shaft</p>	<p>Legged all-in-one gear High gear ratio 1/1200</p>	<p>Long life Rated life 10,000 hours Stainless steel shaft</p>	<p>High gear ratio 1/450 Stainless steel shaft</p>

04

BMU Series

● Compact, Lightweight, High Power, Energy/Space-Saving



Comparison with general 400 W motors

Motor length only	1/3
Motor and Driver Efficiency	87%

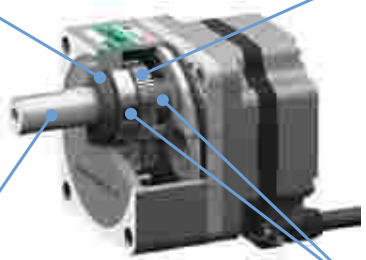
Mass **5.1 kg**

* For the legged gearhead **JB** gear with 1/5 gear 400 W ratio.

- Compact, Lightweight
- High Power
- Energy/Space-Saving

Supports Food Machinery Grease H1 (Connector type only)

Food machinery grease H1 is used for gear lubrication.



H1 grease is adopted to lubricate the oil seal.

H1 grease is adopted to lubricate the gear.

H1 grease is adopted to lubricate the bearing.

Stainless steel shaft

● What is food machinery Grease H1?

It is a grease categorized by the NSF as "a lubricant with incidental food contact for use in and around food processing areas" categorized by the NSF.

What is the NSF (NSF International)?

It is an international third-party certifier headquartered in the U.S. which provides global services regarding public health and the environment, including standard development, product certification, audits, education, and risk management.

● The rated life of the gearhead is 5,000 hours

Features of Brushless Motor

Because our brushless motor do not have brushes, which is the DC motor demerit, they produce less noise and are maintenance-free. The use of permanent magnets allows for compact, high output, and highly efficient motors.

Wide Speed Control Range

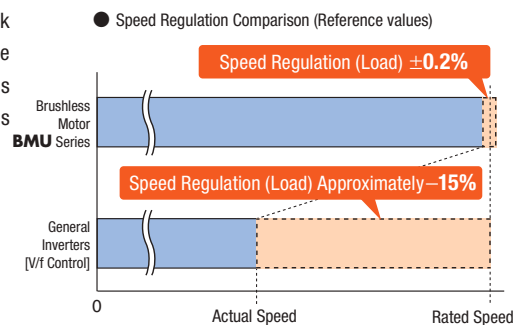
The brushless motor has a broader speed control range compared to AC speed control motors and inverters. They are ideal for applications that require a constant torque for all speeds, low to high.

Product Group	Speed Control Range*	Speed Ratio
Brushless Motor (BMU Series)	80~4000 r/min	1:50
Inverter Control Three-Phase Induction Motor	200~2400 r/min	1:12
AC Speed Control Motor	50Hz: 90~1400 r/min	1:15
	60Hz: 90~1600 r/min	1:17

*The speed control range varies depending on the model.

Stable Speed Control

The brushless motors always monitor feedback signals from the motor and compare them with the set speed to adjust the applied voltage. For this reason, even if the load changes, stable rotation is performed from low speed to high speed.

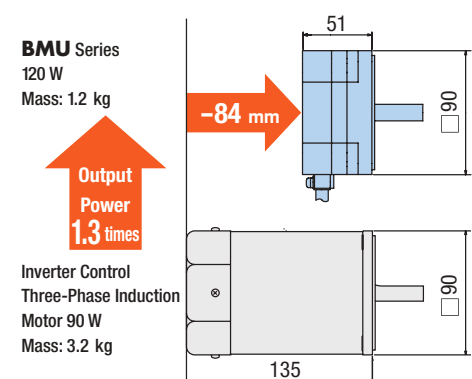


The table on the right shows the speed regulation (load) for each model. It shows how much the rotational speed varies by changing the load between 0 to rated torques.

Model	Speed Regulation with Varying Loads	Condition
		0 ~ rated torque at rated speed
BMU Series	$\pm 0.2\%$	0 ~ rated torque at rated speed
BLE2 Series	$\pm 0.2\%$	
BLE Series	$\pm 0.5\%$	
BXII Series	$\pm 0.05\%$	
BLH Series	$\pm 0.5\%$	

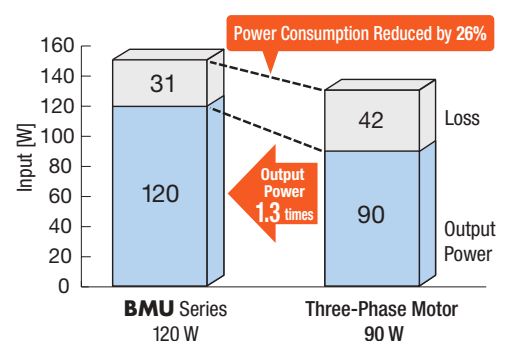
Thin, Lightweight and High Power

The brushless motors use permanent magnets so that they are thin and lightweight but yet have high power. These contribute to the downsizing of equipment.



Contributes to Energy Savings

The brushless motors use permanent magnets in the rotor, reducing secondary loss and power consumption. This contributes to energy savings with the equipment.



Main Features of BMU Series

Spin and Push. Easy Speed Control.



Turn the dial, and set the speed to your desired speed.



Turning the dial slowly changes the speed by 1 r/min.



Pushing the dial sets the speed.



The dial operation can be locked.



04

BMU Series

Easy Wiring. Quick Start.



The motor and driver can be easily connected.



The power and I/O connectors are of the screwless type.



With only one switch, the motor can be started immediately.



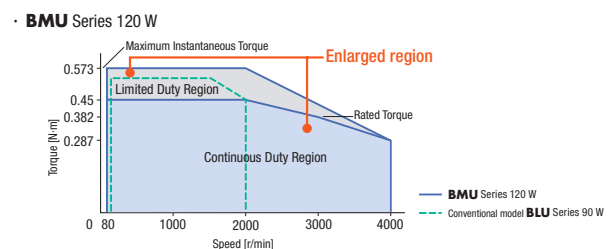
The rotation direction of the motor can be changed with easy operation.



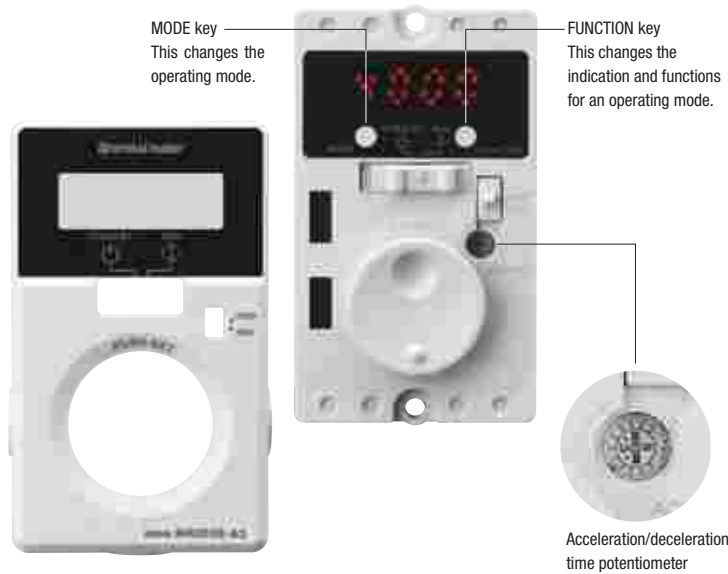
Maximum Speed of 4000 r/min Speed Ratio 1:50* (2.5 times of the conventional ratio)

BMU Series has a maximum speed of 4000 r/min*. Speed ratio of 1:50 (80~4000 r/min*) is realized. Speed regulation has been greatly improved from $\pm 0.5\%$ to $\pm 0.2\%$. With the highest standards of speed control, we respond to our customers' demands.

*Depends on the gearhead.



If you open the Front Panel on the Driver, you can set up Various Functions.



(Typical functions that can be set while the front panel is opened)

- Motor Startup/Stop *
 - Adjustment of operating speed *
 - Setting the operating speed *
 - Selecting the rotation direction *
 - Changing the indication
 - Operating speed indication when the speed reduction/speed increasing ratio is set
 - Setting the acceleration/deceleration time
 - Dial operation lock
 - Speed setting for the 4-speed operation
 - Speed limits setting
 - Validating the external operating signals
 - External input/output signal allocation
 - Setting the overload alarm detection time, except during axial lock
 - Easy holding function for output shaft
- *Setting is possible even if the front panel is attached.

Speed indication

Displays the motor rotational speed by 1 r/min. Additionally, with the "gear ratio" parameter of a conveyor, the display shows the conveyor transfer speed in m/s directly.



Load factor indication

With the rated torque of the motor at 100%, the load factor can be expressed in percentage (40~200%). The load condition during the start-up, as well as the load condition due to the aging deterioration of the equipment can be confirmed.



Indication at a load factor of 50%

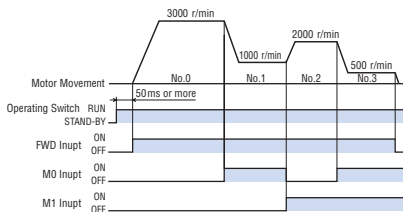
Protective function

Various protective functions such as overload protective function and overvoltage protective function are equipped. When a protection is triggered, it shows the alarm code on the display and outputs an alarm signal.



4-speed setting

Operation in 4 speeds is possible by setting the data to operating data No.0, No.1, No.2, or No.3, and switching the input of the MO and M1 terminals.



- In 4 speed drive, switching of the rotation direction from external input signals cannot be performed. (For 30, 60, 120 W)

Sets the acceleration/deceleration time

The acceleration time and deceleration time can be digitally set, in addition to adjusting them with an acceleration/deceleration time potentiometer.

- Setting range:
0.0~15.0 sec (Initial value: 0.5 sec)

For the digital setting, the acceleration time and deceleration time are each set independently. This allows you to finely adjust the speeds to mitigate shocks on conveyed products at startups and stops and freely set them according to the desired tact time.

Output shaft is held when stopped

When the motor is stopped, the load can be electrically held. (Holding force is up to 50% of the rated torque.)

Note

If the electrical power supply to the driver is turned OFF, the holding force dissipates. This cannot be used to prevent a fall during a power outage.

Other functions

● Lock the dial operation

This prevents the undesired changes in the speed and the changes or deletion of data with the operation of the dial.

● You can set to "Front Panel Operation Invalid"

When operating using external signals, the front panel switch operation can be set to "Invalid".

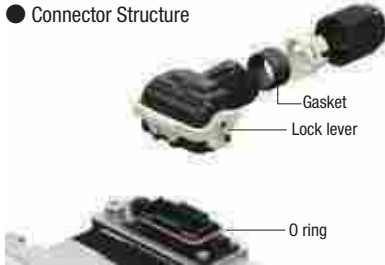
Features of Connector Type

The connector is new and specially developed for compact motors. It connects the motor and the driver directly. In addition to the motor mechanism, improved dust-resistant and watertight performance has allowed the motor to obtain a Degree of Protection IP66*.

New connector

The built-in gasket and the O-ring contribute to improved watertight performance. The locking lever makes connection easy, eliminating the trouble to fix screws.

● Connector Structure



● How to Install



Plug the connector.



Turn the locking lever.



Connection is completed.

Stainless steel shaft equipped as a standard*

Highly rustproof, anti-corrosive stainless steel is used for the shaft. Stainless steel is also used for the parallel key and the installation screws.

*The protection rating and the output shaft material depend on the gearhead used. For details, refer to the Lineup chart. → Page 04-10



Cable with Selectable Drawing Direction for Direct Connection

2 types of connection cables are available to choose from depending on the direction to draw out. For direct connections between the motor and the driver, one connection cable can extend up to 10 m, eliminating the need for a relay.

Selectable cable drawing direction

2 types are available to choose from depending on the direction to draw out the motor cable.

(The round shaft type draws only from the counter-output shaft side.)



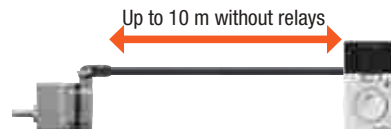
Drawing on the output shaft side



Drawing on the counter-output shaft side

Connects the motor and the driver directly

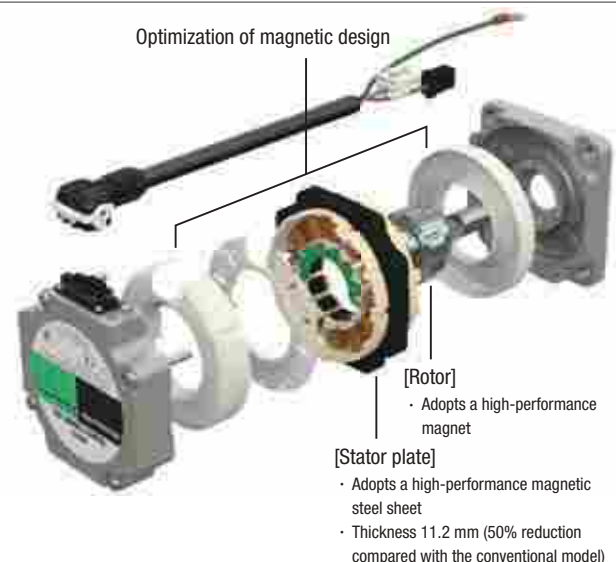
One cable can extend up to 10 m without a relay, eliminating the need for relays. Only this one cable is required for the power, signals and grounding, reducing wiring efforts.



Designed for Compactness, High Power and High Efficiency

An optimal magnetic design and high-performance material enable a stator plate thickness of just 11.2 mm. This slimmess realizes a highly efficient power unit that outputs 120 W. Compared with the conventional brushless motor of the same output power, the stator plate thickness is only half of the conventional one (For motors with a frame size of 90 mm).

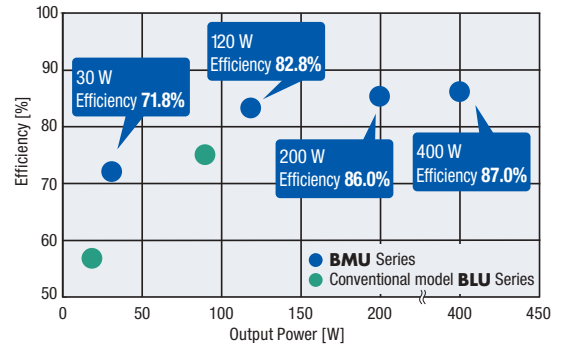
Moreover, the use of high-performance material reduces the amount of material used, therefore reducing costs.



Substantial Improvement in the Efficiency of the Motor and Driver Package

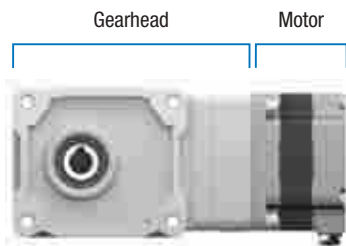
The **BMU** Series sees a maximum of 15% unit efficiency improvement compared with conventional models*.

***BMU** Series 30 W and **BLU** Series 20 W comparison.

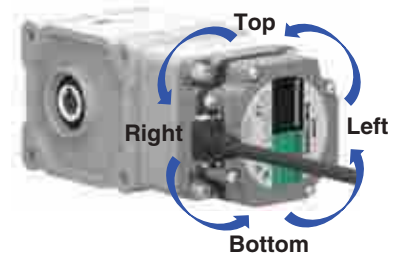
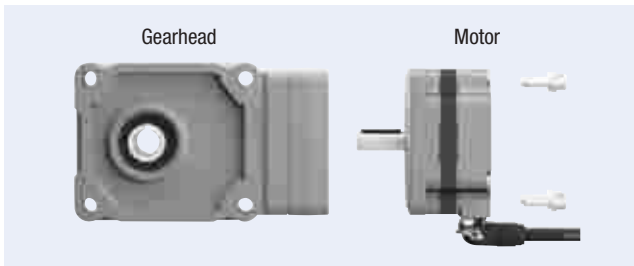


Assembled Motor and Gearhead

The motor and gearhead come pre-assembled. This reduces assembly time and allows immediate installation of the unit to equipment.



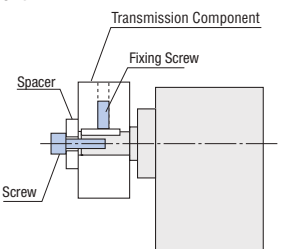
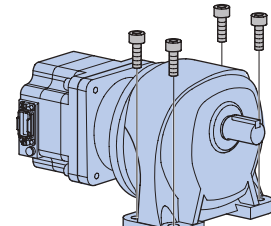
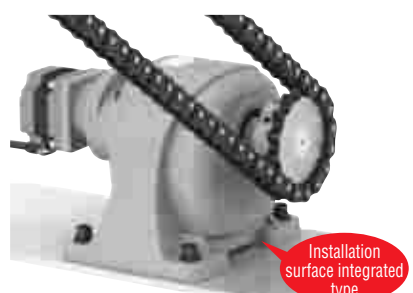
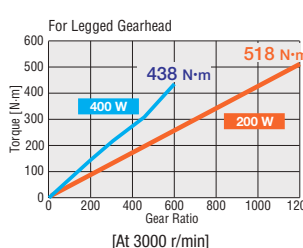
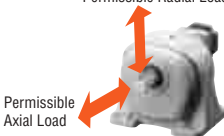


You can remove the gearhead and change the mounting angle by 90-degree intervals. You can change the connector position depending on the equipment.

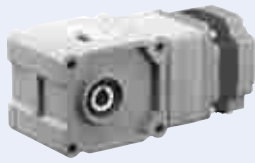


Types and Features of Gearheads

These high-strength gearheads support high-speed rotation and high outputs the brushless motors provide. You can choose from various gearheads to meet your application, requirements, or installation.

	Parallel Shaft Gearhead	Legged Gearhead																																																									
<p>Type</p>	 <p>Parallel Shaft Gearhead GFV Gear Parallel Shaft Gearhead JV Gear</p>	 <p>Legged Gearhead JB Gear</p>																																																									
<p>Installation Advantages</p>	<ul style="list-style-type: none"> Installs on the Flange (JV Gear) Improving the Installation Accuracy (GFV Gear) The boss of the output shaft and the installation surface are cut. This improves the accuracy of device installation. Tapped Hole on the Output Shaft End (GFV Gear • □ 80 mm or more) The output shaft for the gearhead has a tapped hole at the end. The hole can be used for supporting the prevention of coming out of a transmission component.  <p>Usage example of the screw hole on the output shaft end</p>	<ul style="list-style-type: none"> No Mounting Bracket Required The shape quickly attach to your device. High Rigidity/Integral Structure Allows you to easily design the shaft center with the integral installation surface structure.   <p>Installation surface integrated type</p>																																																									
<p>Features</p>	<ul style="list-style-type: none"> High Strength Gearhead (GFV Gear) A heat treatment strengthens the gears and the bearing diameter is enlarged for a higher strength. The gearhead has 2 to 3 times of the permissible torque than AC motor gearheads with the same frame size, contributing to downsized equipment. High Gear Ratio (JV Gear) This line has products with gear ratios up to 1/450. <table border="1"> <tr> <td>Gear Ratio</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>30</td> <td>50</td> <td>100</td> <td>200</td> <td>300</td> <td>450</td> </tr> <tr> <td>200 W</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>400 W</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </table> <p>● represents parallel shaft gearhead GFV gear</p> <ul style="list-style-type: none"> Long Life (GFV Gear) The gearhead has a long life using special bearings and grease for high-speed rotation. It achieves a rated life of 10,000 hours. 	Gear Ratio	5	10	15	20	30	50	100	200	300	450	200 W	●	●	●	●	●	●	●	●	●	●	400 W	●	●	●	●	●	●	●	●	●	●	<ul style="list-style-type: none"> High Permissible Torque The torque is not saturated and the benefit of the motor torque can be maximized.  <p>For Legged Gearhead</p> <p>Torque [N·m]</p> <p>400 W 200 W</p> <p>438 N·m 518 N·m</p> <p>Gear Ratio</p> <p>[At 3000 r/min]</p> <ul style="list-style-type: none"> High Strength  <p>Permissible Radial Load</p> <p>Permissible Axial Load</p> <p>..... 3672 N</p> <p>..... 577 N</p> <p>[With 1/1200 gear ratio, at 3000 r/min]</p> <ul style="list-style-type: none"> High Gear Ratio This line has products with gear ratios up to 1/1200. <table border="1"> <tr> <td>Gear Ratio</td> <td>5</td> <td>10</td> <td>20</td> <td>30</td> <td>50</td> <td>100</td> <td>200</td> <td>300</td> <td>450</td> <td>600</td> <td>1200*</td> </tr> <tr> <td></td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </table> <p>*200 W only</p>	Gear Ratio	5	10	20	30	50	100	200	300	450	600	1200*		●	●	●	●	●	●	●	●	●	●	●
Gear Ratio	5	10	15	20	30	50	100	200	300	450																																																	
200 W	●	●	●	●	●	●	●	●	●	●																																																	
400 W	●	●	●	●	●	●	●	●	●	●																																																	
Gear Ratio	5	10	20	30	50	100	200	300	450	600	1200*																																																
	●	●	●	●	●	●	●	●	●	●	●																																																

Right-Angle Shaft Gearhead

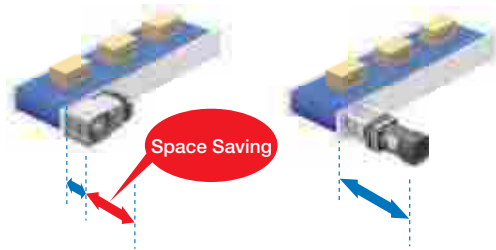


IP66

Hypoid Right-Angle Hollow Shaft **JH** Gear

Space Saving

Placing the motor at right angles saves space.



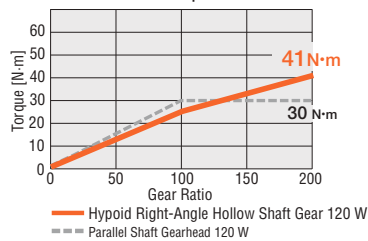
Cost Saving

Reduced couplings, belts, pulleys, and other parts contribute to reduced parts costs and assembling steps.



Unsaturated Permissible Torque

The permissible torque is not saturated even at a high gear ratio. Therefore, the benefit of the motor torque can be maximized.



[At 3000 r/min]

High Strength


Comparison with parallel shaft gearhead



[1/200 at 3000 r/min]

Lineup


Motor

Cable Type		Connector Type		Type/material of the output shaft	Output Power [W]	Gear Ratio	Degree of Protection
Cable Type	Connector Type	GFV Gear Cable Iron Shaft Connector Stainless Steel Shaft 	30	5, 10, 15, 20, 30, 50, 100, 200	Cable IP40 Connector IP66		
			60				
			120				
			200				
Parallel Shaft Gearhead 	Connector Type	NEW GFV Gear Supports Food Machinery Grease H1 Stainless Steel Shaft 	30	5, 10, 15, 20, 30, 50, 100, 200	IP66		
			60				
			120				
JV Gear Stainless Steel Shaft 	Connector Type	200 300, 450	30	300, 450	IP66		
			400				
Connector Type Legged Gearhead JB Gear Iron Shaft 		200 5, 10, 20, 30, 50, 100, 200, 300, 450, 600, 1200	200	5, 10, 20, 30, 50, 100, 200, 300, 450, 600, 1200	IP44		
			400				
Connector Type Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft 		NEW 60 120 200 400	60	10, 15, 20, 30, 50, 100, 200	IP66		
			120				
			200	5, 10, 15, 20, 30, 50, 100, 200			
			400				
Cable Type Connector Type Round Shaft Type*1 Cable Iron Shaft Connector Stainless Steel Shaft 		30 60 120 200 400	30	-	Cable IP40 Connector IP66		
			60				
			120				
			200				
			400				

Driver


Output Power [W]	Power Supply Voltage [VAC]
30/60/120 W	200/400 W
30	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
60	
120	
200	Three-Phase 200-240
400	
30	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
60	
120	
200	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
400	
200	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
400	
60	
120	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
200	
400	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240

Connection Cable



Cable Type

1~10 m




Cable Type


0.5~10 m

Connector Type


0.5~10 m



Drawing on the output shaft side



Drawing on the counter-output shaft side*2



*1 Some round shaft types have a milling cut shaft.

*2 The round shaft type can connect only the connection cable drawing from the counter-output shaft.

Product Number Code

Motor

◇ Parallel Shaft Gearhead **GFV** Gear/Round Shaft Type

BLM 4 60 S H P - 50 S F

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Type	BLM : Brushless Motor
②	Frame Size	2 : 60 mm 4 : 80 mm 5 : 90 mm 6 : 104 mm (Gearhead is 110 mm)
③	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
④	Identification Part Number	S
⑤	Motor Connection Method	Blank: Cable Type H : Connector Type
⑥	Motor Degree of Protection	Blank: IP40 Specifications P : IP66 Specifications
⑦	Gear Ratio/Shaft Shape	Numbers: Gear Ratio of the Gearhead A, A2 : Round Shaft Type AC, AC2 : Round Shaft Type (With milling cut)
⑧	Material of the Output Shaft	B , Blank: Iron S : Stainless Steel
⑨		F : Supports Food Machinery Grease H1

◇ Hypoid Right-Angle Hollow Shaft **JH** Gear, Legged Gearhead **JB** Gear, Parallel Shaft Gearhead **JV** Gear

BLM 5 200 H P K - 5 C B 50 B - L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

Motor Product Name

Gearhead Product Name

Motor Product Name	①	Motor Type	BLM : Brushless Motor
	②	Frame Size	4 : 80 mm 5 : 90 mm
	③	Output Power	60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
	④	Identification Part Number	S
	⑤	Motor Connection Method	H : Connector Type
	⑥	Motor Degree of Protection	P : IP66
	⑦	Combination Type Motor	K : Round Shaft Type (With key)
Gearhead Product Name	⑧	Combination Type Motor Frame Size	4 : 80 mm 5 : 90 mm
	⑨	Gearhead Size	Code (Example) C or the codes of the gearhead size, see Specifications (→ Pages 04-18, 04-19 and 04-22).
	⑩	Gearhead Type	H : JH Gear B : JB Gear V : JV Gear
	⑪	Gear Ratio	Numbers: Gear Ratio of the Gearhead
	⑫	Material of the Output Shaft	S : Stainless Steel B : Iron
	⑬	Connector Position	Blank: Bottom -L : Left

Driver

BMUD 60 - C 2

① ② ③ ④

①	Driver Type	BMUD : BMU Series Driver
②	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
③	Power Supply Voltage	A : Single-Phase 100-120 VAC C : Single-Phase, Three-Phase 200-240 VAC S : Three-Phase 200-240 VAC
④	Reference Number	

● Connection Cable/Flexible Connection Cable (For cable type)

CC 01 BL 2 R

① ② ③ ④ ⑤

①	Cable Type	CC : Connection Cable
②	Length	01 : 1 m 02 : 2 m 03 : 3 m 05 : 5 m 07 : 7 m 10 : 10 m
③	Applied Model	BL : Brushless Motor
④	Reference Number	
⑤	Blank: Connection Cable	R : Flexible Connection Cable

● Connection Cable (For connector type)

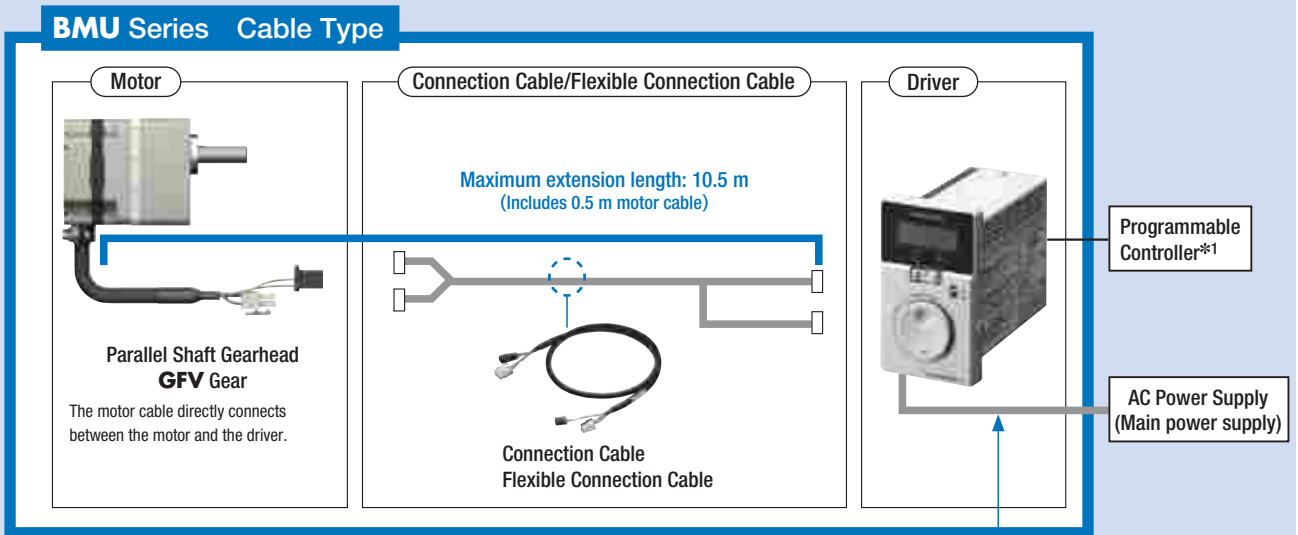
CC 010 H BL F

① ② ③ ④ ⑤

①	Cable Type	CC : Connection Cable
②	Length	005 : 0.5 m 010 : 1 m 015 : 1.5 m 020 : 2 m 025 : 2.5 m 030 : 3 m 040 : 4 m 050 : 5 m 070 : 7 m 100 : 10 m
③	Motor Connection Method	H : Connector Type
④	Applied Model	BL : Brushless Motor
⑤	Cable Drawing Direction	F : Drawing on the Output Shaft Side B : Drawing on the Counter-output Shaft Side

System Configuration Cable Type

The motor, driver and connection cable needs to be purchased separately.



Accessories

- Flexible Couplings → Page 04-54
- Motor and Gearhead Mounting Brackets → Page 04-54
- General-Purpose Cables for I/O Signals → Page 04-53
- Power Supply Cables → Page 04-53
- Motor Covers → Page 04-55
- Enclosure Boxes → Page 04-56
- Dust-Resistant and Watertight Type Front Covers*2 → Page 04-54
- Circuit Products Mounting Brackets*2 → Page 04-54

*1 Not supplied.

*2 Circuit products mounting brackets cannot be used together with the dust-resistant and watertight type front cover.

System Configuration Example

BMU Series Cable Type			Sold Separately		
Motor Parallel Shaft Gearhead GFV Gear	Driver	Connection Cable (1 m)	Mounting Bracket	Flexible Coupling	Circuit Product Mounting Bracket
BLM230-10B	BMUD30-A2	CC01BL2	SOL2M4F	MCL301010	MAFP05V
SGD215	SGD175	SGD38	SGD24	SGD61	SGD12

The system configuration shown above is an example. Other combinations are available.

Product Line Cable Type

A motor, driver and connection cable needs to be purchased separately.

Motors

Parallel Shaft Gearhead GFV Gear



Output Power	Product Name	Gear Ratio	List Price
30 W	BLM230-□B	5, 10, 15, 20	SGD215
		30, 50, 100	SGD224
		200	SGD236
60 W	BLM460S-□B	5, 10, 15, 20	SGD245
		30, 50, 100	SGD254
		200	SGD266
120 W	BLM5120-□B	5, 10, 15, 20	SGD320
		30, 50, 100	SGD331
		200	SGD343
200 W	BLM6200S-□B	5, 10, 15, 20	SGD398
		30, 50	SGD413
		100, 200	SGD431
400 W	BLM6400S-□B	5, 10, 15, 20	SGD448
		30, 50	SGD463

Round Shaft Type



Output Power	Product Name	List Price
30 W	BLM230-A2	SGD128
60 W	BLM260-A2	SGD143
120 W	BLM5120-A2	SGD175
200 W	BLM5200-A	SGD213
400 W	BLM5400-A	SGD263

Lineup of Other Products

Round Shaft Type
Milling Cut Output Shaft

For details, contact your nearest Oriental Motor sales office.

Drivers



Output Power	Power Supply Voltage	Product Name	List Price
30 W	Single-Phase 100-120 VAC	BMUD30-A2	SGD175
	Single-Phase, Three-Phase 200-240 VAC	BMUD30-C2	SGD175
60 W	Single-Phase 100-120 VAC	BMUD60-A2	SGD181
	Single-Phase, Three-Phase 200-240 VAC	BMUD60-C2	SGD181
120 W	Single-Phase 100-120 VAC	BMUD120-A2	SGD203
	Single-Phase, Three-Phase 200-240 VAC	BMUD120-C2	SGD203
200 W	Single-Phase 100-120 VAC	BMUD200-A	SGD225
	Single-Phase, Three-Phase 200-240 VAC	BMUD200-C	SGD225
400 W	Three-Phase 200-240 VAC	BMUD400-S	SGD238

Connection Cables (For cable type)



Length	Product Name	List Price
1 m	CC01BL2	SGD38
2 m	CC02BL2	SGD53
3 m	CC03BL2	SGD68
5 m	CC05BL2	SGD98
7 m	CC07BL2	SGD128
10 m	CC10BL2	SGD173

Flexible Connection Cables (For cable type)



Length	Product Name	List Price
1 m	CC01BL2R	SGD75
2 m	CC02BL2R	SGD105
3 m	CC03BL2R	SGD135
5 m	CC05BL2R	SGD195
7 m	CC07BL2R	SGD255
10 m	CC10BL2R	SGD345

Accessories (Common among cable and connector types)

Motor

Type	Parallel Key	Safety Cover	Installation Screws	Operating Manual
GFV Gear	1 piece	—	1 set	1 copy
JV Gear	—	—	—	
JB Gear	—	—	—	
JH Gear	1 piece	1 piece	1 set	
Round Shaft	—	—	—	

Driver

Connector	Startup Guide	Operating Manual
<ul style="list-style-type: none"> • CN1 connector (1 piece) • CN4 connector (1 piece) 	1 copy	1 copy

A number in the box □ in the product name indicates the gear ratio.

Click Here

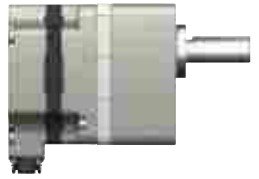
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

System Configuration Connector Type

The motor, driver and connection cable needs to be purchased separately.

BMU Series Connector Type

Motor



Parallel Shaft Gearhead
GFV Gear

Connection Cables

Maximum extension length: 10 m



Drawing on the output shaft side



Drawing on the counter-output shaft side

Driver



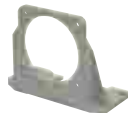
Programmable
Controller*1

AC Power Supply
(Main power supply)

Accessories



Flexible
Couplings
→ Page 04-54



Motor and Gearhead
Mounting Brackets
→ Page 04-54



General-Purpose Cables
for I/O Signals
→ Page 04-53



Power Supply Cables
→ Page 04-53



Torque Arms
→ Page 04-55



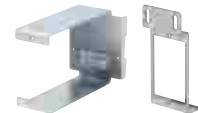
Motor Covers
→ Page 04-55



Enclosure Boxes
→ Page 04-56



Dust-Resistant and Watertight
Type Front Covers*2
→ Page 04-54



Circuit Products Mounting
Brackets*2
→ Page 04-54

*1 Not supplied.

*2 Circuit products mounting brackets cannot be used together with the dust-resistant and watertight type front cover.

System Configuration Example

Motor	Driver	Connection Cable (3 m)
Parallel Shaft Gearhead GFV Gear	BMUD30-A2	CC030HBLF
BLM230HP-10S	SGD175	SGD66
SGD265		

+

Sold Separately		
Mounting Bracket	Flexible Coupling	Circuit Product Mounting Bracket
SOL2M4F	MCL301010	MAFP05V
SGD24	SGD61	SGD12

The system configuration shown above is an example. Other combinations are available.

Product Line Connector Type

A motor, driver and connection cable needs to be purchased separately.

Motors

Parallel Shaft Gearhead **GFV** Gear



Output Power	Product Name	Gear Ratio	List Price
30 W	BLM230HP-□S	5, 10, 15, 20	SGD265
		30, 50, 100	SGD274
		200	SGD286
60 W	BLM460SHP-□S	5, 10, 15, 20	SGD295
		30, 50, 100	SGD304
		200	SGD316
120 W	BLM5120HP-□S	5, 10, 15, 20	SGD370
		30, 50, 100	SGD381
		200	SGD393
200 W	BLM6200SHP-□S	5, 10, 15, 20	SGD448
		30, 50	SGD463
		100, 200	SGD481
400 W	BLM6400SHP-□S	5, 10, 15, 20	SGD498
		30, 50	SGD513

Parallel Shaft Gearhead **GFV** Gear Supports Food Machinery Grease H1



Output Power	Product Name	Gear Ratio	List Price
30 W	NEW BLM230HP-□SF	5, 10, 15, 20	SGD328
		30, 50, 100	SGD336
		200	SGD349
60 W	NEW BLM460SHP-□SF	5, 10, 15, 20	SGD358
		30, 50, 100	SGD366
		200	SGD379
120 W	NEW BLM5120HP-□SF	5, 10, 15, 20	SGD433
		30, 50, 100	SGD444
		200	SGD455

Parallel Shaft Gearhead **JV** Gear



Output Power	Product Name	Gear Ratio	List Price
200 W	BLM5200HPK-5KV□S	300, 450	SGD956
400 W	BLM5400HPK-5DV□S	100, 200	SGD744
	BLM5400HPK-5KV□S	300, 450	SGD1,006

Lineup of Other Products

Round Shaft Type
Milling Cut Output Shaft
Connector Position 4-direction selection

● For details, contact your nearest Oriental Motor sales office.

Drivers



Output Power	Power Supply Voltage	Product Name	List Price
30 W	Single-Phase 100-120 VAC	BMUD30-A2	SGD175
	Single-Phase, Three-Phase 200-240 VAC	BMUD30-C2	SGD175
60 W	Single-Phase 100-120 VAC	BMUD60-A2	SGD181
	Single-Phase, Three-Phase 200-240 VAC	BMUD60-C2	SGD181
120 W	Single-Phase 100-120 VAC	BMUD120-A2	SGD203
	Single-Phase, Three-Phase 200-240 VAC	BMUD120-C2	SGD203
200 W	Single-Phase 100-120 VAC	BMUD200-A	SGD225
	Single-Phase, Three-Phase 200-240 VAC	BMUD200-C	SGD225
400 W	Three-Phase 200-240 VAC	BMUD400-S	SGD238

● A number in the box □ in the product name indicates the gear ratio.
● Accessories → Page 04-13

Legged Gearhead **JB** Gear



Output Power	Product Name	Gear Ratio	List Price
200 W	BLM5200HPK-5AB□B-L	5, 10, 20	SGD538
	BLM5200HPK-5CB□B-L	30, 50	SGD588
	BLM5200HPK-5EB□B-L	100, 200	SGD788
	BLM5200HPK-5KB□B-L	300, 450	SGD988
400 W	BLM5200HPK-5SB□B-L	600, 1200	SGD1,068
	BLM5400HPK-5AB□B-L	5, 10, 20	SGD588
	BLM5400HPK-5CB□B-L	30, 50	SGD638
	BLM5400HPK-5EB□B-L	100, 200	SGD838
400 W	BLM5400HPK-5KB□B-L	300, 450	SGD1,038
	BLM5400HPK-5SB□B-L	600	SGD1,118

Hypoid Right-Angle Hollow Shaft **JH** Gear



Output Power	Product Name	Gear Ratio	List Price
60 W	NEW BLM460SHPK-4H□S	10, 15, 20	SGD498
		30, 50, 100	SGD509
		200	SGD520
120 W	BLM5120HPK-5H□S	10, 15, 20	SGD516
		30, 50, 100	SGD528
		200	SGD539
200 W	BLM5200HPK-5XH□S	5, 10, 15, 20	SGD763
		30	SGD775
	BLM5200HPK-5YH□S	50	SGD813
		100	SGD1,000
400 W	BLM5400HPK-5XH□S	200	SGD1,188
		5, 10, 15, 20	SGD813
		30	SGD825
	BLM5400HPK-5YH□S	50	SGD863
		100	SGD1,050
		200	SGD1,238

Round Shaft Type



Output Power	Product Name	List Price
30 W	BLM230HP-AS	SGD153
60 W	BLM260HP-AS	SGD168
120 W	BLM5120HP-AS	SGD200
200 W	BLM5200HP-AS	SGD238
400 W	BLM5400HP-AS	SGD288

Connection Cables (For connector type)



Length	Product Name	List Price	Length	Product Name	List Price
0.5 m	CC005HBL ■	SGD38	3 m	CC030HBL ■	SGD66
1 m	CC010HBL ■	SGD38	4 m	CC040HBL ■	SGD78
1.5 m	CC015HBL ■	SGD43	5 m	CC050HBL ■	SGD89
2 m	CC020HBL ■	SGD48	7 m	CC070HBL ■	SGD110
2.5 m	CC025HBL ■	SGD56	10 m	CC100HBL ■	SGD139

● The ■ symbol in the product is replaced with **F** or **B** that represents the cable drawing direction.

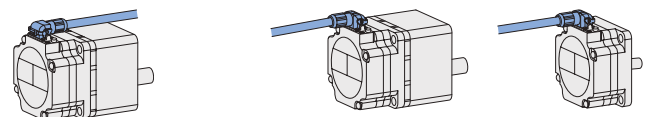
Two types of connection cables for different cable drawing directions are provided.

Note

● The cable for the round shaft type draws only from the counter-output shaft side.

F: Drawing on the output shaft side

B: Drawing on the counter-output shaft side



Parallel Shaft Gearhead GFV Gear 30 W, 60 W, 120 W



Specifications

Product Name	Motor	Cable Type	BLM230-□B		BLM460S-□B		BLM5120-□B		
			BLM230HP-□S / BLM230HP-□SF	BLM230HP-□SF	BLM460SHP-□S / BLM460SHP-□SF	BLM460SHP-□SF	BLM5120HP-□S / BLM5120HP-□SF	BLM5120HP-□SF	
Driver		BMUD30-A2		BMUD30-C2		BMUD60-A2		BMUD60-C2	
Rated Output Power (Continuous)		W		30		60		120	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%		-15~+10%		-15~+10%		
	Frequency	Hz	50 / 60		50 / 60		50 / 60		
	Permissible Frequency Range		±5%		±5%		±5%		
	Rated Input Current	A	1.2	Single-Phase: 0.7/ Three-Phase: 0.38	1.7	Single-Phase: 1.0/ Three-Phase: 0.52	3.3	Single-Phase: 2.0/ Three-Phase: 1.1	
Maximum Input Current	A	2.0	Single-Phase: 1.2/ Three-Phase: 0.75	3.3	Single-Phase: 1.9/ Three-Phase: 1.1	6.8	Single-Phase: 4.1/ Three-Phase: 2.0		
Rated Speed	r/min	3000							
Speed Control Range		80~4000 r/min (Speed ratio 1:50)							
Speed Regulation	Load	±0.2% or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature							
	Voltage	±0.2% or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature							
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage							

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio			5	10	15	20	30	50	100	200	
	Rotation Direction		Same direction as the motor				Opposite direction to the motor				Same direction as the motor
Output Shaft Rotation Speed [r/min]*1	80 r/min		16	8	5.3	4	2.7	1.6	0.8	0.4	
	4000 r/min		800	400	267	200	133	80	40	20	
Permissible Torque [N·m]	30 W	At 80~2000 r/min	0.45	0.9	1.4	1.8	2.6	4.3	6	6	
		At 3000 r/min	0.43	0.86	1.3	1.7	2.5	4.1	6	6	
		At 4000 r/min	0.32	0.65	0.97	1.3	1.9	3.1	5.4	5.4	
		At 80~2000 r/min	0.9	1.8	2.7	3.6	5.2	8.6	16	16	
		At 3000 r/min	0.86	1.7	2.6	3.4	4.9	8.2	16	16	
		At 4000 r/min	0.65	1.3	1.9	2.6	3.7	6.2	12.4	14	
	60 W	At 80~2000 r/min	2.0	4.1	6.1	8.1	11.6	19.4	30	30	
		At 3000 r/min	1.7	3.4	5.2	6.9	9.9	16.4	30	30	
		At 4000 r/min	1.3	2.6	3.9	5.2	7.4	12.3	24.7	27	
		At 80~3000 r/min	100	150				200			
		At 4000 r/min	90	130				180			
		At 80~3000 r/min	200	300				450			
120 W	At 4000 r/min	180	270				420				
	At 80~3000 r/min	300	400				500				
	At 4000 r/min	230	370				450				
	At 80~3000 r/min	150	200				300				
	At 4000 r/min	110	170				230				
	At 80~3000 r/min	250	350				550				
Permissible Radial Load [N]	10 mm from output shaft end*2	30 W	150				300				
		60 W	180				270				
		120 W	200				300				
	20 mm from output shaft end*2	30 W	110				170				
		60 W	220				330				
		120 W	400				600				
Permissible Axial Load [N]	30 W	40									
	60 W	100									
	120 W	150									
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]	30 W	12	50	110	200	370	920	2500	5000		
	60 W	22	95	220	350	800	2200	6200	12000		
	120 W	45	190	420	700	1600	4500	12000	25000		
	At instantaneous stop, instantaneous bi-directional operation*3	30 W	1.55	6.2	14	24.8	55.8	155			
		60 W	5.5	22	49.5	88	198	550			
		120 W	25	100	225	400	900	2500			

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 About Load Position → Page 04-17

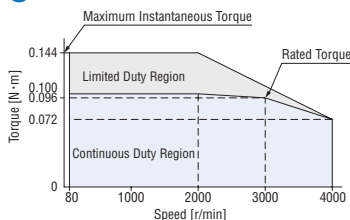
*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

Speed – Torque Characteristics

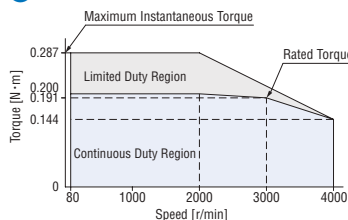
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

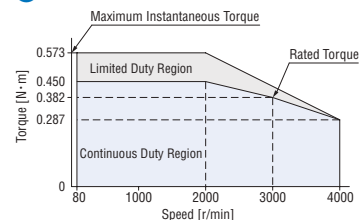
30 W



60 W



120 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Gearhead GFV Gear 200 W, 400 W



Specifications

Product Name	Motor	Cable Type Connector Type	BLM6200S-□B		BLM6400S-□B	
			BLM6200SHP-□S		BLM6400SHP-□S	
Driver		BMUD200-A	BMUD200-C		BMUD400-S	
Rated Output Power (Continuous)		W			400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240		Three-Phase 200-240
	Permissible Voltage Range		-15~+10%			-15~+10%
	Frequency	Hz	50 / 60			50 / 60
	Permissible Frequency Range		±5%			±5%
	Rated Input Current	A	4.6	Single-Phase: 2.7/Three-Phase: 1.5		2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/Three-Phase: 3.4		5.1
Rated Speed		r/min	3000			
Speed Control Range			80~4000 r/min (Speed ratio 1:50)			
Speed Regulation	Load		±0.2% or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature			
	Voltage		±0.2% or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature			
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage			

● The values correspond to each specification and characteristic of a stand-alone motor.

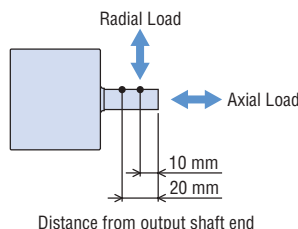
Gear Ratio		5	10	15	20	30	50	100*1	200*1	
Rotation Direction		Same direction as the motor				Opposite direction to the motor		Same direction as the motor		
Output Shaft Rotation Speed [r/min]*2		80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4
Permissible Torque [N·m]	200 W	At 80~3000 r/min	2.9	5.7	8.6	11.5	16.4	27.4	51.6	70
		At 4000 r/min	2.2	4.3	6.5	8.6	12.4	20.6	38.9	63
	400 W	At 80~3000 r/min	5.7	11.4	17.1	22.9	32.8	54.6	—	—
		At 4000 r/min	4.3	8.6	12.9	17.2	24.6	41.1	—	—
Permissible Radial Load [N]	10 mm from output shaft end	At 80~3000 r/min				550		1000		1400
		At 4000 r/min				500		900		1200
Permissible Axial Load [N]	20 mm from output shaft end	At 80~3000 r/min				800		1250		1700
		At 4000 r/min				700		1100		1400
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]		At instantaneous stop, instantaneous bi-directional operation*3	100	460	1000	1700	3900	9300	18000	37000
			50	200	450	800	1800	5000		

*1 For 200 W output only.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ About Load Position

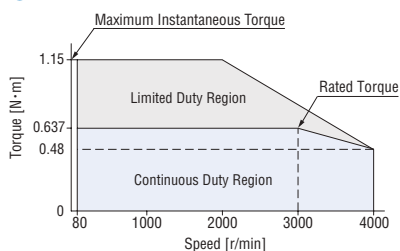


Speed – Torque Characteristics

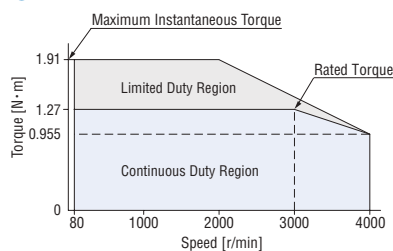
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

● 200 W



● 400 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Parallel Shaft Gearhead JV Gear 200 W, 400 W



Specifications

Product Name	Motor (Connector Type)	BLM5200HPK-5KV□S		BLM5400HPK-5□V□S	
	Driver	BMUD200-A	BMUD200-C	BMUD400-S	
Rated Output Power (Continuous)	W	200		400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%		
	Frequency	Hz	50 / 60		
	Permissible Frequency Range		±5%		
	Rated Input Current	A	4.6	Single-Phase: 2.7/Three-Phase: 1.5	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/Three-Phase: 3.4	5.1
Rated Speed	r/min	3000			
Speed Control Range		80~3600 r/min (Speed ratio 1:45)			
Speed Regulation	Load	±0.2% or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature			
	Voltage	±0.2% or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature			
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage			

● The values correspond to each specification and characteristic of a stand-alone motor.

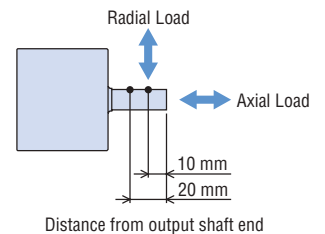
Gear Ratio	100*1				200*1		300		450	
	(104.1)				(196.4)		(300.5)		(450.8)	
Gearhead Size Code		D				K				
Rotation Direction		Opposite direction to the motor				Same direction as the motor				
Output Shaft Rotation Speed [r/min]*2	80 r/min	0.8	0.4	0.27	0.18					
	3600 r/min	36	18	12	8					
Permissible Torque [N·m]	200 W	At 80~3000 r/min	—	—	132	198				
		At 3600 r/min	—	—	92.3	138				
	400 W	At 80~1500 r/min	108	205	298	431				
		At 3600 r/min	81.9	164	219	302				
Permissible Radial Load [N]	10 mm from output shaft end	At 80~1500 r/min	2888	3483	4461					
		At 3000 r/min	2022	2438	3123					
		At 3600 r/min	1444	1742	2231					
	20 mm from output shaft end	At 80~1500 r/min	3496	4216	5174					
		At 3000 r/min	2447	2951	3622					
		At 3600 r/min	1748	2108	2587					
Permissible Axial Load [N]	At 80~1500 r/min	422	461	686						
	At 3000 r/min	295	323	480						
	At 3600 r/min	211	231	343						
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At 80~1500 r/min		100000	400000	900000	2025000				
		At 3000 r/min	36000	144000	324000	729000				
		At 3600 r/min	20250	81000	182250	410063				
	At instantaneous stop, instantaneous bi-directional operation*3	At 80~1500 r/min	33333	133333	300000	675000				
		At 3000 r/min	12000	48000	108000	243000				
		At 3600 r/min	6750	27000	60750	136688				

*1 For 400 W output only.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ About Load Position

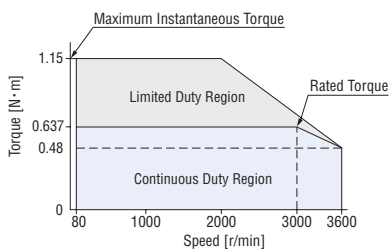


Speed – Torque Characteristics

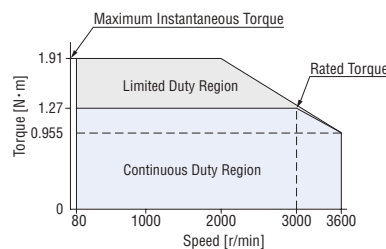
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

● 200 W



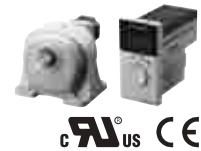
● 400 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box ■ in a product name is replaced with the code (D, K) that represents the gearhead size.
A number in the box □ in the product name indicates the gear ratio.

Legged Gearhead JB Gear 200 W, 400 W



Specifications

Product Name	Motor (Connector Type)	BLM5200HPK-5 <input type="checkbox"/> B <input type="checkbox"/> B-L		BLM5400HPK-5 <input type="checkbox"/> B <input type="checkbox"/> B-L	
	Driver	BMUD200-A	BMUD200-C	BMUD400-S	
Rated Output Power (Continuous)	W	200		400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%		
	Frequency	Hz	50 / 60		
	Permissible Frequency Range		±5%		
	Rated Input Current	A	4.6	Single-Phase: 2.7/Three-Phase: 1.5	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/Three-Phase: 3.4	5.1
Rated Speed	r/min	3000			
Speed Control Range		80~3600 r/min (Speed ratio 1:45)			
Speed Regulation	Load	±0.2% or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage	±0.2% or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature	±0.2% or less: Conditions	Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage		

● The values correspond to each specification and characteristic of a stand-alone motor.

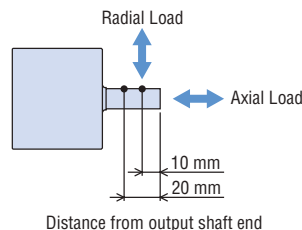
Gear Ratio	Gearhead Size Code												
	5	10	20	30	50	100	200	300	450	600	1200*1		
(Actual gear ratio)	(4.97)	(10.12)	(20.08)	(30.86)	(49.09)	(104.1)	(196.4)	(300.5)	(450.8)	(588.9)	(1178)		
Rotation Direction	Same direction as the motor				Opposite direction to the motor				Same direction as the motor				
Output Shaft Rotation Speed [r/min]*2	80 r/min	16	8	4	2.7	1.6	0.8	0.4	0.27	0.18	0.13	0.07	
	3600 r/min	720	360	180	120	72	36	18	12	8	6	3	
Permissible Torque [N·m]	200 W	At 80~3000 r/min	2.4	4.9	9.7	13.0	22.5	48.4	91.3	132	198	259	518
		At 3600 r/min	1.7	3.4	6.8	8.2	15.6	32.0	60.3	92.3	138	181	362
	400 W	At 80~1500 r/min	5.4	10.9	21.7	31.7	49.9	108	205	298	431	583	—
		At 3000 r/min	4.3	8.3	17.2	25.4	41.2	81.9	164	219	302	438	—
Permissible Radial Load [N]	10 mm from output shaft end	At 80~1500 r/min	521	977	1243	1824	2032	2888	3483	4461	5245	—	
		At 3000 r/min	365	684	870	1277	1422	2022	2438	3123	3672	—	
		At 3600 r/min	261	489	622	912	1016	1444	1742	2231	2623	—	
	20 mm from output shaft end	At 80~1500 r/min	663	1244	1582	2280	2540	3496	4216	5174	5921	—	
		At 3000 r/min	464	871	1107	1596	1778	2447	2951	3622	4145	—	
		At 3600 r/min	332	622	791	1140	1270	1748	2108	2587	2961	—	
Permissible Axial Load [N]	At 80~1500 r/min	39	88	177	255	275	422	461	686	824	—		
	At 3000 r/min	27.3	61.6	124	179	193	295	323	480	577	—		
	At 3600 r/min	19.5	44	88.5	128	138	211	231	343	412	—		
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At 80~1500 r/min	At 80~1500 r/min	250	1000	4000	9000	25000	100000	400000	900000	2025000	3600000	14400000
		At 3000 r/min	90	360	1440	3240	9000	36000	144000	324000	729000	1296000	5184000
		At 3600 r/min	50.6	203	810	1823	5063	20250	81000	182250	410063	729000	2916000
	At instantaneous stop, instantaneous bi-directional operation*3	At 80~1500 r/min	83.3	333	1333	3000	8333	33333	133333	300000	675000	1200000	4800000
		At 3000 r/min	30	120	480	1080	3000	12000	48000	108000	243000	432000	1728000
		At 3600 r/min	16.9	67.5	270	608	1688	6750	27000	60750	136688	243000	972000

*1 For 200 W output only.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ About Load Position

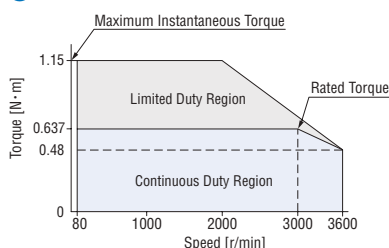


Speed – Torque Characteristics

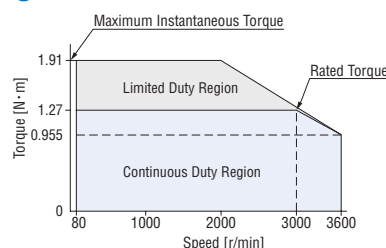
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

● 200 W



● 400 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box in a product name is replaced with the code (A, C, E, K, S) that represents the gearhead size.

A number in the box in the product name indicates the gear ratio.

Hypoid Right-Angle Hollow Shaft JH Gear 60 W, 120 W



Specifications

Product Name	Motor (Connector Type)	BLM460SHPK-4H□S		BLM5120HHPK-5H□S		
	Driver	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-C2	
Rated Output Power (Continuous)	W	60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240
	Permissible Voltage Range		-15~+10%			
	Frequency	Hz	50 / 60			
	Permissible Frequency Range		±5%			
	Rated Input Current	A	1.7	Single-Phase: 1.0/ Three-Phase: 0.52	3.3	Single-Phase: 2.0/ Three-Phase: 1.1
	Maximum Input Current	A	3.3	Single-Phase: 1.9/ Three-Phase: 1.1	6.8	Single-Phase: 4.1/ Three-Phase: 2.0
Rated Speed	r/min	3000				
Speed Control Range	r/min	80~3600 (Speed ratio 1:45)				
Speed Regulation	Load	±0.2% or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature				
	Voltage	±0.2% or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature				
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage				

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		10	15	20	30	50	100	200		
(Actual gear ratio)		(10.25)	(15.38)	(20.50)	(30.75)	(51.25)	(102.5)	(205.0)		
Rotation Direction*1		Same direction as the motor						Opposite direction to the motor		
Output Shaft Rotation Speed [r/min]*2	80 r/min	8	5.3	4	2.7	1.6	0.8	0.4		
	3600 r/min	360	240	180	120	72	36	18		
Permissible Torque [N·m]	60W	At 80~1500 r/min	1.2	1.8	2.7	4.0	6.7	13.3	20.6	
		At 3000 r/min	1.2	1.8	2.5	3.8	6.4	12.7	15.6	
		At 3600 r/min	0.74	1.1	1.8	2.7	4.4	8.9	11.5	
	120W	At 80~1500 r/min	3.2	4.8	6.5	9.7	16.0	32.3	53.9	
		At 3000 r/min	2.5	3.8	5.1	7.6	12.7	25.5	41.0	
		At 3600 r/min	1.8	2.6	3.5	5.3	8.8	17.7	30.2	
Permissible Radial Load [N]*3	60W	At 80~1500 r/min	265	341	417	531	682	758	836	
		At 3000 r/min	201	259	317	404	518	576	635	
		At 3600 r/min	148	191	234	297	382	424	468	
	120W	At 80~1500 r/min	363	484	605	806	971	1045	1127	
		At 3000 r/min	276	368	460	613	738	794	857	
		At 3600 r/min	203	271	339	451	544	585	631	
Permissible Axial Load [N]	60W	At 80~1500 r/min	88	108	137	177	226	245	275	
		At 3000 r/min	67	82	104	135	172	186	209	
		At 3600 r/min	49	60	77	99	127	137	154	
	120W	At 80~1500 r/min	108	147	186	245	294	324	343	
		At 3000 r/min	82	112	141	186	223	246	261	
		At 3600 r/min	60	82	104	137	165	181	192	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	60W	At 80~1500 r/min	100	225	400	900	2500	10000	40000	
		At 3000 r/min	36	81	144	324	900	3600	14400	
		At 3600 r/min	20.3	45.6	81	182	506	2025	8100	
	120W	At 80~1500 r/min	200	450	800	1800	5000	20000	80000	
		At 3000 r/min	72	162	288	648	1800	7200	28800	
		At 3600 r/min	40.5	91.1	162	365	1013	4050	16200	
	At instantaneous stop, instantaneous bi-directional operation*4	60W	At 80~1500 r/min	33.3	75	133	300	833	3333	13333
			At 3000 r/min	12	27	48	108	300	1200	4800
			At 3600 r/min	6.8	15.2	27	60.8	169	675	2700
		120W	At 80~1500 r/min	66.7	150	267	600	1667	6667	26667
			At 3000 r/min	24	54	96	216	600	2400	9600
			At 3600 r/min	13.5	30.4	54	122	338	1350	5400

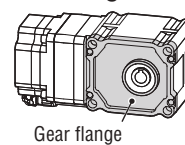
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

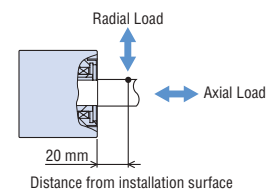
*3 The radial load at each distance can also be calculated with a formula. → Page 04-51

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



◇ About Load Position



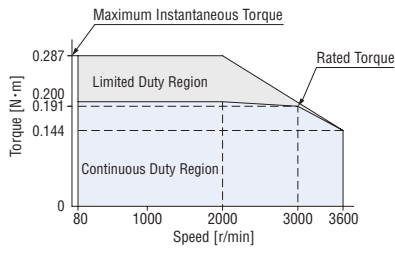
● A number in the box □ in the product name indicates the gear ratio.

Speed – Torque Characteristics

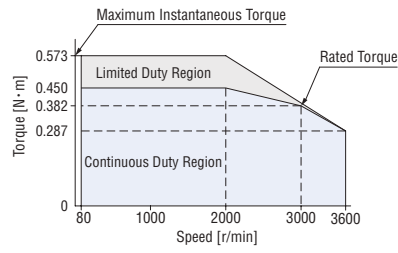
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

60 W



120 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

Hypoid Right-Angle Hollow Shaft JH Gear 200 W, 400 W



Specifications

Product Name	Motor (Connector Type)	BLM5200HPK-5 \square \square S		BLM5400HPK-5 \square \square S	
	Driver	BMUD200-A	BMUD200-C	BMUD400-S	
Rated Output Power (Continuous)	W	200		400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%		
	Frequency	Hz	50 / 60		
	Permissible Frequency Range		$\pm 5\%$		
	Rated Input Current	A	4.6	Single-Phase: 2.7/Three-Phase: 1.5	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/Three-Phase: 3.4	5.1
Rated Speed	r/min	3000			
Speed Control Range		80~3600 r/min (Speed ratio 1:45)			
Speed Regulation	Load	$\pm 0.2\%$ or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage	$\pm 0.2\%$ or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature	$\pm 0.2\%$ or less: Conditions	Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage		

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio	X								Y	
	5	10	15	20	30	50	100	200		
(Actual gear ratio)	(5)	(10)	(15)	(20)	(30)	(50)	(98.95)	(200)		
Gearhead Size Code	X								Y	
Rotation Direction*1	Same direction as the motor								Opposite direction to the motor	
Output Shaft Rotation Speed [r/min]*2	80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4	
	3600 r/min	720	360	240	180	120	72	36	18	
Permissible Torque [N·m]	200 W	At 80~3000 r/min	2.1	4.1	6.2	8.3	13.4	22.3	41.0	82.8
		At 3600 r/min	1.3	2.6	4.0	5.3	9.4	15.6	28.5	57.6
	400 W	At 80~1500 r/min	4.8	9.5	14.3	19.1	30.5	50.8	88.0	178
		At 3000 r/min	3.8	7.7	11.9	16.1	23.1	38.5	73.5	128
Permissible Radial Load [N]*3	20 mm from installation surface	At 3600 r/min	2.7	5.5	8.5	11.5	16.5	27.5	52.5	92.0
		At 80~1500 r/min	1346	1663	1882	2035	2309	2681		3436
		At 3000 r/min	942	1164	1317	1425	1616	1877		2405
Permissible Axial Load [N]		At 80~1500 r/min	307	380	429	466	527	613		785
		At 3000 r/min	215	266	300	326	369	429		550
		At 3600 r/min	154	190	215	233	264	307		393
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At instantaneous stop, instantaneous bi-directional operation*4	At 80~1500 r/min	250	1000	2250	4000	9000	25000	100000	400000
		At 3000 r/min	90	360	810	1440	3240	9000	36000	144000
		At 3600 r/min	50.6	203	456	810	1823	5063	20250	81000
		At 80~1500 r/min	83.3	333	750	1333	3000	8333	33333	133333
		At 3000 r/min	30	120	270	480	1080	3000	12000	48000
	At 3600 r/min	16.9	67.5	152	270	608	1688	6750	27000	

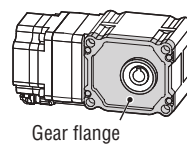
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

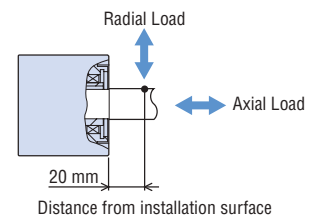
*3 The radial load at each distance can also be calculated with a formula. → Page 04-51

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



◇ About Load Position

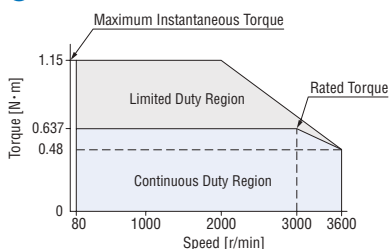


Speed – Torque Characteristics

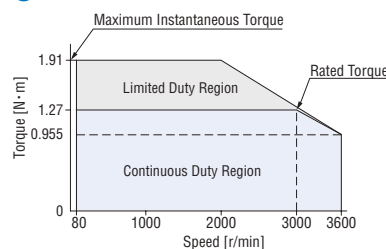
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

● 200 W



● 400 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box \square in a product name is replaced with the code (X, Y) that represents the gearhead size.
A number in the box \square in the product name indicates the gear ratio.

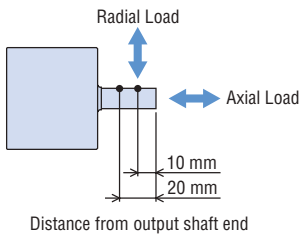
Round Shaft 30 W, 60 W, 120 W



Specifications

Product Name	Motor	Cable Type	BLM230-A2		BLM260-A2		BLM5120-A2	
			BLM230HP-A5		BLM260HP-A5		BLM5120HP-A5	
Driver			BMUD30-A2	BMUD30-C2	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-C2
Rated Output Power (Continuous)	W		30		60		120	
Rated Voltage	VAC		Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240
Permissible Voltage Range			-15~+10%		-15~+10%		-15~+10%	
Frequency	Hz		50 / 60		50 / 60		50 / 60	
Permissible Frequency Range			±5%		±5%		±5%	
Rated Input Current	A		1.2	Single-Phase: 0.7/ Three-Phase: 0.38	1.7	Single-Phase: 1.0/ Three-Phase: 0.52	3.3	Single-Phase: 2.0/ Three-Phase: 1.1
Maximum Input Current	A		2.0	Single-Phase: 1.2/ Three-Phase: 0.75	3.3	Single-Phase: 1.9/ Three-Phase: 1.1	6.8	Single-Phase: 4.1/ Three-Phase: 2.0
Rated Speed	r/min		3000					
Speed Control Range			80~4000 r/min (Speed ratio 1:50)					
Rated Torque	N·m		0.096		0.191		0.382	
Maximum Instantaneous Torque	N·m		0.144		0.287		0.573	
Permissible Radial Load	10 mm from output shaft end	N	80		80		150	
	20 mm from output shaft end	N	100		100		170	
Permissible Axial Load			Half of motor mass or less					
Rotor Inertia J	×10 ⁻⁴ kg·m ²		0.042		0.082		0.23	
Permissible Load Inertia J	×10 ⁻⁴ kg·m ²		1.8		3.75		5.6	
Speed Regulation	Load	±0.2% or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature					
	Voltage	±0.2% or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature					
	Temperature	±0.2% or less: Conditions	Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage					

About Load Position

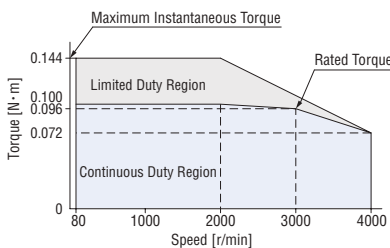


Speed – Torque Characteristics

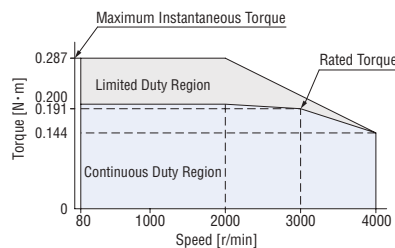
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

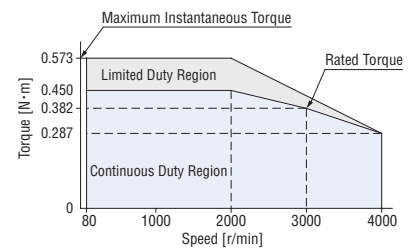
30 W



60 W



120 W



● The speed-torque characteristics shows the values when rated voltage is applied.

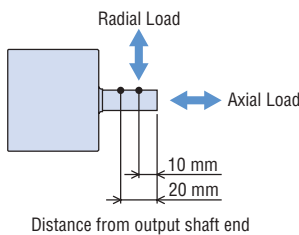
Round Shaft 200 W, 400 W



Specifications

Product Name	Motor	Cable Type Connector Type	BLM5200-A		BLM5400-A
			BLM5200HP-AS		BLM5400HP-AS
Driver			BMUD200-A	BMUD200-C	BMUD400-S
Rated Output Power (Continuous)			200		400
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%
	Frequency	Hz	50 / 60		50 / 60
	Permissible Frequency Range		±5%		±5%
	Rated Input Current	A	4.6	Single-Phase: 2.7/Three-Phase: 1.5	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/Three-Phase: 3.4	5.1
Rated Speed			3000		
Speed Control Range			80~4000 r/min (Speed ratio 1:50)		
Rated Torque			0.637		1.27
Maximum Instantaneous Torque			1.15		1.91
Permissible Radial Load	10 mm from output shaft end	N	150		
	20 mm from output shaft end	N	170		
Permissible Axial Load			Half of motor mass or less		
Rotor Inertia J			0.454		0.67
Permissible Load Inertia J			8.75		15
Speed Regulation	Load		±0.2% or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage		±0.2% or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0~+40°C, rated speed, no load, rated voltage		

◇ About Load Position

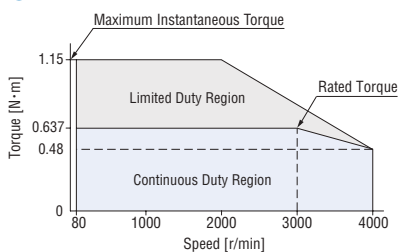


Speed – Torque Characteristics

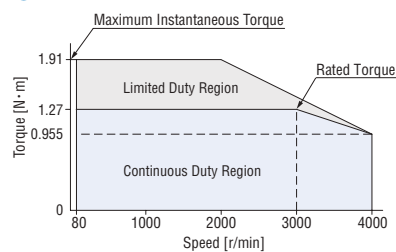
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

● 200 W



● 400 W



● The speed-torque characteristics shows the values when rated voltage is applied.

Common Specifications

Items	Specifications	
	30 W, 60 W, 120 W	200 W, 400 W
Speed Setting Methods	Digital setting by the dial 4 speed settings possible	
Acceleration/Deceleration Time	Analog setting: 0.1~15.0 s (Time setting from stopped state until reaching the rated speed) Common settings for acceleration/deceleration time with the use of acceleration/deceleration time potentiometer* Digital setting: 0.0~15.0 s (Time setting from current speed to the setting speed) Individual settings for acceleration time/deceleration time for each operating data* * Acceleration time/deceleration time varies with the load condition of the motor.	
Input Signals	Photocoupler input Input resistance: 5.7 kΩ Run by internal power supply: 5 VDC Connectable external DC power supply: 24 VDC -15~+20% 100 mA or more Sink input/Source input Supplied through external wiring Signals can be assigned randomly to X0~X2 inputs (3 points) [FWD], [REV], [MO], M1, ALARM-RESET, EXT-ERROR, H-FREE []: Initial setting	Photocoupler input Input resistance: 6.6 kΩ Run by internal power supply: 5 VDC Connectable external DC power supply: 24 VDC -15~+20% 100 mA or more Sink input/Source input Supplied through external wiring Signals can be assigned randomly to IN0~IN4 inputs (5 points) [FWD], [REV], [MO], [M1], [ALARM-RESET], EXT-ERROR, H-FREE []: Initial setting
Output Signals	Photocoupler and open collector output External power supply: 4.5~30 VDC 100 mA or less Sink output/Source output Supplied through external wiring Signals can be assigned randomly to Y0 and Y1 outputs (2 points) [ALARM-OUT1], [SPEED-OUT], ALARM-OUT2, MOVE, VA, WNG []: Initial setting	Photocoupler and open collector output External power supply: 4.5~30 VDC 100 mA or less Sink output/Source output Supplied through external wiring Signals can be assigned randomly to OUT0 and OUT1 outputs (2 points) [ALARM-OUT1], [SPEED-OUT], ALARM-OUT2, MOVE, VA, WNG []: Initial setting
Protective Function	When the following protective functions are activated, ALARM-OUT1 output turns OFF and the motor will undergo a coasting stop. At the same time, the alarm code will be displayed. (Instantaneous stop for external stop only) Overcurrent, main circuit overheating, overvoltage, undervoltage, sensor error, overload, overspeed, EEPROM error, initial sensor error, initial operation inhibition, external stop	
Max. Extension Distance	Motor and driver distance 10.5 m [When using an optional connection cable (for relay)]	
Time Rating	Continuous	

Overload alarm detection time

The overload alarm is generated if the operation goes beyond the continuous duty region.
The detection time for this overload alarm can be set from 0.1~60.0 seconds. (Initial setting: 30.0 seconds)
However, alarm will be generated within 5 seconds in the following cases:
· If an applied load goes beyond the limited duty region
· If the output shaft is locked

General Specifications

Items	Motor	Driver
Insulation Resistance	The measured value is 100 MΩ or more when 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when 500 VDC megger is applied between the power supply terminal and the protective earth terminal, and between the power supply terminal and the I/O signal terminal after continuous operation under normal ambient temperature and humidity.
Dielectric Strength Voltage	Sufficient to withstand 1.5 kVAC at 50 Hz applied between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.5 kVAC at 50 Hz between the power supply terminal and the protective earth terminal, and with application of 1.5 kVAC at 50 Hz between the power supply terminal and the I/O terminal, for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of the windings is 50°C max. (60°C or less for 400 W) and that of the case is 40°C max. (50°C or less for 400 W)*1, measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.	Temperature rise of the heat sink is 50°C or less measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.
Operating Environment	Ambient Temperature	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 1000 m above sea level
	Atmosphere	No corrosive gases or dust. The product should not be exposed to oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.
Storage Condition*2	Ambient Temperature	-20~+70°C (-10~+60°C for JV Gear, JB Gear, JH Gear) (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Altitude	Up to 3000 m above sea level (Up to 1000 m above sea level for JV Gear, JB Gear, JH Gear)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.
Heat-resistant Class	UL/CSA Standards: 105 (A), EN Standards: 120 (E)	—
Degree of Protection*3	Cable Type: IP40 Connector Type GFV Gear, JH Gear, JV Gear, Round shaft: IP66 (Except the installation surface of the round shaft type) JB Gear: IP44 (Except the connector for driver connection when a cable is connected)	IP20

*1 For round shaft types, attach to a heat sink (material: aluminum) of one of the following sizes to keep the motor case surface temperature from exceeding 90°C.
30 W type: 115×115 mm Thickness 5 mm, 60 W type: 135×135 mm Thickness 5 mm, 120 W type: 165×165 mm Thickness 5 mm,
200 W type: 200×200 mm Thickness 5 mm, 400 W type: 250×250 mm Thickness 6 mm

*2 The storage condition applies to short periods such as the period during transportation.

*3 The IP indication representing the dust-resistant and watertight performances are defined in IEC 60529 and IEC 60034-5.

[Note]

Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.

Materials and Surface Treatment of IP66 Specifications (Motors/Gearheads)

- Material Case: Aluminum, Output shaft: Stainless steel, and Screws: Stainless steel (Externally exposed portion only, except for the protective earth terminal)
- Surface Treatment Case: Coated (except for the installation surfaces of the **GFV** gears and round shaft types)

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Dimensions (Unit: mm)

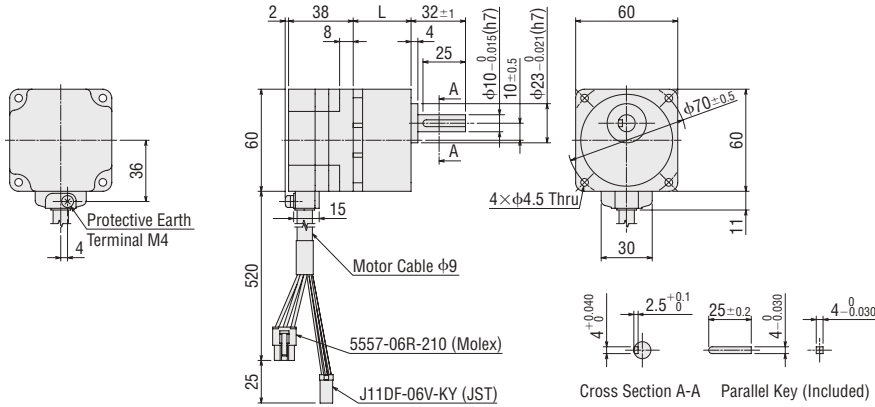
Motors (Cable type)

- "Installation screws" are included. Dimensions of Installation Screws → Page 04-43
- A number in the box □ in the product name indicates the gear ratio.

◇ Parallel Shaft Gearhead **GFV** Gear • 30 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
BLM230-□B	BLM230-GFV2	GFV2G□	5~20	34	0.92	A1360A
			30~100	38		A1360B
			200	43		A1360C

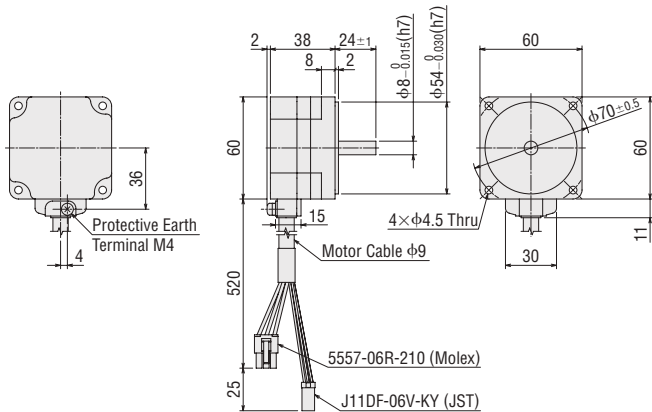


◇ Round Shaft Type • 30 W

BLM230-A2

Mass: 0.42 kg

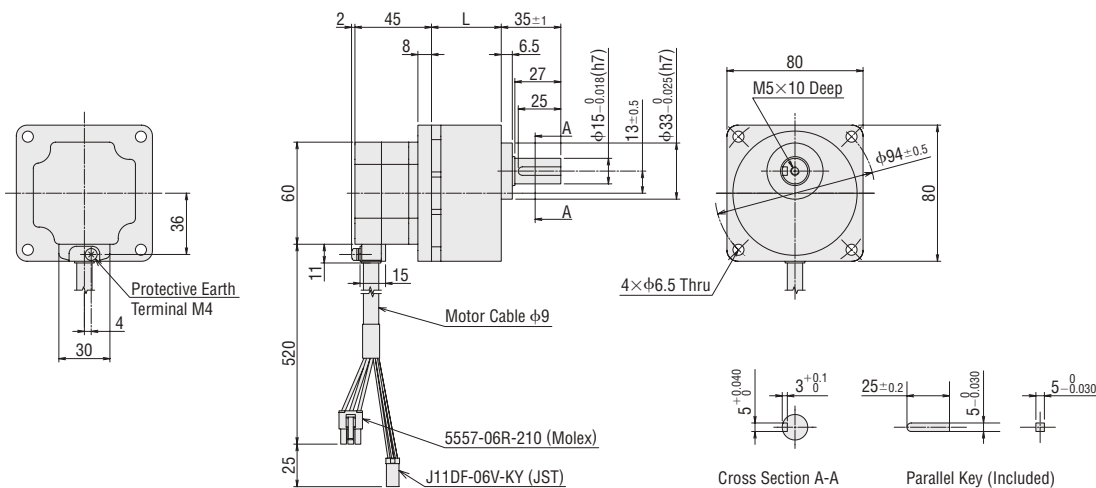
2D CAD A1362 3D CAD



◇ Parallel Shaft Gearhead **GFV** Gear • 60 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
BLM460S-□B	BLM460S-GFV2	GFV4G□	5~20	41	1.6	A1366A
			30~100	46		A1366B
			200	51		A1366C

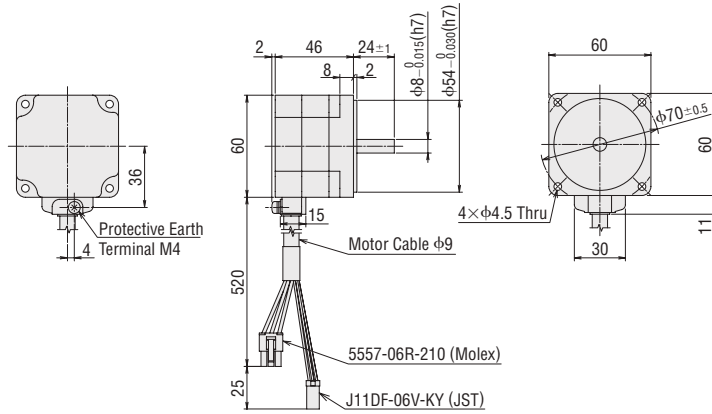


◇ Round Shaft Type • 60 W

BLM260-A2

Mass: 0.55 kg

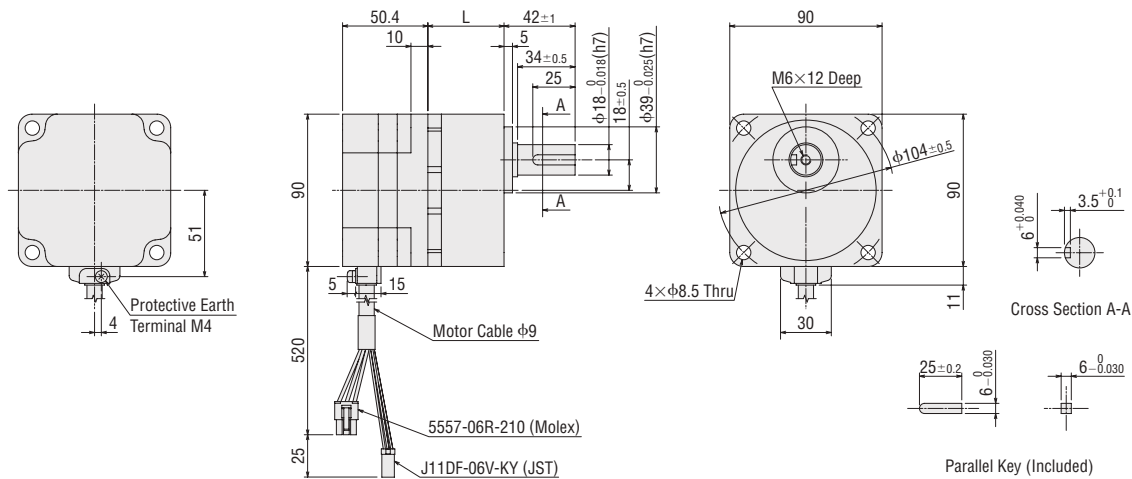
2D CAD A1368 3D CAD



◇ Parallel Shaft Gearhead **GFV** Gear • 120 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
BLM5120-□B	BLM5120-GFV2	GFV5G□	5~20	45	2.7	A1372A
			30~100	58		A1372B
			200	64		A1372C

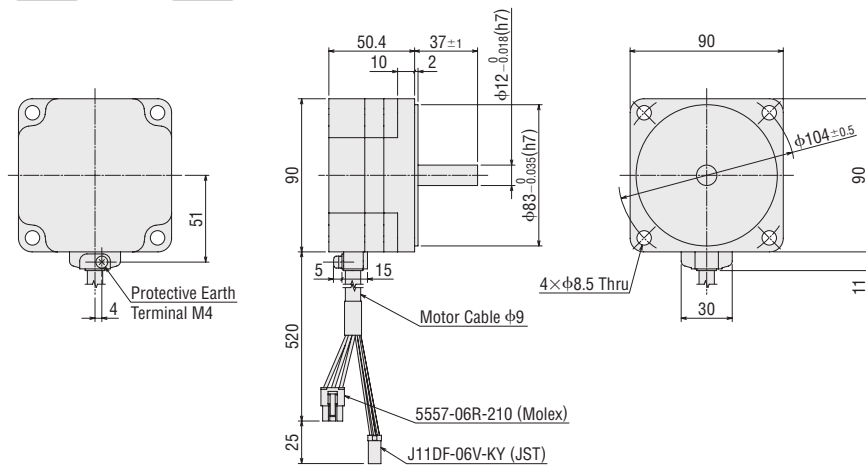


◇ Round Shaft Type • 120 W

BLM5120-A2

Mass: 1.2 kg

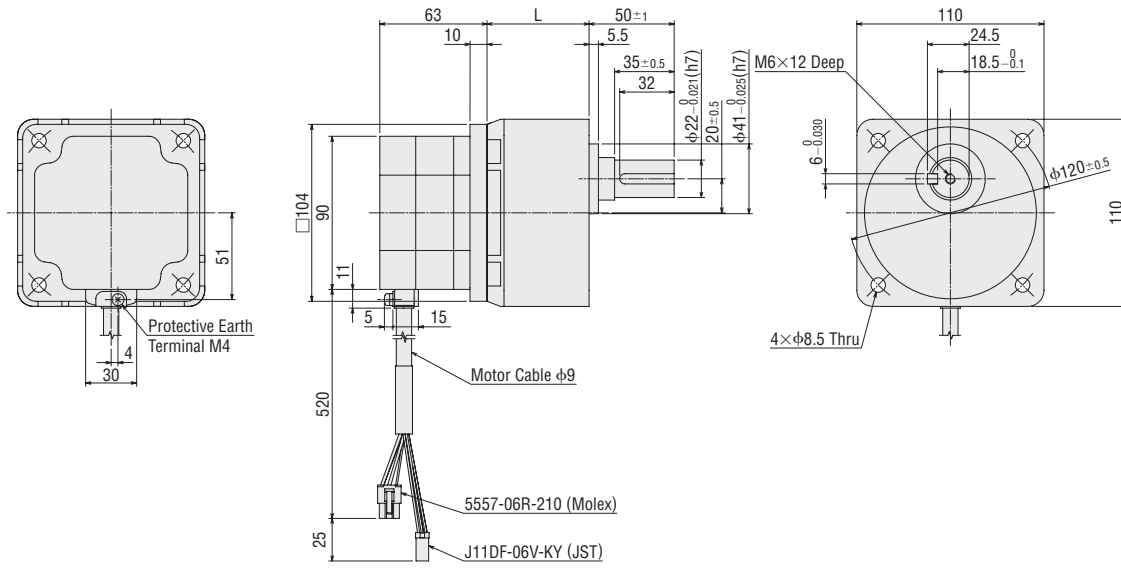
2D CAD A1374 3D CAD



◇ Parallel Shaft Gearhead **GFV Gear** • 200 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
BLM6200S-□B	BLM6200S-GFV	GFV6G□	5~20	60	4.8	A1340A
			30, 50	72		A1340B
			100, 200	86		A1340C



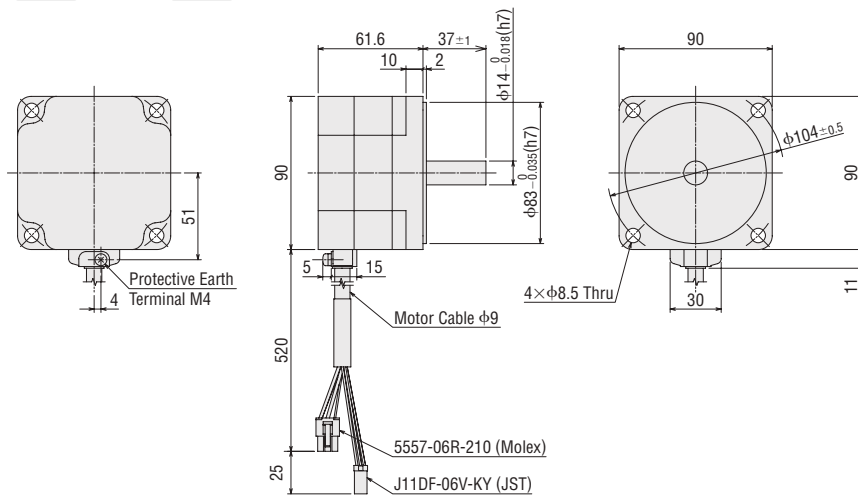
● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

◇ Round Shaft Type • 200 W

BLM5200-A

Mass: 1.7 kg

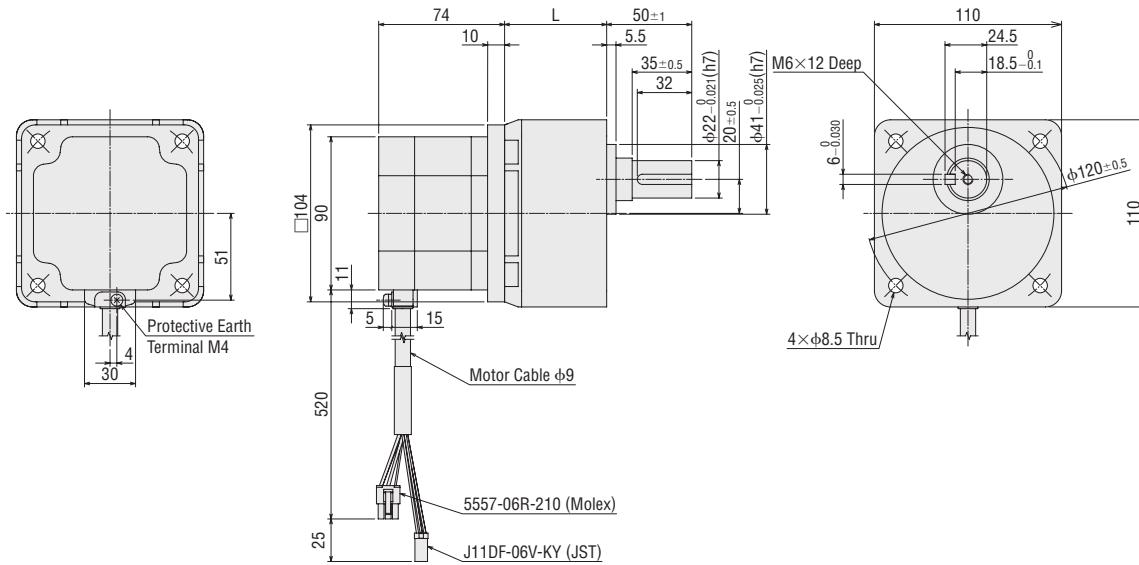
2D CAD A1341 3D CAD



◇ Parallel Shaft Gearhead **GFV Gear** • 400 W

2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD
BLM6400S-□B	BLM6400S-GFV	GFV6G□	5~20	60	5.3	A1413A
			30, 50	72		A1413B



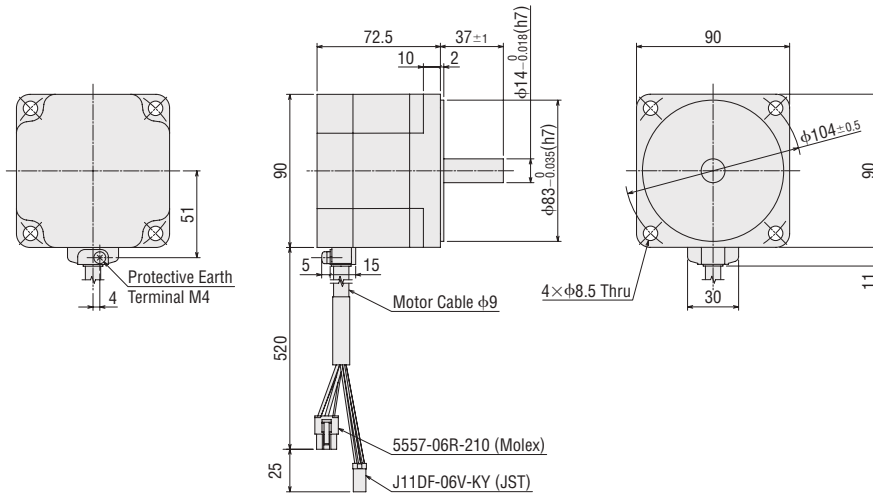
● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

◇ Round Shaft Type • 400 W




BLM5400-A

Mass: 2.2 kg

2D CAD A1415 3D CAD







● **Motors (Connector type)**

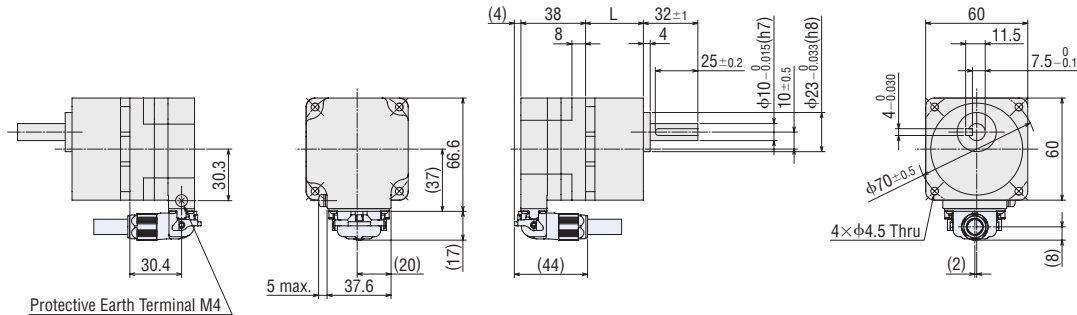
- The dimensions drawing of the motor is an example where a separately sold connection cable ( portion in the figure) is connected.
The described mass does not include the connection cable. Cable Dimensions and Mass → Page 04-42
- "Installation screws" are included. Dimensions of Installation Screws → Page 04-43
- A number in the box  in the product name indicates the gear ratio.
The box  in a product name is replaced with the code that represents the gearhead size.

◇ **Parallel Shaft Gearhead GFV Gear · 30 W**

2D & 3D CAD

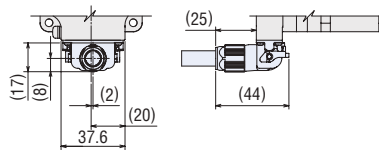
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM230HP-S BLM230HP-SF	BLM230HP-GFV	GFV2G  S GFV2G  SF	5~20	34	0.63	A1465A	A1466A
			30~100	38	0.68	A1465B	A1466B
			200	43	0.73	A1465C	A1466C

● **When connecting the connection cable drawing from the output shaft side**



- At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● **When connecting the connection cable drawing from the counter-output shaft side**

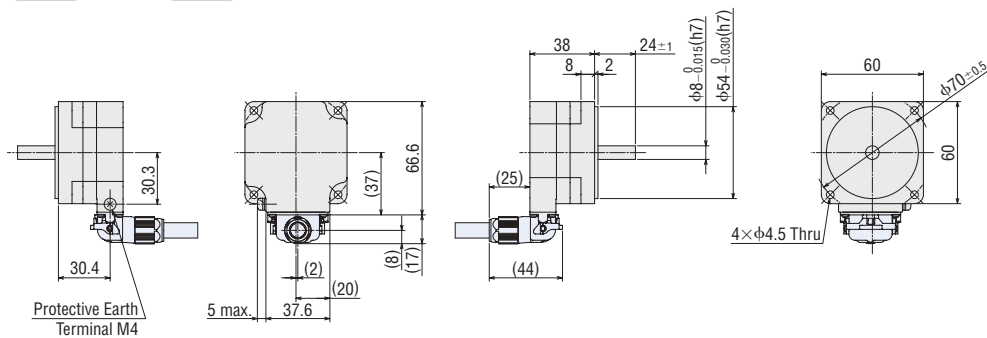


◇ **Round Shaft Type · 30 W**

BLM230HP-AS

Mass: 0.35 kg

2D CAD A1475 3D CAD

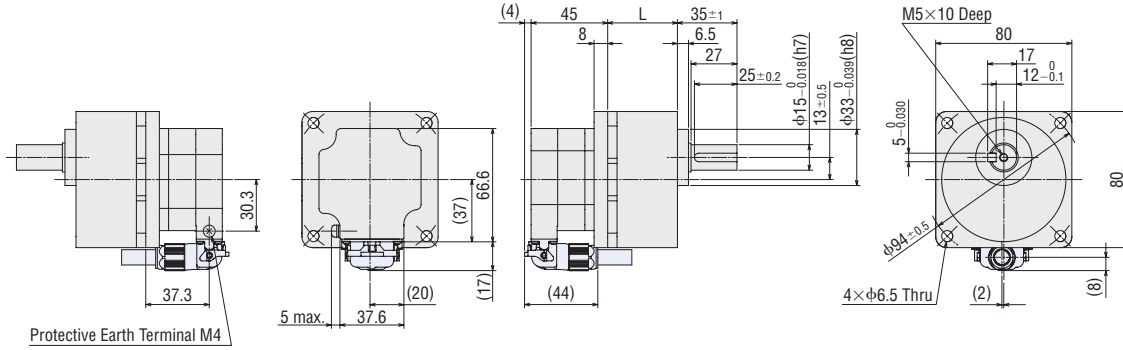


◇ Parallel Shaft Gearhead **GFV Gear** • 60 W

2D & 3D CAD

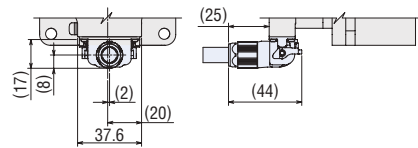
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM460SHP-□S BLM460SHP-□SF	BLM460SHP-GFV	GFV4G□S GFV4G□SF	5~20	41	1.3	A1467A	A1468A
			30~100	46	1.4	A1467B	A1468B
			200	51	1.5	A1467C	A1468C

• When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

• When connecting the connection cable drawing from the counter-output shaft side

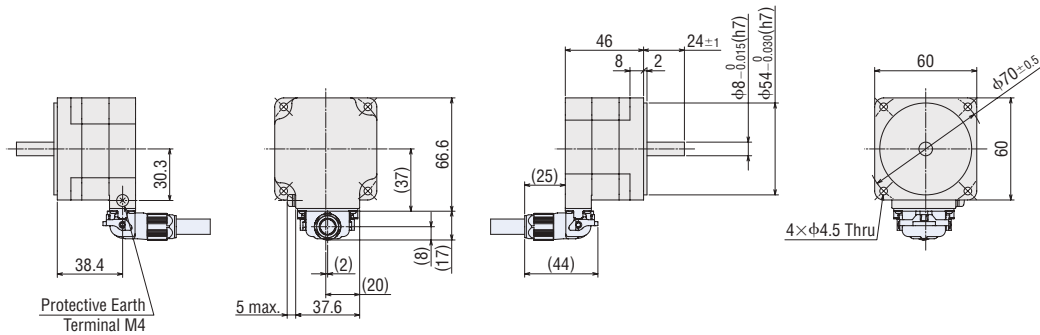


◇ Round Shaft Type • 60 W

BLM260HP-A5

Mass: 0.52 kg

2D CAD A1477 3D CAD

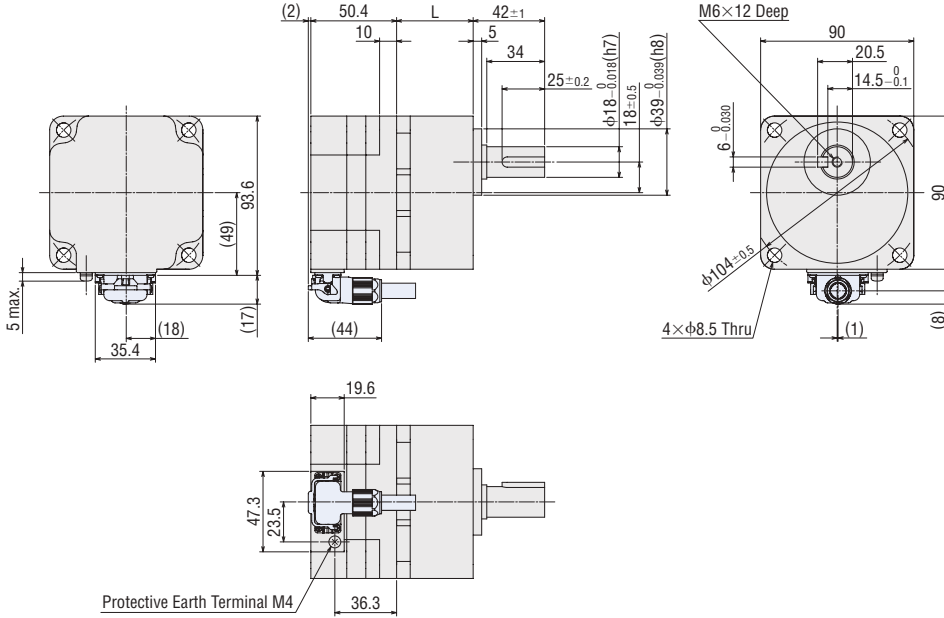


◆ Parallel Shaft Gearhead **GFV Gear** • 120 W

2D & 3D CAD

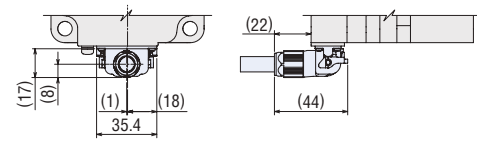
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HP-□S BLM5120HP-□SF	BLM5120HP-GFV	GFV5G□S GFV5G□SF	5~20	45	2.1	A1469A	A1470A
			30~100	58	2.4	A1469B	A1470B
			200	64	2.5	A1469C	A1470C

● When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● When connecting the connection cable drawing from the counter-output shaft side

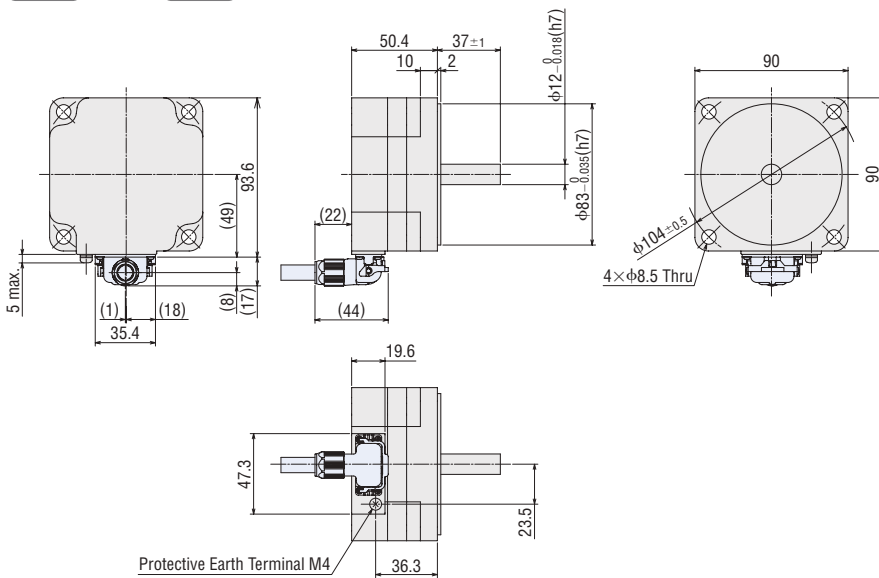


◆ Round Shaft Type • 120 W

BLM5120HP-AS

Mass: 1.1 kg

2D CAD A1479 3D CAD

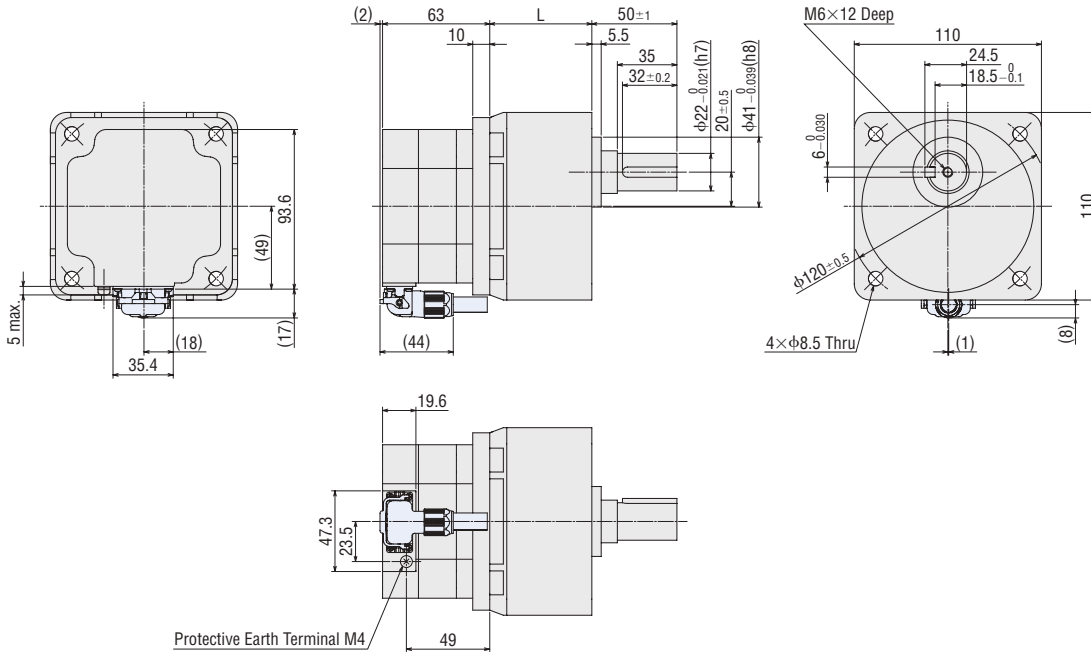


◆ Parallel Shaft Gearhead **GFV Gear** • 200 W

2D & 3D CAD

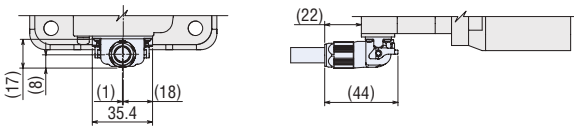
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6200SHP-□S	BLM6200SHP-GFV	GFV6G□S	5~20	60	4.7	A1471A	A1472A
			30, 50	72		A1471B	A1472B
			100, 200	86		A1471C	A1472C

• When connecting the connection cable drawing from the output shaft side



• At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

• When connecting the connection cable drawing from the counter-output shaft side

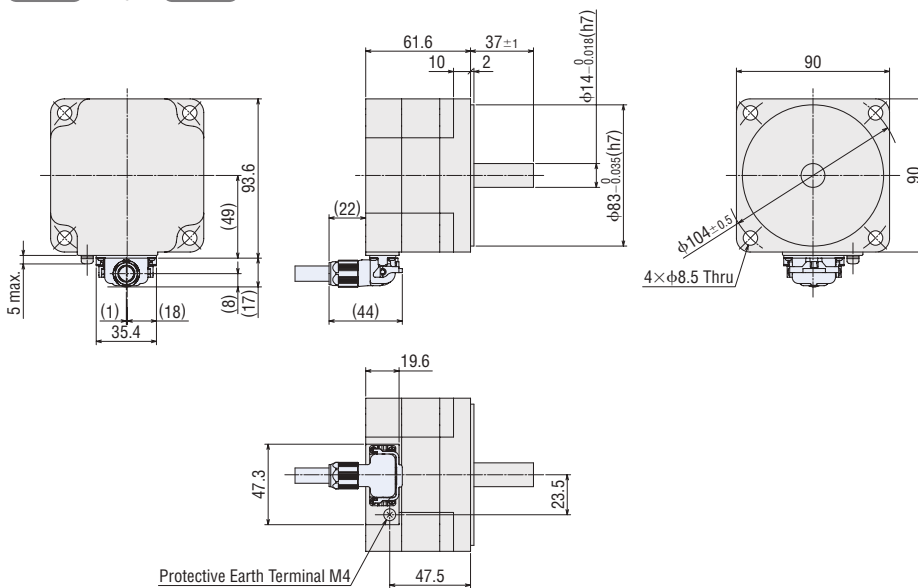


◆ Round Shaft Type • 200 W

BLM5200HP-AS

Mass: 1.6 kg

2D CAD A1481 3D CAD

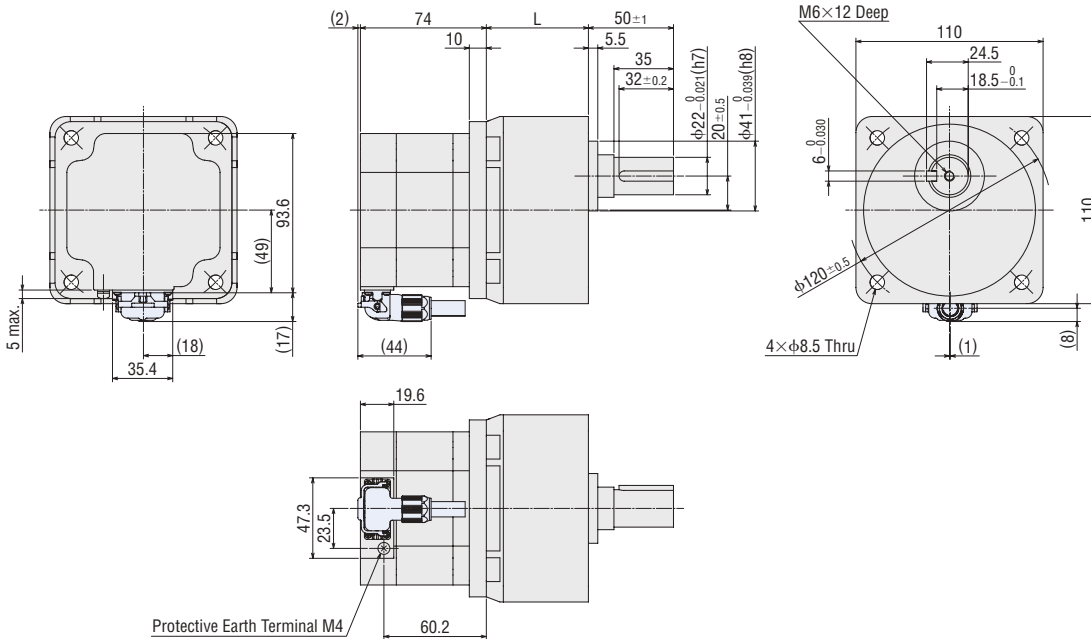


◇ Parallel Shaft Gearhead **GFV Gear** • 400 W

2D & 3D CAD

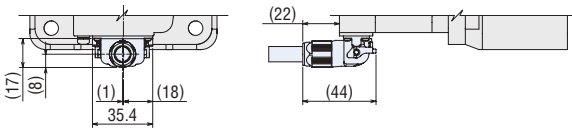
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6400SHP-□S	BLM6400SHP-GFV	GFV6G□S	5~20	60	5.2	A1473A	A1474A
			30, 50	72		A1473B	A1474B

•When connecting the connection cable drawing from the output shaft side



• At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

•When connecting the connection cable drawing from the counter-output shaft side

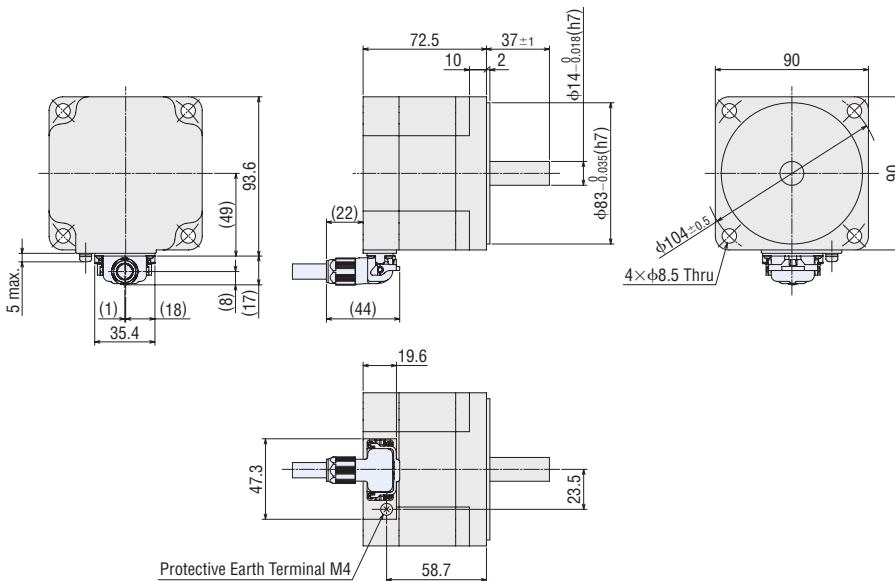


◇ Round Shaft Type • 400 W

BLM5400HP-AS

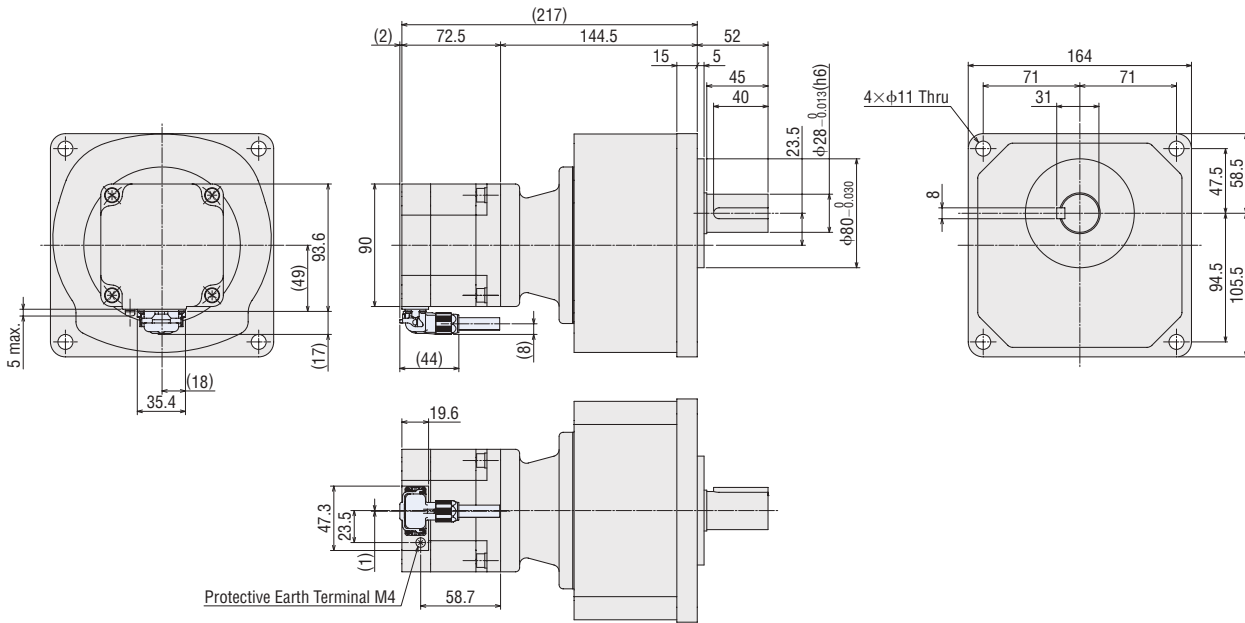
Mass: 2.1 kg

2D CAD A1483 3D CAD

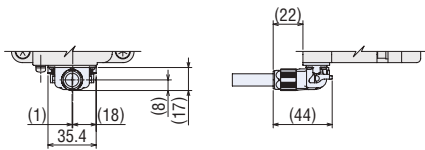


Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Mass kg	2D CAD	
					Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5400HPK-5DV□S	BLM5400HPK	5DV□S	100, 200	8.6	A1559	A1560

•When connecting the connection cable drawing from the output shaft side

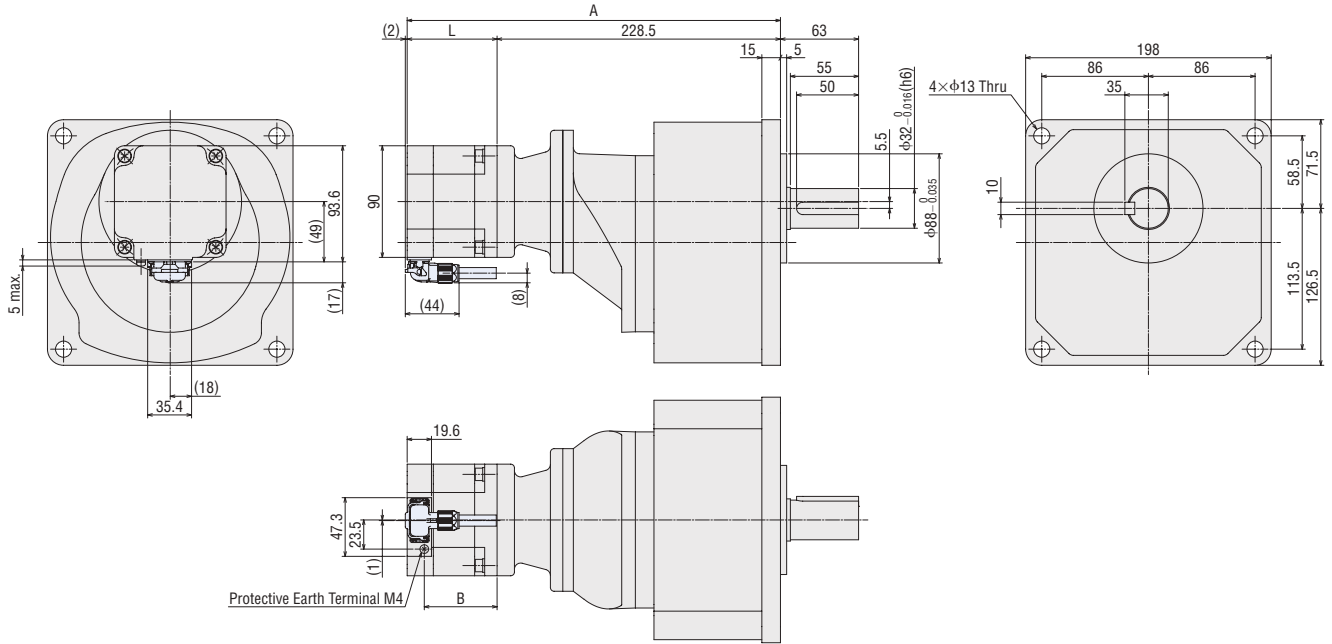


•When connecting the connection cable drawing from the counter-output shaft side

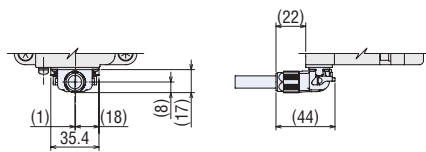


Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				A	L	B		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5KV□S	BLM5200HPK	5KV□S	300, 450	(290.1)	61.6	47.5	12.1	A1557	A1558
BLM5400HPK-5KV□S	BLM5400HPK	5KV□S	300, 450	(301)	72.5	58.7	12.6	A1561	A1562

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

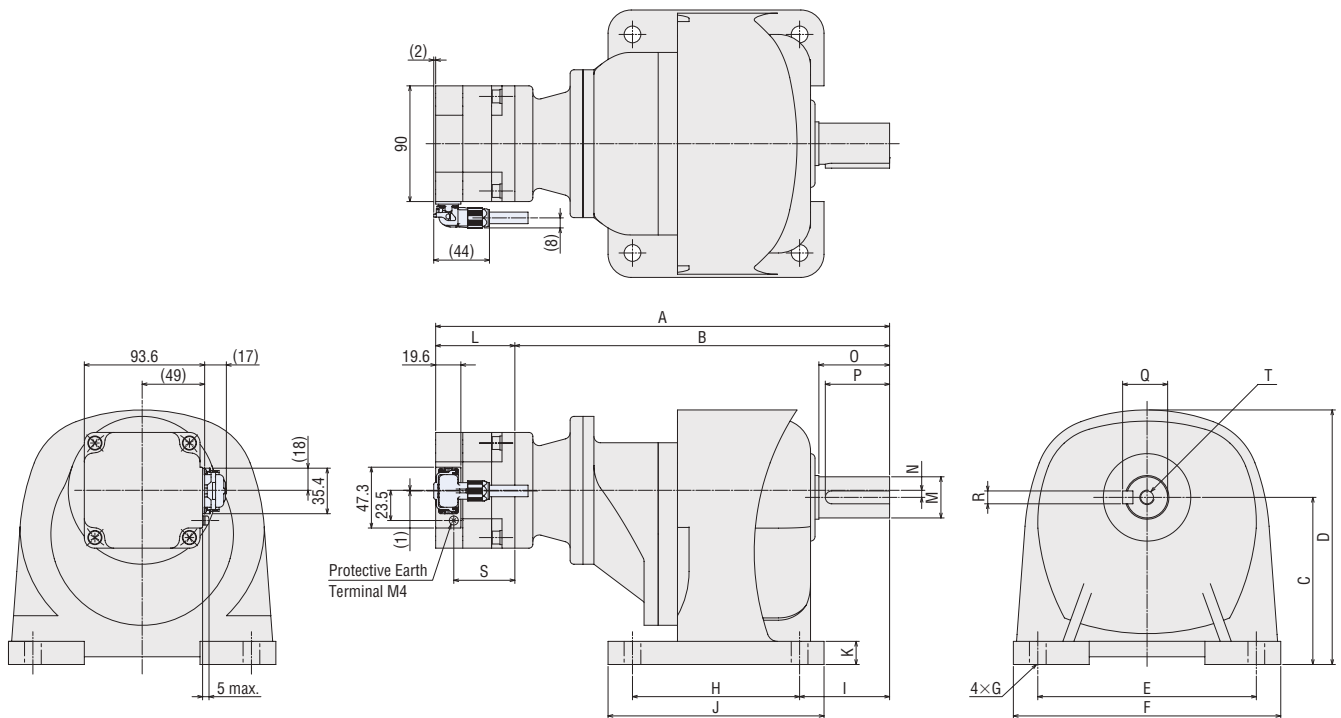


Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions No.	L	S	Mass kg	2D CAD	
								Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5 ■B□B-L	BLM5200HPK	5■B□B	5, 10, 20	①	61.6	47.5	4.6	A1537	A1538
			30, 50	③			5.6	A1539	A1540
			100, 200	⑤			7.6	A1541	A1542
			300, 450	⑦			11.6	A1543	A1544
			600, 1200	⑨			18.1	A1545	A1546
BLM5400HPK-5 ■B□B-L	BLM5400HPK	5■B□B	5, 10, 20	②	72.5	58.7	5.1	A1547	A1548
			30, 50	④			6.1	A1549	A1550
			100, 200	⑥			8.1	A1551	A1552
			300, 450	⑧			12.1	A1553	A1554
			600	⑩			18.6	A1555	A1556

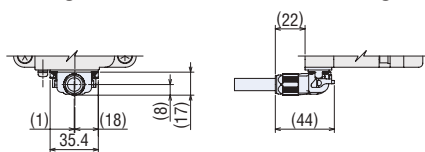
Dimensions No.	Total Length	Gearhead Dimensions										Output Shaft Dimensions						Output Shaft Tapping Size T
		A	B	C	D	E	F	G	H	I	J	K	M	N	O	P	Q	
①	(219.1)	157.5	85±0.2	131	110	134	φ9	40	45	64	10	φ18 _{-0.011} (h6)	16.5*	30	27	20.5	6	M6 15 Deep
②	(230)																	
③	(245.1)	183.5	90±0.2	139	130	154	φ11	65	55	90	12	φ22 _{-0.013} (h6)	19*	40	35	24.5	6	M8 20 Deep
④	(256)																	
⑤	(258.1)	196.5	110±0.2	167	140	175	φ11	90	65	125	15	φ28 _{-0.013} (h6)	23.5*	45	40	31	8	M10 25 Deep
⑥	(269)																	
⑦	(353.1)	291.5	130±0.2	198	170	208	φ13	130	70	168	18	φ32 _{-0.016} (h6)	5.5	55	50	35	10	M10 25 Deep
⑧	(364)																	
⑨	(375.1)	313.5	150±0.2	230	210	254	φ15	150	90	196	20	φ40 _{-0.016} (h6)	0	65	60	43	12	M10 25 Deep
⑩	(386)																	

*The center position of the gearhead output shaft is offset in an upper position than the motor's center position.

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

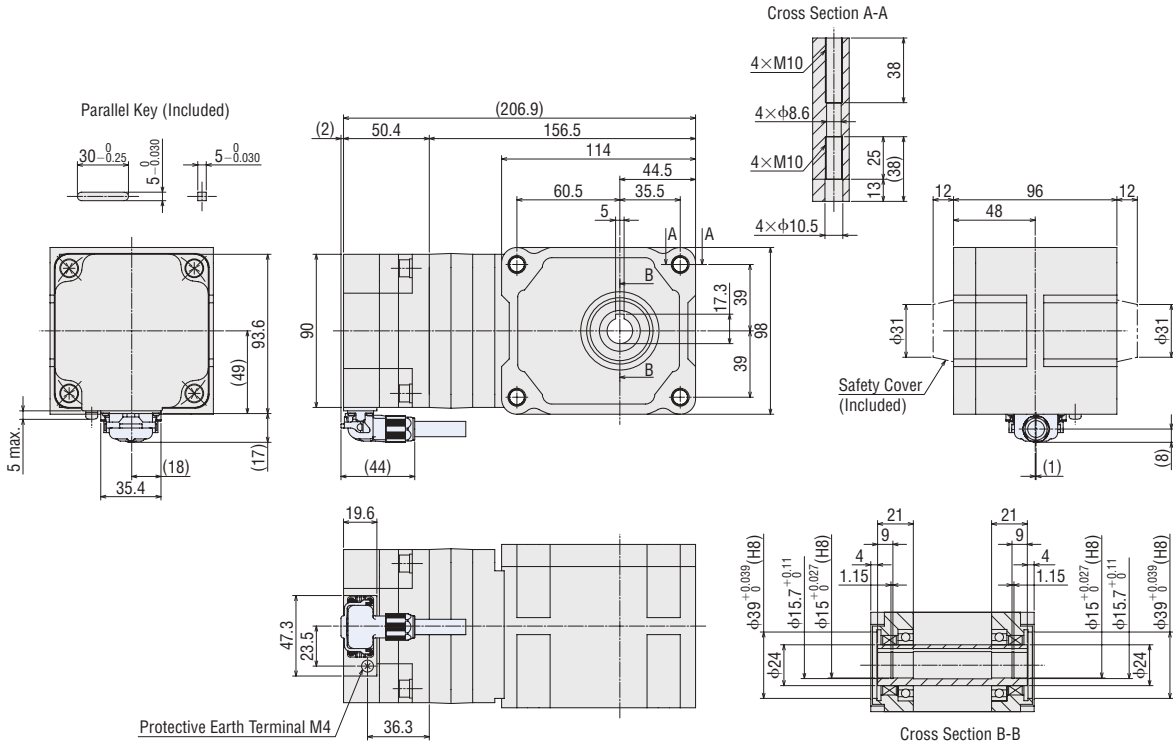


◇ Hypoid Right-Angle Hollow Shaft **JH Gear** • 120 W

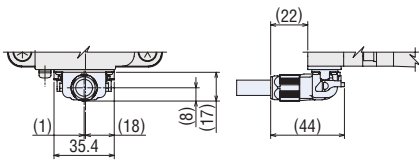
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD	
				Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HPK-5H□S	BLM5120HPK	5H□S	4.1	A1535	A1536

• When connecting the connection cable drawing from the output shaft side



• When connecting the connection cable drawing from the counter-output shaft side

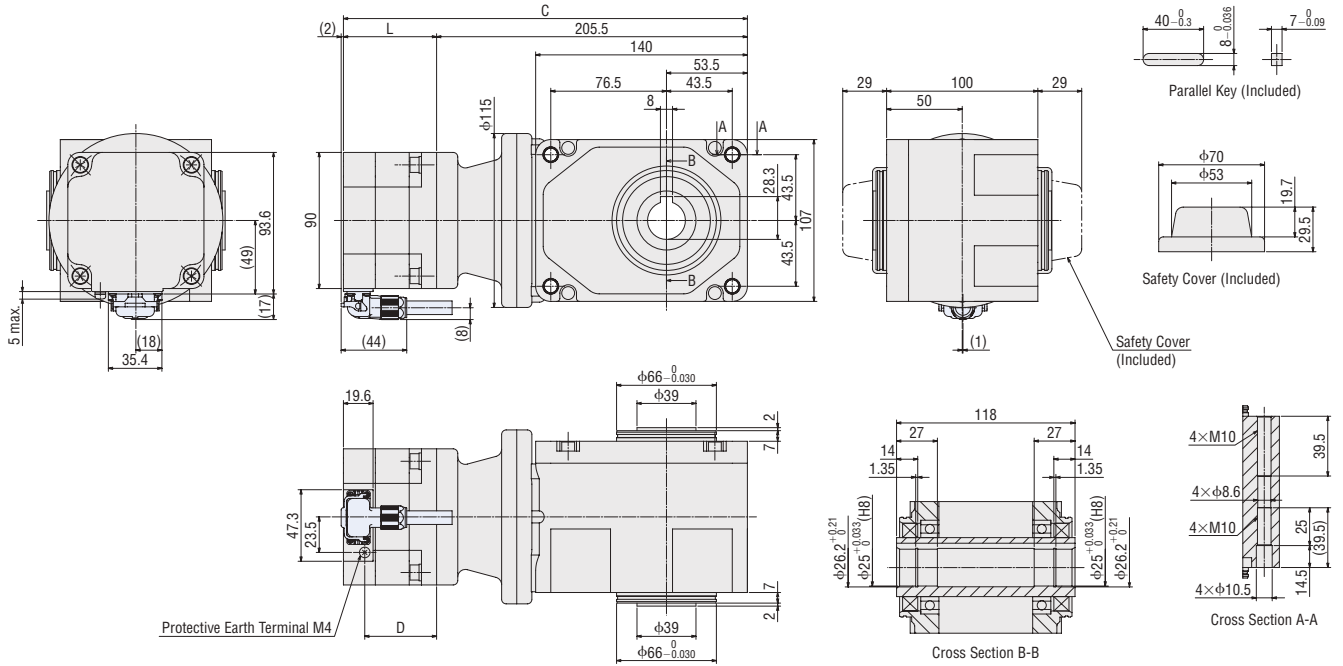


◇Hypoid Right-Angle Hollow Shaft **JH** Gear • 200 W, 400 W

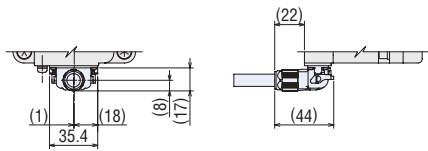
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				C	L	D		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5XH□S	BLM5200HPK	5XH□S	5, 10, 15 20, 30, 50	(267.1)	61.6	47.5	6.6	A1565	A1566
BLM5400HPK-5XH□S	BLM5400HPK	5XH□S	5, 10, 15 20, 30, 50	(278)	72.5	58.7	7.1	A1569	A1570

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

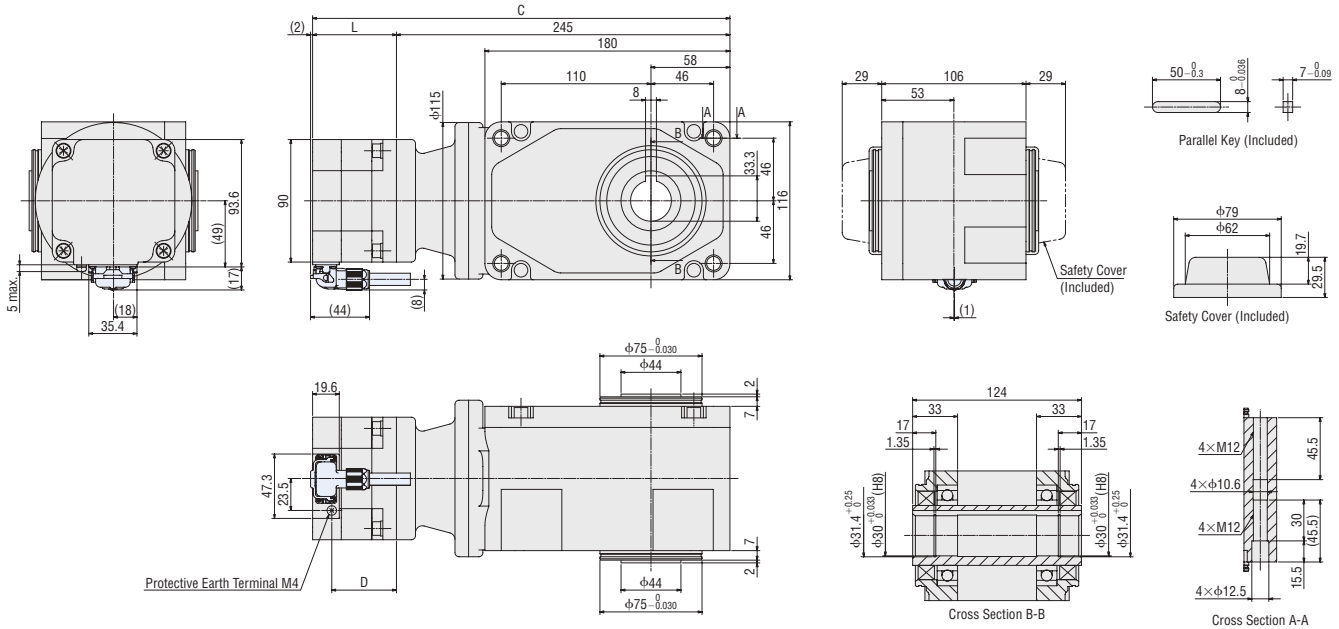


◇ Hypoid Right-Angle Hollow Shaft **JH** Gear • 200 W, 400 W

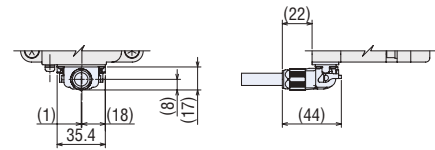
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				C	L	D		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5YH□S	BLM5200HPK	5YH□S	100, 200	(306.6)	61.6	47.5	8.1	A1567	A1568
BLM5400HPK-5YH□S	BLM5400HPK	5YH□S	100, 200	(317.5)	72.5	58.7	8.6	A1571	A1572

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side



04

BMU Series

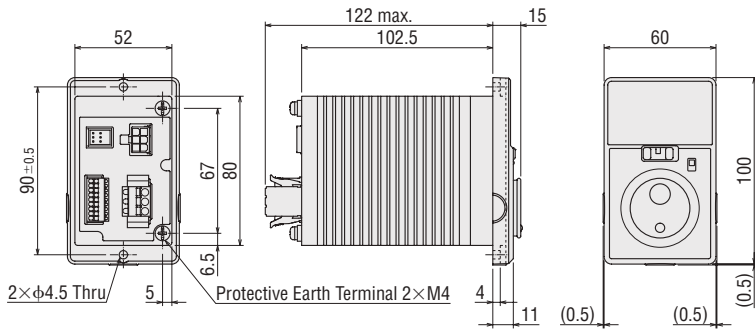
● Drivers (Common among cable and connector types)

◇ 30 W, 60 W, 120 W

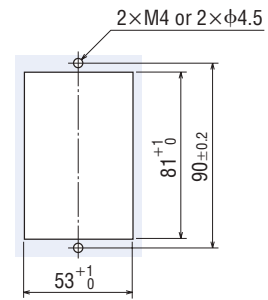
BMUD30-A2, BMUD30-C2, BMUD60-A2, BMUD60-C2, BMUD120-A2, BMUD120-C2

Mass: 0.4 kg

2D CAD A1359 3D CAD



● Driver Panel Cut-out Diagram

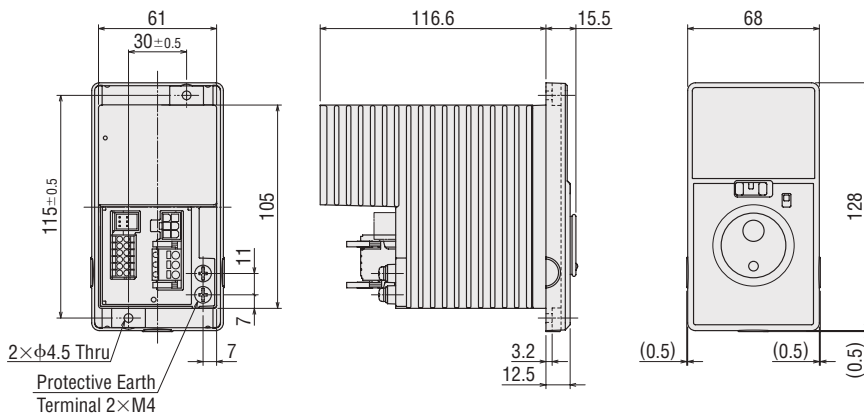


◇ 200 W, 400 W

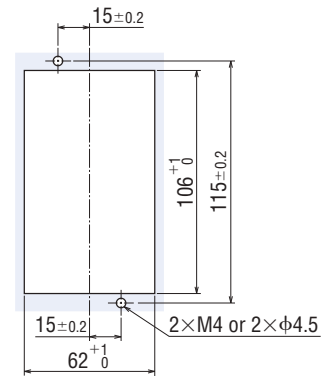
BMUD200-A, BMUD200-C, BMUD400-S

Mass: 0.8 kg

2D CAD A1343 3D CAD

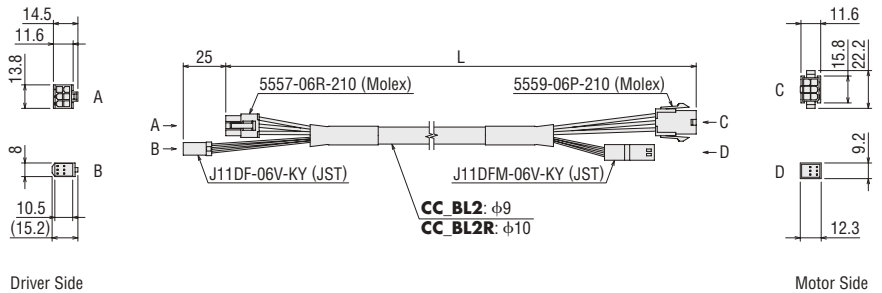


● Driver Panel Cut-out Diagram



● Connection Cables (For cable type)

Product Name	Length L (m)
CC01BL2	1
CC02BL2	2
CC03BL2	3
CC05BL2	5
CC07BL2	7
CC10BL2	10

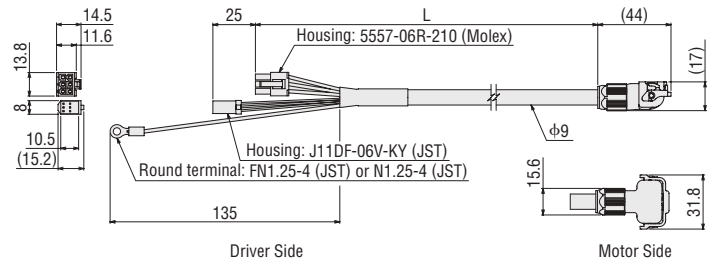


● Flexible Connection Cables (For cable type)

Product Name	Length L (m)
CC01BL2R	1
CC02BL2R	2
CC03BL2R	3
CC05BL2R	5
CC07BL2R	7
CC10BL2R	10

● Connection Cables (For connector type)

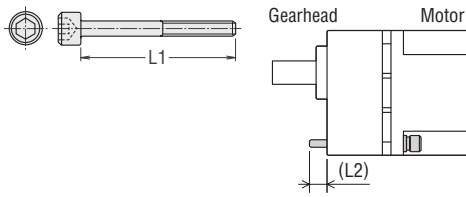
Length L (m)	Product Name		Mass (kg)
	Drawing on the output shaft side	Drawing on the counter-output shaft side	
0.5	CC005HBLF	CC005HBLB	0.08
1	CC010HBLF	CC010HBLB	0.12
1.5	CC015HBLF	CC015HBLB	0.2
2	CC020HBLF	CC020HBLB	0.25
2.5	CC025HBLF	CC025HBLB	0.32
3	CC030HBLF	CC030HBLB	0.38
4	CC040HBLF	CC040HBLB	0.49
5	CC050HBLF	CC050HBLB	0.62
7	CC070HBLF	CC070HBLB	0.86
10	CC100HBLF	CC100HBLB	1.2



Dimensions of Installation Screws

L2 represents the length when the plain washer and the spring washer are installed on the screw head.

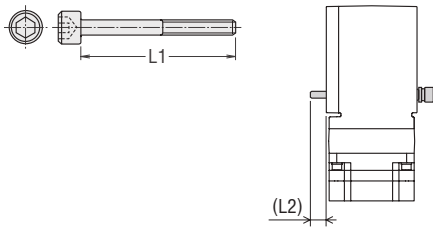
Parallel Shaft Gearhead



Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
GFV2G□ GFV2G□S(F)	5~20	M4	50	6
	30~100		55	7
	200		60	7
GFV4G□ GFV4G□S(F)	5~20	M6	60	8
	30~100		65	8
	200		70	8
GFV5G□ GFV5G□S(F)	5~20	M8	70	11.5
	30~100		85	13.5
	200		90	12.5
GFV6G□ GFV6G□S	5~20	M8	85	11
	30, 50		100	14
	100, 200		110	10

● Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

Hypoid Right-Angle Hollow Shaft



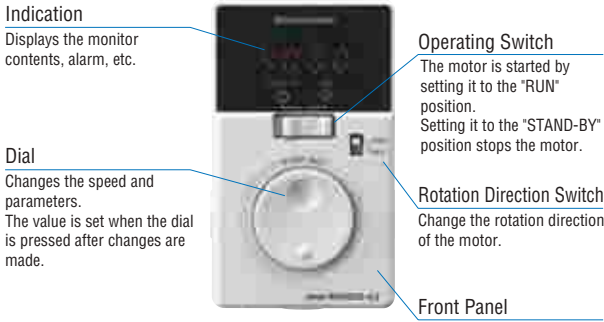
Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
4H□S	10~200	M6	95	11
5H□S	10~200	M8	110	10
5XH□S	5~50	M8	120	16
5YH□S	100, 200	M10	130	19.5

● Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

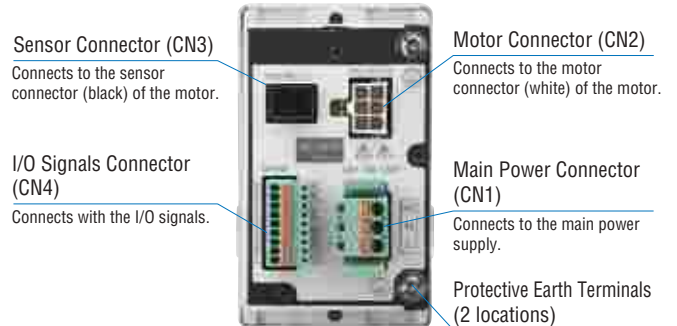
● A number in the box □ in the product name indicates the gear ratio.

Connection and Operation (30 W, 60 W, 120 W)

Names and Functions of Driver Parts

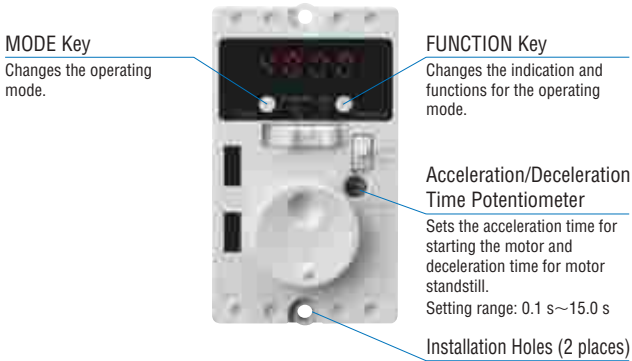


Front side of the driver



Back side of the driver

When Front Panel is Removed



Extended Functions

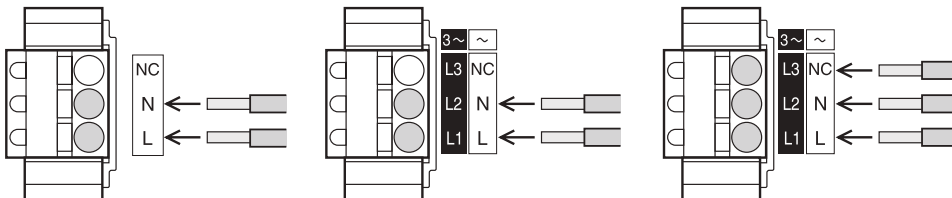
Remove the front panel to be able to perform various settings by operating the keys.

Operating Mode	Details
Monitoring	Rotation speed, load factor, operating data No., alarm, warning, I/O monitor
Data	Data 4 points Rotation speed, acceleration time, deceleration time, reset
Parameters	Gear ratio, speed increasing ratio, initial panel indication, initial operation inhibition alarm, prohibition alarm of operation at the initial setting release method selection, analog acceleration/deceleration, upper and lower limits of speed setting function, easy holding function, external operating signal input, input function selection, output function selection, overload alarm detection time except during axial lock, overload warning level, speed attainment width, parameter mode reset

Main Power Connector (CN1)

Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.

- Single-Phase 100-120 VAC
- Single-Phase 200-240 VAC
- Three-Phase 200-240 VAC
- Applicable Lead Wire Size AWG18~14 (0.75~2.0 mm²)



Operation with the Driver only

Run/Stop

When the operating switch is set to the "RUN" position, the motor will start.
When it is returned to the "STAND-BY" position, the motor decelerates to a stop.

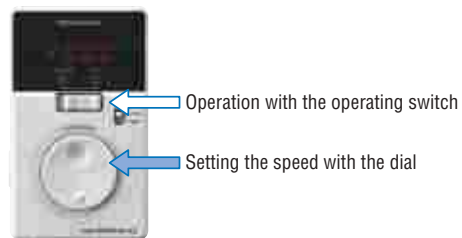
Speed Setting Method

Set the motor speed by using the dial.

Turning the dial slowly to the right increases the speed by 1 r/min increments, while turning it to the left reduces the speed by 1 r/min increments.

Turning the dial fast produces a great variation in speed.

Pressing the dial sets the speed.



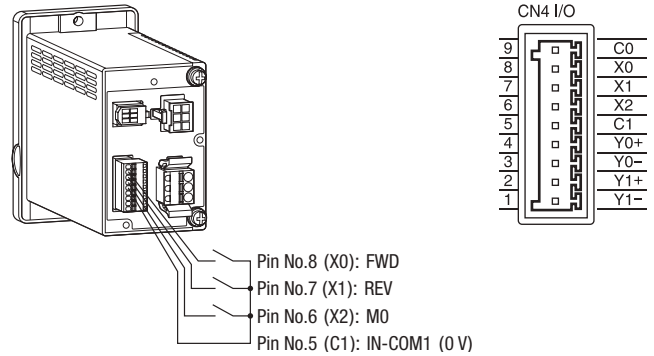
Operating Switch



● Operation by External Signals

◇ Operating Method

- Using the built-in power supply in the driver, the motor is operated through external signals (switched, relays, etc.).
Connect Pins No. 5~8 of the I/O signal connector (CN4) as in the figure to the right.
- For operation using external signals, change the parameter setting in the "External Operating Signal Input". For details, see the user's guide.
- Multiple speed operation is available in up to 4 levels.



● I/O Signals Connector (CN4)

Pin No.	Terminal Name	Functions*	Description
9	C0	Input signal common (for external power supply)	Connect for external power supplies.
8	X0	[FWD]	During "ON", the motor rotates in the FWD direction.
7	X1	[REV]	During "ON", the motor rotates in the REV direction.
6	X2	[MO]	Select the operating data.
5	C1	OV (for internal power supply)	Connect for internal power supply.
4	Y0+	[SPEED-OUT]	For every rotation of the motor output shaft, 30 pulses are output.
3	Y0-		
2	Y1+	[ALARM-OUT1]	It turns OFF when an alarm is generated. (Normally closed)
1	Y1-		

*The [] indicates the functions assigned in the factory.

Among the following signals, the signals required for the 3 input signal terminals (X0~X2) and the 2 output signal terminals (Y0, Y1) can be assigned.

3 points for the 7 input signal points (FWD, REV, MO, M1, ALARM-RESET, EXT-ERROR, H-FREE)

2 points for the 6 input signal points (ALARM-OUT1, SPEED-OUT, ALARM-OUT2, MOVE, VA, WNG)

● Applicable Lead Wire Size

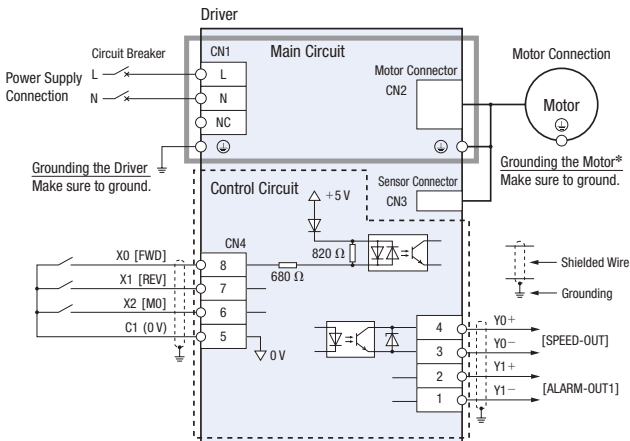
AWG26~20 (0.14~0.5 mm²)

◇ Connection Diagram

The diagrams are for a Single-Phase 100-120 VAC. I/O signals specified in [] are factory set signals.

● When using the built-in power supply

The figure shows a connection example for the operation of the motor using switches having contacts, such as switches or relays.



*Grounding the motor

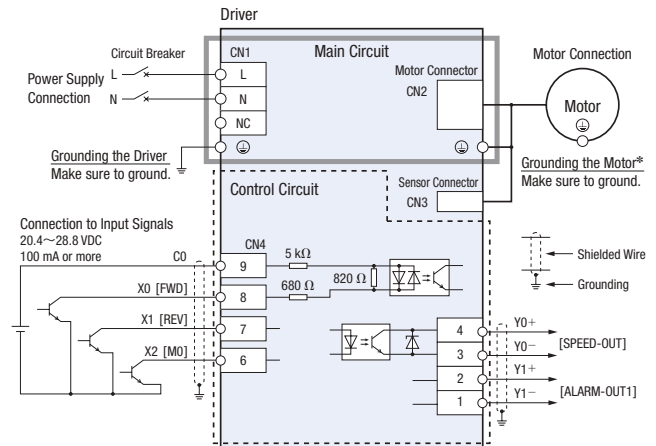
For the connector type: Motor cables may not satisfy the grounding resistance of the standard applied to the equipment depending on the type or the length.

To resolve this issue, make sure to install the motor close to the ground.

For the cable type: The motor cable does not have a protective earth wire. Make sure to ground using the protective earth terminal for the motor.

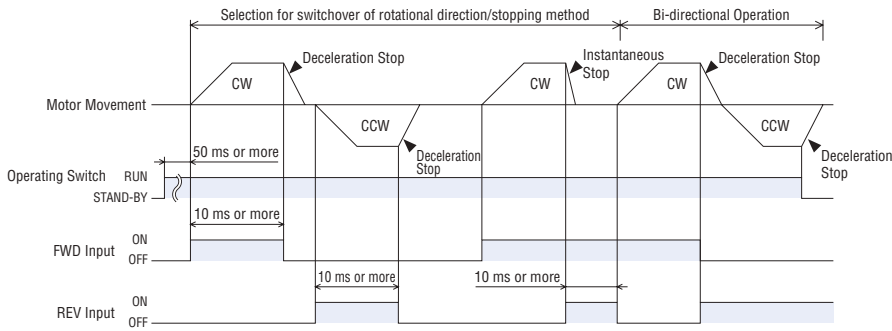
● When using external power supply

The figure shows a connection example when the motor is operated in a sequential connection with transistors.



◇ Timing Chart

This is a timing chart when the "External operating signal input" parameter is set to "ON" and the rotation direction switch to "FWD".

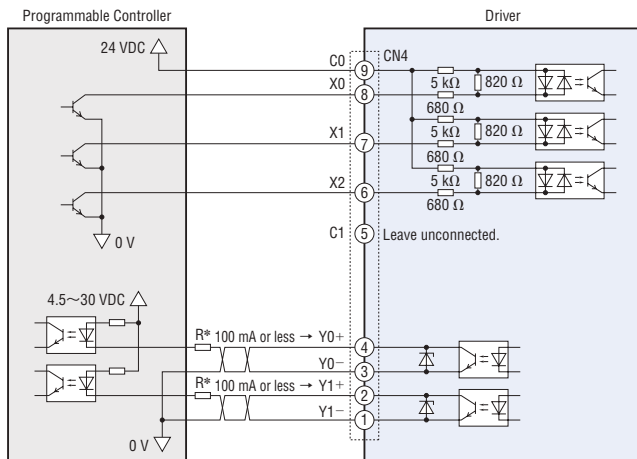


- Switching the FWD input to ON will cause the motor to turn clockwise as viewed from the motor shaft side, while switching the REV input to ON will cause the motor to turn counterclockwise. Turning it OFF decelerates the motor to a stop.
- If both the FWD input and REV input are turned ON simultaneously, the motor will stop instantaneously.
- The rotation direction varies depending on the gear ratio of the gearhead.

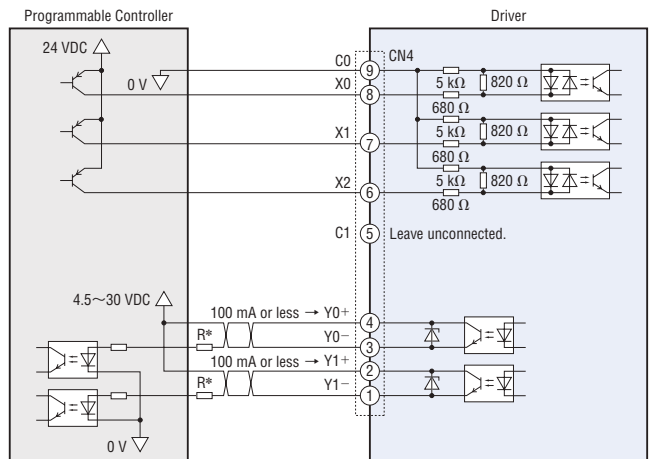
◇ Example of Connection of I/O Signals with the Host Controller

This is a connection example for the operation of the motor using the host controller of the transistor output type.

● Sink Logic



● Source Logic



*Recommended resistance value
 For 24 VDC: 680 Ω~2.7 kΩ (2 W)
 For 5 VDC: 150 Ω~560 Ω (0.5 W)

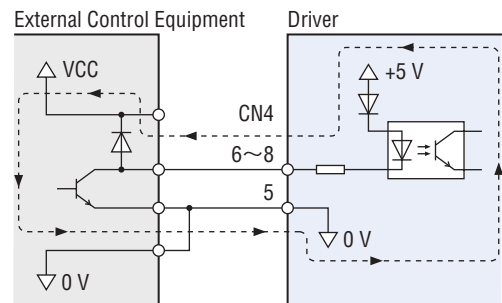
Note

The current applied to Y0 and Y1 must be 100 mA or less. If this value is exceeded, connect the limiting resistance R.

◇ When an External Control Equipment with a Built-in Clamp Diode is used

With external control equipment with built-in clamping diodes connected, if the power of the external control equipment is turned off with the driver turned on, the motor may rotate due to current flowing around. The motor may also rotate even if the driver and the external control equipment are simultaneously turned ON/OFF because these two devices have different current capacities.

To turn off the power, first turn off the driver and then the external control equipment.
 To turn on the power, first turn on the external control equipment and then the driver.

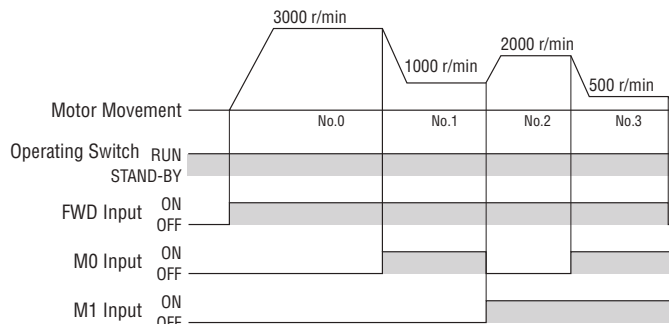


◇ When using for the Multiple Speed Operation

By switching the ON/OFF of the M0 or M1 input, the multiple speed operation becomes available.

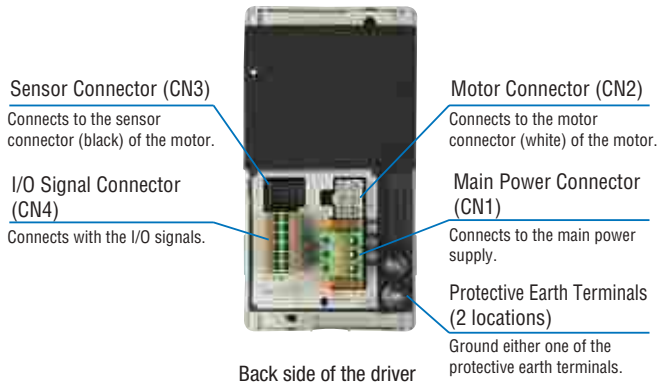
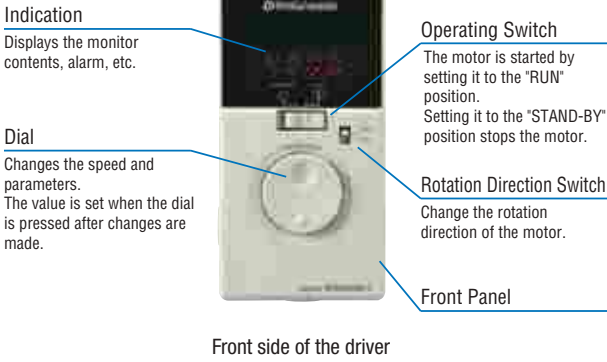
● Example of operating conditions

Operating Data No.	M0	M1	Speed [r/min]
0	OFF	OFF	3000
1	ON	OFF	1000
2	OFF	ON	2000
3	ON	ON	500

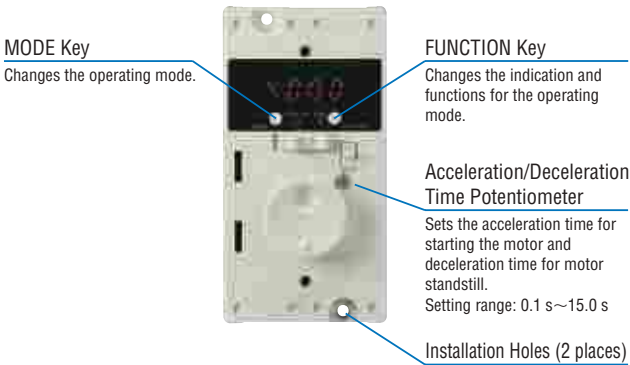


Connection and Operation (200 W, 400 W)

Names and Functions of Driver Parts



When Front Panel is Removed



Extended Functions

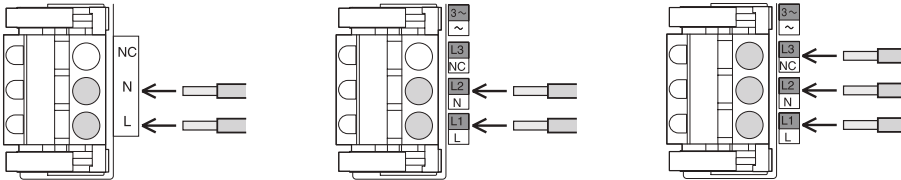
Remove the front panel to be able to perform various settings by operating the keys.

Operating Mode	Details
Monitoring	Rotation speed, load factor, operation data No., alarm, warning, I/O monitor
Data	Data 4 points Rotation speed, acceleration time, deceleration time, reset
Parameters	Gear ratio, speed increasing ratio, initial panel indication, initial operation inhibition alarm, prohibition alarm of operation at the initial setting release method selection, analog acceleration/deceleration, upper and lower limits of speed setting function, easy holding function, external operating signal input, input function selection, output function selection, overload alarm detection time except during axial lock, overload warning level, speed attainment width, parameter mode reset

Main Power Connector (CN1)

Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.

- Single-Phase 100-120 VAC
- Single-Phase 200-240 VAC
- Three-Phase 200-240 VAC
- Applicable Lead Wire Size AWG18~14 (0.75~2.0 mm²)



For the 400 W type, L1, L2 and L3 displays only.

Operation with the Driver only

Run/Stop

When the operating switch is set to the "RUN" position, the motor will start. When it is returned to the "STAND-BY" position, the motor decelerates to a stop.

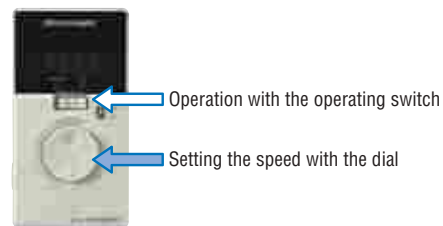
Speed Setting Method

Set the motor speed by using the dial.

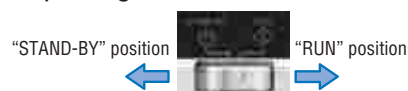
Turning the dial slowly to the right increases the speed by 1 r/min increments, while turning it to the left reduces the speed by 1 r/min increments.

Turning the dial fast produces a great variation in speed.

Pressing the dial sets the speed.



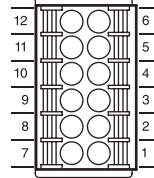
Operating Switch



● Operation by External Signals

◇ Operating Method

- Using the built-in power supply in the driver, the motor is operated through external signals (switched, relays, etc.).
Connect Pins No. 1~5 and No. 7 of the I/O signal connector (CN4) as in the table below.
- For operation using external signals, change the parameter setting in the "External Operating Signal Input". For details, see the user's guide.
- Multiple speed operation is available in up to 4 levels.



CN4

● I/O Signals Connector (CN4)

Pin No.	Signal Name	Functions*	Description
1	IN4	[ALARM-RESET]	Alarms are reset.
2	IN3	[M1]	Select the operating data.
3	IN2	[M0]	
4	IN1	[REV]	During "ON", the motor rotates in the REV direction.
5	IN0	[FWD]	During "ON", the motor rotates in the FWD direction.
6	IN-COM0	Input signal common (for external power supply)	Connect for external power supplies.
7	IN-COM1	0V (for internal power supply)	Connect for internal power supply.
8	N.C.	N.C.	Leave unconnected.
9	OUT1-	[ALARM-OUT1]	It turns OFF when an alarm is generated. (Normally closed)
10	OUT1+		
11	OUT0-	[SPEED-OUT]	For every rotation of the motor output shaft, 30 pulses are output.
12	OUT0+		

● Applicable Lead Wire Size

AWG24~18 (0.2~0.75 mm²)

*The [] indicates the functions assigned in the factory.

Among the following signals, the signals required for the 5 input signal terminals (IN0~IN4) and the 2 output signal terminals (OUT0, OUT1) can be assigned.

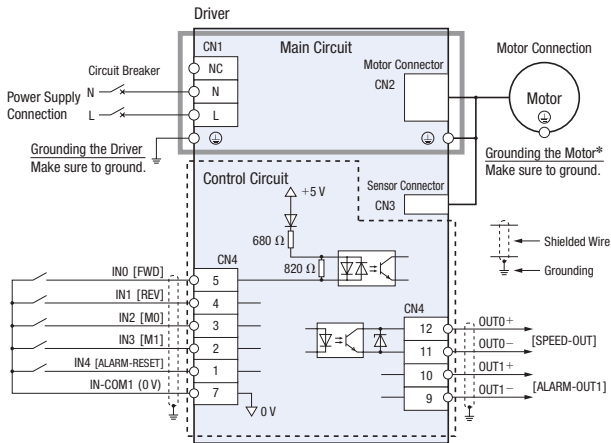
5 points for the 7 input signal points (FWD, REV, M0, M1, ALARM-RESET, EXT-ERROR, H-FREE)
2 points for the 6 input signal points (ALARM-OUT1, SPEED-OUT, ALARM-OUT2, MOVE, VA, WNG)

◇ Connection Diagram

The diagrams are for a Single-Phase 100-120 VAC. I/O signals specified in [] are factory set signals.

● When using the built-in power supply

The figure shows a connection example for the operation of the motor using switches having contacts, such as switches or relays.



*Grounding the motor

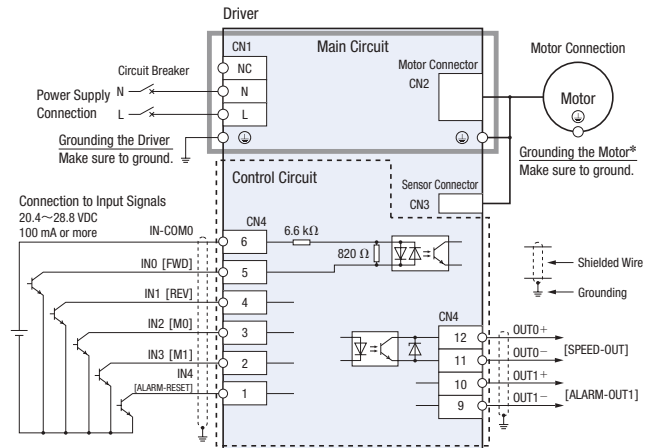
For the connector type: Motor cables may not satisfy the grounding resistance of the standard applied to the equipment depending on the type or the length.

To resolve this issue, make sure to install the motor close to the ground.

For the cable type: The motor cable does not have a protective earth wire. Make sure to ground using the protective earth terminal for the motor.

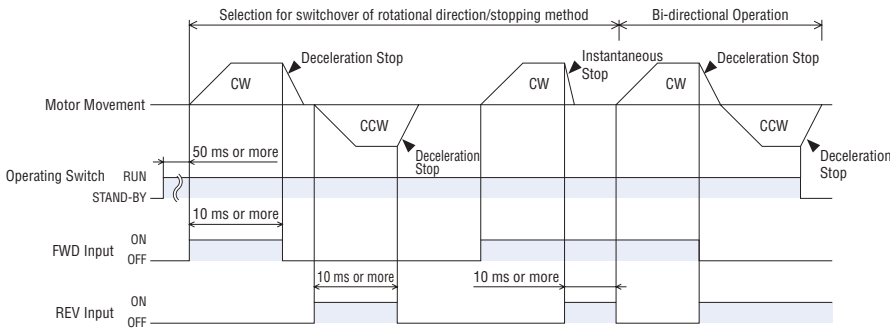
● When using external power supplies

The figure shows a connection example when the motor is operated in a sequential connection with transistors.



◇ Timing Chart

This is a timing chart when the "External operating signal input" parameter is set to "ON" and the rotation direction switch to "FWD".

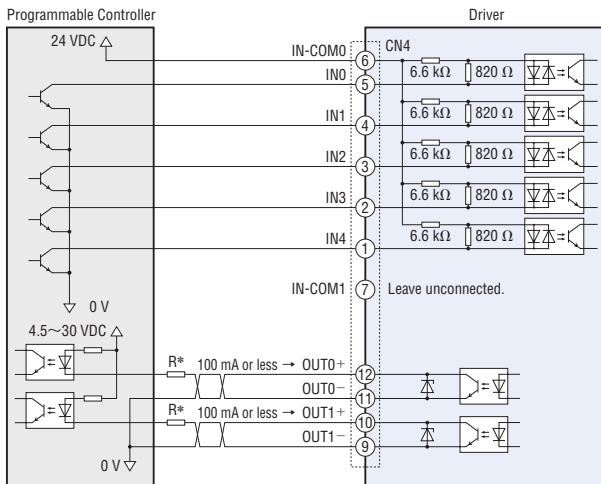


- Switching the FWD input to ON will cause the motor to turn clockwise as viewed from the motor shaft side, while switching the REV input to ON will cause the motor to turn counterclockwise. Turning it OFF decelerates the motor to a stop.
- If both the FWD input and REV input are turned ON simultaneously, the motor will stop instantaneously.
- The rotation direction varies depending on the gear ratio of the gearhead.

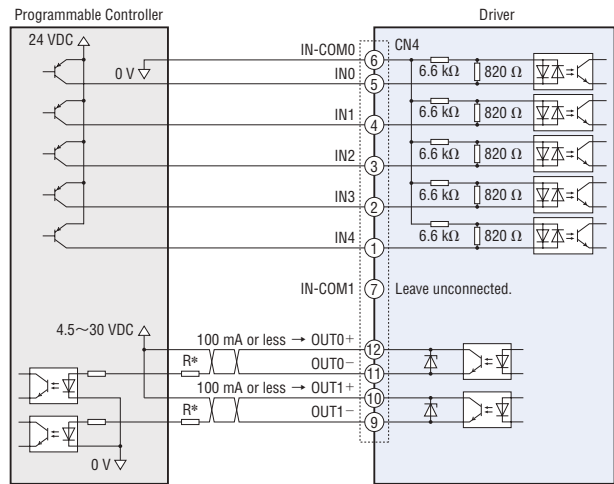
◇ Example of Connection of I/O Signals with the Host Controller

This is a connection example for the operation of the motor using the host controller of the transistor output type.

● Sink Logic



● Source Logic



*Recommended resistance value
 For 24 VDC: 680 Ω~2.7 kΩ (2 W)
 For 5 VDC: 150 Ω~560 Ω (0.5 W)

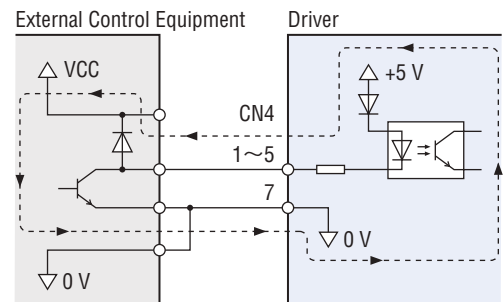
Note

The current applied to OUT0 and OUT1 must be 100 mA or less. If this value is exceeded, connect the limiting resistance R.

◇ When an External Control Equipment with a Built-in Clamp Diode is used

With external control equipment with built-in clamping diodes connected, if the power of the external control equipment is turned off with the driver turned on, the motor may rotate due to current flowing around. The motor may also rotate even if the driver and the external control equipment are simultaneously turned ON/OFF because these two devices have different current capacities.

To turn off the power, first turn off the driver and then the external control equipment.
 To turn on the power, first turn on the external control equipment and then the driver.

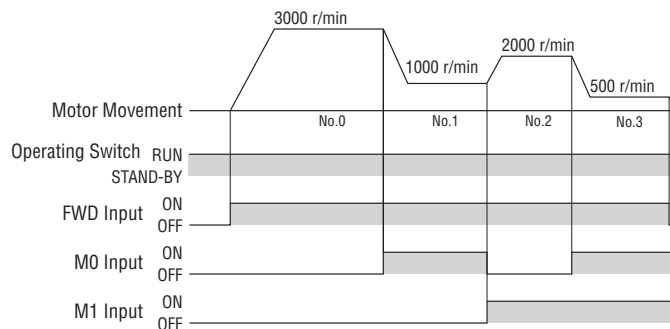


◇ When using for the Multiple Speed Operation

By switching the ON/OFF of the M0 or M1 input, the multiple speed operation becomes available.

● Example of operating conditions

Operating Data No.	M0	M1	Speed [r/min]
0	OFF	OFF	3000
1	ON	OFF	1000
2	OFF	ON	2000
3	ON	ON	500



Installation of Hollow Shaft Load

Example of Load Shaft Installation Method

The load installation method differs depending on the shape of the load shaft. See the figures below.

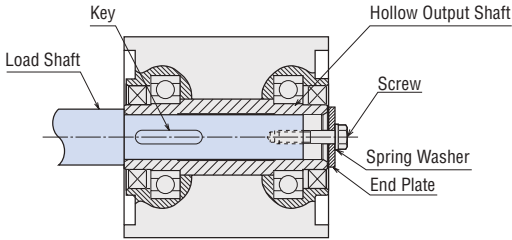
- The hollow output shaft is processed to a tolerance of the inner diameter H8, and incorporates a key slot for load shaft installation.
- The recommended tolerance of the load shaft is h7.

Note

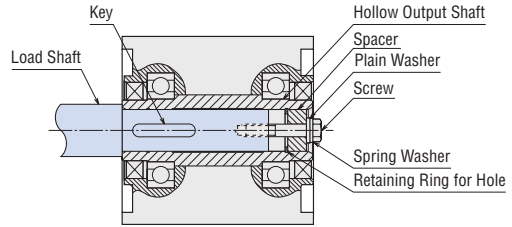
- To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.

Stepped Load Shaft

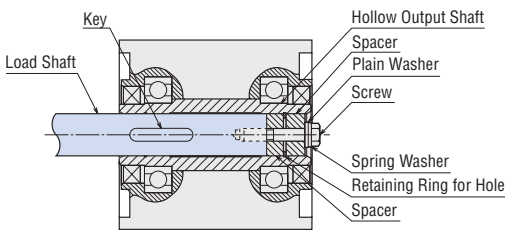
Fixing method using the end plate



Fixing method using the retaining ring for hole



For Non-Stepped Load Shaft



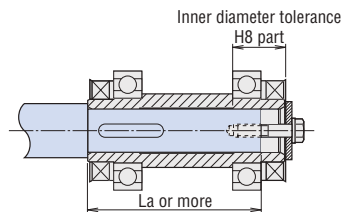
Recommended Load Shaft Installation Method

Unit: mm

Output Power	60 W	120 W	200 W, 400 W	
Gear Ratio	10~200	10~200	5~50	100, 200
Inner Diameter of Hollow Output Shaft (H8)	$\phi 12^{+0.027}_0$	$\phi 15^{+0.027}_0$	$\phi 25^{+0.033}_0$	$\phi 30^{+0.033}_0$
Recommended Tolerance of Load Shaft (h7)	$\phi 12^0_{-0.018}$	$\phi 15^0_{-0.018}$	$\phi 25^0_{-0.021}$	$\phi 30^0_{-0.021}$
Screw Size	M5	M6	M6	M8
Spacer Dimensions	Outer Diameter	$\phi 11.5$	$\phi 14.5$	$\phi 24.5$
	Inner Diameter	$\phi 6$	$\phi 7$	$\phi 7$
	Width	3	3	4
Nominal Hole Diameter of Retaining Ring (C type retaining ring)	$\phi 12$	$\phi 15$	$\phi 25$	$\phi 30$
End Plate Thickness	3	3	4	5
Stepped Shaft La length	55	72	96	96

- Retaining rings for holes, spacers, screws or other parts used to install the load shaft are not supplied.

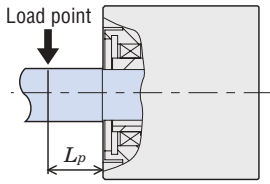
Recommended Load Shaft Length



● Permissible Radial Load Calculation of the Hollow Shaft Type

Formulas to calculate permissible radial loads vary depending on the mechanism.

◇ When One End of the Load Shaft is Not Supported by a Bearing Unit



● 60 W

$$\text{Permissible Radial Load } W [\text{N}] = \frac{68.5}{48.5 + L_p} \times F_0$$

● 120 W

$$\text{Permissible Radial Load } W [\text{N}] = \frac{79}{59 + L_p} \times F_0$$

● 200 W, 400 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W [\text{N}] = \frac{95.5}{75.5 + L_p} \times F_0$$

● 200 W, 400 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W [\text{N}] = \frac{102}{82 + L_p} \times F_0$$

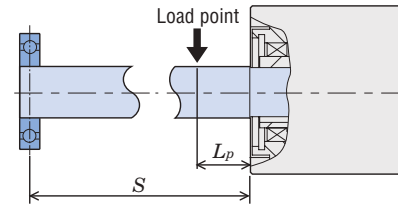
F_0 [N]: Permissible radial load when the reference point is at 20 mm from the installation surface.

L_p [mm]: Distance from the installation surface to the load point.

S [mm]: Distance from the installation surface to the bearing unit.

● For details on the permissible radial load when the reference position is 20 mm away from the flange installation surface, see the Specifications table. → Pages 04-20 and 04-22

◇ When One End of the Load Shaft is Supported by a Bearing Unit



● 60 W

$$\text{Permissible Radial Load } W [\text{N}] = \frac{68.5(S + 5.5)}{53(S - L_p)} \times F_0$$

● 120 W

$$\text{Permissible Radial Load } W [\text{N}] = \frac{79(S + 4)}{65(S - L_p)} \times F_0$$

● 200 W, 400 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W [\text{N}] = \frac{95.5(S - 9)}{104.5(S - L_p)} \times F_0$$

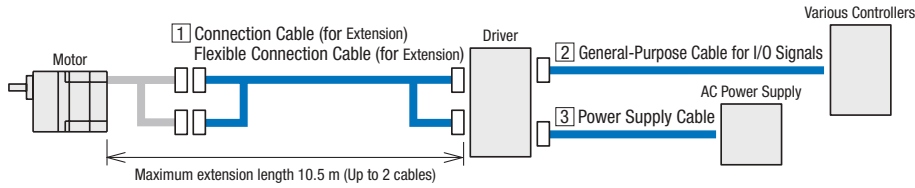
● 200 W, 400 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W [\text{N}] = \frac{102(S - 9)}{111(S - L_p)} \times F_0$$

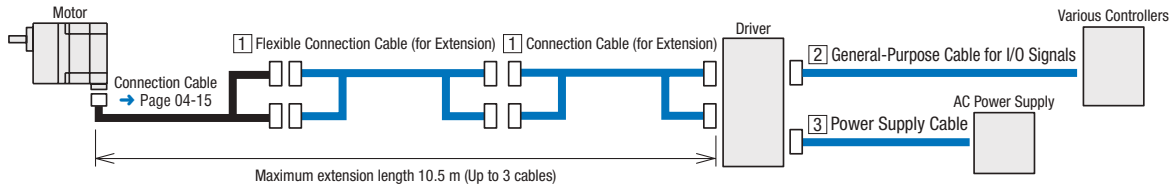
Accessories (Sold Separately)

● Cable System Configuration

◇ Cable Type



◇ Connector Type



1 Connection Cables (for Extension)/Flexible Connection Cables (for Extension)

These cables are used to connect the motor and driver. When using additional connection cables (for extension) and/or flexible connection cables (for extension), make sure that the total length is 10.5 m or less. Use a flexible connection cable in applications where the cable is bent and flexed.

● Product Line

◇ Connection Cables

Product Name	Length L (m)	List Price
CC01BL2	1	SGD38
CC02BL2	2	SGD53
CC03BL2	3	SGD68
CC05BL2	5	SGD98
CC07BL2	7	SGD128
CC10BL2	10	SGD173

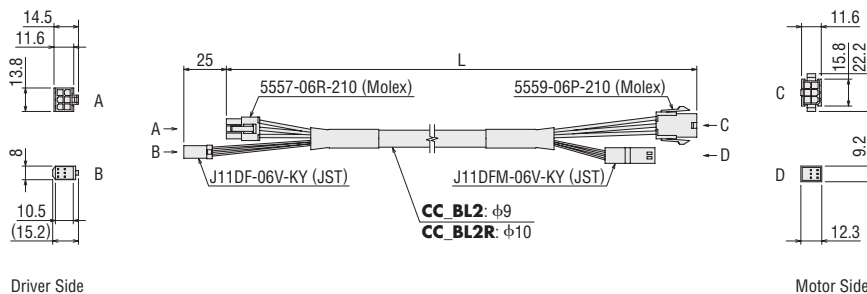


◇ Flexible Connection Cables

Product Name	Length L (m)	List Price
CC01BL2R	1	SGD75
CC02BL2R	2	SGD105
CC03BL2R	3	SGD135
CC05BL2R	5	SGD195
CC07BL2R	7	SGD255
CC10BL2R	10	SGD345



● Dimensions (Unit: mm)



For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

2 General-Purpose Cables for I/O Signals

Connects the driver and various controller. Choose as many cables as the number of connected I/O signal sources.

Product Line

Product Name	Length L (m)	Number of Lead Line Cores	Outer Diameter D (mm)	AWG	List Price
CC06D005B-1	0.5	6	φ5.4	24	SGD17
CC06D010B-1	1				SGD19
CC06D015B-1	1.5				SGD21
CC06D020B-1	2				SGD23
CC10D005B-1	0.5	10	φ6.7		SGD19
CC10D010B-1	1				SGD21
CC10D015B-1	1.5				SGD24
CC10D020B-1	2				SGD26
CC12D005B-1	0.5	12	φ7.5		SGD21
CC12D010B-1	1				SGD24
CC12D015B-1	1.5				SGD27
CC12D020B-1	2				SGD30
CC16D005B-1	0.5	16	φ7.5		SGD22
CC16D010B-1	1				SGD25
CC16D015B-1	1.5				SGD28
CC16D020B-1	2				SGD31



3 Power Supply Cables

This cable used for connecting the driver and the power supply comes with or without a power supply plug.



Plug included

Product Line

Product Name	Type	Power Supply Voltage	Length L (m)	List Price
CC01AC03P	Plug included	Single-Phase 100-120 VAC	1	SGD19
CC02AC03P			2	SGD25
CC03AC03P			3	SGD31
CC01AC03N	Plug not included	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	1	SGD13
CC02AC03N			2	SGD19
CC03AC03N			3	SGD25
CC01AC04N	Plug not included	Three-Phase 200-240 VAC	1	SGD13
CC02AC04N			2	SGD19
CC03AC04N			3	SGD25

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Flexible Couplings

These are clamp type couplings for connecting the motor/gearhead shaft with the driven shaft.

Couplings usable for the parallel shaft gearhead **GFV** gear and the round shaft type are available.

- Couplings can also be used with round shaft types. Select a coupling with the same inner diameter size as the motor shaft diameter.



Product Line

Product Name	List Price	Applicable Product (Motor)
MCL30 Type	SGD61	BLM230 GFV Gear
MCL40 Type	SGD93	BLM460 GFV Gear
MCL55 Type	SGD124	BLM5120 GFV Gear
MCL65 Type	SGD197	BLM6200 GFV Gear BLM6400 GFV Gear

Motor and Gearhead Mounting Brackets

This is a convenient, dedicated mounting bracket for mounting or fixing the parallel shaft gearhead **GFV** gear and the round shaft type.

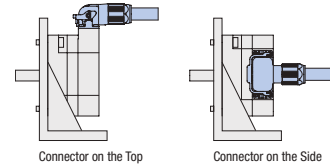


Product Line

Product Name	List Price	Applicable Product (Motor)
SOL2M4F	SGD24	BLM230 BLM260 (Round Shaft Type)
SOL4M6F	SGD29	BLM460 (GFV) Gear
SOL5M8F	SGD31	BLM5120 BLM5200, BLM5400 (Round Shaft Type)
SOL6M8F	SGD34	BLM6200, BLM6400 (GFV) Gear

Note

When mounting the motor on the mounting bracket, place the motor connector on the top or on the side. If the connector is placed on the bottom, it interferes with the bracket or the installation surface and therefore is not recommended.



Connector on the Top

Connector on the Side

Circuit Products Mounting Brackets

Mounting brackets for installing the driver are available.

Mounting brackets have product lines for different applications such as for DIN rail installation, installation on the wall surface, and for conveyor guide installation.

Product Line

Material: SPCC Surface treatment: Electroless nickel plating

Product Name	Application	List Price	Applicable Product (Driver)
MADP05-15	For DIN Rail Installation	SGD23	BMUD30 BMUD60 BMUD120
MAFP04-15	For Wall Surface Installation	SGD23	
MAFP05V	For Conveyor Guide Installation	SGD12	
MAFP05H		SGD12	
MADP05-12B	For DIN Rail Installation	SGD29	BMUD200 BMUD400
MAFP04-12B	For Wall Surface Installation	SGD29	

Note

- Circuit products mounting brackets cannot be used together with the dust-resistant and watertight type front cover.



MADP05-15
< Application example >



MADP05-12B
< Application example >



MAFP04-15
< Application example >



MAFP05V
< Application example >



MAFP05H
< Application example >

Dust-Resistant and Watertight Type Front Covers

Protects the front panels of drivers.

The degree of protection conforms to the IP64 specification.

The cover can also be used to prevent operation errors on the front panel.

Product Line

Product Name	List Price	Applicable Product (Driver)
PCF12-B	SGD31	BMUD30 BMUD60 BMUD120
PCF15-B	SGD44	BMUD200 BMUD400

Note

- The dust-resistant and watertight type front cover cannot be used together with circuit products mounting brackets.



PCF12-B



PCF15-B

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Motor Covers

Protects the motor. The cover is designed with IP66 protection to ensure use in environments where water or dust disperses.

Product Line

Motor Cover

Product Name	List Price
PCM5	SGD44
PCM5-C	SGD54

Replacement Gaskets

Ideally replace the gaskets after 1 year use.

Product Name	List Price	Set Details
PCMP5	SGD8	2 gaskets



With a hole plug
PCM5



With a cable gland
PCM5-C

Applicable Product (Cable type)

Output Power	Motor
30 W, 60 W, 120 W	Parallel Shaft Gearhead GFV Gear Round Shaft Type

Applicable Product (Connector type)

Output Power	Motor	Cable Drawing Direction
30 W, 60 W, 120 W	Parallel Shaft Gearhead GFV Gear*	Drawing on the output shaft side
	Round Shaft Type	Drawing on the counter-output shaft side

*The parallel shaft gearhead **GFV** gear cannot be used to draw the cable on the counter-output shaft side.

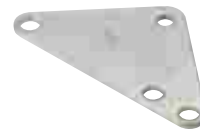
Torque Arms NEW

Prevents the gearhead from spinning due to reaction force from the driven shaft when a hypoid right-angle hollow shaft **JH** gear is installed.

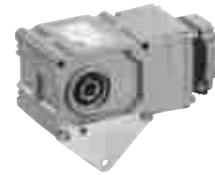
Product Line

Product Name	List Price	Applicable Product	Main Specifications
TAF2S-12-NS	SGD25	BLM460SHPK-4H □	Material: SS400 Surface treatment: Trivalent chromate
TAF2S-15-NS	SGD26	BLM5120HPK-5H □	
TAF3S-25-2-NS	SGD33	BLM5200HPK-5XH □ BLM5400HPK-5XH □	
TAF3S-30-3-NS	SGD71	BLM5200HPK-5YH □ BLM5400HPK-5YH □	

● The □ in the applicable product is replaced with a number that represents the gear ratio and a code that represents the output shaft specification.



TAF2S-12-NS



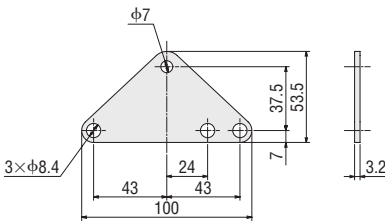
< Application example >

Dimensions (Unit: mm)

TAF2S-12-NS

Mass: 75 g

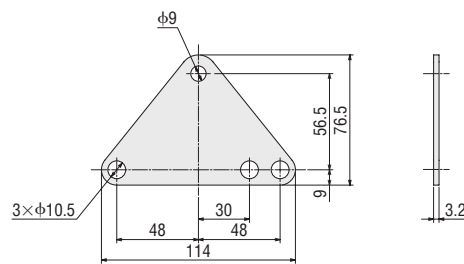
2D CAD A1608 **3D CAD**



TAF2S-15-NS

Mass: 125 g

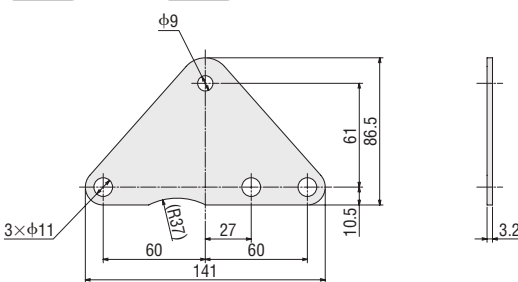
2D CAD A1609 **3D CAD**



TAF3S-25-2-NS

Mass: 200 g

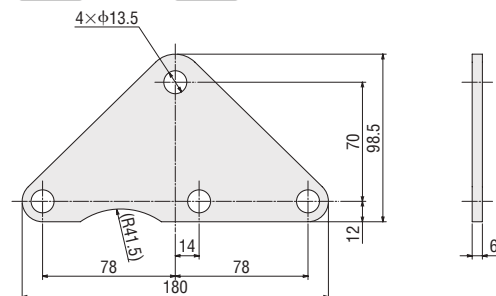
2D CAD A1610 **3D CAD**



TAF3S-30-3-NS

Mass: 400 g

2D CAD A1611 **3D CAD**



For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Enclosure Boxes

These boxes are useful when a driver is installed. The box provides protection to the driver and wiring.

Product Line

Driver Boxes

Product Name	List Price	Applicable Products (Driver)
PCD12	SGD206	BMUD30 BMUD60
PCD12-1	SGD206	BMUD120
PCD12A	SGD206	BMUD200

Cable Gland (For I/O signals)

Use when using input/output signals to perform operations.

Product Name	List Price
MPG	SGD8



< Application example >

BRUSHLESS MOTORS

BLE2 Series

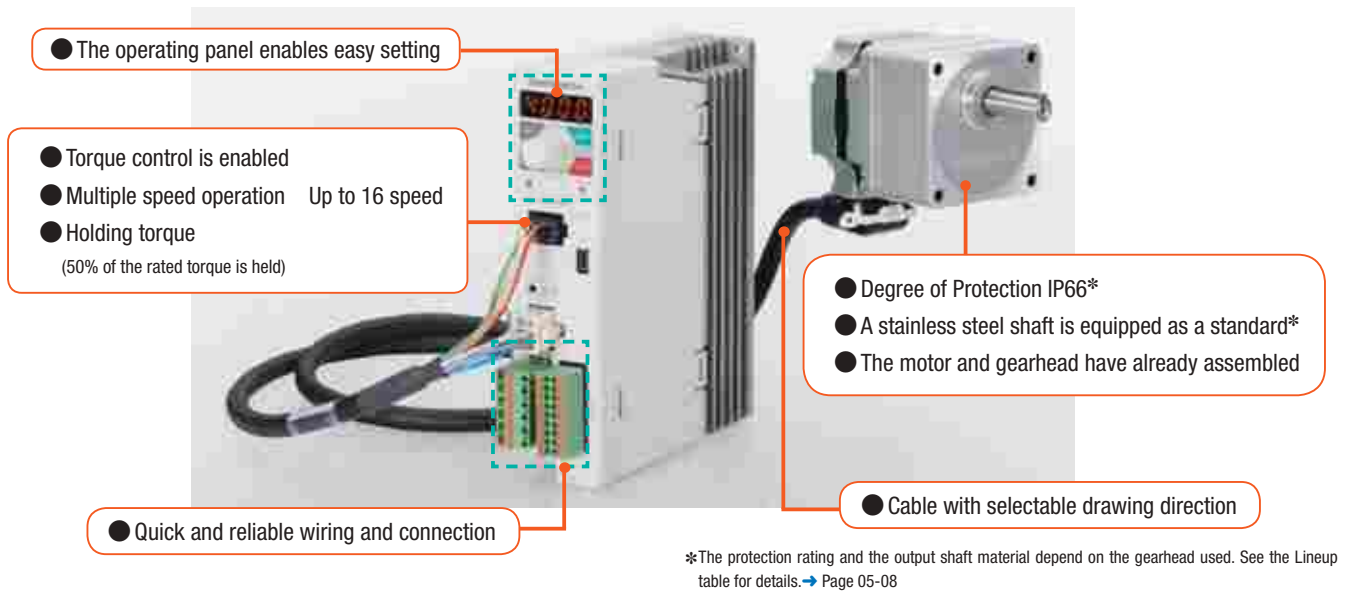
ADVANCED MODELS

THAT SUPPORT HIGH FUNCTIONALITY
AND USABILITY AT THE SAME TIME



Overview of BLE2 Series

The mechanism of the motor is renewed, resulting in compact, high power, and highly efficiency motor. The driver employing the digital display panel allows you to easily set the speed with the knob.



05

The Operating Panel Enables Easy Setting

The operating panel is installed in front. While checking the digital display, you can set the operation data or parameters with the operation keys or the setting dial.



- Speed Setting Range 80~4000 r/min*
*Depends on the gearhead.
- Speed Regulation ±0.2%*
*Digital setting

● The operating panel cannot be detached from the driver.

Quick and Reliable Wiring and Connection

The connector enables quick and reliable connection.



BLE2 Series

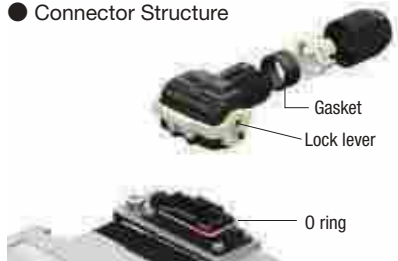
Degree of Protection IP66*

The connector is new and specially developed for compact motors. It connects the motor and the driver directly. In addition to the motor mechanism, it improves dustproof and waterproof performance that allows the motor to obtain a Degree of Protection IP66*.

New connector

The built-in gasket and the O-ring contributes to improve waterproof performance. The locking lever makes connection easy, eliminating the trouble to fix screws.

● Connector Structure



● How to Install



Plug the connector.



Turn the locking lever.



Connection is completed.

Stainless steel shaft equipped as a standard*

Highly rustproof, anti-corrosive stainless steel is used for the shaft. Stainless steel is also used for the parallel key and the installation screws.



*The protection rating and the output shaft material depend on the gearhead used. For details, refer to the Lineup table. → Page 05-08

Cable with Selectable Drawing Direction

Two types of connection cables are available to choose from, depending on the direction to draw out. For direct connections between the motor and the driver, one connection cable can extend up to 20 m, eliminating the need for a relay.

Selectable cable direction

Two types are available to choose from depending on the direction to draw out the motor cable.

(The round shaft type draws only from the counter-output shaft side.)

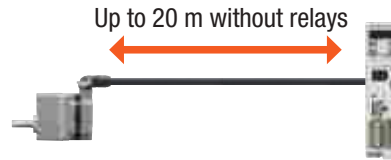


Drawing on the output shaft side

Drawing on the counter-output shaft side

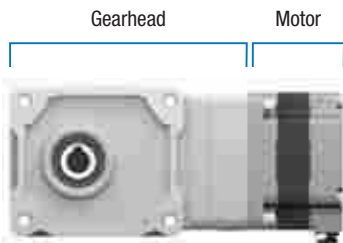
Connects the motor and the driver directly

One cable can extend up to 20 m without a relay, eliminating the need for relays. Only this one cable is required for the power, signals and grounding, reducing wiring efforts.

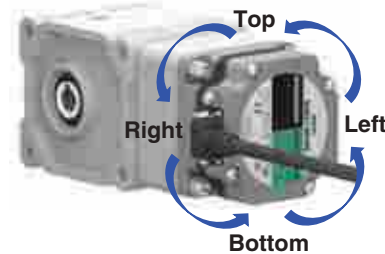
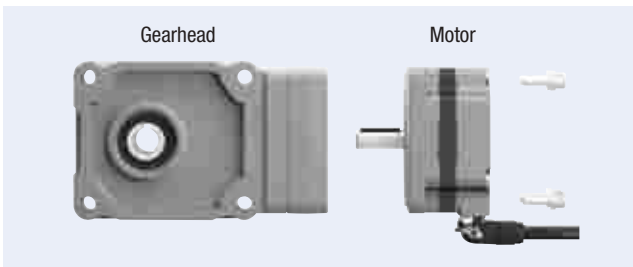


Assembled Motor and Gearhead

The motor and gearhead comes pre-assembled. This reduces assembly time and allows immediate installation of the unit to equipment.



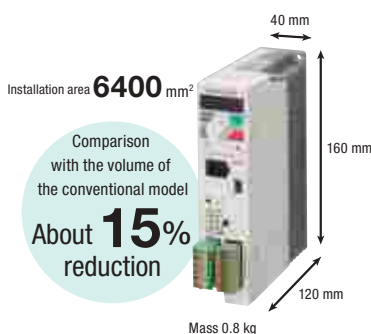
You can remove the gearhead and change the mounting angle by 90-degree intervals. You can change the connector position depending on the equipment.



Effective Use of the Installation Space

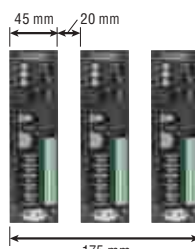
The optimum arrangement of the components in the driver has compact the size of the driver and made it thinner. Since multiple drivers can be closely attached with each other, the installation space can be reduced, or the number of drivers that can be installed in a certain space can be increased.

Compact and thin driver

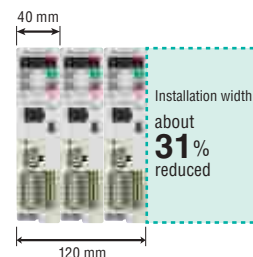


Multiple drivers that can be closely attached with each other

Conventional model BLE Series drivers



BLE2 Series drivers



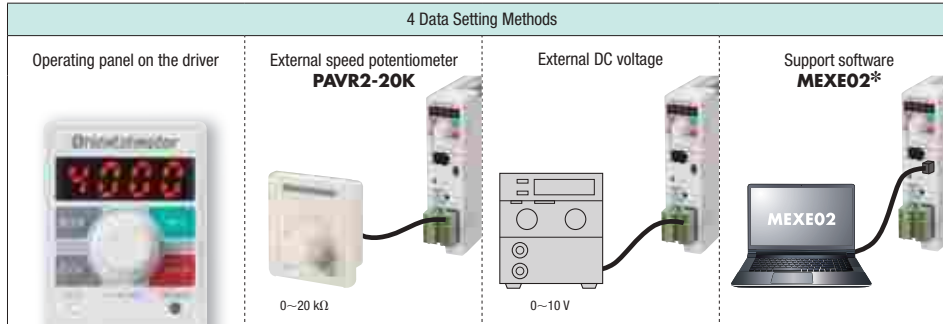
- Conditions for closely attaching multiple drivers with each other
- Ambient temperature 0~+50°C (200 W only 0~+40°C)
 - Install the multiple drivers to a heat sink (Material: Aluminum, 350×350×2 mm equivalent).
 - Maximum number of multiple drivers that can be closely attached: 3 drivers

Supporting Customers with Enhanced Functions

The motor unit supports 4 data setting methods and provides various functions that can be used depending on purposes. The use of support software are made easily use, allows checking of the startup and operating conditions of the equipment.

Operating method

- Local operation: Operation with the operating panel. Can be applied to test operation.
- Remote operation: Operation with external signals or support software **MEXE02**.



*When using support software **MEXE02**, you can connect the driver to the PC with a commercially available USB cable.

Possible settings

The motor unit provides functions that match the conditions of use by the customer.

Setting	Purpose/Objective	Parameter	Setting Method			
			Operating Panel	External Speed Potentiometer PAVR2-20K	External DC Voltage	Support Software MEXE02
Speed	Can be operated at any rotation speed.	80~4000 r/min	●	●	●	●
Torque Limit	The maximum output torque of the motor can be controlled for safety or restricted in accordance with the load.	0~300%	●	●	●	●
Acceleration/Deceleration Time	Acceleration time or deceleration time can be set to prevent load or impact on the unit during its startup or stop.	0~15.0 sec.	●	—	—	●
Multiple Speed Operation	Can be operated in second or higher gear.	Up to 16 speed	●	—	—	●
Multi-Motor Control	Multiple motors can be operated at the same speed.	Up to 20 motor units (when a potentiometer is used)	—	●	●	—

Main useful functions

The table below shows the main functions that are provided through the operating panel or support software **MEXE02**.

Functions	Purpose/Objective	Description
Display of the Load Factor	To check the torque that the motor generates.	This shows the load factor on the assumption that the rated torque of the motor is 100%. (Display range: 0~300%)
Gear Ratio	To allow the conveyor transport speed or the speed reduced by the gearhead to be displayed.	Setting the gear ratio allows the converted rotation speed to be displayed.
Setting the Upper and Lower Limits of the Rotation Speed	To operate the motor unit at a speed which is within the set speed control range.	The upper and lower limits of the rotation speed can be set.
Teaching of the Speed	To change the speed during motor movement.	During motor movement, the monitor mode allows the change of the rotation speed.
Simple Holding Torque	To simply hold the torque during a motor stop.	Electrical holding torque can be generated during a motor stop. (Up to 50% of the rated torque can be held.) Note When power supply to the driver is cut, holding torque disappears. Therefore, it cannot be used for fall prevention when stopped.
Shock-absorbing Filter	To reduce the shock during a startup and stop.	This function allows slow acceleration after a startup and slow stop before the completion of the stop to prevent the transported load from moving.
Alarm	To check the contents of the trouble.	This function allows the identification of the trouble cause such as overload, poor connection, incorrect operation, etc. to enable you to swiftly deal with the cause.
Information	To use information for operation check or periodic maintenance.	Information is output before the output of an alarm. Inputting an appropriate value to the parameter of each information item will be helpful to the maintenance of the equipment.
Editing Lock	To protect the set data.	This function prevents you from editing or deleting data or parameters through the operating panel and disables local operation.

Useful Functions Enabled by Support Software **MEXE02**

The support software can be downloaded from the Oriental Motor website.



Monitor Functions

The software contains various monitor functions that enable checking of conditions such as motor operating conditions. Using functions suitable for each condition may shorten the time for starting up or adjusting the equipment or lead to effective maintenance.

● Waveform Monitoring

During a startup

Like an oscilloscope, the monitor allows you to check motor drive conditions and output signal status. Use this during the startup or adjustment of the attachment.



● Alarm Monitor

During operation

For maintenance

If an error occurs, you can check the error details, operation conditions at the time of error occurrence, and measures to be taken. The checking of the measures facilitates response to the error.



Test Functions

These functions allow the motor to independently operate or you to check the connection with the host system. Using the functions at the startup of the equipment can save time.

● Speed can be Adjusted During Test Operation (teaching of the speed)

During a startup

This test function allows changes of speed data during test operation before connection with the host system. Since the changed speed data is set and saved as is, the time required for the startup of the equipment can be shortened.



● I/O Monitor

During a startup



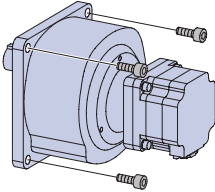
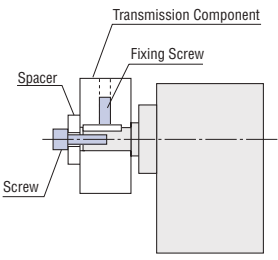
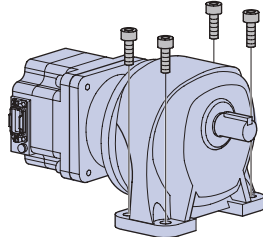

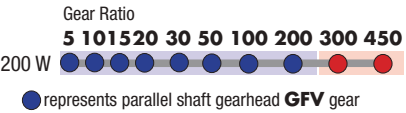
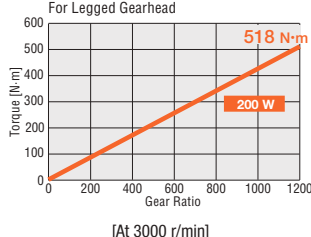
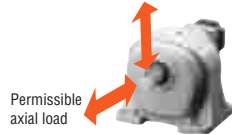
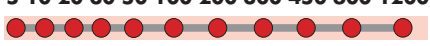
During operation

The monitor allows the testing of the input/output signals of direct I/O. You can monitor input signals as well as external DC voltage and the output signals. This function is convenient for checking connection with the host system.

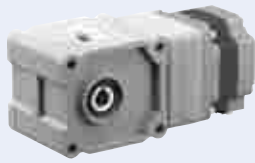


Types and Features of Gearheads

These high-strength gearheads support high-speed rotation and high outputs the brushless motors provide. You can choose from various gearheads to meet your application, requirements, or installation.

	Parallel Shaft Gearhead	Legged Gearhead
Type	 <p>Parallel Shaft Gearhead GFV Gear Parallel Shaft Gearhead JV Gear</p>	 <p>Legged Gearhead JB Gear</p>
Installation Advantages	<ul style="list-style-type: none"> ● Installs on the Flange (JV Gear)  ● Improving the Installation Accuracy (GFV Gear) The boss of the output shaft and the installation surface are shaped. This improves the accuracy of device installation. ● Tapped Hole on the Output Shaft End (GFV Gear, □ 80 mm or more) The output shaft for the gearhead has a tapped hole at the end. The hole can be used for supporting the prevention of coming out of a transmission component.  Usage example of the screw hole on the output shaft end 	<ul style="list-style-type: none"> ● No Mounting Bracket Required The shape quickly attach to your device.  ● High Rigidity/Integral Structure Allows you to easily design the shaft center with the integral installation surface structure.  Installation surface integrated type
Features	<ul style="list-style-type: none"> ● High Strength Gearhead (GFV Gear) A heat treatment strengthens the gears and the bearing diameter is enlarged for a higher strength. The gearhead has 2 to 3 times of the permissible torque than AC motor gearheads with the same frame size, contributing to downsized equipment. ● High Gear Ratio (JV Gear) This line has products with gear ratios up to 1/450.  ● represents parallel shaft gearhead GFV gear ● Long Life (GFV Gear) The gearhead has a long life using special bearings and grease for high-speed rotation. It achieves a rated life of 10,000 hours. 	<ul style="list-style-type: none"> ● High Permissible Torque The torque is not saturated and the motor torque can be maximized.  [At 3000 r/min] ● High Strength  Permissible radial load 3672 N Permissible axial load 577 N [With 1/1200 gear ratio, at 3000 r/min] ● High Gear Ratio This line has products with gear ratios up to 1/1200. Gear Ratio 5 10 20 30 50 100 200 300 450 600 1200 

Right-Angle Shaft Gearhead

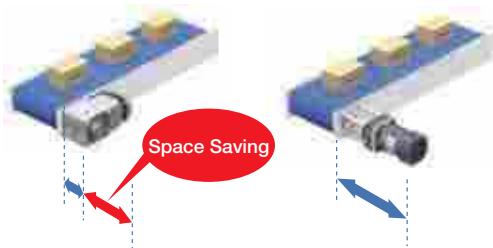


IP66

Hypoid Right-Angle Hollow Shaft **JH** Gear

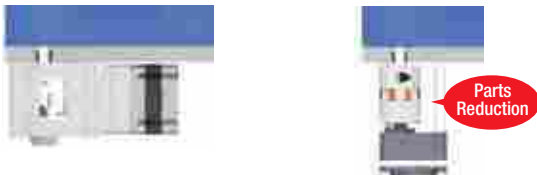
Space Saving

Placing the motor at right angles saves space.



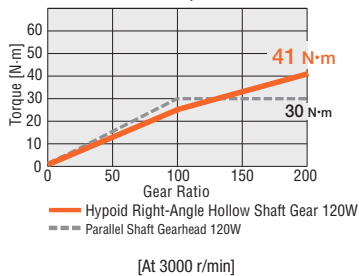
Cost Saving

Reduced couplings, belts, pulleys, and other parts contribute towards reduced parts costs and assembling steps.



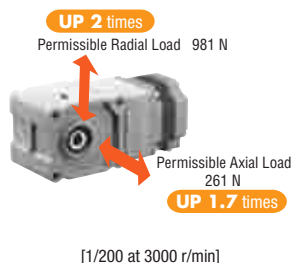
Unsaturated Permissible Torque

The permissible torque is not saturated even at high gear ratio. Therefore, the benefit of the motor torque can be maximized.



High Strength

Comparison with parallel shaft gearhead










Lineup

● Motor

● Driver

● Connection Cable

Motor				Driver		Connection Cable			
Type/Material of the Output Shaft				Output Power [W]	Gear Ratio	Degree of Protection	Output Power [W]	Power Supply Voltage [VAC]	Cable
Parallel Shaft Gearhead	GFV Gear Stainless Steel Shaft		30	5, 10, 15, 20, 30, 50, 100, 200	IP66	30	Single-Phase 100-120		
			60			60	Single-Phase/ Three-Phase 200-240		
			120			120	Single-Phase/ Three-Phase 200-240		
			200			200	Single-Phase/ Three-Phase 200-240		
	GFV Gear Supports Food Machinery Grease H1 Stainless Steel Shaft		400	5, 10, 15, 20, 30, 50	NEW 400	Three-Phase 200-240			
			30	5, 10, 15, 20, 30, 50, 100, 200	30	Single-Phase 100-120			
			60		60	Single-Phase/ Three-Phase 200-240			
	120	120	Single-Phase/ Three-Phase 200-240						
	JV Gear Stainless Steel Shaft		200	300, 450	200	Single-Phase/ Three-Phase 200-240			
	Legged Gearhead JB Gear Iron Shaft		200	5, 10, 20, 30, 50, 100, 200, 300, 450, 600, 1200	IP44	200	Single-Phase/ Three-Phase 200-240		
	Hypoid Right-Angle Hollow Shaft JH Gear Stainless Steel Shaft		60	10, 15, 20, 30, 50, 100, 200	IP66	60	Single-Phase 100-120		
			120			120	Single-Phase/ Three-Phase 200-240		
200			5, 10, 15, 20, 30, 50, 100, 200	200		Single-Phase/ Three-Phase 200-240			
Round Shaft Type*1 Stainless Steel Shaft		30	-	IP66	30	Single-Phase 100-120			
		60			60	Single-Phase/ Three-Phase 200-240			
		120			120	Single-Phase/ Three-Phase 200-240			
		200			200	Single-Phase/ Three-Phase 200-240			
		NEW 400			NEW 400	Three-Phase 200-240			

*1 Some round shaft types have a milling cut shaft.

*2 The round shaft type can connect only the connection cable drawing from the counter-output shaft.

05

BLE2 Series

0.5~20 m



Drawing on the output shaft side



Drawing on the counter-output shaft side*2



Features of Brushless Motor

Because our brushless motor do not have brushes, which is the DC motor demerit, they produce less noise and are maintenance-free. The use of permanent magnets allows for compact, high output, and highly efficient motors.

Wide Speed Control Range

The brushless motor has a broader speed control range compared to AC speed control motors and inverters. They are ideal for applications that require a constant torque for all speeds, low to high.

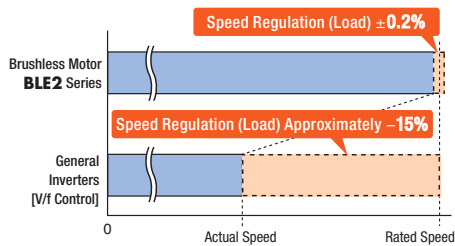
Product Group	Speed Control Range*	Speed Ratio
Brushless Motor BLE2 Series	80~4000 r/min	1:50
Inverter-Controlled Three-Phase Induction Motor	200~2400 r/min	1:12
AC Speed Control Motor	50Hz: 90~1400 r/min 60Hz: 90~1600 r/min	1:15 1:17

*The speed control range varies depending on the model.

Stable Speed Control

The brushless motors always monitor feedback signals from the motor and compare them with the set speed to adjust the applied voltage. For this reason, even if the load changes, stable rotation is performed from low speed to high speed.

Speed Regulation Comparison (Reference values)



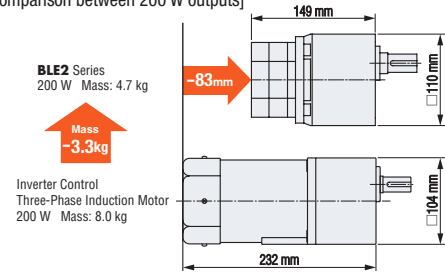
The table below shows the speed regulation (load) of each model. It shows how much the rotational speed varies by changing the load between 0 to rated torques.

Model	Speed Regulation with Varying Loads	
	Speed Regulation	Condition
BLE2 Series	$\pm 0.2\%$	0 ~ rated torque at rated speed
BMU Series	$\pm 0.2\%$	
BLE Series	$\pm 0.5\%$	
BXII Series	$\pm 0.05\%$	
BLH Series	$\pm 0.5\%$	

Thin, Lightweight and High Power

The brushless motors use permanent magnets so that they are thin and lightweight but yet have high power. These contribute to the downsizing of equipment.

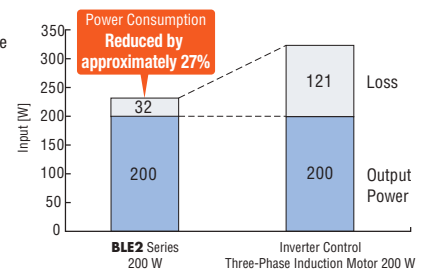
[Example of comparison between 200 W outputs]



Contributes to Energy Savings

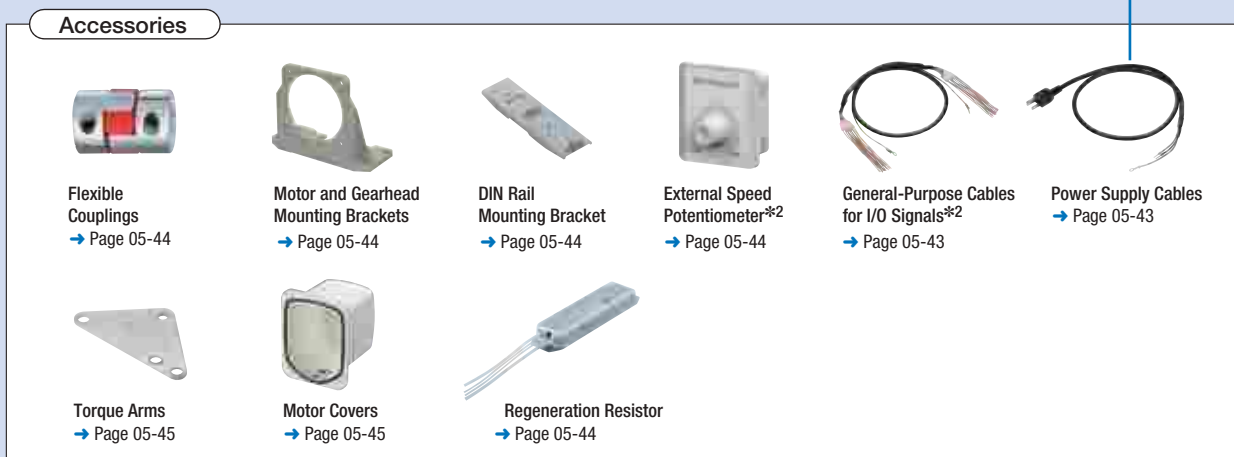
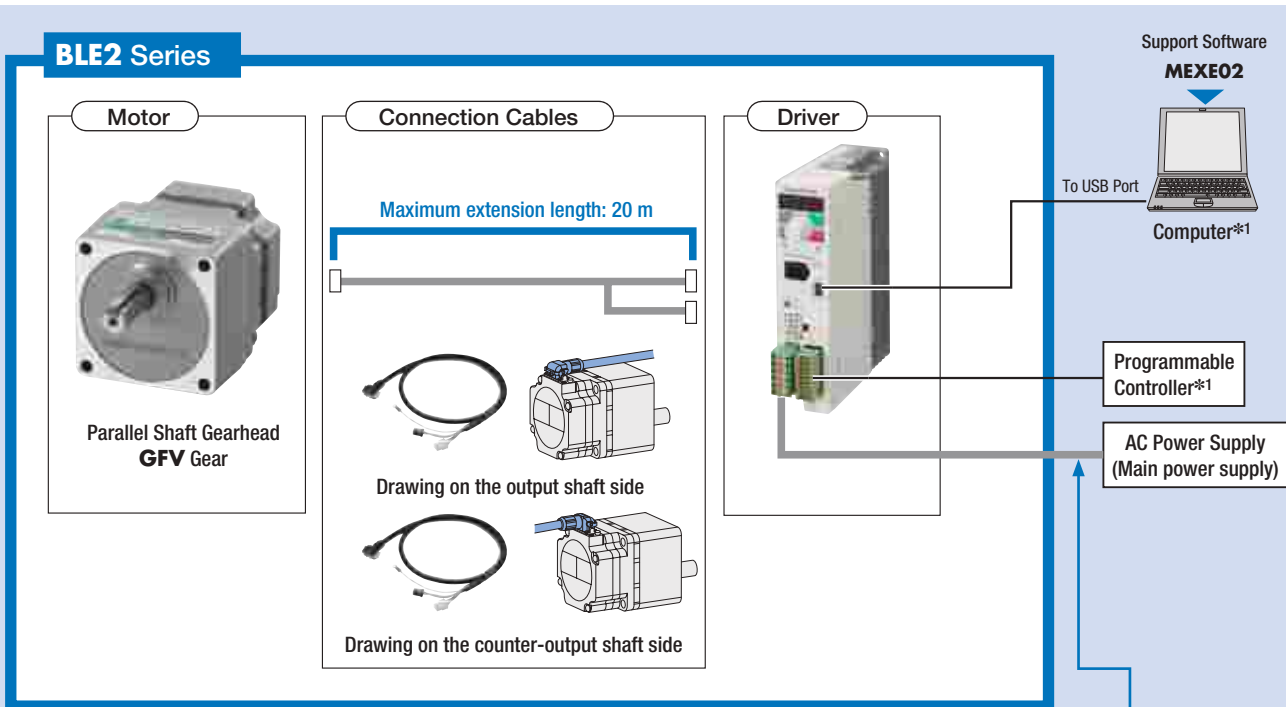
The brushless motors use permanent magnets in the rotor, reducing secondary loss and power consumption. This contributes to energy savings with the equipment.

Rated Output Power
50 Hz (representative
values)



System Configuration

The motor, driver and connection cable needs to be purchased separately.



*1 Not supplied.

*2 The external speed potentiometer (**PAVR2-20K**) cannot be used together with a general-purpose cable for I/O signals.

System Configuration Example

BLE2 Series			Sold Separately		
Motor Parallel Shaft Gearhead GFV Gear	Driver	Connection Cable (3 m)	Mounting Bracket	Flexible Coupling	DIN Rail Mounting Bracket
BLM230HP-10S	BLE2D30-A	CC030HBLF	SOL2M4F	MCL301010	MADP02
SGD265	SGD264	SGD66	SGD24	SGD61	SGD19

The system configuration shown above is an example. Other combinations are available.

Product Number Code

Motor

◇ Parallel Shaft Gearhead **GFV** Gear/Round Shaft Type

BLM 4 60 S H P - 50 S F

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Type	BLM : Brushless Motor
②	Frame Size	2 : 60 mm 4 : 80 mm 5 : 90 mm 6 : 104 mm (110 mm for gearhead)
③	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
④	Identification Part Number	S
⑤	Motor Connection Method	H : Connector Type
⑥	Motor Degree of Protection	P : IP66 Specification
⑦	Gear Ratio/Shaft Shape	Number: Gear Ratio of the Gearhead A : Round Shaft Type AC : Round Shaft Type (With milling cut)
⑧	Material of the Output Shaft	S : Stainless Steel
⑨		F : Supports Food Machinery Grease H1

◇ Hypoid Right-Angle Hollow Shaft **JH** Gear, Legged Gearhead **JB** Gear, Parallel Shaft Gearhead **JV** Gear

BLM 5 200 H P K - 5 C B 50 B - L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

Motor Product Name		Gearhead Product Name	
Motor Product Name	①	Motor Type	BLM : Brushless Motor
	②	Frame Size	4 : 80 mm 5 : 90 mm
	③	Output Power	60 : 60 W 120 : 120 W 200 : 200 W
	④	Identification Part Number	S
	⑤	Motor Connection Method	H : Connector Type
	⑥	Motor Degree of Protection	P : IP66
	⑦	Combination Type Motor	K : Round Shaft Type (With key)
Gearhead Product Name	⑧	Combination Type Motor Frame Size	4 : 80 mm 5 : 90 mm
	⑨	Gearhead Size	Code (Example) C For the codes of the gearhead size, see ■ Specifications (→ Pages 05-17 and 05-20).
	⑩	Gearhead Type	H : JH Gear B : JB Gear V : JV Gear
	⑪	Gear Ratio	Number: Gear Ratio of the Gearhead
	⑫	Material of the Output Shaft	S : Stainless Steel B : Iron
	⑬	Connector Position	None: Below -L : Left

Driver

BLE2D 60 - C

① ② ③

①	Driver Type	BLE2D : BLE2 Series Driver
②	Output Power	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 400 : 400 W
③	Power Supply Voltage	A : Single-Phase 100-120 VAC C : Single-Phase, Three-Phase 200-240 VAC S : Three-Phase 200-240 VAC

Connection Cable

CC 010 H BL F

① ② ③ ④ ⑤

①	Cable Type	CC : Connection Cable
②	Length	005 : 0.5 m 010 : 1 m 015 : 1.5 m 020 : 2 m 025 : 2.5 m 030 : 3 m 040 : 4 m 050 : 5 m 070 : 7 m 100 : 10 m 150 : 15 m 200 : 20 m
③	Motor Connection Method	H : Connector Type
④	Applied Model	BL : Brushless Motor
⑤	Cable Drawing Direction	F : Drawing on the Output Shaft Side B : Drawing on the Counter-output Shaft Side

Product Line

A motor, driver, connection cable need to be purchase separately.

Motors

Parallel Shaft Gearhead **GFV** Gear



Output Power	Product Name	Gear Ratio	List Price
30 W	BLM230HP-□S	5, 10, 15, 20	SGD265
		30, 50, 100	SGD274
		200	SGD286
60 W	BLM460SHP-□S	5, 10, 15, 20	SGD295
		30, 50, 100	SGD304
		200	SGD316
120 W	BLM5120HP-□S	5, 10, 15, 20	SGD370
		30, 50, 100	SGD381
		200	SGD393
200 W	BLM6200SHP-□S	5, 10, 15, 20	SGD448
		30, 50	SGD463
		100, 200	SGD481
400 W	NEW BLM6400SHP-□S	5, 10, 15, 20	SGD498
		30, 50	SGD513

Parallel Shaft Gearhead **GFV** Gear Supports Food Machinery Grease H1



Output Power	Product Name	Gear Ratio	List Price
30 W	BLM230HP-□SF	5, 10, 15, 20	SGD328
		30, 50, 100	SGD336
		200	SGD349
60 W	BLM460SHP-□SF	5, 10, 15, 20	SGD358
		30, 50, 100	SGD366
		200	SGD379
120 W	BLM5120HP-□SF	5, 10, 15, 20	SGD433
		30, 50, 100	SGD444
		200	SGD455

Parallel Shaft Gearhead **JV** Gear



Output Power	Product Name	Gear Ratio	List Price
200 W	BLM5200HPK-5KV-□S	300, 450	SGD956

Lineup of Other Products

Round Shaft Type Milling Cut Output Shaft
Connector Position 4-direction

● For details, contact your nearest Oriental Motor sales office.

Legged Gearhead **JB** Gear



Output Power	Product Name	Gear Ratio	List Price
200 W	BLM5200HPK-5AB-□B-L	5, 10, 20	SGD538
		30, 50	SGD588
		100, 200	SGD788
		300, 450	SGD988
		600, 1200	SGD1,068

Hypoid Right-Angle Hollow Shaft **JH** Gear



Output Power	Product Name	Gear Ratio	List Price
60 W	BLM460SHPK-4H-□S	10, 15, 20	SGD498
		30, 50, 100	SGD509
		200	SGD520
120 W	BLM5120HPK-5H-□S	10, 15, 20	SGD516
		30, 50, 100	SGD528
		200	SGD539
200 W	BLM5200HPK-5XH-□S	5, 10, 15, 20	SGD763
		30	SGD775
		50	SGD813
		100	SGD1,000
		200	SGD1,188

Round Shaft Type



Output Power	Product Name	List Price
30 W	BLM230HP-AS	SGD153
60 W	BLM260HP-AS	SGD168
120 W	BLM5120HP-AS	SGD200
200 W	BLM5200HP-AS	SGD238
400 W	NEW BLM5400HP-AS	SGD288

● A number in the box □ in the product name indicates the gear ratio.



Drivers

Output Power	Power Supply Voltage	Product Name	List Price
30 W	Single-Phase 100-120 VAC	BLE2D30-A	SGD264
	Single-Phase/Three-Phase 200-240 VAC	BLE2D30-C	SGD264
60 W	Single-Phase 100-120 VAC	BLE2D60-A	SGD264
	Single-Phase/Three-Phase 200-240 VAC	BLE2D60-C	SGD264
120 W	Single-Phase 100-120 VAC	BLE2D120-A	SGD270
	Single-Phase/Three-Phase 200-240 VAC	BLE2D120-C	SGD270
200 W	Single-Phase/Three-Phase 200-240 VAC	BLE2D200-C	SGD300
400 W	Three-Phase 200-240 VAC	NEW BLE2D400-S	SGD338

Accessories


Motor

Type	Parallel Key	Safety Cover	Installation Screws	Operating Manual
GFV Gear	1 piece	—	1 set	1 copy
JV Gear	—	—	—	
JB Gear	—	—	—	
JH Gear	1 piece	1 piece	1 set	
Round Shaft	—	—	—	

Connection Cables



Length	Product Name	List Price	Length	Product Name	List Price
0.5 m	CC005HBL	SGD38	4 m	CC040HBL	SGD78
1 m	CC010HBL	SGD38	5 m	CC050HBL	SGD89
1.5 m	CC015HBL	SGD43	7 m	CC070HBL	SGD110
2 m	CC020HBL	SGD48	10 m	CC100HBL	SGD139
2.5 m	CC025HBL	SGD56	15 m	CC150HBL	SGD194
3 m	CC030HBL	SGD66	20 m	CC200HBL	SGD246

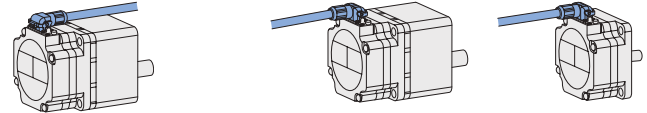
The  symbol in the product is replaced with **F** or **B** that represents the cable drawing direction.

Two types of connection cables for different cable drawing directions are provided.

Note

The cable for the round shaft type draws only from the counter-output shaft side.

F: Drawing on the output shaft side **B:** Drawing on the counter-output shaft side



Driver

Startup Guide	Operating Manual
1 copy	1 copy

Parallel Shaft Gearhead GFV Gear 30 W, 60 W, 120 W



Specifications

Product Name	Motor Driver	BLM230HP-□S / BLM230HP-□SF	BLE2D30-A	BLE2D30-C	BLM460SHP-□S / BLM460SHP-□SF	BLE2D60-A	BLE2D60-C	BLM5120HP-□S / BLM5120HP-□SF	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	30			60			120			
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%			-15~+10%			-15~+10%		
	Frequency	Hz	50/60			50/60			50/60		
	Permissible Frequency Range		±5%			±5%			±5%		
	Rated Input Current	A	1.1	Single-Phase: 0.67/Three-Phase: 0.39	1.7	Single-Phase: 1.0/Three-Phase: 0.61	2.7	Single-Phase: 1.7/Three-Phase: 1.02	3.3	Single-Phase: 2.2/Three-Phase: 1.2	5.4
	Maximum Input Current	A	3.3	Single-Phase: 2.2/Three-Phase: 1.2	5.4	Single-Phase: 3.5/Three-Phase: 2.0	7.4	Single-Phase: 4.8/Three-Phase: 3.3			
Rated Speed	r/min	3000									
Speed Control Range		80~4000 r/min (Speed ratio 1:50)									
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature									
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature									
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage									

* () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		5	10	15	20	30	50	100	200		
Rotation Direction		Same direction as the motor				Opposite direction to the motor				Same direction as the motor	
Output Shaft Rotation Speed [r/min]*1		80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4	
Permissible Torque [N·m]	30 W	4000 r/min	800	400	267	200	133	80	40	20	
		At 80~2500 r/min	0.54	1.1	1.6	2.2	3.1	5.2	6	6	
		At 3000 r/min	0.43	0.86	1.3	1.7	2.5	4.1	6	6	
		At 4000 r/min	0.32	0.65	0.97	1.3	1.9	3.1	5.4	5.4	
		At 80~2000 r/min	0.9	1.8	2.7	3.6	5.2	8.6	16	16	
		At 3000 r/min	0.86	1.7	2.6	3.4	4.9	8.2	16	16	
	60 W	4000 r/min	0.65	1.3	1.9	2.6	3.7	6.2	12.4	14	
		At 80~2000 r/min	2.0	4.1	6.1	8.1	11.6	19.4	30	30	
		At 3000 r/min	1.7	3.4	5.2	6.9	9.9	16.4	30	30	
		At 4000 r/min	1.3	2.6	3.9	5.2	7.4	12.3	24.7	27	
		10 mm from output shaft end*2	30 W	At 80~3000 r/min	100		150			200	
			At 4000 r/min	90		130			180		
20 mm from output shaft end*2	60 W	At 80~3000 r/min	200		300			450			
	At 4000 r/min	180		270			420				
	120 W	At 80~3000 r/min	300		400			500			
	At 4000 r/min	230		370			450				
	30 W	At 80~3000 r/min	150		200			300			
		At 4000 r/min	110		170			230			
Permissible Axial Load [N]	30 W	40									
	60 W	100									
	120 W	150									
Permissible Load Inertia J [×10 ⁻⁴ kg·m ²]	30 W	12	50	110	200	370	920	2500	5000		
	60 W	22	95	220	350	800	2200	6200	12000		
	120 W	45	190	420	700	1600	4500	12000	25000		
	At instantaneous stop, instantaneous bi-directional operation*3	30 W	1.55	6.2	14	24.8	55.8		155		
		60 W	5.5	22	49.5	88	198		550		
		120 W	25	100	225	400	900		2500		

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 About Load Position → Page 05-15

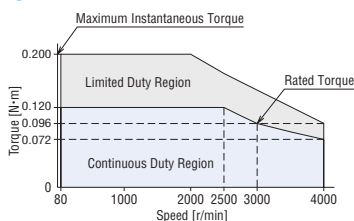
*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

Speed – Torque Characteristics

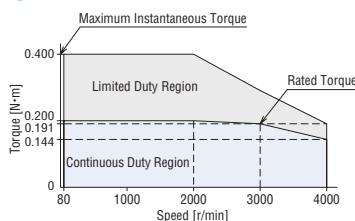
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

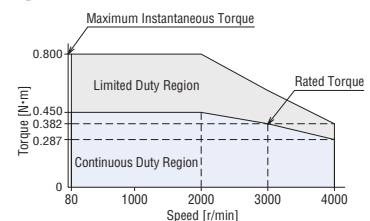
● 30 W



● 60 W



● 120 W



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Parallel Shaft Gearhead GFV Gear 200 W, 400 W



Specifications

Product Name	Motor	BLM6200SHP-□S		BLM6400SHP-□S	
	Driver	BLE2D200-C		BLE2D400-S	
Rated Output Power (Continuous)	W	200		400	
Power Supply Input	Rated Voltage	Single-Phase 200-240/Three-Phase 200-240		Three-Phase 200-240	
	Permissible Voltage Range	-15~+10%		-15~+10%	
	Frequency	50/60		50/60	
	Permissible Frequency Range	±5%		±5%	
	Rated Input Current	Single-Phase: 2.4/Three-Phase: 1.4		2.3	
	Maximum Input Current	Single-Phase: 6.5/Three-Phase: 4.3		6.1	
Rated Speed	r/min	3000			
Speed Control Range		80~4000 r/min (Speed ratio 1:50)			
Speed Regulation*2	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature			
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature			
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage			

*1 400 W type: The certification of the UL/CSA standards has been applied for. For details, refer to the Oriental Motor website.

*2 () The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

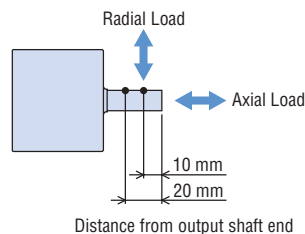
Gear Ratio	5		10		15		20		30		50		100*1		200*1					
	Same direction as the motor																			
Rotation Direction	Same direction as the motor								Opposite direction to the motor				Same direction as the motor							
Output Shaft Rotation Speed [r/min]*2	80 r/min		16		8		5.3		4		2.7		1.6		0.8		0.4			
	4000 r/min		800		400		267		200		133		80		40		20			
Permissible Torque [N·m]	200 W		At 80~3000 r/min		2.9		5.7		8.6		11.5		16.4		27.4		51.6		70	
			At 4000 r/min		2.2		4.3		6.5		8.6		12.4		20.6		38.9		63	
	400 W		At 80~3000 r/min		5.7		11.4		17.1		22.9		32.8		54.6		—		—	
			At 4000 r/min		4.3		8.6		12.9		17.2		24.6		41.1		—		—	
Permissible Radial Load [N]	10 mm from output shaft end		At 80~3000 r/min		550		1000		1400											
	20 mm from output shaft end		At 4000 r/min		500		900		1200											
			At 80~3000 r/min		800		1250		1700											
Permissible Axial Load [N]			At 4000 r/min		700		1100		1400											
					200		300		400											
Permissible Load					100		460		1000		1700		3900		9300		18000		37000	
Inertia J [$\times 10^{-4}$ kg·m ²]	At instantaneous stop, instantaneous bi-directional operation*3				50		200		450		800		1800		5000					

*1 For 200 W output only.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ About Load Position

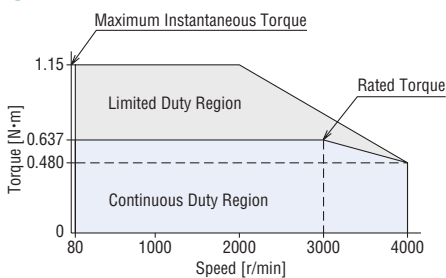


Speed – Torque Characteristics

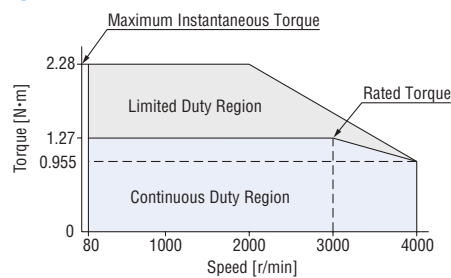
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

● 200 W



● 400 W



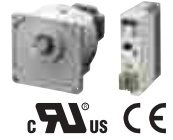
● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Parallel Shaft Gearhead JV Gear 200 W



Specifications

Product Name	Motor	BLM5200HPK-5KV□S		
	Driver	BLE2D200-C		
Rated Output Power (Continuous)	W	200		
Power Supply Input	Rated Voltage	VAC		
	Permissible Voltage Range	Single-Phase 200-240/Three-Phase 200-240		
	Frequency	Hz	50/60	
	Permissible Frequency Range	±5%		
	Rated Input Current	A	Single-Phase: 2.4/Three-Phase: 1.4	
	Maximum Input Current	A	Single-Phase: 6.5/Three-Phase: 4.3	
Rated Speed	r/min	3000		
Speed Control Range		80~3600 r/min (Speed ratio 1:45)		
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature	
	Voltage	±0.2% (±0.5%) or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature	
	Temperature	±0.2% (±0.5%) or less: Conditions	Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage	

*() The number in the parentheses is the specified value for the analog setting.

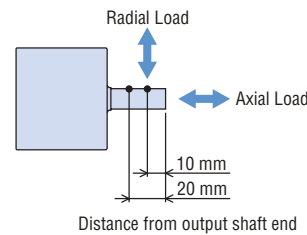
● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		300	450	
(Actual gear ratio)		(300.5)	(450.8)	
Rotation Direction		Same direction as the motor		
Output Shaft Rotation Speed [r/min]*1	80 r/min	0.27	0.18	
	3600 r/min	12	8	
Permissible Torque [N·m]	At 80~3000 r/min	132	198	
	At 3600 r/min	92.3	138	
	At 80~1500 r/min	4461		
Permissible Radial Load [N]	10 mm from output shaft end	At 3000 r/min	3123	
		At 3600 r/min	2231	
		At 80~1500 r/min	5174	
	20 mm from output shaft end	At 3000 r/min	3622	
		At 3600 r/min	2587	
		At 80~1500 r/min	686	
Permissible Axial Load [N]	At 3000 r/min	480		
	At 3600 r/min	343		
	At 80~1500 r/min	90000	202500	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At 3000 r/min	324000	729000	
	At 3600 r/min	182250	410063	
	At instantaneous stop, instantaneous bi-directional operation*2	At 80~1500 r/min	300000	675000
		At 3000 r/min	108000	243000
		At 3600 r/min	60750	136688

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 It is also applicable when digitally setting the deceleration time to below 0.1 second.

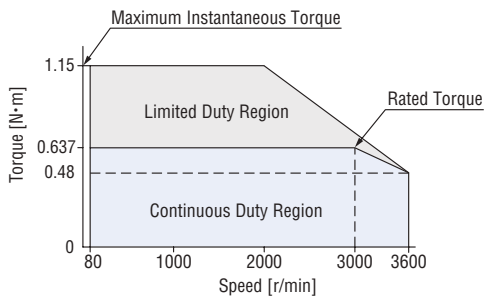
About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● A number in the box □ in the product name indicates the gear ratio.

Legged Gearhead JB Gear 200 W



Specifications

Product Name	Motor Driver	BLM5200HPK-5 <input type="checkbox"/> A <input type="checkbox"/> C <input type="checkbox"/> E <input type="checkbox"/> K <input type="checkbox"/> S <input type="checkbox"/> B-L	
		BLE2D200-C	
Rated Output Power (Continuous)	W	200	
Power Supply Input	Rated Voltage	VAC	
	Permissible Voltage Range	Single-Phase 200-240/Three-Phase 200-240	
	Frequency	Hz	
	Permissible Frequency Range	-15~+10%	
	Rated Input Current	A	
	Maximum Input Current	A	
Rated Speed	r/min	3000	
Speed Control Range		80~3600 r/min (Speed ratio 1:45)	
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions	0 to rated torque, rated speed, rated voltage, normal temperature
	Voltage	±0.2% (±0.5%) or less: Conditions	Rated voltage -15~+10%, rated speed, no load, normal temperature
	Temperature	±0.2% (±0.5%) or less: Conditions	Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage

* () The number in the parentheses is the specified value for the analog setting.

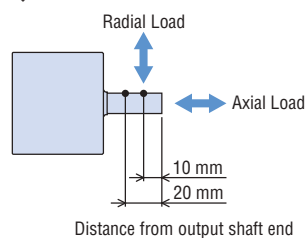
● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio	(Actual gear ratio)	5	10	20	30	50	100	200	300	450	600	1200	
		(4.97)	(10.12)	(20.08)	(30.86)	(49.09)	(104.1)	(196.4)	(300.5)	(450.8)	(588.9)	(1178)	
Gearhead Size Code		A			C			E		K		S	
Rotation Direction		Same direction as the motor				Opposite direction to the motor			Same direction as the motor				
Output Shaft Rotation Speed [r/min]*1	80 r/min	16	8	4	2.7	1.6	0.8	0.4	0.27	0.18	0.13	0.07	
	3600 r/min	720	360	180	120	72	36	18	12	8	6	3	
Permissible Torque [N·m]	At 80~3000 r/min	2.4	4.9	9.7	13.0	22.5	48.4	91.3	132	198	259	518	
	At 3600 r/min	1.7	3.4	6.8	8.2	15.6	32.0	60.3	92.3	138	181	362	
Permissible Radial Load [N]	10 mm from output shaft end	At 80~1500 r/min	521	977	1243	1824	2032	2888	3483	4461		5245	
		At 3000 r/min	365	684	870	1277	1422	2022	2438	3123		3672	
		At 3600 r/min	261	489	622	912	1016	1444	1742	2231		2623	
	20 mm from output shaft end	At 80~1500 r/min	663	1244	1582	2280	2540	3496	4216	5174		5921	
		At 3000 r/min	464	871	1107	1596	1778	2447	2951	3622		4145	
		At 3600 r/min	332	622	791	1140	1270	1748	2108	2587		2961	
Permissible Axial Load [N]	At 80~1500 r/min	39	88	177	255	275	422	461	686		824		
	At 3000 r/min	27.3	61.6	124	179	193	295	323	480		577		
	At 3600 r/min	19.5	44	88.5	128	138	211	231	343		412		
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At 80~1500 r/min	250	1000	4000	9000	25000	100000	400000	900000	2025000	3600000	14400000	
	At 3000 r/min	90	360	1440	3240	9000	36000	144000	324000	729000	1296000	5184000	
	At 3600 r/min	50.6	203	810	1823	5063	20250	81000	182250	410063	729000	2916000	
	At instantaneous stop, instantaneous bi-directional operation*2	At 80~1500 r/min	83.3	333	1333	3000	8333	33333	133333	300000	675000	1200000	4800000
		At 3000 r/min	30	120	480	1080	3000	12000	48000	108000	243000	432000	1728000
		At 3600 r/min	16.9	67.5	270	608	1688	6750	27000	60750	136688	243000	972000

*1 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

*2 It is also applicable when digitally setting the deceleration time to below 0.1 second.

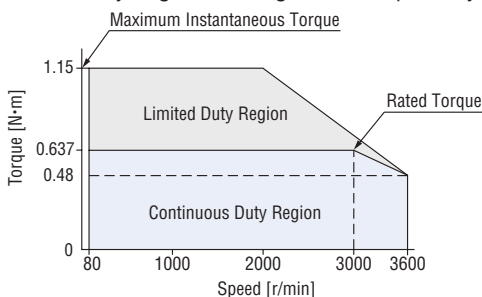
◇ About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box in a product name is replaced with the code (A, C, E, K, S) that represents the gearhead size.

A number in the box in the product name indicates the gear ratio.

[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Hypoid Right-Angle Hollow Shaft JH Gear 60 W, 120 W



Specifications

Product Name	Motor Driver	BLM460SHPK-4H□S		BLM5120HPK-5H□S		
		BLE2D60-A	BLE2D60-C	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%	
	Frequency	Hz	50/60		50/60	
	Permissible Frequency Range		±5%		±5%	
	Rated Input Current	A	1.7	Single-Phase: 1.0 / Three-Phase: 0.61	2.7	Single-Phase: 1.7/Three-Phase: 1.02
	Maximum Input Current	A	5.4	Single-Phase: 3.5 / Three-Phase: 2.0	7.4	Single-Phase: 4.8/Three-Phase: 3.3
Rated Speed	r/min	3000				
Speed Control Range		80~3600 r/min (Speed ratio 1:45)				
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature				
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature				
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage				

*() The number in the parentheses is the specified value for the analog setting.

● The values correspond to each specification and characteristic of a stand-alone motor.

Gear Ratio		10	15	20	30	50	100	200		
(Actual gear ratio)		(10.25)	(15.38)	(20.50)	(30.75)	(51.25)	(102.5)	(205.0)		
Rotation Direction*1		Same direction as the motor						Opposite direction to the motor		
Output Shaft Rotation Speed [r/min]*2	80 r/min	8	5.3	4	2.7	1.6	0.8	0.4		
	3600 r/min	360	240	180	120	72	36	18		
Permissible Torque [N·m]	60 W	At 80~1500 r/min	1.2	1.8	2.7	4.0	6.7	13.3	20.6	
		At 3000 r/min	1.2	1.8	2.5	3.8	6.4	12.7	15.6	
		At 3600 r/min	0.74	1.1	1.8	2.7	4.4	8.9	11.5	
	120 W	At 80~1500 r/min	3.2	4.8	6.5	9.7	16.0	32.3	53.9	
		At 3000 r/min	2.5	3.8	5.1	7.6	12.7	25.5	41.0	
		At 3600 r/min	1.8	2.6	3.5	5.3	8.8	17.7	30.2	
Permissible Radial Load [N]*3	60 W	At 80~1500 r/min	265	341	417	531	682	758	836	
		At 3000 r/min	201	259	317	404	518	576	635	
		At 3600 r/min	148	191	234	297	382	424	468	
	120 W	At 80~1500 r/min	363	484	605	806	971	1045	1127	
		At 3000 r/min	276	368	460	613	738	794	857	
		At 3600 r/min	203	271	339	451	544	585	631	
Permissible Axial Load [N]	60 W	At 80~1500 r/min	88	108	137	177	226	245	275	
		At 3000 r/min	67	82	104	135	172	186	209	
		At 3600 r/min	49	60	77	99	127	137	154	
	120 W	At 80~1500 r/min	108	147	186	245	294	324	343	
		At 3000 r/min	82	112	141	186	223	246	261	
		At 3600 r/min	60	82	104	137	165	181	192	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	60 W	At 80~1500 r/min	100	225	400	900	2500	10000	40000	
		At 3000 r/min	36	81	144	324	900	3600	14400	
		At 3600 r/min	20.3	45.6	81	182	506	2025	8100	
	120 W	At 80~1500 r/min	200	450	800	1800	5000	20000	80000	
		At 3000 r/min	72	162	288	648	1800	7200	28800	
		At 3600 r/min	40.5	91.1	162	365	1013	4050	16200	
	At instantaneous stop, instantaneous bi-directional operation*4	60 W	At 80~1500 r/min	33.3	75	133	300	833	3333	13333
			At 3000 r/min	12	27	48	108	300	1200	4800
			At 3600 r/min	6.8	15.2	27	60.8	169	675	2700
		120 W	At 80~1500 r/min	66.7	150	267	600	1667	6667	26667
			At 3000 r/min	24	54	96	216	600	2400	9600
			At 3600 r/min	13.5	30.4	54	122	338	1350	5400

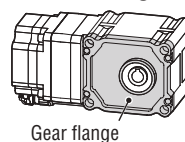
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

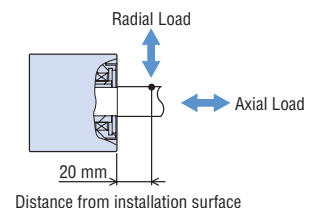
*3 The radial load at each distance can also be calculated with a formula. → Page 05-42

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



◇ About Load Position



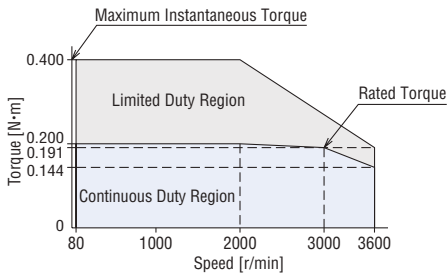
● A number in the box □ in the product name indicates the gear ratio.

Speed – Torque Characteristics

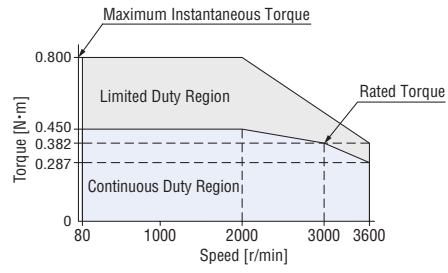
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

60 W



120 W



The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

Hypoid Right-Angle Hollow Shaft JH Gear 200 W



Specifications

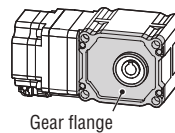
Product Name	Motor Driver	BLM5200HPK-5 <input type="checkbox"/> H <input type="checkbox"/> S BLE2D200-C	
Rated Output Power (Continuous)	W	200	
Power Supply Input	Rated Voltage	VAC	
	Permissible Voltage Range	Single-Phase 200-240/Three-Phase 200-240	
	Frequency	Hz	
	Permissible Frequency Range	50/60	
	Rated Input Current	A	
Rated Speed	Rated Input Current	Single-Phase: 2.4/Three-Phase: 1.4	
	Maximum Input Current	Single-Phase: 6.5/Three-Phase: 4.3	
Rated Speed	r/min	3000	
Speed Control Range		80~3600 r/min (Speed ratio 1:45)	
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature	
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature	
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage	

* () The number in the parentheses is the specified value for the analog setting.
 ● The values correspond to each specification and characteristic of a stand-alone motor.

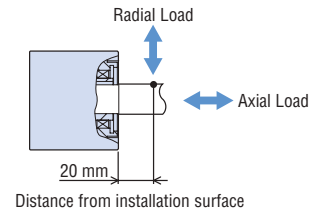
Gear Ratio	X								Y	
	5	10	15	20	30	50	100	200		
(Actual gear ratio)	(5)	(10)	(15)	(20)	(30)	(50)	(98.95)	(200)		
Gearhead Size Code	X							Y		
Rotation Direction*1	Same direction as the motor							Opposite direction to the motor		
Output Shaft Rotation Speed [r/min]*2	80 r/min	16	8	5.3	4	2.7	1.6	0.8	0.4	
	3600 r/min	720	360	240	180	120	72	36	18	
Permissible Torque [N·m]	At 80~3000 r/min	2.1	4.1	6.2	8.3	13.4	22.3	41.0	82.8	
	At 3600 r/min	1.3	2.6	4.0	5.3	9.4	15.6	28.5	57.6	
Permissible Radial Load [N]*3	20 mm from installation surface	At 80~1500 r/min	1346	1663	1882	2035	2309	2681	3436	
		At 3000 r/min	942	1164	1317	1425	1616	1877	2405	
		At 3600 r/min	673	832	941	1018	1155	1341	1718	
Permissible Axial Load [N]		At 80~1500 r/min	307	380	429	466	527	613	785	
		At 3000 r/min	215	266	300	326	369	429	550	
		At 3600 r/min	154	190	215	233	264	307	393	
Permissible Load Inertia J [$\times 10^{-4}$ kg·m ²]	At instantaneous stop, instantaneous bi-directional operation*4	At 80~1500 r/min	250	1000	2250	4000	9000	25000	100000	400000
		At 3000 r/min	90	360	810	1440	3240	9000	36000	144000
		At 3600 r/min	50.6	203	456	810	1823	5063	20250	81000
		At 80~1500 r/min	83.3	333	750	1333	3000	8333	33333	133333
		At 3000 r/min	30	120	270	480	1080	3000	12000	48000
At 3600 r/min	16.9	67.5	152	270	608	1688	6750	27000		

*1 The rotational direction is viewed from the gear flange side (Figure on the right).
 *2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.
 *3 The radial load at each distance can also be calculated with a formula. → Page 05-42
 *4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



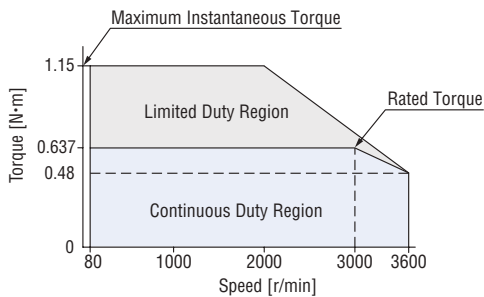
◇ About Load Position



Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.



● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● The box in a product name is replaced with the code (X, Y) that represents the gearhead size.
 A number in the box in the product name indicates the gear ratio.

Round Shaft 30 W, 60 W, 120 W

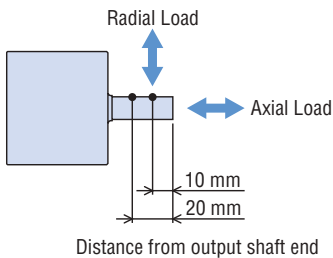


Specifications

Product Name	Motor Driver	BLM230HP-AS		BLM260HP-AS		BLM5120HP-AS		
		BLE2D30-A	BLE2D30-C	BLE2D60-A	BLE2D60-C	BLE2D120-A	BLE2D120-C	
Rated Output Power (Continuous)	W	30		60		120		
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240
	Permissible Voltage Range		-15~+10%		-15~+10%		-15~+10%	
	Frequency	Hz	50/60		50/60		50/60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	1.1	Single-Phase: 0.67/ Three-Phase: 0.39	1.7	Single-Phase: 1.0/ Three-Phase: 0.61	2.7	Single-Phase: 1.7/ Three-Phase: 1.02
Maximum Input Current	A	3.3	Single-Phase: 2.2/ Three-Phase: 1.2	5.4	Single-Phase: 3.5/ Three-Phase: 2.0	7.4	Single-Phase: 4.8/ Three-Phase: 3.3	
Rated Speed	r/min	3000						
Speed Control Range		80~4000 r/min (Speed ratio 1:50)						
Rated Torque	N·m	0.096		0.191		0.382		
Maximum Instantaneous Torque	N·m	0.2		0.4		0.8		
Permissible Radial Load	10 mm from output shaft end	N	80		80		150	
	20 mm from output shaft end	N	100		100		170	
Permissible Axial Load		Half of motor mass or less						
Rotor Inertia J	$\times 10^{-4}$ kg·m ²	0.042		0.082		0.23		
Permissible Load Inertia J	$\times 10^{-4}$ kg·m ²	1.8		3.75		5.6		
Speed Regulation*	Load	±0.2% (±0.5%) or less: Conditions		0 to rated torque, rated speed, rated voltage, normal temperature				
	Voltage	±0.2% (±0.5%) or less: Conditions		Rated voltage -15~+10%, rated speed, no load, normal temperature				
	Temperature	±0.2% (±0.5%) or less: Conditions		Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage				

*() The number in the parentheses is the specified value for the analog setting.

About Load Position

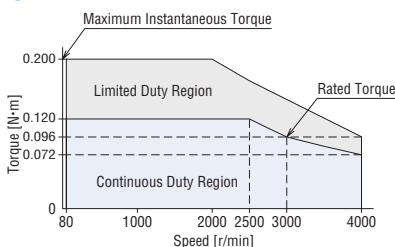


Speed - Torque Characteristics

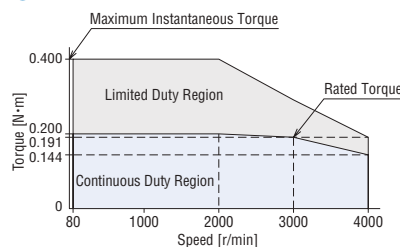
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

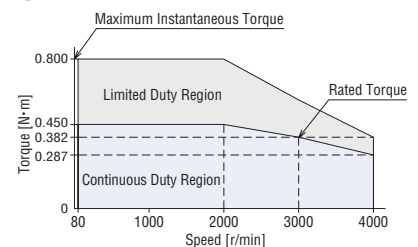
30 W



60 W



120 W



The speed-torque characteristics shows the values when rated voltage is applied.

Round Shaft 200 W, 400 W



Specifications

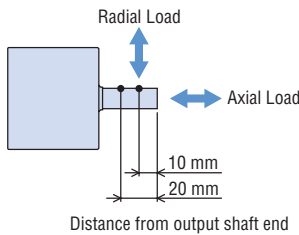
Product Name	BLM5200HP-AS		BLM5400HP-AS	
	Motor	Driver	BLE2D200-C	BLE2D400-S
Rated Output Power (Continuous)	W	200	400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 200-240/Three-Phase 200-240	
	Permissible Voltage Range		-15~+10%	
	Frequency	Hz	50/60	
	Permissible Frequency Range		±5%	
	Rated Input Current	A	Single-Phase: 2.4/Three-Phase: 1.4	
	Maximum Input Current	A	Single-Phase: 6.5/Three-Phase: 4.3	
Rated Speed	r/min	3000		
Speed Control Range		80~4000 r/min (Speed ratio 1:50)		
Rated Torque	N·m	0.637	1.27	
Maximum Instantaneous Torque	N·m	1.15	2.28	
Permissible Radial Load	10 mm from output shaft end	N	150	
	20 mm from output shaft end	N	170	
Permissible Axial Load		Half of motor mass or less		
Rotor Inertia J	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.454	0.67	
Permissible Load Inertia J*2	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	8.75	15	
Speed Regulation*3	Load	±0.2% (±0.5%) or less: Conditions 0 to rated torque, rated speed, rated voltage, normal temperature		
	Voltage	±0.2% (±0.5%) or less: Conditions Rated voltage -15~+10%, rated speed, no load, normal temperature		
	Temperature	±0.2% (±0.5%) or less: Conditions Operating ambient temperature 0~+50°C, rated speed, no load, rated voltage		

*1 400 W type: The certification of the UL/CSA standards has been applied for. For details, refer to the Oriental Motor website.

*2 When operating the round shaft 400 W type under inertial load, use an optional (separately sold) regeneration resistor **RGB100**. Regeneration Resistor → Page 05-44

*3 () The number in the parentheses is the specified value for the analog setting.

◇ About Load Position

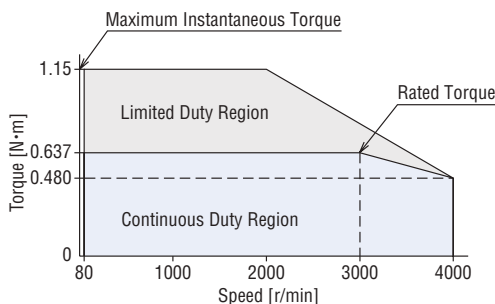


Speed – Torque Characteristics

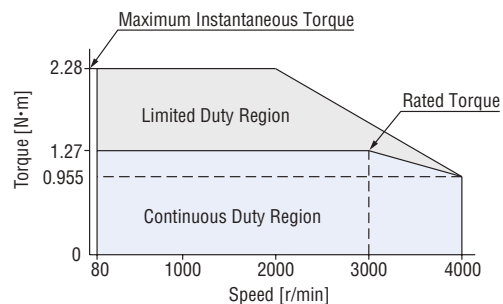
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

● 200 W



● 400 W



● The speed-torque characteristics shows the values when rated voltage is applied.

Common Specifications

Items	Specifications
Speed Setting Methods	Digital Setting <ul style="list-style-type: none"> Operating panel Support software MEXE02
	Analog Setting <ul style="list-style-type: none"> Setting by the external speed potentiometer PAVR2-20K (Sold separately): 0~20 kΩ, 0.05 W or more Setting by an external DC voltage: 0~10 VDC, 1 mA or more (Factory setting: 0~5 VDC)
Acceleration/Deceleration Time	Setting Range: 0.0~15.0 s (Factory setting: 0.5 s)
	Setting Method <ul style="list-style-type: none"> Operating panel Support software MEXE02
Torque Limit*1	Setting Range: 0~300% (Factory setting: 300%)
	Digital Setting <ul style="list-style-type: none"> Operating panel Support software MEXE02
Number of Operation Data Settings	Analog Setting <ul style="list-style-type: none"> Setting by the external speed potentiometer PAVR2-20K (Sold separately): 0~20 kΩ, 0.05 W or more Setting by an external DC voltage: 0~10 VDC, 1 mA or more (Factory setting: 0~5 VDC)
	Up to 16 points (Factory setting: 4 points)
Input Signals	Photocoupler input Input resistance: 6.6 kΩ Connectable external DC power supply: 24 VDC -15~+20% 100 mA or more Sink input/Source input Supplied through external wiring
	Signals can be assigned randomly to IN0~IN6 Input (7 points) []: Initial setting [FWD], [REV], [STOP-MODE], [MO], [M1], [ALARM-RESET], [Not used], M2, M3, H-FREE, TL, INFO-CLR, HMI, EXT-ERROR, START/STOP*2, RUN/BRAKE*2, CW/CCW*2
Output Signals	Photocoupler and open collector output (Power ON: Up to 1.6 V) External power supply: 4.5~30 VDC 100 mA or less (SPEED-OUT output, 5 mA or more) Sink output/Source output Supplied through external wiring
	Arbitrary signal assignment to OUT0, OUT1 (2 points) []: Initial setting [SPEED-OUT], [ALARM-OUT], MOVE, INFO, TLC, VA, DIR
Protective Functions	When the following protective functions are activated, ALARM-OUT output turns OFF and the motor will undergo a coasting stop. At the same time, an alarm code displays with the ALARM LED blinking in red. Overcurrent, main circuit overheating, overvoltage, undervoltage, sensor error, main circuit output error, overload, overspeed, EEPROM error, initial sensor error, initial operation inhibition, regeneration resistor overheat, external stop
Information	When information occurs, the INFO output turns to ON and the ALARM LED blinking in orange. The motor keeps operating.
Maximum Extension Distance	Motor and driver distance 20.5 m [When using an optional connection cable (for relay)]
Time Rating	Continuous

*1 Up to about ±10% of an error occurs between the set value and the generated torque (At rated torque and rated speed) due to the set speed, power supply voltage, and motor cable extension distance.

*2 This is available when 3-wire input method is selected.

General Specifications

Items	Motor	Driver
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	The measured value is 100 MΩ or more when 500 VDC megger is applied between the power supply terminal and the protective earth terminal, and between the power supply terminal and the I/O signal terminal after continuous operation under normal ambient temperature and humidity.
Dielectric Strength Voltage	No abnormality is judged even with application of 1.5 kVAC at 50 Hz between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	No abnormality is judged even with application of 1.5 kVAC at 50 Hz between the power supply terminal and the protective earth terminal, and with application of 1.5 kVAC at 50 Hz between the power supply terminal and the I/O signal terminal, for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of the windings is 50°C or less and that of the case is 40°C or less*1, measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.	Temperature rise of the heat sink is 50°C or less measured by the thermocouple method after rated continuous operation under normal ambient temperature and humidity.
Operating Environment*2	Ambient Temperature: 0~+40°C (Non-freezing)	0~+50°C*3 (Non-freezing)
	Ambient Humidity: 85% or less (Non-condensing)	
	Altitude: Up to 1000 m above sea level	
	Atmosphere: No corrosive gases or dust. The product should not be exposed to oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.	
Vibration	Not subject to continuous vibration or excessive shock Frequency range: 10~55 Hz, Pulsating amplitude: 0.15 mm	Conforms to JIS C 60068-2-6 "Sine-wave vibration test method" Sweep direction: 3 directions (X, Y, Z) Number of sweeps: 20 times
Storage Condition*4	Ambient Temperature: -20~+70°C (-10~+60°C for JV Gear, JB Gear, JH Gear) (Non-freezing)	-25~+70°C (Non-freezing)
	Ambient Humidity: 85% or less (Non-condensing)	
	Altitude: Up to 3000 m above sea level (Up to 1000 m above sea level for JV Gear, JB Gear, JH Gear)	
	Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil. Cannot be used in a radioactive area, magnetic field, vacuum, or other special environments.	
Heat-resistant Class	UL/CSA Standards: 105 (A), EN Standards: 120 (E)	-
Degree of Protection*5	GFV Gear, JH Gear, JV Gear, Round shaft: IP66 (Excluding the mounting surface of the round shaft type) JB Gear: IP44 (Except the connector for driver connection when a cable is connected)	IP20

*1 For round shaft types, attach to a heat sink (material: aluminum) of one of the following sizes to keep the motor case surface temperature from exceeding 90°C.

30 W type: 115×115 mm Thickness 5 mm, 60 W type: 135×135 mm Thickness 5 mm

120 W type: 165×165 mm Thickness 5 mm, 200 W type: 200×200 mm Thickness 5 mm, 400 W type: 250×250 mm Thickness 6 mm

*2 Install the driver in the location that has the same heat radiation capability as an aluminum metal plate.

Unit installation 200×200 mm Thickness 2 mm, Contact installation 350×350 mm Thickness 2 mm

*3 For contact installation (200 W and 400 W only) and DIN rail installation, 0~+40°C.

*4 The storage condition applies to short periods such as the period during transportation.

*5 The IP indication representing the dust-proof and waterproof performances are defined in IEC 60529 and IEC 60034-5.

Note

● Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.




Materials and Surface Treatment of IP66 Specifications (Motors/Gearheads)

- Materials Case: Aluminum, Output shaft: Stainless steel, Screw: Stainless steel (Externally exposed portion only, except for the protective earth terminal)
- Surface treatment Case: Coated (except for the installation surfaces of the **GFV** gears and round shaft types)

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For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>





Dimensions (Unit: mm)

- The dimensions drawing of the motor is an example where a separately sold connection cable ( portion in the figure) is connected. The described mass does not include the connection cable. Cable Dimensions and Mass → Page 05-35
- "Installation screws" are included. Dimensions of installation screws → Page 05-36
- A number in the box  in the product name indicates the gear ratio. The  in a product name is replaced with the code that represents the gearhead size.

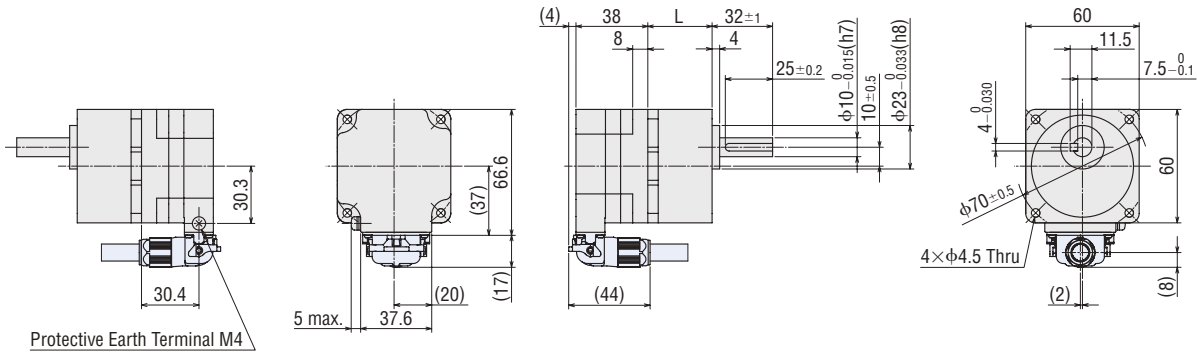
Motors

◇ Parallel Shaft Gearhead **GFV** Gear • 30 W

2D & 3D CAD

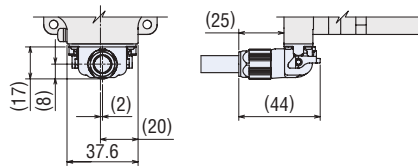
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM230HP-S BLM230HP-SF	BLM230HP-GFV	GFV2G  S GFV2G  SF	5~20	34	0.63	A1465A	A1466A
			30~100	38	0.68	A1465B	A1466B
			200	43	0.73	A1465C	A1466C

● When connecting the connection cable drawing from the output shaft side



- At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

● When connecting the connection cable drawing from the counter-output shaft side

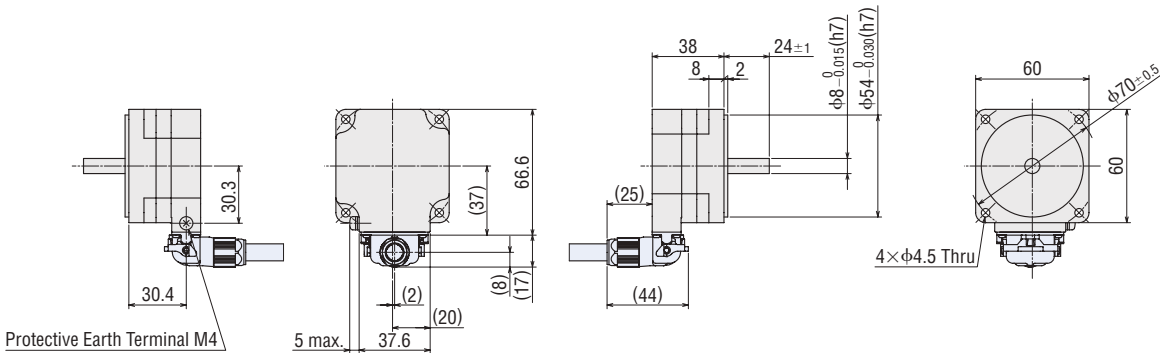


◇ Round Shaft Type • 30 W

BLM230HP-AS

Mass: 0.35 kg

2D CAD A1475 3D CAD

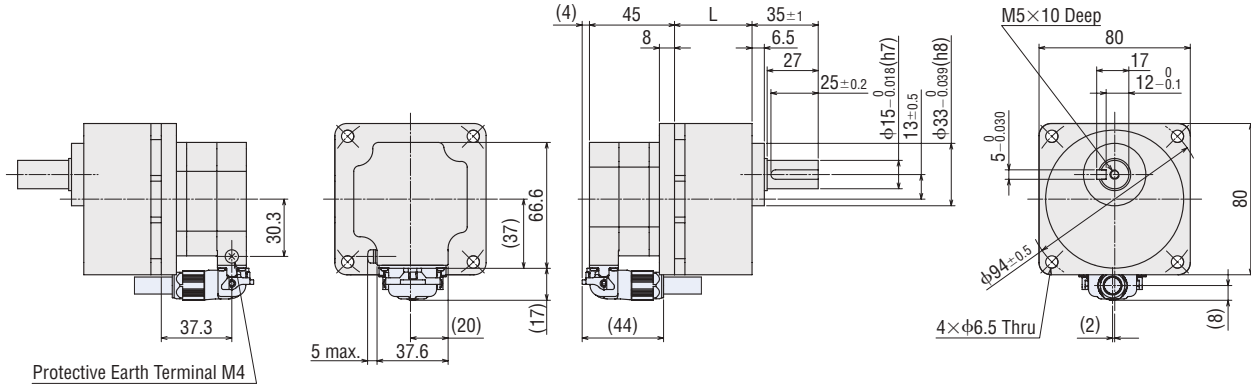


◇ Parallel Shaft Gearhead **GFV Gear** • 60 W

2D & 3D CAD

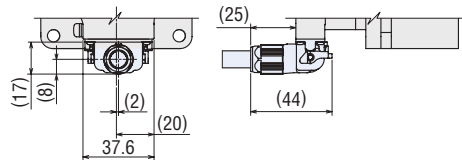
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM460SHP-□S BLM460SHP-□SF	BLM460SHP-GFV	GFV4G□S GFV4G□SF	5~20	41	1.3	A1467A	A1468A
			30~100	46	1.4	A1467B	A1468B
			200	51	1.5	A1467C	A1468C

• When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

• When connecting the connection cable drawing from the counter-output shaft side

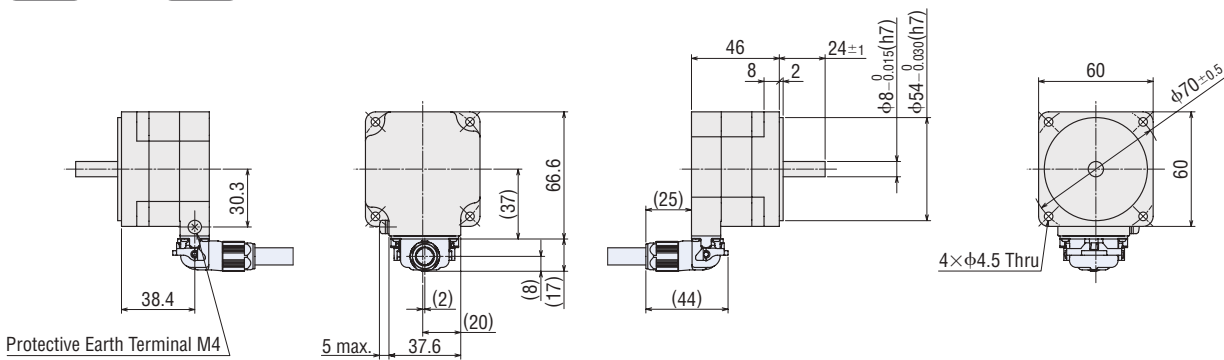


◇ Round Shaft Type • 60 W

BLM260HP-AS

Mass: 0.52 kg

2D CAD A1477 3D CAD



05

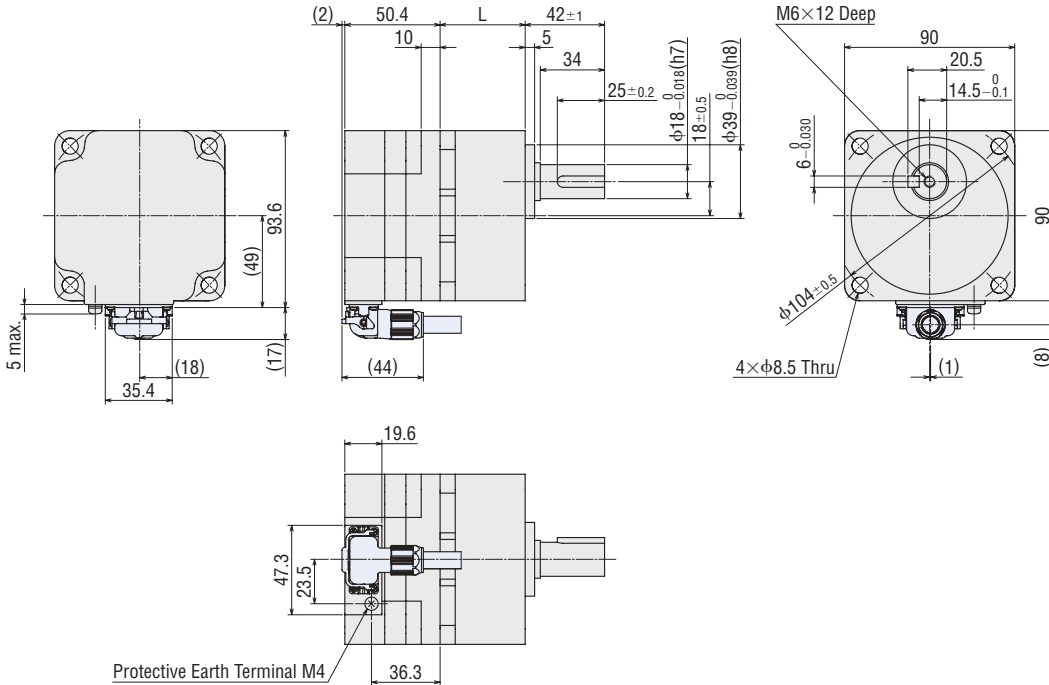
BLE2 Series

◇ Parallel Shaft Gearhead **GFV Gear** • 120 W

2D & 3D CAD

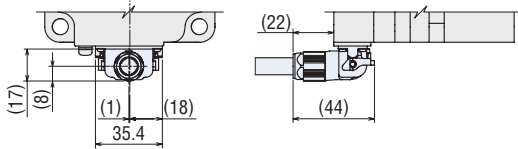
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HP-□S BLM5120HP-□SF	BLM5120HP-GFV	GFV5G□S GFV5G□SF	5~20	45	2.1	A1469A	A1470A
			30~100	58	2.4	A1469B	A1470B
			200	64	2.5	A1469C	A1470C

•When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

•When connecting the connection cable drawing from the counter-output shaft side

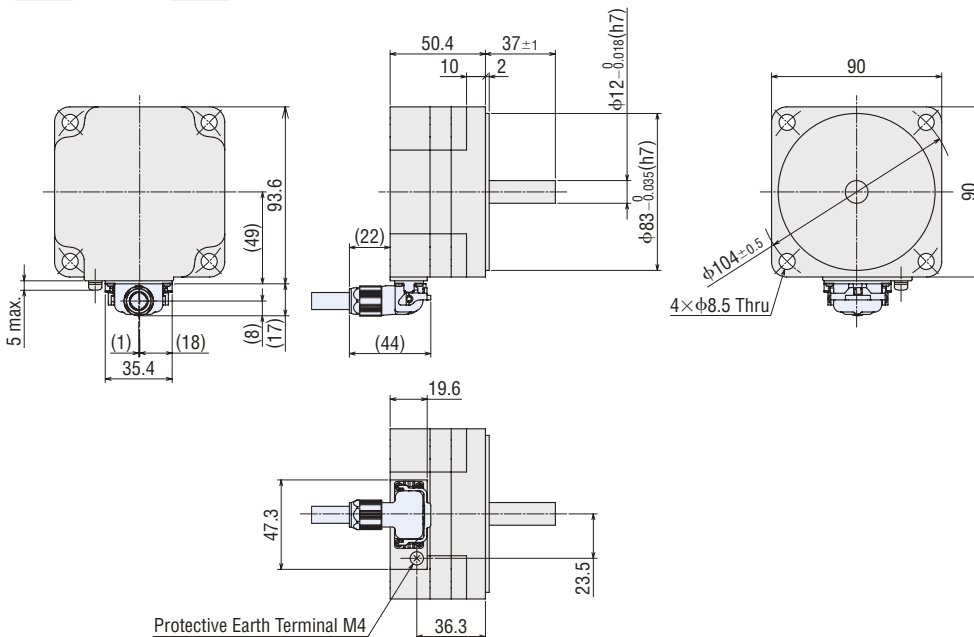


◇ Round Shaft Type • 120 W

BLM5120HP-AS

Mass: 1.1 kg

2D CAD A1479 3D CAD

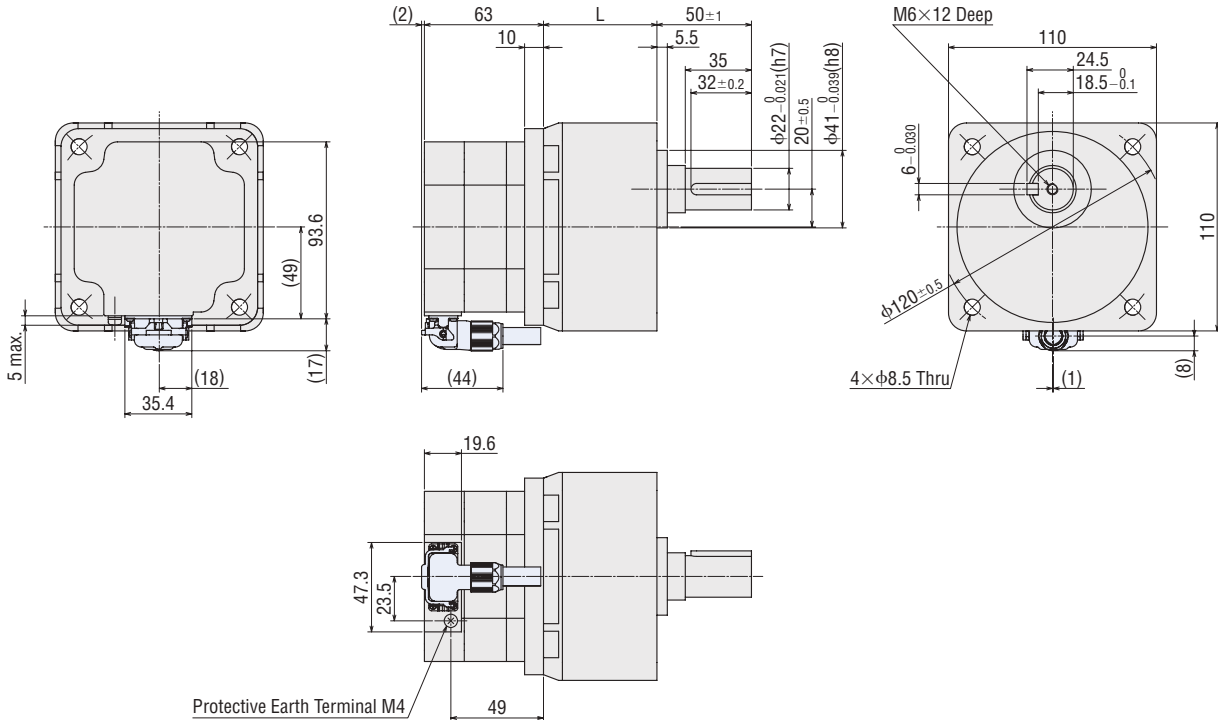


◇ Parallel Shaft Gearhead **GFV Gear** • 200 W

2D & 3D CAD

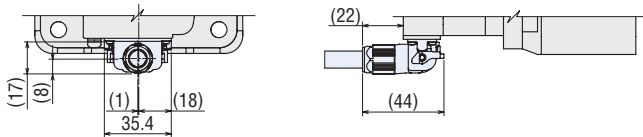
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6200SH-□S	BLM6200SH-GFV	GFV6G□S	5~20	60	4.7	A1471A	A1472A
			30, 50	72		A1471B	A1472B
			100, 200	86		A1471C	A1472C

• When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

• When connecting the connection cable drawing from the counter-output shaft side

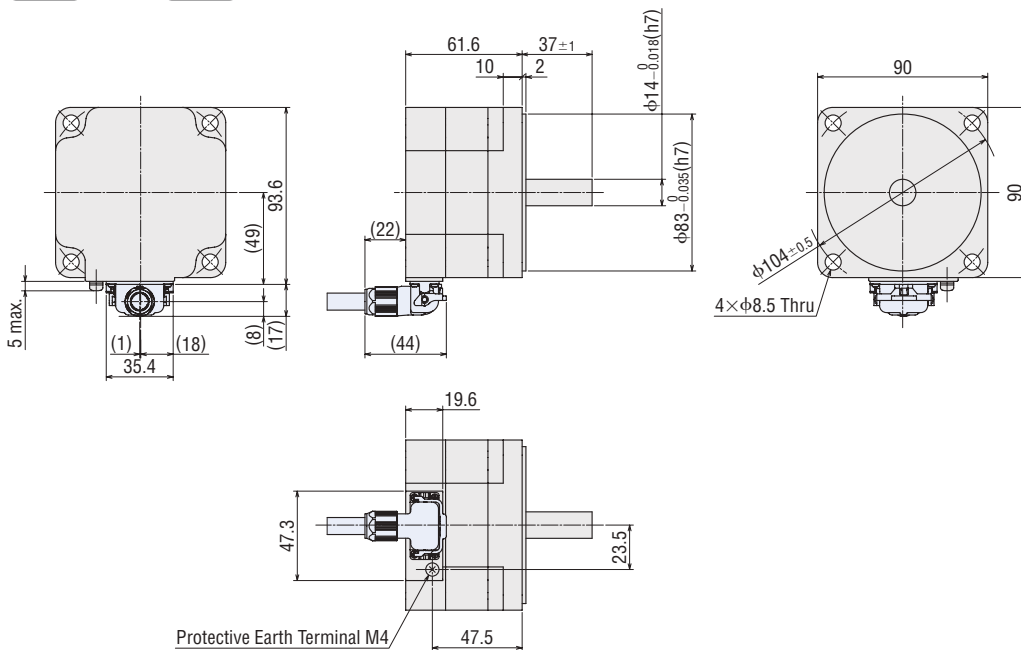


◇ Round Shaft Type • 200 W

BLM5200HP-AS

Mass: 1.6 kg

2D CAD A1481 3D CAD



Click Here

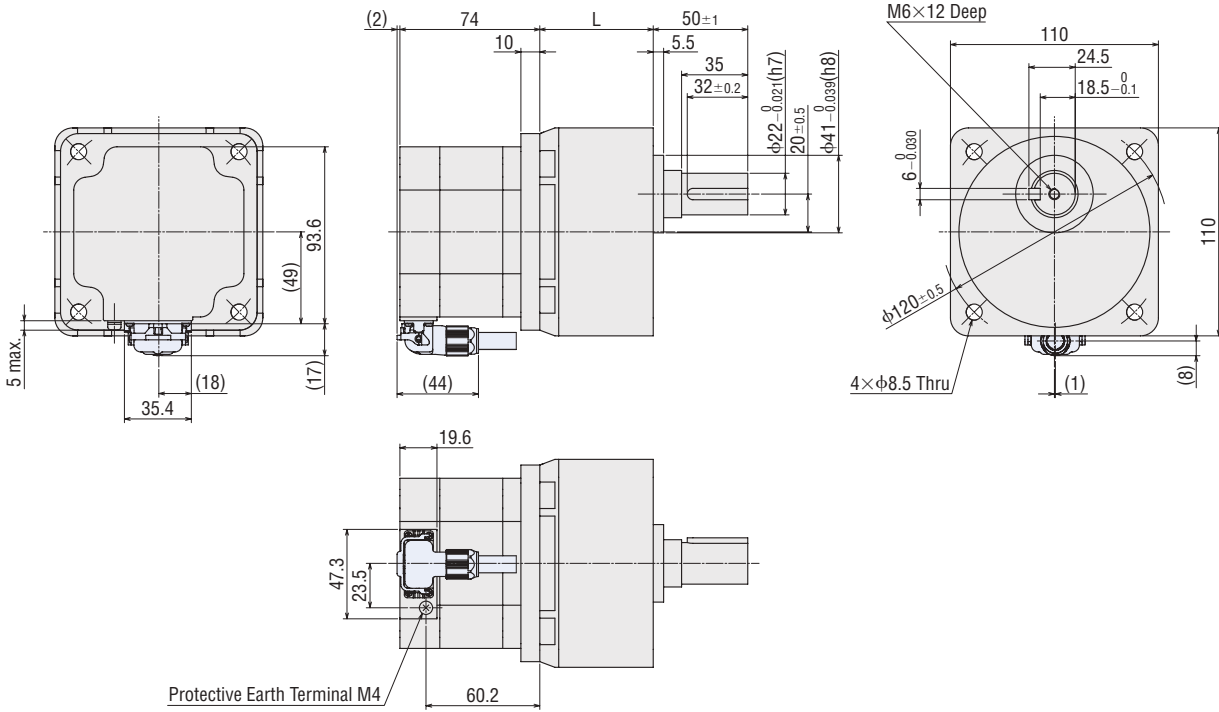
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ Parallel Shaft Gearhead **GFV Gear** • 400 W

2D & 3D CAD

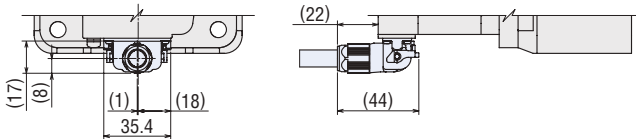
Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass kg	2D CAD	
						Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM6400SHP-□S	BLM6400SHP-GFV	GFV6G□S	5~20	60	5.2	A1473A	A1474A
			30, 50	72		A1473B	A1474B

•When connecting the connection cable drawing from the output shaft side



● At the time of shipment, the parallel key is fixed in the key slot of the gearhead shaft.

•When connecting the connection cable drawing from the counter-output shaft side

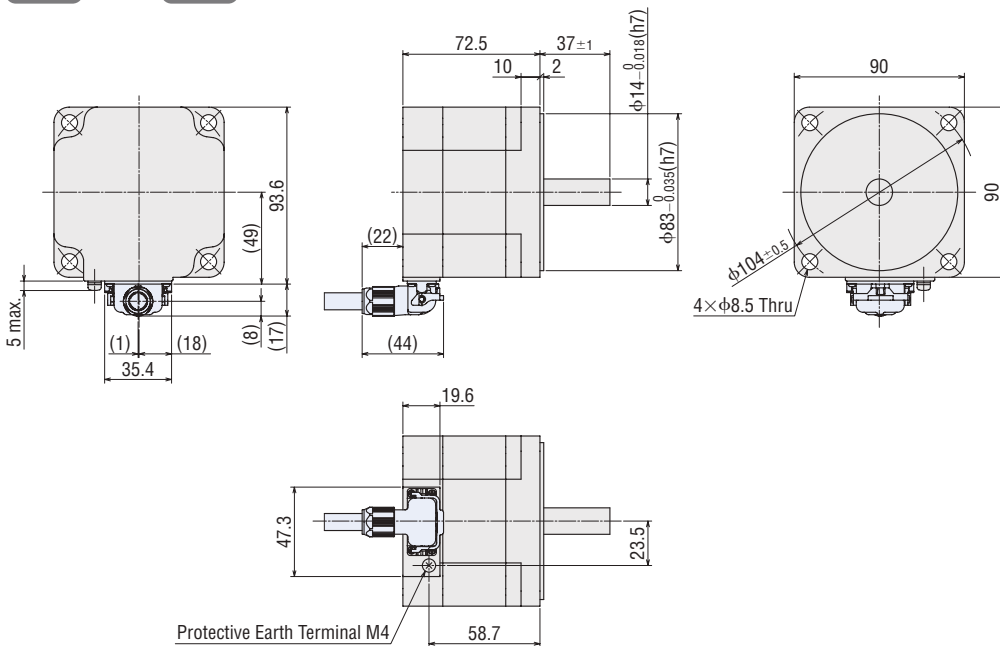


◇ Round Shaft Type • 400 W

BLM5400HP-AS

Mass: 2.1 kg

2D CAD A1483 3D CAD

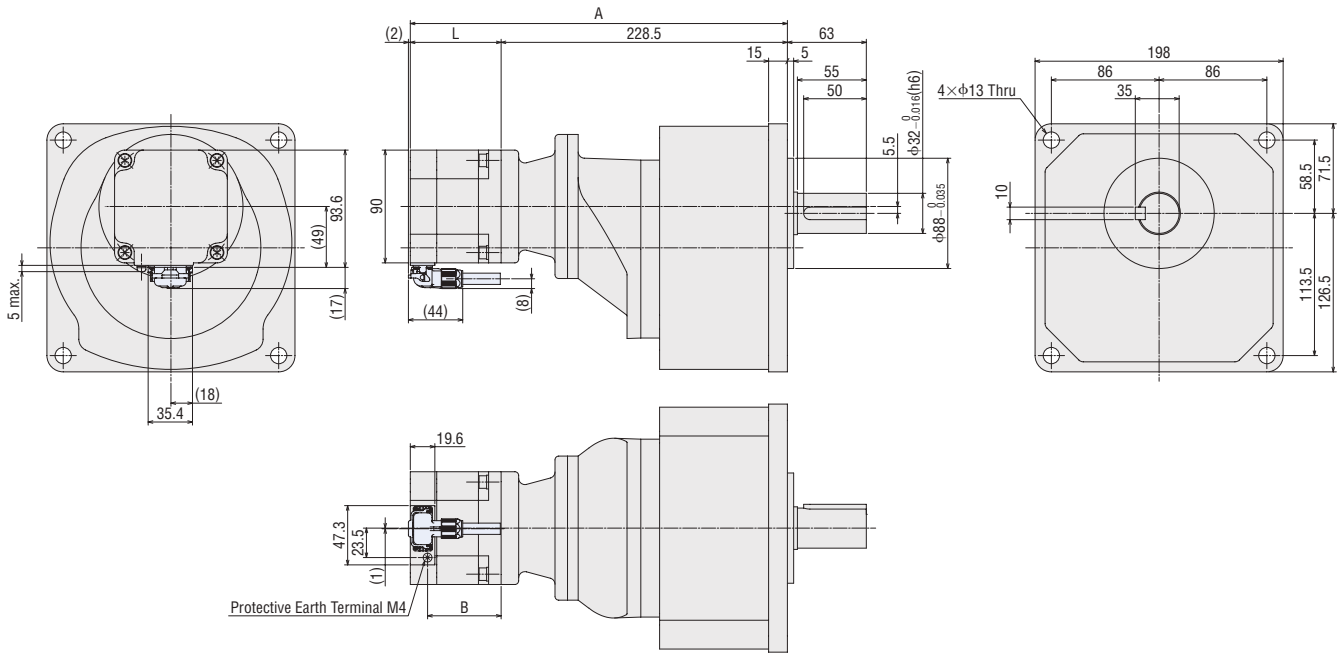


◇ Parallel Shaft Gearhead **JV Gear** • 200 W

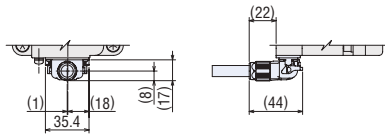
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				A	L	B		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5KV□S	BLM5200HPK	5KV□S	300,450	(290.1)	61.6	47.5	12.1	A1557	A1558

● When connecting the connection cable drawing from the output shaft side



● When connecting the connection cable drawing from the counter-output shaft side



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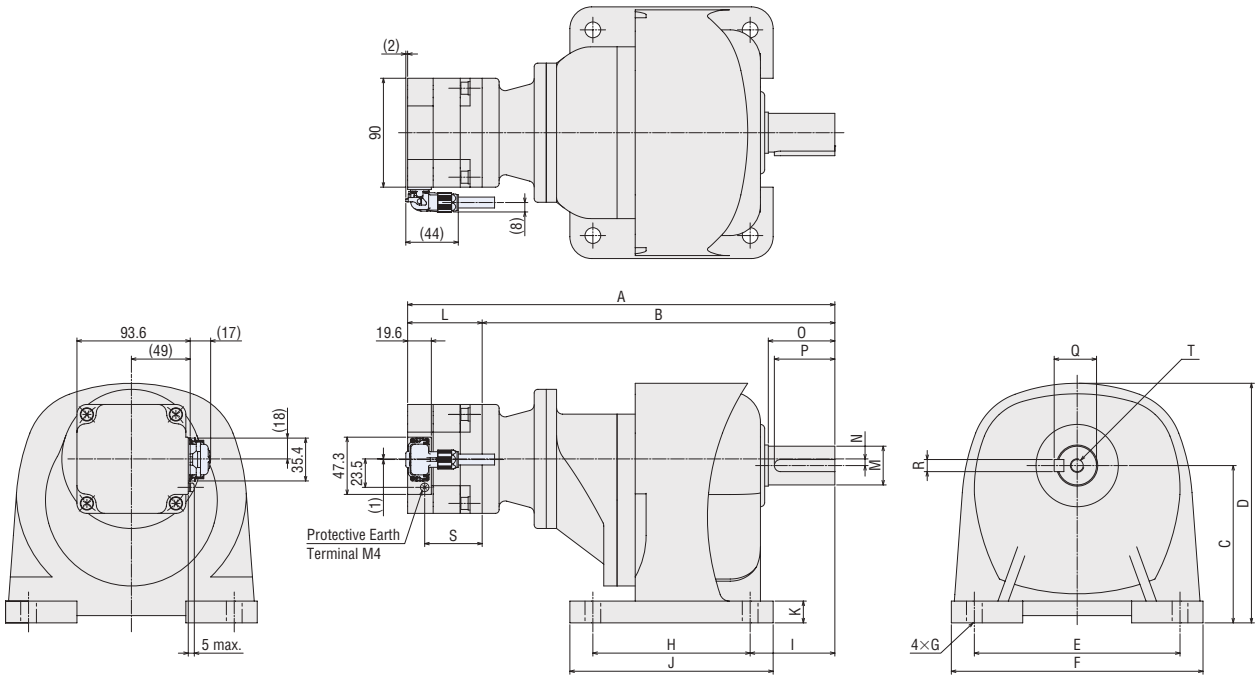
BLE2 Series

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions No.	L	S	Mass kg	2D CAD	
								Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5 ■ B ■ B-L	BLM5200HPK	5 ■ B ■ B	5, 10, 20	①	61.6	47.5	4.6	A1537	A1538
			30, 50	②			5.6	A1539	A1540
			100, 200	③			7.6	A1541	A1542
			300, 450	④			11.6	A1543	A1544
			600, 1200	⑤			18.1	A1545	A1546

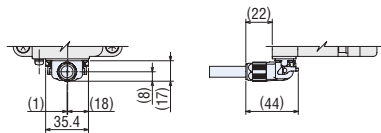
Dimensions No.	Total Length	Gearhead Dimensions										Output Shaft Dimensions						Output Shaft Tapping Size T
		A	B	C	D	E	F	G	H	I	J	K	M	N	O	P	Q	
①	(219.1)	157.5	85±0.2	131	110	134	φ9	40	45	64	10	φ18 ⁰ _{-0.011} (h6)	16.5*	30	27	20.5	6	M6 15 Deep
②	(245.1)	183.5	90±0.2	139	130	154	φ11	65	55	90	12	φ22 ⁰ _{-0.013} (h6)	19*	40	35	24.5	6	M8 20 Deep
③	(258.1)	196.5	110±0.2	167	140	175	φ11	90	65	125	15	φ28 ⁰ _{-0.013} (h6)	23.5*	45	40	31	8	
④	(353.1)	291.5	130±0.2	198	170	208	φ13	130	70	168	18	φ32 ⁰ _{-0.016} (h6)	5.5	55	50	35	10	M10 25 Deep
⑤	(375.1)	313.5	150±0.2	230	210	254	φ15	150	90	196	20	φ40 ⁰ _{-0.016} (h6)	0	65	60	43	12	

*The center position of the gearhead output shaft is offset in an upper position than the motor's center position.

•When connecting the connection cable drawing from the output shaft side

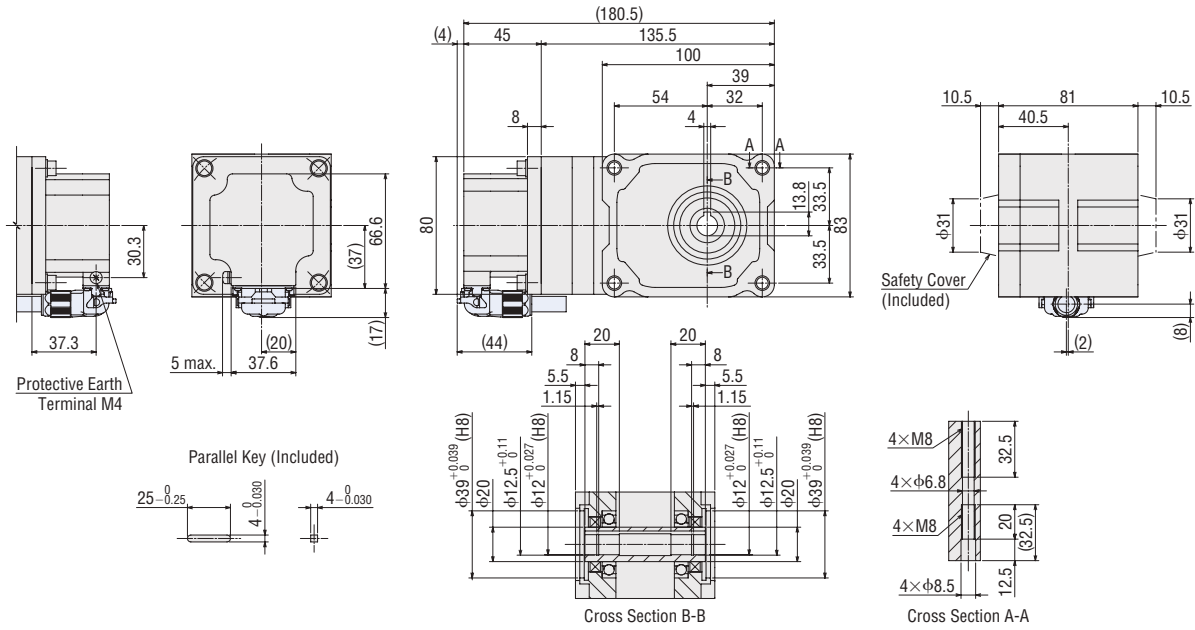


•When connecting the connection cable drawing from the counter-output shaft side

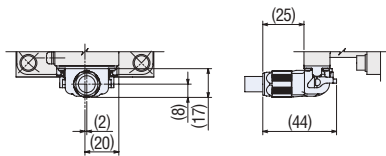


Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD	
				Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM460SHPK-4H□S	BLM460SHPK	4H□S	2.6	A1604	A1605

• When connecting the connection cable drawing from the output shaft side

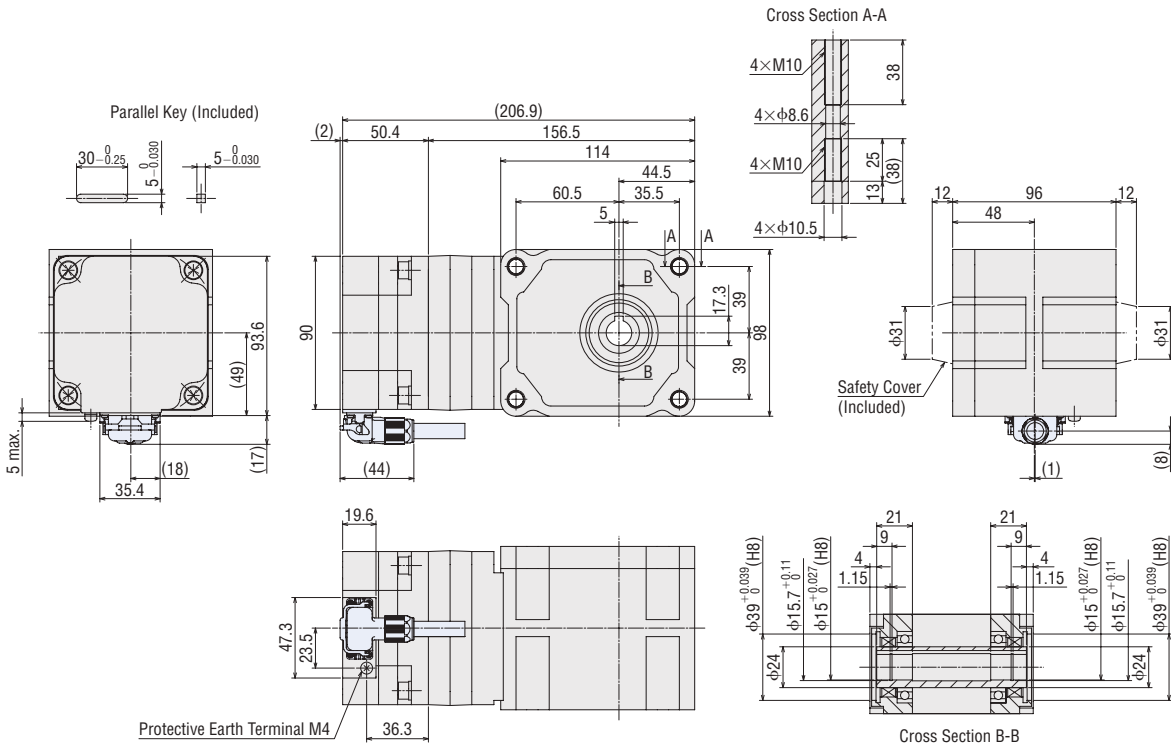


• When connecting the connection cable drawing from the counter-output shaft side

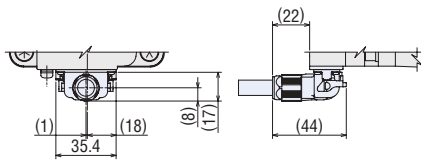


Product Name	Motor Product Name	Gearhead Product Name	Mass kg	2D CAD	
				Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5120HPK-5H□S	BLM5120HPK	5H□S	4.1	A1535	A1536

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

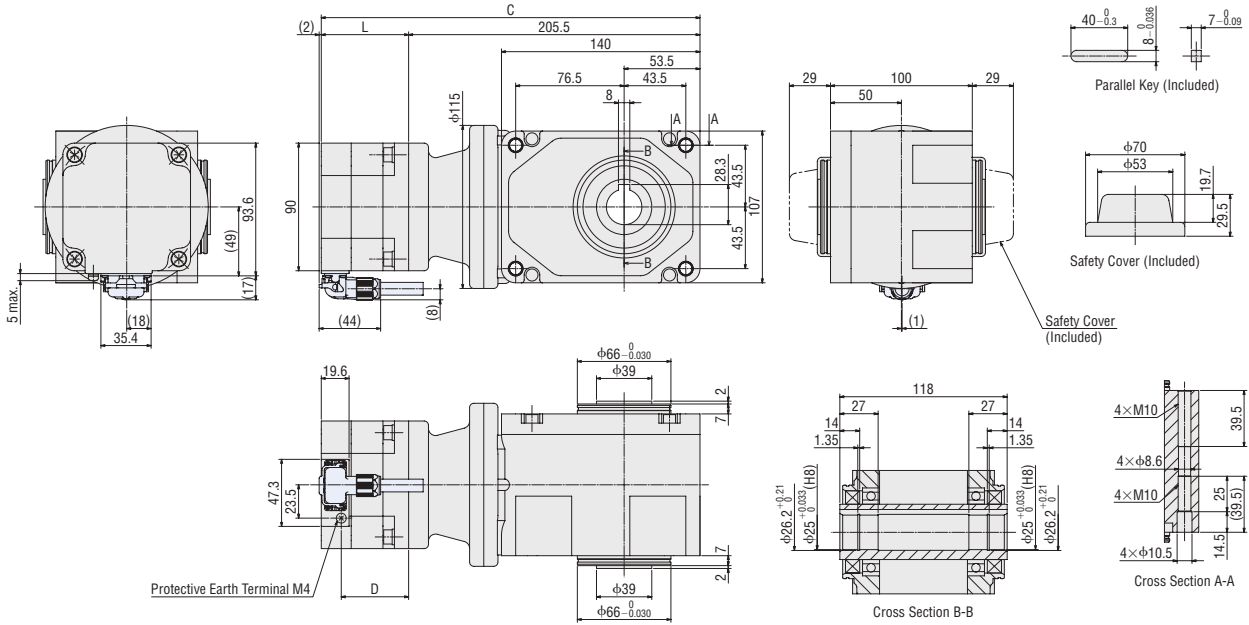


◇ Hypoid Right-Angle Hollow Shaft **JH** Gear • 200 W

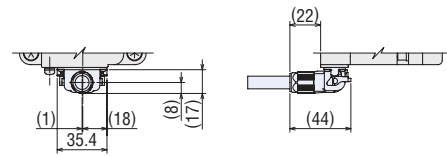
2D & 3D CAD

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				C	L	D		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5XH□S	BLM5200HPK	5XH□S	5, 10, 15, 20, 30, 50	(267.1)	61.6	47.5	6.6	A1565	A1566

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

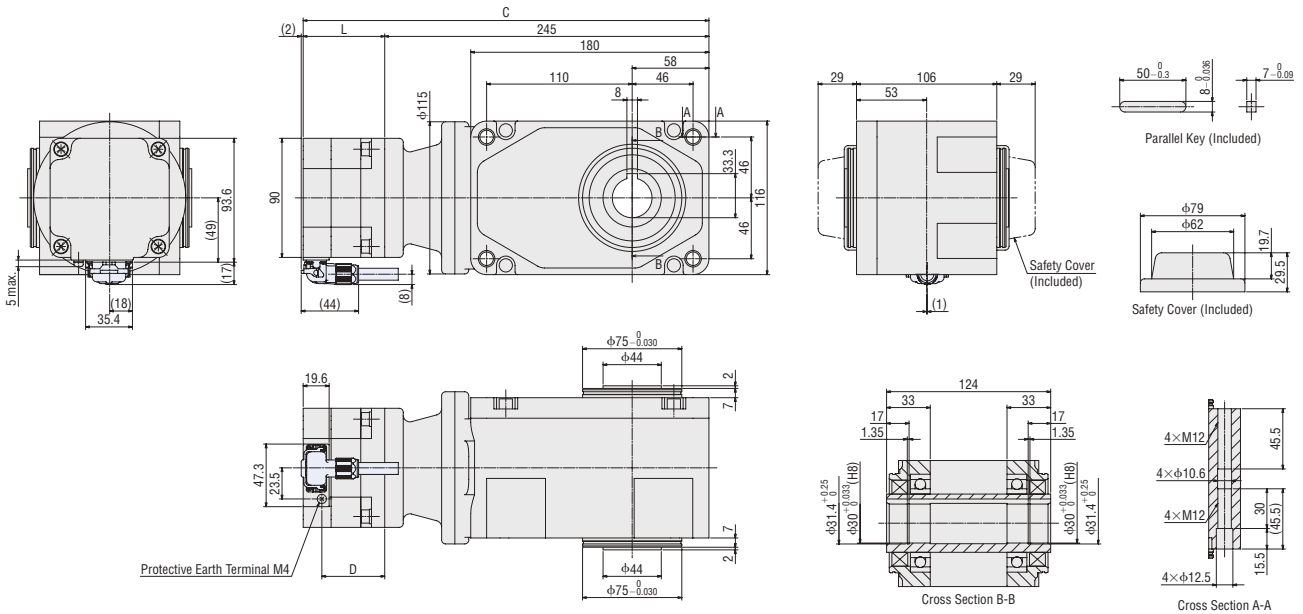


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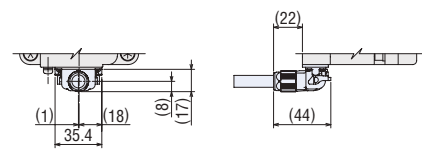
BLE2 Series

Product Name	Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass kg	2D CAD	
				C	L	D		Connection cable drawing from the output shaft side is connected	Connection cable drawing from the counter-output shaft side is connected
BLM5200HPK-5YH□S	BLM5200HPK	5YH□S	100, 200	(306.6)	61.6	47.5	8.1	A1567	A1568

•When connecting the connection cable drawing from the output shaft side



•When connecting the connection cable drawing from the counter-output shaft side

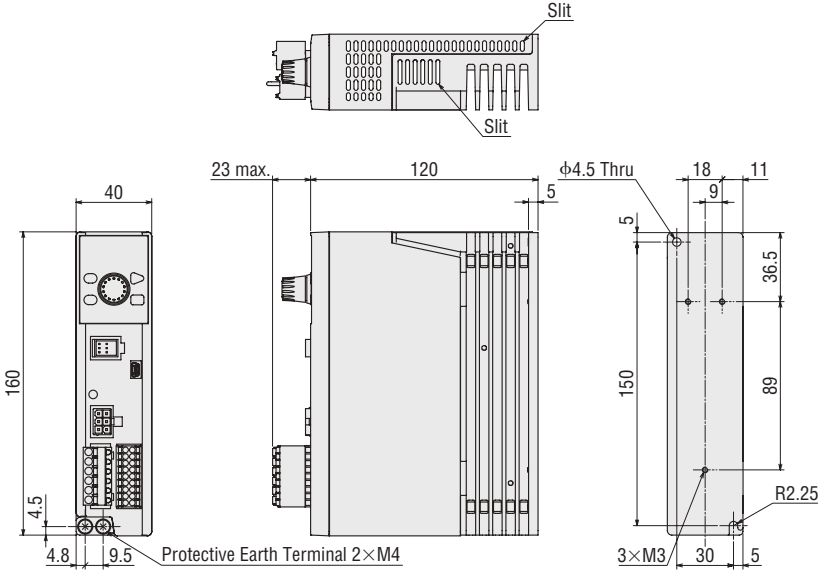


Drivers

BLE2D30-A, BLE2D30-C, BLE2D60-A, BLE2D60-C, BLE2D120-A, BLE2D120-C, BLE2D200-C, BLE2D400-S

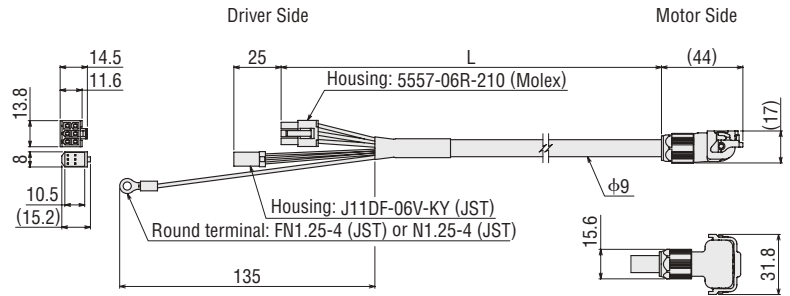
Mass: 0.8 kg

2D CAD A1461 3D CAD



Connection Cables

Length L (m)	Product Name		Mass (kg)
	Drawing on the Output Shaft Side	Drawing on the Counter-output Shaft Side	
0.5	CC005HBLF	CC005HBLB	0.08
1	CC010HBLF	CC010HBLB	0.12
1.5	CC015HBLF	CC015HBLB	0.2
2	CC020HBLF	CC020HBLB	0.25
2.5	CC025HBLF	CC025HBLB	0.32
3	CC030HBLF	CC030HBLB	0.38
4	CC040HBLF	CC040HBLB	0.49
5	CC050HBLF	CC050HBLB	0.62
7	CC070HBLF	CC070HBLB	0.86
10	CC100HBLF	CC100HBLB	1.2
15	CC150HBLF	CC150HBLB	1.9
20	CC200HBLF	CC200HBLB	2.5



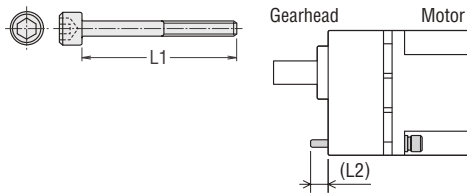
05

BLE2 Series

Dimensions of Installation Screws

L2 represents the length when the plain washer and the spring washer are installed on the screw head.

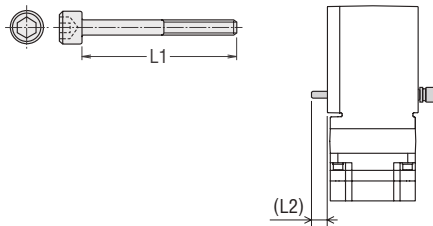
Parallel Shaft Gearhead



Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
GFV2G□S (F)	5~20	M4	50	6
	30~100		55	7
	200		60	7
GFV4G□S (F)	5~20	M6	60	8
	30~100		65	8
	200		70	8
GFV5G□S (F)	5~20	M8	70	11.5
	30~100		85	13.5
	200		90	12.5
GFV6G□S	5~20	M8	85	11
	30, 50		100	14
	100, 200		110	10

- Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

Hypoid Right-Angle Hollow Shaft



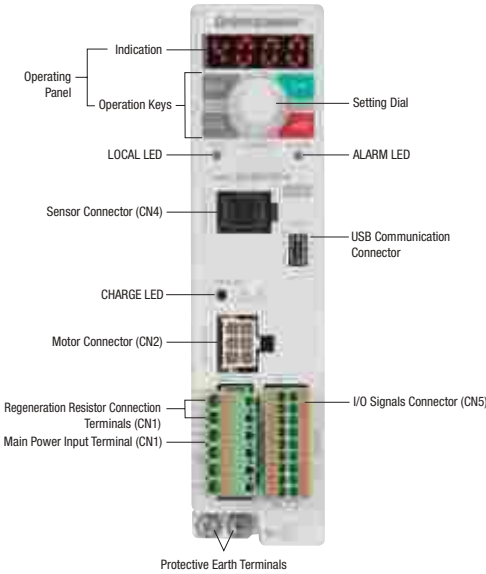
Product Name	Gear Ratio	Installation Screws		L2 (mm)
		Screw Size	L1 (mm)	
4H□S	10~200	M6	95	11
5H□S	10~200	M8	110	10
5XH□S	5~50	M8	120	16
5YH□S	100, 200	M10	130	19.5

- Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

- A number in the box □ in the product name indicates the gear ratio.

Connection and Operation

Names and Functions of Driver Parts



Name	Indication	Description
Operating Panel	—	Indication: Displaying information such as monitored content, setting screens, and alarms.
	MODE LOCAL RUN STOP	Operation keys: Changing operation modes and parameters During local operation, press the RUN key or STOP key to operate or stop the motor.
	PUSH-SET	Setting dial: Rotate it to set the parameter value or change the screen. Press to finalize (SET) the setting.
LOCAL LED	LOCAL	Illuminates in green during local operation.
ALARM LED	ALARM	Blinking in red during alarm generation. Blinking in orange during information generation.
CHARGE LED	CHARGE	Illuminates in red while the main power supply is turned on. Goes out after the main power supply is turned off and residual voltage in the motor drops to a safe level.
Main Power Input Terminal (CN1)	—	Connect the main power supply.
	L, N, NC	Single-Phase 100-120 VAC: Connect 100-120 VAC to L and N. NC is not used.
	L1, L2, NC L1, L2, L3	Single-Phase 200-240 VAC: Connect 200-240 VAC to L and N. NC is not used. Three-Phase 200-240 VAC: Connect Three-Phase 200-240 VAC to L1, L2, and L3.
	L1, L2, L3	Three-Phase 200-240 VAC: Connect Three-Phase 200-240 VAC to L1, L2, and L3.
Regeneration Resistor Connection Terminals (CN1)	RG1, RG2	Regeneration resistor is connected.
Motor Connector (CN2)	MOTOR	Connect the power connector (white) of the connection cable.
Sensor Connector (CN4)	HALL-S	Connect the sensor connector (black) of the connection cable.
USB Communication Connector		Connect the computer in which support software MEXEO2 is installed.
I/O Signals Connector (CN5)	—	Connect an input signal.
	I/O	Connect an optional (sold separately) external speed potentiometer or external DC power supply.
		Connect an output signal.
Protective Earth Terminals		Connect the protective earth terminal and earth wire of the connection cable.

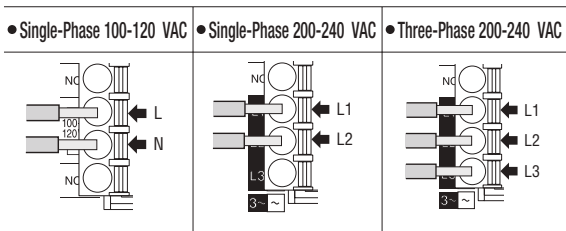
Operation Keys

The **BLE2** Series is equipped with 4 operation modes.

Operating Mode	Description	Setting Items
Monitoring Mode	Displayed when power is applied.	Rotation speed, load factor, operation data no., alarm, information, I/O monitor
Data Mode	Allows the setting of operation data items up to 16 speed.	Rotation speed, torque limit values, acceleration/deceleration time, reset
Parameter Mode	Allows the setting of various parameters.	Basic configuration parameters, parameters for adjusting speed or torque limits, parameters for setting alarm information, operation setting parameters, I/O operation parameters, I/O function selection parameters, I/F function parameters, reset, configuration
Test Mode	Allows the checking of connection with I/O signals.	

Main Power Input Terminal (CN1)

Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.



• Applicable Lead Wire Size
AWG18~14 (0.75~2.0 mm²)

USB Cable Connections

Use a USB cable of the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less Shape: A - mini-B

Operation with the Operating Panel

Selecting the Operation

Pressing the "LOCAL" key activates the illumination of the LOCAL LED, allowing the operation of the operating panel.

Selecting the Rotation Direction

Pressing the "MODE" key changes the rotation direction.

Motor Startup/Stop

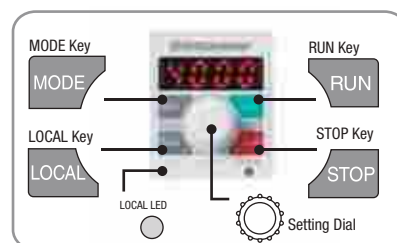
Pressing the "RUN" key activates the rotation of the motor.
Pressing the "STOP" key stops the motor.

Speed Setting Method

Pressing the "Setting Dial" makes the displayed content flash, and turning the dial to the right increases the speed.

Turning "Setting Dial" to the left decreases the speed. Pressing it finalizes the rotation speed.

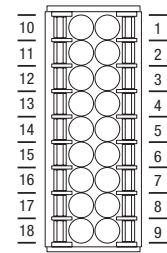
Operating Panel



● Operation by External Signals

◇ I/O Signals Connector (CN5)

Pin No.	Signal Type	Signal Name	Functions*	Description	
1	Input	IN-COM0	Input signal common (for external power supply)	Connect for external power supplies.	
2		IN0	FWD	Turning ON the FWD input or REV input activates the rotation of the motor. Turning OFF the FWD input or REV input stops the motor.	
3		IN1	REV		
4		IN2	STOP-MODE		
5		IN3	M0	Selecting ON/OFF of the M0 or M1 input selects an operation data No.	
6		IN4	M1		
7		IN5	ALARM-RESET	Alarms are reset.	
8		IN6	Not used	Various functions can be allocated.	
9		Output	IN-COM1	0 V (for internal power supply)	Connect for internal power supply.
10			TH	TH	When using a regeneration resistor, connect the thermostat output of the regeneration resistor. (Normally closed.) When the regeneration resistor is heated and the thermostat output is turned OFF, a "Regeneration resistor overheat" alarm is generated.
11					
12	VH		Input of external analog settings	Connect to these pins when setting rotation speed or a torque limitation value from the outside by using an external speed potentiometer or external DC voltage.	
13	VM				
14	VL				
15	Output		OUT0+	SPEED-OUT	For every rotation of the motor output shaft, 30 pulses are output.
16			OUT0-		
17		OUT1+	ALARM-OUT	The generation of an alarm activates an output. (Normally closed)	
18		OUT1-			



● Applicable Lead Wire Size
AWG24~18
(0.2~0.75 mm²)

*The [] indicates the functions assigned in the factory. For pins No. 2~8 and 15~18, the allocated functions can be changed. 7 pins are allocated to 12 types of input signals, and 2 pins are allocated to 7 types of output signals.

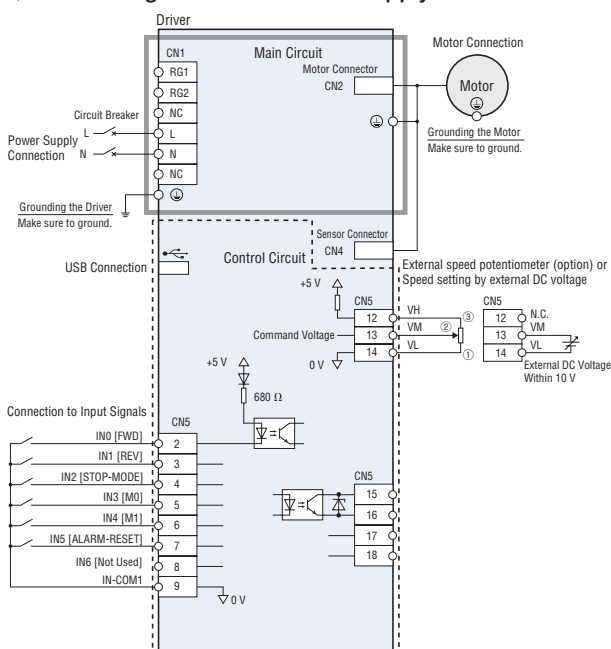
◇ Signals for which allocation can be changed

Signal Type	Functions	Description
Input	START/STOP	When the START/STOP input and RUN/BRAKE input are turned ON, the motor rotates. Turning OFF the START/STOP input reduces motor speed to stop the motor.
	RUN/BRAKE	Turning OFF the RUN/BRAKE input immediately stops the motor.
	CW/CCW	Signal for changing the rotation direction of the motor.
	M2	Signals for selecting operation data No.
	M3	
	H-FREE	Signal for selecting the activation/deactivation of the simple holding function.
	TL	Signal for toggling, through an external measure, between the activation and deactivation of torque limitation.
INFO-CLR	Signal for resetting the information that is being generated.	
Output	HMI	Signal for restricting operation via the operating panel or support software MEXE02 .
	EXT-ERROR	Signal for forcibly stopping the motor from the outside.
	MOVE	Signal which is output when the operation input is turned ON and the motor is rotating.
	INFO	Signal which is output when information is generated.
	TLC	Signal which is output when the output torque of the motor reaches the torque limit value.
	VA	Signal which is output when the motor detection speed reaches the set speed \pm VA detection range.
	DIR	Signal that outputs the rotation direction of the motor.

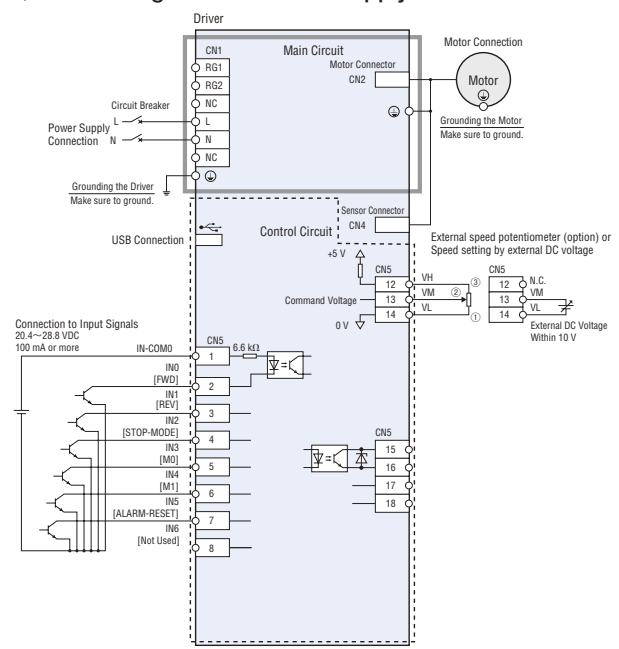
● Connection Diagram

The diagrams shown below are the connection examples for when Single-Phase 100-120 VAC is applied and the rotation speed is set from the outside. (Sink Logic) I/O signals specified in [] are factory set signals.

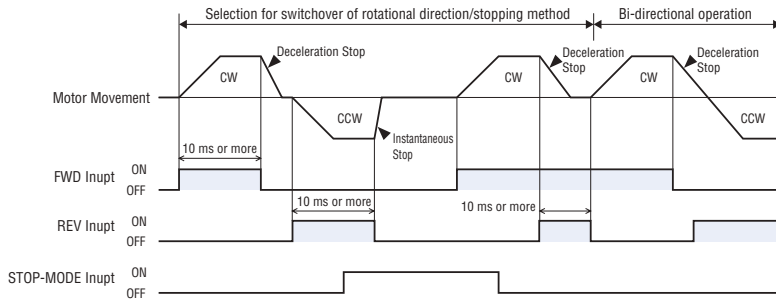
◇ When Using the Built-in Power Supply



◇ When Using External Power Supply



Timing Chart (2 wire input method)



FWD input or REV input

Turning ON the FWD input rotates the motor to the CW (clockwise) direction. Turning it OFF decelerates the motor to a stop.

Turning ON the REV input rotates the motor to the CCW (counter-clockwise) direction. Turning it OFF decelerates the motor to a stop.

STOP-MODE input

Select the motor stop method for when the FWD input or REV input is turned OFF.

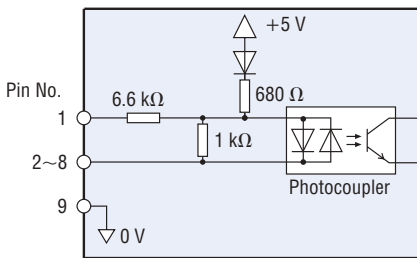
When the STOP-MODE input is turned OFF, a deceleration stop is performed according to the deceleration stop of the operation data No.

When the STOP-MODE is turned ON, the motor stops in the shortest time (instantaneous stop).

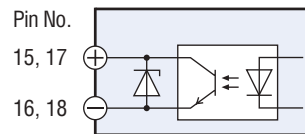
I/O Signal Circuits

Change the wiring of the sink logic and the source logic in accordance with the external control equipment that you will use.

Input Circuit



Output Circuit



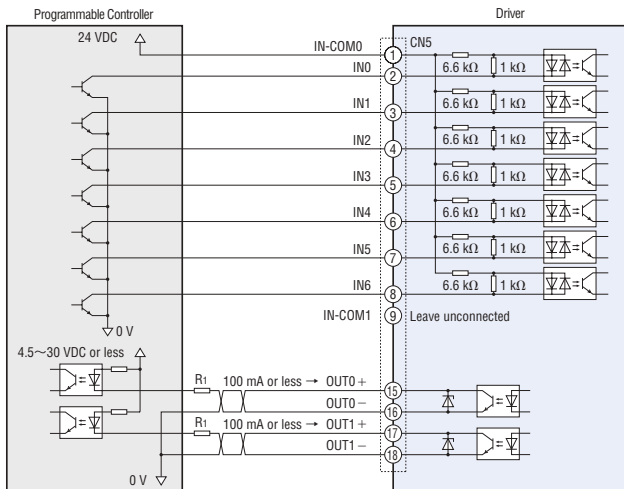
When an external control equipment with a built-in clamp diode is used

With external control equipment with built-in clamping diodes connected, if the power of the external control equipment is turned off with the driver turned on, the motor may rotate due to current flowing around. The motor may also rotate even if the driver and the external control equipment are simultaneously turned ON/OFF because these two devices have different current capacities.

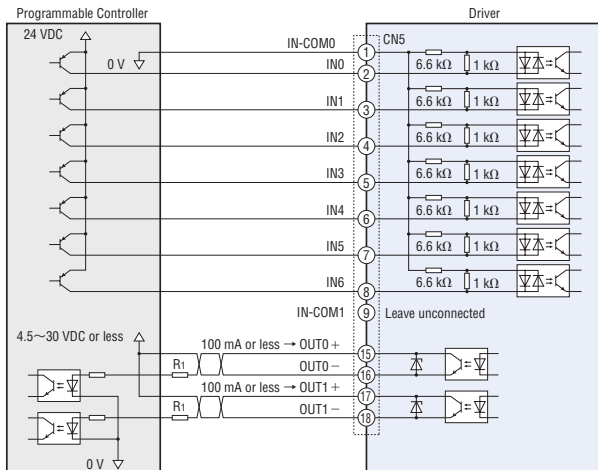
To turn off the power, first turn off the driver and then the external control equipment. To turn on the power, first turn on the external control equipment and then the driver.

Examples of Connections to Host Controllers

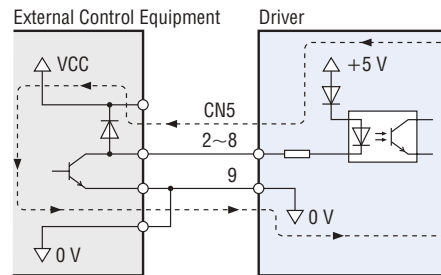
Sink Logic



Source Logic



Sink logic example



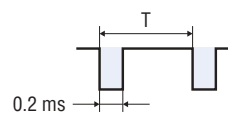
SPEED-OUT Output

Synchronized with motor operation, the motor emits a 30 pulse signal (the pulse width of which is 0.2 ms) per rotation of the motor output shaft.

The measurement of the frequency of the speed output enables the calculation of approximate rotation speed of the motor.

$$\text{SPEED-OUT Frequency [Hz]} = \frac{1}{T[\text{s}]}$$

$$\text{Motor Shaft Speed [r/min]} = \frac{\text{SPEED-OUT Frequency [Hz]}}{30} \times 60$$



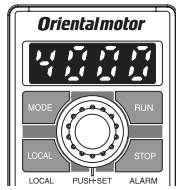
ALARM-OUT Output

An activation of the driver's protective function turns OFF the output, causing the ALARM LED to flash. An alarm code is displayed on the operating panel, and the motor naturally stops. (The motor instantaneously stops when it is stopped by an external signal.)

Speed Setting Methods

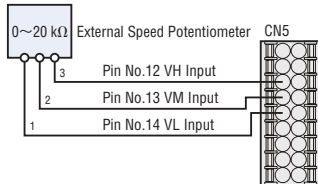
Rotation speed can be set by any of the 4 methods described below.

Setting using the Operating Panel

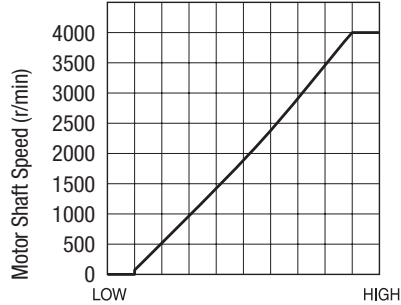


Setting with External Speed Potentiometer

Connect the external speed potentiometer to the I/O signal connector (CN5) of the driver.



External Speed Potentiometer — Speed Characteristics (Representative values)

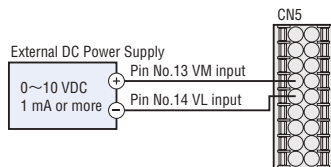


Note

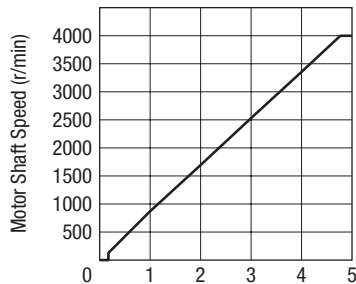
The values correspond to the speed of a stand-alone motor. The rotational speed of the gear output shaft is the value of the rotational speed divided by the gear ratio.

Setting by an External DC Voltage

Connect the external voltage to the I/O signal connector (CN5) of the driver.



External Speed Potentiometer — Speed Characteristics (Representative values) Example: For 0~5 VDC

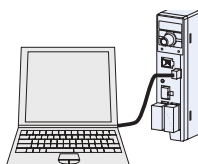


Note

Settings can be made at a voltage of 0~10 VDC. The values correspond to the speed of a stand-alone motor. The rotational speed of the gear output shaft is the value of the rotational speed divided by the gear ratio.

Settings with Support Software (MEXE02)

Personal computer in which support software (MEXE02) is installed.



Multiple Speed Operation (Up to 16 speed)

Select the operation data No. based on the combination of ON/OFF of M0~M3.

Operation Data No.	M3	M2	M1	M0
0	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	ON
2	OFF	OFF	ON	OFF
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	OFF
5	OFF	ON	OFF	ON
6	OFF	ON	ON	OFF
7	OFF	ON	ON	ON
8	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON
10	ON	OFF	ON	OFF
11	ON	OFF	ON	ON
12	ON	ON	OFF	OFF
13	ON	ON	OFF	ON
14	ON	ON	ON	OFF
15	ON	ON	ON	ON

Multi-Motor Control

By using a potentiometer or external DC voltage, you can operate multiple motors at the same speed.

The figure below is an example in which a Single-Phase power supply is employed. For Three-Phase specifications, use a Three-Phase power supply for the power line. The motor and operation control section are omitted from the figure.

When a Potentiometer is used

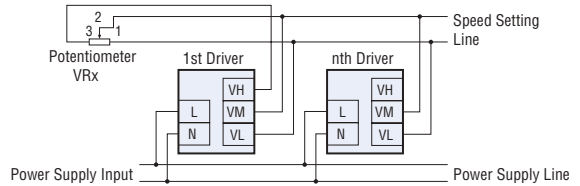
When using a variable resistor (VRx), operate at 20 or less.

Resistance value derived when the No. of drivers is n: $VRx = 20/n$ (kΩ), $n/4$ (W)

Example: When 2 drivers are used

$$VRx = 20/2 = 10 \text{ (k}\Omega\text{)}, 2/4 = 1/2 \text{ (W)}$$

The resistance value is 10 kΩ, 1/2 W.



Using External DC Voltage

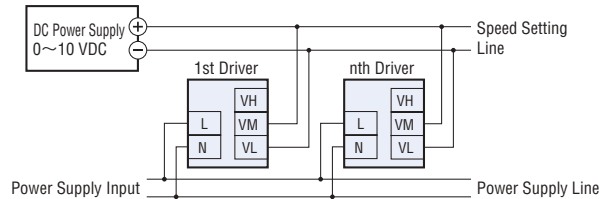
Calculate the power supply capacity of the external DC voltage based on the formula below.

Power supply capacity derived when the No. of drivers is n: $I = 1 \times n$ (mA)

Example: When 2 drivers are used

$$I = 1 \times 2 = 2 \text{ (mA)}$$

Therefore, the power supply capacity is at least 2 mA.



Installation of Hollow Shaft Load

Example of Load Shaft Installation Method

The load installation method differs depending on the shape of the load shaft. See the figures below.

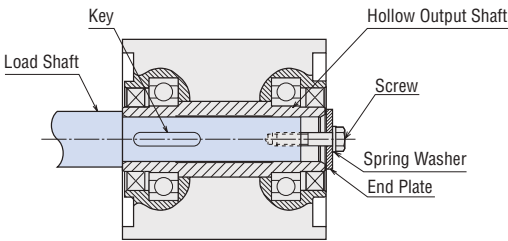
- The hollow output shaft is processed to a tolerance of the inner diameter H8, and incorporates a key slot for load shaft installation.
- The recommended tolerance of the load shaft is h7.

Note

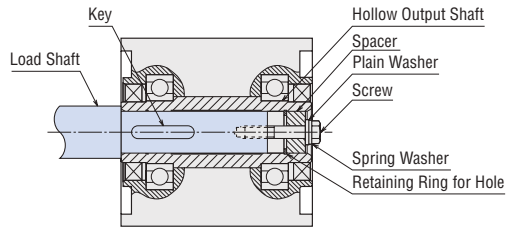
- To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.

Stepped Load Shaft

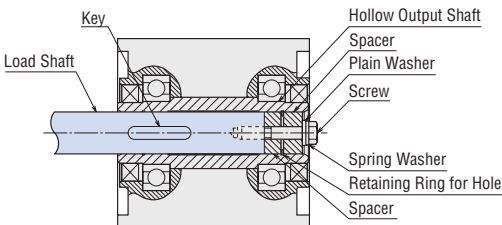
Fixing Method Using the End Plate



Fixing Method Using the Retaining Ring for Hole



For Non-Stepped Load Shaft



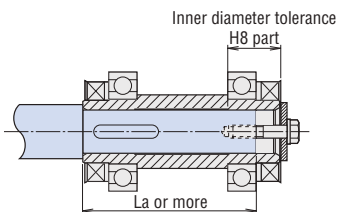
Recommended Load Shaft Installation Method

Unit: mm

Output Power	60 W	120 W	200 W	
Gear Ratio	10~200	10~200	5~50	100, 200
Inner Diameter of Hollow Output Shaft (H8)	$\phi 12 \begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	$\phi 15 \begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	$\phi 25 \begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$	$\phi 30 \begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$
Recommended Tolerance of Load Shaft (h7)	$\phi 12 \begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	$\phi 15 \begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	$\phi 25 \begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	$\phi 30 \begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$
Screw Size	M5	M6	M6	M8
Spacer Dimensions	Outer Diameter	$\phi 11.5$	$\phi 14.5$	$\phi 24.5$
	Inner Diameter	$\phi 6$	$\phi 7$	$\phi 7$
	Width	3	3	4
Nominal Hole Diameter of Retaining Ring (C type retaining ring)	$\phi 12$	$\phi 15$	$\phi 25$	$\phi 30$
End Plate Thickness	3	3	4	5
Stepped Shaft La length	55	72	96	96

- Retaining rings for holes, spacers, screws or other parts used to install the load shaft are not supplied.

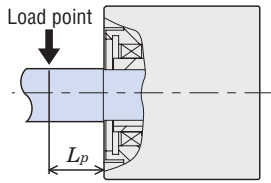
Recommended Load Shaft Length



● Permissible Radial Load Calculation of the Hollow Shaft Type

Formulas to calculate permissible radial loads vary depending on the mechanism.

◇ When One End of the Load Shaft is Not Supported by a Bearing Unit



● 60 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{68.5}{48.5 + L_p} \times F_0$$

● 120 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{79}{59 + L_p} \times F_0$$

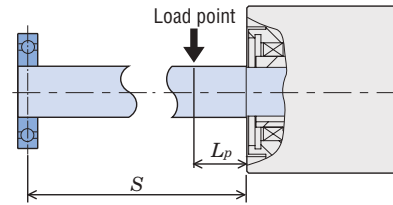
● 200 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{95.5}{75.5 + L_p} \times F_0$$

● 200 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{102}{82 + L_p} \times F_0$$

◇ When One End of the Load Shaft is Supported by a Bearing Unit



● 60 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{68.5 (S + 5.5)}{53 (S - L_p)} \times F_0$$

● 120 W

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{79 (S + 4)}{65 (S - L_p)} \times F_0$$

● 200 W (Gear ratio **5~50**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{95.5 (S - 9)}{104.5 (S - L_p)} \times F_0$$

● 200 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W \text{ [N]} = \frac{102 (S - 9)}{111 (S - L_p)} \times F_0$$

F_0 [N]: Permissible radial load when the reference point is at 20 mm from the installation surface

L_p [mm]: Distance from the installation surface to the load point

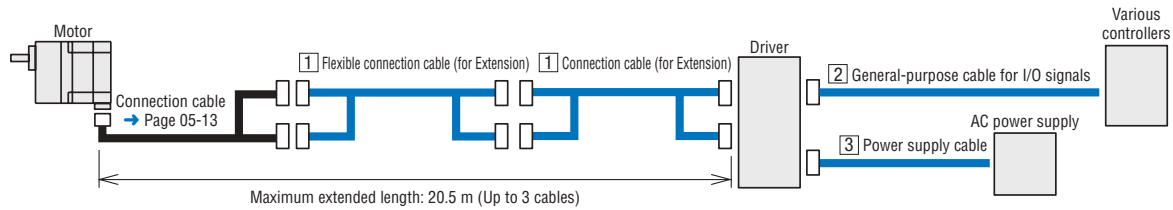
S [mm]: Distance from the installation surface to the bearing unit

● For details on the permissible radial load when the reference position is 20 mm away from the flange installation surface, see the specifications table. → Pages 05-18 and 05-20

Accessories (Sold Separately)

Cables

Cable System Configuration



1 Connection Cables (for Extension), Flexible Connection Cables (for Extension)

For the extension with additional connection cables (for extension) and/or flexible connection cables (for extension), the total length of the cable must be 20.5 m or less (up to 3 cables).

Product Line

◇ Connection Cables

Product Name	Length L (m)	List Price
CC01BL2	1	SGD38
CC02BL2	2	SGD53
CC03BL2	3	SGD68
CC05BL2	5	SGD98
CC07BL2	7	SGD128
CC10BL2	10	SGD173



◇ Flexible Connection Cables

Product Name	Length L (m)	List Price
CC01BL2R	1	SGD75
CC02BL2R	2	SGD105
CC03BL2R	3	SGD135
CC05BL2R	5	SGD195
CC07BL2R	7	SGD255
CC10BL2R	10	SGD345



2 General-Purpose Cables for I/O Signals

This cable is used for connecting the driver and the programmable controller.



3 Power Supply Cables

This cable used for connecting the driver and the AC power supply comes with or without a power supply plug.



Plug included

Product Line

Product Name	Length L (m)	Number of Lead Line Cores	Outer Diameter D (mm)	AWG	List Price
CC06D005B-1	0.5	6	φ5.4	24	SGD17
CC06D010B-1	1				SGD19
CC06D015B-1	1.5				SGD21
CC06D020B-1	2				SGD23
CC10D005B-1	0.5	10	φ6.7	24	SGD19
CC10D010B-1	1				SGD21
CC10D015B-1	1.5				SGD24
CC10D020B-1	2				SGD26
CC12D005B-1	0.5	12	φ7.5	24	SGD21
CC12D010B-1	1				SGD24
CC12D015B-1	1.5				SGD27
CC12D020B-1	2				SGD30
CC16D005B-1	0.5	16	φ7.5	24	SGD22
CC16D010B-1	1				SGD25
CC16D015B-1	1.5				SGD28
CC16D020B-1	2				SGD31

Note

● The general-purpose cable for I/O signals cannot be used together with the external speed potentiometer (PAVR2-20K).

Product Line

Product Name	Type	Power Supply Voltage	Length L (m)	List Price
CC01AC03P	Plug included	Single-Phase 100-120 VAC	1	SGD19
CC02AC03P			2	SGD25
CC03AC03P			3	SGD31
CC01AC03N	Plug not included	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	1	SGD13
CC02AC03N			2	SGD19
CC03AC03N			3	SGD25
CC01AC04N	Plug not included	Three-Phase 200-240 VAC	1	SGD13
CC02AC04N			2	SGD19
CC03AC04N			3	SGD25

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Flexible Couplings

These are clamp type couplings for connecting the motor/gearhead shaft with the driven shaft.

Couplings usable for the parallel shaft gearhead **GFV** gear and the round shaft type are available.

● Couplings can also be used with round shaft types.

Select a coupling with the same inner diameter size as the motor shaft diameter.



Product Line

Applicable Product	Load Type	Coupling Type	List Price
BLM230	Uniform Load	MCL30 Type	SGD61
	Shock Load		
BLM460	Uniform Load	MCL40 Type	SGD93
	Shock Load	MCL55 Type	SGD124
BLM5120	Uniform Load	MCL55 Type	SGD124
	Shock Load		
BLM6200 BLM6400	Uniform Load	MCL65 Type	SGD197
	Shock Load		

External Speed Potentiometer

Features

● Potentiometer which allows the adjustment of rotation speed and torque.

● Easy installation

Simply insert the potentiometer into the mounting hole. No tools are required. It can be removed.

● Easy wiring

A terminal block is employed. Lead wire connection or soldering is not required. The efficiency of wiring is improved.



(Front)



(Back)

Product Line

Product Name	List Price
PAVR2-20K	SGD25

The following items are included in each product.
External speed potentiometer, operating manual

Note

● The external speed setter (**PAVR2-20K**) cannot be used together with a general-purpose cable for I/O signals.

Specifications

Resistance: 0~20 kΩ

Rate power: 0.05 W

Resistance change characteristics: B curve

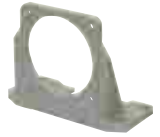
● Applicable Lead Wire Size*

AWG22~18 (0.3~0.75 mm²)

*When combined with the **BLE2** Series

Motor and Gearhead Mounting Brackets

These are convenient, dedicated mounting brackets for mounting or fixing the parallel shaft gearhead **GFV** gear and the round shaft type.



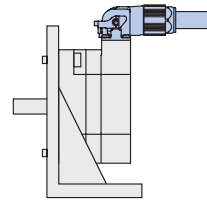
Product Line

Product Name	Applicable Product	List Price
SOL2M4F	BLM230, BLM260 (Round Shaft Type)	SGD24
SOL4M6F	BLM460 (GFV Gear)	SGD29
SOL5M8F	BLM5120, BLM5200, BLM5400 (Round Shaft Type)	SGD31
SOL6M8F	BLM6200, BLM6400 (GFV Gear)	SGD34

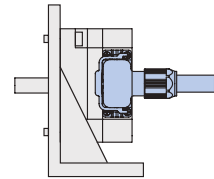
Note

When mounting the motor on the mounting bracket, place the motor connector on the top or on the side.

If the connector is placed on the bottom, it interferes with the bracket or the installation surface and therefore is not recommended.



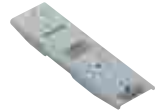
Connector on the Top



Connector on the Side

DIN Rail Mounting Bracket

Use the mounting bracket to install the driver to the DIN rail.

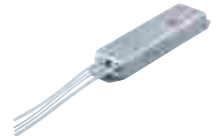


Product Line

Product Name	List Price
MADP02	SGD19

Regeneration Resistor

Use the regeneration resistor to operate the round shaft type (400 W) under inertial load.



Product Line

Product Name	List Price
RGB100	SGD56

Specifications

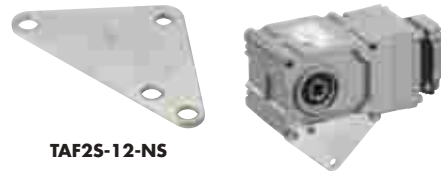
Continuous Regenerative Power	70 W
Instantaneous Regenerative Power	720 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Operation: Open at 150 ± 7°C Reset: Closed at 145 ± 12°C (Normally closed)

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

Torque Arms

Prevents the gearhead from spinning due to reaction force from the driven shaft when a hypoid right-angle hollow shaft **JH** gear is installed.



TAF2S-12-NS

<Application example>

Product Line

Product Name	List Price	Applicable Product	Main Specifications
TAF2S-12-NS	SGD25	BLM460SHPK-4H □	Materials: SS400 Surface treatment: Trivalent chromate
TAF2S-15-NS	SGD26	BLM5120HPK-5H □	
TAF3S-25-2-NS	SGD33	BLM5200HPK-5XH □	
TAF3S-30-3-NS	SGD71	BLM5200HPK-5YH □	

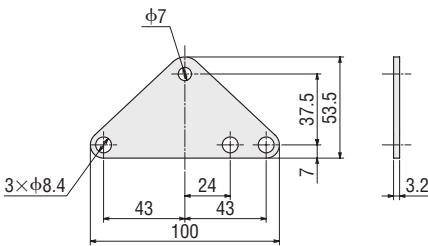
● The □ in the applicable product is replaced with a number that represents the gear ratio and a code that represents the output shaft specification.

Dimensions (Unit: mm)

◇ TAF2S-12-NS

Mass: 75 g

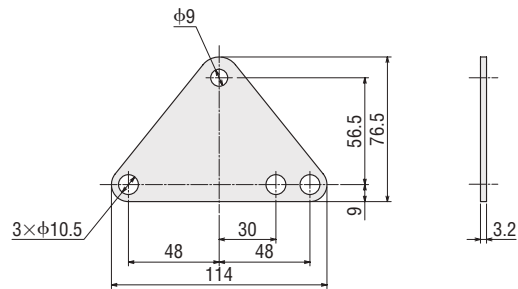
2D CAD A1608 3D CAD



◇ TAF2S-15-NS

Mass: 125 g

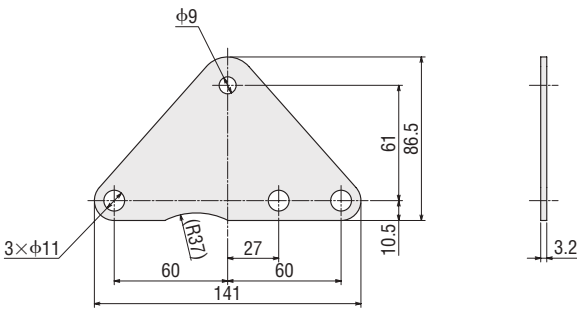
2D CAD A1609 3D CAD



◇ TAF3S-25-2-NS

Mass: 200 g

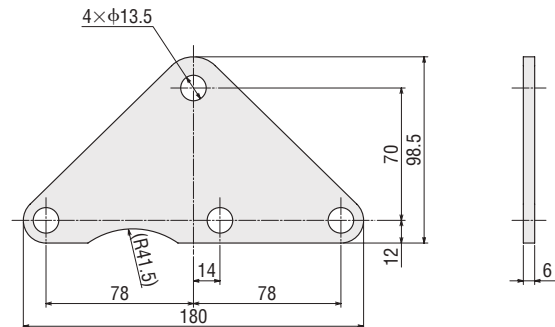
2D CAD A1610 3D CAD



◇ TAF3S-30-3-NS

Mass: 400 g

2D CAD A1611 3D CAD



Motor Covers

Protects the motor. The cover is designed with IP66 protection to ensure use in environments where water or dust disperses.

Product Line

◇ Motor Cover

Product Name	List Price
PCM5	SGD44
PCM5-C	SGD54

◇ Replacement Gaskets

Ideally replace the gaskets after 1 year use.



Product Name	Set Details
PCMP5	2 gaskets

Applicable Product

Output Power	Motor	Cable Drawing Direction
30 W 60 W 120 W	Parallel Shaft Gearhead GFV Gear*	Drawing on the output shaft side
	Round Shaft Type	Drawing on the counter-output shaft side

*The parallel shaft gearhead **GFV** gear cannot be used to draw the cable on the counter-output shaft side.



With a blind cap
PCM5

With a cable gland
PCM5-C

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.com.sg/>

STEPPING MOTORS

AZ Series

Battery-Free Absolute Sensor Equipped

New Generation & High Precision Positioning Motors

α STEP



Newly developed ABZO sensor comes with advanced technology is now at affordable price

Newly Developed **ABZO** Sensor

Oriental Motor has developed a compact, low-cost, and mechanical driven type equipped with absolute sensor that does not require a battery (Patented).

The products offered at affordable prices which can achieve productivity improvement and cost reduction.



06

AZ Series

● Mechanical driven sensor

On an analog clock, the current time is shown by the positions of the second hand, minute hand, and hour hand. The ABZO sensor is a mechanical driven sensor equipped with multiple gears that correspond to the hands of a clock. The sensor recognizes the angle of each gear to detect positional information. Therefore, no batteries are required.

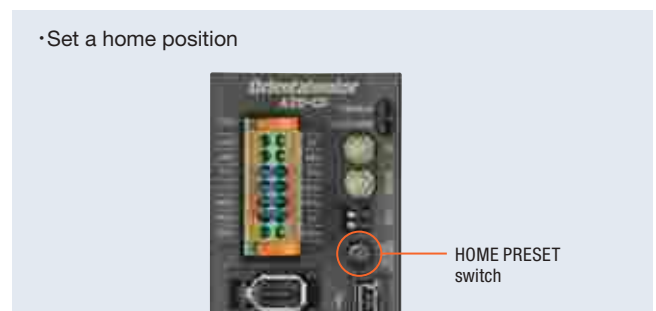
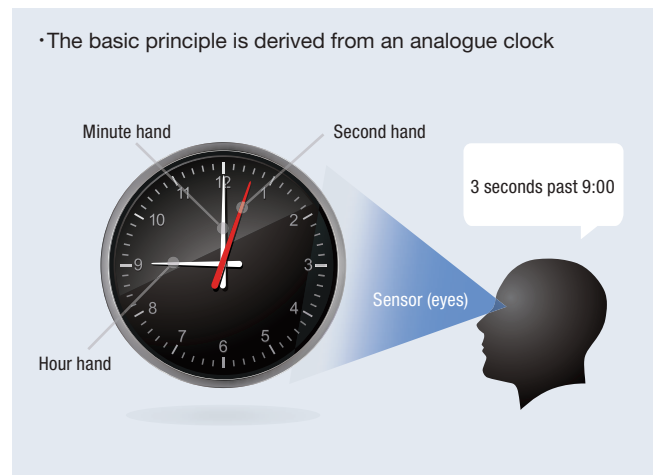
● Multi-rotation absolute sensor

From the reference of home position, the absolute position for ± 900 rotations (for 1800 rotations)* of the motor shaft can be detected.

* A frame size of 20 mm or 28 mm (30 mm) is for ± 450 rotations (900 rotations).

● How to set home position

A home position can easily be set by pressing the switch on the front of the driver, and the ABZO sensor saves the home position. You can also use the support software (**MEXE02**) or external input signals to set a home position.



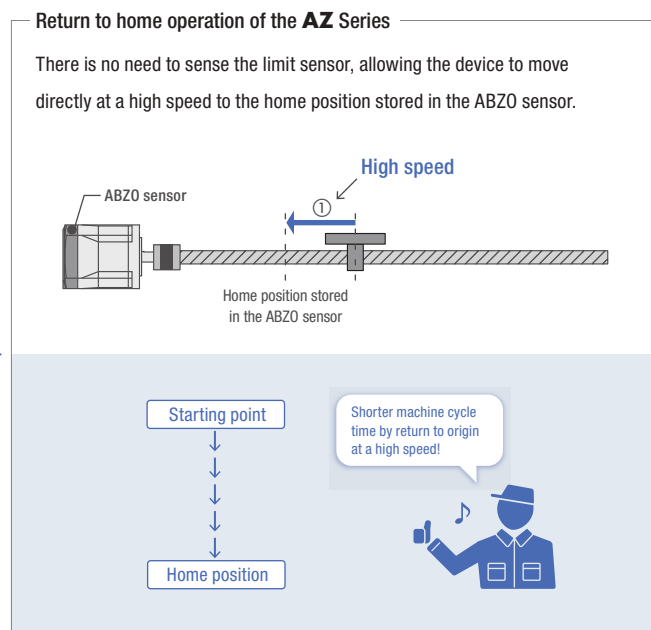
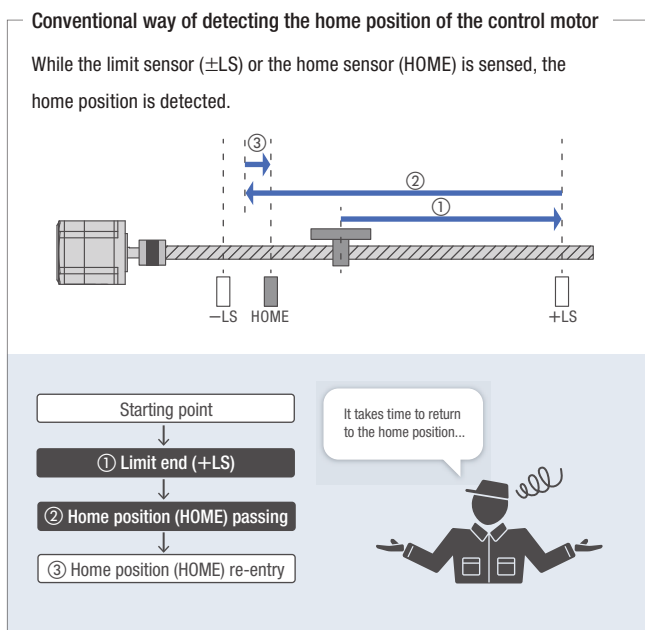
The absolute system is achieved with battery-free.

No External Sensor Required

This series uses the absolute system that does not require external sensors such as a home position sensor and limit sensor.

● High-speed return to home + Improvement of accuracy in the return to home position

Since return-to-home operation is enabled without an external sensor, the operation can be performed at a high speed regardless of sensor sensitivity specifications. This reduces the machine cycle time. Returning to the home position is made possible regardless of variations in home sensors, improving the accuracy of the home position.



● Cost reduction

The sensor and wiring cost can be reduced, lowering the total system cost.

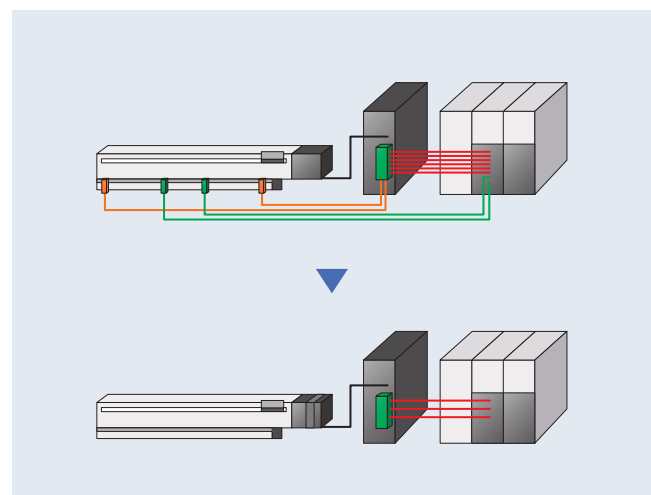
● Wire saving

Wire saving allows the equipment to design easily.

● The equipment is not affected by malfunction of an external sensor.

You do not have to worry about malfunction, failure, or disconnection of an external sensor (for example, in an environment where metal pieces scatter or oil mist occurs).

● If there is no limit sensor attached, you can use the software limit of the driver to prevent the threshold from being exceeded.



The absolute system is achieved with battery-free.

Battery-free

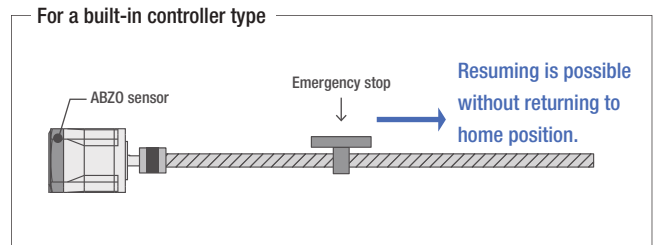
A mechanical driven sensor is used and requires no battery.
The positional information is mechanically managed by the ABZO sensor.



● Keep positional information

The positional information is kept even if power is shut down during positioning operation or the cable between the motor and the driver is removed. When a built-in controller type recovers from an emergency stop of the production line or from a power failure, it can resume positioning operation without returning to the home position.

- Since positional information is kept in the ABZO sensor, the home position must be set again if the motor is replaced.



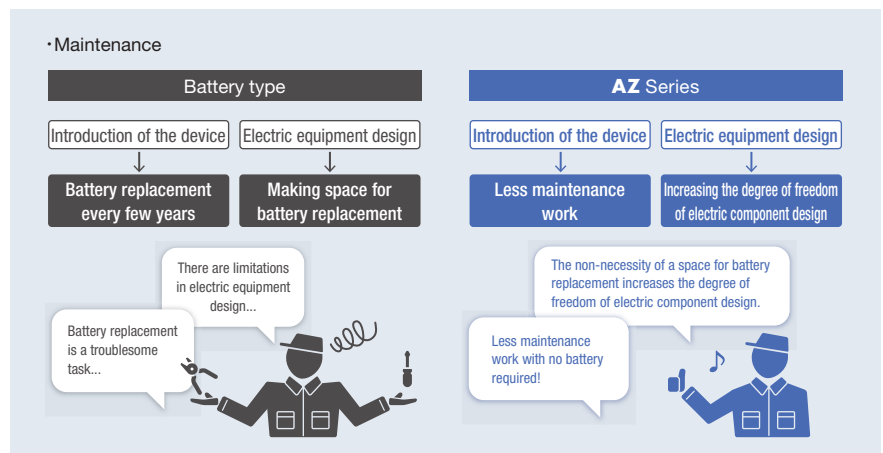
06

● Less maintenance work

Battery replacement is not required, reducing maintenance work and costs.

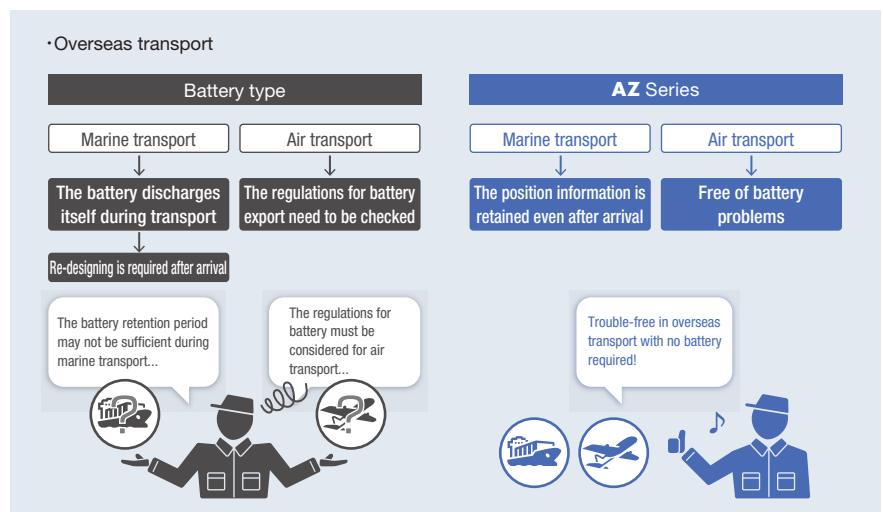
● Desired installation of the driver

Not require to ensure space for battery replacement, as the driver can be installed in any location, and a more flexible layout design is available for the control panel and other devices.



● Trouble-free for overseas transportation

Since batteries discharge by themselves, care must be taken when transported over a long period of time for international or long-distance shipment. The ABZO sensor does not require a battery, and there is no time limitation for positional information retention. In addition, there is no need to consider the regulations applied to battery export.



AZ Series

Energy saving achieved by excellent characteristics, high reliability, and energy saving derived from α STEP



Excellent Characteristics and High Reliability

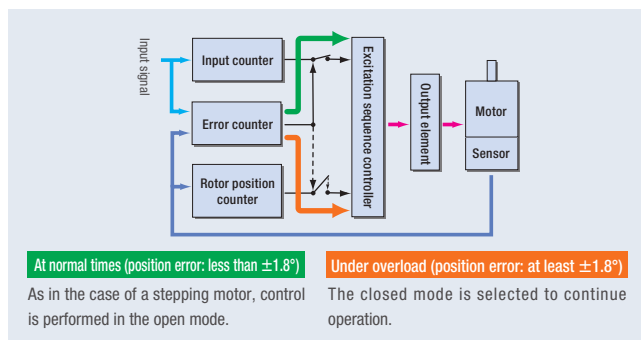
This unit employs the unique control method, achieve high reliability with advantages for both the open loop control and closed loop control.

- **Operation continues even at sudden load change or sudden acceleration**

At normal times, this compact unit synchronizes with pulse commands and operates with open loop control. When overloaded, the current control immediately changed to the closed loop control and corrects the position.

- **In an abnormal condition, an alarm signal is output**

If overloaded continuously applied, the unit outputs an alarm signal, and when positioning is completed, the unit outputs a signal. These features provide high reliability.



- **High response**

Utilizing the high response of the stepping motor, the unit can move the device in a short distance for a short time. The unit can move the device by following the command and without delay.

- **The stop position is retained without hunting**

During positioning, stoppage is done by the retaining force of the motor, without hunting. Therefore, the unit is most suitable for the applications which low-rigidity positioning mechanism is used and vibration should not occur during stoppage.

- **No tuning is required**

Under normal conditions, this unit operates by open loop control. This enables positioning without gain adjustment even when there is a change in the load of the belt mechanism, chain drive, or other mechanical drives.

- **Smooth movement even at a low speed**

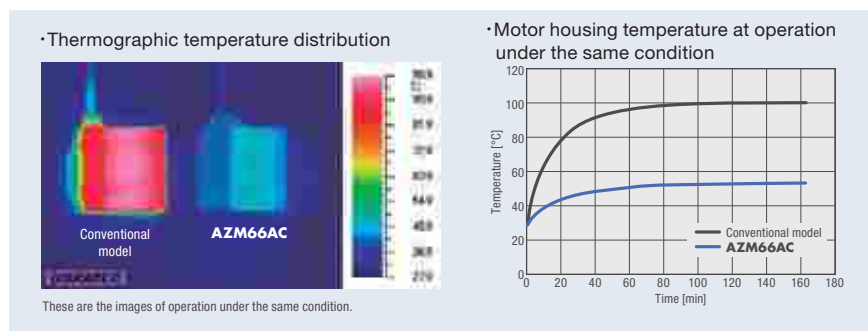
The micro-step drive and smooth driving functions* are equipped with standard functions suppress vibration at a low speed and smooth movement.

* These functions do not require any change of the pulse input setting but allow the micro-step drive which travel distance and speed are of the same as those of full-step drive.

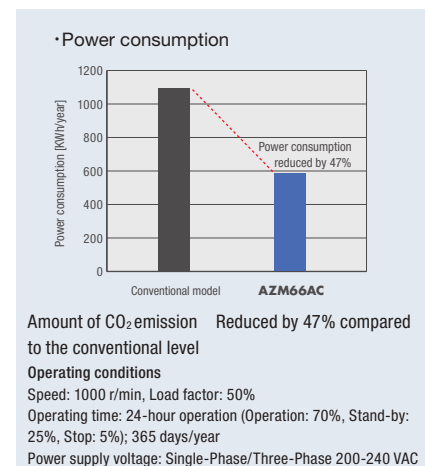
Energy Saving and Low Heat Emission

The adoption of the high efficiency motor leads to the reduction of heat emission and power consumption.

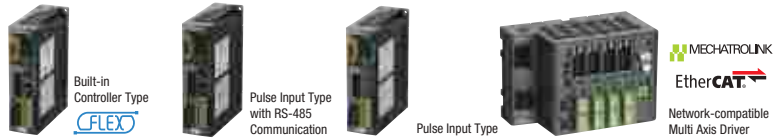
- **Heat emission drastically reduced**



- **Power consumption Reduced by 47% compared to the conventional level**



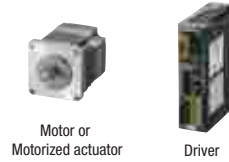
Drivers selectable according to the host system



Built-in Controller Type **FLEX** **AC** **DC**

Sets of data operation in the driver, and selects and executes the operation data from the upper-level system. Connection with and control of the upper-level system are performed by I/O, Modbus (RTU), RS-485 communication, or FA network. By using a network converter (sold separately), the CC-Link communication, MECHATROLINK communication, and EtherCAT communication can be supported.

Basic setting (Factory setting)



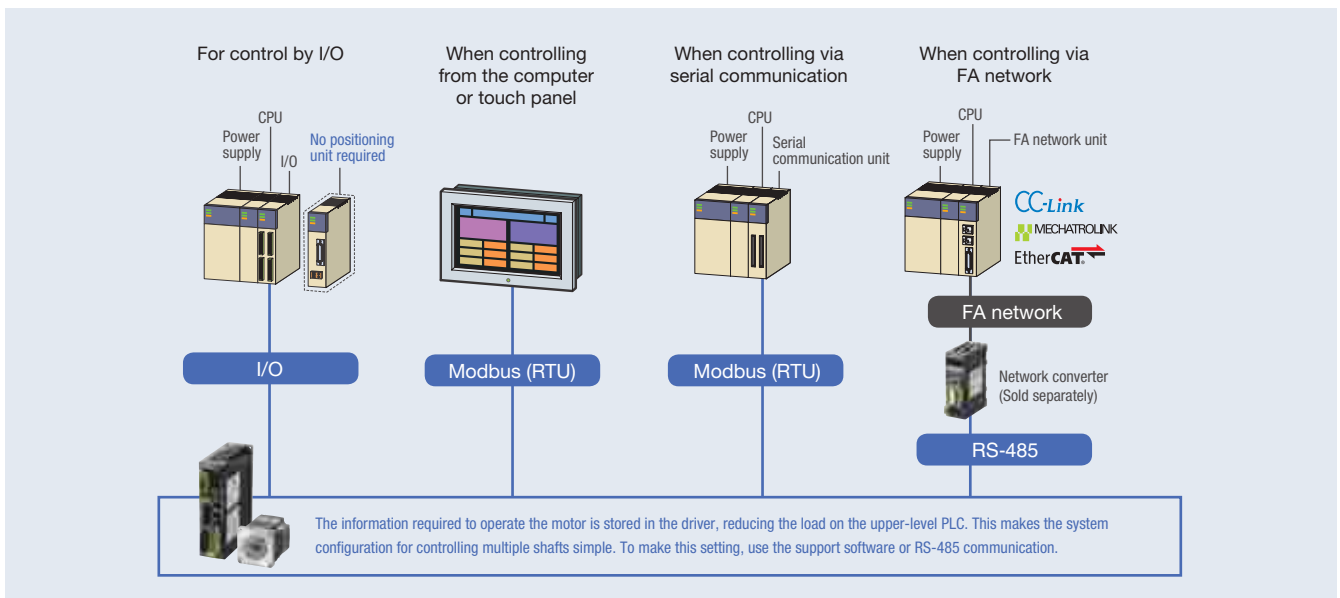
Operation data setting Parameter change

Support software (**MEXE02**)



● Setting via RS-485 communication is also available.

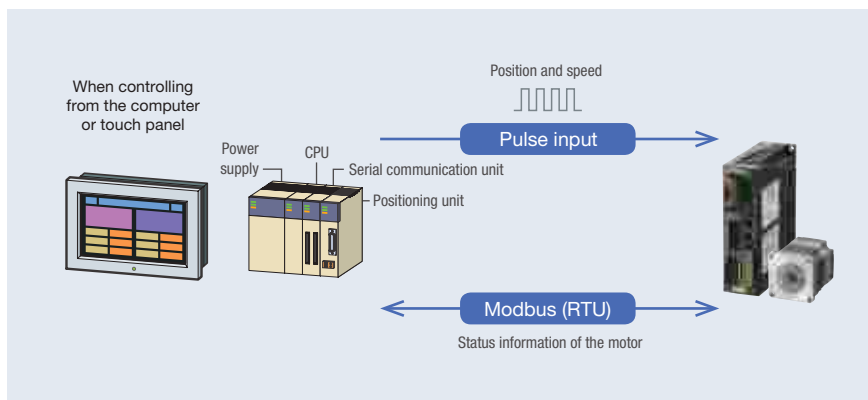
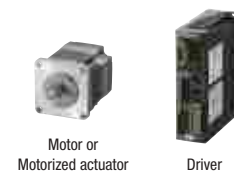
FLEX FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.



NEW Pulse Input Type with RS-485 Communication **AC** **DC**

It executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.

Basic setting (Factory setting)



I/O allocation change Parameter change

Support software (**MEXE02**)

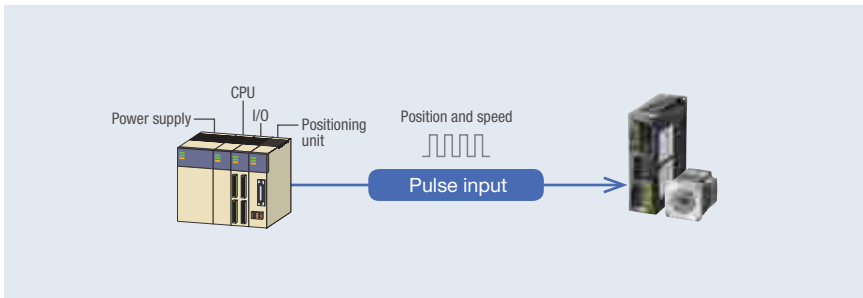
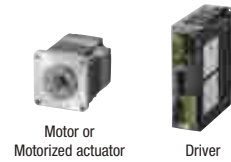


The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.

Pulse Input Type AC DC

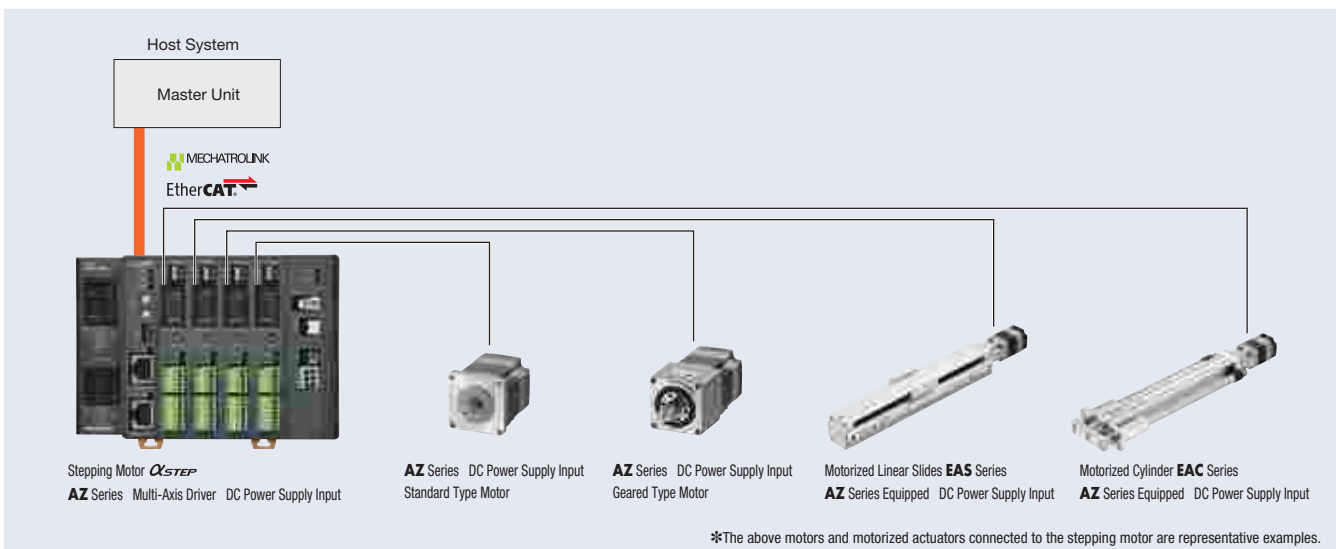
It executes operation by inputting pulses to the driver. The motor is controlled by the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.

Basic setting (Factory setting)



Network-compatible Multi-Axis Drivers DC

Multi-axis driver that supports MECHATROLINK-III and EtherCAT Drive Profile. The driver can be connected to a DC power supply motor of the **AZ** Series and to a motorized actuator equipped with motor. We provide the drivers to which 2, 3, or 4 axial connectors can be connected.



- **CC-Link** and **MECHATROLINK** are the registered trademarks of the CC-Link Partner Association and the MECHATROLINK Members Association, respectively.
- **EtherCAT** is the registered trademark licensed by Beckhoff Automation in Germany.
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website. The media is also available (for free).

Easy settings and useful functions that are unique to the **AZ Series**.



Support software **MEXE02**

The support software can be downloaded from the Oriental Motor website. The media is also available (for free).

Easy Settings and Easy Operation

The support software (**MEXE02**) allows you to perform basic settings such as the editing of operation data and the setting of parameters. Furthermore, since the built-in controller type enables sequence control, it can configure a simple system without using a host sequence.

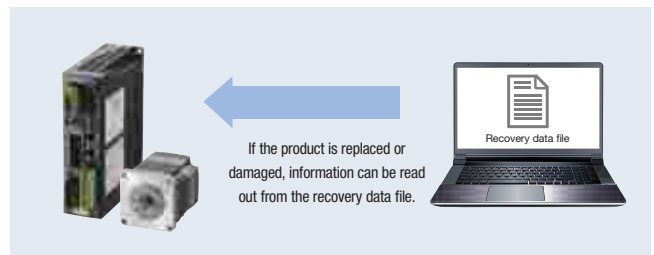
● Unit setting wizard

This function allows you to display/enter the travel distance, speed, or other details in your desired unit. Since data can be input or displayed according to the mechanism used, the function saves labor for unit conversion and allows you to easily input operation data.



● Creating a recovery data file

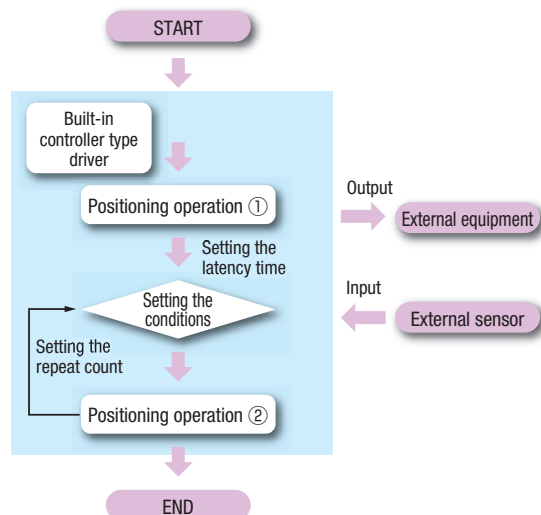
At first, create a file in which factory settings of the product will be saved in preparation for product replacement due to maintenance or for damage to the product. Be sure to create a recovery data file if you are using a motorized actuator.



● The simplified sequence function simplifies programs

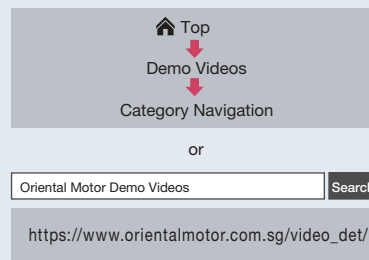
By importing output signals for controlling other equipment or external input signals such as those from sensors, the **AZ Series** can simplify sequence control programs.

- No. of positioning operation data items that can be set (up to 256 points)
- No. of general-purpose I/O points (10 points for input and 6 points for output)
- No. of communication I/O points (16 points for input and 16 points for output)



Tip for the Usage Navigation

Our website contains video which shows useful functions and usage of the **αSTEP AZ Series**. We hope you will use the Usage Navigation.

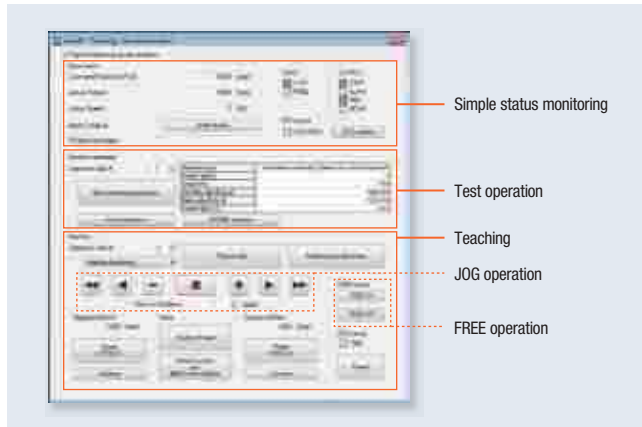


Test Functions

The test functions allows the motor to operate by itself and enables you to check the connection with the host system. The use of these functions during equipment startup can save time.

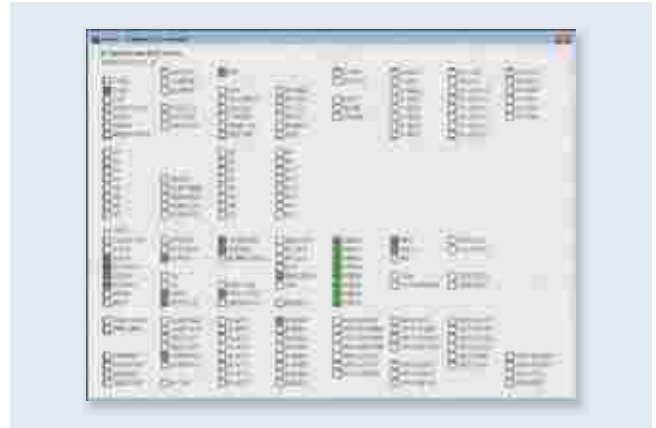
● Teaching/Remote operation During startup

From the support software, you can easily set an original point or drive the motor. Before performing connection with the host system, you can perform teaching, test operation, etc. This contributes to the reduction of the equipment startup time.



● I/O test During startup During operation

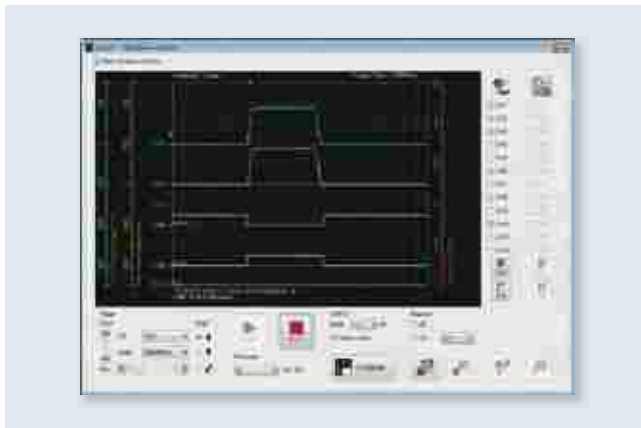
You can monitor input signals and forcibly output output signals. This is a useful function for checking connection with the host system or the operation of a network I/O.



Various Monitor Functions

● Waveform monitor During startup

Similar to using an oscilloscope, the motor drive condition and output signal status can be checked. Use this function when starting up the device or making adjustments.



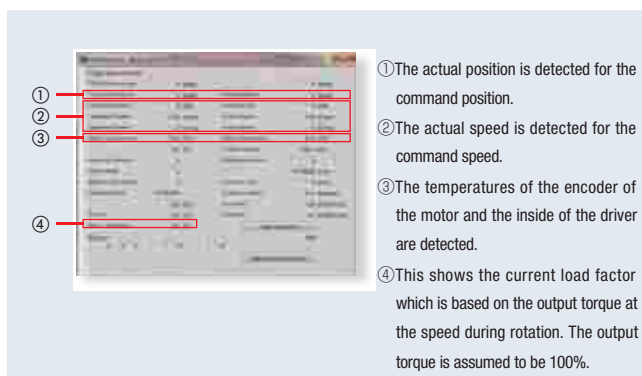
● Alarm monitor During startup

If an error occurs, you can check the error details, operation conditions at the time of error occurrence, and measures to be taken.



● Status monitoring During startup

In addition to the speed, motor, driver temperature, and load factor, you can monitor other conditions including rotation amount accumulated from the start of use. Signals can be output for each item as needed, achieving efficient maintenance.



● Compatible with multi monitoring

This function allows you to simultaneously open and use multiple setting screens such as those for data setting, test operation, and monitoring. This function facilitates equipment startup, adjustment, etc.




AZ Series Lineup

AC : Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC input

DC : 24/48 VDC input

Motors

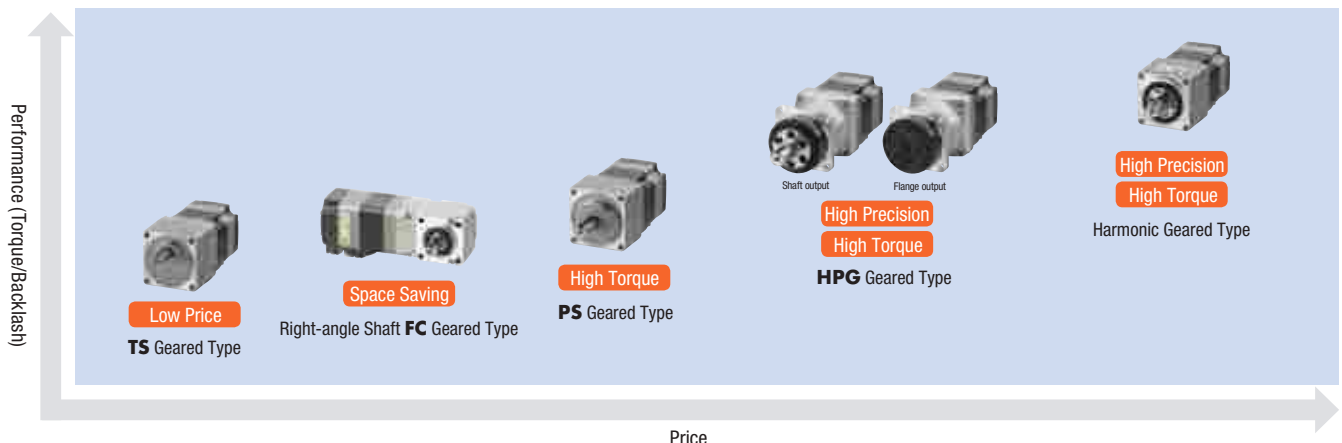
Type	Electromagnetic Brake	Frame Size				
		20 mm	28 mm*6	42 mm*2	60 mm	85 mm 90 mm*4
Standard  Motor shaft shape Single sided milling/straight/with key	Not equipped	DC*1	DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC*3	AC DC*3	AC*5
TS Geared (Spur gear mechanism) Selection of the cable drawing direction Downward/upward/right/left Low gear ratio, high-speed operation enabled Gear ratio: 3.6, 7.2, 10, 20, 30	Not equipped	—	—	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
Right-angle Shaft FC Geared (Face gear mechanism) Right-angle shaft gear for positioning Gear ratio: 7.2, 10, 20, 30	Not equipped	—	—	AC DC	AC DC	—
	Equipped	—	—	AC DC	AC DC	—
PS Geared (Planetary gear mechanism) Gear ratio useful for angle indexing Gear ratio: 5, 7.2, 10, 25, 36, 50	Not equipped	—	NEW DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
HPG Geared (HarmonicPlanetary®) High-precision positioning Gear ratio: 5, 9, 15	Not equipped	—	—	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
Harmonic Geared (HarmonicDrive®) High-precision positioning Gear ratio: 50, 100	Not equipped	—	NEW DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC

*1 24 VDC only *2 40 mm for the HPG geared type *3 AZM46 only *4 Geared type only *5 AZM98 only *6 30 mm for the harmonic geared type

Note ● The values shown above must be used as reference. These values vary depending on the motor frame size and gear ratio.
 ● HarmonicPlanetary, HarmonicDrive and HDS are registered trademarks or trademarks of Harmonic Drive Systems Inc.

We offer motors pre-assembled with gears, as variations of stepping motors.

Select an appropriate type from the various geared motors according to the torque, accuracy (backlash) and price.




Permissible Torque/ Maximum Instantaneous Torque [N·m]	Backlash [arcmin]	Basic Resolution [°/Pulse]	Output Shaft Rotation Speed [r/min]
Maximum Holding Torque 4	—	0.36	6000
Permissible Torque / Maximum Instantaneous Torque 25 / 45	10	0.012	833
Permissible Torque 10.5	10	0.012	416
Permissible Torque / Maximum Instantaneous Torque 37 / 60	7	0.0072	600
Permissible Torque / Maximum Instantaneous Torque 24 / 33	3	0.024	900
Permissible Torque / Maximum Instantaneous Torque 52 / 107	0	0.0036	70

- **FLEX** FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.
- **MECHATROLINK** is a registered trademark of the MECHATROLINK Members Association. ● **EtherCAT** is a registered trademark licensed by Beckhoff Automation in Germany.

Drivers


Type

Built-in Controller **FLEX**




AC DC

Pulse Input with RS-485 Communication **NEW**




AC DC

Pulse Input



AC DC

Network-compatible
Multi Axis Driver



DC
MECHATROLINK
EtherCAT

You can select the shaft shape and cable drawing direction depending on the application.



Single Sided Milling

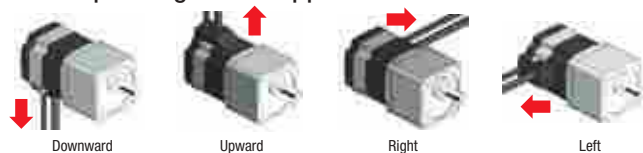
Straight

With Key

● Standard Type

Frame Size	Shaft Shape	Single Sided Milling	NEW Straight	NEW With Key
	20 mm	●	—	—
28 mm	●	—	—	
42 mm	●	●	●*	
60 mm	●	●	●	
85 mm	●	●	●	

*AZM48 only



Downward

Upward

Right

Left

You can select a cable drawing direction from the output shaft from among the 4 directions.

● **TS** Geared Type

Frame Size	Cable Drawing Direction			
	Downward	Upward NEW	Right NEW	Left NEW
42 mm	●	●	●	●
60 mm	●	●	●	●
90 mm	●	●	●	●

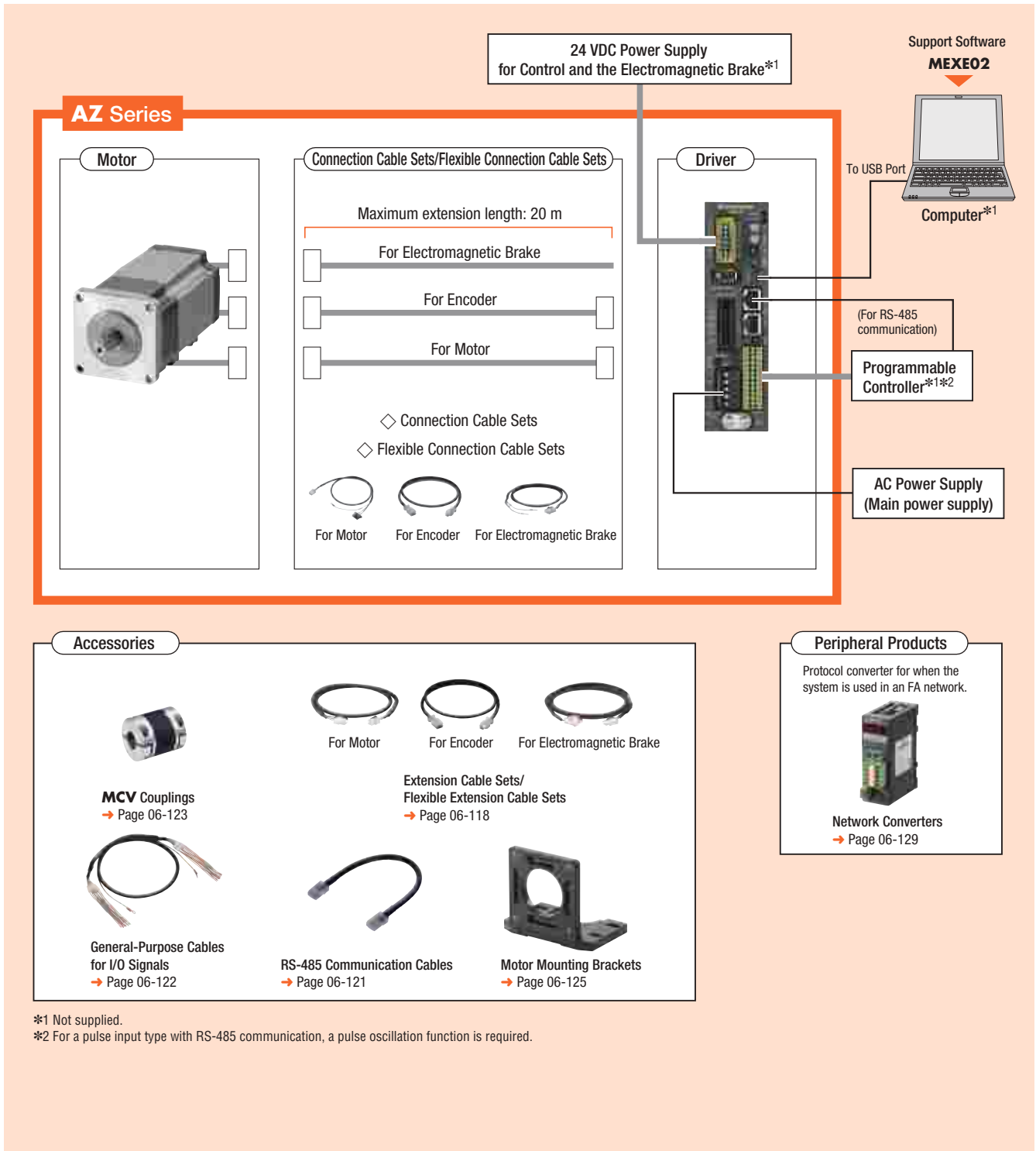
[Click Here](#)

For more information, please visit **ORIENTAL MOTOR** Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

System Configuration

- When a standard type motor with electromagnetic brake is combined with a built-in controller type driver or a pulse input type driver with RS-485 communication

The figure below shows a sample configuration which includes a built-in controller type driver and which uses I/O control or RS-485 communication. The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



System Configuration Example

AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MC	AZD-CD	CC030VZFB	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD650	SGD83	SGD14	SGD100	SGD25

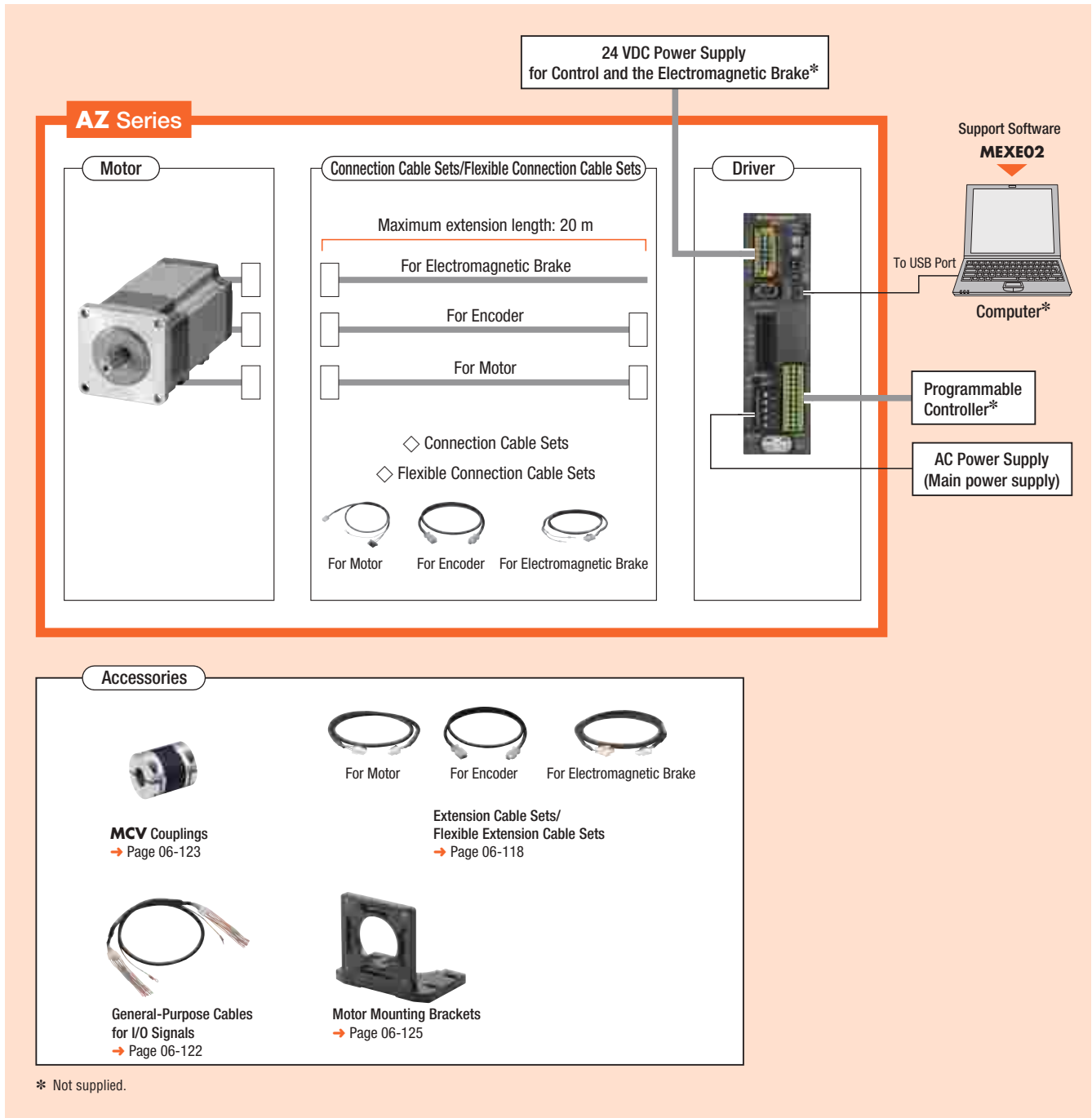
- The system configuration shown above is an example. Other combinations are available.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

● When a standard type motor with electromagnetic brake is combined with a pulse input type driver

The figure below shows a sample configuration of a single axis system which uses a programmable controller (equipped with a pulse oscillator). The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



● System Configuration Example

AZ Series			+	Sold Separately		
Motor	Driver	Connection Cable Sets		Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MC	AZD-C	CC030VZFB		PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD588	SGD83		SGD14	SGD100	SGD25

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Motors

◇ Standard Type

AZM 6 6 A 0 C

① ② ③ ④ ⑤ ⑥

◇ PS, HPG, Harmonic Geared Type

AZM 6 6 A C - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

◇ TS Geared Type

AZM 6 6 A C - TS 7.2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

◇ FC Geared Type

AZM 6 6 A C - FC 7.2 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

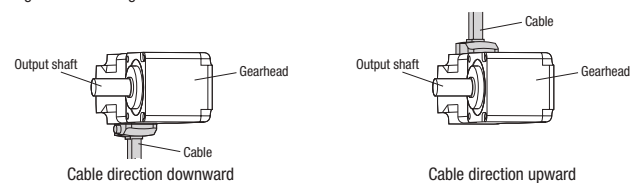
①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm (40 mm for the HPG Geared Type) 6: 60 mm 9: 85 mm (90 mm for the Geared Type)
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Additional Function*	0: Straight 1: With Key
⑥	Motor Specifications	C: AC Power Supply Input Specifications
⑦	Gear Type	PS: PS Geared Type HP: HPG Geared Type HS: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Output Shaft Type	HPG Geared Type Blank: Shaft Output F: Flange Output

*When the name of a standard type does not contain a number representing an additional function, it is a single-sided milled type.

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm 9: 90 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	C: AC Power Supply Input Specifications
⑥	Gear Type	TS: TS Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction	U: Upward L: Left R: Right

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	C: AC Power Supply Input Specifications
⑥	Gear Type	FC: FC Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction*	D: Downward U: Upward
⑨	Identification	A: Solid Shaft

*The cable drawing direction is based on the assumption that the output shaft is at left and the gearhead is at right.



Driver

AZD - C D

① ② ③

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①	Driver Type	AZD: AZ Series Driver
②	Power Supply Input	A: Single-Phase 100-120 VAC C: Single-Phase/Three-Phase 200-240 VAC
③	Type	D: Built-in Controller Type X: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type

①		CC: Cable
②	Length	005: 0.5 m 010: 1 m 015: 1.5 m 020: 2 m 025: 2.5 m 030: 3 m 040: 4 m 050: 5 m 070: 7 m 100: 10 m 150: 15 m 200: 20 m
③	Reference Number	
④	Applied Model	Z: For AZ Series
⑤	Cable Type	F: Connection Cable Set R: Flexible Connection Cable Set
⑥	Description	Blank: For the product with no Electromagnetic Brakes B: For the product with Electromagnetic Brake

Product Line

The motor, driver, and connection cables need to purchase separately.

Motors

◇ Standard Type

Frame Size	Product Name	List Price
42 mm	AZM46AC	SGD340
	AZM46AOC	SGD340
	AZM48AC <small>NEW</small>	SGD353
	AZM48AOC <small>NEW</small>	SGD353
	AZM48A1C <small>NEW</small>	SGD365
60 mm	AZM66AC	SGD400
	AZM66AOC	SGD400
	AZM66A1C	SGD413
	AZM69AC	SGD406
	AZM69AOC	SGD406
85 mm	AZM69A1C	SGD419
	AZM98AC	SGD431
	AZM98AOC	SGD431
	AZM98A1C	SGD444
	AZM911AC	SGD456
	AZM911AOC	SGD456
	AZM911A1C	SGD469

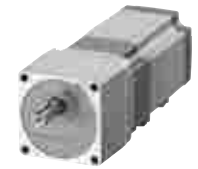


◇ Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC	SGD515
	AZM46MOC	SGD515
60 mm	AZM66MC	SGD625
	AZM66MOC	SGD625
	AZM66M1C	SGD638
	AZM69MC	SGD631
85 mm	AZM69MOC	SGD631
	AZM69M1C	SGD644
	AZM98MC	SGD681
	AZM98MOC	SGD681
	AZM98M1C	SGD694

◇ TS Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AC-TS3.6	SGD488
	AZM46AC-TS3.6R	SGD488
	AZM46AC-TS3.6U	SGD488
	AZM46AC-TS3.6L	SGD488
	AZM46AC-TS7.2	SGD488
	AZM46AC-TS7.2R	SGD488
	AZM46AC-TS7.2U	SGD488
	AZM46AC-TS7.2L	SGD488
	AZM46AC-TS10	SGD505
	AZM46AC-TS10R	SGD505
	AZM46AC-TS10U	SGD505
	AZM46AC-TS10L	SGD505
	AZM46AC-TS20	SGD505
	AZM46AC-TS20R	SGD505
	AZM46AC-TS20U	SGD505
	AZM46AC-TS20L	SGD505
	AZM46AC-TS30	SGD505
	AZM46AC-TS30R	SGD505
	AZM46AC-TS30U	SGD505
	AZM46AC-TS30L	SGD505
60 mm	AZM66AC-TS3.6	SGD574
	AZM66AC-TS3.6R	SGD574
	AZM66AC-TS3.6U	SGD574
	AZM66AC-TS3.6L	SGD574
	AZM66AC-TS7.2	SGD574
	AZM66AC-TS7.2R	SGD574
	AZM66AC-TS7.2U	SGD574
	AZM66AC-TS7.2L	SGD574
	AZM66AC-TS10	SGD591
	AZM66AC-TS10R	SGD591
	AZM66AC-TS10U	SGD591
	AZM66AC-TS10L	SGD591
	AZM66AC-TS20	SGD591
	AZM66AC-TS20R	SGD591
	AZM66AC-TS20U	SGD591
	AZM66AC-TS20L	SGD591
	AZM66AC-TS30	SGD591
	AZM66AC-TS30R	SGD591
	AZM66AC-TS30U	SGD591
	AZM66AC-TS30L	SGD591



◇ TS Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC-TS3.6	SGD663
	AZM46MC-TS3.6R	SGD663
	AZM46MC-TS3.6U	SGD663
	AZM46MC-TS3.6L	SGD663
	AZM46MC-TS7.2	SGD663
	AZM46MC-TS7.2R	SGD663
	AZM46MC-TS7.2U	SGD663
	AZM46MC-TS7.2L	SGD663
	AZM46MC-TS10	SGD680
	AZM46MC-TS10R	SGD680
	AZM46MC-TS10U	SGD680
	AZM46MC-TS10L	SGD680
	AZM46MC-TS20	SGD680
	AZM46MC-TS20R	SGD680
	AZM46MC-TS20U	SGD680
	AZM46MC-TS20L	SGD680
	AZM46MC-TS30	SGD680
	AZM46MC-TS30R	SGD680
	AZM46MC-TS30U	SGD680
	AZM46MC-TS30L	SGD680
60 mm	AZM66MC-TS3.6	SGD799
	AZM66MC-TS3.6R	SGD799
	AZM66MC-TS3.6U	SGD799
	AZM66MC-TS3.6L	SGD799
	AZM66MC-TS7.2	SGD799
	AZM66MC-TS7.2R	SGD799
	AZM66MC-TS7.2U	SGD799
	AZM66MC-TS7.2L	SGD799
	AZM66MC-TS10	SGD816
	AZM66MC-TS10R	SGD816
	AZM66MC-TS10U	SGD816
	AZM66MC-TS10L	SGD816
	AZM66MC-TS20	SGD816
	AZM66MC-TS20R	SGD816
	AZM66MC-TS20U	SGD816
	AZM66MC-TS20L	SGD816
	AZM66MC-TS30	SGD816
	AZM66MC-TS30R	SGD816
	AZM66MC-TS30U	SGD816
	AZM66MC-TS30L	SGD816



◇ **TS Geared Type**

Frame Size	Product Name	List Price
90 mm	AZM98AC-TS3.6	SGD634
	AZM98AC-TS3.6R	SGD634
	AZM98AC-TS3.6U	SGD634
	AZM98AC-TS3.6L	SGD634
	AZM98AC-TS7.2	SGD634
	AZM98AC-TS7.2R	SGD634
	AZM98AC-TS7.2U	SGD634
	AZM98AC-TS7.2L	SGD634
	AZM98AC-TS10	SGD651
	AZM98AC-TS10R	SGD651
	AZM98AC-TS10U	SGD651
	AZM98AC-TS10L	SGD651
	AZM98AC-TS20	SGD651
	AZM98AC-TS20R	SGD651
	AZM98AC-TS20U	SGD651
	AZM98AC-TS20L	SGD651
	AZM98AC-TS30	SGD651
	AZM98AC-TS30R	SGD651
	AZM98AC-TS30U	SGD651
	AZM98AC-TS30L	SGD651

◇ **TS Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
90 mm	AZM98MC-TS3.6	SGD884
	AZM98MC-TS3.6R	SGD884
	AZM98MC-TS3.6U	SGD884
	AZM98MC-TS3.6L	SGD884
	AZM98MC-TS7.2	SGD884
	AZM98MC-TS7.2R	SGD884
	AZM98MC-TS7.2U	SGD884
	AZM98MC-TS7.2L	SGD884
	AZM98MC-TS10	SGD901
	AZM98MC-TS10R	SGD901
	AZM98MC-TS10U	SGD901
	AZM98MC-TS10L	SGD901
	AZM98MC-TS20	SGD901
	AZM98MC-TS20R	SGD901
	AZM98MC-TS20U	SGD901
	AZM98MC-TS20L	SGD901
	AZM98MC-TS30	SGD901
	AZM98MC-TS30R	SGD901
	AZM98MC-TS30U	SGD901
	AZM98MC-TS30L	SGD901

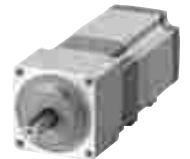


◇ **FC Geared Type**

Frame Size	Product Name	List Price
42 mm	AZM46AC-FC7.2UA	SGD646
	AZM46AC-FC7.2DA	SGD646
	AZM46AC-FC10UA	SGD646
	AZM46AC-FC10DA	SGD646
	AZM46AC-FC20UA	SGD646
	AZM46AC-FC20DA	SGD646
	AZM46AC-FC30UA	SGD646
	AZM46AC-FC30DA	SGD646
60 mm	AZM66AC-FC7.2UA	SGD769
	AZM66AC-FC7.2DA	SGD769
	AZM66AC-FC10UA	SGD769
	AZM66AC-FC10DA	SGD769
	AZM66AC-FC20UA	SGD769
	AZM66AC-FC20DA	SGD769
	AZM66AC-FC30UA	SGD769
	AZM66AC-FC30DA	SGD769

◇ **FC Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MC-FC7.2UA	SGD821
	AZM46MC-FC7.2DA	SGD821
	AZM46MC-FC10UA	SGD821
	AZM46MC-FC10DA	SGD821
	AZM46MC-FC20UA	SGD821
	AZM46MC-FC20DA	SGD821
	AZM46MC-FC30UA	SGD821
	AZM46MC-FC30DA	SGD821
60 mm	AZM66MC-FC7.2UA	SGD994
	AZM66MC-FC7.2DA	SGD994
	AZM66MC-FC10UA	SGD994
	AZM66MC-FC10DA	SGD994
	AZM66MC-FC20UA	SGD994
	AZM66MC-FC20DA	SGD994
	AZM66MC-FC30UA	SGD994
	AZM66MC-FC30DA	SGD994

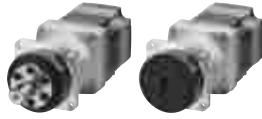


◇ **PS Geared Type**

Frame Size	Product Name	List Price
42 mm	AZM46AC-PS5	SGD628
	AZM46AC-PS7.2	SGD628
	AZM46AC-PS10	SGD628
	AZM46AC-PS25	SGD690
	AZM46AC-PS36	SGD690
	AZM46AC-PS50	SGD690
60 mm	AZM66AC-PS5	SGD750
	AZM66AC-PS7.2	SGD750
	AZM66AC-PS10	SGD750
	AZM66AC-PS25	SGD838
	AZM66AC-PS36	SGD838
	AZM66AC-PS50	SGD838
90 mm	AZM98AC-PS5	SGD869
	AZM98AC-PS7.2	SGD869
	AZM98AC-PS10	SGD869
	AZM98AC-PS25	SGD1,019
	AZM98AC-PS36	SGD1,019
	AZM98AC-PS50	SGD1,019

◇ **PS Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MC-PS5	SGD803
	AZM46MC-PS7.2	SGD803
	AZM46MC-PS10	SGD803
	AZM46MC-PS25	SGD865
	AZM46MC-PS36	SGD865
	AZM46MC-PS50	SGD865
60 mm	AZM66MC-PS5	SGD975
	AZM66MC-PS7.2	SGD975
	AZM66MC-PS10	SGD975
	AZM66MC-PS25	SGD1,063
	AZM66MC-PS36	SGD1,063
	AZM66MC-PS50	SGD1,063
90 mm	AZM98MC-PS5	SGD1,119
	AZM98MC-PS7.2	SGD1,119
	AZM98MC-PS10	SGD1,119
	AZM98MC-PS25	SGD1,269
	AZM98MC-PS36	SGD1,269
	AZM98MC-PS50	SGD1,269



◇ HPG Geared Type

Frame Size	Product Name	List Price
40 mm	AZM46AC-HP5	SGD740
	AZM46AC-HP5F	SGD728
	AZM46AC-HP9	SGD740
	AZM46AC-HP9F	SGD728
60 mm	AZM66AC-HP5	SGD1,000
	AZM66AC-HP5F	SGD981
	AZM66AC-HP15	SGD1,184
	AZM66AC-HP15F	SGD1,165
90 mm	AZM98AC-HP5	SGD1,260
	AZM98AC-HP5F	SGD1,235
	AZM98AC-HP15	SGD1,399
	AZM98AC-HP15F	SGD1,374



◇ HPG Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
40 mm	AZM46MC-HP5	SGD915
	AZM46MC-HP5F	SGD903
	AZM46MC-HP9	SGD915
	AZM46MC-HP9F	SGD903
60 mm	AZM66MC-HP5	SGD1,225
	AZM66MC-HP5F	SGD1,206
	AZM66MC-HP15	SGD1,409
	AZM66MC-HP15F	SGD1,390
90 mm	AZM98MC-HP5	SGD1,510
	AZM98MC-HP5F	SGD1,485
	AZM98MC-HP15	SGD1,649
	AZM98MC-HP15F	SGD1,624



◇ Harmonic Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AC-HS50	SGD996
	AZM46AC-HS100	SGD996
60 mm	AZM66AC-HS50	SGD1,344
	AZM66AC-HS100	SGD1,344
90 mm	AZM98AC-HS50	SGD1,613
	AZM98AC-HS100	SGD1,613



◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC-HS50	SGD1,171
	AZM46MC-HS100	SGD1,171
60 mm	AZM66MC-HS50	SGD1,569
	AZM66MC-HS100	SGD1,569
90 mm	AZM98MC-HS50	SGD1,863
	AZM98MC-HS100	SGD1,863

● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-AD	SGD650
Single-Phase/Three-Phase 200-240 VAC	AZD-CD	SGD650



◇ Pulse Input Type with RS-485 Communication NEW

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-AX	SGD650
Single-Phase/Three-Phase 200-240 VAC	AZD-CX	SGD650



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-A	SGD588
Single-Phase/Three-Phase 200-240 VAC	AZD-C	SGD588



● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent repeatedly. We provide connection cables and flexible extension cables that can be connected to connection cables for extension. See page 06-118.

The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.



For Motor For Encoder



For Motor For Encoder For Electromagnetic Brake

◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZF	SGD38
	1	CC010VZF	SGD38
	1.5	CC015VZF	SGD44
	2	CC020VZF	SGD50
	2.5	CC025VZF	SGD56
	3	CC030VZF	SGD63
	4	CC040VZF	SGD98
	5	CC050VZF	SGD110
	7	CC070VZF	SGD136
	10	CC100VZF	SGD176
	15	CC150VZF	SGD244
	20	CC200VZF	SGD310
Flexible Connection Cable Set	0.5	CC005VZR	SGD84
	1	CC010VZR	SGD84
	1.5	CC015VZR	SGD92
	2	CC020VZR	SGD99
	2.5	CC025VZR	SGD106
	3	CC030VZR	SGD111
	4	CC040VZR	SGD126
	5	CC050VZR	SGD141
	7	CC070VZR	SGD180
	10	CC100VZR	SGD236
	15	CC150VZR	SGD333
	20	CC200VZR	SGD426

◇ For the product with Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZFB	SGD53
	1	CC010VZFB	SGD53
	1.5	CC015VZFB	SGD60
	2	CC020VZFB	SGD68
	2.5	CC025VZFB	SGD75
	3	CC030VZFB	SGD83
	4	CC040VZFB	SGD121
	5	CC050VZFB	SGD135
	7	CC070VZFB	SGD166
	10	CC100VZFB	SGD214
	15	CC150VZFB	SGD294
	20	CC200VZFB	SGD373
Flexible Connection Cable Set	0.5	CC005VZRB	SGD114
	1	CC010VZRB	SGD114
	1.5	CC015VZRB	SGD124
	2	CC020VZRB	SGD134
	2.5	CC025VZRB	SGD143
	3	CC030VZRB	SGD151
	4	CC040VZRB	SGD171
	5	CC050VZRB	SGD191
	7	CC070VZRB	SGD240
	10	CC100VZRB	SGD311
	15	CC150VZRB	SGD433
	20	CC200VZRB	SGD551

06

■ Accessories

● Motors

Type	Accessories	Parallel Key	Motor Installation Screws	Operating Manual
Standard Type		—	—	1 set
TS Geared Type	Frame Size 42 mm	—	—	
	Frame Size 60 mm	1 piece	M4×60 P0.7 (4 pieces)	
	Frame Size 90 mm	1 piece	M8×90 P1.25 (4 pieces)	
FC Geared Type		1 piece	—	
PS Geared Type		1 piece	—	
HPG Geared Type	Shaft Output	1 piece	—	
	Flange Output	—	—	
Harmonic Geared Type		1 piece	—	

● For the details of the functions and operation methods of the product, refer to the Operating Manual (Functions). The Operating Manual for Functions does not come with the product. Contact the nearest Oriental Motor sales office, or download the Operating Manual from the Oriental Motor website.

● Drivers

Type	Accessories	Connector	Operating Manual
For All Types		<ul style="list-style-type: none"> • Connector for CN4 (1 piece) • Connector for CN1 (1 piece) • Connector for CN5 (1 piece) • Connector Wiring Lever (1 piece) 	1 set

● Connection Cable Sets/Flexible Connection Cable Sets

Type	Accessories	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 set

AZ Series

Estimate of Output from Stepping Motors

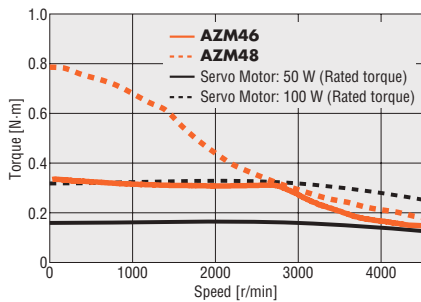
As for output (W) from an AC servo motor, the output (W) generated during rotation at the "Rated Speed" is expressed as the "Rated Output".

On the other hand, stepping motors which feature high-precision positioning and high torque in medium and low-speed areas do not have any rated speed. Therefore, there is no expression of "Rated Output". The table below shows the correspondence between the torque of each **AZ** Series standard type motor and the corresponding rated torque W of an applicable servo motor.

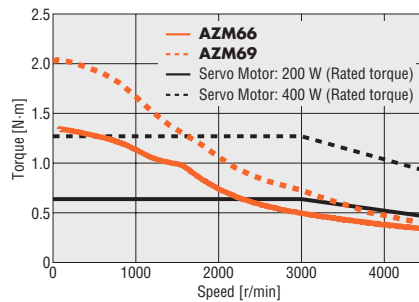
AZ Series (Standard type)		Servo motor with Corresponding Rated Torque (Estimate)
Frame Size	Product Name	
42 mm	AZM46	Corresponds to a rated torque of 50~100 W
	AZM48	
60 mm	AZM66	Corresponds to a rated torque of 100~200 W
	AZM69	Corresponds to a rated torque of 200~400 W
85 mm	AZM98	Corresponds to a rated torque of 400~750 W
	AZM911	

*These are samples of total prices of a motor, driver, and 1 m connection cable.

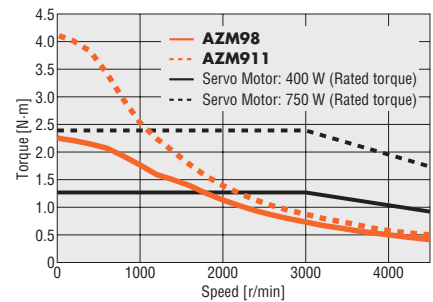
● Frame Size 42 mm



● Frame Size 60 mm



● Frame Size 85 mm



● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

Standard Type Frame Size 42 mm, 60 mm, 85 mm



Specifications

Motor	Single Shaft	AZM46A□C	AZM48A□C	AZM66A□C	AZM69A□C	AZM98A□C	AZM911A□C	
Product Name	With Electromagnetic Brake	AZM46M□C	—	AZM66M□C	AZM69M□C	AZM98M□C	—	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)						
Product Name	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)						
Maximum Holding Torque	N·m	0.3	0.77	1.2	2	2	4	
Holding Torque at Motor Standstill	Power ON	0.15	0.38	0.6	1	1	2	
	Electromagnetic Brake	0.15	—	0.6	1	1	—	
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1	115×10 ⁻⁷	370×10 ⁻⁷ (530×10 ⁻⁷)*1	740×10 ⁻⁷ (900×10 ⁻⁷)*1	1090×10 ⁻⁷ (1250×10 ⁻⁷)*1	2200×10 ⁻⁷	
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse						
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC					
	Input Current	Single-Phase 100-120 VAC	2.7	2.7	3.8	5.4	5.5	6.4
		Single-Phase 200-240 VAC	1.7	1.6	2.3	3.3	3.3	3.9
		Three-Phase 200-240 VAC	1.0	1.0	1.4	2.0	2.0	2.3
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1	24 VDC ±5% 0.25 A	24 VDC ±5%*2 0.25 A (0.5 A)*1				

● Either **0** (Straight) or **1** (With a key) indicating the configuration is entered where the box □ is located within the product name. (For **AZM46**, straight only)
For single-sided milling, no character is entered into the □ mark.

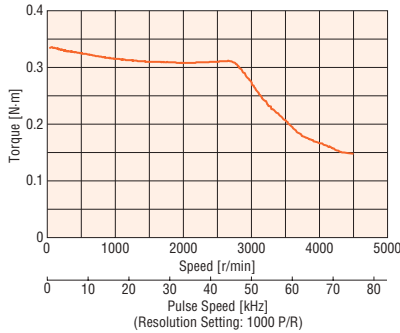
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

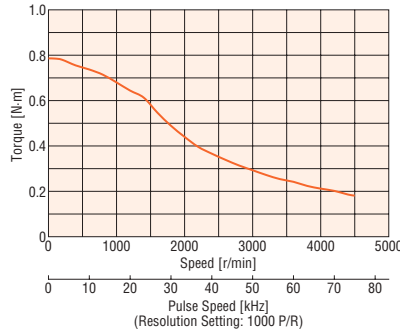
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

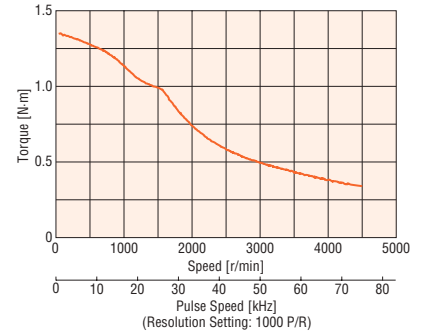
AZM46



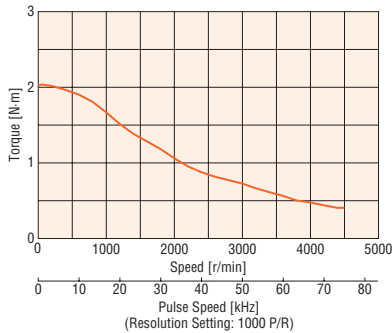
AZM48



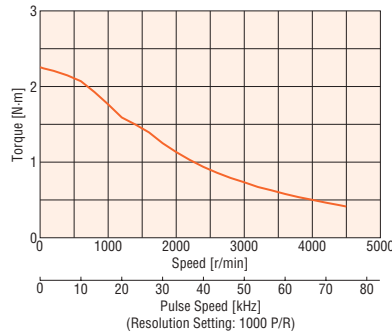
AZM66



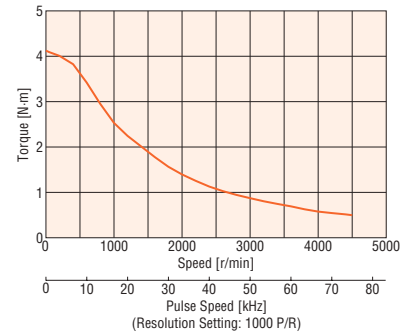
AZM69



AZM98



AZM911



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Descriptions of the Terms on the Specification Table

Maximum Holding Torque	: The maximum holding torque (holding force) of the motor when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the permissible strength of the gear is given consideration for this value.)
Permissible Torque	: The maximum value of the torque that can be continuously applied on the output gear shaft.
Maximum Instantaneous Torque	: This is the maximum torque value that can be applied to the output gear shaft during acceleration/deceleration like when an inertial load is started and stopped.
Holding Torque at Motor Standstill	Power ON : Holding torque when the automatic current cutback function is active.
	Electromagnetic Brake : Static friction torque when the electromagnetic brake is activated at standstill. (Electromagnetic brake is power off activated type.)

TS Geared Type Frame Size 42 mm

Specifications



Motor	Single Shaft	AZM46AC-TS3.6 □	AZM46AC-TS7.2 □	AZM46AC-TS10 □	AZM46AC-TS20 □	AZM46AC-TS30 □	
Product Name	With Electromagnetic Brake	AZM46MC-TS3.6 □	AZM46MC-TS7.2 □	AZM46MC-TS10 □	AZM46MC-TS20 □	AZM46MC-TS30 □	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	0.65	1.2	1.7	2	2.3	
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})* ¹					
Gear Ratio		3.6	7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	0.65	1.2	1.7	2	2.3	
Maximum Instantaneous Torque	N·m	0.85	1.6	2	3		
Holding Torque at	Power ON	N·m	0.54	1	1.5	1.9	2.2
Motor Standstill	Electromagnetic Brake	N·m	0.54	1	1.5	1.9	2.2
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100	
Backlash	arcmin	45 (0.75°)	25 (0.42°)		15 (0.25°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Input	Single-Phase 100-120 VAC		2.7			
	Current	Single-Phase 200-240 VAC		1.7			
	A	Three-Phase 200-240 VAC		1.0			
Control Power Source		24 VDC ±5%* ² 0.25 A (0.33 A)* ¹					

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

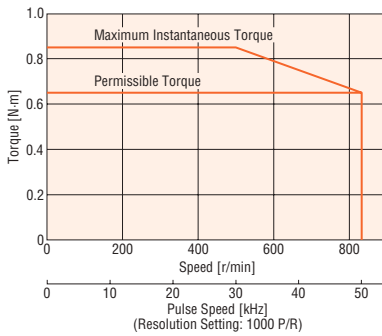
● For details of the standards, check the Oriental Motor website.

*¹ The values in the () are those measured when a motor with electromagnetic brake is connected.

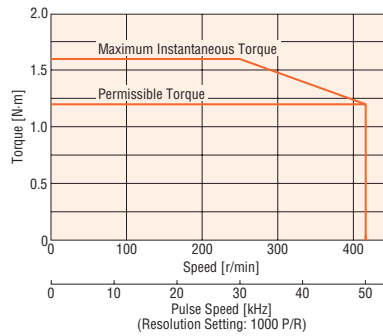
*² For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

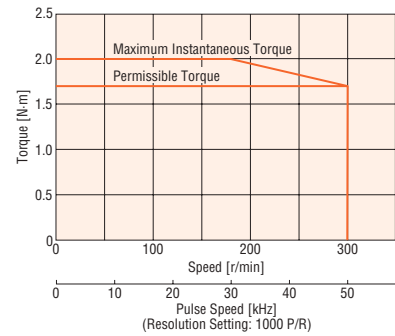
AZM46 Gear Ratio 3.6



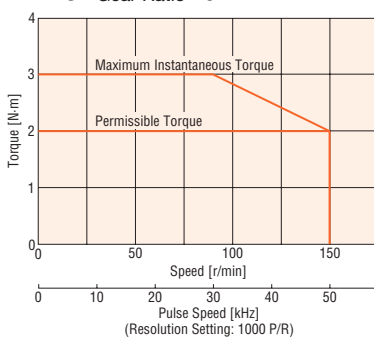
AZM46 Gear Ratio 7.2



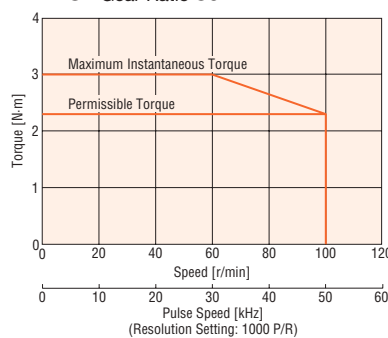
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 60 mm



Specifications

Motor	Single Shaft	AZM66AC-TS3.6 □	AZM66AC-TS7.2 □	AZM66AC-TS10 □	AZM66AC-TS20 □	AZM66AC-TS30 □
Product Name	With Electromagnetic Brake	AZM66MC-TS3.6 □	AZM66MC-TS7.2 □	AZM66MC-TS10 □	AZM66MC-TS20 □	AZM66MC-TS30 □
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	1.8	3	4	5	6
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	1.8	3	4	5	6
Maximum Instantaneous Torque*	N·m	*	4.5	6	8	10
Holding Torque at Power ON	N·m	1.3	2.6	3.7	5	6
Motor Standstill Electromagnetic Brake	N·m	1.3	2.6	3.7	5	6
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arcmin	35 (0.59°)	15 (0.25°)		10 (0.17°)	
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz				
Input	Single-Phase 100-120 VAC					
Current	Single-Phase 200-240 VAC	3.8				
A	Three-Phase 200-240 VAC	2.3				
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1				

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

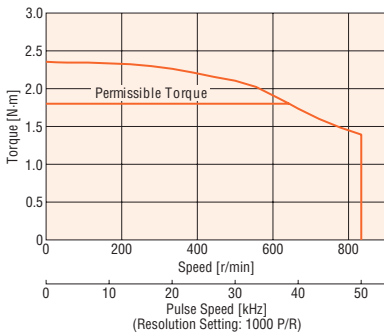
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

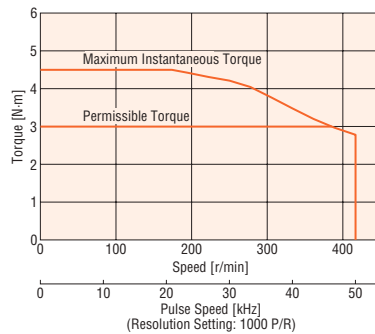
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

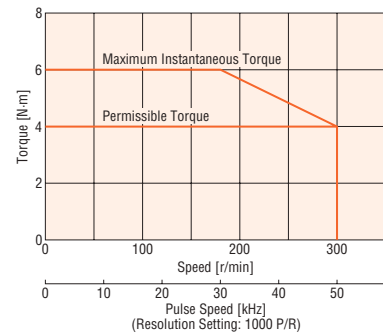
AZM66 Gear Ratio **3.6**



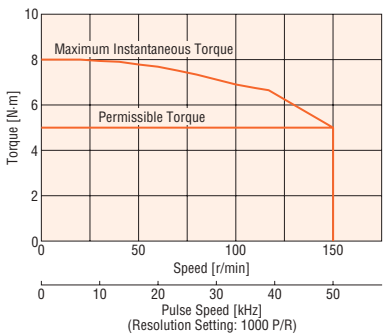
AZM66 Gear Ratio **7.2**



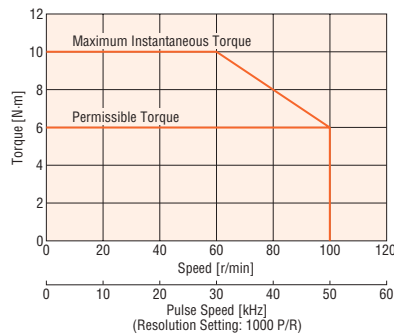
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZ0 sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 90 mm

Specifications



Motor	Single Shaft	AZM98AC-TS3.6	AZM98AC-TS7.2	AZM98AC-TS10	AZM98AC-TS20	AZM98AC-TS30	
Product Name	With Electromagnetic Brake	AZM98MC-TS3.6	AZM98MC-TS7.2	AZM98MC-TS10	AZM98MC-TS20	AZM98MC-TS30	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	6	10	14	20	25	
Rotor Inertial	J: kg·m ²	1090×10 ⁻⁷ (1250×10 ⁻⁷)*1					
Gear Ratio		3.6	7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	6	10	14	20	25	
Maximum Instantaneous Torque*	N·m	*	*	20	*	45	
Holding Torque at	Power ON	N·m	3.6	7.2	10	20	25
Motor Standstill	Electromagnetic Brake	N·m	3.6	7.2	10	20	25
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42)	15 (0.25)		10 (0.17)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	5.5					
Current	Single-Phase 200-240 VAC	3.3					
A	Three-Phase 200-240 VAC	2.0					
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

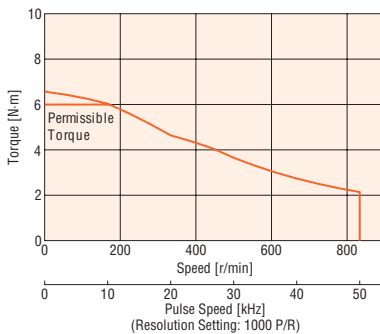
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

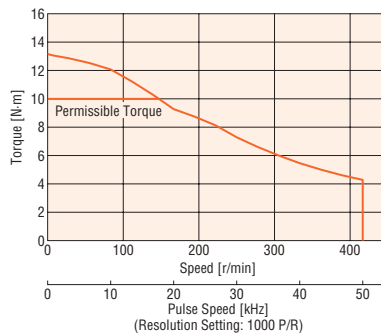
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

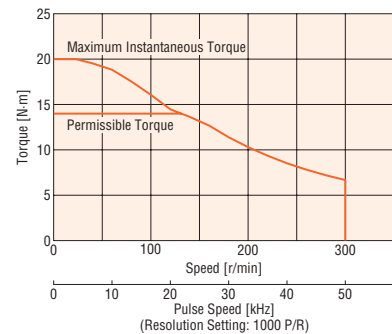
AZM98 Gear Ratio 3.6



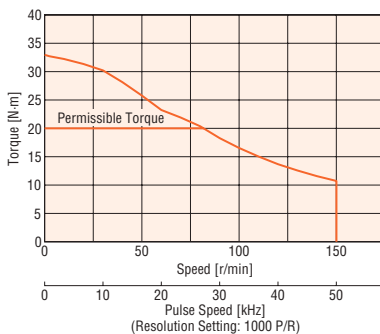
AZM98 Gear Ratio 7.2



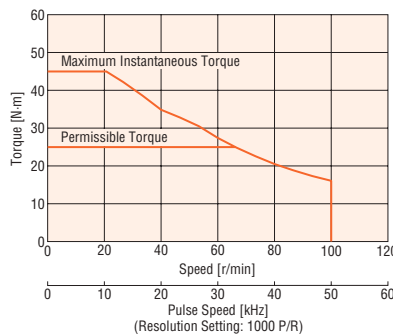
AZM98 Gear Ratio 10



AZM98 Gear Ratio 20



AZM98 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 42 mm



Specifications

Motor	Single Shaft	AZM46AC-FC7.2 □A	AZM46AC-FC10 □A	AZM46AC-FC20 □A	AZM46AC-FC30 □A	
Product Name	With Electromagnetic Brake	AZM46MC-FC7.2 □A	AZM46MC-FC10 □A	AZM46MC-FC20 □A	AZM46MC-FC30 □A	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	0.7	1	2	3	
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})* ¹				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	0.7	1	2	3	
Holding Torque at	Power ON	N·m	0.7	1	2	3
Motor Standstill	Electromagnetic Brake	N·m	0.7	1	2	3
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42°)		15 (0.25°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz				
Input	Single-Phase 100-120 VAC					
Current	Single-Phase 200-240 VAC	2.7				
Input	A	1.7				
	Three-Phase 200-240 VAC	1.0				
Control Power Source		24 VDC \pm 5%* ² 0.25 A (0.33 A)* ¹				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

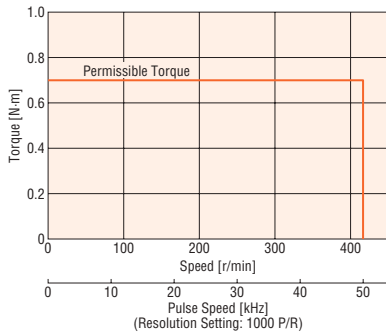
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

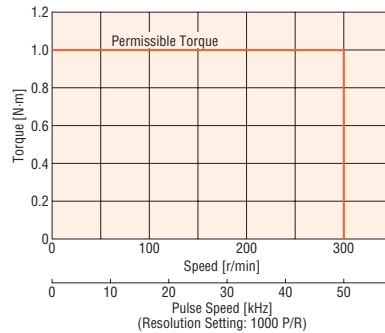
*2 For the electromagnetic brake type, the 24 VDC \pm 4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

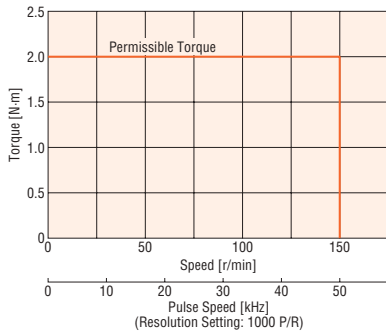
AZM46 Gear Ratio **7.2**



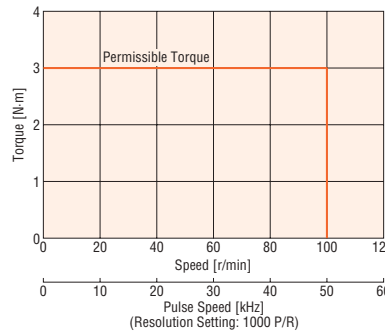
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AC-FC7.2 □ A	AZM66AC-FC10 □ A	AZM66AC-FC20 □ A	AZM66AC-FC30 □ A	
Product Name	With Electromagnetic Brake	AZM66MC-FC7.2 □ A	AZM66MC-FC10 □ A	AZM66MC-FC20 □ A	AZM66MC-FC30 □ A	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	2.5	3.5	7	10.5	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	2.5	3.5	7	10.5	
Holding Torque at	Power ON	N·m	2.5	3.5	7	10.5
Motor Standstill	Electromagnetic Brake	N·m	2.5	3.5	7	10.5
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	15 (0.25°)		10 (0.17°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC				
Input	Input	Single-Phase 100-120 VAC	3.8			
Current	Current	Single-Phase 200-240 VAC	2.3			
A	A	Three-Phase 200-240 VAC	1.4			
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

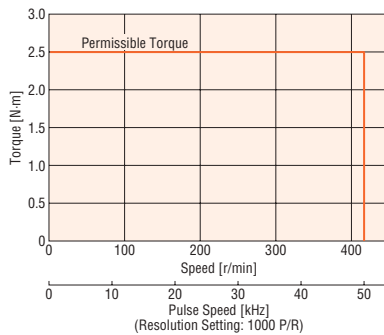
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

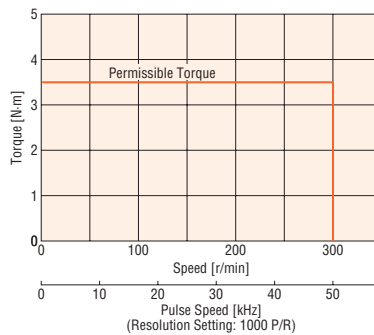
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

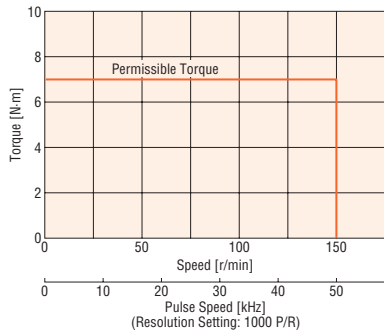
AZM66 Gear Ratio 7.2



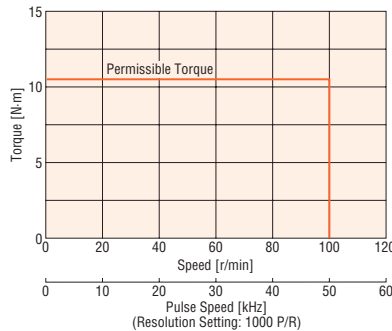
AZM66 Gear Ratio 10



AZM66 Gear Ratio 20



AZM66 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 42 mm



Specifications

Motor	Single Shaft	AZM46AC-PS5	AZM46AC-PS7.2	AZM46AC-PS10	AZM46AC-PS25	AZM46AC-PS36	AZM46AC-PS50
Product Name	With Electromagnetic Brake	AZM46MC-PS5	AZM46MC-PS7.2	AZM46MC-PS10	AZM46MC-PS25	AZM46MC-PS36	AZM46MC-PS50
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	1	1.5	2.5	3		
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	1	1.5	2.5	3		
Maximum Instantaneous Torque	N·m	1.5	2	3	6		
Holding Torque at Power ON	N·m	0.75	1	1.5	2.5	3	
Motor Standstill Electromagnetic Brake	N·m	0.75	1	1.5	2.5	3	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	15 (0.25°)					
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	2.7					
Current	Single-Phase 200-240 VAC	1.7					
A	Three-Phase 200-240 VAC	1.0					
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1					

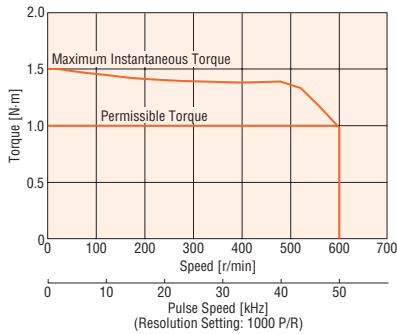
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

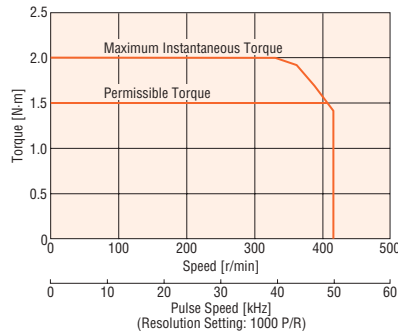
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

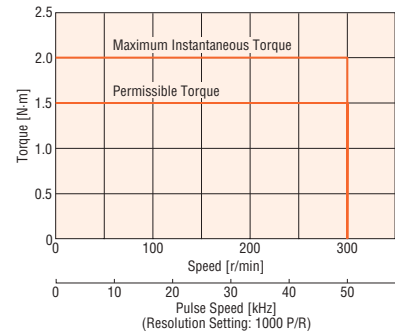
AZM46 Gear Ratio 5



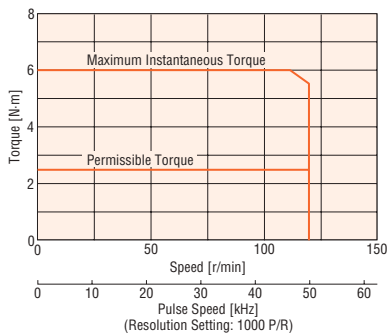
AZM46 Gear Ratio 7.2



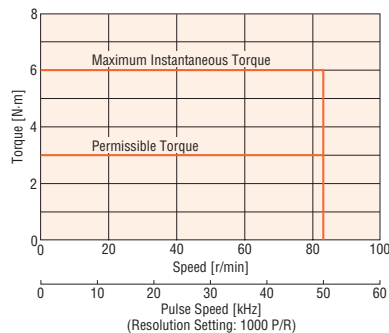
AZM46 Gear Ratio 10



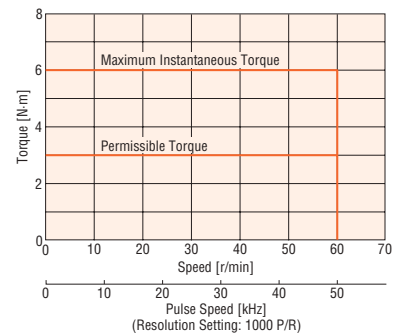
AZM46 Gear Ratio 25



AZM46 Gear Ratio 36



AZM46 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AC-PS5	AZM66AC-PS7.2	AZM66AC-PS10	AZM66AC-PS25	AZM66AC-PS36	AZM66AC-PS50
Product Name	With Electromagnetic Brake	AZM66MC-PS5	AZM66MC-PS7.2	AZM66MC-PS10	AZM66MC-PS25	AZM66MC-PS36	AZM66MC-PS50
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.057°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	3.5	4	5	8		
Maximum Instantaneous Torque*	N·m	*	*	11	16	20	
Holding Torque at	Power ON	N·m	3	4	5	8	
Motor Standstill	Electromagnetic Brake	N·m	3	4	5	8	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	7 (0.12°)			9 (0.15°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	3.8					
Current	Single-Phase 200-240 VAC	2.3					
A	Three-Phase 200-240 VAC	1.4					
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

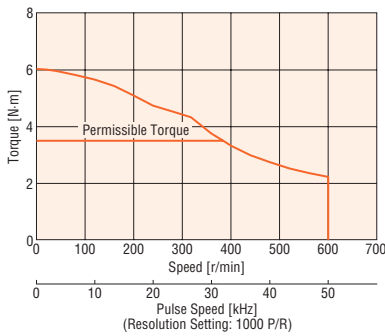
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

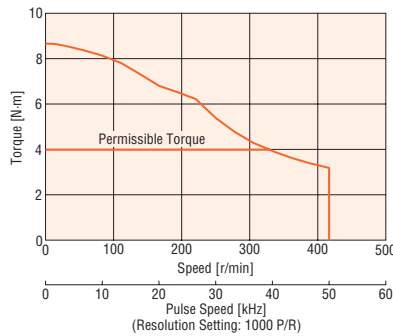
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

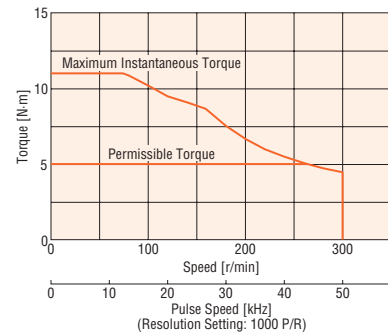
AZM66 Gear Ratio 5



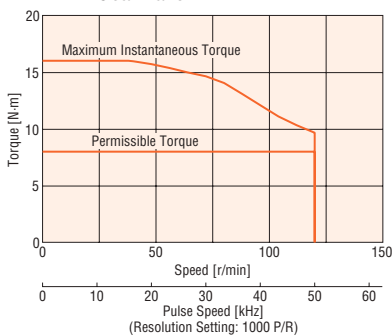
AZM66 Gear Ratio 7.2



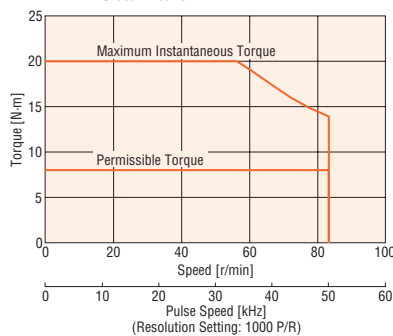
AZM66 Gear Ratio 10



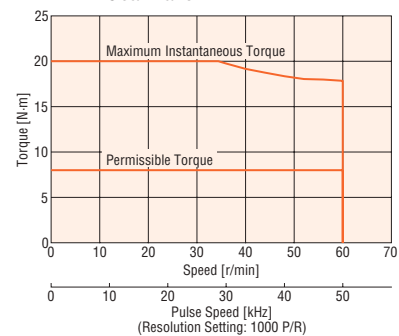
AZM66 Gear Ratio 25



AZM66 Gear Ratio 36



AZM66 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 90 mm



Specifications

Motor	Single Shaft	AZM98AC-PS5	AZM98AC-PS7.2	AZM98AC-PS10	AZM98AC-PS25	AZM98AC-PS36	AZM98AC-PS50	
Product Name	With Electromagnetic Brake	AZM98MC-PS5	AZM98MC-PS7.2	AZM98MC-PS10	AZM98MC-PS25	AZM98MC-PS36	AZM98MC-PS50	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)						
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)						
Maximum Holding Torque	N·m	10	14	20	37			
Rotor Inertial	J: kg·m ²	1090×10 ⁻⁷ (1250×10 ⁻⁷)*1						
Gear Ratio		5	7.2	10	25	36	50	
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.057°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse	
Permissible Torque*	N·m	*	*	20	37			
Maximum Instantaneous Torque*	N·m	*	*	*	*	60		
Holding Torque at	Power ON	N·m	5	7.2	10	25	36	37
Motor Standstill	Electromagnetic Brake	N·m	5	7.2	10	25	36	37
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60	
Backlash	arcmin	7 (0.12°)			9 (0.15°)			
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz						
Input	Single-Phase 100-120 VAC	5.5						
Current	Single-Phase 200-240 VAC	3.3						
A	Three-Phase 200-240 VAC	2.0						
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1						

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

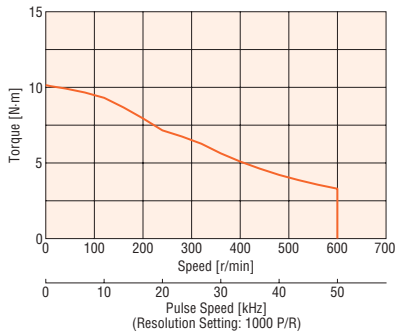
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

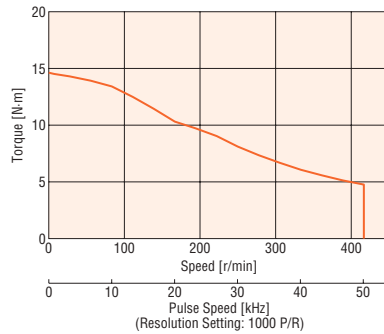
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

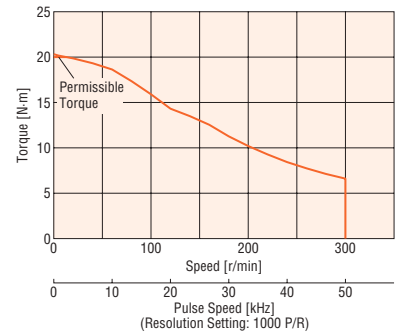
AZM98 Gear Ratio 5



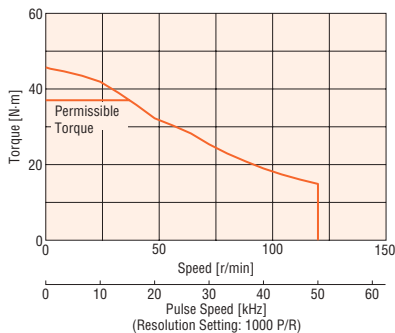
AZM98 Gear Ratio 7.2



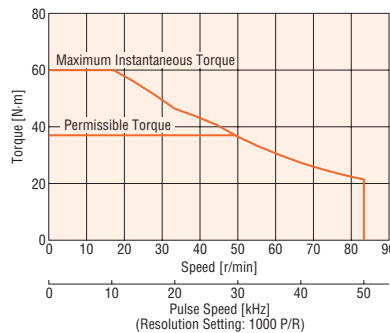
AZM98 Gear Ratio 10



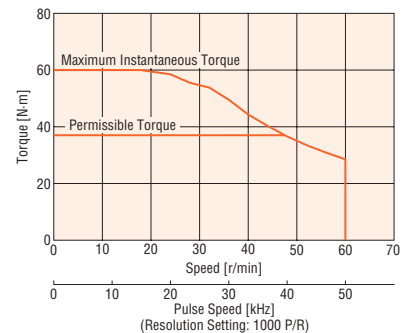
AZM98 Gear Ratio 25



AZM98 Gear Ratio 36



AZM98 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

HPG Geared Type Frame Size 40 mm, 60 mm, 90 mm

Specifications



Motor Product Name	Single Shaft	AZM46AC-HP5	AZM46AC-HP9	AZM66AC-HP5	AZM66AC-HP15	AZM98AC-HP5	AZM98AC-HP15	
	With Electromagnetic Brake	AZM46MC-HP5	AZM46MC-HP9	AZM66MC-HP5	AZM66MC-HP15	AZM98MC-HP5	AZM98MC-HP15	
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)						
Maximum Holding Torque	N·m	1.5	2.5	5.9	9	10	24	
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1		370×10 ⁻⁷ (530×10 ⁻⁷)*1		1090×10 ⁻⁷ (1250×10 ⁻⁷)*1		
Inertial*2	J: kg·m ²	5.8×10 ⁻⁷ (4.2×10 ⁻⁷)	3.4×10 ⁻⁷ (2.9×10 ⁻⁷)	92×10 ⁻⁷ (86×10 ⁻⁷)	78×10 ⁻⁷ (77×10 ⁻⁷)	629×10 ⁻⁷ (589×10 ⁻⁷)	488×10 ⁻⁷ (488×10 ⁻⁷)	
Gear Ratio		5	9	5	15	5	15	
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.04°/Pulse	0.072°/Pulse	0.024°/Pulse	0.072°/Pulse	0.024°/Pulse	
Permissible Torque*	N·m	*	2.5	5.9	9	*	24	
Maximum Instantaneous Torque*	N·m	*	*	*	*	*	*	
Holding Torque at Motor Standstill	Power ON	0.75	1.35	3	9	5	15	
	Electromagnetic Brake	0.75	1.35	3	9	5	15	
Speed Range	r/min	0~900	0~500	0~900	0~300	0~900	0~300	
Backlash	arcmin	3 (0.05°)						
Power Supply Input	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz						
Input	Single-Phase 100-120 VAC	2.7		3.8		5.5		
	Single-Phase 200-240 VAC	1.7		2.3		3.3		
	Three-Phase 200-240 VAC	1.0		1.4		2.0		
Control Power Source		24 VDC ±5%*4 0.25 A (0.33 A)*1		24 VDC ±5%*4 0.25 A (0.5 A)*1				
Runout of Output Flange Surface*3	mm	0.03			0.02			
Runout of Output Flange Inner Diameter*3	mm	0.03			0.04			

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For the flange output type, F is entered where the box □ is located within the product name.

● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

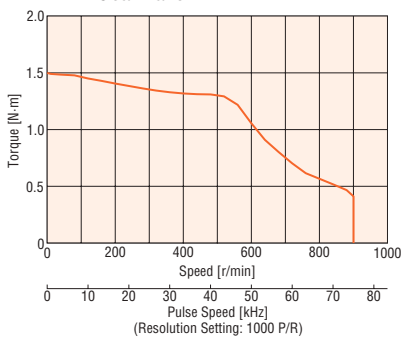
*2 The values for the moments of inertia within the gear that has been converted to motor shaft values. The () indicate the values for the flange output type.

*3 Specifications for the flange output type.

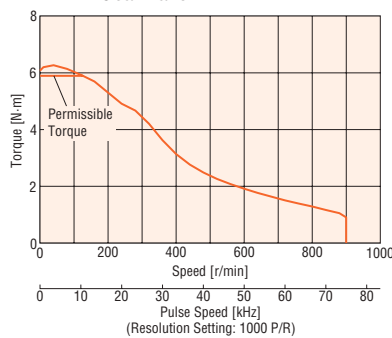
*4 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

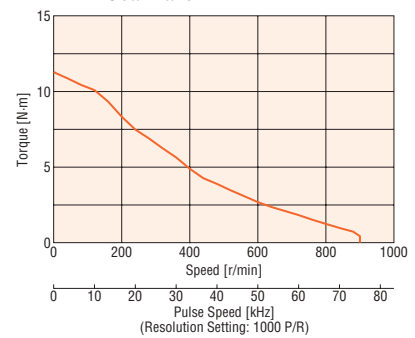
AZM46 Gear Ratio 5



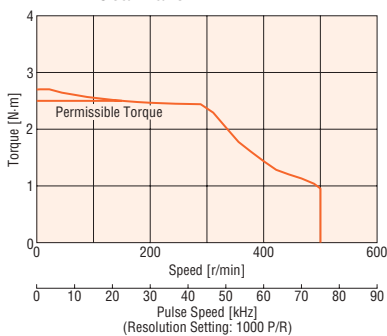
AZM66 Gear Ratio 5



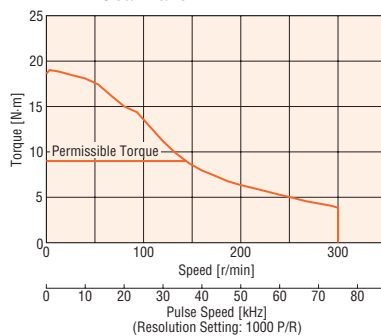
AZM98 Gear Ratio 5



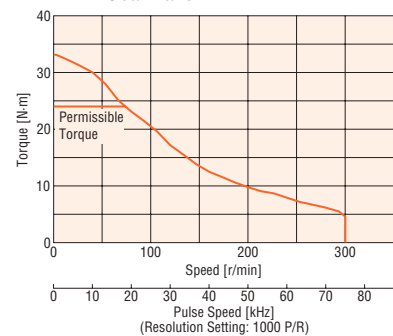
AZM46 Gear Ratio 9



AZM66 Gear Ratio 15



AZM98 Gear Ratio 15



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Harmonic Geared Type Frame Size 42 mm, 60 mm, 90 mm



Specifications

Motor	Single Shaft	AZM46AC-HS50	AZM46AC-HS100	AZM66AC-HS50	AZM66AC-HS100	AZM98AC-HS50	AZM98AC-HS100	
Product Name	With Electromagnetic Brake	AZM46MC-HS50	AZM46MC-HS100	AZM66MC-HS50	AZM66MC-HS100	AZM98MC-HS50	AZM98MC-HS100	
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)						
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)						
Maximum Holding Torque	N·m	3.5	5	7	10	33	52	
Rotor Inertial	J: kg·m ²	72×10 ⁻⁷ (88×10 ⁻⁷)*1		405×10 ⁻⁷ (565×10 ⁻⁷)*1		1290×10 ⁻⁷ (1450×10 ⁻⁷)*1		
Gear Ratio		50	100	50	100	50	100	
Resolution	Resolution Setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	
Permissible Torque	N·m	3.5	5	7	10	33	52	
Maximum Instantaneous Torque*	N·m	8.3	11	23	36	*	107	
Holding Torque at Power ON	N·m	3.5	5	7	10	33	52	
Motor Standstill Electromagnetic Brake	N·m	3.5	5	7	10	33	52	
Speed Range	r/min	0~70	0~35	0~70	0~35	0~70	0~35	
Lost Motion (Load torque)	arcmin	1.5 or less (±0.16 N·m)	1.5 or less (±0.20 N·m)	0.7 or less (±0.28 N·m)	0.7 or less (±0.39 N·m)	0.7 or less (±1.2 N·m)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz						
Input	Input	Single-Phase 100-120 VAC	2.7			3.8	5.5	
	Current	Single-Phase 200-240 VAC	1.7			2.3	3.3	
	A	Three-Phase 200-240 VAC	1.0			1.4	2.0	
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1		24 VDC ±5%*2 0.25 A (0.5 A)*1				

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

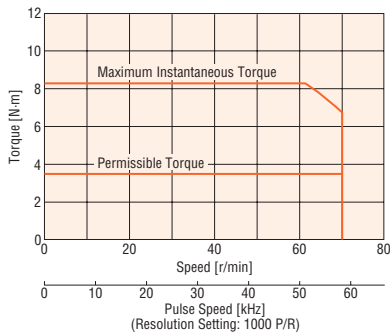
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Note

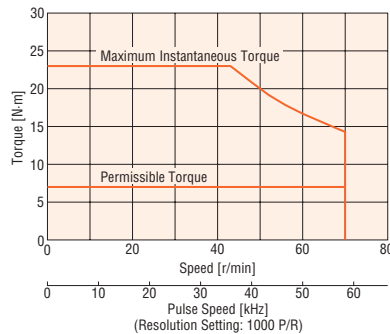
● The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

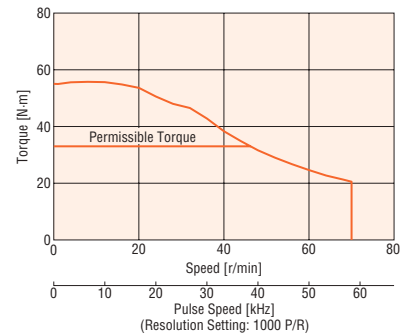
AZM46 Gear Ratio 50



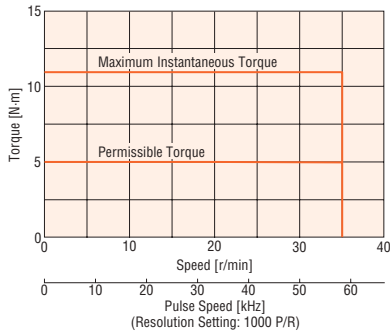
AZM66 Gear Ratio 50



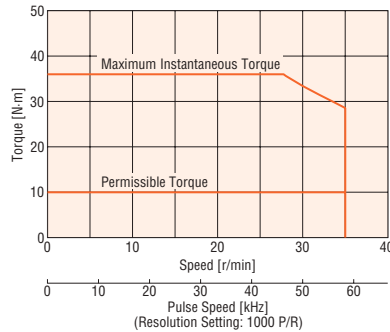
AZM98 Gear Ratio 50



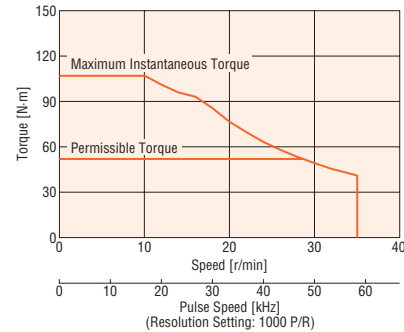
AZM46 Gear Ratio 100



AZM66 Gear Ratio 100



AZM98 Gear Ratio 100



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Driver Specifications

Driver Type	Built-in Controller Type	Pulse Input Type with RS-485 Communication	Pulse Input Type			
Driver Product Name	AZD-AD AZD-CD	AZD-AX AZD-CX	AZD-A AZD-C			
I/O Function	Max. Input Pulse Frequency	–	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input			
	Number of Positioning Data Sets	256 points	256 points*1			
	Direct Input	10 points	6 points			
	Direct Output	6 points				
	RS-485 Communication Remote Input	16 points	–			
	RS-485 Communication Remote Output	16 points	–			
Setting Tool	Support Software MEXE02 ○					
Coordinate Management Method	Battery-free absolute system					
Operation	Type	Positioning Operation	○	○	○*1	
		Push-motion Positioning Operation*2	○	○	○*1	
	Positioning Operation	Connecting Method	Independent Operation	○	○	○*1
			Forward Feed Operation	○	○	○*1
			Multistep Speed-change (Shape connection)	○	○	○*1
	Sequence Control	Event Jump Operation	Loop Operation (Repetition)	○	○	○*1
			Event Jump Operation	○	○	○*1
			Position Control	○	○	○*1
	Linked Operation	Push-motion*2	Speed Control	○	○	○*1
			Torque Control	○	○	○*1
Push-motion*2			○	○	○*1	
Return-to-home Operation	JOG Operation	Return-to-home Operation	○	○	○	
		High-speed Return-to-home Operation	○	○	○	
Monitor/Information	JOG Operation	Waveform Monitoring	○	○	○	
		Overload Detection	○	○	○	
		Overheat Detection (Motor and driver)	○	○	○	
		Position and Speed Information	○	○	○	
		Temperature Detection (Motor and driver)	○	○	○	
		Motor Load Factor	○	○	○	
Alarm	Mileage/Accumulated Mileage	○	○	○		

*1 Available after setting with support software **MEXE02**.

*2 Push-motion operation is not available to geared motors and **DGII** Series motorized actuators.

RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 based, Straight cable Use twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The maximum total extension length is 50 m.*
Communication Mode	Half duplex and start-stop synchronization (Data: 8 bits, Stop bit: 1 bit or 2 bits, Parity: none, even, or odd)
Baud Rate	Select from 9600 bps/19200 bps/38400 bps/57600 bps/115200 bps/230400 bps.
Connection Type	Up to 31 units can be connected to a single programmable controller (Master unit).

*If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

General Specifications

	Motor	Driver	
		Built-in Controller Type Pulse Input Type with RS-485 Communication	Pulse Input Type
Heat-resistant Class	130 (B) [Recognized as 105 (A) by UL.]	-	
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*1	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal · Encoder connector – Power supply terminal · Power input terminal – Power supply terminal	
Dielectric Strength Voltage	No abnormality is found with the following application for 1 minute: · Case – Motor windings 1.5 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*1 1.5 kVAC 50 Hz or 60 Hz	No abnormality is found with the following application for 1 minute: · Protective earth terminal – Power supply terminal 1.5 kVAC 50 Hz or 60 Hz · Encoder connector – Power supply terminal 1.8 kVAC 50 Hz or 60 Hz · Power input terminal – Power supply terminal 1.8 kVAC 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)*2	
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection	IP66 (excluding installation surfaces and connector locations)	IP10	IP20
Stop Position Accuracy	AZM46, AZM48: ±4 min (±0.067°) AZM66, AZM69, AZM98, AZM911: ±3 min (±0.05°)		
Shaft Runout	0.05 T.I.R. (mm)*4	-	
Concentricity of Installation Pilot to the Shaft	0.075 T.I.R. (mm)*4	-	
Perpendicularity of Installation Surface to the Shaft	0.075 T.I.R. (mm)*4	-	
Range of Multiple Rotation Inspection at Power OFF	±900 rotations (1800 rotations)		

*1 Electromagnetic brake type only

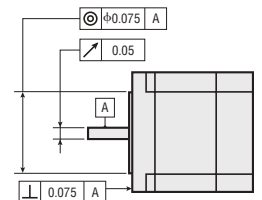
*2 Under the Oriental Motor's measurement conditions

*3 When a heat sink equivalent to an aluminum plate size of at least 200×200 mm and 2 mm thickness is installed

*4 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution, centered on the reference axis center.

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.



Electromagnetic Brake Specifications

Product Name	AZM46	AZM66	AZM69	AZM98	
Type	Power off activated type				
Power Supply Voltage	24 VDC ±5%*				
Power Supply Current	A	0.08	0.25	0.25	0.25
Brake Activate Time	ms	20			
Brake Release Time	ms	30			
Time Rating	Continuous				

*For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

- The product names are described with text by which the product name can be identified.

Rotation Direction

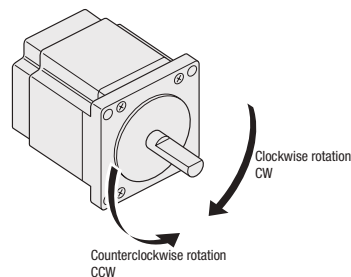
The figure below shows the rotation directions seen from the output shaft.

The rotation direction of the gear output shaft, which is seen from the output shaft of a standard type motor, differs depending on the gear type or gear ratio.

Refer to the table below.

Type	Gear Ratio	Rotation Direction seen from the Output Shaft
TS Geared Type	3, 6, 7, 2, 10	Same direction
	20, 30	Reverse direction
FC Geared Type	Total reduction gear ratio	Same direction
PS Geared Type		
HPG Geared Type		
Harmonic Geared Type	Total reduction gear ratio	Reverse direction

- Standard type motor



Permissible Radial Load/Permissible Axial Load

Unit: N

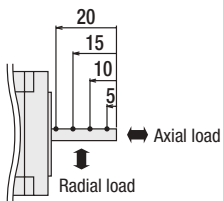
Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End mm					
				0	5	10	15	20	
Standard Type	42 mm	AZM46	-	35	44	58	85	-	15
		AZM48		30	35	44	58	85	
	60 mm	AZM66, AZM69		90	100	130	180	270	30
	85 mm	AZM98, AZM911		260	290	340	390	480	60
TS Geared Type	42 mm	AZM46	3.6, 7.2, 10	20	30	40	50	-	15
			20, 30	40	50	60	70	-	
	60 mm	AZM66	3.6, 7.2, 10	120	135	150	165	180	40
			20, 30	170	185	200	215	230	
	90 mm	AZM98	3.6, 7.2, 10	300	325	350	375	400	150
			20, 30	400	450	500	550	600	
FC Geared Type	42 mm	AZM46	7.2, 10, 20, 30	180	200	220	250	-	100
	60 mm	AZM66		270	290	310	330	350	200
PS Geared Type	42 mm	AZM46	5	70	80	95	120	-	100
			7.2	80	90	110	140	-	
			10	85	100	120	150	-	
			25	120	140	170	210	-	
			36	130	160	190	240	-	
			50	150	170	210	260	-	
	60 mm	AZM66	5	170	200	230	270	320	200
			7.2	200	220	260	310	370	
			10	220	250	290	350	410	
			25	300	340	400	470	560	
			36	340	380	450	530	630	
			50	380	430	500	600	700	
	90 mm	AZM98	5	380	420	470	540	630	600
			7.2	430	470	530	610	710	
			10	480	530	590	680	790	
			25	650	720	810	920	1070	
			36	730	810	910	1040	1210	
			50	820	910	1020	1160	1350	
HPG Geared Type	40 mm	AZM46	5	150	170	190	230	270	430
			9	180	200	230	270	320	510
	60 mm	AZM66	5	250	270	300	330	360	700
			15	360	380	420	460	510	980
	90 mm	AZM98	5	600	630	670	710	750	1460
			15	830	880	930	980	1050	2030
Harmonic Geared Type	42 mm	AZM46	50, 100	180	220	270	360	510	220
	60 mm	AZM66		320	370	440	550	720	450
	90 mm	AZM98		1090	1150	1230	1310	1410	1300

● The product names are described with text by which the product name can be identified.

● PS geared type and HPG geared type: The values shown in the table are those that enable a product life of 20,000 hours when either permissible radial load or permissible axial load is applied. For the product life of the gearhead, contact the nearest Oriental Motor sales office, or check the Oriental Motor website.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

When eccentric load is applied to the installation surface of the output flange, load moment acts on the bearing. Before using the motor, apply the formulas below to check that the axial load and load moment are within the specifications.

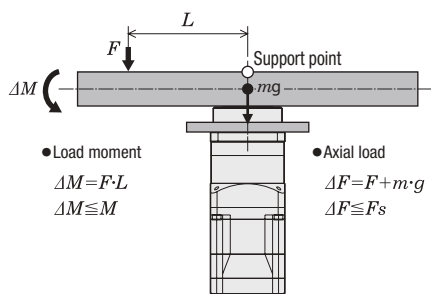
HPG Geared Type Flange Output Type

Product Name	Gear Ratio	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
AZM46	5	430	4.9	0.006
	9	510	5.9	
AZM66	5	700	12.0	0.011
	15	980	17.2	
AZM98	5	1460	38.7	0.0115
	15	2030	53.5	

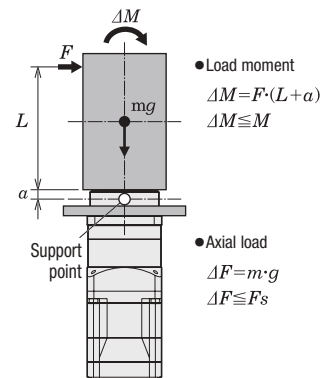
- m : Load mass (kg)
- g : Gravitational acceleration (m/s²)
- F : External force (N)
- L : Overhung distance (m)
- α : Constant (m)
- ΔF : Load applied to the output flange surface (N)
- F_s : Permissible axial load (N)
- ΔM : Load moment (N·m)
- M : Permissible moment load (N·m)

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.

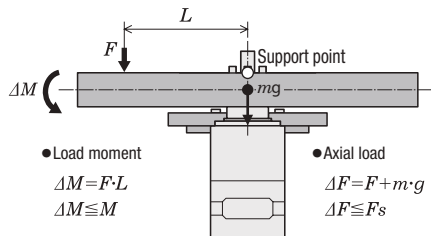


Harmonic Geared Type

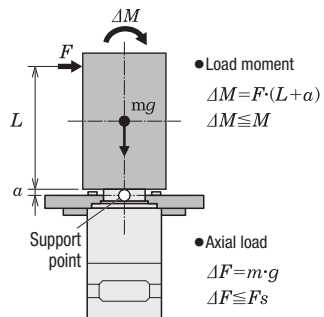
Motor Frame Size	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
42 mm	220	5.6	0.009
60 mm	450	11.6	0.0114

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.

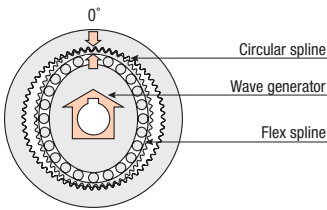


Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.



Accuracy of the Harmonic Geared Type

Basic Structure



Accuracy

Unlike common reduction gears which employ spur gears, the harmonic geared type has no backlash (play between the meshing gears) between the harmonic gears. With this mechanism, the harmonic gears have the following features: The number of teeth that simultaneously mesh is large; the influence of teeth pitch errors or accumulated pitch errors on rotational accuracy are averaged; and with these, high positioning accuracy is achieved. In addition, the harmonic gears have a high gear ratio. Therefore, the distortion of the output shaft which is caused by the load torque applied to the output shaft is by far smaller than the distortion that occurs on the output shafts of standalone motors or other geared motors. This means that harmonic gears have high rigidity. With high rigidity, harmonic gears are resistant to load change, enabling stable positioning. When high positioning accuracy or rigidity is required, refer to the characteristics described below.

Angular Transmission Accuracy

Error between the actual rotation angle of an output shaft and the theoretical rotation angle of the output shaft which is calculated based on the input pulse count. The accuracy is represented by the difference between the minimum error and the maximum error that are measured when the output shaft is rotated once from an arbitrary position.

Product Name	Angular Transmission Accuracy [arcmin]
AZM24-HS □	2 (0.034°)
AZM46-HS □	1.5 (0.025°)
AZM66-HS □	
AZM98-HS □	1 (0.017°)

● Values measured under no load (reference values measured at the gears)

Torque – Distortion Characteristics

In actual applications, frictional load is inevitably generated, causing displacement depending on the frictional load. If the frictional load is constant, the displacement is also constant during one direction operation. However, when the motor is operated in both directions (the forward and reverse directions), the displacement doubles during the back and forth motion. The displacement can be assumed from the torque - distortion characteristics described below.

The displacement occurs when external force is applied during stop or when the motor is operated under frictional load. The slope in the graph below is close to the spring constant of each of the three classifications given below and can be estimated by the corresponding calculation.

1. When the load torque T_L is up to T_1

$$\theta = \frac{T_L}{K_1} \text{ [min]}$$

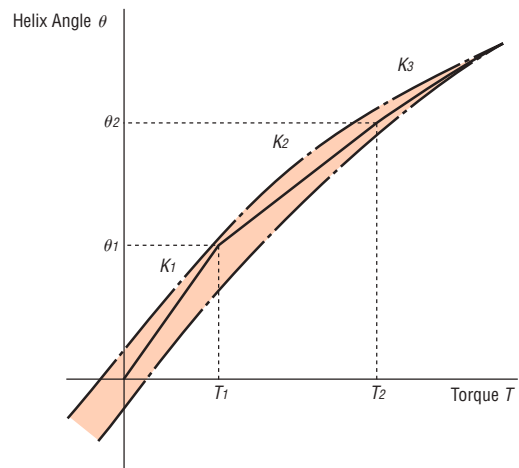
2. When the load torque T_L is above T_1 but up to T_2

$$\theta = \theta_1 + \frac{T_L - T_1}{K_2} \text{ [min]}$$

3. When the load torque T_L exceeds T_2

$$\theta = \theta_2 + \frac{T_L - T_2}{K_3} \text{ [min]}$$

The helix angle determined by the calculation is the helix angle of a stand-alone harmonic gear.



Helix Angle – Torque Characteristics

Values used for the calculation

Product Name	Gear Ratio	T1 N-m	K1 N-m/min	θ1 min	T2 N-m	K2 N-m/min	θ2 min	K3 N-m/min
AZM24-HS50	50	0.29	0.08	3.7	—	0.12	—	—
AZM24-HS100	100	0.29	0.1	2.9	1.5	0.15	11	0.21
AZM46-HS50	50	0.8	0.64	1.25	2	0.87	2.6	0.93
AZM46-HS100	100	0.8	0.79	1.02	2	0.99	2.2	1.28
AZM66-HS50	50	2	0.99	2	6.9	1.37	5.6	1.66
AZM66-HS100	100	2	1.37	1.46	6.9	1.77	4.2	2.1
AZM98-HS50	50	7	3.8	1.85	25	5.2	5.3	6.7
AZM98-HS100	100	7	4.7	1.5	25	7.3	4	8.4

Load Torque – Driver Input Current Characteristics

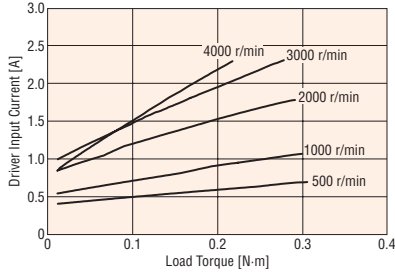
This is the relationship between the load torque and driver input current at each speed when the motor is actually operated. From these characteristics, the power supply capacity required for use in multi-axis operation can be estimated. For the geared type, convert to torque and speed by the motor shaft.

$$\text{Motor shaft speed} = \text{Gear output shaft speed} \times \text{Gear ratio} \text{ [r/min]}$$

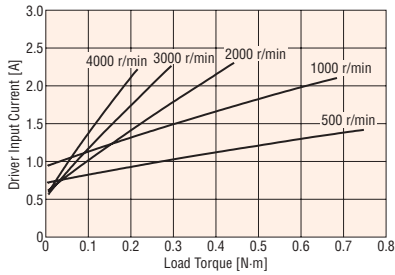
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear ratio}} \text{ [N}\cdot\text{m]}$$

Single-Phase 100-120 VAC

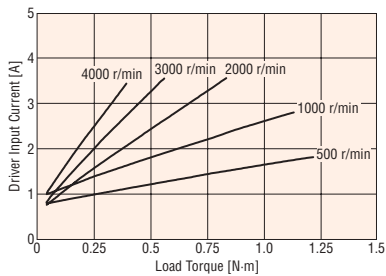
AZM46□C



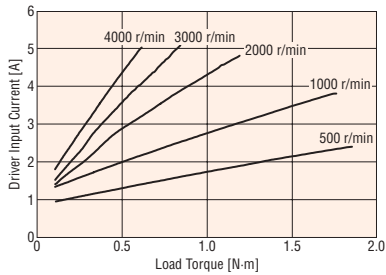
AZM48□C



AZM66□C

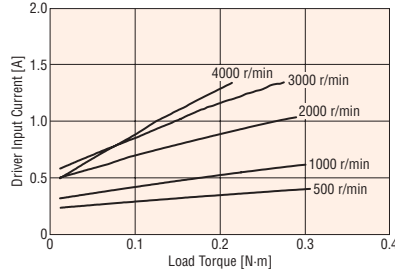


AZM69□C

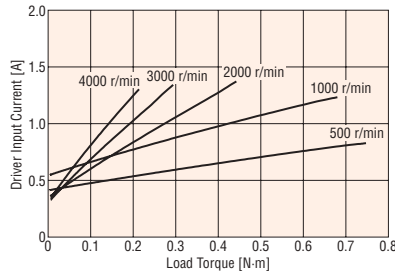


Single-Phase 200-240 VAC

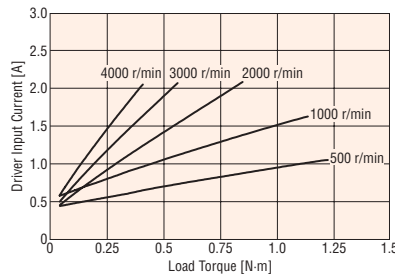
AZM46□C



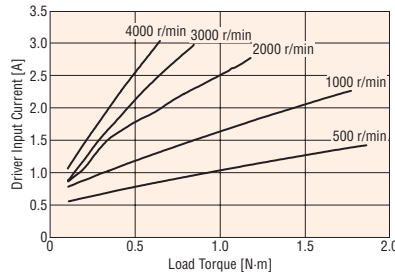
AZM48□C



AZM66□C

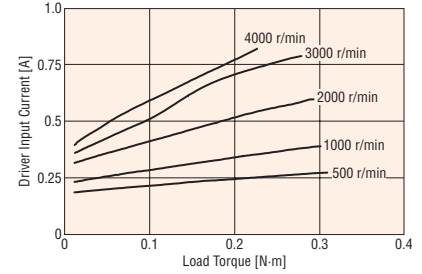


AZM69□C

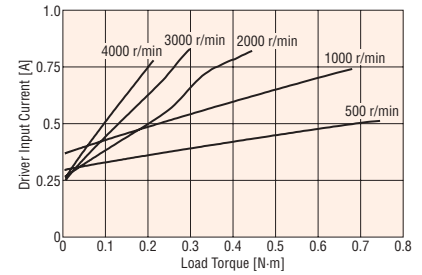


Three-Phase 200-240 VAC

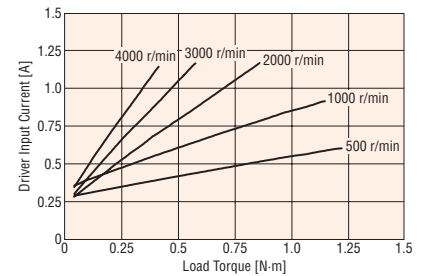
AZM46□C



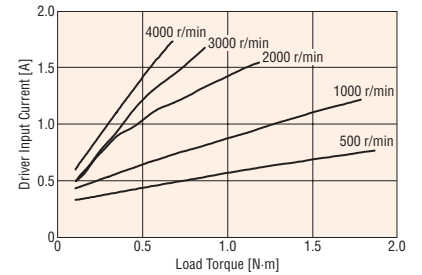
AZM48□C



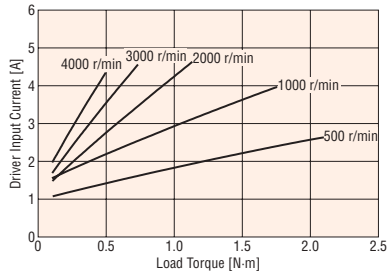
AZM66□C



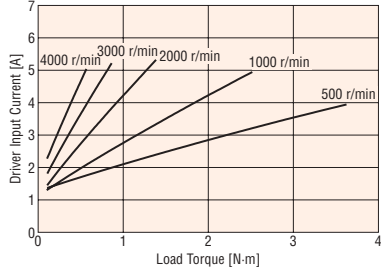
AZM69□C



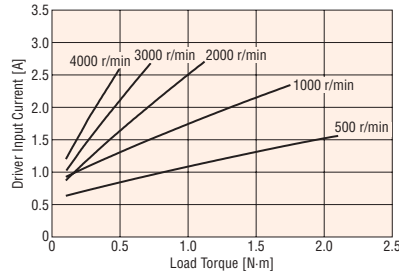
● Single-Phase 100-120 VAC
AZM98□C



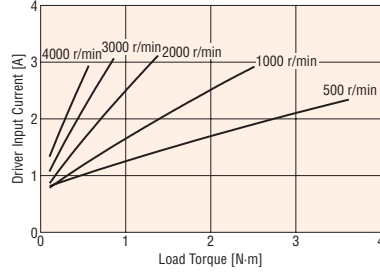
AZM911□C



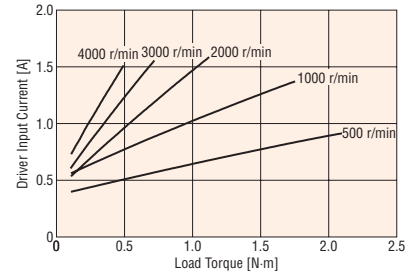
● Single-Phase 200-240 VAC
AZM98□C



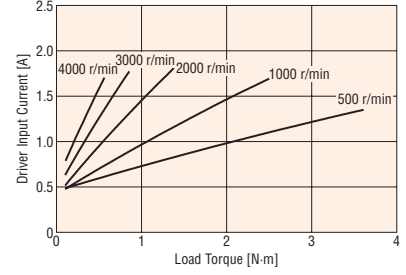
AZM911□C



● Three-Phase 200-240 VAC
AZM98□C



AZM911□C



Dimensions (Unit: mm)

Motors

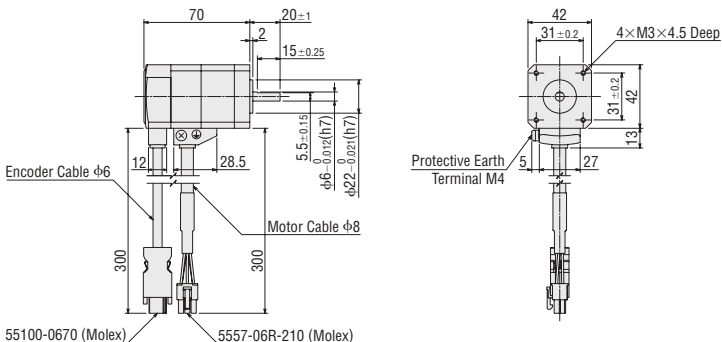
Standard Type

Frame Size 42 mm

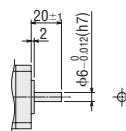
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46AC	0.44	B1092
Straight	AZM46AOC		B1288

Single Sided Milling



Straight

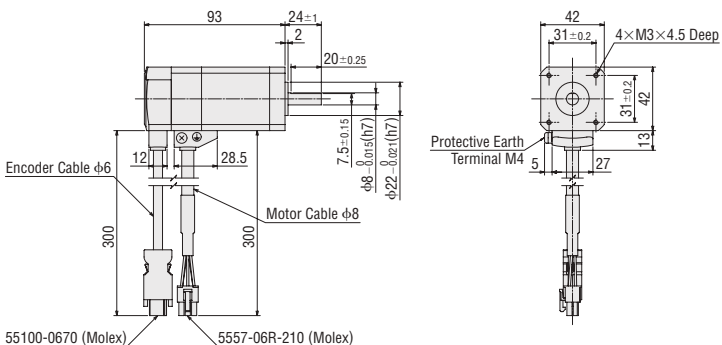


Frame Size 42 mm

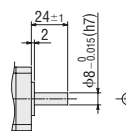
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM48AC	0.68	B1312
Straight	AZM48AOC		B1289
With Key	AZM48A1C		B1299

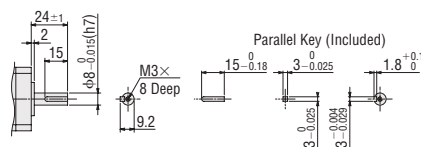
Single Sided Milling



Straight



With Key

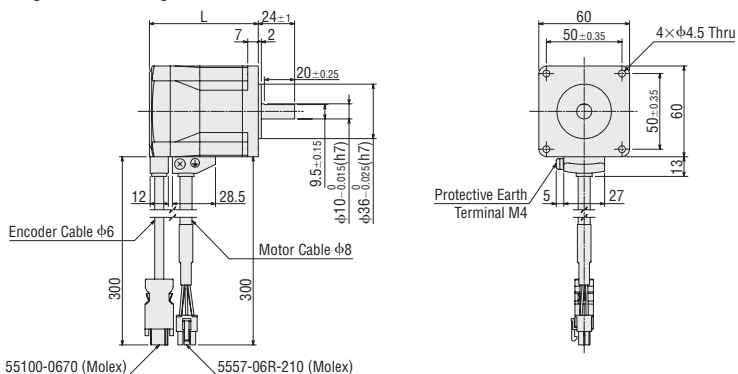


Frame Size 60 mm

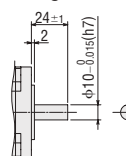
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66AC	72	0.91	B1093
Straight	AZM66AOC			B1290
With Key	AZM66A1C			B1300
Single Sided Milling	AZM69AC	97.5	1.4	B1129
Straight	AZM69AOC			B1291
With Key	AZM69A1C			B1301

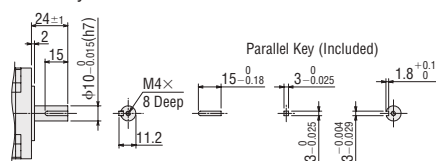
Single Sided Milling



Straight



With Key

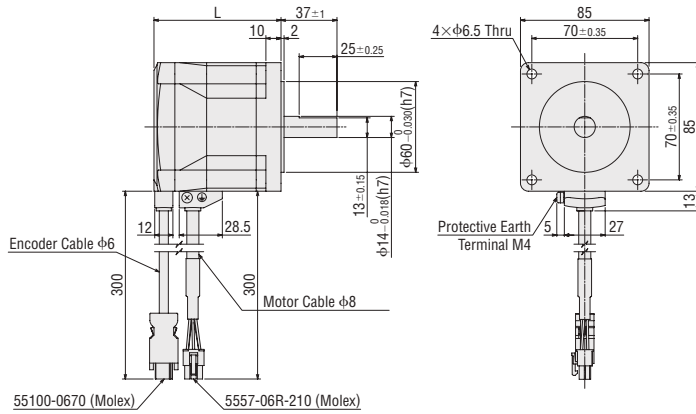


Frame Size 85 mm

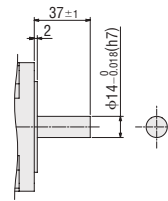
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM98AC	84	1.9	B1181
Straight	AZM98AOC			B1292
With Key	AZM98A1C			B1302
Single Sided Milling	AZM911AC	114	3	B1183
Straight	AZM911AOC			B1293
With Key	AZM911A1C			B1303

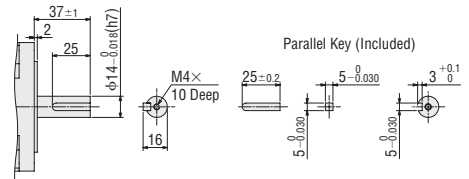
Single Sided Milling



Straight



With Key



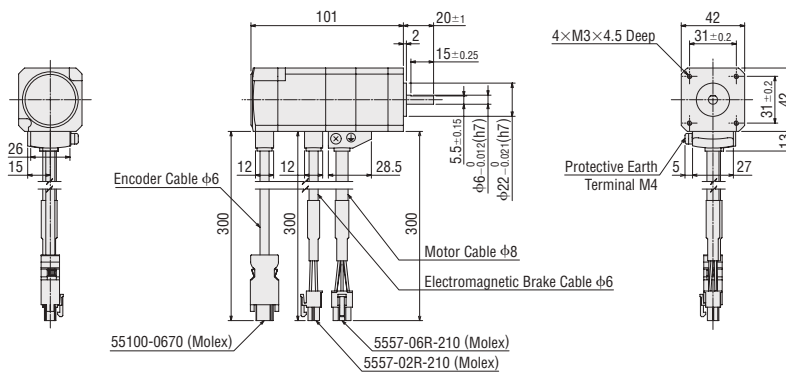
Standard Type with Electromagnetic Brake

Frame Size 42 mm

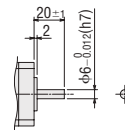
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46MC	0.61	B1154
Straight	AZM46MOC		B1294

Single Sided Milling



Straight



06

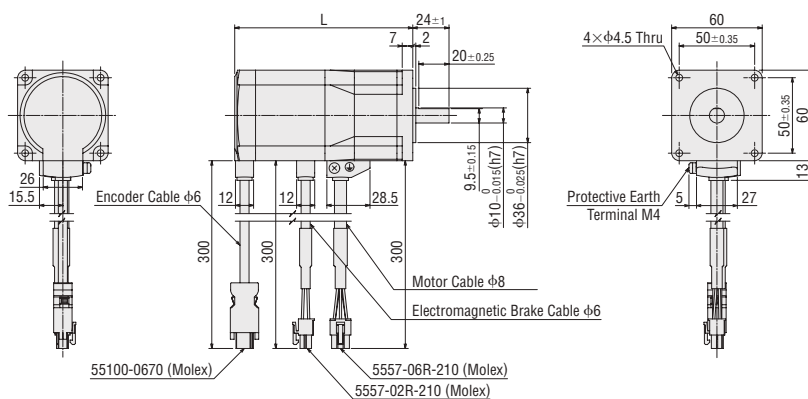
AZ Series

Frame Size 60 mm

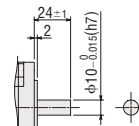
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66MC	118	1.3	B1155
Straight	AZM66MOC			B1295
With Key	AZM66M1C			B1305
Single Sided Milling	AZM69MC	143.5	1.8	B1156
Straight	AZM69MOC			B1296
With Key	AZM69M1C			B1306

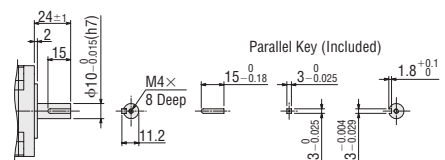
Single Sided Milling



Straight



With Key

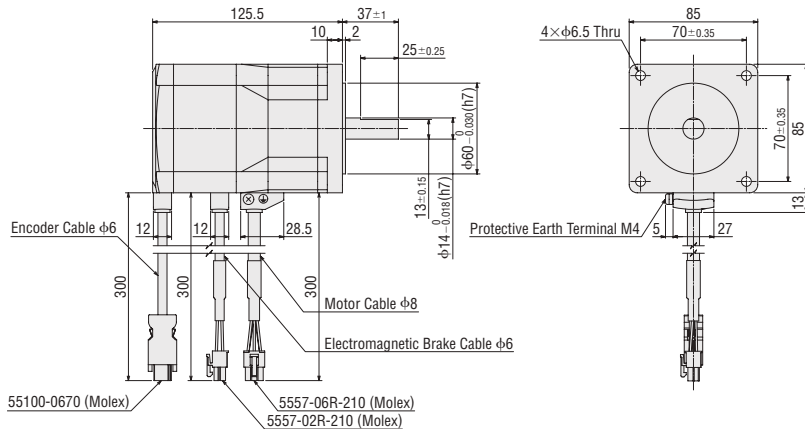


Frame Size 85 mm

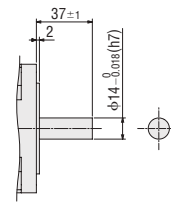
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM98MC	2.5	B1182
Straight	AZM98MOC		B1297
With Key	AZM98M1C		B1307

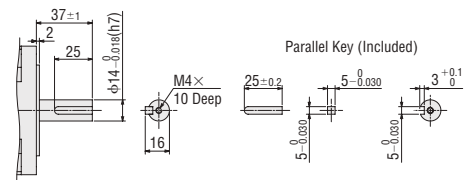
Single Sided Milling



Straight



With Key



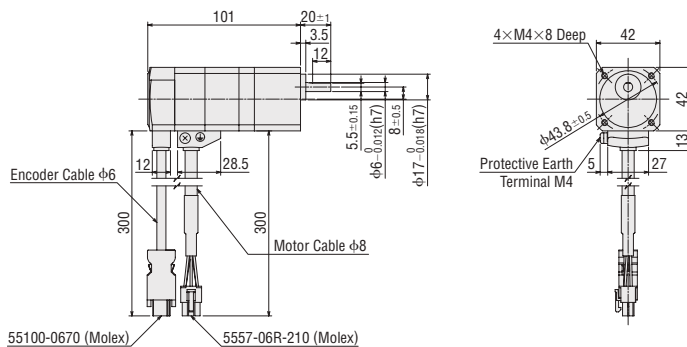
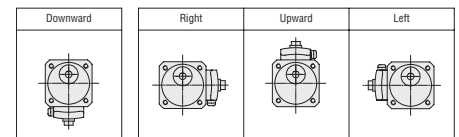
◇ TS Geared Type

Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46AC-TS ■	3.6, 7.2, 10, 20, 30	0.59	B1157
Right	AZM46AC-TS ■ R			B1272
Upward	AZM46AC-TS ■ U			B1270
Left	AZM46AC-TS ■ L			B1271

● Cable Drawing Direction

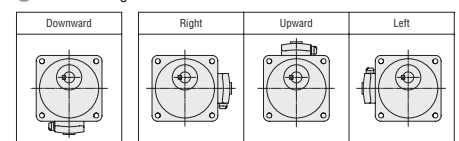


Frame Size 60 mm

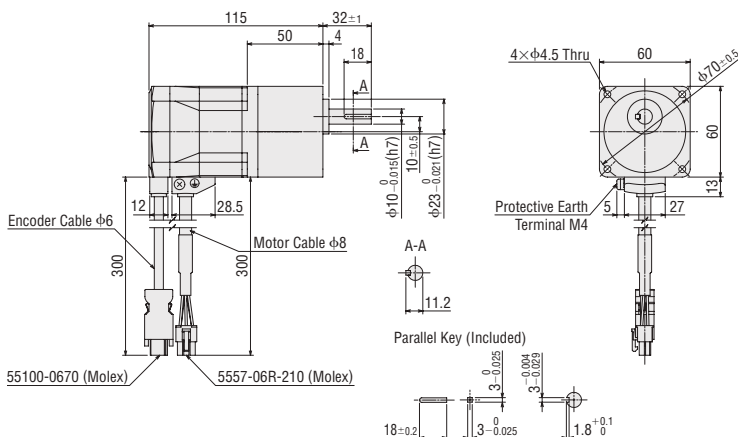
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66AC-TS ■	3.6, 7.2, 10, 20, 30	1.3	B1158
Right	AZM66AC-TS ■ R			B1275
Upward	AZM66AC-TS ■ U			B1273
Left	AZM66AC-TS ■ L			B1274

● Cable Drawing Direction



● Installation Screws: M4×60 P0.7 (4 pieces included)



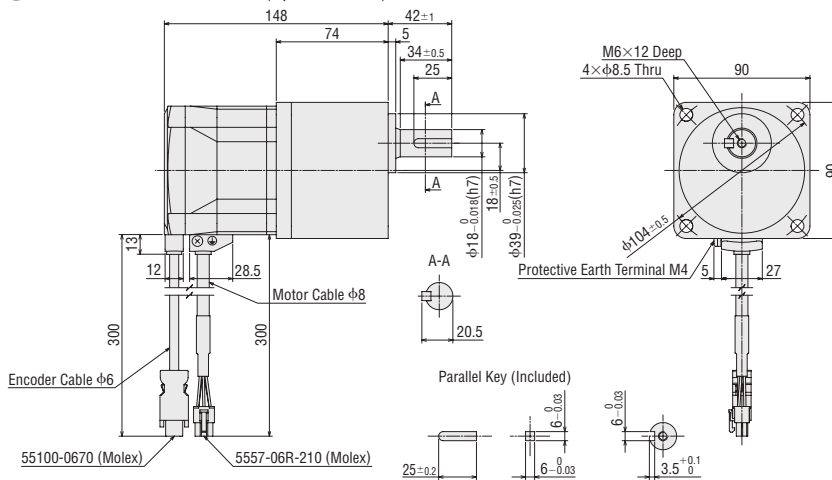
● A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm

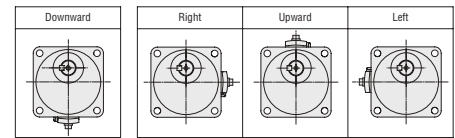
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM98AC-TS 	3.6, 7.2, 10, 20, 30	3.1	B1184
Right	AZM98AC-TS R			B1278
Upward	AZM98AC-TS U			B1276
Left	AZM98AC-TS L			B1277

● Installation Screws: M8×90 P1.25 (4 pieces included)



● Cable Drawing Direction

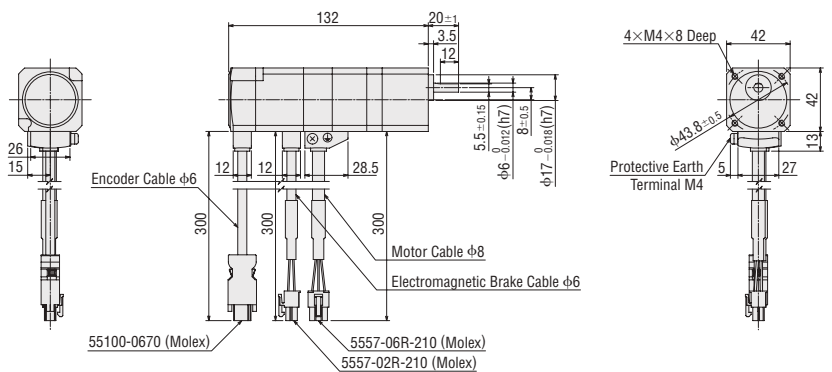


◇ TS Geared Type with Electromagnetic Brake

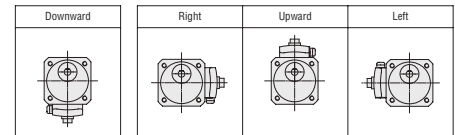
Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46MC-TS 	3.6, 7.2, 10, 20, 30	0.76	B1216
Right	AZM46MC-TS R			B1284
Upward	AZM46MC-TS U			B1282
Left	AZM46MC-TS L			B1283



● Cable Drawing Direction

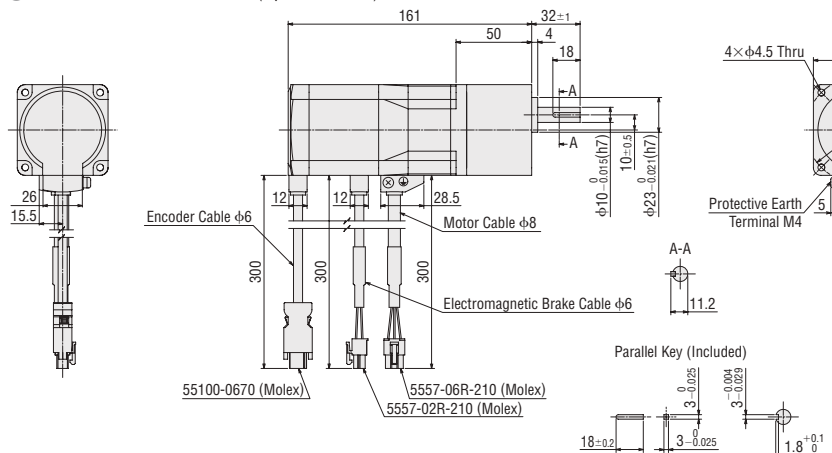


Frame Size 60 mm

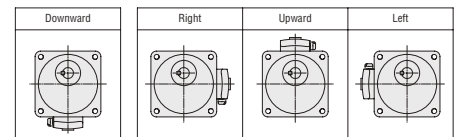
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66MC-TS 	3.6, 7.2, 10, 20, 30	1.7	B1217
Right	AZM66MC-TS R			B1287
Upward	AZM66MC-TS U			B1285
Left	AZM66MC-TS L			B1286

● Installation Screws: M4×60 P0.7 (4 pieces included)



● Cable Drawing Direction



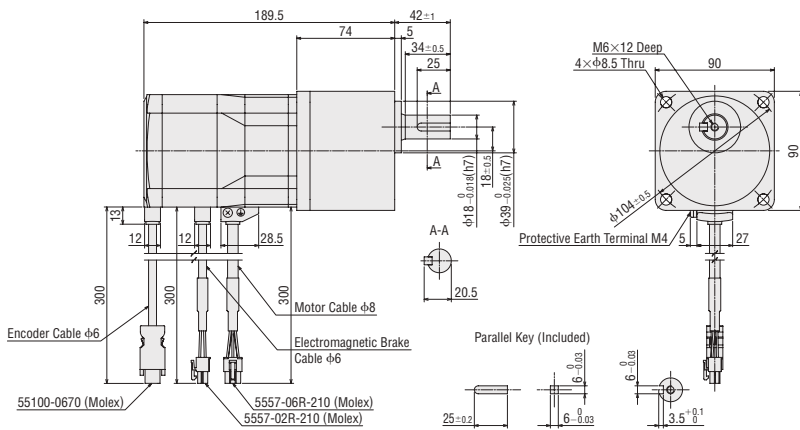
● A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 90 mm

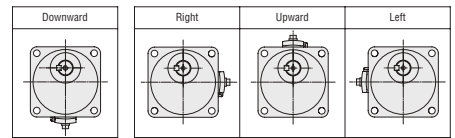
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM98MC-TS 	3.6, 7.2, 10, 20, 30	3.7	B1190
Right	AZM98MC-TS R 			B1281
Upward	AZM98MC-TS U 			B1279
Left	AZM98MC-TS L 			B1280

● Installation Screws: M8×90 P1.25 (4 pieces included)



● Cable Drawing Direction

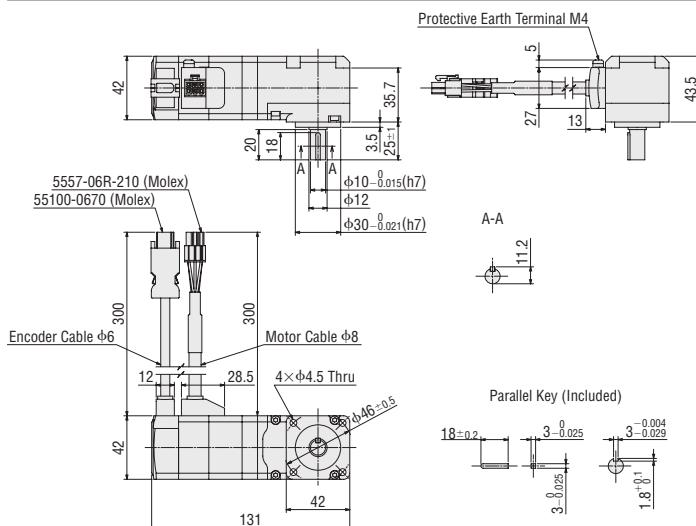


◇ FC Geared Type

Frame Size 42 mm Cable Drawing Direction Upward

2D & 3D CAD

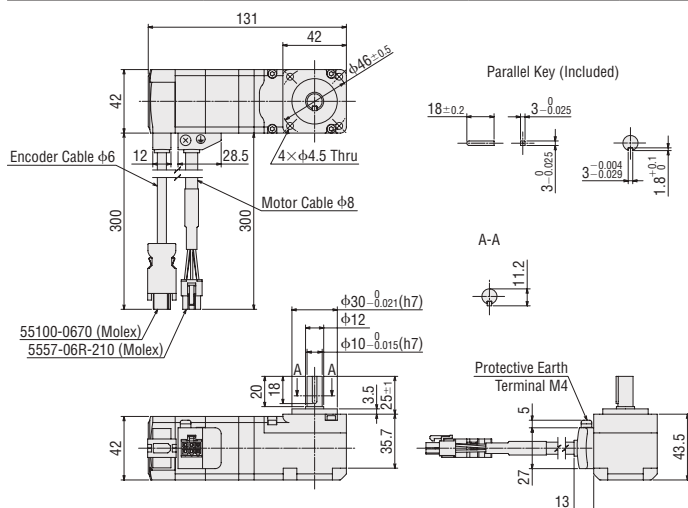
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-FC U A	7.2, 10, 20, 30	0.79	B1314



Frame Size 42 mm Cable Drawing Direction Downward

2D & 3D CAD

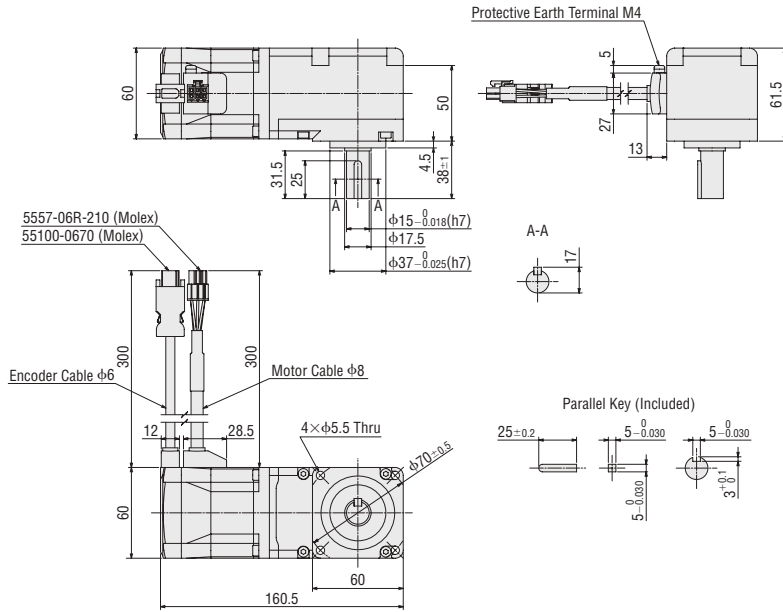
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-FC D A	7.2, 10, 20, 30	0.79	B1313



● A number indicating the gear ratio is entered where the box is located within the product name.

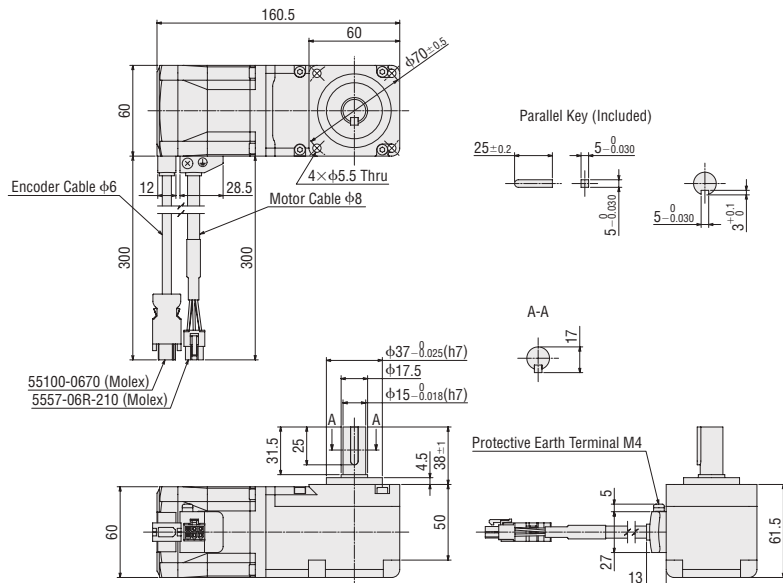
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-FC ■ UA	7.2, 10, 20, 30	1.8	B1318



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-FC ■ DA	7.2, 10, 20, 30	1.8	B1317



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

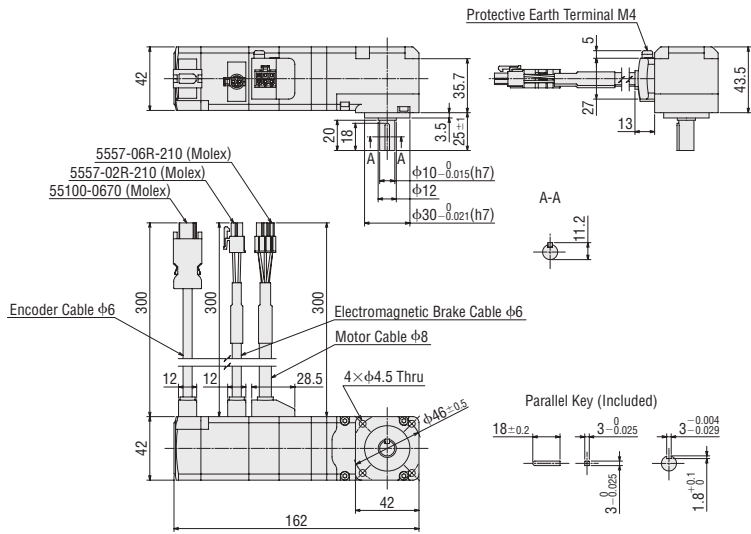
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<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ FC Geared Type with Electromagnetic Brake

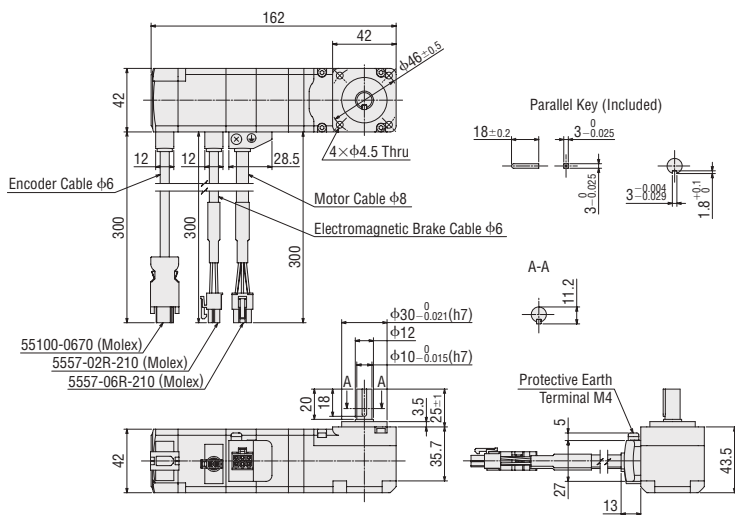
Frame Size 42 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-FC UA	7.2, 10, 20, 30	0.96	B1316



Frame Size 42 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-FC DA	7.2, 10, 20, 30	0.96	B1315



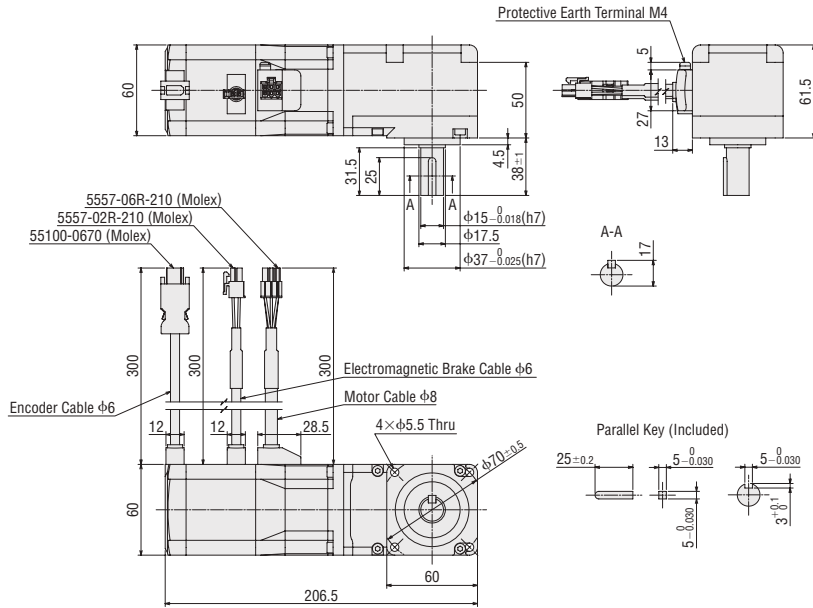
06

AZ Series

● A number indicating the gear ratio is entered where the box ■ is located within the product name.

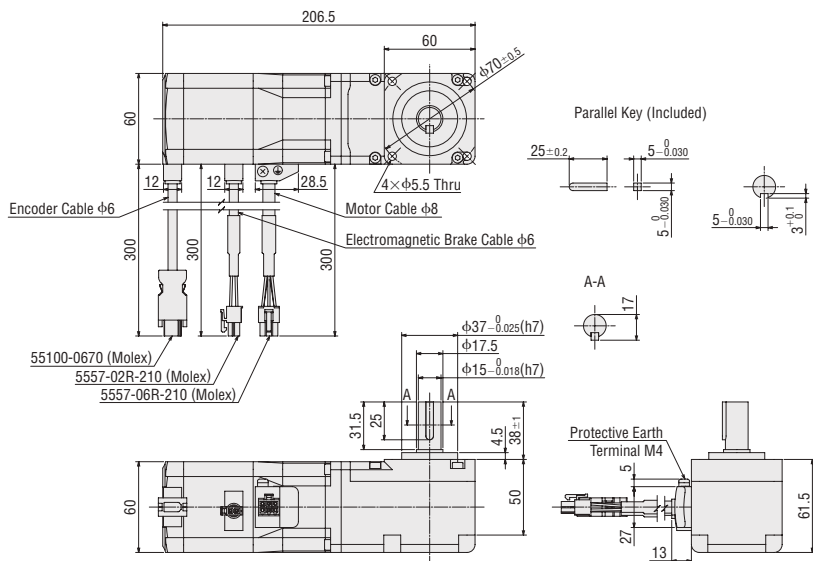
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-FC UA	7.2, 10, 20, 30	2.2	B1320



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-FC DA	7.2, 10, 20, 30	2.2	B1319



● A number indicating the gear ratio is entered where the box is located within the product name.

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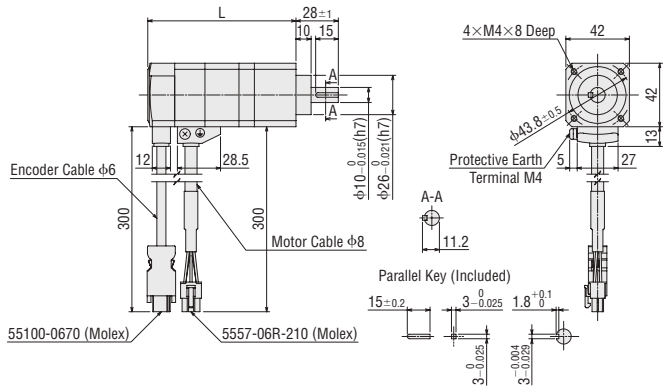
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◇ PS Geared Type

Frame Size 42 mm

2D & 3D CAD

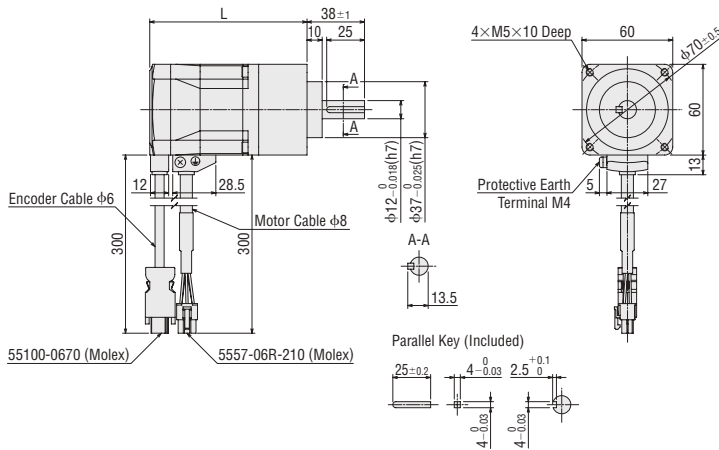
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46AC-PS 	5, 7, 2, 10	98	0.64	B1159
	25, 36, 50	121.5	0.79	B1160



Frame Size 60 mm

2D & 3D CAD

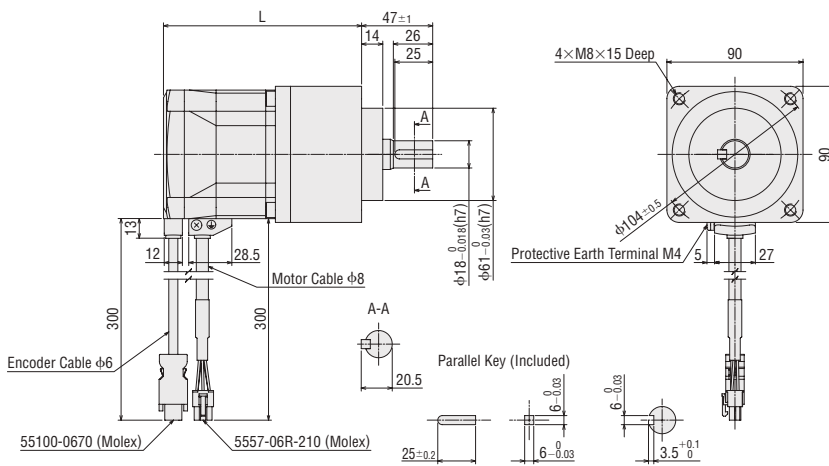
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66AC-PS 	5, 7, 2, 10	104	1.3	B1161
	25, 36, 50	124	1.6	B1162



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM98AC-PS 	5, 7, 2, 10	131	3.3	B1185
	25, 36, 50	158.5	4.1	B1186



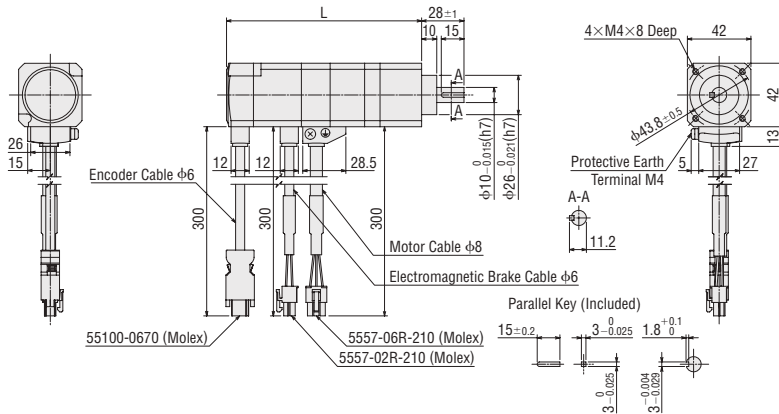
● A number indicating the gear ratio is entered where the box is located within the product name.

◆ PS Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

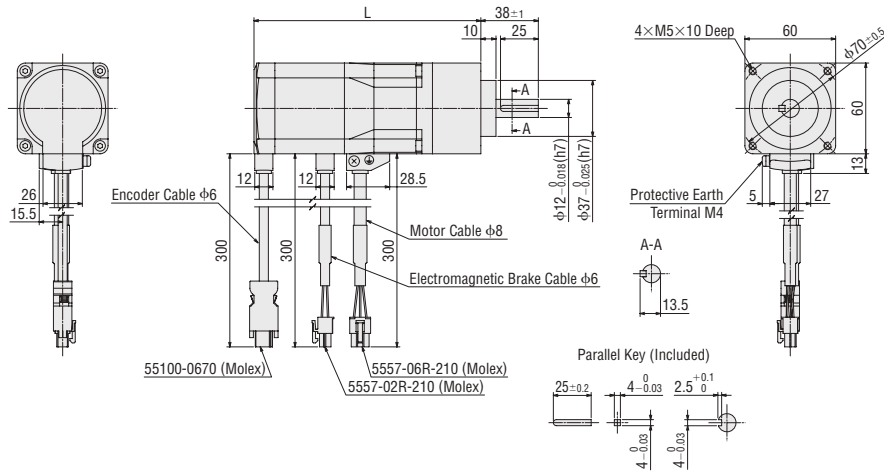
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46MC-PS ■	5, 7.2, 10	129	0.81	B1218
	25, 36, 50	152	0.96	B1219



Frame Size 60 mm

2D & 3D CAD

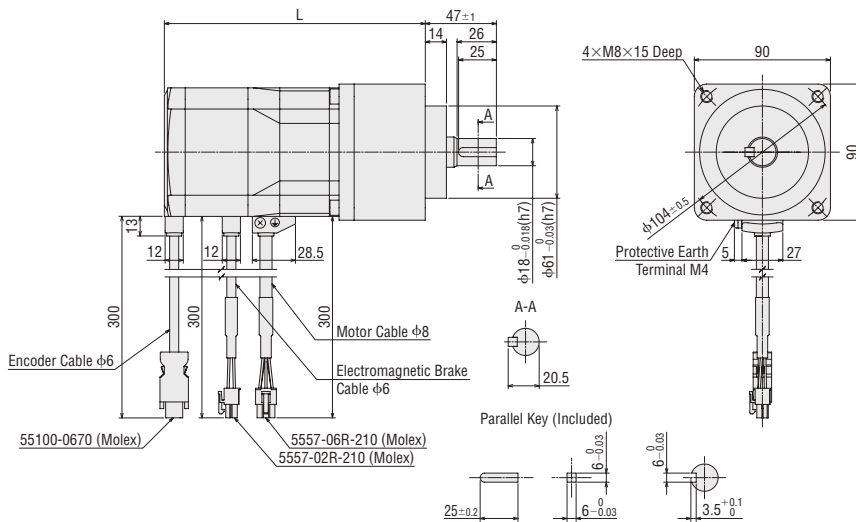
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66MC-PS ■	5, 7.2, 10	150	1.7	B1220
	25, 36, 50	170	2.0	B1221



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM98MC-PS ■	5, 7.2, 10	172.5	3.9	B1191
	25, 36, 50	200	4.7	B1192



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

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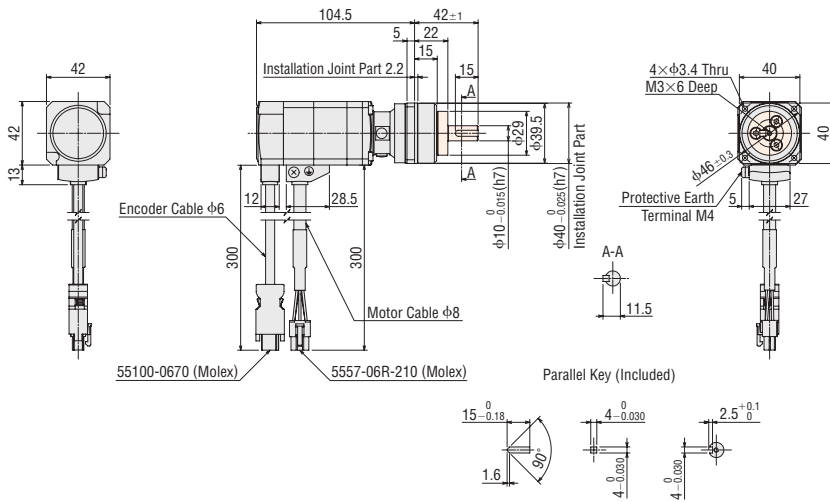
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ **HPG Geared Type Shaft Output Type**

Frame Size 40 mm

2D & 3D CAD

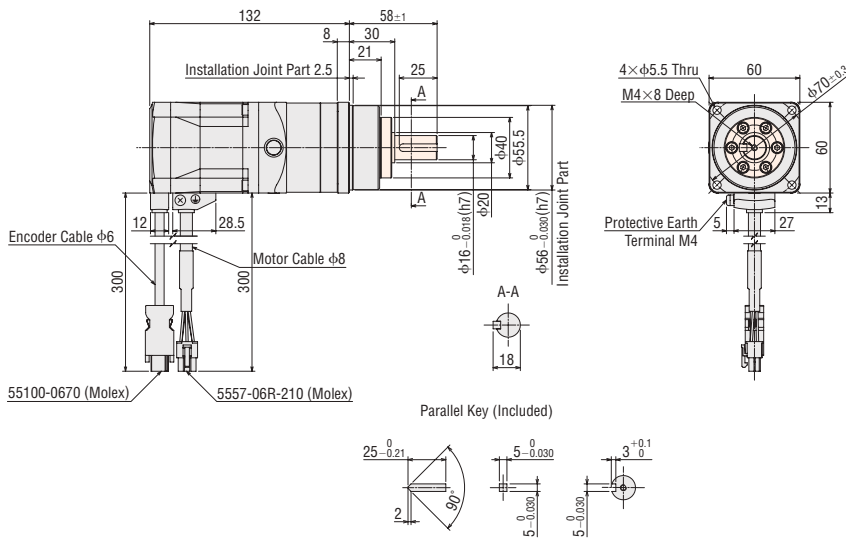
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HP	5, 9	0.71	B1163



Frame Size 60 mm

2D & 3D CAD

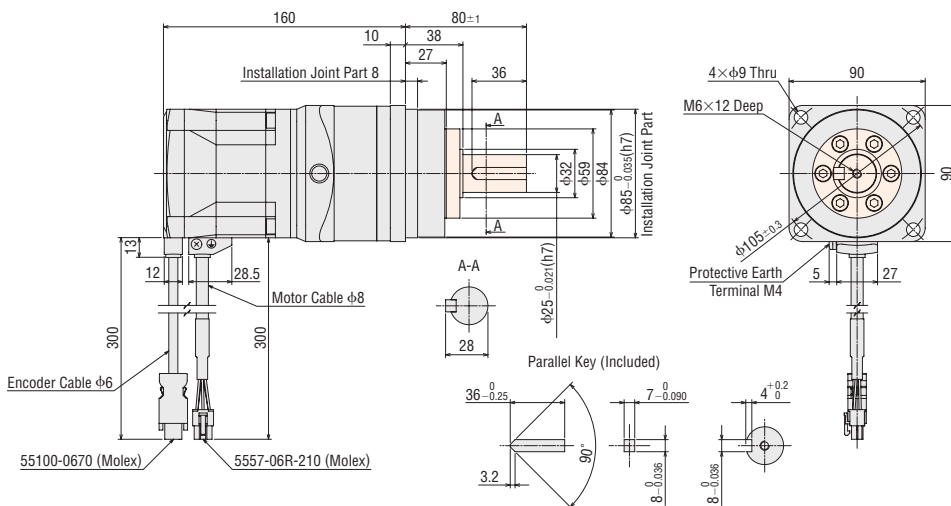
Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HP	5, 15	1.9	B1165



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HP	5, 15	4.8	B1187



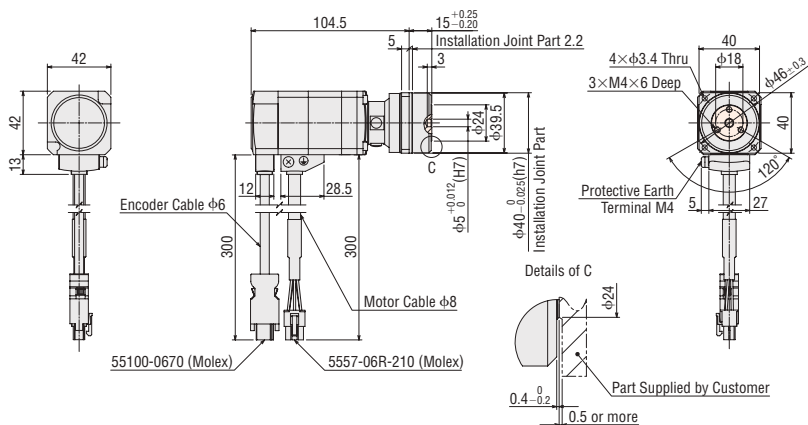
- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

◆ HPG Geared Type Flange Output Type

Frame Size 40 mm

2D & 3D CAD

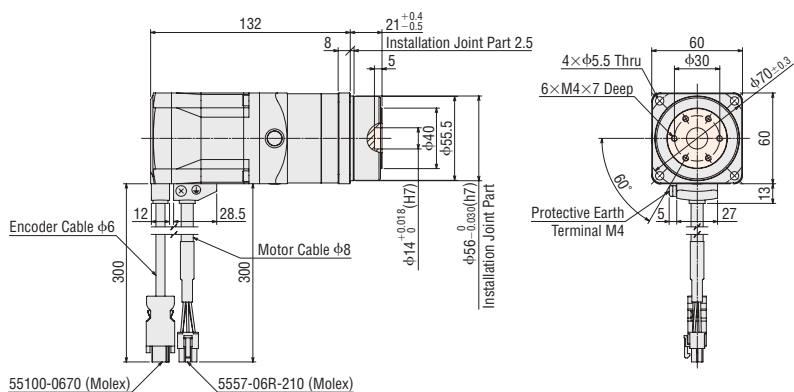
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HP ■F	5, 9	0.66	B1164



Frame Size 60 mm

2D & 3D CAD

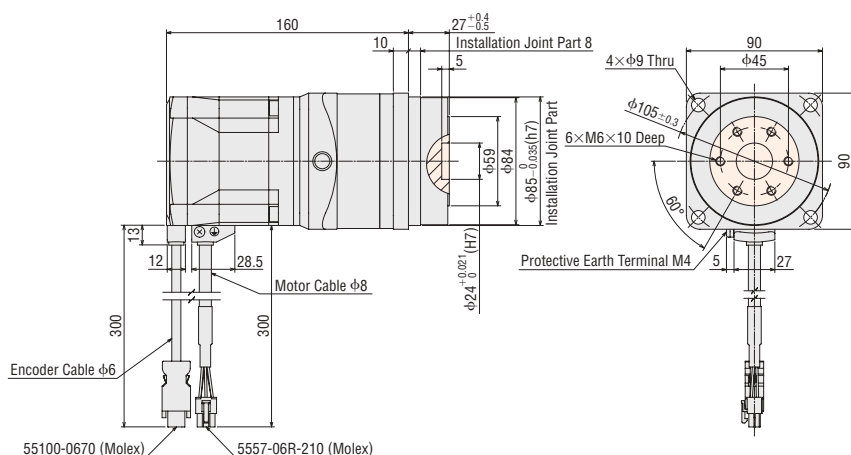
Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HP ■F	5, 15	1.8	B1166



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HP ■F	5	4.5	B1188
	15	4.4	



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

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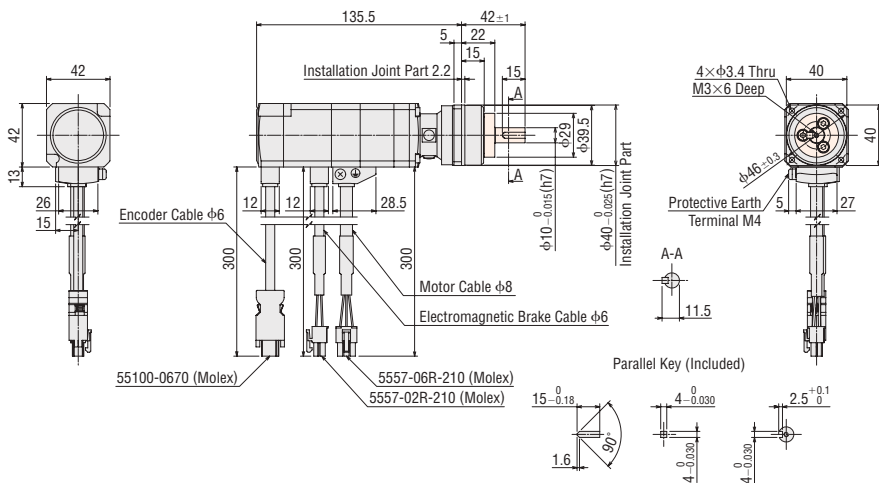
For more information, please visit ORIENTAL MOTOR Website:
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◇ **HPG Geared Type with Electromagnetic Brake Shaft Output Type**

Frame Size 40 mm

2D & 3D CAD

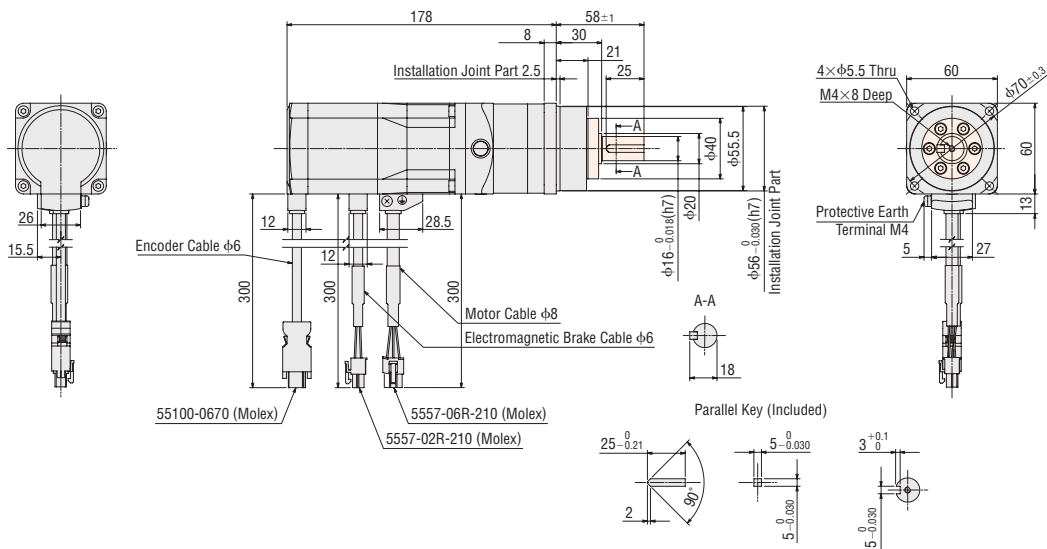
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HP ■	5, 9	0.88	B1222



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HP ■	5, 15	2.3	B1224

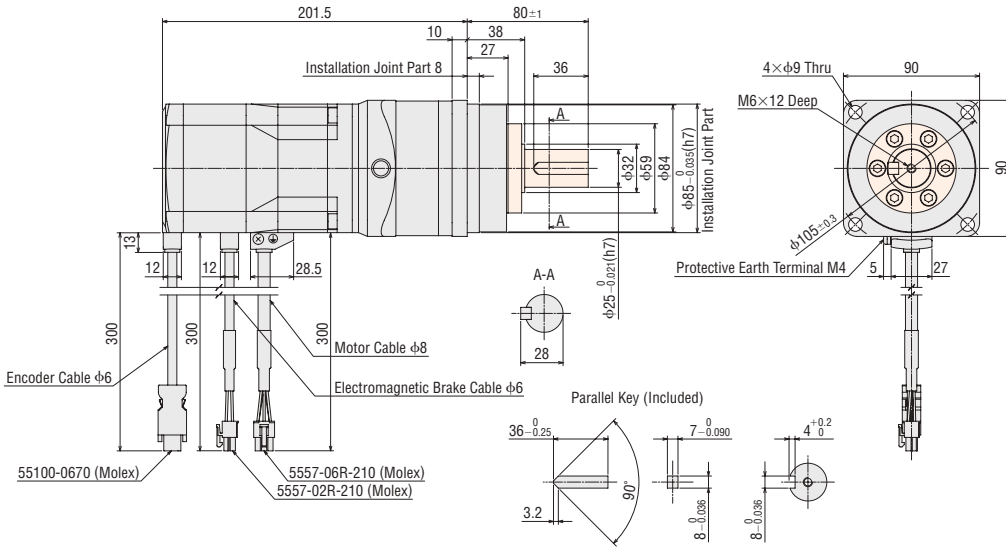


- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HP	5, 15	5.4	B1193

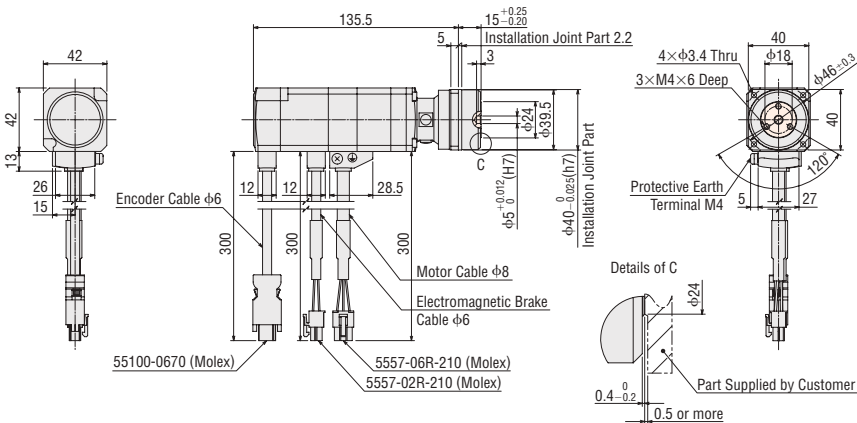


◆ HPG Geared Type with Electromagnetic Brake Flange Output Type

Frame Size 40 mm

2D & 3D CAD

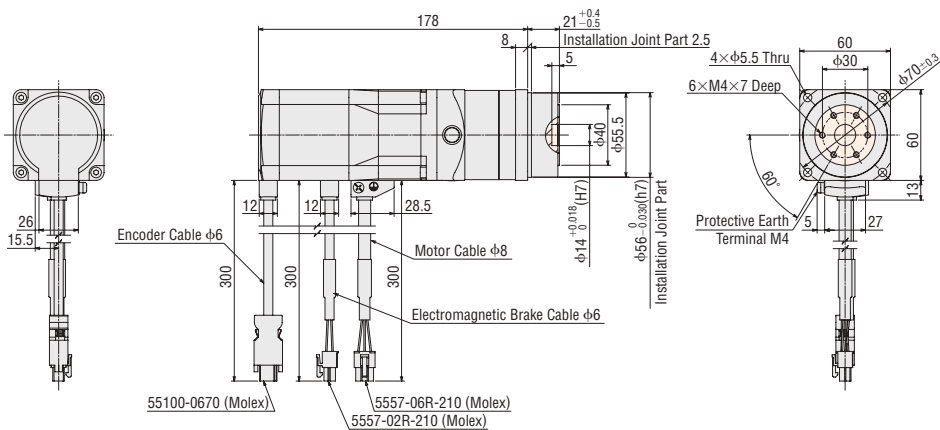
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HP F	5, 9	0.83	B1223



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HP F	5, 15	2.2	B1225



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

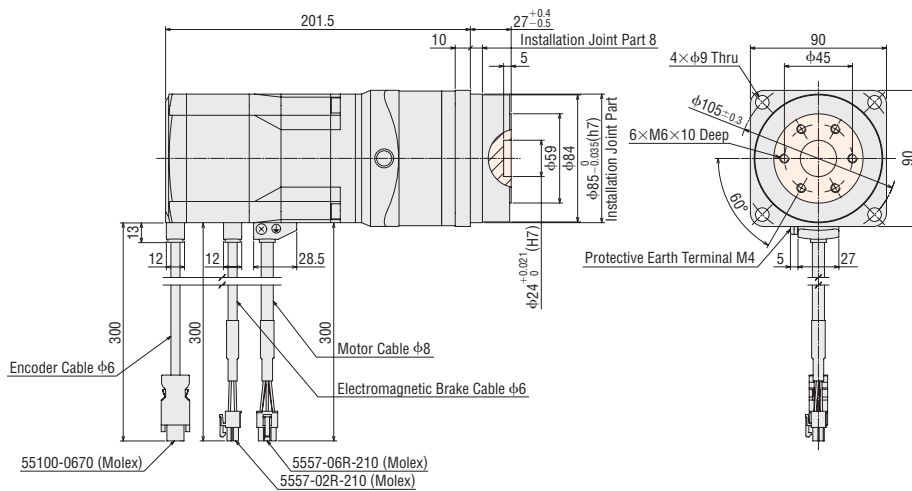
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<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HP F	5	5.1	B1194
	15	5	

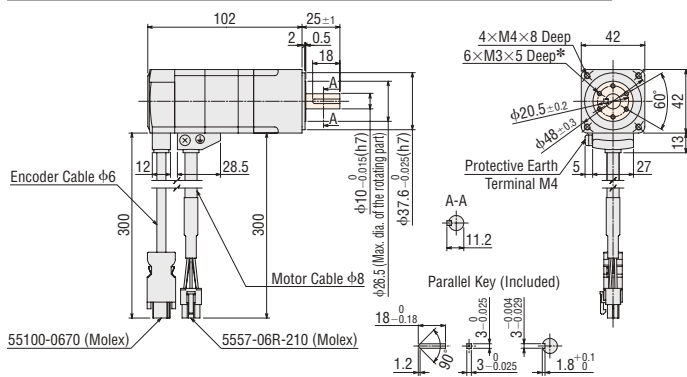


◇ Harmonic Geared Type

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HS ■	50, 100	0.65	B1167

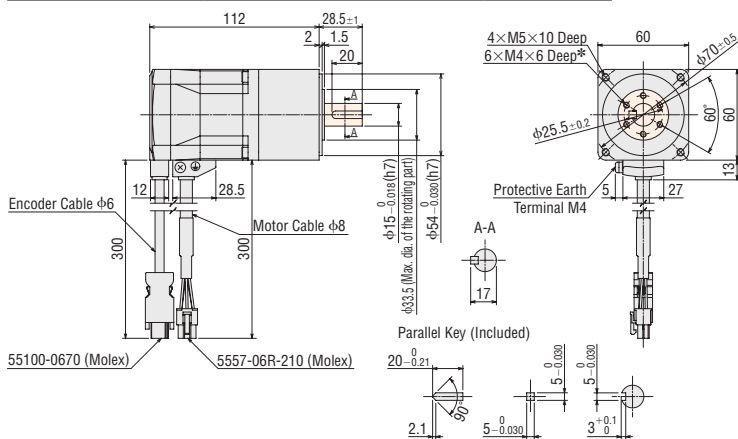


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HS ■	50, 100	1.4	B1168



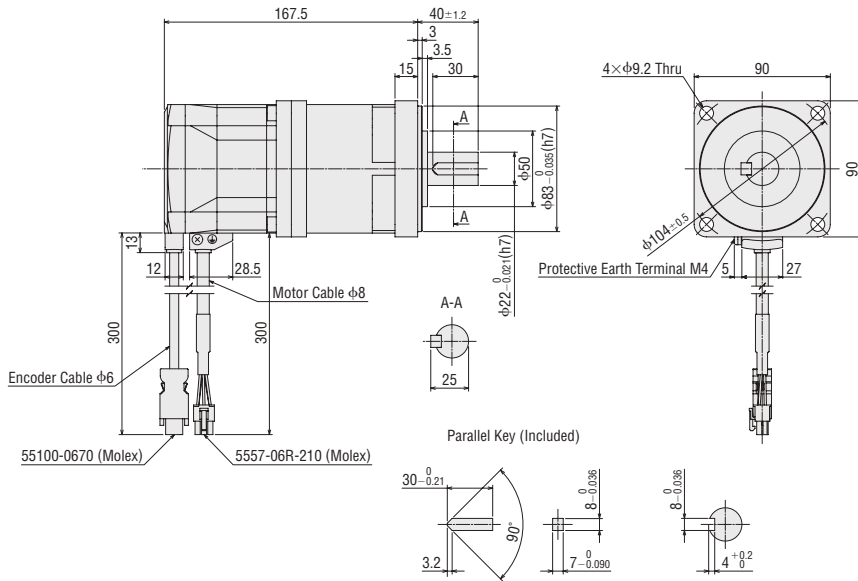
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HS	50, 100	3.9	B1189

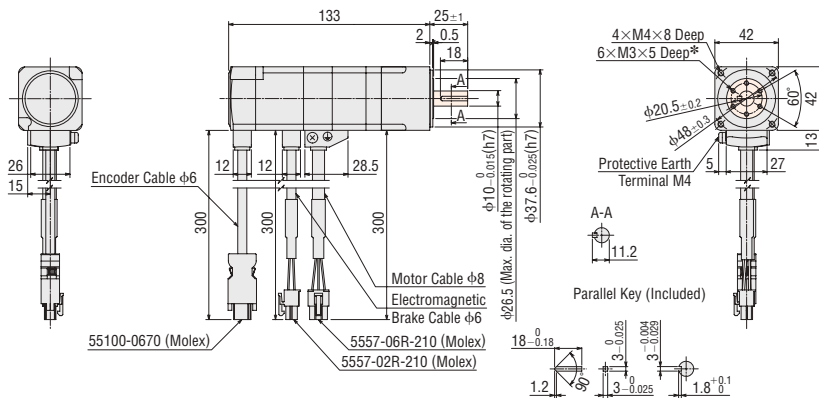


◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HS	50, 100	0.82	B1226

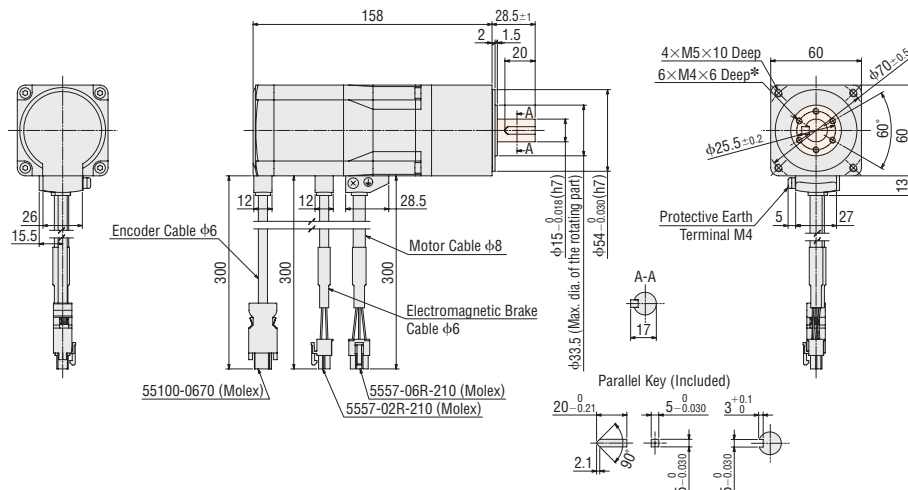


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HS	50, 100	1.8	B1227



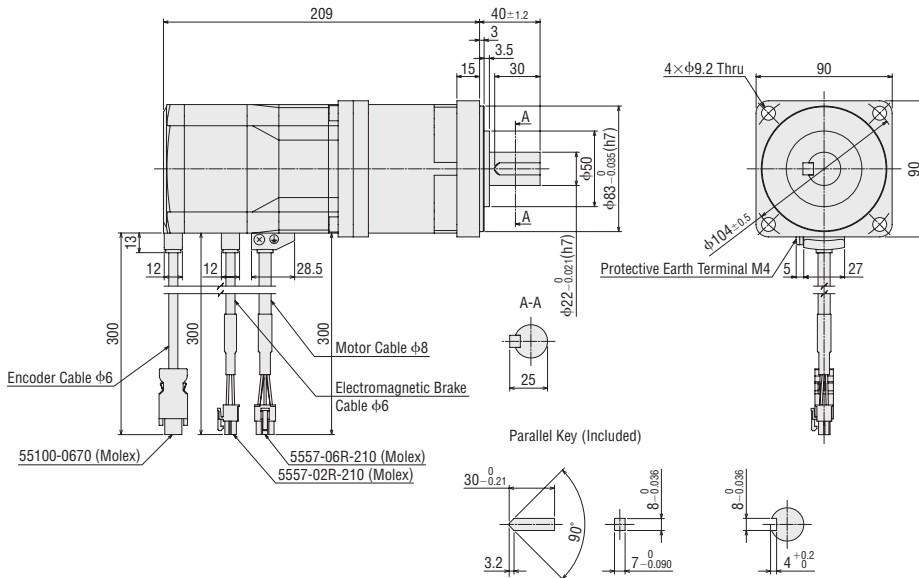
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HS 	50, 100	4.5	B1195



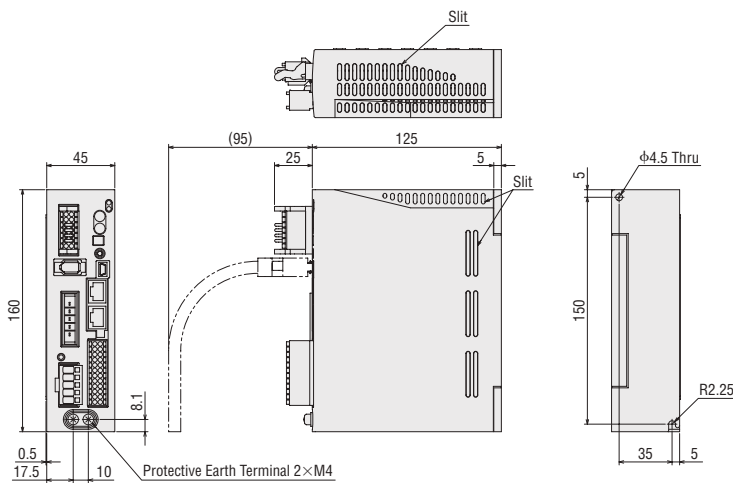
● A number indicating the gear ratio is entered where the box is located within the product name.

Drivers

2D & 3D CAD

Type	Product Name	Mass kg	2D CAD
Built-in Controller Type	AZD-AD, AZD-CD	0.65	B1095
Pulse Input Type with RS-485 Communication	AZD-AX, AZD-CX		
Pulse Input Type	AZD-A, AZD-C		B1097

● The dimensions below is the drawing of a built-in controller type. The external dimensions and accessories are common to all driver types.



Accessories

Connector for the Main Power Supply and Regeneration Resistor (CN4)

Connector: 05JFAT-SAXGDK-H5.0
(J.S.T.MFG.CO.,LTD.)
Connector wiring lever

I/O Signals Connector (CN5)

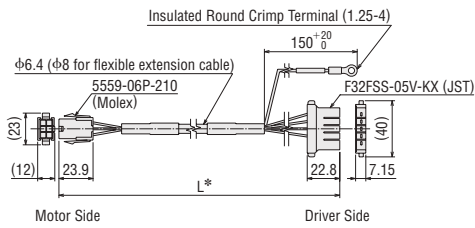
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

Connector for 24 VDC Power-Supply Input/Electromagnetic Brake Connection/Regeneration Resistor Thermal Input/Power Cutoff Signal I/O (CN1)

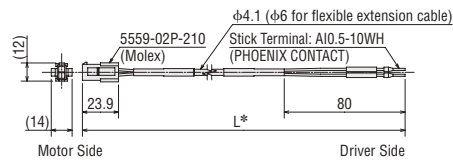
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT)

● Connection Cable Sets/Flexible Connection Cable Sets

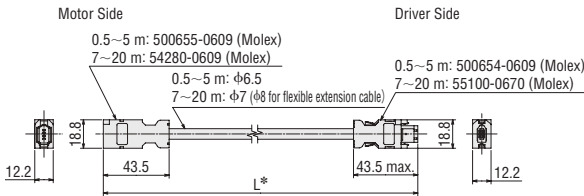
◇ Cable for Motor



◇ Cable for Electromagnetic Brake



◇ Cable for Encoder



*"L" in the above dimensions is replaced by any Length L (m) in "Product Line" on page 06-18.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

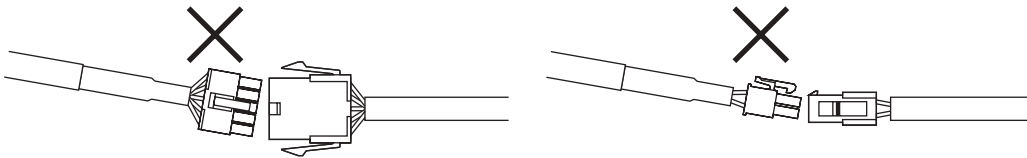
■ Cautions for Using Connection Cables

When using connection cables, make sure you follow the instructions below.

● When inserting the connector

Be sure to hold the connector and firmly insert it straight into the socket.

Inserting the connector at an angle may damage the terminal or result in a bad connection.



● When Disconnecting the Connector

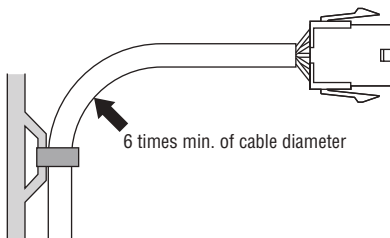
While releasing the lock of the connector, pull it out straight.

Pulling the cable (lead wire) may damage the connector.

● Bending Radius of Cables

The bending radius of the cable, use at least 6 times min. of the cable diameter.

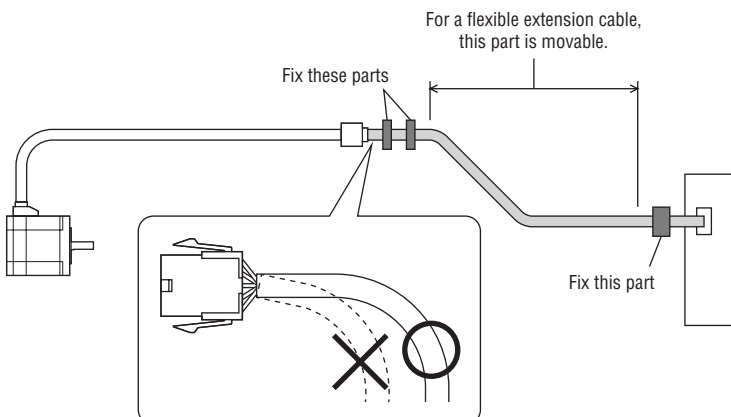
For lead wire types, make sure that the bending radius of the lead wire that you use is at least 4 times larger than the lead wire diameter.



● Method for Fixing the Cable

When fixing the cable, fix a part near the connector to avoid stress on the connector.

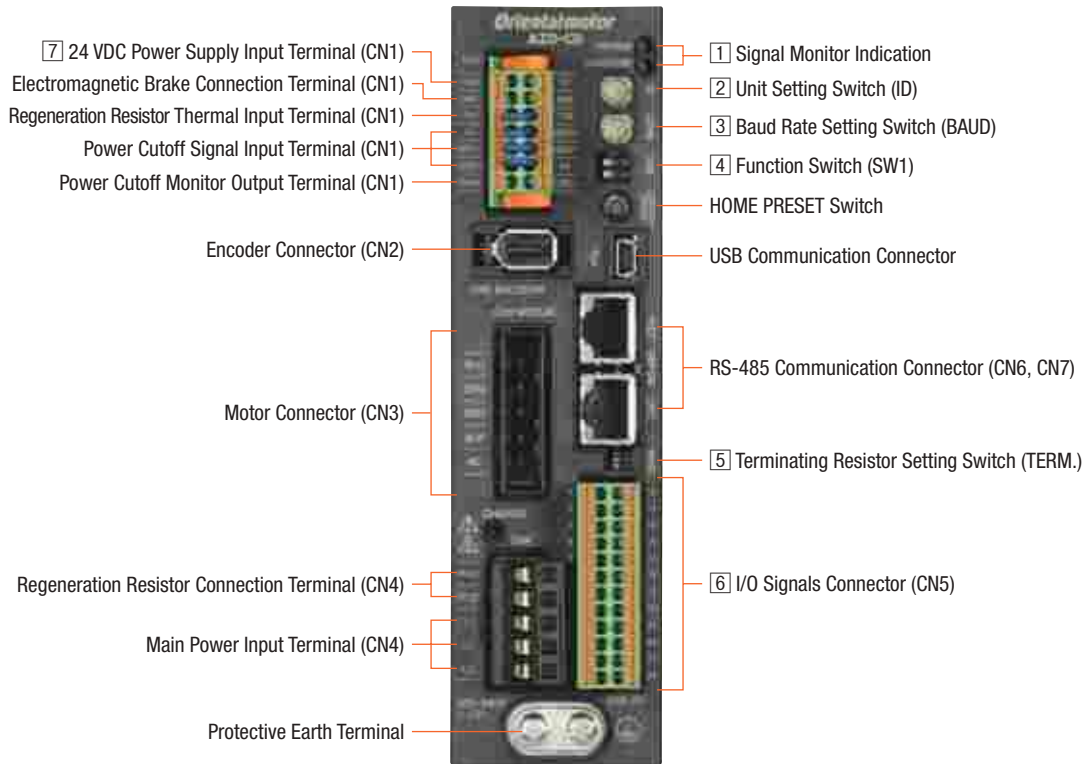
Take measures such as using wide clamps and fixing two parts of the cable to avoid stress on the connector.



Connection and Operation (Built-in controller type/Pulse input type with RS-485 communication)

Names and Functions of Driver Parts

Below is a photo of the built-in controller type.



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
PWR	Green	Power supply indication	When 24 VDC power supply is input
ALM	Red	Alarm indication	When a protective function is activated (blinking)
C-DAT	Green	Communication indication	When communication data is being sent or received
C-ERR	Red	Communication error indication	When communication data is in error

2 Unit Setting Switch

Indication	Function
ID	Set this when you use RS-485 communication. Set the unit number. (Factory setting) Built-in controller type: 0 Pulse input type with RS-485 communication: 1

3 Baud Rate Setting Switch

Indication	Function
BAUD	Set this when you use RS-485 communication. Set the baud rate. (Factory setting) Built-in controller type: 7 Pulse input type with RS-485 communication: 4

4 Function Switch

Indication	No.	Function
SW1	1	Use in combination with the unit setting switch (ID) to set the axis number. (Factory setting) OFF
	2	Set the RS-485 communication protocol. (Factory setting) Built-in controller type: OFF Pulse input type with RS-485 communication: ON

◇ RS-485 Baud Rate Setting

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5	230400
6	Not used
7	Network converter
8~F	Not used

5 Terminating Resistor Setting Switch

Indication	No.	Function
TERM.	1	Set the terminating resistor (120 Ω) for RS-485 communication (Factory setting: OFF).
	2	OFF: Terminating resistor not used ON: Terminating resistor used

● Configure both No. 1 and No. 2 to the same setting.

6 I/O Signals Connector (CN5)

For the pulse input type with RS-485 communication, No. 1, 2, 13, and 14 pins are dedicated to pulse input. For wire connection with programmable controller, refer to "Pulse Input Type" on Page 06-63.

Indication	Pin No.	Driver Type	Signal Name	Description
CN5	1	Built-in Controller Type	IN0	START This signal is used to start positioning operation.
		Pulse Input Type with RS-485 Communication	CW+* [PLS+]	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	Built-in Controller Type	IN2	M1 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse Input Type with RS-485 Communication	CCW+* [DIR+]	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	Common	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	Common	IN6	STOP Stops the motor.
	5	Common	IN-COM [0-7]*	IN0~IN7 Input Common
	6	Common	IN8	FW-JOG Starts the JOG operation.
	7	Common	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	Common	OUT2	PLS-RDY Not used.
	9	Common	OUT4	MOVE Output during motor operation.
	10	Common	OUT-COM*	Output Common
	11	Common	ASG+	A-Phase Pulse Output +
	12	Common	BSG+	B-Phase Pulse Output +
	13	Built-in controller type	IN1	M0 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CW-* [PLS-]	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	Built-in controller type	IN3	M2 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW-* [DIR-]	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	Common	IN5	FREE Stops motor excitation.
	16	Common	IN7	ALM-RST Resets the alarms.
	17	Common	IN-COM [8-9]*	IN8, IN9 Input Common
	18	Common	IN9	RV-JOG Starts the JOG operation.
	19	Common	OUT1	IN-POS Outputs when the motor operation is finished.
	20	Common	OUT3	READY Outputs when the driver is ready for operation.
21	Common	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).	
22	Common	GND*	Ground	
23	Common	ASG-	A-Phase Pulse Output -	
24	Common	BSG-	B-Phase Pulse Output -	

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

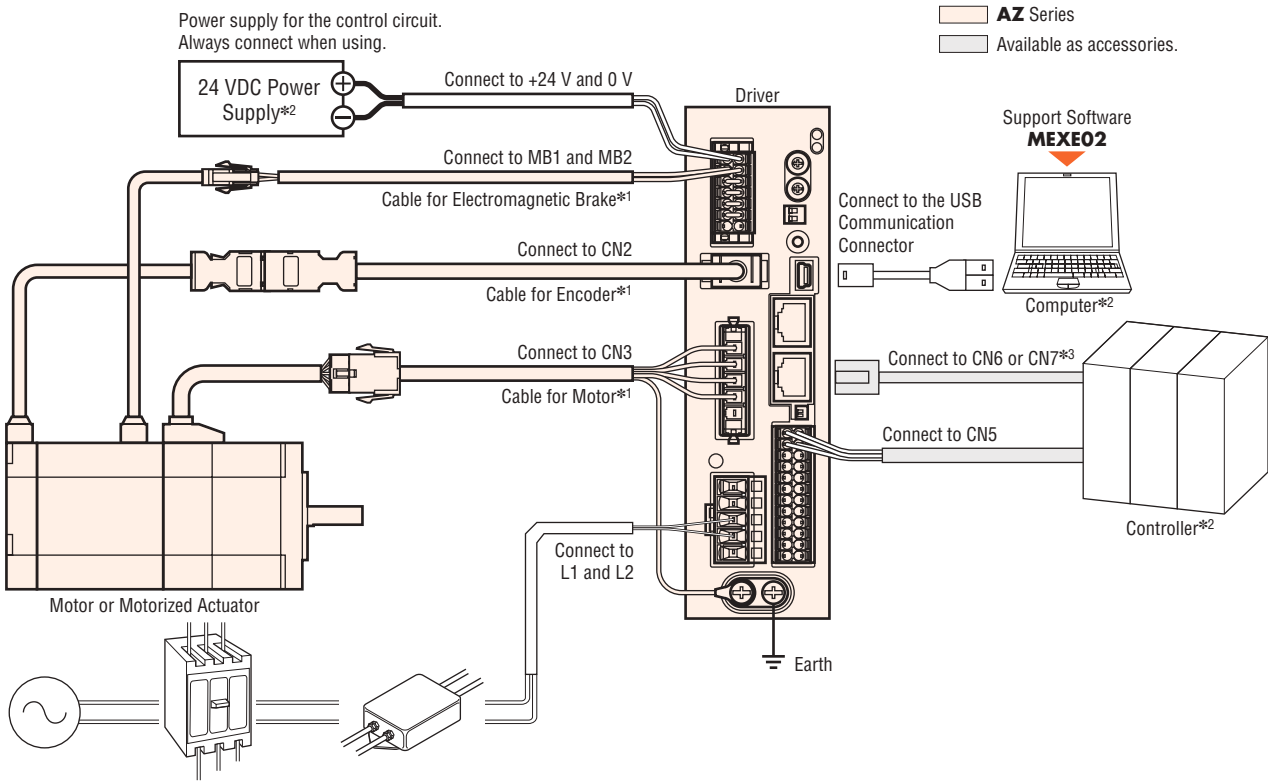
*Initial settings cannot be changed.

7 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Resistor Thermal Input Terminal/Power Cutoff Signal Input Terminal/Power Cutoff Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Description
+24V	Input	24 VDC Power Supply Input Terminal +	The power supply for the driver control circuit. Always connect when using.
0V		24 VDC Power Supply Input Terminal -	
MB1	Output	Electromagnetic Brake Connection Terminal -	For an electromagnetic brake type motor, connect the electromagnetic brake cable line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Resistor Thermal Input Terminal	Connect the accessory regeneration resistor (RGB100). When not connecting a regeneration resistor, short these 2 terminals to each other.
TH2		Regeneration Resistor Thermal Input Terminal	
HWT01+	Input	Power Cutoff Signal Input Terminal 1 +	Connect the switches and the programmable controller. If either the HWT01 input or HWT02 input is OFF, power supply to the motor will be cut off directly with hardware, without passing through the CPU.
HWT01-		Power Cutoff Signal Input Terminal 1 -	
HWT02+		Power Cutoff Signal Input Terminal 2 +	
HWT02-		Power Cutoff Signal Input Terminal 2 -	
EDM+	Output	Power Cutoff Monitor Output Terminal +	Connects the programmable controller. If both the HWT01 input and HWT02 input are OFF, EDM output will be turned ON.
EDM-		Power Cutoff Monitor Output Terminal -	

● Connection Diagram

◇ Connections with Peripheral Equipment

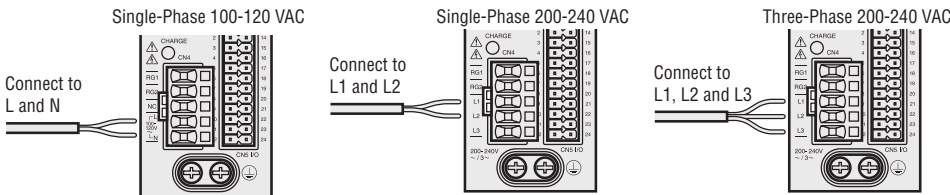


■ AZ Series
 □ Available as accessories.

- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.
- *3 Connect to the controller when controlling by RS-485 communication.

◇ Connecting the Main Power Supply

The connection method varies depending on power supply specifications.



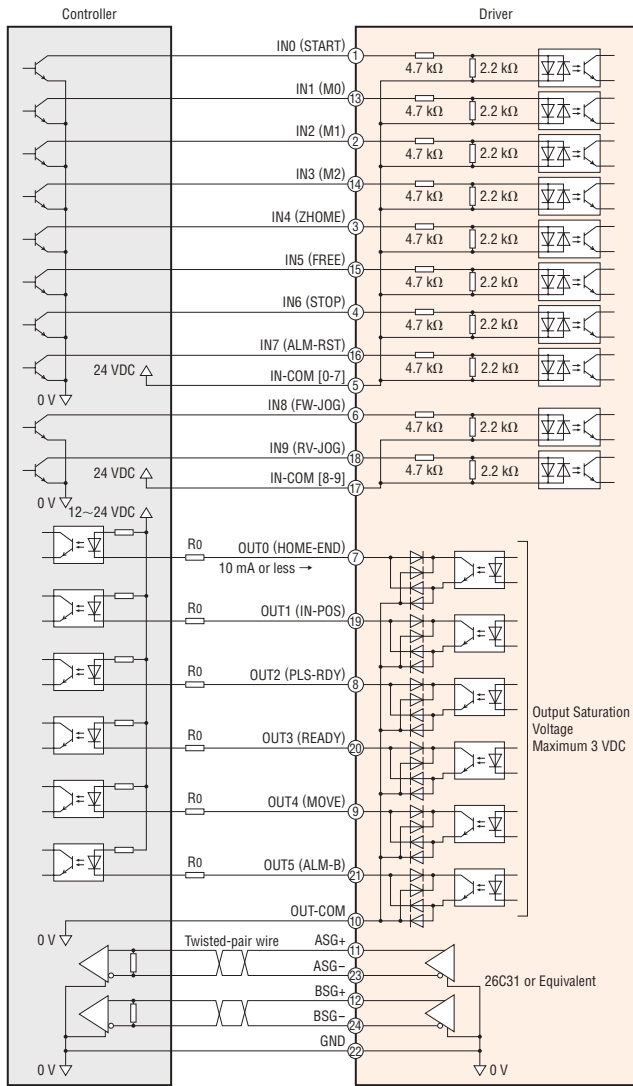
◇ Connection of the USB Cable

Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to Programmable Controller (Built-in controller type)

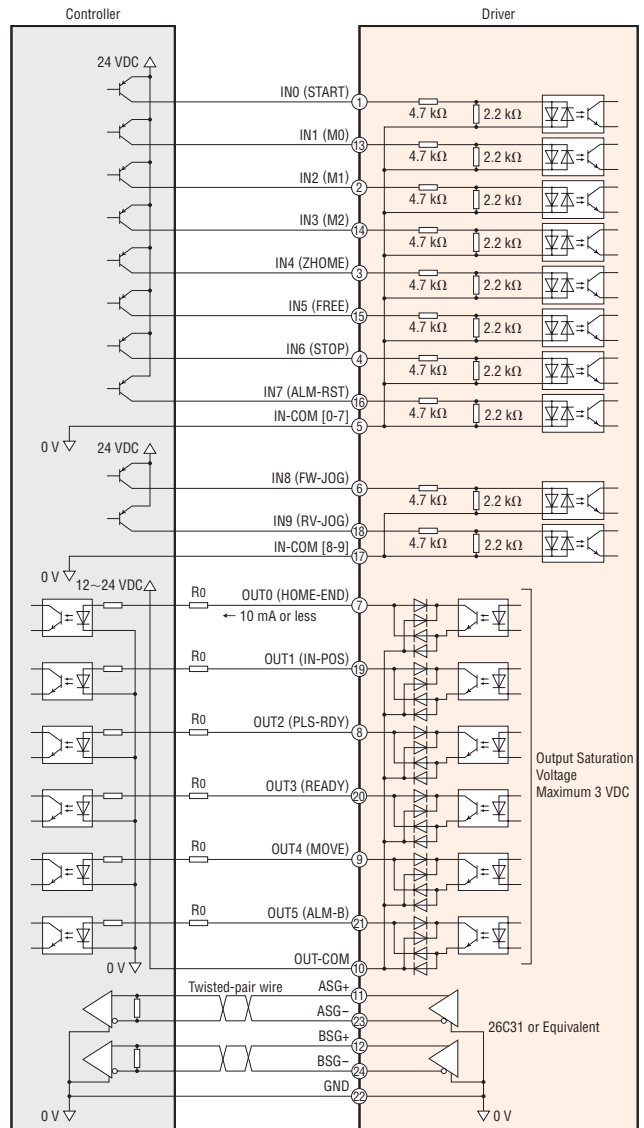
● Connection Diagram for Connection with Current Sink Output Circuit



Note

- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

● Connection Diagram for Connection with Current Source Output Circuit



Note

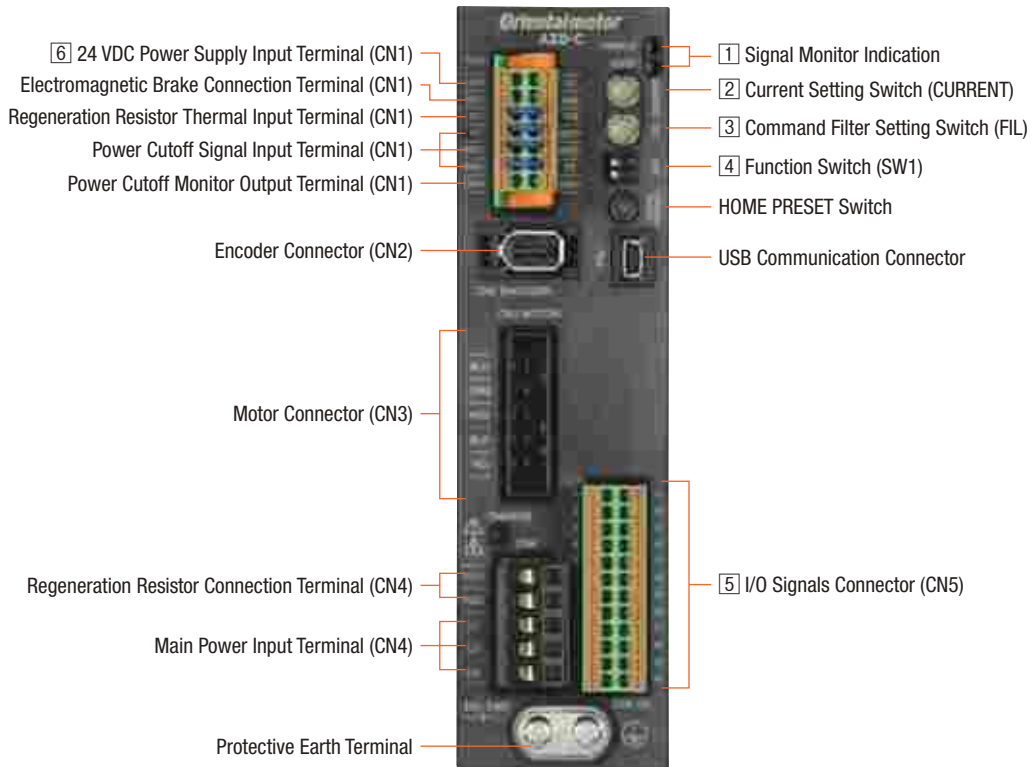
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

◇ Connecting to the Programmable Controller (Pulse input type with RS-485 communication)

The connection diagram is similar to that of the pulse input type. Refer to page 06-63.

Connection and Operation (Pulse input type)

Names and Functions of Driver Parts



1] Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
PWR	Green	Power supply indication	When 24 VDC power supply is input
ALM	Red	Alarm indication	When a protective function is activated (blinking)
READY	Green	READY output	When READY output is ON

2] Current Setting Switch

Indication	Function
CURRENT	Set the base current, which is the basis of the running current and the standstill current (Factory setting: F).

3] Command Filter Setting Switch

Indication	Function
FIL	Adjust the responsiveness of the motor (Factory setting: 1).

4] Function Switch

Indication	No.	Function
SW1	1	Sets the resolution per one rotation of the motor output shaft (Factory setting: OFF [1000 p/r]).
	2	Sets the pulse input mode as either 1-pulse input mode or 2-pulse input mode (Factory setting: OFF [2-pulse input mode]).

5 I/O Signals Connector (CN5)

Indication	Pin No.	Signal Name	Description
CN5	1	CW+ [PLS+]*	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	CCW+ [DIR+]*	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	IN6	STOP Stops the motor.
	5	IN-COM [4-7]*	IN4-IN7 Input Common
	6	IN8	FW-JOG Starts the JOG operation.
	7	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	OUT2	PLS-RDY Output when the pulse input preparation is completed.
	9	OUT4	MOVE Output during motor operation.
	10	OUT-COM*	Output Common
	11	ASG+	A-Phase Pulse Output +
	12	BSG+	B-Phase Pulse Output +
	13	CW- [PLS-]*	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	CCW- [DIR-]*	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	IN5	FREE Stops motor excitation.
	16	IN7	ALM-RST Resets the alarms.
	17	IN-COM [8-9]*	IN8, IN9 Input Common
	18	IN9	RV-JOG Starts the JOG operation.
	19	OUT1	IN-POS Outputs when the motor operation is finished.
	20	OUT3	READY Outputs when the driver is ready for operation.
	21	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).
	22	GND*	Ground
	23	ASG-	A-Phase Pulse Output -
	24	BSG-	B-Phase Pulse Output -

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the **AZ** Series.

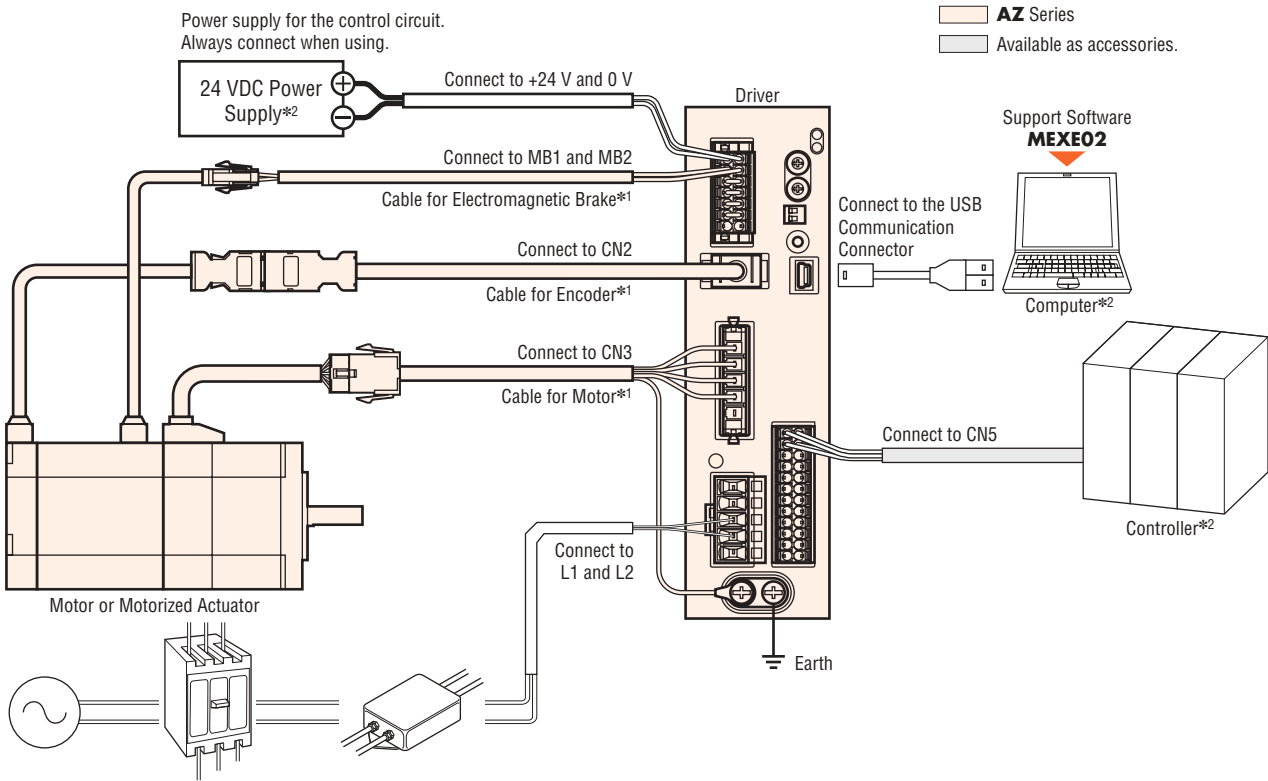
*Initial settings cannot be changed.

6 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Resistor Thermal Input Terminal/Power Cutoff Signal Input Terminal/Power Cutoff Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Description
+24V	Input	24 VDC Power Supply Input Terminal +	The power supply for the driver control circuit. Always connect when using.
0V		24 VDC Power Supply Input Terminal -	
MB1	Output	Electromagnetic Brake Connection Terminal -	For an electromagnetic brake type motor, connect the electromagnetic brake cable line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Resistor Thermal Input Terminal	Connect the accessory regeneration resistor (RGB100). When not connecting a regeneration resistor, short these 2 terminals to each other.
TH2		Regeneration Resistor Thermal Input Terminal	
HWT01+	Input	Power Cutoff Signal Input Terminal 1 +	Connect the switches and the programmable controller. If either the HWT01 input or HWT02 input is OFF, power supply to the motor will be cut off directly with hardware, without passing through the CPU.
HWT01-		Power Cutoff Signal Input Terminal 1 -	
HWT02+		Power Cutoff Signal Input Terminal 2 +	
HWT02-		Power Cutoff Signal Input Terminal 2 -	
EDM+	Output	Power Cutoff Monitor Output Terminal +	Connects the programmable controller. If both the HWT01 input and HWT02 input are OFF, EDM output will be turned on.
EDM-		Power Cutoff Monitor Output Terminal -	

● Connection Diagram

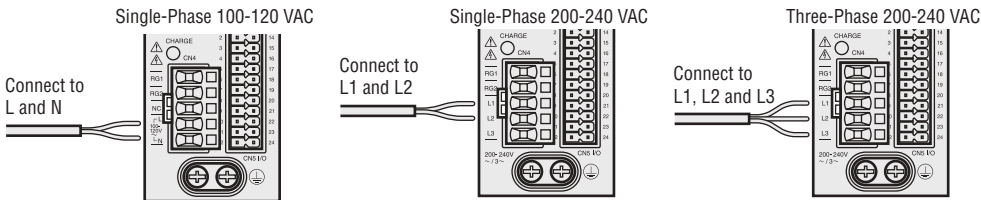
◇ Connections with Peripheral Equipment



- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.

◇ Connecting the Main Power Supply

The connection method varies depending on power supply specifications.



◇ Connection of the USB Cable

Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed.

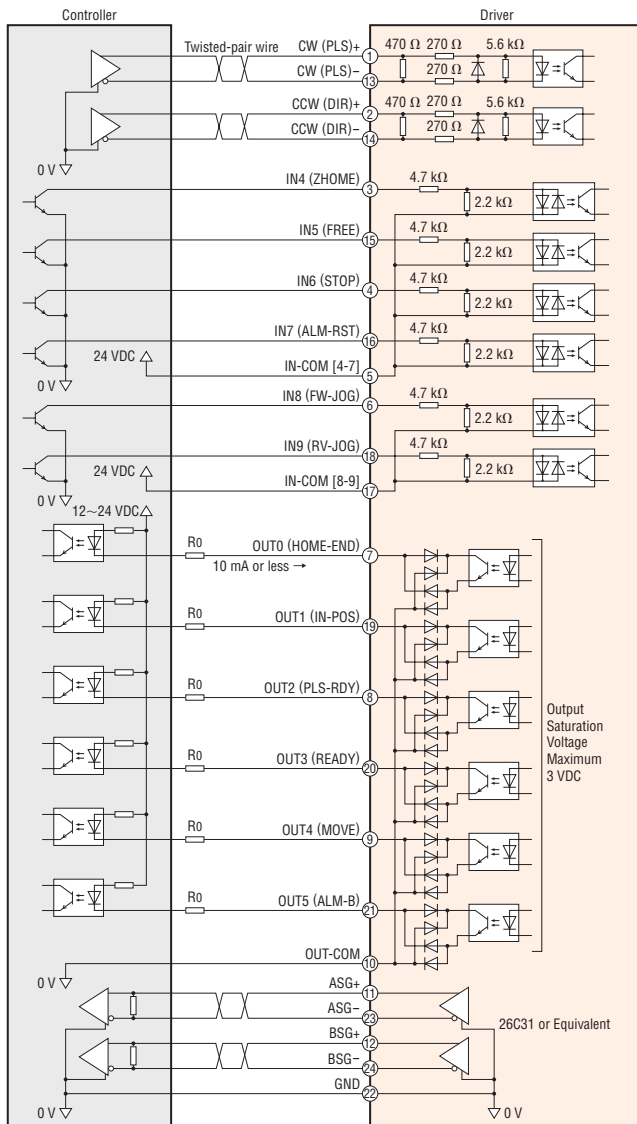
Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to the Programmable Controller (Pulse input type)

● Connection Diagram for Connection with Current Sink Output Circuit

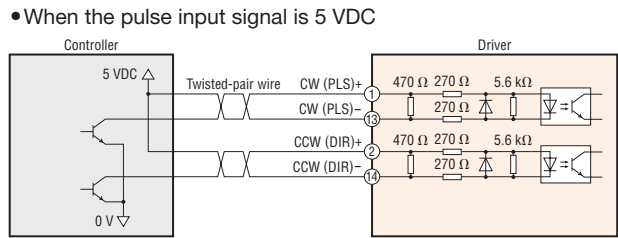
When the pulse input is the line driver



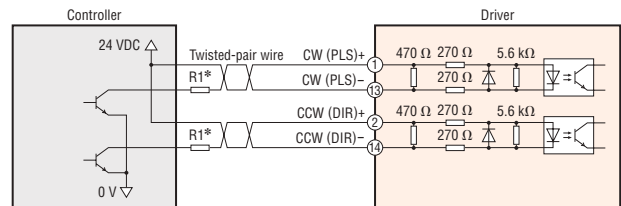
Note

- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector



● When the pulse input signal is 24 VDC



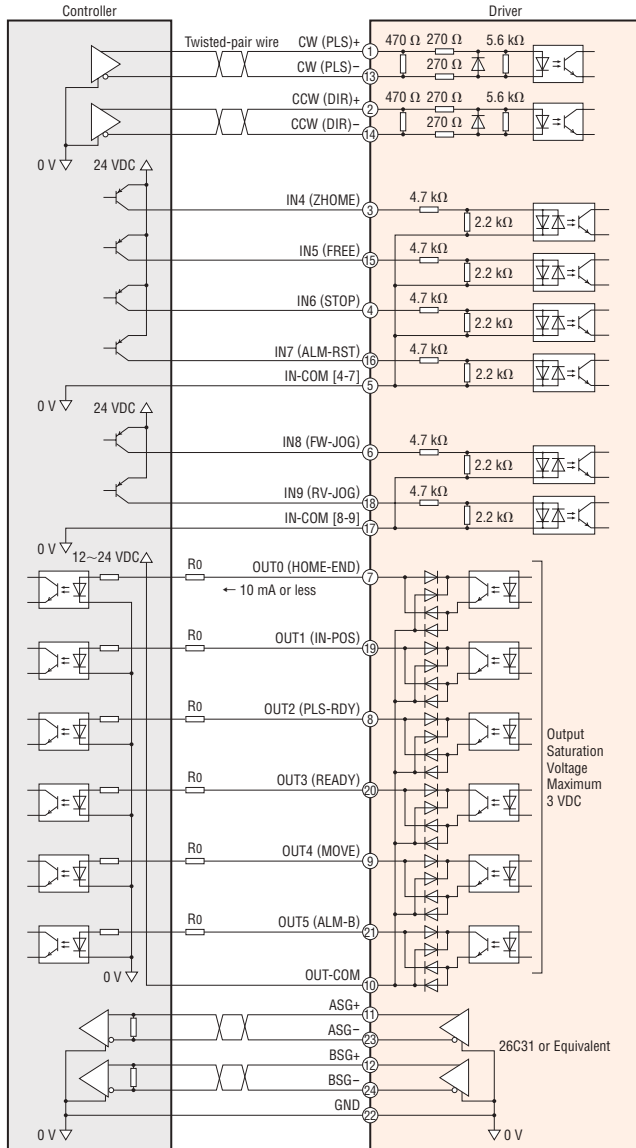
* R_1 : 1.2 kΩ~2.2 kΩ, 0.5 W or more

Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 kΩ~2.2 kΩ, 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

•Connection Diagram for Connection with Current Source Output Circuit

When the pulse input is the line driver

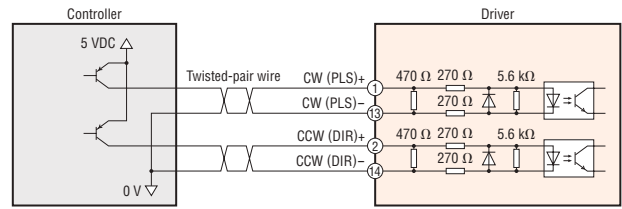


Note

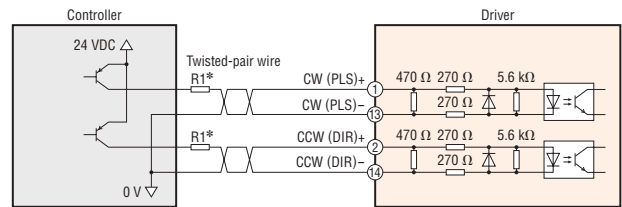
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

•When the pulse input signal is 5 VDC



•When the pulse input signal is 24 VDC



* R_1 : 1.2 kΩ~2.2 kΩ, 0.5 W or more

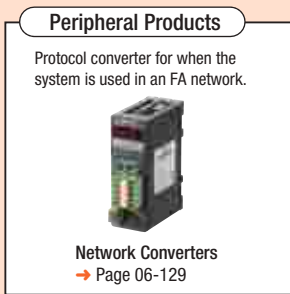
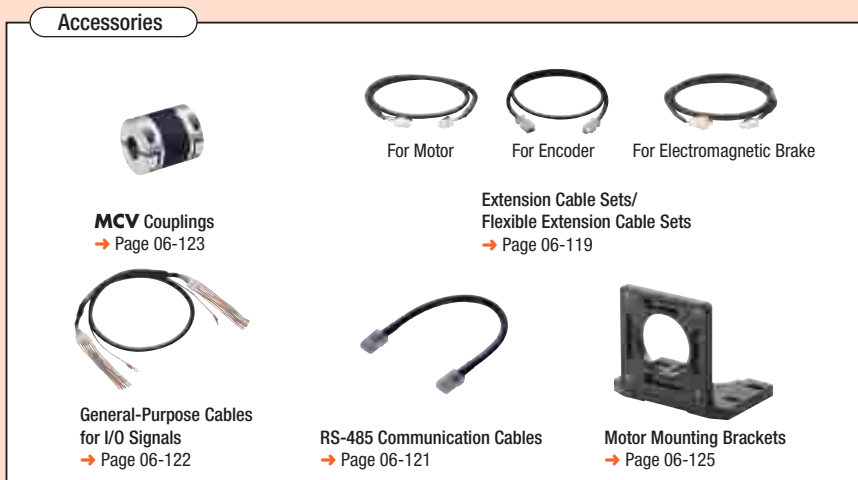
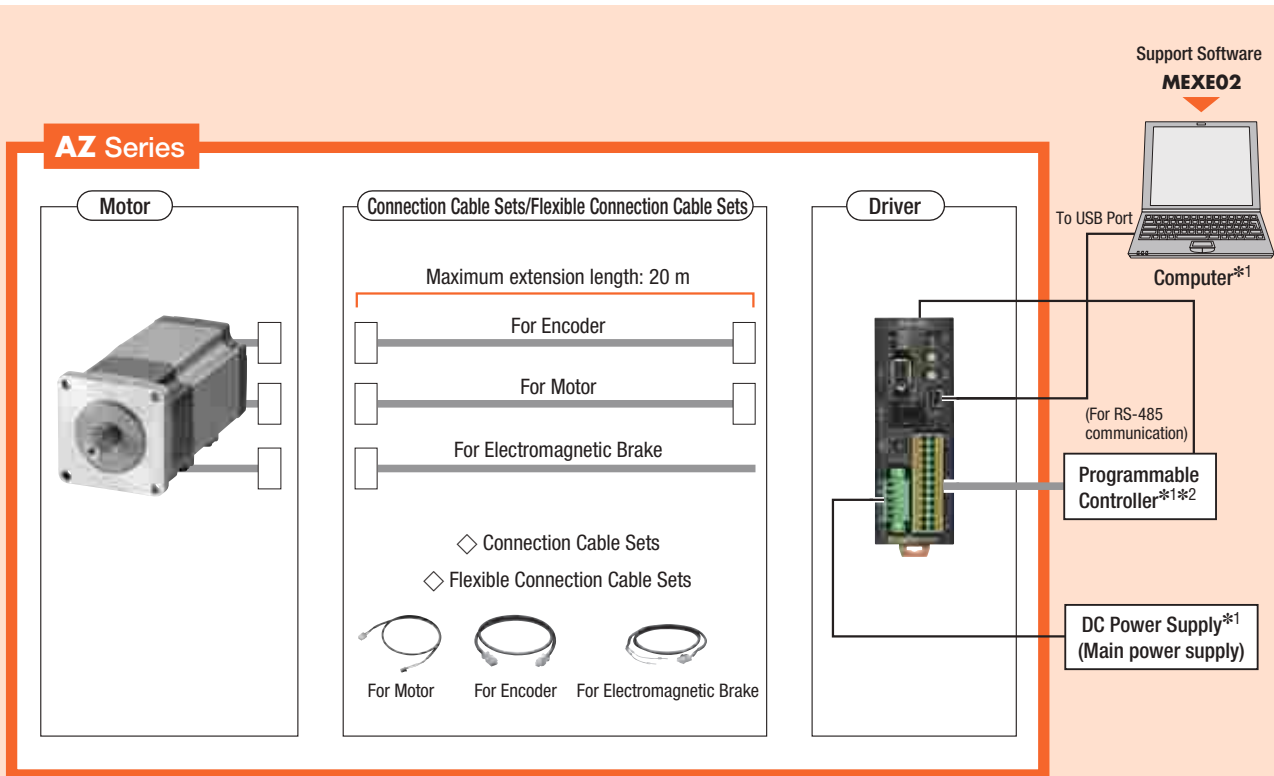
Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 kΩ~2.2 kΩ, 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

System Configuration

- When a standard type motor with electromagnetic brake is combined with a built-in controller type driver or a pulse input type driver with RS-485 communication

The figure below shows a sample configuration which includes a built-in controller type driver and which uses I/O control or RS-485 communication. The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



*1 Not supplied.
*2 For a pulse input type with RS-485 communication, a pulse oscillation function is required.

System Configuration Example

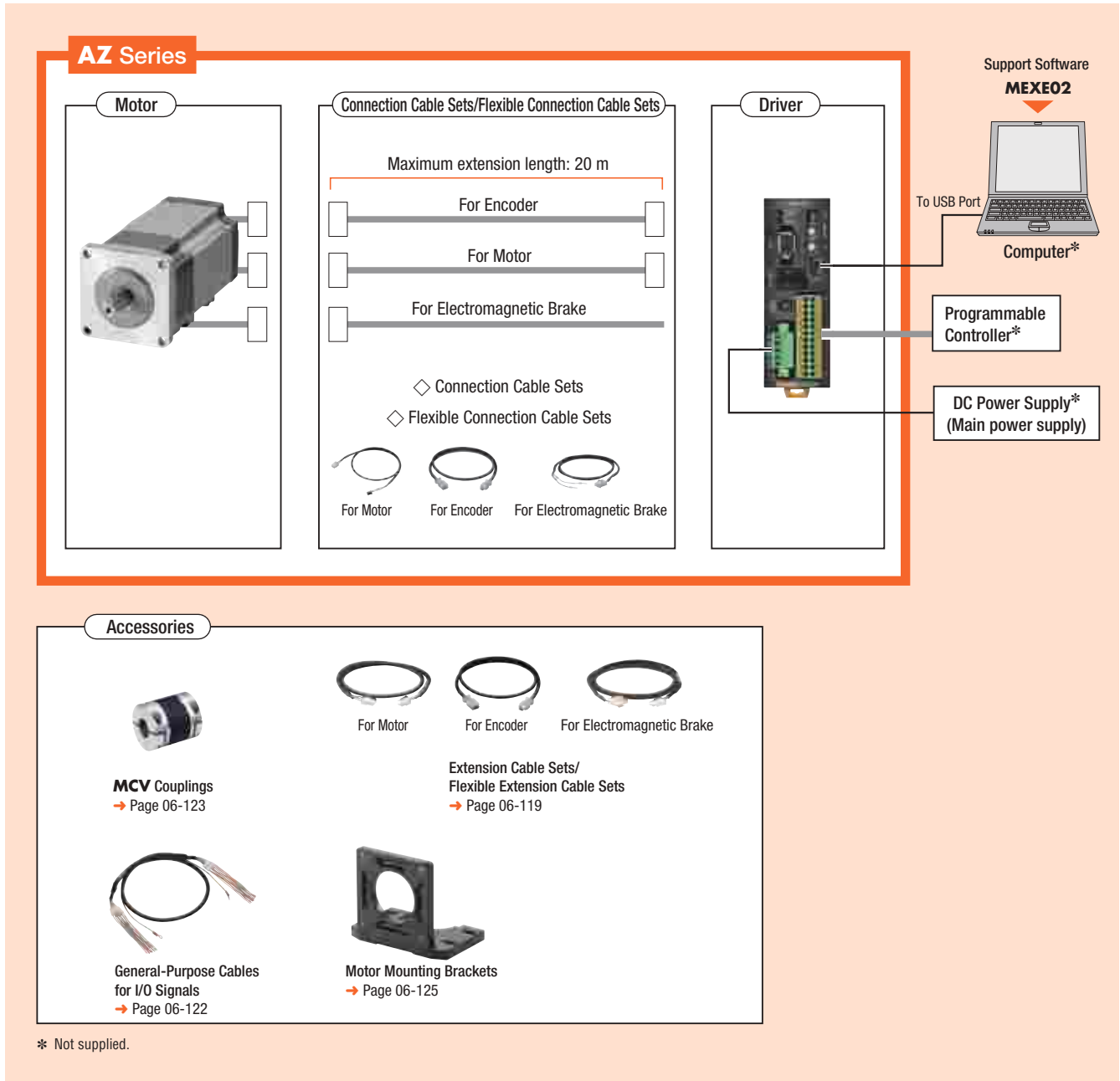
AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MK	AZD-KD	CC030VZFB2	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD488	SGD83	SGD14	SGD100	SGD25

The system configuration shown above is an example. Other combinations are available.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

● When a standard type motor with electromagnetic brake is combined with a pulse input type driver
 The figure below shows a sample configuration of a single axis system which uses a programmable controller (equipped with a pulse oscillator).
 The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



● System Configuration Example

AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MK	AZD-K	CC030VZFB2	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD425	SGD83	SGD14	SGD100	SGD25

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Motors

Standard Type

AZM 6 6 A 0 K

① ② ③ ④ ⑤ ⑥

PS, HPG, Harmonic Geared Type

AZM 6 6 A K - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

TS Geared Type

AZM 6 6 A K - TS 7.2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

FC Geared Type

AZM 6 6 A K - FC 7.2 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

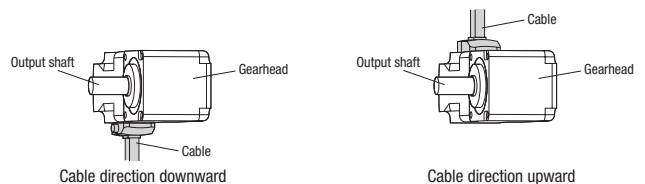
①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	1: 20 mm 2: 28 mm (30 mm for the Harmonic Geared Type) 4: 42 mm (40 mm for the HPG Geared Type) 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Additional Function*	0: Straight 1: With Key
⑥	Motor Specifications	K: DC Power Supply Input Specifications
⑦	Gear Type	PS: PS Geared Type HP: HPG Geared Type HS: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Output Shaft Type	HPG Geared Type Blank: Shaft Output F: Flange Output

*When the name of a standard type does not contain a number representing an additional function, it is a single-sided milled type.

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	K: DC Power Supply Input Specifications
⑥	Gear Type	TS: TS Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction	U: Upward L: Left R: Right

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	K: DC Power Supply Input Specifications
⑥	Gear Type	FC: FC Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction*	D: Downward U: Upward
⑨	Identification	A: Solid Shaft

*The cable drawing direction is based on the assumption that the output shaft is at left and the gearhead is at right.



Driver

AZD - K D

① ② ③

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Driver Type	AZD: AZ Series Driver
②	Power Supply Input	K: 24 VDC/48 VDC
③	Type	D: Built-in Controller Type X: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type

①		CC: Cable
②	Length	005: 0.5 m 010: 1 m 015: 1.5 m 020: 2 m 025: 2.5 m 030: 3 m 040: 4 m 050: 5 m 070: 7 m 100: 10 m 150: 15 m 200: 20 m
③	Reference Number	
④	Applied Model	Z: For AZ Series
⑤	Reference Number	Blank: For frame size 42 mm (40 mm for the HPG Geared Type), 60 mm 2: For frame size 20 mm, 28 mm (30 mm for the Harmonic Geared Type)
⑥	Cable Type	F: Connection Cable Set R: Flexible Connection Cable Set
⑦	Description	Blank: For the product with no Electromagnetic Brakes B: For the product with Electromagnetic Brakes
⑧	Cable Specifications	2: DC Power Supply Input

Product Line

The motor, driver, and connection cables need to purchase separately.

Motors

◇ Standard Type

Frame Size	Product Name	List Price
20 mm	AZM14AK	SGD313
	AZM15AK	SGD313
28 mm	AZM24AK	SGD313
	AZM26AK	SGD313
42 mm	AZM46AK	SGD340
	AZM46AOK	SGD340
	AZM48AK <small>NEW</small>	SGD353
	AZM48AOK <small>NEW</small>	SGD353
	AZM48A1K <small>NEW</small>	SGD365
60 mm	AZM66AK	SGD400
	AZM66AOK	SGD400
	AZM66A1K	SGD413
	AZM69AK	SGD406
	AZM69AOK	SGD406
	AZM69A1K	SGD419



◇ Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK	SGD515
	AZM46MOK	SGD515
60 mm	AZM66MK	SGD625
	AZM66MOK	SGD625
	AZM66M1K	SGD638
	AZM69MK	SGD631
	AZM69MOK	SGD631
	AZM69M1K	SGD644



◇ TS Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AK-TS3.6	SGD488
	AZM46AK-TS3.6R	SGD488
	AZM46AK-TS3.6U	SGD488
	AZM46AK-TS3.6L	SGD488
	AZM46AK-TS7.2	SGD488
	AZM46AK-TS7.2R	SGD488
	AZM46AK-TS7.2U	SGD488
	AZM46AK-TS7.2L	SGD488
	AZM46AK-TS10	SGD505
	AZM46AK-TS10R	SGD505
	AZM46AK-TS10U	SGD505
	AZM46AK-TS10L	SGD505
	AZM46AK-TS20	SGD505
	AZM46AK-TS20R	SGD505
	AZM46AK-TS20U	SGD505
	AZM46AK-TS20L	SGD505
	AZM46AK-TS30	SGD505
	AZM46AK-TS30R	SGD505
	AZM46AK-TS30U	SGD505
	AZM46AK-TS30L	SGD505
60 mm	AZM66AK-TS3.6	SGD574
	AZM66AK-TS3.6R	SGD574
	AZM66AK-TS3.6U	SGD574
	AZM66AK-TS3.6L	SGD574
	AZM66AK-TS7.2	SGD574
	AZM66AK-TS7.2R	SGD574
	AZM66AK-TS7.2U	SGD574
	AZM66AK-TS7.2L	SGD574
	AZM66AK-TS10	SGD591
	AZM66AK-TS10R	SGD591
	AZM66AK-TS10U	SGD591
	AZM66AK-TS10L	SGD591
	AZM66AK-TS20	SGD591
	AZM66AK-TS20R	SGD591
	AZM66AK-TS20U	SGD591
	AZM66AK-TS20L	SGD591
	AZM66AK-TS30	SGD591
	AZM66AK-TS30R	SGD591
	AZM66AK-TS30U	SGD591
	AZM66AK-TS30L	SGD591



◇ TS Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK-TS3.6	SGD663
	AZM46MK-TS3.6R	SGD663
	AZM46MK-TS3.6U	SGD663
	AZM46MK-TS3.6L	SGD663
	AZM46MK-TS7.2	SGD663
	AZM46MK-TS7.2R	SGD663
	AZM46MK-TS7.2U	SGD663
	AZM46MK-TS7.2L	SGD663
	AZM46MK-TS10	SGD680
	AZM46MK-TS10R	SGD680
	AZM46MK-TS10U	SGD680
	AZM46MK-TS10L	SGD680
	AZM46MK-TS20	SGD680
	AZM46MK-TS20R	SGD680
	AZM46MK-TS20U	SGD680
	AZM46MK-TS20L	SGD680
	AZM46MK-TS30	SGD680
	AZM46MK-TS30R	SGD680
	AZM46MK-TS30U	SGD680
	AZM46MK-TS30L	SGD680
60 mm	AZM66MK-TS3.6	SGD799
	AZM66MK-TS3.6R	SGD799
	AZM66MK-TS3.6U	SGD799
	AZM66MK-TS3.6L	SGD799
	AZM66MK-TS7.2	SGD799
	AZM66MK-TS7.2R	SGD799
	AZM66MK-TS7.2U	SGD799
	AZM66MK-TS7.2L	SGD799
	AZM66MK-TS10	SGD816
	AZM66MK-TS10R	SGD816
	AZM66MK-TS10U	SGD816
	AZM66MK-TS10L	SGD816
	AZM66MK-TS20	SGD816
	AZM66MK-TS20R	SGD816
	AZM66MK-TS20U	SGD816
	AZM66MK-TS20L	SGD816
	AZM66MK-TS30	SGD816
	AZM66MK-TS30R	SGD816
	AZM66MK-TS30U	SGD816
	AZM66MK-TS30L	SGD816





◇ FC Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AK-FC7.2UA	SGD646
	AZM46AK-FC7.2DA	SGD646
	AZM46AK-FC10UA	SGD646
	AZM46AK-FC10DA	SGD646
	AZM46AK-FC20UA	SGD646
	AZM46AK-FC20DA	SGD646
	AZM46AK-FC30UA	SGD646
	AZM46AK-FC30DA	SGD646
60 mm	AZM66AK-FC7.2UA	SGD769
	AZM66AK-FC7.2DA	SGD769
	AZM66AK-FC10UA	SGD769
	AZM66AK-FC10DA	SGD769
	AZM66AK-FC20UA	SGD769
	AZM66AK-FC20DA	SGD769
	AZM66AK-FC30UA	SGD769
	AZM66AK-FC30DA	SGD769



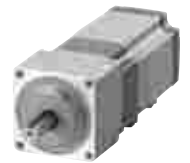
◇ FC Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK-FC7.2UA	SGD821
	AZM46MK-FC7.2DA	SGD821
	AZM46MK-FC10UA	SGD821
	AZM46MK-FC10DA	SGD821
	AZM46MK-FC20UA	SGD821
	AZM46MK-FC20DA	SGD821
	AZM46MK-FC30UA	SGD821
	AZM46MK-FC30DA	SGD821
60 mm	AZM66MK-FC7.2UA	SGD994
	AZM66MK-FC7.2DA	SGD994
	AZM66MK-FC10UA	SGD994
	AZM66MK-FC10DA	SGD994
	AZM66MK-FC20UA	SGD994
	AZM66MK-FC20DA	SGD994
	AZM66MK-FC30UA	SGD994
	AZM66MK-FC30DA	SGD994



◇ PS Geared Type

Frame Size	Product Name	List Price
28 mm	AZM24AK-PS7.2 <small>NEW</small>	SGD625
	AZM24AK-PS10 <small>NEW</small>	SGD625
42 mm	AZM46AK-PS5	SGD628
	AZM46AK-PS7.2	SGD628
	AZM46AK-PS10	SGD628
	AZM46AK-PS25	SGD690
	AZM46AK-PS36	SGD690
	AZM46AK-PS50	SGD690
60 mm	AZM66AK-PS5	SGD750
	AZM66AK-PS7.2	SGD750
	AZM66AK-PS10	SGD750
	AZM66AK-PS25	SGD838
	AZM66AK-PS36	SGD838
	AZM66AK-PS50	SGD838



◇ PS Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK-PS5	SGD803
	AZM46MK-PS7.2	SGD803
	AZM46MK-PS10	SGD803
	AZM46MK-PS25	SGD865
	AZM46MK-PS36	SGD865
	AZM46MK-PS50	SGD865
60 mm	AZM66MK-PS5	SGD975
	AZM66MK-PS7.2	SGD975
	AZM66MK-PS10	SGD975
	AZM66MK-PS25	SGD1,063
	AZM66MK-PS36	SGD1,063
	AZM66MK-PS50	SGD1,063

06

AZ Series



◇ HPG Geared Type

Frame Size	Product Name	List Price
40 mm	AZM46AK-HP5	SGD740
	AZM46AK-HP5F	SGD728
	AZM46AK-HP9	SGD740
	AZM46AK-HP9F	SGD728
60 mm	AZM66AK-HP5	SGD1,000
	AZM66AK-HP5F	SGD981
	AZM66AK-HP15	SGD1,184
	AZM66AK-HP15F	SGD1,165



◇ HPG Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
40 mm	AZM46MK-HP5	SGD915
	AZM46MK-HP5F	SGD903
	AZM46MK-HP9	SGD915
	AZM46MK-HP9F	SGD903
60 mm	AZM66MK-HP5	SGD1,225
	AZM66MK-HP5F	SGD1,206
	AZM66MK-HP15	SGD1,409
	AZM66MK-HP15F	SGD1,390



◇ Harmonic Geared Type

Frame Size	Product Name	List Price
30 mm	AZM24AK-HS50 <small>NEW</small>	SGD954
	AZM24AK-HS100 <small>NEW</small>	SGD954
42 mm	AZM46AK-HS50	SGD996
	AZM46AK-HS100	SGD996
60 mm	AZM66AK-HS50	SGD1,344
	AZM66AK-HS100	SGD1,344



◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK-HS50	SGD1,171
	AZM46MK-HS100	SGD1,171
60 mm	AZM66MK-HS50	SGD1,569
	AZM66MK-HS100	SGD1,569

● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KD	SGD488



◇ Pulse Input Type with RS-485 Communication **NEW**

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KX	SGD488



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-K	SGD425



● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent repeatedly. We provide connection cables and flexible extension cables that can be connected to connection cables for extension. See page 06-119.

The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

[For **AZM14, AZM15, AZM24, AZM26**]



◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZ2F2	SGD38
	1	CC010VZ2F2	SGD38
	1.5	CC015VZ2F2	SGD44
	2	CC020VZ2F2	SGD50
	2.5	CC025VZ2F2	SGD56
	3	CC030VZ2F2	SGD63
	4	CC040VZ2F2	SGD98
	5	CC050VZ2F2	SGD110
	7	CC070VZ2F2	SGD136
	10	CC100VZ2F2	SGD176
	15	CC150VZ2F2	SGD244
	20	CC200VZ2F2	SGD310

Type	Length L (m)	Product Name	List Price
Flexible Connection Cable Set	0.5	CC005VZ2R2	SGD84
	1	CC010VZ2R2	SGD84
	1.5	CC015VZ2R2	SGD92
	2	CC020VZ2R2	SGD99
	2.5	CC025VZ2R2	SGD106
	3	CC030VZ2R2	SGD111
	4	CC040VZ2R2	SGD126
	5	CC050VZ2R2	SGD141
	7	CC070VZ2R2	SGD180
	10	CC100VZ2R2	SGD236
	15	CC150VZ2R2	SGD333
	20	CC200VZ2R2	SGD426

[For **AZM46, AZM48, AZM66, AZM69**]



For Motor For Encoder

◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZF2	SGD38
	1	CC010VZF2	SGD38
	1.5	CC015VZF2	SGD44
	2	CC020VZF2	SGD50
	2.5	CC025VZF2	SGD56
	3	CC030VZF2	SGD63
	4	CC040VZF2	SGD98
	5	CC050VZF2	SGD110
	7	CC070VZF2	SGD136
	10	CC100VZF2	SGD176
	15	CC150VZF2	SGD244
	20	CC200VZF2	SGD310
Flexible Connection Cable Set	0.5	CC005VZR2	SGD84
	1	CC010VZR2	SGD84
	1.5	CC015VZR2	SGD92
	2	CC020VZR2	SGD99
	2.5	CC025VZR2	SGD106
	3	CC030VZR2	SGD111
	4	CC040VZR2	SGD126
	5	CC050VZR2	SGD141
	7	CC070VZR2	SGD180
	10	CC100VZR2	SGD236
	15	CC150VZR2	SGD333
	20	CC200VZR2	SGD426



For Motor For Encoder For Electromagnetic Brake

◇ For the product with Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZFB2	SGD53
	1	CC010VZFB2	SGD53
	1.5	CC015VZFB2	SGD60
	2	CC020VZFB2	SGD68
	2.5	CC025VZFB2	SGD75
	3	CC030VZFB2	SGD83
	4	CC040VZFB2	SGD121
	5	CC050VZFB2	SGD135
	7	CC070VZFB2	SGD166
	10	CC100VZFB2	SGD214
	15	CC150VZFB2	SGD294
	20	CC200VZFB2	SGD373
Flexible Connection Cable Set	0.5	CC005VZRB2	SGD114
	1	CC010VZRB2	SGD114
	1.5	CC015VZRB2	SGD124
	2	CC020VZRB2	SGD134
	2.5	CC025VZRB2	SGD143
	3	CC030VZRB2	SGD151
	4	CC040VZRB2	SGD171
	5	CC050VZRB2	SGD191
	7	CC070VZRB2	SGD240
	10	CC100VZRB2	SGD311
	15	CC150VZRB2	SGD433
	20	CC200VZRB2	SGD551

Accessories

Motors

Type	Accessories	Parallel Key	Motor Installation Screws	Operating Manual
Standard Type		—	—	1 set
TS Geared Type	Frame Size 42 mm	—	—	
	Frame Size 60 mm	1 piece	M4×60 P0.7 (4 pieces)	
FC Geared Type		1 piece	—	
PS Geared Type	Frame Size 28 mm	—	—	
	Frame Size 42 mm, 60 mm	1 piece	—	
HPG Geared Type	Shaft Output	1 piece	—	
	Flange Output	—	—	
Harmonic Geared Type	Frame Size 30 mm	—	—	
	Frame Size 42 mm, 60 mm	1 piece	—	

● For the details of the functions and operation methods of the product, refer to the Operating Manual (Functions). The Operating Manual for Functions does not come with the product. Contact the nearest Oriental Motor sales office, or download the Operating Manual from the Oriental Motor website.

Drivers

Type	Accessories	Connector	Operating Manual
For All Types		<ul style="list-style-type: none"> Connector for CN4 (1 piece) Connector for CN1 (1 piece) 	1 set

Connection Cable Sets/Flexible Connection Cable Sets

Type	Accessories	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 set

Standard Type Frame Size 20 mm, 28 mm

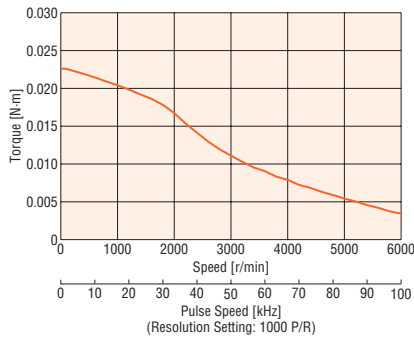


Specifications

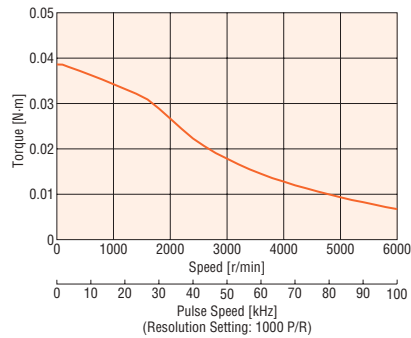
Motor Product Name	Single Shaft	AZM14AK	AZM15AK	AZM24AK	AZM26AK
Driver Product Name	Built-in Controller	AZD-KD			
	Pulse Input with RS-485 Communication	AZD-KX			
	Pulse Input	AZD-K			
Maximum Holding Torque	N·m	0.02	0.036	0.095	0.19
Holding Torque at Motor Standstill	N·m	0.01	0.018	0.047	0.095
Rotor Inertial	J: kg·m ²	2.7×10^{-7}	3.9×10^{-7}	9.2×10^{-7}	17×10^{-7}
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse			
Power Supply Input	Voltage	24 VDC $\pm 5\%$			
	Input Current	A	0.5	0.6	1.6

Speed – Torque Characteristics (Reference values)

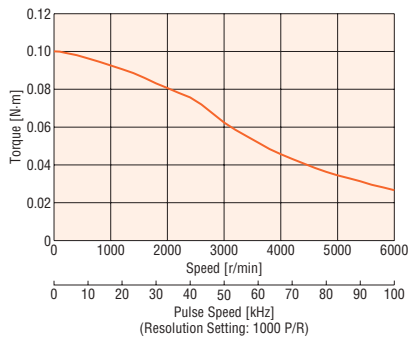
AZM14



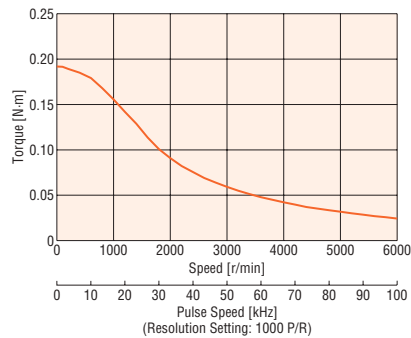
AZM15



AZM24



AZM26



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

Descriptions of the Terms on the Specification Table

Maximum Holding Torque	: The maximum holding torque (holding force) of the motor when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the permissible strength of the gear is given consideration for this value.)
Permissible Torque	: The maximum value of the torque that can be continuously applied on the output gear shaft.
Maximum Instantaneous Torque	: This is the maximum torque value that can be applied to the output gear shaft during acceleration/deceleration like when an inertial load is started and stopped.
Holding Torque at Motor Standstill	Power ON : Holding torque when the automatic current cutback function is active.
	Electromagnetic Brake : Static friction torque when the electromagnetic brake is activated at standstill. (Electromagnetic brake is power off activated type.)

Standard Type Frame Size 42 mm, 60 mm

Lineup Added



Specifications

Motor	Single Shaft	AZM46A□K	AZM48A□K	AZM66A□K	AZM69A□K	
Product Name	With Electromagnetic Brake	AZM46M□K	—	AZM66M□K	AZM69M□K	
Driver	Built-in Controller	AZD-KD				
	Pulse Input with RS-485 Communication	AZD-KX				
	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	0.3	0.72	1	2	
Holding Torque at Motor Standstill	Power ON	N·m	0.15	0.36	0.5	1
	Electromagnetic Brake	N·m	0.15	—	0.5	1
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})*1	115×10^{-7}	370×10^{-7} (530×10^{-7})*1	740×10^{-7} (900×10^{-7})*1	
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse				
Power Supply Input	Voltage	24 VDC $\pm 5\%$ *2 /48 VDC $\pm 5\%$ *3	24 VDC $\pm 5\%$ /48 VDC $\pm 5\%$ *3	24 VDC $\pm 5\%$ *2 /48 VDC $\pm 5\%$ *3		
	Input Current	A	1.72 (1.8)*1	2.2	3.55 (3.8)*1	3.45 (3.7)*1

● Either **0** (Straight) or **1** (With a key) indicating the configuration is entered where the box □ is located within the product name. (For **AZM46**, straight only)

For single-sided milling, no character is entered into the □ mark.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

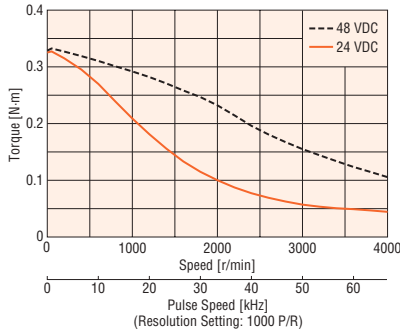
*2 For the electromagnetic brake type, the 24 VDC $\pm 4\%$ specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times of the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**)

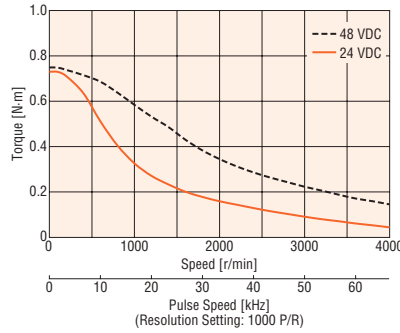
*4 Motor only

Speed – Torque Characteristics (Reference values)

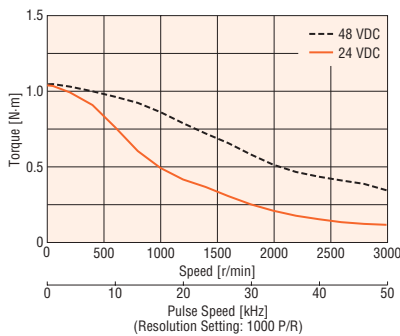
AZM46



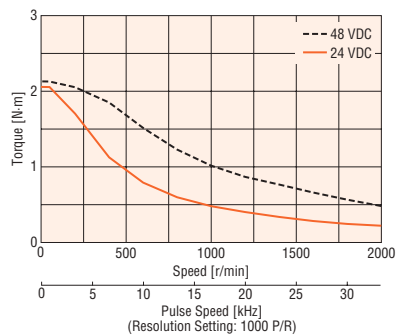
AZM48



AZM66



AZM69



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 42 mm

Specifications



Motor Product Name	Single Shaft	AZM46AK-TS3.6□	AZM46AK-TS7.2□	AZM46AK-TS10□	AZM46AK-TS20□	AZM46AK-TS30□
Motor Product Name	With Electromagnetic Brake	AZM46MK-TS3.6□	AZM46MK-TS7.2□	AZM46MK-TS10□	AZM46MK-TS20□	AZM46MK-TS30□
Driver Product Name	Built-in Controller	AZD-KD				
Driver Product Name	Pulse Input with RS-485 Communication	AZD-KX				
Driver Product Name	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	0.65	1.2	1.7	2	2.3
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1				
Gear Ratio		3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	0.65	1.2	1.7	2	2.3
Maximum Instantaneous Torque*	N·m	0.85	1.6	2	*	3
Holding Torque at Power ON	N·m	0.54	1	1.5	1.8	2.3
Motor Standstill Electromagnetic Brake	N·m	0.54	1	1.5	1.8	2.3
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arcmin	45 (0.75°)	25 (0.42°)		15 (0.25°)	
Power Supply Input Voltage		24 VDC ±5%*2/48 VDC ±5%				
Power Supply Input Input Current	A	1.72 (1.8)*1				

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

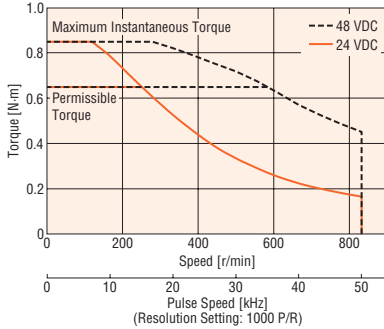
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

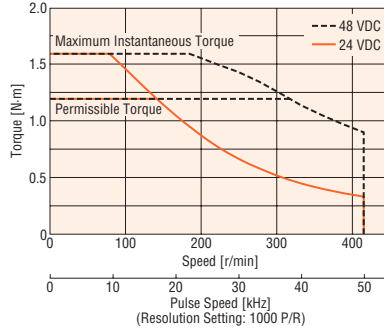
*3 Motor only

Speed – Torque Characteristics (Reference values)

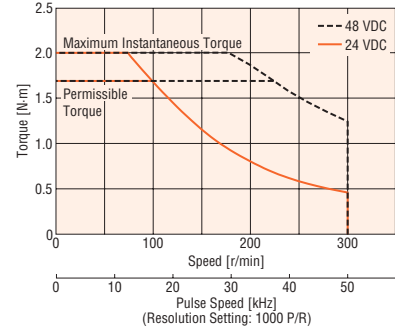
AZM46 Gear Ratio 3.6



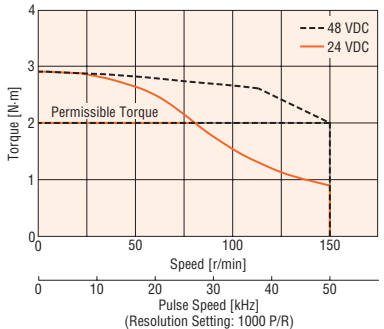
AZM46 Gear Ratio 7.2



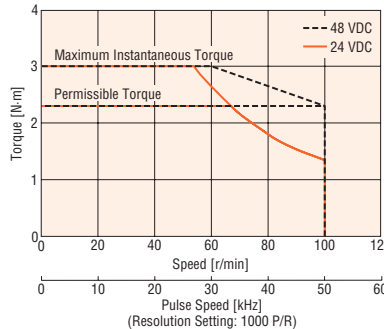
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 60 mm



Specifications

Motor	Single Shaft	AZM66AK-TS3.6	AZM66AK-TS7.2	AZM66AK-TS10	AZM66AK-TS20	AZM66AK-TS30	
Product Name	With Electromagnetic Brake	AZM66MK-TS3.6	AZM66MK-TS7.2	AZM66MK-TS10	AZM66MK-TS20	AZM66MK-TS30	
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1.8	3	4	5	6	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		3.6	7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	1.8	3	4	5	6	
Maximum Instantaneous Torque*	N·m	*	*	*	8	10	
Holding Torque at	Power ON	N·m	1.1	2.2	3	5	6
Motor Standstill	Electromagnetic Brake	N·m	1.1	2.2	3	5	6
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100	
Backlash	arcmin	35 (0.59°)	15 (0.25°)		10 (0.17°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%*3					
	Input Current	A 3.55 (3.8)*1					

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

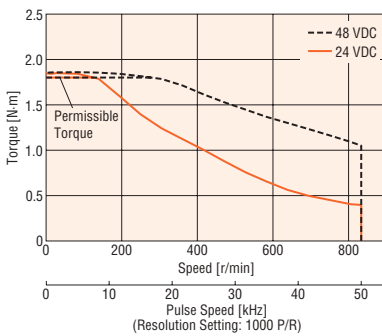
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

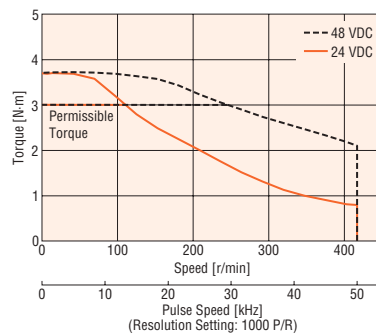
*4 Motor only

Speed – Torque Characteristics (Reference values)

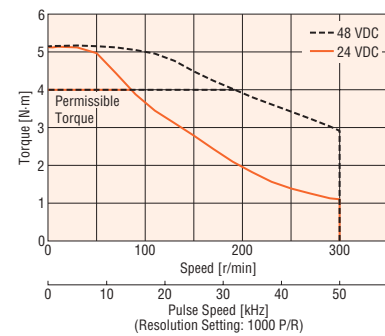
AZM66 Gear Ratio 3.6



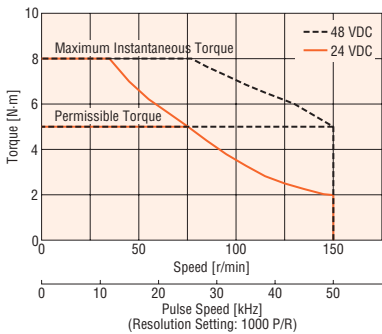
AZM66 Gear Ratio 7.2



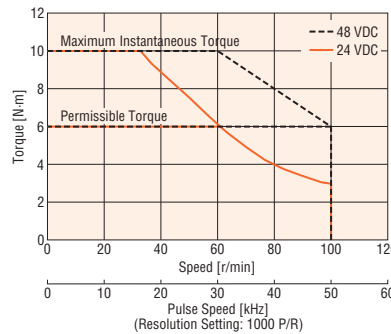
AZM66 Gear Ratio 10



AZM66 Gear Ratio 20



AZM66 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 42 mm

Specifications



Motor Product Name	Single Shaft	AZM46AK-FC7.2□A	AZM46AK-FC10□A	AZM46AK-FC20□A	AZM46AK-FC30□A	
Motor Product Name	With Electromagnetic Brake	AZM46MK-FC7.2□A	AZM46MK-FC10□A	AZM46MK-FC20□A	AZM46MK-FC30□A	
Driver Product Name	Built-in Controller	AZD-KD				
Driver Product Name	Pulse Input with RS-485 Communication	AZD-KX				
Driver Product Name	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	0.7	1	2	3	
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	0.7	1	2	3	
Holding Torque at Motor Standstill	Power ON	N·m	0.7	1	2	3
Holding Torque at Motor Standstill	Electromagnetic Brake	N·m	0.7	1	2	3
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42°)		15 (0.25°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%				
Power Supply Input	Input Current	A 1.72 (1.8)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

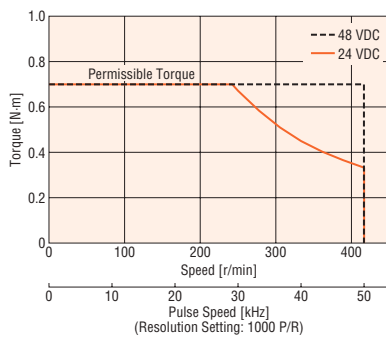
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

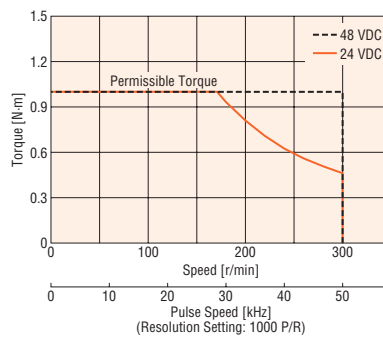
*3 Motor only

Speed – Torque Characteristics (Reference values)

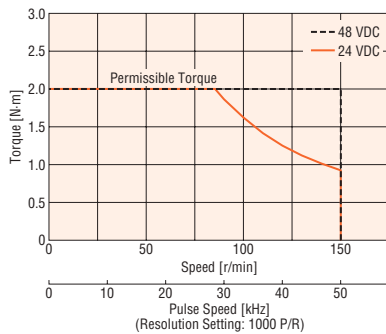
AZM46 Gear Ratio 7.2



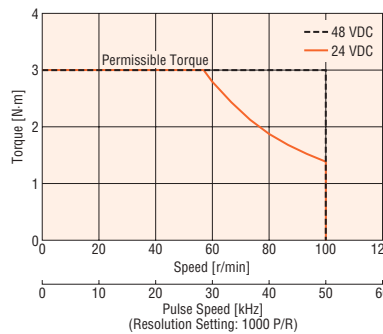
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AK-FC7.2□A	AZM66AK-FC10□A	AZM66AK-FC20□A	AZM66AK-FC30□A	
Product Name	With Electromagnetic Brake	AZM66MK-FC7.2□A	AZM66MK-FC10□A	AZM66MK-FC20□A	AZM66MK-FC30□A	
Driver	Built-in Controller	AZD-KD				
Product Name	Pulse Input with RS-485 Communication	AZD-KX				
	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	2.5	3.5	7	10.5	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	2.5	3.5	7	10.5	
Holding Torque at	Power ON	N·m	2.5	3.5	7	10.5
Motor Standstill	Electromagnetic Brake	N·m	2.5	3.5	7	10.5
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	15 (0.25°)		10 (0.17°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%*3				
	Input Current	A 3.35 (3.8)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

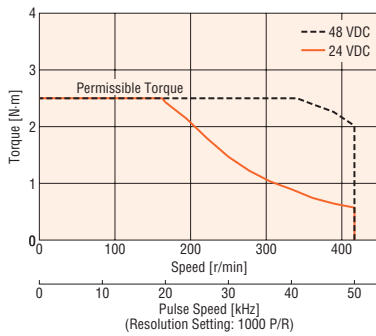
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

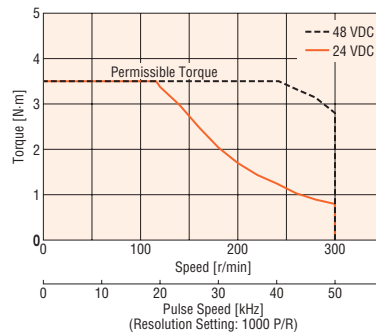
*4 Motor only

Speed – Torque Characteristics (Reference values)

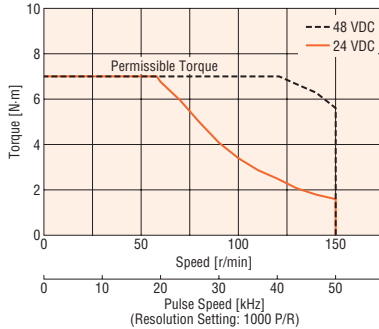
AZM66 Gear Ratio **7.2**



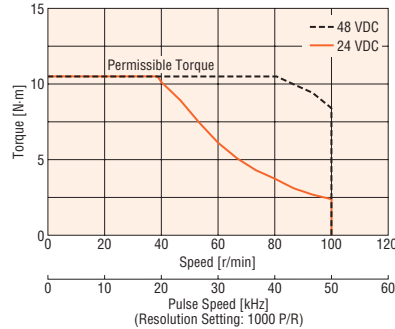
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

(When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 28 mm NEW

Specifications

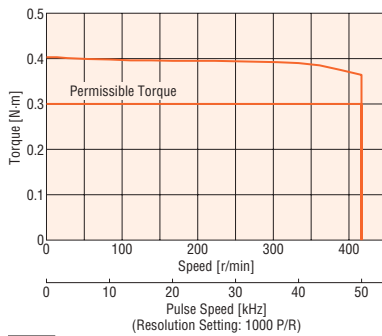


Motor Product Name	Single Shaft	AZM24AK-PS7.2	AZM24AK-PS10
Driver Product Name	Built-in Controller	AZD-KD	
	Pulse Input with RS-485 Communication	AZD-KX	
	Pulse Input	AZD-K	
Maximum Holding Torque	N·m	0.3	0.5
Rotor Inertial	J: kg·m ²	9.2×10^{-7}	
Gear Ratio		7.2	10
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse
Permissible Torque	N·m	0.3	0.5
Maximum Instantaneous Torque*	N·m	*	—
Holding Torque at Motor Standstill	N·m	0.2	0.27
Speed Range	r/min	0~416	0~300
Backlash	arcmin	35 (0.59°)	
Power Supply Input	Voltage	24 VDC ±5%	
	Input Current	A	1.6

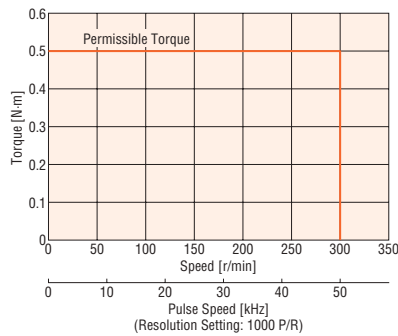
* For the geared motor output torque, refer to the Speed – Torque Characteristics.

Speed – Torque Characteristics (Reference values)

AZM24 Gear Ratio **7.2**



AZM24 Gear Ratio **10**



Note

- The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

PS Geared Type Frame Size 42 mm

Specifications



Motor	Single Shaft	AZM46AK-PS5	AZM46AK-PS7.2	AZM46AK-PS10	AZM46AK-PS25	AZM46AK-PS36	AZM46AK-PS50
Product Name	With Electromagnetic Brake	AZM46MK-PS5	AZM46MK-PS7.2	AZM46MK-PS10	AZM46MK-PS25	AZM46MK-PS36	AZM46MK-PS50
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1	1.5	2.5	3		
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	1	1.5	2.5	3		
Maximum Instantaneous Torque*	N·m	*	2	6	*	6	
Holding Torque at Power ON	N·m	0.75	1	1.5	2.5	3	
Motor Standstill Electromagnetic Brake	N·m	0.75	1	1.5	2.5	3	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	15 (0.25°)					
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%					
	Input Current	1.72 (1.8)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

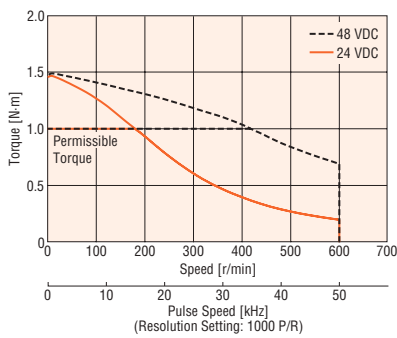
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

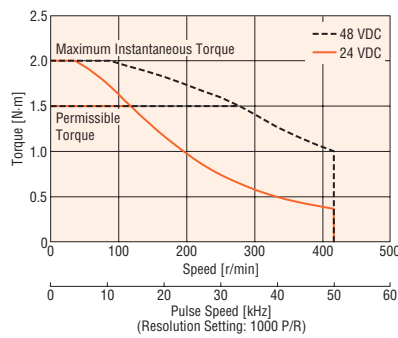
*3 Motor only

Speed – Torque Characteristics (Reference values)

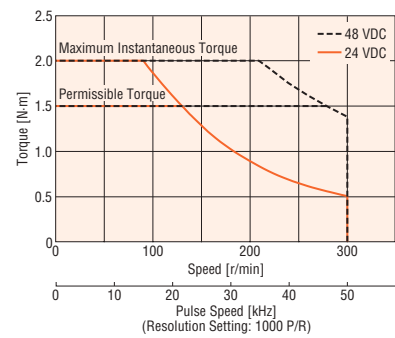
AZM46 Gear Ratio 5



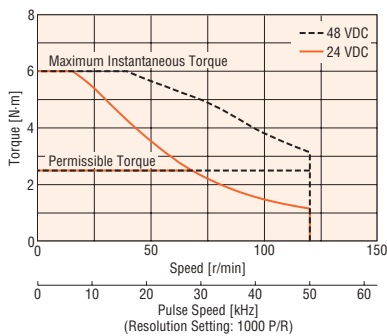
AZM46 Gear Ratio 7.2



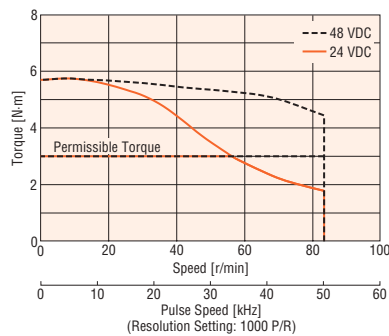
AZM46 Gear Ratio 10



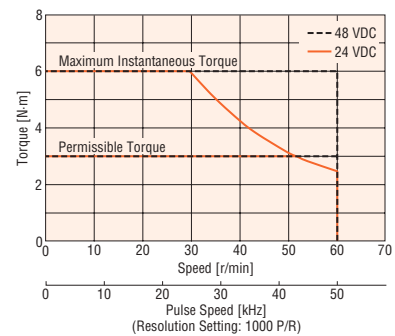
AZM46 Gear Ratio 25



AZM46 Gear Ratio 36



AZM46 Gear Ratio 50



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AK-PS5	AZM66AK-PS7.2	AZM66AK-PS10	AZM66AK-PS25	AZM66AK-PS36	AZM66AK-PS50
Product Name	With Electromagnetic Brake	AZM66MK-PS5	AZM66MK-PS7.2	AZM66MK-PS10	AZM66MK-PS25	AZM66MK-PS36	AZM66MK-PS50
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	3.5	4	5	8		
Maximum Instantaneous Torque*	N·m	*	*	*	*	*	20
Holding Torque at Power ON	N·m	2.5	3.6	5	7.6	8	
Motor Standstill Electromagnetic Brake	N·m	2.5	3.6	5	7.6	8	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	7 (0.12)			9 (0.15)		
Power Supply Input Voltage		24 VDC ±5%*2/48 VDC ±5%*3					
Power Supply Input Input Current	A	3.55 (3.8)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

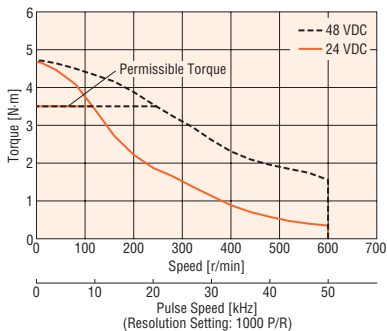
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

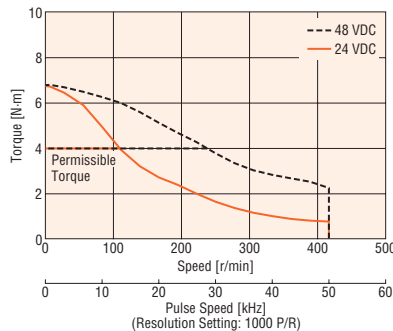
*4 Motor only

Speed – Torque Characteristics (Reference values)

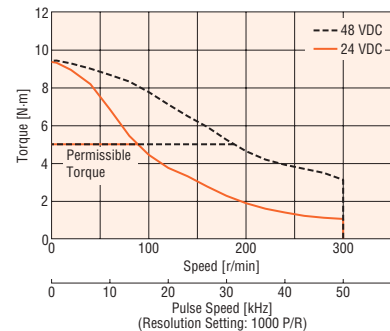
AZM66 Gear Ratio 5



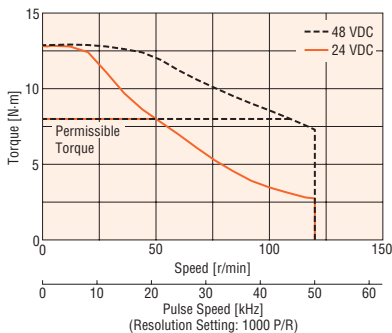
AZM66 Gear Ratio 7.2



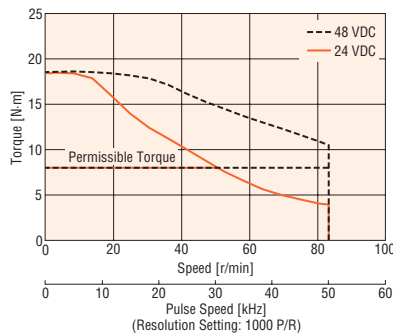
AZM66 Gear Ratio 10



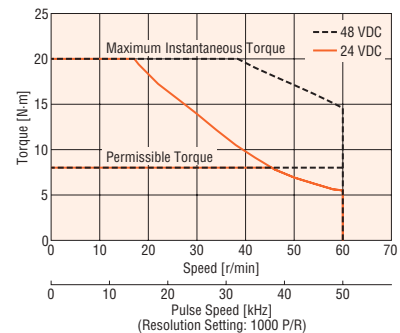
AZM66 Gear Ratio 25



AZM66 Gear Ratio 36



AZM66 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

(When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

HPG Geared Type Frame Size 40 mm, 60 mm

Specifications



Motor	Single Shaft	AZM46AK-HP5	AZM46AK-HP9	AZM66AK-HP5	AZM66AK-HP15
Product Name	With Electromagnetic Brake	AZM46MK-HP5	AZM46MK-HP9	AZM66MK-HP5	AZM66MK-HP15
Driver	Built-in Controller	AZD-KD			
Product Name	Pulse Input with RS-485 Communication	AZD-KX			
	Pulse Input	AZD-K			
Maximum Holding Torque	N·m	1.5	2.5	5	9
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1		370×10 ⁻⁷ (530×10 ⁻⁷)*1	
Inertial*2	J: kg·m ²	5.8×10 ⁻⁷ (4.2×10 ⁻⁷)	3.4×10 ⁻⁷ (2.9×10 ⁻⁷)	92×10 ⁻⁷ (86×10 ⁻⁷)	78×10 ⁻⁷ (77×10 ⁻⁷)
Gear Ratio		5	9	5	15
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.04°/Pulse	0.072°/Pulse	0.024°/Pulse
Permissible Torque*	N·m	*	2.5	*	9
Maximum Instantaneous Torque*	N·m	*	*	*	*
Holding Torque at Power ON	N·m	0.75	1.35	2.5	7.5
Motor Standstill	Electromagnetic Brake	N·m	0.75	1.35	2.5
Speed Range	r/min	0~800	0~444	0~600	0~200
Backlash	arcmin	3 (0.05)			
Power Supply Input	Voltage	24 VDC ±5%*4/48 VDC ±5%*5			
	Input Current	A	1.72 (1.8)*1	3.55 (3.8)*1	
Runout of Output Flange Surface*3	mm	0.02			
Runout of Output Flange Inner Diameter*3	mm	0.03	0.04		

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For the flange output type, **F** is entered where the box □ is located within the product name.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 The values for the moments of inertia within the gear that has been converted to motor shaft values. The parentheses () indicate the values for the flange output type.

*3 Specifications for the flange output type.

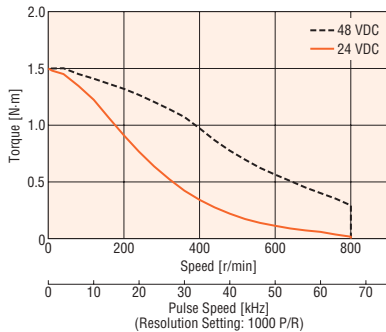
*4 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*5 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**)

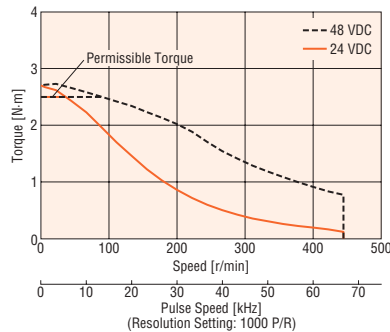
*6 Motor only

Speed – Torque Characteristics (Reference values)

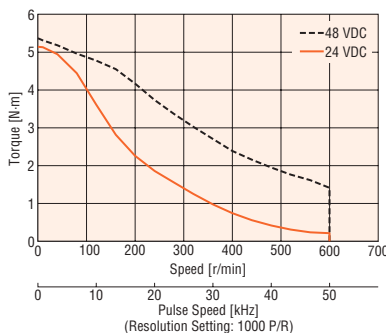
AZM46 Gear Ratio 5



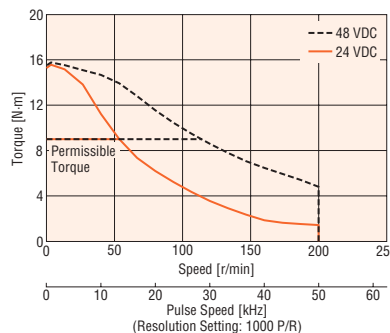
AZM46 Gear Ratio 9



AZM66 Gear Ratio 5



AZM66 Gear Ratio 15



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Harmonic Geared Type Frame Size 30 mm, 42 mm, 60 mm

Lineup Added

CE US *4

Specifications

Motor Product Name	Single Shaft	AZM24AK-HS50	AZM24AK-HS100	AZM46AK-HS50	AZM46AK-HS100	AZM66AK-HS50	AZM66AK-HS100
	With Electromagnetic Brake	-	-	AZM46MK-HS50	AZM46MK-HS100	AZM66MK-HS50	AZM66MK-HS100
Driver Product Name	Built-in Controller	AZD-KD					
	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1.8	2.4	3.5	5	7	10
Rotor Inertial	J: kg·m ²	12×10 ⁻⁷		72×10 ⁻⁷ (88×10 ⁻⁷)*1		405×10 ⁻⁷ (565×10 ⁻⁷)*1	
Gear Ratio		50	100	50	100	50	100
Resolution	Resolution Setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m	1.8	2.4	3.5	5	7	10
Maximum Instantaneous Torque*	N·m	3.3	4.8	8.3	11	*	36
Holding Torque at Power ON	N·m	1.8	2.4	3.5	5	7	10
Motor Standstill Electromagnetic Brake	N·m	-	-	3.5	5	7	10
Speed Range	r/min	0~70	0~35	0~70	0~35	0~60	0~30
Lost Motion (Load torque)	arcmin	1.5 or less (±0.09 N·m)	1.5 or less (±0.12 N·m)	1.5 or less (±0.16 N·m)	1.5 or less (±0.20 N·m)	0.7 or less (±0.28 N·m)	0.7 or less (±0.39 N·m)
Power Supply Input	Voltage	24 VDC ±5%		24 VDC ±5%*2/48 VDC ±5%*3			
	Input Current	A		1.72 (1.8)*1		3.55 (3.8)*1	

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 For the electromagnetic brake type, the 24 VDC ± 4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times of the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**).

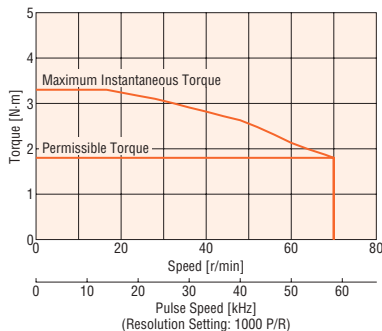
*4 Motor only (Excluding frame size 30 mm)

Note

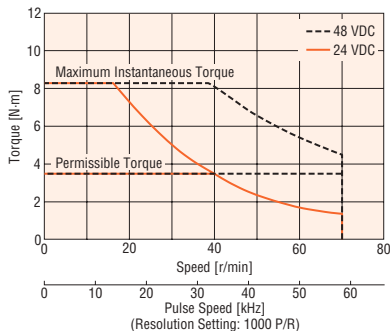
● The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

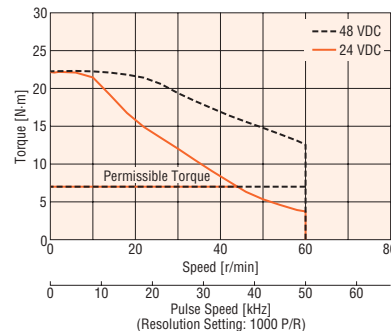
AZM24 Gear Ratio 50



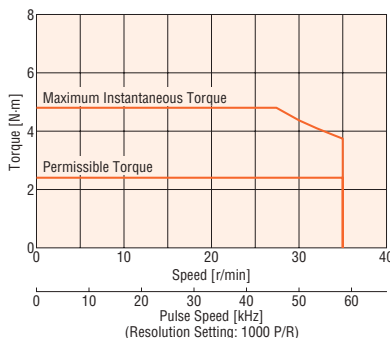
AZM46 Gear Ratio 50



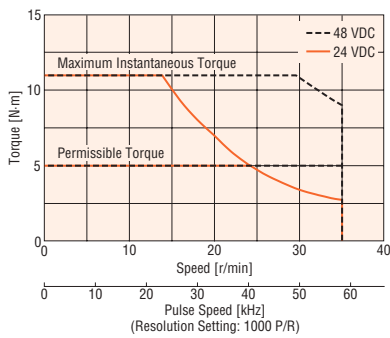
AZM66 Gear Ratio 50



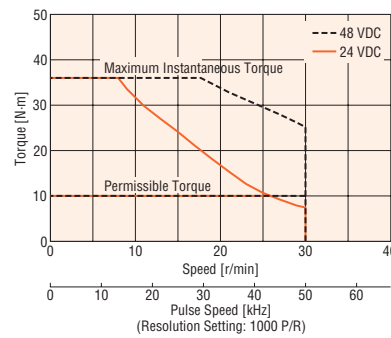
AZM24 Gear Ratio 100



AZM46 Gear Ratio 100



AZM66 Gear Ratio 100



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

06

AZ Series

Click Here

For more information, please visit ORIENTAL MOTOR Website: <https://www.orientalmotor.com.sg/om/tp/index.html>

Driver Specifications

Driver Type	Built-in Controller Type	Pulse Input Type with RS-485 Communication	Pulse Input Type			
Driver Product Name	AZD-KD	AZD-KX	AZD-K			
I/O Function	Max. Input Pulse Frequency	—	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input			
	Number of Positioning Data Sets	256 points	256 points*1			
	Direct Input	10 points	6 points			
	Direct Output	6 points				
	RS-485 Communication Remote Input	16 points	—			
	RS-485 Communication Remote Output	16 points	—			
Setting Tool	Support Software MEXE02	○				
Coordinate Management Method	Battery-free absolute system					
Operation	Type	Positioning Operation	○	○	○*1	
		Push-motion Positioning Operation*2	○	○	○*1	
	Positioning Operation	Connecting Method	Independent Operation	○	○	○*1
			Forward Feed Operation	○	○	○*1
		Sequence Control	Multistep Speed-change (Shape connection)	○	○	○*1
			Loop Operation (Repetition)	○	○	○*1
	Linked Operation	Position Control	Event Jump Operation	○	○	○*1
			Speed Control	○	○	○*1
		Torque Control	○	○	○*1	
	Return-to-home Operation	Push-motion*2	Return-to-home Operation	○	○	○
			High-speed Return-to-home Operation	○	○	○
	JOG Operation		○	○	○	
	Monitor/Information	Waveform Monitoring	○	○	○	
		Overload Detection	○	○	○	
Overheat Detection (Motor and driver)		○	○	○		
Position and Speed Information		○	○	○		
Temperature Detection (Motor and driver)		○	○	○		
Motor Load Factor		○	○	○		
Mileage/Accumulated Mileage		○	○	○		
Alarm		○	○	○		

*1 Available after setting with the support software **MEXE02**.

*2 Push-motion operation is not available to geared motors and **DGII** Series motorized actuators.

RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 based, Straight cable Use twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The maximum total extension length is 50 m.*
Communication Mode	Half duplex and start-stop synchronization (Data: 8 bits, Stop bit: 1 bit or 2 bits, Parity: none, even, or odd)
Baud Rate	Select from 9600bps/19200bps/38400bps/57600bps/115200bps/230400bps.
Connection Type	Up to 31 units can be connected to a single programmable controller (Master unit).

*If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

Electromagnetic Brake Specifications

Product Name	AZM46	AZM66	AZM69
Type	Power off activated type		
Power Supply Voltage	24 VDC ±5%*		
Power Supply Current	A	0.08	0.25
Brake Activate Time	ms	20	
Brake Release Time	ms	30	
Time Rating	Continuous		

*For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

● The product names are described with text by which the product name can be identified.

General Specifications

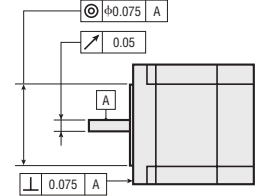
		Motor	Driver
Heat-resistant Class		130 (B) [Recognized as 105 (A) by UL.]	—
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*1	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal
Dielectric Strength Voltage		No abnormality is found with the following application for 1 minute: AZM14, AZM15, AZM24, AZM26 · Case – Motor windings 0.5 kVAC 50 Hz or 60 Hz AZM46, AZM48, AZM66, AZM69 · Case – Motor windings 1.0 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*1 1.0 kVAC 50 Hz or 60 Hz	—
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)	0~+50°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection		AZM14, AZM15, AZM24, AZM26: IP40 (excluding installation surfaces and connector locations) AZM46, AZM48, AZM66, AZM69: IP66 (excluding installation surfaces and connector locations)	IP10
Stop Position Accuracy		AZM14, AZM15, AZM24, AZM26: ±5 min (±0.083°) AZM46, AZM48: ±4 min (±0.067°) AZM66, AZM69: ±3 min (±0.05°)	
Shaft Runout		0.05 T.I.R. (mm)*2	—
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*2	—
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*2	—
Range of Multiple Rotation Inspection at Power OFF		AZM14, AZM15, AZM24, AZM26: ±450 rotations (900 rotations) AZM46, AZM48, AZM66, AZM69: ±900 rotations (1800 rotations)	

*1 Electromagnetic brake type only

*2 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution, centered on the reference axis center.

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.



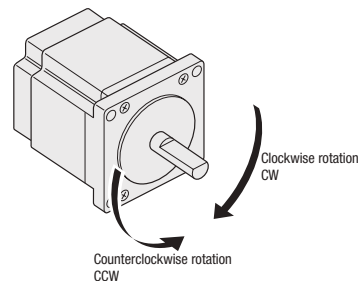
Rotation Direction

The figure shows the rotation directions seen from the output shaft. The rotation direction of the gear output shaft, which is seen from the output shaft of a standard type motor, differs depending on the gear type or gear ratio.

Refer to the table below.

Type	Gear Ratio	Rotation Direction seen from the Output Shaft
TS Geared Type	3.6, 7.2, 10	Same direction
	20, 30	Reverse direction
FC Geared Type	Total reduction gear ratio	Same direction
PS Geared Type		Same direction
HPG Geared Type		Reverse direction
Harmonic Geared Type	Total reduction gear ratio	Reverse direction

● Standard type motor



Motor Installation

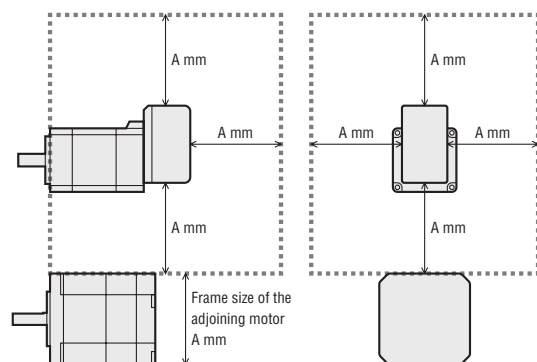
Since the ABZO sensor is easily affected by magnetism, exercise caution when determining the location to install the motor.

Installing the motor the frame size 28 mm or less

When installing multiple motors next to each other, make sure that the distance between two motors in the horizontal and vertical directions is at least the frame size of the adjoining motor.

● Reference

Adjoining Motor	A
Frame size 20 mm	20
Frame size 28 mm	28
Frame size 42 mm	42
Frame size 60 mm	60



● Make sure that the distance between the two motors is at least the frame size of the adjoining motor (A mm).

When installing motors in an environment in which a magnetic field is generated

Ensure that the magnetic flux density on the ABZO sensor surface does not exceed the values listed below.

Motor Frame Size	Magnetic Flux Density
28 mm or less	2 mT*
42 mm or more	10 mT

*If the magnetic flux density is between more than 1 mT and 2 mT, the ambient temperature must be between more than 20°C and 40°C.

Permissible Radial Load/Permissible Axial Load

Unit: N

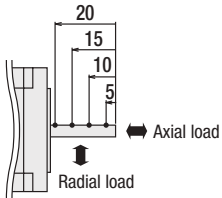
Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End mm					
				0	5	10	15	20	
Standard Type	20 mm	AZM14, AZM15	—	12	15	—	—	—	3
	28 mm	AZM24, AZM26		25	34	52	—	—	5
	42 mm	AZM46		35	44	58	85	—	15
		AZM48		30	35	44	58	85	
TS Geared Type	42 mm	AZM46	3.6, 7.2, 10	20	30	40	50	—	15
			20, 30	40	50	60	70	—	
	60 mm	AZM66	3.6, 7.2, 10	120	135	150	165	180	40
			20, 30	170	185	200	215	230	
FC Geared Type	42 mm	AZM46	7.2, 10, 20, 30	180	200	220	250	—	100
	60 mm	AZM66		270	290	310	330	350	200
PS Geared Type	28 mm	AZM24	7.2, 10	45	60	80	100	—	40
	42 mm	AZM46	5	70	80	95	120	—	100
			7.2	80	90	110	140	—	
			10	85	100	120	150	—	
			25	120	140	170	210	—	
			36	130	160	190	240	—	
	60 mm	AZM66	50	150	170	210	260	—	
			5	170	200	230	270	320	200
			7.2	200	220	260	310	370	
			10	220	250	290	350	410	
			25	300	340	400	470	560	
	36	340	380	450	530	630			
HPG Geared Type	40 mm	AZM46	5	150	170	190	230	270	430
			9	180	200	230	270	320	510
	60 mm	AZM66	5	250	270	300	330	360	700
			15	360	380	420	460	510	980
Harmonic Geared Type	30 mm	AZM24	50, 100	100	135	175	250	—	140
	42 mm	AZM46		180	220	270	360	510	220
	60 mm	AZM66		320	370	440	550	720	450

● The product names are described with text by which the product name can be identified.

● PS geared type and HPG geared type: The values shown in the table are those that enable a product life of 20,000 hours when either permissible radial load or permissible axial load is applied. For the product life of the gearhead, contact the nearest Oriental Motor sales office, or check the Oriental Motor website.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

When eccentric load is applied to the installation surface of the output flange, load moment acts on the bearing.
Before using the motor, apply the formulas below to check that the axial load and load moment are within the specifications.

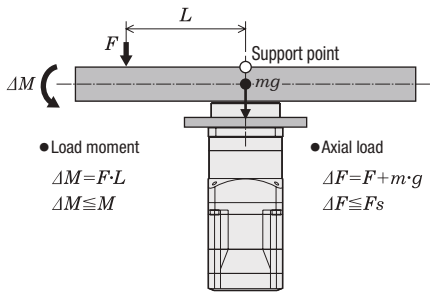
HPG Geared Type Flange Output Type

Product Name	Gear Ratio	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
AZM46	5	430	4.9	0.006
	9	510	5.9	
AZM66	5	700	12.0	0.011
	15	980	17.2	

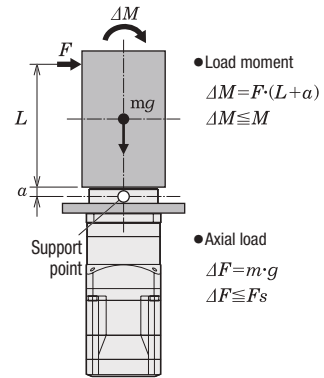
- m : Load mass (kg)
- g : Gravitational acceleration (m/s²)
- F : External force (N)
- L : Overhung distance (m)
- α : Constant (m)
- ΔF : Load applied to the output flange surface (N)
- F_s : Permissible axial load (N)
- ΔM : Load moment (N·m)
- M : Permissible moment load (N·m)

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.

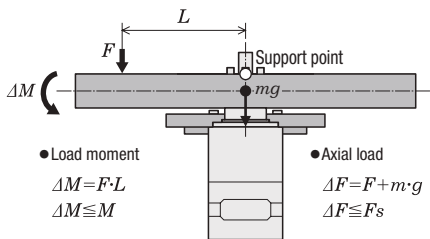


Harmonic Geared Type

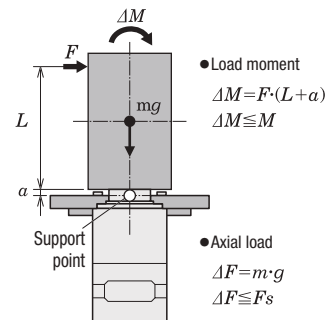
Motor Frame Size	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
30 mm	140	2.9	0.0073
42 mm	220	5.6	0.009
60 mm	450	11.6	0.0114

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.



Accuracy of the Harmonic Geared Type

→ Page 06-35

Load Torque – Driver Input Current Characteristics

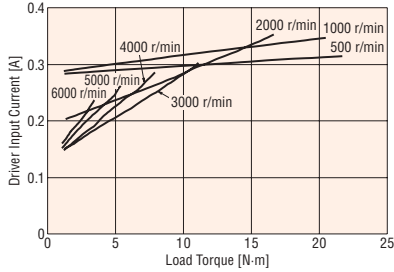
This is the relationship between the load torque and driver input current at each speed when the motor is actually operated. From these characteristics, the power supply capacity required for use in multi-axis operation can be estimated. For the geared type, convert to torque and speed by the motor shaft.

$$\text{Motor shaft speed} = \text{Gear output shaft speed} \times \text{Gear ratio} \text{ [r/min]}$$

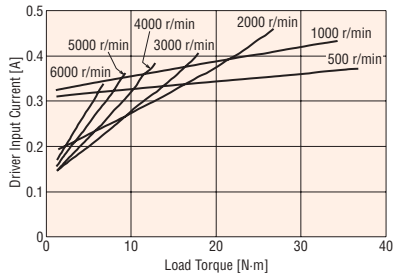
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear ratio}} \text{ [N}\cdot\text{m]}$$

24 VDC

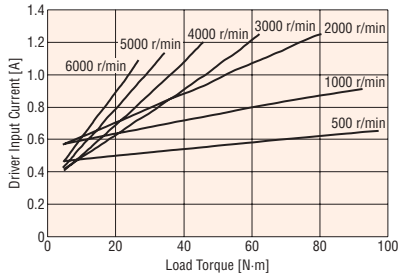
AZM14



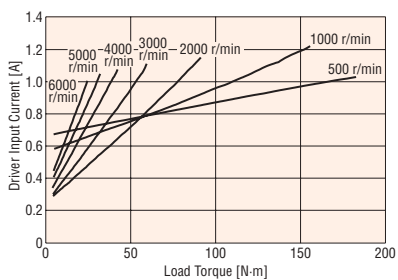
AZM15



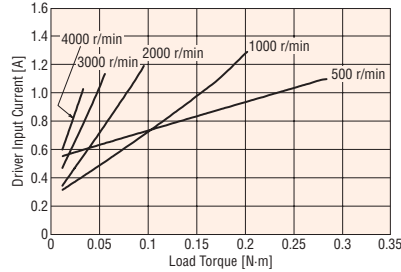
AZM24



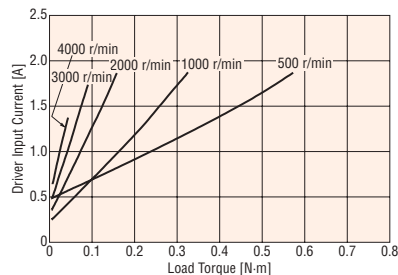
AZM26



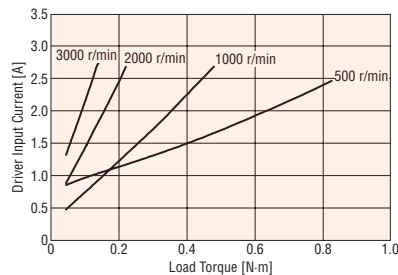
AZM46



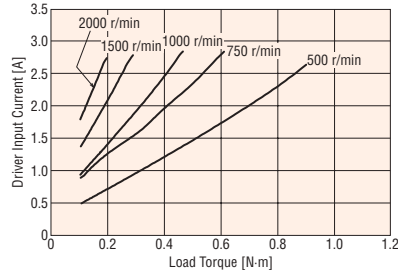
AZM48



AZM66

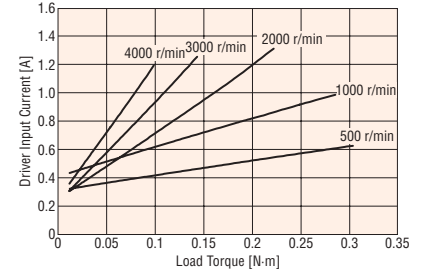


AZM69

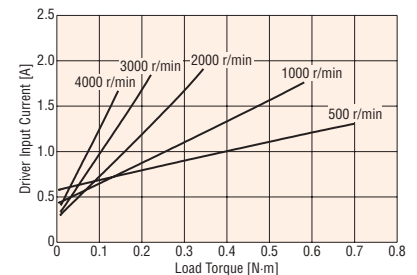


48 VDC

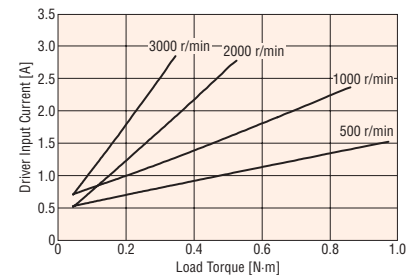
AZM46



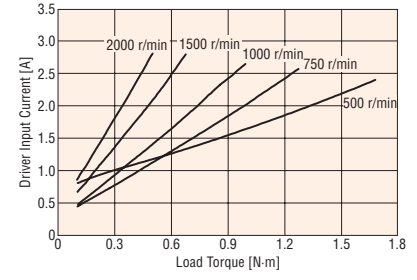
AZM48



AZM66



AZM69



Dimensions (Unit: mm)

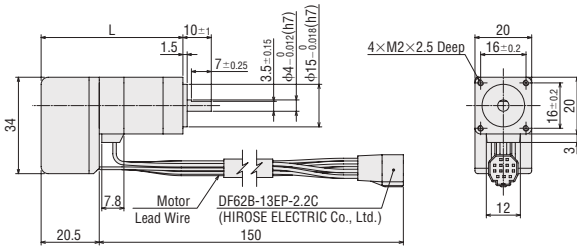
● Motors

◇ Standard Type

Frame Size 20 mm

2D & 3D CAD

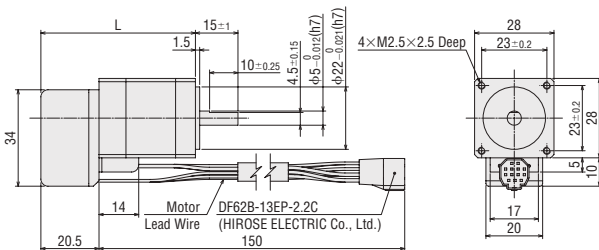
Product Name	L	Mass kg	2D CAD
AZM14AK	50	0.08	B1212
AZM15AK	60	0.1	B1213



Frame Size 28 mm

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
AZM24AK	54.5	0.15	B1214
AZM26AK	74	0.24	B1215

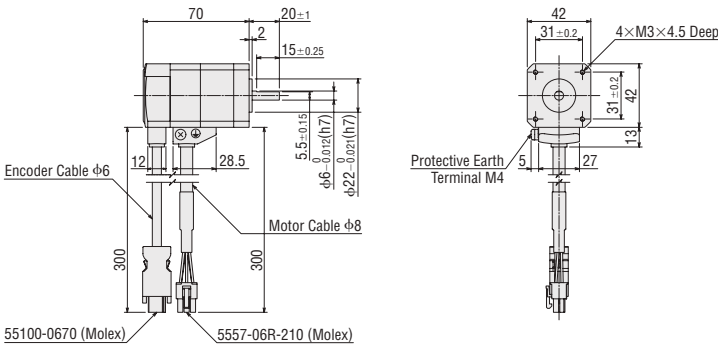


Frame Size 42 mm

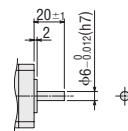
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46AK	0.44	B1092
Straight	AZM46AOK		B1288

Single Sided Milling



Straight

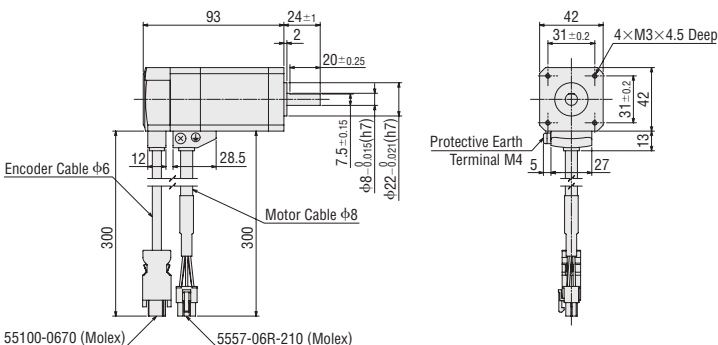


Frame Size 42 mm

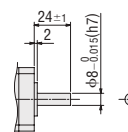
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM48AK	0.68	B1312
Straight	AZM48AOK		B1289
With Key	AZM48A1K		B1299

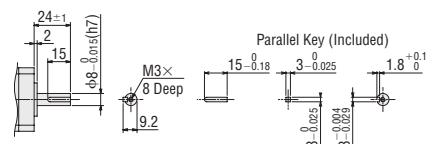
Single Sided Milling



Straight



With Key

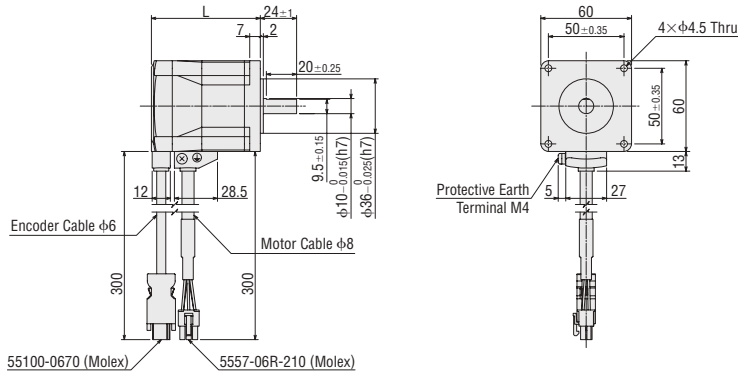


Frame Size 60 mm

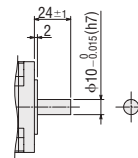
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66AK	72	0.91	B1093
Straight	AZM66AOK			B1290
With Key	AZM66A1K			B1300
Single Sided Milling	AZM69AK	97.5	1.4	B1129
Straight	AZM69AOK			B1291
With Key	AZM69A1K			B1301

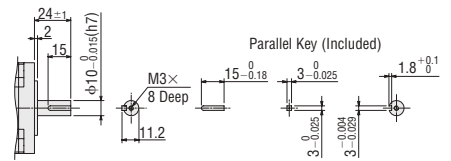
Single Sided Milling



Straight



With Key



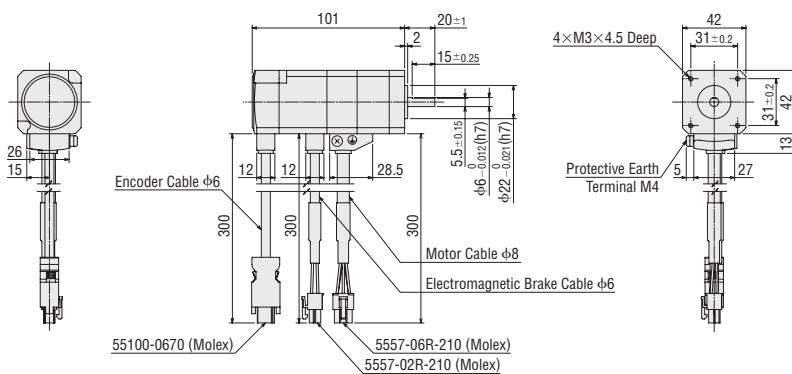
◇ Standard Type with Electromagnetic Brake

Frame Size 42 mm

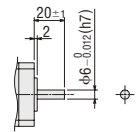
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46MK	0.61	B1154
Straight	AZM46MOK		B1294

Single Sided Milling



Straight



06

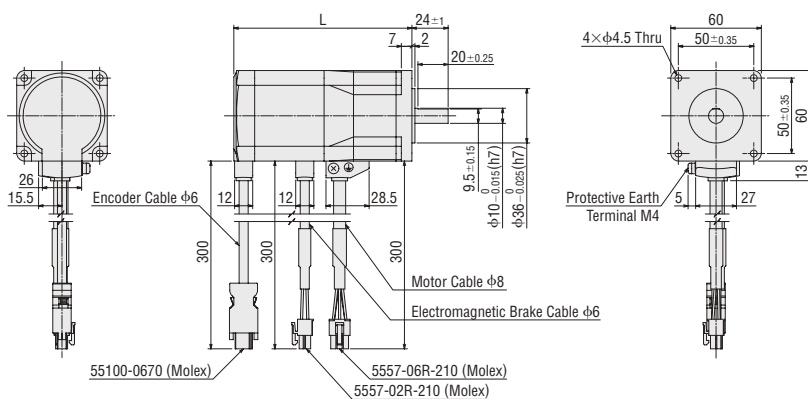
AZ Series

Frame Size 60 mm

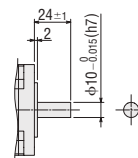
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66MK	118	1.3	B1155
Straight	AZM66MOK			B1295
With Key	AZM66M1K			B1305
Single Sided Milling	AZM69MK	143.5	1.8	B1156
Straight	AZM69MOK			B1296
With Key	AZM69M1K			B1306

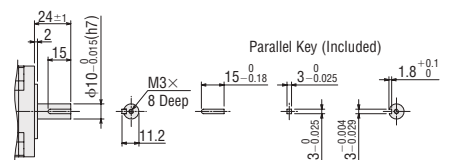
Single Sided Milling



Straight



With Key

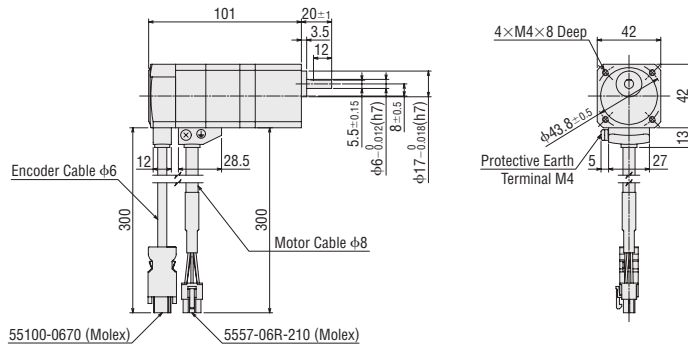


◇ **TS Geared Type**

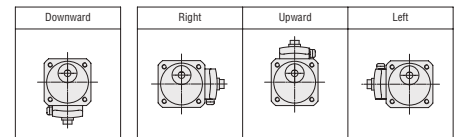
Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46AK-TS ■	3.6, 7.2, 10, 20, 30	0.59	B1157
Right	AZM46AK-TS ■R			B1272
Upward	AZM46AK-TS ■U			B1270
Left	AZM46AK-TS ■L			B1271



● Cable Drawing Direction

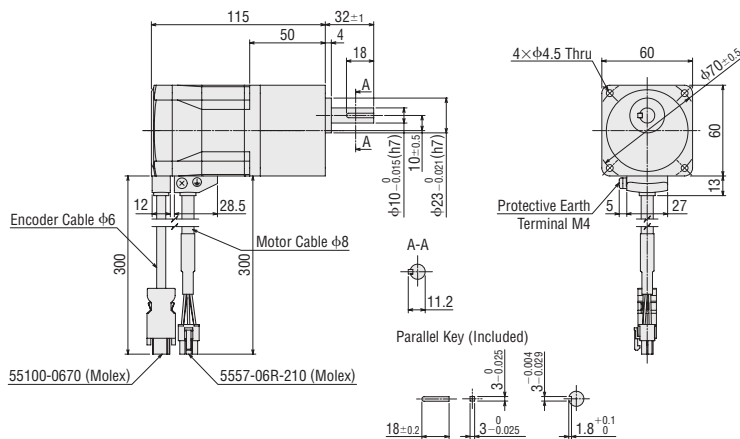


Frame Size 60 mm

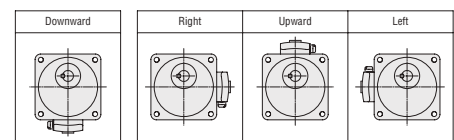
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66AK-TS ■	3.6, 7.2, 10, 20, 30	1.3	B1158
Right	AZM66AK-TS ■R			B1275
Upward	AZM66AK-TS ■U			B1273
Left	AZM66AK-TS ■L			B1274

● Installation Screws: M4×60 P0.7 (4 pieces included)



● Cable Drawing Direction

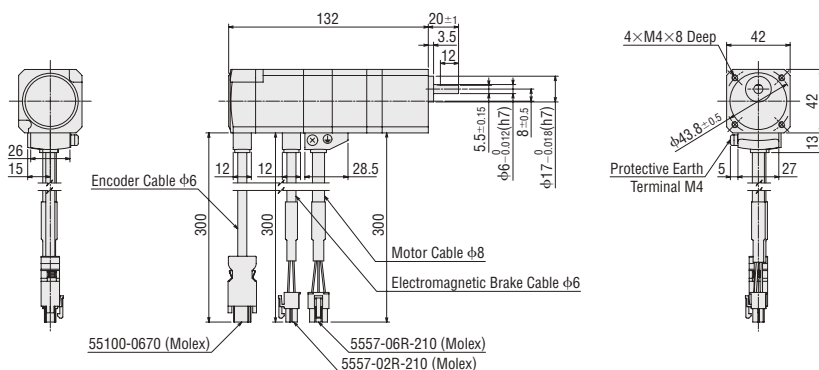


◇ **TS Geared Type with Electromagnetic Brake**

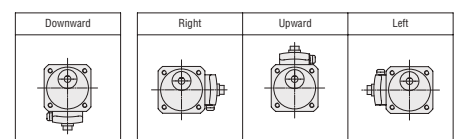
Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46MK-TS ■	3.6, 7.2, 10, 20, 30	0.76	B1216
Right	AZM46MK-TS ■R			B1284
Upward	AZM46MK-TS ■U			B1282
Left	AZM46MK-TS ■L			B1283



● Cable Drawing Direction



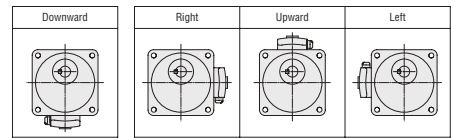
● A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm

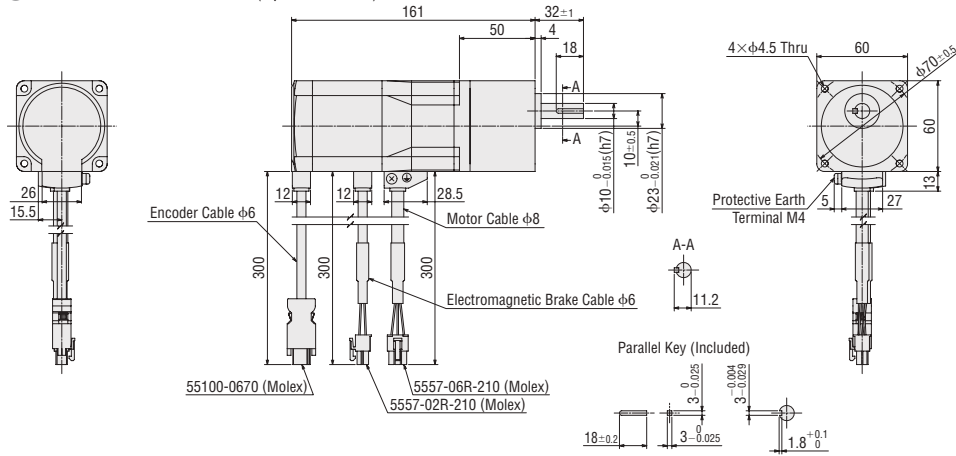
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66MK-TS 	3.6, 7.2, 10, 20, 30	1.7	B1217
Right	AZM66MK-TS R			B1287
Upward	AZM66MK-TS U			B1285
Left	AZM66MK-TS L			B1286

Cable Drawing Direction



● Installation Screws: M4×60 P0.7 (4 pieces included)

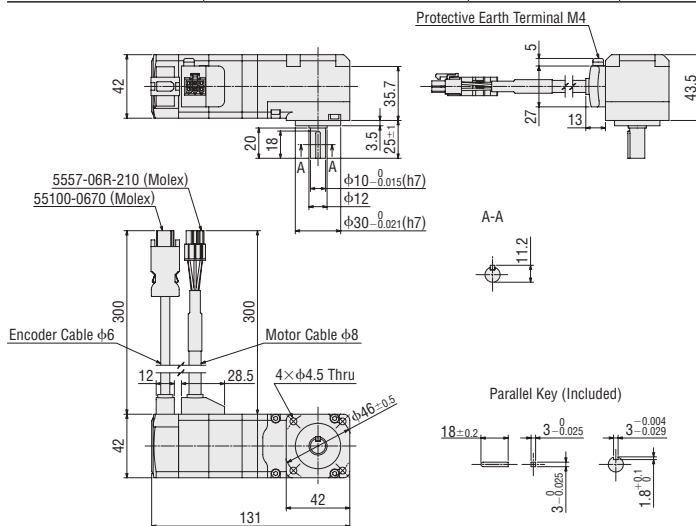


◇ FC Geared Type

Frame Size 42 mm Cable Drawing Direction Upward

2D & 3D CAD

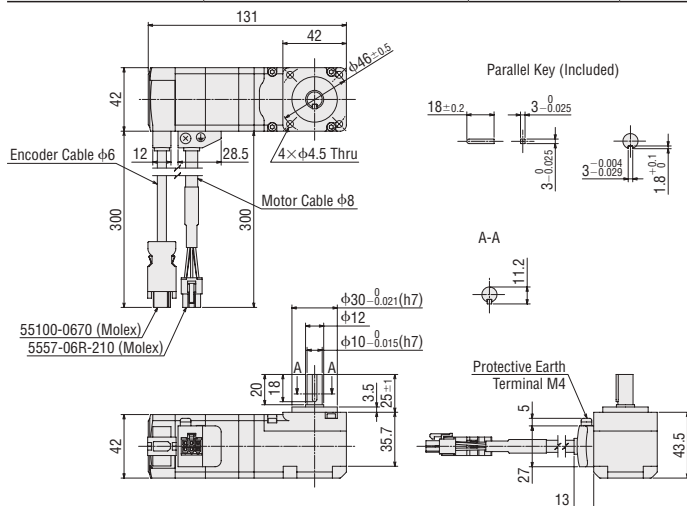
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-FC UA	7.2, 10, 20, 30	0.79	B1314



Frame Size 42 mm Cable Drawing Direction Downward

2D & 3D CAD

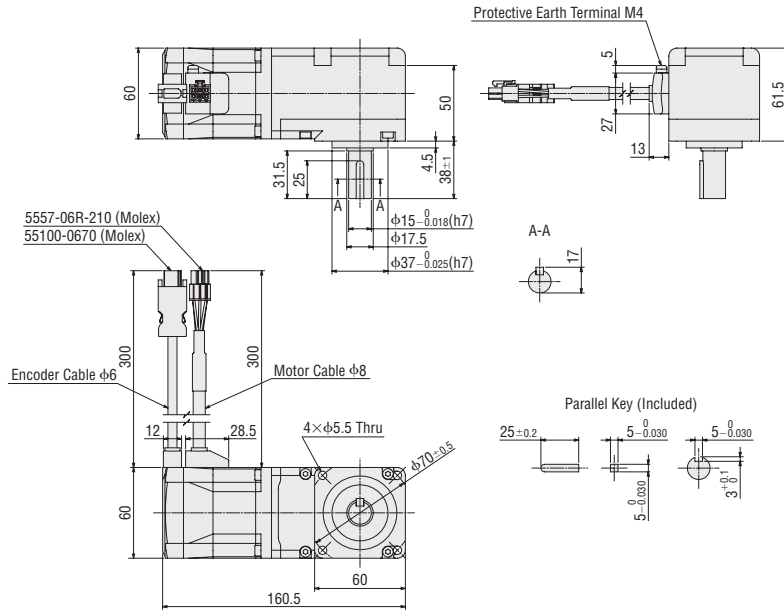
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-FC DA	7.2, 10, 20, 30	0.79	B1313



● A number indicating the gear ratio is entered where the box is located within the product name.

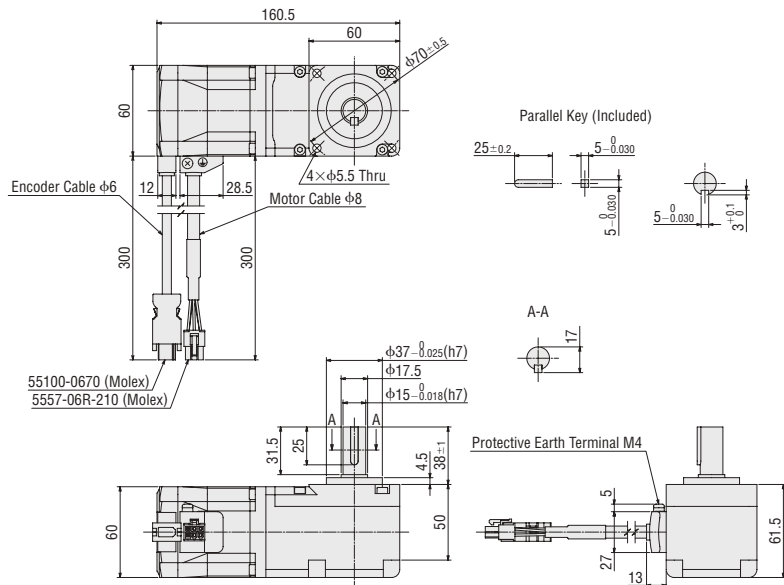
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-FC ■ UA	7.2, 10, 20, 30	1.8	B1318



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-FC ■ DA	7.2, 10, 20, 30	1.8	B1317

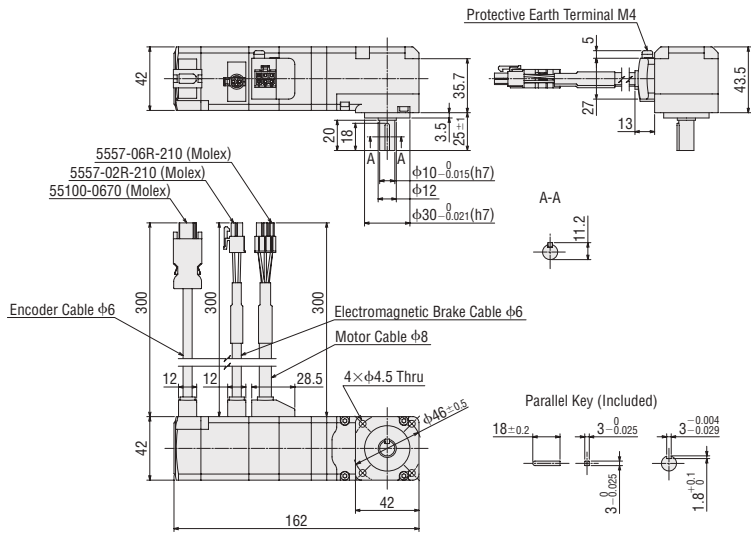


● A number indicating the gear ratio is entered where the box ■ is located within the product name.

◇ FC Geared Type with Electromagnetic Brake

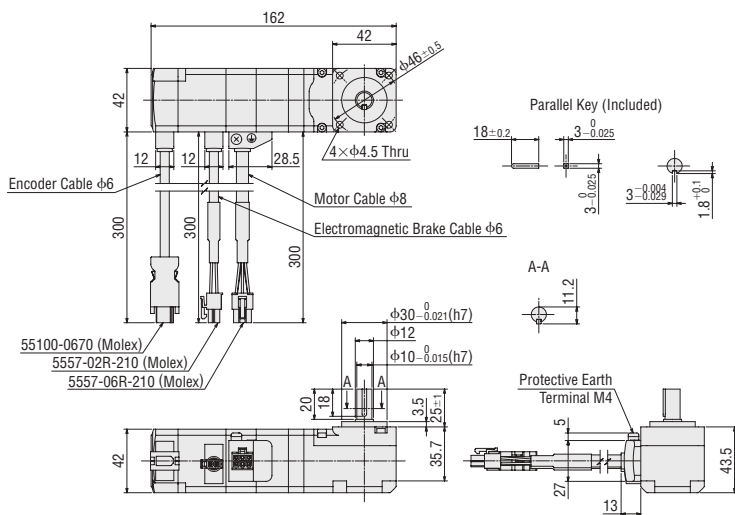
Frame Size 42 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-FC UA	7.2, 10, 20, 30	0.96	B1316



Frame Size 42 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-FC DA	7.2, 10, 20, 30	0.96	B1315



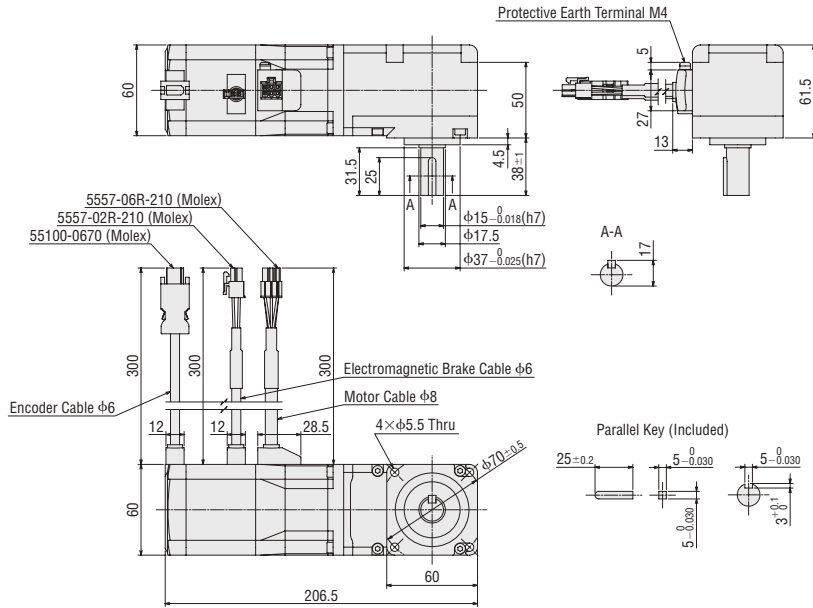
06

AZ Series

● A number indicating the gear ratio is entered where the box ■ is located within the product name.

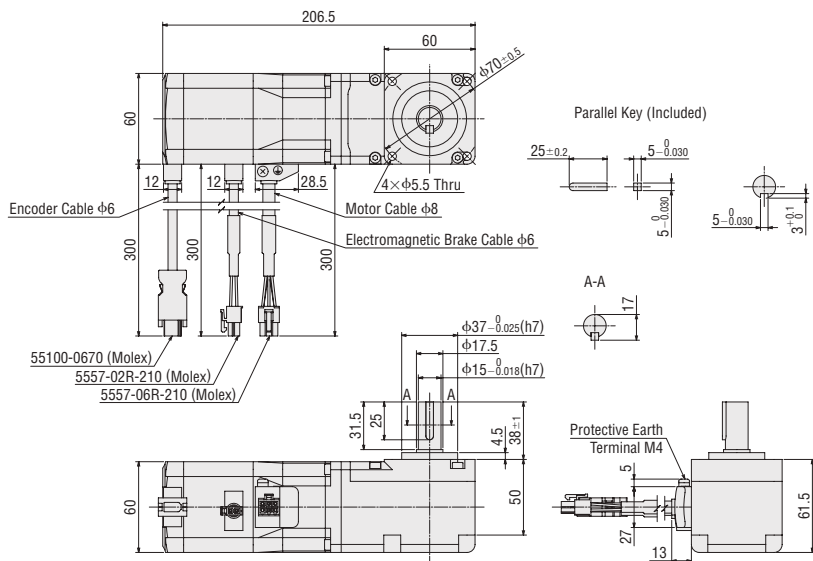
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-FC UA	7.2, 10, 20, 30	2.2	B1320



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-FC DA	7.2, 10, 20, 30	2.2	B1319



● A number indicating the gear ratio is entered where the box is located within the product name.

[Click Here](#)

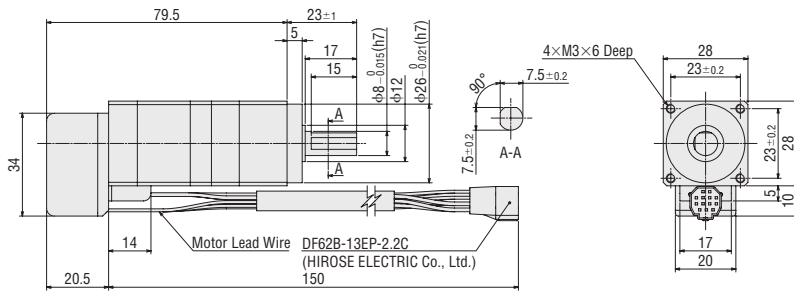
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ PS Geared Type

Frame Size 28 mm

2D & 3D CAD

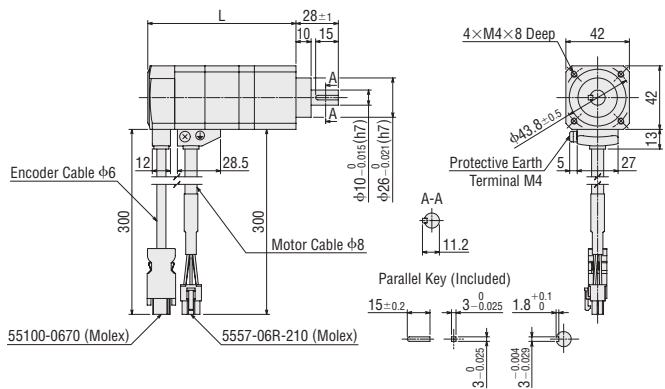
Product Name	Gear Ratio	Mass kg	2D CAD
AZM24AK-PS 	7.2, 10	0.25	B1366



Frame Size 42 mm

2D & 3D CAD

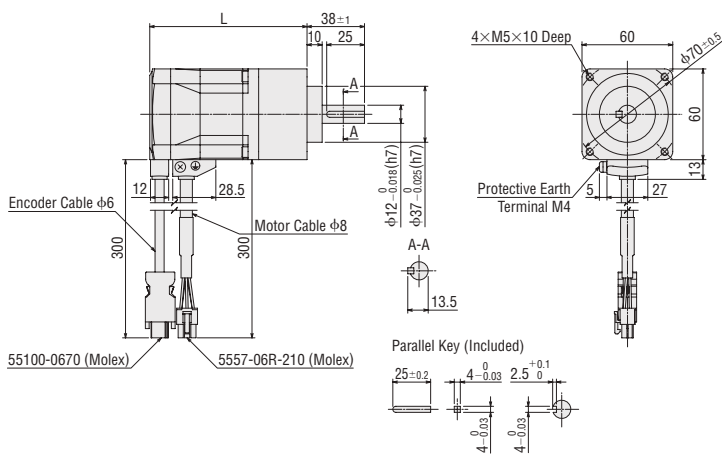
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46AK-PS 	5, 7.2, 10	98	0.64	B1159
	25, 36, 50	121.5	0.79	B1160



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66AK-PS 	5, 7.2, 10	104	1.3	B1161
	25, 36, 50	124	1.6	B1162



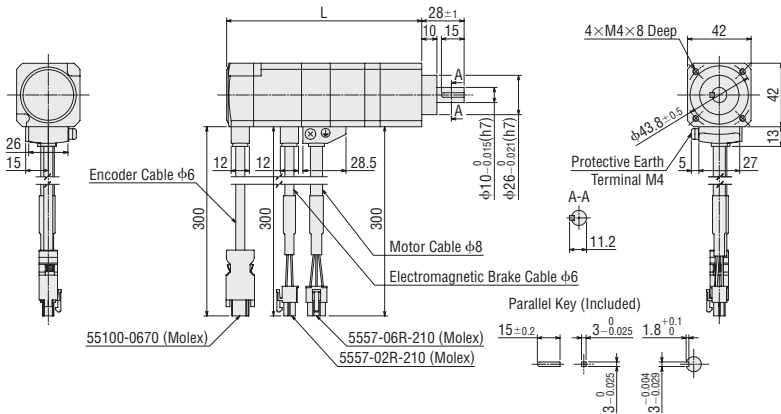
● A number indicating the gear ratio is entered where the box is located within the product name.

◆ **PS Geared Type with Electromagnetic Brake**

Frame Size 42 mm

2D & 3D CAD

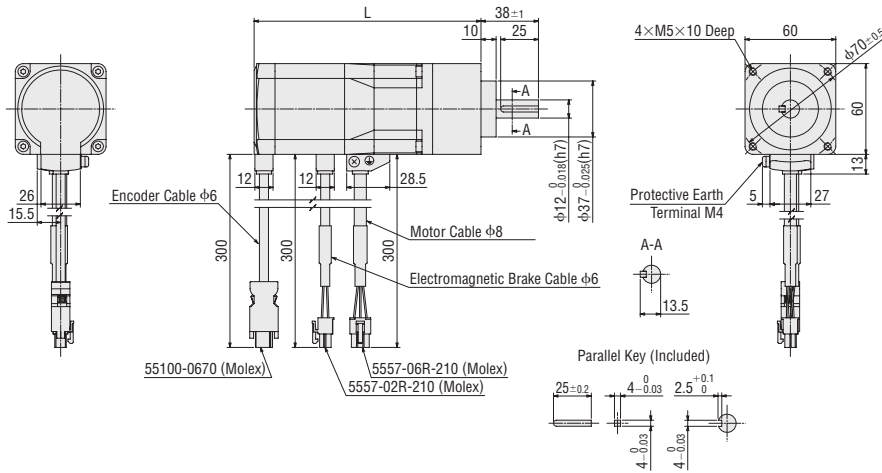
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46MK-PS ■	5, 7.2, 10	129	0.81	B1218
	25, 36, 50	152	0.96	B1219



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66MK-PS ■	5, 7.2, 10	150	1.7	B1220
	25, 36, 50	170	2.0	B1221

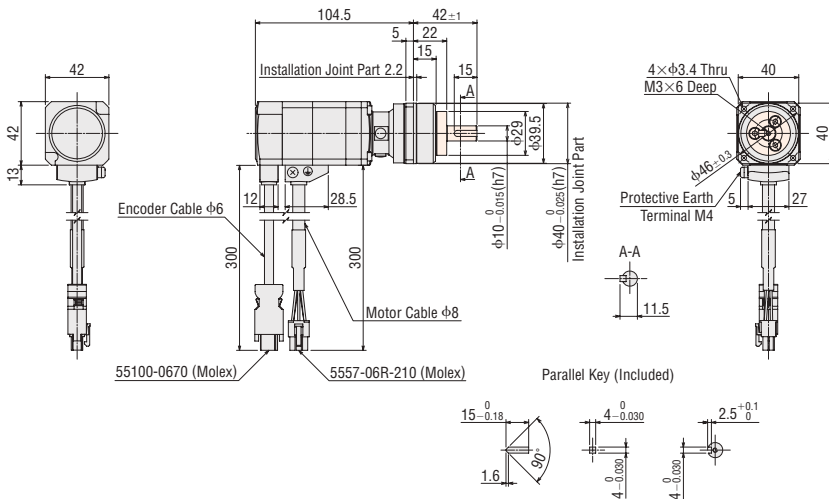


◆ **HPG Geared Type Shaft Output Type**

Frame Size 40 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HP ■	5, 9	0.71	B1163



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

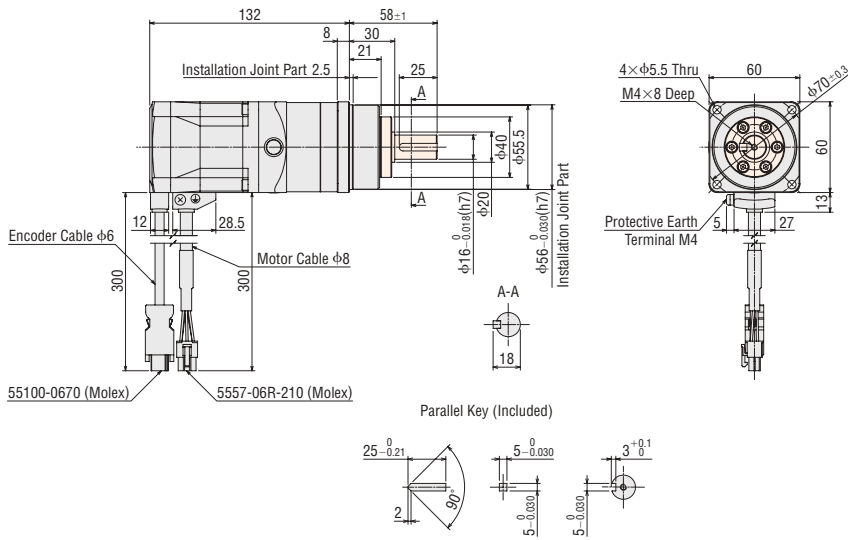
Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 60 mm

2D & 3D CAD

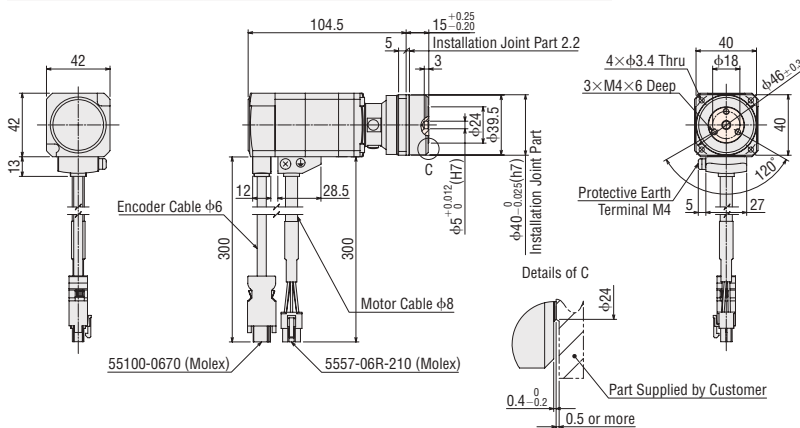
Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HP ■	5, 15	1.9	B1165



◇ HPG Geared Type Flange Output Type
Frame Size 40 mm

2D & 3D CAD

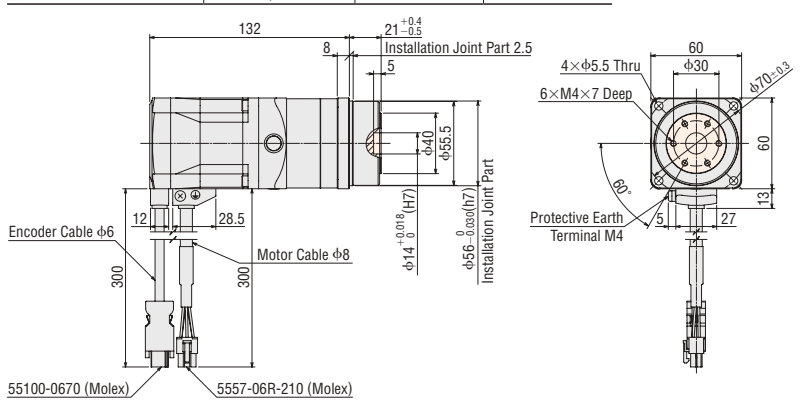
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HP ■F	5, 9	0.66	B1164



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HP ■F	5, 15	1.8	B1166



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

06

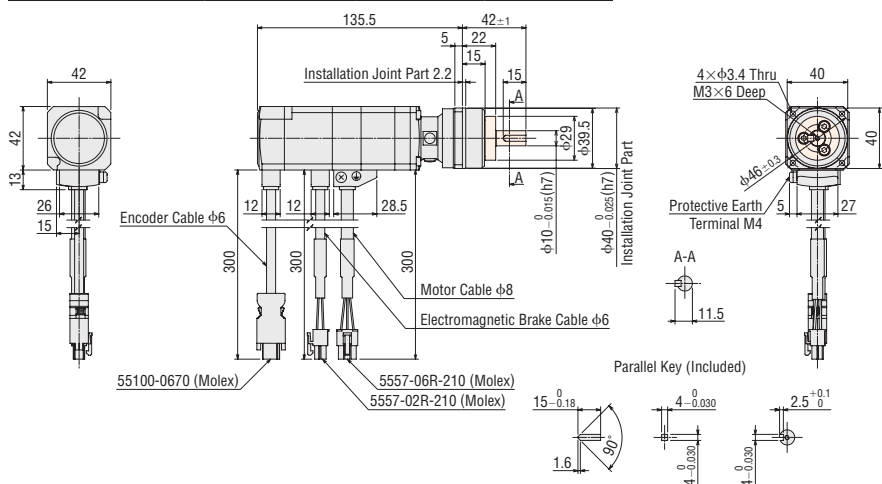
AZ Series

◆ HPG Geared Type with Electromagnetic Brake Shaft Output Type

Frame Size 40 mm

2D & 3D CAD

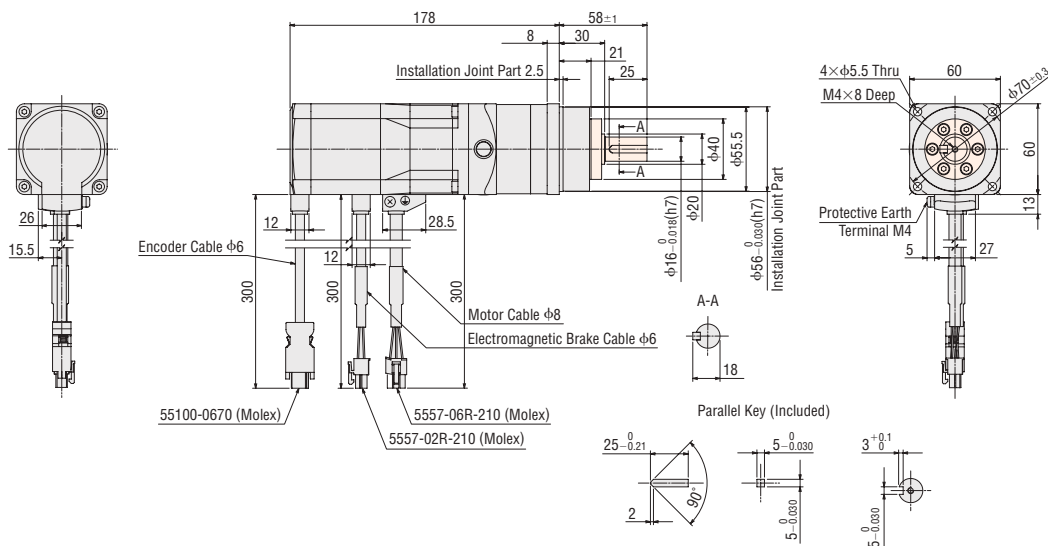
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HP ■	5, 9	0.88	B1222



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HP ■	5, 15	2.3	B1224

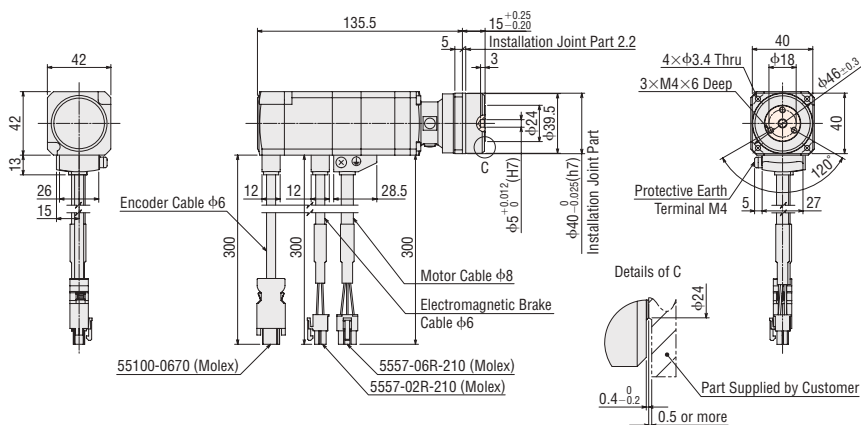


◆ HPG Geared Type with Electromagnetic Brake Flange Output Type

Frame Size 40 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HP ■F	5, 9	0.83	B1223

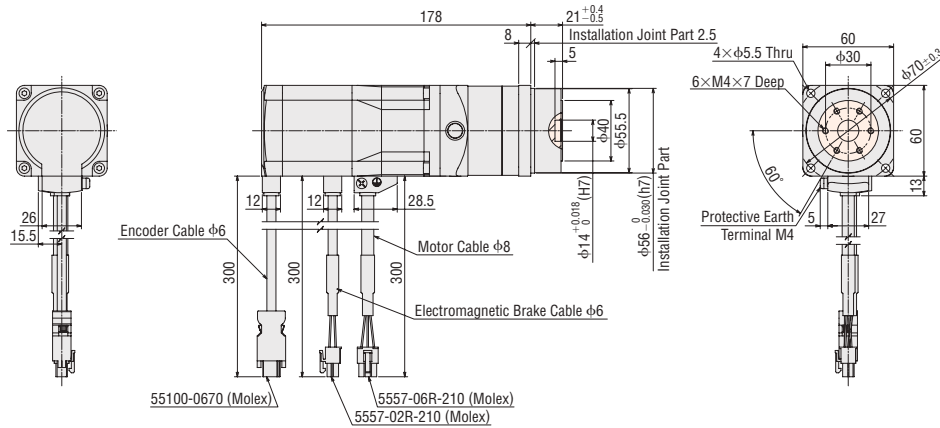


- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HP 	5, 15	2.2	B1225

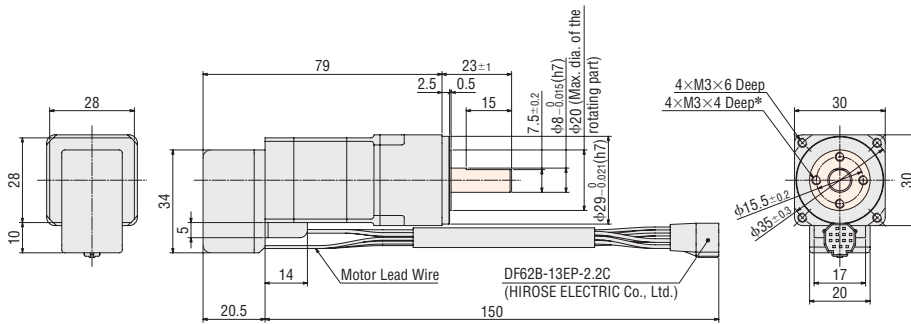


◇ Harmonic Geared Type

Frame Size 30 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM24AK-HS 	50, 100	0.24	B1367

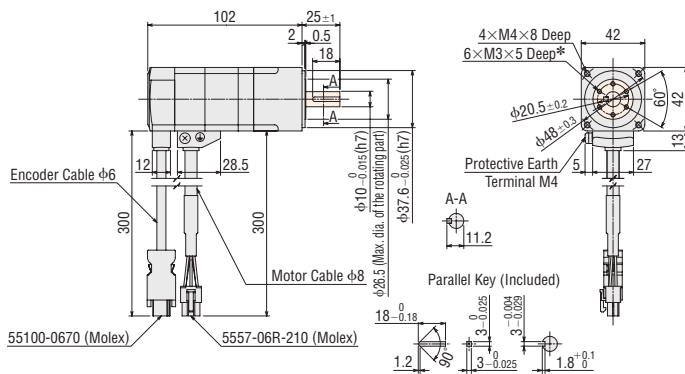


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HS 	50, 100	0.65	B1167



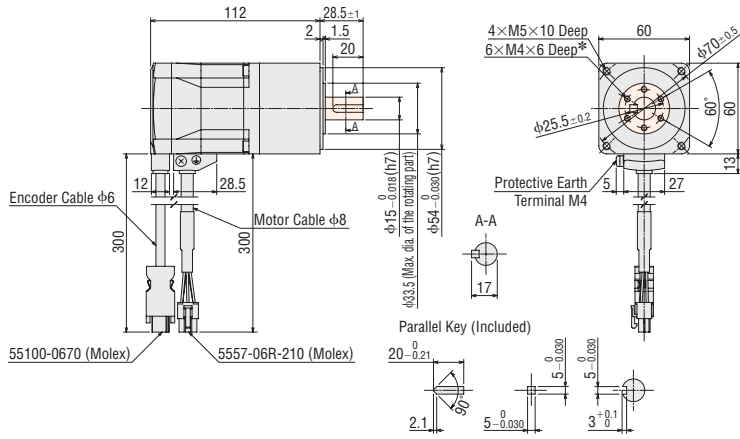
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HS ■	50, 100	1.4	B1168



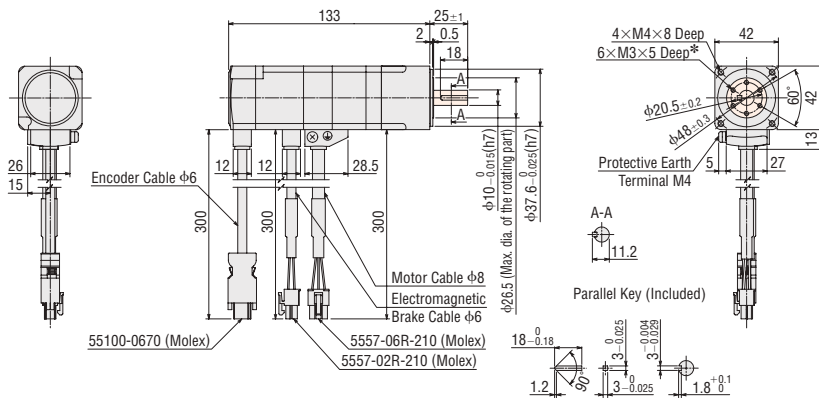
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HS ■	50, 100	0.82	B1226

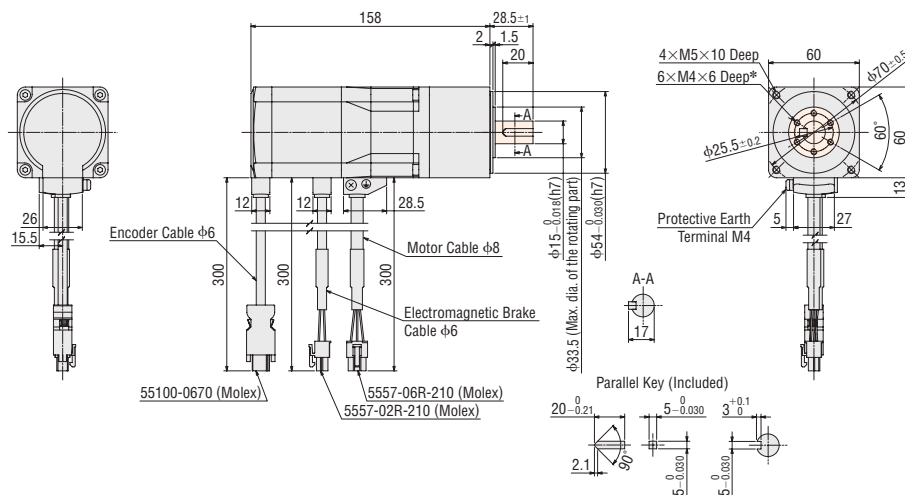


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HS ■	50, 100	1.8	B1227



*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Click Here

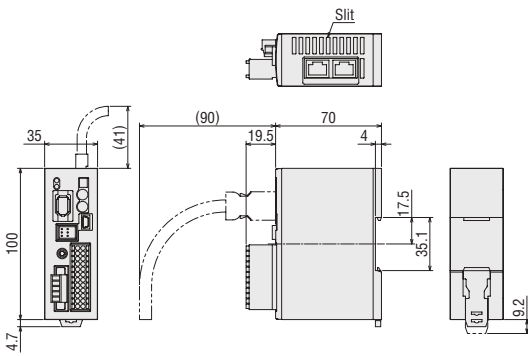
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Drivers

2D & 3D CAD

Type	Product Name	Mass kg	2D CAD
Built-in Controller Type	AZD-KD	0.15	B1094
Pulse Input Type with RS-485 Communication	AZD-KX		
Pulse Input Type	AZD-K		B1096

● The dimensions below is the drawing of a built-in controller type. The external dimensions and accessories are common to all driver types.



● Accessories

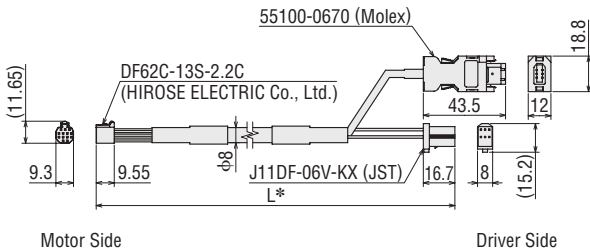
Main Power Supply/Electromagnetic Brake Connector (CN1)
Connector: MC1,5/5-STF-3,5
(PHOENIX CONTACT)

I/O Signals Connector (CN4)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

● Connection Cable Sets/Flexible Connection Cable Sets

[For **AZM14, AZM15, AZM24, AZM26**]

◇ Cable for Motor

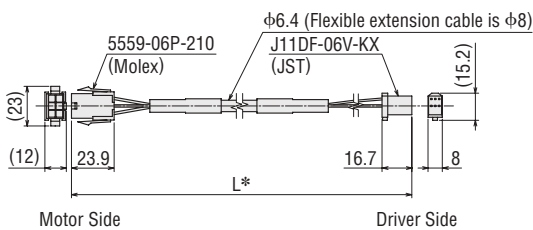


Motor Side

Driver Side

[For **AZM46, AZM48, AZM66, AZM69**]

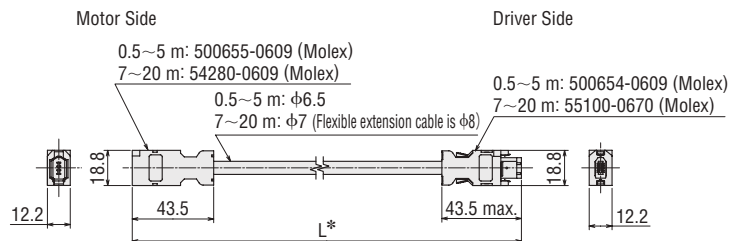
◇ Cable for Motor



Motor Side

Driver Side

◇ Cable for Encoder

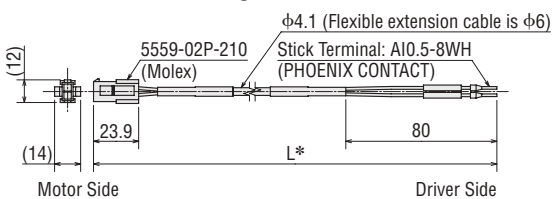


Motor Side

Driver Side

AZ Series

◇ Cable for Electromagnetic Brake



Motor Side

Driver Side

*"L" is replaced by the length specified in Length L (m) in "Product Line" on page 06-71.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

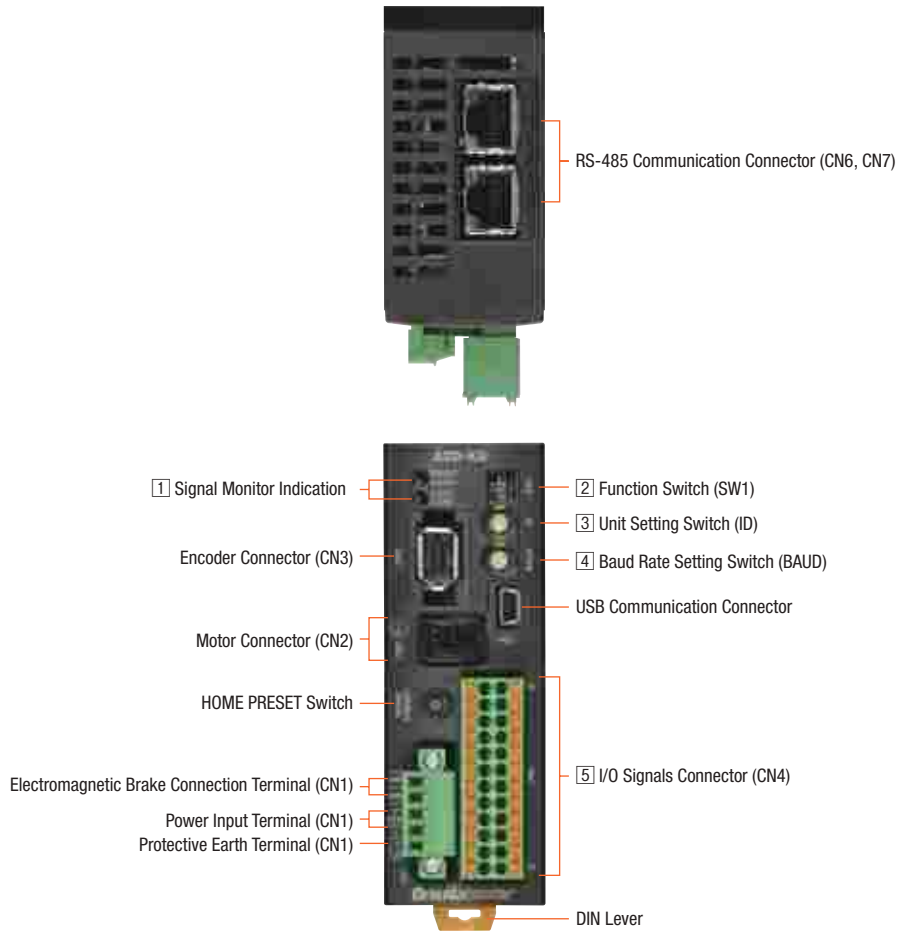
■ Cautions for Using Connection Cables

→ Page 06-55

Connection and Operation (Built-in controller type/Pulse input type with RS-485 communication)

Names and Functions of Driver Parts

Below is a photo of the built-in controller type.



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
POWER	Green	Power supply indication	When power is applied
ALARM	Red	Alarm indication	When a protective function is activated (blinking)
C-DAT	Green	Communication indication	When communication data is being sent or received
C-ERR	Red	Communication error indication	When communication data is in error

2 Function Switch

Indication	No.	Function
SW1	1	Use in combination with the unit setting switch (ID) to set the axis number. (Factory setting) OFF
	2	Set the RS-485 communication protocol. (Factory setting) Built-in controller type: OFF Pulse input type with RS-485 communication: ON
	3	Set the terminating resistor (120 Ω) for RS-485 communication.
	4	(Factory setting) OFF (OFF: Terminating resistor not used ON: Terminating resistor used)

*Configure both No. 3 and No. 4 to the same setting.

3 Unit Setting Switch

Indication	Function
ID	Set this when you use RS-485 communication. Set the unit number. (Factory setting) Built-in controller type: 0 Pulse input type with RS-485 communication: 1

4 Baud Rate Setting Switch

Indication	Function
BAUD	Set this when you use RS-485 communication. Set the baud rate. (Factory setting) Built-in controller type: 7 Pulse input type with RS-485 communication: 4

◇ RS-485 Baud Rate Setting

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5	230400
6	Not used
7	Network converter
8~F	Not used

5 I/O Signals Connector (CN4)

For the pulse input type with RS-485 communication, No. 1, 2, 13, and 14 pins are dedicated to pulse input. For wire connection with the programmable controller, refer to "Pulse Input Types" on page 06-109.

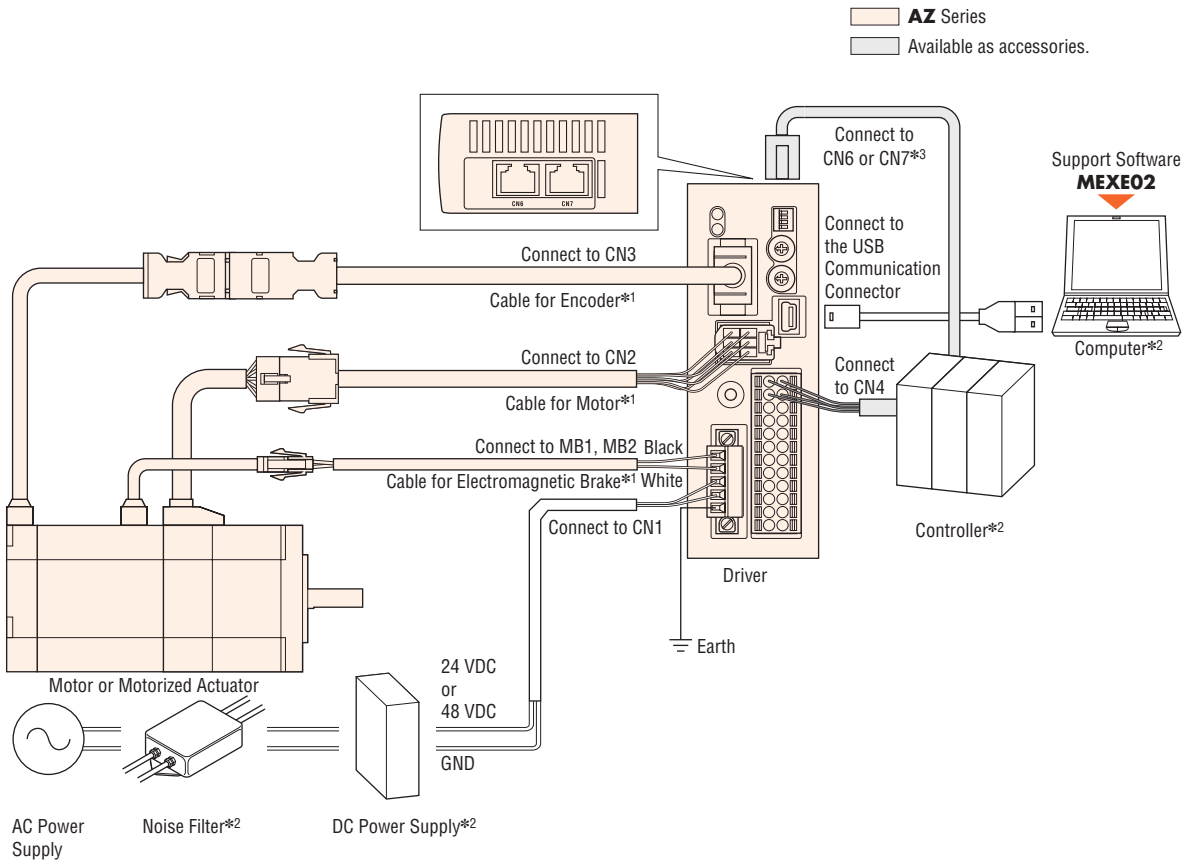
Indication	Pin No.	Driver Type	Signal Name	Description
CN4	1	Built-in controller type	IN0	START This signal is used to start positioning operation.
		Pulse input type with RS-485 communication	CW+* [PLS+]	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	Built-in controller type	IN2	M1 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW+* [DIR+]	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	Common	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	Common	IN6	STOP Stops the motor.
	5	Common	IN-COM [0-7]*	IN0~IN7 Input Common
	6	Common	IN8	FW-JOG Starts the JOG operation.
	7	Common	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	Common	OUT2	PLS-RDY Not used.
	9	Common	OUT4	MOVE Output during motor operation.
	10	Common	OUT-COM*	Output Common
	11	Common	ASG+	A-Phase Pulse Output +
	12	Common	BSG+	B-Phase Pulse Output +
	13	Built-in controller type	IN1	M0 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CW-* [PLS-]	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	Built-in controller type	IN3	M2 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW-* [DIR-]	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	Common	IN5	FREE Stops motor excitation.
	16	Common	IN7	ALM-RST Resets the alarms.
	17	Common	IN-COM [8-9]*	IN8, IN9 Input Common
	18	Common	IN9	RV-JOG Starts the JOG operation.
	19	Common	OUT1	IN-POS Outputs when the motor operation is finished.
	20	Common	OUT3	READY Outputs when the driver is ready for operation.
21	Common	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).	
22	Common	GND*	Ground	
23	Common	ASG-	A-Phase Pulse Output -	
24	Common	BSG-	B-Phase Pulse Output -	

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

*Initial settings cannot be changed.

● Connection Diagram

◇ Connections with Peripheral Equipment



- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.
- *3 Connect to the controller when controlling by RS-485 communication.

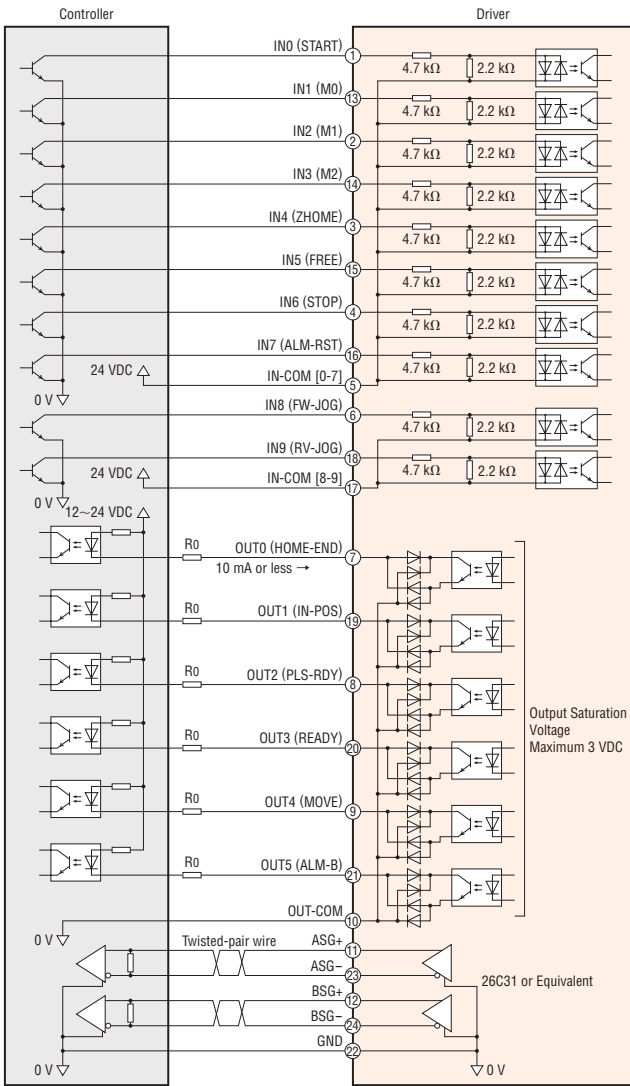
◇ Connection of the USB Cable

Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less Configuration: A to mini B

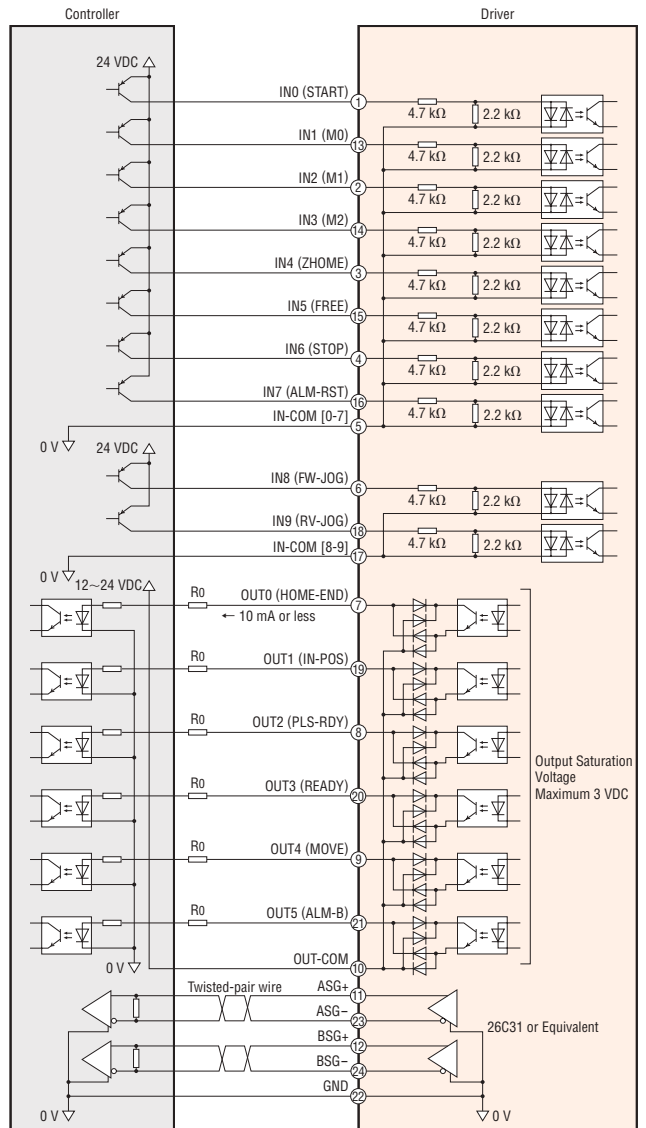
◇ Connecting to the Programmable Controller (Built-in controller type)

● Connection Diagram for Connection with Current Sink Output Circuit



- Note**
- Use 24 VDC for the input signals.
 - Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_o to reduce the current to 10 mA or below.
 - Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
 - If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

● Connection Diagram for Connection with Current Source Output Circuit



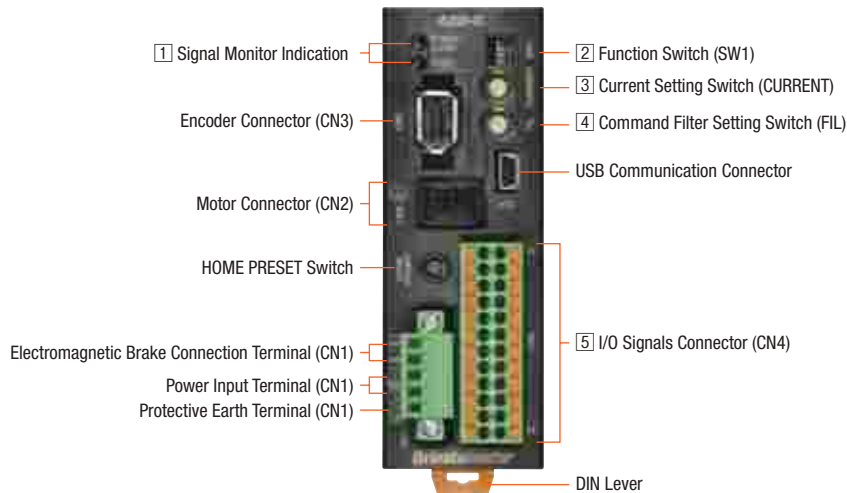
- Note**
- Use 24 VDC for the input signals.
 - Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_o to reduce the current to 10 mA or below.
 - Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
 - If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

◇ Connecting to the Programmable Controller (Pulse input type with RS-485 communication)

The connection diagram is similar to that of the pulse input type. Refer to page 06-109.

Connection and Operation (Pulse input type)

Names and Functions of Driver Parts



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
POWER	Green	Power supply indication	When power is applied
ALARM	Red	Alarm indication	When a protective function is activated (blinking)
READY	Green	READY output	When READY output is ON

2 Function Switch

Indication	No.	Function
SW1	1	Sets the resolution per one rotation of the motor output shaft (Factory setting: OFF [1000 p/r]).
	2	Sets the pulse input mode as either 1-pulse input mode or 2-pulse input mode (Factory setting: OFF [2-pulse input mode]).
	3, 4	Not used.

3 Current Setting Switch

Indication	Function
CURRENT	Set the base current, which is the basis of the running current and the standstill current (Factory setting: F).

4 Command Filter Setting Switch

Indication	Function
FIL	Adjust the responsiveness of the motor (Factory setting: 1).

5 I/O Signals Connector (CN4)

Indication	Pin No.	Signal Name	Description
CN4	1	CW+ [PLS+]*	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	CCW+ [DIR+]*	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	IN6	STOP Stops the motor.
	5	IN-COM [4-7]*	IN4~IN7 Input Common
	6	IN8	FW-JOG Starts the JOG operation.
	7	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	OUT2	PLS-RDY Output when the pulse input preparation is completed.
	9	OUT4	MOVE Output during motor operation.
	10	OUT-COM*	Output Common
	11	ASG+	A-Phase Pulse Output +
	12	BSG+	B-Phase Pulse Output +
	13	CW- [PLS-]*	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	CCW- [DIR-]*	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	IN5	FREE Stops motor excitation.
	16	IN7	ALM-RST Resets the alarms.
	17	IN-COM [8-9]*	IN8, IN9 Input Common
	18	IN9	RV-JOG Starts the JOG operation.
	19	OUT1	IN-POS Outputs when the motor operation is finished.
	20	OUT3	READY Outputs when the driver is ready for operation.
	21	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).
	22	GND*	Ground
	23	ASG-	A-Phase Pulse Output -
	24	BSG-	B-Phase Pulse Output -

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

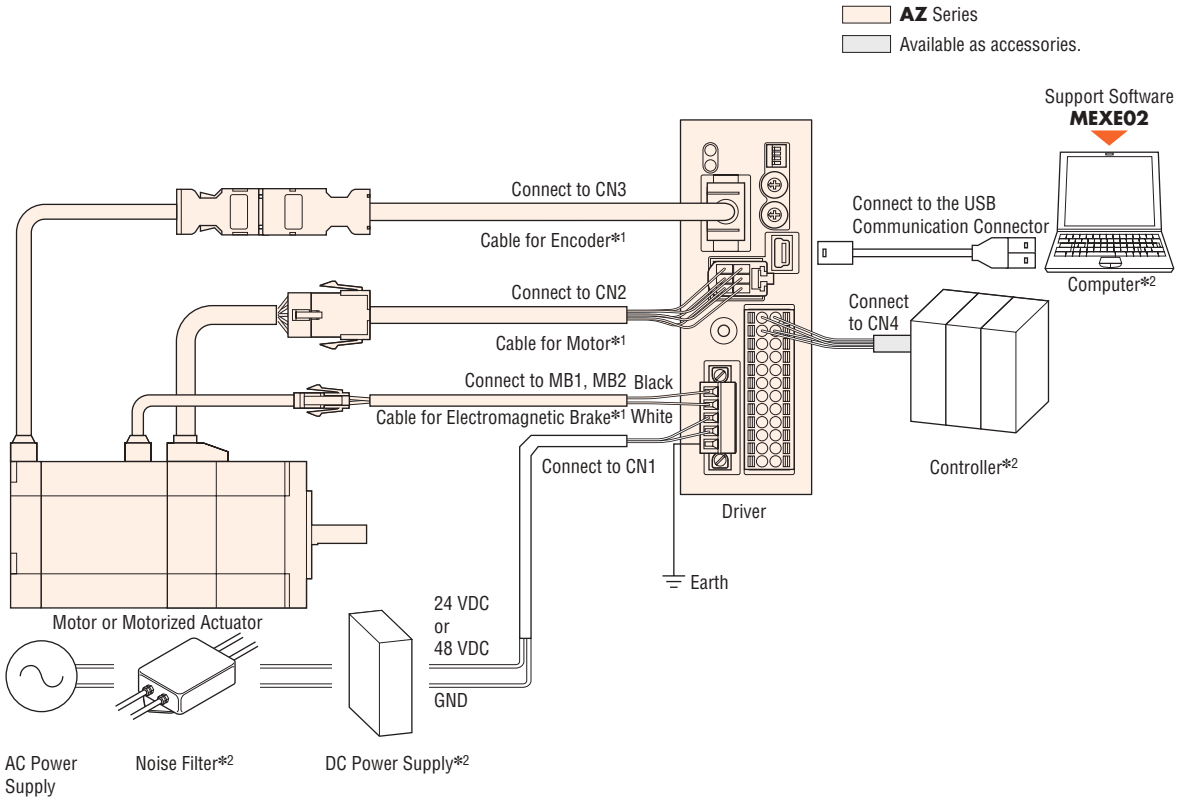
*Initial settings cannot be changed.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

● Connection Diagram

◇ Connections with Peripheral Equipment



- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.

◇ Connection of the USB Cable

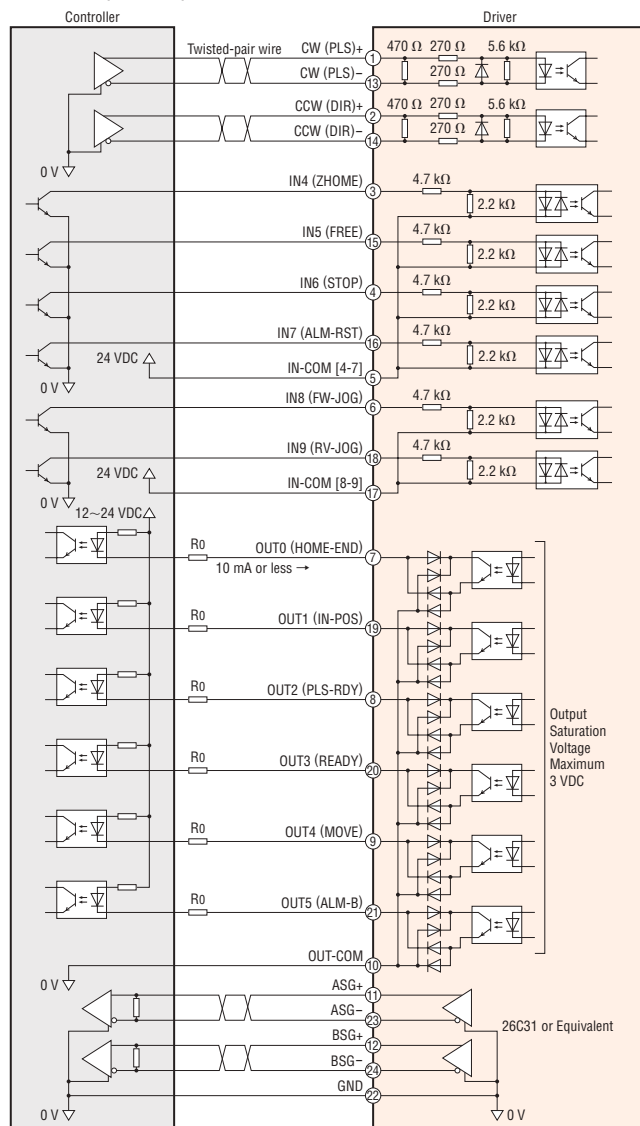
Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to the Programmable Controller (Pulse input type)

● Connection Diagram for Connection with Current Sink Output Circuit

When the pulse input is the line driver

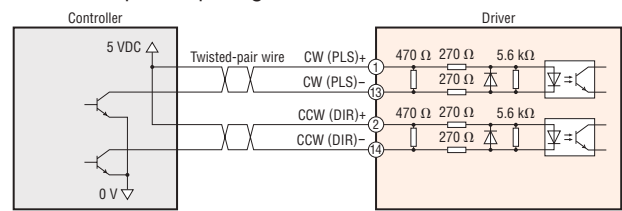


Note

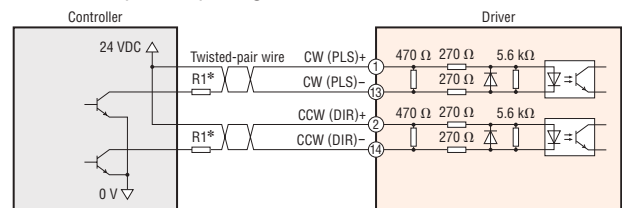
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

● When the pulse input signal is 5 VDC



● When the pulse input signal is 24 VDC



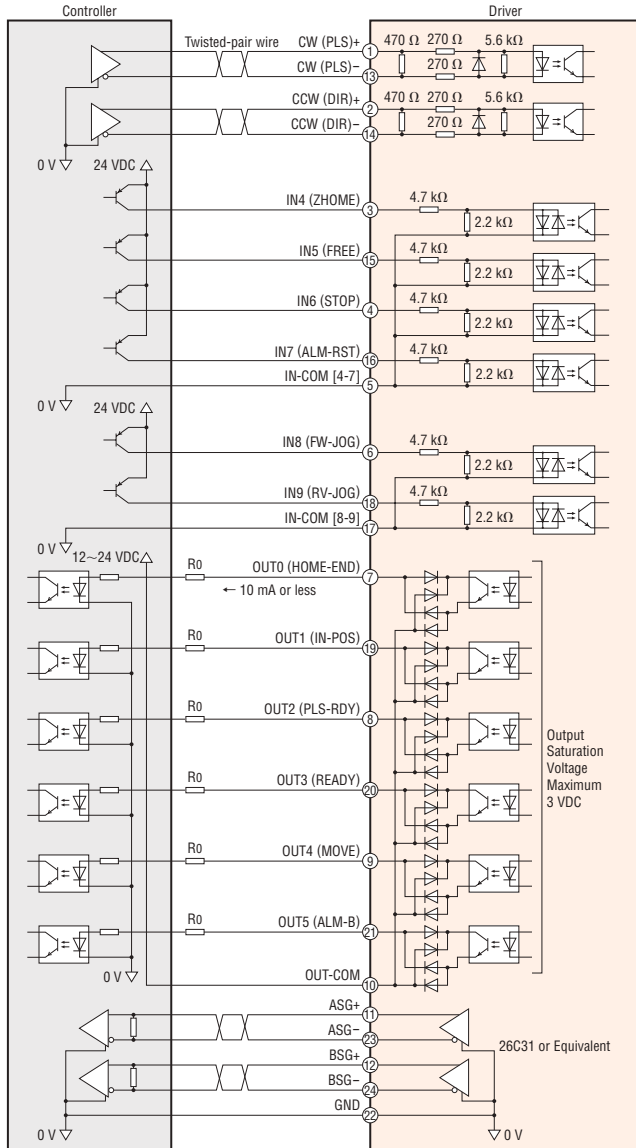
* R_1 : 1.2 k Ω ~2.2 k Ω , 0.5 W or more

Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 k Ω ~2.2 k Ω , 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

•Connection Diagram for Connection with Current Source Output Circuit

When the pulse input is the line driver

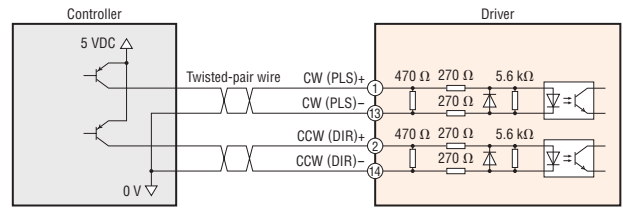


Note

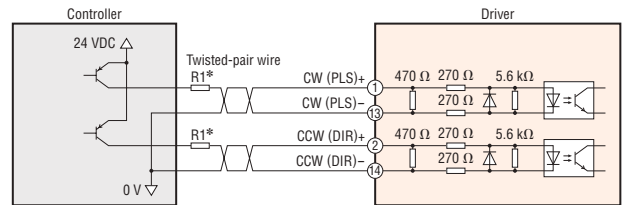
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

•When the pulse input signal is 5 VDC



•When the pulse input signal is 24 VDC



* R_1 : 1.2 k Ω ~2.2 k Ω , 0.5 W or more

Note

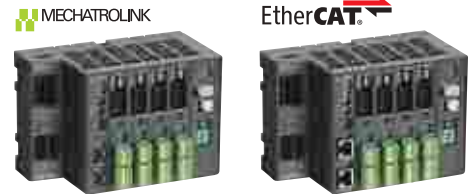
- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 k Ω ~2.2 k Ω , 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

AZ Series Multi-Axis Drivers

DC Power Supply Input

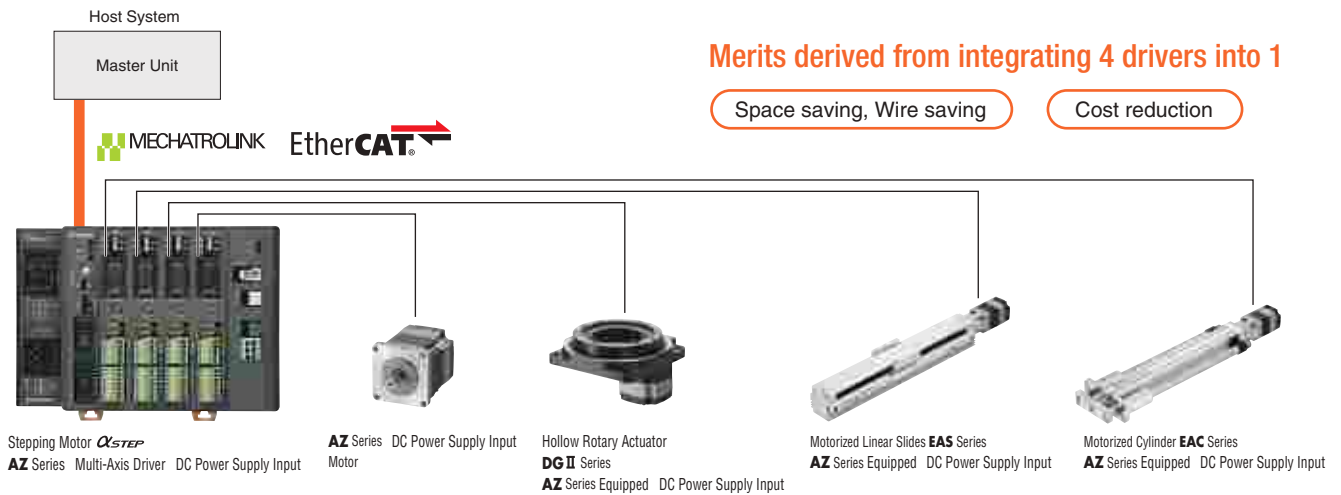
MECHATROLINK-III Compatible
EtherCAT Drive Profile Compatible

The multi-axis drivers can be connected to DC power supply motors of our **AZ** Series and to the motorized actuators equipped with motors. We provide the multi-axis drivers that can support MECHATROLINK-III, or EtherCAT Drive Profile.
No. of axes: 2, 3, or 4



Features

Multi-axis driver (up to 4 axes) that reduces space and cost



The above motors and motorized actuators connected to the stepping motor are representative examples.

ESI File

We provide an ESI file to allow you to use EtherCAT-compatible products more easily. The ESI file can be downloaded from the Oriental Motor website. Contact OMRON Corporation for connection with the PLCs made by the company. An EtherCAT connection guide is available.

Applicable Product Series

The **AZ** Series multi-axis driver DC power supply input can be used in combination with the motorized actuators listed below.

- Compact linear actuators **DRS2** Series **AZ** Series equipped
- Hollow rotary actuators **DG II** Series **AZ** Series equipped DC power supply input
- Motorized linear slides **EAS** Series **AZ** Series equipped DC power supply input
- Motorized linear slides **EZS** Series **AZ** Series equipped DC power supply input
- Motorized cylinders **EAC** Series **AZ** Series equipped DC power supply input

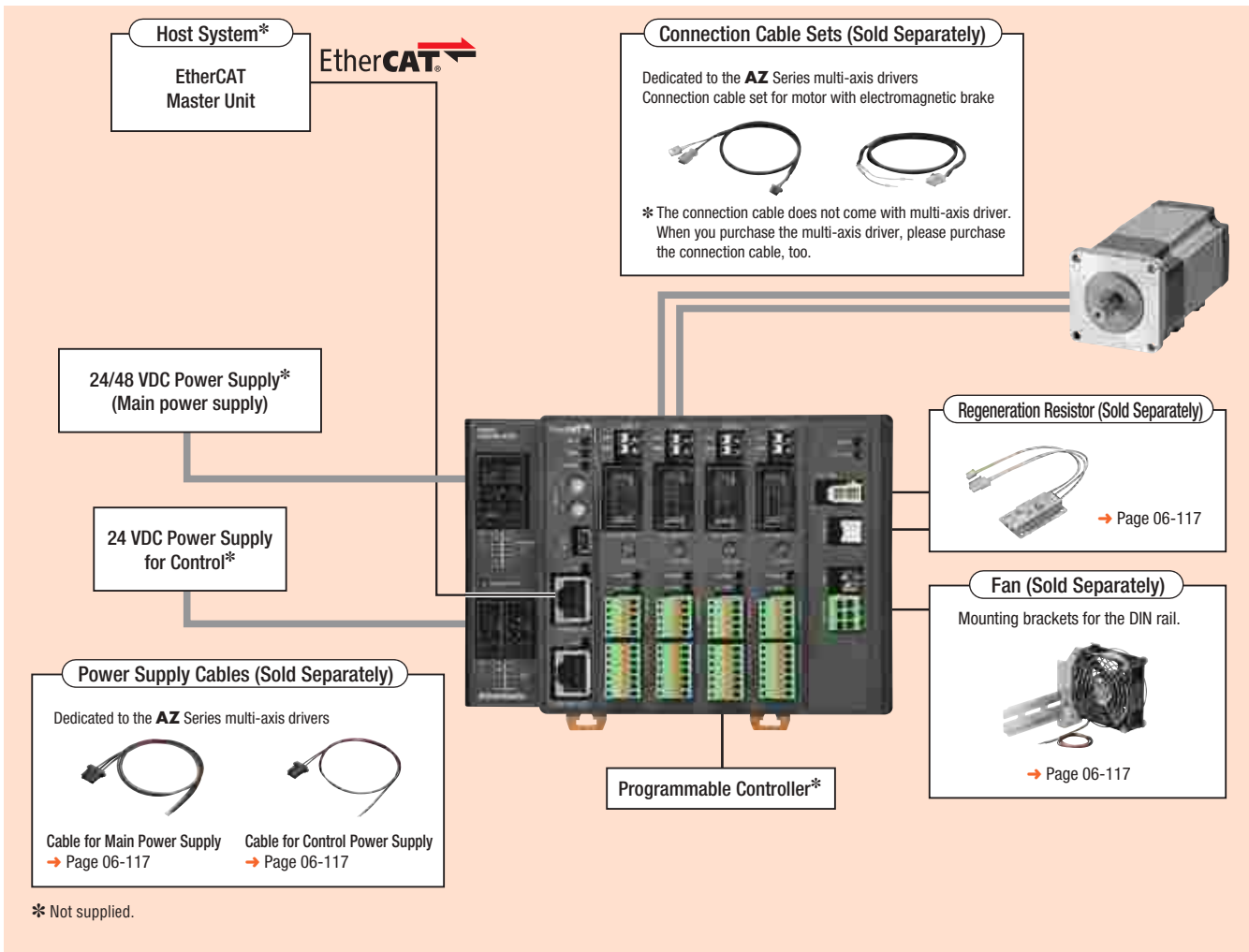
For the details of the motors and motorized actuators that can be combined, refer to the Oriental Motor website or the catalog of each Series.



System Configuration

When supporting EtherCAT Drive Profile

This is a sample system configuration showing a combination with standard type **AZ** Series DC power supply input with electromagnetic brake.



System Configuration Example

AZ Series			Sold Separately			
Motor	Driver	Connection Cable Sets	Cable for Main Power Supply	Cable for Control Power Supply	Regeneration Resistor	Fan
AZM66MK	AZD4A-KED	CC030VZFBA	LC03D06A	LC02D06A	RGC40	V-MD825B24L
SGD625	SGD1,600	SGD111	SGD19	SGD16	SGD56	SGD64

The system configuration shown above is an example. Other combinations are available.

Note

The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Multi-Axis Driver

AZD 4A - K ED

① ② ③ ④

Dedicated to the AZ Series Multi-Axis Drivers

Connection Cable Sets/Flexible Connection Cable Sets

◇ Connection Cable for Motor

CC 050 V Z □ F A

① ② ③ ④ ⑤ ⑥ ⑧

◇ Connection Cable Set for Motor with Electromagnetic Brake

CC 050 V Z F B A

① ② ③ ④ ⑥ ⑦ ⑧

①	Driver Type	AZD : AZ Series Driver
②	No. of Axes	2A : 2 Axes 3A : 3 Axes 4A : 4 Axes
③	Power Supply Input	K : 24 VDC/48 VDC
④	Network Type	M3 : MECHATROLINK-III ED : EtherCAT Drive Profile

①		CC : Cable
②	Length	005 : 0.5 m 010 : 1 m 015 : 1.5 m 020 : 2 m 025 : 2.5 m 030 : 3 m 040 : 4 m 050 : 5 m 070 : 7 m 100 : 10 m 150 : 15 m 200 : 20 m
③	Reference Number	
④	Applied Model	Z : For AZ Series
⑤	Reference Number	Blank: For frame size 42 mm (40 mm for the HPG Geared Type), 60 mm 2 : For frame size 20 mm, 28 mm (30 mm for the harmonic Geared Type)
⑥	Cable Type	F : Connection Cable Set R : Flexible Connection Cable Set
⑦	Description	B : For the product with Electromagnetic Brakes
⑧	Driver Type	A : For Multi-Axis Drivers

Product Line

Multi-Axis Drivers

◇ MECHATROLINK-III Compatible

Product Name	No. of Axes	List Price
AZD2A-KM3	2 axes	SGD1,000
AZD3A-KM3	3 axes	SGD1,325
AZD4A-KM3	4 axes	SGD1,600



◇ EtherCAT Drive Profile Compatible

Product Name	No. of Axes	List Price
AZD2A-KED	2 axes	SGD1,000
AZD3A-KED	3 axes	SGD1,325
AZD4A-KED	4 axes	SGD1,600



● Connection Cable Sets/Flexible Connection Cable Sets dedicated to the **AZ** Series Multi-Axis Drivers

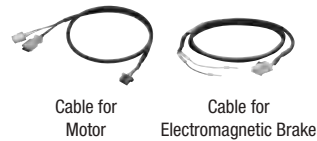


◇ Connection Cable for Motor

Length L (m)	For Frame Size 20 mm, 28 mm				For Frame Size 42 mm, 60 mm			
	Connection Cable	List Price	Flexible Connection Cable	List Price	Connection Cable	List Price	Flexible Connection Cable	List Price
0.5	CC005VZ2FA	SGD71	CC005VZ2RA	SGD84	CC005VZFA	SGD71	CC005VZRA	SGD84
1	CC010VZ2FA	SGD71	CC010VZ2RA	SGD84	CC010VZFA	SGD71	CC010VZRA	SGD84
1.5	CC015VZ2FA	SGD76	CC015VZ2RA	SGD92	CC015VZFA	SGD76	CC015VZRA	SGD92
2	CC020VZ2FA	SGD81	CC020VZ2RA	SGD99	CC020VZFA	SGD81	CC020VZRA	SGD99
2.5	CC025VZ2FA	SGD86	CC025VZ2RA	SGD106	CC025VZFA	SGD86	CC025VZRA	SGD106
3	CC030VZ2FA	SGD91	CC030VZ2RA	SGD111	CC030VZFA	SGD91	CC030VZRA	SGD111
4	CC040VZ2FA	SGD101	CC040VZ2RA	SGD126	CC040VZFA	SGD101	CC040VZRA	SGD126
5	CC050VZ2FA	SGD110	CC050VZ2RA	SGD141	CC050VZFA	SGD110	CC050VZRA	SGD141
7	CC070VZ2FA	SGD136	CC070VZ2RA	SGD180	CC070VZFA	SGD136	CC070VZRA	SGD180
10	CC100VZ2FA	SGD176	CC100VZ2RA	SGD236	CC100VZFA	SGD176	CC100VZRA	SGD236
15	CC150VZ2FA	SGD244	CC150VZ2RA	SGD333	CC150VZFA	SGD244	CC150VZRA	SGD333
20	CC200VZ2FA	SGD310	CC200VZ2RA	SGD426	CC200VZFA	SGD310	CC200VZRA	SGD426

◇ Connection Cable Set for Motor with Electromagnetic Brake

Length L (m)	For Frame Size 42 mm, 60 mm		Flexible Connection Cable Set	
	Connection Cable Set	List Price	Flexible Connection Cable Set	List Price
0.5	CC005VZFBA	SGD86	CC005VZRBA	SGD114
1	CC010VZFBA	SGD86	CC010VZRBA	SGD114
1.5	CC015VZFBA	SGD93	CC015VZRBA	SGD124
2	CC020VZFBA	SGD98	CC020VZRBA	SGD134
2.5	CC025VZFBA	SGD105	CC025VZRBA	SGD143
3	CC030VZFBA	SGD111	CC030VZRBA	SGD151
4	CC040VZFBA	SGD123	CC040VZRBA	SGD171
5	CC050VZFBA	SGD135	CC050VZRBA	SGD191
7	CC070VZFBA	SGD166	CC070VZRBA	SGD240
10	CC100VZFBA	SGD214	CC100VZRBA	SGD311
15	CC150VZFBA	SGD294	CC150VZRBA	SGD433
20	CC200VZFBA	SGD373	CC200VZRBA	SGD551



Note

● As for the cables dedicated to multi-axis drivers, we provide only connection cables. You cannot use extension cables for the **AZ** Series for multi-axis drivers.

■ Accessories

● Multi-Axis Drivers

Type and No. of Axes	Accessories	Connector for CN1	Connector for CN3	Contact for CN1, CN2	Connector Cap for CN4A, CN4B	Connector for CN9	Connector for CN10	Operating Manual
		MECHATROLINK-III Compatible	2 axes	2 pieces	2 pieces	10 pieces	2 pieces	2 pieces
EtherCAT Compatible	3 axes	2 pieces	2 pieces	10 pieces	2 pieces	3 pieces	3 pieces	1 set
	4 axes	2 pieces	2 pieces	10 pieces	2 pieces	4 pieces	4 pieces	1 set

■ Specifications *

● Power Supply Input

For main power supply: 24 VDC/48 VDC ±10% 7.0 A (Maximum 7.0 A Average 4.0 A or less during use)

For control power supply: 24 VDC ±10% 1.5 A (For motors with electromagnetic brake, use power supply, 24 VDC ±5%)

(For motors with electromagnetic brake (when using a 20 cm connection cable), use power supply, 24 VDC ±4%)

● Communication Specifications

◇ MECHATROLINK-III Specifications

Items	Description
Baud Rate	100 Mbps
Transmission Period	0.5 ms/1 ms/2 ms/4 ms
Station Address	03 h~EF h (Initial value: 03 h)
Transmission Bytes	32/48 bytes (Initial value: 48 bytes)
Profile	Standard stepping motor drive profile Standard servo profile

◇ EtherCAT Specifications

Items	Description
Baud Rate	100 Mbps
Communication Period	0.5 ms/1 ms/2 ms/3 ms/4 ms/5 ms/6 ms/7 ms/8 ms
Node Address	0~255 (00 h~FF h, Initial value: 00 h)
Communication Protocol	Proprietary protocol for EtherCAT (CoE) CiA402 drive profile

*Compatible with EtherCAT drive profile only.

General Specifications

Items	Description
Degree of Protection	IP10
Operating Environment	Ambient temperature: 0~+50°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 1000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Storage Condition Transportation Environment	Ambient temperature: -25~+70°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 3000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Insulation Resistance	When a 500 VDC megger is applied to the location below, the resistance to be measured is 100 MΩ or more. · FG terminal – Power supply terminal
Dielectric Strength Voltage	No abnormality is found with the following application for 1 minute: · MECHATROLINK-III Compatible: FG terminal – Power supply terminal 500 VAC 50/60 Hz Leakage current 15 mA or less · EtherCAT Compatible: FG terminal – Power supply terminal 1 kVAC 50/60 Hz Leakage current 10 mA or less

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. In addition, make sure that the ABZO sensor of the motor is exempt from the above measurement and test.

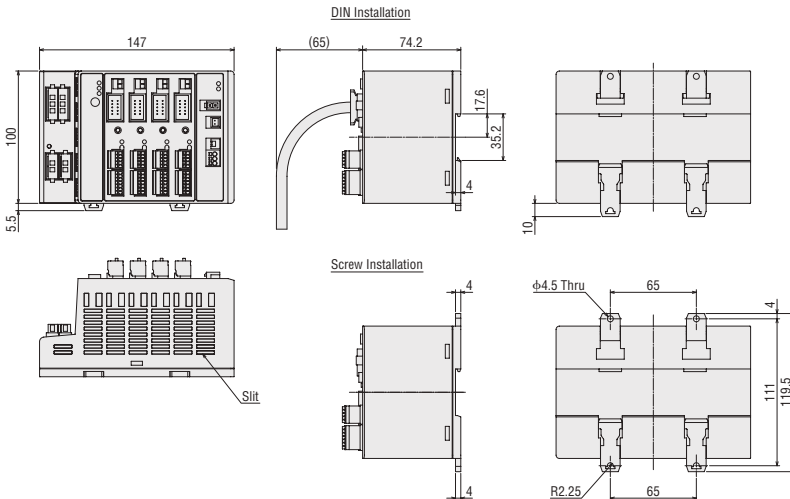
Dimensions (Unit: mm)

Multi-Axis Drivers

2D & 3D CAD

No. of Axes	Type	MECHATROLINK-III Compatible		EtherCAT Compatible		Mass kg
		Product Name	2D CAD	Product Name	2D CAD	
2 Axes	AZD2A-KM3	B1200		AZD2A-KED	B1206	0.39
3 Axes	AZD3A-KM3	B1201		AZD3A-KED	B1207	0.42
4 Axes	AZD4A-KM3	B1202		AZD4A-KED	B1208	0.45

- The size is commonly applied to 2, 3, and 4 axis drivers.



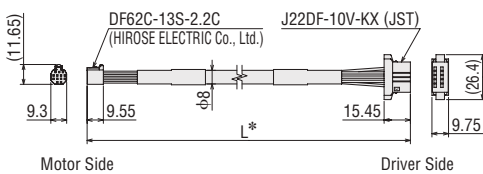
Accessories

- Connector for main power supply: F32FSS-03V-KX (JST)
- Connector for control power supply: F32FSS-02V-KX (JST)
- Contact for main power supply connectors and control power supply connectors: LF3F-41GF-P2.0 (JST)
- Input signal connector: FK-MC 0,5/ 5-ST-2,5 (PHOENIX CONTACT)
- Output signal connector: FK-MC 0,5/ 7-ST-2,5 (PHOENIX CONTACT)

Connection Cable Sets, Flexible Connection Cable Sets

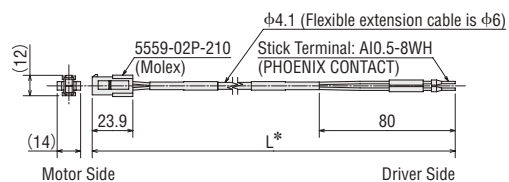
Cable for Motor

For frame size 20 mm, 28 mm

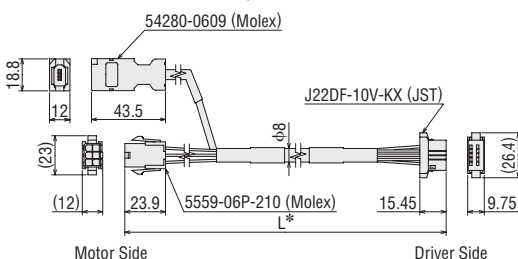


Cable for Electromagnetic Brake

For frame size 42 mm, 60 mm



For frame size 42 mm, 60 mm



*"L" in the above dimensions is replaced by any Length L (m) in "Product Line" on page 06-115.

Accessories Dedicated to Multi-Axis Drivers

Power Supply Cables (Sold separately)

These lead wires, equipped with a connector, are dedicated to the **AZ** Series multi-axis drivers. The wires easily allow connection with main power supply and control power supply.

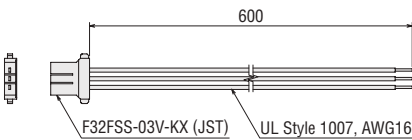
Product Line

Product Name	Type	List Price
LC03D06A	For main power supply	SGD19
LC02D06A	For control power supply	SGD16

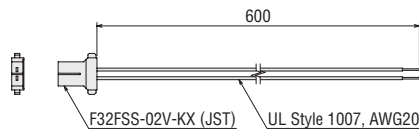


Dimensions (Unit: mm)

Cable for main power supply LC03D06A



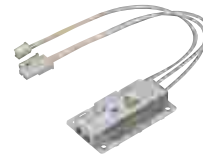
Cable for control power supply LC02D06A



Regeneration Resistor

During vertical drive (gravitational operation) or sudden start/stop in high inertia, an external force causes the motor to rotate and function as a power generator. When the regenerative power exceeds the driver's regenerative power absorption capacity, it may cause damage to the motor. In such a case, the regeneration resistor is connected to the driver to convert regenerative energy into thermal energy for dissipation.

When 24 VDC is used for a multi-axis driver, alarms tend to be easily generated. Therefore, we recommend to use a regeneration resistor.



Product Line

Product Name	List Price
RGC40	SGD56

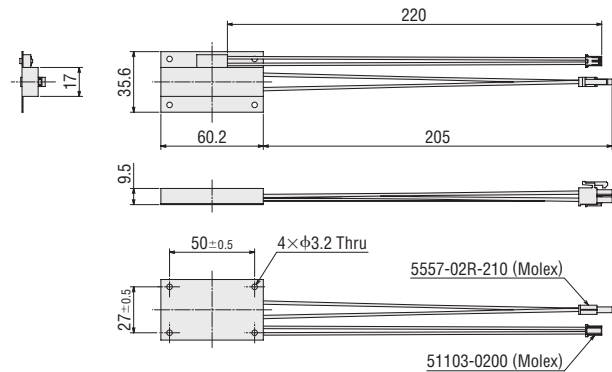
Specifications

Items	Description
Allowable Power Consumption	Continuous regenerative power: 40 W* Instantaneous regenerative power: 400 W
Resistance Value	15 Ω
Thermostat Operating Temperature	Operation: Opens at 95±5°C Reset: Closes at 65±15°C (Normally closed)
Thermostat Electrical Rating	250 VAC, 0.5 A (Min. current 1.5 VDC, 1 mA)

*Install the regeneration resistor in the location that has the same heat radiation capability as the heat sink (Material: Aluminum 180×150 mm Thickness 2 mm).

Dimensions (Unit: mm)

Mass: 0.03 kg **2D CAD** B1209 **3D CAD**



Fan

DC propeller fan for circulating air in the control panel or cooling a certain part.

Product Line

Product Name	Type	List Price
V-MD825B24L	With DIN rail mounting bracket	SGD64



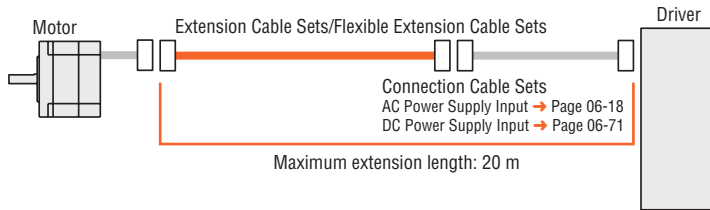
Accessories (Sold Separately)

Extension Cable Sets, Flexible Extension Cable Sets

For the **AZ** Series, we provide sets of connection cables and flexible extension cables that can be connected to sets of connection cables for extension.

For standard motors, sets of motor cables and encoder cables are provided. For motors with an electromagnetic brake, sets of motor cables, encoder cables, and electromagnetic brake cables are provided.

Use a flexible connection cable set or flexible extension cable set if the cable will be bent repeatedly.



Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable. The maximum length of the cable extension is 20 m.

AC Power Supply Input

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

Extension Cable Sets

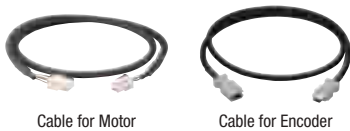
◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZFT	1		SGD71
CC020VZFT	2		SGD81
CC030VZFT	3		SGD91
CC050VZFT	5		SGD110
CC070VZFT	7		SGD136
CC100VZFT	10		SGD176
CC150VZFT	15		SGD244

Flexible Extension Cable Sets

◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZRT	1		SGD84
CC020VZRT	2		SGD99
CC030VZRT	3		SGD111
CC050VZRT	5		SGD141
CC070VZRT	7		SGD180
CC100VZRT	10		SGD236
CC150VZRT	15		SGD333

◇ For Motors with Electromagnetic Brake



Product Name	Length	L (m)	List Price
CC010VZFBT	1		SGD86
CC020VZFBT	2		SGD98
CC030VZFBT	3		SGD111
CC050VZFBT	5		SGD135
CC070VZFBT	7		SGD166
CC100VZFBT	10		SGD214
CC150VZFBT	15		SGD294

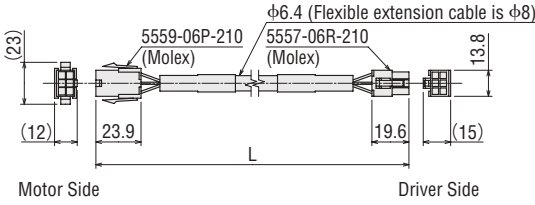
◇ For Motors with Electromagnetic Brake



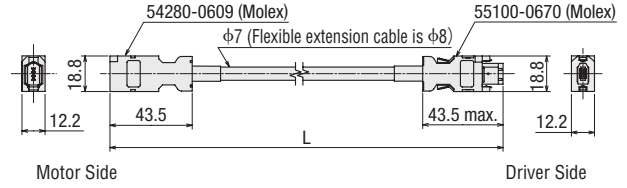
Product Name	Length	L (m)	List Price
CC010VZRBT	1		SGD114
CC020VZRBT	2		SGD134
CC030VZRBT	3		SGD151
CC050VZRBT	5		SGD191
CC070VZRBT	7		SGD240
CC100VZRBT	10		SGD311
CC150VZRBT	15		SGD433

Dimensions (Unit: mm)

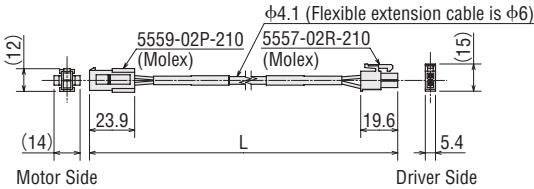
Cable for Motor



Cable for Encoder



Cable for Electromagnetic Brake



DC Power Supply Input

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

[For **AZM14**, **AZM15**, **AZM24**, **AZM26**]

- Extension Cables
- ◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZ2FT	1		SGD71
CC020VZ2FT	2		SGD81
CC030VZ2FT	3		SGD91
CC050VZ2FT	5		SGD110
CC070VZ2FT	7		SGD136
CC100VZ2FT	10		SGD176
CC150VZ2FT	15		SGD244

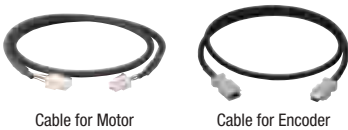
- Flexible Extension Cables
- ◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZ2RT	1		SGD84
CC020VZ2RT	2		SGD99
CC030VZ2RT	3		SGD111
CC050VZ2RT	5		SGD141
CC070VZ2RT	7		SGD180
CC100VZ2RT	10		SGD236
CC150VZ2RT	15		SGD333

[For **AZM46**, **AZM48**, **AZM66**, **AZM69**]

- Extension Cable Sets
- ◇ For Standard Motors



Cable for Motor

Cable for Encoder

Product Name	Length	L (m)	List Price
CC010VZFT	1		SGD71
CC020VZFT	2		SGD81
CC030VZFT	3		SGD91
CC050VZFT	5		SGD110
CC070VZFT	7		SGD136
CC100VZFT	10		SGD176
CC150VZFT	15		SGD244

- ◇ For Motors with Electromagnetic Brake



Cable for Motor

Cable for Encoder

Cable for Electromagnetic Brake

Product Name	Length	L (m)	List Price
CC010VZFBT	1		SGD86
CC020VZFBT	2		SGD98
CC030VZFBT	3		SGD111
CC050VZFBT	5		SGD135
CC070VZFBT	7		SGD166
CC100VZFBT	10		SGD214
CC150VZFBT	15		SGD294

● Flexible Extension Cable Sets

◇ For Standard Motors



Cable for Motor

Cable for Encoder

Product Name	Length	L (m)	List Price
CC010VZRT	1		SGD84
CC020VZRT	2		SGD99
CC030VZRT	3		SGD111
CC050VZRT	5		SGD141
CC070VZRT	7		SGD180
CC100VZRT	10		SGD236
CC150VZRT	15		SGD333

◇ For Motors with Electromagnetic Brake



Cable for Motor

Cable for Encoder

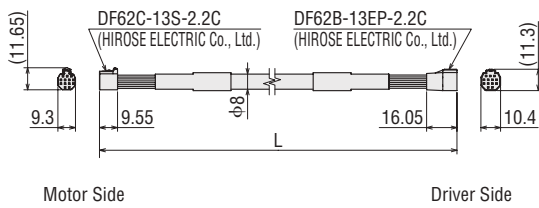
Cable for Electromagnetic Brake

Product Name	Length	L (m)	List Price
CC010VZRB	1		SGD114
CC020VZRB	2		SGD134
CC030VZRB	3		SGD151
CC050VZRB	5		SGD191
CC070VZRB	7		SGD240
CC100VZRB	10		SGD311
CC150VZRB	15		SGD433

■ Dimensions (Unit: mm)

[For AZM14, AZM15, AZM24, AZM26]

● Cable for Motor

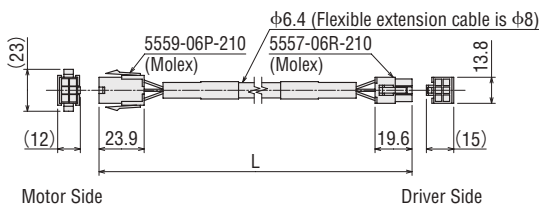


Motor Side

Driver Side

[For AZM46, AZM48, AZM66, AZM69]

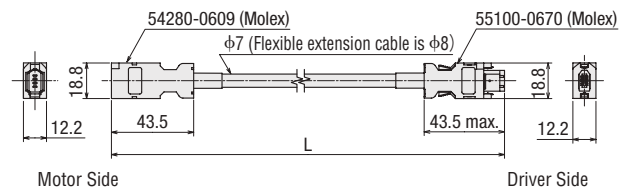
● Cable for Motor



Motor Side

Driver Side

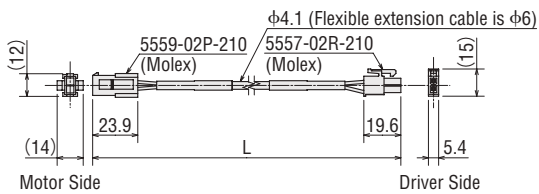
● Cable for Encoder



Motor Side

Driver Side

● Cable for Electromagnetic Brake



Motor Side

Driver Side

■ Notes on Use of Cables

→ Refer to page 06-55.

Support Software MEXE02

In addition to operating data and various parameter settings with a computer, you can perform teaching and monitor I/O and operating speed waveform with support software.

Support software can be downloaded from the Oriental Motor website.

Oriental Motor also provides media.

Visit our website, or contact the nearest Oriental Motor sales office.

Operating Environment

Computer

Recommended CPU*1	Intel Core processor 2 GHz or faster (OS must be supported)
Display	Video adapter and monitor with a minimum resolution of XGA (1024 × 768)
Recommended Memory*1	32 bit (x86) edition: 1 GB or more 64 bit (x64) edition: 2 GB or more
Hard Disk*2	Free disk space of at least 60 MB
USB Port	USB2.0 1 port

*1 The system requirements for the OS must be met.

*2 **MEXE02** requires Microsoft.NET Framework 4 Client Profile. If it is not installed, it will be installed automatically. An additional 1.5 GB of free space may be required for 64-bit (x64) edition OS and 600 MB for 32-bit (x86) edition OS.

● Windows and Windows Vista are registered trademarks of Microsoft Corporation in the United States and other countries.

● Intel and Core are registered trademarks or trademarks of Intel Corporation in the United States and other countries.

● For the latest information of operating environment, refer to the Oriental Motor website.

Note

● Depending on your system environment, the required memory and hard disk may vary.

● When using media to install the support software, you need to prepare a drive for the media.

Operating System (OS)

The 32 bit (x86) editions and 64 bit (x64) editions are supported.

- Microsoft Windows XP Service Pack 3*
- Microsoft Windows Vista Service Pack 2
- Microsoft Windows 7 Service Pack 1
- Microsoft Windows 8
- Microsoft Windows 8.1
- Microsoft Windows 10

*For the 64-bit (x64) version, Service Pack 2 is used.

Computer and Driver Connection

Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less Configuration: A-mini-B

RS-485 Communication Cables

This cable is used to connect drivers when the multi-axis operation of built-in controller types or pulse input types with RS-485 communication is performed.

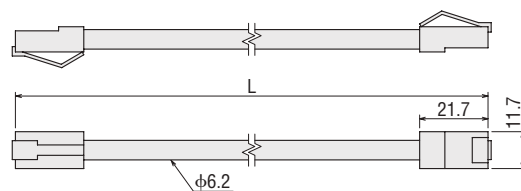
It also connects the network converter to the driver.



Product Line

Product Name	Applicable Drivers	Length L (m)	List Price
CC001-RS4	DC Power Supply Input Driver	0.1	SGD32
CC002-RS4	AC Power Supply Input Driver DC Power Supply Input Driver	0.25	SGD37

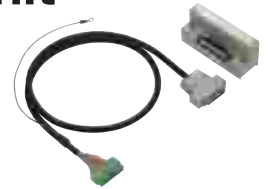
Dimensions (Unit: mm)



Connector – Terminal Block Conversion Unit

A conversion unit that connects a driver to a programmable controller using a terminal block.

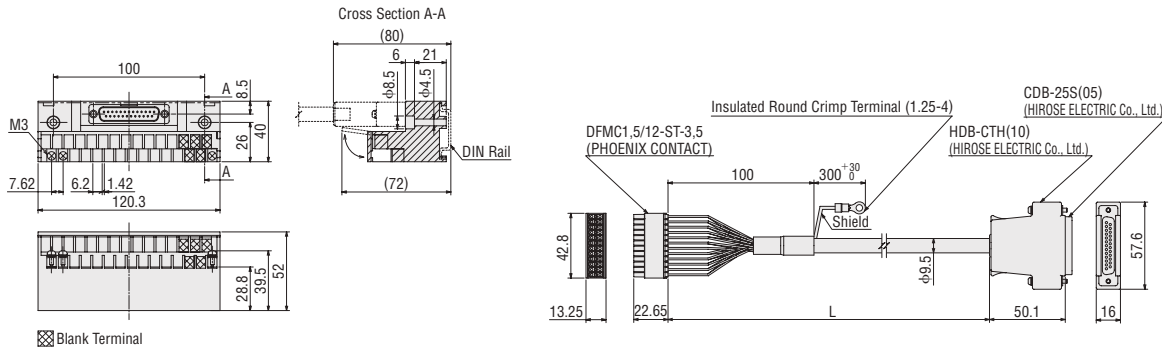
- Includes a signal name plate for easy, one-glance identification of driver signal names
- Enables both DIN rail installation and screw installation
- Employs a double shield cable



Product Line

Product Name	Length L (m)	List Price
CC24T05E	0.5	SGD213
CC24T10E	1	SGD219

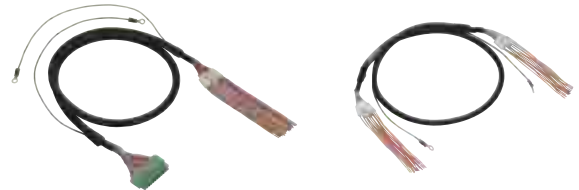
Dimensions (Unit: mm)



General-Purpose Cables for I/O Signals

General-purpose multi-core cables provide convenient connection between a driver and programmable controller.

- Employs a double shield cable
- Core wire AWG24



Cables with lead wires on one side

Cables with lead wires on both sides

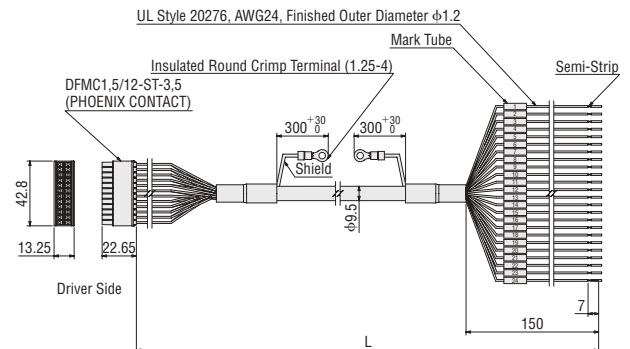
Cables with Lead Wires on One Side

Since cables on the driver side are connected to the connector, labor and time can be saved.

Product Line

Number of Lead Line Cores	Length L		
	0.5 m	1 m	2 m
24	CC24D005C-1	CC24D010C-1	CC24D020C-1
	SGD88	SGD94	SGD106

Dimensions (Unit: mm)



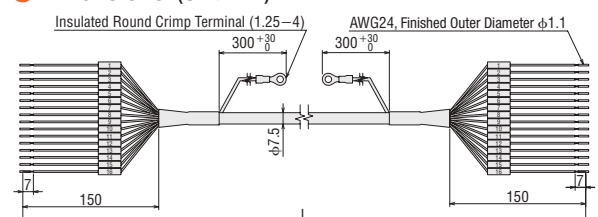
Cables with Lead Wires on Both Sides

In accordance with the number of I/O signals to be connected, select the optimum cable.

Product Line

Number of Lead Line Cores	Length L			
	0.5 m	1 m	1.5 m	2 m
6	CC06D005B-1	CC06D010B-1	CC06D015B-1	CC06D020B-1
	SGD17	SGD19	SGD21	SGD23
10	CC10D005B-1	CC10D010B-1	CC10D015B-1	CC10D020B-1
	SGD19	SGD21	SGD24	SGD26
12	CC12D005B-1	CC12D010B-1	CC12D015B-1	CC12D020B-1
	SGD21	SGD24	SGD27	SGD30
16	CC16D005B-1	CC16D010B-1	CC16D015B-1	CC16D020B-1
	SGD22	SGD25	SGD28	SGD31

Dimensions (Unit: mm)



MCV Couplings

This one-piece coupling is made with anti-vibration rubber molded between aluminum alloy hubs.



Product Line

Product Name	List Price
MCV15 □	SGD94
MCV19 □	SGD90
MCV25 □	SGD100
MCV30 □	SGD105

● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

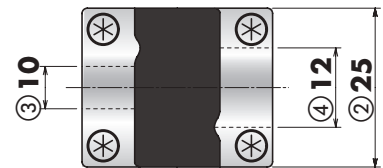
Product Number Code

MCV 25 10 12

① ② ③ ④

①	MCV Coupling
②	Outer Diameter of Coupling
③	Inner Diameter d1 (Smaller inner diameter) (06A represents $\phi 6.35$ mm)
④	Inner Diameter d2 (Larger inner diameter) (06A represents $\phi 6.35$ mm)

● For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Coupling Selection Table

- Select the coupling based on the criteria below.
 - The output torque of the motor is equal to or under the normal torque of the coupling.
 - Motor shaft diameter.

Type	Applicable Product		Coupling Type	Motor Shaft Diameter mm	Driven Shaft Diameter mm												
	Frame Size	Product Name			03	04	05	06	06A	08	10	12	14	15			
					$\phi 3$	$\phi 4$	$\phi 5$	$\phi 6$	$\phi 6.35$	$\phi 8$	$\phi 10$	$\phi 12$	$\phi 14$	$\phi 15$			
Standard Type	20 mm	AZM14, AZM15	MCV15	04	$\phi 4$		●	●	●								
	28 mm	AZM24, AZM26		05	$\phi 5$	●	●	●	●								
	42 mm	AZM46		06	$\phi 6$		●	●	●								
		AZM48	MCV19	08	$\phi 8$			●	●		●						
	60 mm	AZM66, AZM69	MCV25	10	$\phi 10$				●	●	●	●	●				
85 mm	AZM98, AZM911	MCV30	14	$\phi 14$						●	●	●	●	●	●	●	

● The product names of the applicable ones are described with text by which the product name can be identified.

MCS Couplings

This three-piece coupling adopts an aluminum alloy hub and a resin spider.



Product Line

Product Name	List Price
MCS20 □	SGD58
MCS30 □	SGD70
MCS40 □	SGD107
MCS55 □	SGD142
MCS65 □	SGD226

● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

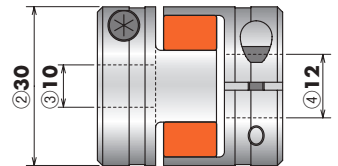
Product Number Code

MCS 30 10 12

① ② ③ ④

①	MCS Coupling
②	Outer Diameter of Coupling
③	Inner Diameter d1 (Smaller inner diameter) (F04 represents φ6.35 mm)
④	Inner Diameter d2 (Larger inner diameter) (F04 represents φ6.35 mm)

● For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Coupling Selection Table

- Select the coupling based on the criteria below.
 - The output torque of the motor is equal to or under the normal torque of the coupling.
 - Motor shaft diameter.
- When using a parallel key, select the coupling that matches the parallel key.

Applicable Product			Gear Ratio	Coupling Type	Motor Shaft Diameter mm	Driven Shaft Diameter mm													
Type	Frame Size	Product Name				05 φ5	06 φ6	F04 φ6.35	08 φ8	10 φ10	12 φ12	14 φ14	15 φ15	16 φ16	18 φ18	20 φ20	22 φ22	24 φ24	25 φ25
TS Geared Type	42 mm	AZM46-TS □	3.6, 7.2	MCS20	06	φ6	●	●	●	●	●	●	●	●	●	●	●	●	
			10, 20, 30	MCS30		●	●	●	●	●	●	●	●	●	●	●	●	●	
	60 mm	AZM66-TS □	3.6, 7.2	MCS30	10	φ10	●	●	●	●	●	●	●	●	●	●	●	●	
			10, 20, 30	MCS40		●	●	●	●	●	●	●	●	●	●	●	●	●	
	90 mm	AZM98-TS □	3.6, 7.2, 10	MCS55	18	φ18	●	●	●	●	●	●	●	●	●	●	●	●	
			20, 30	MCS65		●	●	●	●	●	●	●	●	●	●	●	●	●	
FC Geared Type	42 mm	AZM46-FC □	7.2, 10, 20, 30	MCS20	10	φ10	●	●	●	●	●	●	●	●	●	●	●	●	
				MCS30		●	●	●	●	●	●	●	●	●	●	●	●	●	
	60 mm	AZM66-FC □		MCS40	15	φ15	●	●	●	●	●	●	●	●	●	●	●	●	●
				MCS55		●	●	●	●	●	●	●	●	●	●	●	●	●	●
PS Geared Type	28 mm	AZM24-PS □	7.2, 10	MCS20	08	φ8	●	●	●	●	●	●	●	●	●	●	●	●	
			5	MCS20		●	●	●	●	●	●	●	●	●	●	●	●	●	
	42 mm	AZM46-PS □	7.2, 10, 25, 36, 50	MCS30	10	φ10	●	●	●	●	●	●	●	●	●	●	●	●	
			5, 7.2	MCS40		●	●	●	●	●	●	●	●	●	●	●	●	●	
	60 mm	AZM66-PS □	10, 25, 36, 50	MCS55	12	φ12	●	●	●	●	●	●	●	●	●	●	●	●	
		5, 7.2	MCS55	●		●	●	●	●	●	●	●	●	●	●	●	●		
	90 mm	AZM98-PS □	10, 25, 36, 50	MCS65	18	φ18	●	●	●	●	●	●	●	●	●	●	●	●	
HPG Geared Type	40 mm	AZM46-HP □	5, 9	MCS30	10	φ10	●	●	●	●	●	●	●	●	●	●	●	●	
	60 mm	AZM66-HP □	5, 15	MCS55		16	φ16	●	●	●	●	●	●	●	●	●	●	●	
	90 mm	AZM98-HP □	5, 15	MCS65	25	φ25	●	●	●	●	●	●	●	●	●	●	●	●	
Harmonic Geared Type	30 mm	AZM24-HS □	50, 100	MCS30	08	φ8	●	●	●	●	●	●	●	●	●	●	●	●	
	42 mm	AZM46-HS □	50, 100	MCS40		10	φ10	●	●	●	●	●	●	●	●	●	●	●	
	60 mm	AZM66-HS □	50, 100	MCS55	15	φ15	●	●	●	●	●	●	●	●	●	●	●	●	

- The product names of the applicable ones are described with text by which the product name can be identified.
- A number in the box □ in the product name indicates the gear ratio.

Motor Mounting Brackets

Mounting brackets are convenient for installation and securing a stepping motor and geared type stepping motor. The mounting bracket base is built with holes large enough to allow for adjustments of belt tension after a motor is installed.



Product Line

For Standard Type

Material: Aluminum alloy (SPCC)*

Surface treatment: Painting (Electroless nickel plating)*

Product Name	List Price	Motor Frame Size	Applicable Product
PFB28A	SGD15	28 mm	AZM24, AZM26
PAFOP	SGD14	42 mm	AZM46, AZM48
PALOP		60 mm	AZM66, AZM69
PAL2P-5	SGD16	85 mm	AZM98, AZM911
PAL4P-5			

*The specifications in the () apply to **PFB28A**.

● These installation brackets can be perfectly fitted to the pilot of the stepping motors. (Excluding **PALOP**)

● The motor installation screws are included.

For TS Geared Type

Material: Aluminum alloy

Surface treatment: Painting

Product Name	List Price	Motor Frame Size	Applicable Product
SOLOB	SGD25	42 mm	AZM46
SOL2M4	SGD30	60 mm	AZM66
SOL5M8	SGD38	90 mm	AZM98

For PS Geared Type

Material: SS400

Surface treatment: Electroless nickel plating

Product Name	List Price	Motor Frame Size	Applicable Product
PFA28G	SGD69	28 mm	AZM24
PFA42F	SGD75	42 mm	AZM46
PLA60G	SGD131	60 mm	AZM66
PLA90G	SGD156	90 mm	AZM98

● The motor installation screws are included.

For Harmonic Geared Type

Material: SS400

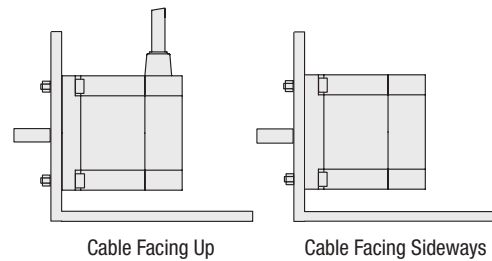
Surface treatment: Electroless nickel plating

Product Name	List Price	Motor Frame Size	Applicable Product
PFA42H	SGD75	42 mm	AZM46
PLA60H	SGD131	60 mm	AZM66
PLA90H	SGD156	90 mm	AZM98

● The motor installation screws are included.

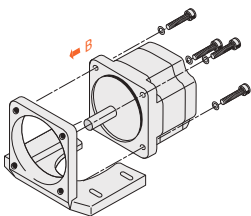
Motor Installation Direction

Since the cable comes out perpendicular with the motor, install the cable in a way that it faces upward or sideward.



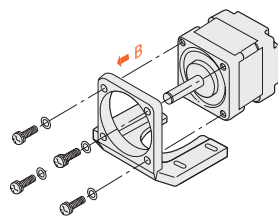
Installation Methods of the Motor

1 PAL2P-5, SOL2M4 PAL4P-5, SOL5M8



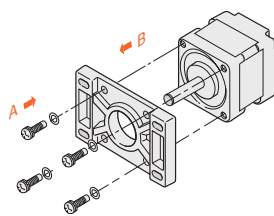
- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

2 PALOP, SOLOB



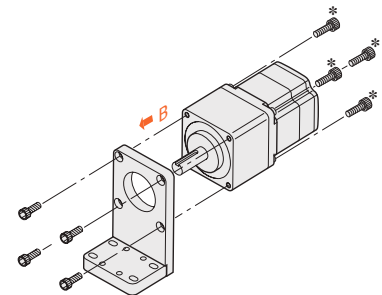
- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

3 PAFOP, PFB28A PFA28G, PFA42F PFA42H



- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (A, B).

4 PLA60G, PLA60H PLA90G, PLA90H



- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

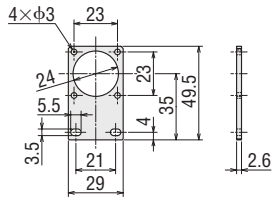
*For **PLA90H**, install the screws from (B) direction.

Dimensions (Unit: mm)

PFB28A

Mass: 25 g

2D CAD B645

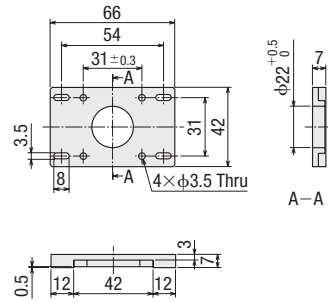


● Installation screws: M2.5 Length 5 mm
4 pieces included

PAFOP

Mass: 30 g

2D CAD B140 3D CAD

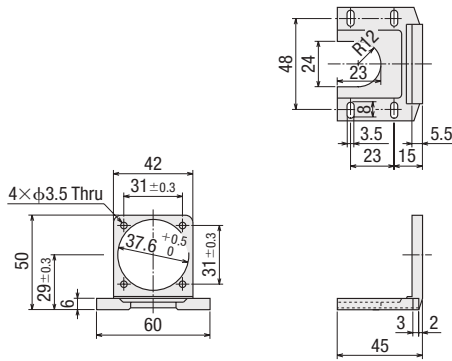


● Installation screws: M3 Length 7 mm
4 pieces included

PALOP

Mass: 35 g

2D CAD B139 3D CAD

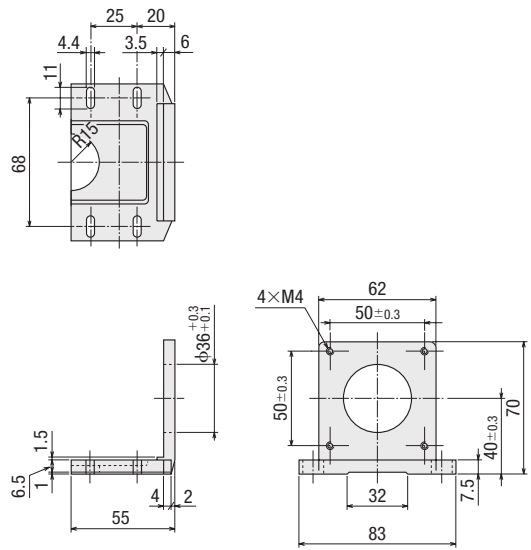


● Installation screws: M3 Length 10 mm
4 pieces included

PAL2P-5

Mass: 110 g

2D CAD B143 3D CAD

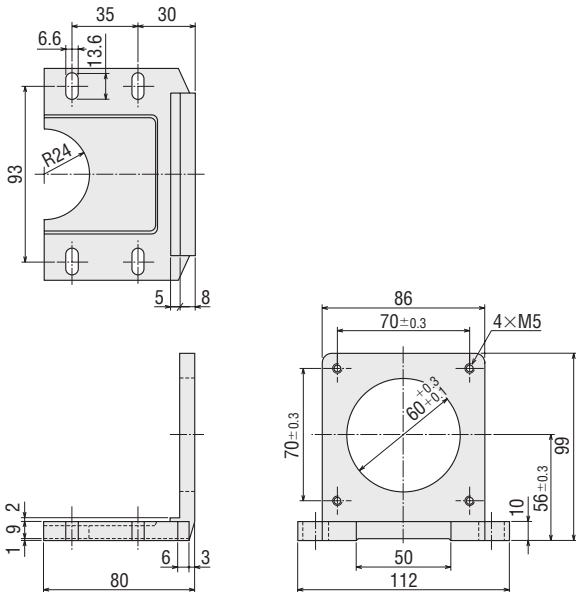


● Installation screws: M4 Length 12 mm
4 pieces included

PAL4P-5

Mass: 250 g

2D CAD B145 3D CAD

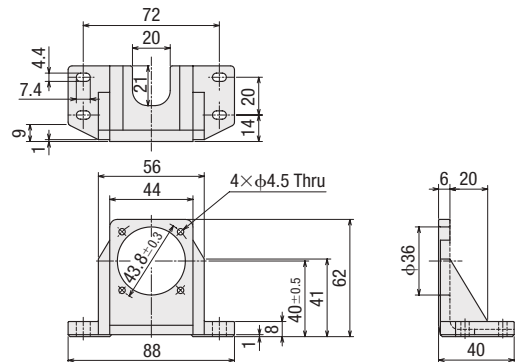


● Installation screws: M5 Length 16 mm
4 pieces included

SOLOB

Mass: 85 g

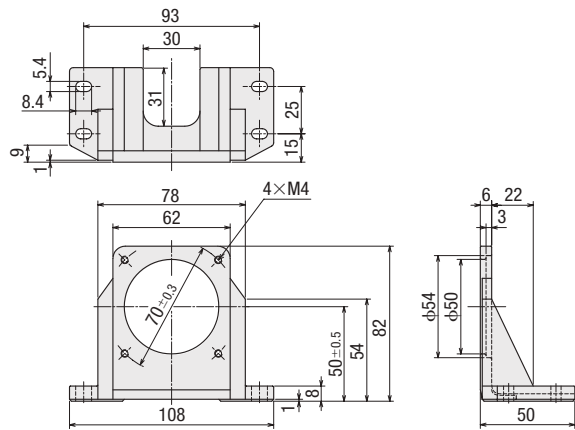
2D CAD B267 3D CAD



SOL2M4

Mass: 135 g

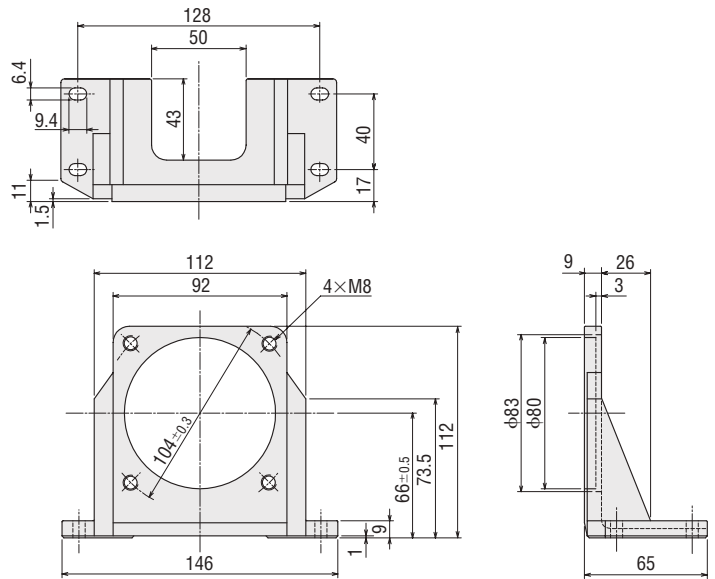
2D CAD A321 3D CAD



SOL5M8

Mass: 270 g

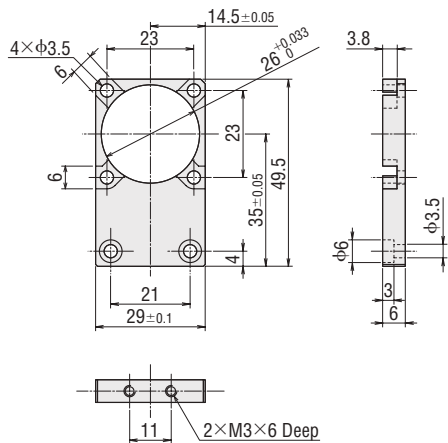
2D CAD A239 3D CAD



PFA28G

Mass: 40 g

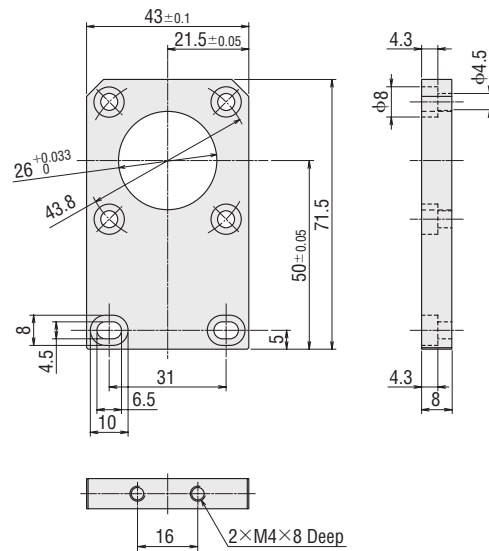
2D CAD B640



PFA42F

Mass: 150 g

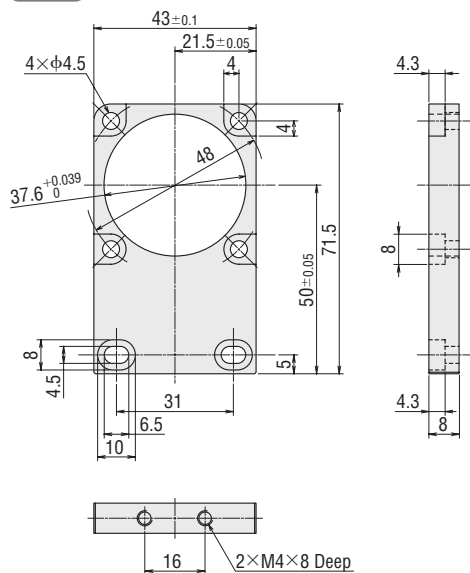
2D CAD B643



PFA42H

Mass: 120 g

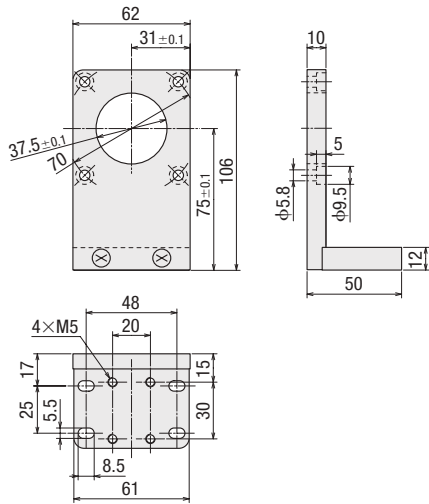
2D CAD B644



PLA60G

Mass: 0.7 kg

2D CAD B634

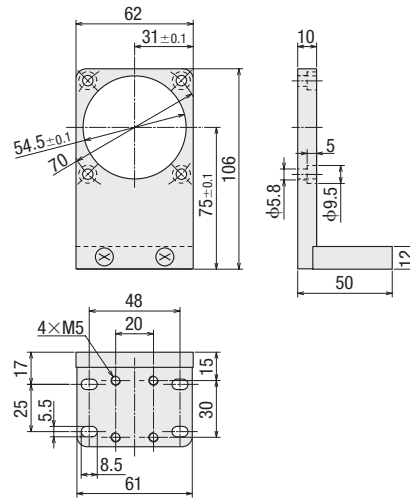


● Installation screws: M5 Length 15 mm
4 pieces included

PLA60H

Mass: 0.7 kg

2D CAD B635

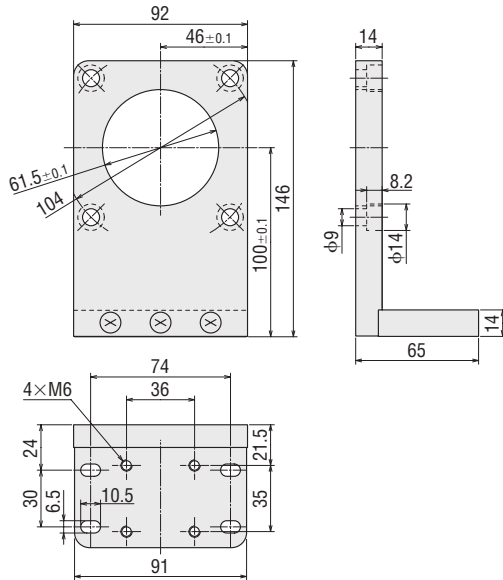


● Installation screws: M5 Length 15 mm
4 pieces included

PLA90G

Mass: 1.6 kg

2D CAD B637

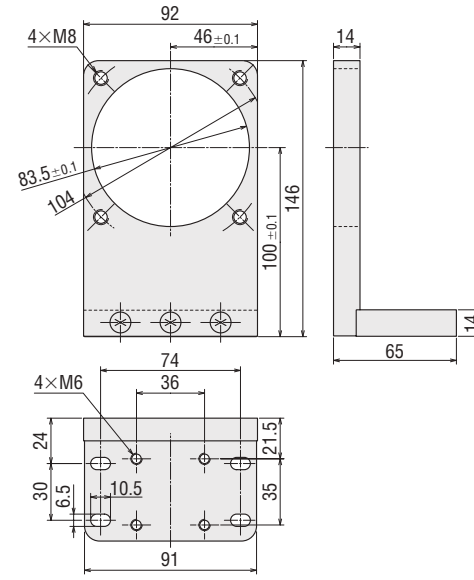


● Installation screws: M8 Length 20 mm
4 pieces included

PLA90H

Mass: 1.6 kg

2D CAD B638



● Installation screws: M8 Length 30 mm 4 pieces included
4 washers included

Regeneration Resistor

During vertical drive (gravitational operation) or sudden start/stop in high inertia, an external force causes the motor to rotate and function as a power generator. When the regenerative power exceeds the driver's regenerative power absorption capacity, it may cause damage to the motor.

In such a case, the regeneration resistor is connected to the driver to convert regenerative energy into thermal energy for dissipation.



Product Line

Product Name	Applicable Driver	List Price
RGB100	AC Power Supply Input Driver	SGD56

Specifications

Items	Description
Continuous Regenerative Power	50 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Operation: 150±7°C Reset: 145±12°C (Normally closed)
Thermostat Electrical Rating	120 VAC, 4 A 30 VDC, 4 A (Min. current 5 mA)

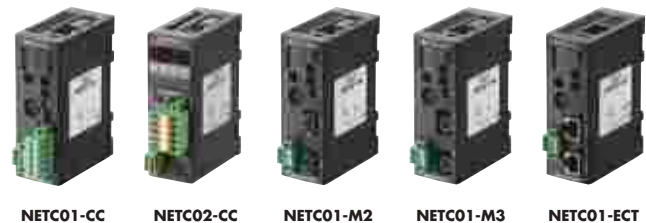
● Install the regeneration resistor in the location that has the same heat radiation capability as the heat sink (Material: Aluminum 350×350 mm Thickness 3 mm).

Network Converters

The network converter converts host communication protocol to Oriental Motor's original RS-485 communication protocol. You can use a network converter to control Oriental Motor's RS-485-compatible products within the host communication environment.

Product Line

Network Type	Product Name	List Price
CC-Link Ver.1.1 Compatible	NETC01-CC	SGD275
CC-Link Ver.2 Compatible	NETC02-CC	SGD275
MECHATROLINK-Ⅱ Compatible	NETC01-M2	SGD313
MECHATROLINK-Ⅲ Compatible	NETC01-M3	SGD350
Compatible with EtherCAT	NETC01-ECT	SGD350



STEPPING MOTORS

PKP Series



1.8°/0.9° Stepping Motors PKP Series/PK Series

● For detailed information about regulations and standards, please see the Oriental Motor website.



These products are high-torque 1.8°/0.9° stepping motors. A wide variety of products is available for selecting a motor that meets your design specifications.

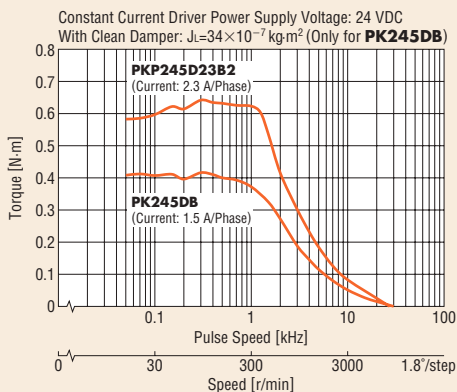
- Standard Type with a Resolution of 200 Steps per Revolution (Basic step angle: 1.8°/step)
- High-Resolution Type with a Resolution of 400 Steps per Revolution (Basic step angle: 0.9°/step)
- Oriental Motor's Flattest Type of 1.8° Stepping Motor
- High-Torque and High-Resolution **SH** Geared Type
- Bipolar (4 lead wires) and Unipolar (5 or 6 lead wires) Are Available.
- Type with Encoder and Type with an Electromagnetic Brake Are Available.
- There is a Wide Variety of Motor Current Specifications.

Features

Increased Torque over the Entire Speed Range from Low to High

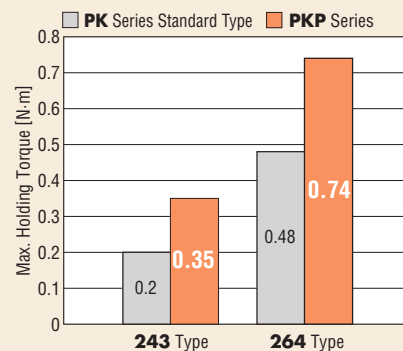
After revising the magnetic design and structure design of the **PKP** Series, it produces much more torque than standard **PK** Series motors of the same size. In addition, torque can be increased in the high-speed range by using high current motors.

Comparison of Speed – Torque Characteristics of the Same Size Motors



High current is possible due to the revised motor winding design and the highly efficient design of the drive circuit that can be combined. Increased torque over the entire speed range from low to high is achieved.

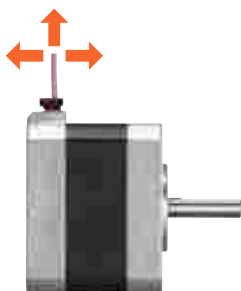
Comparison of Maximum Holding Torque



Compact and Flat Connector

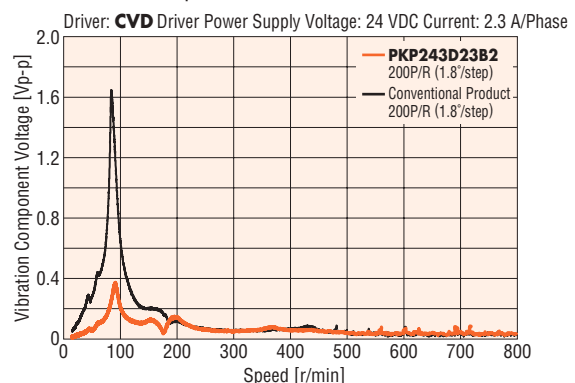
The **PKP** Series uses a compact and flat connector, which shortens the length of the connector's overhang. In addition, the degree of freedom for the cable outlet direction has been increased, because the outlet direction points upward.

- Because the connector is provided for some products only, refer to dimensions of each model for details.



Lower Vibration

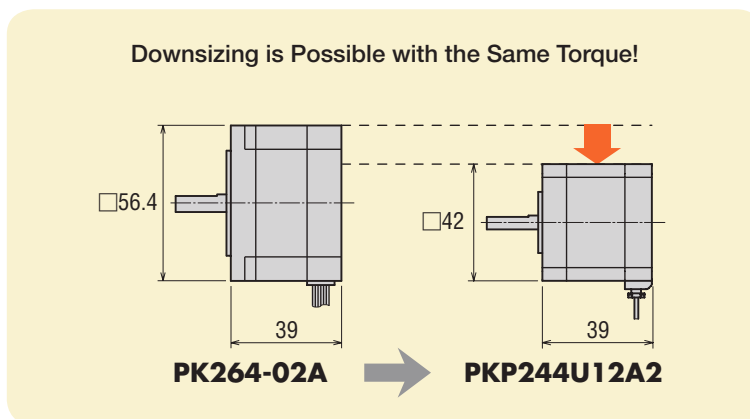
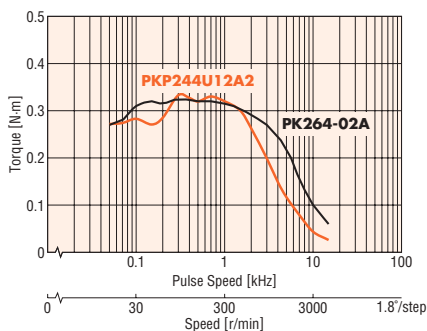
Revising the magnetic design has achieved lower vibration than with conventional products.



Downsizing

Use a **PKP** Series motor in place of a standard motor from the **PK** series with the equivalent torque in order to downsize motors.

Comparison of Torque Characteristics of **PKP244U12A2** and **PK264-02A**

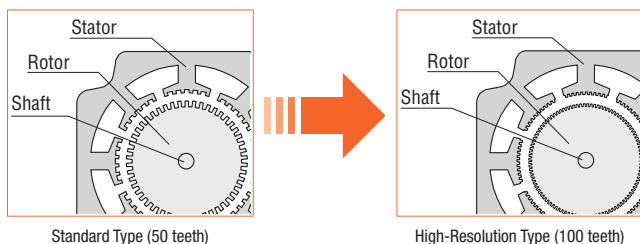


High-Resolution Type

This is a high-resolution stepping motor with a basic step angle of 0.9° . Stopping accuracy is improved.

Increased Resolution (Compared to Standard Type)

The number of rotor teeth has doubled to 100, compared to 50 with the standard type. As a result, the basic step angle is 0.9° /step, which is half that of the standard type.



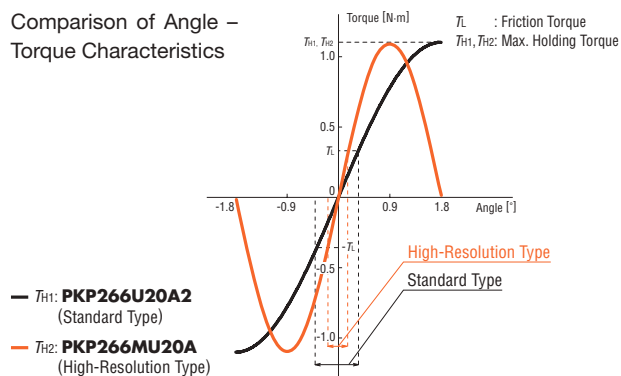
Avoidance of Resonance Regions

If the pulse speed is within a resonance region, vibration may increase. Resonance regions can be avoided by switching to a high-resolution type.

Improved Stopping Accuracy (Compared to Standard Type)

The stopping accuracy improves as the torque increases while minimizing the negative effects of frictional load.

Comparison of Angle – Torque Characteristics

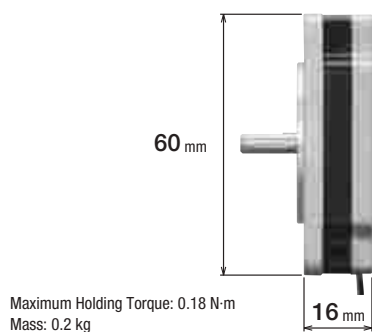


Flat Type

This is Oriental Motor's flattest type of 1.8° stepping motors.

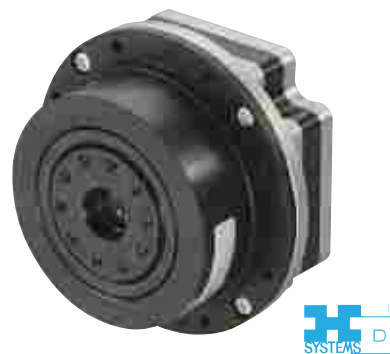
Flat and Lightweight Design

The motor can be installed in a narrow space by being flatter.



With Harmonic Gears

Products assembled with harmonic gears are also available. Attach the load to the surface of the flange to fix the load.

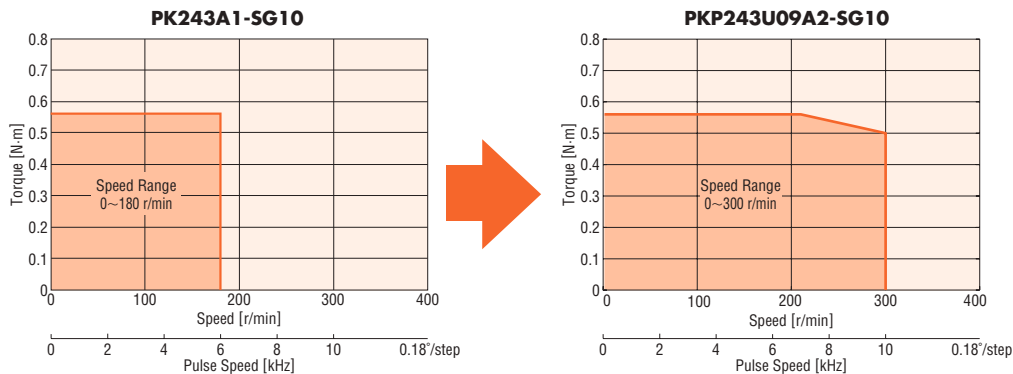


Maximum Holding Torque: 5.4 N·m
Installation Size: $\phi 72$ mm
Mass: 0.6 kg

is a registered trademark of Harmonic Drive Systems Inc.

SH Geared Type

This type is advantageous for its deceleration, greater torque, higher resolution and anti-vibration measures. It experiences less backlash than conventional products. The increased speed range makes it viable in more application usages.



Product Line Equipped with Additional Functions to Further Broaden Applications

● With Encoder

(Provided for standard type and high-resolution type)

Encoder Specifications → Page 07-82

● Main Specifications

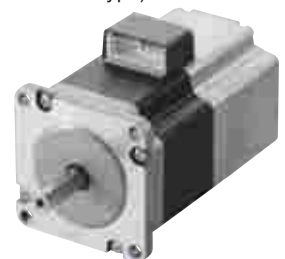
Type	Standard Type	High-Resolution Type
Resolution	200 P/R, 400 P/R	400 P/R
Output Signal	A Phase, B Phase, Z Phase (3ch)	



● Type with an Electromagnetic Brake

(Provided for standard type and high-resolution type)

Electromagnetic Brake → Page 07-82

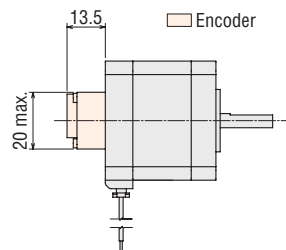


◇ Motor Position Detection is Possible.

Monitoring the current position and detecting positional errors are possible. For example, comparing the command position and current position enables you to check the normal operation of the motor.

◇ Equipped with a Compact Encoder

● When frame size is 42 mm



◇ High Reliability with Line Driver Output Circuit Type

Noise resistance is improved by differential output, and the wiring distance can be longer than with the voltage output type.

◇ Position Can Be Held When the Power Is OFF or a Power Failure Occurs.

This type features an electromagnetic brake that activates when the power is off.

When the power is accidentally cut off due to a power failure or other unexpected event, the electromagnetic brake holds the load in position to prevent it from dropping or moving. Also, the load can be held by the electromagnetic brake when the motor is stopped, and the heat generated by the motor can be curtailed by switching the motor current off.

Combined Drivers (Sold separately)

The compact and lightweight bipolar driver and unipolar driver are available.

Bipolar Drivers

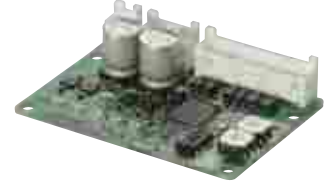
● Right Angle Type with an Installation Plate
The connector points outward.



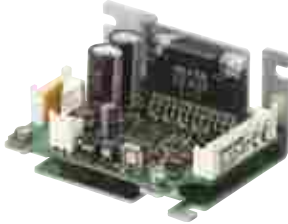
● With an Installation Plate
The connector points upward.







● Without an Installation Plate
The connector direction is upward.



Unipolar Driver



Lineup

Motor Product Line (Basic Step Angle)	Frame Size, Wiring Type															
	20mm		28mm		35mm		42mm		50mm		56.4mm		60mm		85mm	
	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar
Standard Type (1.8°) 	○	○	●	●	●	●	●	●	○*3	—	●	●	○*3	○*3	○	○
	○	○	●	●	●	●	●	●	—	—	●	●	—	—	—	—
	—	—	●	●	●	●	●	●	—	—	●	●	—	—	—	—
High-Resolution Type (0.9°) 	—	—	—	—	—	—	●	●	—	—	●	●	—	—	—	—
	—	—	—	—	—	—	●	●	—	—	●	●	—	—	—	—
	—	—	—	—	—	—	●	●	—	—	●	●	—	—	—	—
Flat Type (1.8°~0.018°) 	—	—	—	—	—	—	—	● <small>NEW</small>	—	—	—	—	—	○	—	—
	—	—	—	—	—	—	—	● <small>NEW</small>	—	—	—	—	—	○*1	—	—
	—	—	—	—	—	—	—	●*4	—	—	—	—	—	○*1	—	—
SH Geared Type (0.5°~0.05°) 	—	—	●	●	—	—	●	●	—	—	—	—	●	●	○*2	—
	—	—	●	●	—	—	●	●	—	—	—	—	●	●	○*3	—

●●: Connector-coupled motors or motors equipped with a terminal box ○: Cable or Lead Wire Type

*1 Flat type with harmonic gears is $\phi 72$ mm.

*2 SH Geared type is 90mm.

*3 Conventional PK Series


*4 Flat type with harmonic gears is 51mm.

System Configuration

These accessories allow the 1.8°/0.9° Stepping Motor **PKP** Series to be used for various operations. Motors and connection cables must be ordered individually.

1.8°/0.9° Stepping Motors PKP Series

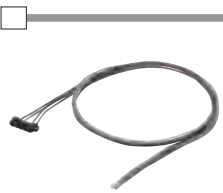
Motor



A connection cable is required for connector-coupled motors and motors equipped with a terminal box.


+

Connection Cable




● Motors and cables are must be ordered individually.

Required Drive Products (Sold separately)




Bipolar Driver
→ Page 07-107

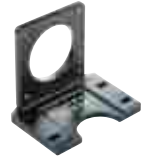


Unipolar Driver
→ Page 07-107


Accessories (Sold separately)




MCV Couplings
→ Page 07-114



Motor Mounting Brackets
→ Page 07-114



Clean Dampers
→ Page 07-117



Motor Connector Set
→ Page 07-117

System Configuration Example

1.8°/0.9° Stepping Motors PKP Series		Sold Separately		
Motor	Connection Cable	Motor Mounting Bracket	Flexible Coupling	Clean Damper
PKP264D28B2	LC2B06E	PAL2P-2	MCV190808	D6CL-8.0F
SGD66	SGD6	SGD14	SGD90	SGD35

● The system configuration shown above is an example. Other combinations are also available.

Product Number Code

Motor

PKP Series

◇ Standard Type/Standard Type with Electromagnetic Brake

PKP 2 6 4 D 28 A 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

◇ High-Resolution Type/High-Resolution Type with Electromagnetic Brake

PKP 2 6 4 M D 28 A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	PKP: PKP Series
②	2: 1.8°/0.9° Stepping Motor	
③	Motor Frame Size	1: 20 mm 2: 28 mm 3: 35 mm 4: 42 mm 6: 56.4 mm (60 mm when the motor classification is "F") 9: 85 mm
④	Motor Case Length	
⑤	Motor Type	Blank: Standard Type M: High-Resolution Type
⑥	Number of Lead Wires	D: 4 Leads U: 5 or 6 Leads
⑦	Motor Winding Specifications	
⑧	Configuration	A: Single Shaft B: Double Shaft M: With Electromagnetic Brake
⑨	Reference Number	

*Products with a 6 mm motor shaft diameter are also available. For details, please contact your nearest Oriental Motor sales office.

◇ Standard Type with Encoder

PKP 2 4 3 D 15 A 2 - R2F L

① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

◇ High-Resolution Type with Encoder

PKP 2 4 3 M D 15 A - R2F L

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑩ ⑪

①	Series Name	PKP : PKP Series
②	2: 1.8°/0.9° Stepping Motor	
③	Motor Frame Size	1 : 20 mm 2 : 28 mm 3 : 35 mm 4 : 42 mm 6 : 56.4 mm
④	Motor Case Length	
⑤	Motor Type	Blank: Standard Type M : High-Resolution Type
⑥	Number of Lead Wires	D : 4 Leads U : 5 or 6 Leads
⑦	Motor Winding Specifications	
⑧	Configuration	A : Single Shaft
⑨	Reference Number	
⑩	Encoder Resolution	R2E : 200P/R R2F : 400P/R
⑪	Encoder Output Circuit Type	L : Line Driver Output*

*Encoder of voltage output for output circuit type is also available. For details, please contact your nearest Oriental Motor sales office.

◇ Flat Type

PKP 2 4 2 D 23 A 2

① ② ③ ④ ⑥ ⑦ ⑧ ⑩

PKP 2 6 2 F D 15 A W

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

◇ Flat Type with Harmonic Gears

PKP 2 4 2 D 23 A 2 - H 100

① ② ③ ④ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫

PKP 2 6 2 F D 15 A W - H 100

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑪ ⑫

①	Series Name	PKP : PKP Series
②	2: 1.8° Stepping Motor	
③	Motor Frame Size	4 : 42 mm (The type with harmonic gears is 51 mm) 6 : 60 mm (The type with harmonic gears is φ72 mm)
④	Motor Case Length	
⑤	Motor Classification	F : Motor Frame Size of 60 mm
⑥	Number of Lead Wires	D : 4 Leads
⑦	Motor Winding Specifications	
⑧	Configuration	A : Single Shaft
⑨	Cable Identification	Blank: Connector Type W : Lead Wire Type
⑩	Reference Number	
⑪	Geared Type	H : Harmonic Geared Type
⑫	Gear Ratio	

◇ SH Geared Type

PKP 2 4 3 U 09 B 2 - SG 18

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series Name	PKP : PKP Series
②	2: 1.8° Stepping Motor	
③	Motor Frame Size	2 : 28 mm 4 : 42 mm 6 : 60 mm
④	Motor Case Length	
⑤	Number of Lead Wires	D : 4 Leads U : 5 or 6 Leads
⑥	Motor Winding Specifications	
⑦	Configuration	A : Single Shaft B : Double Shaft
⑧	Reference Number	
⑨	Gear Type	SG : SH geared Type
⑩	Gear Ratio	

PK Series

◇ Standard Type

PK 2 6 4 J D B

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	PK : PK Series
②	2: 1.8° Stepping Motor	
③	Motor Frame Size	6 : 60 mm
④	Motor Case Length	
⑤	Motor Type	J : High-Torque Type
⑥	Number of Lead Wires	Blank: 6 Leads D : 4 Leads
⑦	Configuration	A : Single Shaft B : Double Shaft

◇ Standard Type (Unipolar 6 lead wires)

PK 2 5 6 - 0 2 B

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	PK : PK Series
②	2: 1.8° Stepping Motor	
③	Motor Frame Size	5 : 50 mm
④	Motor Case Length	
⑤	Reference Number	
⑥	Motor Winding Specifications	
⑦	Configuration	A : Single Shaft B : Double Shaft

◇ SH Geared Type

PK 2 9 6 A 1 - SG 18

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	PK : PK Series
②	2: 1.8° Stepping Motor	
③	Motor Frame Size	9 : 90 mm
④	Motor Case Length	
⑤	Configuration	A : Single Shaft B : Double Shaft
⑥	Motor Winding Specifications	
⑦	Geared Type	H : Harmonic Geared Type
⑧	Gear Ratio	

● Connection Cable

◇ Connection Cable for Motor

LC 2 B 06 A

- ① ② ③ ④ ⑤

①	Cable	LC: Connector Leads
②	2: 1.8°/0.9° Stepping Motor	
③	Cable Type	B: For Bipolar U: For Unipolar
④	Cable Length	06: 0.6 m 10: 1 m
⑤	Reference Number	

◇ Connection Cable for Encoder

LC E 08 A - 006

- ① ② ③ ④ ⑤

①	Cable	LC: Connector Leads
②	Cable Type	E: For Encoder
③	Applicable Models	08: For Line Driver Output*
④	Reference Number	
⑤	Cable Length	006: 0.6 m

*The voltage output cable is also available.
For details, please contact your nearest Oriental Motor sales office.

Product Line

A connector cable is required for the connector type motor. The motor and connection cable are purchased separate. For details on the connection cable, refer to page 07-115.

● Motors

◇ Standard Type

● Unipolar (5 or 6 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP213U05A	SGD69	PKP213U05B	SGD71
PKP214U06A	SGD75	PKP214U06B	SGD78
PKP223U09A2	SGD50	PKP223U09B2	SGD53
PKP225U09A2	SGD60	PKP225U09B2	SGD63
PKP233U12A	SGD50	PKP233U12B	SGD53
PKP235U12A	SGD60	PKP235U12B	SGD63
PKP243U08A2 NEW	SGD50	PKP243U08B2 NEW	SGD53
PKP243U09A2	SGD50	PKP243U09B2	SGD53
PKP243U12A2 NEW	SGD50	PKP243U12B2 NEW	SGD53
PKP244U08A2 NEW	SGD53	PKP244U08B2 NEW	SGD55
PKP244U12A2	SGD53	PKP244U12B2	SGD55
PKP245U08A2 NEW	SGD60	PKP245U08B2 NEW	SGD63
PKP245U12A2	SGD60	PKP245U12B2	SGD63
PKP246U12A2	SGD63	PKP246U12B2	SGD66
PKP246U16A2 NEW	SGD63	PKP246U16B2 NEW	SGD66
PK256-02A	SGD113	PK256-02B	SGD117
PK258-02A	SGD126	PK258-02B	SGD130
PKP264U10A2	SGD63	PKP264U10B2	SGD66
PKP264U20A2	SGD63	PKP264U20B2	SGD66
PKP266U10A2	SGD69	PKP266U10B2	SGD72
PKP266U20A2	SGD69	PKP266U20B2	SGD72
PKP268U10A2	SGD88	PKP268U10B2	SGD91
PKP268U20A2	SGD88	PKP268U20B2	SGD91
PK264JA	SGD93	PK264JB	SGD96
PK266JA	SGD101	PK266JB	SGD104
PK267JA	SGD120	PK267JB	SGD124
PK269JA	SGD150	PK269JB	SGD154
PKP296U20A	SGD123	PKP296U20B	SGD127
PKP296U30A	SGD123	PKP296U30B	SGD127
PKP296U45A	SGD123	PKP296U45B	SGD127
PKP299U20A	SGD188	PKP299U20B	SGD194
PKP299U30A	SGD188	PKP299U30B	SGD194
PKP299U45A	SGD188	PKP299U45B	SGD194
PKP2913U20A	SGD238	PKP2913U20B	SGD248
PKP2913U40A	SGD238	PKP2913U40B	SGD248

● Bipolar (4 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP213D05A	SGD69	PKP213D05B	SGD71
PKP214D06A	SGD75	PKP214D06B	SGD78
PKP223D15A2	SGD50	PKP223D15B2	SGD53
PKP225D15A2	SGD60	PKP225D15B2	SGD63
PKP233D15A	SGD50	PKP233D15B	SGD53
PKP233D23A	SGD50	PKP233D23B	SGD53
PKP235D15A	SGD60	PKP235D15B	SGD63
PKP235D23A	SGD60	PKP235D23B	SGD63
PKP243D08A2 NEW	SGD50	PKP243D08B2 NEW	SGD53
PKP243D15A2	SGD50	PKP243D15B2	SGD53
PKP243D23A2	SGD50	PKP243D23B2	SGD53
PKP244D08A2 NEW	SGD53	PKP244D08B2 NEW	SGD55
PKP244D15A2	SGD53	PKP244D15B2	SGD55
PKP244D23A2	SGD53	PKP244D23B2	SGD55
PKP245D08A2 NEW	SGD60	PKP245D08B2 NEW	SGD63
PKP245D15A2	SGD60	PKP245D15B2	SGD63
PKP245D23A2	SGD60	PKP245D23B2	SGD63
PKP246D15A2	SGD63	PKP246D15B2	SGD66
PKP246D23A2	SGD63	PKP246D23B2	SGD66
PKP264D14A2	SGD63	PKP264D14B2	SGD66
PKP264D28A2	SGD63	PKP264D28B2	SGD66
PKP264D42A2	SGD63	PKP264D42B2	SGD66
PKP266D14A2	SGD69	PKP266D14B2	SGD72
PKP266D28A2	SGD69	PKP266D28B2	SGD72
PKP266D42A2	SGD69	PKP266D42B2	SGD72
PKP268D14A2	SGD88	PKP268D14B2	SGD91
PKP268D28A2	SGD88	PKP268D28B2	SGD91
PKP268D42A2	SGD88	PKP268D42B2	SGD91
PK264JDA	SGD93	PK264JDB	SGD96
PK266JDA	SGD101	PK266JDB	SGD104
PK267JDA	SGD120	PK267JDB	SGD124
PK269JDA	SGD150	PK269JDB	SGD154
PKP296D45A	SGD123	PKP296D45B	SGD127
PKP296D63A	SGD123	PKP296D63B	SGD127
PKP299D45A	SGD188	PKP299D45B	SGD194
PKP299D63A	SGD188	PKP299D63B	SGD194
PKP2913D45A	SGD238	PKP2913D45B	SGD248
PKP2913D56A	SGD238	PKP2913D56B	SGD248

◇ Standard Type with Encoder

● Unipolar (5 or 6 Lead Wires)

Product Name	List Price
PKP213U05A-R2EL	SGD131
PKP214U06A-R2EL	SGD138
PKP223U09A2-R2EL	SGD113
PKP225U09A2-R2EL	SGD123
PKP233U12A-R2EL	SGD113
PKP235U12A-R2EL	SGD123
PKP243U09A2-R2EL	SGD113
PKP243U09A2-R2FL	SGD113
PKP244U12A2-R2EL	SGD115
PKP244U12A2-R2FL	SGD115
PKP245U12A2-R2EL	SGD123
PKP245U12A2-R2FL	SGD123
PKP246U12A2-R2EL	SGD125
PKP246U12A2-R2FL	SGD125
PKP264U10A2-R2EL	SGD125
PKP264U10A2-R2FL	SGD125
PKP264U20A2-R2EL	SGD125
PKP264U20A2-R2FL	SGD125
PKP266U10A2-R2EL	SGD131
PKP266U10A2-R2FL	SGD131
PKP266U20A2-R2EL	SGD131
PKP266U20A2-R2FL	SGD131
PKP268U10A2-R2EL	SGD150
PKP268U10A2-R2FL	SGD150
PKP268U20A2-R2EL	SGD150
PKP268U20A2-R2FL	SGD150

◇ Standard Type with Electromagnetic Brake

● Unipolar (6 Lead Wires)

Product Name	List Price
PKP223U09M2	SGD125
PKP225U09M2	SGD135
PKP233U12M	SGD163
PKP235U12M	SGD173
PKP243U09M	SGD163
PKP244U12M	SGD165
PKP245U12M	SGD173
PKP246U12M	SGD175
PKP264U20M	SGD188
PKP266U20M	SGD194
PKP268U20M	SGD213

● Bipolar (4 Lead Wires)

Product Name	List Price
PKP213D05A-R2EL	SGD131
PKP214D06A-R2EL	SGD138
PKP223D15A2-R2EL	SGD113
PKP225D15A2-R2EL	SGD123
PKP233D15A-R2EL	SGD113
PKP235D15A-R2EL	SGD123
PKP243D15A2-R2EL	SGD113
PKP243D15A2-R2FL	SGD113
PKP243D23A2-R2EL	SGD113
PKP243D23A2-R2FL	SGD113
PKP244D15A2-R2EL	SGD115
PKP244D15A2-R2FL	SGD115
PKP244D23A2-R2EL	SGD115
PKP244D23A2-R2FL	SGD115
PKP245D15A2-R2EL	SGD123
PKP245D15A2-R2FL	SGD123
PKP245D23A2-R2EL	SGD123
PKP245D23A2-R2FL	SGD123
PKP246D15A2-R2EL	SGD125
PKP246D15A2-R2FL	SGD125
PKP246D23A2-R2EL	SGD125
PKP246D23A2-R2FL	SGD125
PKP264D14A2-R2EL	SGD125
PKP264D14A2-R2FL	SGD125
PKP264D28A2-R2EL	SGD125
PKP264D28A2-R2FL	SGD125
PKP264D42A2-R2EL	SGD125
PKP264D42A2-R2FL	SGD125
PKP266D14A2-R2EL	SGD131
PKP266D14A2-R2FL	SGD131
PKP266D28A2-R2EL	SGD131
PKP266D28A2-R2FL	SGD131
PKP266D42A2-R2EL	SGD131
PKP266D42A2-R2FL	SGD131
PKP268D14A2-R2EL	SGD150
PKP268D14A2-R2FL	SGD150
PKP268D28A2-R2EL	SGD150
PKP268D28A2-R2FL	SGD150
PKP268D42A2-R2EL	SGD150
PKP268D42A2-R2FL	SGD150

● Bipolar (4 Lead Wires)

Product Name	List Price
PKP223D15M2	SGD125
PKP225D15M2	SGD135
PKP233D15M	SGD163
PKP235D15M	SGD173
PKP243D15M	SGD163
PKP244D15M	SGD165
PKP245D15M	SGD173
PKP246D15M	SGD175
PKP264D28M	SGD188
PKP266D28M	SGD194
PKP268D28M	SGD213

◇ High-Resolution Type

● Unipolar (6 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP243MU09A	SGD50	PKP243MU09B	SGD53
PKP244MU12A	SGD53	PKP244MU12B	SGD55
PKP264MU20A	SGD63	PKP264MU20B	SGD66
PKP266MU20A	SGD69	PKP266MU20B	SGD72
PKP268MU20A	SGD88	PKP268MU20B	SGD91

◇ High-Resolution Type with Encoder

● Unipolar (6 Lead Wires)

Product Name	List Price
PKP243MU09A-R2FL	SGD113
PKP244MU12A-R2FL	SGD115
PKP264MU20A-R2FL	SGD125
PKP266MU20A-R2FL	SGD131
PKP268MU20A-R2FL	SGD150

◇ High-Resolution Type with Electromagnetic Brake

● Unipolar (6 Lead Wires)

Product Name	List Price
PKP243MU09M	SGD163
PKP244MU12M	SGD165
PKP264MU20M	SGD188
PKP266MU20M	SGD194
PKP268MU20M	SGD213

◇ Flat Type

● Bipolar (4 Lead Wires)

Product Name (Single Shaft)	List Price
PKP242D23A2 <small>NEW</small>	SGD56
PKP262FD15AW	SGD63

◇ Flat Type with Harmonic Gears

● Bipolar (4 Lead Wires)

Product Name (Single Shaft)	List Price
PKP242D23A2-H50 <small>NEW</small>	SGD825
PKP242D23A2-H100 <small>NEW</small>	SGD825
PKP262FD15AW-H50	SGD938
PKP262FD15AW-H100	SGD938

● Bipolar (4 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP243MD15A	SGD50	PKP243MD15B	SGD53
PKP244MD15A	SGD53	PKP244MD15B	SGD55
PKP264MD28A	SGD63	PKP264MD28B	SGD66
PKP266MD28A	SGD69	PKP266MD28B	SGD72
PKP268MD28A	SGD88	PKP268MD28B	SGD91

● Bipolar (4 Lead Wires)

Product Name	List Price
PKP243MD15A-R2FL	SGD113
PKP244MD15A-R2FL	SGD115
PKP264MD28A-R2FL	SGD125
PKP266MD28A-R2FL	SGD131
PKP268MD28A-R2FL	SGD150

● Bipolar (4 Lead Wires)

Product Name	List Price
PKP243MD15M	SGD163
PKP244MD15M	SGD165
PKP264MD28M	SGD188
PKP266MD28M	SGD194
PKP268MD28M	SGD213

◇ SH Geared Type

● Unipolar (5 or 6 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP223U09A-SG7.2	SGD151	PKP223U09B-SG7.2	SGD154
PKP223U09A-SG9	SGD151	PKP223U09B-SG9	SGD154
PKP223U09A-SG10	SGD151	PKP223U09B-SG10	SGD154
PKP223U09A-SG18	SGD169	PKP223U09B-SG18	SGD171
PKP223U09A-SG36	SGD169	PKP223U09B-SG36	SGD171
PKP243U09A2-SG3.6	SGD131	PKP243U09B2-SG3.6	SGD134
PKP243U09A2-SG7.2	SGD131	PKP243U09B2-SG7.2	SGD134
PKP243U09A2-SG9	SGD131	PKP243U09B2-SG9	SGD134
PKP243U09A2-SG10	SGD131	PKP243U09B2-SG10	SGD134
PKP243U09A2-SG18	SGD150	PKP243U09B2-SG18	SGD153
PKP243U09A2-SG36	SGD150	PKP243U09B2-SG36	SGD153
PKP264U10A2-SG3.6	SGD150	PKP264U10B2-SG3.6	SGD153
PKP264U20A2-SG3.6	SGD150	PKP264U20B2-SG3.6	SGD153
PKP264U10A2-SG7.2	SGD150	PKP264U10B2-SG7.2	SGD153
PKP264U20A2-SG7.2	SGD150	PKP264U20B2-SG7.2	SGD153
PKP264U10A2-SG9	SGD150	PKP264U10B2-SG9	SGD153
PKP264U20A2-SG9	SGD150	PKP264U20B2-SG9	SGD153
PKP264U10A2-SG10	SGD150	PKP264U10B2-SG10	SGD153
PKP264U20A2-SG10	SGD150	PKP264U20B2-SG10	SGD153
PKP264U10A2-SG18	SGD168	PKP264U10B2-SG18	SGD171
PKP264U20A2-SG18	SGD168	PKP264U20B2-SG18	SGD171
PKP264U10A2-SG36	SGD168	PKP264U10B2-SG36	SGD171
PKP264U20A2-SG36	SGD168	PKP264U20B2-SG36	SGD171
PK296A1-SG3.6	SGD263	PK296B1-SG3.6	SGD267
PK296A2-SG3.6	SGD263	PK296B2-SG3.6	SGD267
PK296A1-SG7.2	SGD263	PK296B1-SG7.2	SGD267
PK296A2-SG7.2	SGD263	PK296B2-SG7.2	SGD267
PK296A1-SG9	SGD263	PK296B1-SG9	SGD267
PK296A2-SG9	SGD263	PK296B2-SG9	SGD267
PK296A1-SG10	SGD263	PK296B1-SG10	SGD267
PK296A2-SG10	SGD263	PK296B2-SG10	SGD267
PK296A1-SG18	SGD263	PK296B1-SG18	SGD267
PK296A2-SG18	SGD263	PK296B2-SG18	SGD267
PK296A1-SG36	SGD274	PK296B1-SG36	SGD278
PK296A2-SG36	SGD274	PK296B2-SG36	SGD278

● Bipolar (4 Lead Wires)

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP223D15A-SG7.2	SGD151	PKP223D15B-SG7.2	SGD154
PKP223D15A-SG9	SGD151	PKP223D15B-SG9	SGD154
PKP223D15A-SG10	SGD151	PKP223D15B-SG10	SGD154
PKP223D15A-SG18	SGD169	PKP223D15B-SG18	SGD171
PKP223D15A-SG36	SGD169	PKP223D15B-SG36	SGD171
PKP243D15A2-SG3.6	SGD131	PKP243D15B2-SG3.6	SGD134
PKP243D23A2-SG3.6	SGD131	PKP243D23B2-SG3.6	SGD134
PKP243D15A2-SG7.2	SGD131	PKP243D15B2-SG7.2	SGD134
PKP243D23A2-SG7.2	SGD131	PKP243D23B2-SG7.2	SGD134
PKP243D15A2-SG9	SGD131	PKP243D15B2-SG9	SGD134
PKP243D23A2-SG9	SGD131	PKP243D23B2-SG9	SGD134
PKP243D15A2-SG10	SGD131	PKP243D15B2-SG10	SGD134
PKP243D23A2-SG10	SGD131	PKP243D23B2-SG10	SGD134
PKP243D15A2-SG18	SGD150	PKP243D15B2-SG18	SGD153
PKP243D23A2-SG18	SGD150	PKP243D23B2-SG18	SGD153
PKP243D15A2-SG36	SGD150	PKP243D15B2-SG36	SGD153
PKP243D23A2-SG36	SGD150	PKP243D23B2-SG36	SGD153
PKP264D14A2-SG3.6	SGD150	PKP264D14B2-SG3.6	SGD153
PKP264D28A2-SG3.6	SGD150	PKP264D28B2-SG3.6	SGD153
PKP264D14A2-SG7.2	SGD150	PKP264D14B2-SG7.2	SGD153
PKP264D28A2-SG7.2	SGD150	PKP264D28B2-SG7.2	SGD153
PKP264D14A2-SG9	SGD150	PKP264D14B2-SG9	SGD153
PKP264D28A2-SG9	SGD150	PKP264D28B2-SG9	SGD153
PKP264D14A2-SG10	SGD150	PKP264D14B2-SG10	SGD153
PKP264D28A2-SG10	SGD150	PKP264D28B2-SG10	SGD153
PKP264D14A2-SG18	SGD168	PKP264D14B2-SG18	SGD171
PKP264D28A2-SG18	SGD168	PKP264D28B2-SG18	SGD171
PKP264D14A2-SG36	SGD168	PKP264D14B2-SG36	SGD171
PKP264D28A2-SG36	SGD168	PKP264D28B2-SG36	SGD171

● Connection Cables

The applicable motors of the connection cable are shown in the dimensions of each product.

◇ Motor Cables (For unipolar)

Product Name	Length L (m)	List Price
LC2U06A	0.6	SGD6
LC2U10A	1	SGD9
LC2U06B	0.6	SGD6
LC2U10B	1	SGD9
LC2U06C	0.6	SGD6
LC2U10C	1	SGD9
LC2U06E	0.6	SGD6

◇ Motor Cables (For bipolar)

Product Name	Length L (m)	List Price
LC2B06A	0.6	SGD6
LC2B06B	0.6	SGD6
LC2B06C	0.6	SGD6
LC2B06E	0.6	SGD6

◇ Encoder Cable (Line driver output)

Product Name	Length L (m)	List Price
LC2E08A-006	0.6	SGD13

■ Included

Type	Motor Installation Screw	Parallel Key	Varistor	Operating Manual
Standard Type				
High-Resolution Type	–	–	–	1 Set
Flat Type				
Type with an Electromagnetic Brake	–	–	1 Piece	1 Set
SH Geared Type	Frame Size 28 mm			
	Frame Size 42 mm	–	–	1 Set
	Frame Size 60 mm			
	Frame Size 90 mm	M6×18 P1.0 (4 Screws)	1 Piece	–

■ Glossary of Specification Table

Maximum Holding Torque	:This is the maximum holding torque (holding force) the motor has when power is supplied (at rated current) but the motor is not rotating. (With geared types, the value of holding torque considers the permissible strength of the gear.)
Permissible Torque	:This is the maximum torque that can be continuously applied to the gear output shaft. For the SH geared types, the total torque including acceleration and deceleration torque should not exceed the permissible torque.
Maximum Instantaneous Torque	:This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration such when an inertial load is started and stopped.
Holding Torque at Motor Standstill	:This is the holding torque when the automatic current cutback function is active.

Standard Type Frame Size 20 mm (Unipolar 5 lead wires)

Specifications

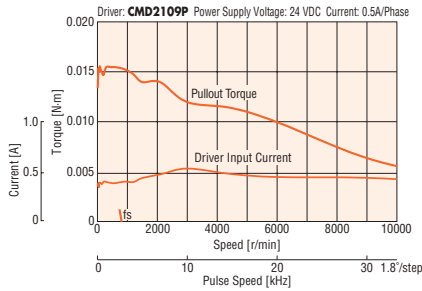
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP213U05□	0.014	1.6×10 ⁻⁷	0.5	4.25	8.5	2.9	1.8°	CMD2109P
PKP214U06□	0.026	2.9×10 ⁻⁷	0.6	4.2	7	2.4		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

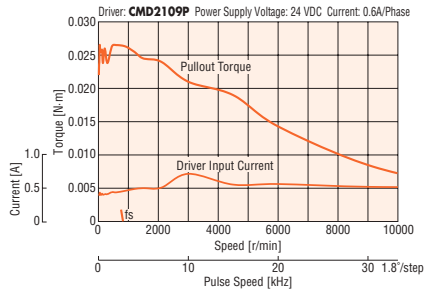
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP213U05A/PKP213U05B



PKP214U06A/PKP214U06B



Note

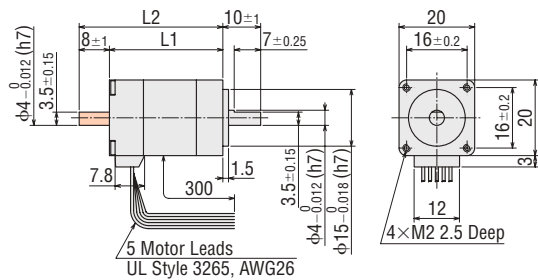
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP213U05A	30	—	0.05	B977
PKP213U05B		38		
PKP214U06A	40	—	0.07	B979
PKP214U06B		48		



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.
- Back shaft of double shaft products have a flat the whole length.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑥

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 20 mm (Bipolar 4 lead wires)

Specifications

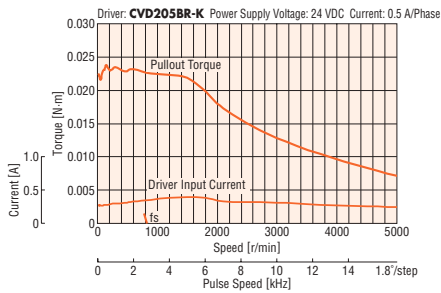
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP213D05□	0.02	1.6×10^{-7}	0.5	4.25	8.5	4.1	1.8°	CVD205BR-K
PKP214D06□	0.036	2.9×10^{-7}	0.6	3.9	6.5	3.5		CVD206BR-K

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

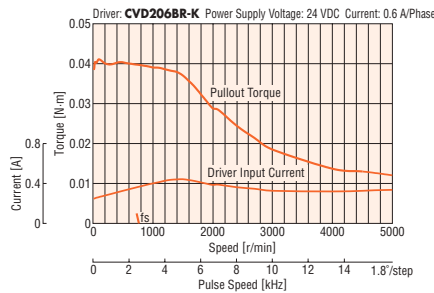
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP213D05A/PKP213D05B



PKP214D06A/PKP214D06B



Note

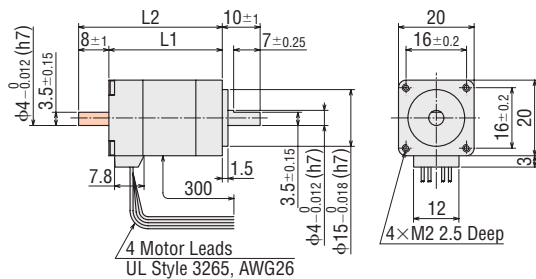
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP213D05A	30	–	0.05	B976
PKP213D05B		38		
PKP214D06A	40	–	0.07	B978
PKP214D06B		48		



- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.
- Back shaft of double shaft products have a flat the whole length.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 20 mm (Unipolar 5 lead wires)

Specifications

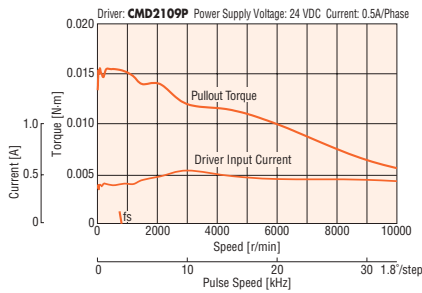
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP213U05A-R2EL	0.014	1.66×10^{-7}	0.5	4.25	8.5	2.9	1.8°	CMD2109P
PKP214U06A-R2EL	0.026	2.96×10^{-7}	0.6	4.2	7	2.4		

● Refer to page 07-82 for encoder specifications.

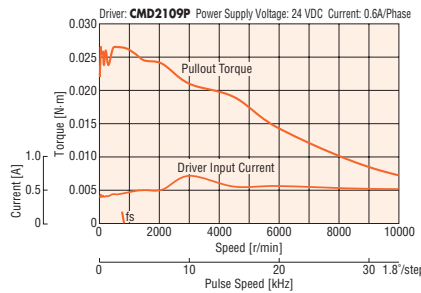
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP213U05A-R2EL



PKP214U06A-R2EL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

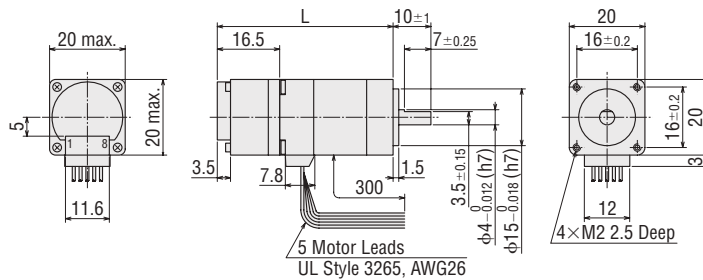
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP213U05A-R2EL	46.5	0.06	B1098
PKP214U06A-R2EL	56.5	0.08	B1099

Applicable Connector (Molex)

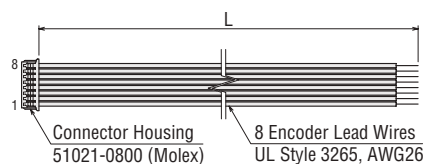
	Encoder
Connector Housing	51021-0800
Contact	50079-8100
Crimp Tool	57067-3000



Connection Cable (Sold separately)

◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑥

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 20 mm (Bipolar 4 lead wires)

Specifications

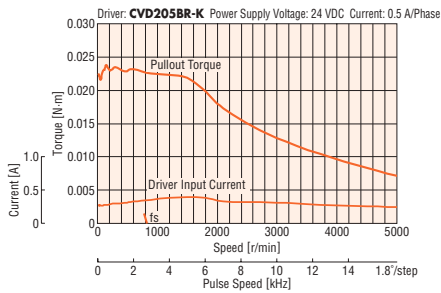
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP213D05A-R2EL	0.02	1.66×10^{-7}	0.5	4.25	8.5	4.1	1.8°	CVD205BR-K
PKP214D06A-R2EL	0.036	2.96×10^{-7}	0.6	3.9	6.5	3.5		CVD206BR-K

● Refer to page 07-82 for encoder specifications.

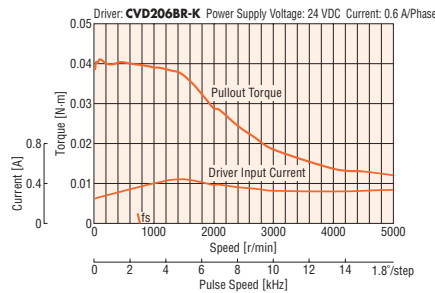
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP213D05A-R2EL



PKP214D06A-R2EL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

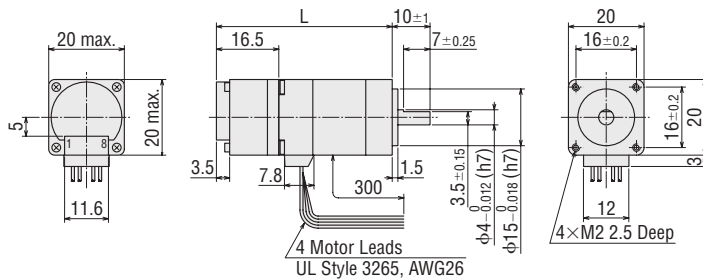
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP213D05A-R2EL	46.5	0.06	B1100
PKP214D06A-R2EL	56.5	0.08	B1101

Applicable Connector (Molex)

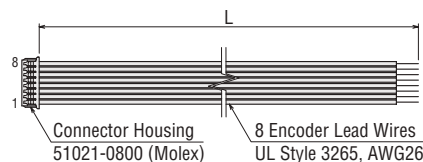
	Encoder
Connector Housing	51021-0800
Contact	50079-8100
Crimp Tool	57067-3000



Connection Cable (Sold separately)

For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 28 mm (Unipolar 6 lead wires)

Specifications

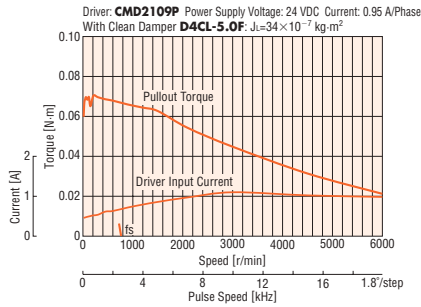
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP223U09□2	0.075	9×10 ⁻⁷	0.95	2.95	3.11	1.44	1.8°	CMD2109P
PKP225U09□2	0.135	18×10 ⁻⁷		4.4	4.6	2.11		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

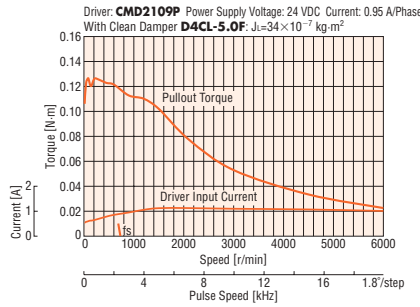
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP223U09A2/PKP223U09B2



PKP225U09A2/PKP225U09B2



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP223U09A2	32	–	0.11	B980
PKP223U09B2		42		
PKP225U09A2	51.5	–	0.2	B982
PKP225U09B2		61.5		

Applicable Connector

Connector Housing: 51065-0600 (Molex)

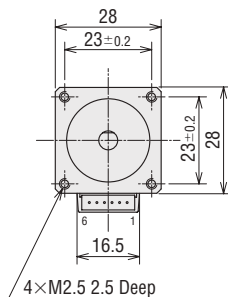
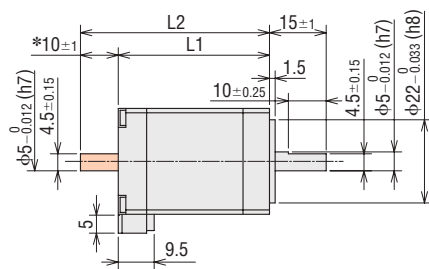
Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

● Refer to page 07-85 for inner wiring diagram of motor.



*The length of the shaft flat on the double shaft model is 10±0.25.

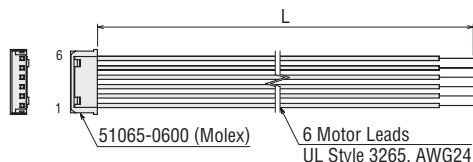
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2U06A	0.6
LC2U10A	1



Standard Type Frame Size 28 mm (Bipolar 4 lead wires)

Specifications

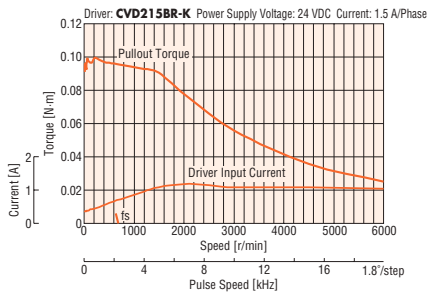
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP223D15□2	0.095	9×10^{-7}	1.5	1.77	1.18	0.96	1.8°	CVD215BR-K
PKP225D15□2	0.19	18×10^{-7}		3	2	1.6		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

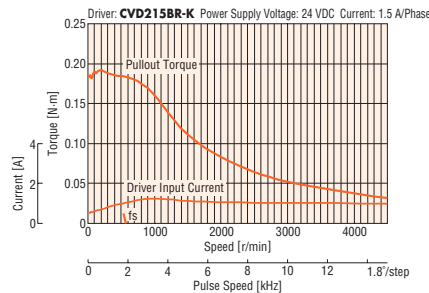
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP223D15A2/ PKP223D15B2



PKP225D15A2/ PKP225D15B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

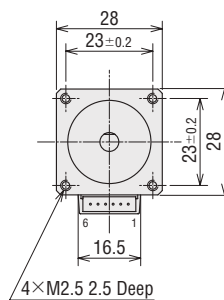
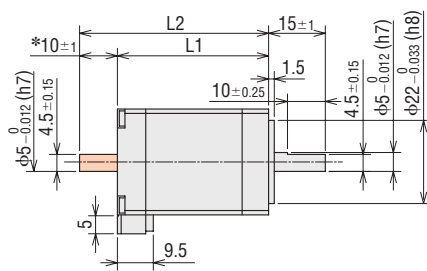
Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP223D15A2	32	–	0.11	B980
PKP223D15B2		42		
PKP225D15A2	51.5	–	0.2	B982
PKP225D15B2		61.5		

Applicable Connector

Connector Housing: 51065-0600 (Molex)
Contact: 50212-8100 (Molex)
Crimp Tool: 57176-5000 (Molex)



*The length of the shaft flat on the double shaft model is 10±0.25.

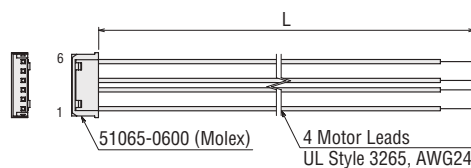
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06A	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 28 mm (Unipolar 6 lead wires)

Specifications

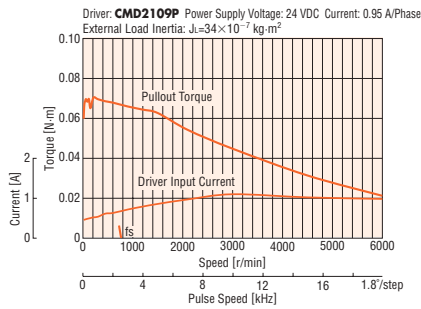
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP223U09A2-R2EL	0.075	9×10^{-7}	0.95	2.95	3.11	1.44	1.8°	CMD2109P
PKP225U09A2-R2EL	0.135	18×10^{-7}		4.4	4.6	2.11		

● Refer to page 07-82 for encoder specifications.

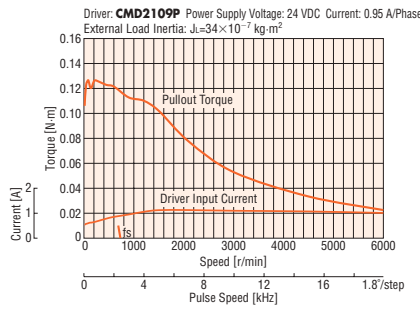
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP223U09A2-R2EL



PKP225U09A2-R2EL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed - torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP223U09A2-R2EL	47.5	0.12	B1198
PKP225U09A2-R2EL	67	0.21	B1199

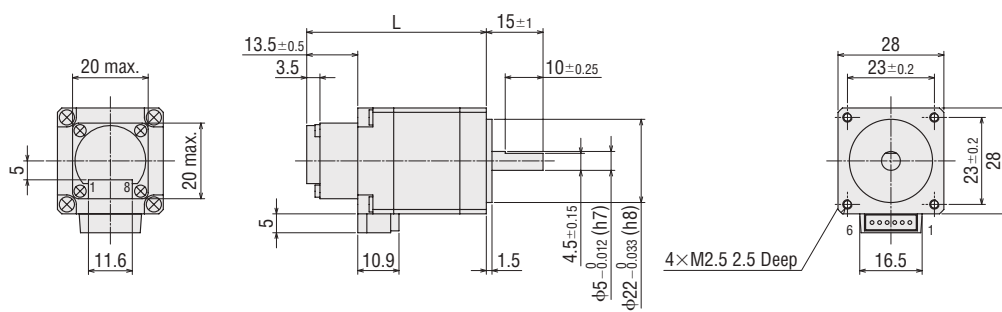
Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

Applicable Connector (Molex)

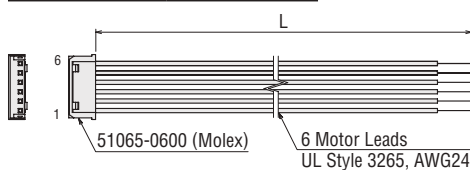
	Motor	Encoder
Connector Housing	51065-0600	51021-0800
Contact	50212-8100	50079-8100
Crimp Tool	57176-5000	57067-3000



Connection Cable (Sold separately)

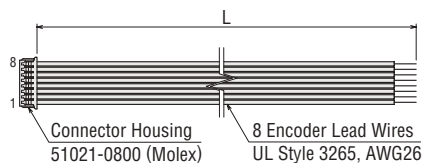
For Motor

Product Name	Length L (m)
LC2U06A	0.6
LC2U10A	1



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Standard Type with Encoder Frame Size 28 mm (Bipolar 4 lead wires)

Specifications

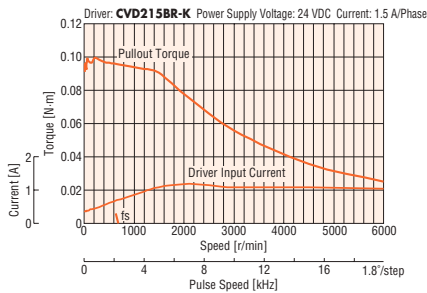
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP223D15A2-R2EL	0.095	9×10^{-7}	1.5	1.77	1.18	0.96	1.8°	CVD215BR-K
PKP225D15A2-R2EL	0.19	18×10^{-7}		3	2	1.6		

● Refer to page 07-82 for encoder specifications.

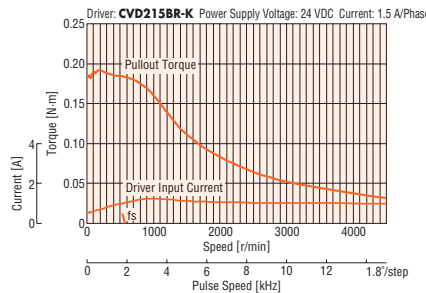
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP223D15A2-R2EL



PKP225D15A2-R2EL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP223D15A2-R2EL	47.5	0.12	B1198
PKP225D15A2-R2EL	67	0.21	B1199

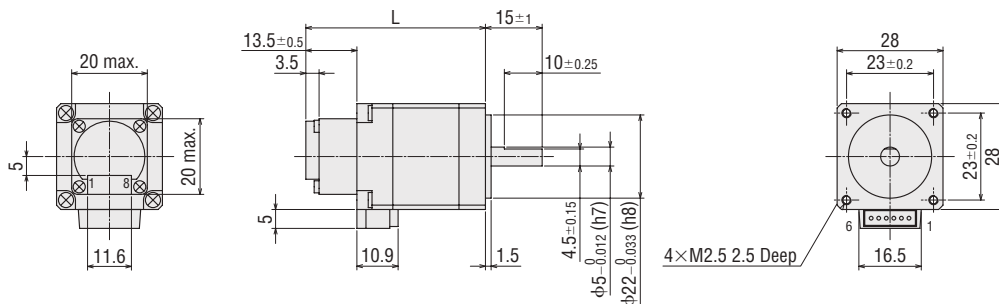
● Applicable Connector (Molex)

	Motor	Encoder
Connector Housing	51065-0600	51021-0800
Contact	50212-8100	50079-8100
Crimp Tool	57176-5000	57067-3000

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

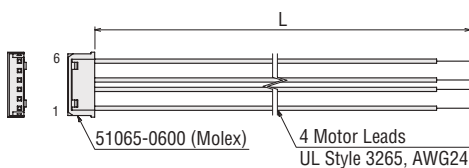
● Refer to page 07-85 for inner wiring diagram of motor.



Connection Cable (Sold separately)

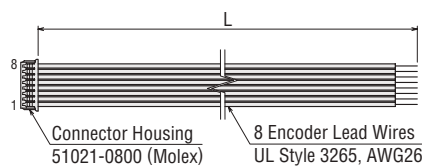
◇ For Motor

Product Name	Length L (m)
LC2B06A	0.6



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Standard Type with Electromagnetic Brake

Frame Size 28 mm (Unipolar 6 lead wires)

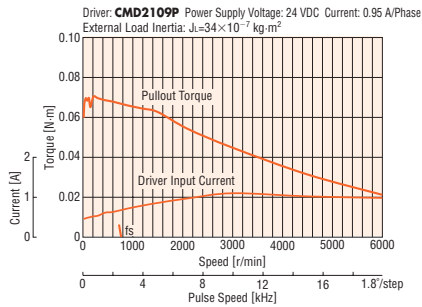
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle
PKP223U09M2	0.075	14×10^{-7}	0.95	2.95	3.11	1.44	1.8°
PKP225U09M2	0.135	23×10^{-7}		4.4	4.6	2.11	

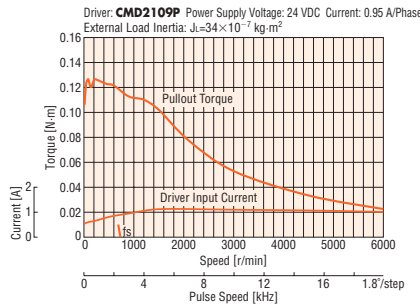
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP223U09M2



PKP225U09M2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed - torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP223U09M2	65.5	0.17	B1196
PKP225U09M2	85	0.26	B1197

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

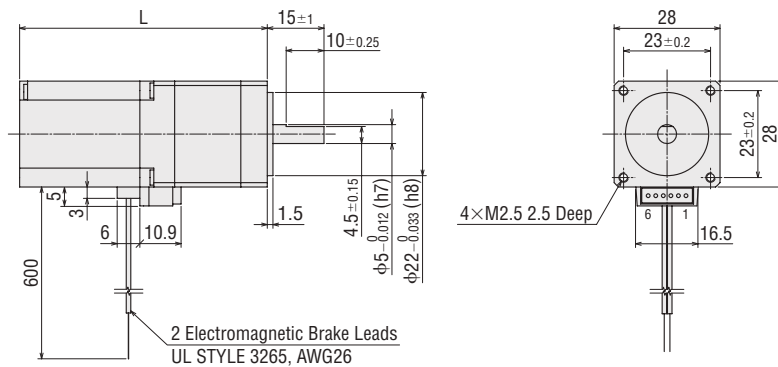
- Refer to page 07-85 for inner wiring diagram of motor.

07

PKP Series

- Applicable Connector

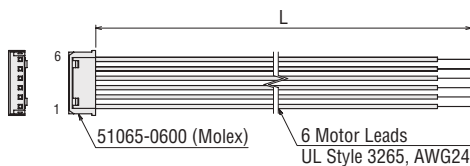
Connector Housing: 51065-0600 (Molex)
Contact: 50212-8100 (Molex)
Crimp Tool: 57176-5000 (Molex)



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06A	0.6
LC2U10A	1



Standard Type with Electromagnetic Brake

Frame Size 28 mm (Bipolar 4 lead wires)

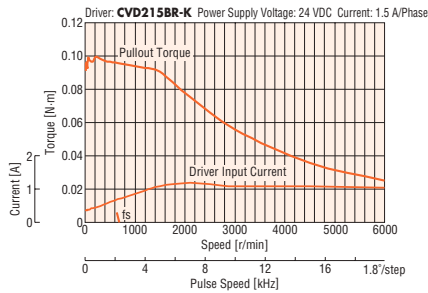
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle
PKP223D15M2	0.095	14 × 10 ⁻⁷	1.5	1.77	1.18	0.96	1.8°
PKP225D15M2	0.19	23 × 10 ⁻⁷		3	2	1.6	

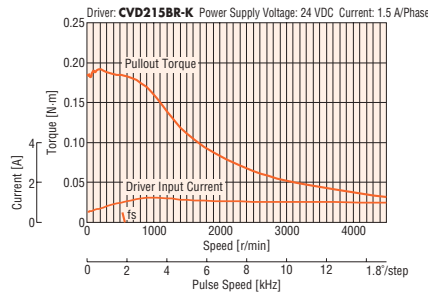
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP223D15M2



PKP225D15M2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

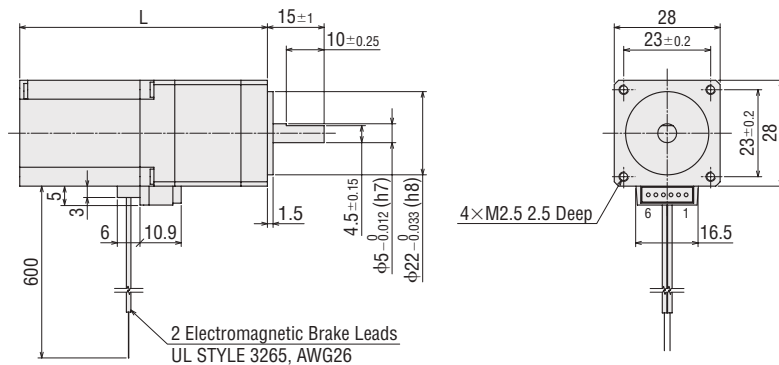
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP223D15M2	65.5	0.17	B1196
PKP225D15M2	85	0.26	B1197

Applicable Connector

- Connector Housing: 51065-0600 (Molex)
- Contact: 50212-8100 (Molex)
- Crimp Tool: 57176-5000 (Molex)



Inner Wiring Diagram of Motor

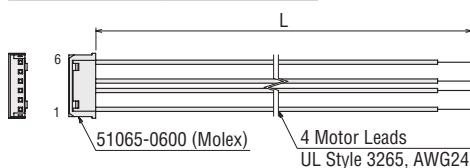
Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06A	0.6



Standard Type Frame Size 35 mm (Unipolar 6 lead wires)

Specifications

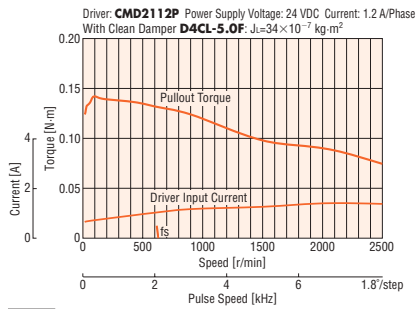
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP233U12□	0.16	24×10 ⁻⁷	1.2	3.24	2.7	1.4	1.8°	CMD2112P
PKP235U12□	0.3	50×10 ⁻⁷		4.08	3.4	2		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

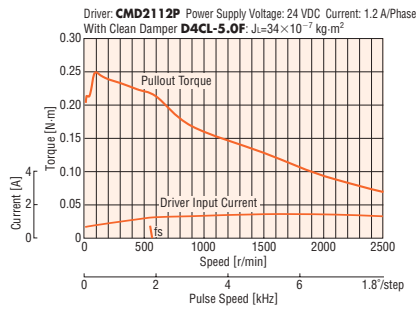
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP233U12A/PKP233U12B



PKP235U12A/PKP235U12B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed - torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP233U12A	37	—	0.18	B983
PKP233U12B		52		
PKP235U12A	52	—	0.285	B984
PKP235U12B		67		

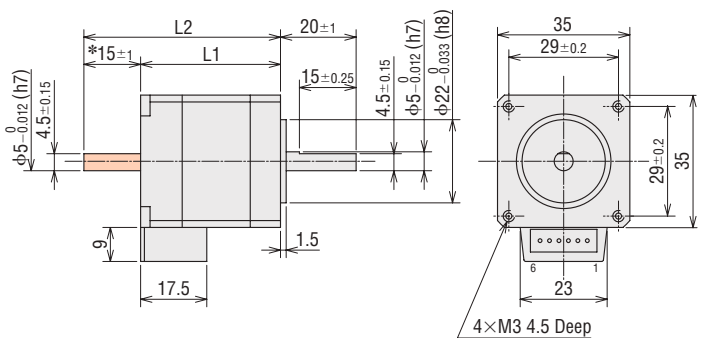
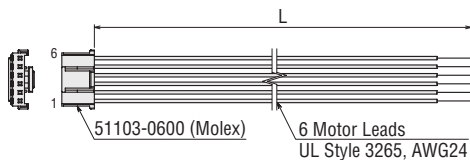
Applicable Connector

Connector Housing: 51103-0600 (Molex)
Contact: 50351-8100 (Molex)
Crimp Tool: 57295-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



*The length of the shaft flat on the double shaft model is 15±0.25.

- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 35 mm (Bipolar 4 lead wires)

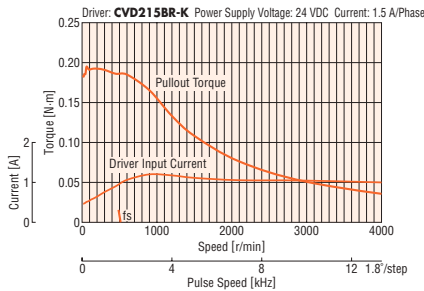
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP233D15□	0.2	24×10 ⁻⁷	1.5	2.43	1.62	1.5	1.8°	CVD215BR-K
PKP233D23□			2.3	1.56	0.68	0.67		CVD223BR-K
PKP235D15□	0.37	50×10 ⁻⁷	1.5	3.6	2.4	2.6		CVD215BR-K
PKP235D23□			2.3	2.23	0.97	1.2		CVD223BR-K

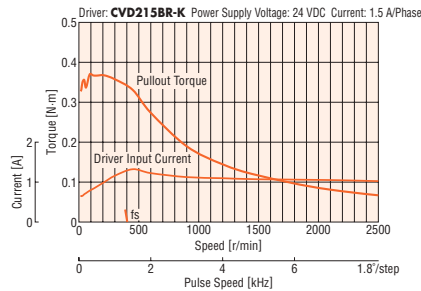
● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.
 *Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

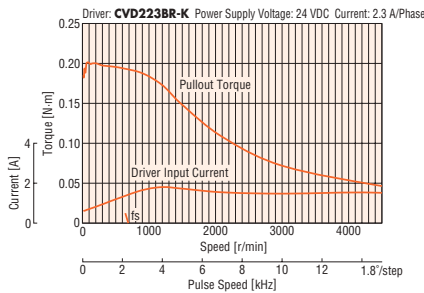
PKP233D15A/PKP233D15B



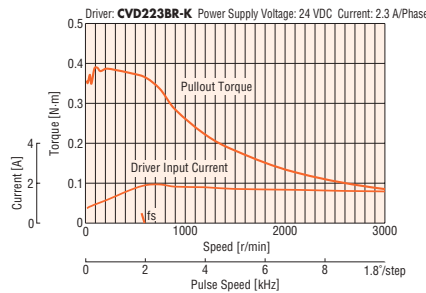
PKP235D15A/PKP235D15B



PKP233D23A/PKP233D23B



PKP235D23A/PKP235D23B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

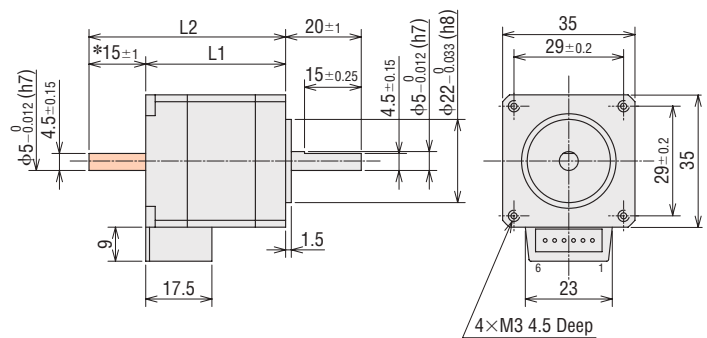
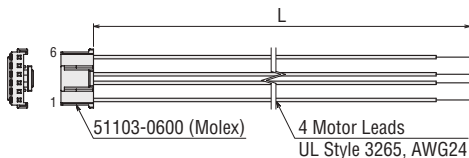
Product Name	L1	L2	Mass kg	2D CAD
PKP233D15A	37	-	0.18	B983
PKP233D15B		52		
PKP233D23A	37	-	0.18	B1111
PKP233D23B		52		
PKP235D15A	52	-	0.285	B984
PKP235D15B		67		
PKP235D23A	52	-	0.285	B1112
PKP235D23B		67		

- Applicable Connector
 Connector Housing: 51103-0600 (Molex)
 Contact: 50351-8100 (Molex)
 Crimp Tool: 57295-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06B	0.6



- * The length of the shaft flat on the double shaft model is 15±0.25.
- These dimensions are for double shaft motors.
 For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 35 mm (Unipolar 6 lead wires)

Specifications

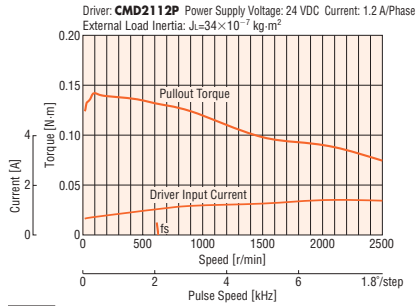
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP233U12A-R2EL	0.16	24×10 ⁻⁷	1.2	3.24	2.7	1.4	1.8°	CMD2112P
PKP235U12A-R2EL	0.3	50×10 ⁻⁷		4.08	3.4	2		

● Refer to page 07-82 for encoder specifications.

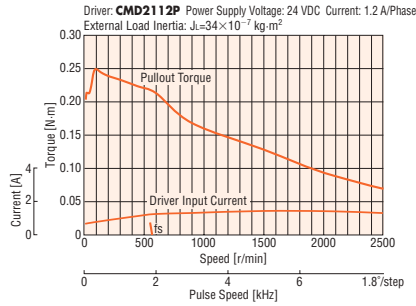
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP233U12A-R2EL



PKP235U12A-R2EL



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP233U12A-R2EL	50.5	0.19	B1102
PKP235U12A-R2EL	65.5	0.295	B1103

● Applicable Connector (Molex)

	Motor	Encoder
Connector Housing	51103-0600	51021-0800
Contact	50351-8100	50079-8100
Crimp Tool	57295-5000	57067-3000

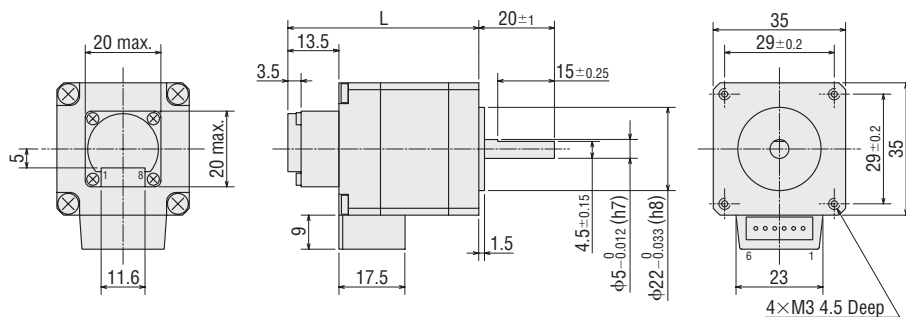
Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

● Refer to page 07-85 for inner wiring diagram of motor.

07

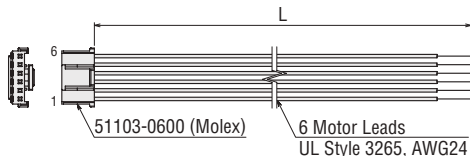
PKP Series



Connection Cable (Sold separately)

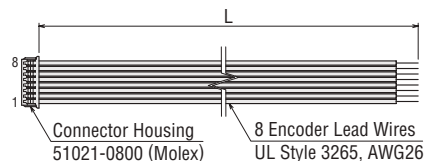
◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Standard Type with Encoder Frame Size 35 mm (Bipolar 4 lead wires)

Specifications

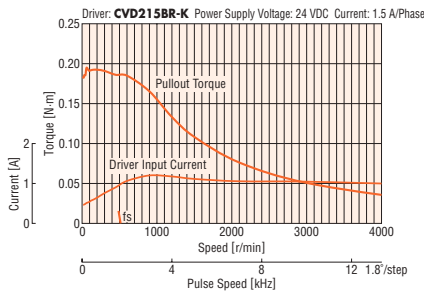
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP233D15A-R2EL	0.2	24×10^{-7}	1.5	2.43	1.62	1.5	1.8°	CVD215BR-K
PKP235D15A-R2EL	0.37	50×10^{-7}		3.6	2.4	2.6		

● Refer to page 07-82 for encoder specifications.

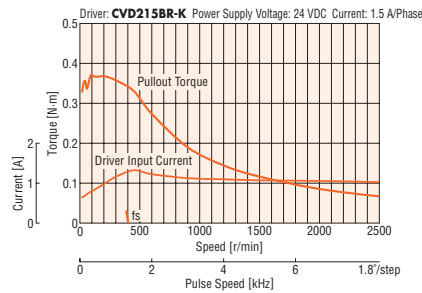
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP233D15A-R2EL



PKP235D15A-R2EL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP233D15A-R2EL	50.5	0.19	B1102
PKP235D15A-R2EL	65.5	0.295	B1103

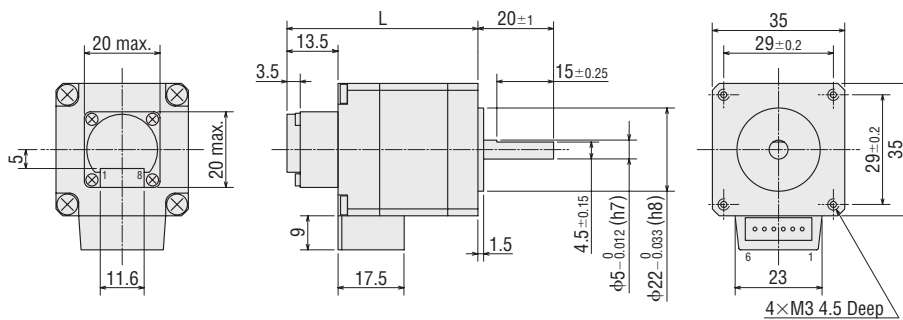
Applicable Connector (Molex)

	Motor	Encoder
Connector Housing	51103-0600	51021-0800
Contact	50351-8100	50079-8100
Crimp Tool	57295-5000	57067-3000

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

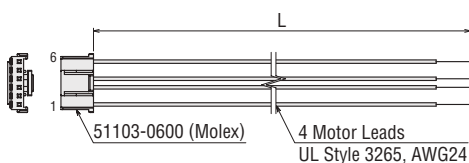
- Refer to page 07-85 for inner wiring diagram of motor.



Connection Cable (Sold separately)

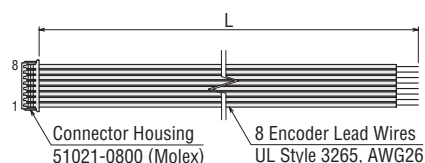
For Motor

Product Name	Length L (m)
LC2B06B	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Standard Type with Electromagnetic Brake

Frame Size 35 mm (Unipolar 6 lead wires)

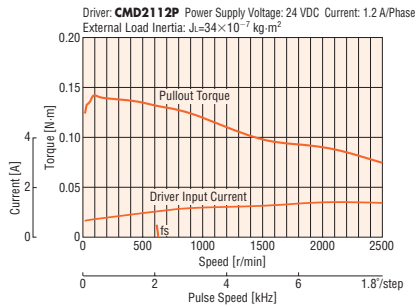
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic brake Static friction torque N·m
PKP233U12M	0.16	36×10^{-7}	1.2	3.24	2.7	1.4	1.8°	0.3
PKP235U12M	0.3	62×10^{-7}		4.08	3.4	2		

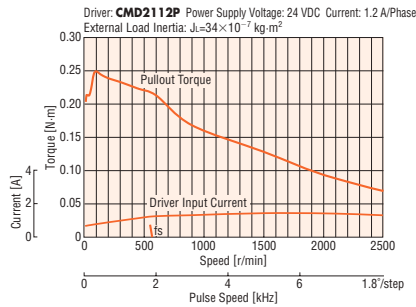
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP233U12M



PKP235U12M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed - torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP233U12M	71	0.285	B1134
PKP235U12M	86	0.39	B1135

Inner Wiring Diagram of Motor

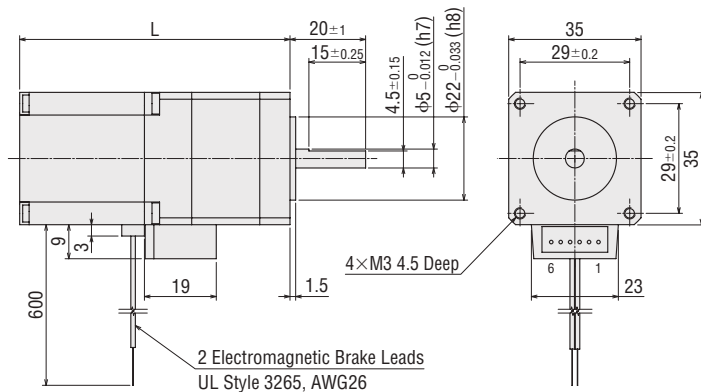
Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

07

- Applicable Connector (Molex)
Connector Housing: 51103-0600
Contact: 50351-8100
Crimp Tool: 57295-5000

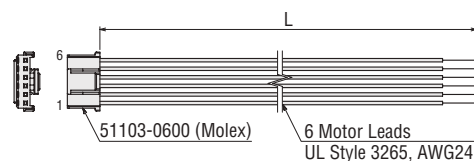
PKP Series



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



Standard Type with Electromagnetic Brake

Frame Size 35 mm (Bipolar 4 lead wires)

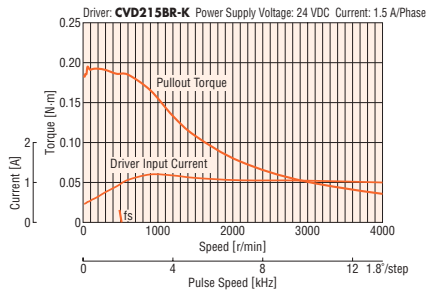
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic brake Static friction torque N·m
PKP233D15M	0.2	36×10^{-7}	1.5	2.43	1.62	1.5	1.8°	0.3
PKP235D15M	0.37	62×10^{-7}		3.6	2.4	2.6		

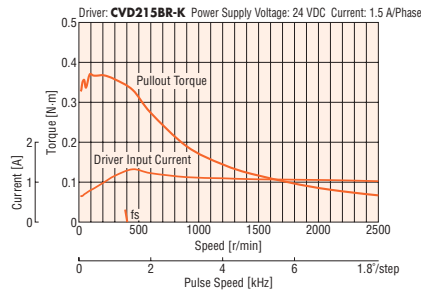
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP233D15M



PKP235D15M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

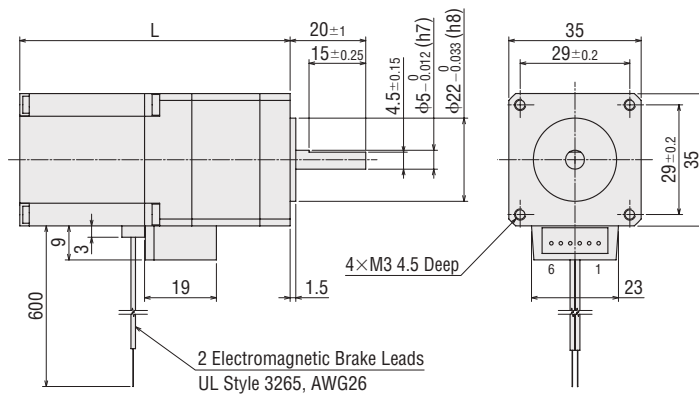
Product Name	L	Mass kg	2D CAD
PKP233D15M	71	0.285	B1134
PKP235D15M	86	0.39	B1135

- Applicable Connector (Molex)
Connector Housing: 51103-0600
Contact: 50351-8100
Crimp Tool: 57295-5000

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

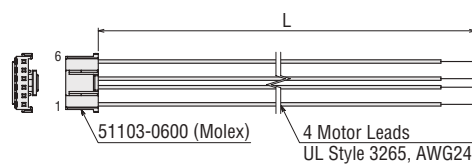
- Refer to page 07-85 for inner wiring diagram of motor.



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06B	0.6



Standard Type Frame Size 42 mm (Unipolar 5 lead wires)

Specifications

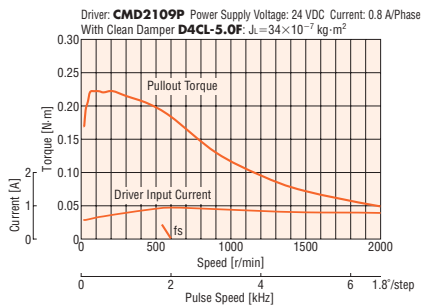
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243U08 <input type="checkbox"/> 2 NEW	0.26	36×10 ⁻⁷	0.8	5.3	6.6	5.3	1.8°	CMD2109P
PKP243U09 <input type="checkbox"/> 2			0.95	4.5	4.7	3.7		CMD2109P
PKP243U12 <input type="checkbox"/> 2 NEW			1.2	3.2	2.7	2.4		CMD2112P
PKP244U08 <input type="checkbox"/> 2 NEW	0.39	54×10 ⁻⁷	0.8	7.1	8.9	8.4		CMD2109P
PKP244U12 <input type="checkbox"/> 2			1.2	4.8	4	3.7		CMD2112P
PKP245U08 <input type="checkbox"/> 2 NEW	0.49	73×10 ⁻⁷	0.8	6.4	8	8.3		CMD2109P
PKP245U12 <input type="checkbox"/> 2			1.2	3.8	3.2	3.7		CMD2112P
PKP246U12 <input type="checkbox"/> 2	0.75	110×10 ⁻⁷	1.2	6.1	5.1	6		CMD2112P
PKP246U16 <input type="checkbox"/> 2 NEW			1.6	4.5	2.8	3.3		CMD2120P

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box is located in the product name.

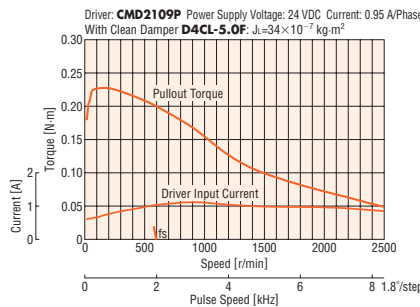
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

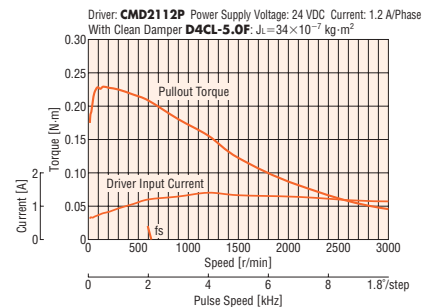
PKP243U08A2/ PKP243U08B2



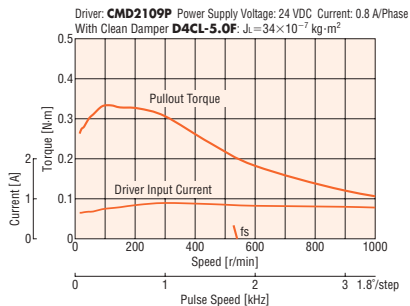
PKP243U09A2/ PKP243U09B2



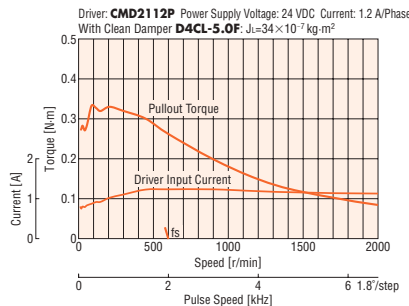
PKP243U12A2/ PKP243U12B2



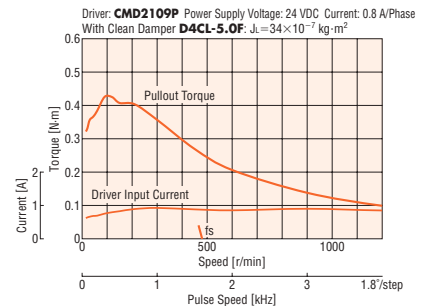
PKP244U08A2/ PKP244U08B2



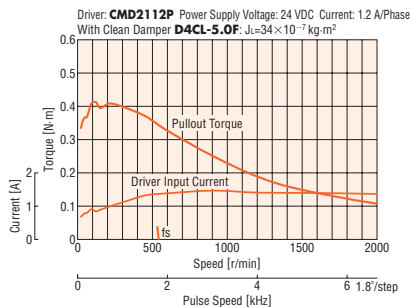
PKP244U12A2/ PKP244U12B2



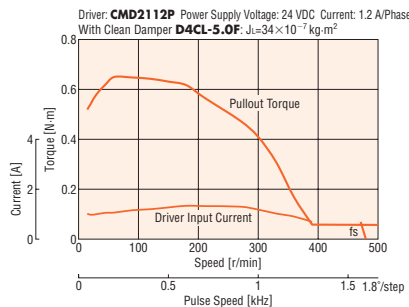
PKP245U08A2/ PKP245U08B2



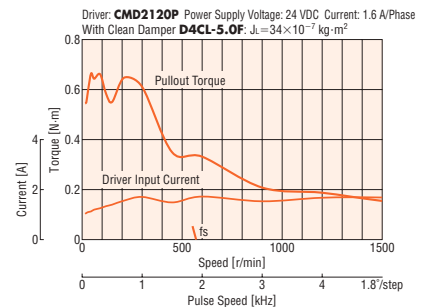
PKP245U12A2/ PKP245U12B2



PKP246U12A2/ PKP246U12B2



PKP246U16A2/ PKP246U16B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP243U08A2	33	—	0.23	B1335
PKP243U08B2		48		
PKP243U09A2		—		
PKP243U09B2		48		
PKP243U12A2		—		
PKP243U12B2	48	—	—	—
PKP244U08A2	39	—	0.3	B1336
PKP244U08B2		54		
PKP244U12A2		—		
PKP244U12B2		54		
PKP245U08A2	47	—	0.37	B1337
PKP245U08B2		62		
PKP245U12A2		—		
PKP245U12B2		62		
PKP246U12A2	59	—	0.5	B1338
PKP246U12B2		74		
PKP246U16A2		—		
PKP246U16B2		74		

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

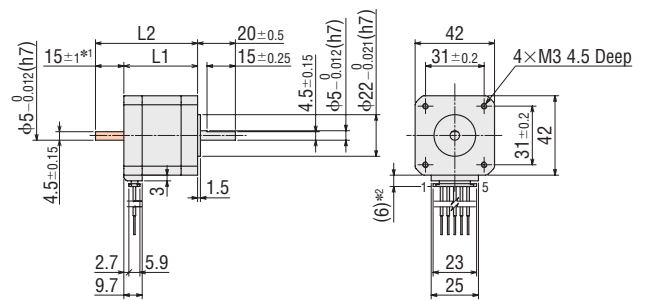
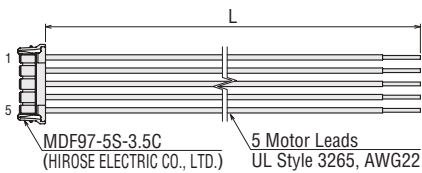
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2U06E	0.6



*1 The length of the shaft flat on the double shaft model is 15 ± 0.25 .

*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 42 mm (Bipolar 4 lead wires)

Specifications

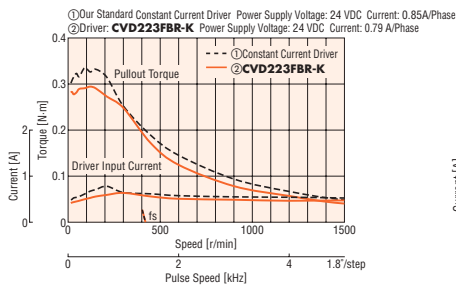
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243D08 <input type="checkbox"/> 2 NEW	0.35	36×10 ⁻⁷	0.85	4.6	5.4	10	1.8°	CVD223FBR-K
PKP243D15 <input type="checkbox"/> 2			1.5	2.7	1.8	3.3		
PKP243D23 <input type="checkbox"/> 2			2.3	1.8	0.78	1.4		
PKP244D08 <input type="checkbox"/> 2 NEW	0.48	54×10 ⁻⁷	0.85	5.7	6.7	14		
PKP244D15 <input type="checkbox"/> 2			1.5	3.2	2.1	4.4		
PKP244D23 <input type="checkbox"/> 2			2.3	2.1	0.93	1.9		
PKP245D08 <input type="checkbox"/> 2 NEW	0.66	73×10 ⁻⁷	0.85	6	7.1	16		
PKP245D15 <input type="checkbox"/> 2			1.5	3.3	2.2	5.3		
PKP245D23 <input type="checkbox"/> 2			2.3	2.3	1	2.2		
PKP246D15 <input type="checkbox"/> 2	0.99	110×10 ⁻⁷	1.5	4.4	2.9	7.9		
PKP246D23 <input type="checkbox"/> 2			2.3	3.2	1.4	3.3		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box is located in the product name.

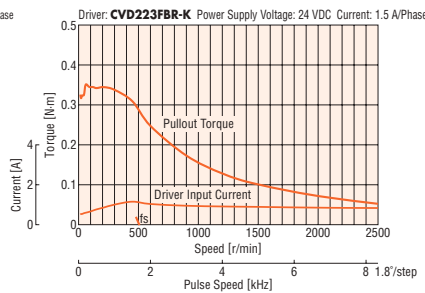
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

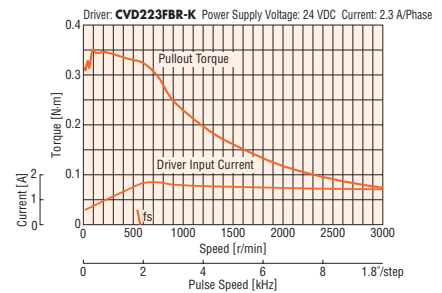
PKP243D08A2/PKP243D08B2



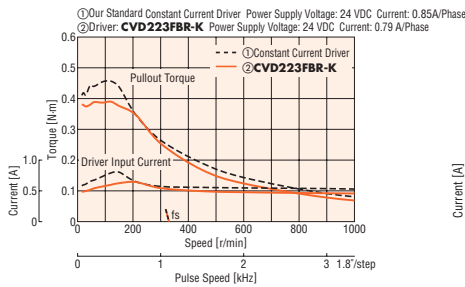
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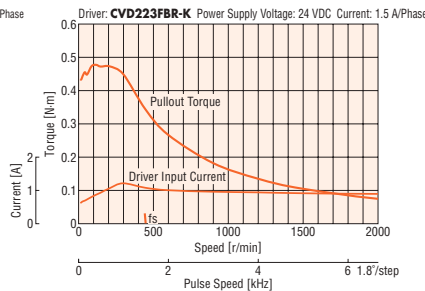
PKP243D23A2/PKP243D23B2



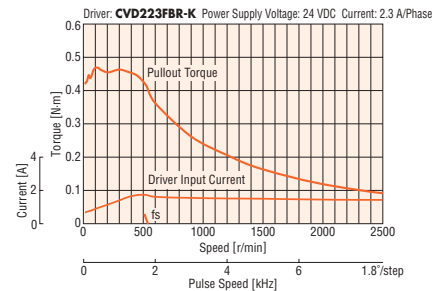
PKP244D08A2/PKP244D08B2



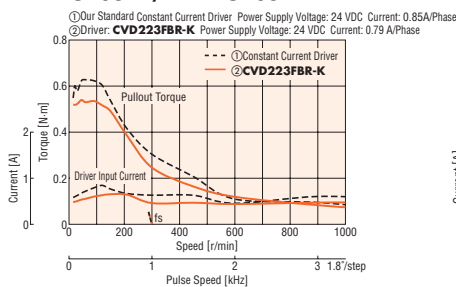
PKP244D15A2/PKP244D15B2



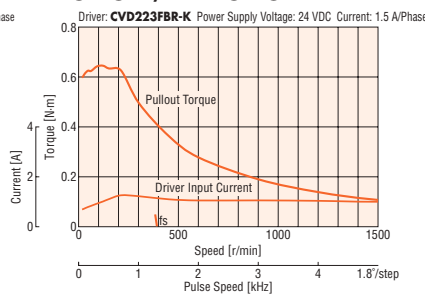
PKP244D23A2/PKP244D23B2



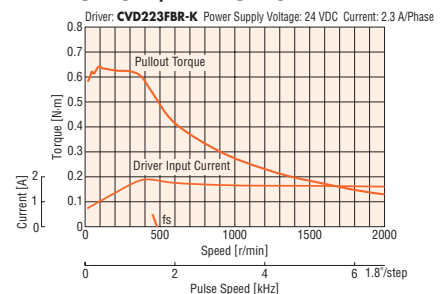
PKP245D08A2/PKP245D08B2



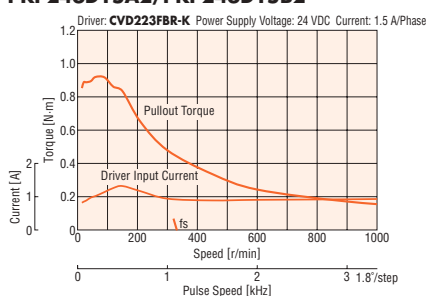
PKP245D15A2/PKP245D15B2



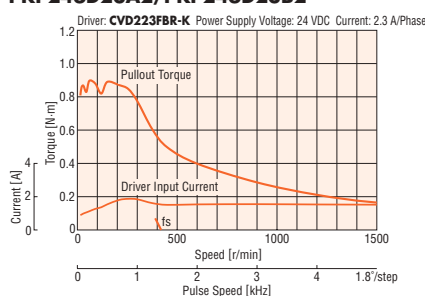
PKP245D23A2/PKP245D23B2



PKP246D15A2/PKP246D15B2



PKP246D23A2/PKP246D23B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP243D08A2	33	—	0.23	B1260
PKP243D08B2		48		
PKP243D15A2		—		
PKP243D15B2		48		
PKP243D23A2		—		
PKP243D23B2	48	—		
PKP244D08A2	39	—	0.3	B1261
PKP244D08B2		54		
PKP244D15A2		—		
PKP244D15B2		54		
PKP244D23A2		—		
PKP244D23B2	54	—		
PKP245D08A2	47	—	0.37	B1262
PKP245D08B2		62		
PKP245D15A2		—		
PKP245D15B2		62		
PKP245D23A2		—		
PKP245D23B2	62	—		
PKP246D15A2	59	—	0.5	B1263
PKP246D15B2		74		
PKP246D23A2		—		
PKP246D23B2		74		

● Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

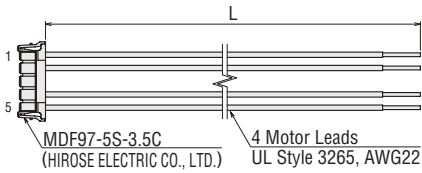
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

● Connection Cable (Sold separately)

◇ For Motor

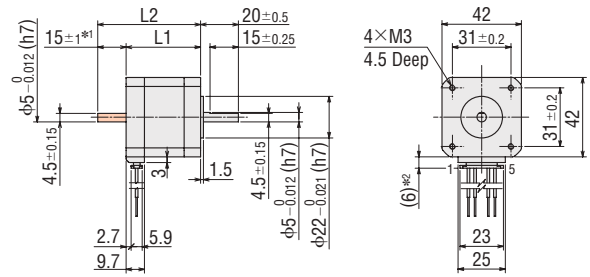
Product Name	Length L (m)
LC2B06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

● Refer to page 07-85 for inner wiring diagram of motor.



*1 The length of the shaft flat on the double shaft model is 15±0.25.

*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Standard Type with Encoder Frame Size 42 mm (Unipolar 5 lead wires)

Specifications

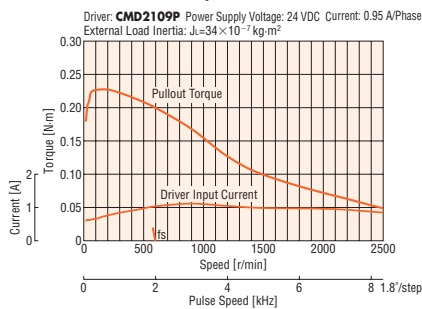
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243U09A2-R2EL PKP243U09A2-R2FL	0.26	36×10 ⁻⁷	0.95	4.5	4.7	3.7	1.8°	CMD2109P
PKP244U12A2-R2EL PKP244U12A2-R2FL	0.39	54×10 ⁻⁷	1.2	4.8	4	3.7		
PKP245U12A2-R2EL PKP245U12A2-R2FL	0.49	73×10 ⁻⁷	1.2	3.8	3.2	3.7		
PKP246U12A2-R2EL PKP246U12A2-R2FL	0.75	110×10 ⁻⁷	1.2	6.1	5.1	6		CMD2112P

● Refer to page 07-82 for encoder specifications.

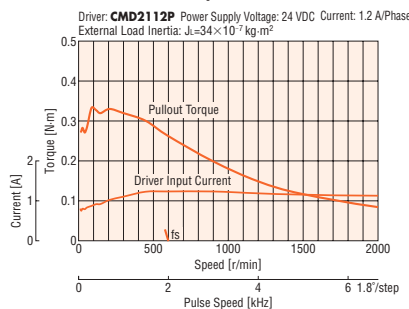
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

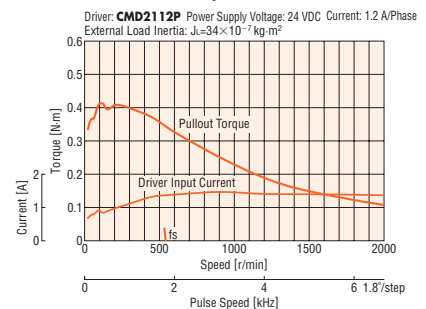
PKP243U09A2-R2EL/PKP243U09A2-R2FL



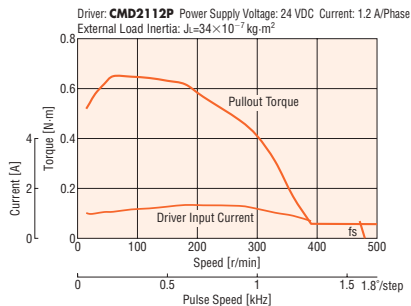
PKP244U12A2-R2EL/PKP244U12A2-R2FL



PKP245U12A2-R2EL/PKP245U12A2-R2FL



PKP246U12A2-R2EL/PKP246U12A2-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

07

PKP Series

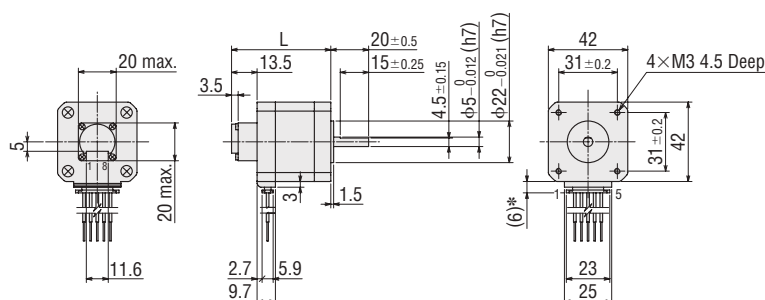
Dimensions (Unit: mm)

Motor

Product Name	L	2D & 3D CAD	
		Mass kg	2D CAD
PKP243U09A2-R2EL, PKP243U09A2-R2FL	46.5	0.24	B1328
PKP244U12A2-R2EL, PKP244U12A2-R2FL	52.5	0.31	B1329
PKP245U12A2-R2EL, PKP245U12A2-R2FL	60.5	0.38	B1330
PKP246U12A2-R2EL, PKP246U12A2-R2FL	72.5	0.51	B1331

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

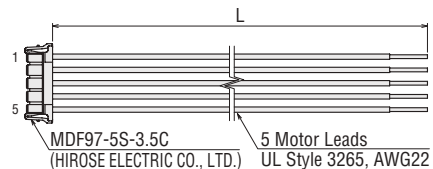


*With connection cable

Connection Cable (Sold separately)

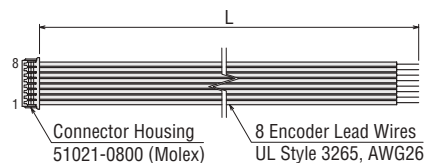
For Motor

Product Name	Length L (m)
LC2U06E	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 42 mm (Bipolar 4 lead wires)

Specifications

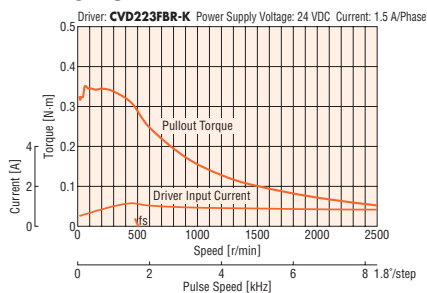
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243D15A2-R2EL	0.35	36×10 ⁻⁷	1.5	2.7	1.8	3.3	1.8°	CVD223FBR-K
PKP243D15A2-R2FL			2.3	1.8	0.78	1.4		
PKP243D23A2-R2EL	0.48	54×10 ⁻⁷	1.5	3.2	2.1	4.4		
PKP243D23A2-R2FL			2.3	2.1	0.93	1.9		
PKP244D15A2-R2EL	0.66	73×10 ⁻⁷	1.5	3.3	2.2	5.3		
PKP244D15A2-R2FL			2.3	2.3	1	2.2		
PKP244D23A2-R2EL	0.99	110×10 ⁻⁷	1.5	4.4	2.9	7.9		
PKP244D23A2-R2FL			2.3	3.2	1.4	3.3		

● Refer to page 07-82 for encoder specifications.

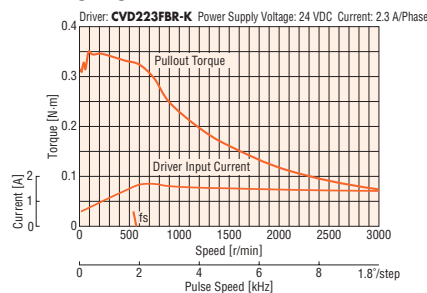
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

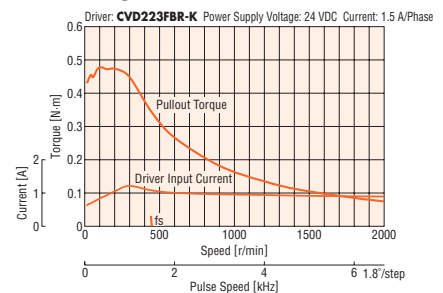
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PKP243D15A2-R2FL



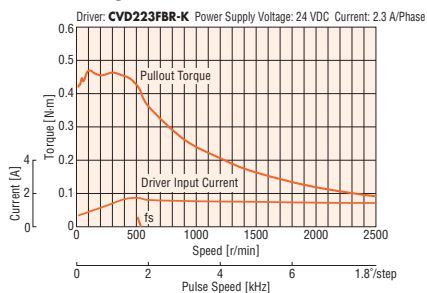
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PKP243D23A2-R2FL



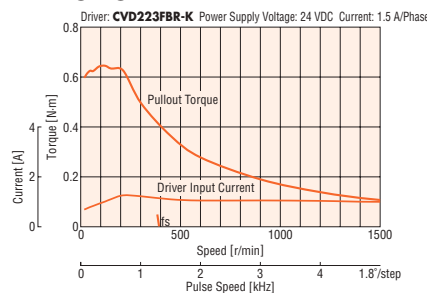
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PKP244D15A2-R2FL



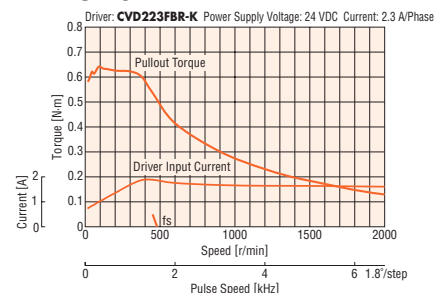
PKP244D23A2-R2EL
PKP244D23A2-R2FL



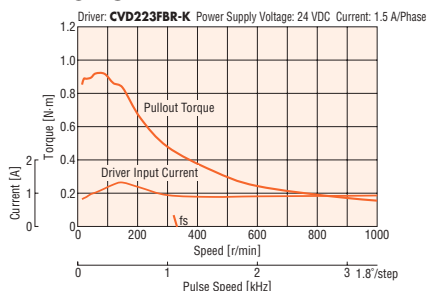
PKP245D15A2-R2EL
PKP245D15A2-R2FL



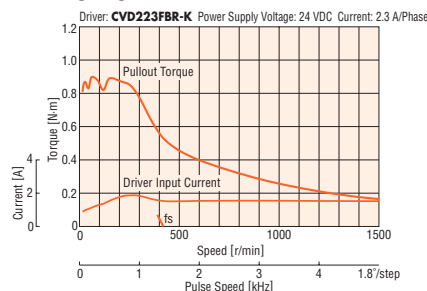
PKP245D23A2-R2EL
PKP245D23A2-R2FL



PKP246D15A2-R2EL
PKP246D15A2-R2FL



PKP246D23A2-R2EL
PKP246D23A2-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

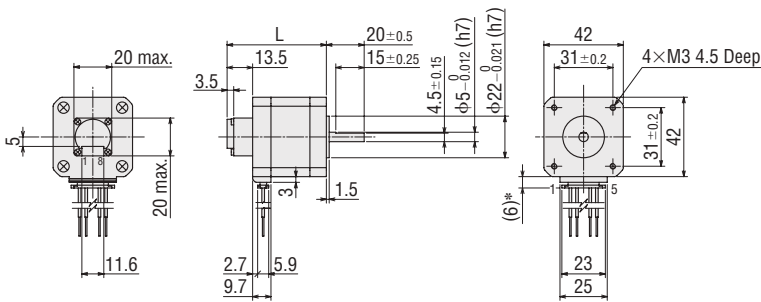
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP243D15A2-R2EL	46.5	0.24	B1321
PKP243D15A2-R2FL			
PKP243D23A2-R2EL			
PKP243D23A2-R2FL	52.5	0.31	B1322
PKP244D15A2-R2EL			
PKP244D15A2-R2FL			
PKP244D23A2-R2EL	60.5	0.38	B1323
PKP244D23A2-R2FL			
PKP245D15A2-R2EL			
PKP245D15A2-R2FL	72.5	0.51	B1324
PKP245D23A2-R2EL			
PKP245D23A2-R2FL			
PKP246D15A2-R2EL			
PKP246D15A2-R2FL			
PKP246D23A2-R2EL			
PKP246D23A2-R2FL			

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000



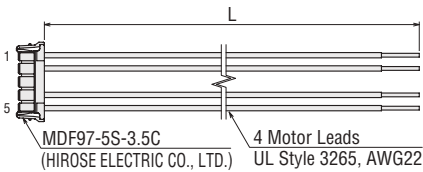
*With connection cable

07

Connection Cable (Sold separately)

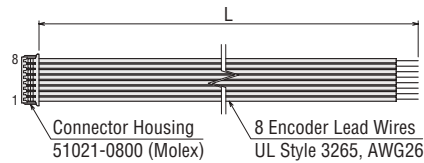
For Motor

Product Name	Length L (m)
LC2B06E	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



PKP Series

Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Electromagnetic Brake

Frame Size 42 mm (Unipolar 6 lead wires)

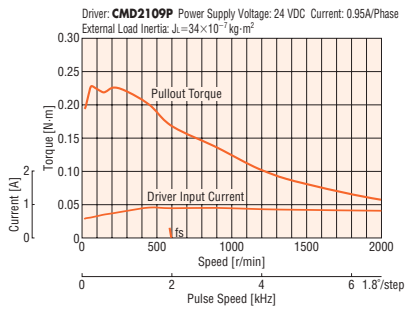
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243U09M	0.25	48×10^{-7}	0.95	4.47	4.7	5	1.8°	0.3
PKP244U12M	0.39	69×10^{-7}	1.2	4.8	4	3.9		
PKP245U12M	0.45	95×10^{-7}		4.56	3.8	5		
PKP246U12M	0.75	126×10^{-7}		7.2	6	6.5		

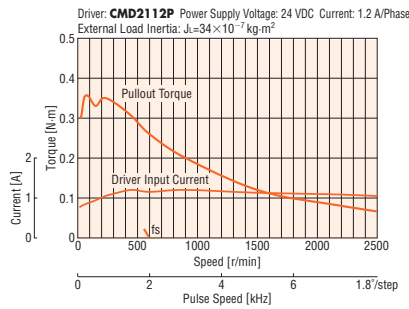
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

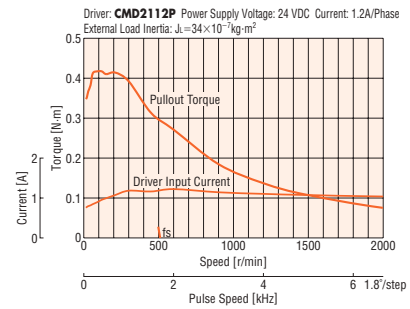
PKP243U09M



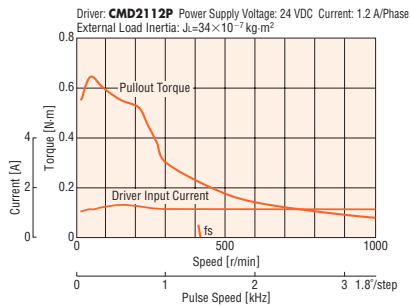
PKP244U12M



PKP245U12M



PKP246U12M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP243U09M	67	0.36	B1136
PKP244U12M	73	0.41	B1137
PKP245U12M	81	0.5	B1138
PKP246U12M	93	0.61	B1139

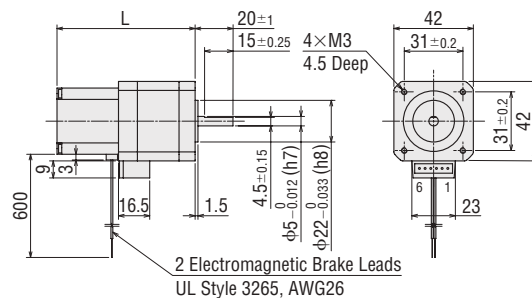
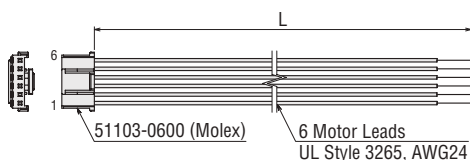
Applicable Connector (Molex)

Connector Housing: 51103-0600
Contact: 50351-8100
Crimp Tool: 57295-5000

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Electromagnetic Brake

Frame Size 42 mm (Bipolar 4 lead wires)

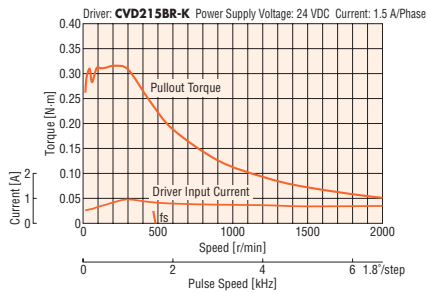
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243D15M	0.35	48×10^{-7}	1.5	2.85	1.9	5	1.8°	0.3
PKP244D15M	0.48	69×10^{-7}		3.9	2.6	4.9		
PKP245D15M	0.58	95×10^{-7}		3.6	2.4	6.6		
PKP246D15M	0.93	126×10^{-7}		5.8	3.87	8		

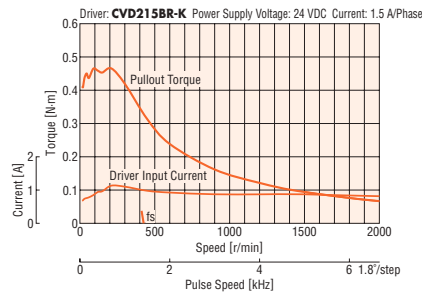
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

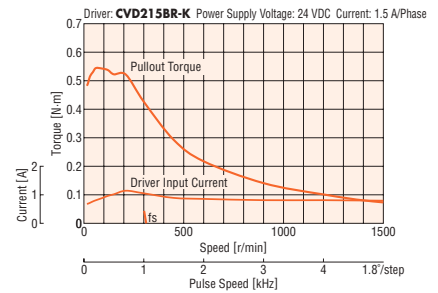
PKP243D15M



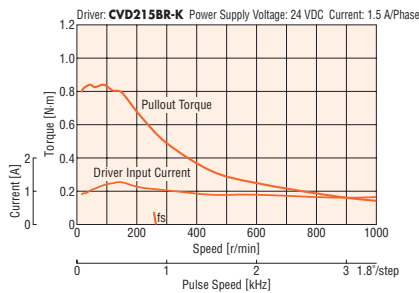
PKP244D15M



PKP245D15M



PKP246D15M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

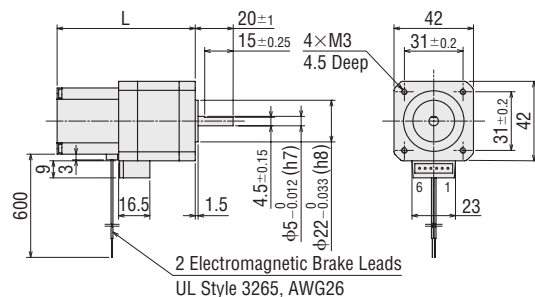
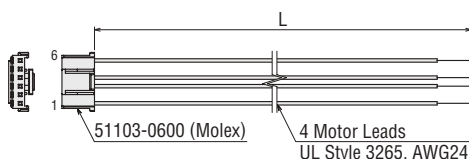
Product Name	L	Mass kg	2D CAD
PKP243D15M	67	0.36	B1136
PKP244D15M	73	0.41	B1137
PKP245D15M	81	0.5	B1138
PKP246D15M	93	0.61	B1139

- Applicable Connector (Molex)
Connector Housing: 51103-0600
Contact: 50351-8100
Crimp Tool: 57295-5000

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06B	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 50 mm (Unipolar 6 lead wires)

Specifications

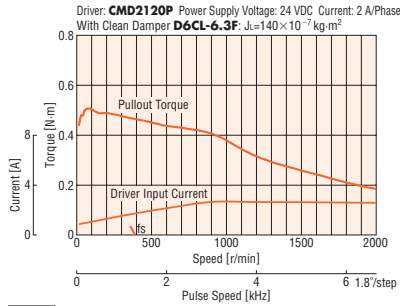
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PK256-02□	0.6	230×10^{-7}	2	3	1.5	1.4	1.8°	CMD2120P
PK258-02□	1.2	420×10^{-7}		4.8	2.4	2.87		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

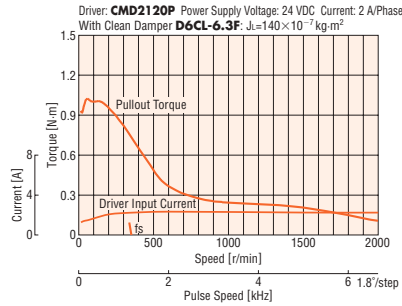
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PK256-02A/PK256-02B



PK258-02A/PK258-02B



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

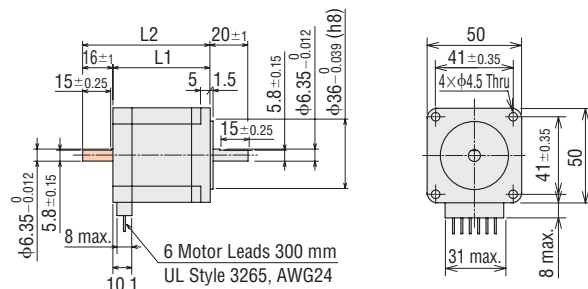
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PK256-02A	51.5	—	0.53	B293
PK256-02B		67.5		
PK258-02A	81	—	0.89	B334
PK258-02B		97		



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑦

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 56.4 mm (Unipolar 5 lead wires)

Specifications

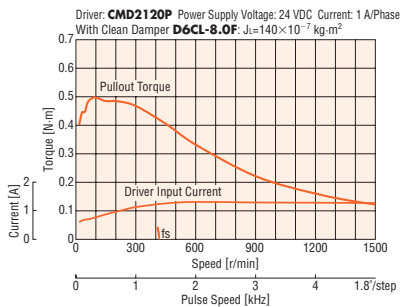
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264U10□2	0.58	140×10 ⁻⁷	1	4.4	4.4	6	1.8°	CMD2120P
PKP264U20□2			2	2.2	1.1	1.5		
PKP266U10□2	1.1	270×10 ⁻⁷	1	6.9	6.9	11.6		
PKP266U20□2			2	3.4	1.7	2.9		
PKP268U10□2	2	500×10 ⁻⁷	1	9.9	9.9	18.4		
PKP268U20□2			2	4.8	2.4	4.6		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

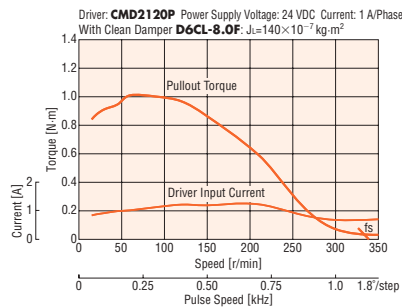
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

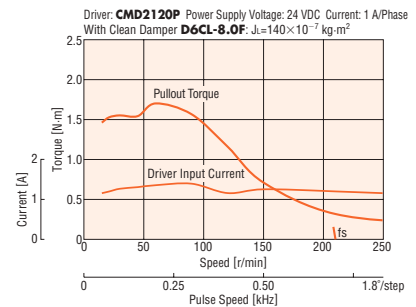
PKP264U10A2/PKP264U10B2



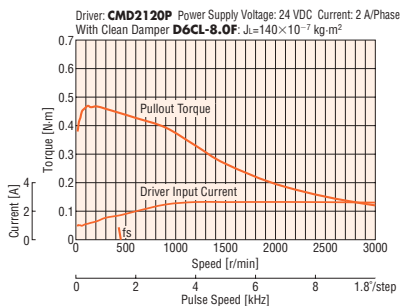
PKP266U10A2/PKP266U10B2



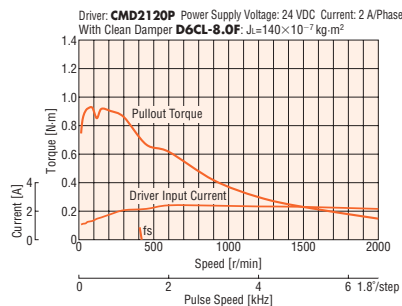
PKP268U10A2/PKP268U10B2



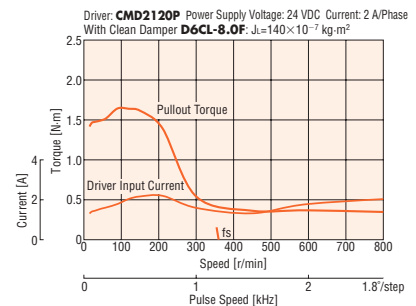
PKP264U20A2/PKP264U20B2



PKP266U20A2/PKP266U20B2



PKP268U20A2/PKP268U20B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP264U10A2	39	-	0.45	B1257
PKP264U10B2		62		
PKP264U20A2		62		
PKP266U10A2	54	-	0.7	B1258
PKP266U10B2		77		
PKP266U20A2		77		
PKP268U10A2	76	-	1.1	B1259
PKP268U10B2		99		
PKP268U20A2		99		

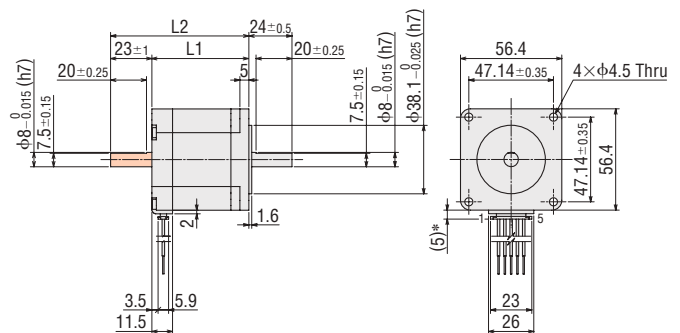
● Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

● Refer to page 07-85 for inner wiring diagram of motor.



*With connection cable

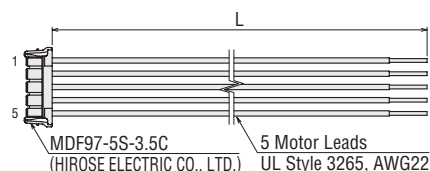
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06E	0.6



Standard Type Frame Size 56.4 mm (Bipolar 4 lead wires)

Specifications

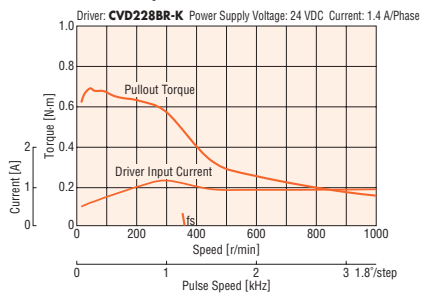
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264D14□2	0.74	140×10 ⁻⁷	1.4	2.9	2.1	6	1.8°	CVD228BR-K
PKP264D28□2			2.8	1.6	0.57	1.5		
PKP264D42□2			4.2	1	0.24	0.65		
PKP266D14□2	1.4	270×10 ⁻⁷	1.4	4.6	3.3	12		CVD228BR-K
PKP266D28□2			2.8	2.4	0.86	2.9		
PKP266D42□2			4.2	1.6	0.38	1.3		
PKP268D14□2	2.5	500×10 ⁻⁷	1.4	6.6	4.7	18		CVD228BR-K
PKP268D28□2			2.8	3.4	1.2	4.6		
PKP268D42□2			4.2	2.2	0.53	2		

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

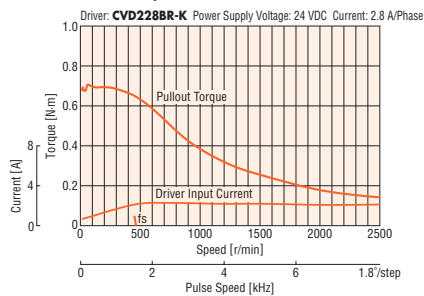
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

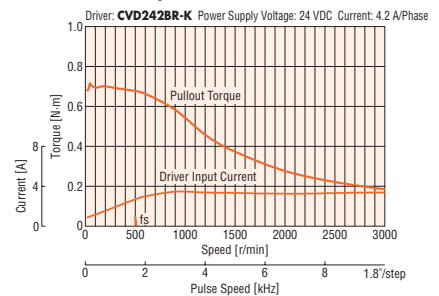
PKP264D14A2/PKP264D14B2



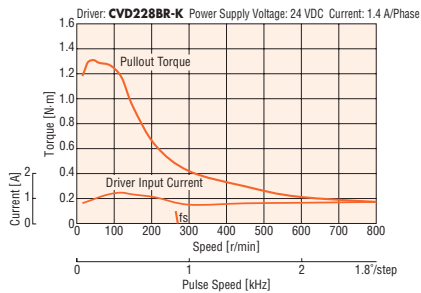
PKP264D28A2/PKP264D28B2



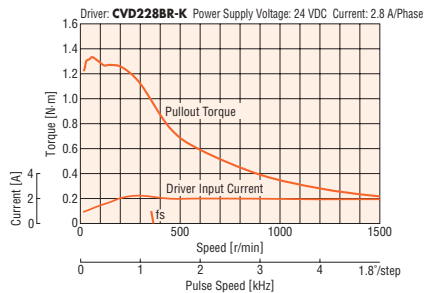
PKP264D42A2/PKP264D42B2



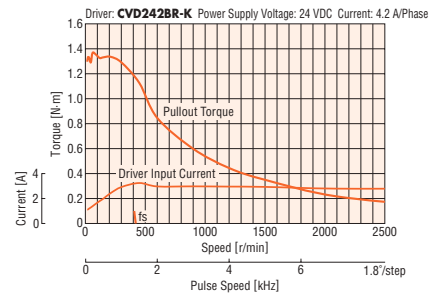
PKP266D14A2/PKP266D14B2



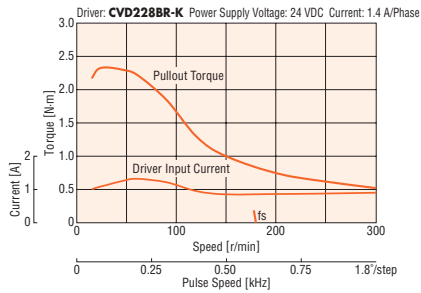
PKP266D28A2/PKP266D28B2



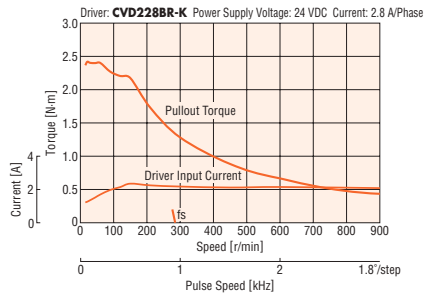
PKP266D42A2/PKP266D42B2



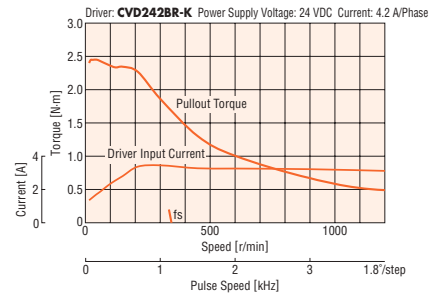
PKP268D14A2/PKP268D14B2



PKP268D28A2/PKP268D28B2



PKP268D42A2/PKP268D42B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP264D14A2	39	-	0.45	B1249
PKP264D14B2		62		
PKP264D28A2		-		
PKP264D28B2		62		
PKP264D42A2		-		
PKP264D42B2	62			
PKP266D14A2	54	-	0.7	B1250
PKP266D14B2		77		
PKP266D28A2		-		
PKP266D28B2		77		
PKP266D42A2		-		
PKP266D42B2	77			
PKP268D14A2	76	-	1.1	B1251
PKP268D14B2		99		
PKP268D28A2		-		
PKP268D28B2		99		
PKP268D42A2		-		
PKP268D42B2	99			

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

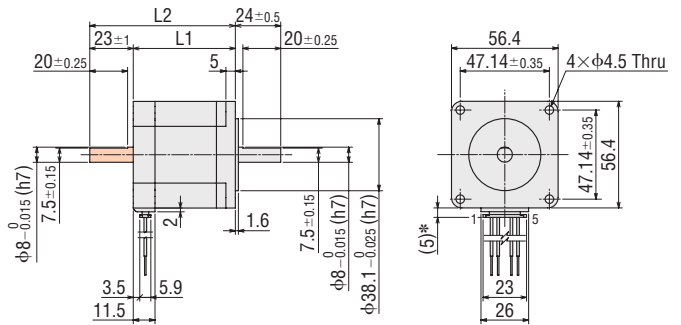
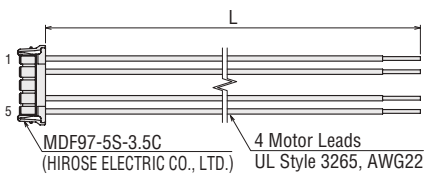
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06E	0.6



*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

● Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 56.4 mm (Unipolar 5 lead wires)

Specifications

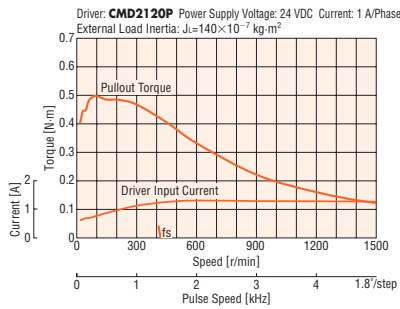
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264U10A2-R2EL	0.58	140×10 ⁻⁷	1	4.4	4.4	6	1.8°	CMD2120P
PKP264U10A2-R2FL			2	2.2	1.1	1.5		
PKP264U20A2-R2EL			1	6.9	6.9	11.6		
PKP264U20A2-R2FL			2	3.4	1.7	2.9		
PKP266U10A2-R2EL	1.1	270×10 ⁻⁷	1	9.9	9.9	18.4		
PKP266U10A2-R2FL			2	4.8	2.4	4.6		
PKP266U20A2-R2EL			1	6.9	6.9	11.6		
PKP266U20A2-R2FL			2	3.4	1.7	2.9		
PKP268U10A2-R2EL	2	500×10 ⁻⁷	1	9.9	9.9	18.4		
PKP268U10A2-R2FL			2	4.8	2.4	4.6		
PKP268U20A2-R2EL			1	6.9	6.9	11.6		
PKP268U20A2-R2FL			2	3.4	1.7	2.9		

● Refer to page 07-82 for encoder specifications.

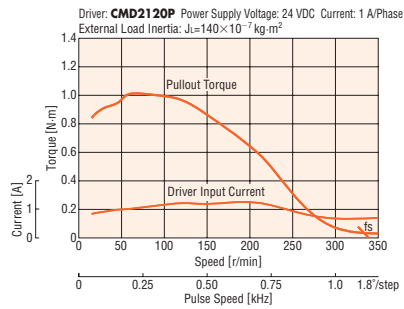
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

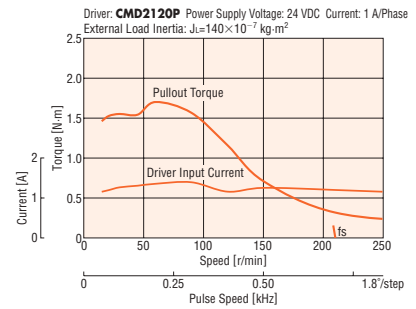
PKP264U10A2-R2EL
PKP264U10A2-R2FL



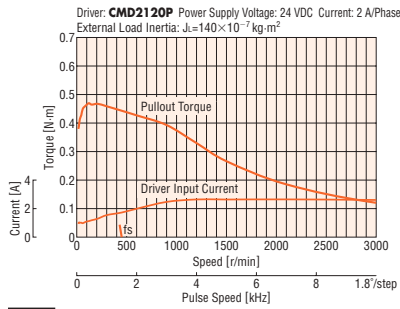
PKP266U10A2-R2EL
PKP266U10A2-R2FL



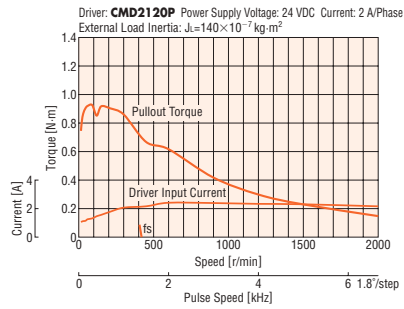
PKP268U10A2-R2EL
PKP268U10A2-R2FL



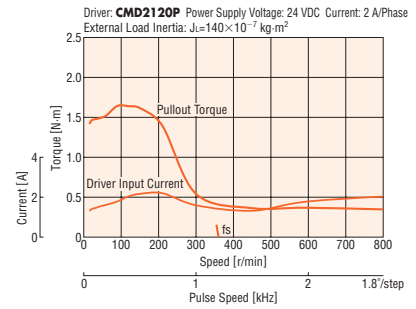
PKP264U20A2-R2EL
PKP264U20A2-R2FL



PKP266U20A2-R2EL
PKP266U20A2-R2FL



PKP268U20A2-R2EL
PKP268U20A2-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

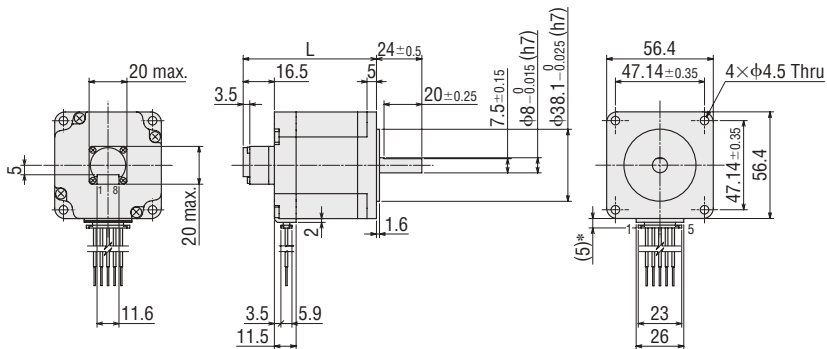
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264U10A2-R2EL	55.5	0.45	B1332
PKP264U10A2-R2FL			
PKP264U20A2-R2EL			
PKP264U20A2-R2FL	70.5	0.7	B1333
PKP266U10A2-R2EL			
PKP266U10A2-R2FL			
PKP266U20A2-R2EL	92.5	1.1	B1334
PKP266U20A2-R2FL			
PKP268U10A2-R2EL			
PKP268U10A2-R2FL			
PKP268U20A2-R2EL			
PKP268U20A2-R2FL			

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

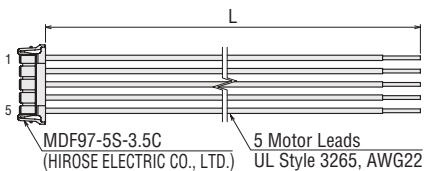


*With Connection Cable

Connection Cable (Sold separately)

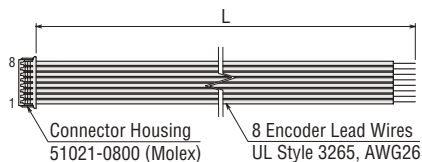
For Motor

Product Name	Length L (m)
LC2U06E	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Encoder Frame Size 56.4 mm (Bipolar 4 lead wires)

Specifications

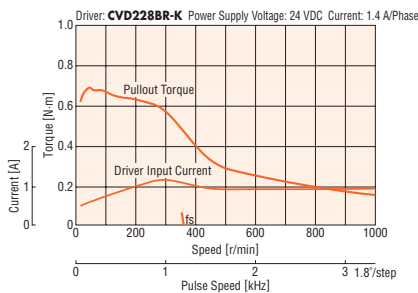
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*		
PKP264D14A2-R2EL PKP264D14A2-R2FL PKP264D28A2-R2EL PKP264D28A2-R2FL	0.74	140×10 ⁻⁷	1.4	2.9	2.1	6	1.8°	CVD228BR-K		
2.8			1.6	0.57	1.5					
4.2			1	0.24	0.65					
PKP266D14A2-R2EL PKP266D14A2-R2FL PKP266D28A2-R2EL PKP266D28A2-R2FL PKP266D42A2-R2EL PKP266D42A2-R2FL			1.4	270×10 ⁻⁷	1.4	4.6			3.3	12
2.8	2.4	0.86			2.9					
4.2	1.6	0.38			1.3	CVD242BR-K				
PKP268D14A2-R2EL PKP268D14A2-R2FL PKP268D28A2-R2EL PKP268D28A2-R2FL PKP268D42A2-R2EL PKP268D42A2-R2FL	2.5	500×10 ⁻⁷			1.4			6.6	4.7	18
2.8					3.4	1.2		4.6		
4.2					2.2	0.53		2	CVD242BR-K	

● Refer to page 07-82 for encoder specifications.

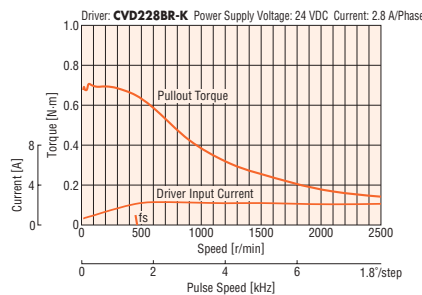
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

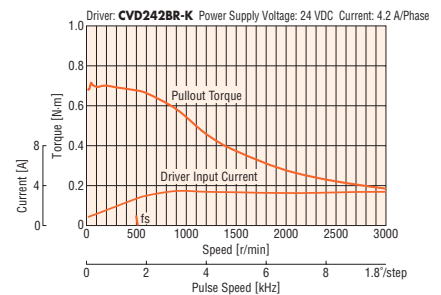
PKP264D14A2-R2EL
PKP264D14A2-R2FL



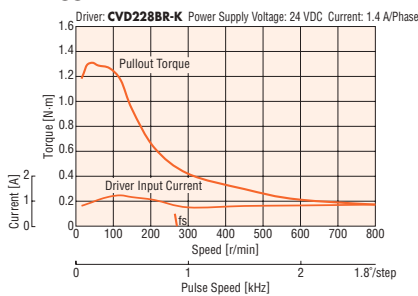
PKP264D28A2-R2EL
PKP264D28A2-R2FL



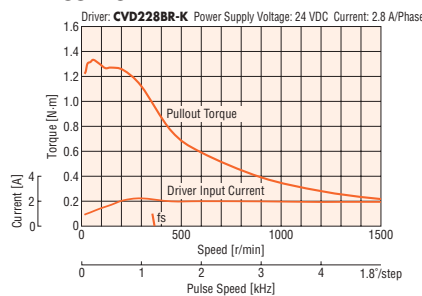
PKP264D42A2-R2EL
PKP264D42A2-R2FL



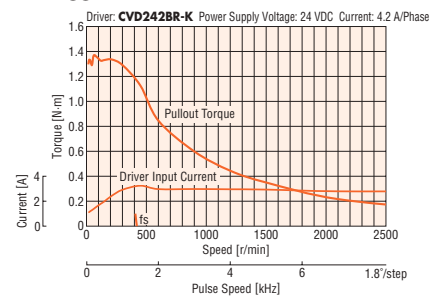
PKP266D14A2-R2EL
PKP266D14A2-R2FL



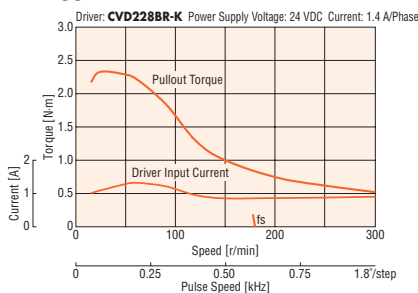
PKP266D28A2-R2EL
PKP266D28A2-R2FL



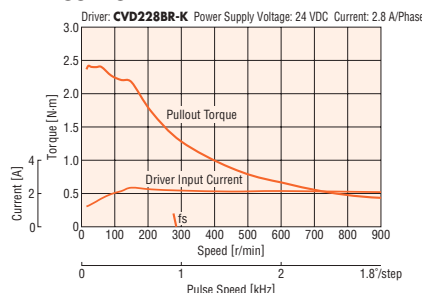
PKP266D42A2-R2EL
PKP266D42A2-R2FL



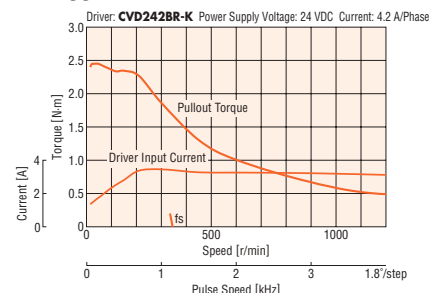
PKP268D14A2-R2EL
PKP268D14A2-R2FL



PKP268D28A2-R2EL
PKP268D28A2-R2FL



PKP268D42A2-R2EL
PKP268D42A2-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

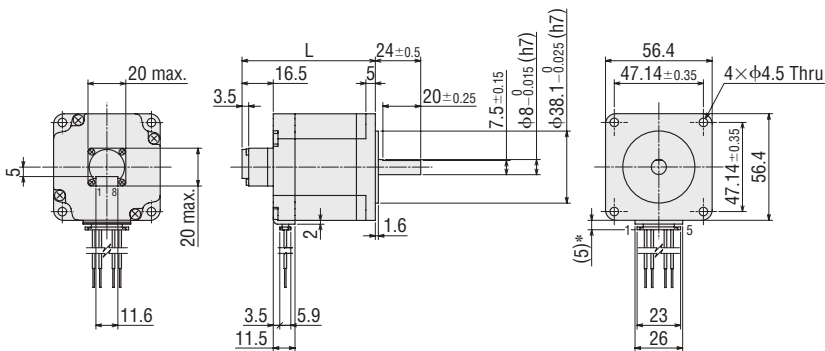
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264D14A2-R2EL	55.5	0.45	B1325
PKP264D14A2-R2FL			
PKP264D28A2-R2EL			
PKP264D28A2-R2FL			
PKP264D42A2-R2EL			
PKP264D42A2-R2FL	70.5	0.7	B1326
PKP266D14A2-R2EL			
PKP266D14A2-R2FL			
PKP266D28A2-R2EL			
PKP266D28A2-R2FL			
PKP266D42A2-R2EL	92.5	1.1	B1327
PKP266D42A2-R2FL			
PKP268D14A2-R2EL			
PKP268D14A2-R2FL			
PKP268D28A2-R2EL			
PKP268D28A2-R2FL			
PKP268D42A2-R2EL			
PKP268D42A2-R2FL			

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

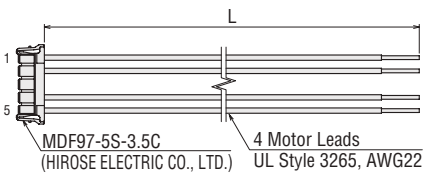


*With connection cable

Connection Cable (Sold separately)

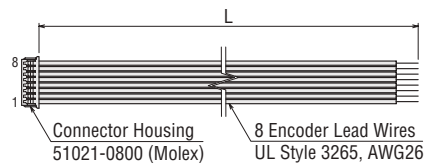
For Motor

Product Name	Length L (m)
LC2B06E	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

Refer to page 07-85 for inner wiring diagram of motor.

Standard Type with Electromagnetic Brake

Frame Size 56.4 mm (Unipolar 6 lead wires)

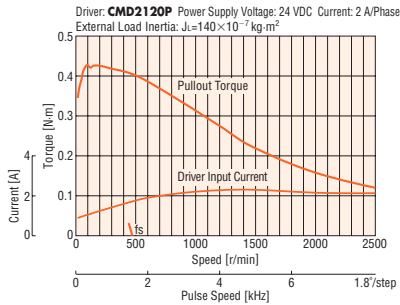
Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N-m
PKP264U20M	0.51	270×10^{-7}	2	2.9	1.45	1.8	1.8°	1.5
PKP266U20M	1.1	440×10^{-7}		4	2	2.9		
PKP268U20M	1.75	640×10^{-7}		4.9	2.45	4.4		

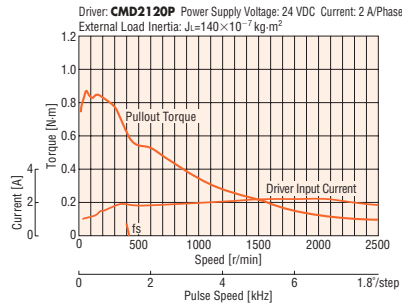
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

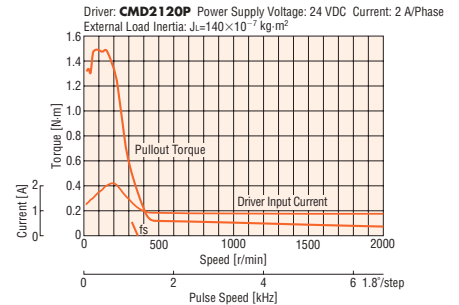
PKP264U20M



PKP266U20M



PKP268U20M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

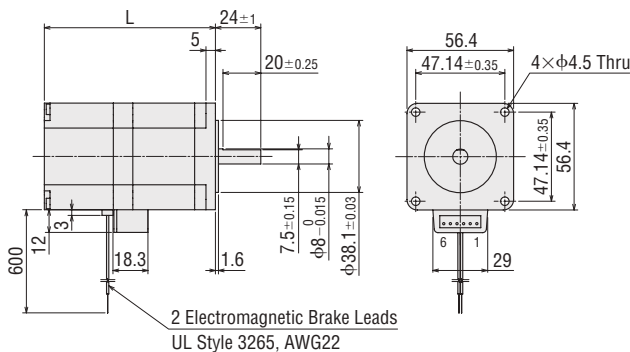
Product Name	L	Mass kg	2D CAD
PKP264U20M	75.5	0.76	B1140
PKP266U20M	90.5	1.03	B1141
PKP268U20M	112.5	1.4	B1142

- Applicable Connector (Molex)
Connector Housing: 51067-0600
Contact: 50217-9101
Crimp Tool: 57189-5000
57190-5000

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

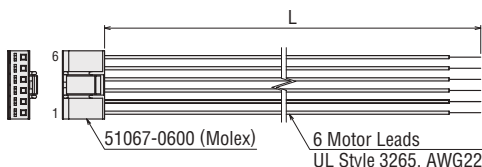
- Refer to page 07-85 for inner wiring diagram of motor.



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06C	0.6
LC2U10C	1



Standard Type with Electromagnetic Brake

Frame Size 56.4 mm (Bipolar 4 lead wires)

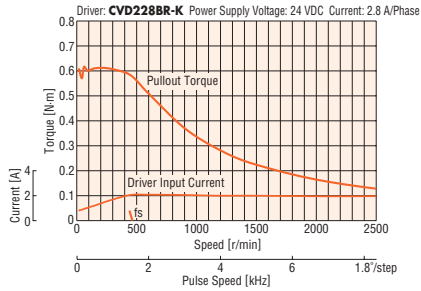
Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N-m
PKP264D28M	0.6	270×10^{-7}	2.8	2	0.73	1.8	1.8°	1.5
PKP266D28M	1.4	440×10^{-7}		2.8	1	2.9		
PKP268D28M	2.3	640×10^{-7}		3.4	1.23	4.4		

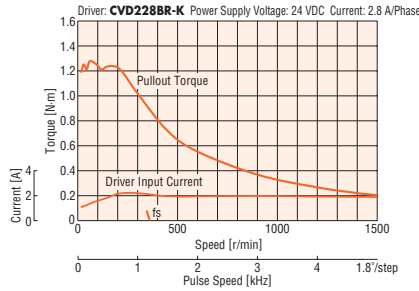
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

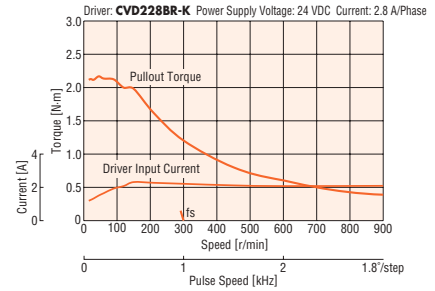
PKP264D28M



PKP266D28M



PKP268D28M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

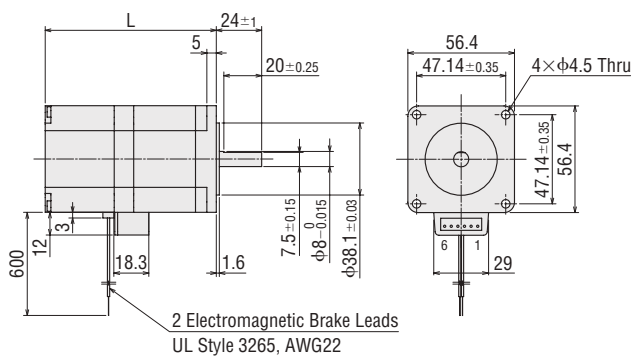
Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264D28M	75.5	0.76	B1140
PKP266D28M	90.5	1.03	B1141
PKP268D28M	112.5	1.4	B1142

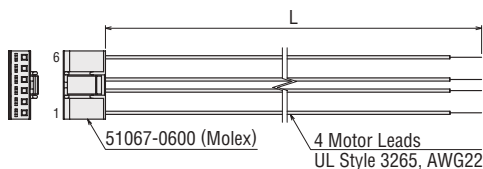
- Applicable Connector (Molex)
Connector Housing: 51067-0600
Contact: 50217-9101
Crimp Tool: 57189-5000
57190-5000



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06C	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 60 mm (Unipolar 6 lead wires)

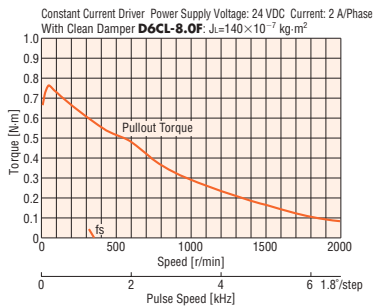
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle
PK264J □	0.75	280×10^{-7}	2	2.9	1.46	1.8	1.8°
PK266J □	1.35	450×10^{-7}		4	2	3.05	
PK267J □	1.7	570×10^{-7}		4.8	2.4	3.54	
PK269J □	2.2	900×10^{-7}		6	2.98	5.7	

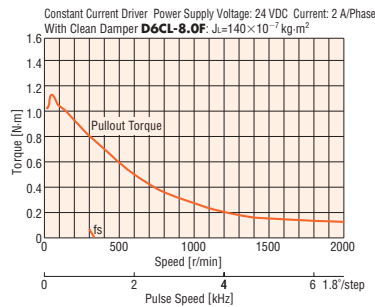
● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

Speed – Torque Characteristics (Reference values)

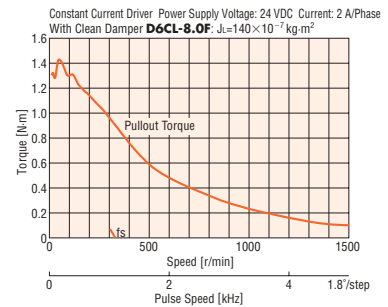
PK264JA/PK264JB



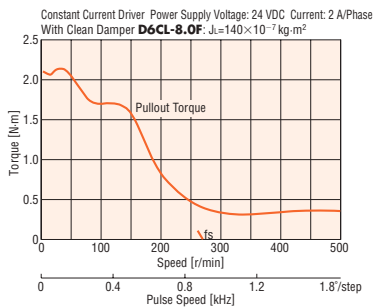
PK266JA/PK266JB



PK267JA/PK267JB



PK269JA/PK269JB



Note

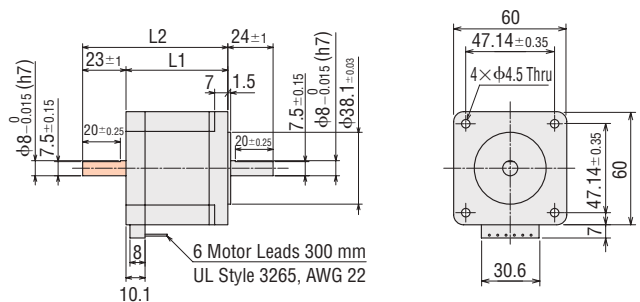
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PK264JA	43.5	—	0.6	B279
PK264JB		66.5		
PK266JA	54	—	0.83	B232
PK266JB		77		
PK267JA	65	—	1.02	B233
PK267JB		88		
PK269JA	85	—	1.43	B280
PK269JB		108		



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑦

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 60 mm (Bipolar 4 lead wires)

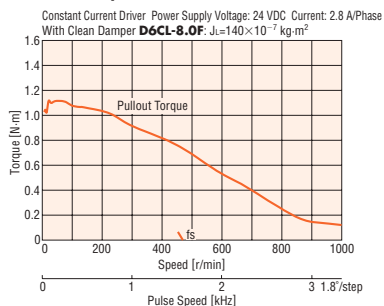
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle
PK264JD□	1.06	280×10^{-7}	2.8	2.1	0.73	1.8	1.8°
PK266JD□	1.75	450×10^{-7}		2.8	1	3.05	
PK267JD□	2.2	570×10^{-7}		3.4	1.2	3.54	
PK269JD□	3.1	900×10^{-7}		4.2	1.49	5.7	

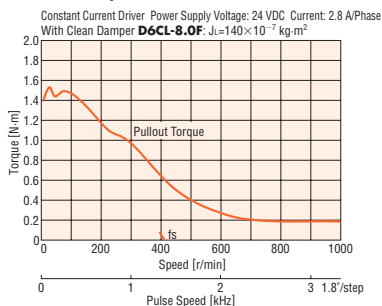
● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

Speed – Torque Characteristics (Reference values)

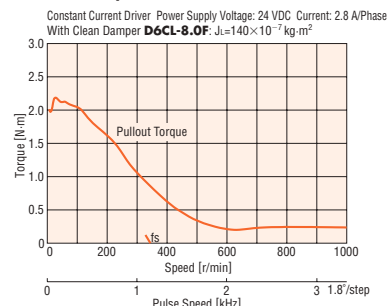
PK264JDA/PK264JDB



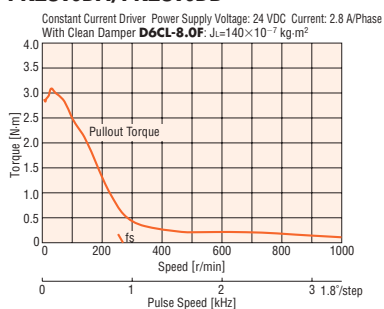
PK266JDA/PK266JDB



PK267JDA/PK267JDB



PK269JDA/PK269JDB



Note

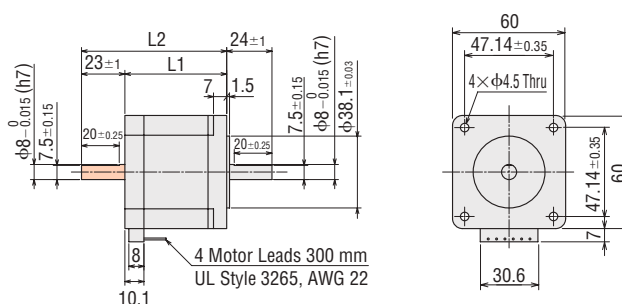
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PK264JDA	43.5	–	0.6	B279
PK264JDB		66.5		
PK266JDA	54	–	0.83	B232
PK266JDB		77		
PK267JDA	65	–	1.02	B233
PK267JDB		88		
PK269JDA	85	–	1.43	B280
PK269JDB		108		



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 85 mm (Unipolar 6 lead wires)

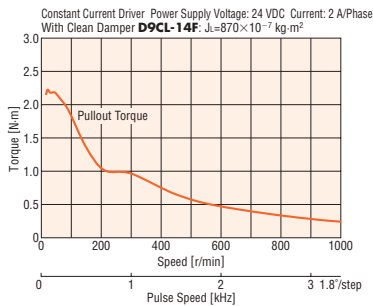
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle
PKP296U20□	2.6	1100×10 ⁻⁷	2	4.4	2.2	7.8	1.8°
PKP296U30□			3	3	1.0	3.5	
PKP296U45□			4.5	2	0.45	1.6	
PKP299U20□	5.0	2200×10 ⁻⁷	2	6.4	3.2	13.2	
PKP299U30□			3	4.5	1.5	6	
PKP299U45□			4.5	2.8	0.63	2.6	
PKP2913U20□	7.3	3400×10 ⁻⁷	2	7.6	3.8	18	
PKP2913U40□			4	3.8	0.94	4.4	

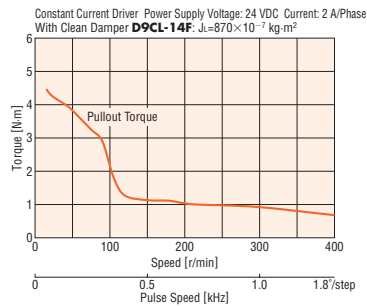
● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

Speed – Torque Characteristics (Reference values)

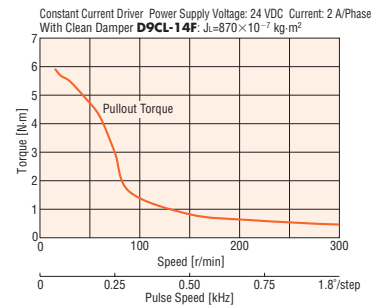
PKP296U20A/PKP296U20B



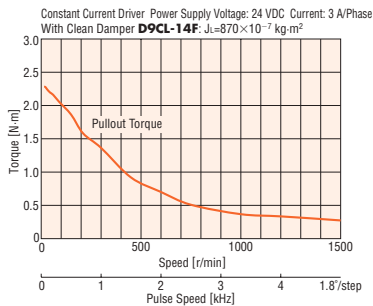
PKP299U20A/PKP299U20B



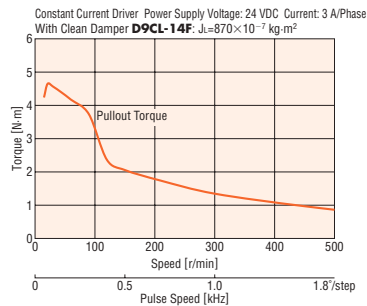
PKP2913U20A/PKP2913U20B



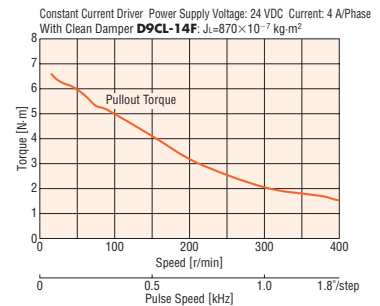
PKP296U30A/PKP296U30B



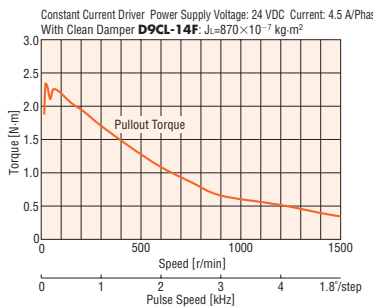
PKP299U30A/PKP299U30B



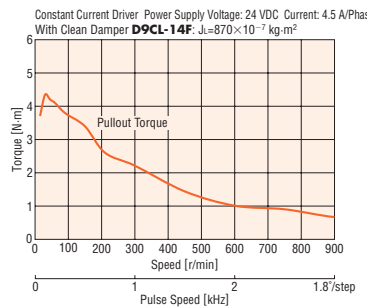
PKP2913U40A/PKP2913U40B



PKP296U45A/PKP296U45B



PKP299U45A/PKP299U45B



Note

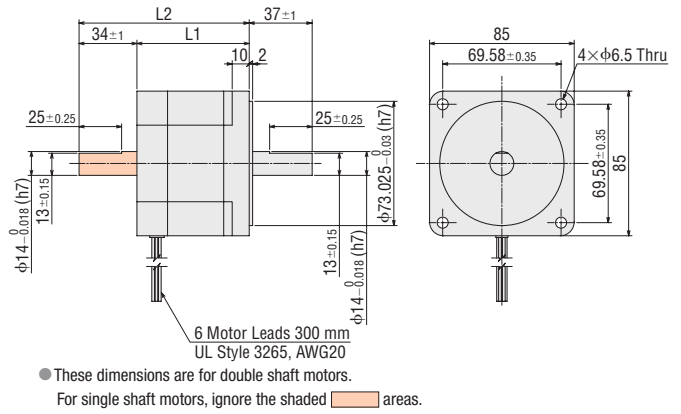
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP296U20A	66	-	1.8	B1246
PKP296U20B		100		
PKP296U30A		-		
PKP296U30B		100		
PKP296U45A		-		
PKP296U45B	100			
PKP299U20A	96	-	2.9	B1247
PKP299U20B		130		
PKP299U30A		-		
PKP299U30B		130		
PKP299U45A		-		
PKP299U45B	130			
PKP2913U20A	126	-	4	B1248
PKP2913U20B		160		
PKP2913U40A		-		
PKP2913U40B		160		



Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑦

- Refer to page 07-85 for inner wiring diagram of motor.

Standard Type Frame Size 85 mm (Bipolar 4 lead wires)

Specifications

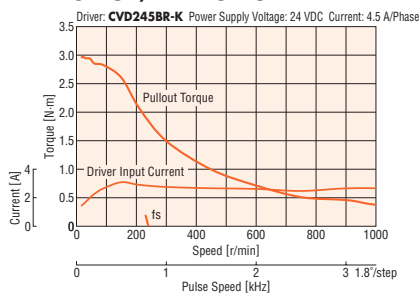
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP296D45□	3.3	1100×10 ⁻⁷	4.5	1.9	0.42	3.1	1.8°	CVD245BR-K
PKP296D63□			6.3	1.4	0.23	1.6		–
PKP299D45□	6.4	2200×10 ⁻⁷	4.5	2.7	0.6	5.4		CVD245BR-K
PKP299D63□			6.3	2	0.32	2.6		–
PKP2913D45□	9.5	3400×10 ⁻⁷	4.5	3.5	0.78	6.9		CVD245BR-K
PKP2913D56□			5.6	2.6	0.47	4.4		–

● Either **A** (Single Shaft) or **B** (Double Shaft) indicating the configuration is specified where the box □ is located in the product name.

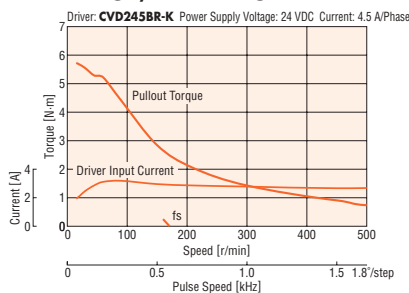
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

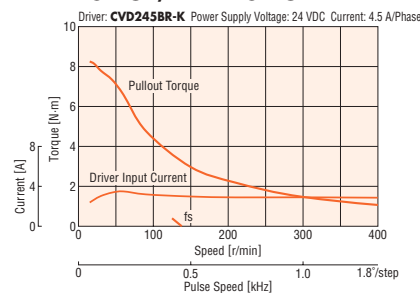
PKP296D45A/PKP296D45B



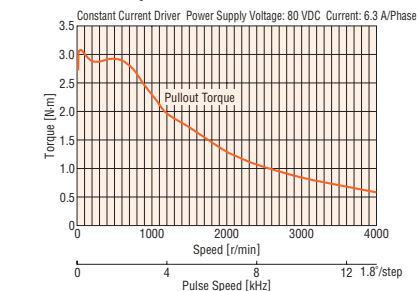
PKP299D45A/PKP299D45B



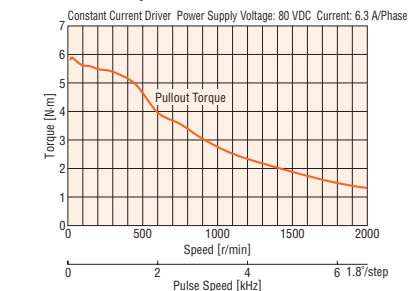
PKP2913D45A/PKP2913D45B



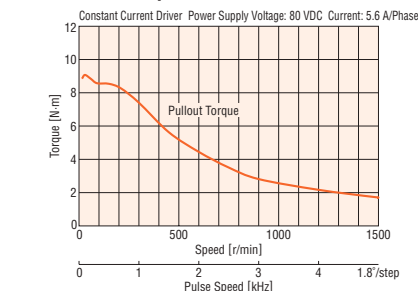
PKP296D63A/PKP296D63B



PKP299D63A/PKP299D63B



PKP2913D56A/PKP2913D56B



Note

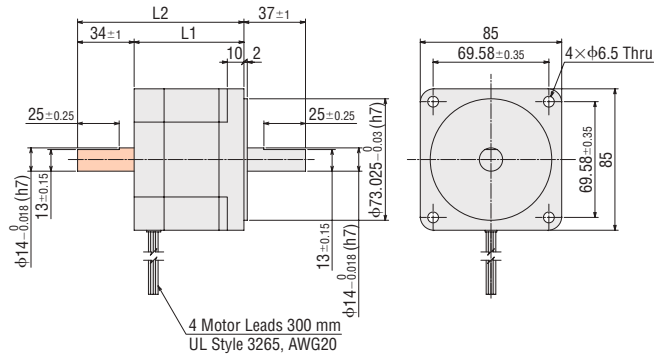
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP296D45A	66	-	1.8	B1237
PKP296D45B		100		
PKP296D63A		-		
PKP296D63B	96	100	2.9	B1238
PKP299D45A		-		
PKP299D45B		130		
PKP299D63A	126	-	4	B1239
PKP299D63B		130		
PKP2913D45A		-		
PKP2913D45B	126	160	4	B1239
PKP2913D56A		-		
PKP2913D56B		160		



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type Frame Size 42 mm (Unipolar 6 lead wires)

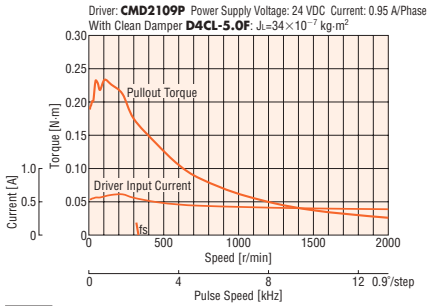
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243MU09□	0.25	36×10^{-7}	0.95	4.47	4.7	6.6	0.9°	CMD2109P
PKP244MU12□	0.35	57×10^{-7}	1.2	4.8	4	6		CMD2112P

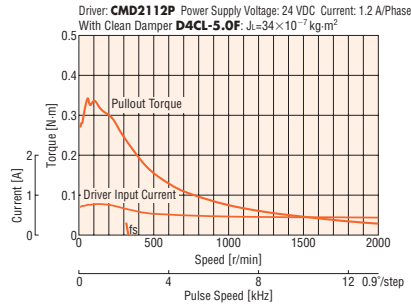
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP243MU09A/PKP243MU09B



PKP244MU12A/PKP244MU12B



Note

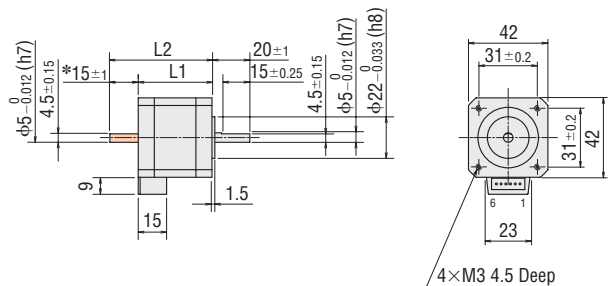
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP243MU09A	33	—	0.25	B968
PKP243MU09B		48		
PKP244MU12A	39	—	0.3	B969
PKP244MU12B		54		



- *The length of the shaft flat on the double shaft model is 15 ± 0.25.
- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

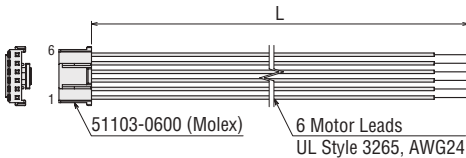
Applicable Connector

Connector housing: 51103-0600 (Molex)
Contact: 50351-8100 (Molex)
Crimp tool: 57295-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product name	Length L (m)
LC2U06B	0.6
LC2U10B	1



Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type Frame Size 42 mm (Bipolar 4 lead wires)

Specifications

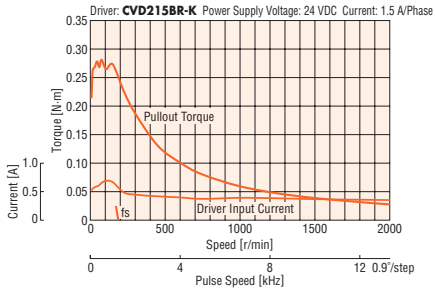
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243MD15 <input type="checkbox"/>	0.30	36×10^{-7}	1.5	2.85	1.9	6.6	0.9°	CVD215BR-K
PKP244MD15 <input type="checkbox"/>	0.42	57×10^{-7}		3.9	2.6	7.6		

● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box is located in the product name.

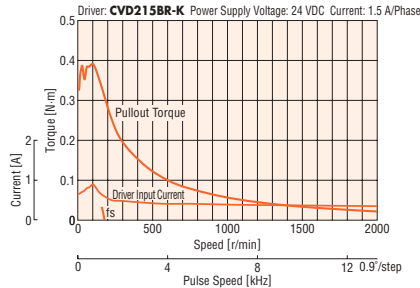
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP243MD15A/PKP243MD15B



PKP244MD15A/PKP244MD15B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

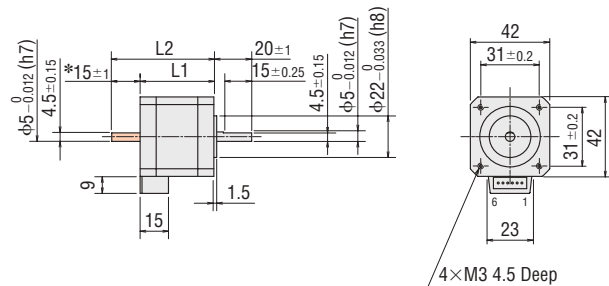
Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP243MD15A	33	–	0.25	B968
PKP243MD15B		48		
PKP244MD15A	39	–	0.3	B969
PKP244MD15B		54		

Applicable Connector

Connector housing: 51103-0600 (Molex)
Contact: 50351-8100 (Molex)
Crimp tool: 57295-5000 (Molex)



*The length of the shaft flat on the double shaft model is 15 ±0.25.

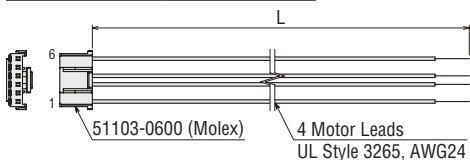
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06B	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

● Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Encoder

Frame Size 42 mm (Unipolar 6 lead wires)

Specifications

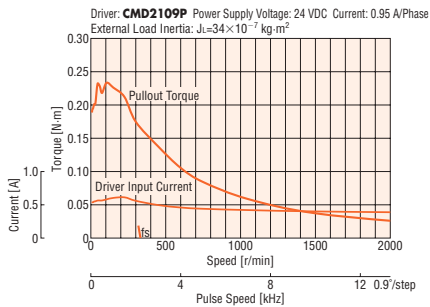
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243MU09A-R2FL	0.25	36×10^{-7}	0.95	4.47	4.7	6.6	0.9°	CMD2109P
PKP244MU12A-R2FL	0.35	57×10^{-7}	1.2	4.8	4	6		CMD2112P

● Refer to page 07-82 for encoder specifications.

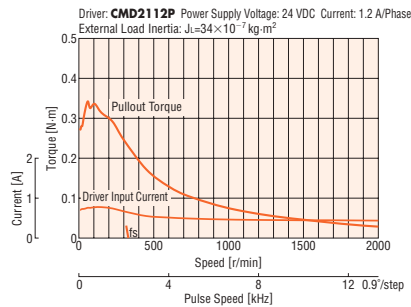
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP243MU09A-R2FL



PKP244MU12A-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

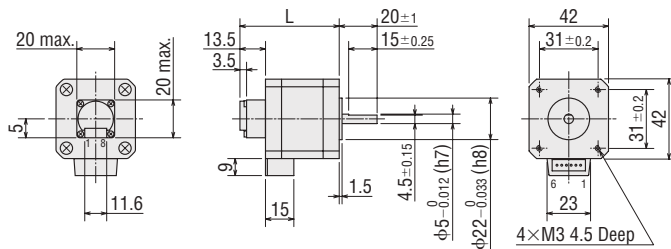
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP243MU09A-R2FL	46.5	0.26	B1104
PKP244MU12A-R2FL	52.5	0.31	B1105

● Applicable Connector (Molex)

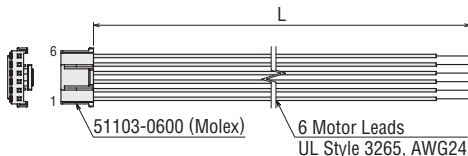
	Motor	Encoder
Connector Housing	51103-0600	51021-0800
Contact	50351-8100	50079-8100
Crimp Tool	57295-5000	57067-3000



Connection Cable (Sold separately)

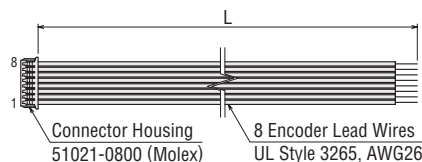
◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Encoder

Frame Size 42 mm (Bipolar 4 lead wires)

Specifications

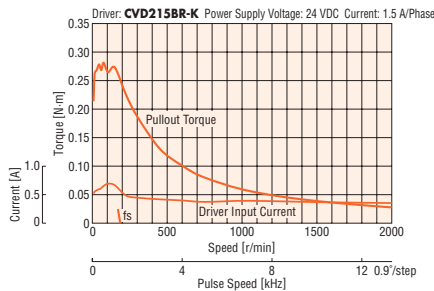
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP243MD15A-R2FL	0.30	36×10^{-7}	1.5	2.85	1.9	6.6	0.9°	CVD215BR-K
PKP244MD15A-R2FL	0.42	57×10^{-7}		3.9	2.6	7.6		

● Refer to page 07-82 for encoder specifications.

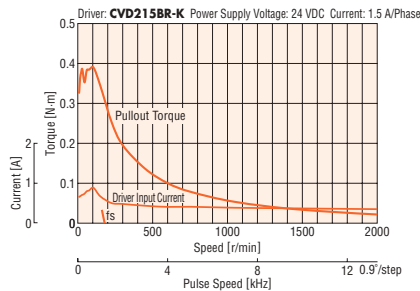
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP243MD15A-R2FL



PKP244MD15A-R2FL



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

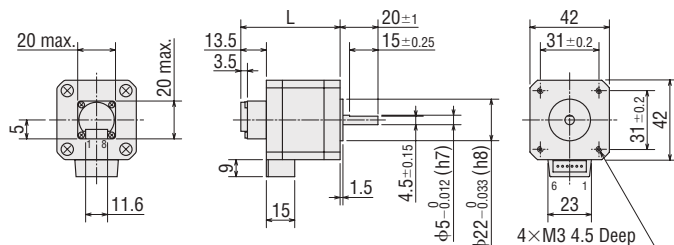
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP243MD15A-R2FL	46.5	0.26	B1104
PKP244MD15A-R2FL	52.5	0.31	B1105

● Applicable Connector (Molex)

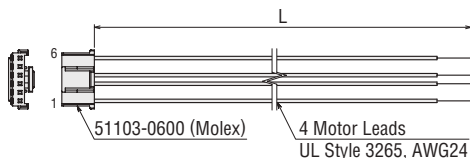
	Motor	Encoder
Connector Housing	51103-0600	51021-0800
Contact	50351-8100	50079-8100
Crimp Tool	57295-5000	57067-3000



Connection Cable (Sold separately)

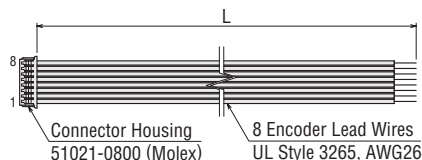
◇ For Motor

Product Name	Length L (m)
LC2B06B	0.6



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

● Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Electromagnetic Brake

Frame Size 42 mm (Unipolar 6 lead wires)

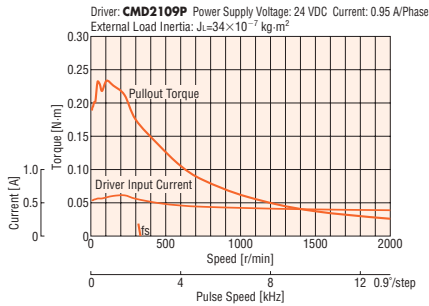
Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg-m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N-m
PKP243MU09M	0.25	48×10^{-7}	0.95	4.47	4.7	6.6	0.9°	0.3
PKP244MU12M	0.35	69×10^{-7}	1.2	4.8	4	6		

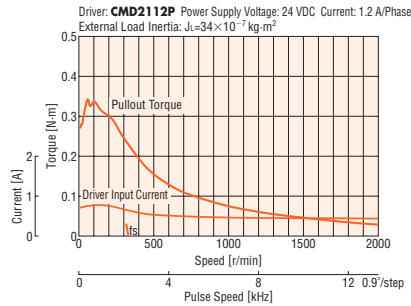
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP243MU09M



PKP244MU12M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

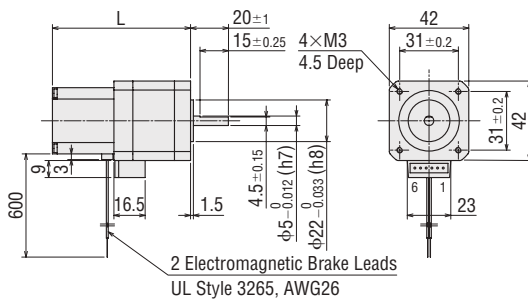
Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP243MU09M	67	0.36	B1136
PKP244MU12M	73	0.41	B1137

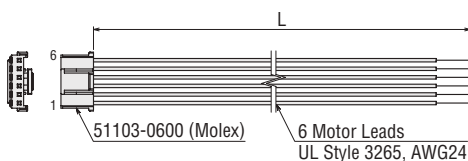
- Applicable Connector (Molex)
Connector housing: 51103-0600
Contact: 50351-8100
Crimp tool: 57295-5000



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06B	0.6
LC2U10B	1



Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Electromagnetic Brake

Frame Size 42 mm (Bipolar 4 lead wires)

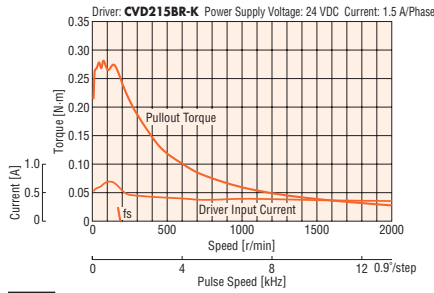
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic Brake Static Friction Torque N·m
PKP243MD15M	0.30	48×10^{-7}	1.5	2.85	1.9	6.6	0.9°	0.3
PKP244MD15M	0.42	69×10^{-7}		3.9	2.6	7.6		

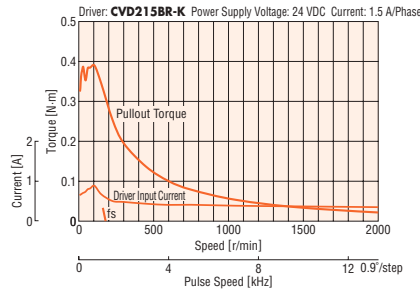
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

PKP243MD15M



PKP244MD15M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

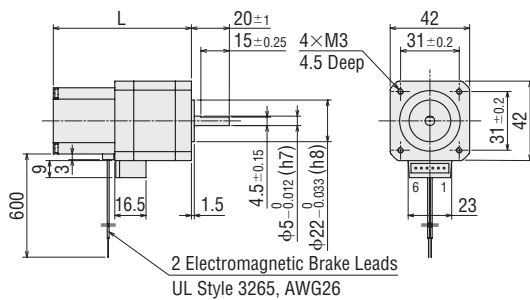
Motor

2D & 3D CAD

Product name	L	Mass kg	2D CAD
PKP243MD15M	67	0.36	B1136
PKP244MD15M	73	0.41	B1137

Applicable Connector (Molex)

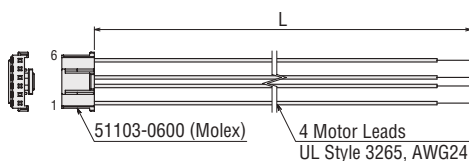
Connector housing: 51103-0600
Contact: 50351-8100
Crimp tool: 57295-5000



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06B	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

High-Resolution Type Frame Size 56.4 mm (Unipolar 6 lead wires)

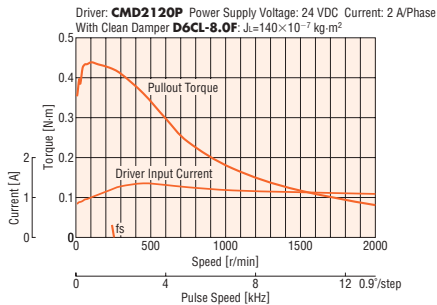
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264MU20□	0.51	120×10 ⁻⁷	2	2.9	1.45	2.1	0.9°	CMD2120P
PKP266MU20□	1.1	290×10 ⁻⁷		4	2	3.9		
PKP268MU20□	1.75	490×10 ⁻⁷		4.9	2.45	5.6		

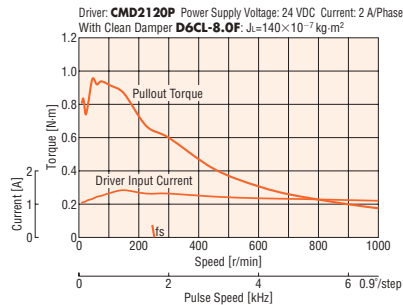
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

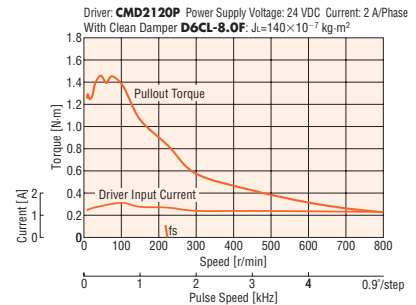
PKP264MU20A/PKP264MU20B



PKP266MU20A/PKP266MU20B



PKP268MU20A/PKP268MU20B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

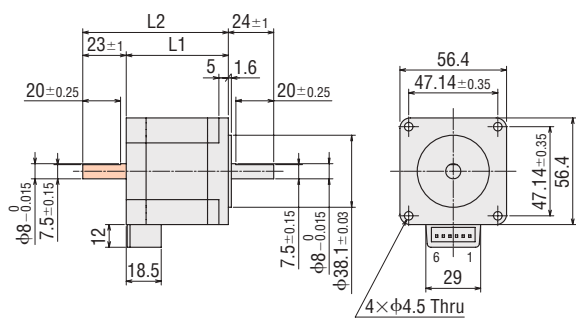
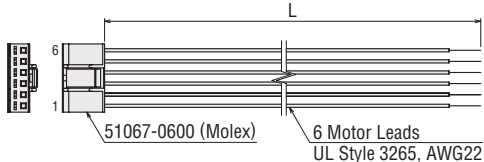
Product Name	L1	L2	Mass kg	2D CAD
PKP264MU20A	39	—	0.46	B972
PKP264MU20B		62		
PKP266MU20A	54	—	0.73	B973
PKP266MU20B		77		
PKP268MU20A	76	—	1.1	B974
PKP268MU20B		99		

- Applicable Connector
Connector housing: 51067-0600 (Molex)
Contact: 50217-9101 (Molex)
Crimp tool: 57189-5000 (Molex)
57190-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06C	0.6
LC2U10C	1



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type Frame Size 56.4 mm (Bipolar 4 lead wires)

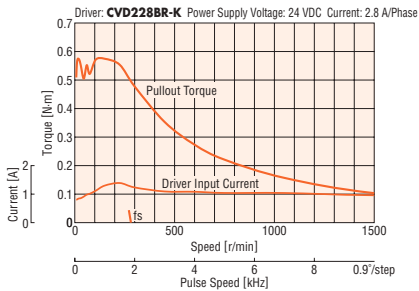
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264MD28□	0.6	120×10 ⁻⁷	2.8	2	0.73	2.1	0.9°	CVD228BR-K
PKP266MD28□	1.32	290×10 ⁻⁷		2.8	1	3.9		
PKP268MD28□	2.23	490×10 ⁻⁷		3.4	1.23	5.6		

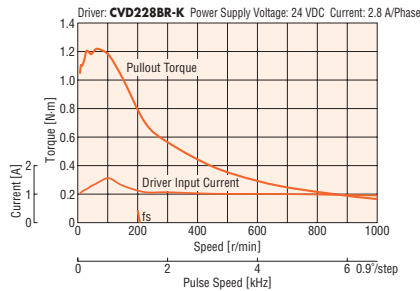
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

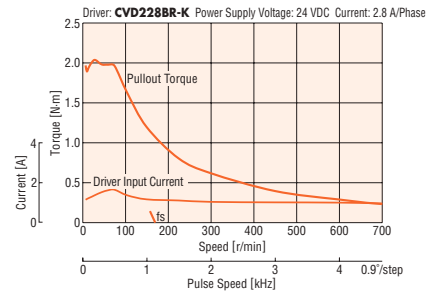
PKP264MD28A/PKP264MD28B



PKP266MD28A/PKP266MD28B



PKP268MD28A/PKP268MD28B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP264MD28A	39	–	0.46	B972
PKP264MD28B		62		
PKP266MD28A	54	–	0.73	B973
PKP266MD28B		77		
PKP268MD28A	76	–	1.1	B974
PKP268MD28B		99		

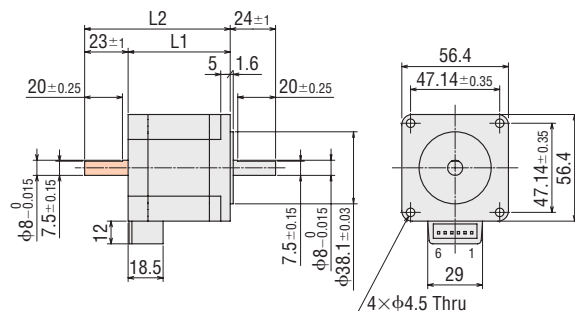
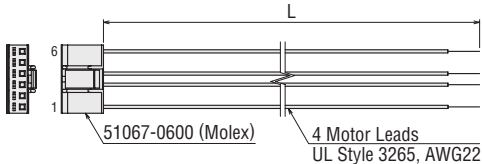
Applicable Connector

Connector housing: 51067-0600 (Molex)
Contact: 50217-9101 (Molex)
Crimp tool: 57189-5000 (Molex)
57190-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06C	0.6



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Encoder

Frame Size 56.4 mm (Unipolar 6 lead wires)

Specifications

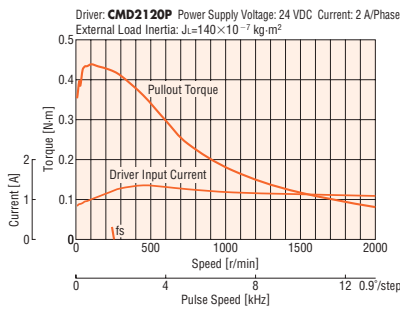
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264MU20A-R2FL	0.51	120×10 ⁻⁷	2	2.9	1.45	2.1	0.9°	CMD2120P
PKP266MU20A-R2FL	1.1	290×10 ⁻⁷		4	2	3.9		
PKP268MU20A-R2FL	1.75	490×10 ⁻⁷		4.9	2.45	5.6		

● Refer to page 07-82 for encoder specifications.

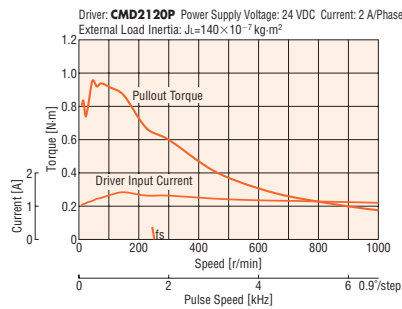
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

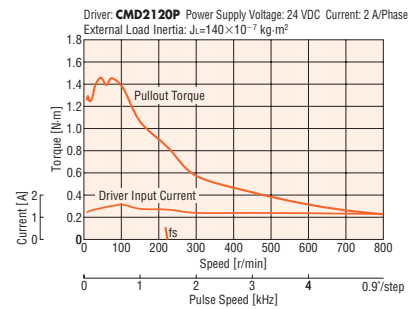
PKP264MU20A-R2FL



PKP266MU20A-R2FL



PKP268MU20A-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

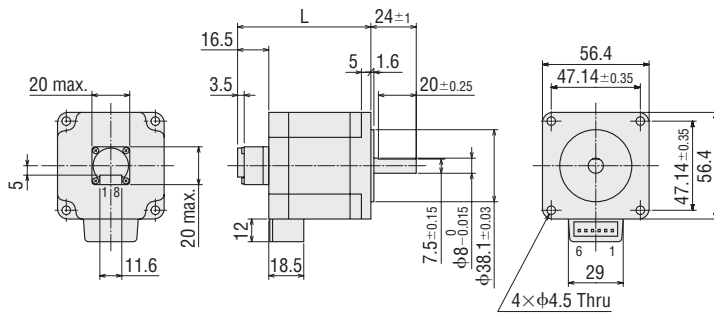
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264MU20A-R2FL	55.5	0.47	B1108
PKP266MU20A-R2FL	70.5	0.74	B1109
PKP268MU20A-R2FL	92.5	1.11	B1110

● Applicable Connector (Molex)

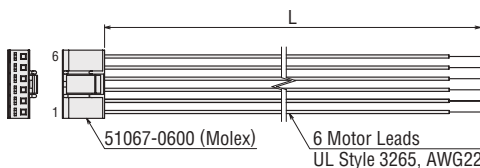
	Motor	Encoder
Connector Housing	51067-0600	51021-0800
Contact	50217-9101	50079-8100
Crimp Tool	57189-5000 57190-5000	57067-3000



Connection Cable (Sold separately)

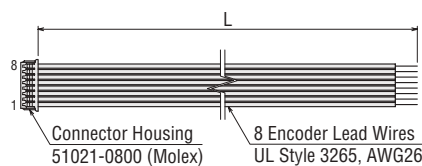
◇ For Motor

Product Name	Length L (m)
LC2U06C	0.6
LC2U10C	1



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

● Refer to page 07-85 for inner wiring diagram of motor.

High-Resolution Type with Encoder

Frame Size 56.4 mm (Bipolar 4 lead wires)

Specifications

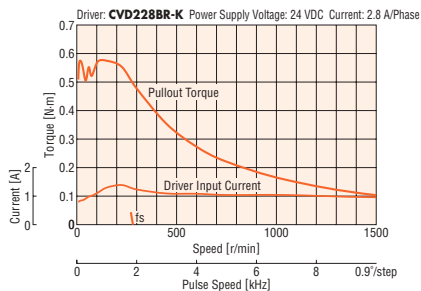
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP264MD28A-R2FL	0.6	120×10^{-7}	2.8	2	0.73	2.1	0.9°	CVD228BR-K
PKP266MD28A-R2FL	1.32	290×10^{-7}		2.8	1	3.9		
PKP268MD28A-R2FL	2.23	490×10^{-7}		3.4	1.23	5.6		

● Refer to page 07-82 for encoder specifications.

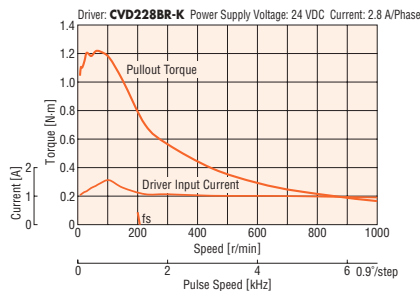
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

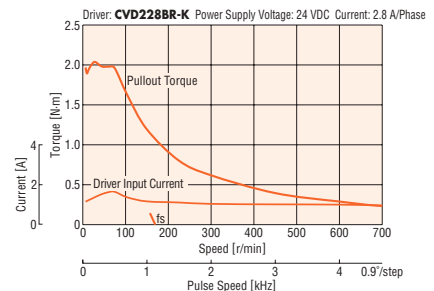
PKP264MD28A-R2FL



PKP266MD28A-R2FL



PKP268MD28A-R2FL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

Dimensions (Unit: mm)

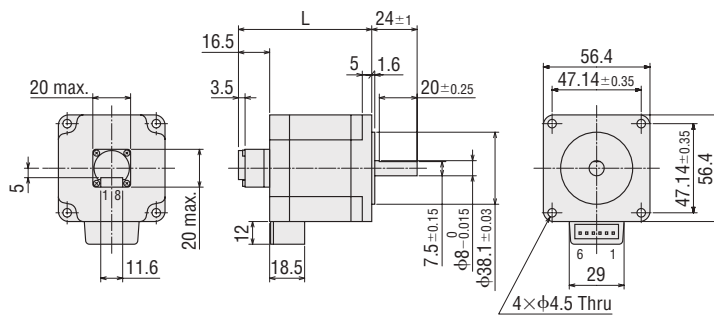
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264MD28A-R2FL	55.5	0.47	B1108
PKP266MD28A-R2FL	70.5	0.74	B1109
PKP268MD28A-R2FL	92.5	1.11	B1110

Applicable Connector (Molex)

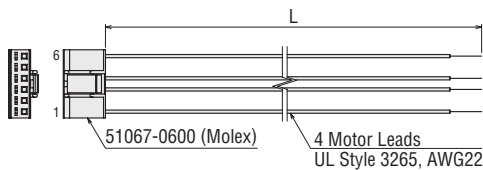
	Motor	Encoder
Connector Housing	51067-0600	51021-0800
Contact	50217-9101	50079-8100
Crimp Tool	57189-5000 57190-5000	57067-3000



Connection Cable (Sold separately)

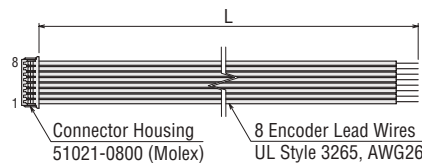
◇ For Motor

Product Name	Length L (m)
LC2B06C	0.6



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

● Refer to page 07-85 for inner wiring diagram of motor.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

High-Resolution Type with Electromagnetic Brake

Frame Size 56.4 mm (Unipolar 6 lead wires)

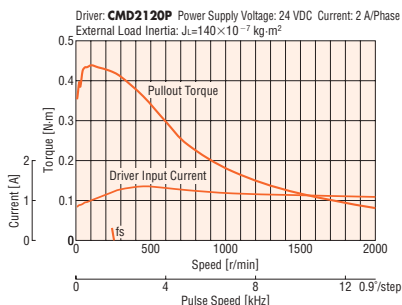
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic brake Static friction torque N·m
PKP264MU20M	0.51	270×10^{-7}	2	2.9	1.45	2.1	0.9°	1.5
PKP266MU20M	1.1	440×10^{-7}		4	2	3.9		
PKP268MU20M	1.75	640×10^{-7}		4.9	2.45	5.6		

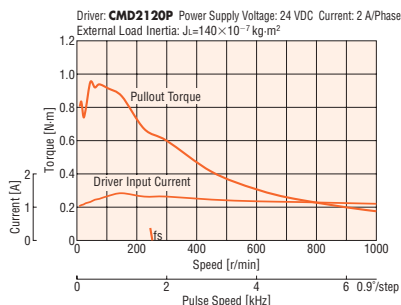
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

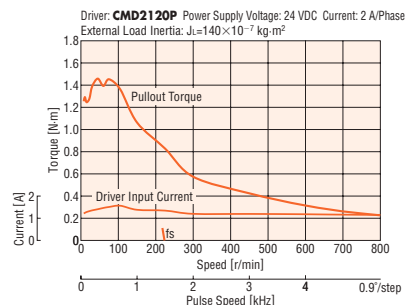
PKP264MU20M



PKP266MU20M



PKP268MU20M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

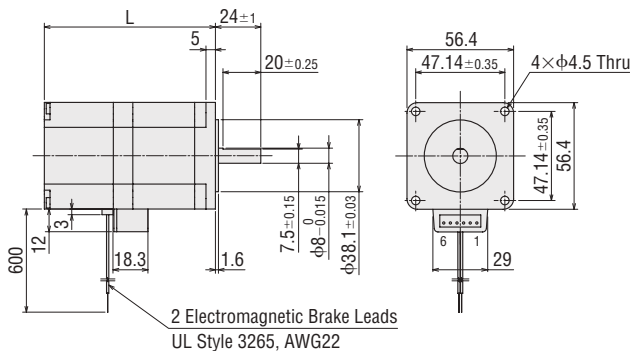
Product Name	L	Mass kg	2D CAD
PKP264MU20M	75.5	0.76	B1140
PKP266MU20M	90.5	1.03	B1141
PKP268MU20M	112.5	1.4	B1142

- Applicable Connector (Molex)
Connector housing: 51067-0600
Contact: 50217-9101
Crimp tool: 57189-5000
57190-5000

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

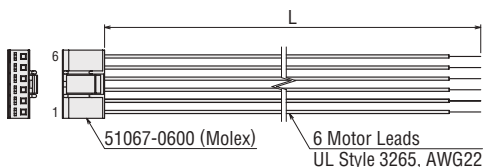
- Refer to page 07-85 for inner wiring diagram of motor.



Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06C	0.6
LC2U10C	1



High-Resolution Type with Electromagnetic Brake

Frame Size 56.4 mm (Bipolar 4 lead wires)

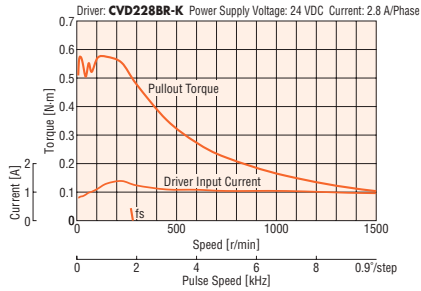
Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Electromagnetic brake Static friction torque N-m
PKP264MD28M	0.6	270×10^{-7}	2.8	2	0.73	2.1	0.9°	1.5
PKP266MD28M	1.32	440×10^{-7}		2.8	1	3.9		
PKP268MD28M	2.23	640×10^{-7}		3.4	1.23	5.6		

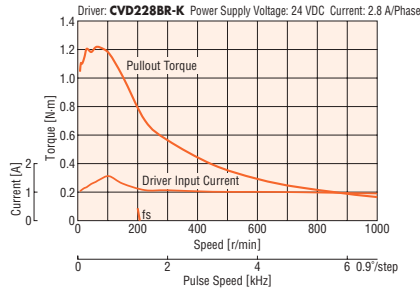
● Refer to page 07-82 for electromagnetic brake specifications.

Speed – Torque Characteristics (Reference values)

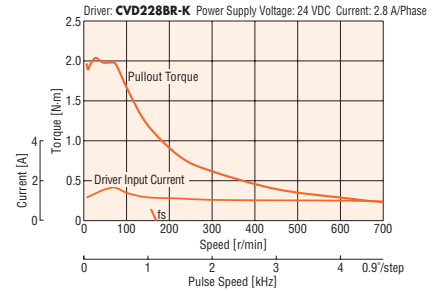
PKP264MD28M



PKP266MD28M



PKP268MD28M



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

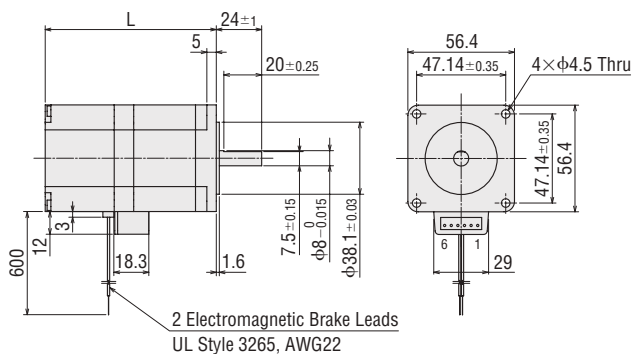
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP264MD28M	75.5	0.76	B1140
PKP266MD28M	90.5	1.03	B1141
PKP268MD28M	112.5	1.4	B1142

Applicable Connector (Molex)

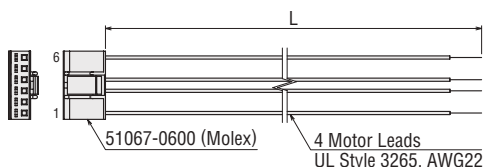
Connector housing: 51067-0600
Contact: 50217-9101
Crimp tool: 57189-5000
57190-5000



Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06C	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

Flat Type Frame Size 42 mm (Bipolar 4 lead wires) NEW

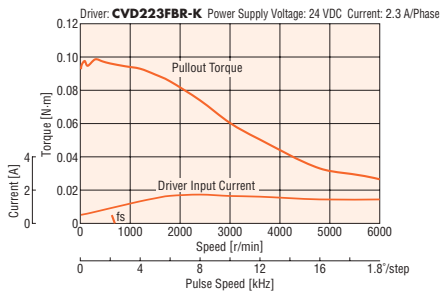
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP242D23A2	0.1	13×10^{-7}	2.3	1.4	0.61	0.53	1.8°	CVD223FBR-K

*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP242D23A2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Mass kg	2D CAD
PKP242D23A2	0.11	B1355

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

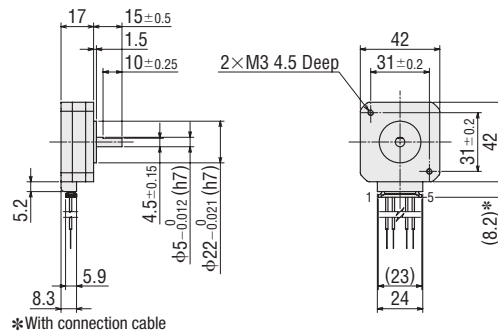
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

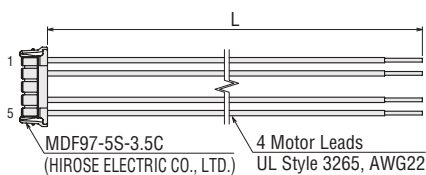
Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06E	0.6



*With connection cable



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

- Refer to page 07-85 for inner wiring diagram of motor.

Flat Type Frame Size 60 mm (Bipolar 4 lead wires)

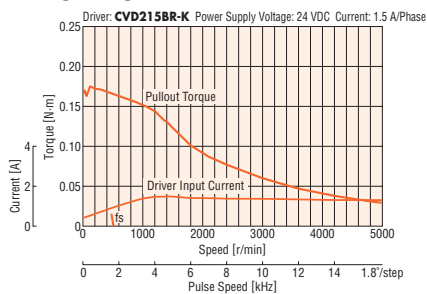
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP262FD15AW	0.18	68×10^{-7}	1.5	2.25	1.5	1.4	1.8°	CVD215BR-K

*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP262FD15AW



Note

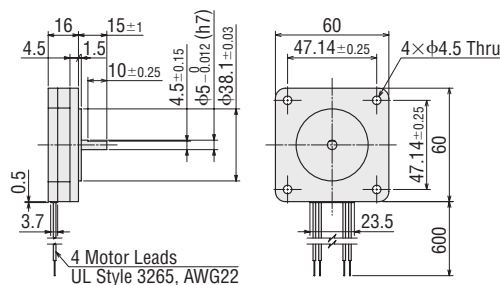
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Mass kg	2D CAD
PKP262FD15AW	0.2	B1170



Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

- Refer to page 07-85 for inner wiring diagram of motor.

Flat Type with Harmonic Gear NEW

Frame Size 51 mm (Bipolar 4 lead wires)

Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg-m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N-m	Maximum Instantaneous Torque N-m	Lost Motion (Load Torque) arcmin	Speed Range r/min	Recommended Driver Product Name*
PKP242D23A2-H50	1.8	17×10 ⁻⁷	2.3	1.4	0.61	0.53	0.036°	50	1.8	3.3	1.5 max. (±0.59 N-m)	0~70	CVD223FBR-K
PKP242D23A2-H100	2.4						0.018°	100	2.4	4.8	1.5 max. (±0.78 N-m)	0~35	

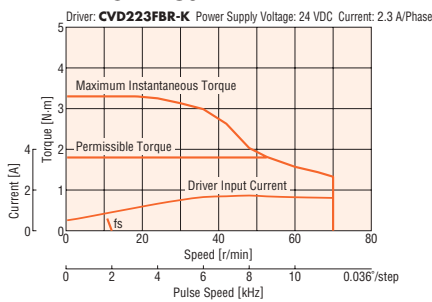
*Refer to page 07-108 for details on the recommended driver.

Note

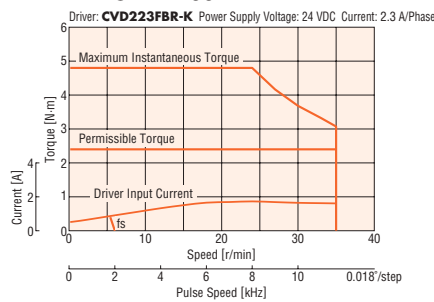
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

PKP242D23A2-H50



PKP242D23A2-H100



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

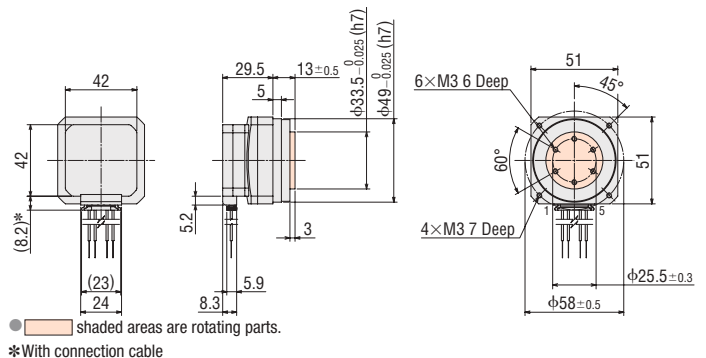
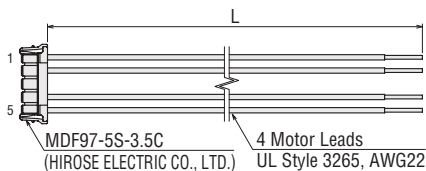
Product Name	Mass kg	2D CAD
PKP242D23A2-H50	0.32	B1356
PKP242D23A2-H100		

- Applicable Connector
Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

- Refer to page 07-85 for inner wiring diagram of motor.

Flat Type with Harmonic Gear

Frame Size $\phi 72$ mm (Bipolar 4 lead wires)

Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω /Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Maximum Instantaneous Torque N·m	Lost Motion (Load Torque) arcmin	Speed Range r/min	Recommended Driver Product Name*
PKP262FD15AW-H50	3.7	90×10^{-7}	1.5	1.65	1.1	0.8	0.036°	50	3.7	4.8	1.5 max. (± 0.18 N·m)	0~70	CVD215BR-K
PKP262FD15AW-H100	5.4						0.018°	100	5.4	7.7	1.5 max. (± 0.27 N·m)	0~35	

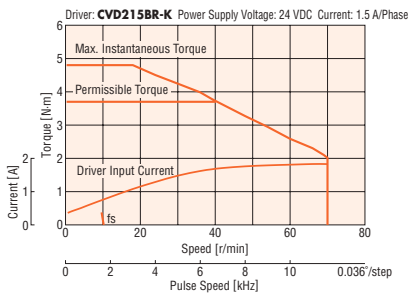
*Refer to page 07-108 for details on the recommended driver.

Note

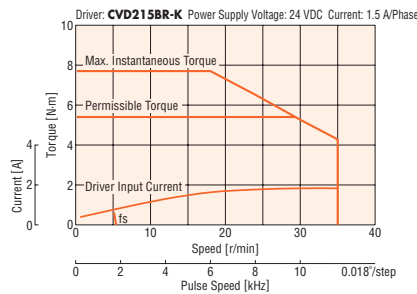
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

PKP262FD15AW-H50



PKP262FD15AW-H100



Note

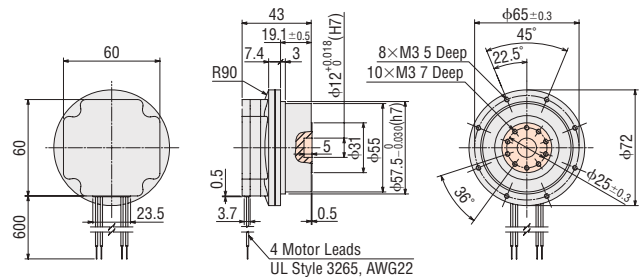
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Mass kg	2D CAD
PKP262FD15AW-H50	0.6	B1171
PKP262FD15AW-H100		



- shaded areas are rotating parts.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑤

- Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 28 mm (Unipolar 6 lead wires)

Specifications

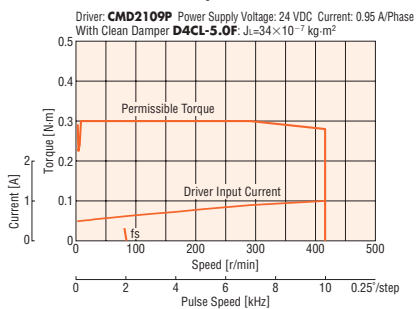
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP223U09□-SG7.2	0.3	9×10 ⁻⁷	0.95	2.66	2.8	1	0.25°	7.2	0.3	0~416	90 (1.5°)	CMD2109P
0.2°							9	0~333				
0.18°							10	0~300				
PKP223U09□-SG9	0.4	9×10 ⁻⁷	0.95	2.66	2.8	1	0.1°	18	0.4	0~166	90 (1.5°)	CMD2109P
0.05°							36	0~83				

● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.

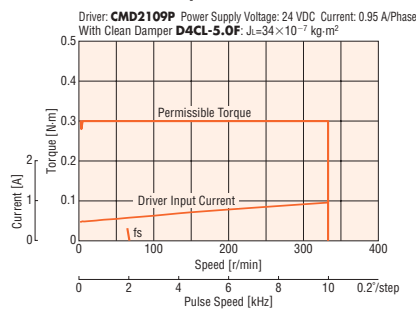
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

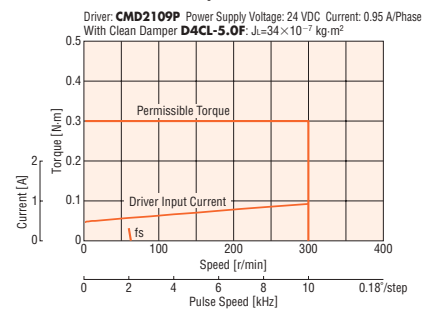
PKP223U09A-SG7.2/PKP223U09B-SG7.2



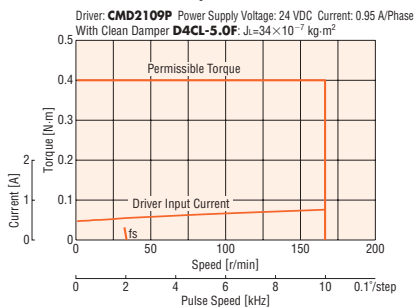
PKP223U09A-SG9/PKP223U09B-SG9



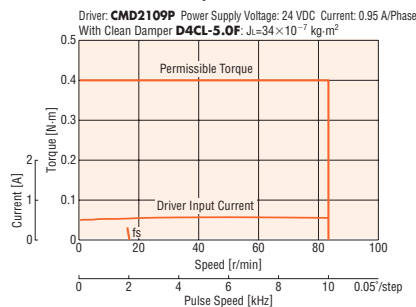
PKP223U09A-SG10/PKP223U09B-SG10



PKP223U09A-SG18/PKP223U09B-SG18



PKP223U09A-SG36/PKP223U09B-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PKP223U09A-SG□	7.2, 9, 10, 18, 36	0.16	B985
PKP223U09B-SG□			

● A number indicating the gear ratio is specified in the box □ in the product name.

● Applicable Connector

Connector housing: 51065-0600 (Molex)

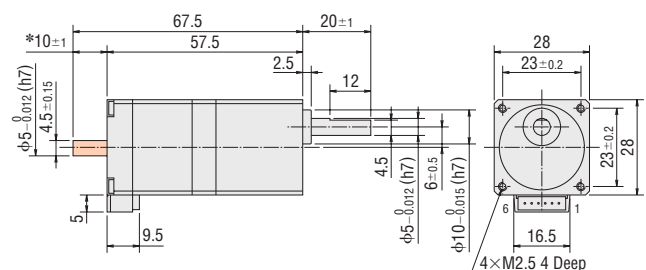
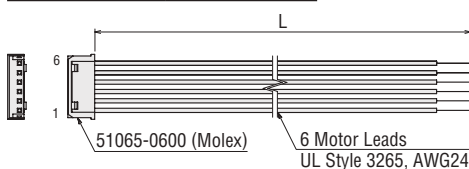
Contact: 50212-8100 (Molex)

Crimp tool: 57176-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06A	0.6
LC2U10A	1



*The length of the shaft flat on the double shaft model is 10±0.25.

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ④

● Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 28 mm (Bipolar 4 lead wires)

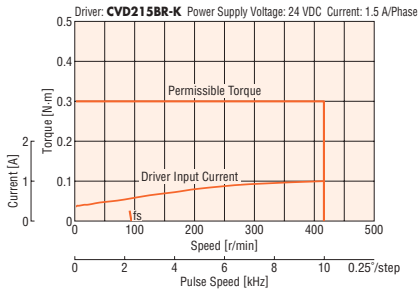
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP223D15□-SG7.2	0.3	9×10 ⁻⁷	1.5	1.8	1.2	0.74	0.25°	7.2	0.3	0~416	90 (1.5)	CVD215BR-K
0.2°							9	0~333				
0.18°							10	0~300				
PKP223D15□-SG10	0.4						0.1°	18	0.4	0~166		
0.05°							36	0~83				

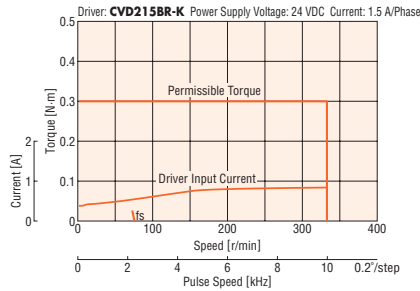
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

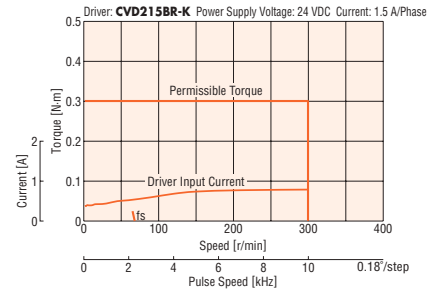
PKP223D15A-SG7.2/PKP223D15B-SG7.2



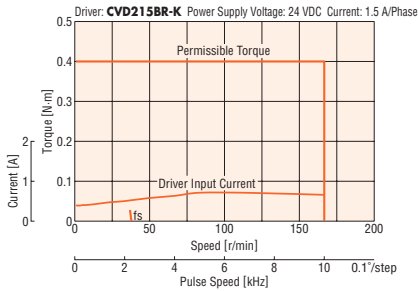
PKP223D15A-SG9/PKP223D15B-SG9



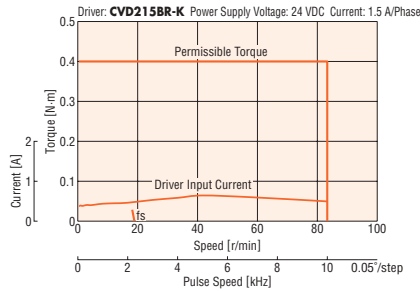
PKP223D15A-SG10/PKP223D15B-SG10



PKP223D15A-SG18/PKP223D15B-SG18



PKP223D15A-SG36/PKP223D15B-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

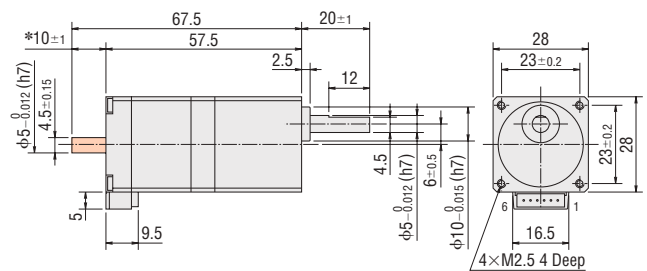
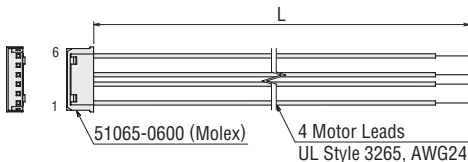
Product Name	Gear Ratio	Mass kg	2D CAD
PKP223D15A-SG□	7.2, 9, 10, 18, 36	0.16	B985
PKP223D15B-SG□			

- A number indicating the gear ratio is specified in the box □ in the product name.
- Applicable Connector
Connector housing: 51065-0600 (Molex)
Contact: 50212-8100 (Molex)
Crimp tool: 57176-5000 (Molex)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06A	0.6



*The length of the shaft flat on the double shaft model is 10±0.25.

- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Inner Wiring Diagram of Motor

Wiring Diagram No.: ③

- Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 42 mm (Unipolar 5 lead wires)

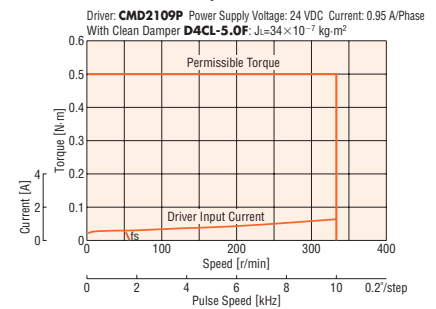
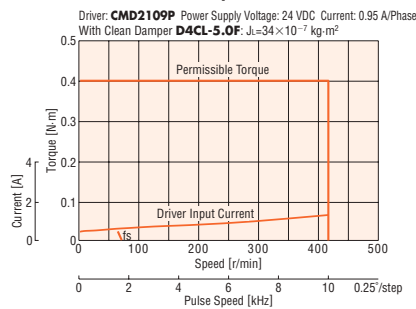
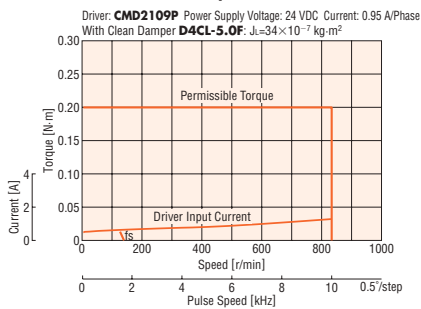
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP243U09□2-SG3.6	0.2	36×10 ⁻⁷	0.95	2	2.1	1.8	0.5°	3.6	0.2	0~833	90 (1.5)	CMD2109P
PKP243U09□2-SG7.2	0.4						0.25°	7.2	0.4	0~416		
PKP243U09□2-SG9	0.5						0.2°	9	0.5	0~333		
PKP243U09□2-SG10	0.56						0.18°	10	0.56	0~300		
PKP243U09□2-SG18	0.8						0.1°	18	0.8	0~166		
PKP243U09□2-SG36	0.8						0.05°	36	0.8	0~83		

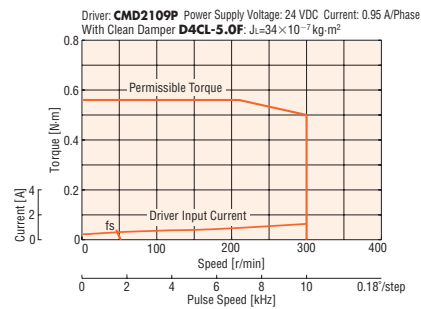
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

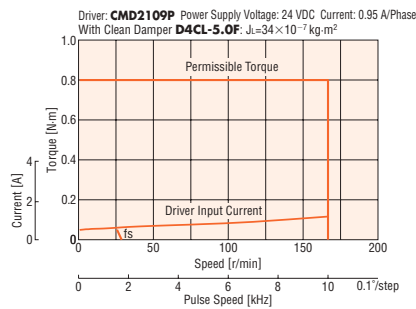
PKP243U09A2-SG3.6/PKP243U09B2-SG3.6 PKP243U09A2-SG7.2/PKP243U09B2-SG7.2 PKP243U09A2-SG9/PKP243U09B2-SG9



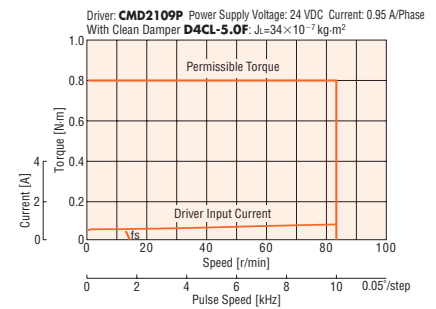
PKP243U09A2-SG10/PKP243U09B2-SG10



PKP243U09A2-SG18/PKP243U09B2-SG18



PKP243U09A2-SG36/PKP243U09B2-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PKP243U09A2-SG□	3.6, 7.2, 9, 10, 18, 36	0.33	B1339
PKP243U09B2-SG□			

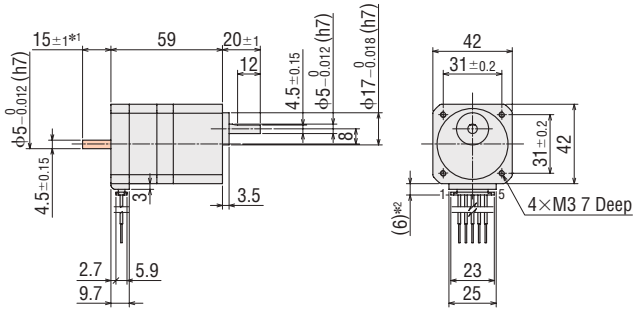
● A number indicating the gear ratio is specified in the box □ in the product name.

● Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



*1 The length of the shaft flat on the double shaft model is 15 ± 0.25 .

*2 With connection cable

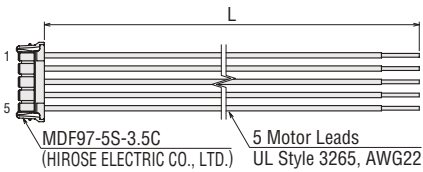
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2U06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

● Refer to page 07-85 for inner wiring diagram of motor.

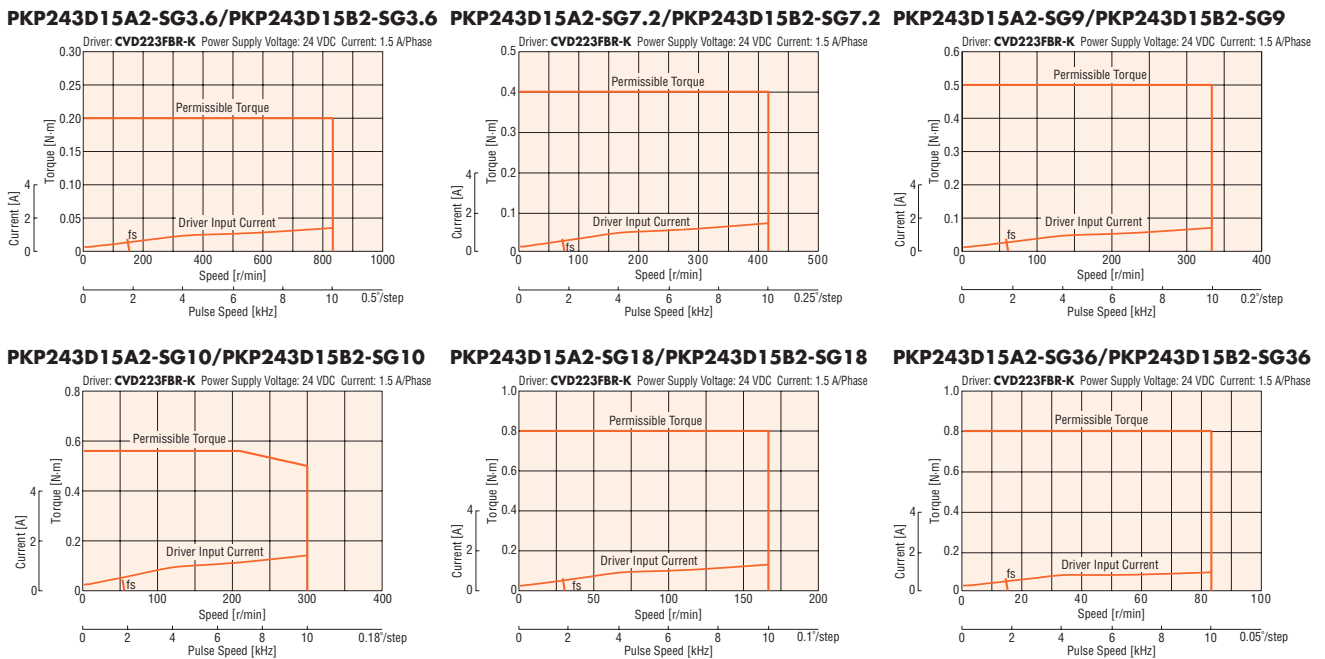
SH Geared Type Frame Size 42 mm (Bipolar 4 lead wires)

Specifications

Product Name	Maximum Holding Torque N-m	Rotor Inertia J: kg·m ²	Rated Current A/ phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N-m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP243D15□2-SG3.6	0.2	36×10 ⁻⁷	1.5	0.83	0.55	0.77	0.5°	3.6	0.2	0~833	90 (1.5)	CVD223FBR-K
PKP243D23□2-SG3.6			2.3	0.87	0.38	0.41						
PKP243D15□2-SG7.2	0.4		1.5	0.83	0.55	0.77	0.25°	7.2	0.4	0~416		
PKP243D23□2-SG7.2			2.3	0.87	0.38	0.41						
PKP243D15□2-SG9	0.5		1.5	0.83	0.55	0.77	0.2°	9	0.5	0~333		
PKP243D23□2-SG9			2.3	0.87	0.38	0.41						
PKP243D15□2-SG10	0.56		1.5	0.83	0.55	0.77	0.18°	10	0.56	0~300		
PKP243D23□2-SG10			2.3	0.87	0.38	0.41						
PKP243D15□2-SG18	0.8		1.5	0.83	0.55	0.77	0.1°	18	0.8	0~166		
PKP243D23□2-SG18			2.3	0.87	0.38	0.41						
PKP243D15□2-SG36	0.8	1.5	0.83	0.55	0.77	0.05°	36	0.8	0~83			
PKP243D23□2-SG36		2.3	0.87	0.38	0.41							

● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

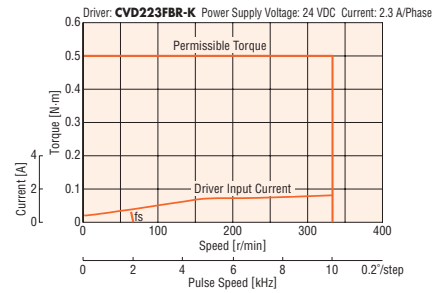
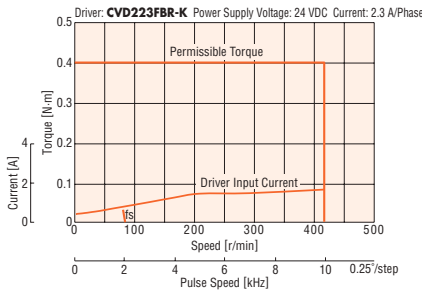
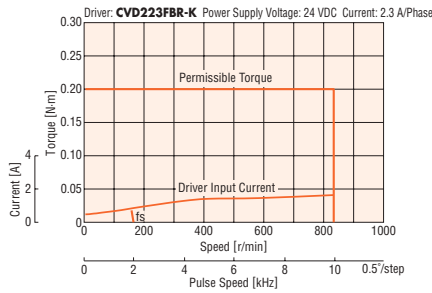


Note

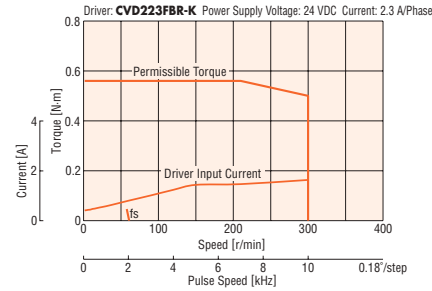
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Speed – Torque Characteristics (Reference values)

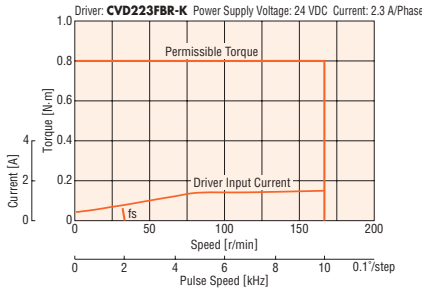
PKP243D23A2-SG3.6/PKP243D23B2-SG3.6 PKP243D23A2-SG7.2/PKP243D23B2-SG7.2 PKP243D23A2-SG9/PKP243D23B2-SG9



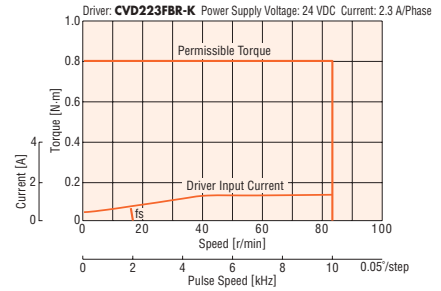
PKP243D23A2-SG10/PKP243D23B2-SG10



PKP243D23A2-SG18/PKP243D23B2-SG18



PKP243D23A2-SG36/PKP243D23B2-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

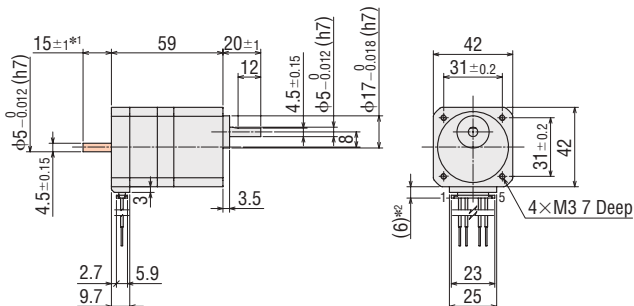
2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PKP243D15A2-SG□	3.6, 7.2, 9, 10, 18, 36	0.33	B1340
PKP243D15B2-SG□			
PKP243D23A2-SG□			
PKP243D23B2-SG□			

- A number indicating the gear ratio is specified in the box □ in the product name.

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

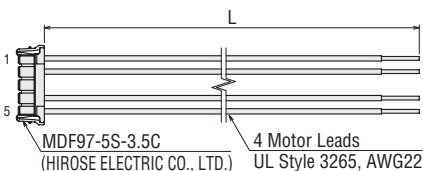


- *1 The length of the shaft flat on the double shaft model is 15±0.25.
- *2 With connection cable
- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2B06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

- Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 60 mm (Unipolar 5 lead wires)

Specifications

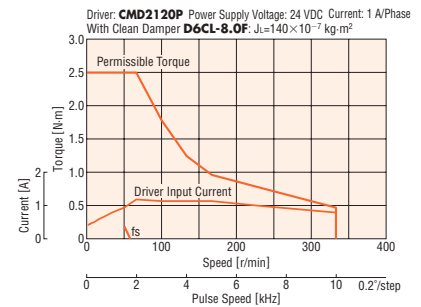
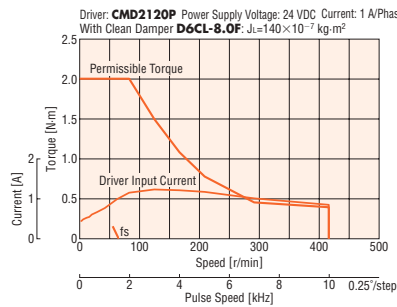
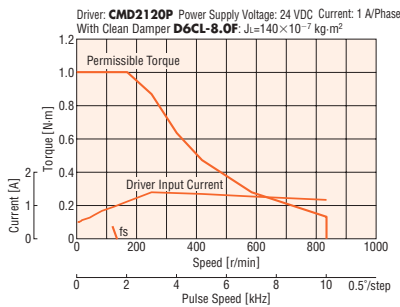
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP264U10□2-SG3.6	1	140×10 ⁻⁷	1	2.9	2.9	4.2	0.5°	3.6	1	0~833	70 (1.17)	CMD2120P
PKP264U20□2-SG3.6			2	1.5	0.76	1						
PKP264U10□2-SG7.2	2		1	2.9	2.9	4.2	0.25°	7.2	2	0~416		
PKP264U20□2-SG7.2			2	1.5	0.76	1						
PKP264U10□2-SG9	2.5		1	2.9	2.9	4.2	0.2°	9	2.5	0~333		
PKP264U20□2-SG9			2	1.5	0.76	1						
PKP264U10□2-SG10	2.7		1	2.9	2.9	4.2	0.18°	10	2.7	0~300		
PKP264U20□2-SG10			2	1.5	0.76	1						
PKP264U10□2-SG18	3		1	2.9	2.9	4.2	0.1°	18	3	0~166		
PKP264U20□2-SG18			2	1.5	0.76	1						
PKP264U10□2-SG36	4	1	2.9	2.9	4.2	0.05°	36	4	0~83			
PKP264U20□2-SG36		2	1.5	0.76	1							

● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.

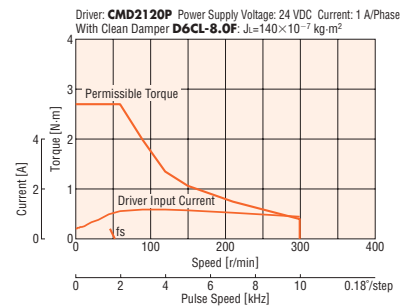
*Refer to page 07-112 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

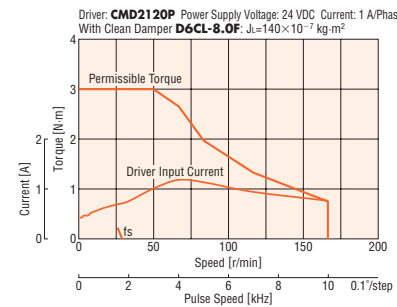
PKP264U10A2-SG3.6/PKP264U10B2-SG3.6 PKP264U10A2-SG7.2/PKP264U10B2-SG7.2 PKP264U10A2-SG9/PKP264U10B2-SG9



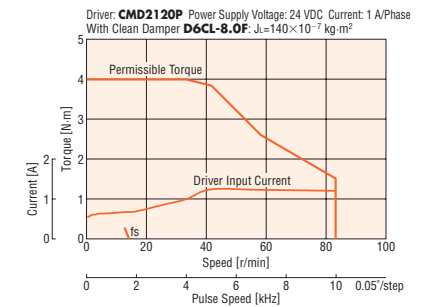
PKP264U10A2-SG10/PKP264U10B2-SG10



PKP264U10A2-SG18/PKP264U10B2-SG18



PKP264U10A2-SG36/PKP264U10B2-SG36

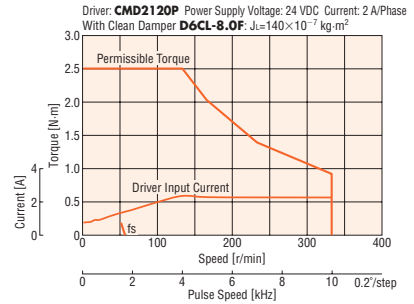
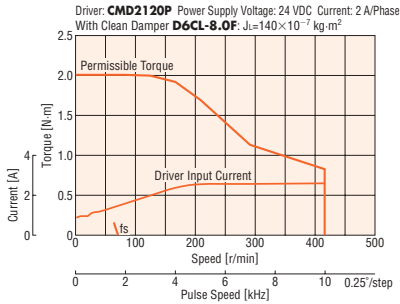
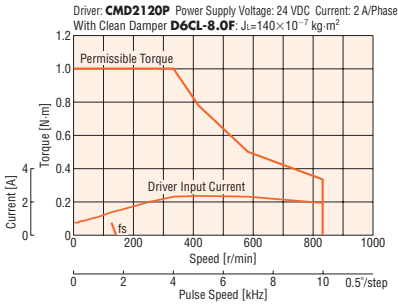


Note

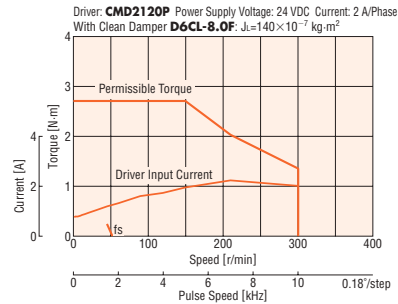
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Speed – Torque Characteristics (Reference values)

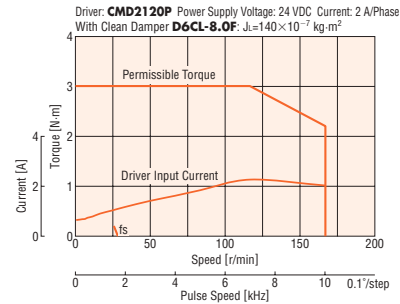
PKP264U20A2-SG3.6/PKP264U20B2-SG3.6 PKP264U20A2-SG7.2/PKP264U20B2-SG7.2 PKP264U20A2-SG9/PKP264U20B2-SG9



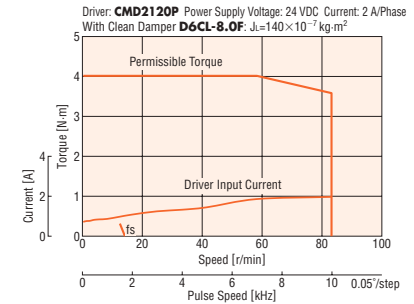
PKP264U20A2-SG10/PKP264U20B2-SG10



PKP264U20A2-SG18/PKP264U20B2-SG18



PKP264U20A2-SG36/PKP264U20B2-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PKP264U10A2-SG <input type="checkbox"/>	3.6, 7.2, 9, 10, 18, 36	0.76	B1341
PKP264U10B2-SG <input type="checkbox"/>			
PKP264U20A2-SG <input type="checkbox"/>			
PKP264U20B2-SG <input type="checkbox"/>			

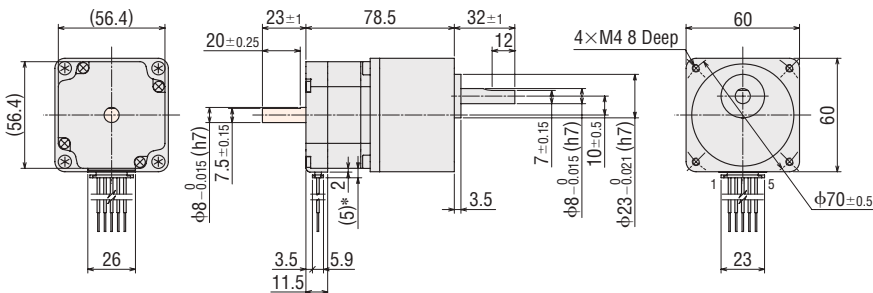
- A number indicating the gear ratio is specified in the box in the product name.

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



*With connection cable

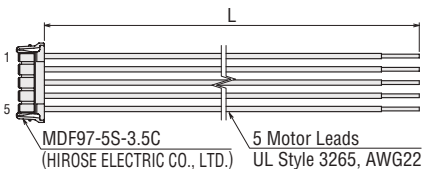
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC2U06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ②

- Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 60 mm (Bipolar 4 lead wires)

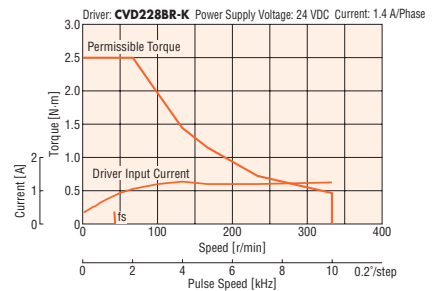
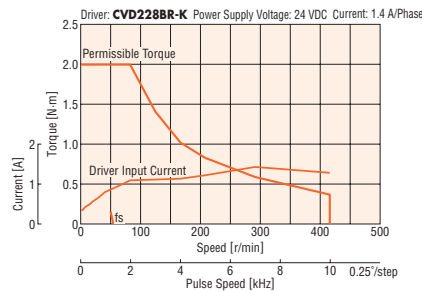
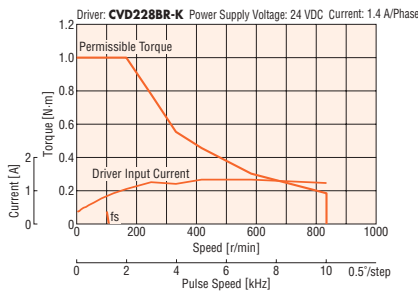
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP264D14□2-SG3.6	1	140×10 ⁻⁷	1.4	2	1.4	3.1	0.5°	3.6	1	0~833	70 (1.17°)	CVD228BR-K
PKP264D28□2-SG3.6			2.8	0.92	0.33	0.81						
PKP264D14□2-SG7.2	2		1.4	2	1.4	3.1	0.25°	7.2	2	0~416		
PKP264D28□2-SG7.2			2.8	0.92	0.33	0.81						
PKP264D14□2-SG9	2.5		1.4	2	1.4	3.1	0.2°	9	2.5	0~333		
PKP264D28□2-SG9			2.8	0.92	0.33	0.81						
PKP264D14□2-SG10	2.7		1.4	2	1.4	3.1	0.18°	10	2.7	0~300		
PKP264D28□2-SG10			2.8	0.92	0.33	0.81						
PKP264D14□2-SG18	3		1.4	2	1.4	3.1	0.1°	18	3	0~166		
PKP264D28□2-SG18			2.8	0.92	0.33	0.81						
PKP264D14□2-SG36	4	1.4	2	1.4	3.1	0.05°	36	4	0~83			
PKP264D28□2-SG36		2.8	0.92	0.33	0.81							

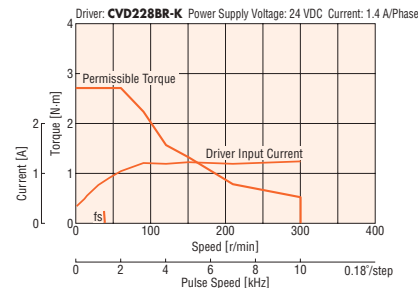
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

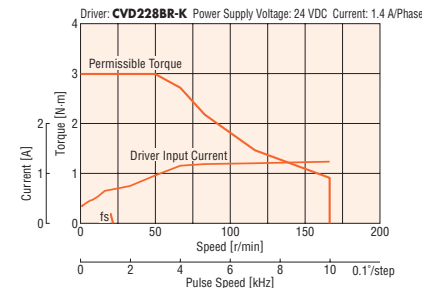
PKP264D14A2-SG3.6/PKP264D14B2-SG3.6 PKP264D14A2-SG7.2/PKP264D14B2-SG7.2 PKP264D14A2-SG9/PKP264D14B2-SG9



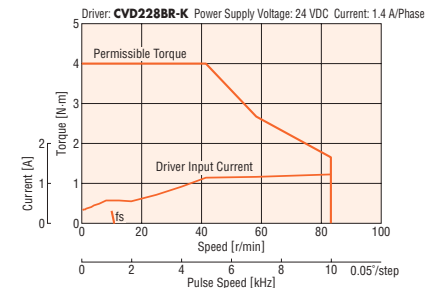
PKP264D14A2-SG10/PKP264D14B2-SG10



PKP264D14A2-SG18/PKP264D14B2-SG18



PKP264D14A2-SG36/PKP264D14B2-SG36

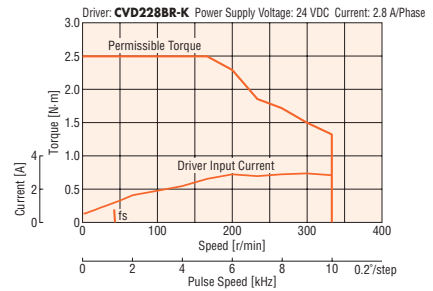
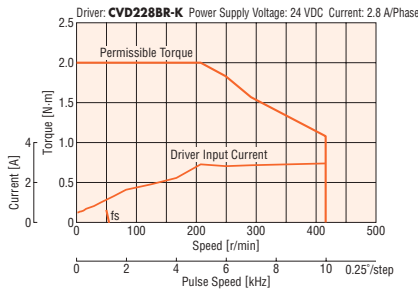
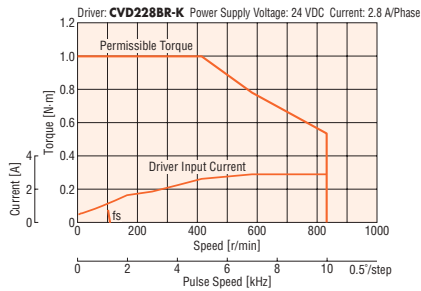


Note

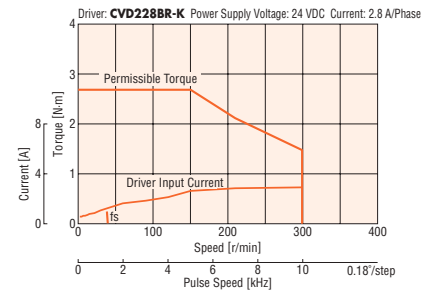
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Speed – Torque Characteristics (Reference values)

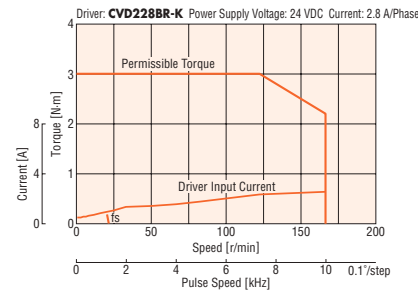
PKP264D28A2-SG3.6/PKP264D28B2-SG3.6 PKP264D28A2-SG7.2/PKP264D28B2-SG7.2 PKP264D28A2-SG9/PKP264D28B2-SG9



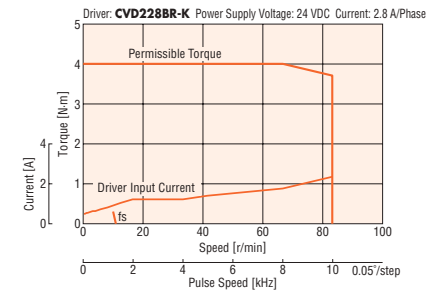
PKP264D28A2-SG10/PKP264D28B2-SG10



PKP264D28A2-SG18/PKP264D28B2-SG18



PKP264D28A2-SG36/PKP264D28B2-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PKP264D14A2-SG□	3.6, 7.2, 9, 10, 18, 36	0.76	B1342
PKP264D14B2-SG□			
PKP264D28A2-SG□			
PKP264D28B2-SG□			

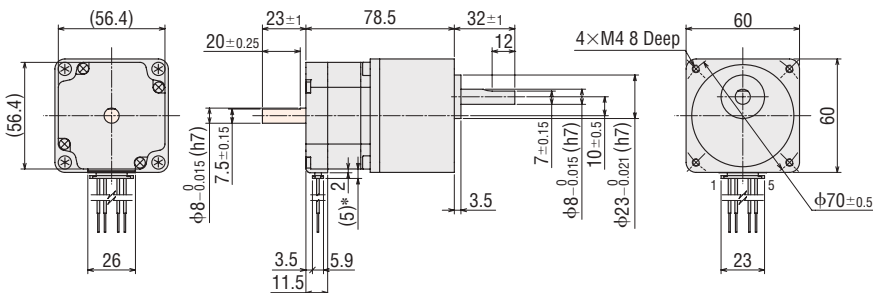
- A number indicating the gear ratio is specified in the box □ in the product name.

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



*With connection cable

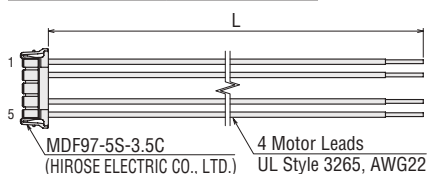
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC2B06E	0.6



Inner Wiring Diagram of Motor

Wiring Diagram No.: ①

- Refer to page 07-85 for inner wiring diagram of motor.

SH Geared Type Frame Size 90 mm (Unipolar 6 lead wires)

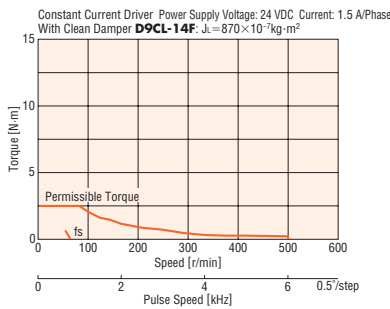
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Voltage VDC	Winding Resistance Ω/Phase	Inductance mH/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Speed Range r/min
PK296□1-SG3.6	2.5	1400×10 ⁻⁷	1.5	3.3	2.2	7.7	0.5°	3.6	2.5	0~500
PK296□2-SG3.6			3	1.4	0.48	1.5				
PK296□1-SG7.2	5		1.5	3.3	2.2	7.7	0.25°	7.2	5	0~250
PK296□2-SG7.2			3	1.4	0.48	1.5				
PK296□1-SG9	6.3		1.5	3.3	2.2	7.7	0.2°	9	6.3	0~200
PK296□2-SG9			3	1.4	0.48	1.5				
PK296□1-SG10	7		1.5	3.3	2.2	7.7	0.18°	10	7	0~180
PK296□2-SG10			3	1.4	0.48	1.5				
PK296□1-SG18	9		1.5	3.3	2.2	7.7	0.1°	18	9	0~100
PK296□2-SG18			3	1.4	0.48	1.5				
PK296□1-SG36	12	1.5	3.3	2.2	7.7	0.05°	36	12	0~50	
PK296□2-SG36		3	1.4	0.48	1.5					

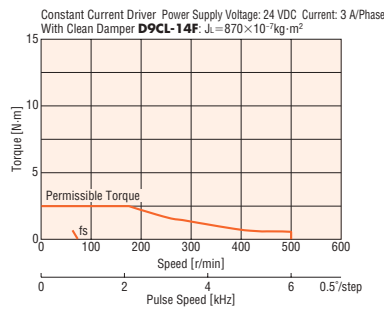
- Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
- Backlash value is approximately 1 to 2°.

Speed – Torque Characteristics (Reference values)

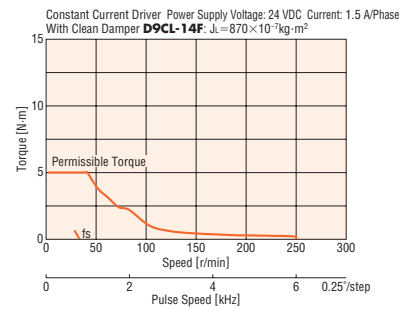
PK296A1-SG3.6/PK296B1-SG3.6



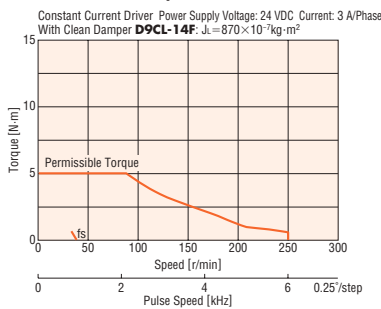
PK296A2-SG3.6/PK296B2-SG3.6



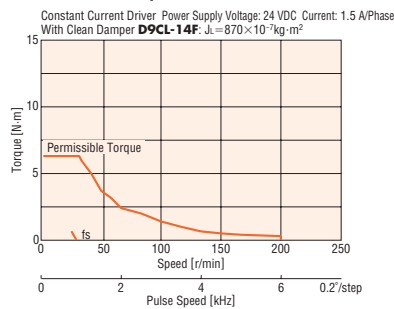
PK296A1-SG7.2/PK296B1-SG7.2



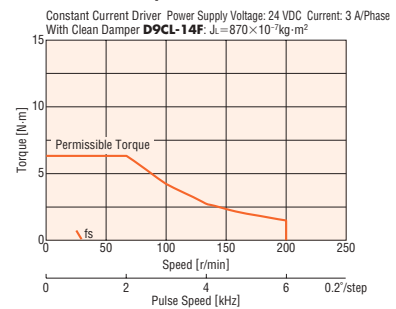
PK296A2-SG7.2/PK296B2-SG7.2



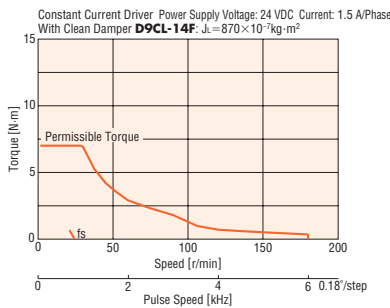
PK296A1-SG9/PK296B1-SG9



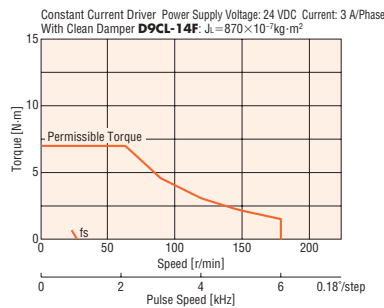
PK296A2-SG9/PK296B2-SG9



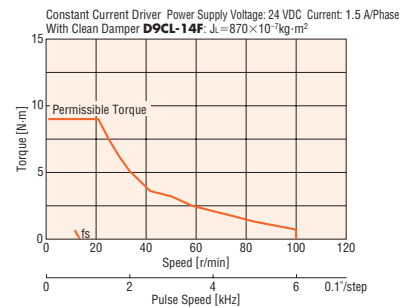
PK296A1-SG10/PK296B1-SG10



PK296A2-SG10/PK296B2-SG10



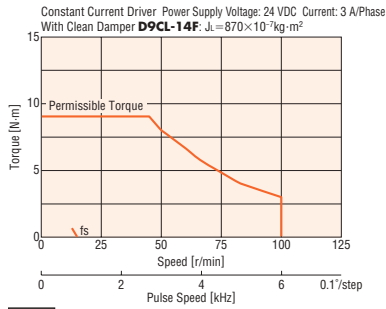
PK296A1-SG18/PK296B1-SG18



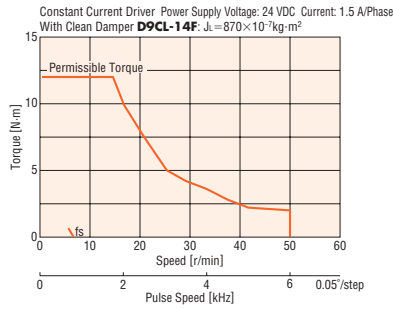
07

PKP Series

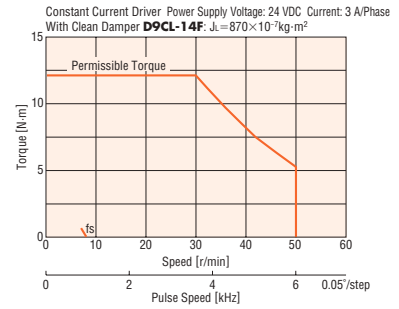
PK296A2-SG18/PK296B2-SG18



PK296A1-SG36/PK296B1-SG36



PK296A2-SG36/PK296B2-SG36



Note

- Data for the speed – torque characteristics is based on Oriental Motor’s internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a “clean damper” entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

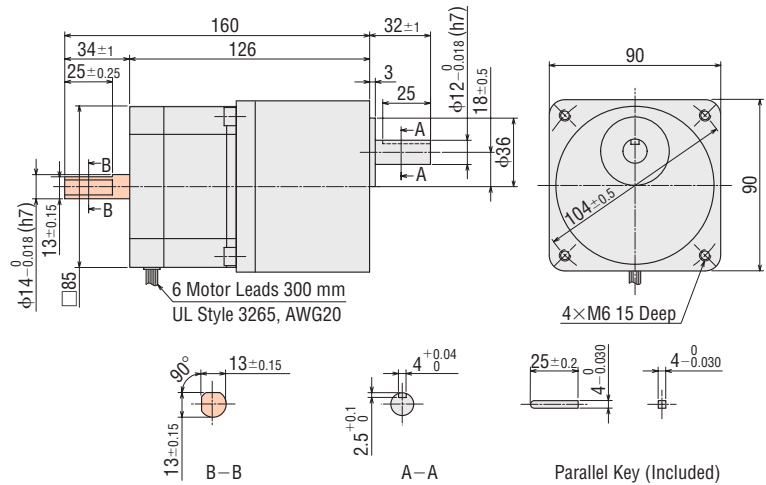
Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
PK296A1-SG <input type="checkbox"/>	3.6, 7.2, 9, 10, 18, 36	2.8	B242
PK296B1-SG <input type="checkbox"/>			
PK296A2-SG <input type="checkbox"/>			
PK296B2-SG <input type="checkbox"/>			

● A number indicating the gear ratio is specified in the box in the product name.



- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.
 - Included
- Installation Screws: M6 × 18 P1.0 (4 Screws)

Inner Wiring Diagram of Motor

Wiring Diagram No.: ⑦

- Refer to page 07-85 for inner wiring diagram of motor.

General Specifications

Specification	Motor	
Thermal Class	130(B)	
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.	
Dielectric Voltage	No abnormalities are observed, even when applying voltage between the windings and the case for 1 minute under normal ambient temperature and humidity with the following conditions. <ul style="list-style-type: none"> • Frame size 42 mm max., PKP262: 0.5 kVAC 50/60 Hz • Frame size 50 mm min.: 1.0 kVAC 50/60 Hz • PKP29□, PK29□: 1.5 kVAC 50/60 Hz 	
Operating Environment (In Operation)	Ambient temperature	-10~+50°C (Non-freezing) [0~+40°C for Flat Type with Harmonic Gear]
	Ambient humidity	85% or less (Non-condensing)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Temperature Rise	Winding temperature rise 80°C max. (Based on Oriental Motor's internal measurement conditions)	
Stop Position Accuracy*1	±3 arc minutes (±0.05°) [PKP21□ and PKP262 are ±5 arc minutes (±0.083°), PK26□J and PK26□JD are ±2 arc minutes (±0.034°)]	
Shaft Runout	0.05 T.I.R. (mm)*4	
Radial Play*2	0.025 mm Max. (load 5 N)	
Axial Play*3	0.075 mm max. (10 N load) [PKP21□ is 1 N load, PKP22□ and PKP262 are 2.5 N load]	
Concentricity of Installation Pilot to the Shaft	0.075 T.I.R. (mm)*4	
Perpendicularity of Installation Surface to the Shaft	0.075 T.I.R. (mm)*4	

*1 This value is for full step under no load. (The value changes with the size of the load.)

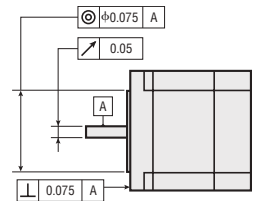
*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N load is applied in the vertical direction to the tip of the motor shaft.

*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N (**PKP21□** is 1 N, **PKP22□** and **PKP262** are 2.5 N) load is applied to the motor shaft in the axial direction.

*4 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.

Note

- Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected. Also, do not conduct these tests on the motor encoder section.

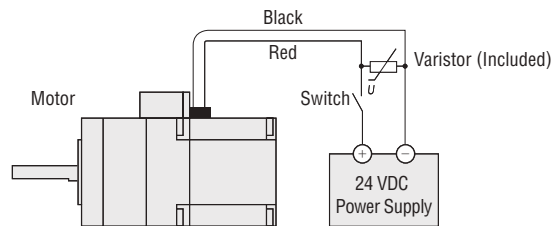


Electromagnetic Brake Specifications

Product Name	PKP22	PKP23 · PKP24	PKP26	
Type	Power off Activated Type			
Power Supply Voltage	24 VDC ±5%			
Power Supply Current	A	0.05	0.07	0.23
Static Friction Torque	N·m	0.08	0.3	1.5
Brake Activation Time	ms	20		
Brake Release Time	ms	50		
Time Rating	Continuous			

- The product names are listed such that the product names are distinguishable.

Connecting the Electromagnetic Brake



Encoder Specifications

Encoder Product Name	R2EL	R2FL
Resolution	200P/R	400P/R
Output Circuit Type	Line Driver*	
Output Mode	Incremental	
Output Signal	A Phase, B Phase, Z Phase (3 ch)	
Power Supply Voltage	5 VDC ±10%	
Current	30 mA max.	

- A voltage output type of encoder output circuit is also available. For details, please contact your nearest Oriental Motor sales office.
- *Equivalent to 26C31

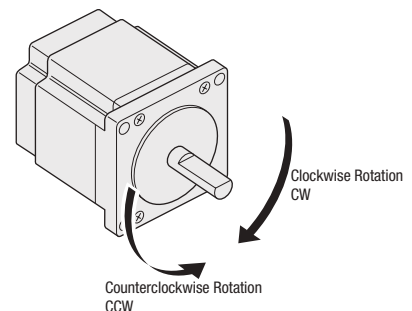
Rotation Direction

This indicates the rotation direction as viewed from the output shaft side of the motor (factory setting).

The rotation direction of the output gear shaft relative to the standard type motor output shaft varies depending on the gear type and gear ratio. Please check the following table.

Gear Type		Gear Ratio	Rotation Direction Relative to Motor Output Shaft
SH Geared	Frame Size 28 mm	7.2, 36	Same direction
		9, 10, 18	Opposite direction
	Frame Size 42 mm, 60 mm	3.6, 7.2, 9, 10	Same direction
		18, 36	Opposite direction
	Frame Size 90 mm	3.6, 7.2, 9, 10, 18	Same direction
		36	Opposite direction
Flat Type with Harmonic Gear		50, 100	Opposite direction

Standard Type Motor



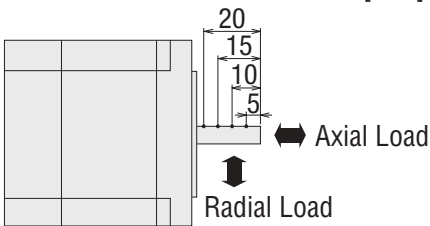
Permissible Radial Load and Permissible Axial Load

Unit: N

Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End [mm]					
				0	5	10	15	20	
Standard Type	20 mm	PKP213, PKP214	-	12	15	-	-	-	3
	28 mm	PKP223, PKP225		25	34	52	-	-	5
	35 mm	PKP233, PKP235		20	25	34	52	-	10
	42 mm	PKP243, PKP244, PKP245, PKP246		20	25	34	52	-	10
		PKP243□2, PKP244□2, PKP245□2, PKP246□2		35	44	58	85	-	15
	50 mm	PK256, PK258		54	67	89	130	-	20
	56.4 mm	PKP264, PKP266, PKP268		61	73	90	110	160	20
		PKP264□2, PKP266□2, PKP268□2		90	100	130	180	270	30
60 mm	PK264J, PK266J, PK267J, PK269J	50	60	75	100	150	20		
85 mm	PKP296, PKP299, PKP2913	260	290	340	390	480	60		
High-Resolution Type	42 mm	PKP243, PKP244	-	20	25	34	52	-	10
	56.4 mm	PKP264, PKP266, PKP268		61	73	90	110	160	20
Flat Type · Standard	42 mm	PKP242	-	20	25	34	-	-	5
	60 mm	PKP262							
Flat Type with Harmonic Gear	51 mm	PKP242	50, 100	-	-	-	-	-	200
	φ72 mm	PKP262		-	-	-	-	-	450
SH Geared Type	28 mm	PKP223	7.2, 9, 10, 18, 36	15	17	20	23	-	10
	42 mm	PKP243	3.6, 7.2, 9, 10, 18, 36	10	15	20	30	-	15
	60 mm	PKP264	3.6, 7.2, 9, 10	30	40	50	60	70	30
			18, 36	80	100	120	140	160	
	90 mm	PK296	3.6, 7.2, 9, 10, 18, 36	220	250	300	350	400	100

Radial Load and Axial Load

Distance from Shaft End [mm]



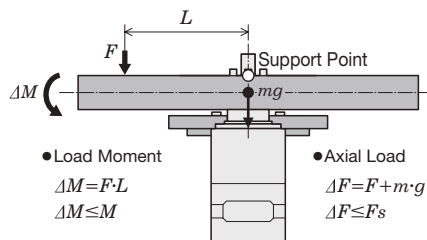
Permissible Moment Load of Flat Type with Harmonic Gear

When an eccentric (uneven) load is applied to the output flange-installation surface, the load moment acts on the bearing. Use the following formula to check whether the axial load and load moment are within specifications.

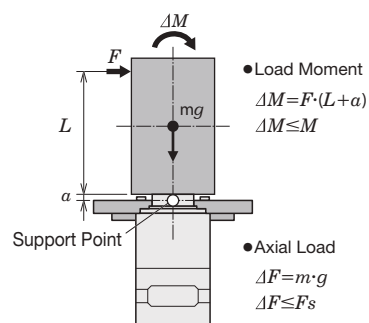
Product Name	Gear Ratio	Permissible Axial Load [N]	Permissible Moment Load [N·m]	α Constant [m]
PKP242-H□	50, 100	200	8.5	0.0129
PKP262-H□	50, 100	450	5.0	0.0095

m : Load Mass (kg)	ΔF : Load on output flange surface (N)
g : Gravitational acceleration (m/s ²)	F_s : Permissible axial load (N)
F : External force (N)	
L : Overhung distance (m)	ΔM : Load moment (N·m)
a : Constant (m)	M : Permissible moment load (N·m)

Example 1: An external force F (N) is applied at L (m) overhung position in a horizontal direction from the center of the output flange

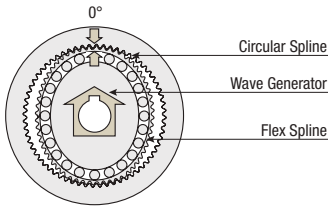


Example 2: An external force F (N) is applied at L (m) overhung position in a vertical direction from the output flange-installation surface



Accuracy of Flat Type with Harmonic Gear

◇ Principle and Structure



◇ Accuracy

Unlike the conventional spur gear gearhead, the harmonic gear has no backlash. The harmonic gear has many teeth in simultaneous meshing engagement, and is designed to average out the effects of tooth pitch error and cumulative pitch error on rotation accuracy to ensure high positioning accuracy. Also, harmonic gears have high gear ratio, so that the torsion when the load torque is applied to the output shaft is much smaller than a single motor and other geared motor, and the rigidity is high. High rigidity is less subject to load fluctuation and enables stable positioning. When the high positioning accuracy and rigidity are required, refer to the following characteristics.

◇ Angular Transmission Accuracy

Angular transmission error is the difference between the theoretical rotation angle of the output shaft, as calculated from the input pulse count, and actual rotation angle. Represented as the difference between the min. value and max. value in the set of measurements taken for a single rotation of the output shaft, starting from an arbitrary position.

Product Name	Angular Transmission Accuracy [arcminute]
PKP242-H□	2 (0.034°)
PKP262-H□	1.5 (0.025°)

● Value at no-load condition (Gear reference value)

Torque – Torsion Angle Characteristics

The torque – torsion angle characteristics in the graph measure displacement (torsion) when the motor shaft is fixed and the load (torque) is gradually increased and decreased in the forward and reverse directions of the output shaft. When a load is applied to the output shaft in this way, displacement occurs due to the gear's spring constant.

This displacement occurs when an external force is applied as the gear is stopped, or when the gear is driven under a frictional load. The slope can be approximated with the spring constant in the following 3 classes, depending on the size of the torque, and can be estimated through calculation.

1. Load torque T_L is T_1 max.

$$\theta = \frac{T_L}{K_1} \text{ [min]}$$

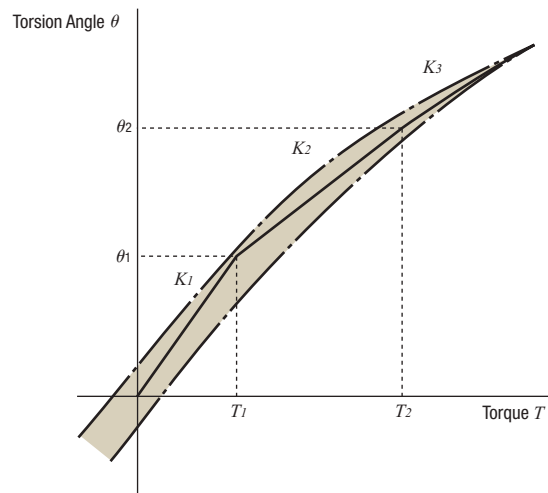
2. Load torque T_L exceeds T_1 but is less than T_2

$$\theta = \theta_1 + \frac{T_L - T_1}{K_2} \text{ [min]}$$

3. Load torque T_L exceeds T_2

$$\theta = \theta_2 + \frac{T_L - T_2}{K_3} \text{ [min]}$$

The torsion angle of the harmonic gear alone is calculated according to the size of the load torque.



Torsion Angle – Torque Characteristics

Values for Determining Torsion Angle

Product Name	Item	Gear Ratio	T_1	K_1	θ_1	T_2	K_2	θ_2	K_3
			N-m	N-m/min	min	N-m	N-m/min	min	N-m/min
PKP242-H50	50	0.29	0.13	2.3	0.75	0.19	4.5	0.24	
	100	0.29	0.26	1.1	0.75	0.29	2.8	0.35	
PKP262-H50	50	2	0.84	2.4	6.9	1.1	6.5	1.4	
	100	2	1.2	1.7	6.9	1.3	5.5	1.8	

Inner Wiring Diagram of Motor

Wiring Diagrams			Pin Assignment
<p>① Bipolar 4 Lead Wires</p>	<p>② Unipolar 5 Lead Wires</p>		<p>Pin No. → 5 1</p>
<p>③ Bipolar 4 Lead Wires</p>	<p>④ Unipolar 6 Lead Wires</p>		<p>Pin No. → 1 6</p>
<p>⑤ Bipolar 4 Lead Wires</p>	<p>⑥ Unipolar 5 Lead Wires</p>	<p>⑦ Unipolar 6 Lead Wires</p>	<p>Colors of Motor Lead Wires: Blue, White, Red, Black, Yellow, Green</p>

0.72°/0.36° Stepping Motors PKP Series/PK Series



This is a high torque and low vibration stepping motor with a basic step angle of 0.72° (resolution of 500 steps per revolution).

High positioning accuracy is possible through low vibration and reduced noise.

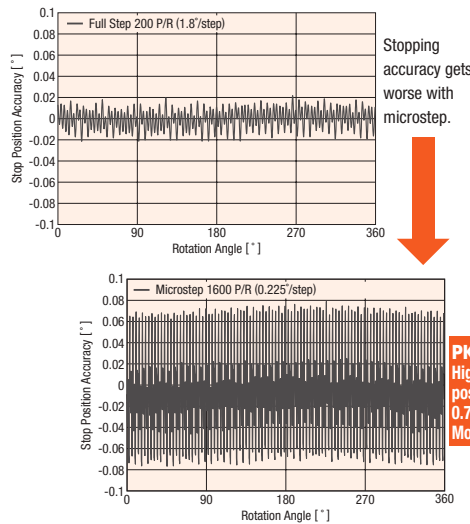
(A separate dedicated driver is required to operate each motor.)

Features

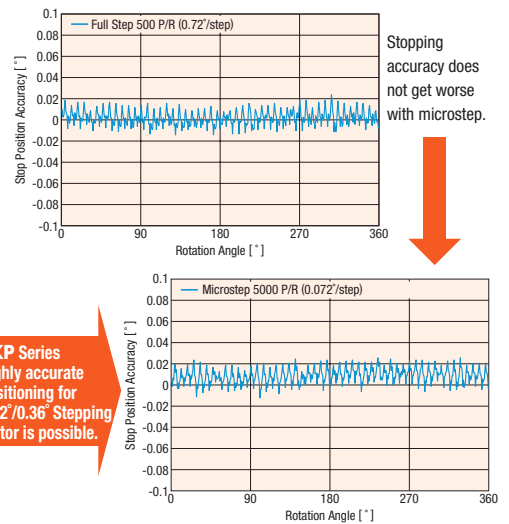
High Accuracy

Since the step angle of 0.72°/0.36° Stepping Motor in the **PKP** Series is at 0.72° (high-resolution type at 0.36°) and the stopping accuracy is at $\pm 0.05^\circ$, highly accurate positioning is possible. In addition, the stop position accuracy controlled by a microstep driver has almost the same high accuracy as that controlled by a full-step driver.

● General 1.8° Stepping Motor



● 0.72°/0.36° Stepping Motor **PKP** Series (Driver: **CVD** driver for 0.72°/0.36° Stepping Motor)



PKP Series
Highly accurate
positioning for
0.72°/0.36° Stepping
Motor is possible.

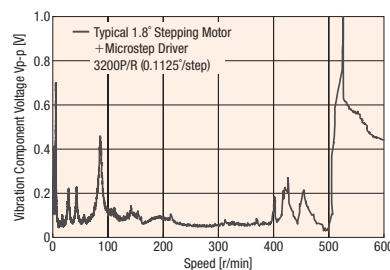
07

PKP Series

Low Vibration and Reduced Noise

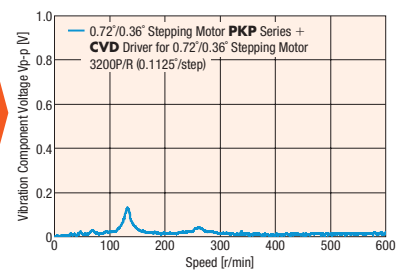
Because the basic step angle is small at 0.72° (0.36° for high-resolution type), the vibrations and noise are lower than the 1.8° stepping motor with a basic step angle of 1.8°. Also, vibrations and noise can be further reduced through control with the driver of the microstep drive.

● Example of 1.8° Stepping Motor Vibration Characteristics



PKP Series
Vibration characteristics
for 0.72°/0.36° Stepping
Motor have been further
improved.

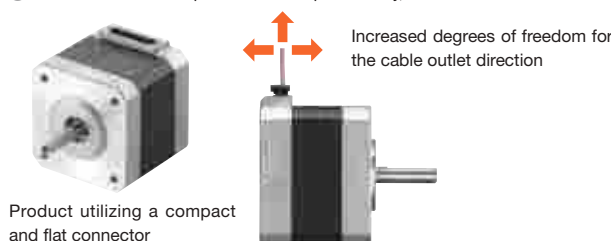
● Example of 0.72°/0.36° Stepping Motor Vibration Characteristics

















Compact and Flat Connector

The **PKP** Series uses a compact and flat connector, which shortens the length of the connector's overhang. In addition, the degree of freedom for the cable outlet direction has been increased, because the outlet direction points upward.

● Because the connector is provided for some products only, refer to dimensions of each model for details.

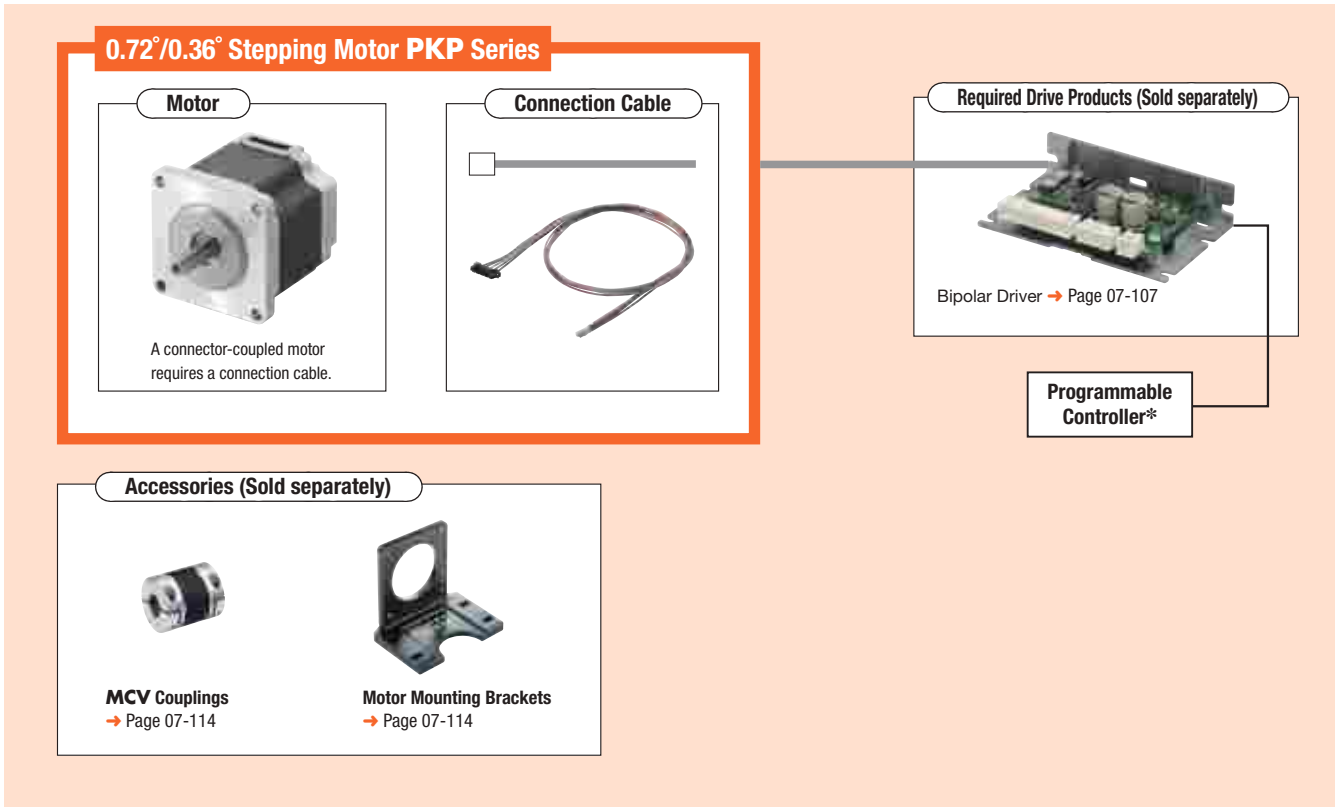


Type (Basic step angle)	Features	Frame Size					
		20mm	28mm	42mm	56.4mm	60mm	85mm
Standard Type (0.72°)	<ul style="list-style-type: none"> Standard model High torque, low vibration 						 Lead Wire Type
High-Resolution Type (0.36°)	<ul style="list-style-type: none"> Double the resolution of the standard type motor High positioning accuracy and reduced vibration 	–	–		–		–
Standard Type with Encoder (0.72°)	<ul style="list-style-type: none"> Encoder resolution 500 P/R, A, B, and Z (3 ch) output signals Utilizes a compact encoder Encoder with superior noise resistance and a line driver (differential) output 		–				–
TS Geared Type (0.024°-0.2°)	<ul style="list-style-type: none"> Spur gear mechanism A wide variety of low gear ratios, high-speed operations Gear ratios: 3.6, 7.2, 10, 20, 30 	–	–		–		–

*Conventional PK Series.

System Configuration

These accessories allow 0.72°/0.36° stepping motor in the **PKP** Series to be used for various operations. Motors and connection cables must be ordered individually.



System Configuration Example

0.72°/0.36° Stepping Motor PKP Series		Sold Separately	
Motor	Connection Cable	Motor Mounting Bracket	Flexible Coupling
PKP566FN24A2	LC5N06E	PAL2P-5	MCV190808
SGD81	SGD6	SGD14	SGD90

The system configuration shown above is an example. Other combinations are also available.

Product Number Code

● Motor

◇ Frame Size 20 mm, 85 mm

Standard type

PK 5 1 3 P A

① ② ③ ④ ⑤ ⑧

PK 5 9 6 H N A W

① ② ③ ④ ⑥ ⑦ ⑧ ⑪

Standard Type with Encoder

PK 5 1 3 P A - R2G L

① ② ③ ④ ⑤ ⑧ ⑨ ⑩

◇ Frame Size 28 mm, 42 mm, 56.4 mm, 60 mm

Standard Type, High-Resolution Type

PKP 5 6 6 F N 24 A 2

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩

PKP 5 4 4 M N 18 A

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

Standard Type with Encoder

PKP 5 6 6 F N 24 A 2 - R2G L

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

TS Geared Type

PKP 5 4 3 N 18 A 2 - TS 30

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

● Connection Cable

◇ Connection Cable for Motor

LC 5 N 06 E

① ② ③ ④ ⑤

◇ Connection Cable for Encoder

LC E 08 A - 006

① ② ③ ④ ⑤

①	Series Name	PK: PK Series
②	5: 0.72°/0.36° Stepping Motor	
③	Motor Frame Size	1: 20 mm 9: 85 mm
④	Motor Case Length	
⑤	Motor Classification	
⑥	Motor Type	Blank: Standard Specifications H: High-Speed Specifications
⑦	Number of Lead Wires	N: 5 Leads
⑧	Configuration	A: Single Shaft B: Double Shaft
⑨	Encoder Resolution	R2G: 500 P/R
⑩	Encoder Output Circuit Type	L: Line Driver Output
⑪	Cable Identification	Blank: Connector Connection Method W: Lead Wire Type

①	Series Name	PKP: PKP Series
②	5: 0.72°/0.36° Stepping Motor	
③	Motor Frame Size	2: 28 mm 4: 42 mm 6: 56.4 mm *1 (60 mm when the motor classification is "F")
④	Motor Case Length	
⑤	Motor Classification	F: Motor Frame Size of 60 mm
⑥	Motor Type	Blank: Standard Type M: High-Resolution Type
⑦	Number of Lead Wires	N: 5 Leads
⑧	Motor Winding Specifications	
⑨	Configuration	A: Single Shaft B: Double Shaft
⑩	Reference Number	
⑪	Encoder Resolution	R2G: 500 P/R
⑫	Encoder Output Circuit Type	L: Line Driver Output*2

*1 Products with shaft diameter $\phi 6.35$ mm are also available.

For details, please contact your nearest Oriental Motor sales office.

*2 Encoder of voltage output for output circuit type is also available.

For details, please contact your nearest Oriental Motor sales office.

①	Series Name	PKP : PKP Series
②	5 : 0.72°/0.36° Stepping Motor	
③	Motor Frame Size	4: 42 mm 6: 56.4 mm
④	Motor Case Length	
⑤	Number of Lead Wires	N: 5 Leads
⑥	Motor Winding Specifications	
⑦	Configuration	A: Single Shaft B: Double Shaft
⑧	Reference Number	
⑨	Gearhead Type	TS: TS Geared Type
⑩	Gear Ratio	

①	Cables	LC: Connector-Type Leads
②	5: 0.72°/0.36° Stepping Motor	
③	Cable Type	N: For 0.72°/0.36° Stepping Motor
④	Cable Length	06: 0.6 m 10: 1 m
⑤	Reference Number	

①	Cables	LC: Connector-Type Leads
②	Cable Type	E: For Encoder
③	Applicable Models	08: For Line Driver Output*
④	Reference Number	
⑤	Cable Length	006: 0.6 m

*A voltage output cable is available.

For details, please contact your nearest Oriental Motor sales office.

Product Line

A connector cable is required for the connector type motor. The motor and connection cable are purchased separate. For details on the connection cable, refer to page 07-115.

Motors

◇ Standard Type

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PK513PA	SGD125	PK513PB	SGD131
PKP523N12A	SGD56	PKP523N12B	SGD59
PKP525N12A	SGD66	PKP525N12B	SGD69
PKP543N18A2	SGD56	PKP543N18B2	SGD59
PKP544N18A2	SGD59	PKP544N18B2	SGD61
PKP545N18A2	SGD66	PKP545N18B2	SGD69
PKP546N18A2	SGD69	PKP546N18B2	SGD72
PKP564N28A2	SGD69	PKP564N28B2	SGD72
PKP566N28A2	SGD75	PKP566N28B2	SGD78
PKP568N28A2	SGD94	PKP568N28B2	SGD98
PKP564FN24A2	SGD75	PKP564FN24B2	SGD78
PKP564FN38A2	SGD75	PKP564FN38B2	SGD78
PKP566FN24A2	SGD81	PKP566FN24B2	SGD84
PKP566FN38A2	SGD81	PKP566FN38B2	SGD84
PKP569FN24A2	SGD100	PKP569FN24B2	SGD104
PKP569FN38A2	SGD100	PKP569FN38B2	SGD104
PK596HNAW	SGD183	PK596HNBW	SGD188
PK599HNAW	SGD275	PK599HNBW	SGD284
PK5913HNAW	SGD400	PK5913HNBW	SGD413

◇ Standard Type with Encoder

Product Name	List Price
PK513PA-R2GL	SGD200
PKP543N18A2-R2GL	SGD119
PKP544N18A2-R2GL	SGD121
PKP545N18A2-R2GL	SGD129
PKP546N18A2-R2GL	SGD131
PKP564N28A2-R2GL	SGD131
PKP566N28A2-R2GL	SGD138
PKP568N28A2-R2GL	SGD156
PKP564FN24A2-R2GL	SGD138
PKP564FN38A2-R2GL	SGD138
PKP566FN24A2-R2GL	SGD144
PKP566FN38A2-R2GL	SGD144
PKP569FN24A2-R2GL	SGD163
PKP569FN38A2-R2GL	SGD163

◇ High-Resolution Type

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP544MN18A	SGD59	PKP544MN18B	SGD61
PKP546MN18A	SGD69	PKP546MN18B	SGD72
PKP564FMN24A	SGD75	PKP564FMN24B	SGD78
PKP566FMN24A	SGD81	PKP566FMN24B	SGD84
PKP569FMN24A	SGD100	PKP569FMN24B	SGD104

◇ TS Geared Type NEW

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP544N18A2-TS3.6	SGD215	PKP544N18B2-TS3.6	SGD218
PKP544N18A2-TS7.2	SGD215	PKP544N18B2-TS7.2	SGD218
PKP544N18A2-TS10	SGD233	PKP544N18B2-TS10	SGD235
PKP543N18A2-TS20	SGD233	PKP543N18B2-TS20	SGD235
PKP543N18A2-TS30	SGD233	PKP543N18B2-TS30	SGD235
PKP566N28A2-TS3.6	SGD249	PKP566N28B2-TS3.6	SGD252
PKP566N28A2-TS7.2	SGD249	PKP566N28B2-TS7.2	SGD252
PKP566N28A2-TS10	SGD266	PKP566N28B2-TS10	SGD269
PKP564N28A2-TS20	SGD266	PKP564N28B2-TS20	SGD269
PKP564N28A2-TS30	SGD266	PKP564N28B2-TS30	SGD269

● Connection Cables for Motor

The applicable motors of the connection cable are shown in the dimensions of each product.

Product Name	Length L (m)	List Price
LC5N06A	0.6	SGD6
LC5N10A	1	SGD9
LC5N06B	0.6	SGD6
LC5N10B	1	SGD9
LC5N06C	0.6	SGD9
LC5N10C	1	SGD11
LC5N06E	0.6	SGD6

● Connection Cable for Encoder

◇ For Line Driver Output

Product Name	Length L (m)	List Price
LCE08A-006	0.6	SGD13

Included

Type	Included	Parallel Key	Motor Installation Screw	Operating Manual
Standard Type				1 Set
High-Resolution Type		—	—	
TS Geared Type	Frame Size 42 mm	—	—	
	Frame Size 60 mm	1 Piece	M4 × 60 P0.7 (4 Screws)	

Glossary of Specification Table

→ Page 07-11

Standard Type Frame Size 20 mm

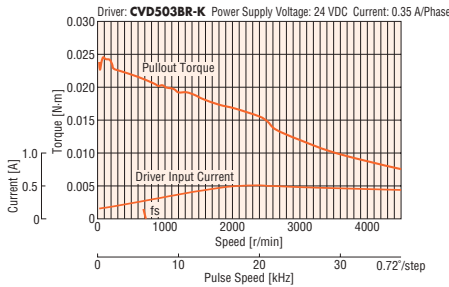
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PK513PA	PK513PB	0.0231	1.6×10^{-7}	0.35	3.5	0.72°	CVD503BR-K

*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PK513PA/PK513PB



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

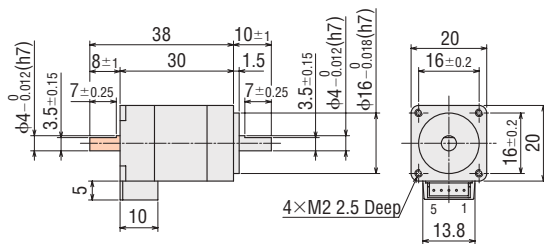
Motor

2D & 3D CAD

Product Name	Mass kg	2D CAD
PK513PA	0.05	B316
PK513PB		

Applicable Connector

Connector Housing: 51065-0500 (Molex)
Contact: 50212-8100 (Molex)
Crimp Tool: 57176-5000 (Molex)



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Motor Pin Assignment

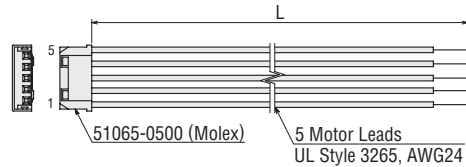
Motor Pin Assignment: Model B

- Refer to page 07-105 for motor pin layout.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06A	0.6
LC5N10A	1



Standard Type with Encoder Frame Size 20 mm

Specifications

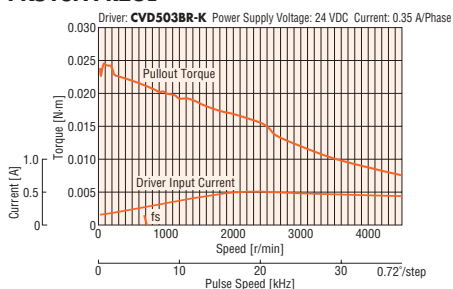
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
PK513PA-R2GL	0.0231	1.66×10^{-7}	0.35	3.5	0.72°	CVD503BR-K

● Refer to page 07-105 for encoder specifications.

*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PK513PA-R2GL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

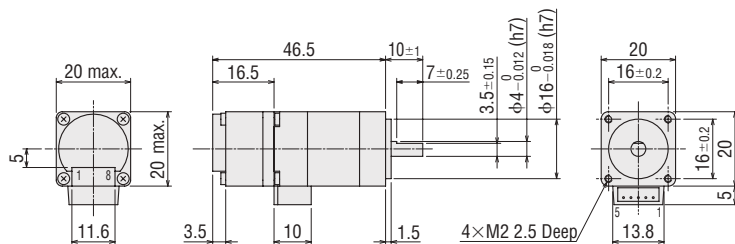
Motor

2D & 3D CAD

Product Name	Mass kg	2D CAD
PK513PA-R2GL	0.06	B1069

● Applicable Connector (Molex)

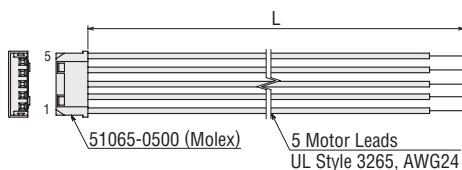
	Motor	Encoder
Connector Housing	51065-0500	51021-0800
Contact	50212-8100	50079-8100
Crimp Tool	57176-5000	57067-3000



Connection Cable (Sold separately)

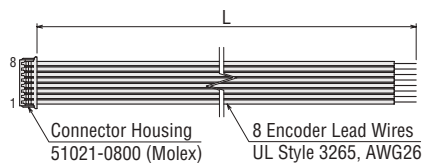
◇ For Motor

Product Name	Length L (m)
LC5N06A	0.6
LC5N10A	1



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Motor Pin Assignment

Motor Pin Assignment: Model B

● Refer to page 07-105 for motor pin layout.

Standard Type Frame Size 28 mm

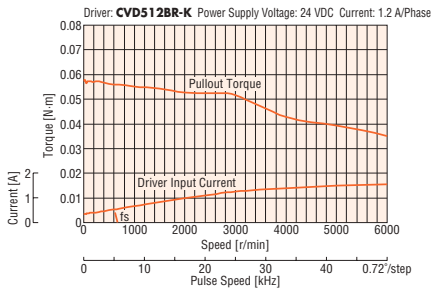
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP523N12A	PKP523N12B	0.052	9×10^{-7}	1.2	0.63	0.72°	CVD512BR-K
PKP525N12A	PKP525N12B	0.091	18×10^{-7}		1		

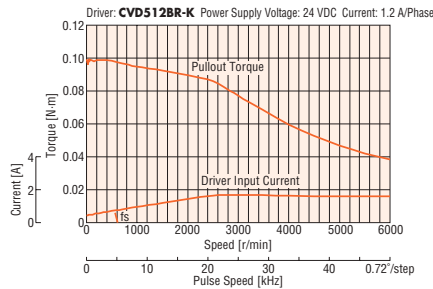
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP523N12A/PKP523N12B



PKP525N12A/PKP525N12B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

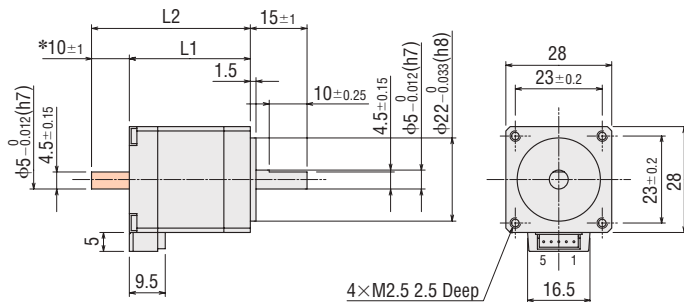
Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP523N12A	32	—	0.11	B1146
PKP523N12B		42		
PKP525N12A	51.5	—	0.2	B1147
PKP525N12B		61.5		

Applicable Connector

Connector Housing: 51065-0500 (Molex)
Contact: 50212-8100 (Molex)
Crimp Tool: 57176-5000 (Molex)



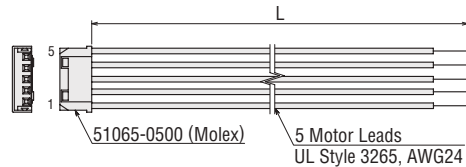
*The length of the shaft flat on the double shaft model is 10 ± 0.25 .

- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06A	0.6
LC5N10A	1



Motor Pin Assignment

Motor Pin Assignment: Model B

- Refer to page 07-105 for motor pin layout.

Standard Type Frame Size 42 mm

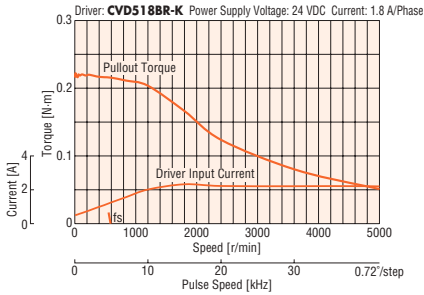
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP543N18A2	PKP543N18B2	0.22	35×10^{-7}	1.8	0.4	0.72°	CVD518BR-K
PKP544N18A2	PKP544N18B2	0.3	55×10^{-7}		0.48		
PKP545N18A2	PKP545N18B2	0.37	71×10^{-7}		0.55		
PKP546N18A2	PKP546N18B2	0.5	110×10^{-7}		0.64		

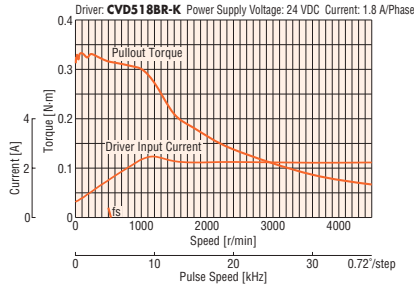
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

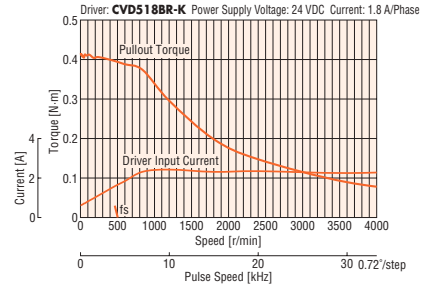
PKP543N18A2/ PKP543N18B2



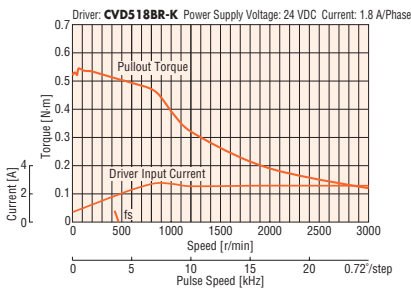
PKP544N18A2/ PKP544N18B2



PKP545N18A2/ PKP545N18B2



PKP546N18A2/ PKP546N18B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

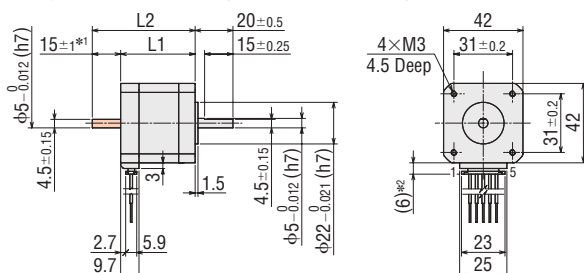
Product Name	L1	L2	Mass kg	2D CAD
PKP543N18A2	33	—	0.23	B1264
PKP543N18B2	—	48		
PKP544N18A2	39	—	0.29	B1265
PKP544N18B2		54		
PKP545N18A2	47	—	0.37	B1266
PKP545N18B2		62		
PKP546N18A2	59	—	0.49	B1267
PKP546N18B2		74		

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

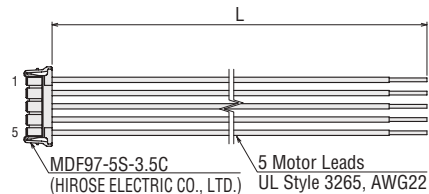
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06E	0.6



Motor Pin Assignment

Motor Pin Assignment: Model A

- Refer to page 07-105 for motor pin layout.

*1 The length of the shaft flat on the double shaft model is 15±0.25.

*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Standard Type with Encoder Frame Size 42 mm

Specifications

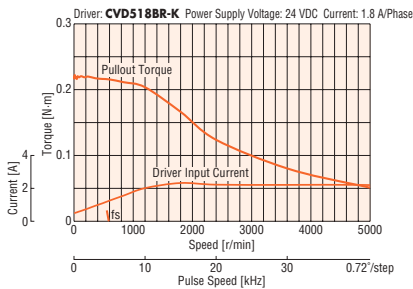
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP543N18A2-R2GL	0.22	35×10^{-7}	1.8	0.4	0.72°	CVDS18BR-K
PKP544N18A2-R2GL	0.3	55×10^{-7}		0.48		
PKP545N18A2-R2GL	0.37	71×10^{-7}		0.55		
PKP546N18A2-R2GL	0.5	110×10^{-7}		0.64		

● Refer to page 07-105 for encoder specifications.

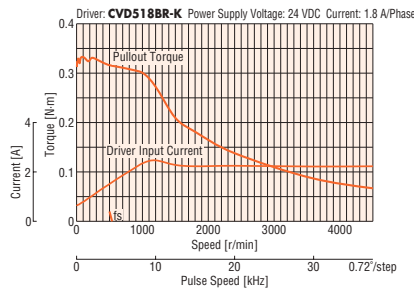
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

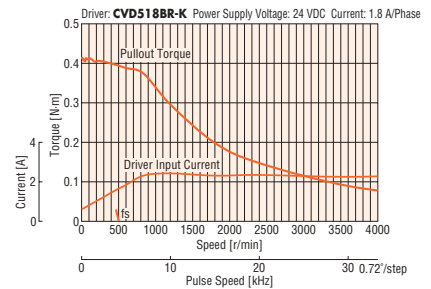
PKP543N18A2-R2GL



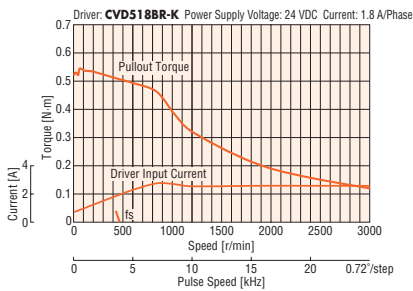
PKP544N18A2-R2GL



PKP545N18A2-R2GL



PKP546N18A2-R2GL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

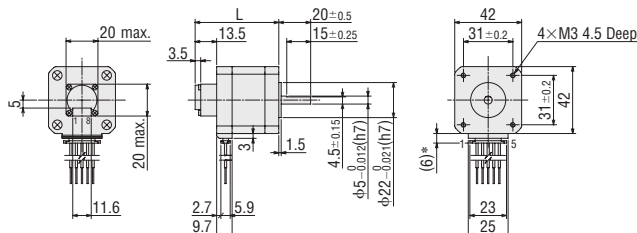
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP543N18A2-R2GL	46.5	0.24	B1343
PKP544N18A2-R2GL	52.5	0.3	B1344
PKP545N18A2-R2GL	60.5	0.38	B1345
PKP546N18A2-R2GL	72.5	0.5	B1346

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

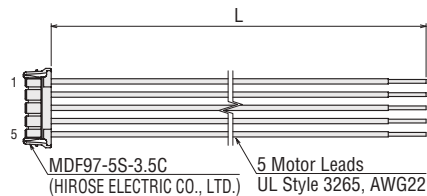


*With connection cable

Connection Cable (Sold separately)

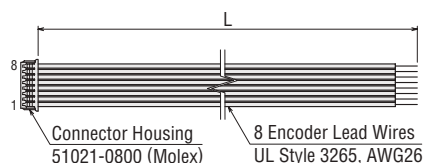
For Motor

Product Name	Length L (m)
LC5N06E	0.6



For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Motor Pin Assignment

Motor Pin Assignment: Model A

● Refer to page 07-105 for motor pin layout.

Standard Type Frame Size 56.4 mm

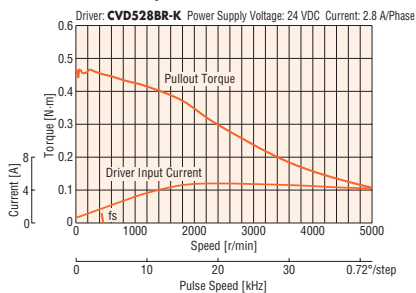
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP564N28A2	PKP564N28B2	0.44	140×10^{-7}	2.8	0.16	0.72°	CVD528BR-K
PKP566N28A2	PKP566N28B2	0.81	270×10^{-7}		0.24		
PKP568N28A2	PKP568N28B2	1.5	500×10^{-7}		0.37		

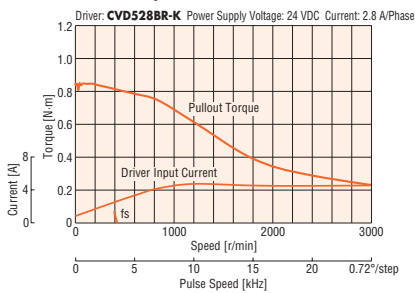
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

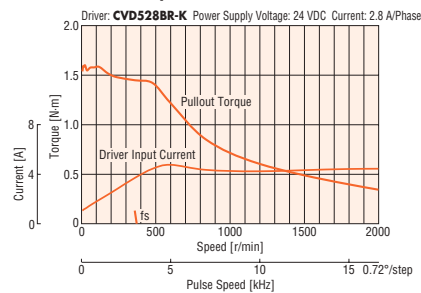
PKP564N28A2/ PKP564N28B2



PKP566N28A2/ PKP566N28B2



PKP568N28A2/ PKP568N28B2



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP564N28A2	39	—	0.43	B1257
PKP564N28B2	—	62	—	—
PKP566N28A2	54	—	0.67	B1258
PKP566N28B2	—	77	—	—
PKP568N28A2	76	—	1	B1259
PKP568N28B2	—	99	—	—

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

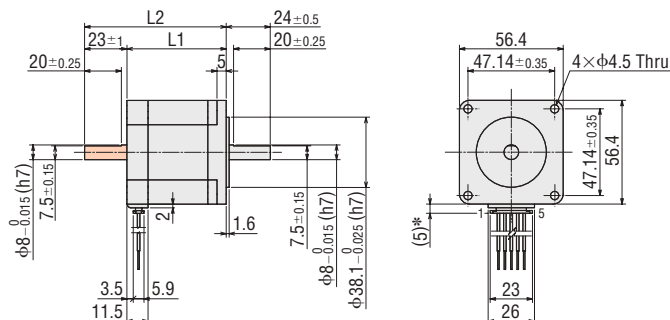
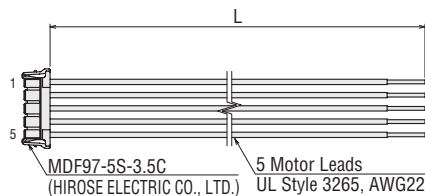
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06E	0.6



*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Motor Pin Assignment

Motor Pin Assignment: Model A

● Refer to page 07-105 for motor pin layout.

Standard Type with Encoder Frame Size 56.4 mm

Specifications

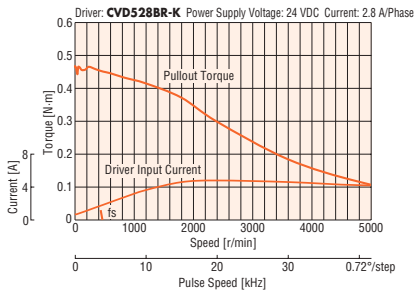
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP564N28A2-R2GL	0.44	140×10^{-7}	2.8	0.16	0.72°	CVD528BR-K
PKP566N28A2-R2GL	0.81	270×10^{-7}		0.24		
PKP568N28A2-R2GL	1.5	500×10^{-7}		0.37		

● Refer to page 07-105 for encoder specifications.

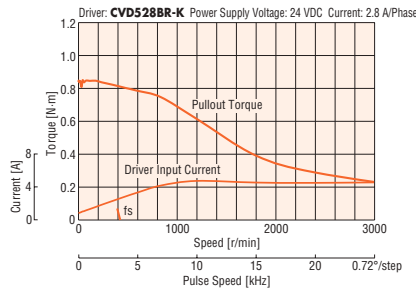
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

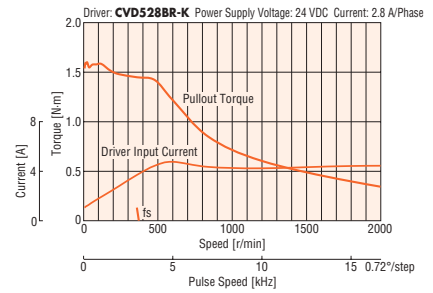
PKP564N28A2-R2GL



PKP566N28A2-R2GL



PKP568N28A2-R2GL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

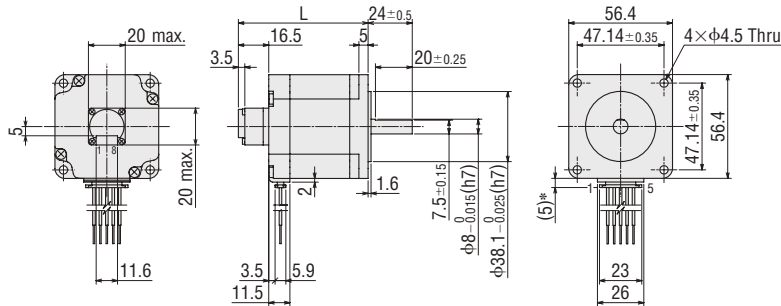
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP564N28A2-R2GL	55.5	0.43	B1347
PKP566N28A2-R2GL	70.5	0.67	B1348
PKP568N28A2-R2GL	92.5	1	B1349

Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

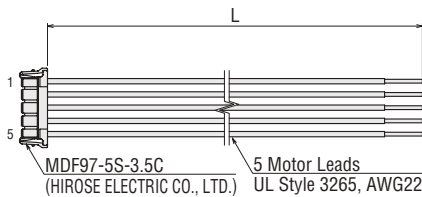


*With connection cable

Connection Cable (Sold separately)

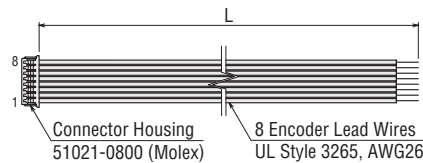
◇ For Motor

Product Name	Length L (m)
LC5N06E	0.6



◇ For Encoder

Product Name	Length L (m)
LC08A-006	0.6



Motor Pin Assignment

Motor Pin Assignment: Model A

● Refer to page 07-105 for motor pin layout.

Standard Type Frame Size 60 mm

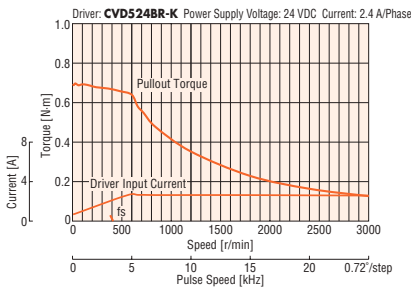
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP564FN24A2	PKP564FN24B2	0.66	160×10 ⁻⁷	2.4	0.28	0.72°	CVD524BR-K
PKP564FN38A2	PKP564FN38B2			3.8	0.12		CVD538BR-K
PKP566FN24A2	PKP566FN24B2	1.15	290×10 ⁻⁷	2.4	0.38		CVD524BR-K
PKP566FN38A2	PKP566FN38B2			3.8	0.16		CVD538BR-K
PKP569FN24A2	PKP569FN24B2	2.1	540×10 ⁻⁷	2.4	0.64		CVD524BR-K
PKP569FN38A2	PKP569FN38B2			3.8	0.22		CVD538BR-K

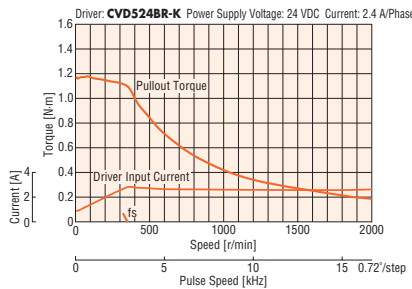
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

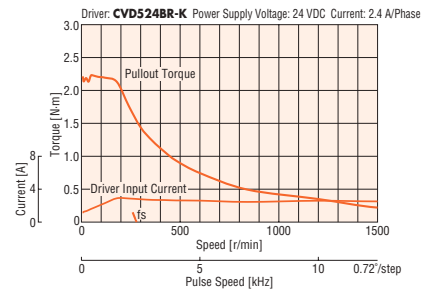
PKP564FN24A2/ PKP564FN24B2



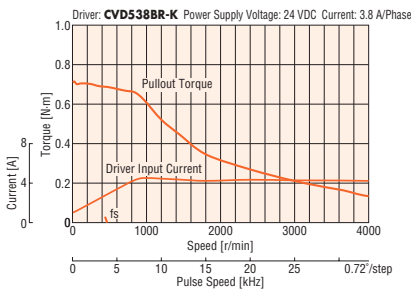
PKP566FN24A2/ PKP566FN24B2



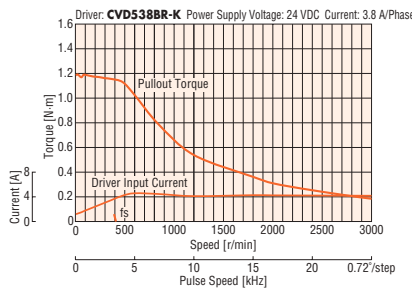
PKP569FN24A2/ PKP569FN24B2



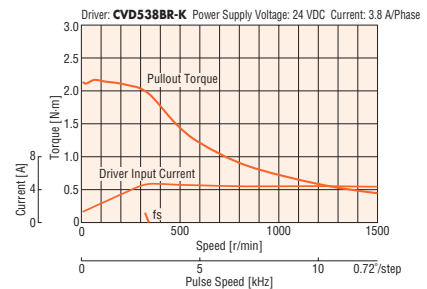
PKP564FN38A2/ PKP564FN38B2



PKP566FN38A2/ PKP566FN38B2



PKP569FN38A2/ PKP569FN38B2



Note

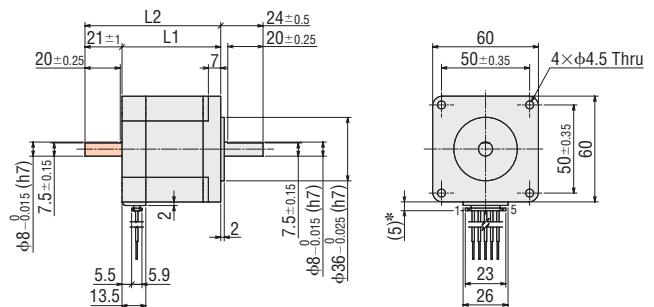
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP564FN24A2	44	—	0.56	B1252
PKP564FN24B2		65		
PKP564FN38A2	44	—	0.56	B1252
PKP564FN38B2		65		
PKP566FN24A2	56	—	0.79	B1253
PKP566FN24B2		77		
PKP566FN38A2	56	—	0.79	B1253
PKP566FN38B2		77		
PKP569FN24A2	84.5	—	1.3	B1254
PKP569FN24B2		105.5		
PKP569FN38A2	84.5	—	1.3	B1254
PKP569FN38B2		105.5		



*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

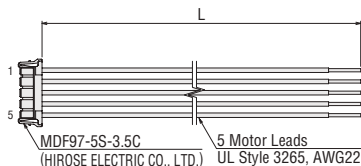
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06E	0.6



Motor Pin Assignment

Motor Pin Assignment: Model A

● Refer to page 07-105 for motor pin layout.

Standard Type with Encoder Frame Size 60 mm

Specifications

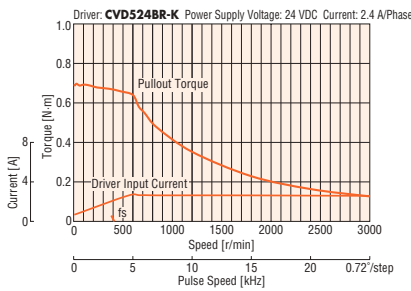
Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
PKP564FN24A2-R2GL	0.66	160×10 ⁻⁷	2.4	0.28	0.72°	CVD524BR-K
PKP564FN38A2-R2GL			3.8	0.12		CVD538BR-K
PKP566FN24A2-R2GL	1.15	290×10 ⁻⁷	2.4	0.38		CVD524BR-K
PKP566FN38A2-R2GL			3.8	0.16		CVD538BR-K
PKP569FN24A2-R2GL	2.1	540×10 ⁻⁷	2.4	0.64		CVD524BR-K
PKP569FN38A2-R2GL			3.8	0.22		CVD538BR-K

● Refer to page 07-105 for encoder specifications.

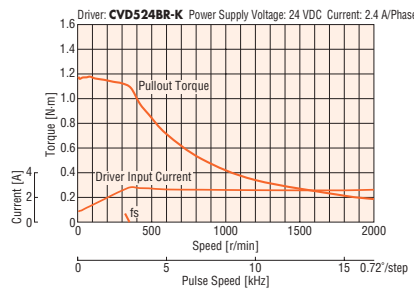
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

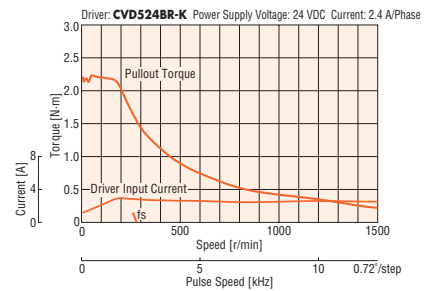
PKP564FN24A2-R2GL



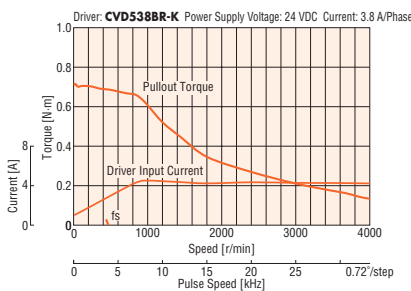
PKP566FN24A2-R2GL



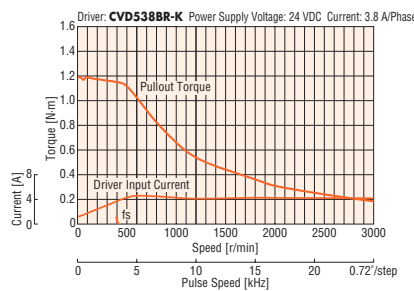
PKP569FN24A2-R2GL



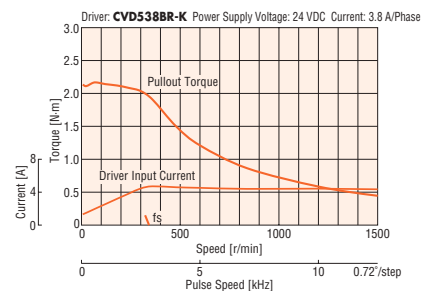
PKP564FN38A2-R2GL



PKP566FN38A2-R2GL



PKP569FN38A2-R2GL



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

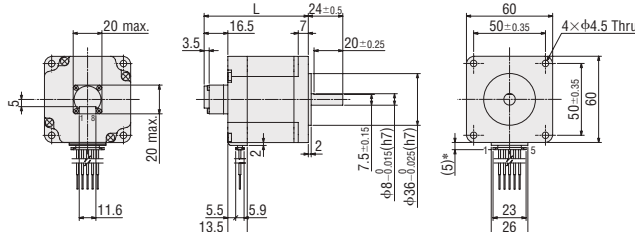
Motor

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
PKP564FN24A2-R2GL	60.5	0.56	B1350
PKP564FN38A2-R2GL			
PKP566FN24A2-R2GL	72.5	0.79	B1351
PKP566FN38A2-R2GL			
PKP569FN24A2-R2GL	101	1.3	B1352
PKP569FN38A2-R2GL			

● Applicable Connector

	Motor (HIROSE ELECTRIC CO., LTD.)	Encoder (Molex)
Connector Housing	MDF97-5S-3.5C	51021-0800
Contact	MDF97-22SC	50079-8100
Crimp Tool	HT801/MDF97-22S	57067-3000

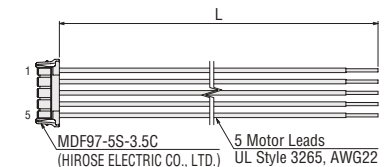


*With connection cable

Connection Cable (Sold separately)

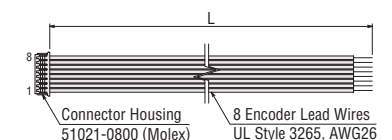
◇ For Motor

Product Name	Length L (m)
LC5N06E	0.6



◇ For Encoder

Product Name	Length L (m)
LCE08A-006	0.6



Motor Pin Assignment

Motor Pin Assignment: Model A

● Refer to page 07-105 for motor pin layout.

Standard Type Frame Size 85 mm

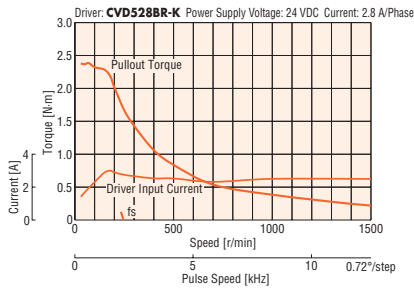
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PK596HNAW	PK596HNBW	2.1	1400×10^{-7}	2.8	0.41	0.72°	CVD528BR-K
PK599HNAW	PK599HNBW	4.1	2700×10^{-7}		0.46		
PK5913HNAW	PK5913HNBW	6.3	4000×10^{-7}		0.72		

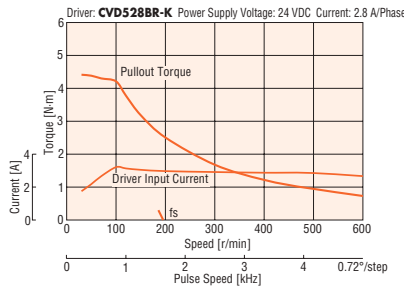
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

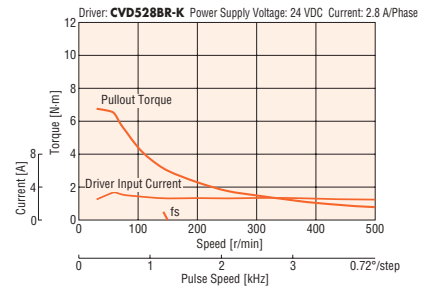
PK596HNAW/PK596HNBW



PK599HNAW/PK599HNBW



PK5913HNAW/PK5913HNBW



Note

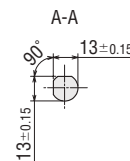
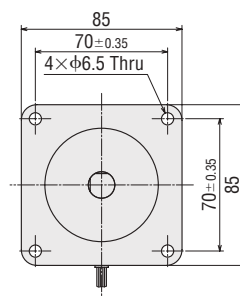
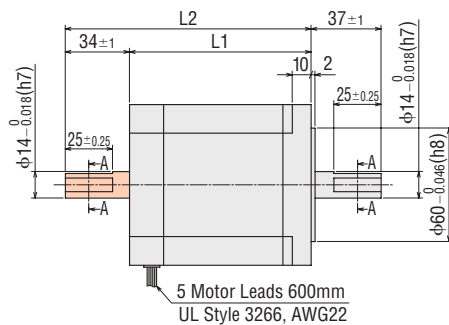
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PK596HNAW	66	—	1.7	B155
PK596HNBW		100		
PK599HNAW	96	—	2.8	B156
PK599HNBW		130		
PK5913HNAW	126	—	3.8	B157
PK5913HNBW		160		



- These dimensions are for double shaft motors.
For single shaft motors, ignore the shaded areas.

Motor Pin Assignment

Motor Pin Assignment: Model C

- Refer to page 07-105 for motor pin layout.

High-Resolution Type Frame Size 42 mm

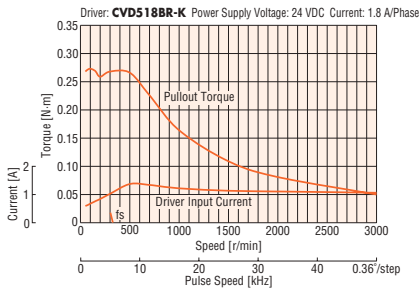
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP544MN18A	PKP544MN18B	0.26	60×10^{-7}	1.8	0.51	0.36°	CVD518BR-K
PKP546MN18A	PKP546MN18B	0.44	121×10^{-7}		0.66		

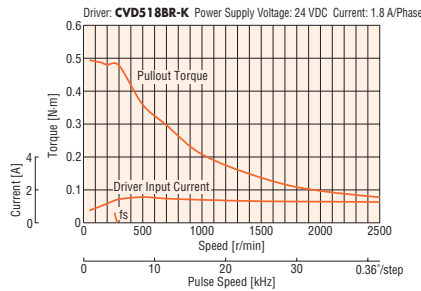
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

PKP544MN18A/PKP544MN18B



PKP546MN18A/PKP546MN18B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

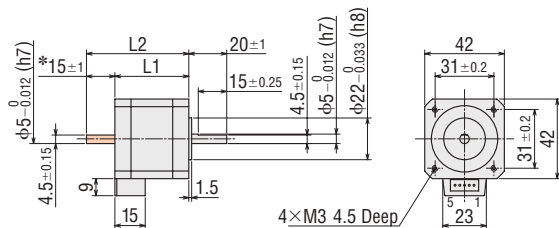
Motor

2D & 3D CAD

Product Name	L1	L2	Mass kg	2D CAD
PKP544MN18A	39	—	0.3	B1120
PKP544MN18B		54		
PKP546MN18A	59	—	0.5	B1121
PKP546MN18B		74		

● Applicable Connector

Connector Housing: 51103-0500 (Molex)
Contact: 50351-8100 (Molex)
Crimp Tool: 57295-5000 (Molex)



*The length of the shaft flat on the double shaft model is 15 ± 0.25 .

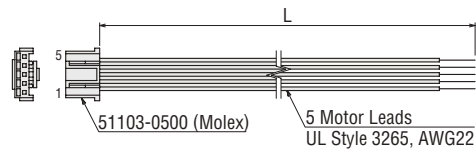
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC5N06B	0.6
LC5N10B	1



Motor Pin Assignment

Motor Pin Assignment: Model B

● Refer to page 07-105 for motor pin layout.

High-Resolution Type Frame Size 60 mm

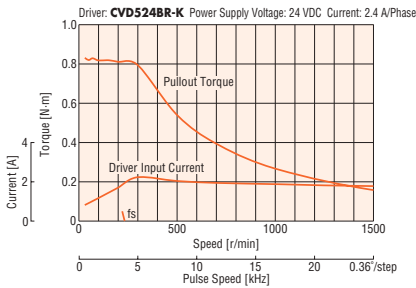
Specifications

Product Name		Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Recommended Driver Product Name*
Single Shaft	Double Shaft						
PKP564FMN24A	PKP564FMN24B	0.78	310×10^{-7}	2.4	0.32	0.36°	CVD524BR-K
PKP566FMN24A	PKP566FMN24B	1.25	490×10^{-7}		0.4		
PKP569FMN24A	PKP569FMN24B	2.3	970×10^{-7}		0.66		

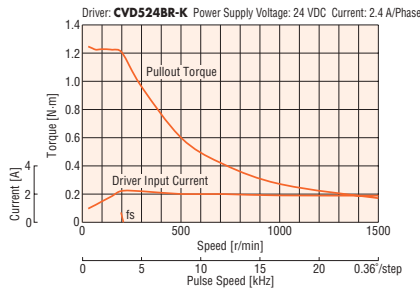
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

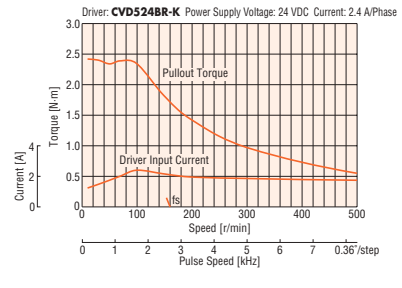
PKP564FMN24A/ PKP564FMN24B



PKP566FMN24A/ PKP566FMN24B



PKP569FMN24A/ PKP569FMN24B



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

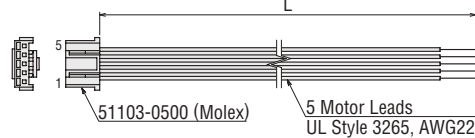
2D & 3D CAD

Product Name	L1	L2	L3	φD	Mass kg	2D CAD
PKP564FMN24A	46.5	—	7.5±0.15	8 ⁰ _{-0.015}	0.65	B1125
PKP564FMN24B		69.5				
PKP566FMN24A	56	—	7.5±0.15	8 ⁰ _{-0.015}	0.87	B1126
PKP566FMN24B		79				
PKP569FMN24A	87	—	9.5±0.15	10 ⁰ _{-0.015}	1.5	B1127
PKP569FMN24B		110				

Connection Cable (Sold separately)

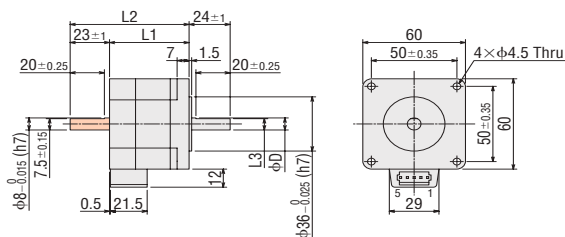
◇ For Motor

Product Name	Length L (m)
LC5N06C	0.6
LC5N10C	1



● Applicable Connector

Connector Housing: 51144-0500 (Molex)
Contact: 50539-8100 (Molex)
Crimp Tool: 57189-5000 (Molex)



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

Motor Pin Assignment

Motor Pin Assignment: Model B

- Refer to page 07-105 for motor pin layout.

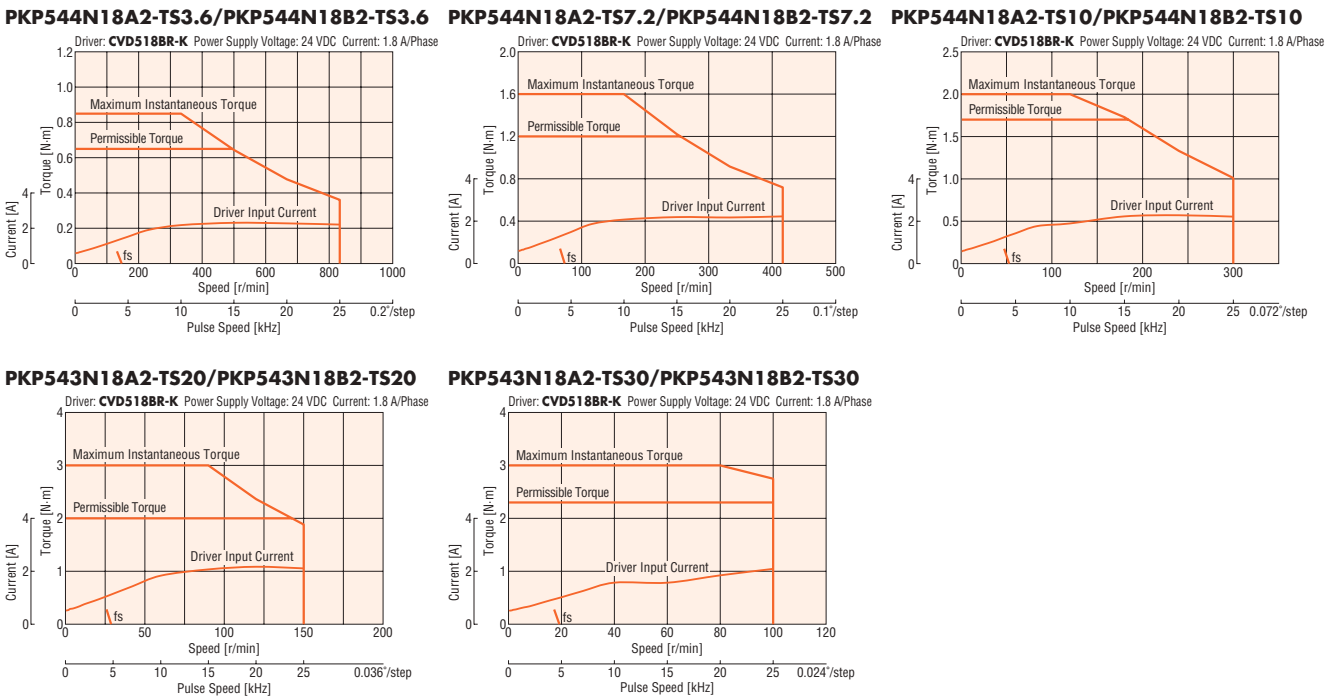
TS Geared Type Frame Size 42 mm NEW

Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Maximum Instantaneous Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP544N18□2-TS3.6	0.65	55×10 ⁻⁷	1.8	0.48	0.2°	3.6	0.65	0.85	0~833	45 (0.75°)	CVD518BR-K
PKP544N18□2-TS7.2	1.2				0.1°	7.2	1.2	1.6	0~416	25 (0.42°)	
PKP544N18□2-TS10	1.7				0.072°	10	1.7	2	0~300		
PKP543N18□2-TS20	2	35×10 ⁻⁷	0.4	0.4	0.036°	20	2	3	0~150	15 (0.25°)	
PKP543N18□2-TS30	2.3				0.024°	30	2.3	3	0~100		

● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

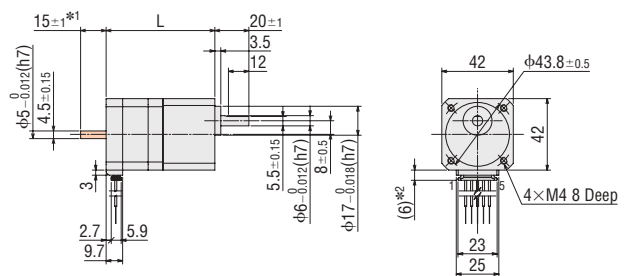
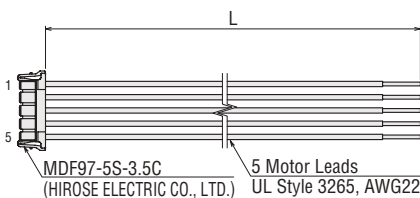
Product Name	Gear Ratio	L	Mass kg	2D CAD
PKP544N18A2-TS□	3.6, 7.2, 10	70.5	0.41	B1362
PKP544N18B2-TS□				
PKP543N18A2-TS□	20, 30	64.5	0.36	B1363
PKP543N18B2-TS□				

- A number indicating the gear ratio is specified in the box □ in the product name.
- Applicable Connector
Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

◇ For Motor

Product Name	Length L (m)
LC5N06E	0.6



*1 The length of the shaft flat on the double shaft model is 15±0.25.

*2 With connection cable

- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.

Motor Pin Assignment

Motor Pin Assignment: Model A

- Refer to page 07-105 for motor pin layout.

TS Geared Type Frame Size 60 mm NEW

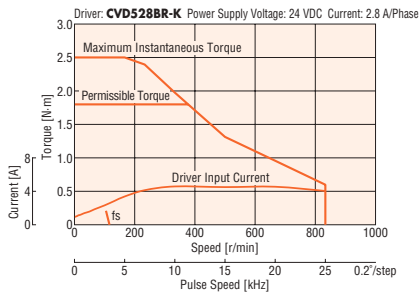
Specifications

Product Name	Maximum Holding Torque N·m	Rotor Inertia J: kg·m ²	Rated Current A/Phase	Winding Resistance Ω/Phase	Basic Step Angle	Gear Ratio	Permissible Torque N·m	Maximum Instantaneous Torque N·m	Speed Range r/min	Backlash arcmin	Recommended Driver Product Name*
PKP566N28□ 2-TS3.6	1.8	270×10 ⁻⁷	2.8	0.24	0.2°	3.6	1.8	2.5	0~833	35 (0.59°)	CVD528BR-K
PKP566N28□ 2-TS7.2	3				0.1°	7.2	3	4.5	0~416	15 (0.25°)	
PKP566N28□ 2-TS10	4				0.072°	10	4	6	0~300	10 (0.17°)	
PKP564N28□ 2-TS20	5	140×10 ⁻⁷	0.16	0.036°	20	5	8	0~150			
PKP564N28□ 2-TS30	6			0.024°	30	6	10	0~100			

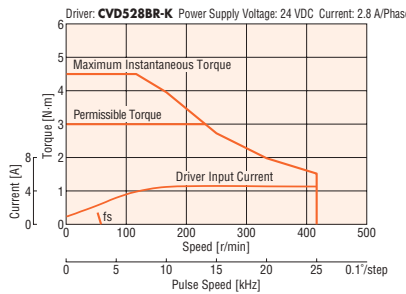
● Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the product name.
*Refer to page 07-108 for details on the recommended driver.

Speed – Torque Characteristics (Reference values)

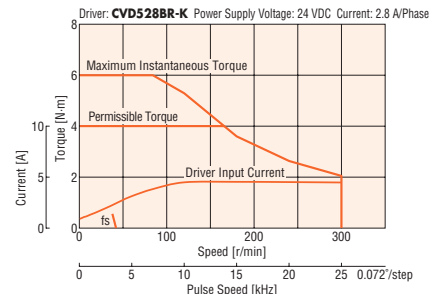
PKP566N28A2-TS3.6/PKP566N28B2-TS3.6 Driver: CVD528BR-K Power Supply Voltage: 24 VDC Current: 2.8 A/Phase



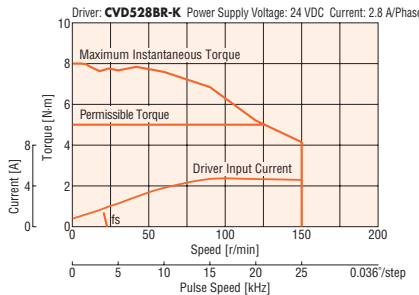
PKP566N28A2-TS7.2/PKP566N28B2-TS7.2 Driver: CVD528BR-K Power Supply Voltage: 24 VDC Current: 2.8 A/Phase



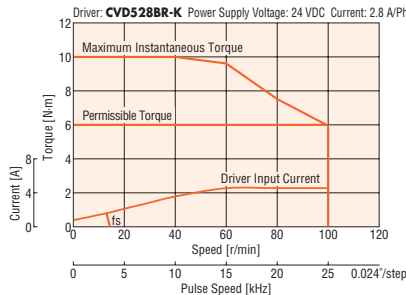
PKP566N28A2-TS10/PKP566N28B2-TS10 Driver: CVD528BR-K Power Supply Voltage: 24 VDC Current: 2.8 A/Phase



PKP564N28A2-TS20/PKP564N28B2-TS20 Driver: CVD528BR-K Power Supply Voltage: 24 VDC Current: 2.8 A/Phase



PKP564N28A2-TS30/PKP564N28B2-TS30 Driver: CVD528BR-K Power Supply Voltage: 24 VDC Current: 2.8 A/Phase



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- Set the driver current to be less than or equal to the rated current of the motor.

Dimensions (Unit: mm)

Motor

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
PKP566N28A2-TS□	3.6, 7.2, 10	98	0.99	B1364
PKP566N28B2-TS□				
PKP564N28A2-TS□	20, 30	83	0.78	B1365
PKP564N28B2-TS□				

● A number indicating the gear ratio is specified in the box □ in the product name.

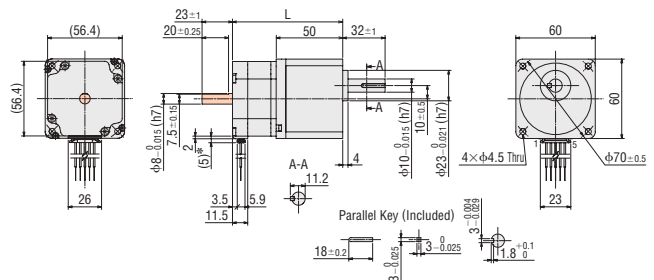
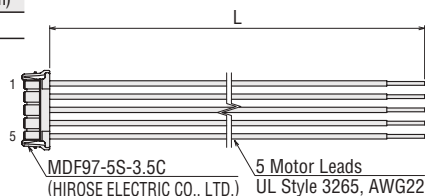
Applicable Connector

Connector Housing: MDF97-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

Connection Cable (Sold separately)

For Motor

Product Name	Length L (m)
LC5N06E	0.6



*With connection cable

- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.
- Included
- Installation Screws: M4 × 60 P0.7 (4 Screws)

Motor Pin Assignment

Motor Pin Assignment: Model A

- Refer to page 07-105 for motor pin layout.

General Specifications

Specification		Motor
Thermal Class		130 (B)
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.
Dielectric Voltage		No abnormalities are observed, even when applying voltage between the windings and the case for 1 minute under normal ambient temperature and humidity with the following conditions. · PK513, PKP52□, PK54□ : 0.5 kVAC 50/60 Hz · PKP56□ : 1.0 kVAC 50/60 Hz · PKP56□FMN, PK59□ : 1.5 kVAC 50/60 Hz
Operating Environment (In Operation)	Ambient temperature	-10~+50°C (Non-freezing)
	Ambient humidity	85% or less (Non-condensing)
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Temperature Rise		Winding temperature rise 80°C max. (Based on Oriental Motor's internal measurement conditions)
Stop Position Accuracy*1		Standard type: ±3 arc minutes (±0.05°) [PK513 is ±10 arc minutes (±0.17°)] High-resolution type: ±2 arc minutes (±0.034°)
Shaft Runout		0.05 T.I.R. (mm)*4
Radial Play*2		0.025 mm Max. (load 5 N)
Axial Play*3		0.075 mm max. (10 N load) [PK513 is 1 N load, PKP52□ is 2.5 N load]
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*4
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*4

*1 This value is for full step under no load. (The value changes with the size of the load.)

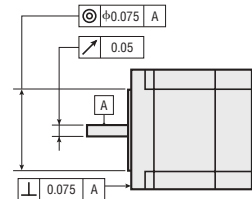
*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N load is applied in the vertical direction to the tip of the motor shaft.

*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N (**PK513** is 1 N, **PKP52□** is 2.5 N) load is applied to the motor shaft in the axial direction.

*4 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.

Note

- Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.
Also, do not conduct these tests on the motor encoder section.



Encoder Specifications

Encoder Product Name	R2GL
Resolution	500P/R
Output Circuit Type	Line Driver*
Output Mode	Incremental
Output Signal	A Phase, B Phase, Z Phase (3 ch)
Power Supply Voltage	5 VDC±10%
Current	30 mA max.

- A voltage output type of encoder output circuit is also available.
For details, please contact your nearest Oriental Motor sales office.
- *Equivalent to 26C31

Motor Pin Assignment

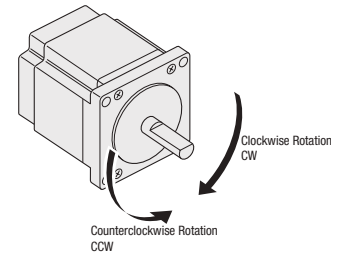
Motor Model	Pin Assignment/Colors of Lead Wires	
Model A	Pin No. → 5 1	Pin No. Colors of Lead Wires*
		5 Blue 4 Red 2 Orange 2 Green 1 Black
*The colors of lead wires are the color scheme of the connection cable (sold separately).		
Model B	Pin No. → 1 5	Pin No. Colors of Lead Wires*
		1 Blue 2 Red 3 Orange 4 Green 5 Black
*The colors of lead wires are the color scheme of the connection cable (sold separately).		
Model C		Colors of Lead Wires
		Blue Red Orange Green Black

Rotation Direction

This indicates the rotation direction as viewed from the output shaft side of the motor (factory setting). The rotation direction of the output gear shaft relative to the standard type motor output shaft varies depending on the gear type and gear ratio. Please check the following table.

Gear Type		Gear Ratio	Rotation direction Relative to Motor Output Shaft
TS Geared	Frame Size 42 mm, 60 mm	3.6, 7.2, 10	Same direction
		20, 30	Opposite direction

Standard Type Motor



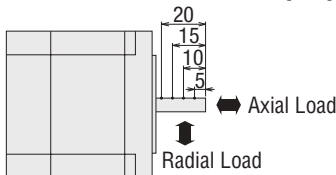
Permissible Radial Load and Permissible Axial Load

Unit: N

Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End [mm]					
				0	5	10	15	20	
Standard Type	20 mm	PK513	—	12	15	—	—	—	3
	28 mm	PKP523, PKP525	—	25	34	52	—	—	5
	42 mm	PKP543, PKP544, PKP545, PKP546	—	35	44	58	85	—	15
	56.4 mm	PKP564, PKP566, PKP568	—	90	100	130	180	270	30
	60 mm	PKP564, PKP566, PKP569	—	90	100	130	180	270	30
High-Resolution Type	85 mm	PK596, PK599, PK5913	—	260	290	340	390	480	60
	42 mm	PKP544, PKP546	—	20	25	34	52	—	10
TS Geared Type	60 mm	PKP564, PKP566, PKP569	—	90	100	130	180	270	20
	42 mm	PKP544	3.6, 7.2, 10	20	30	40	50	—	15
		PKP543	20, 30	40	50	60	70	—	
		PKP566	3.6, 7.2, 10	120	135	150	165	180	40
	60 mm	PKP564	20, 30	170	185	200	215	230	

Radial Load and Axial Load

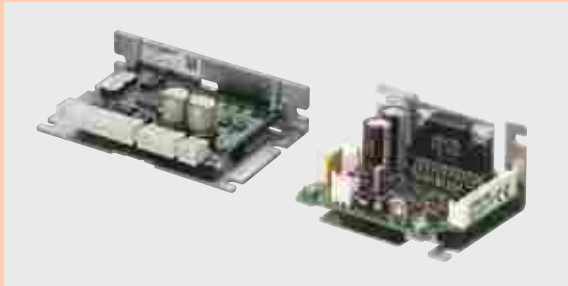
Distance from Shaft End [mm]



Bipolar Drivers for 1.8°/0.9° Stepping Motors

Unipolar Drivers for 1.8°/0.9° Stepping Motors

Drivers for 0.72°/0.36° Stepping Motors



These are DC power supply input drivers for stepping motors. The bipolar/unipolar driver for 1.8°/0.9° stepping motor and the driver for 0.72°/0.36° stepping motor are available. Using the microstep drive function for a low-vibration driver reduces vibration and noise.

Features and Types

● Bipolar/Unipolar Drivers for 1.8°/0.9° Stepping Motors Drivers for 0.72°/0.36° Stepping Motors

Driver Type	External View	Introduction	Driver Installation Direction
<ul style="list-style-type: none"> ● Bipolar Drivers for 1.8°/0.9° Stepping Motors ● Drivers for 0.72°/0.36° Stepping Motors <p>Page 07-108~07-111</p> <p>Right Angle Type with Installation Plate</p> <p>The connector points outward.</p> <p>With Installation Plate</p> <p>The connector points upward.</p> <p>Without Installation Plate</p> <p>The connector points upward.</p>	<ul style="list-style-type: none"> · Compact and lightweight driver with a full-time microstep · Using the smooth drive function reduces the vibration and noise more than conventional products. · The driver is equipped with a protective function that enables you to find driver errors early. · Running current can be easily set with the digital switch. 	<ul style="list-style-type: none"> · Horizontal direction installation · Vertical direction installation 	
<ul style="list-style-type: none"> ● Unipolar Drivers for 1.8°/0.9° Stepping Motors <p>Page 07-112</p> <p>50.5 mm</p> <p>33 mm</p> <p>65 mm</p> <p>· Mass 50g</p>	<p>The connector points upward.</p> <p>· Compact and lightweight driver with a microstep</p> <p>· Running current can be easily set with the digital switch.</p>		

● Other Product Line

● Bipolar Driver for 1.8°/0.9° and 0.72°/0.36° Stepping Motors S Type



This is a base-mounted type, compact size driver. For details, please contact your nearest Oriental Motor sales office.

● Driver for 0.72°/0.36° Stepping Motors SC Type



It is a driver that can control the speed which is similar to that of a speed control motor. For details, please contact your nearest Oriental Motor sales office.

Bipolar Drivers for 1.8°/0.9° Stepping Motors

Drivers for 0.72°/0.36° Stepping Motors

Product Number Code

CVD 2 23 F B R - K

① ② ③ ④ ⑤ ⑥ ⑦

①	Driver Type	
②	2: 1.8°/0.9° Stepping Motor	5: 0.72°/0.36° Stepping Motor
③	Rated Current	
④	Driver Identification	
⑤	Driver Configuration	B : With Installation Plate Blank: Without Installation Plate
⑥	Connector Configuration	R : Right Angle
⑦	Power Supply Input	K : DC Power Supply

Product Line

● Bipolar Drivers for 1.8°/0.9° Stepping Motors

◇ Right Angle Type with Installation Plate

Product Name	List Price
CVD205BR-K	SGD156
CVD206BR-K	
CVD215BR-K	
CVD223BR-K	
CVD223FBR-K	
CVD228BR-K	
CVD242BR-K	SGD175
CVD245BR-K	

◇ With Installation Plate

Product Name	List Price
CVD205B-K	SGD156
CVD206B-K	
CVD215B-K	
CVD223B-K	
CVD223FB-K	
CVD228B-K	
CVD242B-K	SGD175
CVD245B-K	

◇ Without Installation Plate

Product Name	List Price
CVD205-K	SGD150
CVD206-K	
CVD215-K	
CVD223-K	
CVD223F-K	
CVD228-K	

● Drivers for 0.72°/0.36° Stepping Motors

◇ Right Angle Type with Installation Plate

Product Name	List Price
CVD503BR-K	SGD169
CVD507BR-K	
CVD512BR-K	
CVD514BR-K	
CVD518BR-K	
CVD524BR-K	
CVD528BR-K	SGD188
CVD538BR-K	

◇ With Installation Plate

Product Name	List Price
CVD503B-K	SGD169
CVD507B-K	
CVD512B-K	
CVD514B-K	
CVD518B-K	
CVD524B-K	
CVD528B-K	SGD188
CVD538B-K	

◇ Without Installation Plate

Product Name	List Price
CVD503-K	SGD163
CVD507-K	
CVD512-K	
CVD514-K	
CVD518-K	
CVD524-K	

Included

Type	Connector for Driver Connection	Operating manual
Common to All Types	For CN1 (1 Piece) For CN2 (1 Piece) For CN3 (1 Piece)	1 set

07

PKP Series

Specifications

● Bipolar Drivers for 1.8°/0.9° Stepping Motors

Product Name	CVD205□□-K	CVD206□□-K	CVD215□□-K	CVD223□□-K CVD223F□□-K	CVD228□□-K	CVD242B□□-K	CVD245B□□-K
Drive Method	Microstep Drive, Bipolar Constant Current Drive Method						
Motor Drive Current (Factory setting)	0.5 A/Phase	0.6 A/Phase	1.5 A/Phase	2.3 A/Phase	2.8 A/Phase	4.2 A/Phase	4.5 A/Phase
Power Supply Voltage	24 VDC±10%						
Input Current A	0.5	0.5	1.3	2.0	3.0	3.6	3.9
Maximum Input Pulse Frequency	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input						
Operating Environment (In operation)	Ambient Temperature	0~+50°C (Non-freezing)					
	Ambient Humidity	85% or Less (Non-condensing)					
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.					

- For the type with installation plate, **B** (with installation plate) indicating the diver configuration is specified where the box □ is located in the product name.
For the right angle type with installation plate, an **R** (right angle) indicating the connector configuration is specified where the box □ is located in the product name.

● Drivers for 0.72°/0.36° Stepping Motors

Product Name	CVD503□□-K	CVD507□□-K	CVD512□□-K	CVD514□□-K	CVD518□□-K	CVD524B□□-K	CVD528B□□-K	CVD538B□□-K
Drive Method	Microstep Drive, Bipolar Constant Current Drive Method							
Motor Drive Current (Factory setting)	0.35 A/Phase	0.75 A/Phase	1.2 A/Phase	1.4 A/Phase	1.8 A/Phase	2.4 A/Phase	2.8 A/Phase	3.8 A/Phase
Power Supply Voltage	24 VDC±10%							
Input Current A	0.6	1.4	1.7	1.8	2.8	3.0	4.8	4.8
Maximum Input Pulse Frequency	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input							
Operating Environment (In operation)	Ambient Temperature	0~+50°C (Non-freezing)						
	Ambient Humidity	85% or Less (Non-condensing)						
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.						

- For the type with installation plate, **B** (with installation plate) indicating the diver configuration is specified where the box □ is located in the product name.
For the right angle type with installation plate, an **R** (right angle) indicating the connector configuration is specified where the box □ is located in the product name.

Dimensions (Unit: mm)

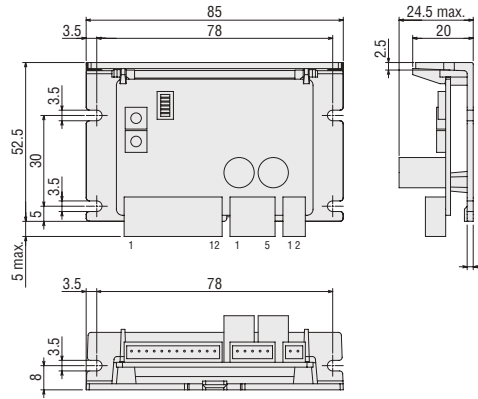
Right Angle types with Installation Plate

2D & 3D CAD

Product Name	Mass kg	2D CAD
CVD205BR-K	0.06	B1210
CVD206BR-K		
CVD215BR-K		
CVD223BR-K		
CVD223FBR-K		
CVD228BR-K		
CVD503BR-K		
CVD507BR-K		
CVD512BR-K		
CVD514BR-K		
CVD518BR-K		
CVD524BR-K		

● Included

Connector Housing: 51103-0200 (Molex)
51103-0500 (Molex)
51103-1200 (Molex)
Contact: 50351-8100 (Molex)

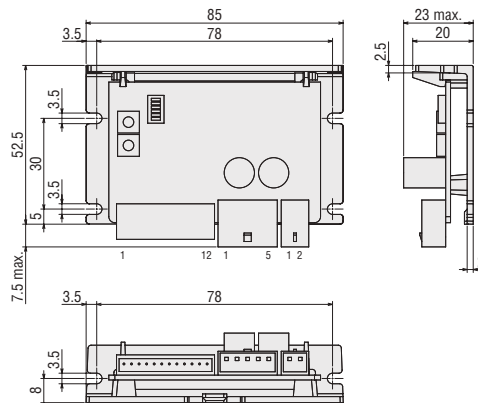


2D & 3D CAD

Product Name	Mass kg	2D CAD
CVD242BR-K	0.07	B1211
CVD245BR-K		
CVD528BR-K		
CVD538BR-K		

● Included

Connector Housing: 51067-0200 (Molex)
51067-0500 (Molex)
51103-1200 (Molex)
Contact: 50217-9101 (Molex)
50351-8100 (Molex)



● Connection cable set (sold separately) including a motor cable, a power cable and an I/O signal cable is also available. Due to the connector assembly, it is possible to easily wire without using a crimping tool. Refer to page 07-115 for details.

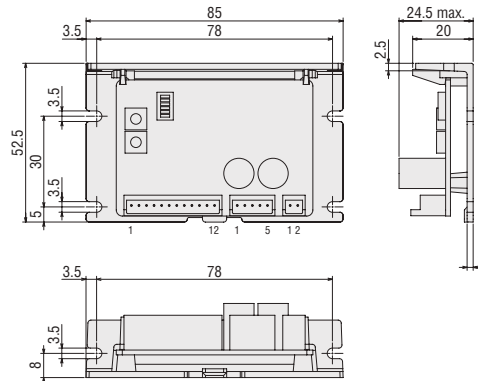
With Installation Plate

2D & 3D CAD

Product Name	Mass kg	2D CAD
CVD205B-K	0.06	B1255
CVD206B-K		
CVD215B-K		
CVD223B-K		
CVD223FBR-K		
CVD228B-K		
CVD503B-K		
CVD507B-K		
CVD512B-K		
CVD514B-K		
CVD518B-K		
CVD524B-K		

● Included

Connector Housing: 51103-0200 (Molex)
51103-0500 (Molex)
51103-1200 (Molex)
Contact: 50351-8100 (Molex)

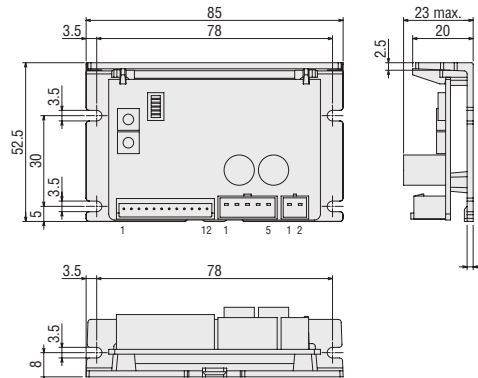


2D & 3D CAD

Product Name	Mass kg	2D CAD
CVD242B-K	0.07	B1256
CVD245B-K		
CVD528B-K		
CVD538B-K		

● Included

Connector Housing: 51067-0200 (Molex)
51067-0500 (Molex)
51103-1200 (Molex)
Contact: 50217-9101 (Molex)
50351-8100 (Molex)

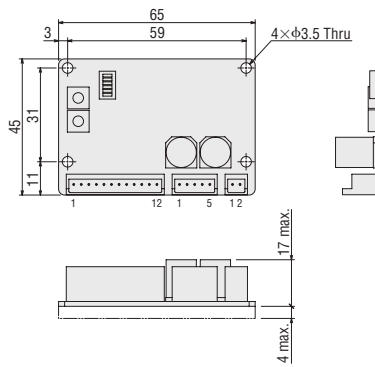


● Connection cable set (sold separately) including a motor cable, a power cable and an I/O signal cable is also available. Due to the connector assembly, it is possible to easily wire without using a crimping tool. Refer to page 07-115 for details.

Without Installation Plate

2D & 3D CAD

Product Name	Mass kg	2D CAD
CVD205-K	0.02	B1128
CVD206-K		
CVD215-K		
CVD223-K		
CVD223F-K		
CVD228-K		
CVD503-K		
CVD507-K		
CVD512-K		
CVD514-K		
CVD518-K		
CVD524-K		



Included

Connector Housing:	51103-0200 (Molex) 51103-0500 (Molex) 51103-1200 (Molex)
Contact:	50351-8100 (Molex)

Connection cable set (sold separately) including a motor cable, a power cable and an I/O signal cable is also available. Due to the connector assembly, it is possible to easily wire without using a crimping tool. Refer to page 07-115 for details.

List of Applicable Motors

Bipolar Drivers for 1.8°/0.9° Stepping Motors

Driver Product Name			Motor Drive Current (Factory Setting)	Applicable Motor
Right Angle Type with Installation Plate	With Installation Plate	Without Installation Plate		
CVD205BR-K	CVD205B-K	CVD205-K	0.5 A/Phase	PKP213D
CVD206BR-K	CVD206B-K	CVD206-K	0.6 A/Phase	PKP214D
CVD215BR-K	CVD215B-K	CVD215-K	1.5 A/Phase	PKP22□D15, PKP23□D15, PKP24□MD15, PKP262FD
CVD223BR-K	CVD223B-K	CVD223-K	2.3 A/Phase	PKP23□D23
CVD223FBR-K	CVD223FB-K	CVD223F-K	2.3 A/Phase	PKP24□D08□2, PKP24□D15□2, PKP24□D23□2
CVD228BR-K	CVD228B-K	CVD228-K	2.8 A/Phase	PKP26□D14□2, PKP26□D28□2, PKP26□MD28
CVD242BR-K	CVD242B-K	—	4.2 A/Phase	PKP26□D42
CVD245BR-K	CVD245B-K	—	4.5 A/Phase	PKP29□D

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.
- Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box ■ is located in the names of the applicable motors.
- The applicable motors are listed such that the available combinations with the driver are distinguishable. Combinations with the encoder type and geared type are also available. For details on the product name, please see the Oriental Motor website.

Drivers for 0.72°/0.36° Stepping Motors

Driver Product Name			Motor Drive Current (Factory Setting)	Applicable Motor
Right Angle Type with Installation Plate	With Installation Plate	Without Installation Plate		
CVD503BR-K	CVD503B-K	CVD503-K	0.35 A/Phase	PK513, PK52□
CVD507BR-K	CVD507B-K	CVD507-K	0.75 A/Phase	PK52□H, PK54□
CVD512BR-K	CVD512B-K	CVD512-K	1.2 A/Phase	PKP52□
CVD514BR-K	CVD514B-K	CVD514-K	1.4 A/Phase	PK56□
CVD518BR-K	CVD518B-K	CVD518-K	1.8 A/Phase	PKP54□
CVD524BR-K	CVD524B-K	CVD524-K	2.4 A/Phase	PKP56□FN24, PKP56□FMN
CVD528BR-K	CVD528B-K	—	2.8 A/Phase	PKP56□N28, PK56□H, PK59□H
CVD538BR-K	CVD538B-K	—	3.8 A/Phase	PKP56□FN38

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.
- The applicable motors are listed such that the available combinations with the driver are distinguishable. Combinations with the encoder type and geared type are also available. For details on the product name, please see the Oriental Motor website.

Unipolar Drivers for 1.8°/0.9° Stepping Motors

Product Number Code

CMD 2 1 09 P

① ② ③ ④ ⑤

①	Driver Type
②	2 : 1.8°/0.9° Stepping Motor
③	Power Supply Input Voltage 1 : 24 VDC
④	Rated Current
⑤	Signal I/O Mode P : Photocoupler

Product Line

Driver cable set (sold separately) including a motor cable, an I/O signal cable and a power supply cable is also available. Due to the connector assembly, it is possible to easily wire without using a crimping tool. Refer to page 07-115 for details.

Product Name	List Price
CMD2109P	SGD194
CMD2112P	SGD194
CMD2120P	SGD194

Included

Type	Connector for Driver Connection	Operating Manual
Common to All Types	For CN1 (1 Piece) For CN2 (1 Piece) For CN3 (1 Piece)	1 set

Specifications

Product Name		CMD2109P	CMD2112P	CMD2120P
Drive Method		Microstep Drive, Unipolar constant-current drive method		
Motor Drive Current (Factory setting)		0.95 A/Phase	1.2 A/Phase	2 A/Phase
Power Supply Voltage		24 VDC±10%		
Input Current A		1.5	1.7	2.9
Max. Input Pulse Frequency		100 kHz (When the pulse duty is 50%) Negative Logic Pulse Input		
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)		
	Ambient Humidity	85% or Less (Non-condensing)		
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.		

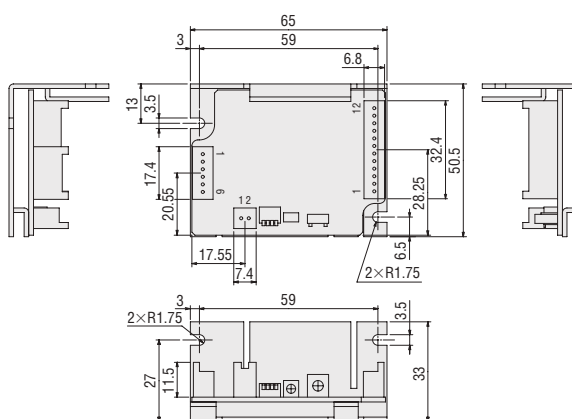
Dimensions (Unit: mm)

2D & 3D CAD

Product Name	Mass kg	2D CAD
CMD2109P	0.05	B441
CMD2112P		
CMD2120P		

Included

Connector Housing: 51103-0200 (Molex)
51103-1200 (Molex)
51103-0600 (Molex)
Contact: 50351-8100 (Molex)



List of Applicable Motors

Driver Product Name	Motor Drive Current (Factory Setting)	Applicable Motor
CMD2109P	0.95 A/Phase	PKP213U, PKP214U, PKP22□U, PKP24□U08■2, PKP243U09■2, PKP243MU
CMD2112P	1.2 A/Phase	PKP23□U, PKP24□U12■2, PKP244MU
CMD2120P	2 A/Phase	PK25□, PKP246U16■2, PKP26□U10■2, PKP26□U20■2, PKP26□MU

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.
- Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box ■ is located in the names of the applicable motors.
- The applicable motors are listed such that the available combinations with the driver are distinguishable.
Combination with the encoder type and geared type are also available.
For details on the product name, please see the Oriental Motor website.

Accessories (Sold Separately)

Flexible Couplings

A flexible coupling ideal for **PKP** Series is available.

Once you have decided on a type and/or applications of motor/gear, you can select the recommended size of coupling easily. All motor shaft diameters of stepping motor packages are available (including geared motors).

MCV Couplings

This one-piece coupling is made with anti-vibration rubber molded between aluminum alloy hubs.

- For Standard Type, High-Resolution Type



Product Line

Product name	List Price
MCV15 □	SGD94
MCV19 □	SGD90
MCV25 □	SGD100
MCV30 □	SGD105
MCV34 □	SGD115
MCV39 □	SGD134

- A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

MC Couplings

This is a slit-type one-piece coupling.

- For Standard Type, High-Resolution Type



Set Screw Type



Clamp Type

Product Line

◇ Set Screw Type

Product name	List Price
MC12 □ S	SGD53
MC16 □ S	SGD61
MC20 □ S	SGD70
MC25 □ S	SGD80
MC32 □ S	SGD93
MC40 □ S	SGD147
MC50 □ S	SGD231

◇ Clamp Type

Product name	List Price
MC12 □ C2	SGD69
MC16 □ C2	SGD78
MC20 □ C2	SGD86
MC25 □ C2	SGD95
MC32 □ C2	SGD104
MC40 □ C2	SGD172
MC50 □ C2	SGD252

- A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

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MCS Couplings

This three-piece coupling adopts an aluminum alloy hub and a resin spider.

- For **SH** Geared Type, **TS** Geared Type



Product Line

Product name	List Price
MCS14 □	SGD52
MCS20 □	SGD58
MCS30 □	SGD70
MCS40 □	SGD107
MCS55 □	SGD142

- A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

PKP Series

Motor Mounting Brackets

The mounting bracket base is built with holes large enough to allow for adjustments of belt tension after a motor is installed.

Product Line

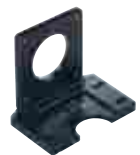
◇ For Standard Type, High-Resolution Type

Material: Aluminum alloy (SPCC)*

Product Name	List Price	Motor Frame Size	Applicable Product
PFB28A	SGD15	28 mm	PKP22 □, PKP52 □
PAFOP PALOP	SGD14	42 mm	PKP24 □ PKP54 □
PAL2P-2		56.4 mm	PKP26 □, PKP56 □ PK26 □
PAL2P-5		60 mm	PKP56 □ F
PAL4P-2 PAL4P-5	SGD16	85 mm	PKP29 □ PK59 □

*The specifications in the () apply to **PFB28A**.

- These installation brackets can be perfectly fitted to the pilot of the stepping motors. (Excluding **PALOP**)



◇ For **SH** Geared Type

Material: Aluminum alloy (SPCC)*

Product Name	List Price	Motor Frame Size	Applicable Product
PFB28A	SGD15	28 mm	PKP223
SOLOA	SGD25	42 mm	PKP243
SOL2A	SGD31	60 mm	PKP264
SOL5A	SGD38	90 mm	PK296

*The specifications in the () apply to **PFB28A**.

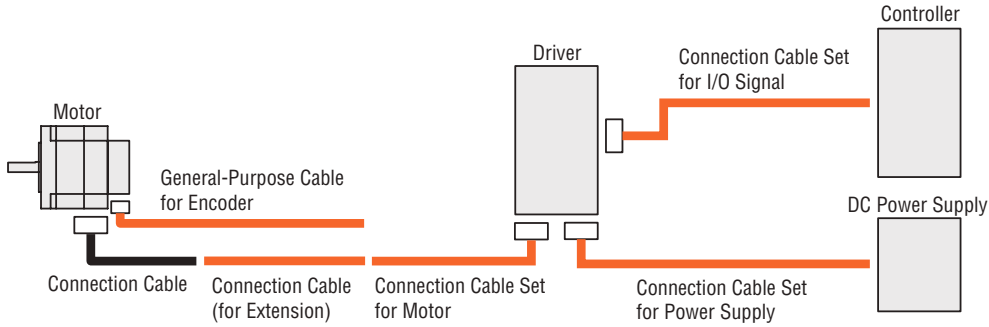
◇ For **TS** Geared Type

Material: Aluminum alloy

Product Name	List Price	Motor Frame Size	Applicable Product
SOLOB	SGD25	42 mm	PKP54 □
SOL2M4	SGD30	60 mm	PKP56 □

Cable

Cable System Configuration



*2m maximum when using with an unipolar driver (CMD) for 1.8°/0.9° stepping motors.

Connection Cable Sets

These are leads with connectors. Connecting with motors, input signal parts, and power supply parts is easy. The connection cable set includes three cables (for motor, I/O signal, and power supply).

- Since the connector is assembled to the lead wire, it can be used without a dedicated crimp tool.
- Lead wires of appropriate size for current specifications are used.

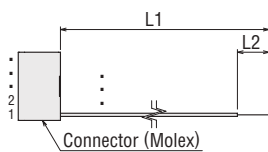
Product Line



Product Name	Applicable Drivers	Connector Name	Connector Product Name	Length L1	Length L2	Conductor AWG	List Price						
LCS04SD5	CVD503, CVD507 CVD512, CVD514 CVD518, CVD524	For motor	51103-0500	0.6m	10mm	22 (0.3 mm ²)	SGD24						
		For power supply	51103-0200										
		For I/O signal	51103-1200										
LCS05SD5	CVD528, CVD538	For motor	51067-0500			0.6m	10mm	20 (0.5 mm ²)	SGD26				
		For power supply	51067-0200										
		For I/O signal	51103-1200					22 (0.3 mm ²)					
LCS01CVK2	CVD205, CVD206 CVD215, CVD223 CVD228	For motor	51103-0500					0.6m	10mm	22 (0.3 mm ²)	SGD24		
		For power supply	51103-0200										
		For I/O signal	51103-1200										
LCS02CVK2	CVD242, CVD245	For motor	51067-0500							0.6m	10mm	20 (0.5 mm ²)	SGD26
		For power supply	51067-0200										
		For I/O signal	51103-1200									22 (0.3 mm ²)	
LCS01CMK2	CMD2109P CMD2112P CMD2120P	For motor	51103-0600	0.6m	10mm							22 (0.3 mm ²)	SGD24
		For power supply	51103-0200										
		For I/O signal	51103-1200										

● The applicable driver products are listed such that the model can be determined.

Dimensions



Connector Pin Assignment

◇ For Motor

● LCS0□SD5

Pin No.	Color of Cable
1	Blue
2	Red
3	Orange
4	Green
5	Black

● LCS0□CVK2

Pin No.	Color of Cable
1	Blue
2	Red
3	—
4	Green
5	Black

● LCS01CMK2

Pin No.	Color of Cable
1	Blue
2	White
3	Red
4	Black
5	Yellow
6	Green

◇ For Power Supply

● Common to all cables

Pin No.	Color of Cable
1	Red
2	Black

◇ For I/O Signal

● Common to all cables

Pin No.	Color of Cable
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Purple
8	Gray
9	White
10	Black
11	Brown
12	Red

Connection Cables (For Extension)



These cables are used to extend the connection between bipolar connection motors and drivers.

When wiring the motor and the driver, keep a max. distance of 10 m.

Product Line

Product Name	Cable Type	Length (m)	Conductor AWG	Finished Outer Diameter mm	List Price
CC05PK5	Connection Cable for Standard Motor	5	22 (0.3 mm ²)	φ7.2	SGD44
CC10PK5		10			SGD88
CC05PK5R	Flexible Connection Cable for Standard Motor	5	22 (0.3 mm ²)	φ5.8	SGD69
CC10PK5R		10			SGD138

- Conductor configuration: 5 (Blue, Red, Orange, Green, Black)
- Cable rating: 105°C
- Outer casing: Oil-resistant, heat-resistant, non-migrating vinyl
- Applicable Product:
Can be used with 1.8°/0.9° stepping motors with a rated current of 2.8 A max., and 0.72°/0.36° stepping motors with a rated current of 2.4 A max.
- Flexible connection cables can be used only for 0.72°/0.36° stepping motors.

Connection Cables



These are cables with connector on the motor connection side.

Product Line (For 1.8° /0.9° Bipolar Motors)

Product Name	Length (m)	List Price
LC2B06A	0.6	SGD6
LC2B06B	0.6	SGD6
LC2B06C	0.6	SGD6
LC2B06E	0.6	SGD6

Product Line (For 1.8° /0.9° Unipolar Motors)

Product Name	Length (m)	List Price
LC2U06A	0.6	SGD6
LC2U10A	1	SGD9
LC2U06B	0.6	SGD6
LC2U10B	1	SGD9
LC2U06C	0.6	SGD6
LC2U10C	1	SGD9
LC2U06E	0.6	SGD6

Product Line (For 0.72° /0.36° Motors)

Product Name	Length (m)	List Price
LC5N06A	0.6	SGD6
LC5N10A	1	SGD9
LC5N06B	0.6	SGD6
LC5N10B	1	SGD9
LC5N06C	0.6	SGD9
LC5N10C	1	SGD11
LC5N06E	0.6	SGD6

07

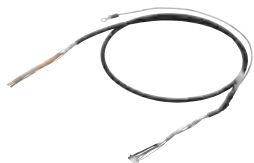
Encoder Cables

Lead Wire



This is an encoder wire with connector on the motor connection side.

Flexible Shielded Cable



These cables are available for use with the connection between the encoder and the controller.

A shielded earth wire is provided for easy grounding.

Product Line

Product Name	Applicable Motor	Length (m)	Conductor AWG	List Price
LCE08A-006	1.8°/0.9° and 0.72°/0.36° Stepping Motor with Encoder	0.6	26 (0.13 mm ²)	SGD13

- A voltage output type cable is also available. For details, please contact your nearest Oriental Motor sales office.

Product Line

Product Name	Applicable Motor	Length (m)	Conductor AWG	List Price
CC010E1R	1.8°/0.9° and 0.72°/0.36° Stepping Motor with Encoder	1	26 (0.13 mm ²)	SGD29
CC020E1R		2		SGD45
CC030E1R		3		SGD61

Motor Connector Sets

This is a set of connector housings and contacts compatible with a connector-coupled motor. Use this set if extra housings and contacts are necessary, although they are included with the products.

Product Line

Product Name	List Price	Applicable Product
CS2U30A	SGD50	PKP223, PKP225
CS2U30B	SGD50	PKP233, PKP235, PKP243M, PKP244M
CS5N30A	SGD50	PK513, PKP523, PKP525
CS5N30B	SGD50	PKP544M, PKP546M
CS5N30C	SGD56	PKP564FM, PKP566FM, PKP569FM

- Each package contains enough housings and contacts for 30 motors. Please order in units of 1 package. The list price shows the price of 1 package.

Note

- A crimp tool is not included. Please prepare separately.



This photograph shows **CS5N30B**.

Mounting Brackets for Circuit Products

This is a DIN rail mounting bracket for board type drivers.

<Application Example of **MADP07**>



Product Line

Material: SPCC

Product Name	List Price	Applicable Drivers	Surface Treatment
MADP01	SGD9	CMD21□□P	Trivalent chromate
MADP07	SGD11	CVD□□□BR-K CVD□□□B-K	Electroless nickel plating
MADP01S1	SGD15	CVD□□□-K	Trivalent chromate

Circuit Product Cover

This is a protection cover to prevent contact with the circuit board. Available for the right angle type driver with an installation plate.

<Application Example>



Product Line

Material: Resin

Product Name	List Price	Applicable Driver
PADC-CVD	SGD15	CVD□□□BR-K

Clean Dampers

Mechanical dampers suppress stepping motor vibration and improve high-speed performance. An inertia body and silicon gel are hermetically sealed in a plastic case.



Product Line

- Accessory for double shaft motors only

Product Name	Inertia [kg·m ²]	Mass [g]	Motor Frame Size	Applicable Product	List Price
D4CL-5.0F	34×10 ⁻⁷	24	28 mm 42 mm	PKP223, PKP225, PKP523, PKP525 PKP233, PKP235 PKP243, PKP244, PKP543, PKP544 PKP245, PKP246, PKP545, PKP546	SGD35
D6CL-6.3F	140×10 ⁻⁷	62	50 mm	PK256, PK258	SGD35
D6CL-8.0F	140×10 ⁻⁷	61	56.4 mm 60 mm	PKP264, PKP266, PKP268 PK264, PK266, PKP564, PKP566 PK267, PK269, PKP568, PKP569	SGD35
D9CL-14F	870×10 ⁻⁷	105	85 mm 90 mm	PKP296, PKP299, PKP2913 PK296, PK596, PK599, PK5913	SGD44

Ambient Temperature: -20~+80°C

LINEAR AND ROTARY ACTUATORS

Motorize Cylinders

EAC Series

AZ Series Battery-Free Absolute Sensor Equipped



Battery-Free Absolute Sensor Equipped
Advanced "Positioning" is in your hand.

Extensive Lineup for A Variety of Combinations! Designed to Achieve Great Usability

Battery-Free **AZ** Series Equipped with Built-in Absolute Sensor

Motorized Cylinders **EAC** Series

Standard Type
Side-Mounted Type
Same Price

FLEX What is FLEX?

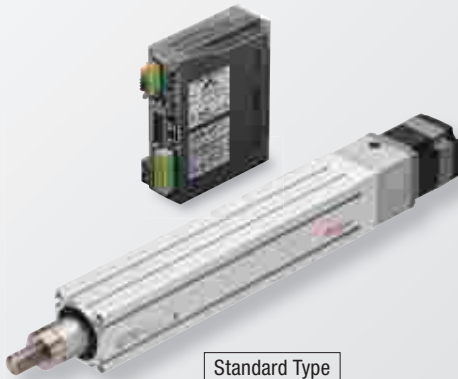
FLEX is a collective term for products compatible with I/O control, Modbus (RTU) control, and FA network control via network converters. These products enable simple connection and simple control, shortening the total lead time for system configuration.

Built-in Controller Type **FLEX**

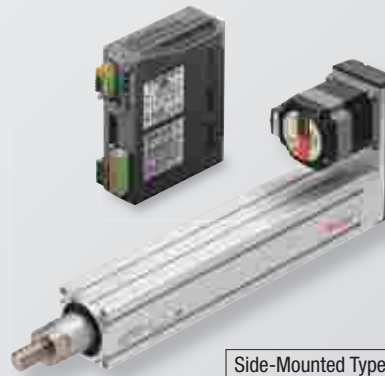
AC Power Supply Input
DC Power Supply Input

Pulse Input Type

AC Power Supply Input
DC Power Supply Input



Standard Type



Side-Mounted Type

- Stroke: 50~300 mm
- Maximum Speed: 600 mm/s
- Maximum Transportable Mass: 60 kg (Horizontal), 30 kg (Vertical)
- Repetitive Positioning Accuracy: ± 0.02 mm

Standard Type

- Standard
- With Shaft Guide
- With Shaft Guide Cover

Side-Mounted Type

- Standard
- With Shaft Guide
- With Shaft Guide Cover

Stepping Motor Unit **α STEP**
Battery-Free Absolute Sensor Equipped

AZ Series Equipped

- Standard
- With Electromagnetic Brake



Product for positioning in the absolute system without any battery, leading to better productivity and cost reduction.

■ Standard

To be compatible with the device of the customer, an external guide is required.

■ Equipped with shaft guide

The customer is not required to design or arrange for the parts, therefore reduce the time required to start up the equipment.

■ Equipped with shaft guide cover

The movable parts of the cylinder body are protected, thereby improving the safety of the device. It also helps prevent the spattering of grease on the shaft guide and also prevent the intrusion of foreign matter into linear bushing.



Battery-Free Features of AZ Series Equipped with Absolute Sensor

Positioning in the absolute system does not require a battery.

Equipped with newly developed <ABZO sensor> using compact advanced technologies.

High Reliability with Our Unique Control System



Battery-free **AZ** Series Equipped with Absolute Sensor

The **AZ** Series is closed loop stepping motor unit **αSTEP**.

■ Operation continues even at sudden load change or sudden acceleration

At normal times, this compact unit operates by the open loop control synchronously with pulse commands and generates high torques, having excellent acceleration and responsiveness. When overloaded, the current control immediately changes to the closed loop control and corrects the position.

■ Alarm signal output in case of abnormality

If continuously overloaded, an alarm signal is output. A signal is also output when the positioning operation is finished. These features provide high reliability.

■ No tuning is required

At normal times, this unit operates by the open loop control. Therefore, even if the load fluctuates, the set movement is achieved without adjusting.

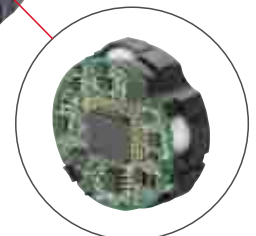
■ The stop position is retained without hunting

With the open loop control, the stepping motor normally does not cause hunting. This means it always enable the motor to maintain the stop position, thus no vibration will occur when stopping.

Oriental Motor has developed a compact, battery-free mechanical driven type absolute sensor <ABZO sensor> (Patented), improving productivity and reducing costs.

Battery-Free

Multi-rotation absolute sensor equipped



ABZO sensor

Newly Developed ABZO Sensor

■ Mechanical driven sensor

A mechanical driven sensor consisting of multiple gears recognizes the angle of each gear to detect positional information. This allows no battery to be required.

■ Multi-rotation absolute sensor

From the reference point of the origin, absolute position for ± 900 rotations (for 1800 rotations) of the motor shaft can be detected.

■ How to set a home position







A home position can be easily set by pressing the switch on the driver, and the ABZO sensor saves it.

You can also use the support software (**MEXE02**) or external input signals to set a home position.



Push switch

Motorized Cylinders Lineup

Series Name Type Name	Product Width×Height	Power Supply Input	Lead [mm]	Stroke [mm]				Maximum Speed [mm/s]								Thrust [N]	
				100	200	300	400	100	200	300	400	500	600	700	800		
EAC Series <i>Q-STEP</i> AZ Series Equipped Standard Type  Side-Mounted Type 	EAC2 28 × 28 mm	DC Power Input	6	50~150				300								25	
			3	50~150				150								50	
	EAC4 42 × 42 mm	AC Power Input	12	50~300				600								~70	
			6	50~300				300								~140 (125)*	
		DC Power Input	12	50~300				600								~70	
			6	50~300				300								~140 (125)*	
	EAC6 60 × 60 mm	AC Power Input	12	50~300				600								~200	
			6	50~300				300								~400 (360)*	
		DC Power Input	12	50~300				600								~200	
			6	50~300				300								~400 (360)*	
	EAC Series <i>Q-STEP</i> AZ Series Equipped Standard Type With Shaft Guide Cover  Side-Mounted Type With Shaft Guide Cover  Standard Type With Shaft Guide  Side-Mounted Type With Shaft Guide 	EAC2W 28 × 86 mm	DC Power Input	6	50~150				300								25
				3	50~150				150								50
EAC4W 42 × 114 mm		AC Power Input	12	50~300				600								~70	
			6	50~300				300								~140 (125)*	
		DC Power Input	12	50~300				600								~70	
			6	50~300				300								~140 (125)*	
EAC6W 60 × 156 mm		AC Power Input	12	50~300				600								~200	
			6	50~300				300								~400 (360)*	
		DC Power Input	12	50~300				600								~200	
			6	50~300				300								~400 (360)*	

*The figure in the parentheses () indicates the specifications for the side-mounted type.

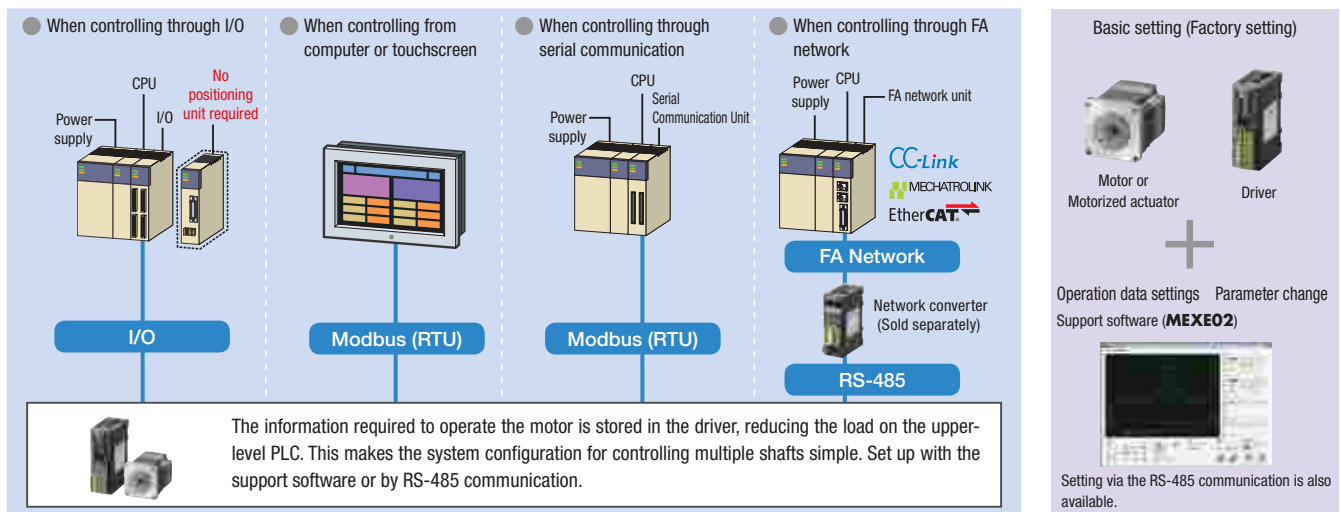
	Pushing Force [N]	Horizontal Transportable Mass [kg]												Vertical Transportable Mass [kg]			Repetitive Positioning Accuracy [mm]	List Price	Page		
		10	20	30	40	50	60	§	200	400	10	20	30								
	40	7.5																2.5	±0.02	SGD1,191~ SGD1,255	08-20
	80	15																5			
	100	15																7	±0.02	SGD1,425~ SGD1,812	08-22~ 08-23
	200	30																14(12.5)*			
	100	15																7			
	200	30																14(12.5)*			
	400	30																15	±0.02	SGD1,522~ SGD1,974	08-26~ 08-27
	500	60																30			
	400	30																15			
	500	60																30			
	40	7.5																2.0	±0.02	SGD1,465~ SGD1,530	08-21
	80	15																4.5			
	100	15																6	±0.02	SGD1,742~ SGD2,119	08-30~ 08-31
	200	30																13(11.5)*			
	100	15																6			
	200	30																13(11.5)*			
	400	30																13	±0.02	SGD1,845~ SGD2,329	08-34~ 08-35
	500	60																28			
	400	30																13			
	500	60																28			

Drivers Selectable According to the Host System

A compatible driver can be selected for the **EAC** Series according to your host system.

● Built-in Controller Type **FLEXO**

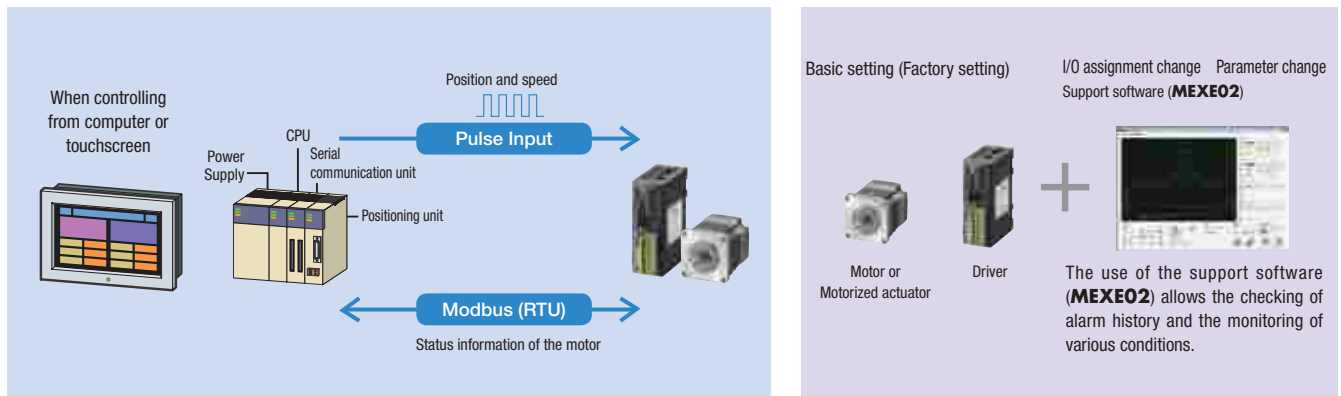
Set the operating data in the driver, and the operating data is selected and executed from the host system. Host system connection and control is performed through I/O, Modbus (RTU), RS-485 communication, or FA network. The use of a network converter (sold separately) allows control via CC-Link communication, MECHATROLINK communication, or EtherCAT communication.



FLEXO FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

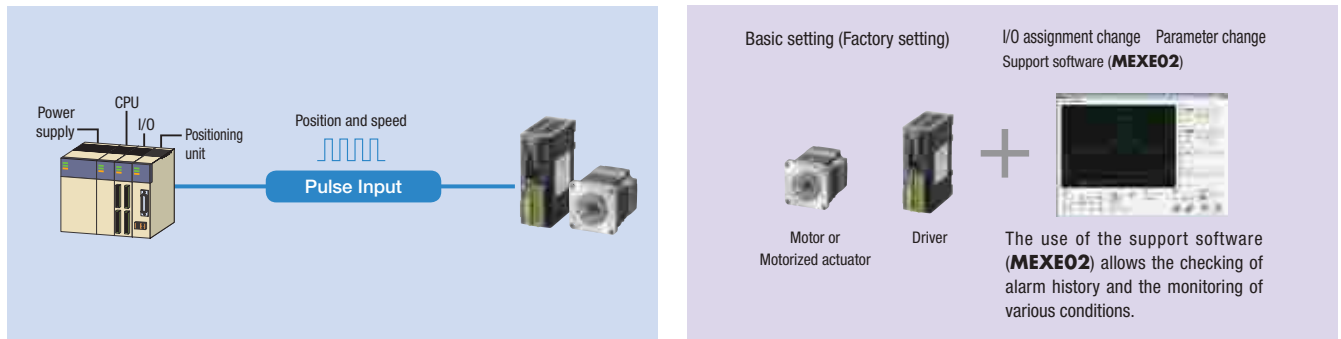
● Pulse Input Type with RS-485 Communication

This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.



● Pulse Input Type

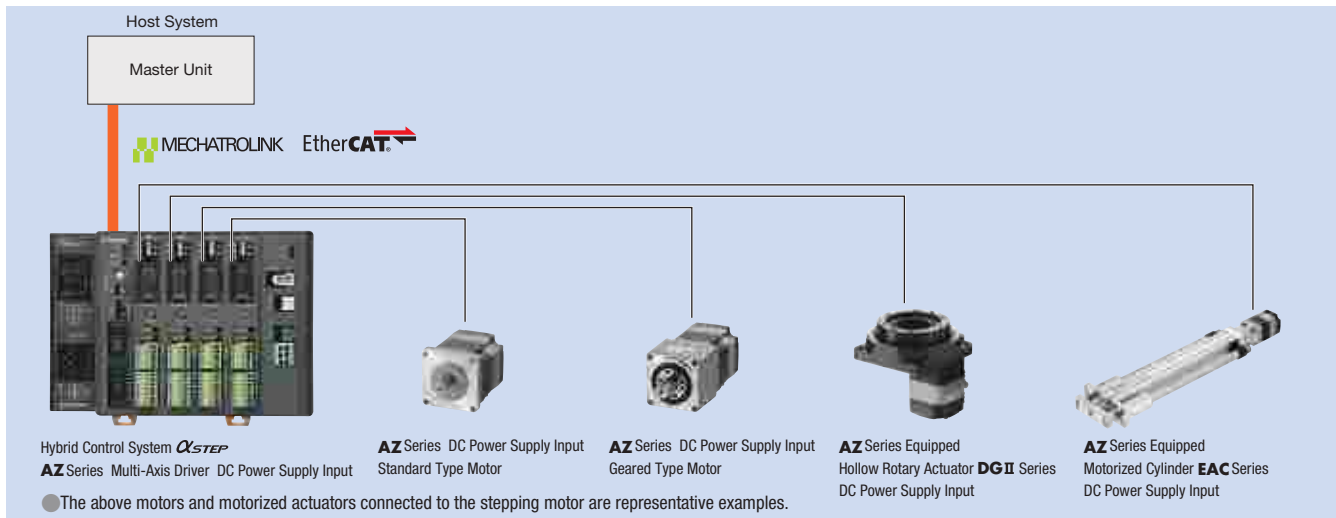
This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.



- **CC-Link** and **MECHATROLINK** are the registered trademarks of the CC-Link Partner Association and the MECHATROLINK Members Association, respectively.
- **EtherCAT** is the registered trademark licensed by Beckhoff Automation in Germany.
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website. The media is also available (for free).

● **Network-compatible Multi-Axis Driver* (DC power supply input)**

Multi-axis driver that supports MECHATROLINK-III and EtherCAT Drive Profile. The driver can be connected to a DC power supply motor of the **AZ** Series and to an actuator equipped with motor. 2-axes, 3-axes, and 4-axes connectable drivers are available.



*For details of the products, see the Oriental Motor website.

Simple Operation with Support Software

Easy-to-use data setting software enables data setting and verification of the actual drive by using a computer.

Support Software (MEXE02)

The support software can be downloaded from the website. Oriental Motor also provides it on a CD-ROM free of charge.



● **Operating Data and Parameter Settings**

Setting of operation data and parameters is easily performed via computer. Because the setting data can be saved, when the driver is replaced, the same settings can be used by transferring the saved data.



● **Teaching and Remote Operation**

By using the support software and manual positioning, the operation command information can be input into the driver. Use when setting up equipment.

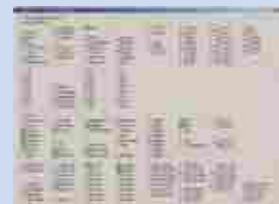


● Multi-monitoring enables remote operation and teaching while monitoring.

Various Monitoring Functions

● **I/O Monitoring**

The state of I/O wiring to the driver can be verified by computer. This can be used for post-wiring I/O checks or I/O checks during operation.



● **Waveform Monitoring**

The operational state of the motor (such as command speed and motor load factor), can be checked by an oscilloscope-like image. This can be used for equipment start-up and adjustment.



● **Alarm Monitoring**

When an abnormality occurs, the details of the abnormality and the solution can be checked.



Overview of Motorized Cylinders

The motor component incorporates a high-efficiency, energy-saving α STEP AZ Series motorized cylinder. In addition to standard type actuators, side-mounted types with shorter overall lengths are also available.

Compact and Powerful

Compact, High Thrust Force Cylinders

Using aluminum for the rod, these motorized cylinders produce high thrust force despite their compact and lightweight body. The unique structure suppresses vibration to achieve improved acceleration characteristics and high-speed positioning operation. This illustration shows a straight type without shaft guide.

Motor

A standard motor is equipped.

α STEP AZ Series

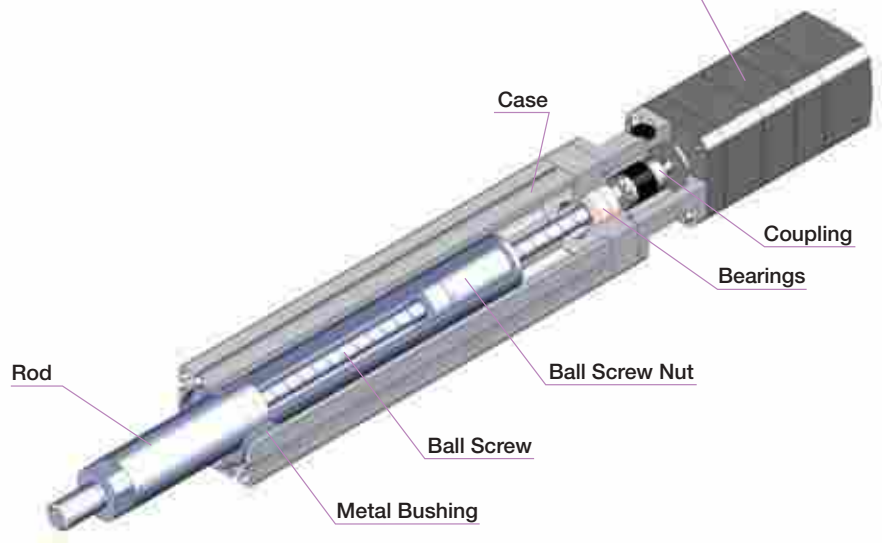
- Battery-Free, Absolute Sensor Equipped
- Positioning Information is Available without a sensor
- High Reliability with Closed Loop Control
- High Efficiency Technology Reduces Motor Heat Generation and Saves Energy



Built-in Controller Type



Pulse Input Type

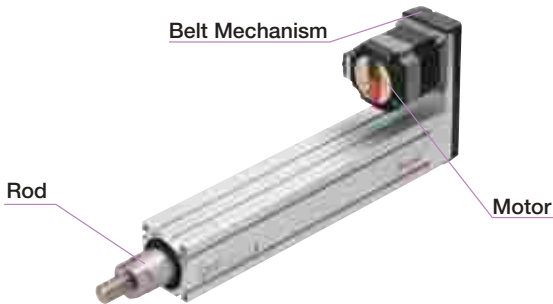


● Cylinder Type and Configuration

The **EAC** Series has standard types and side-mounted types. For both types, the following three types of cylinders are available: without shaft guide, with shaft guide, and with shaft guide cover.

◇ Side-Mounted Type

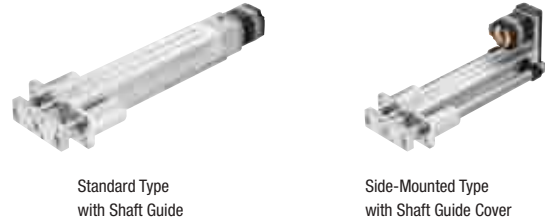
Thanks to the belt mechanism, this type features a reversed motor installation direction.



◇ With Shaft Guide/With Shaft Guide Cover

This type has a shaft guide and cover installed, which allows for the load to be transported while attached directly to the body of this product.

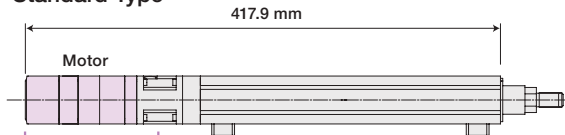
Standard types and side-mounted types are available.



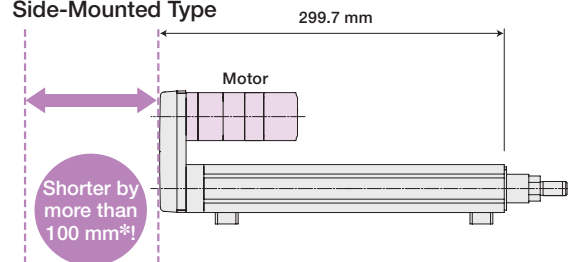
Side-mounted types are provided for all motorized cylinders. This contributes to a shorter overall length and space savings.

αSTEP AZ Series Equipped
EAC4 with Electromagnetic Brake Type Stroke 200 mm

Standard Type

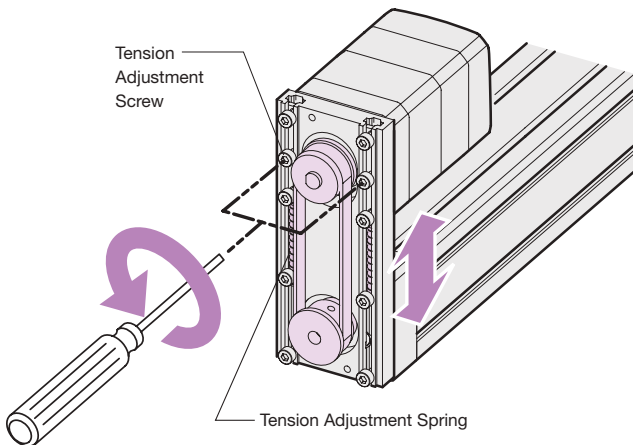


Side-Mounted Type

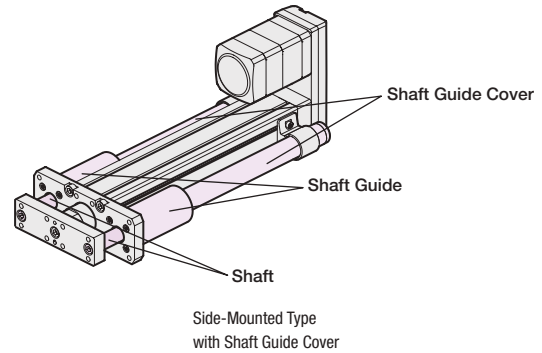


*When electromagnetic brake is installed

Thanks to Oriental Motor's unique belt tension adjustment mechanism, belt replacement is easy.



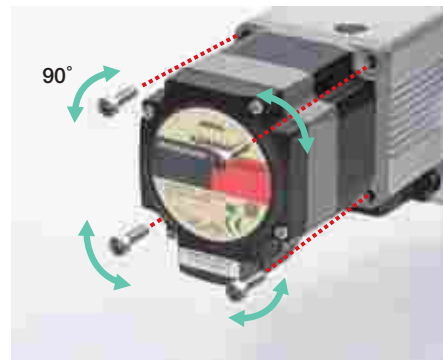
If the screw is loosened, the belt tension is adjusted to an appropriate value by the force of the spring.



● Cable Outlet Direction

Rotatable in 4 directions (3 directions for Reversed Motor types)

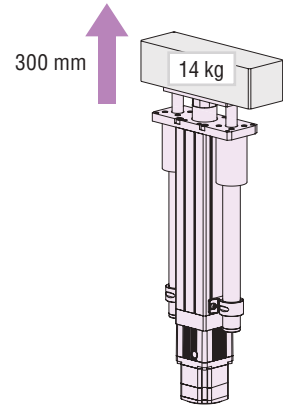
Motor cable can be changed to any direction by simply rotating the motor. There is no need to leave space behind the motor since the cable outlet is on one side of the motor, allowing for easy connection and saving space.



● **Wide Range of Applications, from Low Speed to High Speed and from Light Loads to Heavy Loads**

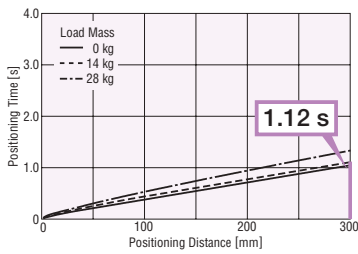
<Product Used>
 Product name: **EAC6WE**
 Lead: 6 mm
 Power Supply Input: 230 VAC

When transferring a load of 14 kg over a distance of 300 mm, the positioning time is 1.12 seconds.



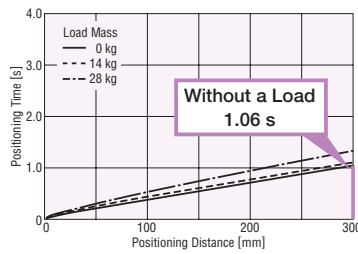
High-Speed With a Heavy Load

Transportable Mass: 14 kg
 Positioning Distance: 300 mm
 Positioning Time: 1.12 s
 Operating Speed: 300 mm/s
 Acceleration: 2.48 m/s² (0.25 G)



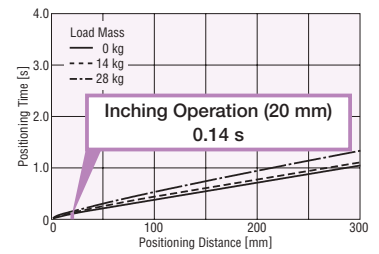
High-Speed With a Light Load

Transportable Mass: 0 kg
 Positioning Distance: 300 mm
 Positioning Time: 1.06 s
 Operating Speed: 300 mm/s
 Acceleration: 5.25 m/s² (0.5 G)









High-Speed During Inching Operation

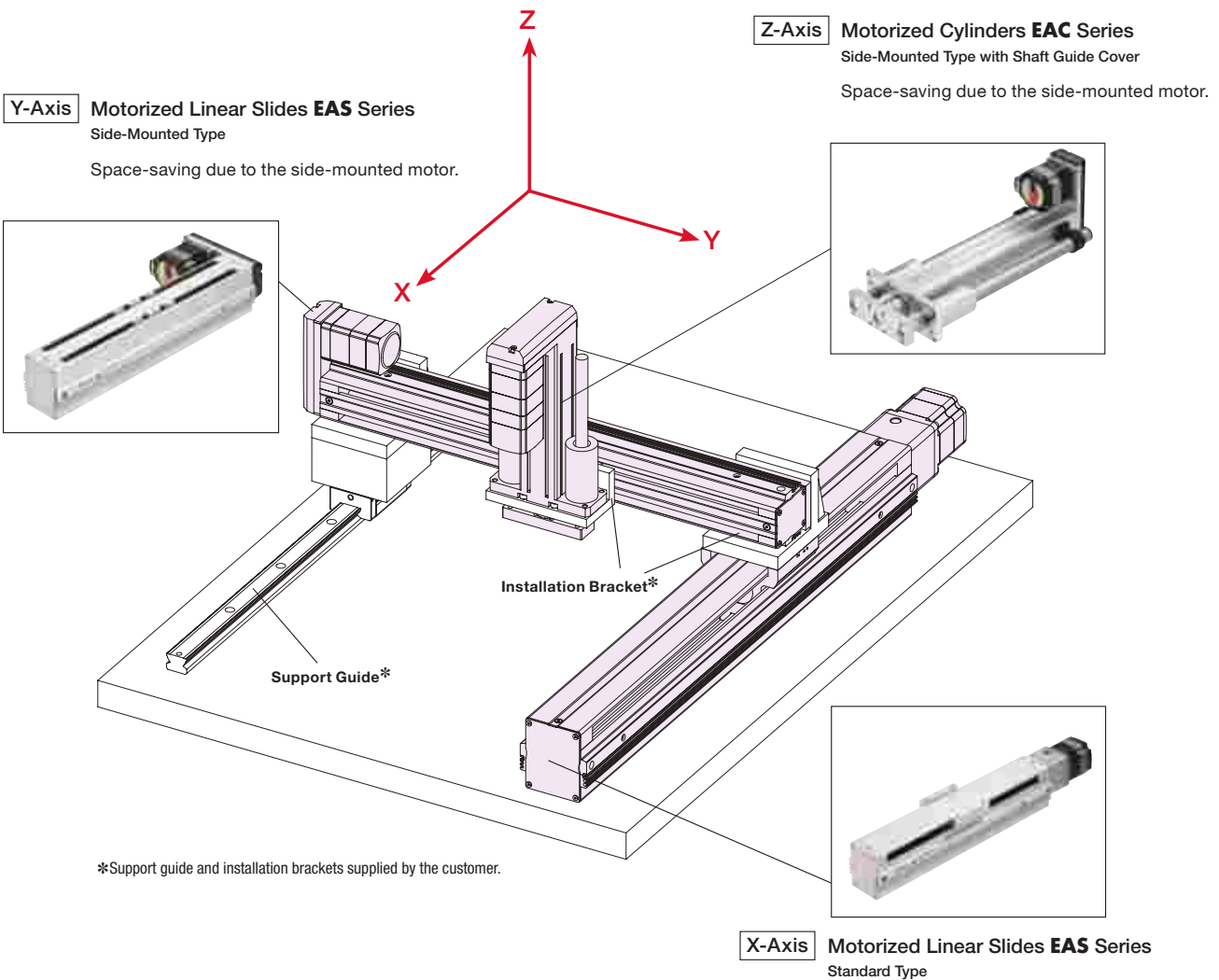
Transportable Mass: 14 kg
 Positioning Distance: 20 mm
 Positioning Time: 0.14 s
 Operating Speed: 200 mm/s
 Acceleration: 5.3 m/s² (0.5 G)



Product Line

Shaft Guide	Standard Type	Side-Mounted Type
<p>Without Shaft Guide</p> <p>Depending on the equipment, an external guide may be necessary.</p>		
<p>With Shaft Guide</p> <p>Designing an external guide and arranging the components is unnecessary, decreasing the startup time.</p>		
<p>With Shaft Guide Cover</p> <p>Moving parts on the cylinder main unit side are protected, improving equipment safety. This is useful for grease splash prevention in the shaft guide section and the prevention of the infiltration of foreign particles in the linear bush section.</p>		

The image below shows a three axes system using the motorized linear slide **EAS** Series on the X-Y axis and the motorized cylinder **EAC** Series on the Z axis.



How to Read Specifications Table

Motorized Cylinder Specifications

① Drive System	Ball Screw	② Repetitive Positioning Accuracy [mm]	±0.02		③ Minimum Traveling Amount [mm]	0.01		④ Dynamic Permissible Moment [N·m]	Me: 1.3	Mv: 1.3	Mr: 0.6
								⑤ Static Permissible Moment [N·m]	Me: 3.7	Mv: 3.7	Mr: 3.0
Product Name	④ Lead [mm]	⑦ Transportable Mass [kg]		⑧ Thrust [N]	⑨ Pushing Force [N]	⑩ Holding Force [N]	⑪ Maximum Speed [mm/s]				
		Horizontal	Vertical								
EAC4W-D-5-AZA ⑧⑨-⑩-⑪	12	~15	-	~70	100	70	600				
EAC4W-D-5-AZM ⑧⑨-⑩-⑪			~6								
EAC4W-E-5-AZA ⑧⑨-⑩-⑪	6	~30	-	~140	200	140	300				
EAC4W-E-5-AZM ⑧⑨-⑩-⑪			~13								

① Drive System

Mechanism used to convert motor rotation to linear motion.

② Repetitive Positioning Accuracy

A value indicating the amount of error that is generated when positioning is performed repeatedly to the same position in the same direction. The repetitive positioning accuracy is measured at a constant temperature under a constant load.

③ Minimum Traveling Amount

The minimum distance that the rod travels. (Factory setting)

④ Dynamic Permissible Moment*

The load moment acts on the linear guide if the load position is offset from the center of the rod.
The direction of action applies to three directions (pitching (MP), yawing (MY), and rolling (MR)) depending on the position of the offset.
The dynamic permissible moment is the moment allowed during operation.

⑤ Static Permissible Moment*

The load moment acts on the linear guide if the load position is offset from the center of the rod.
The direction of action applies to three directions (pitching (MP), yawing (MY), and rolling (MR)) depending on the position of the offset.
The static permissible moment is the moment allowed during static conditions.

⑥ Lead

Distance the rod moves linearly in one motor rotation.

⑦ Transportable Mass

• Horizontal Direction

Mass that can be moved under operating performance in the horizontal direction of the electric cylinder.

• Vertical Direction

Mass that can be moved under operating performance in the vertical direction of the electric cylinder.

⑧ Thrust

Force from the rod that pushes the load when speed is constant.

⑨ Pushing Force

The pressure applied to the load during the pushing operation.

⑩ Holding Force

Holding force when the motor is stopped or when the electromagnetic brake is operating, while power is supplied.

⑪ Maximum Speed

Maximum speed allowed when transporting the maximum transportable mass.

*The motorized cylinders have specifications only for those with shaft guide cover.

Product Line

AC Power Supply Input

Product Number Code

① Product Series	② Motor Installing Direction	③ Shaft Guide	④ Lead	⑤ Stroke	⑥ Installed Motor	⑦ Motor Shape	⑧ Power Supply Input	⑨ Driver Type	⑩ Connection Cable*	⑪ Shaft Guide Cover
EAC4	R	W	D	05	AZ	A	A	D	3	G
EAC4 EAC6	R: Right Side Mounted Blank: Standard	W: With Shaft Guide Blank: Standard	D: 12 mm E: 6 mm	05: 50 mm 10: 100 mm 15: 150 mm ~ 30: 300 mm (50 mm increments)	AZ Series	A: Single Shaft M: With Electromagnetic Brake	A: Single-Phase 100-120 VAC C: Single-Phase/Three-Phase 200-240 VAC	D: Built-in Controller Type Blank: Pulse Input Type	Number: Length of included cable 1: 1m 2: 2m 3: 3m None: Connection cable not included	G: With Shaft Guide Cover Blank: No Shaft Guide Cover

* Connection cables with a length of more than 3 m are available as accessories (sold separately).
Connection Cable Sets → Page 08-54

◇ EAC4 Standard Type/Side-Mounted Type (Frame size 42 mm × 42 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,554	SGD1,506	SGD1,780	SGD1,732	SGD1,473	SGD1,425	SGD1,699	SGD1,651
	100 mm (10)	SGD1,554	SGD1,506	SGD1,780	SGD1,732	SGD1,473	SGD1,425	SGD1,699	SGD1,651
	150 mm (15)	SGD1,570	SGD1,522	SGD1,796	SGD1,748	SGD1,489	SGD1,441	SGD1,716	SGD1,667
	200 mm (20)	SGD1,570	SGD1,522	SGD1,796	SGD1,748	SGD1,489	SGD1,441	SGD1,716	SGD1,667
	250 mm (25)	SGD1,586	SGD1,538	SGD1,812	SGD1,764	SGD1,506	SGD1,457	SGD1,732	SGD1,683
300 mm (30)	SGD1,586	SGD1,538	SGD1,812	SGD1,764	SGD1,506	SGD1,457	SGD1,732	SGD1,683	

◇ EAC4 Standard Type/Side-Mounted Type With Shaft Guide (Frame size 42 mm × 114 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,829	SGD1,780	SGD2,055	SGD2,006	SGD1,748	SGD1,699	SGD1,974	SGD1,926
	100 mm (10)	SGD1,829	SGD1,780	SGD2,055	SGD2,006	SGD1,748	SGD1,699	SGD1,974	SGD1,926
	150 mm (15)	SGD1,845	SGD1,796	SGD2,071	SGD2,022	SGD1,764	SGD1,716	SGD1,990	SGD1,942
	200 mm (20)	SGD1,845	SGD1,796	SGD2,071	SGD2,022	SGD1,764	SGD1,716	SGD1,990	SGD1,942
	250 mm (25)	SGD1,861	SGD1,812	SGD2,087	SGD2,039	SGD1,780	SGD1,732	SGD2,006	SGD1,958
300 mm (30)	SGD1,861	SGD1,812	SGD2,087	SGD2,039	SGD1,780	SGD1,732	SGD2,006	SGD1,958	

◇ EAC4 Standard Type/Side-Mounted Type With Shaft Guide Cover (Frame size 42 mm × 114 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,861	SGD1,812	SGD2,087	SGD2,039	SGD1,780	SGD1,732	SGD2,006	SGD1,958
	100 mm (10)	SGD1,861	SGD1,812	SGD2,087	SGD2,039	SGD1,780	SGD1,732	SGD2,006	SGD1,958
	150 mm (15)	SGD1,877	SGD1,829	SGD2,103	SGD2,055	SGD1,796	SGD1,748	SGD2,022	SGD1,974
	200 mm (20)	SGD1,877	SGD1,829	SGD2,103	SGD2,055	SGD1,796	SGD1,748	SGD2,022	SGD1,974
	250 mm (25)	SGD1,893	SGD1,845	SGD2,119	SGD2,071	SGD1,812	SGD1,764	SGD2,039	SGD1,990
300 mm (30)	SGD1,893	SGD1,845	SGD2,119	SGD2,071	SGD1,812	SGD1,764	SGD2,039	SGD1,990	

◇ **EAC6** Standard Type/Side-Mounted Type (Frame size 60 mm × 60 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,651	SGD1,602	SGD1,942	SGD1,893	SGD1,570	SGD1,522	SGD1,861	SGD1,812
	100 mm (10)	SGD1,651	SGD1,602	SGD1,942	SGD1,893	SGD1,570	SGD1,522	SGD1,861	SGD1,812
	150 mm (15)	SGD1,667	SGD1,619	SGD1,958	SGD1,909	SGD1,586	SGD1,538	SGD1,877	SGD1,829
	200 mm (20)	SGD1,667	SGD1,619	SGD1,958	SGD1,909	SGD1,586	SGD1,538	SGD1,877	SGD1,829
	250 mm (25)	SGD1,683	SGD1,635	SGD1,974	SGD1,926	SGD1,602	SGD1,554	SGD1,893	SGD1,845
300 mm (30)	SGD1,683	SGD1,635	SGD1,974	SGD1,926	SGD1,602	SGD1,554	SGD1,893	SGD1,845	

◇ **EAC6** Standard Type/Side-Mounted Type With Shaft Guide (Frame size 60 mm × 156 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,974	SGD1,926	SGD2,265	SGD2,216	SGD1,893	SGD1,845	SGD2,184	SGD2,136
	100 mm (10)	SGD1,974	SGD1,926	SGD2,265	SGD2,216	SGD1,893	SGD1,845	SGD2,184	SGD2,136
	150 mm (15)	SGD1,990	SGD1,942	SGD2,281	SGD2,232	SGD1,909	SGD1,861	SGD2,200	SGD2,152
	200 mm (20)	SGD1,990	SGD1,942	SGD2,281	SGD2,232	SGD1,909	SGD1,861	SGD2,200	SGD2,152
	250 mm (25)	SGD2,006	SGD1,958	SGD2,297	SGD2,249	SGD1,926	SGD1,877	SGD2,216	SGD2,168
	300 mm (30)	SGD2,006	SGD1,958	SGD2,297	SGD2,249	SGD1,926	SGD1,877	SGD2,216	SGD2,168

◇ **EAC6** Standard Type/Side-Mounted Type With Shaft Guide Cover (Frame size 60 mm × 156 mm)

Same price regardless of ② Motor Installing Direction (R, Blank), ④ Lead (D, E) or ⑧ Power Supply Input (A, C).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD2,006	SGD1,958	SGD2,297	SGD2,249	SGD1,926	SGD1,877	SGD2,216	SGD2,168
	100 mm (10)	SGD2,006	SGD1,958	SGD2,297	SGD2,249	SGD1,926	SGD1,877	SGD2,216	SGD2,168
	150 mm (15)	SGD2,022	SGD1,974	SGD2,313	SGD2,265	SGD1,942	SGD1,893	SGD2,232	SGD2,184
	200 mm (20)	SGD2,022	SGD1,974	SGD2,313	SGD2,265	SGD1,942	SGD1,893	SGD2,232	SGD2,184
	250 mm (25)	SGD2,039	SGD1,990	SGD2,329	SGD2,281	SGD1,958	SGD1,909	SGD2,249	SGD2,200
	300 mm (30)	SGD2,039	SGD1,990	SGD2,329	SGD2,281	SGD1,958	SGD1,909	SGD2,249	SGD2,200

DC Power Supply Input

Product Number Code

① Product Series	② Motor Installing Direction	③ Shaft Guide	④ Lead	⑤ Stroke	⑥ Installed Motor	⑦ Motor Shape	⑧ Power Supply Input	⑨ Driver Type	⑩ Connection Cable*2	⑪ Shaft Guide Cover
EAC4	R	W	D	05	AZ	A	K	D	3	G
EAC2 EAC4 EAC6	R : Right Side Mounted Blank: Standard	W : With Shaft Guide Blank: Standard	D : 12 mm E : 6 mm F : 3 mm	05 : 50 mm 10 : 100 mm 15 : 150 mm ~ 30 : 300 mm (50 mm increments)	AZ Series	A : Single Shaft M : With Electromagnetic Brake	K : 24 VDC/48 VDC *1	D : Built-in Controller Type Blank: Pulse Input Type	Number: Length of included cable 1 : 1m 2 : 2m 3 : 3m None: Connection cable not included	G : With Shaft Guide Cover Blank: No Shaft Guide Cover

*1 **EAC2** types are available with 24 VDC only.

*2 Connection cables with a length of more than 3 m are available as accessories (sold separately).

Connection Cable Sets → Page 08-54

Product Number Code **EAC2** Standard Type/Side-Mounted Type (Frame size 28 mm × 28 mm)

Same price regardless of ④ Lead (**E, F**).

⑨ Driver Type (D , Blank)	Built-in Controller Type (D)		Pulse Input Type (Blank)		
	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3 , Blank)	50 mm (05)	SGD1,320	SGD1,271	SGD1,239	SGD1,191
	100 mm (10)	SGD1,320	SGD1,271	SGD1,239	SGD1,191
⑤ Stroke	150 mm (15)	SGD1,336	SGD1,287	SGD1,255	SGD1,207

Product Number Code **EAC2** Standard Type With Shaft Guide Cover (Frame size 28 mm × 86 mm)

Same price regardless of ④ Lead (**E, F**).

⑨ Driver Type (D , Blank)	Built-in Controller Type (D)		Pulse Input Type (Blank)		
	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3 , Blank)	50 mm (05)	SGD1,594	SGD1,546	SGD1,514	SGD1,465
	100 mm (10)	SGD1,594	SGD1,546	SGD1,514	SGD1,465
⑤ Stroke	150 mm (15)	SGD1,611	SGD1,562	SGD1,530	SGD1,481

Product Number Code **EAC4** Standard Type/Side-Mounted Type (Frame size 42 mm × 42 mm)

Same price regardless of ② Motor Installing Direction (**R**, Blank) or ④ Lead (**D, E**).

⑨ Driver Type (D , Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
	⑩ Connection Cable (1, 2, 3 , Blank)	50 mm (05)	SGD1,344	SGD1,296	SGD1,570	SGD1,522	SGD1,263	SGD1,215	SGD1,489
100 mm (10)		SGD1,344	SGD1,296	SGD1,570	SGD1,522	SGD1,263	SGD1,215	SGD1,489	SGD1,441
⑤ Stroke	150 mm (15)	SGD1,360	SGD1,312	SGD1,586	SGD1,538	SGD1,279	SGD1,231	SGD1,506	SGD1,457
	200 mm (20)	SGD1,360	SGD1,312	SGD1,586	SGD1,538	SGD1,279	SGD1,231	SGD1,506	SGD1,457
	250 mm (25)	SGD1,376	SGD1,328	SGD1,602	SGD1,554	SGD1,296	SGD1,247	SGD1,522	SGD1,473
	300 mm (30)	SGD1,376	SGD1,328	SGD1,602	SGD1,554	SGD1,296	SGD1,247	SGD1,522	SGD1,473

Product Number Code **EAC4** Standard Type/Side-Mounted Type With Shaft Guide (Frame size 42 mm × 114 mm)

Same price regardless of ② Motor Installing Direction (**R**, Blank) or ④ Lead (**D, E**).

⑨ Driver Type (D , Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
	⑩ Connection Cable (1, 2, 3 , Blank)	50 mm (05)	SGD1,619	SGD1,570	SGD1,845	SGD1,796	SGD1,538	SGD1,489	SGD1,764
100 mm (10)		SGD1,619	SGD1,570	SGD1,845	SGD1,796	SGD1,538	SGD1,489	SGD1,764	SGD1,716
⑤ Stroke	150 mm (15)	SGD1,635	SGD1,586	SGD1,861	SGD1,812	SGD1,554	SGD1,506	SGD1,780	SGD1,732
	200 mm (20)	SGD1,635	SGD1,586	SGD1,861	SGD1,812	SGD1,554	SGD1,506	SGD1,780	SGD1,732
	250 mm (25)	SGD1,651	SGD1,602	SGD1,877	SGD1,829	SGD1,570	SGD1,522	SGD1,796	SGD1,748
	300 mm (30)	SGD1,651	SGD1,602	SGD1,877	SGD1,829	SGD1,570	SGD1,522	SGD1,796	SGD1,748

Product Number Code **EAC4** Standard Type/Side-Mounted Type With Shaft Guide Cover (Frame size 42 mm × 114 mm)

Same price regardless of ② Motor Installing Direction (**R**, Blank) or ④ Lead (**D, E**).

⑨ Driver Type (D , Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
	⑩ Connection Cable (1, 2, 3 , Blank)	50 mm (05)	SGD1,651	SGD1,602	SGD1,877	SGD1,829	SGD1,570	SGD1,522	SGD1,796
100 mm (10)		SGD1,651	SGD1,602	SGD1,877	SGD1,829	SGD1,570	SGD1,522	SGD1,796	SGD1,748
⑤ Stroke	150 mm (15)	SGD1,667	SGD1,619	SGD1,893	SGD1,845	SGD1,586	SGD1,538	SGD1,812	SGD1,764
	200 mm (20)	SGD1,667	SGD1,619	SGD1,893	SGD1,845	SGD1,586	SGD1,538	SGD1,812	SGD1,764
	250 mm (25)	SGD1,683	SGD1,635	SGD1,909	SGD1,861	SGD1,602	SGD1,554	SGD1,829	SGD1,780
	300 mm (30)	SGD1,683	SGD1,635	SGD1,909	SGD1,861	SGD1,602	SGD1,554	SGD1,829	SGD1,780

◇ **EAC6 Standard Type/Side-Mounted Type (Frame size 60 mm × 60 mm)**

Same price regardless of ② Motor Installing Direction (R, Blank) or ④ Lead (D, E).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,441	SGD1,392	SGD1,732	SGD1,683	SGD1,360	SGD1,312	SGD1,651	SGD1,602
	100 mm (10)	SGD1,441	SGD1,392	SGD1,732	SGD1,683	SGD1,360	SGD1,312	SGD1,651	SGD1,602
	150 mm (15)	SGD1,457	SGD1,409	SGD1,748	SGD1,699	SGD1,376	SGD1,328	SGD1,667	SGD1,619
	200 mm (20)	SGD1,457	SGD1,409	SGD1,748	SGD1,699	SGD1,376	SGD1,328	SGD1,667	SGD1,619
	250 mm (25)	SGD1,473	SGD1,425	SGD1,764	SGD1,716	SGD1,392	SGD1,344	SGD1,683	SGD1,635
300 mm (30)	SGD1,473	SGD1,425	SGD1,764	SGD1,716	SGD1,392	SGD1,344	SGD1,683	SGD1,635	

◇ **EAC6 Standard Type/Side-Mounted Type With Shaft Guide (Frame size 60 mm × 156 mm)**

Same price regardless of ② Motor Installing Direction (R, Blank) or ④ Lead (D, E).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,764	SGD1,716	SGD2,055	SGD2,006	SGD1,683	SGD1,635	SGD1,974	SGD1,926
	100 mm (10)	SGD1,764	SGD1,716	SGD2,055	SGD2,006	SGD1,683	SGD1,635	SGD1,974	SGD1,926
	150 mm (15)	SGD1,780	SGD1,732	SGD2,071	SGD2,022	SGD1,699	SGD1,651	SGD1,990	SGD1,942
	200 mm (20)	SGD1,780	SGD1,732	SGD2,071	SGD2,022	SGD1,699	SGD1,651	SGD1,990	SGD1,942
	250 mm (25)	SGD1,796	SGD1,748	SGD2,087	SGD2,039	SGD1,716	SGD1,667	SGD2,006	SGD1,958
	300 mm (30)	SGD1,796	SGD1,748	SGD2,087	SGD2,039	SGD1,716	SGD1,667	SGD2,006	SGD1,958

◇ **EAC6 Standard Type/Side-Mounted Type With Shaft Guide Cover (Frame size 60 mm × 156 mm)**

Same price regardless of ② Motor Installing Direction (R, Blank) or ④ Lead (D, E).

⑨ Driver Type (D, Blank)	Built-in Controller Type (D)				Pulse Input Type (Blank)				
	Single Shaft (A)		With Electromagnetic Brake (M)		Single Shaft (A)		With Electromagnetic Brake (M)		
⑦ Motor Shape (A, M)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	Included (1, 2, 3)	Not Included (Blank)	
⑩ Connection Cable (1, 2, 3, Blank)									
⑤ Stroke	50 mm (05)	SGD1,796	SGD1,748	SGD2,087	SGD2,039	SGD1,716	SGD1,667	SGD2,006	SGD1,958
	100 mm (10)	SGD1,796	SGD1,748	SGD2,087	SGD2,039	SGD1,716	SGD1,667	SGD2,006	SGD1,958
	150 mm (15)	SGD1,812	SGD1,764	SGD2,103	SGD2,055	SGD1,732	SGD1,683	SGD2,022	SGD1,974
	200 mm (20)	SGD1,812	SGD1,764	SGD2,103	SGD2,055	SGD1,732	SGD1,683	SGD2,022	SGD1,974
	250 mm (25)	SGD1,829	SGD1,780	SGD2,119	SGD2,071	SGD1,748	SGD1,699	SGD2,039	SGD1,990
	300 mm (30)	SGD1,829	SGD1,780	SGD2,119	SGD2,071	SGD1,748	SGD1,699	SGD2,039	SGD1,990

Included

Type	Included	Actuator	Driver	Connector	Operating Manual
Common to All Types		1 Unit	1 Unit	<ul style="list-style-type: none"> • Connector for CN4 (1 piece) • Connector for CN1 (1 piece) • Connector for CN5 (1 piece)* • Connector Wiring Lever (1 piece)* 	1 Copy

*AC input only

System Configuration

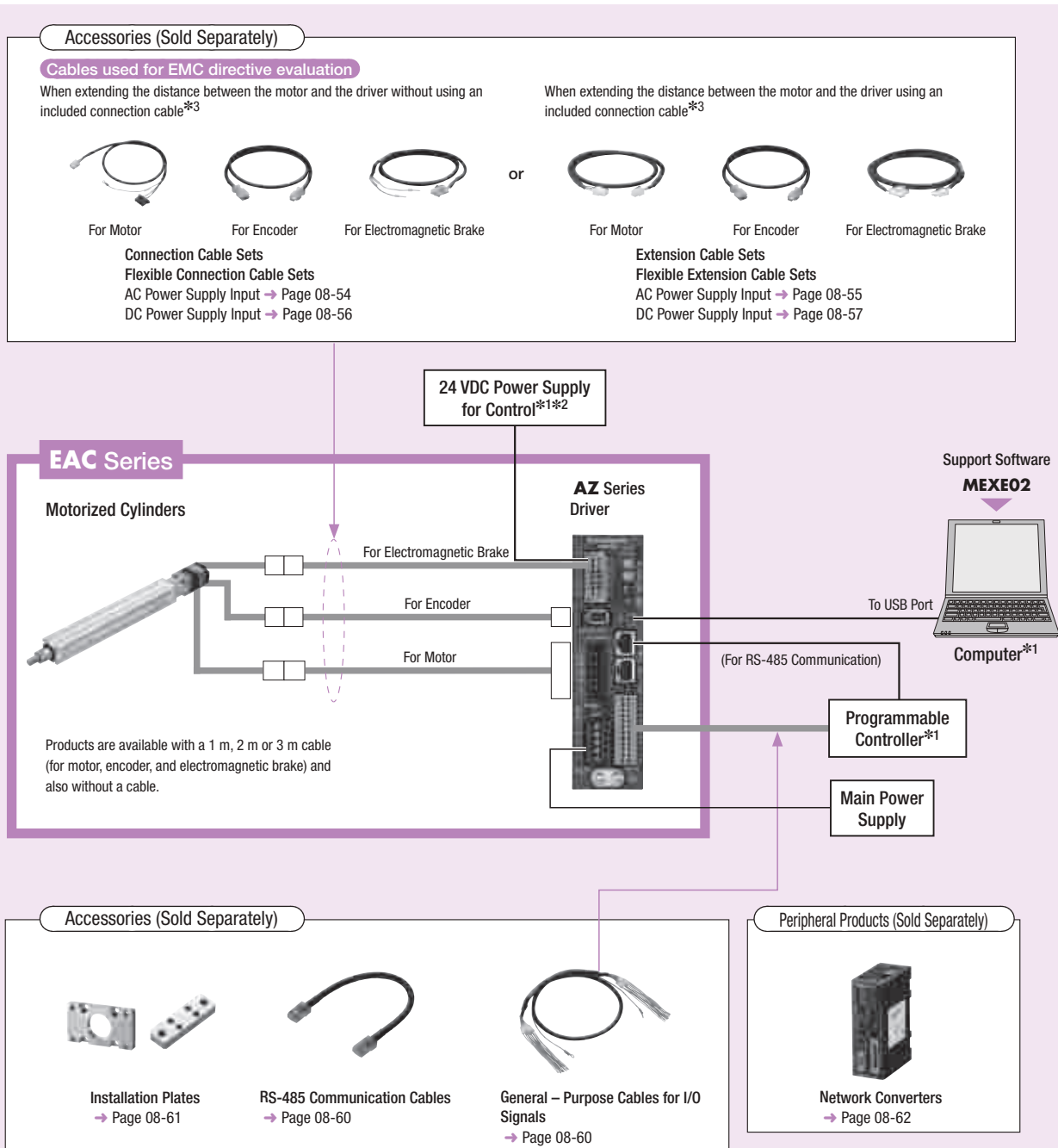
- Built-in controller type with an electromagnetic brake equipped with the **AZ Series** (AC power supply input and DC power supply input are both indicated. The photo shows a type for AC power supply input.)

An example of a configuration using I/O control or RS-485 communication is shown below.

*1 Not supplied.

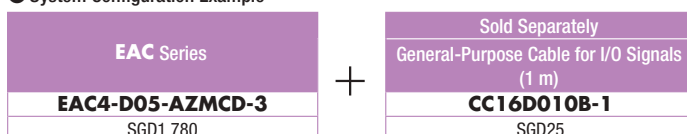
*2 A product for DC power supply is unnecessary.

*3 Only with products supplied with a connection cable.



- The functions and operation method of this product are common to the stepping motor and driver package **AZ Series**. For details on the functions and operation method, see the User's Manual (for Drivers, Functions) of the **AZ Series**. The User's Manual for Drivers is included with the product, but the guide for Functions is not included. Contact the nearest Oriental Motor sales office or download from the Oriental Motor website. <http://www.orientalmotor.com.sg>

System Configuration Example



- The system configuration shown above is an example. Other combinations are available.

● Pulse input type with an electromagnetic brake equipped with the **AZ Series** (AC power supply input and DC power supply input are both indicated. The photo shows a type for AC power supply input.)
An example of a single-axis system configuration is shown below.

- *1 Not supplied.
- *2 A product for DC power supply is unnecessary.
- *3 Only with products supplied with a connection cable.

Accessories (Sold Separately)

Cables used for EMC directive evaluation

When extending the distance between the motor and the driver without using an included connection cable*3

For Motor For Encoder For Electromagnetic Brake

When extending the distance between the motor and the driver using an included connection cable*3

For Motor For Encoder For Electromagnetic Brake

Connection Cable Sets

Flexible Connection Cable Sets

AC Power Supply Input → Page 08-54

DC Power Supply Input → Page 08-56

Extension Cable Sets

Flexible Extension Cable Sets

AC Power Supply Input → Page 08-55

DC Power Supply Input → Page 08-57

EAC Series

Motorized Cylinders

Products are available with a 1 m, 2 m or 3 m cable (for motor, encoder, and electromagnetic brake) and also without a cable.

AZ Series Driver

24 VDC Power Supply for Control*1*2

Main Power Supply

Programmable Controller*1

Computer*1

Support Software **MEXE02**

To USB Port

Accessories (Sold Separately)

Installation Plates

→ Page 08-61

General – Purpose Cables for I/O Signals

→ Page 08-60

● The functions and operation method of this product are common to the stepping motor and driver package **AZ Series**. For details on the functions and operation method, see the User's Manual (for Drivers, Functions) of the **AZ Series**.
The User's Manual for Drivers is included with the product, but the guide for Functions is not included. Contact the nearest Oriental Motor sales office or download from the Oriental Motor website. <http://www.orientalmotor.com.sg>

● **System Configuration Example**

<p style="background-color: #808080; color: white; padding: 2px;">EAC Series</p> <p style="background-color: #808080; color: white; padding: 2px;">EAC4-D05-AZMC-3</p> <p style="font-size: small; padding: 2px;">SGD1,699</p>	+	<p style="font-size: small; padding: 2px;">Sold Separately</p> <p style="font-size: small; padding: 2px;">General-Purpose Cable for I/O Signals (1 m)</p> <p style="background-color: #808080; color: white; padding: 2px;">CC16D010B-1</p> <p style="font-size: small; padding: 2px;">SGD25</p>
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● The system configuration shown above is an example. Other combinations are available.

EAC2: Frame Size 28 mm×28 mm 24 VDC Input Standard Type

Maximum Transportable Mass: Horizontal 15 kg/Vertical 5 kg
Stroke: 50~150 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC2-E ⑤-AZAK ⑨-⑩	6	Horizontal	Vertical	~25	40	25	300
EAC2-F ⑤-AZAK ⑨-⑩	3	~15	~5	~50	80	50	150

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

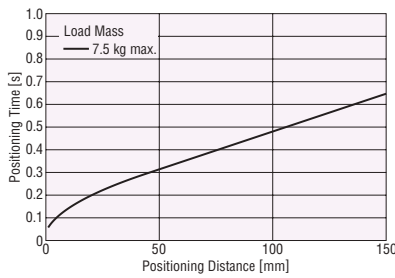
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

The positioning time (reference) can be checked from the positioning distance.

Lead: 6 mm

◇ Horizontal Direction Installation

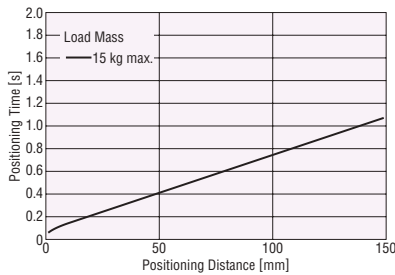


◇ Vertical Direction Installation

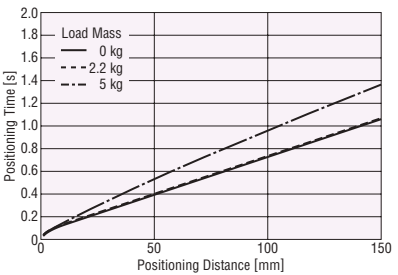


Lead: 3 mm

◇ Horizontal Direction Installation



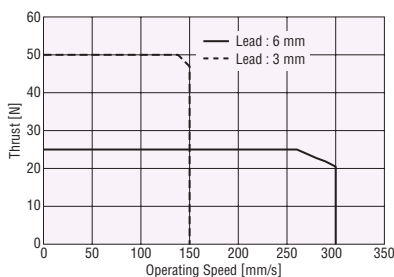
◇ Vertical Direction Installation



Note

- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-40

EAC2W: Frame Size 28 mm×86 mm 24 VDC Input Standard Type With Shaft Guide (With Cover)

Maximum Transportable Mass: Horizontal 15 kg/Vertical 4.5 kg
Stroke: 50~150 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC2W-E-⑤-AZAK-⑨-⑩-⑪	6	~7.5	~2.0	~25	40	25	300
EAC2W-F-⑤-AZAK-⑨-⑩-⑪	3	~15	~4.5	~50	80	50	150

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for ⑤, ⑨, ⑩ and ⑪ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

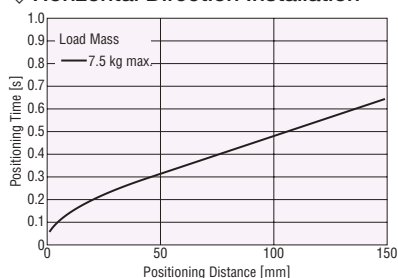
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

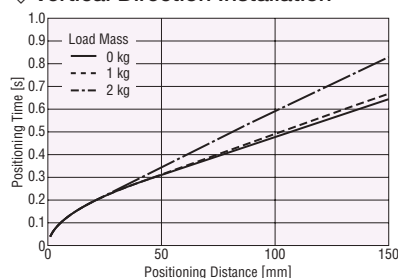
The positioning time (reference) can be checked from the positioning distance.

Lead: 6 mm

◇ Horizontal Direction Installation

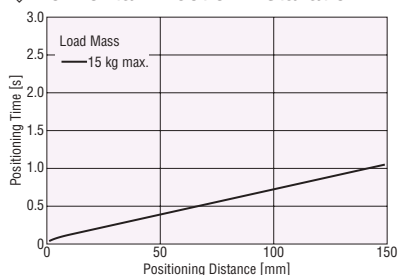


◇ Vertical Direction Installation



Lead: 3 mm

◇ Horizontal Direction Installation



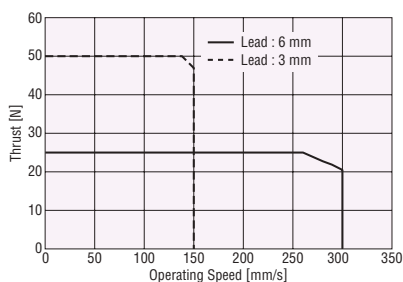
◇ Vertical Direction Installation



Note

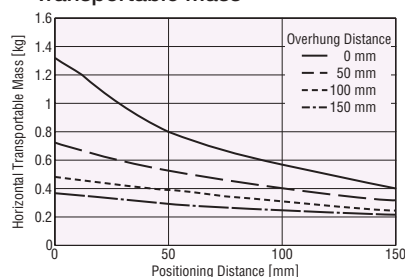
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

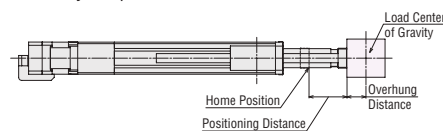


Horizontal Transportable Mass

◇ Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-45

EAC4: Frame Size 42 mm×42 mm AC Power Supply Input Standard Type

Maximum Transportable Mass: Horizontal 30 kg/Vertical 14 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC4-D (5)-(AZA (8)(9)-(10))	12	~15	—	~70	100	70	600
EAC4-D (5)-(AZM (8)(9)-(10))			~7				
EAC4-E (5)-(AZA (8)(9)-(10))	6	~30	—	~140	200	140	300
EAC4-E (5)-(AZM (8)(9)-(10))			~14				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for (5), (8), (9) and (10) in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

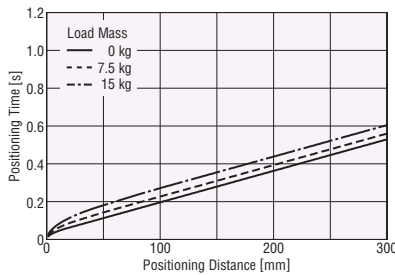
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

Positioning Distance – Positioning Time

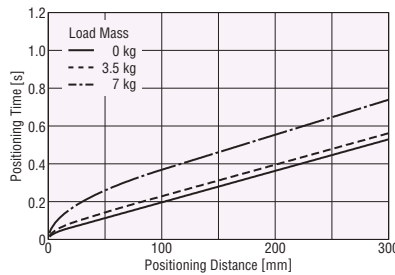
The positioning time (reference) can be checked from the positioning distance.

● Lead: 12 mm

◇ Horizontal Direction Installation

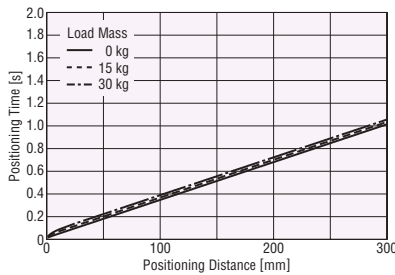


◇ Vertical Direction Installation

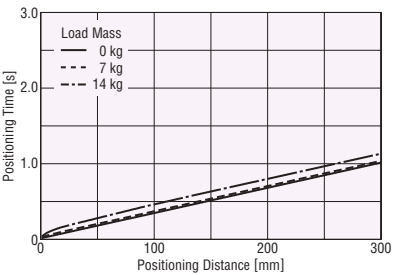


● Lead: 6 mm

◇ Horizontal Direction Installation



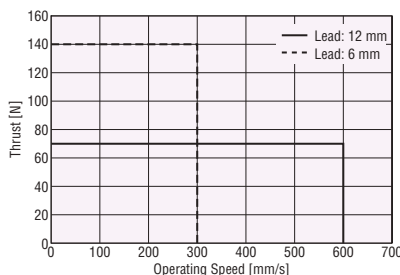
◇ Vertical Direction Installation



Note

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-41

EAC4R: Frame Size 42 mm×42 mm AC Power Supply Input Side-Mounted Type

Maximum Transportable Mass: Horizontal 30 kg/Vertical 12.5 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC4R-D⑤-AZA⑧⑨⑩	12	~15	—	~70	100	70	600
EAC4R-D⑤-AZM⑧⑨⑩			~7				
EAC4R-E⑤-AZA⑧⑨⑩	6	~30	—	~125	200	125	300
EAC4R-E⑤-AZM⑧⑨⑩			~12.5				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑧, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

Positioning Distance – Positioning Time

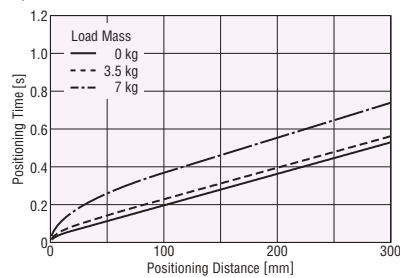
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

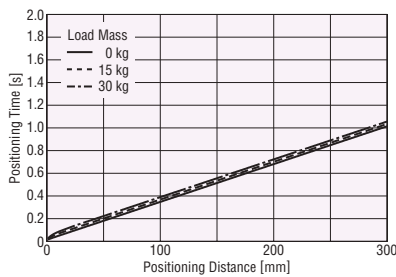


◇ Vertical Direction Installation

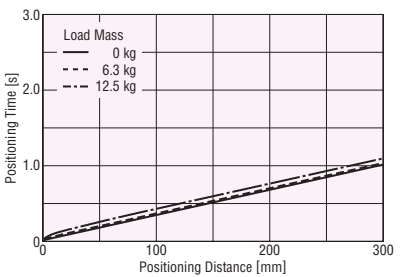


Lead: 6 mm

◇ Horizontal Direction Installation



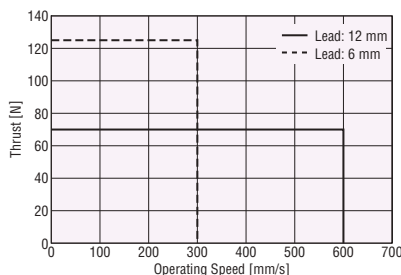
◇ Vertical Direction Installation



Note

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-42

EAC4: Frame Size 42 mm×42 mm 24 VDC Input Standard Type

Maximum Transportable Mass: Horizontal 30 kg/Vertical 14 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC4-D (5)-(9)-(10)	12	~15	—	~70	100	70	600
EAC4-D (5)-(9)-(10)			~7				
EAC4-E (5)-(9)-(10)	6	~30	—	~140	200	140	300
EAC4-E (5)-(9)-(10)			~14				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for (5), (9) and (10) in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

● In the case of upward pushing return-to-home, the home position may vary.

● The push-motion operation speed should be 25 mm/s or less.

● Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

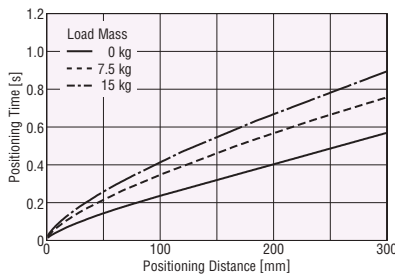
● The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

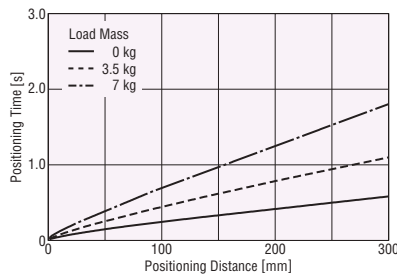
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

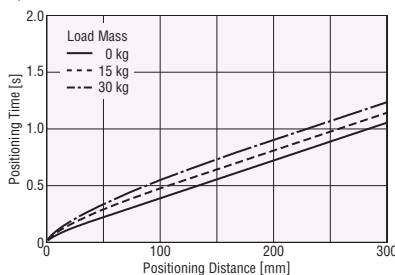


◇ Vertical Direction Installation

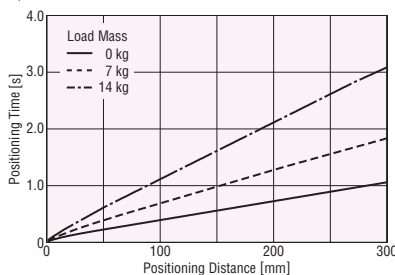


Lead: 6 mm

◇ Horizontal Direction Installation



◇ Vertical Direction Installation



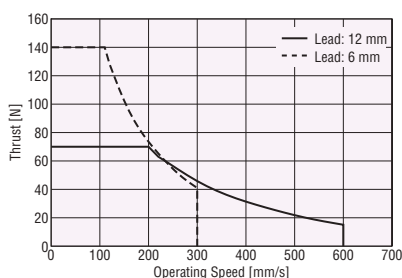
Note

● The positioning time in the graph does not include the settling time.

Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)

● The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-41

EAC4R: Frame Size 42 mm×42 mm 24 VDC Input Side-Mounted Type

Maximum Transportable Mass: Horizontal 30 kg/Vertical 12.5 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC4R-D-⑤-AZAK⑨-⑩	12	~15	—	~70	100	70	600
EAC4R-D-⑤-AZMK⑨-⑩			~7				
EAC4R-E-⑤-AZAK⑨-⑩	6	~30	—	~125	200	125	300
EAC4R-E-⑤-AZMK⑨-⑩			~12.5				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

● In the case of upward pushing return-to-home, the home position may vary.

● The push-motion operation speed should be 25 mm/s or less.

● Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

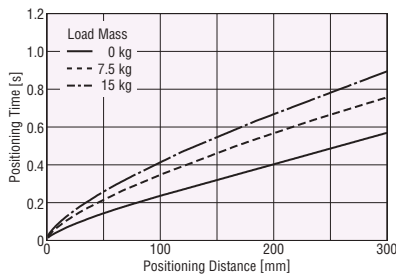
● The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

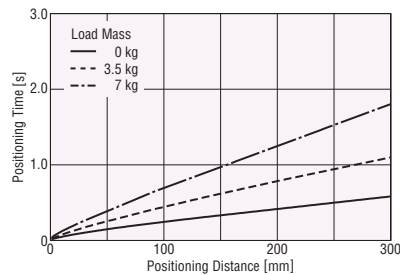
The positioning time (reference) can be checked from the positioning distance.

● Lead: 12 mm

◇ Horizontal Direction Installation

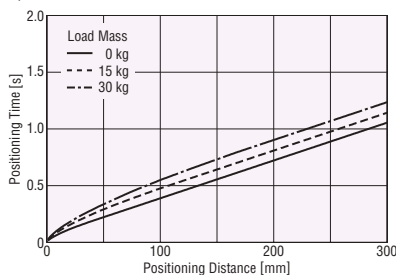


◇ Vertical Direction Installation

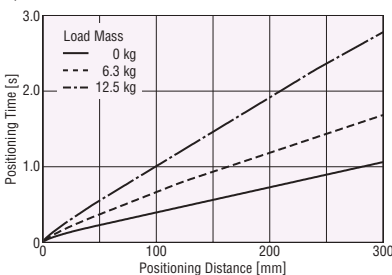


● Lead: 6 mm

◇ Horizontal Direction Installation



◇ Vertical Direction Installation



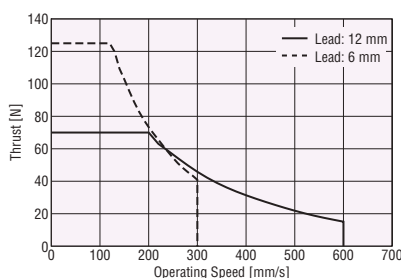
Note

● The positioning time in the graph does not include the settling time.

Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)

● The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-42

EAC6: Frame Size 60 mm×60 mm AC Power Supply Input Standard Type

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC6-D (5)-AZA (8,9)-(10)	12	~30	—	~200	400	200	600
EAC6-D (5)-AZM (8,9)-(10)		~15	—				
EAC6-E (5)-AZA (8,9)-(10)	6	~60	—	~400	500	400	300
EAC6-E (5)-AZM (8,9)-(10)		~30	—				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for (5), (6), (9) and (10) in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

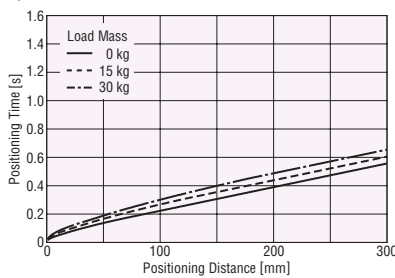
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

Positioning Distance – Positioning Time

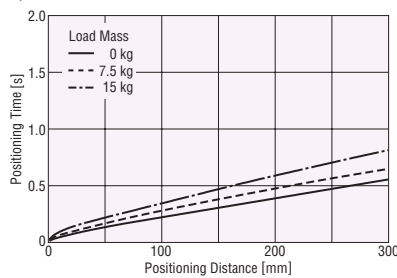
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

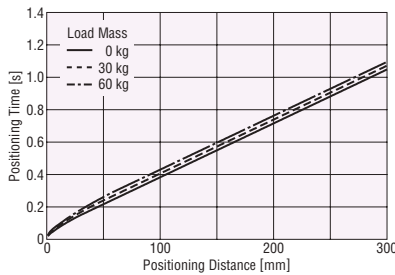


◇ Vertical Direction Installation

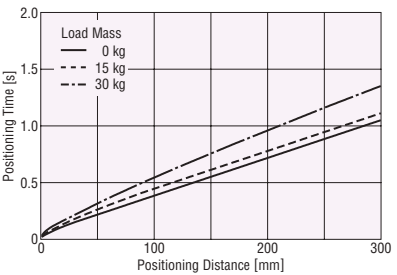


Lead: 6 mm

◇ Horizontal Direction Installation



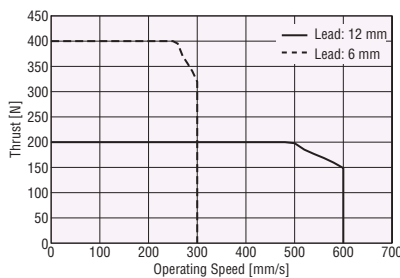
◇ Vertical Direction Installation



Note

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-43

EAC6R: Frame Size 60 mm×60 mm AC Power Supply Input Side-Mounted Type

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC6R-D ^⑤ -AZA ^{⑧⑨⑩}	12	Horizontal	~30	~200	400	200	600
EAC6R-D ^⑤ -AZM ^{⑧⑨⑩}		Vertical	~15				
EAC6R-E ^⑤ -AZA ^{⑧⑨⑩}	6	Horizontal	~60	~360	500	360	300
EAC6R-E ^⑤ -AZM ^{⑧⑨⑩}		Vertical	~30				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑧, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

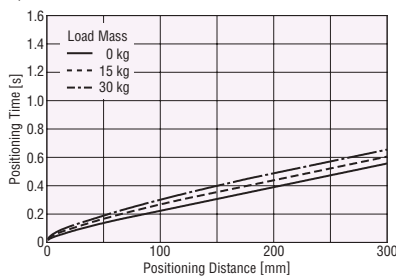
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less.
- Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

Positioning Distance – Positioning Time

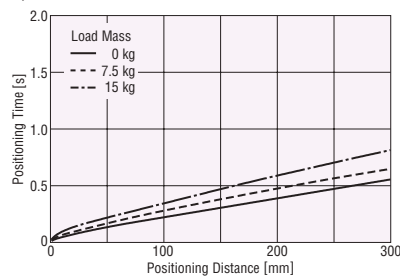
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

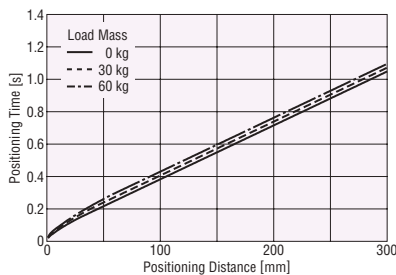


◇ Vertical Direction Installation

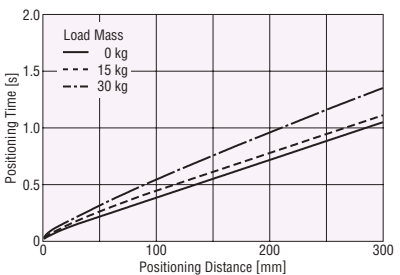


Lead: 6 mm

◇ Horizontal Direction Installation



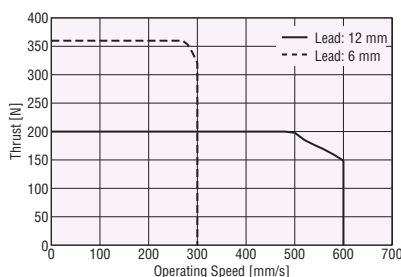
◇ Vertical Direction Installation



Note

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-44

EAC6: Frame Size 60 mm×60 mm 24 VDC Input Standard Type

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC6-D-⑤-AZAK-⑨-⑩	12	~30	—	~200	400	200	600
EAC6-D-⑤-AZMK-⑨-⑩			~15				
EAC6-E-⑤-AZAK-⑨-⑩	6	~60	—	~400	500	400	300
EAC6-E-⑤-AZMK-⑨-⑩			~30				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

● In the case of upward pushing return-to-home, the home position may vary.

● The push-motion operation speed should be 25 mm/s or less.

● Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

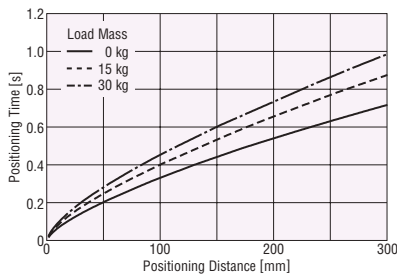
● The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

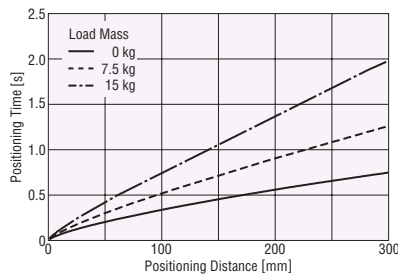
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

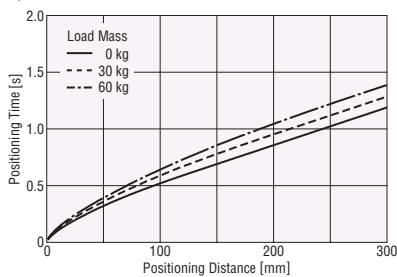


◇ Vertical Direction Installation

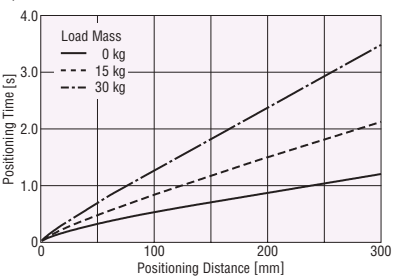


Lead: 6 mm

◇ Horizontal Direction Installation



◇ Vertical Direction Installation



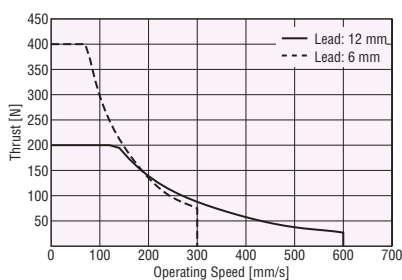
Note

● The positioning time in the graph does not include the settling time.

Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)

● The starting speed should be 6 mm/s or less.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-43

EAC6R: Frame Size 60 mm×60 mm 24 VDC Input Side-Mounted Type

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01		
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
EAC6R-D-⑤-AZAK⑨-⑩	12	Horizontal	Vertical	~200	400	200	600
EAC6R-D-⑤-AZMK⑨-⑩		~30	~15				
EAC6R-E-⑤-AZAK⑨-⑩	6	Horizontal	Vertical	~360	500	360	300
EAC6R-E-⑤-AZMK⑨-⑩		~60	~30				

*The transportable mass is the value when an external linear guide is used.

● Symbols and numbers are substituted for ⑤, ⑨ and ⑩ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

● In the case of upward pushing return-to-home, the home position may vary.

● The push-motion operation speed should be 25 mm/s or less.

● Do not apply radial load or load moment to the rod of the motorized cylinders. Make sure to provide a guide although a simple anti-spin mechanism is already provided.

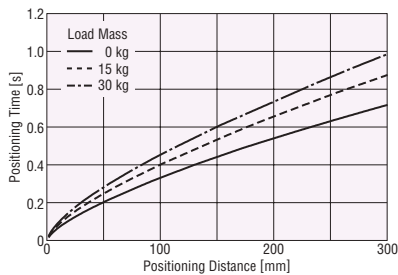
● The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

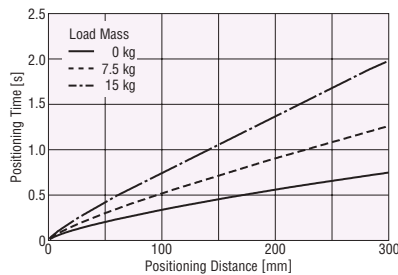
The positioning time (reference) can be checked from the positioning distance.

● Lead: 12 mm

◇ Horizontal Direction Installation

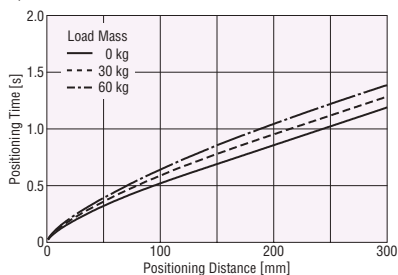


◇ Vertical Direction Installation

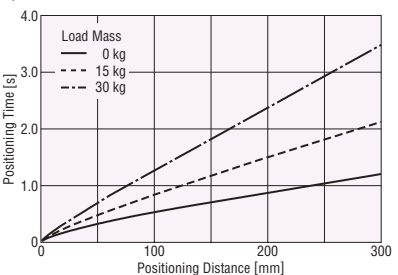


● Lead: 6 mm

◇ Horizontal Direction Installation



◇ Vertical Direction Installation



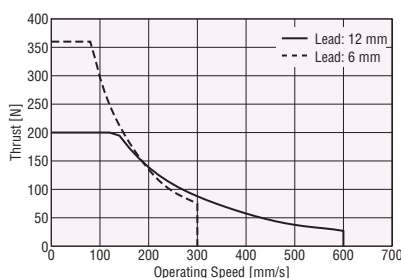
Note

● The positioning time in the graph does not include the settling time.

Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)

● The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

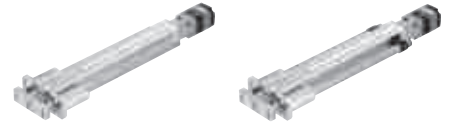


Dimensions

● Motorized Cylinders → Page 08-44

EAC4W: Frame Size 42 mm×114 mm AC Power Supply Input Standard Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 30 kg/Vertical 13 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment[N·m]	M _r :1.3 M _v :1.3 M _h :0.6
						Static Permissible Moment[N·m]	M _r :3.7 M _v :3.7 M _h :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC4W-D-5-AZA(8)(9)-(10)-(11)	12	~15	—	~70	100	70	600
EAC4W-D-5-AZM(8)(9)-(10)-(11)			~6				
EAC4W-E-5-AZA(8)(9)-(10)-(11)	6	~30	—	~140	200	140	300
EAC4W-E-5-AZM(8)(9)-(10)-(11)			~13				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for (5), (6), (9), (10) and (11) in the product names. For details, refer to "Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

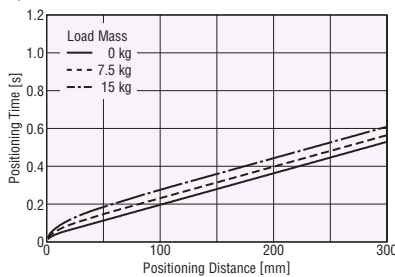
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.

Positioning Distance – Positioning Time

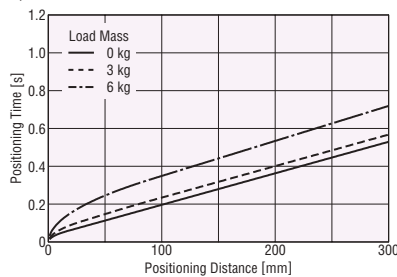
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

Horizontal Direction Installation

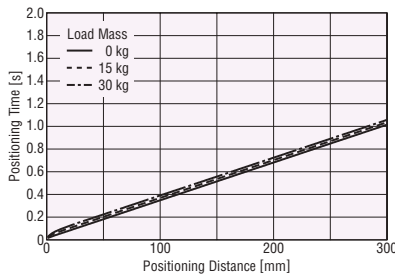


Vertical Direction Installation

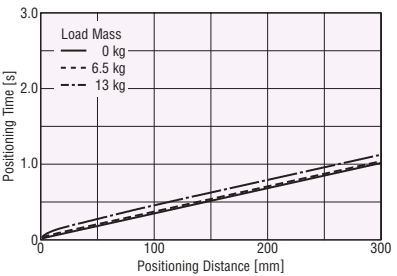


Lead: 6 mm

Horizontal Direction Installation



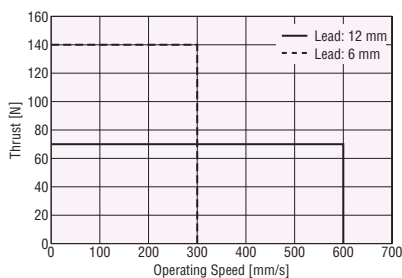
Vertical Direction Installation



Note

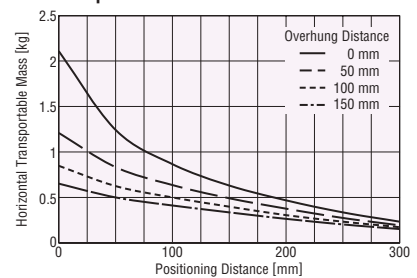
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

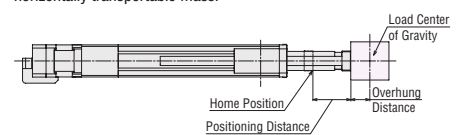


Horizontal Transportable Mass

Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



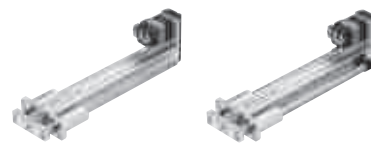
- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-46

EAC4RW: Frame Size 42 mm×114 mm AC Power Supply Input Side-Mounted Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 30 kg/Vertical 11.5 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment [N·m]	M _r :1.3	M _r :1.3	M _r :0.6
						Static Permissible Moment [N·m]	M _s :3.7	M _s :3.7	M _s :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC4RW-D-5-AZA-8-9-10-11	12	~15	—	~70	100	70	600
EAC4RW-D-5-AZM-8-9-10-11			~6				
EAC4RW-E-5-AZA-8-9-10-11	6	~30	—	~125	200	125	300
EAC4RW-E-5-AZM-8-9-10-11			~11.5				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Motorized Cylinders Horizontal Transportable Mass."

● Symbols and numbers are substituted for ⑤, ⑧, ⑨, ⑩ and ⑪ in the product names. For details, refer to "Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

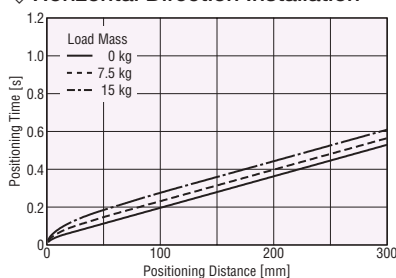
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.

Positioning Distance – Positioning Time

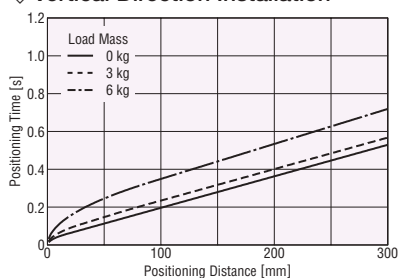
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

Horizontal Direction Installation

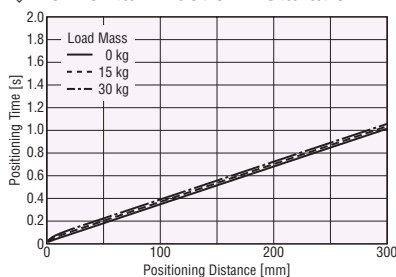


Vertical Direction Installation

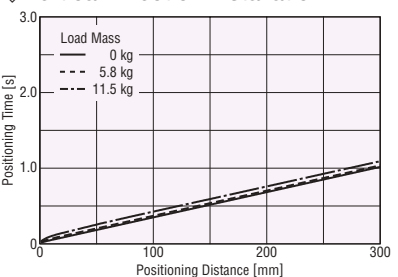


Lead: 6 mm

Horizontal Direction Installation



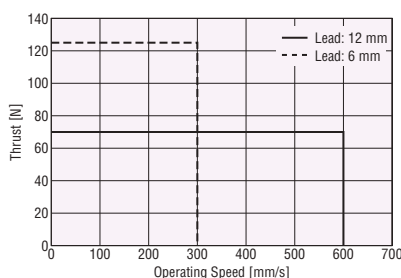
Vertical Direction Installation



Note

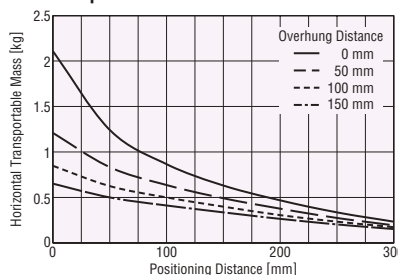
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

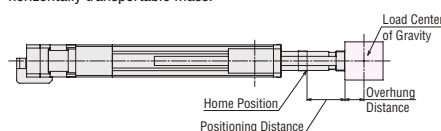


Horizontal Transportable Mass

Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



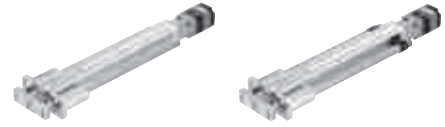
- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-47

EAC4W: Frame Size 42 mm×114 mm 24 VDC Input Standard Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 30 kg/Vertical 13 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment[N·m]	M _r :1.3	M _v :1.3	M _a :0.6
						Static Permissible Moment[N·m]	M _r :3.7	M _v :3.7	M _a :3.0
Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]		
		Horizontal	Vertical						
EAC4W-D-5-AZAK-9-10-11	12	~15	—	~70	100	70	600		
EAC4W-D-5-AZMK-9-10-11			~6						
EAC4W-E-5-AZAK-9-10-11	6	~30	—	~140	200	140	300		
EAC4W-E-5-AZMK-9-10-11			~13						

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for ⑤, ⑨, ⑩ and ⑪ in the product names. For details, refer to "Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

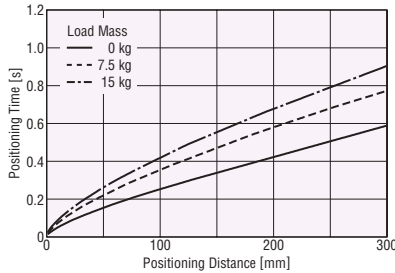
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

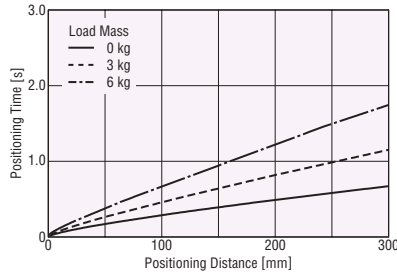
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

Horizontal Direction Installation

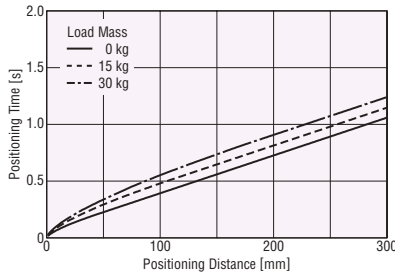


Vertical Direction Installation

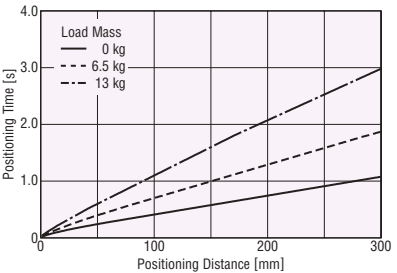


Lead: 6 mm

Horizontal Direction Installation



Vertical Direction Installation

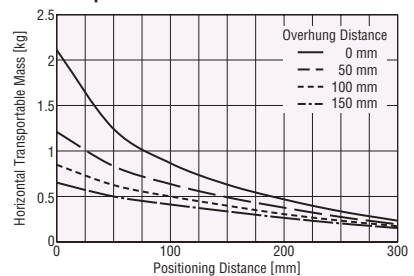


Note

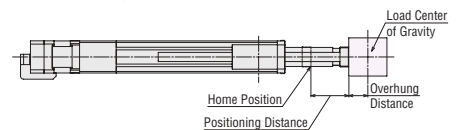
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Horizontal Transportable Mass

Positioning Distance – Horizontal Transportable Mass

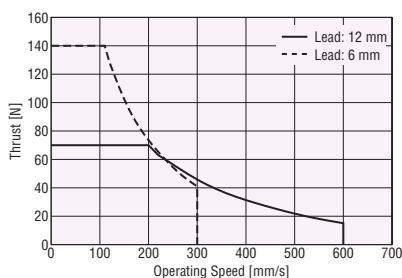


Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Operating Speed – Thrust

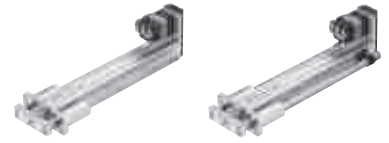


Dimensions

● Motorized Cylinders → Page 08-46

EAC4RW: Frame Size 42 mm×114 mm 24 VDC Input Side-Mounted Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 30 kg/Vertical 11.5 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment[N·m]	M _r :1.3	M _r :1.3	M _r :0.6
						Static Permissible Moment[N·m]	M _r :3.7	M _r :3.7	M _r :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC4RW-D ⑤-AZAK ⑨-⑩-⑪	12	~15	—	~70	100	70	600
EAC4RW-D ⑤-AZMK ⑨-⑩-⑪			~6				
EAC4RW-E ⑤-AZAK ⑨-⑩-⑪	6	~30	—	~125	200	125	300
EAC4RW-E ⑤-AZMK ⑨-⑩-⑪			~11.5				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for ⑤, ⑨, ⑩ and ⑪ in the product names. For details, refer to "Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

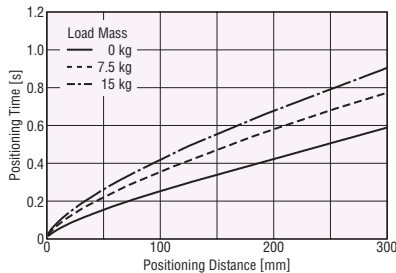
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

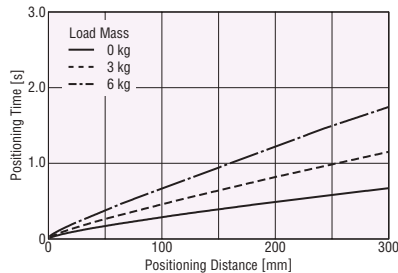
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

Horizontal Direction Installation

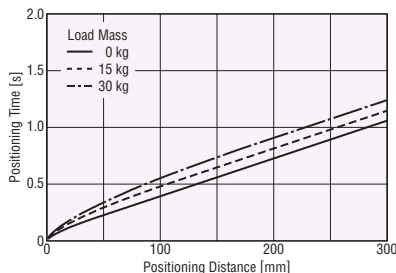


Vertical Direction Installation

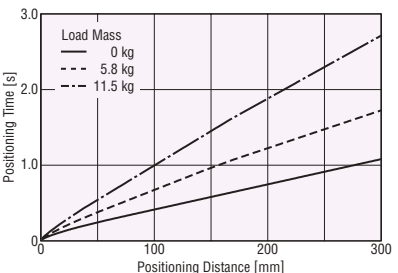


Lead: 6 mm

Horizontal Direction Installation



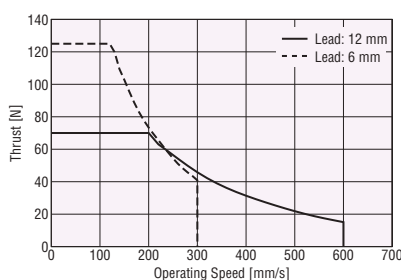
Vertical Direction Installation



Note

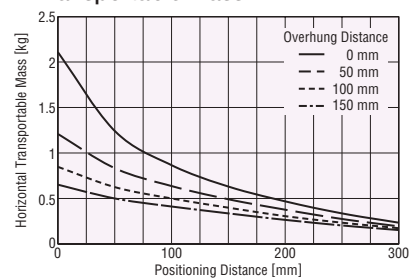
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

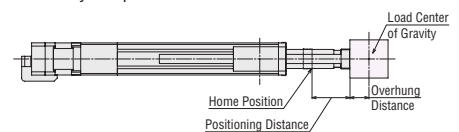


Horizontal Transportable Mass

Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



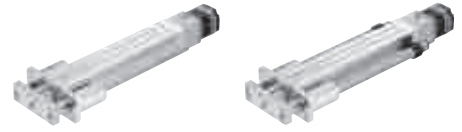
- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-47

EAC6W: Frame Size 60 mm×156 mm AC Power Supply Input Standard Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 60 kg/Vertical 28 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment [N·m]	M _r :2.2	M _v :2.2	M _s :1.3
						Static Permissible Moment [N·m]	M _r :7.8	M _v :7.8	M _s :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC6W-D-5-AZA-8-9-10-11	12	~30	—	~200	400	200	600
EAC6W-D-5-AZM-8-9-10-11			~13				
EAC6W-E-5-AZA-8-9-10-11	6	~60	—	~400	500	400	300
EAC6W-E-5-AZM-8-9-10-11			~28				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."
 ● Symbols and numbers are substituted for ⑤, ⑧, ⑨, ⑩ and ⑪ in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.
 ● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.

Positioning Distance – Positioning Time

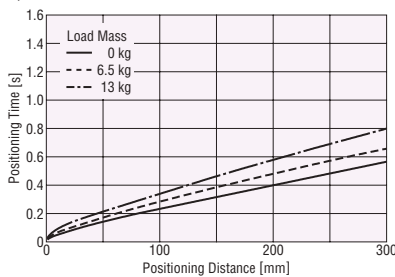
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

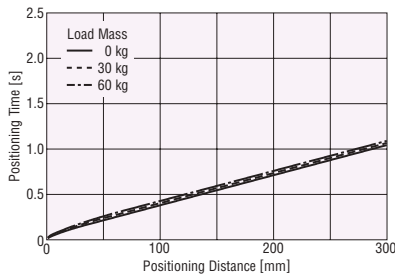


◇ Vertical Direction Installation

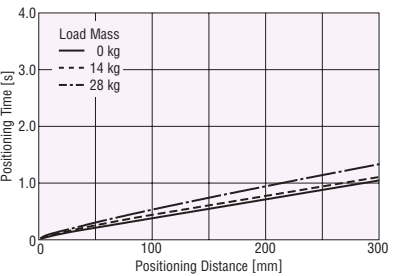


Lead: 6 mm

◇ Horizontal Direction Installation



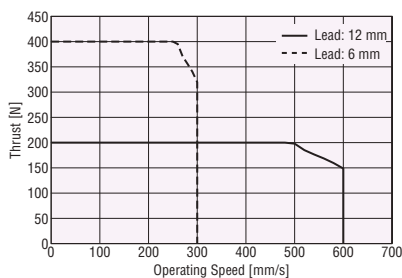
◇ Vertical Direction Installation



Note

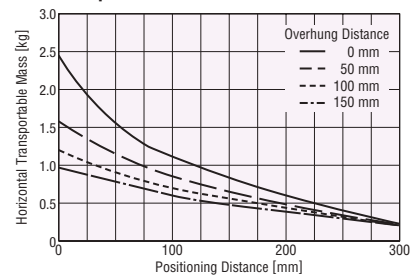
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

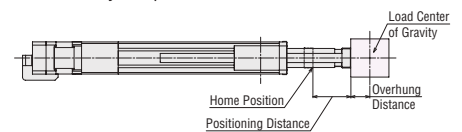


Horizontal Transportable Mass

◇ Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-48

EAC6RW: Frame Size 60 mm×156 mm AC Power Supply Input Side-Mounted Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 60 kg/Vertical 28 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment [N·m]	M _r :2.2	M _r :2.2	M _r :1.3
						Static Permissible Moment [N·m]	M _r :7.8	M _r :7.8	M _r :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC6RW-D-⑤-AZA⑧⑨⑩⑪	12	~30	—	~200	400	200	600
EAC6RW-D-⑤-AZM⑧⑨⑩⑪			~13				
EAC6RW-E-⑤-AZA⑧⑨⑩⑪	6	~60	—	~360	500	360	300
EAC6RW-E-⑤-AZM⑧⑨⑩⑪			~28				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for ⑤, ⑧, ⑨, ⑩ and ⑪ in the product names. For details, refer to "◇ Product Number Code" in Page 08-14.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

Note

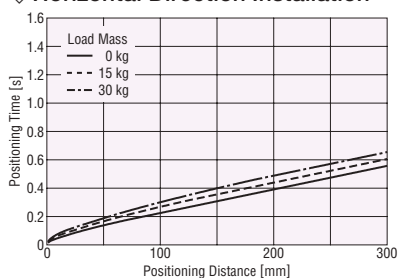
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.

Positioning Distance – Positioning Time

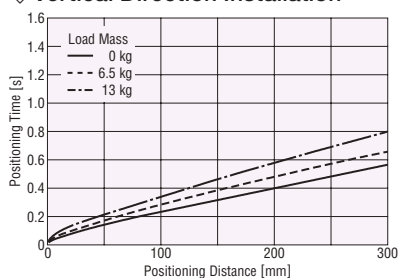
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

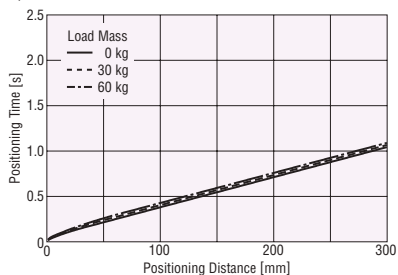


◇ Vertical Direction Installation

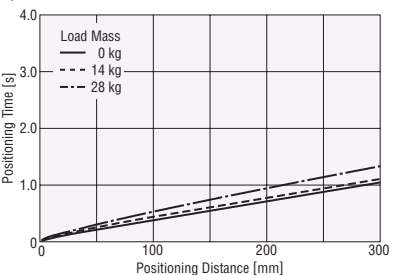


Lead: 6 mm

◇ Horizontal Direction Installation



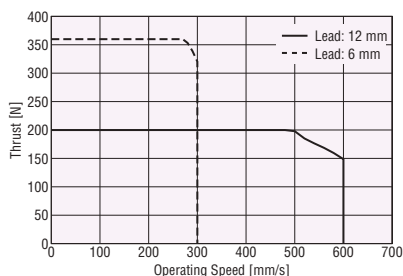
◇ Vertical Direction Installation



Note

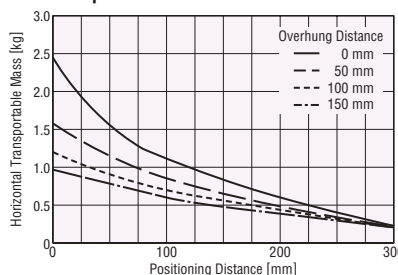
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

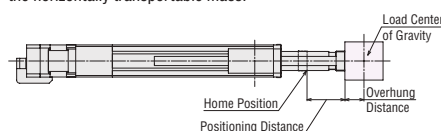


Horizontal Transportable Mass

◇ Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



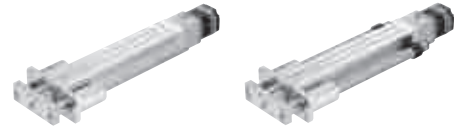
- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-49

EAC6W: Frame Size 60 mm×156 mm 24 VDC Input Standard Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 60 kg/Vertical 28 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment [N·m]	M _r :2.2	M _v :2.2	M _s :1.3
						Static Permissible Moment [N·m]	M _r :7.8	M _v :7.8	M _s :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC6W-D-5-AZAK(9-10-11)	12	~30	—	~200	400	200	600
EAC6W-D-5-AZMK(9-10-11)			~13				
EAC6W-E-5-AZAK(9-10-11)	6	~60	—	~400	500	400	300
EAC6W-E-5-AZMK(9-10-11)			~28				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

● Symbols and numbers are substituted for (5), (9), (10) and (11) in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.

● For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

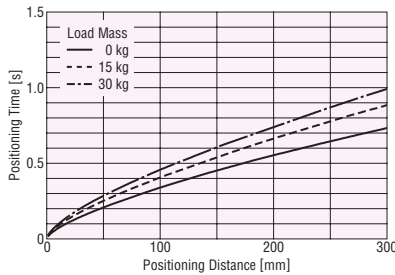
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

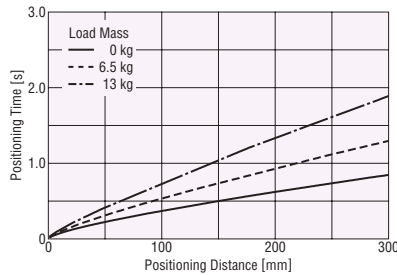
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

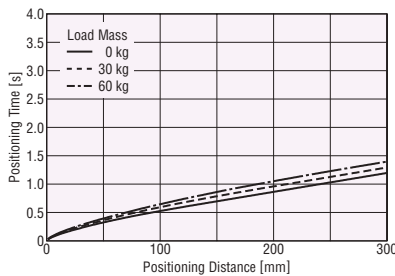


◇ Vertical Direction Installation

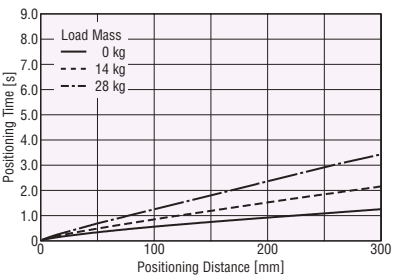


Lead: 6 mm

◇ Horizontal Direction Installation



◇ Vertical Direction Installation

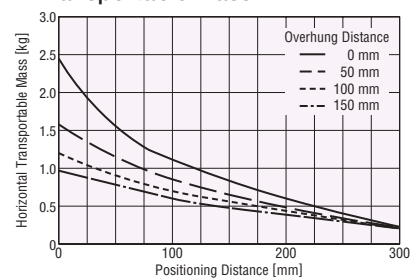


Note

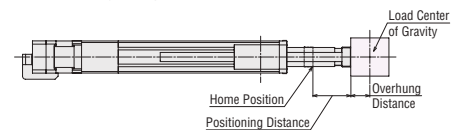
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Horizontal Transportable Mass

◇ Positioning Distance – Horizontal Transportable Mass

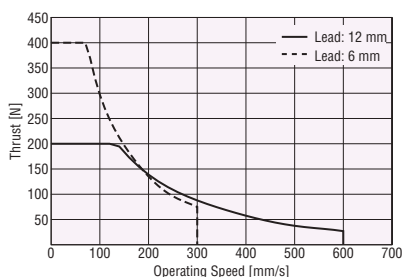


Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Operating Speed – Thrust



Dimensions

● Motorized Cylinders → Page 08-48

EAC6RW: Frame Size 60 mm×156 mm 24 VDC Input Side-Mounted Type With Shaft Guide (With cover)

Maximum Transportable Mass: Horizontal 60 kg/Vertical 28 kg
Stroke: 50~300 mm (50 mm increments)



Motorized Cylinders

Drive System	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Minimum Traveling Amount [mm]	0.01	Dynamic Permissible Moment [N·m]	M _r :2.2	M _r :2.2	M _r :1.3
						Static Permissible Moment [N·m]	M _r :7.8	M _r :7.8	M _r :3.0

Product Name	Lead [mm]	Transportable Mass [kg]*		Thrust [N]	Pushing Force [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EAC6RW-D-5-AZAK-9-10-11	12	~30	—	~200	400	200	600
EAC6RW-D-5-AZMK-9-10-11			~13				
EAC6RW-E-5-AZAK-9-10-11	6	~60	—	~360	500	360	300
EAC6RW-E-5-AZMK-9-10-11			~28				

*The transportable mass is the value when an external linear guide is used. When not using a linear guide, refer to "Horizontal Transportable Mass."

- Symbols and numbers are substituted for ⑤, ⑨, ⑩ and ⑪ in the product names. For details, refer to "◇ Product Number Code" in Page 08-16.
- For reading the specifications table, refer to "How to Read Specifications Table" on Page 08-12.
- For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

Note

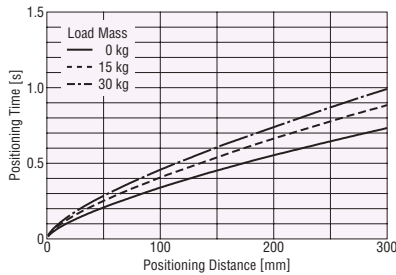
- In the case of upward pushing return-to-home, the home position may vary.
- The push-motion operation speed should be 25 mm/s or less and within the limit of the dynamic permissible moment.
- The maximum speed may decrease depending on the ambient temperature and motor cable length.

Positioning Distance – Positioning Time

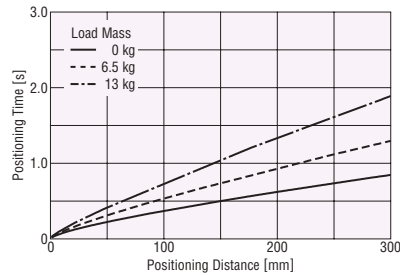
The positioning time (reference) can be checked from the positioning distance.

Lead: 12 mm

◇ Horizontal Direction Installation

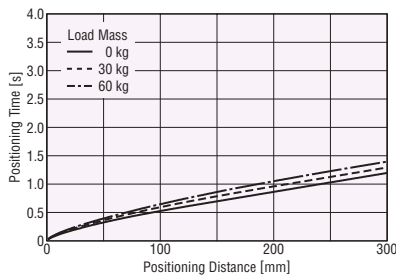


◇ Vertical Direction Installation

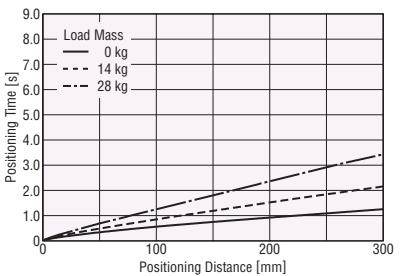


Lead: 6 mm

◇ Horizontal Direction Installation



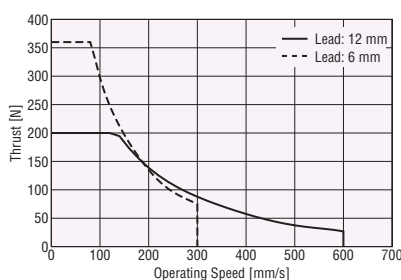
◇ Vertical Direction Installation



Note

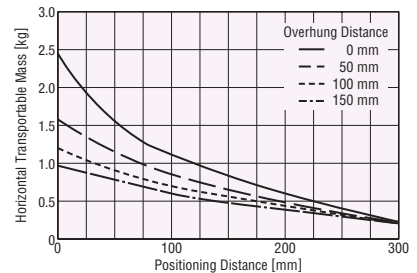
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s or less as a reference. (Settling time is adjustable by the velocity filter function.)
- The starting speed should be 6 mm/s or less.

Operating Speed – Thrust

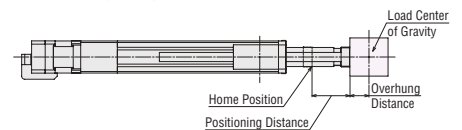


Horizontal Transportable Mass

◇ Positioning Distance – Horizontal Transportable Mass



Products with shaft guide and shaft guide cover can be applied with load, and can transport the load. Refer to the above graph for the horizontally transportable mass.



- The positioning distance is the distance from the home position.
- The overhung distance is the distance taken by the protrusion from the load installation surface.

Dimensions

● Motorized Cylinders → Page 08-49

Power Supply Input Specifications

AC Input Driver

Item			EAC4	EAC6
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15 to +6% 50/60 Hz	
	Input Current A	Single-Phase 100-120 VAC	2.7	3.8
		Single-Phase 200-240 VAC	1.7	2.3
		Three-Phase 200-240 VAC	1	1.4
Voltage		24 VDC ± 5%*		
Control Power Supply	Input Current A	Without Electromagnetic Brake	0.25	0.25
		With Electromagnetic Brake	0.33	0.5

*For the type with an electromagnetic brake, the 24 VDC ± 4% specification applies if the wiring distance between the motor and driver is extended to 20 m using an accessory cable (sold separately).

DC Input Driver

Item			EAC2	EAC4	EAC6
Power Supply Input	Voltage		24 VDC ± 5%*	24 VDC ± 5%* 48 VDC ± 5%	
	Input Current A	Without Electromagnetic Brake	1.6	1.72	3.55
		With Electromagnetic Brake	—	1.8	3.8

*For the type with an electromagnetic brake, the 24 VDC ± 4% specification applies if the wiring distance between the motor and driver is extended to 20 m using an accessory cable (sold separately).

Electromagnetic Brake Specifications

Item		EAC4	EAC6
Brake Type		Power Off Activated Type	
Power Supply Voltage		24 VDC ± 5%*	
Power Supply Current	A	0.08	0.25
Brake Operating Time	ms	20	
Brake Releasing Time	ms	30	
Time Rating		Continuous	

*For the type with an electromagnetic brake, 24 VDC ± 4% specification applies if the wiring distance between the motor and driver is extended to 20 m using an accessory cable (sold separately).

General Specifications

Motor Specifications (AZ Series)

AC Input :   DC Input :  

		AC Input	DC Input
Thermal Class		130 (B) [UL Recognized 105 (A)]	
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: <ul style="list-style-type: none"> Case – Motor Windings Case – Electromagnetic Brake Windings*1 	
Dielectric Strength		Sufficient to withstand the following for 1 minute: EAC4, EAC6 <ul style="list-style-type: none"> Case – Motor Windings 1.5 kVAC, 50 Hz or 60 Hz Case – Electromagnetic Brake Windings*1 1.5 kVAC, 50 Hz or 60 Hz 	Sufficient to withstand the following for 1 minute: EAC2 <ul style="list-style-type: none"> Case – Motor Windings 0.5 kVAC, 50 Hz or 60 Hz EAC4, EAC6 <ul style="list-style-type: none"> Case – Motor Windings 1.0 kVAC, 50 Hz or 60 Hz Case – Electromagnetic Brake Windings*1 1.0 kVAC, 50 Hz or 60 Hz
Operating Environment	Ambient Temperature	0 to + 40°C (Non-freezing)*3	
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection*2		EAC2 : IP40 (excluding installation surfaces and connector locations) EAC4, EAC6 : IP66 (excluding installation surfaces and connector locations)	
Multiple Rotation Detection Range in Power OFF State		EAC2 : ± 450 Rotations (900 Rotations) EAC4, EAC6 : ± 900 Rotations (1800 Rotations)	

*1 Only for products with an electromagnetic brake.

*2 Only for motor parts. The degree of protection of the electric cylinder is IP00.

*3 It is based on Oriental Motor's measurement conditions.

Note

● When conducting the insulation resistance measurement or the dielectric strength test, be sure to separate the connection between the motor and the driver. Also, do not perform these tests on the absolute sensor part of the motor.

Driver Specifications

		AC Input		DC Input	
		Built-in Controller Type	Pulse Input Type	Built-in Controller Type	Pulse Input Type
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: • Protective Earth Terminal – Power Supply Terminal • Encoder Connector – Power Supply Terminal • I/O Signal Terminal – Power Supply Terminal		100 MΩ or more when a 500 VDC megger is applied between the following places: • Protective Earth Terminal – Power Supply Terminal	
Dielectric Strength		Sufficient to withstand the following for 1 minute: • Protective Earth Terminal – Power Supply Terminal 1.5 kVAC, 50 Hz or 60 Hz • Encoder Connector – Power Supply Terminal 1.8 kVAC, 50 Hz or 60 Hz • I/O Signal Terminal – Power Supply Terminal 1.8 kVAC, 50 Hz or 60 Hz		—	
Operating Environment		Ambient Temperature		0 to +55°C (Non-freezing)*	
		Ambient Humidity		85% or less (Non-condensing)	
		Atmosphere		No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection		IP10	IP20	IP10	
Multiple Rotation Detection Range in Power OFF State		EAC2 : ± 450 Rotations (900 Rotations) EAC4, EAC6 : ± 900 Rotations (1800 Rotations)			

*When a heat sink is installed that is equivalent to an aluminum plate with the dimensions 200 × 200 mm and 2 mm thickness

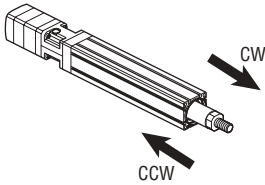
Note

● When conducting the insulation resistance measurement or the dielectric strength test, be sure to separate the connection between the motor and the driver.

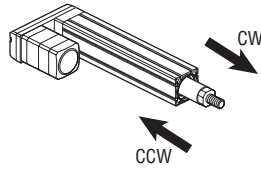
Moving Direction

At the time of shipment, the moving direction of the rod is set as shown below.

Installation of Motor: Standard Type



Installation of Motor: Side-Mounted Type

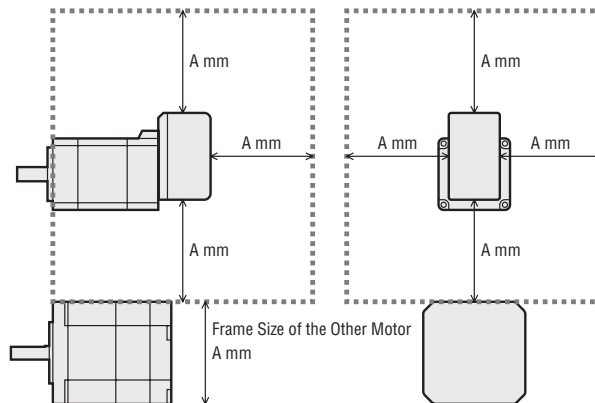


Actuator Installation

When installing the actuator, pay particular attention to the installation location, because the ABZO sensor can easily be affected by magnetic force.

Installation of EAC2

When installing the motor parts in parallel, leave a buffer space that is equal to or greater than the other motor's size (frame size) both horizontally and vertically.



● Leave a buffer space equal to or greater than the other motor's frame size (A mm).

Reference

The Other Motor	A
Frame Size 20 mm	20
Frame Size 28 mm	28
Frame Size 42 mm	42
Frame Size 60 mm	60

When installing an actuator in an environment where a magnetic field is generated

Make sure that the magnetic flux density on the ABZO sensor surface does not exceed the value in the table.

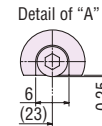
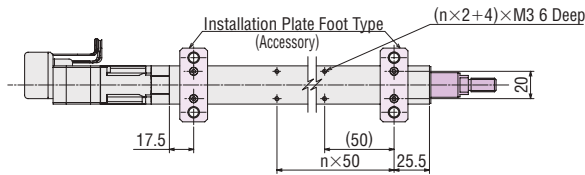
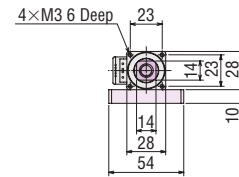
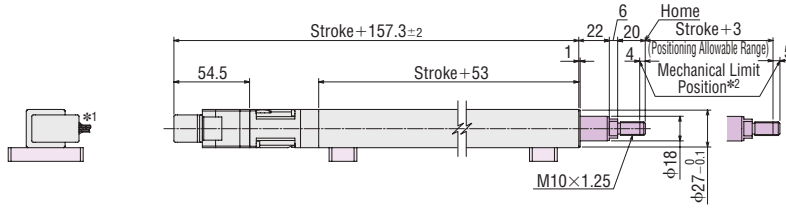
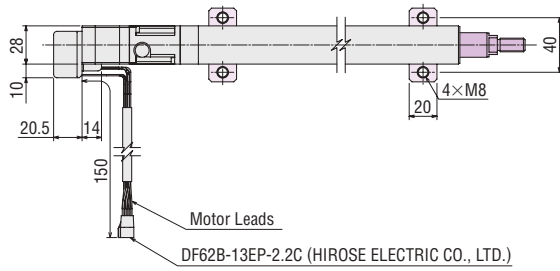
Product Name	Magnetic Flux Density
EAC2	2 mT*
EAC4, EAC6	10 mT

*When the magnetic flux density exceeding 1 mT and below 2 mT, please use the actuator at ambient temperature exceeding 20°C and below 40°C.

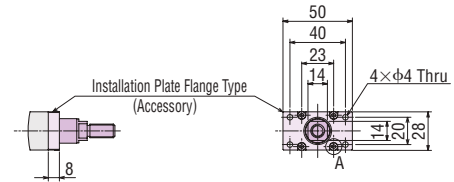
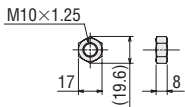
Dimensions (Unit: mm)

Motorized Cylinders

◇ EAC2 Standard Type



● Included Nut (1 piece)



*1 The motor cable outlet direction can be changed in 90° intervals in four directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

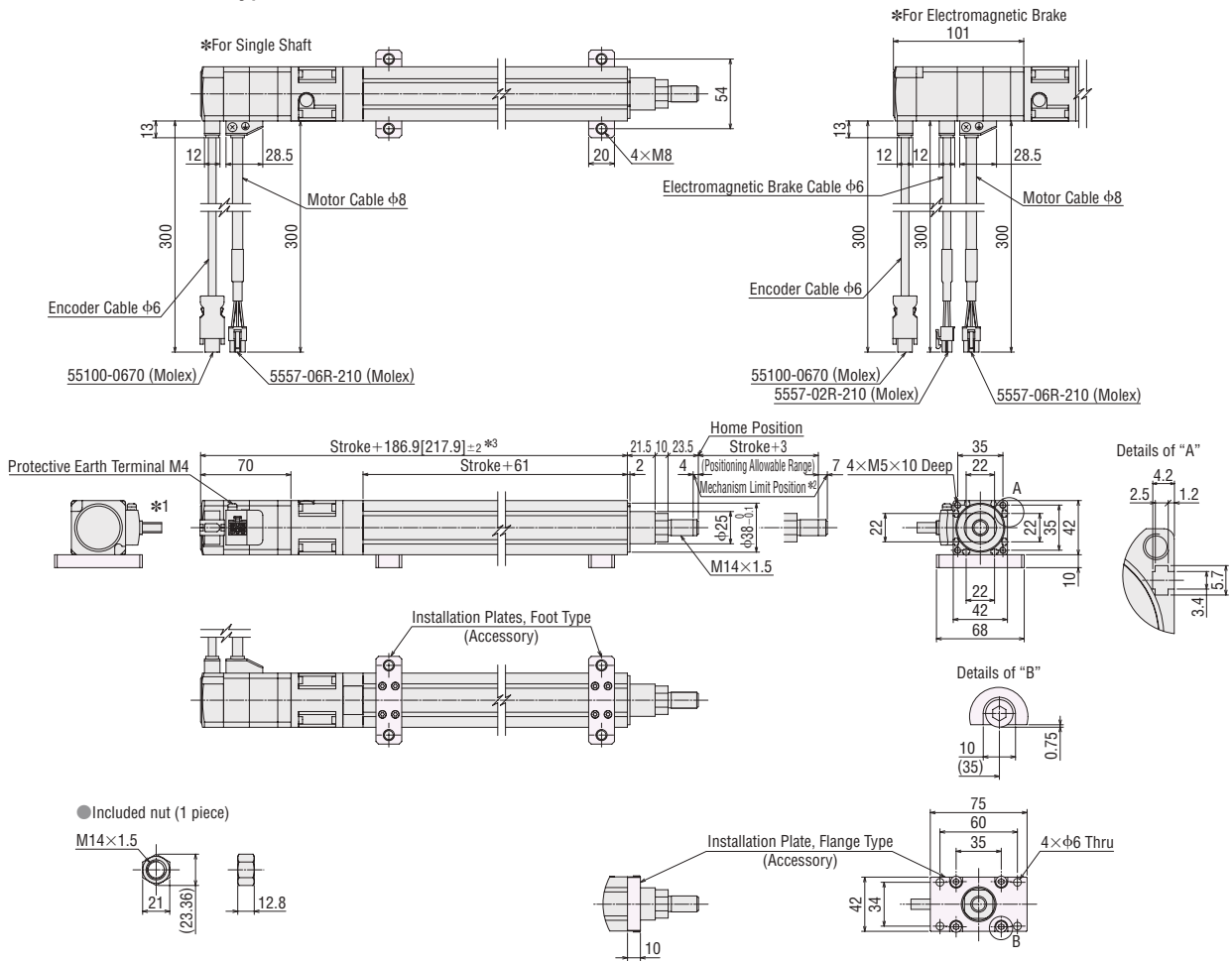
● Shaded areas are moving parts.

● Shaded areas are installation plates (accessories).

Stroke [mm]	50	100	150	
Hole Coefficient (n)	1	2	3	
Mass [kg]	Single Shaft	0.46	0.54	0.61

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

◇ EAC4 Standard Type



*1 The motor cable outlet direction can be changed in 90° intervals in four directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

*3 The brackets [] indicate the value for a product with an electromagnetic brake.

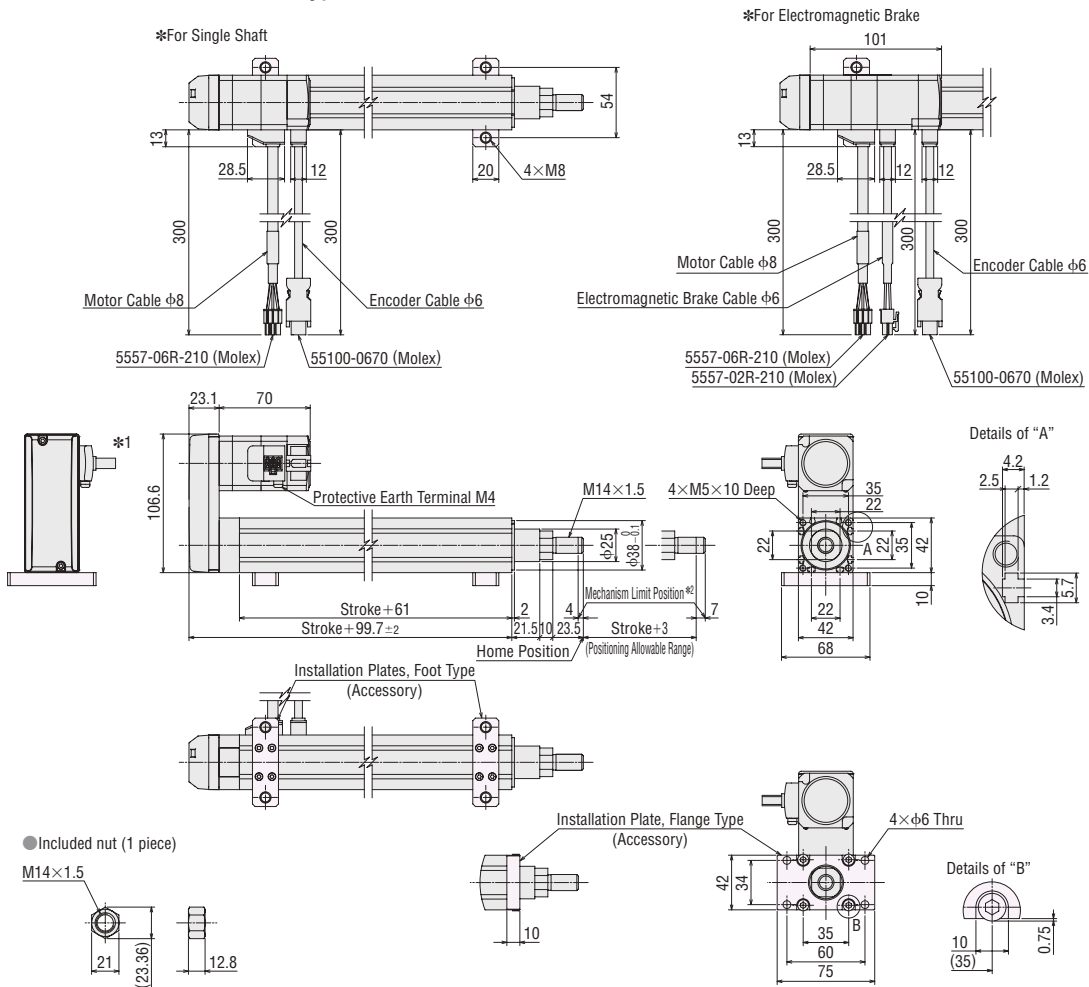
Stroke [mm]		50	100	150	200	250	300
	Single Shaft	1.0	1.2	1.4	1.6	1.7	1.9
Mass [kg]	Electromagnetic Brake Type	1.2	1.4	1.6	1.8	1.9	2.1

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

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◇ **EAC4R Side-Mounted Type**



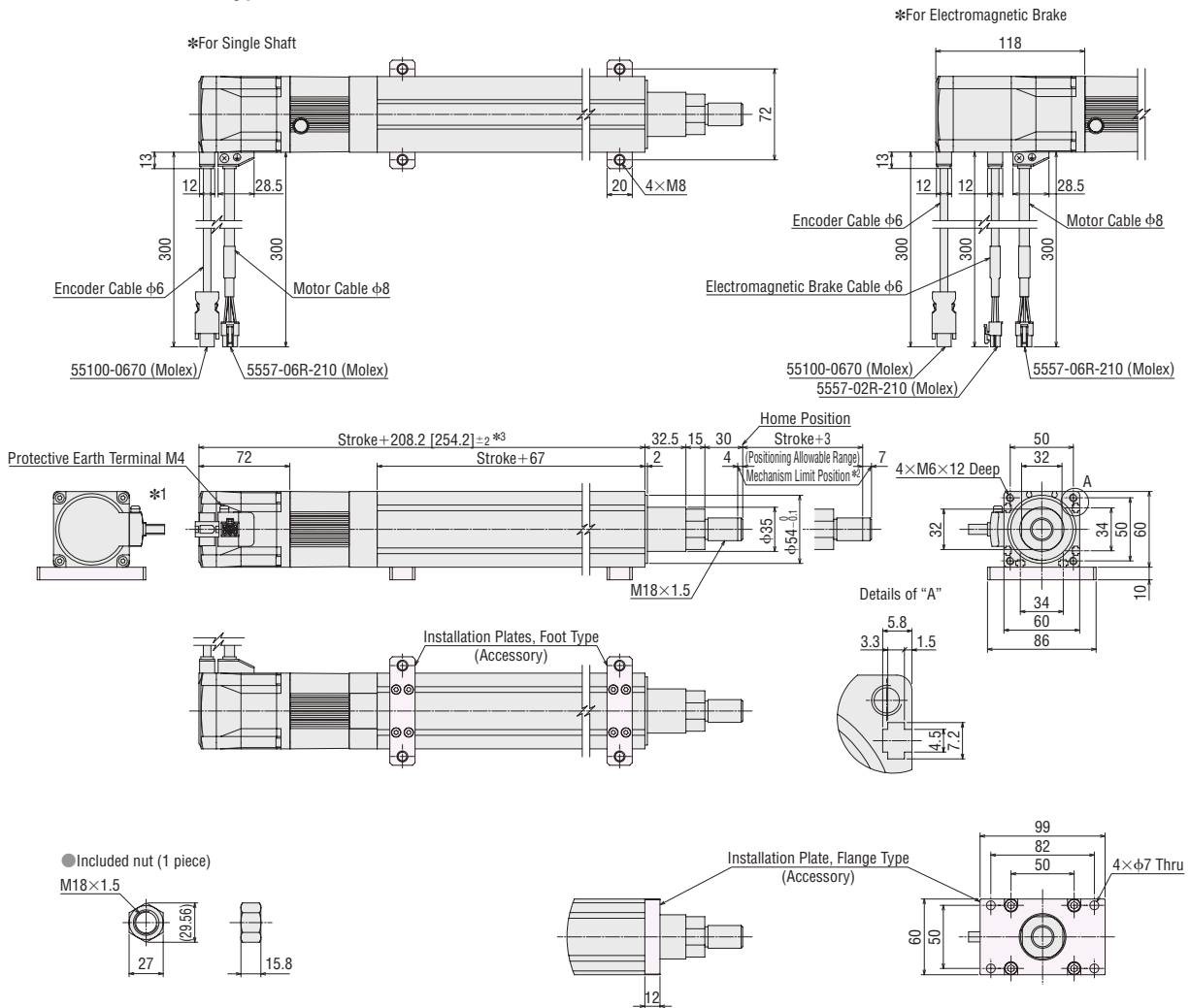
*1 The motor cable outlet direction can be changed in 90° intervals in three directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

Stroke [mm]		50	100	150	200	250	300
	Single Shaft	1.0	1.2	1.4	1.6	1.7	1.9
Mass [kg]	Electromagnetic Brake Type	1.2	1.4	1.6	1.8	1.9	2.1

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

◇ EAC6 Standard Type



- *1 The motor cable outlet direction can be changed in 90° intervals in four directions.
- *2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.
- *3 The brackets [] indicate the value for a product with an electromagnetic brake.

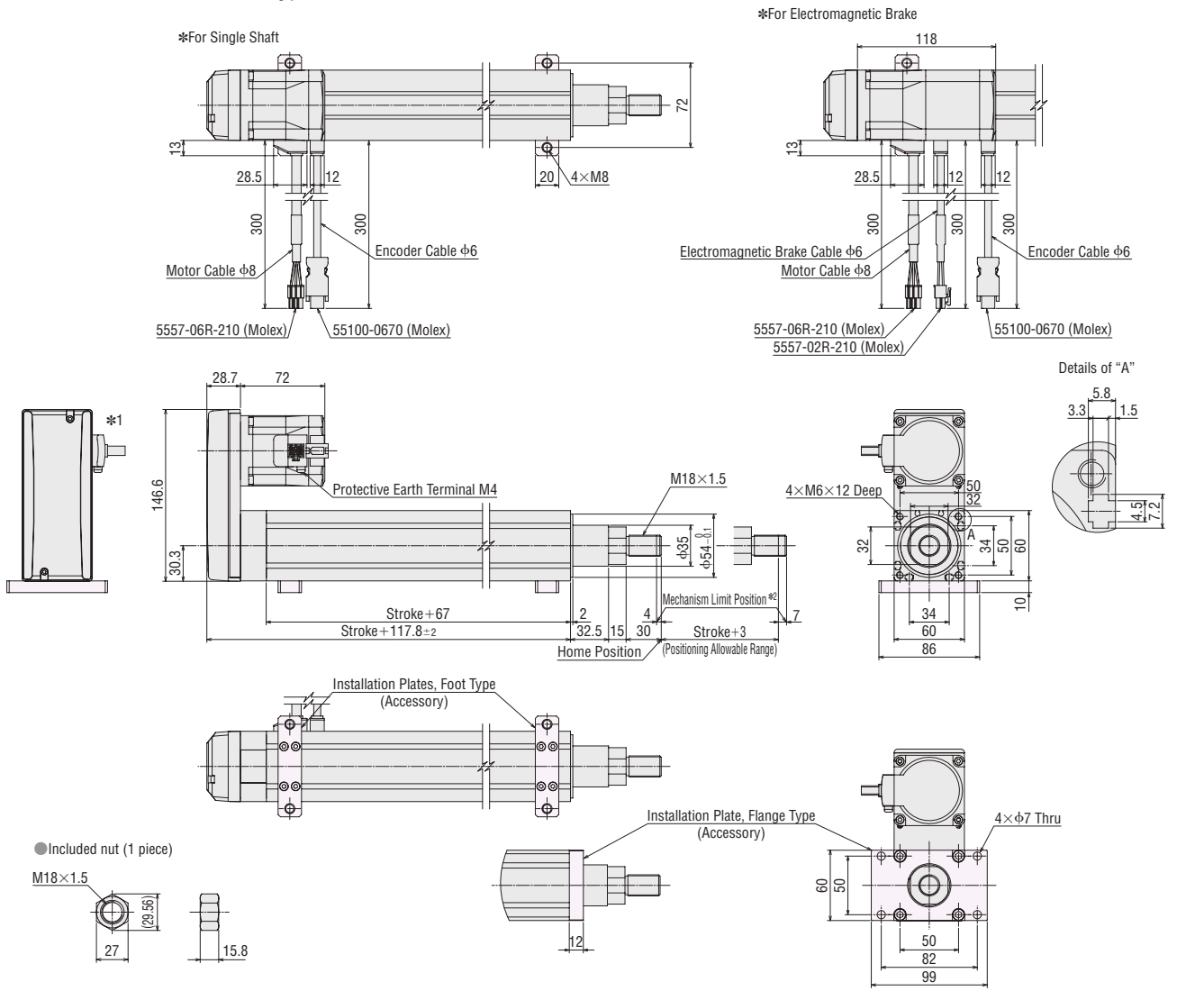
Stroke [mm]		50	100	150	200	250	300
	Single Shaft	2.6	3.0	3.4	3.7	4.1	4.5
Mass [kg]	Electromagnetic Brake Type	3.0	3.4	3.8	4.1	4.5	4.9

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

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◇ **EAC6R** Side-Mounted Type



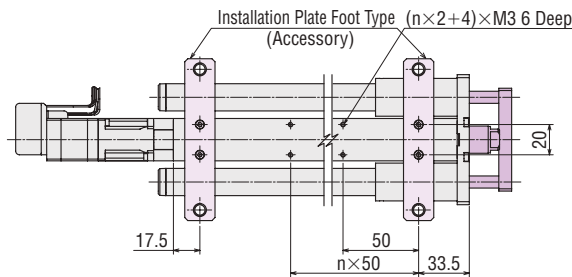
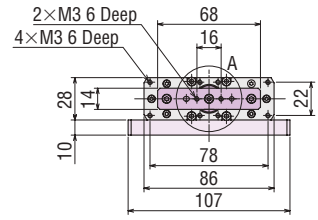
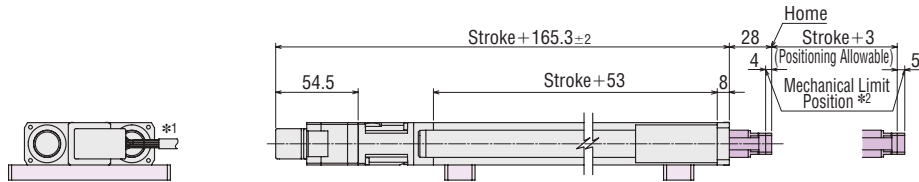
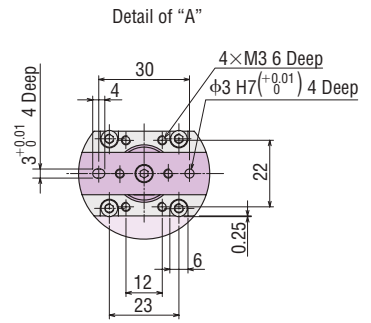
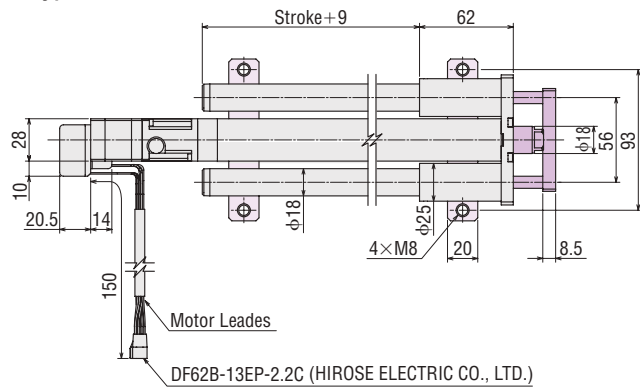
*1 The motor cable outlet direction can be changed in 90° intervals in three directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

Stroke [mm]		50	100	150	200	250	300
Mass [kg]	Single Shaft	2.6	3.0	3.4	3.7	4.1	4.5
	Electromagnetic Brake Type	3.0	3.4	3.8	4.1	4.5	4.9

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

◇ **EAC2W** Standard Type With Shaft Guide/With Shaft Guide Cover



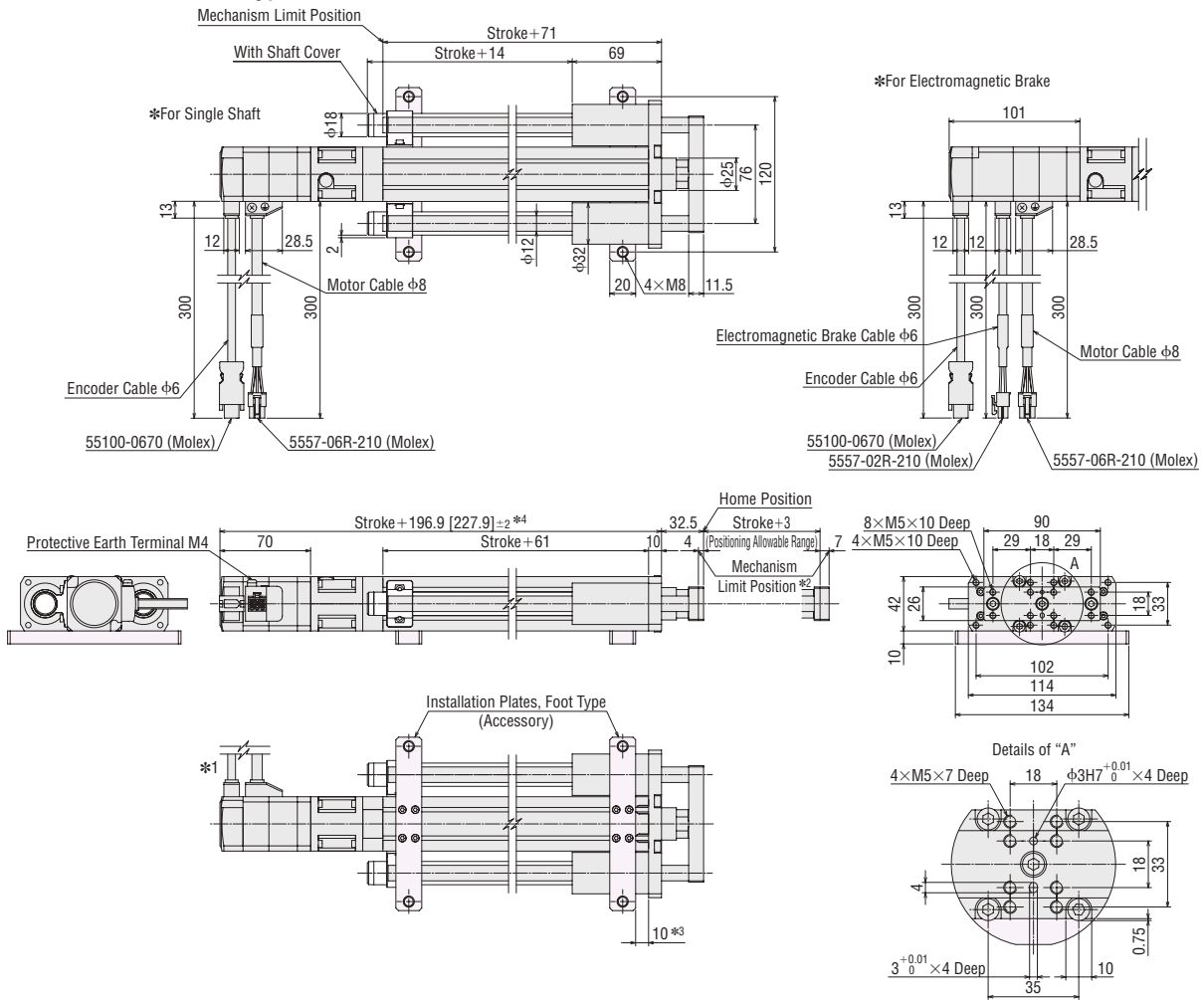
- *1 The motor cable outlet direction can be changed in 90° intervals in four directions.
- *2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.
- Shaded areas are moving parts.
- Shaded areas are installation plates (accessories).

Stroke [mm]	50	100	150	
Hole Coefficient (n)	1	2	3	
Mass [kg]	Single Shaft	0.78	0.92	1.10

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

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◇ **EAC4W Standard Type With Shaft Guide/With Shaft Guide Cover**



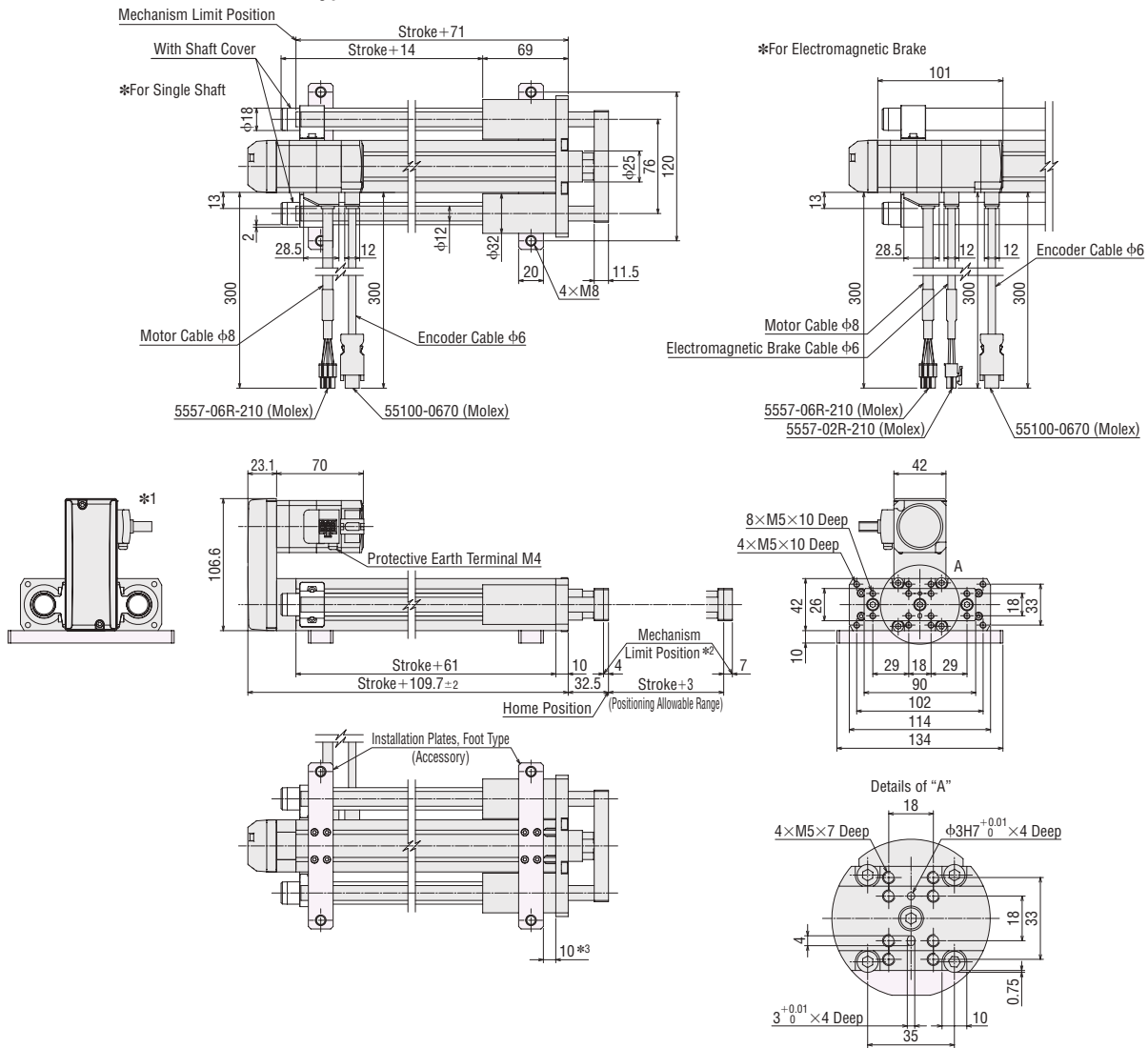
- *1 The motor cable outlet direction can be changed in 90° intervals in four directions.
- *2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.
- *3 The installation plate foot type cannot be installed on this part.
- *4 The brackets [] indicate the value for a product with an electromagnetic brake.

Stroke [mm]	50	100	150	200	250	300	
Mass [kg]	With Shaft Guide	1.7 (1.9)	2.0 (2.2)	2.3 (2.5)	2.5 (2.7)	2.8 (3.0)	3.1 (3.3)
	With Shaft Guide Cover	1.8 (1.9)	2.1 (2.3)	2.4 (2.6)	2.6 (2.8)	3.0 (3.1)	3.3 (3.5)

● The values in the parentheses () for the mass refer to the mass using models with electromagnetic brake.

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

◇ **EAC4RW Side-Mounted Type With Shaft Guide/With Shaft Guide Cover**



*1 The motor cable outlet direction can be changed in 90° intervals in three directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

*3 The installation plate foot type cannot be installed on this part.

Stroke [mm]		50	100	150	200	250	300
Mass [kg]	With Shaft Guide	1.7 (1.9)	2.0 (2.2)	2.3 (2.5)	2.5 (2.7)	2.8 (3.0)	3.1 (3.3)
	With Shaft Guide Cover	1.8 (1.9)	2.1 (2.3)	2.4 (2.6)	2.6 (2.8)	3.0 (3.1)	3.3 (3.5)

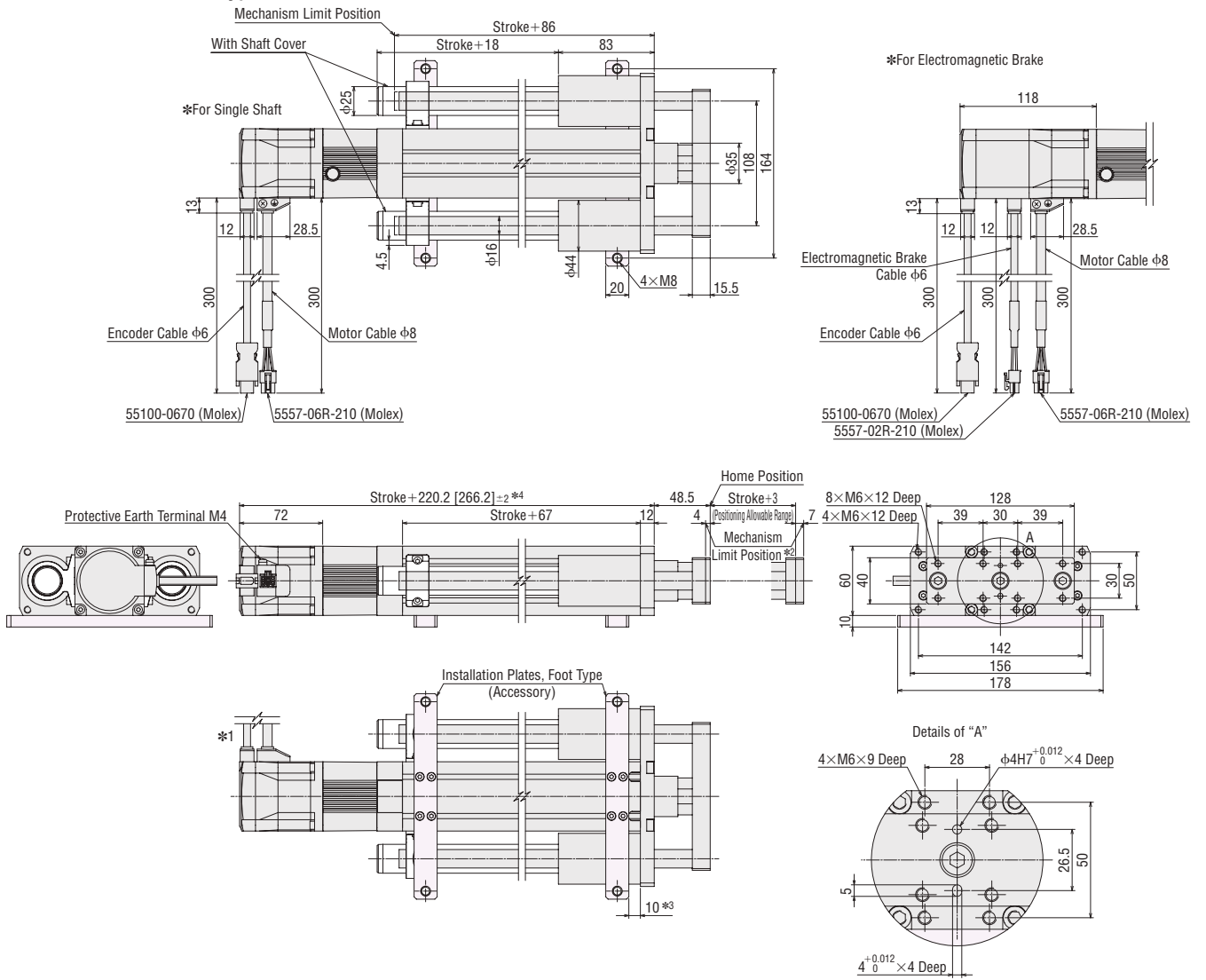
● The values in the parentheses () for the mass refer to the mass using models with electromagnetic brake.

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

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◇ **EAC6W Standard Type With Shaft Guide/With Shaft Guide Cover**



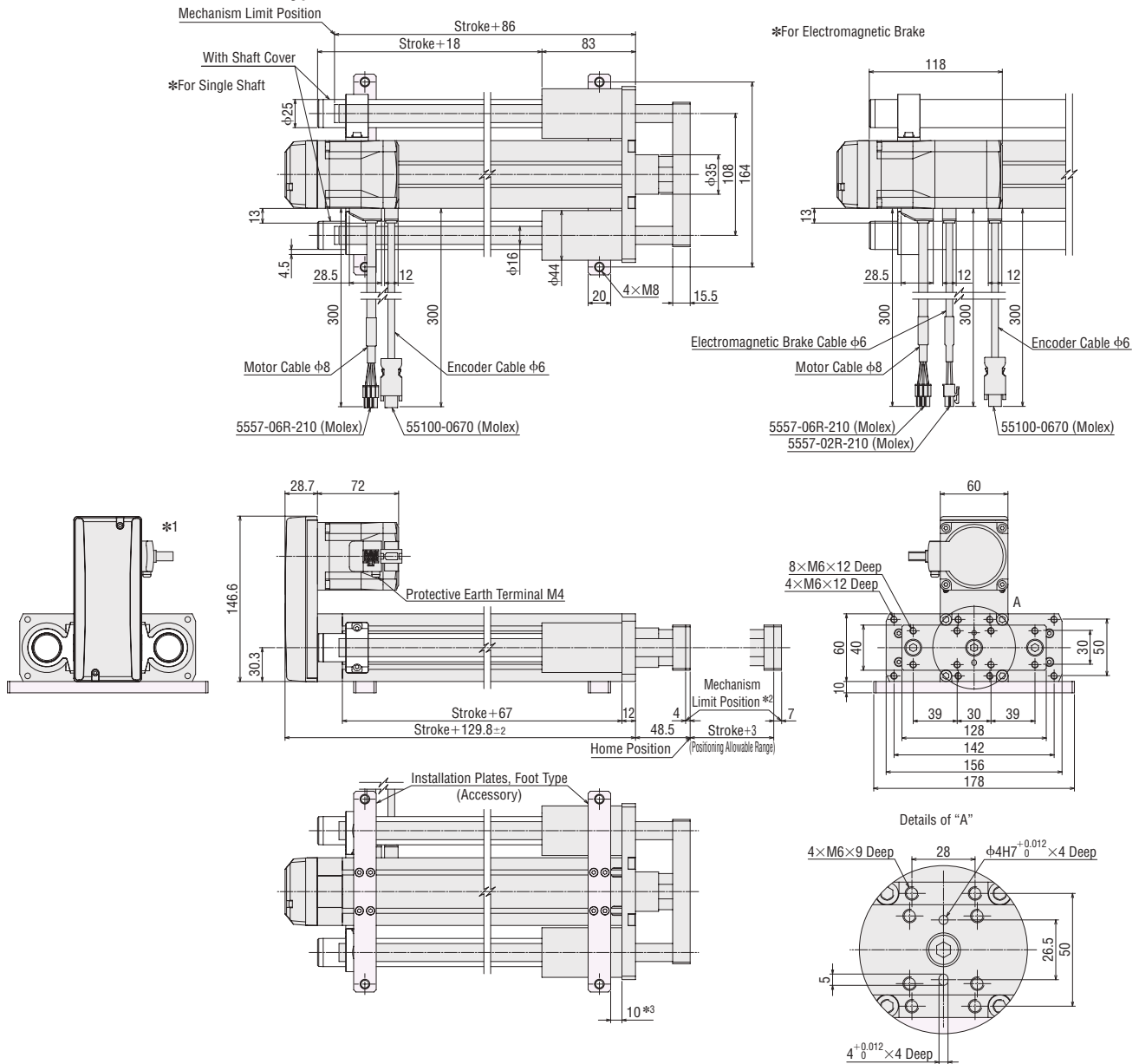
- *1 The motor cable outlet direction can be changed in 90° intervals in four directions.
- *2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.
- *3 The installation plate foot type cannot be installed on this part.
- *4 The brackets [] indicate the value for a product with an electromagnetic brake.

Stroke [mm]	50	100	150	200	250	300	
Mass [kg]	With Shaft Guide	4.1 (4.5)	4.7 (5.1)	5.2 (5.6)	5.7 (6.1)	6.3 (6.7)	6.8 (7.2)
	With Shaft Guide Cover	4.2 (4.6)	4.9 (5.3)	5.4 (5.8)	6.0 (6.4)	6.6 (7.0)	7.2 (7.6)

● The values in the parentheses () for the mass refer to the mass using models with electromagnetic brake.

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

◆ **EAC6RW** Side-Mounted Type With Shaft Guide/With Shaft Guide Cover



*1 The motor cable outlet direction can be changed in 90° intervals in three directions.

*2 During the pushing return-to-home operation, the rod moves to the position limit of the mechanism. The pushing return-to-home operation cannot be performed on the opposite side of the motor.

*3 The installation plate foot type cannot be installed on this part.

Stroke [mm]		50	100	150	200	250	300
Mass [kg]	With Shaft Guide	4.1 (4.5)	4.7 (5.1)	5.2 (5.6)	5.7 (6.1)	6.3 (6.7)	6.8 (7.2)
	With Shaft Guide Cover	4.2 (4.6)	4.9 (5.3)	5.4 (5.8)	6.0 (6.4)	6.6 (7.0)	7.2 (7.6)

● The values in the parentheses () for the mass refer to the mass using models with electromagnetic brake.

● For CAD data, please download from the Oriental Motor website.
<http://www.orientalmotor.com.sg>

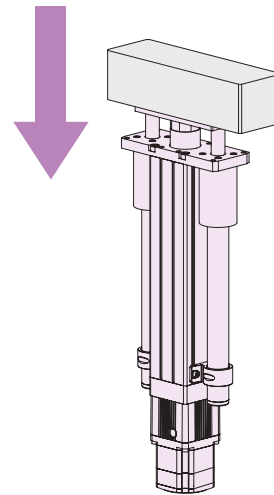
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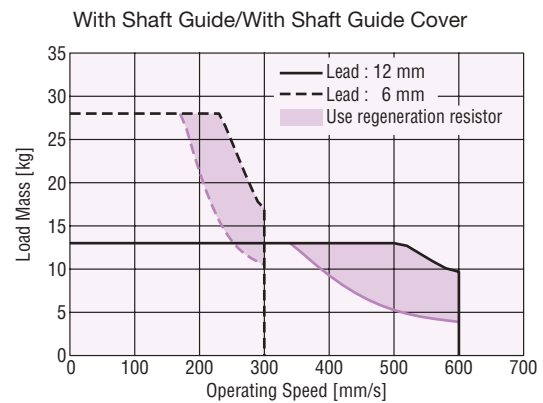
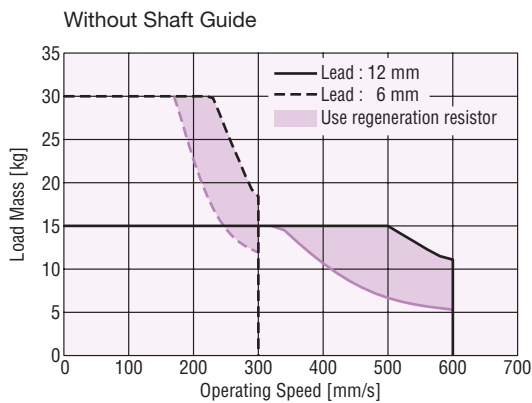
Using EAC6 (AC Input Type) for Vertical Driving

When operating the **EAC6*** type vertically, an alarm of the overvoltage protection may be detected depending on the operating conditions. In such case, refer to the operating speed - load mass characteristics below, and connect the accessory **RGB100** regeneration resistor (sold separately) to the driver.

*For AC Input type products equipped with the **AZ** series, specifications are common to all products of **D** (Lead 12mm)/**E** (Lead 6mm), standard type/side-mounted type.



Example of Use in Vertical Direction



Area in which the regeneration resistor **RGB100** is needed to use for the operation of **EAC6** (AC input type) products

Regeneration Resistor

When a regeneration resistor is attached to the special terminal on the driver, the regenerative power that is fed back from the motor is released as heat energy.



Product Line

Product Name	List Price	Applicable Product
RGB100	SGD56	AZ Series Equipped (AC Input)

Specifications

Item	Specifications
Continuous Regenerative Power	50 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Open: 150±7°C Close: 145±12°C (Normally Closed)
Thermostat Electrical Rating	120 VAC 4 A 30 VDC 4 A (Minimum current 5 mA)

● Install the regeneration resistor in the place which has the same heat radiation capability as heat radiation plate [Material: Aluminum 350 mm × 350 mm, 3 mm thick].

Motorized Cylinder and Driver Combinations

The product names for motorized cylinder and driver combinations are shown below.

The product name enclosed with () in the motorized cylinder product name is the installed motor product name.

When you would like to purchase the installed motor for maintenance, contact the nearest Oriental Motor sales office.

AC Power Supply Input

◇ Built-in Controller Type Single Shaft

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4 (2-E)(5-AZA)(8-D)(10)	EACM4(2E)(5)AZAC (AZM46AC)	AZD-(8)D
EAC4 (2-D)(5-AZA)(8-D)(10)	EACM4(2D)(5)AZAC (AZM46AC)	
EAC4 (2W-E)(5-AZA)(8-D)(10)	EACM4(2WE)(5)AZAC (AZM46AC)	
EAC4 (2W-D)(5-AZA)(8-D)(10)	EACM4(2WD)(5)AZAC (AZM46AC)	
EAC4 (2W-E)(5-AZA)(8-D)(10-G)	EACM4(2WE)(5)AZAC-G (AZM46AC)	
EAC4 (2W-D)(5-AZA)(8-D)(10-G)	EACM4(2WD)(5)AZAC-G (AZM46AC)	
EAC6 (2-E)(5-AZA)(8-D)(10)	EACM6(2E)(5)AZAC (AZM66AC)	
EAC6 (2-D)(5-AZA)(8-D)(10)	EACM6(2D)(5)AZAC (AZM66AC)	
EAC6 (2W-E)(5-AZA)(8-D)(10)	EACM6(2WE)(5)AZAC (AZM66AC)	
EAC6 (2W-D)(5-AZA)(8-D)(10)	EACM6(2WD)(5)AZAC (AZM66AC)	
EAC6 (2W-E)(5-AZA)(8-D)(10-G)	EACM6(2WE)(5)AZAC-G (AZM66AC)	
EAC6 (2W-D)(5-AZA)(8-D)(10-G)	EACM6(2WD)(5)AZAC-G (AZM66AC)	

◇ Built-in Controller Type With Electromagnetic Brake

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4 (2-E)(5-AZM)(8-D)(10)	EACM4(2E)(5)AZMC (AZM46MC)	AZD-(8)D
EAC4 (2-D)(5-AZM)(8-D)(10)	EACM4(2D)(5)AZMC (AZM46MC)	
EAC4 (2W-E)(5-AZM)(8-D)(10)	EACM4(2WE)(5)AZMC (AZM46MC)	
EAC4 (2W-D)(5-AZM)(8-D)(10)	EACM4(2WD)(5)AZMC (AZM46MC)	
EAC4 (2W-E)(5-AZM)(8-D)(10-G)	EACM4(2WE)(5)AZMC-G (AZM46MC)	
EAC4 (2W-D)(5-AZM)(8-D)(10-G)	EACM4(2WD)(5)AZMC-G (AZM46MC)	
EAC6 (2-E)(5-AZM)(8-D)(10)	EACM6(2E)(5)AZMC (AZM66MC)	
EAC6 (2-D)(5-AZM)(8-D)(10)	EACM6(2D)(5)AZMC (AZM66MC)	
EAC6 (2W-E)(5-AZM)(8-D)(10)	EACM6(2WE)(5)AZMC (AZM66MC)	
EAC6 (2W-D)(5-AZM)(8-D)(10)	EACM6(2WD)(5)AZMC (AZM66MC)	
EAC6 (2W-E)(5-AZM)(8-D)(10-G)	EACM6(2WE)(5)AZMC-G (AZM66MC)	
EAC6 (2W-D)(5-AZM)(8-D)(10-G)	EACM6(2WD)(5)AZMC-G (AZM66MC)	

◇ Pulse Input Type Single Shaft

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4 (2-E)(5-AZA)(8-10)	EACM4(2E)(5)AZAC (AZM46AC)	AZD-(8)
EAC4 (2-D)(5-AZA)(8-10)	EACM4(2D)(5)AZAC (AZM46AC)	
EAC4 (2W-E)(5-AZA)(8-10)	EACM4(2WE)(5)AZAC (AZM46AC)	
EAC4 (2W-D)(5-AZA)(8-10)	EACM4(2WD)(5)AZAC (AZM46AC)	
EAC4 (2W-E)(5-AZA)(8-10-G)	EACM4(2WE)(5)AZAC-G (AZM46AC)	
EAC4 (2W-D)(5-AZA)(8-10-G)	EACM4(2WD)(5)AZAC-G (AZM46AC)	
EAC6 (2-E)(5-AZA)(8-10)	EACM6(2E)(5)AZAC (AZM66AC)	
EAC6 (2-D)(5-AZA)(8-10)	EACM6(2D)(5)AZAC (AZM66AC)	
EAC6 (2W-E)(5-AZA)(8-10)	EACM6(2WE)(5)AZAC (AZM66AC)	
EAC6 (2W-D)(5-AZA)(8-10)	EACM6(2WD)(5)AZAC (AZM66AC)	
EAC6 (2W-E)(5-AZA)(8-10-G)	EACM6(2WE)(5)AZAC-G (AZM66AC)	
EAC6 (2W-D)(5-AZA)(8-10-G)	EACM6(2WD)(5)AZAC-G (AZM66AC)	

◇ Pulse Input Type With Electromagnetic Brake

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4 (2-E)(5-AZM)(8-10)	EACM4(2E)(5)AZMC (AZM46MC)	AZD-(8)
EAC4 (2-D)(5-AZM)(8-10)	EACM4(2D)(5)AZMC (AZM46MC)	
EAC4 (2W-E)(5-AZM)(8-10)	EACM4(2WE)(5)AZMC (AZM46MC)	
EAC4 (2W-D)(5-AZM)(8-10)	EACM4(2WD)(5)AZMC (AZM46MC)	
EAC4 (2W-E)(5-AZM)(8-10-G)	EACM4(2WE)(5)AZMC-G (AZM46MC)	
EAC4 (2W-D)(5-AZM)(8-10-G)	EACM4(2WD)(5)AZMC-G (AZM46MC)	
EAC6 (2-E)(5-AZM)(8-10)	EACM6(2E)(5)AZMC (AZM66MC)	
EAC6 (2-D)(5-AZM)(8-10)	EACM6(2D)(5)AZMC (AZM66MC)	
EAC6 (2W-E)(5-AZM)(8-10)	EACM6(2WE)(5)AZMC (AZM66MC)	
EAC6 (2W-D)(5-AZM)(8-10)	EACM6(2WD)(5)AZMC (AZM66MC)	
EAC6 (2W-E)(5-AZM)(8-10-G)	EACM6(2WE)(5)AZMC-G (AZM66MC)	
EAC6 (2W-D)(5-AZM)(8-10-G)	EACM6(2WD)(5)AZMC-G (AZM66MC)	

● DC Power Supply Input

◇ Built-in Controller Type Single Shaft

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC2-E⑤-AZAKD-⑩	EACM2E⑤AZAK (AZM24AK)	AZD-KD
EAC2-F⑤-AZAKD-⑩	EACM2F⑤AZAK (AZM24AK)	
EAC2W-E⑤-AZAKD-⑩-G	EACM2WE⑤AZAK-G (AZM24AK)	
EAC2W-F⑤-AZAKD-⑩-G	EACM2WF⑤AZAK-G (AZM24AK)	
EAC4②-E⑤-AZAKD-⑩	EACM4②E⑤AZAK (AZM46AK)	
EAC4②-D⑤-AZAKD-⑩	EACM4②D⑤AZAK (AZM46AK)	
EAC4②W-E⑤-AZAKD-⑩	EACM4②WE⑤AZAK (AZM46AK)	
EAC4②W-D⑤-AZAKD-⑩	EACM4②WD⑤AZAK (AZM46AK)	
EAC4②W-E⑤-AZAKD-⑩-G	EACM4②WE⑤AZAK-G (AZM46AK)	
EAC4②W-D⑤-AZAKD-⑩-G	EACM4②WD⑤AZAK-G (AZM46AK)	
EAC6②-E⑤-AZAKD-⑩	EACM6②E⑤AZAK (AZM66AK)	
EAC6②-D⑤-AZAKD-⑩	EACM6②D⑤AZAK (AZM66AK)	
EAC6②W-E⑤-AZAKD-⑩	EACM6②WE⑤AZAK (AZM66AK)	
EAC6②W-D⑤-AZAKD-⑩	EACM6②WD⑤AZAK (AZM66AK)	
EAC6②W-E⑤-AZAKD-⑩-G	EACM6②WE⑤AZAK-G (AZM66AK)	
EAC6②W-D⑤-AZAKD-⑩-G	EACM6②WD⑤AZAK-G (AZM66AK)	

◇ Pulse Input Type Single Shaft

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC2-E⑤-AZAK-⑩	EACM2E⑤AZAK (AZM24AK)	AZD-K
EAC2-F⑤-AZAK-⑩	EACM2F⑤AZAK (AZM24AK)	
EAC2W-E⑤-AZAK-⑩-G	EACM2WE⑤AZAK-G (AZM24AK)	
EAC2W-F⑤-AZAK-⑩-G	EACM2WF⑤AZAK-G (AZM24AK)	
EAC4②-E⑤-AZAK-⑩	EACM4②E⑤AZAK (AZM46AK)	
EAC4②-D⑤-AZAK-⑩	EACM4②D⑤AZAK (AZM46AK)	
EAC4②W-E⑤-AZAK-⑩	EACM4②WE⑤AZAK (AZM46AK)	
EAC4②W-D⑤-AZAK-⑩	EACM4②WD⑤AZAK (AZM46AK)	
EAC4②W-E⑤-AZAK-⑩-G	EACM4②WE⑤AZAK-G (AZM46AK)	
EAC4②W-D⑤-AZAK-⑩-G	EACM4②WD⑤AZAK-G (AZM46AK)	
EAC6②-E⑤-AZAK-⑩	EACM6②E⑤AZAK (AZM66AK)	
EAC6②-D⑤-AZAK-⑩	EACM6②D⑤AZAK (AZM66AK)	
EAC6②W-E⑤-AZAK-⑩	EACM6②WE⑤AZAK (AZM66AK)	
EAC6②W-D⑤-AZAK-⑩	EACM6②WD⑤AZAK (AZM66AK)	
EAC6②W-E⑤-AZAK-⑩-G	EACM6②WE⑤AZAK-G (AZM66AK)	
EAC6②W-D⑤-AZAK-⑩-G	EACM6②WD⑤AZAK-G (AZM66AK)	







◇ Built-in Controller Type With Electromagnetic Brake


Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4②-E⑤-AZMKD-⑩	EACM4②E⑤AZMK (AZM46MK)	AZD-KD
EAC4②-D⑤-AZMKD-⑩	EACM4②D⑤AZMK (AZM46MK)	
EAC4②W-E⑤-AZMKD-⑩	EACM4②WE⑤AZMK (AZM46MK)	
EAC4②W-D⑤-AZMKD-⑩	EACM4②WD⑤AZMK (AZM46MK)	
EAC4②W-E⑤-AZMKD-⑩-G	EACM4②WE⑤AZMK-G (AZM46MK)	
EAC4②W-D⑤-AZMKD-⑩-G	EACM4②WD⑤AZMK-G (AZM46MK)	
EAC6②-E⑤-AZMKD-⑩	EACM6②E⑤AZMK (AZM66MK)	
EAC6②-D⑤-AZMKD-⑩	EACM6②D⑤AZMK (AZM66MK)	
EAC6②W-E⑤-AZMKD-⑩	EACM6②WE⑤AZMK (AZM66MK)	
EAC6②W-D⑤-AZMKD-⑩	EACM6②WD⑤AZMK (AZM66MK)	
EAC6②W-E⑤-AZMKD-⑩-G	EACM6②WE⑤AZMK-G (AZM66MK)	
EAC6②W-D⑤-AZMKD-⑩-G	EACM6②WD⑤AZMK-G (AZM66MK)	

◇ Pulse Input Type With Electromagnetic Brake

Product Name	Motorized Cylinder Product Name (Installed motor product name)	Driver Product Name
EAC4②-E⑤-AZMK-⑩	EACM4②E⑤AZMK (AZM46MK)	AZD-K
EAC4②-D⑤-AZMK-⑩	EACM4②D⑤AZMK (AZM46MK)	
EAC4②W-E⑤-AZMK-⑩	EACM4②WE⑤AZMK (AZM46MK)	
EAC4②W-D⑤-AZMK-⑩	EACM4②WD⑤AZMK (AZM46MK)	
EAC4②W-E⑤-AZMK-⑩-G	EACM4②WE⑤AZMK-G (AZM46MK)	
EAC4②W-D⑤-AZMK-⑩-G	EACM4②WD⑤AZMK-G (AZM46MK)	
EAC6②-E⑤-AZMK-⑩	EACM6②E⑤AZMK (AZM66MK)	
EAC6②-D⑤-AZMK-⑩	EACM6②D⑤AZMK (AZM66MK)	
EAC6②W-E⑤-AZMK-⑩	EACM6②WE⑤AZMK (AZM66MK)	
EAC6②W-D⑤-AZMK-⑩	EACM6②WD⑤AZMK (AZM66MK)	
EAC6②W-E⑤-AZMK-⑩-G	EACM6②WE⑤AZMK-G (AZM66MK)	
EAC6②W-D⑤-AZMK-⑩-G	EACM6②WD⑤AZMK-G (AZM66MK)	

Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of  Driver Specifications,  RS-485 Communication Specifications,  Dimensions (Drivers, Connection Cables),  Cautions for Using Connection Cables,  Connection and Operation,  Accessories (Extension Cables).



● The following symbols and number are substituted for ②, ⑤, ⑧ and ⑩ in the product names.
 ②: L (Left Side-Mounted) or R (Right Side-Mounted) indicating the motor installation direction is substituted. For the standard type, no symbol is substituted for this.
 ⑤: A number indicating the stroke length is substituted.
 ⑧: A (Single-Phase 100-120 VAC) or C (Single-Phase/Three-Phase 200-240 VAC) indicating the type of power supply voltage is substituted.
 ⑩: A number indicating the length of desired connection cable, if included. 1 (1 m), 2 (2 m) or 3 (3 m) is substituted. If no connection cable is included, the product name does not have ⑩.

Accessories (Sold Separately)

Connection Cable Sets, Flexible Connection Cable Sets Extension Cable Sets, Flexible Extension Cable Sets

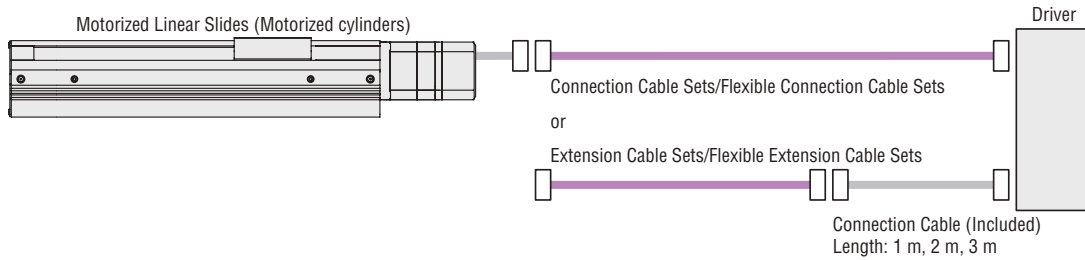
The **EAC** Series are available with a cable (1 m, 2 m or 3 m) for connecting the motor to the driver, and also without a cable.

If the distance between the motor and driver is extended to 3 m or longer, a connection cable set or extension cable set must be used.

The maximum length of the cable extension is 20 m (using included cable).

Connection cable sets and extension cable sets come as a set of cables for motor, encoder, and electromagnetic brake (electromagnetic brake type only).

Use a flexible connection cable set or flexible extension cable set if the cable will be bent repeatedly.



Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect to a driver, use an accessory connection cable (sold separately) or the connection cable included in the product (if included).

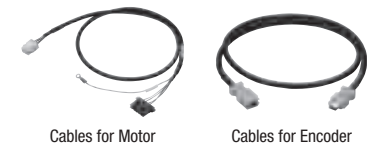
AC Power Supply Input

Connection Cable Sets, Flexible Connection Cable Sets

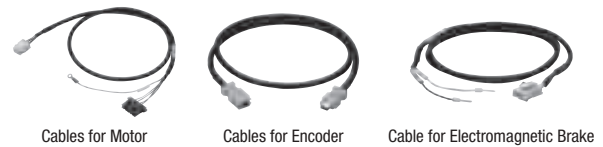
Product Line

● Connection Cable Sets

◇ For Standard Motor



◇ For Electromagnetic Brake Type Motor



Type	Product Name	Length L (m)	List Price
Connection Cable Sets	CC005VZF	0.5	SGD38
	CC010VZF	1	SGD38
	CC015VZF	1.5	SGD44
	CC020VZF	2	SGD50
	CC025VZF	2.5	SGD56
	CC030VZF	3	SGD63
	CC040VZF	4	SGD98
	CC050VZF	5	SGD110
	CC070VZF	7	SGD136
	CC100VZF	10	SGD176
Flexible Connection Cable Sets	CC150VZF	15	SGD244
	CC200VZF	20	SGD310
	CC005VZR	0.5	SGD84
	CC010VZR	1	SGD84
	CC015VZR	1.5	SGD92
	CC020VZR	2	SGD99
	CC025VZR	2.5	SGD106
	CC030VZR	3	SGD111
	CC040VZR	4	SGD126
	CC050VZR	5	SGD141
Flexible Connection Cable Sets	CC070VZR	7	SGD180
	CC100VZR	10	SGD236
	CC150VZR	15	SGD333
	CC200VZR	20	SGD426

Type	Product Name	Length L (m)	List Price
Connection Cable Sets	CC005VZFB	0.5	SGD53
	CC010VZFB	1	SGD53
	CC015VZFB	1.5	SGD60
	CC020VZFB	2	SGD68
	CC025VZFB	2.5	SGD75
	CC030VZFB	3	SGD83
	CC040VZFB	4	SGD121
	CC050VZFB	5	SGD135
	CC070VZFB	7	SGD166
	CC100VZFB	10	SGD214
Flexible Connection Cable Sets	CC150VZFB	15	SGD294
	CC200VZFB	20	SGD373
	CC005VZRB	0.5	SGD114
	CC010VZRB	1	SGD114
	CC015VZRB	1.5	SGD124
	CC020VZRB	2	SGD134
	CC025VZRB	2.5	SGD143
	CC030VZRB	3	SGD151
	CC040VZRB	4	SGD171
	CC050VZRB	5	SGD191
Flexible Connection Cable Sets	CC070VZRB	7	SGD240
	CC100VZRB	10	SGD311
	CC150VZRB	15	SGD433
	CC200VZRB	20	SGD551

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

Extension Cable Sets

For Standard Motor



Cables for Motor Cables for Encoder

Type	Product Name	Length L (m)	List Price
Extension Cable Sets	CC010VZFT	1	SGD71
	CC020VZFT	2	SGD81
	CC030VZFT	3	SGD91
	CC050VZFT	5	SGD110
	CC070VZFT	7	SGD136
	CC100VZFT	10	SGD176
	CC150VZFT	15	SGD244
Flexible Extension Cable Sets	CC010VZRT	1	SGD84
	CC020VZRT	2	SGD99
	CC030VZRT	3	SGD111
	CC050VZRT	5	SGD141
	CC070VZRT	7	SGD180
	CC100VZRT	10	SGD236
	CC150VZRT	15	SGD333

For Electromagnetic Brake Type Motor



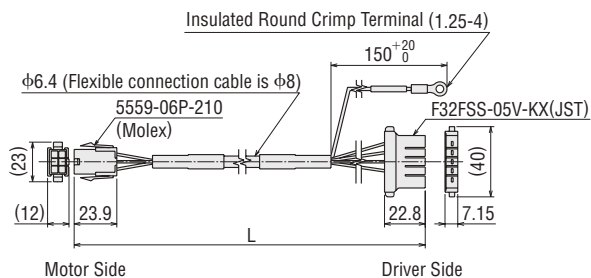
Cables for Motor Cables for Encoder Cable for Electromagnetic Brake

Type	Product Name	Length L (m)	List Price
Extension Cable Sets	CC010VZFBT	1	SGD86
	CC020VZFBT	2	SGD98
	CC030VZFBT	3	SGD111
	CC050VZFBT	5	SGD135
	CC070VZFBT	7	SGD166
	CC100VZFBT	10	SGD214
	CC150VZFBT	15	SGD294
Flexible Extension Cable Sets	CC010VZRBT	1	SGD114
	CC020VZRBT	2	SGD134
	CC030VZRBT	3	SGD151
	CC050VZRBT	5	SGD191
	CC070VZRBT	7	SGD240
	CC100VZRBT	10	SGD311
	CC150VZRBT	15	SGD433

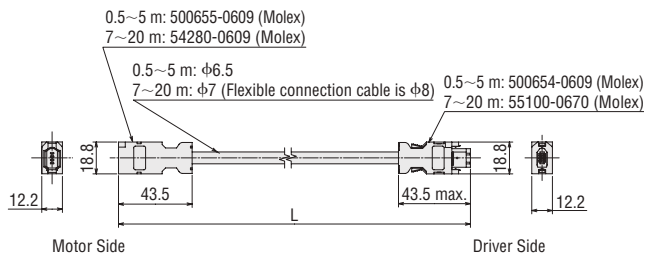
Dimensions (Unit: mm)

Connection Cable Set, Flexible Connection Cable Set

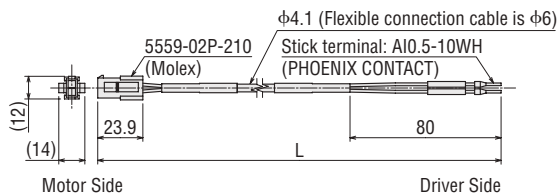
Cables for Motor



Cables for Encoder

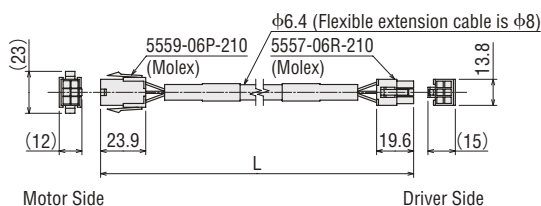


Cable for Electromagnetic Brake

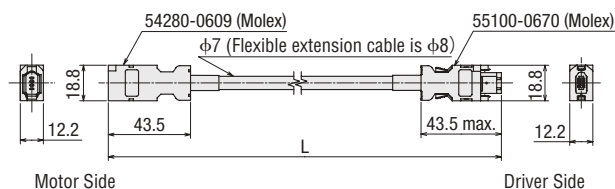


Extension Cable Set, Flexible Extension Cable Set

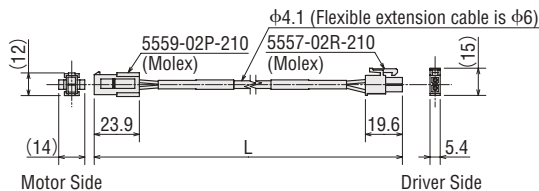
Cables for Motor



Cables for Encoder



Cable for Electromagnetic Brake



Connection Cable Sets, Flexible Connection Cable Sets

Product Line

[For **EAC2**]

- Connection Cable Sets
- ◇ For Standard Motor



Type	Product Name	Length L (m)	List Price
Connection Cable Sets	CC005VZ2F2	0.5	SGD38
	CC010VZ2F2	1	SGD38
	CC015VZ2F2	1.5	SGD44
	CC020VZ2F2	2	SGD50
	CC025VZ2F2	2.5	SGD56
	CC030VZ2F2	3	SGD63
	CC040VZ2F2	4	SGD98
	CC050VZ2F2	5	SGD110
	CC070VZ2F2	7	SGD136
	CC100VZ2F2	10	SGD176
Flexible Connection Cable Sets	CC150VZ2F2	15	SGD244
	CC200VZ2F2	20	SGD310
	CC005VZ2R2	0.5	SGD84
	CC010VZ2R2	1	SGD84
	CC015VZ2R2	1.5	SGD92
	CC020VZ2R2	2	SGD99
	CC025VZ2R2	2.5	SGD106
	CC030VZ2R2	3	SGD111
	CC040VZ2R2	4	SGD126
	CC050VZ2R2	5	SGD141
Flexible Connection Cable Sets	CC070VZ2R2	7	SGD180
	CC100VZ2R2	10	SGD236
	CC150VZ2R2	15	SGD333
	CC200VZ2R2	20	SGD426

[For **EAC4**, **EAC6**]

- Connection Cable Sets
- ◇ For Standard Motor



Cables for Motor

Cables for Encoder

Type	Product Name	Length L (m)	List Price
Connection Cable Sets	CC005VZF2	0.5	SGD38
	CC010VZF2	1	SGD38
	CC015VZF2	1.5	SGD44
	CC020VZF2	2	SGD50
	CC025VZF2	2.5	SGD56
	CC030VZF2	3	SGD63
	CC040VZF2	4	SGD98
	CC050VZF2	5	SGD110
	CC070VZF2	7	SGD136
	Flexible Connection Cable Sets	CC100VZF2	10
CC150VZF2		15	SGD244
CC200VZF2		20	SGD310
CC005VZR2		0.5	SGD84
CC010VZR2		1	SGD84
CC015VZR2		1.5	SGD92
CC020VZR2		2	SGD99
CC025VZR2		2.5	SGD106
CC030VZR2		3	SGD111
Flexible Connection Cable Sets		CC040VZR2	4
	CC050VZR2	5	SGD141
	CC070VZR2	7	SGD180
	CC100VZR2	10	SGD236
	CC150VZR2	15	SGD333
Flexible Connection Cable Sets	CC200VZR2	20	SGD426

- ◇ For Electromagnetic Brake Type Motor



Cables for Motor

Cables for Encoder

Cable for Electromagnetic Brake

Type	Product Name	Length L (m)	List Price
Connection Cable Sets	CC005VZFB2	0.5	SGD53
	CC010VZFB2	1	SGD53
	CC015VZFB2	1.5	SGD60
	CC020VZFB2	2	SGD68
	CC025VZFB2	2.5	SGD75
	CC030VZFB2	3	SGD83
	CC040VZFB2	4	SGD121
	CC050VZFB2	5	SGD135
	CC070VZFB2	7	SGD166
	Flexible Connection Cable Sets	CC100VZFB2	10
CC150VZFB2		15	SGD294
CC200VZFB2		20	SGD373
CC005VZRB2		0.5	SGD114
CC010VZRB2		1	SGD114
CC015VZRB2		1.5	SGD124
CC020VZRB2		2	SGD134
CC025VZRB2		2.5	SGD143
CC030VZRB2		3	SGD151
Flexible Connection Cable Sets		CC040VZRB2	4
	CC050VZRB2	5	SGD191
	CC070VZRB2	7	SGD240
	CC100VZRB2	10	SGD311
	CC150VZRB2	15	SGD433
Flexible Connection Cable Sets	CC200VZRB2	20	SGD551

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

[For **EAC2**]

- Extension Cable Sets
- ◇ For Standard Motor



Type	Product Name	Length L (m)	List Price
Extension Cable Sets	CC010VZ2FT	1	SGD71
	CC020VZ2FT	2	SGD81
	CC030VZ2FT	3	SGD91
	CC050VZ2FT	5	SGD110
	CC070VZ2FT	7	SGD136
	CC100VZ2FT	10	SGD176
	CC150VZ2FT	15	SGD244
Flexible Extension Cable Sets	CC010VZ2RT	1	SGD84
	CC020VZ2RT	2	SGD99
	CC030VZ2RT	3	SGD111
	CC050VZ2RT	5	SGD141
	CC070VZ2RT	7	SGD180
	CC100VZ2RT	10	SGD236
	CC150VZ2RT	15	SGD333

[For **EAC4, EAC6**]

- Extension Cable Sets
- ◇ For Standard Motor



Cables for Motor



Cables for Encoder

Type	Product Name	Length L (m)	List Price
Extension Cable Sets	CC010VZFT	1	SGD71
	CC020VZFT	2	SGD81
	CC030VZFT	3	SGD91
	CC050VZFT	5	SGD110
	CC070VZFT	7	SGD136
	CC100VZFT	10	SGD176
	CC150VZFT	15	SGD244
Flexible Extension Cable Sets	CC010VZRT	1	SGD84
	CC020VZRT	2	SGD99
	CC030VZRT	3	SGD111
	CC050VZRT	5	SGD141
	CC070VZRT	7	SGD180
	CC100VZRT	10	SGD236
	CC150VZRT	15	SGD333

- ◇ For Electromagnetic Brake Type Motor



Cables for Motor



Cables for Encoder



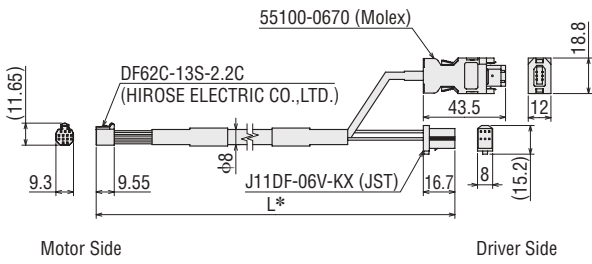
Cable for Electromagnetic Brake

Type	Product Name	Length L (m)	List Price
Extension Cable Sets	CC010VZFBT	1	SGD86
	CC020VZFBT	2	SGD98
	CC030VZFBT	3	SGD111
	CC050VZFBT	5	SGD135
	CC070VZFBT	7	SGD166
	CC100VZFBT	10	SGD214
	CC150VZFBT	15	SGD294
Flexible Extension Cable Sets	CC010VZRBT	1	SGD114
	CC020VZRBT	2	SGD134
	CC030VZRBT	3	SGD151
	CC050VZRBT	5	SGD191
	CC070VZRBT	7	SGD240
	CC100VZRBT	10	SGD311
	CC150VZRBT	15	SGD433

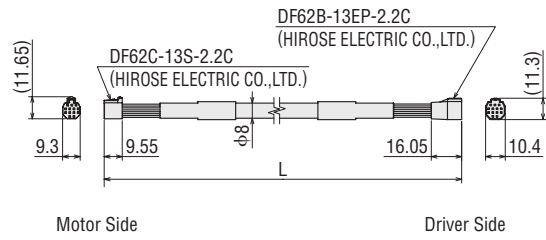
Dimensions (Unit: mm)

[For **EAC2**]

● Connection Cable Set, Flexible Connection Cable Set



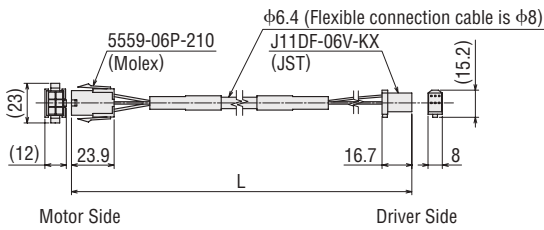
● Extension Cable Set, Flexible Extension Cable Set



[For **EAC4, EAC6**]

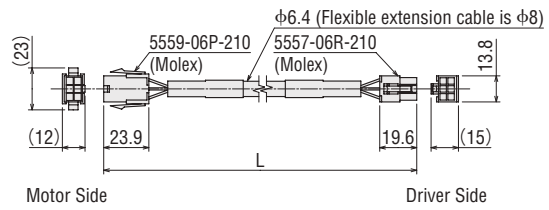
● Connection Cable Set, Flexible Connection Cable Set

◇ Cables for Motor

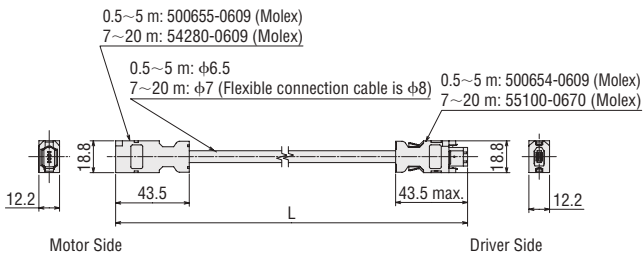


● Extension Cable Set, Flexible Extension Cable Set

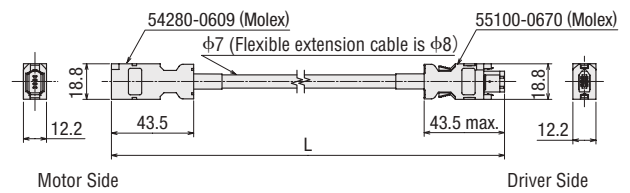
◇ Cables for Motor



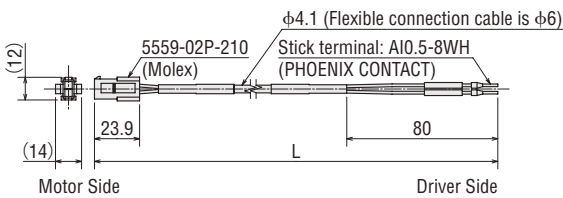
◇ Cables for Encoder



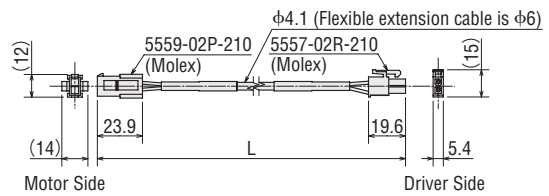
◇ Cables for Encoder



◇ Cable for Electromagnetic Brake



◇ Cable for Electromagnetic Brake

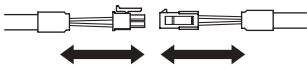
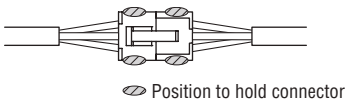


Notes on Use of Cables

Notes on Connecting

Make sure to hold the connector when inserting/disconnecting the connector.

Pulling the cable may result in a bad connection.



When Inserting the Connector

Be sure to hold the connector and firmly insert it straight into the socket.

Inserting the connector at an angle may damage the terminal or result in a bad connection.

When Disconnecting the Connector

While releasing the lock of the connector, pull it out straight.

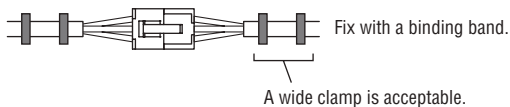
Pulling the cable (lead wire) may damage the connector.

Notes on Connecting the Flexible Cables

Do not bend the cable with the connector part. Stress may be applied to connectors and terminals, which may cause poor contact or disconnection.

Method for Fixing the Cable

Fix in two places so that the cable does not move.



Wiring Length and Bending Radius of Cables

Wire it with an appropriate length so that it will not be pulled even if the cable moves.

The bending radius (R) should be at least 6 times the cable diameter.



Cable Interference

When wiring in the cable holder, make sure that the cables do not interfere with each other. Stress may be applied to the cable, which may cause an early disconnection.

Please use after checking the cautions on the cable holder.

Twist of Cable

Wire so that the cable does not twist. Flexing the cable in a twisted state will cause an early disconnection.

After wiring, please check that there is no twist on the cable as a guideline, such as printing on the surface of the cable.

Support Software MEXE02

In addition to operating data and various parameter settings with a computer, you can perform teaching and monitor I/O and operating speed waveform with Support Software.

Support Software can be downloaded from the Oriental Motor website.

Oriental Motor can also provide a CD-ROM.

Visit our website, or contact the nearest Oriental Motor sales office.

Computer and Driver Connection

Use a USB cable of the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less Shape: A-mini-B

System Requirements

Operating System (OS)

The 32 bit (x86) edition and 64 bit (x64) edition are supported.

- Microsoft Windows XP Service Pack 3*
- Microsoft Windows Vista Service Pack 2
- Microsoft Windows 7 Service Pack 1
- Microsoft Windows 8
- Microsoft Windows 8.1

*For the 64-bit (x64) version, Service Pack 2 is used.

Computer

Recommended CPU*1	Intel Core processor 2 GHz or faster (OS must be supported)
Display	Video adapter and monitor with a minimum resolution of XGA (1024 × 768)
Recommended Memory*1	32 bit (x86) edition: 1 GB or more 64 bit (x64) edition: 2 GB or more
Hard Disk*2	Free disk space of at least 60 MB
USB Port	USB2.0 1 port
Disk Device	CD-ROM drive (for installation)

*1 The system requirements for the OS must be met.

*2 For **MEXE02**, Microsoft .NET Framework 4 Client Profile is required. If not installed, it will be installed automatically. For 64 bit (x64) or 32 bit (x86) editions OS, an additional 1.5 GB or 600 MB of free space, respectively, may be required.

- Windows and Windows Vista are registered trademarks of Microsoft Corporation in the United States and other countries.
- Intel and Core are registered trademarks or trademarks of Intel Corporation in the United States and other countries.
- For the latest information of operating environment, refer to the Oriental Motor website.

Note

• Depending on your system environment, the required memory and hard disk may vary.

General-Purpose Cables for I/O Signals

General-purpose multi-core cables provide convenient connection between a driver and programmable controller.



RS-485 Communication Cables

This cable is used to link drivers in multi-axis operations with the built-in controller type. It also connects the network converter to the driver.



Product Line

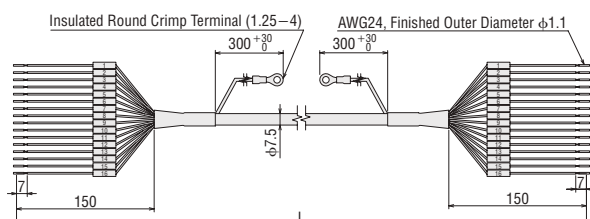
Product Name	Length L (m)	List Price
CC16D005B-1	0.5	SGD22
CC16D010B-1	1.0	SGD25
CC16D015B-1	1.5	SGD28
CC16D020B-1	2.0	SGD31

• The number of conductors of the products above is 16. Products with 6, 10, or 12 conductors are also provided.

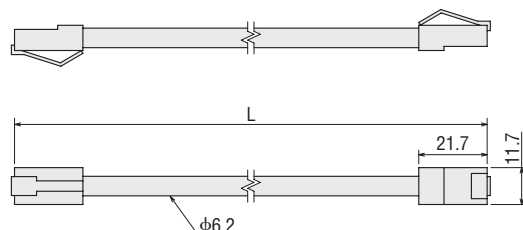
Product Line

Product Name	Applicable Drivers	Length L (m)	List Price
CC001-R54	DC Power Supply Input Driver	0.1	SGD25
CC002-R54	AC Power Supply Input Driver DC Power Supply Input Driver	0.25	SGD29

Dimensions (Unit: mm)



Dimensions (Unit: mm)



Installation Plates

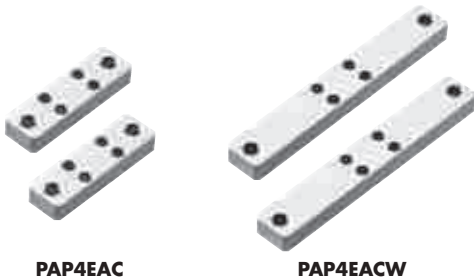
Dedicated installation plates are available for the **EAC** Series.

Foot Type

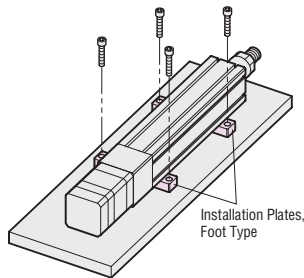
This is convenient for installing the motorized cylinder to the wall surface or floor surface of the equipment.

Product Name	List Price	Applicable Product
PAP2EAC	SGD25	EAC2
PAP2EACW	SGD25	EAC2W
PAP4EAC	SGD25	EAC4, EAC4R
PAP6EAC	SGD25	EAC6, EAC6R
PAP4EACW	SGD25	EAC4W, EAC4RW
PAP6EACW	SGD25	EAC6W, EAC6RW

- The product names of the applicable products are described with alphanumeric characters by which the configuration can be identified.



● Installation Example Using the Foot Type



Flange Type

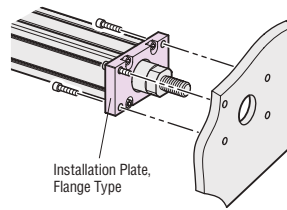
This is convenient for installing the flange surface of the motorized cylinder to the equipment.

Product Name	List Price	Applicable Product
PAF2EAC	SGD25	EAC2
PAF4EAC	SGD25	EAC4, EAC4R
PAF6EAC	SGD25	EAC6, EAC6R

- The product names of the applicable products are described with alphanumeric characters by which the configuration can be identified.
- The flange type installation plate cannot be installed to models with a shaft guide and models with a shaft guide cover.



● Installation Example Using the Flange Type



Regeneration Resistor

The regeneration resistor is connected to the driver to release the regenerative power returned from the motor as thermal energy.

Product Line

Product Name	List Price	Applicable Product
RGB100	SGD56	EAC Series (AC Power Supply Input)

Specifications

Item	Description
Continuous Regenerative Power	50 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Open: 150 ± 7°C Close: 145 ± 12°C (Normally closed)
Thermostat Electrical Rating	120 VAC 4 A 30 VDC 4 A (Minimum current 5 mA)

*Install the regeneration resistor in the location that has the same heat radiation capability as the heat sink (Material: aluminum, 350×350 mm, 3 mm thick).



Network Converters

The network converter converts host communication protocol to Oriental Motor's original RS-485 communication protocol. You can use a network converter to control Oriental Motor's RS-485-compatible products within the host communication environment.

Product Line

Network Type	Product Name	List Price
CC-Link Ver.1.1 Compatible	NETC01-CC	SGD275
CC-Link Ver.2 Compatible	NETC02-CC	SGD330
MECHATROLINK- II Compatible	NETC01-M2	SGD485
MECHATROLINK- III Compatible	NETC01-M3	SGD543
Compatible with EtherCAT	NETC01-ECT	SGD543



NETC01-CC



NETC01-M2



NETC01-M3



NETC01-ECT

LINEAR AND ROTARY ACTUATORS

Compact Linear Actuators

DRS2 Series

AZ Series Battery-Free Absolute Sensor Equipped

Battery-Free Absolute Sensor Equipped.
Delivers Advanced High Precision Positioning More Compactly.



Delivers Advanced Highly-Accurate Positioning More Compactly.

Integration of the stepping motor and the ball screw enables linear motion. Delivers high precision positioning in a compact body and space/wire-saving.

The **DRS2** Series is equipped with the hybrid control system **αSTEP** Series. The linear motion mechanism delivers motion unique to the **AZ** Series equipped with the hybrid control system **αSTEP** and the battery-free absolute sensor.

Best for Inching Feed and High Precision Positioning

Integral Structure of the Stepping Motor and the Ball Screw

The hollow rotor and the ball screw nut are integrated. Less connected parts reduces backlash caused by parts combination including coupling rigidity and delivers high precision positioning.

Two Types of Driving Screws available – Ground and Rolled Ball Screws

[Minimum traveling amount]

0.001 mm

[Repetitive positioning accuracy]

Ground ball screw: **±0.003** mm Rolled ball screw: **±0.01** mm

Delivers Large Transportable Mass and High Speed

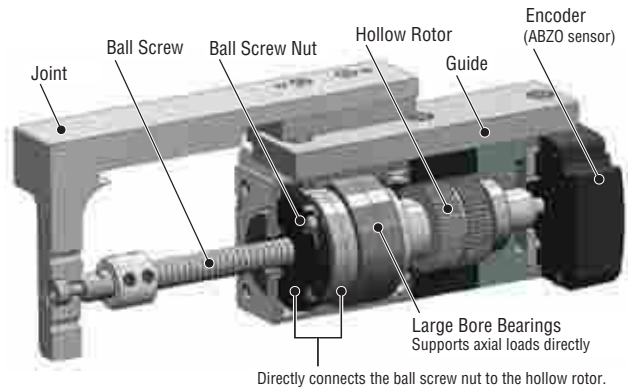
Guided type

[Transportable mass]

- Horizontal direction: **10** kg (2 mm lead), **5** kg (8 mm lead)
- Vertical direction: **10** kg (2 mm lead), **5** kg (8 mm lead)

[Maximum speed]

50 mm/sec (2 mm lead), **200** mm/sec (8 mm lead)



What is the ABZO Sensor?

It is a battery-free, mechanical driven, multi-rotation absolute sensor. It delivers benefits such as not only providing a compact, low-cost absolute system but also contributing to space-/wire-saving of equipment by not needing a home sensor.

Reduced Startup Time

Linear Motion Mechanism Equipped in a Compact Body

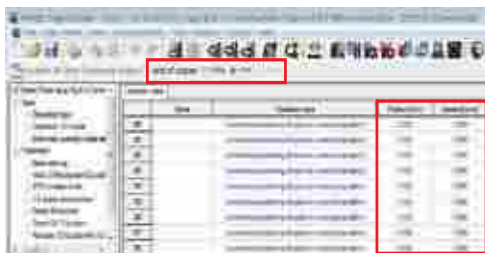
- Removing custom parts reduces time to design equipment and select parts.
- Reducing time for assembling and adjustments for installation accuracy increases production efficiency.

Parameters Set for Operation

[Minimum traveling amount]
Built-in controller type : 0.001 mm
Pulse input type : 0.001 mm

Specifiable by mm

You can specify the traveling amount in millimeters.

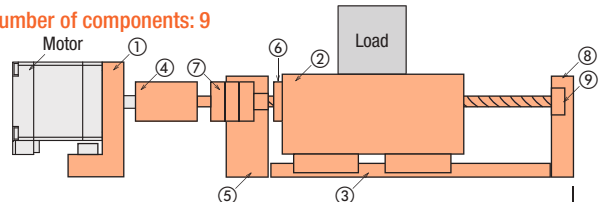


Comparison of Number of Components

Examples of configurations for load travel with the same stroke

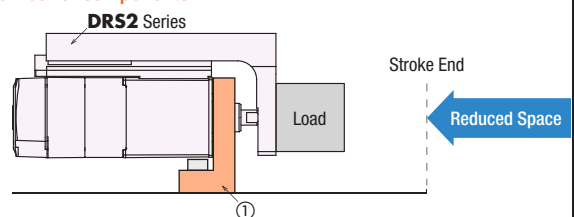
◇ Custom

Number of components: **9**



◇ DRS2 Series with a Guide

Number of components: **1**

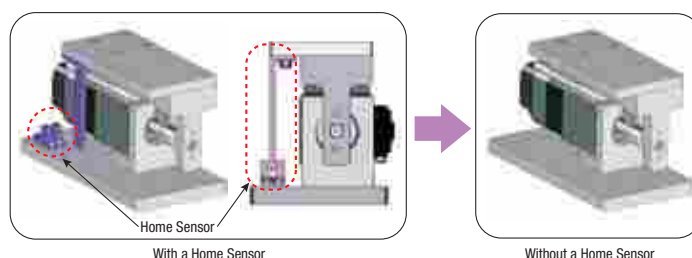


[Parts used] ① Mounting plate ② Transportation table ③ Linear guide ④ Coupling
⑤ Fixed side block ⑥ Ball screw ⑦ Fixed side bearing
⑧ Supported side block ⑨ Supported side bearing

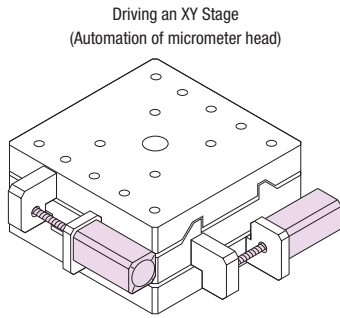
Space/Wire-Saving Achieved with the ABZO Sensor

The compact body allows downsized lightweight equipment. The equipment will also not require a home sensor with the equipped ABZO sensor. It contributes to saving further space and reducing wiring of the equipment, and avoids regular maintenance and issues that arise when using a home sensor.

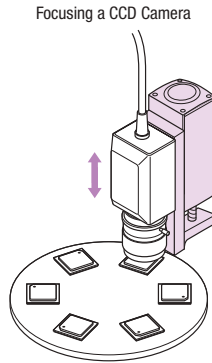
Application Example



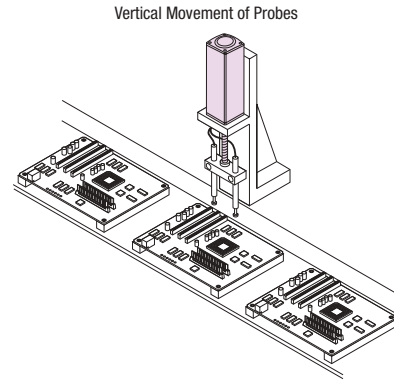
Typical Applications



Driving an XY Stage
(Automation of micrometer head)



Focusing a CCD Camera



Vertical Movement of Probes

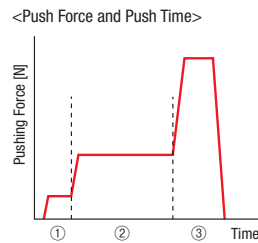
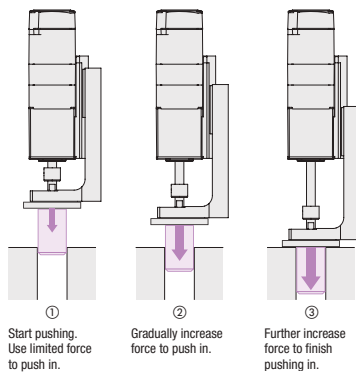
Enhanced Pushing Features

You can easily change the Push Force and Time.

The **DRS2** Series simply switches to pushing after completing positioning. In addition, you can easily change the push force and time.

MERIT

- You can set the push force and time for each operation data No., allowing you to select data No. to change them easily.
- You can set a slow push-in stage for accurate positioning using a reduced force and a quick push-in stage using increased force.



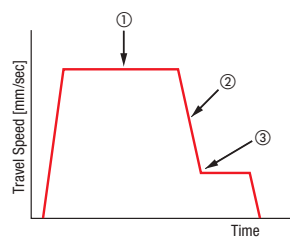
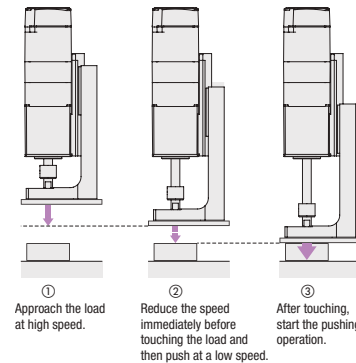
- Start pushing. Use limited force to push in.
- Gradually increase force to push in.
- Further increase force to finish pushing in.

Low Speed Pushing Possible

You can set to approach the load at high speed and then reduce the speed immediately before touching it and push at a low speed.

MERIT

- Since almost no impact occurs when pushing, no cushioning mechanism is required to absorb the impact.
- High-speed approach immediately before pushing reduces the tact time of the equipment.



- Approach the load at high speed.
- Reduce the speed immediately before touching the load and then push at a low speed.
- After touching, start the pushing operation.

Pushing also Possible with Pulse Input Type

Setting the T-MODE input allows pushing even with pulse input type without overload alarms. This is very useful for pulse train controls that requires pushing.



Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of the **AZ** Series or our website.

- Driver Specifications
- RS-485 Communication Specifications
- Dimensions (Drivers, Connection Cables)
- Cautions for Using Connection Cables
- Connection and Operation
- Accessories (Extension Cables)



Equipped with the ABZO Sensor.

The absolute system is achieved with battery-free.

Uses Newly Developed ABZO Sensor

Oriental Motor has developed a compact, low-cost, battery-free mechanical driven type absolute sensor <ABZO sensor> (Patented), improving productivity and reducing costs.

● Mechanical Driven Sensor

A mechanical driven sensor consisting of multiple gears recognizes the angle of each gear to detect positional information.

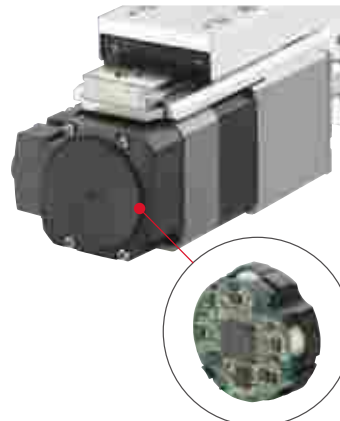
● Multi-rotation Absolute Sensor

From the reference point of the origin, absolute position for ± 900 rotations (for 1800 rotations) of the motor shaft can be detected.

● How to Set a Home Position

A home position can be easily set by pressing the switch on the driver, and the ABZO sensor saves it.

You can also use the support software (**MEXE02**) or external input signals to set a home position.



Battery-free Absolute Sensor (Equipped with ABZO sensor)

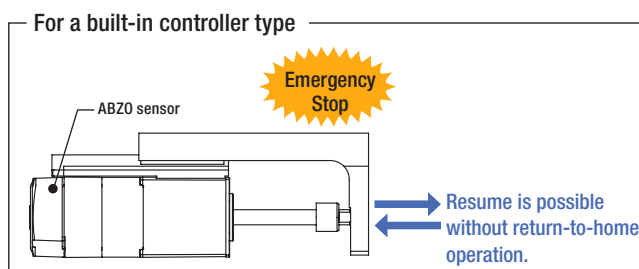
Battery-free

With a mechanical sensor, no battery is required.

The positional information is mechanically managed by the ABZO sensor.

● Keeping Positional Information

Positional information is kept even if power is shut down during positioning operation or the cable between the motor and the driver is removed. When a built-in controller type recovers from an emergency stop of the production line or from a power failure, it can resume positioning operation without returning to the home position.



● Less Maintenance Work

Do not require of battery replacement, able to reduce the maintenance work and costs.

● Desired Installation of the Driver

There is no need of space for battery replacement, thus the driver can be installed in any location, and more flexible in layout design for the control panel or other devices.

● Overseas Transportation Trouble-free

Care must be taken regarding battery discharge when transported over a long period of time for international or long-distance shipment. The ABZO sensor does not require a battery, and there is no time limit for retaining the positioning information. In addition, there is no need to consider the regulations applied to battery export.

No External Sensor Required

This series can configure the absolute system, which does not require external sensors such as a home sensor and a limit sensor.

● High-speed Return-To-Home

The return to home without using an external sensor is possible, enabling the return-to-home position at a high speed regardless of the sensor sensitivity. This leads to reduction in the machine cycle time.

● Cost Reduction

The sensor cost and the wiring cost can be reduced, lowering the total cost of the system.

● Wire-saving

Wire saving allows the equipment to be designed more flexibly.

● The Equipment is not affected by a malfunction of an External Sensor

There is no need to worry about the malfunction of the sensor, the failure of the sensor, or sensor wire disconnection.

● Accuracy Improvement in Return-To-Home

Returning to the home position is possible regardless of variation in the sensing of the home sensor, improving the accuracy of the home position.

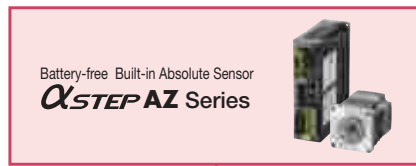
● If there is no limit sensor attached, you can use the software limit of the driver to prevent the threshold from being exceeding.

Product Variation with Unified Control Method

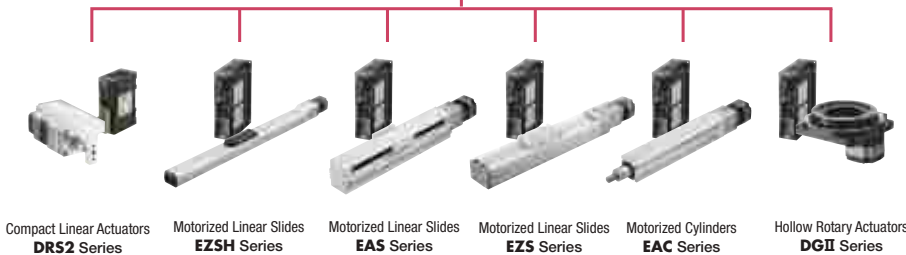
Mechanical products equipped with the α STEP AZ Series are available. With the same motor and the driver equipped in each of them, common wirings, controls, and maintenance parts can be used, reducing startup time and effort.

Advantages of Common Unit Use

- Integration of Wiring**
 The same pin assignment is used for I/O, saving effort for electrical design and wiring.
- Integration of Controls**
 With the same control method, units can be operated in the same manner. Additionally, remote I/Os and command codes are the same for network controls, reducing effort for program coding.
- Integration of Maintenance Parts**
 Using common motors, drivers, cables, and other parts reduces maintenance parts to the minimum. This leads to reduction in management cost (parts cost, management space).



α STEP AZ Series Equipped

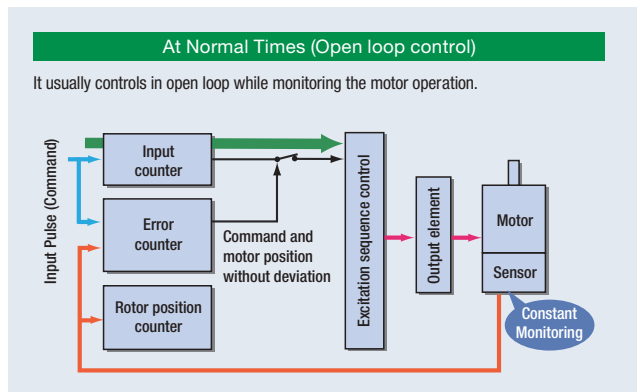


● The lineup of built-in motors differs depending on the series. For details, see the catalogs or our website.

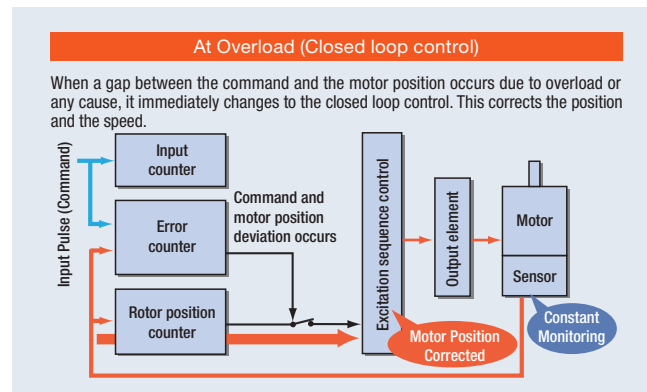
Features of the Hybrid Control System α STEP

The α STEP is a motor based on a stepping motor providing unique controls using advantages of both the "Open loop control" and the "Closed loop control". According to the situation, it automatically switches between the two controls while always monitoring the motor position.

● It usually uses Open Loop Control with usability like a Stepping Motor

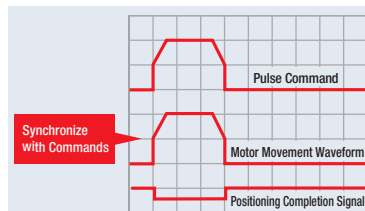


● More Secure Operation by Closed Loop Control at Overload



◇ High Response

Utilizing the high response of the stepping motor, the unit can move the device in a short distance for a short time. The unit can move the device by following the command and without delay.



◇ Operation Continues Even at Sudden Load Change or Sudden Acceleration

At normal times, this compact unit synchronizes with commands and operates with open loop control. When overloaded, the current control immediately changes to the closed loop control and corrects the position.

◇ Alarm Signal Output in Case of Abnormality

If continuously overloaded, an alarm signal is output. An END signal is output when positioning is finished. With these features, it provides reliability equal to that of a servo motor.

◇ The Stop Position is Retained without Hunting

During positioning, stoppage is done by the retaining force of the motor, without hunting. Therefore, the unit is most suitable for the applications in which a low-rigidity positioning mechanism is used and for which vibration should not occur during stoppage.

◇ No Tuning is Required

Under normal conditions, this unit operates by open loop control. This enables positioning without gain adjustment even when there is a change in the load in the belt mechanism, cum or chain drive, or other mechanical drives.

● Smooth Movement Even at a Low Speed

The micro-step drive and smooth driving functions* that are equipped with as standard functions suppress vibration at a low speed and allow smooth movement.

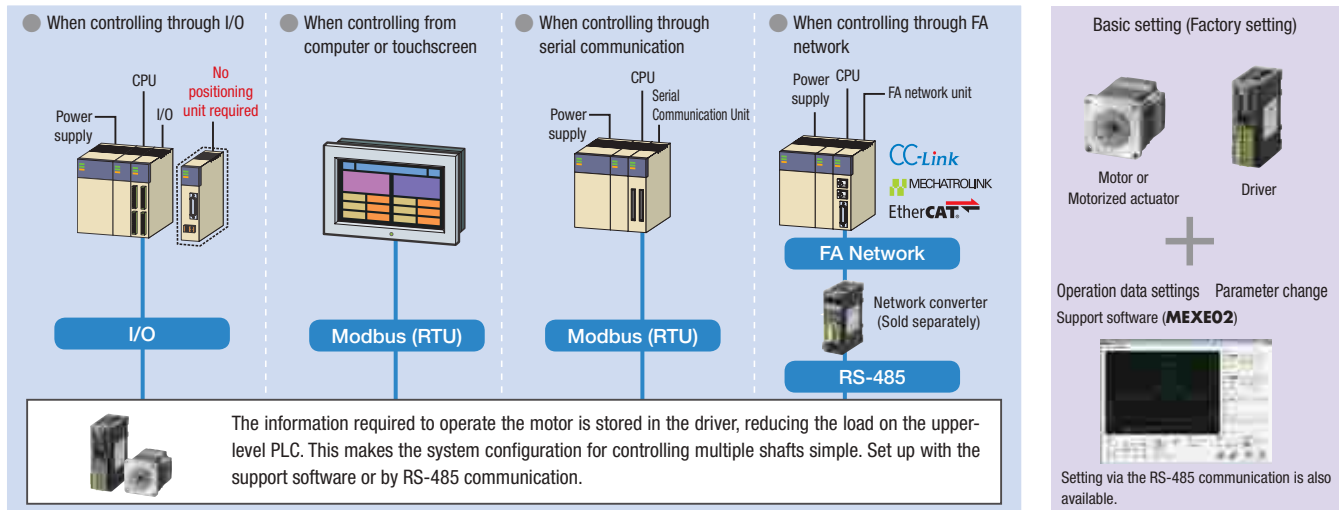
*These functions do not require any change of the pulse input setting but allow the micro-step drive the travel distance and speed of which are the same as those of full-step drive.

Drivers Selectable According to the Host System

A compatible driver can be selected for the **DRS2** Series according to your host system.

Built-in Controller Type **FLEX**

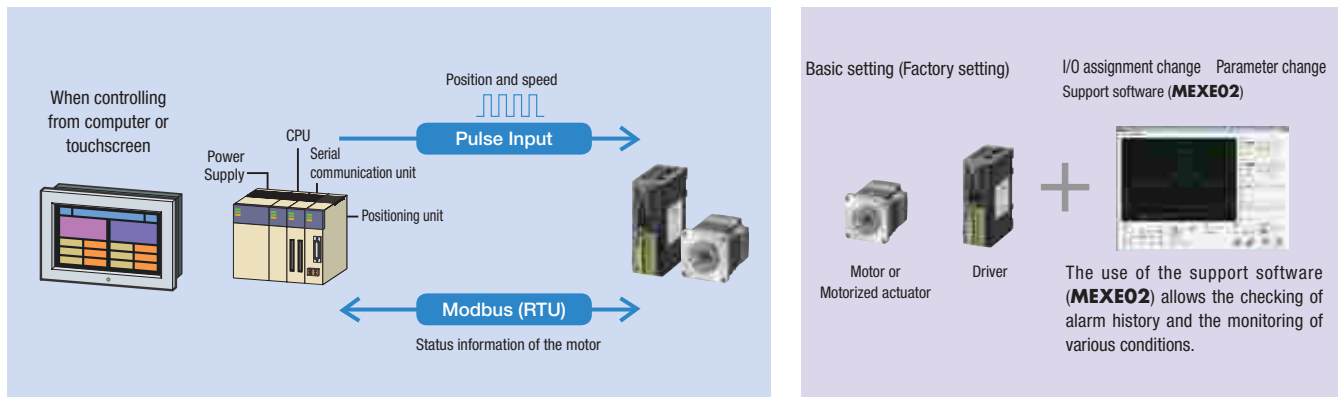
Set the operating data in the driver, and the operating data is selected and executed from the host system. Host system connection and control is performed through I/O, Modbus (RTU), RS-485 communication, or FA network. The use of a network converter (sold separately) allows control via CC-Link communication, MECHATROLINK communication, or EtherCAT communication.



FLEX FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

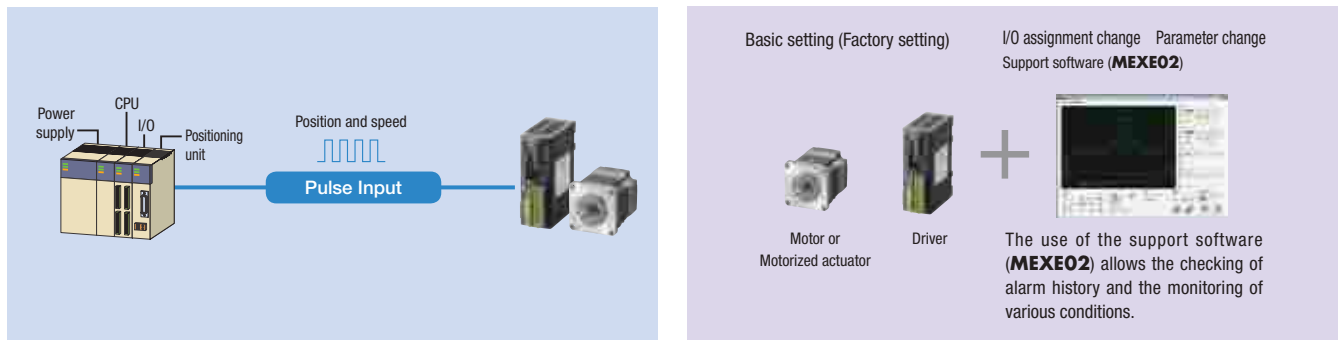
Pulse Input Type with RS-485 Communication

This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.



Pulse Input Type

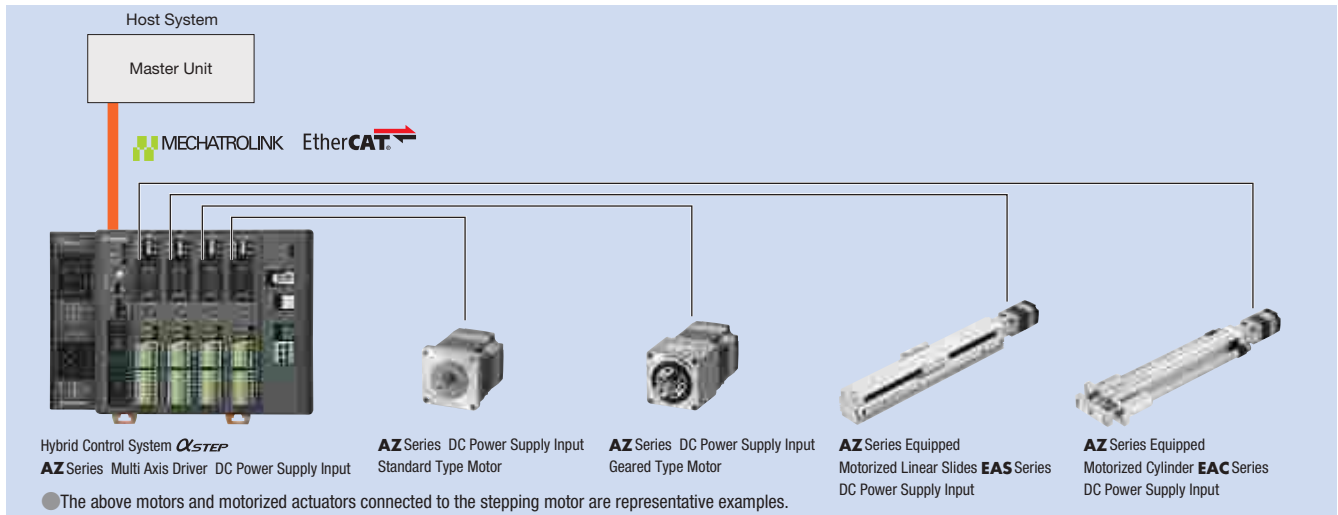
This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.



- **CC-Link** and **MECHATROLINK** are the registered trademarks of the CC-Link Partner Association and the MECHATROLINK Members Association, respectively.
- **EtherCAT** is the registered trademark licensed by Beckhoff Automation in Germany.
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website. The media is also available (for free).

● **Network-compatible Multi Axis Driver* (DC power supply input only)**

Multi axis driver that supports MECHATROLINK-III and EtherCAT Drive Profile. The driver can be connected to a DC power supply motor of the **AZ** Series and to an actuator equipped with motor. 2-axes, 3-axes, and 4-axes connectable drivers are available.



*For details of the products, see the Oriental Motor website.

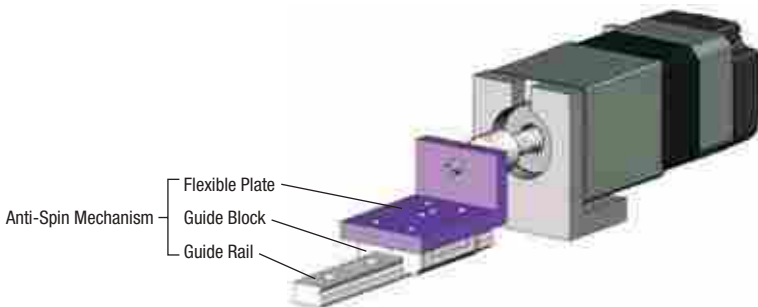
Lineup

Compact linear actuators, drivers and connection cables must be provided separately for the **DRS2** Series. They are provided in combination.

Compact Linear Actuator						Driver* (24 VDC/48 VDC)	Connection Cable Set
Shape	Frame Size	Stroke	Ball Screw Type	Lead [mm]	Cable Orientation		
With Guide	42 mm	40 mm	Rolled	2	Right/Left	● Built-in Controller Type	<ul style="list-style-type: none"> ● Without Electromagnetic Brake For Motor For Encoder ● With Electromagnetic Brake For Motor For Encoder For Electromagnetic Brake
				8			
Ground			2	Pulse Input Type			
			Without Guide			60 mm	
8							
Ground	2	Pulse Input Type					
	Rolled		4				

*Multi-axis drivers which can control multi-axis drivers are available. For details, see Oriental Motor website.

● Products without a guide require an anti-spin mechanism for the screw mechanism.



Drive Easily with Support Software **MEXE02**

By using the support software, data settings, actual operation, and checks by the various monitor functions are also easily performed on the computer.

● Support Software **MEXE02**

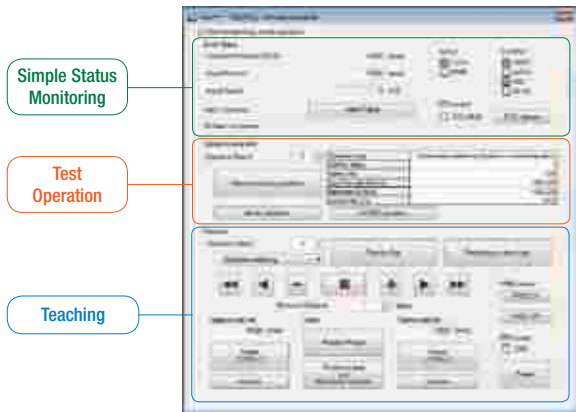
The support software can be downloaded from the Oriental Motor website.
The media is also available (for free).

● Teaching/Remote Operation

From the support software, you can easily set a home position or drive the motor. You can use this function for teaching or trial operation before connecting to the host system.

● I/O Monitoring

You can monitor input signals, and output forcibly output signals. Use function for wire connection with the host system or check network I/O operations.



Various Monitor Functions

● Waveform Monitoring

Similar to using an oscilloscope, the motor drive condition and output signal status can be checked. Use this during the startup of the device and when adjusting.



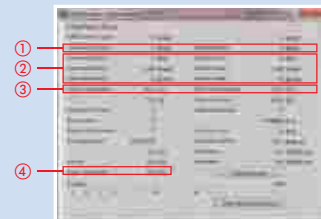
● Alarm Monitor

If an error occurs, you can check the error details, operation condition at the time of error occurrence, and measures to be taken.



● Status Monitoring

In addition to the speed, motor, temperature of the driver, and load factor, you can monitor other items including rotation amount accumulated from the start of use. Signals can be output for each item as needed, achieving efficient maintenance.



- ① The actual position is detected for the command position.
- ② The actual speed is detected for the command speed.
- ③ The temperatures of the encoder of the motor and the inside of the driver are detected.
- ④ This shows the current load factor to the output torque at the speed during rotation as 100%.

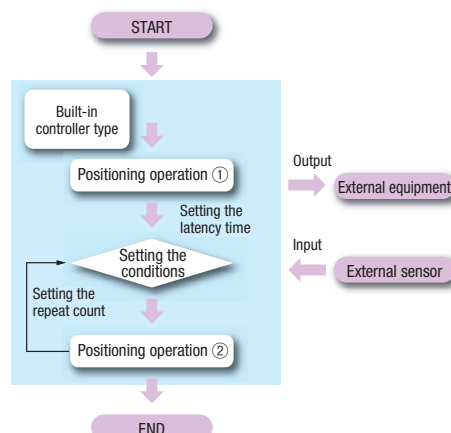
● Supporting multi-monitoring, the software allows you to perform remote operation or teaching while monitoring the operational status.

Sequence Function Simplifies Main Program

The built-in controller type of the **AZ** Series provides a rich variety of sequence functions including timer setting for link operations or intervals between operations, conditional branching, and number of loops. This helps to simplify sequence programs in the host system.

◇ For a Built-in Controller Type

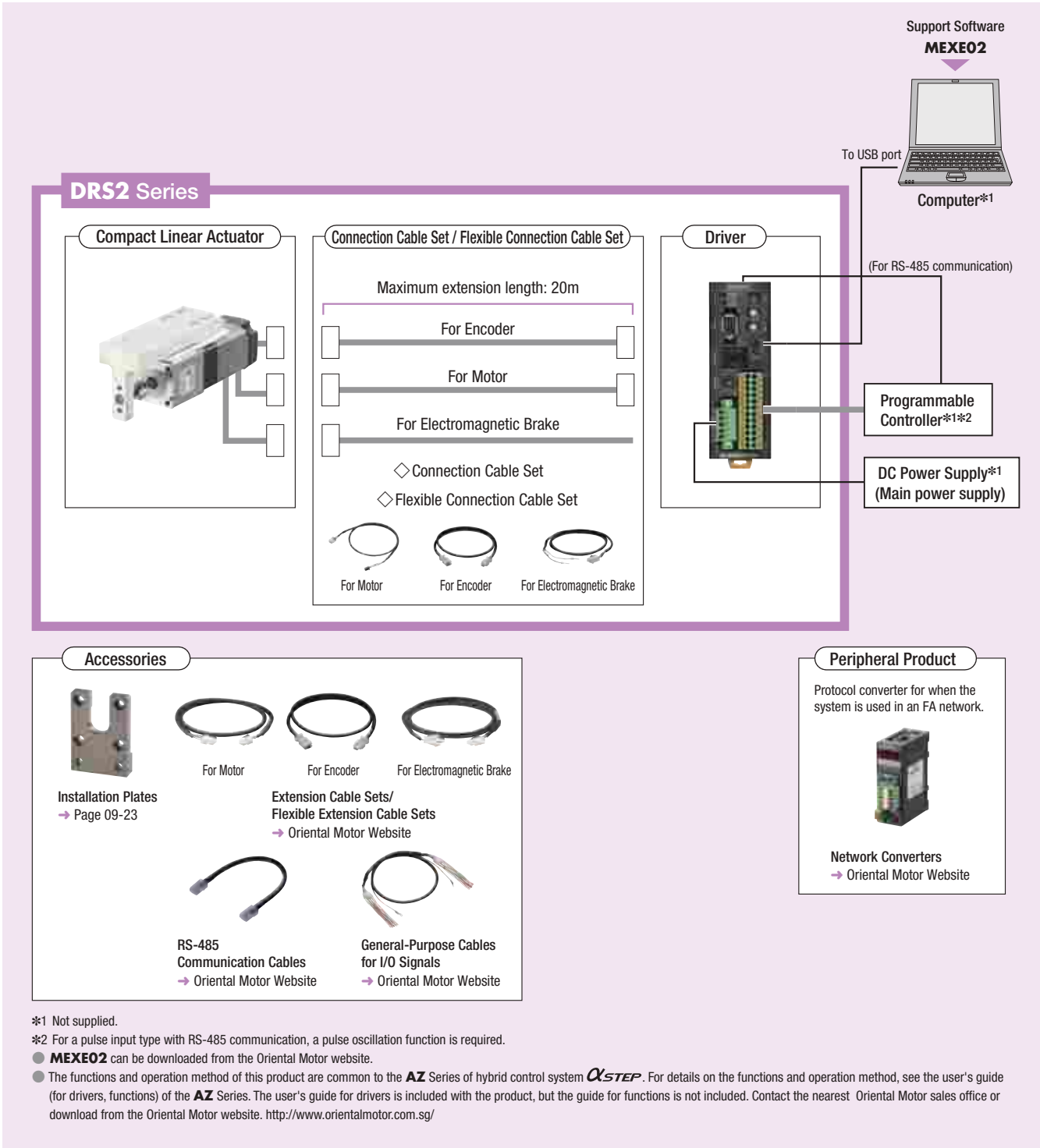
- No. of positioning operation data items that can be set (up to 256 points)
- No. of general-purpose I/O points (10 points for input and 6 points for output)
- No. of communication I/O points (16 points for input and 16 points for output)



System Configuration

- When using a motorized actuator with electromagnetic brake and a built-in controller type driver or a pulse input type driver with RS-485 communication feature

The figure below shows a sample configuration which includes a built-in controller type driver and which uses I/O control or RS-485 communication. The actuator, driver, and connection cable set/flexible connection cable set need to be separately provided.



System Configuration Example

DRS2 Series			Sold Separately	
Compact Linear Actuator	Driver	Connection Cable Set	Installation Plate	General-Purpose Cable for I/O Signals (1 m)
DRSM42RG-04A2AZMK	AZD-KD	CC030VZFB2	PADRL-42	CC16D010B-1
SGD1,225	SGD488	SGD83	SGD235	SGD25

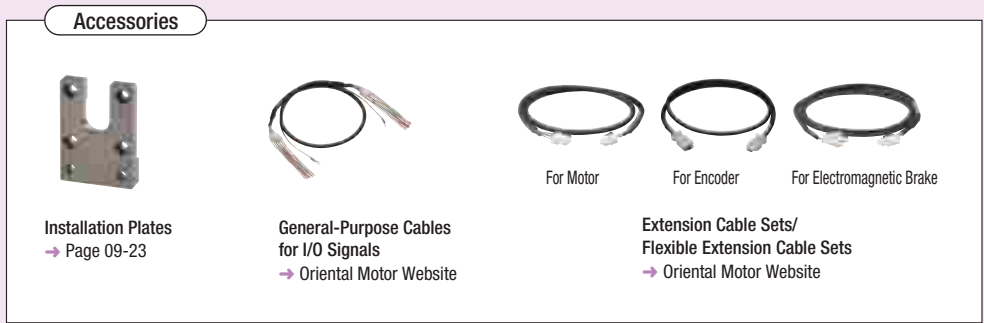
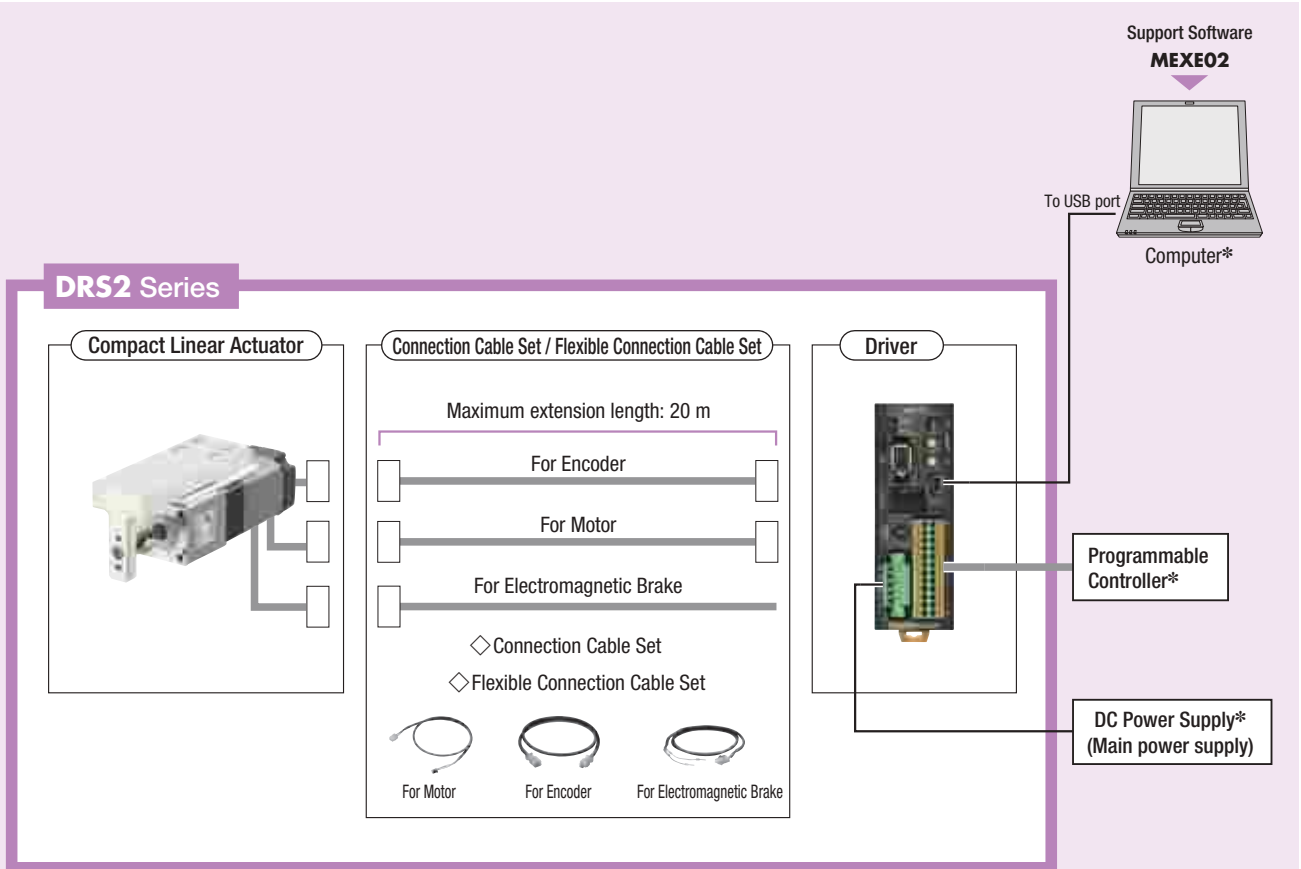
- The system configuration shown above is an example. Other combinations are available.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

● When using a motorized actuator with electromagnetic brake and a pulse input type driver

The figure below shows a sample configuration of a single axis system which uses a programmable controller (equipped with a pulse oscillator). The actuator, driver, and connection cable set/flexible connection cable set need to be separately provided.



* Not supplied.

● MEXE02 can be downloaded from the Oriental Motor website.

● The functions and operation method of this product are common to the **AZ** Series of hybrid control system *αSTEP*. For details on the functions and operation method, see the user's guide (for drivers, functions) of the **AZ** Series. The user's guide for drivers is included with the product, but the guide for functions is not included. Contact the nearest Oriental Motor sales office or download from the Oriental Motor website. <http://www.orientalmotor.com.sg/>

● System Configuration Example

DRS2 Series			Sold Separately	
Compact Linear Actuator	Driver	Connection Cable Set	+	Installation Plate
DRSM42RG-04A2AZMK	AZD-K	CC030VZFB2		General-Purpose Cable for I/O Signals (1 m)
SGD1,225	SGD425	SGD83		PADRL-42
				CC16D010B-1
				SGD235
				SGD25

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Compact Linear Actuator

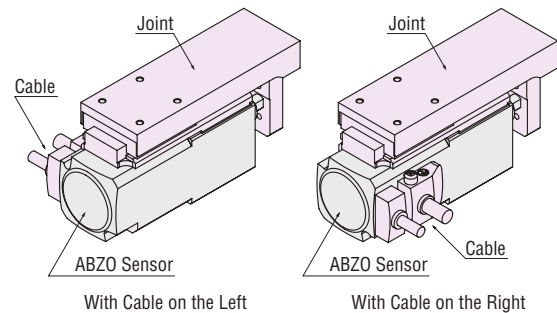
DRSM 42 R G - 04 A 2 AZ M K

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Series Name	DRSM: DRS2 Series
②	Frame Size	42: 42 mm 60: 60 mm
③	Cable Orientation*	R: Right L: Left Blank: Type without Guide
④	Shape	G: Type with Guide Blank: Type without Guide
⑤	Stroke	04: 40 mm 05: 50 mm
⑥	Ball Screw Type	A: Rolled Ball Screw B: Ground Ball Screw
⑦	Lead	2: 2 mm 4: 4 mm 8: 8 mm
⑧	Installed Motor	AZ: AZ Series
⑨	Electromagnetic Brake	A: Without Electromagnetic Brake M: With Electromagnetic Brake
⑩	Motor Specifications	K: DC Power Supply Input Specifications

*The cable orientation can be specified only for actuators without guide.

The cable orientation represents the cable orientation viewed from the encoder (ABZO sensor) with the joint on the top.



Driver

AZD - K D

① ② ③

①	Driver Type	AZD: AZ Series Driver
②	Power Supply Input	K: 24 VDC/48 VDC
③	Type	D: Built-in Controller Type X: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z F B 2

① ② ③ ④ ⑤ ⑥ ⑦

①		CC: Cable
②	Length	005: 0.5 m 010: 1 m 015: 1.5 m 020: 2 m 025: 2.5 m 030: 3 m 040: 4 m 050: 5 m 070: 7 m 100: 10 m 150: 15 m 200: 20 m
③	Reference Number	
④	Applied Model	Z: For AZ Series
⑤	Cable Type	F: Connection Cable Set R: Flexible Connection Cable Set
⑥	Description	Blank: For Motors without Electromagnetic Brake B: For Motors with Electromagnetic Brake
⑦	Type	2: For DC Power Supply Input

Product Line

Compact Linear Actuators

◇ Type with Guide
Rolled Ball Screw



With Electromagnetic Brake

Electromagnetic Brake	Lead [mm]	Cable Orientation	Product Name	List Price
Without Electromagnetic Brake	2	Right	DRSM42RG-04A2AZAK	SGD1,000
		Left	DRSM42LG-04A2AZAK	SGD1,000
	8	Right	DRSM42RG-04A8AZAK	SGD1,113
		Left	DRSM42LG-04A8AZAK	SGD1,113
With Electromagnetic Brake	2	Right	DRSM42RG-04A2AZMK	SGD1,225
		Left	DRSM42LG-04A2AZMK	SGD1,225
	8	Right	DRSM42RG-04A8AZMK	SGD1,338
		Left	DRSM42LG-04A8AZMK	SGD1,338

◇ Type with Guide
Ground Ball Screw



With Electromagnetic Brake

Electromagnetic Brake	Lead [mm]	Cable Orientation	Product Name	List Price
Without Electromagnetic Brake	2	Right	DRSM42RG-04B2AZAK	SGD1,340
		Left	DRSM42LG-04B2AZAK	SGD1,340
	8	Right	DRSM42RG-04B8AZMK	SGD1,565
		Left	DRSM42LG-04B8AZMK	SGD1,565

◇ Type without Guide
Rolled Ball Screw



With Electromagnetic Brake

Electromagnetic Brake	Lead [mm]	Product Name	List Price
Without Electromagnetic Brake	2	DRSM42-04A2AZAK	SGD725
	8	DRSM42-04A8AZAK	SGD838
	4	DRSM60-05A4AZAK	SGD938
With Electromagnetic Brake	2	DRSM42-04A2AZMK	SGD950
	8	DRSM42-04A8AZMK	SGD1,063
	4	DRSM60-05A4AZMK	SGD1,163

◇ Type without Guide
Ground Ball Screw



With Electromagnetic Brake

Electromagnetic Brake	Lead [mm]	Product Name	List Price
Without Electromagnetic Brake	2	DRSM42-04B2AZAK	SGD1,065
With Electromagnetic Brake		DRSM42-04B2AZMK	SGD1,290

● Drivers

◇ Built-in Controller Type



Product Name	List Price
AZD-KD	SGD488

◇ Pulse Input Type with RS-485 Communication



Product Name	List Price
AZD-KX	SGD488

◇ Pulse Input Type



Product Name	List Price
AZD-K	SGD425

● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent.

◇ For Motors/Encoders



Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZF2	SGD38
	1	CC010VZF2	SGD38
	1.5	CC015VZF2	SGD44
	2	CC020VZF2	SGD50
	2.5	CC025VZF2	SGD56
	3	CC030VZF2	SGD63
	4	CC040VZF2	SGD98
	5	CC050VZF2	SGD110
	7	CC070VZF2	SGD136
	10	CC100VZF2	SGD176
Flexible Connection Cable Set	15	CC150VZF2	SGD244
	20	CC200VZF2	SGD310
	0.5	CC005VZR2	SGD84
	1	CC010VZR2	SGD84
	1.5	CC015VZR2	SGD92
	2	CC020VZR2	SGD99
	2.5	CC025VZR2	SGD106
	3	CC030VZR2	SGD111
	4	CC040VZR2	SGD126
	5	CC050VZR2	SGD141
Flexible Connection Cable Set	7	CC070VZR2	SGD180
	10	CC100VZR2	SGD236
	15	CC150VZR2	SGD333
	20	CC200VZR2	SGD426

◇ For Motors/Encoders/
Electromagnetic Brakes



Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZFB2	SGD53
	1	CC010VZFB2	SGD53
	1.5	CC015VZFB2	SGD60
	2	CC020VZFB2	SGD68
	2.5	CC025VZFB2	SGD75
	3	CC030VZFB2	SGD83
	4	CC040VZFB2	SGD121
	5	CC050VZFB2	SGD135
	7	CC070VZFB2	SGD166
	10	CC100VZFB2	SGD214
Flexible Connection Cable Set	15	CC150VZFB2	SGD294
	20	CC200VZFB2	SGD373
	0.5	CC005VZRB2	SGD114
	1	CC010VZRB2	SGD114
	1.5	CC015VZRB2	SGD124
	2	CC020VZRB2	SGD134
	2.5	CC025VZRB2	SGD143
	3	CC030VZRB2	SGD151
	4	CC040VZRB2	SGD171
	5	CC050VZRB2	SGD191
Flexible Connection Cable Set	7	CC070VZRB2	SGD240
	10	CC100VZRB2	SGD311
	15	CC150VZRB2	SGD433
	20	CC200VZRB2	SGD551

■ Accessories

● Actuators

Type	Accessories	Operating Manual
For All Types		1 set

● Drivers

Type	Accessories	Connector	Operating Manual
For All Types		Connector for CN4 (1 piece) Connector for CN1 (1 piece)	1 set

● Connection Cable Sets/Flexible Connection Cable Sets

Type	Accessories	Operating Manual
Connection Cable Set		—
Flexible Connection Cable Set		1 set

How to Read Specifications Table

For Compact Linear Actuator (Rolled ball screw of type with guide)

Actuator Product Name	Cable Orientation: Right		DRSM42RG-04A2AZAK	DRSM42RG-04A2AZMK	DRSM42RG-04A8AZAK	DRSM42RG-04A8AZMK
	Cable Orientation: Left		DRSM42LG-04A2AZAK	DRSM42LG-04A2AZMK	DRSM42LG-04A8AZAK	DRSM42LG-04A8AZMK
① Lead	mm		2		8	
② Electromagnetic Brake (Power off activated type)			Not provided	Provided	Not provided	Provided
③ Ball Screw Type			Rolled			
④ Repetitive Positioning Accuracy	① End	mm	±0.01			
	② Top	mm	±0.02			
⑤ Lost Motion	mm		0.05 or less			
⑥ Minimum Traveling Amount	mm		0.001			
⑦ Permissible Moment	Static Permissible Moment	N·m	Mp: 1.3 My: 1.0 Mr: 2.5			
	Dynamic Permissible Moment	N·m	Mp: 1.3 My: 1.0 Mr: 2.5			
⑧ Transportable Mass	Horizontal	kg	10	5	5	
	Vertical	kg	—	—	—	
⑨ Thrust	N		~200		~50	
⑩ Pushing Force	N		400		100	
⑪ Holding Force	N		200	200	50	50
⑫ Stroke	mm		40			
⑬ Maximum Speed	mm/s		50		200	

Some products may have limitations and notes on use. For details, see notes on respective product pages.

① Lead

Distance the screw shaft moves linearly in one motor rotation.

② Electromagnetic Brake (Power off activated type)

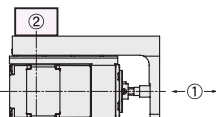
The product has types with and without an electromagnetic brake of power off activated type. Choose the type with electromagnetic brake for vertical drive.

③ Ball Screw Type

The product has rolled and ground ball screw types. Choose according to required accuracy.

④ Repetitive Positioning Accuracy

A value indicating the amount of error that is generated when positioning is performed repeatedly to the same position in the same direction. (The repetitive positioning accuracy is measured at a constant temperature under a constant load).



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②. Other items are common unless specified.

⑤ Lost Motion

A value indicating the amount of error that is generated when positioning is performed to the same position in a different direction.

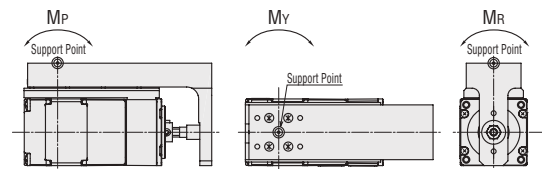
⑥ Minimum Traveling Amount

The traveling amount for each pulse, set by default.

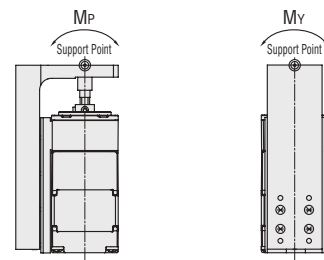
⑦ Permissible Moment

When the load is placed in a position eccentric from the actuator guide, force making the guide rotate applies. In this case, it indicates the maximum force applied to the guide. The dynamic permissible moment is the moment allowed during operation. The static permissible moment is the moment allowed during static conditions.

• Horizontal Direction



• Vertical Direction



⑧ Transportable Mass

• Horizontal Direction (Figure A)

Maximum mass that can be moved under operating performance in the horizontal direction of the actuator.

• Vertical Direction (Figure B)

Maximum mass that can be moved under operating performance in the vertical direction of the actuator.

Figure A

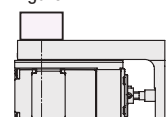
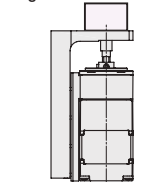


Figure B



⑨ Thrust

Force that pushes the load when speed is constant.

⑩ Pushing Force

The pressure applied to the load during the pushing operation.

⑪ Holding Force

Holding force when the motor is stopped or when the electromagnetic brake is operating, while power is supplied.

⑫ Stroke

Maximum distance to transport or push/draw the load.

⑬ Maximum Speed

Maximum speed to transport the load.

Compact Linear Actuator Specifications



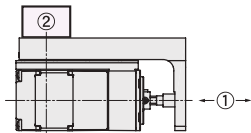
Type with Guide

Frame Size 42 mm

Actuator Product Name	Cable Orientation: Right		DRSM42RG-04A2AZAK	DRSM42RG-04A2AZMK	DRSM42RG-04A8AZAK	DRSM42RG-04A8AZMK	DRSM42RG-04B2AZAK	DRSM42RG-04B2AZMK
	Cable Orientation: Left		DRSM42LG-04A2AZAK	DRSM42LG-04A2AZMK	DRSM42LG-04A8AZAK	DRSM42LG-04A8AZMK	DRSM42LG-04B2AZAK	DRSM42LG-04B2AZMK
Lead	mm		2		8		2	
Electromagnetic Brake (Power off activated type)			Not provided	Provided	Not provided	Provided	Not provided	Provided
Ball Screw Type			Rolled				Ground	
Repetitive Positioning Accuracy	① End	mm	±0.01				±0.003	
	② Top	mm	±0.02				±0.005	
Lost Motion	mm		0.05 or less				0.02 or less	
Minimum Traveling Amount	mm		0.001					
Permissible Moment	Static Permissible Moment	N·m	Mp: 1.3 Mr: 1.0 Mr: 2.5					
	Dynamic Permissible Moment	N·m	Mp: 1.3 Mr: 1.0 Mr: 2.5					
Transportable Mass	Horizontal	kg	10	10	5	5	10	10
	Vertical	kg	—	—	—	—	—	—
Thrust	N		~200		~50		~200	
Pushing Force	N		400		100		400	
Holding Force	N		200	200	50	50	200	200
Stroke	mm		40					
Maximum Speed	mm/s		50		200		50	

Note

- The maximum speed may decrease depending on the ambient temperature and motor cable length.
- Repetitive positioning accuracy



The repetitive positioning accuracy is measured on the end for ① and the linear guide for ②.
Other items are common unless specified.

Type without Guide



Frame Size 42 mm

Actuator Product Name	DRSM42-04A2AZAK	DRSM42-04A2AZMK	DRSM42-04A8AZAK	DRSM42-04A8AZMK	DRSM42-04B2AZAK	DRSM42-04B2AZMK
Lead	mm		2		8	
Electromagnetic Brake (Power off activated type)	Not Provided		Provided		Not Provided	
Ball Screw Type	Rolled				Ground	
Repetitive Positioning Accuracy	mm		±0.01			
Lost Motion	mm		0.05 or less			
Minimum Traveling Amount	mm		0.001			
Transportable Mass	Horizontal	kg	40	40	10	10
	Vertical	kg	—	20	—	5
Thrust	N		~200		~50	
Pushing Force	N		400		100	
Holding Force	N		200	200	50	50
Stroke	mm		40			
Maximum Speed	mm/s		50		200	

Note

- The maximum speed may decrease depending on the ambient temperature and motor cable length.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.



Frame Size 60 mm

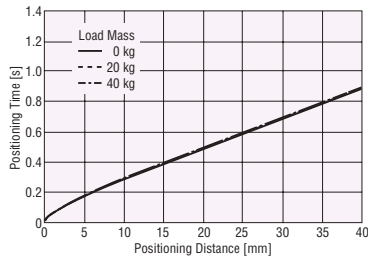
Actuator Product Name		DRSM60-05A4AZAK	DRSM60-05A4AZMK
Lead	mm		4
Electromagnetic Brake (Power off activated type)		Not Provided	Provided
Ball Screw Type			Rolled
Repetitive Positioning Accuracy	mm		± 0.01
Lost Motion	mm		0.05 or less
Minimum Traveling Amount	mm		0.001
Transportable Mass	Horizontal	kg	50
	Vertical	kg	50
Thrust	N		~ 500
Pushing Force	N		500
Holding Force	N	500	500
Stroke	mm		50
Maximum Speed	mm/s		50

Positioning Distance – Positioning Time

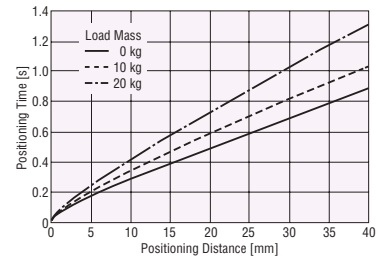
● Frame Size 42 mm/Power Supply Voltage 24 VDC

◇ Lead 2 mm

● Horizontal Direction Installation

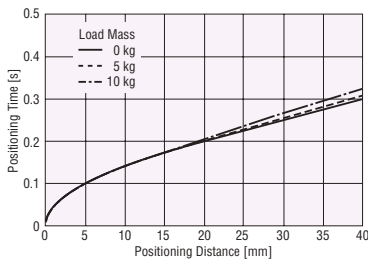


● Vertical Direction Installation

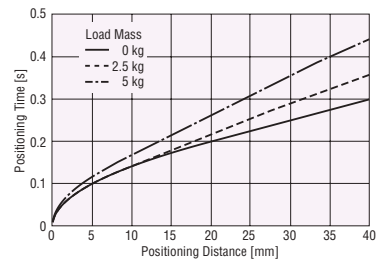


◇ Lead 8 mm

● Horizontal Direction Installation



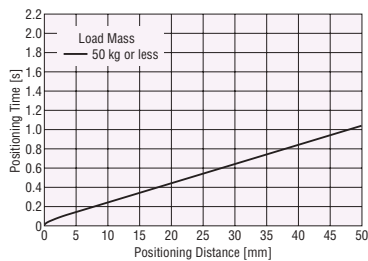
● Vertical Direction Installation



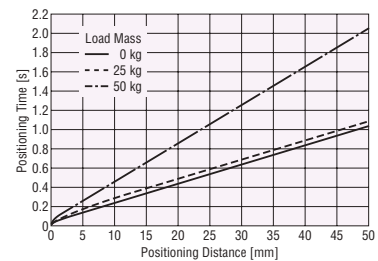
● Frame Size 60 mm/Power Supply Voltage 24 VDC

◇ Lead 4 mm

● Horizontal Direction Installation



● Vertical Direction Installation



● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

[Click Here](#)

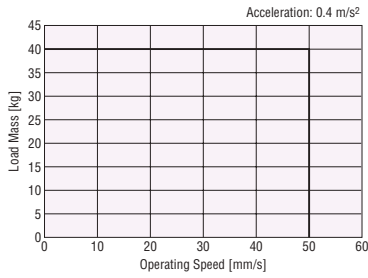
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Operating Speed – Load Mass

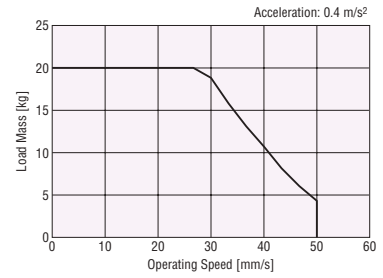
● Frame Size 42 mm/Power Supply Voltage 24 VDC

◇ Lead 2 mm

● Horizontal Direction Installation

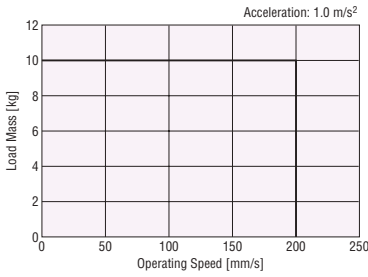


● Vertical Direction Installation

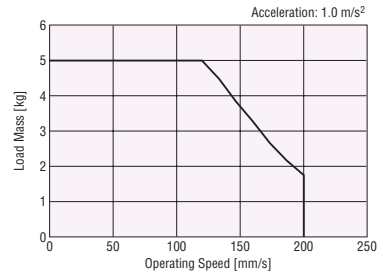


◇ Lead 8 mm

● Horizontal Direction Installation



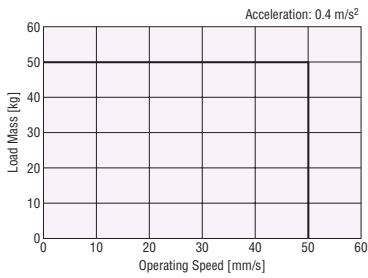
● Vertical Direction Installation



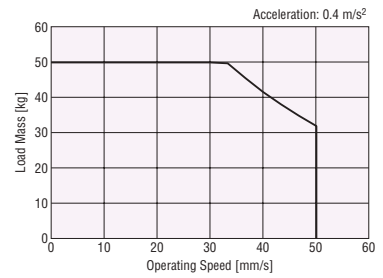
● Frame Size 60 mm/Power Supply Voltage 24 VDC

◇ Lead 4 mm

● Horizontal Direction Installation



● Vertical Direction Installation

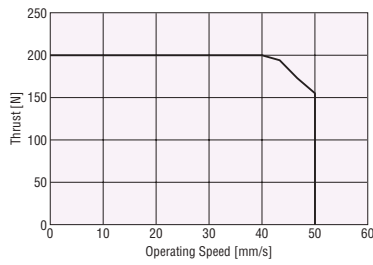


● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

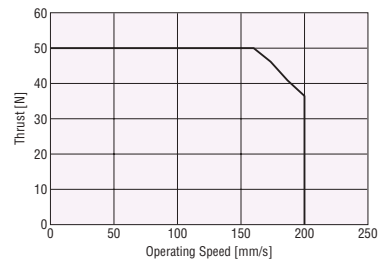
Operating Speed – Thrust

● Frame Size 42 mm/Power Supply Voltage 24 VDC

◇ Lead 2 mm

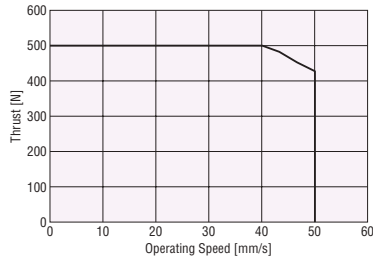


◇ Lead 8 mm



● Frame Size 60 mm/Power Supply Voltage 24 VDC

◇ Lead 4 mm

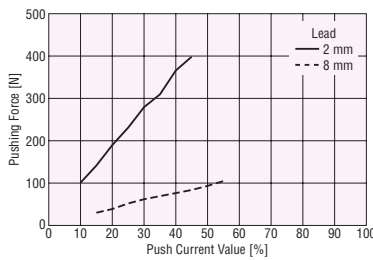


Actual Pushing Force Value

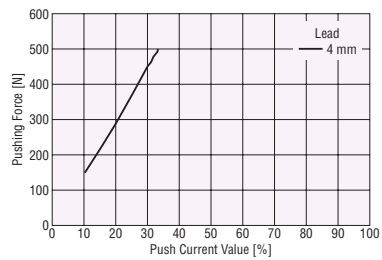
This section shows reference data of the push current values and the pushing force of the **DRS2** Series.

When using, check the actual pushing force.

● Frame Size 42 mm



● Frame Size 60 mm



- The characteristic diagrams above show the averages of measurement results of pushing during horizontal operation of the **DRS2** Series.
- The relationship between the pushing current and the pushing force differs depending on the following conditions. Check with actual equipment.
 - Installation conditions (horizontal or vertical installation)
 - Load conditions of the equipment
- The upper limit of the push-motion operating speed is 6 mm/s.

● For the specifications and characteristics for 48 VDC input, contact the nearest Oriental Motor sales office.

[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Power Supply Input Specifications

Actuator Product Name		DRSM42	DRSM60
Power Supply Input	Voltage	24 VDC±5%* 48 VDC±5%	24 VDC±5%* 48 VDC±5%
	Input Current	1.72	2.45
	A	Without Electromagnetic Brake With Electromagnetic Brake	1.8 2.7

*For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Electromagnetic Brake Specifications

Product Name		DRSM42	DRSM60
Type		Power off activated type	
Power Supply Voltage		24 VDC±5%*	
Power Supply Current	A	0.08	0.25
Brake Activate Time	ms	20	
Brake Release Time	ms	30	
Time Rating		Continuous	

*For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

General Specifications

		Actuator	Driver
Heat-Resistant Class		130(B)	—
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*1	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal
Dielectric Strength Voltage		No abnormality is found with the following application for 1 minute: · Case – Motor windings 1.0 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*1 1.0 kVAC 50 Hz or 60 Hz	—
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)*2	0~+50°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection		IP00	IP10
Range of Multiple Rotation Inspection at Power OFF		±900 rotations (1800 rotations)	

*1 Electromagnetic brake type only

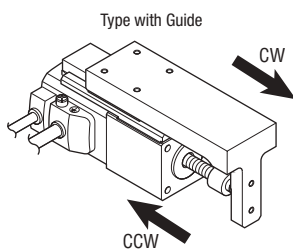
*2 Under the Oriental Motor's measurement conditions

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.

Traveling Direction

The traveling direction of joint is set by default as follows:



Dimensions (Unit: mm)

Compact Linear Actuators

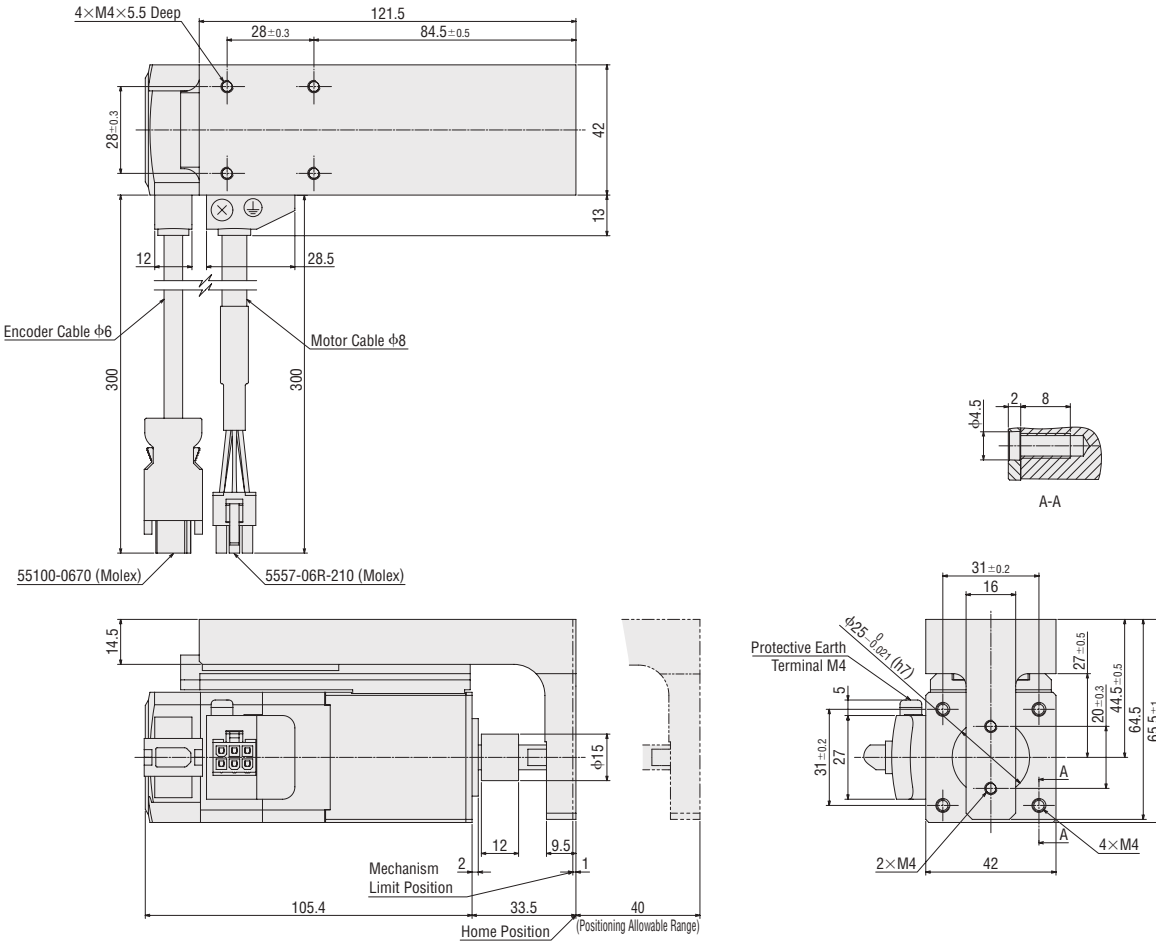
◇ Type with Guide (With cable on the right)

Frame Size 42 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM42RG-04A2AZAK DRSM42RG-04B2AZAK DRSM42RG-04A8AZAK	1.10	D7595

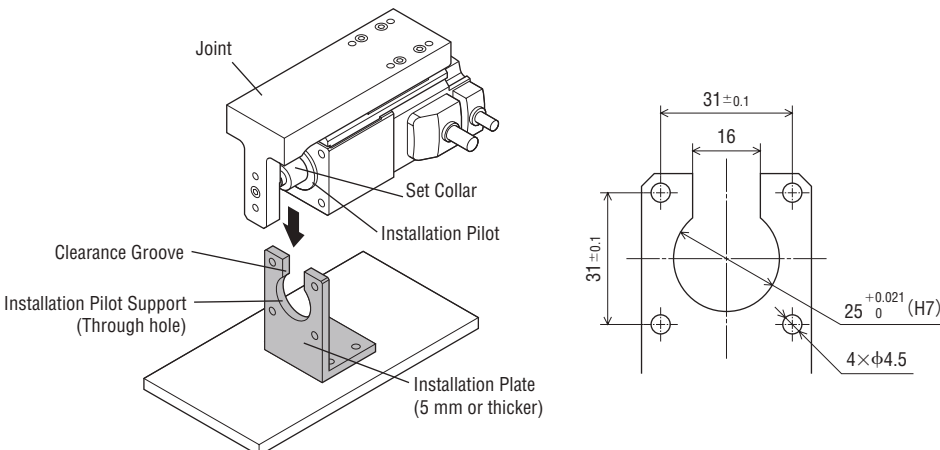
● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>



● The above figure is an outline drawing of the cable on the right. For outline drawing of the cable on the left, see our website.
<http://www.orientalmotor.com.sg/>

Dimensions for Installation Plate (Unit: mm)

Prepare a through hole for the installation pilot support and the clearance groove for the ball screw shaft on the installation plate.



● For details of installation, see page 09-24.

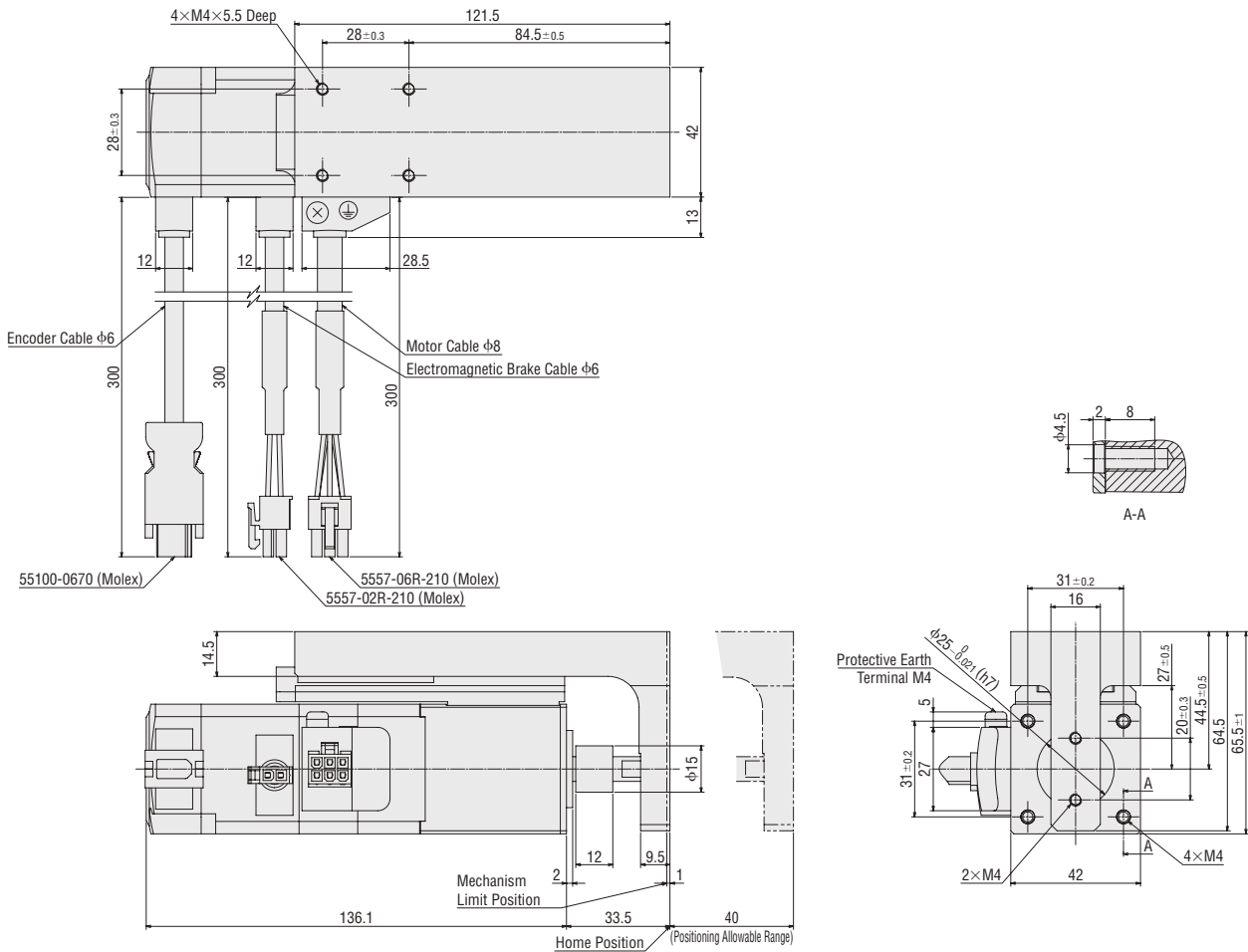
◇ Type with Guide With Electromagnetic Brake (With cable on the right)

Frame Size 42 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM42RG-04A2AZMK DRSM42RG-04B2AZMK DRSM42RG-04A8AZMK	1.30	D7598

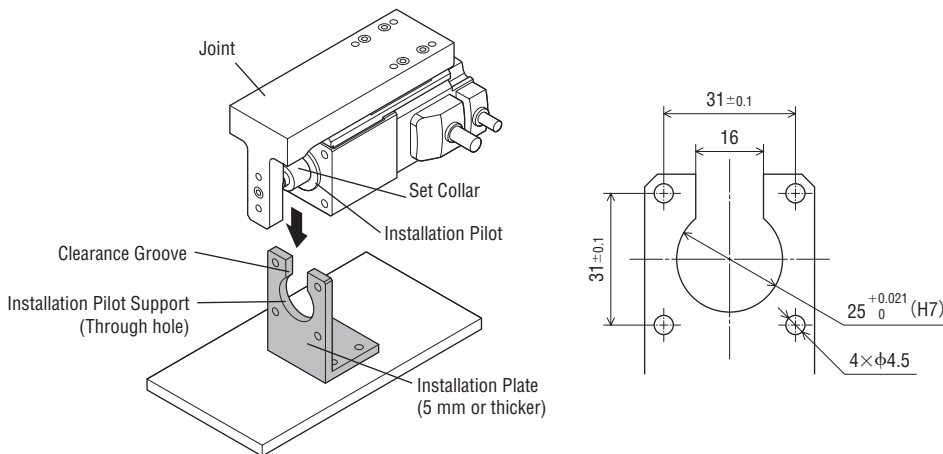
● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>



● The above figure is an outline drawing of the cable on the right. For outline drawing of the cable on the left, see our website.
<http://www.orientalmotor.com.sg/>

Dimensions for Installation Plate (Unit: mm)

Prepare a through hole for the installation pilot support and the clearance groove for the ball screw shaft on the installation plate.



● For details of installation, see page 09-24.

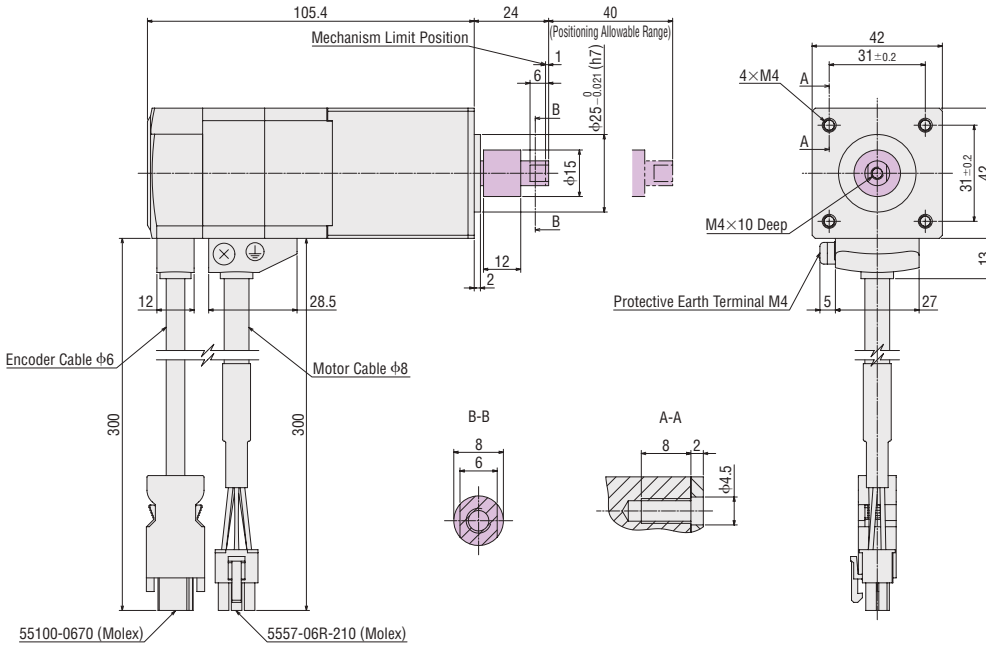
◇ Type without Guide

Frame Size 42 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM42-04A2AZAK	0.68	D7594
DRSM42-04B2AZAK		
DRSM42-04A8AZAK		

● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>

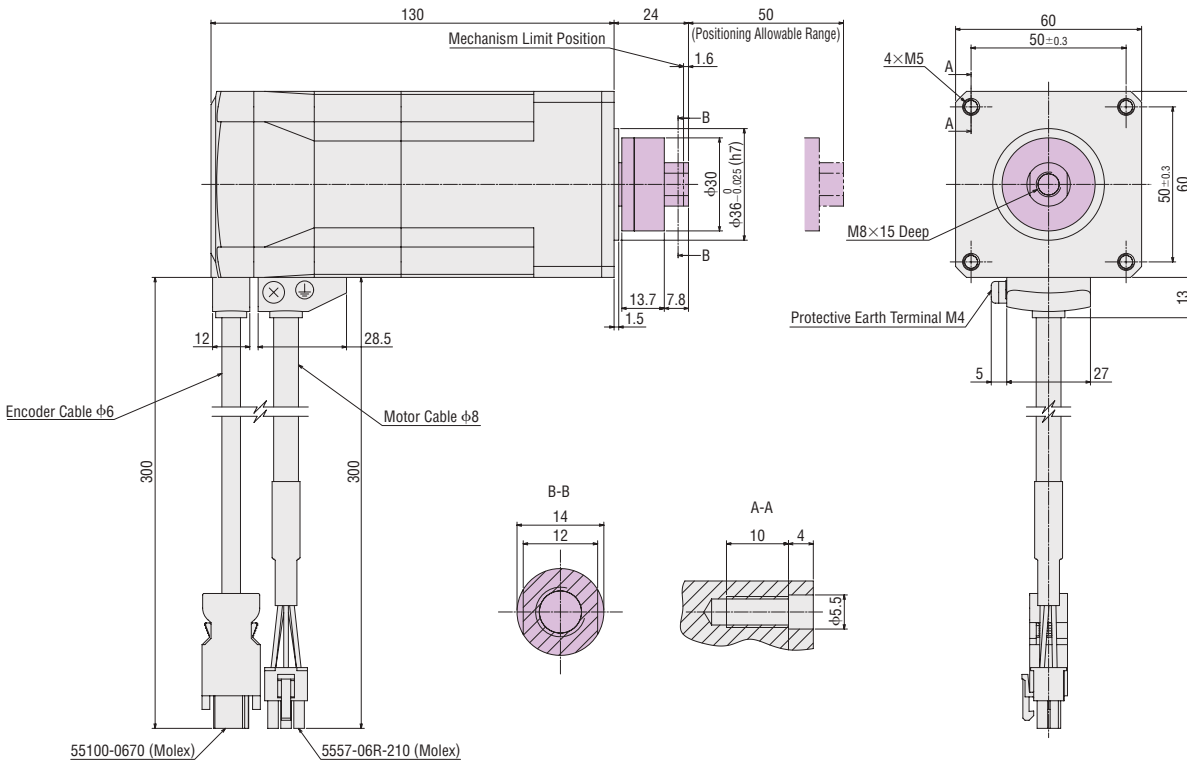


Frame Size 60 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM60-05A4AZAK	1.6	D7638

● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>



● The shaded areas are moving parts.

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

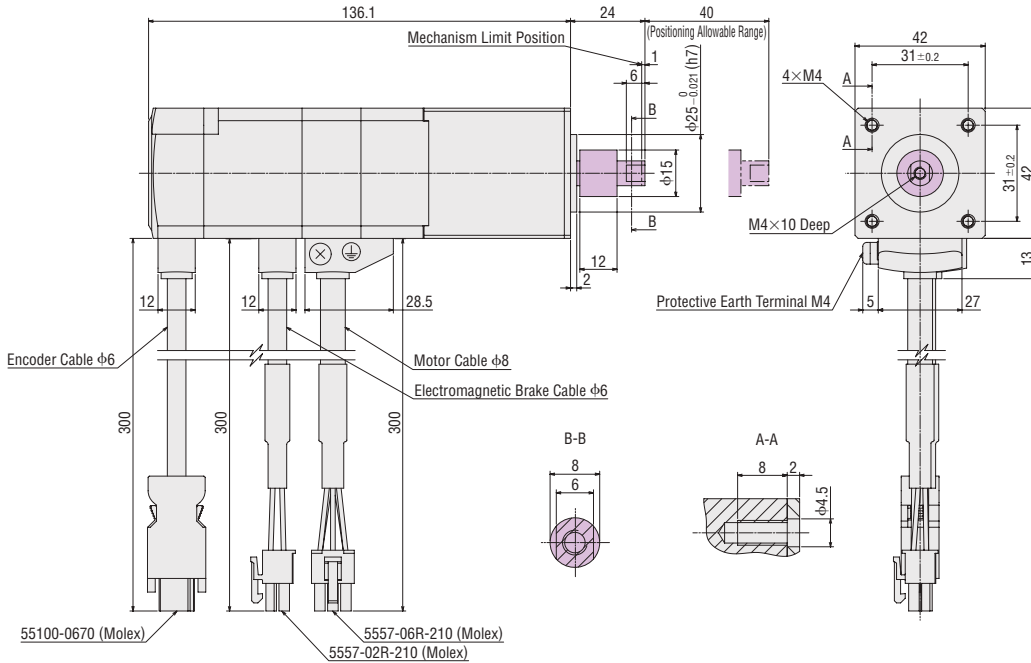
◇ Type without Guide With Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM42-04A2AZMK DRSM42-04B2AZMK DRSM42-04A8AZMK	0.85	D7597

● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>

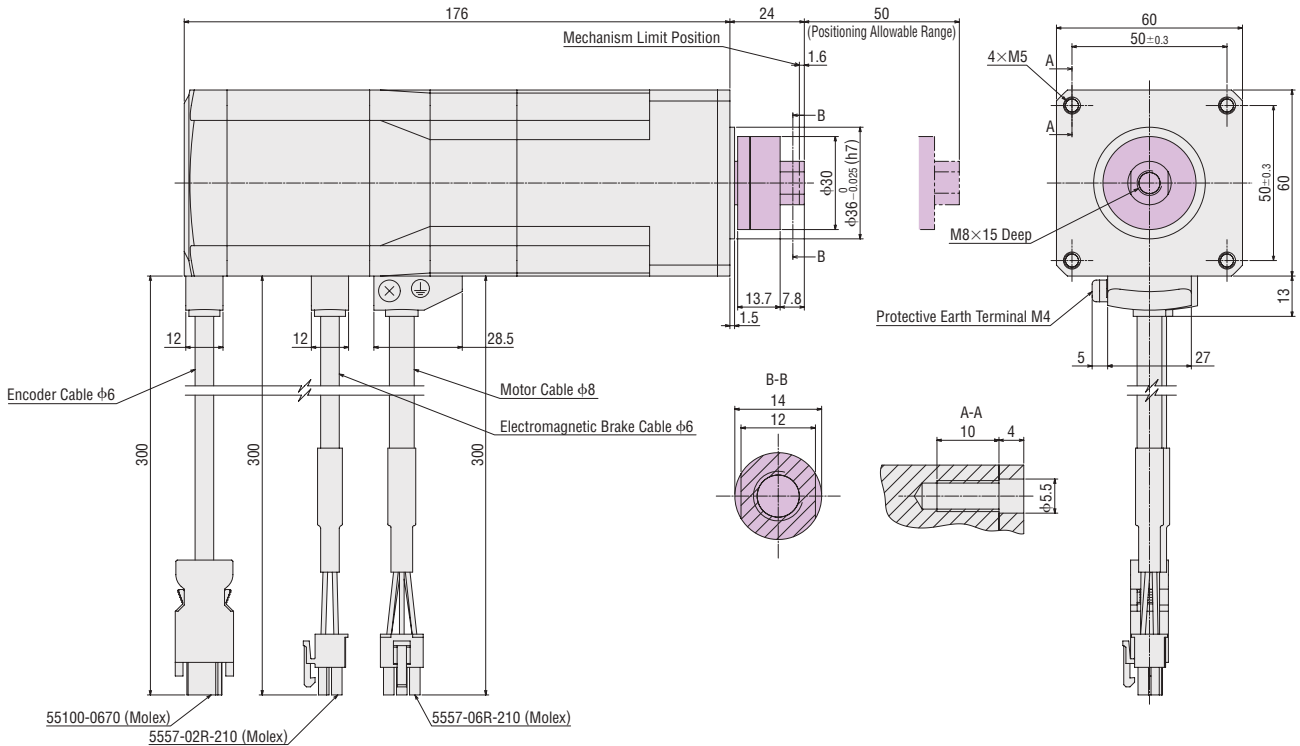


Frame Size 60 mm

2D & 3D CAD

Product Name	Mass kg	2D CAD
DRSM60-05A4AZMK	2.0	D7639

● For CAD data, please download from our website.
<http://www.orientalmotor.com.sg/>



● The shaded areas are moving parts.

Accessories (Sold Separately)

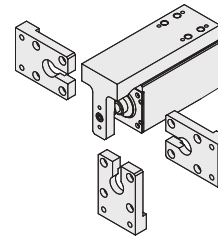
Installation Plates

Dedicated mounting bracket for installing actuators.
Screws between the actuator and the installation plate are included.

● Installation screws for installing to the equipment must be provided by the customer.

Material: Iron

Surface treatment: Black electroless nickel plating



The plate can be installed from three directions.

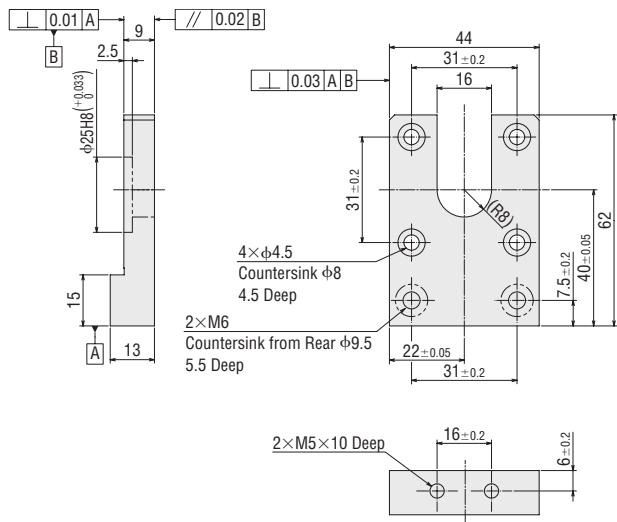
Product Line

2D & 3D CAD

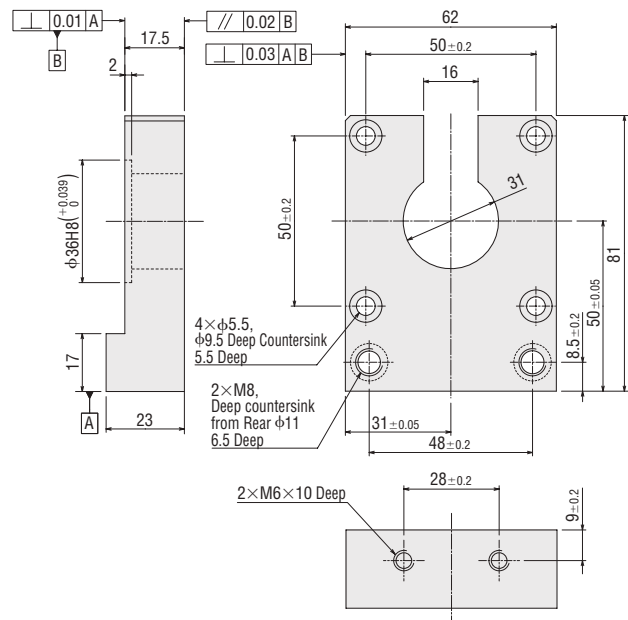
Product Name	List Price	Applicable Product	Mass (g)	2D CAD
PADRL-42	SGD235	DRSM42	165	D466
PADRL-60	SGD248	DRSM60	570	D2751

Dimensions (Unit: mm)

PADRL-42



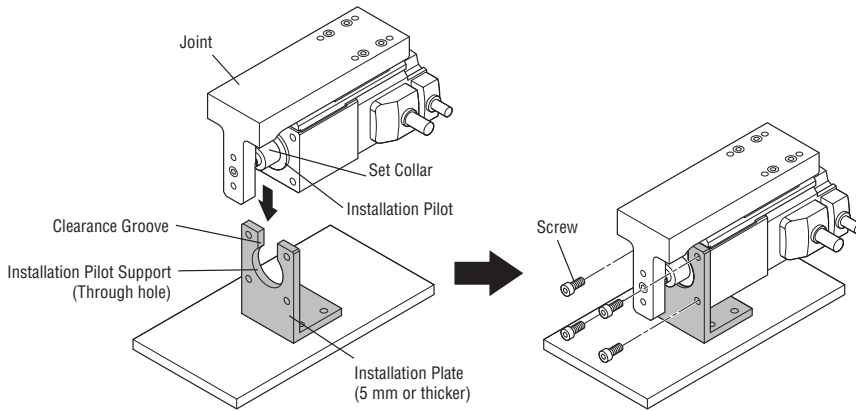
PADRL-60



Installation

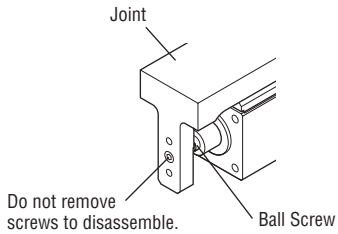
This section shows how to install the types with/without a guide.

Example of Installation for Type with Guide



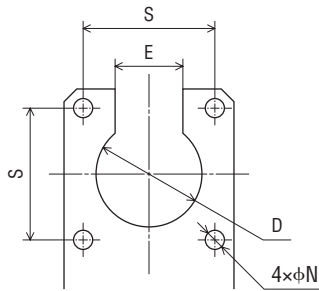
Note

Do not remove the joint from the ball screw shaft. Otherwise, the accuracy to install the ball screw shaft is reduced, causing a malfunction. Removing the joint may cause the home position set by default to shift and break the equipment in unexpected operations.



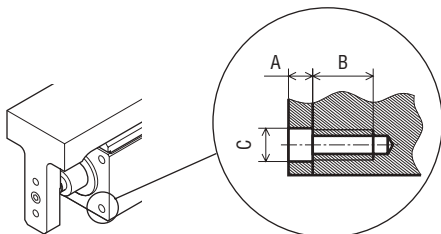
Shape of Installation Plate

Prepare a through hole for the installation pilot support and the clearance groove for the ball screw shaft on the installation plate.



Unit: mm				
Product Name	D	E	S	φN
DR5M42	25 $^{+0.021}_{0}$ (H7)	16	31 ± 0.2	4.5

Shape of Actuator Installation Hole



Unit: mm					
Product Name	Nominal Screw Diameter	Tightening Torque (N·m)	A	B	φC
DR5M42	M4	1.8	2	8	4.5

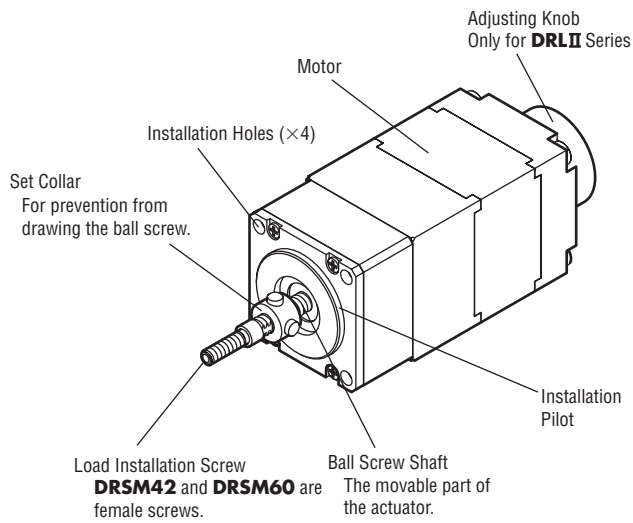
Installation Steps for Type without Guide

Names of Parts

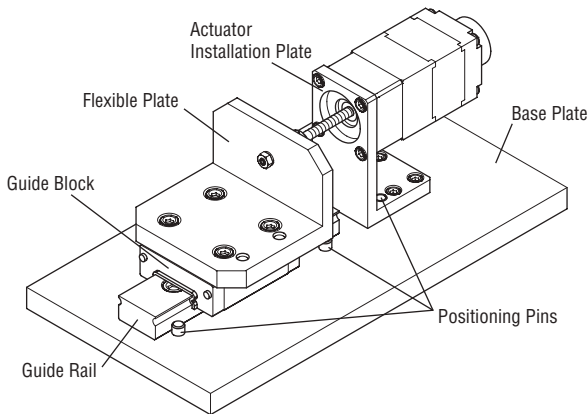
This section shows names of each part and those in a load installation example.

Type without Guide

This figure shows the type without guide for **DRL28**.



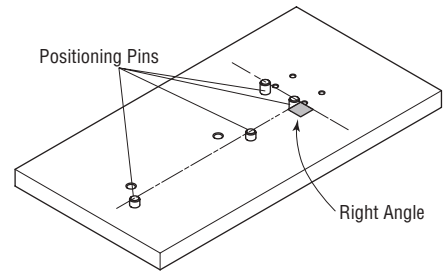
Load Installation Example



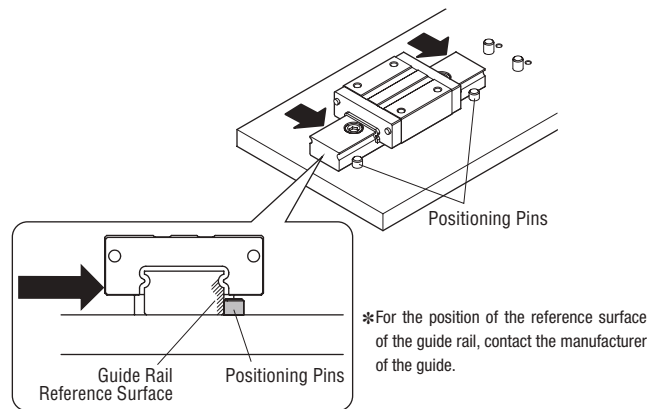
Installation Steps (Example)

Step1 Installing the Guide Rail

1. To position the guide rail and the actuator installation plate, install the positioning pins on the base plate.

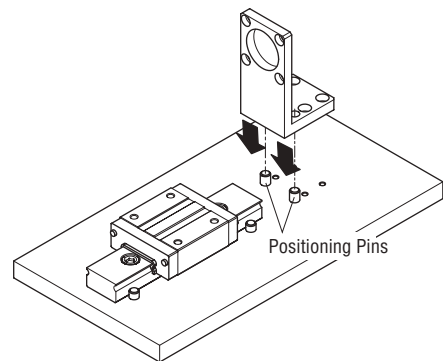


2. Pressing the reference surface of the guide rail against the positioning pins, fix it with screws.



Step2 Installing the Installation Plate

- Insert the actuator installation plate into the positioning pins on the base plate and fix it with screws.

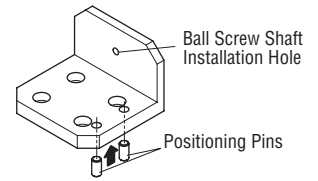
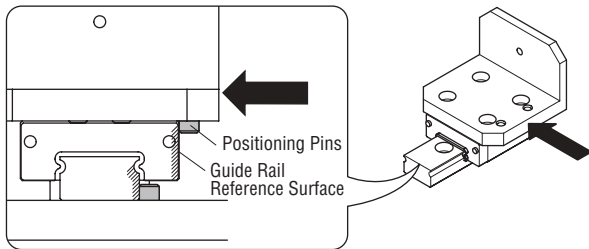


Step3 Installing the Flexible Plate

- If part precision centering is possible → ◇ Step3-A
- If part precision centering is not possible → ◇ Step3-B

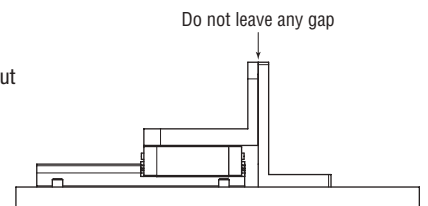
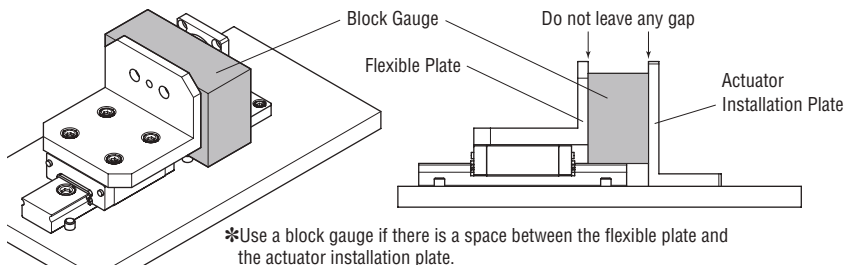
◇ Step3-A Installing the Flexible Plate (If part precision centering is possible)

1. To position the flexible plate and the guide block, install the positioning pins on the flexible plate.
2. Pressing the reference surface of the guide block against the positioning pins of the flexible plate, fix it with screws.

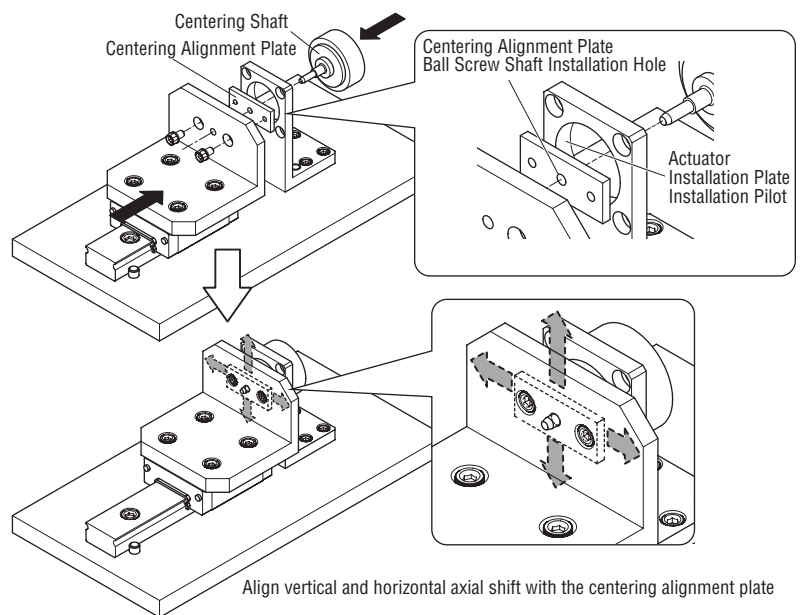


◇ Step3-B Installing the Flexible Plate (If part precision centering is not possible)

1. Install the flexible plate in either of the following ways:
 - Match the flexible plate and the actuator installation plate and fix them with screws not leaving any gap.
 - Insert a block gauge between the flexible plate and the actuator installation plate and fix them with screws without leaving any gap. If any gap is left, install the flexible plate again.

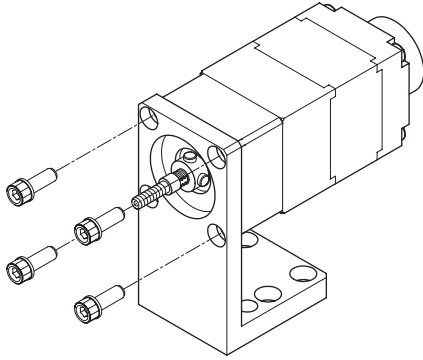


2. Using the centering shaft, align the axial center of the installation pilot of the actuator installation plate and the installation hole of the ball screw shaft on the centering alignment plate.
3. Slide the flexible plate back and force to check that it moves smoothly between the centering shaft and the flexible plate and then fix it. If the flexible plate does not move smoothly, move the centering alignment plate up and down and side by side to correct the axial shift.

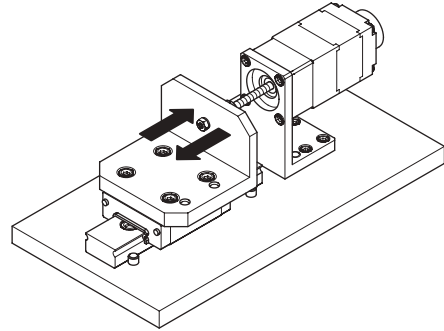


Step4 Fixing the Flexible Plate and the Ball Screw Shaft

1. Fix the compact linear actuator to the actuator installation plate with screws.

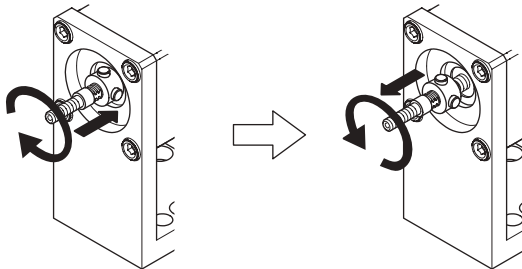


4. Run a test and check for no abnormal noise made from any part.

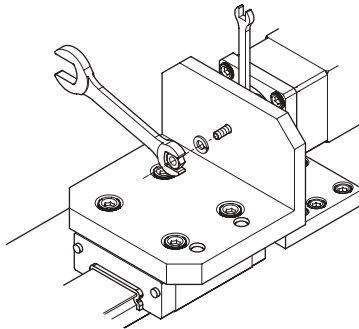


Product Name	Nominal Screw Diameter	Tightening Torque (N·m)
DRSM42	M4	1.8
DRSM60	M5	5

2. Press in the ball screw shaft until the set collar stops and then draw it out. The ball screw shaft should be drawn so that the set collar does not hit the actuator unit when tightening the shaft with a tool.



3. Insert the ball screw shaft into the installation hole for the shaft on the flexible plate and then fix with the nut. (Fix with a screw for **DRSM42** or **DRSM60**.)



Product Name	Nominal Screw Diameter	Tightening Torque (N·m)
DRSM42	M4 screw	1.8
DRSM60	M8 screw	5

LINEAR AND ROTARY ACTUATORS

Hollow Rotary Actuators

DGI Series

AZ Series Battery-Free Absolute Sensor Equipped

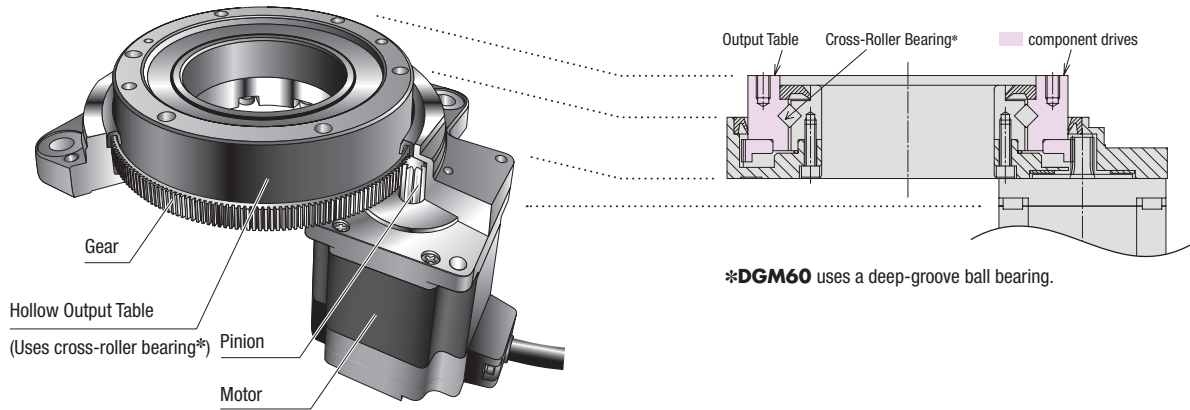


Hollow Rotary Actuator Characteristics

The **DGII** Series is a line of integrated products that combines a hollow rotary table with a stepper motor. The actuator has an internal speed reduction mechanism (gear ratio 18), which makes high power driving possible.

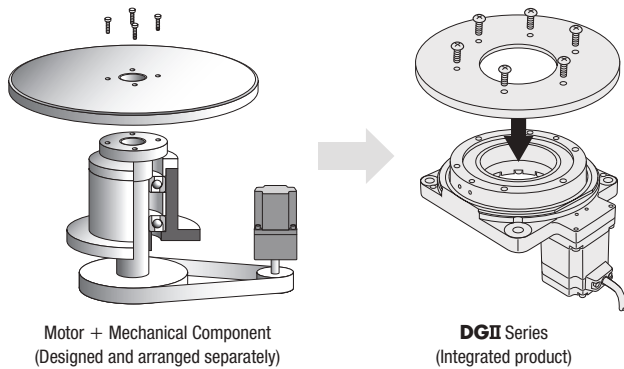
Features

A cross-roller bearing* is used on the output table, which allows for both high load and high rigidity.



Simplified Design

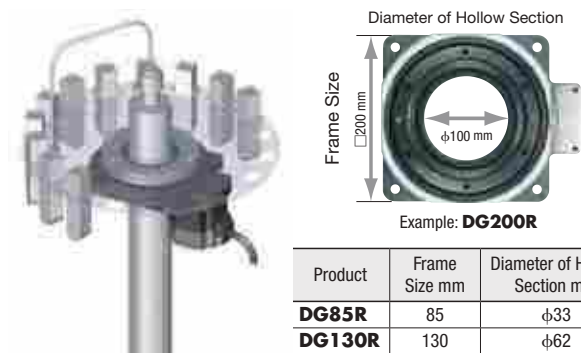
Tables and arms can be installed directly onto the output table. This saves the hassle and cost of designing an installation mechanism, arranging necessary mechanism parts, adjusting the belt tension, etc., when mechanical components such as a belt and pulley are used for installation.



Large-Diameter, Hollow Output Table Makes Simple Wiring and Piping Possible

The large diameter hollow hole (through-hole) helps reduce the complexity of wiring and piping, thus simplifying equipment design.

- Filling equipment with piped-in liquid



Product	Frame Size mm	Diameter of Hollow Section mm
DG85R	85	φ33
DG130R	130	φ62
DG200R	200	φ100

High Positioning Accuracy with Non-Backlash

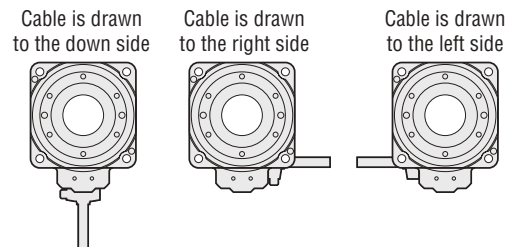
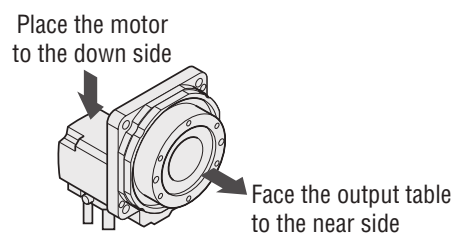
- Non-Backlash
- Repetitive Positioning Accuracy ± 15 arc seconds ($\pm 0.004^\circ$)

Note The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

Selectable Cable Drawing Direction

3 types are available to choose from depending on the direction to draw out the motor cable.

- The cable drawing direction shows the cable direction when facing the output table to the near side and placing the motor to the down side.



Power Supply	Cable Drawing Direction	Hollow Rotary Actuator			
		Frame Size			
		60 mm	85 mm	130 mm	200 mm
AC Input	Down	—	●	●	●
	Right	—	—	●	●
	Left	—	—	●	●
DC Input	Down	●	●	●	—
	Right	—	—	●	—
	Left	—	—	●	—

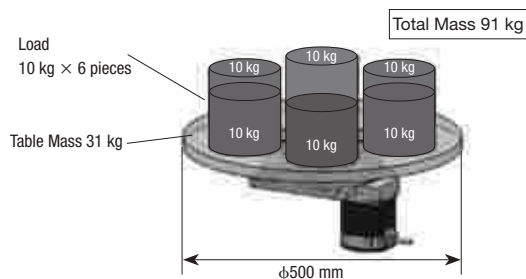
High Load and High Rigidity

DGII Series uses a cross-roller bearing on the output table bearing, which allows for both high load and high rigidity. (Except **DGM60** type)

- Maximum Permissible Axial Load 4000 N
- Maximum Permissible Moment 100 N·m

<Example Operation>

Actuator Product Name : **DGM200R-AZAC**
 Driver Product Name : **AZD-CD**
 Power-Supply Input : 230 VAC
 Load Mass : 91 kg (6 load pieces + table)
 : Load 10 kg/piece × 6 pieces
 : Table 31 kg
 (Diameter 500 mm, thickness 20 mm, iron)
 Overhang Distance : 160 mm
 Installation Direction : Horizontal



● High Load

The axial load for a total mass of 91 kg is 893 N.
 $(10 \text{ kg} \times 6 \text{ pieces} + 31 \text{ kg}) \times \text{gm/s}^2 \doteq 893 \text{ N}$
 The permissible axial load of the **DGM200R** is 4000 N, so this is within the permissible value.

High Load Driving is Possible

● High Rigidity

[Load Moment]

When a 10 kg load is placed 160 mm from the center of the table, the moment is 15.7 N·m.

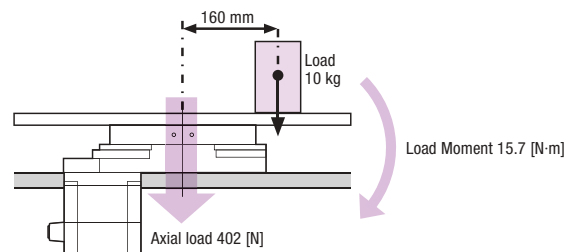
$$10 \text{ kg} \times \text{gm/s}^2 \times 0.16 \text{ m} \doteq 15.7 \text{ N}\cdot\text{m}$$

The permissible moment of the **DGM200R** is 100 N·m, so this is within the permissible value.

[Axial Load]

The axial load is: table + load $(31 \text{ kg} + 10 \text{ kg}) \times \text{gm/s}^2 \doteq 402 \text{ N}$

The permissible axial load of the **DGM200R** is 4000 N, so this is within the permissible value.

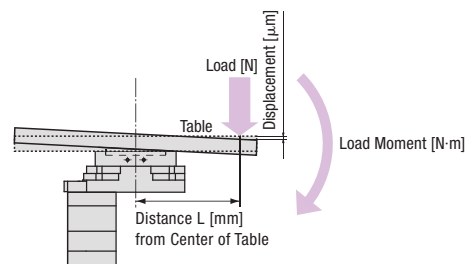


A high-rigidity rotary actuator allows a large load that is far away from the table center to be driven

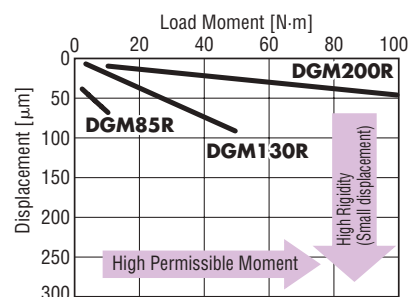
● Relationship Between Load Moment and Displacement when

Distance L=200 mm from Center of Table

The larger the frame size, the received permissible moment increases, but the displacement caused by the load moment decreases.

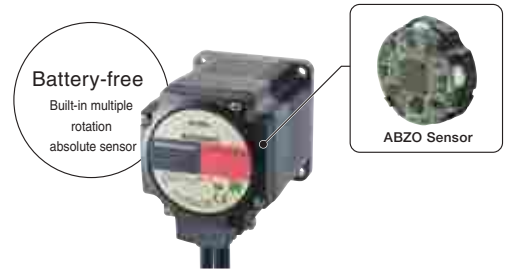


Displacement at Distance L = 200 mm from Center of Table



Simple Home Position Setting and Return-to-Home Thanks to Absolute System

The patented <ABZO Sensor>, a newly developed small mechanical multi-rotation absolute sensor. Contributes to improved productivity and cost reduction.



No Home Sensor Required

Because it is an absolute system, no home sensor is required.

Reduced Cost

Sensor costs and wiring costs can be reduced, allowing for lower system costs.

Simple Wiring

Wiring is simplified, and the degree of freedom for equipment design is increased.

Not Affected by Sensor Malfunctions

No need to worry about sensor malfunctions, sensor damage or sensor disconnection.

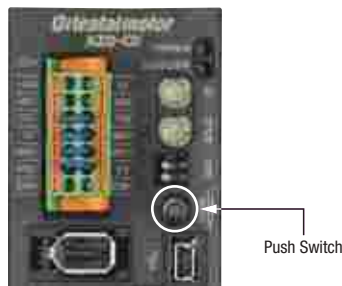
Improved Return-to-Home Accuracy

Home position accuracy is increased because the return-to-home action is performed regardless of any variations in home sensor sensitivity.

*If no limit sensor is installed, movements that exceed the limit values can be avoided through the use of the limits in the driver software.

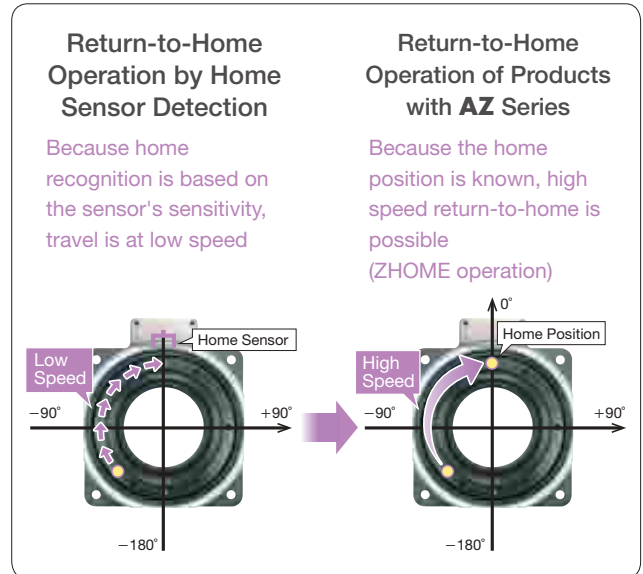
Easy Home Position Setting

The home position can be easily set by pressing a switch on the driver's surface, which is saved by the ABZO sensor. In addition, home setting is possible with the **MEXEO2** support software or by using an external input signal.



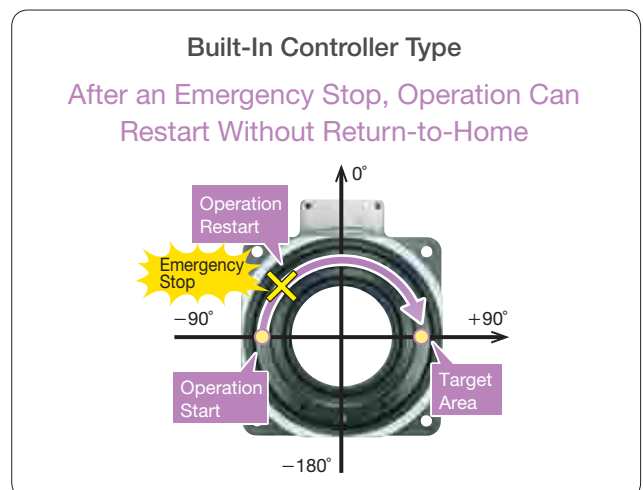
High-Speed Return-to-Home Operation

Because return-to-home is possible without using a home sensor, return-to-home can be performed at high speed without taking the specifications for sensor sensitivity into account, allowing for a shortened machine cycle.



Return-to-Home Not Required

Even if the power shuts down during a positioning operation, the positioning information is retained. Furthermore, for built-in controller types, positioning operations can restart without a return-to-home when recovering from an emergency stop of the production line or a blackout.



Battery-Free Because it is a Mechanical-Type Sensor

Battery-Free

No battery is required because it is a mechanical-type sensor. Because positioning information is managed mechanically by the ABZO sensor, the positioning information can be preserved, even if the power turns off, or if the cable between the motor and the driver is disconnected.

Reduced Maintenance

Because there's no battery that needs replacing, maintenance time and costs can be reduced.

Unlimited Driver Installation Possibilities

Because there is no need to secure space for battery replacement, there are no restrictions on the installation location of the driver, improving the flexibility and freedom of the layout design of the control box.



Safe for Overseas Shipping

Normal batteries will self-discharge, so care must be taken when the equipment requires a long shipping time, such as when being sent overseas. The ABZO sensor does not require a battery, so there is no limit to how long the positioning information is maintained. In addition, there's no need to worry about various safety regulations, which must be taken into consideration when shipping a battery overseas.

Position Holding Even When the Cable Between the Motor and Driver is Detached

Positioning information is stored within the ABZO sensor.

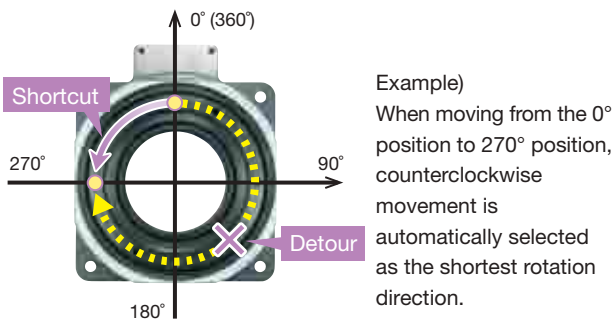
Convenient Functions Thanks to the Use of the AZ Series

Convenient Operation & Setting

By using models with **AZ** Series functions, coordinate management on the hollow rotary actuator output table can be carried out, and the follow operations are possible.

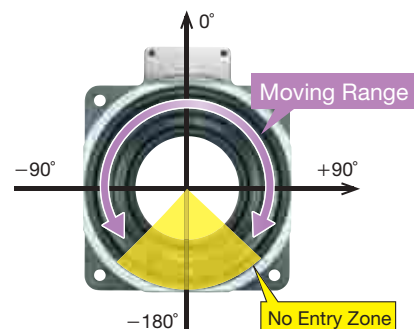
Reduce takt time with short-cut operations

This is an operation method in which the actuator rotates in the direction that is the shortest distance to the target position. This can reduce the takt time of the equipment.



Simple control by setting no-entry zones

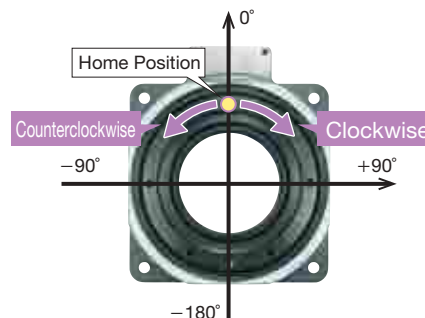
If there are obstructions on the equipment, it is possible to set a region on the output table that will be avoided.



Reduced Equipment Setup Time

The necessary operation parameters for the hollow rotary actuator are set at the time of shipment, which contributes to reduced equipment setup time.

- Home Position
- Resolution Setting (0.01°/step)
- Output Table Rotation Direction Setting
- Round Setting $\pm 180^\circ$
- All initial setting values can be changed.



High Performance and High Reliability Thanks to Stepper Motor and Driver Packages α STEP

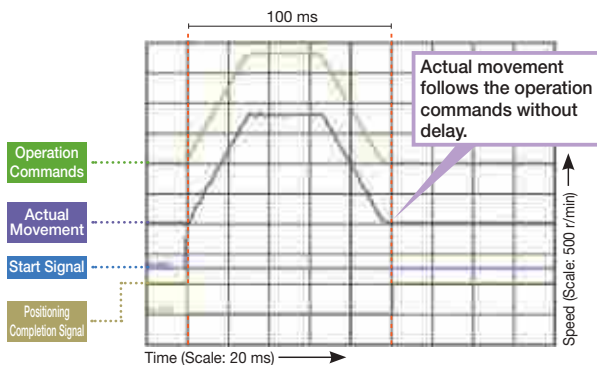
High reliability is provided by using stepper motor and driver packages that employ a control method unique to Oriental Motor, which combines the merits of both open loop control and closed loop control.

Quick Positioning through Agile Responsiveness

With stepper motors, short distance positioning is carried out in a short period of time.

Stepper motors are operated synchronously with pulse commands, and while they are compact, they still generate high torque and offer excellent acceleration performance and response.

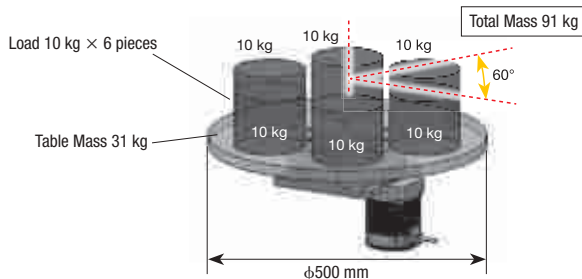
Actual stepper motor movement in response to operation commands



<Example Operation>

Actuator Product Name : **DGM200R-AZAC**
 Driver Product Name : **AZD-CD**
 Power-Supply Input : 230 VAC
 Load Mass : 91 kg (6 load pieces + table)
 : Load 10 kg/piece \times 6 pieces
 : Table 31 kg (Diameter 500 mm, thickness 20 mm, iron)
 Installation Direction : Horizontal
 Traveling Amount : 60°

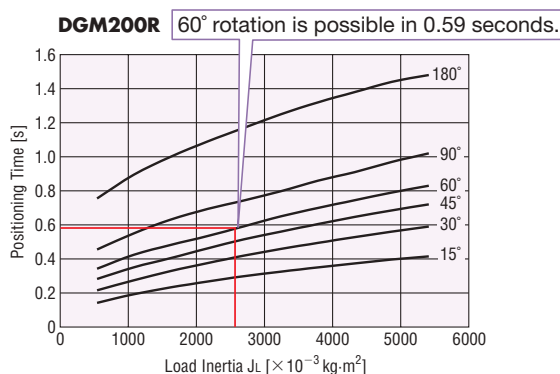
Total inertia of table and load = $2633 \times 10^{-3} \text{ kg}\cdot\text{m}^2$



● Quick Positioning

With the **DGM200R**, 60° rotation of a total mass of 91 kg is possible in 0.59 seconds.

Load Inertia – Positioning Time (Reference value)



The positioning time can be inferred using catalog data.

Quick positioning is possible even with large loads.



Stepper Motor and Driver Packages α STEP

AZ Series

With built-in battery-free absolute sensor

Continues Operation Even with Sudden Load Fluctuation and Sudden Acceleration

In normal conditions, it operates synchronously with pulse commands under open loop control, and because of its compact size and high torque generation, it has excellent acceleration performance and responsiveness. In an overload condition, it switches immediately to closed loop control to correct the position.

Low Vibration Even at Low Speed

Thanks to the microstep drive system and smooth drive function* of the stepper motor, resolution can be improved without mechanical elements such as a speed reduction mechanism. As a result, speed fluctuation is minimal even at low speeds, leading to improved stability.

*About the Smooth Drive Function

The smooth drive function automatically microsteps based on the same traveling amount and traveling speed used in the full step mode, without changing the pulse input settings.

Alarm Signal Output in Case of Abnormality

If a continuous overload is applied, an alarm signal is output. Also, when the positioning is completed, a signal is output. This provides high reliability.

No Tuning Required

Because it is normally operated with open loop control, even when the load fluctuates, no tuning is needed to obtain movement exactly as set.

Maintains Stop Position Without Hunting

Thanks to the normally open loop control, there is no hunting, the minute shaft movements that occur during stopping. Because the stop location is securely maintained, it is best suited for applications that undergo vibration during stops.

Applications & Uses

Applications that Require High Rigidity

- Applications in which a Moment Load is Applied (Ceiling mounted)



Applications that Require High Performance Motors

- High Positioning Accuracy Applications (Image inspection equipment)
- Applications with Load Fluctuations (Disc manufacturing equipment)

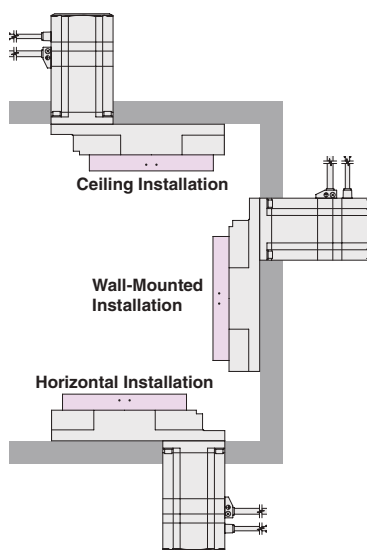


Installation Direction

In addition to horizontal installation, the **DGII** Series can also be ceiling-mounted or wall-mounted, expanding the possibilities of equipment design.

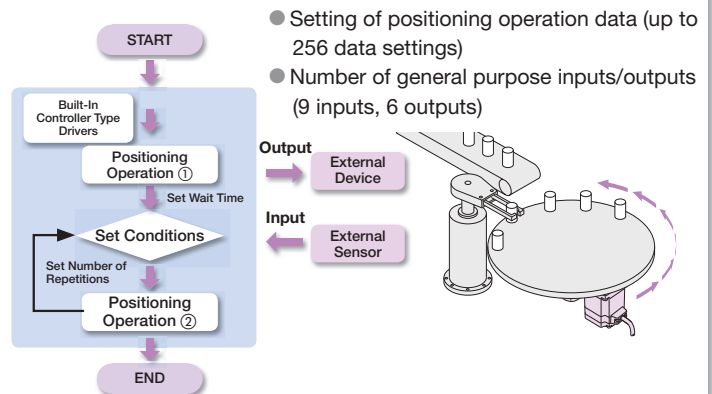
Note

A small amount of grease will occasionally seep out of the hollow rotary actuator. If a grease leak would cause a contamination issue near the machine, either perform routine inspections, or install protective equipment such as an oil sump.



Example Use of Simple Sequence Function (Built-in Controller Type)

The built-in controller type can simplify sequence control programming by outputting control signals to other devices, and incorporating external input signals from sensors, etc.

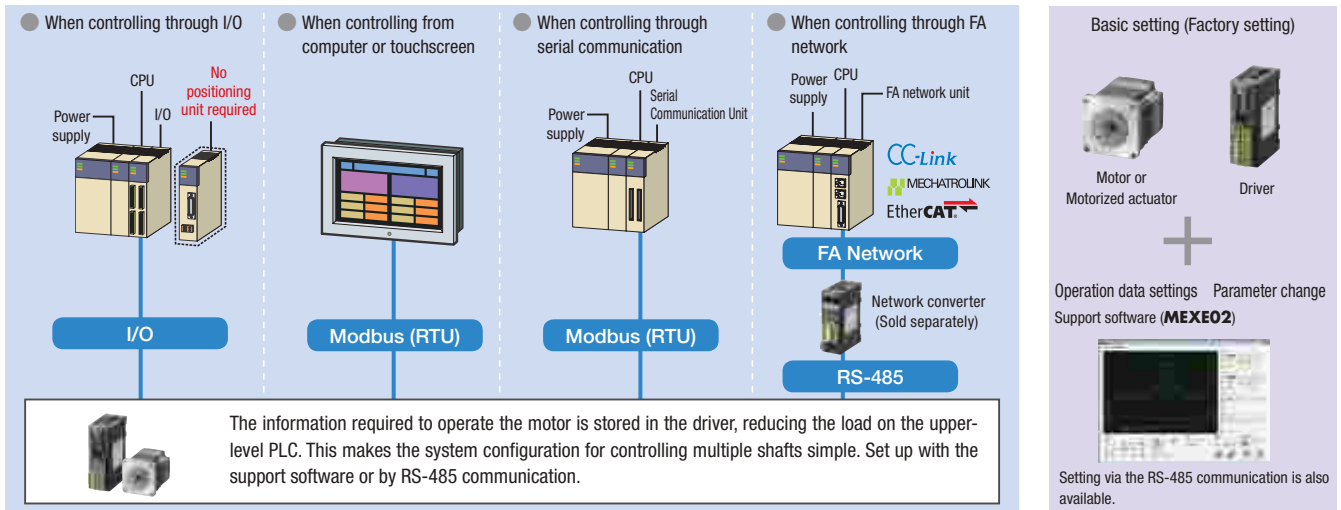


Drivers Selectable According to the Host System

A compatible driver can be selected for the **DGII** Series according to your host system.

● Built-in Controller Type **FLEXO**

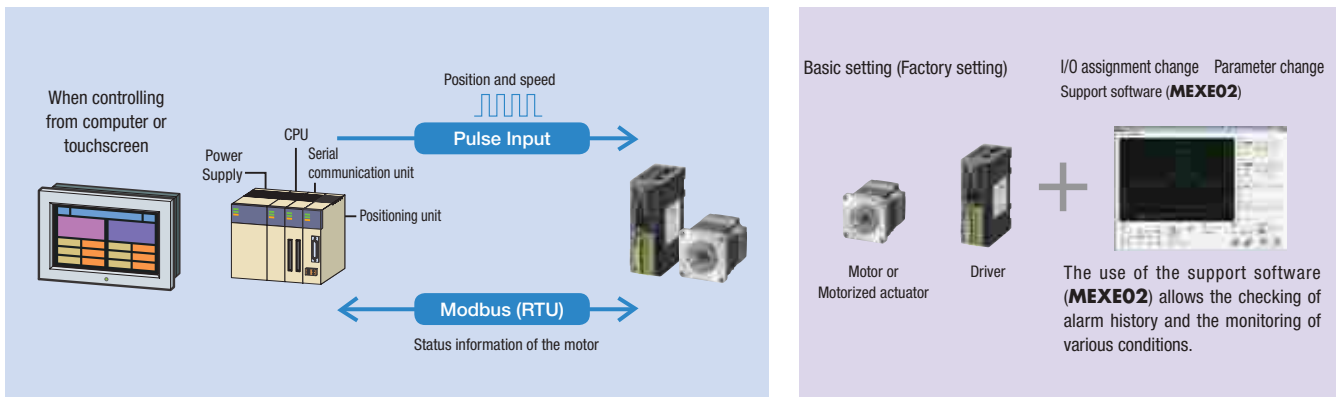
Set the operating data in the driver, and the operating data is selected and executed from the host system. Host system connection and control is performed through I/O, Modbus (RTU), RS-485 communication, or FA network. The use of a network converter (sold separately) allows control via CC-Link communication, MECHATROLINK communication, or EtherCAT communication.



FLEXO FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

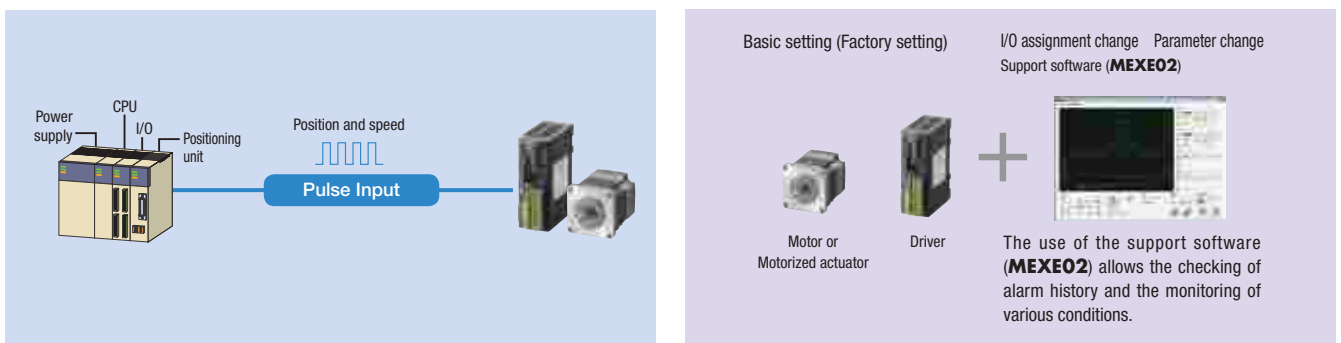
● Pulse Input Type with RS-485 Communication

This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.



● Pulse Input Type

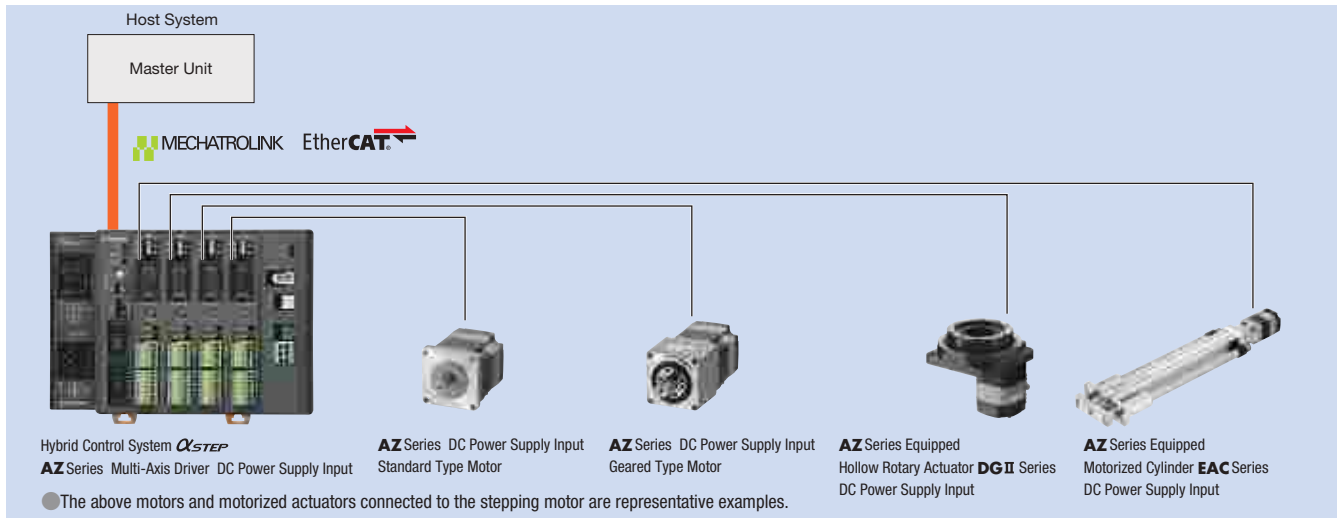
This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.



- **CC-Link** and **MECHATROLINK** are the registered trademarks of the CC-Link Partner Association and the MECHATROLINK Members Association, respectively.
- **EtherCAT** is the registered trademark licensed by Beckhoff Automation in Germany.
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website. The media is also available (for free).

● **Network-compatible Multi-Axis Driver* (DC power supply input only)**

Multi-axis driver that supports MECHATROLINK-III and EtherCAT Drive Prole. The driver can be connected to a DC power supply motor of the **AZ** Series and to a actuator equipped with motor. 2-axes, 3-axes, and 4-axes connectable drivers are available.



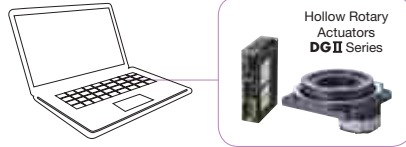
*For details of the products, see the Oriental Motor website.

Simple Operation with Support Software

Easy to use support software enables data setting and verification of the actual drive by using a computer.

Support Software (MEXE02)

The support software can be downloaded from the website. Oriental Motor also provides it on a CD-ROM free of charge.



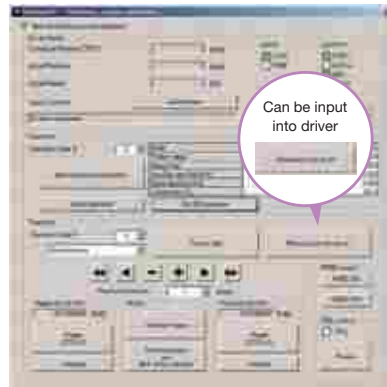
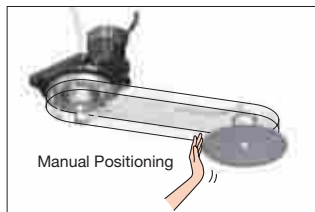
● **Operating Data and Parameter Settings**

Setting of operation data and parameters is easily performed via computer. Because the setting data can be saved, when the driver is replaced, the same settings can be used by transferring the saved data.



● **Teaching and Remote Operation**

By using the data setting software and manual positioning, the operation command information can be input into the driver. Use when setting up equipment.

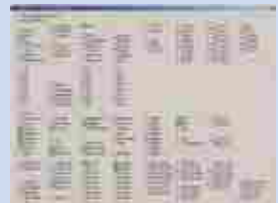


● Multi-monitoring enables remote operation and teaching while monitoring.

Various Monitoring Functions

● **I/O Monitoring**

The state of I/O wiring to the driver can be verified by computer. This can be used for post-wiring I/O checks or I/O checks during operation.



● **Waveform Monitoring**

The operational state of the motor (such as command speed and motor load factor), can be checked by an oscilloscope-like image. This can be used for equipment start-up and adjustment.



● **Alarm Monitoring**

When an abnormality occurs, the details of the abnormality and the solution can be checked.















Lineup

Hollow Rotary Actuators **DGII** Series *αSTEP AZ* Equipped

AC : Single-Phase 100-120 VAC,
Single-Phase/Three-Phase 200-240 VAC Input

DC : 24/48 VDC Input

Actuators													Driver			
Product Name Frame Size Power Supply Input	Electro- magnetic Brake	Diameter of Hollow Section [mm]	Permissible Torque [N·m]	Permissible Moment Load [N·m]				Permissible Axial Load [N]				Lost Motion [arcmin]	Backlash [arcmin]	Angular Transmission Accuracy [arcmin]	Repetitive Positioning Accuracy [arcsec]	Type
				20	40	60	80	500	1000	2000	3000					
DGM60 60 mm NEW DC 	Not Equipped	φ28	0.9	2	100							2	4	±15	Built-in Controller FLEX  AC  DC	
	Equipped															
DGM85R 85 mm AC DC 	Not Equipped	φ33	4.5	10	500							2	4	±15		Pulse Input with RS-485 Communication  AC  DC
	Equipped															
DGM130R 130 mm AC DC Selectable Cable Drawing Direction 	Not Equipped	φ62	12	50	2000					Non- Backlash	3	±15	Pulse Input  AC  DC			
	Equipped															
DGM200R 200 mm AC Selectable Cable Drawing Direction 	Not Equipped	φ100	50	100	4000						2	±15		Network -Compatible Multi-Axis Driver*  DC 		
	Equipped															

* For details please refer to our website.

How to Read Specifications

Specifications

Frame Size		85 mm	130 mm	200 mm
Actuator Product Name	Single Shaft Type	DGM85R-AZAC	DGM130R-AZAC □	DGM200R-AZAC □
	Electromagnetic Brake Type	DGM85R-AZMC	DGM130R-AZMC □	DGM200R-AZMC □
Driver Model Name	Built-in Controller Type	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase / Three-Phase 200-240 VAC)		
	Pulse Input Type with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase / Three-Phase 200-240 VAC)		
	Pulse Input Type	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase / Three-Phase 200-240 VAC)		
Built-In Motor (AZ Series)		AZM46	AZM66	AZM911
①	Type of Output Table Supporting Bearing	Cross-Roller Bearing		
②	Inertia	J: kg·m ²	21120 × 10 ⁻⁷ [26304 × 10 ⁻⁷]	147380 × 10 ⁻⁷ [199220 × 10 ⁻⁷]
	Gear Ratio	18		
③	Minimum Traveling Amount of the Output Table	deg/STEP	0.01	
④	Permissible Torque	N·m	4.5	12
		Power ON	2.7	12
	Holding Torque at Motor Standstill	Electromagnetic Brake	2.7	12
		N·m	20	36 [20]
⑥	Max. Speed	deg/seconds	1200 (200 r/min)	
⑦	Repetitive Positioning Accuracy	arc second	±15 (±0.004°)	
⑧	Lost Motion	arc minute	2 (0.033°)	
⑨	Angular Transmission Accuracy	arc minute	4 (0.067°)	3 (0.05°)
⑩	Permissible Axial Load	N	500	2000
⑪	Permissible Moment	N·m	10	50
⑫	Runout of Output Table Surface	mm	0.015	
⑬	Runout of Output Table Inner (Outer) Diameter	mm	0.015	0.030
⑭	Parallelism of Output Table	mm	0.030	0.050
⑮	Degree of Protection	IP40 (IP20 for motor connector)		
Power-Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase / Three-Phase 200-240 VAC -15~+6% 50/60 Hz	
	Input Current A	Single-Phase 100-120 VAC	2.7	3.8
		Single-Phase 200-240 VAC	1.7	2.3
		Three-Phase 200-240 VAC	1.0	1.4
Control Power Supply		24 VDC±5% 0.25 A [0.33 A]	24 VDC±5% 0.25 A [0.5 A]	

① Type of Output Table Supporting Bearing

This is the type of the bearing used for the output table.

② Inertia

This is the total sum of the rotor inertial moment of the motor and the inertial moment of the speed reduction mechanism converted to a moment on the output table.

③ Minimum Traveling Amount of the Output Table

This is the minimum traveling amount that can be set. (Factory setting)

④ Permissible Torque

This is the limit of mechanical strength of the speed reduction mechanism. Make sure the applied torque, including the acceleration torque and load fluctuation, does not exceed the permissible torque.

⑤ Holding Torque at Motor Standstill

Power ON: This is the maximum torque with which to hold the output table in position if it stops when the power is on.

Electromagnetic Brake: This is the maximum torque with which to hold the output table in position using an electromagnetic brake when it stops.

⑥ Max. Speed

This is the output table speed that the mechanical strength of the speed reduction mechanism can tolerate.

⑦ Repetitive Positioning Accuracy

This is a value indicating the degree of error that generates when positioning is performed repeatedly to the same position in the same direction.

⑧ Lost Motion

This is the difference in stopped angles achieved when the output table is positioned to the same position in the forward and reverse directions.

⑨ Angular Transmission Accuracy

This is the difference between the theoretical rotation angle of the output table as calculated from the input pulse counter, and the actual rotation angle.

⑩ Permissible Axial Load

This is the permissible value of axial load applied to the output table in the axial direction.

⑪ Permissible Moment

When a load is applied to a position away from the center of the output table, the output table receives a tilting force. The permissible moment load refers to the permissible value of moment load calculated by multiplying the offset distance from the center by the applied load.

⑫ Runout of Output Table Surface

This is the maximum value of runout of the installation surface of the output table when the output table is rotated under no load.

⑬ Runout of Output Table Inner (Outer) Diameter

This is the maximum value of runout of the inner diameter or outer diameter of the table when the output table is rotated under no load.

⑭ Parallelism of Output Table

This is the inclination of the installation surface of the output table compared with the actuator installation surface on the equipment side.

⑮ Degree of Protection

Based on IEC60529 and EN60034-5 (=IEC60034-5), dust-resistance and waterproofing regarding the degree of protection of the device is classified using a grade.

Hollow Rotary Actuators

DGII Series α STEP AZ Equipped AC Input

Product Number Code

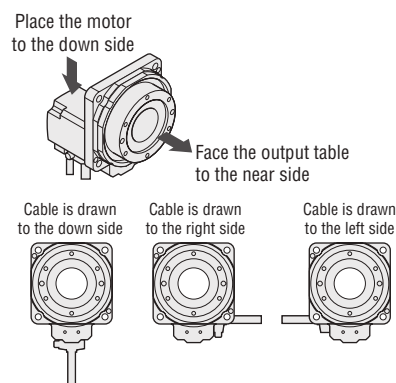
Hollow Rotary Actuators

DGM 130 R - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	DGM : DGII Series Actuator
②	Frame Size	85 : 85 mm 130 : 130 mm 200 : 200 mm
③	Type of Output Table Supporting Bearing	R : Cross-Roller Bearing
④	Motor Type	AZ : AZ Series
⑤	Motor Configuration	A : Single Shaft M : With Electromagnetic Brake
⑥	Motor Specification	C : AC Power Supply Input Specification
⑦	Cable Drawing Direction*	Blank : Down side R : Right side L : Left side

* The cable drawing direction represents the cable direction for when the output table is faced to the near side and the motor is placed to the down side.



Drivers

AZD - C D

① ② ③

①	Driver Type	AZD : AZ Series Driver
②	Power Supply Input	A : Single-Phase 100-120 VAC C : Single-Phase /Three-Phase 200-240 VAC
③	Type	D : Built-in Controller Type X : Pulse Input Type with RS-485 Communication Blank : Pulse Input Type

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		CC : Cable
②	Length	010 : 1 m 020 : 2 m 030 : 3 m 050 : 5 m 070 : 7 m 100 : 10 m 150 : 15 m 200 : 20 m
③	Reference Number	
④	Applicable Models	Z : AZ Series
⑤	Cable Type	F : Connection Cable Sets R : Flexible Connection Cable Sets
⑥	Electromagnetic Brake	Blank : Without Electromagnetic Brake B : With Electromagnetic Brake

Product Line

Hollow Rotary Actuators

◇ Single Shaft

Frame Size	Product Name	List Price
85 mm	DGM85R-AZAC	SGD1,938
130 mm	DGM130R-AZAC DGM130R-AZACR DGM130R-AZACL	SGD2,188
200 mm	DGM200R-AZAC DGM200R-AZACR DGM200R-AZACL	SGD2,613



◇ With Electromagnetic Brake

Frame Size	Product Name	List Price
85 mm	DGM85R-AZMC	SGD2,113
130 mm	DGM130R-AZMC DGM130R-AZMCR DGM130R-AZMCL	SGD2,413
200 mm	DGM200R-AZMC DGM200R-AZMCR DGM200R-AZMCL	SGD2,863



● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
Single-Phase100-120VAC	AZD-AD	SGD650
Single-Phase/Three-Phase200-240VAC	AZD-CD	SGD650



◇ Pulse Input Type with RS-485 Communication

Power Supply Input	Product Name	List Price
Single-Phase 100-120VAC	AZD-AX	SGD650
Single-Phase/Three-Phase200-240VAC	AZD-CX	SGD650



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
Single-Phase100-120VAC	AZD-A	SGD588
Single-Phase/Three-Phase200-240VAC	AZD-C	SGD588

● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable if the cable will be bent.

The motor cable and electromagnetic brake cable from the hollow rotary actuator cannot be connected directly to the driver. When connecting to a driver, use the accessory connection cable (sold separately) or use the included connection cable (for products which include a connection cable).

◇ For Motor/Encoder



Product Line	Length m	Product Name	List Price
Connection Cable Sets	0.5	CC005VZF	SGD38
	1	CC010VZF	SGD38
	1.5	CC015VZF	SGD44
	2	CC020VZF	SGD50
	2.5	CC025VZF	SGD56
	3	CC030VZF	SGD63
	4	CC040VZF	SGD98
	5	CC050VZF	SGD110
	7	CC070VZF	SGD136
	10	CC100VZF	SGD176
Flexible Connection Cable Sets	15	CC150VZF	SGD244
	20	CC200VZF	SGD310
	0.5	CC005VZR	SGD84
	1	CC010VZR	SGD84
	1.5	CC015VZR	SGD92
	2	CC020VZR	SGD99
	2.5	CC025VZR	SGD106
	3	CC030VZR	SGD111
	4	CC040VZR	SGD126
	5	CC050VZR	SGD141
7	CC070VZR	SGD180	
10	CC100VZR	SGD236	
15	CC150VZR	SGD333	
20	CC200VZR	SGD426	

◇ For Motor/Encoder/
Electromagnetic Brake



Product Line	Length m	Product Name	List Price
Connection Cable Sets	0.5	CC005VZFB	SGD53
	1	CC010VZFB	SGD53
	1.5	CC015VZFB	SGD60
	2	CC020VZFB	SGD68
	2.5	CC025VZFB	SGD75
	3	CC030VZFB	SGD83
	4	CC040VZFB	SGD121
	5	CC050VZFB	SGD135
	7	CC070VZFB	SGD166
	10	CC100VZFB	SGD214
Flexible Connection Cable Sets	15	CC150VZFB	SGD294
	20	CC200VZFB	SGD373
	0.5	CC005VZRB	SGD114
	1	CC010VZRB	SGD114
	1.5	CC015VZRB	SGD124
	2	CC020VZRB	SGD134
	2.5	CC025VZRB	SGD143
	3	CC030VZRB	SGD151
	4	CC040VZRB	SGD171
	5	CC050VZRB	SGD191
7	CC070VZRB	SGD240	
10	CC100VZRB	SGD311	
15	CC150VZRB	SGD433	
20	CC200VZRB	SGD551	

■ Included

● Actuators

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		<ul style="list-style-type: none"> • Connector for CN4 (1 piece) • Connector for CN1 (1 piece) • Connector for CN5 (1 piece) • Connector Wiring Lever (1 piece) 	1 Copy

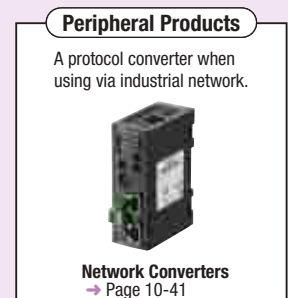
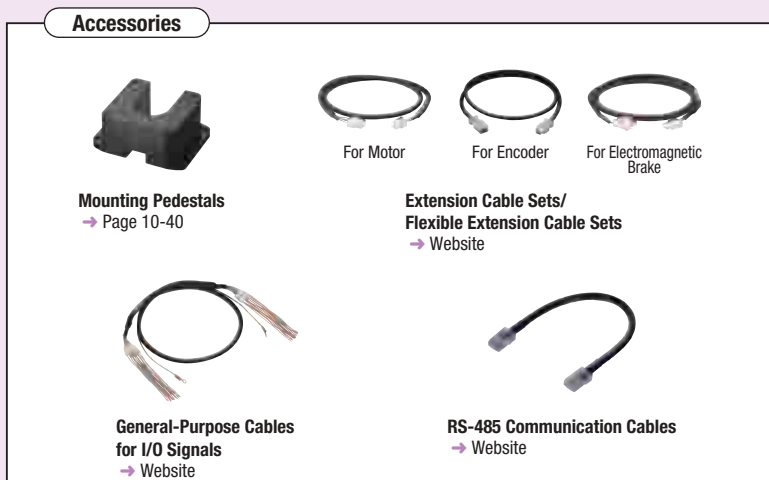
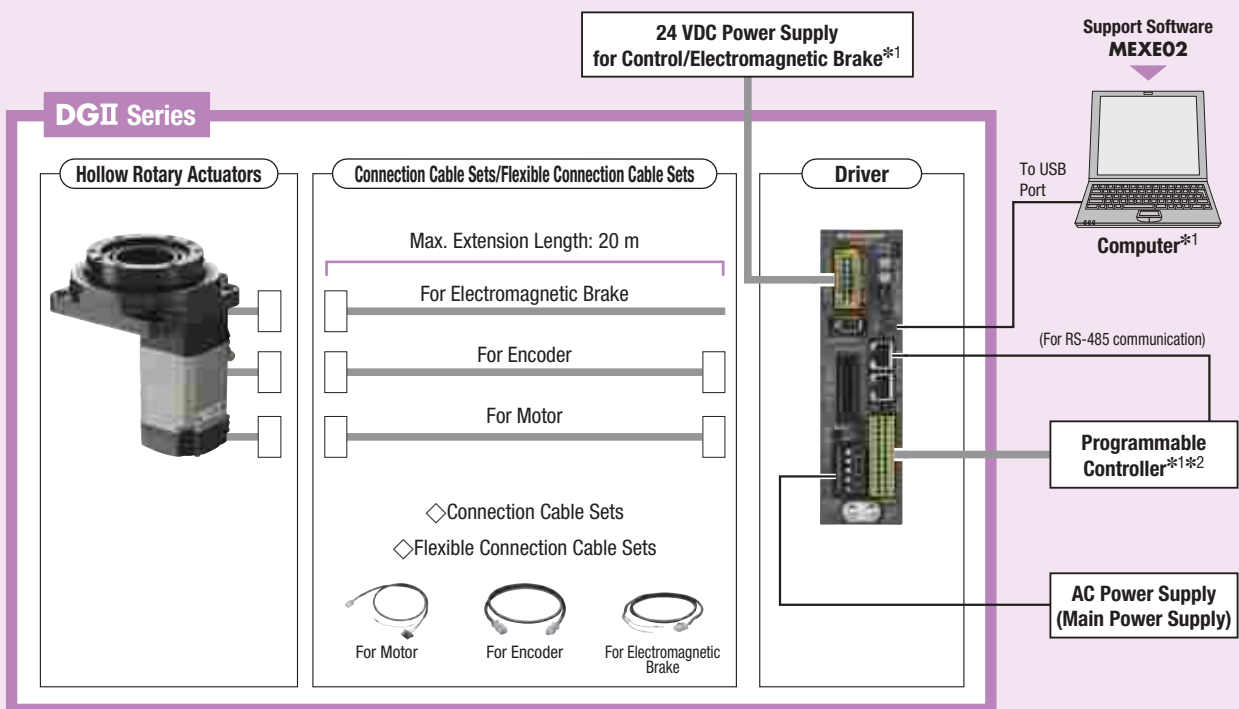
● Connection Cable Sets/Flexible Connection Cable Sets

Type	Included	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 Copy

System Configuration

Combination of Linear & Rotary Actuator with Electromagnetic Brake, and either Built-in Controller Type Driver or Pulse Input Type Driver with RS-485 Communication

This is an example of a configuration using I/O control or RS-485 communication in a built-in controller type driver. Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



*1 Not supplied.

*2 For drivers of pulse input type with RS-485 communication, use a controller that has a pulse generating function.

● The **MEXE02** can be downloaded from Oriental Motor Website Download Page.

● The functions and operating method of this product are common to those of the hybrid control system **αSTEP AZ** Series.

For the functions and operating method of this product, refer to the operating manuals (Driver Edition and Function Edition) of the **AZ** Series.

The OPERATING MANUAL Driver Edition is included in the product, but the OPERATING MANUAL Function Edition is not included.

For detail, contact the nearest Oriental Motor sales office or download from Oriental Motor Website Download Page.

<http://www.orientalmotor.com.sg/>

System Configuration Example

DGII Series			+	Sold Separately
Hollow Rotary Actuator	Driver	Connection Cable Set (3 m)		General-Purpose Cable for I/O Signals (1 m)
DGM85R-AZMC SGD2,113	AZD-CD SGD650	CC030VZFB SGD83	CC16D010B-1 SGD25	

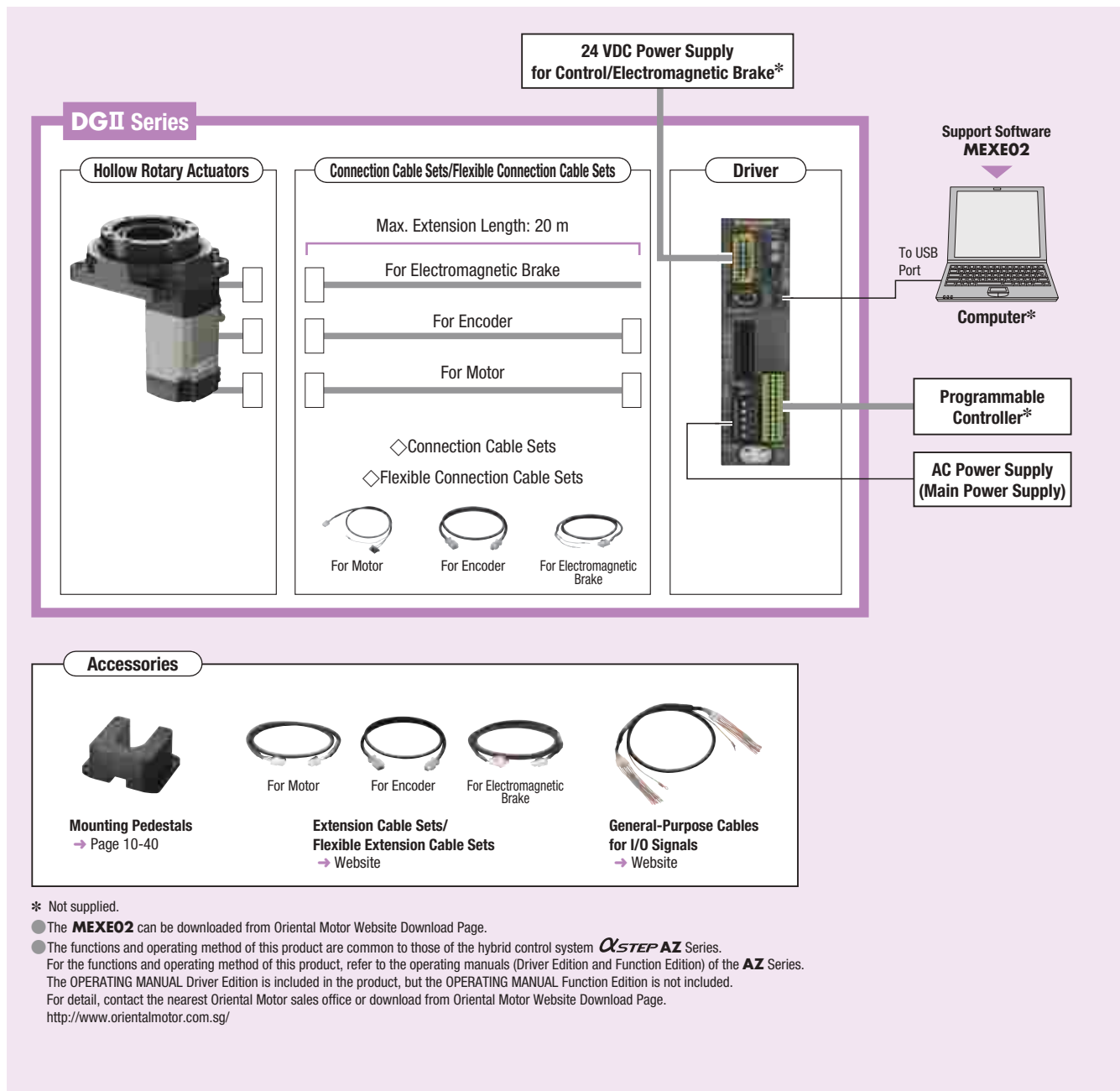
● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

● **Combination of Linear & Rotary Actuator with Electromagnetic Brake and Pulse Input Type Driver**

This is an example of a single-axis system configuration using a programmable controller (with pulse oscillation function). Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



● **System Configuration Example**

DGII Series			+	Sold Separately	
Hollow Rotary Actuator	Driver	Connection Cable Set (3 m)		General-Purpose Cable for I/O Signals (1 m)	
DGM85R-AZMC	AZD-C	CC030VZFB		CC16D010B-1	
SGD2,113	SGD588	SGD83		SGD25	

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

Specifications

Frame Size		85 mm	130 mm	200 mm	
Actuator Product Name	Single Shaft	DGM85R-AZAC	DGM130R-AZAC □	DGM200R-AZAC □	
	With Electromagnetic Brake	DGM85R-AZMC	DGM130R-AZMC □	DGM200R-AZMC □	
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase / Three-Phase 200-240VAC)			
	Pulse Input Type with RS-485 Communication	AZD-AX (Single-Phase 100-120VAC), AZD-CX (Single-Phase / Three-Phase 200-240VAC)			
	Pulse Input	AZD-A (Single-Phase 100-120VAC), AZD-C (Single-Phase / Three-Phase 200-240VAC)			
Motor Type (AZ Series)		AZM46	AZM66	AZM911	
Type of Output Table Supporting Bearing			Cross-Roller Bearing		
Inertia	J: kg·m ²	21120×10^{-7} [26304×10^{-7}]*1	147380×10^{-7} [199220×10^{-7}]*1	916400×10^{-7} [968240×10^{-7}]*1	
Gear Ratio		18			
Minimum Traveling Amount of the Output Table	deg/STEP	0.01			
Permissible Torque	N·m	4.5	12	50	
	Power ON	N·m	2.7	12	36 [20]*1
Holding Torque at Motor Standstill	Electromagnetic Brake	N·m	2.7	12	20
Maximum Speed	deg/s	1200 (200 r/min)		660 (110 r/min)	
Repetitive Positioning Accuracy	arcsec	±15 (±0.004°)			
Lost Motion	arcmin	2 (0.033°)			
Angular Transmission Accuracy	arcmin	4 (0.067°)	3 (0.05°)	2 (0.033°)	
Permissible Axial Load	N	500	2000	4000	
Permissible Moment	N·m	10	50	100	
Runout of Output Table Surface	mm	0.015			
Runout of Output Table Inner (Outer) Diameter	mm	0.015		0.030	
Parallelism of Output Table	mm	0.030		0.050	
Degree of Protection		IP40 (IP20 for motor connector)			
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase / Three-Phase 200-240 VAC -15~+6% 50/60 Hz		
	Input Current A	Single-Phase 100-120 VAC	2.7	3.8	6.4
		Single-Phase 200-240 VAC	1.7	2.3	3.9
		Three-Phase 200-240 VAC	1.0	1.4	2.3
Control Power Supply		24 VDC ±5%*2 0.25 A [0.33 A]*1	24 VDC ±5%*2 0.25 A [0.5 A]*1		

● Either **R** (right) or **L** (left) is entered for the cable withdrawing direction in □ in the product name.

*1 The brackets [] indicate the specifications for the electromagnetic brake type.

*2 Changes to 24 VDC ± 4% if the electromagnetic brake type has been extended with the 20 m accessory cable.

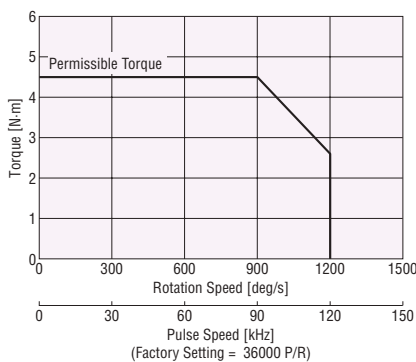
Note

● The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

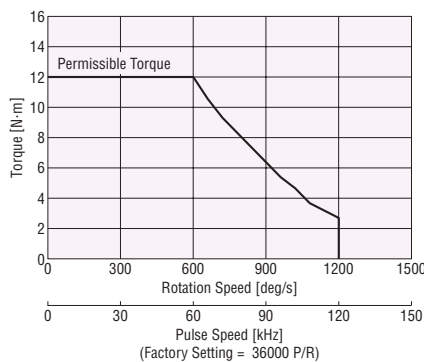
● The motor can not be removed.

Speed – Torque Characteristics (Reference values)

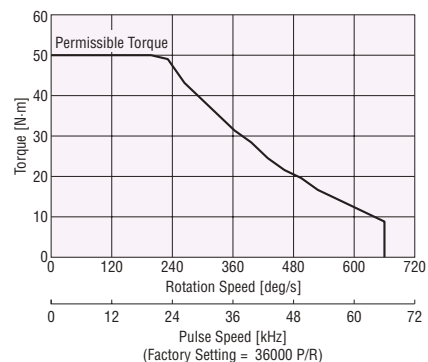
DGM85R-AZ



DGM130R-AZ



DGM200R-AZ



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

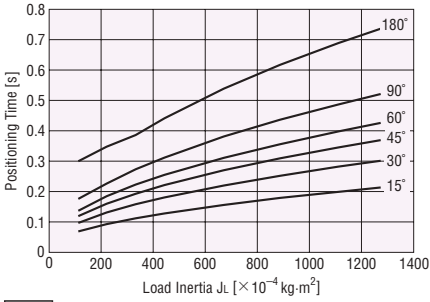
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Please keep the motor case temperature at a maximum of 80°C to protect the ABZO sensor.

(When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

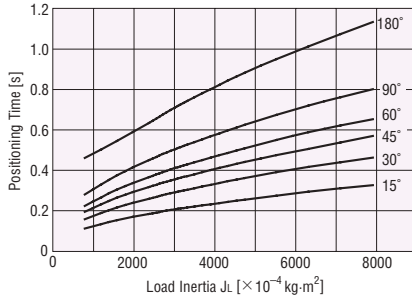
Load Inertia – Positioning Time (Reference value)

The load inertia refers to the inertia of the customer's load.

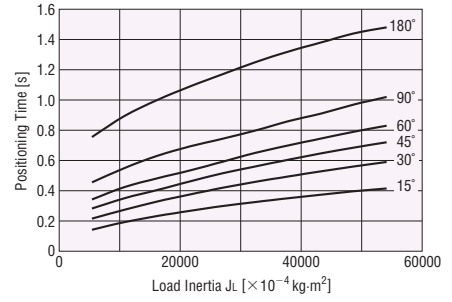
DGM85R-AZ



DGM130R-AZ



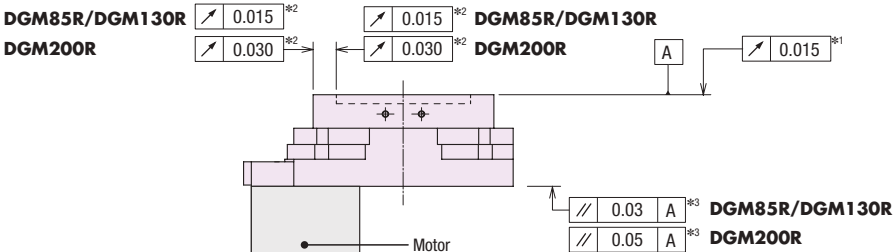
DGM200R-AZ



Note

- Data for the load inertia - positioning time is theoretical value of 1.5 times torque safety factor at normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.

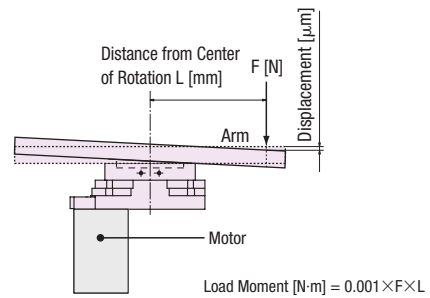
Mechanical Precision (At no load)



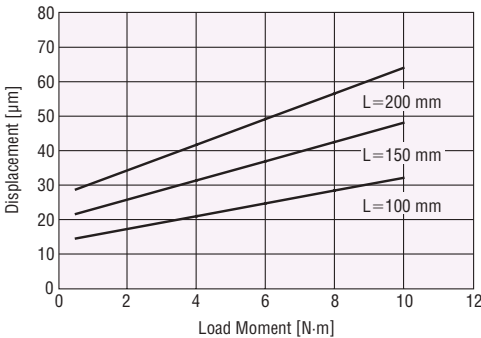
- *1 Runout of output table surface
- *2 Runout of output table inner and outer diameter
- *3 Parallelism of output table (against the installation surface)

Displacement by Load Moment (Reference value)

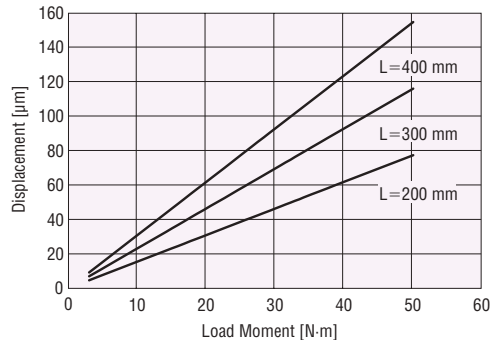
The output table will be displaced when it receives a load moment.
 The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction.
 The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.



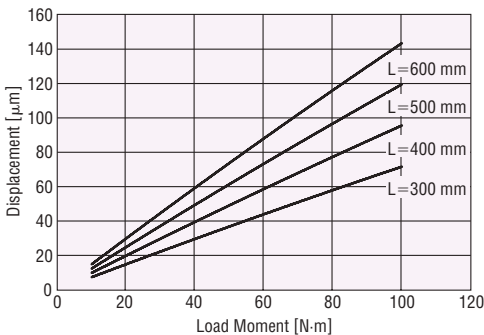
DGM85R



DGM130R



DGM200R



Electromagnetic Brake Specifications

Product Name	DGM85	DGM130	DGM200
Type	Power off activated type		
Power Supply Voltage	24 VDC±5%*		
Power Supply Current	A	0.08	0.25
Brake Activate Time	ms	20	
Brake Release Time	ms	30	
Time Rating	Continuous		

*For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

General Specifications



	Actuator (Built-in Motor: AZ Series)	Driver	
		Built-In Controller Type Pulse Input Type with RS-485 Communication	Pulse Input Type
Thermal Class	130 (B) [Recognized as 105 (A) by the UL Standards]	-	
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*2	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal · Encoder connector – Power supply terminal · I/O signal terminals – Power supply terminal	
Dielectric Strength	Sufficient to withstand the following for 1 minute: · Case – Motor windings 1.5 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*2 1.5 kVAC 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: · Protective earth terminal – Power supply terminal 1.5 kVAC, 50 Hz or 60 Hz · Encoder connector – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz · I/O signal terminals – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)*3	
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection	IP40 (IP20 for motor connector)	IP10	IP20
Multiple rotation detection range in Power OFF state (Motor output shaft)	±900 rotations (1800 rotations)		

*1 For motor product names, not actuator product names.

*2 Only for electromagnetic brake type.

*3 It depends on the Orientalmotor's measurement conditions.

*4 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200 × 200 mm and 2 mm thickness.

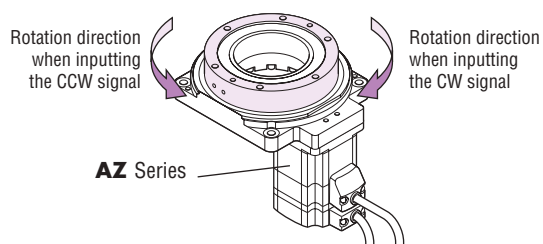
Note

Do not perform the insulation resistance measurement or dielectric voltage withstand test while the actuator and driver are connected.

Also, do not conduct these tests on the motor absolute sensor component.

Rotation Direction

The figure below shows the rotation directions seen from the output table.



Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of the **AZ** Series or our website.

- Driver Specifications
- RS-485 Communication Specifications
- Dimensions (Drivers, Connection Cables)
- Connection and Operation
- Accessories (Extension Cables)



Dimensions (Unit: mm)

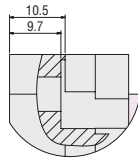
Hollow Rotary Actuators

◇ Frame Size 85 mm

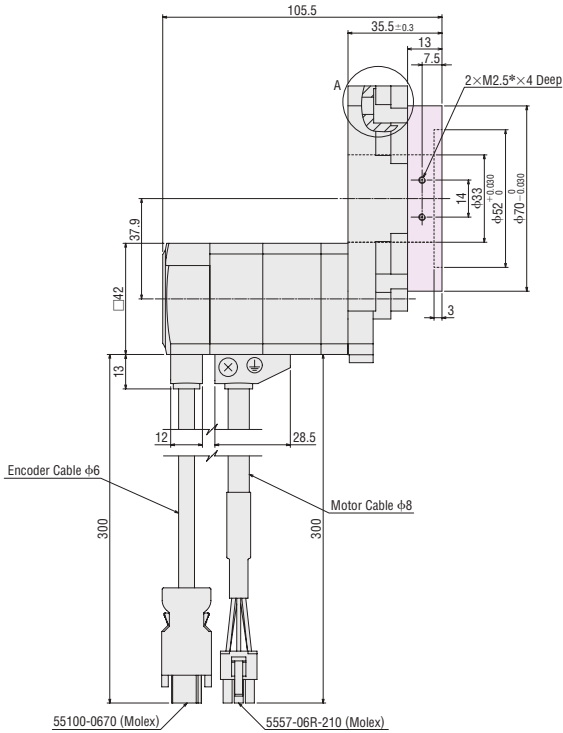
Single Shaft Type

2D & 3D CAD

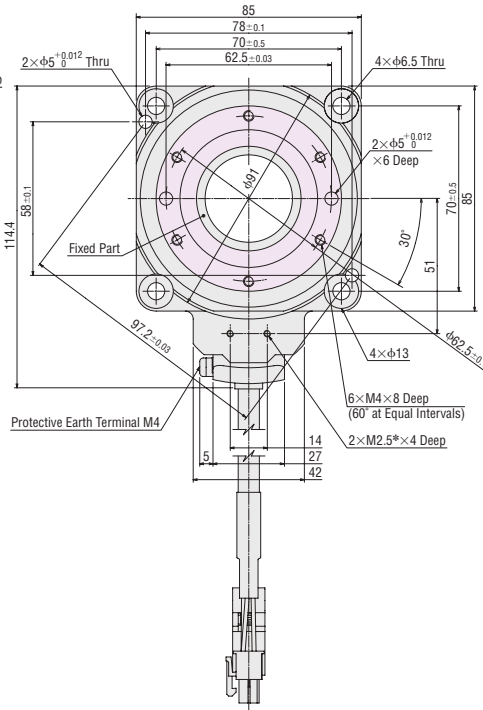
Product Name	Mass kg	2D CAD
DGM85R-AZAC	1.1	D4501



Detail of 'A'



● The shaded areas are rotating parts.

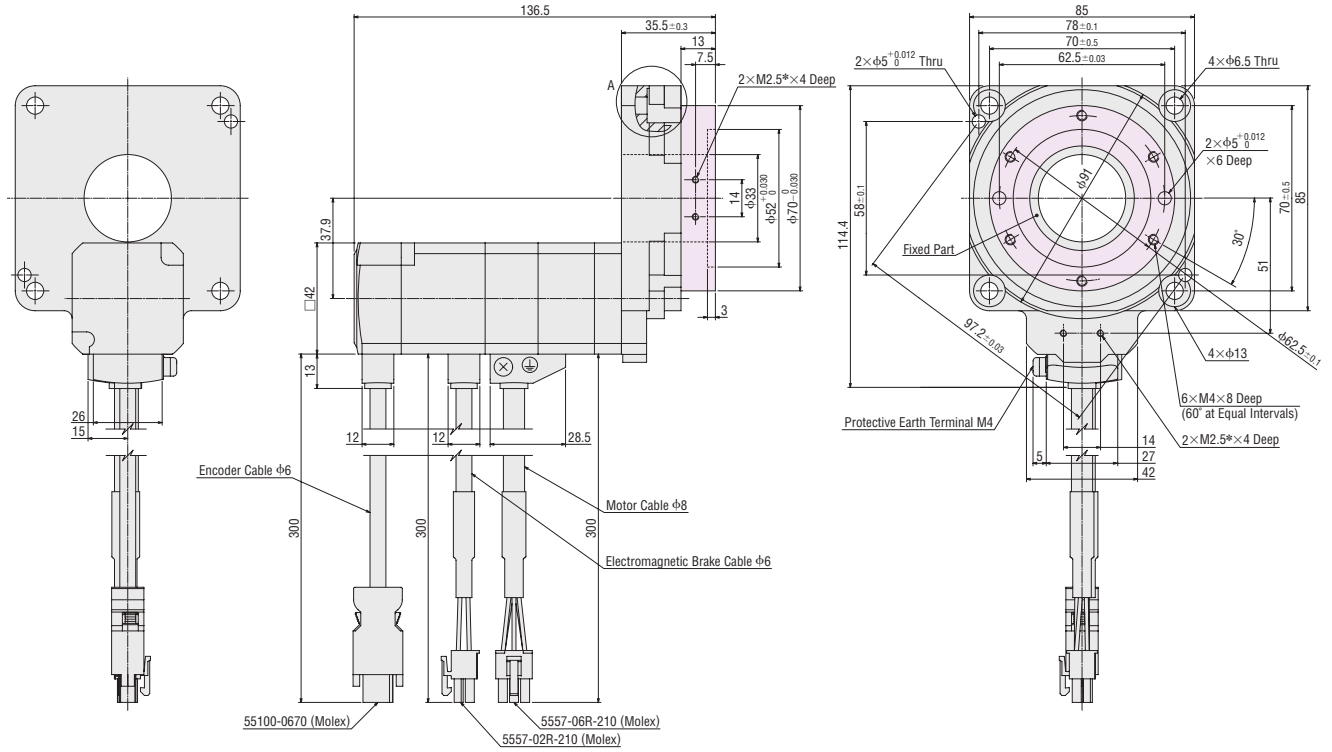
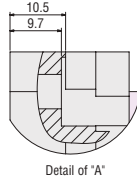


*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

Electromagnetic Brake Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM85R-AZMC	1.3	D6452



● The shaded areas are rotating parts.

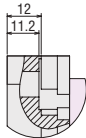
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 130 mm

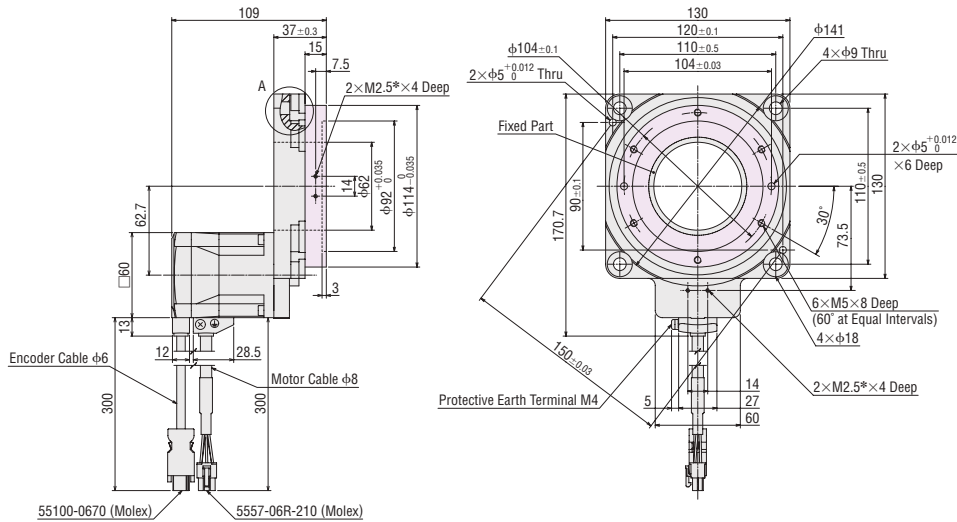
Single Shaft Type

2D & 3D CAD

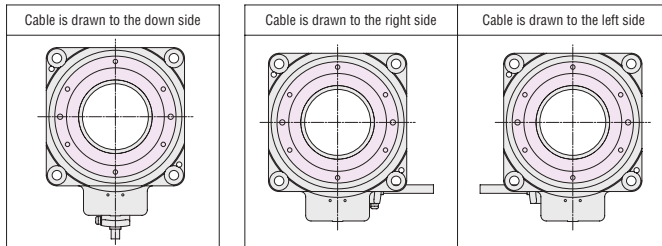
Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZAC	2.7	D4502
Right	DGM130R-AZACR		D7645
Left	DGM130R-AZACL		D7644



Detail of 'A'



Cable leading direction



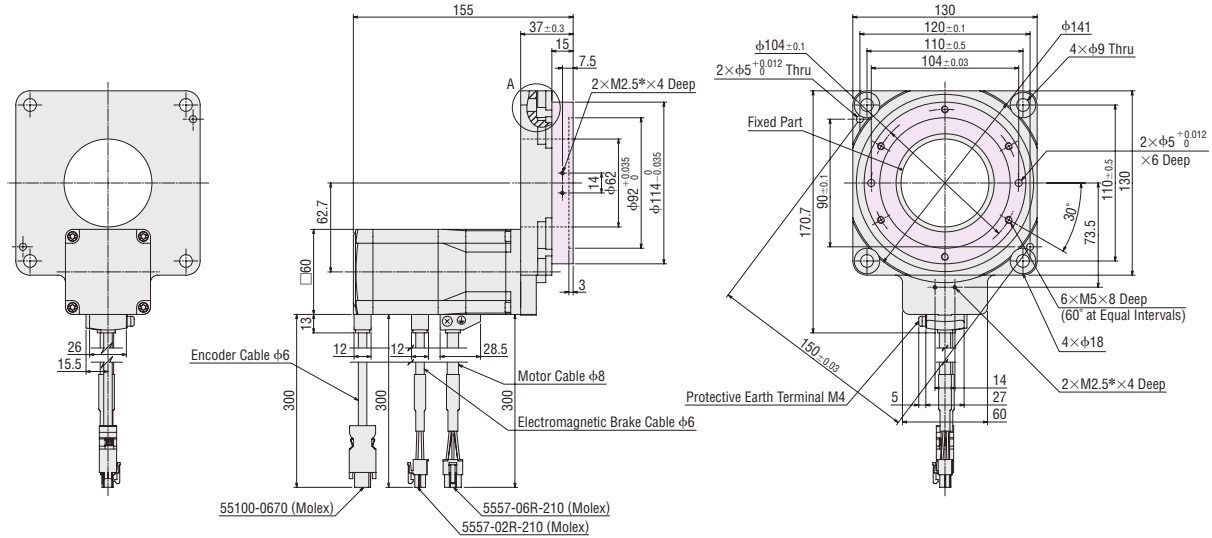
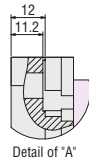
● The shaded areas are rotating parts.

*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

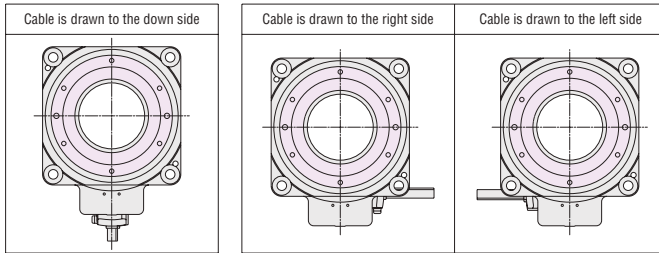
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZMC	3.1	D6453
Right	DGM130R-AZMCR		D7647
Left	DGM130R-AZMCL		D7646



Cable leading direction



● The shaded areas are rotating parts.

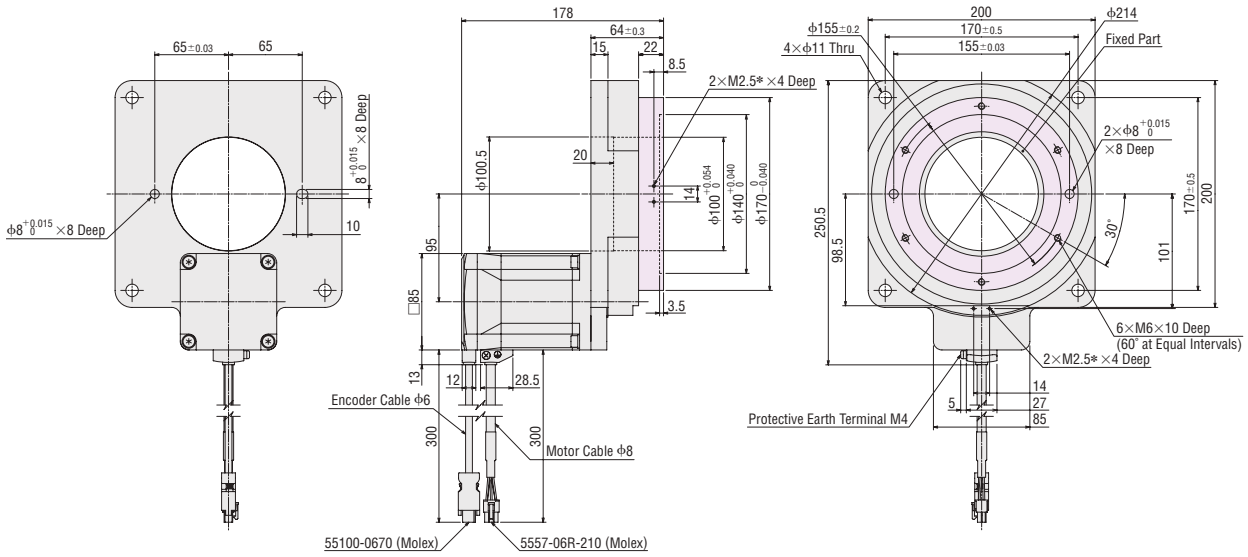
※Use M2.5 screw holes when installing the home sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 200 mm

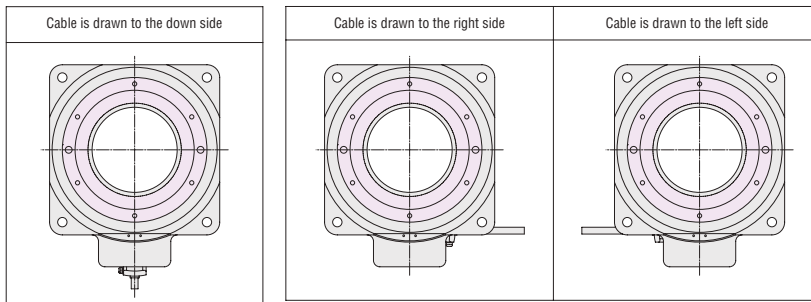
Single Shaft Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM200R-AZAC	9.4	D6454
Right	DGM200R-AZACR		D7649
Left	DGM200R-AZACL		D7648



Cable leading direction



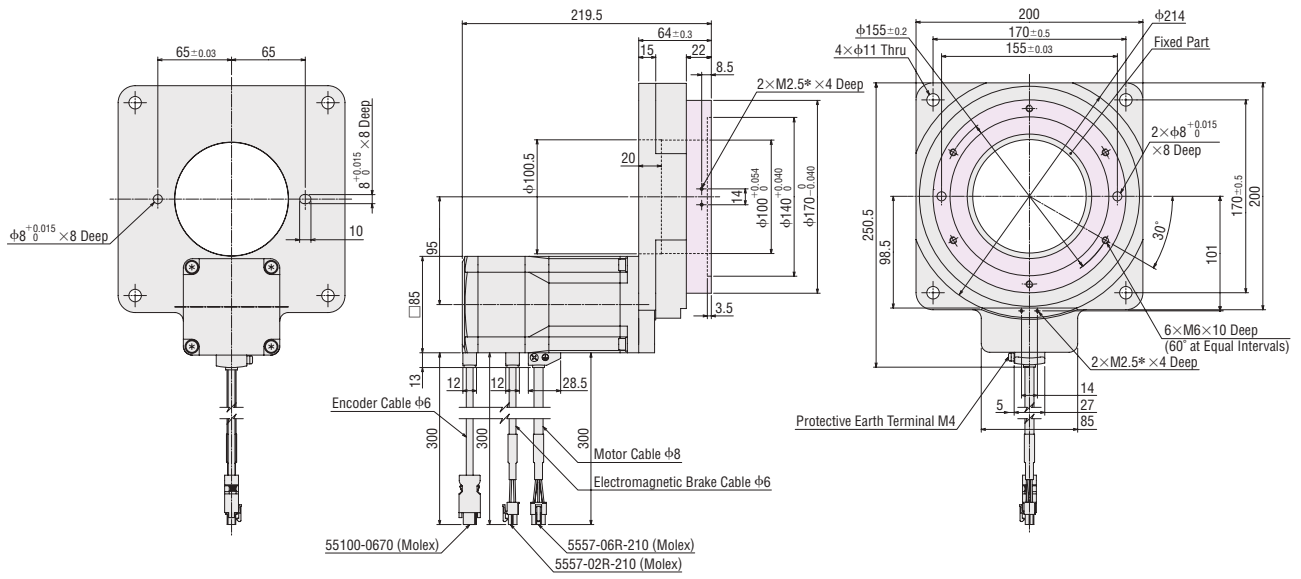
● The shaded areas are rotating parts.

*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

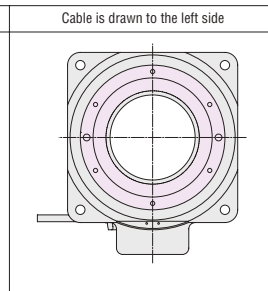
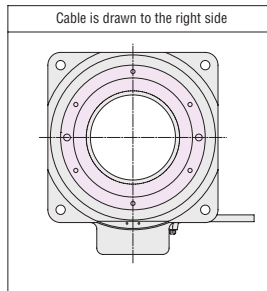
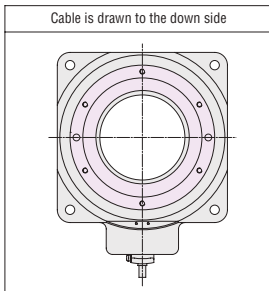
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM200R-AZMC	10	D6455
Right	DGM200R-AZMCR		D7651
Left	DGM200R-AZMCL		D7650



Cable leading direction



● The shaded areas are rotating parts.

*Use M2.5 screw holes when installing the home sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

Hollow Rotary Actuators

DGII Series α STEP AZ Equipped DC Input

Product Number Code

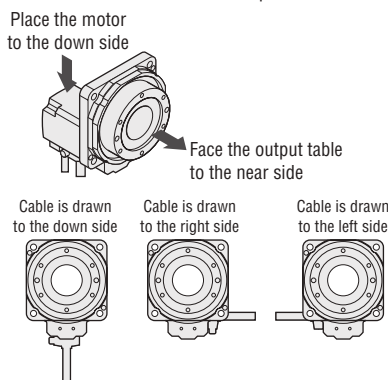
Hollow Rotary Actuators

DGM 130 R - AZ A K R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	DGM : DGII Series Actuator
②	Frame size	60 : 60 mm 85 : 85 mm 130 : 130 mm
③	Type of Output Table Supporting Bearing	R : Cross-Roller Bearing Blank : Deep-Groove Ball Bearing
④	Motor Type	AZ : AZ Series
⑤	Motor Configuration	A : Single Shaft M : With Electromagnetic Brake
⑥	Motor Specification	K : DC Power Supply Input Specification
⑦	Cable Drawing Direction*	Blank: Down side R : Right side L : Left side

*The cable drawing direction represents the cable direction for when the output table is faced to the near side and the motor is placed to the down side.



Drivers

AZD - K D

① ② ③

①	Driver Type	AZD : AZ Series Driver
②	Power Supply Input	K : 24/48 VDC
③	Type	D : Built-in Controller Type X : Pulse Input Type with RS-485 Communication Blank : Pulse Input Type

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B 2

① ② ③ ④ ⑤ ⑥ ⑦

①		CC : Cables
②	Length	010 : 1 m 020 : 2 m 030 : 3 m 050 : 5 m 070 : 7 m 100 : 10 m 150 : 15 m 200 : 20 m
③	Reference Number	
④	Applicable Models	Z : AZ Series
⑤	Cable Type	F : Connection Cable Sets R : Flexible Connection Cable Sets
⑥	Electromagnetic Brake	Blank : Without Electromagnetic Brake B : With Electromagnetic Brake
⑦	Cable Specifications	2 : DC Power Supply Input

Product Line

Hollow Rotary Actuators

◇ Single Shaft

Frame Size	Product Name	List Price
60 mm	DGM60-AZAK NEW	SGD1,081
85 mm	DGM85R-AZAK	SGD1,938
130 mm	DGM130R-AZAK DGM130R-AZAKR DGM130R-AZAKL	SGD2,188



◇ With Electromagnetic Brake

Frame Size	Product Name	List Price
85 mm	DGM85R-AZMK	SGD2,113
130 mm	DGM130R-AZMK DGM130R-AZMKR DGM130R-AZMKL	SGD2,413



● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KD	SGD488



◇ Pulse Input Type with RS-485 Communication

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KX	SGD488



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-K	SGD425



● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent.

The motor cable and electromagnetic brake cable from the hollow rotary actuator cannot be connected directly to the driver. When connecting to a driver, use the accessory connection cable (sold separately) or use the included connection cable (for products which include a connection cable).

For **DGM60**



◇ For Motor/Encoder

Product Line	Length m	Product Name	List Price
Connection Cable Sets	0.5	CC005VZ2F2	SGD38
	1	CC010VZ2F2	SGD38
	1.5	CC015VZ2F2	SGD44
	2	CC020VZ2F2	SGD50
	2.5	CC025VZ2F2	SGD56
	3	CC030VZ2F2	SGD63
	4	CC040VZ2F2	SGD98
	5	CC050VZ2F2	SGD110
	7	CC070VZ2F2	SGD136
	10	CC100VZ2F2	SGD176
Flexible Connection Cable Sets	15	CC150VZ2F2	SGD244
	20	CC200VZ2F2	SGD310
	0.5	CC005VZ2R2	SGD84
	1	CC010VZ2R2	SGD84
	1.5	CC015VZ2R2	SGD92
	2	CC020VZ2R2	SGD99
	2.5	CC025VZ2R2	SGD106
	3	CC030VZ2R2	SGD111
	4	CC040VZ2R2	SGD126
	5	CC050VZ2R2	SGD141
7	CC070VZ2R2	SGD180	
10	CC100VZ2R2	SGD236	
15	CC150VZ2R2	SGD333	
20	CC200VZ2R2	SGD426	

For **DGM85, DGM130**



◇ For Motor/Encoder

Product Line	Length m	Product Name	List Price
Connection Cable Sets	0.5	CC005VZF2	SGD38
	1	CC010VZF2	SGD38
	1.5	CC015VZF2	SGD44
	2	CC020VZF2	SGD50
	2.5	CC025VZF2	SGD56
	3	CC030VZF2	SGD63
	4	CC040VZF2	SGD98
	5	CC050VZF2	SGD110
	7	CC070VZF2	SGD136
	10	CC100VZF2	SGD176
Flexible Connection Cable Sets	0.5	CC005VZR2	SGD84
	1	CC010VZR2	SGD84
	1.5	CC015VZR2	SGD92
	2	CC020VZR2	SGD99
	2.5	CC025VZR2	SGD106
	3	CC030VZR2	SGD111
	4	CC040VZR2	SGD126
	5	CC050VZR2	SGD141
	7	CC070VZR2	SGD180
	10	CC100VZR2	SGD236
15	CC150VZR2	SGD333	
20	CC200VZR2	SGD426	



◇ For Motor/Encoder/
Electromagnetic Brake

Product Line	Length m	Product Name	List Price
Connection Cable Sets	0.5	CC005VZFB2	SGD53
	1	CC010VZFB2	SGD53
	1.5	CC015VZFB2	SGD60
	2	CC020VZFB2	SGD68
	2.5	CC025VZFB2	SGD75
	3	CC030VZFB2	SGD83
	4	CC040VZFB2	SGD121
	5	CC050VZFB2	SGD135
	7	CC070VZFB2	SGD166
	10	CC100VZFB2	SGD214
Flexible Connection Cable Sets	0.5	CC005VZRB2	SGD114
	1	CC010VZRB2	SGD114
	1.5	CC015VZRB2	SGD124
	2	CC020VZRB2	SGD134
	2.5	CC025VZRB2	SGD143
	3	CC030VZRB2	SGD151
	4	CC040VZRB2	SGD171
	5	CC050VZRB2	SGD191
	7	CC070VZRB2	SGD240
	10	CC100VZRB2	SGD311
15	CC150VZRB2	SGD433	
20	CC200VZRB2	SGD551	

Included

● Actuators

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		<ul style="list-style-type: none"> • Connector for CN4 (1 piece) • Connector for CN1 (1 piece) 	1 Copy

● Connection Cable Sets/Flexible Connection Cable Sets

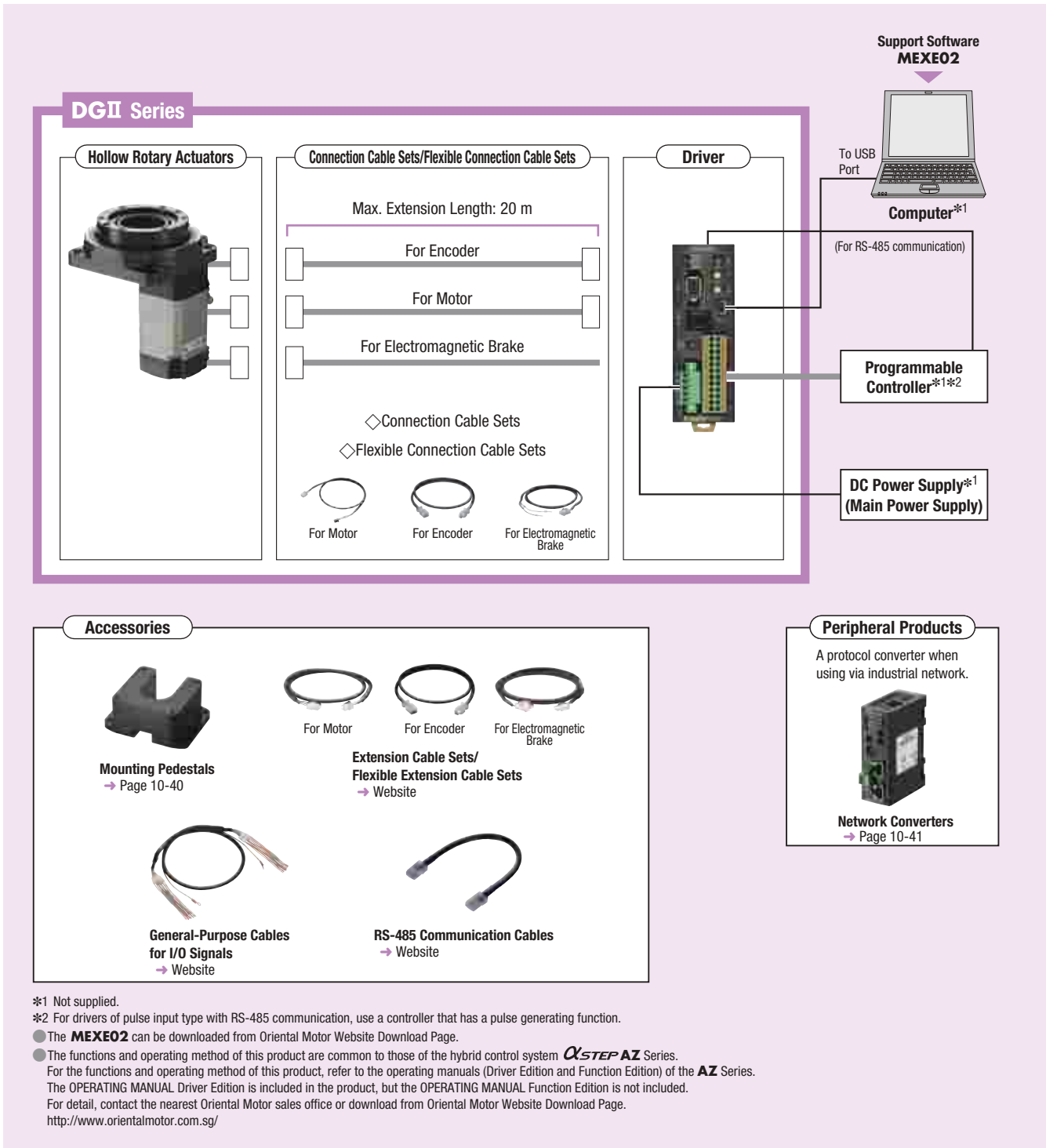
Type	Included	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 Copy

System Configuration

Combination of Linear & Rotary Actuator with Electromagnetic Brake, and either Built-in Controller Type Driver or Pulse Input Type Driver with RS-485 Communication

This is an example of a configuration using I/O control or RS-485 communication in a built-in controller type driver.

Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



System Configuration Example

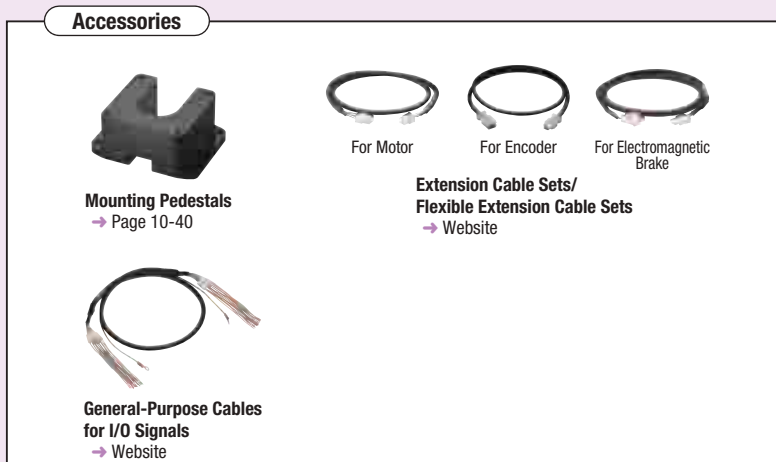
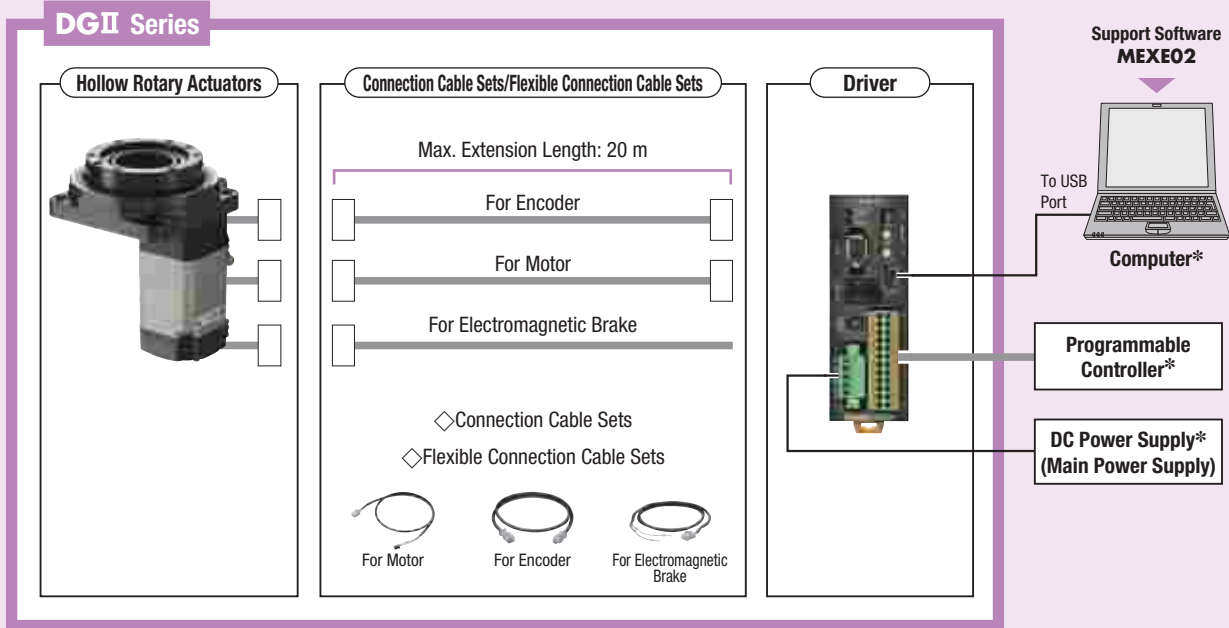
DG II Series			+	Sold Separately
Hollow Rotary Actuator	Driver	Connection Cable Set (3 m)		General-Purpose Cable for I/O Signals (1 m)
DGM85R-AZMK SGD2,113	AZD-KD SGD488	CC030VZFB2 SGD83	CC16D010B-1 SGD25	

● The system configuration shown above is an example. Other combinations are available.

Note

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

- **Combination of Linear & Rotary Actuator with an Electromagnetic Brake and Pulse Input Type Driver**
This is an example of a single-axis system configuration using a programmable controller (with pulse oscillation function). Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



- * Not supplied.
- The **MEXE02** can be downloaded from Oriental Motor Website Download Page.
- The functions and operating method of this product are common to those of the hybrid control system **αSTEP AZ** Series. For the functions and operating method of this product, refer to the operating manuals (Driver Edition and Function Edition) of the **AZ** Series. The OPERATING MANUAL Driver Edition is included in the product, but the OPERATING MANUAL Function Edition is not included. For detail, contact the nearest Oriental Motor sales office or download from Oriental Motor Website Download Page. <http://www.orientalmotor.com.sg/>

● **System Configuration Example**

DGII Series			+	Sold Separately
Hollow Rotary Actuator	Driver	Connection Cable Set (3 m)		General-Purpose Cable for I/O Signals (1 m)
DGM85R-AZMK	AZD-K	CC030VZFB2		CC16D010B-1
SGD2,113	SGD425	SGD83		SGD25

- The system configuration shown above is an example. Other combinations are available.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

Specifications

Frame Size		60 mm	85 mm	130 mm
Actuator Product Name	Single Shaft	DGM60-AZAK	DGM85R-AZAK	DGM130R-AZAK <input type="checkbox"/>
	With Electromagnetic Brake		DGM85R-AZMK	DGM130R-AZMK <input type="checkbox"/>
Driver Product Name	Built-in Controller	AZD-KD		
	Pulse Input Type with RS-485 Communication	AZD-KX		
	Pulse Input	AZD-K		
Motor Type (AZ Series)		AZM24	AZM46	AZM66
Type of Output Table Supporting Bearing		Deep-Groove Ball Bearing	Cross-Roller Bearing	
Inertia	J : kg·m ²	3700×10 ⁻⁷ —	21120×10 ⁻⁷ [26304×10 ⁻⁷]*1	147380×10 ⁻⁷ [199220×10 ⁻⁷]*1
Gear Ratio		18		
Minimum Traveling Amount of the Output Table	deg/STEP	0.01		
Permissible Torque	N·m	0.9	4.5	12
Holding Torque at Motor Standstill	Power ON	0.45	2.7	9
	Electromagnetic Brake	—	2.7	9
Maximum Speed	deg/s	1200 (200 r/min)		900 (150 r/min)
Repetitive Positioning Accuracy	arcsec	±15 (±0.004°)		
Lost Motion	arcmin	2 (0.033°)		
Angular Transmission Accuracy	arcmin	4 (0.067°)		
Permissible Axial Load	N	100	500	2000
Permissible Moment	N·m	2	10	50
Runout of Output Table Surface	mm	0.030	0.015	
Runout of Output Table Inner (Outer) Diameter	mm	0.030	0.015	
Parallelism of Output Table	mm	0.050	0.030	
Degree of Protection		IP40 (IP20 for motor connector)		
Power Supply Input	Voltage	24 VDC ±5%	24 VDC ±5%*2 / 48 VDC ±5%*3	
	Input Current	A	1.6	1.72 [1.8]*1

● Either **R** (right) or **L** (left) is entered for the cable withdrawing direction in in the product name.

*1 The brackets [] indicate the specifications for the electromagnetic brake type.

*2 Changes to 24 VDC ± 4% if the electromagnetic brake type has been extended with the 20 m accessory cable.

*3 When the motor is operated with 48 VDC input, as a reference, keep the load inertia 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **DGM85**)

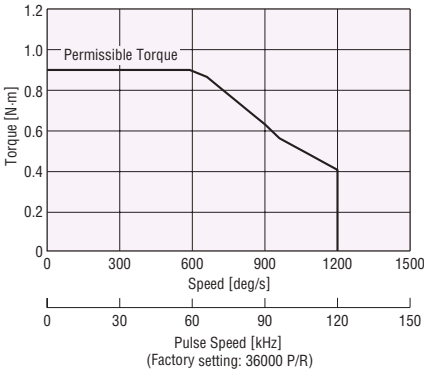
Note

● The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

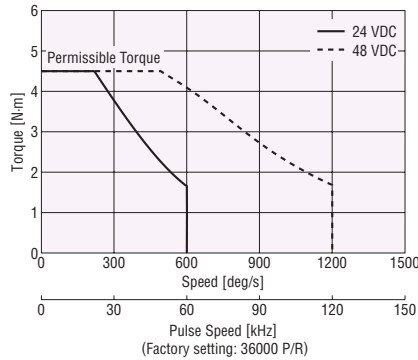
● The motor can not be removed.

Speed – Torque Characteristics (Reference values)

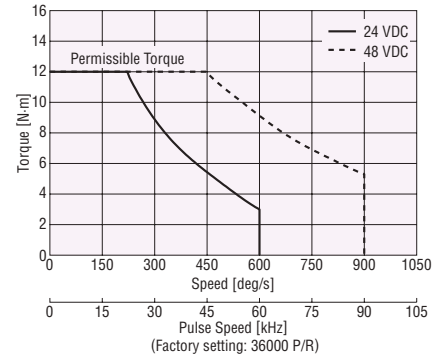
DGM60-AZ



DGM85R-AZ



DGM130R-AZ



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Please keep the motor case temperature at a maximum of 80°C to protect the ABZO sensor.

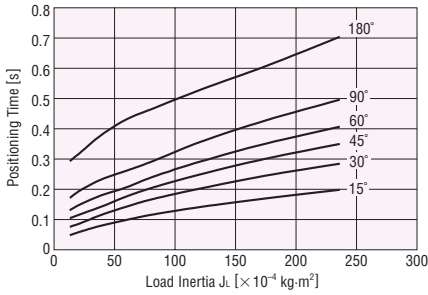
(When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

Load Inertia – Positioning Time (Reference value)

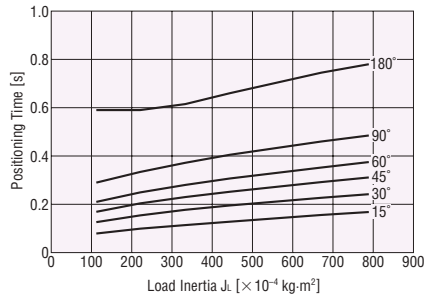
The load inertia refers to the inertia of the customer's load.

● 24 VDC

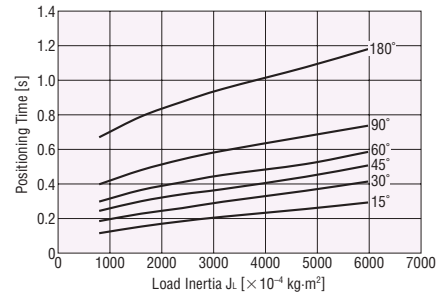
DGM60-AZ



DGM85R-AZ



DGM130R-AZ

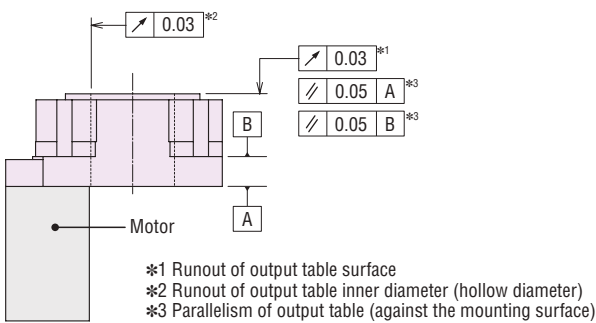


Note

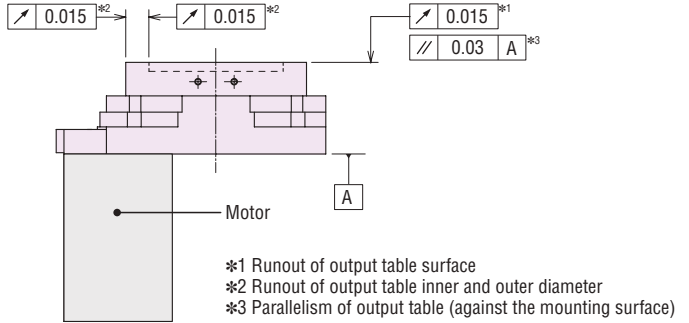
- Data for the load inertia - positioning time is theoretical value of 1.5 times torque safety factor at normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.
- For details on 48 VDC input the Load Inertia - Positioning Time data, please refer to contact your nearest Oriental Motor sales office.

Mechanical Precision (At no load)

DGM60



DGM85R/DGM130R

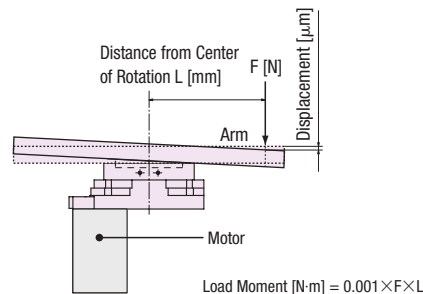


Displacement by Load Moment (Reference value)

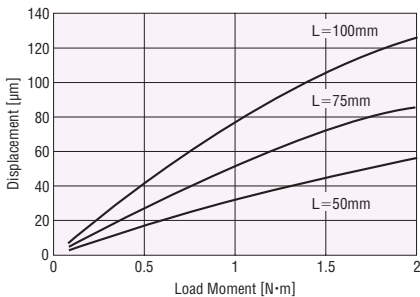
The output table will be displaced when it receives a load moment.

The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction.

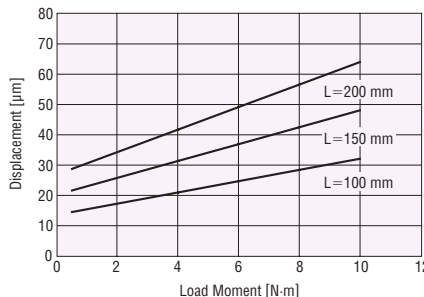
The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.



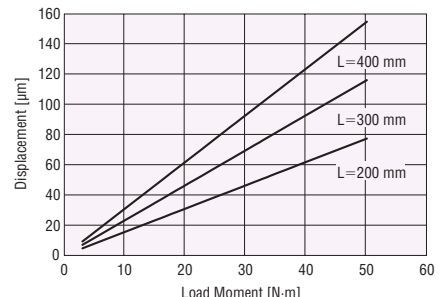
DGM60



DGM85R



DGM130R



Electromagnetic Brake Specifications

Product Name	DGM85	DGM130
Type	Power off activated type	
Power Supply Voltage	24 VDC ± 5%*	
Power Supply Current	0.08	0.25
Brake Activate Time	ms	
Brake Release Time	ms	
Time Rating	Continuous	

*For the electromagnetic brake type, the 24 VDC ± 4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

General Specifications



	Actuator (Built-in Motor: AZ Series)	Driver
Thermal Class	130 (B) [Recognized as 105 (A) by the UL Standards]*1	—
Insulation Resistance	The measured value is 100 M Ω or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*4	The measured value is 100 M Ω or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal.
Dielectric Strength	Sufficient to withstand the following for 1 minute: DGM60 · Case – Motor windings 0.5 kVAC 50Hz or 60Hz DGM85, DGM130 · Case – Motor windings 1.0 kVAC 50Hz or 60Hz · Case – Electromagnetic brake windings*4 1.0kVAC 50Hz or 60Hz	—
Operating Environment (In operation)	Ambient Temperature	0 ~ +40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Atmosphere	Use in an area without corrosive gases and dust. The product should not be exposed to water, oil or other liquids.
Degree of Protection	IP40 (IP20 for motor connector)	IP10
Multiple rotation detection range in Power OFF state (Motor output shaft)	DGM60 : ±450 rotations (900 rotations) DGM85, DGM130 : ±900 rotations (1800 rotations)	

*1 Excluding **DGM60**

*2 For motor product names, not actuator product names.

*3 For motor product

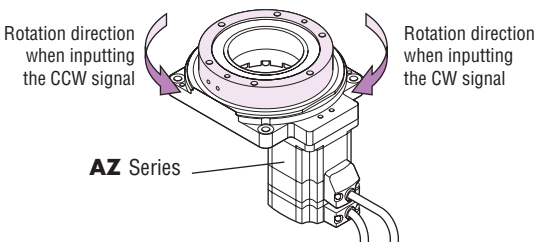
*4 Only for electromagnetic brake type

Note

- Do not perform the insulation resistance measurement or dielectric voltage withstand test while the actuator and driver are connected.
Also, do not conduct these tests on the motor absolute sensor component.

Rotation Direction

The figure below shows the rotation directions seen from the output table.



Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of the **AZ** Series or our website.

- Driver Specifications
- RS-485 Communication Specifications
- Dimensions (Drivers, Connection Cables)
- Connection and Operation
- Accessories (Extension Cables)



Dimensions (Unit: mm)

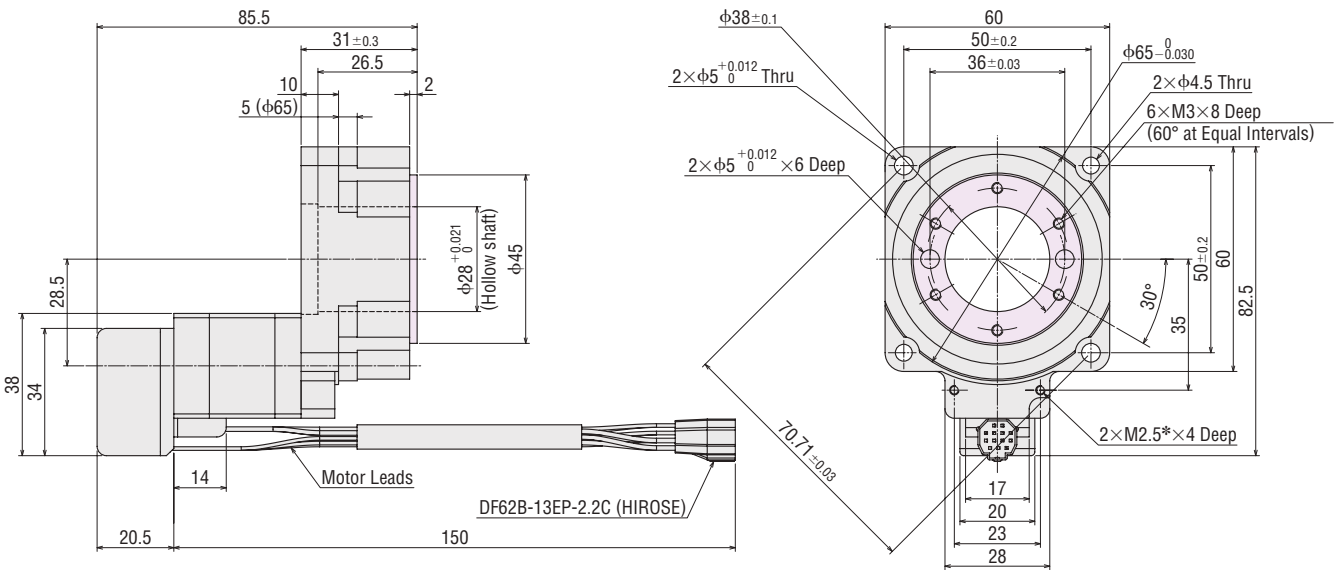
Hollow Rotary Actuators

◇ Frame Size 60 mm

Single Shaft Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM60-AZAK	0.5	D7689



● The shaded areas are rotating parts.

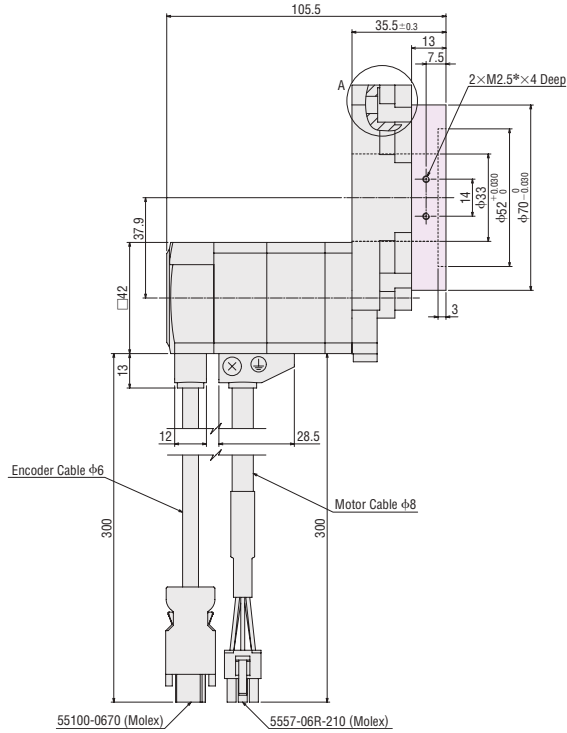
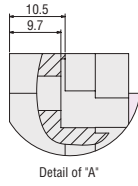
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 85 mm

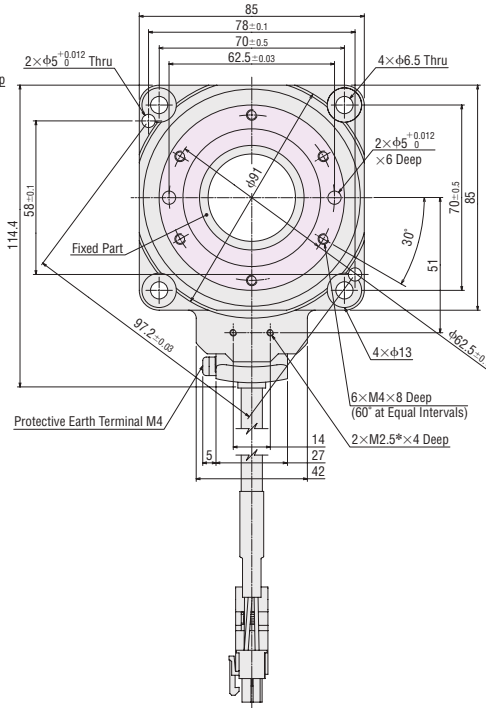
Single Shaft Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM85R-AZAK	1.1	D4501



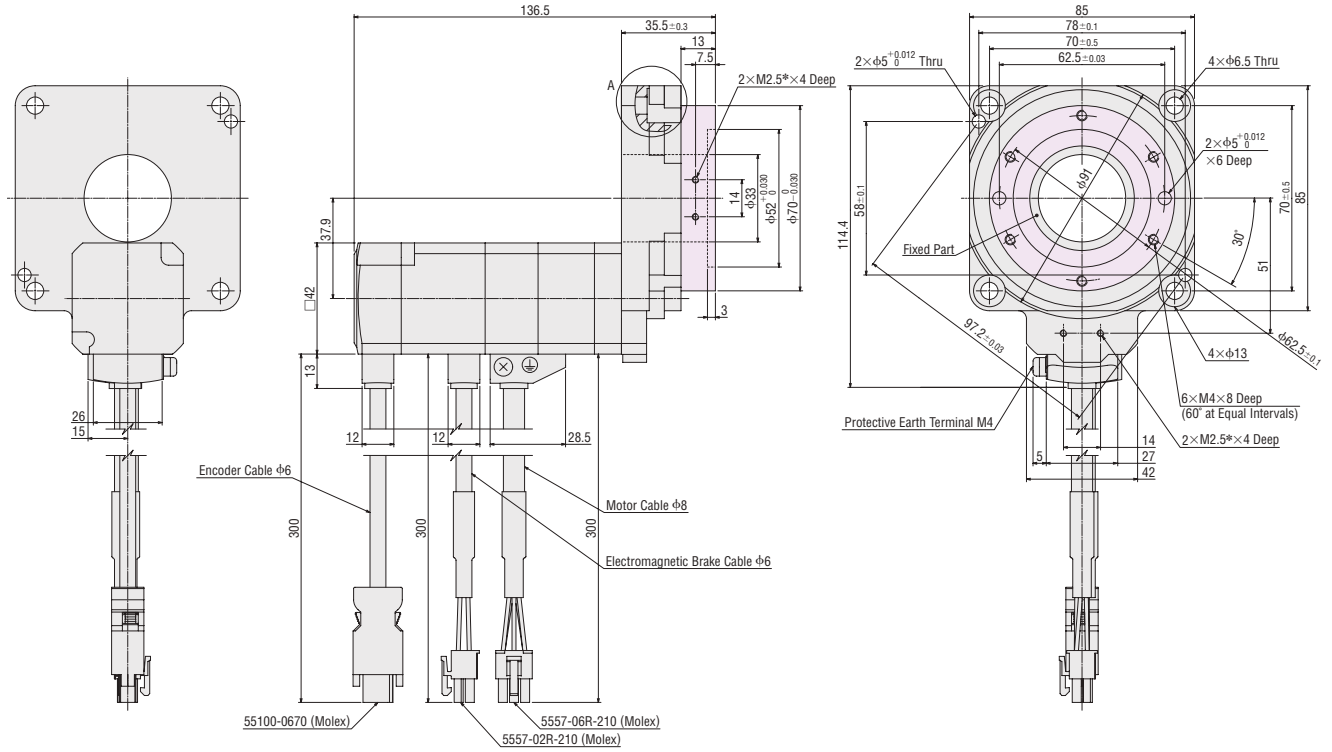
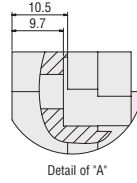
● The shaded areas are rotating parts.



*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

Electromagnetic Brake Type **2D & 3D CAD**

Product Name	Mass kg	2D CAD
DGM85R-AZMK	1.3	D6452



● The shaded areas are rotating parts.

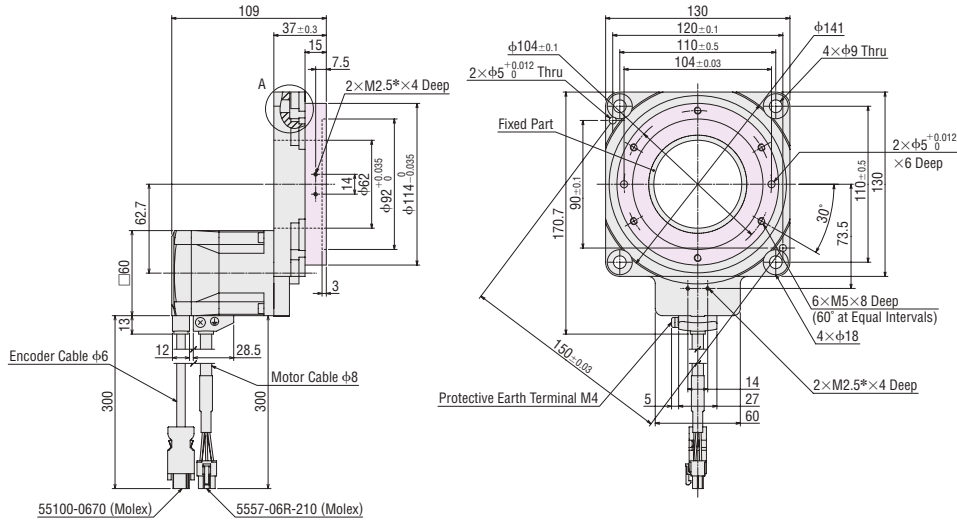
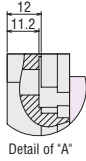
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 130 mm

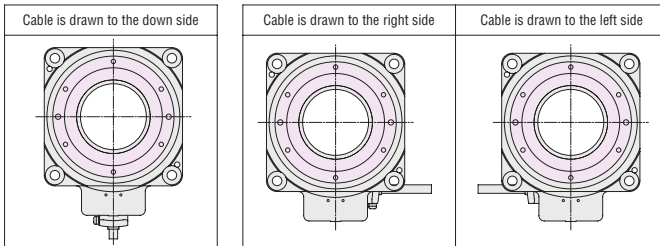
Single Shaft Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZAK	2.7	D4502
Right	DGM130R-AZAKR		D7645
Left	DGM130R-AZAKL		D7644



Cable leading direction



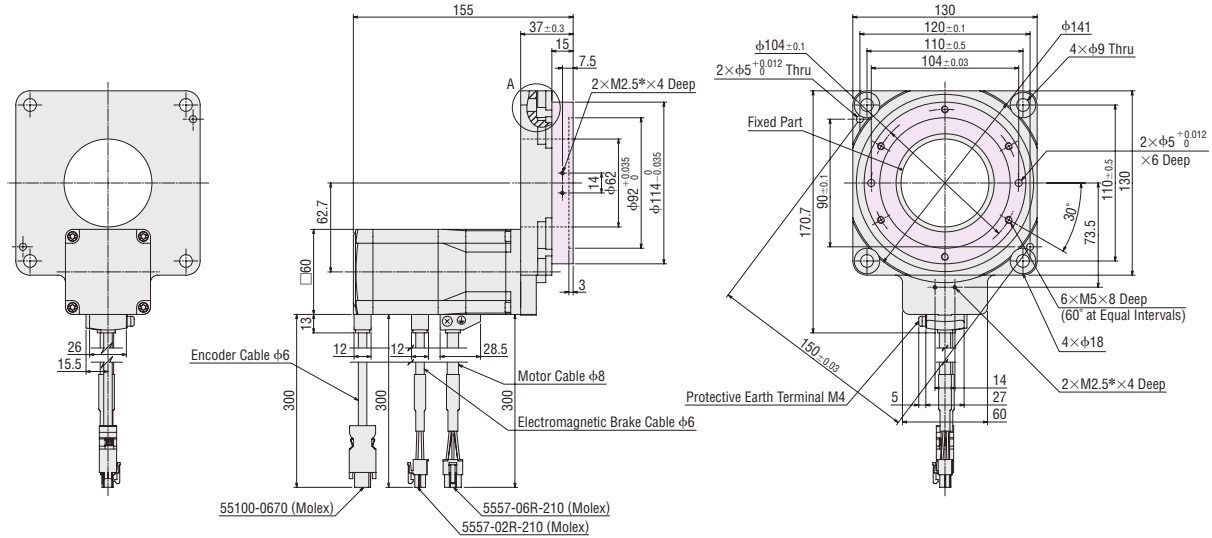
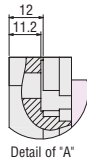
● The shaded areas are rotating parts.

*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

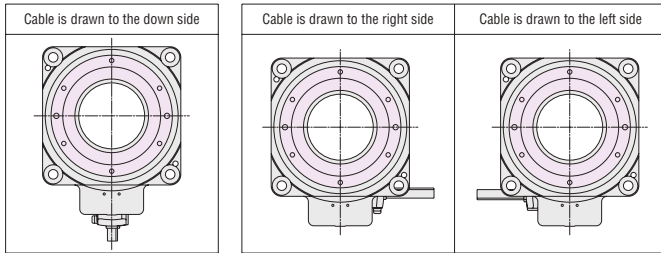
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZMK	3.1	D6453
Right	DGM130R-AZMKR		D7647
Left	DGM130R-AZMKL		D7646



Cable leading direction



● The shaded areas are rotating parts.

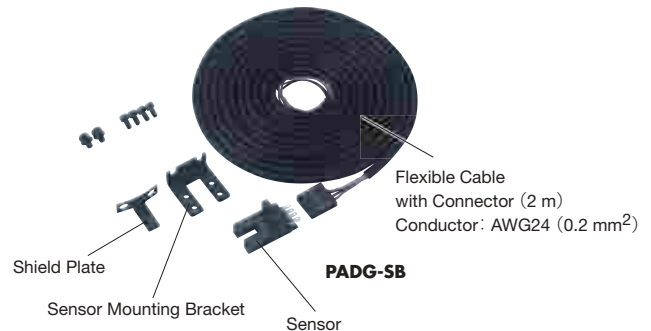
※Use M2.5 screw holes when installing the home sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

Accessories (Sold Separately)

Home-Sensor Sets

A home-sensor set, which consists of a photomicro sensor, connector with cable, sensor mounting bracket, shield plate and installation screws, is provided to facilitate easy return to home operation.

All parts needed for return to home operation are included in the set, so you will spend less time designing, fabricating or procuring parts in connection with sensor installation. Installation is very easy, so you can start using the sensor right away.



Product Line

Product	Sensor Output	Applicable Product	List Price
PADG-SA	NPN	DGM60-AZ	SGD88
PADG-SB		DGM85R-AZ DGM130R-AZ DGM200R-AZ	SGD88
PADG-SAY		DGM60-AZ	SGD94
PADG-SBY	PNP	DGM85R-AZ DGM130R-AZ DGM200R-AZ	SGD94

Specifications

NPN Type

Product	PADG-SA (OMRON Model: EE-SX672A) PADG-SB (OMRON Model: EE-SX673A)
Power Supply	5~24 VDC ±10%, ripple (P-P) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5~24 VDC 100 mA or less Residual voltage 0.8 VDC or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Sensor Logic	Normally open/normally closed (selectable, depending on connection)

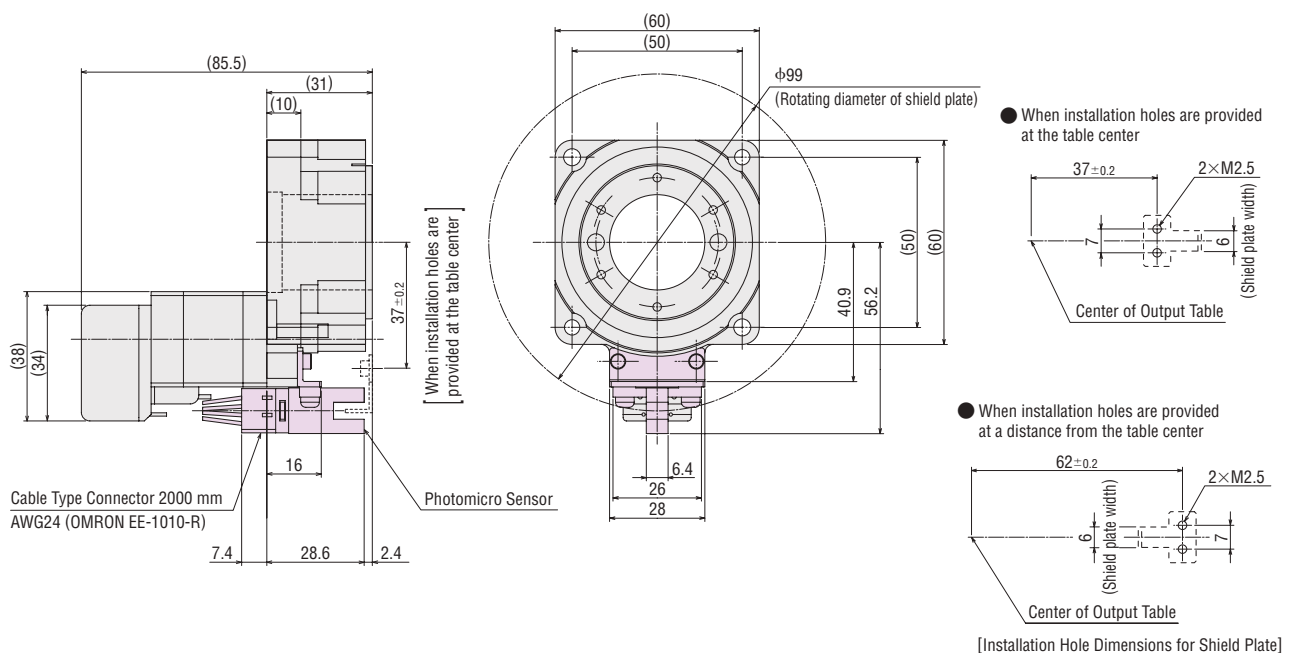
PNP Type

Product	PADG-SAY (OMRON Model: EE-SX672R) PADG-SBY (OMRON Model: EE-SX673R)
Power Supply	5~24 VDC ±10%, ripple (P-P) 10% or less
Current Consumption	30 mA or less
Control Output	PNP open-collector output, 5~24 VDC 50 mA or less Residual voltage 1.3 VDC or less (at load current of 50 mA)
Indicator LED	Detection display (red)
Sensor Logic	Normally open/normally closed (selectable, depending on connection)

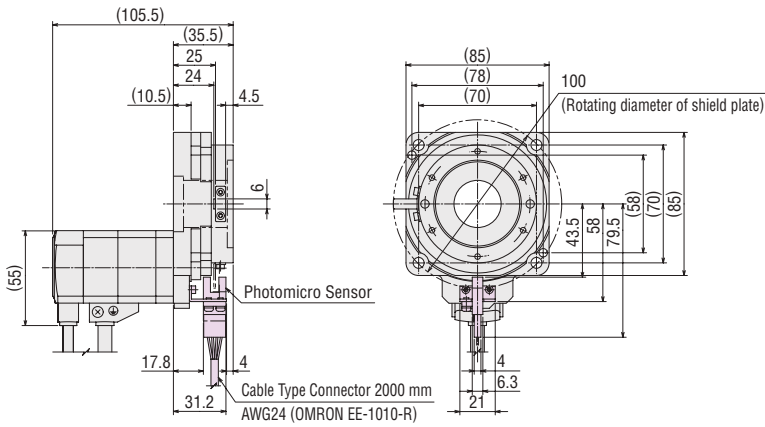
Dimensions of Sensor Installation (Unit: mm)

These dimensions apply when a home-sensor set is installed on a single shaft.
For the dimensions of other frame sizes, please refer to our website.

DGM60



DGM85R



2D CAD

Applicable Products	2D CAD
DGM60-AZAK	D7690
DGM85R-AZA <input type="checkbox"/>	D4503
DGM85R-AZM <input type="checkbox"/>	D6456
DGM130R-AZA <input type="checkbox"/>	D4504
DGM130R-AZA <input type="checkbox"/> R	D7653
DGM130R-AZA <input type="checkbox"/> L	D7652
DGM130R-AZM <input type="checkbox"/>	D6457
DGM130R-AZM <input type="checkbox"/> R	D7655
DGM130R-AZM <input type="checkbox"/> L	D7654
DGM200R-AZAC	D6458
DGM200R-AZACR	D7657
DGM200R-AZACL	D7656
DGM200R-AZMC	D6459
DGM200R-AZMCR	D7659
DGM200R-AZMCL	D7658

● Either **C** (AC power input) or **K** (DC power input) indicating the motor specification is entered where the box is located within the product name.

Mounting Pedestals

The mounting pedestal enables the **DGII** Series to be used as a direct drive motor. Applications that require height and installation from the side can also be performed, expanding the range of available operations.

Product Line

Material: Aluminum Alloy

Surface treatment: Alumite (**DGM60**, **DGM85**, **DGM130**),
Paint (**MDG200**)

2D & 3D CAD

Model Name	Applicable Products		List Price
	Type	Product Name	
MDG60B	Single Shaft	DGM60-AZA	SGD150
MDG85A2	Single Shaft	DGM85R-AZA	SGD213
MDG85B2	Single Shaft	DGM85R-AZA	SGD238
	Electromagnetic Brake	DGM85R-AZM	
MDG130A2	Single Shaft	DGM130R-AZA	SGD288
MDG130B2	Single Shaft	DGM130R-AZA	SGD338
	Electromagnetic Brake	DGM130R-AZM	
MDG200A	Single Shaft	DGM200R-AZA	SGD488
MDG200B	Single Shaft	DGM200R-AZA	SGD563
	Electromagnetic Brake	DGM200R-AZM	

● The product names of the applicable products are described with text by which the product name can be identified.



<Application Example>

Note

The mounting pedestals are cannot be used to the products with cable drawing direction is right and left sides.

They can be used with permissible values of **DGII** Series. Please use them facing upwards on the horizontal plane.

The following items are included with each product.

Hexagonal Socket Head Screws for Actuator Assembly, Positioning Pins, Bands (for Cable Clamping), Band Bases, Set Screws for Band Bases

Network Converters

Network converters convert host communication protocol to Oriental Motor's original RS-485 communication protocol. You can use a network converter to control Oriental Motor's RS-485-compatible products within the host communication environment.

Product Line

Network Type	Product Name	List Price
CC-Link Ver.1.1 Compatible	NETC01-CC	SGD275
CC-Link Ver.2 Compatible	NETC02-CC	SGD330
MECHATROLINK- II Compatible	NETC01-M2	SGD485
MECHATROLINK- III Compatible	NETC01-M3	SGD543
Compatible with EtherCAT	NETC01-ECT	SGD543



NETC01-CC

NETC02-CC

NETC01-M2

NETC01-M3

NETC01-ECT

