

Orientalmotor

Brushless Motor

BMU Series

Easy Speed Control with Spin and Push



30 W Full Size

Easy Speed Control with Spin and Push

A settings dial designed for easy speed control.

Once the motor and the driver are connected, all you do for this simple wiring is turn on the switch.

The new brushless motor NexBL is a compact, high-power, and high-efficiency motor.

For the **BMU** Series that focuses on user-friendly features and affordable prices, we also provide various gearheads, including hypoid right-angle hollow shaft gearheads.*

Wider applications.

*Some gearheads support H1 food-grade lubricant










- ① Spin and push. Easy speed control.
- ② Easy wiring. Quick start.
- ③ Opening the panel reveals extensive functions.
- ④ New Brushless Motor NexBL.

Brushless Motor **BMU** Series

BMU Series



List of Product Line

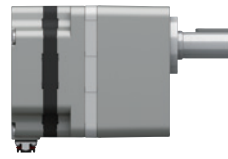
Gearhead Product Line	Parallel Shaft Gearhead GFV Gear		Parallel Shaft Gearhead JV Gear		Foot Mount Gearhead JB Gear	Right-Angle Shaft Hollow Hypoid Gearhead JH Gear	Hollow Shaft Flat Gearhead FR Gear
	Round Shaft Type		Round Shaft Type				
Degree of Protection	H1 Grade Lubricant Compatible*		Dust-Resistant, Watertight Specification*				
							
Motor Output Power	IP66	IP66	IP67	IP66	IP44	IP66	IP65
30 W	●	●					●
60 W	●	●				●	●
120 W	●	●				●	●
200 W	●		●	●	●	●	●
300 W	●		●	●	●	●	●
400 W	●		●	●	●	●	●

*Only available for parallel shaft gearhead **GFV** gearhead

Main Features of BMU Series

- Easy speed control with “Spin and Push” of the setting dial.
- Easy wiring by connecting the motor and the driver and turning on the switch.
- Employs new compact, high output, highly efficient brushless motors.
- Lineup cable and connector types.
- Delivers the highest level of speed control at reasonable prices.

● Connection Method



Connection Cables / Flexible
Connection Cables (Sold separately)

Connector Type Motor
(Degree of protection IP66 specification)

Features

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.

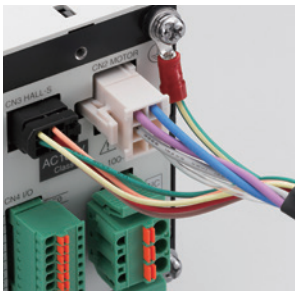


Pushing the dial sets the speed.



The dial operation can be locked.

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.



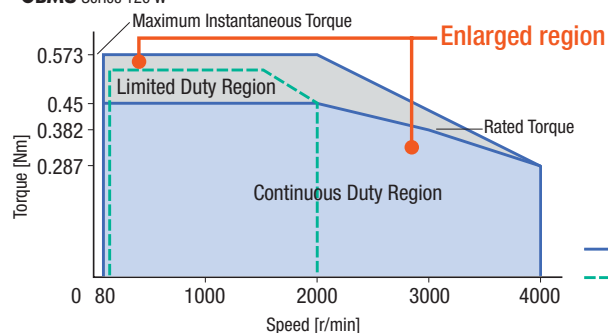
The rotation direction of the motor can be changed with easy operation.

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.

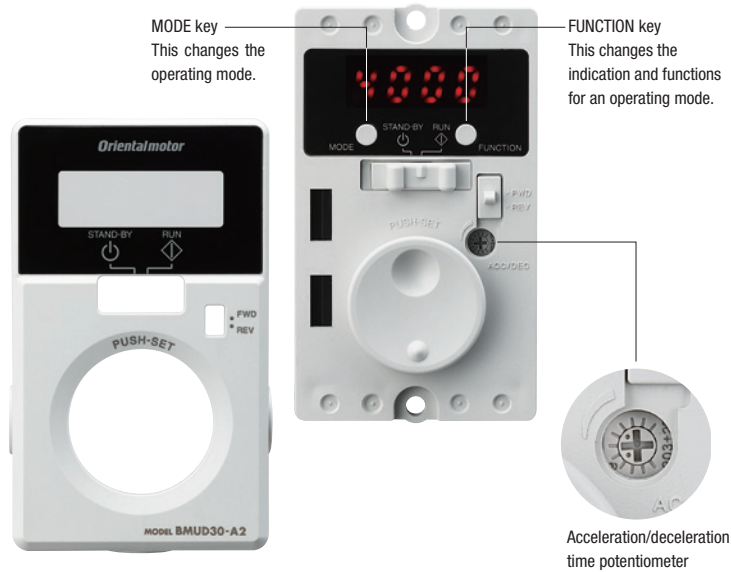
*Depends on the gearhead.

●BMU Series 120 W



— **BMU Series 120 W**
- - - Conventional model **BLU Series 90 W**

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 Start/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%

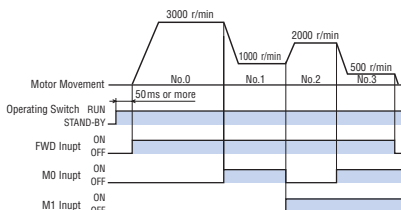
Protective function

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 M0 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".

Locking Lever-Type Connector for Direct Connection (Connector Type)

The locking lever connector for small motors enables direct connection between the motor and the driver.

Easy Connection

Connecting the cable is easy due to the lock lever that does not require screws.

●Attachment Method



Insert the connector



Turn down the lock lever



Connection complete

Cable Outlet Direction Can be Selected

Choose from 3 types of cable outlet directions of the motor to suit the equipment.



Cable Outlet in Output Shaft Direction



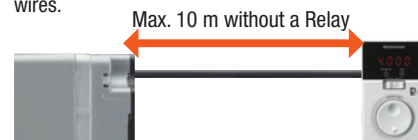
Cable Outlet Opposite to Output Shaft Direction



Cable Outlet in Vertical Direction

Motor-Driver Direct Connection

Without an extension cable, a connection of up to 10 m is possible. No extension cable is required. The wiring process is simplified by using one cable, instead of power lines, signal lines, and ground wires.



Flexible Cables are Also Available

Use the flexible connection cable in applications where the cable is bent and flexed repeatedly.

IP67 Watertight, Dust-Resistant Motor Features

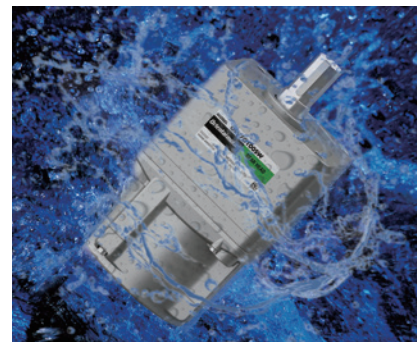
It has a watertight, dust-resistant structure that can withstand environments prone to water splashes and dusts, and it can also be washed easily with water.

Washable, Including the Motor

Water and Dust Resistant

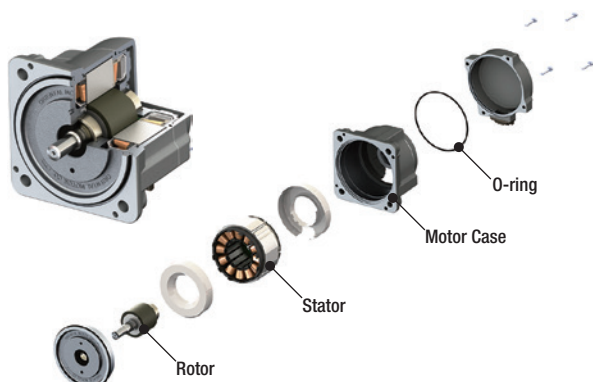
IP67 Structure, Including the Connector Units

Improved Corrosion Resistance



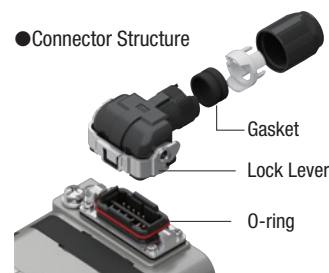
Superior Protective Structure

Sealing parts (O-rings) are used in joints between parts to prevent water from entering the motor. It is suitable for uses that require washing of the motor with water.



The internal gasket and O-ring improve the watertight performance of the connector structure. It is IP67-rated, including the connector units.

●Connector Structure

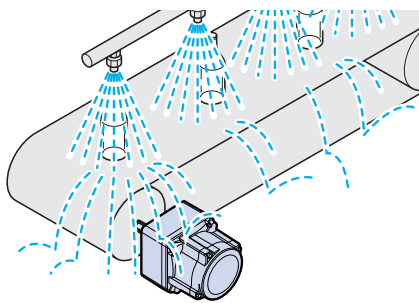


Washable IP67 Rating

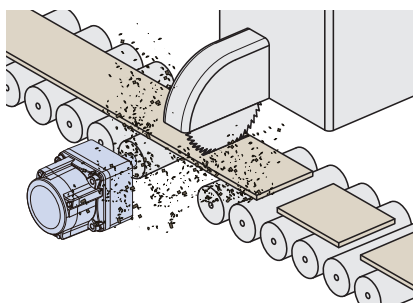
It can operate in locations prone to dust and water.

Because it can be washed with water, it can stay installed on the equipment without a protective cover.

Washable while still attached to the equipment



Suitable for applications where there is dust



IP67

Usable after immersion in water under specified conditions
Completely dust-proof structure

<Watertight Test Conditions>

Immersion to a depth of 1 m for 30 minutes

*Do not use it under water or where the water pressure is high.

“Water-Washing Resistant Test” for Prolonged Service Life

Oriental Motor's Proprietary Assessment*¹

The sealing parts (O-rings) may become deteriorated over the course of motor operation, resulting in compromised watertight performance.

The sealing parts are therefore put through “water-washing resistant test”, which are our proprietary assessment standards designed to address the issue of deterioration over time, to ensure that water does not enter the motor.

Oriental Motor's Proprietary “Water-Washing Resistant Tests”*²

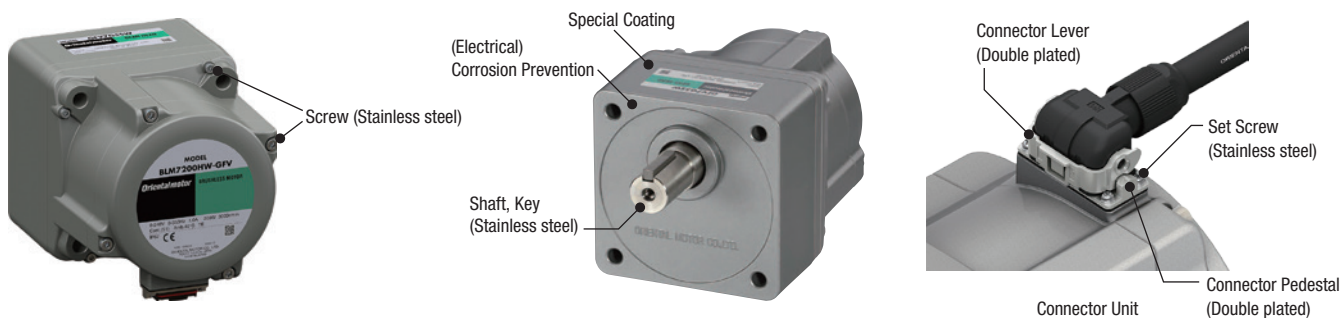
- ① Thermal Shock Test: 5 years worth of heat deterioration is applied to the sealing parts (O-rings)
- ② Vibration Test: Vibration is applied to the motor
- ③ Water Spray Test: Water is sprayed at a pressure of 100 kPa

*¹ These tests are performed under Oriental Motor's in-house conditions and methods, and they are not intended to guarantee fail-free operation.

*² For details on the test conditions, please see the Oriental Motor website. → <https://www.orientalmotor.co.jp/ja>

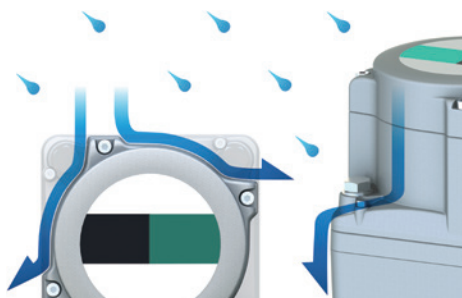
Improved Corrosion Resistance

A special rust-resistant coating is applied and stainless steel is used for the output shafts and screws. The mounting surface is also coated so that it resists rusting even when it is assembled onto a stainless steel equipment.



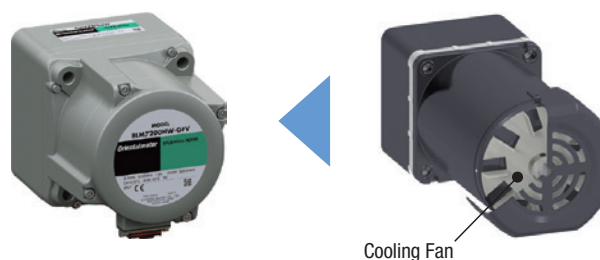
Sloped Motor Shape

The motor has a sloped design for easier water flow when it is being washed. It is designed so that water will flow easily regardless of the motor's installation direction.






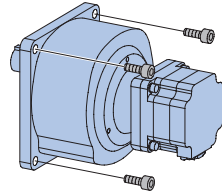
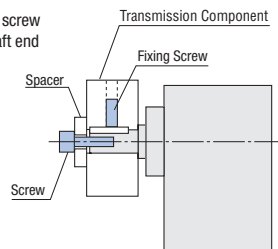
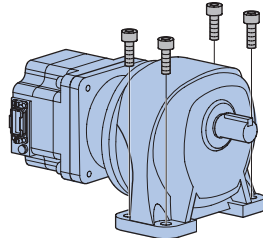

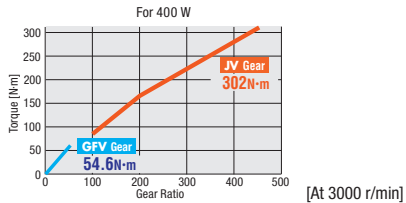
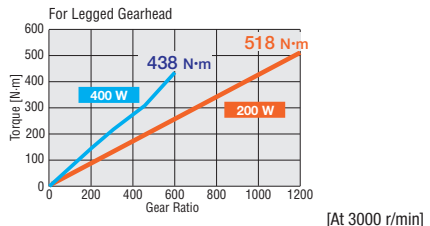
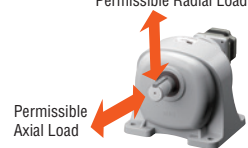
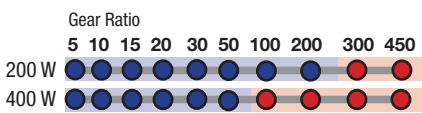
Suitable for Clean Environment

The fact that it is a high-efficiency motor means that there is no cooling fan. Because of this, the motor will not stir and kick up dust from the outside.

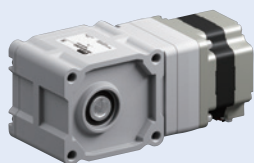


Types and Features of Gearheads

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	
Type	<div>   </div> <div> <p>Parallel Shaft Gearhead GFV Gear H1 Food-Grade Lubricant Compatible</p> <p>Parallel Shaft Gearhead JV Gear</p> </div>
Installation Advantages	<div>  <p>Legged Gearhead JB Gear</p> </div> <div> <p>● Installs on the Flange (JV Gear)</p>  <p>● 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.</p> <p>● 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>  <p>Usage example of the screw hole on the output shaft end</p> </div> <div> <p>● No Mounting Bracket Required The shape quickly attach to your device.</p>  <p>● High Rigidity/Integral Structure Allows you to easily design the shaft center with the integral installation surface structure.</p>  <p>Installation surface integrated type</p> </div>
Features	<div> <p>● 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.</p> <p>● High Permissible Torque The torque is not saturated and the benefit of the motor torque can be maximized.</p>  <p>For 400 W</p> <p>For 200 W</p>  <p>For Legged Gearhead</p> </div> <div> <p>● High Strength</p>  <p>Permissible Radial Load 3672 N Permissible Axial Load 577 N [With 1/1200 gear ratio, at 3000 r/min]</p> </div> <div> <p>● High Gear Ratio This line has products with gear ratios up to 1/1200.</p>  <p>● 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.</p> </div>

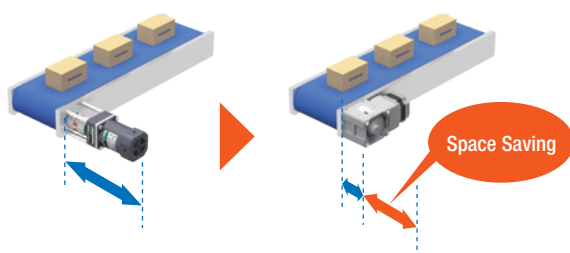
Right-Angle Shaft Gearhead



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

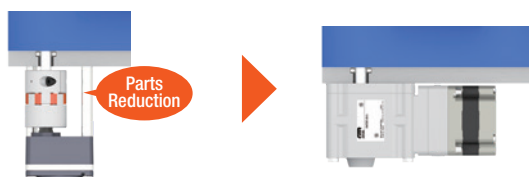
Space Saving

Placing the motor at right angles saves space.

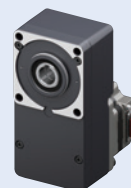


Cost Saving

Reduced couplings, belts, pulleys, and other parts contribute to reduced parts costs and assembling steps.



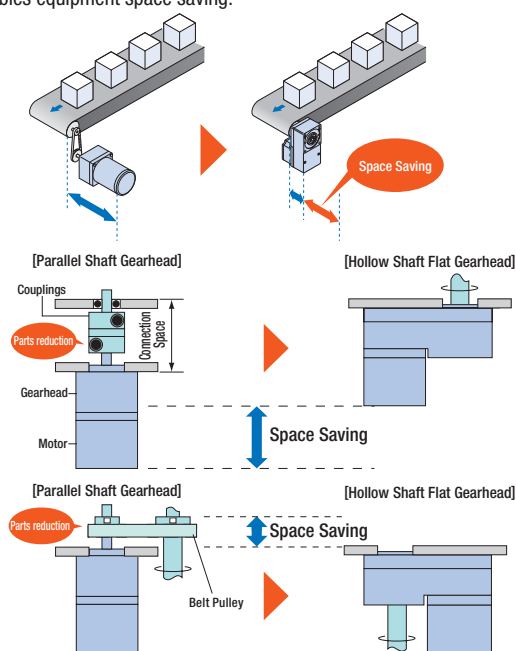
Hollow Shaft Flat Gearhead



Hollow Shaft Flat Gearhead **FR** Gear

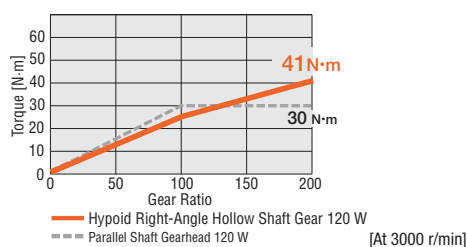
Space Saving

Direct connection to the drive shaft is possible without using coupling parts, which enables equipment space saving.



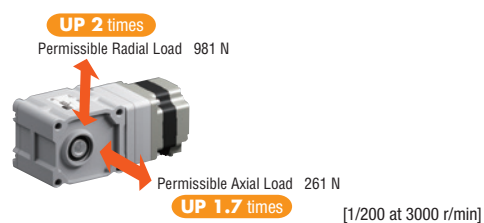
Unsaturated Permissible Torque

The permissible torque is not saturated even at a high gear ratio. Therefore, the benefit of the motor torque can be maximized.



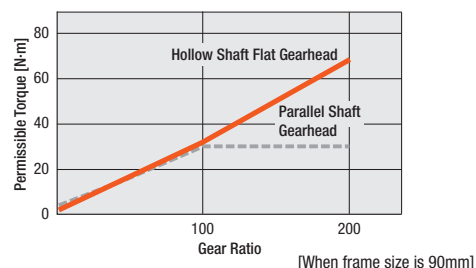
High Strength

Comparison with parallel shaft gearhead



Permissible Torque with No Saturation

Permissible torque will not become saturated even at high gear ratios. This is useful for maximizing the motor torque.



Higher Permissible Torque, Longer Service Life

With improved gear case durability and larger gear and bearing diameters, the permissible torque is higher and the service life is longer. It has reached a rated life of 10000 hours.



Selectable High-Strength, High-Gear Ratio Gearheads to Suit Your Needs

In addition to the conventional parallel shaft gearhead **GFV** gearhead, Oriental Motor offers specialized gearheads to meet your needs, including high-gear ratio, high-strength, and space-saving gearheads. Maximum permissible torque and permissible load of the output shaft have also been improved significantly. They are also compatible with equipment in various environments.

Gearhead Rated Life of 10000 Hours

H1 food-grade lubricant compatible and watertight, dust-resistant models also available

Gear Shape for Extensive High Gear Ratios and Easy Installation



Parallel Shaft Gearhead **GFV** Gear



Watertight,
Dust-Resistant
Specification

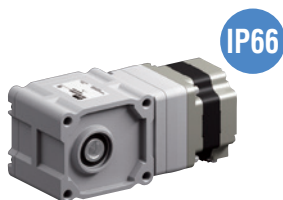


Parallel Shaft Gearhead **JV** Gear



Foot Mount Gearhead **JB** Gear

For Space-Saving Applications and Permissible Torque with No Saturation



Right-Angle Hollow
Shaft Hypoid
JH Gear



Hollow Shaft Flat
Gearhead
FR Gear

H1 Food-Grade Lubricant Compatible (Connector Type, Parallel shaft gearhead **GFV** gear)

H1 food-grade lubricant is used for gear lubrication.

● What is H1 food-grade lubricant?

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.

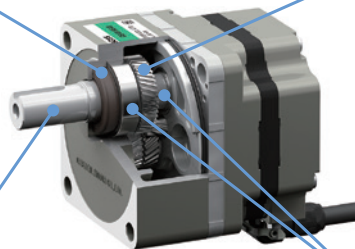
● The rated life of the gearhead is 5,000 hours

H1 grease is adopted to
lubricate the oil seal

H1 grease is adopted to
lubricate the gear

Stainless steel shaft

H1 grease is adopted to
lubricate the bearing



Brushless Motor Features

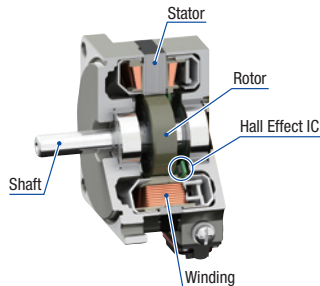
A brushless motor is a speed control motor that combines a high-efficiency compact motor and a dedicated circuit (driver). This motor leads to conservation of energy and resources, and therefore contributes to carbon neutral initiatives.

A built-in permanent magnet in the motor's rotor unit and its optimal magnetic design makes this a highly efficient motor.

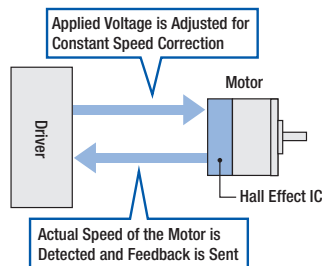
The feedback control with the built-in sensor (hall effect IC) enables accurate speed control in response to commands.

Unlike using inverter control on an AC motor, the low-speed torque is not restricted and a constant rated torque is used from low speed to high speed.

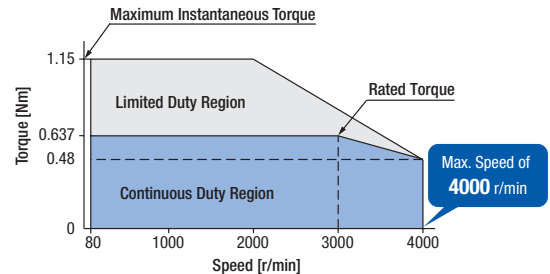
● Motor Structure



● Motor Control



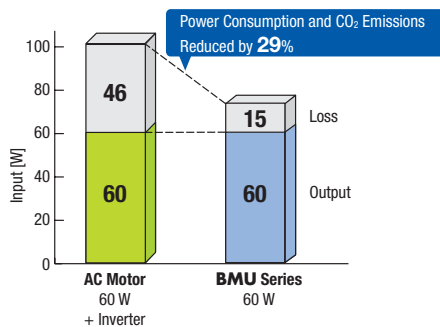
● Wide Speed Range, Constant Torque



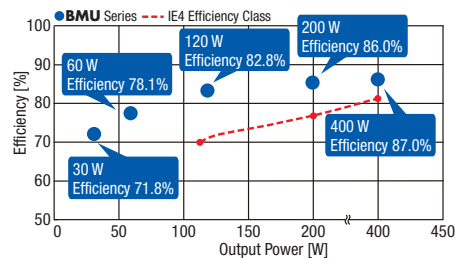
IE4-Equivalent* High-Efficiency, Energy-Saving Motor

A brushless motor is a high-efficiency motor that exceeds the IE4 standards. It is more efficient than applying inverter control on an AC motor (induction motor), and it leads to reduced power consumption and CO₂ emission.

● Energy Saving Effects



● Efficiency at Various Outputs

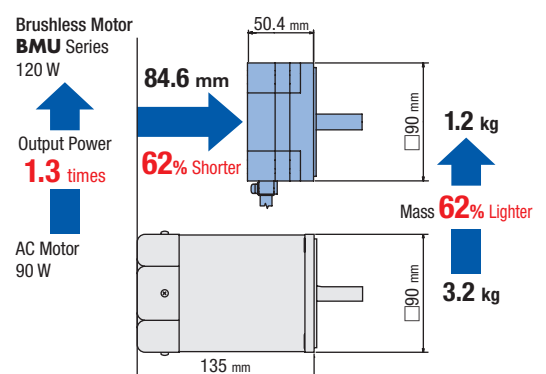


*This is an efficiency class stipulated by the international standards IEC 60034-30-1, and it applies to induction motors of 120 W or higher.

*The IE4 efficiency data is based on rated output power of 4-pole motor. The efficiency data for brushless motor is based on application of rated torque at rated speed.

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.

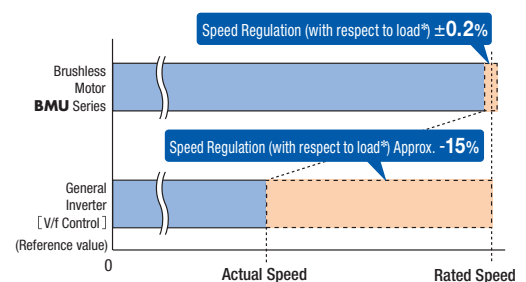


Steady Operation at Preset Speed

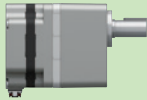

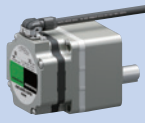


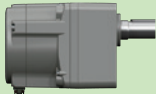


The feedback signal from the motor is monitored constantly and compared against the preset speed to adjust the applied voltage. This means that the motor will operate at the preset speed, from low speed to high speed, even if the load fluctuates.

*Rate of change in speed when a constant load is applied.







$$\text{Speed regulation} = \frac{\text{Actual speed} - \text{Command speed}}{\text{Rated speed}} \times 100 (\%)$$



Product Line

Type	Motor Type	Connection Cable/Flexible Connection Cable Type		Driver Type
Connector Type			Cable Outlet in Output Shaft Direction  Cable Outlet Opposite to Output Shaft Direction 	 30/60/120 W
Watertight, Dust-Resistant Connector Type	Watertight, Dust-Resistant Motor 	Connection Cable 0.5 - 10 m Flexible Connection Cable 1.0 - 10 m	Cable Outlet in Vertical Direction 	 200/300/400 W


Connector Type

Output Shaft Type/Output Shaft Material		Frame Size [mm]	Rated Output Power [W]	Gear Ratio	Degree of Protection	Rated Voltage [VDC]	
Parallel Shaft Gearhead	GFV Gearhead ·Stainless Steel Shaft 	60	30	5 - 200	IP66	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
		80	60				
		90	120				
		110	200			5 - 100	Single-Phase 200-240 Three-Phase 200-240
			300				
			400	5 - 50			
	GFV Gearhead H1 Food-Grade Lubricant Compatible ·Stainless Steel Shaft	60	30	5 - 200	IP66	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
		80	60				
		90	120				
	JV Gearhead ·Stainless Steel Shaft 	*1	200	300, 450		IP66	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
			300	200 - 450			
			400	100 - 450			
Foot Mount Gearhead JB Gearhead ·Iron Shaft 		*1	200	5 - 1200	IP44	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
			300	5 - 600			
			400				
Right-Angle Hollow Shaft Hypoid Gearhead JH Gearhead ·Stainless Steel Shaft 		*1	60	10 - 200	IP66	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
			120				
			200	5 - 200			
			300				
			400				
Hollow Shaft Flat Gearhead FR Gearhead ·Iron Shaft 		*1	30	5 - 200	IP65	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
			60				
			120				
			200	10 - 100		Single-Phase 200-240 Three-Phase 200-240	
			300				
			400	5 - 100			
Round Shaft Type*2 ·Stainless Steel Shaft 		60	30	—	IP66	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240	
			60				
		90	120				
			200				
			300				
			400			Single-Phase 200-240 Three-Phase 200-240	

*1 Refer to the dimensions shown on the product information page.

*2 Round shaft type includes a type with shaft flat.

Watertight, Dust-resistant Connector Type

Output Shaft Type/Output Shaft Material	Frame Size [mm]	Rated Output Power [W]	Gear Ratio	Degree of Protection	Rated Voltage [VDC]
<div>Parallel Shaft Gearhead GFV Gearhead -Stainless Steel Shaft</div> <div></div>	110	200	5 - 100	IP67	Single-Phase 100-120 Single-Phase 200-240 Three-Phase 200-240
		300			5 - 50
		400			

● 2 types of motors, one with mounting screws and one without mounting screws, are available.

Product Code

● Motor

BLM 4 60 S H P - GFV ☐

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

BLM 5 200 ☐ **H P K**

① ② ③ ④ ⑤ ⑥ ⑦

● Gearhead

GFV 2 G 50 S ☐ **F**

① ② ④ ⑤ ⑥ ⑦

5 C B 50 B

② ③ ⑥ ④ ⑤

● Driver

BMUD 60-A 2

① ② ③ ④

● Connection Cables/Flexible Connection Cables (Connector Type)

CC 010 KH BL R F

① ② ③ ④ ⑤ ⑥

①	Motor Type	BLM : Brushless Motors
②	Frame Size	2 : 60 mm 4 : 80 mm 5 : 90 mm 6 : 104 mm 7 : 110 mm
③	Output Power (W)	(Example) 120 : 120 W
④	Identification Number	S
⑤	Motor Connection Method	Blank: Cable Type H : Connector Type
⑥	Motor Degree of Protection	None: IP40 Rating P : IP66 Rating* W : IP67 Rating
⑦	Shaft Type	GFV, GFV2 : GFV Pinion A, A2 : Round Shaft Type AC, AC2 : Round Shaft Type (with Shaft Flat) K : Round Shaft Type (with Key)
⑧	Output Shaft Material	Blank: Iron S : Stainless Steel

*IP65 when combined with **FR** gearhead, IP44 when combined with the **JB** gearhead.

①	Shaft Type	GFV : GFV Pinion GFS : GFS Pinion
②	Combinable Motors Frame Size	2 : 60 mm 4 : 80 mm 5 : 90 mm 6 : 104 mm 7 : 110 mm
③	Gearhead Size	Code (Example) C For gearhead size codes, refer to ■ Specification (→ page 21, page 22, page 25).
④	Gear Ratio	Number: Gearhead Gear Ratio
⑤	Output Shaft Material	Blank, B : Iron S : Stainless Steel
⑥	Gearhead Type	Blank: Parallel Shaft Gearhead FR : Hollow Shaft Flat Gearhead H : JH Gearhead B : JB Gearhead V : JV Gearhead
⑦		F : H1 Food-Grade Lubricant Compatible W : Watertight, Dust-Resistant Specification

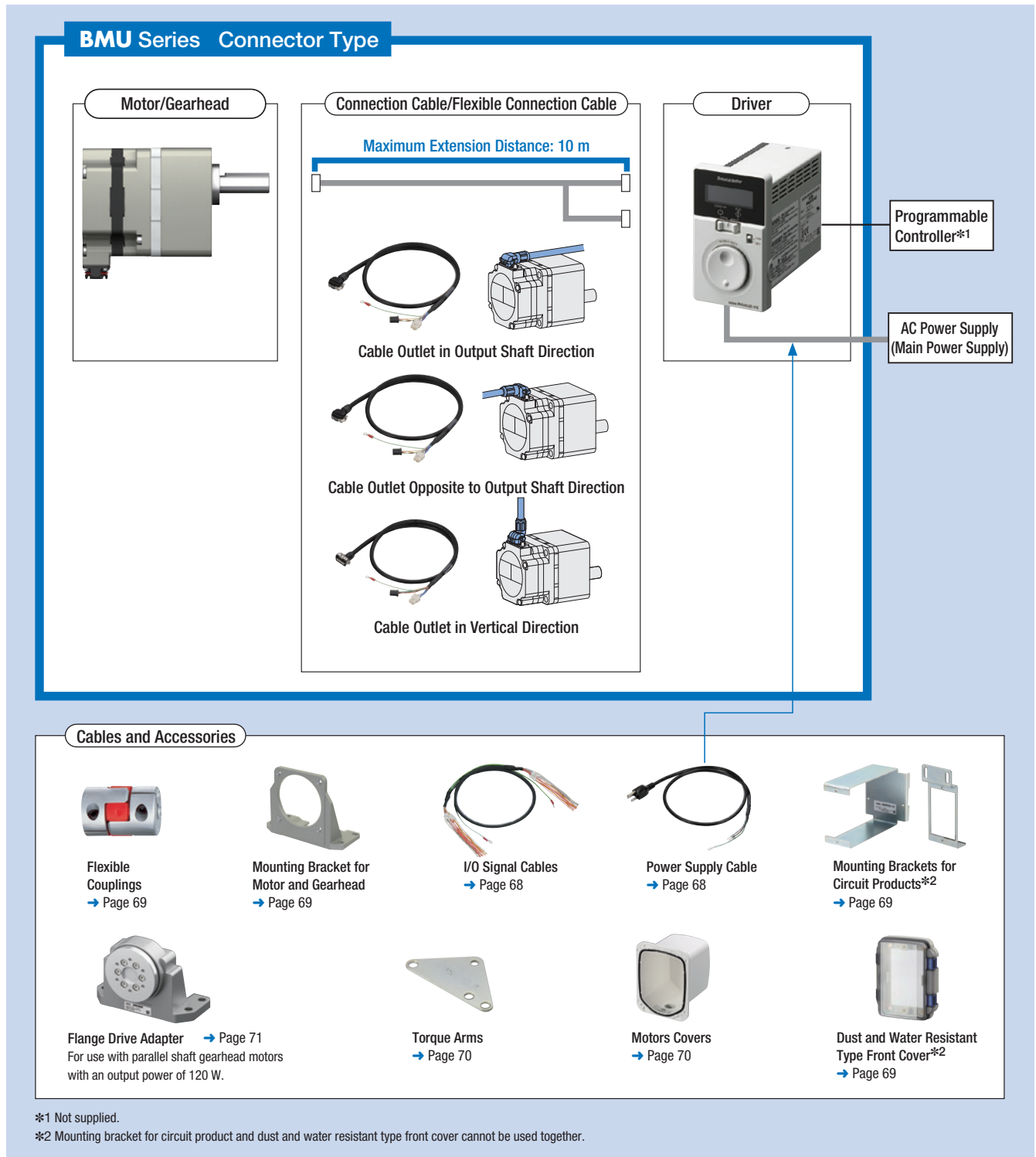
①	Driver Type	BMUD : BMU Series Driver
②	Output	30 : 30 W 60 : 60 W 120 : 120 W 200 : 200 W 300 : 300 W 400 : 400 W
③	Power Supply Voltage*	A : Single-Phase 100-120 VAC C : Single-Phase, Three-Phase 200-240 VAC S : Three-Phase 200-240 VAC
④	Reference Number	

*Check the power supply specifications on the specifications page for each product.

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	KH : Metal Connector Type
④	Applicable Model	BL : Brushless Motor
⑤	Blank: Connection Cable	R : Flexible Connection Cable
⑥	Cable Output Direction	F : Cable Outlet in Output Shaft Direction B : Cable Outlet in the Direction on the Opposite Side of the Output Shaft V : Cable Outlet in Vertical Direction

System Configuration Connector Type

Motors, gearheads, and connection cables must be ordered individually.



Product Line Connector Type

● Motor

◇ Pinion Shaft Type



Output Power	Product Name
30 W	BLM230HP-GFV
60 W	BLM460SHP-GFV
120 W	BLM5120HP-GFV
200 W	BLM6200SHP-GFV
300 W	BLM6300SHP-GFV
400 W	BLM6400SHP-GFV

● Gearhead

◇ Parallel Shaft Gearhead



Applicable Motor Output	Product Name	Gear Ratio
30 W	GFV2G□S	5, 10, 15, 20
		30, 50, 100
		200
60 W	GFV4G□S	5, 10, 15, 20
		30, 50, 100
		200
120 W	GFV5G□S	5, 10, 15, 20
		30, 50, 100
		200
200 W 300 W 400 W	GFV6G□S	5, 10, 15, 20
		30, 50
		100, 200

◇ H1 Food-Grade Lubricant Compatible



Applicable Motor Output	Product Name	Gear Ratio
30 W	GFV2G□SF	5, 10, 15, 20
		30, 50, 100
		200
60 W	GFV4G□SF	5, 10, 15, 20
		30, 50, 100
		200
120 W	GFV5G□SF	5, 10, 15, 20
		30, 50, 100
		200

◇ Hollow Shaft Flat Gearhead



Applicable Motor Output	Product Name	Gear Ratio
30 W	GFS2G□FR	5, 10, 15, 20
		30, 50, 100
		200
60 W	GFS4G□FR	5, 10, 15, 20
		30, 50, 100
		200
120 W	GFS5G□FR	5, 10, 15, 20
		30, 50, 100
		200
200 W 300 W 400 W	GFS6G□FR	10, 15, 20
		30, 50, 100
		30, 50, 100

◇ Round Shaft Type (with Key)



Output Power	Product Name
60 W	BLM460SHPK
120 W	BLM5120HPK
200 W	BLM5200HPK
300 W	BLM5300HPK
400 W	BLM5400HPK

◇ JV Gear



Applicable Motor Output	Product Name	Gear Ratio
200 W	5KV□S	300, 450
300 W	5DV□S	100, 200
400 W	5KV□S	300, 450

◇ JB Gear



Applicable Motor Output	Product Name	Gear Ratio
200 W 300 W 400 W	5AB□B	5, 10, 20
	5CB□B	30, 50
	5EB□B	100, 200
	5KB□B	300, 450
	5SB□B	600, 1200

◇ JH Gear



Applicable Motor Output	Product Name	Gear Ratio
60 W	4H□S	10, 15, 20
		30, 50, 100
		200
120 W	5H□S	10, 15, 20
		30, 50, 100
		200
200 W 300 W 400 W	5XH□S	5, 10, 15, 20
		30
		50
	5YH□S	100
		200

● A number indicating the gear ratio is specified where the box □ is located in the product name.

● Motor (Watertight, Dust-Resistant Specification)

◇ Pinion Shaft Type



Output Power	Product Name
200 W	BLM7200HW-GFV
300 W	BLM7300HW-GFV
400 W	BLM7400HW-GFV

● Gearhead (Watertight, Dust-Resistant Specification)

◇ Parallel Shaft Gearhead



Applicable Motor Output	Product Name	Gear Ratio
200 W	GFV7G□SW	5, 10, 15, 20
300 W		30, 50
400 W		100

● Driver



Output Power	Power Supply Voltage	Product Name
30 W	Single-phase 100-120 VAC	BMUD30-A2
	Single-phase/ Three-phase 200-240 VAC	BMUD30-C2
60 W	Single-phase 100-120 VAC	BMUD60-A2
	Single-phase/ Three-phase 200-240 VAC	BMUD60-C2
120 W	Single-phase 100-120 VAC	BMUD120-A2
	Single-phase/ Three-phase 200-240 VAC	BMUD120-C2
200 W	Single-phase 100-120 VAC	BMUD200-A
	Single-phase/ Three-phase 200-240 VAC	BMUD200-C
300 W	Single-phase/ Three-phase 200-240 VAC	BMUD300-C
400 W	Single-phase 200-240 VAC	BMUD400-C
	Three-phase 200-240 VAC	BMUD400-S

● Motor

◇ Round Shaft Type



Output Power	Product Name
30 W	BLM230HP-AS
60 W	BLM260HP-AS
120 W	BLM5120HP-AS
200 W	BLM5200HP-AS
300 W	BLM5300HP-AS
400 W	BLM5400HP-AS

● Other Product Line

Round Shaft Type
Shaft Flat-Processed Output
Shaft

● For more details, please contact the Oriental Motor sales office.

● Connection Cables (for Connector Type)



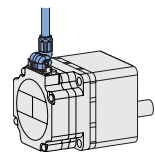
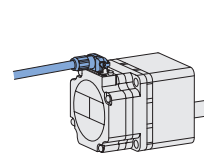
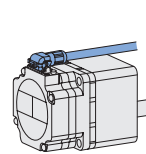
Length	Product Name	Length	Product Name
0.5 m	CC005KHBL ■	3 m	CC030KHBL ■
1 m	CC010KHBL ■	4 m	CC040KHBL ■
1.5 m	CC015KHBL ■	5 m	CC050KHBL ■
2 m	CC020KHBL ■	7 m	CC070KHBL ■
2.5 m	CC025KHBL ■	10 m	CC100KHBL ■

● Flexible Connection Cables (for Connector Type)

Length	Product Name	Length	Product Name
1 m	CC010KHBLR ■	4 m	CC040KHBLR ■
1.5 m	CC015KHBLR ■	5 m	CC050KHBLR ■
2 m	CC020KHBLR ■	7 m	CC070KHBLR ■
2.5 m	CC025KHBLR ■	10 m	CC100KHBLR ■
3 m	CC030KHBLR ■		

Three types of cables with different outlet directions are available.

F: Cable Output in the Side of the Output Shaft **B**: Cable Output in the Opposite Side of the Output Shaft **V**: Cable outlet in vertical direction



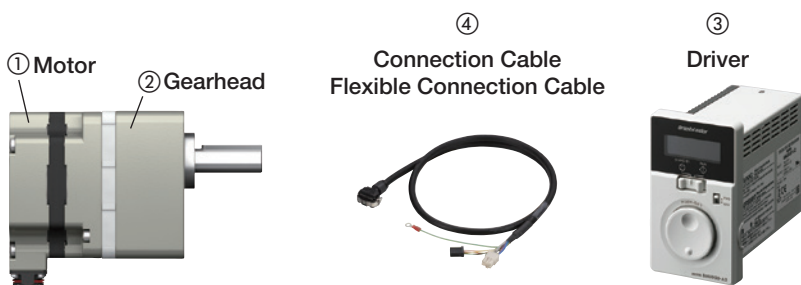
Note

● For the round shaft type, please select the cable outlet direction required for the installation.

● A number indicating the gear ratio is specified where □ is located in the product name.

The letter **F**, **B** or **V** indicating the cable outlet direction is specified where ■ is located in the product name.

List of Combinations Connector Type



Output Power	Type	Motor	Gearhead	Driver	Connection Cable Flexible Connection Cable
		①	②	③	④
30 W	Parallel Shaft Gearhead GFV Gear	BLM230HP-GFV	GFV2G□S	BMUD30-A2 BMUD30-C2	CC◇KHBL CC◇KHBLR
	Parallel Shaft Gearhead GFV Gear H1 Food-Grade Lubricant Compatible		GFV2G□SF		
	Hollow Shaft Flat Gearhead FR Gear		GFS2G□FR		
	Round Shaft Type	BLM230HP-AS	—		
60 W	Parallel Shaft Gearhead GFV Gear	BLM460SHP-GFV	GFV4G□S	BMUD60-A2 BMUD60-C2	
	Parallel Shaft Gearhead GFV Gear H1 Food-Grade Lubricant Compatible		GFV4G□SF		
	Hollow Shaft Flat Gearhead FR Gear		GFS4G□FR		
	Right-Angle Hollow Shaft Hypoid JH Gear	BLM460SHPK	4H□S		
	Round Shaft Type	BLM260HP-AS	—		
120 W	Parallel Shaft Gearhead GFV Gear	BLM5120HP-GFV	GFV5G□S	BMUD120-A2 BMUD120-C2	
	Parallel Shaft Gearhead GFV Gear H1 Food-Grade Lubricant Compatible		GFV5G□SF		
	Hollow Shaft Flat Gearhead FR Gear		GFS5G□FR		
	Right-Angle Hollow Shaft Hypoid JH Gear	BLM5120HPK	5H□S		
	Round Shaft Type	BLM5120HP-AS	—		
200 W	Parallel Shaft Gearhead GFV Gear	BLM6200SHP-GFV	GFV6G□S	BMUD200-A BMUD200-C	
	Hollow Shaft Flat Gearhead FR Gear		GFS6G□FR		
	Watertight, Dust-Resistant Specification Parallel Shaft Gearhead GFV Gear	BLM7200HW-GFV	GFV7G□SW		
	Parallel Shaft Gearhead JV Gear	BLM5200HPK	5KV□S		
	Foot Mount Gearhead JB Gear		5AB□B		
			5CB□B		
			5EB□B		
			5KB□B		
			5SB□B		
	Right-Angle Hollow Shaft Hypoid JH Gear		5XH□S		
		5YH□S			
	Round Shaft Type	BLM5200HP-AS	—		
300 W	Parallel Shaft Gearhead GFV Gear	BLM6300SHP-GFV	GFV6G□S	BMUD300-C	
	Hollow Shaft Flat Gearhead FR Gear		GFS6G□FR		
	Watertight, Dust-Resistant Specification Parallel Shaft Gearhead GFV Gear	BLM7300HW-GFV	GFV7G□SW		
	Parallel Shaft Gearhead JV Gear	BLM5300HPK	5DV□S		
	Foot Mount Gearhead JB Gear		5KV□S		
			5AB□B		
			5CB□B		
			5EB□B		
			5KB□B		
			5SB□B		
	Right-Angle Hollow Shaft Hypoid JH Gear	5XH□S			
		5YH□S			
Round Shaft Type	BLM5300HP-AS	—			
400 W	Parallel Shaft Gearhead GFV Gear	BLM6400SHP-GFV	GFV6G□S	BMUD400-C BMUD400-S	
	Hollow Shaft Flat Gearhead FR Gear		GFS6G□FR		
	Watertight, Dust-Resistant Specification Parallel Shaft Gearhead GFV Gear	BLM7400HW-GFV	GFV7G□SW		
	Parallel Shaft Gearhead JV Gear	BLM5400HPK	5DV□S		
	Foot Mount Gearhead JB Gear		5KV□S		
			5AB□B		
			5CB□B		
			5EB□B		
			5KB□B		
			5SB□B		
	Right-Angle Hollow Shaft Hypoid JH Gear	5XH□S			
		5YH□S			
Round Shaft Type	BLM5400HP-AS	—			

● A number indicating the gear ratio is specified where □ is located in the product name. A number indicating the cable length is specified where ◇ is located in the product name.
 The letter **F**, **B** or **V** indicating the cable outlet direction is specified where ■ is located in the product name.

Parallel Shaft Gearhead GFV Gear 30 W, 60 W, 120 W



Specifications



Product Name	Motor/Gearhead	Connector Type	BLM230HP-GFV / GFV2G□S(F)		BLM460SHP-GFV / GFV4G□S(F)		BLM5120HP-GFV / GFV5G□S(F)	
	Driver		BMUD30-A2	BMUD30-C2	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-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 to +10%		-15 to +10%		-15 to +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 to +10%, rated speed, no load, normal temperature					
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +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
		4000 r/min	800	400	267	200	133	80	40
Permissible Torque [Nm]	30 W	At 80 - 2000 r/min	0.45	0.9	1.4	1.8	2.6	4.3	6
		At 3000 r/min	0.43	0.86	1.3	1.7	2.5	4.1	6
		At 4000 r/min	0.32	0.65	0.97	1.3	1.9	3.1	5.4
		At 80 - 2000 r/min	0.9	1.8	2.7	3.6	5.2	8.6	16
	60 W	At 3000 r/min	0.86	1.7	2.6	3.4	4.9	8.2	16
		At 4000 r/min	0.65	1.3	1.9	2.6	3.7	6.2	14
		At 80 - 2000 r/min	2.0	4.1	6.1	8.1	11.6	19.4	30
		At 3000 r/min	1.7	3.4	5.2	6.9	9.9	16.4	30
		At 4000 r/min	1.3	2.6	3.9	5.2	7.4	12.3	27
	120 W	At 80 - 3000 r/min	100		150			200	
		At 4000 r/min	90		130			180	
	10 mm from output shaft end*2	At 80 - 3000 r/min	200		300			450	
		At 4000 r/min	180		270			420	
Permissible Radial Load [N]	120 W	At 80 - 3000 r/min	300		400			500	
		At 4000 r/min	230		370			450	
	20 mm from output shaft end*2	At 80 - 3000 r/min	150		200			300	
		At 4000 r/min	110		170			230	
	60 W	At 80 - 3000 r/min	250		350			550	
		At 4000 r/min	220		330			500	
	120 W	At 80 - 3000 r/min	400		500			650	
		At 4000 r/min	300		430			550	
Permissible Axial Load [N]	30 W	40							
	60 W	100							
	120 W	150							
Permissible Load Inertia J [$\times 10^{-4}$ kgm ²]	At instantaneous stop, instantaneous bi-directional operation*3	30 W	12	50	110	200	370	920	2500
		60 W	22	95	220	350	800	2200	6200
		120 W	45	190	420	700	1600	4500	12000
		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 20

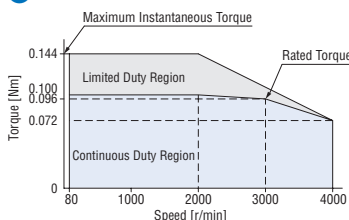
*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

Speed – Torque Characteristics

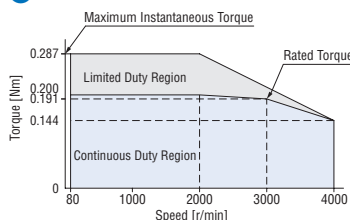
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

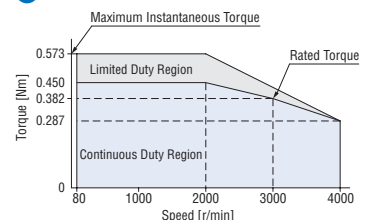
30 W



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, 300 W, 400 W



Specifications

Product Name	Motor/ Gearhead	Connector Type	BLM6200SHP-GFV / GFV6G□S		BLM6300SHP-GFV / GFV6G□S	BLM6400SHP-GFV / GFV6G□S	
		watertight, dust-resistant	BLM7200HW-GFV/ GFV7G□SW		BLM7300HW-GFV/ GFV7G□SW	BLM7400HW-GFV/ GFV7G□SW	
Driver			BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S
Rated Output Power (Continuous)			W	200	300	400	
Power Supply Input	Rated Voltage	VAC	Single-phase 100-120	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240	Three-phase 200-240
	Permissible Voltage Range		-15 to +10%		-15 to +10%		-15 to +10%
	Frequency	Hz	50/60		50/60	50/60	
	Permissible Frequency Range		±5%		±5%		±5%
	Rated Input Current	A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/Three-Phase: 2.1	4.6	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/Three-Phase: 4.7	8.1	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 to +10%, rated speed, no load, normal temperature					
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0 to +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
Permissible Torque [Nm]	200 W	4000 r/min	800	400	267	200	133	80	40
		At 80 - 3000 r/min	2.9	5.7	8.6	11.5	16.4	27.4	51.6
		At 4000 r/min	2.2	4.3	6.5	8.6	12.4	20.6	38.9
		At 80 - 3000 r/min	4.3	8.6	12.9	17.2	24.6	41.1	70
	300 W	At 4000 r/min	3.2	6.4	9.7	12.9	18.5	30.8	58
		At 80 - 3000 r/min	5.7	11.4	17.1	22.9	32.8	54.6	—
	400 W	At 4000 r/min	4.3	8.6	12.9	17.2	24.6	41.1	—
		At 80 - 3000 r/min	550	1000	1400	1800	2500	3500	5000
Permissible Radial Load [N]	10 mm from output shaft end	At 80 - 3000 r/min	500	800	1250	1700	2400	3400	5000
	20 mm from output shaft end	At 80 - 3000 r/min	700	1100	1600	2200	3200	4600	6600
	At 4000 r/min	500	700	1000	1400	2000	2800	4000	5600
	At 4000 r/min	500	700	1000	1400	2000	2800	4000	5600
Permissible Axial Load [N]		200				300		400	
Permissible Load Inertia J [$\times 10^{-4}$ kgm ²]		At instantaneous stop, instantaneous bi-directional operation*3	100	460	1000	1700	3900	9300	18000
			50	200	450	800	1800	5000	37000

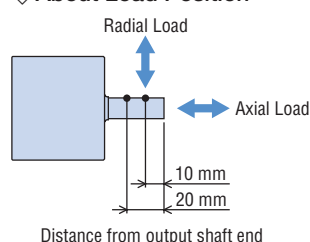
*1 The **100** gear ratio is compatible with the 200 W and 300 W output types.

The **200** gear ratio is only available on the 200 W output type (excluding the watertight, dust-resistant specification).

*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

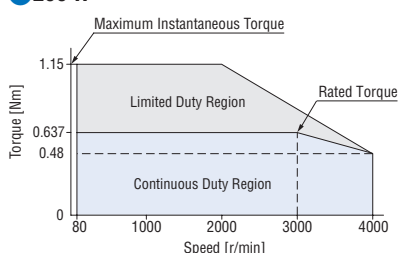


Speed – Torque Characteristics

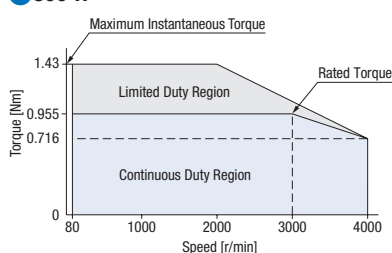
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

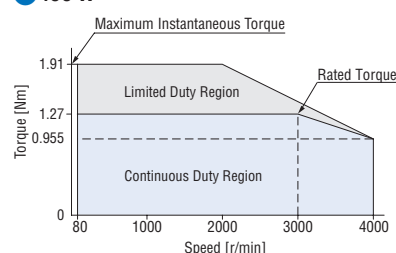
● 200 W



● 300 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.

Parallel Shaft Gearhead JV Gear 200 W, 300 W, 400 W



Specifications

Product Name	Motor/Gearhead	BLM5200HPK / 5KV□S		BLM5300HPK / 5V□S	BLM5400HPK / 5V□S			
	Driver	BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S		
Rated Output Power (Continuous)		W	200		300		400	
Power Supply Input	Rated Voltage	VAC	Single-phase 100-120	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240	Three-phase 200-240	
	Permissible Voltage Range		-15 to +10%		-15 to +10%		-15 to +10%	
	Frequency	Hz	50/60		50/60		50/60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/Three-Phase: 2.1	4.6	2.8	
	Maximum Input Current	A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/Three-Phase: 4.7	8.1	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 to ~+10%, rated speed, no load, normal temperature						
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0 to +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
(Actual gear ratio)		(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 [Nm]	200 W	At 80 - 3000 r/min	—	132	198
		At 3600 r/min	—	92.3	138
	300 W	At 80 - 3000 r/min	—	137	297
		At 3600 r/min	—	117	216
	400 W	At 80 - 1500 r/min	108	298	431
		At 3000 r/min	81.9	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 [$\times 10^{-4}$ kgm ²]	At instantaneous stop, instantaneous bi-directional operation*3	At 80 - 1500 r/min	100000	400000	900000
		At 3000 r/min	36000	144000	324000
		At 3600 r/min	20250	81000	182250
		At 80 - 1500 r/min	33333	133333	300000
		At 3000 r/min	12000	48000	108000
		At 3600 r/min	6750	27000	60750

*1 The **100** gear ratio is only available on the 400 W output type. The **200** gear ratio is compatible with the 300 W and 400 W output types.

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

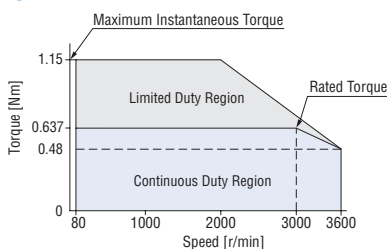
*3 It is also applicable when digitally setting the deceleration time to below 0.1 second.

Speed – Torque Characteristics

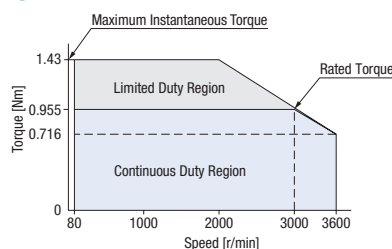
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

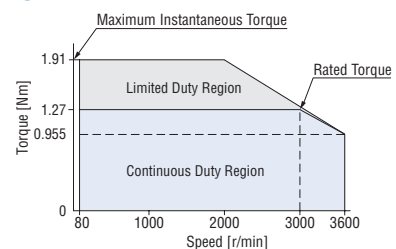
200 W



300 W



400 W

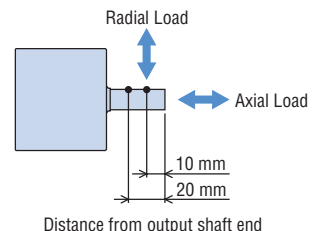


● The values correspond to each specification and characteristic of a stand-alone motor. The speed-torque characteristics shows the values when rated voltage is applied.

● 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.










About Load Position



Legged Gearhead JB Gear 200 W, 300 W, 400 W



Specifications

Product Name	Motor/Gearhead		BLM5200HPK / 5   		BLM5300HPK / 5   		BLM5400HPK / 5   	
	Driver		BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S	
Rated Output Power (Continuous)		W	200		300	400		
Power Supply Input	Rated Voltage	VAC	Single-phase 100-120	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240	Three-phase 200-240	
	Permissible Voltage Range		-15 to +10%		-15 to +10%	-15 to +10%		
	Frequency	Hz	50/60		50/60	50/60		
	Permissible Frequency Range		±5%		±5%	±5%		
	Rated Input Current	A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/ Three-Phase: 2.1	4.6	2.8	
	Maximum Input Current	A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/ Three-Phase: 4.7	8.1	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 to +10%, rated speed, no load, normal temperature					
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +40°C, rated speed, no load, rated voltage					

● The values correspond to each specification and characteristic of a stand-alone motor.

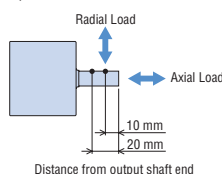
Gear Ratio		5	10	20	30	50	100	200	300	450	600	1200*1		
(Actual gear ratio)		(4.97)	(10.12)	(20.08)	(30.86)	(49.09)	(104.1)	(196.4)	(300.5)	(450.8)	(588.9)	(1178)		
Gearhead Size Code		A			C		E		K		S			
Rotation Direction		Same direction as the motor				Opposite direction to the motor			Same direction as the motor					
Output Shaft Rotation Speed		80 r/min	16	8	4	2.7	1.6	0.8	0.4	0.27	0.18	0.13	0.07	
[r/min]*2		3600 r/min	720	360	180	120	72	36	18	12	8	6	3	
Permissible Torque [Nm]	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	
	300 W	At 80 - 3000 r/min	3.6	7.3	14.6	19.4	33.8	72.6	137	198	297	388	—	
		At 3600 r/min	2.5	5.1	10.1	12.2	23.2	47.7	90	138	207	270	—	
	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	—	
		At 3600 r/min	3.1	5.9	12.3	18.2	29.4	58.5	117	157	216	313	—	
		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 [×10 ⁻⁴ kgm 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 instantaneous stop, instantaneous bi-directional operation*3	At 3600 r/min	50.6	203	810	1823	5063	20250	81000	182250	410063	729000	2916000
			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

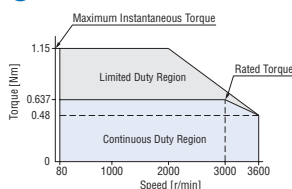


Speed - Torque Characteristics

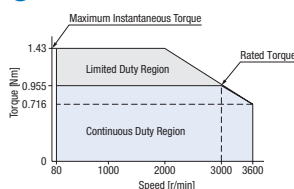
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

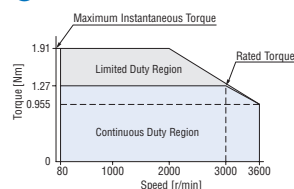
200 W



300 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 (A, C, E, K, S) that represents the gearhead size.

A number in the box \square in the product name indicates the gear ratio.

Hypoid Right-Angle Hollow Shaft JH Gear 60 W, 120 W



Specifications



Product Name	Motor/Gearhead Driver		BLM460SHPK / 4H □S		BLM5120HPK / 5H □S	
			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 to +10%		-15 to +10%	
	Frequency	Hz	50 / 60		50 / 60	
	Permissible Frequency Range		±5%		±5%	
	Rated Input Current	A	1.7	Single-Phase: 1.0/ Three-Phase: 0.52	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			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 to +10%, rated speed, no load, normal temperature			
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +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
	At 80 - 1500 r/min	1.2	1.8	2.7	4.0	6.7	13.3	20.6
Permissible Torque [Nm]	60W	At 3000 r/min	1.2	1.8	2.5	3.8	6.4	12.7
		At 3600 r/min	0.74	1.1	1.8	2.7	4.4	8.9
	120W	At 80 - 1500 r/min	3.2	4.8	6.5	9.7	16.0	32.3
		At 3000 r/min	2.5	3.8	5.1	7.6	12.7	25.5
		At 3600 r/min	1.8	2.6	3.5	5.3	8.8	17.7
		At 80 - 1500 r/min	265	341	417	531	682	758
Permissible Radial Load [N]*3	60W	At 3000 r/min	201	259	317	404	518	576
		At 3600 r/min	148	191	234	297	382	424
	120W	At 80 - 1500 r/min	363	484	605	806	971	1045
		At 3000 r/min	276	368	460	613	738	794
		At 3600 r/min	203	271	339	451	544	585
		At 80 - 1500 r/min	88	108	137	177	226	245
Permissible Axial Load [N]	60W	At 3000 r/min	67	82	104	135	172	186
		At 3600 r/min	49	60	77	99	127	137
	120W	At 80 - 1500 r/min	108	147	186	245	294	324
		At 3000 r/min	82	112	141	186	223	246
		At 3600 r/min	60	82	104	137	165	181
		At 80 - 1500 r/min	100	225	400	900	2500	10000
Permissible Load Inertia J [$\times 10^{-4}$ kgm ²]	60W	At 3000 r/min	36	81	144	324	900	3600
		At 3600 r/min	20.3	45.6	81	182	506	2025
	120W	At 80 - 1500 r/min	200	450	800	1800	5000	20000
		At 3000 r/min	72	162	288	648	1800	7200
		At 3600 r/min	40.5	91.1	162	365	1013	4050
	At instantaneous stop,	At 80 - 1500 r/min	33.3	75	133	300	833	3333
	60W	At 3000 r/min	12	27	48	108	300	1200
		At 3600 r/min	6.8	15.2	27	60.8	169	675
	At instantaneous bi-directional operation*4	At 80 - 1500 r/min	66.7	150	267	600	1667	6667
	120W	At 3000 r/min	24	54	96	216	600	2400
		At 3600 r/min	13.5	30.4	54	122	338	1350
								5400

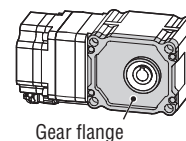
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*2 The rotational speed of the output shaft is the value of the rotational speed divided by the gear ratio.

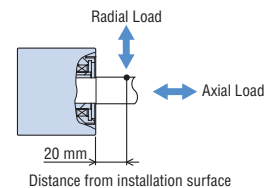
*3 The radial load at each distance can also be calculated with a formula. → Page 66

*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



◇ About Load Position



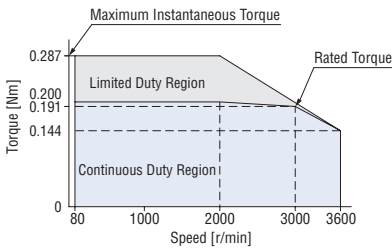
● A number in the box □ in the product name indicates the gear ratio.

Speed – Torque Characteristics

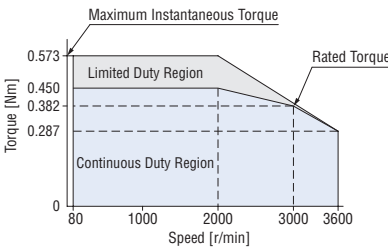
Continuous Duty Region : Continuous operation is possible in this region.

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, 300 W, 400 W



Specifications



Product Name	Motor/Gearhead Driver	BLM5200HPK / 5□H□S		BLM5300HPK / 5□H□S	BLM5400HPK / 5□H□S			
		BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S		
Rated Output Power (Continuous)		W	200		300		400	
Power Supply Input	Rated Voltage	VAC	Single-phase 100-120	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240	Three-phase 200-240	
	Permissible Voltage Range		-15 to +10%		-15 to +10%			
	Frequency	Hz	50/60		50/60		50/60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/ Three-Phase: 2.1	4.6	2.8	
	Maximum Input Current	A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/ Three-Phase: 4.7	8.1	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 to +10%, rated speed, no load, normal temperature					
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +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
(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 [Nm]	200 W	At 80 - 3000 r/min	2.1	4.1	6.2	8.3	13.4	22.3	41.0
		At 3600 r/min	1.3	2.6	4.0	5.3	9.4	15.6	28.5
	300 W	At 80 - 1500 r/min	3.3	6.7	10.0	13.4	21.5	35.8	66.2
		At 3000 r/min	3.3	6.7	10.0	13.4	21.5	35.8	66.2
	400 W	At 3600 r/min	2.3	4.7	7.0	9.3	15.0	25.1	46.1
		At 80 - 1500 r/min	4.8	9.5	14.3	19.1	30.5	50.8	88.0
		At 3000 r/min	3.8	7.7	11.9	16.1	23.1	38.5	73.5
		At 3600 r/min	2.7	5.5	8.5	11.5	16.5	27.5	52.5
	Permissible Radial Load [N]*3	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]	20 mm from installation surface	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
		At 80 - 1500 r/min	250	1000	2250	4000	9000	25000	100000
Permissible Load Inertia J [$\times 10^{-4}$ kgm ²]	At instantaneous stop, instantaneous bi-directional operation*4	At 3000 r/min	90	360	810	1440	3240	9000	36000
		At 3600 r/min	50.6	203	456	810	1823	5063	20250
		At 80 - 1500 r/min	83.3	333	750	1333	3000	8333	33333
		At 3000 r/min	30	120	270	480	1080	3000	12000
		At 3600 r/min	16.9	67.5	152	270	608	1688	6750
		At 3600 r/min							27000

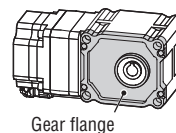
*1 The rotational direction is viewed from the gear flange surface (Figure on the right).

*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 66

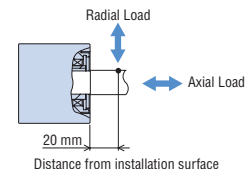
*4 It is also applicable when digitally setting the deceleration time to below 0.1 second.

◇ Gear Flange Position



Gear flange

◇ About Load Position



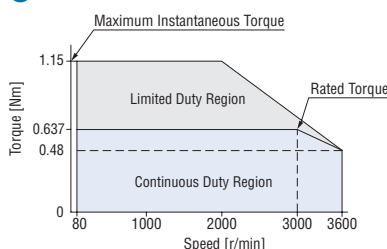
Distance from installation surface

Speed – Torque Characteristics

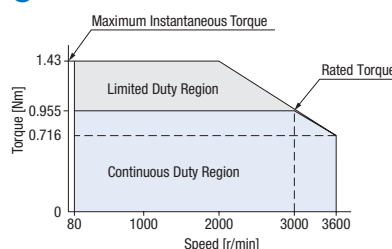
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

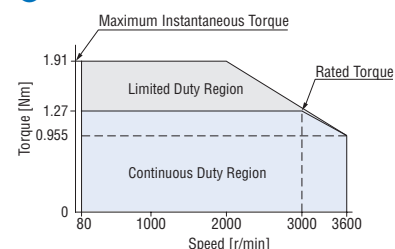
● 200 W



● 300 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 (X, Y) that represents the gearhead size.

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

Hollow Shaft Flat Gearhead FR Gear 30 W, 60 W, 120 W



Specifications

Product Name	Motor/Gearhead Driver		BLM230HP-GFV / GFS2G□FR		BLM460SHP-GFV / GFS4G□FR		BLM5120HP-GFV / GFS5G□FR	
			BMUD30-A2	BMUD30-C2	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-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 to +10%		−15 to +10%		−15 to +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
	Max. 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 ambient temperature					
	Voltage		±0.2% or less: Conditions Rated voltage −15 to +10%, rated speed, no load, normal ambient temperature					
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +40°C, rated speed, no load, rated voltage					

● The values correspond to each specification and characteristics of a stand-alone motor.

Gear Ratio		5	10	15	20	30	50	100	200
Output Shaft Speed [r/min]*1		80 r/min	16	8	5.3	4	2.7	1.6	0.8
		4000 r/min	800	400	267	200	133	80	40
Permissible Torque [Nm]	30 W	At 80 - 2000 r/min	0.40	0.85	1.3	1.7	2.6	4.3	8.5
		At 3000 r/min	0.38	0.82	1.2	1.6	2.4	4.1	8.2
		At 4000 r/min	0.29	0.61	0.92	1.2	1.8	3.1	6.1
		At 80 - 2000 r/min	0.85	1.7	2.6	3.4	5.1	8.5	17
	60 W	At 3000 r/min	0.81	1.6	2.4	3.2	4.9	8.1	16
		At 4000 r/min	0.61	1.2	1.8	2.4	3.7	6.1	12
		At 80 - 2000 r/min	1.9	3.8	5.7	7.7	11	19	38
		At 3000 r/min	1.6	3.2	4.9	6.5	9.7	16	32
		At 4000 r/min	1.2	2.4	3.7	4.9	7.3	12	24
	120 W	At 80 - 3000 r/min	450				500		
		At 4000 r/min	410				460		
		At 80 - 3000 r/min	800				1200		
		At 4000 r/min	730				1100		
Permissible Radial Load [N]*2	10 mm from Installation Surface	At 80 - 3000 r/min	900		1300		1500		
		At 4000 r/min	820		1200		1400		
	20 mm from Installation Surface	At 80 - 3000 r/min	370				400		
		At 4000 r/min	330				370		
	60 W	At 80 - 3000 r/min	660				1000		
		At 4000 r/min	600				910		
	120 W	At 80 - 3000 r/min	770		1110		1280		
		At 4000 r/min	700		1020		1200		
Permissible Axial Load [N]	30 W	200							
	60 W	400							
	120 W	500							
Permissible Inertia J [$\times 10^{-4}$ kgm 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	

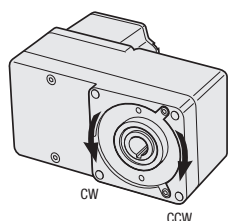
*1 The output shaft speed is the speed divided by the gear ratio.

*2 The radial load at each distance can also be calculated with a formula. → Page 66

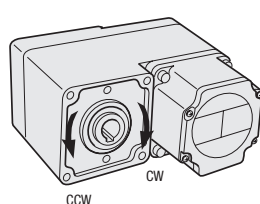
*3 It is also applicable when deceleration time is set to below 0.1 seconds in digital setting.

◇ Rotation Direction

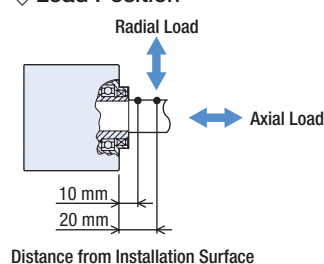
● Viewed from front face



● Viewed from back face



◇ Load Position



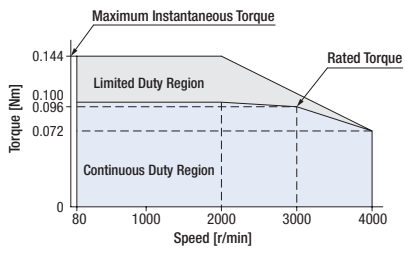
● A number indicating the gear ratio is specified where the box □ is located in the product name.

Speed – Torque Characteristics

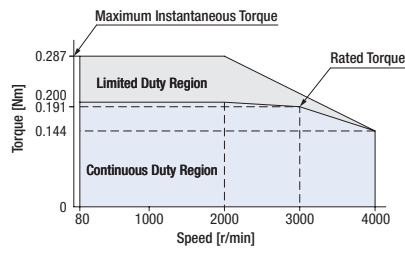
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

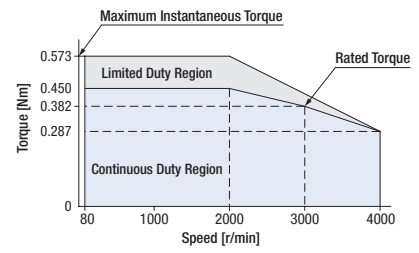
30 W



60 W



120 W



● The values correspond to each specification and characteristics of a stand-alone motor. The speed-torque characteristics show the values when rated voltage is applied.

Hollow Shaft Flat Gearhead FR Gear 200 W, 300 W, 400 W



CE

Specifications

Product Name	Motor/Gearhead Driver	BLM6200SHP-GFV / GFS6G□FR		BLM6300SHP-GFV / GFS6G□FR	BLM6400SHP-GFV / GFS6G□FR	
		BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S
Rated Output Power (Continuous)	W	200		300	400	
	Rated Voltage VAC	Single-phase 100-120	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240/ Three-phase 200-240	Single-phase 200-240	Three-phase 200-240
Power Supply Input	Permissible Voltage Range	− 15 to +10%		− 15 to +10%	− 15 to +10%	
	Frequency Hz	50/60		50/60	50/60	
	Permissible Frequency Range	±5%		±5%	±5%	
	Rated Input Current A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/Three-Phase: 2.1	4.6	2.8
	Max. Input Current A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/Three-Phase: 4.7	8.1	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 ambient temperature				
	Voltage	±0.2% or less: Conditions Rated voltage −15 to +10%, rated speed, no load, normal ambient temperature				
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0 to +40°C, rated speed, no load, rated voltage				

● The values correspond to each specification and characteristics of a stand-alone motor.

Gear Ratio		5*1	10	15	20	30	50	100	
Output Shaft Speed [r/min]*2	80 r/min	16	8	5.3	4	2.7	1.6	0.8	
	4000 r/min	800	400	267	200	133	80	40	
Permissible Torque [Nm]	200 W	At 80 - 3000 r/min	—	5.4	8.1	10.8	16.2	27	54
		At 4000 r/min	—	4.0	6.1	8.1	12.2	20.4	40.8
	300 W	At 80 - 3000 r/min	—	8.1	12.1	16.2	24.3	40.5	81
		At 4000 r/min	—	6.0	9.1	12.1	18.2	30.4	60
	400 W	At 80 - 3000 r/min	5.3	10.7	16.1	21.5	32.3	53	107
		At 4000 r/min	4.0	8.1	12.1	16.2	24.3	40.5	81
Permissible Radial Load [N]*3	From installation surface	At 80 - 3000 r/min		1230		1680		2040	
	10 mm	At 4000 r/min		1130		1550		1900	
	From installation surface	At 80 - 3000 r/min		1070		1470		1780	
	20 mm	At 4000 r/min		990		1360		1660	
Permissible Axial Load [N]		800							
Permissible Inertia J		100	460	1000	1700	3900	9300	18000	
(×10 ⁻⁴ kgm ²)	During Instantaneous Stop and During Instantaneous Bi-Directional Operation*4	50	200	450	800	1800	5000		

*1 The 5 gear ratio is compatible with the 400 W output type.

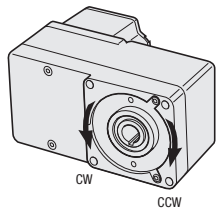
*2 The output shaft speed is the speed divided by the gear ratio.

*3 The radial load at each distance can also be calculated with a formula. → Page 66

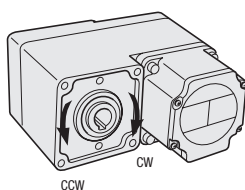
*4 It is also applicable when deceleration time is set to below 0.1 seconds in digital setting.

Rotation Direction

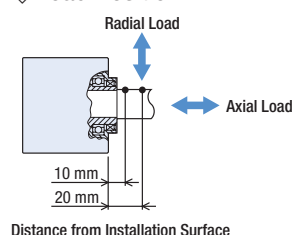
● Viewed from front face



● Viewed from back face



Load Position

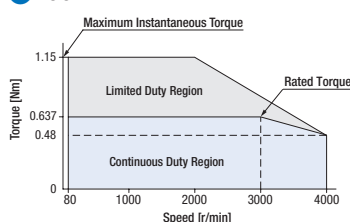


Speed – Torque Characteristics

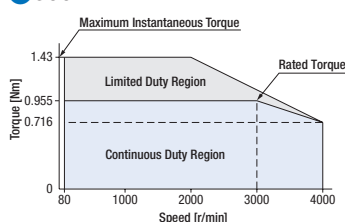
Continuous Duty Region: Continuous operation is possible in this region.

Limited Duty Region: This region is used primarily when accelerating.

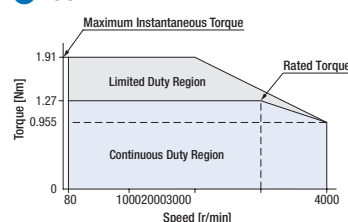
200 W



300 W



400 W



● The values correspond to each specification and characteristics of a stand-alone motor. The speed-torque characteristics show the values when rated voltage is applied.

● A number indicating the gear ratio is specified where the box □ is located in the product name.

Round Shaft 30 W, 60 W, 120 W

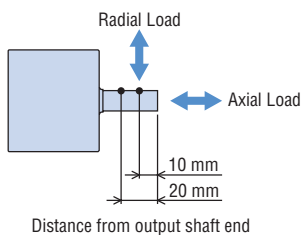


Specifications



Product Name	Motor	Connector Type	BLM230HP-AS		BLM260HP-AS		BLM5120HP-AS	
	Driver		BMUD30-A2	BMUD30-C2	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-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 to +10%		- 15 to +10%		- 15 to +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		Nm	0.096		0.191		0.382	
Maximum Instantaneous Torque		Nm	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		N	20		20		25	
Rotor Inertia J		×10 ⁻⁴ kgm ²	0.042		0.082		0.23	
Permissible Load Inertia J		×10 ⁻⁴ kgm 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 to + 10%, rated speed, no load, normal temperature						
	Temperature	±0.2% or less: Conditions Operating ambient temperature 0 to +40°C, rated speed, no load, rated voltage						

About Load Position

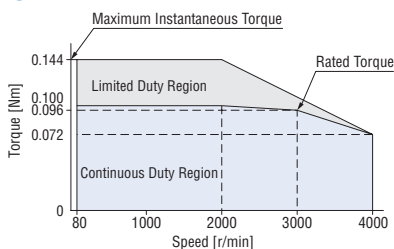


Speed – Torque Characteristics

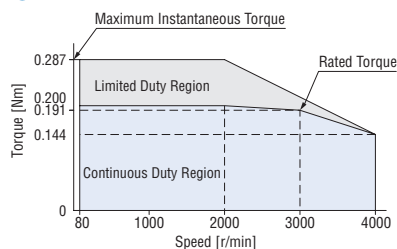
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

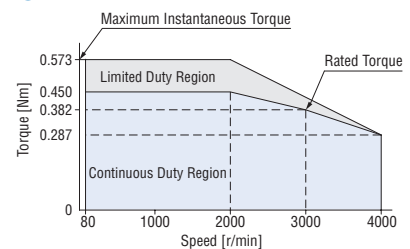
30 W



60 W



120 W



● The speed-torque characteristics shows the values when rated voltage is applied.

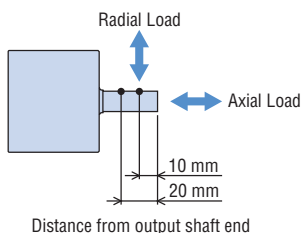
Round Shaft 200 W, 300 W, 400 W



Specifications

Product Name	Motor	Connector Type	BLM5200HP-AS		BLM5300HP-AS	BLM5400HP-AS	
	Driver		BMUD200-A	BMUD200-C	BMUD300-C	BMUD400-C	BMUD400-S
Rated Output Power (Continuous)		W	200		300	400	
Power Supply Input	Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240/ Three-Phase 200-240	Single-Phase 200-240/ Three-Phase 200-240	Single-phase 200-240	Three-phase 200-240
	Permissible Voltage Range		-15 to +10%		-15 to +10%	-15 to +10%	
	Frequency	Hz	50/60		50/60	50/60	
	Permissible Frequency Range		±5%		±5%	±5%	
	Rated Input Current	A	4.6	Single-Phase: 2.7/ Three-Phase: 1.5	Single-Phase: 3.4/ Three-Phase: 2.1	4.6	2.8
	Maximum Input Current	A	9.3	Single-Phase: 4.9/ Three-Phase: 3.4	Single-Phase: 7.8/ Three-Phase: 4.7	8.1	5.1
Rated Speed		r/min	3000				
Speed Control Range			80 - 4000 r/min (Speed ratio 1:50)				
Rated Torque		Nm	0.637		0.955	1.27	
Maximum Instantaneous Torque		Nm	1.15		1.43	1.91	
Permissible Radial Load	10 mm from output shaft end	N	150				
	20 mm from output shaft end	N	170				
Permissible Axial Load		N	25				
Rotor Inertia J		×10 ⁻⁴ kgm ²	0.454		0.67	0.67	
Permissible Load Inertia J		×10 ⁻⁴ kgm ²	8.75		12	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 to +10%, rated speed, no load, normal temperature				
	Temperature		±0.2% or less: Conditions Operating ambient temperature 0 to +40°C, rated speed, no load, rated voltage				

◇ About Load Position



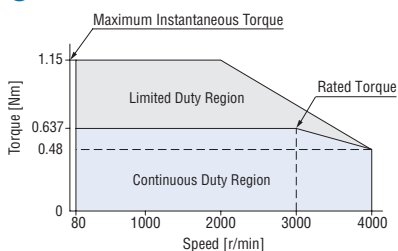
Distance from output shaft end

■ Speed – Torque Characteristics

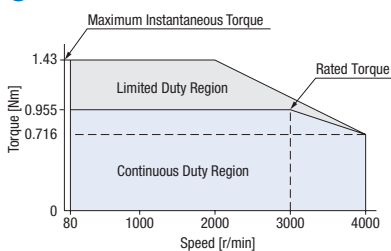
Continuous Duty Region : Continuous operation is possible in this region.

Limited Duty Region : This region is used primarily when accelerating.

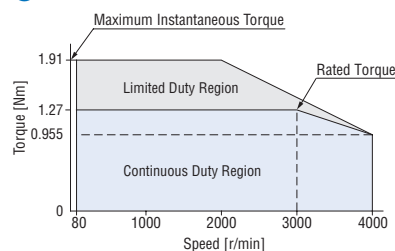
● 200 W



● 300 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, 300 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 to +20% 100 mA or more Sink input/Source input Supplied through external wiring	Photocoupler input Input resistance: 6.6 kΩ Run by internal power supply: 5 VDC Connectable external DC power supply: 24 VDC -15 to +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], [M0], M1, ALARM-RESET, EXT-ERROR, H-FREE []: Initial setting	Signals can be assigned randomly to IN0~IN4 inputs (5 points) [FWD], [REV], [M0], [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	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	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 300 W, 400 W) and that of the case is 40°C max. (50°C or less for 300 W, 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 to +40°C (Non-freezing)	0 to +40°C (Non-freezing) [0 to +35°C*2 (non-freezing) only when the 300 W or 400 W type driver has been installed with its front side (with a dial) facing up.]
	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. 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*3	Ambient Temperature	−20 to +70°C (−10 to +60°C for JV gearhead, JB gearhead, JH gearhead) (Non-freezing)	−25 to +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 gearhead, JB gearhead, JH gearhead)	
	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*4		Cable Type: IP40 Connector type Watertight, dust-resistant specification (GFV gearhead): IP67 GFV gearhead, JH gearhead, JV gearhead, round shaft: IP66 (Excluding the mounting surface of the round shaft type) FR gearhead: IP65 JB gearhead: IP44	IP20

*1 For the round shaft type, install on a heat sink (material: aluminum) with the following size so that the surface temperature of the motor case does not exceed 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, 300 W and 400 W type: 250×250 mm, thickness 6 mm

*2 When **BMUD400-C** is installed in an upward direction, keep the load rate at 80% or less when using it.

*3 The storage condition applies to short periods such as the period during transport.

*4 The IP label that indicates the dust-resistance and water-resistance performance are stipulated under IEC 60529 and IEC 60034-5. The degree of protection for the connector type is valid when a connection cable has been connected. It does not apply to connectors for driver connection.

Note

● Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected.

● Motor (Connector Type)

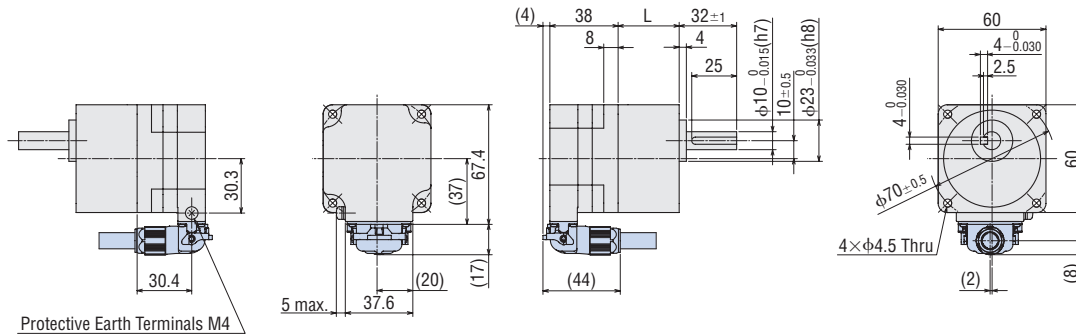
- The motor dimensions provided in this catalogue are illustrated with the separately-sold connection cable (parts in the figure).
The described masses do not include the mass of the connection cable. Dimensions and mass of the Connection Cables → Page 55
- A number indicating the gear ratio is specified where the box □ is located in the product name.
The box ■ in a product name is replaced with the code that represents the gearhead size.

◇ Parallel Shaft Gearhead **GFV** Gear • 30 W

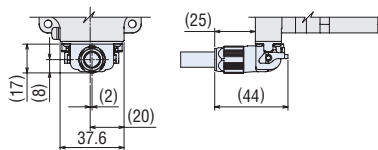
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM230HP-GFV	GFV2G□S GFV2G□SF	5 - 20	34	0.35	0.28	A1728A_F	A1728A_B	A1728A_V
		30 - 100	38		0.33	A1728B_F	A1728B_B	A1728B_V
		200	43		0.38	A1728C_F	A1728C_B	A1728C_V

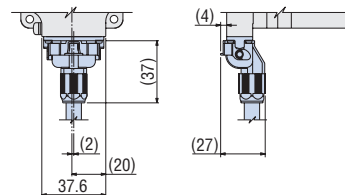
● Cable Outlet in Output Shaft Direction, with Connection Cable Attached



● Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



● Cable Outlet in Vertical Direction, with Connection Cable Attached

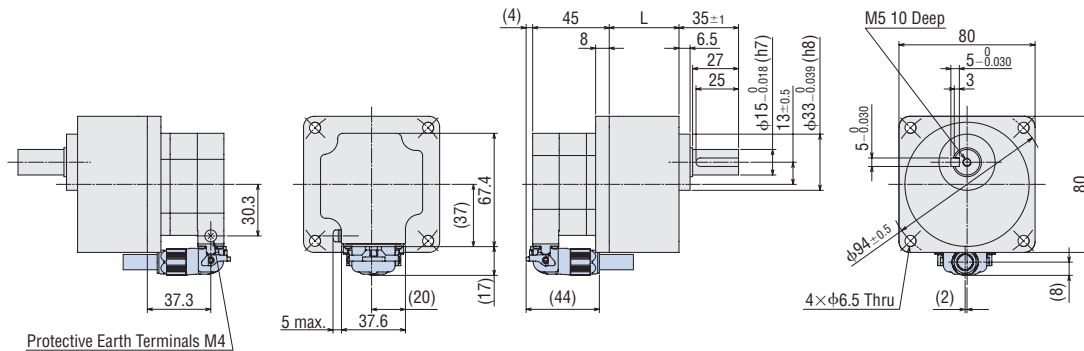


◇ Parallel Shaft Gearhead **GFV** Gear • 60 W

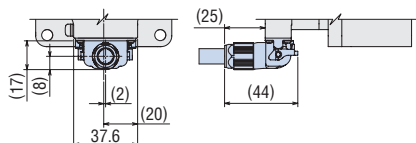
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM460SHP-GFV	GFV4G□S GFV4G□SF	5 - 20	41	0.59	0.67	A1729A_F	A1729A_B	A1729A_V
		30 - 100	46		0.79	A1729B_F	A1729B_B	A1729B_V
		200	51		0.89	A1729C_F	A1729C_B	A1729C_V

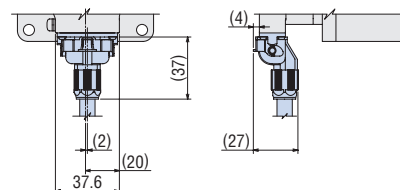
● Cable Outlet in Output Shaft Direction, with Connection Cable Attached



● Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



● Cable Outlet in Vertical Direction, with Connection Cable Attached

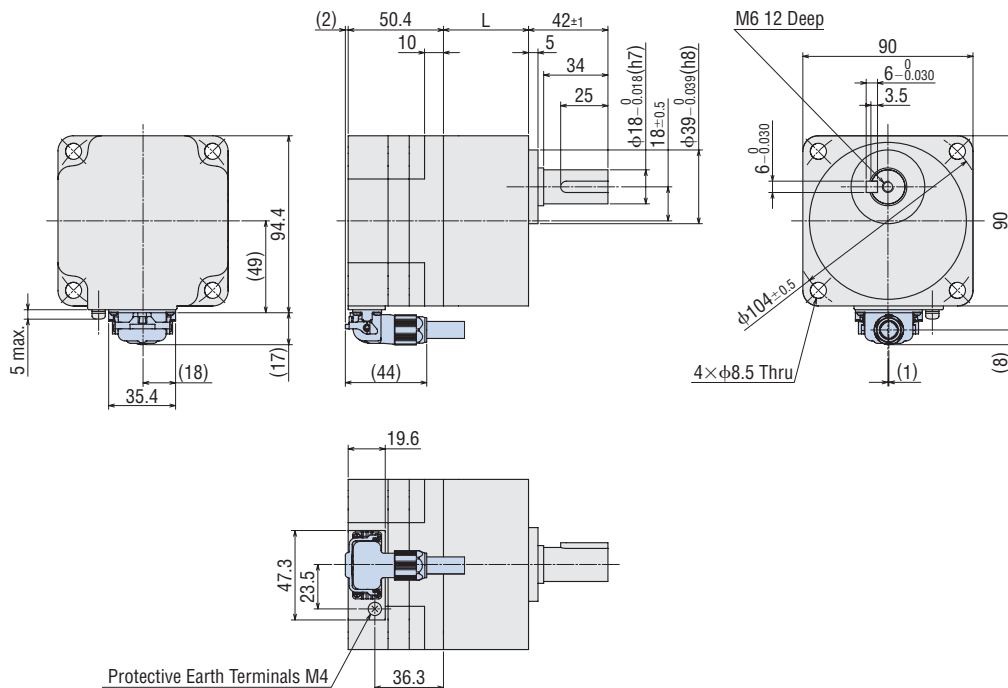


◇ Parallel Shaft Gearhead **GFV** Gear • 120 W

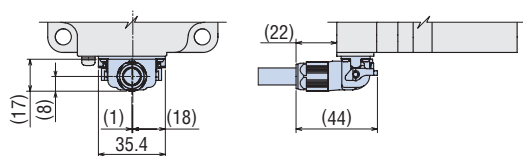
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5120HP-GFV	GFV5G□S GFV5G□SF	5 - 20	45	1.1	0.95	A1730A_F	A1730A_B	A1730A_V
		30 - 100	58		1.3	A1730B_F	A1730B_B	A1730B_V
		200	64		1.4	A1730C_F	A1730C_B	A1730C_V

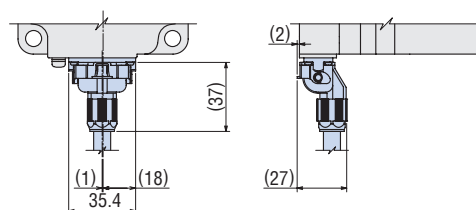
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

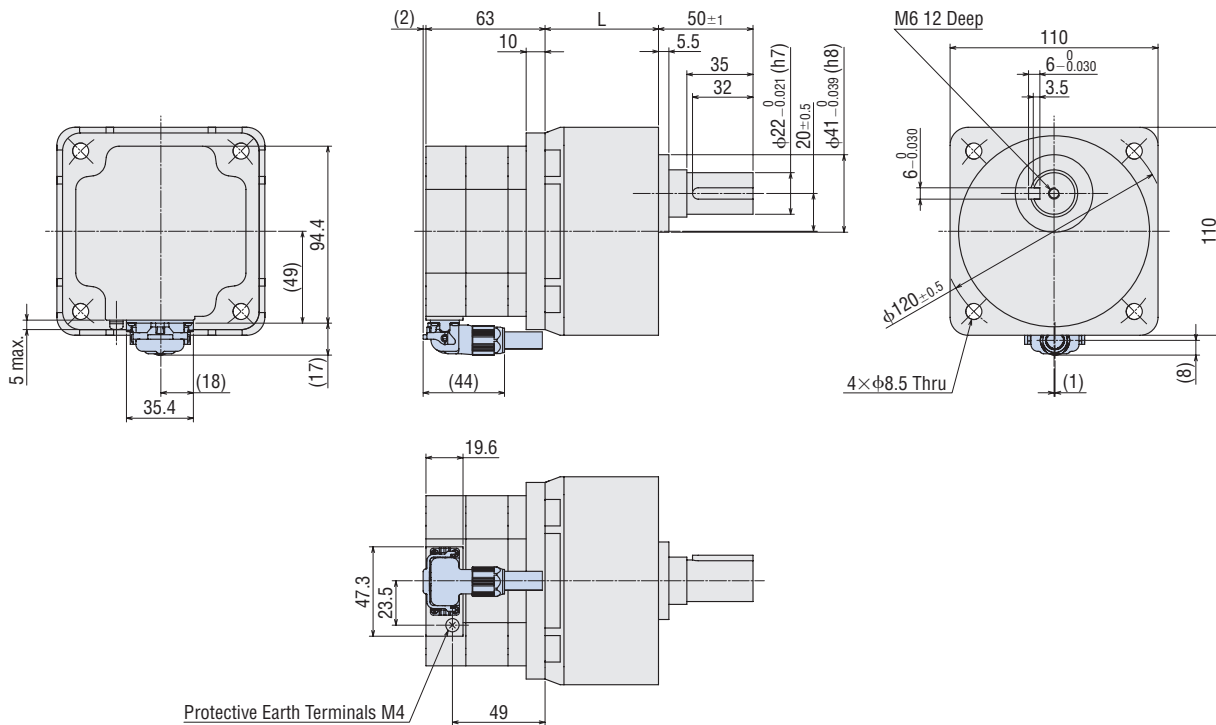


• Cable Outlet in Vertical Direction, with Connection Cable Attached

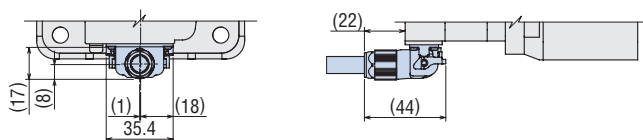


Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM6200SHP-GFV	GFV6G□S	5 - 20	60	1.7	1.9	A1731A_F	A1731A_B	A1731A_V
		30, 50	72		2.4	A1731B_F	A1731B_B	A1731B_V
		100, 200	86		3.0	A1731C_F	A1731C_B	A1731C_V

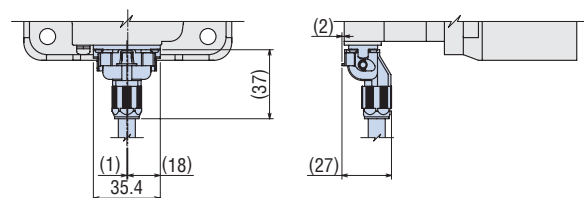
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



• Cable Outlet in Vertical Direction, with Connection Cable Attached

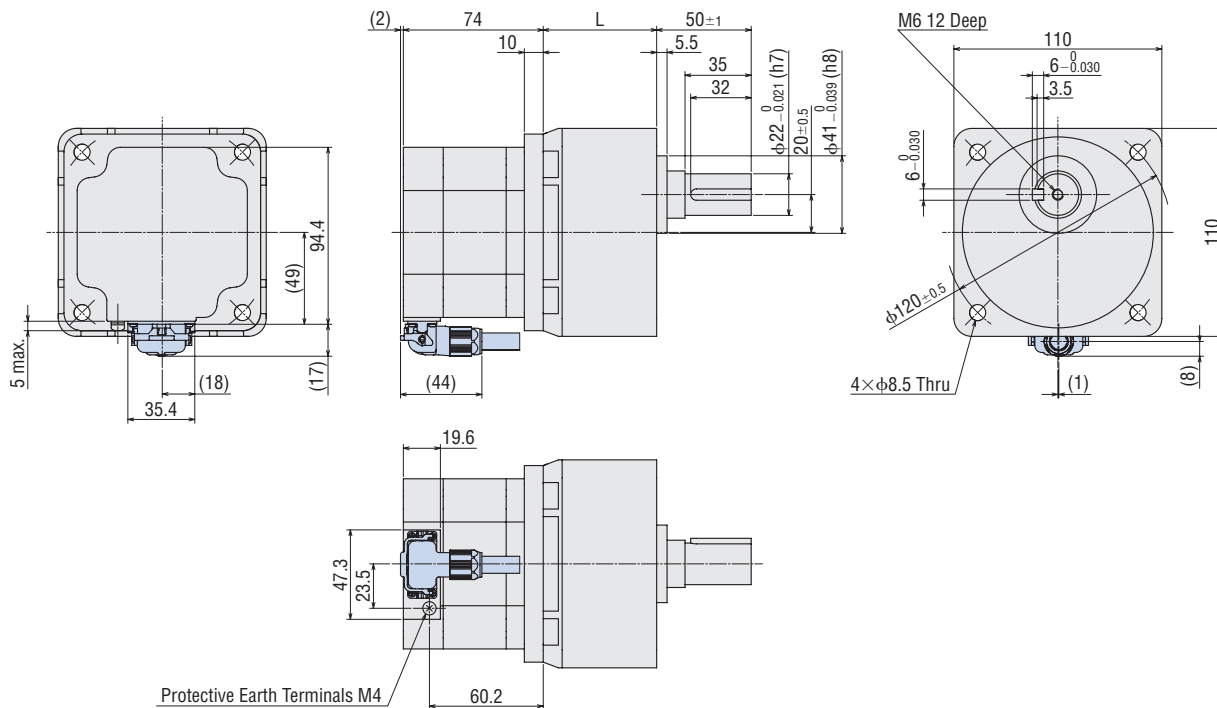


◇ Parallel Shaft Gearhead **GFV** Gear • 300 W, 400 W

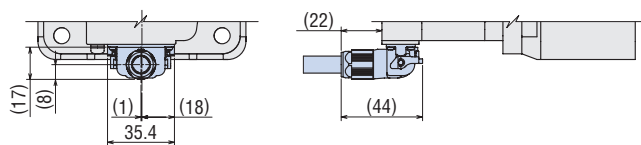
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM6300SHP-GFV BLM6400SHP-GFV	GFV6G□S	5 - 20	60	2.2	1.9	A1732A_F	A1732A_B	A1732A_V
		30, 50	72		2.4	A1732B_F	A1732B_B	A1732B_V
		100	86		3.0	A1732C_F	A1732C_B	A1732C_V

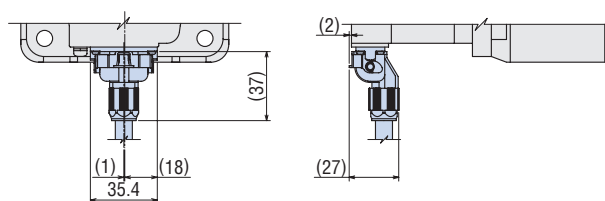
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

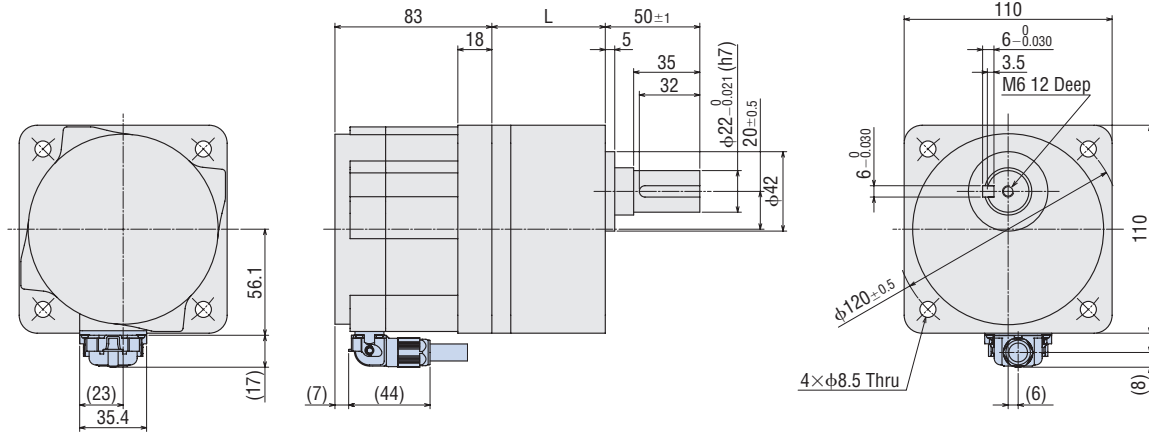


• Cable Outlet in Vertical Direction, with Connection Cable Attached

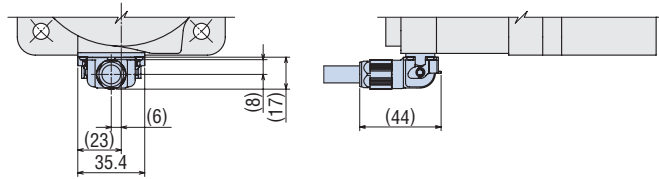


Motor Product Name	Gearhead Product Name	Gear Ratio	L	Mass [kg]		CAD		
				Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM7200HW-GFV	GFV7G□SW	5 - 20	60	1.9	1.9	A1711A_F	A1711A_B	A1711A_V
		30, 50	72		2.4	A1711B_F	A1711B_B	A1711B_V
		100	86		3.0	A1711C_F	A1711C_B	A1711C_V
BLM7300HW-GFV BLM7400HW-GFV	GFV7G□SW	5 - 20	60	2.3	1.9	A1711A_F	A1711A_B	A1711A_V
		30, 50	72		2.4	A1711B_F	A1711B_B	A1711B_V
		100	86		3.0	A1711C_F	A1711C_B	A1711C_V

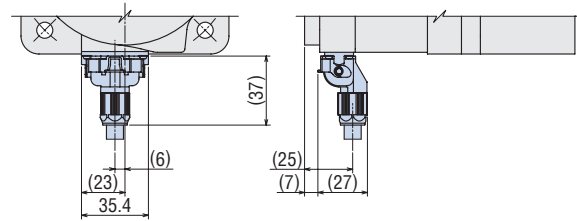
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



• Cable Outlet in Vertical Direction, with Connection Cable Attached

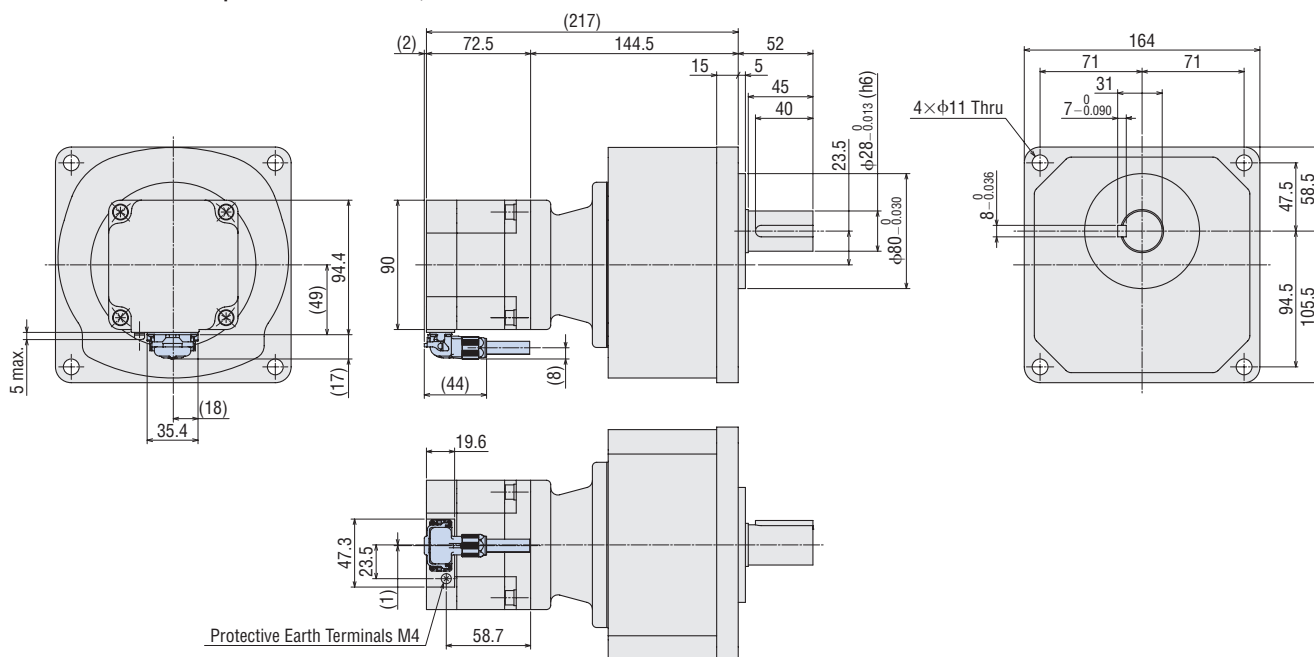


◇ Parallel Shaft Gearhead **JV** Gear • 300 W, 400 W

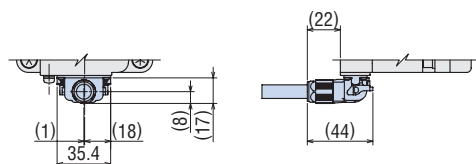
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	Mass [kg]		CAD		
			Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5300HPK	5DV□S	200	2.1	6.5	A1750_F	A1750_B	A1750_V
BLM5400HPK	5DV□S	100, 200					

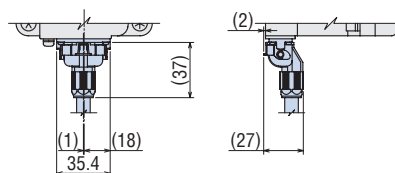
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

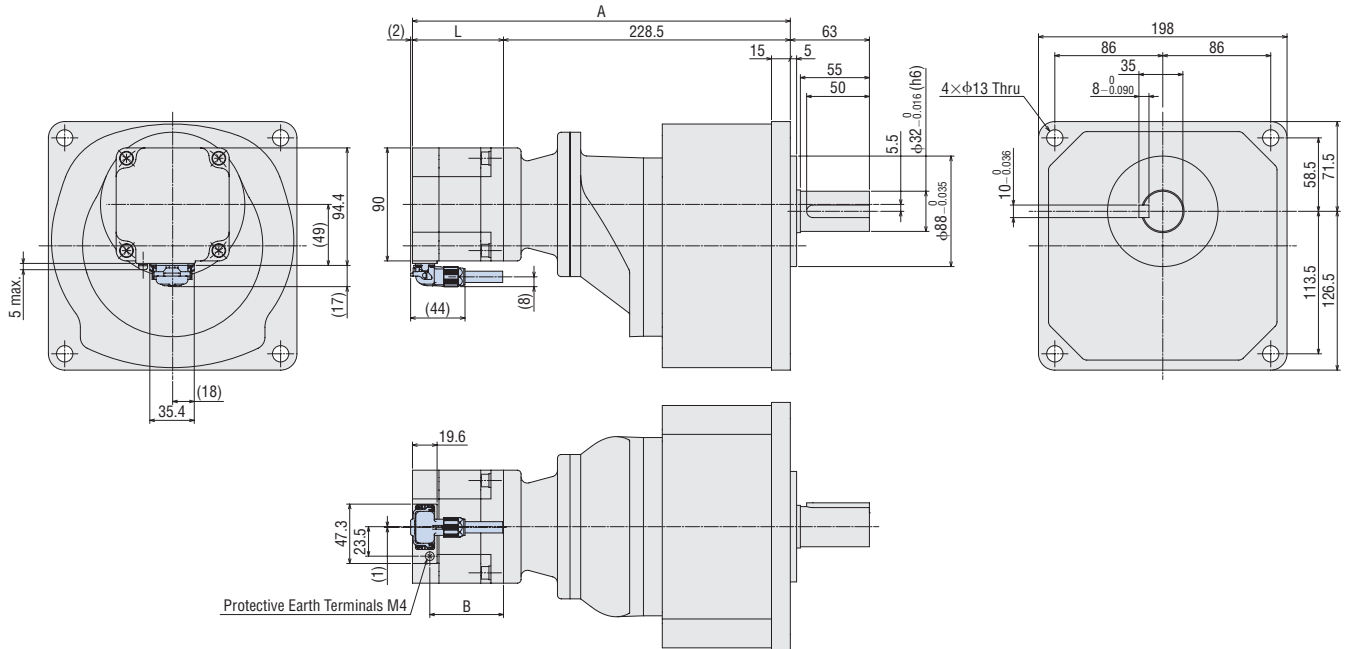


• Cable Outlet in Vertical Direction, with Connection Cable Attached

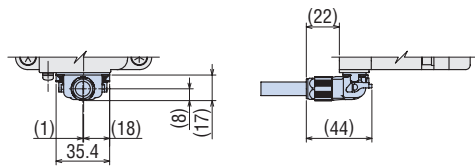


Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass [kg]		CAD		
			A	L	B	Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5200HPK	5KV□S	300, 450	(290.1)	61.6	47.5	1.6	10.5	A1749_F	A1749_B	A1749_V
BLM5300HPK BLM5400HPK	5KV□S	300, 450	(301)	72.5	58.7	2.1	10.5	A1751_F	A1751_B	A1751_V

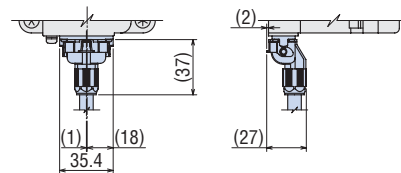
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



• Cable Outlet in Vertical Direction, with Connection Cable Attached



◇ Foot Mount Gearhead **JB** Gear • 200 W, 300 W, 400 W

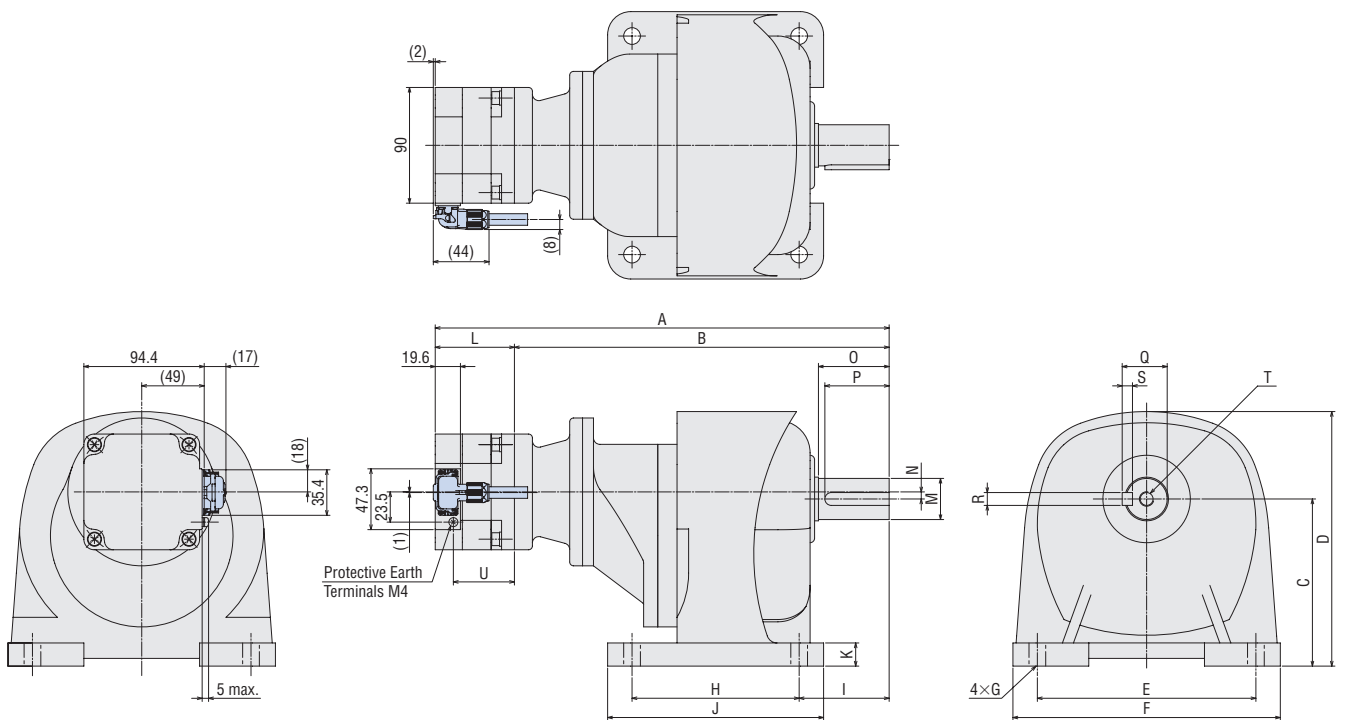
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions No.	L	U	Mass [kg]		CAD		
						Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5200HPK	5■B□B	5, 10, 20	①	61.6	47.5	1.6	3.0	A1739_F	A1739_B	A1739_V
		30, 50	③				4.0	A1740_F	A1740_B	A1740_V
		100, 200	⑤				6.0	A1741_F	A1741_B	A1741_V
		300, 450	⑦				10.0	A1742_F	A1742_B	A1742_V
		600, 1200	⑨				16.5	A1743_F	A1743_B	A1743_V
BLM5300HPK BLM5400HPK	5■B□B	5, 10, 20	②	72.5	58.7	2.1	3.0	A1744_F	A1744_B	A1744_V
		30, 50	④				4.0	A1745_F	A1745_B	A1745_V
		100, 200	⑥				6.0	A1746_F	A1746_B	A1746_V
		300, 450	⑧				10.0	A1747_F	A1747_B	A1747_V
		600	⑩				16.5	A1748_F	A1748_B	A1748_V

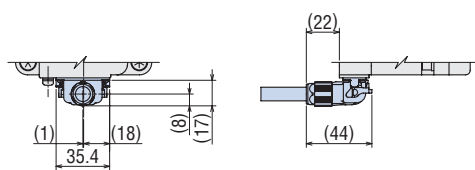
Dimensions No.	Total Length	Gearhead Dimensions										Output Shaft Dimensions								The Screw Hole on the Output Shaft End
	A	B	C	D	E	F	G	H	I	J	K	M	N	O	P	Q	R	S	T	
①	(219.1)	157.5	85±0.2	131	110	134	φ9	40	45	64	10	φ18 ⁰ _{-0.011} (h6)	16.5*	30	27	20.5	6 ⁰ _{-0.030}	6 ⁰ _{-0.030}	M6 15 Deep	
②	(230)																			
③	(245.1)																			
④	(256)																			
⑤	(258.1)	196.5	110±0.2	139	130	154	φ11	65	55	90	12	φ22 ⁰ _{-0.013} (h6)	19*	40	35	24.5	6 ⁰ _{-0.030}	6 ⁰ _{-0.030}	M8 20 Deep	
⑥	(269)																			
⑦	(353.1)																			
⑧	(364)																			
⑨	(375.1)	291.5	130±0.2	198	170	208	φ13	130	70	168	18	φ32 ⁰ _{-0.016} (h6)	5.5	55	50	35	10 ⁰ _{-0.036}	8 ⁰ _{-0.090}	M10 25 Deep	
⑩	(386)																			
		313.5	150±0.2	230	210	254	φ15	150	90	196	20	φ40 ⁰ _{-0.016} (h6)	0	65	60	43	12 ⁰ _{-0.043}	8 ⁰ _{-0.090}	M10 25 Deep	

*The center position of the gearhead output shaft is offset above the center position of the motor.

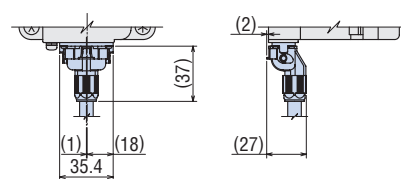
● Cable Outlet in Output Shaft Direction, with Connection Cable Attached



● Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

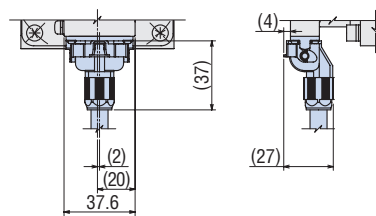
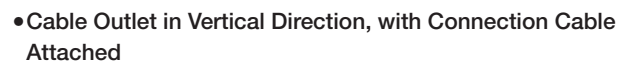


● Cable Outlet in Vertical Direction, with Connection Cable Attached



2D & 3D CAD

• **Cable Outlet in Output Shaft Direction, with Connection Cable Attached**

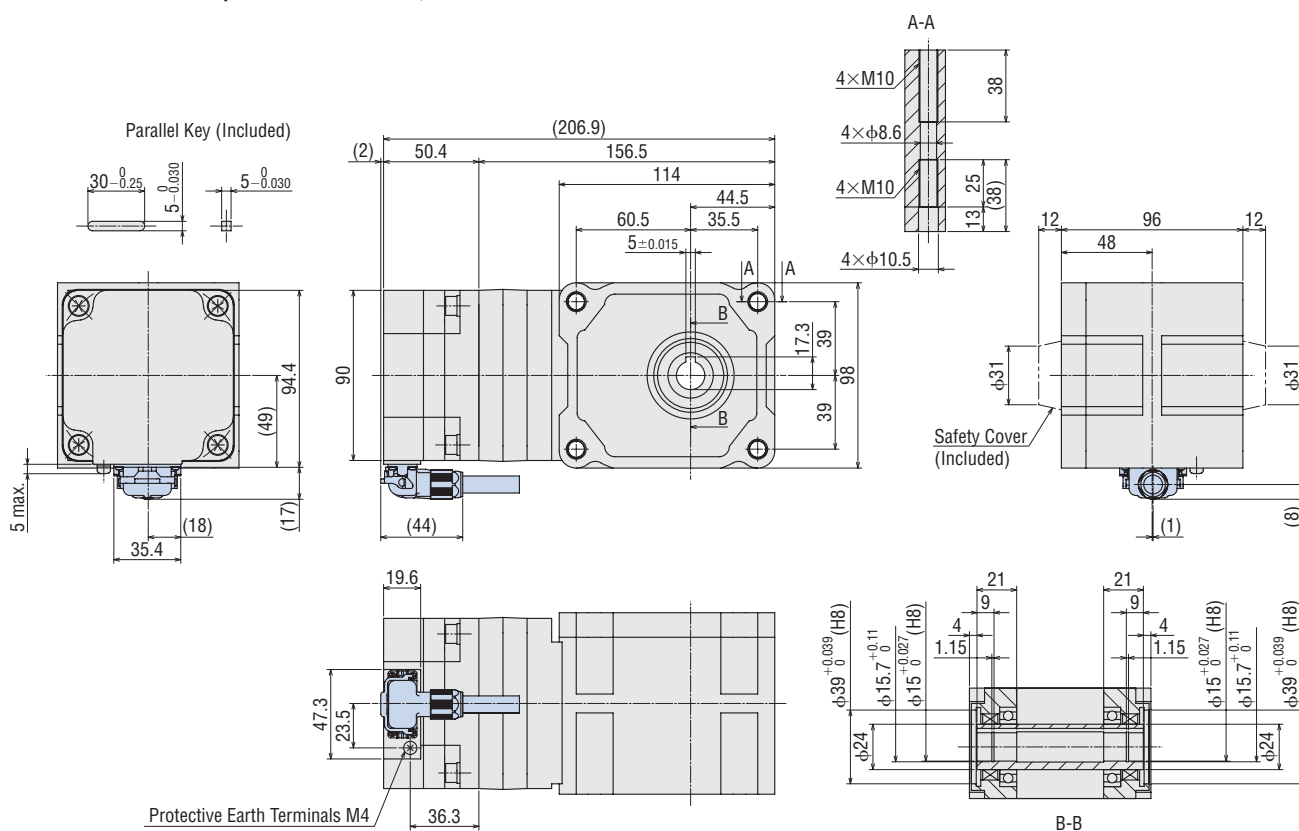


◇ Right-Angle Hollow Shaft Hypoid **JH** Gear • 120 W

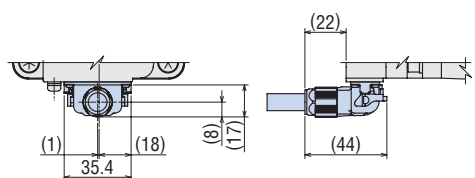
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Mass [kg]		CAD		
		Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5120HPK	5H□S	1.1	3.0	A1734_F	A1734_B	A1734_V

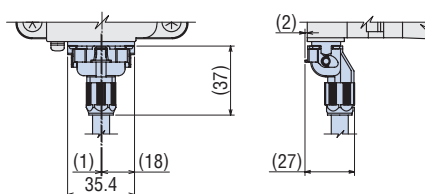
• **Cable Outlet in Output Shaft Direction, with Connection Cable Attached**



- Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



- Cable Outlet in Vertical Direction, with Connection Cable Attached

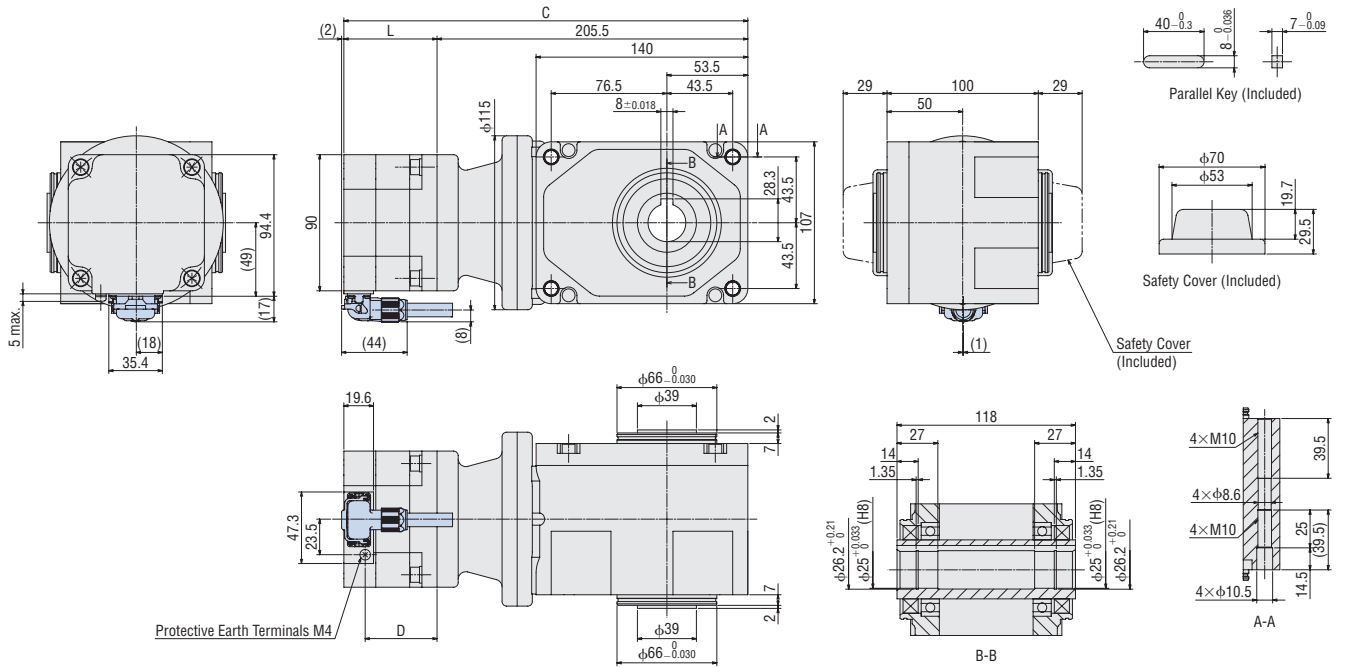


◇ Right-Angle Hollow Shaft Hypoid **JH** Gear • 200 W, 300 W, 400 W

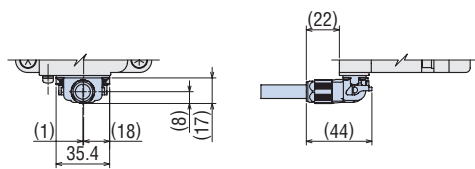
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass [kg]		CAD		
			C	L	D	Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5200HPK	5XH□S	5, 10, 15 20, 30, 50	(267.1)	61.6	47.5	1.6	5.0	A1735_F	A1735_B	A1735_V
BLM5300HPK BLM5400HPK	5XH□S	5, 10, 15 20, 30, 50	(278)	72.5	58.7	2	5.0	A1737_F	A1737_B	A1737_V

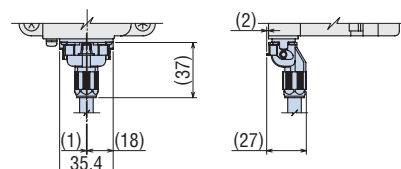
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



• Cable Outlet in Vertical Direction, with Connection Cable Attached

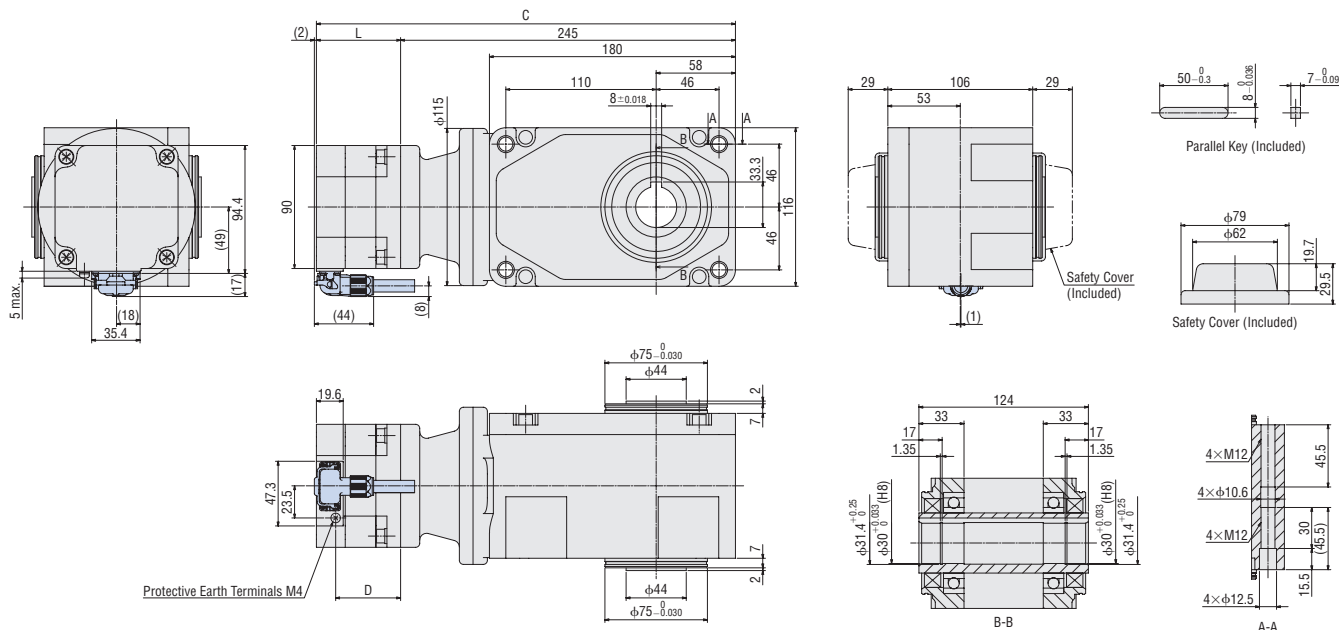


◇ Right-Angle Hollow Shaft Hypoid **JH** Gear • 200 W, 300 W, 400 W

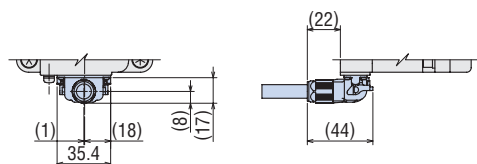
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Gear Ratio	Dimensions			Mass [kg]		CAD		
			C	L	D	Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5200HPK	5YH□S	100, 200	(306.6)	61.6	47.5	1.6	6.5	A1736_F	A1736_B	A1736_V
BLM5300HPK BLM5400HPK	5YH□S	100, 200	(317.5)	72.5	58.7	2.1	6.5	A1738_F	A1738_B	A1738_V

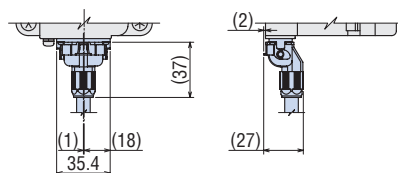
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

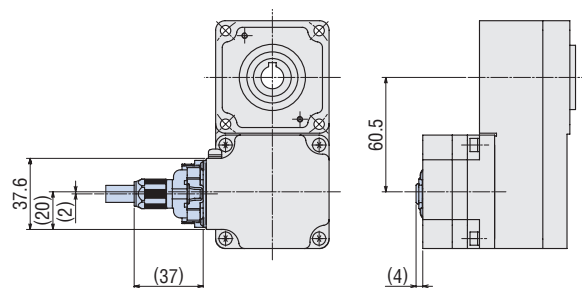


• Cable Outlet in Vertical Direction, with Connection Cable Attached



2D & 3D CAD

• **Cable Outlet in Output Shaft Direction, with Connection Cable Attached**

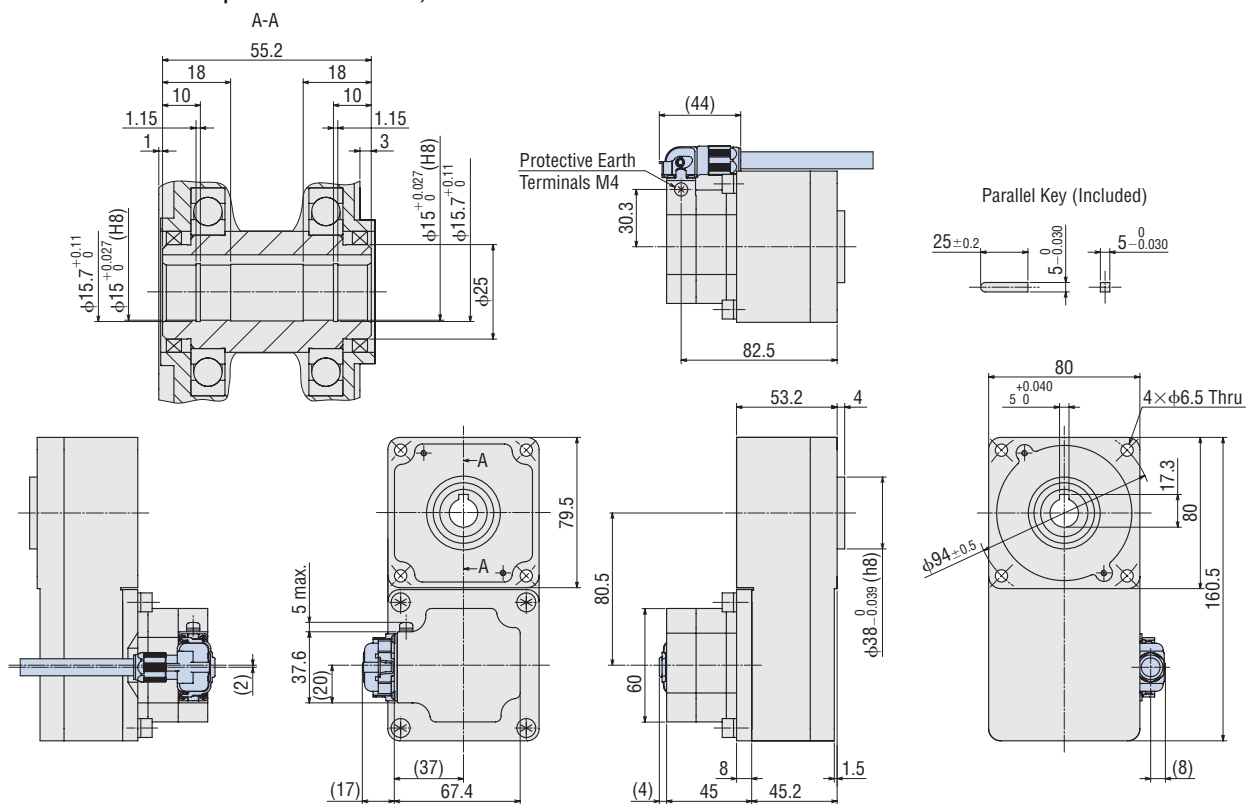


◇ Hollow Shaft Flat Gearhead **FR** Gear • 60 W

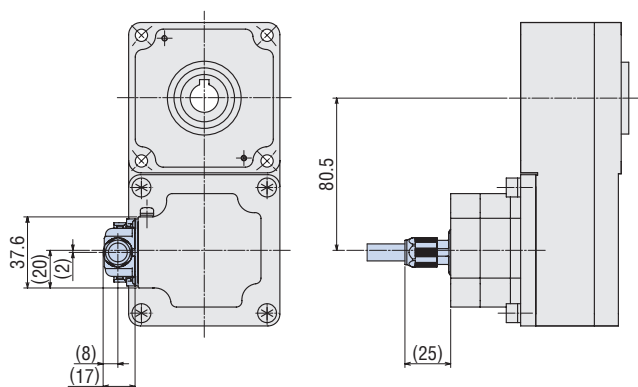
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Mass [kg]		CAD		
		Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM460SHP-GFV	GF54G□FR	0.59	1.6	A1726_F	A1726_B	A1726_V

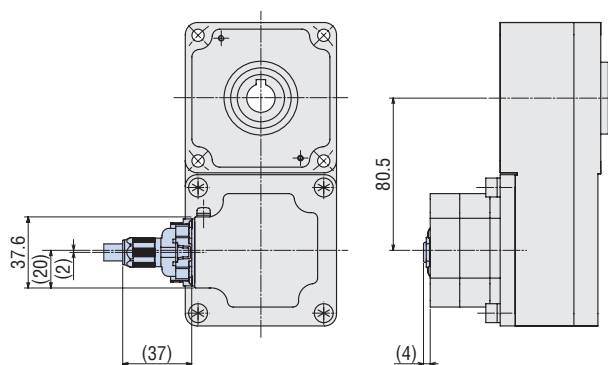
● Cable Outlet in Output Shaft Direction, with Connection Cable Attached



● Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

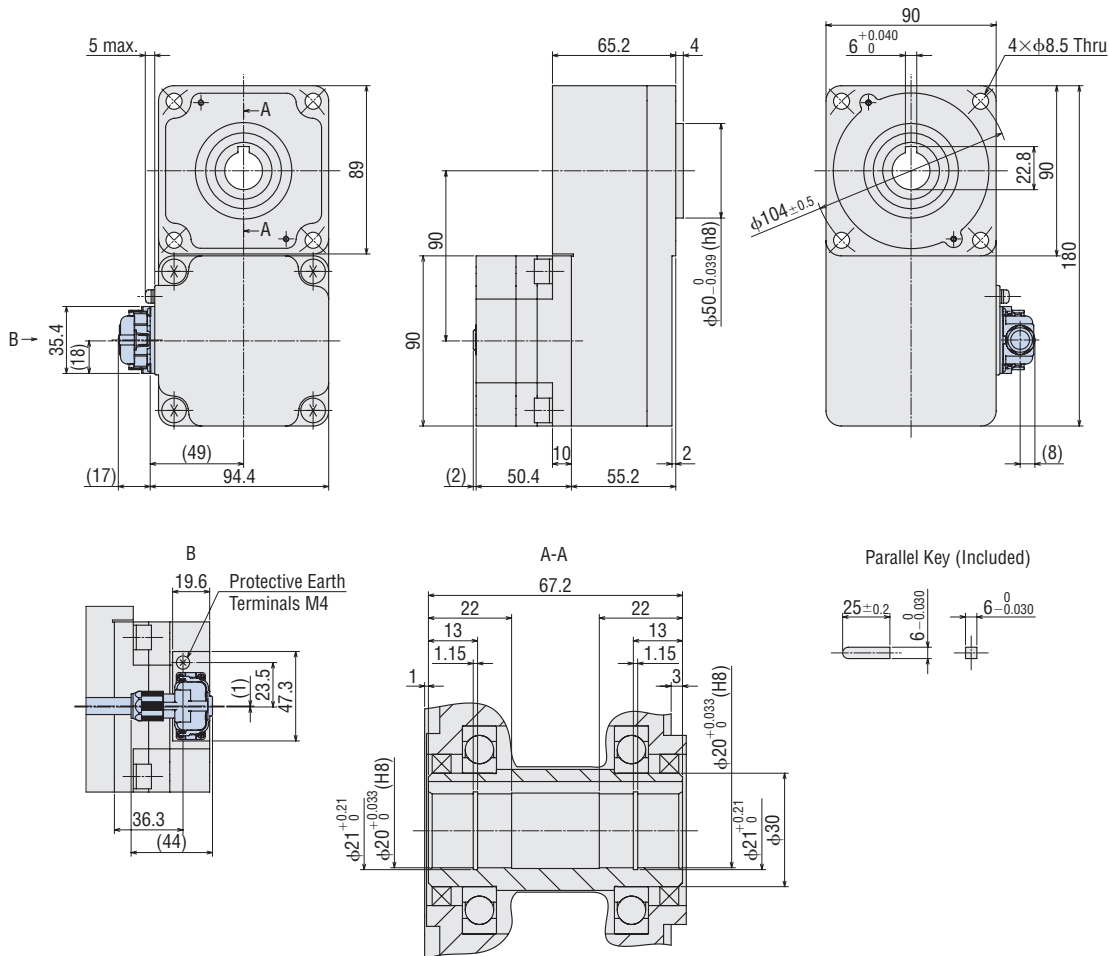


● Cable Outlet in Vertical Direction, with Connection Cable Attached

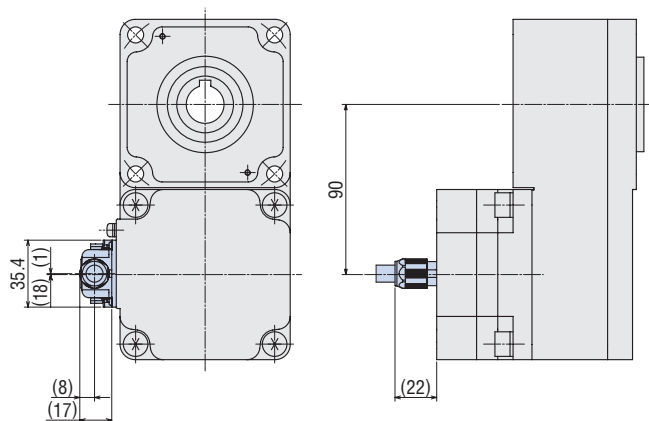


Motor Product Name	Gearhead Product Name	Mass [kg]		CAD		
		Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM5120HP-GFV	GF55G□FR	1.1	2.2	A1727_F	A1727_B	A1727_V

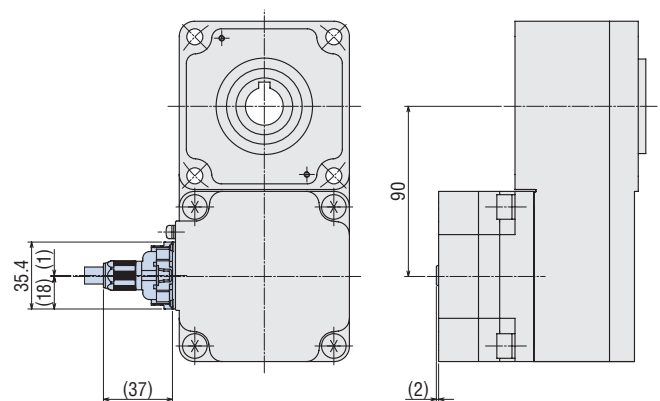
●Cable Outlet in Output Shaft Direction, with Connection Cable Attached



●Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached

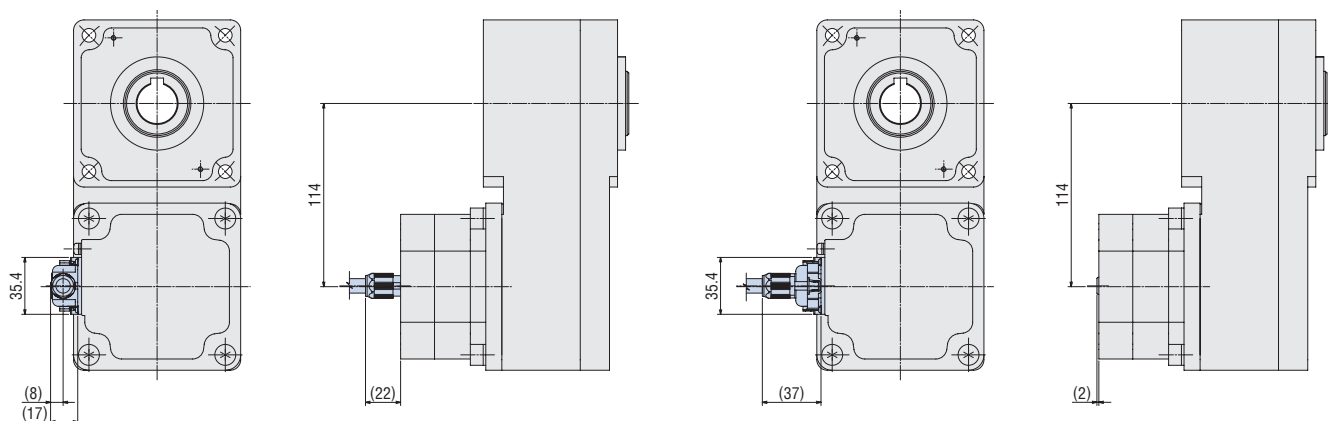


●Cable Outlet in Vertical Direction, with Connection Cable Attached



2D & 3D CAD

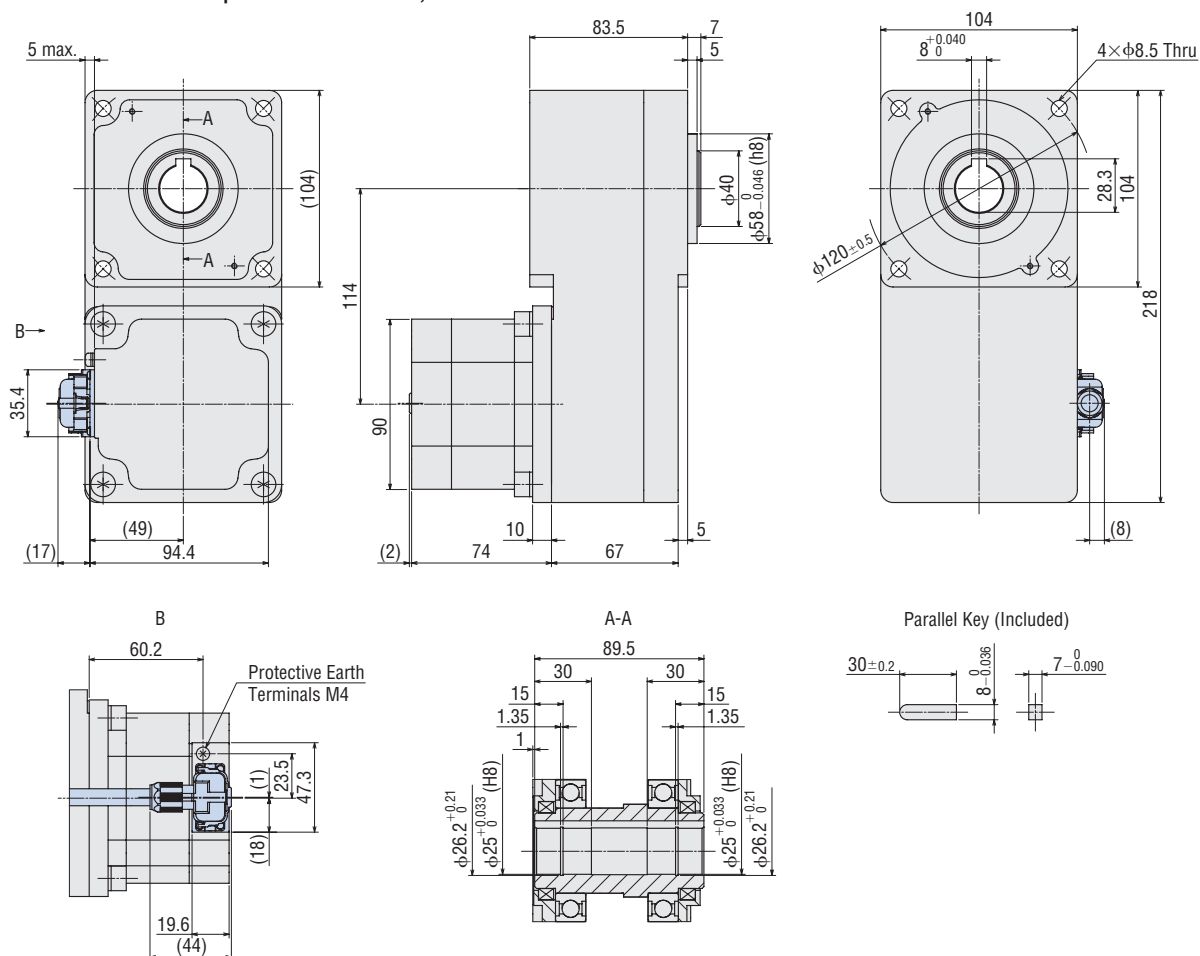
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached



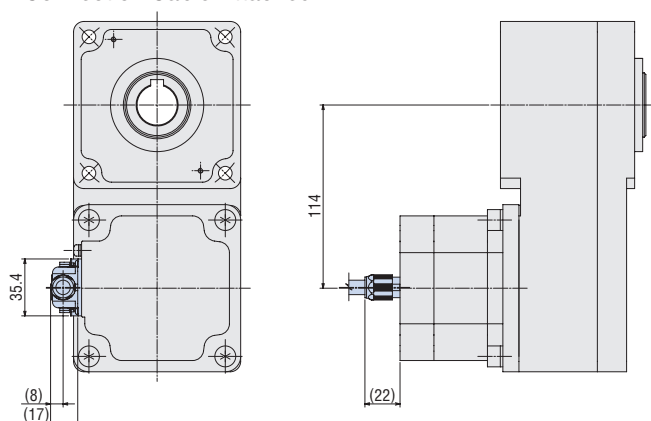
2D & 3D CAD

Motor Product Name	Gearhead Product Name	Mass [kg]		CAD		
		Motor	Gearhead	Cable Outlet in Output Shaft Direction with Connection Cable Attached	Cable Outlet Opposite to Output Shaft Direction with Connection Cable Attached	Cable Outlet in Vertical Direction with Connection Cable Attached
BLM6300SHP-GFV BLM6400SHP-GFV	GFS6G□FR	2.2	4.8	A1799_F	A1799_B	A1799_V

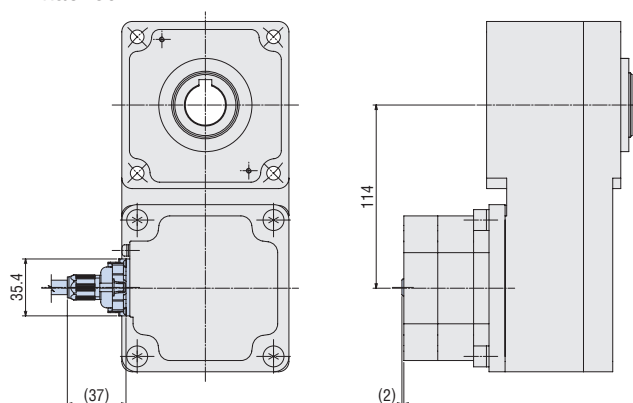
• Cable Outlet in Output Shaft Direction, with Connection Cable Attached

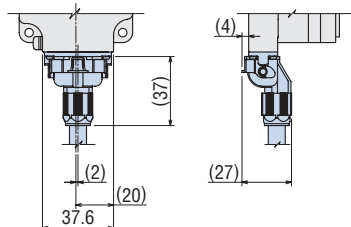


- Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



- **Cable Outlet in Vertical Direction, with Connection Cable Attached**





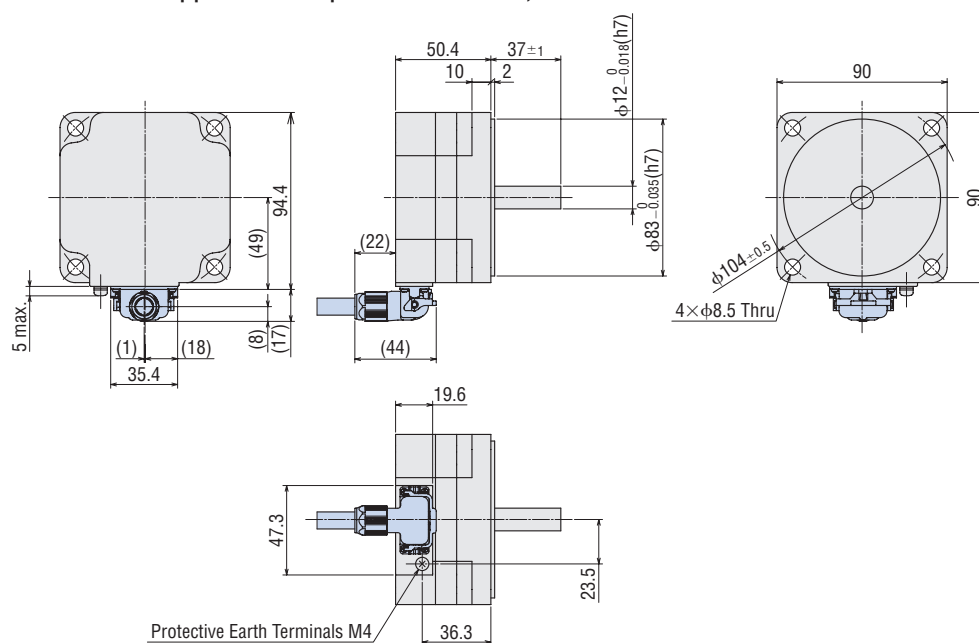
◇ Round Shaft Type • 120 W

BLM5120HP-AS

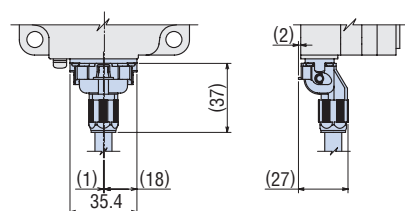
Mass: 1.1 kg

2D CAD Cable Outlet Opposite to Output Shaft Direction: A1756_B Cable Outlet in Vertical Direction: A1756_V **3D CAD**

• Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached



• Cable Outlet in Vertical Direction, with Connection Cable Attached



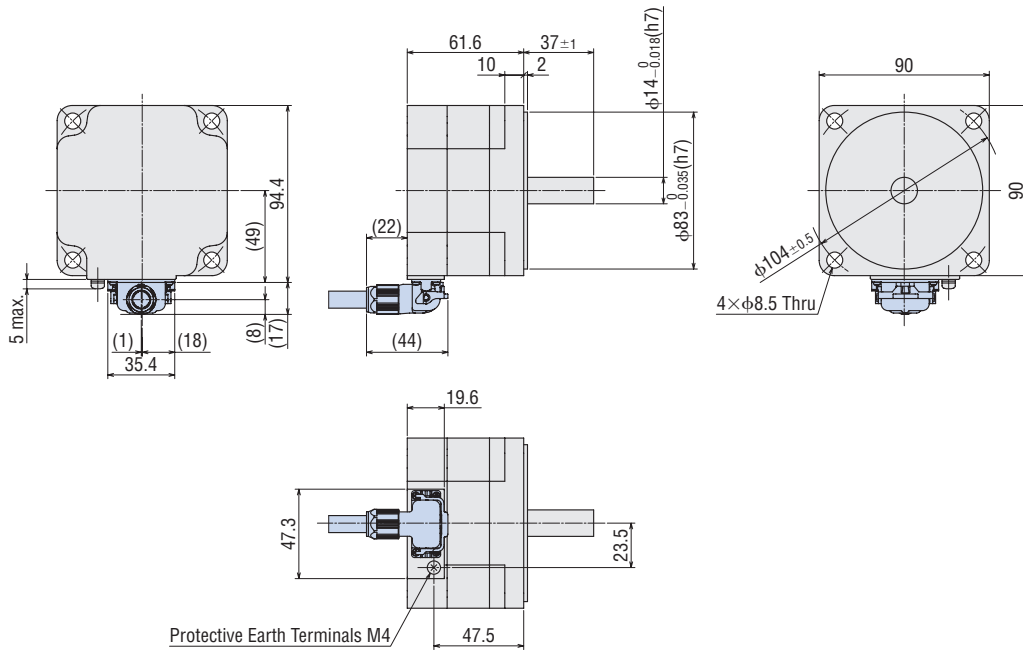
◇ Round Shaft Type • 200 W

BLM5200HP-AS

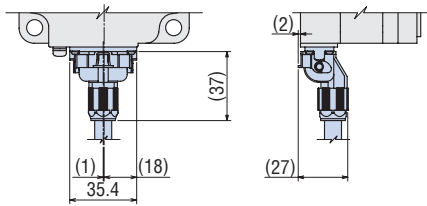
Mass: 1.6 kg

2D CAD Cable Outlet Opposite to Output Shaft Direction: A1758_B Cable Outlet in Vertical Direction: A1758_V **3D CAD**

• **Cable Outlet Opposite to Output Shaft Direction, with Connection Cable Attached**



• **Cable Outlet in Vertical Direction, with Connection Cable Attached**



BLM5300HP-AS, BLM5400HP-AS

2D CAD Cable Outlet Opposite to Output Shaft Direction: A1760_B Cable Outlet in Vertical Direction: A1760_V **3D CAD**

[illegible]

Technical drawings of the 1000 Series Ball Bearing Unit. The left drawing is a front view showing a total width of 35.4, with a distance of (1) from the left edge to the center and (18) from the center to the right edge. The height is (37). The right drawing is a side view showing a height of (27) and a distance of (2) from the top edge to the center of the bearing.

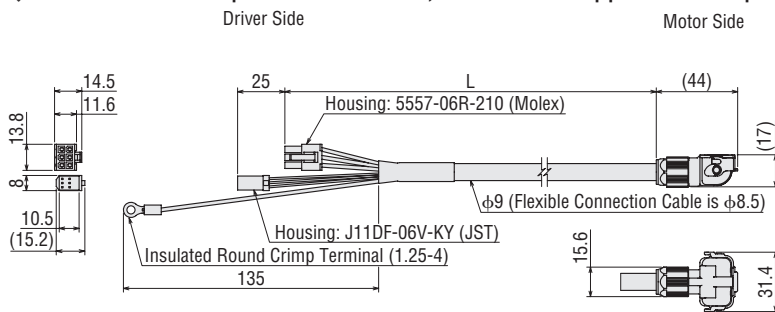
● Connection Cables (for Connector Type)

Length L [m]	Product Name			Mass [kg]
	Cable Outlet in Output Shaft Direction	Cable Outlet Opposite to Output Shaft Direction	Cable Outlet in Vertical Direction	
0.5	CC005KHBLF	CC005KHBLB	CC005KHBLV	0.08
1	CC010KHBLF	CC010KHBLB	CC010KHBLV	0.14
1.5	CC015KHBLF	CC015KHBLB	CC015KHBLV	0.20
2	CC020KHBLF	CC020KHBLB	CC020KHBLV	0.25
2.5	CC025KHBLF	CC025KHBLB	CC025KHBLV	0.32
3	CC030KHBLF	CC030KHBLB	CC030KHBLV	0.38
4	CC040KHBLF	CC040KHBLB	CC040KHBLV	0.49
5	CC050KHBLF	CC050KHBLB	CC050KHBLV	0.62
7	CC070KHBLF	CC070KHBLB	CC070KHBLV	0.86
10	CC100KHBLF	CC100KHBLB	CC100KHBLV	1.2

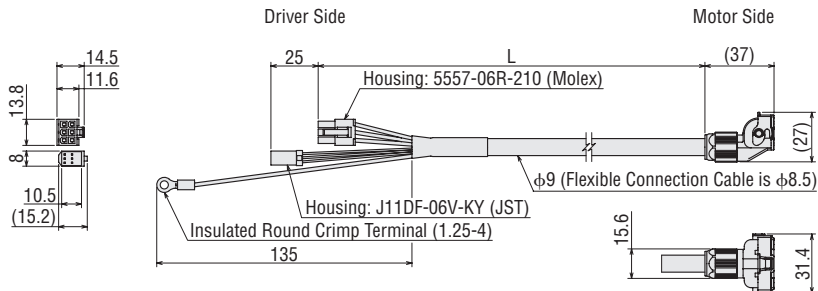
● Flexible Connection Cables (for Connector Type)

Length L [m]	Product Name			Mass [kg]
	Cable Outlet in Output Shaft Direction	Cable Outlet Opposite to Output Shaft Direction	Cable Outlet in Vertical Direction	
1	CC010KHBLRF	CC010KHBLRB	CC010KHBLRV	0.14
1.5	CC015KHBLRF	CC015KHBLRB	CC015KHBLRV	0.20
2	CC020KHBLRF	CC020KHBLRB	CC020KHBLRV	0.26
2.5	CC025KHBLRF	CC025KHBLRB	CC025KHBLRV	0.32
3	CC030KHBLRF	CC030KHBLRB	CC030KHBLRV	0.38
4	CC040KHBLRF	CC040KHBLRB	CC040KHBLRV	0.50
5	CC050KHBLRF	CC050KHBLRB	CC050KHBLRV	0.62
7	CC070KHBLRF	CC070KHBLRB	CC070KHBLRV	0.87
10	CC100KHBLRF	CC100KHBLRB	CC100KHBLRV	1.2

◇ Cable Outlet in Output Shaft Direction, Cable Outlet Opposite to Output Shaft Direction



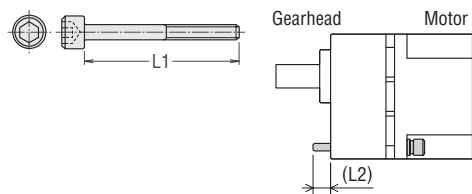
◇ Cable Outlet in Vertical Direction



Dimensions of Installation Screws

L2 represents the length when the plain washer and the spring washer are installed on the screw head.

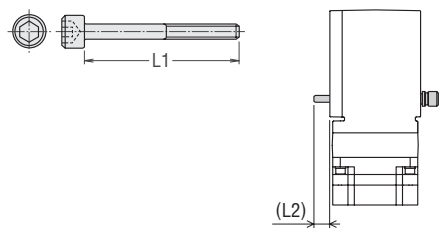
Parallel Shaft Gearhead



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
GFV7G □ SW	5 - 20	M8	95	13
	30, 50		110	16
	100		120	12

● Installation screw: Includes 4 plain washers and 4 spring washers each.
The installation screw material is stainless steel.

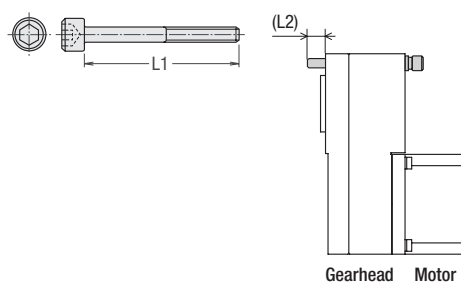
Hypoid Right-Angle Hollow Shaft



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.

Hollow Shaft Flat Gearhead



Product Name	Gear Ratio	Installation Screws		L2 [mm]
		Screw Size	L1 [mm]	
GFS2G □ FR	5 - 200	M5	65	15
GFS4G □ FR	5 - 200	M6	70	14
GFS5G □ FR	5 - 200	M8	90	21
GFS6G □ FR	5 - 100	M8	100	13

● Installation screws: 4 flat washers, spring washers and hexagonal nuts are included.
No hexagonal nuts are included with the **GFS6G**□**FR**.

● 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

Indication

Displays the monitor contents, alarm, etc.

Dial

Changes the speed and parameters. The value is set when the dial is pressed after changes are made.



Operating Switch

The motor is started by setting it to the "RUN" position. Setting it to the "STAND-BY" position stops the motor.

Rotation Direction Switch

Change the rotation direction of the motor.

Front Panel

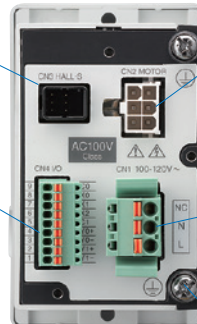
Front side of the driver

Sensor Connector (CN3)

Connects to the sensor connector (black) of the motor.

I/O Signals Connector (CN4)

Connects with the I/O signals.



Motor Connector (CN2)

Connects to the motor connector (white) of the motor.

Main Power Connector (CN1)

Connects to the main power supply.

Protective Earth Terminals (2 locations)

Ground either one of the protective earth terminals.

Back side of the driver

◇ When Front Panel is Removed

MODE Key

Changes the operating mode.



FUNCTION Key

Changes the indication and functions for the operating mode.

Acceleration/Deceleration Time Potentiometer

Sets the acceleration time for starting the motor and deceleration time for motor standstill. Setting range: 0.1 s ~ 15.0 s

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, 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)

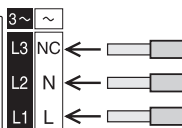
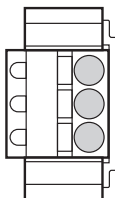
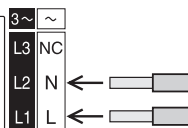
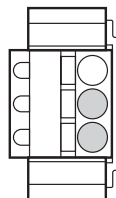
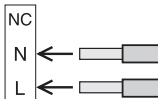
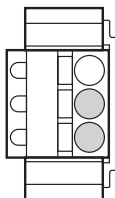
Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.

● 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.



Operation with the operating switch

Setting the speed with the dial

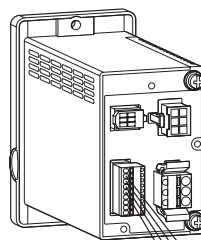
● Operating Switch



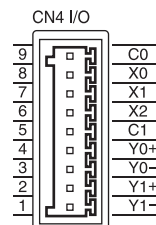
● Operation by External Signals

◇ 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.



Pin No.8 (X0): FWD
Pin No.7 (X1): REV
Pin No.6 (X2): M0
Pin No.5 (C1): IN-COM1 (0 V)



● 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	[M0]	Select the operating data.
5	C1	0V (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, 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)

● Applicable Lead Wire Size

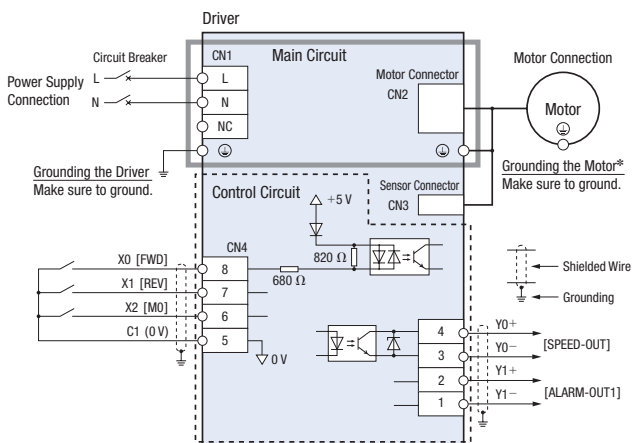
AWG26 - 20 (0.14 - 0.5 mm²)

◇ 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

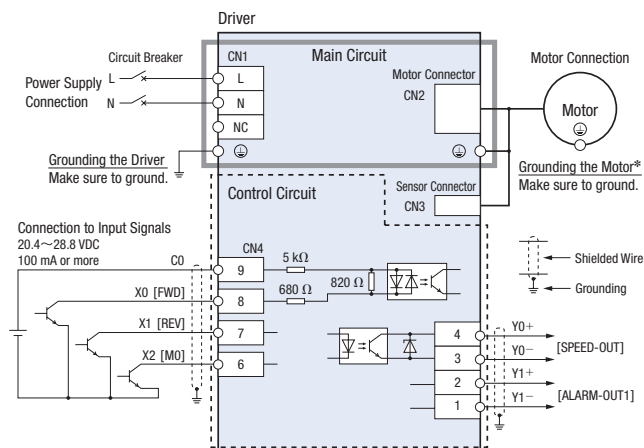
For the connector type: Motor cables may not satisfy the grounding resistance of the standard applied to the equipment depending on the type or the length.

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.

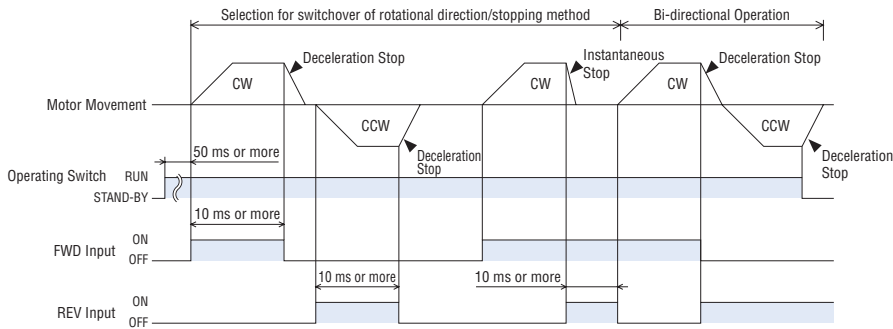
● When using external power supply

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".

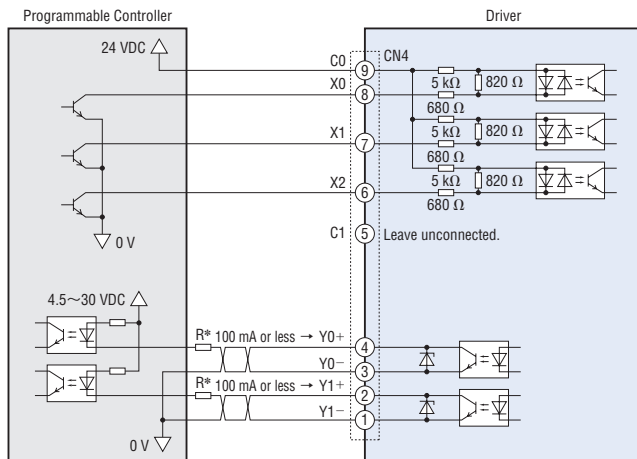


- Switching the FWD input to ON will cause the motor to turn clockwise as viewed from the motor shaft side, while switching the REV input to ON will cause the motor to turn counterclockwise. Turning it OFF decelerates the motor to a stop.
- If both the FWD input and REV input are turned ON simultaneously, the motor will stop instantaneously.
- The rotation direction varies depending on the gear ratio of the gearhead.

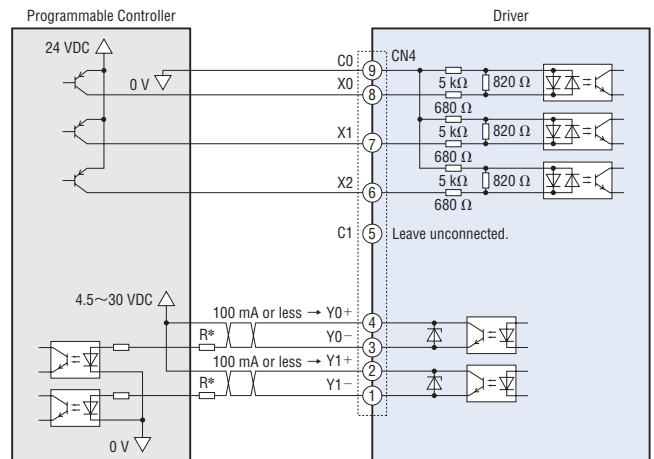
◇Example of Connection of I/O Signals with the Host Controller

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]

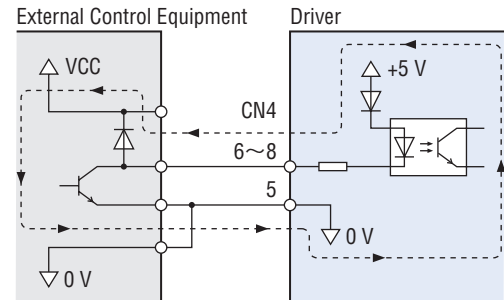
The current applied to Y0 and Y1 must be 100 mA or less. If this value is exceeded, connect the limiting resistance R.

◇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.

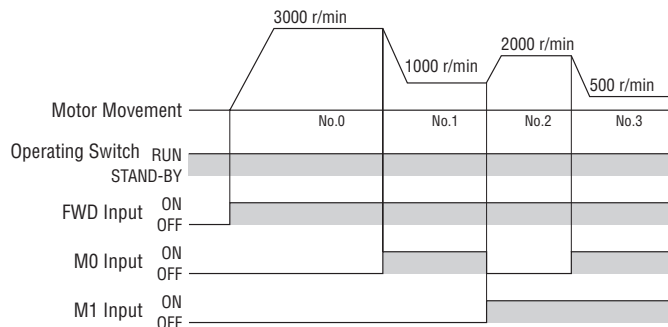


◇When using for the Multiple Speed Operation

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, 300 W, 400 W)

Names and Functions of Driver Parts

Indication

Displays the monitor contents, alarm, etc.

Dial

Changes the speed and parameters. The value is set when the dial is pressed after changes are made.

Operating Switch

The motor is started by setting it to the "RUN" position. Setting it to the "STAND-BY" position stops the motor.

Rotation Direction Switch

Change the rotation direction of the motor.

Front Panel

Front side of the driver

Sensor Connector (CN3)

Connects to the sensor connector (black) of the motor.

I/O Signal Connector (CN4)

Connects with the I/O signals.

Motor Connector (CN2)

Connects to the motor connector (white) of the motor.

Main Power Connector (CN1)

Connects to the main power supply.

Protective Earth Terminals (2 locations)

Ground either one of the protective earth terminals.

Back side of the driver

When Front Panel is Removed

MODE Key

Changes the operating mode.

FUNCTION Key

Changes the indication and functions for the operating mode.

Acceleration/Deceleration Time Potentiometer

Sets the acceleration time for starting the motor and deceleration time for motor standstill. Setting range: 0.1 s ~ 15.0 s

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, 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)

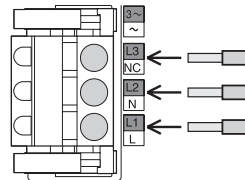
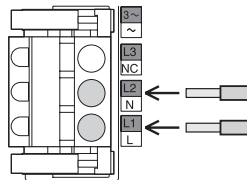
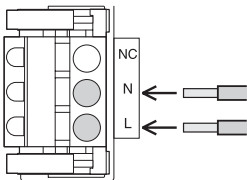
Connects to the main power supply. Connect a power supply that matches with the power supply voltage to be used.

•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.



Operation with the operating switch

Setting the speed with the dial

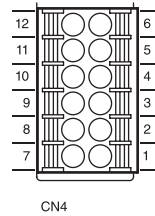
Operating Switch



● 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)

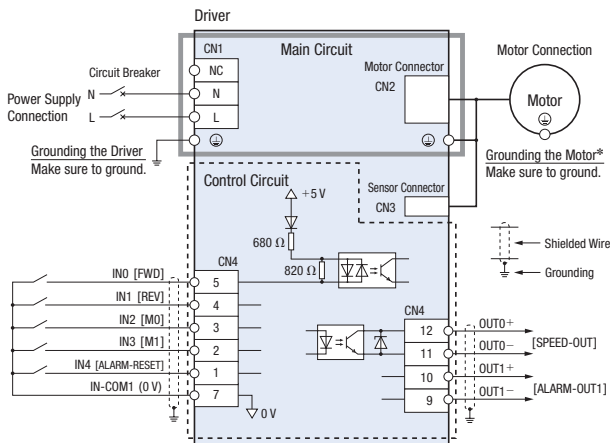
2 points for the 6 input signal points (ALARM-OUT1, SPEED-OUT, ALARM-OUT2, MOVE, VA, WNG)

◇ 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

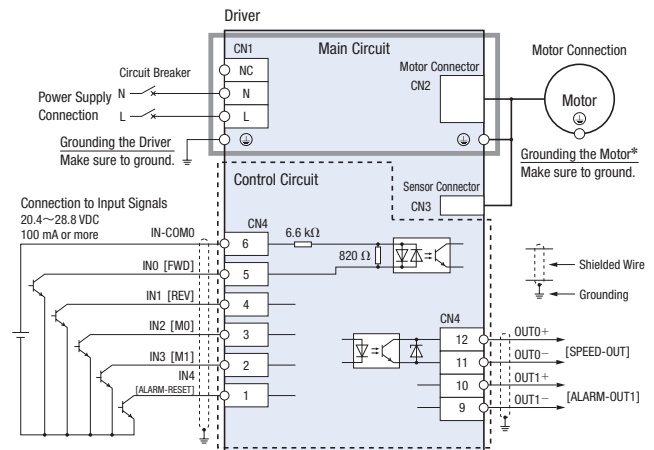
For the connector type: Motor cables may not satisfy the grounding resistance of the standard applied to the equipment depending on the type or the length.

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.

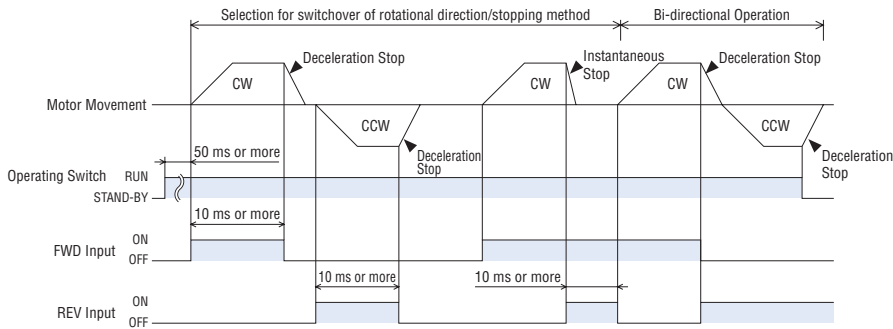
• When using external power supplies

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".

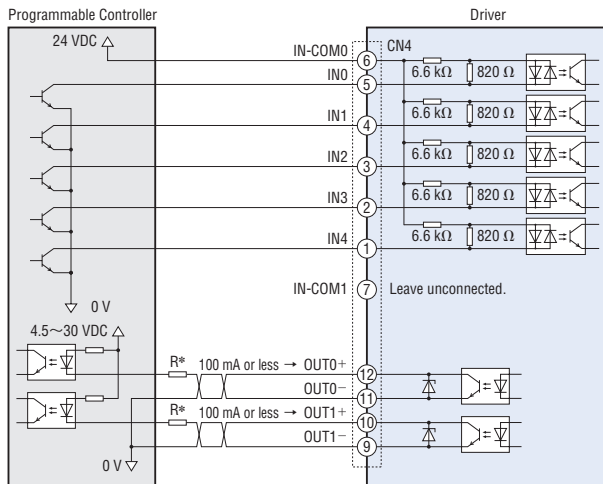


- Switching the FWD input to ON will cause the motor to turn clockwise as viewed from the motor shaft side, while switching the REV input to ON will cause the motor to turn counterclockwise. Turning it OFF decelerates the motor to a stop.
- If both the FWD input and REV input are turned ON simultaneously, the motor will stop instantaneously.
- The rotation direction varies depending on the gear ratio of the gearhead.

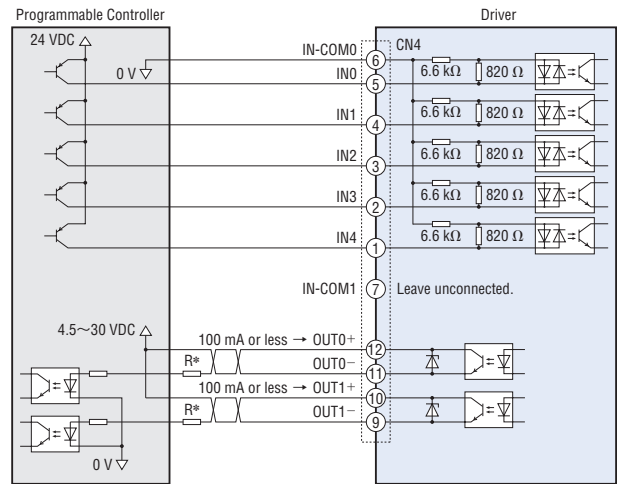
◇Example of Connection of I/O Signals with the Host Controller

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)

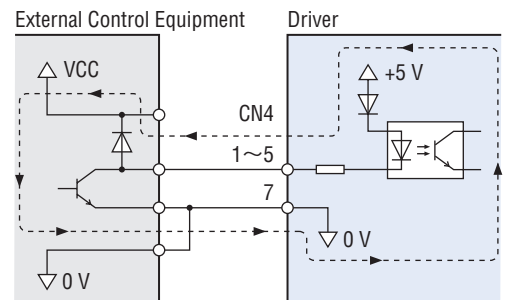
Note

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.

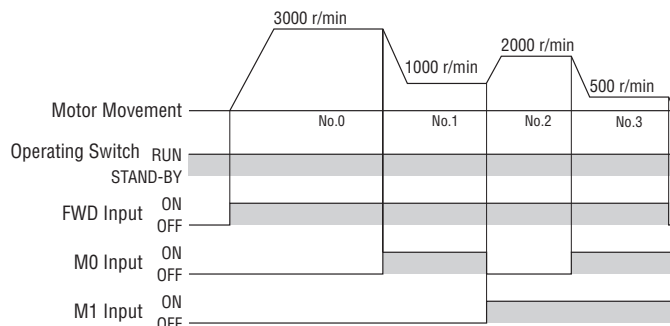


◇When using for the Multiple Speed Operation

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 (with Right-Angle Hollow Shaft Hypoid JH Gearhead)

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.

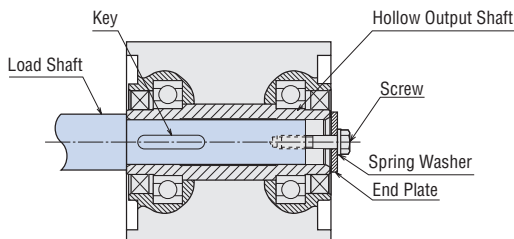
● The recommended tolerance of the load shaft is h7.

Note

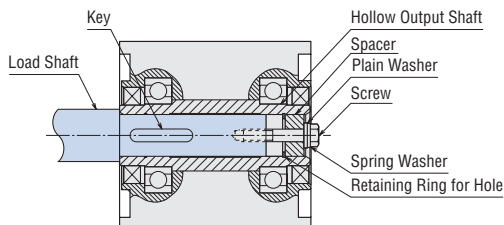
● To prevent sticking, apply a coat of grease on the exterior surface of the load shaft and interior surface of the hollow output shaft.

◇Stepped Load Shaft

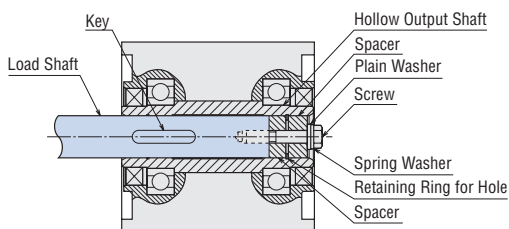
●Fixing method using the end plate



●Fixing method using the retaining ring for hole



◇For Non-Stepped Load Shaft



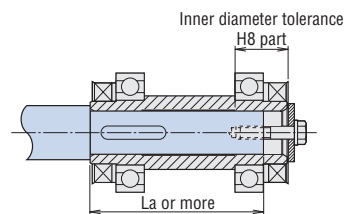
◇Recommended Load Shaft Installation Method

Unit: mm

Output Power	60 W	120 W	200 W, 300 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.

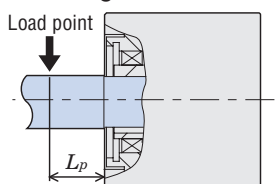
◇Recommended Load Shaft Length



● Permissible Radial Load Calculation for Hollow Shaft Type (with Right-Angle Hollow Shaft Hypoid **JH** Gearhead)

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, 300 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, 300 W, 400 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W[\text{N}] = \frac{102}{82 + L_p} \times F_0$$

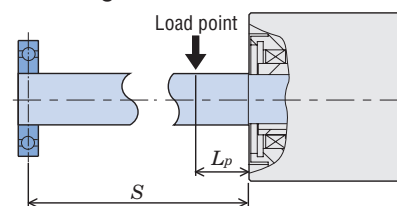
F_0 [N]: Permissible radial load when the reference point is at 20 mm from the installation surface.

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 23 and 25

◇ 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, 300 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, 300 W, 400 W (Gear ratio **100, 200**)

$$\text{Permissible Radial Load } W[\text{N}] = \frac{102(S - 9)}{111(S - L_p)} \times F_0$$

● Mounting a Load Shaft (with Hollow Shaft Flat Gearhead **FR** Gearhead)

- Install the load shaft to the hollow output shaft by aligning the center of the hollow shaft with that of the load shaft.
- The hollow output shaft has a key slot. Machine a matching key slot on the load shaft and use the included key to fix the two shafts across the slots.
- The recommended tolerance of the load shaft is h7.
- If the motor is intended to receive large shocks due to frequent instantaneous stops or carry a large radial load, use a stepped load shaft.
- The load shaft can be installed from both the front and rear faces of the hollow shaft flat gearheads.

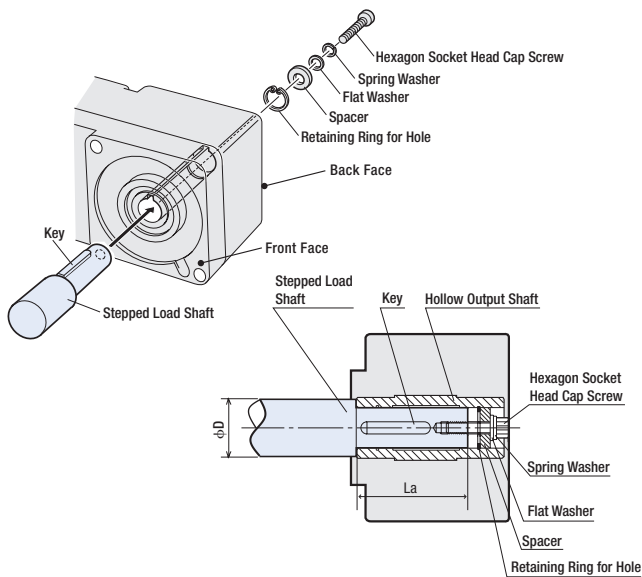
Note

- When installing the load shaft to the hollow output shaft, be careful not to damage the hollow output shaft or bearing.
- To prevent seizure, apply a coat of molybdenum disulfide grease on the exterior surface of the load shaft and on the interior surface of the hollow output shaft.
- Do not attempt to modify or machine the hollow output shaft. This may damage the bearing and cause the hollow shaft flat gearhead to break.

◇ Stepped Load Shaft

Tighten the retaining ring for hole with a hexagon socket head cap screw using a spacer, flat washer and a spring washer.

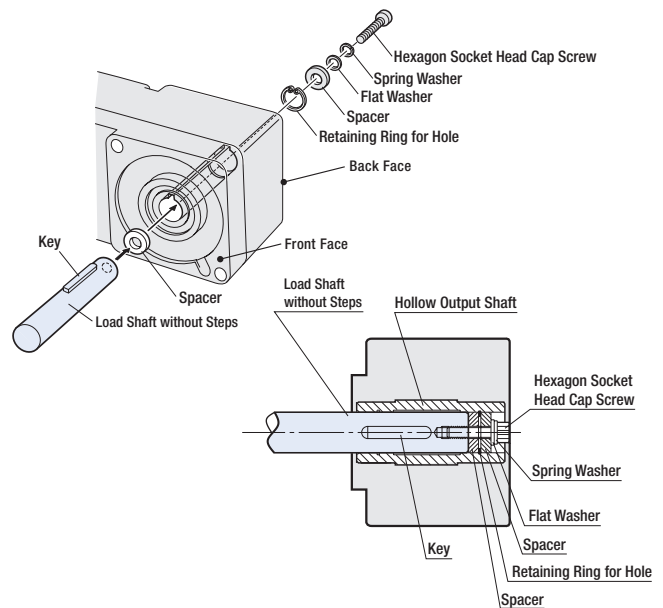
● Example of Front-Face Installation



◇ Non-stepped Load Shaft

Insert a spacer on the load shaft side. Tighten the retaining ring for hole with a hexagon socket head cap screw using a spacer, flat washer and a spring washer.

● Example of Front-Face Installation



◇ Recommended Load Shaft Installation Dimensions

Unit: mm

Product Name	GFS2G□FR	GFS4G□FR	GFS5G□FR	GFS6G□FR
Inner Diameter of Hollow Shaft (H8)	$\phi 12 \begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	$\phi 15 \begin{smallmatrix} +0.027 \\ 0 \end{smallmatrix}$	$\phi 20 \begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$	$\phi 25 \begin{smallmatrix} +0.033 \\ 0 \end{smallmatrix}$
Shaft Diameter of Load Shaft (h7)	$\phi 12 \begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	$\phi 15 \begin{smallmatrix} 0 \\ -0.018 \end{smallmatrix}$	$\phi 20 \begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$	$\phi 25 \begin{smallmatrix} 0 \\ -0.021 \end{smallmatrix}$
Screw Size	M4	M5	M6	M8
Spacer Thickness*	3	4	5	Front-side installation: 6 Front-side installation: 3
Nominal Hole Diameter of Retaining Ring	$\phi 12$ C type retaining ring	$\phi 15$ C type retaining ring	$\phi 20$ C type retaining ring	$\phi 25$ C type retaining ring
Outer Diameter of Stepped Shaft ϕD	20	25	30	40
La Length of Stepped Shaft	39	43	52	71

*For the thickness of spacers, use the dimensions in the table. Exceeding these dimensions may cause the bolt to stick outside, preventing the safety cover from being attached.

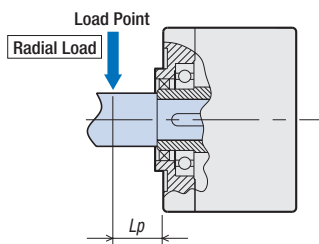
- Retaining rings for holes, spacers, screws or other parts used to install the load shaft are not supplied.

● Permissible Radial Load Calculation for Hollow Shaft Type (with Hollow Shaft Flat Gearhead **FR** Gearhead)

The permissible radial load calculation formula differs depending on the mechanism.

◇ If One Side of the Load Shaft is Not Supported by the Bearing Unit

Radial load is the most severe mechanism. The recommended load shaft is the stepped type.



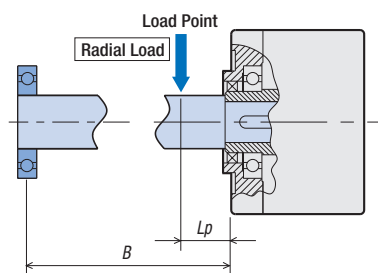
F_0 [N] : Permissible radial load on flange-installation surface

L_p [mm] : Distance from flange-installation surface to radial load point

B [mm] : Distance from flange-installation surface to bearing unit

Product Name	Permissible Radial Load W[N]
GFS2G□FR	W [N] = $\frac{36}{36+L_p} \times F_0$ [N]
GFS4G□FR	W [N] = $\frac{40}{40+L_p} \times F_0$ [N]
GFS5G□FR	W [N] = $\frac{50}{50+L_p} \times F_0$ [N]
GFS6G□FR	W [N] = $\frac{60}{60+L_p} \times F_0$ [N]

◇ If One Side of the Load Shaft is Supported by the Bearing Unit



Product Name	Permissible Radial Load W[N]
GFS2G□FR GFS4G□FR GFS5G□FR GFS6G□FR	W [N] = $\frac{B}{B-L_p} \times F_0$ [N]

Product Name	Speed	Gear Ratio	F_0 [N]
GFS2G□FR	At 80 - 3000 r/min	5, 10	570
		15 - 200	630
	At 4000 r/min	5, 10 15 - 200	520 580
GFS4G□FR	At 80 - 3000 r/min	5, 10	1000
		15 - 200	1500
	At 4000 r/min	5, 10 15 - 200	910 1370
GFS5G□FR	At 80 - 3000 r/min	5, 10	1080
		15, 20	1550
	At 4000 r/min	30 - 200	1800
GFS6G□FR	At 80 - 3000 r/min	5, 10	980
		15, 20	1430
	At 4000 r/min	30 - 200	1680
GFS6G□FR	At 80 - 3000 r/min	5, 10	1430
		15, 20	1960
	At 4000 r/min	30 - 100	2380
GFS6G□FR	At 80 - 3000 r/min	5, 10	1320
		15, 20	1810
	At 4000 r/min	30 - 100	2210

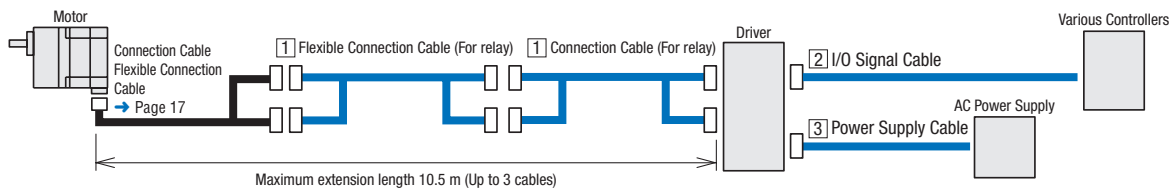
● A number indicating the gear ratio is specified where the box □ is located in the product name.

Cables and Accessories (Sold Separately)

Cables

● Cable System Configuration

◇ Connector Type



1 Connection Cable (For relay)/Flexible Connection Cable (For relay)

These cables are used to connect the motor and driver. When using additional connection cables (for relay) and/or flexible connection cables (for relay), 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]
CC01BL2	1
CC02BL2	2
CC03BL2	3
CC05BL2	5
CC07BL2	7
CC10BL2	10

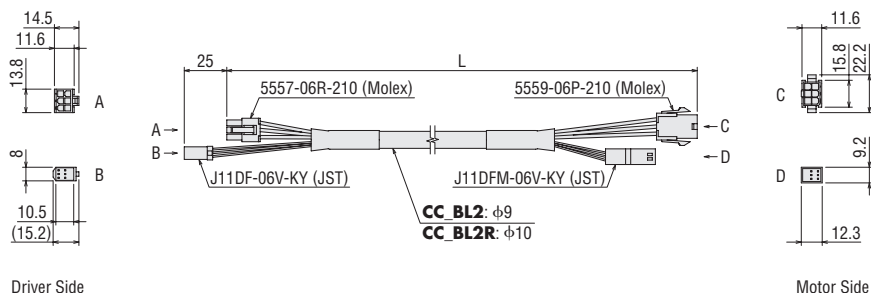


◇ Flexible Connection Cables

Product Name	Length L [m]
CC01BL2R	1
CC02BL2R	2
CC03BL2R	3
CC05BL2R	5
CC07BL2R	7
CC10BL2R	10



● Dimensions (Unit = mm)



For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.eu>

2 General-Purpose Type

- A double-shielded cable is used (AWG24 core wire)
- Unbundled wires on both ends
- Easy shield grounding using ground wire with a round terminal
- The number of lead wire cores can be selected to suit the functions that will be used

Product Line

Product Name	Length L [m]	Number of Lead Wire Cores	Outer Diameter D [mm]	AWG
CC06D005B-1	0.5	6	φ5.4	24
CC06D010B-1	1			
CC06D015B-1	1.5			
CC06D020B-1	2			
CC10D005B-1	0.5	10	φ6.7	
CC10D010B-1	1			
CC10D015B-1	1.5			
CC10D020B-1	2			
CC12D005B-1	0.5	12	φ7.5	
CC12D010B-1	1			
CC12D015B-1	1.5			
CC12D020B-1	2			
CC16D005B-1	0.5	16	φ7.5	
CC16D010B-1	1			
CC16D015B-1	1.5			
CC16D020B-1	2			



3 Power Supply Cable

These cables are used to connect the driver and the power supply. Cables are available with or without a power supply plug.

Product Line

Product Name	Product Line	Power Supply Voltage	Length L [m]
CC01AC03N	No Plug	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	1
CC02AC03N			2
CC03AC03N			3
CC01AC04N	No Plug	Three-Phase 200-240 VAC	1
CC02AC04N			2
CC03AC04N			3

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.eu>

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.



Motor and Gearhead Mounting Bracket

This is a convenient, dedicated mounting bracket for mounting or fixing the parallel shaft gearhead **GFV** gear and the round shaft type.



Product Line

Applicable Product	Load Type	Coupling Type
GFV2G □ ■	Uniform Load	MCL30 Type
	Impact Load	
GFV4G □ ■	Uniform Load	MCL40 Type MCL55 Type
	Impact Load	
GFV5G □ ■	Uniform Load	MCL55 Type
	Impact Load	
GFV6G □ ■	Uniform Load	MCL65 Type
	Impact Load	

- A number indicating the gear ratio is specified where □ is located in the applicable product.
A symbol indicating the material of output shaft is specified where ■ is located in the applicable product.

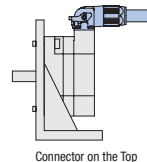
Product Line

Product Name	Applicable Product
SOL2M4F	BLM230, BLM260, GFV2G □ ■
SOL4M6F	BLM460, GFV4G □ ■
SOL5M8F	BLM5120, BLM5200, BLM5300, BLM5400, GFV5G □ ■
SOL6M8F	BLM6200, BLM6300, BLM6400, GFV6G □ ■

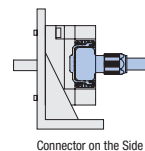
- A number indicating the gear ratio is specified where □ is located in the applicable product.
A symbol indicating the material of output shaft is specified where ■ is located in the applicable product.

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	Applicable Product (Driver)
MADP05-15	For DIN Rail Installation	BMUD30 BMUD60 BMUD120
MAFP04-15	For Wall Surface Installation	
MAFP05V	For Conveyor Guide Installation	
MADP05-12B	For DIN Rail Installation	BMUD200 BMUD300 BMUD400
MAFP04-12B	For Wall Surface Installation	

Note

- Circuit products mounting brackets cannot be used together with the dust-resistant and watertight type front cover.

Dust-Resistant/Watertight Type Front Cover

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	Applicable Product (Driver)
PCF12-B	BMUD30 BMUD60 BMUD120
PCF15-B	BMUD200 BMUD300 BMUD400

Note

- The dust-resistant and watertight type front cover cannot be used together with circuit products mounting brackets.



MADP05-15

<<Application example>>



MADP05-12B

<<Application example>>



MAFP04-15

<<Application example>>



MAFP05V

<<Application example>>



PCF12-B



PCF15-B

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.eu>

Motor Cover

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
PCM5
PCM5-C

Replacement Gaskets

Ideally replace the gaskets after 1 year use.

Product Name	Set Details
PCMP5	2 gaskets



With a blind cap
PCM5

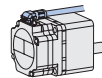



With a cable gland
PCM5-C

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 Arm

Prevents the gearhead from spinning due to reaction force from the driven shaft when a hypoid right-angle hollow shaft **JH** gear is installed.

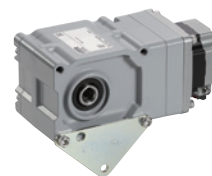
Product Line

Product Name	Applicable Product	Main Specifications
TAF2S-12-NS	BLM460SHPK-4H <input type="checkbox"/>	Material: SS400 Surface treatment: Trivalent chromate
TAF2S-15-NS	BLM5120HPK-5H <input type="checkbox"/>	
TAF3S-25-2-NS	BLM5200HPK / 5XH <input type="checkbox"/>	
	BLM5300HPK / 5XH <input type="checkbox"/>	
	BLM5400HPK / 5XH <input type="checkbox"/>	
TAF3S-30-3-NS	BLM5200HPK / 5YH <input type="checkbox"/>	
	BLM5300HPK / 5YH <input type="checkbox"/>	
	BLM5400HPK / 5YH <input type="checkbox"/>	

● 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



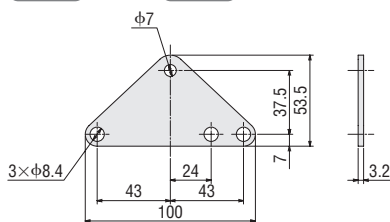
<<Application example>>

Dimensions (Unit = mm)

TAF2S-12-NS

Mass: 75 g

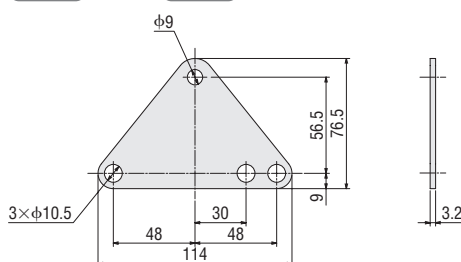
2D CAD A1608 **3D CAD**



TAF2S-15-NS

Mass: 125 g

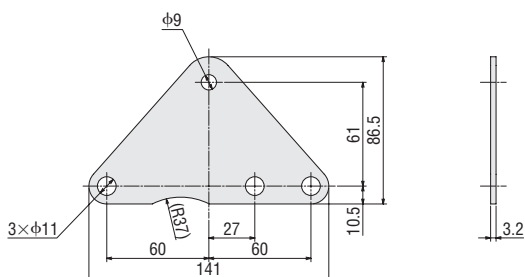
2D CAD A1609 **3D CAD**



TAF3S-25-2-NS

Mass: 200 g

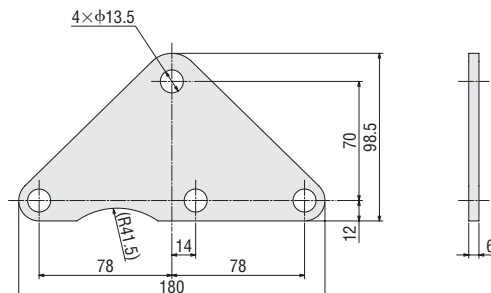
2D CAD A1610 **3D CAD**



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.eu>

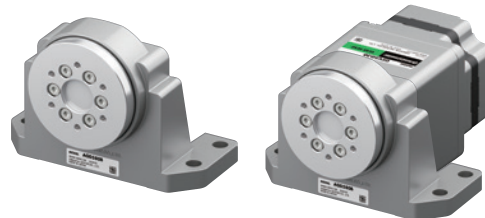
■ Flange Drive Adapter

These products allow for greatly increased permissible load with the installation on a gearhead.

It can be used with parallel shaft gearheads **GFV** with an output power of 120 W.

● Product Line

Product Name
AGD580B



<Application Example>

For details, check the Oriental Motor website or contact the Oriental Motor sales office.

<http://www.orientalmotor.eu>

Orientalmotor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in October 2024.

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