D

Brushless Motors

Brushless Motors

Brushless Motor Product Series

These speed control motors combine compact yet powerful brushless motors and high performance drivers. They offer excellent energy savings and speed stability, as well as a wide speed control range.

Brushless Motor Product Line

Wide Speed Ratio

Reduced Size and Energy for Equipment

AC Input

Brushless Motors

- Output Power: 30 W (1/25 HP)~400 W (1/2 HP)
- Speed Control Range: 80~4000 r/min
- Speed Regulation: ±0.2% max. (±0.05 **BXII**)

High Performance and Easy Control

BMU Series

30 W(1/25 HP)~400 W(1/2 HP)

- Speed Settings: 4
- Control Method: I/O control
- Easy to control; just turn and pop

16 Speed Settings
Torque Limiting
External DC Voltage Control

BLE2 Series

30 W(1/25 HP)~400 W(1/2 HP)

- Speed Settings: 16
- Control Method: I/O control, external DC voltage control, external speed potentiometer, driver control panel

Position Control
Torque Limiting
External DC Voltage Control

BXII Series

30 W(1/25 HP)~400 W(1/2 HP)

- Speed Settings: 16
- Control Method: I/O control, external DC voltage control, internal and external speed potentiometer, driver control panel
- Vertical operation possible (Electromagnetic Brake Type)

Reasonably Priced

Wide Variety of Products

DC Input

Brushless Motors

- Output Power: 15 W (1/50 HP)~400 W (1/2 HP)
- Speed Control Range: 100~4000 r/min
- Speed Regulation: ±0.5% max.

Compact Driver

BLH Series

15 W(1/50 HP)~100 W(1/8 HP)

- Speed Settings: 2
- Speed Setting Methods: I/O control, external DC voltage control, internal and external speed potentiometer

High Power
Torque Limiting
RS-485 Communication

BLV Series

200 W(1/4 HP), 400 W(1/2 HP)

- Speed Settings: 2 (8)
- Speed Setting Methods: I/O control, external DC voltage control, internal and external speed potentiometer
- Electromagnetic Brake Type

The NexBL is the new brushless motor from Oriental Motor.
All of the structures have been updated, with a focus on maximizing the performance demanded of a motor.
A combination of unprecedented compactness, high power, and high efficiency.

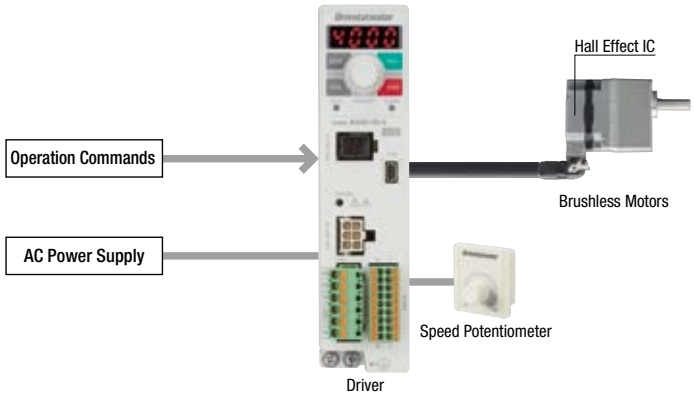
Overview of Brushless Motors

Overview of Brushless Motors

With brushless motors, there is no brush and commutator, which is an advantage of Brushless Motors.
DC Brush motors rotate by means of a brush and commutator, so maintenance for these parts must be performed regularly. However, brushless motors rotate using signals detected by a hall effect IC (magnetic sensor), which means they are maintenance-free.

System Configuration

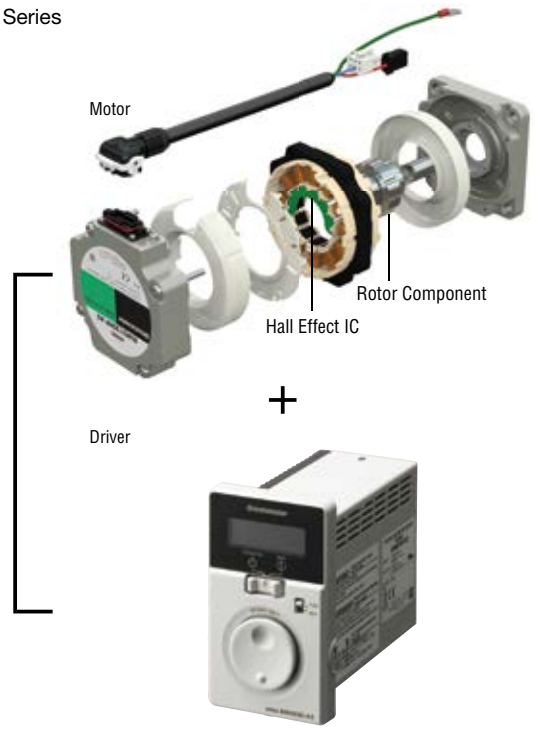
Driving is performed by a motor equipped with a built-in hall effect IC for detecting speed that is combined with a driver (control circuit).
The motor speed is set using a speed potentiometer, external DC voltage or a control module.



Structure

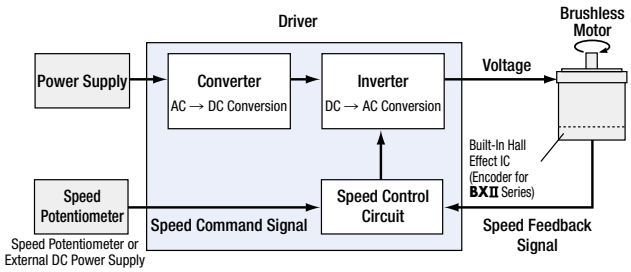
Brushless motors use permanent magnets in the rotor of three-phase motors. In addition, on the inside of the stator, there is a built-in hall effect IC (magnetic sensor) that detects magnetic field changes with the permanent magnets.
The feedback signals from the hall effect IC of the motor are compared with the setting speed by the driver and the motor speed is adjusted continuously.

BMU Series



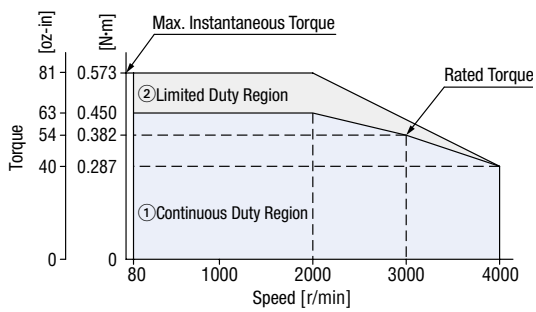
Control Block Diagram

The speed feedback signal from the built-in hall effect IC in the motor is compared with the speed command signal set in the driver. The comparison result is sent to the inverter. The inverter adjusts the voltage applied to the motor and controls the motor speed.



Speed – Torque Characteristics

Brushless motors can operate continuously with a constant torque from low speed to rated speed. In addition, if within the rated torque, these motors rotate at a stable speed even when the load size changes.
With brushless motors, there is a continuous duty region (①) where continuous duty is possible and a limited duty region (②). The limited duty region can be used for acceleration torque when starting an inertial load.
If operation continues for five seconds or more in this region, the drivers overload protective function activates and the motor is stopped.



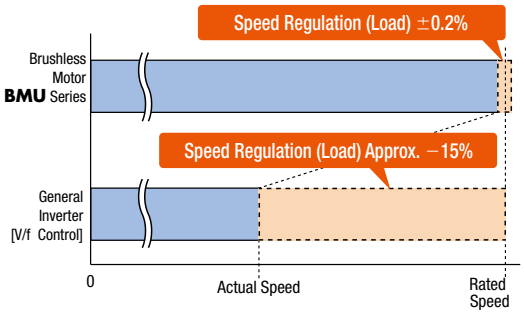
BMU Series 120 W (1/6 HP)

Features of Brushless Motors

Excellent Speed Stability

Brushless motor drivers compare the set speed with the speed feedback signals from the motor at all times and adjust the motor's applied voltage to ensure accurate speed regulation. For this reason, even if the load changes, stable rotation is performed from low speed to high speed.
With inverter-controlled (V/F control) three-phase induction motors, feedback control is not performed, so the speed will drop significantly when the load increases. Brushless motors are recommended for applications where speed stability is important.

● Comparison of Speed Variation (Reference value)



Speed regulation (load) for each model is as shown below. The level to which the speed changes when the load changes from 0 to rated torque is shown.

Series Name	Speed Regulation with Respect to the Load	
		Conditions
BMU Series	±0.2%	0～Rated Torque At rated speed
BLE2 Series	±0.2%	
BXII Series	±0.05%	
BLH Series	±0.5%	
BLV Series	±0.5%	

Wide Speed Control Range

Brushless motors have a wider speed control range than AC speed control motors and inverters.
Unlike AC speed control motors, the torque at low speed is not limited, so brushless motors are suited to applications that require a constant torque from low speed to high speed.

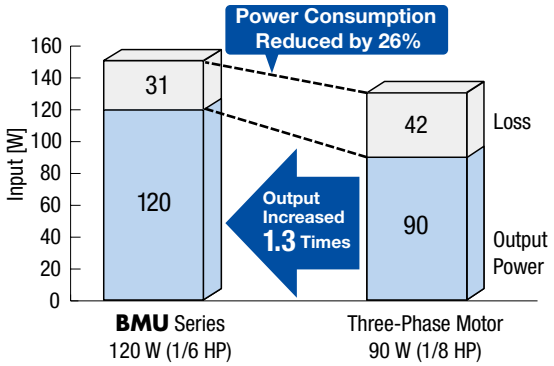
Product Group	Speed Control Range*	Speed Ratio
Brushless Motors (For **BMU** Series)	**80～4000 r/min**	**50:1**
Inverter-Controlled Three-Phase Induction Motors	200～2400 r/min	12:1
AC Speed Control Motors	50 Hz: 90～1400 r/min 60 Hz: 90～1600 r/min	15:1 17:1

*The speed control range varies depending on the product.

Contributes to Energy Savings

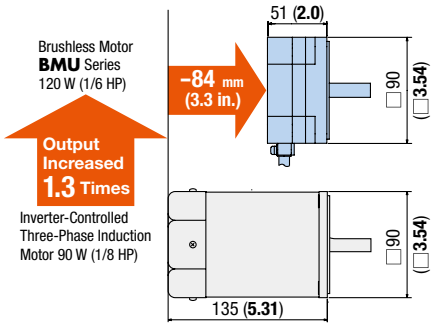
Brushless motors, which incorporate permanent magnets in the rotor, generate little secondary loss from the rotor.
This allows for power consumption to be reduced by approximately 26% compared with inverter-controlled three-phase induction motors*. This contributes to energy savings.

*When Output Power is 90 W (1/8 HP)



Compact yet Powerful

Brushless motors have slim bodies and provide high power due to permanent magnets being used in the rotor. For example, the overall length is 84 mm (3.3 in.) shorter and the output power is 1.3 times higher than that of three-phase induction motors with a frame size of 90 mm (3.54 in.).
Using brushless motors can contribute to downsizing.



Protective Functions and Alarm Output

These motors are equipped with various protective functions including the overload protective function and overvoltage protective function. An alarm is output if a protective function activates.

Conforms to Major Standards

Each brushless DC motor series consists of products conforming to the UL, CSA and EN Standards and that also affix the CE Marking.

How to Read Specifications

An explanation of how you should read the specifications on several important items is shown below.

How to Read Specifications

	Product Name / Motor		BLM230HP-AS		BLM260HP-AS		BLM5120HP-AS	
	Driver		BMUD30-A2	BMUD30-C2	BMUD60-A2	BMUD60-C2	BMUD120-A2	BMUD120-C2
①	Rated Output Power (Continuous)	W (HP)	30 (1/25)		60 (1/12)		120 (1/6)	
	Power Supply Input — Rated Voltage	VAC	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240	Single-Phase 100-120	Single-Phase 200-240 / Three-Phase 200-240
	Permissible Voltage Range		−15～+10%		−15～+10%		−15～+10%	
	Frequency	Hz	50 / 60		50 / 60		50 / 60	
	Permissible Frequency Range		±5%		±5%		±5%	
	Rated Input Current	A	1.2	Single-Phase:0.7/ Three-Phase: 0.38	1.7	Single-Phase: 1.0/ Three-Phase: 0.52	3.3	Single-Phase: 2.0/ Three-Phase: 1.1
②	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
③	Rated Speed	r/min	3000					
④	Speed Control Range		80～4000 r/min (Speed ratio 50:1)					
⑤	Rated Torque	N·m (oz-in)	0.096 (13.6)		0.191 (27)		0.382 (54)	
⑥	Maximum Instantaneous Torque	N·m (oz-in)	0.144 (20)		0.287 (40)		0.573 (81)	
	Permissible Radial Load — 10 mm (0.39 in.) from End of Output Shaft	N (lb.)	80 (18.0)		80 (18.0)		150 (33)	
	Permissible Radial Load — 20 mm (0.79 in.) from End of Output Shaft	N (lb.)	100 (22)		100 (22)		170 (38)	
	Permissible Axial Load		Half of motor mass max.					
	Rotor Inertia J	$\times 10^{-4}$ kg·m^2 (oz-in^2)	0.042 (0.23)		0.082 (0.45)		0.23 (1.26)	
⑦	Permissible Inertia J	$\times 10^{-4}$ kg·m^2 (oz-in^2)	1.8 (9.8)		3.75 (21)		5.6 (31)	
⑧	Speed Regulation — Load		Max.±0.2%: Conditions 0～rated torque, rated speed, rated voltage, normal temperature					
	Speed Regulation — Voltage		Max.±0.2%: Conditions Rated voltage −15～+10%, rated speed, no load, normal temperature					
	Speed Regulation — Temperature		Max.±0.2%: Conditions Operating ambient temperature 0～+40°C (+32～+104°F), rated speed, no load, rated voltage					

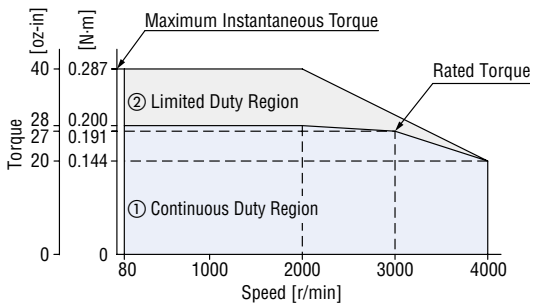
① Rated Output Power: This refers to, with the combination of motor and driver, the amount of work that can be performed by a motor in a given period of time. It also expresses the max. output that can be generated continuously.
② Maximum Input Current: This refers to, with the combination of motor and driver, the max. input current required by the driver.
③ Rated Speed: This refers to, with the combination of motor and driver, the speed at rated output.
④ Speed Control Range: This refers to, with the combination of motor and driver, the variable speed range of rotation speed.
⑤ Rated Torque: This refers to, with the combination of motor and driver, the max. torque created when they are in continuous operation.
⑥ Maximum Instantaneous Torque: This refers to, with the combination of motor and driver, the limit of torque that can be generated instantaneously.
⑦ Permissible Inertia: This refers to, with the combination of motor and driver, the max. moment of load inertia that can be driven.
⑧ Speed Regulation: This shows how much the speed is affected by the change in load, voltage and temperature.

Permissible Radial Load and Permissible Axial Load of Motors

Similar to standard AC motors. Refer to "How to Read Motor Specifications" of constant speed motors.

● How to read motor specifications of constant speed motors ➜ Page E-12

How to Read Speed – Torque Characteristics



① Continuous Duty Region: This refers to the region where a motor can be operated continuously. The area is also used for the frictional load torque at the sliding portion of equipment.
② Limited Duty Region: This refers to the region which can be used for a short period of time. If operated for more than about five seconds in the limited duty region, the driver's overload protective function engages and the motor is automatically stopped. This region is also used for acceleration torque which accelerates an inertial load up to the set speed at motor start-up.

How to Read Gearhead Specifications

Similar to standard AC motors. Refer to "How to Read Gearhead Specifications" of constant speed motors.

● How to read gearhead specifications of constant speed motors ➜ Page E-13

Product Line of Brushless Motors

The specifications and functions of each series are introduced with a list. Use these for your model selection.

Classification		AC Input		
Series		High Performance and Easy Control **BMU** Series 	Full Range of Functions **BLE2** Series 	Equipped with Encoder for Position Control High Power, Speed and Position Control **BXII** Series 
Reference Page		▶ Page D-13	▶ Page D-31	▶ Page D-49
Key Features		● Easy Setup and Easy Operation ● Full Range of Functions ● Right-Angle Gearhead Product Line Also Available	● Digital Setting and Indication ● Max. Speed of 4000 r/min ● Multistep Speed-Change Operation Up to 16 Axes	● Speed Control, Position Control, Torque Limiting ● Excellent Speed Stability ● Digital Setting Unit Built-in
Power Supply Input		Single-Phase 100-120 VAC Single-Phase 200-240 VAC Three-Phase 200-240 VAC	Single-Phase 100-120 VAC Single-Phase 200-240 VAC Three-Phase 200-240 VAC	Single-Phase 100-120 VAC Single-Phase 200-240 VAC Three-Phase 200-240 VAC
Output Power	□42 mm (□1.65 in.)	–	–	–
	□60 mm (□2.36 in.)	30 W (1/25 HP)	30 W (1/25 HP)	30 W (1/25 HP)
	□80 mm (□3.15 in.)	60 W (1/12 HP)	60 W (1/12 HP)	60 W (1/12 HP)
	□90 mm (□3.54 in.)	120 W (1/6 HP)	120 W (1/6 HP)	120 W (1/6 HP)
	□110 mm (□4.33 in.)	200 W (1/4 HP)/400 W (1/2 HP)	200 W (1/4 HP)/400 W (1/2 HP)	200 W (1/4 HP)/400 W (1/2 HP)
Speed Control Range	[r/min]	80～4000 r/min 4000 3000 2000 0	80～4000 r/min	2～4000 r/min (Digital setting) 30～4000 r/min (Analog setting)
Speed Ratio		50 : 1	50 : 1	2000 : 1 (Digital setting) 133 : 1 (Analog setting)
Speed Regulation (Load)		±0.2%	±0.2% (Digital setting) ±0.5% (Analog setting)	±0.05%
Speed Setting Method	Potentiometer Setting	Dial Setting	Dial Setting/External Speed Potentiometer	Internal/External Speed Potentiometer
	Digital Setting	●	●	●
	External DC Voltage	–	●	●
	Control Module Support Software	–	●	●
Function	Digital Speed Indicator	●	●	●
	Instantaneous Stop	●	●	●
	Acceleration and Deceleration Operation	●	●	●
	Multistep Speed-Change Operation	4 Speeds	16 Speeds	16 Speeds
	Load Holding/Gravitational Operation	–	–	● With Electromagnetic Brake
	Parallel-Motor Operation	–	●	●
	Protective Function	●	●	●
	Sink/Source Connection Compatibility	●	●	●
	Max. Extension Length	10.5 m (34.4 ft.)	20.5 m (67.2 ft.)	30.6 m (100.3 ft.)
	Other	–	Torque Limiting	Position Control/Torque Limiting
Gearheads	Parallel Shaft Gearhead	●	●	●
	Hollow Shaft Flat Gearhead	–	–	●
	Right-Angle Gearhead	●	●	–
	Foot Mount Gearhead	●	●	–
Safety Standards		cULus CE	cULus CE	cULus CE
Price Range		$300.00～$1,427.00	$393.00～$1,532.00	$693.00～$1,397.00

Classification		DC Input		
Series		24 VDC Input **BLH** Series 	24 VDC/48 VDC Input **BLV** Series Standard Type 	Standard Type+Control Module 
Reference Page		▶ Page D-57	▶ Page D-61	
Key Features		● Compact Board Driver ● 24 VDC Input	● High Power ● Network Compatible (RS-485 Communication)	
Power Supply Input		24 VDC	24 VDC/48 VDC	
Output Power	□42 mm (□1.65 in.)	15 W (1/50 HP)	–	
	□60 mm (□2.36 in.)	30 W (1/25 HP)	–	
	□80 mm (□3.15 in.)	50 W (1/15 HP)	–	
	□90 mm (□3.54 in.)	100 W (1/8 HP)	–	
	□110 mm (□4.33 in.)	–	200 W (1/4 HP)/400 W (1/2 HP)	
Speed Control Range		100～3000 r/min [r/min] 4000 / 3000 / 2000 / 0	100～4000 r/min	80～4000 r/min
Speed Ratio		30 : 1	40 : 1	50 : 1
Speed Regulation (Load)		±0.5%	±0.5%	±0.2%
Speed Setting Method	Potentiometer Setting	Internal/External Speed Potentiometer	Internal/External Speed Potentiometer	
	Digital Setting	–	–	●
	External DC Voltage	●	●	●
	Control Module Support Software	–	–	●
Function	Digital Speed Indicator	SDM496	SDM496	●
	Instantaneous Stop	●	●	●
	Acceleration and Deceleration Operation	●	●	●
	Multistep Speed-Change Operation	2 Speeds (Internal/External Switching)	2 Speeds	8 Speeds
	Load Holding/Gravitational Operation	–	● Electromagnetic Brake Type	● Electromagnetic Brake Type
	Parallel-Motor Operation	●	●	●
	Protective Function	●	●	●
	Sink/Source Connection Compatibility	–	●	●
	Max. Extension Length	2 m (6.6 ft.)	3.5 m (11.5 ft.)	3.5 m (11.5 ft.)
	Other	–	Torque Limiting	Torque Limiting
Gearheads	Parallel Shaft Gearhead	●	●	●
	Hollow Shaft Flat Gearhead	● (Excluding 15 W (1/50 HP))	●	●
	Right-Angle Gearhead	–	–	–
	Foot Mount Gearhead	–	–	–
Safety Standards		c UL us CE	CE	CE
Price Range		$264.00～$677.00	$715.00～$1,380.00	Standard Type + $300.00*

*This price is for the control module.

SDM496 :Possible when a speed indicator (**SDM496**, accessory) is used.

Types and Features of Gearheads

These are high-strength gearheads that are compatible with the high speed and high power of brushless motors.
A wide variety of gearheads are available for every application, specification or installation method.

Product Line

Parallel Shaft Gearhead

Parallel Shaft Gearhead **GFV** Gear

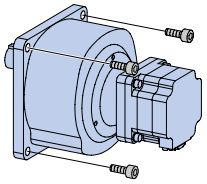
Parallel Shaft Gearhead **JV** Gear

Foot Mount Gearhead

Foot Mount Gearhead **JB** Gear

Installation Advantages

●Can be Installed on the Flange Surface (**JV** Gear)

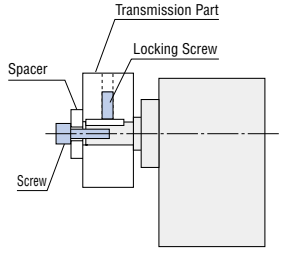


●Improved Installation Accuracy (**GFV** Gear)

The output shaft boss and installation surface have been machined. This improves the installation accuracy for the equipment.

●Tapped Hole at the End of the Output Shaft (**GFV** Gear □80 mm (3.15 in.) min.)

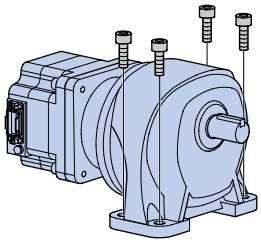
A tapped hole has been machined at the tip of the output shaft. This can be used as an aid for preventing transmission parts from coming off.



Example of Using the Output Shaft End Tapped Hole

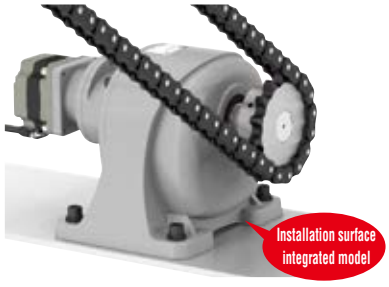
●Mounting Bracket Not Necessary

Configured so it can be quickly installed on equipment.



●High Rigidity / Integral Structure

Well designed shaft axis, integrated construction with installation surface.



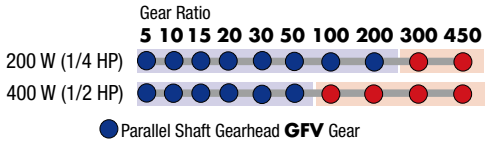
Features

●High-Strength Gearhead (**GFV** Gear)

High strength is achieved through improving the strength of gears through heat treatment and through larger bearing diameters.
The high permissible torque is 2 ～ 3 times that of a gearhead for an AC motor with the same frame size, and this contributes to reducing the size of equipment.

●High Gear Ratios (**JV** Gear)

The gear ratio lineup ranges to 450:1.



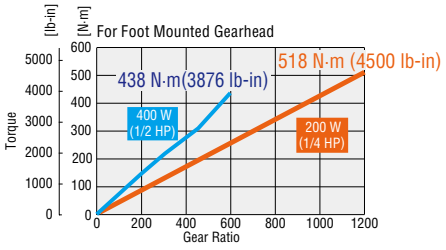
●Parallel Shaft Gearhead **GFV** Gear

●Long Life (**GFV** Gear)

A long life gearhead that uses a special bearing and grease for high-speed rotation.
A rated life of 10000 hours is achieved.

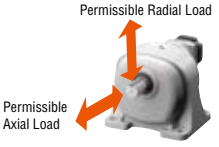
●High Permissible Torque

Motor torque can be fully utilized without torque saturation.



[At 3000 r/min]

●High Strength



Permissible Radial Load
3672 N (820 lb.)
Permissible Axial Load
577 N (129 lb.)

[Gear ratio 1200:1 at 3000 r/min]

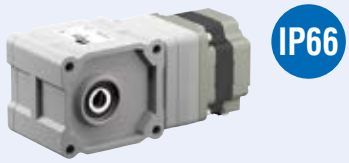
●High Gear Ratio

The gear ratio lineup ranges to 1200:1.

Gear Ratio
5 10 20 30 50 100 200 300 450 600 1200*

*200 W (1/4 HP) only

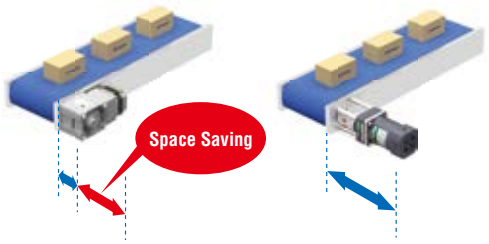
Right-Angle Gearhead



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

●Space Saving

Space is saved by the motor being mounted perpendicularly.

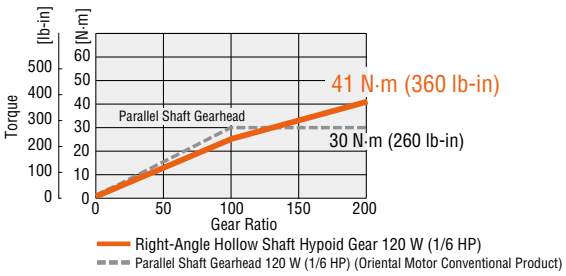


●Low Cost

Eliminating parts like the coupling or the belt-and-pulley will also decrease parts cost and labor.

●Permissible Torque without Saturation

Permissible torque is not saturated even at high gear ratios. The motor torque can be fully utilized.



[At 3000 r/min]

●High Strength

Parallel Shaft Gearhead Comparison

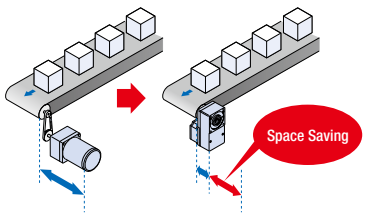
[200:1 at 3000 r/min]

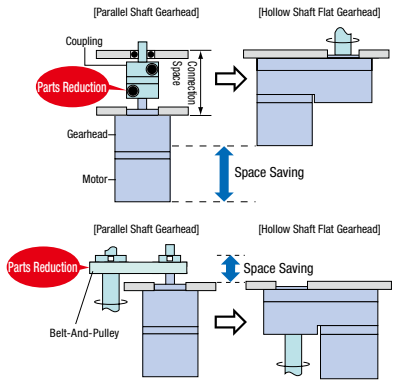
Hollow Shaft Flat Gearhead

Hollow Shaft Flat (FR) Gearhead

●Space Saving

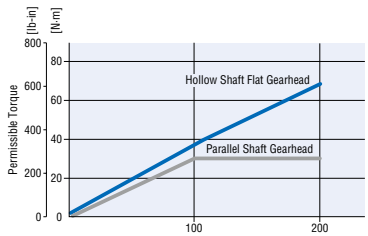
Direct connection to the drive shaft is possible without using a connecting part which enables equipment space saving.





●Permissible Torque without Saturation

The hollow shaft flat gearhead enables permissible torque without saturation even at high gear ratios. The motor torque can be fully utilized.



●High Permissible Torque, Long Life

High permissible torque and long life are achieved through improved gear case rigidity and larger diameters for gears and bearings. A rated life of 10000 hours* is achieved.

*5000 hours for 200 W (1/4 HP) and 400 W (1/2 HP)

Selection of Brushless Motors

The speed control range and performance of brushless motors vary depending on the model.
This section explains the main selection points to consider in order to select an optimal model based on the characteristics and functions required from the brushless motor in accordance with the purpose and application.

Selection by Speed Control Range and Speed Regulation

The speed control ranges and speed regulation shown below apply to the motor only.
Gearheads are available for each model, enabling you to use them for speed reduction. For details, refer to the page where each product is listed.

	Product Name	Reference Page	Speed Control Range (r/min) 0 1000 2000 3000 4000	Speed Ratio	Speed Regulation with Respect to the Load	Conditions
Brushless Motors	**BMU** Series	D-13	80～4000 r/min	50 : 1	±0.2%	0 to Rated Torque at Rated Speed
	BLE2 Series	D-31	80～4000 r/min	50 : 1	±0.2% (±0.5%)*1	
	BXII Series	D-49	2(30)*1～4000 r/min	2000 : 1 (133 : 1)*1	±0.05%	
	BLH Series	D-57	100～3000 r/min	30 : 1	±0.5%	
	BLV Series	D-61	100(80)*2～4000 r/min	40 : 1 (50 : 1)*2	±0.5% (±0.2%)*2	

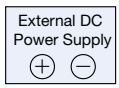
*1 Specification value for analog setting.
*2 Specification value for digital setting.

Selection by Output Power and Frame Size

	Product Name	Reference Page	Output Power				
			Frame Size 42 mm (1.65 in.)	Frame Size 60 mm (2.36 in.)	Frame Size 80 mm (3.15 in.)	Frame Size 90 mm (3.54 in.)	Frame Size 110 mm (4.33 in.)
Brushless Motors	**BMU** Series	D-13		30 W (1/25 HP) 60 W*1 (1/12 HP)	60 W*2 (1/12 HP)	120 W (1/6 HP) 200 W*1 (1/4 HP) 400 W*1 (1/2 HP)	200W*2 (1/4 HP) 400W*2 (1/2 HP)
	BLE2 Series	D-31		30 W (1/25 HP) 60 W*1 (1/12 HP)	60 W*2 (1/12 HP)	120 W (1/6 HP) 200 W*1 (1/4 HP) 400 W*1 (1/2 HP)	200 W*2 (1/4 HP) 400 W*2 (1/2 HP)
	BXII Series	D-49		30 W (1/25 HP)	60 W (1/12 HP)	120 W (1/6 HP)	200 W*3 (1/4 HP) 400 W*3 (1/2 HP)
	BLH Series	D-57	15 W (1/50 HP)	30 W (1/25 HP)	50 W (1/15 HP)	100 W (1/8 HP)	
	BLV Series	D-61					200 W*3 (1/4 HP) 400 W*3 (1/2 HP)

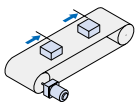
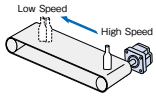
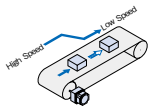
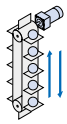
*1 Round shaft type
*2 Combination type
*3 Frame size of the round shaft type is 104mm (4.09 in.).

Selection by Speed Setting Methods

Product Name		Reference Page	Speed Setting Method				
			Digital Setting	Potentiometer Setting: Internal Speed Potentiometer Built-in Potentiometer	Potentiometer Setting: External Speed Potentiometer	External DC Voltage	Control Module Support Software
							
Brushless Motors	**BMU** Series	D-13	●	●			
	BLE2 Series	D-31	●	●	●	●	●
	BXII Series	D-49	●	●	●	●	●
	BLH Series	D-57		●	●	●	
	BLV Series	D-61	●*	●	●	●	●

*Possible when a control module (sold separately) is used.

Selection Based on Functions

Product Name		Reference Page	Function Comparison					
			For Displaying the Speed ↓ Digital Speed Indicator	For Stopping the Motor Quickly ↓ Instantaneous Stop	For Softening Shock during Starting and Stopping ↓ Acceleration and Deceleration Operation	For Operation at Multiple Speeds ↓ Multistep Speed-Change Operation	To Change Motor Speed in Vertical Operation ↓ Load Holding/ Gravitational Operation	To Use Alarm Output ↓ Alarm Output
								
Brushless Motors	**BMU** Series	D-13	●	●	●	4 Speeds		●
	BLE2 Series	D-31	●	●	●	16 Speeds		●
	BXII Series	D-49	●	●	●	16 Speeds	● Electromagnetic Brake Type	●
	BLH Series	D-57	●*1	●	●	2 Speeds (Internal/External switching)		●
	BLV Series	D-61	●*1 *2	●	●	2 Speeds (8 Speeds*2)	● Electromagnetic Brake Type	●

*1 Possible when a speed indicator (**SDM496**, accessory) is used.
*2 Possible when a control module (sold separately) is used.