for a greener tomorrow

MITSUBISHI ELECTRIC
Changes for the Better

FACTORY AUTOMATION

MITSUBISHI GEARED MOTORS PRODUCT CATALOG

GLOBAL IMPACT OF MITSUBISHI ELECTRIC

Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximising the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following

Energy and Electric Systems
A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices
A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance
Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems
Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems
Maximising productivity and efficiency with cutting-edge automation technology.

Geared Motor

The epitome of advanced technology, demonstrating its strength in a wide range of industrial fields

CONTENTS

Geared Motor

Premium Geared Motor Series

Premium Geared Motor Series
Premium efficiency class IE3
(0.75 kW to 55 kW)

Geared Motor Series

Geared Motor Series
(25 W to 0.4 kW)

Parallel shaft type

GM-SP Series
- Output range: 3-phase, 0.75 to 2.2 kW
- Gear ratio: 1/3 to 1/450
- For uniform loads
- Service factor: 1.0

GM-DP Series
- Output range: 3-phase, 0.75 to 7.5 kW
- Gear ratio: 1/3 to 1/1200
- For medium loads: Model GM-DP Service factor: 1.4
- For heavy loads: Model GM-DDP Service factor: 2.0

GM-LJP Series
- Output range: 3-phase, 11 to 37 kW
- Gear ratio: 1/3 to 1/60
- For medium loads: Model GM-LJP Service factor: 1.4
- For heavy loads: Model GM-LLJP Service factor: 2.0

GM-PJP Series
- Output range: 3-phase, 3.7 to 55 kW
- Gear ratio: 1/5 to 1/240
- For uniform loads to heavy loads
- Service factor: 1.0 to 2.0

Right angle shaft type

GM-SSYP Series
- Output range: 3-phase, 0.75 to 2.2 kW
- Gear ratio: 1/7.5 to 1/60
- For uniform loads
- Service factor: 1.0

GM-SHYP Series
- Output range: 3-phase, 0.75 to 2.2 kW
- Gear ratio: 1/5 to 1/240
- For medium loads
- Service factor: 1.4

GM-DYP Series
- Output range: 3-phase, 3.7 to 11 kW
- Gear ratio: 1/15 to 1/100
- For medium loads
- Service factor: 1.4

Parallel shaft type

GM-S Series
- Output range: 3-phase and single-phase, 0.1 to 0.4 kW
- Gear ratio: 1/3 to 1/1200
- For uniform loads
- Service factor: 1.0

GM-D Series
- Output range: 3-phase, 0.4 kW
- Gear ratio: 1/3 to 1/1200
- For medium loads: Model GM-D Service factor: 1.4
- For heavy loads: Model GM-DD Service factor: 2.0

GM-J2 Series
- Output range: 3-phase and single-phase, 25 to 90 W
- Gear ratio: 1/3 to 1/2400
- For uniform loads
- Service factor: 1.0

Right angle shaft type

GM-SSY Series
- Output range: 3-phase and single-phase, 0.1 to 0.4 kW
- Gear ratio: 1/7.5 to 1/60
- For uniform loads
- Service factor: 1.0

GM-SHY Series
- Output range: 3-phase and single-phase, 0.1 to 0.4 kW
- Gear ratio: 1/5 to 1/1440
- For medium loads
- Service factor: 1.4

Premium GEARED

Premium Geared Motor Series
Premium Efficiency Class IE3

In response to the international trend toward prevention of global warming, the introduction of laws and regulations requiring the manufacture and sale of high-efficiency motors is being promoted around the world. Mitsubishi's Premium Geared Motor Series conforms to the Top Runner Program standards in the Act on the Rational Use of Energy, which has been started in 2015 in Japan.

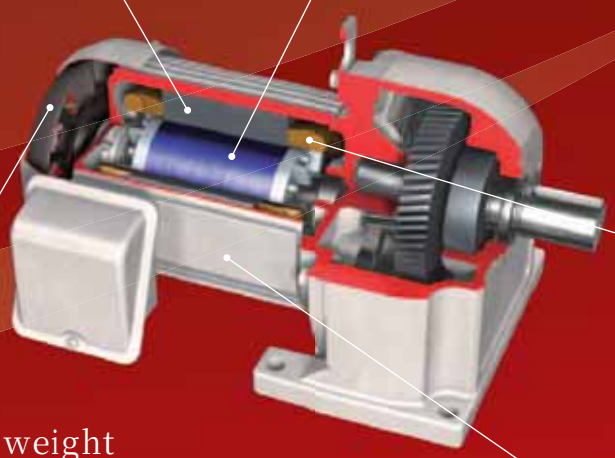
Structure of Premium Geared Motor

Iron loss

A material with low loss is used for the iron core. The magnetic flux flow has been re-examined to optimize its shape.

Mechanical loss

The cooling fan has a shape optimized in consideration of the balance between cooling performance and mechanical loss.



Secondary copper loss

The shape of the rotor slots is designed to reduce resistance during operation and improve the starting characteristics. The number of slots has been optimized as well.

Primary copper loss

The space factor of the electric wire has been improved to increase its sectional area and reduce the crossover length, thereby suppressing resistance.

Control of increase in weight

For 7.5-kW or lower models, light aluminum frames have been adopted without increasing the motor frame size. For 11-kW or higher models, the frames were changed from cast iron frames to steel sheet frames. The increase in weight caused by efficiency improvement has been minimized by these measures.

Frame

The use of aluminum frames improves the cooling performance and reduces the temperature (7.5 kW or lower).

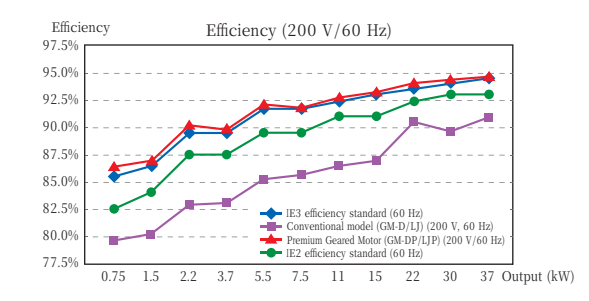
MOTOR Series

Conforming to for the Next Generation

Feature 1

Enhanced energy saving during operation

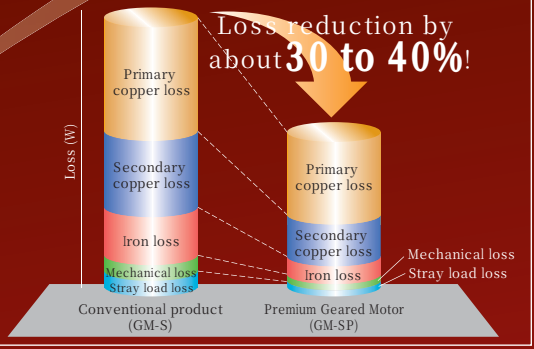
The generated loss has been reduced by 30 to 40% compared to conventional Mitsubishi geared motors. The generated loss of Mitsubishi high-efficiency geared motors (IE2) has been reduced by 15 to 25% to meet the higher premium efficiency standard (IE3), allowing further energy to be saved during operation.



Energy saving

Premium Geared Motors are high-performance, energy-saving motors with reduced losses (primary copper loss, secondary copper loss, iron loss, stray load loss, and mechanical loss). These motors meet the induction motor efficiency class IE3 standards and ensure energy-saving operation of equipment.

Comparison of reduced losses



Feature 2

Interchangeable mounting

The motors in these series have interchangeable mountings with the Mitsubishi conventional geared motors, and existing motors can be replaced easily with any of these motors.

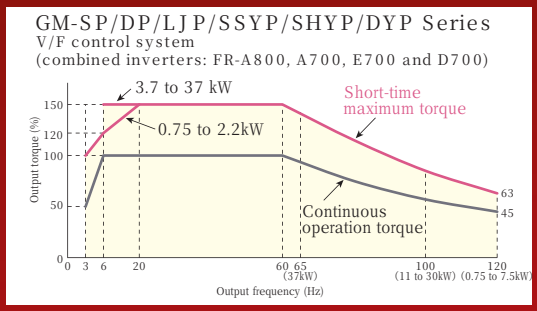
* Excluding the 11-kW, 22-kW, and 30-kW models with a gear ratio of 1/10 in the GM-LJP series and the 30-kW model with a gear ratio of 1/5 in the GM-PJP series

Feature 3

Best matching with inverters

Premium Geared Motors are inverter constant torque motors as a standard.

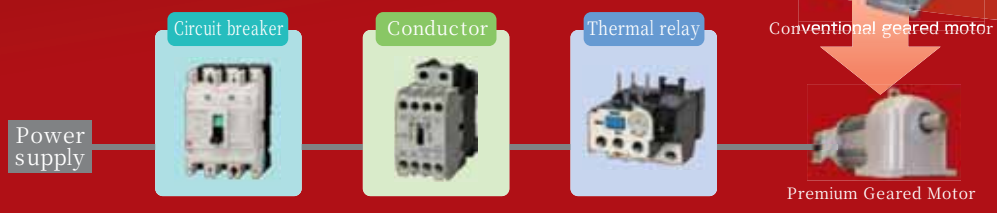
* The constant torque range is limited in some models that are lubricated with grease or oil.



Feature 4

Compatibility with distribution control devices

Since the geared motors are designed for combined use with Mitsubishi's distribution control devices, devices with equivalent specifications to those used for conventional geared motors can be used.



Mitsubishi geared motor series with

Feature 1

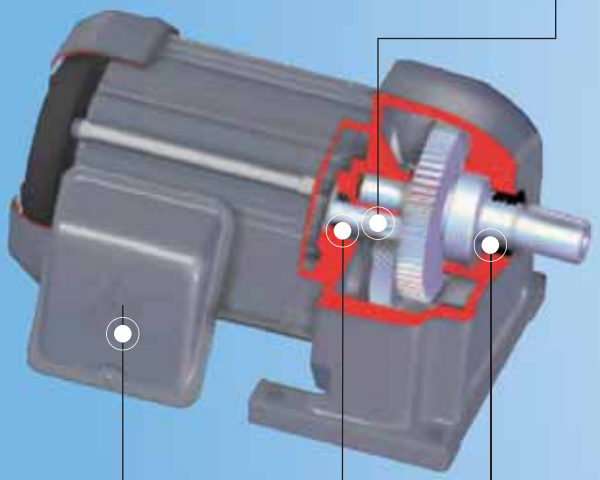
Achieved low noise and low vibration levels that are top class in the industry

High-precision gears (RGC)

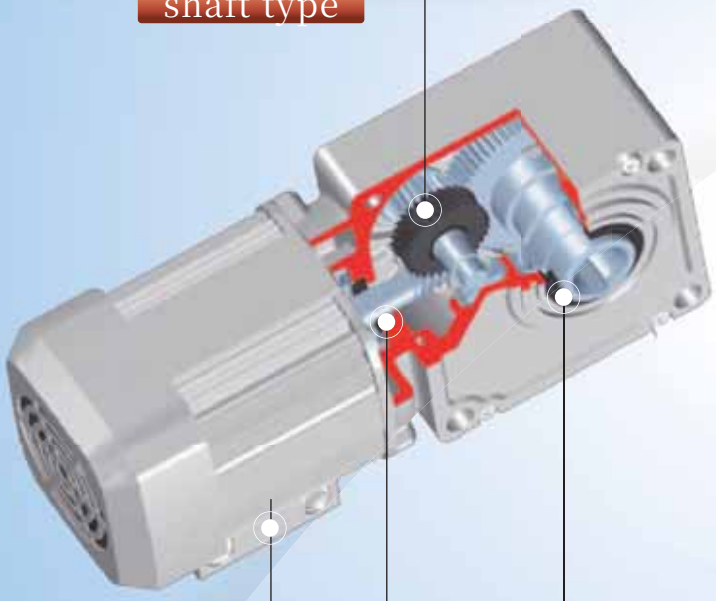
Reduced noise by the use of RGC(Note 1) and special precision machining for the first and second gears

(Note 1) RGC: Abbreviation for Round-bar Gear Cutting
RGC is a technique for gear cutting after hardening, by which high-hardness and high-precision gears can be produced.

Parallel shaft type



Right angle shaft type



Feature 2

Highest priority on ease of use

Terminal box

A terminal box (terminal block) that is safe and easy to use is provided on each motor as a standard. The installation work can be performed smoothly.

* Model GM-LJP, Model GM-J2 with standard specifications, and Model GM-DYP (11 kW) have lug type terminal boxes.

Mounting method (right angle shaft type)

One of the various mounting methods can be selected.

● Foot mounting ● Flange mounting ● Face mounting

GM-SSY/SSYP series models are designed for both flange and face mounting methods.

Terminal box

The terminal box of any model with a brake contains the power circuit.

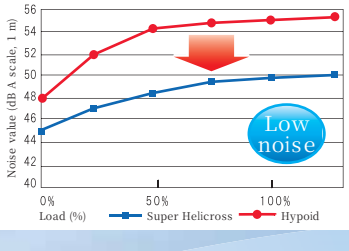
improved noise levels and ease of use

Super Helicross Series

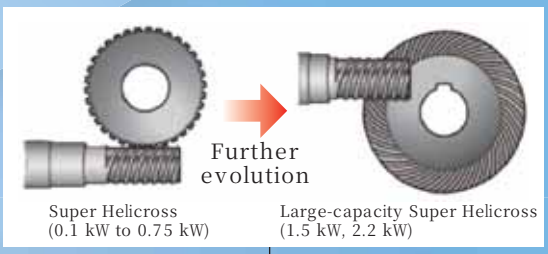
The Super Helicross series are high-precision, super-silent geared motors using the first right-angle“ Super Helicross Gears ”(0.1 to 2.2 kW) in the industry. The RGC technique (0.1 to 0.75 kW) and design technique (Note 2) have been established to provide gears with many features (low noise, low vibration, long life, compactness, and high efficiency) that other gears do not have.

(Note 2) Design technique: The design technique is the Super Helicross Gear simulation technique developed by industry-university joint research, which enabled the optimum design and tool design of tooth surfaces with complicated three-dimensional shapes.

■Noise levels compared to right angle shafts
(Reduction by 3 to 4 dB compared to the conventional Mitsubishi 0.2-kW model)



The Super Helicross series have evolved to an increased capacity of up to 2.2 kW. In addition, rotation irregularities are prevented to transmit power smoothly.



Super Helicross (0.1 kW to 0.75 kW)

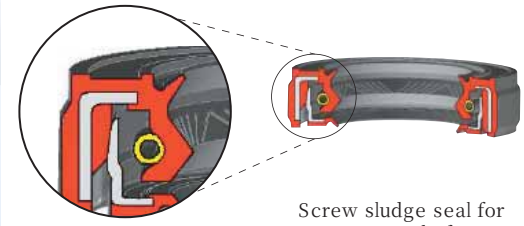
Large-capacity Super Helicross (1.5 kW, 2.2 kW)

Feature 3

Reliability improved by high-quality oil seals

Oil seals

The results of Mitsubishi ’s long-term study on oil seals are reflected in the product. The oil seals demonstrate their excellence in high-temperature environments and during operations with frequent switching between forward and reverse directions. The oil seals for motor shafts and output shafts have been developed specially for each shaft, achieving a sealing capacity that is more than 100 times higher.



Screw sludge seal for motor shaft

Screw seal for output shaft

* These seals are used in the standard and semi-standard models in GM-S, SP, D, DP, SSY, SSYP, SHY and SHYP Series. (Dust- and water-proof type P and DYP Series models use partly different seals.)

Feature 4

Wide range of variations

- Parallel shaft models with gear ratios of 1/3 to 1/1200 and right angle shaft models with gear ratios of 1/5 to 1/1440 are available. The model most suited to the customer ’s purpose can be selected.
- Various series of high-efficiency motors, V/F inverter constant torque motors, pressure-resistant explosion-proof motors, dust- and water-proof motors, and motors conforming to overseas standards are available.

Feature 5

Environment-friendly

The motors in these series do not contain harmful substances.

- Although the restriction on six specific hazardous substances (European RoHS Directive) in electric and electronic equipment does not apply to these motors, these six hazardous substances are not used in these products (Mitsubishi standard products).
- Asbestos is not used in Mitsubishi geared motors.

Excellent inverter characteristics

Feature 6

Excellent characteristics of the inverter drive

A wide constant torque range achieved for standard products

- The constant torque range can be expanded by combining with the Mitsubishi inverter.
- The advanced magnetic flux vector control has constant torque characteristics equivalent to those of constant torque motors that are dedicated to inverter drives.

Output (kW)	Constant torque range (Hz)	
	Magnetic flux vector control	V/F control
0.1 to 0.4	3 to 60	40 to 60
0.75 to 7.5	3 to 60	6 to 60

* The constant torque range of GM-D/DP Series models to be lubricated with oil is limited to 25 to 60 Hz.

Dedicated V/F control for the inverter drive Expanded product line of constant torque motor series (0.4 kW or lower)

- The product line of V/F constant torque motors has been expanded.

Model name		Output (kW)	Constant torque range (Hz)
Parallel shaft type	GM-SZ	0.1 to 0.4	6 to 60
	GM-DZ	0.4	
Right angle shaft type	GM-SSYZ	0.1 to 0.4	6 to 60
	GM-SHYZ		

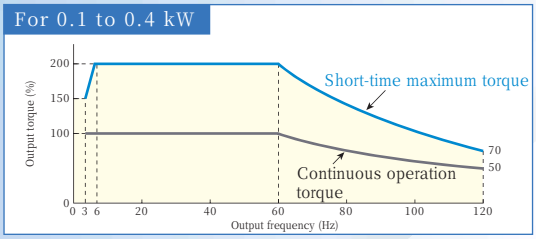
- PLG feedback control models: Feedback control has been achieved by developing a dedicated PLG.
- Expansion of product series that are compatible with pressure-resistant explosion-proof inverters: Combinations with the FR-B3 type, which have magnetic flux vector control, have been included as a menu.

Output torque range

GM-S, GM-D, GM-SSY and GM-SHY Series

Advanced magnetic flux vector control system
(Combined inverters: FR-A800, A700 and E700)

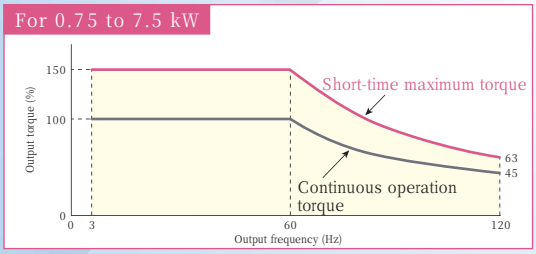
For 0.1 to 0.4 kW



GM-SP, GM-DP, GM-SSYP and GM-SHYP Series

Advanced magnetic flux vector control system
(Combined inverters: FR-A800, A700 and E700)

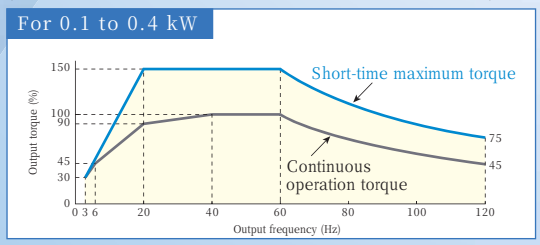
For 0.75 to 7.5 kW



GM-S, GM-D, GM-SSY, GM-SHY and GM-DY Series

V/F control system
(Combined inverters: FR-A800, A700, E700 and D700)

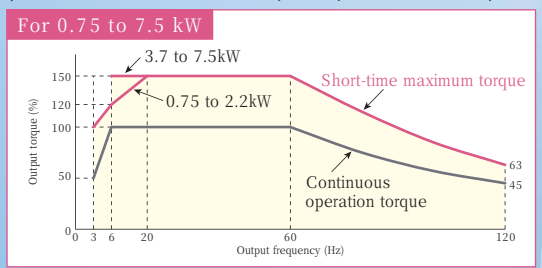
For 0.1 to 0.4 kW



GM-SP, GM-DP, GM-SSYP and GM-DYP Series

V/F control system
(Combined inverters: FR-A800, A700, E700 and D700)

For 0.75 to 7.5 kW



Changes in torque boost for V/F control of Premium Geared Motors

Capacity (kW)	Initial value			Value after setting change (%)
	FR-A800(%)	FR-E700(%)	FR-D700(%)	
0.75	6	6	6	4
1.5	4	4	4	5
2.2	4	4	4	4
3.7	4	4	4	4.5
5.5	3	3(2)	3(2)	3.7
7.5	3	3(2)	3(2)	4.5
11	2	2	2	3.3
15	2	2	2	3
22	2	—	—	3.4

* The values in parentheses apply when the electronic thermal setting is changed for the use of constant torque motor.

Combination of Premium Geared Motors (IE3) and inverters

Motor model	Output (kW)	Number of poles	Frame number	Applicable inverter *1 *2	Usable frequency range	
					Grease lubrication	Oil lubrication
GM-SP/DP GM-LJP/PJP GM-SSYP/SHYP GM-DYP	0.75	4	80M	FR-A820-0.75K	3 to 120Hz	25 to 70Hz
	1.5		90L	FR-A820-1.5K		
	2.2		100L	FR-A820-2.2K		
	3.7		112M	FR-A820-3.7K	3 to 85Hz	25 to 70Hz *3
	5.5		132S	FR-A820-5.5K	3 to 75Hz	
	7.5		132M	FR-A820-7.5K	3 to 70Hz	
	11		160M	FR-A820-11K		25 to 70Hz
	15		160L	FR-A820-15K		
	22		180M	FR-A820-22K		
	30		180LD	FR-A820-30K		
	37		200LD	FR-A820-37K		25 to 65Hz
	45		200LD	FR-A820-45K		
	55		225S	FR-A820-55K		

*1 To 400 V class motors, the inverters FR-A840-○○K are applicable.
*2 FR-A700, FR-E700 and FR-D700 series are also applicable.
*3 The usable frequency range of 3.7- to 7.5-kW models in GM-DYP series is 3 to 70 Hz.
*4 The lubrication method varies depending on the gear ratio. For more information, see the lineup of models.

Setting of parameter constant

Perform auto-tuning to run any of the motors and inverters shown above by advanced magnetic flux vector control.

●Remarks

(1) When replacing an inverter constant torque geared motor (for V/F control) in GM-DZ Series with Premium Geared Motor in GM-DP Series, specify the **lubrication method as grease lubrication** because the series includes models to be lubricated with oil (their low frequencies are limited).

(2) When replacing an inverter constant torque geared motor (for V/F control) in GM-LJZ Series with Premium Geared Motor in GM-LJP Series, confirm whether the desired model is interchangeable with respect to installation. Some models in the series are not interchangeable. (11-kW models with gear ratios of 1/3 and 1/5 and 15-kW models with gear ratios of 1/10 and 1/30)
GM-LJP Series models are designed for oil lubrication (their low frequencies are limited). If continuous operation in a low-speed operation area (3 to 25 Hz) is required, specify a model to be lubricated with grease. However, the upper limit of usable frequency is 60 Hz.

(3) 400 V class Premium Geared Motors are provided with reinforced insulation as a measure against surge voltage. However, when the voltage is 440 V AC or more, connect a surge voltage suppression filter on the secondary side of the inverter.

Sensorless Servo Series

SENSORLESS SERVO | S-PMseries

S-PM geared motors achieve stable speed control and energy saving through sensorless control.

S-PM (Sensorless-Permanent Magnet) is a product developed by combining a permanent magnet motor and Mitsubishi 's unique sensorless control technique (Sensorless drive).

GV-S 0.1kW

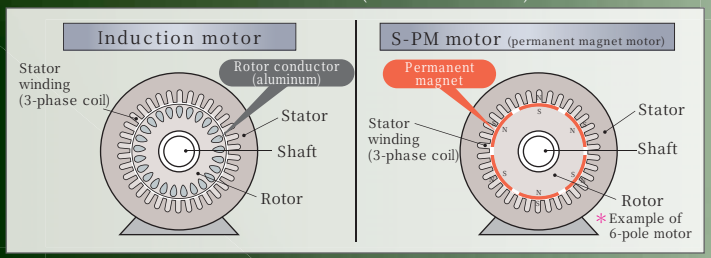
FR-D700-G

FR-E700EX

What is the S-PM motor (permanent magnet motor)?

The S-PM motor is a synchronous motor having a strong permanent magnet (high-performance ferrite magnet) in the rotor.
Unlike induction motors, the motor does not show slipping (drop in rotation speed under increased load), and it is suitable for high accuracy speed control. Since the rotor is a permanent magnet, it does not cause the secondary copper loss (rotor loss) seen in induction motors and can keep a high motor efficiency.

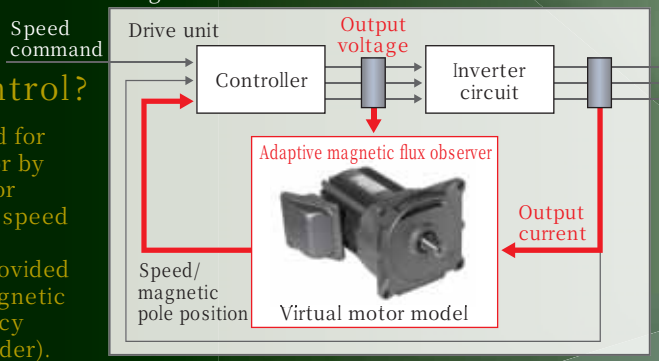
Motor structure (sectional view)



What is sensorless control?

Sensorless control refers to a method for controlling a permanent magnet motor by using a drive unit to estimate the rotor position (magnetic pole position) and speed instead of using a sensor (encoder).
The PM sensorless vector control, provided with Mitsubishi 's unique adaptive magnetic flux observer *1, enables high-accuracy speed control without a sensor (encoder).

Image of PM sensorless vector control



*1 The adaptive magnetic flux observer has a virtual motor model in the drive unit and controls the speed by detecting the speed and magnetic pole position of the motor based on the motor voltage and current.

Features of S-PM geared motors

Feature 1

A speed control equivalent to servo motors is achieved without sensors.

- The combination of the S-PM motor (permanent magnet motor) and Mitsubishi 's unique PM sensorless vector control enables high-accuracy speed control that generates lesser speed fluctuations even under variable load conditions.
- The speed regulation is close to that of servo motors at ±0.05%. The motors can be used for high-accuracy transfer systems for semiconductors and LC production lines, where conventional induction motors are unusable.

Speed regulation is ±0.05%
* In the case of digital input

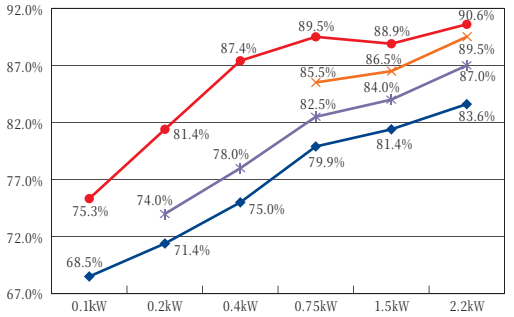
Feature 2

High efficiency conforming to IE3 motor standard

- The S-PM motors are high-performance, energy-saving motors with strong permanent magnets (high-performance ferrite magnets) in the rotors. The motors clear the IE3 high efficiency standard for induction motors and can save the energy consumption of equipment.
- The S-PM geared motors are magnet motors and are not subject to the high efficiency regulations for induction motors.

IE3 Conforming to level

Comparison of motor efficiency



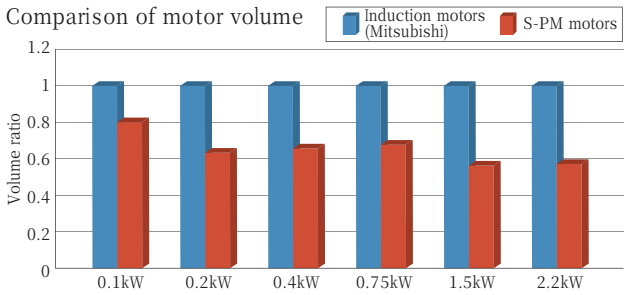
* Comparison of efficiency of single motors (without reducers)
* Values of induction motors obtained at 220 V, 60 Hz

Feature 3

Compact

- The S-PM motors are downsized by 20 to 40% compared to conventional induction motors through its optimized design and the use of permanent magnet rotors. The compact motors allow for the overall size and weight of equipment to be reduced.

Comparison of motor volume



Comparison of volume of motor unit
(comparison with Mitsubishi 's induction motors)

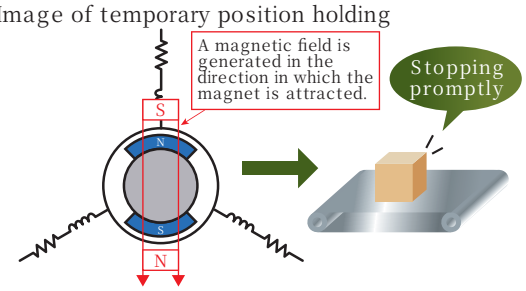
Feature 4

Ease of use achieved by removing sensors

- The control by the permanent magnet motor does not require sensors (encoders). The removal of sensors allows wiring to be saved and can also improve reliability.
- The preliminary excitation function*1 enables the motor to temporarily stop in position. The function can be used as a temporary holding brake.*2

*1: The preliminary excitation refers to the control of DC excitation to generate a holding torque at stop. The holding torque is about 50% (default value). The value can be adjusted by parameter settings (0 to 150%). However, a torque of 50% or more will be short time rating.
*2: For lifts, use motors with brakes. These geared motors do not have servo lock functions.

Image of temporary position holding



Preliminary excitation function

* Please see the separate Mitsubishi Sensorless Servo General Catalog for details on the Sensorless Servo Series S-PM geared motor.

Excellent dust- and water-proof

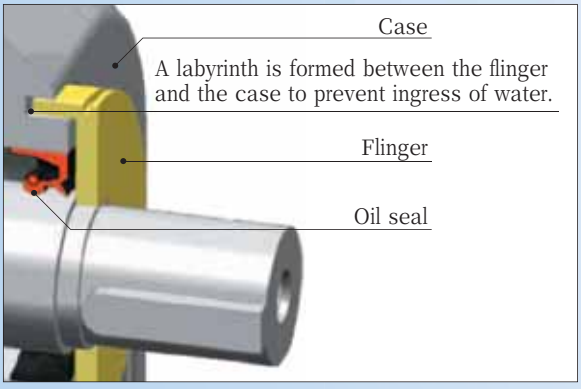
W type (IP65) (0.1 to 2.2 kW)

Feature 1

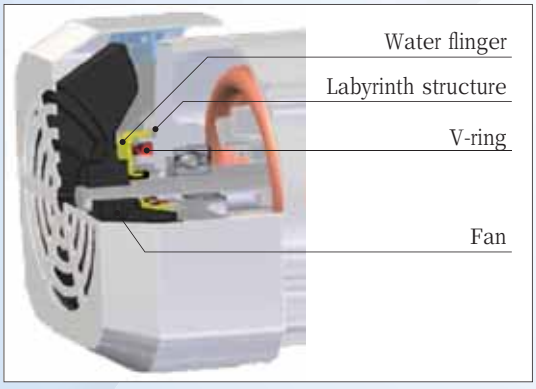
Excellent seal structure

- The passed-through parts of output and motor shafts are sealed with Mitsubishi's unique protective structure, which shows excellent dust- and water-proof performance.
- All the passed-through parts of the output shaft, cable outlets, etc. conform to IP65.

Output shaft side



Motor shaft side



Feature 2

Conforms to premium efficiency (0.75 to 2.2 kW)

- Water-proof type motors also meet the IE3 premium efficiency standard.
- All the output shafts, shaft end keys, and external bolts are made of stainless steel.

Feature 3

Wide range of variations

- A lineup of parallel and right angle shaft series
- A suitable model can be selected from a wide range of output (from 0.1 to 2.2 kW) and gear ratios.
- Models with brakes are also available as standard models.

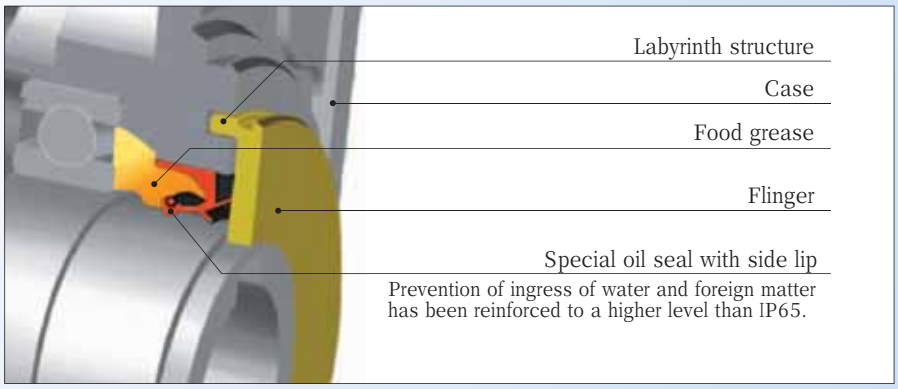
performance

P type (IP67) (0.1 to 0.4 kW)

Feature 1

Reinforced protective structure

●The output shaft unit has a multiple seal structure consisting of a special oil seal and a flinger to reinforce the protective construction. Food grease (USDA H1 grease) is used to lubricate the oil seal.



Feature 2

Hygienic

●To prevent the accumulation of foreign matter, the frame surface is smoothed so that the frame can be cleaned easily.
●Totally-enclosed, self-cooled type motors have been adopted to eliminate the use of fans.

Feature 3

Resistant to high-pressure washing

●All parts, including the passed through parts of the output shaft, have high water-proof performance conforming to IP67, and the motors can be cleaned by high-pressure washing used for cleaning of food machinery.

Feature 4

Can be used in clean rooms

●Dust is generated only from the output shaft, achieving low dust generation.
●Since cooling fans are not used, the motors do not disperse powder dust or disturb the airflow in a clean room.
●Motors with brakes have completely sealed structures and can be used safely.

How to read the model names

Premium Geared Motor Series

Parallel shaft type

■GM-SP Series (for uniform loads)

GM		SP	F	B	
Geared motor	_	SP: SP Series	None: Foot mounting type F: Flange type	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65)

■GM-DP Series (for medium loads)

GM		DP	F	B	
Geared motor	_	DP: DP Series DDP: DDP Series (Note 1)	None: Foot mounting type F: Flange type (Note 2)	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65)

* Note 1: DDP Series is designed for frequent heavy loads
* Note 2: 3.7-kW models with a gear ratio of 1/120, 5.5-kW models with gear ratios of 1/60 to 1/120 and 7.5-kW models with gear ratios of 1/45 to 1/90 of vertical type (V) can be manufactured.
Models with other gear ratios are available in flange and vertical type. (The oil filler plug and the air breather are replaced with each other.)

■GM-LJP Series (for medium loads)

GM		LJP	V	B
Geared motor	_	LJP: LJP Series LLJP: LLJP Series (Note 3)	None: Foot mounting type V: Vertical type F: Flange type	None: Without brake B: With brake (11 to 22 kW) (Note 4)

* Note 3: LLJP Series is designed for frequent heavy loads.
* Note 4: 22-kW models with a gear ratio of 1/45 and 30-kW or more models with brakes are not available.

■GM-PJP Series (for uniform to heavy loads)

GM		PJP	V	B
Geared motor	_	PJP: PJP Series	None: Foot mounting type V: Vertical type F: Flange type	None: Without brake B: With brake (3.7 to 22 kW) (Note 5)

* Note 5: 22-kW models with a gear ratio of 1/45 and 30-kW or more models with brakes are not available.

Right angle shaft type

■GM-SSYP Series (for uniform loads)

GM		SSYP	F	B			R	H
Geared motor	_	SSYP: SSYP Series	F: Both flange type and face mounting	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65)	_	R: Right angle geared motor	H: Hollow shaft

■GM-SHYP Series (for medium loads)

GM		SHYP	F	B			R	H
Geared motor	_	SHYP: SHYP Series	None: Foot mounting type F: Flange type M: Face mounting	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65)	_	R: Right angle geared motor	L: Left shaft R: Right shaft T: Both shafts H: Hollow shaft

* Note 6: The positions of shafts, right and left, are viewed from the motor side. Models of foot mounting type are manufactured with solid shafts.

■GM-DYP Series (for medium loads)

GM		DYP	F	B		R	H
Geared motor	_	DYP: DYP Series	F: Flange type M: Foot mounting	None: Without brake B: With brake	_	R: Right angle geared motor	H: Hollow shaft

Geared Motor Series

Parallel shaft type

■GM-S Series (for uniform loads)

GM	_	S	F	S	B	
Geared motor		S: S Series SZ: Inverter constant torque	None: Foot mounting type F: Flange type	None: 3-phase S: Single-phase	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65)

The single-phase motors are designed only for indoor use.

■GM-D Series (for medium loads)

GM	_	D	F	B	
Geared motor		D: D Series DD: DD Series (Note 1) DZ: V/F control inverter constant torque DZ3: Magnetic flux vector control inverter constant torque (only explosion-proof type) DT: V/F control inverter reduced torque (only explosion-proof type)	None: Foot mounting type F: Flange (Note 2)	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65) X: Pressure-resistant explosion-proof type H: High-performance energy-saving type

* Note 1: DDP Series is designed for frequent heavy loads
* Note 2: 3.7-kW models with a gear ratio of 1/120, 5.5-kW models with gear ratios of 1/60 to 1/120 and 7.5-kW models with gear ratios of 1/45 to 1/90 of vertical type (V) can be manufactured.
Models with other gear ratios are available in flange and vertical type. (The oil filler plug and the air breather are replaced with each other.)

■GM-J2 Series (for uniform loads)

●Geared motor

GM	_	J2	S	B	
Geared motor		J2: J2 Series	None: 3-phase S: Single-phase R: Single-phase reversible	None: Without brake B: With brake	None: Without terminal box T: With small terminal box W: With large terminal box

●Options

GL-80	Mounting foot (for 25 W)
GL-90	Mounting foot (for 40 to 90 W)

Right angle shaft type

■GM-SSY Series (for uniform loads)

GM	_	SSY	F	S	B		_	R	H
Geared motor		SSY: SSY Series SSYZ: Inverter constant torque	F: Both flange type and face mounting	None: 3-phase S: Single-phase	None: Without brake B: With brake	None: Standard type W: Water-proof type (IP65) P: Water-proof type (IP67)		R: Right angle geared motor	H: Hollow shaft

The single-phase motors are designed only for indoor use.

■GM-SHY Series (for medium loads)

GM	_	SHY	F	S	B		_	R	H
Geared motor		SHY: SHY Series SHYZ: Inverter constant torque	None: Foot mounting type F: Flange type M: Face mounting	None: 3-phase S: Single-phase	None: Without brake B: With brake	None: Standard type X: Pressure-resistant explosion-proof type H: High-performance energy-saving type W: Water-proof type (IP65) P: Water-proof type (IP67) Z3X: Magnetic flux vector control inverter constant torque (only explosion-proof type) TX: V/F control inverter reduced torque (only explosion-proof type)		R: Right angle geared motor	L: Left shaft R: Right shaft T: Both shafts H: Hollow shaft

The single-phase motors are designed only for indoor use.

* Note 6:
The positions of shafts, right and left, are viewed from the motor side. Models of foot mounting type are manufactured with solid shafts.

Lineup of models (parallel shaft type)

GM-S and SP Series

(Foot mounting) Service factor 1.0

Output shaft rotation speed (r/min)			50Hz	500	300	150	100	75	60	50	37.5	30	25	18.8	15	12.5	9.4	7.5	5.6	4.2	3.3	2.8	2.1	1.7	1.3
			60Hz	600	360	180	120	90	72	60	45	36	30	22.5	18	15	11.3	9	6.7	5	4	3.3	2.5	2	1.5
Specifications			Gear ratio / Output	1/3	1/5	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80	1/100	1/120	1/160	1/200	1/270	1/360	1/450	1/540	1/720	1/900	1/1200
Foot mounting	Without brake	3-phase	0.1kW	●A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	●C	●C	●C	●EM	●EM	●EM	●GM	●GM	●GM	●GM
			0.2kW	●A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	●E	●E	●E	●GM	●GM	●GM	●JM	●JM	●JM	●JM
			0.4kW	●B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	●G	●G	●G	●JM	●JM	●JM	●LM	●LM	●LM	●LM
			0.75kW	●D	●D	●D	●D	●D	●D	●D	●E	●E	●G	●G	●G	●J	●J	●J	○LM	○LM	○LM				
			1.5kW	●F	●F	●F	●F	●F	●F	●F	●G	●G	●J	●J	●J	●L	●L	●L							
			2.2kW	●H	●H	●H	●H	●H	●H	●H	●J	●J	●L	●L	●L										
		Single-phase	0.1kW	○A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	□C	□C	□C	□EM	□EM	□EM	□GM	□GM	□GM	□GM
			0.2kW	○A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	□E	□E	□E	□GM	□GM	□GM	□JM	□JM	□JM	□JM
			0.4kW	○B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	□G	□G	□G	□JM	□JM	□JM	□LM	□LM	□LM	□LM
	With brake	3-phase	0.1kW	●A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	●C	●C	●C	●EM	●EM	●EM	●GM	●GM	●GM	●GM
			0.2kW	●A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	●E	●E	●E	●GM	●GM	●GM	●JM	●JM	●JM	●JM
			0.4kW	●B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	●G	●G	●G	●JM	●JM	●JM	●LM	●LM	●LM	●LM
			0.75kW	●D	●D	●D	●D	●D	●D	●D	●E	●E	●G	●G	●G	●J	●J	●J	○LM	○LM	○LM				
			1.5kW	●F	●F	●F	●F	●F	●F	●F	●G	●G	●J	●J	●J	●L	●L	●L							
			2.2kW	●H	●H	●H	●H	●H	●H	●H	●J	●J	●L	●L	●L										
		Single-phase	0.1kW	○A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	□C	□C	□C	□EM	□EM	□EM	□GM	□GM	□GM	□GM
			0.2kW	○A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	□E	□E	□E	□GM	□GM	□GM	□JM	□JM	□JM	□JM
			0.4kW	○B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	□G	□G	□G	□JM	□JM	□JM	□LM	□LM	□LM	□LM

Notes) 1. ● In-stock ○ Short-delivery (*) □ Make-to-order
* When placing an order for 10 units or more of one model (4 units or more of a model with a high gear ratio of 1/270 or more), consult us in advance.
2. Voltage: 3-phase: 200/200/220 V, 50/60/60 Hz Single-phase: 100/100 V, 50/60 Hz
3. Lubrication: All models must be lubricated only with grease (these models will be delivered filled with grease).
4. The alphabet on the right side of each box indicates the gear size.
5. 0.1- to 0.4-kW models are in GM-S Series, and 0.75- to 2.2-kW models are in GM-SP Series.

GM-S and SP Series

(With flange) Service factor 1.0

Output shaft rotation speed (r/min)			50Hz	500	300	150	100	75	60	50	37.5	30	25	18.8	15	12.5	9.4	7.5	5.6	4.2	3.3	2.8	2.1	1.7	1.3
			60Hz	600	360	180	120	90	72	60	45	36	30	22.5	18	15	11.3	9	6.7	5	4	3.3	2.5	2	1.5
Specifications			Gear ratio / Output	1/3	1/5	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80	1/100	1/120	1/160	1/200	1/270	1/360	1/450	1/540	1/720	1/900	1/1200
Flange mounting	Without brake	3-phase	0.1kW	●A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	●C	●C	●C	○EM	○EM	○EM	○GM	○GM	○GM	○GM
			0.2kW	●A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	●E	●E	●E	○GM	○GM	○GM	○JM	○JM	○JM	○JM
			0.4kW	●B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	○G	○G	○G	○JM	○JM	○JM	○LM	○LM	○LM	○LM
			0.75kW	●D	●D	●D	●D	●D	●D	●D	●E	●E	○G	○G	○G	○J	○J	○J	○LM	○LM	○LM				
			1.5kW	○F	○F	○F	○F	○F	○F	○F	○G	○G	○J	○J	○J	○L	○L	○L							
			2.2kW	○H	○H	○H	○H	○H	○H	○H	○J	○J	○L	○L	○L										
		Single-phase	0.1kW	○A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	□C	□C	□C	□EM	□EM	□EM	□GM	□GM	□GM	□GM
			0.2kW	○A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	□E	□E	□E	□GM	□GM	□GM	□JM	□JM	□JM	□JM
			0.4kW	○B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	□G	□G	□G	□JM	□JM	□JM	□LM	□LM	□LM	□LM
	With brake	3-phase	0.1kW	○A	●A	●A	●A	●A	●A	●A	●A	●A	●B	●B	●B	●C	●C	●C	○EM	○EM	○EM	○GM	○GM	○GM	○GM
			0.2kW	○A	●A	●A	●A	●A	●A	●A	●B	●B	●C	●C	●C	●E	●E	●E	○GM	○GM	○GM	○JM	○JM	○JM	○JM
			0.4kW	○B	●B	●B	●B	●B	●B	●B	●C	●C	●E	●E	●E	○G	○G	○G	○JM	○JM	○JM	○LM	○LM	○LM	○LM
			0.75kW	●D	●D	●D	●D	●D	●D	●D	●E	●E	○G	○G	○G	○J	○J	○J	○LM	○LM	○LM				
			1.5kW	○F	○F	○F	○F	○F	○F	○F	○G	○G	○J	○J	○J	○L	○L	○L							
			2.2kW	○H	○H	○H	○H	○H	○H	○H	○J	○J	○L	○L	○L										
		Single-phase	0.1kW	□A	□A	□A	□A	□A	□A	□A	□A	□A	□B	□B	□B	□C	□C	□C	□EM	□EM	□EM	□GM	□GM	□GM	□GM
			0.2kW	□A	□A	□A	□A	□A	□A	□A	□B	□B	□C	□C	□C	□E	□E	□E	□GM	□GM	□GM	□JM	□JM	□JM	□JM
			0.4kW	□B	□B	□B	□B	□B	□B	□B	□C	□C	□E	□E	□E	□G	□G	□G	□JM	□JM	□JM	□LM	□LM	□LM	□LM

Notes) 1. ● In-stock ○ Short-delivery (*) □ Make-to-order
* When placing an order for 10 units or more of one model (4 units or more of a model with a high gear ratio of 1/270 or more), consult us in advance.
2. Voltage: 3-phase: 200/200/220 V, 50/60/60 Hz Single-phase: 100/100 V, 50/60 Hz
3. Lubrication: All models must be lubricated only with grease (these models will be delivered filled with grease).
4. The alphabet on the right side of each box indicates the gear size.
5. 0.1- to 0.4-kW models are in GM-S Series, and 0.75- to 2.2-kW models are in GM-SP Series.

Lineup of models (parallel shaft type)

GM-D and DP Series

(Foot mounting) Service factor 1.4

Output shaft rotation speed (r/min)		50Hz	500	300	150	100	75	60	50	37.5	33	30	25	18.8	16.7	15	12.5	9.4	7.5	5.6	4.2	3.3	2.8	2.1	1.7	1.3
		60Hz	600	360	180	120	90	72	60	45	40	36	30	22.5	20	18	15	11.3	9	6.7	5	4	3.3	2.5	2	1.5
Specifications		Gear ratio / Output	1/3	1/5	1/10	1/15	1/20	1/25	1/30	1/40	1/45	1/50	1/60	1/80	1/90	1/100	1/120	1/160	1/200	1/270	1/360	1/450	1/540	1/720	1/900	1/1200
Foot mounting	3-phase	Without brake	0.4kW	●D	●D	●D	●D	●D	●D	●D	●D		●D	●G	●G		●G	●J	○J	○J	○LM	○LM	○LM	○MM	○MM	○MM	○MM
			0.75kW	●F	●F	●F	●F	●F	●F	●F	●G		●G	●J	●J		●J	●L	○L	○L	○MM	○MM	○MM	○NM	○NM	○NM	○NM
			1.5kW	●H	●H	●H	●H	●H	●H	●H	●J		●J	●L	●L		●L	●M	○M	○M	○NM	○NM	○NM				
			2.2kW	●J	●J	●J	●J	●J	●J	●J	●L		●L	●M	●M		●M	●N	○N	○N							
			3.7kW	●L	●L	●L	●L	●L	●L	●L	●M		●M	●N	●N		●N	●TN									
			5.5kW	●M	●M	●M	●M	●M	●M	●M	●N		●N	●TM		●TN		●TP									
			7.5kW	●M	●M	●M	●M	●M	●N	●N		●TM		●TN		●TP											
		With brake	0.4kW	●D	●D	●D	●D	●D	●D	●D	●D		●D	●G	●G		●G	○J	○J	○J	○LM	○LM	○LM	○MM	○MM	○MM	○MM
			0.75kW	●F	●F	●F	●F	●F	●F	●F	●G		●G	●J	●J		●J	●L	○L	○L	○MM	○MM	○MM	○NM	○NM	○NM	○NM
			1.5kW	●H	●H	●H	●H	●H	●H	●H	●J		●J	●L	●L		●L	●M	○M	○M	○NM	○NM	○NM				
			2.2kW	●J	●J	●J	●J	●J	●J	●J	●L		●L	●M	○M		○M	○N	○N	○N							
			3.7kW	●L	●L	●L	●L	●L	●L	●L	●M		●M	●N	●N		●N	●TN									
			5.5kW	●M	●M	●M	●M	●M	●M	●M	●N		●N	●TM		●TN		●TP									
			7.5kW	●M	●M	●M	●M	●M	●N	●N		●TM		●TN		●TP											

Notes) 1. ● In-stock ○ Short-delivery (*) * When placing an order for 10 units or more of one model (4 units or more of a model with a high gear ratio of 1/270 or more or any of 3.7- to 7.5-kW models), consult us in advance.
2. Voltage: 3-phase: 200/200/220 V, 50/60/60 Hz
3. Lubrication: Lubrication only with grease (These models will be delivered filled with grease.)
Lubrication only with oil (These models will be delivered without oil. Pour the oil recommended by Mitsubishi.)
4. The alphabet on the right side of each box indicates the gear size.
5. 0.4-kW models are in GM-D Series, and 0.75- to 7.5-kW models are in GM-DP Series.

GM-D and DP Series

(With flange) Service factor 1.4

Foot mounting	3-phase		Output shaft rotation speed (r/min) 50Hz	500	300	150	100	75	60	50	37.5	33	30	25	18.8	16.7	15	12.5	9.4	7.5	5.6	4.2	3.3	2.8	2.1	1.7	1.3
			60Hz	600	360	180	120	90	72	60	45	40	36	30	22.5	20	18	15	11.3	9	6.7	5	4	3.3	2.5	2	1.5
			Specifications Gear ratio / Output	1/3	1/5	1/10	1/15	1/20	1/25	1/30	1/40	1/45	1/50	1/60	1/80	1/90	1/100	1/120	1/160	1/200	1/270	1/360	1/450	1/540	1/720	1/900	1/1200
✓	✓	Without brake	0.4kW	○D	○D	●D	●D	●D	●D	●D	●D		●D	○G	○G		○G	○J	○J	○J	○LM	○LM	○LM	○MM	○MM	○MM	○MM
✓	✓	Without brake	0.75kW	○F	○F	●F	●F	●F	●F	●F	●G		●G	○J	○J		○J	○L	○L	○L	○MM	○MM	○MM	○NM	○NM	○NM	○NM
✓	✓	Without brake	1.5kW	○H	○H	●H	●H	●H	●H	●H	●J		●J	○L	○L		○L	○M	○M	○M	○NM	○NM	○NM				
✓	✓	Without brake	2.2kW	○J	○J	●J	●J	●J	●J	●J	●L		●L	○M	○M		○M	○N	○N	○N							
✓	✓	Without brake	3.7kW	○L	○L	●L	●L	●L	●L	●L	●M		●M	○N	○N		○N	○TN									
✓	✓	Without brake	5.5kW	○M	○M	●M	●M	●M	●M	●M	●N		●N	○TM		○TN		○TP									
✓	✓	Without brake	7.5kW	○M	○M	●M	●M	●M	●N	●N		○TM		○TN		○TP											
✓	✓	With brake	0.4kW	○D	○D	○D	○D	○D	○D	○D	○D		○D	○G	○G		○G	○J	○J	○J	○LM	○LM	○LM	○MM	○MM	○MM	○MM
✓	✓	With brake	0.75kW	○F	○F	○F	○F	○F	○F	○F	○G		○G	○J	○J		○J	○L	○L	○L	○MM	○MM	○MM	○NM	○NM	○NM	○NM
✓	✓	With brake	1.5kW	○H	○H	○H	○H	○H	○H	○H	○J		○J	○L	○L		○L	○M	○M	○M	○NM	○NM	○NM				
✓	✓	With brake	2.2kW	○J	○J	○J	○J	○J	○J	○J	○L		○L	○M	○M		○M	○N	○N	○N							
✓	✓	With brake	3.7kW	○L	○L	○L	○L	○L	○L	○L	○M		○M	○N	○N		○N	○TN									
✓	✓	With brake	5.5kW	○M	○M	○M	○M	○M	○M	○M	○N		○N	○TM		○TN		○TP									
✓	✓	With brake	7.5kW	○M	○M	○M	○M	○M	○N	○N		○TM		○TN		○TP											

Notes) 1. ● In-stock ○ Short-delivery (*) * When placing an order for 10 units or more of one model (4 units or more of a model with a high gear ratio of 1/270 or more or any of 3.7- to 7.5-kW models), consult us in advance.
2. Voltage: 3-phase: 200/200/220 V, 50/60/60 Hz
3. Lubrication: Lubrication only with grease (These models will be delivered filled with grease.)
Lubrication only with oil (These models will be delivered without oil. Pour the oil recommended by Mitsubishi.)
4. The alphabet on the right side of each box indicates the gear size.
5. 0.4-kW models are in GM-D Series, and 0.75- to 7.5-kW models are in GM-DP Series.
6. 3.7-kW models with a gear ratio of 1/120, 5.5-kW models with gear ratios of 1/60 to 1/120 and 7.5-kW models with gear ratios of 1/45 to 1/90 of vertical type (V) can be manufactured.
Models with other gear ratios are available in flange and vertical type. (The oil filler plug and the air breather are replaced with each other.)

Lineup of models (parallel shaft type)

GM-LJP Series

(Foot mounting) Service factor 1.4

Output shaft rotation speed (r/min)			50Hz	500	300	150	100	75	50	33	25
			60Hz	600	360	180	120	90	60	40	30
Specifications			Output \ Gear ratio	1/3	1/5	1/10	1/15	1/20	1/30	1/45	1/60
Foot mounting	3-phase	Without brake	11kW	□SM	●SM	●L	●L	●L	●M	●TN	●TP
			15kW	□SN	□SN	●L	●M	●M	●N	●TP	
			22kW	□SP	□SP	●N	●N	●N	●P	●P	
			30kW			□P	□P	□P	□P		
			37kW			□P	□P	□P	□P		
		With brake	11kW	□SM	□SM	□L	□L	□L	□M	□TN	□TP
			15kW	□SN	□SN	□L	□M	□M	□N	□TP	
			22kW	□SP	□SP	□N	□N	□N	□P		

(Vertical type) Service factor 1.4

Output shaft rotation speed (r/min)			50Hz	150	100	75	50	33	25
			60Hz	180	120	90	60	40	30
Specifications			Output \ Gear ratio	1/10	1/15	1/20	1/30	1/45	1/60
Vertical type	3-phase	Without brake	11kW	□L	□L	□L	□M	□TN	□TP
			15kW	□L	□M	□M	□N	□TP	
			22kW	□N	□N	□N	□P	□P	
			30kW	□P	□P	□P	□P		
			37kW	□P	□P	□P	□P		
		With brake	11kW	□L	□L	□L	□M	□TN	□TP
			15kW	□L	□M	□M	□N	□TP	
			22kW	□N	□N	□N	□P		

Notes) 1. ● In-stock □ Make-to-order
2. Lubrication: All models must be lubricated only with oil. (These models will be delivered without oil. Pour the oil recommended by Mitsubishi.)
3. The alphabet on the right side of each box indicates the gear size.
4. Only the 22-kW model with a gear ratio of 1/45 is manufactured as a 6P motor.
* 22-kW models with a gear ratio of 1/45 and 30-kW or more models with brakes are not available.

GM-PJP Series

Service factor 1.0 to 2.0

Output shaft rotation speed (r/min)		50Hz	300	167	94	71	50	37.5	30	16.7	11.5	8.3	6.3
		60Hz	360	200	113	86	60	45	36	20	13.8	10	7.5
Specifications		Gear ratio / Output	1/5	1/9	1/16	1/21	1/30	1/40	1/50	1/90	1/130	1/180	1/240
Foot mounting	3-phase	Without/with brake											
		3.7kW											□ 74240
		5.5kW										□ 74180	□ 74240
		7.5kW									□ 74130	□ 74180	□ 84240
		11kW								□ 7490	□ 84130	□ 84180	
		15kW							□ 6450	□ 8490	□ 84130		
		22kW						□ 7440	□ 7450	□ 9490			
		30kW	□ 745					□ 7440	□ 8450				
		37kW	□ 745		□ 7416	□ 7421		□ 8440	□ 8450				
		45kW	□ 745	□ 739	□ 7416	□ 7421	□ 8430	□ 8440	□ 9450				
		55kW			□ 8416	□ 8412	□ 8430						

Notes) 1. □ Make-to-order
2. Lubrication: All models must be lubricated only with oil. (These models will be delivered without oil. Pour the oil recommended by Mitsubishi.)
3. The alphabet in the lower part of each box indicates the gear size.
4. 30-kW or more models with brakes are not available.

Lineup of models (parallel shaft type)

GM-J2 Series

Service factor 1.0

Output shaft rotation speed (r/min)		50Hz	500	300	200	150	120	100	75	60	50	37.5	30	25	20	
		60Hz	600	360	240	180	144	120	90	72	60	45	36	30	24	
Specifications		Output \ Gear ratio	1/3	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/75	
Without brake	3-phase	25W	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	
		40W	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	
		60W	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	
		90W	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	
	Single-phase	25W	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	
		40W	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	
		60W	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	
		90W	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	
	Single-phase reversible	25W	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	
		40W	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	
		60W	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	
		90W	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	
With brake	3-phase	25W	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	
		40W	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	
		60W	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	
		90W	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	
	Single-phase reversible	25W	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	○AB	
		40W	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	○AC	
		60W	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	○AD	
		90W	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	○AE	

Notes) 1. ○ Short-delivery (*) * When placing an order for 10 units or more of one model, consult us in advance.
2. Voltage: Single phase/single-phase reversible: 100/100 V, 50/60 Hz 3-phase: 200/200/220 V, 50/60/60 Hz
3. Lubrication: All models must be lubricated only with grease (these models will be delivered filled with grease).
4. The alphabet on the right side of each box indicates the gear size.

	16.7	15	12.5	10	7.5	6	5	3.8	3	2.5	1.9	1.5	1.3	1	0.8	0.75	0.63
	20	18	15	12	9	7.2	6	4.5	3.6	3	2.3	1.8	1.5	1.2	1	0.9	0.75
	1/90	1/100	1/120	1/150	1/200	1/250	1/300	1/400	1/500	1/600	1/800	1/1000	1/1200	1/1500	1/1800	1/2000	1/2400
	○AB	○AB	○AB	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM
	○AC	○AC	○AC	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM
	○AD	○AD	○AD	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM
	○AE	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM		
	○AB	○AB	○AB	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM
	○AC	○AC	○AC	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM
	○AD	○AD	○AD	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM
	○AE	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM		
	○AB	○AB	○AB	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM
	○AC	○AC	○AC	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM
	○AD	○AD	○AD	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM
	○AE	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM		
	○AB	○AB	○AB	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM
	○AC	○AC	○AC	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM
	○AD	○AD	○AD	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM
	○AE	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM		
	○AB	○AB	○AB	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM	○ABM
	○AC	○AC	○AC	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM	○ACM
	○AD	○AD	○AD	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM	○ADM
	○AE	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM	○AEM		

Lineup of models (right angle shaft type)

GM-SSY·SSYP Series

Service factor 1.0

Output shaft rotation speed (r/min)			50Hz	200	150	120	100	75	60	50	37.5	30	25
			60Hz	240	180	144	120	90	72	60	45	36	30
Specifications			Output \ Gear ratio	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40	1/50	1/60
Hollow shaft	Flange/face mounting	Without brake	0.1kW	○20	○20	○20	○20	○20	○20	○20	○20	○20	○20
			0.2kW	○20	○20	○20	○20	○20	○20	○20	○25	○25	○25
			0.4kW	○25	○25	○25	○25	○25	○25	○25	○30	○30	○30
			0.75kW	○30	○30	○30	○30	○30	○30	○30	○35	○35	○35
			1.5kW	○35	○35	○35	○35	○35	○35	○35			
			2.2kW	○45	○45	○45	○45	○45	○45	○45			
		With brake	0.1kW	○20	○20	○20	○20	○20	○20	○20	○20	○20	○20
			0.2kW	○20	○20	○20	○20	○20	○20	○20	○25	○25	○25
			0.4kW	○25	○25	○25	○25	○25	○25	○25	○30	○30	○30
			0.75kW	○30	○30	○30	○30	○30	○30	○30	○35	○35	○35
			1.5kW	○35	○35	○35	○35	○35	○35	○35			
			2.2kW	○45	○45	○45	○45	○45	○45	○45			

Notes) 1. ○ Short-delivery (*) * When placing an order for 10 units or more of one model, consult us in advance.
2. Lubrication: All models must be lubricated only with grease (these models will be delivered filled with grease).
3. The alphabet on the right side of each box indicates the gear size.
4. 0.1- to 0.4-kW models are in GM-SSY Series, and 0.75- to 2.2-kW models are in GM-SSYP Series.

GM-DYP Series

Service factor 1.4

Output shaft rotation speed (r/min)			50Hz	100	75	60	50	37.5	30	25	18.8	15
			60Hz	120	90	72	60	45	36	30	22.5	18
Specifications			Output \ Gear ratio	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80	1/100
Hollow shaft	Flange	Without brake	3.7kW	□34	□34	□44	□44	□44	□44	□44	□54	□54
			5.5kW	□44	□44	□44	□44	□44	□54	□54	□54	
			7.5kW	□44	□44	□54	□54	□54	□54	□54		
			11kW	□54	□54	□54	□54	□54				
		With brake	3.7kW	□34	□34	□44	□44	□44	□44	□44	□54	□54
			5.5kW	□44	□44	□44	□44	□44	□54	□54	□54	
			7.5kW	□44	□44	□54	□54	□54	□54	□54		
			11kW	□54	□54	□54	□54	□54				
	Foot mounting	Without brake	3.7kW	□34	□34	□44	□44	□44	□44	□44	□54	□54
			5.5kW	□44	□44	□44	□44	□44	□54	□54	□54	
			7.5kW	□44	□44	□54	□54	□54	□54	□54		
			11kW	□54	□54	□54	□54	□54				
		With brake	3.7kW	□34	□34	□44	□44	□44	□44	□44	□54	□54
			5.5kW	□44	□44	□44	□44	□44	□54	□54	□54	
			7.5kW	□44	□44	□54	□54	□54	□54	□54		
			11kW	□54	□54	□54	□54	□54				

Notes) 1. □ Make-to-order
2. Lubrication: All models must be lubricated only with oil. (These models will be delivered without oil. Pour the oil recommended by Mitsubishi.)
3. The alphabet on the right side of each box indicates the gear size.

GM-SHY•SHYP Series

Service factor 1.4

Output shaft rotation speed (r/min)			50Hz	300	200	150	120	100	75	60	50	37.5	30	25	18.8	15	12.5	9.4	7.5	6.3	5	4.2	3.1	2.7	2	1.7	1.3	1
			60Hz	360	240	180	144	120	90	72	60	45	36	30	22.5	18	15	11.3	9	7.5	6	5	3.8	3.2	2.4	2	1.5	1.25
Specifications			Gear ratio / Output	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80	1/100	1/120	1/160	1/200	1/240	1/300	1/360	1/480	1/560	1/750	1/900	1/1200	1/1440
Hollow shaft	Flange	Without brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
		With brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
	Face mounting	Without brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
		With brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
Solid shaft Right shaft/left shaft	Foot mounting	Without brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
		With brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
	Flange	Without brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
		With brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
	Face mounting	Without brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											
		With brake	0.1kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○AT	○AT	○AT	○AT	○AT	○AT	○CM	○CM	○CM	○CM	○CM	○CM	○CM	○CM
			0.2kW	○AT	○AT	○A	○A	○A	○A	○A	○A	○A	○A	○A	○BT	○BT	○BT	○BT	○BT	○BT	○DM	○DM	○DM	○DM	○DM	○DM	○DM	○DM
			0.4kW	○BT	○BT	○B	○B	○B	○B	○B	○B	○B	○B	○B	○CT	○CT	○CT	○CT	○CT	○CT	○DM	○DM	○DM					
			0.75kW	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○C	○DT	○DT	○DT	○DT	○DT	○DT								
			1.5kW	○DT	○DT	○D	○D	○D	○D	○D	○D	○D	○D	○D	○ET	○ET	○ET	○ET	○ET	○ET								
			2.2kW	○ET	○ET	○E	○E	○E	○E	○E	○E	○E	○E	○E	○ET	○ET	○ET											

Notes) 1. ○ Short-delivery (*) * When placing an order for 10 units or more of one model (4 units or more of a model with a high gear ratio of 1/270 or more), consult us in advance.
2. Lubrication: All models must be lubricated only with grease (these models will be delivered filled with grease).
3. The alphabet on the right side of each box indicates the gear size.
4. 0.1- to 0.4-kW models are in GM-SSY Series, and 0.75- to 2.2-kW models are in GM-SSYP Series.

GM-S Series

GM-SP Series

■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-S	0.1 to 0.4	3 to 60	40 to 60
GM-SP	0.75 to 2.2		6 to 60

■Compact and lightweight

●Reduced size and weight achieved by employing structural analysis and the use of aluminum frame motors

■Low noise and vibration

●Achieved low noise through use of RGC finishing and special precision machining of the first and second gears
●Reduced the impact noise caused by brake operation by utilizing brake covers and optimizing the brake gap
●Dynamic balance processing used for the motor to reduce vibration

Specifications

●Standard specifications

Item	Standard specification		
Series name	GM-S Series		GM-SP Series
Output	0.1 to 0.4 kW	0.1 to 0.4 kW	0.75 to 2.2 kW
Number of poles	4P		
Number of phases	Single-phase	3-phase	
Voltage	100/100 V	200/200/220 V	
Frequency	50/60 Hz	50/60/60 Hz	
Gear ratio	1/3 to 1/1200 (See the model configuration list.)		
Rating	Continuous		
Heat resistance class	120 (E)		130 (B)
Starting method	Split-phase start (0.1 kW) Capacitor start/operation (0.2/0.4 kW)	Direct start	
Casing construction	Totally-enclosed fan-cooled type (totally-enclosed self-cooled type only for 3-phase 0.1-kW models)		
Protective construction	Indoor type (equivalent to IP44)		
Mounting method	Foot mounting or flange mounting (concentric)		
Mounting direction	Installation in any direction		
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)		
Ambient temperature	−15 to +40℃ (non condensing)		
Ambient humidity	90%RH or less		
Altitude	1000 m or less above sea level		
Vibration	Normally: 4.9 m/s² or less Instantaneously: 9.8 m/s² or less		
Brake type	DC spring brake		
Applicable standards	JEC, JEM		
Lubrication method	Grease lubrication (filled with PYRONOC UNIVERSAL No.000)		
Paint color	Silver (equivalent to Munsell N6.0)		
Accessories	Shaft end key		

●Semi-standard specifications

Voltage	200/200 V 50/60 Hz (single-phase, single-phase with brake)	400/400/440 V 50/60/60 Hz 380 V 50 Hz, 415 V 50 Hz 460 V 60 Hz (3-phase, 3-phase with brake)	400/400/440 V 50/60/60 Hz 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type (3-phase, 3-phase with brake) Single-phase models with motors and models with quick manual release brakes are designed only for indoor use.		
Others	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor type) ● Inverter drive constant torque (V/F control) series (3-phase, 0.1 to 0.4 kW)		● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor type)

●Special specifications

Overseas standards	● cUL standard ● CCC Standard (0.1 to 0.75 kW) ● EN Standard
Protective construction	● Dust-proof and water-proof (equivalent to IP65)

Characteristic table

●GM-S Series 0.1 to 0.4 kW

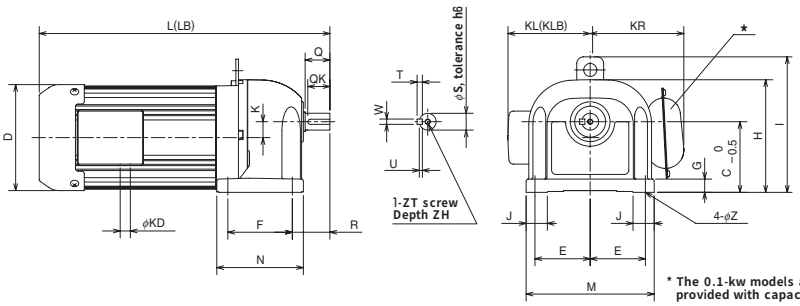
Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.1	500	600	1/3	1/3.07	1.7	1.5	686	25
	300	360	1/5	1/4.97	2.9	2.5	686	42
	150	180	1/10	1/9.93	5.9	4.9	686	83
	100	120	1/15	1/14.81	8.8	7.4	735	125
	75	90	1/20	1/20.08	11	9.5	1030	167
	60	72	1/25	1/23.85	14	12	1180	208
	50	60	1/30	1/28.88	17	14	1180	250
	37.5	45	1/40	1/37.92	23	19	1230	250
	30	36	1/50	1/47.32	27	24	1270	250
	25	30	1/60	1/58.98	33	27	1620	300
	18.8	22.5	1/80	1/80.05	45	37	1670	300
	15	18	1/100	1/95.44	56	47	1720	300
	12.5	15	1/120	1/114.05	67	56	2350	600
	9.4	11.3	1/160	1/151.67	90	75	2350	600
	7.5	9	1/200	1/168.76	112	94	2350	600
	5.6	6.7	1/270	1/278.78	140	118	2740	500
	4.2	5	1/360	1/367.62	176	147	2740	500
	3.3	4	1/450	1/453.76	216	186	2740	500
	2.8	3.3	1/540	1/508.20	279	235	3920	700
	2.1	2.5	1/720	1/693.00	363	304	3920	700
	1.7	2	1/900	1/865.82	441	372	3920	700
	1.3	1.5	1/1200	1/1154.42	441	441	3920	700
0.2	500	600	1/3	1/3.07	3.5	2.9	686	25
	300	360	1/5	1/4.97	5.9	4.9	686	42
	150	180	1/10	1/9.93	12	9.8	686	83
	100	120	1/15	1/14.81	18	15	882	125
	75	90	1/20	1/20.08	24	20	1180	167
	60	72	1/25	1/23.85	29	25	1180	208
	50	60	1/30	1/28.88	33	29	1230	250
	37.5	45	1/40	1/41.07	47	39	1570	300
	30	36	1/50	1/48.96	59	49	1620	300
	25	30	1/60	1/60.54	69	58	2350	500
	18.8	22.5	1/80	1/80.50	92	76	2350	500
	15	18	1/100	1/89.57	115	95	2350	500
	12.5	15	1/120	1/112.29	138	116	2650	500
	9.4	11.3	1/160	1/148.08	183	153	2700	500
	7.5	9	1/200	1/182.78	229	191	2740	500
	5.6	6.7	1/270	1/251.20	272	227	3920	700
	4.2	5	1/360	1/342.55	351	300	3920	700
	3.3	4	1/450	1/427.98	439	366	3920	700
	2.8	3.3	1/540	1/509.38	540	449	7060	1200
	2.1	2.5	1/720	1/708.40	703	585	7060	1200
	1.7	2	1/900	1/787.10	769	740	7060	1200
	1.3	1.5	1/1200	1/1049.48	769	769	7060	1200
0.4	500	600	1/3	1/2.93	6.7	5.6	686	30
	300	360	1/5	1/5.04	13	10	686	50
	150	180	1/10	1/9.80	25	21	1370	100
	100	120	1/15	1/14.44	36	30	1470	150
	75	90	1/20	1/19.60	48	40	1570	200
	60	72	1/25	1/25.73	61	50	1620	250
	50	60	1/30	1/28.51	70	61	1760	300
	37.5	45	1/40	1/38.89	94	78	2350	500
	30	36	1/50	1/43.27	119	99	2350	500
	25	30	1/60	1/61.95	140	118	2550	500
	18.8	22.5	1/80	1/81.69	187	156	2650	500
	15	18	1/100	1/100.84	234	195	2740	500
	12.5	15	1/120	1/112.93	283	236	3920	700
	9.4	11.3	1/160	1/154.00	374	313	3920	700
	7.5	9	1/200	1/192.40	470	392	3920	700
0.4	5.6	6.7	1/270	1/262.89	537	439	6370	1200
	4.2	5	1/360	1/365.59	711	593	6370	1200
	3.3	4	1/450	1/406.22	769	743	6370	1200
	2.8	3.3	1/540	1/518.18	1068	889	9800	1300
	2.1	2.5	1/720	1/720.30	1230	1230	9800	1300
	1.7	2	1/900	1/826.88	1230	1230	9800	1300
	1.3	1.5	1/1200	1/1102.50	1230	1230	9800	1300

●GM-SP Series 0.75 to 2.2 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.75	500	600	1/3	1/3.00	14	11	980	50
	300	360	1/5	1/4.87	24	20	980	83
	150	180	1/10	1/10.00	47	39	1470	167
	100	120	1/15	1/14.54	70	58	1570	250
	75	90	1/20	1/19.44	92	76	1760	333
	60	72	1/25	1/22.95	115	95	1960	417
	50	60	1/30	1/30.60	133	114	2160	500
	37.5	45	1/40	1/37.15	179	149	2650	500
	30	36	1/50	1/45.86	222	185	2740	500
	25	30	1/60	1/55.82	272	227	3920	700
	18.8	22.5	1/80	1/76.12	351	299	3920	700
	15	18	1/100	1/95.11	439	366	3920	700
	12.5	15	1/120	1/113.20	540	449	6660	1200
	9.4	11.3	1/160	1/157.42	703	585	6960	1200
	7.5	9	1/200	1/174.91	769	740	7060	1200
	5.6	6.7	1/270	1/271.09	1130	931	8530	1300
	4.2	5	1/360	1/376.83	1230	1180	8530	1300
	3.3	4	1/450	1/432.59	1230	1230	8530	1300
1.5	500	600	1/3	1/2.96	27	22	1960	70
	300	360	1/5	1/4.98	46	38	1960	117
	150	180	1/10	1/9.57	92	76	2450	233
	100	120	1/15	1/14.49	140	117	2940	350
	75	90	1/20	1/20.31	186	155	3430	467
	60	72	1/25	1/24.80	229	193	4210	583
	50	60	1/30	1/27.72	272	226	4900	700
	37.5	45	1/40	1/39.27	362	301	3920	700
	30	36	1/50	1/49.07	447	372	3920	700
	25	30	1/60	1/58.42	537	439	5880	1200
	18.8	22.5	1/80	1/81.24	711	593	6170	1200
	15	18	1/100	1/90.27	769	743	6370	1200
	12.5	15	1/120	1/115.15	1070	889	9020	1300
	9.4	11.3	1/160	1/160.07	1230	1190	9310	1300
	7.5	9	1/200	1/183.75	1230	1230	9800	1300
2.2	500	600	1/3	1/2.97	39	33	2160	70
	300	360	1/5	1/4.79	69	57	2160	117
	150	180	1/10	1/9.57	137	115	3140	233
	100	120	1/15	1/14.71	204	170	3530	350
	75	90	1/20	1/18.93	277	230	3820	467
	60	72	1/25	1/25.45	332	277	4210	583
	50	60	1/30	1/28.50	399	332	4410	700
	37.5	45	1/40	1/41.91	524	436	6960	1200
	30	36	1/50	1/46.57	667	556	7060	1200
	25	30	1/60	1/60.24	799	664	8040	1300
	18.8	22.5	1/80	1/83.74	1070	899	8330	1300
	15	18	1/100	1/96.13	1230	1070	8530	1300

Dimensional outline drawing

Foot mounting Single-phase GM-SS (B) Series

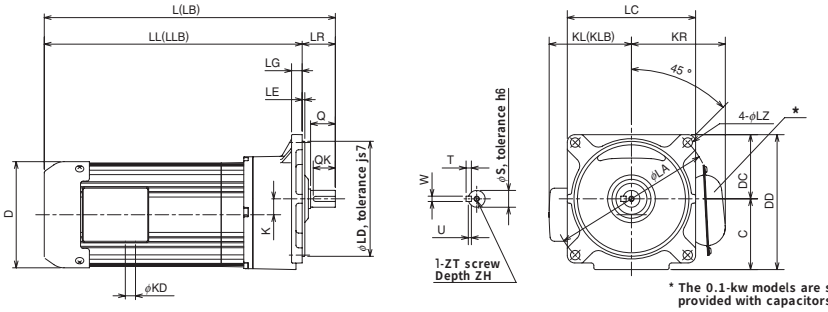


* The 0.1-kw models are split-phase-start motors and are not provided with capacitors.

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																											Weight (kg)	
			L	(LB)	Q	QK	D	KD	K	F	R	N	T	W	U	ZT	ZH	S	KL	(KLB)	KR	J	E	M	G	C	H	I	Z	Without brake	With brake
0.1	1/3 to 1/50	A	277	325	25	24	108	12	15	60	37	80	5	5	3	M6	10	16	87	92	—	21.5	57	130	12	70	112	—	7	6.6	8
	1/60 to 1/100	B	292	340	28	25	108	12	18	73	42.5	98	6	6	3.5	M6	10	19	87	92	—	24	62.5	145	15	80	127.5	—	10	7.3	8.7
	1/120 to 1/200	C	318	366	36	32	108	12	20	93	50	117	6	6	3.5	M8	12	22	87	92	—	24	62.5	145	15	85	131	—	10	8.8	10.2
	1/270 to 1/450	EM	381	429	42	36	108	12	1.5	110	57.5	137	7	8	4	M8	12	28	87	92	—	28	70	165	18	105	160	—	12	9.9	11.3
	1/540 to 1/900	GM	408	456	50	45	108	12	5.5	135	65	161	8	10	5	M8	12	32	87	92	—	30	87.5	200	18	125	195	230	12	21.8	23.2
	1/1200	GM	408	456	50	45	108	12	1	135	65	161	8	10	5	M8	12	32	87	92	—	30	87.5	200	18	125	195	230	12	21.8	23.2
0.2	1/3 to 1/30	A	297	345	25	24	108	12	15	60	37	80	5	5	3	M6	10	16	87	92	100	21.5	57	130	12	70	112	—	7	8.3	9.7
	1/40, 1/50	B	312	360	28	25	108	12	18	73	42.5	98	6	6	3.5	M6	10	19	87	92	100	24	62.5	145	15	80	127.5	—	10	9	10.4
	1/60 to 1/100	C	338	386	36	32	108	12	20	93	50	117	6	6	3.5	M8	12	22	87	92	100	24	62.5	145	15	85	131	—	10	10.5	11.9
	1/120 to 1/200	E	352	400	42	36	108	12	26	110	57.5	137	7	8	4	M8	12	28	87	92	100	28	70	165	18	105	160	—	12	11.6	13
	1/270 to 1/450	GM	460	508	50	45	108	12	5.5	135	65	161	8	10	5	M8	12	32	87	92	100	30	87.5	200	18	125	195	230	12	23.5	24.9
	1/540 to 1/900	JM	486	534	60	55	108	12	7.5	150	80	187	8	12	5	M8	12	40	87	92	100	45	107.5	250	22	145	230	265	15	37.5	38.9
	1/1200	JM	486	534	60	55	108	12	1	150	80	187	8	12	5	M8	12	40	87	92	100	45	107.5	250	22	145	230	265	15	37.5	38.9
0.4	1/3 to 1/30	B	329	381	28	25	120	12	18	73	42.5	98	6	6	3.5	M6	10	19	93	98	106	24	62.5	145	15	80	127.5	—	10	10.5	12
	1/40, 1/50	C	354	406	36	32	120	12	20	93	50	117	6	6	3.5	M8	12	22	93	98	106	24	62.5	145	15	85	131	—	10	12	13.5
	1/60 to 1/100	E	369	421	42	36	120	12	26	110	57.5	137	7	8	4	M8	12	28	93	98	106	28	70	165	18	105	160	—	12	13.1	14.6
	1/120 to 1/200	G	395	447	50	45	120	12	30	135	65	161	8	10	5	M8	12	32	93	98	106	30	87.5	200	18	125	195	230	12	25	26.5
	1/270 to 1/450	JM	501	553	60	55	120	12	1.5	150	80	187	8	12	5	M8	12	40	93	98	106	45	107.5	250	22	145	230	265	15	39	40.5
	1/540 to 1/900	LM	527	579	75	70	120	12	9.5	170	95	206	9	14	5.5	M8	12	48	93	98	106	50	125	285	22	170	275	310	15	51	52.5
	1/1200	LM	527	579	75	70	120	12	1.5	170	95	206	9	14	5.5	M8	12	48	93	98	106	50	125	285	22	170	275	310	15	51	52.5

(Notes) ● The dimensions in parentheses are for the models with brakes.
● The dimensions and weight are subject to change without notice.
● **For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/).**
CAD data (DXF format) and PDF data are available.

Flange mounting Single-phase GM-SFS (B) Series

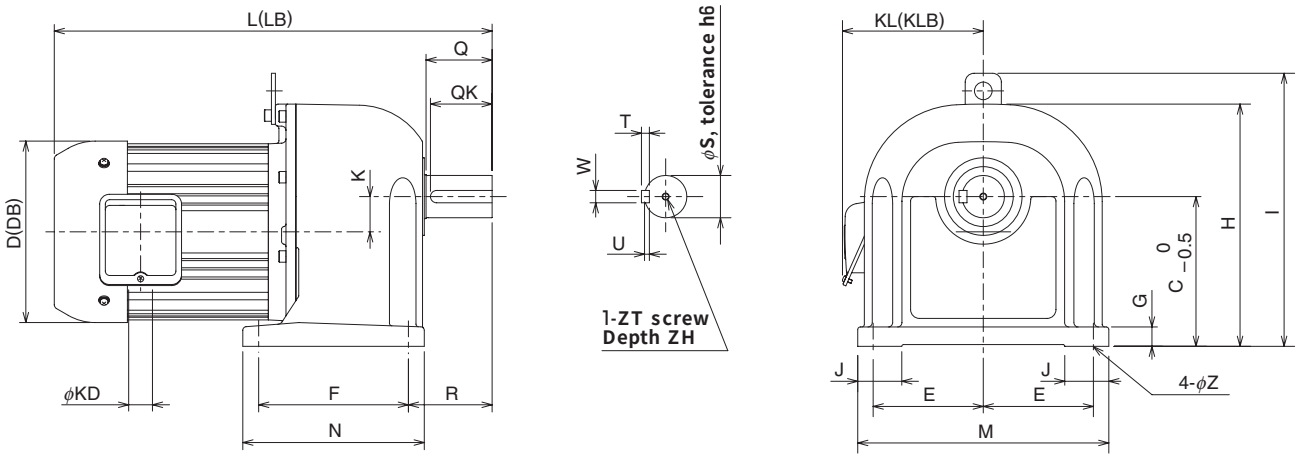


* The 0.1-kw models are split-phase-start motors and are not provided with capacitors.

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																													Weight (kg)	
			L	(LB)	LL	(LLB)	LR	LG	LE	Q	QK	LD	D	KD	K	T	W	U	ZT	ZH	S	LC	KL	(KLB)	KR	LA	LZ	DC	C	DD	Without brake	With brake
0.1	1/3 to 1/50	A	277	325	244.5	292.5	32.5	12	3	25	24	130	108	12	15	5	5	3	M6	10	16	145	87	92	—	180	10	72.5	72.5	145	8.4	9.8
	1/60 to 1/100	B	292	340	254.5	302.5	37.5	12	3	28	25	130	108	12	18	6	6	3.5	M6	10	19	145	87	92	—	180	10	72.5	80	152.5	8.8	10.2
	1/120 to 1/200	C	318	366	271.5	319.5	46.5	12	3	36	32	150	108	12	20	6	6	3.5	M8	12	22	160	87	92	—	195	10	80	85	165	10.6	12
	1/270 to 1/450	EM	381	429	332.5	380.5	48.5	12	3	42	36	170	108	12	1.5	7	8	4	M8	12	28	190	87	92	—	235	12	95	104.5	199.5	12.3	13.7
	1/540 to 1/900	GM	408	456	348	396	60	16	4	50	45	210	108	12	5.5	8	10	5	M8	12	32	225	87	92	—	280	15	112.5	125.5	238	24.7	26.1
	1/1200	GM	408	456	348	396	60	16	4	50	45	210	108	12	1	8	10	5	M8	12	32	225	87	92	—	280	15	112.5	125.5	238	24.7	26.1
0.2	1/3 to 1/30	A	297	345	264.5	312.5	32.5	12	3	25	24	130	108	12	15	5	5	3	M6	10	16	145	87	92	100	180	10	72.5	72.5	145	10.1	11.5
	1/40, 1/50	B	312	360	274.5	322.5	37.5	12	3	28	25	130	108	12	18	6	6	3.5	M6	10	19	145	87	92	100	180	10	72.5	80	152.5	10.5	11.9
	1/60 to 1/100	C	338	386	291.5	339.5	46.5	12	3	36	32	150	108	12	20	6	6	3.5	M8	12	22	160	87	92	100	195	10	80	85	165	12.3	13.7
	1/120 to 1/200	E	352	400	303.5	351.5	48.5	12	3	42	36	170	108	12	26	7	8	4	M8	12	28	190	87	92	100	235	12	95	104.5	199.5	14	15.4
	1/270 to 1/450	GM	460	508	400	448	60	16	4	50	45	210	108	12	5.5	8	10	5	M8	12	32	225	87	92	100	280	15	112.5	125.5	238	26.4	27.8
	1/540 to 1/900	JM	486	534	411.5	459.5	74.5	18	4	60	55	260	108	12	7.5	8	12	5	M8	12	40	280	87	92	100	340	19	140	146	286	39.9	41.3
	1/1200	JM	486	534	411.5	459.5	74.5	18	4	60	55	260	108	12	1	8	12	5	M8	12	40	280	87	92	100	340	19	140	146	286	39.9	41.3
0.4	1/3 to 1/30	B	329	381	291.5	343.5	37.5	12	3	28	25	130	120	12	18	6	6	3.5	M6	10	19	145	93	98	106	180	10	72.5	80	152.5	12.1	13.6
	1/40, 1/50	C	354	406	307.5	359.5	46.5	12	3	36	32	150	120	12	20	6	6	3.5	M8	12	22	160	93	98	106	195	10	80	85	165	13.9	15.4
	1/60 to 1/100	E	369	421	320.5	372.5	48.5	12	3	42	36	170	120	12	26	7	8	4	M8	12	28	190	93	98	106	235	12	95	104.5	199.5	15.6	17.1
	1/120 to 1/200	G	395	447	335	387	60	16	4	50	45	210	120	12	30	8	10	5	M8	12	32	225	93	98	106	280	15	112.5	125.5	238	28	29.5
	1/270 to 1/450	JM	501	553	426.5	478.5	74.5	18	4	60	55	260	120	12	1.5	8	12	5	M8	12	40	280	93	98	106	340	19	140	146	286	41.5	43
	1/540 to 1/900	LM	527	579	440.5	492.5	86.5	20	4	75	70	290	120	12	9.5	9	14	5.5	M8	12	48	315	93	98	106	380	24	157.5	172	329.5	55.5	57
	1/1200	LM	527	579	440.5	492.5	86.5	20	4	75	70	290	120	12	1.5	9	14	5.5	M8	12	48	315	93	98	106	380	24	157.5	172	329.5	55.5	57

(Notes) ● The dimensions in parentheses are for the models with brakes.
● The dimensions and weight are subject to change without notice.
● **For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/).**
CAD data (DXF format) and PDF data are available.

Foot mounting 3-phase GM-S (B)/SP (B) Series



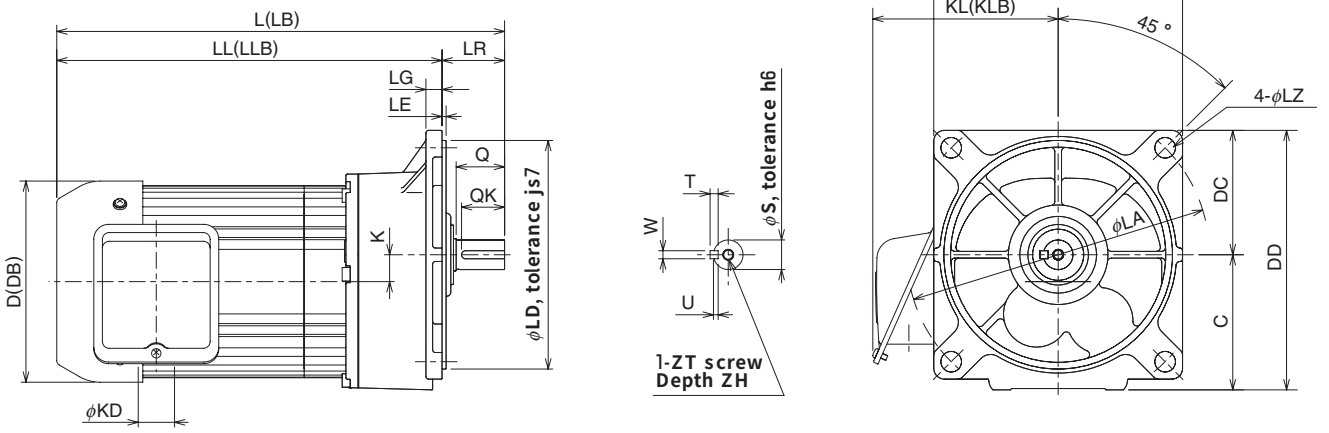
Output (kW)	Gear ratio	Gear size	Dimensions (mm)																										Weight (kg)	
			L	(LB)	Q	QK	D	(DB)	KD	K	F	R	N	T	W	U	ZT	ZH	S	KL	(KLB)	J	E	M	G	C	H	I	Z	Without brake	With brake
0.1	1/3 to 1/50	A	215	266	25	24	105	108	12	15	60	37	80	5	5	3	M6	10	16	87	92	21.5	57	130	12	70	112	—	7	5.1	6.5
	1/60 to 1/100	B	230	281	28	25	105	108	12	18	73	42.5	98	6	6	3.5	M6	10	19	87	92	24	62.5	145	15	80	127.5	—	10	5.8	7.2
	1/120 to 1/200	C	256	307	36	32	105	108	12	20	93	50	117	6	6	3.5	M8	12	22	87	92	24	62.5	145	15	85	131	—	10	7.3	8.7
	1/270 to 1/450	EM	320	371	42	36	105	108	12	1.5	110	57.5	137	7	8	4	M8	12	28	87	92	28	70	165	18	105	160	—	12	8.4	9.8
	1/540 to 1/900	GM	346	397	50	45	105	108	12	5.5	135	65	161	8	10	5	M8	12	32	87	92	30	87.5	200	18	125	195	230	12	20.3	21.7
	1/1200	GM	346	397	50	45	105	108	12	1	135	65	161	8	10	5	M8	12	32	87	92	30	87.5	200	18	125	195	230	12	20.3	21.7
0.2	1/3 to 1/30	A	240	288	25	24	108	108	12	15	60	37	80	5	5	3	M6	10	16	87	92	21.5	57	130	12	70	112	—	7	6.3	7.7
	1/40, 1/50	B	255	303	28	25	108	108	12	18	73	42.5	98	6	6	3.5	M6	10	19	87	92	24	62.5	145	15	80	127.5	—	10	7.0	8.4
	1/60 to 1/100	C	281	329	36	32	108	108	12	20	93	50	117	6	6	3.5	M8	12	22	87	92	24	62.5	145	15	85	131	—	10	8.5	9.9
	1/120 to 1/200	E	296	359	42	36	108	108	12	26	110	57.5	137	7	8	4	M8	12	28	87	92	28	70	165	18	105	160	—	12	9.6	11
	1/270 to 1/450	GM	404	452	50	45	108	108	12	5.5	135	65	161	8	10	5	M8	12	32	87	92	30	87.5	200	18	125	195	230	12	21.5	22.9
	1/540 to 1/900	JM	430	478	60	55	108	108	12	7.5	150	80	187	8	12	5	M8	12	40	87	92	45	107.5	250	22	145	230	265	15	35.5	36.9
	1/1200	JM	430	478	60	55	108	108	12	1	150	80	187	8	12	5	M8	12	40	87	92	45	107.5	250	22	145	230	265	15	35.5	36.9
0.4	1/3 to 1/30	B	277	329	28	25	120	120	12	18	73	42.5	98	6	6	3.5	M6	10	19	93	98	24	62.5	145	15	80	127.5	—	10	8.5	10
	1/40, 1/50	C	302	354	36	32	120	120	12	20	93	50	117	6	6	3.5	M8	12	22	93	98	24	62.5	145	15	85	131	—	10	10	11.5
	1/60 to 1/100	E	317	369	42	36	120	120	12	26	110	57.5	137	7	8	4	M8	12	28	93	98	28	70	165	18	105	160	—	12	11.1	12.6
	1/120 to 1/200	G	343	395	50	45	120	120	12	30	135	65	161	8	10	5	M8	12	32	93	98	30	87.5	200	18	125	195	230	12	23	24.5
	1/270 to 1/450	JM	449	501	60	55	120	120	12	1.5	150	80	187	8	12	5	M8	12	40	93	98	45	107.5	250	22	145	230	265	15	37	38.5
	1/540 to 1/900	LM	475	527	75	70	120	120	12	9.5	170	95	206	9	14	5.5	M8	12	48	93	98	50	125	285	22	170	275	310	15	49	50.5
	1/1200	LM	475	527	75	70	120	120	12	1.5	170	95	206	9	14	5.5	M8	12	48	93	98	50	125	285	22	170	275	310	15	49	50.5

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																										Weight (kg)	
			L	(LB)	Q	QK	D	(DB)	KD	K	F	R	N	T	W	U	ZT	ZH	S	KL	(KLB)	J	E	M	G	C	H	I	Z	Without brake	With brake
0.75	1/3 to 1/30	D	356	419	36	32	150	150	27	20	85	50	109	6	6	3.5	M8	12	22	138	138	25	75	170	15	100	160	—	10	15.2	18.8
	1/40, 1/50	E	382	445	42	36	150	150	27	26	110	57.5	137	7	8	4	M8	12	28	138	138	28	70	165	18	105	160	—	12	15.8	19.4
	1/60 to 1/100	G	403	466	50	45	150	150	27	30	135	65	161	8	10	5	M8	12	32	138	138	30	87.5	200	18	125	195	230	12	27.7	31.3
	1/120 to 1/200	J	436	499	60	55	150	150	27	32	150	80	187	8	12	5	M8	12	40	138	138	45	107.5	250	22	145	230	265	15	40.7	44.3
	1/270 to 1/450	LM	541	604	75	70	150	150	27	2	170	95	206	9	14	5.5	M8	12	48	138	138	50	125	285	22	170	275	310	15	53.7	57.3
1.5	1/3 to 1/30	F	428	500	50	45	175	175	27	30	120	65	146	8	10	5	M8	12	32	148	148	30	87.5	200	18	120	195	230	12	32.6	36.2
	1/40, 1/50	G	446	518	50	45	175	175	27	30	135	65	161	8	10	5	M8	12	32	148	148	30	87.5	200	18	125	195	230	12	32.6	36.2
	1/60 to 1/100	J	472	544	60	55	175	175	27	32	150	80	187	8	12	5	M8	12	40	148	148	45	107.5	250	22	145	230	265	15	45.6	49.2
	1/120 to 1/200	L	499	571	75	70	175	175	27	40	170	95	206	9	14	5.5	M8	12	48	148	148	50	125	285	22	170	275	310	15	58.6	62.2
2.2	1/3 to 1/30	H	473	540	50	45	206	206	27	30	115	65	141	8	10	5	M8	12	32	160	160	35	102.5	230	18	140	227	262	12	44.9	49.6
	1/40, 1/50	J	511	578	60	55	206	206	27	32	150	80	187	8	12	5	M8	12	40	160	160	45	107.5	250	22	145	230	265	15	53.9	58.6
	1/60 to 1/100	L	537	604	75	70	206	206	27	40	170	95	206	9	14	5.5	M8	12	48	160	160	50	125	285	22	170	275	310	15	66.9	71.6

(Notes)
- The dimensions in parentheses are for the models with brakes.
- The terminal boxes of 0.1- to 0.4-kW models are made of plastics and differ in shape.
- The dimensions and weight are subject to change without notice.
- For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

Dimensional outline drawing

Flange mounting 3-phase GM-SF (B)/SPF (B) Series



Output (kW)	Gear ratio	Gear size	Dimensions (mm)																											Weight (kg)	
			L	(LB)	LL	(LLB)	LR	LG	LE	Q	QK	D	(DB)	KD	K	LD	T	W	U	ZT	ZH	S	LC	KL	(KLB)	LA	LZ	DC	C	DD	Without brake	With brake
0.1	1/3 to 1/50	A	215	266	182.5	233.5	32.5	12	3	25	24	105	108	12	15	130	5	5	3	M6	10	16	145	87	92	180	10	72.5	72.5	145	5.5	6.9
	1/60 to 1/100	B	230	281	192.5	243.5	37.5	12	3	28	25	105	108	12	18	130	6	6	3.5	M6	10	19	145	87	92	180	10	72.5	80	152.5	5.9	7.3
	1/120 to 1/200	C	256	307	209.5	260.5	46.5	12	3	36	32	105	108	12	20	150	6	6	3.5	M8	12	22	160	87	92	195	10	80	85	165	7.7	9.1
	1/270 to 1/450	EM	320	371	271.5	322.5	48.5	12	3	42	36	105	108	12	1.5	170	7	8	4	M8	12	28	190	87	92	235	12	95	104.5	199.5	9.4	10.8
	1/540 to 1/900	GM	346	397	286	337	60	16	4	50	45	105	108	12	5.5	210	8	10	5	M8	12	32	225	87	92	280	15	112.5	125.5	238	21.8	23.2
	1/1200	GM	346	397	286	337	60	16	4	50	45	105	108	12	1	210	8	10	5	M8	12	32	225	87	92	280	15	112.5	125.5	238	21.8	23.2
0.2	1/3 to 1/30	A	240	288	207.5	255.5	32.5	12	3	25	24	108	108	12	15	130	5	5	3	M6	10	16	145	87	92	180	10	72.5	72.5	145	6.7	8.1
	1/40, 1/50	B	255	303	217.5	265.5	37.5	12	3	28	25	108	108	12	18	130	6	6	3.5	M6	10	19	145	87	92	180	10	72.5	80	152.5	7.1	8.5
	1/60 to 1/100	C	281	329	234.5	282.5	46.5	12	3	36	32	108	108	12	20	150	6	6	3.5	M8	12	22	160	87	92	195	10	80	85	165	8.9	10.3
	1/120 to 1/200	E	296	344	247.5	295.5	48.5	12	3	42	36	108	108	12	26	170	7	8	4	M8	12	28	190	87	92	235	12	95	104.5	199.5	10.6	12
	1/270 to 1/450	GM	404	452	344	392	60	16	4	50	45	108	108	12	5.5	210	8	10	5	M8	12	32	225	87	92	280	15	112.5	125.5	238	23	24.4
	1/540 to 1/900	JM	430	478	355.5	403.5	74.5	18	4	60	55	108	108	12	7.5	260	8	12	5	M8	12	40	280	87	92	340	19	140	146	286	36.5	37.9
	1/1200	JM	430	478	355.5	403.5	74.5	18	4	60	55	108	108	12	1	260	8	12	5	M8	12	40	280	87	92	340	19	140	146	286	36.5	37.9
0.4	1/3 to 1/30	B	277	329	239.5	291.5	37.5	12	3	28	25	120	120	12	18	130	6	6	3.5	M6	10	19	145	93	98	180	10	72.5	80	152.5	8.6	10.1
	1/40, 1/50	C	302	354	255.5	307.5	46.5	12	3	36	32	120	120	12	20	150	6	6	3.5	M8	12	22	160	93	98	195	10	80	85	165	10.4	11.9
	1/60 to 1/100	E	317	369	268.5	320.5	48.5	12	3	42	36	120	120	12	26	170	7	8	4	M8	12	28	190	93	98	235	12	95	104.5	199.5	12.1	13.6
	1/120 to 1/200	G	343	395	283	335	60	16	4	50	45	120	120	12	30	210	8	10	5	M8	12	32	225	93	98	280	15	112.5	125.5	238	24.5	26
	1/270 to 1/450	JM	449	501	374.5	426.5	74.5	18	4	60	55	120	120	12	1.5	260	8	12	5	M8	12	40	280	93	98	340	19	140	146	286	38	39.5
	1/540 to 1/900	LM	475	527	388.5	440.5	86.5	20	4	75	70	120	120	12	9.5	290	9	14	5.5	M8	12	48	315	93	98	380	24	157.5	172	329.5	52	53.5
	1/1200	LM	475	527	388.5	440.5	86.5	20	4	75	70	120	120	12	1.5	290	9	14	5.5	M8	12	48	315	93	98	380	24	157.5	172	329.5	52	53.5

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																											Weight (kg)	
			L	(LB)	LL	(LLB)	LR	LG	LE	Q	QK	D	(DB)	KD	K	LD	T	W	U	ZT	ZH	S	LC	KL	(KLB)	LA	LZ	DC	C	DD	Without brake	With brake
0.75	1/3 to 1/30	D	356	419	309.5	372.5	46.5	12	3	36	32	150	150	27	20	170	6	6	3.5	M8	12	22	185	138	138	225	12	92.5	100.5	193	15.2	18.8
	1/40, 1/50	E	382	445	333.5	396.5	48.5	12	3	42	36	150	150	27	26	170	7	8	4	M8	12	28	190	138	138	235	12	95	104.5	199.5	16.8	20.4
	1/60 to 1/100	G	403	466	343	406	60	16	4	50	45	150	150	27	30	210	8	10	5	M8	12	32	225	138	138	280	15	112.5	125.5	238	29.2	32.8
	1/120 to 1/200	J	436	499	361.5	424.5	74.5	18	4	60	55	150	150	27	32	260	8	12	5	M8	12	40	280	138	138	340	19	140	146	286	42.7	46.3
	1/270 to 1/450	LM	541	604	454.5	517.5	86.5	20	4	75	70	150	150	27	2	290	9	14	5.5	M8	12	48	315	138	138	380	24	157.5	172	329.5	56.7	60.3
1.5	1/3 to 1/30	F	428	500	364	436	64	16	4	50	45	175	175	27	30	180	8	10	5	M8	12	32	205	148	148	250	15	102.5	119	221.5	34.1	37.7
	1/40, 1/50	G	446	518	386	458	60	16	4	50	45	175	175	27	30	210	8	10	5	M8	12	32	225	148	148	280	15	112.5	125.5	238	34.1	37.7
	1/60 to 1/100	J	472	544	397.5	469.5	74.5	18	4	60	55	175	175	27	32	260	8	12	5	M8	12	40	280	148	148	340	19	140	146	286	47.6	51.2
	1/120 to 1/200	L	499	571	412.5	484.5	86.5	20	4	75	70	175	175	27	40	290	9	14	5.5	M8	12	48	315	148	148	380	24	157.5	172	329.5	61.6	65.2
2.2	1/3 to 1/30	H	473	540	410	477	63	18	4	50	45	206	206	27	30	235	8	10	5	M8	12	32	255	160	160	315	19	127.5	141	268.5	49.4	54.1
	1/40, 1/50	J	511	578	436.5	503.5	74.5	18	4	60	55	206	206	27	32	260	8	12	5	M8	12	40	280	160	160	340	19	140	146	286	55.9	60.6
	1/60 to 1/100	L	537	604	450.5	517.5	86.5	20	4	75	70	206	206	27	40	290	9	14	5.5	M8	12	48	315	160	160	380	24	157.5	172	329.5	69.9	74.6

(Notes)
- The dimensions in parentheses are for the models with brakes.
- The terminal boxes of 0.1- to 0.4-kW models are made of plastics and differ in shape.
- The dimensions and weight are subject to change without notice.
- For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

GM-D Series

GM-DP Series

■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-D	0.4	3 to 60	40 to 60
GM-DP	0.75 to 7.5		6 to 60

* Frequencies that can be used are limited depending on the model and output.

■Compact and lightweight

●Reduced size and weight achieved by employing structural analysis and the use of aluminum frame motors

■Low noise and vibration

●Achieved low noise through use of RGC finishing and special precision machining of the first and second gears
●Reduced the impact noise caused by brake operation by utilizing brake covers and optimizing the brake gap
●Dynamic balance processing used for the motor to reduce vibration

Specifications

●Standard specifications

Item	Standard specification	
Series name	GM-D Series	GM-DP Series
Output	0.4 kW	0.75 to 7.5 kW
Number of poles	4P	
Number of phases	3-phase	
Voltage	200/200/220 V	
Frequency	50/60/60 Hz	
Gear ratio	1/3 to 1/1200 (See the model configuration list.)	
Rating	Continuous	
Heat resistance class	120 (E) (0.4 kW)	130 (B)
Starting method	Direct start	Direct start (0.75 to 3.7 kW) 人−△ start (5.5 and 7.5 kW)
Casing construction	Totally-enclosed fan-cooled type	
Protective construction	Indoor type (equivalent to IP44)	
Mounting method	Foot mounting or flange mounting (concentric)	
Mounting direction	Installation in any direction (models to be lubricated only with grease) Limited (models to be lubricated only with oil)	
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)	
Ambient temperature	−15 to +40℃ (non condensing)	
Ambient humidity	90%RH or less	
Altitude	1000 m or less above sea level	
Vibration	Normally: 4.9 m/s² or less Instantaneously: 9.8 m/s² or less	
Brake type	DC spring brake	
Applicable standards	JEC, JEM	
Lubrication method	Grease lubrication (filled with PYRONOC UNIVERSAL No.000) Oil lubrication (Pour the oil recommended by Mitsubishi.)	
Paint color	Metallic gray (equivalent to Munsell N4.5)	
Accessories	Shaft end key	

●Semi-standard specifications

Voltage	400/400/440 V 50/60/60 Hz, 380 V 50 Hz 415 V 50 Hz, 460 V 60 Hz (3-phase, 3-phase with brake)	400/400/440 V 50/60/60 Hz 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type (3-phase, 3-phase with brake) Models with quick manual release brakes are designed only for indoor use.	
Others	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor type) ● Inverter drive constant torque (V/F control) series (only 0.4 kW)	● Terminal box assemblies B, C and D ● With quick manual release brake (only 2.2 kW or less, indoor type)

●Special specifications

Overseas standards	● cUL Standard (0.4 to 2.2 kW) ● CCC Standard (0.4 kW, 0.75 kW) ● EN Standard
Protective construction	● Dust-proof (equivalent to IP54) ● Water-proof (equivalent to IP45) ● Dust- and water-proof (equivalent to IP65, 2.2 kW or less)
Others	● For inverter drive PLG feedback control: GM-DZ (0.4 kW), DP (0.75 to 7.5 kW) ● For frequent heavy loads: GM-DD (0.4 kW), DDP (0.75 to 7.5 kW) ● Pressure-resistant explosion-proof type: GM-DX (0.4 to 7.5 kW) ● Only for explosion-proof inverter: Magnetic flux vector control inverter constant torque GM-DZ3X (0.4 to 7.5 kW) V/F control inverter reduced torque GM-DTX (0.4 to 7.5 kW)

Characteristic table

●GM-D Series 3-phase, 0.4 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.4	500	600	1/3	1/3.00	7.3	6.0	686	50
	300	360	1/5	1/4.92	12	10	784	83
	150	180	1/10	1/9.94	24	20	1370	167
	100	120	1/15	1/14.80	36	30	1470	250
	75	90	1/20	1/19.10	46	38	1570	333
	60	72	1/25	1/25.54	62	51	1670	417
	50	60	1/30	1/30.15	73	61	1810	500
	37.5	45	1/40	1/40.20	97	81	2350	500
	30	36	1/50	1/50.62	122	102	2450	500
	25	30	1/60	1/60.06	145	121	3230	700
	18.8	22.5	1/80	1/81.90	198	165	3580	700
	15	18	1/100	1/102.32	253	211	5000	700
	12.5	15	1/120	1/116.37	283	236	6660	1200
	9.4	11.3	1/160	1/161.84	391	326	6960	1200
	7.5	9	1/200	1/179.82	444	370	8620	1200
	5.6	6.7	1/270	1/254.01	614	512	11960	1300
	4.2	5	1/360	1/353.09	871	726	11960	1300
	3.3	4	1/450	1/405.33	1000	833	11960	1300
	2.8	3.3	1/540	1/514.80	1240	1030	18330	1400
	2.1	2.5	1/720	1/733.20	1770	1480	18330	1400
	1.7	2	1/900	1/842.40	1780	1780	18330	1400
	1.3	1.5	1/1200	1/1123.20	1780	1780	18330	1400

●GM-DP Series 3-phase, 0.75 to 7.5 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.75	500	600	1/3	1/3.04	14	11	980	70
	300	360	1/5	1/4.80	22	18	1180	117
	150	180	1/10	1/9.94	45	38	1760	233
	100	120	1/15	1/14.58	66	55	1960	350
	75	90	1/20	1/19.59	89	74	2650	467
	60	72	1/25	1/25.38	115	96	2790	583
	50	60	1/30	1/27.96	127	106	2990	700
	37.5	45	1/40	1/37.93	172	143	3040	700
	30	36	1/50	1/47.39	220	183	4020	700
	25	30	1/60	1/60.20	273	227	4310	1200
	18.8	22.5	1/80	1/83.72	380	316	5680	1200
	15	18	1/100	1/93.02	431	359	7840	1200
	12.5	15	1/120	1/112.28	509	424	9020	1300
	9.4	11.3	1/160	1/156.07	722	602	9310	1300
	7.5	9	1/200	1/179.17	829	690	13030	1300
	5.6	6.7	1/270	1/268.71	1220	1020	16270	1400
	4.2	5	1/360	1/382.71	1740	1450	16270	1400
	3.3	4	1/450	1/439.71	2040	1700	16270	1400
	2.8	3.3	1/540	1/528.54	2450	2040	24300	2200
	2.1	2.5	1/720	1/665.96	2640	2580	24300	2200
	1.7	2	1/900	1/852.27	2640	2640	24300	2200
	1.3	1.5	1/1200	1/1136.36	2640	2640	24300	2200
1.5	500	600	1/3	1/2.93	27	22	1320	70
	300	360	1/5	1/4.91	44	37	1570	117
	150	180	1/10	1/9.78	89	74	2450	233
	100	120	1/15	1/14.57	132	110	2940	350
	75	90	1/20	1/19.76	179	149	3920	467
	60	72	1/25	1/23.47	213	177	4460	583
	50	60	1/30	1/28.42	258	215	5000	700
	37.5	45	1/40	1/40.67	367	306	5190	1200
	30	36	1/50	1/45.19	417	347	6370	1200
	25	30	1/60	1/56.45	512	427	8820	1300

●GM-DP Series 3-phase, 0.75 to 7.5 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
1.5	18.8	22.5	1/80	1/78.46	726	605	9460	1300
	15	18	1/100	1/90.07	833	694	11960	1300
	12.5	15	1/120	1/114.40	1040	867	18330	1400
	9.4	11.3	1/160	1/162.93	1480	1230	18330	1400
	7.5	9	1/200	1/187.20	1700	1420	18300	1400
	5.6	6.7	1/270	1/279.55	2530	2110	21850	2200
	4.2	5	1/360	1/352.23	2640	2640	21850	2200
	3.3	4	1/450	1/450.77	2640	2640	21850	2200
2.2	500	600	1/3	1/3.04	40	34	1910	120
	300	360	1/5	1/5.00	66	55	2250	200
	150	180	1/10	1/9.98	133	111	3430	400
	100	120	1/15	1/14.52	193	161	3920	600
	75	90	1/20	1/18.92	252	210	5100	800
	60	72	1/25	1/23.19	308	257	5640	1000
	50	60	1/30	1/29.36	390	325	6220	1200
	37.5	45	1/40	1/39.16	528	440	6370	1300
	30	36	1/50	1/44.95	606	505	7840	1300
	25	30	1/60	1/59.51	794	662	14700	1400
	18.8	22.5	1/80	1/84.75	1130	942	14700	1400
	15	18	1/100	1/97.38	1300	1080	16270	1400
	12.5	15	1/120	1/117.45	1600	1330	23520	2200
	9.4	11.3	1/160	1/147.99	2010	1680	23520	2200
	7.5	9	1/200	1/189.39	2640	2200	24300	2200
3.7	500	600	1/3	1/2.95	66	55	2700	130
	300	360	1/5	1/4.75	106	88	3190	217
	150	180	1/10	1/9.97	222	185	4900	433
	100	120	1/15	1/14.35	321	268	5590	650
	75	90	1/20	1/20.22	460	384	6960	867
	60	72	1/25	1/25.13	572	477	8870	1083
	50	60	1/30	1/28.41	635	530	10780	1300
	37.5	45	1/40	1/41.13	932	776	10190	1400
	30	36	1/50	1/47.26	1070	892	13430	1400
	25	30	1/60	1/62.12	1390	1160	18330	2200
	18.8	22.5	1/80	1/78.27	1750	1460	18330	2200
	15	18	1/100	1/100.17	2290	1910	21850	2200
	12.5	15	1/120	1/113.87	2600	2170	28910	3180
5.5	500	600	1/3	1/2.91	97	81	3480	140
	300	360	1/5	1/4.89	162	135	4120	233
	150	180	1/10	1/9.51	315	262	6370	467
	100	120	1/15	1/14.05	467	389	8620	700
	75	90	1/20	1/18.63	620	516	9800	933
	60	72	1/25	1/23.22	772	643	11270	1167
	50	60	1/30	1/30.10	1000	833	12740	1400
	37.5	45	1/40	1/38.12	1270	1060	14110	2200
	30	36	1/50	1/48.78	1660	1380	15580	2200
	25	30	1/60	1/56.58	1930	1610	23520	2587
	16.7	20	1/90	1/87.28	2890	2410	28910	3180
	12.5	15	1/120	1/116.05	3860	3210	34590	3805
7.5	500	600	1/3	1/2.87	130	108	3920	210
	300	360	1/5	1/4.99	225	187	4610	350
	150	180	1/10	1/9.86	447	373	7150	700
	100	120	1/15	1/14.22	645	537	10190	1050
	75	90	1/20	1/19.78	897	747	11560	1400
	60	72	1/25	1/24.20	1100	917	13720	1833
	50	60	1/30	1/27.38	1240	1030	15970	2200
	33	40	1/45	1/42.62	1990	1640	23520	2587
	25	30	1/60	1/56.05	2630	2200	28910	3180
	16.7	20	1/90	1/87.39	3940	3280	34590	3805

Dimensional outline drawing

Foot mounting 3-phase GM-D (B)/DP (B) Series

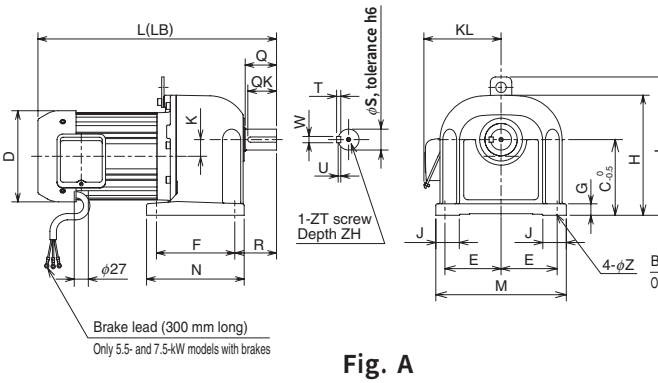


Fig. A

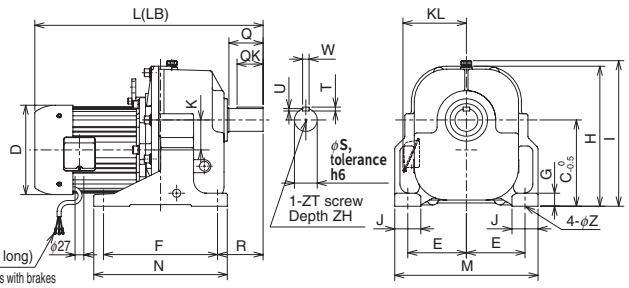


Fig. B

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																								Weight (kg)	
			L	(LB)	Q	QK	D	K	F	R	N	T	W	U	ZT	ZH	S	KL	J	E	M	G	C	H	I	Z	Without brake	With brake
0.4	1/3 to 1/50	D	289	341	36	32	120	20	85	50	109	6	6	3.5	M8	12	22	119	25	75	170	15	100	160	-	10	10.5	12
	1/60 to 1/100	G	343	395	50	45	120	30	135	65	161	8	10	5	M8	12	32	119	30	87.5	200	18	125	195	230	12	23	24.5
	1/120 to 1/200	J	372	424	60	55	120	32	150	80	187	8	12	5	M8	12	40	119	45	107.5	250	22	145	230	265	15	36	37.5
	1/270 to 1/450	LM	474	526	75	70	120	9.5	170	95	206	9	14	5.5	M8	12	48	119	50	125	285	22	170	275	310	15	49	50.5
	1/540 to 1/900	MM	516	568	82	71	120	19.5	200	107	240	10	16	6	M10	18	55	119	60	130	300	25	195	330	345	19	65.4	66.9
	1/1200	MM	516	568	82	71	120	11.5	200	107	240	10	16	6	M10	18	55	119	60	130	300	25	195	330	345	19	65.4	66.9

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																								Weight (kg)	
			L	(LB)	Q	QK	D	K	F	R	N	T	W	U	ZT	ZH	S	KL	J	E	M	G	C	H	I	Z	Without brake	With brake
0.75	1/3 to 1/30	F	384	447	50	45	150	30	120	65	146	8	10	5	M8	12	32	138	30	87.5	200	18	120	195	230	12	27.7	31.3
	1/40, 1/50	G	403	466	50	45	150	30	135	65	161	8	10	5	M8	12	32	138	30	87.5	200	18	125	195	230	12	27.7	31.3
	1/60 to 1/100	J	436	499	60	55	150	32	150	80	187	8	12	5	M8	12	40	138	45	107.5	250	22	145	230	265	15	40.7	44.3
	1/120 to 1/200	L	458	521	75	70	150	40	170	95	206	9	14	5.5	M8	12	48	138	50	125	285	22	170	275	310	15	53.7	57.3
	1/270 to 1/450	MM	584	647	82	71	150	12	200	107	240	10	16	6	M10	18	55	138	60	130	300	25	195	330	345	19	70.1	73.7
	1/540 to 1/900	NM	617	680	90	72	150	22	230	120	280	11	18	7	M10	18	60	138	70	150	350	30	230	380	395	24	105	109
	1/1200	NM	617	680	90	72	150	11.5	230	120	280	11	18	7	M10	18	60	138	70	150	350	30	230	380	395	24	105	109
1.5	1/3 to 1/30	H	433	505	50	45	175	30	115	65	141	8	10	5	M8	12	32	148	35	102.5	230	18	140	227	262	12	36.6	40.2
	1/40, 1/50	J	472	544	60	55	175	32	150	80	187	8	12	5	M8	12	40	148	45	107.5	250	22	145	230	265	15	45.6	49.2
	1/60 to 1/100	L	499	571	75	70	175	40	170	95	206	9	14	5.5	M8	12	48	148	50	125	285	22	170	275	310	15	58.6	62.2
	1/120 to 1/200	M	543	615	82	71	175	50	200	107	240	10	16	6	M10	18	55	148	60	130	300	25	195	330	345	19	75.0	78.6
	1/270 to 1/450	NM	681	753	90	72	175	14.5	230	120	280	11	18	7	M10	18	60	148	70	150	350	30	230	380	395	24	110	113
2.2	1/3 to 1/30	J	511	578	60	55	206	32	150	80	187	8	12	5	M8	12	40	160	45	107.5	250	22	145	230	265	15	53.9	58.6
	1/40, 1/50	L	537	604	75	70	206	40	170	95	206	9	14	5.5	M8	12	48	160	50	125	285	22	170	275	310	15	66.9	71.6
	1/60 to 1/100	M	580	647	82	71	206	50	200	107	240	10	16	6	M10	18	55	160	60	130	300	25	195	330	345	19	83.3	88.0
	1/120 to 1/200	N	613	680	90	72	206	60	230	120	280	11	18	7	M10	18	60	160	70	150	350	30	230	380	395	24	118	123
3.7	1/3 to 1/30	L	573	648	75	70	235	40	170	95	206	9	14	5.5	M8	12	48	174	50	125	285	22	170	275	310	15	88.3	94.6
	1/40, 1/50	M	614	689	82	71	235	50	200	107	240	10	16	6	M10	18	55	174	60	130	300	25	195	330	345	19	105	111
	1/60 to 1/100	N	648	723	90	72	235	60	230	120	280	11	18	7	M10	18	60	174	70	150	350	30	230	380	395	24	140	146
	1/120	TN	740	815	130	91	235	99	400	170	470	14	22	9	M12	22	80	174	100	195	490	45	300	483	500	28	227	246
5.5	1/3 to 1/30	M	672	752	82	71	275	50	200	107	240	10	16	6	M10	18	55	194	60	130	300	25	195	330	345	19	116	124
	1/40, 1/50	N	706	786	90	72	275	60	230	120	280	11	18	7	M10	18	60	194	70	150	350	30	230	380	395	24	150	158
	1/60	TM	736	816	105	80	275	92	350	140	410	12	20	7.5	M12	22	70	194	80	180	440	40	265	430	447	28	198	217
	1/90	TN	791	871	130	91	275	99	400	170	470	14	22	9	M12	22	80	194	100	195	490	45	300	483	500	28	243	262
	1/120	TP	824	904	130	98	275	105	420	175	500	14	25	9	M16	27	90	194	110	210	540	50	335	540	553	35	313	332
7.5	1/3 to 1/20	M	707	787	82	71	275	50	200	107	240	10	16	6	M10	18	55	194	60	130	300	25	195	330	345	19	117	127
	1/25, 1/30	N	726	806	90	72	275	60	230	120	280	11	18	7	M10	18	60	194	70	150	350	30	230	380	395	24	152	161
	1/45	TM	775	855	105	80	275	92	350	140	410	12	20	7.5	M12	22	70	194	80	180	440	40	265	430	447	28	211	227
	1/60	TN	828	908	130	91	275	99	400	170	470	14	22	9	M12	22	80	194	100	195	490	45	300	483	500	28	256	272
	1/90	TP	861	941	130	98	275	105	420	175	500	14	25	9	M16	27	90	194	110	210	540	50	335	540	553	35	326	342

(Notes)
- See Fig. B for the models in the shaded areas.
- The dimensions in parentheses are for the models with brakes.
- The dimensions and weight are subject to change without notice.
- For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

Dimensional outline drawing

Flange mounting 3-phase GM-DF (B)/DPF (B) Series

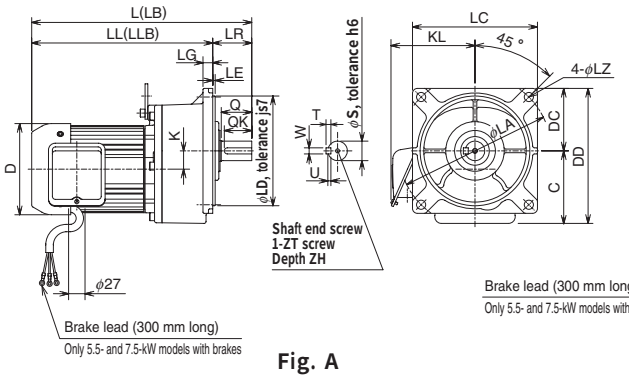


Fig. A

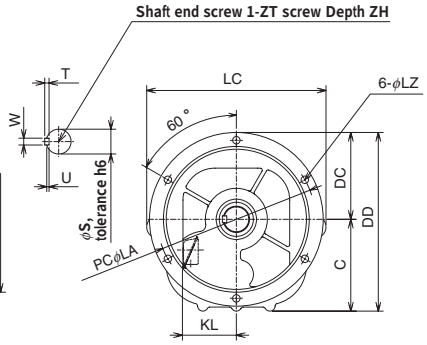


Fig. B

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																									Weight (kg)	
			L	(LB)	LL	(LLB)	LR	LG	LE	Q	QK	D	K	LD	T	W	U	ZT	ZH	S	LC	KL	LA	LZ	DC	C	DD	Without brake	With brake
0.4	1/3 to 1/50	D	289	341	242.5	294.5	46.5	12	3	36	32	120	20	170	6	6	3.5	M8	12	22	185	119	225	12	92.5	100.5	193	10.5	12
	1/60 to 1/100	G	343	395	283	335	60	16	4	50	45	120	30	210	8	10	5	M8	12	32	225	119	280	15	112.5	125.5	238	24.5	26
	1/120 to 1/200	J	372	424	297.5	349.5	74.5	18	4	60	55	120	32	260	8	12	5	M8	12	40	280	119	340	19	140	146	286	38	39.5
	1/270 to 1/450	LM	474	526	387.5	439.5	86.5	20	4	75	70	120	9.5	290	9	14	5.5	M8	12	48	315	119	380	24	157.5	172	329.5	52	53.5
	1/540 to 1/900	MM	516	568	426	478	90	20	4	82	71	120	19.5	340	10	16	6	M10	18	55	370	119	450	24	185	197	382	72.4	73.9
	1/1200	MM	516	568	426	478	90	20	4	82	71	120	11.5	340	10	16	6	M10	18	55	370	119	450	24	185	197	382	72.4	73.9

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																									Weight (kg)	
			L	(LB)	LL	(LLB)	LR	LG	LE	Q	QK	D	K	LD	T	W	U	ZT	ZH	S	LC	KL	LA	LZ	DC	C	DD	Without brake	With brake
0.75	1/3 to 1/30	F	384	447	320	383	64	16	4	50	45	150	30	180	8	10	5	M8	12	32	205	138	250	15	102.5	119	221.5	29.2	32.8
	1/40, 1/50	G	403	466	343	406	60	16	4	50	45	150	30	210	8	10	5	M8	12	32	225	138	280	15	112.5	125.5	238	29.2	32.8
	1/60 to 1/100	J	436	499	361.5	424.5	74.5	18	4	60	55	150	32	260	8	12	5	M8	12	40	280	138	340	19	140	146	286	42.7	46.3
	1/120 to 1/200	L	458	521	371.5	434.5	86.5	20	4	75	70	150	40	290	9	14	5.5	M8	12	48	315	138	380	24	157.5	172	329.5	56.7	60.3
	1/270 to 1/450	MM	584	647	494	557	90	20	4	82	71	150	12	340	10	16	6	M10	18	55	370	138	450	24	185	197	382	77.1	80.7
	1/540 to 1/900	NM	617	680	512	575	105	24	5	90	72	150	22	420	11	18	7	M10	18	60	450	138	550	28	225	233	458	115	119
	1/1200	NM	617	680	512	575	105	24	5	90	72	150	11.5	420	11	18	7	M10	18	60	450	138	550	28	225	233	458	115	119
1.5	1/3 to 1/30	H	433	505	370	442	63	18	4	50	45	175	30	235	8	10	5	M8	12	32	255	148	315	19	127.5	141	268.5	41.1	44.7
	1/40, 1/50	J	472	544	397.5	469.5	74.5	18	4	60	55	175	32	260	8	12	5	M8	12	40	280	148	340	19	140	146	286	47.6	51.2
	1/60 to 1/100	L	499	571	412.5	484.5	86.5	20	4	75	70	175	40	290	9	14	5.5	M8	12	48	315	148	380	24	157.5	172	329.5	61.6	65.2
	1/120 to 1/200	M	543	615	453	525	90	20	4	82	71	175	50	340	10	16	6	M10	18	55	370	148	450	24	185	197	382	82.0	85.6
	1/270 to 1/450	NM	681	753	576	648	105	24	5	90	72	175	14.5	420	11	18	7	M10	18	60	450	148	550	28	225	233	458	120	123
2.2	1/3 to 1/30	J	511	578	436.5	503.5	74.5	18	4	60	55	206	32	260	8	12	5	M8	12	40	280	160	340	19	140	146	286	55.9	60.6
	1/40, 1/50	L	537	604	450.5	517.5	86.5	20	4	75	70	206	40	290	9	14	5.5	M8	12	48	315	160	380	24	157.5	172	329.5	69.9	74.6
	1/60 to 1/100	M	580	647	490	557	90	20	4	82	71	206	50	340	10	16	6	M10	18	55	370	160	450	24	185	197	382	90.3	95.0
	1/120 to 1/200	N	613	680	508	575	105	24	5	90	72	206	60	420	11	18	7	M10	18	60	450	160	550	28	225	233	458	128	133
3.7	1/3 to 1/30	L	573	648	486.5	561.5	86.5	20	4	75	70	235	40	290	9	14	5.5	M8	12	48	315	174	380	24	157.5	172	329.5	91.3	97.6
	1/40, 1/50	M	614	689	524	599	90	20	4	82	71	235	50	340	10	16	6	M10	18	55	370	174	450	24	185	197	382	112	118
	1/60 to 1/100	N	648	723	543	618	105	24	5	90	72	235	60	420	11	18	7	M10	18	60	450	174	550	28	225	233	458	150	156
	1/120	TN	739	814	599	674	140	25	6	130	91	235	99	470	14	22	9	M12	22	80	576	174	510	24	280	296	576	242	249
5.5	1/3 to 1/30	M	672	752	582	662	90	20	4	82	71	275	50	340	10	16	6	M10	18	55	370	194	450	24	185	197	382	123	131
	1/40, 1/50	N	706	786	601	681	105	24	5	90	72	275	60	420	11	18	7	M10	18	60	450	194	550	28	225	233	458	160	168
	1/60	TM	736	816	621	701	115	24	5	105	80	275	92	435	12	20	7.5	M12	22	70	538	194	480	19	260	261	521	203	211
	1/90	TN	790	870	650	730	140	25	6	130	91	275	99	470	14	22	9	M12	22	80	578	194	510	24	280	296	576	258	266
	1/120	TP	823	903	683	763	140	30	6	130	98	275	105	510	14	25	9	M16	27	90	648	194	560	24	305	317	622	343	351
7.5	1/3 to 1/20	M	707	787	617	697	90	20	4	82	71	275	50	340	10	16	6	M10	18	55	370	194	450	24	185	197	382	124	134
	1/25, 1/30	N	726	806	621	701	105	24	5	90	72	275	60	420	11	18	7	M10	18	60	450	194	550	28	225	233	458	162	171
	1/45	TM	775	855	660	740	115	24	5	105	80	275	92	435	12	20	7.5	M12	22	70	538	194	480	19	260	261	521	216	224
	1/60	TN	827	907	687	767	140	25	6	130	91	275	99	470	14	22	9	M12	22	80	578	194	510	24	280	296	576	271	280
	1/90	TP	860	940	720	800	140	30	6	130	98	275	105	510	14	25	9	M16	27	90	648	194	560	24	305	317	622	356	365

(Notes)
- See Fig. B for the models in the shaded areas.
- The dimensions in parentheses are for the models with brakes.
- The dimensions and weight are subject to change without notice.
- For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

GM-LJP
Series

■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-LJP	11 to 37	3 to 60	6 to 60

* Frequencies that can be used are limited depending on the model and output.

■Highly reliable materials enable a long product life.

●The GM-LJP geared motors use high-grade bearings in addition to high-hardness and high-precision gears exposed to special heat treatment to improve the gear strength. Life tests have been carried out repeatedly to ensure that they have a long life and can adequately meet demanding conditions.

■Low noise

●The noise level of geared motors is affected by the precision of gears and gear cases.
Mitsubishi uses helical gears with optimum torsion angles to improve the precision of gears.
A high precision of gears is achieved through crowning and honing processes.
The gear cases have been processed by a high-precision machining center, resulting in reduced noise levels.

■Use of DC safety brakes for a long product life

●The GM-LJP series use DC safety brakes (spring brakes) that are built into the power units.

Specifications

●Standard specifications

Item	Standard specification
Series name	GM-LJP Series
Output	11 to 37 kW
Number of poles	4P (6P only in 22-kW 33/40-r/min models)
Number of phases	3-phase
Voltage	200/200/220 V
Frequency	50/60/60 Hz
Gear ratio	1/3 to 1/60 (See the model configuration list.)
Rating	Continuous
Heat resistance class	130 (B) (11 to 22 kW), 155 (F) (22kW 6P, 30, 37 kW)
Starting method	Y–Δ start
Casing construction	Totally-enclosed fan-cooled type
Protective construction	Indoor type (equivalent to IP44)
Mounting method	Foot mounting, vertical
Mounting direction	Limited (models to be lubricated only with oil)
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)
Ambient temperature	−15 to +40°C (non condensing)
Ambient humidity	80%RH or less
Altitude	1000 m or less above sea level
Vibration	Normally: 4.9 m/s^2 or less Instantaneously: 9.8 m/s^2 or less
Brake type	DC spring brake (11 to 22 kW)
Applicable standards	JEC, JEM
Lubrication method	Models to be lubricated only with oil (Pour the oil recommended by Mitsubishi.)
Paint color	Purple blue (equivalent to Munsell 2.5PB2/4)
Accessories	Shaft end key and oil dipstick (only for vertical type)

●Semi-standard specifications

Voltage	400/400/440 V 50/60/60 Hz, 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type (3-phase, 3-phase with brake)
Others	● Terminal box assembly B

●Special specifications

Protective construction	● Dust-proof (IP54) ● Water-proof (IP45)
Others	● For frequent heavy loads: GM-LLJP

Characteristic table

●GM-LJP Series 3-phase, 11 to 37 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Allowable overhang load on output shaft (N)
	50Hz	60Hz			50Hz	60Hz	
11	500	600	1/3	1/2.83	203	170	5150
	300	360	1/5	1/4.80	339	282	6080
	150	180	1/10	1/9.50	664	554	11270
	100	120	1/15	1/14.33	990	831	12740
	75	90	1/20	1/19.66	1320	1110	14360
	50	60	1/30	1/29.62	1990	1660	20090
	33	40	1/45	1/44.12	2920	2410	28910
	25	30	1/60	1/59.64	3860	3210	34590
15	500	600	1/3	1/2.82	277	231	6170
	300	360	1/5	1/4.91	463	385	7300
	150	180	1/10	1/9.82	907	756	11270
	100	120	1/15	1/14.64	1350	1130	16660
	75	90	1/20	1/19.13	1810	1510	18180
	50	60	1/30	1/28.85	2710	2260	27930
	33	40	1/45	1/42.60	3990	3290	34590

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Allowable overhang load on output shaft (N)
	50Hz	60Hz			50Hz	60Hz	
22	500	600	1/3	1/2.82	407	339	7940
	300	360	1/5	1/4.91	678	565	9410
	150	180	1/10	1/9.66	1320	1110	16460
	100	120	1/15	1/14.53	1990	1660	20680
	75	90	1/20	1/19.23	2660	2210	23320
	50	60	1/30	1/28.51	3990	3320	31160
	33	40	*1 1/45	1/28.66	5880	4820	31160
30	150	180	1/10	1/9.52	1810	1510	18230
	100	120	1/15	1/14.32	2710	2260	22930
	75	90	1/20	1/19.30	3630	3020	28320
	50	60	1/30	1/28.33	5250	4380	31160
37	150	180	1/10	1/9.52	2230	1860	18230
	100	120	1/15	1/15.15	3460	2880	22930
	75	90	1/20	1/19.29	4400	3670	28320
	50	60	1/30	1/28.66	6540	5450	31160

*1: When the 22-kW model with a gear ratio of 1/45 is provided with a 6P motor, its gear ratio is 1/30.
*2: 22-kW models with a gear ratio of 1/45 and 30-kW or more models with brakes are not available.

Dimensional outline drawing

Foot mounting 3-phase GM-LJP (B) Series

〈With brake〉

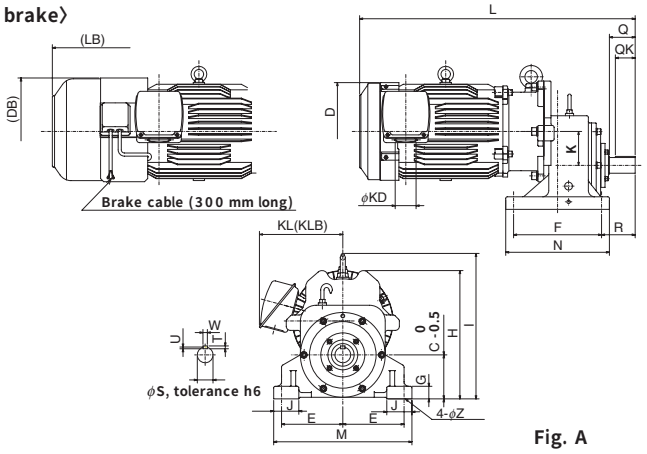


Fig. A

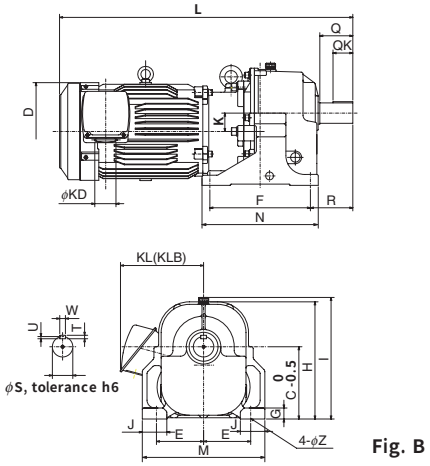


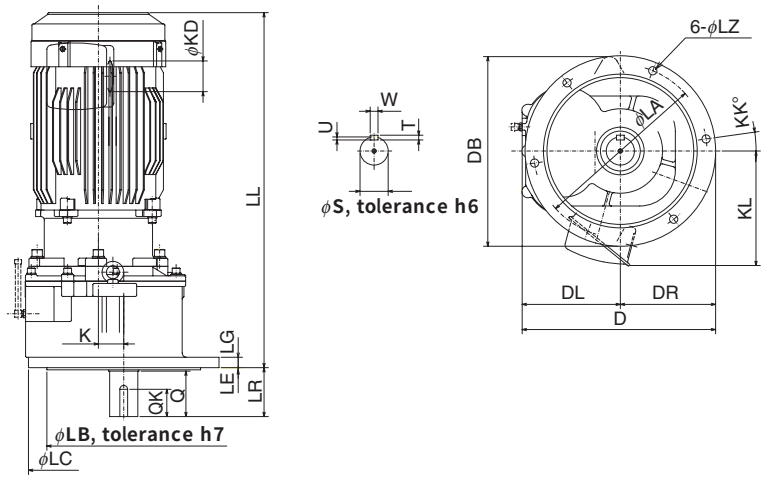
Fig. B

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																										Weight (kg)	
			L	(LB)	Q	QK	D	(DB)	KD	K	F	R	N	T	W	U	S	KL	(KLB)	J	E	M	G	C	H	I	Z	Without brake	With brake
11	1/3,1/5	SM	803	982	82	63	311	341	35	96	234	105	280	9	14	5.5	45	270	280	75	167	380	35	125	360	428	24	185	237
	1/10,1/15,1/20	L	888.5	1067.5	105	63	311	341	35	58.5	320	135	370	11	18	7	65	270	280	78	150	390	35	230	373	389	24	218	262
	1/30	M	902	1081	105	80	311	341	35	92	350	140	410	12	20	7.5	70	270	280	80	180	440	40	265	430	445	28	242	294
	1/45	TN	956.5	1135.5	130	91	311	341	35	99	400	170	470	14	22	9	80	270	280	100	195	490	45	300	483	500	28	288	340
	1/60	TP	989.5	1168.5	130	98	311	341	35	105	420	175	500	14	25	9	90	270	280	110	210	540	50	335	540	555	35	359	411
15	1/3,1/5	SN	876	1058	82	63	311	341	35	108	280	107	330	9	14	5.5	50	270	280	80	195	440	40	140	408	458	24	217	295
	1/10	L	932.5	1114.5	105	63	311	341	35	58.5	320	135	370	11	18	7	65	270	280	78	150	390	35	230	373	389	24	230	308
	1/15,1/20	M	946	1128	105	80	311	341	35	92	350	140	410	12	20	7.5	70	270	280	80	180	440	40	265	430	445	28	262	340
	1/30	N	1000.5	1182.5	130	91	311	341	35	99	400	170	470	14	22	9	80	270	280	100	195	490	45	300	483	500	28	292	370
	1/45	TP	1033.5	1215.5	130	98	311	341	35	105	420	175	500	14	25	9	90	270	280	110	210	540	50	335	540	555	35	370	448
22	1/3,1/5	SP	903	1098	82	63	355	341	35	126	320	112	380	10	16	6	55	290	295	90	220	500	45	160	446	539	28	302	375
	1/10,1/15,1/20	N	1021	1216	130	91	355	341	35	99	400	170	470	14	22	9	80	290	295	100	195	490	45	300	483	500	28	337	435
	1/30	P	1054	1249	130	98	355	341	35	105	420	175	500	14	25	9	90	290	295	110	210	540	50	335	540	555	35	409	505
	*1/45	P	1129	—	130	98	400	—	35	105	420	175	500	14	25	9	90	300	—	110	210	540	50	335	540	555	35	500	—
30	1/10 to 1/30	P	1129	—	130	98	400	—	35	105	420	175	500	14	25	9	90	300	—	110	210	540	50	335	540	555	35	500	—
37	1/10 to 1/30	P	1173.5	—	130	98	439	—	50	105	420	175	500	14	25	9	90	370	—	110	210	540	50	335	540	555	35	554	—

(Notes) ● See Fig. B for the models in the shaded areas.
● The dimensions in parentheses are for the models with brakes. 22-kW models with a gear ratio of 1/45 and 30-kW models with brakes are not available.
● The dimensions and weight are subject to change without notice.
● For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/).
CAD data (DXF format) and PDF data are available.
* When the 22-kW model with a gear ratio of 1/45 is provided with a 6P motor, its gear ratio is 1/30.
* Note that the 11-kW, 22-kW and 30-kW models with a gear ratio of 1/10 are not dimensionally compatible with GM-LJ Series.

Dimensional outline drawing

Vertical type 3-phase GM-LJPV Series



Output (kW)	Gear ratio	Gear size	Dimensions (mm)																					Weight (kg)
			D	DL	DR	DB	KL	KD	KK	K	LA	LB	LC	LE	LG	LL	LR	LZ	Q	QK	S	T	W	U	Without brake
11	1/10,1/15,1/20	L	448	228	220	436	270	35	8	58.5	400	355	440	5	24	775	113	19	105	63	65	11	18	7	210
	1/30	M	521	261	260	538	270	35	0	92	480	435	520	5	24	787	115	19	105	80	70	12	20	7.5	250
	1/45	TN	576	296	280	578	270	35	0	99	510	470	560	6	25	816.5	140	24	130	91	80	14	22	9	303
	1/60	TP	622	317	305	648	270	35	0	105	560	510	610	6	30	849.5	140	24	130	98	90	14	25	9	289
15	1/10	L	448	228	220	436	270	35	8	58.5	400	355	440	5	24	819	113	19	105	63	65	11	18	7	230
	1/15,1/20	M	521	261	260	538	270	35	0	92	480	435	520	5	24	831	115	19	105	80	70	12	20	7.5	262
	1/30	N	576	296	280	578	270	35	0	99	510	470	560	6	25	860.5	140	24	130	91	80	14	22	9	307
	1/45	TP	622	317	305	648	270	35	0	105	560	510	610	6	30	893.5	140	24	130	98	90	14	25	9	410
22	1/10,1/15,1/20	N	576	296	280	578	290	35	0	99	510	470	560	6	25	881	140	24	130	91	80	14	22	9	337
	1/30	P	622	317	305	648	290	35	0	105	560	510	610	6	30	914	140	24	130	98	90	14	25	9	409
	* 1/45	P	622	317	305	648	300	35	0	105	560	510	610	6	30	989	140	24	130	98	90	14	25	9	500
30	1/10 to 1/30	P	622	317	305	648	300	35	0	105	560	510	610	6	30	989	140	24	130	98	90	14	25	9	500
37	1/10 to 1/30	P	622	317	305	648	370	50	0	105	560	510	610	6	30	1034	140	24	130	98	90	14	25	9	554

(Notes) ● The dimensions and weight are subject to change without notice.

● For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/).
CAD data (DXF format) and PDF data are available.

* When the 22-kW model with a gear ratio of 1/45 is provided with a 6P motor, its gear ratio is 1/30.

* Note that the 11-kW, 22-kW and 30-kW models with a gear ratio of 1/10 are not dimensionally compatible with GM-LJ Series.

GM-J2
Series

■High torque and increased strength

●The maximum allowable torques of 9.8 Nm for 25 W models and 20.6 Nm for models with 40 W or more were achieved for the GM-J2 series. These are durable models with high-rigid casings.

■Low noise

●Reduced noise levels were achieved by adopting high-precision gears and a highly rigid structure integrating the motor and gear head.

■A wide range of variations

●The widest range of gear ratios in the industry has been achieved, ranging from 1/3 to 1/2400 (1/3 to 1/1800 for 90 W models). The wide range of selections allows for a variety of choices.

■Novel design

●A new form and coloring are adopted to allow the motor to match with various installation environments.
The new gray motor demonstrates the sophistication of the era of mechatronics.

■High quality

●Improved quality has been achieved by adopting a production line integrating the processes from the receipt of order to shipment.

Specifications

●Standard specifications

Item	Standard specification											
Series name	GM-J2 Series											
Output	25, 40 W	60, 90 W	25 W	40 W	60, 90 W	25, 40 W	60, 90 W	25, 40 W	60, 90 W	25, 40 W	60, 90 W	
Motor type	3-phase		Single-phase induction			Single-phase reversible		3-phase with brake		Single-phase reversible with brake		
Cooling method	Totally-enclosed self-cooled type	Totally-enclosed fan-cooled type	Totally-enclosed self-cooled type		Totally-enclosed fan-cooled type	Totally-enclosed self-cooled type	Totally-enclosed fan-cooled type	Totally-enclosed self-cooled type	Totally-enclosed fan-cooled type	Totally-enclosed self-cooled type	Totally-enclosed fan-cooled type	
Starting method	Direct start		Capacitor operation					Direct start		Capacitor operation		
Voltage/frequency	200/200/220 V 50/60/60 Hz		100 V 50/60 Hz					200/200/220 V 50/60/60 Hz		100 V 50/60 Hz		
Rating	Continuous		Continuous			30 min		Continuous		30 min		
Number of poles	4P											
Heat resistance class	120 (E)											
Brake type	—							DC spring brake Both for simultaneous turn-off and separate turn-off				
Gear ratio	1/3 to 1/2400 (1/3 to 1/1800 for 90-W models)											
Installation location	Indoors Ambient temperature: −15 to +40℃ (non condensing) Humidity: 90%RH or less											
Vibration	4.9 m/s² or less											
Mounting method	Flange type											
Lubrication method	Grease lubrication (All models will be delivered filled with grease.)											
Protective construction	Indoor type (equivalent to IP40)											
Paint color	Munsell 5Y4/1											
Accessories	Shaft end key, mounting bolts, capacitor (only single-phase and single-phase reversible models)											
Number of lead wires	3 pcs.		3 pcs.	4 pcs.		3 pcs.		3 pcs. for motor and 3 pcs. for brake				

(Note) The single-phase reversible (GM-J2R, J2RT and J2RW) 25- and 40-W models have built-in simple brakes.

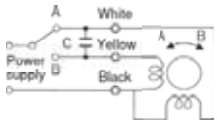
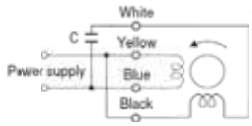
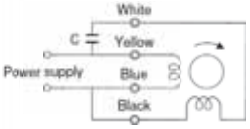
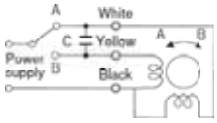
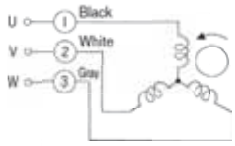
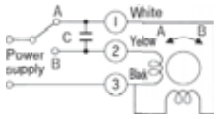
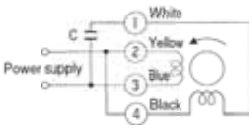
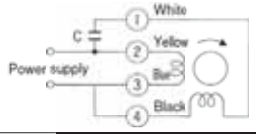
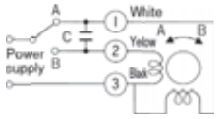
●Semi-standard specifications

Voltage	Single phase and single-phase reversible: 200 V 3-phase: 400 V class (except 25-W models and models with brakes)
With small terminal box	Single phase and single-phase reversible: 100 V and 200 V 3-phase: 200 V class and 400 V class (400 V class models have lug type boxes.)
With large terminal box	Single phase and single-phase reversible: 100 V and 200 V 3-phase: 200 V class and 400 V class (400 V class models have lug type boxes.)

Wiring

●Motor

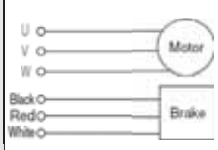
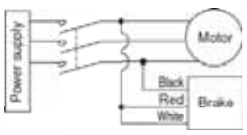
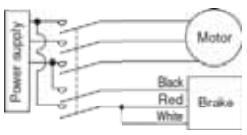
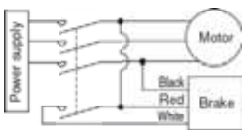
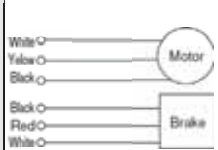
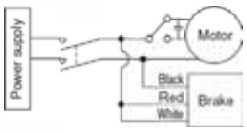
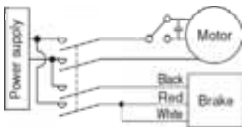
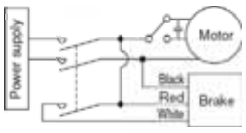
Motor rotating directions viewed from output shaft end.

Motor type			Counterclockwise direction	Clockwise direction
Without terminal box	3-phase			**The motor will rotate clockwise when two wires are swapped.**
	Single-phase	25 W		**The motor will rotate clockwise when the switch is turned to B.**
		40 W 60 W 90 W	 	
	Single-phase reversible			**The motor will rotate clockwise when the switch is turned to B.**
With small/large terminal box	3-phase			**The motor will rotate clockwise when two wires are swapped.**
	Single-phase	25 W		**The motor will rotate clockwise when the switch is turned to B.**
		40 W 60 W 90 W	 	
	Single-phase reversible			**The motor will rotate clockwise when the switch is turned to B.**

(Notes) 1. For the rotating direction of the output shaft, see (Note) **2/under the characteristic table (page 46).**
2. C is for Capacitor.

Brake connection method and coasting time

The coasting time (time after power is turned off until the braking operation starts) of geared motor with brake varies depending on the brake connection method. Connect the **brake** appropriately depending on the purpose of **use.**

Model	Before shipment		Simultaneous turn-off	Separate turn-off	DC turn-off (quick turn-off)
Model GM-J2B (3-phase)		Connection method			
		Coasting time	0.2 to 0.4 sec	0.1 to 0.2 sec	0.01 to 0.03 sec
Model GM-J2RB (single-phase reversible)		Connection method			
		Coasting time	0.2 to 0.4 sec	0.1 to 0.2 sec	0.01 to 0.03 sec

Characteristic table

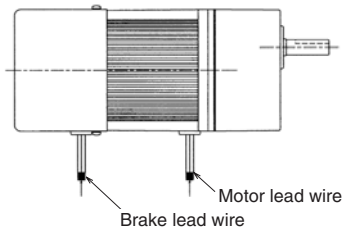
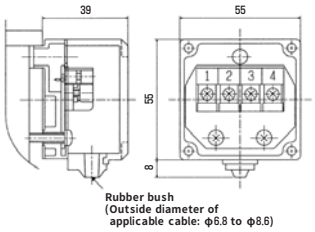
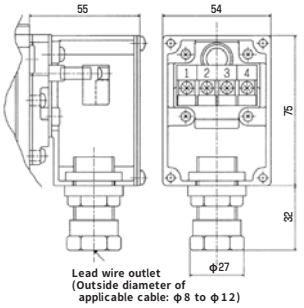
●GM-J2 Series 25 to 90 W

Output (W)	Output shaft rotation speed (r/min) 50Hz	60Hz	Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm) 50Hz	60Hz	Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
25	500	600	1/3	1/2.97	0.45	0.37	245	
	300	360	1/5	1/4.81	0.75	0.63	245	
	200	240	1/7.5	1/7.38	1.18	0.98	245	
	150	180	1/10	1/10.18	1.57	1.27	245	
	120	144	1/12.5	1/12.00	1.86	1.57	245	
	100	120	1/15	1/14.22	2.25	1.86	343	
	75	90	1/20	1/18.67	2.94	2.45	392	
	60	72	1/25	1/22.77	3.63	2.94	392	
	50	60	1/30	1/28.36	4.51	3.72	392	
	37.5	45	1/40	1/40.00	6.08	5.1	392	19.6
	30	36	1/50	1/47.14	7.15	5.98	392	
	25	30	1/60	1/55.87	8.53	7.06	392	
	20	24	1/75	1/73.33	9.8	8.33	392	
	16.7	20	1/90	1/89.45	9.8	9.8	392	
	15	18	1/100	1/99.52	9.8	9.8	392	
	12.5	15	1/120	1/111.43	9.8	9.8	392	
	10	12	1/150	1/143.74	9.8	9.8	392	
	7.5	9	1/200	1/188.66	9.8	9.8	392	
	6	7.2	1/250	1/256.04	9.8	9.8	392	
	5	6	1/300	1/285.36	9.8	9.8	392	
	3.8	4.5	1/400	1/374.53	9.8	9.8	392	
	3	3.6	1/500	1/508.30	9.8	9.8	392	
	2.5	3	1/600	1/566.91	9.8	9.8	392	
	1.9	2.3	1/800	1/744.07	9.8	9.8	392	
	1.5	1.8	1/1000	1/1009.80	9.8	9.8	392	
	1.3	1.5	1/1200	1/1130.60	9.8	9.8	392	
	1	1.2	1/1500	1/1511.80	9.8	9.8	392	
	0.8	1	1/1800	1/1844.10	9.8	9.8	392	
	0.75	0.9	1/2000	1/2051.70	9.8	9.8	392	
	0.63	0.75	1/2400	1/2297.10	9.8	9.8	392	
40	500	600	1/3	1/2.98	0.72	0.60	294	
	300	360	1/5	1/4.67	1.18	0.98	294	
	200	240	1/7.5	1/6.89	1.76	1.47	294	
	150	180	1/10	1/9.62	2.35	1.96	294	
	120	144	1/12.5	1/11.83	2.94	2.45	294	
	100	120	1/15	1/14.30	3.53	2.94	343	
	75	90	1/20	1/19.42	4.41	3.63	441	
	60	72	1/25	1/24.38	5.49	4.61	490	
	50	60	1/30	1/27.61	6.57	5.49	539	
	37.5	45	1/40	1/39.44	8.62	7.15	588	29.4
	30	36	1/50	1/48.55	10.8	8.92	637	
	25	30	1/60	1/54.24	12.3	10.8	686	
	20	24	1/75	1/69.03	16.2	13.2	686	
	16.7	20	1/90	1/83.44	19.6	19.1	686	
	15	18	1/100	1/93.78	20.6	19.6	686	
	12.5	15	1/120	1/106.20	20.6	20.6	686	
	10	12	1/150	1/141.63	20.6	20.6	686	
	7.5	9	1/200	1/180.25	20.6	20.6	686	
	6	7.2	1/250	1/244.87	20.6	20.6	686	
	5	6	1/300	1/283.25	20.6	20.6	686	
	3.8	4.5	1/400	1/360.49	20.6	20.6	686	
	3	3.6	1/500	1/489.74	20.6	20.6	686	
	2.5	3	1/600	1/555.10	20.6	20.6	686	
	1.9	2.3	1/800	1/706.47	20.6	20.6	686	
	1.5	1.8	1/1000	1/959.77	20.6	20.6	686	
	1.3	1.5	1/1200	1/1086.90	20.6	20.6	686	
	1	1.2	1/1500	1/1384.10	20.6	20.6	686	
	0.8	1	1/1800	1/1673.10	20.6	20.6	686	
	0.75	0.9	1/2000	1/1880.40	20.6	20.6	686	
	0.63	0.75	1/2400	1/2129.40	20.6	20.6	686	

Output (W)	Output shaft rotation speed (r/min) 50Hz	60Hz	Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm) 50Hz	60Hz	Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
60	500	600	1/3	1/2.98	1.08	0.88	392	
	300	360	1/5	1/4.67	1.76	1.47	392	
	200	240	1/7.5	1/6.89	2.65	2.25	392	
	150	180	1/10	1/9.62	3.53	3.04	392	
	120	144	1/12.5	1/11.83	4.41	3.63	392	
	100	120	1/15	1/14.30	5.39	4.51	392	
	75	90	1/20	1/19.42	6.86	5.59	441	
	60	72	1/25	1/24.38	8.82	7.25	490	
	50	60	1/30	1/27.61	9.8	8.33	539	
	37.5	45	1/40	1/39.44	13.2	10.8	784	29.4
	30	36	1/50	1/48.55	16.7	13.7	882	
	25	30	1/60	1/54.24	19.6	16.7	882	
	20	24	1/75	1/69.03	20.6	19.1	980	
	16.7	20	1/90	1/83.44	20.6	19.6	1080	
	15	18	1/100	1/93.78	20.6	20.6	1080	
	12.5	15	1/120	1/106.20	20.6	20.6	1080	
	10	12	1/150	1/141.63	20.6	20.6	1080	
	7.5	9	1/200	1/180.25	20.6	20.6	1080	
	6	7.2	1/250	1/244.87	20.6	20.6	1080	
	5	6	1/300	1/283.25	20.6	20.6	1080	
	3.8	4.5	1/400	1/360.49	20.6	20.6	1080	
	3	3.6	1/500	1/489.74	20.6	20.6	1080	
	2.5	3	1/600	1/555.10	20.6	20.6	1080	
	1.9	2.3	1/800	1/706.47	20.6	20.6	1080	
	1.5	1.8	1/1000	1/959.77	20.6	20.6	1080	
	1.3	1.5	1/1200	1/1086.90	20.6	20.6	1080	
	1	1.2	1/1500	1/1384.10	20.6	20.6	1080	
	0.8	1	1/1800	1/1673.10	20.6	20.6	1080	
	0.75	0.9	1/2000	1/1880.40	20.6	20.6	1080	
	0.63	0.75	1/2400	1/2129.40	20.6	20.6	1080	
90	500	600	1/3	1/2.79	1.67	1.37	588	
	300	360	1/5	1/4.89	2.74	2.25	588	
	200	240	1/7.5	1/7.37	4.12	3.43	588	
	150	180	1/10	1/9.67	5.39	4.51	588	
	120	144	1/12.5	1/11.68	6.37	5.29	588	
	100	120	1/15	1/14.27	7.35	6.17	588	
	75	90	1/20	1/19.92	10.3	8.62	588	
	60	72	1/25	1/22.56	12.3	10.8	588	
	50	60	1/30	1/29.20	14.7	12.7	686	
	37.5	45	1/40	1/39.66	19.6	19.1	784	29.4
	30	36	1/50	1/49.80	20.6	19.6	882	
	25	30	1/60	1/56.39	20.6	20.6	980	
	20	24	1/75	1/68.16	20.6	20.6	1080	
	16.7	20	1/90	1/86.75	20.6	20.6	1080	
	15	18	1/100	1/94.19	20.6	20.6	1080	
	12.5	15	1/120	1/118.80	20.6	20.6	1080	
	10	12	1/150	1/133.93	20.6	20.6	1080	
	7.5	9	1/200	1/196.58	20.6	20.6	1080	
	6	7.2	1/250	1/246.83	20.6	20.6	1080	
	5	6	1/300	1/279.50	20.6	20.6	1080	
	3.8	4.5	1/400	1/378.97	20.6	20.6	1080	
	3	3.6	1/500	1/475.87	20.6	20.6	1080	
	2.5	3	1/600	1/538.84	20.6	20.6	1080	
	1.9	2.3	1/800	1/766.76	20.6	20.6	1080	
	1.5	1.8	1/1000	1/962.80	20.6	20.6	1080	
	1.3	1.5	1/1200	1/1090.20	20.6	20.6	1080	
	1	1.2	1/1500	1/1317.80	20.6	20.6	1080	
	0.8	1	1/1800	1/1677.20	20.6	20.6	1080	

(Notes) 1. The output shaft rotation speed fluctuates by ±10% depending on the load level.
2. The rotating direction of the models in the shaded areas is the same as the motors, and that of other models is reverse.

Structural dimensions of terminal block

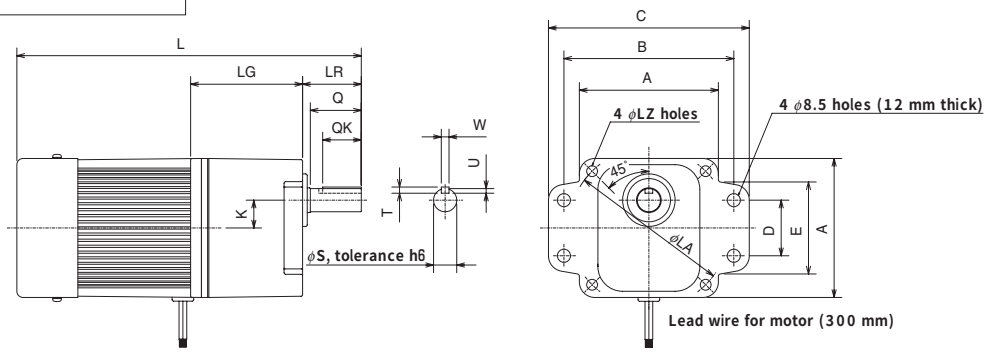
Series	Output	Classification	Dimensions
GM-J2	25 W to 90 W	Standard	 The standard models have lug type terminals.
		With terminal box	●Small terminal box  ●Large terminal box 

Applicable crimp-type terminals	
Bare round type (R type)	1.25-3.5 (2-3.5 *)
Round type with insulation coating	1.25-3.5 2-3.5
Spade type	1.25-YS3A (JST)
Spade type with insulation coating	1.25-YS3A (JST) 2-YS3A (JST)

(Notes) 1. Up to 2 pcs./terminal screw
2. * Applicable to 380 V (JIS C0704)
3. Terminal screw size: M3.5 screw Tightening torque: 90 N
4. 400 V models have lug type terminals.

Dimensional outline drawing

GM-J2 (S, B, R, RB)

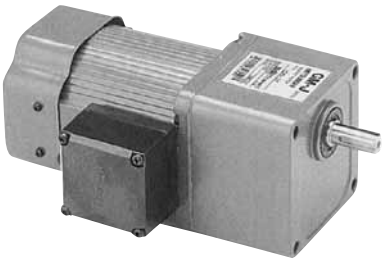


Model name	Capacity	Gear ratio	Gear size	Dimensions (mm) L	LG	LR	K	Q	QK	T	W	U	S	A	B	C	D	E	LA	LZ	Weight (kg)
GM-J2 GM-J2S GM-J2R	25 W	1/3 to 1/120	AB	164 (165.5)	54	32	15	28	20	4	4	2.5	10	80	—	—	—	—	94	5.5	2.0 (2.0)
		1/150 to 1/2400	ABM	204.5 (206)	94.5																2.5 (2.5)
	40 W	1/3 to 1/120	AC	202 (203.5)	72.5	32	18	27	20	4	4	2.5	12	90	—	—	—	—	104	6.5	3.4 (3.4)
		1/150 to 1/2400	ACM	254 (255.5)	124.5																4.1 (4.1)
	60 W	1/3 to 1/120	AD	223 (238)	72.5	38	18	33	25	5	5	3	15	90	110	130	36	60	104	6.5	3.6 (4.1)
		1/150 to 1/2400	ADM	275 (290)	124.5																4.3 (5.0)
	90 W	1/3 to 1/90	AE	238 (238)	72.5	38	18	33	25	5	5	3	15	90	110	130	36	60	104	6.5	4.1 (4.1)
		1/100 to 1/1800	AEM	290 (290)	124.5																5.0 (5.0)
GM-J2B GM-J2RB	25 W	1/3 to 1/120	AB	206.5 (206.5)	54	32	15	28	20	4	4	2.5	10	80	—	—	—	—	94	5.5	2.6 (2.6)
		1/150 to 1/2400	ABM	247 (247)	94.5																3.1 (3.1)
	40 W	1/3 to 1/120	AC	247.5 (247.5)	72.5	32	18	27	20	4	4	2.5	12	90	—	—	—	—	104	6.5	4.2 (4.2)
		1/150 to 1/2400	ACM	299.5 (299.5)	124.5																4.9 (4.9)
	60 W	1/3 to 1/120	AD	253.5 (268.5)	72.5	38	18	33	25	5	5	3	15	90	110	130	36	60	104	6.5	4.4 (4.9)
		1/150 to 1/2400	ADM	305.5 (320.5)	124.5																5.1 (5.8)
	90 W	1/3 to 1/90	AE	268.5 (268.5)	72.5	38	18	33	25	5	5	3	15	90	110	130	36	60	104	6.5	4.9 (4.9)
		1/100 to 1/1800	AEM	320.5 (320.5)	124.5																5.8 (5.8)

(Notes) ● The dimensions in parentheses are for the single-phase reversible models (J2R and J2RB).
● The dimensions and weight are subject to change without notice.
● For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

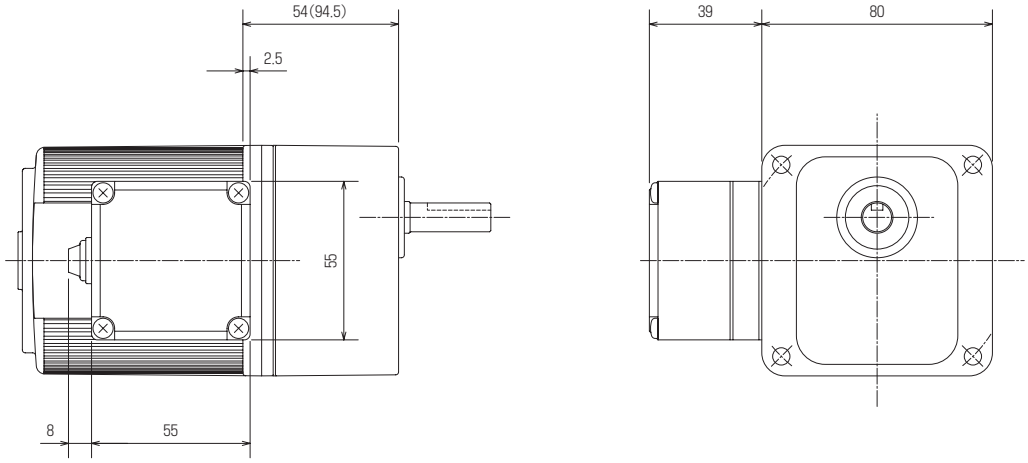
With small terminal box

Motor type	Model name	Terminal box weight
3-phase without brake	GM-J2T	0.1 kg
3-phase with brake	GM-J2BT	
Singe-phase without brake	GM-J2ST	
Single-phase reversible without brake	GM-J2RT	
Single-phase reversible with brake	GM-J2RBT	



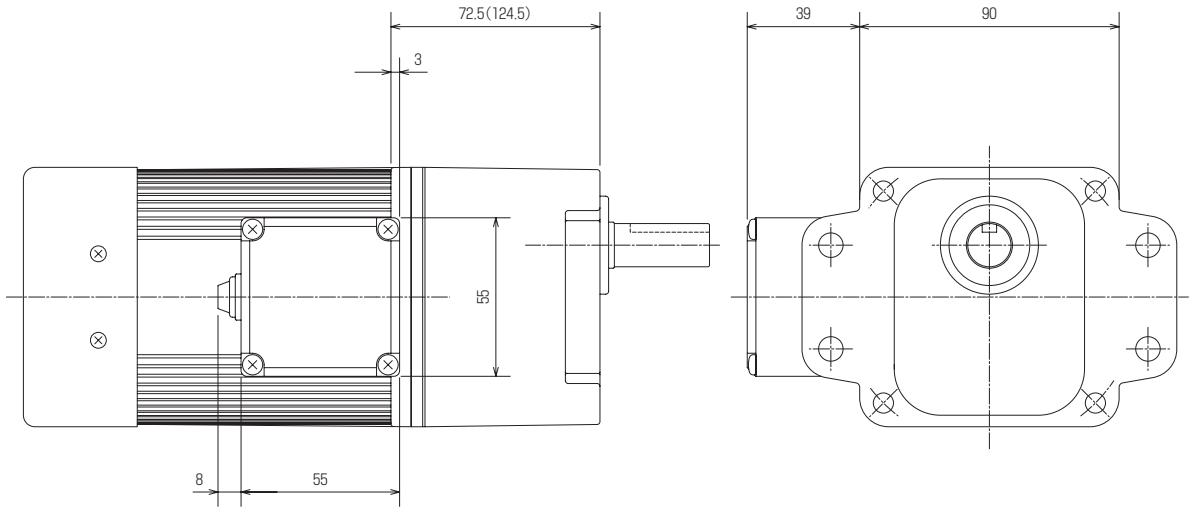
Models with output of 25 W

【Dimensions in parentheses are for models with gear ratios of 1/150 to 1/2400.】



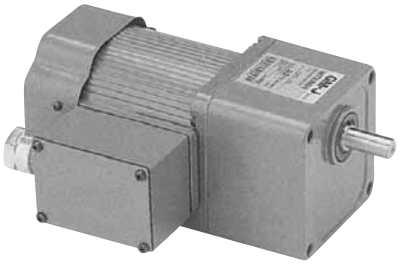
Models with output of 40 to 90 W

【Dimensions in parentheses are for models with gear ratios of 1/150 to 1/2400, however, 90 W models with gear ratios of 1/100 to 1/1800.】



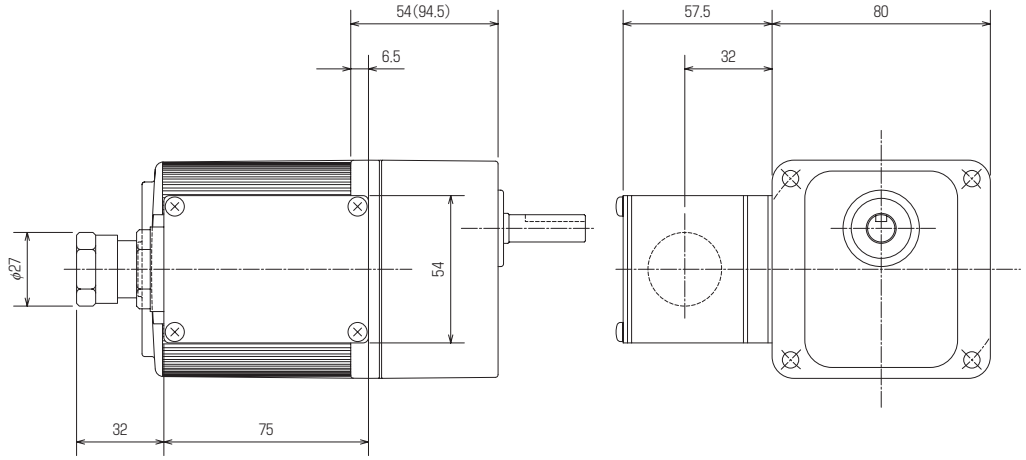
With large terminal box

Motor type	Model name	Terminal box weight
3-phase without brake	GM-J2W	0.5 kg
3-phase with brake	GM-J2BW	
Singe-phase without brake	GM-J2SW	
Single-phase reversible without brake	GM-J2RW	
Single-phase reversible with brake	GM-J2RBW	



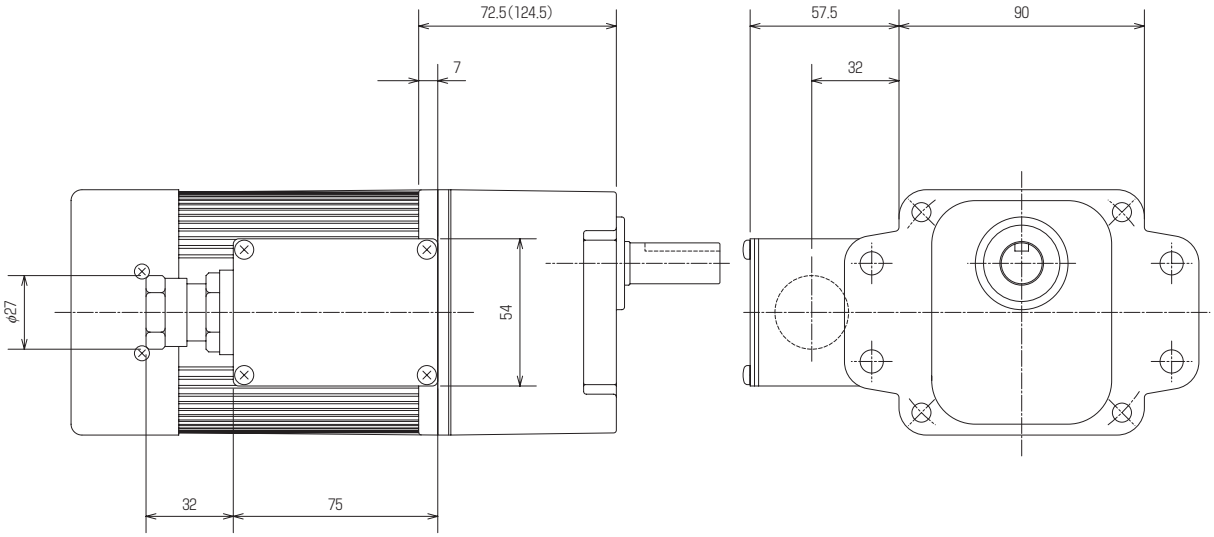
Models with output of 25 W

【Dimensions in parentheses are for models with gear ratios of 1/150 to 1/2400.】



Models with output of 40 to 90 W

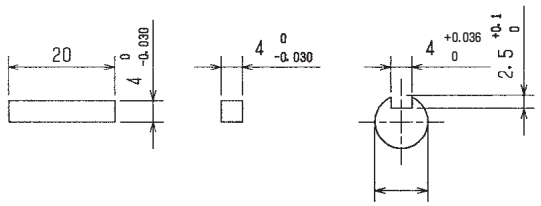
【Dimensions in parentheses are for models with gear ratios of 1/150 to 1/2400, however, 90 W models with gear ratios of 1/100 to 1/1800.】



Accessories

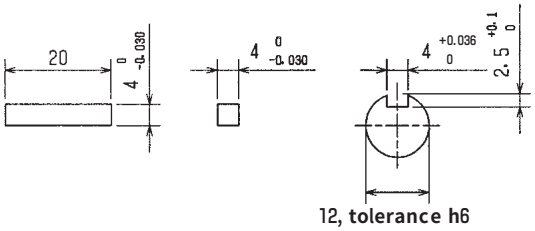
●Shaft end key (and keyway)

(For 25 W)



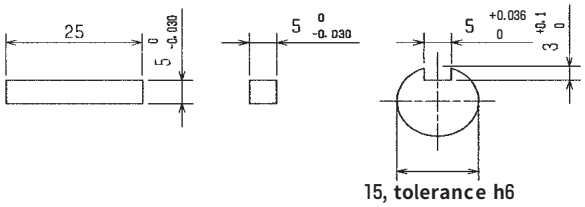
10, tolerance h6

(For 40 W)



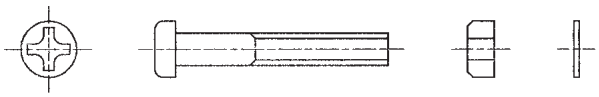
12, tolerance h6

(for 60 and 90 W)



15, tolerance h6

●Mounting screws, nuts and plain washers



Motor output (W)	Gear ratio	P pan head screw		Hex. nut	Plain washer
		Nominal pitch	Length (mm)	Nominal	Nominal
25	1/3 to 1/120	M5×0.8	70	M5	5
40, 60	1/3 to 1/120	M6×1.0	90	M6	6
90	1/3 to 1/90				
25	1/150 to 1/2400	M5×0.8	110	M5	5
40, 60	1/150 to 1/2400	M6×1.0	140	M6	6
90	1/100 to 1/1800				

●Capacitor (only single-phase and single-phase reversible motors)

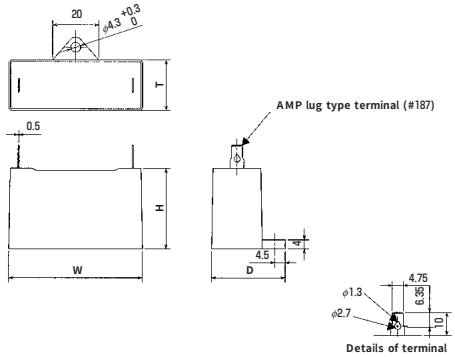


Fig. A

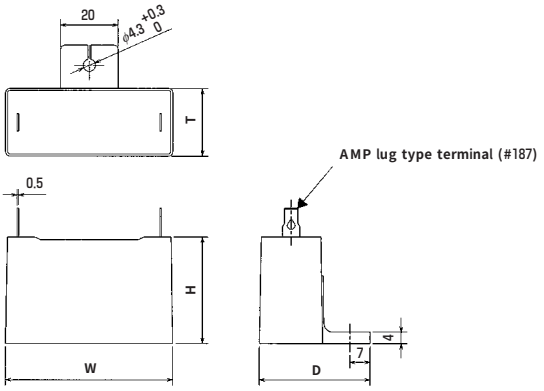


Fig. B

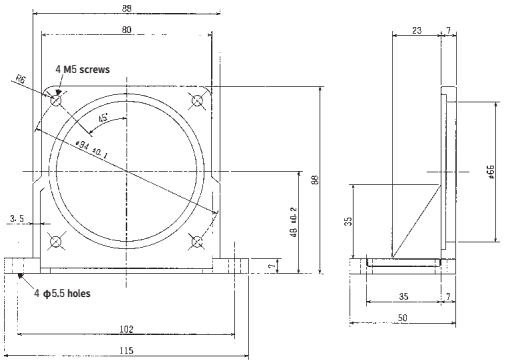
Model name	Motor output (W)	Capacity (μF)	Capacitor rated voltage (VAC)	Fig.	Dimensions (mm)				Applicable power supply
					W	H	T	D	Voltage (V)
GM-J2S	25	9.0	220	Fig. A	38	29	19	29	100
	40	10		Fig. A	48	29	19	29	
	60	15		Fig. A	58	31	21	31	
	90	25		Fig. A	58	37	23.5	38.5	
GM-J2R(B)	25	11		Fig. B	48	29	19	29	
	40	15		Fig. A	58	31	21	31	
	60	25		Fig. B	58	37	23.5	38.5	
	90	35		Fig. B	58	50	35	50	
GM-J2S	25	2.2	440	Fig. A	48	29	19	29	200
	40	2.5		Fig. A	48	31	21	31	
	60	4.0		Fig. A	58	35	22	32	
	90	6.0		Fig. B	58	41	29	44	
GM-J2R(B)	25	2.8		Fig. A	48	31.5	22.5	32.5	
	40	4.0		Fig. A	58	35	22	32	
	60	6.0		Fig. B	58	41	29	44	
	90	9.0		Fig. B	58	50	35	50	

Options

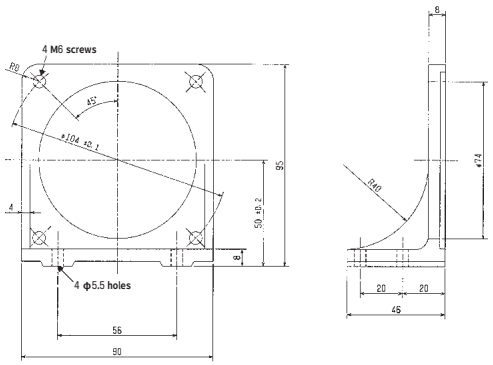
For the methods of using the options, see the wiring diagram on page 45.

●Mounting feet

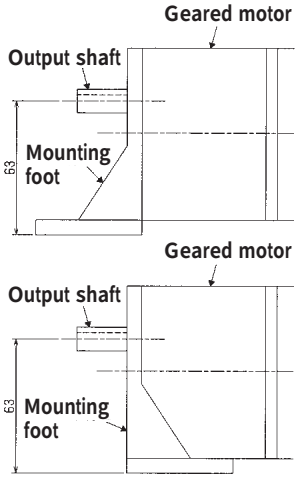
1. Model name: GL-80 (for 25 W)



2. Model name: GL-90 (for 40 to 90 W)



<Mounting method>



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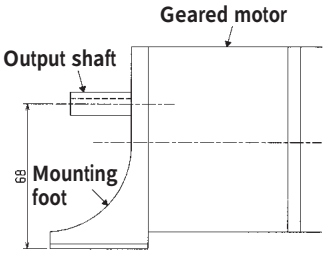


GM-SSY Series

GM-SSYP Series

■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

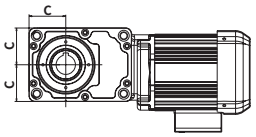
Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-SSY	0.1 to 0.4	3 to 60	40 to 60
GM-SSYP	0.75 to 2.2		6 to 60

■Low noise

●A noise level lower than conventional models has been achieved by the smooth power transmission made possible by the optimum Super Helicross gear design (Lower by 3 to 4 dB(A) compared to conventional Mitsubishi models).

■Microminiaturization

●The distance from the output shaft to the case end face (dimension C) has been minimized to the smallest size possible, enabling the motors to be installed easily on small-sized machines. (Dimension C is the same for the three faces.)



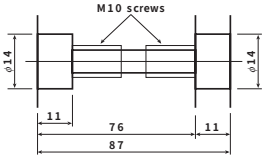
■Shared methods for mounting

●The motors are designed to allow both flange and face-mounting methods. Changing the method for connecting with machines will not require a change of the motor model.

■In the case of flange mounting
Use the M8 hexagon socket head cap screws.
(Make sure to use the supplied special washers.)

* The bolt hole diameter conforms to JIS Class 1.
Please check the mounting dimensions beforehand.

■In the case of face mounting
Use M10 bolts.



Example) 0.4 kW, 1/30

Specifications

●Standard specifications

Item	Standard specification	
Series name	GM-SSY Series	GM-SSYP Series
Output	0.1 to 0.4 kW	0.75 to 2.2 kW
Number of poles	4P	
Number of phases	3-phase	
Voltage	200/200/220 V	
Frequency	50/60/60 Hz	
Gear ratio	1/7.5 to 1/60 (See the model configuration list.)	
Rating	Continuous	
Heat resistance class	120 (E)	130 (B)
Starting method	Direct start	
Casing construction	Totally-enclosed fan-cooled type (totally-enclosed self-cooled type only for 0.1-kW models)	
Protective construction	Indoor type (equivalent to IP44)	
Output shaft	Hollow shaft	
Mounting method	For both flange and face mounting methods	
Mounting direction	Installation in any direction	
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)	
Ambient temperature	−15 to +40℃ (non condensing)	
Ambient humidity	90%RH or less	
Altitude	1000 m or less above sea level	
Vibration	Normally: 4.9 m/s² or less Instantaneously: 9.8 m/s² or less	
Brake type	DC spring brake	
Applicable standards	JEC, JEM	
Lubrication method	Grease lubrication (filled with TOUGHLIX GREASE GM)	Grease lubrication (filled with PYRONOC UNIVERSAL (SH))
Paint color	Silver (equivalent to Munsell N6.0)	
Accessories	Output shaft protective cover and special washers	

●Semi-standard specifications

Voltage	400/400/440 V, 50/60/60 Hz, 380 V 50 Hz, 415 V 50 Hz, 460 V 60 Hz (3-phase, 3-phase with brake) 100/100 V 50/60 Hz, 200/200 V 50/60 Hz (single-phase, single-phase with brake)	400/400/440 V 50/60/60 Hz 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type (3-phase, 3-phase with brake) Single-phase models with motors and models with quick manual release brakes are designed only for indoor use.	
Others	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor models) ● Inverter drive constant torque (V/F control) series (0.1 to 0.4 kW)	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor models)

●Special specifications

Overseas standards	● cUL standard ● CCC Standard (0.1 to 0.75 kW) ● EN Standard	
Protective construction	● Dust-proof and water-proof (equivalent to IP65 and IP67)	● Dust-proof and water-proof (equivalent to IP65)

Characteristic table

●GM-SSY Series 3-phase, 0.1 to 0.4 kW

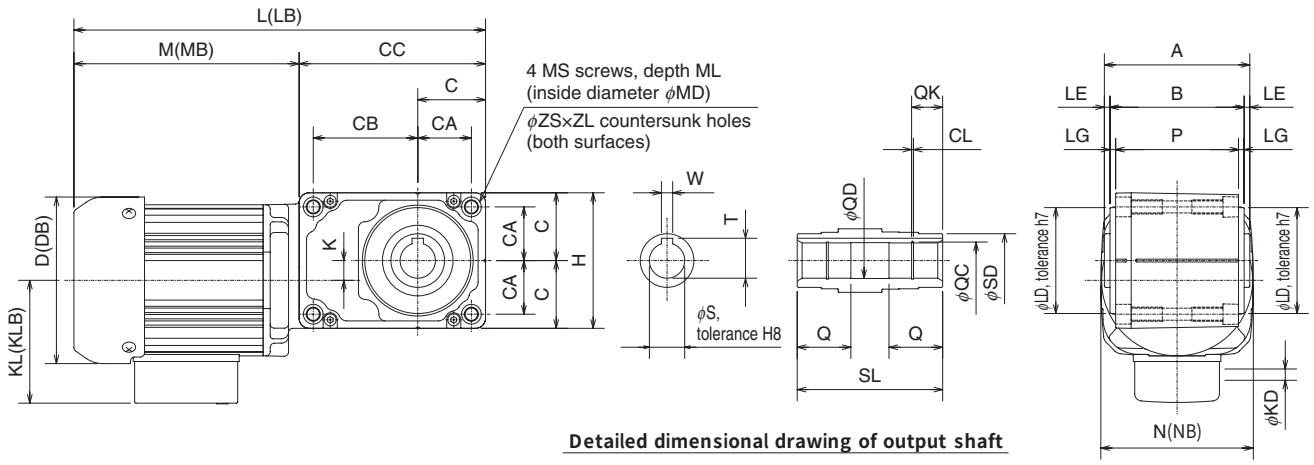
Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.1	200	240	1/7.5	1/7.68	4.06	3.38	1078	216
	150	180	1/10	1/10.06	5.41	4.51	1176	235
	120	144	1/12.5	1/12.90	6.76	5.63	1225	245
	100	120	1/15	1/15.79	8.11	6.76	1274	255
	75	90	1/20	1/20.77	10.8	9.01	1421	284
	60	72	1/25	1/25.83	13.5	11.3	1470	294
	50	60	1/30	1/30.21	16.2	13.5	1519	304
	37.5	45	1/40	1/39.74	21.6	18.0	1666	333
	30	36	1/50	1/48.85	27.0	22.5	1813	363
	25	30	1/60	1/54.77	32.5	27.0	1911	382
0.2	200	240	1/7.5	1/7.68	8.11	6.76	1323	265
	150	180	1/10	1/10.06	10.8	9.01	1421	284
	120	144	1/12.5	1/12.90	13.5	11.3	1519	304
	100	120	1/15	1/15.79	16.2	13.5	1617	323
	75	90	1/20	1/20.77	21.6	18.0	1764	353
	60	72	1/25	1/25.83	27.0	22.5	1862	372
	50	60	1/30	1/30.21	32.5	27.0	1911	382
	37.5	45	1/40	1/41.33	43.3	36.1	2058	412
	30	36	1/50	1/51.67	54.1	45.1	2254	451
	25	30	1/60	1/59.70	64.9	54.1	2352	470
0.4	200	240	1/7.5	1/7.82	16.2	13.5	1764	353
	150	180	1/10	1/10.39	21.6	18.0	1960	392
	120	144	1/12.5	1/12.76	27.0	22.5	2058	412
	100	120	1/15	1/15.30	32.5	27.0	2156	431
	75	90	1/20	1/20.70	43.3	36.1	2450	490
	60	72	1/25	1/25.69	54.1	45.1	2548	510
	50	60	1/30	1/30.06	64.9	54.1	2646	529
	37.5	45	1/40	1/40.08	86.5	72.1	2842	568
	30	36	1/50	1/49.95	108.2	90.1	3038	608
	25	30	1/60	1/56.53	129.8	108.2	3136	627

●GM-SSYP Series 3-phase, 0.75 to 2.2 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
	50Hz	60Hz			50Hz	60Hz		
0.75	200	240	1/7.5	1/7.76	30.4	25.4	2254	451
	150	180	1/10	1/9.49	40.6	33.8	2450	490
	120	144	1/12.5	1/12.99	50.7	42.3	2646	529
	100	120	1/15	1/15.88	60.9	50.7	2744	549
	75	90	1/20	1/21.32	81.1	67.6	3038	608
	60	72	1/25	1/25.13	101	84.5	3234	647
	50	60	1/30	1/29.56	122	101	3332	666
	37.5	45	1/40	1/40.50	162	135	3528	706
	30	36	1/50	1/49.64	203	169	3528	706
	25	30	1/60	1/60.67	243	203	3528	706
1.5	200	240	1/7.5	1/7.26	60.9	50.7	2548	510
	150	180	1/10	1/10	81.1	67.6	2744	549
	120	144	1/12.5	1/12.42	101	84.5	2940	588
	100	120	1/15	1/15	122	101	3136	627
	75	90	1/20	1/20.16	162	135	3332	666
	60	72	1/25	1/25.33	203	169	3528	706
	50	60	1/30	1/27.22	243	203	3724	745
2.2	200	240	1/7.5	1/7.18	89.2	74.4	3283	657
	150	180	1/10	1/10.08	119	99.2	3675	735
	120	144	1/12.5	1/12.37	149	124	3822	764
	100	120	1/15	1/15.14	178	149	3920	784
	75	90	1/20	1/19.89	238	198	4214	843
	60	72	1/25	1/24.87	297	248	4312	862
	50	60	1/30	1/27.79	357	297	4410	882

Dimensional outline drawing

Hollow shaft, for both flange and face mounting methods, 3-phase GM-SSYF (B)/SSYPF (B)-RH Series



Detailed dimensional drawing of output shaft

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																		
			A	B	P	LE	LG	LD	KD	N	(NB)	T	W	S	SD	QC	QD	QK	CL	SL	Q	L
0.1	1/7.5 to 1/60	20	95	87	79	4	4	56	12	107	108	22.8	6	20	30	21	20.4	16	1.15	95	30	251
0.2	1/7.5 to 1/30	20	95	87	79	4	4	56	12	108	108	22.8	6	20	30	21	20.4	16	1.15	95	30	277
	1/40 to 1/60	25	103	95	87	4	4	75	12	108	108	28.3	8	25	38	26.2	25.4	22	1.35	103	38	292
0.4	1/7.5 to 1/30	25	103	95	87	4	4	75	12	120	120	28.3	8	25	38	26.2	25.4	22	1.35	103	38	319
	1/40 to 1/60	30	114	106	98	4	4	85	12	120	120	33.3	8	30	44	31.4	30.4	22	1.35	114	46	332
0.75	1/7.5 to 1/30	30	114	106	98	4	4	85	27	150	150	33.3	8	30	44	31.4	30.4	22	1.35	114	46	403
	1/40 to 1/60	35	134	126	116	4	5	95	27	150	150	38.3	10	35	48	37	35.4	26	1.75	134	52	423
1.5	1/7.5 to 1/30	35	134	126	116	4	5	95	27	175	175	38.3	10	35	48	37	35.4	26	1.75	134	52	481
2.2	1/7.5 to 1/30	45	158	150	140	4	5	115	27	206	206	48.8	14	45	63	47.5	45.4	30	1.95	158	67	574

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																	Weight (kg)	
			(LB)	M	(MB)	CC	KL	(KLB)	D	(DB)	K	C	CA	CB	H	MS	ML	MD	ZS	ZL	Without brake	With brake
0.1	1/7.5 to 1/60	20	303	133	185	118	87	92	107	118	16	40	32	70	80	M8	16	6.7	11	11	6.2	7.6
0.2	1/7.5 to 1/30	20	325	159	207	118	87	92	118	118	16	40	32	70	80	M8	16	6.7	11	11	6.5	7.9
	1/40 to 1/60	25	340	160	208	132	87	92	118	118	14	48	38	74	96	M10	20	8.5	14	11	7.0	8.4
0.4	1/7.5 to 1/30	25	371	176	228	143	93	98	130	130	20	48	38	85	96	M10	20	8.5	14	11	10	11.5
	1/40 to 1/60	30	384	173	225	159	93	98	130	130	12	57	45	90	114	M12	24	10.5	18	13	11	12.5
0.75	1/7.5 to 1/30	30	466	233	296	170	138	138	150	150	18	57	45	101	114	M12	24	10.5	18	13	15.4	19.0
	1/40 to 1/60	35	486	237	300	186	138	138	150	150	28.5	68	54	104	136	M16	32	14	20	16	22.9	26.5
1.5	1/7.5 to 1/30	35	553	271	343	210	148	148	175	175	20	68	54	128	136	M16	32	14	20	16	27.3	30.9
2.2	1/7.5 to 1/30	45	641	324	391	250	160	160	206	206	23	83	65	149	166	M20	40	17.5	26	21	35.1	39.8

(Notes)
- The dimensions in parentheses are for the models with brakes.
- The terminal boxes of 0.75-kW or more models are made of steel sheet and differ in shape.
- The dimensions and weight are subject to change without notice.
- For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.

GM-SHY Series

GM-SHYP Series

■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-SHY	0.1 to 0.4	3 to 60	40 to 60
GM-SHYP	0.75 to 2.2		6 to 60

■Tough with a long product life

●A longer product life has been achieved by the first Super Helicross gear design in the industry and the use of original special grease.

■Low noise

●A noise level lower than conventional models has been achieved by the smooth power transmission made possible by the optimum Super Helicross gear design (Lower by 3 to 4 dB(A) compared to conventional Mitsubishi models).

■An extensive lineup of products

●A full series of face-mounting type motors have been introduced, expanding the range of choices.

●A model of choice can be selected from the extensive product lineup with gear ratios of 1/5 to 1/1440.

Specifications

●Standard specifications

Item	Standard specification				
Series name	GM-SHY Series			GM-SHYP Series	
Output	0.1 to 0.4 kW			0.75 to 2.2 kW	
Number of poles	4P				
Number of phases	3-phase				
Voltage	200/200/220 V				
Frequency	50/60/60 Hz				
Gear ratio	1/5 to 1/1440 (See the model configuration list.)			1 to 1/240 (See the model configuration list.)	
Rating	Continuous				
Heat resistance class	120 (E)			130 (B)	
Starting method	Direct start				
Casing construction	Totally-enclosed fan-cooled type (totally-enclosed self-cooled type only for 0.1-kW models)				
Protective construction	Indoor type (equivalent to IP44)				
Output shaft	Solid shaft (with shaft end tap)			Hollow shaft	
Mounting method	Foot mounting	Face mounting	Flange	Face mounting	Flange
Mounting direction	Installation in any direction				
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)				
Ambient temperature	−15 to +40℃ (non condensing)				
Ambient humidity	90%RH or less				
Altitude	1000 m or less above sea level				
Vibration	Normally: 4.9 m/s² or less Instantaneously: 9.8 m/s² or less				
Brake type	DC spring brake				
Applicable standards	JEC, JEM				
Lubrication method	Grease lubrication (filled with TOUGHLIX GREASE GM)			Grease lubrication (filled with PYRONOC UNIVERSAL (SH))	
Paint color	Silver (equivalent to Munsell N6.0)				
Accessories	Solid shaft: Shaft end key Hollow shaft: Output protective cover				

●Semi-standard specifications

Voltage	400/400/440 V, 50/60/60 Hz, 380 V 50 Hz, 415 V 50 Hz, 460 V 60 Hz (3-phase, 3-phase with brake) 100/100 V 50/60 Hz, 200/200 V 50/60 Hz (single-phase, single-phase with brake)	400/400/440 V 50/60/60 Hz 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type (3-phase, 3-phase with brake) Single-phase models with motors and models with quick manual release brakes are designed only for indoor use.	
Output shaft	● Solid shaft: Double-shaft type ● Hollow shaft: Special hole diameter	
Others	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor models) ● Inverter drive constant torque (V/F control) series (0.1 to 0.4 kW)	● Terminal box assemblies B, C and D ● With quick manual release brake (only indoor models)

●Special specifications

Overseas standards	● cUL standard ● CCC Standard (0.1 to 0.75 kW) ● EN Standard	
Protective construction	● Dust-proof and water-proof (equivalent to IP65 and IP67)	● Dust-proof and water-proof (equivalent to IP65)
Others	● Pressure-resistant, explosion-proof type GM-SHYX (0.4 and 0.75 kW) ● Only for explosion-proof inverter: Magnetic flux vector control inverter constant torque GM-SHYZ3X (0.4 and 0.75 kW) V/F control inverter reduced torque GM-SHYTX (0.2 to 0.75 kW)	

Characteristic table

●GM-SHY Series 0.1 to 0.4 kW

Output (kW)	Output shaft rotation speed (r/min) 50Hz	60Hz	Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm) 50Hz	60Hz	Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
0.1	300	360	1/5	1/5.13	2.74	2.25	1176	235
	200	240	1/7.5	1/7.81	4.07	3.38	1372	275
	150	180	1/10	1/10.24	5.39	4.51	1568	314
	120	144	1/12.5	1/13.05	6.76	5.64	1666	334
	100	120	1/15	1/15.22	8.13	6.76	1764	353
	75	90	1/20	1/20.65	10.8	9.02	1862	372
	60	72	1/25	1/25.83	13.7	11.8	2058	412
	50	60	1/30	1/31.00	16.7	13.7	2156	431
	37.5	45	1/40	1/40.73	21.6	17.6	2352	470
	30	36	1/50	1/51.67	27.4	22.5	2548	510
	25	30	1/60	1/61.14	32.3	27.4	2548	510
	18.8	22.5	1/80	1/82.52	43.1	36.3	2744	549
	15	18	1/100	1/99.98	53.9	45.1	2744	549
	12.5	15	1/120	1/124.41	64.7	53.9	2744	549
	9.4	11.3	1/160	1/162.75	81.3	67.6	2940	588
	7.5	9	*1/200	1/202.53	99.0	99.0	2940	588
	6.3	7.5	*1/240	1/229.06	99.0	99.0	2940	588
	5	6	1/300	1/294.71	143	119	3724	745
	4.2	5	1/360	1/358.31	172	143	3724	745
	3.1	3.8	1/480	1/478.03	229	191	3724	745
	2.7	3.2	1/560	1/561.83	267	223	3724	745
	2	2.4	*1/750	1/739.91	349	298	3724	745
	1.7	2	*1/900	1/911.65	349	349	3724	745
	1.3	1.5	*1/1200	1/1215.53	349	349	3724	745
	1	1.25	*1/1440	1/1370.99	349	349	3724	745
0.2	300	360	1/5	1/5.13	5.49	4.61	1568	314
	200	240	1/7.5	1/7.81	8.15	6.82	1715	343
	150	180	1/10	1/10.24	10.8	9.02	1862	372
	120	144	1/12.5	1/13.05	13.8	11.4	2009	402
	100	120	1/15	1/15.22	16.7	13.7	2156	431
	75	90	1/20	1/20.65	22.5	18.6	2352	470
	60	72	1/25	1/25.83	27.4	22.5	2548	510
	50	60	1/30	1/31.00	33.3	27.4	2646	529
	37.5	45	1/40	1/40.73	44.1	37.2	2842	568
	30	36	1/50	1/51.67	54.9	46.1	3038	608
	25	30	1/60	1/61.14	66.6	55.9	3038	608
	18.8	22.5	1/80	1/79.16	86.2	71.5	3136	627
	15	18	1/100	1/101.86	109	91.1	3136	627
	12.5	15	1/120	1/125.61	130	109	3136	627
	9.4	11.3	1/160	1/159.92	171	142	3136	627
	7.5	9	*1/200	1/212.66	193	193	3136	627
	6.3	7.5	*1/240	1/241.11	193	193	3136	627
	5	6	300	1/294.96	267	223	5292	1058
	4.2	5	360	1/364.76	321	267	5292	1058
	3.1	3.8	480	1/462.49	428	356	5292	1058
	2.7	3.2	560	1/552.71	499	416	5292	1058
	2	2.4	*1/750	1/697.61	642	557	5292	1058
	1.7	2	*1/900	1/884.52	642	642	5292	1058
	1.3	1.5	*1/1200	1/1179.36	642	642	5292	1058
	1	1.25	*1/1440	1/1409.40	642	642	5292	1058
0.4	300	360	1/5	1/5.18	10.8	9.02	1960	392
	200	240	1/7.5	1/7.82	16.7	13.8	2205	441
	150	180	1/10	1/10.35	22.5	18.6	2450	490
	120	144	1/12.5	1/13.21	27.9	23	2597	520
	100	120	1/15	1/15.91	33.3	27.4	2744	549
	75	90	1/20	1/20.70	44.1	37.2	3038	608
	60	72	1/25	1/25.69	54.9	46.1	3234	647
	50	60	1/30	1/32.07	66.6	55.9	3332	666
	37.5	45	1/40	1/42.40	88.2	73.5	3528	706
	30	36	1/50	1/52.73	111	92.1	3528	706
	25	30	1/60	1/60.64	133	111	3528	706
	18.8	22.5	1/80	1/79.62	173	145	3724	745
	15	18	1/100	1/106.23	217	180	3724	745
	12.5	15	1/120	1/124.85	260	217	3724	745
	9.4	11.3	1/160	1/164.42	321	268	3724	745
	7.5	9	*1/200	1/202.59	349	349	3724	745
	6.3	7.5	*1/240	1/228.50	349	349	3724	745
	5	6	1/300	1/294.96	435	363	5292	1058
	4.2	5	1/360	1/364.76	522	435	5292	1058
	3.1	3.8	*1/480	1/462.49	642	580	5292	1058

●GM-SHYP Series 0.75 to 2.2 kW

Output (kW)	Output shaft rotation speed (r/min) 50Hz	60Hz	Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm) 50Hz	60Hz	Output shaft allowable radial load (N)	Output shaft allowable thrust load (N)
0.75	300	360	1/5	1/5.05	20.6	17.6	3234	647
	200	240	1/7.5	1/7.58	30.9	26	3479	696
	150	180	1/10	1/10.94	41.2	34.3	3724	745
	120	144	1/12.5	1/12.68	52	43.1	3721	775
	100	120	1/15	1/15.17	62.7	51.9	4018	804
	75	90	1/20	1/20.83	83.3	69.6	4214	843
	60	72	1/25	1/25.66	104	86.2	4410	882
	50	60	1/30	1/31.82	124	104	4508	902
	37.5	45	1/40	1/40.39	166	138	4704	941
	30	36	1/50	1/53.18	208	173	4704	941
	25	30	1/60	1/59.39	249	208	4704	941
	18.8	22.5	1/80	1/81.06	325	271	5292	1058
	15	18	1/100	1/102.78	406	338	5292	1058
	12.5	15	1/120	1/122.82	487	406	5292	1058
	9.4	11.3	1/160	1/155.03	602	502	5292	1058
	7.5	9	*1/200	1/196.56	642	642	5292	1058
	6.3	7.5	*1/240	1/234.90	642	642	5292	1058
1.5	300	360	1/5	1/4.89	41.2	34.3	4900	980
	200	240	1/7.5	1/7.26	62.3	52.0	5194	1039
	150	180	1/10	1/9.39	83.3	69.6	5488	1098
	120	144	1/12.5	1/12.50	104	86.8	5635	1127
	100	120	1/15	1/15.04	124	104	5782	1156
	75	90	1/20	1/19.12	166	138	5978	1196
	60	72	1/25	1/25.06	208	173	6174	1235
	50	60	1/30	1/28.88	249	208	6272	1254
	37.5	45	1/40	1/39.38	332	277	6272	1254
	30	36	1/50	1/46.93	416	346	6272	1254
	25	30	1/60	1/58.33	498	415	6272	1254
	18.8	22.5	1/80	1/77.08	650	542	9800	1960
	15	18	1/100	1/95.34	812	677	9800	1960
	12.5	15	1/120	1/116.56	975	812	9800	1960
	9.4	11.3	1/160	1/152.22	1147	956	9800	1960
	7.5	9	*1/200	1/183.82	1147	1147	9800	1960
	6.3	7.5	*1/240	1/216.94	1147	1147	9800	1960
2.2	300	360	1/5	1/4.66	60.8	51.0	5390	1078
	200	240	1/7.5	1/7.01	91.4	76	5733	1147
	150	180	1/10	1/9.55	122	101	6076	1215
	120	144	1/12.5	1/12.50	152	127	6223	1245
	100	120	1/15	1/15.05	182	152	6370	1274
	75	90	1/20	1/19.09	244	204	6566	1313
	60	72	1/25	1/24.79	305	254	6860	1372
	50	60	1/30	1/30.33	366	305	7154	1431
	37.5	45	1/40	1/39.38	487	406	7154	1431
	30	36	1/50	1/46.93	609	508	7546	1509
	25	30	1/60	1/58.33	731	610	7546	1509
	18.8	22.5	1/80	1/77.08	926	772	9800	1960
	15	18	*1/100	1/94.24	1029	858	9800	1960
	12.5	15	*1/120	1/112.85	1029	858	9800	1960

(Notes) 1. **The asterisked models have limited output shaft allowable torques.**
2. **The models in the shaded areas rotate in the reverse direction to that of the models in the unshaded areas.**

Dimensional outline drawing

Hollow shaft, flange mounting (face mounting), 3-phase GM-SHY/SHYP (F) (M) (B)-RH Series

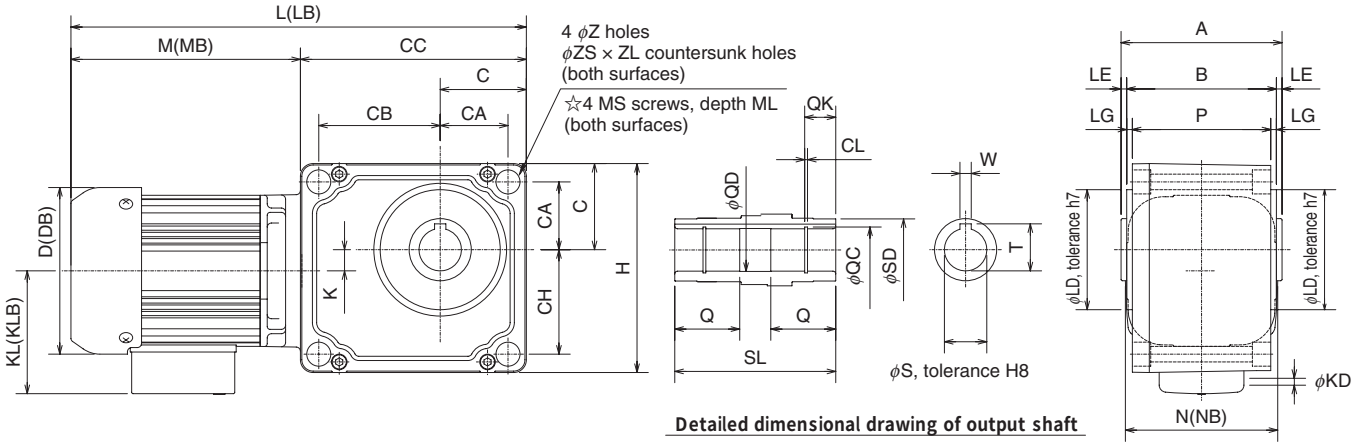


Fig. A

The ☆-marked dimensions are for face mounting.

Solid shaft, flange mounting (face mounting), 3-phase GM-SHY/SHYP (F) (M) (B)-RR (RL) Series

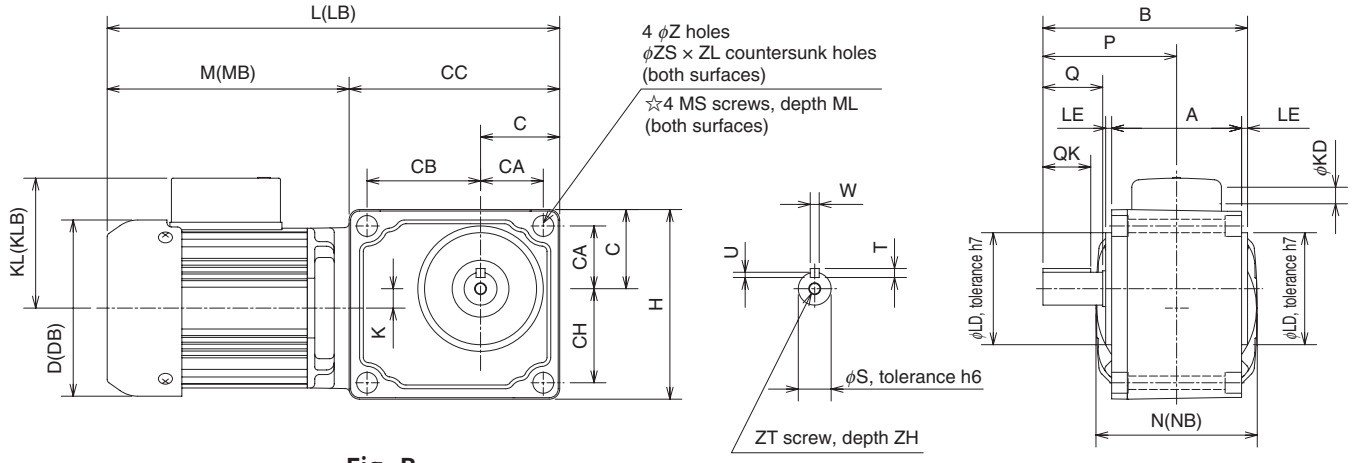


Fig. B

The ☆-marked dimensions are for face mounting.

Solid shaft, foot mounting, 3-phase GM-SHY/SHYP (B)-RR (RL) (RT) Series

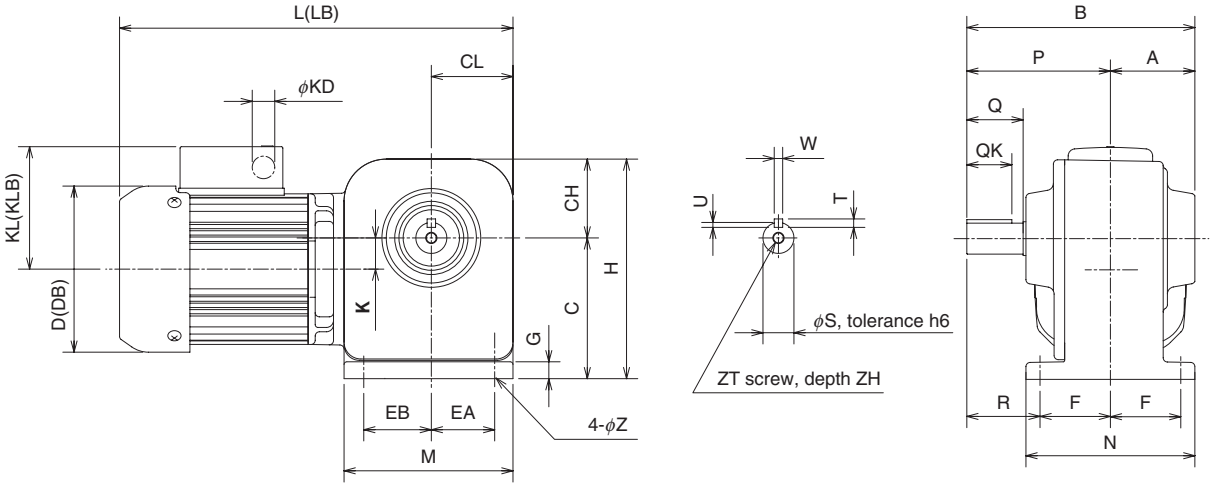


Fig. C

●Common specifications Flange mounting (face mounting)

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																		
			L	(LB)	M	(MB)	CC	KL	(KLB)	D	(DB)	K	C	CA	CB	CH	H	Z	ZS	ZL	MS	ML
0.1	1/5 to 1/240	AT, A	278	329	137	188	141	87	92	107	118	13	53	42	76	63	127	9	14	11	M8	25
	1/300 to 1/900	CM	370	421	181	232	189	87	92	107	118	8.5	72	57	102	89	176	14	20	16	M12	35
	1/1200, 1/1440	CM	370	421	181	232	189	87	92	107	118	15	72	57	102	89	176	14	20	16	M12	35
0.2	1/5 to 1/60	AT, A	303	351	162	210	141	87	92	118	118	13	53	42	76	63	127	9	14	11	M8	25
	1/80 to 1/240	BT	322.5	370.5	162.5	210.5	160	87	92	118	118	15	61	48	86	74	148	11	17	13	M10	30
	1/300 to 1/900	DM	474	522	236	284	238	87	92	118	118	19.5	87	69	131	106	211	18	26	21	M16	42
	1/1200, 1/1440	DM	474	522	236	284	238	87	92	118	118	13	87	69	131	106	211	18	26	21	M16	42
0.4	1/5 to 1/60	BT, B	341	393	181	233	160	93	98	130	130	23	61	48	86	74	148	11	17	13	M10	30
	1/80 to 1/240	CT	365.5	417.5	176.5	228.5	189	93	98	130	130	16	72	57	102	89	176	14	20	16	M12	35
	1/300 to 1/480	DM	493	545	255	307	238	93	98	130	130	13.5	87	69	131	106	211	18	26	21	M16	42
0.75	1/5 to 1/60	C	424.5	487.5	235.5	298.5	189	138	138	150	150	11	72	57	102	89	176	14	20	16	M12	35
	1/80 to 1/240	DT	480	543	242	305	238	138	138	150	150	44	87	69	131	106	211	18	26	21	M16	42
1.5	1/5 to 1/60	DT, D	512	584	274	346	238	148	148	175	175	20	87	69	131	106	211	18	26	21	M16	32
	1/80 to 1/240	ET	549	621	268	340	281	148	148	175	175	20	106	83	152	129	258	22	32	26	M20	40
2.2	1/5 to 1/120	ET, E	612	679	331	398	281	160	160	206	206	23	106	83	152	129	258	22	32	26	M20	40

●In the case of hollow shaft (Fig. A)

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																	Weight (kg)	
			A	B	P	LE	LG	LD	KD	N	(NB)	W	T	S	SD	QC	QD	QK	CL	SL	Q	Without brake / With brake
0.1	1/5 to 1/240	AT, A	103	95	87	4	4	75	12	105	108	8	28.3	25	38	26.2	25.4	22	1.35	103	38	8 / 9.4
	1/300 to 1/900	CM	134	126	116	4	5	95	12	105	108	10	38.3	35	48	37	35.4	26	1.75	134	52	14.5 / 16
	1/1200, 1/1440	CM	134	126	116	4	5	95	12	105	108	10	38.3	35	48	37	35.4	26	1.75	134	52	14.5 / 16
0.2	1/5 to 1/60	AT, A	103	95	87	4	4	75	12	108	108	8	28.3	25	38	26.2	25.4	22	1.35	103	38	8.2 / 9.6
	1/80 to 1/240	BT	114	106	98	4	4	85	12	108	108	8	33.3	30	44	31.4	30.4	22	1.35	114	46	10.5 / 11.9
	1/300 to 1/900	DM	158	150	140	4	5	115	12	108	108	14	48.8	45	63	47.5	45.4	30	1.95	158	67	23.6 / 25
	1/1200, 1/1440	DM	158	150	140	4	5	115	12	108	108	14	48.8	45	63	47.5	45.4	30	1.95	158	67	23.6 / 25
0.4	1/5 to 1/60	BT, B	114	106	98	4	4	85	12	120	120	8	33.3	30	44	31.4	30.4	22	1.35	114	46	12.5 / 14
	1/80 to 1/240	CT	134	126	116	4	5	95	12	120	120	10	38.3	35	48	37	35.4	26	1.75	134	52	17 / 18.5
	1/300 to 1/480	DM	158	150	140	4	5	115	12	120	120	14	48.8	45	63	47.5	45.4	30	1.95	158	67	26.5 / 28
0.75	1/5 to 1/60	C	134	126	116	4	5	95	27	150	150	10	38.3	35	48	37	35.4	26	1.75	134	52	21.9 / 23.9
	1/80 to 1/240	DT	158	150	140	4	5	115	27	150	150	14	48.8	45	63	47.5	45.4	30	1.95	158	67	30.9 / 32.9
1.5	1/5 to 1/60	DT, D	158	150	140	4	5	115	27	175	175	14	48.8	45	63	47.5	45.4	30	1.95	158	67	37.3 / 41.3
	1/80 to 1/240	ET	178	170	160	4	5	150	27	175	175	16	59.3	55	79.8	58	55.4	40	2.2	178	70	49.3 / 53.3
2.2	1/5 to 1/120	ET, E	178	170	160	4	5	150	27	206	206	16	59.3	55	79.8	58	55.4	40	2.2	178	70	59.1 / 64.1

●In the case of solid shaft (Fig. B)

Output (kW)	Gear ratio	Gear size	Dimensions (mm)														Weight (kg)	
			A	B	P	LE	Q	QK	LD	KD	N	T	W	U	S	ZT	ZH	Without brake / With brake
0.1	1/5 to 1/240	AT, A	87	137	89.5	4	40	32	75	12	105	6	6	3.5	22	M8	12	7.5 / 8.9
	1/300 to 1/900	CM	116	183	120	5	55	40	95	12	105	8	10	5	32	M8	12	16 / 17.5
	1/1200, 1/1440	CM	116	183	120	5	55	40	95	12	105	8	10	5	32	M8	12	16 / 17.5
0.2	1/5 to 1/60	AT, A	87	137	89.5	4	40	32	75	12	108	6	6	3.5	22	M8	12	7.7 / 9.1
	1/80 to 1/240	BT	98	153	100	4	45	36	85	12	108	7	8	4	28	M8	12	10 / 11.4
	1/300 to 1/900	DM	140	217	142	5	65	55	115	12	108	8	12	5	40	M8	12	26.5 / 28
	1/1200, 1/1440	DM	140	217	142	5	65	55	115	12	108	8	12	5	40	M8	12	26.5 / 28
0.4	1/5 to 1/60	BT, B	98	153	100	4	45	36	85	12	120	7	8	4	28	M8	12	12 / 13.5
	1/80 to 1/240	CT	116	183	120	5	55	40	95	12	120	8	10	5	32	M8	12	16.5 / 18
	1/300 to 1/480	DM	140	217	142	5	65	55	115	12	120	8	12	5	40	M8	12	29 / 30.5
0.75	1/5 to 1/60	C	116	183	120	5	55	40	95	27	150	8	10	5	32	M8	12	21.4 / 23.4
	1/80 to 1/240	DT	140	217	142	5	65	55	115	27	150	8	12	5	40	M8	12	30.4 / 32.4
1.5	1/5 to 1/60	DT, D	140	217	142	5	65	55	115	27	175	8	12	5	40	M8	12	36.8 / 40.3
	1/80 to 1/240	ET	160	247	162	5	75	63	150	27	175	9	14	5.5	50	M8	12	48.8 / 52.8
2.2	1/5 to 1/120	ET, E	160	247	162	5	75	63	150	27	206	9	14	5.5	50	M8	12	58.6 / 63.6

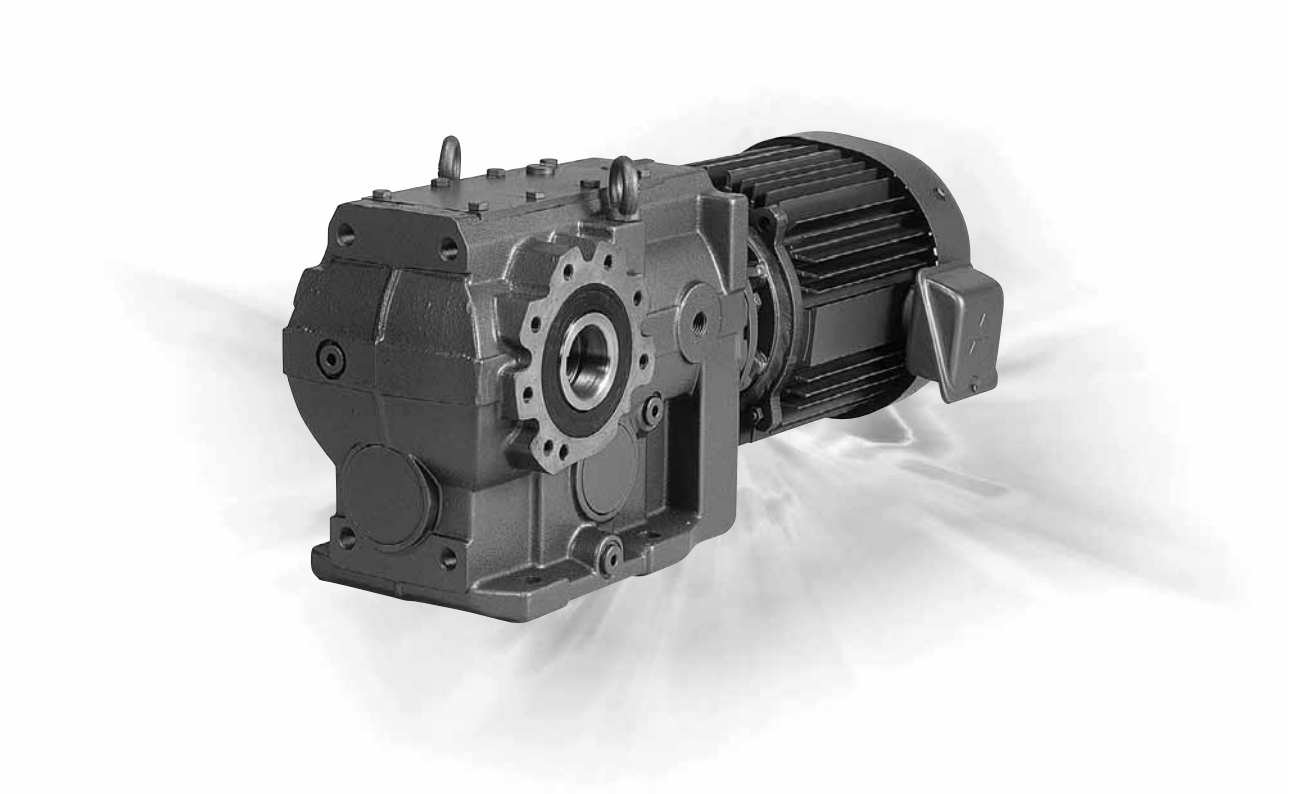
●Solid shaft, foot mounting (Fig. C)

Output (kW)	Gear ratio	Gear size	Dimensions (mm)															
			A	B	P	Q	QK	F	R	KD	N	T	W	U	S	ZT	ZH	L	(LB)
0.1	1/5 to 1/240	AT, A	60	162	102	40	32	50	52	12	120	6	6	3.5	22	M8	12	254	305
	1/300 to 1/900	CM	84	225	141	55	40	69	72	12	168	8	10	5	32	M8	12	334	385
	1/1200, 1/1440	CM	84	225	141	55	40	69	72	12	168	8	10	5	32	M8	12	334	385
0.2	1/5 to 1/60	AT, A	60	162	102	40	32	50	52	12	120	6	6	3.5	22	M8	12	279	327
	1/80 to 1/240	BT	67	181	114	45	36	55	59	12	134	7	8	4	28	M8	12	289	337
	1/300 to 1/900	DM	100	268	168	65	55	85	83	12	200	8	12	5	40	M8	12	412	464
	1/1200, 1/1440	DM	100	268	168	65	55	85	83	12	200	8	12	5	40	M8	12	412	464
0.4	1/5 to 1/60	BT, B	67	181	114	45	36	55	59	12	134	7	8	4	28	M8	12	314.5	366.5
	1/80 to 1/240	CT	84	225	141	55	40	69	72	12	168	8	10	5	32	M8	12	331	383
	1/300 to 1/480	DM	100	268	168	65	55	85	83	12	200	8	12	5	40	M8	12	435	487
0.75	1/5 to 1/60	C	84	225	141	55	40	69	72	27	168	8	10	5	32	M8	12	402	465
	1/80 to 1/240	DT	100	268	168	65	55	85	83	27	200	8	12	5	40	M8	12	422	485
1.5	1/5 to 1/60	DT, D	100	268	168	65	55	85	83	27	200	8	12	5	40	M8	12	466	538
	1/80 to 1/240	ET	105	289	184	75	63	90	94	27	214	9	14	5.5	50	M8	12	494	566
2.2	1/5 to 1/120	ET, E	105	289	184	75	63	90	94	27	214	9	14	5.5	50	M8	12	557	624

Output (kW)	Gear ratio	Gear size	Dimensions (mm)													Weight (kg)	
			CL	KL	(KLB)	D	(DB)	K	C	CH	H	G	EA	EB	M	Z	Without brake / With brake
0.1	1/5 to 1/240	AT, A	58	87	92	107	118	22.2	100	56	156	12	45	48	120	9	8 / 9.4
	1/300 to 1/900	CM	82.5	87	92	107	118	11.6	140	72	212	18	66	60	158.5	14	16.5 / 18
	1/1200, 1/1440	CM	82.5	87	92	107	118	5.1	140	72	212	18	66	60	158.5	14	16.5 / 18
0.2	1/5 to 1/60	AT, A	58	87	92	118	118	22.2	100	56	156	12	45	48	120	9	8.2 / 9.6
	1/80 to 1/240	BT	67	87	92	118	118	44.9	120	63	183	15	55	51	130	11	10.5 / 11.9
	1/300 to 1/900	DM	103	87	92	118	118	14.7	170	88	258	20	86	70	190.5	14	27 / 28.5
	1/1200, 1/1440	DM	103	87	92	118	118	8.2	170	88	258	20	86	70	190.5	14	27 / 28.5
0.4	1/5 to 1/60	BT, B	67	93	98	130	130	21.5	120	63	183	15	55	51	130	11	12.5 / 14
	1/80 to 1/240	CT	82.5	93	98	130	130	36.1	140	72	212	18	66	60	158.5	14	17 / 18.5
	1/300 to 1/480	DM	103	93	98	130	130	8.7	170	88	258	20	86	70	190.5	14	29.5 / 31
0.75	1/5 to 1/60	C	82.5	138	138	150	150	20.5	140	72	212	18	66	60	158.5	14	21.9 / 23.9
	1/80 to 1/240	DT	103	138	138	150	150	39.2	170	88	258	20	86	70	190.5	14	30.9 / 32.9
1.5	1/5 to 1/60	DT, D	103	148	148	175	175	65.5	170	88	258	20	86	70	190.5	14	37.3 / 41.3
	1/80 to 1/240	ET	122	148	148	175	175	81.5	190	107	297	22	102	88	230	18	49.3 / 53.3
2.2	1/5 to 1/120	ET, E	122	160	160	206	206	78.5	190	107	297	22	102	88	230	18	56.1 / 61.1

(Notes)
- The dimensions in parentheses are for the models with brakes.
- All figures of the solid shaft models show the right shaft (R) models. The shafts of the left shaft models (L) are on the opposite side.
- The dimension ML on the right side differs from that on the left side. For details, see the dimensional outline drawing on MELFANSweb.
- The dimensions and weight are subject to change without notice.
- **For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.**
- The terminal boxes of 0.75-kW or more models are made of steel sheet and differ in shape.

GM-DYP
Series



■Excellent drive characteristics of the inverter

●Achieves a wide constant torque range in standard models with the use of Mitsubishi inverters

Model name	Output (kW)	Constant torque range (Hz)	
		Advanced magnetic flux vector control	V/F control
GM-DYP	3.7 to 11	3 to 60	6 to 60

* Frequencies that can be used are limited depending on the model and output.

■Tough with a long product life

●A long-life, right-angle geared motor that can meet the required needs has been achieved by the latest gear technology (optimum tooth profile and heat treatment) and by carrying out careful evaluations and verifications.

■High efficiency

●The spiral bevel gears have carburizing and grind finishing and demonstrate high efficiency (gear efficiency of 90% or more).

■Highest priority on ease of use

●All models are provided with terminal boxes as a standard. Since the wires are connected on the terminal blocks in the boxes, the wiring work can be performed safely and easily (this specification does not include 11-kW models).
●Easy to lubricate
●Either of the flange and foot mounting methods can be selected.

GM-DYP Series

Specifications

●Standard specifications

Item	Standard specification	
Series name	GM-DYP Series	
Output	3.7 to 11 kW	
Number of poles	4P	
Number of phases	3-phase	
Voltage	200/200/220 V	
Frequency	50/60/60 Hz	
Gear ratio	1/15 to 1/100 (See the model configuration list.)	
Rating	Continuous	
Heat resistance class	130 (B)	
Starting method	Direct start (3.7 kW) ⅄-△ start (5.5 to 11 kW)	
Casing construction	Totally-enclosed fan-cooled type	
Protective construction	Indoor type (equivalent to IP44)	
Output shaft	Hollow shaft	
Mounting method	Flange	Foot mounting
Mounting direction	Horizontal installation	
Installation location	Indoors (without corrosive gas, oil mist, flammable gas and dust)	
Ambient temperature	−10 to +40℃ (non condensing)	
Ambient humidity	90%RH or less	
Altitude	1000 m or less above sea level	
Vibration	Normally: 4.9 m/s² or less Instantaneously: 9.8 m/s² or less	
Brake type	DC spring brake	
Applicable standards	JEC, JEM	
Lubrication method	Oil lubrication (Pour the oil recommended by Mitsubishi.)	
Paint color	Metallic gray (equivalent to Munsell N4.5)	

●Semi-standard specifications

Voltage	400/400/440 V 50/60/60 Hz, 380 V 50 Hz (3-phase, 3-phase with brake)
Protective construction	● Outdoor type
Others	● Terminal box assemblies B, C and D

Characteristic table

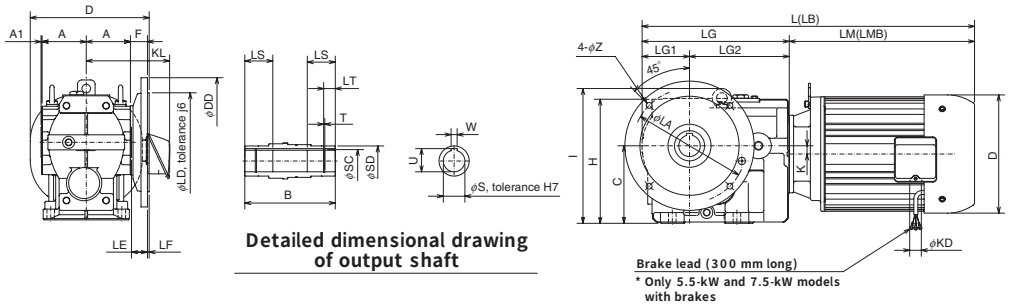
●GM-DYP Series 3-phase, 3.7 to 11 kW

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)
	50Hz	60Hz			50Hz	60Hz	
3.7	100	120	1/15	1/15.60	333	278	14500
	75	90	1/20	1/20.62	451	376	14500
	60	72	1/25	1/26.15	559	466	19500
	50	60	1/30	1/28.91	676	563	19000
	37.5	45	1/40	1/40.19	892	743	18500
	30	36	1/50	1/49.15	1117	931	18500
	25	30	1/60	1/60.70	1245	1038	18000
	18.8	22.5	1/80	1/80.88	1793	1494	27000
	15	18	1/100	1/101.20	2166	1805	27000
5.5	100	120	1/15	1/16.10	500	417	18000
	75	90	1/20	1/20.63	666	555	19000
	60	72	1/25	1/26.15	833	694	19000
	50	60	1/30	1/28.91	970	808	18500
	37.5	45	1/40	1/40.19	1117	931	18000
	30	36	1/50	1/50.51	1666	1388	27000
	25	30	1/60	1/59.31	1999	1666	27000
	18.8	22.5	1/80	1/80.88	2019	1683	27000

Output (kW)	Output shaft rotation speed (r/min)		Nominal gear ratio	Actual gear ratio	Output shaft allowable torque (Nm)		Output shaft allowable radial load (N)
	50Hz	60Hz			50Hz	60Hz	
7.5	100	120	1/15	1/16.10	676	563	18000
	75	90	1/20	1/20.63	862	718	18500
	60	72	1/25	1/25.35	1137	948	27000
	50	60	1/30	1/29.06	1362	1135	27000
	37.5	45	1/40	1/39.75	1813	1511	27000
	30	36	1/50	1/50.51	2029	1691	27000
	25	30	1/60	1/59.31	2068	1723	27000
11	100	120	1/15	1/15.40	1000	833	23500
	75	90	1/20	1/19.88	1333	1111	24000
	60	72	1/25	1/25.35	1666	1388	25000
	50	60	1/30	1/29.06	1784	1487	25000
	37.5	45	1/40	1/39.75	1931	1609	25500

Dimensional outline drawing

Hollow shaft, flange type, 3-phase GM-DYPF (B)-RH Series



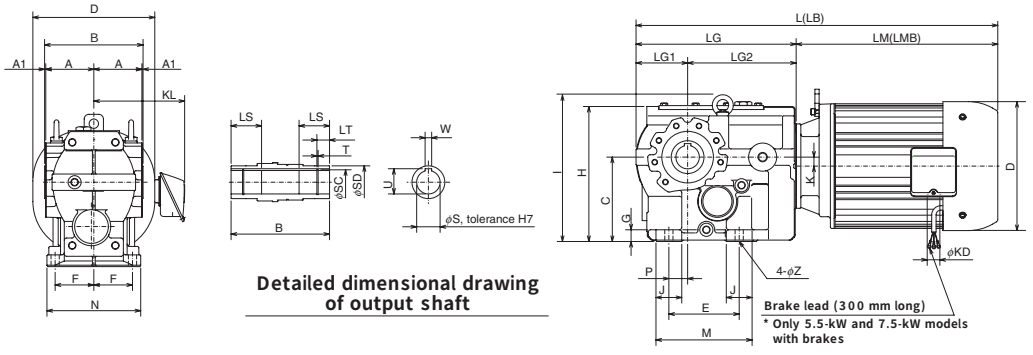
Detailed dimensional drawing of output shaft

Output (kW)	Gear ratio	Gear size	Dimensions (mm)															
			L	(LB)	H	A	A1	B	C	D	F	I	K	LA	LD	DD	LE	LF
3.7	1/15, 1/20	34	665.5	740.5	228	88	2	180	140	227	25	259	11	215	180	250	23	4
	1/25 to 1/60	44	713.5	788.5	288	102.5	2.5	210	180	256	39.5	313	19	265	230	300	37	4
	1/80, 1/100	54	785	860	340	117.5	2.5	240	212	275	32.5	382	15	300	250	350	30	5
5.5	1/15 to 1/40	44	771.5	851.5	288	102.5	2.5	210	180	276	39.5	313	19	265	230	300	37	4
	1/50 to 1/80	54	851	931	340	117.5	2.5	240	212	285	32.5	382	15	300	250	350	30	5
7.5	1/15, 1/20	44	806.5	886.5	288	102.5	2.5	210	180	276	39.5	313	19	265	230	300	37	4
	1/25 to 1/60	54	886	966	340	117.5	2.5	240	212	285	32.5	382	15	300	250	350	30	5
11	1/15 to 1/40	54	915	1094	340	117.5	2.5	240	212	315	32.5	382	15	300	250	350	30	5

Output (kW)	Gear ratio	Gear size	Dimensions (mm)															Weight (kg)	
			LG1	LG2	LG	LM	(LMB)	KL	KD	Z	S	U	W	LS	LT	T	SC	SD	Without brake	With brake
3.7	1/15, 1/20	34	88	205.5	293.5	372	447	174	27	13.5	40	43.3	12	60	24	2.15	42.5	55	91.0	96.0
	1/25 to 1/60	44	110	231.5	341.5	372	447	174	27	13.5	50	53.8	14	65	27	2.65	53	70	116	126
	1/80, 1/100	54	129	297	426	359	434	174	27	18	60	64.4	18	75	30	3.15	63	85	156	161
5.5	1/15 to 1/40	44	110	231.5	341.5	430	510	194	27	13.5	50	53.8	14	65	27	2.65	53	70	130	135
	1/50 to 1/80	54	129	297	426	425	505	194	27	18	60	64.4	18	75	30	3.15	63	85	165	175
7.5	1/15, 1/20	44	110	231.5	341.5	465	545	194	27	13.5	50	53.8	14	65	27	2.65	53	70	131	141
	1/25 to 1/60	54	129	297	426	460	540	194	27	18	60	64.4	18	75	30	3.15	63	85	166	176
11	1/15 to 1/40	54	129	297	426	489	668	270	35	18	60	64.4	18	75	30	3.15	63	85	228	257

(Notes)
- The dimensions in parentheses are for the models with brakes.
- The dimensions and weight are subject to change without notice.
- **For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.**

Hollow shaft, foot mounting type, 3-phase GM-DYPM (B)-RH Series



Detailed dimensional drawing of output shaft

Output (kW)	Gear ratio	Gear size	Dimensions (mm)																		
			L	(LB)	H	A	A1	B	C	G	D	E	P	J	M	F	N	I	K
3.7	1/15, 1/20	34	665.5	740.5	228	88	2	180	140	20	220	120	30	45	165	70	170	259	11
	1/25 to 1/60	44	713.5	788.5	288	102.5	2.5	210	180	25	220	150	40	55	205	82.5	200	313	19
	1/80, 1/100	54	785	860	340	117.5	2.5	240	212	30	235	180	55	70	250	90	230	382	15
5.5	1/15 to 1/40	44	771.5	851.5	288	102.5	2.5	210	180	25	260	150	40	55	205	82.5	200	313	19
	1/50 to 1/80	54	851	931	340	117.5	2.5	240	212	30	260	180	55	70	250	90	230	382	15
7.5	1/15, 1/20	44	806.5	886.5	288	102.5	2.5	210	180	25	260	150	40	55	205	82.5	200	313	19
	1/25 to 1/60	54	886	966	340	117.5	2.5	240	212	30	260	180	55	70	250	90	230	382	15
11	1/15 to 1/40	54	915	1094	340	117.5	2.5	240	212	30	320	180	55	70	250	90	230	382	15

Output (kW)	Gear ratio	Gear size	Dimensions (mm)															Weight (kg)	
			LG1	LG2	LG	LM	(LMB)	KL	KD	Z	S	U	W	LS	LT	T	SC	SD	Without brake	With brake
3.7	1/15, 1/20	34	88	205.5	293.5	372	447	174	27	13.5	40	43.3	12	60	24	2.15	42.5	55	86.0	91.0
	1/25 to 1/60	44	110	231.5	341.5	372	447	174	27	17.5	50	53.8	14	65	27	2.65	53	70	106	116
	1/80, 1/100	54	129	297	426	359	434	174	27	22	60	64.4	18	75	30	3.15	63	85	141	146
5.5	1/15 to 1/40	44	110	231.5	341.5	430	510	194	27	17.5	50	53.8	14	65	27	2.65	53	70	120	130
	1/50 to 1/80	54	129	297	426	425	505	194	27	22	60	64.4	18	75	30	3.15	63	85	150	160
7.5	1/15, 1/20	44	110	231.5	341.5	465	545	194	27	17.5	50	53.8	14	65	27	2.65	53	70	121	131
	1/25 to 1/60	54	129	297	426	460	540	194	27	22	60	64.4	18	75	30	3.15	63	85	151	161
11	1/15 to 1/40	54	129	297	426	489	668	270	35	22	60	64.4	18	75	30	3.15	63	85	213	242

(Notes)
- The dimensions in parentheses are for the models with brakes.
- The dimensions and weight are subject to change without notice.
- **For more information, see Mitsubishi Electric FA website (www.mitsubishielectric.co.jp/fa/). CAD data (DXF format) and PDF data are available.**

Technical information

Table of contents

1. Selection

1-1 Determination of service factor

It is necessary to select a reducer having a mechanical strength corresponding to the equivalent output under steady-state loading conditions in consideration of various loading conditions depending on the driven machine.
Output converted under steady-state loading conditions (kW) = required power × service factor
The service factors are classified as shown in Table 1 according to the loading conditions.

Table 1 Loading conditions and service factor

Service factor	Loading conditions			Applicable models	
	Intermittent operation for 3 hrs/day	Continuous operation for 3 to 10 hrs/day	Continuous operation for 10 hrs or more/day	Parallel shaft	Right angle shaft
1.0	Uniform, light or medium impact load	Uniform or light impact load	Uniform load without impact	GM-J2 GM-S GM-SP	GM-SSY GM-SSYP
1.4	Heavy impact load	Medium impact load	Uniform or light impact load	GM-D GM-LJP	GM-SHY GM-SHYP GM-DYP
2.0		Heavy impact load	Medium impact load	GM-DD GM-DDP GM-LLJP	—

1-2 Formula for calculating required power

1. General formula

$$P_0 = \frac{T \cdot N}{9550\eta}(kW) \quad \cdots\cdots (1)$$

T : Required torque (Nm)
N : Rotation speed (r/min)
η : Mechanical efficiency

2. Power required for parallel movement of contact surface

$$P_0 = \frac{m \cdot \mu \cdot V}{6120\eta}(kW) \quad \cdots\cdots (2)$$

m : Mass (kg)
μ : Friction coefficient
V : Speed (m/min)

3. Power required for hoisting

$$P_0 = \frac{m \cdot V}{6120\eta}(kW) \quad \cdots\cdots (3)$$

m : Mass (kg)
V : Hoisting speed (m/min)

4. Power required for traveling carriage

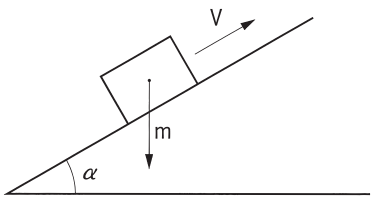
$$P_0 = \frac{m \cdot m_r \cdot V}{6120\eta}(kW) \quad \cdots\cdots (4)$$

m_r : Traveling resistance (about 0.02 to 0.03)
V : Traveling speed (m/min)

5. Power required for lifting on ascending slope

$$P_0 = \frac{m(\sin\alpha + \mu\cos\alpha)V}{6120\eta}(kW) \quad \cdots\cdots (5)$$

m : Mass (kg)
μ : Friction coefficient
α : Inclination angle (°)
V : Traveling speed (m/min)



● Other calculation formulas

1. Speed

$$V = \frac{\pi \cdot D \cdot N}{1000}(m/min) \quad \cdots\cdots (6)$$

D : Diameter of sprocket, etc. (mm)
N : Rotation speed of sprocket, etc. (r/min)

2. Rotation speed

$$N = \frac{1000 \cdot V}{\pi \cdot D}(r/min) \quad \cdots\cdots (7)$$

V : Peripheral velocity of sprocket, etc. (m/min)
D : Diameter of sprocket, etc. (mm)

1-3 Allowable torque of output shaft

Ensure that the required torque of the load does not exceed the allowable torque of the selected model. When the load may fluctuate, select a model based on the equivalent torque. However, if the load cycle is unknown, select a model based on the maximum torque. See the characteristic table for the allowable torque of the output shaft.

1-4 Allowable radial load of output shaft

■ Solid shaft type

To drive the geared motor with a chain or gears, set the position of application of load as close to the stepped section as possible from the center of the output shaft. (Fig. 1)

The allowable radial load of the geared motor output shaft is shown in the characteristic table. However, this allowable radial load of the output shaft is an allowable value for the output shaft when the load is applied to its center by a single row chain drive. When the driving method or the position of application of load is different from the above, correct the allowable value as shown below.

(1) Correction factor of allowable radial load of output shaft

Table 2 Correction factor (α) according to driving method

Driving method	Correction factor(α)
Single row chain	1.0
Double row chain	1.25
V belt	1.5
Flat belt	2.5
Gears	1.25

Table 3 Correction factor (β) according to position of application of load

ℓ'/ℓ	Correction factor(β)
0.75	1.08
1.0	1.0
1.25	0.9
1.5	0.8

(2) Correction of allowable radial load of output shaft

After determining the correction factor (α) according to the driving method and the correction factor (β) according to the position of application of load, correct the output shaft radial load as shown below.

$$W' = W \times \frac{\beta}{\alpha}$$

W' : Corrected allowable radial load of output shaft

W : Allowable radial load of output shaft

Make sure that the radial load applied to the output shaft does not exceed the corrected allowable radial load.

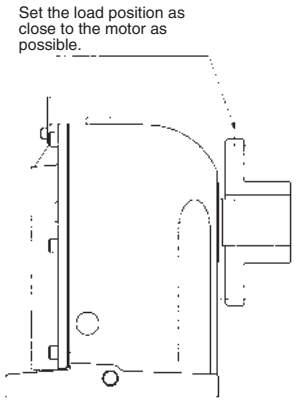


Fig. 1

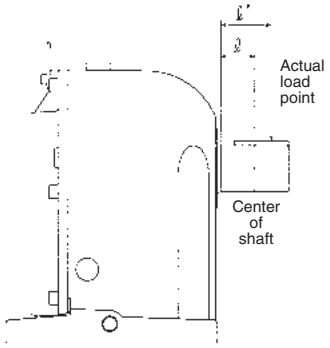


Fig. 2

■ Hollow shaft type

The allowable radial load position is calculated with the same size ℓ as that for the solid shaft. (The size ℓ is 1/2 of the right angle solid shaft length.)

(1) Correction of allowable radial load when one side of driven shaft is supported by bearing (Fig. 3)

Correct the load by the following formula.

Corrected allowable radial load = allowable radial load $\times \frac{B}{B-\ell}$, (B: Distance from hollow shaft end face to bearing center)

(2) Correction of allowable radial load when one side of driven shaft is not supported by bearing (Fig. 4)

When the radial load position ℓ' is larger than ℓ, correct the load by the following formula.

Corrected allowable radial load = allowable radial load $\times \frac{A+\ell}{A+\ell'}$, (A: See Table 4.)

Table 4 Size A (mm)

Output (kW)	Model GM-SSY Model GM-SSYP	
	Gear ratio	Size A
0.1	1/7.5 to 1/60	12
0.2	1/7.5 to 1/30	
	1/40 to 1/60	14
0.4	1/7.5 to 1/30	
	1/40 to 1/60	17
0.75	1/7.5 to 1/30	
	1/40 to 1/60	19
1.5	1/7.5 to 1/30	
2.2	1/7.5 to 1/30	24

Output (kW)	Model GM-SHY Model GM-SHYP	
	Gear ratio	Size A
0.1	1/5 to 1/240	21
	1/300 to 1/1440	25
0.2	1/5 to 1/60	21
	1/80 to 1/240	23
	1/300 to 1/1440	28
0.4	1/5 to 1/60	23
	1/80 to 1/240	25
	1/300 to 1/480	28
0.75	1/5 to 1/60	25
	1/80 to 1/240	28
1.5	1/5 to 1/60	
	1/80 to 1/240	
2.2	1/5 to 1/120	

Output (kW)	Model GM-DYP	
	Gear ratio	Size A
3.7	1/15 to 1/20	44
	1/25 to 1/60	56
	1/80 to 1/100	62
5.5	1/15 to 1/40	56
	1/50 to 1/80	62
7.5	1/15 to 1/20	56
	1/25 to 1/60	62
11	1/15 to 1/40	

(3) When the shaft is installed in upper position (Fig. 5)

The distance r from the center of the driven shaft to the stopper of the torque arm must be:

$r(mm) \geq \frac{\text{actual load torque (Nm)} \times (L+A)}{\text{allowable radial load} \times (\ell+A)} \times 1000$. (L and r are shown in Fig. 5.)

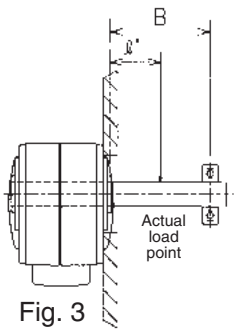


Fig. 3

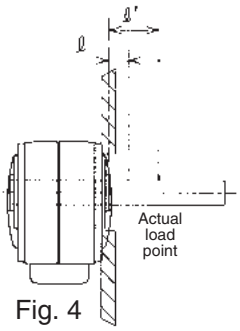


Fig. 4

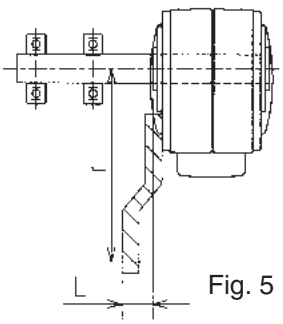


Fig. 5

* Take care that no power other than the stopping power is applied to the stopper of the torque arm.

1-5 Allowable thrust load of output shaft

The allowable thrust load of the output shaft is shown in the characteristic table. In this case, ensure that the sum of the thrust load and radial load does not exceed the allowable radial load.

When selecting GM-LJP or GM-DYP Series, inform us of the magnitude and direction of the thrust load.

1-6 Inertia moment of load J and allowable number of starts

If a load with large inertia moment J is repeatedly started (or braked), a remarkably large torque is generated instantaneously, and unexpected accidents, such as damage to the geared motor, may occur. Particularly, for models with low gear ratios of 1/3, 1/5 or so, the equivalent inertia moment on the motor shaft is calculated with 1/(actual gear ratio)^2, and the equivalent value on the motor shaft is not lower than the equivalent inertia moment on the output shaft, thereby causing unexpected accidents, such as damage to the geared motor at an early stage. Give due consideration to the inertia moment when selecting a model.

Check the inertia moment of load and the allowable number of starts on Figs. 6 to 11.

(1) Determine the equivalent load inertia moment J_L on the output shaft as the equivalent value on the motor shaft.

J_{Lm}(equivalent on motor shaft) = J_L(equivalent on output shaft)×(actual gear ratio)^2

(2) Divide J_{Lm}(equivalent on motor shaft) by the motor output.

$$\frac{J_{Lm}}{kW}$$

Determine the allowable number of starts based on this value from Figs. 6 to 11. (Figs. 6 to 11 apply in the case of chain drive and gear drive. In the case of direct connection with a coupling, estimate the allowable number of starts by $J_{Lm} \times 0.5$.)

(3) Example of calculation 1

Motor output	2.2kW
Inertia moment of load J_L (equivalent on output shaft)	0.03kg・m^2
Gear ratio	1/3

For GM-SP Series

Actual gear ratio 1/2.96 (See the characteristics table of GM-SP.)

i) J_{Lm} (equivalent on motor shaft) = $0.03\times\left(\frac{1}{2.96}\right)^2 = 0.0034$

ii) $\frac{J_{Lm}}{kW} = \frac{0.0034}{2.2} = 0.0015$

As is evident from Fig. 7, GM-SP Series can withstand 1.2×10^5 times of starting.

(4) Example of calculation 2

Motor output	2.2kW
Inertia moment of load J_L (equivalent on output shaft)	3kg・m^2
Gear ratio	1/30

For GM-SP Series

Actual gear ratio 1/28.50 (See the characteristics table of GM-SP.)

i) J_{Lm} (equivalent on motor shaft) = $3\times\left(\frac{1}{30}\right)^2 = 0.0033$

ii) $\frac{J_{Lm}}{kW} = \frac{0.0033}{2.2} = 0.0015$

As is evident from Fig. 7, GM-SP Series can withstand 1.2×10^5 times of starting.

(5) Example of calculation 2

Motor output	2.2kW
Inertia moment of load J_L (equivalent on output shaft)	6kg・m^2
Gear ratio	1/30

For GM-DP/DDP Series

i) J_{Lm}(equivalent on motor shaft) = $6\times\left(\frac{1}{30}\right)^2 = 0.0067$

ii) $\frac{J_{Lm}}{kW} = \frac{0.0067}{2.2} = 0.003$

As is evident from Fig. 8, GM-DP Series can withstand 2×10^5 times of starting, and GM-DDP Series can withstand 1.2×10^6 times.

As shown in the above examples of calculation, the allowable number of starts for the equivalent load inertia moment on the output shaft varies depending on the selected gear ratio and reducer service factor.

1-7 Inertia moment of load J and allowable frequency of starting

When the frequency of starting is high even if the inertia moment of load J is low, the allowable number of starts may be restricted by the heat capacity of the motor.

It is necessary that the frequency of starting does not exceed C × Z shown in Table 5.

(1) Calculate C by the following formula.

$$C = \frac{J_{Lm} + J_m}{J_m}$$

J_{Lm} : Inertia moment of load (equivalent on motor shaft)

J_m : Inertia moment of geared motor (Table 5)

(2) Determine Z.

Z : Frequency of starting (times/hr)

(3) Check that the value of C × Z does not exceed the value shown in Table 5.

The allowable values of C × Z are common to all series of geared motors.

1-8 J_m of geared motor and allowable value of C × Z

Table 5

Motor output	Inertia moment of geared motor J_m(kgm^2)			Allowable value of C × Z
	GM-J2	GM-S/D/SSY/SHY GM-SP/DP/SSYP/SHYP/DYP	GM-LJP	
25W	6.0×10^{-5}(7.5×10^{-5})	–	–	360
40W	1.9×10^{-4}(2.4×10^{-4})	–	–	360
60W	2.3×10^{-4}(2.4×10^{-4})	–	–	360
90W	3.0×10^{-4}(3.1×10^{-4})	–	–	360
0.1kW	–	3.5×10^{-4}(3.9×10^{-4})	–	360
0.2kW	–	4.5×10^{-4}(4.9×10^{-4})	–	360
0.4kW	–	0.00115(0.00119)	–	360
0.75kW	–	0.00212(0.00219)	–	360
1.5kW	–	0.00444(0.00475)	–	360
2.2kW	–	0.00840(0.00895)	–	360
3.7kW	–	0.0169(0.0180)	–	360
5.5kW	–	0.0327(0.0341)	–	360
7.5kW	–	0.0411(0.0427)	–	300
11kW	–	0.0876(0.100)	0.0876(0.100)	300
15kW	–	–	0.111(0.143)	130
22kW	–	–	0.196(0.227)	130

The values in parentheses are for the motors with brakes.

1-9 Allowable number of starts

● **Allowable number of starts for GM-J2 Series**

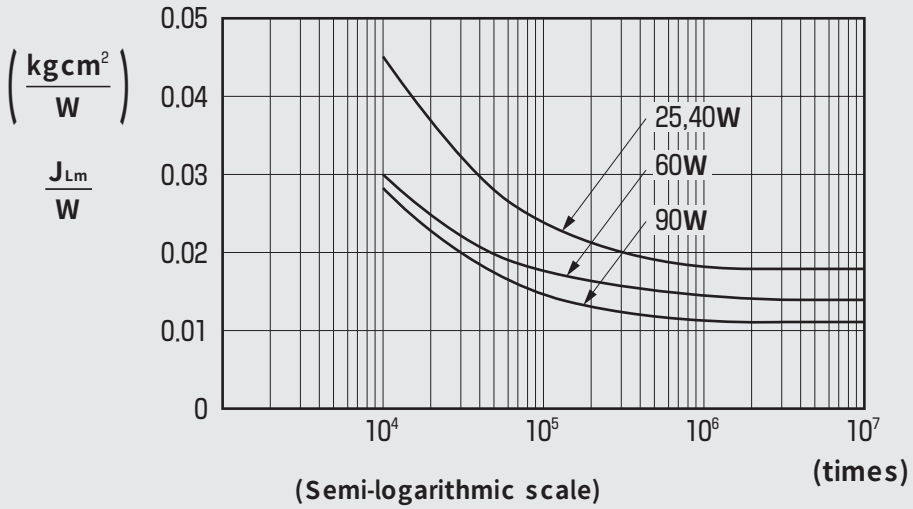


Fig. 6 **GM-J2 Series**

● **Allowable number of starts for GM-S/SP Series**

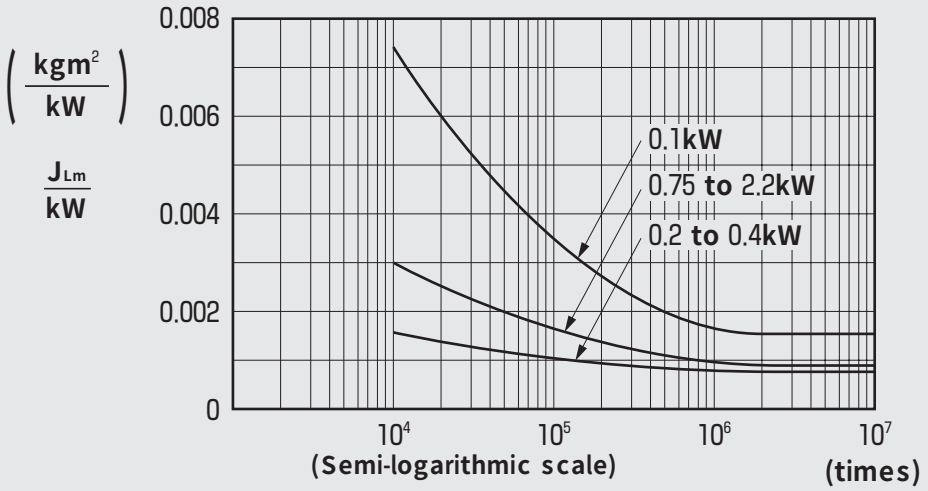


Fig. 7 GM-S/SP Series

● **Allowable number of starts for GM-D/DP Series**

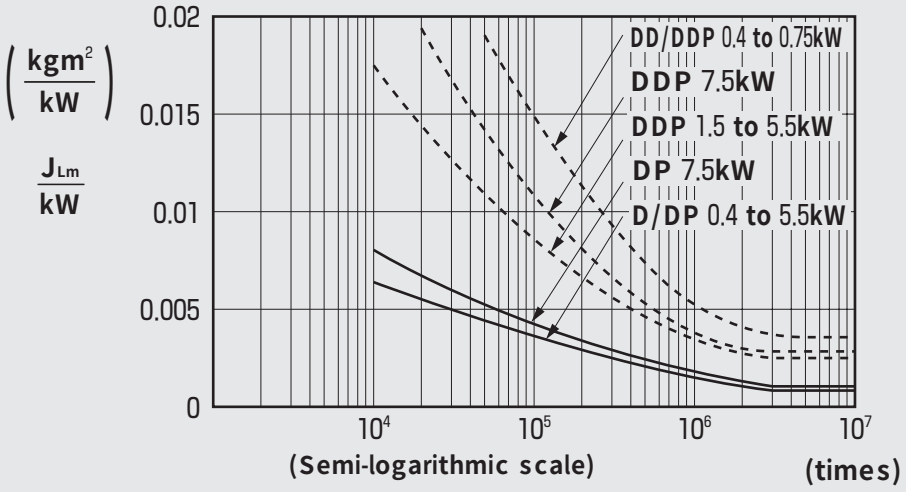


Fig. 8 GM-D/DP/DD/DDP Series

● **Allowable number of starts for GM-LJP Series**

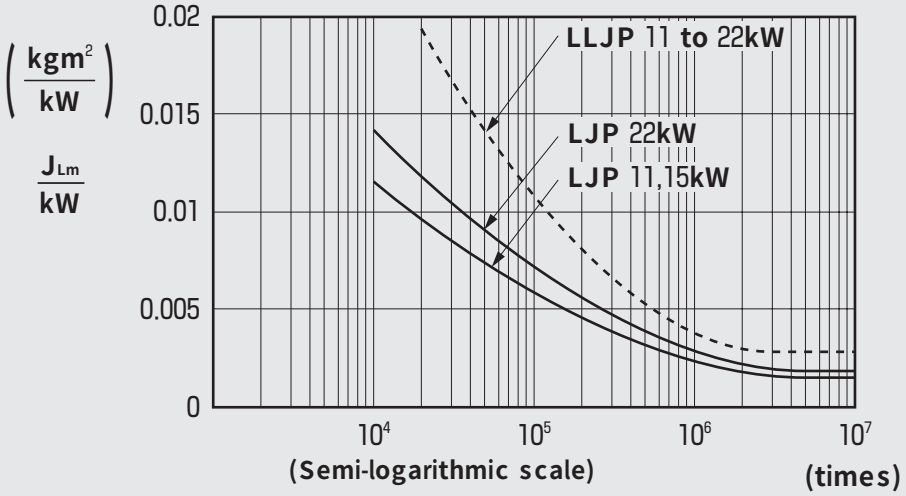


Fig. 9 GM-LJP/LLJP Series

● **Allowable number of starts for GM-SSY/SSYP Series**

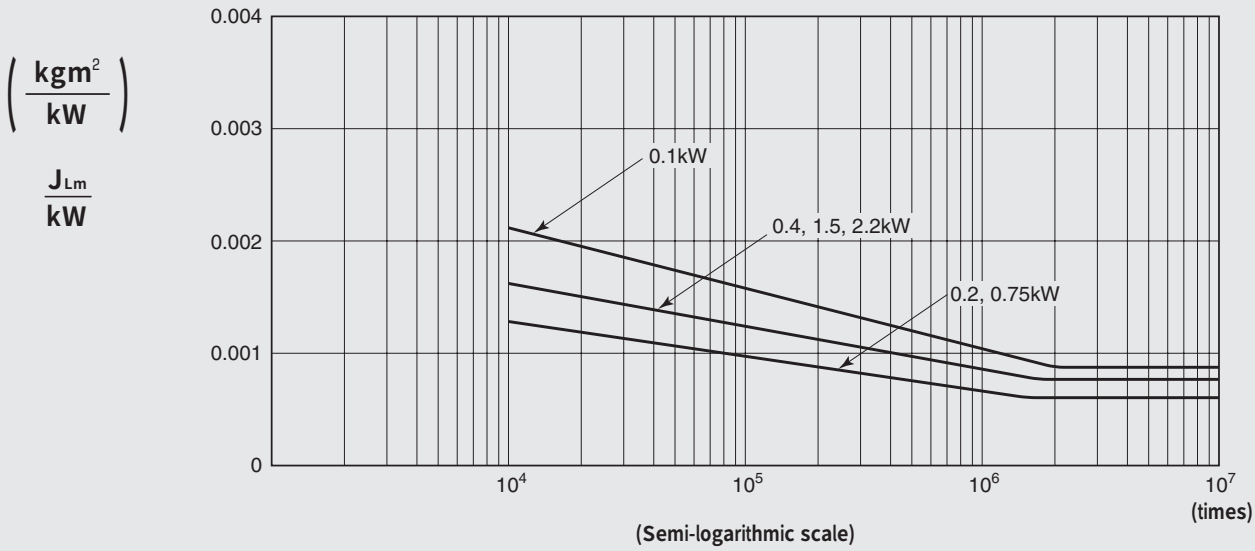


Fig. 10 **GM-SSY/SSYP Series**

● **Allowable number of starts for GM-SHY/SHYP Series**

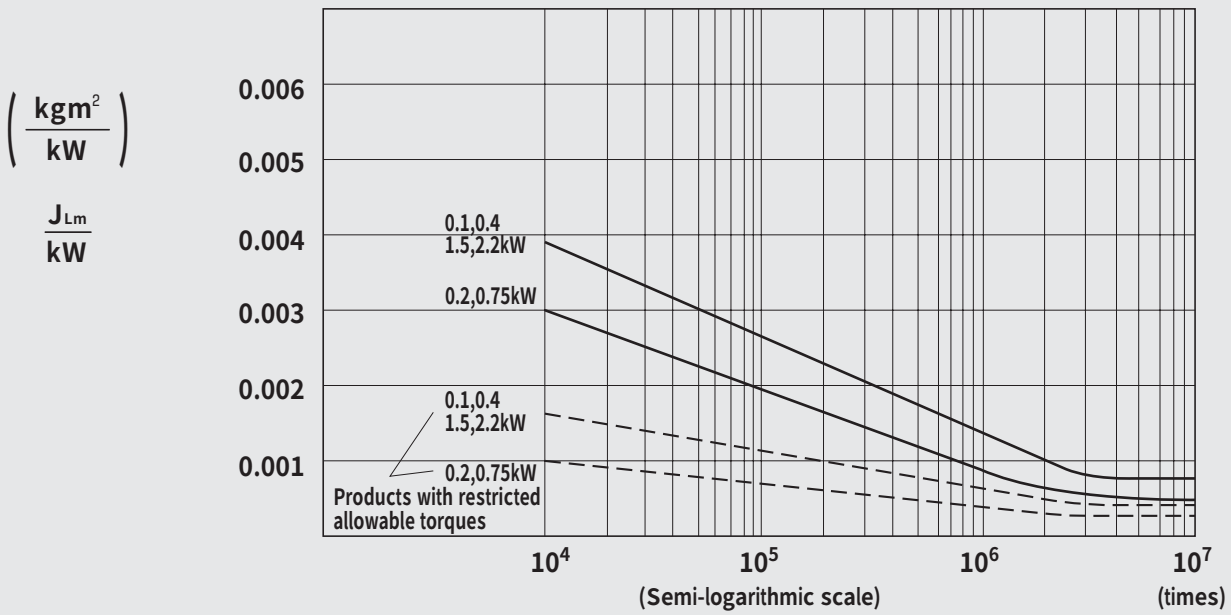


Fig. 11 **GM-SHY/SHYP Series**

2. Motors

2-1 Motor characteristic tables

●3-phase, 25 to 90 W

Number of phases	Output (W)	Motor characteristics			Brake coil current DC (A)
		Voltage (V)	Frequency (Hz)	Rated current (A)	
3-phase	25	200	50	0.26	0.078
		200	60	0.22	0.078
		220	60	0.22	0.078
	40	200	50	0.33	0.10
		200	60	0.3	0.10
		220	60	0.3	0.11
		380 to 400	50	0.16	—
		380 to 460	60	0.16	—
	60	200	50	0.48	0.10
		200	60	0.44	0.10
		220	60	0.44	0.11
		380 to 400	50	0.24	—
		380 to 460	60	0.23	—
	90	200	50	0.64	0.10
		200	60	0.6	0.10
		220	60	0.58	0.11
		380 to 400	50	0.32	—
		380 to 460	60	0.3	—

●Single-phase/single-phase reversible, 25 to 90 W

Number of phases	Output (W)	Motor characteristics				Capacitor capacity (μF)	Brake coil current DC (A)
		Voltage (V)	Frequency (Hz)	Rated current (A)	Starting torque (Nm)		
Single-phase	25	100	50	0.66	0.118	9.0(220V)	—
		100	60	0.54	0.188	9.0(220V)	
		200	50	0.33	0.127	2.2(440V)	
		200	60	0.27	0.108	2.2(440V)	
Single-phase reversible		100	50	0.68 [0.64]	0.167 [0.196]	11(220V)	0.156
		100	60	0.68 [0.64]	0.176 [0.206]	11(220V)	0.156
		200	50	0.34 [0.32]	0.167 [0.196]	2.8(440V)	0.078
		200	60	0.34 [0.32]	0.176 [0.206]	2.8(440V)	0.078
Single-phase	40	100	50	0.95	0.186	10(220V)	—
		100	60	0.85	0.186	10(220V)	
		200	50	0.48	0.206	2.5(440V)	
		200	60	0.42	0.206	2.5(440V)	
Single-phase reversible		100	50	1.1 [0.95]	0.225 [0.265]	15(220V)	0.20
		100	60	1.0 [0.86]	0.225 [0.265]	15(220V)	0.20
		200	50	0.55 [0.45]	0.225 [0.294]	4.0(440V)	0.10
		200	60	0.55 [0.45]	0.225 [0.294]	4.0(440V)	0.10
Single-phase	60	100	50	1.4	0.265	15(220V)	—
		100	60	1.2	0.265	15(220V)	
		200	50	0.64	0.264	4.0(440V)	
		200	60	0.58	0.264	4.0(440V)	
Single-phase reversible		100	50	1.3	0.539	25(220V)	0.20
		100	60	1.6	0.539	25(220V)	0.20
		200	50	0.62	0.539	6.0(440V)	0.10
		200	60	0.8	0.539	6.0(440V)	0.10
Single-phase	90	100	50	1.8	0.451	25(220V)	—
		100	60	1.74	0.451	25(220V)	
		200	50	0.9	0.451	6.0(440V)	
		200	60	0.87	0.451	6.0(440V)	
Single-phase reversible		100	50	1.8	0.725	35(220V)	0.20
		100	60	2.1	0.755	35(220V)	0.20
		200	50	0.9	0.745	9.0(440V)	0.10
		200	60	1.1	0.774	9.0(440V)	0.10

(Notes) 1. The values in brackets are for the models with brakes.
2. The values in parentheses in the capacitor capacity column are the rated voltage values of the capacitors.

Table 6 Non-explosion-proof type, 3-phase, 0.1 kW to 2.2 kW

Number of poles	Output (kW)	Voltage (V)	Frequency (Hz)	Load characteristics										Torque characteristics		Starting current (A)	Rated current (A)
				50% load			75% load			100% load			Rotation speed (r/min)	Max. torque (%)	Starting torque (%)		
				Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)					
4	0.1	200	50	0.56	52.4	49.3	0.60	59.9	60.3	0.66	63.1	69.3	1420	235	231	2.4	0.70
		200	60	0.46	57.1	54.6	0.52	63.7	66.0	0.59	66.0	74.3	1710	216	191	2.2	0.65
		220	60	0.51	53.2	48.3	0.55	61.0	58.9	0.60	64.7	67.4	1730	262	233	2.4	0.65
		400	50	0.33	52.6	41.3	0.35	60.6	51.4	0.37	64.5	60.3	1440	285	279	1.4	0.37
		400	60	0.26	60.2	45.6	0.28	66.9	57.0	0.31	69.7	66.1	1720	259	223	1.3	0.32
		440	60	0.30	54.4	40.2	0.31	62.4	50.1	0.34	66.6	58.7	1740	310	274	1.4	0.33
	0.2	200	50	0.99	61.9	47.3	1.07	67.2	59.9	1.21	68.2	69.9	1390	220	218	4.3	1.30
		200	60	0.79	67.4	54.2	0.91	71.2	67.1	1.07	70.9	75.8	1660	199	176	3.8	1.15
		220	60	0.86	64.4	47.3	0.95	69.8	59.6	1.07	71.3	69.0	1690	242	217	4.2	1.15
		400	50	0.50	62.1	46.7	0.54	67.5	59.2	0.61	68.7	69.1	1390	223	216	2.2	0.65
		400	60	0.40	68.3	52.5	0.46	71.9	65.5	0.54	71.5	74.4	1660	199	173	1.9	0.55
		440	60	0.44	65.0	45.9	0.48	70.3	58.2	0.54	71.7	67.7	1690	242	213	2.1	0.55
	0.4	200	50	1.60	67.3	53.6	1.80	72.0	66.7	2.08	72.9	75.9	1410	252	256	9.4	2.20
		200	60	1.34	71.4	60.5	1.58	74.9	73.1	1.90	75.0	80.8	1690	231	211	8.5	2.00
		220	60	1.42	68.5	53.8	1.61	73.5	66.5	1.86	75.0	75.3	1720	280	259	9.3	2.00
		400	50	0.83	65.1	53.1	0.93	70.2	66.1	1.07	71.4	75.4	1420	244	235	4.8	1.10
		400	60	0.68	69.7	61.0	0.80	73.4	73.6	0.97	73.5	81.3	1690	226	206	4.3	0.98
		440	60	0.72	66.9	54.4	0.81	72.1	67.0	0.94	73.7	75.8	1710	274	252	4.7	0.94
	0.75	200	50	3.57	79.9	37.8	3.89	83.1	50.2	4.28	83.9	60.2	1440	450	431	26.2	4.3
		200	60	2.61	84.1	49.2	3.05	85.8	62.0	3.57	86.0	70.5	1730	396	361	24.0	3.6
		220	60	2.93	82.9	40.5	3.25	85.6	52.9	3.65	86.3	62.4	1750	494	466	26.8	3.7
		400	50	1.80	78.4	38.4	1.96	81.9	50.7	2.16	82.7	60.6	1440	446	444	12.9	2.20
		400	60	1.30	84.3	49.3	1.52	86.0	62.2	1.78	85.8	70.8	1730	394	357	11.9	1.80
		440	60	1.47	82.0	40.7	1.63	84.9	53.3	1.83	85.6	62.7	1740	494	458	13.4	1.85
	1.5	200	50	5.01	85.3	50.6	5.83	86.4	64.4	6.88	85.9	73.2	1430	344	322	42.3	7.0
		200	60	3.76	88.9	64.8	4.83	88.7	75.7	6.11	87.2	81.3	1720	294	244	37.1	6.2
		220	60	4.07	87.9	54.9	4.90	88.8	67.8	5.90	88.3	75.4	1740	375	315	42.7	6.0
		400	50	2.33	85.8	54.1	2.78	86.4	67.5	3.35	85.3	75.7	1430	332	317	21.1	3.4
		400	60	1.81	88.6	67.4	2.37	88.2	77.5	3.04	86.5	82.4	1720	285	252	19.1	3.1
		440	60	1.92	87.9	58.2	2.36	88.6	70.5	2.89	87.8	77.5	1730	363	314	20.8	2.9
	2.2	200	50	7.93	87.0	46.0	9.04	88.3	59.6	10.4	88.2	69.0	1450	376	343	69.4	10.5
		200	60	6.02	90.1	58.5	7.48	90.4	70.4	9.16	89.6	77.4	1740	326	251	60.4	9.2
		220	60	6.60	88.9	49.1	7.70	90.1	62.4	9.03	90.0	70.9	1750	408	343	68.4	9.1
		400	50	3.97	87.0	46.0	4.52	88.3	59.6	5.22	88.2	69.0	1450	376	343	34.7	5.3
		400	60	3.01	90.1	58.5	3.74	90.4	70.4	4.58	89.6	77.4	1740	326	251	30.2	4.6
		440	60	3.30	88.9	49.1	3.85	90.1	62.4	4.52	90.0	70.9	1750	408	343	34.2	4.6

Note: The values of the 0.1- to 0.4-kW models shown in the above characteristics table are the representative values calculated by equivalent circuit method when the motors are in the single state.
The values of the 0.75- to 2.2-kW models are the representative values calculated by loss separation method when the motors are in the single state.
Note that the values are subject to change for improvement without prior notice.

Table 7 Non-explosion-proof type, 3-phase, 3.7 kW to 15 kW

Number of poles	Output (kW)	Voltage (V)	Frequency (Hz)	Load characteristics									Rotation speed (r/min)	Torque characteristics		Starting current (A)	Rated current (A)
				50% load			75% load			100% load				Max. torque (%)	Starting torque (%)		
				Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)					
4	3.7	200	50	9.91	89.6	60.1	12.2	90.3	72.7	15.0	89.6	79.4	1460	355	334	119	15.5
		200	60	8.48	90.7	69.4	11.1	90.8	79.4	14.1	89.8	84.1	1750	300	268	107	14.5
		220	60	8.68	90.3	61.9	10.8	91.1	73.9	13.3	90.8	80.2	1760	380	346	121	13.5
		400	50	4.96	89.6	60.1	6.10	90.3	72.7	7.50	89.6	79.4	1460	355	334	59.4	7.8
		400	60	4.24	90.7	69.4	5.55	90.8	79.4	7.07	89.8	84.1	1750	300	268	53.6	7.3
		440	60	4.34	90.3	61.9	5.41	91.1	73.9	6.66	90.8	80.2	1760	380	346	60.5	6.8
	5.5	200	50	15.6	90.6	56.0	18.7	91.7	69.5	22.4	91.6	77.2	1470	358	297	189	23.0
		200	60	12.6	91.9	68.3	16.3	92.3	78.9	20.5	92.0	83.8	1765	289	232	159	21.0
		220	60	13.3	91.3	59.5	16.2	92.5	72.0	19.7	92.6	79.1	1770	377	290	179	20.0
		400	50	7.81	90.6	56.0	9.34	91.7	69.5	11.2	91.6	77.2	1470	358	297	94.4	11.5
		400	60	6.32	91.9	68.3	8.16	92.3	78.9	10.3	92.0	83.8	1765	230	232	79.4	10.5
		440	60	6.64	91.3	59.5	8.11	92.5	72.0	9.86	92.6	79.1	1770	377	290	89.4	10.0
	7.5	200	50	19.6	90.9	60.7	24.1	91.6	73.4	29.5	91.3	80.4	1465	311	260	233	30.0
		200	60	16.3	92.4	71.8	21.5	92.7	81.3	27.5	92.0	85.6	1760	249	200	192	28.0
		220	60	16.8	92.1	63.6	21.0	93.0	75.5	25.9	92.8	81.7	1770	309	243	214	26.5
		400	50	9.80	90.9	60.7	12.0	91.6	73.4	14.7	91.3	80.4	1465	311	260	117	15.0
		400	60	8.15	92.4	71.8	10.8	92.7	81.3	13.7	92.0	85.6	1760	249	200	96.0	14.0
		440	60	8.39	92.1	63.6	10.5	93.0	75.5	13.0	92.8	81.7	1770	309	243	107	13.3
	11	200	50	26.7	92.1	64.3	33.7	92.9	76.1	41.8	92.5	82.1	1470	303	287	379	42.0
		200	60	23.0	92.6	74.3	30.9	93.1	82.9	39.6	92.7	86.5	1765	263	220	319	40.0
		220	60	23.4	91.9	67.0	29.8	93.0	77.8	37.2	93.1	83.3	1770	316	267	360	38.0
		400	50	13.4	92.1	64.3	16.8	92.9	76.1	20.9	92.5	82.1	1470	303	287	190	21.0
		400	60	11.5	92.6	74.3	15.4	93.1	82.9	19.8	92.7	86.5	1765	263	220	160	20.0
		440	60	11.7	91.9	67.0	14.9	93.0	77.8	18.6	93.1	83.3	1770	316	267	180	19.0
	15	200	50	37.3	92.2	62.8	46.5	93.1	75.0	57.3	93.0	81.2	1470	316	295	540	58.0
		200	60	31.3	93.0	74.4	41.8	93.6	83.0	53.6	93.2	86.4	1765	275	237	459	54.0
		220	60	32.0	92.5	66.5	40.7	93.5	77.6	50.6	93.5	83.2	1770	329	288	517	51.0
		400	50	18.7	92.2	62.8	23.2	93.1	75.0	28.6	93.0	81.2	1470	316	295	270	29.0
		400	60	15.6	93.0	74.4	20.9	93.6	83.0	26.8	93.2	86.4	1765	275	237	230	27.0
		440	60	16.0	92.5	66.5	20.3	93.5	77.6	25.3	93.5	83.2	1770	329	288	259	25.5

Note: The above characteristic values are the representative values calculated by loss separation method when the motors are in the single state. Note that the values are subject to change for improvement without prior notice.

Table 8 Non-explosion-proof type, 3-phase, 22 kW to 37 kW

Number of poles	Output (kW)	Voltage (V)	Frequency (Hz)	Load characteristics										Torque characteristics		Starting current (A)	Rated current (A)
				50% load			75% load			100% load			Rotation speed (r/min)	Max. torque (%)	Starting torque (%)		
				Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)					
4	22	200	50	50.8	93.4	66.9	65.0	94.1	77.8	81.2	94.0	83.2	1480	312	222	744	82.0
		200	60	43.1	94.0	78.3	59.0	94.4	85.5	76.5	94.0	88.2	1775	273	182	628	77.0
		220	60	43.5	93.6	70.9	56.8	94.5	80.6	71.7	94.4	85.2	1780	327	221	704	72.0
		400	50	25.4	93.4	66.9	32.5	94.1	77.8	40.6	94.0	83.2	1480	312	222	372	41.0
		400	60	21.5	94.0	78.3	29.5	94.4	85.5	38.3	94.0	88.2	1775	273	182	314	39.0
		440	60	21.8	93.6	70.9	28.4	94.5	80.6	35.9	94.4	85.2	1780	327	221	352	36.0
6	22	200	50	56.4	92.8	60.6	70.0	93.6	72.7	85.9	93.4	79.0	985	283	196	660	87.0
		200	60	46.9	94.3	71.8	62.5	94.4	80.7	79.9	94.0	84.5	1180	248	158	558	81.0
		220	60	48.2	93.8	63.8	60.9	94.5	75.2	75.5	94.5	80.9	1185	297	192	624	77.0
		400	50	28.2	92.8	60.6	35.0	93.6	72.7	43.0	93.4	79.0	985	283	196	330	44.0
		400	60	23.4	94.3	71.8	31.2	94.4	80.7	39.9	94.0	84.5	1180	248	158	279	41.0
		440	60	24.1	93.8	63.8	30.4	94.5	75.2	37.8	94.5	80.9	1185	297	192	312	39.0
4	30	200	50	67.2	94.1	68.5	87.1	94.7	78.7	109	94.6	83.6	1485	298	216	1050	110
		200	60	57.6	94.6	79.4	79.8	94.9	85.8	104	94.6	88.0	1780	258	165	870	105
		220	60	57.6	94.3	72.5	76.3	95.0	81.4	97.1	94.9	85.4	1785	310	201	982	98.0
		400	50	33.6	94.1	68.5	43.6	94.7	78.7	54.7	94.6	83.6	1485	298	216	523	55.0
		400	60	28.8	94.6	79.4	39.9	94.9	85.8	52.0	94.6	88.0	1780	258	165	435	53.0
		440	60	28.8	94.3	72.5	38.1	95.0	81.4	48.5	94.9	85.4	1785	310	201	491	49.0
	37	200	50	84.0	94.5	67.3	108	95.1	77.7	136	95.0	82.5	1485	275	176	1090	138
		200	60	74.6	94.1	76.0	102	94.8	83.2	131	94.7	86.0	1780	238	138	904	133
		220	60	74.2	93.9	69.6	96.9	94.9	79.2	122	95.1	83.6	1785	286	168	1010	124
		400	50	42.0	94.5	67.3	54.2	95.1	77.7	68.1	95.0	82.5	1485	275	176	545	69.0
		400	60	37.3	94.1	76.0	50.8	94.8	83.2	65.6	94.7	86.0	1780	238	138	452	67.0
		440	60	37.1	93.9	69.6	48.4	94.9	79.2	61.1	95.1	83.6	1785	286	168	507	62.0

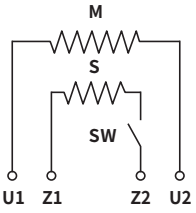
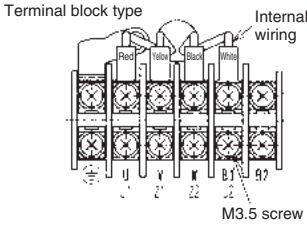
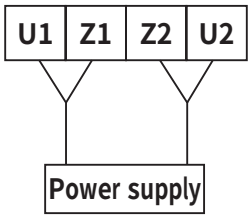
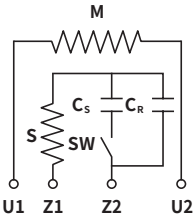
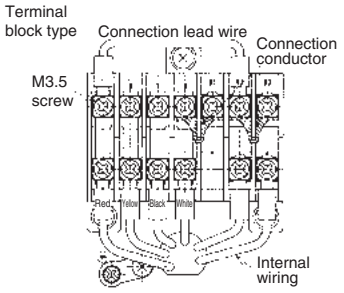
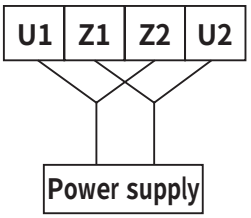
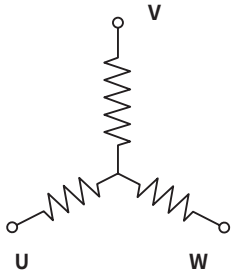
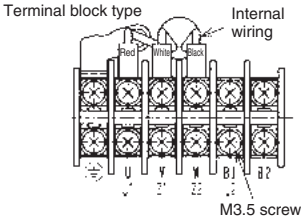
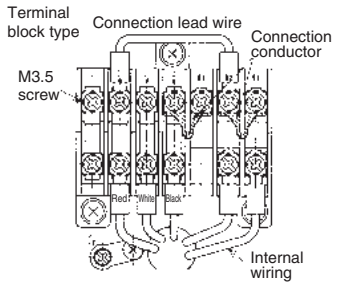
Note: The above characteristic values are the representative values calculated by loss separation method when the motors are in the single state. Note that the values are subject to change for improvement without prior notice.

Table 9 Non-explosion-proof type, single-phase, 0.1 kW to 0.4 kW

Number of poles	Output (kW)	Voltage (V)	Frequency (Hz)	Load characteristics										Torque characteristics		Starting current (A)	Rated current (A)
				50% load			75% load			100% load			Rotation speed (r/min)	Max. torque (%)	Starting torque (%)		
				Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)	Current (A)	Efficiency (%)	Power factor (%)					
4	0.1	100	50	3.28	36.3	41.3	3.37	44.3	49.5	3.55	48.7	57.3	1400	240	189	22.3	3.60
		100	60	2.57	40.9	47.1	2.72	49.5	55.4	3.02	51.0	65.1	1690	219	187	21.4	3.20
		200	50	1.58	36.6	43.1	1.64	44.5	51.3	1.73	48.3	59.5	1410	234	206	12.0	1.75
		200	60	1.26	44.4	44.4	1.35	50.9	54.7	1.48	53.8	62.9	1700	199	183	10.7	1.50
	0.2	100	50	2.87	62.9	55.3	3.20	70.0	67.3	3.70	67.4	80.2	1440	209	278	17.2	3.70
		100	60	1.96	58.3	87.6	2.43	68.3	90.8	3.02	71.9	92.5	1730	234	286	18.2	3.20
		200	50	1.50	59.1	56.7	1.63	68.6	67.6	1.81	72.2	76.5	1440	204	246	8.5	1.80
		200	60	1.01	60.6	81.6	1.20	72.4	86.1	1.52	74.6	88.8	1740	214	223	8.7	1.55
	0.4	100	50	5.41	51.2	72.0	6.20	61.4	78.9	6.90	67.9	85.3	1430	210	230	33.9	6.90
		100	60	3.76	54.3	92.8	4.58	59.7	93.3	5.99	64.3	95.3	1730	220	223	33.7	6.00
		200	50	2.37	57.1	73.9	2.81	65.0	82.2	3.30	70.2	86.6	1430	215	204	18.2	3.40
		200	60	1.88	55.9	95.5	2.37	65.9	96.1	2.95	70.3	96.4	1710	212	186	18.0	3.10

Note: The above characteristic values are the representative values obtained by actual loading test when the motors are in the single state. Note that the values are subject to change for improvement without prior notice.

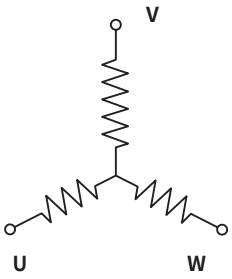
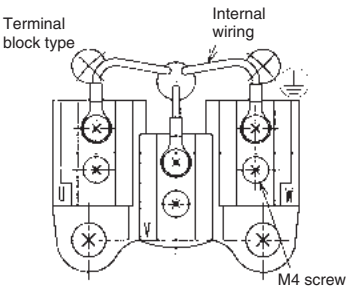
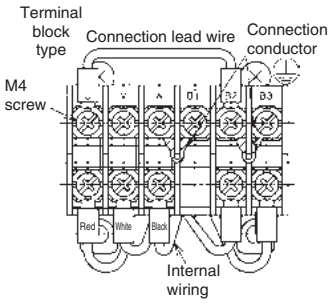
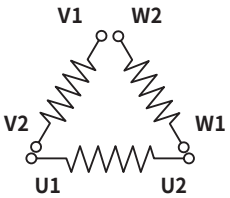
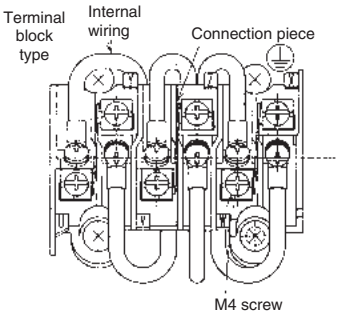
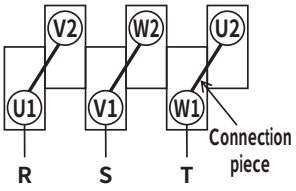
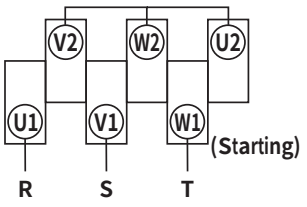
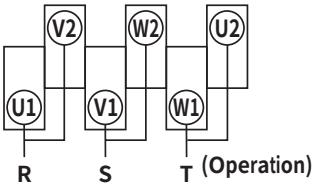
2-2 Wire connection

Number of phases	Model name	Output (kW)	Number of lead wires	Winding	Structure of terminal outlet	Connection method	Rotation direction
Single-phase	GM-SS GM-SSYS GM-SHYS	0.1	4	 M : Main winding S : Starting winding SW : Centrifugal force switch	 Without brake		Counter clockwise (CCW) 
		0.2 0.4		 M : Main winding S : Starting winding SW : Centrifugal force switch C_S : Starting capacitor C_R : Operating capacitor	 With brake (connection for simultaneous turn-off)		Clockwise (CW) 
3-phase	GM-S GM-SSY GM-SHY	0.1 to 0.4	3		 Without brake  With brake (connection for simultaneous turn-off)	 The direction can be changed to clockwise (CW) by exchanging any two of the three lead wires.	Counter clockwise (CCW) 

Note: The rotation directions (viewed from the output shaft) shown in the above table are for 2- and 4-stage reduction models. The rotation directions of 3-stage reduction models are opposite to the directions shown in the above table.

Cautions

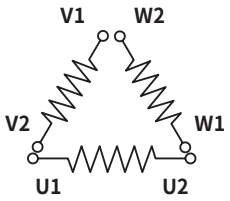
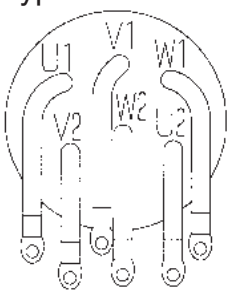
1. Ground the motors without fail. Install the dedicated earth leakage circuit breaker for each motor. Failure to do so may cause electric shock.
2. Wire the motors using excellent wiring devices in accordance with the electrical equipment technical standards and the regulations of the electric power company.
3. Install an appropriate motor protective device for each motor. Failure to do so may cause a fire when a trouble occurs.
4. Use a power supply of the specified voltage. Failure to do so may cause a fire.
5. For the connecting diagram of GM-J2, see page 45.

Number of phases	Model name	Output (kW)	Number of lead wires	Winding	Structure of terminal outlet	Connection method	Rotation direction
3-phase	GM-SP GM-SSYP GM-SHYP	0.75 to 2.2	3		 Without brake  With brake (connection for simultaneous turn-off)	 The direction can be changed to clockwise (CW) by exchanging any two of the three lead wires.	Counter clockwise (CCW) 
	GM-D GM-DP GM-DYP	0.4 to 3.7					
	GM-DP GM-DYP	5.5 7.5	6			 Full-voltage starting   Star-delta starting	

Note: The rotation directions (viewed from the output shaft) shown in the above table are for 2- and 4-stage reduction models with parallel shafts. (The rotation directions of those with right angle shafts are different.)
The rotation directions of 1- and 3-stage reduction models are opposite to the directions shown in the above table.

Cautions

1. **Ground the motors without fail. Install the dedicated earth leakage circuit breaker for each motor. Failure to do so may cause electric shock.**
2. **Wire the motors using excellent wiring devices in accordance with the electrical equipment technical standards and the regulations of the electric power company.**
3. **Install an appropriate motor protective device for each motor. Failure to do so may cause a fire when a trouble occurs.**
4. **Use a power supply of the specified voltage. Failure to do so may cause a fire.**

Number of phases	Model name	Output (kW)	Number of lead wires	Winding	Structure of terminal outlet	Connection method	Rotation direction
3-phase	GM-LJP	11 to 37	6		Lug type 	R S T | | | U1 V1 W1 | | | V2 W2 U2 Full-voltage starting	Counter clockwise (CCW) 
	GM-DYP	11				R S T | | | U1 V1 W1 V2—W2—U2 (Starting) R S T | | | U1 V1 W1 | | | V2 W2 U2 (Operation) Star-delta starting	

Note: The rotation directions (viewed from the output shaft) of GM-LJP Series are for 2- and 4-stage reduction models with parallel shafts. The rotation directions of 1- and 3-stage reduction models are opposite to the directions shown in the above table. (The rotation directions of those with right angle shafts are different.)

Cautions

1. **Ground the motors without fail. Install the dedicated earth leakage circuit breaker for each motor. Failure to do so may cause electric shock.**
2. **Wire the motors using excellent wiring devices in accordance with the electrical equipment technical standards and the regulations of the electric power company.**
3. **Install an appropriate motor protective device for each motor. Failure to do so may cause a fire when a trouble occurs.**
4. **Use a power supply of the specified voltage. Failure to do so may cause a fire.**

2-3 Number of reduction stages and rotation direction

The rotation directions in the case of connection of R-U, S-V and T-W are shown below. To change the rotation direction, exchange any two of the three lead wires.

■ Parallel shaft

Table10 Rotation directions of GM-S/SP Series

Output (kW)	Gear ratio	No. of reduction stages	Rotation direction (viewed from output shaft)
0.1	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise
0.2	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise
0.4	1/3	3 stages	Clockwise
	1/5 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise
0.75 to 2.2	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise

Table11 Rotation directions of GM-LJP Series

Output (kW)	Gear ratio	No. of reduction stages	Rotation direction (viewed from output shaft)
11	1/3,1/5	1 stage	Clockwise
	1/10 to 1/30	2 stages	Counterclockwise
	1/45,1/60	3 stages	Clockwise
15	1/3,1/5	1 stage	Clockwise
	1/10 to 1/30	2 stages	Counterclockwise
	1/45	3 stages	Clockwise
22	1/3,1/5	1 stage	Clockwise
	1/10 to 1/45	2 stages	Counterclockwise
30	1/10 to 1/30	2 stages	Counterclockwise
37	1/10 to 1/30	2 stages	Counterclockwise

Table12 Rotation directions of GM-D/DP Series

Output (kW)	Gear ratio	No. of reduction stages	Rotation direction (viewed from output shaft)
0.4	1/3 to 1/50	2 stages	Counterclockwise
	1/60 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise
0.75	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/1200	4 stages	Counterclockwise
1.5	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
	1/270 to 1/450	4 stages	Counterclockwise
2.2	1/3 to 1/30	2 stages	Counterclockwise
	1/40 to 1/200	3 stages	Clockwise
3.7	1/3	3 stages	Clockwise
	1/5 to 1/30	2 stages	Counterclockwise
	1/40 to 1/120	3 stages	Clockwise
5.5	1/3 to 1/30	2 stages	Counterclockwise
	1/40,1/50	3 stages	Clockwise
	1/60 to 1/120	3 stages	Clockwise
7.5	1/3 to 1/30	2 stages	Counterclockwise
	1/45 to 1/90	3 stages	Clockwise

■ Right angle shaft

Foot mounting

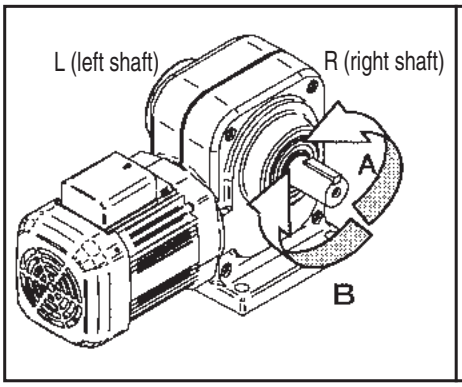


Fig. A

Flange/face mounting (solid shaft)

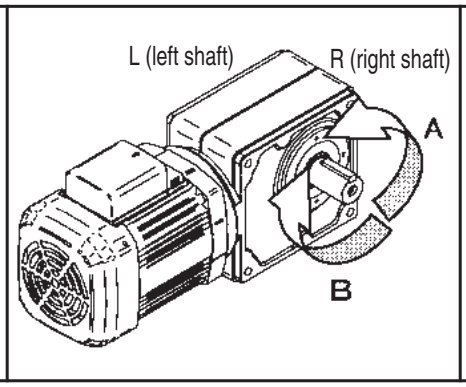


Fig. B

Flange/face mounting (hollow shaft)

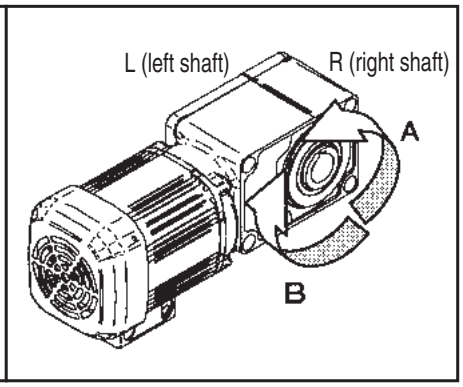


Fig. C

Table13 GM-SSY/SSYP Series

Mounting	Figure	Gear ratio	Number of reduction stages	Rotation direction
Flange/face mounting	C	All gear ratios	2 stages	B

Table14 GM-SHY/SHYP Series

Output (kW)	Mounting	Figure	Gear ratio	GM-SHY	
				Number of reduction stages	Rotation direction
0.1 to 0.4	Foot mounting	A	1/5 to 1/7.5	3 stages	B
			1/10 to 1/60	2 stages	A
			1/80 to 240	3 stages	B
			1/300 to 1440	4 stages	A
0.75			1/5 to 1/7.5	2 stages	A
			1/10 to 1/60	2 stages	A
			1/80 to 240	3 stages	B
1.5,2.2			1/5 to 1/7.5	3 stages	B
			1/10 to 1/60	2 stages	A
			1/80 to 240	3 stages	B
0.1 to 0.4	Flange/face mounting (solid shaft)	C	1/5 to 1/7.5	3 stages	A
			1/10 to 1/60	2 stages	B
			1/80 to 240	3 stages	A
			1/300 to 1440	4 stages	B
0.75			1/5 to 1/7.5	2 stages	A
			1/10 to 1/60	2 stages	A
			1/80 to 240	3 stages	A
1.5,2.2			1/5 to 1/7.5	3 stages	A
			1/10 to 1/60	2 stages	B
			1/80 to 240	3 stages	A
0.1 to 0.4	Flange/face mounting (hollow shaft)	B	1/5 to 1/7.5	3 stages	A
			1/10 to 1/60	2 stages	B
			1/80 to 240	3 stages	A
			1/300 to 1440	4 stages	B
0.75			1/5 to 1/7.5	2 stages	A
			1/10 to 1/60	2 stages	A
			1/80 to 240	3 stages	A
1.5,2.2			1/5 to 1/7.5	3 stages	A
			1/10 to 1/60	2 stages	B
			1/80 to 240	3 stages	A

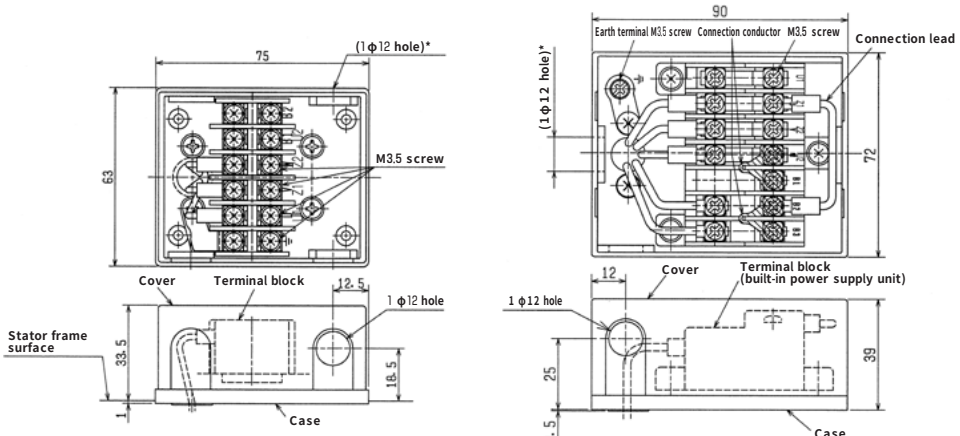
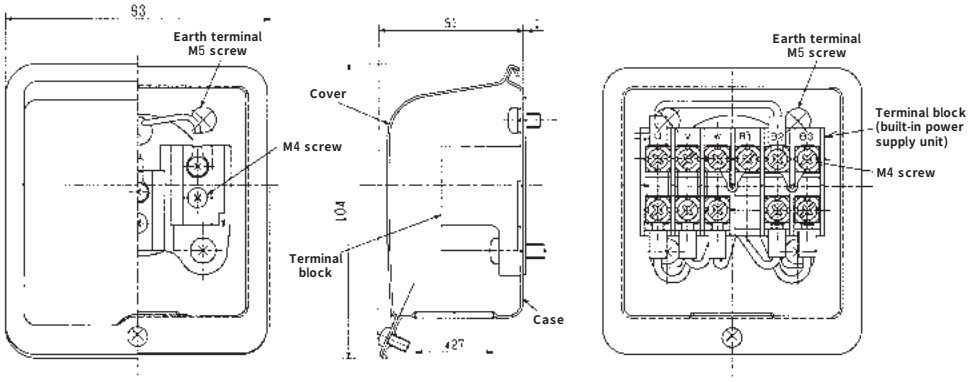
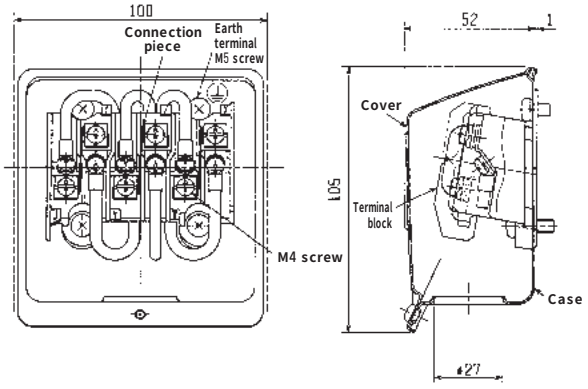
*** 0.4-kW models have gear ratios from 1/300 to 1/480.**

Table15 GM-DYP Series

Mounting	Figure	Gear ratio	Number of reduction stages	Rotation direction
Flange/foot mounting	A	All gear ratios	3 stages	A

2-4 Dimensions of terminal boxes

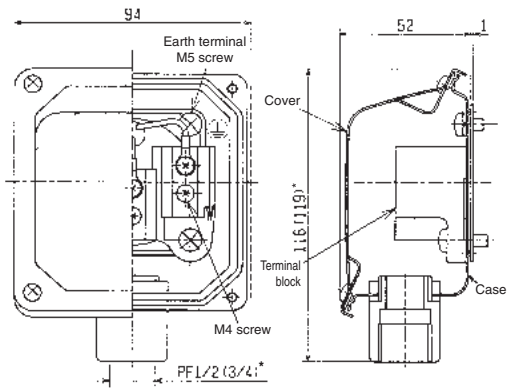
● GM-S/SP, GM-D/DP, GM-SSY/SSYP, GM-SHY/SHYP and GM-DYP Series

Protective construction	Model name	Output (kW)	Dimensions of terminal box
Indoor type	GM-S GM-SSY GM-SHY	0.1 to 0.4	 Without brake With brake
	GM-SP GM-SSYP GM-SHYP	0.75 to 2.2	 Without brake With brake
	GM-D GM-DP GM-DYP	0.4 to 3.7	
	GM-DP GM-DYP	5.5 7.5	

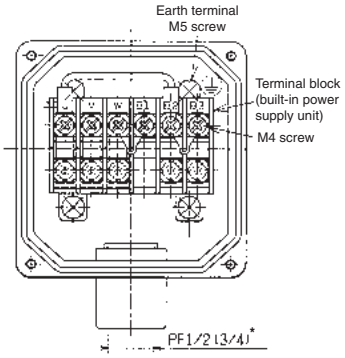
For the dimensions of terminal boxes of GM-J2 Series, see page 47.

● GM-S/SP, GM-D/DP, GM-SSY/SSYP, GM-SHY/SHYP and GM-DYP Series

Protective construction	Model name	Output (kW)	Dimensions of terminal box
Outdoor type	GM-S GM-SP	0.1 to 2.2	
	GM-SSY GM-SHY GM-SSYP GM-SHYP	0.1 to 2.2	
	GM-D GM-DP GM-DYP	0.4 to 3.7	
	GM-DP GM-DYP	5.5 7.5	

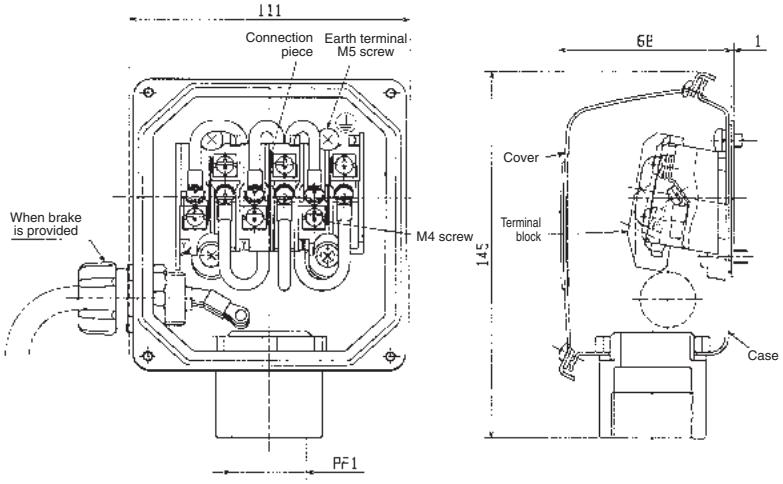


Without brake



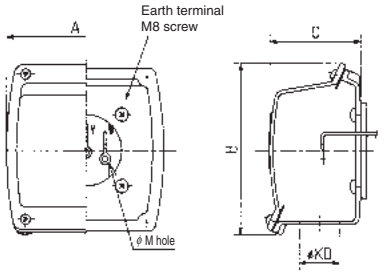
With brake

*** The values in parentheses are for 0.75- to 3.7-kW models.**



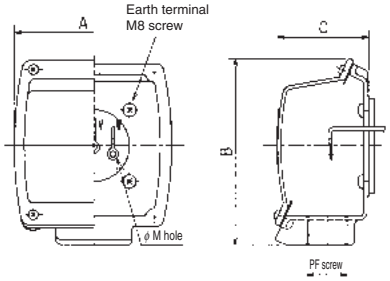
● GM-LJP and GM-DYP Series

Protective construction	Model name	Output (kW)	Dimensions of terminal box
Indoor type	GM-LJP	11 to 37	
	GM-DYP	11	



Output (kW)	A	B	C	KD	M
11 to 30	154	163	93	35	6.4
37	200	240	141	50	6.4

Protective construction	Model name	Output (kW)	Dimensions of terminal box
Outdoor type	GM-LJP	11 to 37	
	GM-DYP	11	



Output (kW)	A	B	C	M
11 to 30	164	194	95	6.4
37	230	273	143	6.4

PF screw size

Voltage	11,15kW	22kW	30,37kW
200 V class	PF1 1/2	PF2	PF2
400 V class	PF1 1/4	PF1 1/4	PF2

2-5 Detail dimensions of motor

● **GM-S/SP, GM-D/DP, GM-SSY/SSYP, GM-SHY/SHYP and GM-DYP Series**

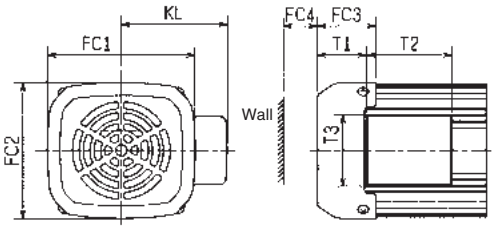


Fig. A

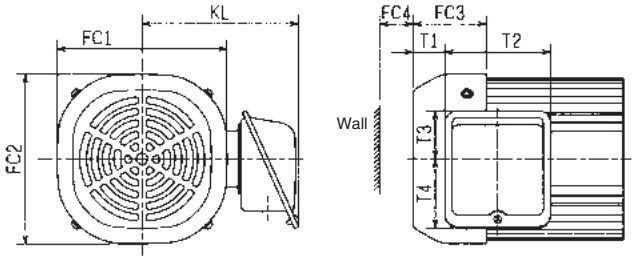
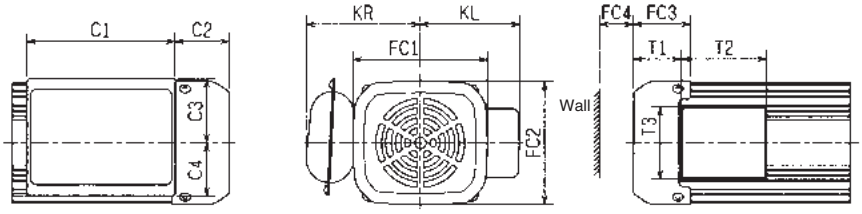


Fig. B

Output (kW)	Series	Fig.	Indoor type								
			Dimensions of terminal box (mm)					Dimensions of fan cover (mm)			
			T1	T2	T3	T4	KL	FC1	FC2	FC3	FC4
0.1	GM-S	A	— (68)	75(90)	63(72)	—	87(92)	— (118)	— (108)	— (76)	20
0.2	GM-SSY		42(90)					118	108	50(98)	
0.4	GM-SHY		43(95)				93(98)	130	120	51(103)	
	GM-D	B	31(83)	93	44	60	119				
0.75	GM-SP GM-DP GM-SSYP GM-SHYP		28(91)				138	150	150	64(127)	
1.5			37(109)				148	175	175	73(145)	40
2.2			52(119)				160	204	204	83(150)	
3.7	GM-DP GM-DYP		64(139)	96	40	64	174	235	235	95(170)	
5.5			88(168)				194	275	275	117(197)	
7.5											

(Notes) 1. FC4 is the minimum dimension from the wall determined in consideration of ventilation to cool the motor. It is recommended to install the motor at such a distance (FC3 + 5 mm) from the wall that the fan cover can be removed to facilitate maintenance of the brake.
2. The values in parentheses are for the models with brakes.

● **GM-SS, GM-SSYS and GM-SHYS Series**

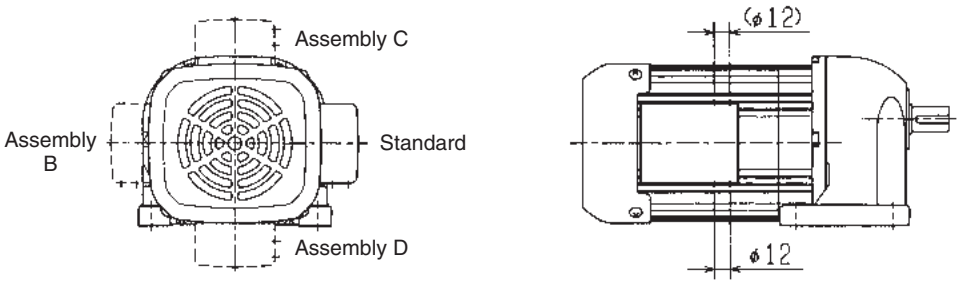
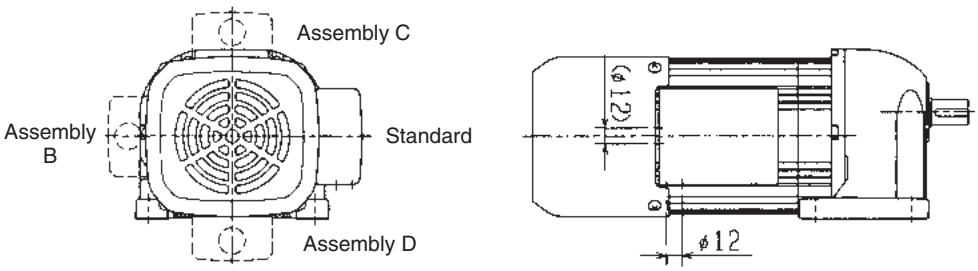
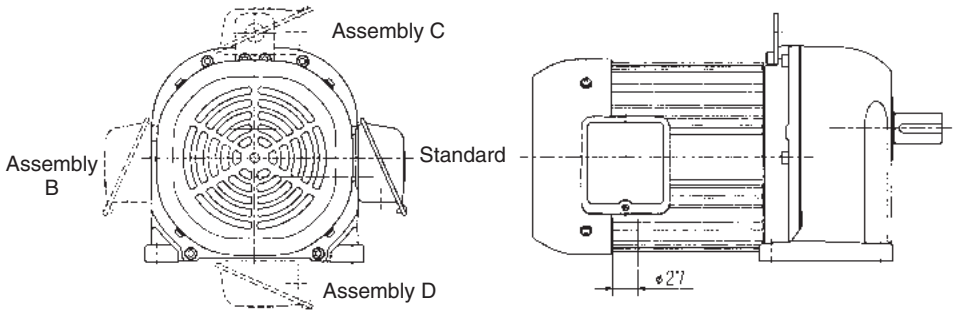


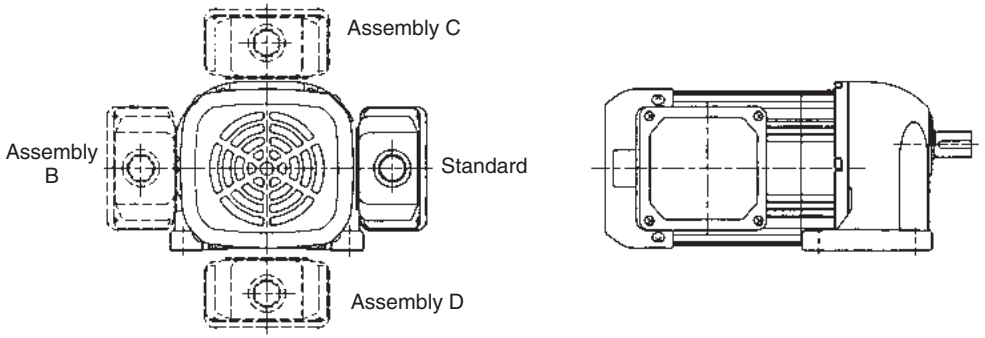
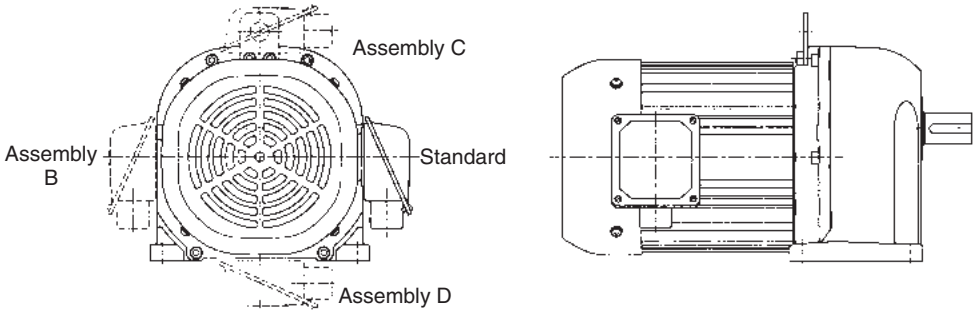
Output(kW)	Indoor type												
	Dimensions of capacitor (mm)					Dimensions of fan cover (mm)				Dimensions of terminal box (mm)			
	C1	C2	C3	C4	KR	FC1	FC2	FC3	FC4	T1	T2	T3	T4
0.1	—					118	108	50(98)	20	43(91)	75(90)	63(72)	87(92)
0.2	130	48(96)	56	46	100								
0.4		49(101)			106	130	120	51(103)		44(96)			93(98)

(Notes) 1. FC4 is the minimum dimension from the wall determined in consideration of ventilation to cool the motor. It is recommended to install the motor at such a distance (FC3 + 5 mm) from the wall that the fan cover can be removed to facilitate maintenance of the brake.
2. The values in parentheses are for the models with brakes.

2-6 Terminal box installation location and direction of lead wire outlet

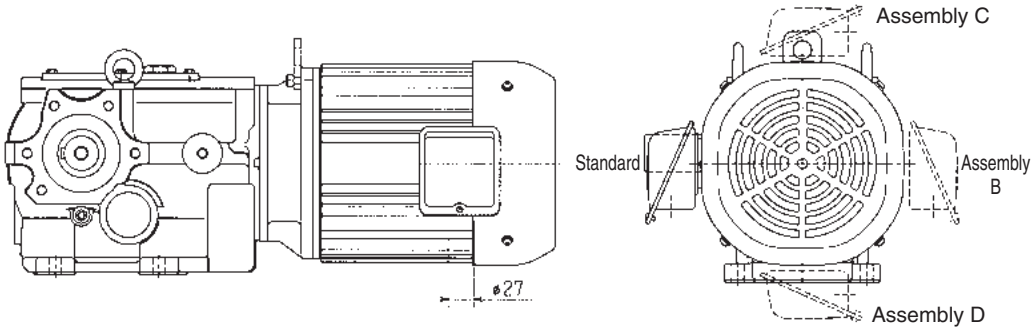
● GM-S/SP and GM-D/DP Series

Protective construction	Model name	Output (kW)	Brake	Terminal box installation location and direction of lead wire outlet
Indoor type	GM-S	0.1 to 0.4	Without brake	 The direction of the socket can be changed to the (φ12) side by installing the terminal box cover after turning it 180 °.
			With brake	 The direction of the socket can be changed to the (φ12) side by installing the terminal box cover after turning it 180 °.
	GM-SP	0.75 to 2.2	Common	
	GM-D	0.4		
	GM-DP	0.75 to 7.5		

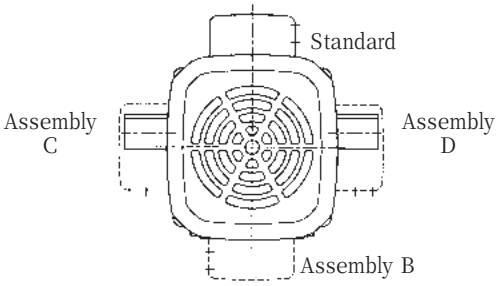
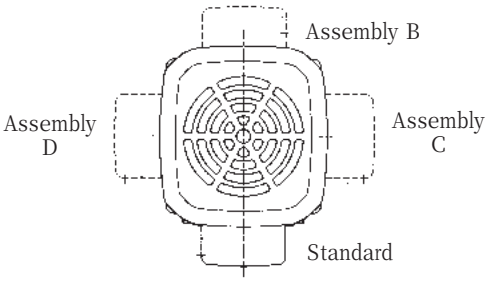
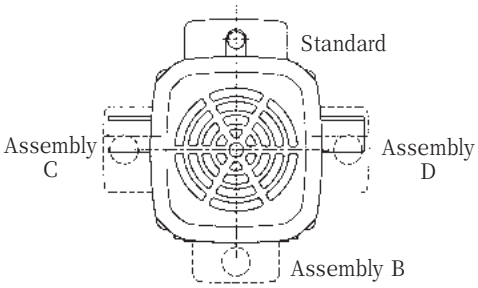
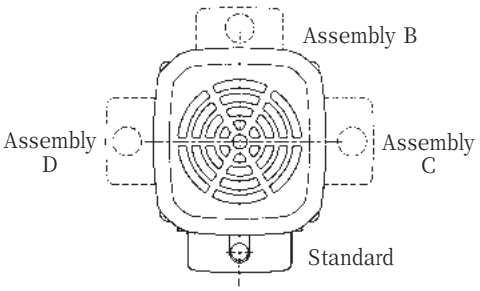
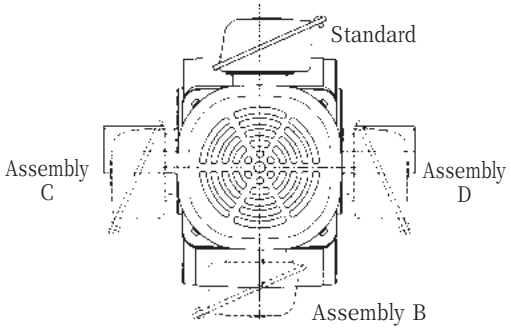
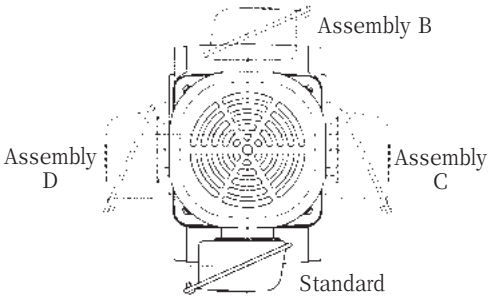
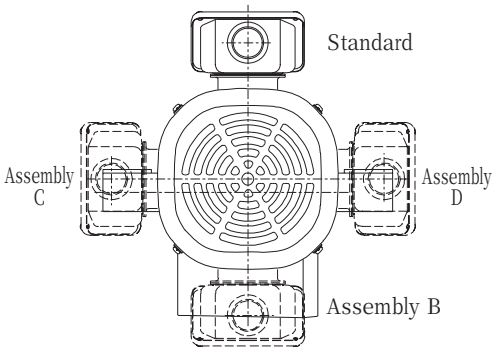
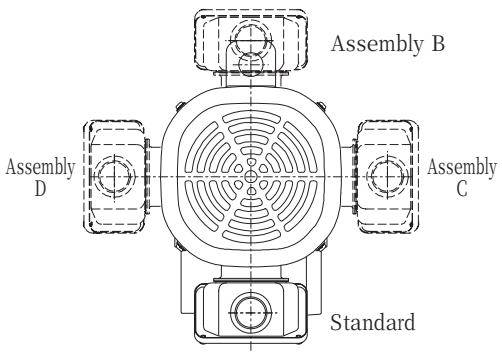
Protective construction	Model name	Output (kW)	Brake	Terminal box installation location and direction of lead wire outlet
Outdoor type	GM-S GM-SP	0.1 to 1.5	Common	
	GM-D	0.4		
	GM-DP	0.75 to 1.5		
	GM-SP	2.2		
	GM-DP	2.2 to 7.5		

(Notes) 1. When the assembly style of some foot mounting type geared motors is changed to the assembly D, the terminal boxes may protrude downward from the mounting surface.
2. When the socket position of some outdoor type geared motors is changed to the load side, it may be difficult to connect the power cables.

● GM-DYP Series

Protective construction	Output (kW)	Brake	Terminal box installation location and direction of lead wire outlet
Indoor type	3.7 to 7.5	Common	

● GM-SSY/SSYP and GM-SHY/SHYP Series

Protective construction	Model name	Output (kW)	Brake	Terminal box installation location and direction of lead wire outlet	
				Solid shaft	Hollow shaft
Indoor type	GM-SSY GM-SHY	0.1 to 0.4	Without brake		
			With brake		
	GM-SSYP GM-SHYP	0.75 to 2.2	Common		
Outdoor type	GM-SSY GM-SHY GM-SSYP GM-SHYP	0.1 to 2.2			

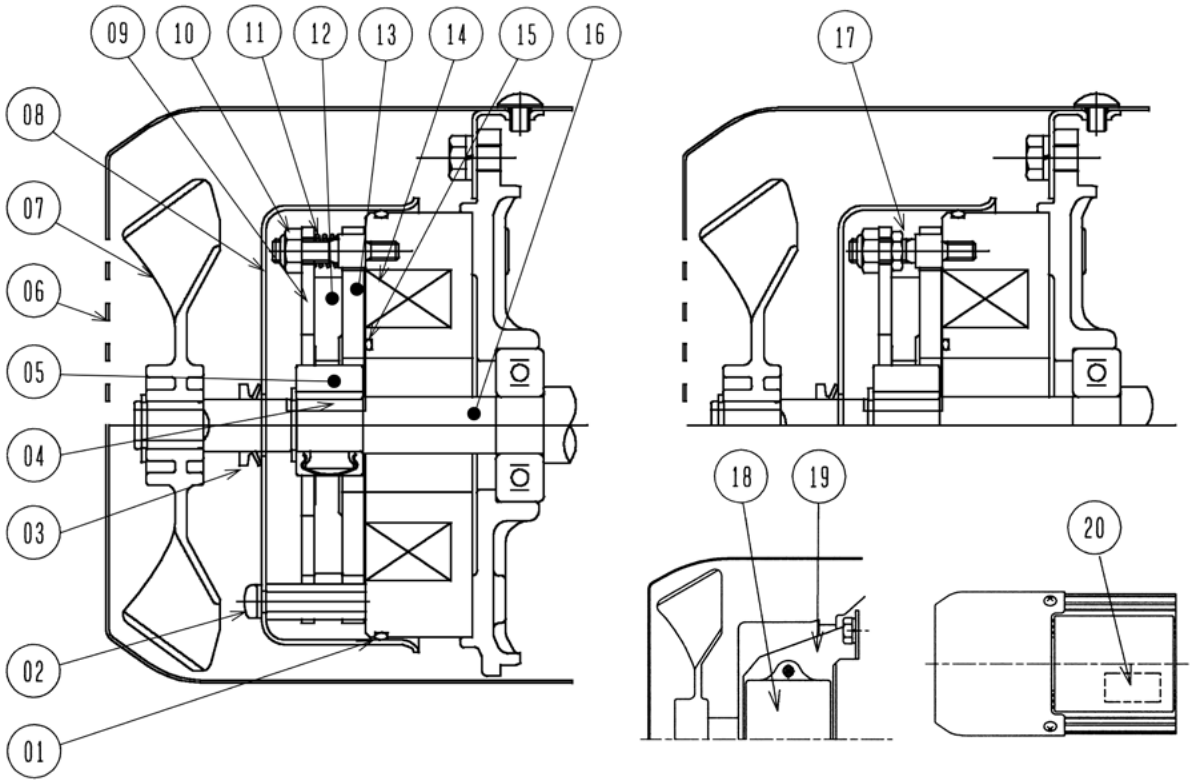
(Notes) 1. Do not turn the motor frame to change the terminal box position. (When the tightening bolt is loosened, the bolt may be broken.)
2. For the details of the position of the hoisting attachment, see the outline drawing on Mitsubishi Electric FA site (www.mitsubishielectric.co.jp/fa/).

3. Brake

3-1 Features and structure of brake

● GM-SB/SPB, GM-DB/DPB, GM-SSYB/SSYPB, GM-SHYB/SHYPB and GM-DYPB (except 11-kW models) Series

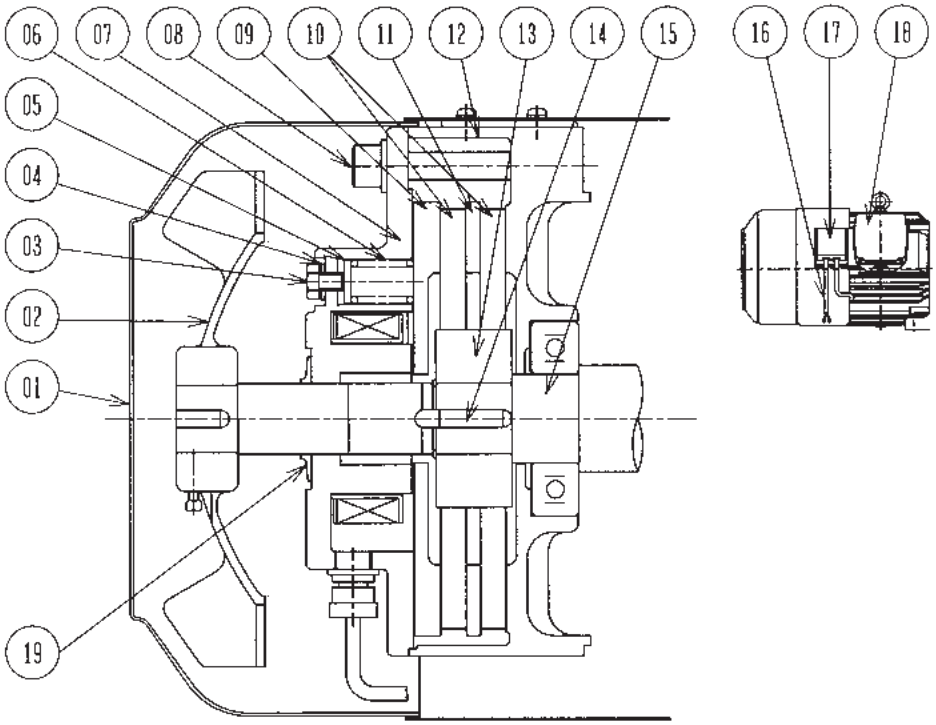
1. Low noise
   The impact noise caused by brake operation (releasing and braking) has been greatly reduced by the use of brake cover, O-ring, etc.
2. Built-in device in power supply unit
   The power supply unit has a built-in surge absorber. The surge caused by quick turn-off is reduced, and the brake can be used with the auxiliary contact.
3. Easy to wire
   The use of a 6- or 7-point terminal block facilitates the wiring. The point-to-point construction for quickly turning off the inverter is not required. (0.1 to 3.7 kW)
4. Long life
   The double face brake system ensures stable and strong brake performance for a long time.
5. Safety brake
   The negative actuated type brake system (spring actuated type brake system) can serve as a safety brake system.
6. Use of non-asbestos material
   A non-asbestos material is used for the brake lining.
7. Cleanliness
   The totally enclosed structure (with a brake cover) can prevent scattering of abrasion powder of brake lining to the outside and maintain clean environment.



Part No.	Part name	Part No.	Part name	Part No.	Part name
1	O-ring	8	Brake cover	15	O-ring
2	Cross-recessed pan head screw	9	Supporting plate	16	Motor shaft
3	V-shaped end face seal (only outdoor type)	10	Hexagon nut	17	Lock nut (0.75 kW or more)
4	Key	11	Supporting spring (0.4 kW or less)	18	Power supply unit (5.5 to 7.5 kW)
5	Brake hub	12	Brake lining	19	Fitting
6	Fan cover	13	Moving core	20	Power supply unit (0.1 to 3.7 kW)
7	Fan	14	Stationary core		

● GM-LJPB and GM-DYPB (only 11-kW models) Series

1. Long life
   The DC disc brake with a built-in power supply unit has high braking force and long life.
2. Safety brake
   The negative actuated type brake system (spring actuated type brake system) can serve as a safety brake system.
3. Use of non-asbestos material
   A non-asbestos material is used for the brake lining.
4. Easy to adjust the brake torque
   The brake torque can be easily adjusted by removing the brake cover and adding the supplied spacer to the adjusting bolt.



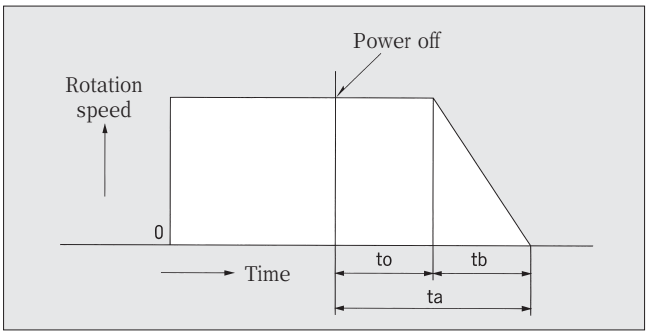
Part No.	Part name	Part No.	Part name	Part No.	Part name
1	Fan cover	8	Hexagon socket head cap screw	15	Motor shaft
2	Fan	9	Moving core	16	Brake lead
3	Brake torque adjusting bolt	10	Brake lining	17	Power supply unit
4	Spacer	11	Friction plate	18	Terminal box
5	Washer	12	Brake box	19	Flinger (only outdoor type)
6	Brake spring	13	Brake hub		
7	Stationary core	14	Key		

3-2 Braking system

Friction type DC electromagnetic disc brakes are used for the geared motors with built-in brakes. The brakes are negative actuated type brakes (spring actuated type brakes) and, therefore, safety brakes which are applied upon power failure.
If an electric brake (reverse-phase brake, dynamic brake, etc.) is applied to any geared motor, the motor temperature will rise, and a burnout accident may occur. Consult us.

3-3 Stop time

The brake stopping characteristics are shown below. After a certain time (coast down time) has passed since the power was turned off, the brake will start, continue to work almost straightly (braking time) and stop.



The stop time can be determined by the following formula.

(1) General load

$$ta = to + tb$$

$$= to + \frac{(J_m + J_{Lm}) \times N}{9.55 \times (T_B + T_L)}$$

(2) Lowering load

$$ta = to + tb$$

$$= to + \frac{(J_m + J_{Lm}) \times N}{9.55 \times (T_B - T_L)}$$

ta : Stop time (sec)
to : Coast down time (sec)
tb : Braking time (sec)
J_m : Inertia moment of geared motor (kgm^2)
J_{Lm} : Inertia moment of load (equivalent on motor shaft) (kgm^2)
N : Rotation speed of motor (r/min)
T_B : Brake torque (Nm)
T_L : Load torque (equivalent on motor shaft) (Nm)

The coast down time varies depending on the brake connecting method. Connect the brake appropriately to the purpose of use.
When an inverter drive or input power is controlled, connect the brake on the side of the power supply of the inverter, etc.

3-4 Amount of braking energy

When a brake is applied, the brake lining will slide and generate heat due to sliding friction. If a large amount of heat is generated, the friction coefficient of the lining will decrease or abnormal friction will occur due to overheat, and the brake will be disabled. Therefore, it is necessary that the braking energy rate does not exceed the allowable braking energy rate of the brake. The braking energy rate of the brake can be determined by the following formula.

(1) General load

$$E = \frac{(J_m + J_{Lm}) \times N^2}{182} \times \frac{T_B}{(T_B + T_L)} \times n$$

(2) Lowering load

$$E = \frac{(J_m + J_{Lm}) \times N^2}{182} \times \frac{T_B}{(T_B - T_L)} \times n$$

E : Braking energy rate per minute (J/min)
J_m : Inertia moment of geared motor (kgm^2)
J_{Lm} : Inertia moment of load (equivalent on motor shaft) (kgm^2)
N : Rotation speed of motor (r/min)
T_B : Brake torque (Nm)
T_L : Load torque (equivalent on motor shaft) (Nm)
n : Frequency of braking (times/min)

Note) For the allowable braking energy rate of each brake, see the brake characteristics table. The temperature rise of the brake can be checked by examining the braking energy rate of the brake. Examine also the frequency of starting based on the determined service class and allowable number of starts.

3-5 Life of brake lining

The friction surface of the brake lining will wear with use. Therefore, it is necessary to determine the allowable number of braking operations (service life) from the allowable wear volume of the brake lining and examine whether the brake lining has appropriate life for the working condition. The allowable number of braking operations can be determined by the following formula.

$$N_L = \frac{V}{E_0 \times \varepsilon} = \frac{182 \times V}{(J_m + J_{Lm}) \times N^2 \times \varepsilon}$$

N_L : Allowable number of braking operations (times)
V : Allowable wear volume (cm^3)
J_m : Inertia moment of geared motor (kgm^2)
J_{Lm} : Inertia moment of load (equivalent on motor shaft) (kgm^2)
N : Rotation speed of motor (r/min)
ε : Wear rate (cm^3/J)

When the brake lining temperature is 150 °C or less:

ε $2 \times 10^{-8} (cm^3/J)$

Note) The mechanical life of brake is 1,000,000 times. Therefore, the smaller one of the allowable number of braking operations and the mechanical life is regarded as the brake service life.

3-6 Brake characteristics table

Model name	Output	Brake torque (Nm)	Brake torque (%) 50Hz	Brake torque (%) 60Hz	Allowable braking energy rate (J/min)	Wear volume to gap adjustment (cm^3)	Allowable wear volume (cm^3)	Brake voltage (V) *1	Brake current (A) *1	Total amount of braking energy to gap adjustment (J)	Total amount of braking energy to limit of application (J)
GM-J2B	25W	0.29	182	219	98	—	0.19	DC90	0.078	3.3×10^7	
	40W	0.50	196	236			0.23		0.10	4.2×10^7	
	60W		131	157							
	90W		87	105							
GM-SB GM-SSYB GM-SHYB	0.1kW	1.91	300	360	2070	0.38	1.88		0.16	3.1×10^7	6.3×10^7
	0.2kW		150	180							
GM-SB GM-DB GM-SSYB GM-SHYB	0.4kW	3.82	150	180	2600	0.48	2.39		0.18	4.0×10^7	8.0×10^7
GM-SPB GM-DPB GM-SSYPB GM-SHYPB	0.75kW	7.16	150	180	2800	0.54	2.69		0.24	6.3×10^7	9.0×10^7
	1.5kW	14.3	150	180	4500	1.07	6.39		0.25	8.5×10^7	4.2×10^8
	2.2kW	21.0	150	180	6400	1.49	8.95		0.37	1.1×10^8	5.9×10^8
GM-DPB GM-DYPB	3.7kW	35.3	150	180	8000	2.53	12.64		0.41	2.2×10^8	8.4×10^8
	5.5kW	52.5	150	180	8600	7.41	32.04	(Reference value) Approx. 90/23 DC	2/0.6	4.8×10^8	2.1×10^9
	7.5kW	71.6	150	180	9900	8.59	37.13			5.5×10^8	2.4×10^9
GM-LJPB GM-DYPB	11kW	0 to 143	0 to 200	0 to 240	19600	—	45.5	(Reference value) Approx. 180/32 DC	3.5/0.7	4.1×10^9	
	15kW		0 to 150	0 to 180							
	22kW	0 to 210									

(Notes) 1. The brake torque values shown above are static friction torque values. The dynamic friction torque is about 80% of the static friction torque.
2. At the beginning of use, the specified brake torque may not be obtained. In such a case, turn on and off the brake under as light a load condition as possible to break in the friction surface.
*1…The brake voltage/current input at 200 V AC is shown.

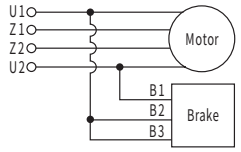
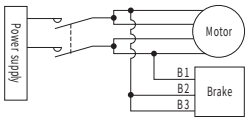
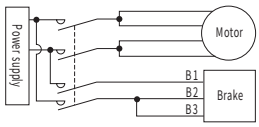
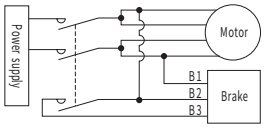
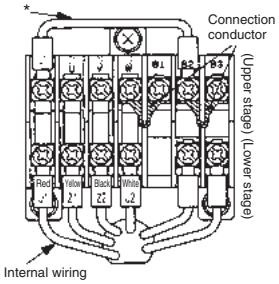
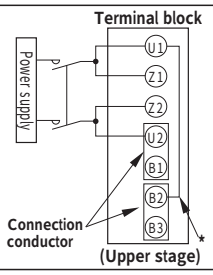
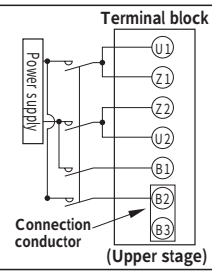
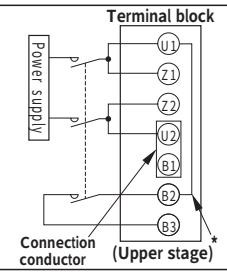
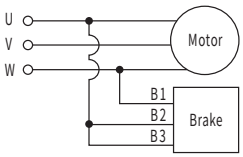
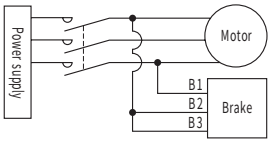
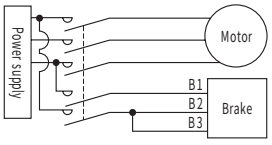
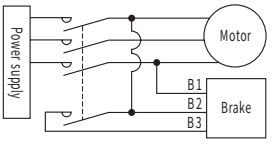
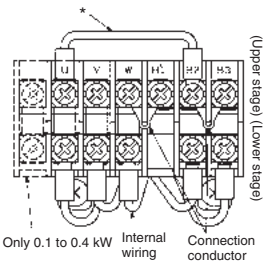
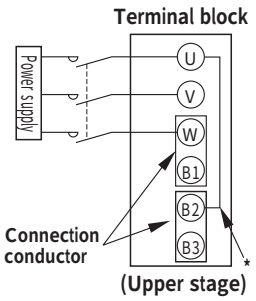
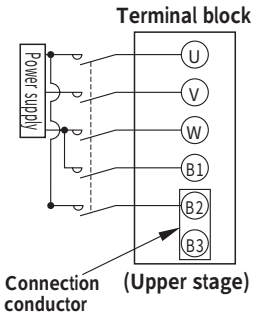
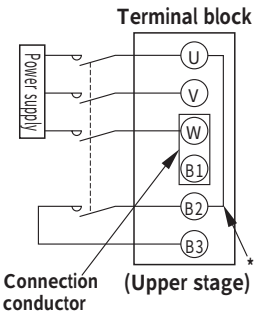
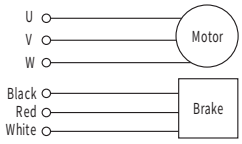
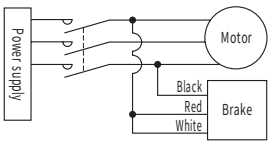
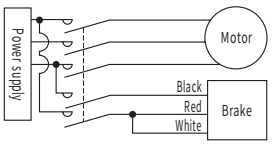
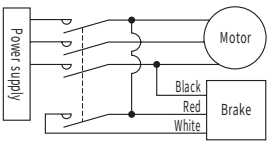
List of brake suction gaps

Model name	Output	Gap(mm) Initial	Gap(mm) Limit
GM-J2B	25W	$0.25^{+0.05}_{-0.1}$	0.57
	40 to 90W		0.55
GM-SB GM-SSYB	0.1,0.2kW	$0.15^{+0.1}_{0}$	0.4
GM-SB GM-DB GM-SSYB GM-SHYB	0.4kW		
GM-SPB GM-DPB GM-SSYPB GM-SHYPB	0.75kW		0.5
	1.5kW	$0.2^{+0.1}_{0}$	
	2.2kW		
GM-DPB GM-DYPB	3.7kW		0.55
	5.5kW	$0.25^{+0.1}_{-0.05}$	1.2
	7.5kW		

3-7 Connecting procedure and coast down time

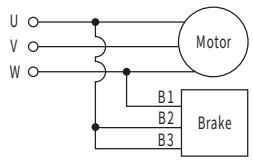
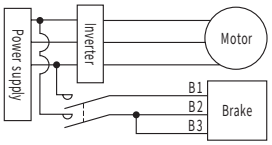
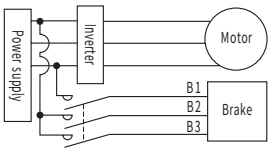
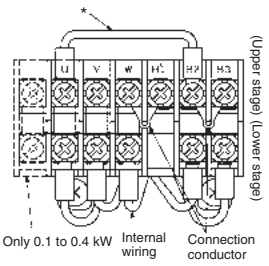
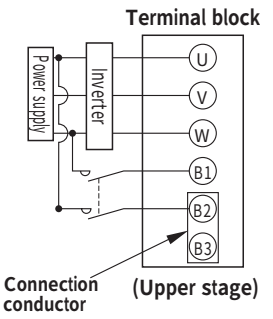
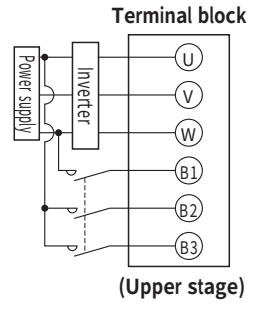
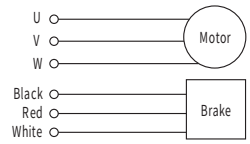
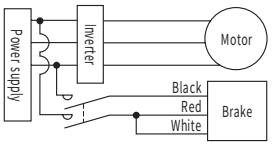
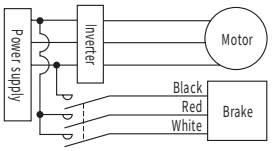
The brake coast down time (time from when the power is turned off until the brake starts operating) varies depending on the brake connecting method and load specifications. Connect the brake appropriately to the purpose of use.

● **GM-SB/SPB, GM-DB/DPB, GM-SSYB/SSYPB, GM-SHYB/SHYPB and GM-DYPB (except 11-kW models) Series**

Motor		Before shipment		Simultaneous turn-off	Separate turn-off	DC turn-off (quick turn-off)
Input	Output					
Single-phase	0.1 to 0.4 kW		Circuit			
			Connecting procedure			
			Coast down time	0.2 to 0.55 sec	0.1 to 0.3 sec	0.01 to 0.04 sec
3-phase	0.1 to 3.7 kW		Circuit			
			Connecting procedure			
		(Except GM-DB/DPB)	Coast down time	0.2 to 0.55 sec	0.1 to 0.3 sec	0.01 to 0.04 sec
	5.5 to 7.5 kW		Connecting procedure			
		There are 6 leads (U1, V1, W1, U2, V2 and W2). Connect them carefully.	Coast down time	0.2 to 0.55 sec	0.1 to 0.3 sec	0.01 to 0.04 sec

(Notes) 1. **The *-marked wires in the figures are the connection lead wires. Connect them to U-B2 (upper stage). In the case of separate turn-off, remove them without fail.**
2. **In the case of separate or DC (quick) turn-off, remove the connection conductor from the terminal block as shown above according to the connecting method.**
3. **The terminal blocks of 0.1- to 3.7-kW models have two stages, upper and lower stages. When wiring the motor and brake power supplies, connect the wires to the terminal screws on the upper stage shown above. If they are connected to the lower stage, the brake will not be released.**
4. **5.5- and 7.5-kW models use an over excitation power supply system. Ensure an interval of 500 ms or more between turning OFF and ON.**
5. **In the case of DC (quick) turn-off, select the contact for DC (quick) turn-off of the brake based on the current at 110 V DC (*220 V) or class DC13 (L/R = 100 ms) rating. *: 400 V class**
6. **See page 96 for the cautions for use.**
7. **See page 45 for the procedure for connecting the brakes of GM-J2 Series.**

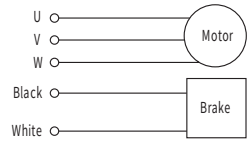
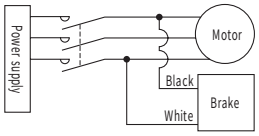
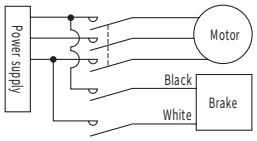
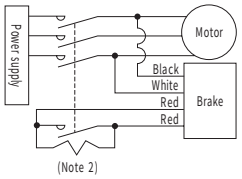
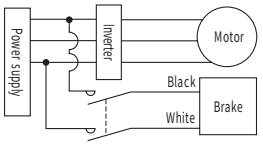
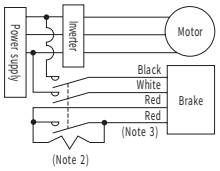
● GM-SB/SPB, GM-DB/DPB, GM-SSYB/SSYPB, GM-SHYB/SHYPB and GM-DYPB (except 11-kW models) Series (inverter drive)

Motor		Before shipment		Simultaneous turn-off	Separate turn-off	DC turn-off (quick turn-off)
Input	Output					
Inverter drive	0.1 to 3.7 kW		Circuit			
		 (Except GM-DB/DPB)	Connecting procedure			
			Coast down time		0.1 to 0.3 sec	0.01 to 0.04 sec
	5.5 to 7.5 kW	 There are 6 leads (U1, V1, W1, U2, V2 and W2). Connect them carefully.	Connecting procedure			
			Coast down time		0.1 to 0.3 sec	0.01 to 0.04 sec

(Notes) 1. The *-marked wires in the figures are the connection lead wires. In the case of inverter drive, remove them without fail. They are connected for simultaneous turn-off before shipment. To use the inverter drive, change the wiring method in the terminal box to separate turn-off or DC (quick) turn-off, and remove the connection conductor depending on the connecting method as shown above.

2. In the case of separate or DC (quick) turn-off, remove the connection conductor from the terminal block depending on the connecting method as shown above.
3. The terminal blocks of 0.1- to 3.7-kW models have two stages, upper and lower stages. When wiring the motor and brake power supplies, connect the wires to the terminal screws on the upper stage shown above. If they are connected to the lower stage, the brake will not be released.
4. 5.5- and 7.5-kW models use an over excitation power supply system. Ensure an interval of 500 ms or more between turning OFF and ON.
5. In the case of DC (quick) turn-off, select the contact for DC (quick) turn-off of the brake based on the current at 110 V DC (220 V DC for 400 V class) or class DC13 (L/R = 100 ms) rating.
6. See page 96 for the cautions for use.
7. The inverter drive constant torque motor (for V/F control) series motors are wired for separate turn-off before shipment.
8. Use the brake power supply unit in the following voltage range because the element withstand voltage is restricted.
   • 200 V class: 200 to 230 V
   • 400 V class: 380 to 460 V

● **GM-LJPB and DYPB (only 11-kW models) Series**

Motor		Before shipment		Simultaneous turn-off	Separate turn-off	DC turn-off (quick turn-off)
Input	Output					
3-phase	11 to 22 kW		Connecting procedure			
			Coast down time	1.2 to 2.0 sec	0.1 to 0.3 sec	0.01 to 0.03 sec
Inverter drive			Connecting procedure			
		There are 6 leads (U1, V1, W1, U2, V2 and W2). Connect them carefully.	Coast down time		0.1 to 0.3 sec	0.01 to 0.03 sec

(Notes) 1. In the case of DC (quick) turn-off, select the contact for DC (quick) turn-off of the brake based on the current at 200 V DC or class DC13 (L/R = 100 ms) rating.
2. A resistor (3 kΩ, 60 W) is required only for 400 V class models to protect the contacts and reduce the surge voltage. In this case, the coast down time is slightly longer.
3. In the case of DC (quick) turn-off, use the supplied cable (2-core, 0.75 mm^2).
The cables supplied with the outdoor models have lead wires differing in color from those of the indoor models. When connecting the cable, see the instruction manual for the brake.
4. In the case of DC (quick) turn-off, ensure a time lag of 500 msec or more between turning ON and OFF.
5. In many cases of simultaneous turn-off, the brake stop time is longer than that of conventional geared motors. Use the separate turn-off or DC (quick) turn-off wiring as needed.

Cautions for use

1. Use the DC (quick) turn-off circuit for hoisting purpose or to increase the stop position accuracy.
2. The coast down time changes somewhat depending on the load specifications and brake torque.
3. The lining may generate a sliding sound because of the brake structure. This does not affect the performance. However, in the case of vertical installation, remove abrasion powder periodically (semiannually).
4. If power is applied only to the brake, the brake may be damaged. Avoid doing so.
5. When installing a capacitor for improvement of power factor on the motor circuit, the circuit must be designed as a separate turn-off circuit.
   Note that a capacitor for improvement of power factor cannot be installed on the motor circuit in the case of inverter drive.
6. When the inverter drive or input power is controlled, connect the brake on the side of the power supply for the inverter, etc. (If it is connected on the output side of the inverter, etc., the power supply unit may be damaged.)
7. The inverter drive may generate somewhat loud noise in a low-frequency range. However, the functions are not affected.
8. When the motor is operated by the inverter drive at a frequency of 25 Hz or less, the rating is a one hour rating or 25%ED.
9. When a 400 V class motor is inverter-driven, surge voltage may be caused between motor terminals owing to the wiring constant, and the voltage may deteriorate the motor insulation. In such a case, examine the following measures.
   (1) Use of motor with reinforced insulation
   The following models of Mitsubishi geared motors have reinforced insulation.
   ・Standard geared motors ··· 0.1 kW to 55 kW
   ・Inverter drive constant torque (V/F constant torque) motors ··· 0.1 kW to 0.4 kW
   (2) Suppression of surge voltage on inverter side
   Connect a filter to suppress the surge voltage on the secondary side of the inverter so that the motor terminal voltage is 850 V or less. When the motor is driven by any of Mitsubishi inverters, connect the optional surge voltage suppression filter (FR-ASF-H) on the secondary side of the inverter.

4. Reducer

4-1 Cautions when installing geared motor

The details of handling of each geared motor are described in the instruction manual. Thoroughly read the manual before use. This section describes general notes on handling the geared motors.

(1) Install each geared motor on a sufficiently strong foundation to avoid vibration and adjustment failure. Install it on a horizontal surface.

(2) When installing it on a steel floor, ensure that the floor has a sufficient rigidity (vibration acceleration of 4.9 m/s^2 or less) and a thickness larger than the diameter of the tightening bolts.

(3) When installing the geared motor, secure it taking due care not to apply uneven clamping force to the feet.

(4) The geared motors are manufactured with center height tolerances of 0 to -0.5 mm. When accurate adjustment is required, use shims.

(5) Installation angles of geared motors

① Models to be lubricated only with grease (GM-J2, S/SP, D/DP, SSY/SSYP and SHY/SHYP Series)
The models to be lubricated only with grease have complete grease leak prevention structures. The installation angles of these models are not restricted, and they can be installed in any direction.

② Models to be lubricated only with oil (GM-D/DP, LJP and DYP Series)
Normally, the horizontal models to be lubricated only with oil shall be installed horizontally. However, a slight inclination is allowed.
Tables 16 and 17 show the allowable angles of inclination according to the gear size. (The angles have been determined mainly based on the oil level gauge and are the maximum allowable angles at which the oil level gauge can function.) If the inclination exceeds the specified angle, the gears and bearings may not be lubricated sufficiently, or oil leak may occur.

③ There are restrictions on installation direction for part of the inverter drive series (GM-DZ, explosion-proof models to be lubricated with oil). For details, see the Notes under the special model configuration table.

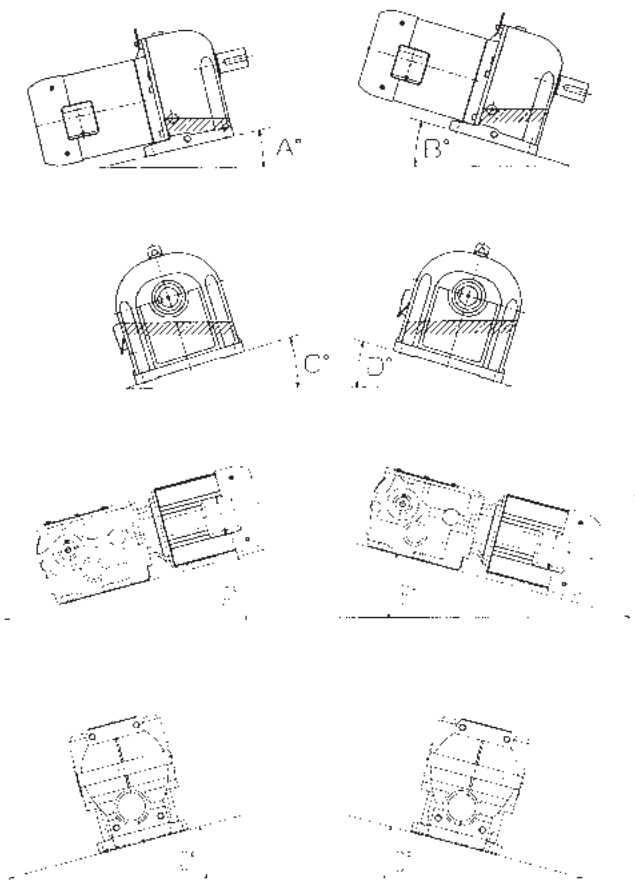


Table 16 Allowable angles of inclination of models to be lubricated only with oil (GM-D/DP/LJP Series)

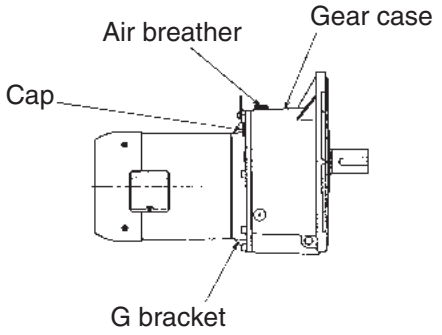
Series	Gear size	Mounting angle(°)			
		A°	B°	C°	D°
GM-D GM-DP	M,MM	14	17	17	17
	N,NM	13	17	16	16
	DK	14	17	16	16
	DL	13	17	17	17
	TM	4	7	5	5
	TN	4	7	7	7
	TP	5	6	7	7
GM-LJP	K	14	17	16	16
	L	13	17	17	17
	M,TM	4	7	5	5
	N,TN	4	7	7	7
	P,TP	5	6	7	7

Table 17 Allowable angles of inclination of models to be lubricated only with oil (GM-DYP Series)

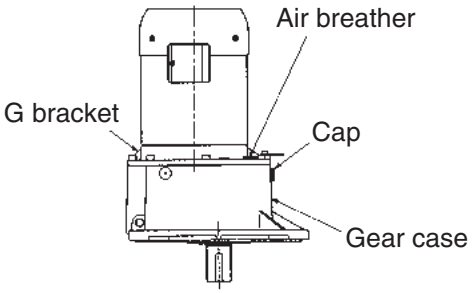
Series	Gear size	Output/gear ratio	Mounting angle(°)			
			A°	B°	C°	D°
GM-DYP	34C	3.7kW 1/15 to 1/20	5	5	5	5
	44C	3.7kW 1/25 to 1/60 5.5kW 1/15 to 1/40 7.5kW 1/15 to 1/20	5	5	5	5
	54C	3.7kW 1/80,1/100 5.5kW 1/50 to 1/80 7.5kW 1/25 to 1/60 11kW 1/15 to 1/40	3	3	3	3

(6) Flange mounting of GM-D/DP Series

Flange-type GM-DP Series models to be lubricated only with oil can be installed in any of the vertical direction (with the shaft downward only) and the horizontal direction by replacing the oil filler plug and the air breather (except GM-LJP Series). The oil filler plug has a cap which is provided with an O-ring and does not have an air hole, and the air breather has a cap which has an air hole and is not provided with an O-ring.



In the case of flange mounting



In the case of vertical installation

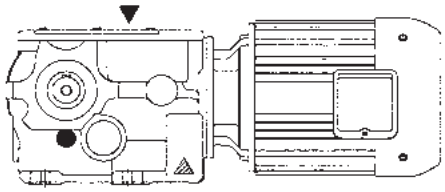
Note) GM-DP 3.7 kW 1/120, 5.5 kW 1/60 to 1/120 and 7.5 kW 1/45 to 1/90 models are not designed for flange mounting. GM-DPV models are equivalent models for flange mounting.

● **Directions of installation of GM-DYP Series**

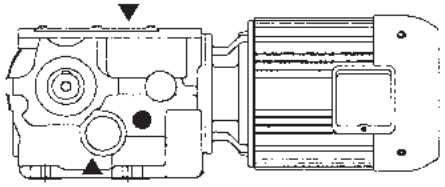
Normally, the models in this series shall be installed horizontally. However, models which can be installed in the following directions can be manufactured at customer 's request.

Any of these models cannot be installed in such a direction that the motor is on the lower side or the flange surface is on the upper or lower side.

Installation direction ①

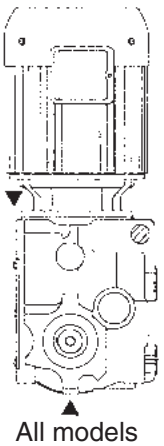


3.7 kW, 1/15 to 1/20



Other than above models

Installation direction ②



All models

Meanings of symbols in figures

▼ ··· **Air breather**
● ··· **Oil level gauge**
▲ ··· **Oil drain plug**

Notes

(1) The shaded symbols indicate that the parts are on the back side of the gear case.

(2) In the cases of the flange type and the installation direction ①, the oil level gauge is on the back side of the gear case (on the opposite side of the flange).

(3) The air breather serves as an oil filler port.

4-2 Coupling

(1) When coupling, ensure that the eccentricity between the geared motor and the mating machine is 0.05 mm or less (see Fig. 12). Use a flexible coupling for convenience.
(2) The slack in the chain shall be approx. 4% of the span length (see Fig. 13). If the slack is too large, an excessively high impact will occur at the start, and the geared motor may be damaged.
(3) To prevent damage caused by overhang load, install the sprocket, gear and pulley in such a way that the load position is as close to the output shaft stepped section as possible (see Fig. 14).
(4) The tolerances on the holes in the sprocket and coupling shall be H8 or so. Install them smoothly using the threaded hole at the output shaft end (see Fig. 15).
(5) Do not strongly drive them in with a hammer or the like. Doing so may adversely affect the bearings and gears of the geared motor.
(6) If a right angle shaft type motor will be used under radial load, do not install it as shown in Fig. 17. The gear case may be damaged.
(7) Avoid tightening individually the screws on both sides of the face mount of a right angle shaft type motor.

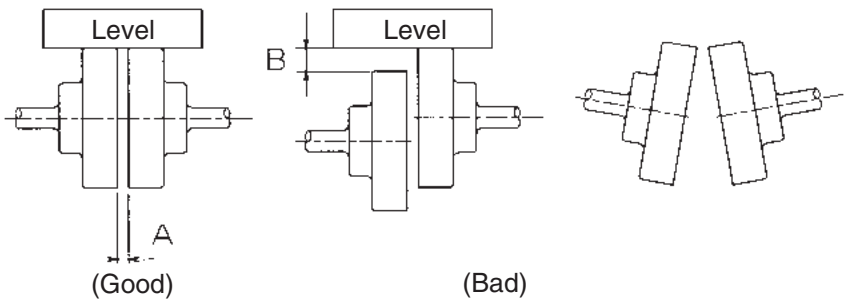


Fig. 12 Installation of coupling

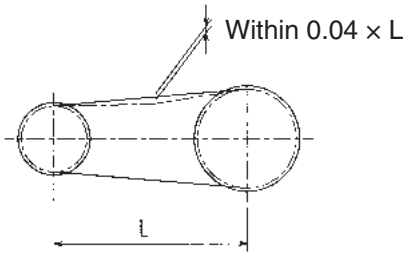


Fig. 13 Slack in chain

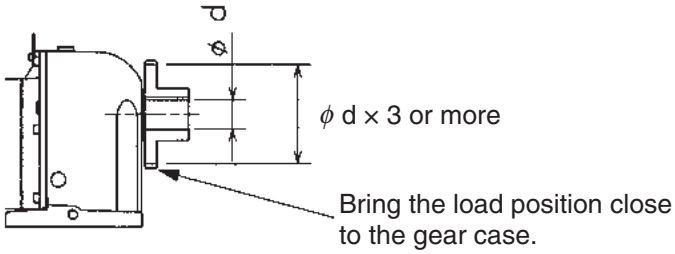


Fig. 14 Position of sprocket

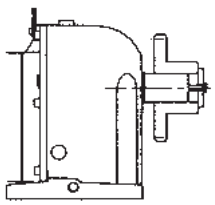
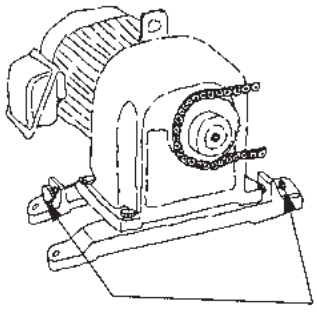


Fig. 15 Method of installing sprocket



When slide rails are used, fit the push bolts alternatingly to the front and rear in the direction opposite to the external force as shown in Fig. 16.

Fig. 16 Slide rails

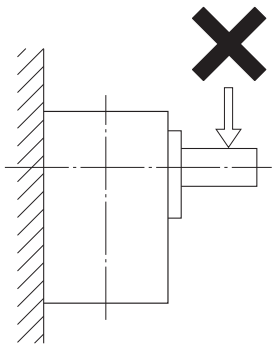
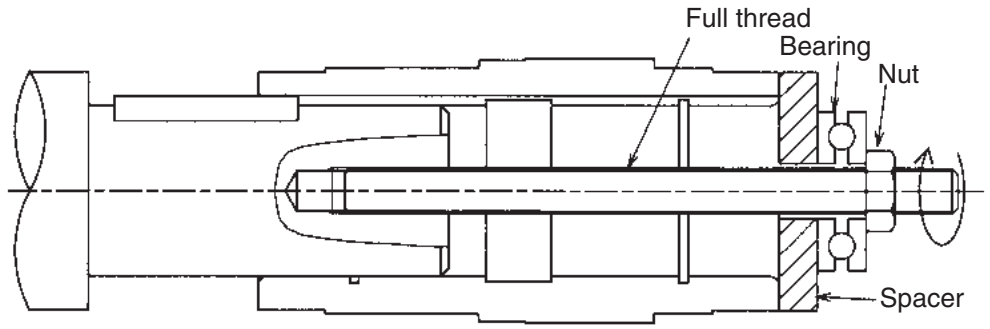


Fig. 17 Caution when installing

4-3 Hollow shaft

(1) Installing to the hollow shaft

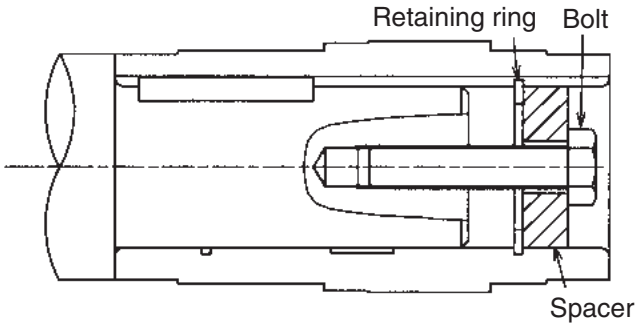
- Before installing, apply an anti-seizure agent (molybdenum disulfide, etc.) to the driven shaft and the inside of the hollow shaft.
- If the shaft cannot be fitted smoothly, tap the end of the hollow shaft with a shockless hammer to insert the shaft. The shaft can be inserted more smoothly by using a tool as shown in the following figure.
- The hollow shafts for GM-SSY/SSYP and SHY/SHYP Series are manufactured to tolerance H8, and those for GM-DYP Series – to tolerance H7.
  In the case of general fitting, tolerance h7 is recommended for the driven shaft. When the impact and radial loads are large, fit them tightly.
- When connecting the hollow shaft directly with the driven shaft, pay attention to the concentricity. Avoid installing them eccentrically.



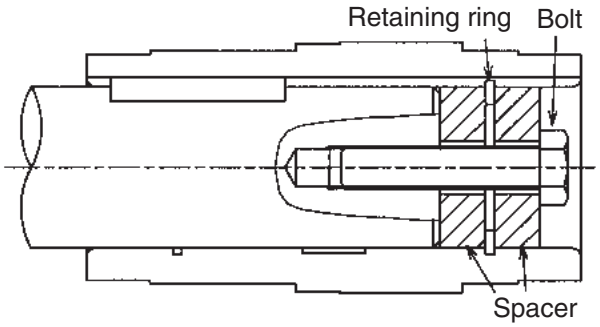
(2) Securing in the hollow shaft

- Secure the driven shaft surely in the hollow shaft. Examples of securing are shown below.

① When the driven shaft has a stepped section

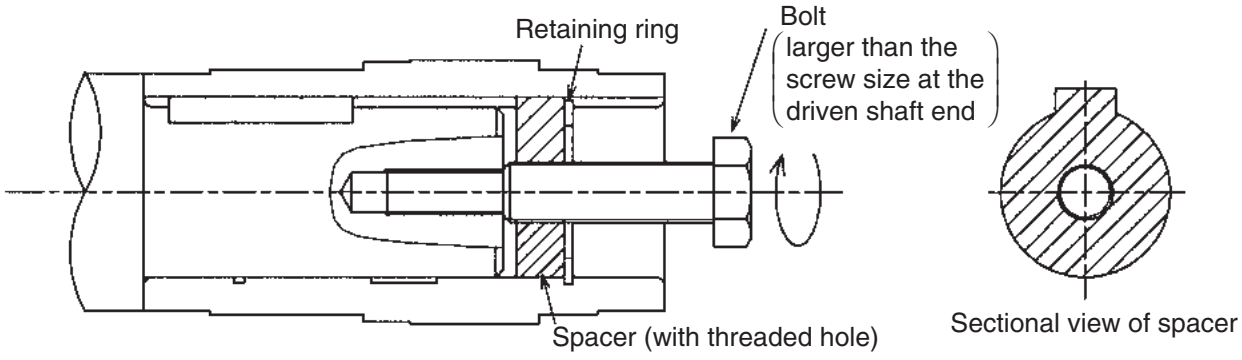


② When the driven shaft does not have a stepped section



(3) Removing from the hollow shaft

- The shaft can be removed more smoothly by using a jig as shown below.
  When securing the driven shaft, ensure a space for the spacer.



(4) Length of driven shaft

Ensure that the driven shaft lies within the L1 zones on both sides (see the right figure).

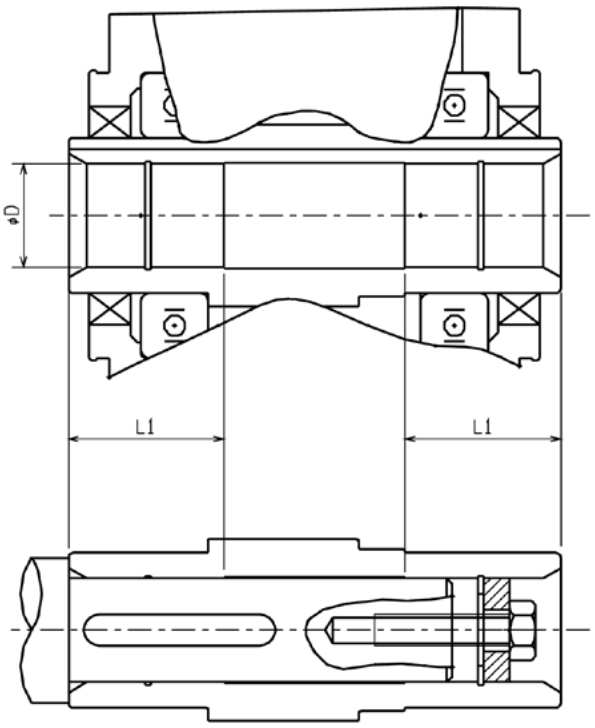
Determine the length taking into consideration the size of the spacer necessary for removing from the hollow shaft stated in (3).

(5) Key length of driven shaft

Determine the key length for each series referring to the recommended length shown in the following table.

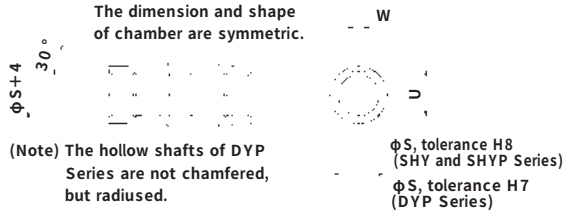
Series	Recommended key length
GM-SSY/SSYP	Bore diameter of hollow shaft ϕD × 1.5 to 2
GM-SHY/SHYP	Bore diameter of hollow shaft ϕD × 2 to 2.5

Insert the key so that 1/2 or more of the overall length of the key lies on the L1 zones (see the right figure).



(6) Internal diameter of hollow shaft

① Chamfer dimension of inner edge of end face



(Note) The hollow shafts of DYP Series are not chamfered, but radiused.

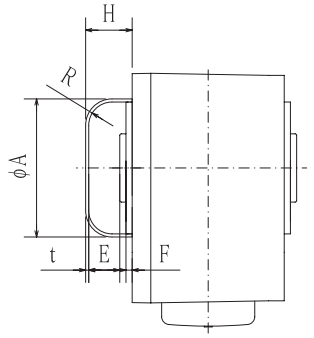
② List of special bore diameters different from standard (GM-SHY/SHYP Series)

kW	Gear ratio	Standard			Hollow shafts with special specifications								
		S	W	U	S	W	U	S	W	U	S	W	U
0.1	1/5 **to** 1/60	25	8	28.3	17	5	19.3	20	6	22.8	—	—	—
	1/80 **to** 1/240	25	8	28.3	17	5	19.3	20	6	22.8	—	—	—
0.2	1/5 **to** 1/60	25	8	28.3	17	5	19.3	20	6	22.8	—	—	—
	1/80 **to** 1/240	30	8	33.3	20	6	22.8	25	8	28.3	—	—	—
0.4	1/5 **to** 1/60	30	8	33.3	20	6	22.8	25	8	28.3	—	—	—
	1/80 **to** 1/240	35	10	38.3	25	8	28.3	30	8	33.3	—	—	—
0.75	1/5 **to** 1/60	35	10	38.3	25	8	28.3	30	8	33.3	*40	*12	*43.3
	1/80 **to** 1/240	45	14	48.8	30	8	33.3	35	10	38.3	40	12	43.3
1.5	1/5 **to** 1/60	45	14	48.8	30	8	33.3	35	10	38.3	40	12	43.3
	1/80 **to** 1/240	55	16	59.3	40	12	43.3	45	14	48.8	50	14	53.8
2.2	1/5 **to** 1/120	55	16	59.3	40	12	43.3	45	14	48.8	50	14	53.8

(Notes) The *-marked dimensions are not available for water-proof models.
*** 0.75- to 2.2-kW models are supplied in GM-SSYP or GM-SHYP Series.**

(7) Dimensions of hollow shaft protective cover (accessory) (GM-SSY/SHY/SSYP/SHYP)

The cover can be fitted to any of the right and left sides.



(Note 1) The protective cover has a convexity. It can be fitted quickly by tapping.
(Note 2) Material: Plastic (polypropylene) Color: Gray (Munsell N7.0)

Table 18 GM-SSY/SSYP Series

Gear size	Output (kW)	Gear ratio	Dimensions					
			ϕA	H	R	t	E	F
20	0.1	1/7.5 **to** 1/60	60	24	10	2.0	14	4
	0.2	1/7.5 **to** 1/30						
25	0.2	1/40 **to** 1/60	79	30	15	2.0	20	4
	0.4	1/7.5 **to** 1/30						
30	0.4	1/40 **to** 1/60	89	30	15	2.0	20	4
	0.75	1/7.5 **to** 1/30						
35	0.75	1/40 **to** 1/60	99	35	20	2.0	24	5
	1.5	1/7.5 **to** 1/30						
45	2.2	1/7.5 **to** 1/30	119	40	25	2.0	29	5

Table 19 GM-SHY/SHYP Series

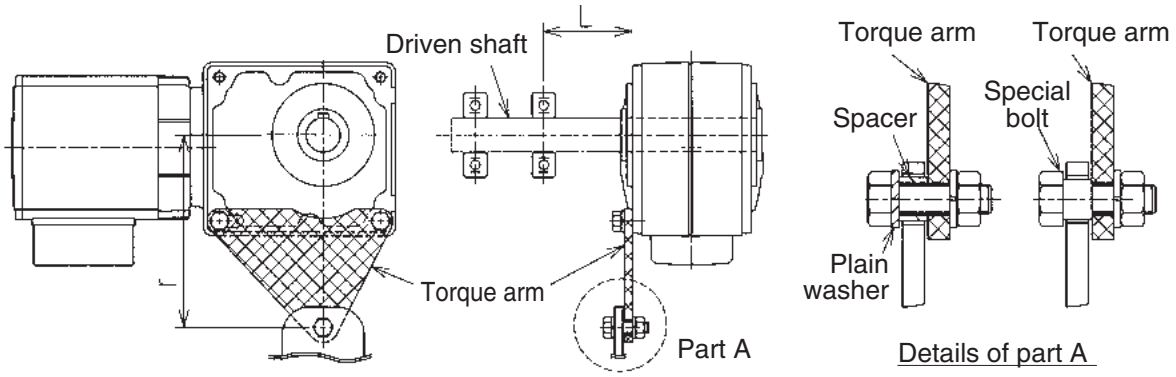
Gear size	Output (kW)	Gear ratio	Dimensions					
			ϕA	H	R	t	E	F
A	0.1	1/5 **to** 1/240	79	30	15	2.0	20	4
	0.2	1/5 **to** 1/60						
B	0.2	1/80 **to** 1/240	89	30	15	2.0	20	4
	0.4	1/5 **to** 1/60						
C	0.1	1/300 **to** 1/1440	99	35	20	2.0	24	5
	0.4	1/80 **to** 1/240						
	0.75	1/5 **to** 1/60						
D	0.2	1/300 **to** 1/1440	119	40	25	2.0	29	5
	0.4	1/300 **to** 1/480						
	0.75	1/80 **to** 1/240						
	1.5	1/5 **to** 1/60						
E	1.5	1/80 **to** 1/240	154	50	30	2.0	39	5
	2.2	1/5 **to** 1/120						

*** 0.75- to 2.2-kW models are supplied in GM-SSYP or GM-SHYP Series.**

(8) Torque arm

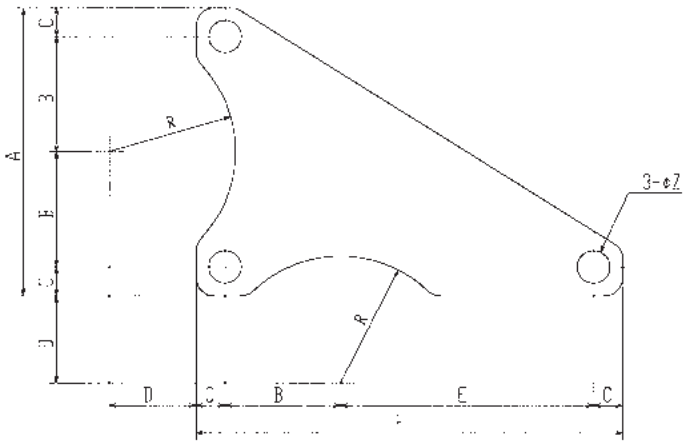
The hollow shaft type geared motors are normally secured with the torque arms so that they are not rotated by the reaction force from the driven machines.

- For the torque arm, use a plate and bolts with sufficient strength.
  Reduce the dimension L as much as possible. For the dimension r, see page 70.
- Ensure that no force other than that from the whirl stop is applied to the torque arm. The torque arm may be damaged. An example of installation is given below.



(9) Dimensions of torque arms (option) (GM-SSY/SSYP Series)

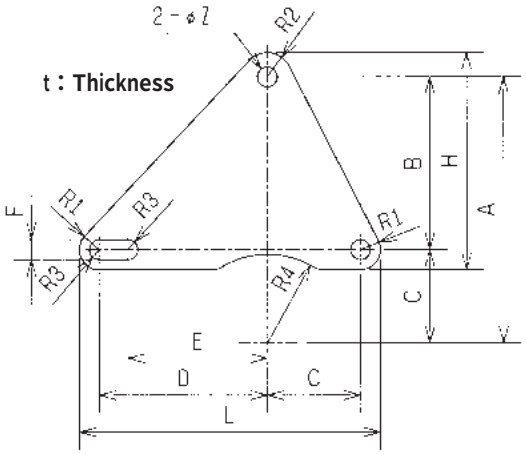
The following torque arms are available as an option. To place an order, specify the product number.



Product No.	Output (kW)	Gear ratio	Gear size	Dimensions								
				A	B	C	D	E	F	R	φZ	Thickness
SY-206	0.1	1/7.5 to 1/60	20	80	32	8	24	70	118	30	9	6
	0.2	1/7.5 to 1/30										
SY-256	0.2	1/40 to 1/60	25	96	38	10	28	74	132	40	11	6
SY-257	0.4	1/7.5 to 1/30	25	96	38	10	28	85	143	40	11	6
SY-307	0.4	1/40 to 1/60	30	114	45	12	33	90	159	45	14	6
SY-308	0.75	1/7.5 to 1/30	30	114	45	12	33	101	170	45	14	9
SY-358	0.75	1/40 to 1/60	35	136	54	14	40	104	186	50	18	9
SY-359	1.5	1/7.5 to 1/30	35	136	54	14	40	128	210	50	18	9
SY-4510	2.2	1/7.5 to 1/30	45	166	65	18	47	149	250	60	22	9

(10) Dimensions of torque arms (option) (GM-SHY/SHYP Series)

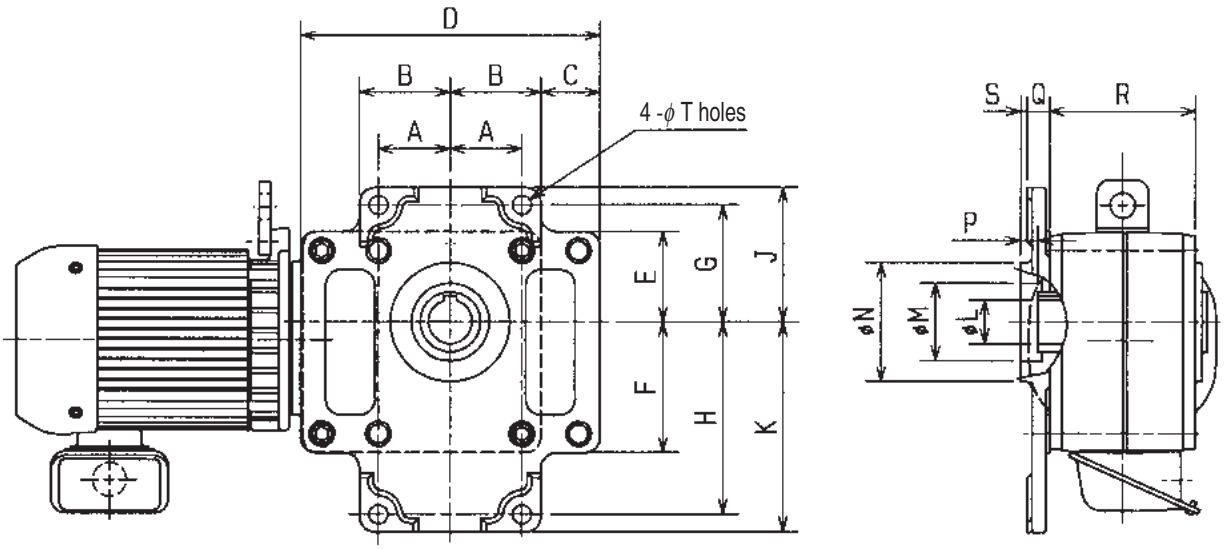
The following torque arms are available as an option. To place an order, specify the product number.



Product No.	Capacity/gear ratio	Dimensions													
		A	B	C	D	E	F	L	H	R1	R2	R3	R4	φZ	t
HY-TAA	0.1kW, 1/5 to 1/240 0.2kW 1/5 to 1/60	120	78	42	76	63	9	136	98	9	11	4.5	40	9	6
HY-TAB	0.2kW 1/80 to 1/240 0.4kW 1/5 to 1/60	150	102	48	86	74	11	156	128	11	15	5.5	45	11	6
HY-TAC	0.1kW 1/300 to 1/1440 0.4kW 1/80 to 1/240 0.75kW 1/5 to 1/60	180	123	57	102	89	14	187	155	14	18	7	50	14	9
HY-TAD	0.2kW 1/300 to 1/1440 0.4kW 1/300 to 1/480 0.75kW 1/80 to 1/240 1.5kW 1/5 to 1/60	200	131	69	131	106	18	236	169	18	20	9	60	18	9
HY-TAE	1.5kW 1/80 to 1/240 2.2kW 1/5 to 1/120	250	167	83	152	129	22	279	214	22	25	11	80	22	9

(11) Adapter (GM-SHY/SHYP Series)

The adapter eliminates interference between the reducer and the geared motor when the motor is installed on a wall. The adapter can be used only for the face mounting type. It can be installed on any of the right and left sides.



Product No.	Gear size	Output/gear ratio	Dimensions								
			A	B	C	D	E	F	G	H	J
HY-ADA	A, AT	0.1kW 1/5 to 1/240 0.2kW 1/5 to 1/60	42	53	35	176	53	74	65	101	75
HY-ADB	B, BT	0.2kW 1/80 to 1/240 0.4kW 1/5 to 1/60	48	61	38	198	61	87	78	131	90
HY-ADC	C, CT, CM	0.1kW 1/300 to 1/1440 0.4kW 1/80 to 1/240 0.75kW 1/5 to 1/60	57	72	47	238	72	104	93	153	107
HY-ADD	D, DT, DM	0.2kW 1/300 to 1/1440 0.4kW 1/300 to 1/480 0.75kW 1/80 to 1/240 1.5kW 1/5 to 1/60	69	87	64	302	87	124	110	181	129
HY-ADE	E, ET	1.5kW 1/80 to 1/240 2.2kW 1/5 to 1/120	83	106	69	350	106	152	132	218	156

Product No.	Gear size	Dimensions								
		K	ϕL	ϕM	ϕN	P	Q	R	S	ϕT
HY-ADA	A, AT	111	25	50	75	8	12	87	4	10
HY-ADB	B, BT	143	30	60	85	10	14	98	4	12
HY-ADC	C, CT	167	35	62	95	14	18	116	5	15
HY-ADD	D, DT	200	45	80	115	18	22	140	5	19
HY-ADE	E, ET	242	55	100	150	22	26	160	5	24

4-4 Flange mounting and face mounting

(1) GM-SSY/SSYP Series

These models are designed to be installed by any of flange and face mounting methods. For the flange mounting models, use hexagon socket head cap screws and the supplied special washers. The mounting screw size is shown in Table 20.

In the case of flange mounting, the tolerances for the mounting pitch on the mating side shall be within the range shown in Table 21.

Table 20

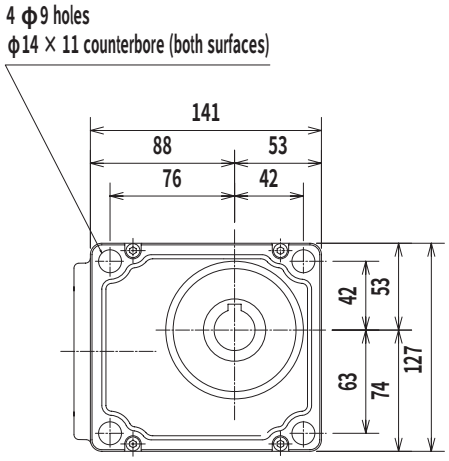
Gear size	Flange mounting	Face mounting
20	M6	M8
25	M8	M10
30	M10	M12
35	M12	M16
45	M16	M20

Table 21

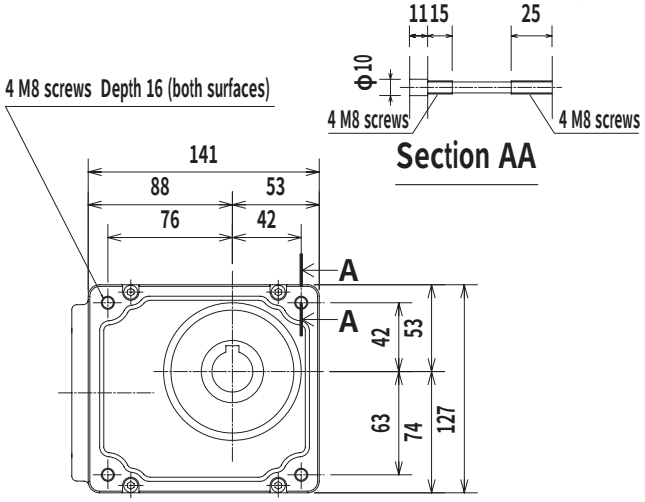
Gear size	Tolerances for mounting pitch
20	±0.4
25	±0.4
30	±0.4
35	±0.5
45	±0.5

(2) GM-SHY/SHYP Series

To provide a wide range of selection for each type of mounting, we supply series of flange mounting and face mounting (with threaded holes) models. These series have the same outside dimensions and mounting pitch. Those of a 0.1-kW model are shown below.



<Flange mounting>



<Face mounting>

4-5 Lubrication

All models to be lubricated only with grease are delivered after they are filled with grease. They can be used directly. All models to be lubricated only with oil are delivered after the lubricant is removed. Pour lubricant before operation.

● Recommended brands of grease

Series	Recommended brands of grease
GM-SSY and GM-SHY, 0.4 kW or less	TOUGHLIX GREASE® GM made by JX Nippon Oil and Energy Corporation (consistency No.00, lithium complex grease with extreme-pressure additive)
GM-SSYP and GM-SHYP, 0.75 kW or more	PYRONOC UNIVERSAL® (SH) made by JX Nippon Oil and Energy Corporation (consistency No.000, urea grease with extreme-pressure additive)
GM-J2	Moly PS Grease No.2 made by Sumico Lubricant Co., Ltd. (consistency No.2, Bentone grease)
GM-S/SP,GM-D/DP	PYRONOC UNIVERSAL® (No.000) made by JX Nippon Oil and Energy Corporation (consistency No.000, urea grease with extreme-pressure additive)

* The above grease names are registered trademarks of their respective companies.

● Recommended oil: Parallel shaft (JIS K2219 class 2 gear oil: for industrial use, with extreme-pressure additive) Models: GM-D/DP and GM-LJP Series

Manufacturer	Ambient temperature	− 15 to 0°C	0 to 40°C	40 to 60°C
	JIS K 2219	Class 2, ISO VG150	Class 2, ISO VG220	Class 2, ISO VG320
JX Nippon Oil and Energy Corporation		BONNOC® M 150	BONNOC® M 220	BONNOC® M 320
Idemitsu Kosan Co., Ltd.		Daphne® Super Gear 150	Daphne® Super Gear 220	Daphne® Super Gear 320
Showa Shell Sekiyu K.K.		Omala® Oil 150	Omala® Oil 220	Omala® Oil 320
Tonen General Sekiyu K.K.		General® SP Gear Roll 150	General® SP Gear Roll 220	General® SP Gear Roll 320
Exxon Mobil Corporation		Mobil® Gear 629	Mobil® Gear 630	Mobil® Gear 632
Cosmo Oil Co., Ltd.		Cosmo® Gear SE 150	Cosmo® Gear SE 220	Cosmo® Gear SE 320

* Carry out the first oil change about 250 hours after the start of operation. After this, change the oil every 6 months or 2,000 hours of operation, whichever comes first.
The oil level may fluctuate depending on the gear rotation during operation, but there are no problems.
* The above oil names are trademarks of their respective companies.

● Recommended oil: Right angle shaft (JIS K2219 class 2 gear oil: for industrial use, with extreme-pressure additive) Models: GM-DYP Series

Manufacturer	Ambient temperature	− 10 to 15°C	0 to 40°C
	JIS K 2219	Class 2, ISO VG150	Class 2, ISO VG320
JX Nippon Oil and Energy Corporation		BONNOC® M 150	BONNOC® M 320
Idemitsu Kosan Co., Ltd.		Daphne® Super Gear 150	Daphne® Super Gear 320
Showa Shell Sekiyu K.K.		Omala® Oil 150	Omala® Oil 320
Tonen General Sekiyu K.K.		General® SP Gear Roll 150	General® SP Gear Roll 320
Exxon Mobil Corporation		Mobil® Gear 629	Mobil® Gear 632
Cosmo Oil Co., Ltd.		Cosmo® Gear SE 150	Cosmo® Gear SE 320

* Carry out the first oil change about 250 hours after the start of operation. After this, change the oil every 6 months or 2,000 hours of operation, whichever comes first.
The oil level may fluctuate depending on the gear rotation during operation, but there are no problems.
* The above oil names are trademarks of their respective companies.

● Estimated requirements of lubricants: GM-S/SP Series (grease: kg)

Gear ratio / Output (kW)	1/3 to 1/30	1/40, 1/50	1/60 to 1/100	1/120 to 1/200	1/270 to 1/450	1/540 to 1/1200
0.1	0.21kg(0.22kg)		0.32kg(0.26kg)	0.35kg(0.47kg)	0.6kg(0.5kg) + 0.18kg*	1.0kg(0.9kg) + 0.18kg*
0.2	0.21kg(0.22kg)	0.32kg(0.26kg)	0.35kg(0.47kg)	0.6kg(0.5kg)	1.0kg(0.9kg) + 0.26kg*	1.7kg(1.7kg) + 0.26kg*
0.4	0.32kg(0.26kg)	0.35kg(0.47kg)	0.6kg(0.5kg)	1.0kg(0.9kg)	1.7kg(1.7kg) + 0.26kg*	2.7kg(2.5kg) + 0.26kg*
0.75	0.52kg(0.4kg)	0.6kg(0.5kg)	1.0kg(0.9kg)	1.7kg(1.7kg)	2.7kg(2.5kg) + 0.26kg*	−
1.5	0.9kg(0.8kg)	1.0kg(0.9kg)	1.7kg(1.7kg)	2.7kg(2.5kg)	−	−
2.2	1.5kg(1.4kg)	1.7kg(1.7kg)	2.7kg(2.5kg)	−	−	−

(Notes) 1. The *-marked values are the quantities of grease required for the intermediate brackets.
2. The values in parentheses are for the flange type models.

● Estimated requirements of lubricants: GM-D/DP Series (grease: kg, oil: L)

Gear ratio / Output (kW)	Lubricant	1/3 to 1/20	1/25 to 1/30	1/40 to 1/50	1/60 to 1/100	1/120 to 1/200	1/270 to 1/450	1/540 to 1/1200
0.4	Grease	0.52kg/0.4kg		0.42kg/0.4kg	1.0kg/0.9kg	2.1kg/2.1kg	2.7kg/2.5kg*	4.8kg/4.8kg*
	Oil	—		—	—	—	—	2L/1.6L/5.3L
0.75	Grease	0.9kg/0.8kg		1.0kg/0.9kg	1.7kg/1.7kg	2.7kg/2.5kg	4.8kg/4.8kg*	6.0kg/6.0kg*
	Oil	—		—	—	—	2L/1.6L/5.3L	3.3L/3L/7L
1.5	Grease	1.5kg/1.4kg		1.7kg/1.7kg	2.7kg/2.5kg	4.8kg/4.8kg	6.0kg/6.0kg*	—
	Oil	—		—	—	2L/1.6L/5.3L	3.3L/3L/7L	—
2.2	Grease	2.1kg/2.1kg		2.7kg/2.5kg	4.8kg/4.8kg	6.0kg/6.0kg	—	—
	Oil	—		—	2L/1.6L/5.3L	3.3L/3L/7L	—	—
3.7	Grease	3.2kg/2.5kg		4.8kg/4.8kg	6.0kg/6.0kg		—	—
	Oil	—		2L/1.6L/5.3L	3.3L/3L/7L		—	—
5.5	Grease	4.8kg/4.8kg		6.0kg/6.0kg			—	—
	Oil	2L/1.6L/5.3L		3.3L/3L/7L			—	—
7.5	Grease	4.8kg/4.8kg	6.0kg/6.0kg			—	—	—
	Oil	2L/1.6L/4.2L	3.3L/3L/7L			—	—	—

See the estimated requirements of lubricants for 3.7- to 7.5-kW models with high gear ratios.

Estimated requirements of lubricants for 3.7- to 7.5-kW models with high gear ratios

Gear ratio / Output (kW)	Lubricant	1/45	1/60	1/90	1/120
3.7	Grease				10kg/10kg
	Oil				6.7L/6.7L/15.5L
5.5	Grease		7.0kg/7.0kg	10kg/10kg	15kg/15kg
	Oil		5L/5L/12.5L	6.7L/6.7L/15.5L	10L/10L/21L
7.5	Grease	7.0kg/7.0kg	10kg/10kg	15kg/15kg	
	Oil	5L/5L/12.5L	6.7L/6.7L/15.5L	10L/10L/21L	

Notes on table

Grease lubrication	Foot mounting/flange mounting
Oil lubrication	Foot mounting/flange mounting/vertical flange mounting

(Notes) 1. For the *-marked quantities, the quantity of grease for the intermediate brackets is 0.26 kg.
2. This table shows estimated values. Pour the oil to the center of the level gauge.

● Estimated requirements of lubricants: GM-LJP Series (grease: kg, oil: L)

Gear ratio / Output (kW)	Lubricant	1/3, 1/5	1/10	1/15	1/20	1/30	1/45	1/60
11	Grease	2.8kg	7.0kg	7.0kg	7.0kg	9.8kg	10kg	15kg
	Oil	1.5L	2.5L(10L)	2.5L(10L)	2.5L(10L)	5L(12.5L)	6.7L(15.5L)	10L(21L)
15	Grease	8.5kg	7.0kg	9.8kg	9.8kg	13kg	15kg	—
	Oil	2.5L	2.5L(10L)	5L(12.5L)	5L(12.5L)	6.7L(15.5L)	10L(21L)	—
22	Grease	7.6kg	13kg	13kg	13kg	15kg	15kg	—
	Oil	3.8L	6.7L(15.5L)	6.7L(15.5L)	6.7L(15.5L)	10L(21L)	10L(21L)	—
30	Grease	—	15kg	15kg	15kg	15kg	—	—
	Oil	—	10L(21L)	10L(21L)	10L(21L)	10L(21L)	—	—
37	Grease	—	15kg	15kg	15kg	15kg	—	—
	Oil	—	10L(21L)	10L(21L)	10L(21L)	10L(21L)	—	—

(Notes)1. The values in parentheses are for the vertical type.
2. This table shows estimated values. Pour the oil to the center of the level gauge.

● Estimated requirements of lubricants: GM-SSY/SSYP Series (grease: kg)

Gear size	Gear size	Quantity of grease
0.1	20	0.12kg
0.2	20	0.12kg
	25	0.15kg
0.4	25	0.21kg
	30	0.33kg
0.75	30	0.46kg
	35	0.75kg
1.5	35	1.0kg
2.2	45	1.2kg

● Estimated requirements of lubricants: GM-SHY/SSYP Series (grease: kg)

Output (kW) \ Gear ratio	1/5, 1/7.5	1/10 to 1/60	1/80 to 1/120	1/160 to 1/240	1/300 to 1/1440
0.1	0.3kg(0.28kg)	0.38kg(0.4kg)	0.33kg(0.29kg)	0.33kg(0.29kg)	0.9kg(0.87kg)0.15kg*
0.2	0.3kg(0.28kg)	0.4kg(0.38kg)	0.53kg(0.45kg)	0.49kg(0.45kg)	1.65kg(1.65kg)0.35kg*
0.4	0.53kg(0.49kg)	0.64kg(0.57kg)	0.9kg(0.87kg)	0.9kg(0.87kg)	1.65kg(1.65kg)0.35kg*
0.75	1.5kg(1.3kg)	1.5kg(1.3kg)	2.2kg(2.2kg)	2.2kg(2.2kg)	—
1.5	2.2kg(1.9kg)	2.2kg(1.9kg)	2.8kg(2.7kg)	2.8kg(2.7kg)	—
2.2	3.1kg(3.0kg)	3.1kg(3.0kg)	2.8kg(2.7kg)	—	—

(Notes) 1. 0.4-kW models with gear ratios of up to 1/480
2. The *-marked values are the quantities of grease for the intermediate brackets.
3. The values in parentheses are for the flange type models.

● Estimated requirements of lubricants: GM-DYP Series (oil: L)

Output (kW) \ Gear ratio	1/15 to 1/20	1/25 to 1/40	1/50 to 1/60	1/80	1/100
3.7	① 1.1L ② 3.7L	① 2.4L ② 6.7L	① 2.4L ② 6.7L	① 4L ② 11.4L	① 4L ② 11.4L
5.5	① 2.4L ② 6.7L	① 2.4L ② 6.7L	① 4L ② 11.4L	① 4L ② 11.4L	—
7.5	① 2.4L ② 6.7L	① 4L ② 11.4L	① 4L ② 11.4L	—	—
11	① 4L ② 11.4L	① 4L ② 11.4L	—	—	—

(Note) The quantities ① and ② show the quantities of oil in the respective installation directions. (For the installation directions, see page 98.)

5. Inverter

Mitsubishi Geared Motors (with 3-phase motors) can be inverter-driven.
The use of an inverter is the easiest method for operating a geared motor at various speed. However, the motor characteristics are different from those in the case of operation with commercial power. Check the following items prior to use.

Usable frequency : The usable frequency range of each geared motor is restricted depending on the gear lubrication conditions and oil seal life. The motor cannot be used out of the usable frequency range because gear trouble and lubricant leakage may be caused by the use in such a state.

Operating torque characteristics : The allowable torque for operation of each geared motor is restricted to control the geared motor temperature rise within the specification. The continuous operating torque is the allowable torque for continuous operation of geared motor. The geared motor cannot be used at a torque higher than this torque value because motor burnout will occur at such a torque. The short-time maximum torque is the maximum torque which can be output by the geared motor. The torque value is the short-time rating (1 min) because the motor cannot be continuously operated at this torque. Note that the motor life may be affected depending on the frequency of operation at this maximum torque.

5-1 Usable frequency of geared motor

The usable frequency range is determined based on the mechanical life.
If you intend to use a motor to be lubricated with oil or operate the motor at a high frequency, place an order for a special oil filler plug (option) because the oil may leak from the original oil filler plug.
If you replace an inverter constant torque geared motor (for V/F control) in GM-DZ Series with Premium Geared Motor in GM-DP Series, specify the lubrication type as grease lubrication because the series includes models of oil lubrication type (with low frequency limit).

The allowable frequency ranges of the geared motors are shown in the following table.

Series	Output (kW)	Number of poles	Heat resistance class	Inverter input power	Usable frequency range			Recommended inverter
					Grease lubrication	Oil lubrication (standard oil filler plug)	Oil lubrication (special oil filler plug)	
GM-S GM-SSY GM-SHY GM-SP GM-SSYP GM-SHYP	0.1 0.2 0.4 0.75 1.5 2.2	4	120(E) 130(B)	200/200/220V 50/60/60Hz	3 to 120Hz			FR-A800 FR-E700 FR-D700
GM-D	0.4	4	120(E)	200/200/220V 50/60/60Hz	3 to 120Hz	25 to 70Hz	25 to 120Hz	FR-A800 FR-E700 FR-D700
GM-DP	0.75 1.5 2.2 3.7 5.5 7.5	4	130(B)	200/200/220V 50/60/60Hz	3 to 120Hz 3 to 85Hz 3 to 75Hz 3 to 70Hz	25 to 70Hz	25 to 120Hz 25 to 115Hz	FR-A800 FR-E700 FR-D700
GM-DYP (3.7 to 11kW) GM-LJP (11 to 37kW)	3.7 5.5 7.5 11 15 22 30 37	4	130(B) 155(F)	200/200/220V 50/60/60Hz		3 to 70Hz * 25 to 70Hz 25 to 70Hz 25 to 65Hz	3 to 120Hz 3 to 115Hz * 25 to 100Hz 25 to 95Hz 25 to 90Hz	FR-A800 FR-E700 FR-D700

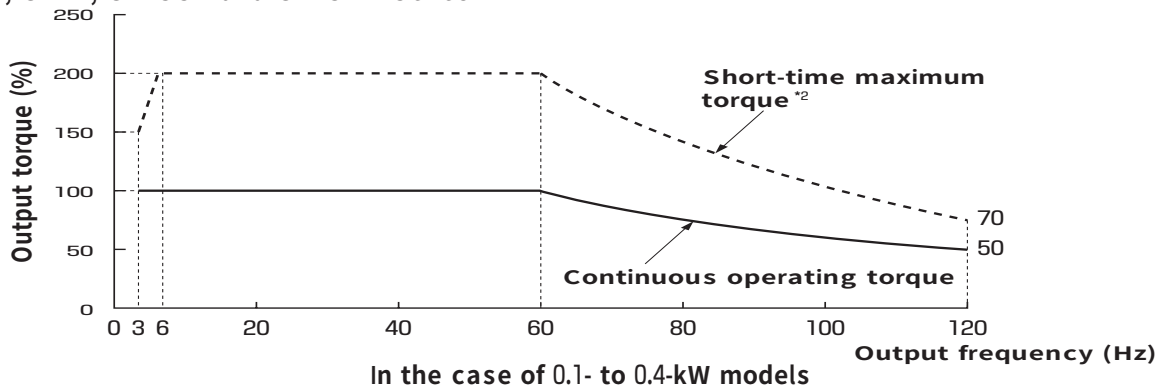
(Notes) When the motor is continuously operated at an inverter frequency of 60 Hz or more, inspect the oil seal normally once a year.
* The *-marked models in GM-DYP Series are usable at 3 Hz or more.
When using a small-capacity model with a low gear ratio, note that the rotation speed may not increase due to mechanical loss if the operating frequency is increased to 60 Hz or more.
(Example: When a 0.1-kW model with a gear ratio of 1/5 or 1/7.5 is operated at 120 Hz)

5-2 Operating torque characteristics

The operating torque characteristics of the geared motors combined with Mitsubishi inverters FR-A, E and D are shown below. Note that the output frequencies are restricted depending on the usable frequency ranges of the geared motors.

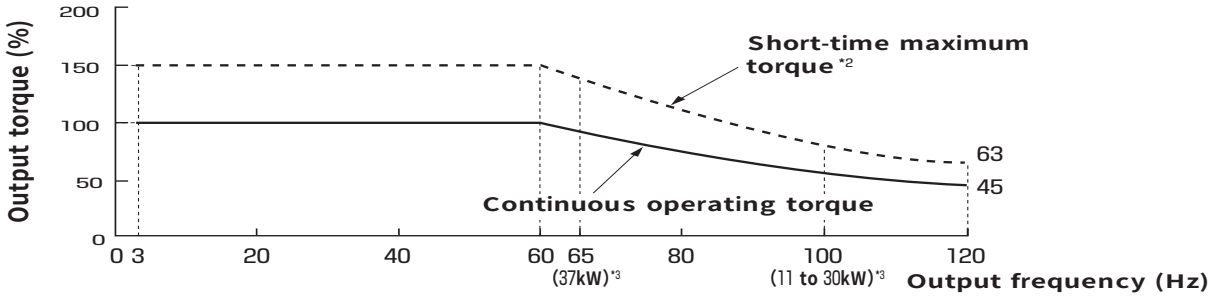
● **Advanced magnetic flux vector control method (combined inverter: FR-A800 or E700)**

GM-S, GM-D, GM-SSY and GM-SHY Series



In the case of 0.1- to 0.4-kW models

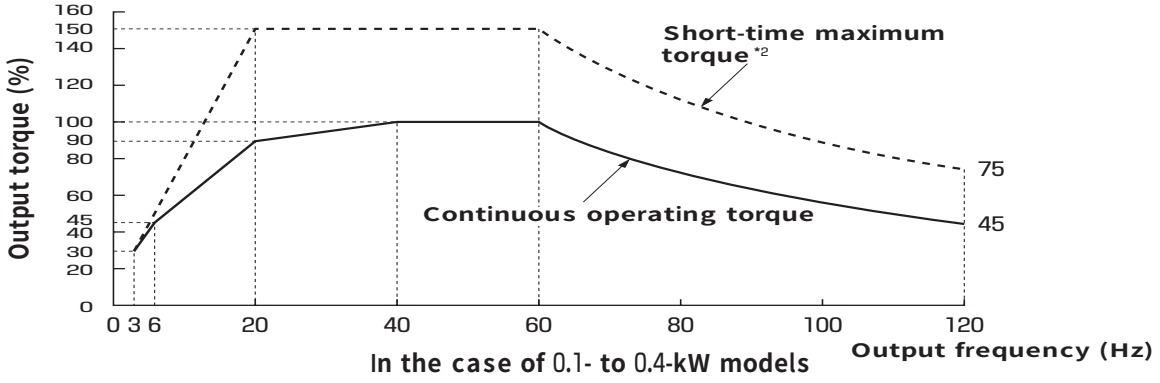
GM-SP, GM-DP, GM-SSYP, GM-SHYP, GM-DYP and GM-LJP Series



In the case of 0.75- to 37-kW models

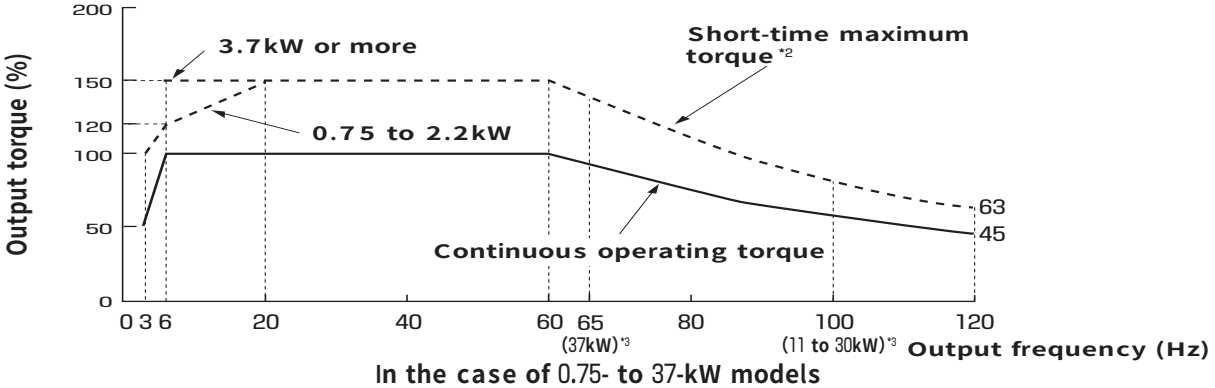
● **V/F control method (combined inverter: FR-A800, E700 or D700)**

GM-S, GM-D, GM-SSY and GM-SHY Series



In the case of 0.1- to 0.4-kW models

GM-SP, GM-DP, GM-SSYP, GM-SHYP, GM-DYP and GM-LJP Series



In the case of 0.75- to 37-kW models

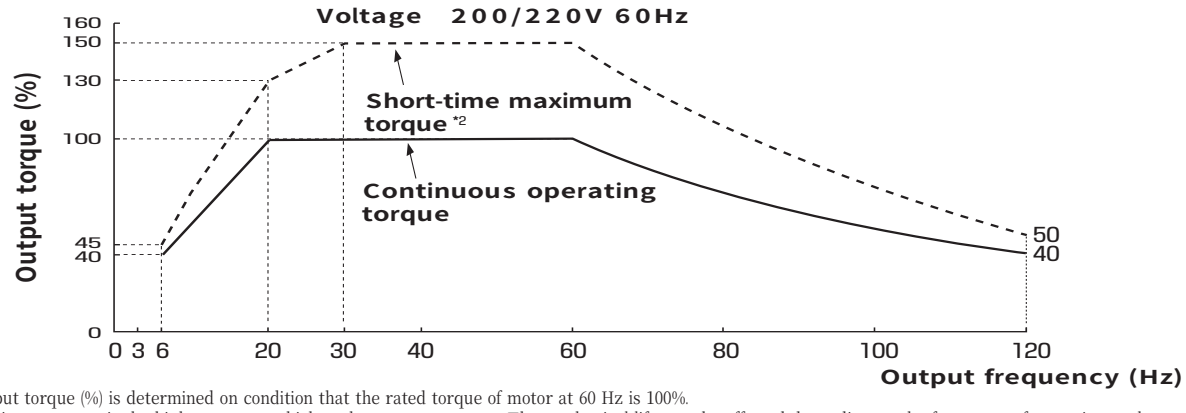
*1 The output torque (%) is determined on condition that the rated torque at 60 Hz is 100%.

*2 The maximum torque is the highest torque which each motor can output. The mechanical life may be affected depending on the frequency of operation at the maximum torque. Pay due attention to the frequency.

*3 The allowable maximum frequency varies depending on output.

● **GM-J2 Series**

V/F control method (combined inverter: FR-E700 or D700)



*1 The output torque (%) is determined on condition that the rated torque of motor at 60 Hz is 100%.
*2 The maximum torque is the highest torque which each motor can output. The mechanical life may be affected depending on the frequency of operation at the maximum torque. Pay due attention to the frequency.

5-3 Changes in torque boost in V/F control of premium geared motors

The changed values of torque boost in V/F control of premium geared motors are shown below.

Capacity (kW)	Default			Changed setting(%)
	FR-A800(%)	FR-E700(%)	FR-D700(%)	
0.75	6	6	6	4
1.5	4	4	4	5
2.2	4	4	4	4
3.7	4	4	4	4.5
5.5	3	3(2)	3(2)	3.7
7.5	3	3(2)	3(2)	4.5
11	2	2	2	3.3
15	2	2	2	3
22	2	—	—	3.4

*** The values in parentheses apply in the case of change of the electronic thermal to the setting for constant torque motor.**

5-4 Cautions for inverter driving

1. The data shown above are the operating torque characteristics obtained when the motors are combined with Mitsubishi general-purpose inverters.
2. In the case of geared motor with built-in brake
   Make sure that the brake power supply is connected to the inverter power supply side (primary side) through another circuit and allowed to be used where the brake is operated after the inverter main circuit is turned off. Note that the noise is rather large in a low speed operation range.
   The brake cooling capacity will be reduced, and the heat generated by the brake coil may cause problems. When the motor is operated at a frequency of 25 Hz or less, the rating is a one hour rating or 25%ED. Since the braking capacity is limited, the brake shall be operated at 60 Hz or less.
3. In the case of explosion-proof type geared motor
   When driving a pressure-resistant explosion-proof type geared motor, use an approved explosion-proof product combined with geared motor and inverter. In this case, install the inverter in a nonhazardous area because the inverter main body is non-explosion-proof.
4. If the wiring distance between the geared motor and the inverter is long, the geared motor torque will be reduced by the cable voltage drop. Select the cable size based on the voltage drop of 2% or less of the rated voltage.
5. When a 400 V class motor is inverter-driven, surge voltage may be caused between motor terminals owing to the wiring constant, and the voltage may deteriorate the motor insulation. In such a case, examine the following measures.
   (1) Method of reinforcing the motor insulation
   The following models of Mitsubishi geared motors have reinforced insulation.
   • Standard geared motors: 0.1 kW to 55 kW
   • Inverter drive constant torque (V/F constant torque) motors: 0.1 kW to 0.4 kW
   (2) Method of suppressing the surge voltage on the inverter side
   Connect a filter to suppress the surge voltage on the secondary side of the inverter so that the motor terminal voltage is 850 V or less. When the motor is driven by any of Mitsubishi inverters, connect the optional surge voltage suppression filter (FR-ASF-H) on the secondary side of the inverter.
6. If the carrier frequency is set higher in the case of inverter operation, abnormal noise may occur, or the bearings may be damaged. Specify the frequency when placing an order.

6. Common items

6-1 Standards

In Japan, there are no standards for geared motors. In the U.S., geared motors are classified into AGMA Classes I to III according to the load condition and operating time (life) in ANSI/AGMA 6019-E89 (R1994)" Standard for Gearmotors Using Spur, Helical, Herringbone, Straight Bevel, or Spiral Bevel Gears "by AGMA (American Gear Manufacturers Association) to rationalize the selection of a geared motor suitable for the purpose of use. In Japan, we have JGMA (Japan Gear Manufacturers Association) Standard similar to the AGMA Standard, but the standard specifies only the strength calculation and accuracy of gears.

● Standards in Japan

JIS … Japanese Industrial Standards
JEM…Standards of The Japan Electrical Manufacturers ' Association
JEC… Standards of the Japanese Electrotechnical Committee of the Institute of Electrical Engineers of Japan

These three kinds of standards are used in Japan. There is no special correspondence relationship among these standards. JIS are national standards established by the Japanese Industrial Standards Committee based on the Industrial Standardization Act, JEM Standards are standards established by the Japan Electrical Manufacturers ' Association composed mainly of manufacturers, and JEC Standards are standards established by the Japanese Electrotechnical Committee of the Institute of Electrical Engineers of Japan. The items closely related to geared motors in these standards are listed below. If you require the details of any standard item, you can obtain the handbook from the association or its affiliate.

<Standards for motors>
JIS C4003 … Types of motor insulation
C4213 … Low-voltage three-phase squirrel-cage induction motors -- Low-voltage top runner motor
C4034 … Rotating electrical machines – General requirements
C0930 … Electrical apparatus for explosive gas atmospheres -- General requirements
JEC 2137 … Induction machines
2100 … General requirements for rotating electrical machines
6147 … Types of insulation for electrical machines

<Standards for gears>
JGMA 6101-02 … Calculation of bending strength for spur and helical gears
6102-02 … Calculation of surface durability (pitting resistance) for spur and helical gears
405-01 … Calculation of strength for cylindrical worm gear
4101-01 … Testing method for load – capacity of cylindrical Gears
4102-01 … Criteria and evaluation procedures for load-capacity test results of cylindrical gears
1103-01 … Gear accuracy – Backlash and tooth thickness for spur and helical gears

<Standards for power supply units (printed circuit boards)>
JIS C 60664-1 … Insulation coordination for equipment within low-voltage systems -- Part 1: Principles, requirements and tests

<Others>
JIS K2219 … Gear oils
K2220 … Lubricating grease

● Foreign standards

To export a geared motor, it may be required to manufacture the motor in accordance with the standards of the destination country. The major foreign standards are shown below. Since JIS has been recognized widely, it is recommended to discuss the specifications with the customer to manufacture the product in accordance with JIS.

<Standards for motors>
International standards of IEC(International Electrotechnical Commission)
- 60034-1 … Rotating electrical machines
  - Part 1 : Rating and performance
- 60034-5 … Rotating electrical machines
  - Part 5 : Degrees of protection provided by the integral design of rotating electrical machines (IP code)
- 60204-1 … Safety of machinery-Electrical equipment of machine
  - Part1 : General requirements
- 60664-1 … Insulation coordination for equipment within low-voltage systems
  - Part1 : Principles, requirements and tests

U.S. NEMA(National Electrical Manufacturers Association)
ANSI(American National Standard Institute)
UL(Underwriters Laboratories Inc.)1004-1
- 1004-1 … Standard for Electric Motors

England BS(British Standard Institution)
Canada CSA(Canadian Standards Association)
China CCC(China Compulsory Certificate system)

<Standards for gears>
U.S. AGMA(American Gear Manufacturers Association)
- 2001-D04…Fundamental Rating Factors and Calculation Methods for Involute Spur and Helical Gear Teeth

England BS(British Standard Institution)

● Conformance of geared motors to foreign standards

The conformance of Mitsubishi Geared Motors to foreign standards is shown below.

<table>
<tr><th>Standard</th><th>Conformance</th><th>Remarks</th></tr>
<tr><td>UL</td><td>○</td><td>
The geared motors conform to cUL.
Conforming models: GM-S/D/SSY/SHY
Output: 0.1 to 0.4 kW
<table>
<tr><th>Voltage (V)</th><th>Frequency (Hz)</th></tr>
<tr><td>200/208/220/230</td><td>60/60/60/60</td></tr>
<tr><td>400/416/440/460</td><td>60/60/60/60</td></tr>
<tr><td>216</td><td>60</td></tr>
<tr><td>230</td><td>60</td></tr>
<tr><td>240</td><td>60</td></tr>
<tr><td>460</td><td>60</td></tr>
<tr><td>480</td><td>60</td></tr>
</table>
Conforming models: GM-SP/DP/SSYP/SHYP
Output: 0.75 to 2.2 kW
<table>
<tr><th>Voltage (V)</th><th>Frequency (Hz)</th></tr>
<tr><td>200/208/220</td><td>60/60/60</td></tr>
<tr><td>400/416/440</td><td>60/60/60</td></tr>
<tr><td>216</td><td>60</td></tr>
<tr><td>230</td><td>60</td></tr>
<tr><td>240</td><td>60</td></tr>
<tr><td>460</td><td>60</td></tr>
<tr><td>480</td><td>60</td></tr>
</table>
* Inverter drive constant torque models and models for other voltages and frequencies are not manufactured.
</td></tr>
<tr><td>CE</td><td>○</td><td>
The geared motor is a component of a mechanical product. Therefore, the CE marking is not required for the motor, but it must conform to the EN Standards. (The CE mark is affixed.) We are ready for issuing the supplier 's declaration of conformity to supply the motor as a product conforming to the EN Standards. Please consult us.
* For the voltage and frequency of conforming models, please contact us.
</td></tr>
<tr><td>CCC</td><td>○</td><td>
Conforming models: GM-S/D/SSY/SHY
Output: 0.1 to 0.4kW
<table>
<tr><th>Voltage (V)</th><th>Frequency (Hz)</th></tr>
<tr><td>200/200/220</td><td>50/60/60</td></tr>
<tr><td>400/400/440</td><td>50/60/60</td></tr>
<tr><td>220</td><td>50</td></tr>
<tr><td>210</td><td>60</td></tr>
<tr><td>230</td><td>60</td></tr>
<tr><td>380</td><td>50</td></tr>
</table>
Conforming models: GM-SP/DP/SSYP/SHYP
Output:0.75kW
<table>
<tr><th>Voltage (V)</th><th>Frequency (Hz)</th></tr>
<tr><td>380</td><td>50</td></tr>
</table>
* Inverter drive constant torque models and single-phase motors are not manufactured.
</td></tr>
</table>

(Note) All motors conforming to these standards will be manufactured as special models.

The conformance of Mitsubishi Geared Motors to high efficiency regulations in various countries is shown below.

Country	Date of enforcement (output in question)	Efficiency class	Remarks
U.S.	2016.06.01 (0.75 kW or more)	NEMA Premium (IE3)	Certification will be obtained.
Europe (EU)	2011.06.16 (0.75 kW or more)	IE2 (* Supplier's declaration)	Conforming models: GM-SH/DH GM-SSYH/SHYH Output: 0.75 to 7.5kW * Only models without brakes * For the voltage and frequency of the conforming models, consult us.
	2015.01.01 (7.5 kW or more)	IE3 (commercial power driving) or IE2 (inverter driving) (* Self declaration)	Conforming models: GM-SP/DP/LJP GM-SSYP/SHYP/DYP Output: 0.75 to 37kW * Only models without brakes * For the voltage and frequency of the conforming models, consult us.
	2017.01.01 (0.75 kW or more)		
China	2012.09.01 (0.75 kW or more)	Class GB3 (IE2)	Conforming models: GM-SH/DH GM-SSYH/SHYH Output: 0.75 to 7.5kW Voltage (V) / Frequency (Hz): 200 / 50; 380 / 50 * 3.7- to 7.5-kW models without brakes only
	2016.09.01 (7.5 kW or more)	Class GB2 (IE3)	Conforming models: GM-SP/DP/LJP GM-SSYP/SHYP/DYP Output: 0.75kW to 15kW Voltage (V) / Frequency (Hz): 380 / 50
	2017.09.01 (0.75 kW or more)		
Korea	2010.07.01 (0.75 kW or more)	Equivalent to EPAct (IE2)	Conforming models: GM-SH/DH GM-SSYH/SHYH Output: 0.75 to 2.2kW Voltage (V) / Frequency (Hz): 220 / 60; 440 / 60
	2015.10.01 (37 kW or more)	IE3	No certified models
	2018.10.01 (0.75 kW or more)		Conforming models: GM-SP/DP GM-SSYP/SHYP Output: 0.75kW to 7.5kW Voltage (V) / Frequency (Hz): 220 / 60; 440 / 60

(Notes) 1. All models are available as special products.
2. The regulations in each country are subject to change. The customer must confirm the actual customs clearance.

6-2 Protective construction

● Outline of protection systems (IP codes)

(1) Classification of protection systems
The protection systems by motor enclosure are classified according to the combination of the following protection types.
(a) Protection against human bodies and solid foreign objects
For the details of classification, see Table 22.
(b) Protection against ingress of water
For the details of classification, see Table 23.

(2) Names and symbols of protection types
To indicate the motor protection system, the symbols in Table 22 and Table 23 are put after IP as the first and second symbols.

Table 22 Protection against human bodies and solid foreign objects (1st symbol)

Rating	Symbol	Description
Not protected	0	Structures not provided with special protection against contact with human body parts or ingress of solid foreign objects
Semi-protected	1	Structures designed to prevent contact of internal rotating parts or conductive parts with large human body parts, such as hands Structures designed to prevent ingress of solid foreign objects having diameters of more than 50 mm
Protected	2	Structures designed to prevent contact of internal rotating parts or conductive parts with fingers or the like Structures designed to prevent ingress of solid foreign objects having diameters of more than 12 mm
Totally enclosed	4	Structures designed to prevent contact of internal rotating parts or conductive parts with objects having the minimum width or thickness of more than 1 mm, such as tools and wires Structures designed to prevent ingress of solid foreign objects having diameters of more than 1 mm, but whose drainage holes and fan inlet and outlet are allowed to have structures of level 2
Dust-proof	5	Structures designed to prevent contact of internal rotating parts or conductive parts with all kinds of objects Structures designed to prevent ingress of dust as completely as possible and to operate normally even in case of ingress of dust
Dust-resistant	6	Structures into which no dust can enter

Table 23 Protection against ingress of water (second symbol)

Rating	Symbol	Description
Not protected	0	Structures not provided with special protection against ingress of water
Drip-proof	2	Structures not detrimentally affected by water drops falling at angles within 15 °from the vertical
Rain-proof	3	Structures not detrimentally affected by water drops falling at angles within 60 °from the vertical
Splash-proof	4	Structures not detrimentally affected by water drops falling from any direction
Jet-proof	5	Structures not detrimentally affected by water jets from any direction
Wave-proof	6	Structures not detrimentally affected by powerful water jets from any direction
Immersion-proof	7	Structures not detrimentally affected by ingress of water, if any, when immersed in water under specified conditions of depth and time
Submerged	8	Structures which can normally operate in water

● IP44 rated outdoor models

IP44 rated outdoor models are not designed in consideration of use in a rainfall environment with strong wind. If you intend to install such a geared motor in an outdoor environment where the motor will be exposed to rain with strong wind, fit a cover to the motor, or use a water-proof or dust- and water-proof model.
The output shaft is made of a carbon steel material. It may rust. Periodically apply a rust-preventive agent.

● Example of selection of protection system

It is required to select a geared motor protection system appropriate to the installation conditions and environment. If an improper geared motor is selected, the motor cannot be maintained properly, or its life may be reduced. If a motor with a higher degree of protection than necessary is selected, the motor will be expensive and uneconomical.
Table 24 shows examples of selection of protection system. Refer to the table.

Table 24 Examples of selection of protection system of geared motor

Installation location	Environment	Possibility of damage	Motor type to be selected	Protection system
Indoor type	Ordinary places		Totally enclosed-fan-cooled type	IP44
	Places with a lot of dust (sand, ash and ore powder)	Temperature rise due to inhibition of draft cooling Deterioration of coil insulation and damage to bearings	Totally enclosed-fan-cooled type	IP44
			Totally enclosed-fan-cooled dust-proof type	IP54
	Acid, alkaline fluid or corrosive gas	Corrosion and deterioration of insulation	Total enclosed-fan-cooled corrosion-proof type	IP44
	Explosive or combustible fluid or gas	Explosion or fire	Totally enclosed-fan-cooled pressure-resistant explosion-proof type	IP44
Outdoor type	Ordinary places	Deterioration of insulation	Totally enclosed-fan-cooled outdoor type	IP44
	Places with a lot of dust (sand, ash and ore powder) Places affected by strong sea breeze	Temperature rise due to inhibition of draft cooling Deterioration of coil insulation and damage to bearings	Totally enclosed-fan-cooled dust-proof outdoor type	IP54
	Acid, alkaline fluid or corrosive gas	Corrosion and deterioration of insulation	Totally enclosed-fan-cooled corrosion-proof outdoor type	IP44
	Explosive or combustible fluid or gas	Explosion or fire	Totally enclosed-fan-cooled pressure-resistant explosion-proof outdoor type	IP44

6-3 Coating

Tables 25 and 26 show some examples of our coating specifications.

Table 25 Examples of coating specifications for GM-S/SP, GM-D/DP, GM-SSY/SSYP, GM-SHY/SHYP and GM-DYP Series of indoor and outdoor types

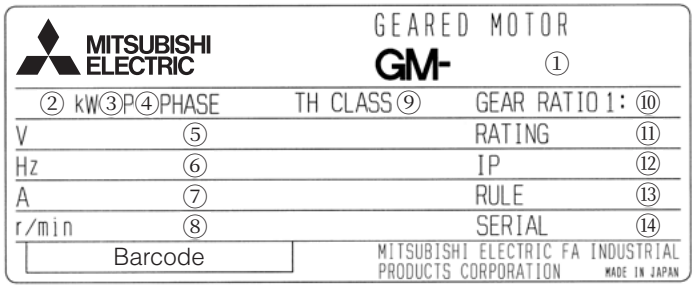
Coating material			Indoor type				Outdoor type			
			GM-S/SP,GM-D/DP, GM-SSY/SSYP,GM-SHY/SHYP				GM-S/SP,GM-SSY/SSYP, GM-SHY/SHYP		GM-D/DP, GM-DYP	
			Inner surface	Outer surface	Inner surface	Outer surface	Inner surface	Outer surface	Inner surface	Outer surface
Anticorrosive coating	Polyester epoxy primer	Number of coats	—	—	1	1	—	—	1	1
Top coating	Phthalic resin enamel	Number of coats	—	1	—	1	—	1	—	1
Average film thickness (μ)			—	20	20	40	—	40	20	60

Table 26 Examples of coating specifications for GM-LJP and GM-DYP (only 11 kW) Series of indoor and outdoor types

Coating material			Indoor type		Outdoor type	
			Inner surface	Outer surface	Inner surface	Outer surface
Anticorrosive coating	Polyester epoxy primer	Number of coats	1	1	1	1
Top coating	Phthalic resin enamel	Number of coats	—	1	—	1
Average film thickness (μ)			20	40	20	60

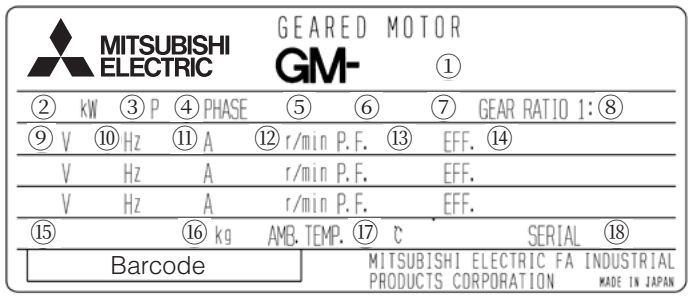
6-4 How to read nameplates

● **When the rated efficiency is not indicated**



Product No.	Item	Product No.	Item
①	Model name of geared motor	⑧	Output shaft rotation speed
②	Output	⑨	Heat resistance class
③	Number of poles	⑩	Gear ratio
④	Number of phases	⑪	Time rating
⑤	Power-supply voltage	⑫	Protection rating
⑥	Power-supply frequency	⑬	Standard
⑦	Rated current	⑭	Serial number

● **When the rated efficiency is indicated**



Product No.	Item	Product No.	Item
①	Model name of geared motor	⑩	Power-supply frequency
②	Output	⑪	Rated current
③	Number of poles	⑫	Output shaft rotation speed
④	Number of phases	⑬	Power factor
⑤	Heat resistance class	⑭	Rated efficiency
⑥	Time rating	⑮	Standard
⑦	Protection rating	⑯	Mass
⑧	Gear ratio	⑰	Ambient temperature
⑨	Power-supply voltage	⑱	Serial number

Cautions for use

General

- Before operating, thoroughly understand the instruction manual and nameplate.
- When carrying a geared motor with a hoisting attachment, use the attachment.

Environment and conditions of use

- Do not bring any flammable item close to the geared motor. Doing so may cause ignition or explosion. Use an explosion-proof geared motor in a place with organic solvents or explosive powder.
- Do not use any geared motor for a lift. This is prescribed by Building Standards Act.
- When using for a lift, provide the machine with safety devices. Otherwise, the lifted load may be dropped.
- If oil or grease may adversely affect the external environment when the motor is out of order, install an oil pan to prevent leakage of oil or grease.
- Fit safety covers to the belts, chains and gears.
- When using outdoors, use an outdoor type motor. If an indoor type geared motor is used outdoors, rain water will enter the motor, and earth leakage or lubrication failure may occur. When using a geared motor in a rainfall environment with strong wind, fit a cover to the geared motor, or use a water-proof model.
- Note that if small foreign objects enter the output shaft oil seal or the oil seal is rusted by water, the grease may leak. In a place where overflow may occur, use a dust- and water-proof geared motor.
- Do not place anything obstructing the ventilation around the motor. Doing so will hinder cooling, thereby causing burnout due to abnormal heating.

Wiring

- Ground the motor without fail. Install the dedicated earth leakage circuit breaker for each motor. Failure to do so may cause electric shock.
- Perform the electrical wiring work safely and surely in accordance with the electrical equipment technical standards and the regulations of the electric power company.
- Install an appropriate motor protective device for each motor. Failure to do so may cause a fire when a trouble occurs.
- Use a power supply of the specified voltage. Failure to do so may cause a fire.
- When connecting the power cable, follow the instructions shown in the wiring diagram on the geared motor or the instruction manual.

Operation

- Use the motor within the allowable load range and allowable range of frequency of starting.
- Do not use the motor for any application accompanied by excessive impact torque at stop (e.g. stopping by hitting). Doing so may damage the motor.
- If abnormal noise or vibration occurs during operation or the specified characteristics cannot be obtained, stop the operation, and inspect or overhaul the motor.
- Do not touch the geared motor during operation. Doing so may cause injury or burn.
- In the case of fluctuating load, noise may be caused by the motor shaft end play. However, the performance is not affected at all.

Brake

- Do not operate the brake manual release device with a load lifted. The load may drop.
- When operating a geared motor with quick manual release brake, secure the release lever on the lever receiver.
- When using the motor for lifting, use a DC (quick) turn-off circuit.
- At the beginning of use, the specified brake torque may not be obtained for reasons of the friction surface. In such a case, turn on and off the brake under as light a load condition as possible to break in the friction surface.
- The lining may generate a sliding sound because of the brake structure. This does not affect the performance.
- In the case of wiring for separate turn-off, operate the motor and brake at the same timing. If they are operated at different timing, there may be a risk of drop, collision or damage to the brake.

Inverter operation

- Use the motor within the specified frequency range. Failure to do so may damage the motor.
- Somewhat loud noise may be caused in a low-frequency range. However, the functions are not affected.
- When using a motor with a brake, wire the brake with a separate or DC (quick) turn-off circuit.
- Somewhat loud noise may be caused in a low-carrier frequency range. However, the functions are not affected.

Maintenance and modification

- Never modify the product.
- Turn off the power before maintaining or repairing.
- The motor surface may be hot. Do not touch it with bare hands during maintenance. Doing so may cause a burn.

Warranty

When using this product, make sure to understand the warranty described below.

1. Warranty period and coverage

We will repair any failure or defect (hereinafter referred to as "failure") in our FA equipment (hereinafter referred to as the "Product") arisen during warranty period at no charge due to causes for which we are responsible through the distributor from which you purchased the Product or our service provider. However, we will charge the actual cost of dispatching our engineer for an on-site repair work on request by customer in Japan or overseas countries. We are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit are repaired or replaced.

[Term]

The term of warranty for Product is twelve months after your purchase or delivery of the Product to a place designated by you or eighteen months from the date of manufacture whichever comes first ("Warranty Period"). Warranty period for repaired Product cannot exceed beyond the original warranty period before any repair work.

[Limitations]

(1) You are requested to conduct an initial failure diagnosis by yourself, as a general rule. It can also be carried out by us or our service company upon your request and the actual cost will be charged.
However, it will not be charged if we are responsible for the cause of the failure.
(2) This limited warranty applies only when the condition, method, environment, etc. of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual and user manual for the Product and the caution label affixed to the Product.
(3) Even during the term of warranty, the repair cost will be charged on you in the following cases;
1) a failure caused by your improper storing or handling, carelessness or negligence, etc., and a failure caused by your hardware
2) a failure caused by any alteration, etc. to the Product made on your side without our approval
3) a failure which may be regarded as avoidable, if your equipment in which the Product is incorporated is equipped with a safety geard motor required by applicable laws and has any function or structure considered to be indispensable according to a common sense in the industry
4) a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced
5) any replacement of consumable parts (oil-seal, grease, etc.)
6) a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning and natural disasters
7) a failure generated by an unforeseeable cause with a scientific technology that was not available at the time of the shipment of the Product from our company
8) any other failures which we are not responsible for or which you acknowledge we are not responsible for

2. Term of warranty after the stop of production

(1) We may accept the repair at charge for another seven (7) years after the production of the product is discontinued. The announcement of the stop of production for each model can be seen in our Sales and Service, etc.
(2) Please note that the Product (including its spare parts) cannot be ordered after its stop of production.

3. Service in overseas

Our regional FA Center in overseas countries will accept the repair work of the Product; however, the terms and conditions of the repair work may differ depending on each FA Center. Please ask your local FA center for details.

4. Exclusion of responsibility for compensation against loss of opportunity, secondary loss, etc.

Whether under or after the term of warranty, we assume no responsibility for any damages arisen from causes for which we are not responsible, any losses of opportunity and/or profit incurred by you due to a failure of the Product, any damages, secondary damages or compensation for accidents arisen under a specific circumstance that are foreseen or unforeseen by our company, any damages to products other than the Product, and also compensation for any replacement work, readjustment, start-up test run of local machines and the Product and any other operations conducted by you.

5. Change of Product specifications

Specifications listed in our catalogs, manuals or technical documents may be changed without notice.

6. Application and use of the Product

(1) For the use of our product, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in product, and a backup or fail-safe function should operate on an external system to product when any failure or malfunction occurs.
(2) Our product is designed and manufactured as a general purpose product for use at general industries.
Therefore, applications substantially influential on the public interest for such as atomic power plants and other power plants of electric power companies, and also which require a special quality assurance system, including applications for railway companies and government or public offices are not recommended, and we assume no responsibility for any failure caused by these applications when used.
In addition, applications which may be substantially influential to human lives or properties for such as airlines, medical treatments, railway service, incineration and fuel systems, man-operated material handling equipment, entertainment machines, safety machines, etc. are not recommended, and we assume no responsibility for any failure caused by these applications when used.
We will review the acceptability of the abovementioned applications, if you agree not to require a specific quality for a specific application. Please contact us for consultation.

YOUR SOLUTION PARTNER

Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

A NAME TO TRUST

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

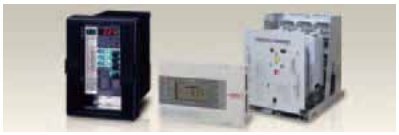
The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation is active in space development, transportation, semi-conductors, energy systems, communications and information processing, audio visual equipment and home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on Mitsubishi Electric automation solution - because we know first hand about the need for reliable, efficient, easy-to-use automation and control in our own factories.

As one of the world's leading companies with a global turnover of over 4 trillion Yen (over $40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.

Low voltage: MCCB, MCB, ACB



Medium voltage: VCB, VCC

Power monitoring, energy management

Compact and Modular Controllers

Inverters, Servos and Motors

Visualisation: HMIs, Software, MES connectivity

Numerical Control (NC)

Robots: SCARA, Articulated arm

Processing machines: EDM, Lasers, IDS

Transformers, Air conditioning, Photovoltaic systems

* All products are not available in all countries.

Global Partner. Local Friend.

⚠ Safety Precautions

- To ensure proper use of the products listed in this catalog, please read the instruction manual carefully prior to use.
- Make sure to connect the grounding wire and install the dedicated earth leakage circuit breaker. Electric shock may be caused by machine failure or electricity leakage.
- Install an appropriate motor protective device for each unit of the product to prevent fires caused by machine trouble.
- Make sure that electrical wiring works are conducted safely according to the electric installation engineering standards and the indoor wiring regulations of the power company.
- Do not exceed the rotation speed specified in the outline drawings, specifications, and catalogs, etc. Failure to do so may cause the product to explode or be damaged.
- Select a model appropriate to the operating environment and the purpose of use. Use in an inappropriate environment or for an unintended purpose will result in accidents.
- When using the product for a lift, install safety devices on the machine side to prevent the lift from falling in case of product trouble.
- Do not use the product for passenger lifts. This is prescribed in the Building Standards Act.
- Install an oil pan, etc. to prevent leakage when using the product in an environment affected by oils and grease.

ISO 14001 JACO EC97J1084

LLOYD'S REGISTER · LRQA ISO 9001 UKAS MANAGEMENT SYSTEMS 001

Mitsubishi geared motors are manufactured in a factory certified for ISO 14001 (standards for environmental management systems) and ISO 9001 (standards for quality assurance management systems).

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