

- | | |
|---------------|---|
| Repair | Consult to the dealer from whom you have purchased this product for details of repair work.
When the product is incorporated to the machine you have purchased, consult to the machine manufacturer or its dealer. |
| URL | Electronic data of this product (Instruction Manual, CAD data) can be downloaded from the following web site;
https://industry.panasonic.com/global/en/ |

Panasonic
INDUSTRY



2025.5

AC Servo Motor & Driver <MINAS A6 Family>

MINAS A6 Family

● This product is for industrial equipment. Don't use this product at general household.

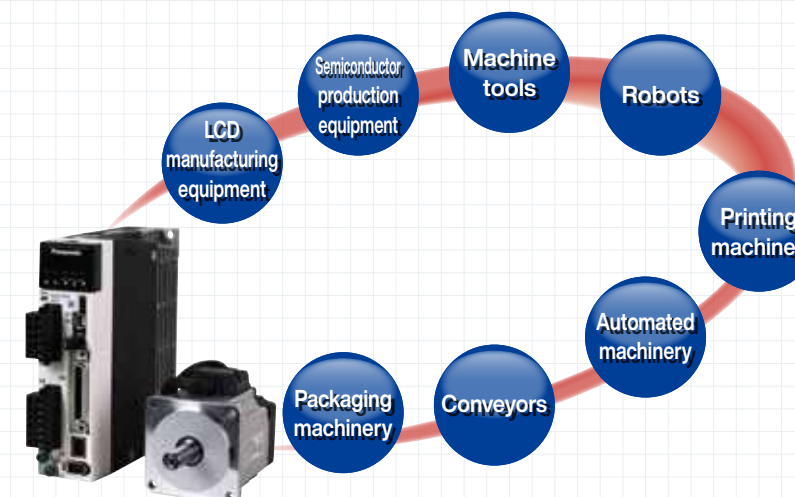
2025 / 5

MINAS A6 Family



More compact, more faster and more easy-to-use Servomotors that meet the demands of the present age.

The MINAS A6 family of advanced AC servomotors is changing the landscape of industrial machinery.



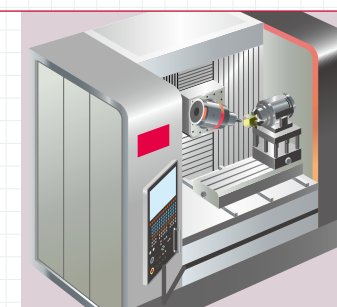
Robots

A robot is required to operate stably despite arm posture and position, workload and other conditions changing from moment to moment. The MINAS A6 family assures stable operation by suppressing effects of load to a minimum using "adaptive load control."



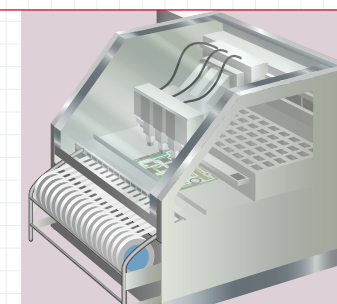
Processing machinery

With metal processing machine, it is very difficult to render mirror-like finishing on a polygonal body. The A6 family realizes "3.2 kHz frequency response" to improve feedback responsiveness, thus enabling mirror surfacing without generating lines or streaks.



Component mounting machines

The A6 family also shows its versatility when used with a component mounting machine where speed and positional accuracy are demanded. In addition to high frequency response, it can process accidental disturbances with the help of built-in "adaptive load control," thus maintaining high productivity.



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A6 Family

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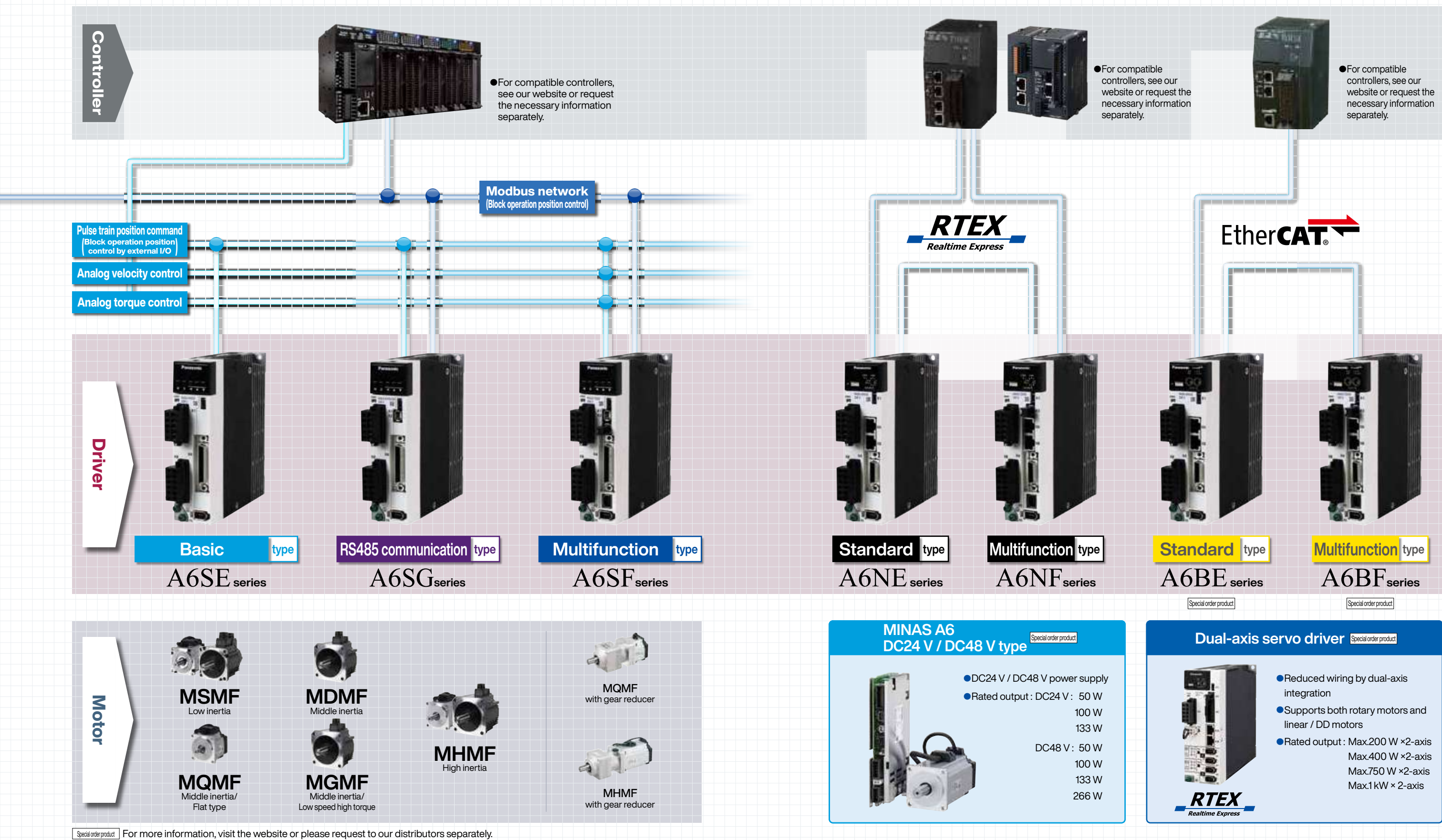
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Servomotors that flexibly and effectively fit into

various system configurations

MINAS A6 Family



It is MINAS A6 Family lineup that meets the

manufacturing industry needs.

MINAS A6 Family

Motor line-up		50 w	100 w	200 w	400 w	750 w	850 w	1000 w	1.0 kW	1.3 kW	1.5 kW		1.8 kW	2.0 kW	2.4 kW	2.9 kW	3.0 kW	4.0 kW	4.4 kW	5.0 kW	5.5 kW	7.5 kW	11.0 kW	15.0 kW	22.0 kW	
Low inertia MSMF	100 V 	38 sq.	38 sq.	60 sq.	60 sq.																					
	Rated rotational speed (Maximum rotational speed)	3000 r/min(6000 r/min)																								
	200 V 	38 sq.	38 sq.	60 sq.	60 sq.	80 sq.		80 sq.	100 sq.		100 sq.			100 sq.				120 sq.	130 sq.		130 sq.					
Middle inertia/Flat type MQMF	100 V 		60 sq.	80 sq.	80 sq.																					
	Rated rotational speed (Maximum rotational speed)		3000 r/min(6500 r/min)																							
	200 V 		60 sq.	80 sq.	80 sq.																					
Middle inertia MDMF	200 V 								130 sq.		130 sq.			130 sq.				130 sq.	176 sq.		176 sq.		176 sq.	220 sq.	220 sq.	220 sq.
	Rated rotational speed (Maximum rotational speed)								2000 r/min(3000 r/min)					2000 r/min(3000 r/min)								1500 r/min [†]	1500 r/min(2000 r/min)			
	400 V 								130 sq.		130 sq.			130 sq.				130 sq.	176 sq.		176 sq.					
Middle inertia/Low speed high torque MGMF	200 V 						130 sq.			130 sq.			130 sq.		176 sq.	176 sq.			176 sq.		176 sq.					
	Rated rotational speed (Maximum rotational speed)						1500 r/min(3000 r/min)						1500 r/min(3000 r/min)													
	400 V 						130 sq.			130 sq.			130 sq.		176 sq.	176 sq.			176 sq.							
High inertia MHMF	100 V 	40 sq.	40 sq.	60 sq.	60 sq.																					
	Rated rotational speed (Maximum rotational speed)	3000 r/min(6500 r/min)																								
	200 V 	40 sq.	40 sq.	60 sq.	60 sq.	80 sq.		80 sq.	130 sq.		130 sq.			176 sq.				176 sq.	176 sq.		176 sq.		176 sq.			
	400 V 			60 sq.	60 sq.	80 sq.		80 sq.	130 sq.		130 sq.			176 sq.				176 sq.	176 sq.		176 sq.					
	Rated rotational speed (Maximum rotational speed)			3000 r/min(6500 r/min)		3000 r/min(6000 r/min)		2000 r/min(3000 r/min)						2000 r/min(3000 r/min)								1500 r/min [†]				

Table description

60 sq.

Flange sq. dimension
[Unit: mm]

Also available with gear reducer.

<Information> “MINAS A6 Family 400 V Series” catalog is available separately.
For more information, please visit our website or request to our distributors separately.

*1 Maximum rotational speed is 3000 r/min.

It is MINAS A6 Family lineup that meets the

manufacturing industry needs. MINAS A6 Family

Driver line-up					
	Rotary motor			Linear motor / DD motor	
	Basic type A6SE series	RS485 communication type A6SG series	Multifunction type A6SF series	Basic type A6SL series Special order product	Multifunction type A6SM series Special order product
Position control					
Block operation	(External contact signal only)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)
Speed control					
Internal velocity command ^{*2}	(External contact signal only)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)	(External contact signal or Modbus communication)
Torque control					
Full-close control					
Block operation			(External contact signal or Modbus communication)		
Pulse					
Analog					
Modbus					
External scale					
RS-232/RS-485					
STO (Safety Torques Off)					

^{*1} A6SE series driver (Position control only) does not correspond to the absolute system of using the serial communication with the host device. It supports incremental system only.
^{*2} When using internal speed command with Modbus, external servo ON is required.

High speed communication For Realtime Express Network servo driver ▶ For Details see P.349					
	Rotary motor		Linear motor / DD motor		
	Standard type A6NE series	Multifunction type A6NF series	Standard type A6NL series Special order product	Multifunction type A6NM series Special order product	
Control mode					Position/Speed/Torque control
					Full-close control
Interface					External scale
					STO (Safety Torques Off)

Servo drivers with EtherCAT open network ▶ For Details see P.369					
	Rotary motor		Linear motor / DD motor		
	Standard type A6BE series Special order product	Multifunction type A6BF series Special order product	Standard type A6BL series Special order product	Multifunction type A6BM series Special order product	
Control mode					Position/Speed/Torque control
					Full-close control
Interface					External scale
					STO (Safety Torques Off)

● Please check the instruction manual for necessary wiring.
Special order product For more information, please visit our website or request to our distributors separately.

Small, light, powerful and speedy^{※1}

MINAS A6 Family

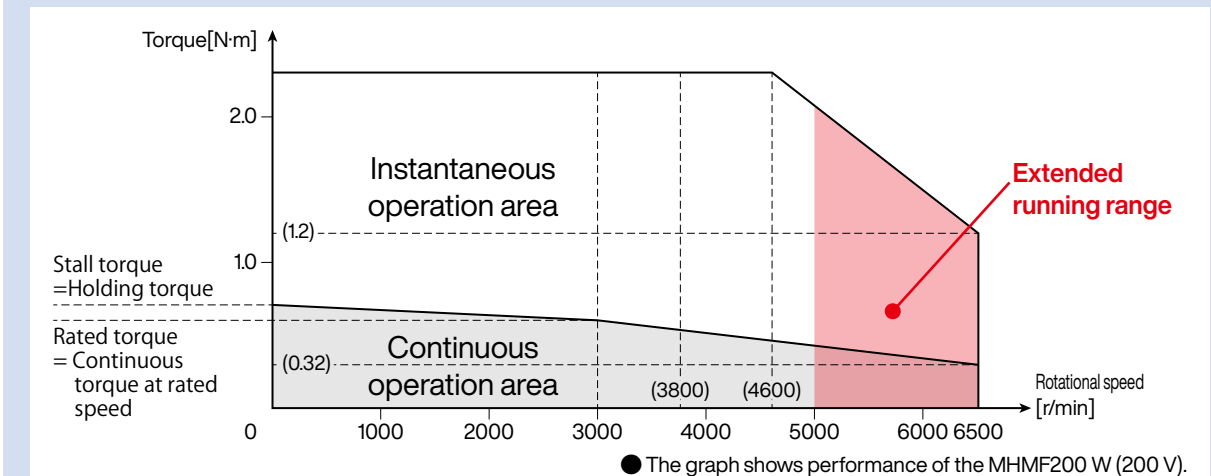


High-speed, high-torque, compact and lightweight.^{※1}

Max. speed	Max. torque	Overall length	Weight
6500 r/min ^{※2}	Approx. 350 % ^{※2}	67.5 mm ^{※2}	750 g ^{※2}
Fast	High	Short	Light
(A5Family ^{※3} 5000 r/min)	(A5Family ^{※3} Approx 300 %)	(A5Family ^{※3} 99.0 mm)	(A5Family ^{※3} 960 g)

※1 Middle and high inertia types only ※2 MHMF200 W ※3 MHMD200 W

Thanks to high-speed and high-torque, the application area is greatly expanded.



Enhanced position detecting resolution enables smoother and more precise positioning.

Encoder	Communication speed
23 bit (8388608 Pulse / rotation)	5 Mbps
8 times higher resolution	Improved
(A5 Family ^{※4} 20 bit)	(A5 Family 2.5 Mbps)

Low vibrations High speed and high precision positioning

※4 Incremental encoder

Swifter, smarter and easier to use

MINAS A6 Family

Powered Up
compact
driver



New two-degree-of-freedom control system

Frequency response
3.2 kHz

Built-in filters and adjusting functions

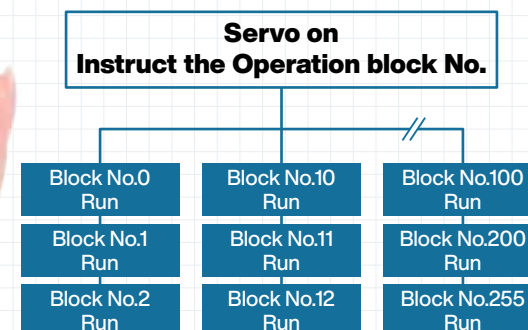
PANATERM Support

Modbus Support
(A6SF, A6SG Series)

Block operation position control
(Supports Modbus and external I/O)

Full-scale

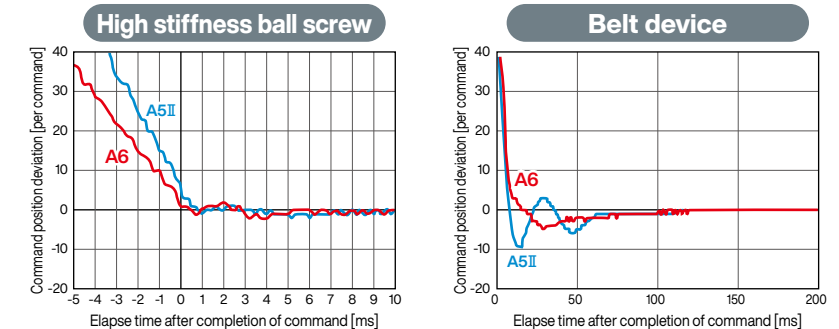
Image of block operations



High-speed response, high-precision positioning for quick and accurate movement

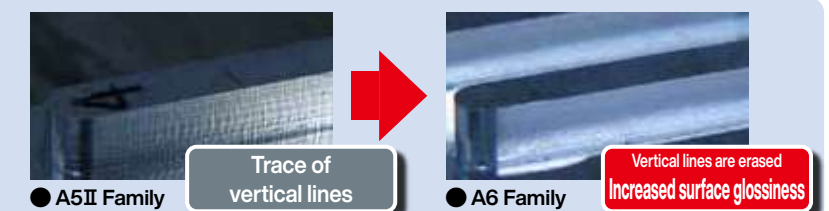
Our proprietary algorithm in addition to upgraded CPU and other hardware realized further high-speed response. Furthermore, high-precision positioning is achieved by automatically eliminating micro vibrations and machine oscillation caused by the resonance.

Comparison of position setting waveforms



Example of operation with processing machine

A mirror finish is obtained even if a process that tends to cause streaking.



Easy and quick setting, shortening conventional settling time by approx. 64%^{※1}

Newly developed fit gain function substantially reduces adjustment time. Adaptive notch filter and various gains can be automatically set and adjusted.

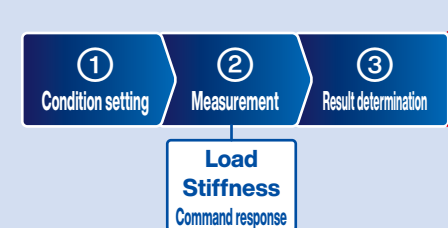
Settling time (Measured on low stiffness resonant mechanism)



※1 Comparison with conventional product A5II Family

● The above is a measure based on our test environment

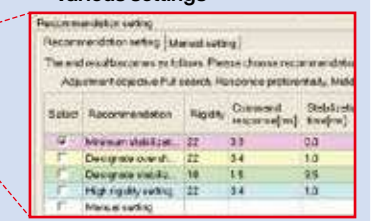
Adjustment completed in only 3 processes



Fit gain adjustment window



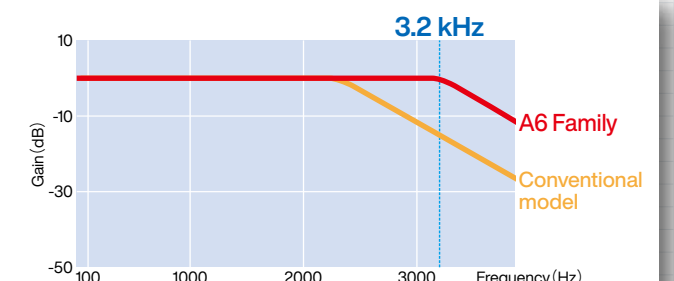
Automatically proposes various settings



Realized 3.2 kHz frequency response to improve productivity

Realizes 3.2 kHz frequency response. At 139% that of conventional models^{※1}, it enables high-speed operation and improves productivity.

※1 Comparison with conventional product A5II Family



Reduced maintenance work

Lineup of motors protected by high dust-proof, high heat-resistant oil seal (With protective lip)

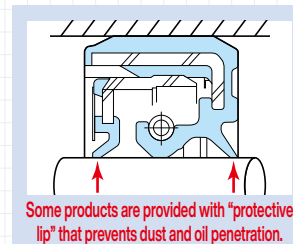
Motors protected by a highly dust-proof, oil-tight oil seal (with protection lip) have been added to the lineup of motor products equipped with oil seals of conventional specifications. The oil seals of this type of motor are made of a material of higher heat resistance.

You can select appropriate motor type according to your application environment such as dusty, powdery or gear connection necessity.

- Oil-seals (with protective lip) are not available for MSMF motors with flange size 80 mm or smaller.
- MQMF and MHMF motors with flange size of 80 mm or smaller provided with oil seals (with protective lip) are not mounting-compatible with A5 Family models.

Applicable oil seals

Flange size	Motor type	With oil seal		With oil seal (with protective lip)		
80 mm or less	MSMF	○	Made of nitrile rubber (NBR)	No setting		
	MHMF, MQMF	○		○	Made of fluororubber	Not mounting-compatible with A5 Family products
100 mm or more	All Type	○		○		Mounting-compatible with A5 Family products



and trouble.

MINAS A6 Family

IP67 enclosure rating (Motors with flange size of 80 mm or smaller are order-made products)

Direct-mount connectors are used for the motor power supply and encoder input and output to improve sealing performance of the motor to IP67.

- IP67-compatible motors with flange size of 80 mm or smaller are order-made products.
- For environmental conditions of applications, refer to P.303.

What is IP?

An international standard that specifies the degree of dustproof and waterproof performance. (IP: Ingress Protection)

IP-67	
6	Dust-tight type: Totally protected against dust penetration.
7	Protected against water penetration when immersed in water for the specified period of time and under the specified pressure.



Lifespan diagnosis / degradation diagnosis

It warns expected lifetime of the motor & driver, and deterioration limit of the equipment.

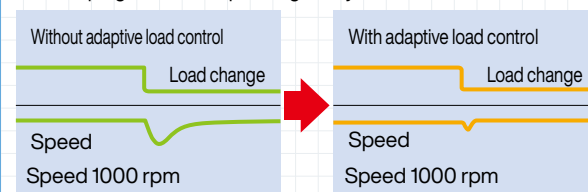
Geared servomotor

The geared servomotor lineup is also added.

Other driver functions

Adaptive load control

Adaptive load control automatically sets the best suitable gain table in response to fluctuations in inertia caused by changes in workload, thus keeping machines operating stably at all times.

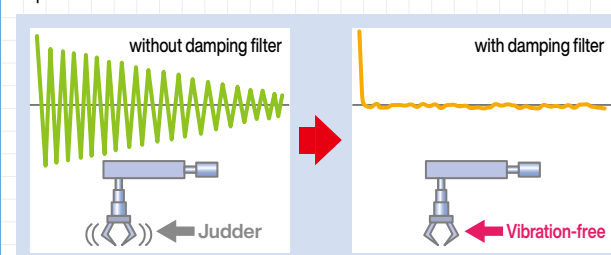


Friction torque compensation

This function reduces the effect of machine related friction and improves responsiveness. Three kinds of friction compensation can be set: unbalanced load compensation, which sets an offset torque that is constantly applied; kinetic friction compensation, which changes direction in response to the direction of movement; and viscous friction compensation, which changes according to the speed command.

Manual/Auto damping filter

Equipped with a damping filter that is automatically set through the setup support software. This filter removes the natural vibration frequency component from the command input, greatly reducing vibration of the axis when stopping. The number of filters for simultaneous use has been increased to three from the conventional two filters. (Two from one in the two-degree-of-freedom-control mode.) The adaptive frequency has also been significantly expanded from 0.5 Hz to 300 Hz.

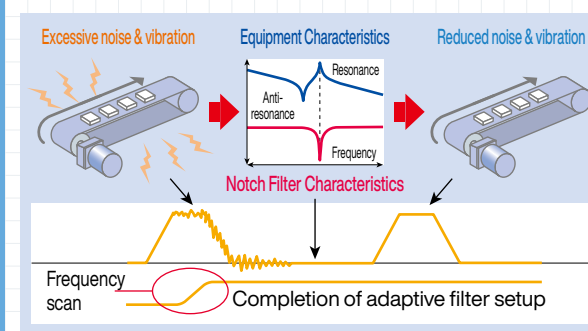


Manual/Auto notch filter

Equipped with auto-setting notch filters for greater convenience. Now there is no need to measure troublesome vibration frequencies.

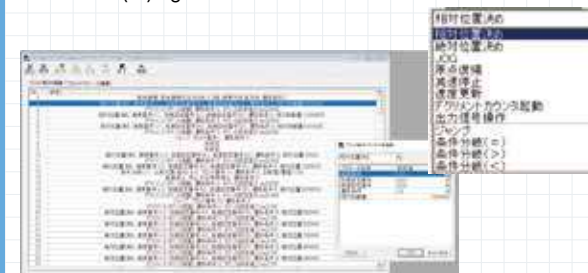
Our notch filters automatically detect vibration and provide simple auto-setting. These notch filters greatly reduce noise and vibration caused by equipment resonance and respond quickly.

The A6 Family is equipped with 5 notch filters with frequencies settable from 50 Hz to 5000 Hz. Depth can be individually adjusted within this range. (Two of the filters share automatic settings.)



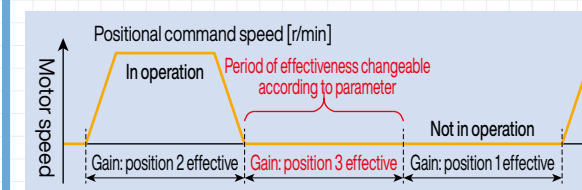
Block operation function

256 block patterns can be created. Easy control is possible because the instruction can be given to block No. by Modbus (RS232, RS485) or interface (IO) signal.



3-step gain

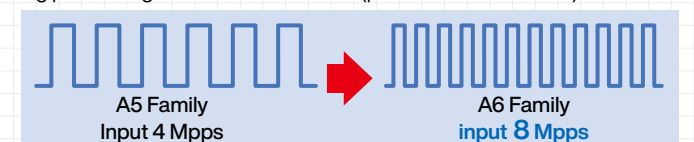
A 3-step gain switch is available in addition to the normal gain switch. This chooses appropriate gain tunings at both stopping and running. The 3-step gain switch gives you choices of 3 different tunings for normal running, stopping for faster positioning and at stopping. The right gaining tunings achieve lower vibration and quicker positioning time of your application.



Supports semi-/full-closed loop (8 Mpps input pulse, 4 Mpps output pulse) control.

Supports full-closed loop control. The A6SF series accommodates a command input of 8 Mpps and feedback output of 4 Mpps, enabling high-resolution, high-speed operation. Supports the industry's leading positioning resolution commands (pulse-train commands).

- The A6SE and A6SG series do not support full-closed loop control.
- Applicable scale: AB-phase feedback scale (general purpose product) and serial feedback scale (dedicated to Panasonic format product)



Dynamic braking

With parameter settings, you can select dynamic braking, which shorts servomotor windings U, V and W at Servo-OFF, during positive direction/ negative direction, and during power shutdown and tripping of the circuit breaker for over travel inhibition.

- The desired action sequence can be set up to accommodate your machine requirements.

Inrush current preventive function

This driver is equipped with a rush current preventive resistor to prevent the circuit breaker from shutting off the power supply as a result of inrush current occurring at power-on.

Inertia ratio conversion

You can adjust right inertia ratio by Inertia ratio conversion input (J-SEL) of interface. When you have significant load inertia changes, it can adjust unbalanced speed and position gain turning combination. It ends up quicker response of your system.

Input/output signal assignment

You can use the parameters to arbitrarily allocate the universal 10 inputs and 6 outputs. (Inputs can be selected as either A contacts or B contacts). The Panaterm setup software provides an exclusive screen for a more simplified setup.

Torque limiter switching

These can be used for applications such as simplified pressure, tension control, and sensor-less homing.

Parameter initialization

Using the front panel or by connecting a PC, you can restore the parameters to the factory settings.

Regenerative energy discharge

A regenerative resistor is used to discharge regenerative energy, which is the energy generated when stopping a load with a large moment of inertia or when using this unit in vertical operation. This energy is returned to the driver from the motor.

- Frame A, and frame B model drivers do not contain a regenerative resistor. Optional regenerative resistors are recommended.
- Frame C to frame F model drivers contain one regenerative resistor; however, adding an optional regenerative resistor provides additional regeneration capability.

Multifunctional software for quick adjustment support

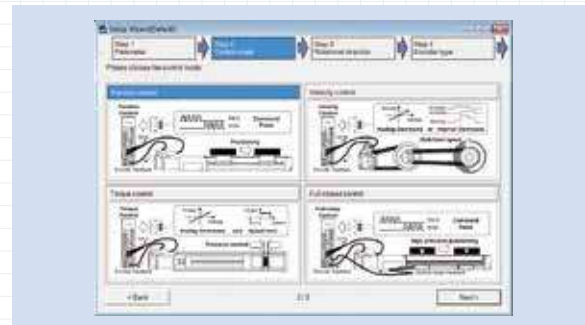
MINAS A6 Family

PANATERM set-up support software

The PANATERM set-up support software, with many added features. The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A6 Family through the USB interface. Choose either English, Japanese, Chinese, Korean-language display.

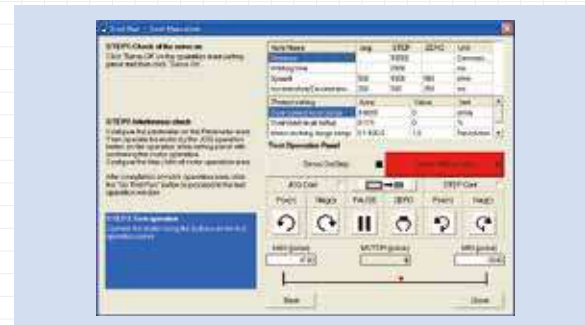
Setup wizard

This wizard supports fundamental settings in each control mode step by step, including reading of default setting. In On-line condition, Input data related to each step can be monitored in real time.



Trial run

This function supports positioning with the Z-phase search and software limit.



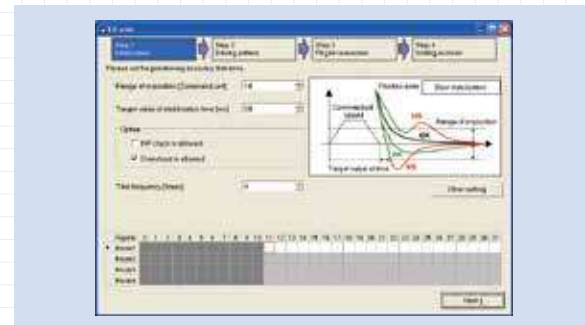
The fit gain function for setting Two-degree-of-freedom control.

- 1) Select the adjustment method
- 2) Load measurement
- 3) Confirming results Adjust gain to meet your needs



Fit gain

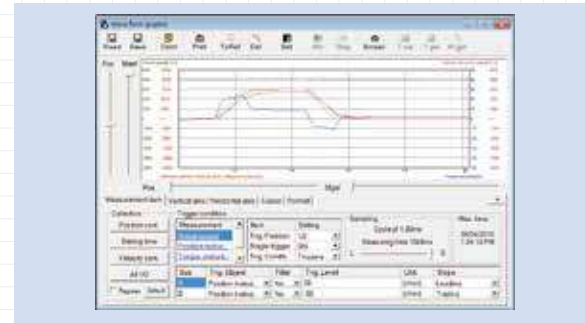
This function automatically searches the best suitable stiffness setting and mode and adjusts the gain once the target in-position range and setting time are set.



Added New screen for gain adjustment, equipped with stiffness oscillation auto-reduction function



Significant increase of measuring objects Multi-functional waveform graphic

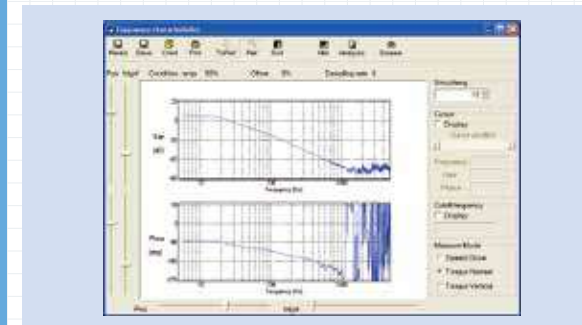


Please download from our web site and use after install to the PC.

<https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panaterm>

Frequency characteristics measurement function

Can check frequency response characteristics of the mechanism and motor. Since resonance frequency of the mechanism is measurable, it is effective for start-up time reduction.



Service Life Prediction

The service life prediction function considers the internal temperature for main components such as the fan and condenser. If the rated value is exceeded, an alarm is displayed. This approach prevents unexpected suspension of operation and allows for planning of systemized maintenance.

Note: The life span prediction value should be considered as a guide only.

Item	Value	Unit	Status
Power supply fan integrated time	3.0	h	
Driver temperature	34	degrees	
Number of times of inductive resistance	0	times	
Number of times of CB relay changing	0	times	
Fan operation time	0.0	h	
Fan life time integrated value	0.0	%	
Condenser life time integrated value	0.0	%	
Maker user	0		

Encoder temperature monitor

The Encoder Temperature Monitor is a new function capable of real-time measurement of the interior temperature of the encoder, something that has been difficult to achieve in the past. It is valuable for monitoring the motor and can be used as a diagnostic in the event of a malfunction.



Deterioration diagnosis

From the equipment information that can be detected by the motor, it is possible to display and check the deterioration and aging status of the equipment.



Other features It has convenient functions such as motor / driver information such as load factor, power supply voltage, driver temperature etc, logging function capable of recording interface recording, display function of non-rotating factors etc

● Deterioration diagnosis ● Block action editor / monitor (A6SE, A6SG, A6SF series) ● Battery refresh ● Object editor (A6BE, A6BF series)

Hardware configuration

Personal computer	CPU	800 MHz or more
	Memory	System memory 512 MB or more Graphics memory 32 MB or more
	Hard disk capacity	Vacancy of 512MB or more recommended
	OS	Windows® Vista SP1 (32 bit), Windows® 7 (32 bit, 64 bit), Windows® 8 (32 bit, 64 bit), Windows® 10 (32 bit, 64 bit) Japanese, English, Chinese (Simplified), Korean version
Display	Serial communication function	USB port, COM port (Communication speeds: 2400 bps to 115200 bps) * A COM port is required to use RS232C communications. A 9600 bps or higher baud rate is recommended.
	Resolution	1024 × 768 pix or more
	Number of colors	24 bit colors (TrueColor) or more

<CAUTION> This software is applicable only to A5 Family, A6 Family. To apply this software to A, AIII, E or A4 series, consult our distributors.

Lineup of two types of network

Realtime Express(RTEX)

Ultimate Real-time performance

- Com. period min. **0.0625 ms**
- Com. speed **100 Mbps** Full-duplex
- Velocity response **3200 Hz**

Functionality to meet various needs

- Precise position latch & comparing
- Infinitely rotatable absolute encoder
- IEC safety I/F model available ^{*1}

^{*1}: Multi-functional type F. IEC61800-5-2 STO, IEC61508 SIL3.

Simple network

- High-performance & Low-cost
- Isochronous established by ASIC
- Easy device development

RTEX
Realtime Express



Max
16000
times/s

MINAS A6N series

servo driver

EtherCAT

High-Performance

- Frequency response: **3200 Hz**
- Supports network communication "EtherCAT".
- High-Speed **100 Mbps**
- Real-time auto tuning function, Anti-vibration filters are available.

High-functions

- **EtherCAT** with many supported applications <7 control modes, 32 hm methods, DC(Synch), SM2(Synch), FreeRUN (Non-synch)>
- System-up possible with various slaves.
- Supports PC-based controller.
- A6BL/A6BM (for Linear Motor) will be available soon.

Standards

- Official EtherCAT Conformance Tested model available.
- IEC safety I/F model available. ^{*2}

^{*2}: Supported by multifunction type. EN61800-5-2 STO, EN61508 SIL3.

EtherCAT®



Small size
servo driver
with EtherCAT

MINAS A6B series Special order product

Absolute system can be configured without the battery.

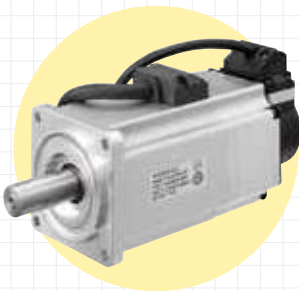
Battery-less absolute encoder motor

For details on the battery-less absolute encoder type, refer to the "MINAS A6 Family Battery-less Absolute Encoder Models" catalog.

Reduced the battery for the absolute encoder by installing the power generating element in the motor. In addition to improving maintainability, we support the construction of ecological and economical industrial machines and systems.

Maintenance work such as battery replacement is reduced because battery is not required anymore.

Reduce wasteful inventory management and replacement costs as battery is no required anymore. It contributes to the construction of ecological and economical industrial machines and systems.



Compliance with MINAS A6 Family international standards



		Driver	Motor
EU/UK Standards	EU EMC Directives/ UK EMC Regulation	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3	—
	EU Low Voltage Directives/ UK Low Voltage Regulation	EN61800-5-1	EN60034-1 EN60034-5
	Machinery (Functional safety *)	EN ISO13849-1 EN61508 EN IEC62061 EN61800-5-2	—
UL Standards		UL61800-5-1 (E164620)	UL1004-1, UL 1004-6 (E327868)
CSA Standards		C22.2 No.274	C22.2 No.100
Radio Waves Act (South Korea) (KC) **		KN11 KN61000-4-2,3,4,5,6,8,11	—

IEC : International Electrotechnical Commission
UL : Underwriters Laboratories
EN : Europaischen Normen
CSA : Canadian Standards Association
EMC : Electromagnetic Compatibility

Safety parameter

	Diagnosis based on EDM	No diagnosis based on EDM
Safety Integrity Level	EN61508 (SIL3) EN IEC62061 (maximum SIL 3)	EN61508 (SIL2) EN IEC62061 (maximum SIL 2)
Performance level	EN ISO13849-1 (PLd, Cat.3)	EN ISO13849-1 (PLd, Cat.3)
Safety function	EN61800-5-2 (SIL 3, STO)	EN61800-5-2 (SIL 2, STO)
Hazardous failure probability per hour	<For size A,B,C,D,E,F> PFH = 1.34 × 10 ⁻⁸ (% SIL3 = 13.4 %) <For size G and H> PFH = 1.78 × 10 ⁻⁸ (% SIL3 = 17.8 %)	<For size A,B,C,D,E,F> PFH = 1.40 × 10 ⁻⁸ (% SIL2 = 1.40 %) <For size G and H> PFH = 1.85 × 10 ⁻⁸ (% SIL2 = 1.85 %)
Average time of hazardous failure	MTTFd : High (100 years)	MTTFd : High (100 years)
Average self-diagnosis rate	DC : Medium	DC : Low
Task time	15 years	15 years

* When export this product, follow statutory provisions of the destination country.
*1 A6SE, A6SG, A6NE and A6BE series doesn't correspond to the functional safety standard.
*2 Information related to the Korea Radio Law
This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use.
The user and dealer should be aware of this fact.

A 급 기기 (업무용 방송통신기자재)
이 기기는 업무용(A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
(대상기종 : Servo Driver)

This products is not an object of china compulsory certification (CCC).

Low noise, compliant with EU EMC Directives/UK EMC Regulation

Radiated noise is minimized to meet EU EMC Directives/UK EMC Regulation and to support international standards.

Compliance with EU safety standards.

Features non-software-based independent redundant circuitry for motor power isolation. Independent redundant circuitry for motor power isolation. This obviates the need for magnetic contactors to isolate the required motor in order to accommodate EU Low Voltage Directives/UK Low Voltage Regulation machinery commands. (The final safety compliance must be applied as machine.)

SEMI-F47

Includes a function in compliance with the SEMI F47 standard for voltage sag immunity under no load or light load. Ideal for the semiconductor and LCD industries.
• Excluding the single-phase 100-V type.
• Please verify the actual compliance with your machine checking the F47 standard for voltage sag immunity.

Battery-less absolute encoder motor list

	80 mm sq. or less Leadwire type						100 mm sq. or more Encoder connector (Small size JN2) type					
	50 W	100 W	200 W	400 W	750 W	1000 W	1.0 kW	1.5 kW	2.0 kW	3.0 kW	4.0 kW	5.0 kW
Low inertia MSMF	100 V 200 V	100 V 200 V	100 V 200 V	100 V 200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V
Middle inertia MQMF		100 V 200 V	100 V 200 V	100 V 200 V								
Middle inertia MDMF	Table description Voltage specifications 100 V 200 V						200 V	200 V	200 V	200 V	200 V	200 V
Middle inertia MGMF							850 W 200 V	1.3 kW 200 V	1.8 kW 200 V	2.4 kW 200 V	2.9 kW 200 V	4.4 kW 200 V
High inertia MHMF	100 V 200 V	100 V 200 V	100 V 200 V	100 V 200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V	200 V

<Information> "MINAS A6 Family 400 V Series" catalog is available separately.
For more information, please visit our website or request to our distributors separately.

MINAS A6 Series

Motor Line-up

Motor Line-up For details on the battery-less absolute encoder type, refer to the "MINAS A6 Family Battery-less Absolute Encoder Models" catalog.

Motor			Rated output (kW)		Rated rotational speed (Max. speed) (r/min)	Rotary encoder 23-bit absolute	Enclosure (*1)	Motor lead-out configuration	Features	Applications	
Low inertia	MSMF		0.05	0.1	3000 (6000)	○	IP65	Leadwire	· Small capacity · Suitable for high speed application · Suitable for all applications	· Bonder · Semiconductor production equipment · Packing machines etc	
		0.2	0.4								
		0.75	1.0								
			0.05	0.1	3000 (6000)	○	IP67	Connector			
		0.2	0.4								
		0.75	1.0								
			1.0	1.5	3000 (5000)	○	IP67	Connector	· Middle capacity · Suitable for the machines directly coupled with ball screw and high stiffness and high repetitive application	· SMT machines · Food machines · LCD production equipment etc	
			2.0	3.0							
			4.0	5.0	3000 (4500)						
Middle inertia	MQMF (Flat type)		0.1	0.2	3000 (6500)	○	IP65	Leadwire	· Small capacity · Flat type and suitable for low stiffness machines with belt driven · Motors with gear reducers are also available. (See. P.293)	· SMT machines · Inserter machines · Belt drive machines · unloading robot	
		0.4									
			0.1	0.2	3000 (6500)	○	IP67	Connector			
		0.4									
	MDMF		1.0	1.5	2000 (3000)	○	IP67 (22.0 kW : IP44)	Connector (22.0 kW : Terminal)	· Middle capacity · Suitable for low stiffness machines with belt driven	· Conveyors · Robots · Machine tool etc	
			2.0	3.0							
			4.0	5.0							
			7.5	1500 (3000)							
			11.0		15.0						1500 (2000)
			22.0								
	MGMF (Low speed/High torque type)		0.85	1.3	1500 (3000)	○	IP67	Connector	· Middle capacity · Suitable for low speed and high torque application	· Conveyors · Robots · Textile machines etc	
			1.8	2.4							
			2.9	4.4							
			5.5								
High inertia	MHMF		0.05	0.1	3000 (6500)	○	IP65	Leadwire	· Small capacity · Suitable for low stiffness machines with belt driven · Motors with gear reducers are also available. (See. P.293)	· Conveyors · Robots etc	
			0.2	0.4							
			0.75	1.0							
			0.05	0.1	3000 (6500)	○	IP67	Connector			
			0.2	0.4							
			0.75	1.0							
			1.0	1.5	2000 (3000)	○	IP67	Connector	· Middle capacity · Suitable for low stiffness machines with belt driven, and large load moment of inertia	· Conveyors · Robots · LCD manufacturing equipment etc	
			2.0	3.0							
			4.0	5.0							
			7.5	1500 (3000)							

(*1) Please refer to P.303 for protection class conditions.

* For possible combinations of motors and drivers, see P.29 to P.42.

- When using a rotary encoder as an absolute system (using multi-turn data), connect a battery to the absolute encoder.
- When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

MINAS A6 Series

Model Designation

Refer to P.29 to P.42 for motor and driver combinations. * For combination of elements of model number, refer to Index P.411.

■ **Servo Motor** "Oil seal with protective lip" option is not available for motors above 7.5 kW.

M S M F 5 A Z L 1 A 1 * Special specifications

① Type

Symbol	Type
MSM	Low inertia (50 W to 5.0 kW)
MQM	Middle inertia (100 W to 400 W)
MDM	Middle inertia (10 kW to 22.0 kW)
MGM	Middle inertia (0.85 kW to 5.5 kW)
MHM	High inertia (50 W to 7.5 kW)

② Series

Symbol	Series name
F	A6 Family

③ Motor rated output

Symbol	Rated output	Symbol	Rated output	Symbol	Rated output
5A	50 W	13	1.3 kW	44	4.4 kW
01	100 W	15	1.5 kW	50	5.0 kW
02	200 W	18	1.8 kW	55	5.5 kW
04	400 W	20	2.0 kW	75	7.5 kW
08	750 W	24	2.4 kW	C1	11.0 kW
09	0.85 kW, 1000 W (130 mm sq.)	29	2.9 kW	C5	15.0 kW
		30	3.0 kW	D2	22.0 kW
10	1.0 kW	40	4.0 kW		

④ Voltage specifications

Symbol	Specifications
1	100 V
2	200 V
Z	100 V/200 V common (50 W only)

⑥ Design order

Symbol	Specifications
1	Standard

<Note>

When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

⑤ Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

⑦ Motor specifications: IP67 *2 100 mm sq. to 220 mm sq. MSMF, MHMF, MDMF, MGMF

Symbol	Shaft		Holding brake		Oil seal		Encoder terminal *1	
	Round	Key-way, center tap	without	with	with	With protective lip	Connector JN2 (Small size)	Connector JL10 (Large size) *3
C 5	●		●		●		●	●
C 6	●		●		●		●	●
C 7	●		●		●		●	●
C 8	●		●		●		●	●
D 5	●			●	●		●	●
D 6	●			●	●		●	●
D 7	●			●	●		●	●
D 8	●			●	●		●	●
G 5		●	●		●		●	●
G 6		●	●		●		●	●
G 7		●	●		●		●	●
G 8		●	●		●		●	●
H 5		●		●	●		●	●
H 6		●		●	●		●	●
H 7		●		●	●		●	●
H 8		●		●	●		●	●

■ **Servo Driver** "Basic" and "RS485 communication" types are not available for G-Frame and H-Frame drivers.

M A D L N 1 5 S E * * * Special specifications

① Frame symbol

Symbol	Frame	Symbol	Frame
MAD	A-Frame	MED	E-Frame
MBD	B-Frame	MFD	F-Frame
MCD	C-Frame	MGD	G-Frame
MDD	D-Frame	MHD	H-Frame

② Series

Symbol	Series name
L	A6 Family

③ Safety Function *4

Symbol	Specifications
N	without the safety function
T	with the safety function

④ Max. current rating

Symbol	Current rating	Symbol	Current rating
0	6 A	9	80 A
1	8 A	A	100 A
2	12 A	B	120 A
3	22 A	C	160 A
4	24 A	E	240 A
5	40 A	F	360 A
8	60 A		

⑤ Supply voltage specifications

Symbol	Specifications
1	Single phase 100 V
3	3-phase 200 V
5	Single/3-phase 200 V

⑥ I/f specifications

Symbol (specification)	Symbol	Specification
S (Analog/Pulse)	E	Basic type (Pulse train only)
	F	Multi function type (Pulse, analog, full-closed)
	G	RS485 communication type (Pulse train only)

⑦ Classification of type *4

*4 Position control type "E" and general communication type "G" do not have a safety function.

<A6SF Series (Driver: A-frame Motor: 200 W)>

Wiring of Main Connector

Connection to input power

Circuit Breaker (MCCB)
(to be supplied by customer)

Noise Filter (NF)
(optional)

Magnetic Contactor (MC)
(to be supplied by customer)

Reactor (L)
(optional)

Charge lamp

Lights while the main power is ON.

External regenerative resistor
(optional)

A short wire is not required for A-frame and B-frame.
For handling and wiring in case of using external regenerative resistor, please refer to P.47.

Use this cable only for a motor with brake.

The power supply for the motor brake and connectors X1, X2, X3, X4, X5, X6 must be insulated. Do not connect to the same power supply.

Front Panel

Indicates parameters and errors

Display LED
Mode switching button
Data setting button
SET Button

X1 Connection to PC
USB mini-B cable
(to be supplied by customer)

Setup support software "PANATERM" Please download from our web site.

X2 Connection to RS232, RS485 or host controller (optional)
Communication with host controller
(X2 connector is not installed on A6 SE series.)

X3 Connection to Safety by-pass plug (accessory)
Use this connection when not configuring a safety circuit.
(X3 connector is not installed on A6 SE, A6 SG series.)

X4 Connection to host controller
50-pin for I/O signals

Interface cable
(optional)

X5 Connection to external scale
Connect to external device, e.g. feedback scale
(X5 connector is not installed on A6 SE, A6 SG series.)

X6 Connection to encoder
Encoder cable dedicated to a specific model is available as option.

Encoder cable
(optional)

Brake cable
(optional)

DC Power supply for brake DC24 V
(to be supplied by customer)

Encoder cable
(optional)

Motor

Terminal block type

Frames F is terminal block type. Terminate the cable or connect it to the terminal block.
(Photo: F-frame)



<A6SG Series/ A6SE Series (Driver: D-frame Motor: 1.0 kW)>

Wiring of Main Connector

Connection to input power

Circuit Breaker (MCCB)
(to be supplied by customer)

Noise Filter (NF)
(optional)

Magnetic Contactor (MC)
(to be supplied by customer)

Reactor (L)
(optional)

Charge lamp

Lights while the main power is ON.

External regenerative resistor
(optional)

Short wire (accessory)
For handling and wiring in case of using external regenerative resistor, please refer to P.48.

Use this cable only for a motor with brake.

The power supply for the motor brake and connectors X1, X2, X3, X4, X5, X6 must be insulated. Do not connect to the same power supply.

Front Panel

Indicates parameters and errors

Display LED
Mode switching button
Data setting button
SET Button

X1 Connection to PC
USB mini-B cable
(to be supplied by customer)

Setup support software "PANATERM" Please download from our web site.

X2 Connection to RS232, RS485 or host controller (optional)
Communication with host controller
(X2 connector is not installed on A6 SE series.)

X4 Connection to host controller
50-pin for I/O signals

Interface cable
(optional)

X6 Connection to encoder
Encoder cable dedicated to a specific model is available as option.

Motor cable
(optional)

Brake cable
(optional)

DC Power supply for brake DC24 V
(to be supplied by customer)

Encoder cable
(optional)

Motor

Terminal block type

Frames F is terminal block type. Terminate the cable or connect it to the terminal block.
(Photo: F-frame)



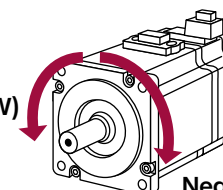
<Caution>

Apply adequate tightening torque to the product mounting screw by taking into consideration strength of the screw and the characteristics of material to which the product is installed. Overtightening can damage the screw and/or material; undertightening can result in loosening.

<Note>

Initial setup of rotational direction:
positive = CCW and negative = CW.
Pay an extra attention.

Positive direction (CCW)

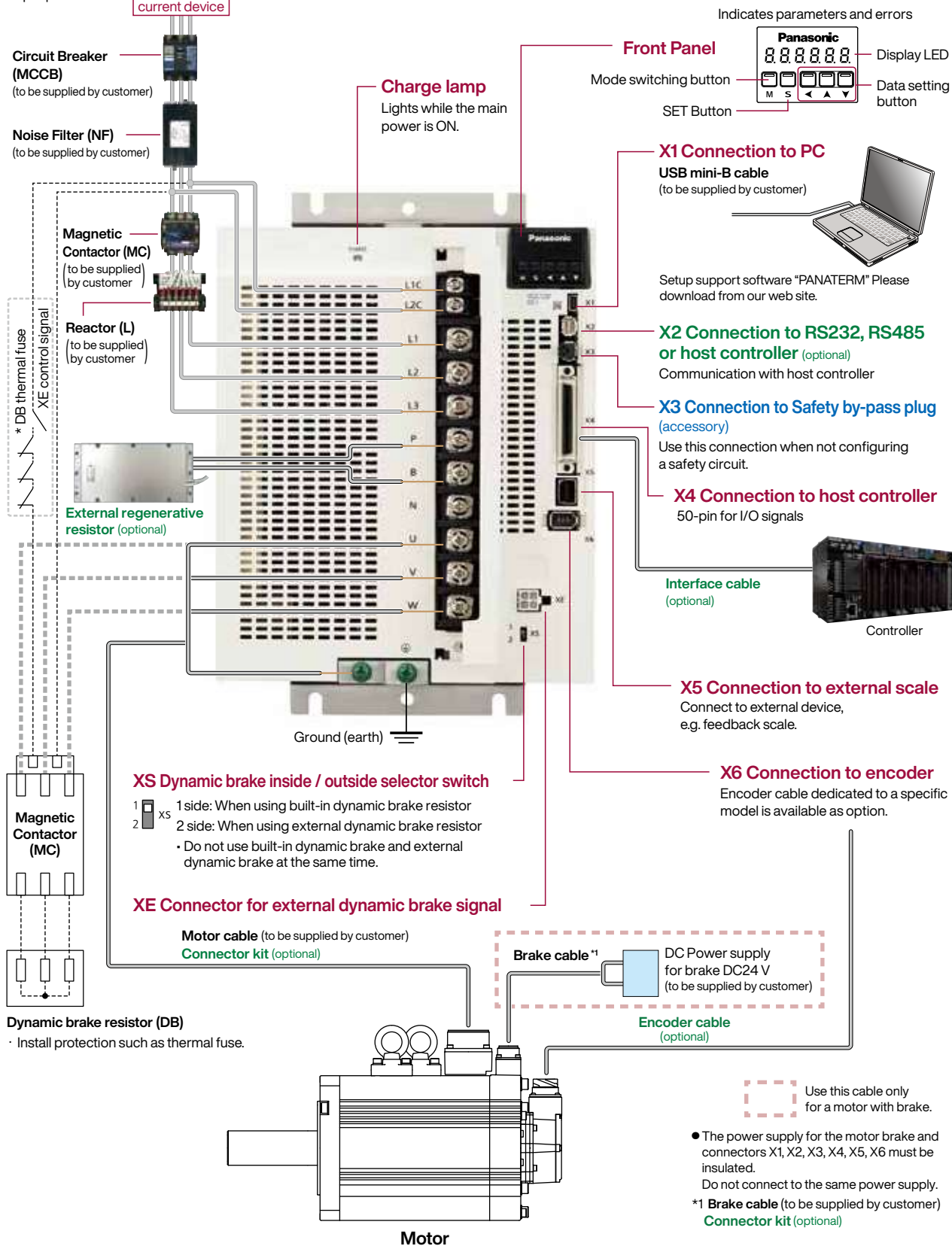


Negative direction (CW)

<A6SF Series (Driver: G-frame Motor: 7.5 kW)>

Wiring of Main Connector

Connection to input power

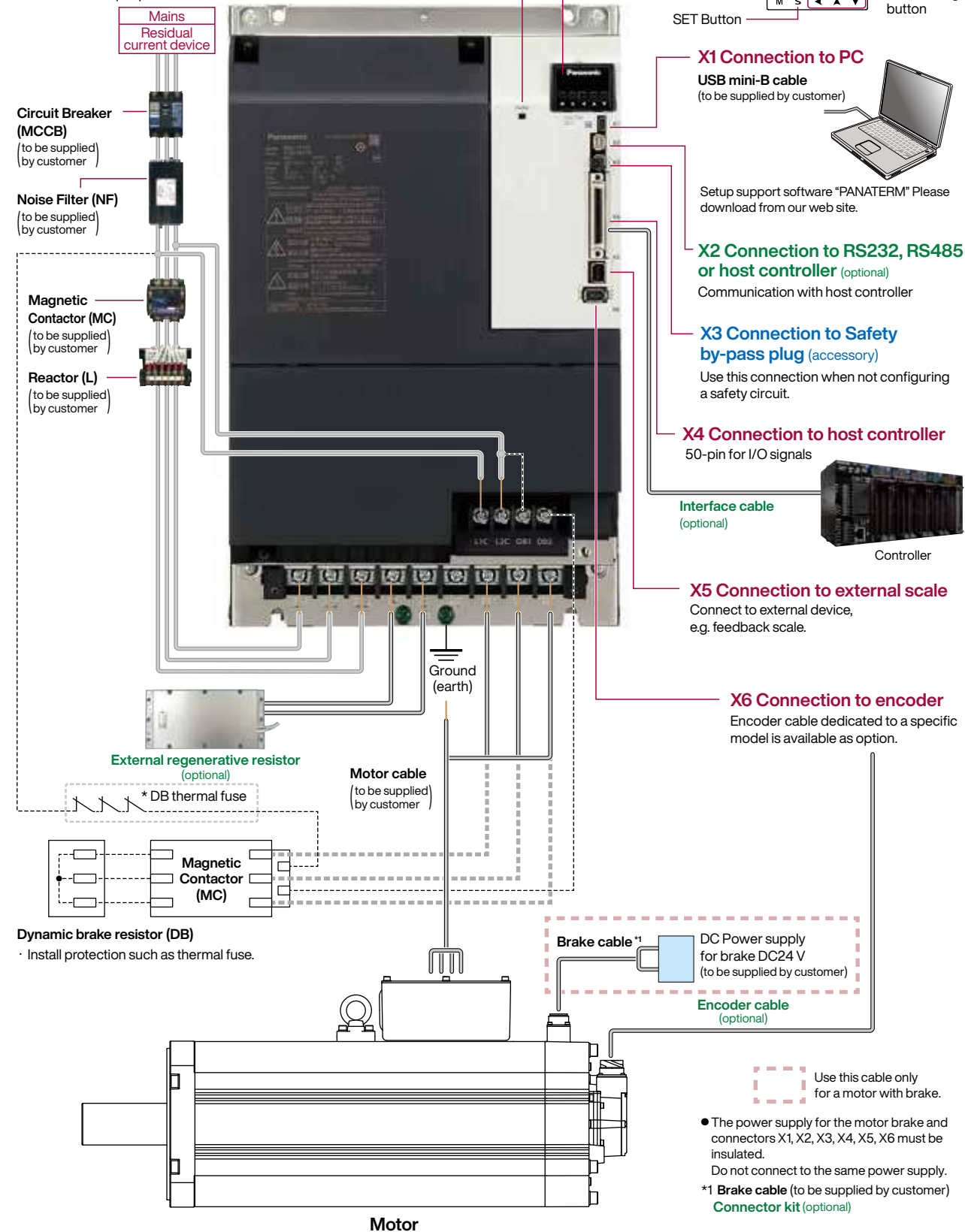


<Caution> Apply adequate tightening torque to the product mounting screw by taking into consideration strength of the screw and the characteristics of material to which the product is installed. Overtightening can damage the screw and/or material; undertightening can result in loosening.

<A6SF Series (Driver: H-frame Motor: 22.0 kW)>

Wiring of Main Connector

Connection to input power



<Note> Initial setup of rotational direction: positive = CCW and negative = CW. Pay an extra attention.

Driver	Applicable motor	Voltage (V) *1	Rated output (kW)	Required Power at the (rated load) (kVA)	Circuit breaker (rated current) (A)	Noise filter (Single phase 3-phase)	Surge absorber (Single phase 3-phase)	Ferrite core	Rated operating current of magnetic contactor (configuration) *2	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *3	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *4	Diameter and withstand voltage of brake cable															
MADL	MSMF MHMF MSMF MQMF MHMF	Single phase, 100	0.05	approx. 0.4	10	DV0P4170	DV0P4190	20 A (3P+1a)	2.0 mm ² / AWG14 600 VAC or more to 2.0 mm ² / AWG14 600 VAC or more	0.75 mm ² / AWG18 600 VAC or more to 2.0 mm ² / AWG14 600 VAC or more	Connection to exclusive connector	0.75 mm ² / AWG18 600 VAC or more to 2.0 mm ² / AWG14 600 VAC or more	Connection to exclusive connector	0.75 mm ² / AWG18 600 VAC or more to 2.0 mm ² / AWG14 600 VAC or more	0.28 mm ² to 0.75 mm ² / AWG22 to AWG18 100 VAC or more															
			0.1													DV0P4170 DV0PM20042	DV0P4190 DV0P1450													
		Single/ 3-phase 200	0.05	approx. 0.5														DV0P4170 DV0PM20042	DV0P4190 DV0P1450											
			0.1, 0.2																											
MBDL	MSMF MQMF MHMF	Single phase, 100	0.2	approx. 0.9		DV0P4170 DV0PM20042	DV0P4190 DV0P1450									30 A (3P+1a)	2.0 mm ² / AWG14 600 VAC or more to 3.5 mm ² / AWG12 600 VAC or more	3.5 mm ² / AWG12 600 VAC or more	11 mm or smaller Terminal block M5	0.75 mm ² / AWG18 600 VAC or more	11 mm or smaller Terminal block M5	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more							
		Single/ 3-phase 200	0.4																					approx. 2.6						
MCDL	MSMF MQMF MHMF	Single phase, 100	0.4	approx. 0.9		DV0PM20042	DV0P4190 DV0P1450																		60 A (3P+1a)	2.0 mm ² / AWG14 600 VAC or more to 3.5 mm ² / AWG12 600 VAC or more	11 mm or smaller Terminal block M5	0.75 mm ² / AWG18 600 VAC or more	11 mm or smaller Terminal block M5	3.5 mm ² / AWG12 600 VAC or more
		Single/ 3-phase 200	0.75																					approx. 1.8						
MDDL	MGMF MSMF MDMF MHMF MSMF MGMF MSMF MDMF MHMF	Single/ 3-phase 200	0.85	approx. 2.0	20	DV0P4220	DV0P4190 DV0P1450	30 A (3P+1a)	2.0 mm ² / AWG14 600 VAC or more to 3.5 mm ² / AWG12 600 VAC or more	3.5 mm ² / AWG12 600 VAC or more	11 mm or smaller Terminal block M5	0.75 mm ² / AWG18 600 VAC or more	11 mm or smaller Terminal block M5	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more															
			1.0 (80 mm sq.)																					approx. 2.4						
			1.0	approx. 2.6																										
			1.0 (80 mm sq.)																					approx. 2.9						
			1.0	approx. 2.9																										
			1.3													approx. 2.9														
			1.5	approx. 2.9																										
MEDL	MGMF MSMF MDMF MHMF	3-phase 200	1.8		approx. 3.4	30	DV0PM20043	DV0P1450	60 A (3P+1a)	2.0 mm ² / AWG14 600 VAC or more to 3.5 mm ² / AWG12 600 VAC or more	3.5 mm ² / AWG12 600 VAC or more	11 mm or smaller Terminal block M5	0.75 mm ² / AWG18 600 VAC or more	11 mm or smaller Terminal block M5	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more														
			2.0	approx. 3.8																										
			2.4														approx. 4.5													
MFDL	MGMF MSMF MDMF MHMF MSMF MDMF MHMF	3-phase 200	2.9	approx. 5.0	50	DV0P3410	DV0P1450	100 A (3P+1a)	3.5 mm ² / AWG12 600 VAC or more	11 mm or smaller Terminal block M5	0.75 mm ² / AWG18 600 VAC or more	11 mm or smaller Terminal block M5	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more																
			3.0												approx. 5.2															
			4.0	approx. 7.8																										
			4.4												approx. 7.0															
			5.0	approx. 7.8																										
MGDL	MGMF MDMF MHMF	3-phase 200	5.5		approx. 8.5	60	HF3080C-SZA (Recommended components)	DV0P1450	100 A (3P+1a)	8.0 mm ² / AWG8 600 VAC or more	16 mm or smaller Terminal block M6	0.75 mm ² / AWG18 600 VAC or more	16 mm or smaller Terminal block M6	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more															
			7.5	approx. 11																										
MHDL	MDMF	3-phase 200	11.0	approx. 20	125	HF3100C-SZA (Recommended components)	DV0P1450	*5	150 A (3P+1a)	22 mm ² / AWG4 600 VAC or more	16 mm or smaller Terminal block M6	0.75 mm ² / AWG18 600 VAC or more	16 mm or smaller Terminal block M6	3.5 mm ² / AWG12 600 VAC or more	0.75 mm ² / AWG18 100 VAC or more															
			15.0													approx. 28														
			22.0		175																									

*1 Select peripheral devices for single/3phase common specification according to the power source.
*2 The magnetic contactor used for the external dynamic brake resistor should have the same rating as the magnetic contactor used for the main circuit.
*3 For the ground screw, use the same crimp terminal as that for the main circuit terminal block.
*4 The thickness of the grounding wire and the thickness of the external dynamic brake resistor should be the same as or larger than the thickness of the motor wire.
*5 Please use all to comply with international standards.
*6 22.0 kW The connection of the motor power line is a terminal block. In order to comply with the CSA standard, it is necessary to use a CSA standard-certified power wire round terminal.

- **Related page**
Noise filterP.382 “Composition of Peripheral Devices”
Surge absorberP.383 “Composition of Peripheral Devices”
Ferrite coreP.384 “Composition of Peripheral Devices”
Motor/brake connectorP.307 “Specifications of Motor connector”

- **About circuit breaker and magnetic contactor**
To comply to EU Directives/UK Regulation, install a circuit breaker between the power and the noise filter without fail, and the circuit breaker should conform to IEC Standards and UL recognized (Listed and  marked).
Suitable for use on a circuit capable of delivering not more than 5000 Arms symmetrical amperes, below the maximum input voltage of the product.
If the short-circuit current of the power supply exceeds this value, install a current limit device (current limiting fuse, current limiting circuit breaker, transformer, etc.) to limit the short-circuit current.

- **<Caution>**
· Select a circuit breaker and noise filter which match to the capacity of power supply (including a load condition).

- **Terminal block and protective earth terminals**
· Use a copper conductor cables with temperature rating of 75 or higher.
· Use the attached exclusive connector for A-frame to E-frame, and maintain the peeled off length of 8 mm to 9 mm.

■ **Fastening torque list (Terminal block screw/Terminal cover fastening screw)**

Driver		Terminal block screw		Terminal cover fastening screw	
Frame	Terminal name	Nominal size	Fastening torque (N·m) ^{Note)1}	Nominal size	Fastening torque (N·m) ^{Note)1}
MFDL	L1, L2, L3, L1C, L2C, P, RB, B, N, U, V, W	M5	1.8 to 2.0	M3	0.19 to 0.21
MGDL	L1C, L2C	M3	0.4 to 0.6	M3	0.19 to 0.21
	L1, L2, L3, P, B, N, U, V, W	M5	2.0 to 2.4		
MHDL	L1C, L2C, DB1, DB2	M4	0.7 to 1.0	M5	2.0 to 2.5
	L1, L2, L3, P, B, N, U, V, W	M6	2.2 to 2.5	M3	0.19 to 0.21

■ **Fastening torque list (Ground terminal screw/Connector to host controller [X4])**

Driver frame	Ground screw		Connector to host controller (X4)	
	Nominal size	Fastening torque (N·m) ^{Note)1}	Nominal size	Fastening torque (N·m) ^{Note)1}
MADL, MBDL, MCDL, MDDL, MEDL	M4	1.0 to 1.2	M2.6	0.2±0.05
MFDL, MGDL	M5	1.8 to 2.0		
MHDL	M6	2.4 to 2.6		

■ **Motor: Fastening torque**

Motor	U, V, W terminal Ground terminal screw		Terminal box cover fastening screw	
	Nominal size	Fastening torque (N·m) ^{Note)1}	Nominal size	Fastening torque (N·m) ^{Note)1}
MDMF 22.0 kW		M8 12.0	M5	4.4

- Note)1 **<Caution>**
- Applying fastening torque larger than the maximum value may result in damage to the product.
 - Do not turn on power without tightening all terminal block screws properly, otherwise, loose contacts may generate heat (smoking, firing).

- **<Remarks>**
· To check for looseness, conduct periodic inspection of fastening torque once a year.

Motor										Driver			Power capacity (at rated load) (kVA)		Optional parts ▶ refer to P.306							
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3			External Regenerative Resistor	Reactor (Single phase 3-phase	Noise Filter (Single phase 3-phase					
								23-bit Absolute		without Brake	with Brake											
								Use in the absolute system (with battery box) Note)5	Use in the Incremental system (without battery box)													
																		Fixed cable		Movable cable		Movable cable
Low inertia	MSMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	50	MSMF5AZL1 □ 2	63, 119	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4280	DV0P227	DV0P4170						
			100	MSMF011L1 □ 2	65, 120	MADLT11SF	MADLN11S◇							DV0P4283	DV0P228		DV0PM20042					
			200	MSMF021L1 □ 2	67, 121	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5					DV0P4282								
			400	MSMF041L1 □ 2	69, 123	MCDLT31SF	MCDLN31S◇							C-frame	Approx. 0.9							
		Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 2	64, 119	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5							DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042				
			100	MSMF012L1 □ 2	66, 120	MADLT05SF	MADLN05S◇															
			200	MSMF022L1 □ 2	68, 121	MADLT15SF	MADLN15S◇	B-frame ★	Approx. 0.9					DV0P4283	DV0P228 DV0P220	DV0PM20042						
			400	MSMF042L1 □ 2	70, 123	MBDLT25SF	MBDLN25S◇								C-frame		Approx. 1.8					
			750	MSMF082L1 □ 2	71, 124	MCDLT35SF	MCDLN35S◇	D-frame	Approx. 2.4					DV0P4284		DV0P228 DV0P222		DV0P4220				
			1000	MSMF092L1 □ 2	72, 125	MDDLT45SF	MDDLN45S◇															
Middle inertia Flat type	MQMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	100	MQMF011L1 □ 2 MQMF011L1 □ 4	79, 135	MADLT11SF	MADLN11S◇	A-frame ★	Approx. 0.4	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4280	DV0P227	DV0P4170						
			200	MQMF021L1 □ 2 MQMF021L1 □ 4	81, 139	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5					DV0P4283	DV0P228		DV0PM20042					
			400	MQMF041L1 □ 2 MQMF041L1 □ 4	83, 143	MCDLT31SF	MCDLN31S◇							C-frame		Approx. 0.9		DV0P4282				
		Single phase/ 3-phase 200 V	100	MQMF012L1 □ 2 MQMF012L1 □ 4	80, 135	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5						DV0P4281		DV0P227 DV0P220	DV0P4170 DV0PM20042				
			200	MQMF022L1 □ 2 MQMF022L1 □ 4	82, 139	MADLT15SF	MADLN15S◇															
			400	MQMF042L1 □ 2 MQMF042L1 □ 4	84, 143	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9					DV0P4283	DV0P228 DV0P220							
		High inertia	MHMF (Leadwire type) 3000 r/min IP65	Single phase 100 V	50	MHMF5AZL1 □ 2 MHMF5AZL1 □ 4	85, 147	MADLT01SF	MADLN01S◇					A-frame ★	Approx. 0.4	MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4280	DV0P227	DV0P4170
					100	MHMF011L1 □ 2 MHMF011L1 □ 4	87, 151	MADLT11SF	MADLN11S◇											DV0P4283	DV0P228	
					200	MHMF021L1 □ 2 MHMF021L1 □ 4	89, 155	MBDLT21SF	MBDLN21S◇					B-frame ★	Approx. 0.5					DV0P4282		
400	MHMF041L1 □ 2 MHMF041L1 □ 4				91, 159	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9													
Single phase/ 3-phase 200 V	50			MHMF5AZL1 □ 2 MHMF5AZL1 □ 4	86, 147	MADLT05SF	MADLN05S◇			A-frame ★	Approx. 0.5	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042								
	100			MHMF012L1 □ 2 MHMF012L1 □ 4	88, 151	MADLT05SF	MADLN05S◇															
	200			MHMF022L1 □ 2 MHMF022L1 □ 4	90, 155	MADLT15SF	MADLN15S◇	B-frame ★	Approx. 0.9	DV0P4283	DV0P228 DV0P220	DV0PM20042										
	400			MHMF042L1 □ 2 MHMF042L1 □ 4	92, 159	MBDLT25SF	MBDLN25S◇				C-frame		Approx. 1.8									
	750			MHMF082L1 □ 2 MHMF082L1 □ 4	93, 163	MCDLT35SF	MCDLN35S◇	D-frame	Approx. 2.4	DV0P4284		DV0P228 DV0P222		DV0P4220								
	1000			MHMF092L1 □ 2 MHMF092L1 □ 4	94, 167	MDDLT55SF	MDDLN55S◇															

★ : Frame-A and B drivers are not equipped with regenerative resistors.When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EAE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)6 Brake cable and motor cables are required for the motors with brake.

Motor										Driver			Power capacity (at rated load) (kVA)		Optional parts ▶ refer to P.306																				
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)5	Frame	Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3			External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)																		
								23-bit Absolute		without Brake	with Brake																								
								Use in the absolute system (with battery box) Note)6	Use in the Incremental system (without battery box)																										
Low inertia	MSMF (Connector type) 3000 r/min IP67	Single phase 100 V	50	MSMF5AZL1 □ 1	63, 119	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4																										
			100	MSMF011L1 □ 1	65, 121	MADLT11SF	MADLN11S◇																												
			200	MSMF021L1 □ 1	67, 122	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5										MFECA 0 * * 0MJJE (For movable, direction of motor shaft)	MFECA 0 * * 0MJJD (For movable, direction of motor shaft)	MFMCA 0 * * 0NJJD (For movable, direction of motor shaft)	MFMCB 0 * * 0PJJT (For movable, direction of motor shaft)	DV0P4280	DV0P227	DV0P4170										
			400	MSMF041L1 □ 1	69, 123	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9														DV0P4283	DV0P228		DV0PM20042									
		Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 1	64, 119	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5										MFECA 0 * * 0MKE (For movable, opposite direction of motor shaft)	MFECA 0 * * 0MKD (For movable, opposite direction of motor shaft)	MFMCA 0 * * 0NKD (For movable, opposite direction of motor shaft)	MFMCB 0 * * 0PKT (For movable, opposite direction of motor shaft)	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042										
			100	MSMF012L1 □ 1	66, 121	MADLT05SF	MADLN05S◇																												
			200	MSMF022L1 □ 1	68, 122	MADLT15SF	MADLN15S◇																			B-frame ★	Approx. 0.9	MFECA 0 * * 0TJE (For fixed, direction of motor shaft)	MFECA 0 * * 0TJD (For fixed, direction of motor shaft)	MFMCA 0 * * 0RJJD (For fixed, direction of motor shaft)	MFMCB 0 * * 0SJT (For fixed, direction of motor shaft)				
			400	MSMF042L1 □ 1	70, 123	MBDLT25SF	MBDLN25S◇	C-frame	Approx. 1.8														MFECA 0 * * 0TKE (For fixed, opposite direction of motor shaft)	MFECA 0 * * 0TKD (For fixed, opposite direction of motor shaft)	MFMCA 0 * * 0RKD (For fixed, opposite direction of motor shaft) Note)4							MFMCB 0 * * 0SKT (For fixed, opposite direction of motor shaft) Note)7	DV0P4283	DV0P228 DV0P220	DV0PM20042
			750	MSMF082L1 □ 1	71, 125	MCDLT35SF	MCDLN35S◇																										DV0P4284	DV0P228 DV0P222	DV0P4220
			1000	MSMF092L1 □ 1	72, 126	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4																										
Middle inertia Flat type	MQMF (Connector type) 3000 r/min IP67	Single phase 100 V	100	MQMF011L1 □ 1 MQMF011L1 □ 3	79, 137	MADLT11SF	MADLN11S◇	A-frame ★	Approx. 0.4																										
			200	MQMF021L1 □ 1 MQMF021L1 □ 3	81, 141	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5										DV0P4280	DV0P227	DV0P4170														
			400	MQMF041L1 □ 1 MQMF041L1 □ 3	83, 145	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9										DV0P4283	DV0P228		DV0PM20042													
		Single phase/ 3-phase 200 V	100	MQMF012L1 □ 1 MQMF012L1 □ 3	80, 137	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5										MFECA 0 * * 0MKE (For movable, opposite direction of motor shaft)	MFECA 0 * * 0MKD (For movable, opposite direction of motor shaft)	MFMCA 0 * * 0UGD (For movable, opposite direction of motor shaft)	MFMCA 0 * * 0VGD (For movable, opposite direction of motor shaft)	—	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042									
			200	MQMF022L1 □ 1 MQMF022L1 □ 3	82, 141	MADLT15SF	MADLN15S◇																												
			400	MQMF042L1 □ 1 MQMF042L1 □ 3	84, 145	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9																		DV0P4283	DV0P228 DV0P220							

★ : Frame-A and B drivers are not equipped with regenerative resistors.When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to “Model designation” P.22.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030MJE

Note)4 Cables for opposite to output shaft cannot be used with 50 W or 100 W motor. (MSMF connector type only.)

Note)5 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)6 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box).
Please buy the battery part number “DV0P2990” separately.

Note)7 Brake cable and motor cables are required for the motors with brake.

Movable : For application where the cable is movable.

Fixed : For application where the cable is fixed.

Direction of motor shaft/Opposite direction of motor shaft : Cable direction

Motor series		Power supply	Motor			Driver			Power capacity (at rated load) (kVA)		Optional parts ▶ refer to P.306											
			Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi fancement type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame			Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)				
											23-bit Absolute		without Brake	with Brake								
											Use in the absolute system (with battery box) Note)5	Use in the Incremental system (without battery box)										
High inertia	MHMF (Connector type) 3000 r/min IP67	Single phase 100 V	50	MHMF5AZL1 □ 1 MHMF5AZL1 □ 3	85, 149	MADLT01SF	MADLN01S◇	A-frame ★	Approx. 0.4					—	DV0P4280	DV0P227	DV0P4170					
			100	MHMF011L1 □ 1 MHMF011L1 □ 3	87, 153	MADLT11SF	MADLN11S◇															
			200	MHMF021L1 □ 1 MHMF021L1 □ 3	89, 157	MBDLT21SF	MBDLN21S◇	B-frame ★	Approx. 0.5						DV0P4283	DV0P228						
			400	MHMF041L1 □ 1 MHMF041L1 □ 3	91, 161	MCDLT31SF	MCDLN31S◇								DV0P4282		DV0PM20042					
		Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ 1 MHMF5AZL1 □ 3	86, 149	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5						DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042					
			100	MHMF012L1 □ 1 MHMF012L1 □ 3	88, 153	MADLT05SF	MADLN05S◇															
			200	MHMF022L1 □ 1 MHMF022L1 □ 3	90, 157	MADLT15SF	MADLN15S◇															
			400	MHMF042L1 □ 1 MHMF042L1 □ 3	92, 161	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9						DV0P4283	DV0P228 DV0P220	DV0PM20042					
			750	MHMF082L1 □ 1 MHMF082L1 □ 3	93, 165	MCDLT35SF	MCDLN35S◇															
			1000	MHMF092L1 □ 1 MHMF092L1 □ 3	94, 169	MDDLT55SF	MDDLN55S◇	D-frame	Approx. 2.4						DV0P4284	DV0P228 DV0P222	DV0P4220					

★ : Frame-A and B drivers are not equipped with regenerative resistors.When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to “Model designation” P.22.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030MJE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

Movable : For application where the cable is movable.

Fixed : For application where the cable is fixed.

Direction of motor shaft/Opposite direction of motor shaft : Cable direction

Motor										Driver		Optional parts ▶ refer to P.306									
Motor series		Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog,) full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)					Encoder Cable Note)3,5		Motor Cable Note)3,5		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter	
														JL10 (Large size) (One-touch lock type) (N/MS screwed type)		JL10 (One-touch lock type) (JL04 screwed type)					
														23-bit Absolute		without Brake	with Brake				
										Use in the absolute system (with battery box) Note)7		Use in the Incremental system (without battery box)									
														Fixed cable		Movable cable					
Low inertia	MSMF Large size JL10 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 6 MSMF102L1 □ 8	73, 127	MDDLT55SF	MDDL55S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222		DV0P4220				
			1500	MSMF152L1 □ 6 MSMF152L1 □ 8	74, 128	MDDLT55SF	MDDL55S◇		DV0PM20047 / DV0P222												
		3-phase 200 V	2000	MSMF202L1 □ 6 MSMF202L1 □ 8	75, 129	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223		DV0PM20043						
			3000	MSMF302L1 □ 6 MSMF302L1 □ 8	76, 131	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224		DV0P3410					
			4000	MSMF402L1 □ 6 MSMF402L1 □ 8	77, 132	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8					DV0P225								
			5000	MSMF502L1 □ 6 MSMF502L1 □ 8	78, 133	MFDLTB3SF	MFDLNB3S◇														
Middle inertia	MDMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 6 MDMF102L1 □ 8	102, 180	MDDLT45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222		DV0P4220				
			1500	MDMF152L1 □ 6 MDMF152L1 □ 8	103, 181	MDDLT55SF	MDDL55S◇		DV0PM20047 / DV0P222												
		3-phase 200 V	2000	MDMF202L1 □ 6 MDMF202L1 □ 8	104, 183	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223		DV0PM20043						
			3000	MDMF302L1 □ 6 MDMF302L1 □ 8	105, 184	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224		DV0P3410					
			4000	MDMF402L1 □ 6 MDMF402L1 □ 8	106, 185	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8					DV0P225								
			5000	MDMF502L1 □ 6 MDMF502L1 □ 8	107, 187	MFDLTB3SF	MFDLNB3S◇														
	MGMF Large size JL10 type (Low speed/ High torque type) 1500 r/min IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □ 6 MGMF092L1 □ 8	112, 193	MDDLT45SF	MDDL45S◇	D-frame	Approx. 2.0	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P221		DV0P4220				
			1300	MGMF132L1 □ 6 MGMF132L1 □ 8	113, 195	MDDLT55SF	MDDL55S◇		DV0PM20047 / DV0P222												
		3-phase 200 V	1800	MGMF182L1 □ 6 MGMF182L1 □ 8	114, 196	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.4			DV0P4285 Note)6	DV0P223		DV0PM20043						
			2400	MGMF242L1 □ 6 MGMF242L1 □ 8	115, 197	MEDLT93SF	MEDLN93S◇		F-frame				Approx. 4.5	DV0P224		DV0P3410					
			2900	MGMF292L1 □ 6 MGMF292L1 □ 8	116, 199	MFDLTB3SF	MFDLNB3S◇	Approx. 5.0					DV0P225								
			4400	MGMF442L1 □ 6 MGMF442L1 □ 8	117, 200	MFDLTB3SF	MFDLNB3S◇		Approx. 7.0												
High inertia	MHMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 6 MHMF102L1 □ 8	95, 171	MDDLT45SF	MDDL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222		DV0P4220				
			1500	MHMF152L1 □ 6 MHMF152L1 □ 8	96, 172	MDDLT55SF	MDDL55S◇		DV0PM20047 / DV0P222												
		3-phase 200 V	2000	MHMF202L1 □ 6 MHMF202L1 □ 8	97, 173	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223		DV0PM20043						
			3000	MHMF302L1 □ 6 MHMF302L1 □ 8	98, 175	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224		DV0P3410					
			4000	MHMF402L1 □ 6 MHMF402L1 □ 8	99, 176	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8					DV0P225								
			5000	MHMF502L1 □ 6 MHMF502L1 □ 8	100, 177	MFDLTB3SF	MFDLNB3S◇														

Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to “Model designation” P.22.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EPE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

Motor										Driver		Optional parts ▶ refer to P.306						
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)		Encoder Cable Note)3		Motor Cable Note)3,5		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter		
										JN2 (Small size) (One-touch lock type)		JL10 (One-touch lock type) (JL04 screwed type)						
										23-bit Absolute		without Brake	with Brake					
										Use in the absolute system (with battery box) Note)7	Use in the Incremental system (without battery box)							
										Fixed cable		Movable cable						
Low inertia	MSMF Small size JN2 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 5 MSMF102L1 □ 7	73, 127	MDDLTL55SF	MDDLNL55S◇	D-frame	Approx. 2.4	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222 DV0PM20047 / DV0P222	DV0P4220		
			1500	MSMF152L1 □ 5 MSMF152L1 □ 7	74, 129	MDDLTL55SF	MDDLNL55S◇		Approx. 2.9									
		3-phase 200 V	2000	MSMF202L1 □ 5 MSMF202L1 □ 7	75, 130	MEDLTL83SF	MEDLNL83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223	DV0PM20043				
			3000	MSMF302L1 □ 5 MSMF302L1 □ 7	76, 131	MFDLTLA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224	DV0P3410			
			4000	MSMF402L1 □ 5 MSMF402L1 □ 7	77, 133	MFDLTLB3SF	MFDLNLB3S◇	Approx. 7.8					MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT		DV0P225		
			5000	MSMF502L1 □ 5 MSMF502L1 □ 7	78, 134	MFDLTLB3SF	MFDLNLB3S◇											
			Middle inertia	MDMF Small size JN2 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 5 MDMF102L1 □ 7	102, 181	MDDLTL45SF				MDDLNL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD
1500	MDMF152L1 □ 5 MDMF152L1 □ 7	103, 182				MDDLTL55SF	MDDLNL55S◇	Approx. 2.9										
3-phase 200 V	2000	MDMF202L1 □ 5 MDMF202L1 □ 7			104, 183	MEDLTL83SF	MEDLNL83S◇	E-frame	Approx. 3.8	DV0P4285 Note)6	DV0P223	DV0PM20043						
	3000	MDMF302L1 □ 5 MDMF302L1 □ 7			105, 185	MFDLTLA3SF	MFDLNA3S◇		F-frame		Approx. 5.2	DV0P224	DV0P3410					
	4000	MDMF402L1 □ 5 MDMF402L1 □ 7			106, 186	MFDLTLB3SF	MFDLNLB3S◇	Approx. 7.8			MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT		DV0P225				
	5000	MDMF502L1 □ 5 MDMF502L1 □ 7			107, 187	MFDLTLB3SF	MFDLNLB3S◇											
MGMF Small size JN2 type (Low speed/ High torque type) 1500 r/min IP67	Single phase/ 3-phase 200 V	850		MGMF092L1 □ 5 MGMF092L1 □ 7	112, 194	MDDLTL45SF	MDDLNL45S◇	D-frame	Approx. 2.0	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P221 DV0PM20047 / DV0P222			DV0P4220
		1300	MGMF132L1 □ 5 MGMF132L1 □ 7	113, 195	MDDLTL55SF	MDDLNL55S◇	Approx. 2.6											
	3-phase 200 V	1800	MGMF182L1 □ 5 MGMF182L1 □ 7	114, 197	MEDLTL83SF	MEDLNL83S◇	E-frame	Approx. 3.4	DV0P4285 Note)6			DV0P223	DV0PM20043					
		2400	MGMF242 L1 □ 5 MGMF242 L1 □ 7	115, 198	MEDLTL93SF	MEDLNL93S◇		Approx. 4.5				DV0P224		DV0P3410				
		2900	MGMF292L1 □ 5 MGMF292L1 □ 7	116, 199	MFDLTLB3SF	MFDLNLB3S◇	F-frame	Approx. 5.0				DV0P4285 x2 in parallel	DV0P225					
4400	MGMF442L1 □ 5 MGMF442L1 □ 7	117, 201	MFDLTLB3SF	MFDLNLB3S◇	Approx. 7.0													
High inertia	MHMF Small size JN2 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 5 MHMF102L1 □ 7	95, 171	MDDLTL45SF	MDDLNL45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222 DV0PM20047 / DV0P222	DV0P4220		
			1500	MHMF152L1 □ 5 MHMF152L1 □ 7	96, 173	MDDLTL55SF	MDDLNL55S◇		Approx. 2.9									
		3-phase 200 V	2000	MHMF202L1 □ 5 MHMF202L1 □ 7	97, 174	MEDLTL83SF	MEDLNL83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223	DV0PM20043				
			3000	MHMF302L1 □ 5 MHMF302L1 □ 7	98, 175	MFDLTLA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224	DV0P3410			
			4000	MHMF402L1 □ 5 MHMF402L1 □ 7	99, 177	MFDLTLB3SF	MFDLNLB3S◇	Approx. 7.8					MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT		DV0P225		
			5000	MHMF502L1 □ 5 MHMF502L1 □ 7	100, 178	MFDLTLB3SF	MFDLNLB3S◇											

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P.22.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type motor cables enable one-touch lock connections. Conventional screwed type JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Motor					Driver			Power capacity (at rated load) (kVA)		Optional parts ▶ refer to P.306							
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type (Pulse, analog, full-closed)	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame			Encoder Cable Note)2,3		Motor Cable		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter	
										JL10 (Large size) (One-touch lock type) (N/MS screwed type)		Note)6					
										23-bit Absolute		without Brake	with Brake				
										Use in the absolute system (with battery box) Note)4	Use in the Incremental system (without battery box)						
										Fixed cable							
Middle inertia	MDMF Large size JL10 type 1500 r/min IP67 IP44 (22000 W)	3-phase 200 V	7500	MDMF752L1 □ 6	108 188	MGDLTC3SF	—	G-frame	Approx. 11		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6	DV0P4285 ×3 in parallel	— Note)5	HF3080C-SZA (Recommended components) P.383
			11000	MDMFC12L1 □ 6	109 189	MHDLTE3SF	—	H-frame	Approx. 20						DV0P4285 ×6 in parallel		HF3100C-SZA (Recommended components) P.383
			15000	MDMFC52L1 □ 6	110 191	MHDLTE3SF	—										
			22000	MDMFD22L1 □ 6	111 192	MHDLTF3SF	—						Note)6 (U, V, W, Ground) : M8 terminal block	Note)6 (U, V, W, Ground) : M8 terminal block			
		MGMF Large size JL10 type (Low speed/ High torque type) 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 □ 6	118 201	MGDLTC3SF	—	G-frame	Approx. 8.5		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6	DV0P4285 ×3 in parallel	— Note)5
High inertia	MHMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 □ 6	101 179	MGDLTC3SF	—	G-frame	Approx. 11		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6	— Note)5		HF3080C-SZA (Recommended components) P.383

■ About dynamic brake

G frame is built-in / external, H frame is external

The indication of the internal / {external} dynamic brake resistance capacity is the maximum allowable inertia (load inertia moment ratio to rotor inertia moment is 10 times) up to three consecutive emergency stops at the rated speed. If used under conditions higher than that, the resistance may break and the dynamic brake may not operate.

Recommended resistance: 1.2 Ω 400 W or more × 3 pieces

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Note)1 □ : Represents the motor specifications. (refer to "Model designation" P.22.)

Note)2 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)5 The reactor has to be prepared by the customer.

Note)6 We recommend purchasing an optional connector kit.

■ Connector kit (option) components Note)6

Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable	
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20107	Large size connector	For Connector X6	Connector Screwed type	(to be supplied by customer) M5 Round terminal	not included	(to be supplied by customer)
			DV0PM20108	One-touch lock type				Connector Screwed type	
			DV0PM20111	Large size connector				not included	
			DV0PM20112	Screwed type				Connector Screwed type	
MDMF 11.0 kW MDMF 15.0 kW	H	M6	DV0PM20107	Large size connector	For Connector X6	Connector Screwed type	(to be supplied by customer) M6 Round terminal	not included	(to be supplied by customer)
			DV0PM20108	One-touch lock type				Connector Screwed type	
			DV0PM20111	Large size connector				not included	
			DV0PM20112	Screwed type				Connector Screwed type	
MDMF 22.0 kW	H	M6	DV0PM20109	Large size connector	For Connector X6	Terminal block (to be supplied by customer) M8 Round terminal	(to be supplied by customer) M6 Round terminal	not included	(to be supplied by customer)
			DV0PM20110	One-touch lock type				Connector Screwed type	
			DV0PM20113	Large size connector				not included	
			DV0PM20114	Screwed type				Connector Screwed type	

Motor					Driver			Power capacity （ at rated load ） （kVA）		Optional parts ▶ refer to P.306						
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi fancement type （ Pulse, analog, full-closed ）	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame			Encoder Cable Note)2		Motor Cable		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter
										JN2 (Small size) (One-touch lock type)		Note)5				
										23-bit Absolute		without Brake	with Brake			
										Use in the absolute system (with battery box) Note)3	Use in the Incremental system (without battery box)					
										Fixed cable						
Middle inertia	MDMF Small size JN2 type 1500 r/min IP67 IP44 (22000 W)	3-phase 200 V	7500	MDMF752L1 □ 5	108 189	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	DV0P4285 ×3 in parallel	— Note)4	HF3080C-SZA (Recommended components) P.383
			11000	MDMFC12L1 □ 5	109 190	MHDLTE3SF	—	H-frame	Approx. 20					DV0P4285 ×6 in parallel		HF3100C-SZA (Recommended components) P.383
			15000	MDMFC52L1 □ 5	110 191	MHDLTE3SF	—									
			22000	MDMFD22L1 □ 5	111 193	MHDLTF3SF	—					Note)5 （ U, V, W, Ground : M8 terminal block ）	Note)5 （ U, V, W, Ground : M8 terminal block ）			
	MGMF Small size JN2 type （ Low speed/ High torque type ） 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 □ 5	118 202	MGDLTC3SF	—	G-frame	Approx. 8.5	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5	DV0P4285 ×3 in parallel	— Note)4	HF3080C-SZA (Recommended components) P.383
High inertia	MHMF Small size JN2 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 □ 5	101 179	MGDLTC3SF	—	G-frame	Approx. 11	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	Note)5	Note)5		— Note)4	HF3080C-SZA (Recommended components) P.383

■ About dynamic brake

G frame is built-in / external, H frame is external

The indication of the internal / {external} dynamic brake resistance capacity is the maximum allowable inertia (load inertia moment ratio to rotor inertia moment is 10 times) up to three consecutive emergency stops at the rated speed. If used under conditions higher than that, the resistance may break and the dynamic brake may not operate.

Recommended resistance: 1.2 Ω 400 W or more × 3 pieces

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Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.22.)

Note)2 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)3 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

Note)4 The reactor has to be prepared by the customer.

Note)5 We recommend purchasing an optional connector kit.

■ Connector kit (option) components Note)5									
Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable	
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20056	Small size connector Screwed type	For Connector X6	Connector Screwed type	(to be supplied by customer) M5 Round terminal	not included	(to be supplied by customer)
			DV0PM20057				Connector Screwed type		
MDMF 11.0 kW MDMF 15.0 kW	H	M6	DV0PM20056	Small size connector Screwed type	For Connector X6	Connector Screwed type	(to be supplied by customer) M6 Round terminal	not included	(to be supplied by customer)
			DV0PM20057				Connector Screwed type		
MDMF 22.0 kW	H	M6	DV0PM20115	Small size connector Screwed type	For Connector X6	Terminal block (to be supplied by customer) M8 Round terminal	(to be supplied by customer) M6 Round terminal	not included	(to be supplied by customer)
			DV0PM20116				Connector Screwed type		

Input power	100 V	Main circuit		Single phase	100 V	+10 % -15 %	to 120 V	+10 % -15 %	50 Hz / 60 Hz
		Control circuit		Single phase	100 V	+10 % -15 %	to 120 V	+10 % -15 %	50 Hz / 60 Hz
	200 V	Main circuit	A-frame to D-frame	Single/3-phase	200 V	+10 % -15 %	to 240 V	+10 % -15 %	50 Hz / 60 Hz
			E-frame to H-frame	3-phase	200 V	+10 % -15 %	to 240 V	+10 % -15 %	50 Hz / 60 Hz
		Control circuit	A-frame to D-frame	Single phase	200 V	+10 % -15 %	to 240 V	+10 % -15 %	50 Hz / 60 Hz
			E-frame to H-frame	Single phase	200 V	+10 % -15 %	to 240 V	+10 % -15 %	50 Hz / 60 Hz
Environment	temperature		Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)						
	humidity		Both operating and storage : 20 %RH to 85 %RH (free from condensation*1)						
	Altitude		Lower than 1000 m						
	Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz						
Control method				IGBT PWM Sinusoidal wave drive					
Encoder feedback				23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to “1” (factory settings).					
External scale feedback				A/B phase, homing signal differential input. Serial communication is also supported. Manufacturers that support serial communication scale: Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation Nidec Instruments Corporation, Renishaw plc					
Interface connector	Control signal	Input		General purpose 10 inputs The function of general-purpose input is selected by parameters.					
		Output		General purpose 6 outputs The function of general-purpose output is selected by parameters.					
	Analog signal	Input		3 inputs (16-bit A/D : 1 input, 12-bit A/D : 2 inputs)					
		Output		2 outputs (Analog monitor: 2 output)					
	Pulse signal	Input		2 inputs (Photo-coupler input, Line receiver input) Both open collector and line driver interface can be connected. High speed line driver interface can be connected.					
		Output		4 outputs (Line driver: 3 output, open collector: 1 output) Line driver output for encoder pulses (A/B/Z signal) or external feedback pulses (EXA/ EXB/EXZ signal) open collector output also available for Z or EXZ signal.					
Communication function		USB		USB interface to connect to computers for parameter setting or status monitoring.					
		RS232		1:1 communication					
		RS485		1: n communication (max 31) (Supports Modbus)					
Safety function				A dedicated connector is provided for Functional Safety.					
Front panel				(1) 5 keys (2) LED (6-digit)					
Regeneration				A-frame, B-frame, G-frame, H-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)					
Dynamic brake				A-frame to G-frame: Built-in H-frame: External resistor only					
Control mode				Switching among the following 7 mode is enabled, (1) Position control (2) Speed control (3) Toque control (4) Position/Speed control (5) Position/Torque control (6) Speed/Torque control (7) Full-closed control					

*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Function	Control input		(1) servo-ON input (2) Alarm clear input (3) Gain switch input (4) Positive direction drive inhibit input (5) Negative direction drive inhibit input (6) Forced alarm input (7) Inertia ratio switch input		
	Control output		(1) Servo-alarm output (2) Servo-ready output (3) External brake off output (4) At-speed output (5) Torque in-limit output (6) Zero speed detection output (7) Warning output (8) Alarm clear attribute output (9) Servo on status output		
	Position control	Control input		(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input (6) Control mode switch input	
		Control output		(1) In-position output (2) Position command ON/OFF output	
		Pulse input	Max. command pulse frequency	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)	
			Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)	
			Electronic gear (Division/Multiplication of command pulse)	Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.	
			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input	
		Analog input	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.	
			Torque feed forward input	Analog voltage can be used as torque feed forward input.	
		Two-degree-of-freedom control		Available	
		Anti-vibration control		Available	
		Load variation suppression control		Available	
		Block operation		Modbus (RS 232, RS 485) or interface is selectable	
	Speed control	Control input		(1) Internal command velocity selection input (2) Speed zero clamp input (3) Velocity command sign input (4) Control mode switch input	
		Control output		(1) Speed coincidence output (2) Velocity command ON/OFF output	
		Analog input	Velocity command input	Velocity command input with analog voltage is possible. Scale setting and com- mand polarity vary depending on parameters. (6 V/Rated rotational speed: Default)	
			Torque limit command input	Individual torque limit for both positive and negative direction is enabled.	
			Torque feed forward input	Analog voltage can be used as torque feed forward input.	
		Internal velocity command		Switching the internal 8 speed is enabled by command input.	
		Soft-start/down function		Individual setup of acceleration and deceleration is enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.	
		Speed zero clamp		Internal velocity command can be clamped to 0 with speed zero clamp input.	
	Two-degree-of-freedom control		Available		
	Torque control	Control input		Speed zero clamp input, torque command sign input, control mode switch input.	
		Control output		(1) Speed coincidence output (2) Speed in-limit output	
		Analog input	Torque command input	Torque command input with analog voltage is possible. Scale setting and com- mand polarity vary depending on parameters. (3 V/rated torque Default)	
		Speed limit function		Speed limit value with parameter is enabled.	
	Full-closed control	Control input		(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input	
		Control output		(1) In-position output (2) Position command ON/OFF output	
		Pulse input	Max. command pulse frequency	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by 4)	
			Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)	
			Electronic gear (Division/Multiplication of command pulse)	Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.	
			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input	
		Analog input	Torque limit command input	Individual torque limit for both positive and negative direction is enabled.	
			Torque feed forward input	Analog voltage can be used as torque feed forward input.	
		Setting range of external scale division/multiplication		1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (de- nominator) can be arbitrarily set in the range of 1 to 2 ²³ for the numerator and in the range of 1 to 2 ²³ for the denominator, this product should be used within the aforementioned range.	
		Two-degree-of-freedom control		Available	
		Anti-vibration control		Available	
		Load variation suppression control		Available	
		Block operation		Modbus (RS 232, RS 485) or interface is selectable	
		Common	Auto tuning		The load inertia is identified in real time by the driving state of the motor operating ac- cording to the command given by the controlling device and set up support software “PANATERM”. The gain is set automatically in accordance with the rigidity setting.
			Division of encoder feedback pulse		Set up of any value is enabled (encoder pulses count is the max.).
			Protective function	Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.
	Soft error			Excess position deviation, command pulse division error, EEPROM error etc.	
	Alarm data trace back		Tracing back of alarm data is available		

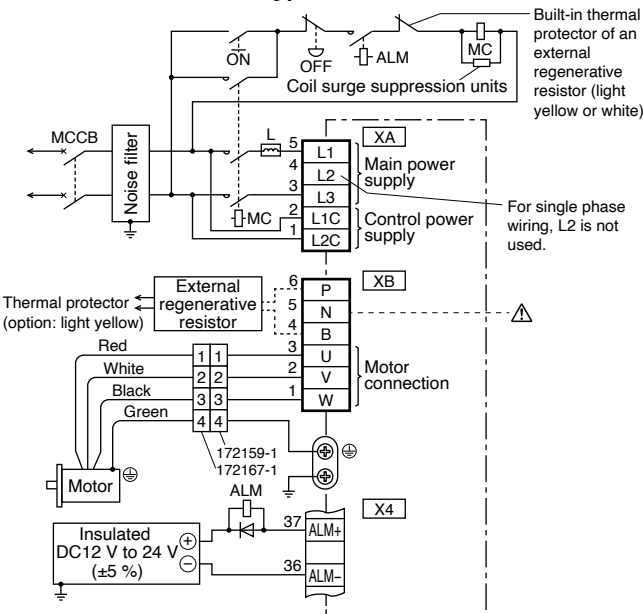
Input power	100 V	Main circuit		Single phase 100 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 120 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
		Control circuit		Single phase 100 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 120 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
	200 V	Main circuit	A-frame to D-frame	Single/3-phase 200 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
			E-frame to F-frame	3-phase 200 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
		Control circuit	A-frame to D-frame	Single phase 200 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
			E-frame to F-frame	Single phase 200 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10 \% \\ -15 \% \end{smallmatrix}$ 50 Hz / 60 Hz			
	Environment		temperature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)			
			humidity	Both operating and storage : 20 %RH to 85 %RH (free from condensation**)			
			Altitude	Lower than 1000 m			
			Vibration	5.88 m/s ² or less, 10 Hz to 60 Hz			
Control method			IGBT PWM Sinusoidal wave drive				
Encoder feedback			23-bit (8388608 resolution) absolute encoder, 7-wire serial * A6SG series When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to “1” (factory settings). * A6SE series Since it can be used only as an incremental system, do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to “1” (factory settings).				
Interface connector	Control signal	Input	General purpose 10 inputs The function of general-purpose input is selected by parameters.				
		Output	General purpose 6 outputs The function of general-purpose input is selected by parameters.				
	Analog signal	Input	None				
		Output	2 outputs (Analog monitor: 2 output)				
	Pulse signal	Input	2 inputs (Photo-coupler input, Line receiver input)				
		Output	4 outputs (Line driver: 3 output, open collector: 1 output)				
Communication function		USB	USB interface to connect to computers for parameter setting or status monitoring.				
		RS232	1:1 communication		* RS485, RS232 connector is not installed on A6 SE series.		
		RS485	1: n communication (max 31)				
Front panel			(1) 5 keys (2) LED (6-digit)				
Regeneration			A-frame, B,-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)				
Dynamic brake			A-frame to F-frame: Built-in				
Control mode			(1) Position control (2) Internal velocity command (3) Position/Internal velocity command				

*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

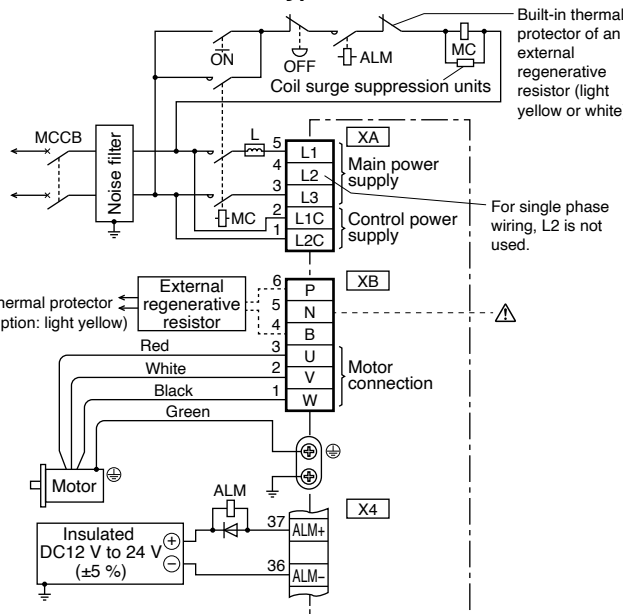
Function	Control input		(1) servo-ON input (2) Alarm clear input (3) Gain switch input (4) Positive direction drive inhibit input (5) Negative direction drive inhibit input (6) Forced alarm input (7) Inertia ratio switch input	
	Control output		(1) Servo-alarm output (2) Servo-ready output (3) External brake off output (4) At-speed output (5) Torque in-limit output (6) Zero speed detection output (7) Warning output (8) Alarm clear attribute output (9) Servo on status output	
	Position control	Control input		(1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input (6) Control mode switch input
		Control output		(1) In-position output (2) Position command ON/OFF output
		Pulse input	Max. command pulse frequency	500 kpps (Optocoupler interface) 8 Mpps (Line receiver interface)
			Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)
			Electronic gear (Division/Multiplication of command pulse)	Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.
			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input
		Anti-vibration control		Available
		Two-degree-of-freedom control		Available
		Load variation suppression control		Available
		Block operation		Modbus (RS 232, RS 485) or interface is selectable. (A6SE : interface only.)
	Speed control	Control input		(1) Internal command velocity selection input (2) Speed zero clamp input (3) Velocity command sign input (4) Control mode switch input
		Control output		(1) Speed coincidence output (2) Velocity command ON/OFF output
		Internal velocity command		Switching the internal 8 speed is enabled by command input.
		Soft-start/down function		Individual setup of acceleration and deceleration is enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.
		Zero-speed clamp		Internal velocity command can be clamped to 0 with speed zero clamp input.
		Two-degree-of-freedom control		Available
	Common	Auto tuning		The load inertia is identified in real time by the driving state of the motor operating according to the command given by the controlling device and set up support software “PANATERM”. The gain is set automatically in accordance with the rigidity setting.
		Division of encoder feedback pulse		Set up of any value is enabled (encoder pulses count is the max.).
		Protective function	Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.
			Soft error	Excess position deviation, command pulse division error, EEPROM error etc.
		Alarm data trace back		Tracing back of alarm data is available

In Case of Single phase, A-frame, B-frame, 100 V / 200 V type

● In Case of Leadwire type



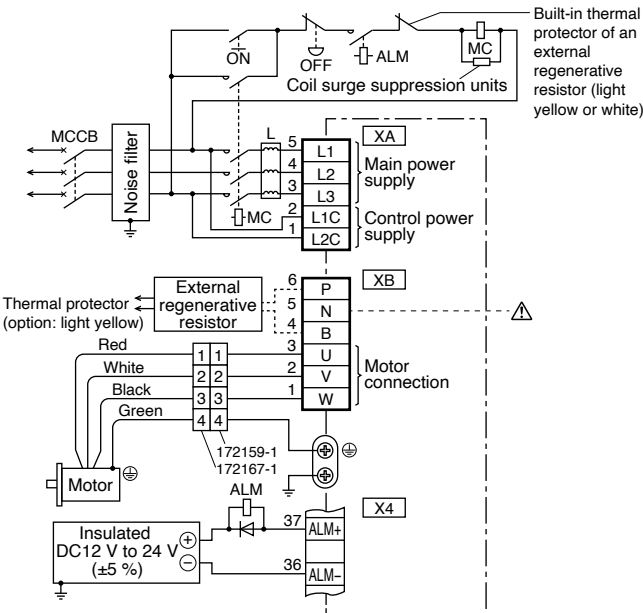
● In Case of Connector type



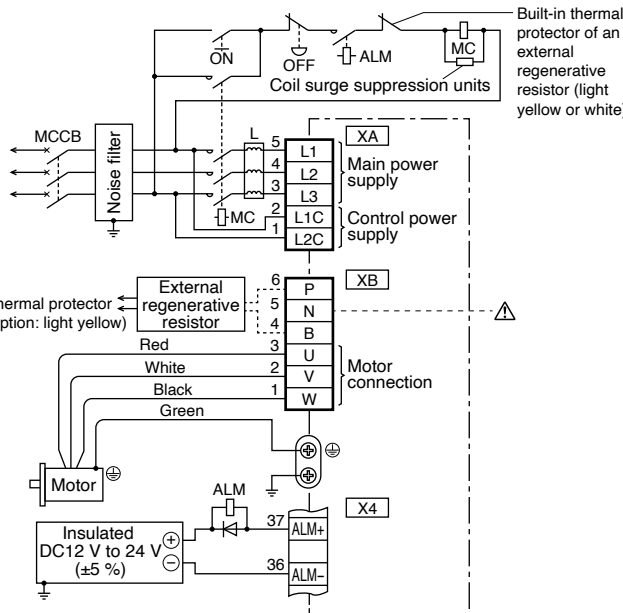
- The pin number of X4 is based on the factory setting parameters.
- * Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

In Case of 3-phase, A-frame, B-frame, 200 V type

● In Case of Leadwire type



● In Case of Connector type



- The pin number of X4 is based on the factory setting parameters.
- * Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

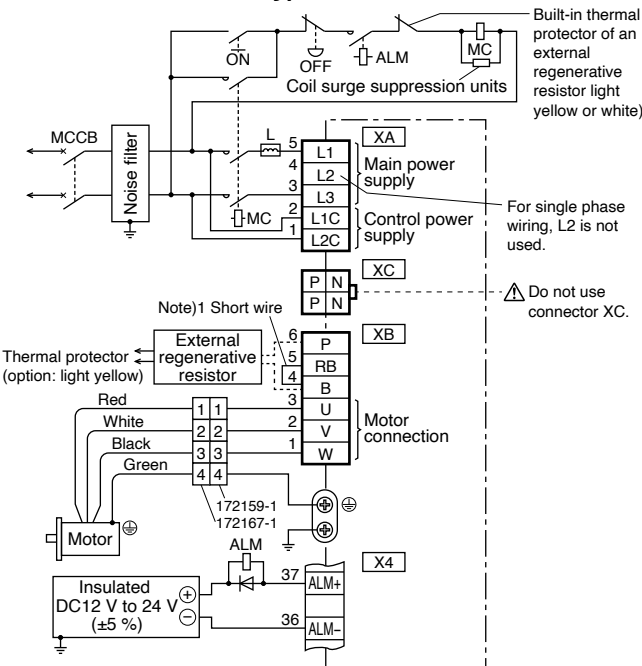
Connect an external regenerative resistor.

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XB ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
A-frame B-frame	without	without	• Connect an external regenerative resistor between P-B.	• Always open between P-B.

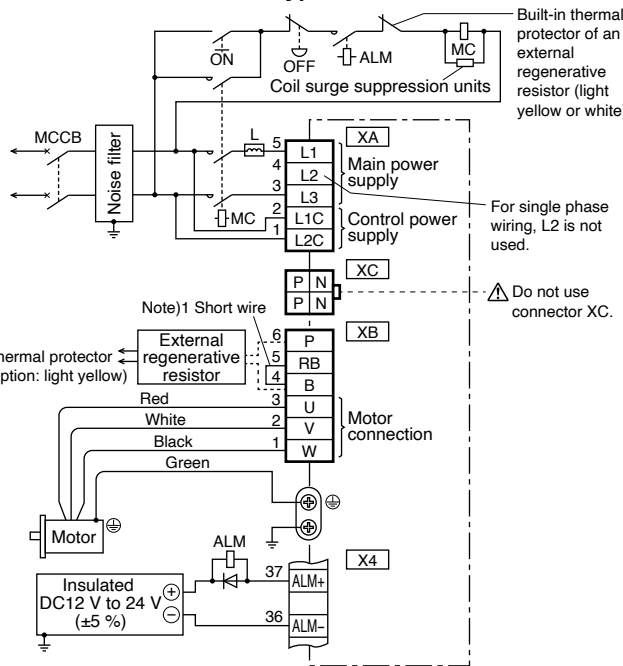
* Refer to P.307 Specifications of Motor connector.

In Case of Single phase, C-frame, D-frame, 100 V / 200 V type

● In Case of Leadwire type



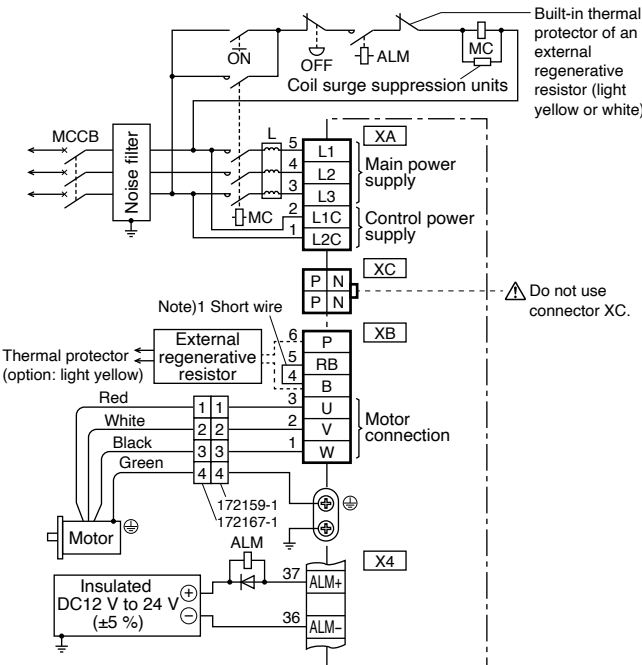
● In Case of Connector type



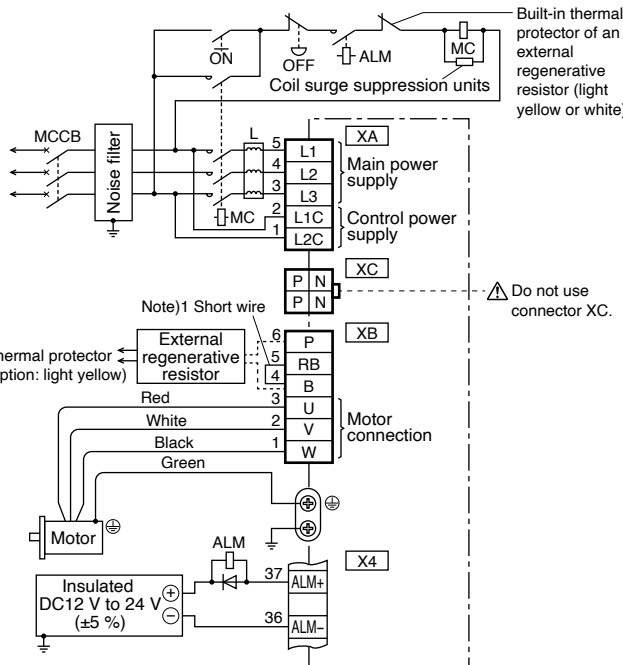
- The pin number of X4 is based on the factory setting parameters.
- * Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

In Case of 3-phase, C-frame, D-frame, 200 V type

● In Case of Leadwire type



● In Case of Connector type



- The pin number of X4 is based on the factory setting parameters.
- * Power supply for motor brake and connector X4 requires insulation. Do not connect to the same power supply.

Note)1

Frame No.	Short wire (Accessory)	Built-in regenerative resistor	Connection of the connector XB ⚠ Do not connect anything to N.	
			In case of using an external regenerative resistor	In case of not using an external regenerative resistor
C-frame D-frame	with	with	• Remove the short wire accessory from between RB-B. • Connect an external regenerative resistor between P-B.	• Shorted between RB-B with an attached short wire

* Refer to P.307, P.308, Specifications of Motor connector.

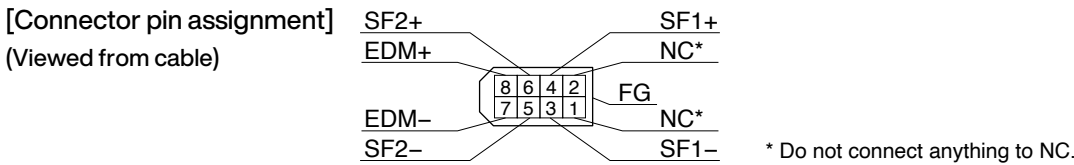
Connecting the host controller can configure a safety circuit that controls the safety functions.
When not constructing the safety circuit, use the supplied safety bypass plug.

Outline Description of Safe Torque Off (STO)

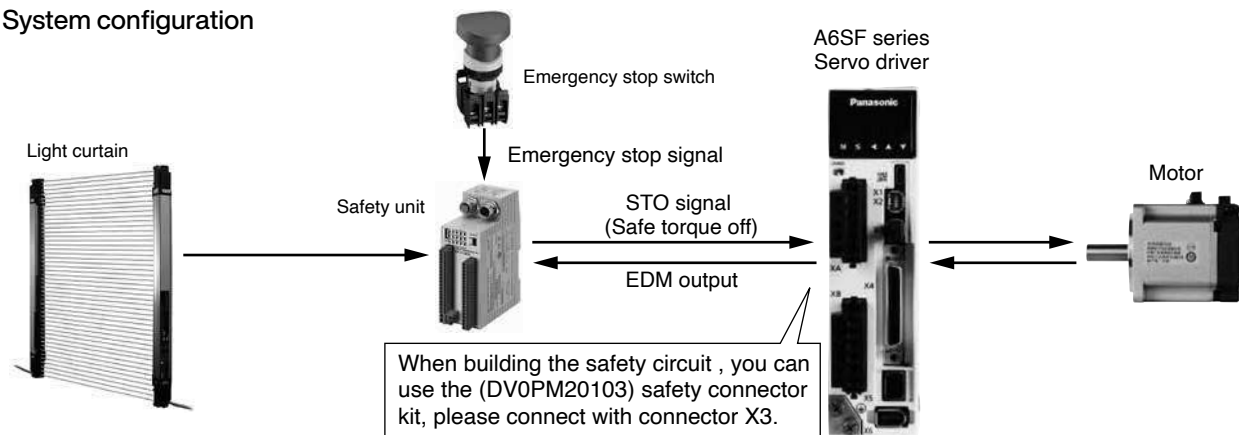
The safe torque off (STO) function is a safety function that shuts the motor current and turns off motor output torque by forcibly turning off the driving signal of the servo driver internal power transistor. For this purpose, the STO uses safety input signal and hardware (circuit).
When STO function operates, the servo driver turns off the servo ready output signal (S-RDY) and enters STO state. When the driver becomes STO state, front panel displays the “St.”. Then, when the driver's state is STO input is off and servo-on input is off, the driver automatically becomes servo-off.

Safety Precautions

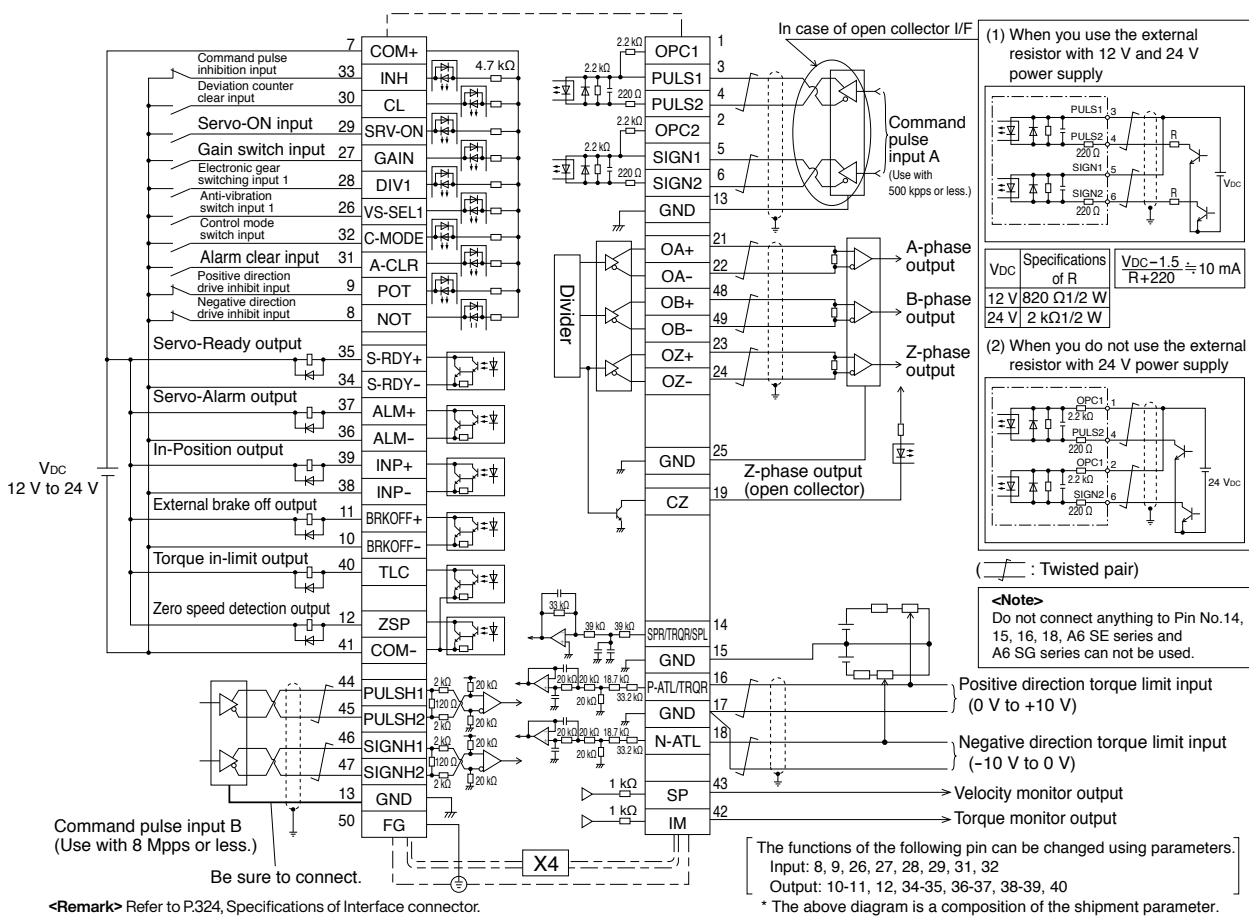
- When using the STO function, be sure to perform equipment risk assessment to ensure that the system conforms to the safety requirements.
- Even while the STO function is working, the following potential safety hazards exist. Check safety in risk assessment.
 - The motor may move when external force (e.g. gravity force on vertical axis) is exerted on it. Provide an external brake, etc., as necessary to secure the motor. Note that the purpose of motor with brake is holding and it cannot be used for braking application.
- When parameter Pr5.10 Sequence at alarm is set to free run (disable dynamic brake), the motor is free run state and requires longer stop distance even if no external force is applied. Make sure that this does not cause any problem.
- When power transistor, etc., becomes defective, the motor will move to the extent equivalent of 180 electrical angle (max.). Make sure that this does not cause any problem.
- The STO turns off the current to the motor but does not turn off power to the servo driver and does not isolate it. When starting maintenance service on the servo driver, turn off the driver by using a different disconnecting device.
- External device monitor (EDM) output signal is not a safety signal. Do not use it for an application other than failure monitoring.
- Dynamic brake and external brake release signal output are not related to safety function. When designing the system, make sure that the failure of external brake release during STO condition does not result in danger condition.
- When using STO function, connect equipment conforming to the safety standards.



System configuration

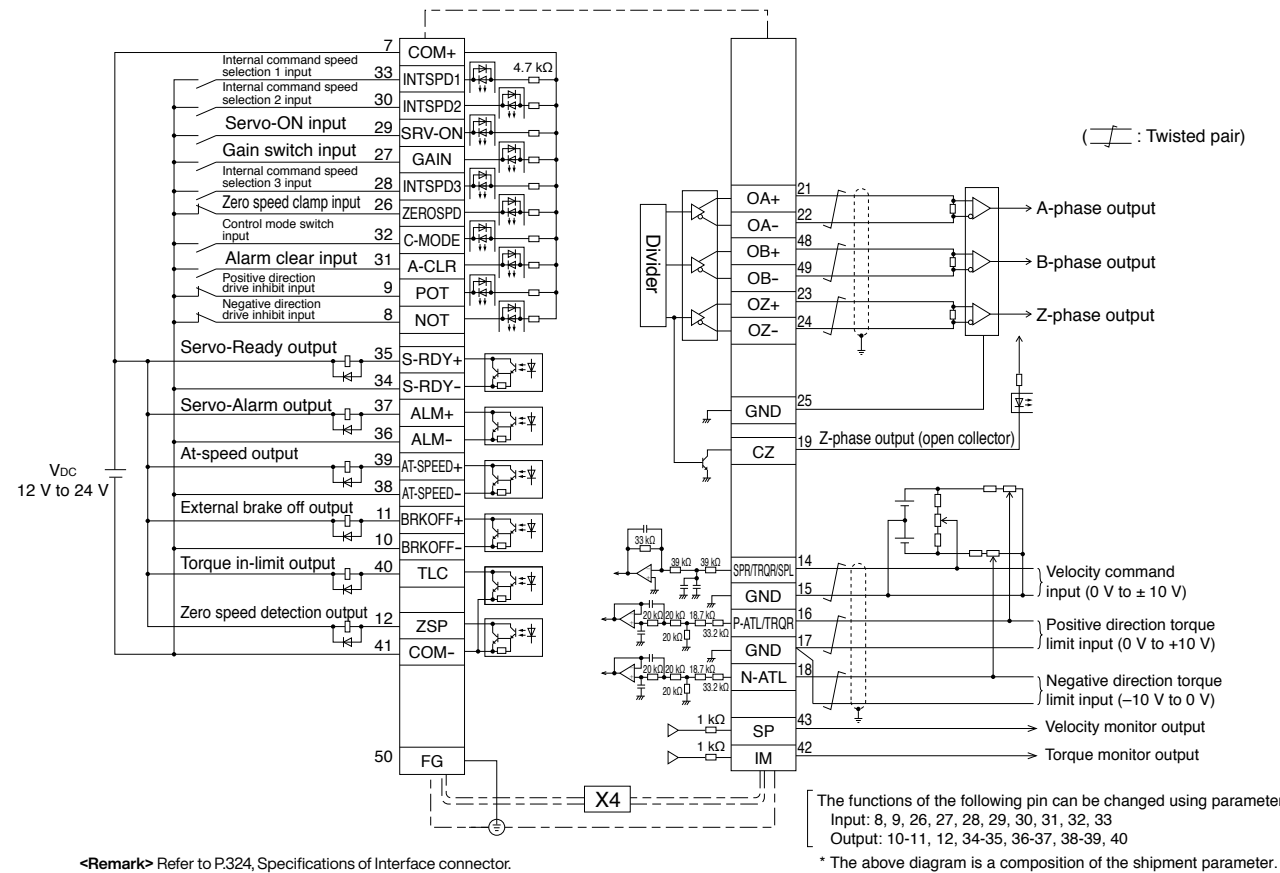


Wiring Example of Position Control Mode



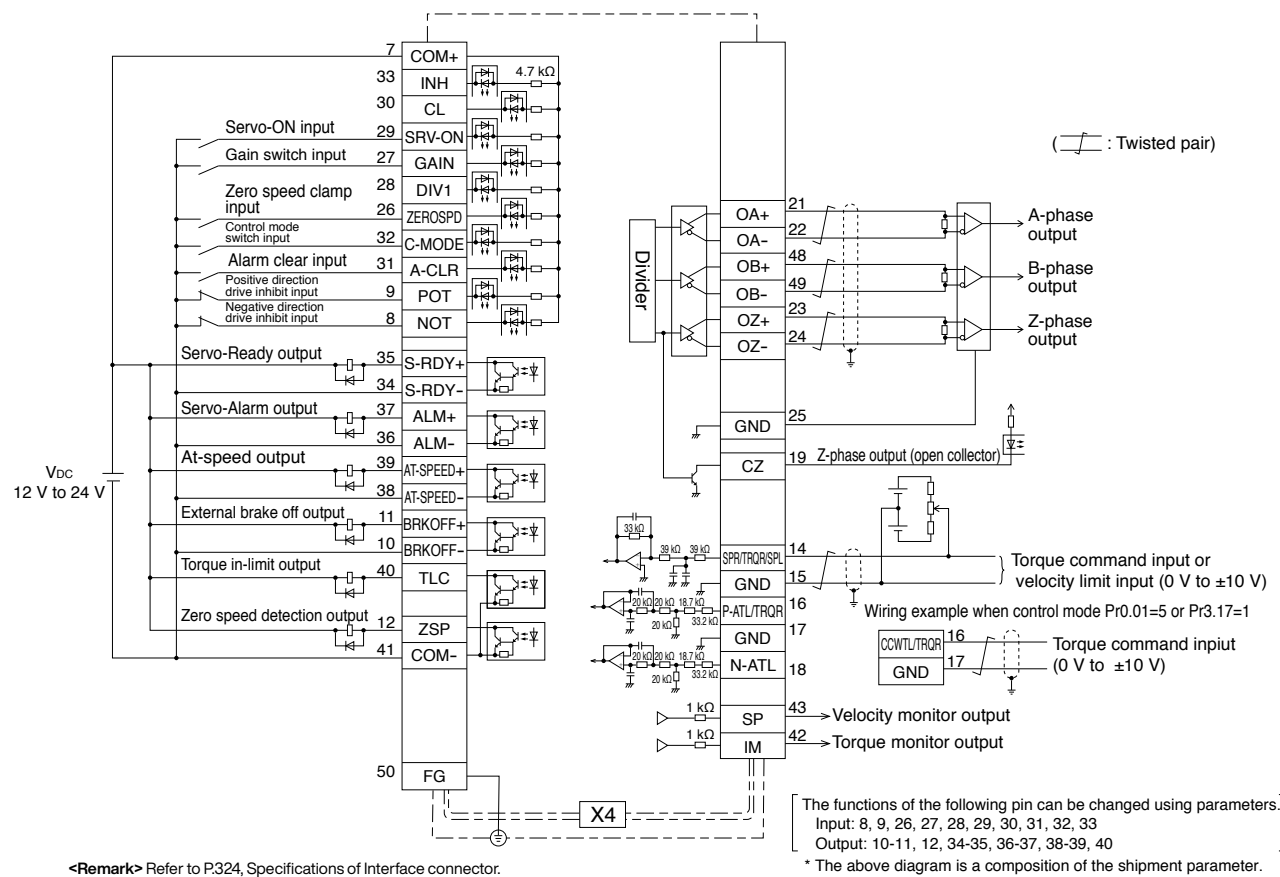
Wiring Example of Velocity Control Mode

* Internal velocity command is available only for A6SE and A6SG series



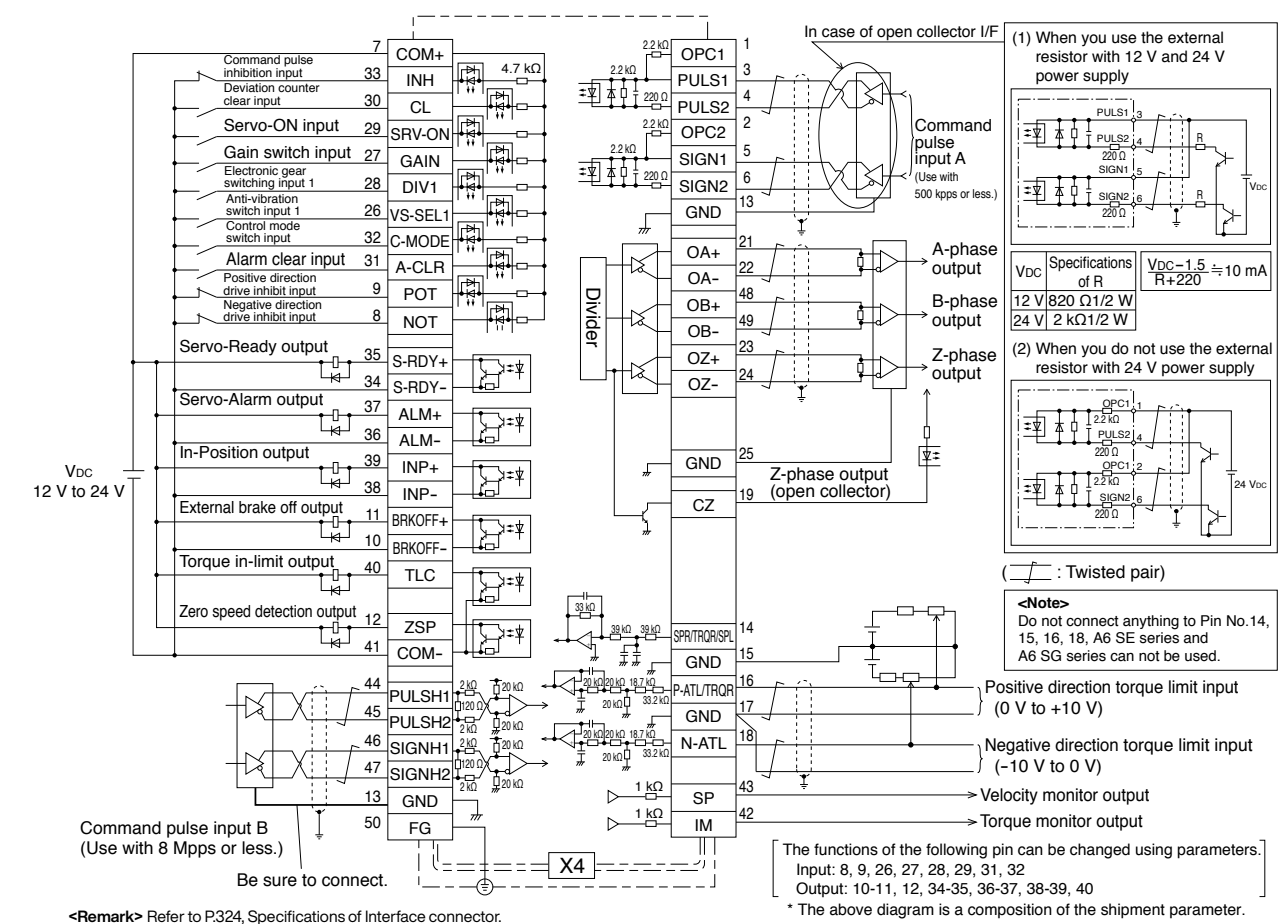
Wiring Example of Torque Control Mode

* Excluding A6SE, A6SG Series



Wiring Example of Full-closed Control Mode

* Excluding A6SE, A6SG Series



Applicable External Scale

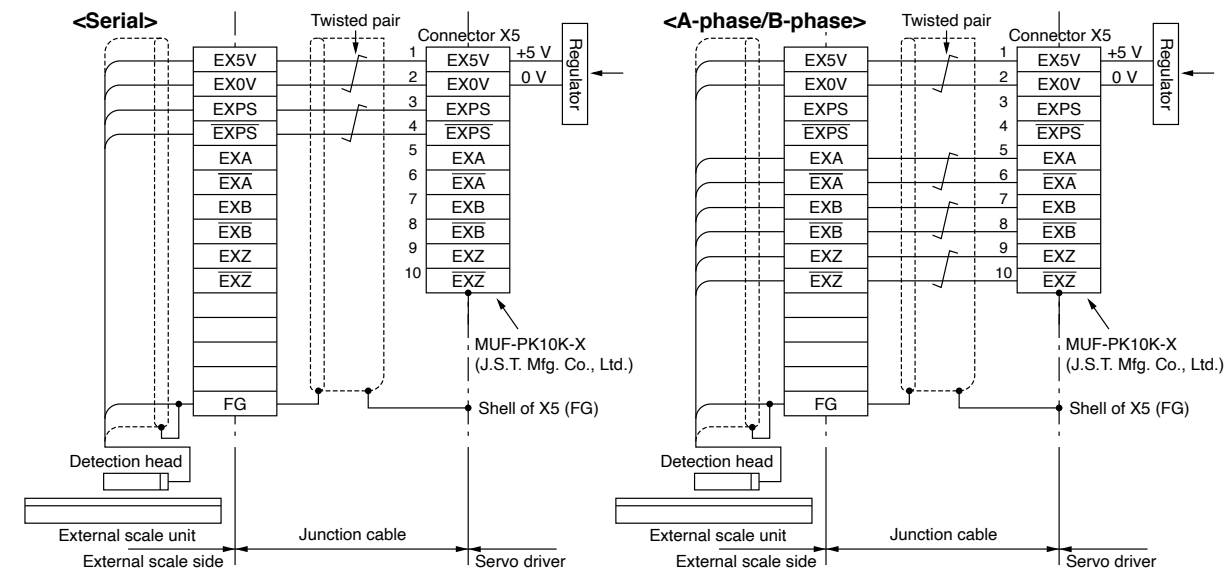
Scale Type	Partner	Series	Resolution*1 [μm]	Max. rate*1 [m/s]
Parallel Type (A/B/Z phase)	General	—	Maximum speed after 4× multiplication : 4 Mpps	
Serial communication (Incremental)	Magnescale Co., Ltd.	SL700-PL101RP/RHP SL710-PL101RP/RHP	0.1	10
		BL50H	0.001	3
	NIDEC INSTRUMENTS CORPORATION	PSLH041+PSLG	0.1	6
	NIDEC MACHINE TOOL CORPORATION	MPLIN	0.1	30
Serial communication (Absolute)	FAGOR AUTOMATION	G3BP/S3BP/SV3BP	0.001/0.01	3
		L3BP	0.01/0.05	3
		EXA/ EXG/ EXT	0.01/0.05	8
		H2AP-D200 *2/H2AP-D90 *2	29 bit/23 bit	750 r/min / 1500 r/min
		H3BP-D90 *2	28 bit	3000 r/min
		S2AP-D90*2	28 bit	1500 r/min
	HEIDENHAIN	UTP *2	23 bit/27 bit/28 bit	6000 r/min / 4000 r/min / 3000 r/min / 2000 r/min
		LIC 2197P/LIC 2199P	0.05/0.1	10
		LIC 4193P/LIC 4195P LIC 4197P/LIC 4199P	0.001/0.005/0.01	10
		LC 195P/LC 495P	0.001/0.01	3
	Magnescale Co.,Ltd.	ECA 4490P *2	27 bits to 29 bits	7000 r/min to 550 r/min (Depends on drum size)
		RCN2x9xP/RCN5x9xP *2	26 bits/28 bits	1500 r/min
	Mitutoyo Corporation	RCN 8x90P *2	29 bit	500 r/min
		SR27A	0.01 to 1	3.3
	NIDEC MACHINE TOOL CORPORATION	AT573-SC/H	0.05	2.5
		ST700	0.1	5
Renishaw plc	RESOLUTE	ST1300	0.001/0.01	8
		MPZA/MPRZ *2	23 bits	10000 r/min, 5000 r/min
			0.001	4
			0.05	100
RSF Elektronik	MC 15P MP/MC 15P MK		0.1	100
			0.05/0.1	10
		MCR 15P *2	22 bits to 25 bits	—

- *1 There is the difference of resolution and maximum rate from the specification by original supplier as per the servo driver limitation of maximum pulse frequency. The maximum pulse frequency is 4 Gpps for A6 series. We show the value of A6 family on this table.
- *2 Only a limited series of drivers support rotary scales.

Motor type	Feedback Scale Specifications	Supported driver series
Rotary motor	Incremental Rotary Scale	A6SF, A6NF, A6BF
	Absolute Rotary Scale	A6BF
Linear motor / Direct Drive motor	Incremental Rotary Scale	A6SM, A6SL, A6NM, A6NL, A6BM, A6BL
	Absolute Rotary Scale	A6SM, A6SL, A6NM, A6NL, A6BM, A6BL

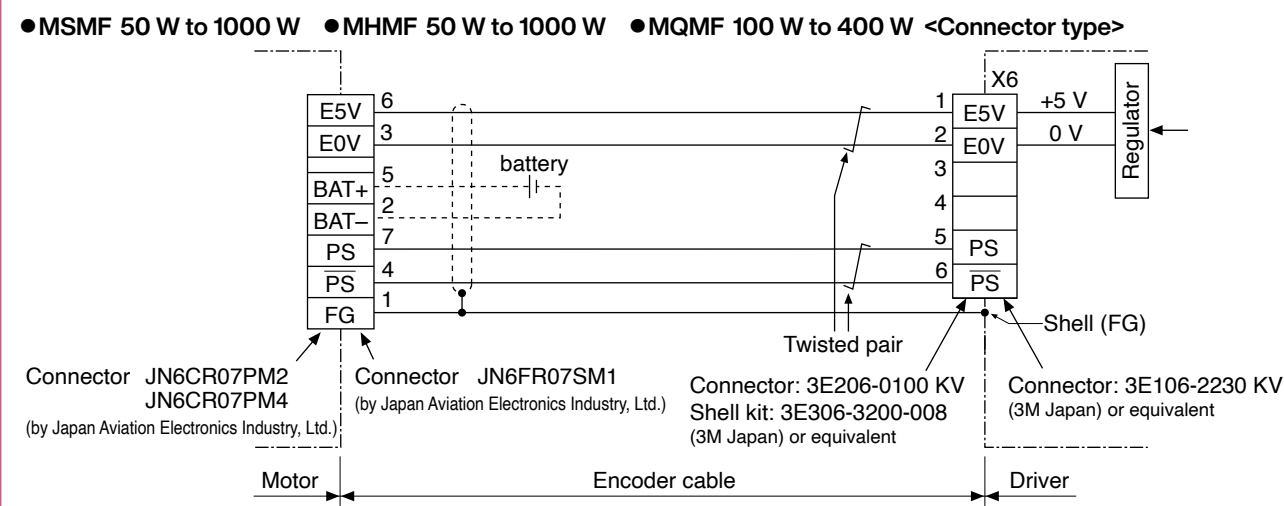
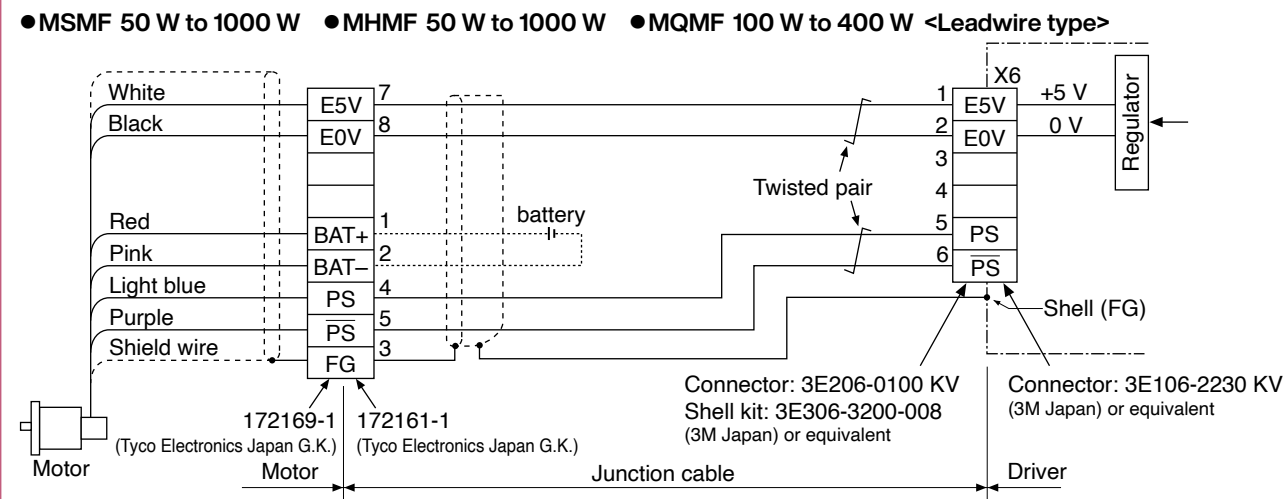
* For more information about the external scale product, please contact the manufacturer.

Wiring Diagram of X5



When using a 23-bit absolute encoder as an absolute system*.

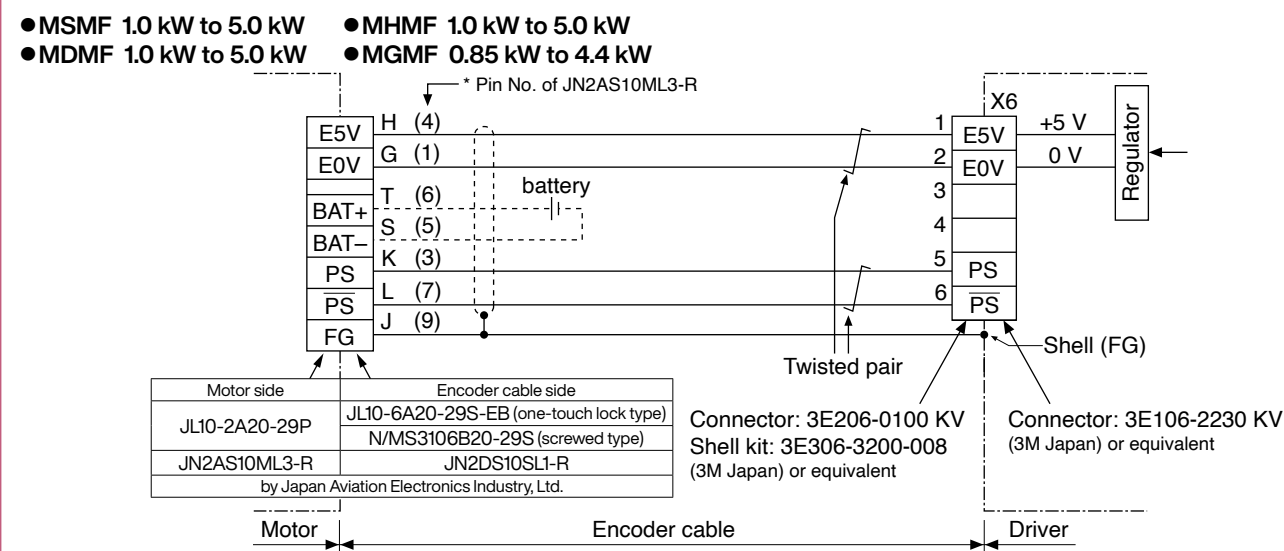
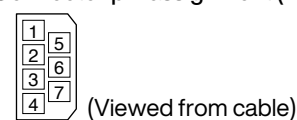
* When use a multi-turn data.



<Caution>

- Tighten the motor connector mounting screw (M2) with a torque between 0.19 N·m and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.
- Do not remove the gasket supplied with the junction cable connector. Securely install the gasket in place. Otherwise, the degree of protection of IP67 will not be guaranteed.

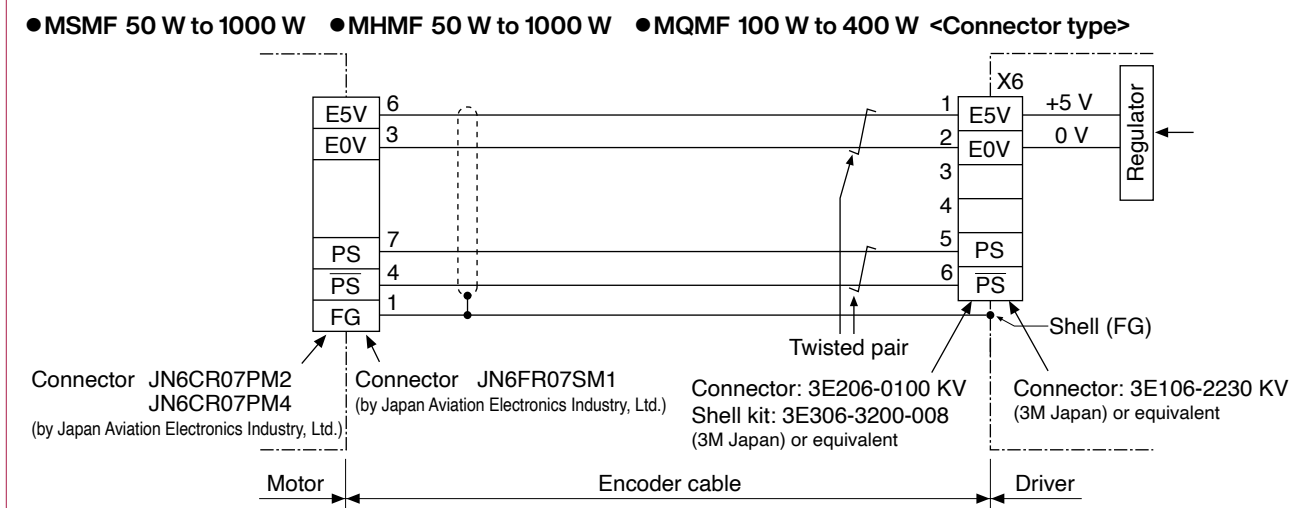
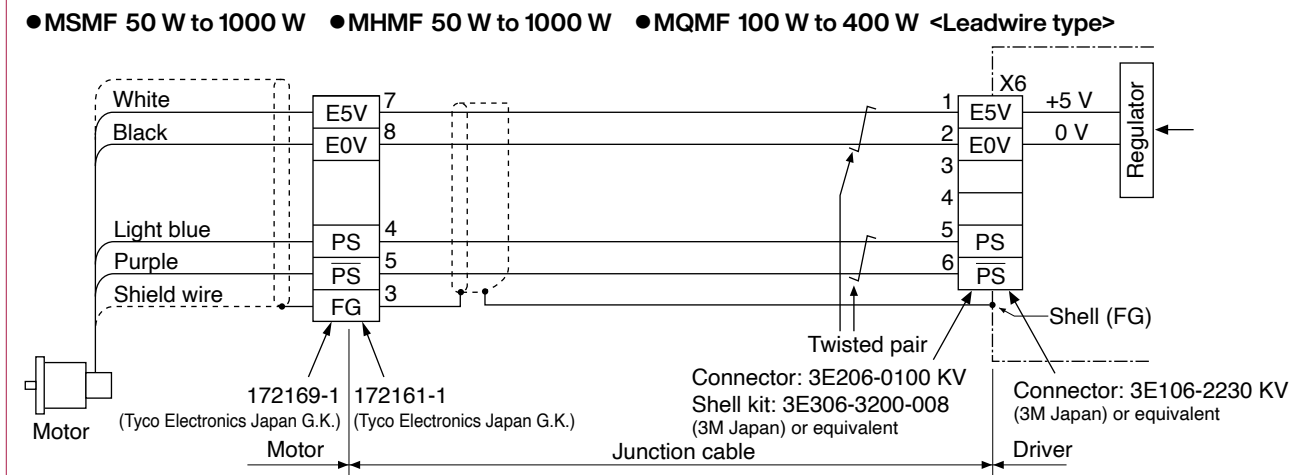
[Connector pin assignment (Motor side)]



[Connector pin assignment] Refer to P.307, P.308 "Specifications of Motor connector".

When using a 23-bit absolute encoder as a incremental system*.

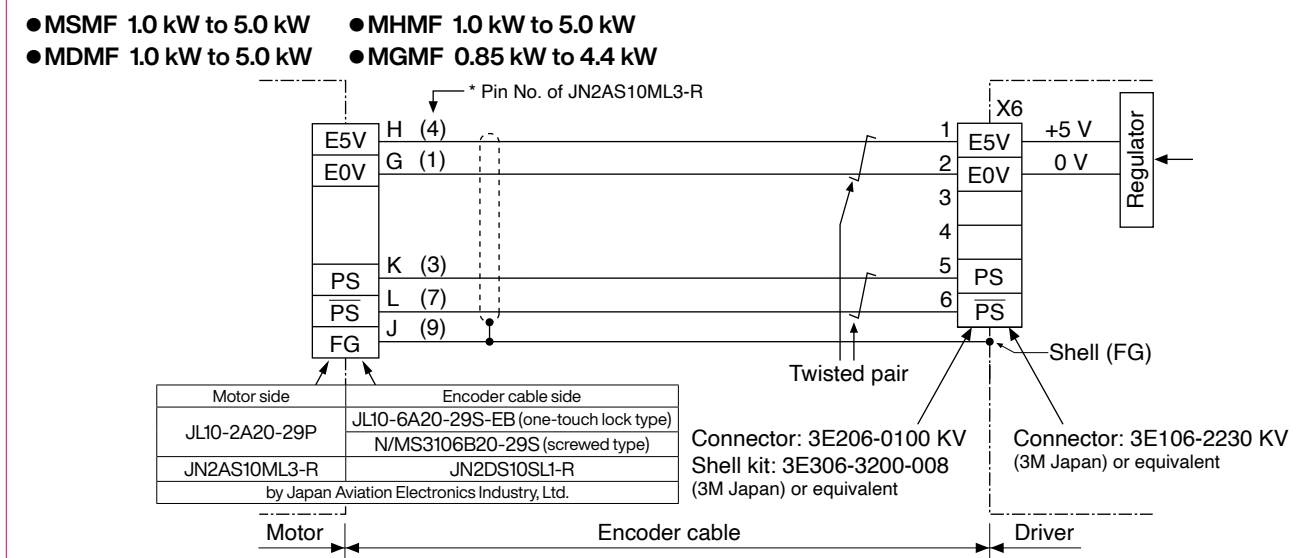
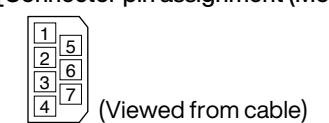
* When do not use a multi-turn data.



<Caution>

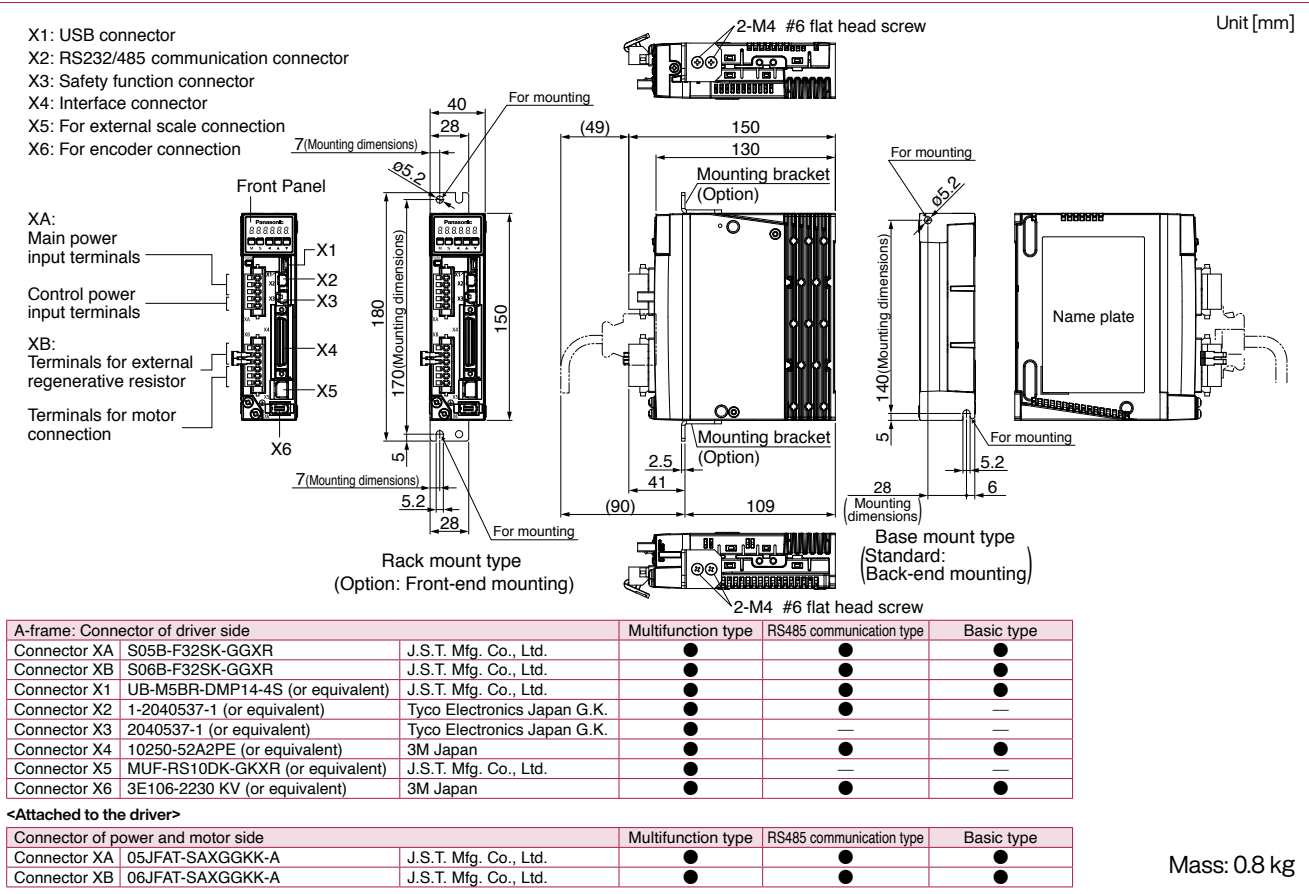
- Tighten the motor connector mounting screw (M2) with a torque between 0.19 N·m and 0.21 N·m. To avoid damage, be sure to use only the screw supplied with the connector.
- Do not remove the gasket supplied with the junction cable connector. Securely install the gasket in place. Otherwise, the degree of protection of IP67 will not be guaranteed.

[Connector pin assignment (Motor side)]

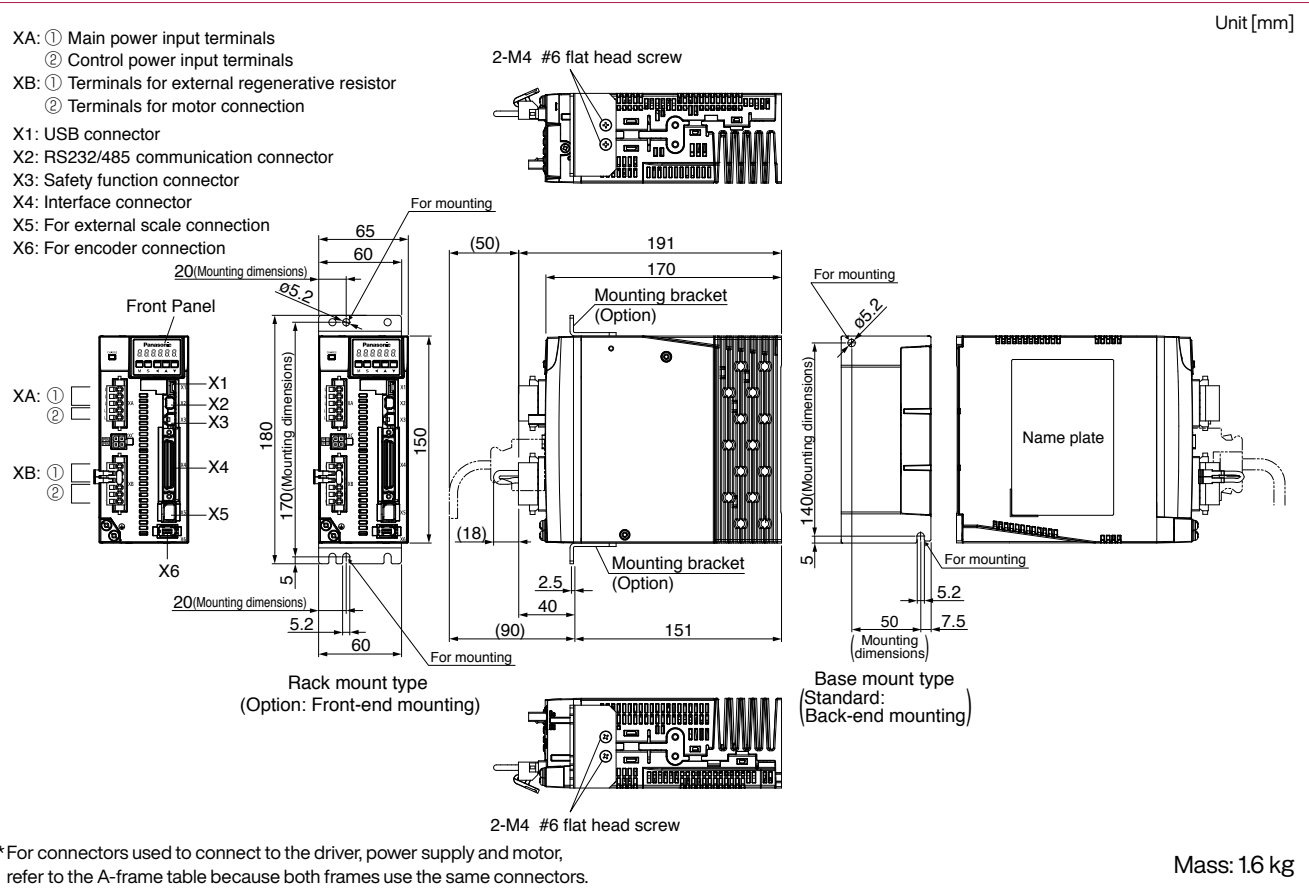


[Connector pin assignment] Refer to P.307, P.308 "Specifications of Motor connector".

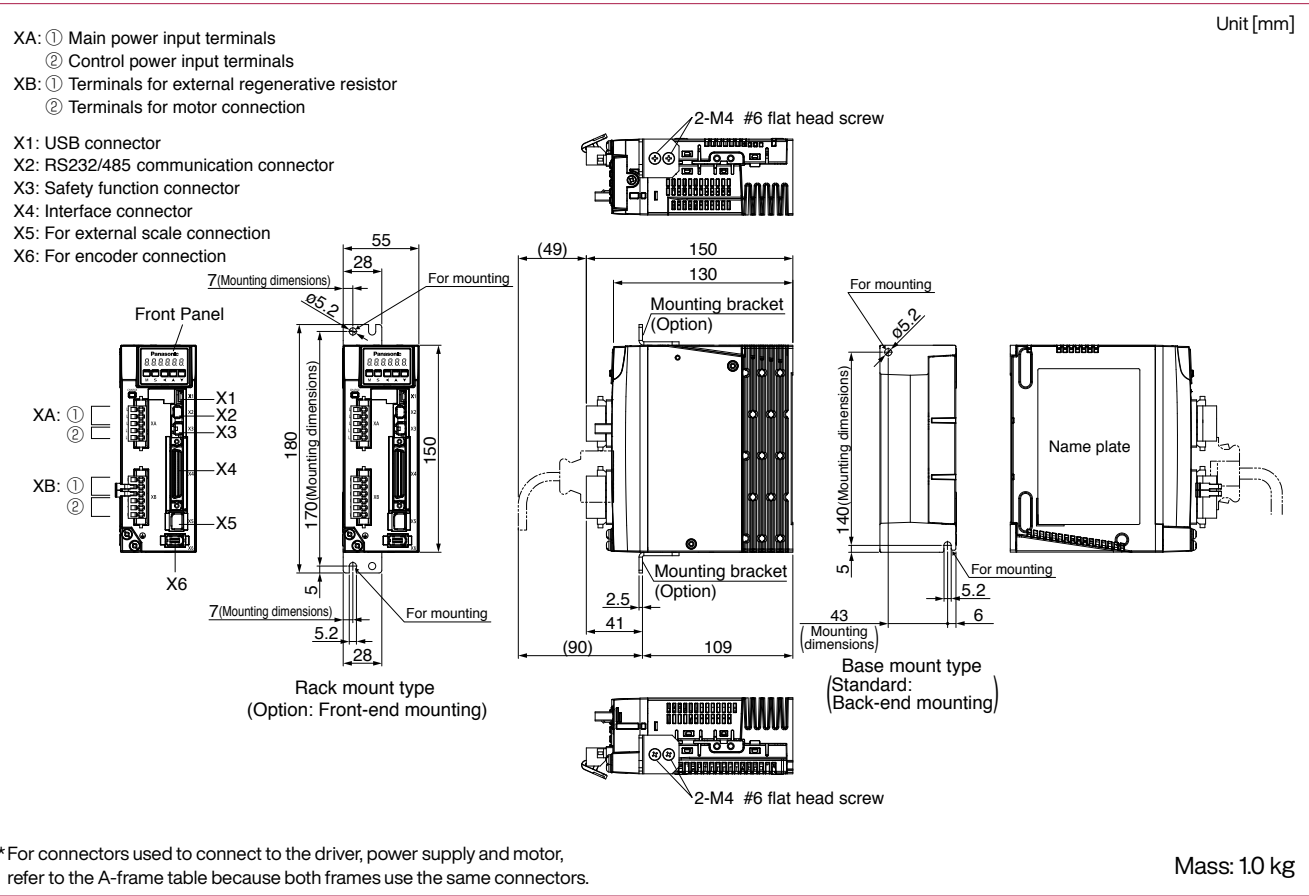
A-frame



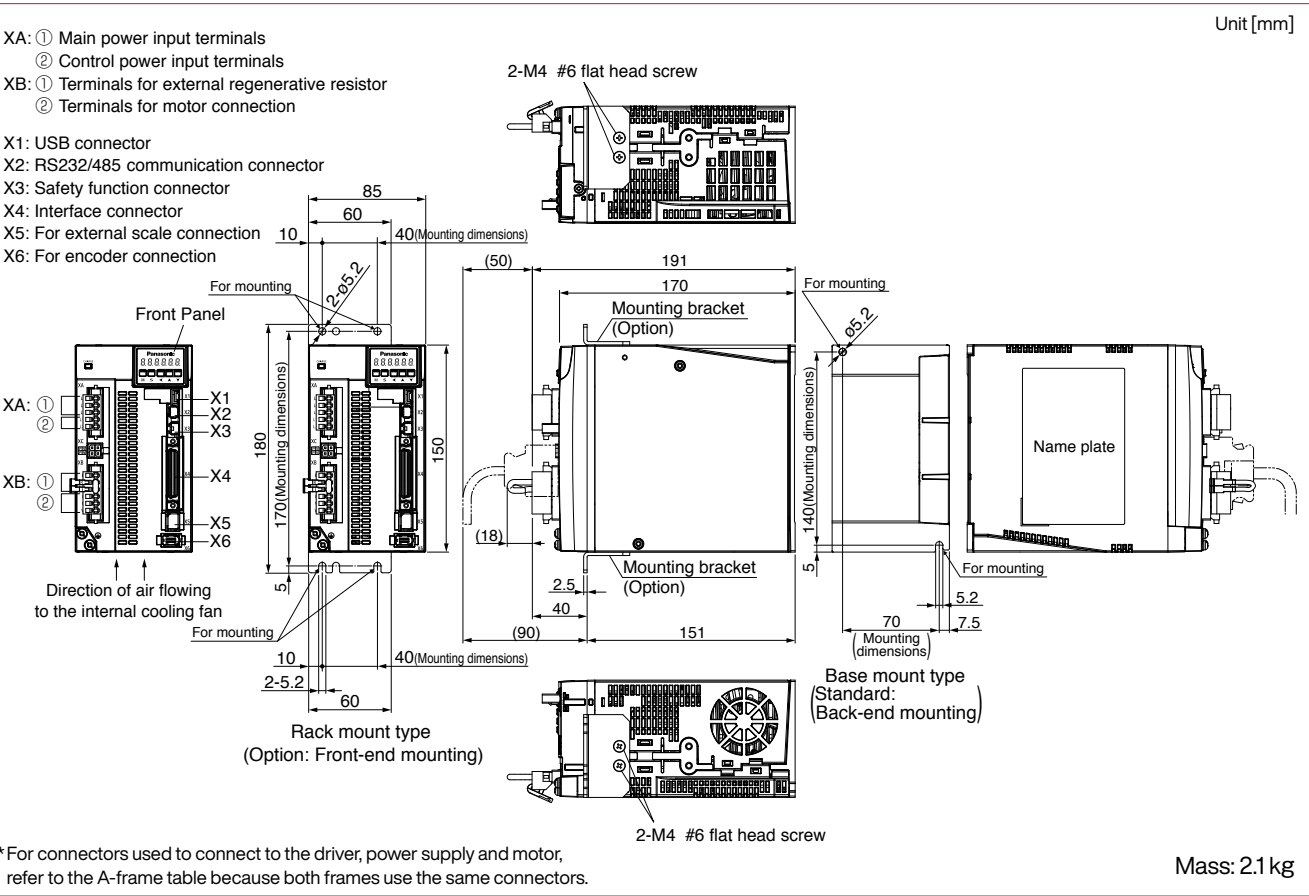
C-frame



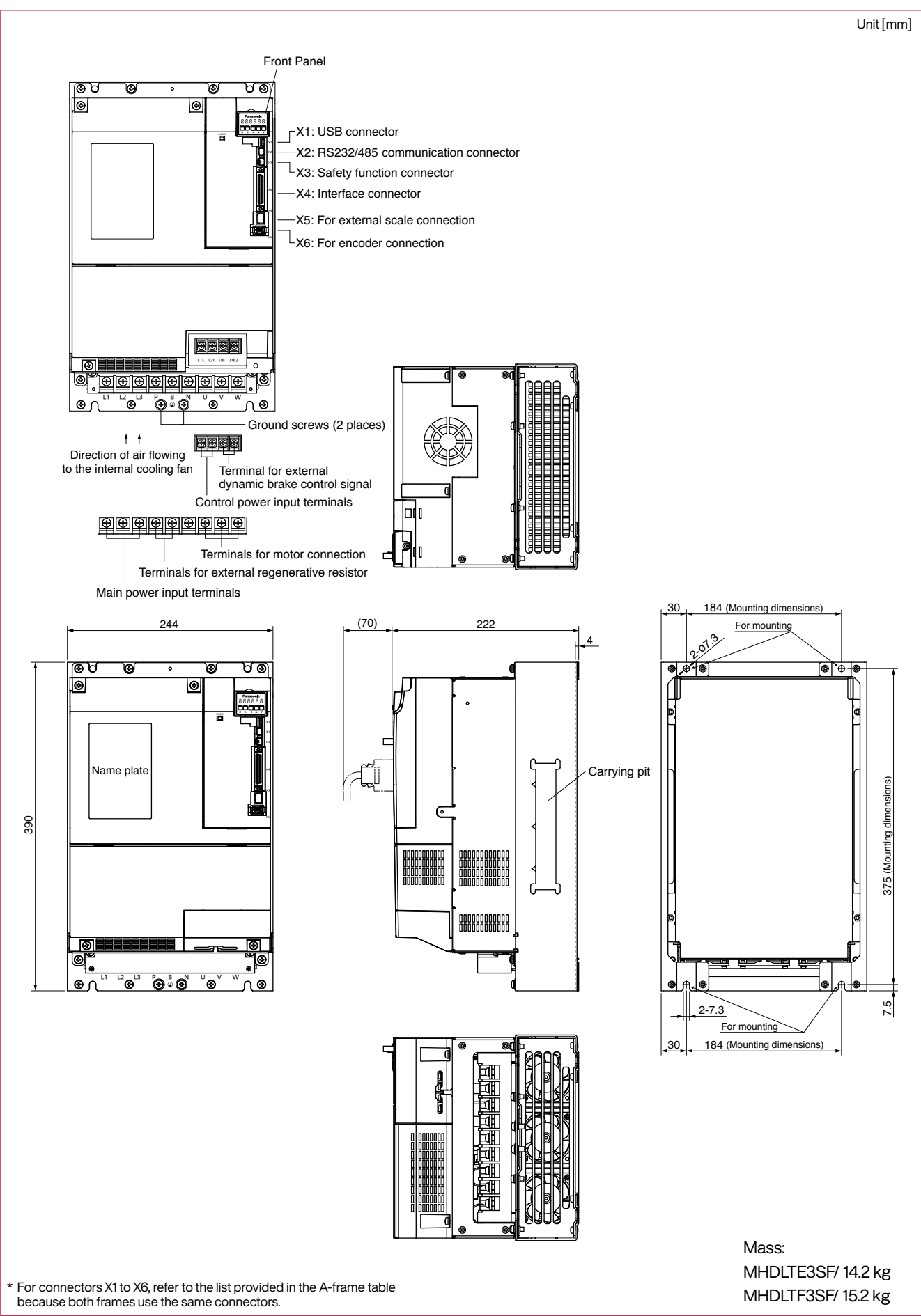
B-frame



D-frame (200 V)



H-frame (200 V) (The lineup of A6SE and A6SG series is not available.)



Features

- Line-up IP67 motor: 50 W to 5.0 kW
- Max speed: 6500r/min (MHMF 50 W to 400 W)
- Low inertia (MSMF) to High inertia (MHMF).
- Low cogging torque: Rated torque ratio 0.5 % (typical value).
- 23-bit absolute encoder (8388608 pulse).

Motor Lineup

80 mm sq. or less	 MSMF Low inertia Max. speed : 6000 r/min Rated speed : 3000 r/min Rated output : 50 W to 1000 W Enclosure: IP65: Leadwire type IP67: Connector type	 MQMF (Flat type) Middle inertia Max. speed : 6500 r/min Rated speed : 3000 r/min Rated output : 100 W to 400 W Enclosure: IP65: Leadwire type IP67: Connector type	 MHMF High inertia Max. speed : 6500 r/min 6000 r/min (750 W,1000 W) Rated speed : 3000 r/min Rated output : 50 W to 1000 W Enclosure: IP65: Leadwire type IP67: Connector type	
	 MSMF Low inertia Max. speed : 5000 r/min 4500 r/min (4.0 kW,5.0 kW) Rated speed : 3000 r/min Rated output : 1.0 kW to 5.0 kW Enclosure : IP67	 MDMF Middle inertia Max. speed : 3000 r/min 2000 r/min (11.0 kW to 22.0 kW) Rated speed : 2000 r/min 1500 r/min (11.0 kW to 22.0 kW) Rated output : 1.0 kW to 22.0 kW Enclosure : IP67, IP44 (22.0 kW)		
	 MGMF (Low speed/ High torque type) Middle inertia Max. speed : 3000 r/min Rated speed : 1500 r/min Rated output : 0.85 kW to 5.5 kW Enclosure : IP67	 MHMF High inertia Max. speed : 3000 r/min Rated speed : 2000 r/min 1500 r/min (7.5 kW) Rated output : 1.0 kW to 7.5 kW Enclosure : IP67		

Motor Contents

MSMF
50 W to 5.0 kW P.63

MQMF
100 W to 400 W P.79

MHMF
50 W to 7.5 kW P.85

MDMF
1.0 kW to 22.0 kW P.102

MGMF
0.85 kW to 5.5 kW P.112

Dimensions

MSMF (50 W to 1000 W).....	P.119
MSMF (1.0 kW to 5.0 kW).....	P.127
MQMF (100 W to 400 W).....	P.135
MHMF (50 W to 1000 W).....	P.147
MHMF (1.0 kW to 7.5 kW).....	P.171
MDMF (1.0 kW to 22.0 kW).....	P.180
MGMF (0.85 kW to 5.5 kW).....	P.193

Special Order Product P.203

Motors with Gear Reducer P.293

Motor Specification Description

Environmental Conditions	P.303
Notes on [Motor specification] page	P.303
Permissible Load at Output Shaft	P.304
Built-in Holding Brake	P.305

Specifications

			AC100 V
Motor model ^{*1}			MSMF5AZL1□□
Applicable driver	Model No.	Multifunction type	MADLT01SF
		RS485 communication type ^{*2}	MADLN01SG
		Basic type ^{*2}	MADLN01SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.4
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.16
Momentary Max. peak torque		(N·m)	0.48
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	4.7
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4280	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.026
		With brake	0.029
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

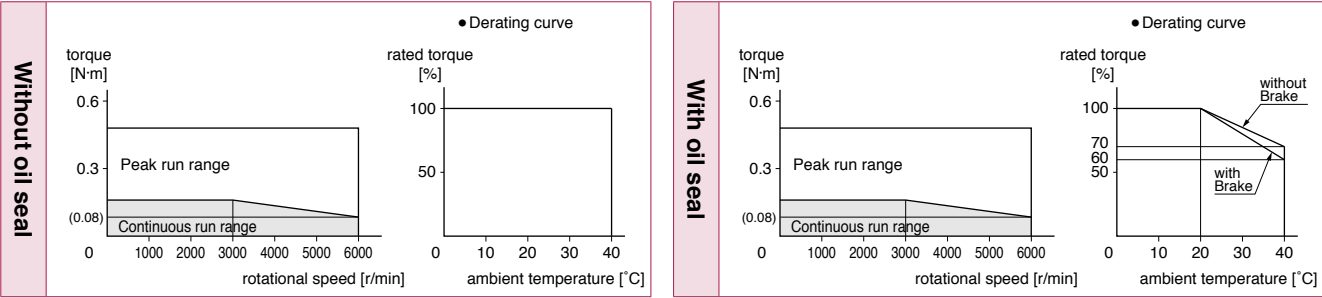
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.119		—	P.119		—
Connector type (IP67)	P.119		—	P.120		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF5AZL1□□
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.16
Momentary Max. peak torque		(N·m)	0.48
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	4.7
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.026
		With brake	0.029
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

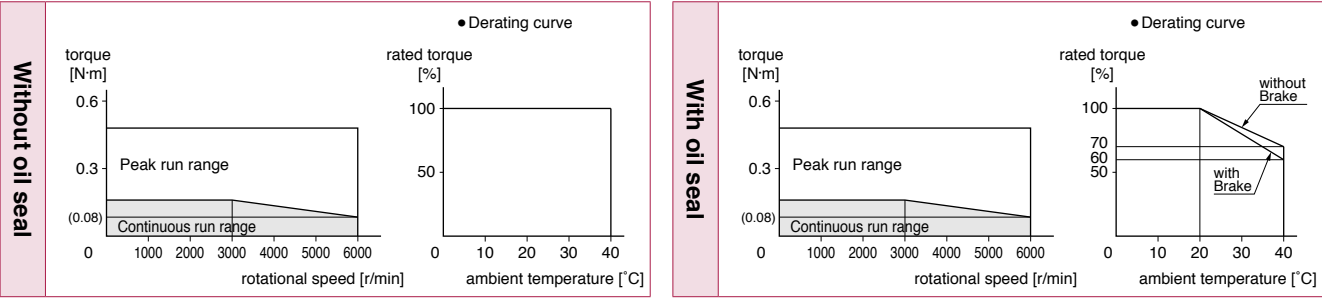
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.119		—	P.119		—
Connector type (IP67)	P.119		—	P.120		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MSMF011L1□□
Applicable driver	Model No.	Multifunction type	MADLT11SF
		RS485 communication type ^{*2}	MADLN11SG
		Basic type ^{*2}	MADLN11SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.4
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.32
Momentary Max. peak torque		(N·m)	0.95
Rated current		(A(rms))	1.6
Max. current		(A(o-p))	6.9
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4280	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.048
		With brake	0.051
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

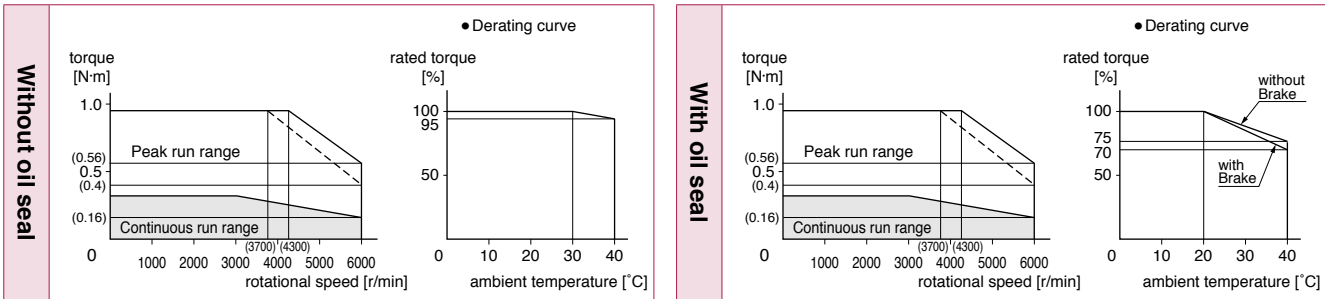
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.120			P.120		
Connector type (IP67)	P.121			P.121		

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF012L1□□
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.32
Momentary Max. peak torque		(N·m)	0.95
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	4.7
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.048
		With brake	0.051
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	8388608

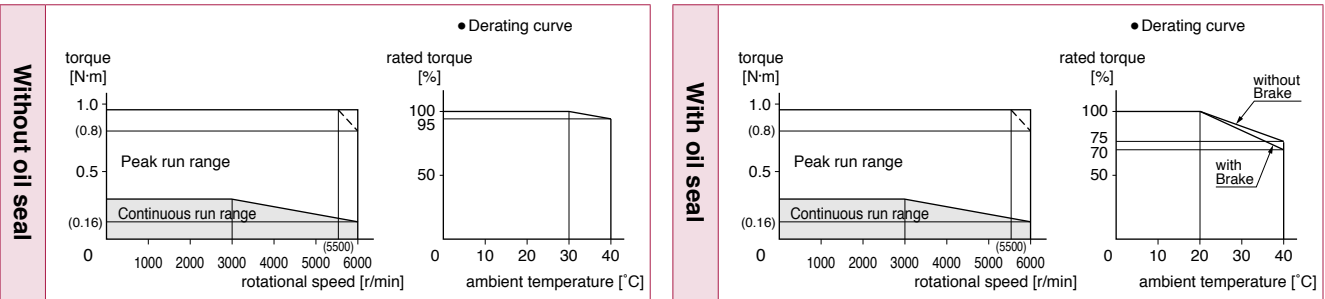
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.120			P.120		
Connector type (IP67)	P.121			P.121		

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MSMF021L1□□
Applicable driver	Model No.	Multifunction type	MBDLT21SF
		RS485 communication type ^{*2}	MBDLN21SG
		Basic type ^{*2}	MBDLN21SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.64
Momentary Max. peak torque		(N·m)	1.91
Rated current		(A(rms))	2.5
Max. current		(A(o-p))	10.6
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.14
		With brake	0.17
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
Resolution per single turn			8388608

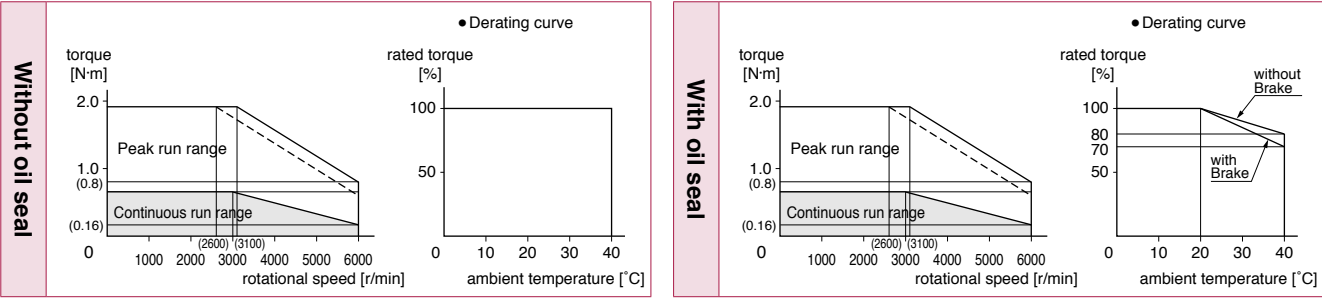
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.121			P.122		
Connector type (IP67)	P.122			P.122		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF022L1□□
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.64
Momentary Max. peak torque		(N·m)	1.91
Rated current		(A(rms))	1.5
Max. current		(A(o-p))	6.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.14
		With brake	0.17
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

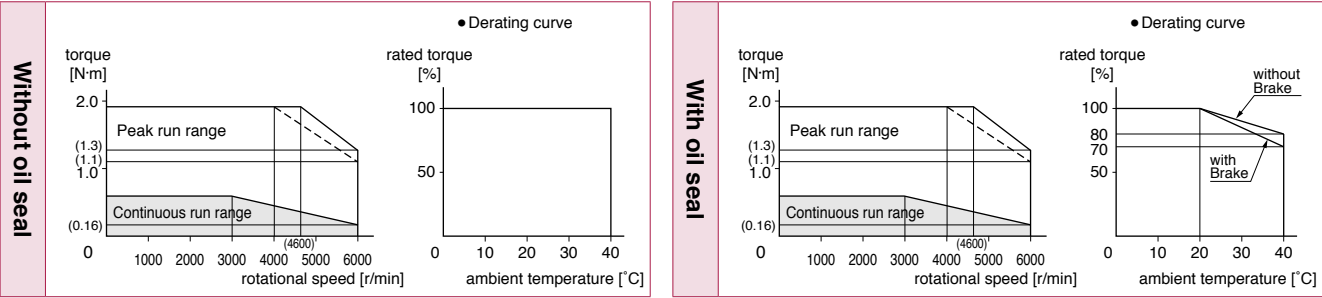
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.121			P.122		
Connector type (IP67)	P.122			P.122		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MSMF041L1□□
Applicable driver	Model No.	Multifunction type	MCDLT31SF
		RS485 communication type ^{*2}	MCDLN31SG
		Basic type ^{*2}	MCDLN31SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.27
Momentary Max. peak torque		(N·m)	3.82
Rated current		(A(rms))	4.6
Max. current		(A(o-p))	19.5
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4282	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.27
		With brake	0.30
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

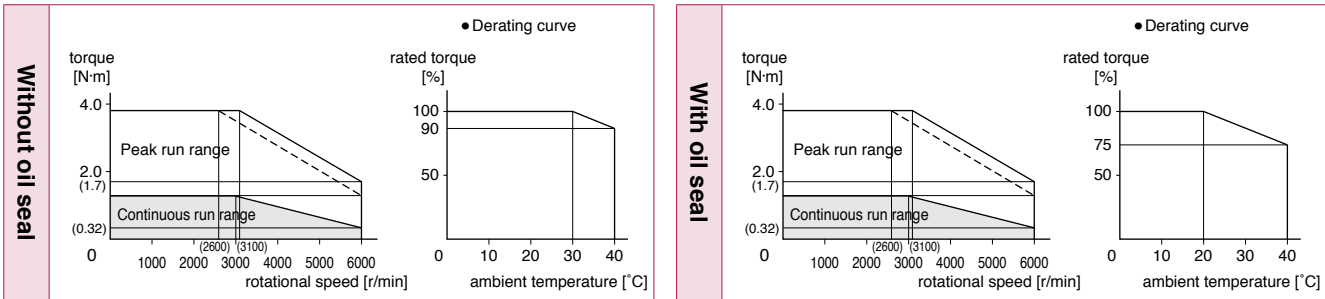
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.123		—	P.123		—
Connector type (IP67)	P.123		—	P.124		—

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF042L1□□
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type ^{*2}	MBDLN25SG
		Basic type ^{*2}	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.27
Momentary Max. peak torque		(N·m)	3.82
Rated current		(A(rms))	2.4
Max. current		(A(o-p))	10.2
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.27
		With brake	0.30
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	8388608

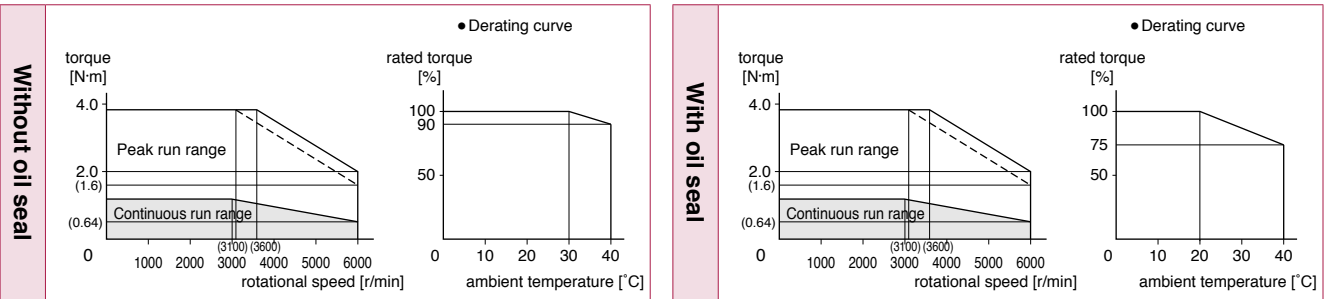
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.123		—	P.123		—
Connector type (IP67)	P.123		—	P.124		—

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF082L1□□
Applicable driver	Model No.	Multifunction type	MCDLT35SF
		RS485 communication type ^{*2}	MCDLN35SG
		Basic type ^{*2}	MCDLN35SE
Frame symbol		C-frame	
Power supply capacity (kVA)		1.8	
Rated output (W)		750	
Rated torque (N·m)		2.39	
Continuous stall torque (N·m)		2.39	
Momentary Max. peak torque (N·m)		7.16	
Rated current (A(rms))		4.1	
Max. current (A(o-p))		17.4	
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4283	No limit ^{Note)2}
Rated rotational speed (r/min)		3000	
Max. rotational speed (r/min)		6000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.96
		With brake	1.06
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}		20 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
	Resolution per single turn		8388608

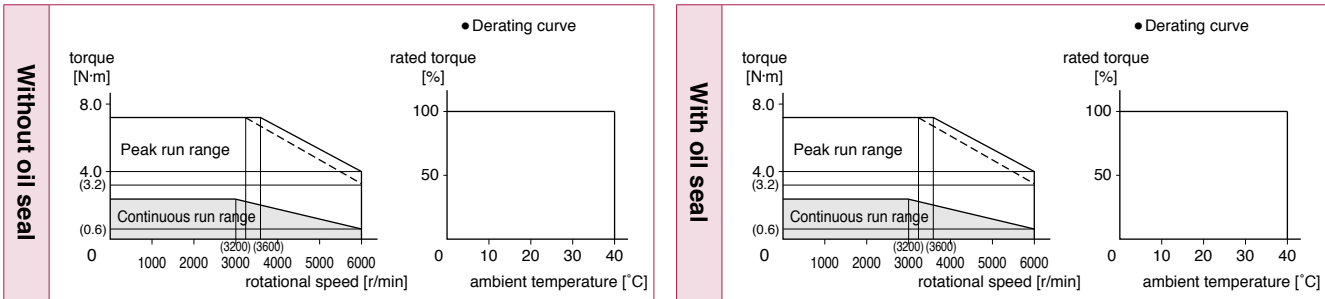
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.124		—	P.124		—
Connector type (IP67)	P.125		—	P.125		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF092L1□□
Applicable driver	Model No.	Multifunction type	MDDLT45SF
		RS485 communication type ^{*2}	MDDLN45SG
		Basic type ^{*2}	MDDLN45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.18
Momentary Max. peak torque		(N·m)	9.55
Rated current		(A(rms))	5.7
Max. current		(A(o-p))	24.2
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	1.26
		With brake	1.36
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

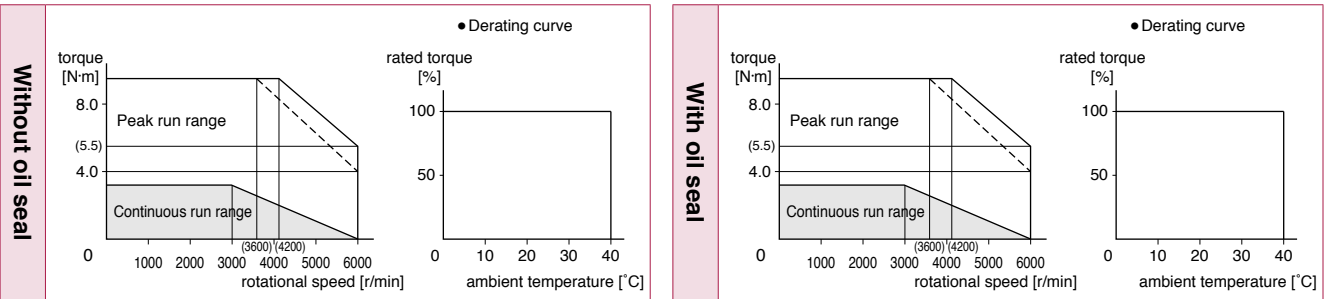
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.80 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.125		—	P.126		—
Connector type (IP67)	P.126		—	P.126		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF102L1□□
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.82
Momentary Max. peak torque		(N·m)	9.55
Rated current		(A(rms))	6.6
Max. current		(A(o-p))	28
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	2.15
		With brake	2.47
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

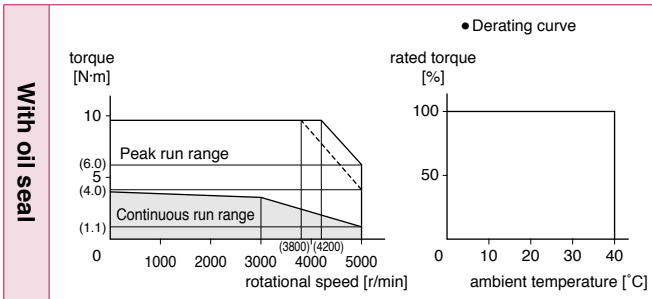
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.127		—	P.127	
Encoder connector Small size (JN2) type	—	P.127		—	P.128	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF152L1□□
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.72
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	8.2
Max. current		(A(o-p))	35
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	3.10
		With brake	3.45
Recommended moment of inertia ratio of the load and the rotor Note)3		15 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	8388608

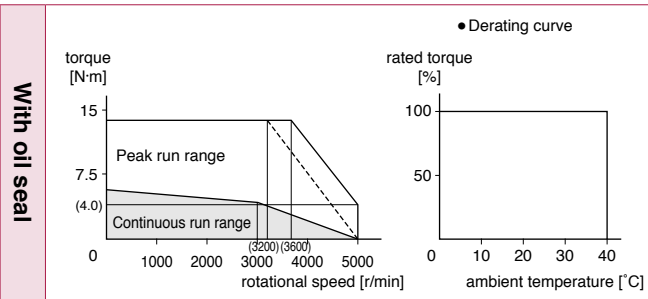
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.128		—	P.128	
Encoder connector Small size (JN2) type	—	P.129		—	P.129	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF202L1□□
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	6.37
Continuous stall torque		(N·m)	7.64
Momentary Max. peak torque		(N·m)	19.1
Rated current		(A(rms))	11.3
Max. current		(A(o-p))	48
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	4.06
		With brake	4.41
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

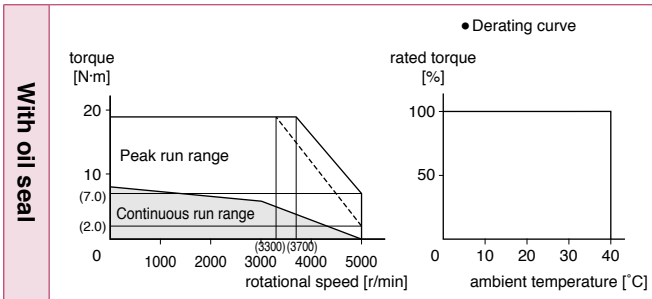
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.129		—	P.130	
Encoder connector Small size (JN2) type	—	P.130		—	P.130	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF302L1□□
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type ^{*2}	MFDLNA3SG
		Basic type ^{*2}	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	11.0
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	18.1
Max. current		(A(o-p))	77
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	7.04
		With brake	7.38
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

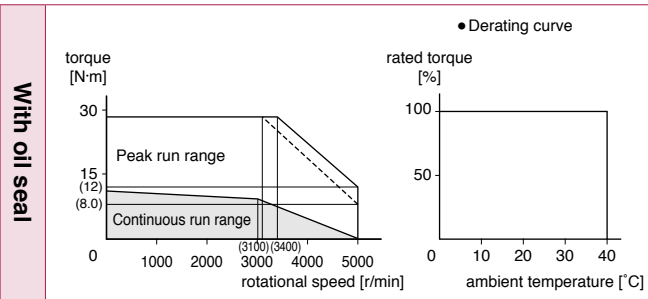
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.131		—	P.131	
Encoder connector Small size (JN2) type	—	P.131		—	P.132	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MSMF402L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type *2	MFDLNB3SG
		Basic type *2	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	12.7
Continuous stall torque		(N·m)	15.2
Momentary Max. peak torque		(N·m)	38.2
Rated current		(A(rms))	19.6
Max. current		(A(o-p))	83
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	4500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	14.4
		With brake	15.6
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

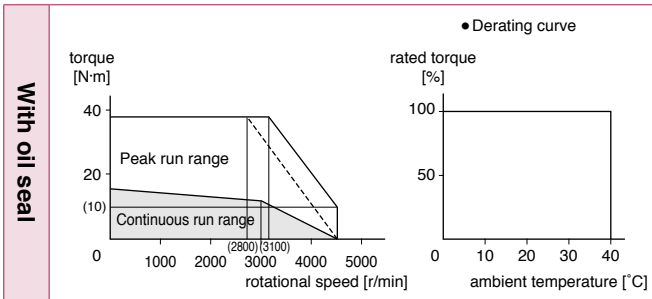
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.132		—	P.132	
Encoder connector Small size (JN2) type	—	P.133		—	P.133	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MSMF502L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	5000
Rated torque		(N·m)	15.9
Continuous stall torque		(N·m)	19.1
Momentary Max. peak torque		(N·m)	47.7
Rated current		(A(rms))	24.0
Max. current		(A(o-p))	102
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	4500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	19.0
		With brake	20.2
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

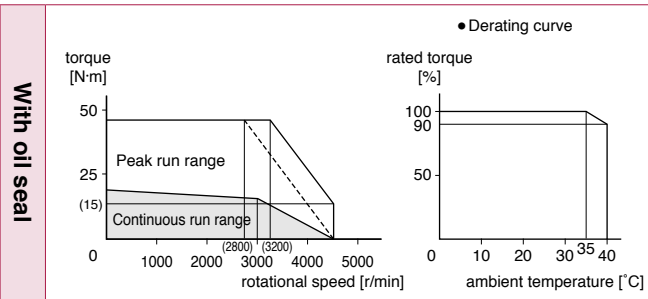
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.133		—	P.134	
Encoder connector Small size (JN2) type	—	P.134		—	P.134	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MQMF011L1□□
Applicable driver	Model No.	Multifunction type	MADLT11SF
		RS485 communication type ^{*2}	MADLN11SG
		Basic type ^{*2}	MADLN11SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.4
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.6
Max. current		(A(o-p))	7.9
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4280	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.15
		With brake	0.18
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

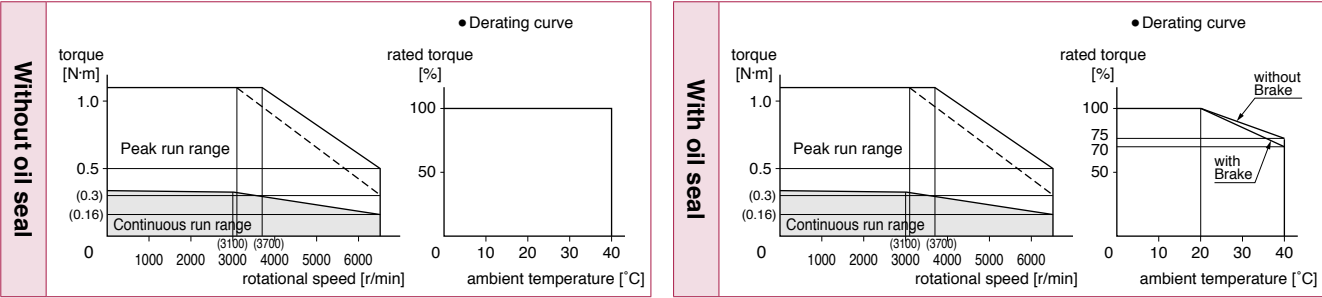
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.135	P.135	P.135	P.136	P.136	P.136
Connector type (IP67)	P.137	P.137	P.137	P.138	P.138	P.138

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MQMF012L1□□
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.15
		With brake	0.18
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

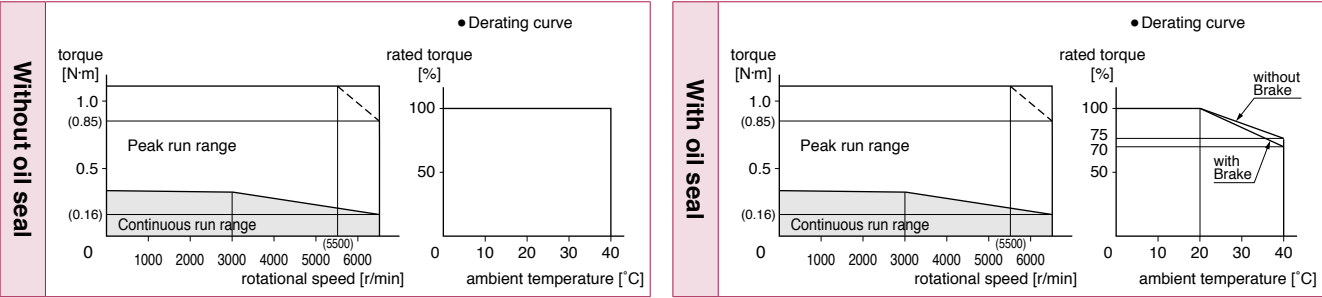
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.135	P.135	P.135	P.136	P.136	P.136
Connector type (IP67)	P.137	P.137	P.137	P.138	P.138	P.138

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MQMF021L1□□
Applicable driver	Model No.	Multifunction type	MBDLT21SF
		RS485 communication type ^{*2}	MBDLN21SG
		Basic type ^{*2}	MBDLN21SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.50
		With brake	0.59
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

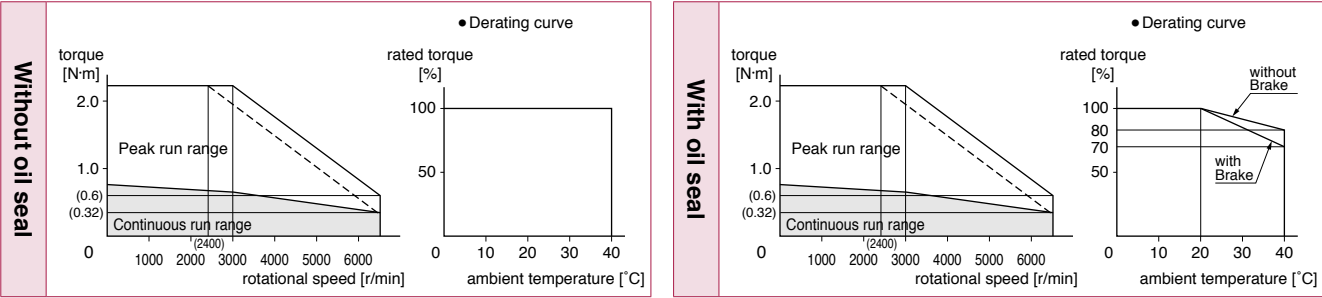
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.139	P.139	P.139	P.140	P.140	P.140
Connector type (IP67)	P.141	P.141	P.141	P.142	P.142	P.142

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MQMF022L1□□
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	1.4
Max. current		(A(o-p))	6.9
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.50
		With brake	0.59
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

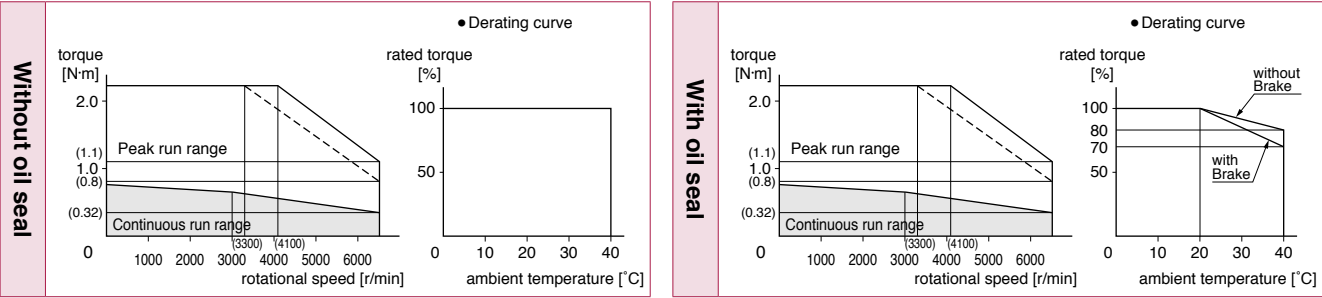
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.139	P.139	P.139	P.140	P.140	P.140
Connector type (IP67)	P.141	P.141	P.141	P.142	P.142	P.142

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MQMF041L1□□
Applicable driver	Model No.	Multifunction type	MCDLT31SF
		RS485 communication type ^{*2}	MCDLN31SG
		Basic type ^{*2}	MCDLN31SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	4.1
Max. current		(A(o-p))	20.3
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4282	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.98
		With brake	1.06
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

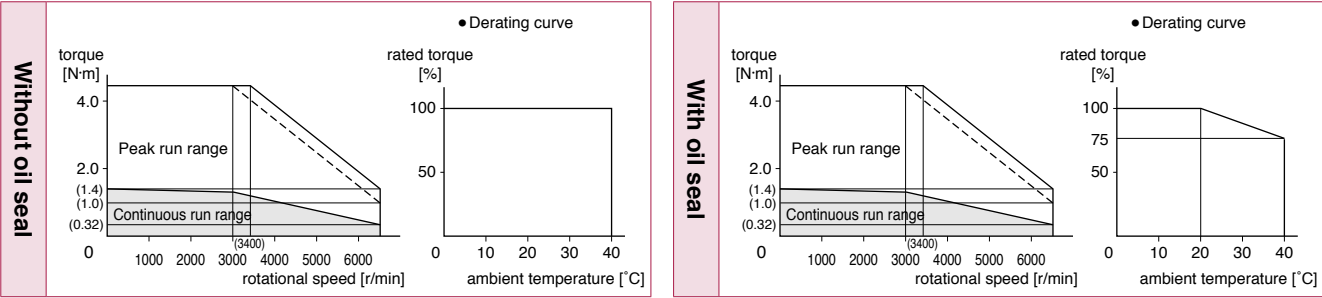
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.143	P.143	P.143	P.144	P.144	P.144
Connector type (IP67)	P.145	P.145	P.145	P.146	P.146	P.146

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MQMF042L1□□
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type ^{*2}	MBDLN25SG
		Basic type ^{*2}	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.98
		With brake	1.06
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

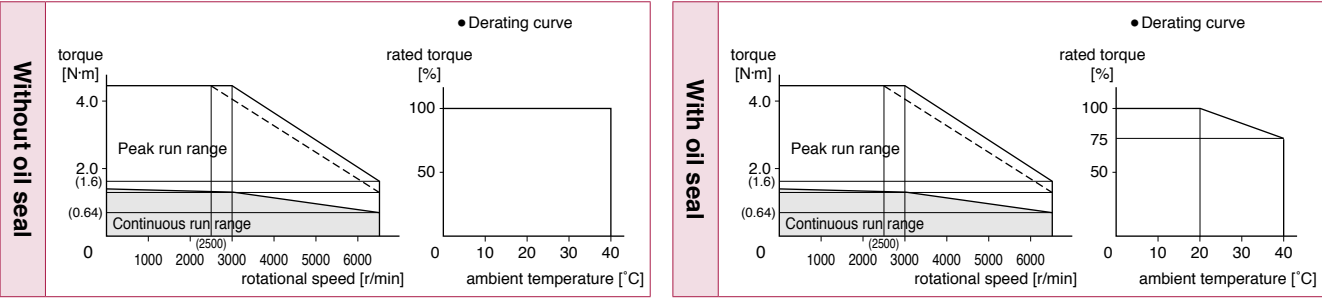
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.143	P.143	P.143	P.144	P.144	P.144
Connector type (IP67)	P.145	P.145	P.145	P.146	P.146	P.146

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MHMF5AZL1□□
Applicable driver	Model No.	Multifunction type	MADLT01SF
		RS485 communication type ^{*2}	MADLN01SG
		Basic type ^{*2}	MADLN01SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.4
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.18
Momentary Max. peak torque		(N·m)	0.56
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4280	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.038
		With brake	0.042
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

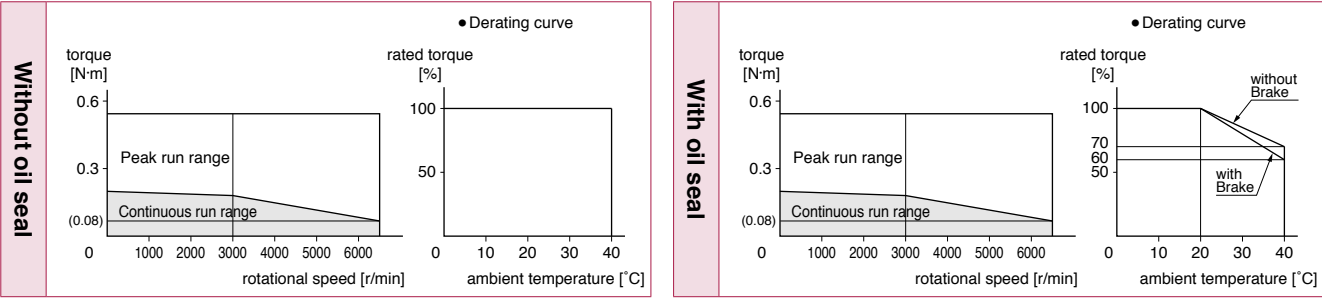
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.147	P.147	P.147	P.148	P.148	P.148
Connector type (IP67)	P.149	P.149	P.149	P.150	P.150	P.150

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF5AZL1□□
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.18
Momentary Max. peak torque		(N·m)	0.56
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.038
		With brake	0.042
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

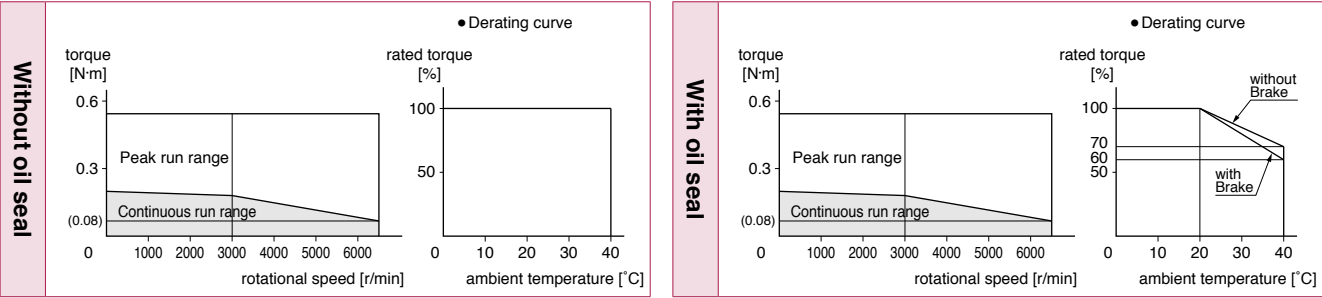
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.147	P.147	P.147	P.148	P.148	P.148
Connector type (IP67)	P.149	P.149	P.149	P.150	P.150	P.150

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MHMF011L1□□
Applicable driver	Model No.	Multifunction type	MADLT11SF
		RS485 communication type ^{*2}	MADLN11SG
		Basic type ^{*2}	MADLN11SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.4
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.6
Max. current		(A(o-p))	7.9
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4280	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.071
		With brake	0.074
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
Resolution per single turn			8388608

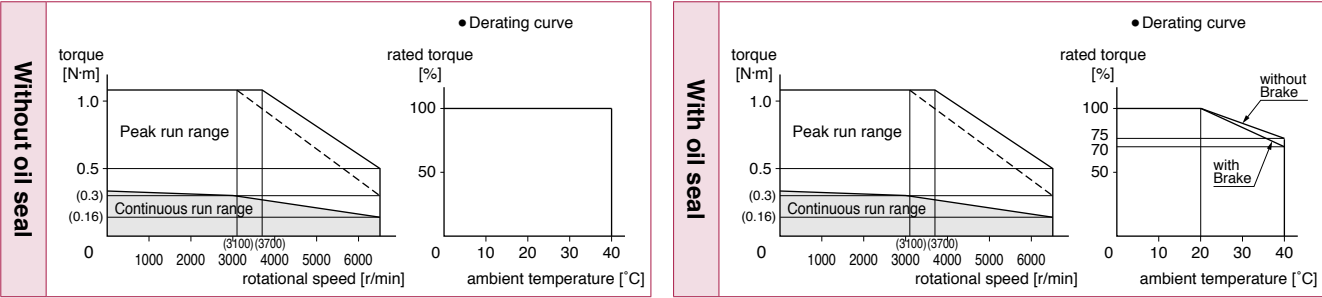
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.151	P.151	P.151	P.152	P.152	P.152
Connector type (IP67)	P.153	P.153	P.153	P.154	P.154	P.154

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF012L1□□
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.071
		With brake	0.074
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

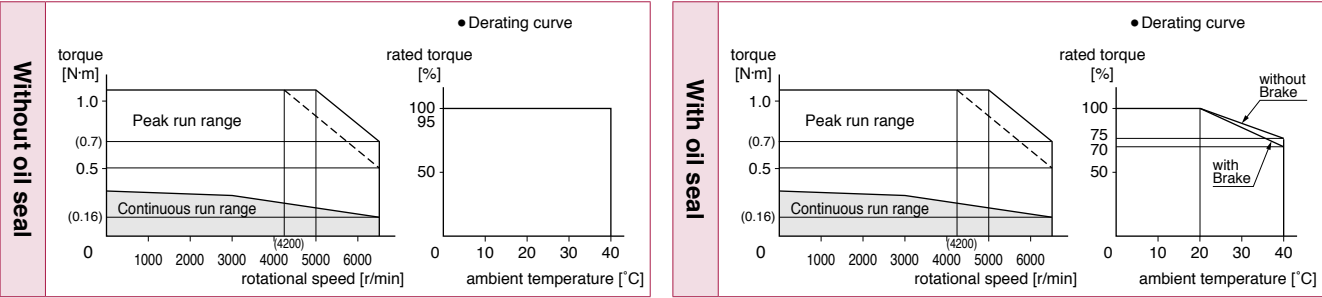
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.151	P.151	P.151	P.152	P.152	P.152
Connector type (IP67)	P.153	P.153	P.153	P.154	P.154	P.154

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MHMF021L1□□
Applicable driver	Model No.	Multifunction type	MBDLT21SF
		RS485 communication type ^{*2}	MBDLN21SG
		Basic type ^{*2}	MBDLN21SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.29
		With brake	0.31
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

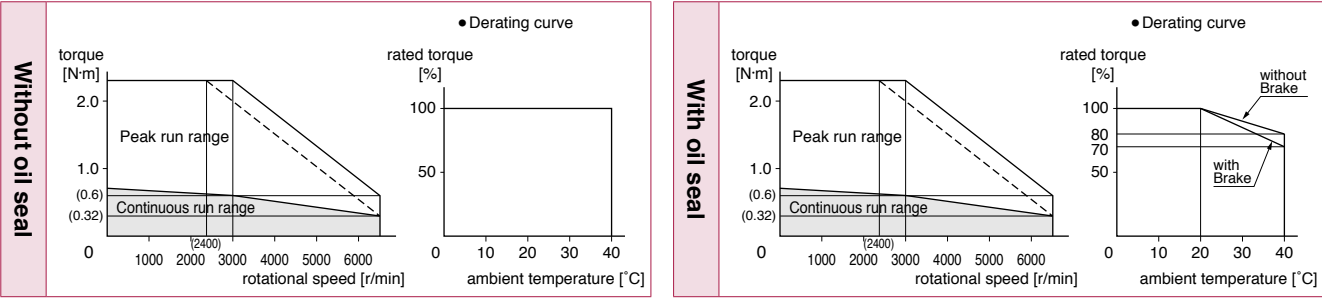
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.155	P.155	P.155	P.156	P.156	P.156
Connector type (IP67)	P.157	P.157	P.157	P.158	P.158	P.158

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF022L1□□
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	1.4
Max. current		(A(o-p))	6.9
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.29
		With brake	0.31
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

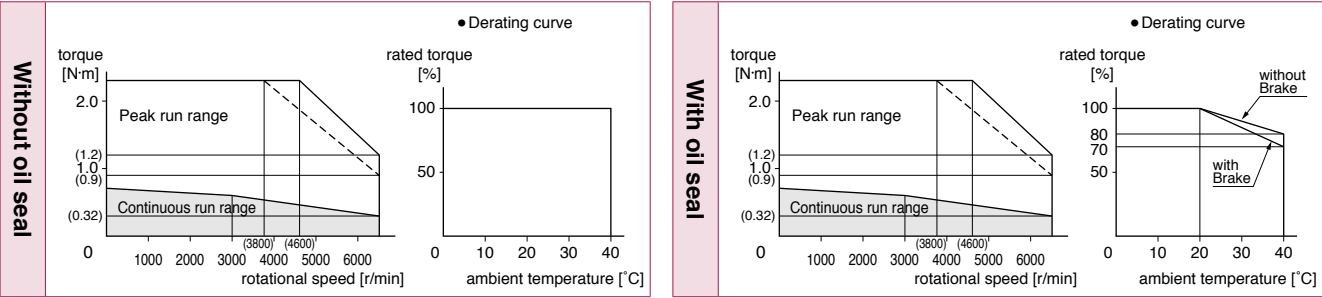
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.155	P.155	P.155	P.156	P.156	P.156
Connector type (IP67)	P.157	P.157	P.157	P.158	P.158	P.158

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC100 V
Motor model ^{*1}			MHMF041L1□□
Applicable driver	Model No.	Multifunction type	MCDLT31SF
		RS485 communication type ^{*2}	MCDLN31SG
		Basic type ^{*2}	MCDLN31SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	4.1
Max. current		(A(o-p))	20.3
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4282	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.56
		With brake	0.58
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}		30 times or less	
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

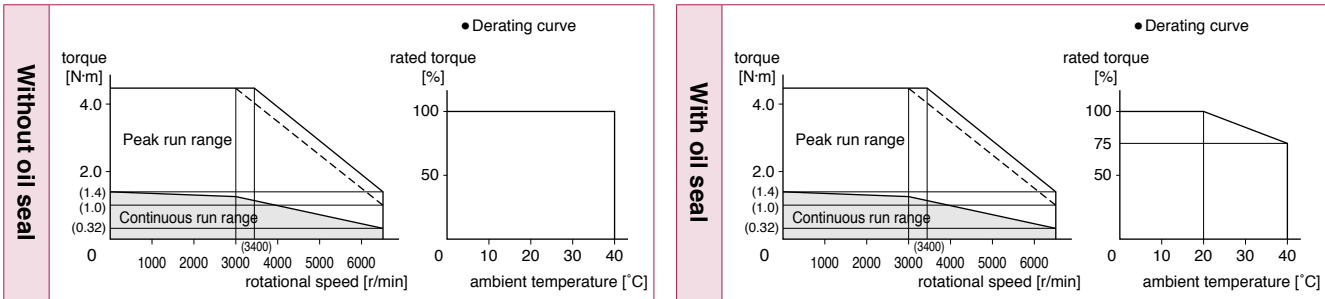
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC100 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.159	P.159	P.159	P.160	P.160	P.160
Connector type (IP67)	P.161	P.161	P.161	P.162	P.162	P.162

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF042L1□□
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type ^{*2}	MBDLN25SG
		Basic type ^{*2}	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4283	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.56
		With brake	0.58
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

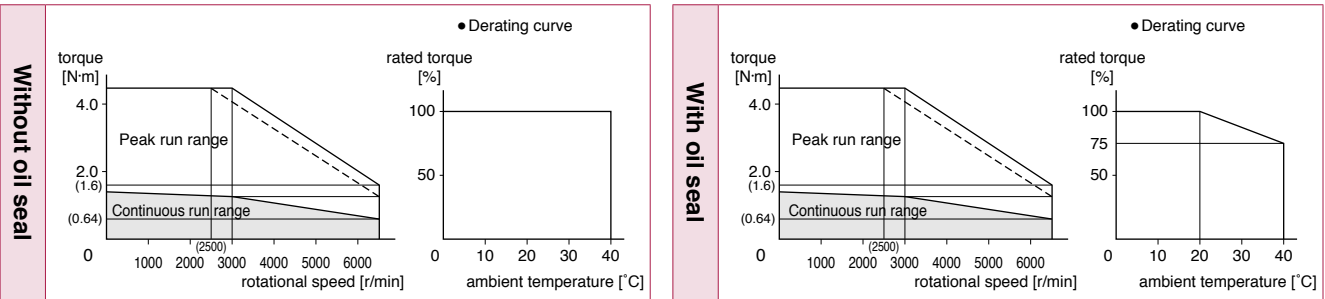
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.159	P.159	P.159	P.160	P.160	P.160
Connector type (IP67)	P.161	P.161	P.161	P.162	P.162	P.162

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF082L1□□
Applicable driver	Model No.	Multifunction type	MCDLT35SF
		RS485 communication type ^{*2}	MCDLN35SG
		Basic type ^{*2}	MCDLN35SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	1.8
Rated output		(W)	750
Rated torque		(N·m)	2.39
Continuous stall torque		(N·m)	2.86
Momentary Max. peak torque		(N·m)	8.36
Rated current		(A(rms))	3.8
Max. current		(A(o-p))	18.8
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	1.56
		With brake	1.66
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

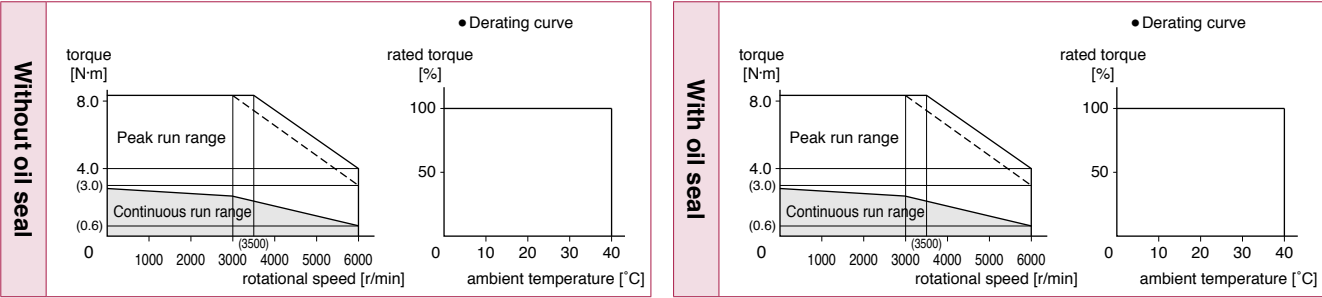
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.163	P.163	P.163	P.164	P.164	P.164
Connector type (IP67)	P.165	P.165	P.165	P.166	P.166	P.166

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF092L1□□
Applicable driver	Model No.	Multifunction type	MDDLT55SF
		RS485 communication type ^{*2}	MDDLN55SG
		Basic type ^{*2}	MDDLN55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.34
Momentary Max. peak torque		(N·m)	11.1
Rated current		(A(rms))	5.7
Max. current		(A(o-p))	28.2
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	2.03
		With brake	2.13
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

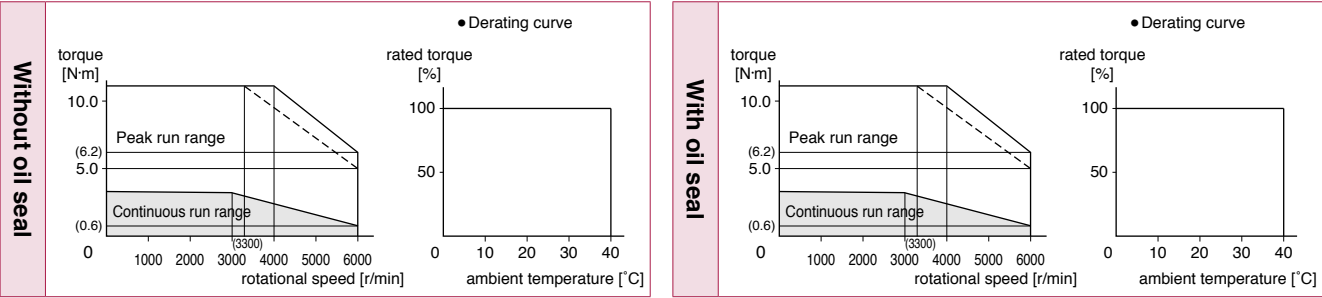
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.167	P.167	P.167	P.168	P.168	P.168
Connector type (IP67)	P.169	P.169	P.169	P.170	P.170	P.170

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model [†]			MHMF102L1□□
Applicable driver	Model No.	Multifunction type	MDDL T45SF
		RS485 communication type [‡]	MDDL N45SG
		Basic type [‡]	MDDL N45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.25
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.2
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	22.9
		With brake	24.1
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			5 times or less
Rotary encoder specifications ^{‡3}			23-bit Absolute
	Resolution per single turn		8388608

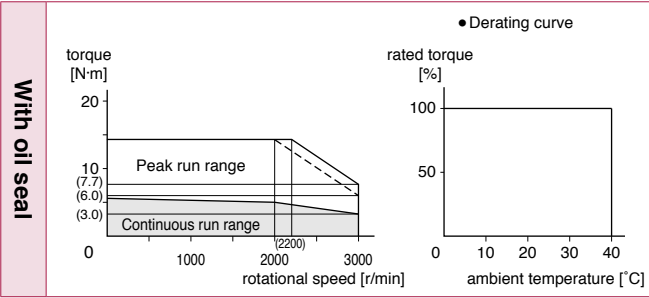
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.171		—	P.171	
Encoder connector Small size (JN2) type	—	P.171		—	P.172	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF152L1□□
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	7.16
Continuous stall torque		(N·m)	7.52
Momentary Max. peak torque		(N·m)	21.5
Rated current		(A(rms))	8.0
Max. current		(A(o-p))	34
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	33.4
		With brake	34.6
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

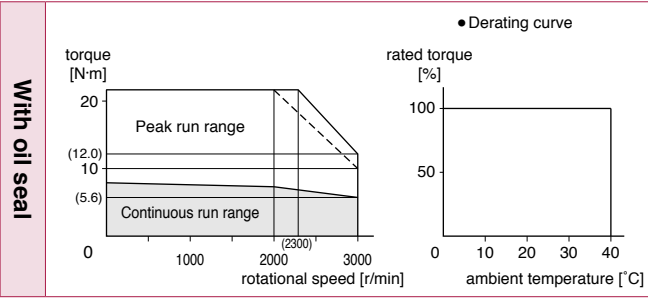
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.172		—	P.172	
Encoder connector Small size (JN2) type	—	P.173		—	P.173	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MHMF202L1□□
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type *2	MEDLN83SG
		Basic type *2	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	11.5
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	12.5
Max. current		(A(o-p))	53
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	55.7
		With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

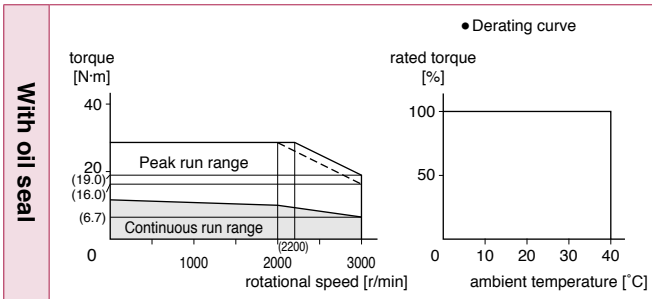
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.173		—	P.174	
Encoder connector Small size (JN2) type	—	P.174		—	P.174	

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.
 - Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
 - Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF302L1□□
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type ^{*2}	MFDLNA3SG
		Basic type ^{*2}	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	14.3
Continuous stall torque		(N·m)	17.2
Momentary Max. peak torque		(N·m)	43.0
Rated current		(A(rms))	17.0
Max. current		(A(o-p))	72
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	85.3
		With brake	90.7
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
	Resolution per single turn		8388608

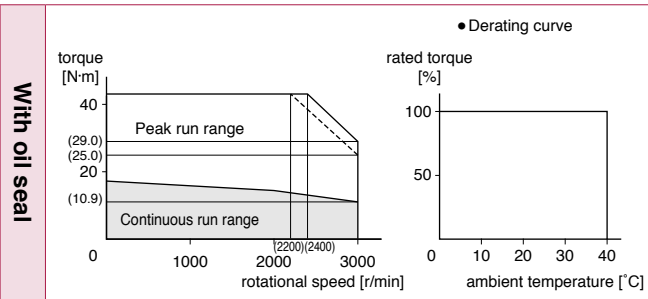
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.175		—	P.175	
Encoder connector Small size (JN2) type	—	P.175		—	P.176	

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.
 - Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
 - Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF402L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	19.1
Continuous stall torque		(N·m)	22.0
Momentary Max. peak torque		(N·m)	57.3
Rated current		(A(rms))	20
Max. current		(A(o-p))	85
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	104
		With brake	110
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

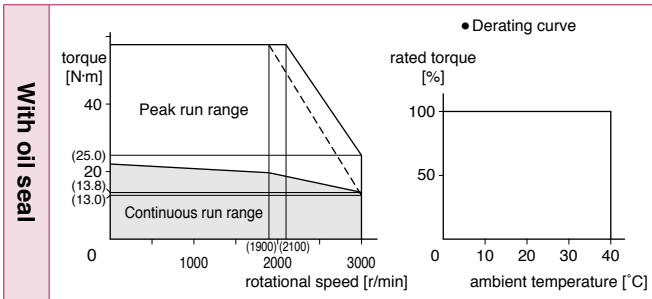
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.176		—	P.176	
Encoder connector Small size (JN2) type	—	P.177		—	P.177	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF502L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	5000
Rated torque		(N·m)	23.9
Continuous stall torque		(N·m)	26.3
Momentary Max. peak torque		(N·m)	71.6
Rated current		(A(rms))	23.3
Max. current		(A(o-p))	99
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	146
		With brake	151
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	8388608

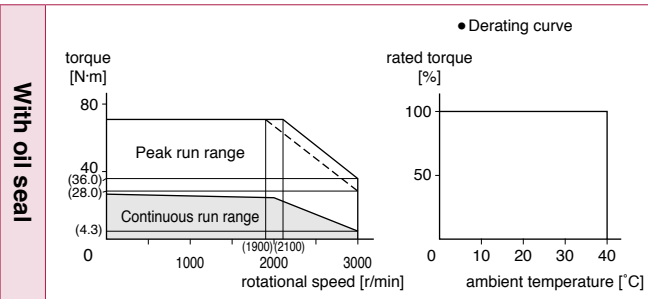
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.177		—	P.178	
Encoder connector Small size (JN2) type	—	P.178		—	P.178	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MHMF752L1□□
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
Frame symbol		G-frame	
Power supply capacity		(kVA)	11
Rated output		(W)	7500
Rated torque		(N·m)	47.8
Continuous stall torque		(N·m)	47.8
Momentary Max. peak torque		(N·m)	125
Rated current		(A(rms))	40.2
Max. current		(A(o-p))	154
Regenerative brake frequency (times/min)	Without option		No limit ^{Note)2}
	DV0P4285×3		No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		272
	With brake		279
Recommended moment of inertia ratio of the load and the rotor		^{Note)3}	5 times or less
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	
		8388608	

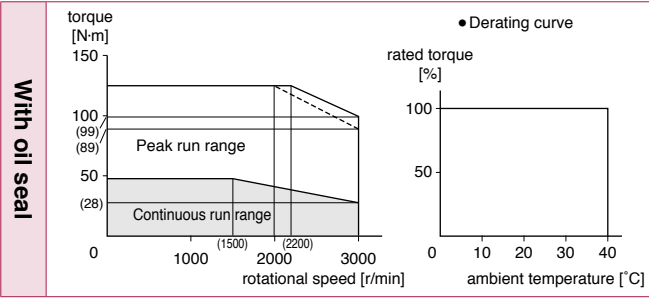
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.179	—	—	P.179	—
Encoder connector Small size (JN2) type	—	P.179	—	—	P.180	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MDMF102L1□□
Applicable driver	Model No.	Multifunction type	MDDL45SF
		RS485 communication type ^{*2}	MDDL45SG
		Basic type ^{*2}	MDDL45SE
Frame symbol		D-frame	
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.25
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.2
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min)	Without option		No limit ^{Note)2}
	DV0P4284		No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		6.18
	With brake		7.40
Recommended moment of inertia ratio of the load and the rotor		^{Note)3}	10 times or less
Rotary encoder specifications ^{*3}		23-bit Absolute	
		Resolution per single turn	
		8388608	

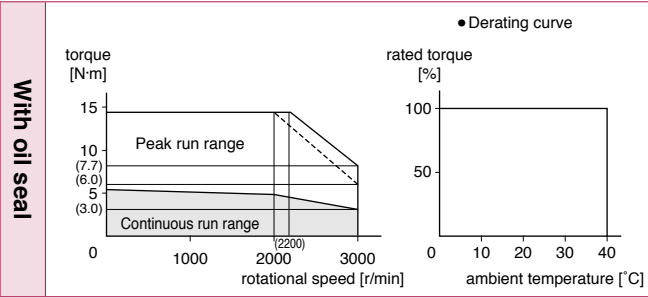
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.180		—	P.180	
Encoder connector Small size (JN2) type	—	P.181		—	P.181	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model [†]			MDMF152L1□□
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type [‡]	MDDL N55SG
		Basic type [‡]	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	7.16
Continuous stall torque		(N·m)	7.52
Momentary Max. peak torque		(N·m)	21.5
Rated current		(A(rms))	8.0
Max. current		(A(o-p))	34
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	9.16
		With brake	10.4
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications [‡]			23-bit Absolute
	Resolution per single turn		8388608

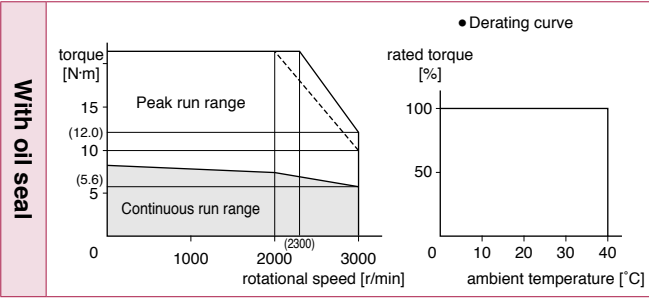
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.181		—	P.182	
Encoder connector Small size (JN2) type	—	P.182		—	P.182	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MDMF202L1□□
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	10.0
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	9.9
Max. current		(A(o-p))	42
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	12.1
		With brake	13.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

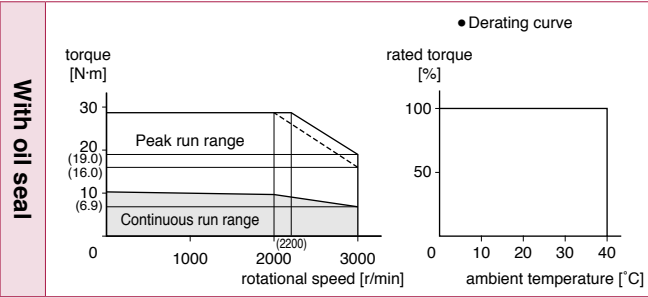
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.183		—	P.183	
Encoder connector Small size (JN2) type	—	P.183		—	P.184	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model [†]			MDMF302L1□□
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type [‡]	MFDLNA3SG
		Basic type [‡]	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	14.3
Continuous stall torque		(N·m)	15.0
Momentary Max. peak torque		(N·m)	43.0
Rated current		(A(rms))	16.4
Max. current		(A(o-p))	70
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	18.6
		With brake	19.6
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications [‡]			23-bit Absolute
	Resolution per single turn		8388608

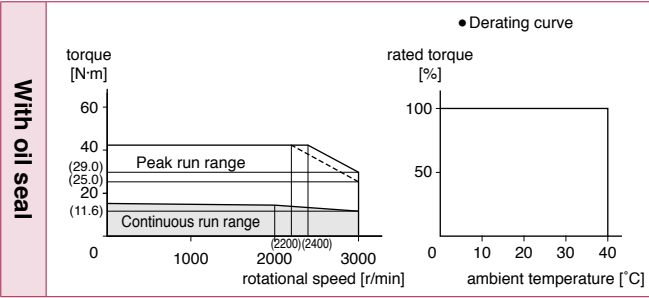
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.184		—	P.184	
Encoder connector Small size (JN2) type	—	P.185		—	P.185	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MDMF402L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	19.1
Continuous stall torque		(N·m)	22.0
Momentary Max. peak torque		(N·m)	57.3
Rated current		(A(rms))	20.0
Max. current		(A(o-p))	85
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

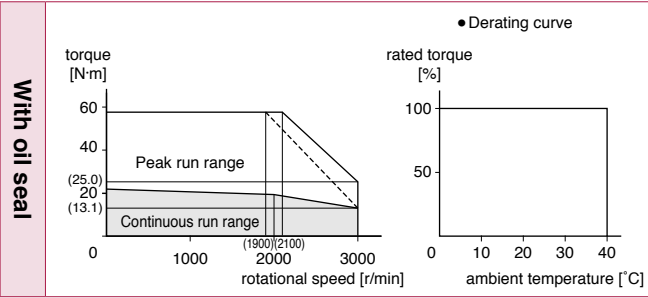
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.185		—	P.186	
Encoder connector Small size (JN2) type	—	P.186		—	P.186	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MDMF502L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
Frame symbol		F-frame	
Power supply capacity (kVA)		7.8	
Rated output (W)		5000	
Rated torque (N·m)		23.9	
Continuous stall torque (N·m)		26.3	
Momentary Max. peak torque (N·m)		71.6	
Rated current (A(rms))		23.3	
Max. current (A(o-p))		99	
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed (r/min)		2000	
Max. rotational speed (r/min)		3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	58.2
		With brake	63.0
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}		10 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
Resolution per single turn		8388608	

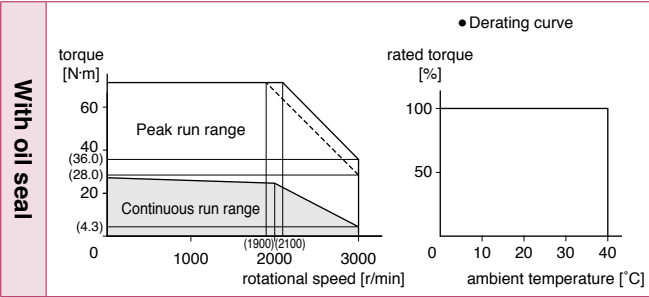
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.187		—	P.187	
Encoder connector Small size (JN2) type	—	P.187		—	P.188	

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MDMF752L1□□
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
	Frame symbol		G-frame
Power supply capacity		(kVA)	11
Rated output		(W)	7500
Rated torque		(N·m)	47.8
Continuous stall torque		(N·m)	47.8
Momentary Max. peak torque		(N·m)	125
Rated current		(A(rms))	40.2
Max. current		(A(o-p))	154
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×3	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	122
		With brake	127
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

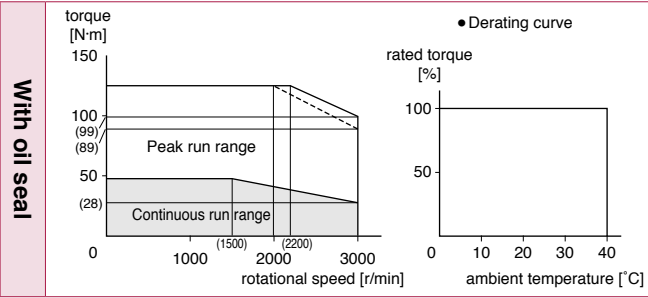
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.188	—	—	P.188	—
Encoder connector Small size (JN2) type	—	P.189	—	—	P.189	—

- <Cautions>
- Reduce the moment of inertia ratio if high speed response operation is required.

Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MDMFC12L1□□
Applicable driver	Model No.	Multifunction type	MHDLTE3SF
		RS485 communication type *2	—
		Basic type *2	—
Frame symbol		H-frame	
Power supply capacity		(kVA)	20
Rated output		(W)	11000
Rated torque		(N·m)	70.0
Continuous stall torque		(N·m)	70.0
Momentary Max. peak torque		(N·m)	175
Rated current		(A(rms))	57.1
Max. current		(A(o-p))	209
Regenerative brake frequency (times/min)	Without option		No limit Note)2
	DV0P4285×6		No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	2000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		205
	With brake		214
Recommended moment of inertia ratio of the load and the rotor		Note)3	10 times or less
Rotary encoder specifications *3		23-bit Absolute	
		Resolution per single turn	
		8388608	

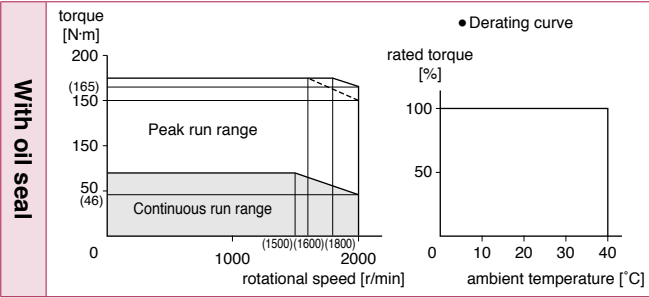
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.189	—	—	P.190	—
Encoder connector Small size (JN2) type	—	P.190	—	—	P.190	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MDMFC52L1□□
Applicable driver	Model No.	Multifunction type	MHDLTE3SF
		RS485 communication type *2	—
		Basic type *2	—
Frame symbol		H-frame	
Power supply capacity		(kVA)	20
Rated output		(W)	15000
Rated torque		(N·m)	95.5
Continuous stall torque		(N·m)	95.5
Momentary Max. peak torque		(N·m)	224
Rated current		(A(rms))	65.8
Max. current		(A(o-p))	225
Regenerative brake frequency (times/min)	Without option		No limit Note)2
	DV0P4285×6		No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	2000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)	Without brake		280
	With brake		289
Recommended moment of inertia ratio of the load and the rotor		Note)3	10 times or less
Rotary encoder specifications *3		23-bit Absolute	
		Resolution per single turn	
		8388608	

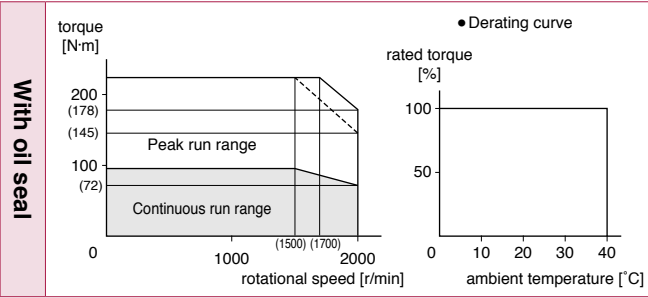
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	100 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	140 or less
Exciting current (DC) (A)	1.08
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.191	—	—	P.191	—
Encoder connector Small size (JN2) type	—	P.191	—	—	P.192	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MDMFD22L1□□
Applicable driver	Model No.	Multifunction type	MHDLTF3SF
		RS485 communication type *2	—
		Basic type *2	—
	Frame symbol		H-frame
Power supply capacity		(kVA)	28
Rated output		(W)	22000
Rated torque		(N·m)	140
Continuous stall torque		(N·m)	140
Momentary Max. peak torque		(N·m)	350
Rated current		(A(rms))	80.9
Max. current		(A(o-p))	294
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×6	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	2000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	431
		With brake	455
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

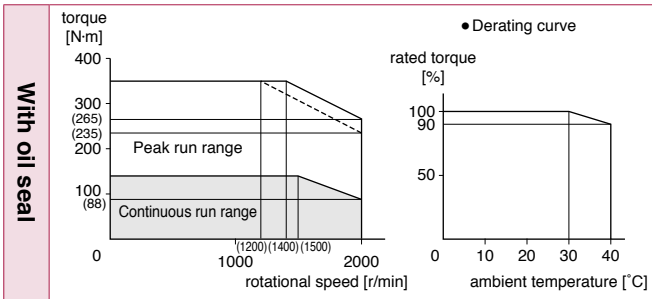
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	200 or more
Engaging time (ms)	300 or less
Releasing time (ms) Note)4	150 or less
Exciting current (DC) (A)	1.72
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	4508
	Thrust load A-direction (N)	1470
	Thrust load B-direction (N)	2646
During operation	Radial load P-direction (N)	2254
	Thrust load A, B-direction (N)	686

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.61.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.192	—	—	P.192	—
Encoder connector Small size (JN2) type	—	P.193	—	—	P.193	—

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF092L1□□
Applicable driver	Model No.	Multifunction type	MDDL45SF
		RS485 communication type ^{*2}	MDDL45SG
		Basic type ^{*2}	MDDL45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.0
Rated output		(W)	850
Rated torque		(N·m)	5.41
Continuous stall torque		(N·m)	5.41
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.9
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	6.18
		With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

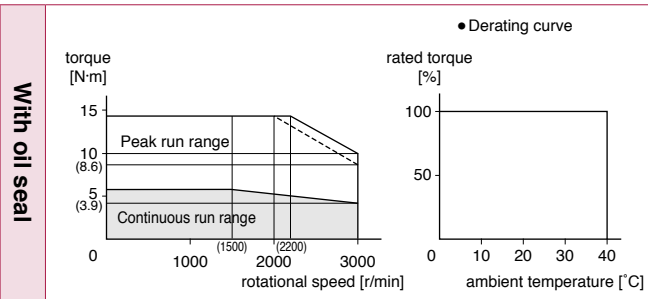
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.193		—	P.194	
Encoder connector Small size (JN2) type	—	P.194		—	P.194	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model *1			MGMF132L1□□
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type *2	MDDL N55SG
		Basic type *2	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.6
Rated output		(W)	1300
Rated torque		(N·m)	8.28
Continuous stall torque		(N·m)	8.28
Momentary Max. peak torque		(N·m)	23.3
Rated current		(A(rms))	9.3
Max. current		(A(o-p))	37
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	9.16
		With brake	10.4
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

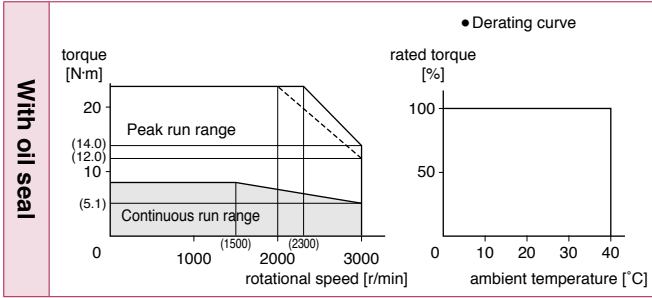
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.195		—	P.195	
Encoder connector Small size (JN2) type	—	P.195		—	P.196	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF182L1□□
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.4
Rated output		(W)	1800
Rated torque		(N·m)	11.5
Continuous stall torque		(N·m)	11.5
Momentary Max. peak torque		(N·m)	28.7
Rated current		(A(rms))	11.8
Max. current		(A(o-p))	42
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	12.1
		With brake	13.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

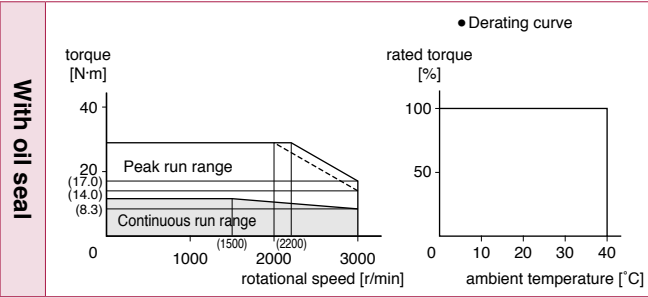
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.196		—	P.196	
Encoder connector Small size (JN2) type	—	P.197		—	P.197	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF242L1□□
Applicable driver	Model No.	Multifunction type	MEDLT93SF
		RS485 communication type ^{*2}	MEDLN93SG
		Basic type ^{*2}	MEDLN93SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	4.5
Rated output		(W)	2400
Rated torque		(N·m)	15.3
Continuous stall torque		(N·m)	15.3
Momentary Max. peak torque		(N·m)	45.2
Rated current		(A(rms))	16.0
Max. current		(A(o-p))	67
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

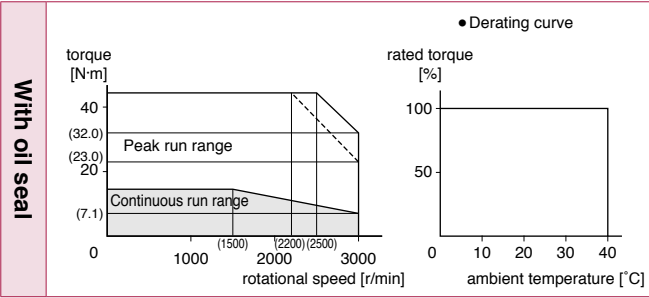
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.197		—	P.198	
Encoder connector Small size (JN2) type	—	P.198		—	P.198	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF292L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.0
Rated output		(W)	2900
Rated torque		(N·m)	18.5
Continuous stall torque		(N·m)	18.5
Momentary Max. peak torque		(N·m)	45.2
Rated current		(A(rms))	19.3
Max. current		(A(o-p))	67
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

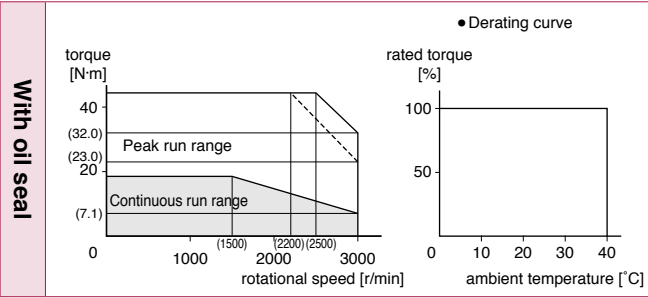
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.199		—	P.199	
Encoder connector Small size (JN2) type	—	P.199		—	P.200	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF442L1□□
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.0
Rated output		(W)	4400
Rated torque		(N·m)	28.0
Continuous stall torque		(N·m)	28.0
Momentary Max. peak torque		(N·m)	70.0
Rated current		(A(rms))	27.2
Max. current		(A(o-p))	96
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	58.2
		With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

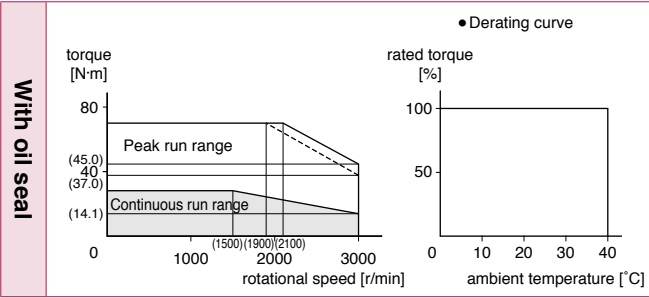
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.200		—	P.200	
Encoder connector Small size (JN2) type	—	P.201		—	P.201	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

Specifications

			AC200 V
Motor model ^{*1}			MGMF552L1□□
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
	Frame symbol		G-frame
Power supply capacity		(kVA)	8.5
Rated output		(W)	5500
Rated torque		(N·m)	35.0
Continuous stall torque		(N·m)	35.0
Momentary Max. peak torque		(N·m)	102
Rated current		(A(rms))	39.8
Max. current		(A(o-p))	164
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×3	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	83.0
		With brake	88.0
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

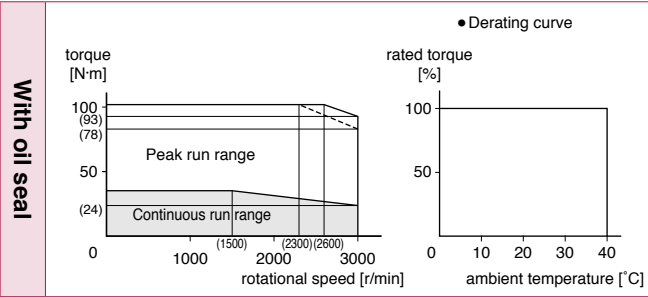
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.22.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)

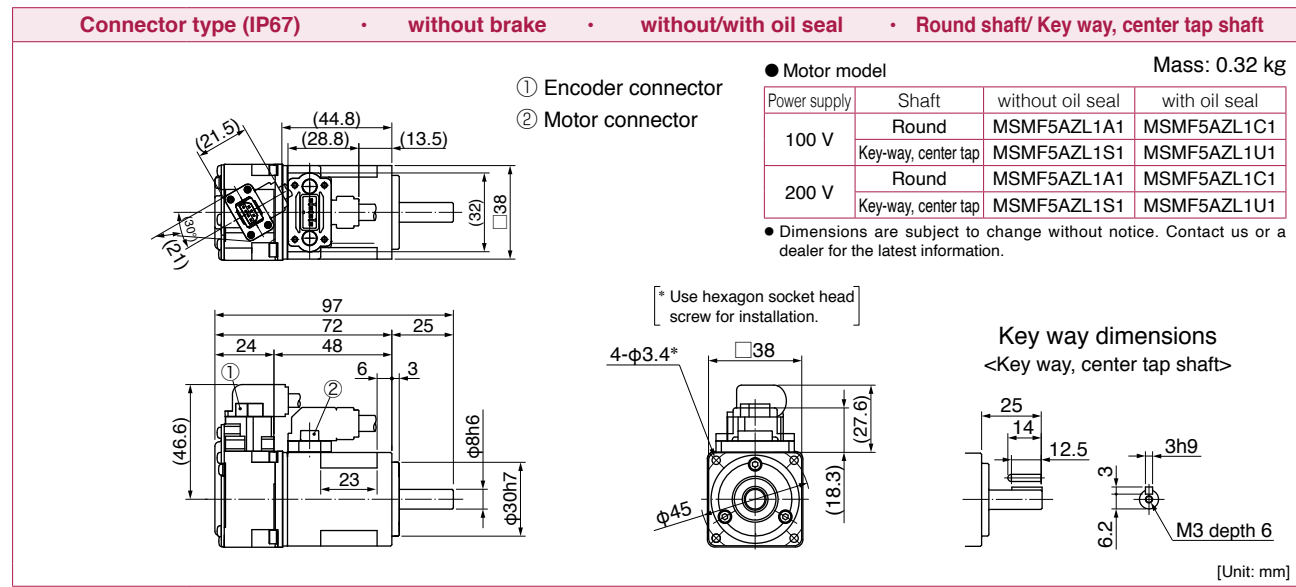
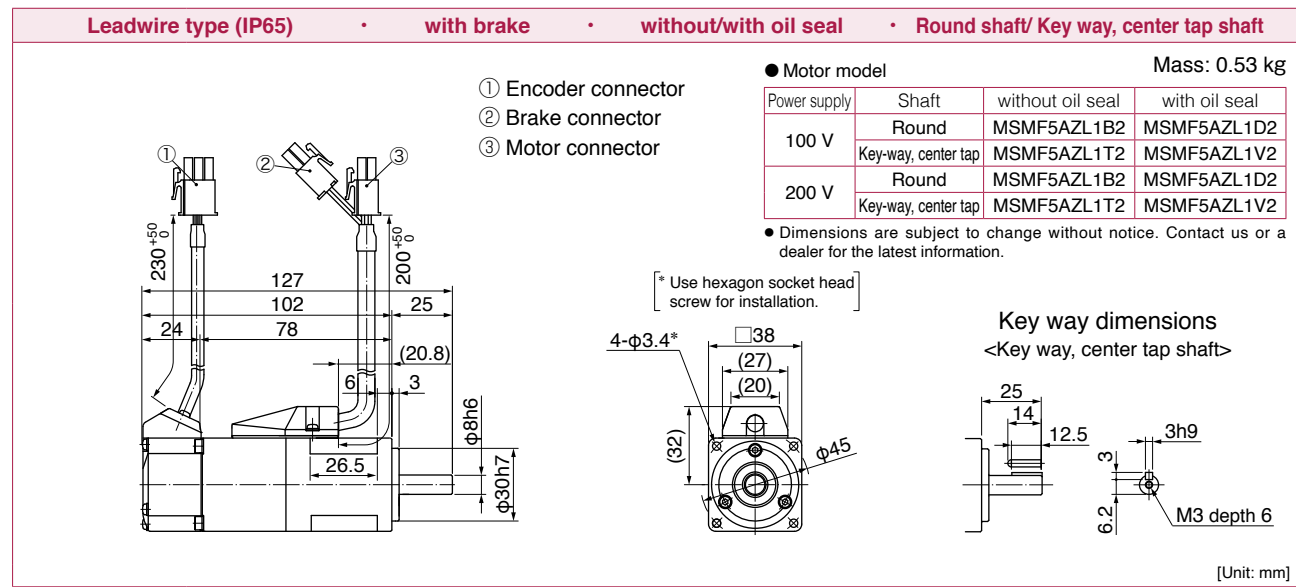
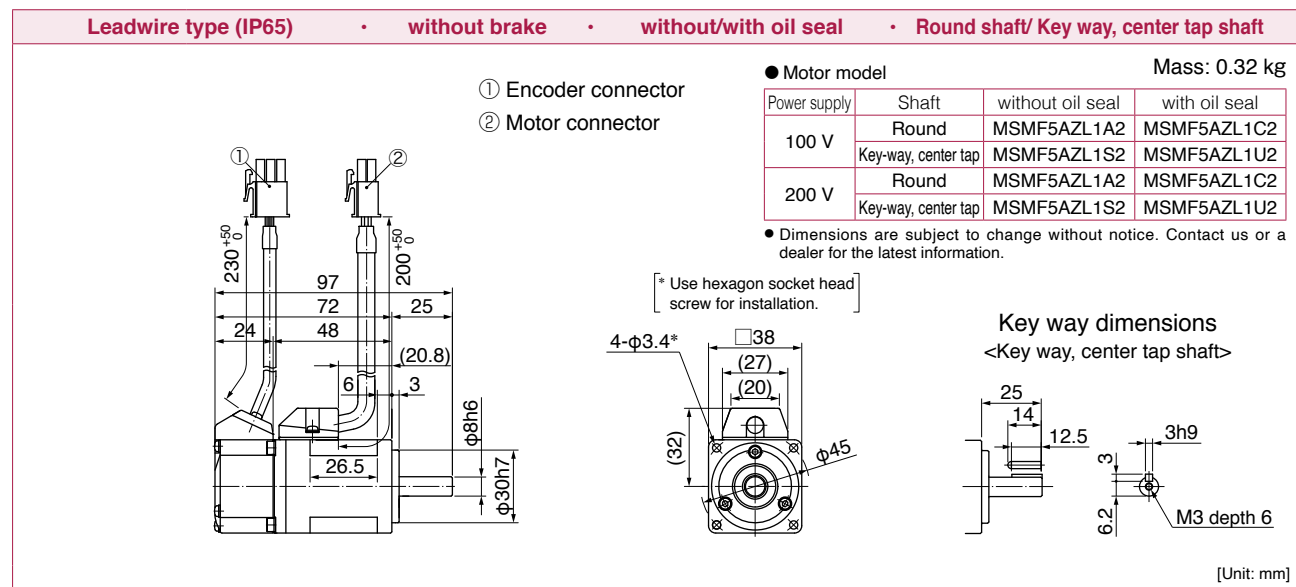


Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.201	—	—	P.202	—
Encoder connector Small size (JN2) type	—	P.202	—	—	P.202	—

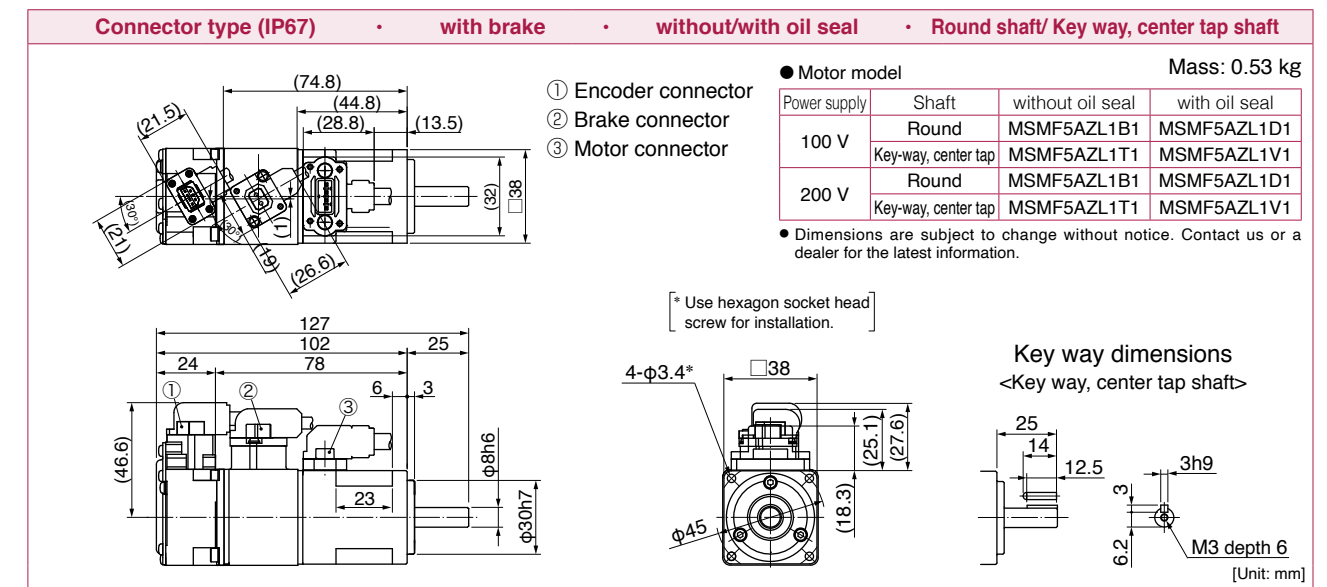
- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

MSMF 50 W

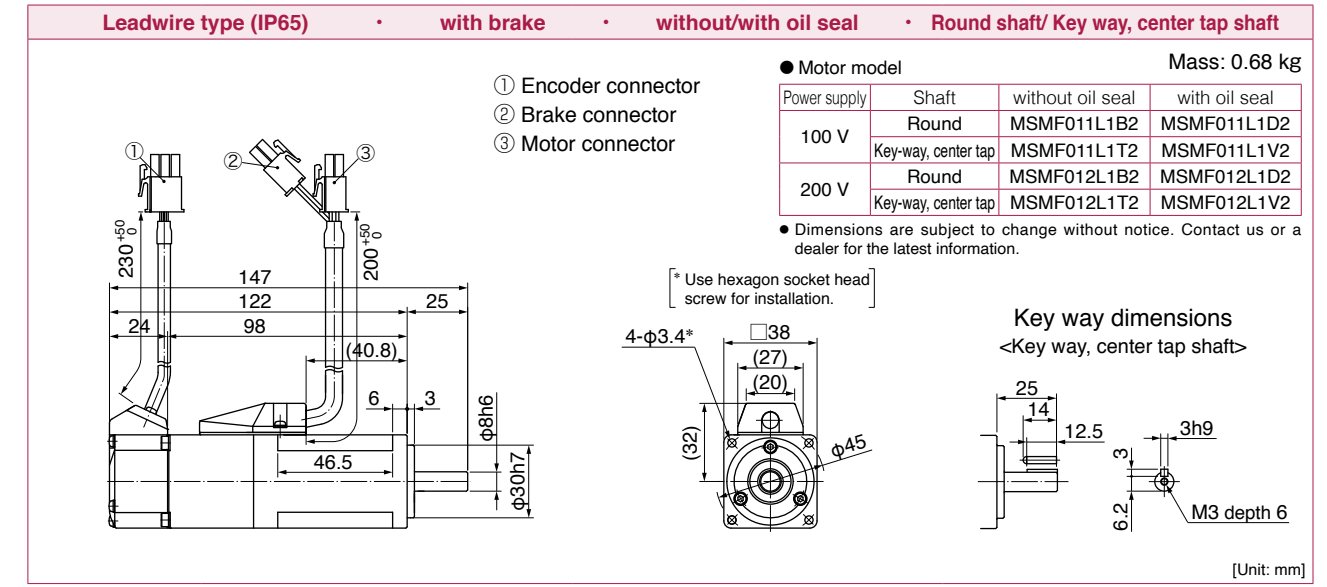
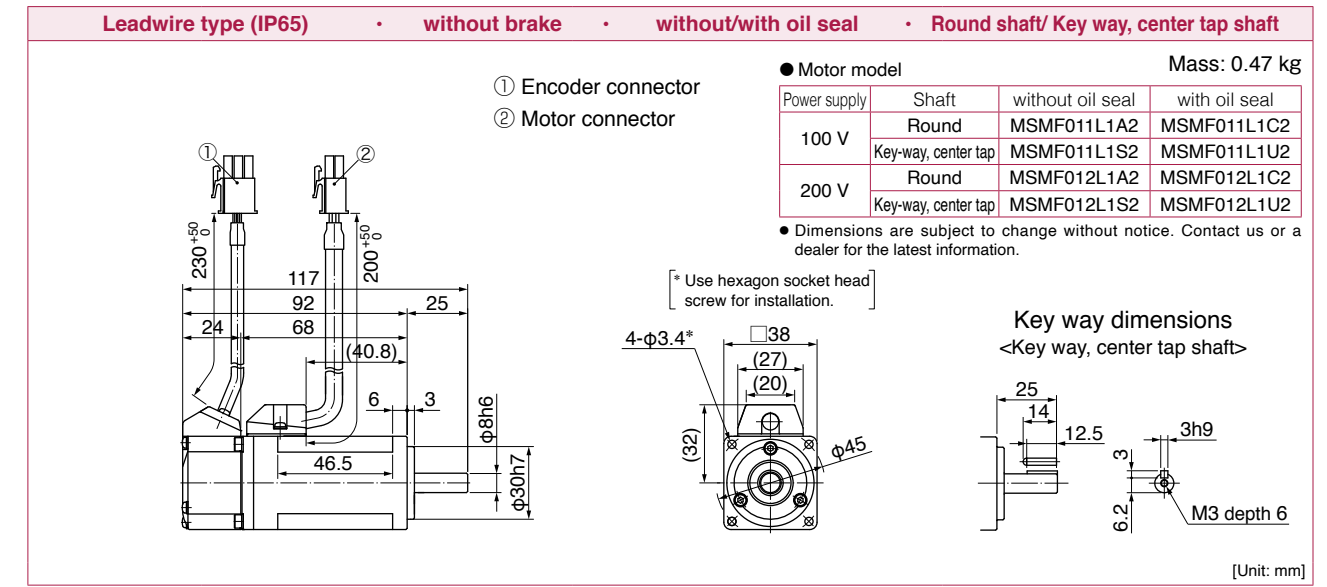


* For motors specifications, refer to P63, P64.

MSMF 50 W

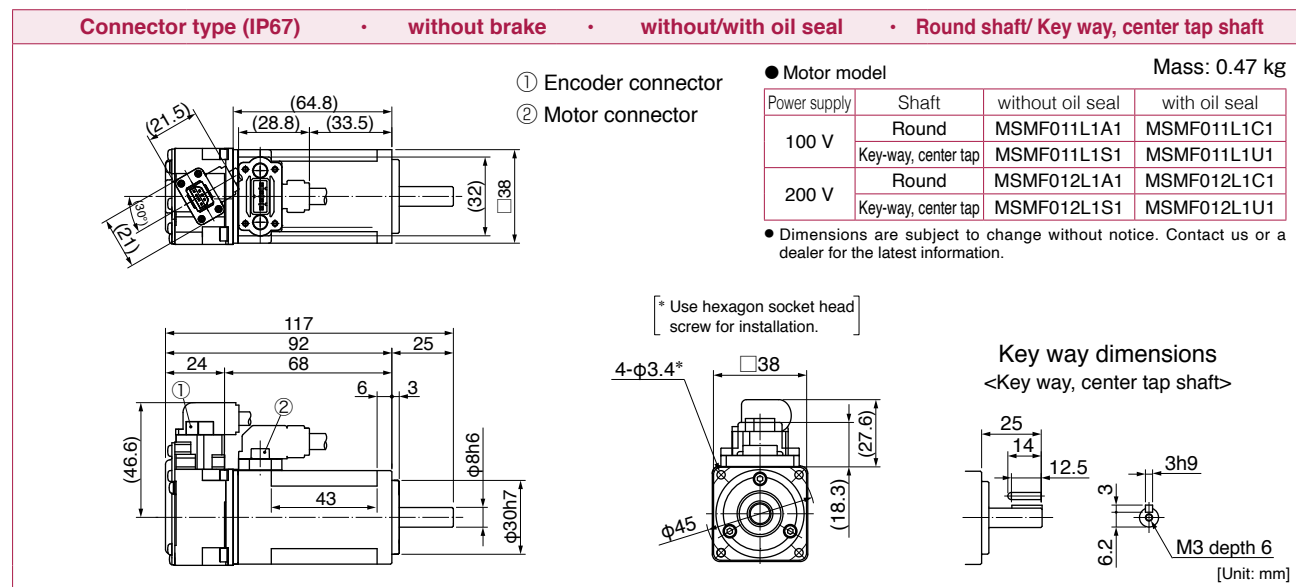


MSMF 100 W

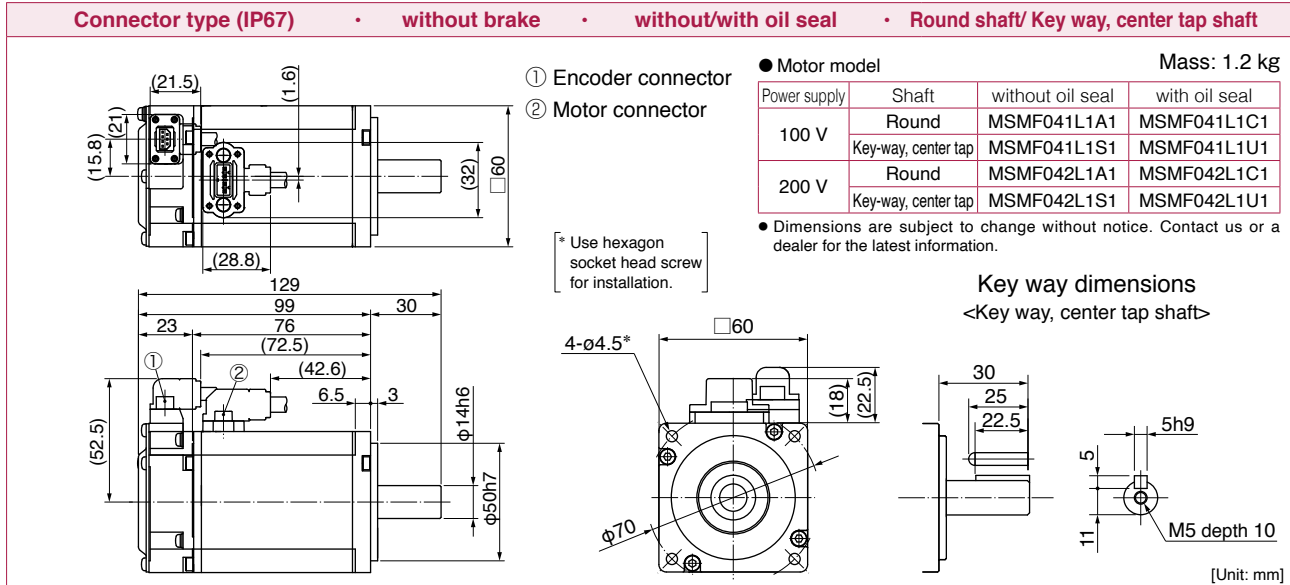
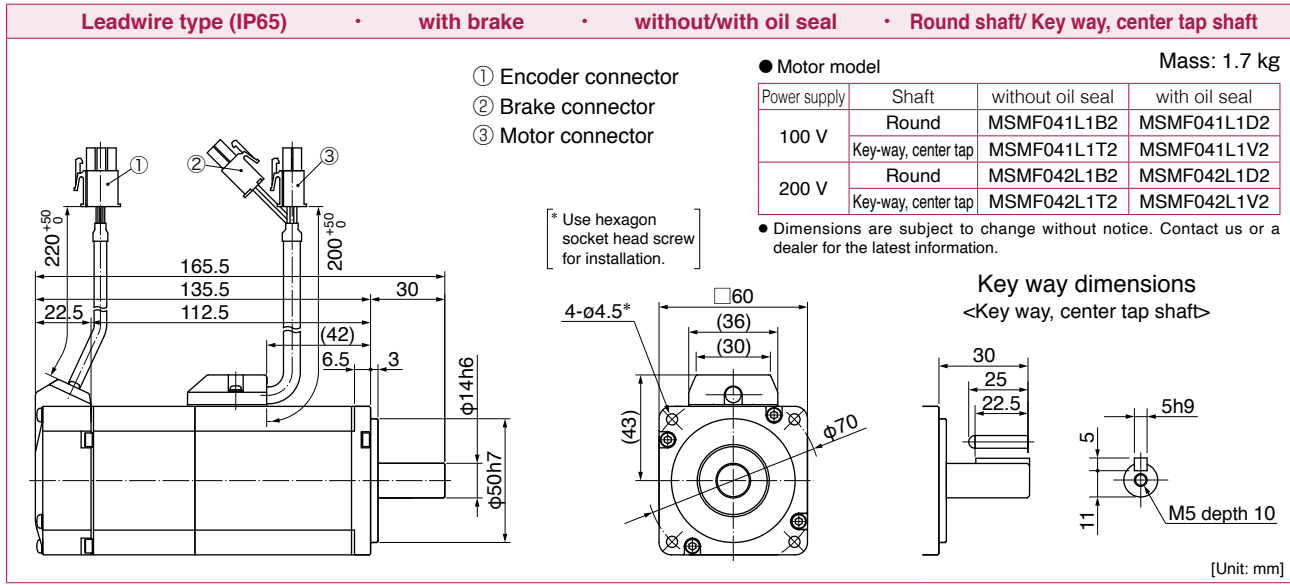
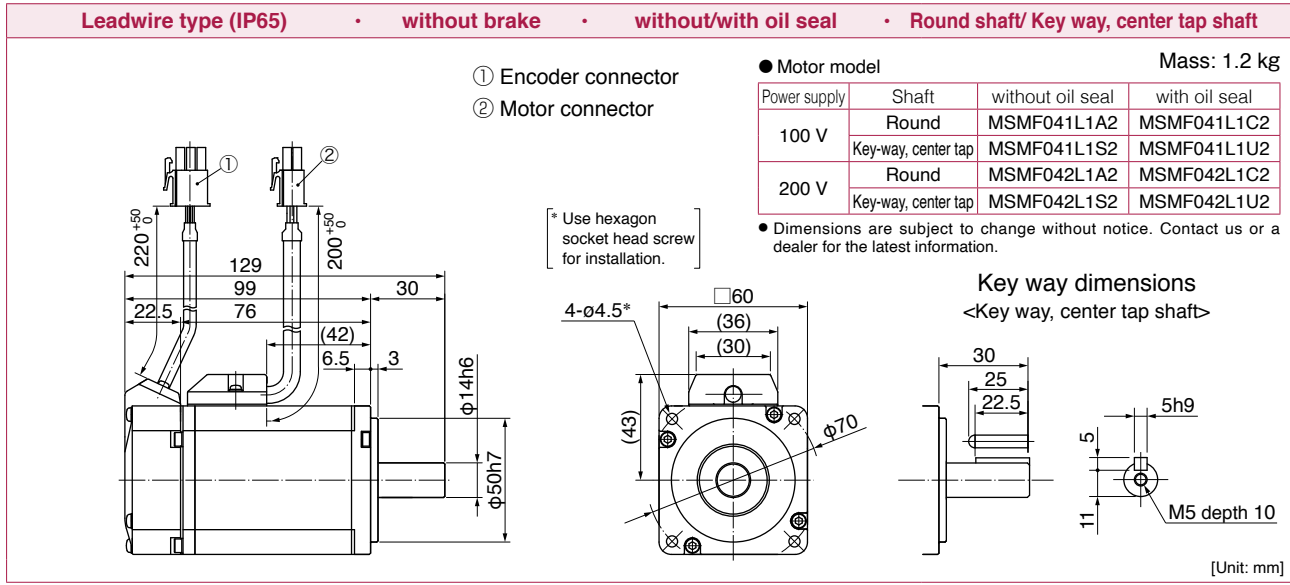


* For motors specifications, refer to P63 to P66.

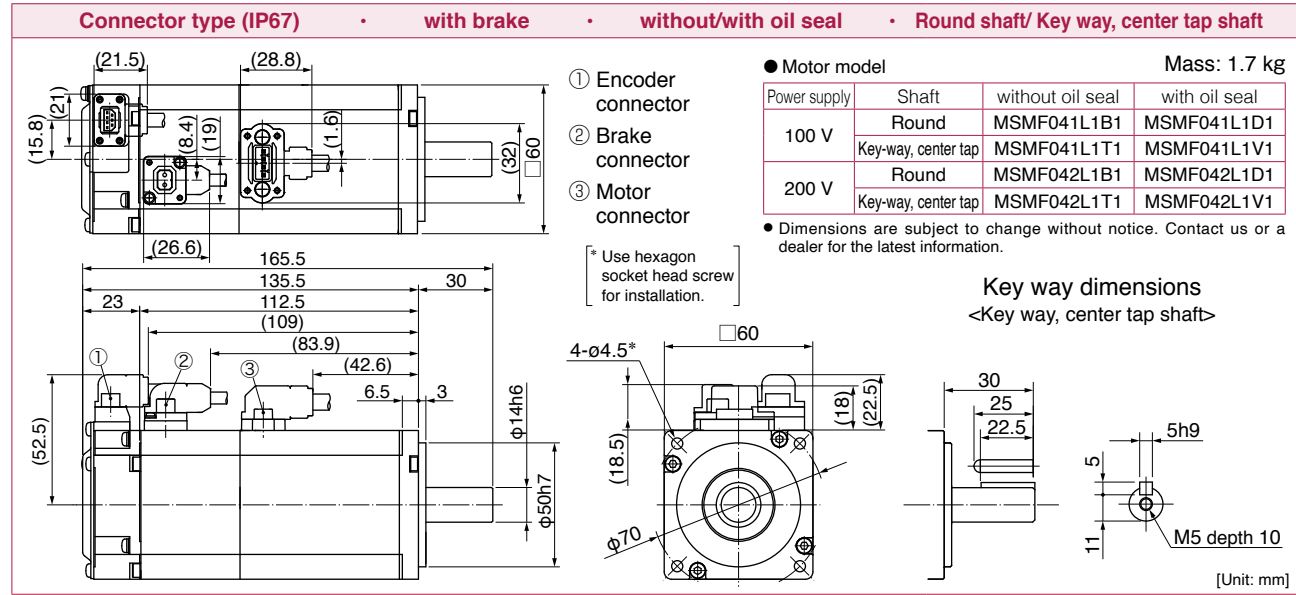
MSMF 100 W



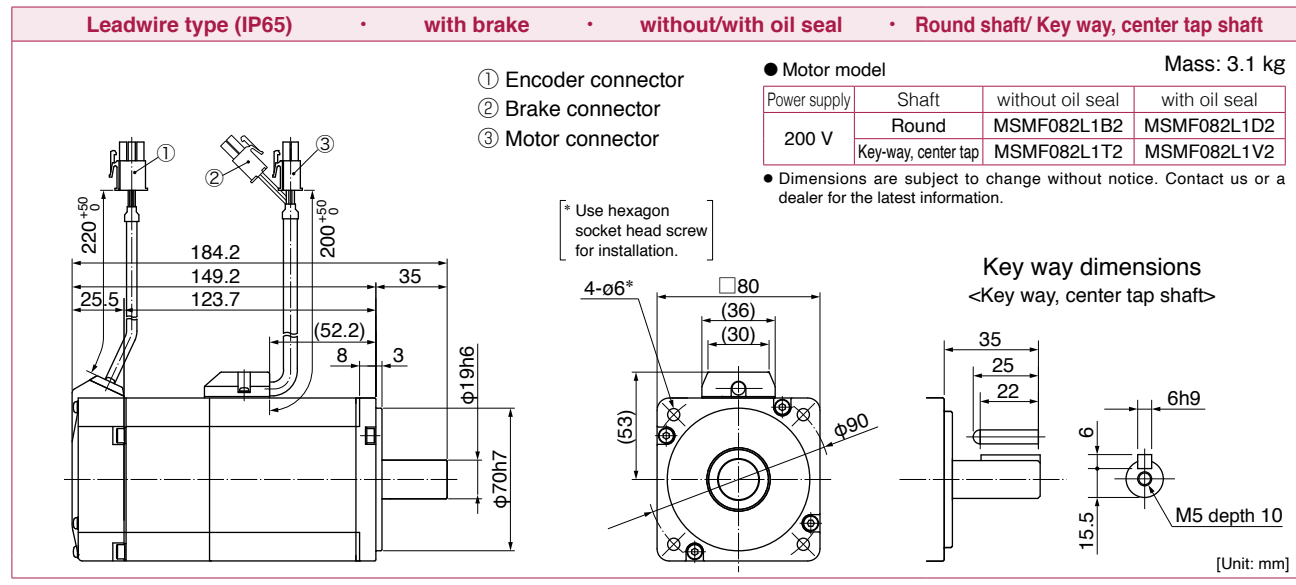
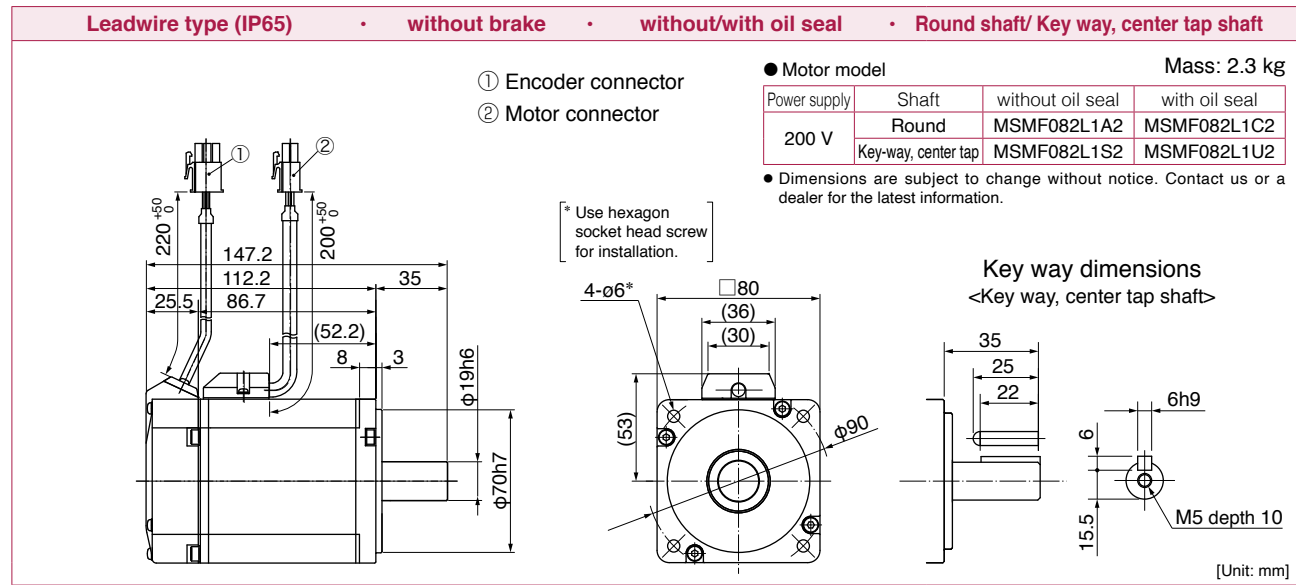
MSMF 400 W



MSMF 400 W



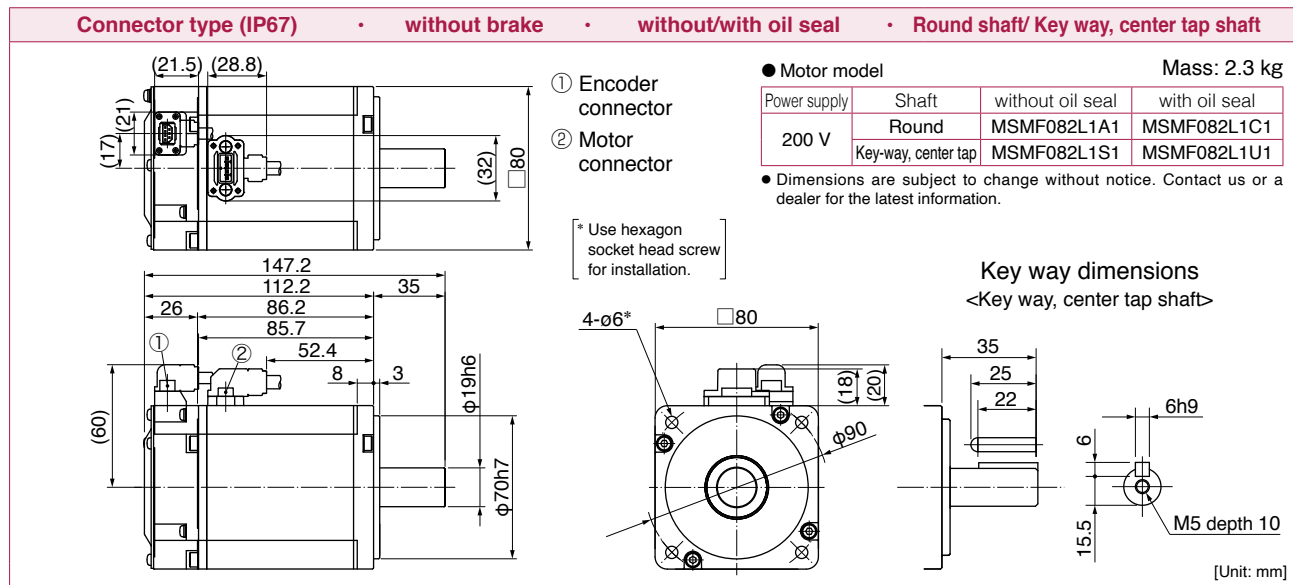
MSMF 750 W



* For motors specifications, refer to P69, P70.

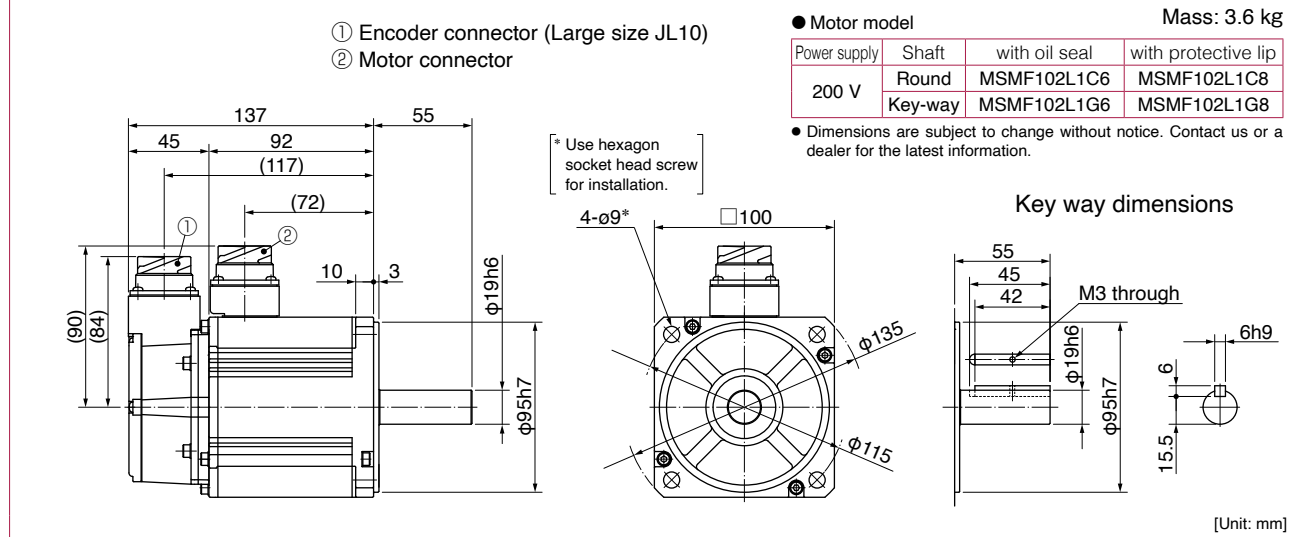
* For motors specifications, refer to P69 to P71.

MSMF 750 W

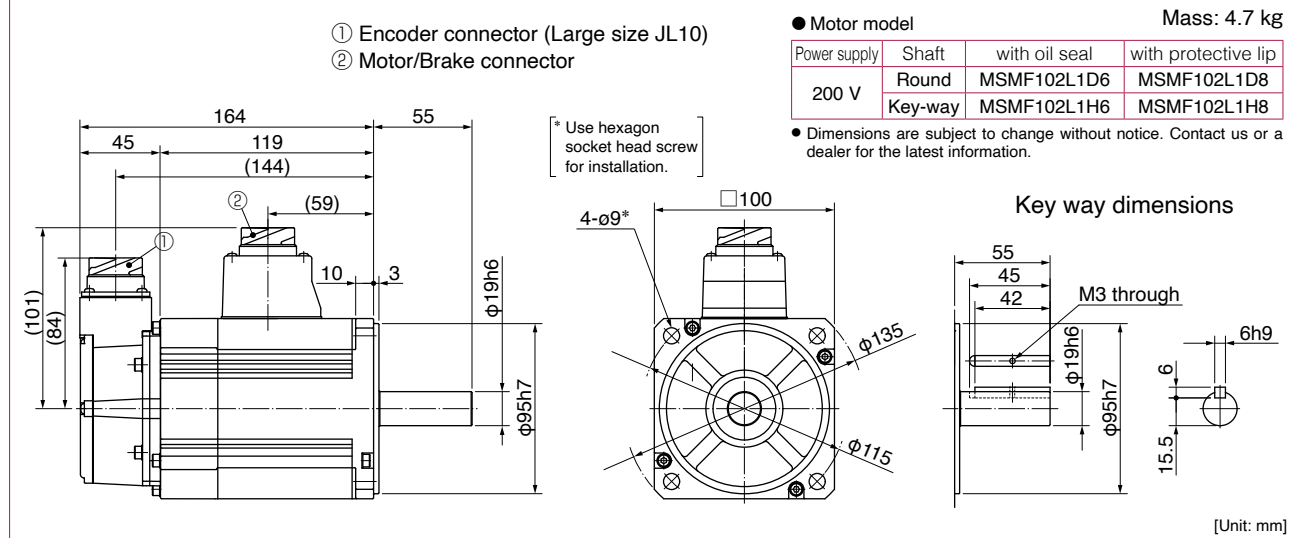


MSMF 1.0 kW

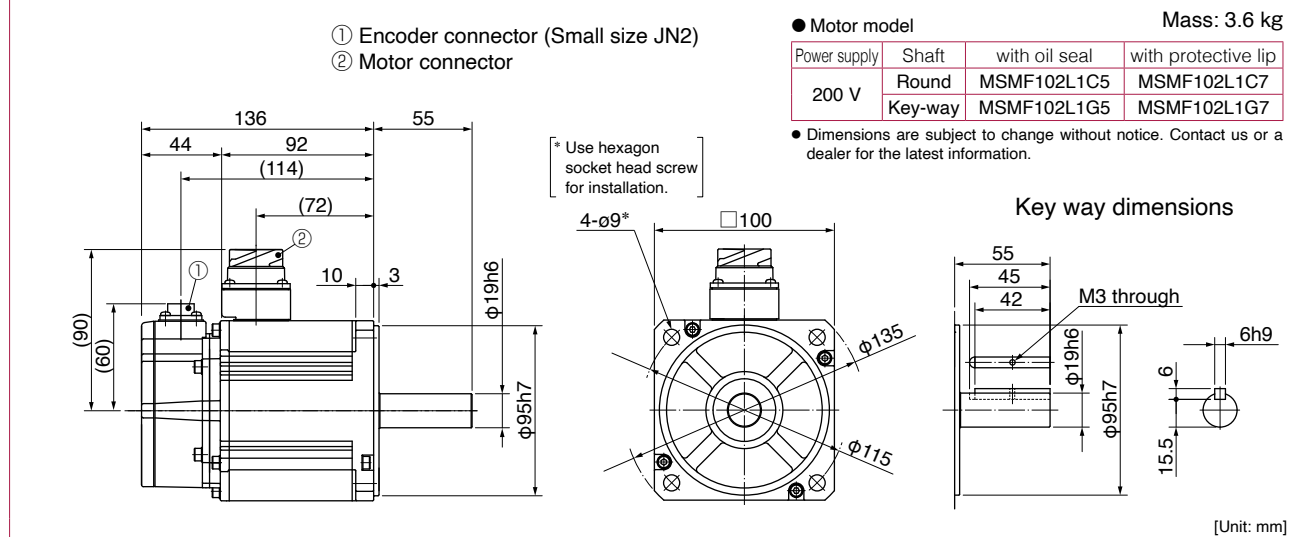
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



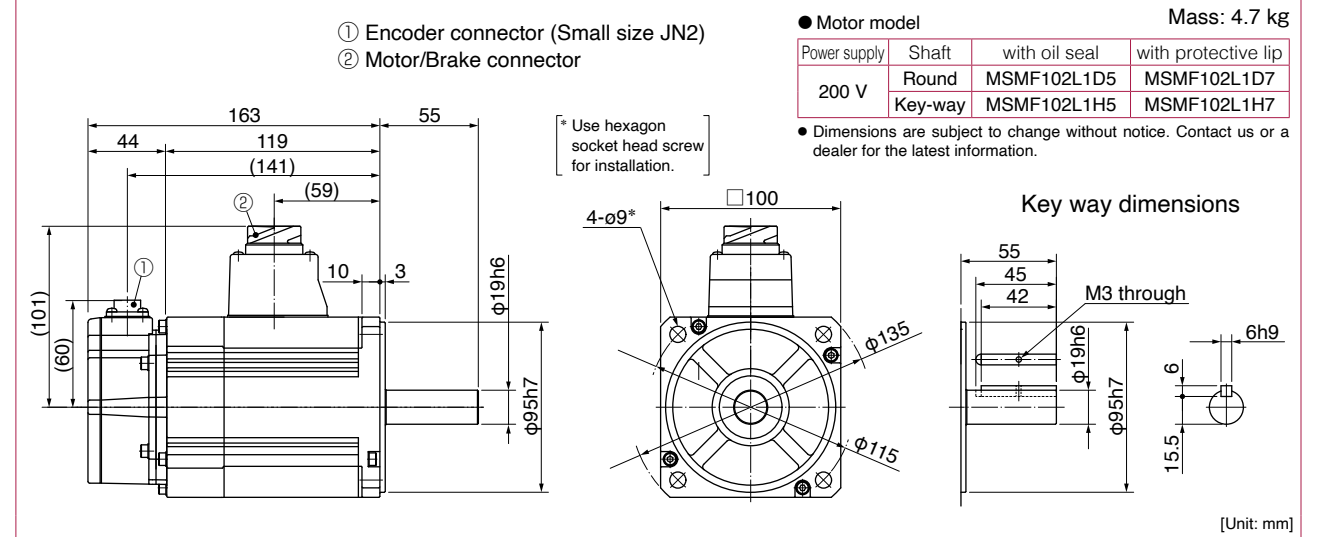
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P.73.

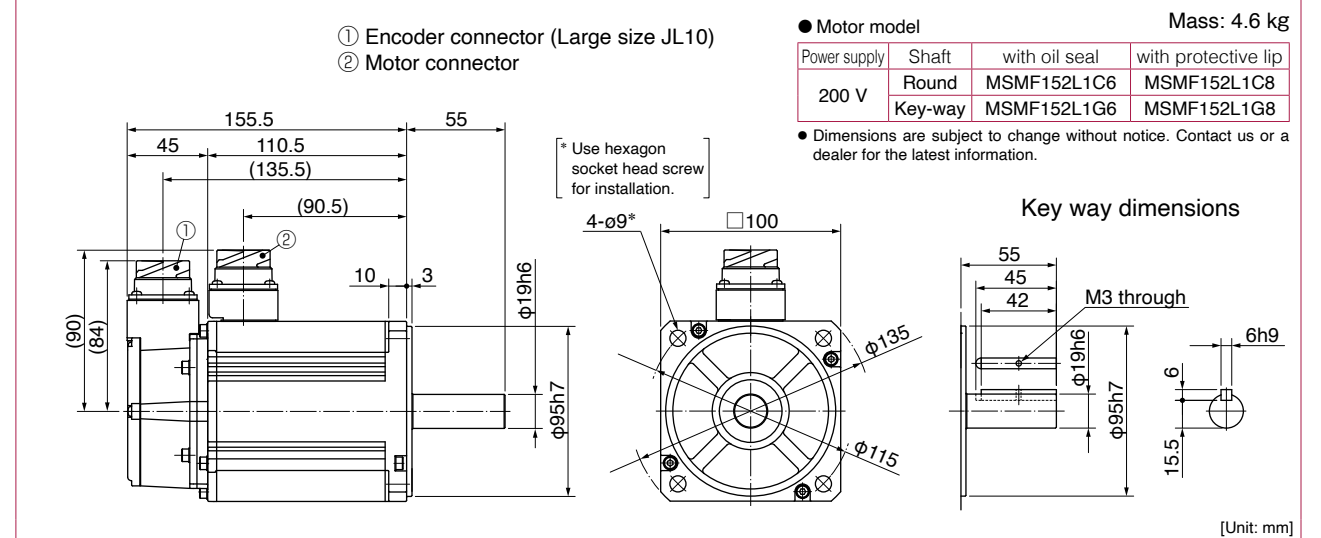
MSMF 1.0 kW

Small size connector (JN2) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft

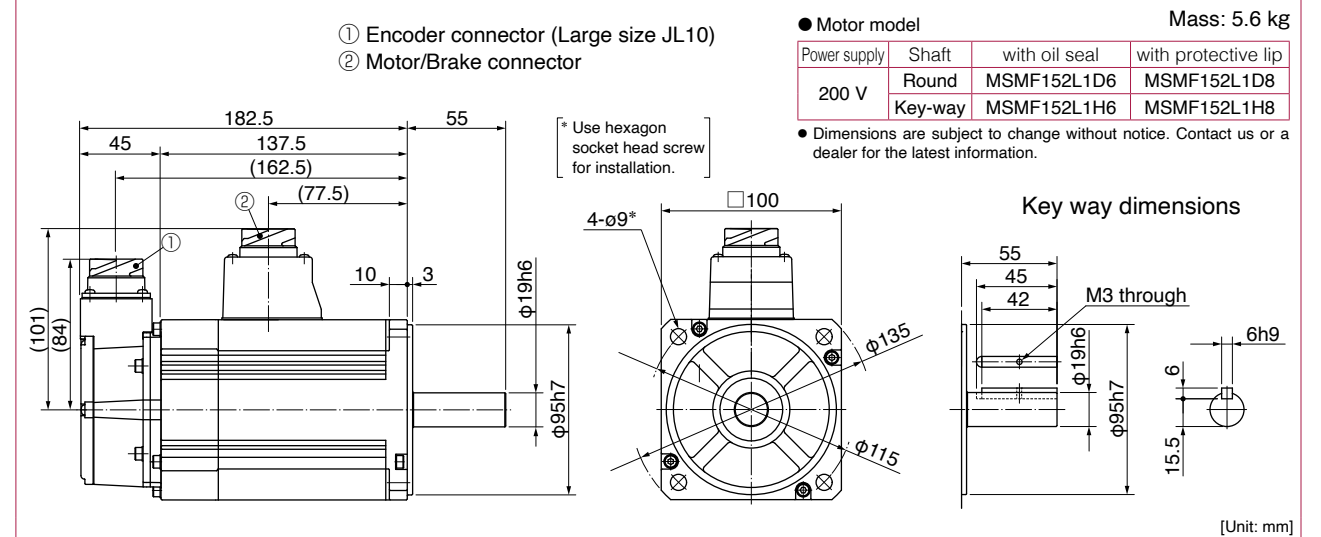


MSMF 1.5 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

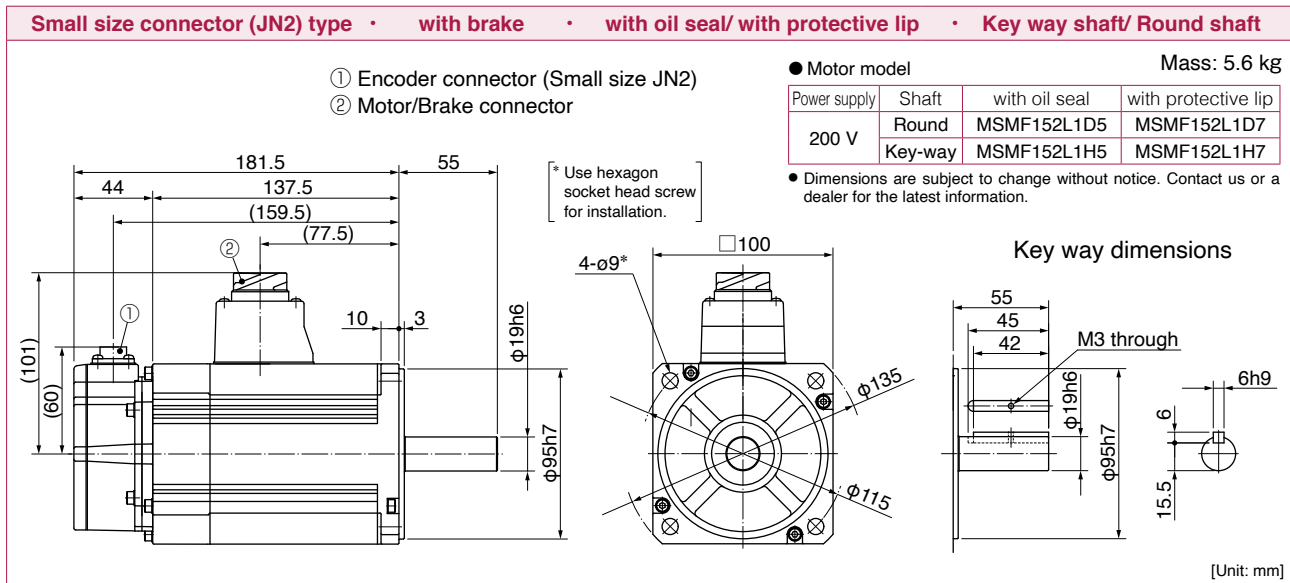
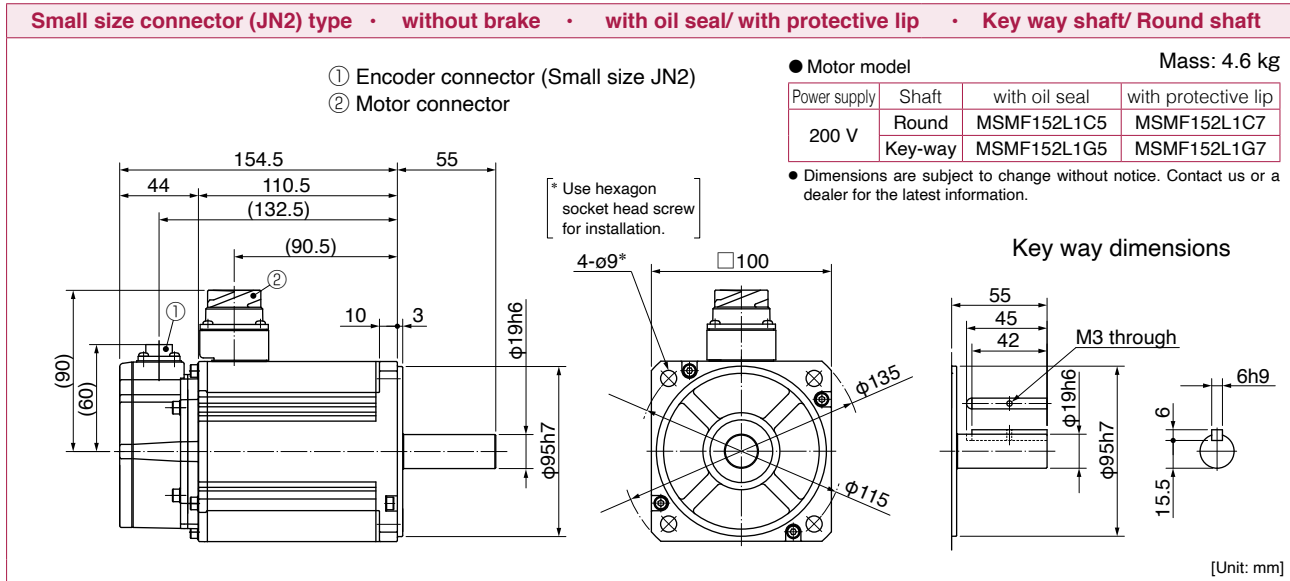


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

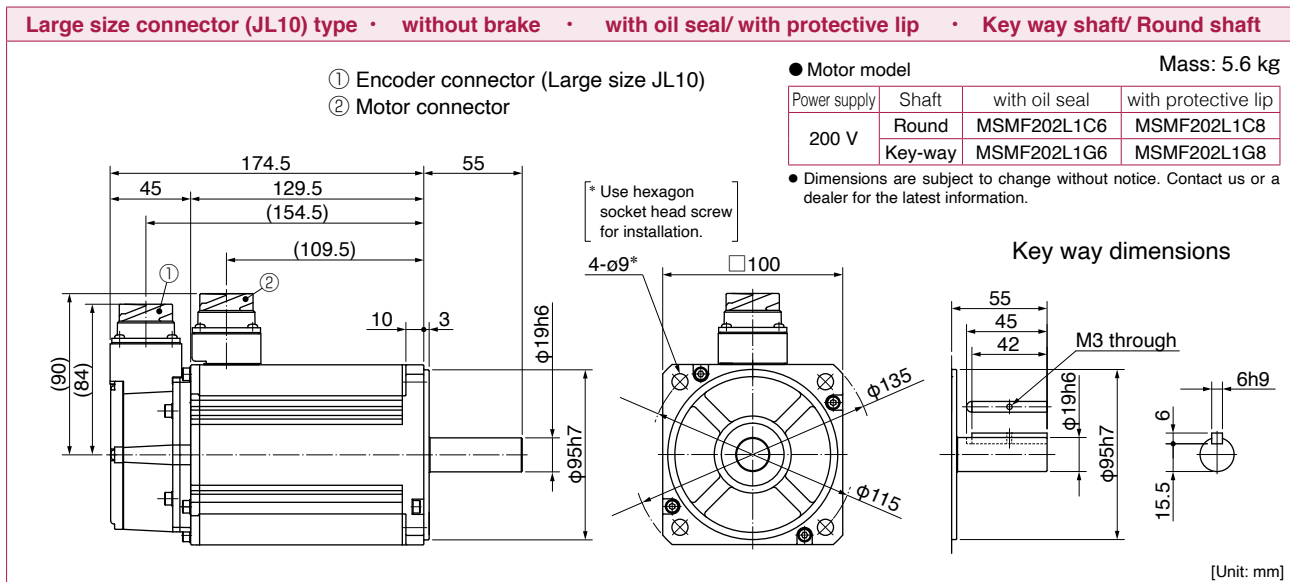


* For motors specifications, refer to P.73, P.74.

MSMF 1.5 kW

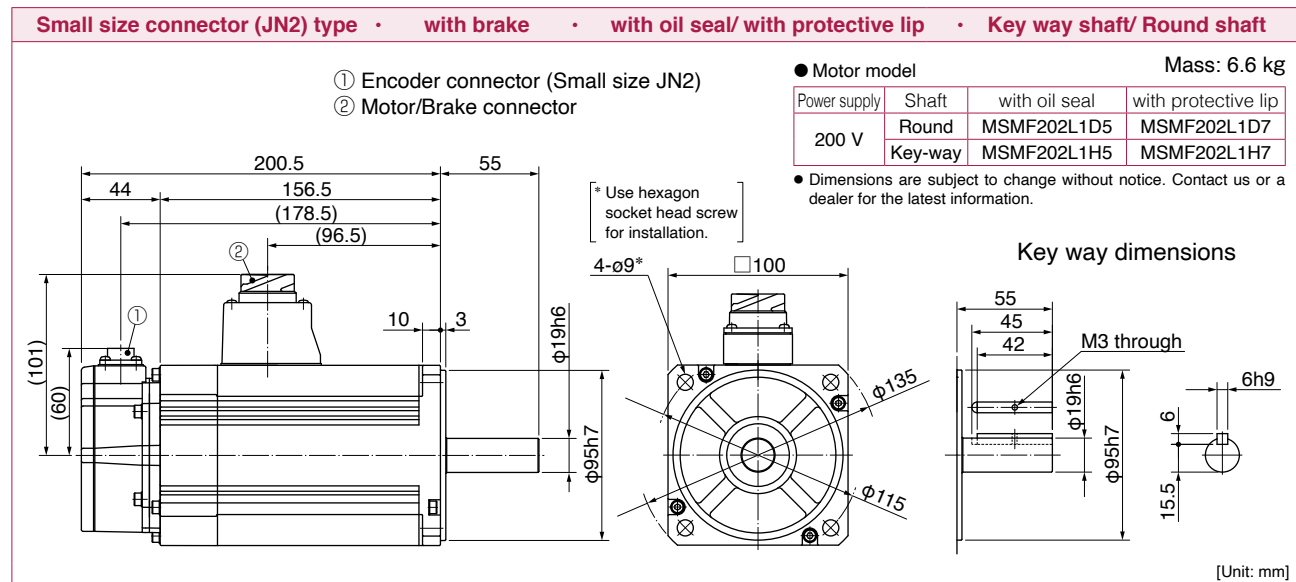
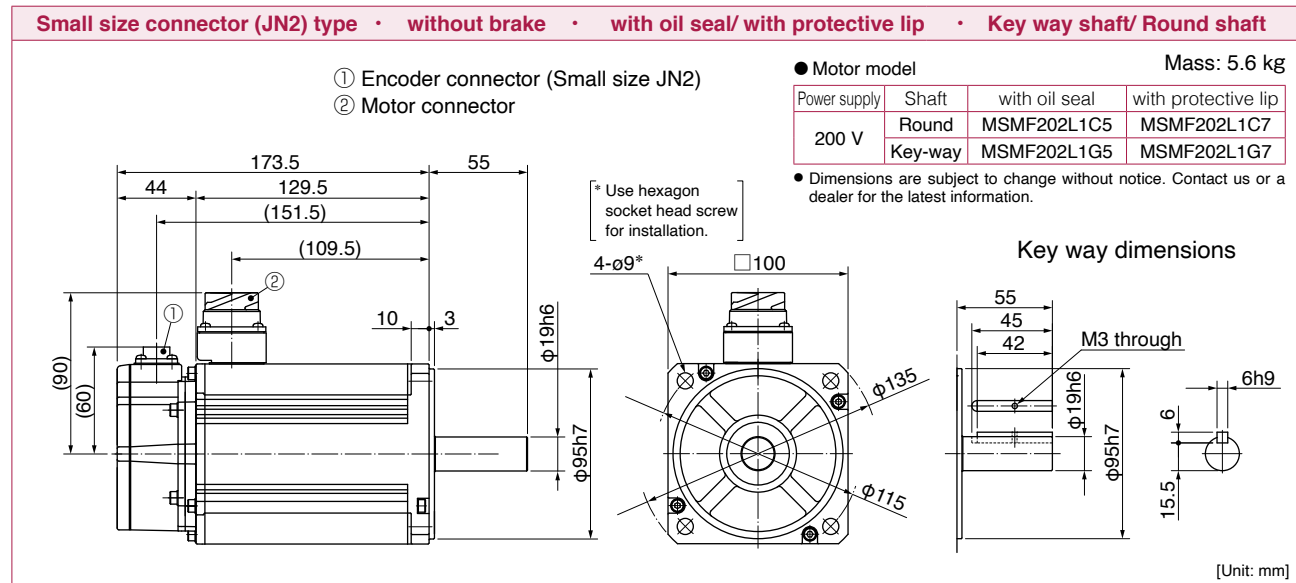
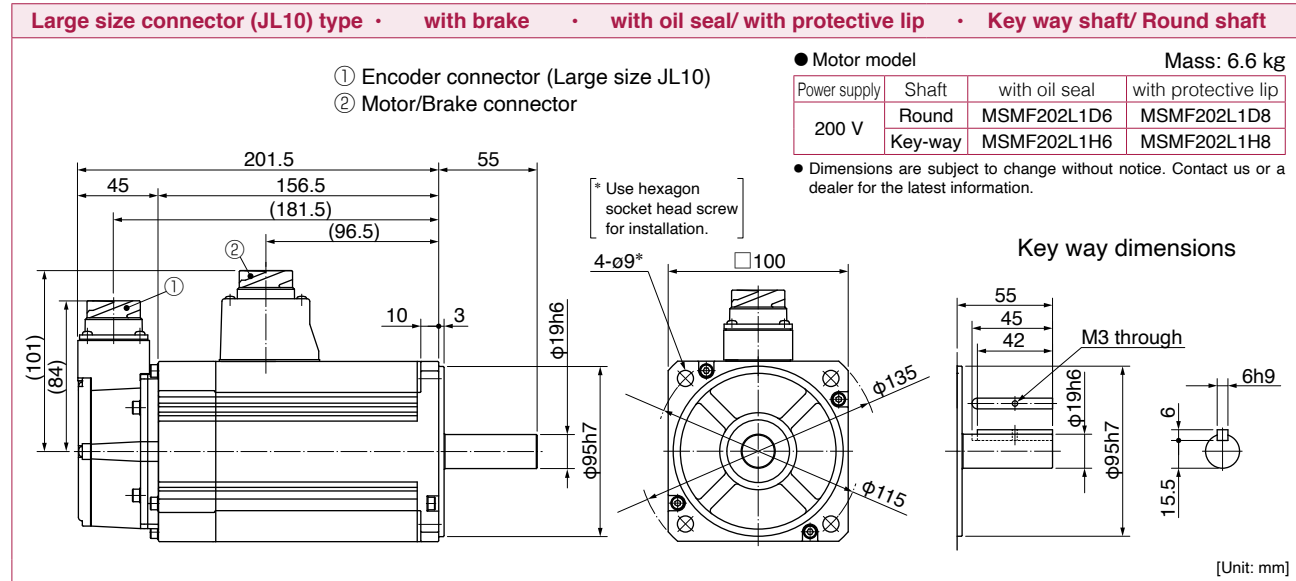


MSMF 2.0 kW



* For motors specifications, refer to P.74, P.75.

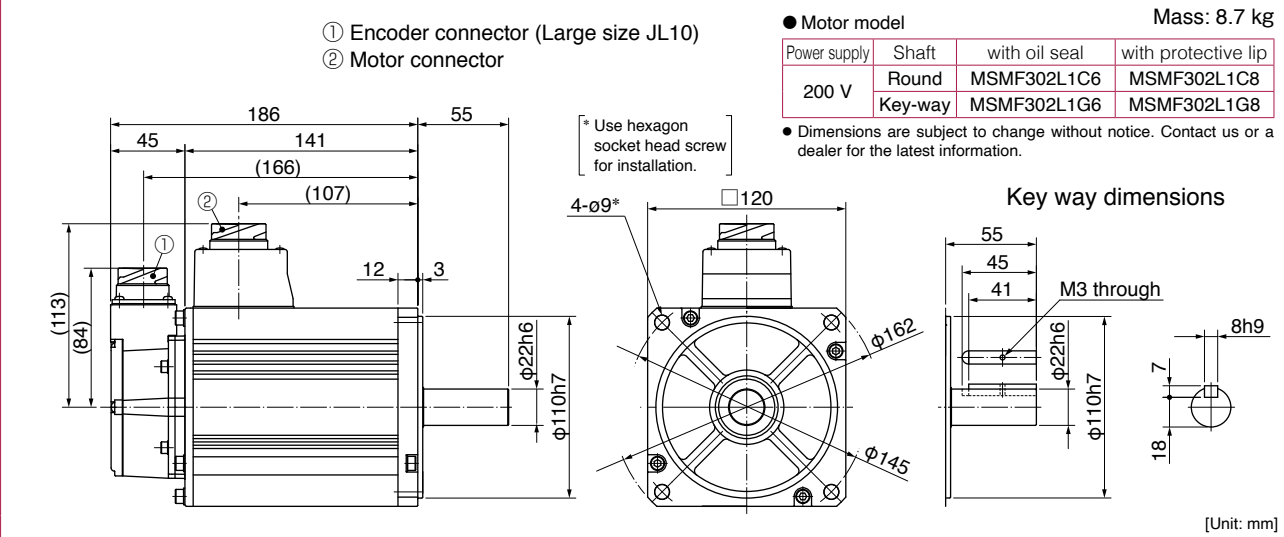
MSMF 2.0 kW



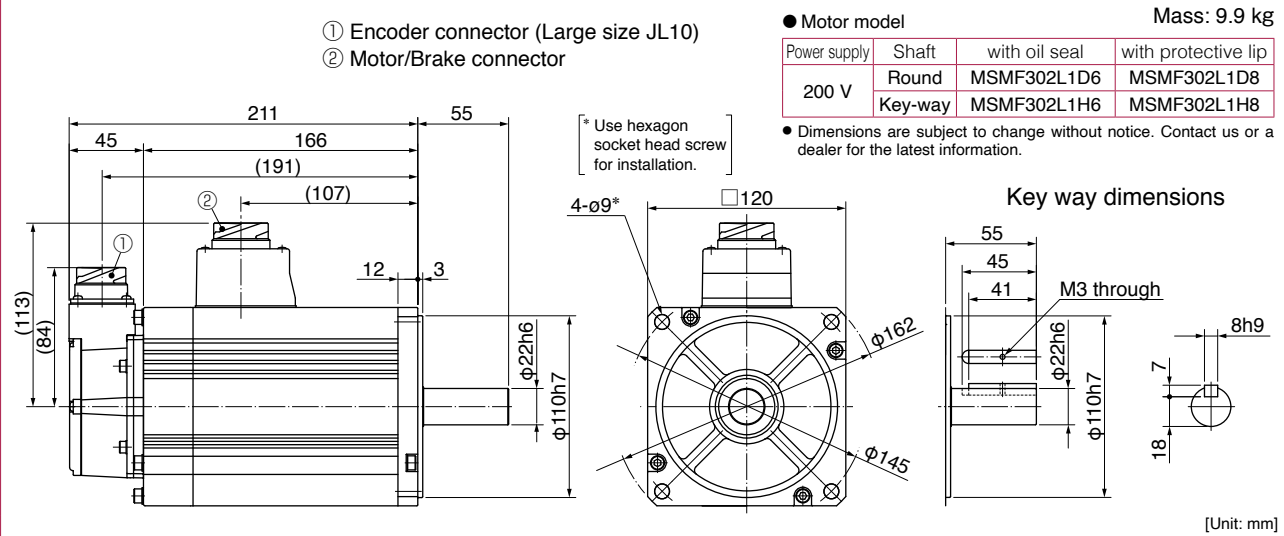
* For motors specifications, refer to P.75.

MSMF 3.0 kW

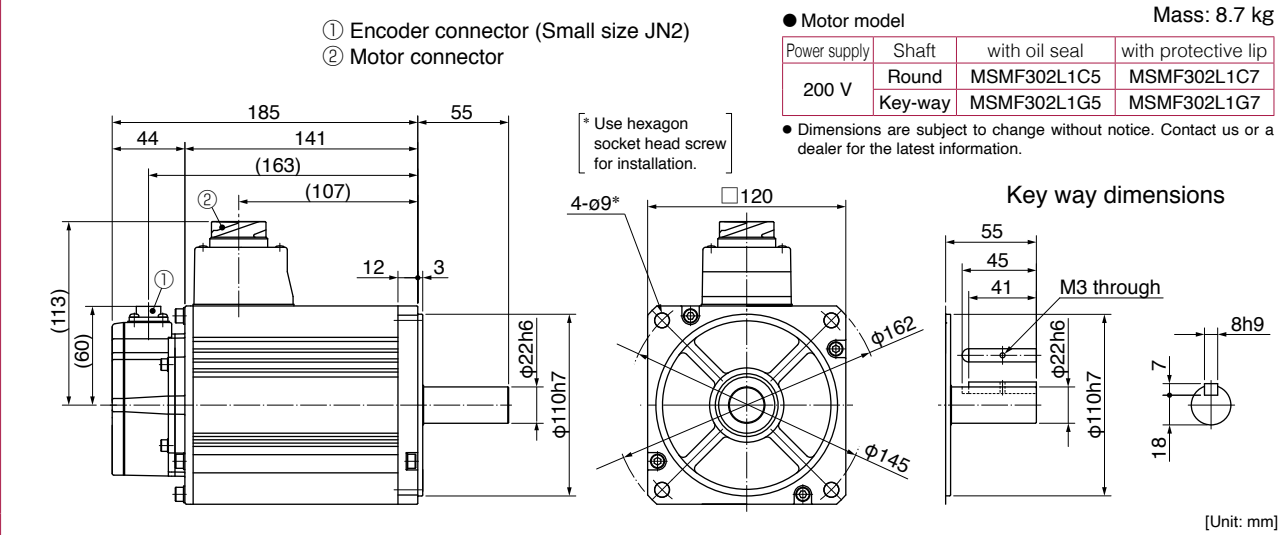
Large size connector (JL10) type without brake with oil seal/ with protective lip Key way shaft/ Round shaft



Large size connector (JL10) type with brake with oil seal/ with protective lip Key way shaft/ Round shaft



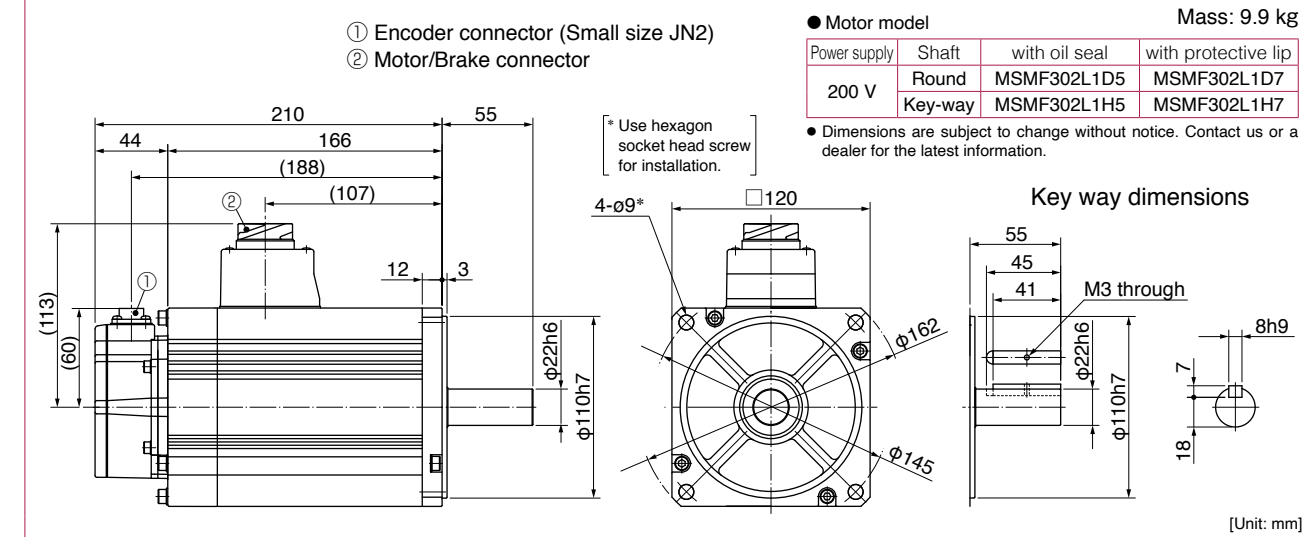
Small size connector (JN2) type without brake with oil seal/ with protective lip Key way shaft/ Round shaft



* For motors specifications, refer to P.76.

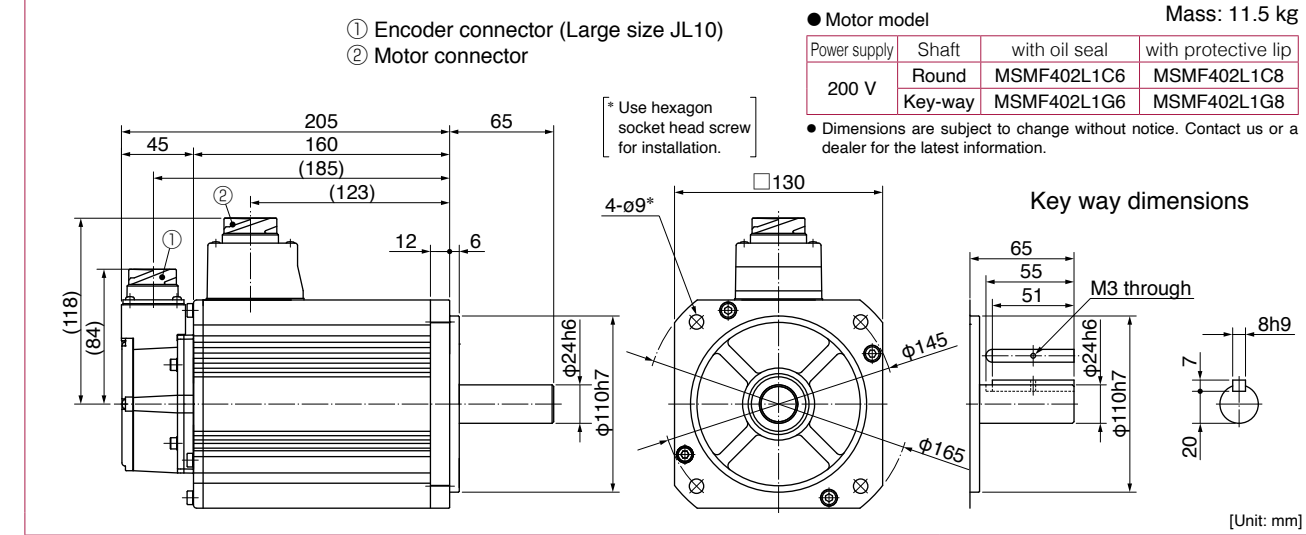
MSMF 3.0 kW

Small size connector (JN2) type with brake with oil seal/ with protective lip Key way shaft/ Round shaft

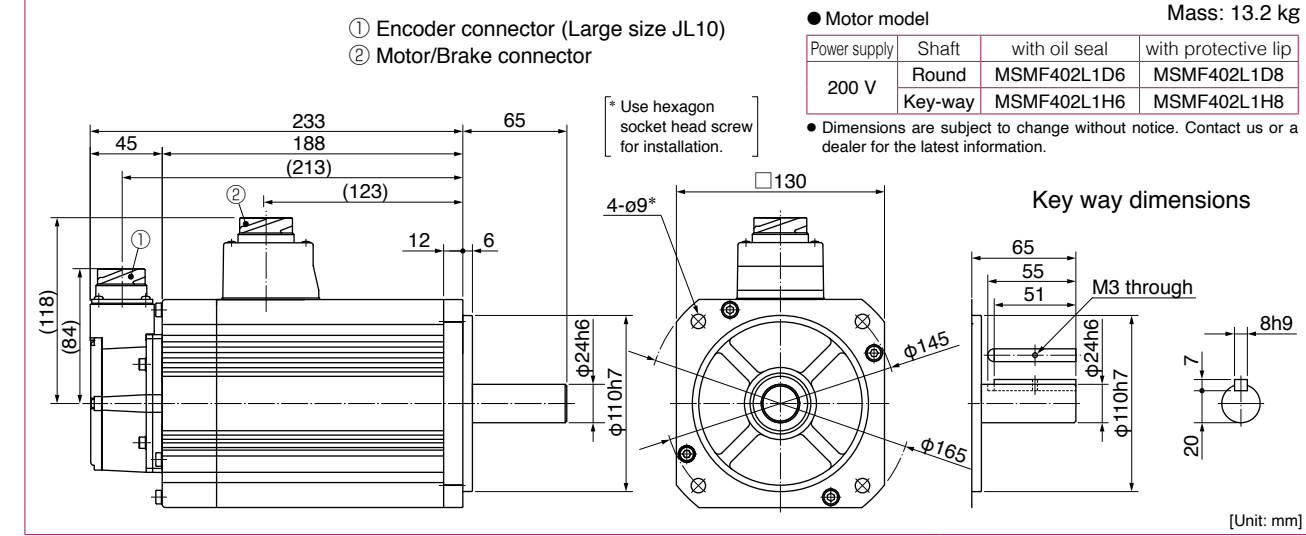


MSMF 4.0 kW

Large size connector (JL10) type without brake with oil seal/ with protective lip Key way shaft/ Round shaft

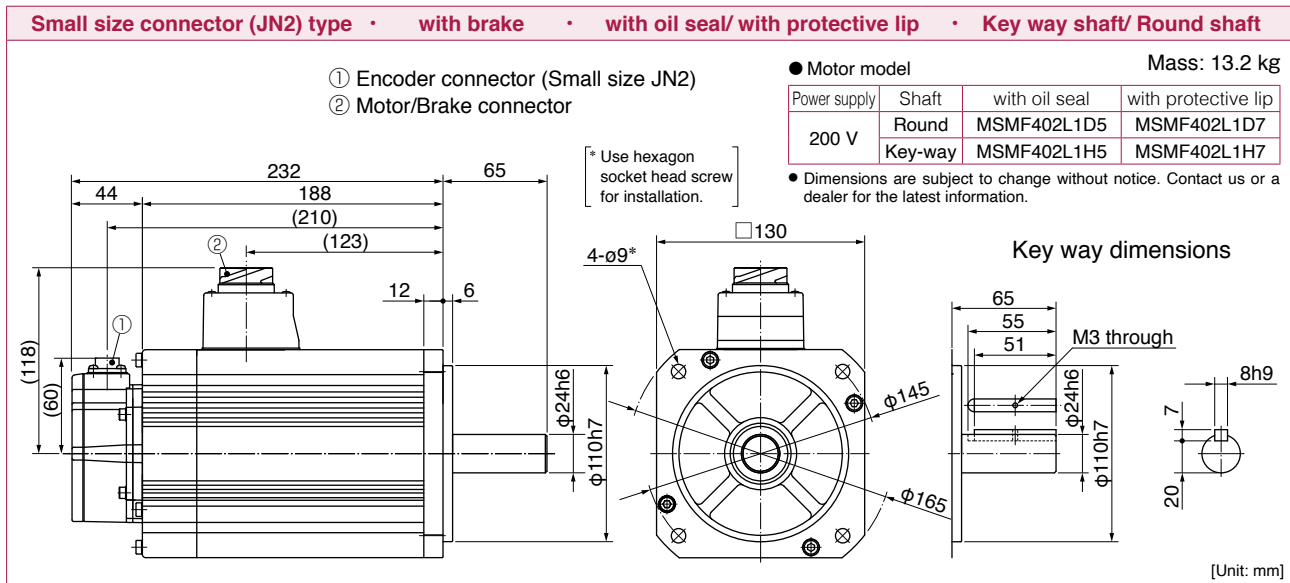
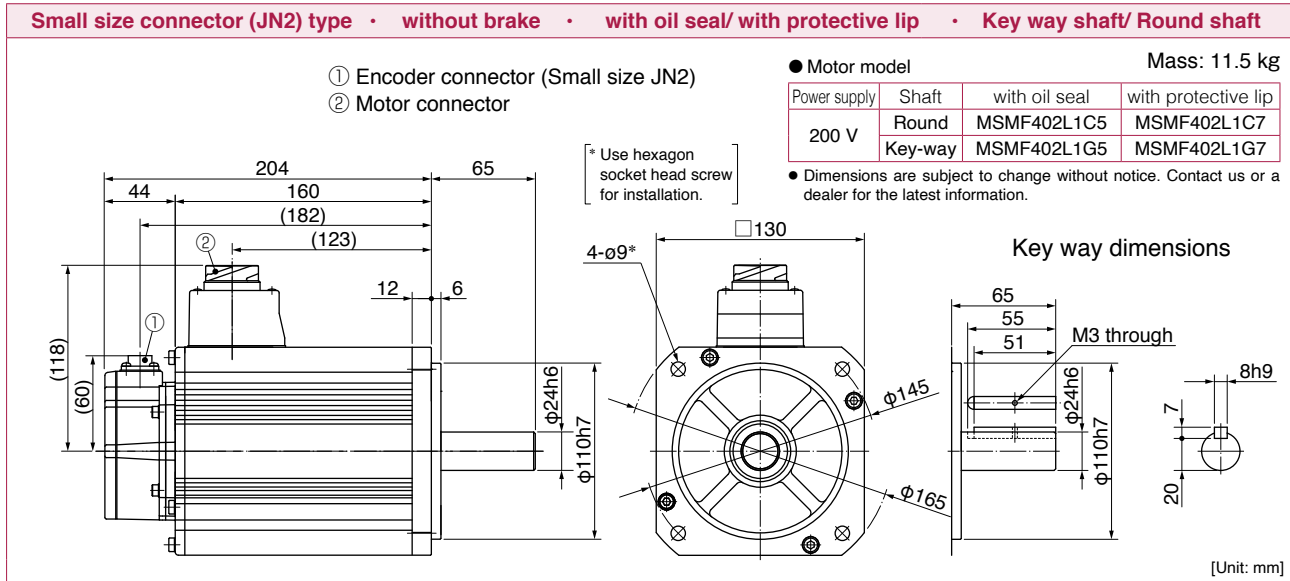


Large size connector (JL10) type with brake with oil seal/ with protective lip Key way shaft/ Round shaft

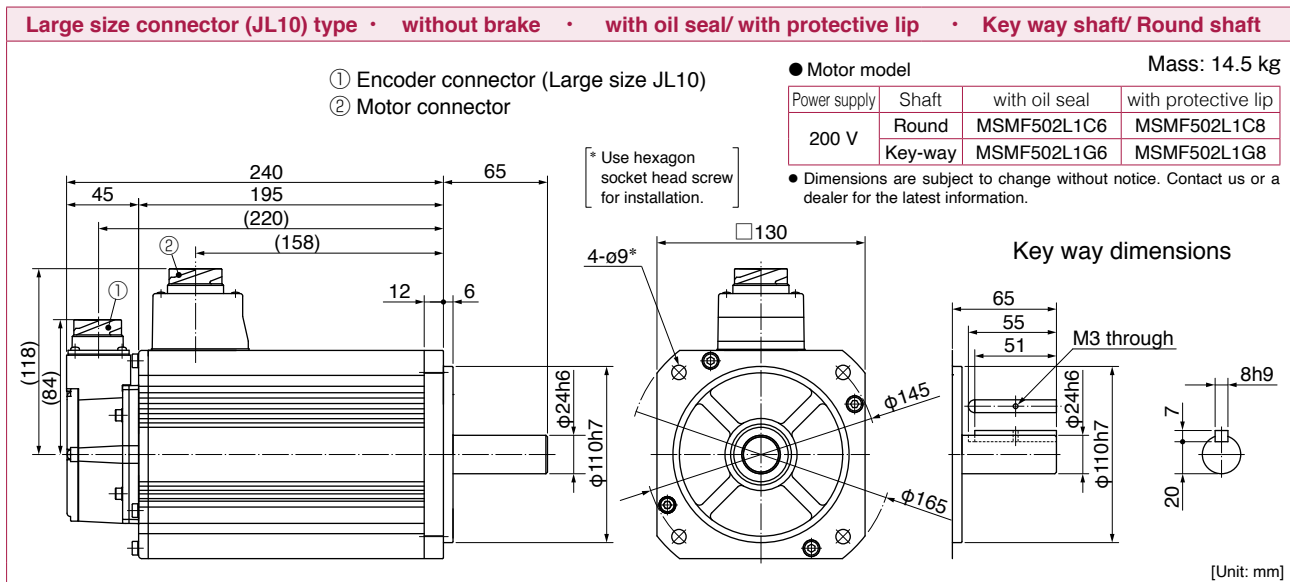


* For motors specifications, refer to P.76, P.77.

MSMF 4.0 kW

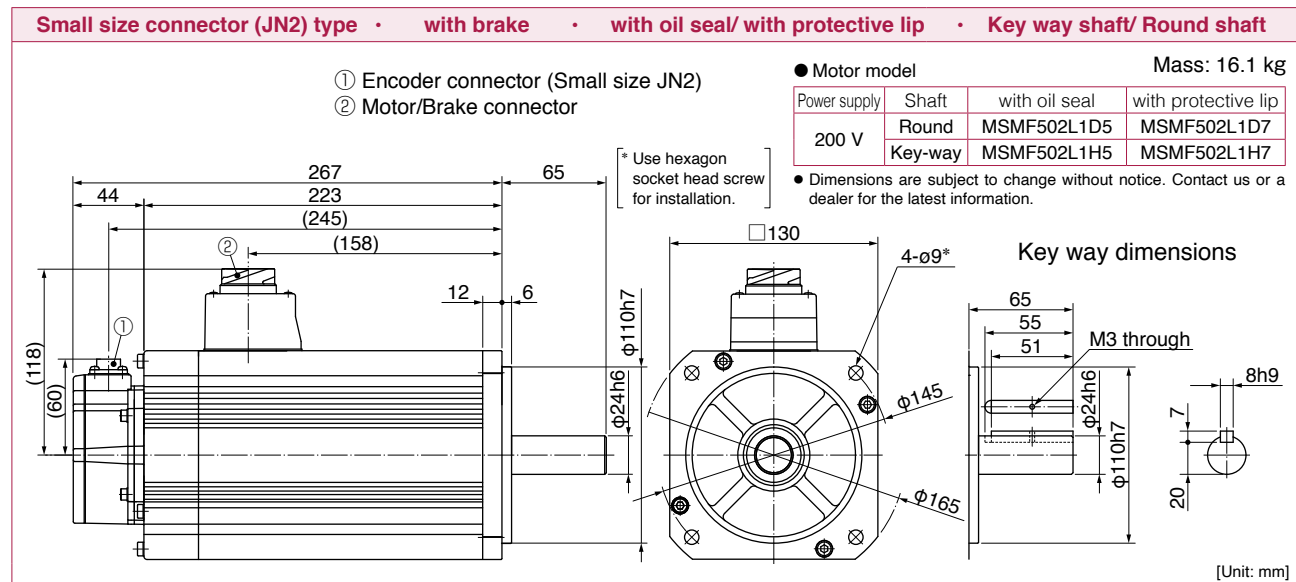
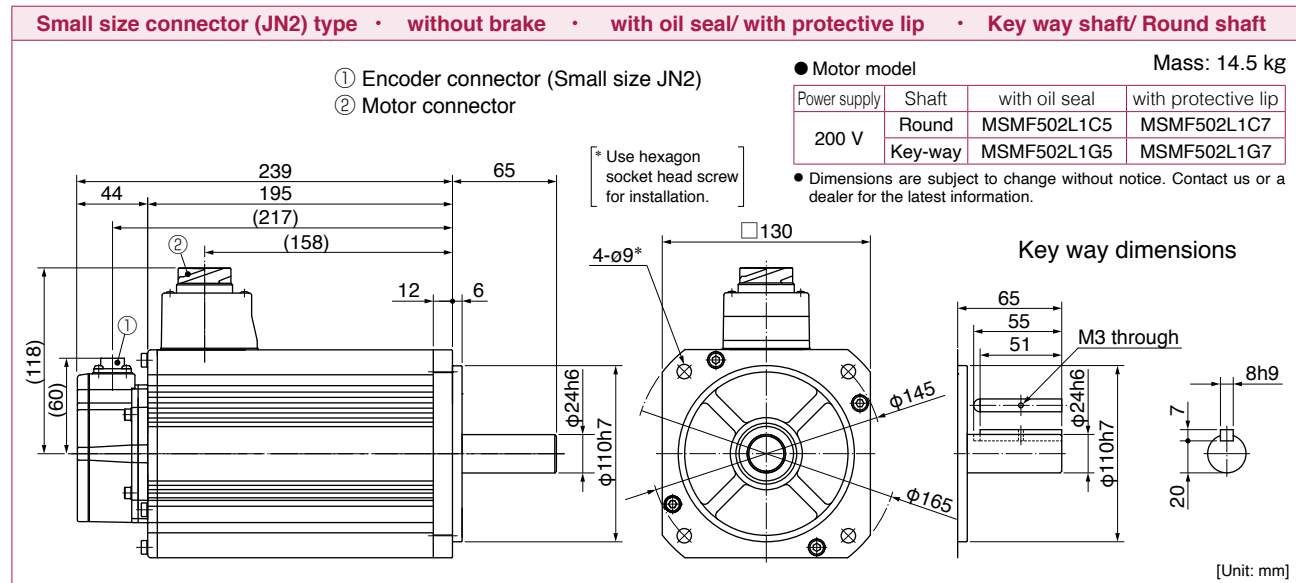
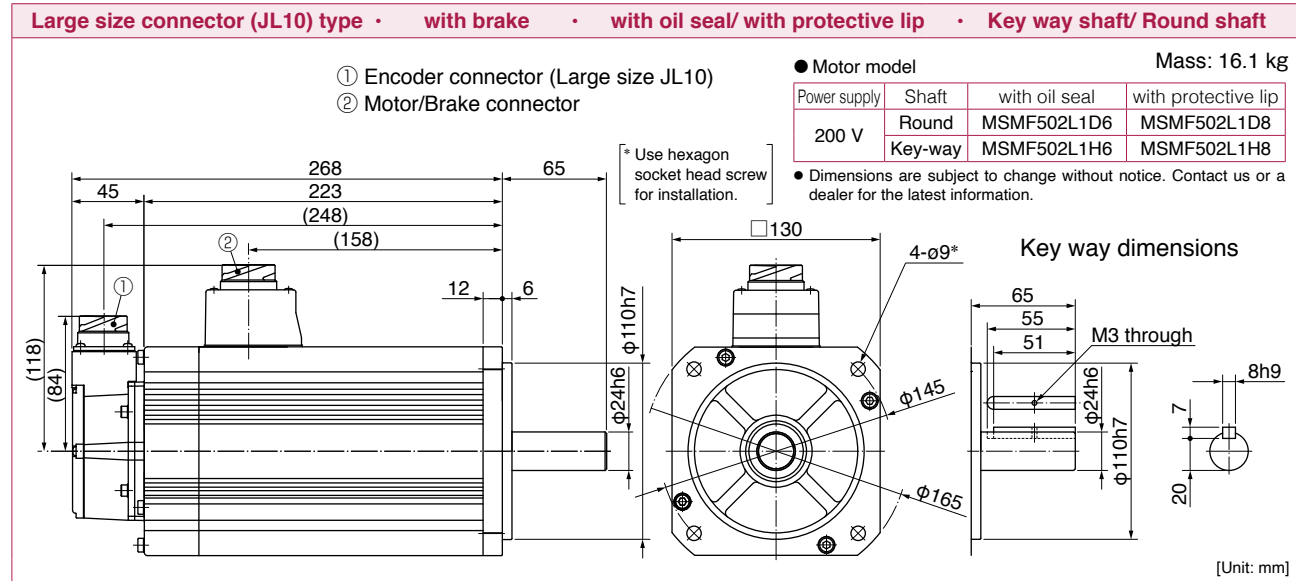


MSMF 5.0 kW



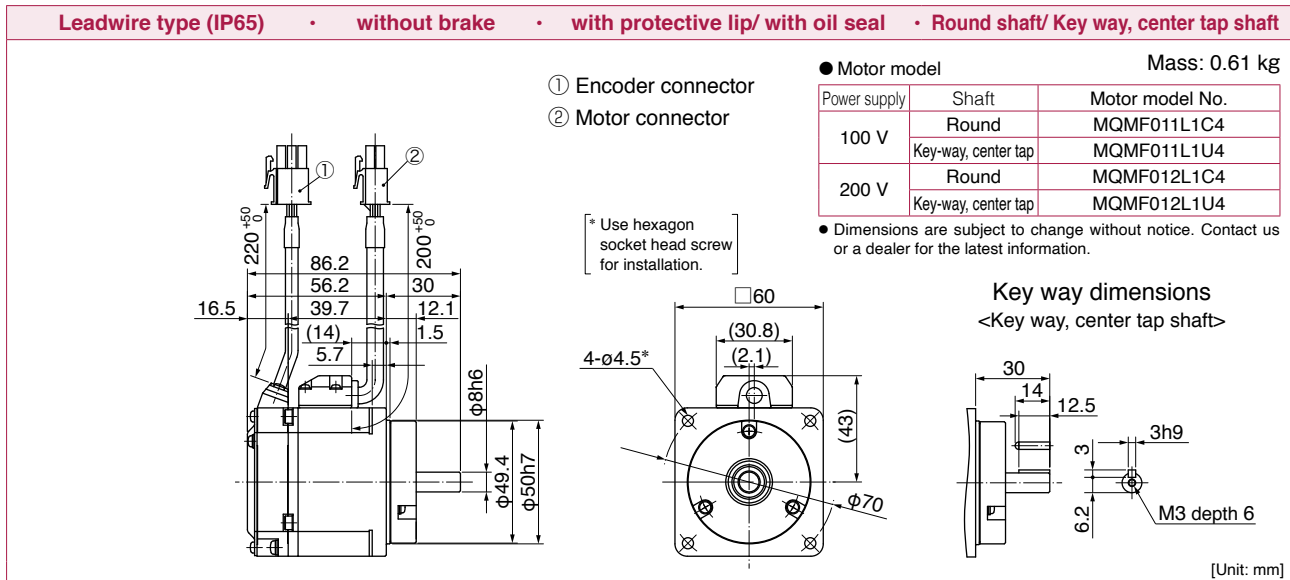
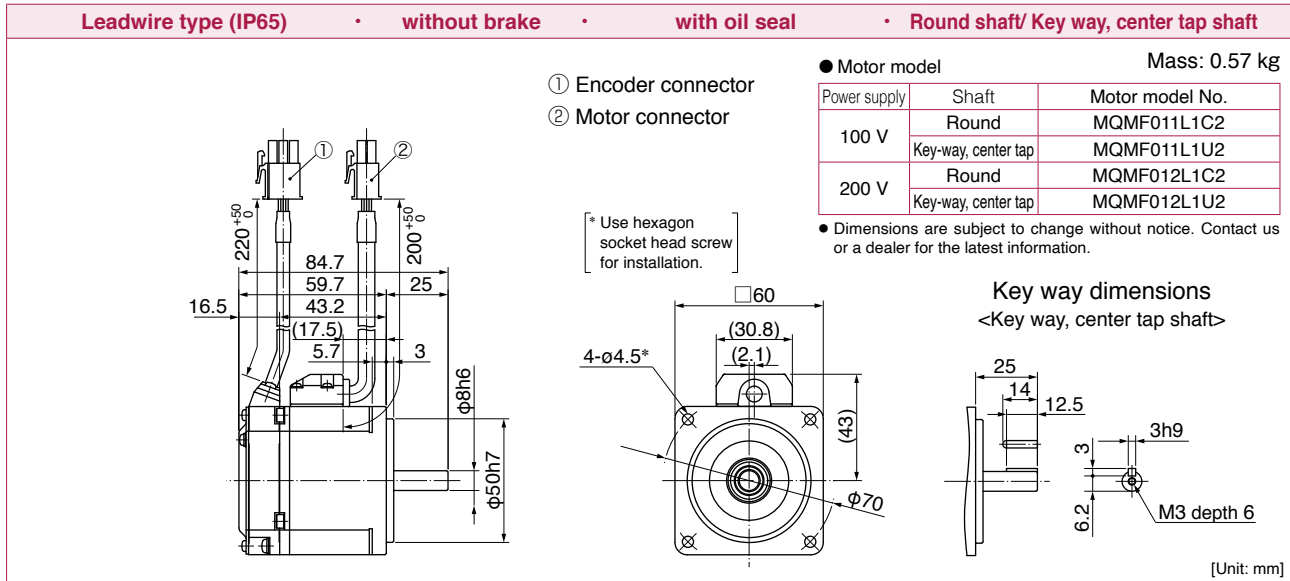
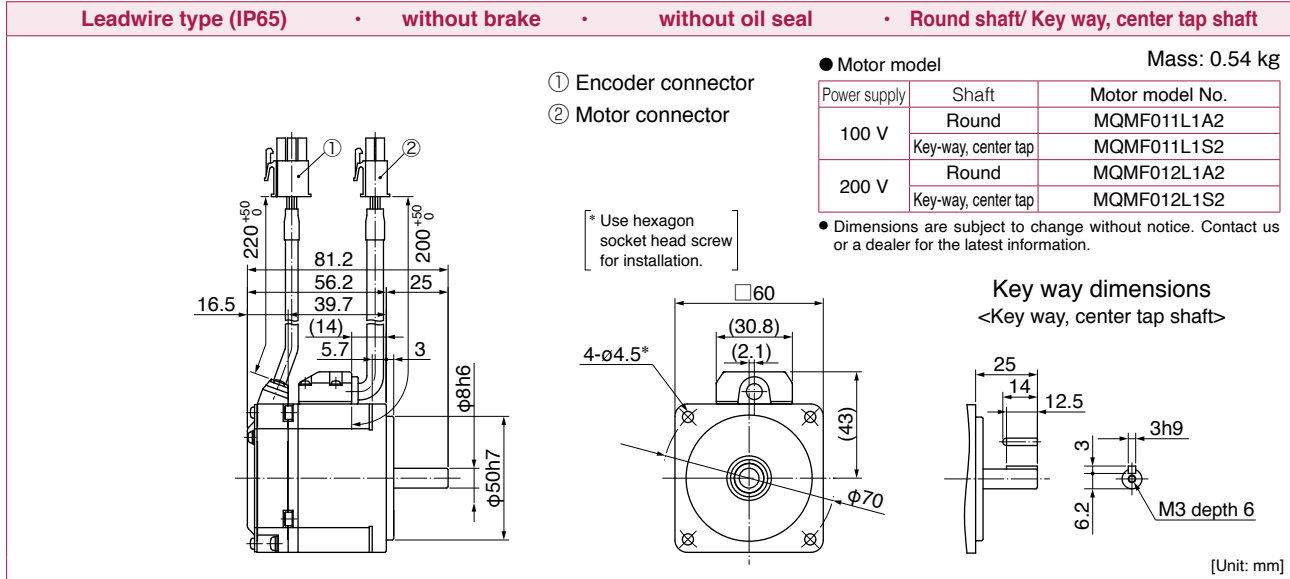
* For motors specifications, refer to P.77, P.78.

MSMF 5.0 kW



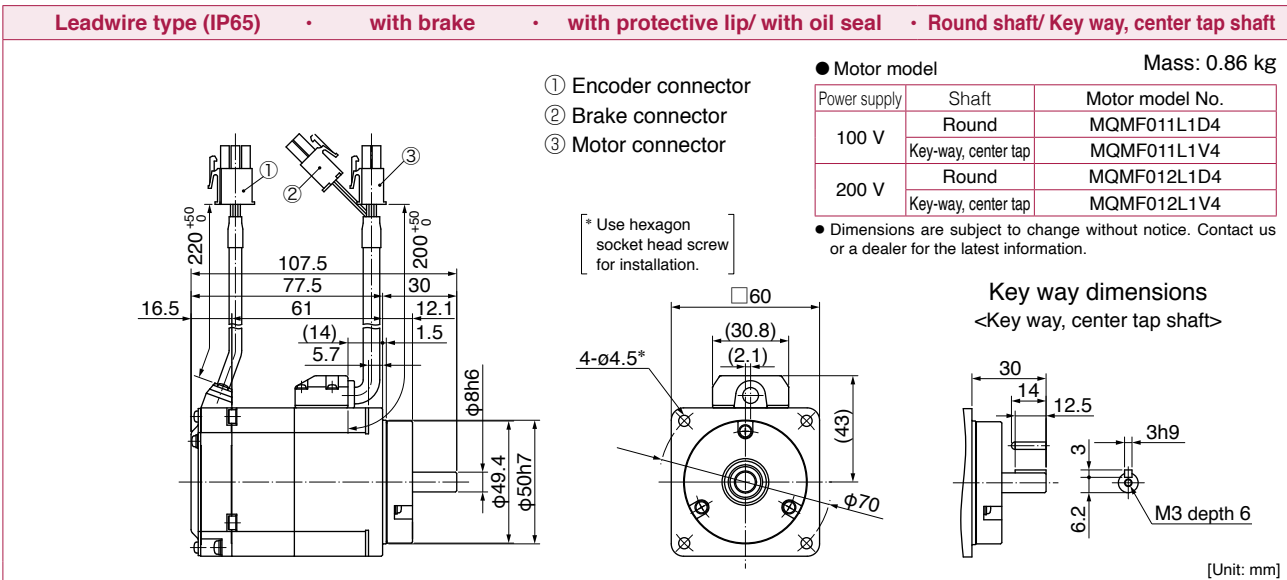
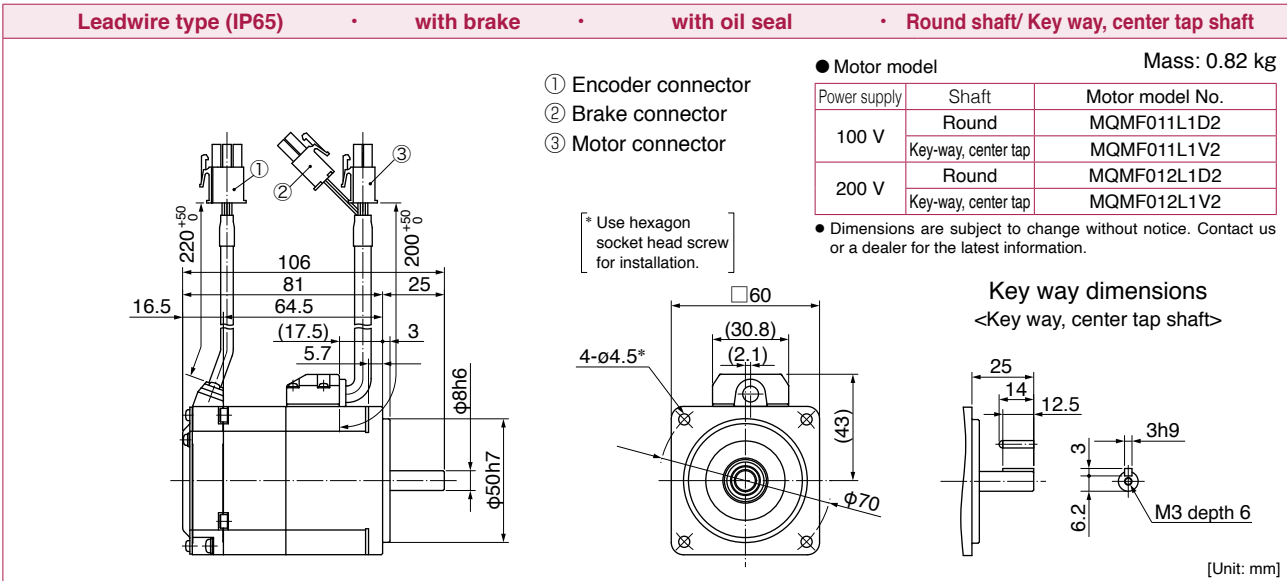
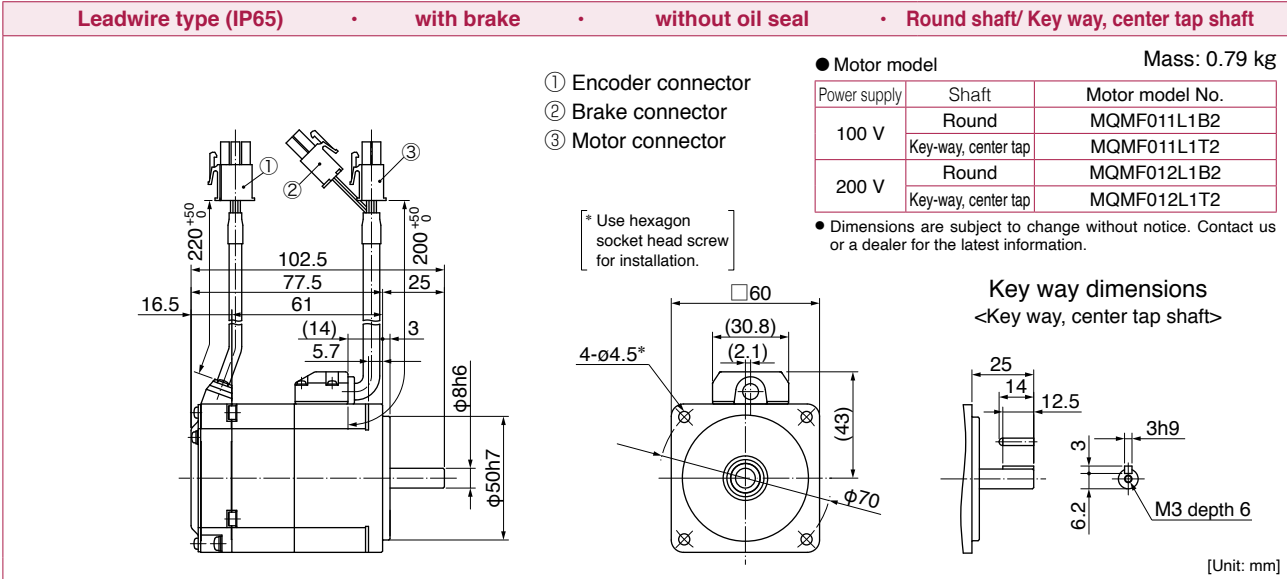
* For motors specifications, refer to P.78.

MQMF 100 W



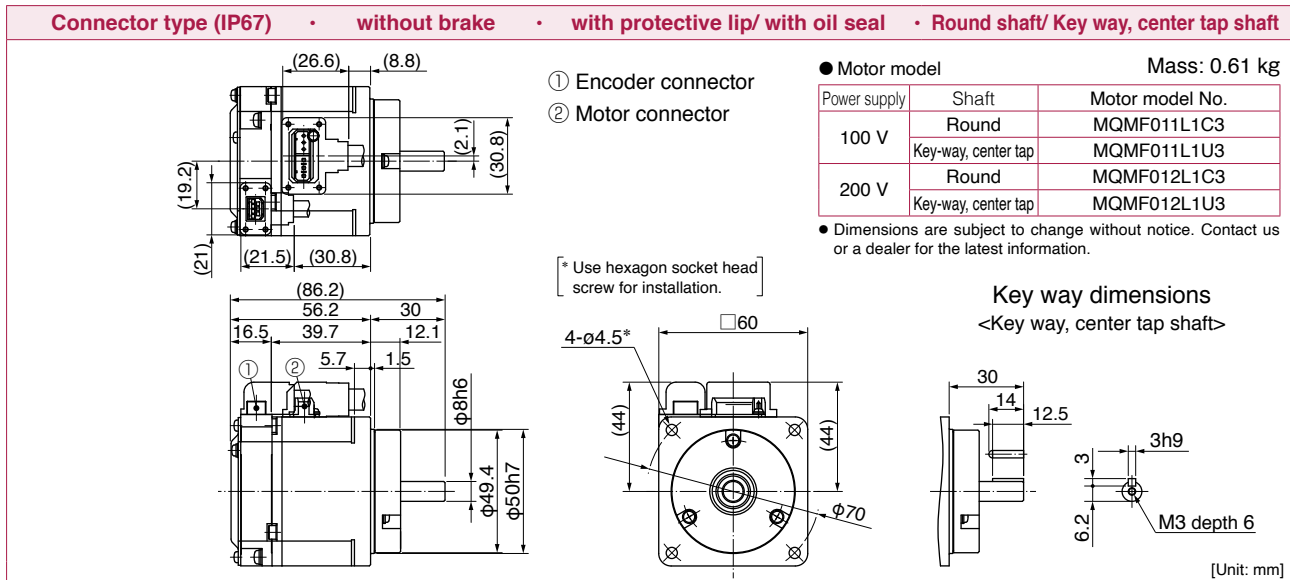
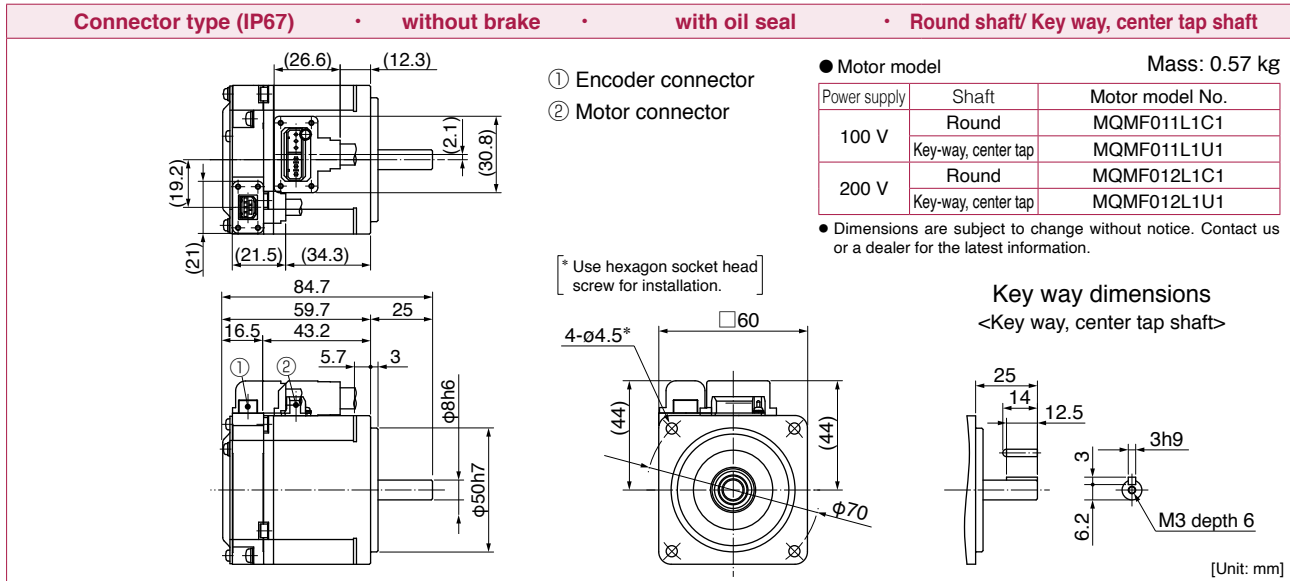
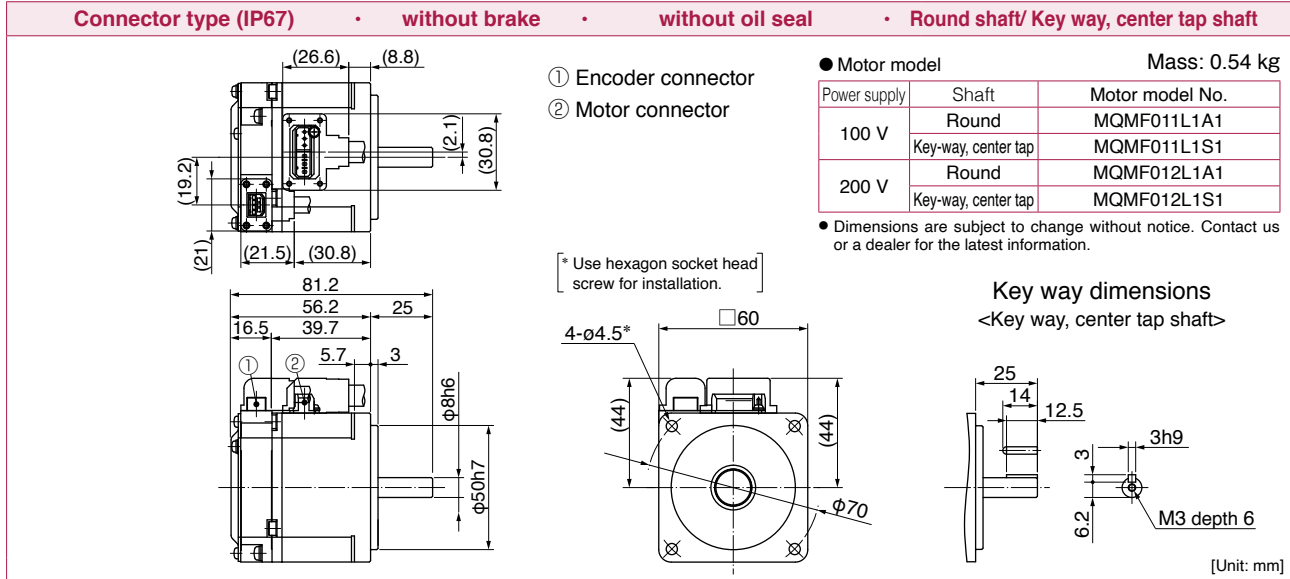
* For motors specifications, refer to P.79, P.80.

MQMF 100 W

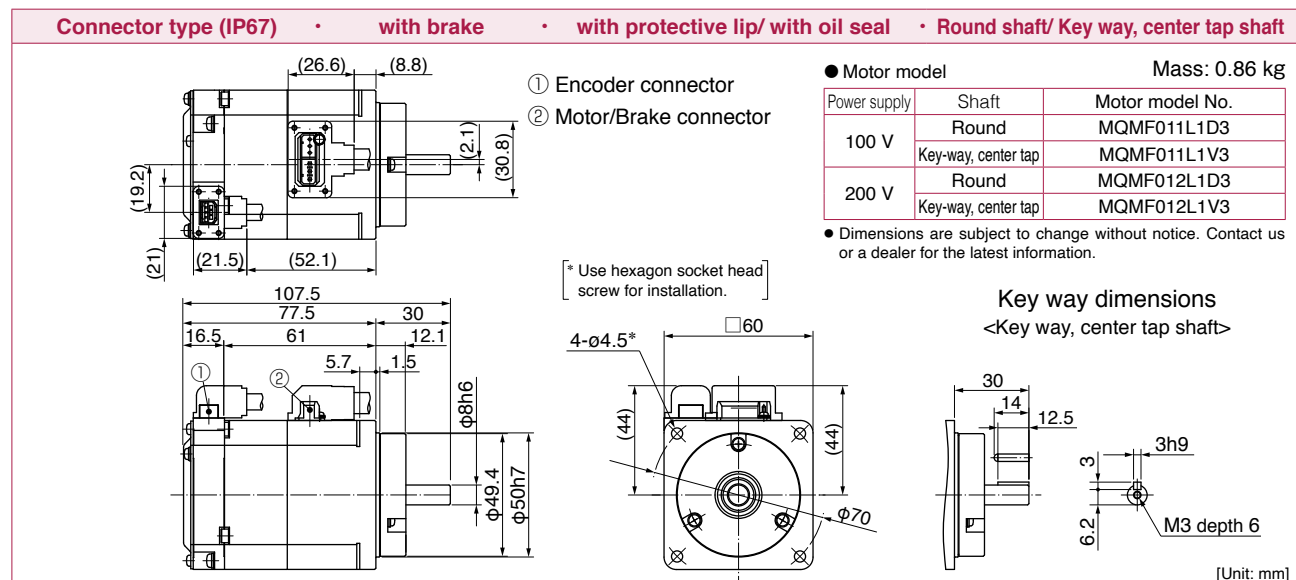
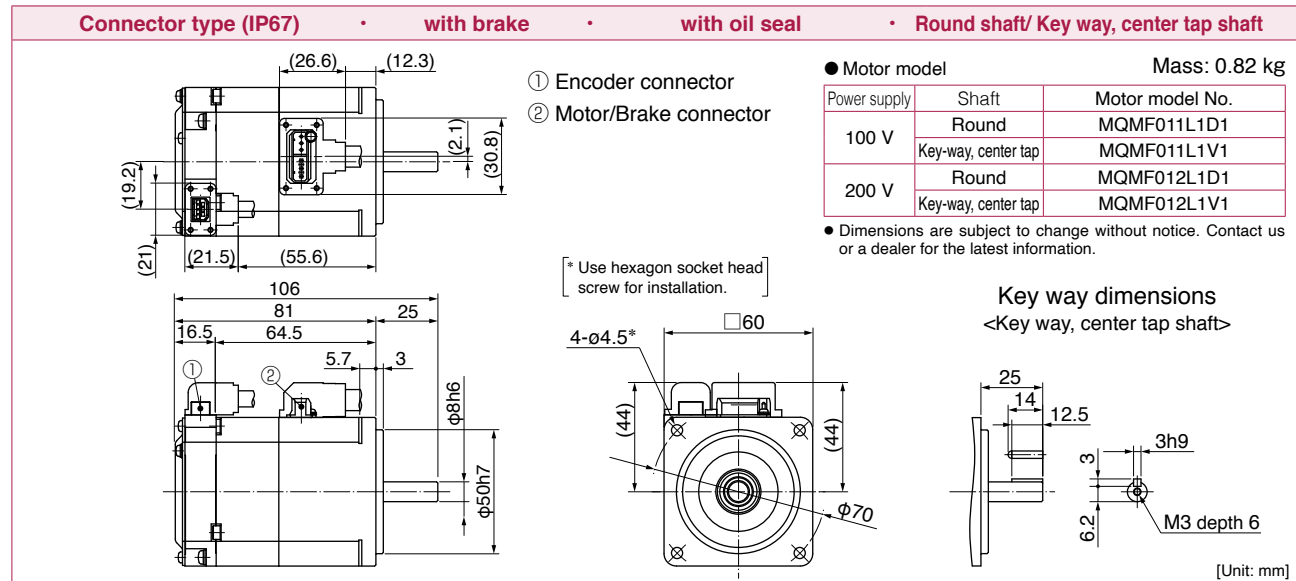
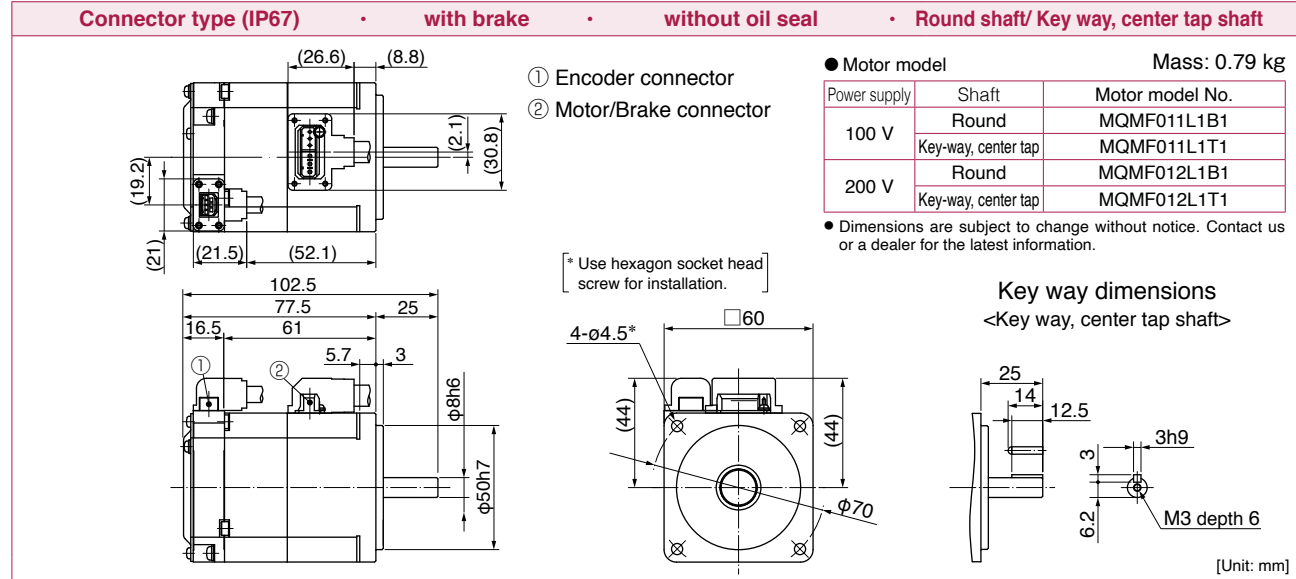


* For motors specifications, refer to P.79, P.80.

MQMF 100 W



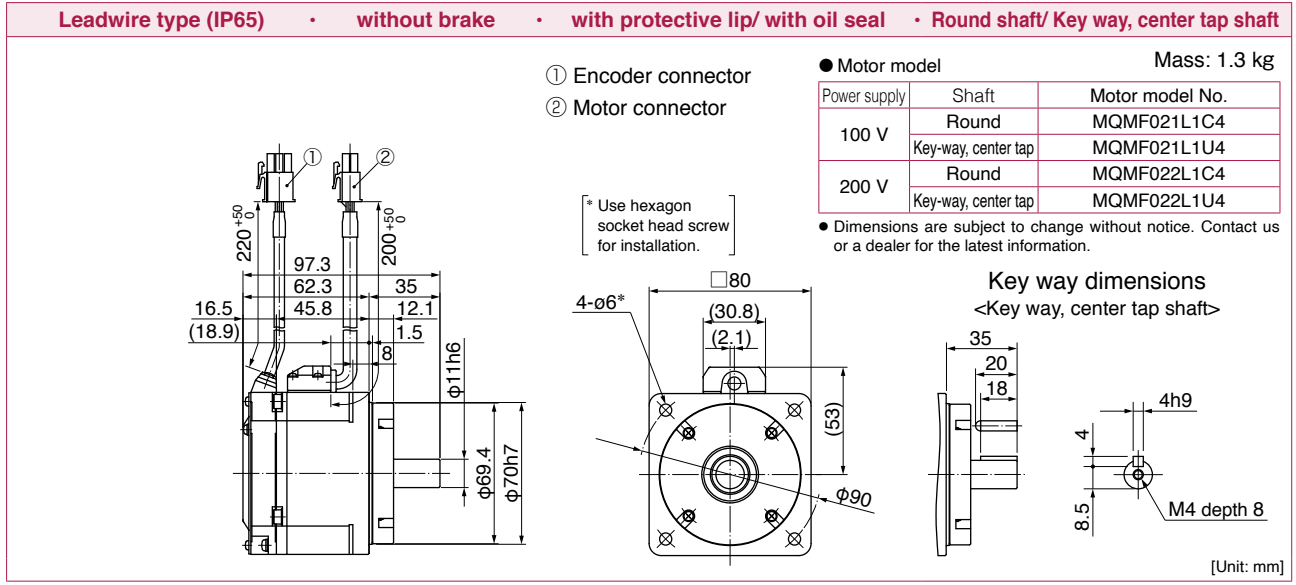
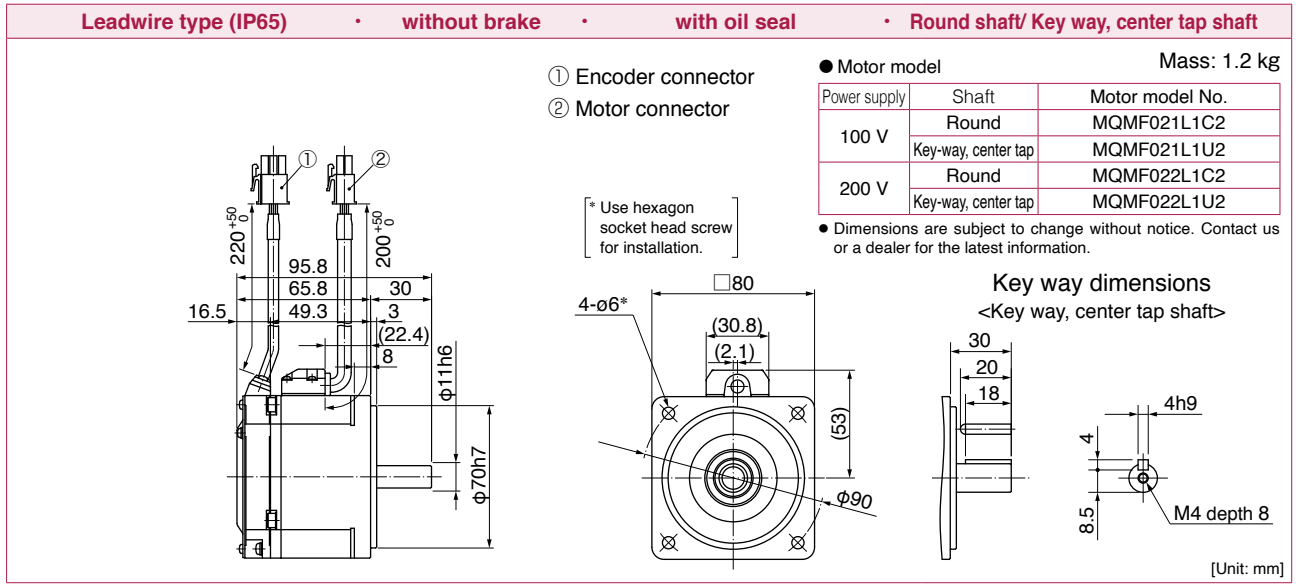
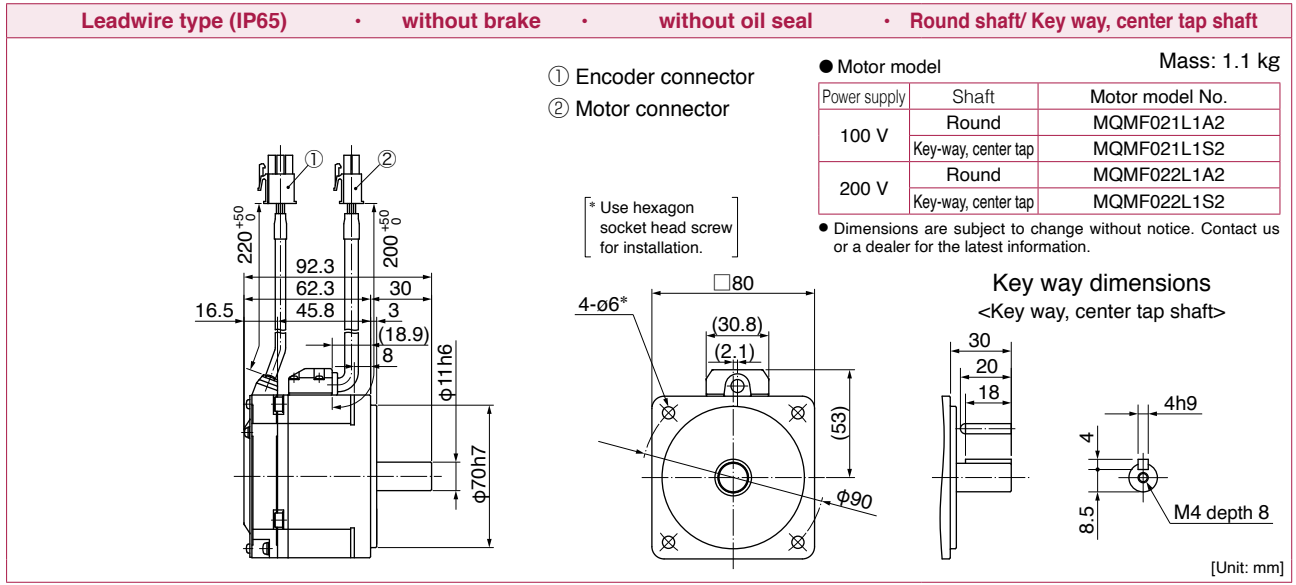
MQMF 100 W



* For motors specifications, refer to P.79, P.80.

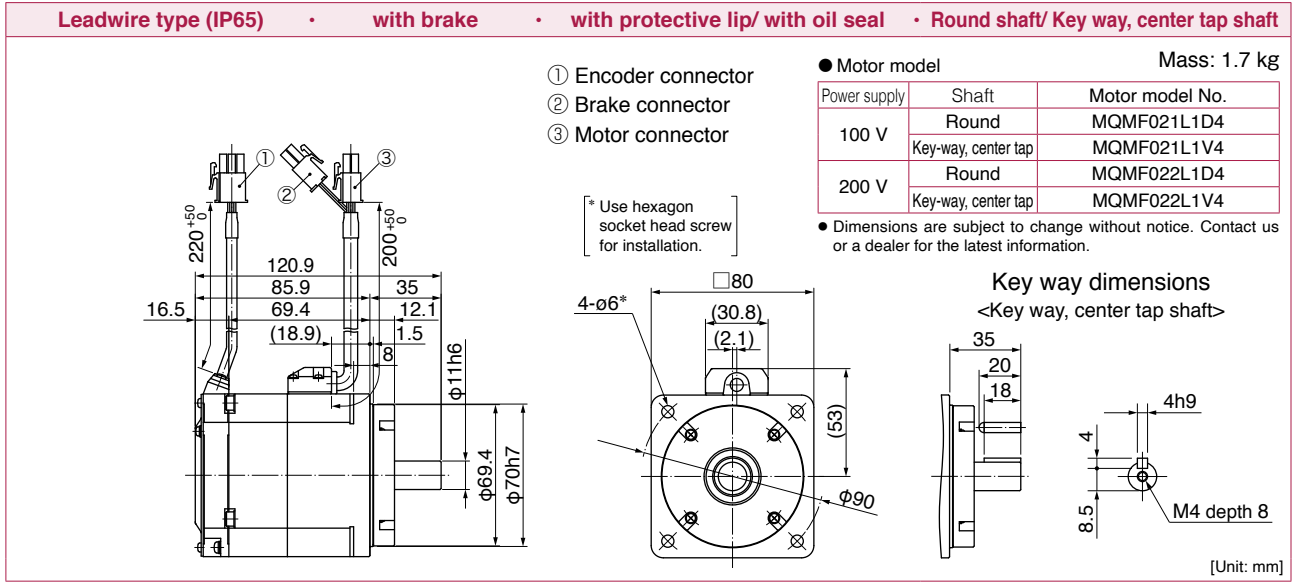
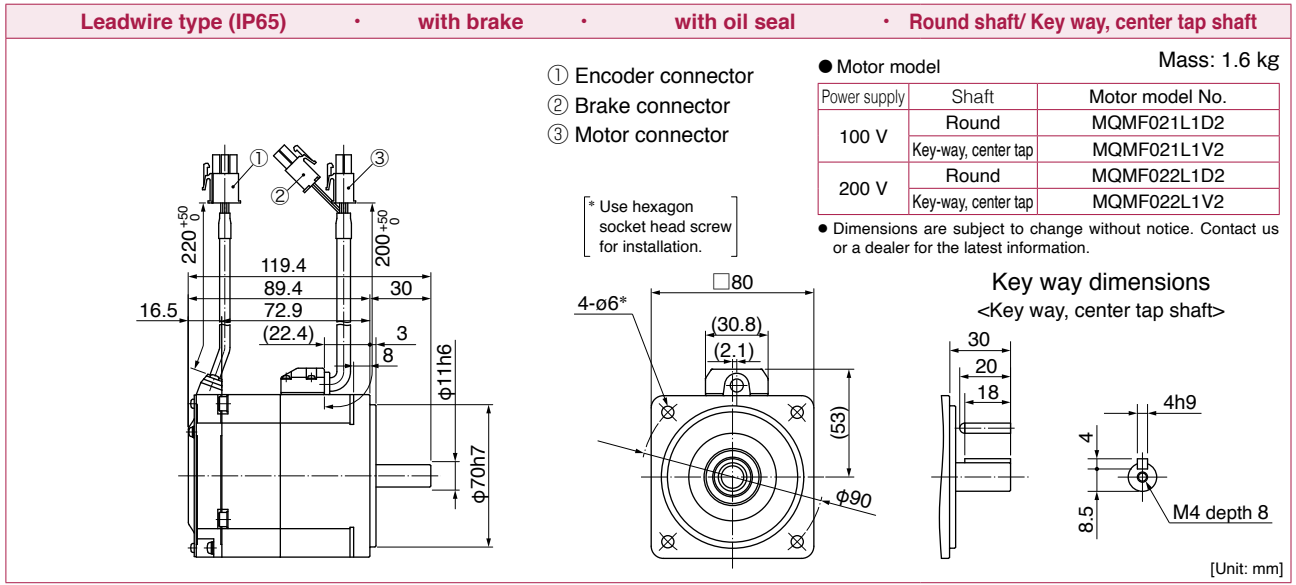
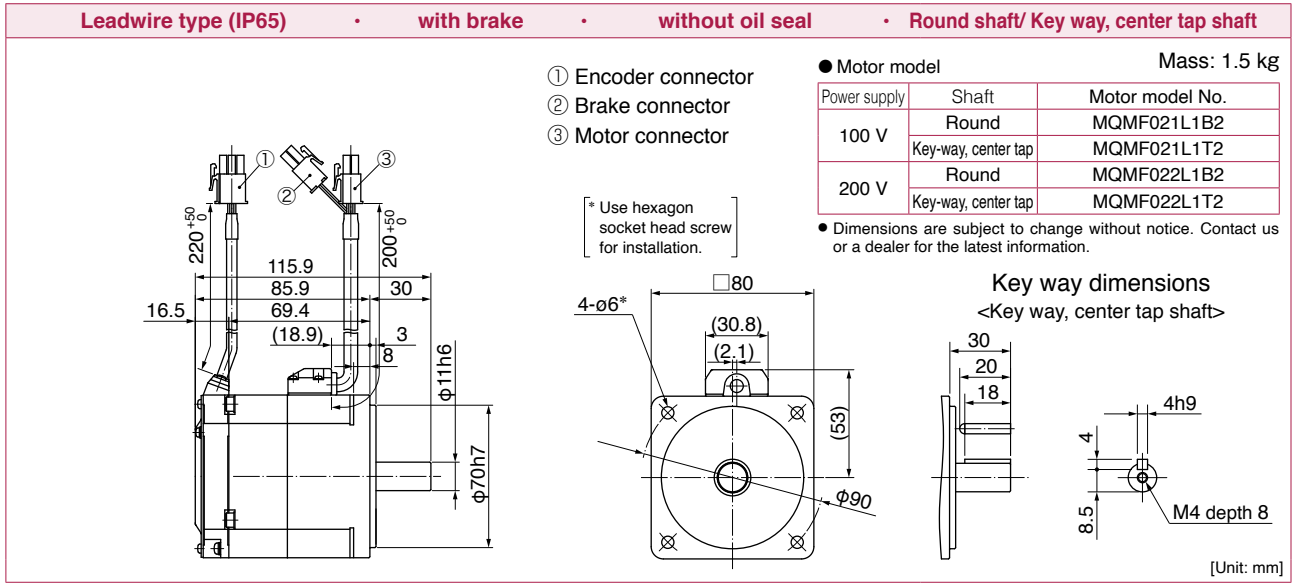
* For motors specifications, refer to P.79, P.80.

MQMF 200 W



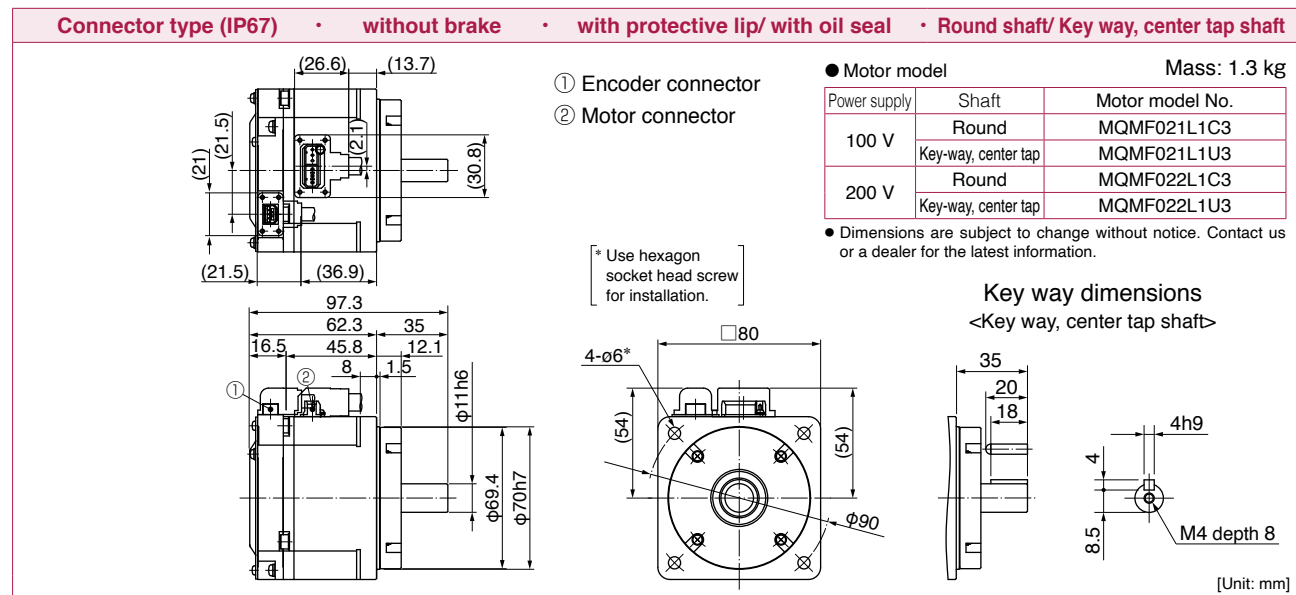
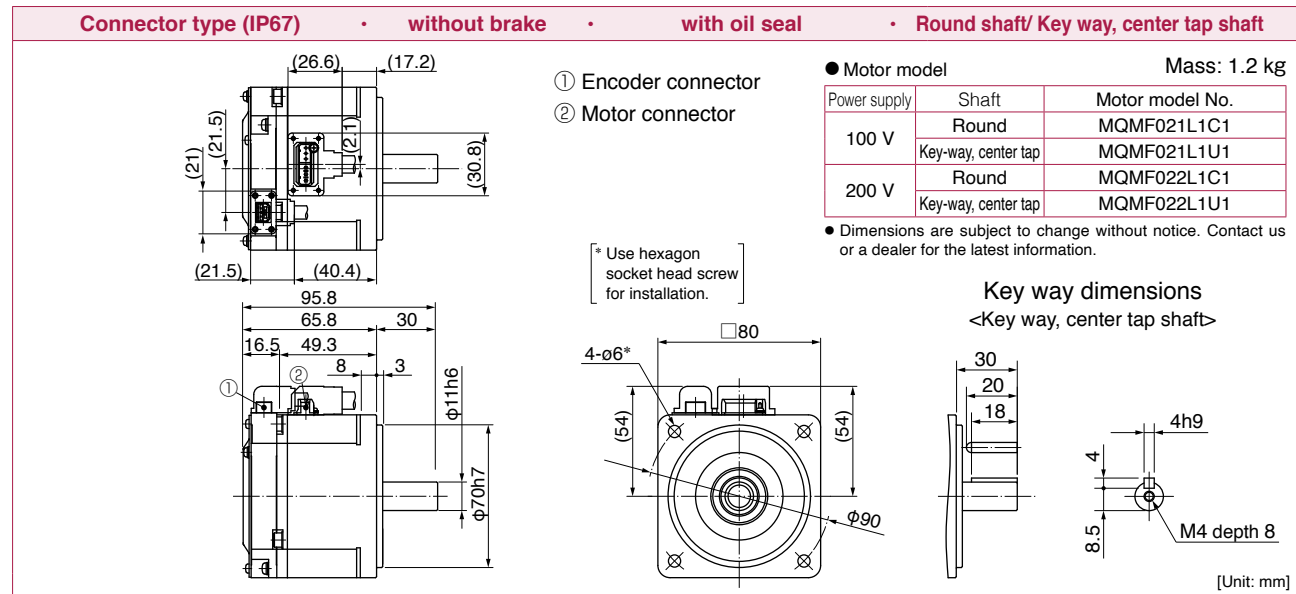
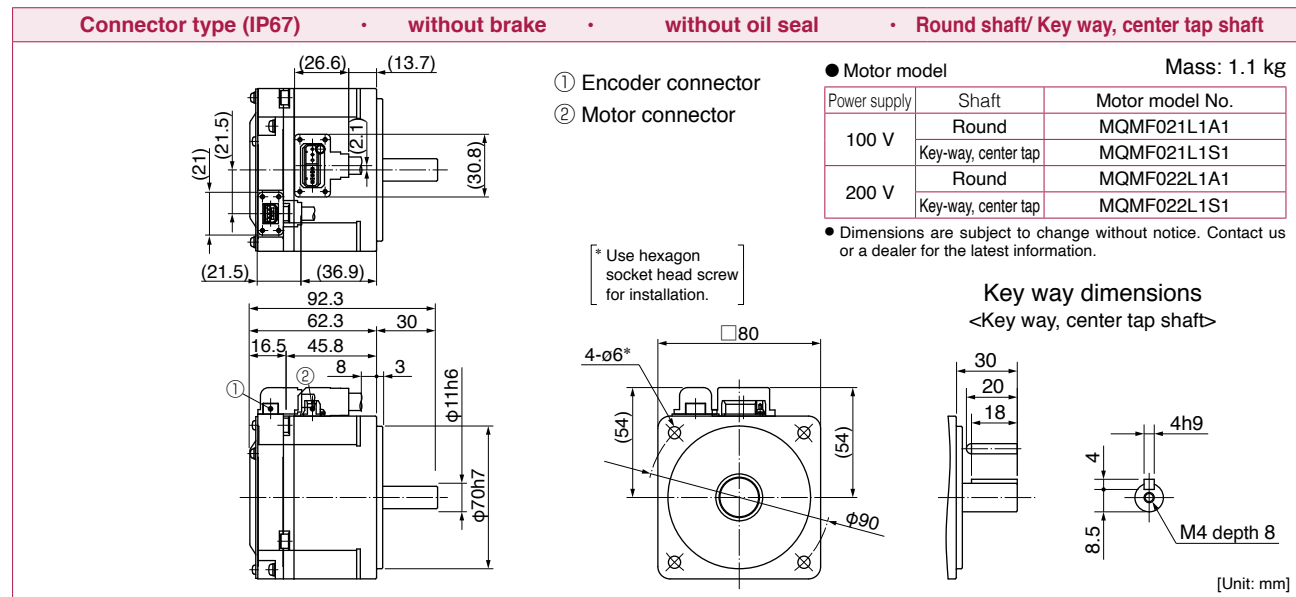
* For motors specifications, refer to P.81, P.82.

MQMF 200 W



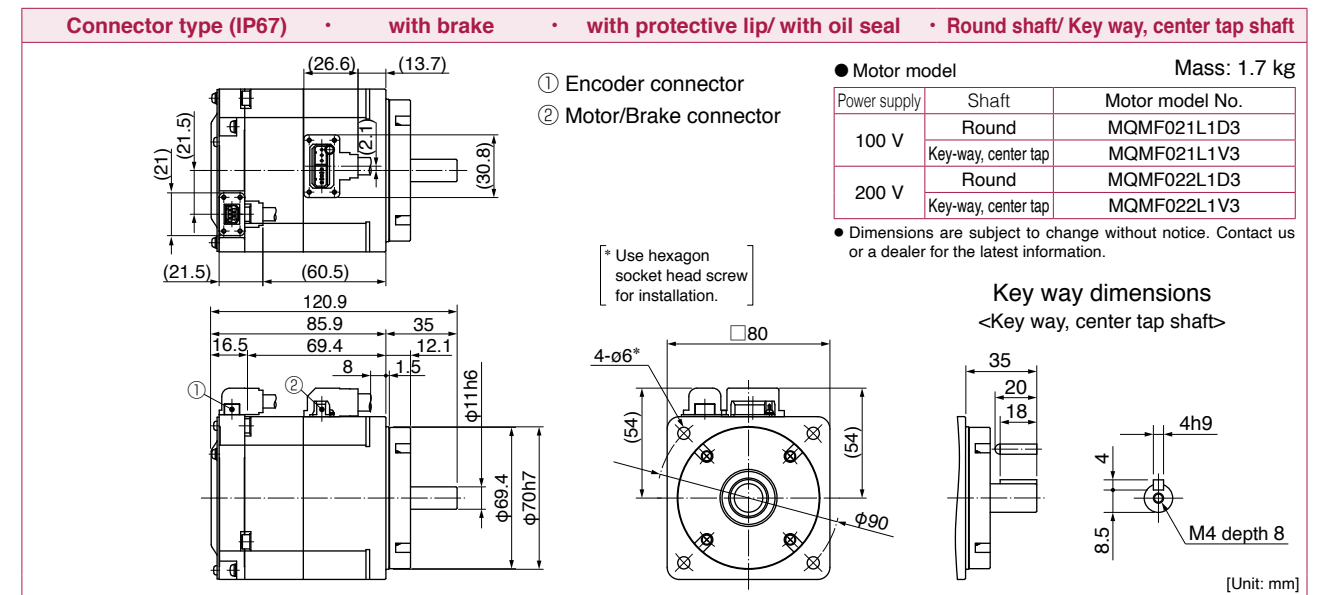
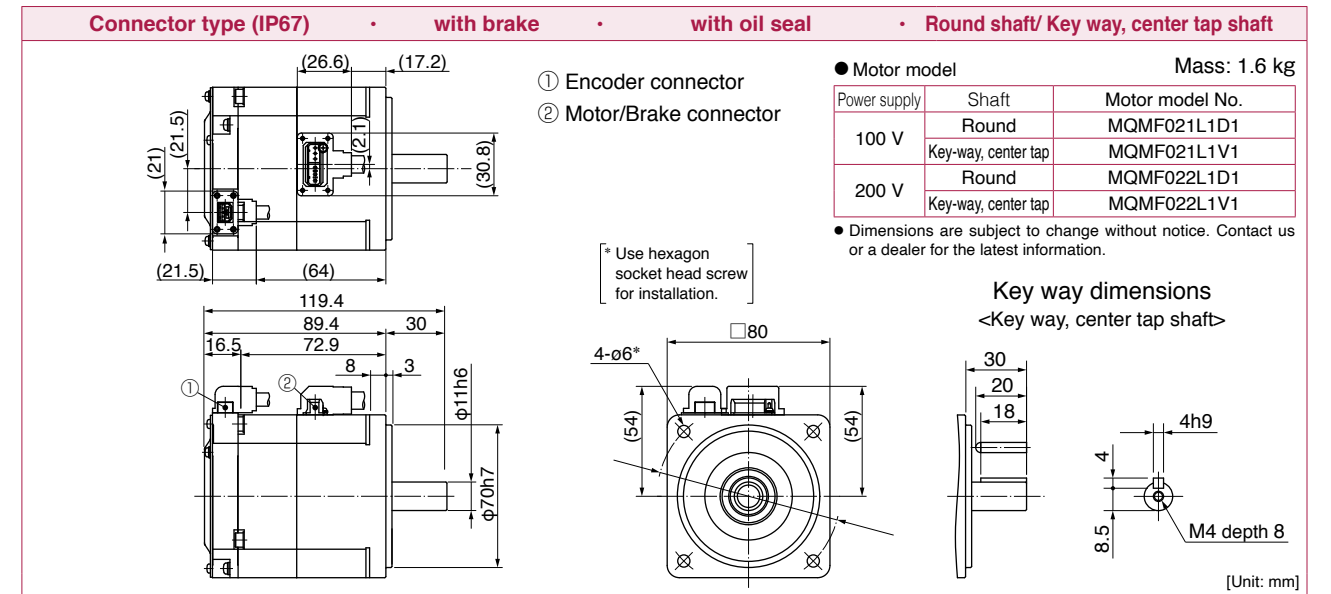
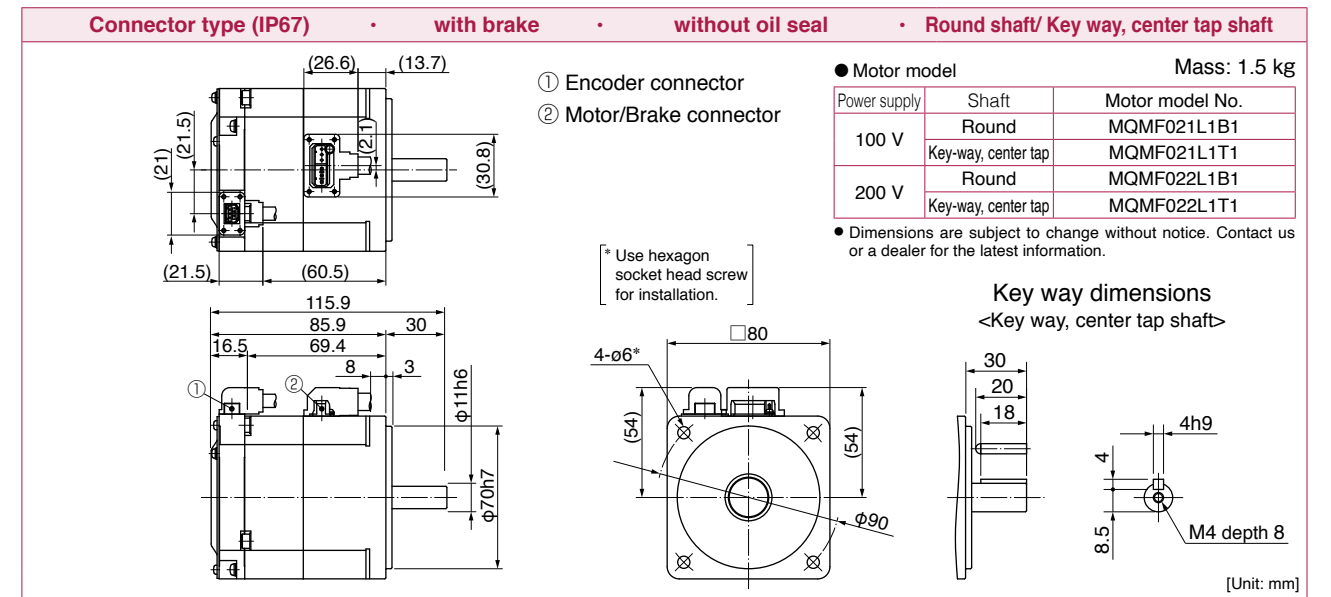
* For motors specifications, refer to P.81, P.82.

MQMF 200 W



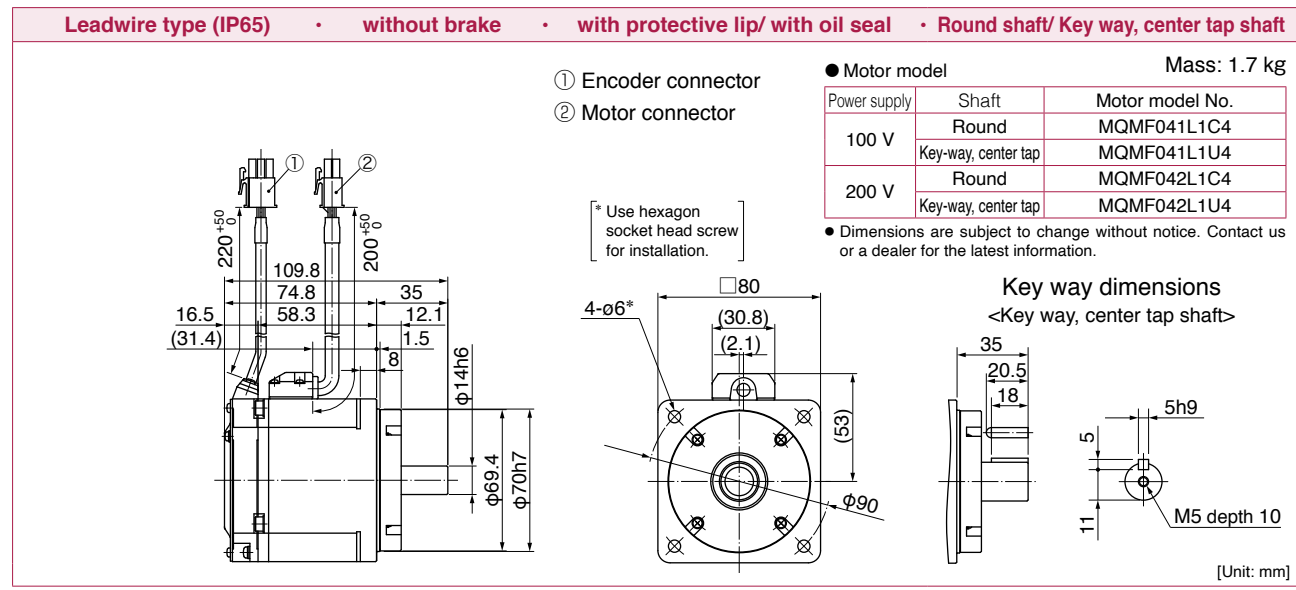
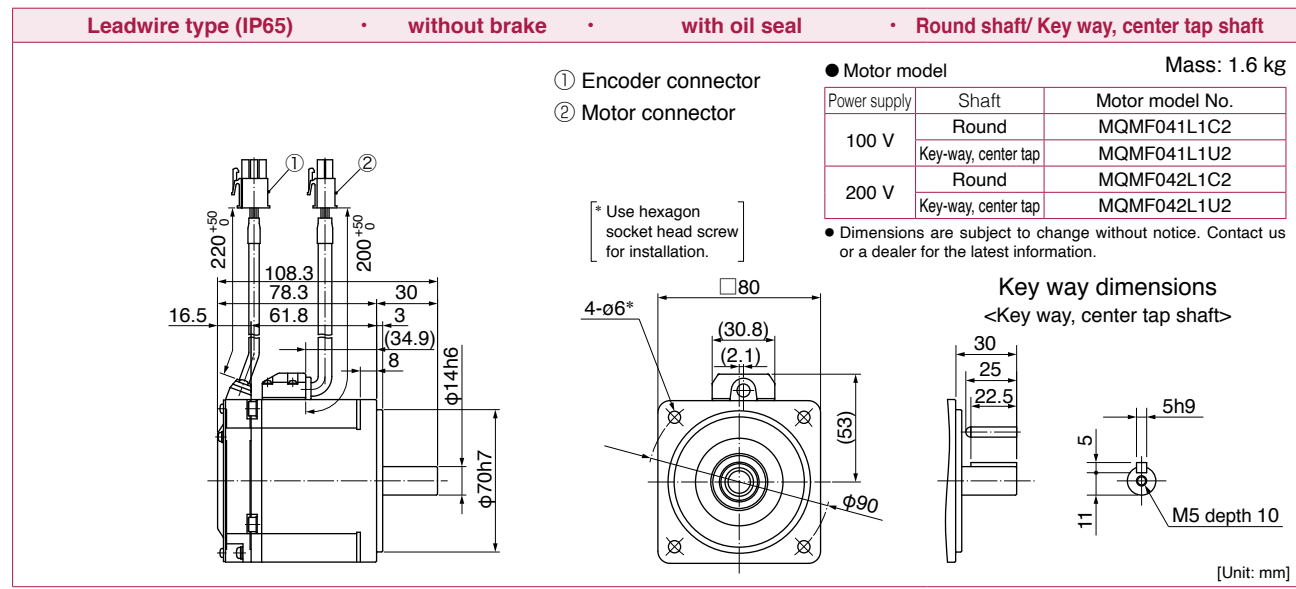
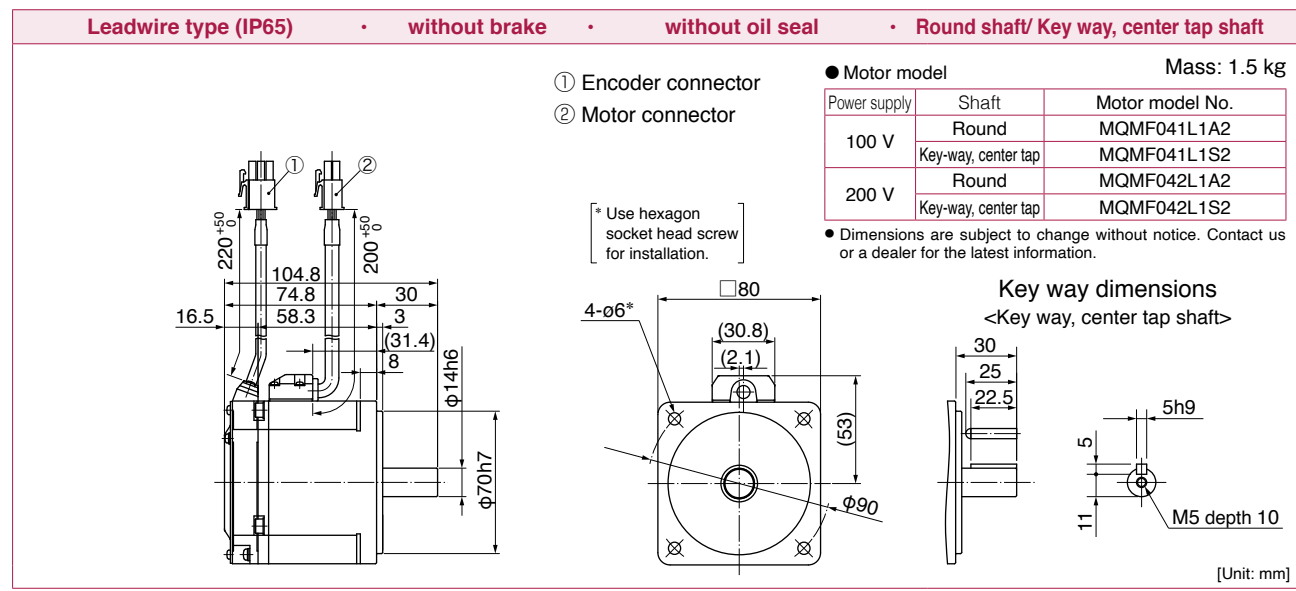
* For motors specifications, refer to P.81, P.82.

MQMF 200 W



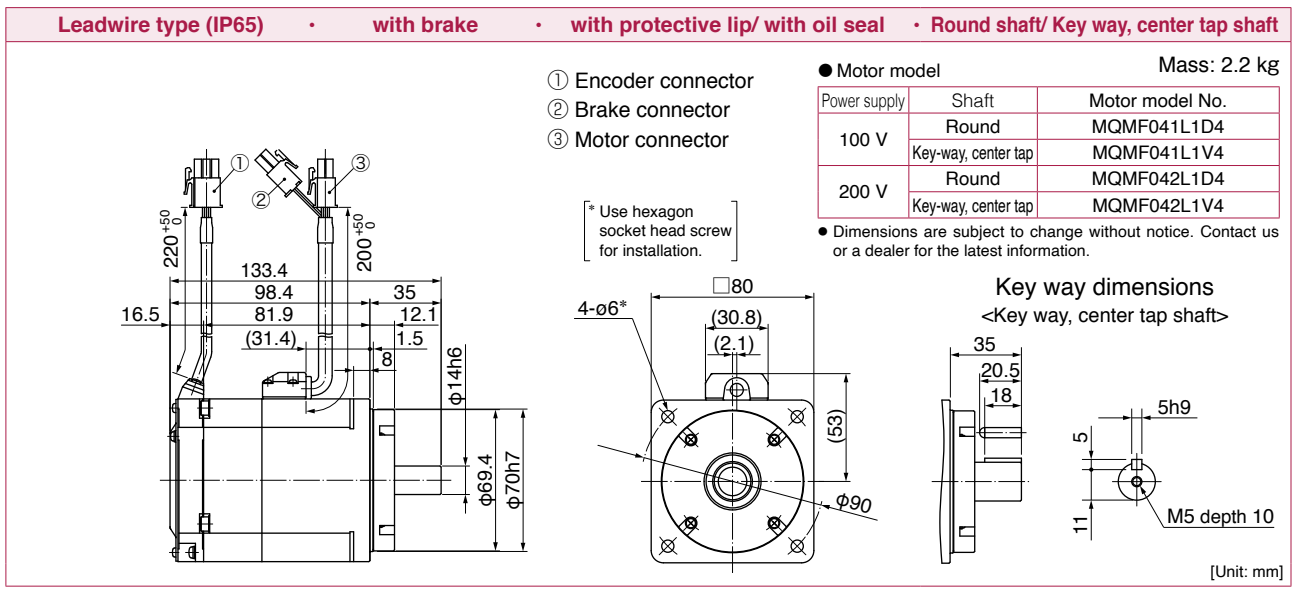
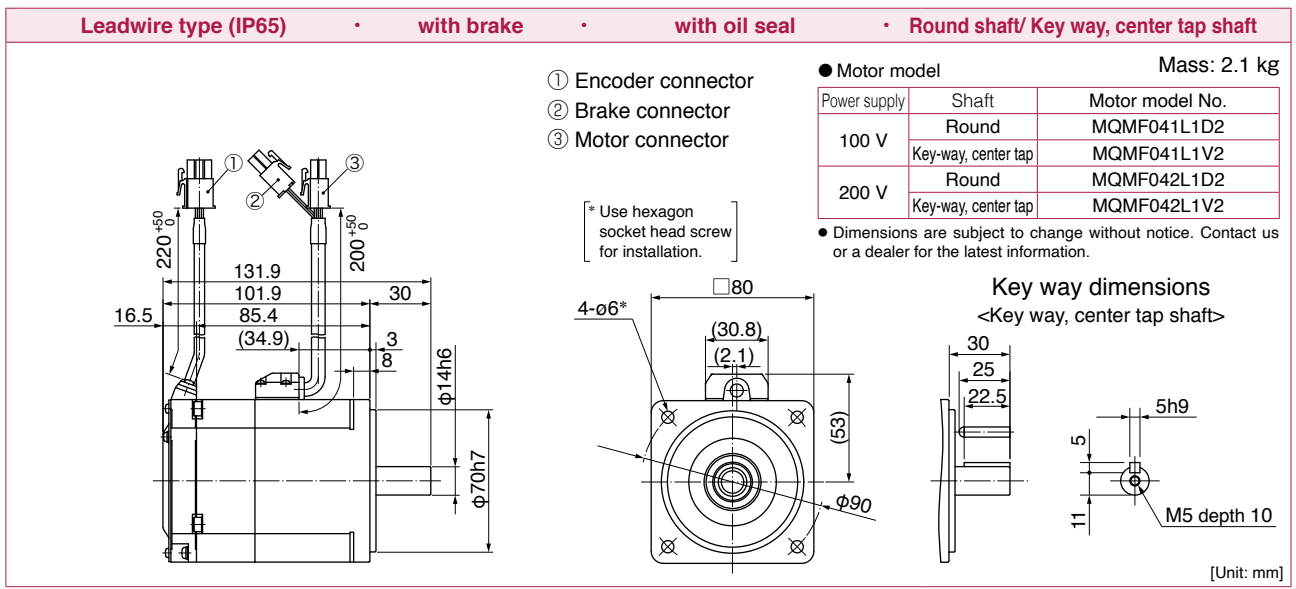
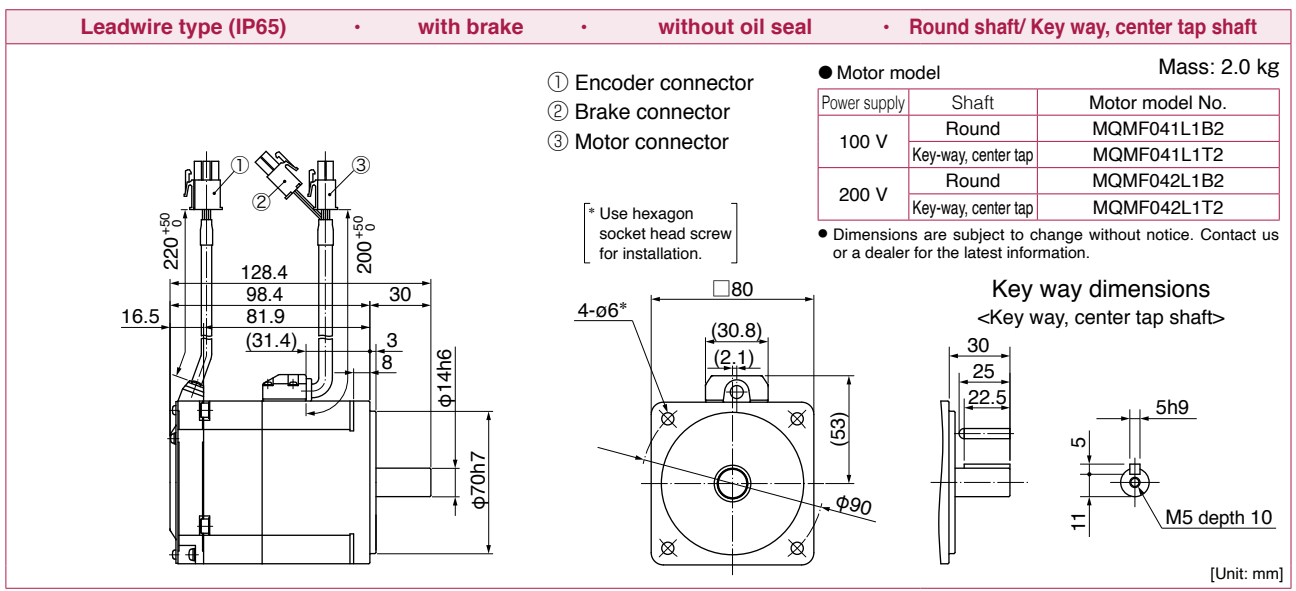
* For motors specifications, refer to P.81, P.82.

MQMF 400 W



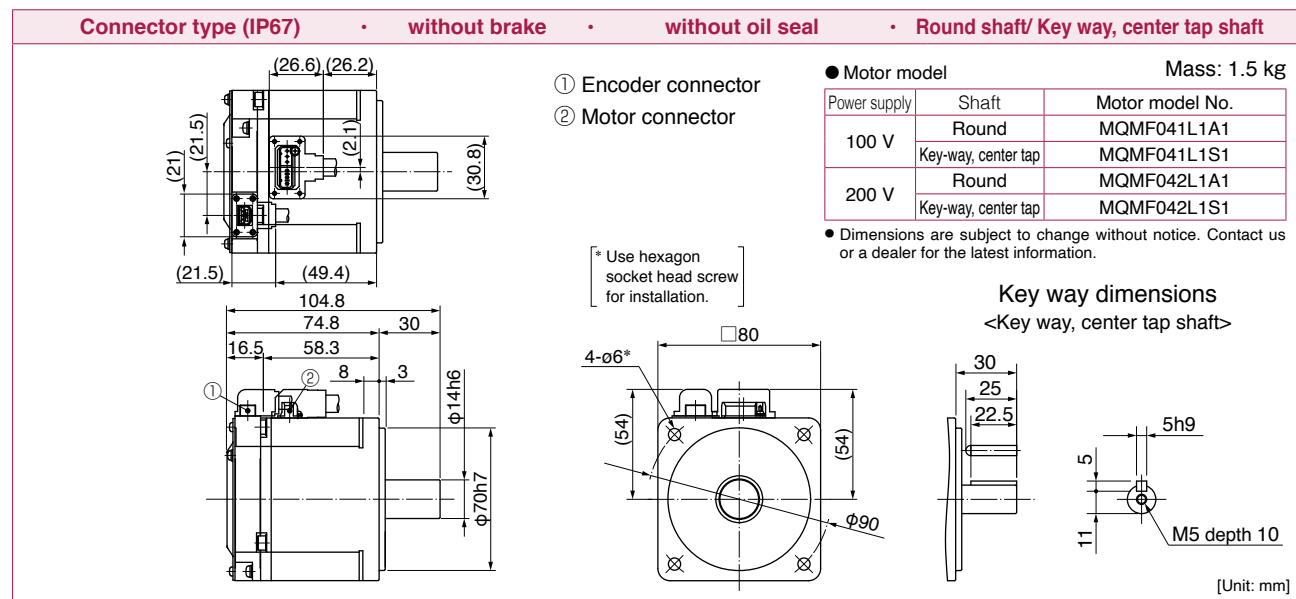
* For motors specifications, refer to P.83, P.84.

MQMF 400 W

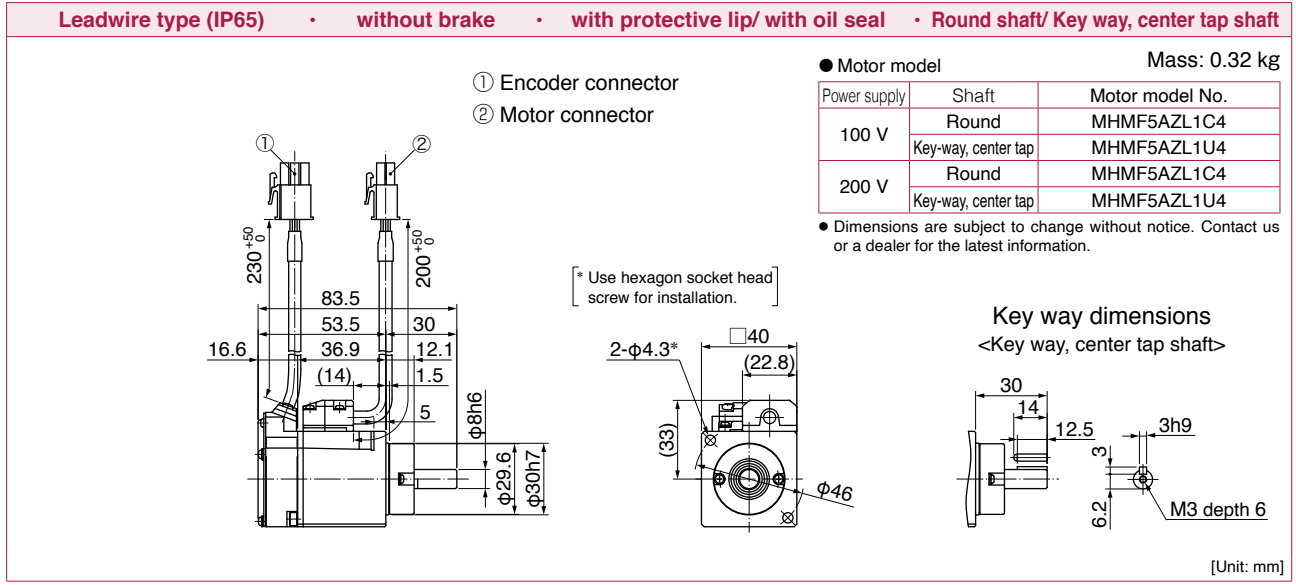
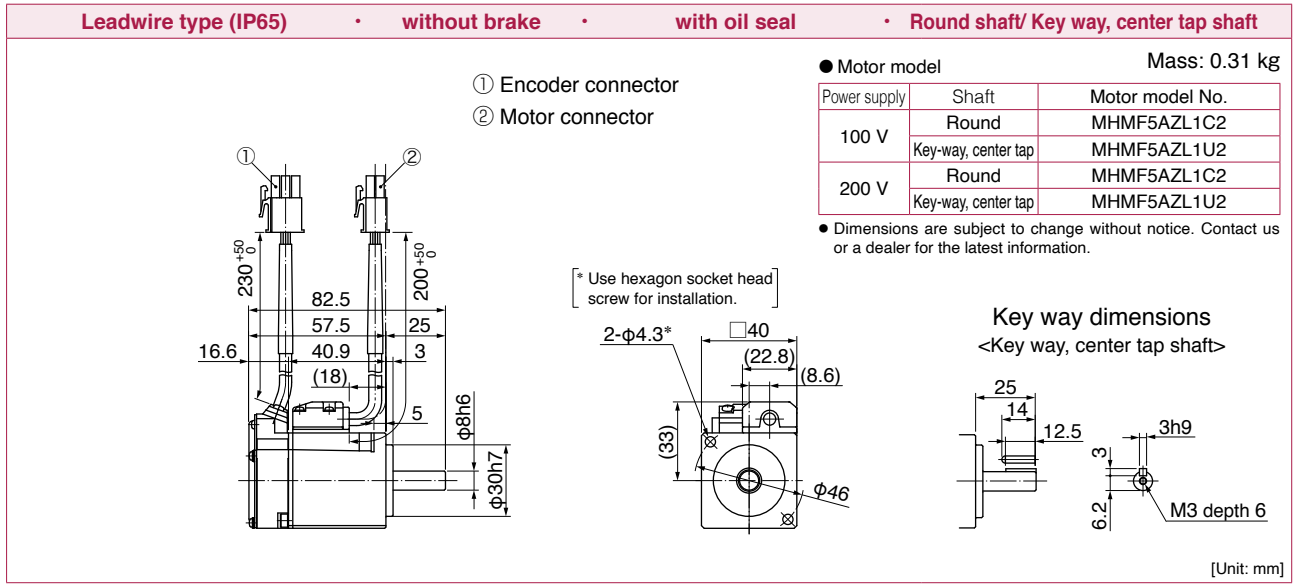
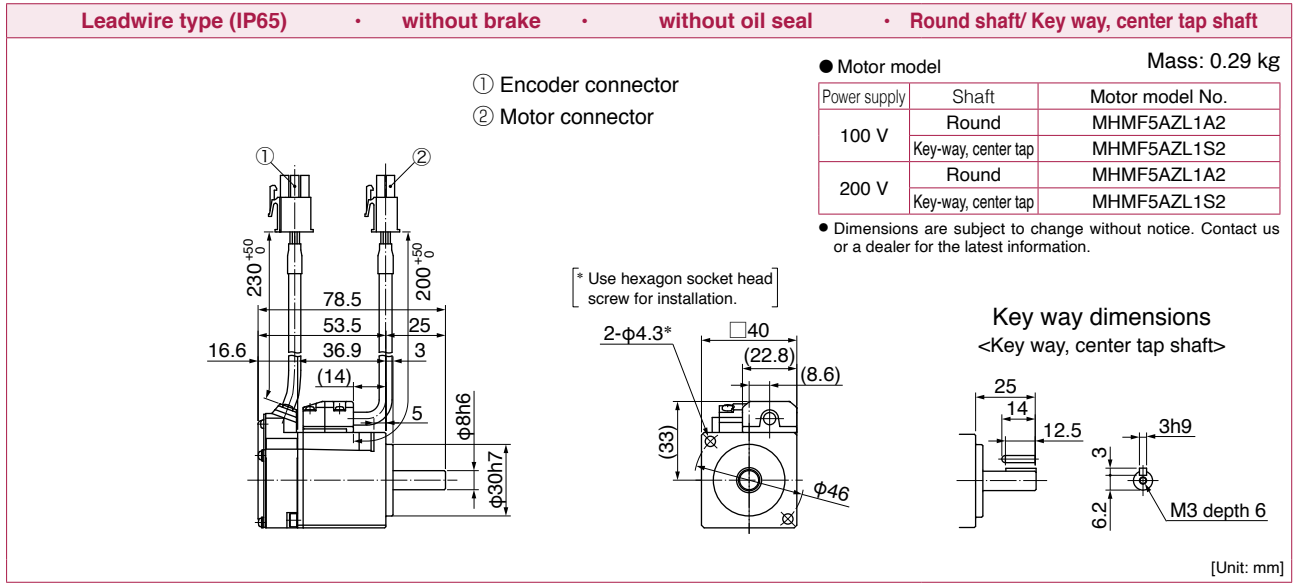


* For motors specifications, refer to P.83, P.84.

MQMF 400 W

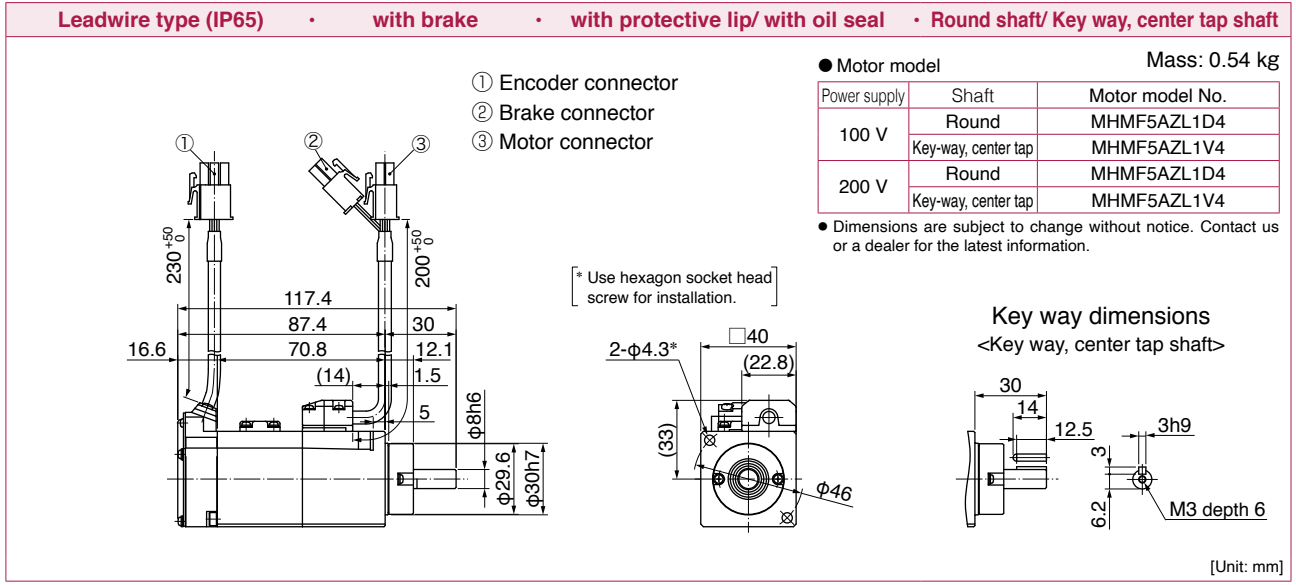
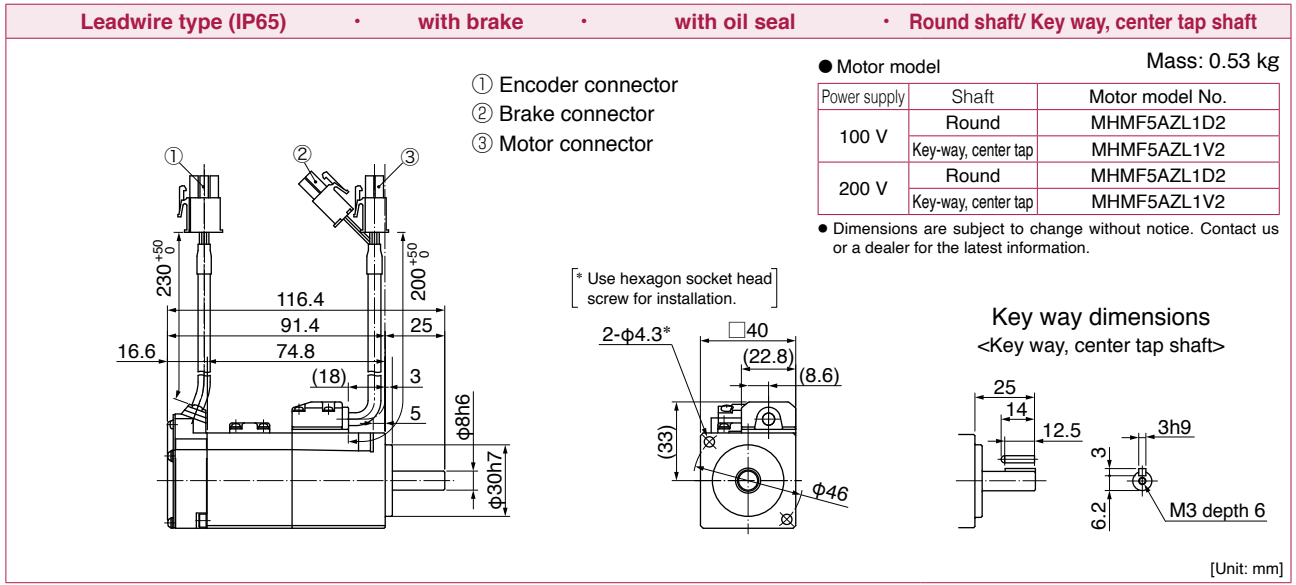
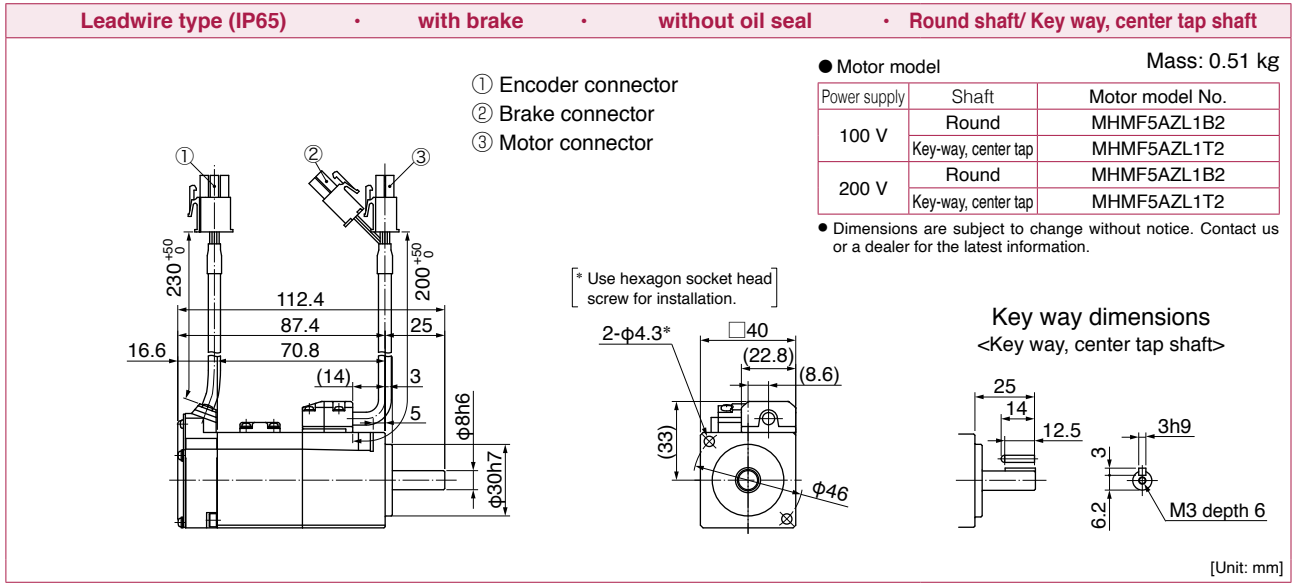


MHMF 50 W



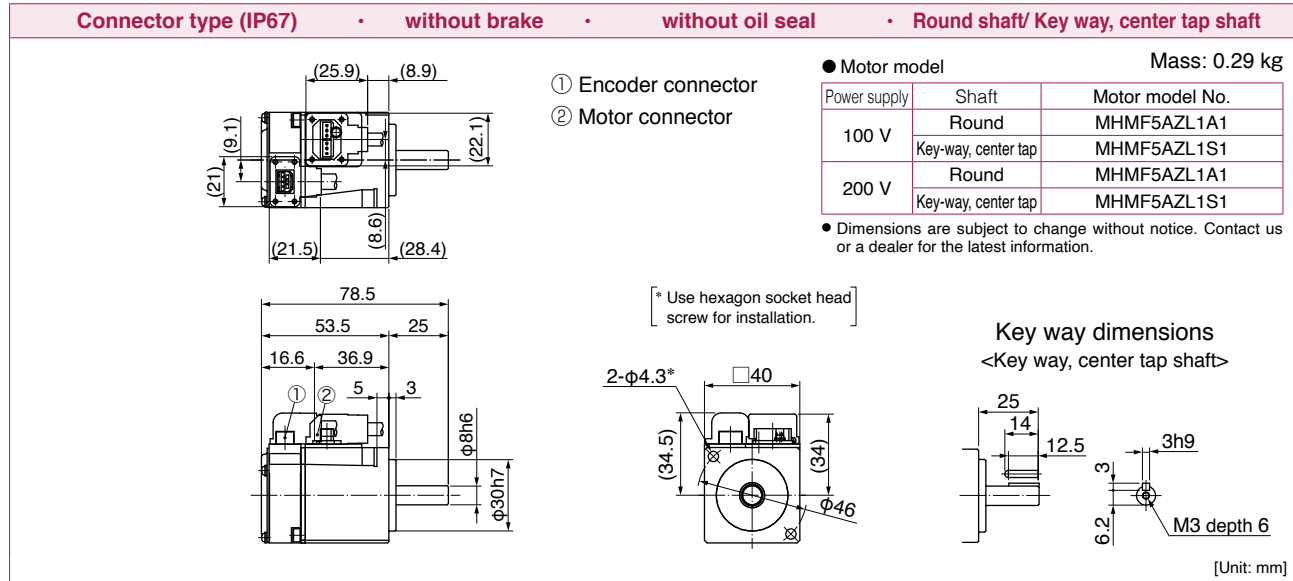
* For motors specifications, refer to P.85, P.86.

MHMF 50 W

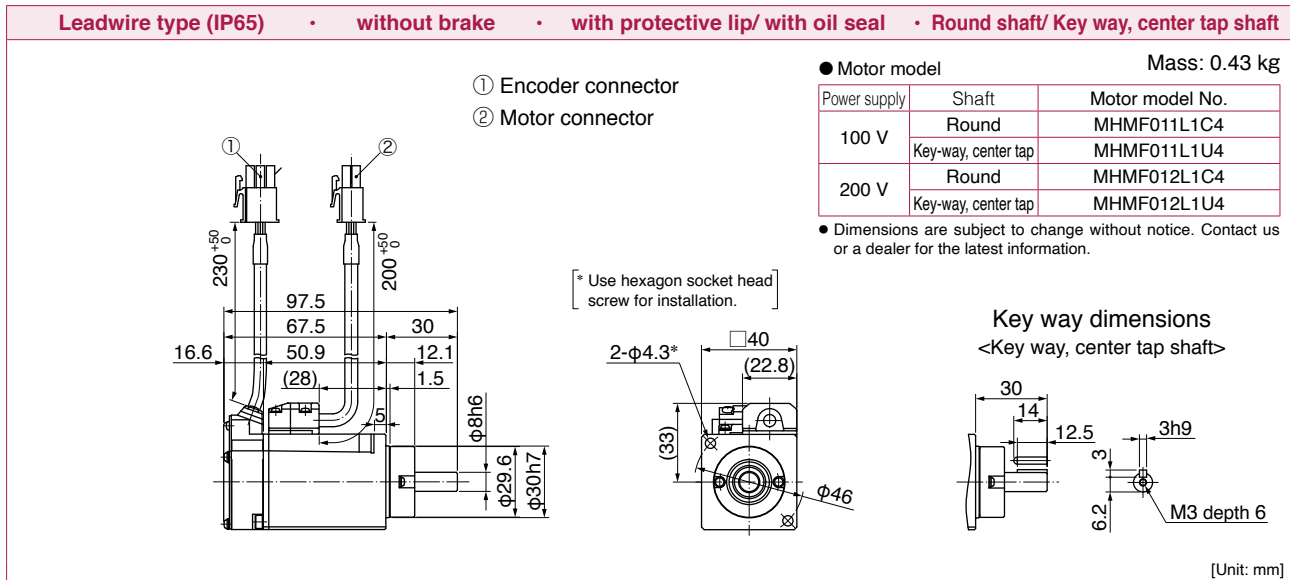
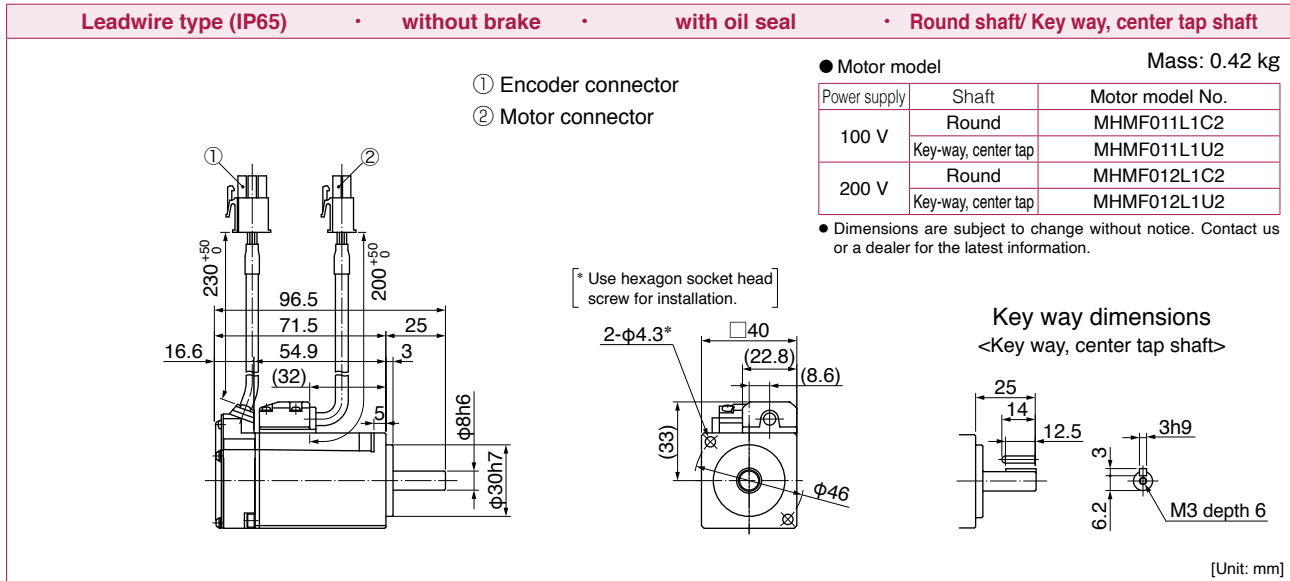
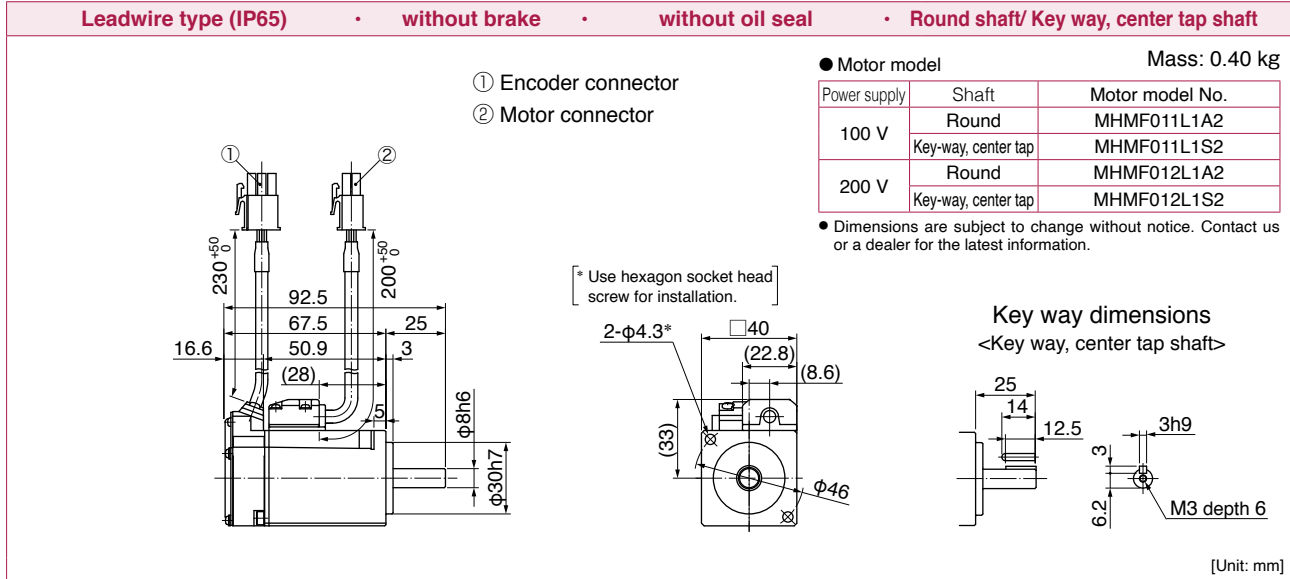


* For motors specifications, refer to P.85, P.86.

MHMF 50 W

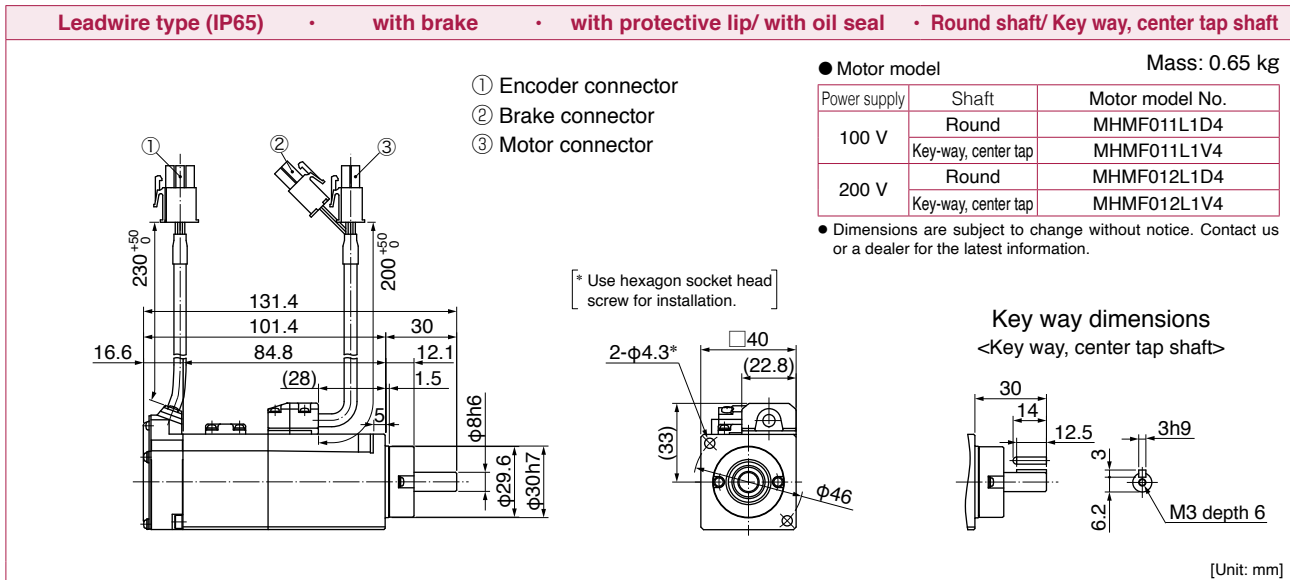
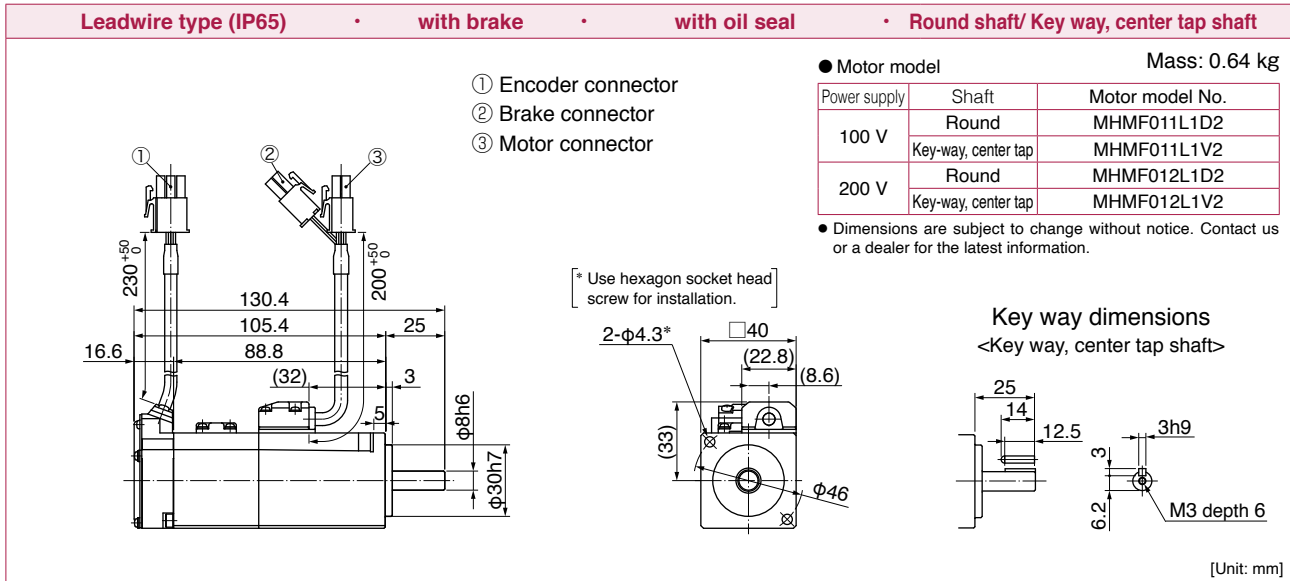
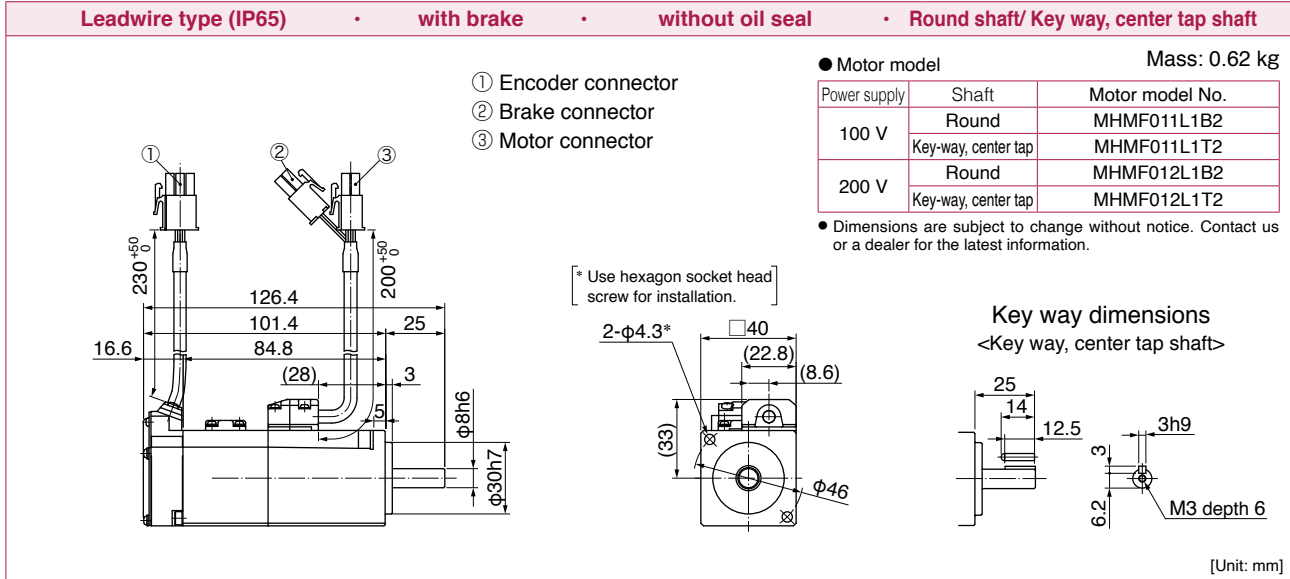


MHMF 100 W



* For motors specifications, refer to P.87, P.88.

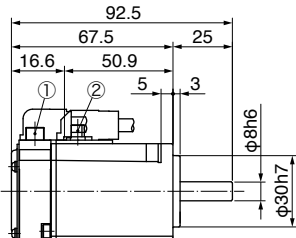
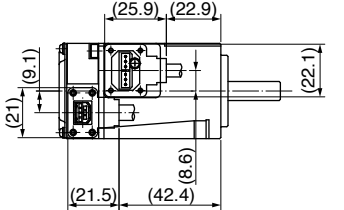
MHMF 100 W



* For motors specifications, refer to P.87, P.88.

MHMF 100 W

Connector type (IP67) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor connector

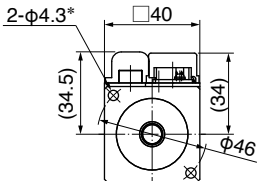
● Motor model

Mass: 0.40 kg

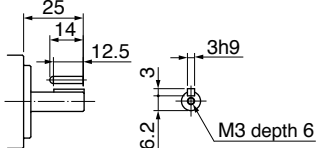
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1A1
	Key-way, center tap	MHMF011L1S1
200 V	Round	MHMF012L1A1
	Key-way, center tap	MHMF012L1S1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.

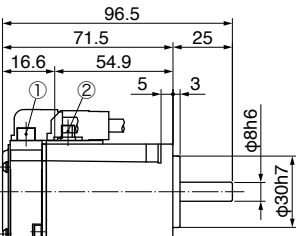
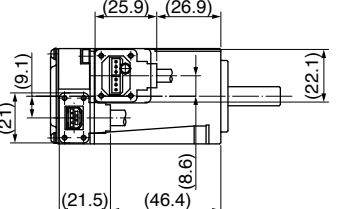


Key way dimensions
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor connector

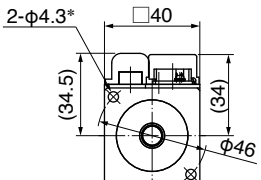
● Motor model

Mass: 0.42 kg

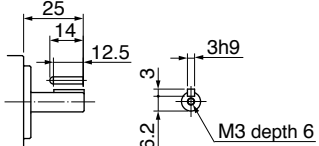
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1C1
	Key-way, center tap	MHMF011L1U1
200 V	Round	MHMF012L1C1
	Key-way, center tap	MHMF012L1U1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.

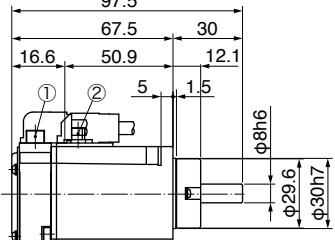
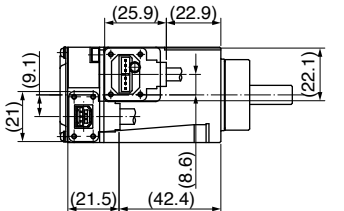


Key way dimensions
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor connector

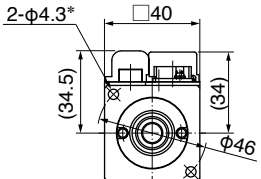
● Motor model

Mass: 0.43 kg

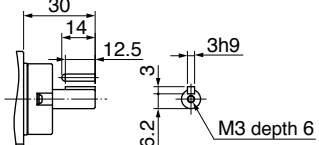
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1C3
	Key-way, center tap	MHMF011L1U3
200 V	Round	MHMF012L1C3
	Key-way, center tap	MHMF012L1U3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.



Key way dimensions
<Key way, center tap shaft>

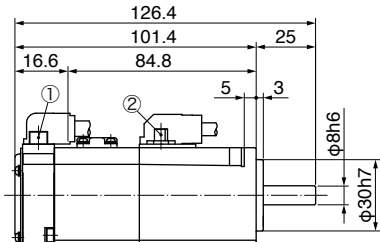
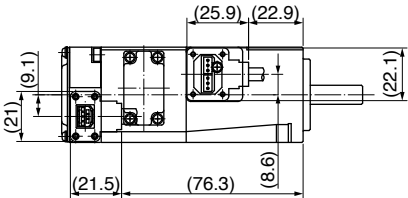


[Unit: mm]

* For motors specifications, refer to P.87, P.88.

MHMF 100 W

Connector type (IP67) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor/Brake connector

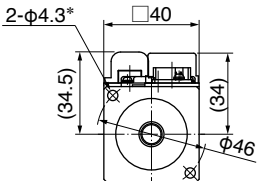
● Motor model

Mass: 0.62 kg

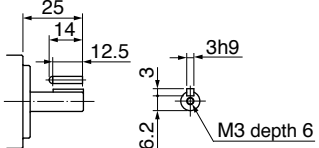
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1B1
	Key-way, center tap	MHMF011L1T1
200 V	Round	MHMF012L1B1
	Key-way, center tap	MHMF012L1T1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.

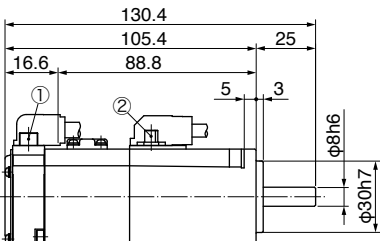
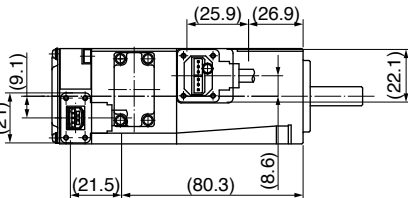


Key way dimensions
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor/Brake connector

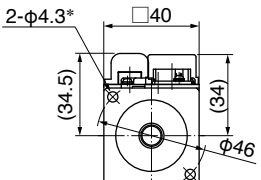
● Motor model

Mass: 0.64 kg

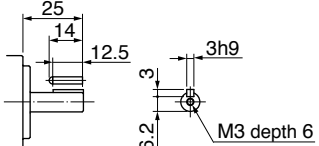
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1D1
	Key-way, center tap	MHMF011L1V1
200 V	Round	MHMF012L1D1
	Key-way, center tap	MHMF012L1V1

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.

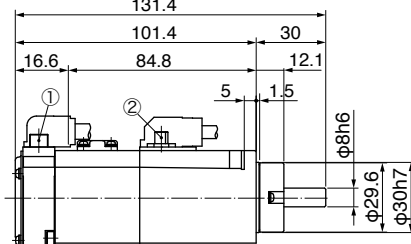
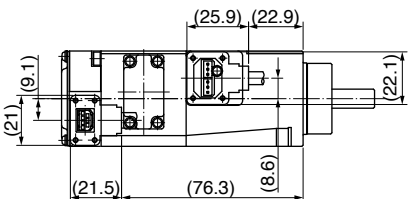


Key way dimensions
<Key way, center tap shaft>



[Unit: mm]

Connector type (IP67) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



① Encoder connector
② Motor/Brake connector

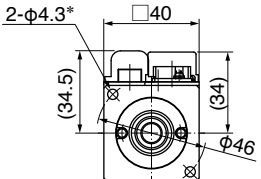
● Motor model

Mass: 0.65 kg

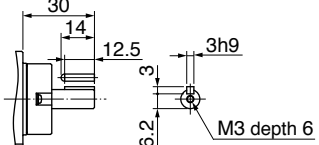
Power supply	Shaft	Motor model No.
100 V	Round	MHMF011L1D3
	Key-way, center tap	MHMF011L1V3
200 V	Round	MHMF012L1D3
	Key-way, center tap	MHMF012L1V3

● Dimensions are subject to change without notice. Contact us or a dealer for the latest information.

* Use hexagon socket head screw for installation.



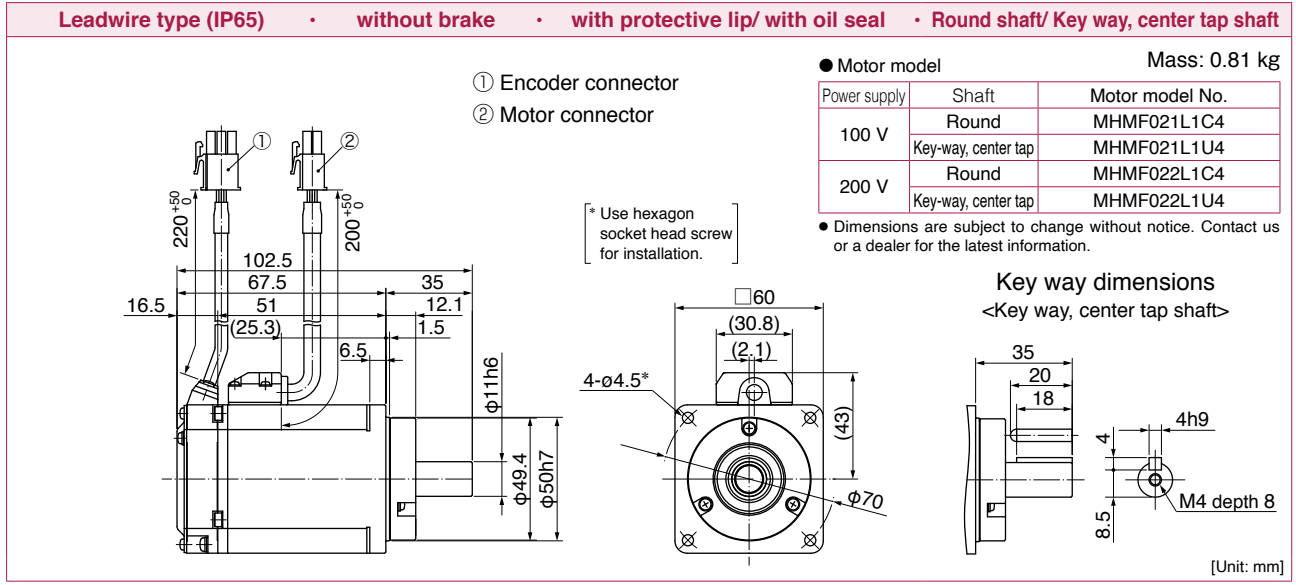
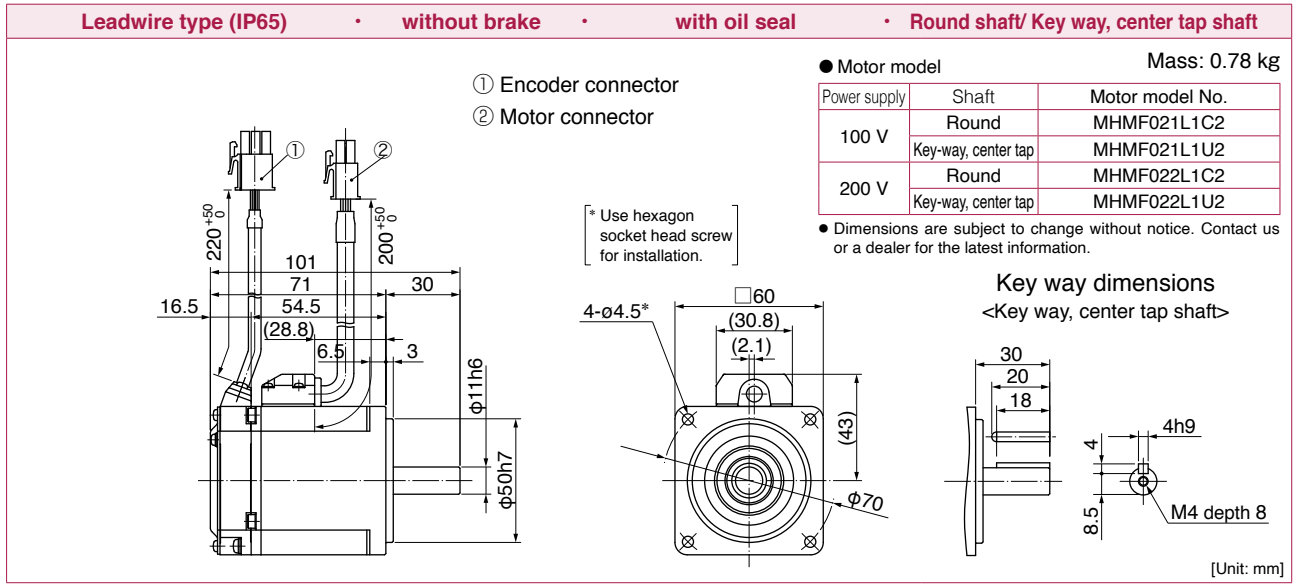
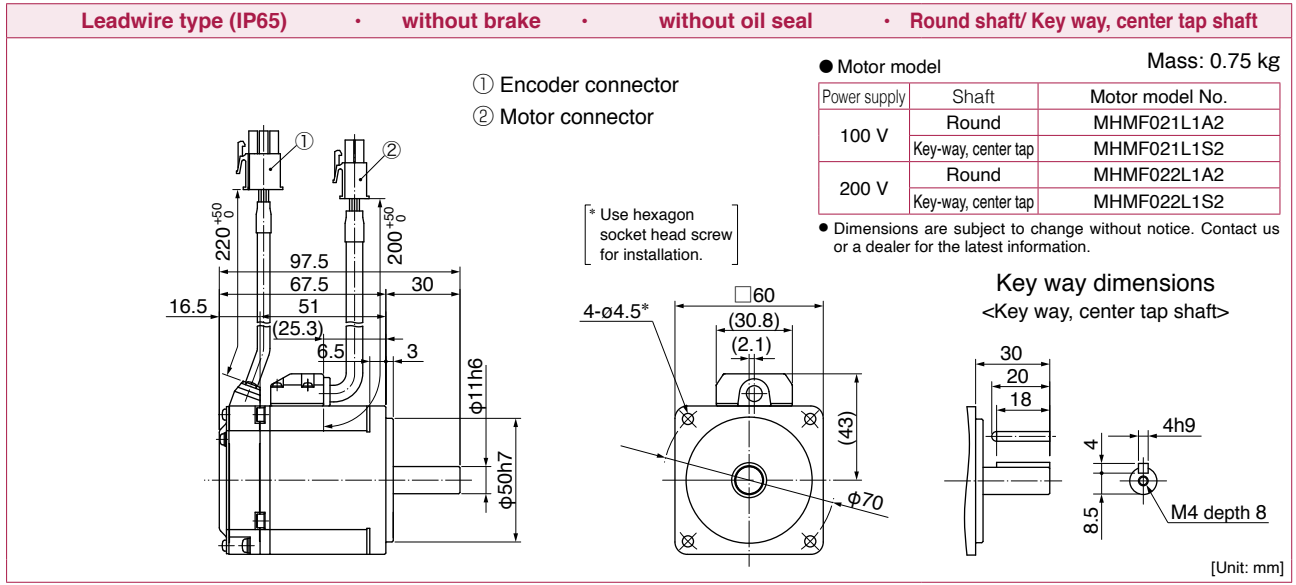
Key way dimensions
<Key way, center tap shaft>



[Unit: mm]

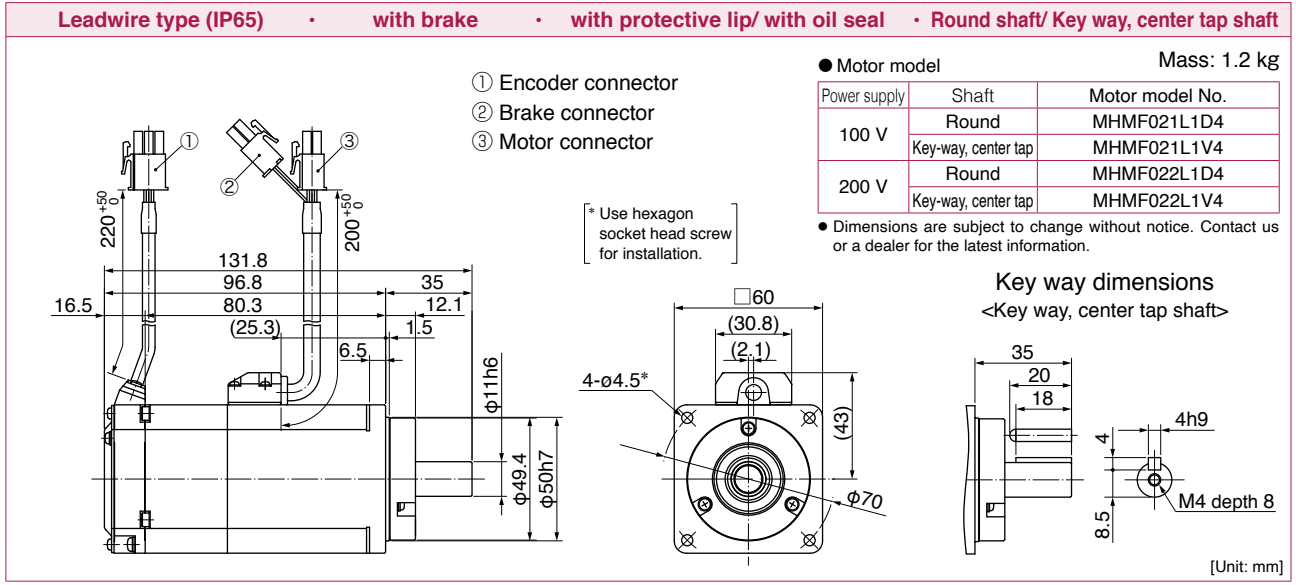
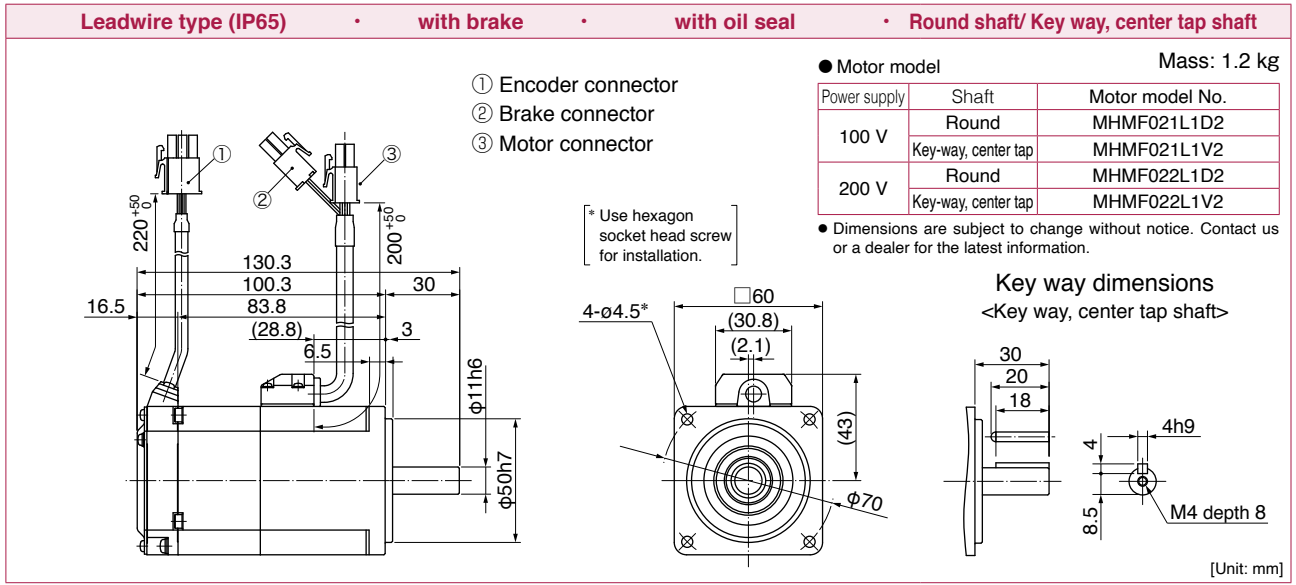
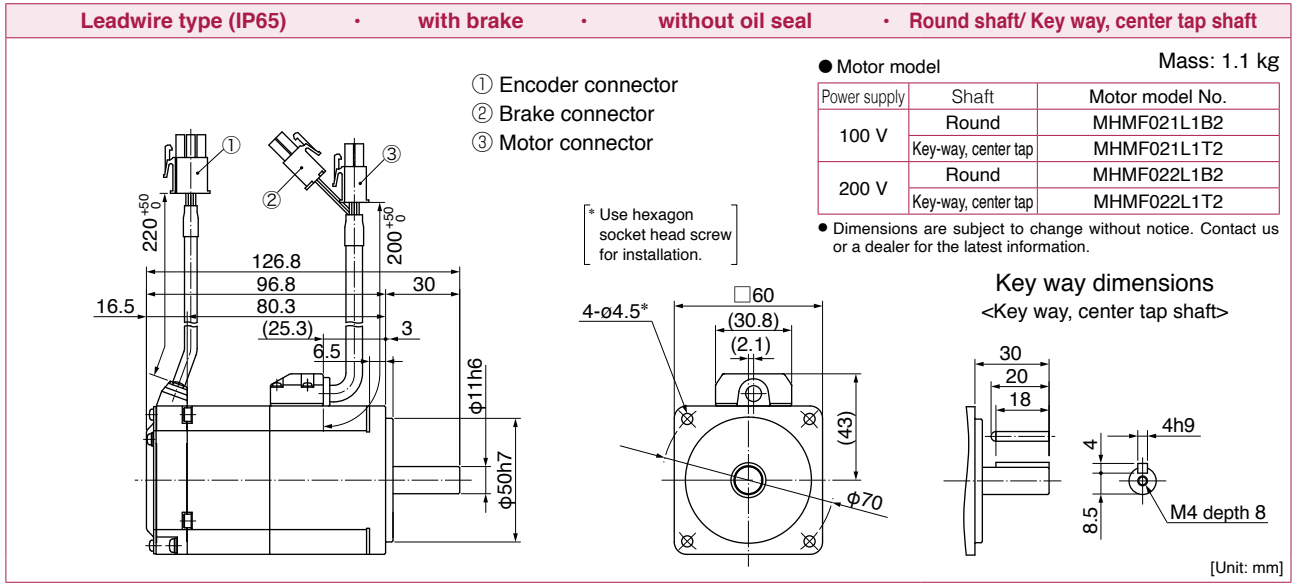
* For motors specifications, refer to P.87, P.88.

MHMF 200 W

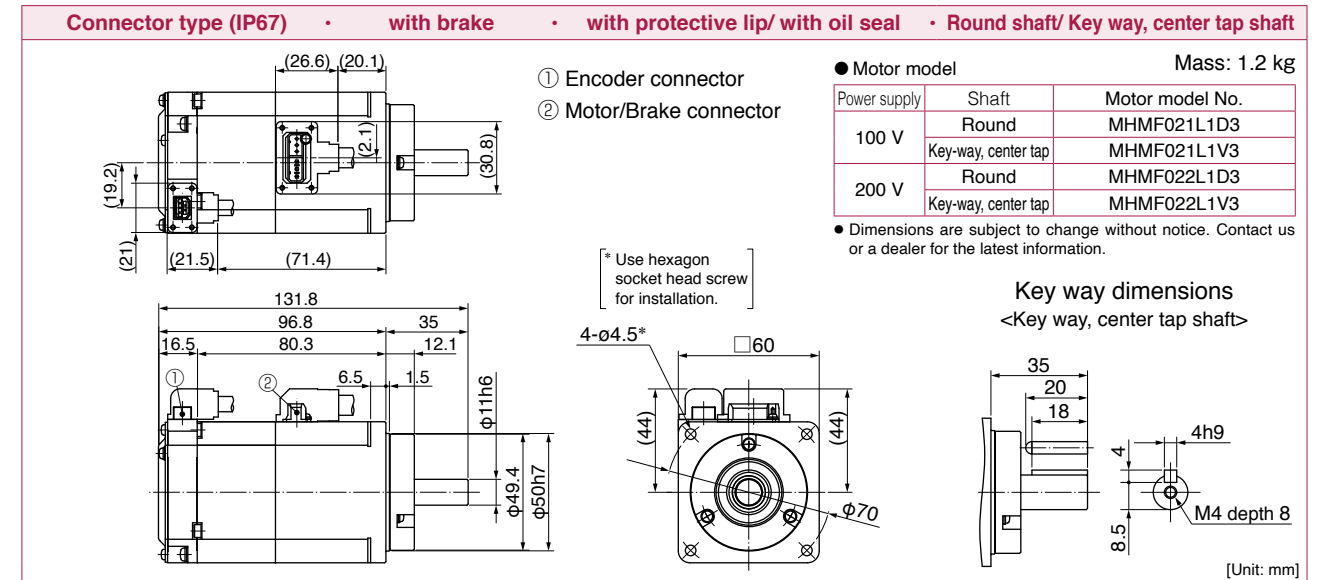
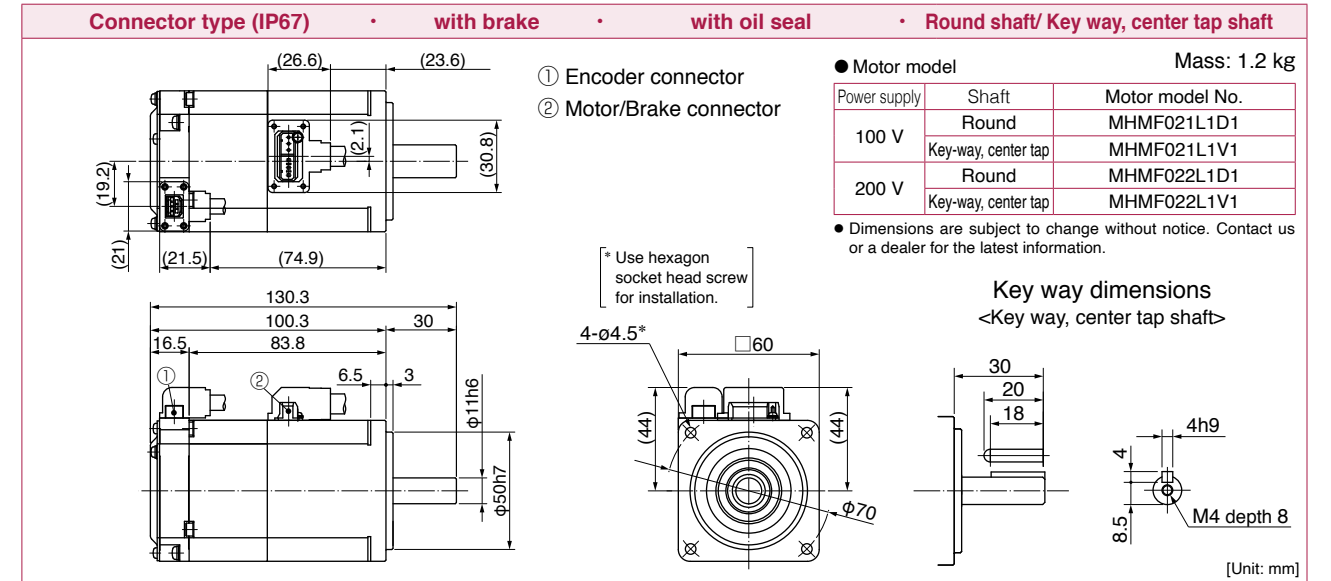
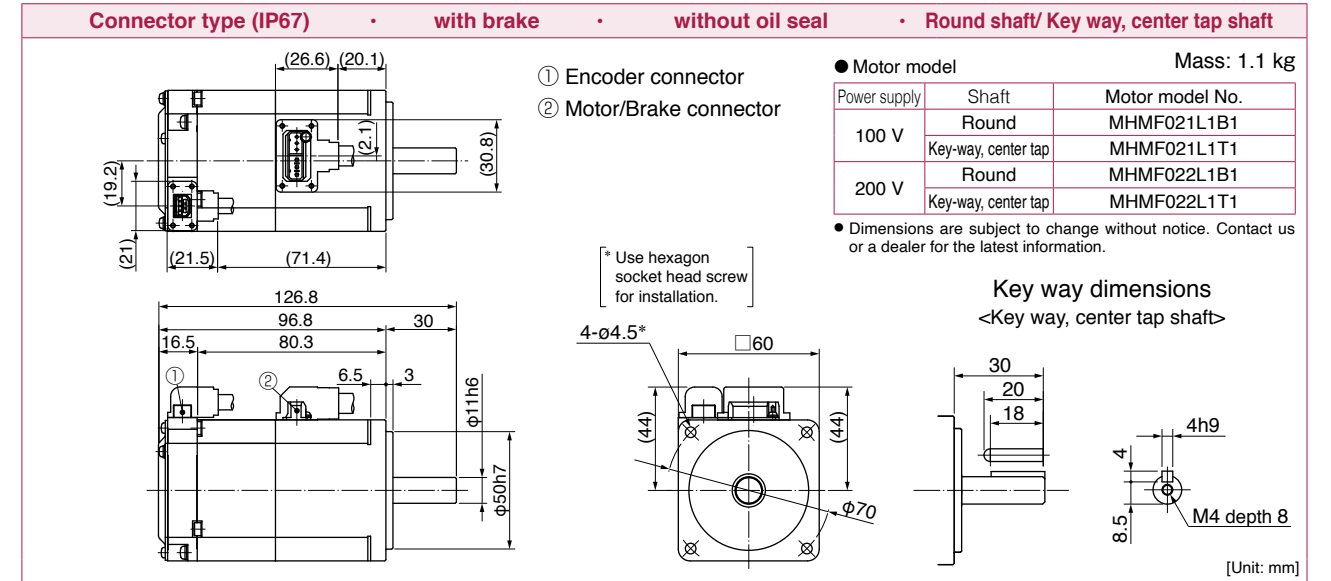
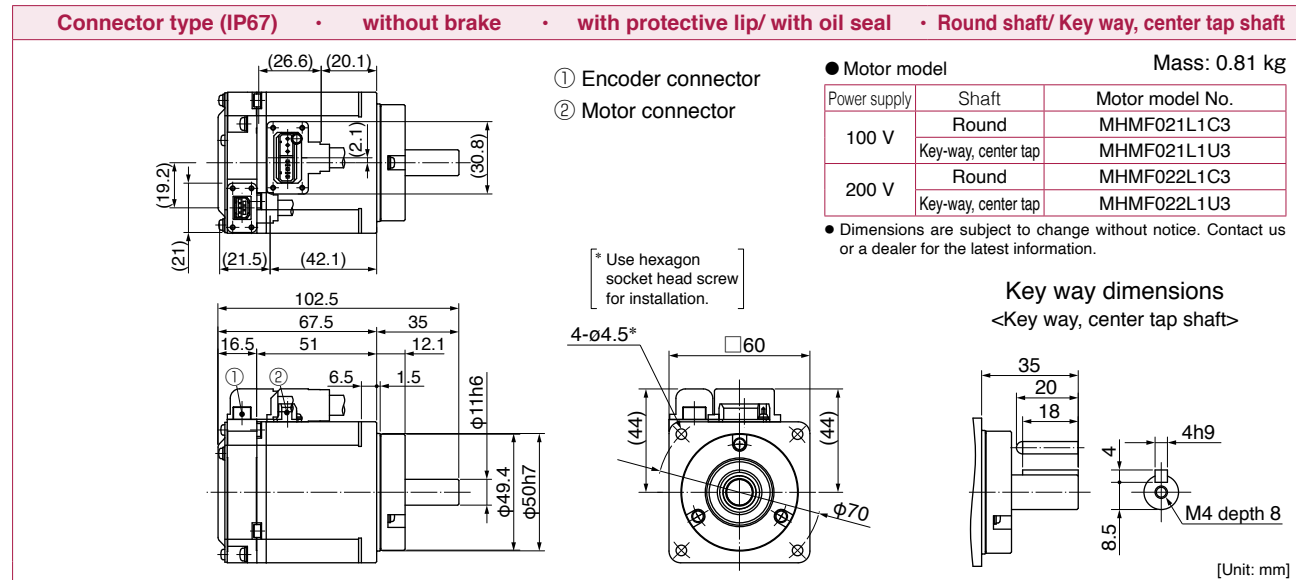
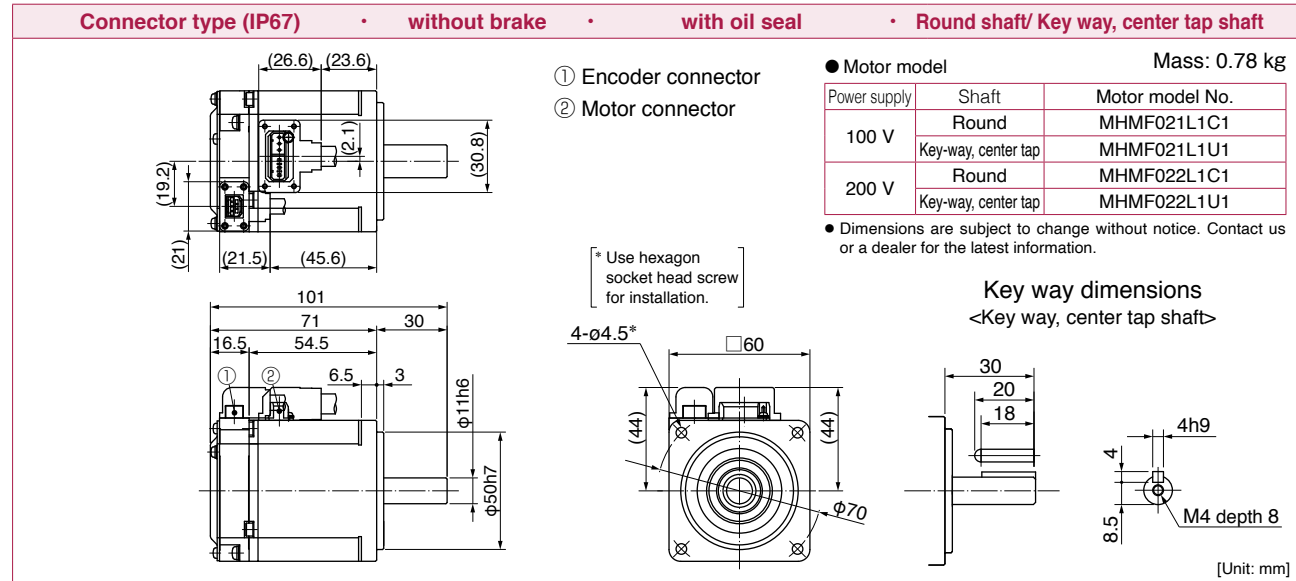
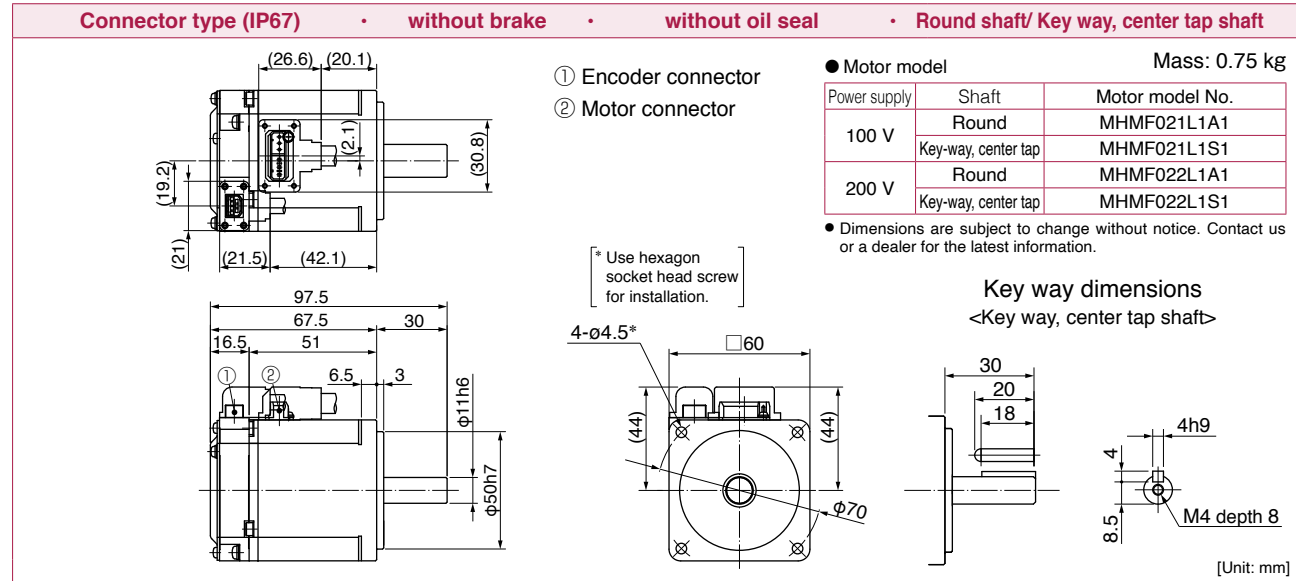


* For motors specifications, refer to P.89, P.90.

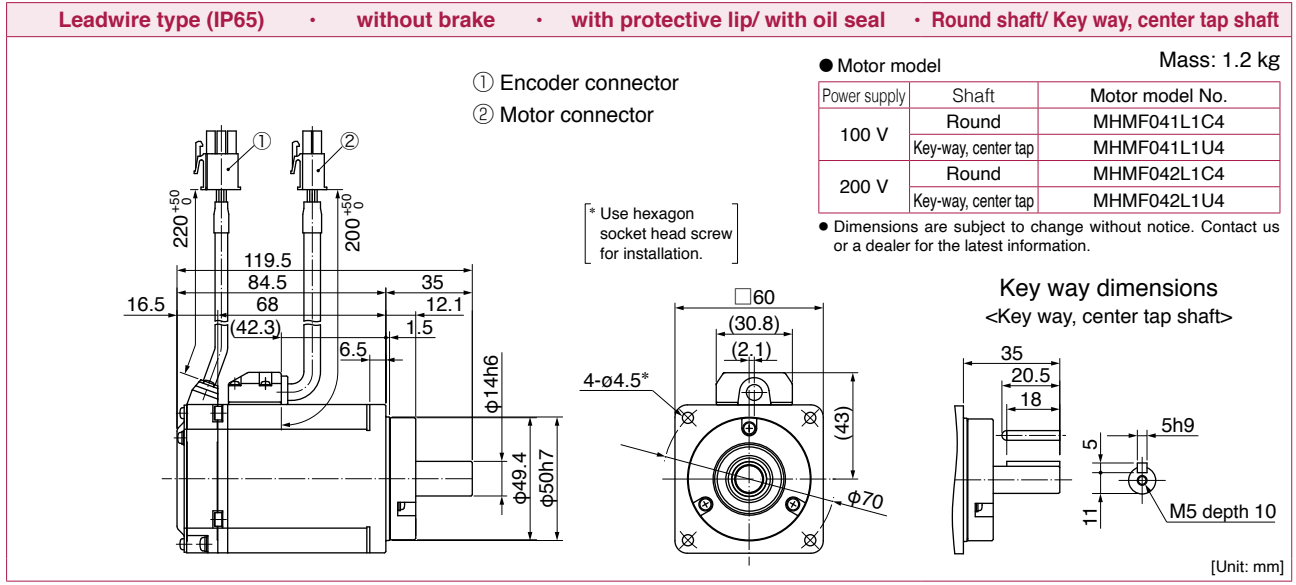
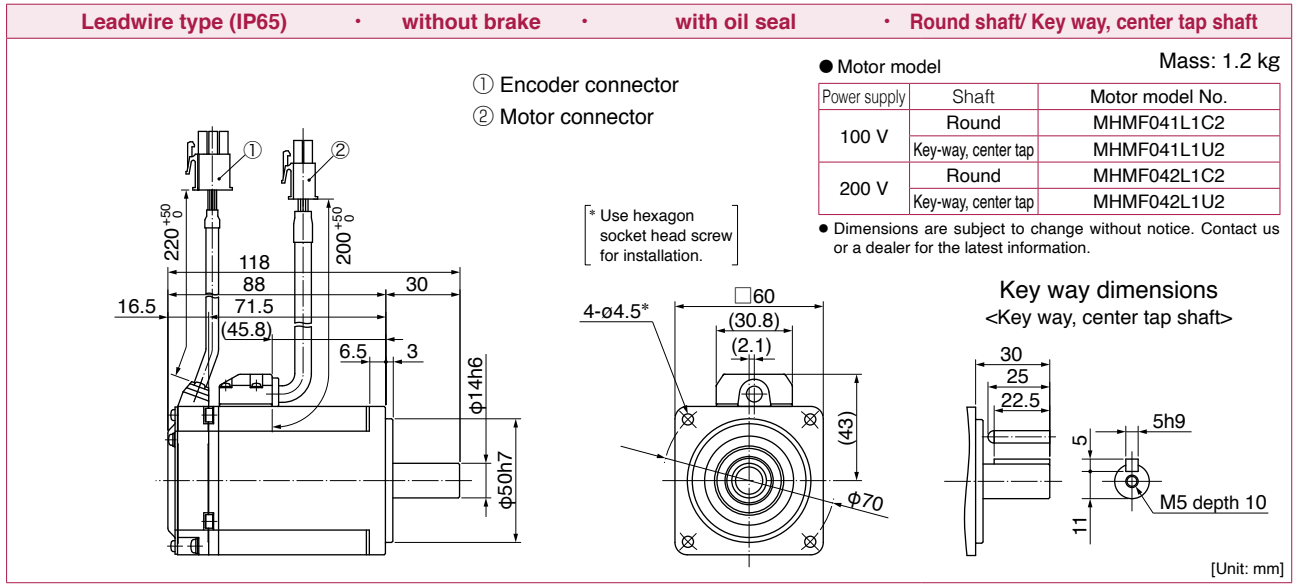
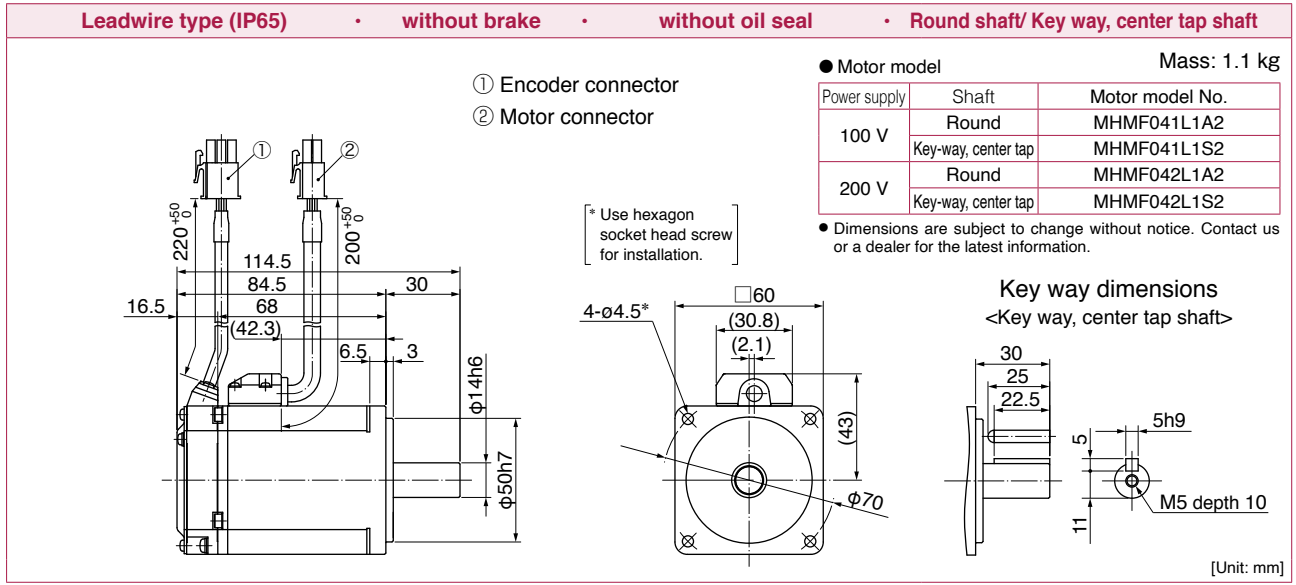
MHMF 200 W



* For motors specifications, refer to P.89, P.90.

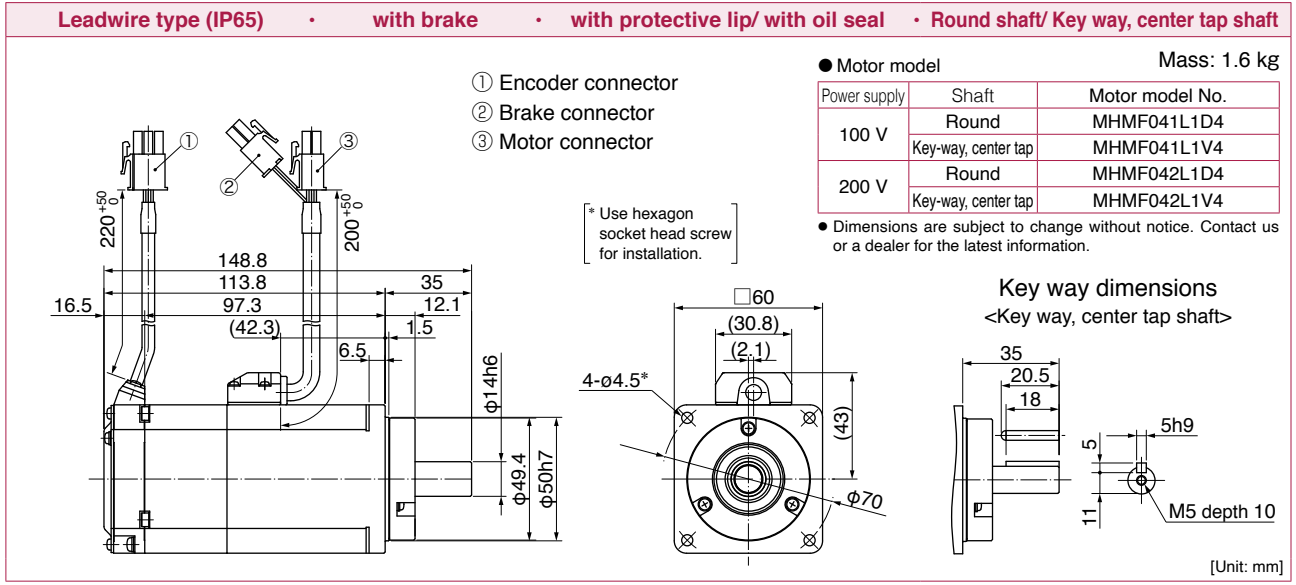
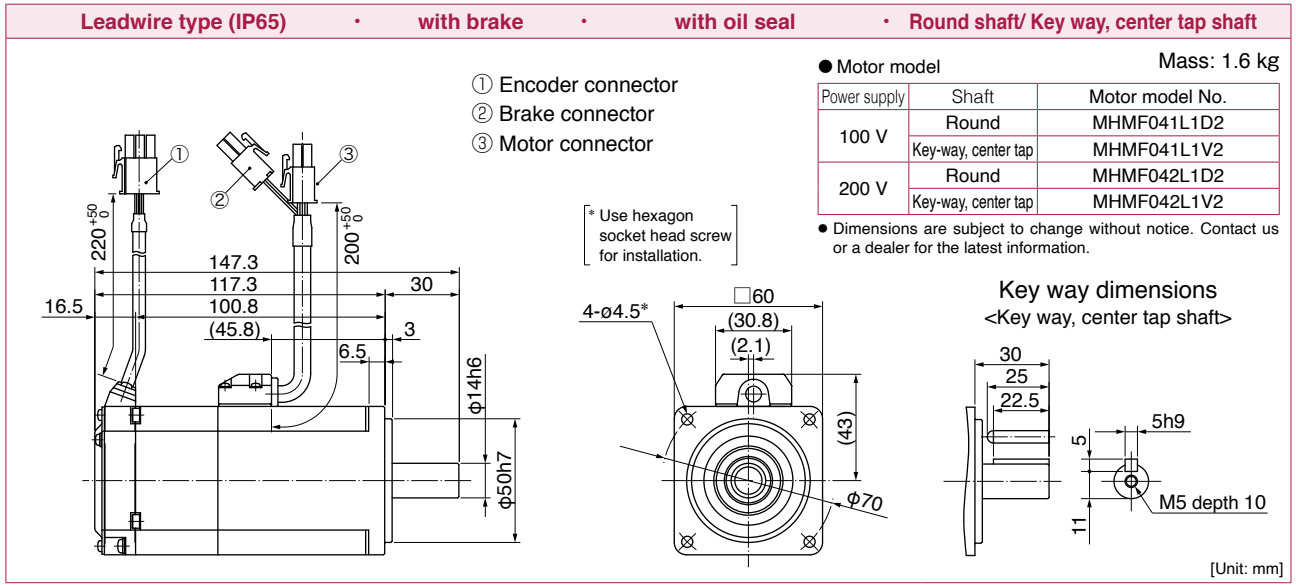
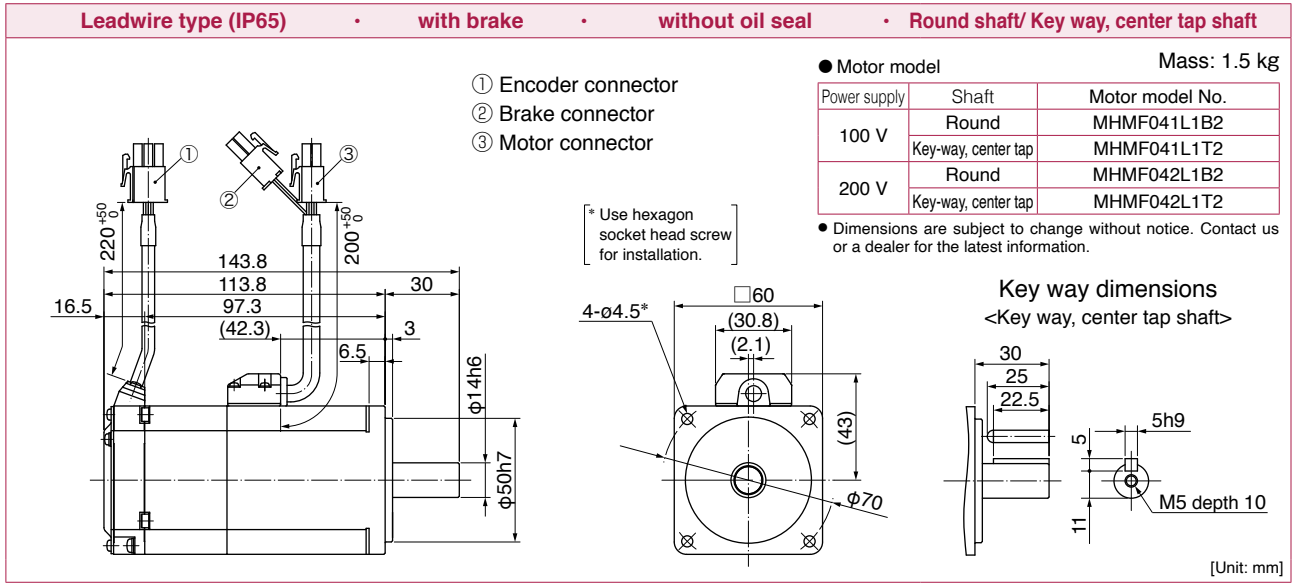


MHMF 400 W



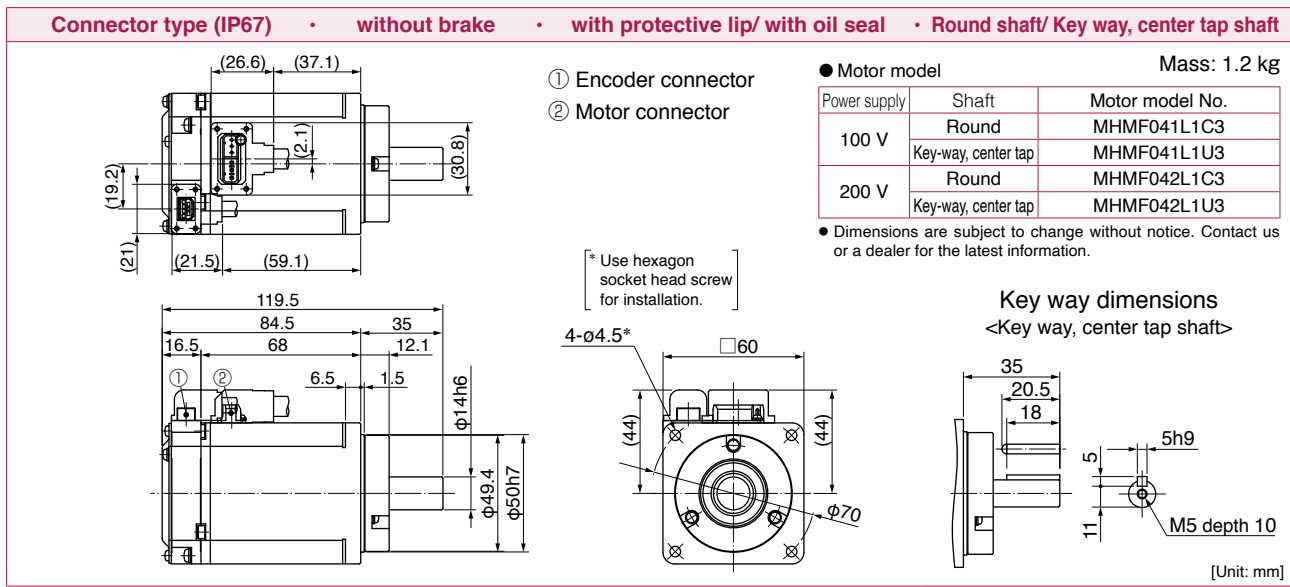
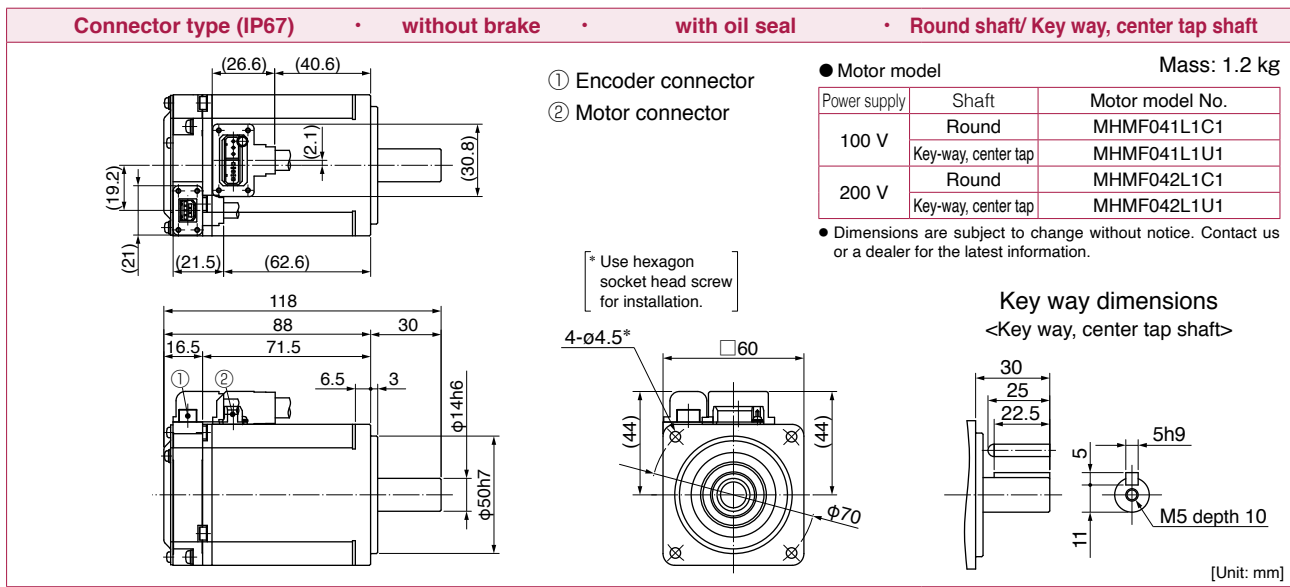
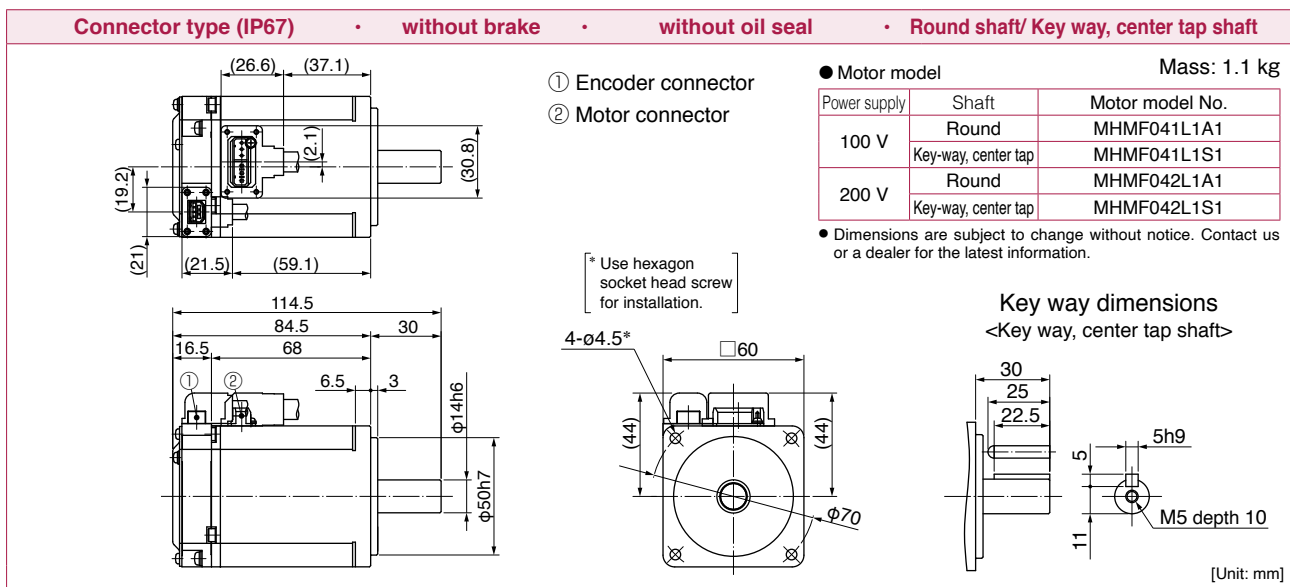
* For motors specifications, refer to P.91, P.92.

MHMF 400 W



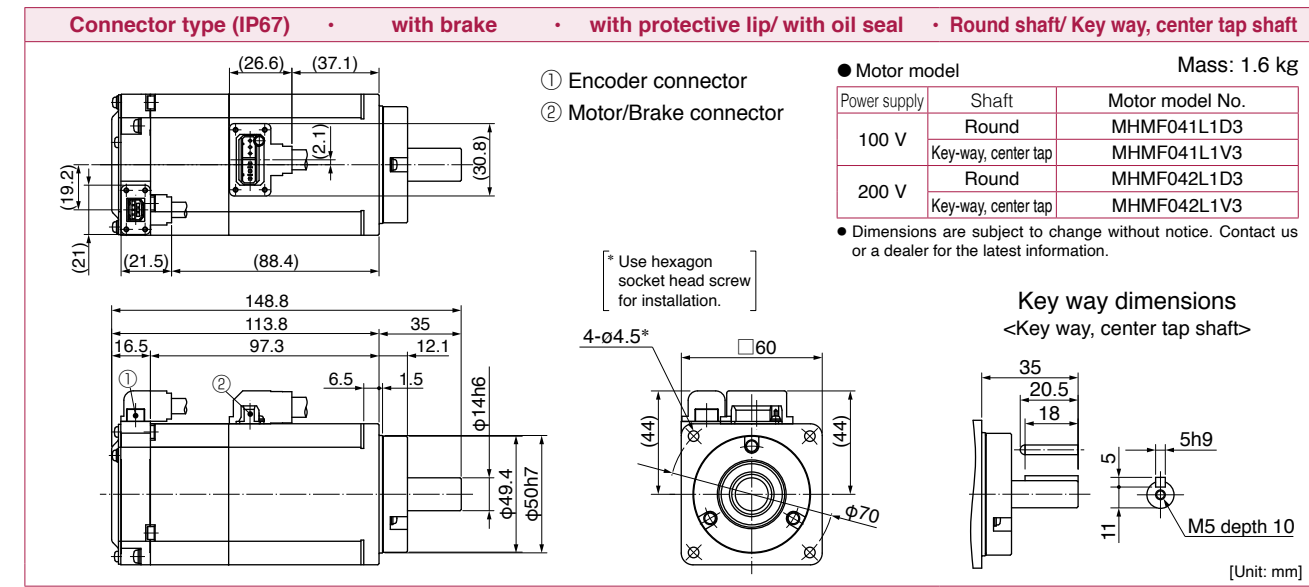
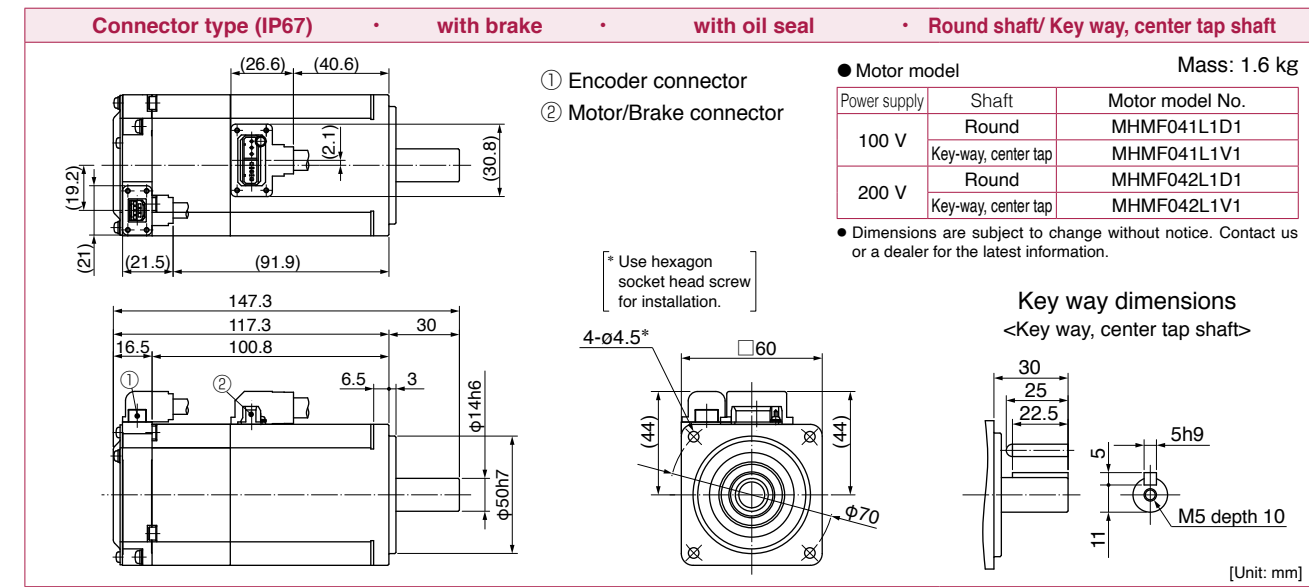
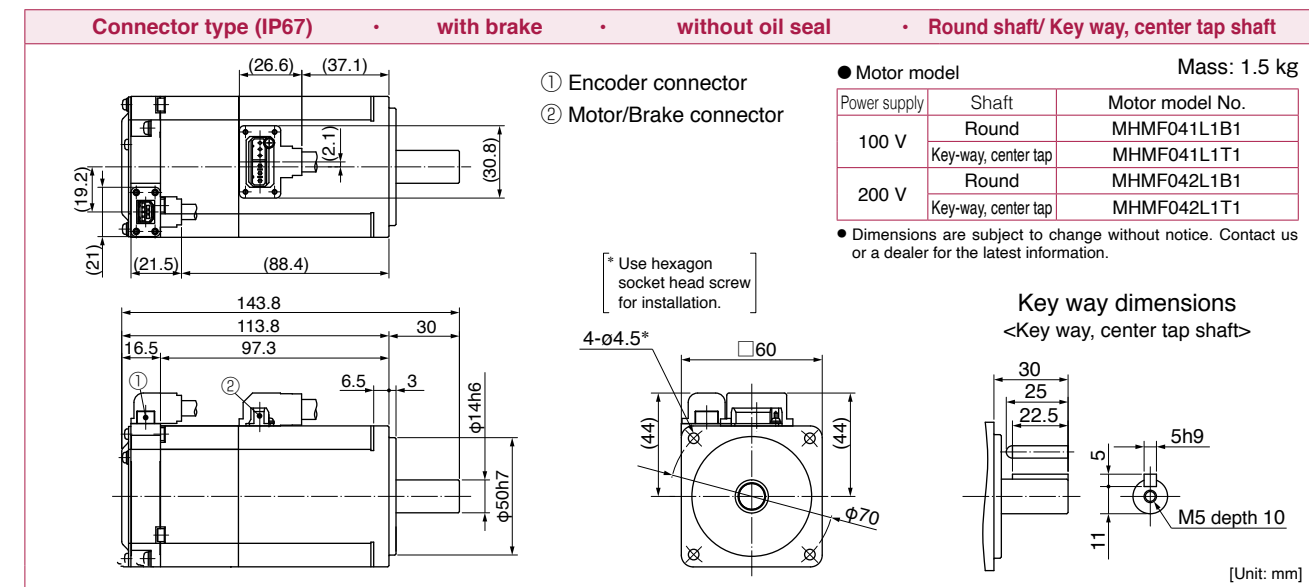
* For motors specifications, refer to P.91, P.92.

MHMF 400 W



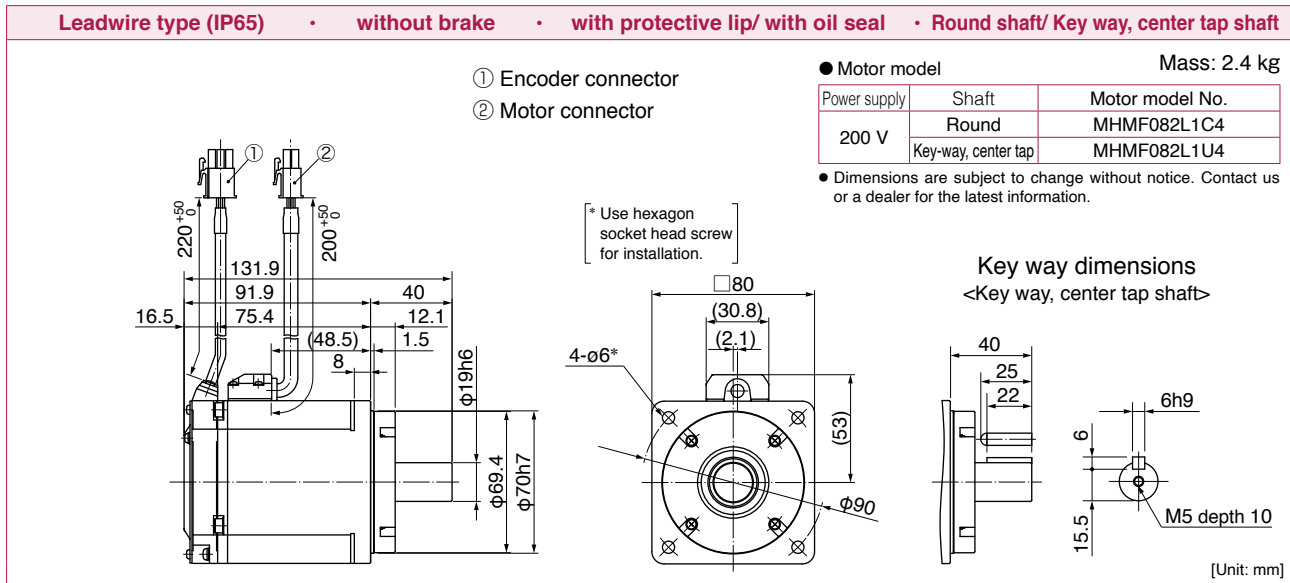
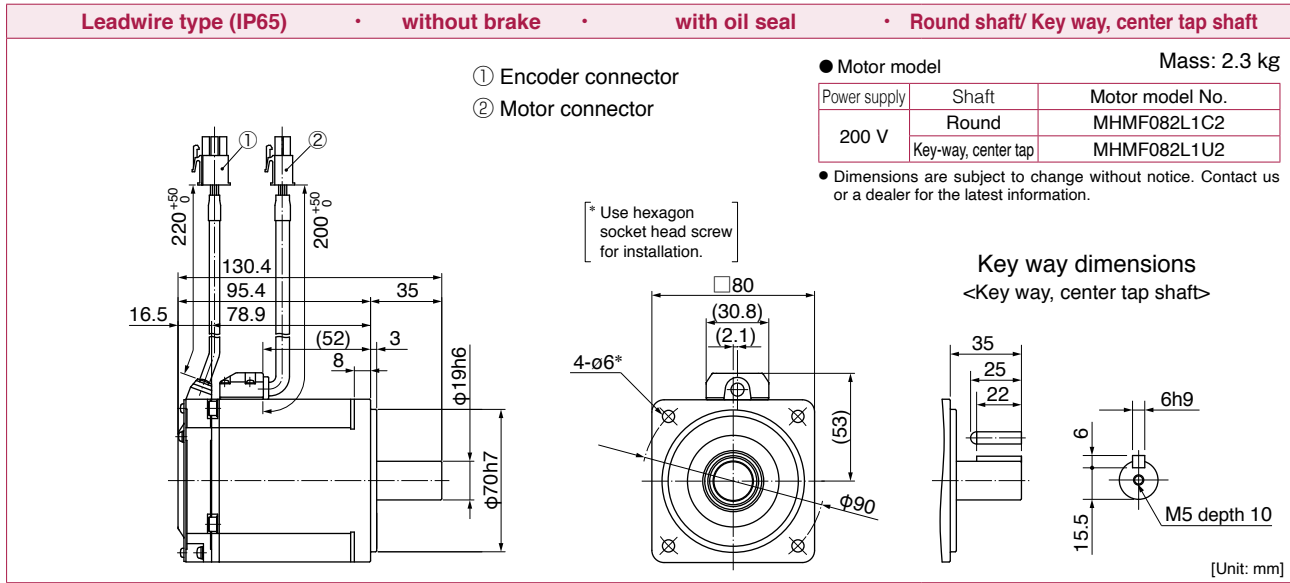
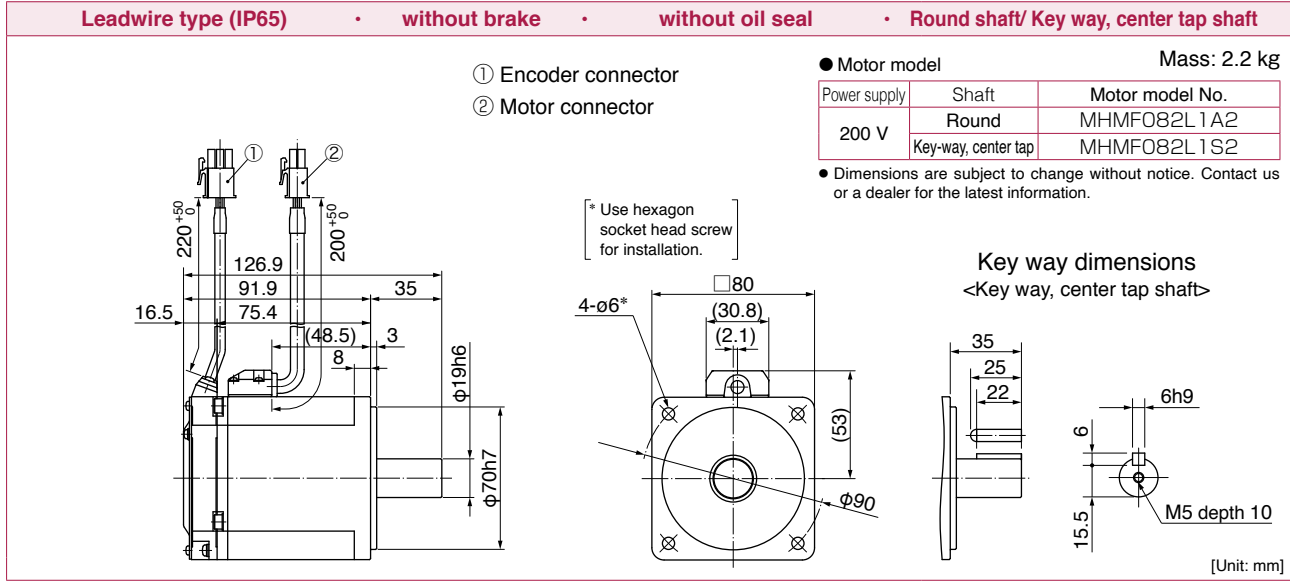
* For motors specifications, refer to P.91, P.92.

MHMF 400 W



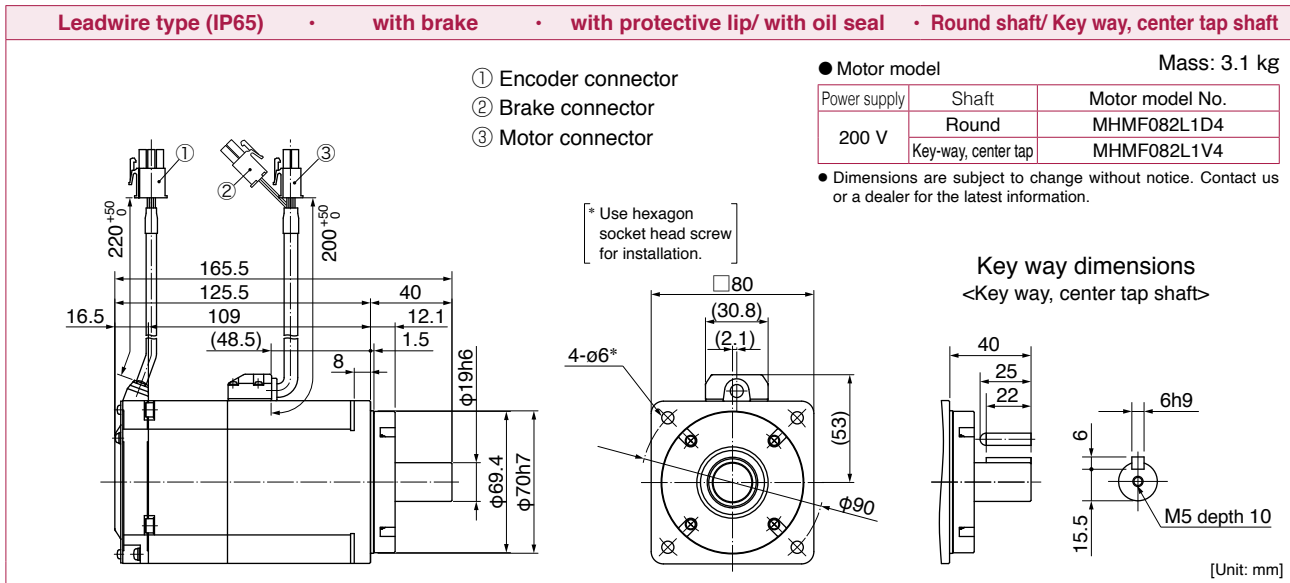
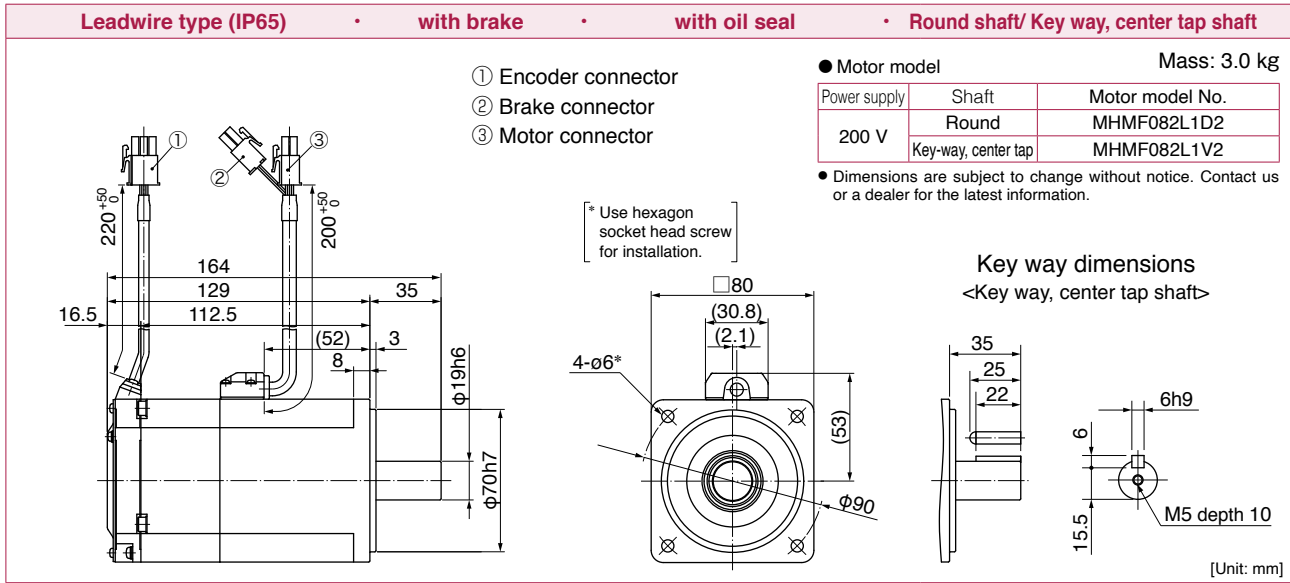
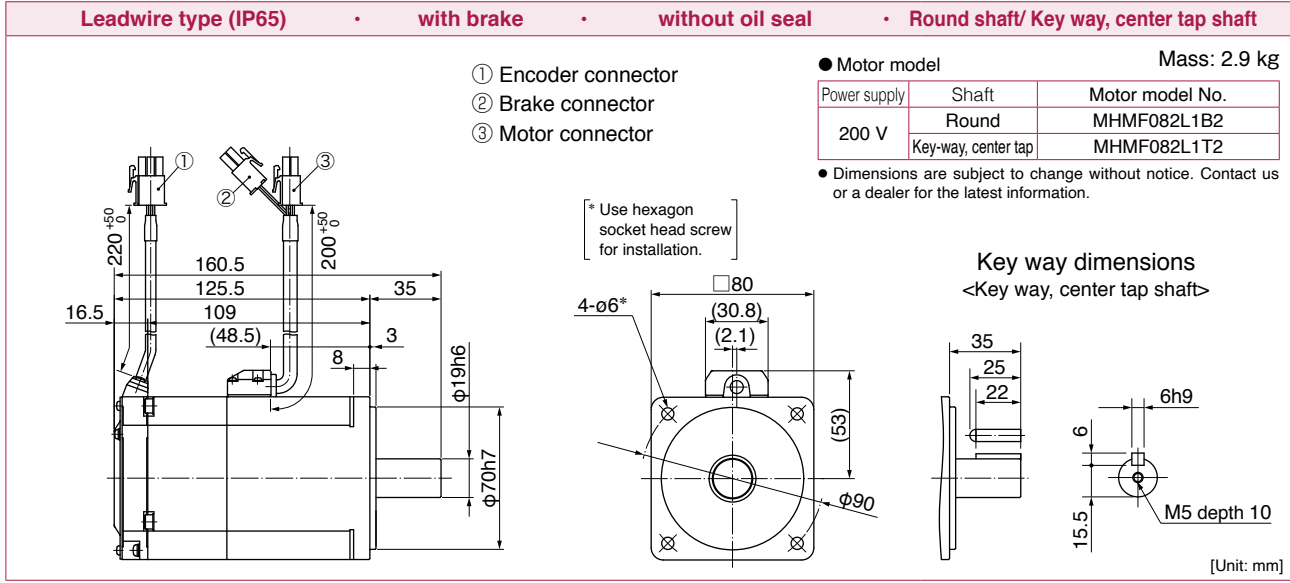
* For motors specifications, refer to P.91, P.92.

MHMF 750 W

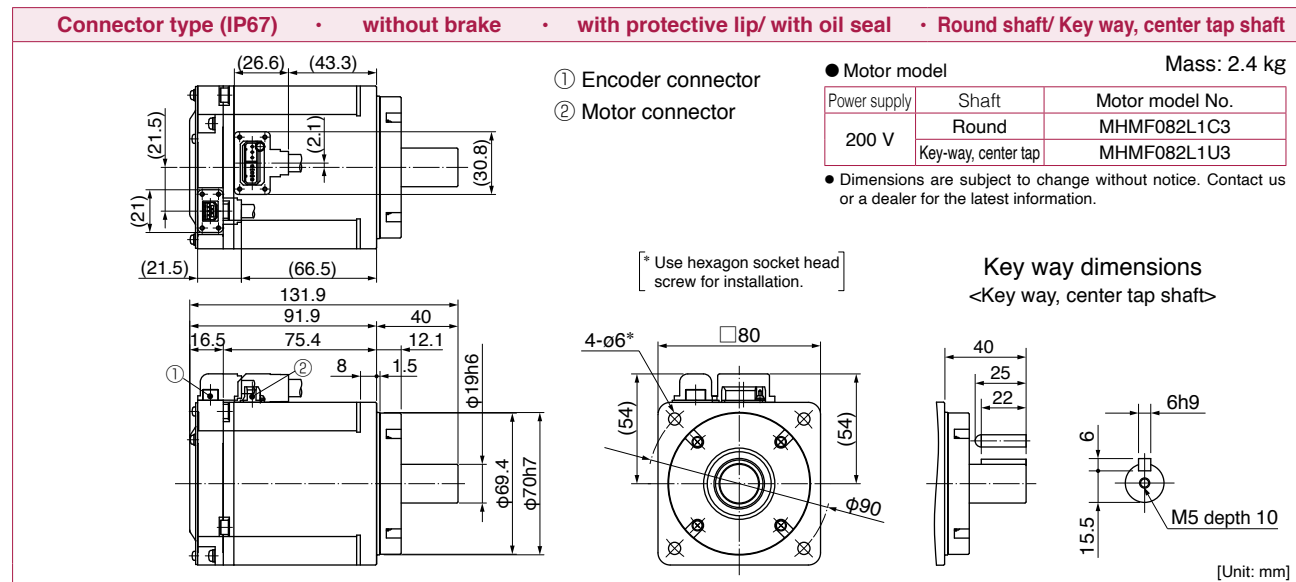
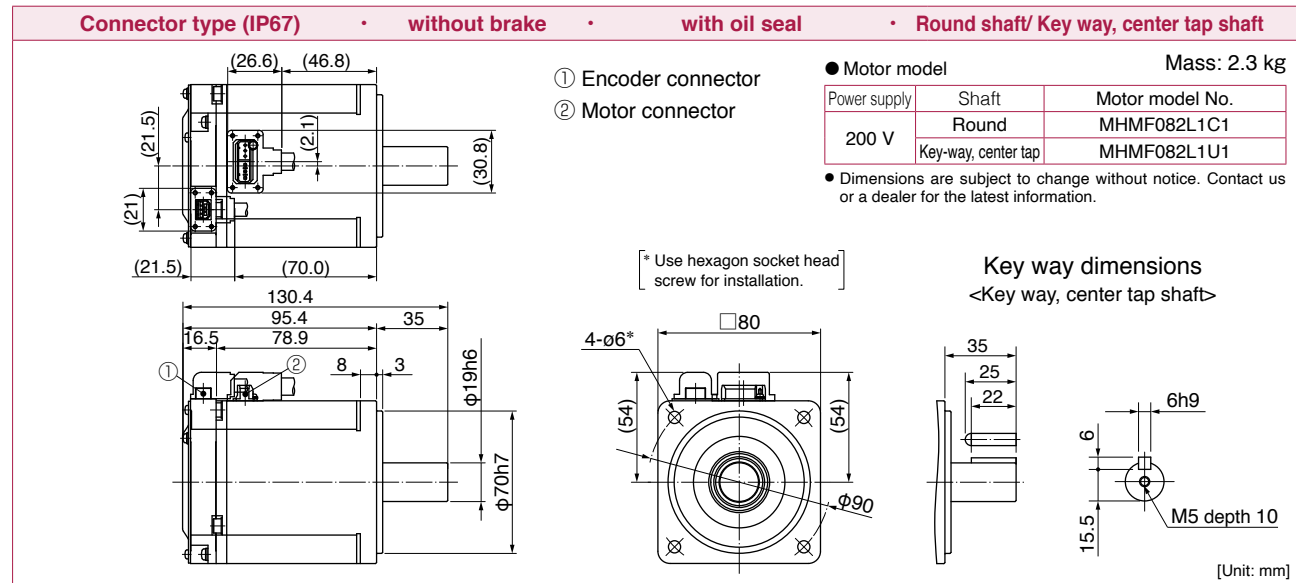
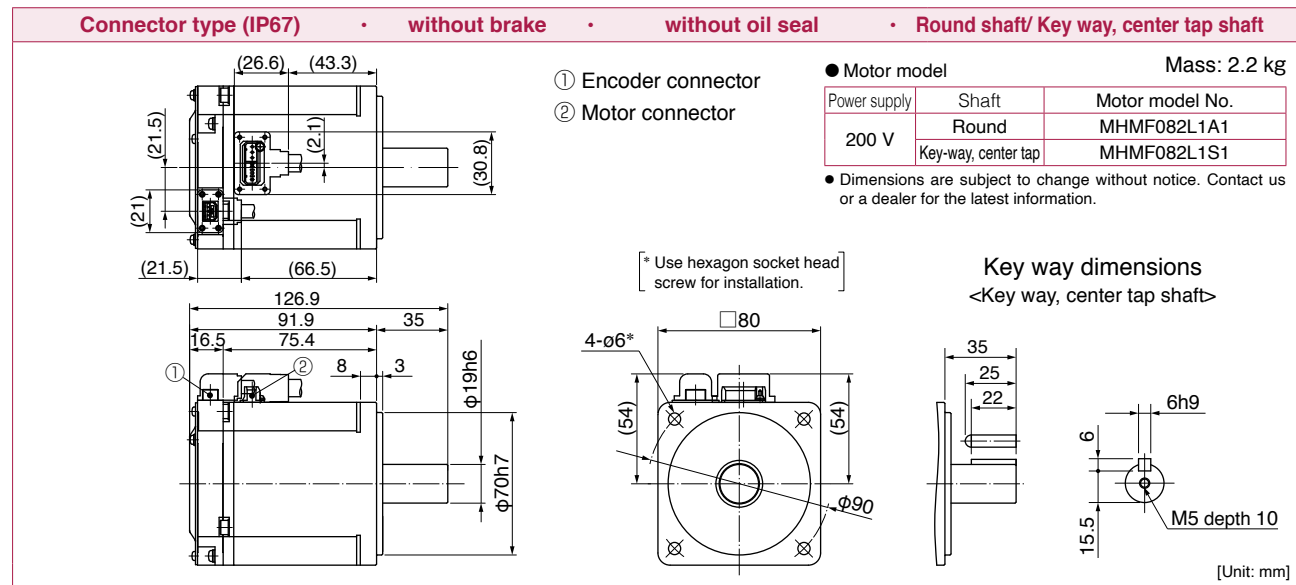


* For motors specifications, refer to P.93.

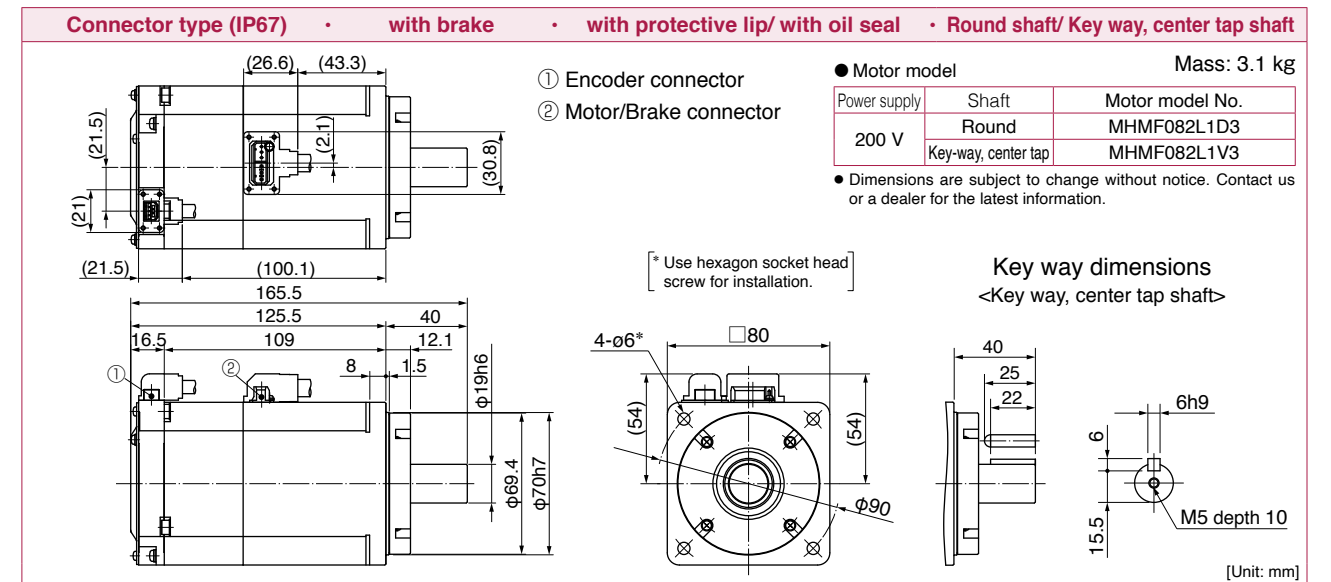
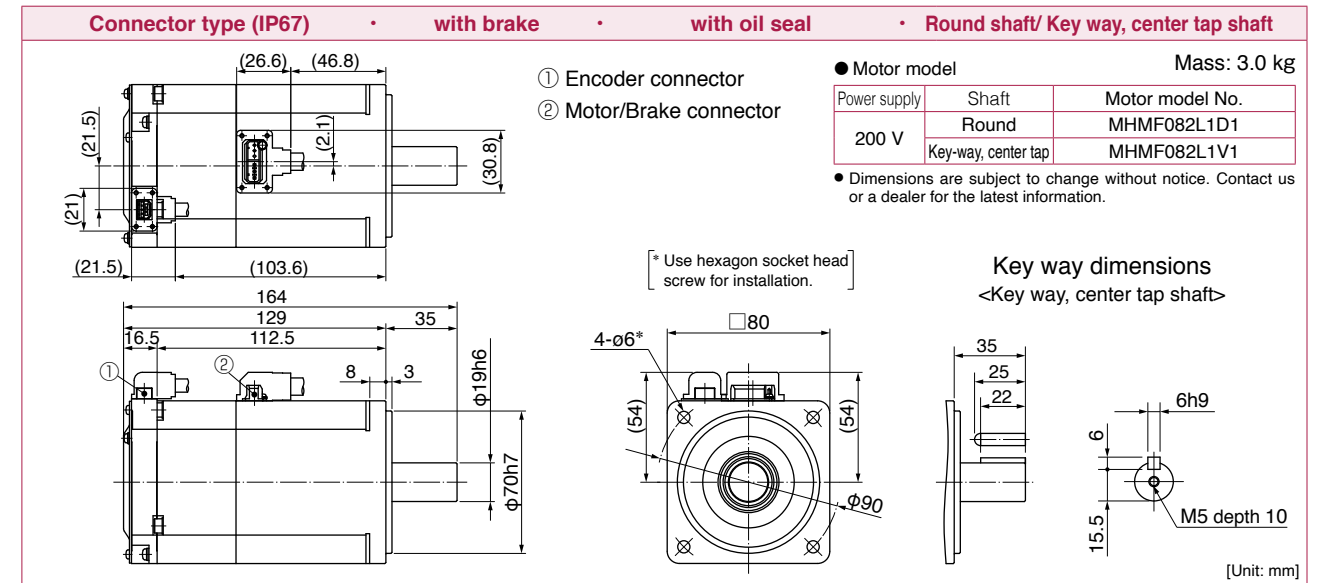
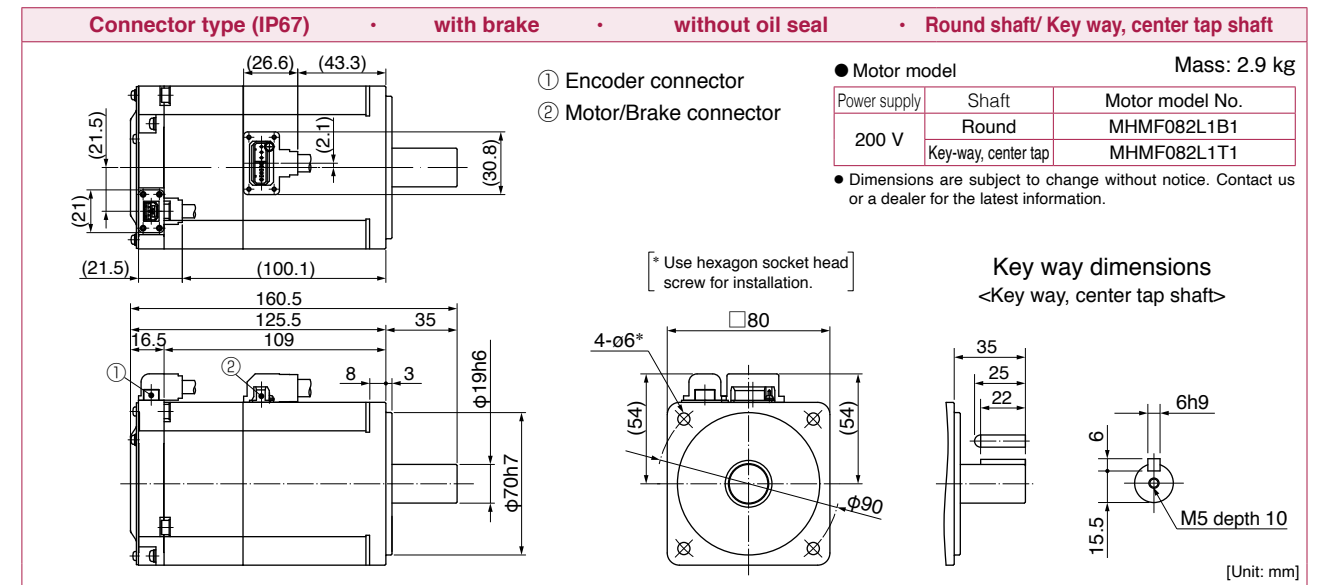
MHMF 750 W



* For motors specifications, refer to P.93.

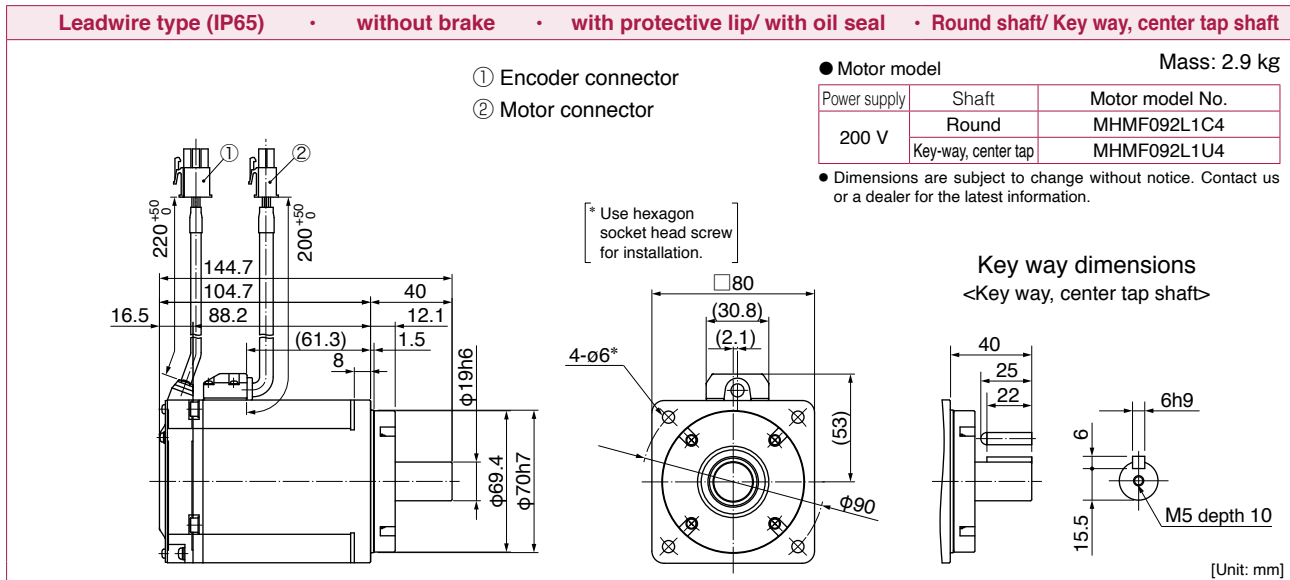
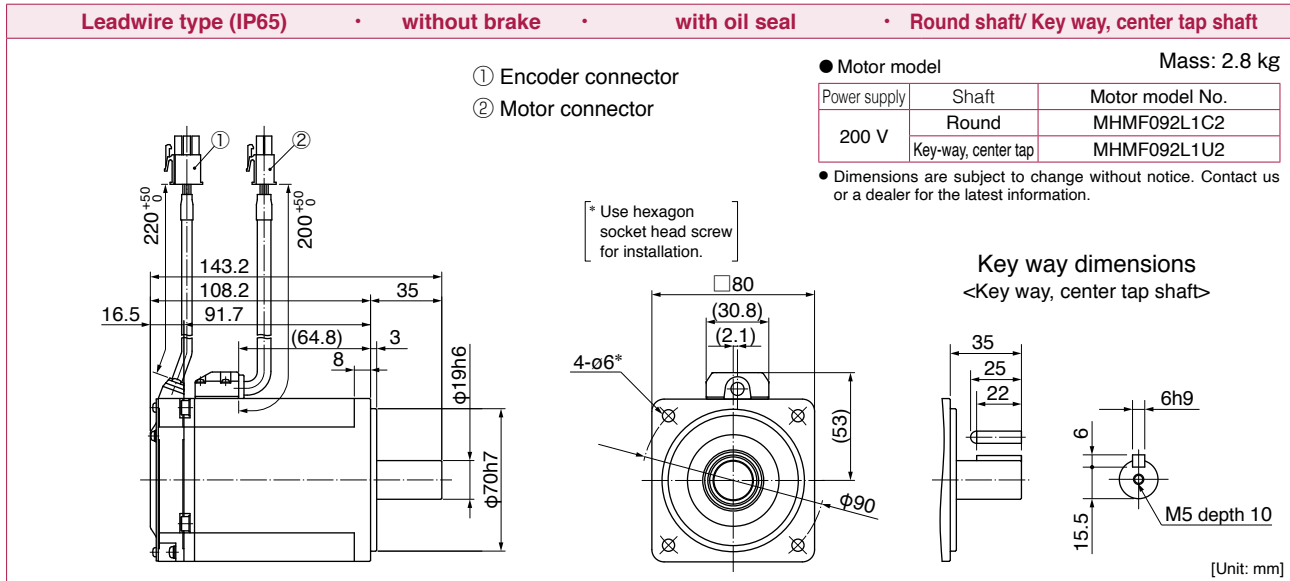
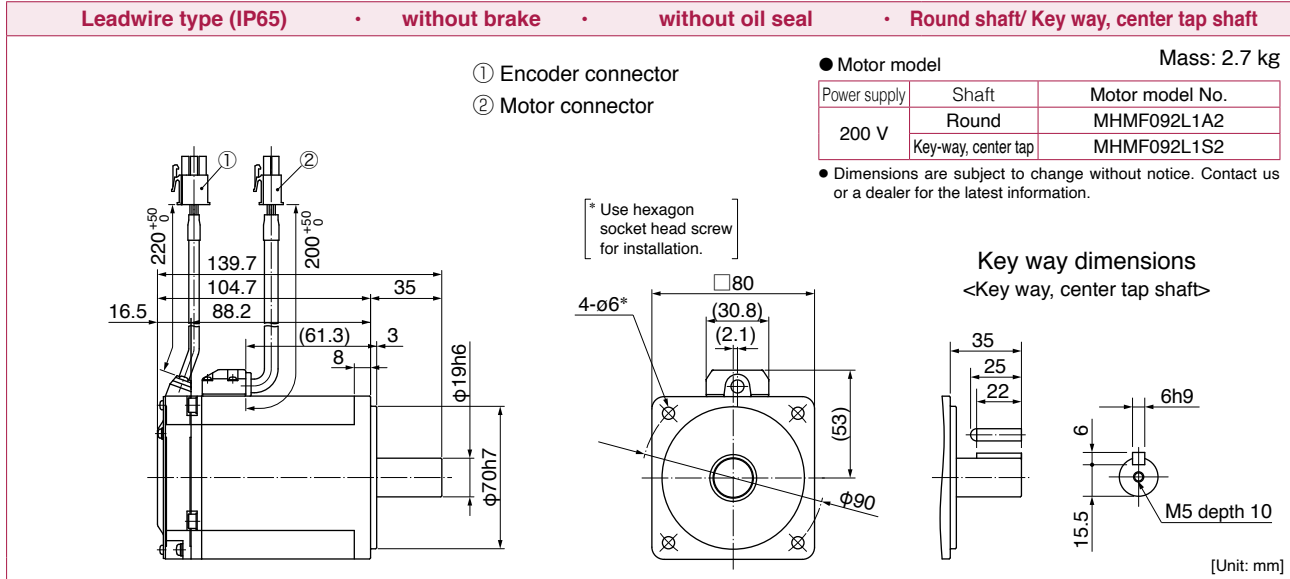


* For motors specifications, refer to P.93.



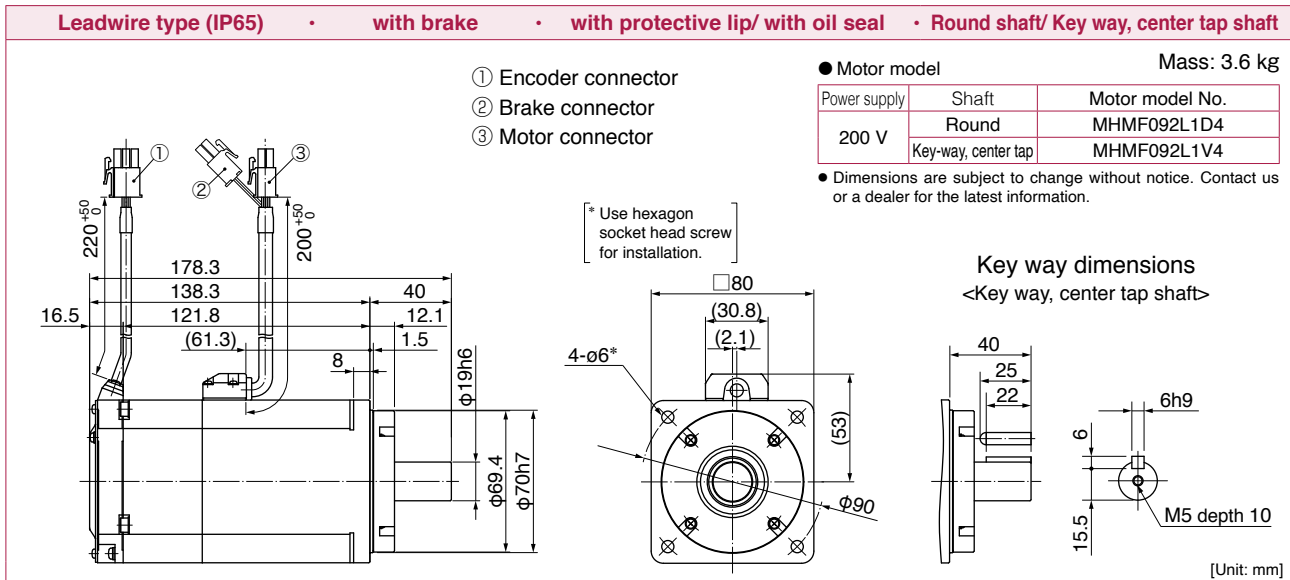
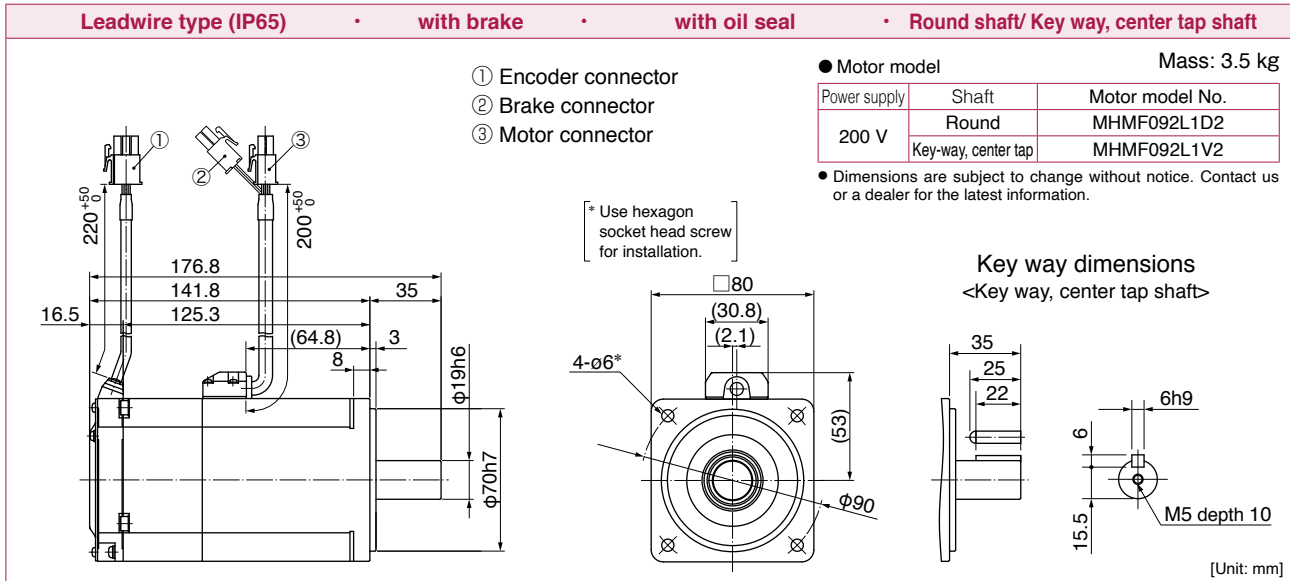
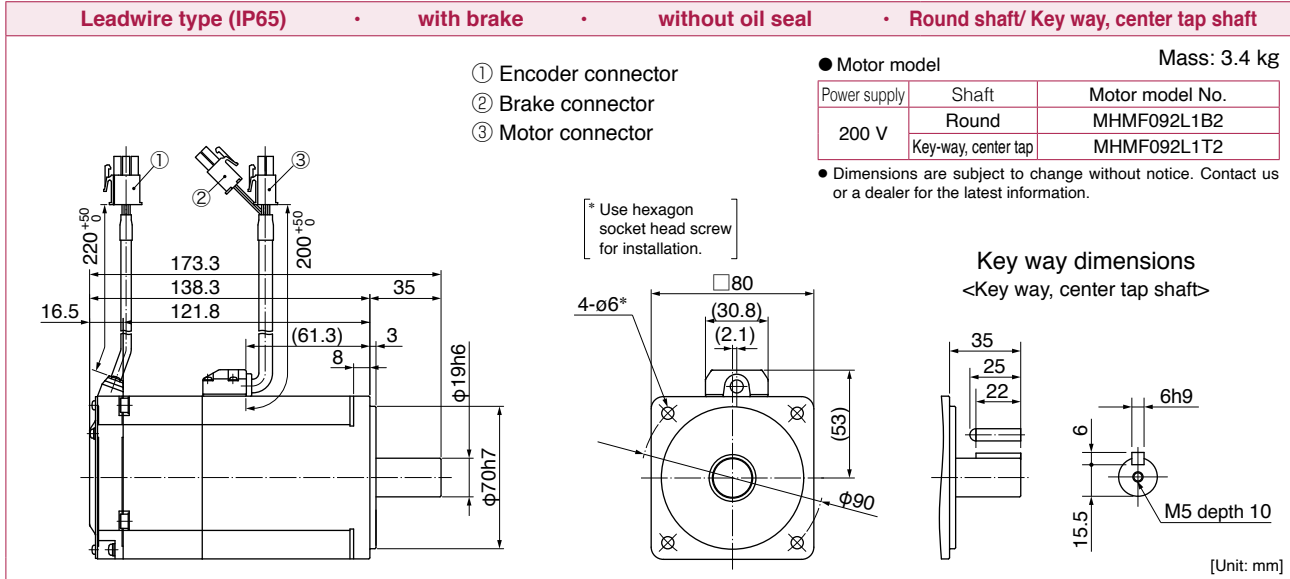
* For motors specifications, refer to P.93.

MHMF 1000 W



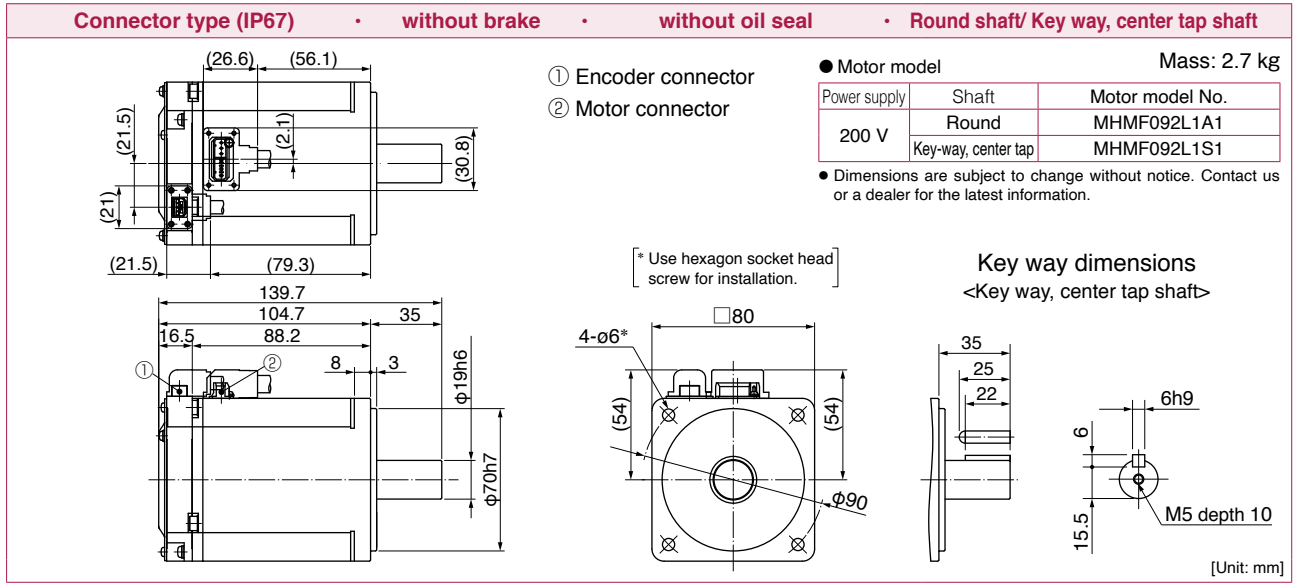
* For motors specifications, refer to P.94.

MHMF 1000 W



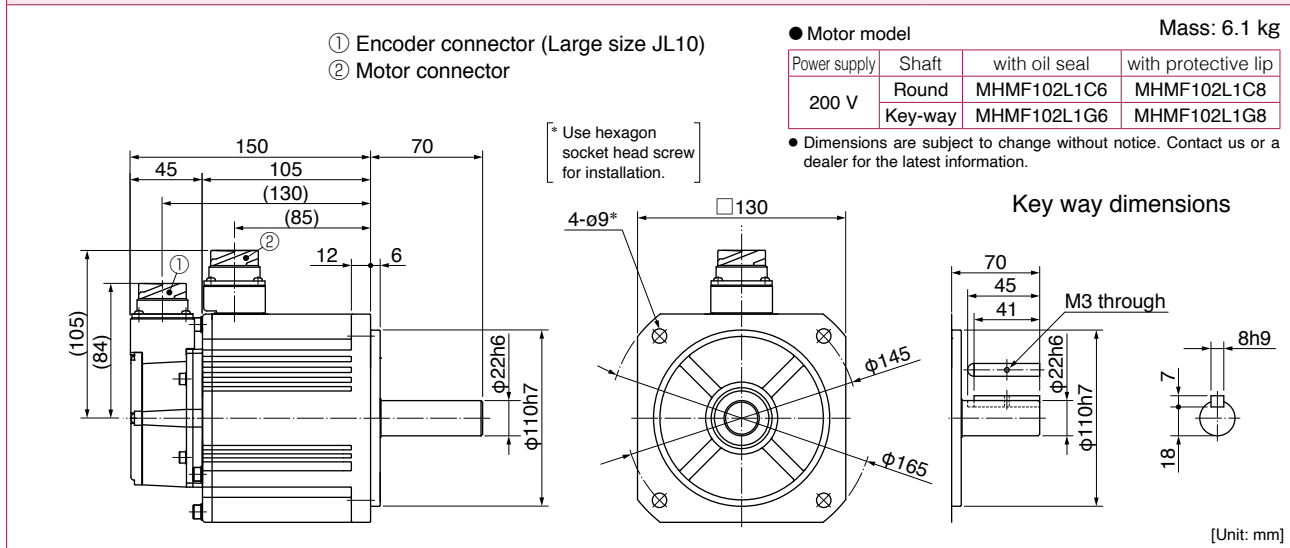
* For motors specifications, refer to P.94.

MHMF 1000 W

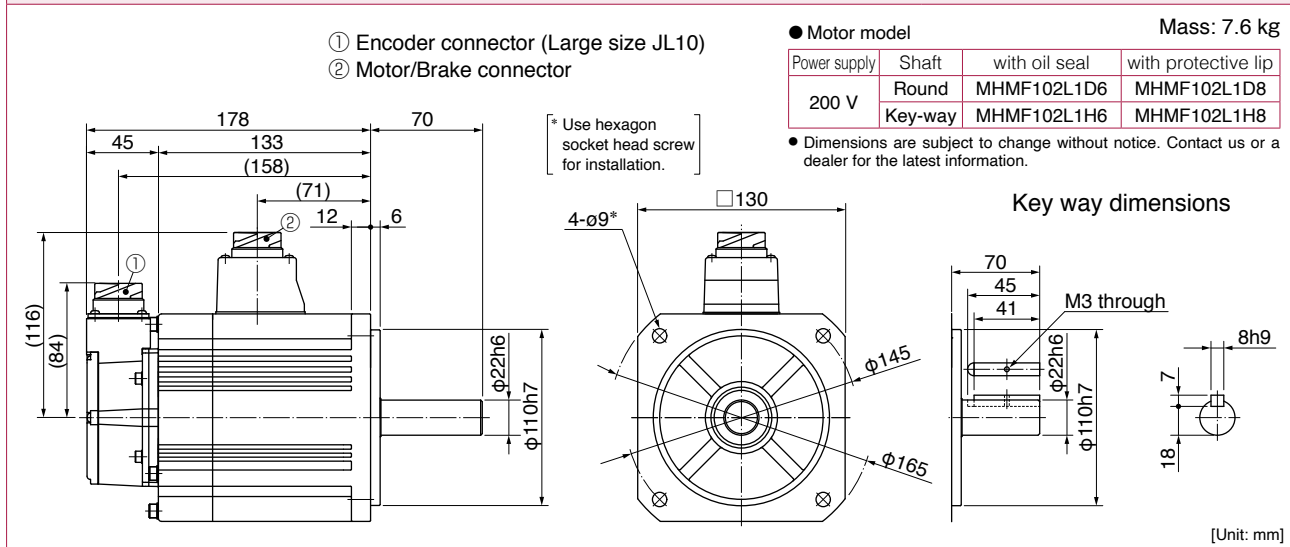


MHMF 1.0 kW

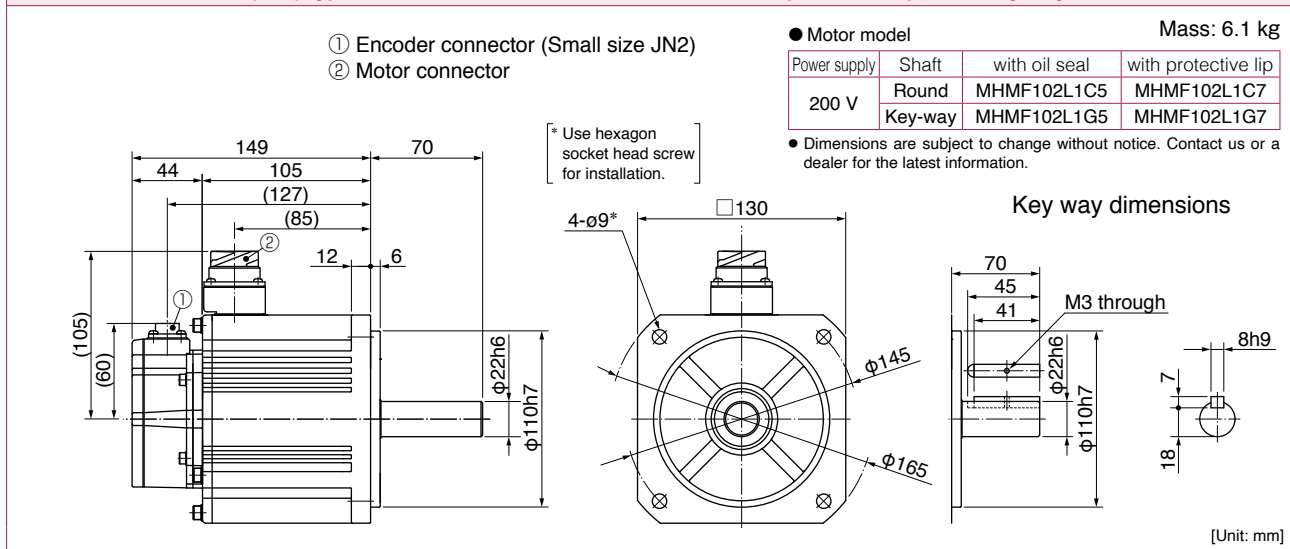
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



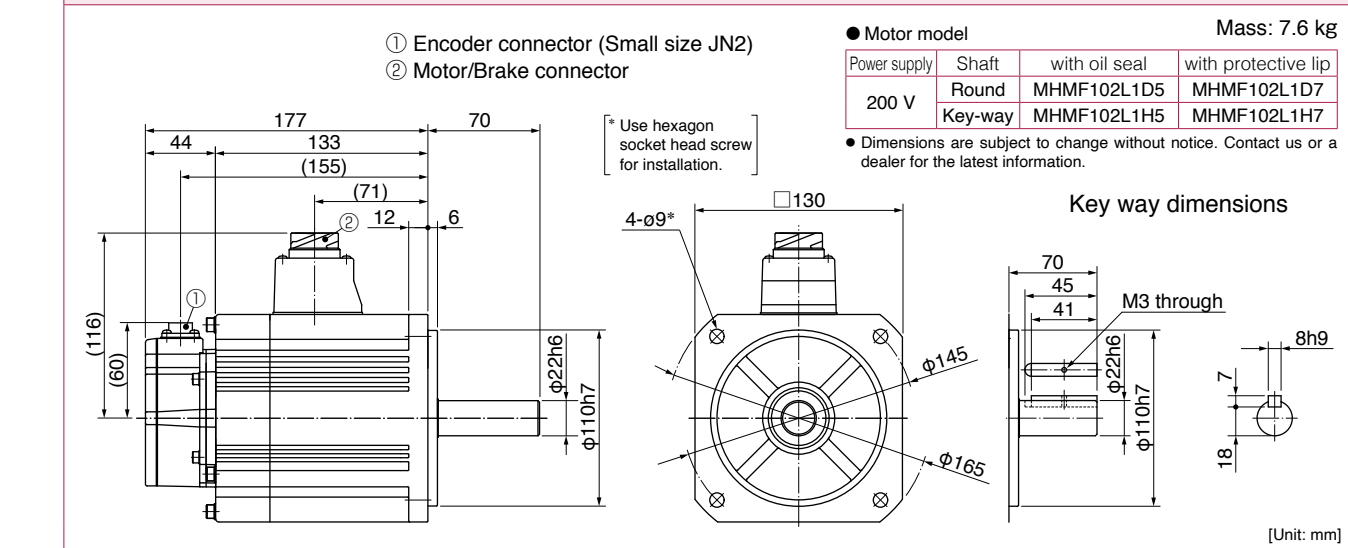
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P.95.

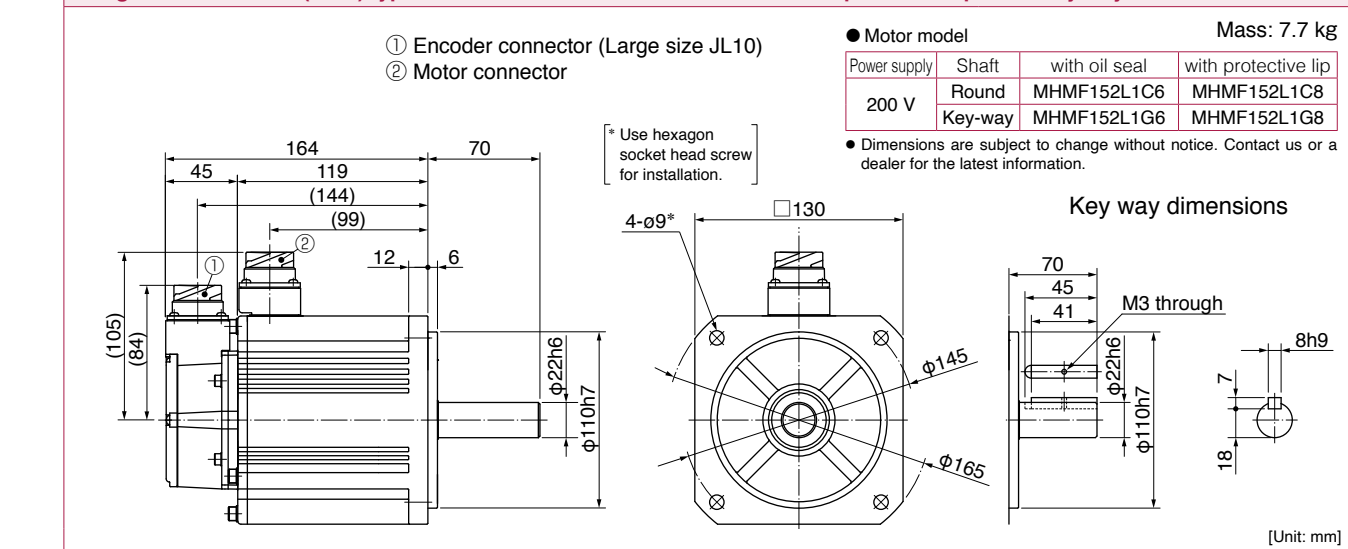
MHMF 1.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

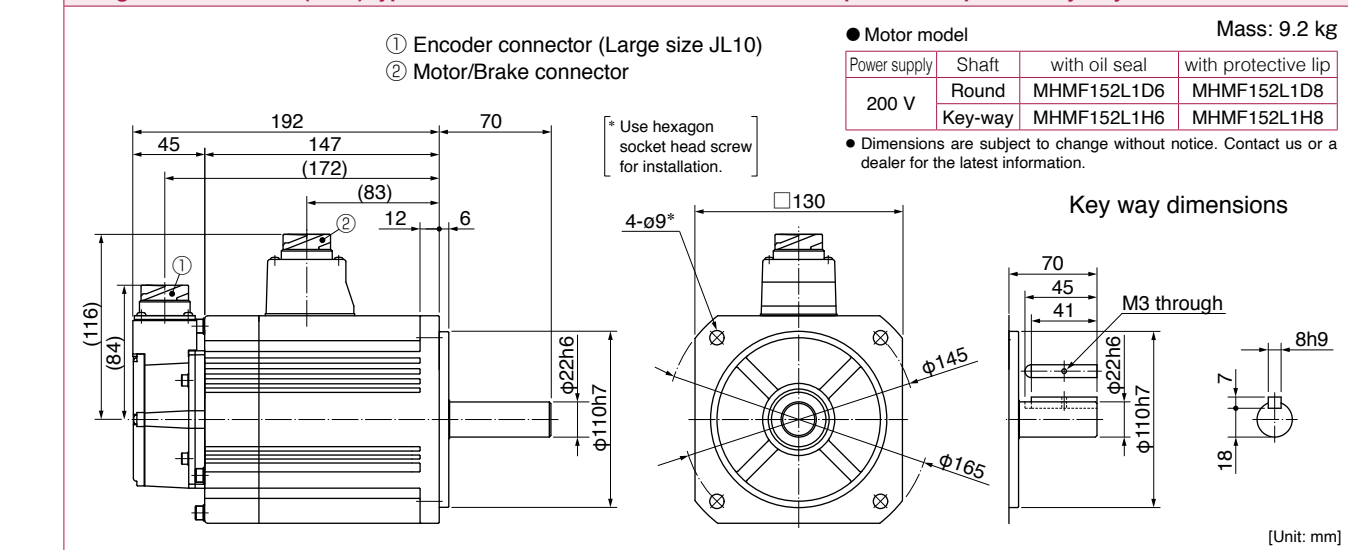


MHMF 1.5 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

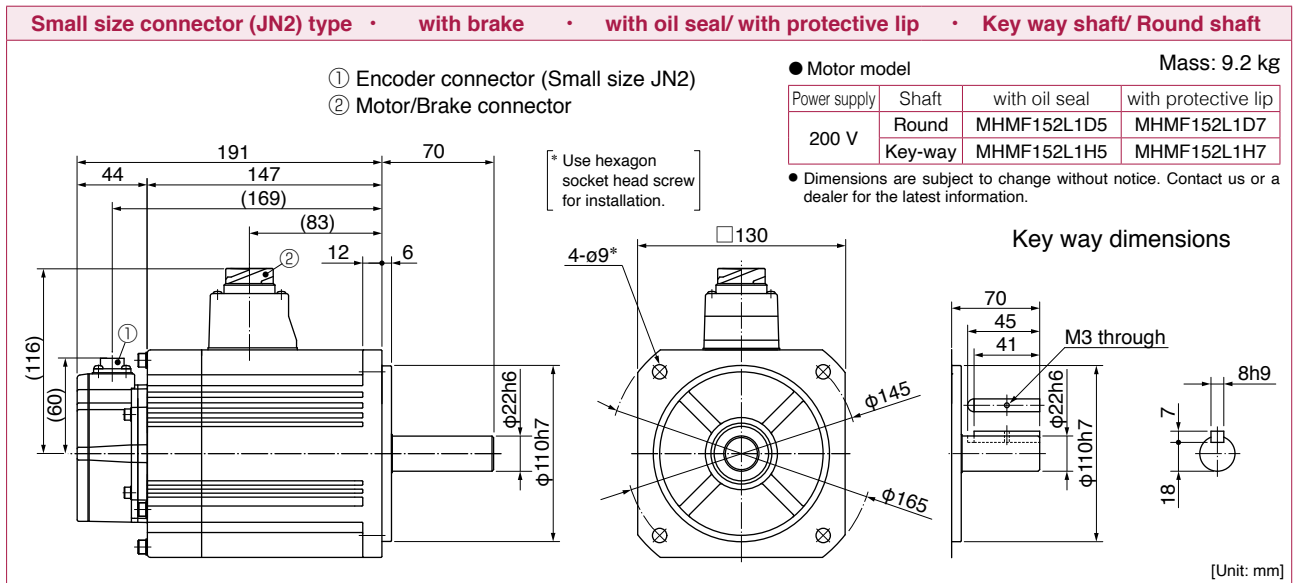
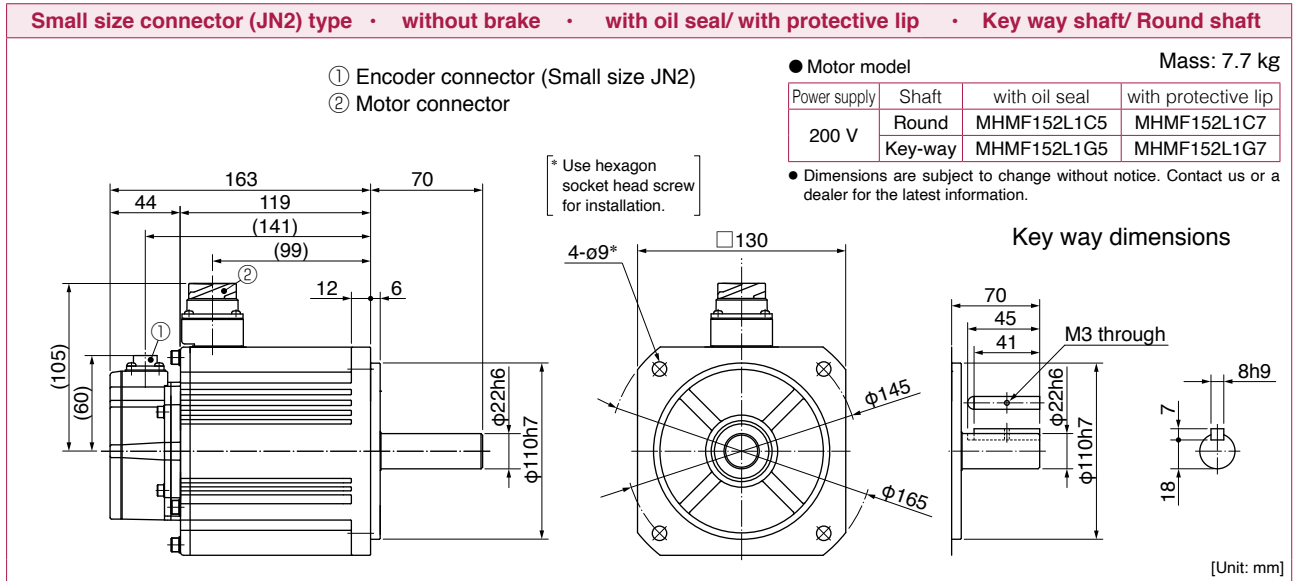


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

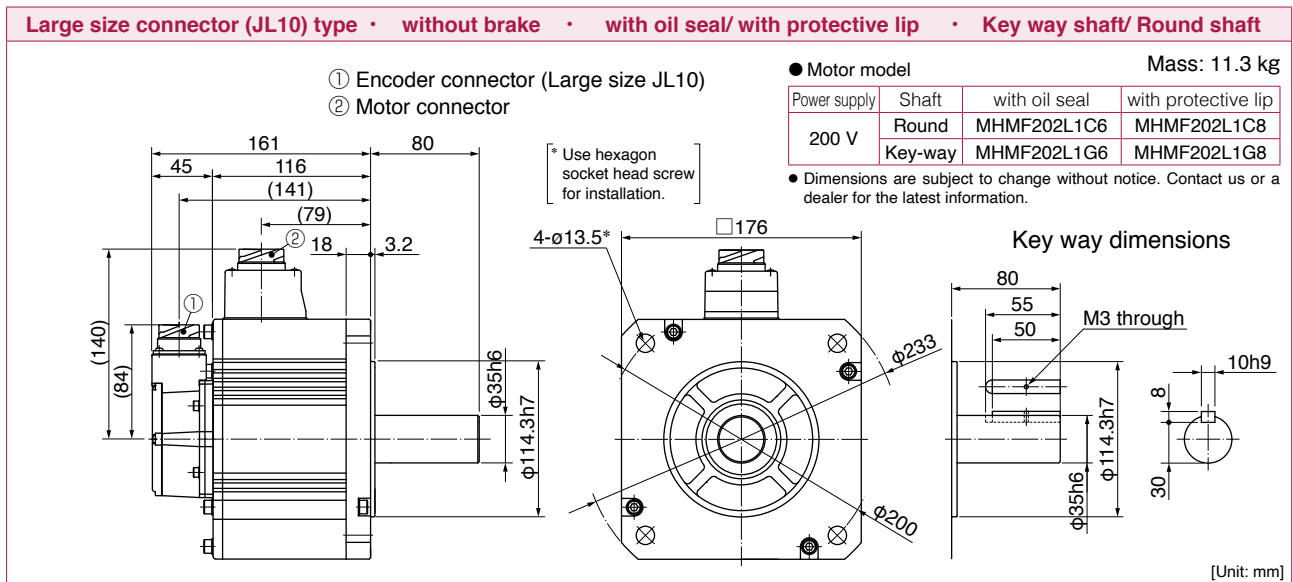


* For motors specifications, refer to P.95, P.96.

MHMF 1.5 kW

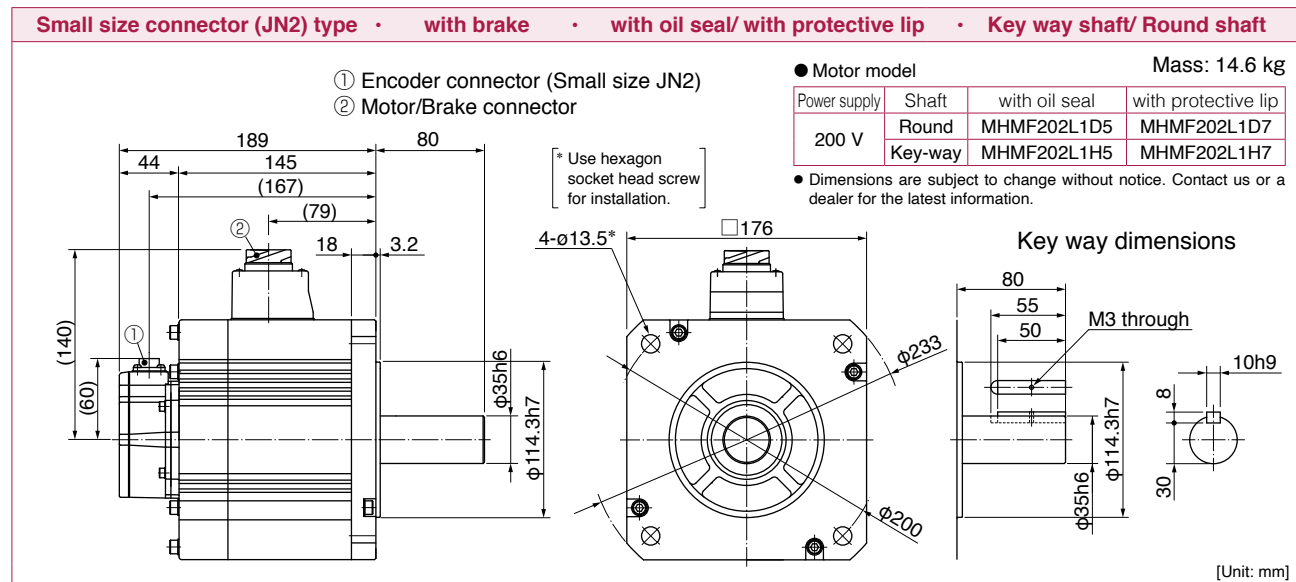
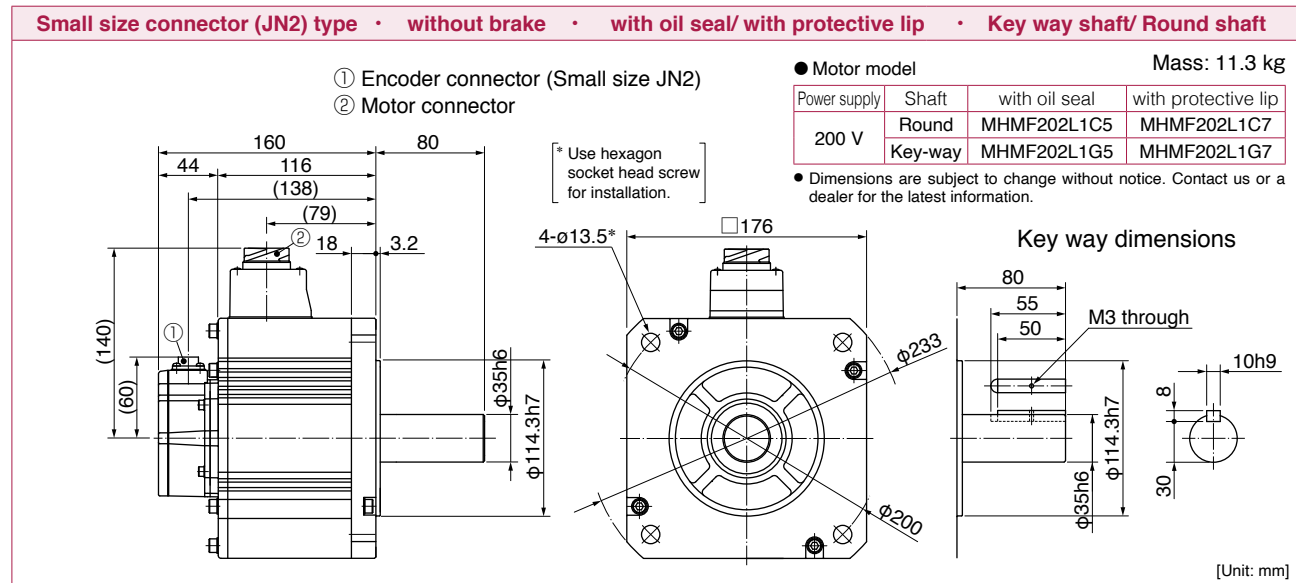
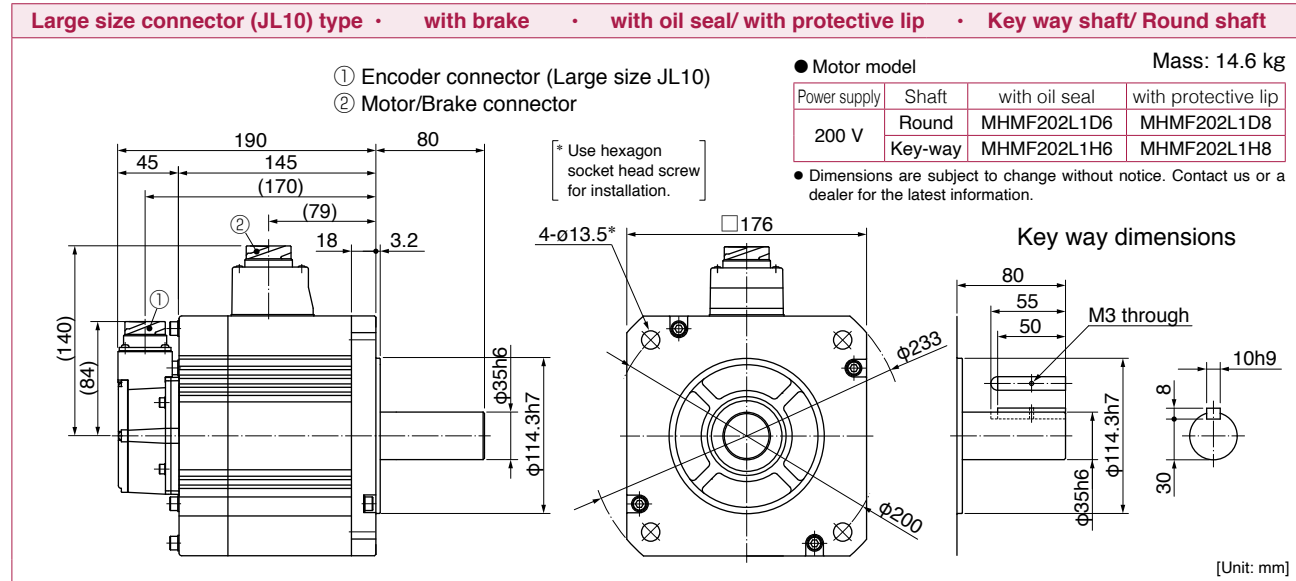


MHMF 2.0 kW



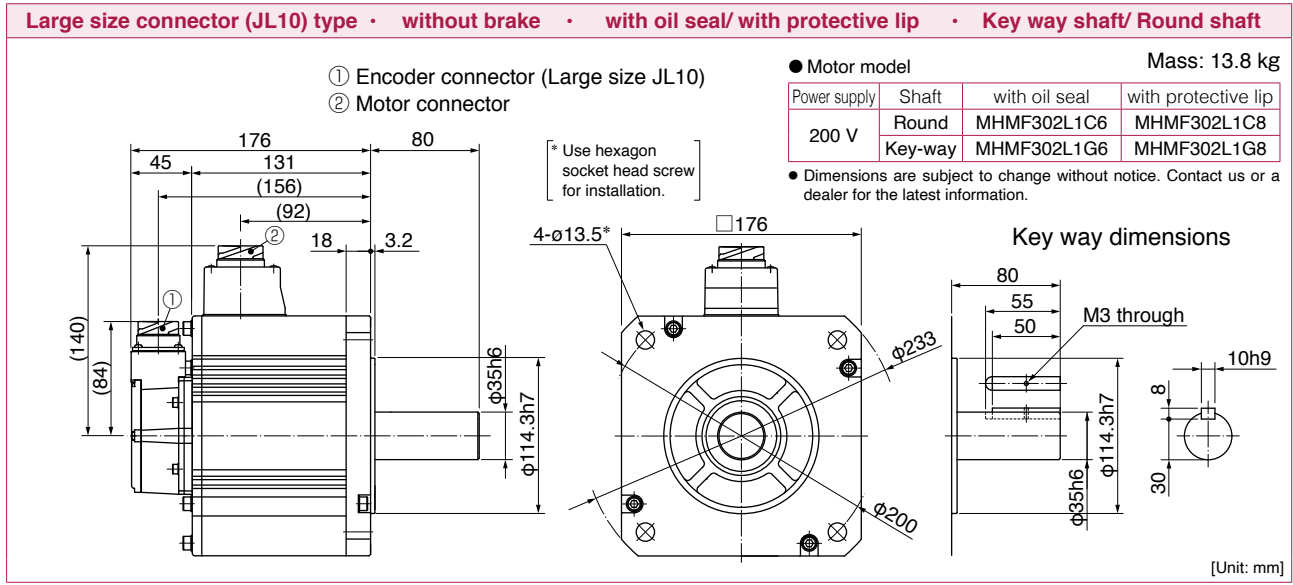
* For motors specifications, refer to P.96, P.97.

MHMF 2.0 kW

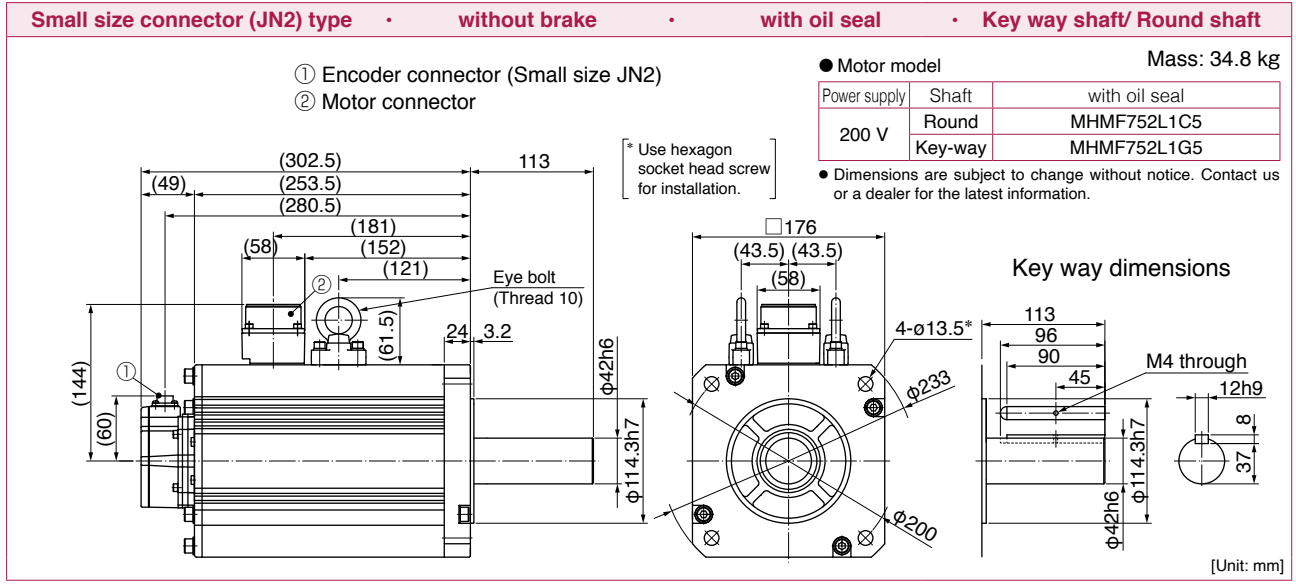
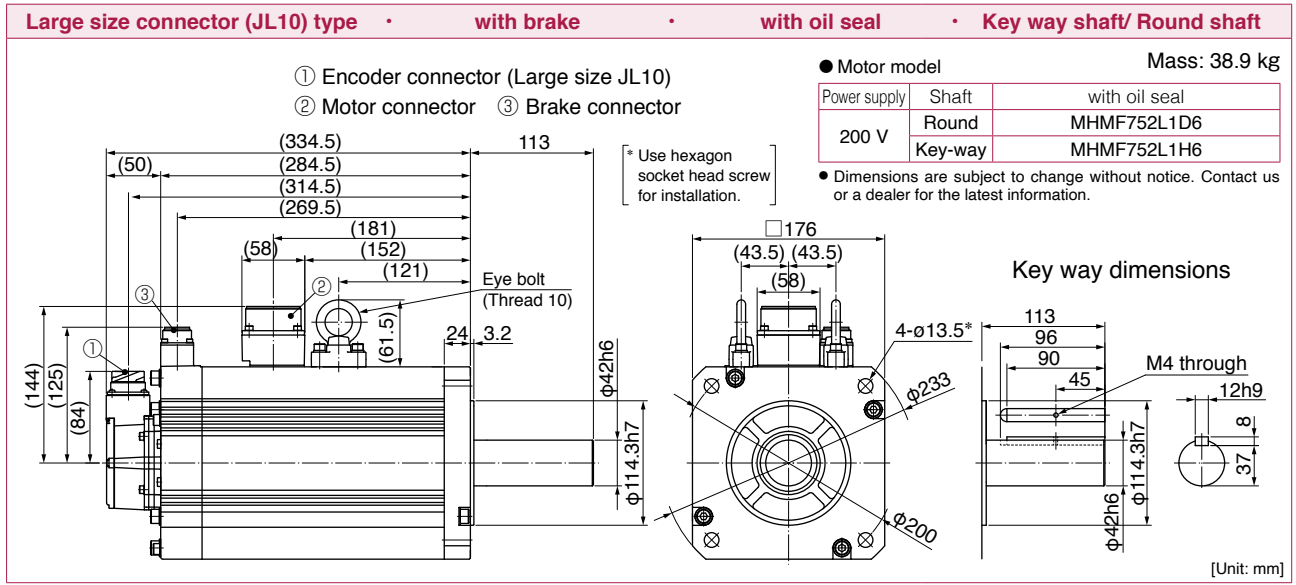
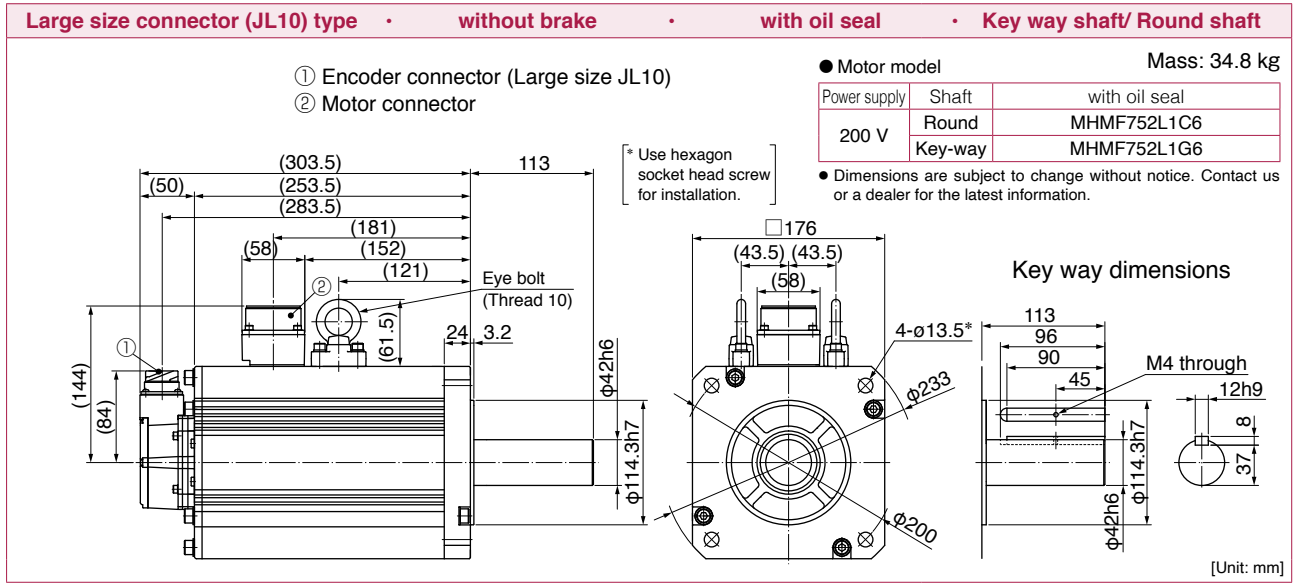


* For motors specifications, refer to P.97.

MHMF 3.0 kW

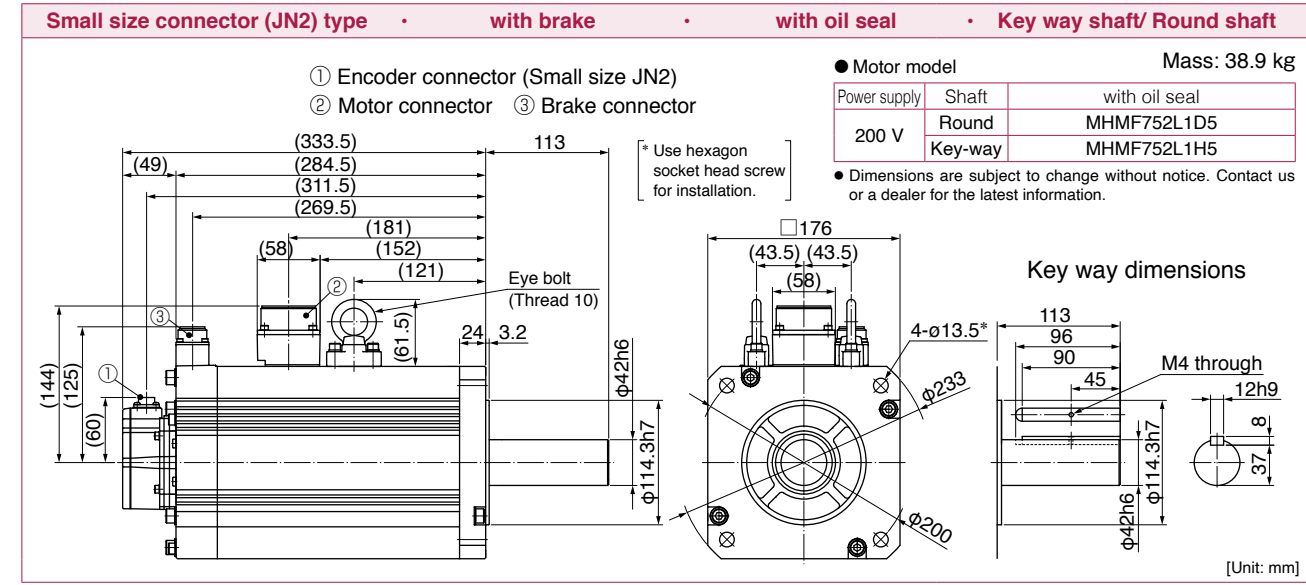


MHMF 7.5 kW

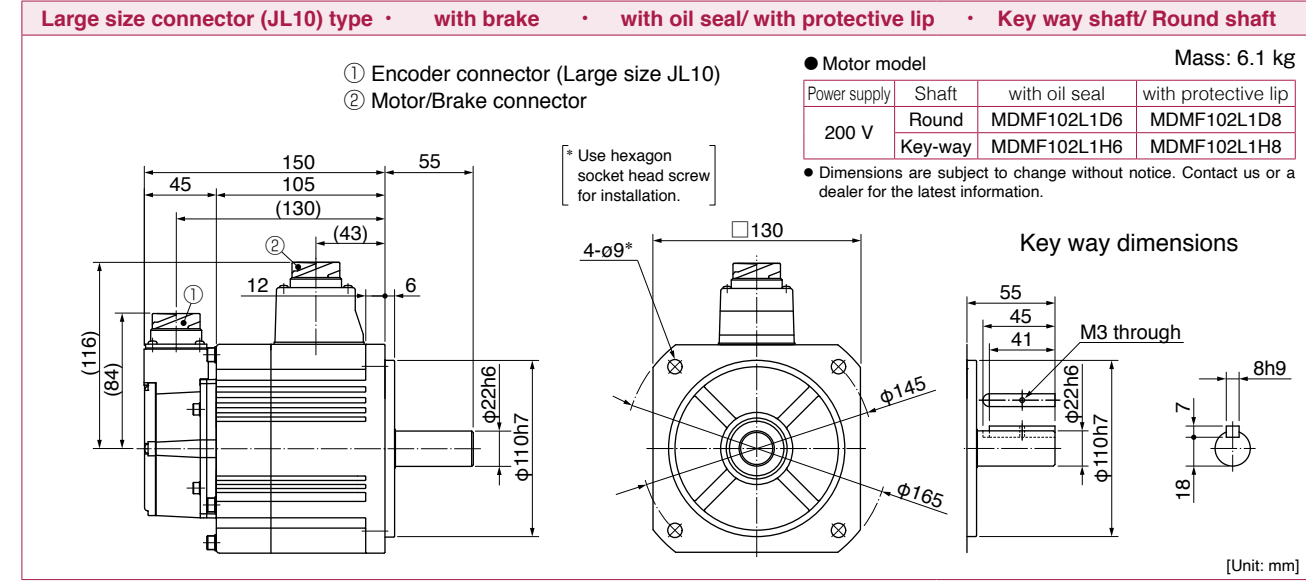
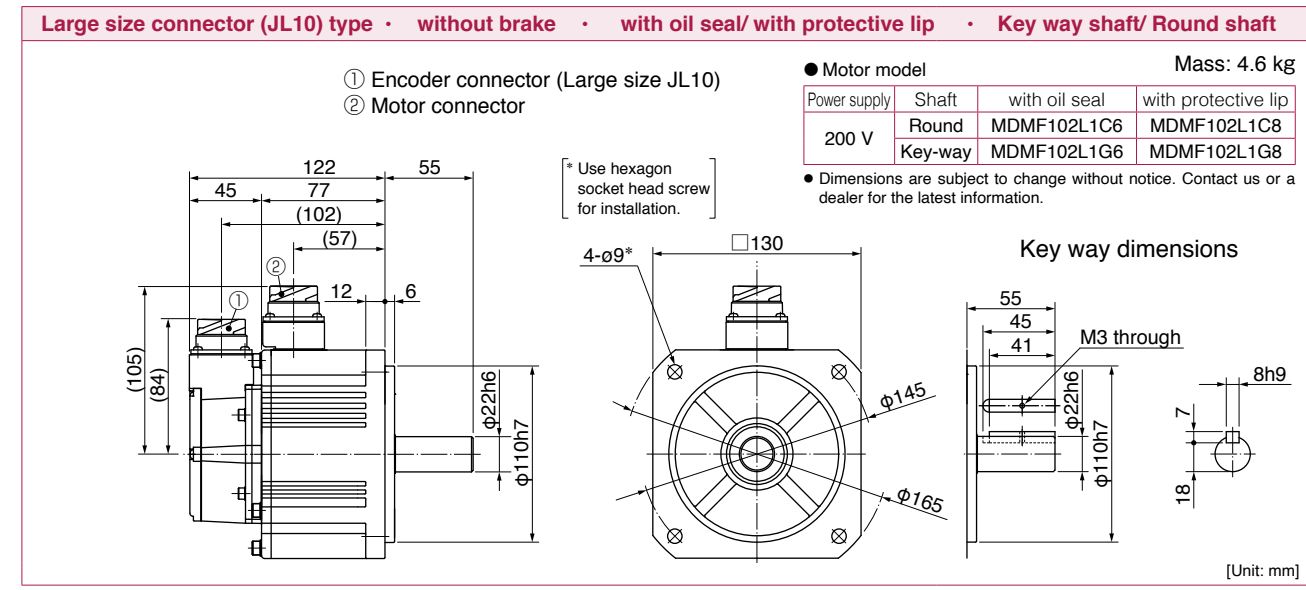


* For motors specifications, refer to P.101.

MHMF 7.5 kW

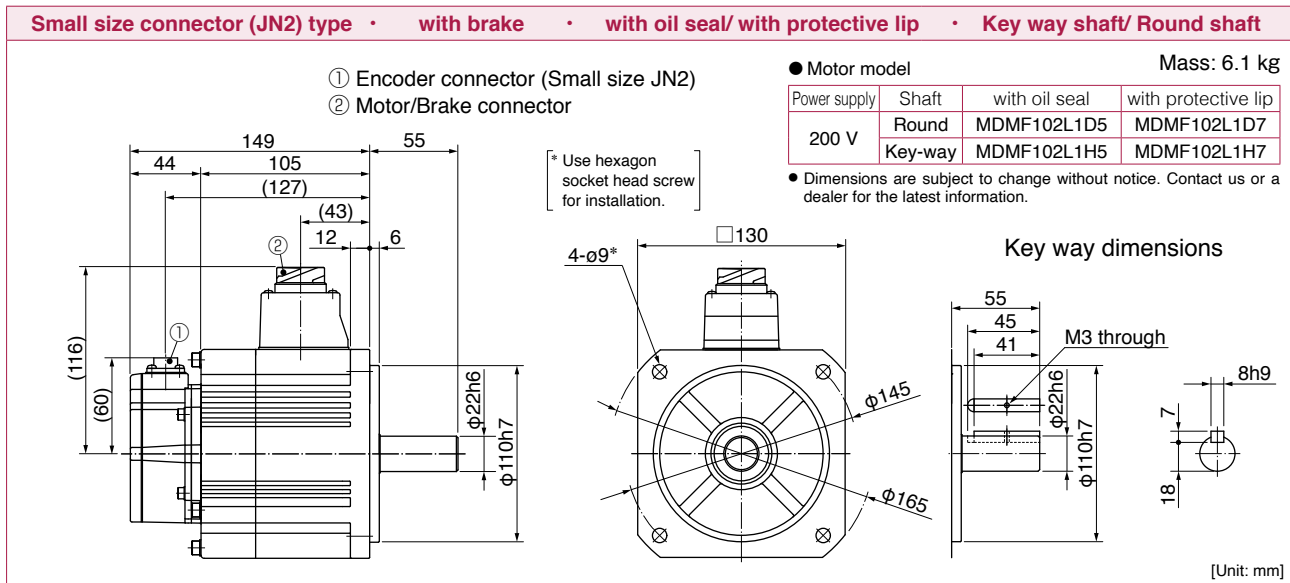
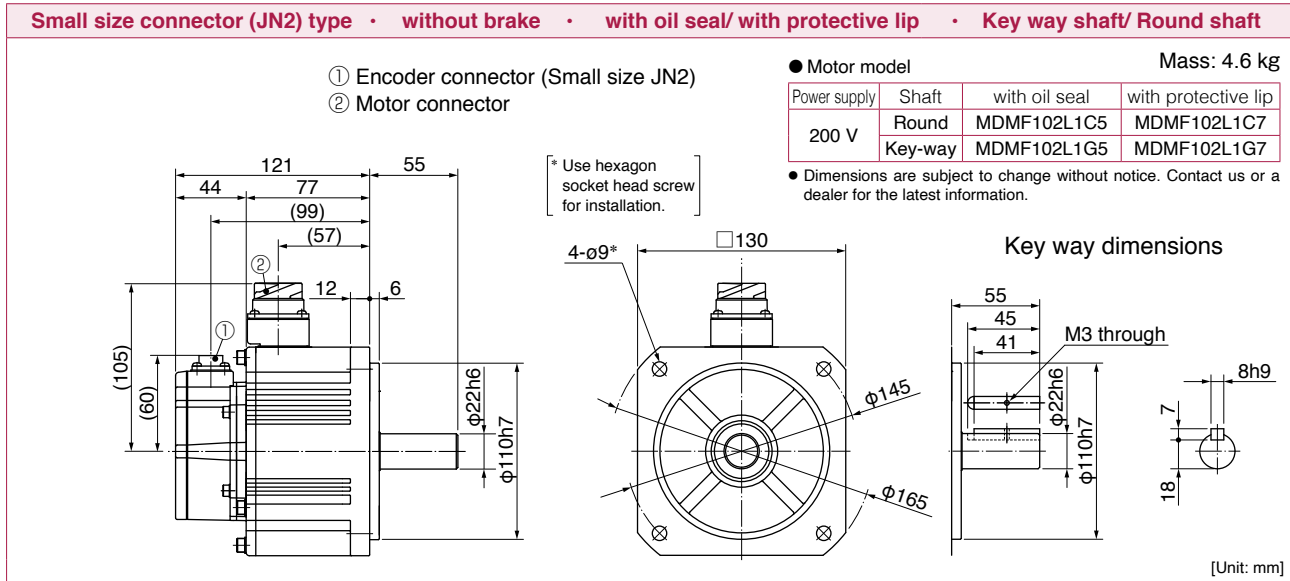


MDMF 1.0 kW

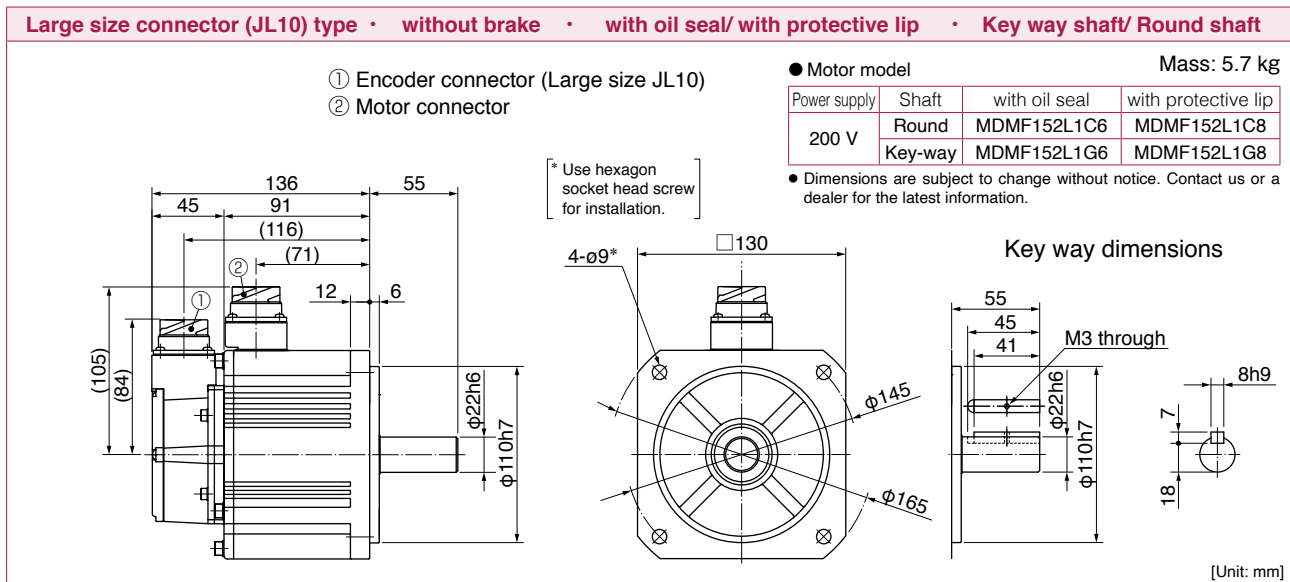


* For motors specifications, refer to P.101, P.102.

MDMF 1.0 kW

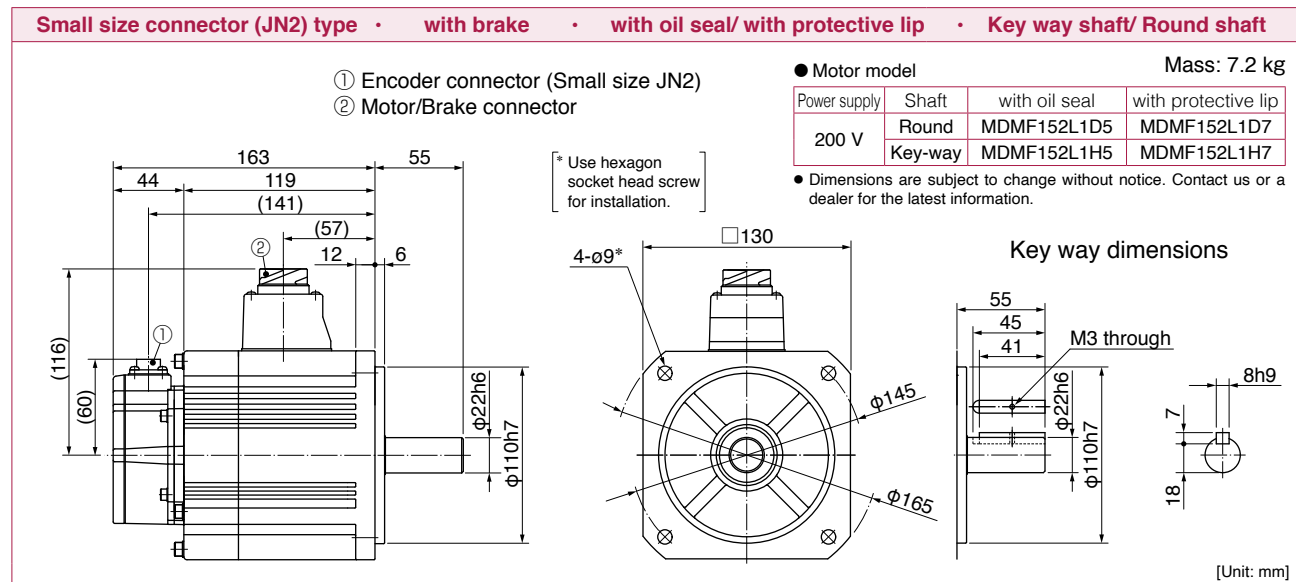
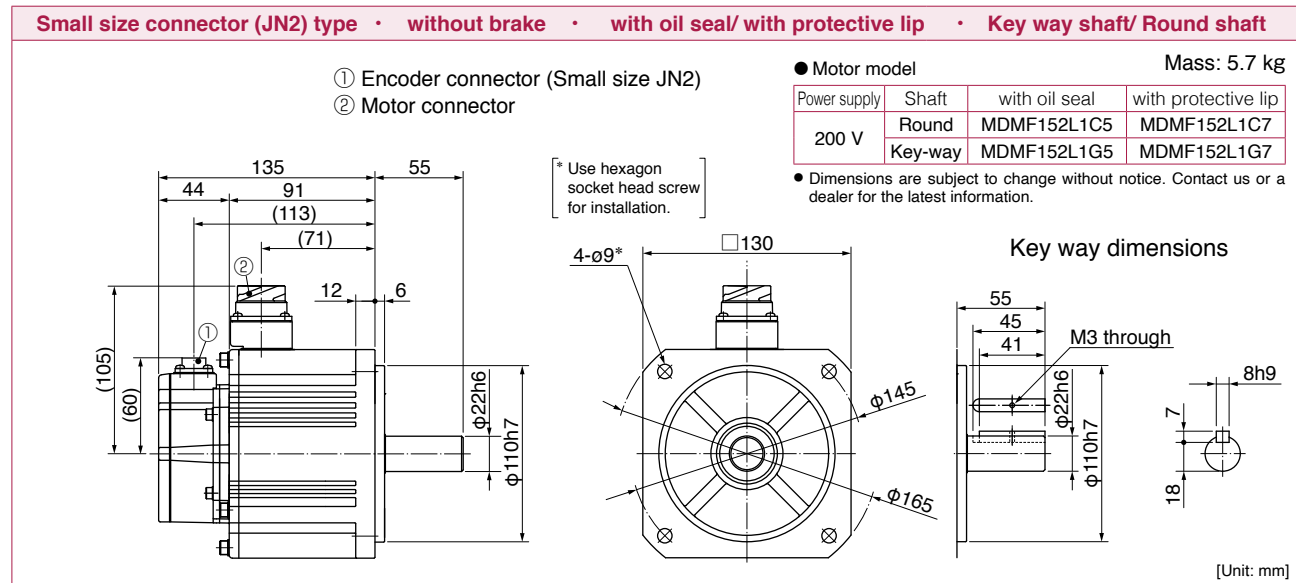
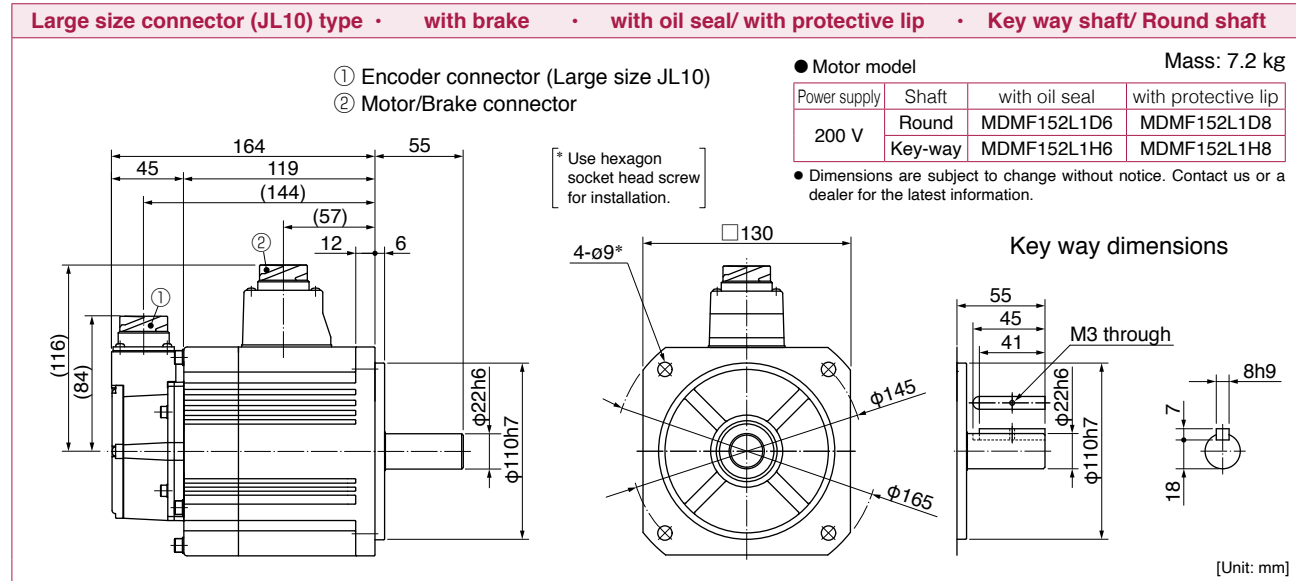


MDMF 1.5 kW



* For motors specifications, refer to P.102, P.103.

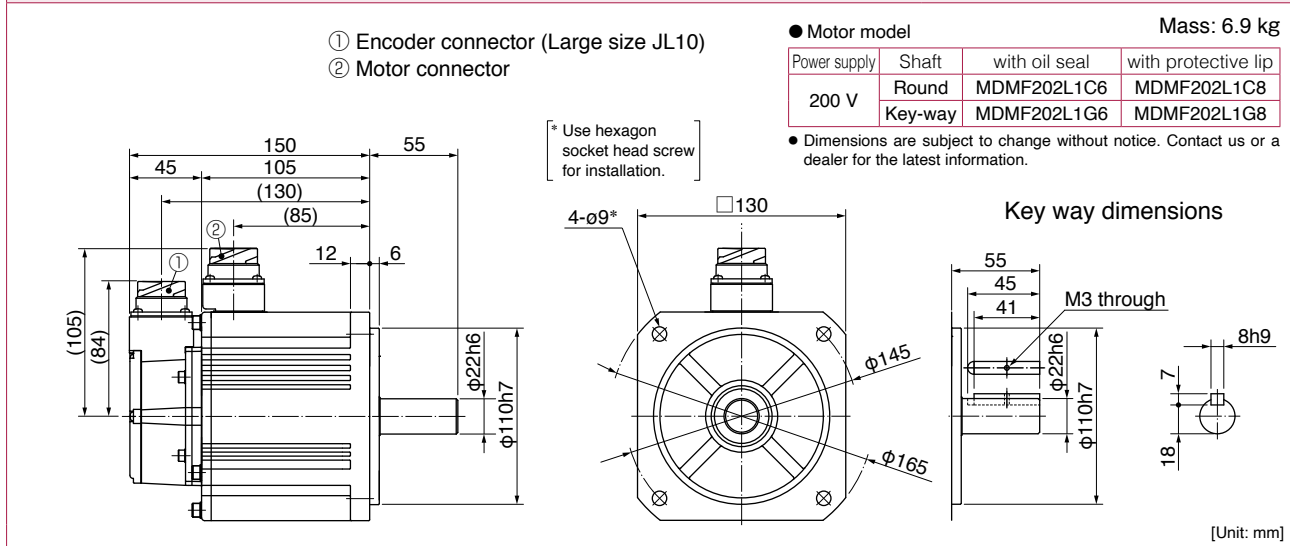
MDMF 1.5 kW



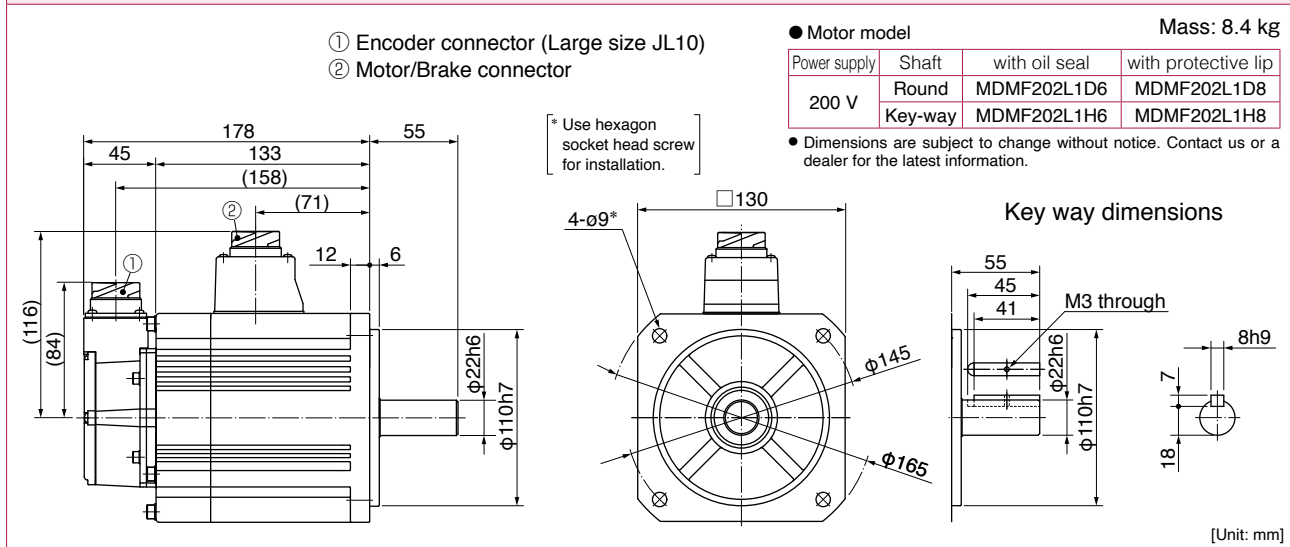
* For motors specifications, refer to P.103.

MDMF 2.0 kW

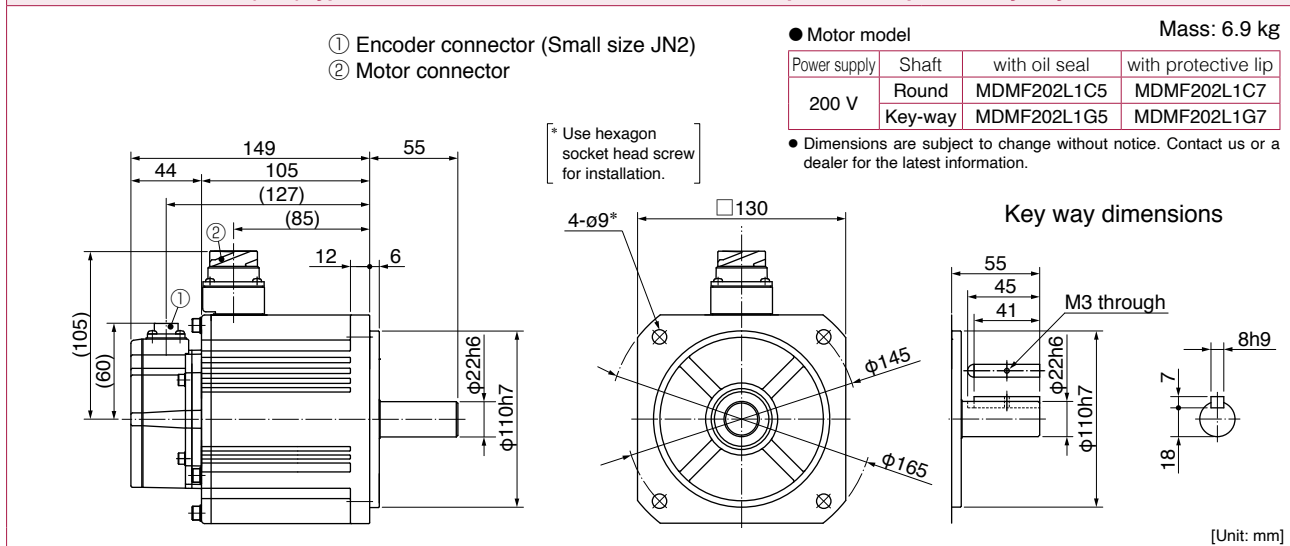
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



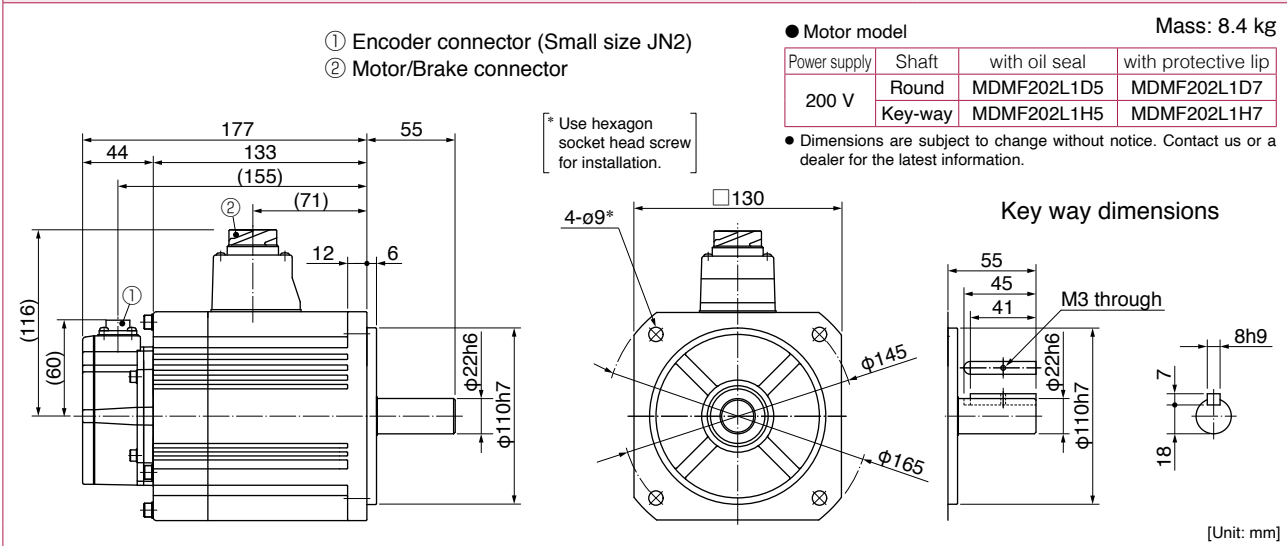
Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P.104.

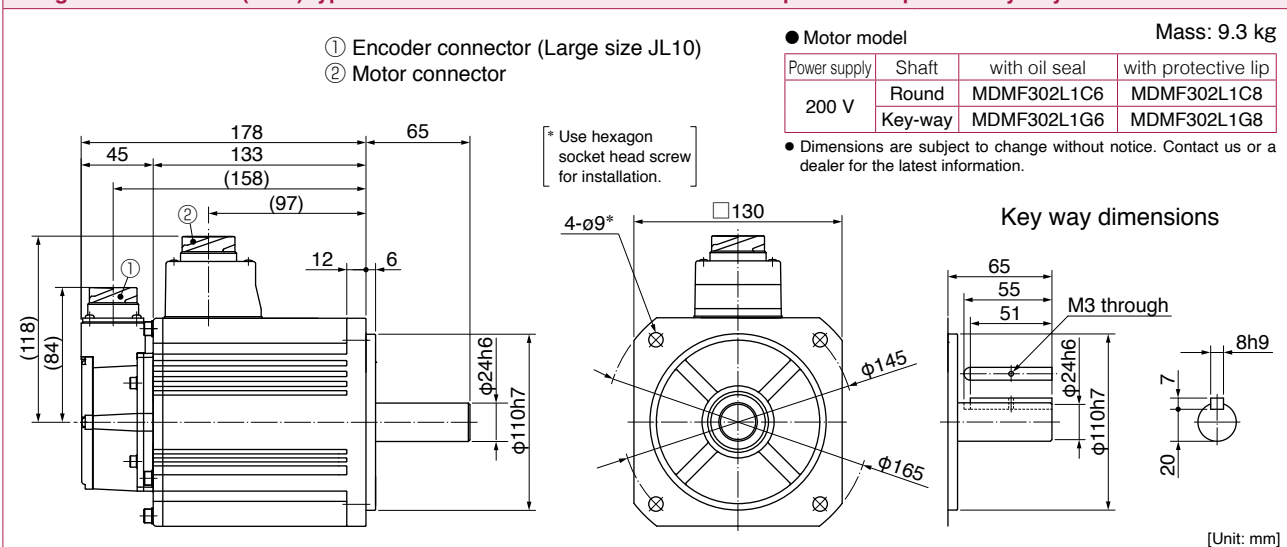
MDMF 2.0 kW

Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

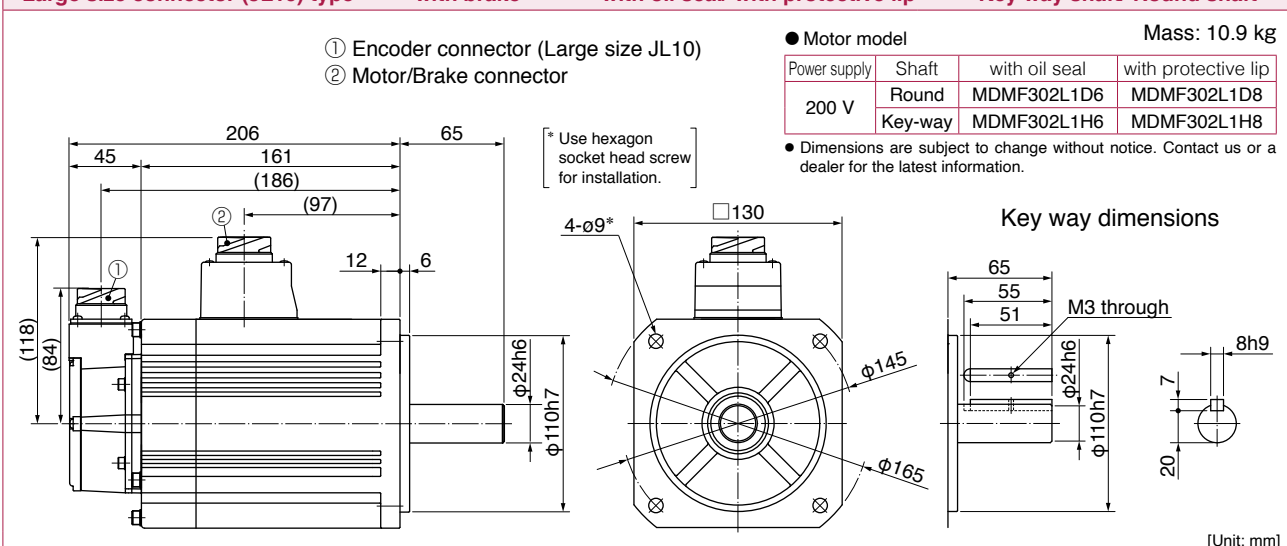


MDMF 3.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

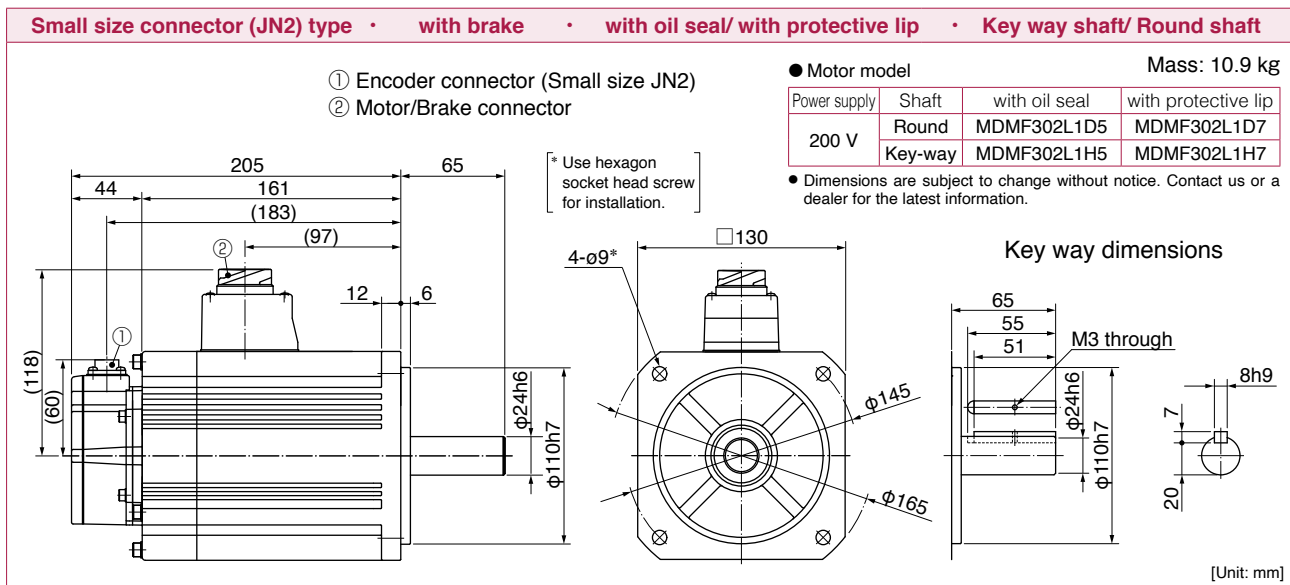
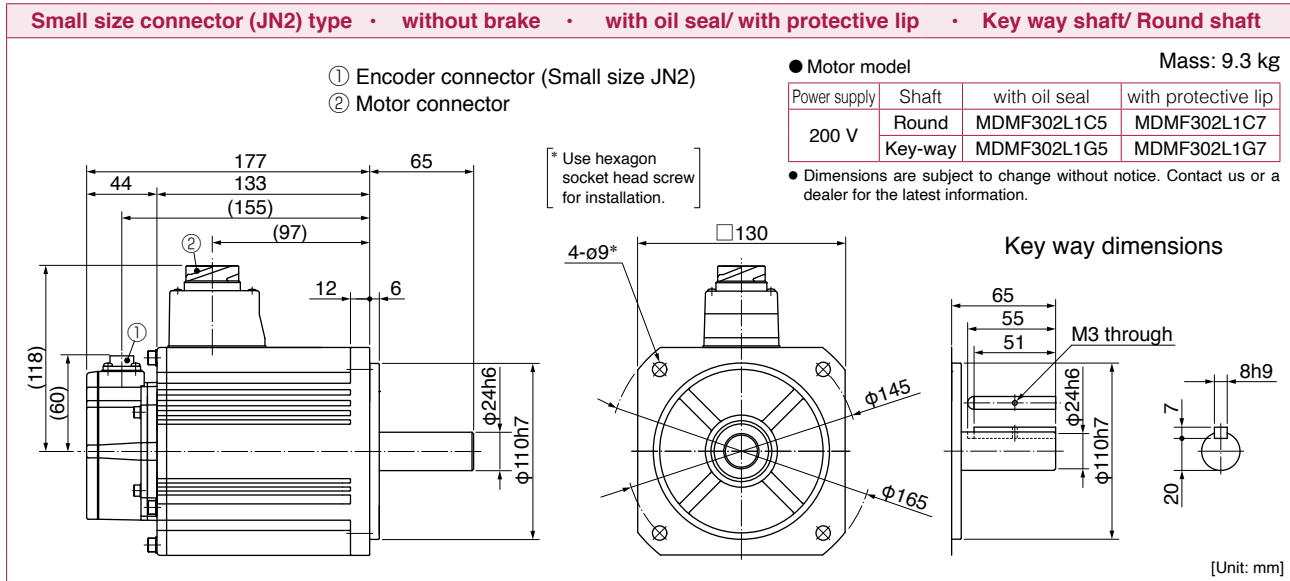


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

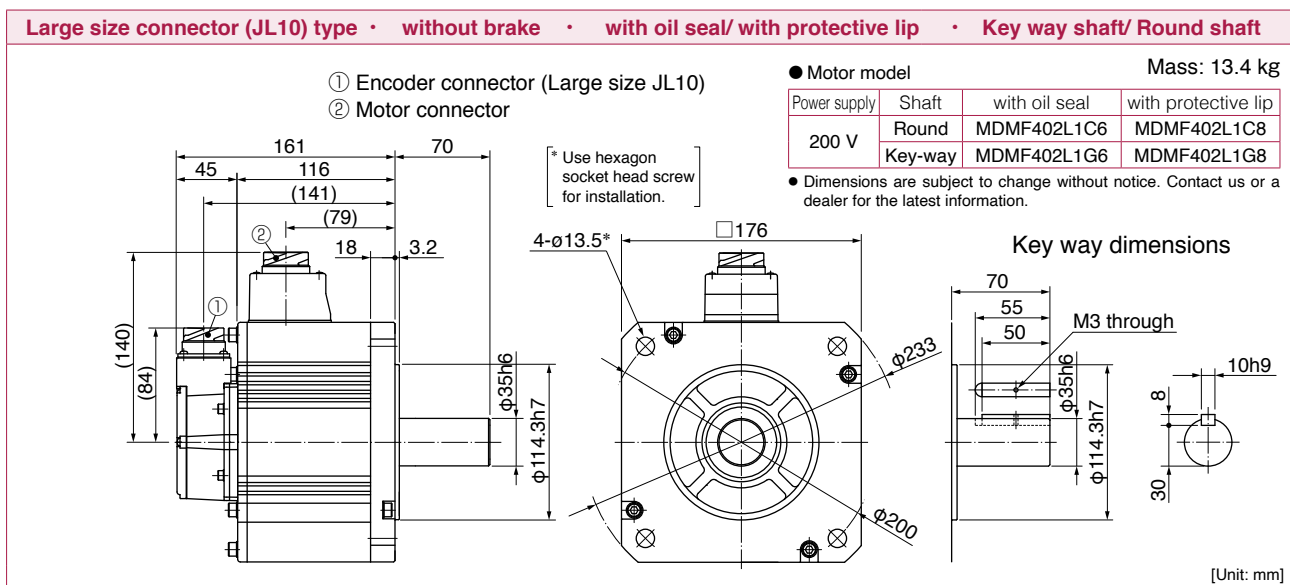


* For motors specifications, refer to P.104, P.105.

MDMF 3.0 kW

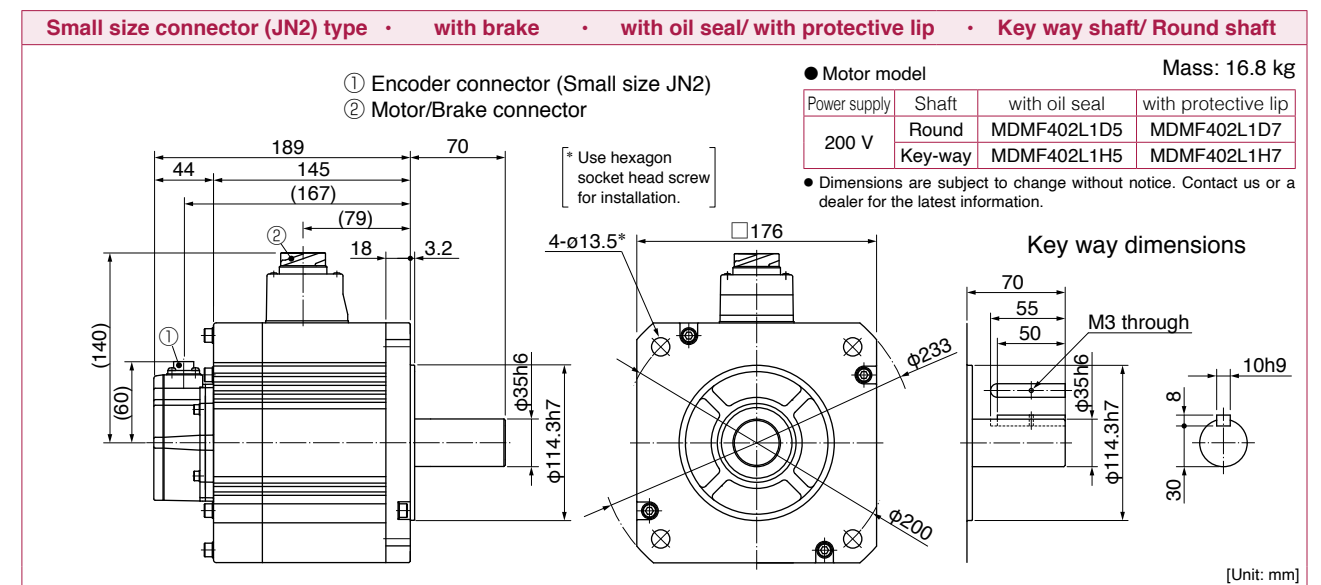
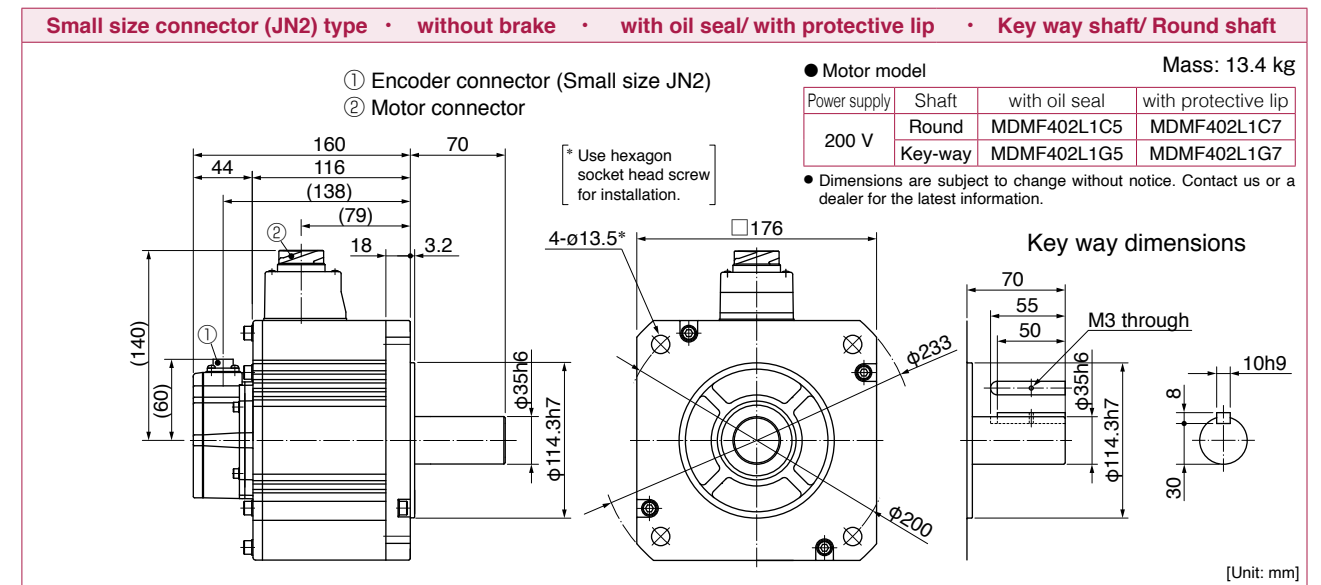
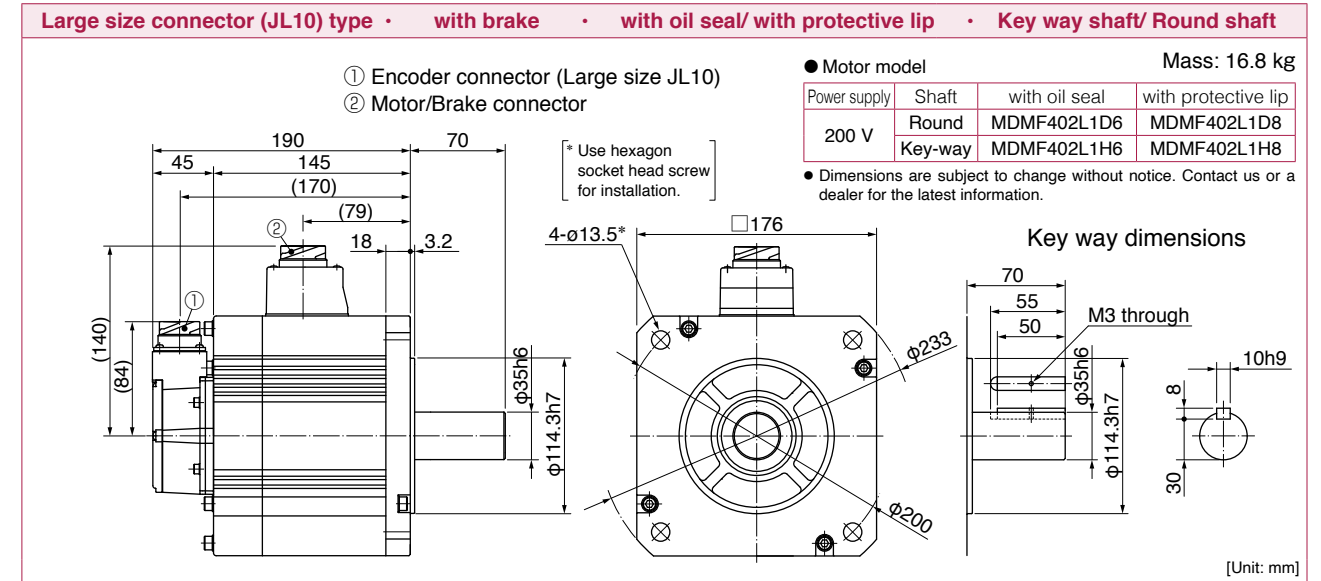


MDMF 4.0 kW



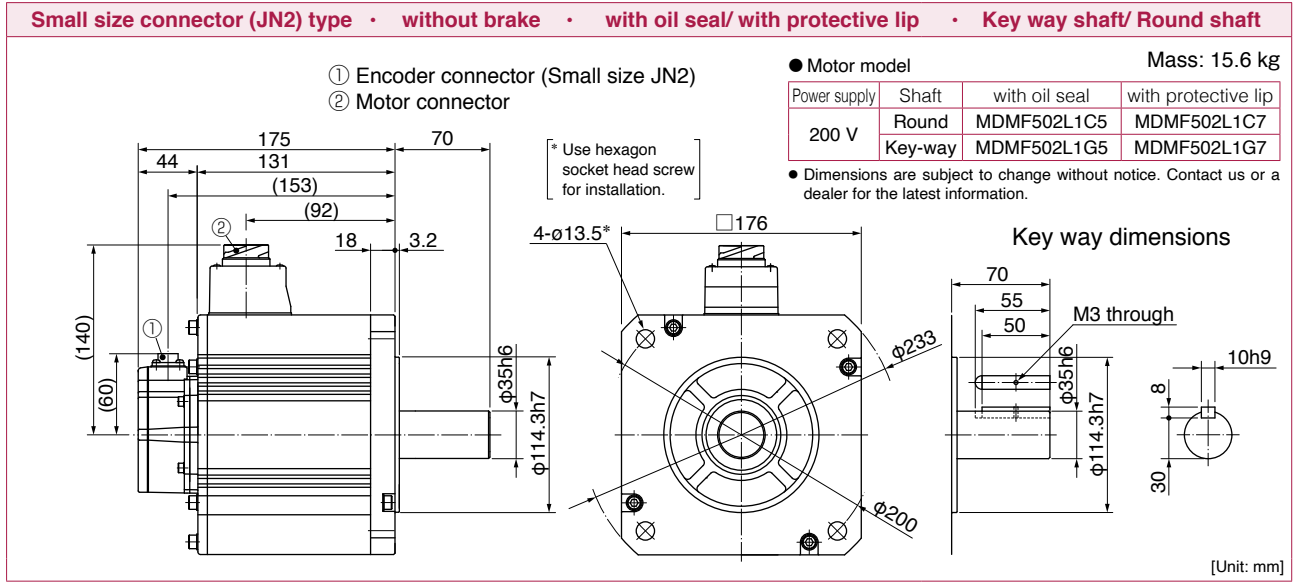
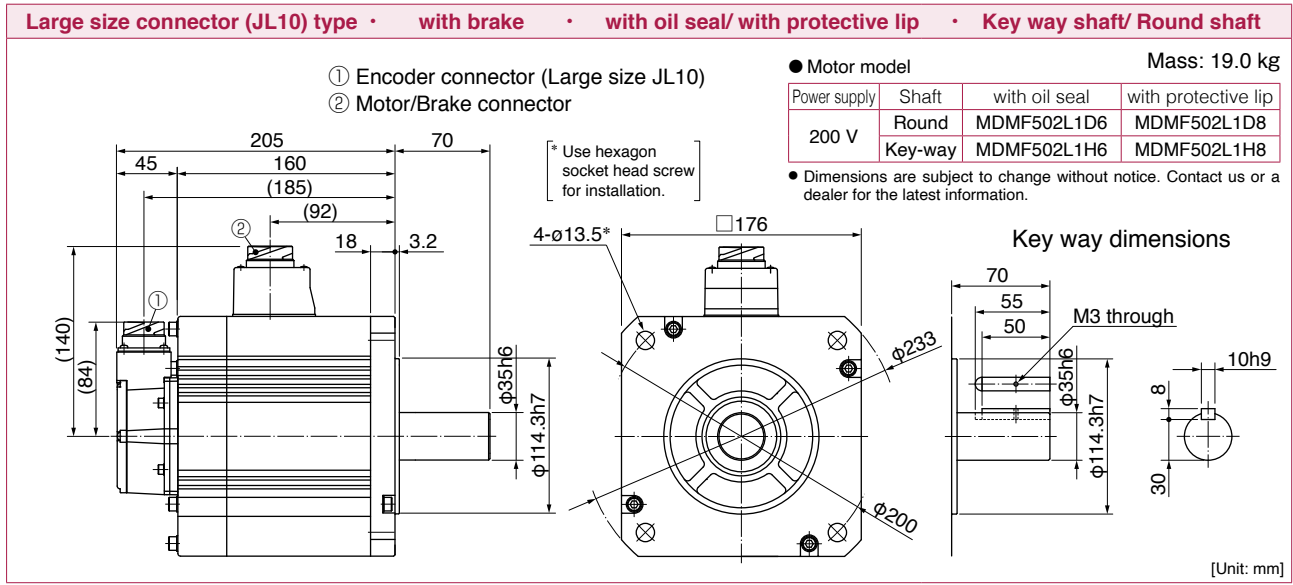
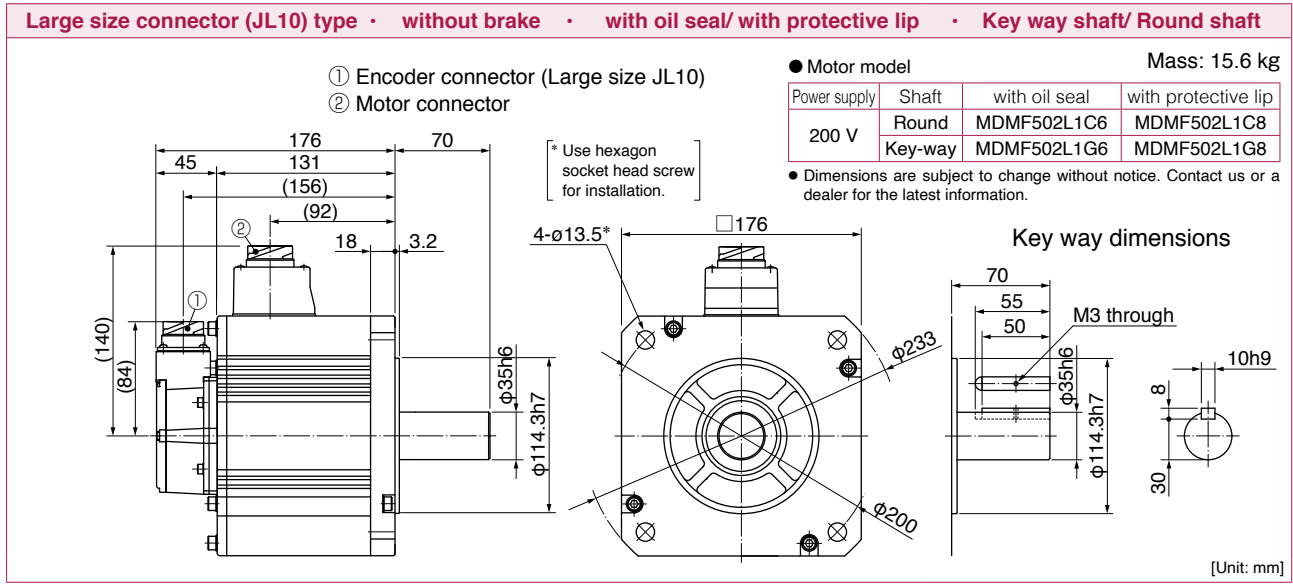
* For motors specifications, refer to P.105, P.106.

MDMF 4.0 kW



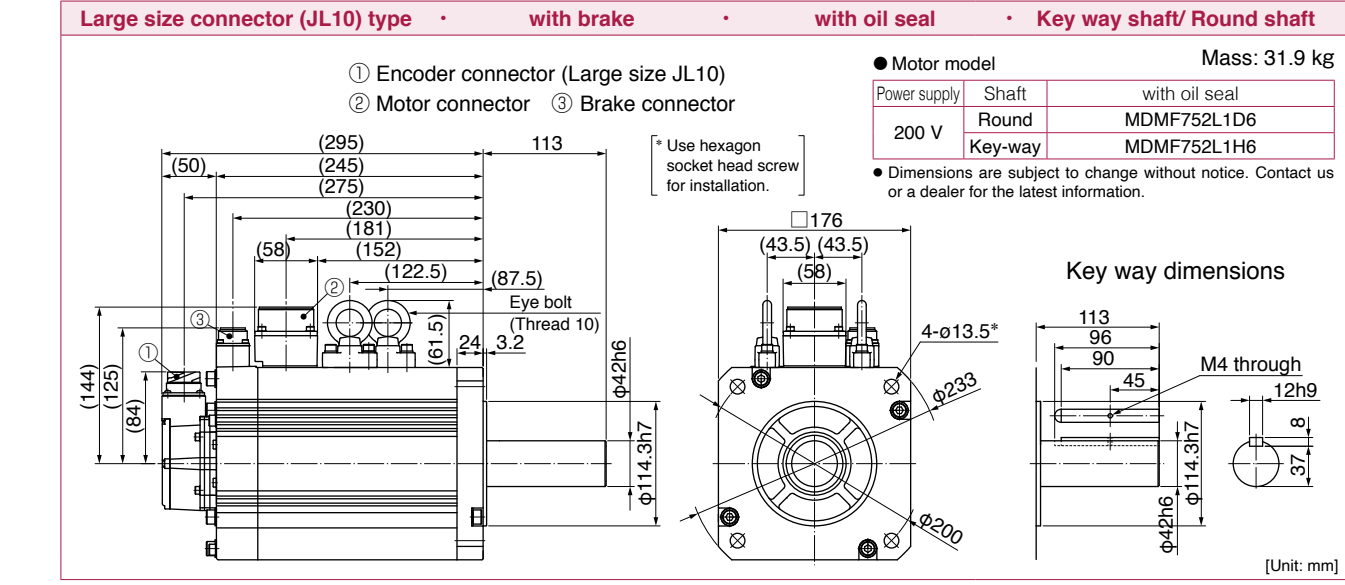
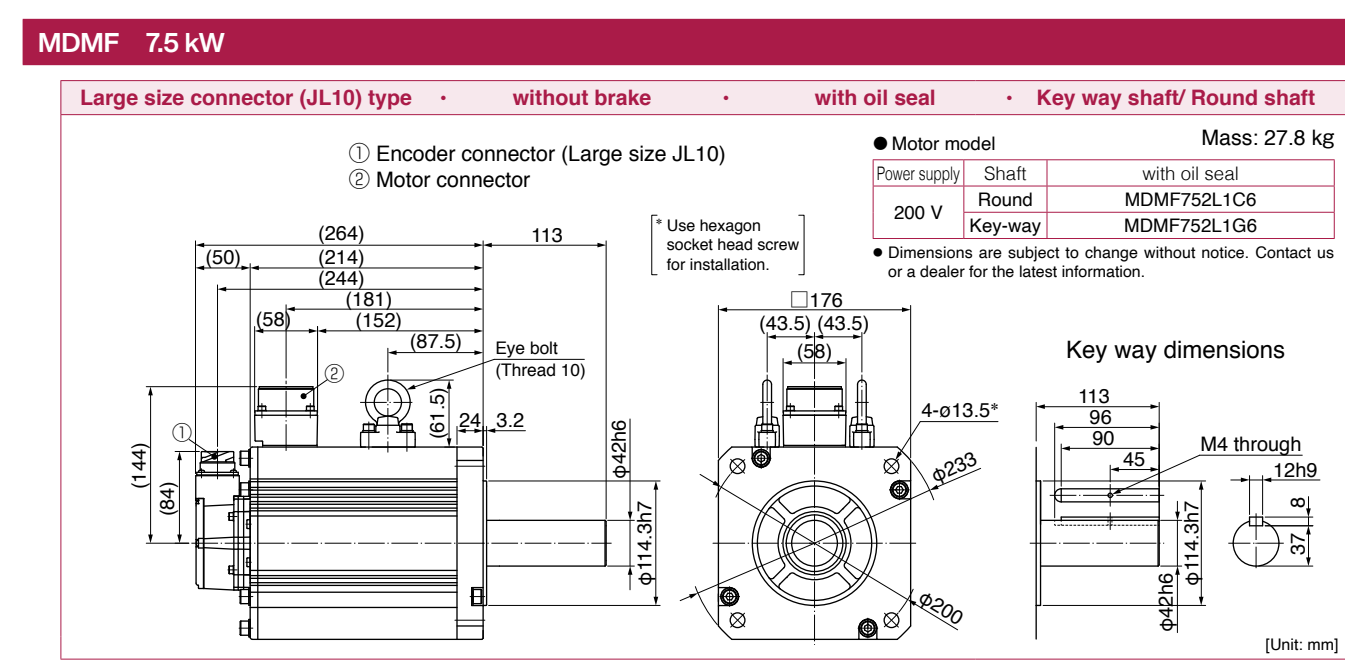
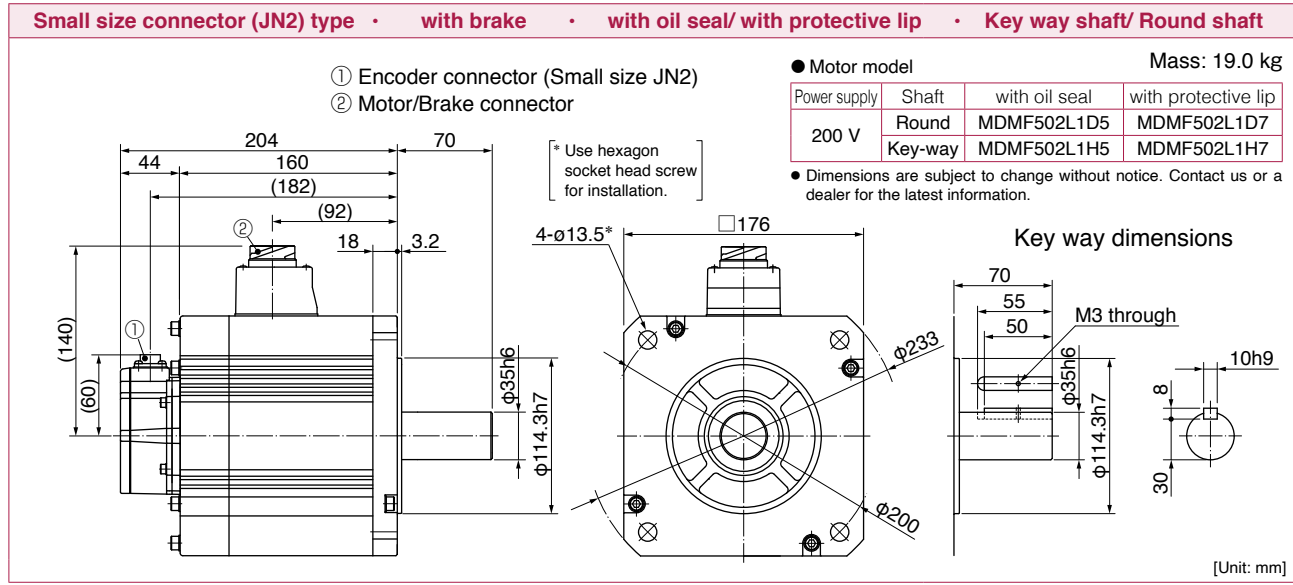
* For motors specifications, refer to P.106.

MDMF 5.0 kW



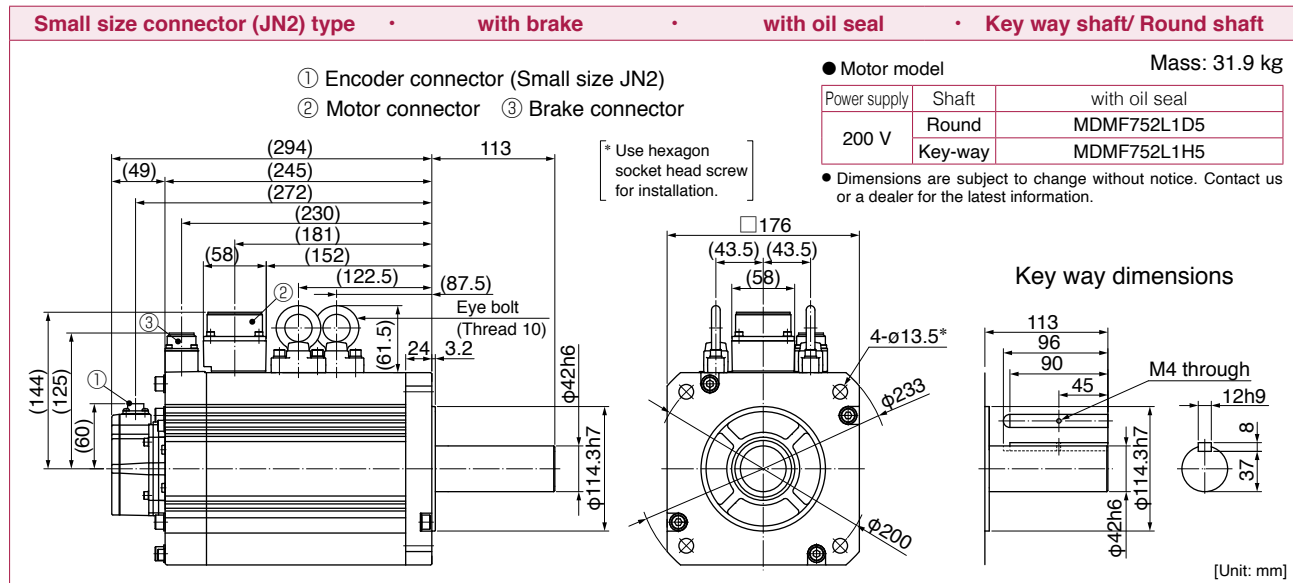
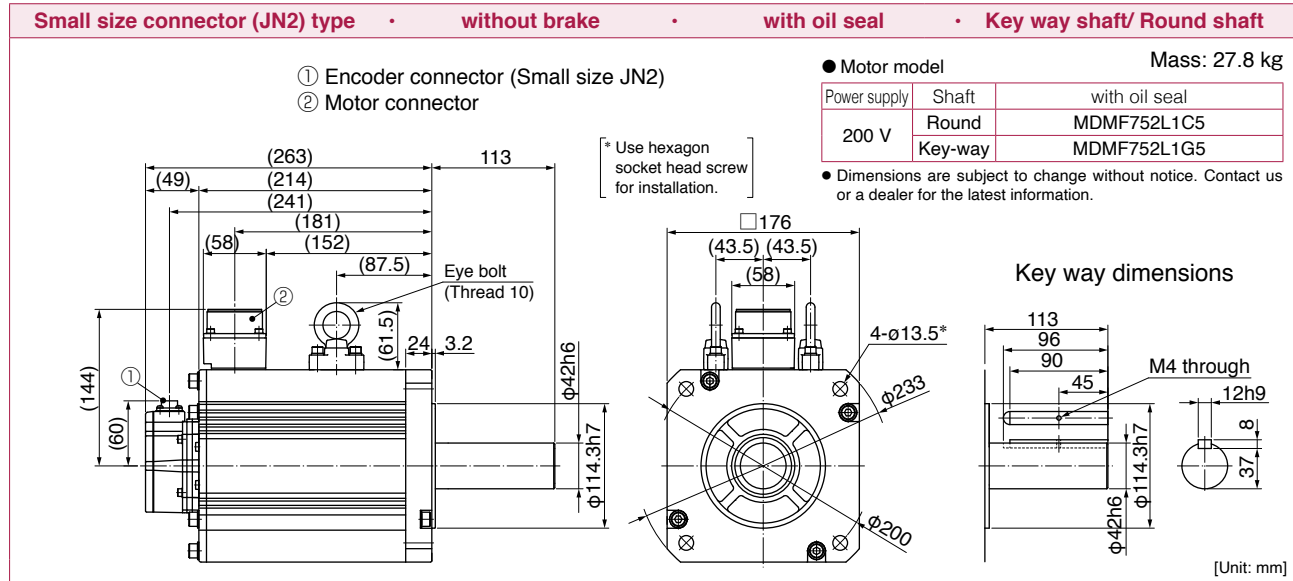
* For motors specifications, refer to P.107.

MDMF 5.0 kW

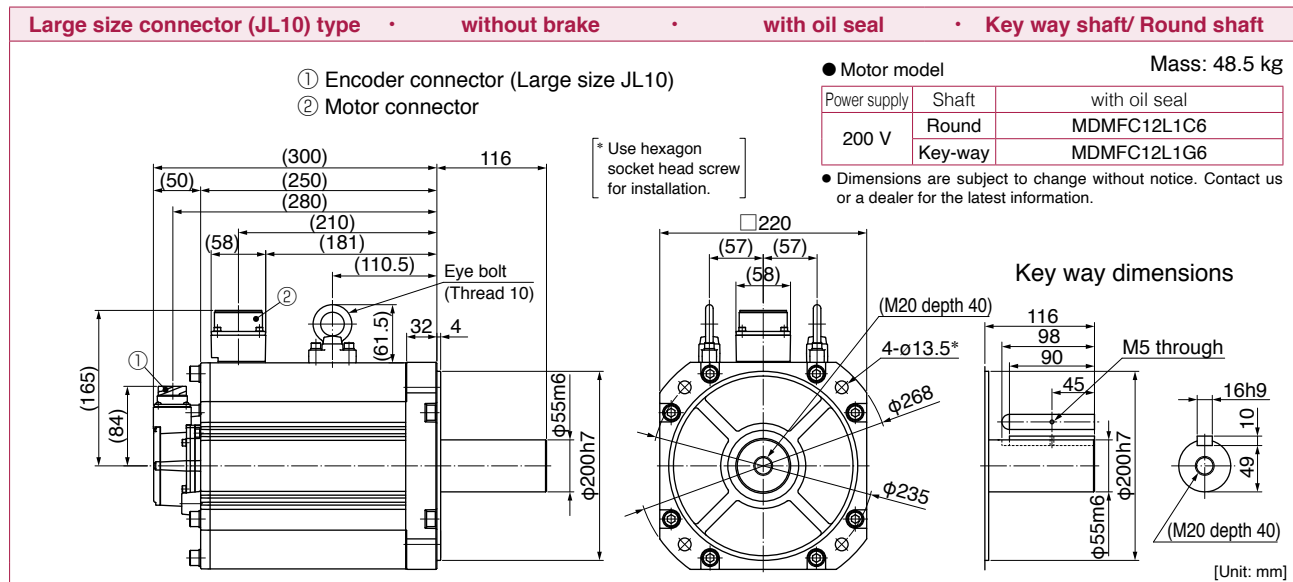


* For motors specifications, refer to P.107, P.108.

MDMF 7.5 kW

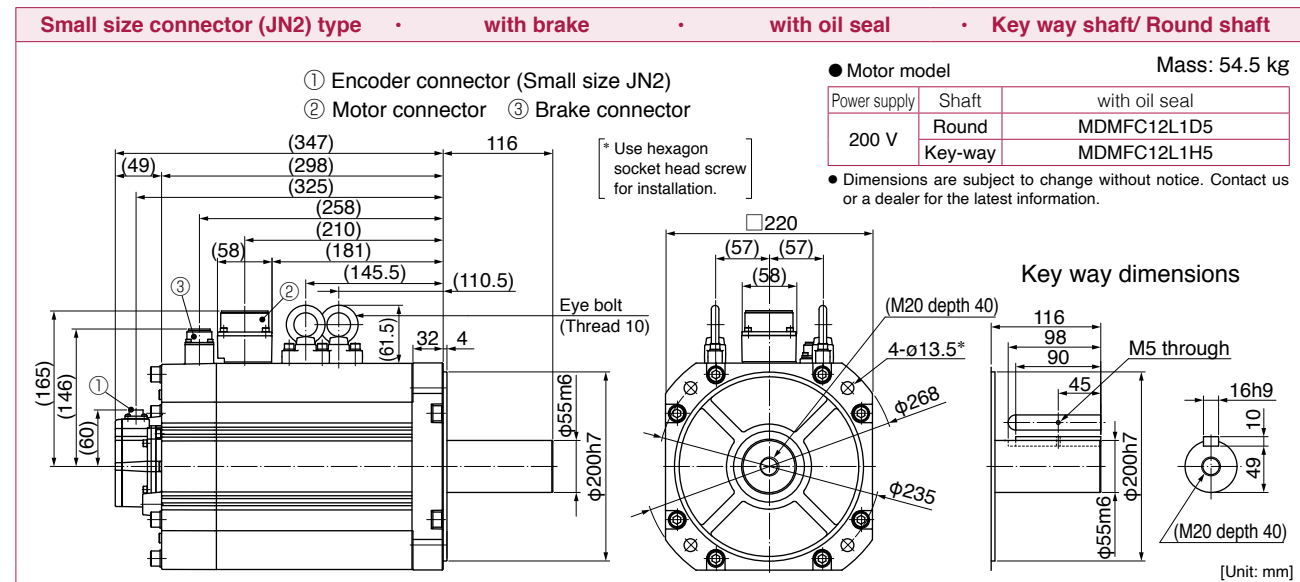
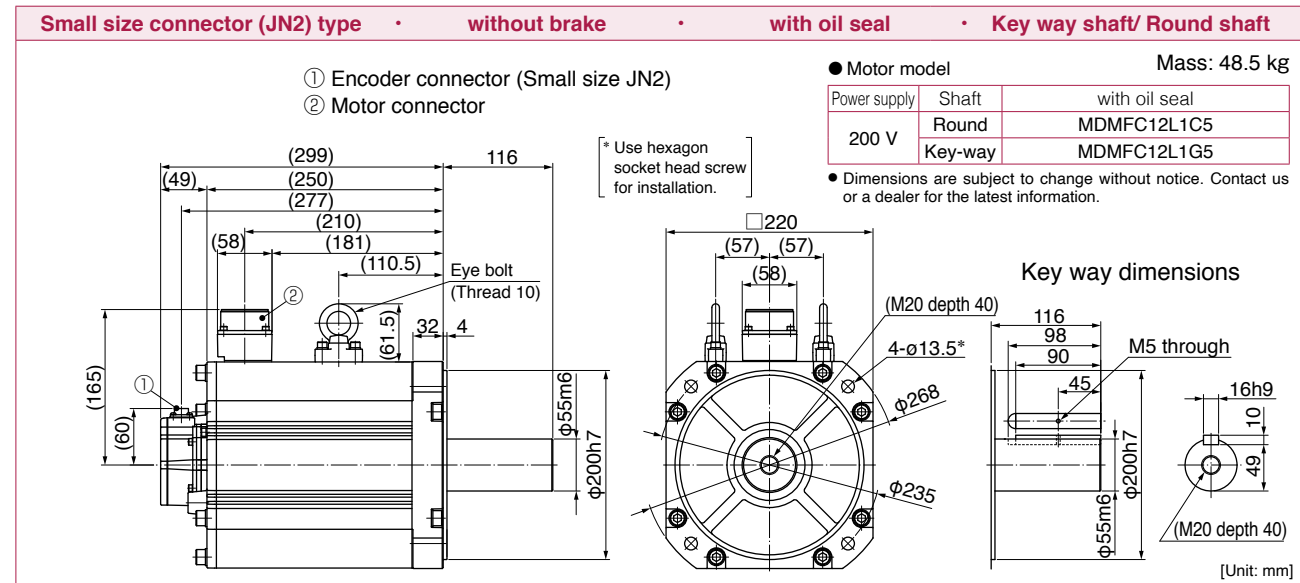
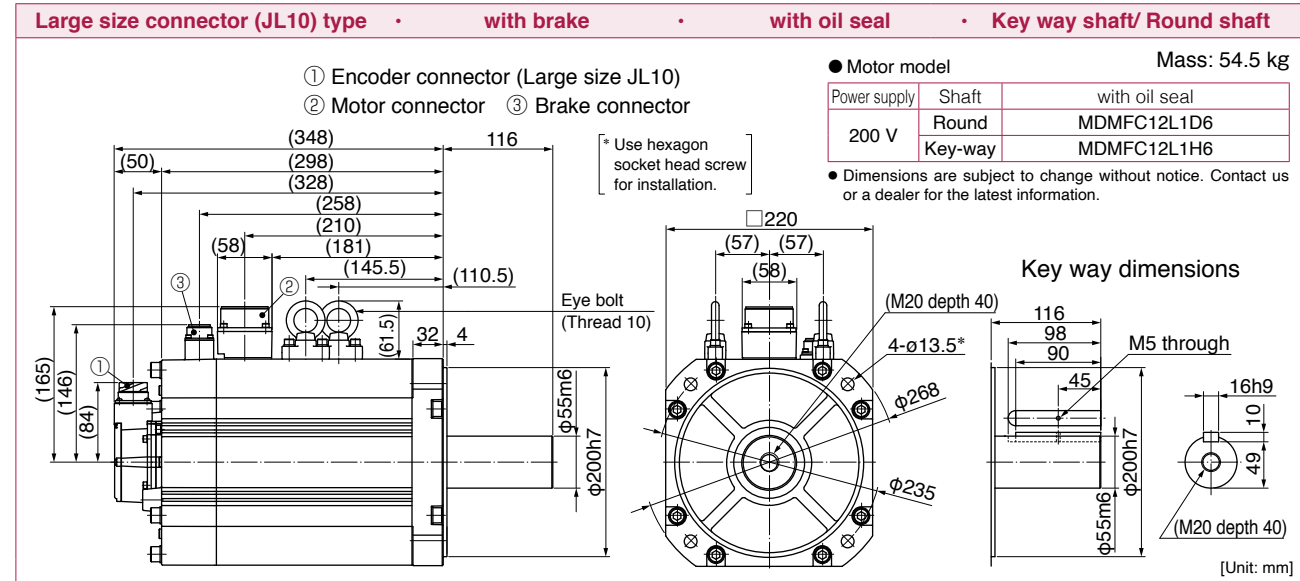


MDMF 11.0 kW



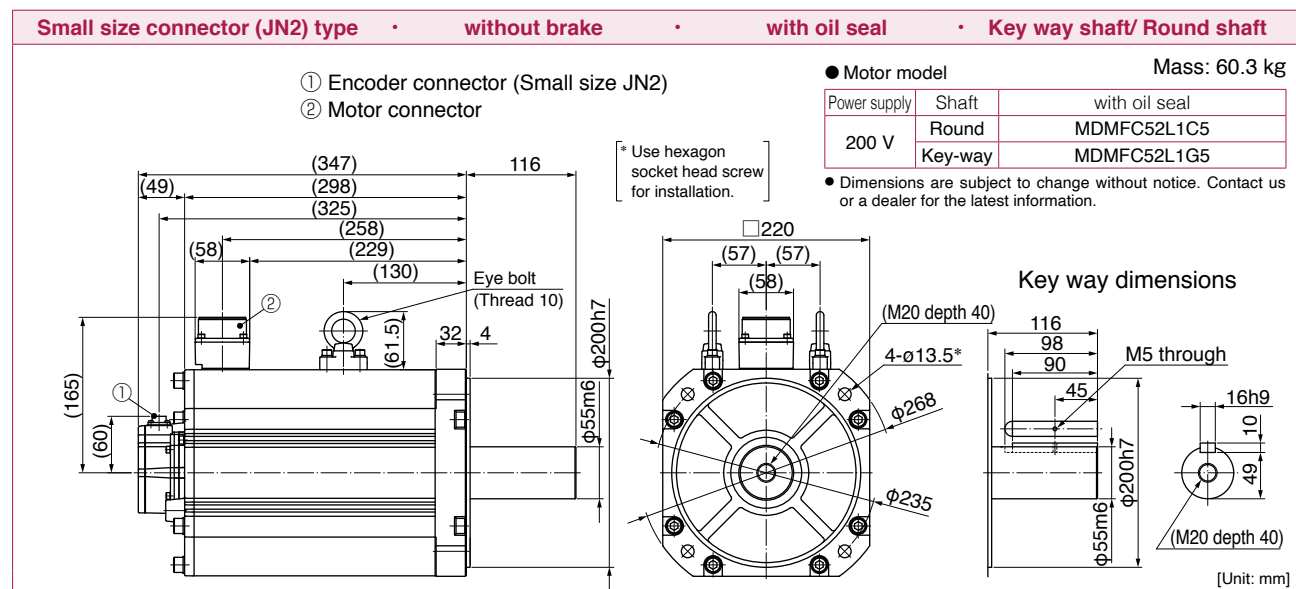
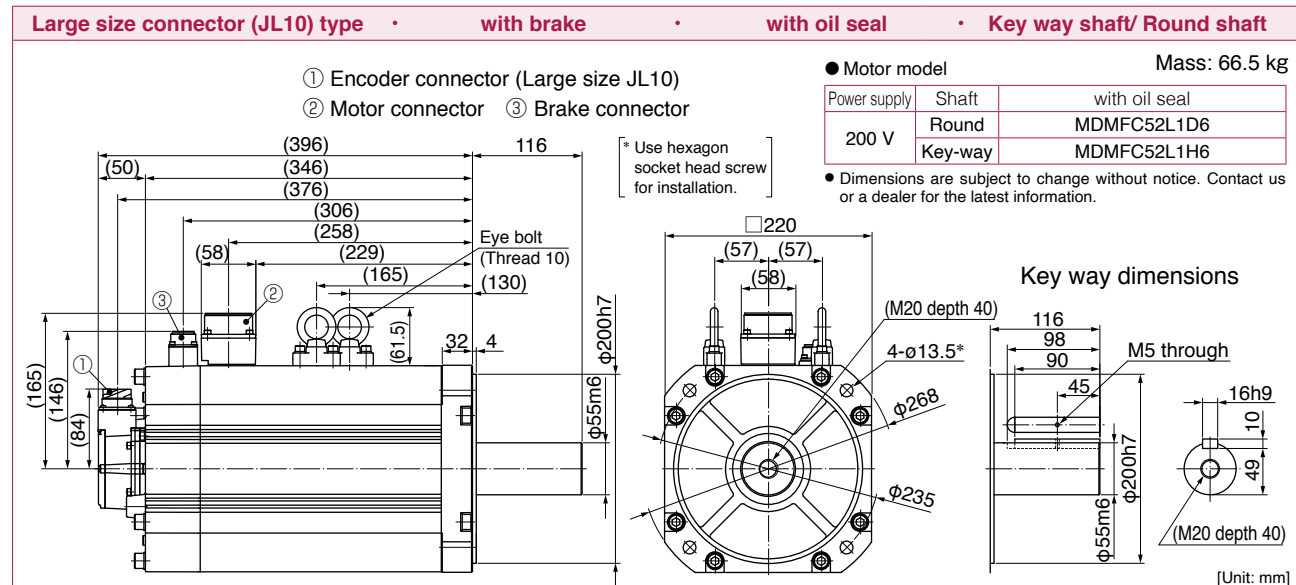
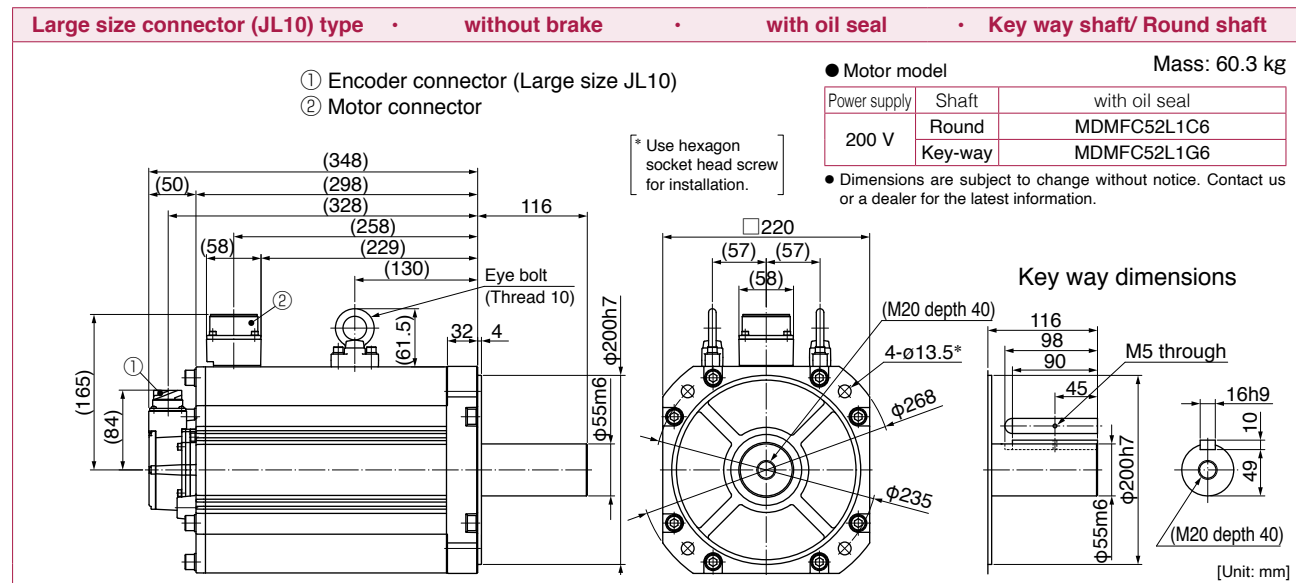
* For motors specifications, refer to P108, P109.

MDMF 11.0 kW



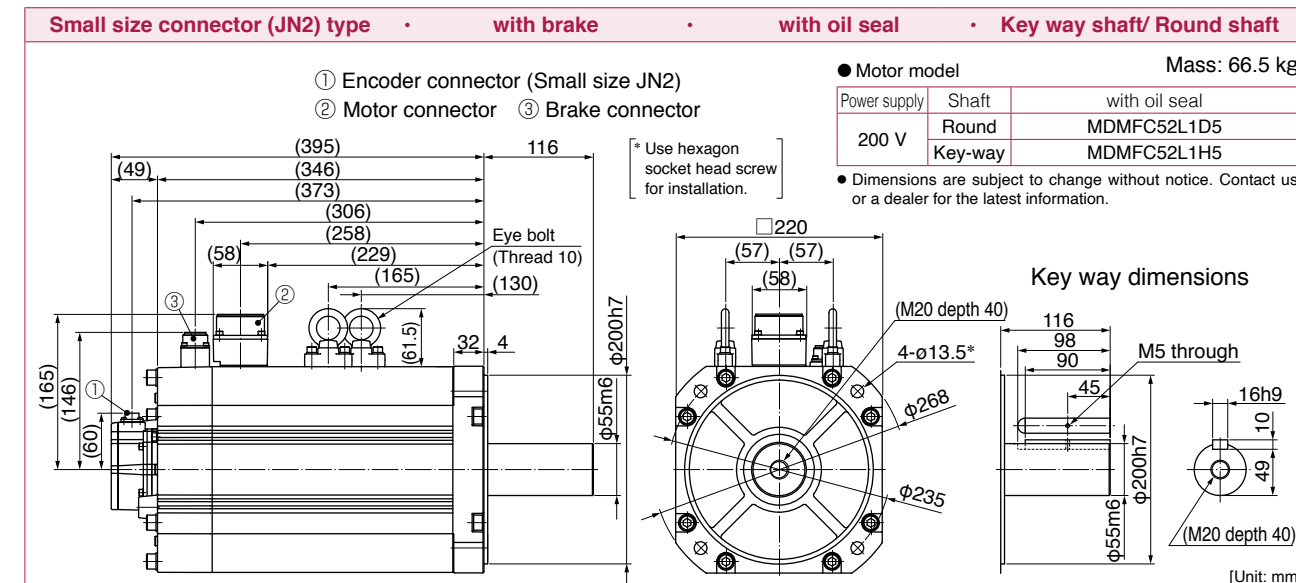
* For motors specifications, refer to P109.

MDMF 15.0 kW

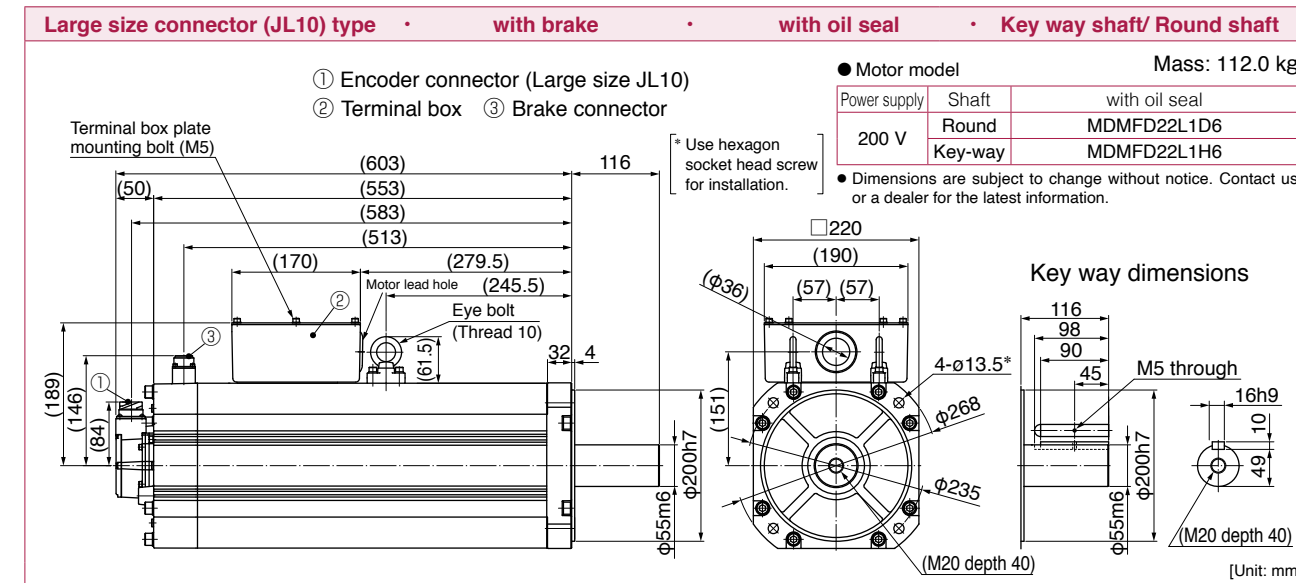
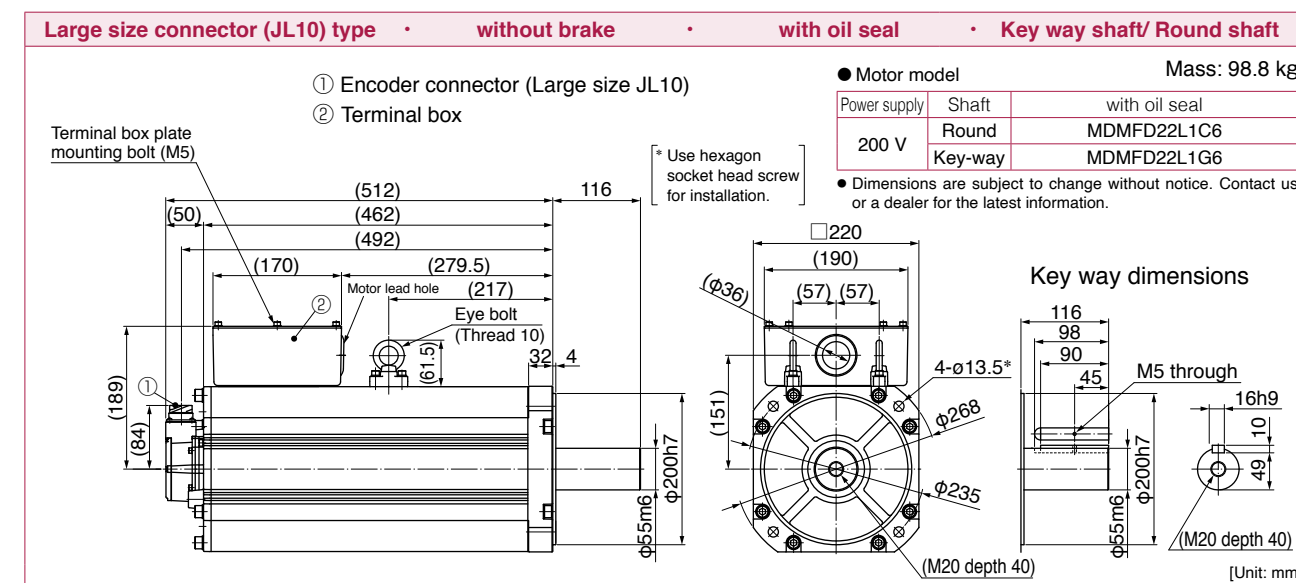


* For motors specifications, refer to P.110.

MDMF 15.0 kW



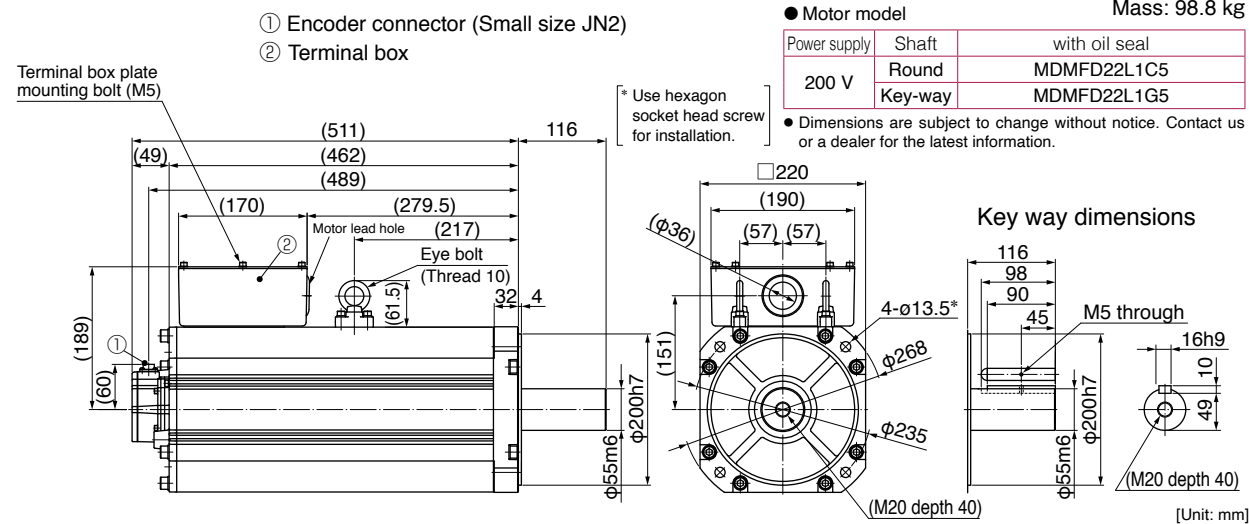
MDMF 22.0 kW



* For motors specifications, refer to P.110, P.111.

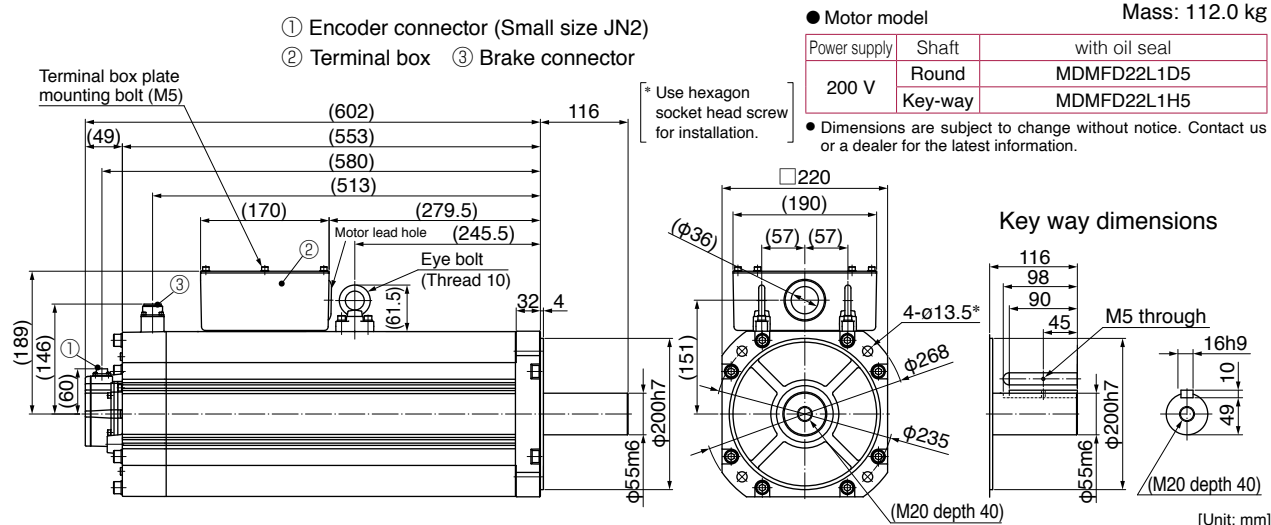
MDMF 22.0 kW

Small size connector (JN2) type • without brake • with oil seal • Key way shaft/ Round shaft



[Unit: mm]

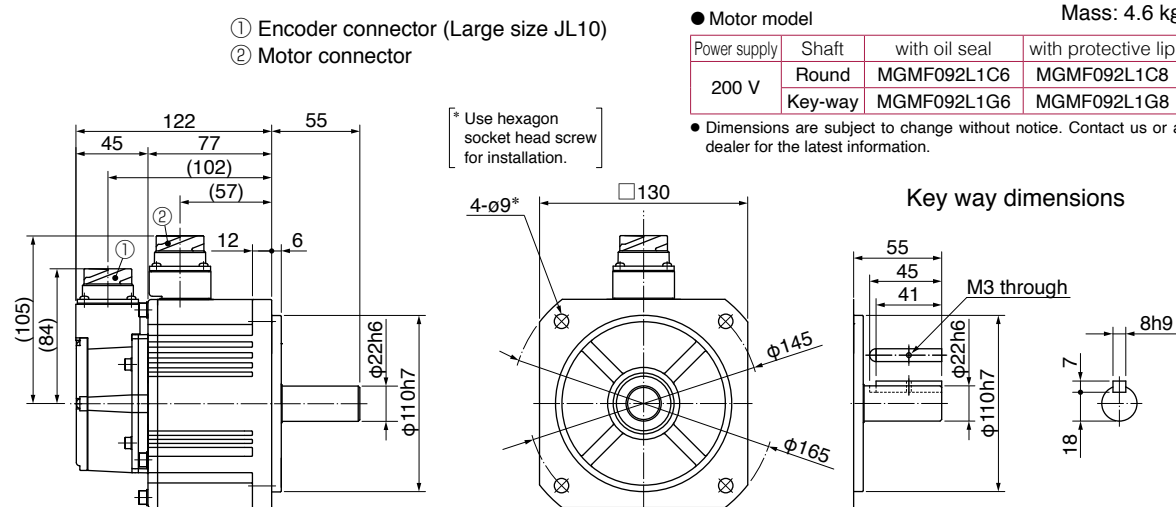
Small size connector (JN2) type	•	with brake	•	with oil seal	•	Key way shaft/ Round shaft
---------------------------------	---	------------	---	---------------	---	----------------------------



[Unit: mm]

MGMF 0.85 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

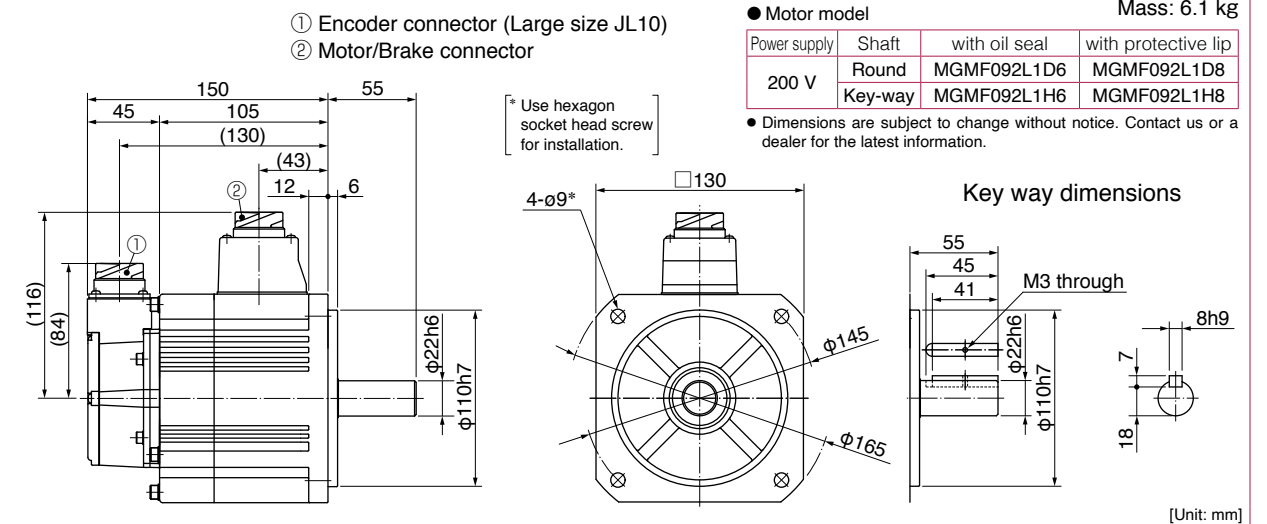


[Unit: mm]

* For motors specifications, refer to P.111, P.112.

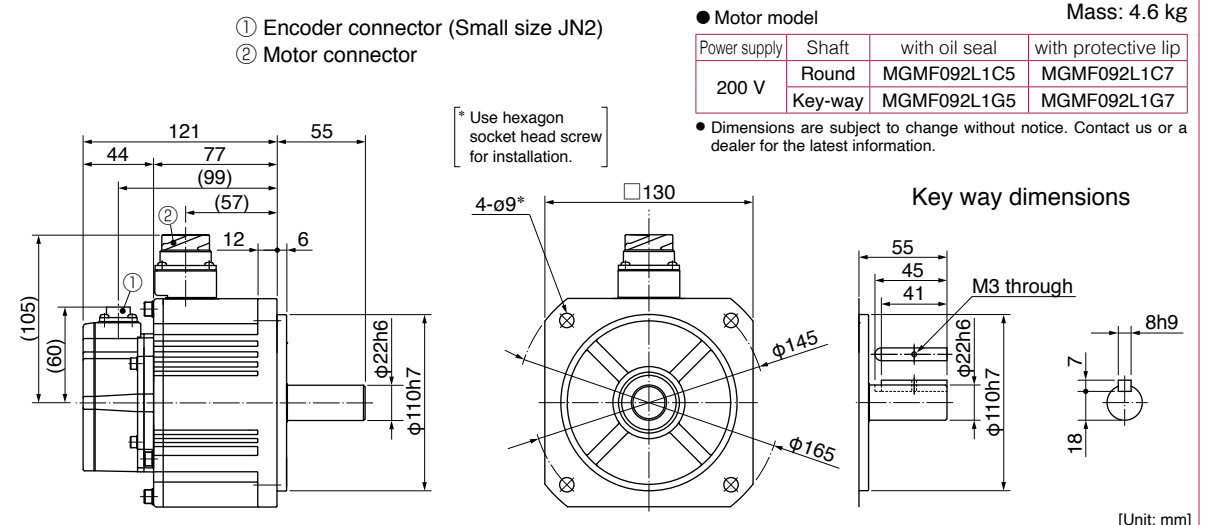
MGMF 0.85 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



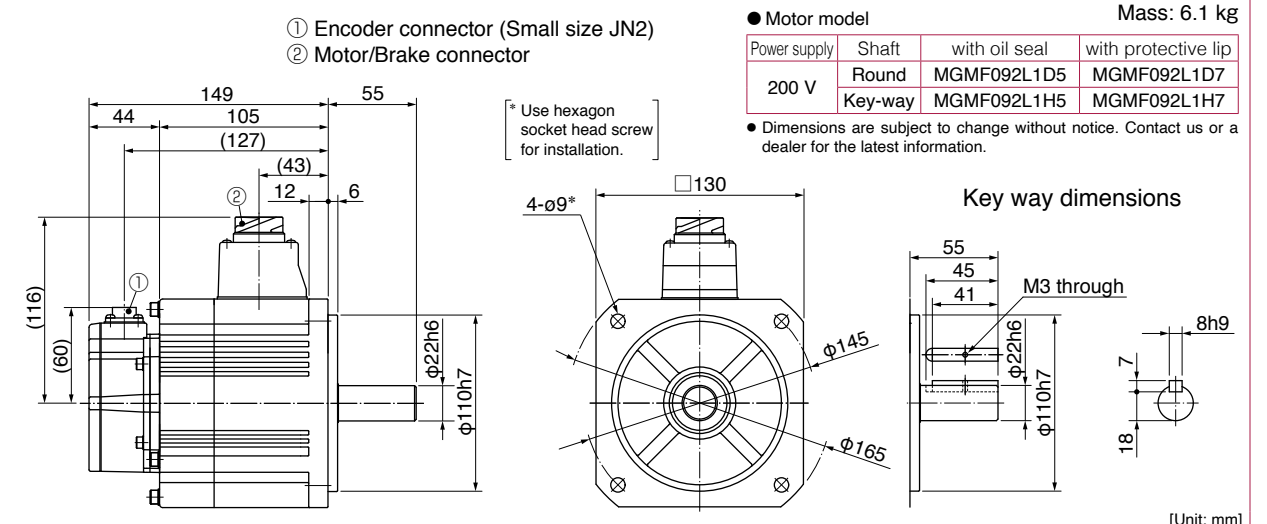
Unit: mm]

Small size connector (JN2) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



Unit: mm1

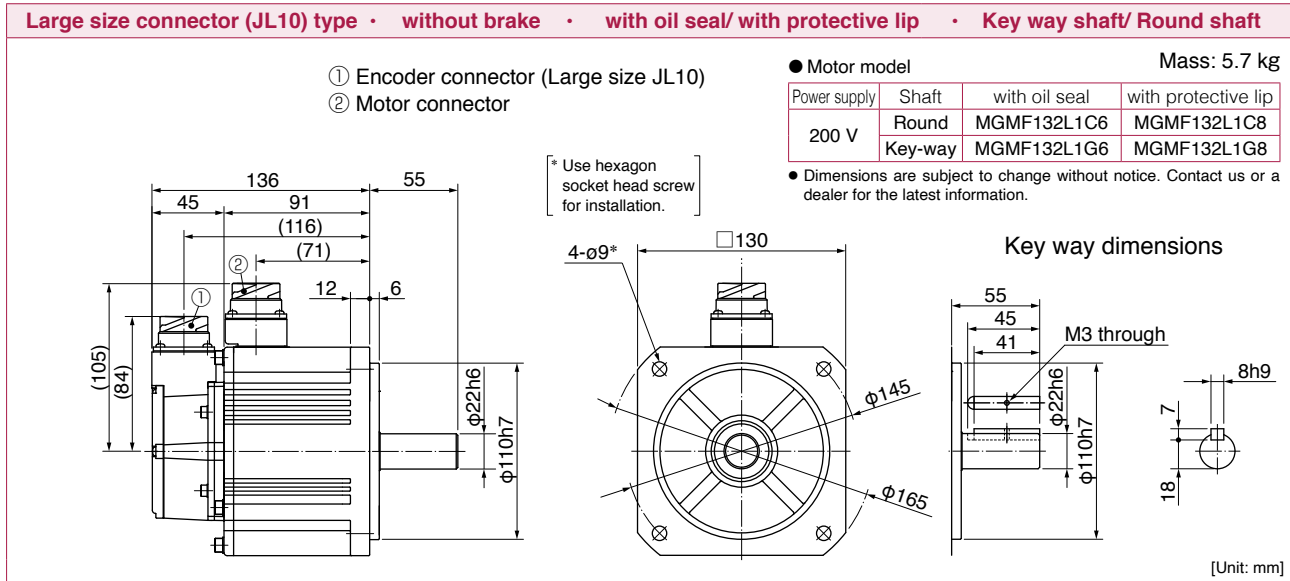
Small size connector (JN2) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



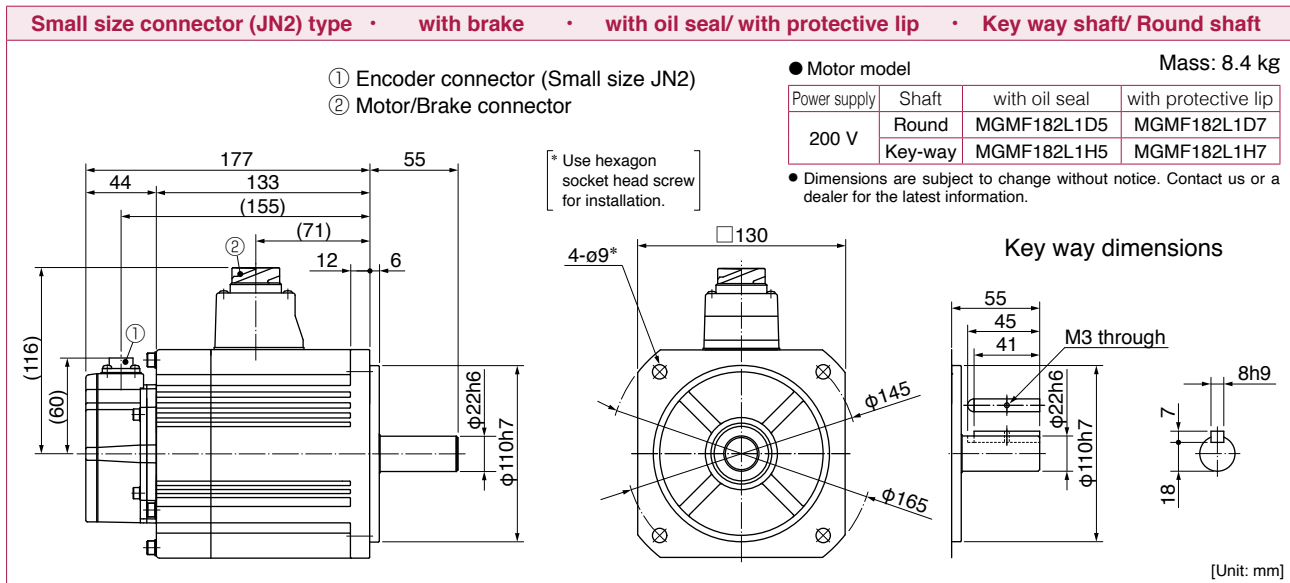
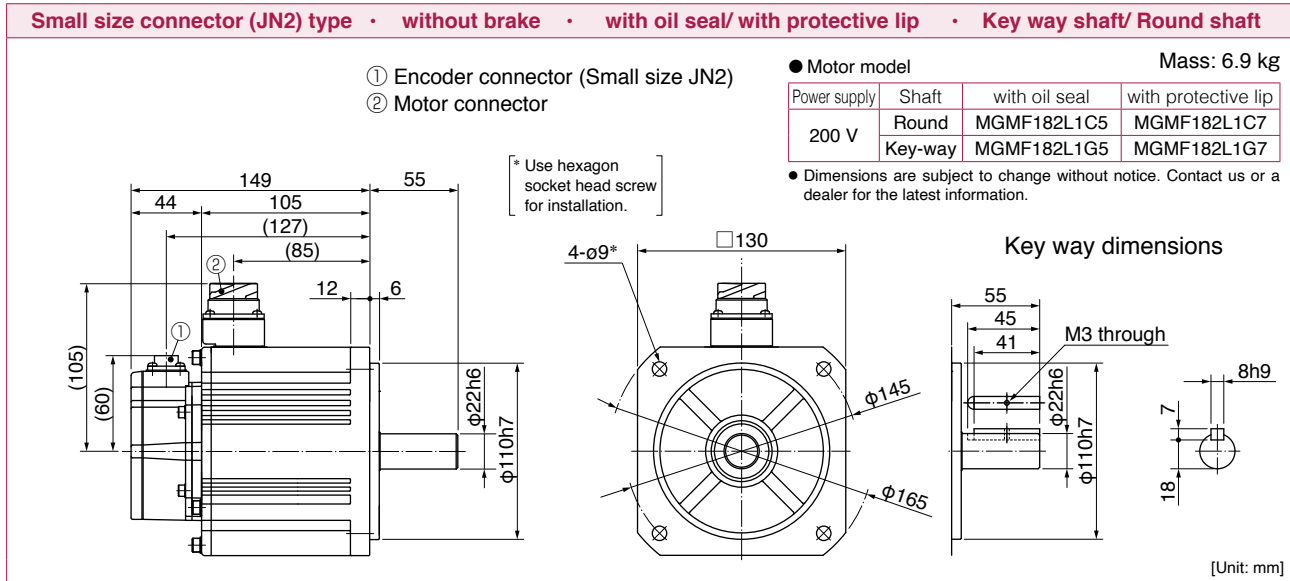
Unit: mm]

* For motors specifications, refer to P.112.

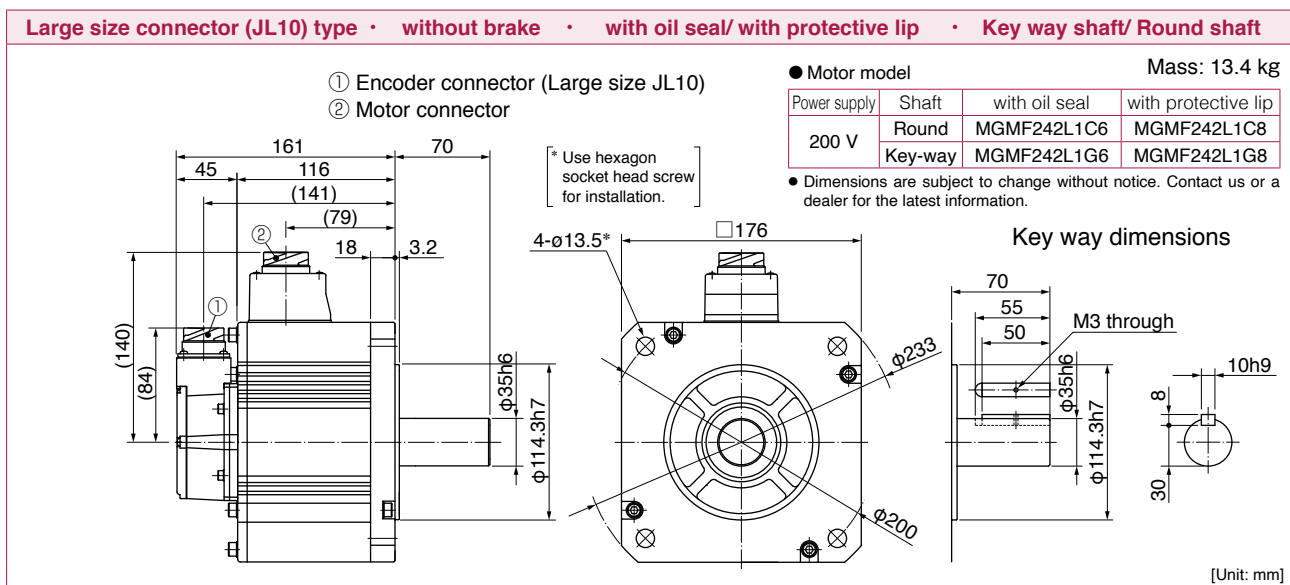
MGMF 1.3 kW



MGMF 1.8 kW

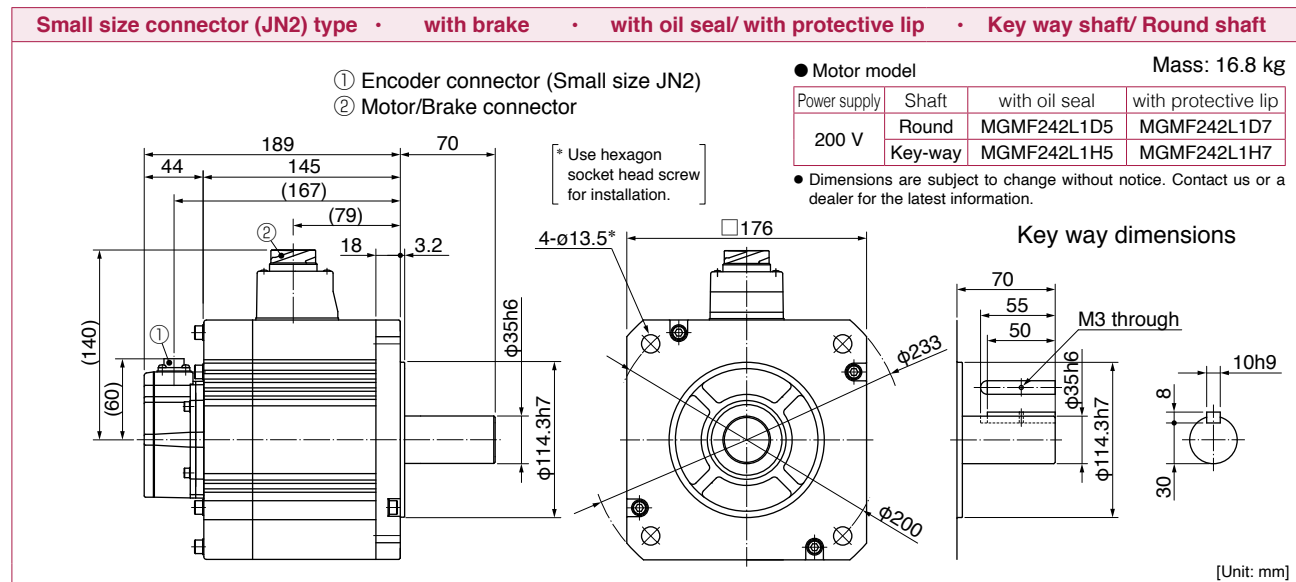
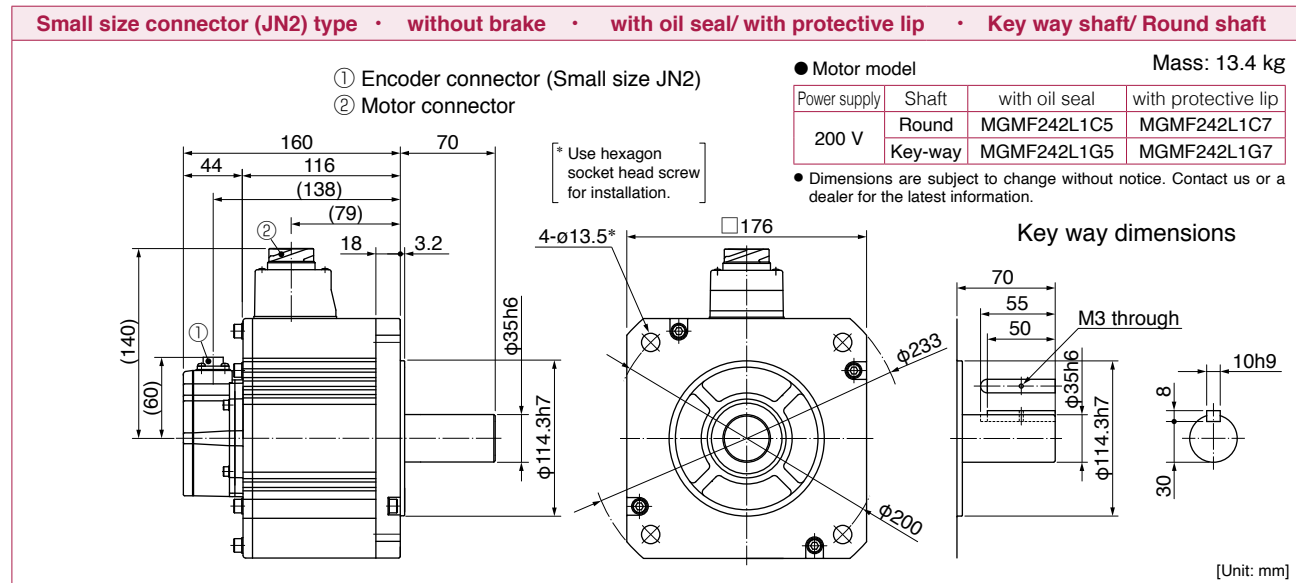
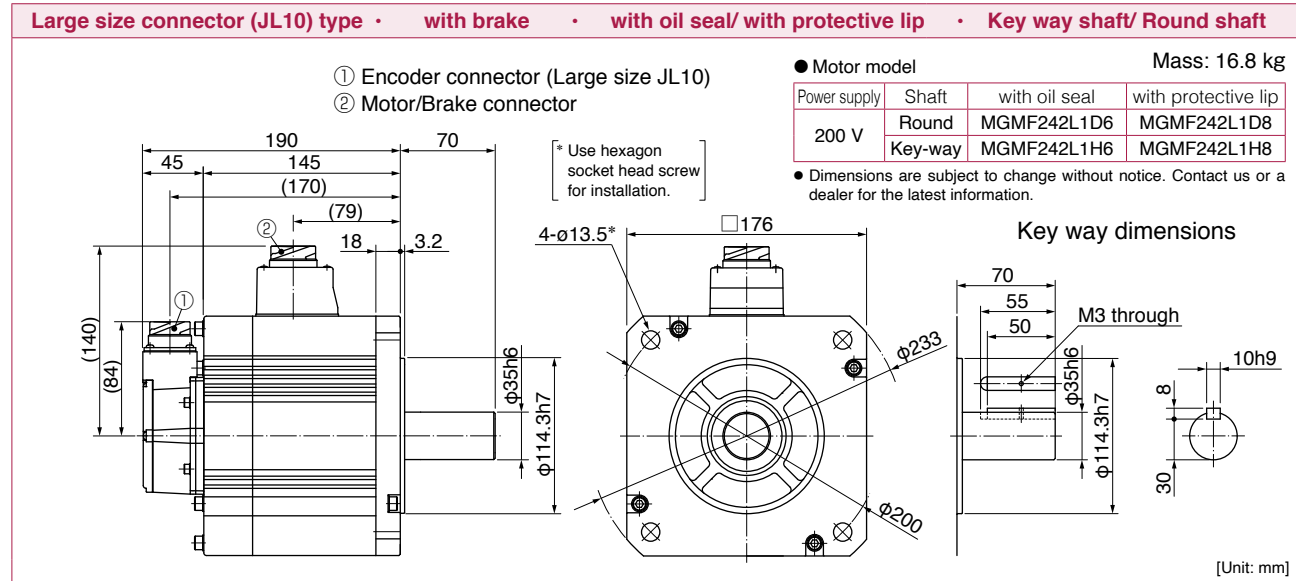


MGMF 2.4 kW



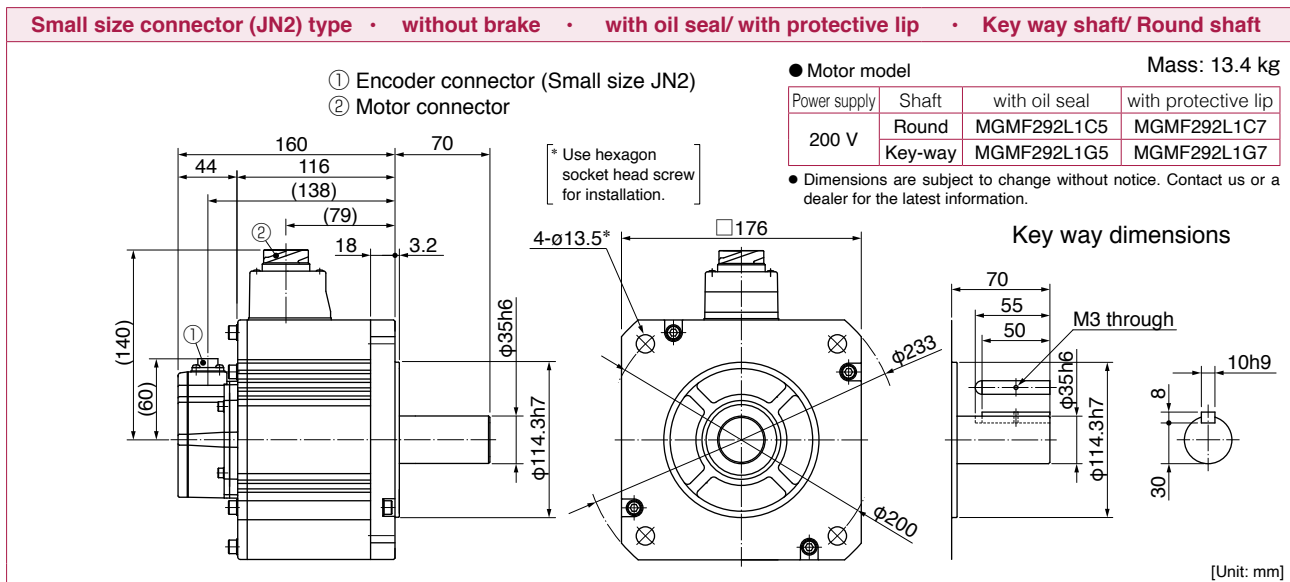
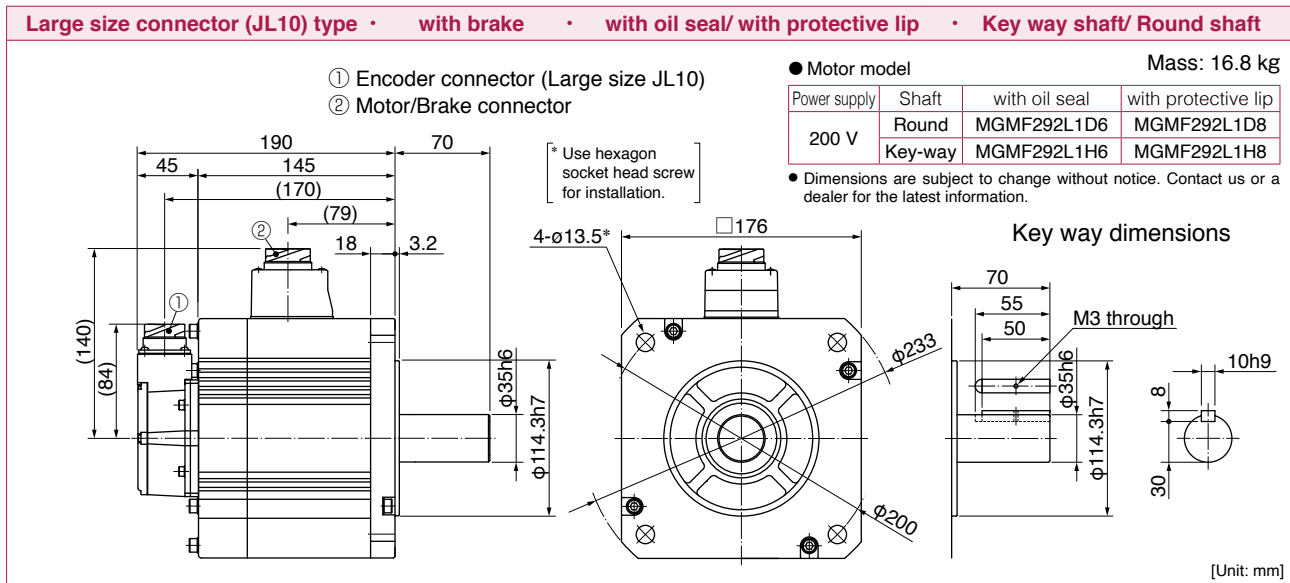
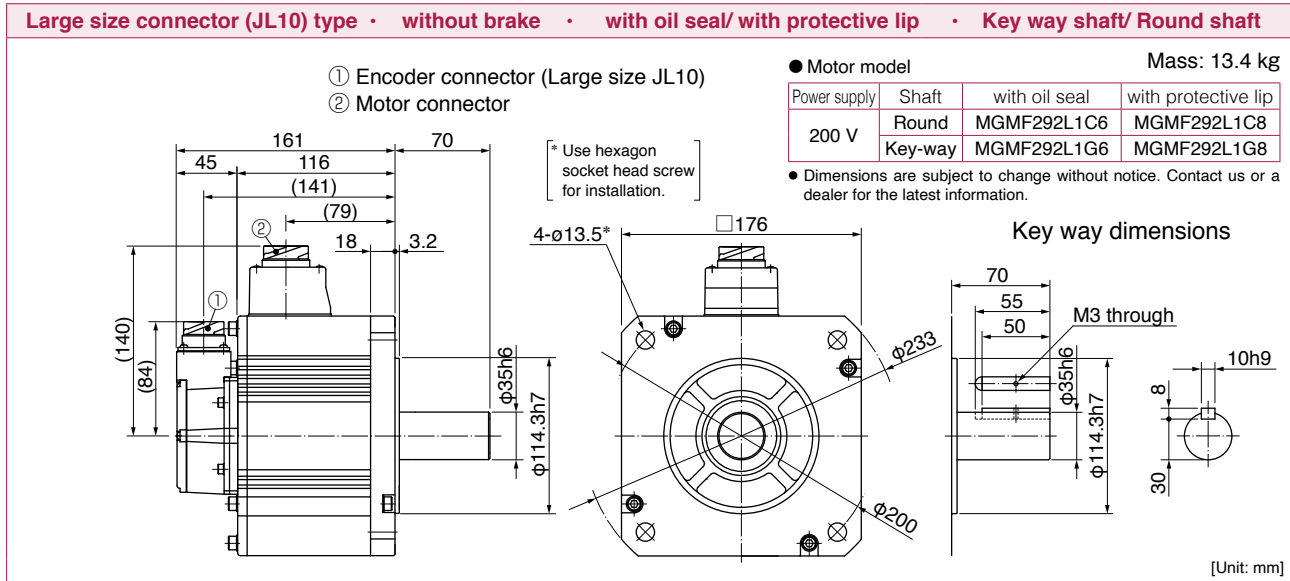
* For motors specifications, refer to P.114, P.115.

MGMF 2.4 kW



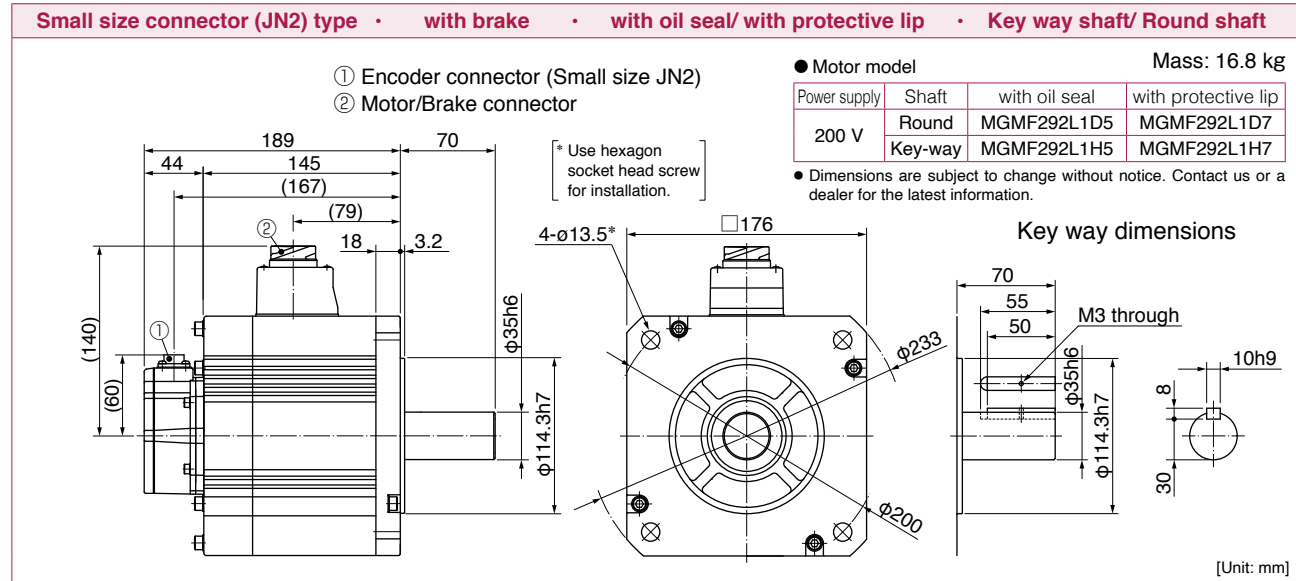
* For motors specifications, refer to P.115.

MGMF 2.9 kW

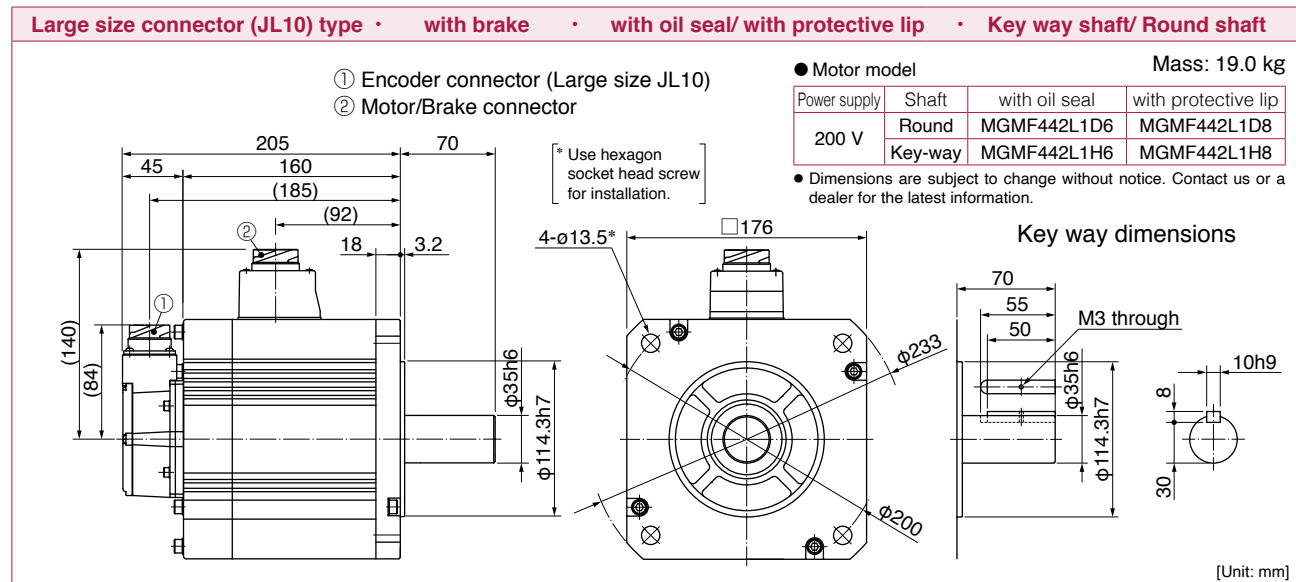
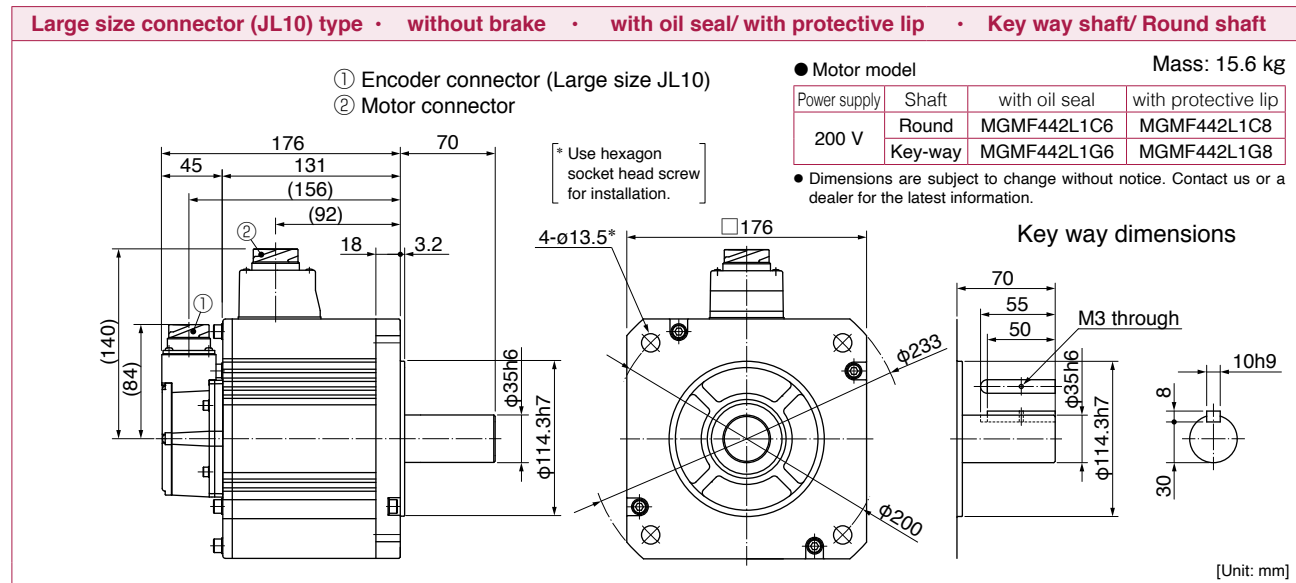


* For motors specifications, refer to P.116.

MGMF 2.9 kW

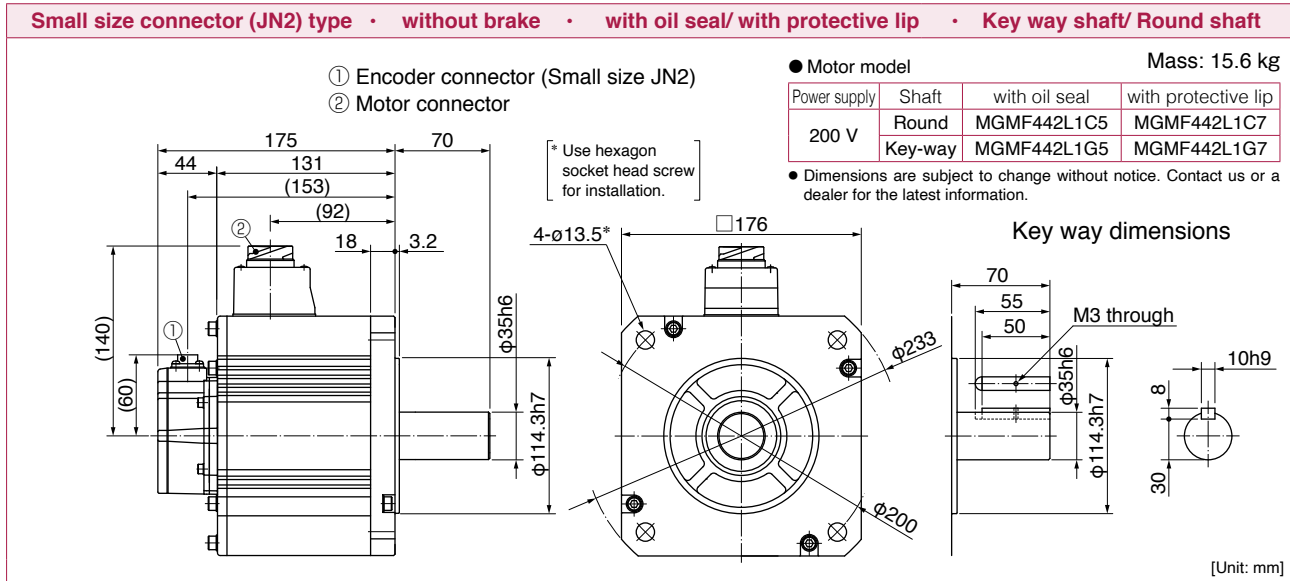


MGMF 4.4 kW



* For motors specifications, refer to P.116, P.117.

MGMF 4.4 kW



Features

- Line-up IP67 motor: 1.0 kW to 7.5 kW
- Max speed: 6500r/min (MHMF 50 W to 400 W)
- Low inertia (MSMF) to High inertia (MHMF).
- Low cogging torque: Rated torque ratio 0.5 % (typical value).
- 23-bit absolute encoder (8388608 pulse).

Motor Lineup

80 mm sq. or less



MSMF
Low inertia

Max. speed : 6000 r/min
Rated speed : 3000 r/min
Rated output : 50 W to 1000 W
Enclosure: IP65: Leadwire type



MQMF
(Flat type)
Middle inertia

Max. speed : 6500 r/min
Rated speed : 3000 r/min
Rated output : 100 W to 400 W
Enclosure: IP65: Leadwire type



MHMF
High inertia

Max. speed : 6500 r/min
6000 r/min (750 W,1000 W)
Rated speed : 3000 r/min
Rated output : 50 W to 1000 W
Enclosure: IP65: Leadwire type

100 mm sq. or more



MSMF
Low inertia

Max. speed : 5000 r/min
4500 r/min (4.0 kW,5.0 kW)
Rated speed : 3000 r/min
Rated output : 1.0 kW to 5.0 kW
Enclosure : IP67



MDMF
Middle inertia

Max. speed : 3000 r/min
Rated speed : 2000 r/min
: 1500 r/min (7.5 kW)
Rated output : 1.0 kW to 7.5 kW
Enclosure : IP67



MGMF
(Low speed/ High torque type)
Middle inertia

Max. speed : 3000 r/min
Rated speed : 1500 r/min
Rated output : 0.85 kW to 5.5 kW
Enclosure : IP67



MHMF
High inertia

Max. speed : 3000 r/min
Rated speed : 2000 r/min
: 1500 r/min (7.5 kW)
Rated output : 1.0 kW to 7.5 kW
Enclosure : IP67

Special Order Product
Motor Contents

MSMF (200 V)
50 W to 5.0 kW P.211

MQMF (200 V)
100 W to 400 W P.223

MHMF (200 V)
50 W to 7.5 kW P.226

MDMF (200 V)
1.0 kW to 7.5 kW..... P.239

MGMF (200 V)
0.85 kW to 5.5 kW P.246

Dimensions

MSMF (50 W to 1000 W).....	P.253
MSMF (1.0 kW to 5.0 kW).....	P.257
MQMF (100 W to 400 W).....	P.261
MHMF (50 W to 1000 W).....	P.267
MHMF (1.0 kW to 7.5 kW).....	P.279
MDMF (1.0 kW to 7.5 kW).....	P.283
MGMF (0.85 kW to 5.5kW).....	P.288

Motor Specification
Description

Environmental Conditions	P.303
Notes on [Motor specification] page	P.303
Permissible Load at	
Output Shaft	P.304
Built-in Holding Brake	P.305

Refer to P.205 to P.210 for motor and driver combinations. * For combination of elements of model number, refer to Index P.411.

Servo Motor

"Oil seal with protective lip" option is not available for motors above 7.5 kW.

M S M F 5 A Z L 1 A 2 *Special specifications

① ② ③ ④ ⑤ ⑥ ⑦

① Type

Symbol	Type	
MSM	Low inertia	(50 W to 5.0 kW)
MQM	Middle inertia	(100 W to 400 W)
MDM	Middle inertia	(1.0 kW to 7.5 kW)
MGM	Middle inertia	(0.85 kW to 5.5 kW)
MHM	High inertia	(50 W to 7.5 kW)

② Series

Symbol	Series name
F	A6 Family

③ Motor rated output

Symbol	Rated output	Symbol	Rated output
5A	50 W	18	1.8 kW
01	100 W	20	2.0 kW
02	200 W	24	2.4 kW
04	400 W	29	2.9 kW
08	750 W	30	3.0 kW
09	0.85 kW, (130 mm sq.)	40	4.0 kW
		44	4.4 kW
10	1.0 kW	50	5.0 kW
13	1.3 kW	55	5.5 kW
15	1.5 kW	75	7.5 kW

④ Voltage specifications

Symbol	Specifications
2	200 V
Z	100 V/200 V common (50 W only)

⑤ Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

<Note>

When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

⑥ Design order

Symbol	Specifications
1	Standard

⑦ Motor specifications: 80 mm sq. or less Leadwire type IP65
MSMF 50 W to 1000 W

Symbol		Shaft		Holding brake		Oil seal	
		Round	Key-way, center tap	without	with	without	with
A	2	●		●		●	
B	2	●			●	●	
C	2	●		●			●
D	2	●			●		●
S	2		●	●		●	
T	2		●		●	●	
U	2		●	●			●
V	2		●		●		●

⑦ Motor specifications: 80 mm sq. or less Leadwire type IP65
MHMF 50 W to 1000 W, MQMF 100 W to 400 W

Symbol		Shaft		Holding brake		Oil seal		
		Round	Key-way, center tap	without	with	without	with	With protective lip
A	2	●		●		●		
B	2	●			●	●		
C	2	●		●			●	
C	4	●		●				●
D	2	●			●		●	
D	4	●			●			●
S	2		●	●		●		
T	2		●		●	●		
U	2		●	●			●	
U	4		●	●				●
V	2		●		●		●	
V	4		●		●			●

⑦ Motor specifications: 100 mm sq. or more Encoder connector : JL10 IP67
MSMF, MHMF, MDMF, MGMF

Symbol		Shaft		Holding brake		Oil seal	
		Round	Key-way	without	with	with	With protective lip
C	6	●		●		●	
C	8	●		●			●
D	6	●			●	●	
D	8	●			●		●
G	6		●	●		●	
G	8		●	●			●
H	6		●		●	●	
H	8		●		●		●

* Encoder connector JL10: Also applicable to screwed type

Servo Driver

"Basic" and "RS485 communication" types are not available for G-Frame drivers.

M A D L N 1 5 S E * * *Special specifications

① ② ③ ④ ⑤ ⑥ ⑦

① Frame symbol

Symbol	Frame	Symbol	Frame
MAD	A-Frame	MED	E-Frame
MBD	B-Frame	MFD	F-Frame
MCD	C-Frame	MGD	G-Frame
MDD	D-Frame		

② Series

Symbol	Series name
L	A6 Family

③ Safety Function

Symbol	Specifications
N	without the safety function
T	with the safety function

④ Max. current rating

Symbol	Current rating	Symbol	Current rating
0	6 A	8	60 A
1	8 A	9	80 A
2	12 A	A	100 A
3	22 A	B	120 A
4	24 A	C	160 A
5	40 A		

⑤ Supply voltage specifications

Symbol	Specifications
3	3-phase 200 V
5	Single/3-phase 200 V

⑥ I/f specifications

Symbol (specification)	Symbol	Specification
S (Analog/Pulse)	E	Basic type (Pulse train only)
	F	Multi function type (Pulse, analog, full-closed)
	G	RS485 communication type (Pulse train only)

⑦ Classification of type

<Cautions> Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

										Optional parts									
Motor series		Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi fancement type (Pulse, analog, full-closed)	A6 G series RS485 communication A6 SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Power capacity (at rated load) (kVA)			Encoder Cable Note)3		Motor Cable Note)3		Brake Cable Note)3	External Regenerative Resistor	Reactor (Single phase 3-phase)	Noise Filter (Single phase 3-phase)
												23-bit Absolute		without Brake	with Brake				
												Use in the absolute system (with battery box) Note)5	Use in the Incremental system (without battery box)						
Low inertia	MSMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 2M	211 253	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5		MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
			100	MSMF012L1 □ 2M	212 253	MADLT05SF	MADLN05S◇												
			200	MSMF022L1 □ 2M	213 254	MADLT15SF	MADLN15S◇												
			400	MSMF042L1 □ 2M	214 255	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9							DV0P4283	DV0P228 DV0P220	DV0PM20042	
			750	MSMF082L1 □ 2M	215 255	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.8										
			1000	MSMF092L1 □ 2M	216 256	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4										
Middle inertia Flat type	MQMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V	100	MQMF012L1 □ 2M MQMF012L1 □ 4M	223 261	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5		MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
			200	MQMF022L1 □ 2M MQMF022L1 □ 4M	224 263	MADLT15SF	MADLN15S◇												
			400	MQMF042L1 □ 2M MQMF042L1 □ 4M	225 265	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9						DV0P4283	DV0P228 DV0P220			
High inertia	MHMF (Leadwire type) 3000 r/min IP65	Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ 2M MHMF5AZL1 □ 4M	226 267	MADLT05SF	MADLN05S◇	A-frame ★	Approx. 0.5		MFECA 0 * * 0EAE (For fixed)	MFECA 0 * * 0EAD (For fixed)	MFMCA 0 * * 0EED	MFMCB 0 * * 0GET Note)6	DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042		
			100	MHMF012L1 □ 2M MHMF012L1 □ 4M	227 269	MADLT05SF	MADLN05S◇												
			200	MHMF022L1 □ 2M MHMF022L1 □ 4M	228 271	MADLT15SF	MADLN15S◇												
			400	MHMF042L1 □ 2M MHMF042L1 □ 4M	229 273	MBDLT25SF	MBDLN25S◇	B-frame ★	Approx. 0.9						DV0P4283	DV0P228 DV0P220	DV0PM20042		
			750	MHMF082L1 □ 2M MHMF082L1 □ 4M	230 275	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.8										
			1000	MHMF092L1 □ 2M MHMF092L1 □ 4M	231 277	MDDLT55SF	MDDLN55S◇	D-frame	Approx. 2.4										

★ : Frame-A and B drivers are not equipped with regenerative resistors.When regeneration occurs, please prepare an optional external regenerative resistor.

Note)1 □ : Represents the motor specifications. (refer to "Model designation" P204.)

Note)2 ◇ : Represents the driver specifications. (refer to "Model designation" P204.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EAE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number "DV0P2990" separately.

Note)6 Brake cable and motor cable are required for the motor with brake.

Motor										Driver		Power capacity (at rated load) (kVA)		Optional parts ▶ refer to P.306						
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6 SF series Multi function type (Pulse, analog, full-closed)	A6 SG series RS485 communication A6 SE series Basic (Pulse signal input) Note)2, Note)4	Frame	Encoder Cable Note)3,5		Motor Cable Note)3,5				External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter				
								JL10 (Large size) (One-touch lock type) N/MS screwed type)		JL10 (One-touch lock type) JL04 screwed type)										
								23-bit Absolute		without Brake	with Brake									
								Use in the absolute system (with battery box) Note)7	Use in the Incremental system (without battery box)											
								Fixed cable		Movable cable										
Low inertia	MSMF Large size JL10 type 3000 r/min IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □ 6M MSMF102L1 □ 8M	217 257	MDDLT55SF	MDDLN55S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222	DV0P4220				
			1500	MSMF152L1 □ 6M MSMF152L1 □ 8M	218 257	MDDLT55SF	MDDLN55S◇		Approx. 2.9						DV0PM20047 / DV0P222					
		3-phase 200 V	2000	MSMF202L1 □ 6M MSMF202L1 □ 8M	219 258	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MSMF302L1 □ 6M MSMF302L1 □ 8M	220 259	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	DV0P224	DV0P3410					
			4000	MSMF402L1 □ 6M MSMF402L1 □ 8M	221 259	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8					MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT		DV0P225				
			5000	MSMF502L1 □ 6M MSMF502L1 □ 8M	222 260	MFDLTB3SF	MFDLNB3S◇													
Middle inertia	MDMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □ 6M MDMF102L1 □ 8M	239 283	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222	DV0P4220				
			1500	MDMF152L1 □ 6M MDMF152L1 □ 8M	240 284	MDDLT55SF	MDDLN55S◇		Approx. 2.9						DV0PM20047 / DV0P222					
		3-phase 200 V	2000	MDMF202L1 □ 6M MDMF202L1 □ 8M	241 285	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MDMF302L1 □ 6M MDMF302L1 □ 8M	242 285	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT	DV0P224	DV0P3410			
			4000	MDMF402L1 □ 6M MDMF402L1 □ 8M	243 286	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8							DV0P225					
			5000	MDMF502L1 □ 6M MDMF502L1 □ 8M	245 287	MFDLTB3SF	MFDLNB3S◇													
	MGMF Large size JL10 type (Low speed/ High torque type) 1500 r/min IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □ 6M MGMF092L1 □ 8M	246 288	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.0	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P221	DV0P4220				
			1300	MGMF132L1 □ 6M MGMF132L1 □ 8M	247 289	MDDLT55SF	MDDLN55S◇		Approx. 2.6						DV0PM20047 / DV0P222					
		3-phase 200 V	1800	MGMF182L1 □ 6M MGMF182L1 □ 8M	248 289	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.4			DV0P4285 Note)6	DV0P223	DV0P224	DV0PM20043					
			2400	MGMF242L1 □ 6M MGMF242L1 □ 8M	249 290	MEDLT93SF	MEDLN93S◇		F-frame				Approx. 4.5			MFMCE 0 * * 3EUT MFMCE 0 * * 3ECT	MFMCD 0 * * 3FUT MFMCD 0 * * 3FCT			
			2900	MGMF292L1 □ 6M MGMF292L1 □ 8M	250 291	MFDLTB3SF	MFDLNB3S◇	Approx. 5.0					MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT			MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT	DV0P4285 ×2 in parallel	DV0P225	DV0P3410	
			4400	MGMF442L1 □ 6M MGMF442L1 □ 8M	251 291	MFDLTB3SF	MFDLNB3S◇						Approx. 7.0							
High inertia	MHMF Large size JL10 type 2000 r/min IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □ 6M MHMF102L1 □ 8M	232 279	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 2.4	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	MFMCD 0 * * 2EUD MFMCD 0 * * 2ECD	MFMCA 0 * * 2FUD MFMCA 0 * * 2FCD	DV0P4284	DV0P228 / DV0P222	DV0P4220				
			1500	MHMF152L1 □ 6M MHMF152L1 □ 8M	233 279	MDDLT55SF	MDDLN55S◇		Approx. 2.9						DV0PM20047 / DV0P222					
		3-phase 200 V	2000	MHMF202L1 □ 6M MHMF202L1 □ 8M	234 280	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8			DV0P4285 Note)6	DV0P223	DV0PM20043						
			3000	MHMF302L1 □ 6M MHMF302L1 □ 8M	235 281	MFDLTA3SF	MFDLNA3S◇		F-frame				Approx. 5.2	MFMCE 0 * * 2EUD MFMCE 0 * * 2ECD	MFMCE 0 * * 2FUD MFMCE 0 * * 2FCD	DV0P224	DV0P3410			
			4000	MHMF402L1 □ 6M MHMF402L1 □ 8M	236 281	MFDLTB3SF	MFDLNB3S◇	Approx. 7.8					MFMCA 0 * * 3EUT MFMCA 0 * * 3ECT	MFMCA 0 * * 3FUT MFMCA 0 * * 3FCT	DV0P225					
			5000	MHMF502L1 □ 6M MHMF502L1 □ 8M	237 282	MFDLTB3SF	MFDLNB3S◇													

Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.204.)

Note)2 ◇ : Represents the driver specifications. (refer to “Model designation” P.204.)

Note)3 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030EPE

Note)4 Because A6SE series driver (dedicated for position control) does not support the absolute system specification, only incremental system can be used in combination.

Note)5 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)6 For other possible combinations, refer to P.343.

Note)7 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

Motor					Driver			Power capacity at rated load (kVA)		Optional parts ▶ refer to P.306							
Motor series	Power supply	Output (W)	Part No. Note)1	Rating/ Spec. Dimensions (page)	A6SF series Multi function type Pulse, analog, full-closed	A6SG series RS485 communication A6SE series Basic (Pulse signal input)	Frame			Encoder Cable Note)2,3		Motor Cable		External Regenerative Resistor	Reactor (Single phase / 3-phase)	Noise Filter	
										JL10 (Large size) One-touch lock type N/MS screwed type		Note)6					
										23-bit Absolute		without Brake	with Brake				
										Use in the absolute system (with battery box) Note)4	Use in the Incremental system (without battery box)						
										Fixed cable							
Middle inertia	MDMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MDMF752L1 □ 6M	245 287	MGDLTC3SF	—	G-frame	Approx. 11		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6	DV0P4285 ×3 in parallel	— Note)5	HF3080C-SZA (Recommended components) P.383
	MGMF Large size JL10 type Low speed/ High torque type 1500 r/min IP67	3-phase 200 V	5500	MGMF552L1 □ 6M	252 292	MGDLTC3SF	—	G-frame	Approx. 8.5		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6	DV0P4285 ×3 in parallel	— Note)5	HF3080C-SZA (Recommended components) P.383
High inertia	MHMF Large size JL10 type 1500 r/min IP67	3-phase 200 V	7500	MHMF752L1 □ 6M	238 283	MGDLTC3SF	—	G-frame	Approx. 11		MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	Note)6	Note)6		— Note)5	HF3080C-SZA (Recommended components) P.383

■ About dynamic brake

G frame is built in / external, H frame is external

Built-in / {external} The standard of the dynamic brake resistance's capability is up to three consecutive emergency stops from the rated speed at the maximum allowable inertia (load inertia moment ratio 10 times the rotor inertia moment). If it is used under more conditions, the resistance may be broken and the dynamic brake may not operate.

Recommended resistance: 1.2 Ω 400 W or more × 3 pieces

For inquiries: Iwaki Musen Kenkyusho Co.,Ltd. Tel: +81-44-833-4311

■ Connector kit (option) Component parts Note)6												
Motor	Driver		Option No. Connector Kit for motor, encoder connection	Encoder Cable		Motor Cable		Brake Cable				
	Frame	Connection terminal		Motor side	Driver side	Motor side	Driver side	Motor side	Power supply for brake			
MDMF 7.5 kW MGMF 5.5 kW MHMF 7.5 kW	G	M5	DV0PM20107	Large size connector One-touch lock type	For Connector X6	Connector Screwed type	(to be supplied by customer) M5 Round terminal	not included	(to be supplied by customer)			
			DV0PM20108					Connector Screwed type				
			DV0PM20111	Large size connector Screwed type				not included				
			DV0PM20112					Connector Screwed type				

Note)1 □ : Represents the motor specifications. (refer to “Model designation” P.204.)

Note)2 * * : Represents the cable length (03/3 m, 05/5 m, 10/10 m, 20/20 m). Example. 3 m/MFECA0030ETE

Note)3 Use of JL10 type encoder cables and motor cables enable one-touch lock connections. Conventional screwed type N/MS and JL04V type cables can also be used.

Note)4 Please note that a battery is not supplied together with 23-bit absolute encoder cable (with battery box). Please buy the battery part number “DV0P2990” separately.

Note)5 Please prepare reactor for customer.

Note)6 We recommend purchasing an optional connector kit.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF5AZL1□□M
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.16
Momentary Max. peak torque		(N·m)	0.48
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	4.7
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4281	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.026
		With brake	0.029
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

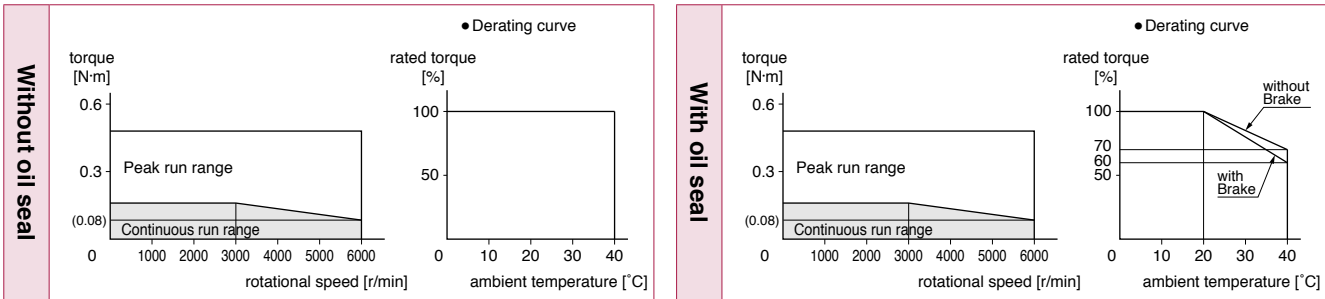
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.253		—	P.253		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF012L1□□M
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.32
Momentary Max. peak torque		(N·m)	0.95
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	4.7
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4281	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.048
		With brake	0.051
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

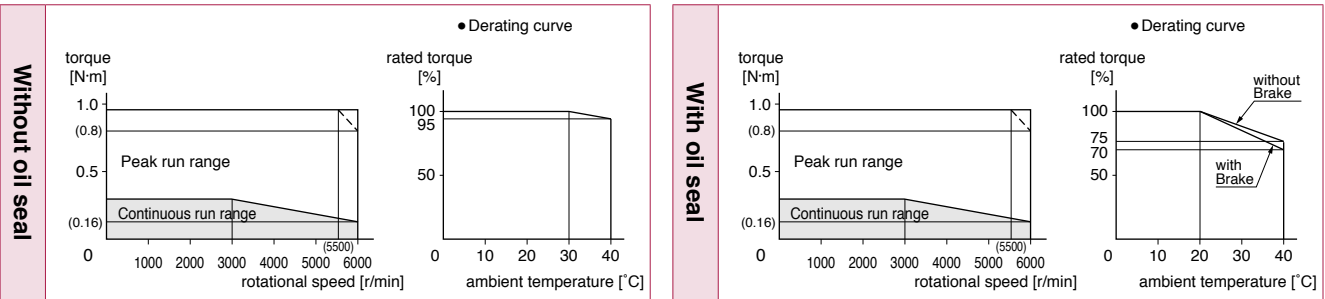
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.253		—	P.254		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF022L1□□M
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.64
Momentary Max. peak torque		(N·m)	1.91
Rated current		(A(rms))	1.5
Max. current		(A(o-p))	6.5
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.14
		With brake	0.17
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

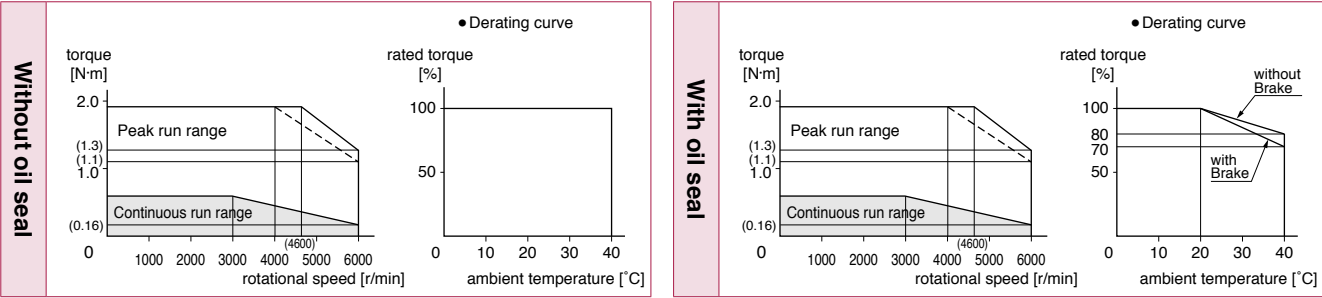
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.57.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.254		—	P.254		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF042L1□□M
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type ^{*2}	MBDLN25SG
		Basic type ^{*2}	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.27
Momentary Max. peak torque		(N·m)	3.82
Rated current		(A(rms))	2.4
Max. current		(A(o-p))	10.2
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.27
		With brake	0.30
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

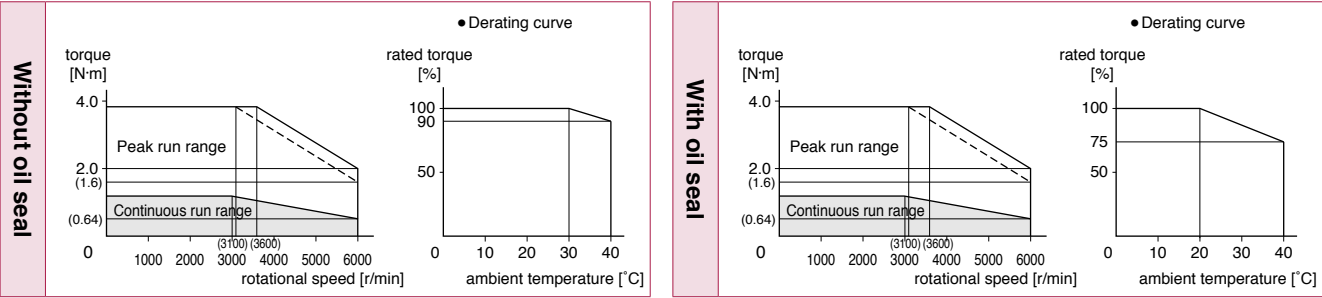
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.57.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.255		—	P.255		—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF082L1□□M
Applicable driver	Model No.	Multifunction type	MCDLT35SF
		RS485 communication type ^{*2}	MCDLN35SG
		Basic type ^{*2}	MCDLN35SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	1.8
Rated output		(W)	750
Rated torque		(N·m)	2.39
Continuous stall torque		(N·m)	2.39
Momentary Max. peak torque		(N·m)	7.16
Rated current		(A(rms))	4.1
Max. current		(A(o-p))	17.4
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4283	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.96
		With brake	1.06
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}		20 times or less	
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

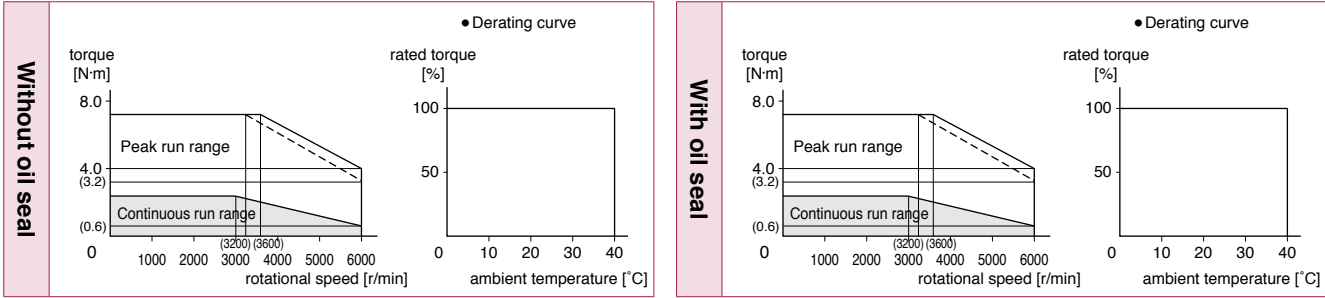
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.255			P.256		
	—			—		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF092L1□□M
Applicable driver	Model No.	Multifunction type	MDDLT45SF
		RS485 communication type ^{*2}	MDDLN45SG
		Basic type ^{*2}	MDDLN45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.18
Momentary Max. peak torque		(N·m)	9.55
Rated current		(A(rms))	5.7
Max. current		(A(o-p))	24.2
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	1.26
		With brake	1.36
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

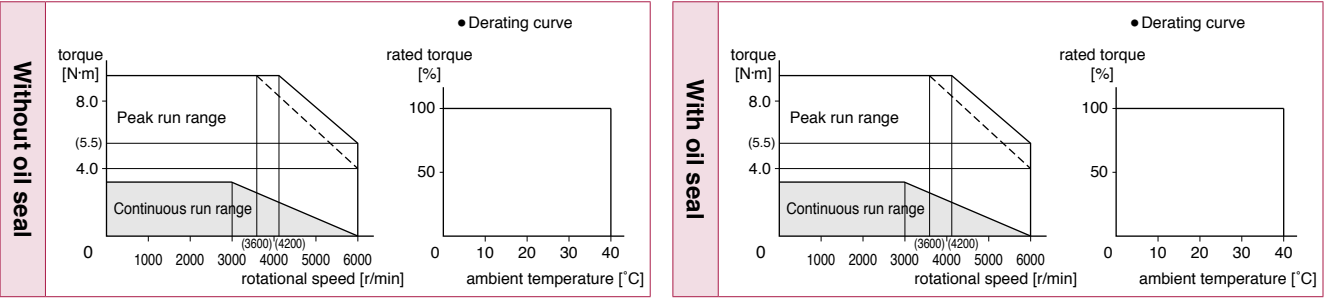
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.80 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.256			P.256		
	—			—		

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
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• Please contact us for more information.

Specifications

			AC200 V
Motor model *1			MSMF102L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type *2	MDDL N55SG
		Basic type *2	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.82
Momentary Max. peak torque		(N·m)	9.55
Rated current		(A(rms))	6.6
Max. current		(A(o-p))	28
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	2.15
		With brake	2.47
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

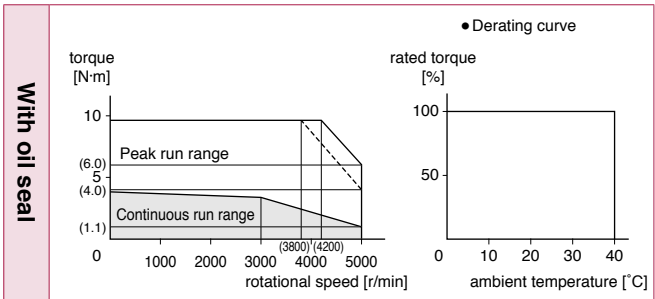
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.257		—	P.257	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MSMF152L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.72
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	8.2
Max. current		(A(o-p))	35
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	3.10
		With brake	3.45
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

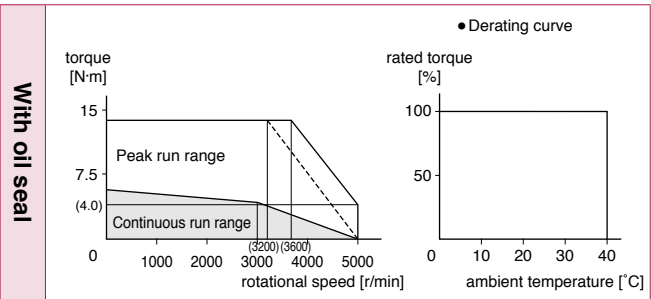
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.257		—	P.258	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MSMF202L1□□M
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	6.37
Continuous stall torque		(N·m)	7.64
Momentary Max. peak torque		(N·m)	19.1
Rated current		(A(rms))	11.3
Max. current		(A(o-p))	48
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	4.06
		With brake	4.41
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

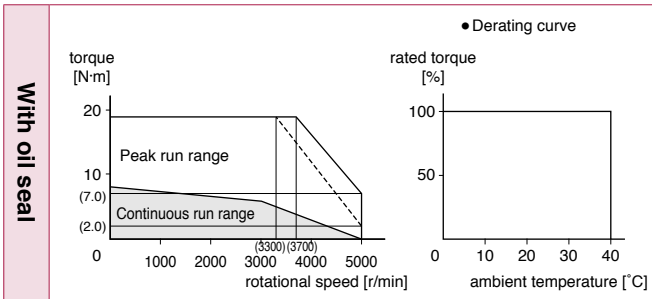
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.59.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.258		—	P.258	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MSMF302L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type ^{*2}	MFDLNA3SG
		Basic type ^{*2}	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	11.0
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	18.1
Max. current		(A(o-p))	77
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	5000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	7.04
		With brake	7.38
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

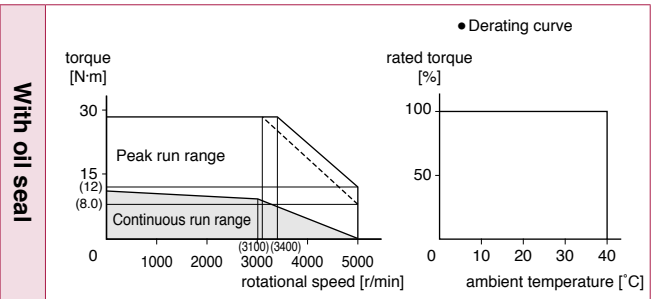
Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	15 or less
Exciting current (DC) (A)	0.81
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.59.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.259		—	P.259	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
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Specifications

			AC200 V
Motor model ^{*1}			MSMF402L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	12.7
Continuous stall torque		(N·m)	15.2
Momentary Max. peak torque		(N·m)	38.2
Rated current		(A(rms))	19.6
Max. current		(A(o-p))	83
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	4500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	14.4
		With brake	15.6
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

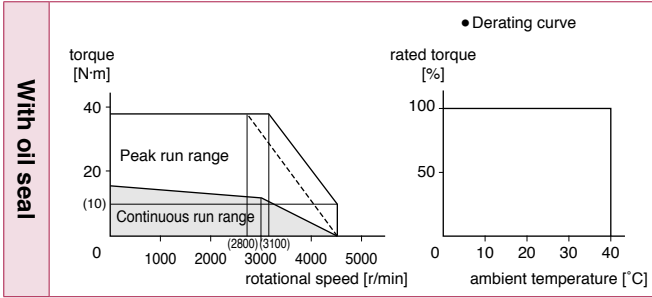
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.259		—	P.260	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MSMF502L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	5000
Rated torque		(N·m)	15.9
Continuous stall torque		(N·m)	19.1
Momentary Max. peak torque		(N·m)	47.7
Rated current		(A(rms))	24.0
Max. current		(A(o-p))	102
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	4500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	19.0
		With brake	20.2
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

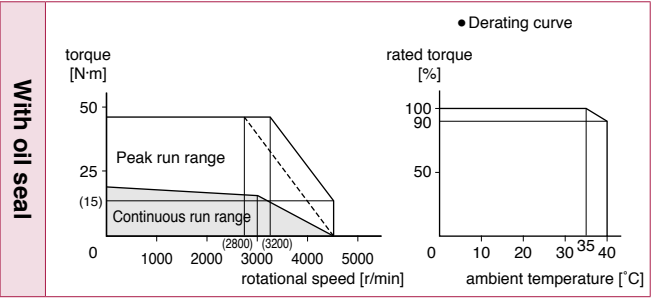
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.260		—	P.260	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MQMF012L1□□M
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4281	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.15
		With brake	0.18
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

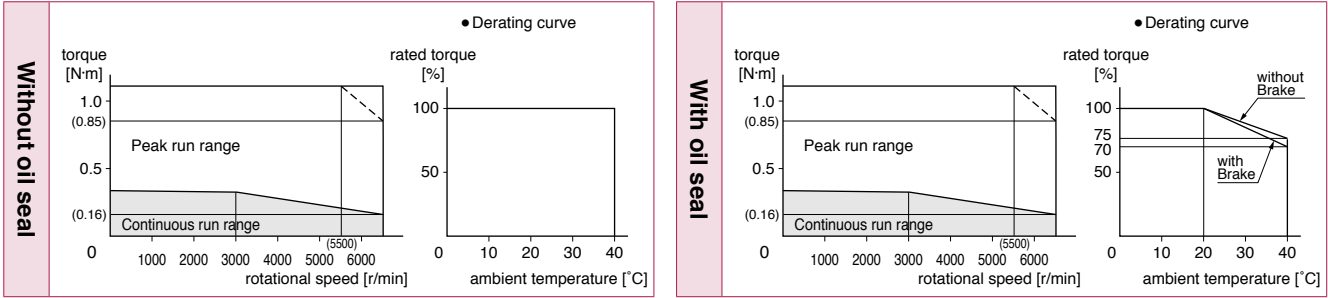
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.261	P.261	P.261	P.262	P.262	P.262

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MQMF022L1□□M
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	1.4
Max. current		(A(o-p))	6.9
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4283	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.50
		With brake	0.59
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			20 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

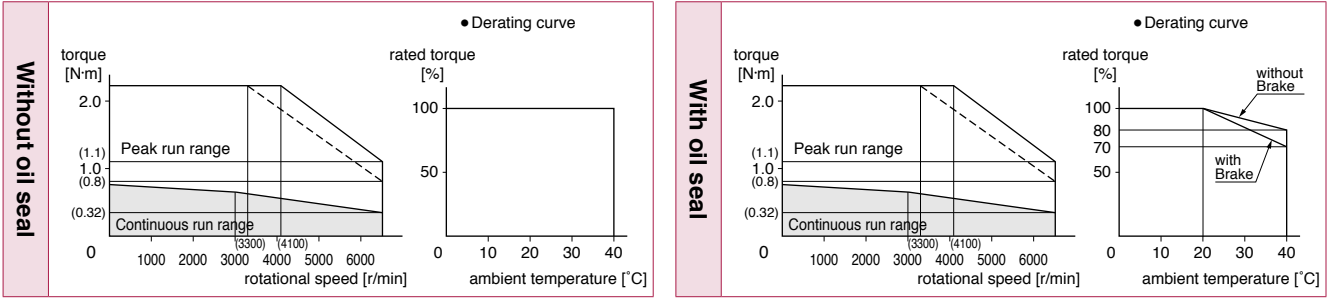
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.263	P.263	P.263	P.264	P.264	P.264

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model *1			MQMF042L1□□M
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type *2	MBDLN25SG
		Basic type *2	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.98
		With brake	1.06
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

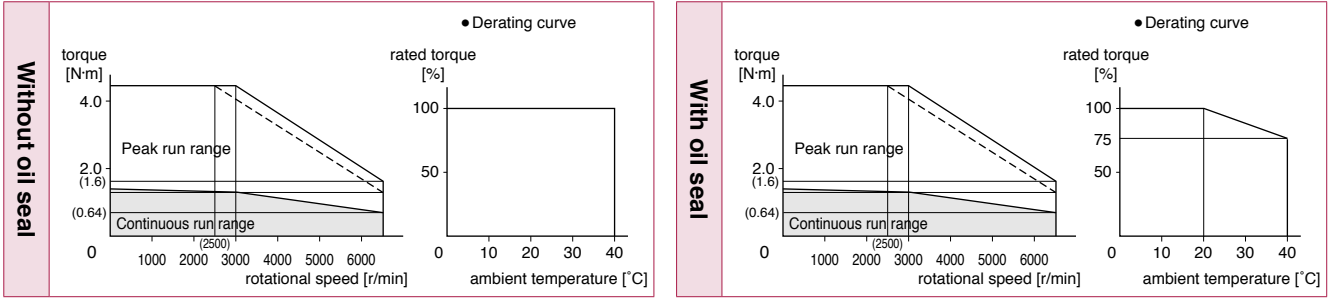
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.265	P.265	P.265	P.266	P.266	P.266

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF5AZL1□□M
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	50
Rated torque		(N·m)	0.16
Continuous stall torque		(N·m)	0.18
Momentary Max. peak torque		(N·m)	0.56
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4281	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.038
		With brake	0.042
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

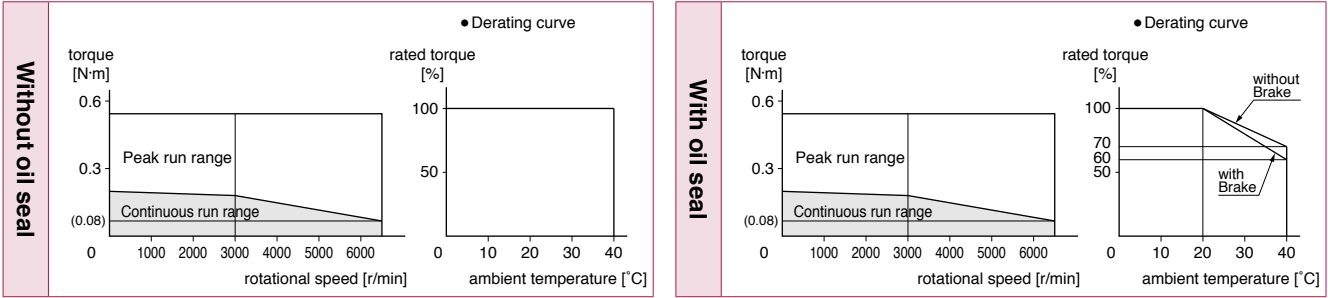
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	49

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.267	P.267	P.267	P.268	P.268	P.268

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF012L1□□M
Applicable driver	Model No.	Multifunction type	MADLT05SF
		RS485 communication type ^{*2}	MADLN05SG
		Basic type ^{*2}	MADLN05SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	100
Rated torque		(N·m)	0.32
Continuous stall torque		(N·m)	0.33
Momentary Max. peak torque		(N·m)	1.11
Rated current		(A(rms))	1.1
Max. current		(A(o-p))	5.5
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4281	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.071
		With brake	0.074
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

• For details of Note)1 to Note)4, refer to P.303.

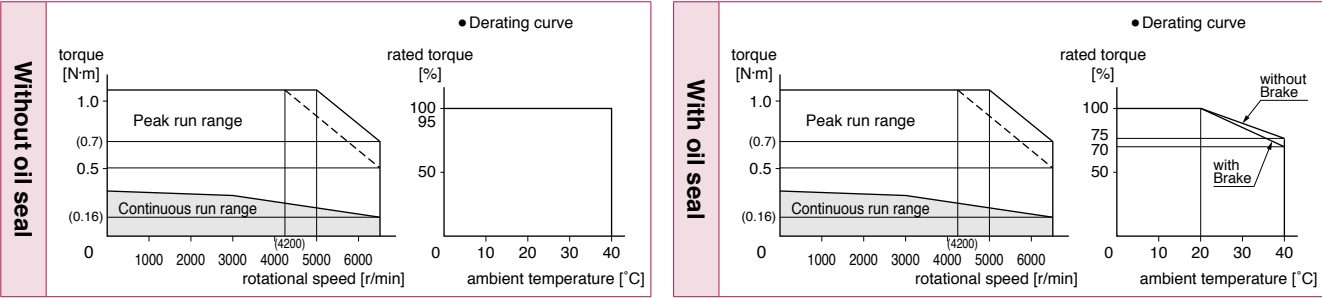
• Dimensions of Driver, refer to P.57.

*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.269	P.269	P.269	P.270	P.270	P.270

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF022L1□□M
Applicable driver	Model No.	Multifunction type	MADLT15SF
		RS485 communication type ^{*2}	MADLN15SG
		Basic type ^{*2}	MADLN15SE
	Frame symbol		A-frame
Power supply capacity		(kVA)	0.5
Rated output		(W)	200
Rated torque		(N·m)	0.64
Continuous stall torque		(N·m)	0.76
Momentary Max. peak torque		(N·m)	2.23
Rated current		(A(rms))	1.4
Max. current		(A(o-p))	6.9
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.29
		With brake	0.31
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

• For details of Note)1 to Note)4, refer to P.303.

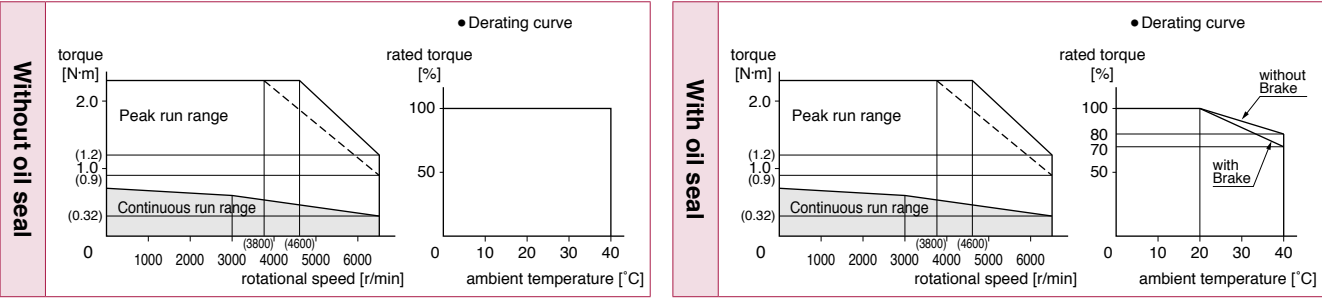
• Dimensions of Driver, refer to P.57.

*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.271	P.271	P.271	P.272	P.272	P.272

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model *1			MHMF042L1□□M
Applicable driver	Model No.	Multifunction type	MBDLT25SF
		RS485 communication type *2	MBDLN25SG
		Basic type *2	MBDLN25SE
	Frame symbol		B-frame
Power supply capacity		(kVA)	0.9
Rated output		(W)	400
Rated torque		(N·m)	1.27
Continuous stall torque		(N·m)	1.40
Momentary Max. peak torque		(N·m)	4.46
Rated current		(A(rms))	2.1
Max. current		(A(o-p))	10.4
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6500
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	0.56
		With brake	0.58
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less	
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

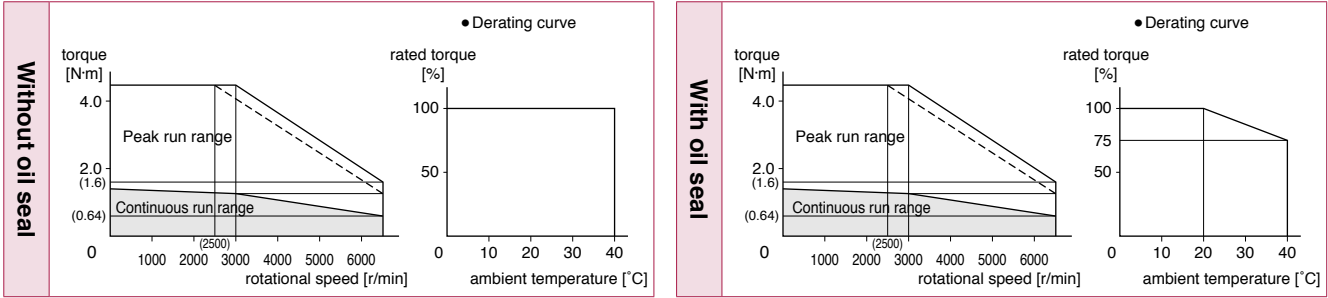
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.57.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.273	P.273	P.273	P.274	P.274	P.274

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
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Specifications

			AC200 V
Motor model *1			MHMF082L1□□M
Applicable driver	Model No.	Multifunction type	MCDLT35SF
		RS485 communication type *2	MCDLN35SG
		Basic type *2	MCDLN35SE
	Frame symbol		C-frame
Power supply capacity		(kVA)	1.8
Rated output		(W)	750
Rated torque		(N·m)	2.39
Continuous stall torque		(N·m)	2.86
Momentary Max. peak torque		(N·m)	8.36
Rated current		(A(rms))	3.8
Max. current		(A(o-p))	18.8
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	1.56
		With brake	1.66
Recommended moment of inertia ratio of the load and the rotor			

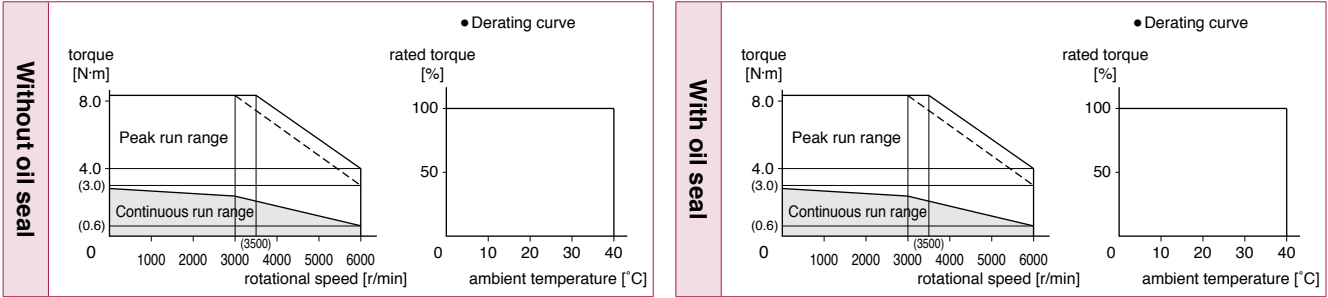
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.275	P.275	P.275	P.276	P.276	P.276

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF092L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	3.18
Continuous stall torque		(N·m)	3.34
Momentary Max. peak torque		(N·m)	11.1
Rated current		(A(rms))	5.7
Max. current		(A(o-p))	28.2
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	3000
Max. rotational speed		(r/min)	6000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	2.03
		With brake	2.13
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			15 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

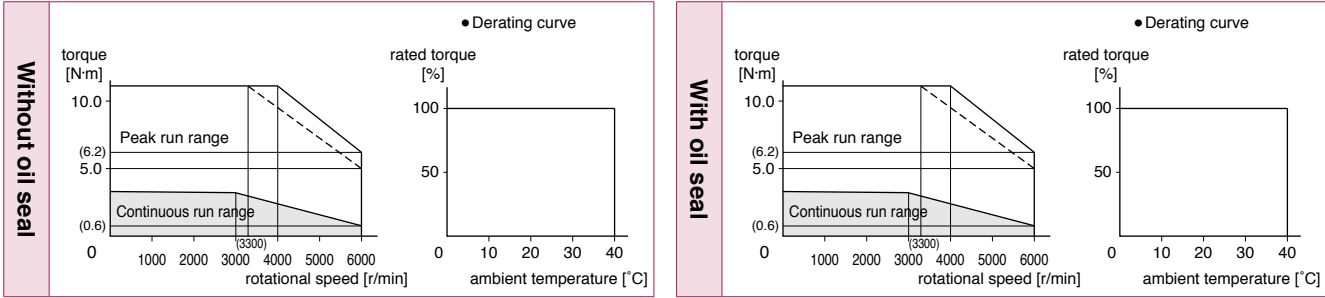
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) ^{Note)4}	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Round shaft/ Key way, center tap shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Leadwire type (IP65)	P.277	P.277	P.277	P.278	P.278	P.278

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF102L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T45SF
		RS485 communication type ^{*2}	MDDL N45SG
		Basic type ^{*2}	MDDL N45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.25
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.2
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	22.9
		With brake	24.1
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

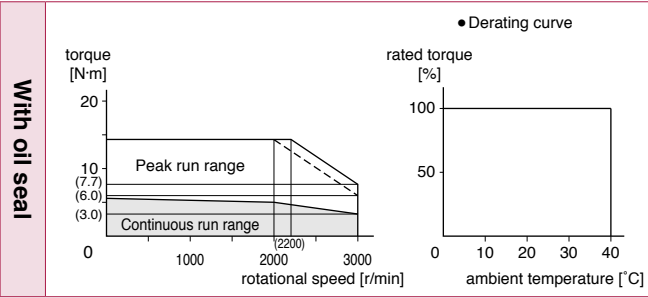
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.279		—	P.279	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF152L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	7.16
Continuous stall torque		(N·m)	7.52
Momentary Max. peak torque		(N·m)	21.5
Rated current		(A(rms))	8.0
Max. current		(A(o-p))	34
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	33.4
		With brake	34.6
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.58.

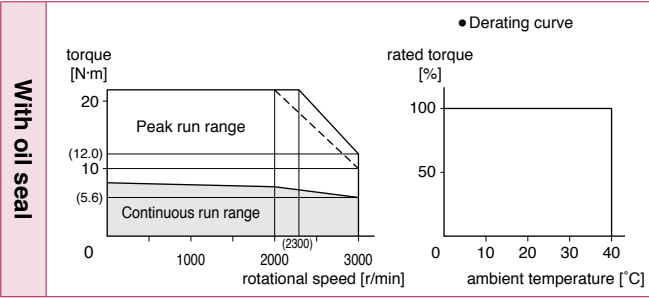
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.279		—	P.280	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
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• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF202L1□□M
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	11.5
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	12.5
Max. current		(A(o-p))	53
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	55.7
		With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

• Brake specifications (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

• For details of Note)1 to Note)4, refer to P.303.

• Dimensions of Driver, refer to P.59.

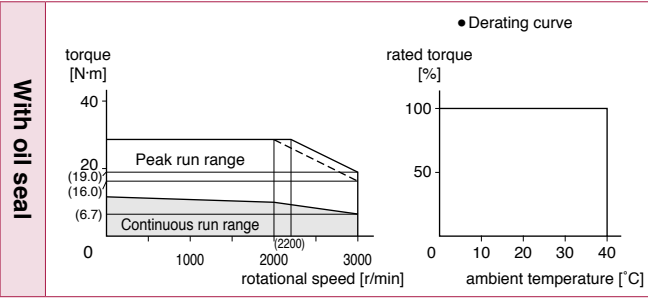
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.280		—	P.280	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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• Please contact us for more information.

Specifications

			AC200 V
Motor model *1			MHMF302L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type *2	MFDLNA3SG
		Basic type *2	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	14.3
Continuous stall torque		(N·m)	17.2
Momentary Max. peak torque		(N·m)	43.0
Rated current		(A(rms))	17.0
Max. current		(A(o-p))	72
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	85.3
		With brake	90.7
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications *3			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
- (This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

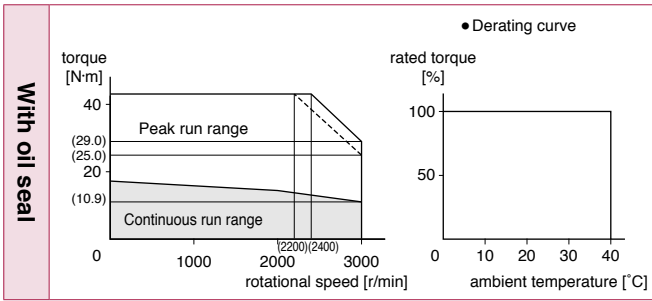
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.281		—	P.281	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
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• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF402L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	19.1
Continuous stall torque		(N·m)	22.0
Momentary Max. peak torque		(N·m)	57.3
Rated current		(A(rms))	20
Max. current		(A(o-p))	85
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	104
		With brake	110
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
- (This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

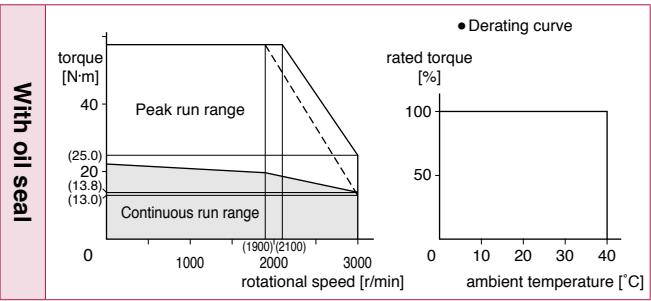
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.281		—	P.282	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MHMF502L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	5000
Rated torque		(N·m)	23.9
Continuous stall torque		(N·m)	26.3
Momentary Max. peak torque		(N·m)	71.6
Rated current		(A(rms))	23.3
Max. current		(A(o-p))	99
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	146
		With brake	151
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

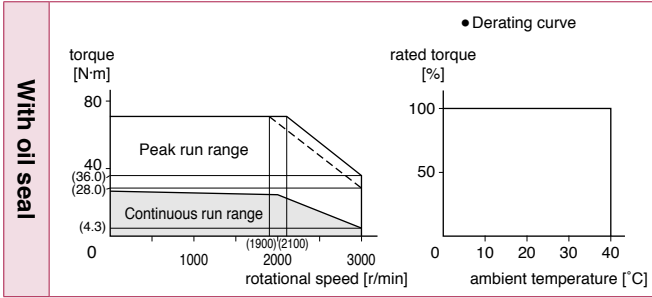
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.59.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.282		—	P.282	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MHMF752L1□□M
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
	Frame symbol		G-frame
Power supply capacity		(kVA)	11
Rated output		(W)	7500
Rated torque		(N·m)	47.8
Continuous stall torque		(N·m)	47.8
Momentary Max. peak torque		(N·m)	125
Rated current		(A(rms))	40.2
Max. current		(A(o-p))	154
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×3	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	272
		With brake	279
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

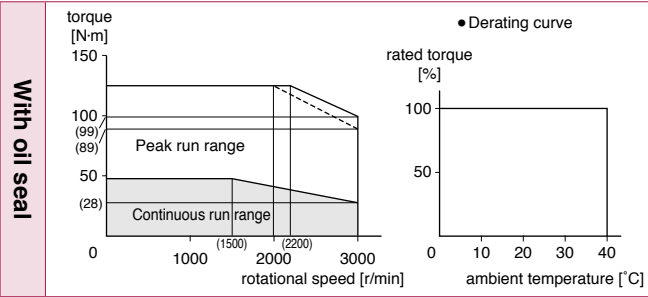
Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
• Dimensions of Driver, refer to P.60.
*1 □□ in the motor part number represents the motor specifications.
*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.283	—	—	P.283	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Specifications

			AC200 V
Motor model *1			MDMF102L1□□M
Applicable driver	Model No.	Multifunction type	MDDLT45SF
		RS485 communication type *2	MDDL N45SG
		Basic type *2	MDDL N45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.4
Rated output		(W)	1000
Rated torque		(N·m)	4.77
Continuous stall torque		(N·m)	5.25
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.2
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	6.18
		With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications *3			23-bit Absolute
		Resolution per single turn	8388608

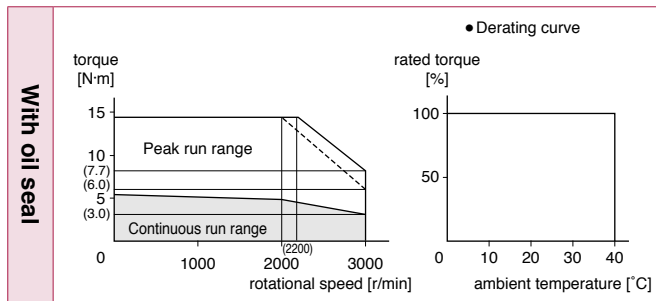
- **Brake specifications** (For details, refer to P.305)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)
- | | | |
|------------------|--------------------------------|-----|
| During assembly | Radial load P-direction (N) | 980 |
| | Thrust load A-direction (N) | 588 |
| | Thrust load B-direction (N) | 686 |
| During operation | Radial load P-direction (N) | 490 |
| | Thrust load A, B-direction (N) | 196 |

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.283		—	P.284	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

Specifications

			AC200 V
Motor model ^{*1}			MDMF152L1□□M
Applicable driver	Model No.	Multifunction type	MDDLT55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.9
Rated output		(W)	1500
Rated torque		(N·m)	7.16
Continuous stall torque		(N·m)	7.52
Momentary Max. peak torque		(N·m)	21.5
Rated current		(A(rms))	8.0
Max. current		(A(o-p))	34
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	9.16
		With brake	10.4
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
		Resolution per single turn	8388608

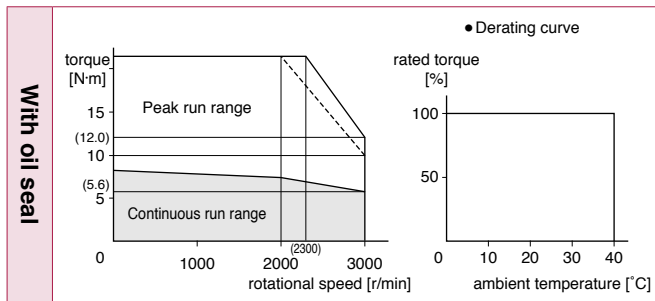
- **Brake specifications** (For details, refer to P.305)
 (This brake will be released when it is energized.)
 (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)
- | | | |
|------------------|--------------------------------|-----|
| During assembly | Radial load P-direction (N) | 980 |
| | Thrust load A-direction (N) | 588 |
| | Thrust load B-direction (N) | 686 |
| During operation | Radial load P-direction (N) | 490 |
| | Thrust load A, B-direction (N) | 196 |

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.284		—	P.284	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MDMF202L1□□M
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.8
Rated output		(W)	2000
Rated torque		(N·m)	9.55
Continuous stall torque		(N·m)	10.0
Momentary Max. peak torque		(N·m)	28.6
Rated current		(A(rms))	9.9
Max. current		(A(o-p))	42
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	12.1
		With brake	13.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.

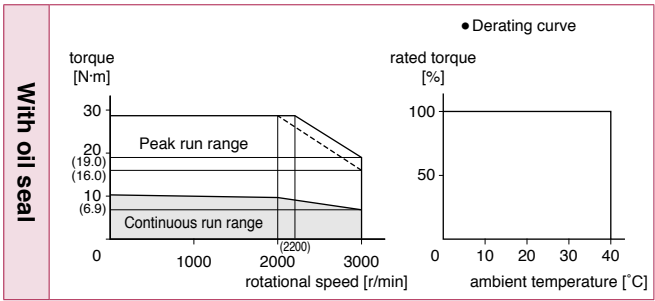
- Dimensions of Driver, refer to P.59.

*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.285		—	P.285	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MDMF302L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTA3SF
		RS485 communication type ^{*2}	MFDLNA3SG
		Basic type ^{*2}	MFDLNA3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.2
Rated output		(W)	3000
Rated torque		(N·m)	14.3
Continuous stall torque		(N·m)	15.0
Momentary Max. peak torque		(N·m)	43.0
Rated current		(A(rms))	16.4
Max. current		(A(o-p))	70
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	18.6
		With brake	19.6
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.90
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.

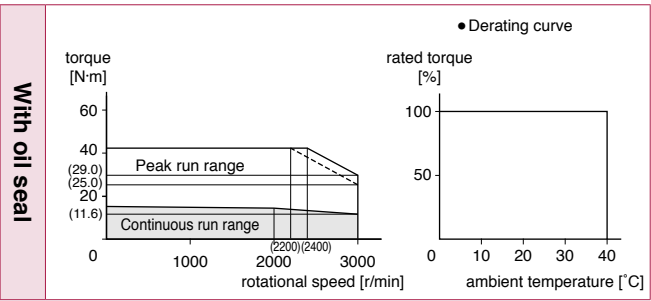
- Dimensions of Driver, refer to P.59.

*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.285		—	P.286	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MDMF402L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.8
Rated output		(W)	4000
Rated torque		(N·m)	19.1
Continuous stall torque		(N·m)	22.0
Momentary Max. peak torque		(N·m)	57.3
Rated current		(A(rms))	20.0
Max. current		(A(o-p))	85
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	2000
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.

- Dimensions of Driver, refer to P.59.

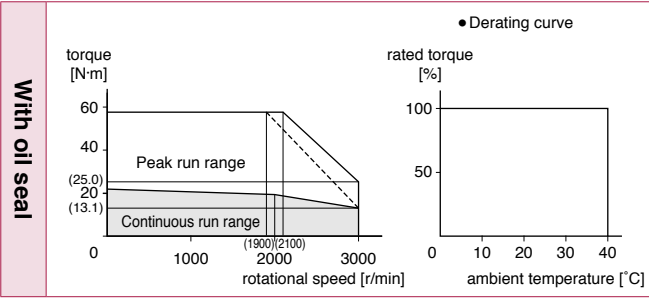
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.286		—	P.286	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MDMF502L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity (kVA)			7.8
Rated output (W)			5000
Rated torque (N·m)			23.9
Continuous stall torque (N·m)			26.3
Momentary Max. peak torque (N·m)			71.6
Rated current (A(rms))			23.3
Max. current (A(o-p))			99
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed (r/min)			2000
Max. rotational speed (r/min)			3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	58.2
		With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.303.

- Dimensions of Driver, refer to P.59.

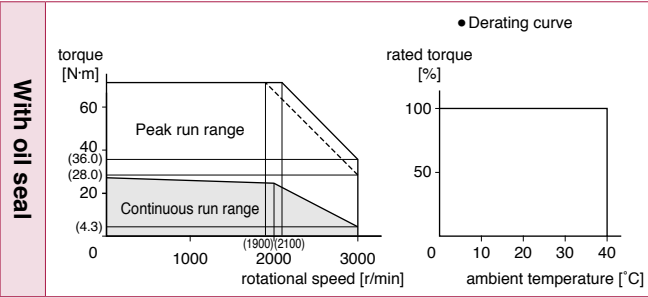
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.287		—	P.287	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MDMF752L1□□M
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
	Frame symbol		G-frame
Power supply capacity		(kVA)	11
Rated output		(W)	7500
Rated torque		(N·m)	47.8
Continuous stall torque		(N·m)	47.8
Momentary Max. peak torque		(N·m)	125
Rated current		(A(rms))	40.2
Max. current		(A(o-p))	154
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×3	No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	122
		With brake	127
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

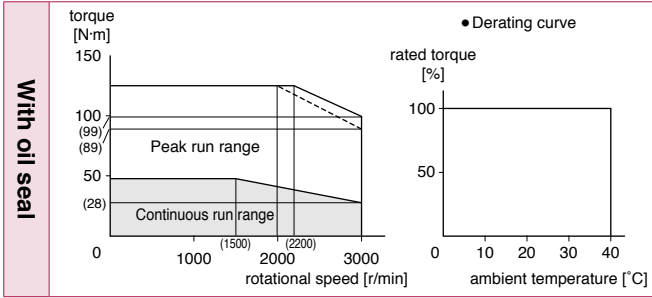
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.287	—	—	P.288	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF092L1□□M
Applicable driver	Model No.	Multifunction type	MDDL45SF
		RS485 communication type ^{*2}	MDDL45SG
		Basic type ^{*2}	MDDL45SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.0
Rated output		(W)	850
Rated torque		(N·m)	5.41
Continuous stall torque		(N·m)	5.41
Momentary Max. peak torque		(N·m)	14.3
Rated current		(A(rms))	5.9
Max. current		(A(o-p))	22
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	6.18
		With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

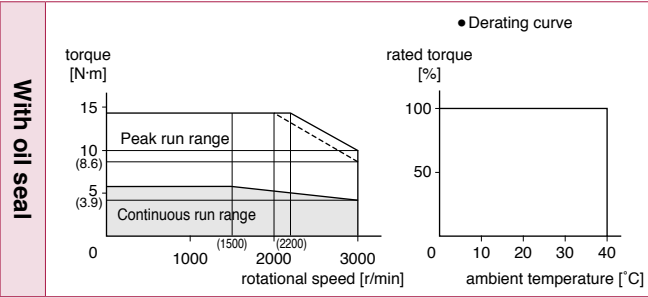
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.288	—	—	P.288	—

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF132L1□□M
Applicable driver	Model No.	Multifunction type	MDDL T55SF
		RS485 communication type ^{*2}	MDDL N55SG
		Basic type ^{*2}	MDDL N55SE
	Frame symbol		D-frame
Power supply capacity		(kVA)	2.6
Rated output		(W)	1300
Rated torque		(N·m)	8.28
Continuous stall torque		(N·m)	8.28
Momentary Max. peak torque		(N·m)	23.3
Rated current		(A(rms))	9.3
Max. current		(A(o-p))	37
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4284	No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	9.16
		With brake	10.4
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

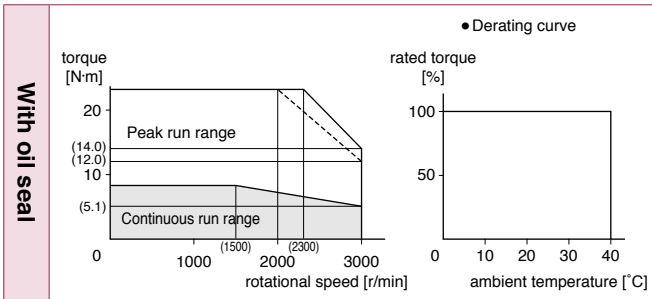
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.58.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.289		—	P.289	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF182L1□□M
Applicable driver	Model No.	Multifunction type	MEDLT83SF
		RS485 communication type ^{*2}	MEDLN83SG
		Basic type ^{*2}	MEDLN83SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	3.4
Rated output		(W)	1800
Rated torque		(N·m)	11.5
Continuous stall torque		(N·m)	11.5
Momentary Max. peak torque		(N·m)	28.7
Rated current		(A(rms))	11.8
Max. current		(A(o-p))	42
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	12.1
		With brake	13.3
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
	Resolution per single turn		8388608

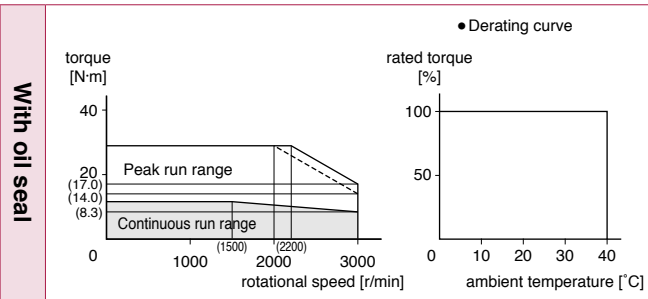
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) ^{Note)4}	50 or less
Exciting current (DC) (A)	0.79
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.289		—	P.290	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF242L1□□M
Applicable driver	Model No.	Multifunction type	MEDLT93SF
		RS485 communication type ^{*2}	MEDLN93SG
		Basic type ^{*2}	MEDLN93SE
	Frame symbol		E-frame
Power supply capacity		(kVA)	4.5
Rated output		(W)	2400
Rated torque		(N·m)	15.3
Continuous stall torque		(N·m)	15.3
Momentary Max. peak torque		(N·m)	45.2
Rated current		(A(rms))	16.0
Max. current		(A(o-p))	67
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.

- Dimensions of Driver, refer to P.59.

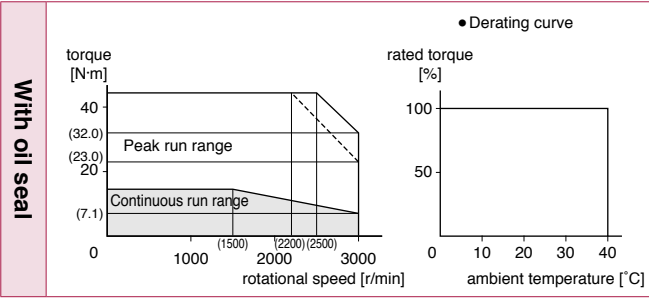
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.290		—	P.290	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF292L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	5.0
Rated output		(W)	2900
Rated torque		(N·m)	18.5
Continuous stall torque		(N·m)	18.5
Momentary Max. peak torque		(N·m)	45.2
Rated current		(A(rms))	19.3
Max. current		(A(o-p))	67
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×2	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	46.9
		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

- **Brake specifications** (For details, refer to P.305)

(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) ^{Note)4}	25 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

- **Permissible load** (For details, refer to P.304)

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.

- Dimensions of Driver, refer to P.59.

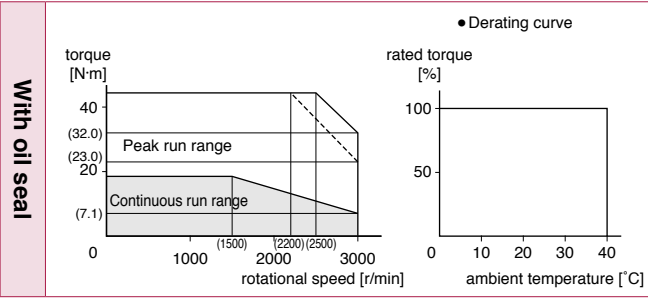
*1 □□ in the motor part number represents the motor specifications.

*2 Basic type and RS485 communication type are “Position control type”.

Detail of model designation, refer to P.204.

*3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.291		—	P.291	

<Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
Read the Instruction Manual carefully and understand all precautions and remarks before using the products.
Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

• Please contact us for more information.

Specifications

			AC200 V
Motor model ^{*1}			MGMF442L1□□M
Applicable driver	Model No.	Multifunction type	MFDLTB3SF
		RS485 communication type ^{*2}	MFDLNB3SG
		Basic type ^{*2}	MFDLNB3SE
	Frame symbol		F-frame
Power supply capacity		(kVA)	7.0
Rated output		(W)	4400
Rated torque		(N·m)	28.0
Continuous stall torque		(N·m)	28.0
Momentary Max. peak torque		(N·m)	70.0
Rated current		(A(rms))	27.2
Max. current		(A(o-p))	96
Regenerative brake frequency (times/min) ^{Note)1}		Without option	No limit ^{Note)2}
		DV0P4285×2	No limit ^{Note)2}
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	58.2
		With brake	63.0
Recommended moment of inertia ratio of the load and the rotor ^{Note)3}			10 times or less
Rotary encoder specifications ^{*3}			23-bit Absolute
	Resolution per single turn		8388608

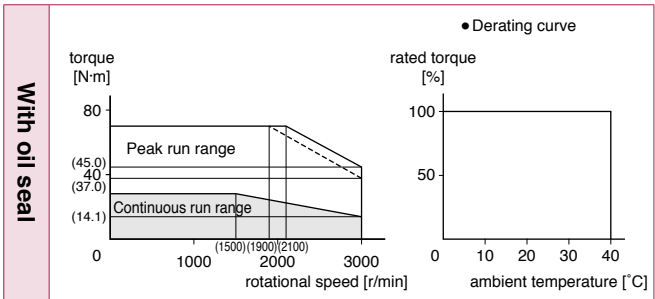
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) ^{Note)4}	30 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.59.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.291		—	P.292	

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Specifications

			AC200 V
Motor model ^{*1}			MGMF552L1□□M
Applicable driver	Model No.	Multifunction type	MGDLTC3SF
		RS485 communication type ^{*2}	—
		Basic type ^{*2}	—
	Frame symbol		G-frame
Power supply capacity		(kVA)	8.5
Rated output		(W)	5500
Rated torque		(N·m)	35.0
Continuous stall torque		(N·m)	35.0
Momentary Max. peak torque		(N·m)	102
Rated current		(A(rms))	39.8
Max. current		(A(o-p))	164
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2
		DV0P4285×3	No limit Note)2
Rated rotational speed		(r/min)	1500
Max. rotational speed		(r/min)	3000
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	83.0
		With brake	88.0
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less	
Rotary encoder specifications ^{*3}		23-bit Absolute	
	Resolution per single turn		8388608

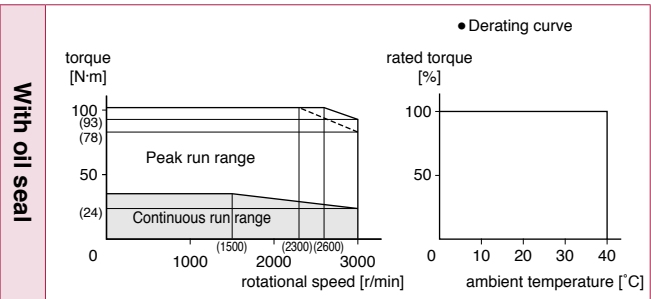
- **Brake specifications** (For details, refer to P.305)
(This brake will be released when it is energized.)
(Do not use this for braking the motor in motion.)

Static friction torque (N·m)	63.0 or more
Engaging time (ms)	200 or less
Releasing time (ms) ^{Note)4}	80 or less
Exciting current (DC) (A)	1.29
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

During assembly	Radial load P-direction (N)	2058
	Thrust load A-direction (N)	980
	Thrust load B-direction (N)	1176
During operation	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.303.
- Dimensions of Driver, refer to P.60.
- *1 □□ in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are “Position control type”.
Detail of model designation, refer to P.204.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Torque characteristics (at AC200 V of power voltage <Dotted line represents the torque at 10 % less supply voltage.>)

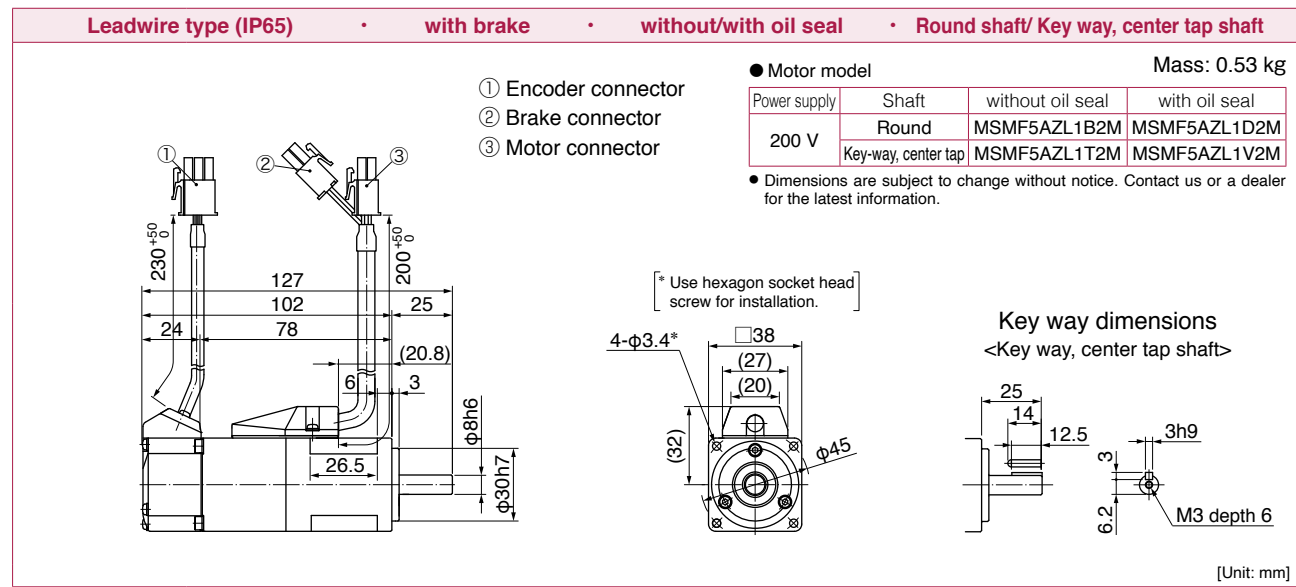
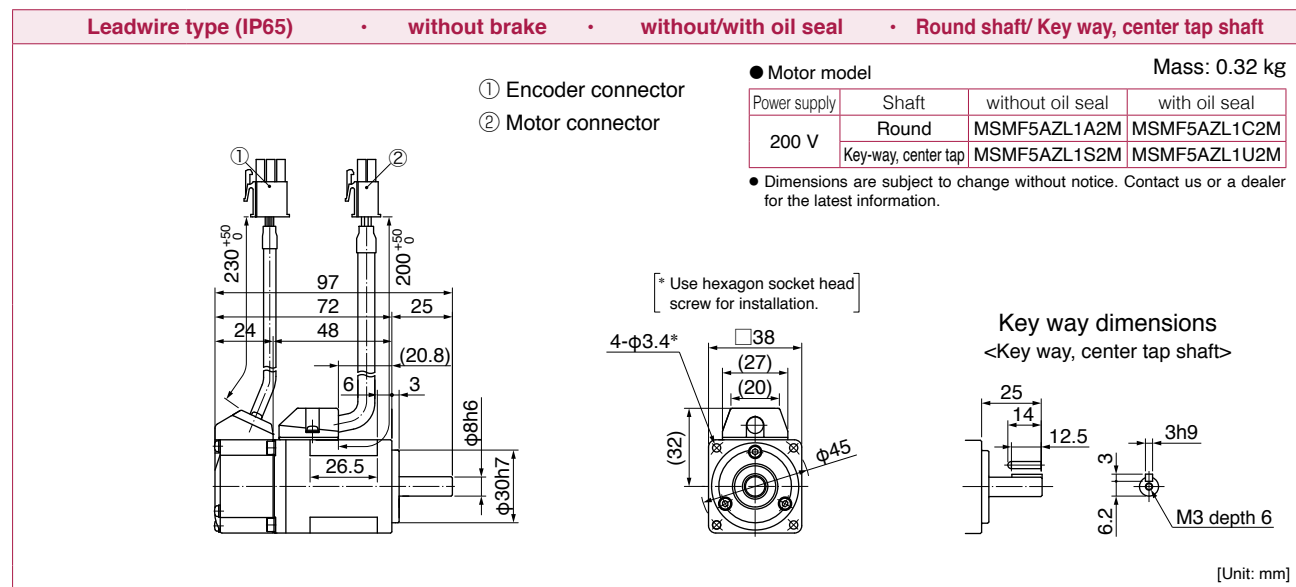


Dimensions

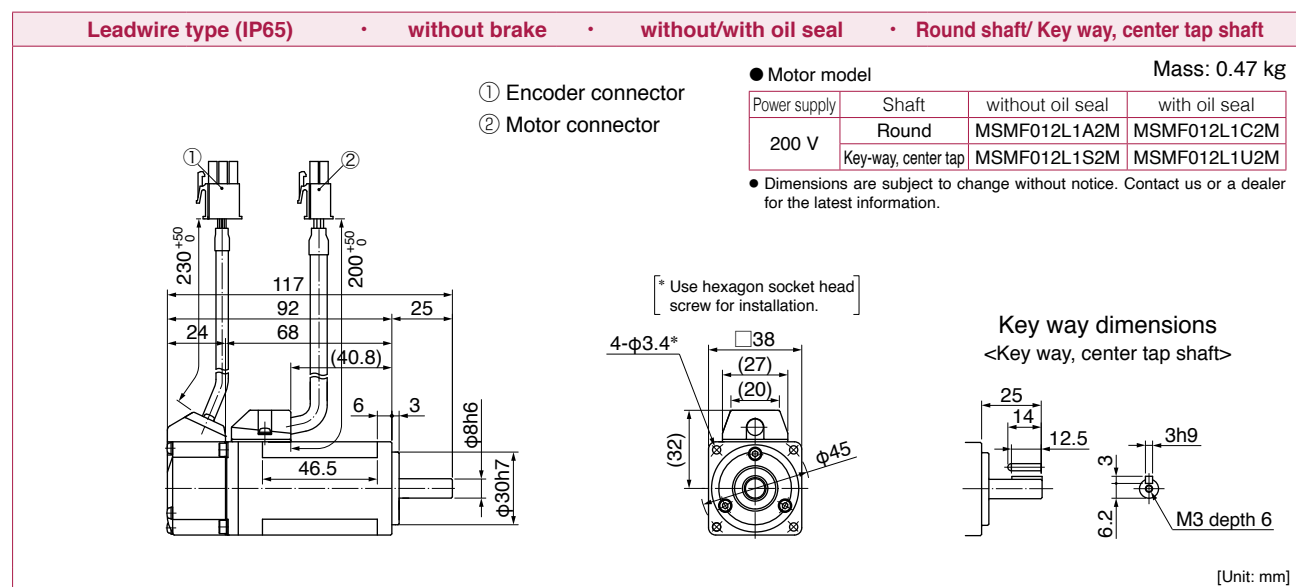
Motor specifications	Key way shaft/ Round shaft					
	without brake			with brake		
	without oil seal	with oil seal	with protective lip/ with oil seal	without oil seal	with oil seal	with protective lip/ with oil seal
Encoder connector Large size (JL10) type	—	P.292	—	—	P.292	—

- <Cautions> Reduce the moment of inertia ratio if high speed response operation is required.
Dimensions are subject to change without notice. Contact us or a dealer for the latest information.
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Please avoid the motor, or equipment containing the motor to be distributed to Japan, or other regions through Japan.

MSMF 50 W

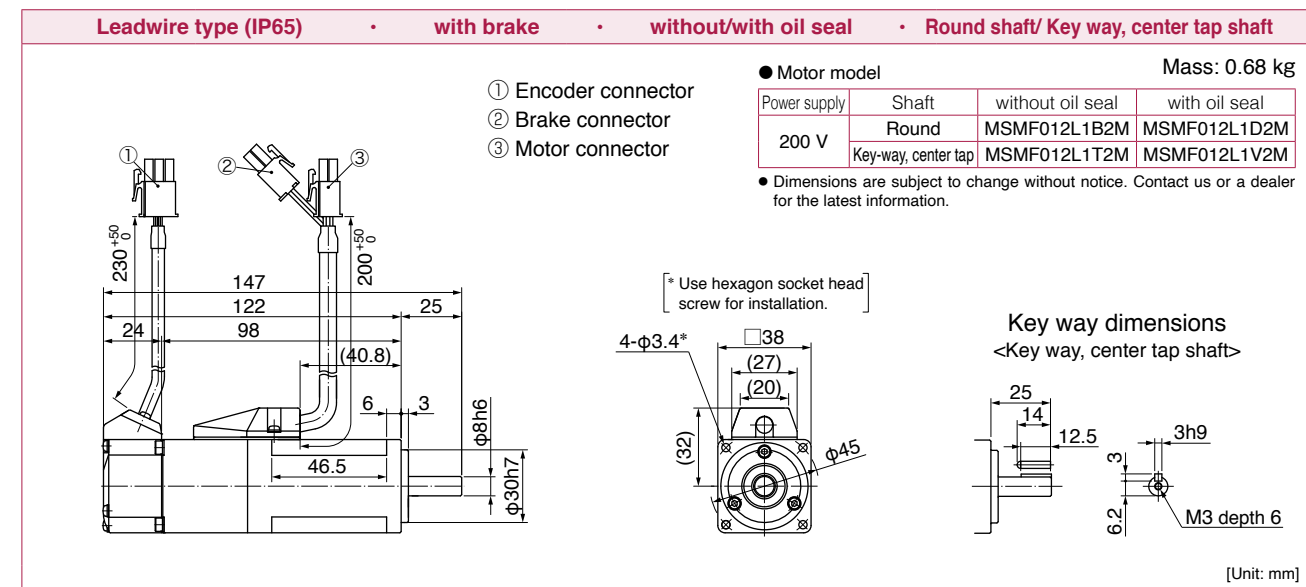


MSMF 100 W

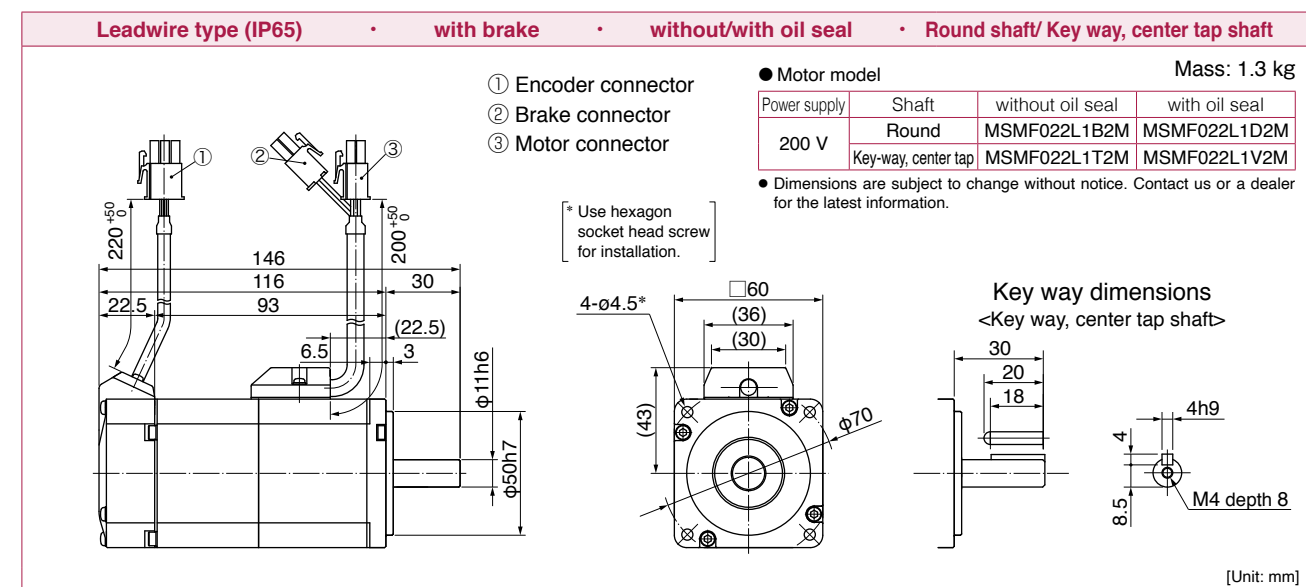
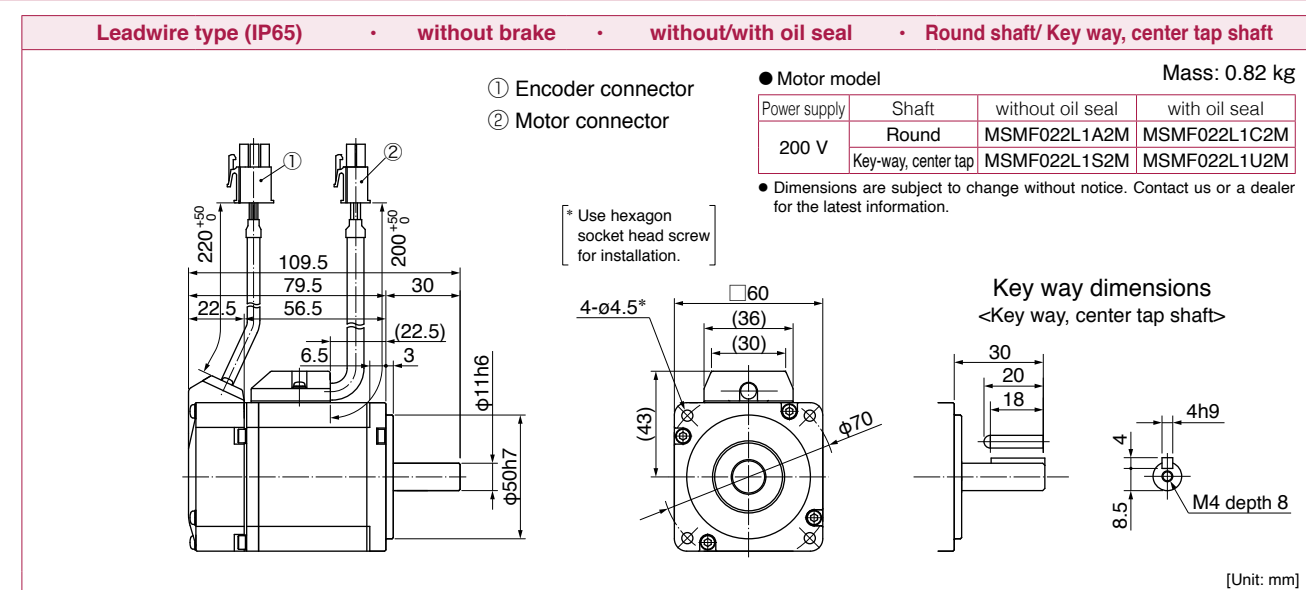


* For motors specifications, refer to P211, P212.

MSMF 100 W

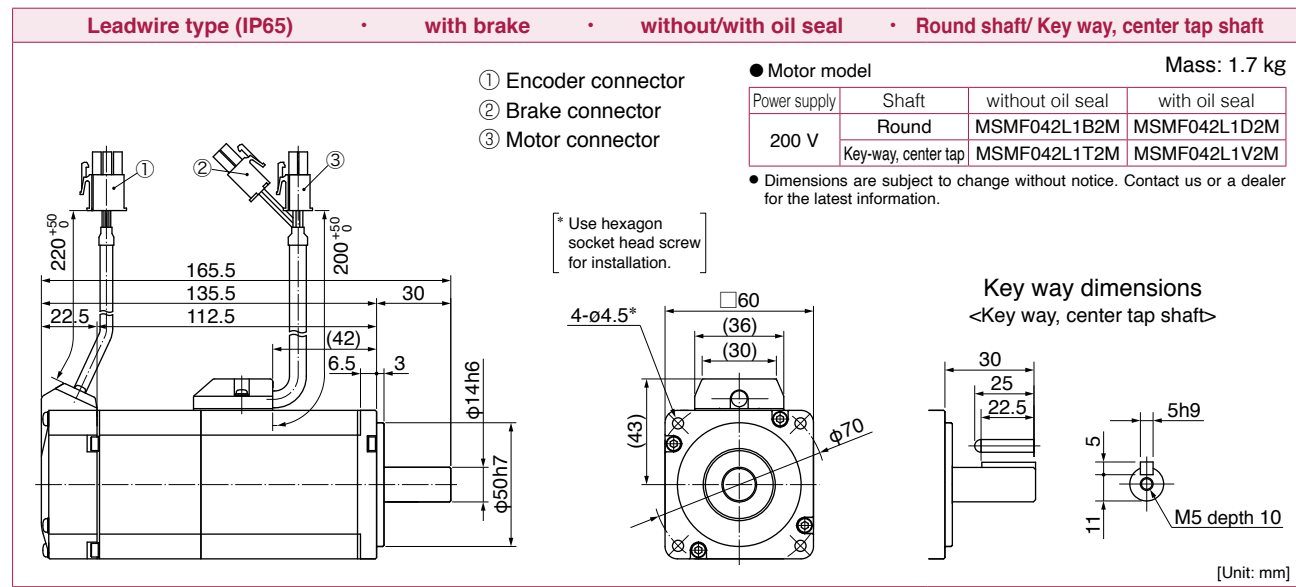
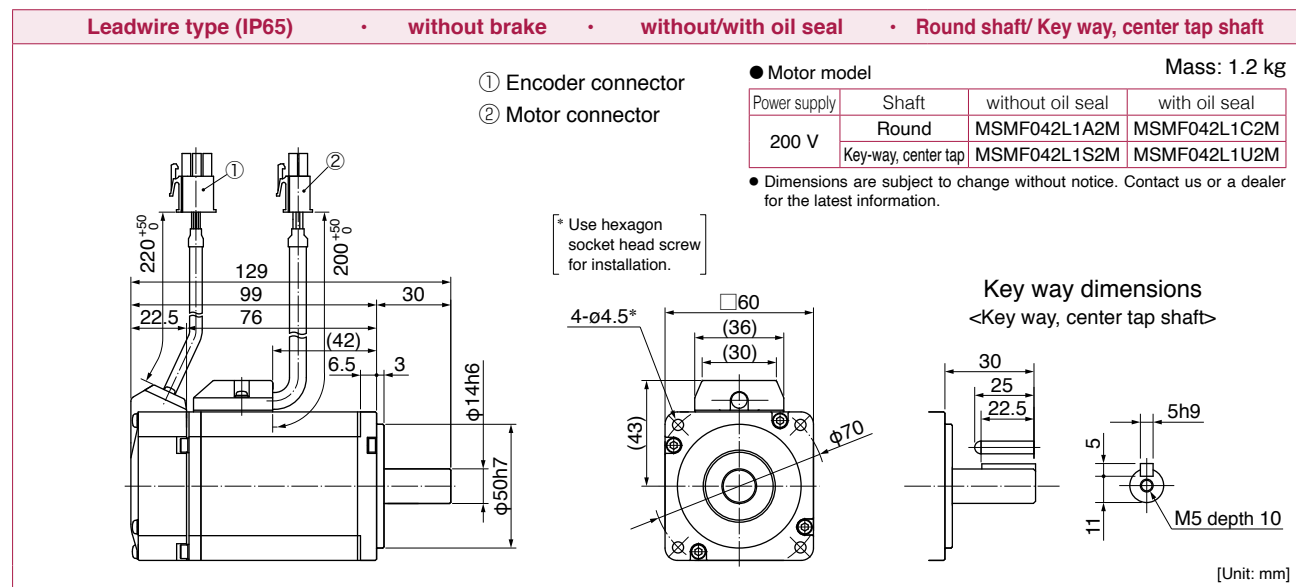


MSMF 200 W

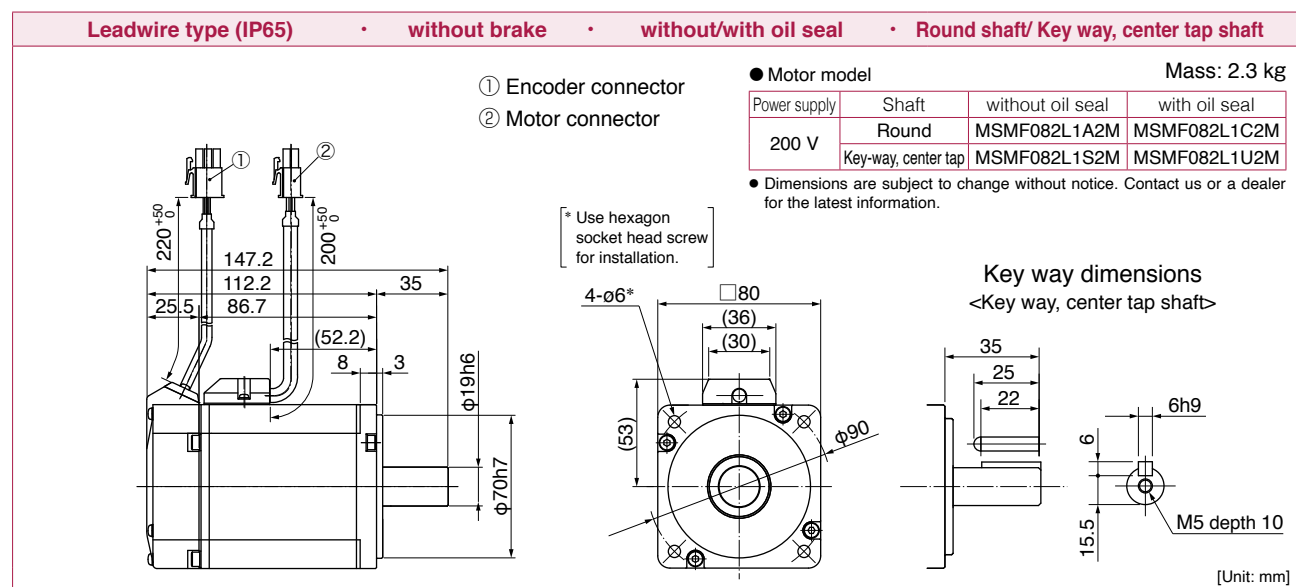


* For motors specifications, refer to P212, P213.

MSMF 400 W

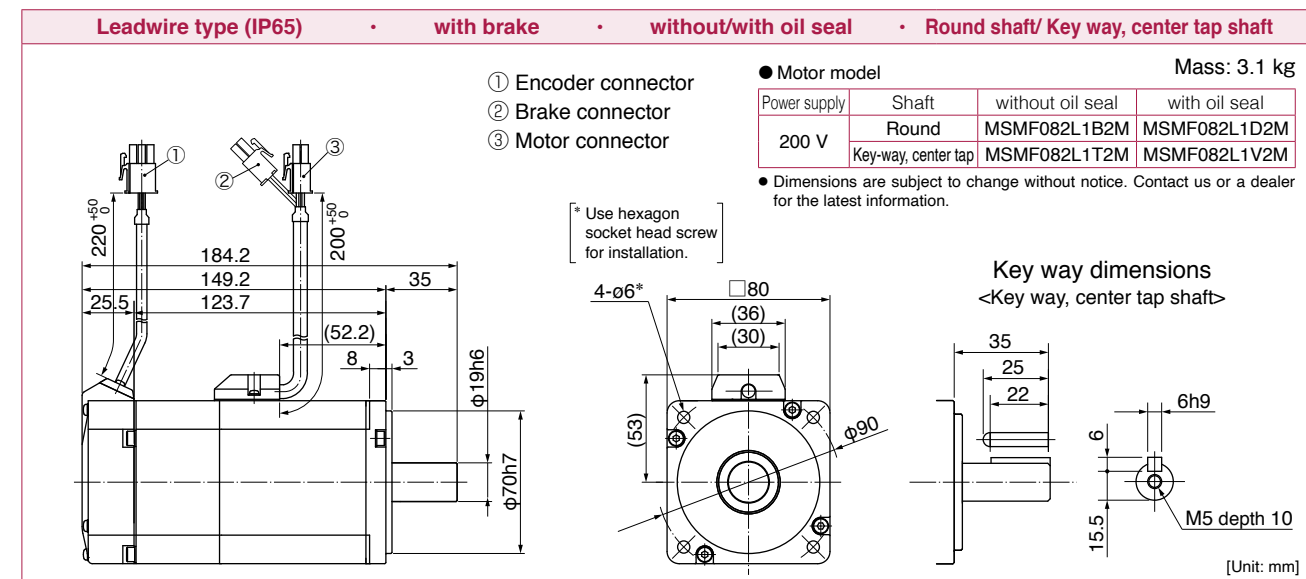


MSMF 750 W

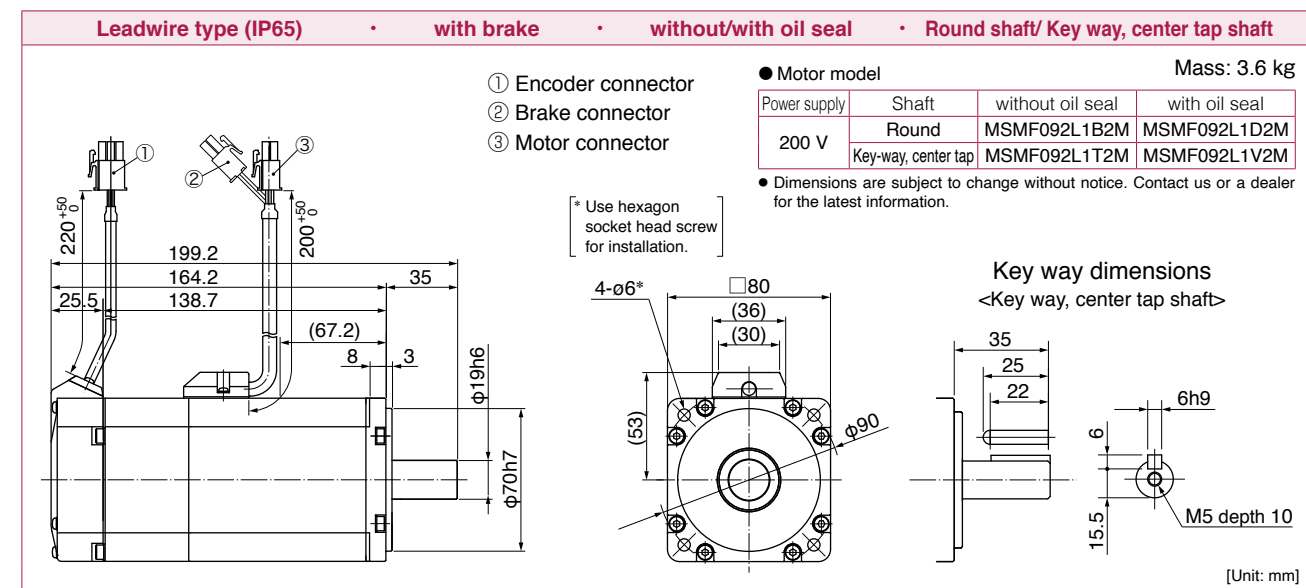
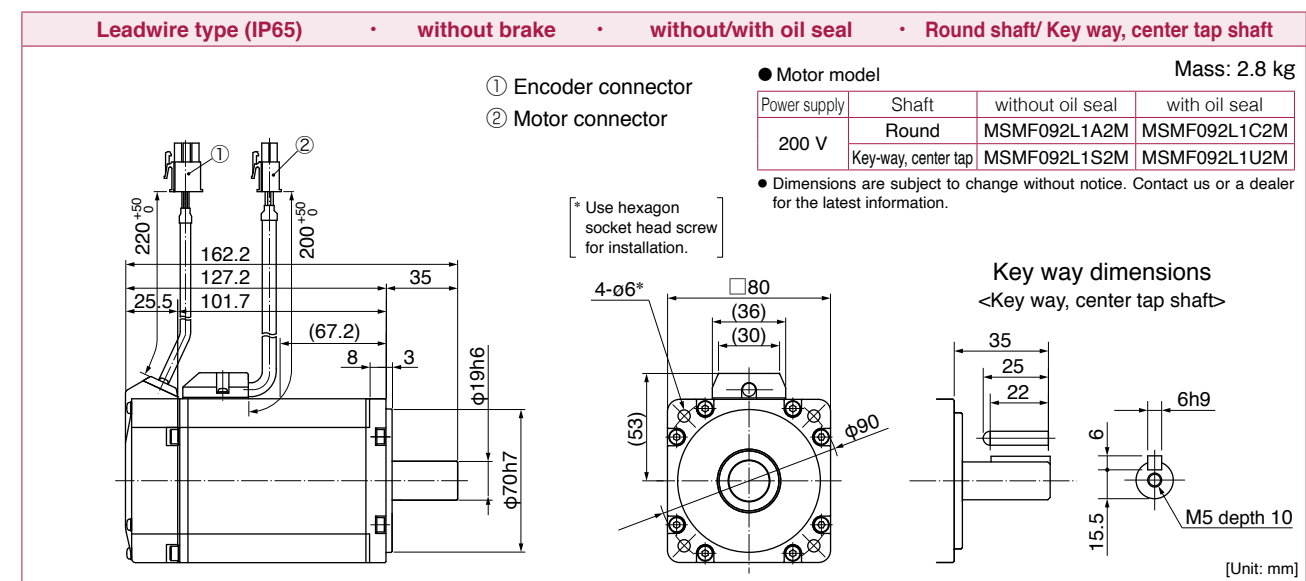


* For motors specifications, refer to P214, P215.

MSMF 750 W

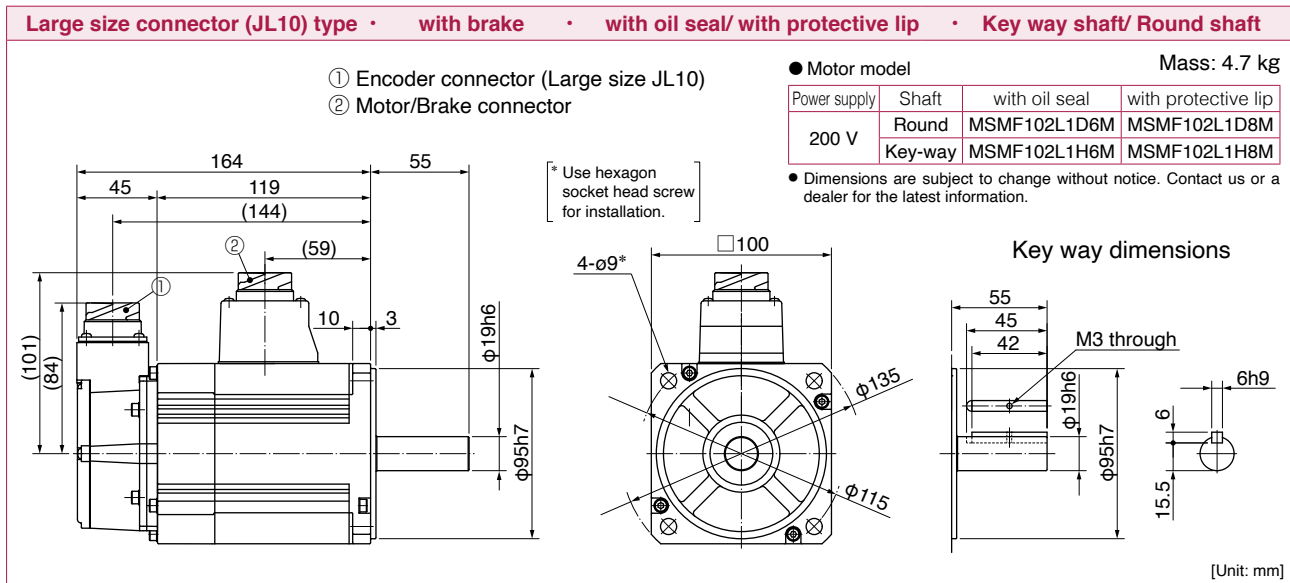
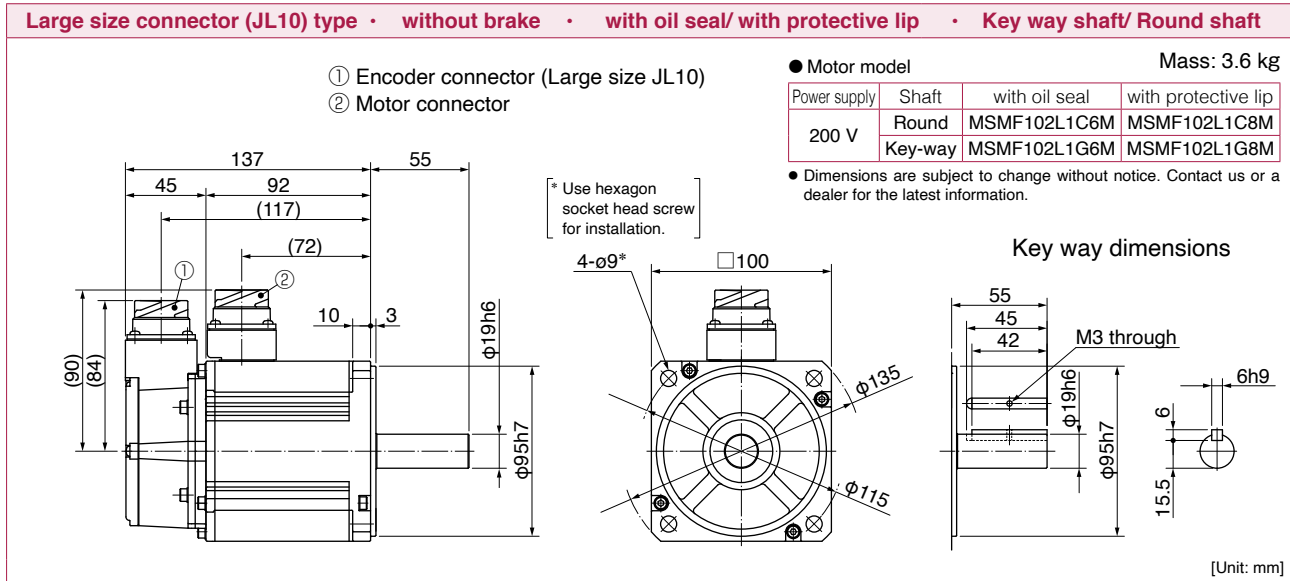


MSMF 1000 W

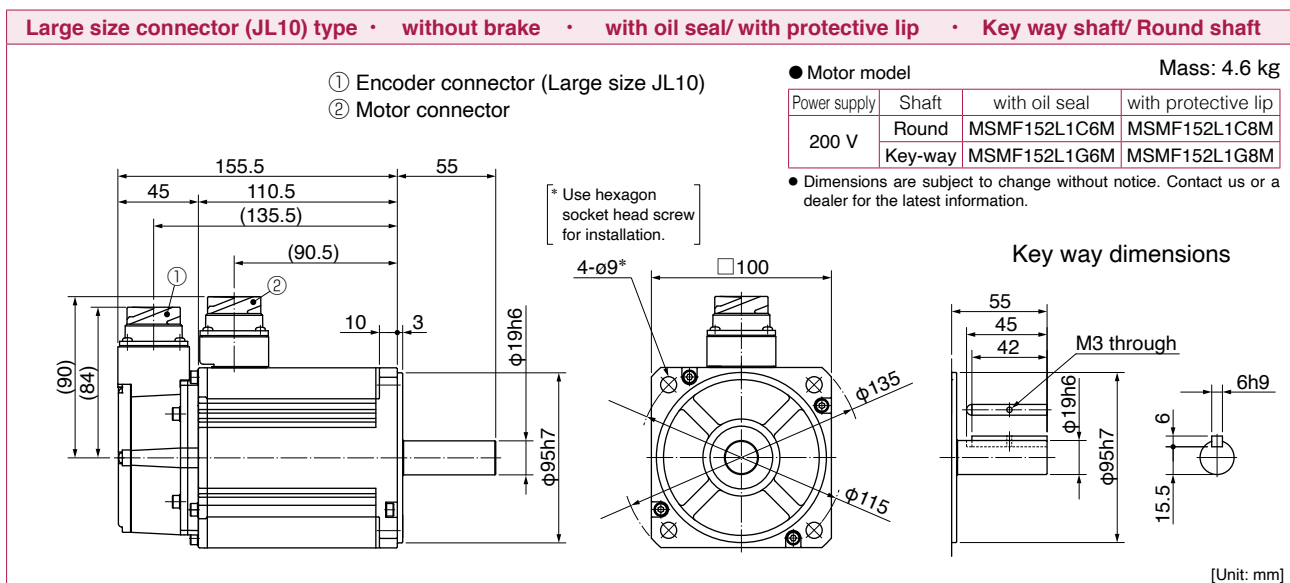


* For motors specifications, refer to P215, P216.

MSMF 1.0 kW

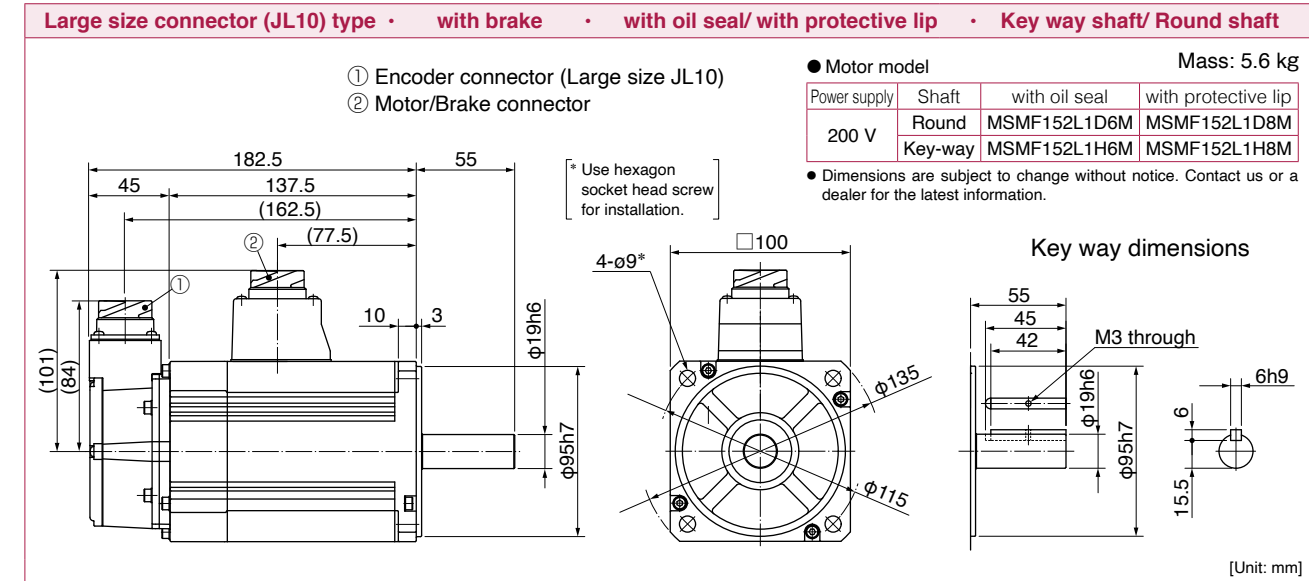


MSMF 1.5 kW

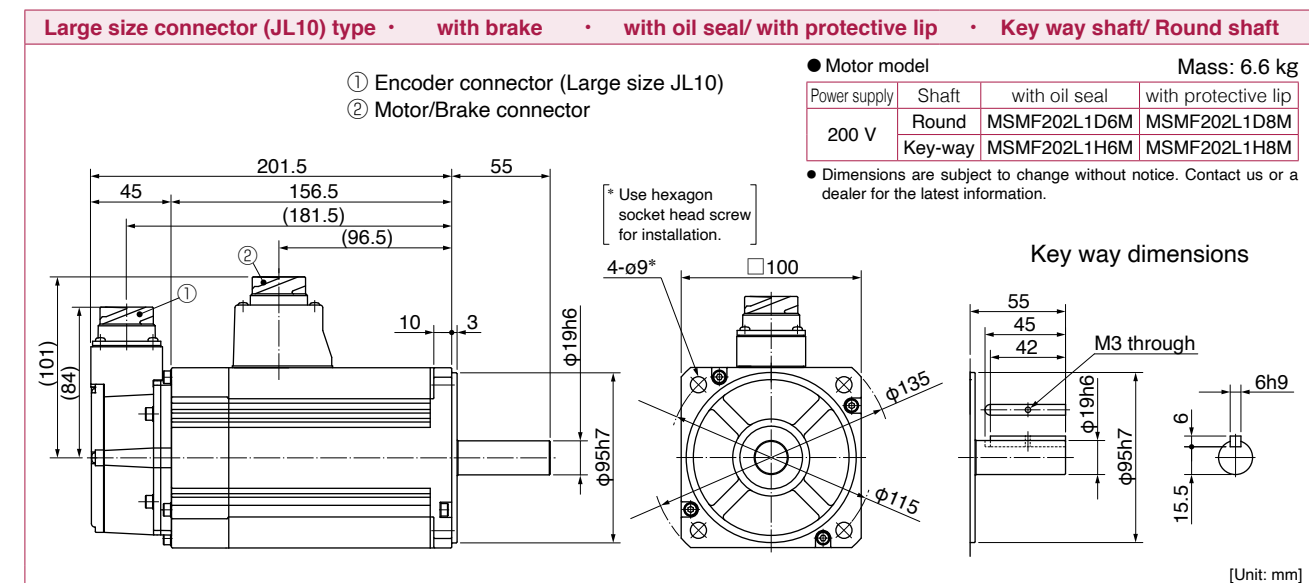
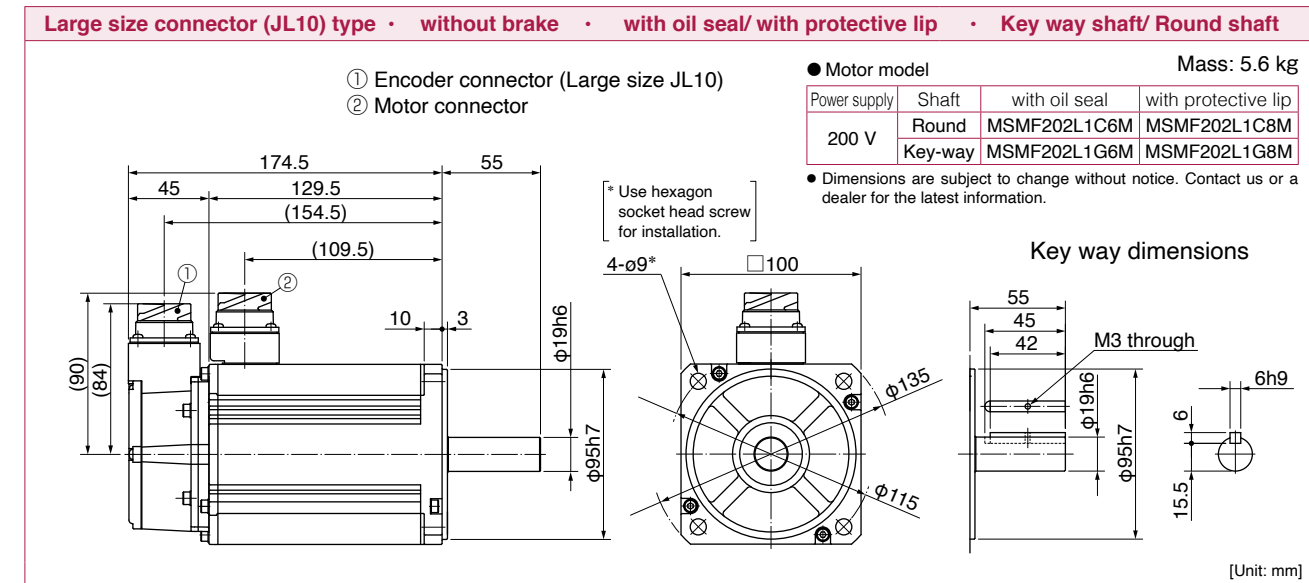


* For motors specifications, refer to P217, P218.

MSMF 1.5 kW



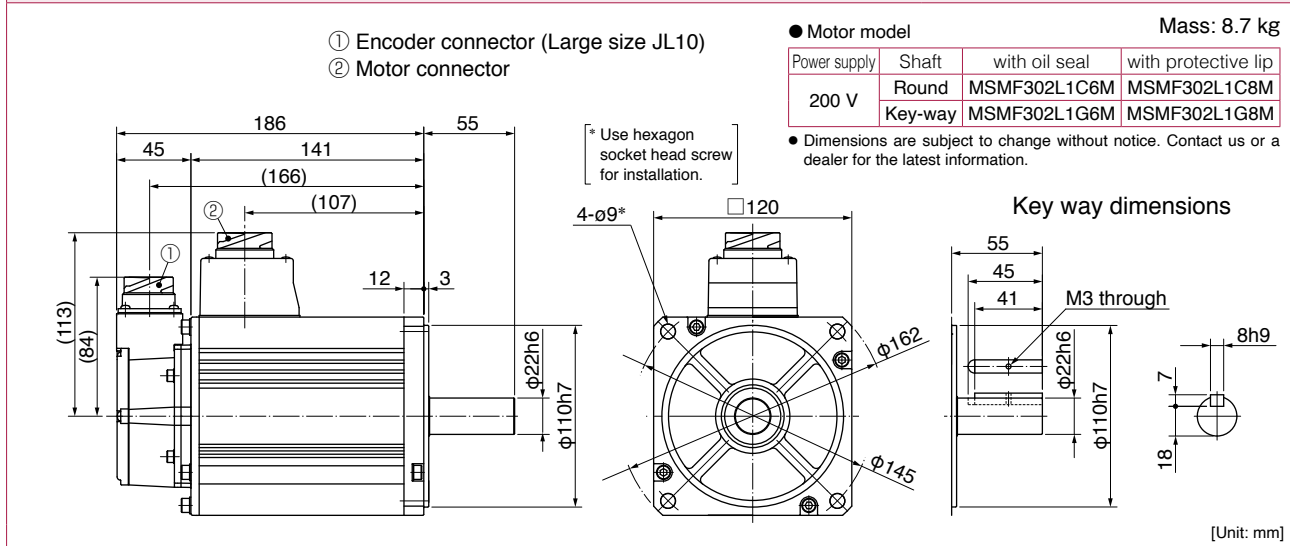
MSMF 2.0 kW



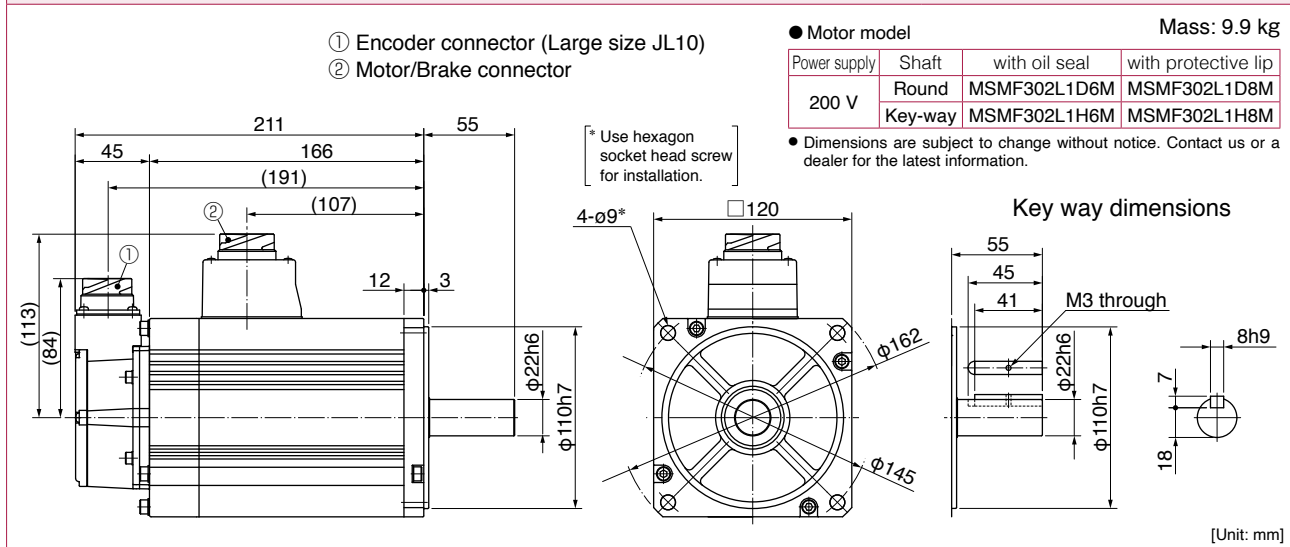
* For motors specifications, refer to P218, P219.

MSMF 3.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

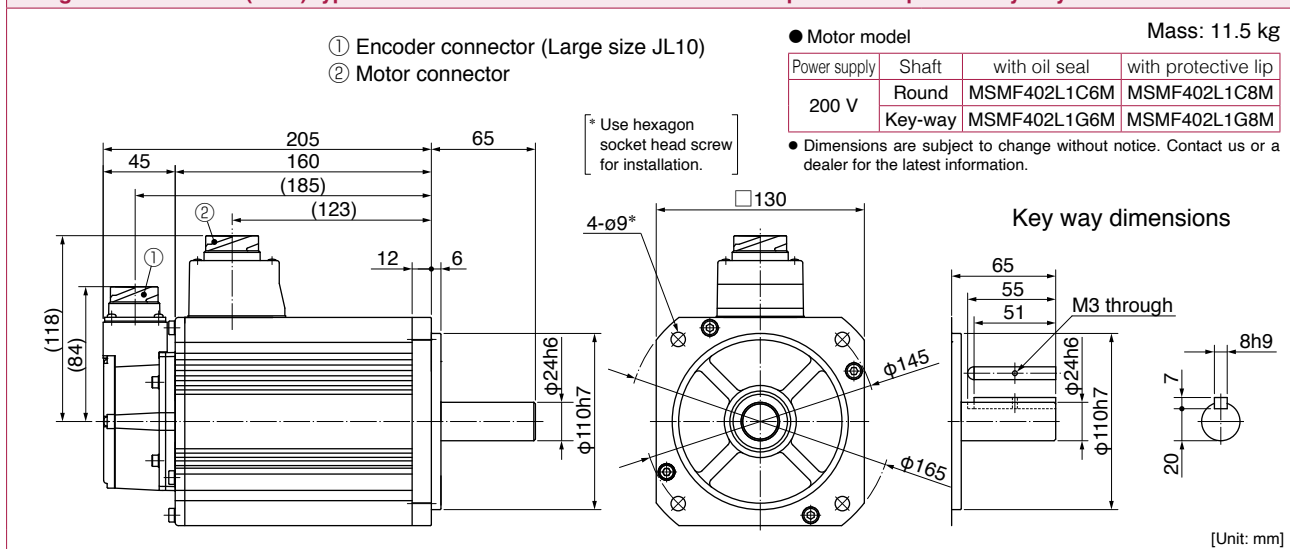


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MSMF 4.0 kW

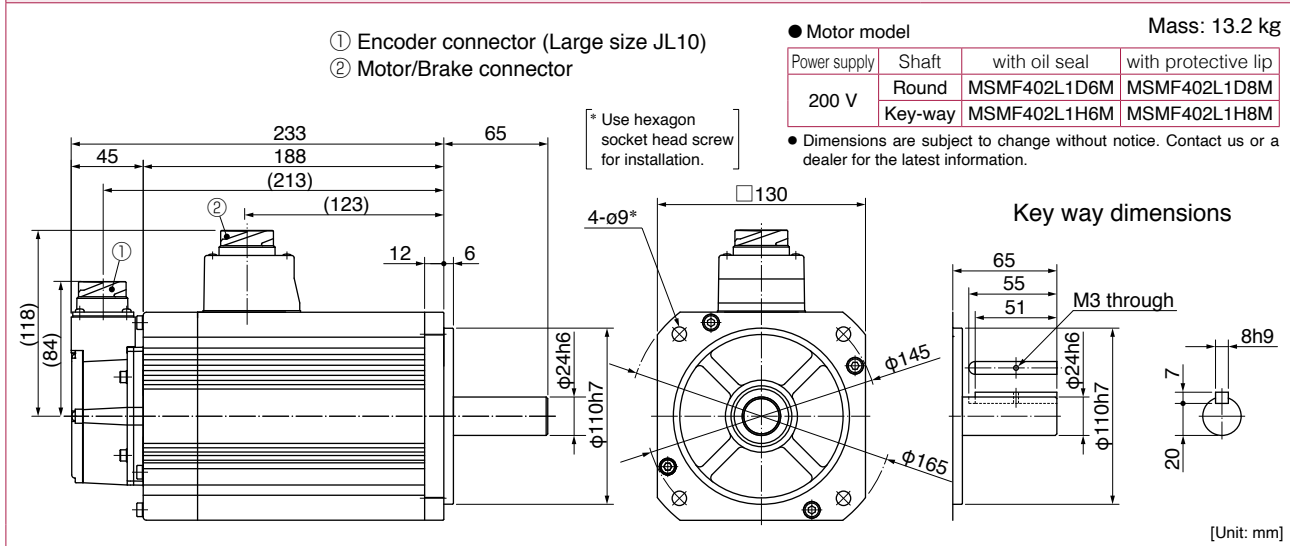
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P220, P221.

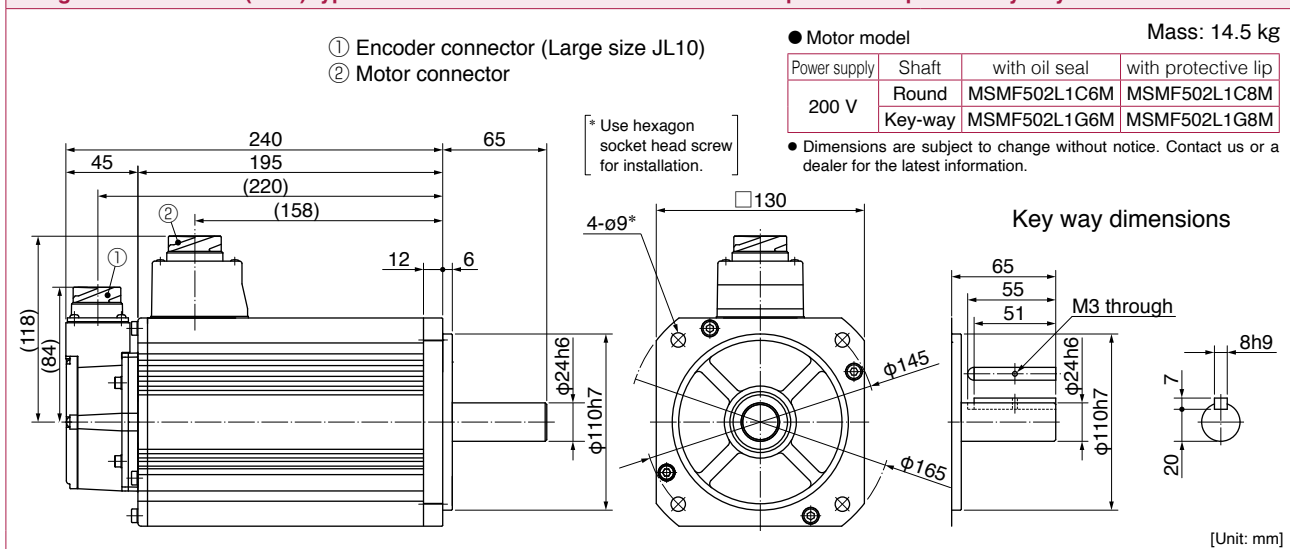
MSMF 4.0 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

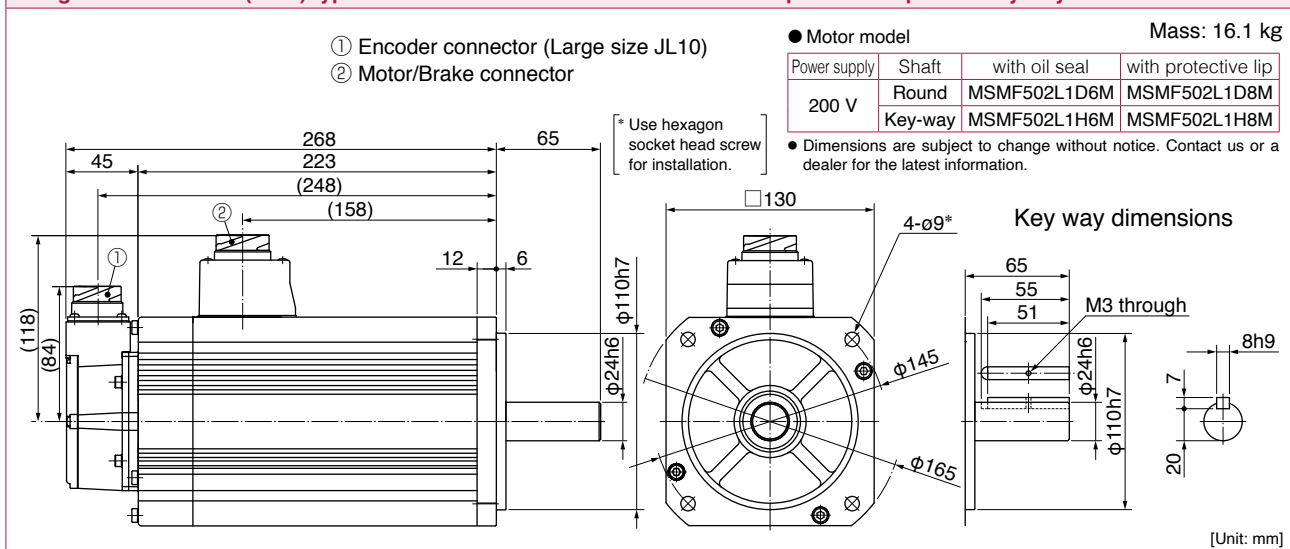


MSMF 5.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

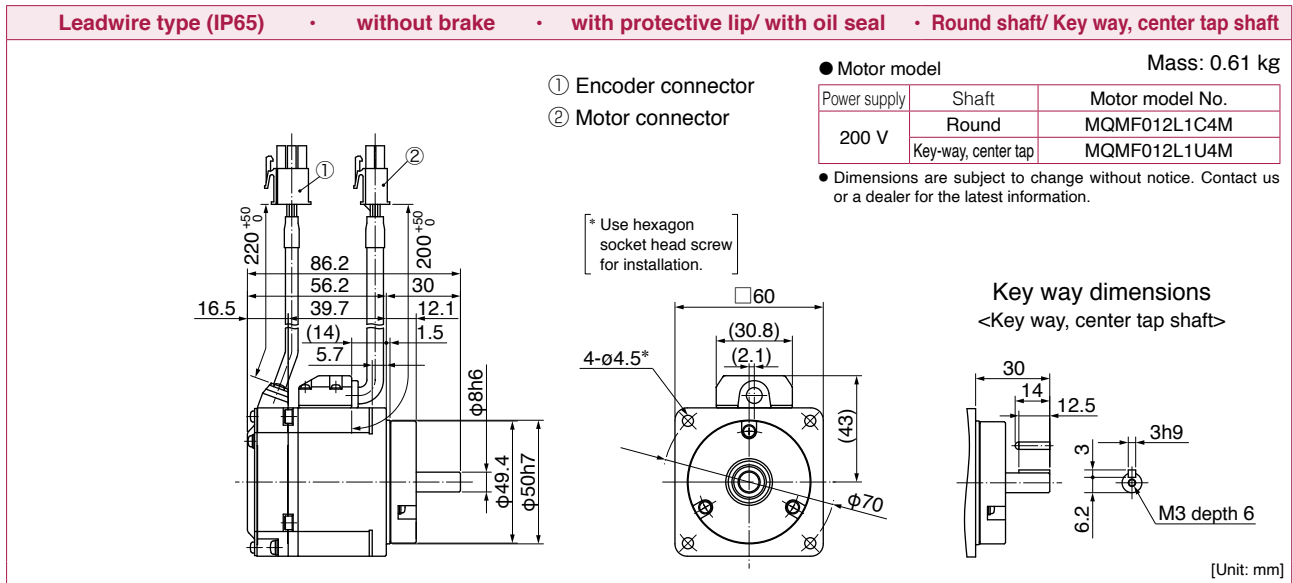
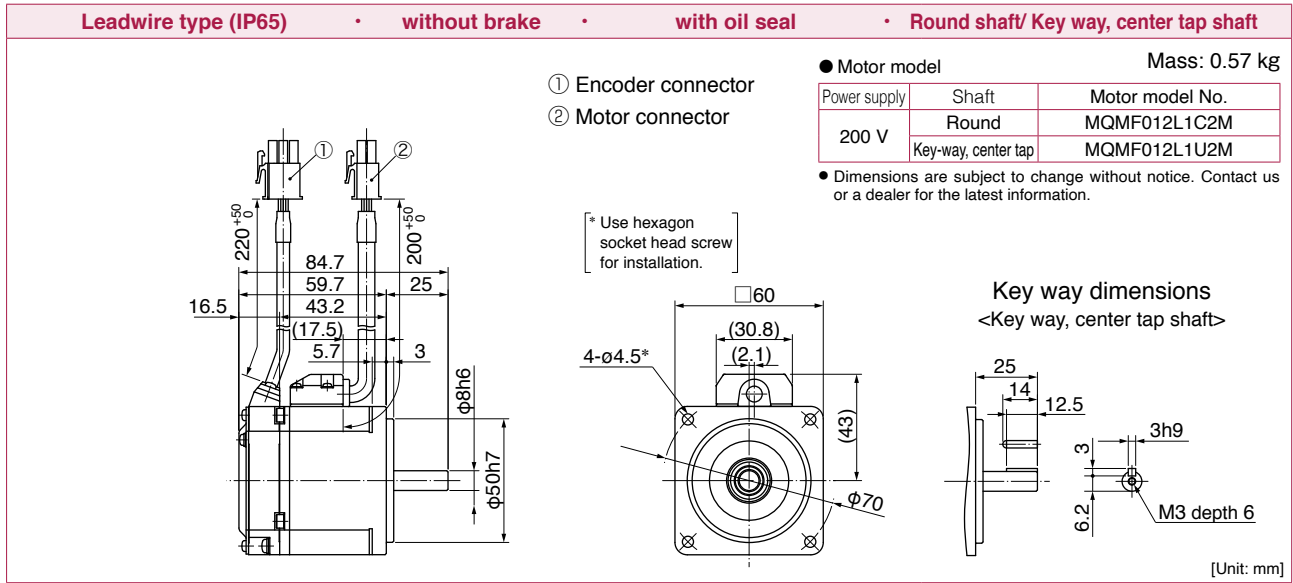
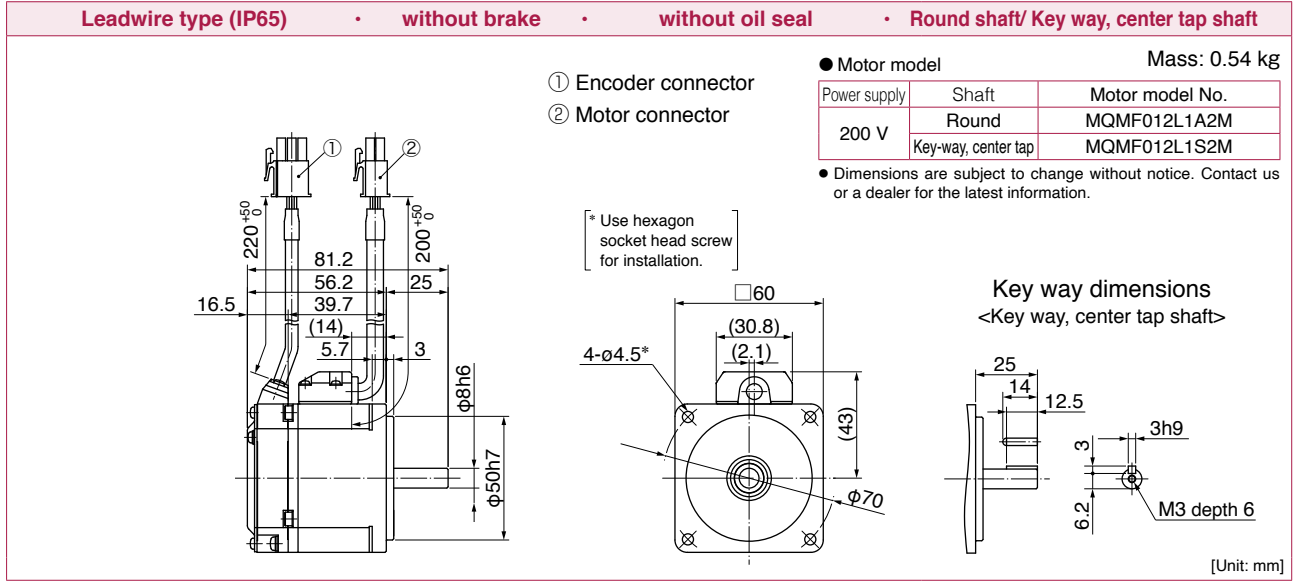


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



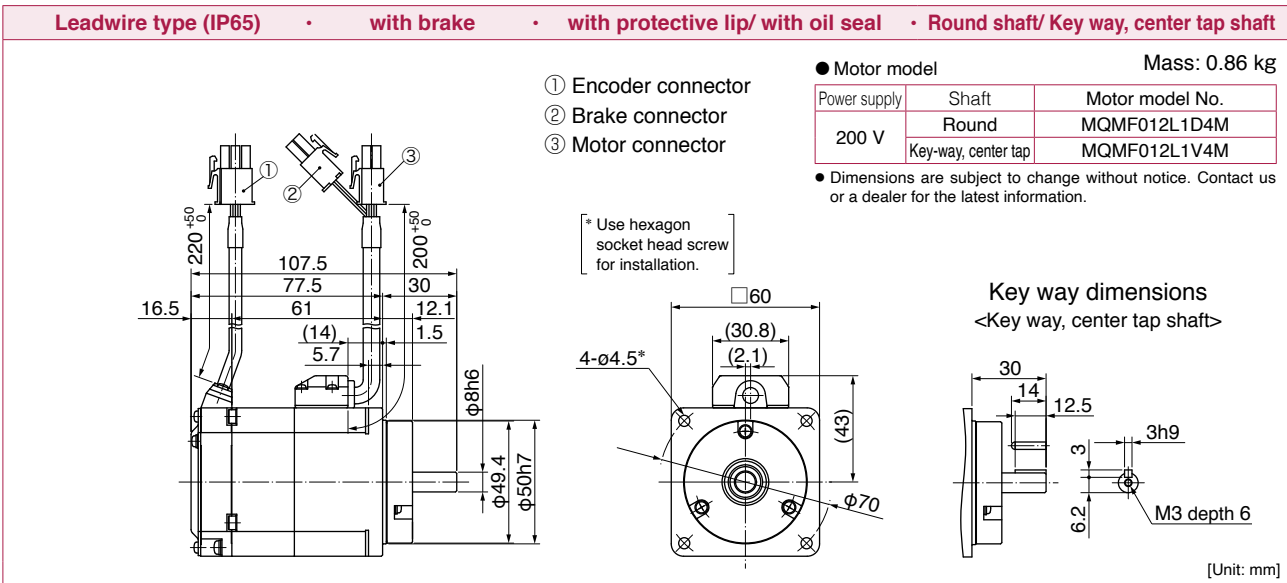
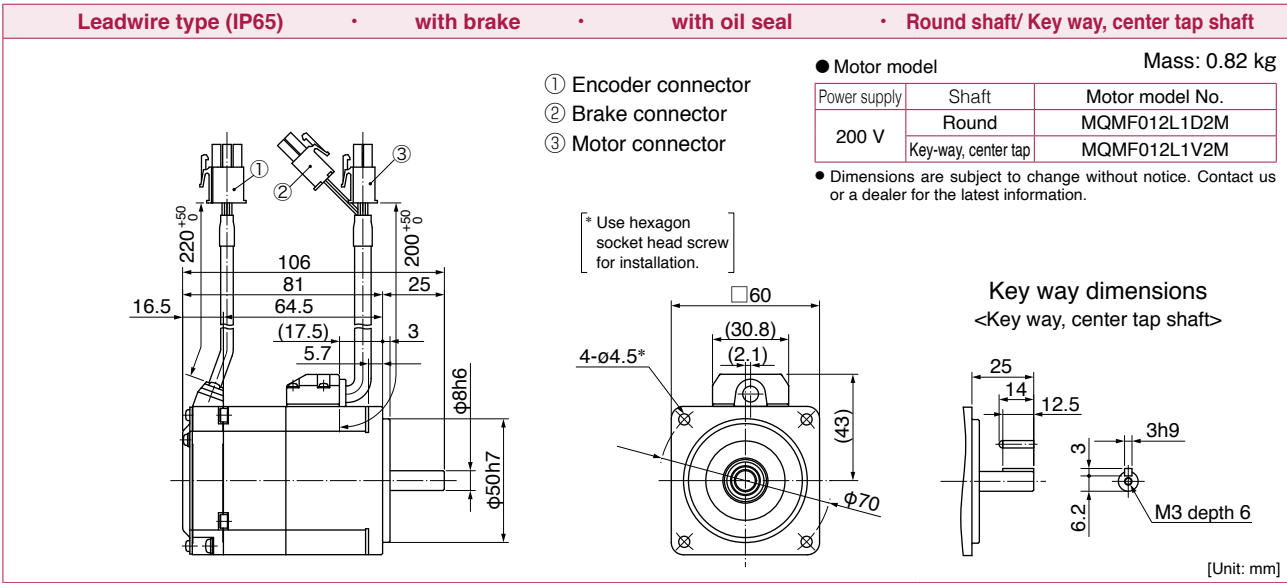
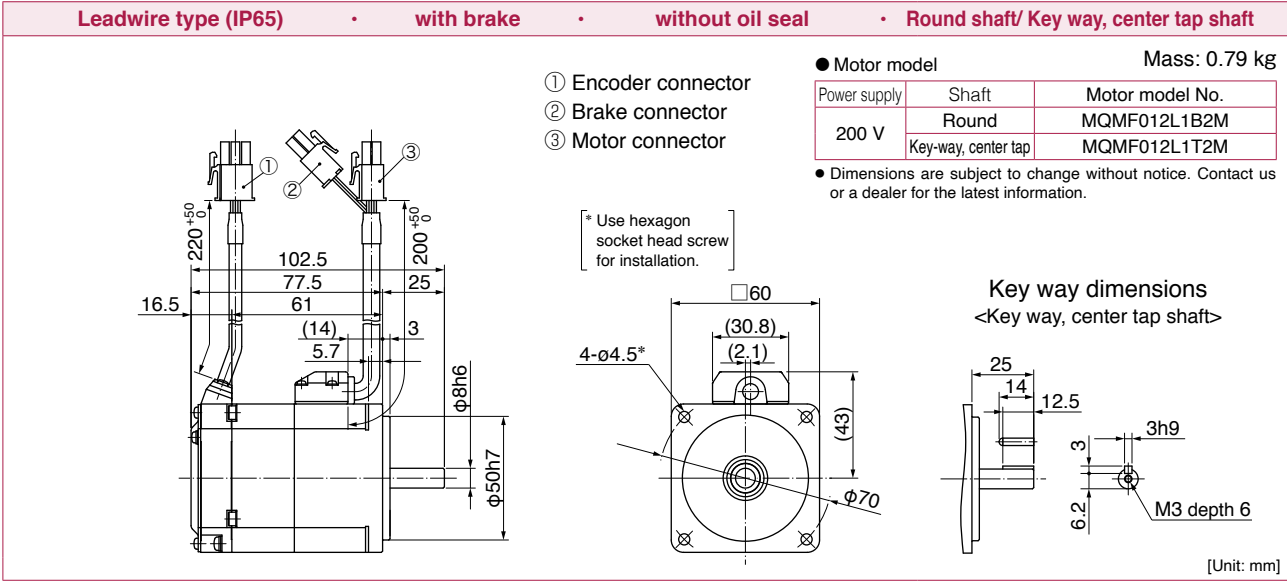
* For motors specifications, refer to P221, P222.

MQMF 100 W



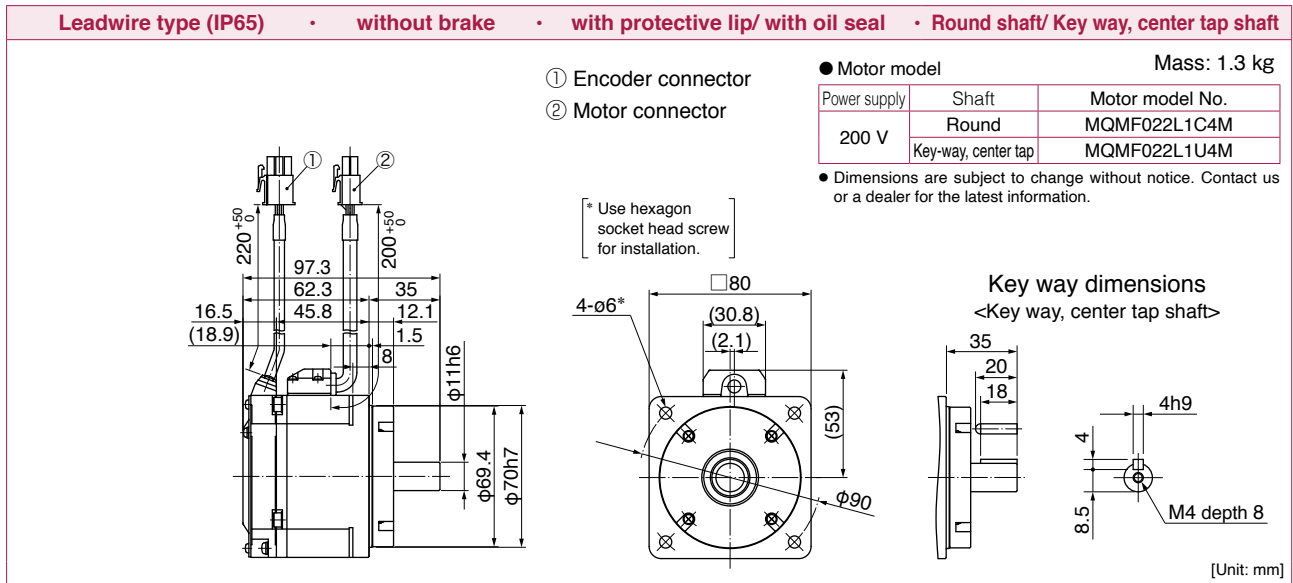
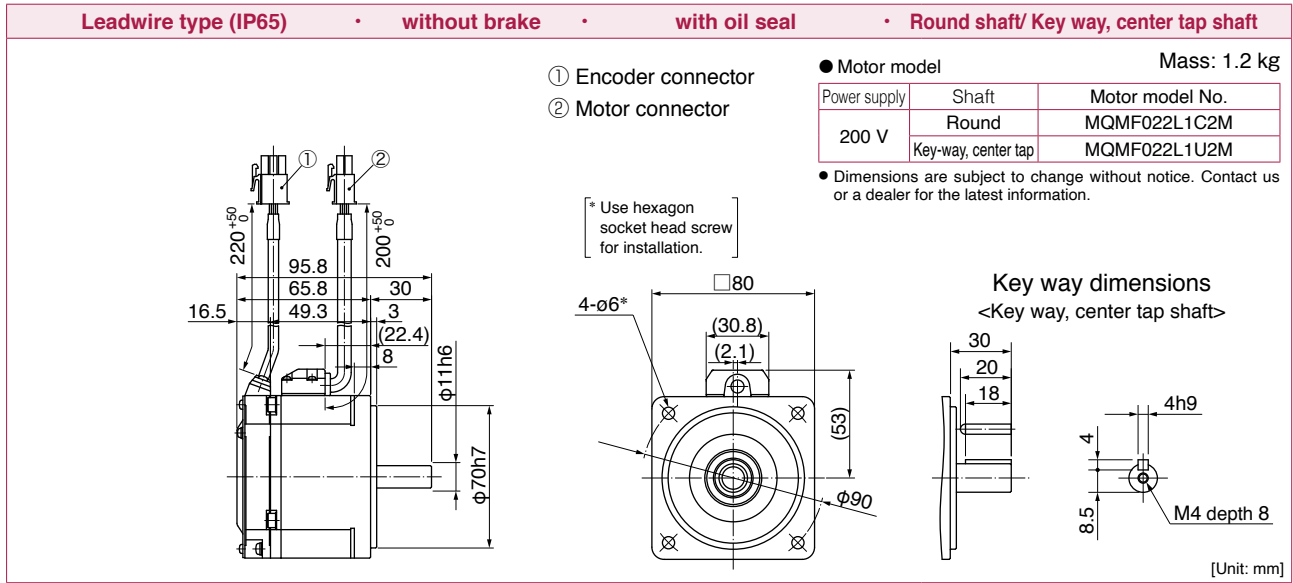
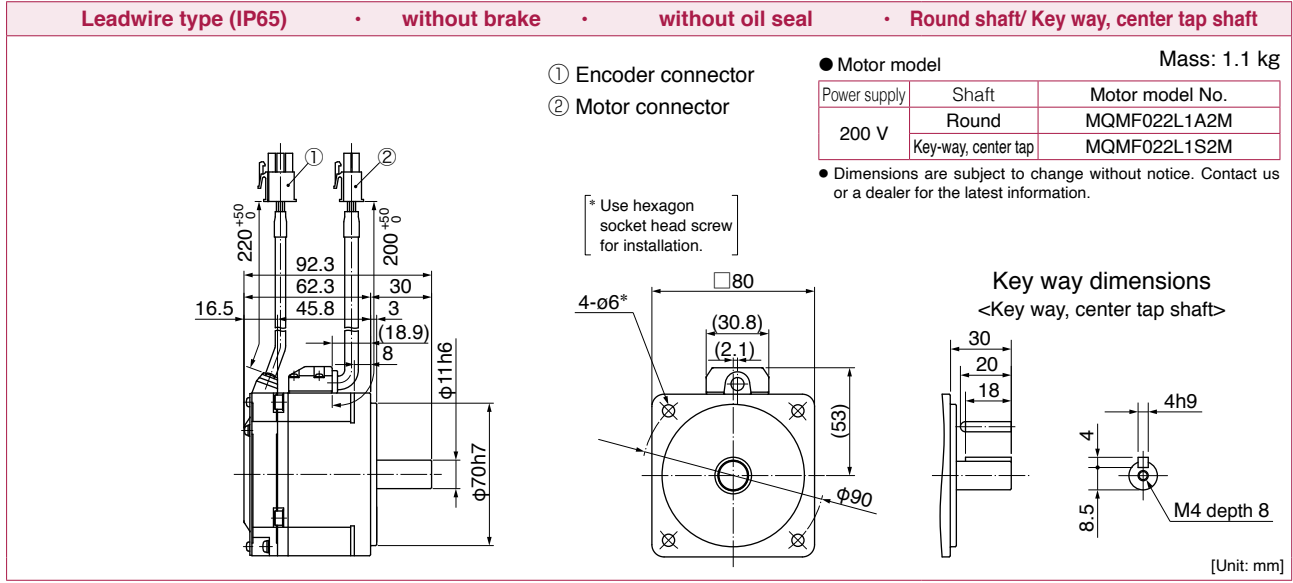
* For motors specifications, refer to P.223.

MQMF 100 W



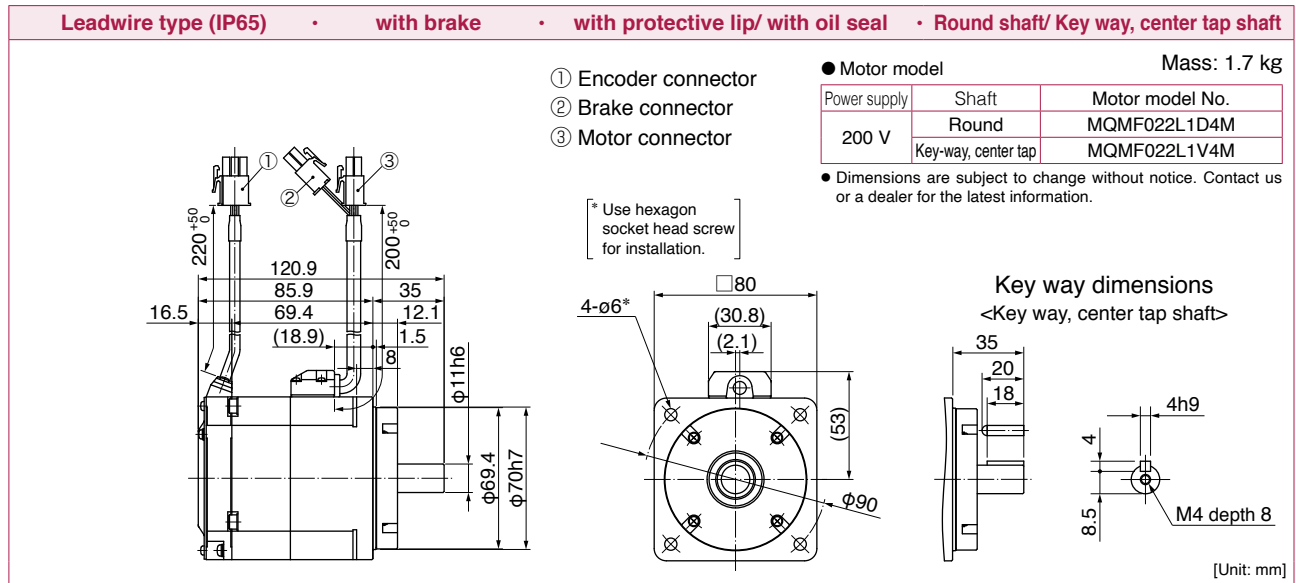
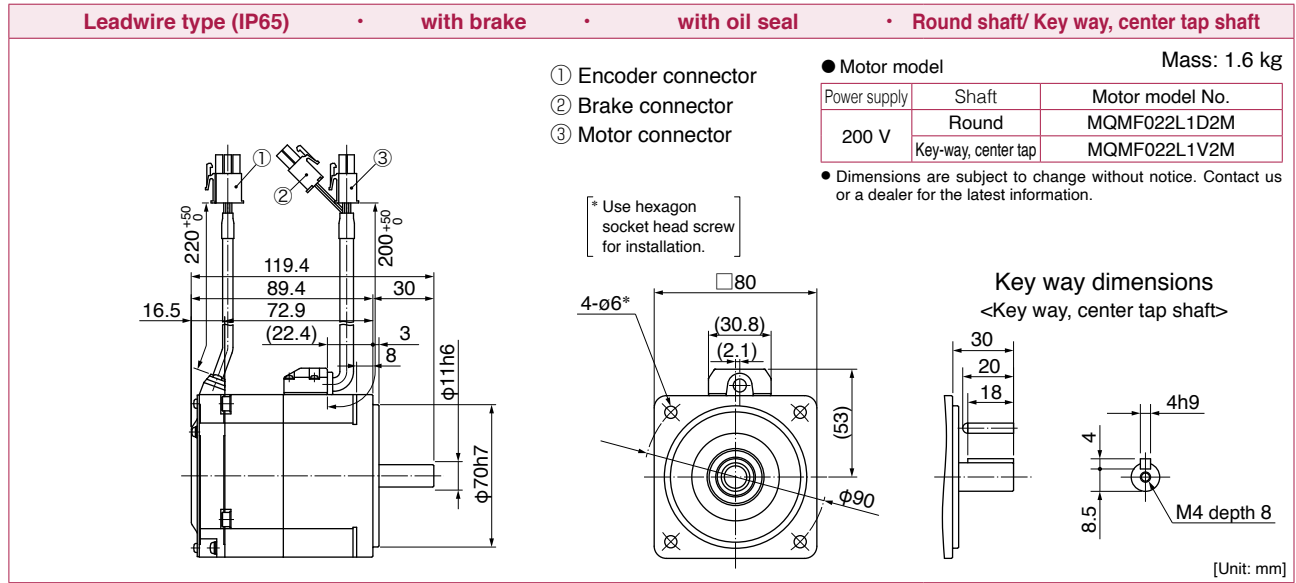
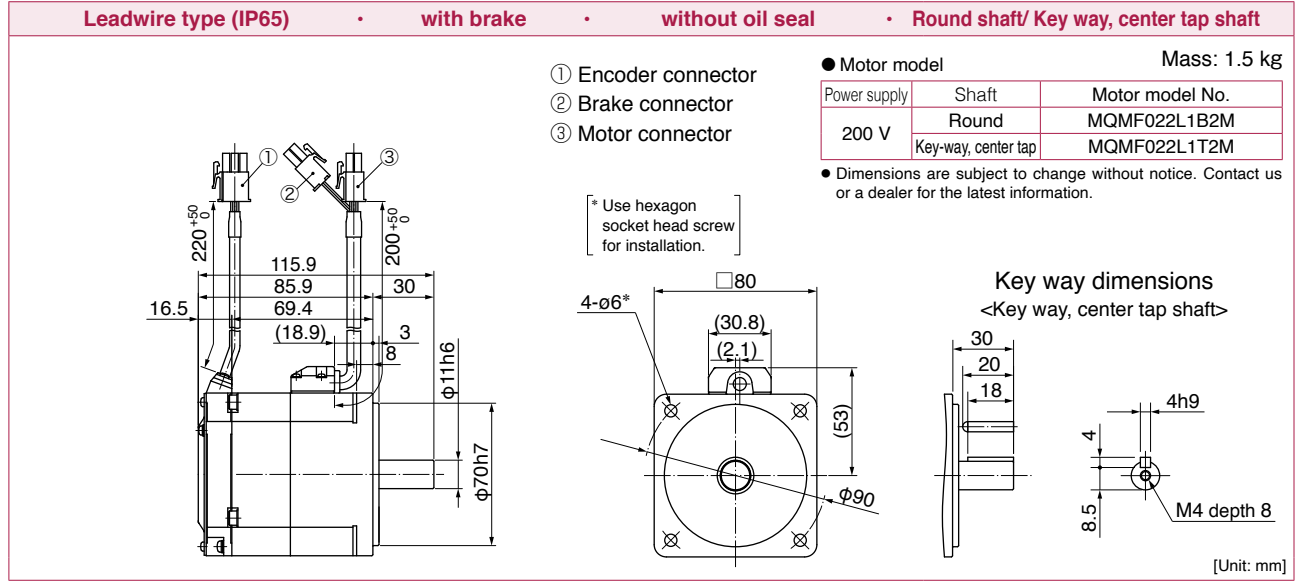
* For motors specifications, refer to P.223.

MQMF 200 W



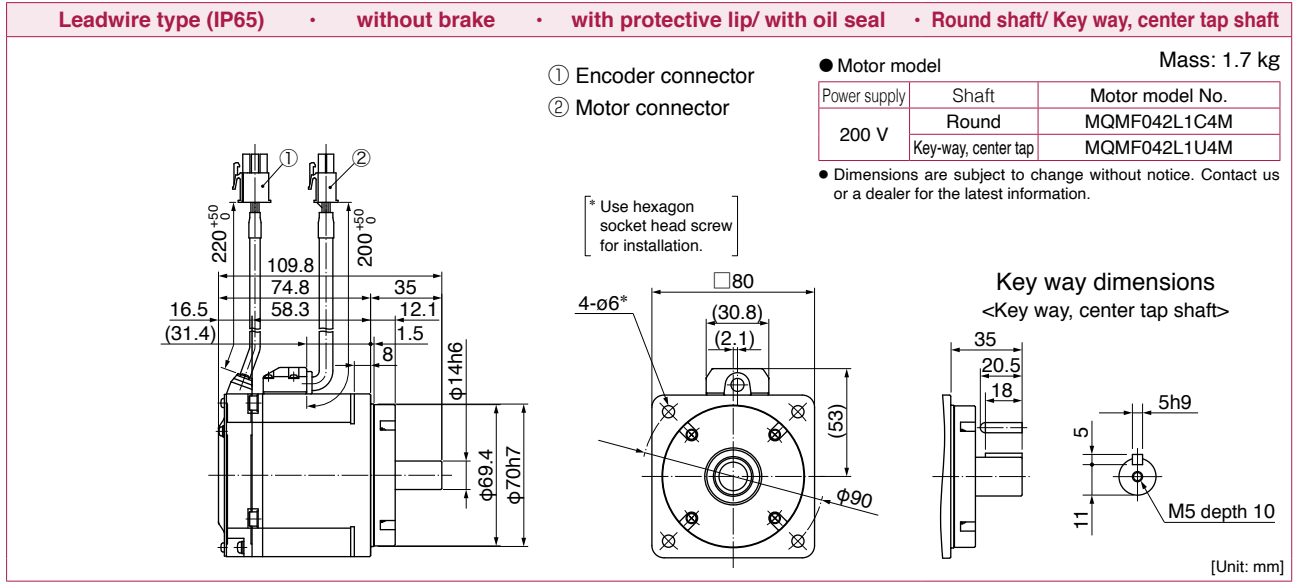
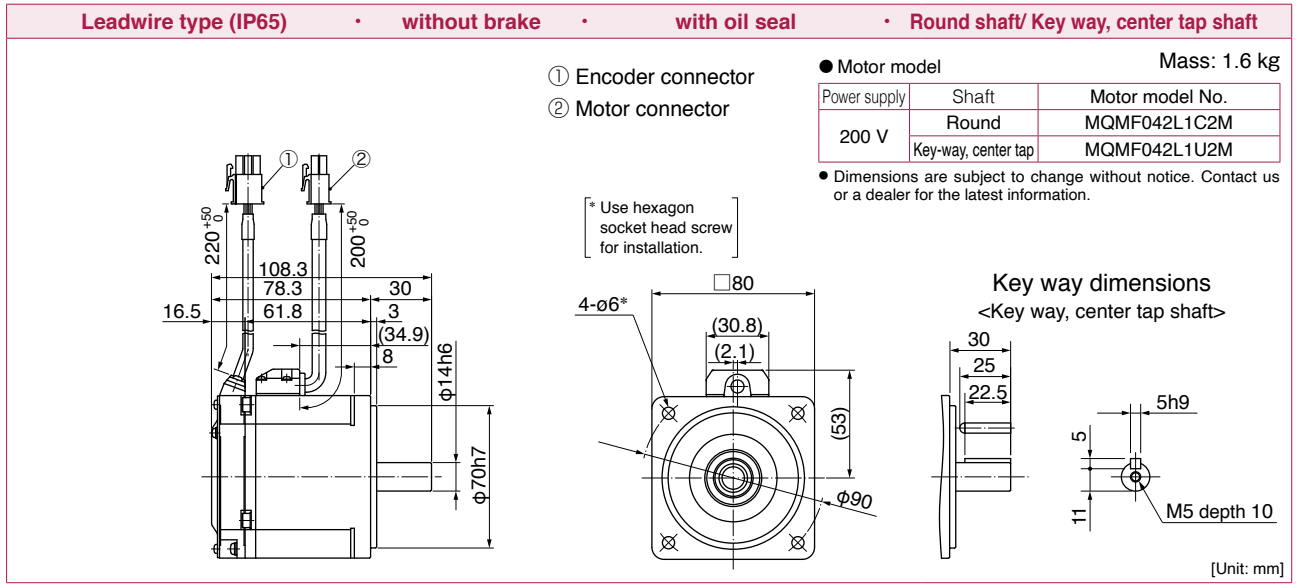
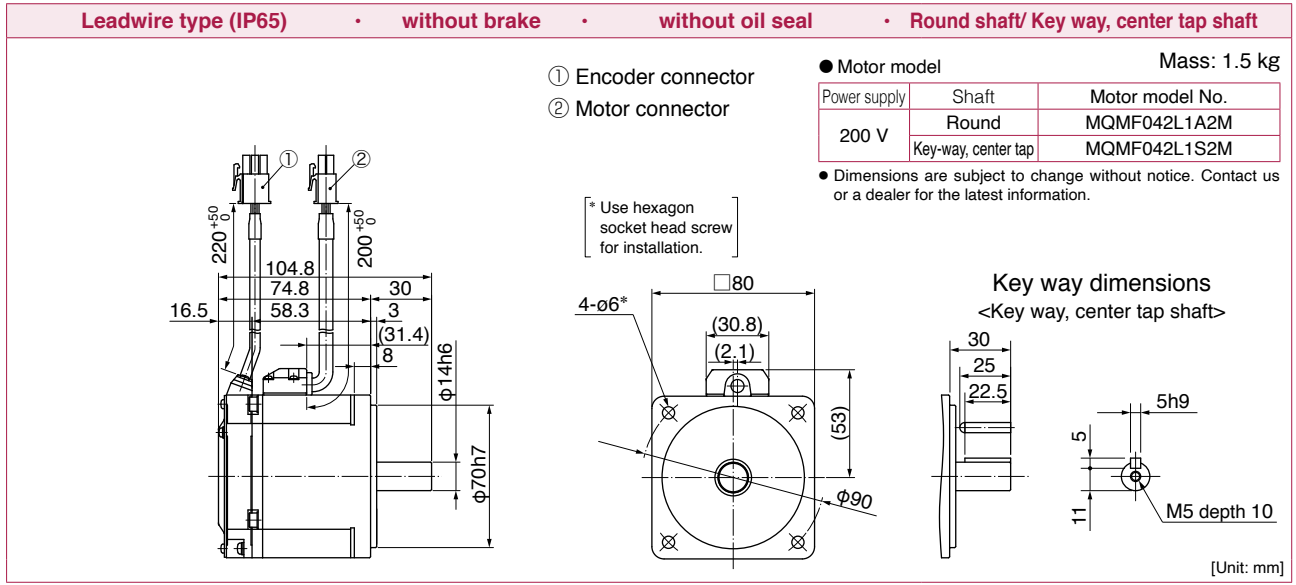
* For motors specifications, refer to P.224.

MQMF 200 W



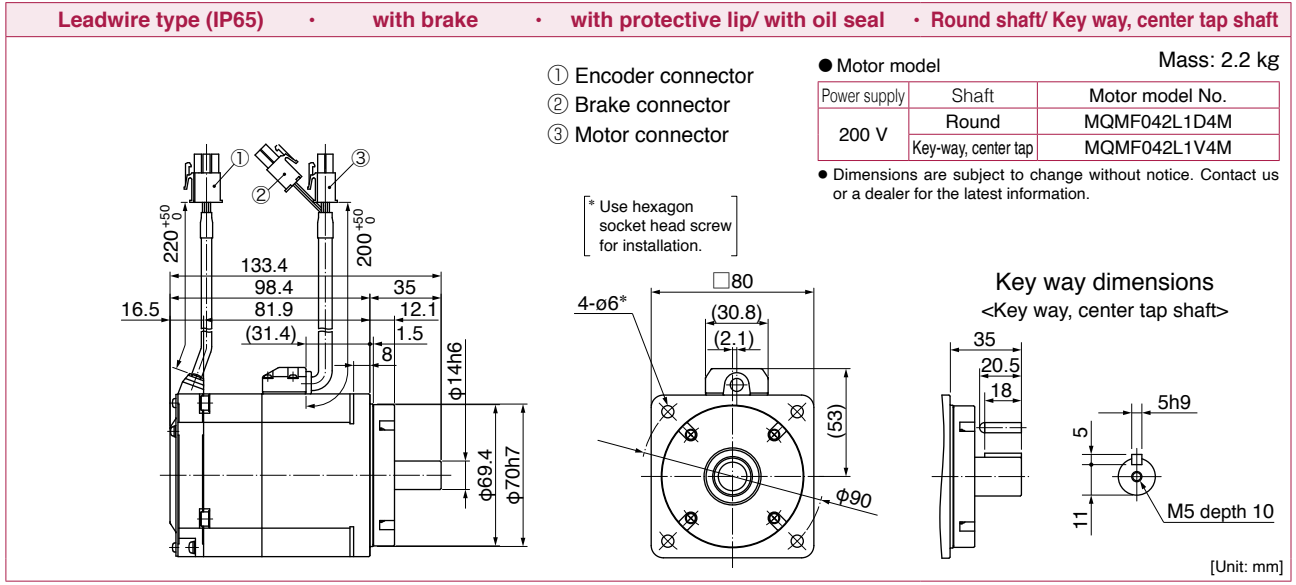
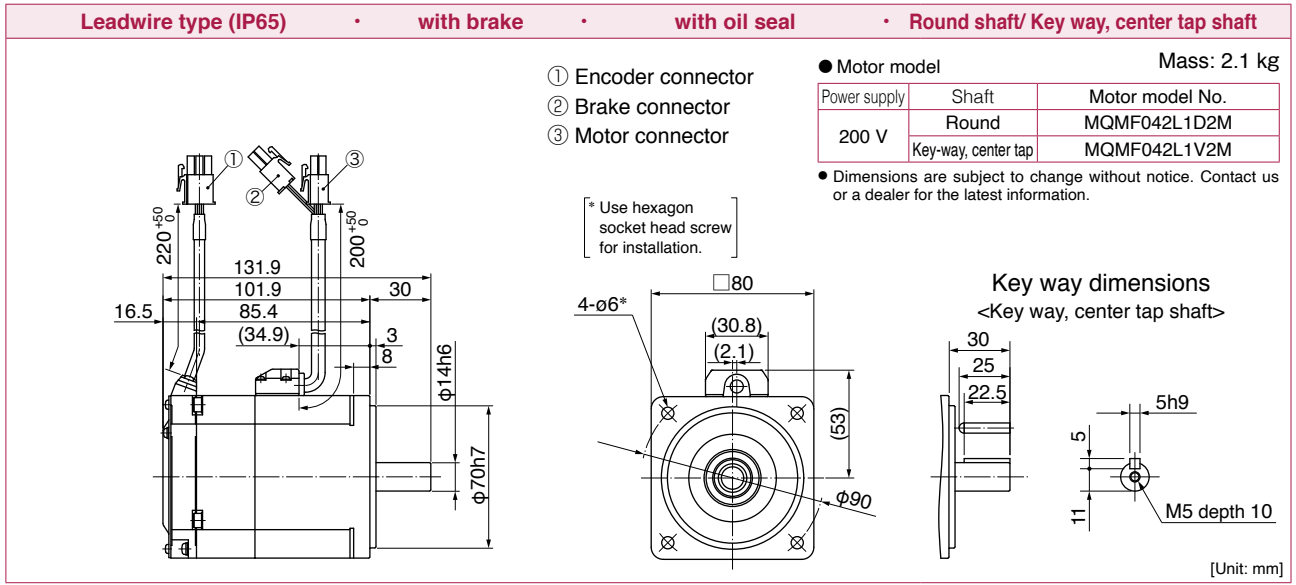
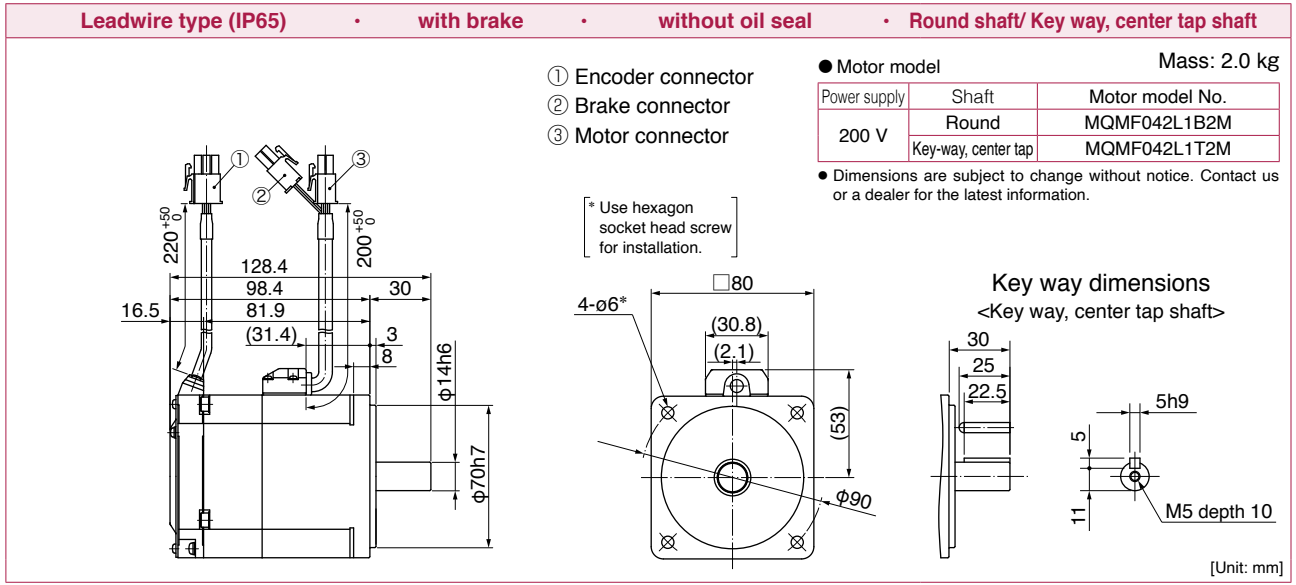
* For motors specifications, refer to P.224.

MQMF 400 W



* For motors specifications, refer to P.225.

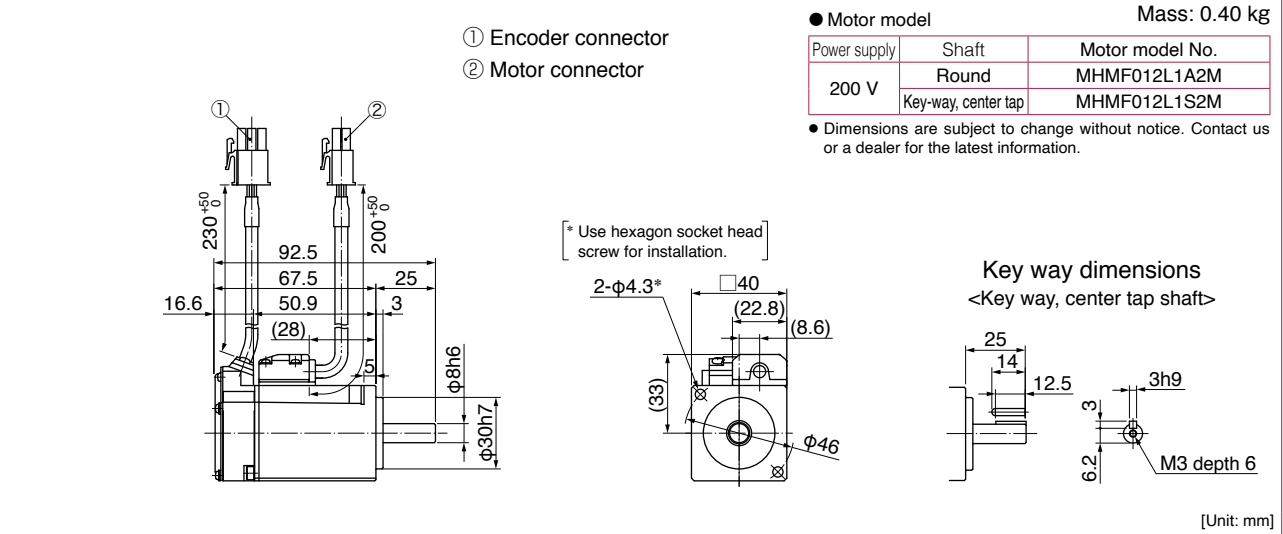
MQMF 400 W



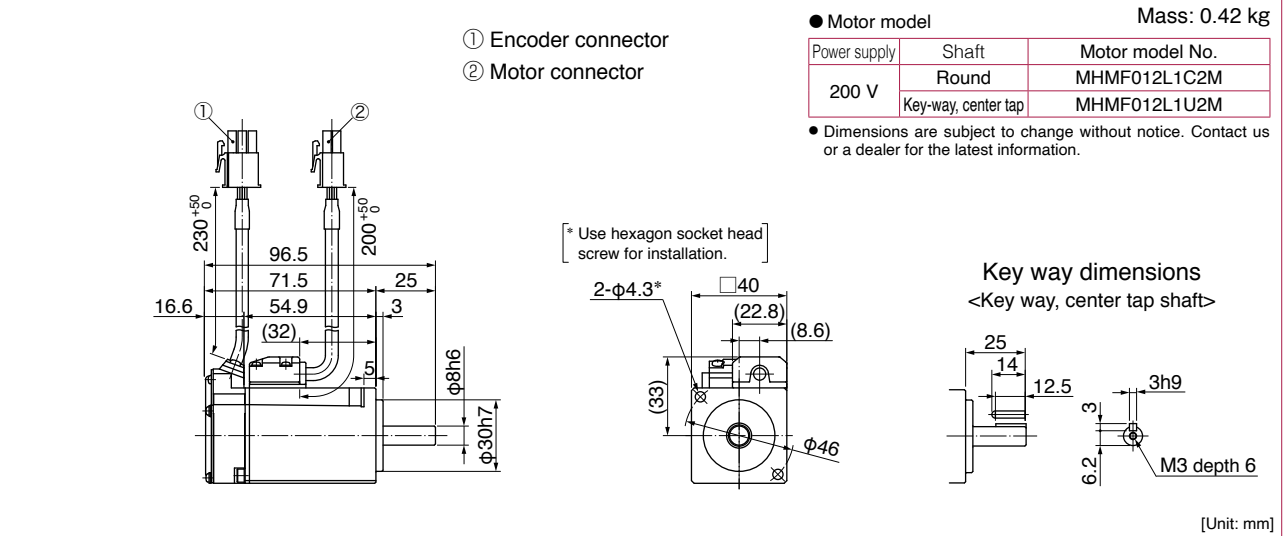
* For motors specifications, refer to P.225.

MHMF 100 W

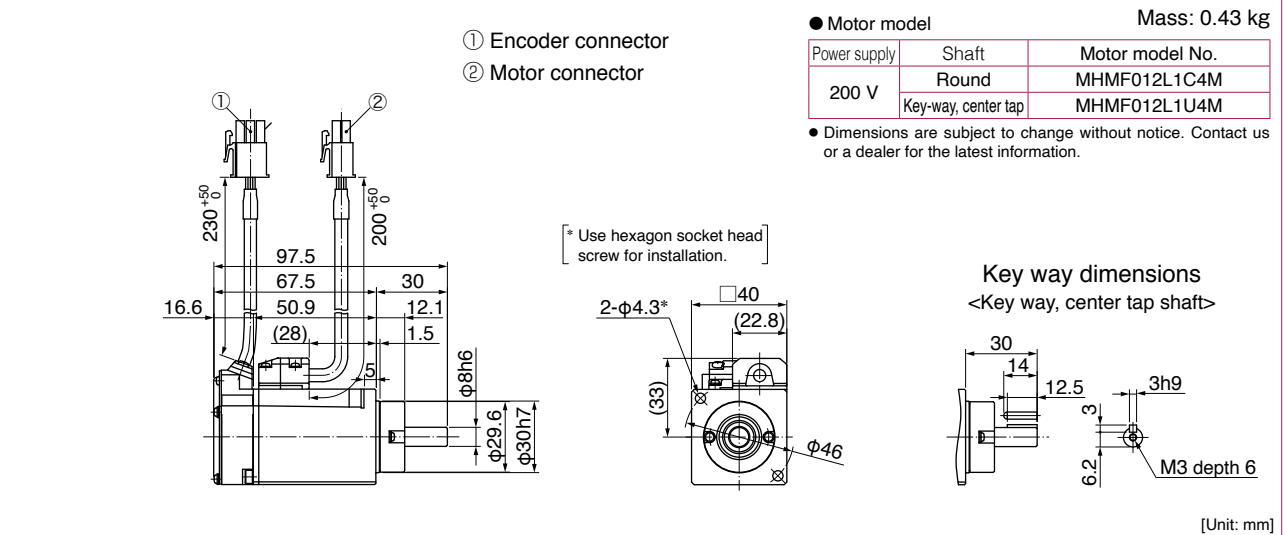
Leadwire type (IP65) • without brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • without brake • with oil seal • Round shaft/ Key way, center tap shaft



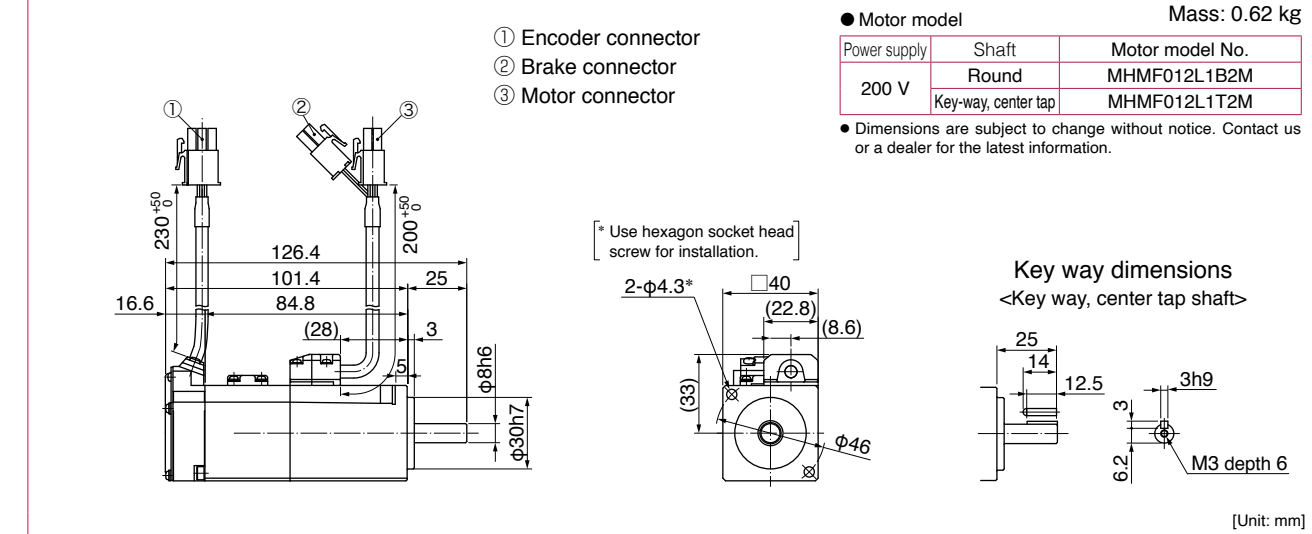
Leadwire type (IP65) • without brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



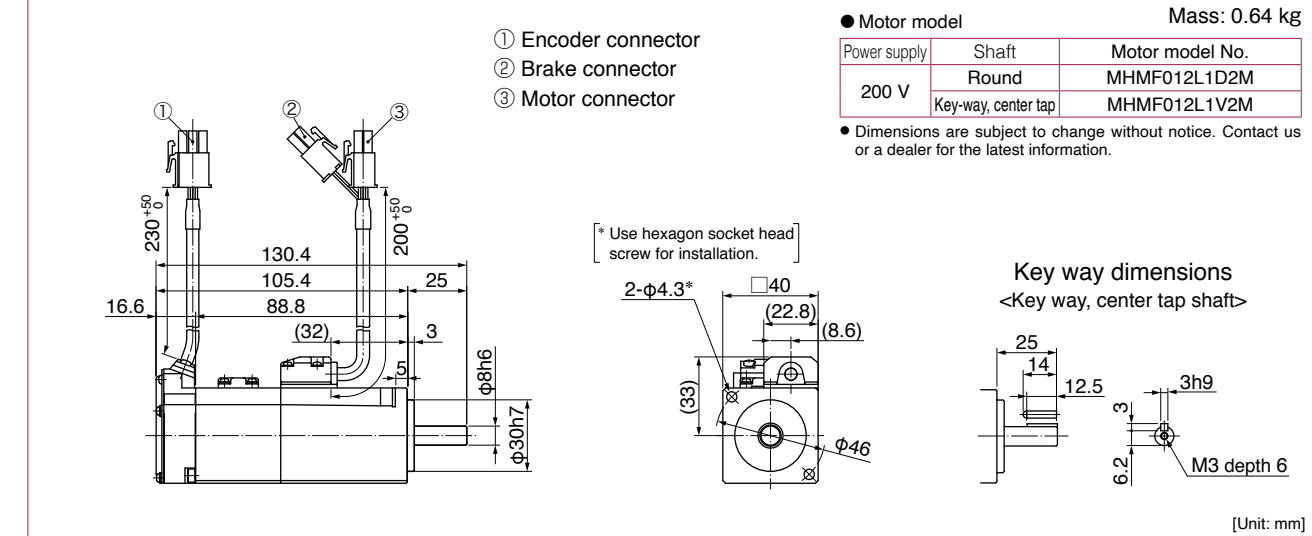
* For motors specifications, refer to P.227.

MHMF 100 W

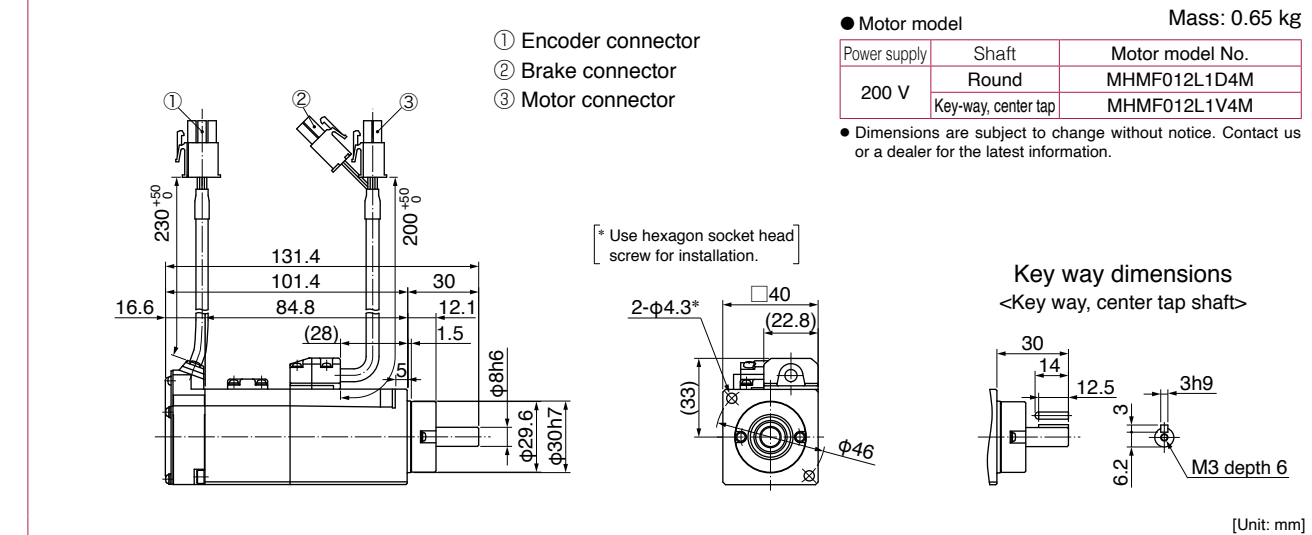
Leadwire type (IP65) • with brake • without oil seal • Round shaft/ Key way, center tap shaft



Leadwire type (IP65) • with brake • with oil seal • Round shaft/ Key way, center tap shaft

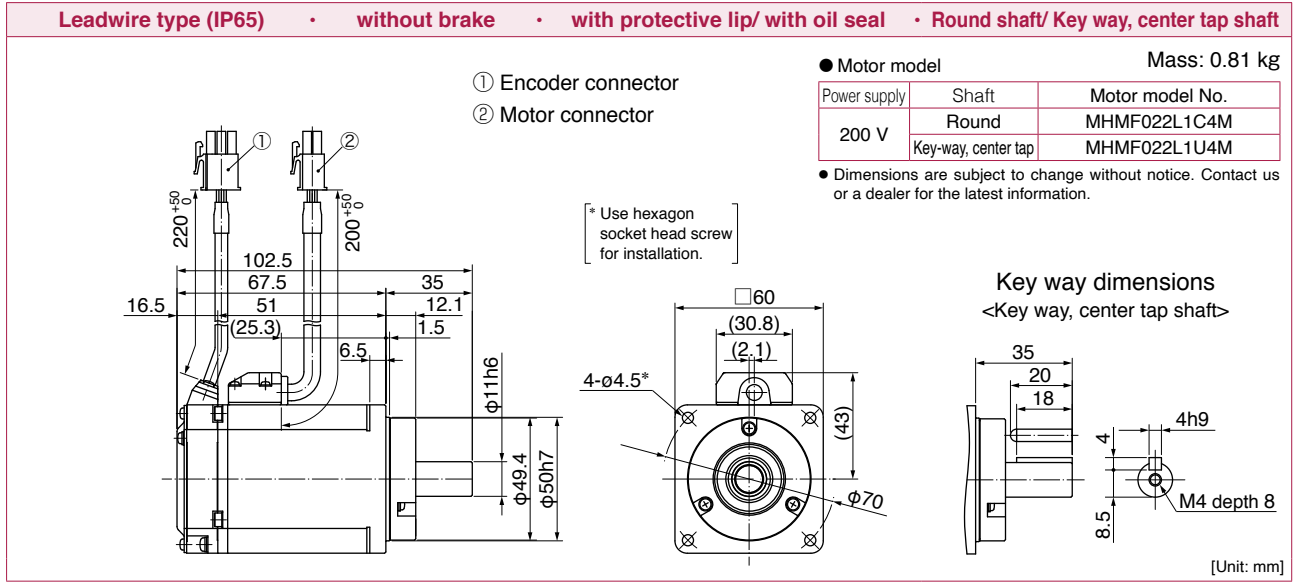
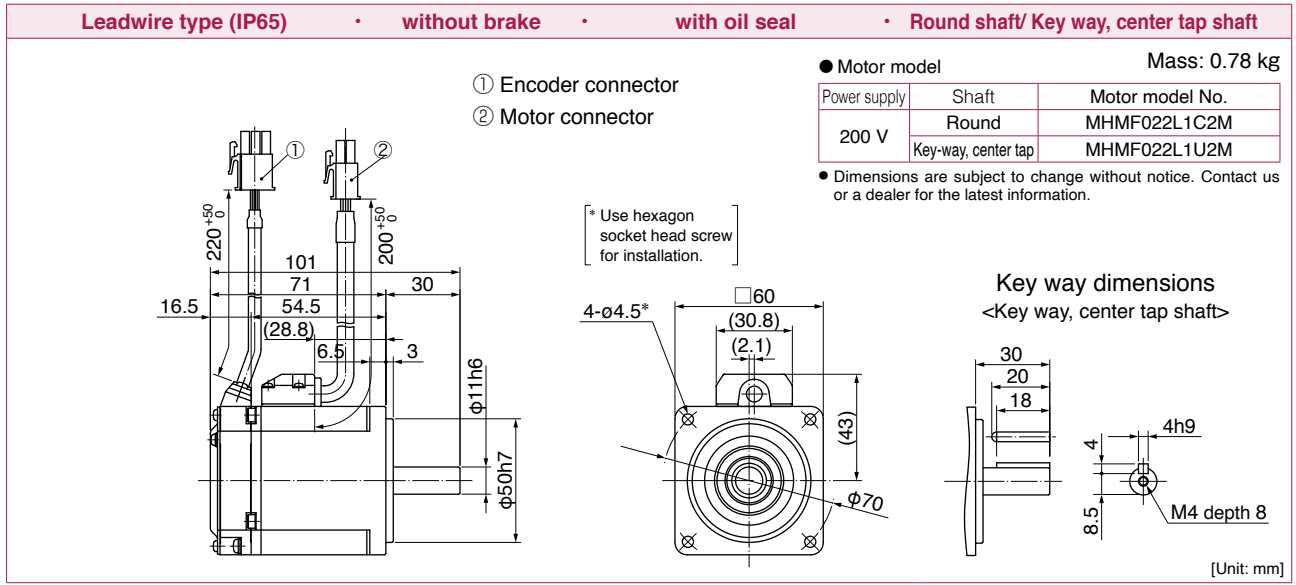
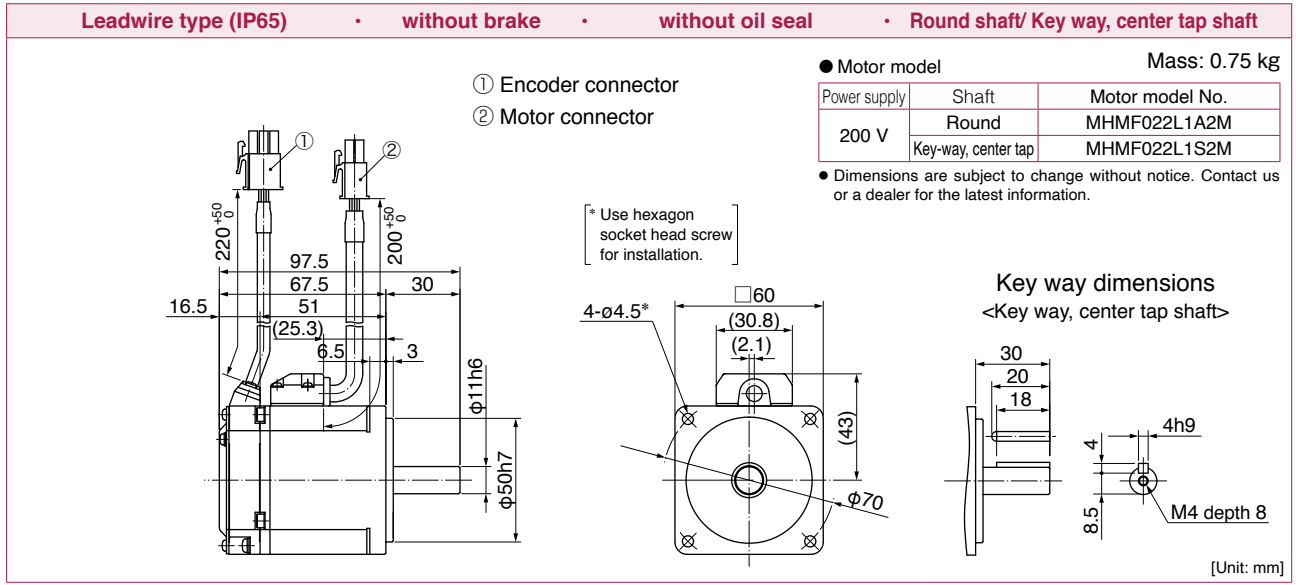


Leadwire type (IP65) • with brake • with protective lip/ with oil seal • Round shaft/ Key way, center tap shaft



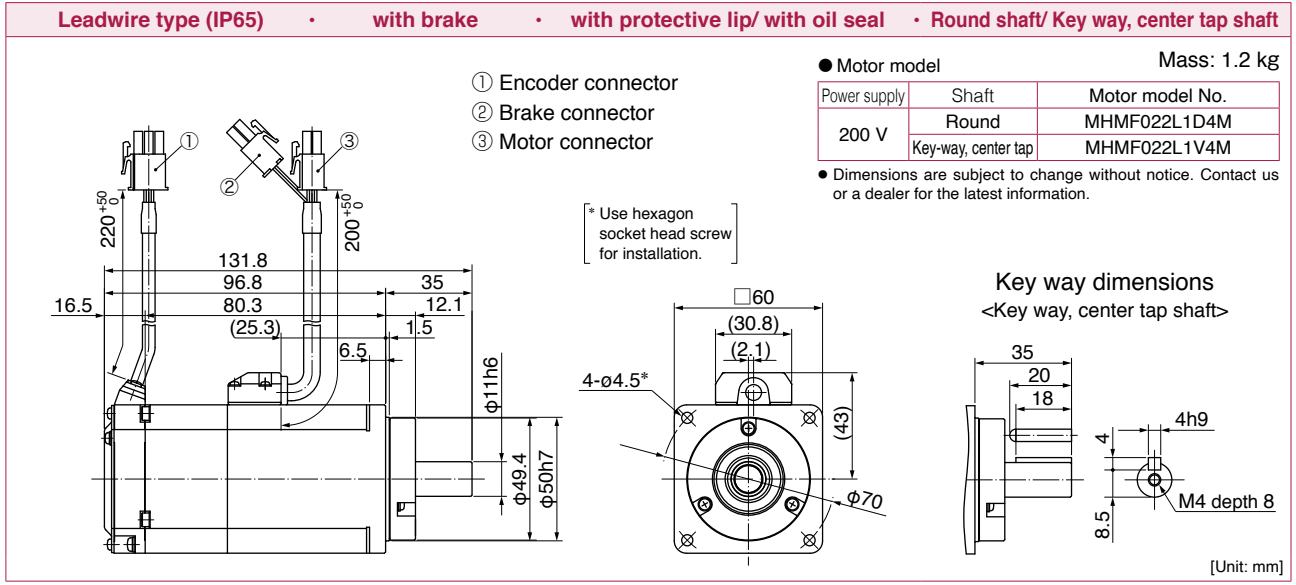
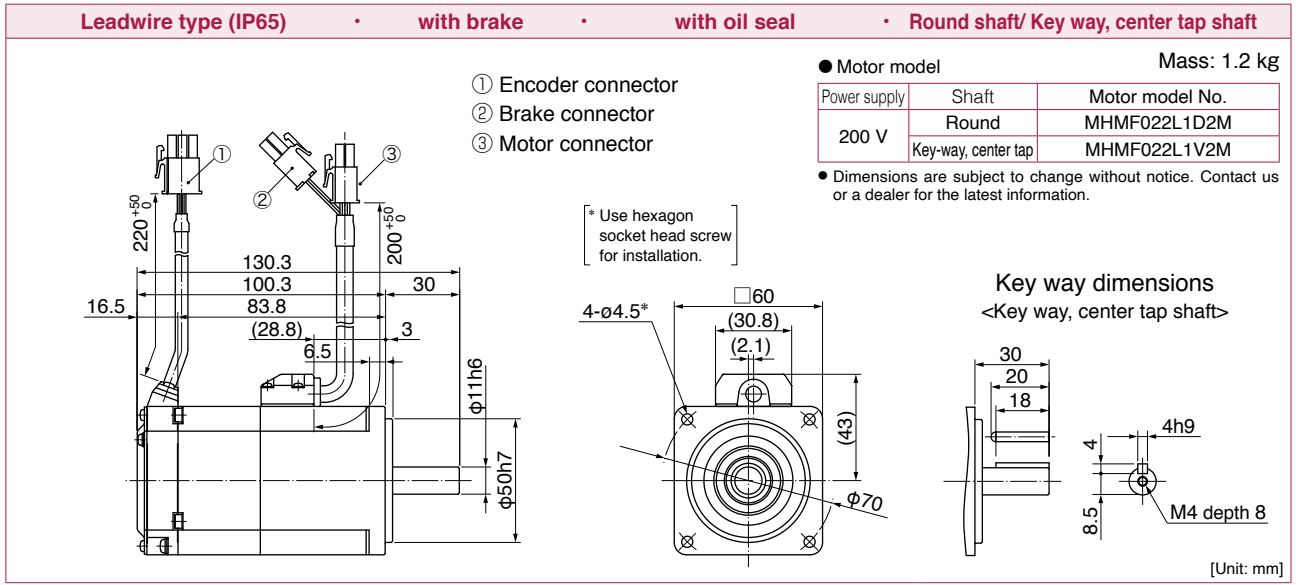
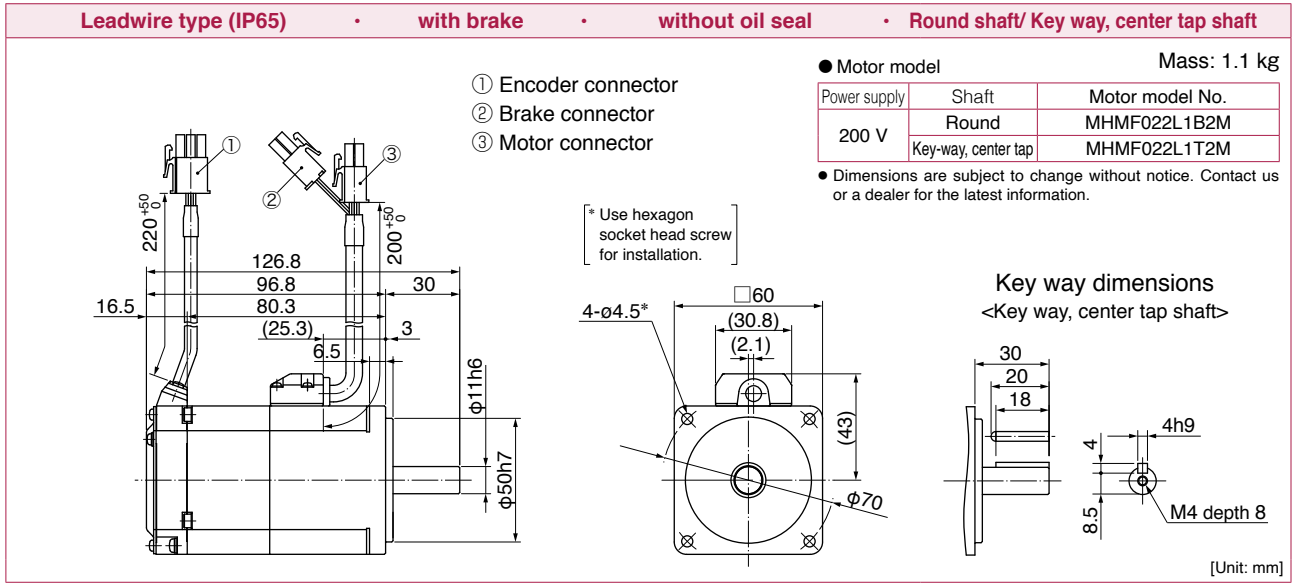
* For motors specifications, refer to P.227.

MHMF 200 W



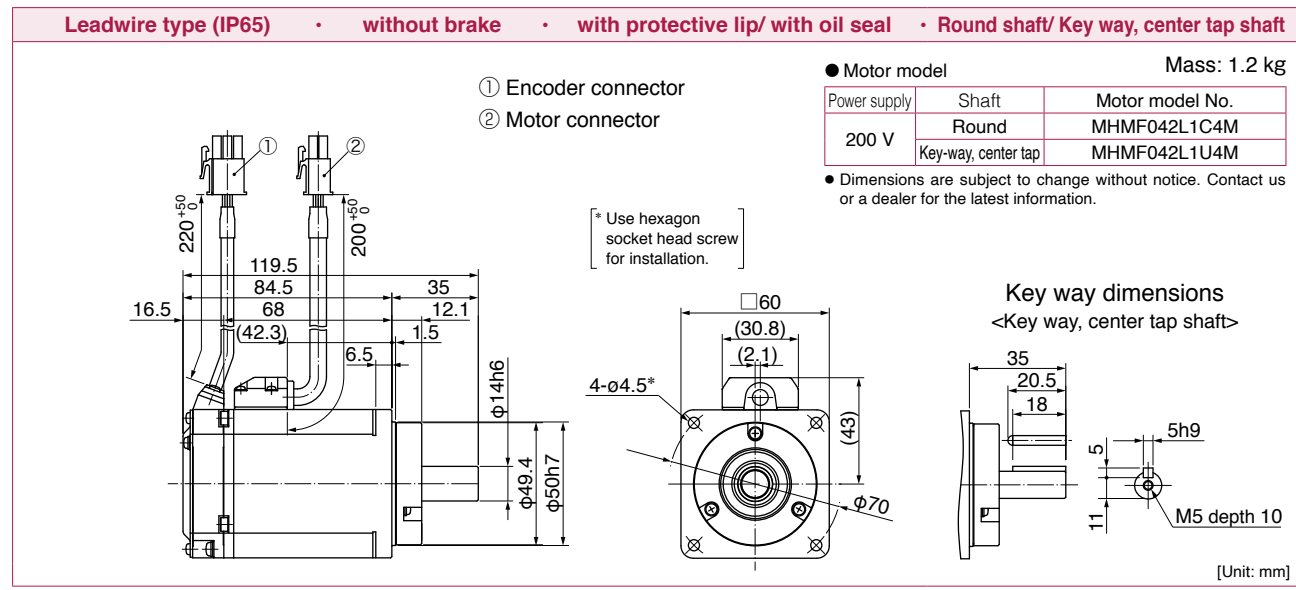
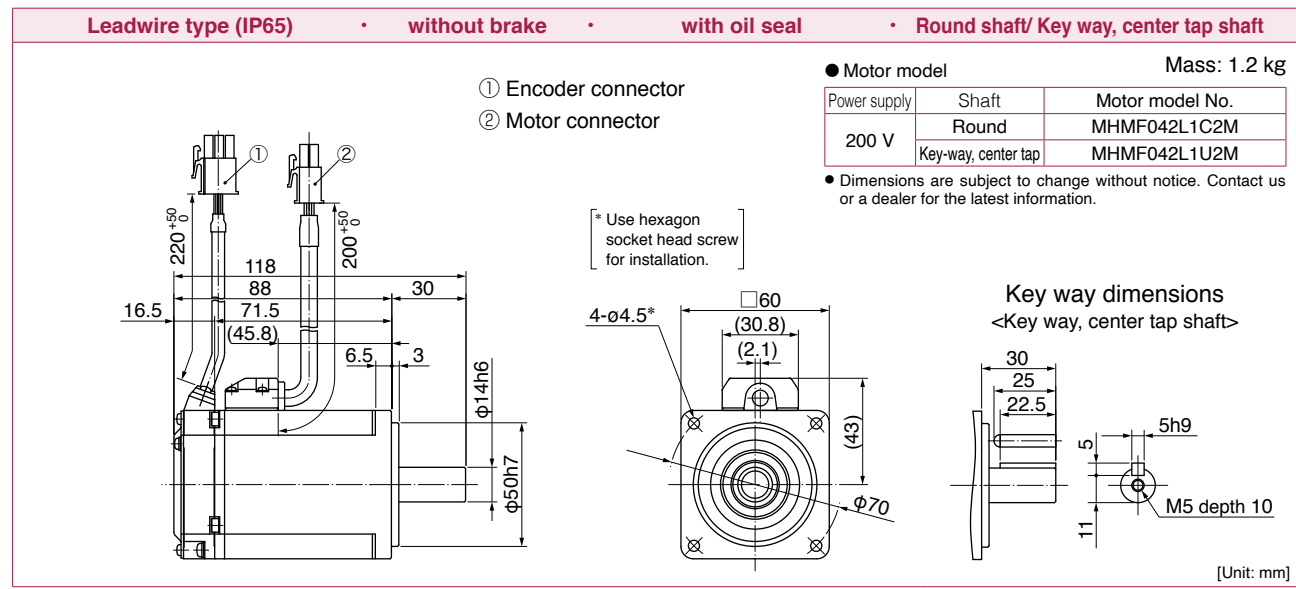
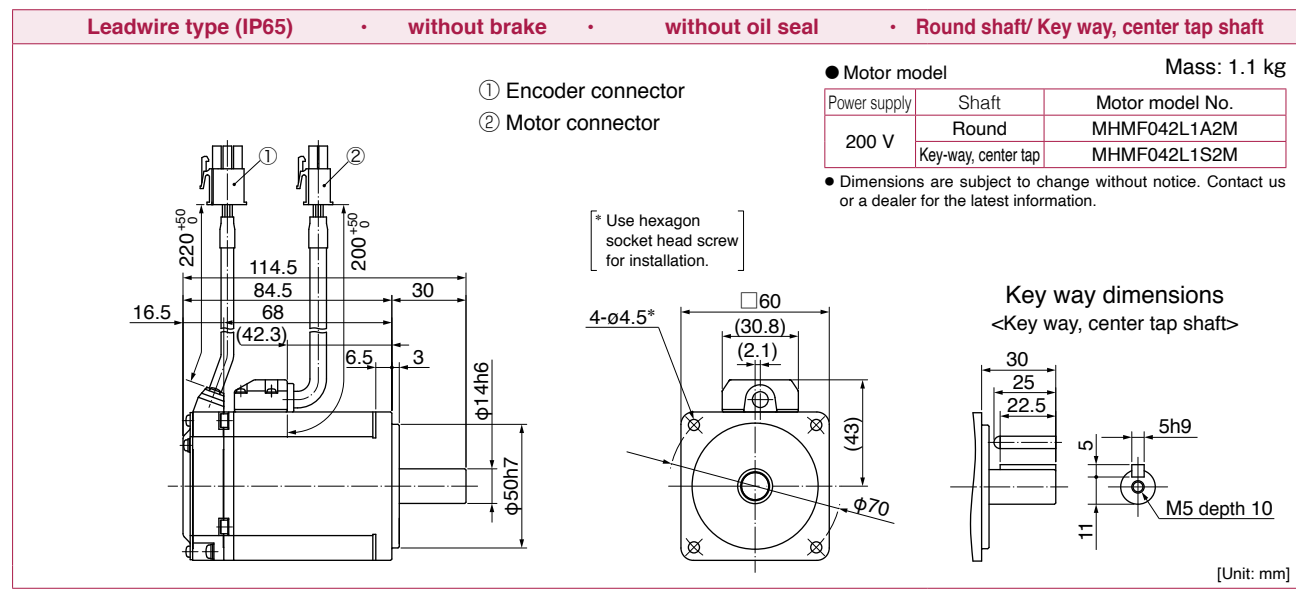
* For motors specifications, refer to P.228.

MHMF 200 W



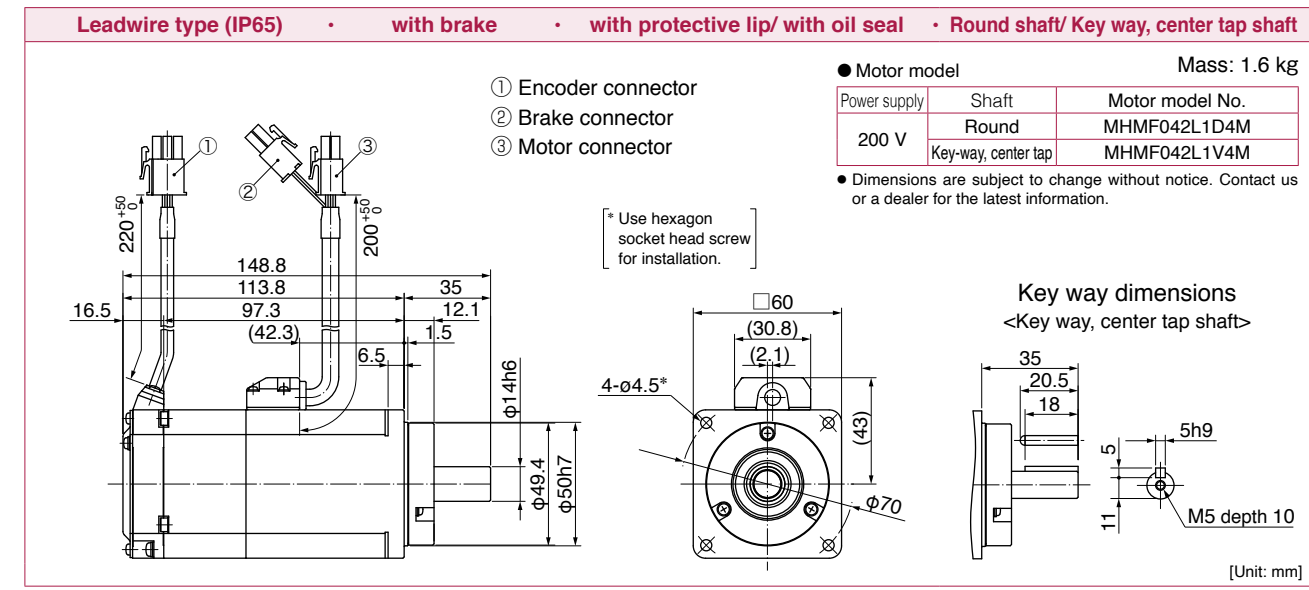
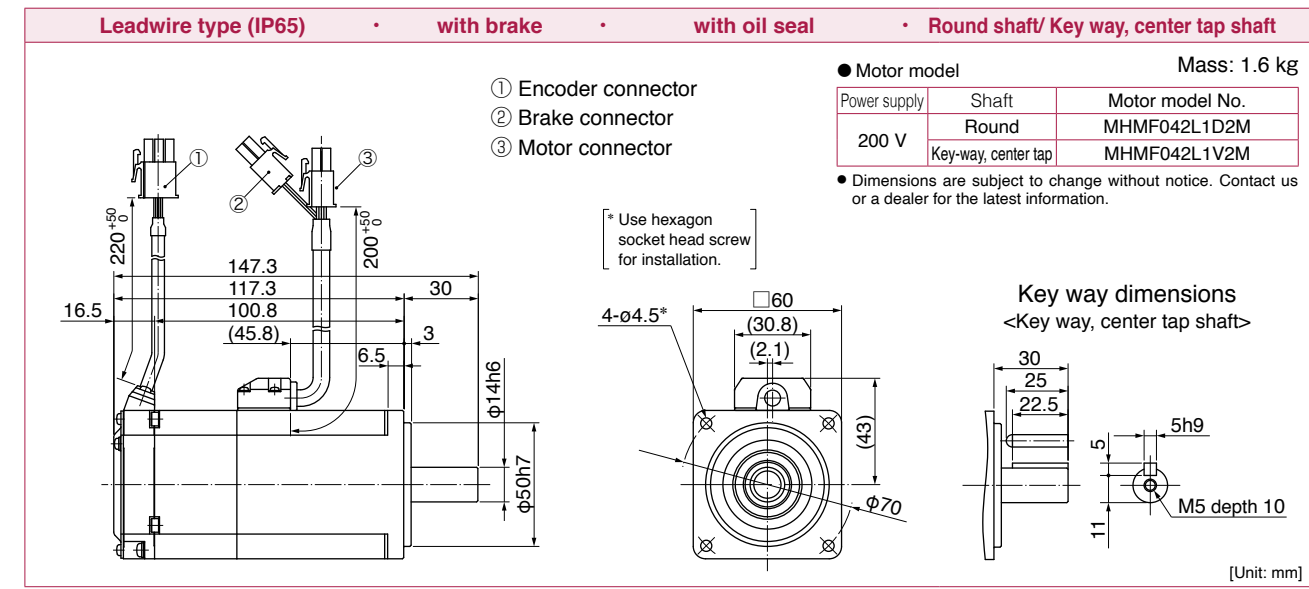
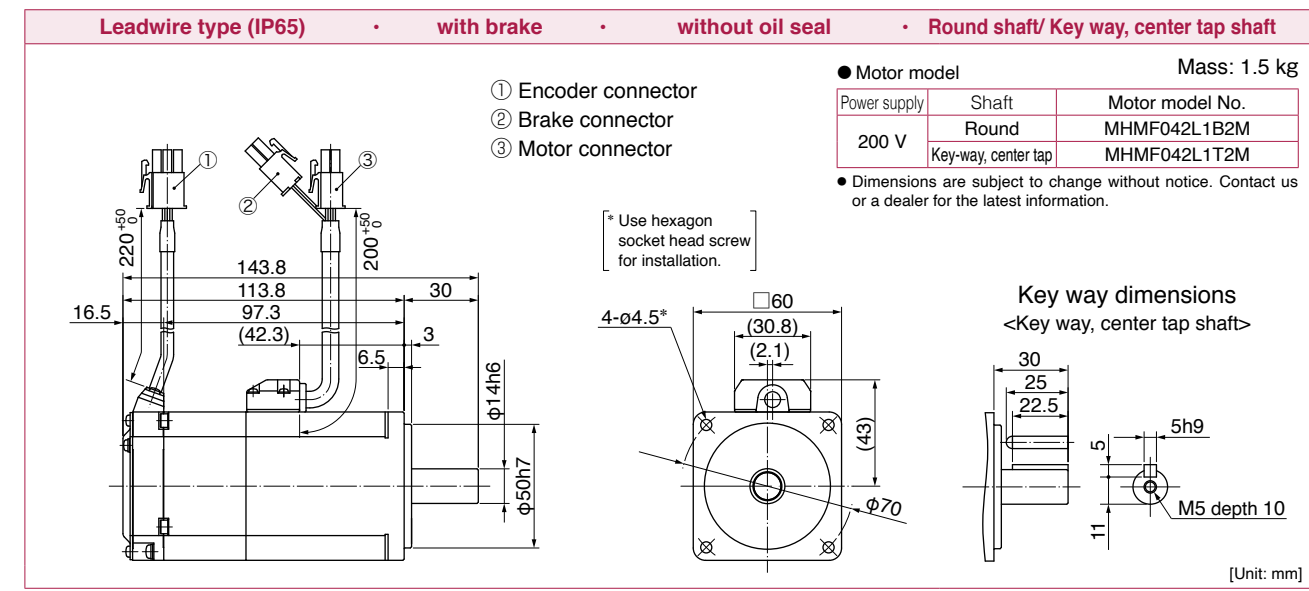
* For motors specifications, refer to P.228.

MHMF 400 W



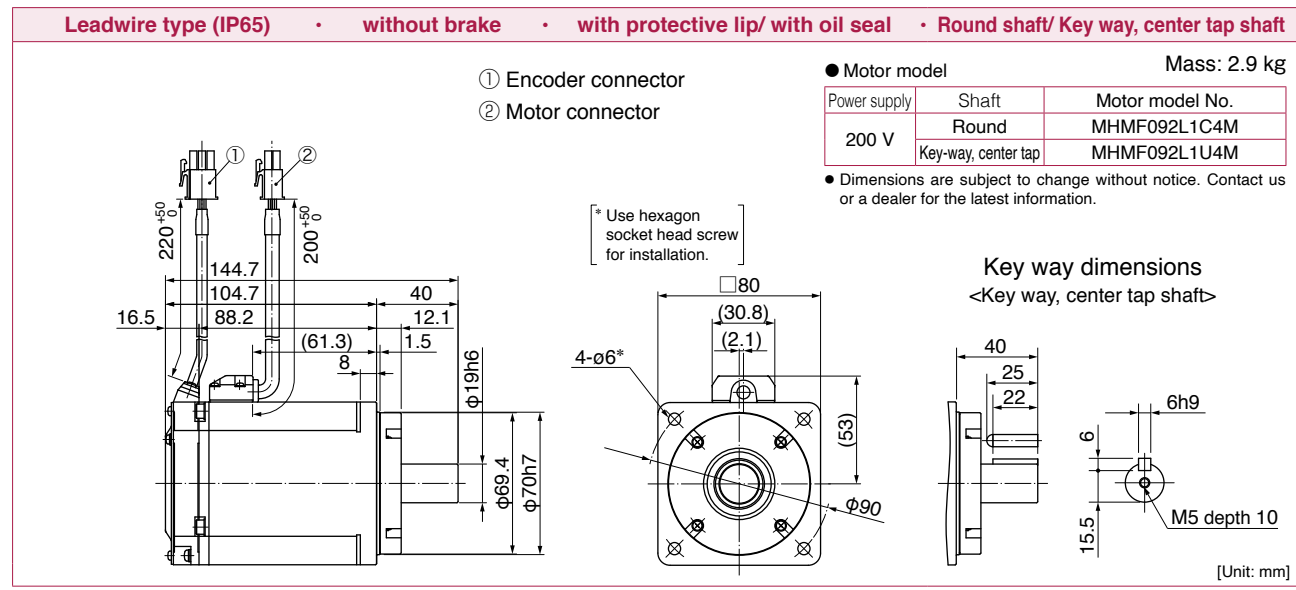
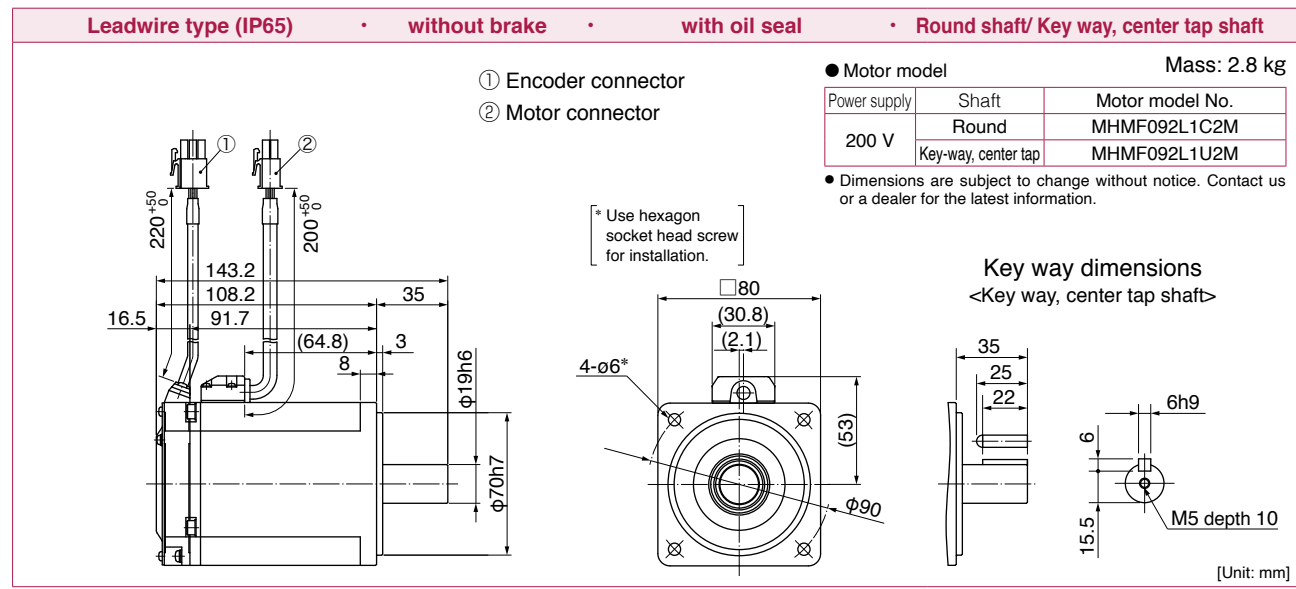
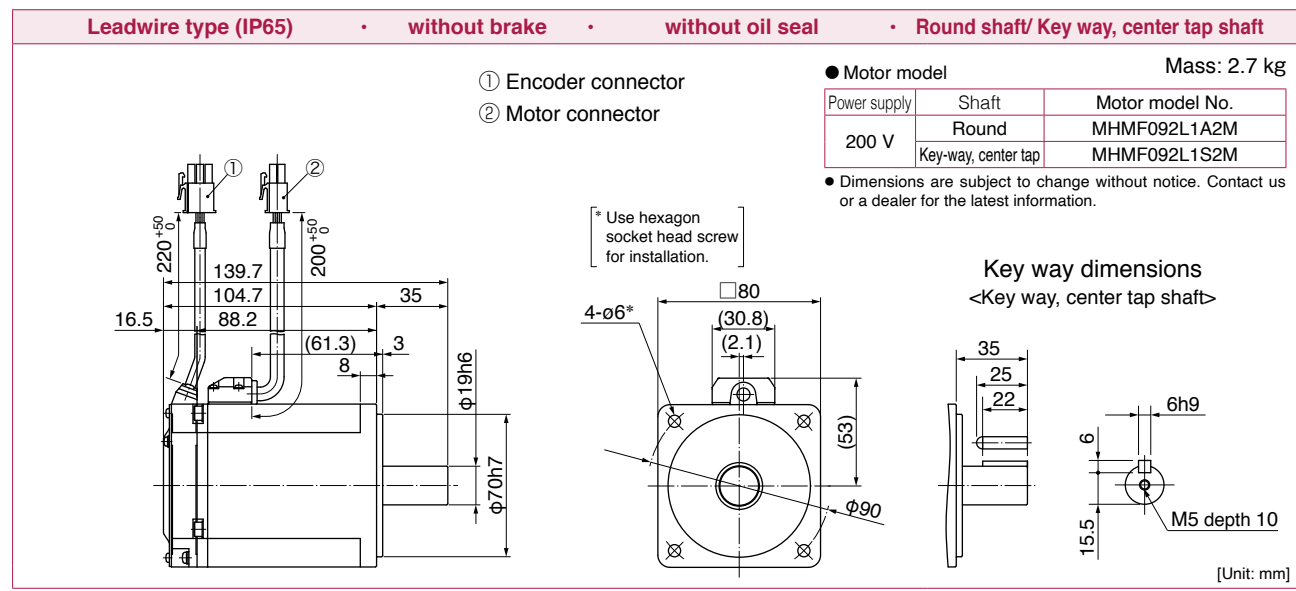
* For motors specifications, refer to P.229.

MHMF 400 W



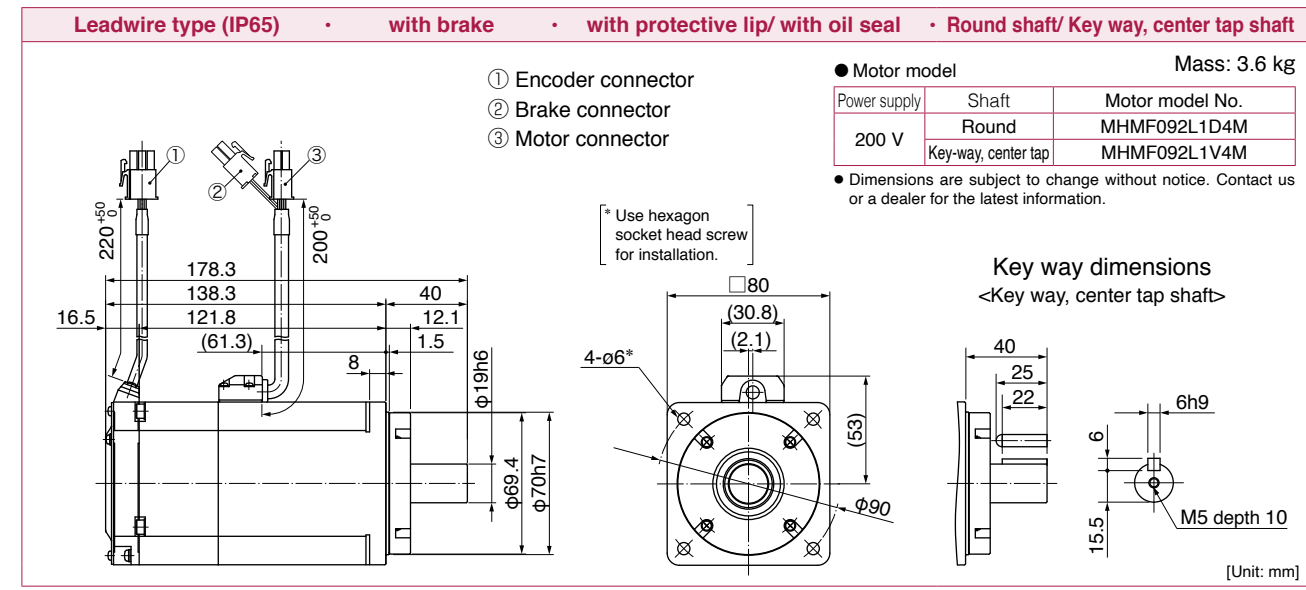
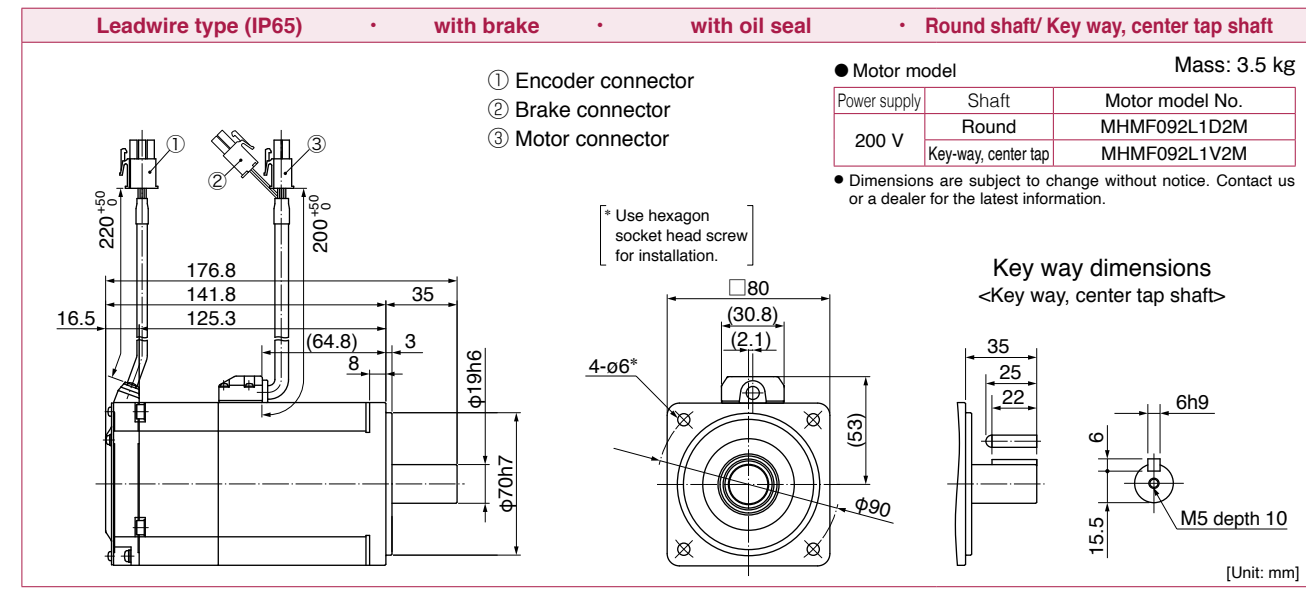
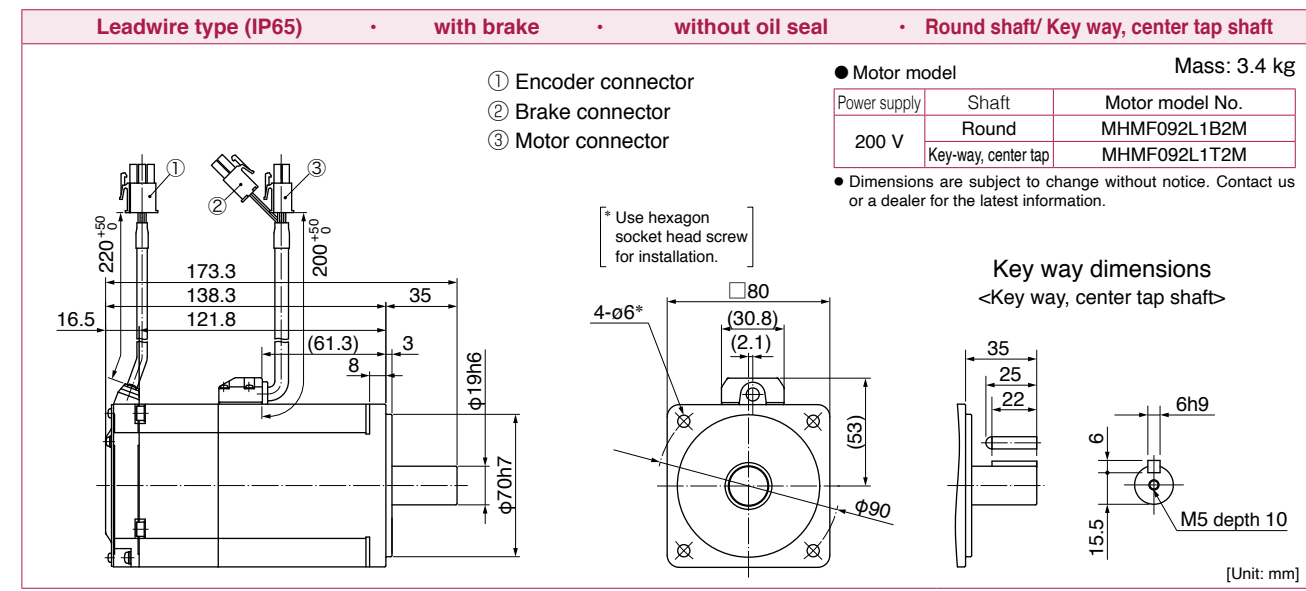
* For motors specifications, refer to P.229.

MHMF 1000 W



* For motors specifications, refer to P.231.

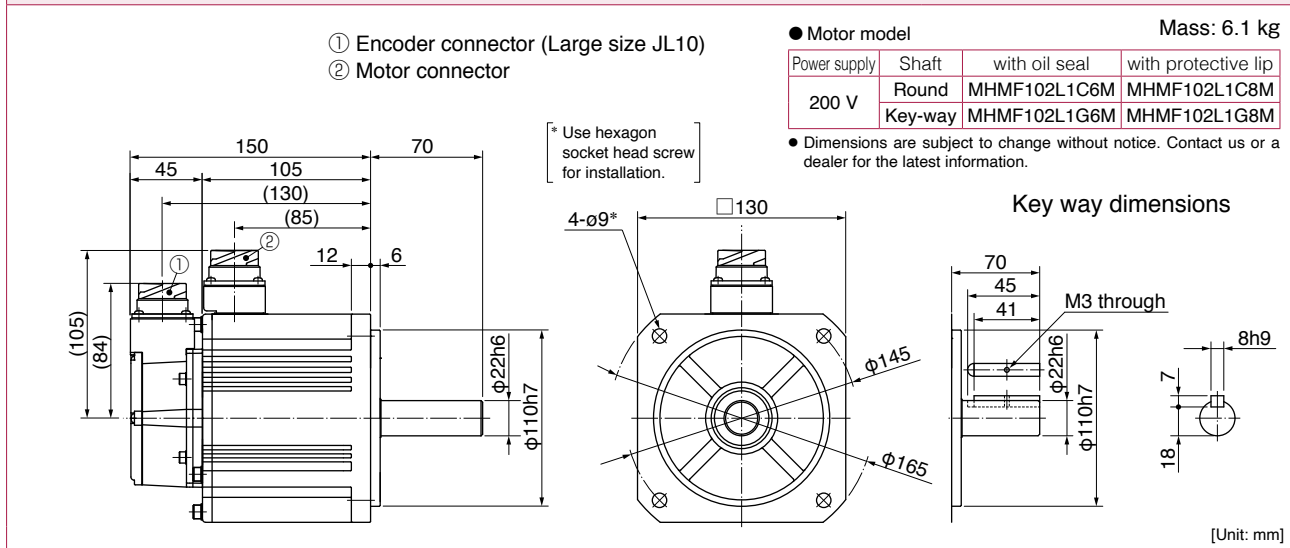
MHMF 1000 W



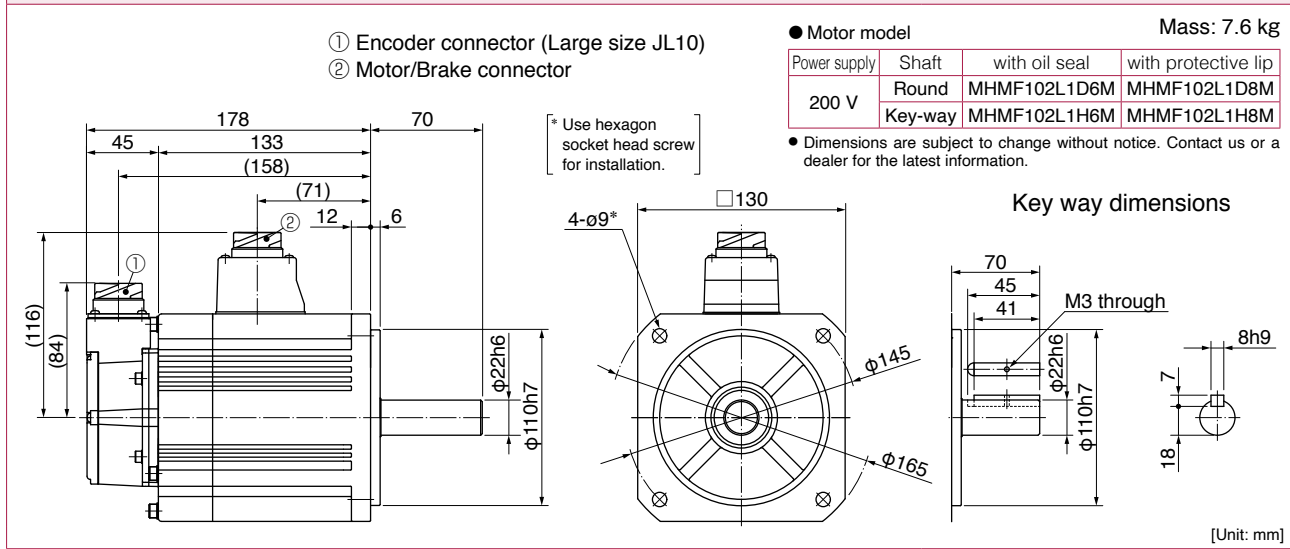
* For motors specifications, refer to P.231.

MHMF 1.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

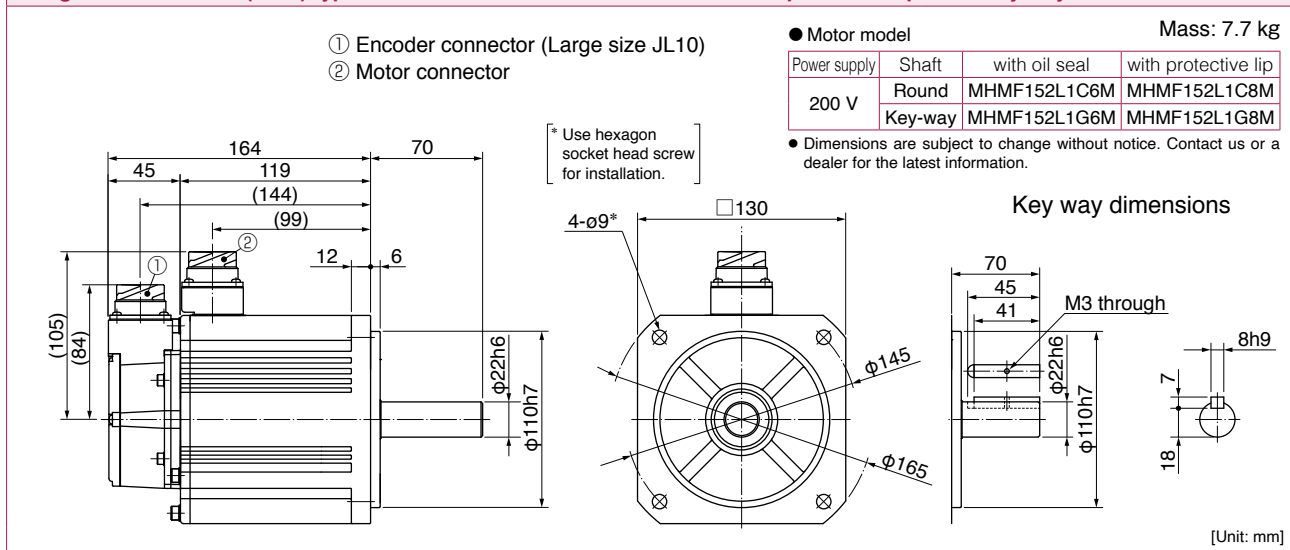


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MHMF 1.5 kW

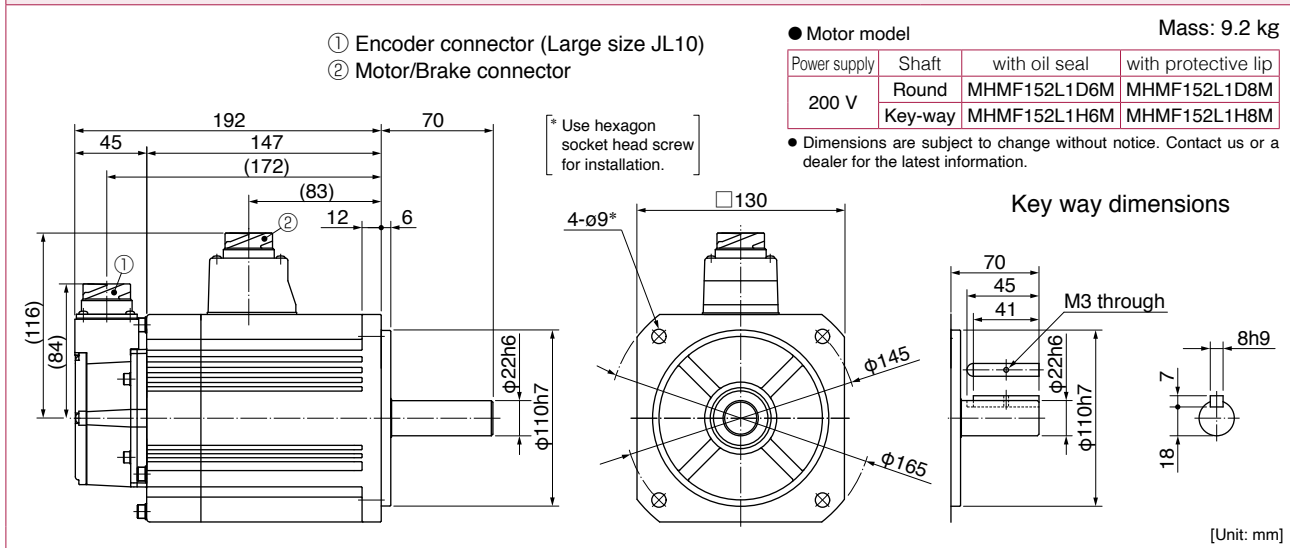
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P232, P233.

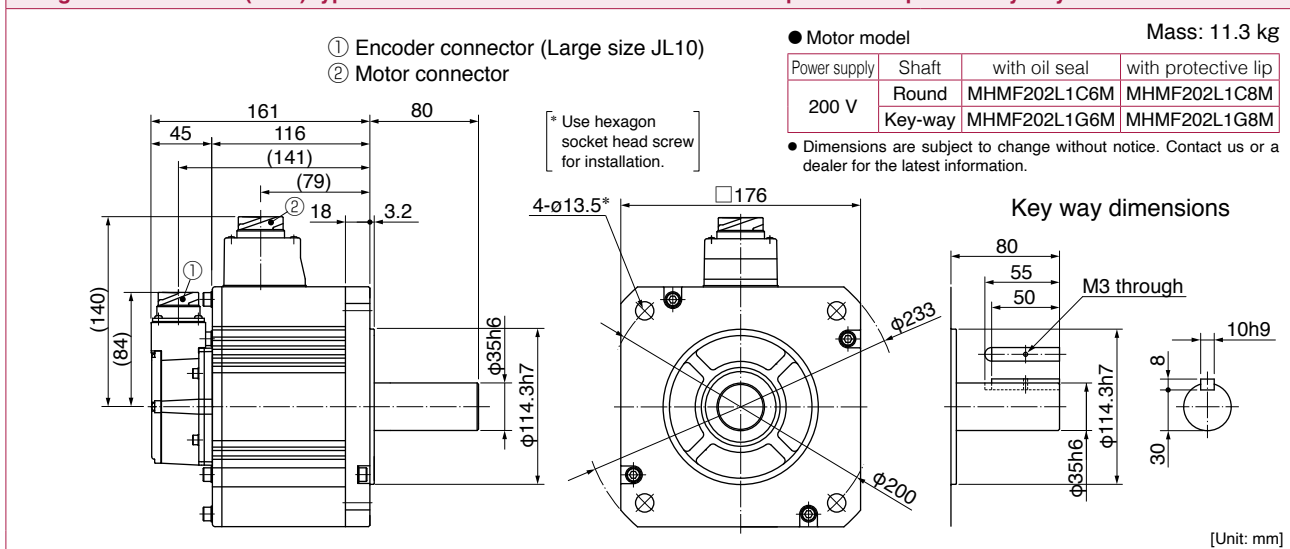
MHMF 1.5 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

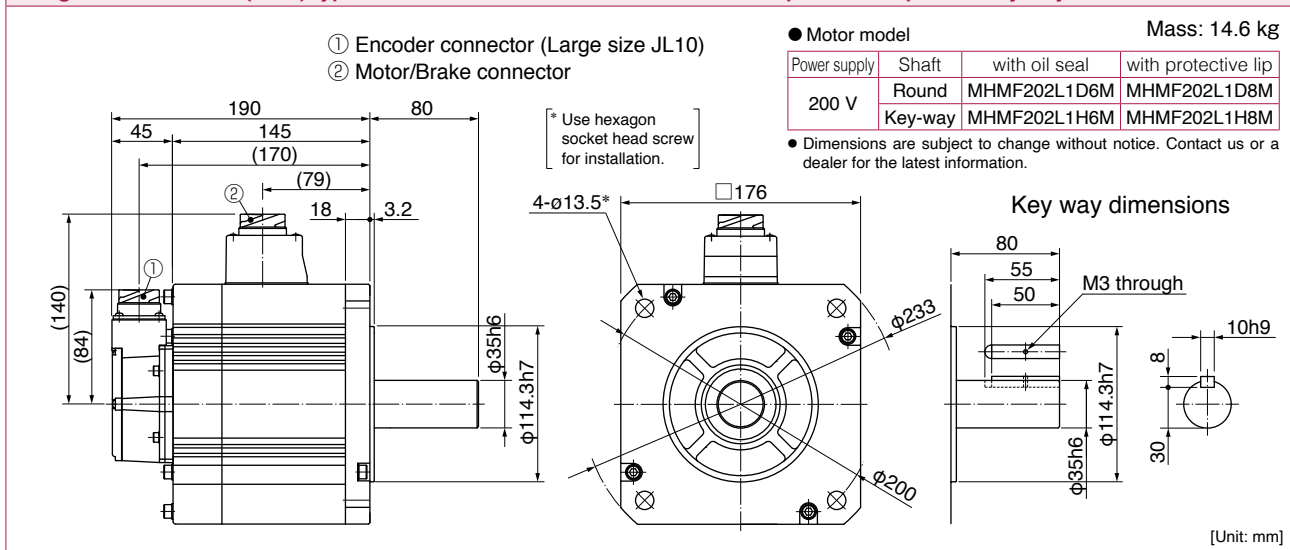


MHMF 2.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



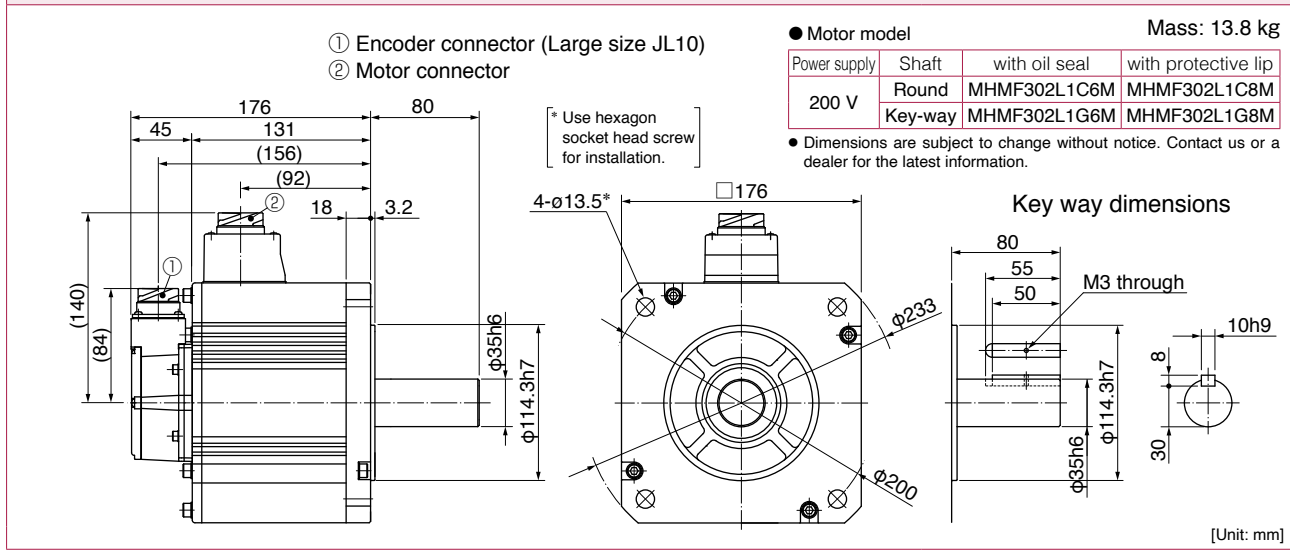
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



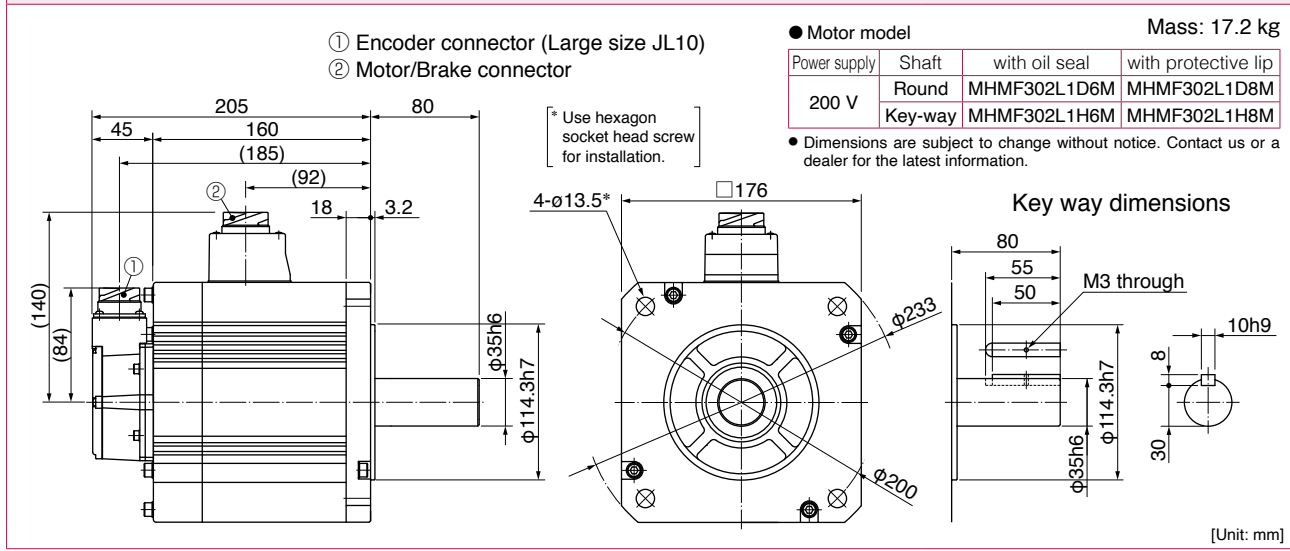
* For motors specifications, refer to P233, P234.

MHMF 3.0 kW

Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft

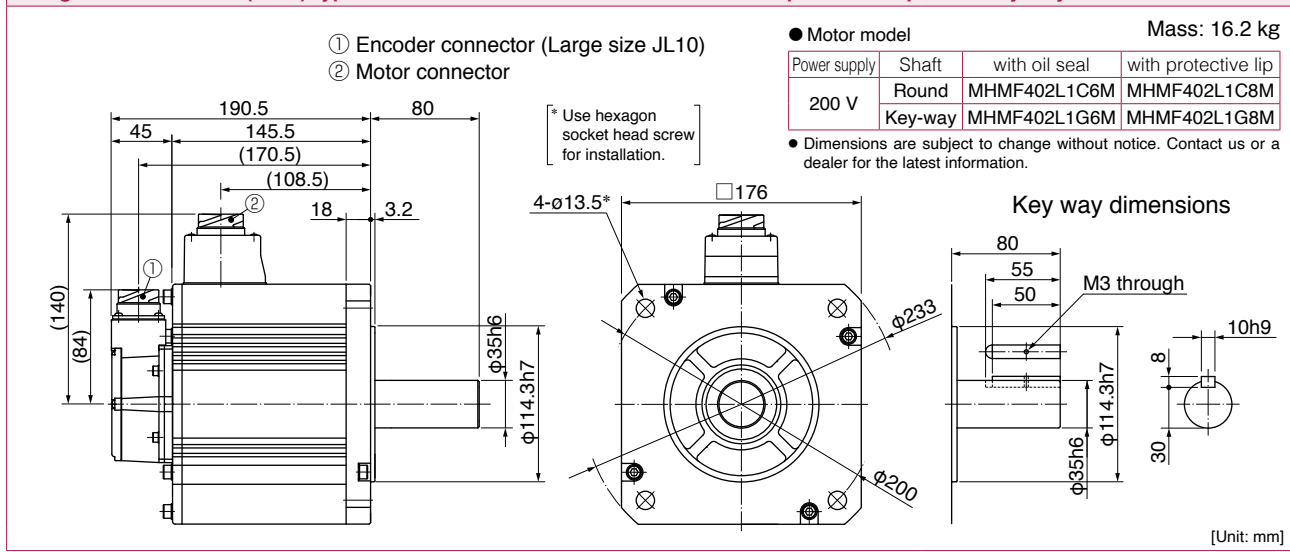


Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



MHMF 4.0 kW

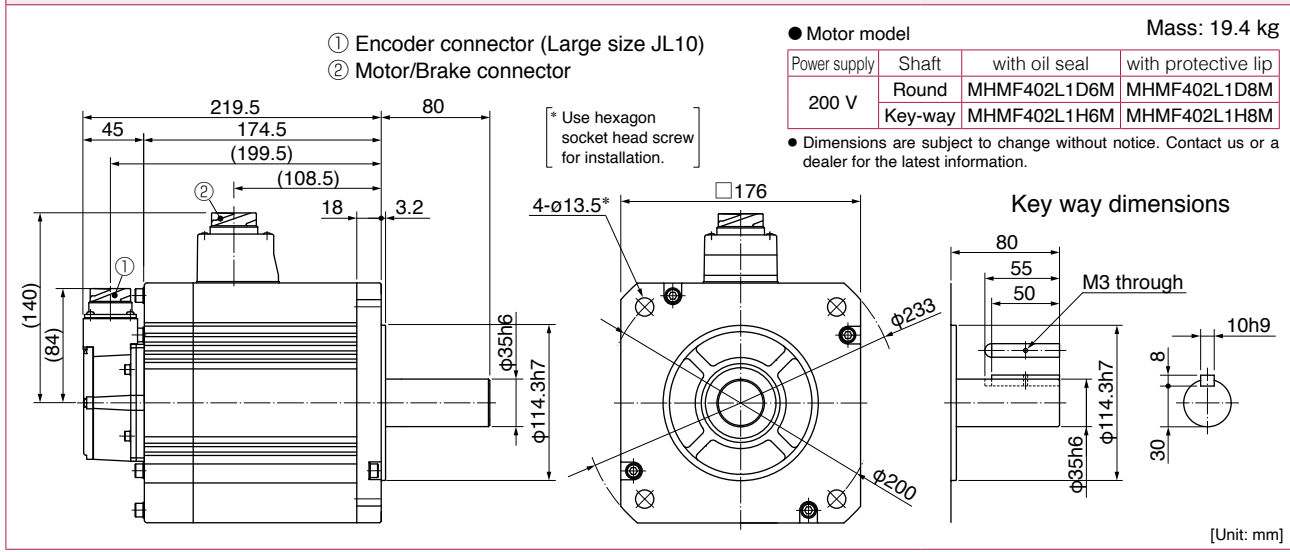
Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



* For motors specifications, refer to P235, P236.

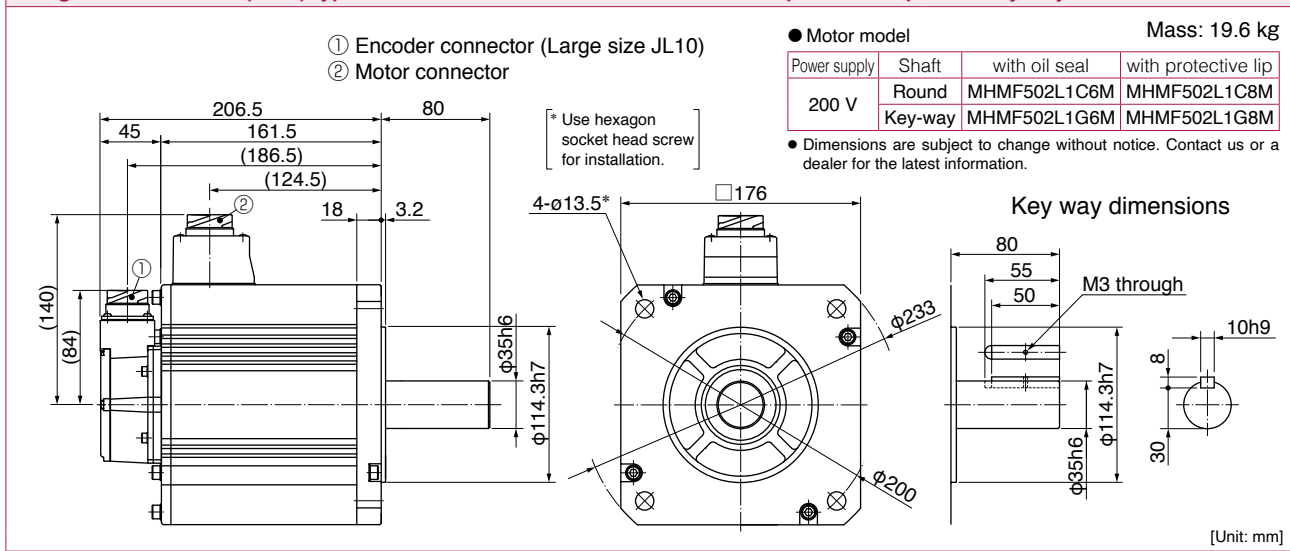
MHMF 4.0 kW

Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft

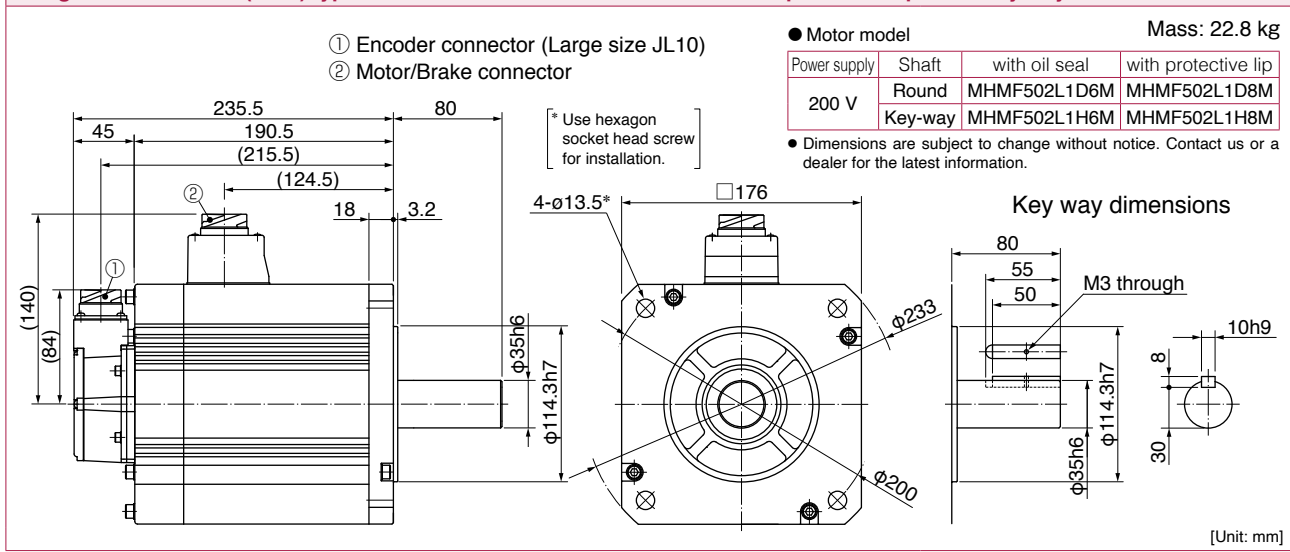


MHMF 5.0 kW

Large size connector (JL10) type • without brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



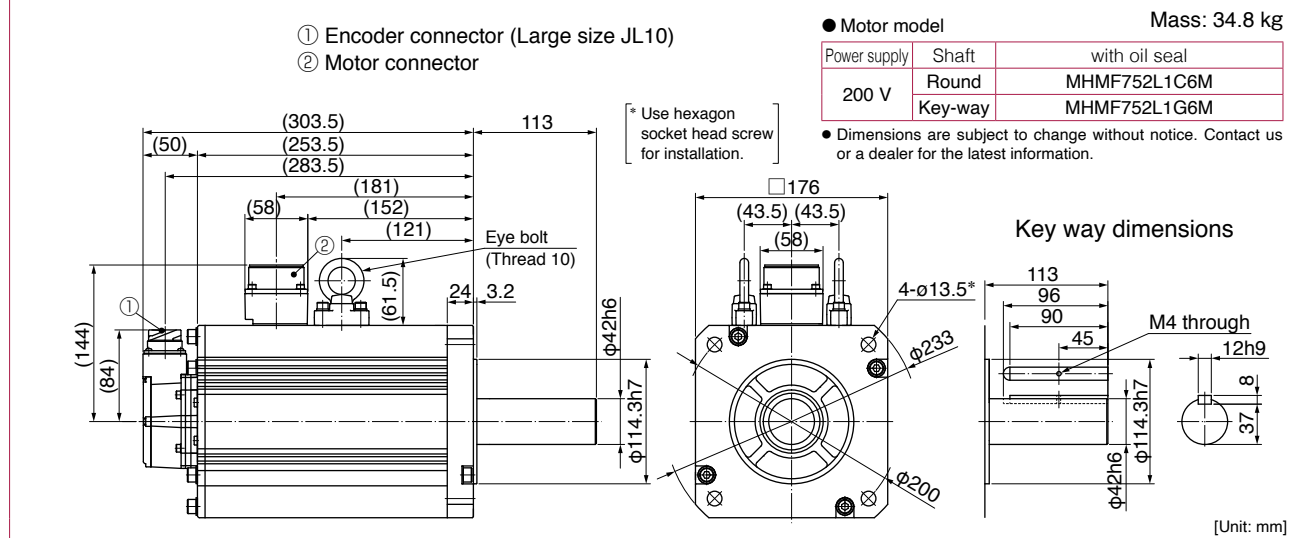
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



* For motors specifications, refer to P236, P237.

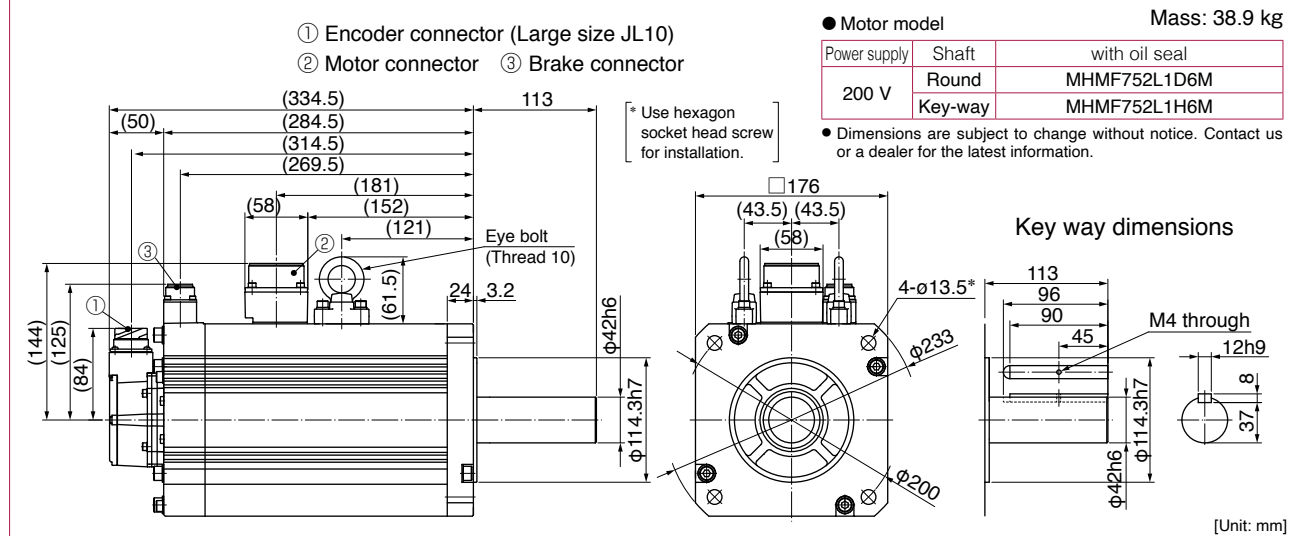
MHMF 7.5 kW

Large size connector (JL10) type • without brake • with oil seal • Key way shaft/ Round shaft



[Unit: mm]

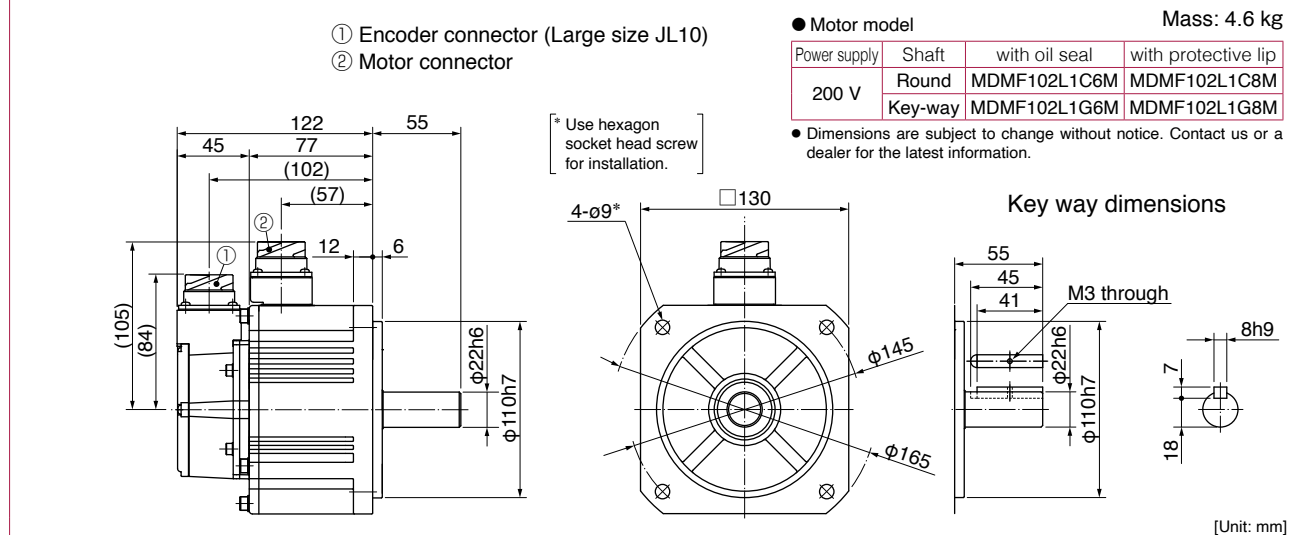
Large size connector (JL10) type • with brake • with oil seal • Key way shaft/ Round shaft



[Unit: mm]

MDMF 1.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

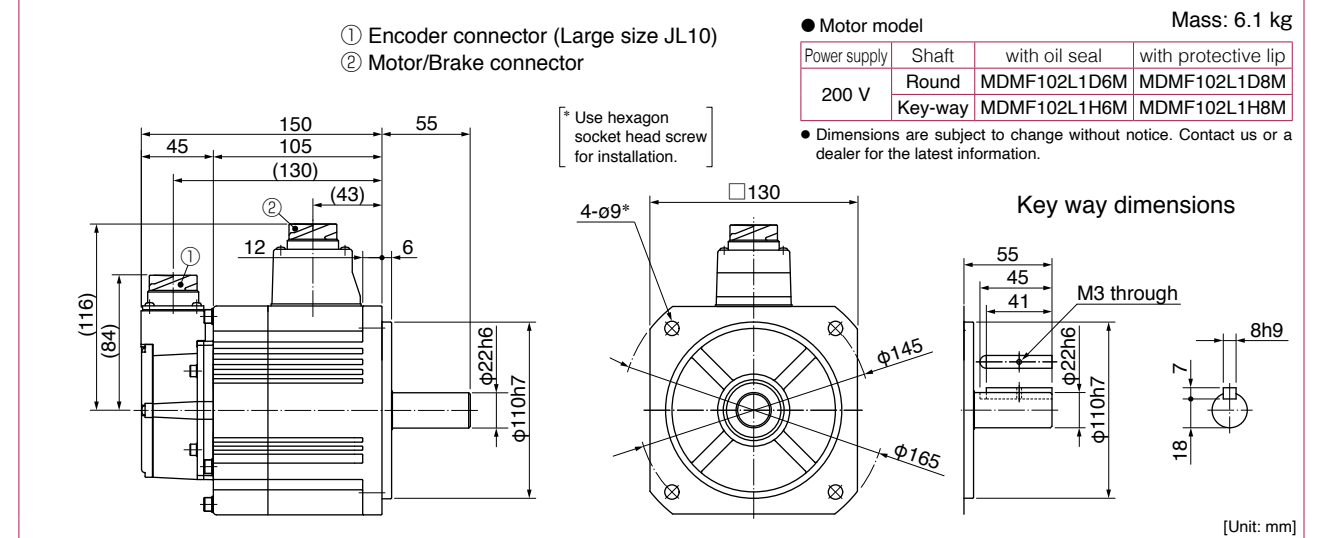


[Unit: mm]

* For motors specifications, refer to P.238, P.239.

MDMF 1.0 kW

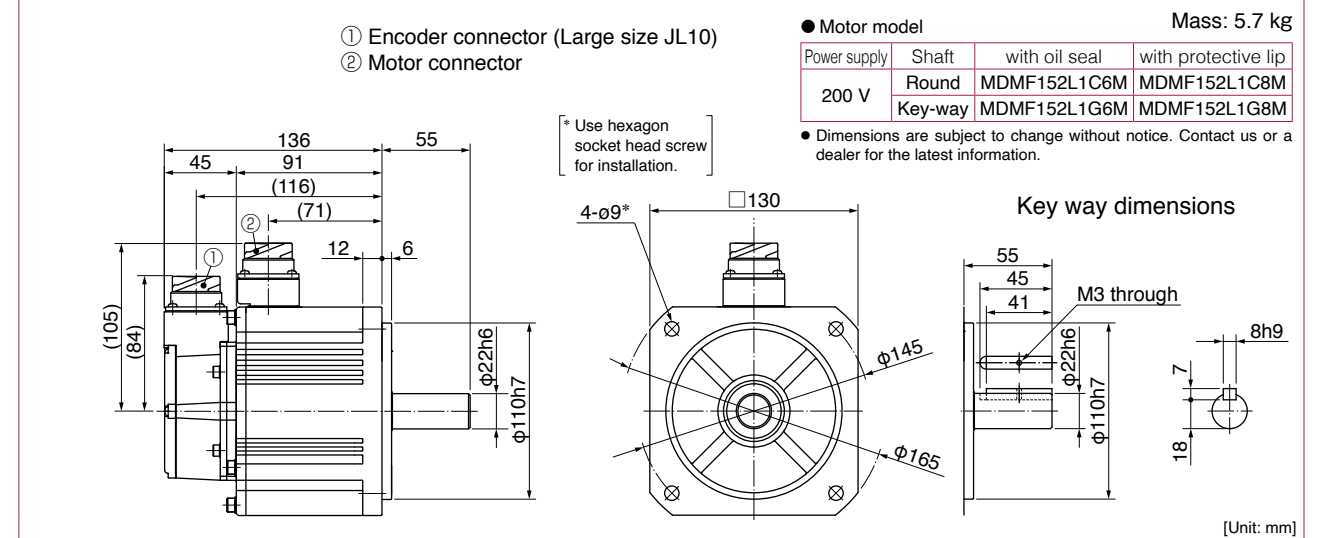
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



[Unit: mm]

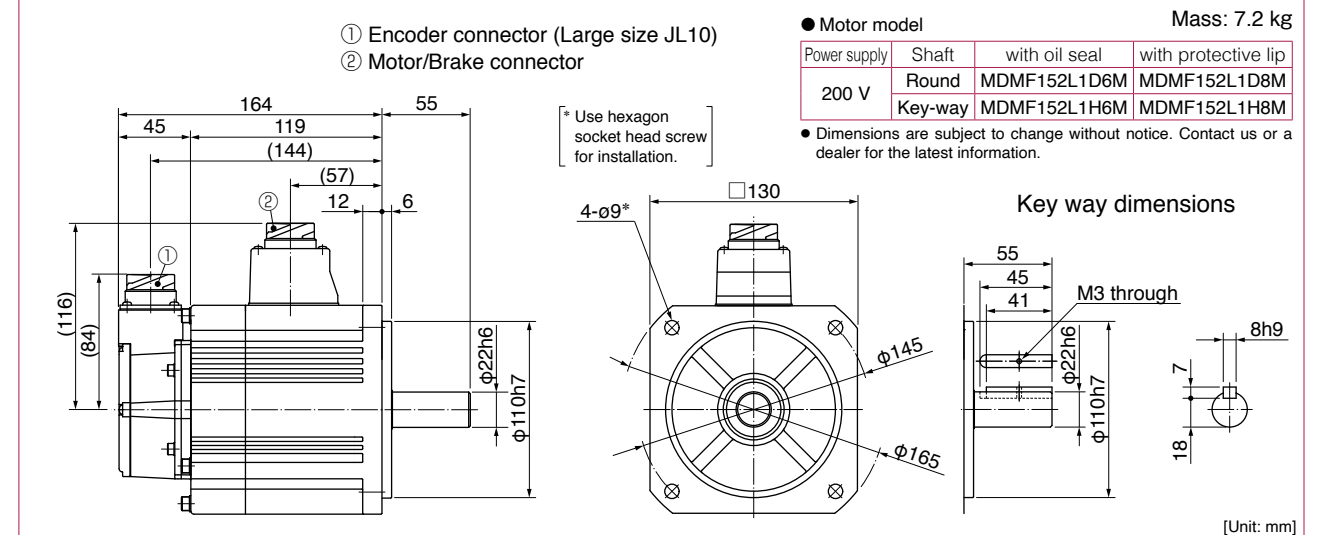
MDMF 1.5 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



[Unit: mm]

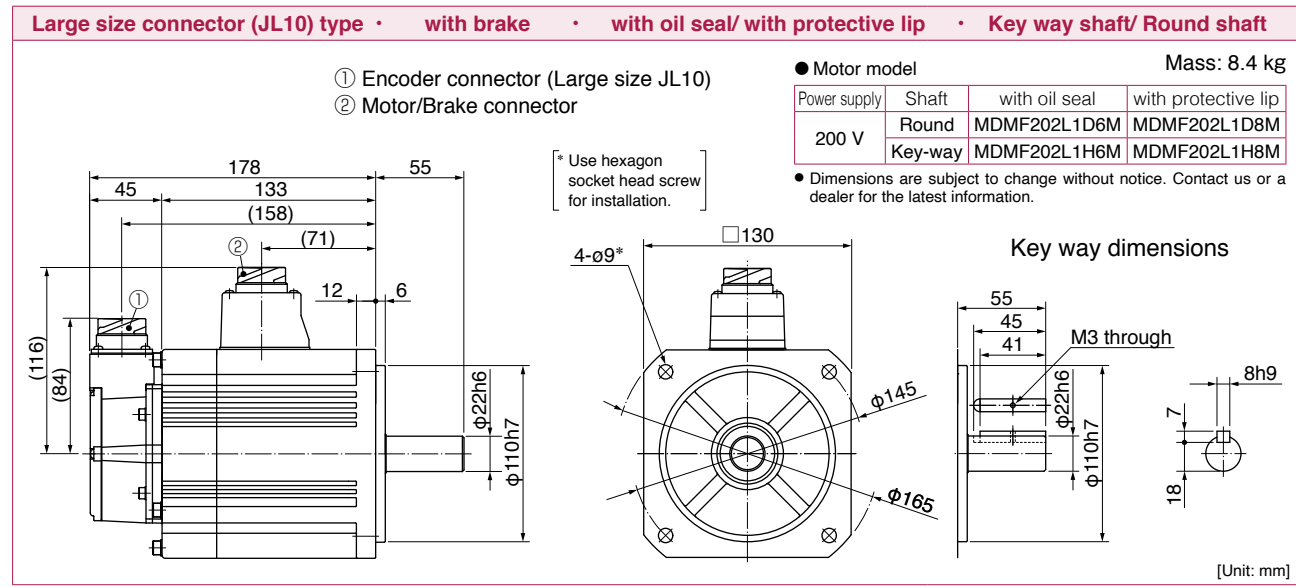
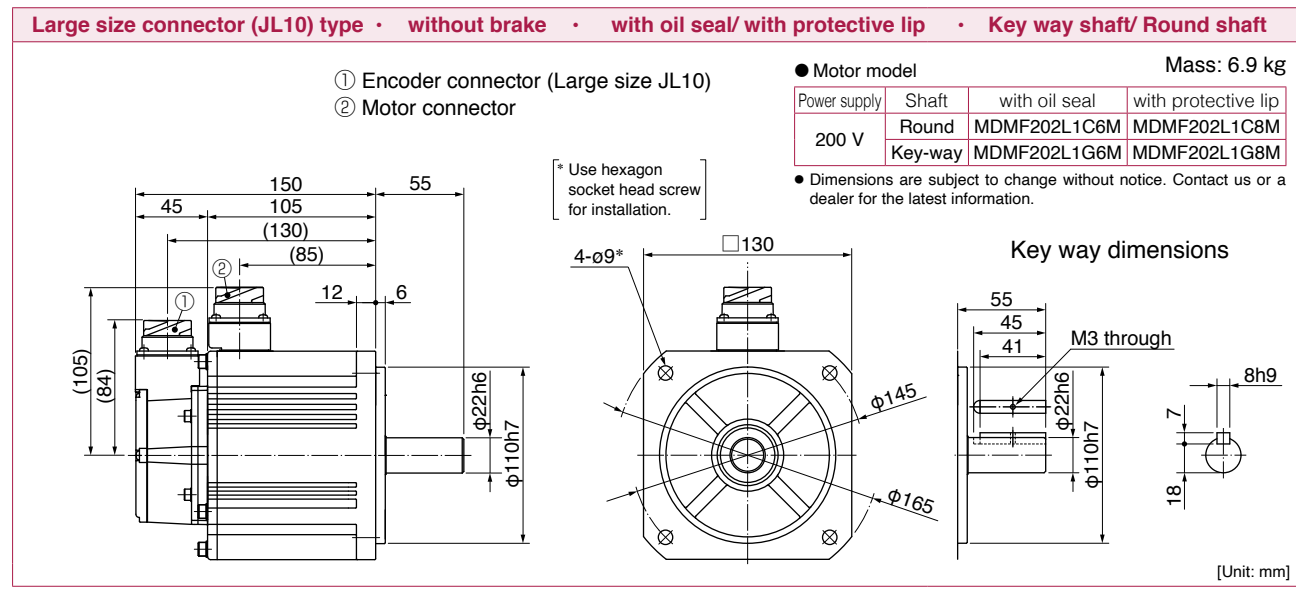
Large size connector (JL10) type • with brake • with oil seal/ with protective lip • Key way shaft/ Round shaft



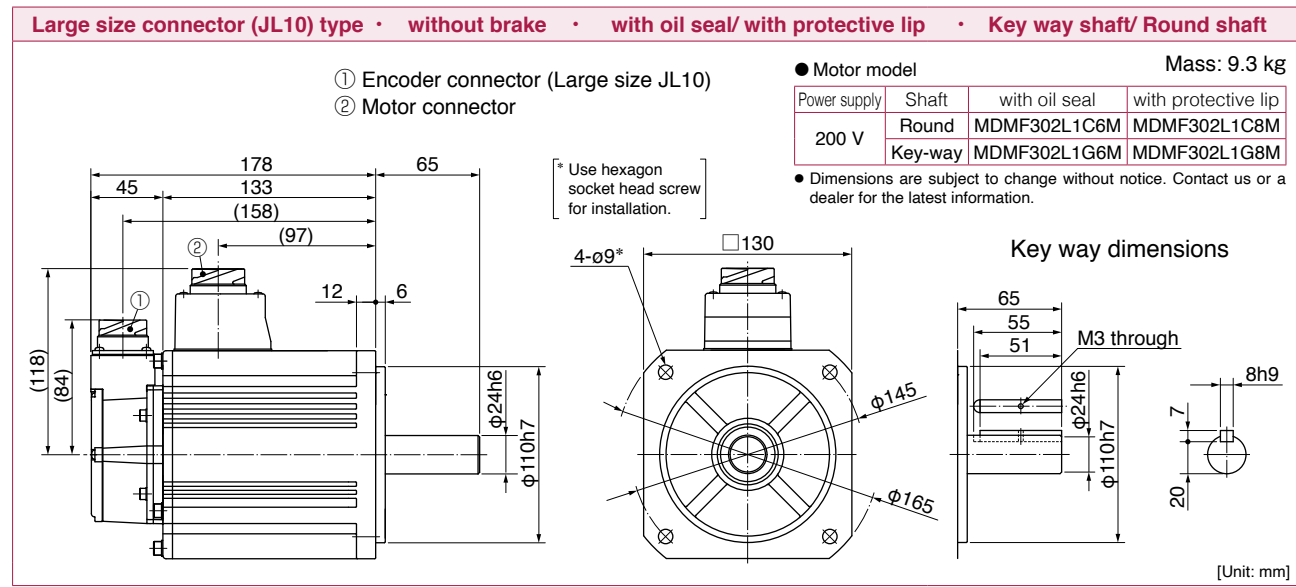
[Unit: mm]

* For motors specifications, refer to P.239, P.240.

MDMF 2.0 kW

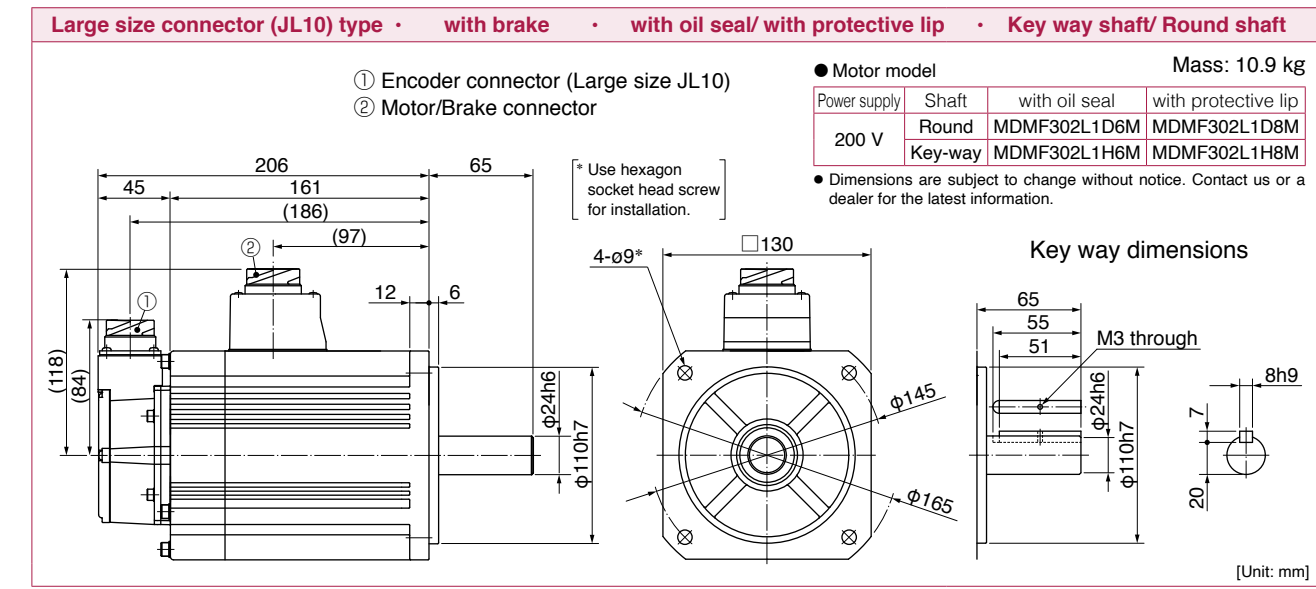


MDMF 3.0 kW

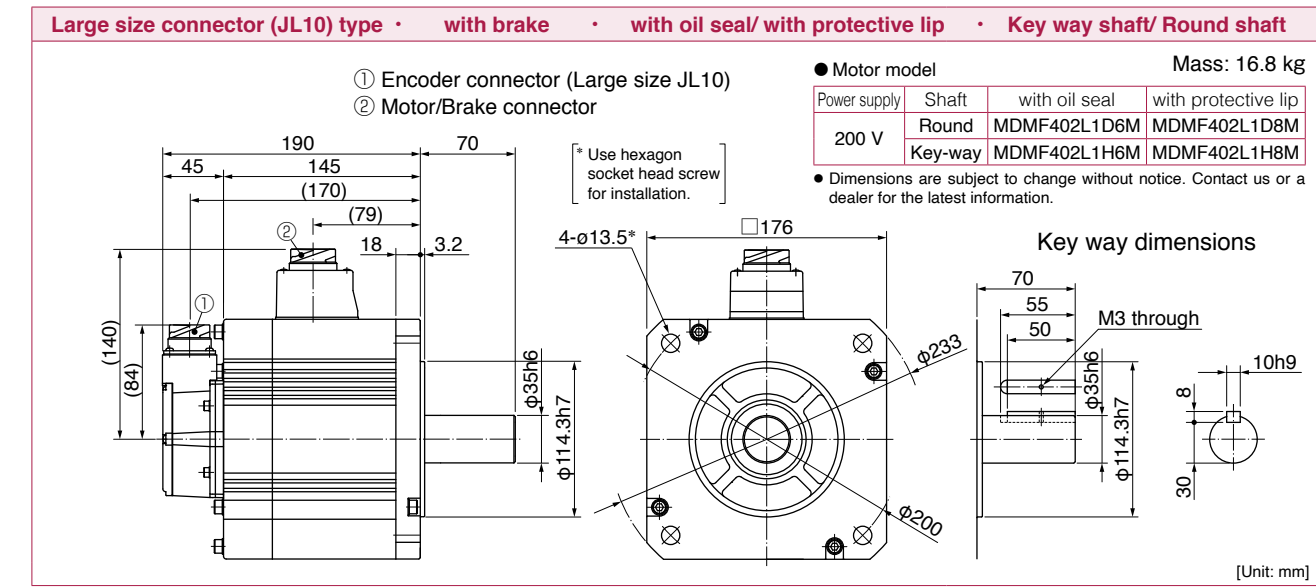
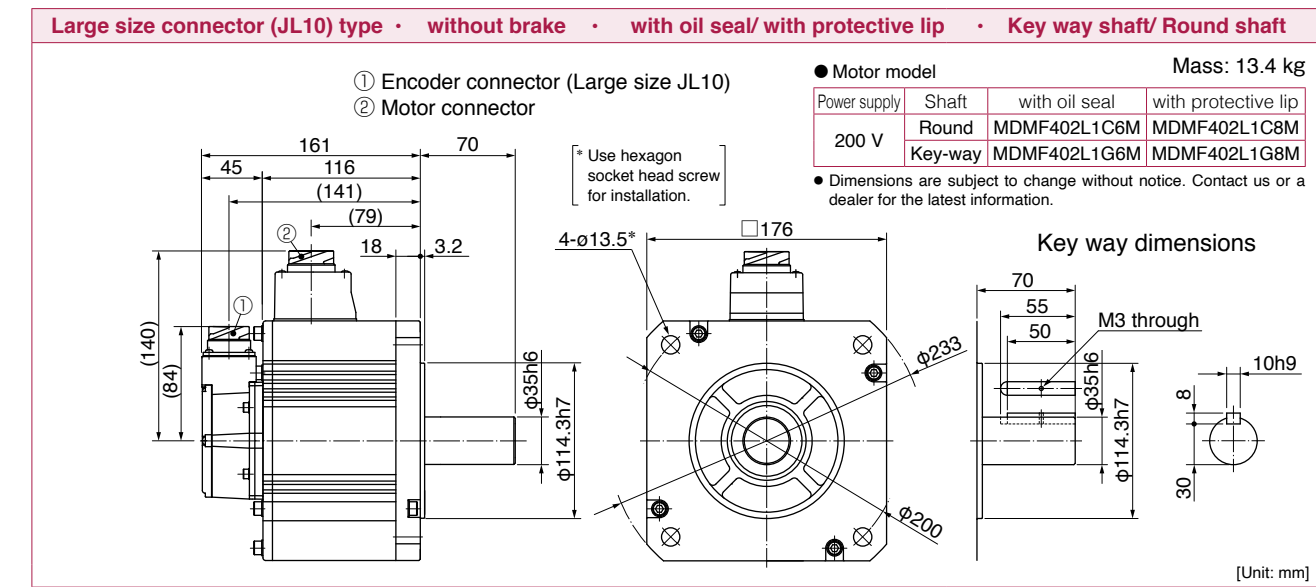


* For motors specifications, refer to P.241, P.242.

MDMF 3.0 kW



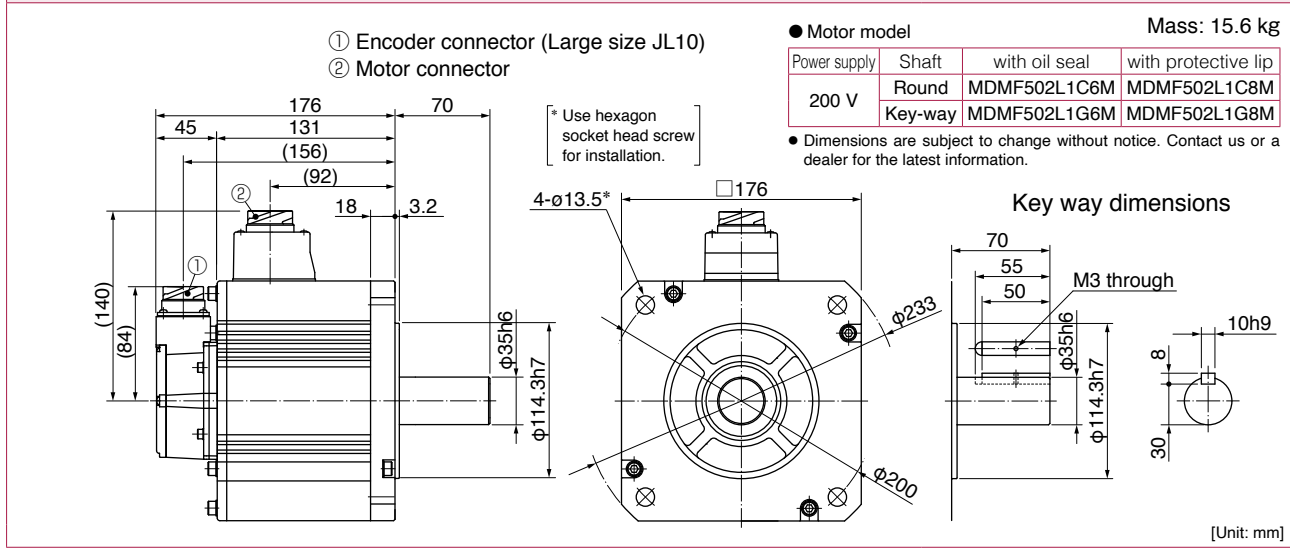
MDMF 4.0 kW



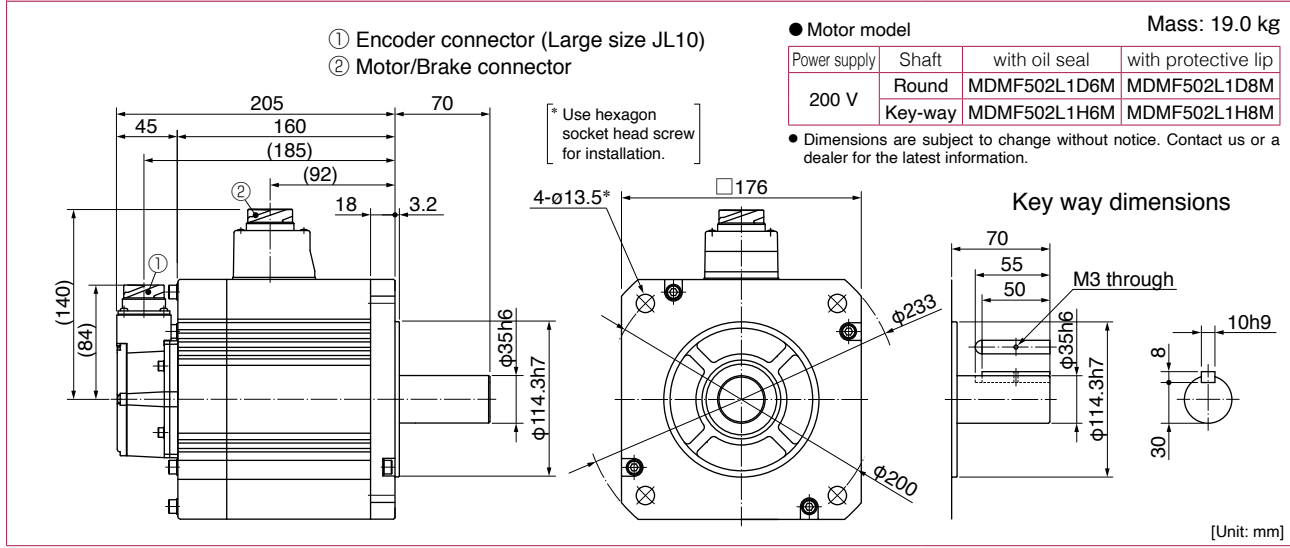
* For motors specifications, refer to P.242, P.243.

MDMF 5.0 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

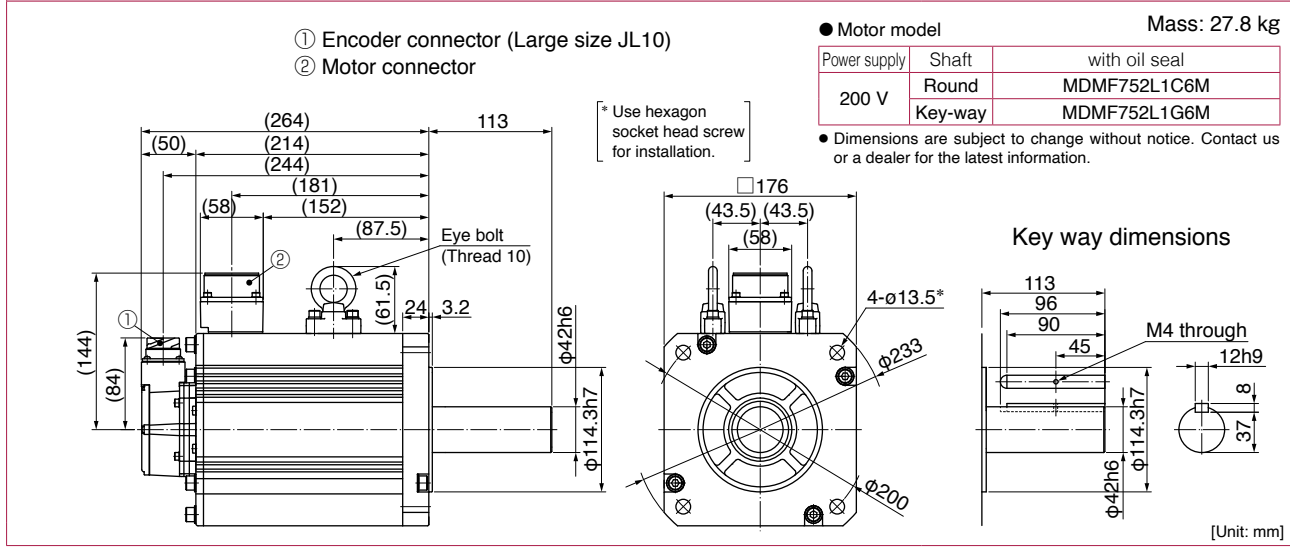


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MDMF 7.5 kW

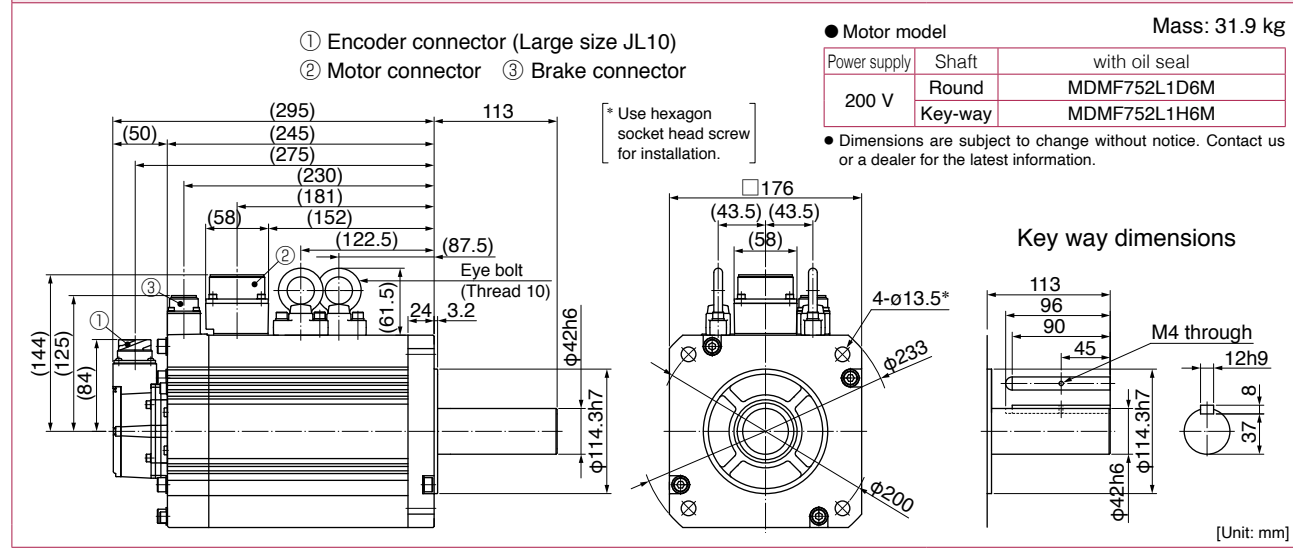
Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft



* For motors specifications, refer to P244, P245.

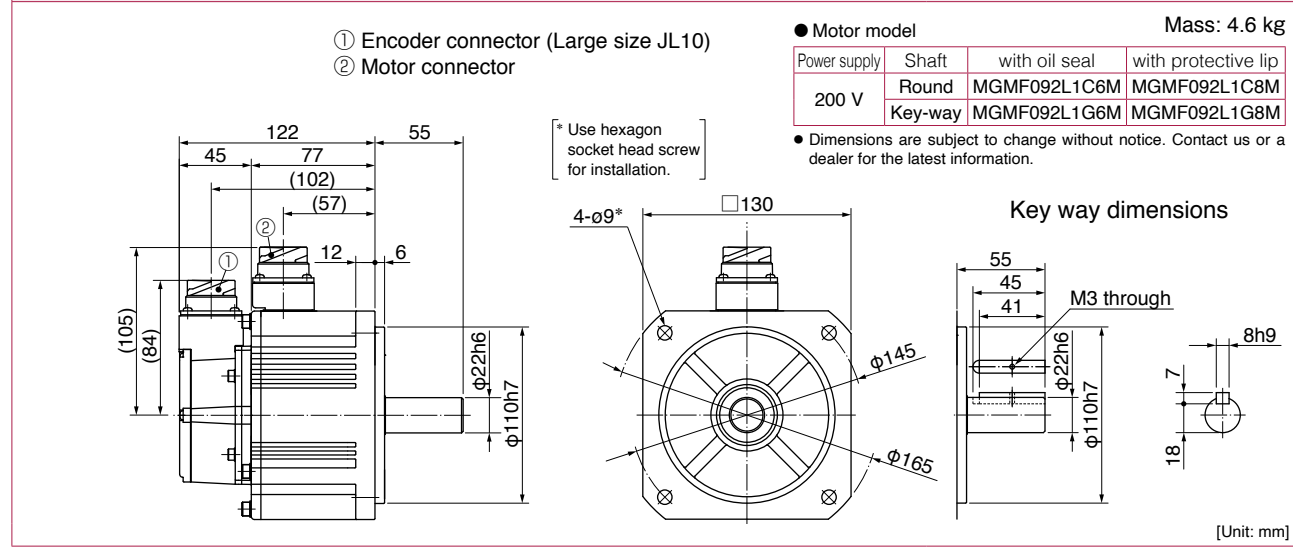
MDMF 7.5 kW

Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft

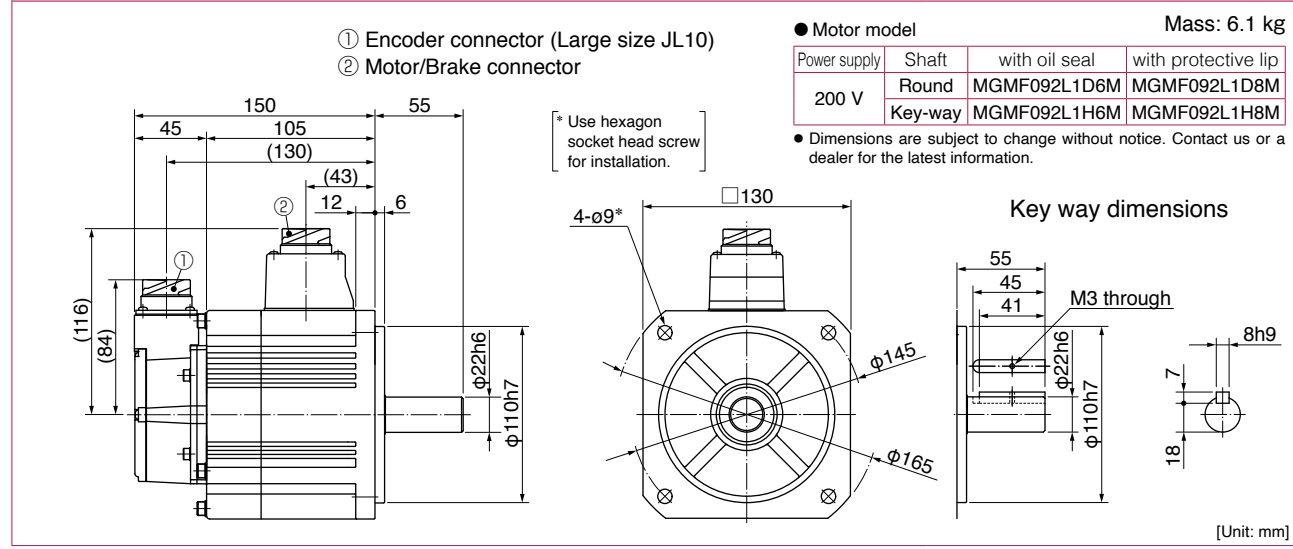


MGMF 0.85 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



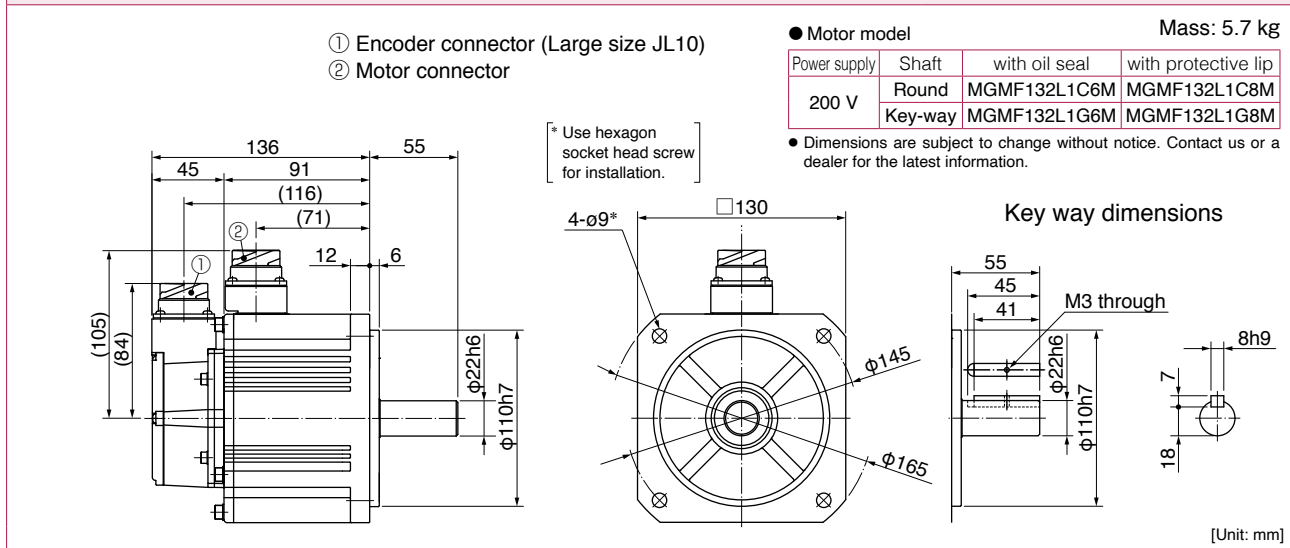
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



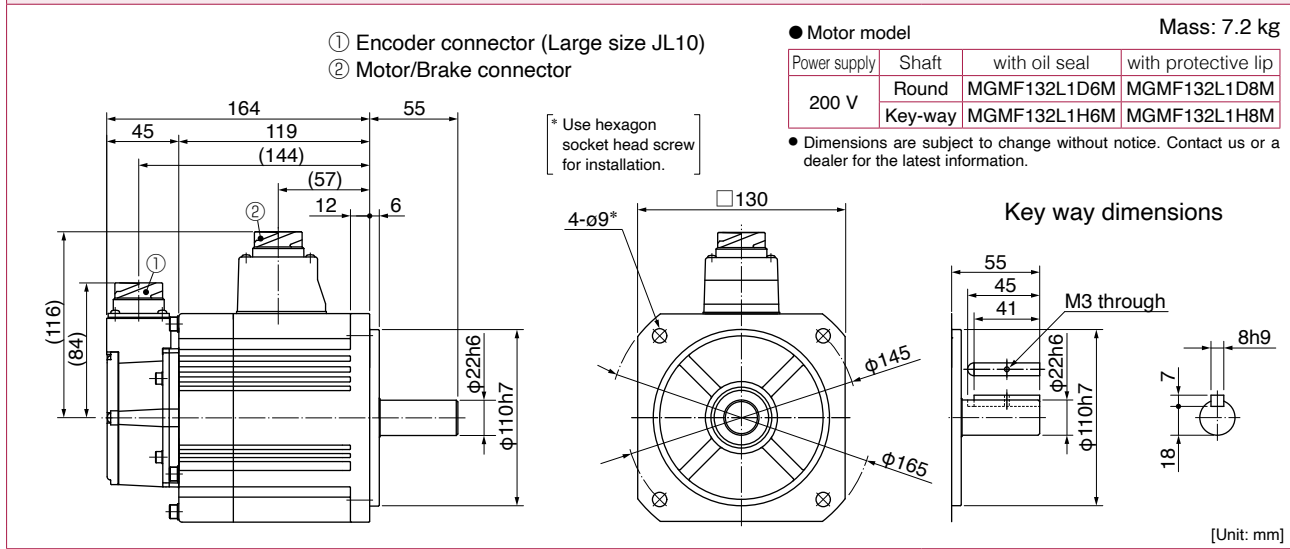
* For motors specifications, refer to P245, P246.

MGMF 1.3 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

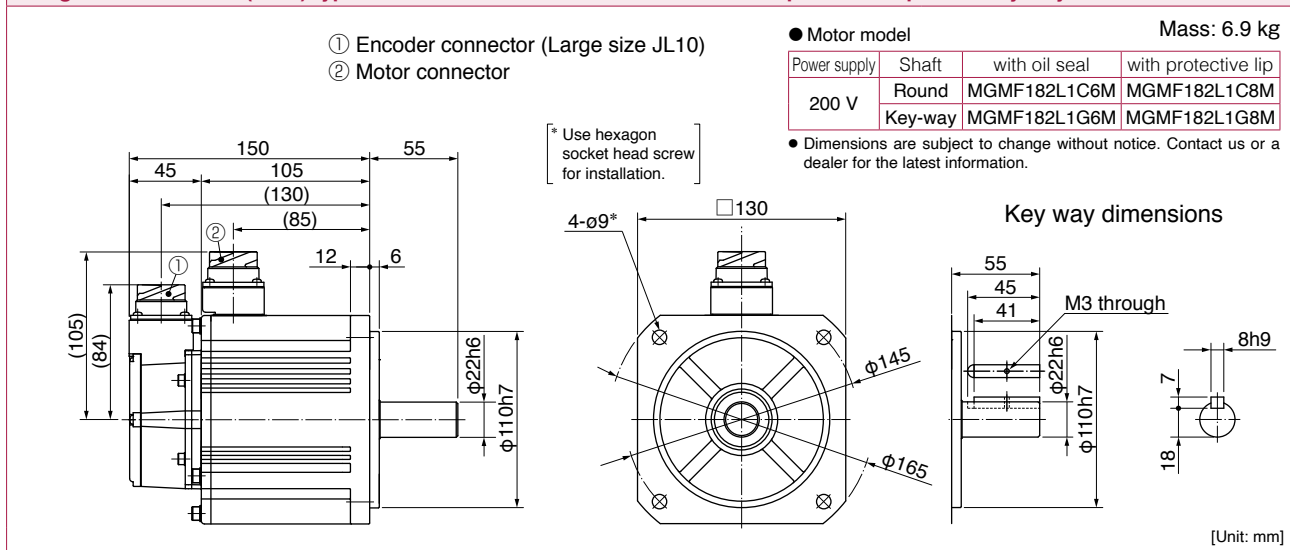


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MGMF 1.8 kW

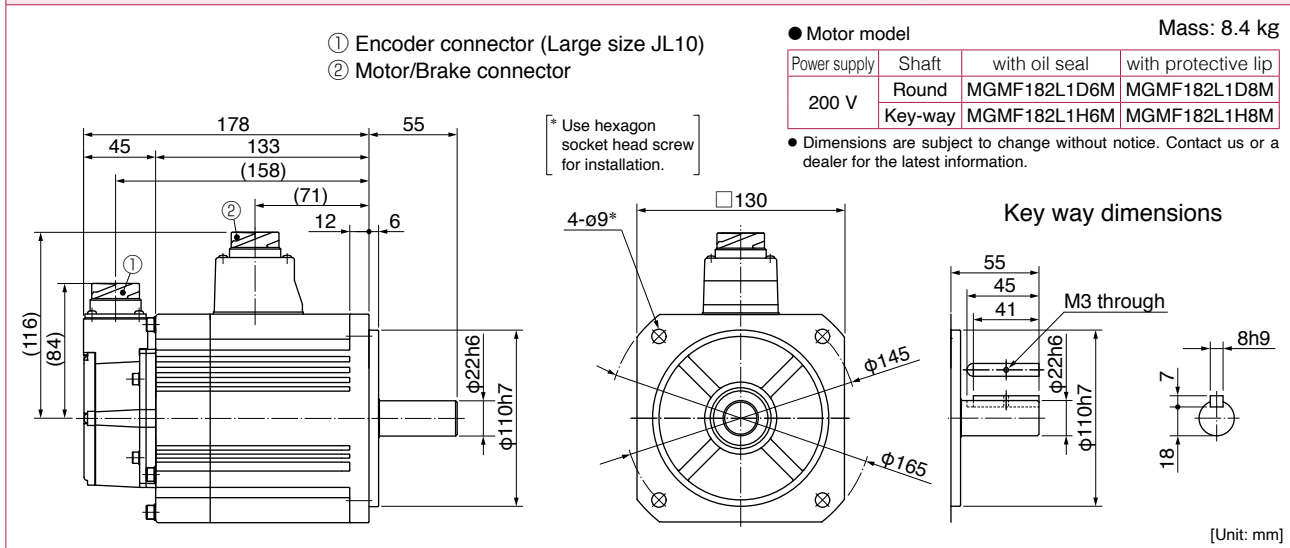
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P247, P248.

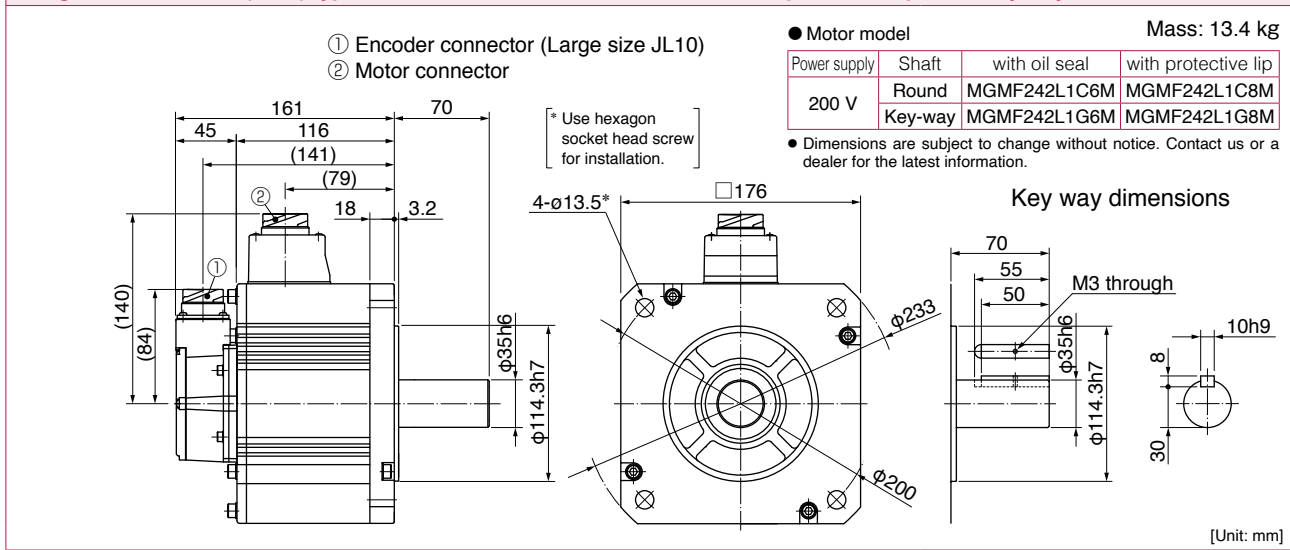
MGMF 1.8 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

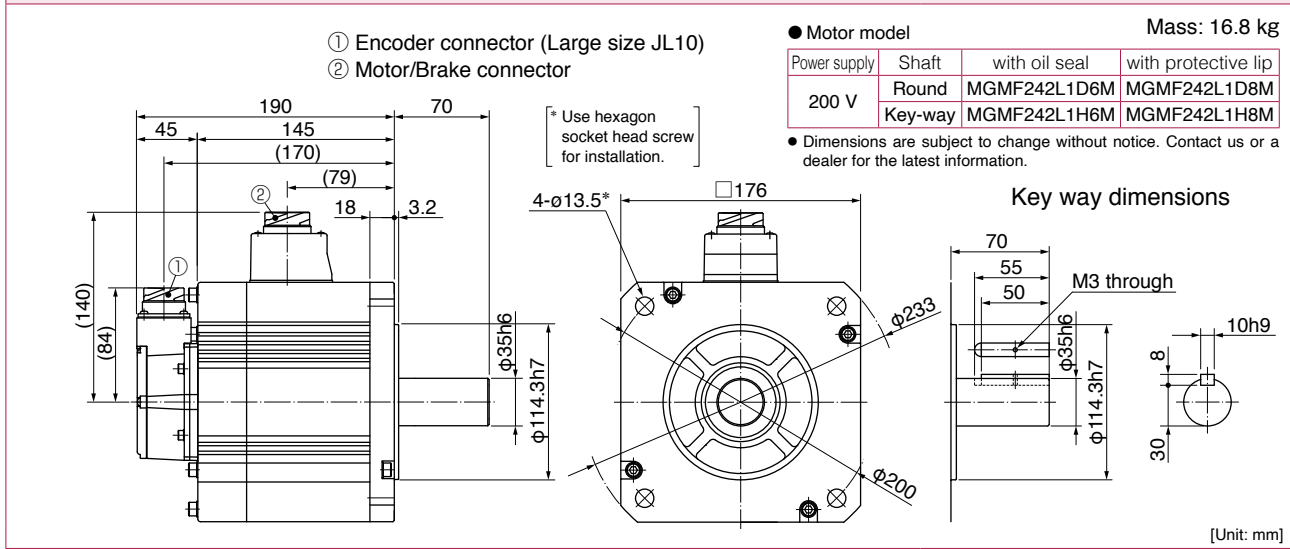


MGMF 2.4 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



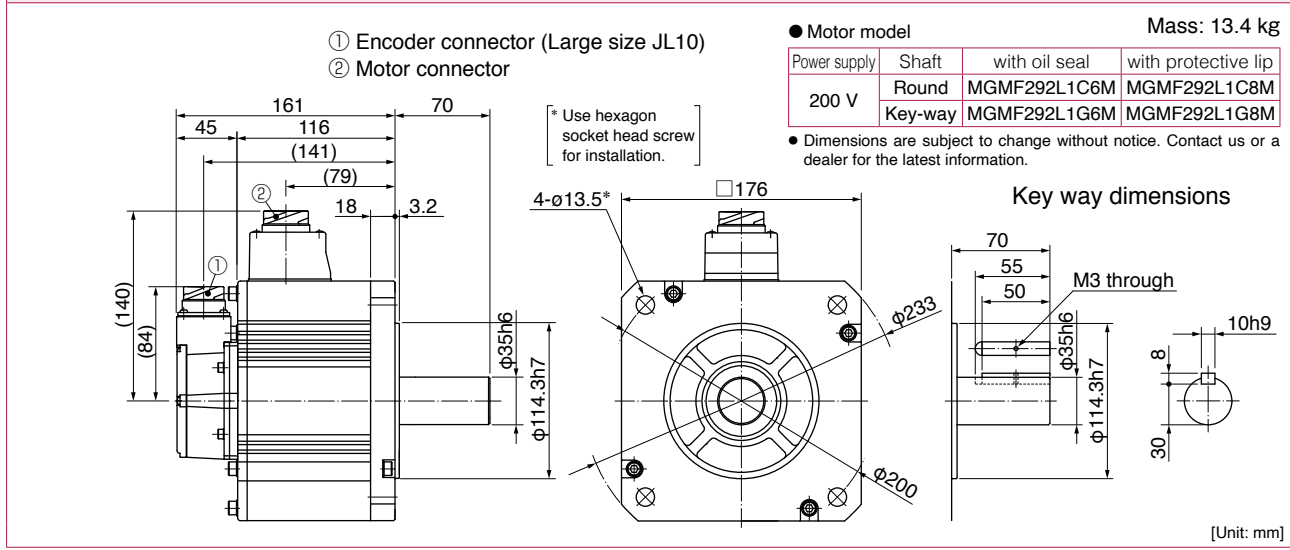
Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



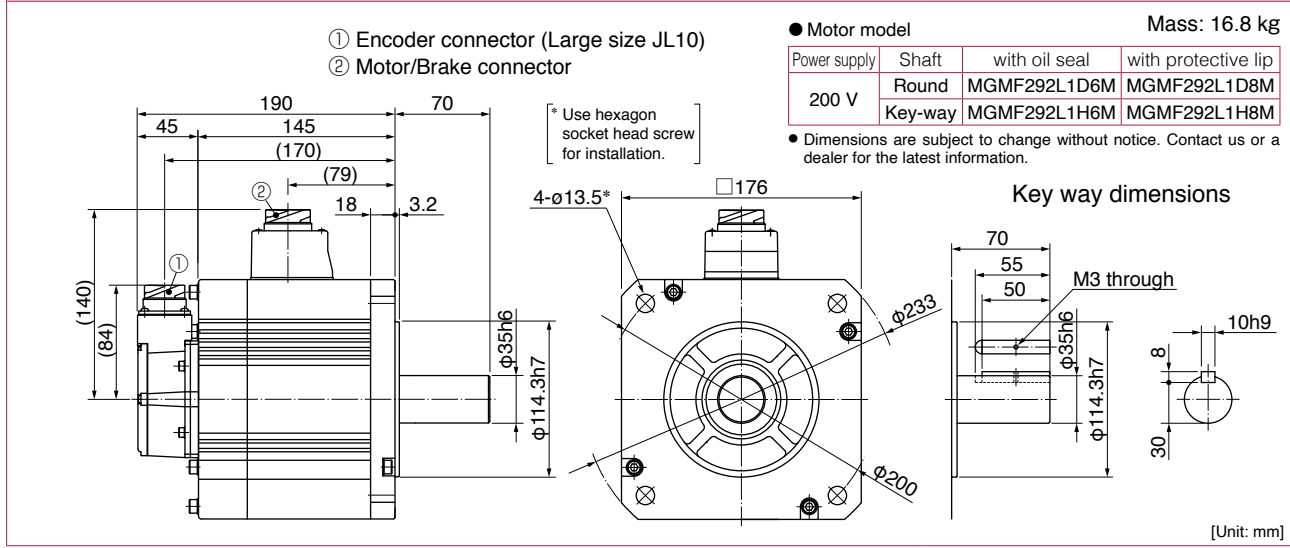
* For motors specifications, refer to P248, P249.

MGMF 2.9 kW

Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

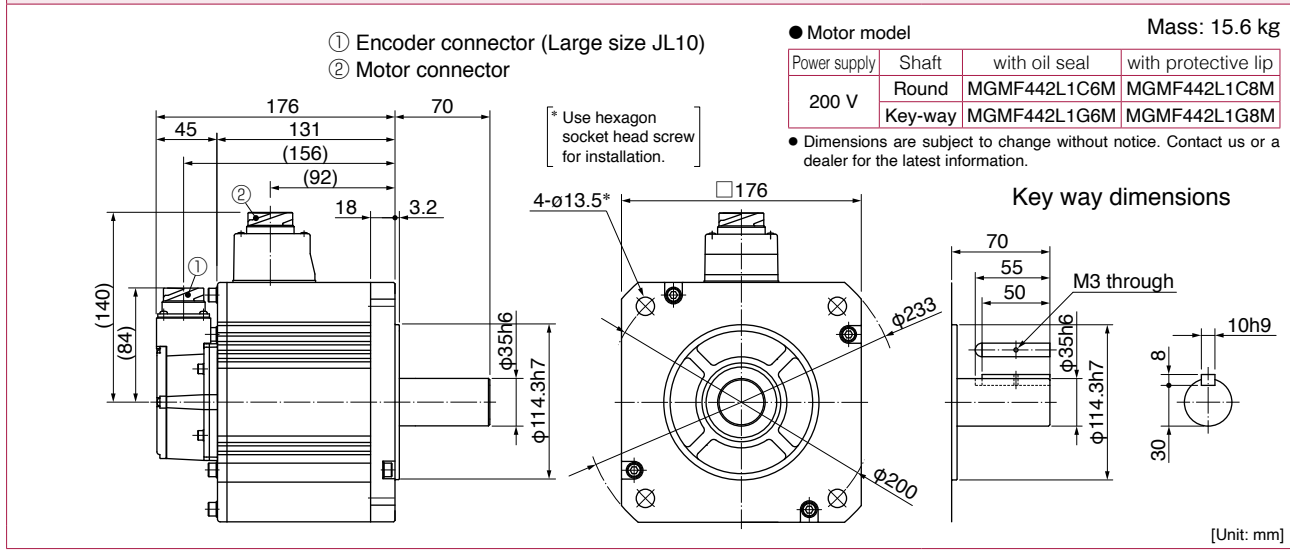


Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



MGMF 4.4 kW

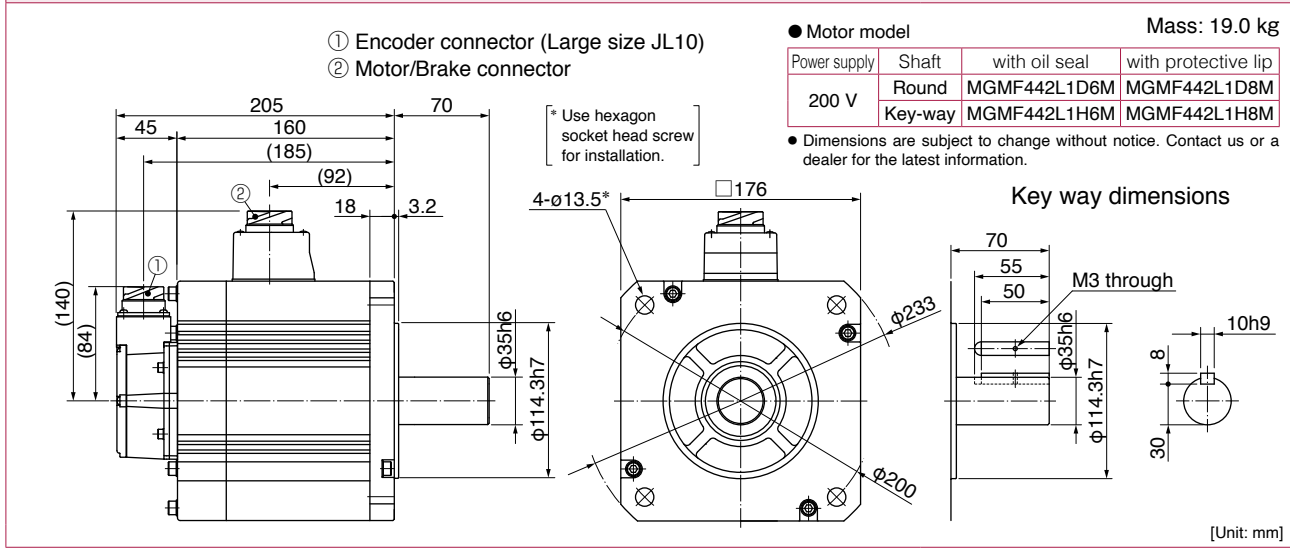
Large size connector (JL10) type · without brake · with oil seal/ with protective lip · Key way shaft/ Round shaft



* For motors specifications, refer to P250, P251.

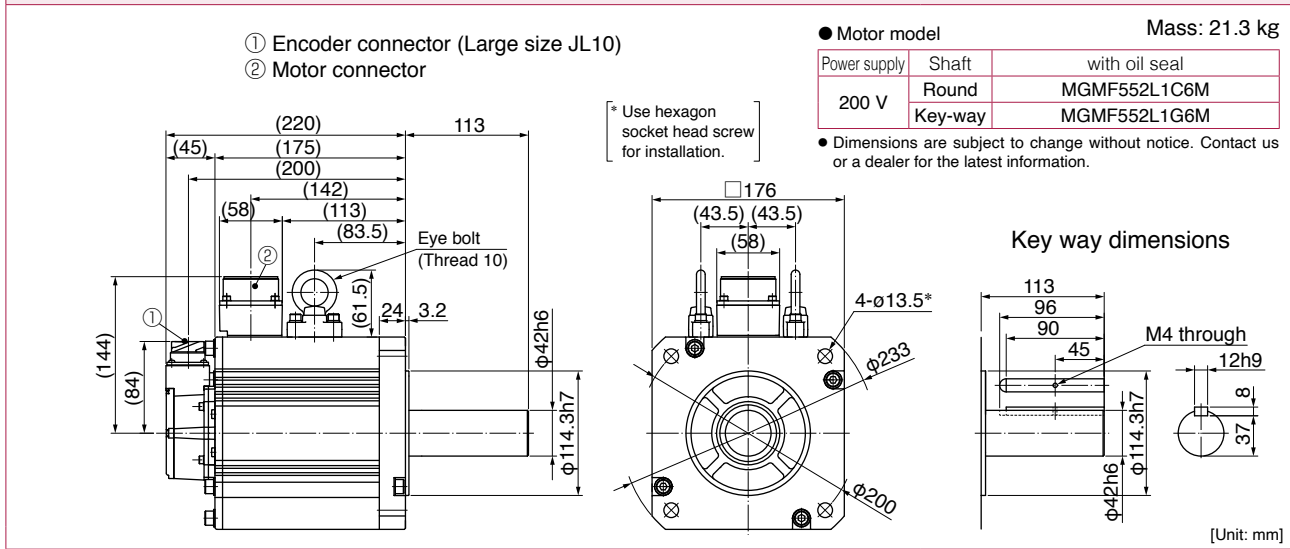
MGMF 4.4 kW

Large size connector (JL10) type · with brake · with oil seal/ with protective lip · Key way shaft/ Round shaft

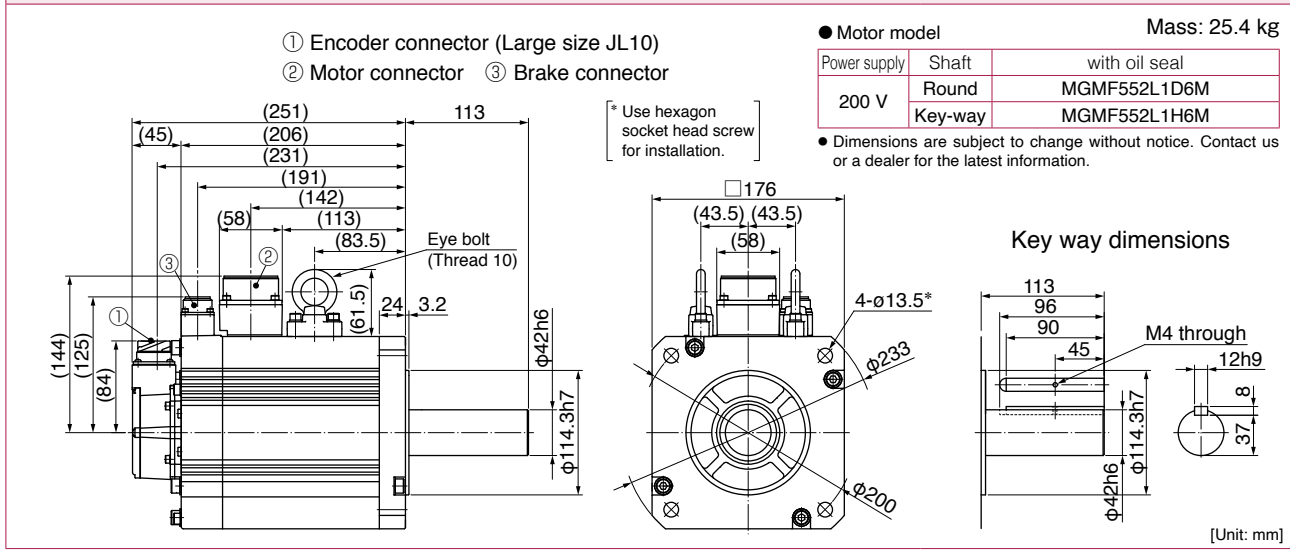


MGMF 5.5 kW

Large size connector (JL10) type · without brake · with oil seal · Key way shaft/ Round shaft

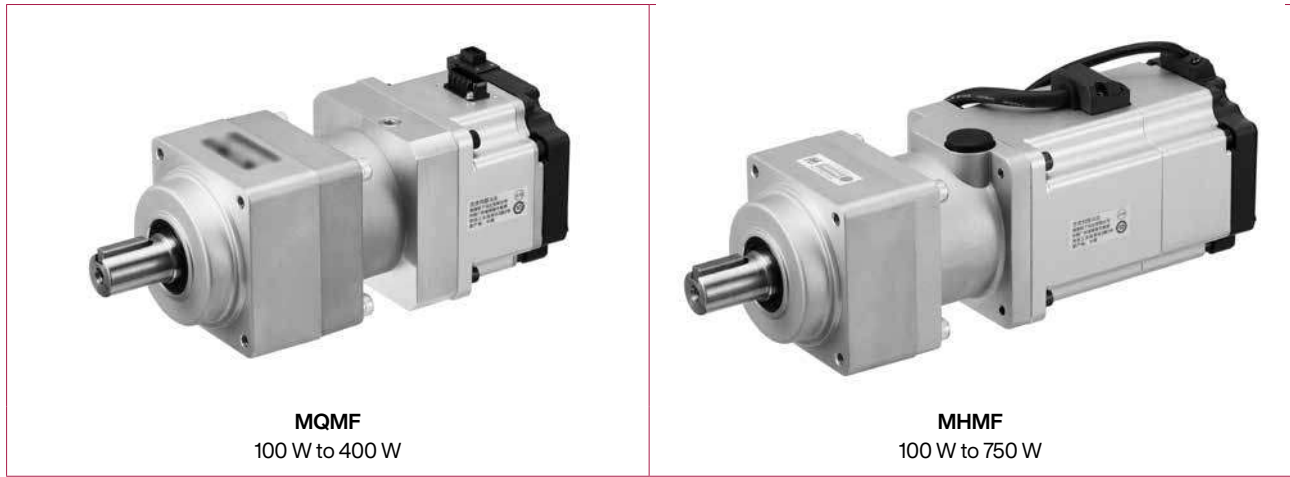


Large size connector (JL10) type · with brake · with oil seal · Key way shaft/ Round shaft



* For motors specifications, refer to P251, P252.

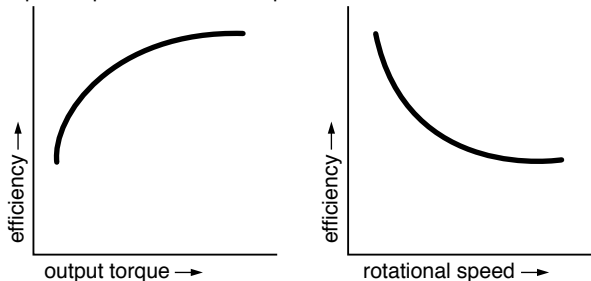
Motor Types with Gear Reducer



Reduction ratio	Motor output (W)				Type of reducer
	100	200	400	750	
1/5	●	●	●	●	For high precision
1/9	●	●	●	●	
1/15	●	●	●	●	
1/25	●	●	●	●	

* MQMF 750 W is not prepared.
* MHMF 100 W 1/25, 400 W 1/25 are not prepared.

Efficiency of the gear reducer show the following inclination in relation to output torque and rotational speed.



Specifications of Motor with Gear Reducer

Items		Specifications
Gear reducer	Backlash	3 minutes or smaller (initial value) at output shaft of the reducer
	Composition of gear	Planetary gear
	Gear efficiency	76 % to 87 %
	Lubrication	Grease lubrication
	Rotational direction at output shaft	Same direction as the motor output shaft
	Mounting method	Flange mounting
	Permissible moment of inertia of the load (conversion to the motor shaft)	10 times or smaller than rotor moment of inertia of the motor
Environment	Enclosure rating	IP44 (at gear reducer)
	Ambient temperature	0 °C to 40 °C (free from freezing)
	Storage temperature	−20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation)
	Ambient humidity, Storage humidity	20 %RH to 85 %RH (free from condensation)
	Vibration	Lower than 49 m/s ² (5G) at running, 24.5 m/s ² (2.5G) at stall
	Impact	Lower than 98 m/s ² (10G)
	Altitude	Lower than 1000 m

* For combination of elements of model number, refer to Index P411.

Model Designation

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Motor rated output

Symbol	Type
MQMF	Middle inertia Flat type 100 W to 400 W
MHMF	High inertia 100 W to 750 W

Symbol Series
F A6 Family

Motor output (W)

Symbol	Specifications
01	100 W
02	200 W
04	400 W
08	750 W

Voltage specifications

Symbol	Rated output
1	100 V
2	200 V

N: Standard

Motor types with gear reducer

Symbol	Reduction ratio	Motor output (W)				Type of reducer
		100	200	400	750	
1N	1/5	●	●	●	●	For high precision
2N	1/9	●	●	●	●	
3N	1/15	●	●	●	●	
4N	1/25	●	●	●	●	

* MQMF 750 W is not prepared.
* MHMF 100 W 1/25, 400 W 1/25 are not prepared.

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wire
L	Absolute	23-bit	8388608	7

<Note>
When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder.

Motor structure

Symbol	Motor I/F	Shaft	Holding brake	
		Key way	without	with
3	Connector	●	●	
4		●		●
7	Leadwire	●	●	
8		●		●

The Combination of the Driver and the Motor

Motor				Driver	
Motor series	Power supply	Output (W)	Part No.*	A6SF series	A6SE series
				Multi function type	Basic type
				Pulse, analog, full-closed	Pulse signal input (Incremental only)
MQMF Middle inertia Flat type	Single phase 100 V	100	MQMF011L □□ N	MADLT11SF	MADLN11SE
		200	MQMF021L □□ N	MBDLT21SF	MBDLN21SE
		400	MQMF041L □□ N	MCDLT31SF	MCDLN31SE
	Single phase/ 3-phase 200 V	100	MQMF012L □□ N	MADLT05SF	MADLN05SE
		200	MQMF022L □□ N	MADLT15SF	MADLN15SE
		400	MQMF042L □□ N	MBDLT25SF	MBDLN25SE
MHMF High inertia	Single phase 100 V	100	MHMF011L □□ N	MADLT11SF	MADLN11SE
		200	MHMF021L □□ N	MBDLT21SF	MBDLN21SE
		400	MHMF041L □□ N	MCDLT31SF	MCDLN31SE
	Single phase/ 3-phase 200 V	100	MHMF012L □□ N	MADLT05SF	MADLN05SE
		200	MHMF022L □□ N	MADLT15SF	MADLN15SE
		400	MHMF042L □□ N	MBDLT25SF	MBDLN25SE
		750	MHMF082L □□ N	MCDLT35SF	MCDLN35SE

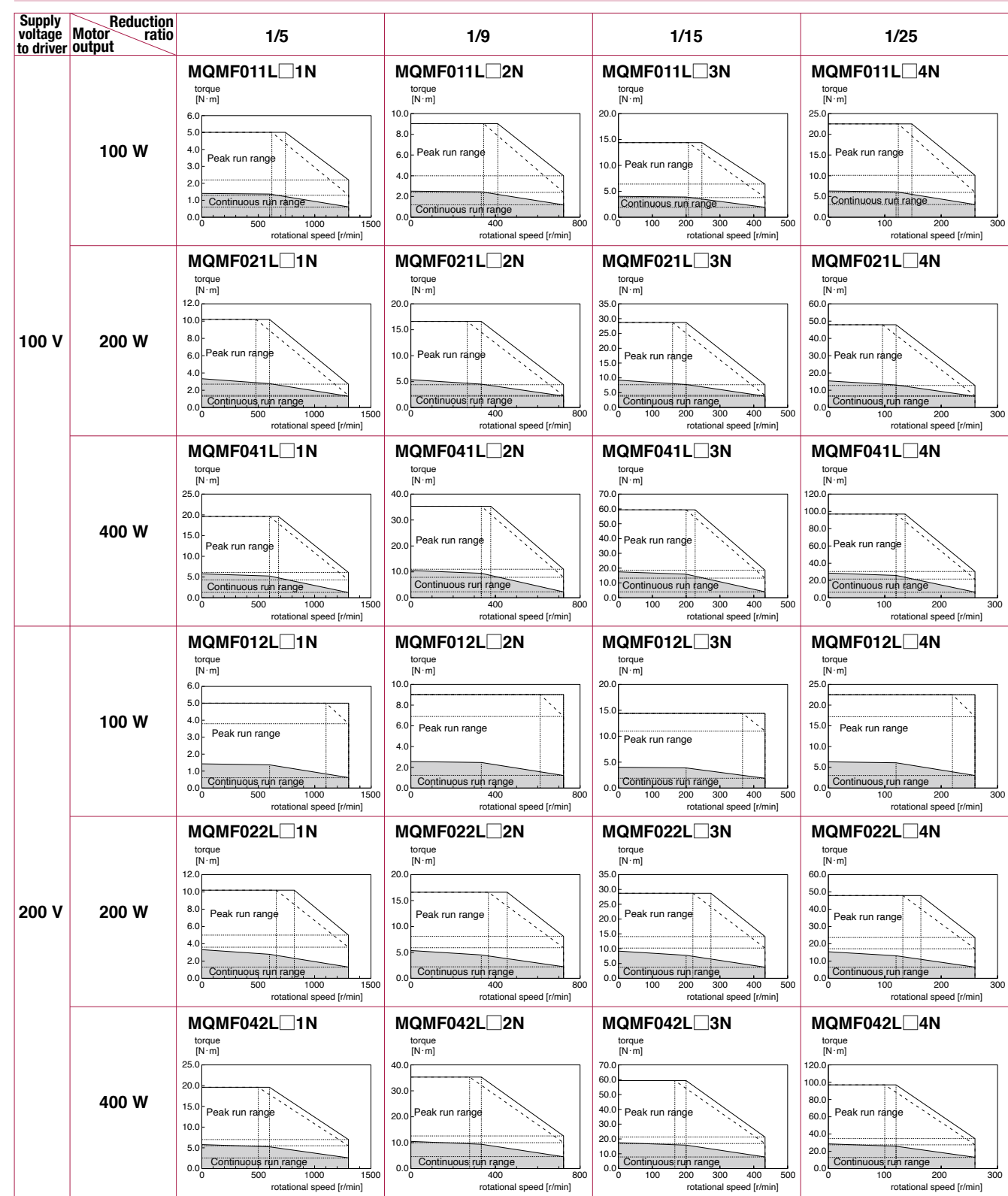
* The symbols of the motor structure and the gear reduction ratio are entered in □□ of the motor part number. Please refer to the above “Model Designation”.
* Motor options: Please check the upper 9th digit of the motor part number. If the motor is connector type, refer to P.31 to P.32. And if the motor is leadwire type, refer to P.29 to P.30.

Table of Motor Specifications

Part No.*		Motor Output	Reduction ratio	Output	Rated speed	Max. speed	Rated torque	Peak max. torque	Moment of inertia (motor + reducer/ converted to motor shaft)		Mass		Permissible radial load	Permissible thrust load
		(W)		(W)	(r/min)	(r/min)	(N·m)	(N·m)	w/o brake	w/ brake	w/o brake	w/ brake	(N)	(N)
MQMF Middle inertia Flat type	MQMF01□L□1N	100	1/5	85	600	1300	1.36	5.01	0.210	0.240	1.2	1.4	490	245
	MQMF01□L□2N		1/9	85	333	722	2.45	9.02	0.200	0.230	1.2	1.4	588	294
	MQMF01□L□3N		1/15	81	200	433	3.89	14.4	0.207	0.237	1.4	1.7	784	392
	MQMF01□L□4N		1/25	76	120	260	6.08	22.5	0.287	0.317	2.6	2.9	1670	833
	MQMF02□L□1N	200	1/5	175	600	1300	2.78	10.2	0.650	0.740	1.9	2.3	490	245
	MQMF02□L□2N		1/9	157	333	722	4.49	16.6	0.770	0.860	3.0	3.4	1180	588
	MQMF02□L□3N		1/15	163	200	433	7.78	28.7	0.800	0.890	3.4	3.8	1470	735
	MQMF02□L□4N		1/25	163	120	260	13.0	47.9	0.790	0.880	3.4	3.8	1670	833
	MQMF04□L□1N	400	1/5	331	600	1300	5.27	19.6	1.35	1.43	3.4	3.9	980	490
	MQMF04□L□2N		1/9	331	333	722	9.49	35.3	1.25	1.33	3.4	3.9	1180	588
	MQMF04□L□3N		1/15	335	200	433	16.0	59.4	1.28	1.36	3.8	4.3	1470	735
	MQMF04□L□4N		1/25	327	120	260	26.0	96.9	1.31	1.39	5.4	5.9	2060	1030
MHMF High inertia	MHMF01□L□1N	100	1/5	85	600	1300	1.36	5.01	0.131	0.134	1.0	1.2	490	245
	MHMF01□L□2N		1/9	85	333	722	2.45	9.02	0.121	0.124	1.0	1.2	588	294
	MHMF01□L□3N		1/15	81	200	433	3.89	14.4	0.124	0.127	1.1	1.3	784	392
	MHMF02□L□1N	200	1/5	175	600	1300	2.78	10.2	0.437	0.457	1.5	1.8	490	245
	MHMF02□L□2N		1/9	157	333	722	4.49	16.6	0.563	0.583	2.5	2.8	1180	588
	MHMF02□L□3N		1/15	163	200	433	7.78	28.7	0.592	0.612	2.9	3.2	1470	735
	MHMF02□L□4N	400	1/25	163	120	260	13.0	47.9	0.583	0.603	2.9	3.2	1670	833
	MHMF04□L□1N		1/5	339	600	1300	5.39	19.6	0.930	0.950	2.8	3.2	980	490
	MHMF04□L□2N		1/9	332	333	722	9.51	35.3	0.833	0.853	2.8	3.2	1180	588
	MHMF04□L□3N		1/15	335	200	433	16.0	59.4	0.862	0.882	3.2	3.6	1470	735
	MHMF082L□1N	750	1/5	672	600	1200	10.7	38.4	2.38	2.48	4.3	5.0	980	490
	MHMF082L□2N		1/9	645	333	667	18.5	68.4	2.32	2.42	5.6	6.3	1470	735
	MHMF082L□3N		1/15	637	200	400	30.4	111	2.25	2.35	6.0	6.7	1760	882
	MHMF082L□4N		1/25	637	120	240	50.7	186	2.22	2.32	6.0	6.7	2060	1030

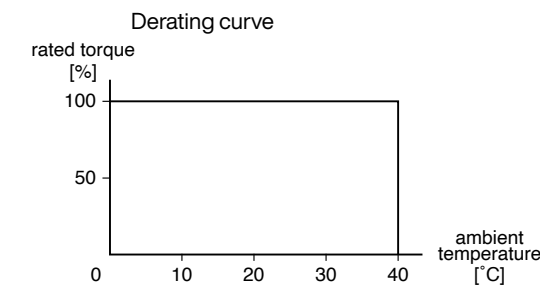
* The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P.294.

MQMF series (100 W to 400 W)

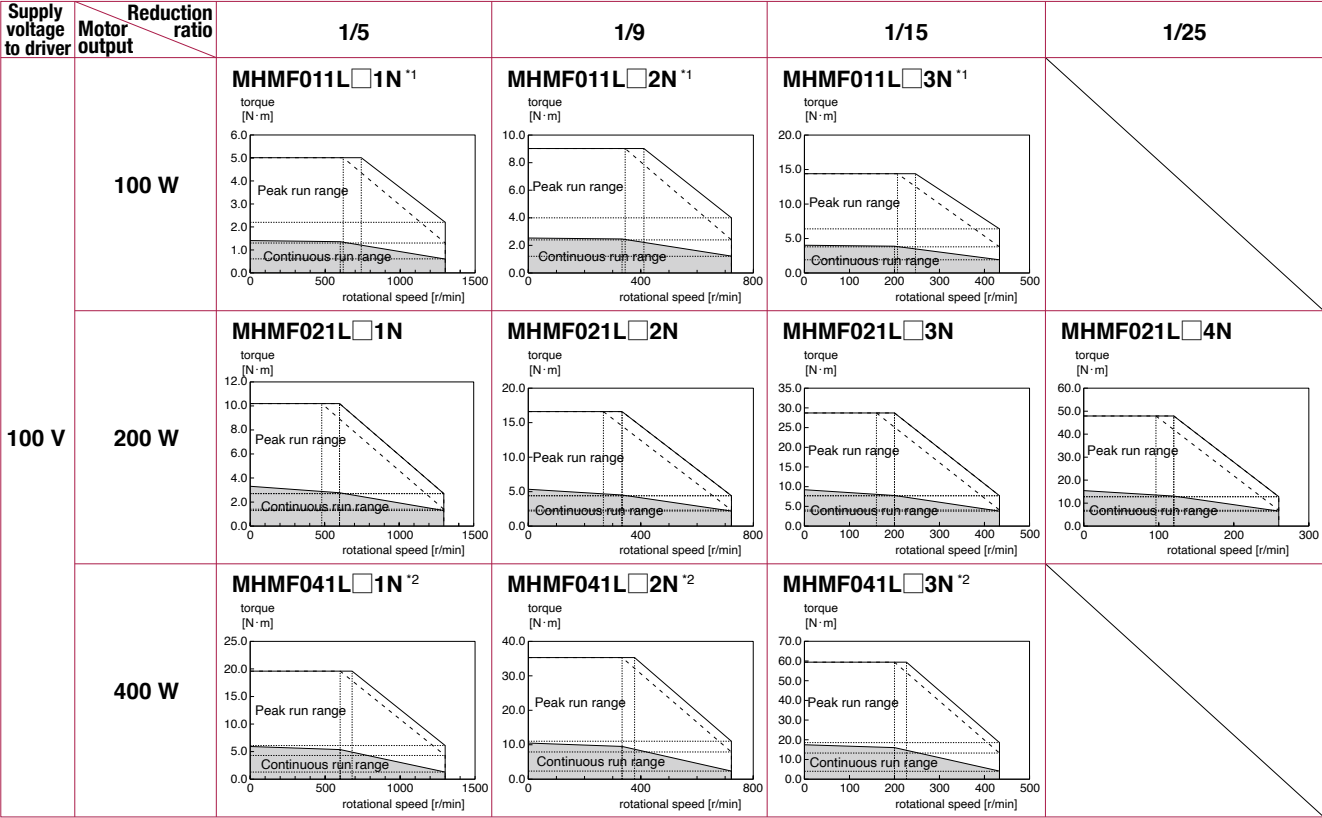


Dotted line represents the torque at 10 % less supply voltage to driver.

* The symbols of the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P.294.



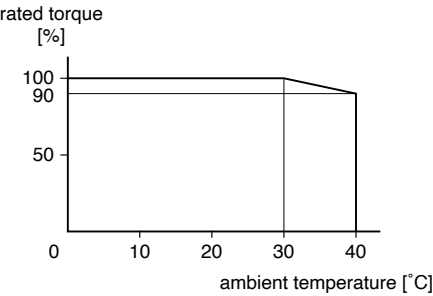
MHMF series (100 W to 750 W)



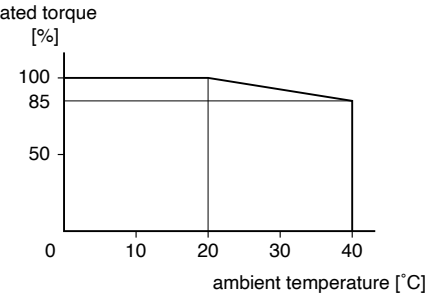
Dotted line represents the torque at 10 % less supply voltage to driver.

* The symbols of the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P294.

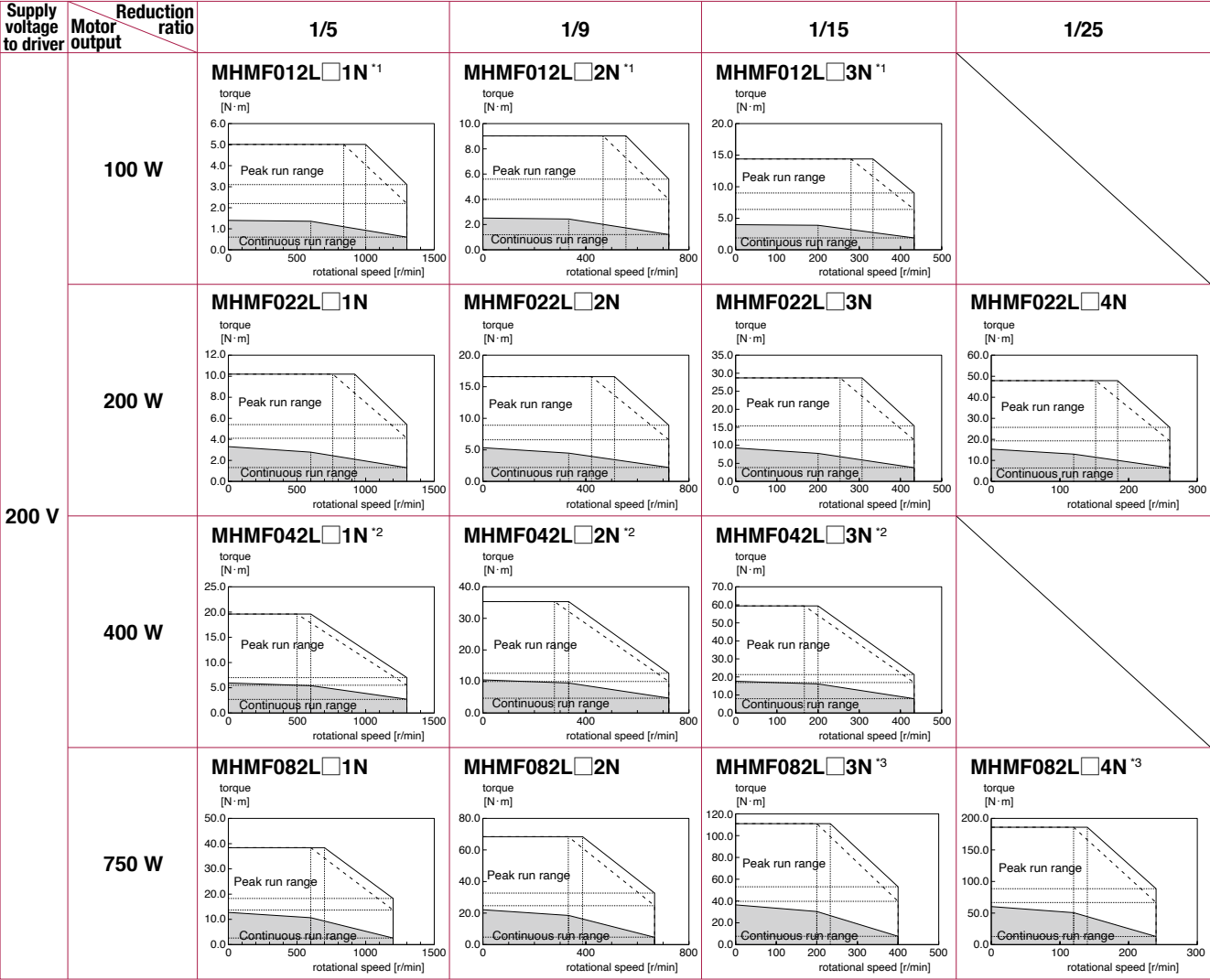
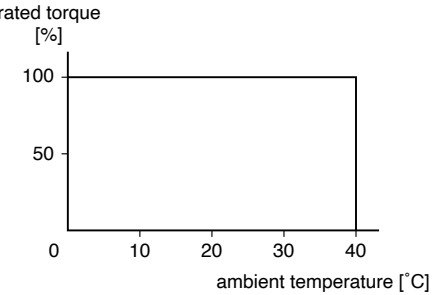
*1 Derating curve



*2 Derating curve



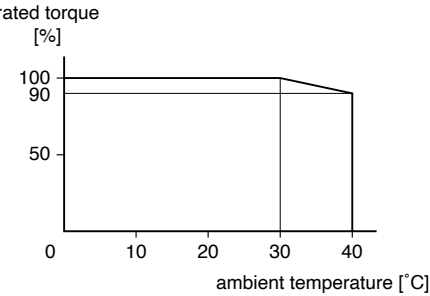
Motor number without *1, *2 Derating curve



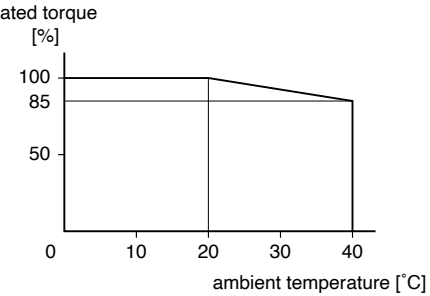
Dotted line represents the torque at 10 % less supply voltage to driver.

* The symbols of the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P294.

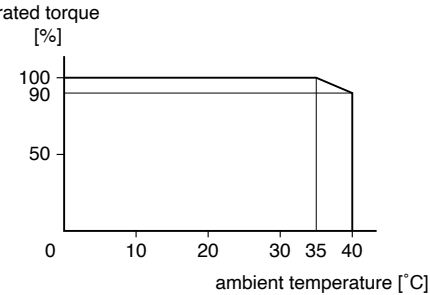
*1 Derating curve



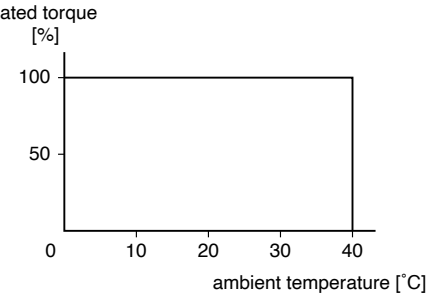
*2 Derating curve



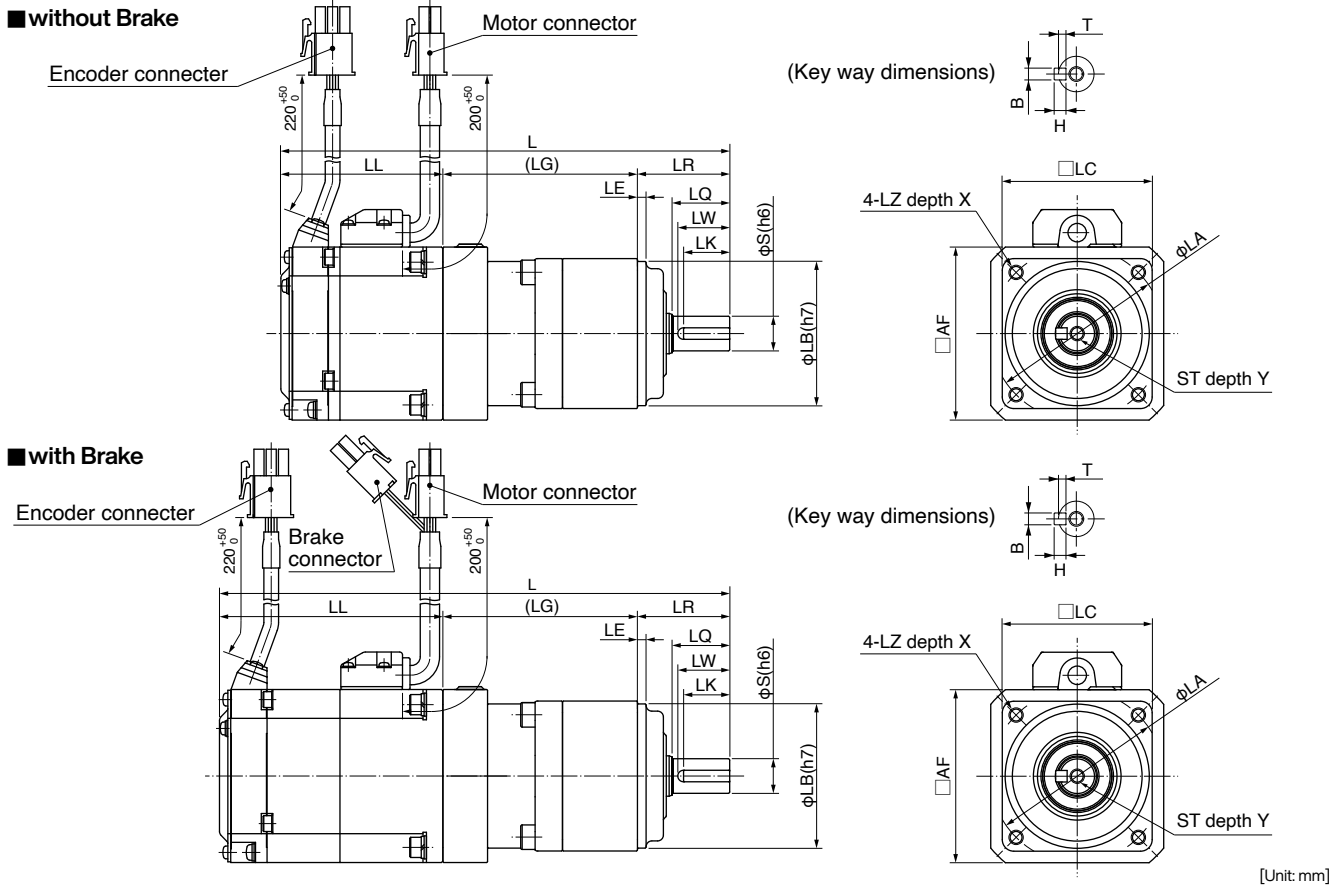
*3 Derating curve



Motor number without *1, *2, *3 Derating curve



MQMF series (Leadwire type)

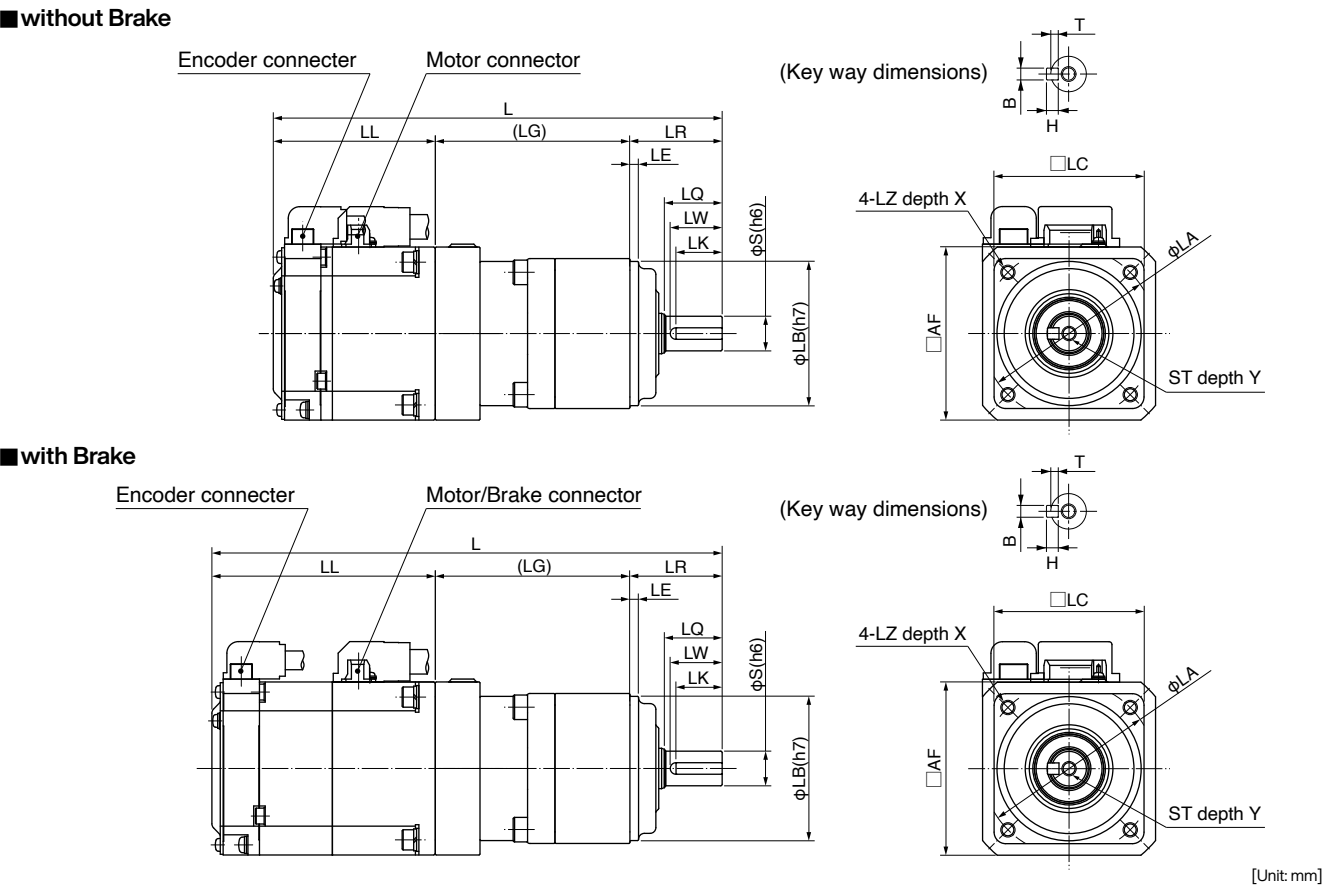


Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	LL	without Brake with Brake	(LG)	LR	LQ	LW	LK	S	B×T	H	ST	Y	LB	LA	LE	LZ	LC *2	X	AF *2	
MQMF01□L□1N	100	1/5	155.7	56.2	177	77.5	67.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	60	
MQMF01□L□2N			155.7	56.2		77.5																		
MQMF01□L□3N		1/9	155.7	56.2	77.5																			
			171.7	56.2	77.5																			
MQMF01□L□4N		1/15	171.7	56.2	77.5																			
			193	77.5	83.5																			
MQMF01□L□4N		1/25	199.7	56.2	221	77.5	93.5	50	30	26	22	19	6×3.5	6	M6	12	70	90		M6	78			20
			221	77.5																				
MQMF02□L□1N	200	1/5	166.8	62.3	190.4	85.9	72.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	80	
MQMF02□L□2N			201.8	62.3		85.9																		
MQMF02□L□3N		1/9	201.8	62.3	85.9																			
			225.4	85.9	89.5																			
MQMF02□L□4N		1/15	212.3	62.3	235.9	85.9	100	50	30	26	22	19	6×3.5	6	M6	12	70	90		M6	78	20		
			235.9	85.9																				
MQMF02□L□4N		1/25	212.3	62.3	235.9	85.9																		
			235.9	85.9																				
MQMF04□L□1N	400	1/5	214.3	74.8	237.9	98.4	89.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	80	
MQMF04□L□2N			214.3	74.8		98.4																		
MQMF04□L□3N		1/9	214.3	74.8	98.4																			
			237.9	98.4	100																			
MQMF04□L□4N		1/15	224.8	74.8	248.4	98.4																		
			248.4	98.4																				
MQMF04□L□4N		1/25	239.8	74.8	263.4	98.4	104	61	40	35	30	24	8×4	7	M8	16	90	115	5	M8	98			
			263.4	98.4																				

*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P294.

*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

MQMF series (Connector type)

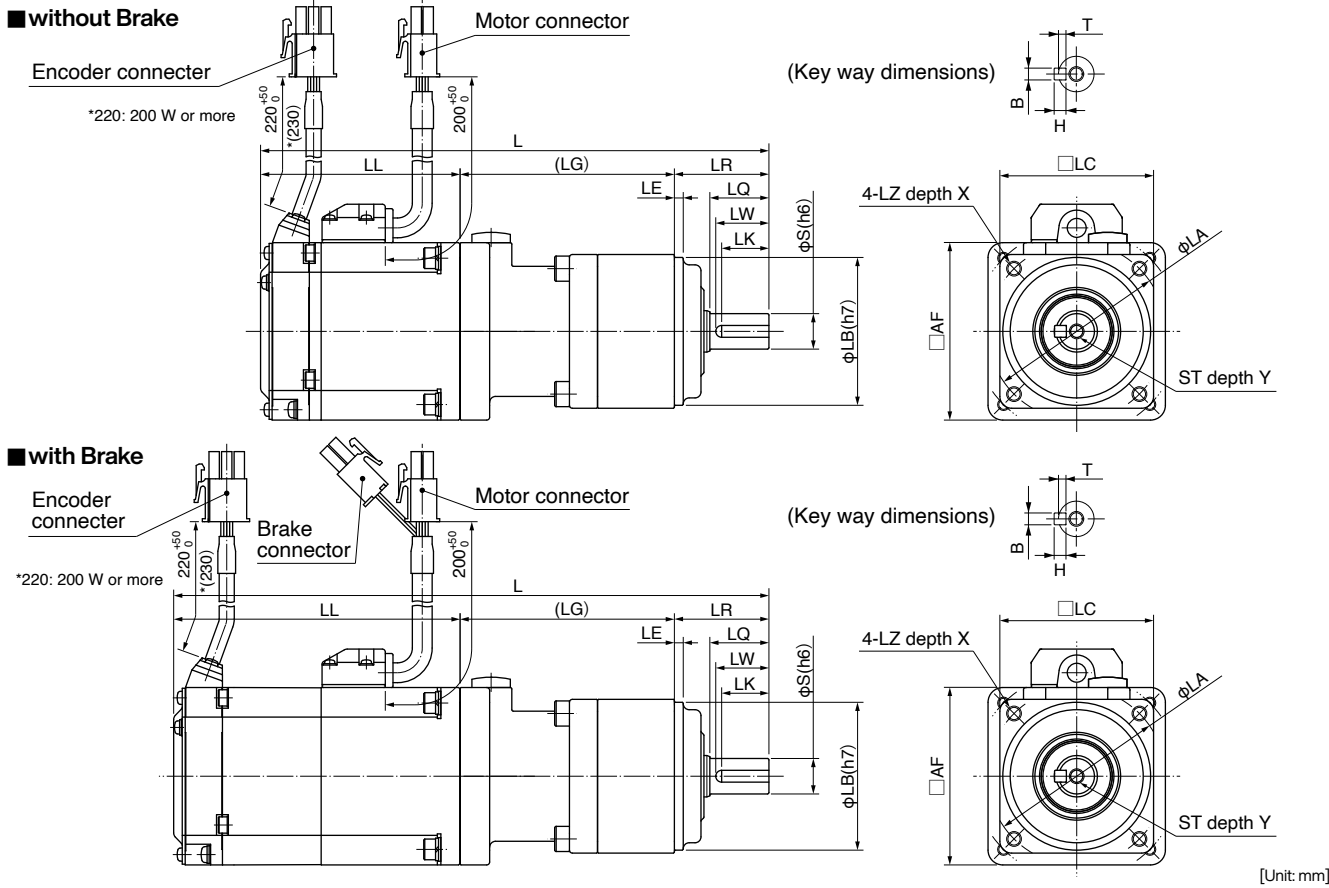


Motor Part No. *1	Motor output (W)	Reduction ratio	L	without Brake with Brake	LL	without Brake with Brake	(LG)	LR	LQ	LW	LK	S	B×T	H	ST	Y	LB	LA	LE	LZ	LC ^{*2}	X	AF ^{*2}												
MQMF01□L□1N	100	1/5	155.7	56.2	177	77.5	67.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	60												
MQMF01□L□2N			155.7	56.2		77.5																													
MQMF01□L□3N		1/9	155.7	56.2	177	77.5																													
MQMF01□L□4N			171.7	56.2		77.5																													
		1/15	171.7	56.2	193	77.5	83.5	50	30	26	22	19	6×3.5	6	M6	12	70	90		M6	78			20											
			193	77.5																															
		1/25	199.7	56.2	221	77.5	93.5	50	30	26	22	19	6×3.5	6	M6	12	70	90		M6	78			20											
			221	77.5																															
MQMF02□L□1N	200	1/5	166.8	62.3	190.4	85.9	72.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	80												
MQMF02□L□2N			201.8	62.3		85.9																													
MQMF02□L□3N		1/9	201.8	62.3	225.4	85.9	89.5	50	30	26	22	19	6×3.5	6	M6	12	70	90			M6	78		20											
			225.4	85.9																															
MQMF02□L□4N		1/15	212.3	62.3	235.9	85.9	100												50		30	26		22	19	6×3.5	6	M6	12	70	90		M6	78	20
			235.9	85.9																															
		1/25	212.3	62.3	235.9	85.9		50	30	26	22	19	6×3.5	6	M6	12	70	90		M6	78	20													
			235.9	85.9																															
MQMF04□L□1N	400	1/5	214.3	74.8	237.9	98.4	89.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	80												
MQMF04□L□2N			214.3	74.8		98.4																													
MQMF04□L□3N		1/9	214.3	74.8	237.9	98.4	100	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20													
			237.9	98.4																															
		1/15	224.8	74.8	248.4	98.4	100	61	40	35	30	24	8×4	7	M8	16	90	115	5	M8	98	20													
			248.4	98.4																															
		1/25	239.8	74.8	263.4	98.4	104	61	40	35	30	24	8×4	7	M8	16	90	115	5	M8	98	20													
			263.4	98.4																															

*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number. Please refer to “Model Designation” in P294.

*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

MHMF series (Leadwire type)

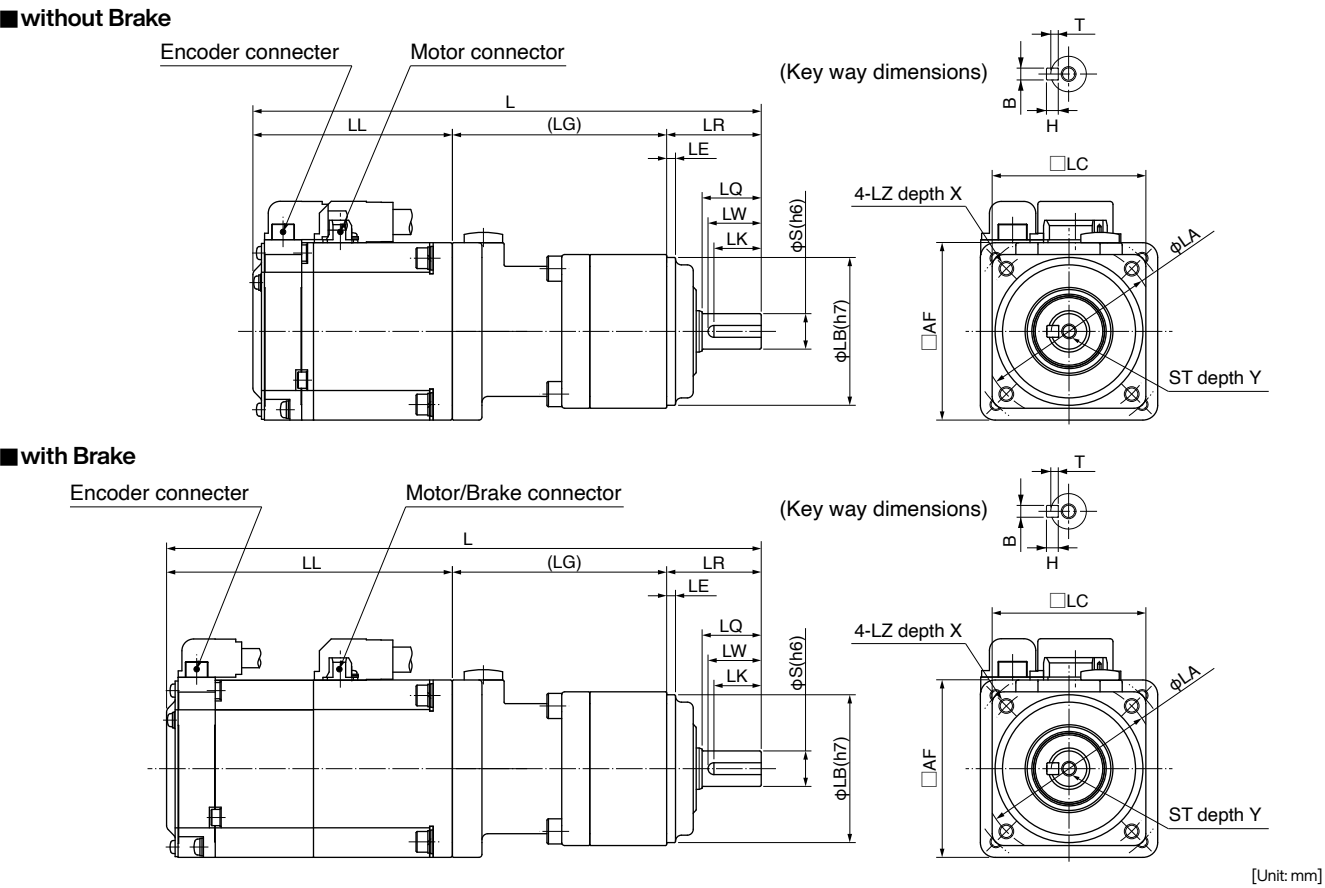


Motor Part No.*1	Motor output (W)	Reduction ratio	L	without Brake with Brake	LL	without Brake with Brake	(LG)	LR	LQ	LW	LK	S	B×T	H	ST	Y	LB	LA	LE	LZ	LC ^{*2}	X	AF ^{*2}
MHMF01□L□1N	100	1/5	167	67.5	67.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	40		
MHMF01□L□2N			200.9	101.4																			
MHMF01□L□3N		1/9	167	67.5	78																		
			200.9	101.4																			
	1/15	177.5	67.5																				
		211.4	101.4																				
MHMF02□L□1N	200	1/5	172	67.5	72.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	60		
MHMF02□L□2N			201.3	96.8																			
MHMF02□L□3N		1/9	207	67.5	89.5																		
			236.3	96.8																			
MHMF02□L□4N		1/15	217.5	67.5	100																		
			246.8	96.8																			
	1/25	217.5	67.5																				
		246.8	96.8																				
MHMF04□L□1N	400	1/5	224	84.5	89.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	60		
MHMF04□L□2N			253.3	113.8																			
MHMF04□L□3N		1/9	224	84.5	100																		
			253.3	113.8																			
	1/15	234.5	84.5																				
		263.8	113.8																				
MHMF082L□1N	750	1/5	235.4	91.9	93.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	80		
MHMF082L□2N			269	125.5	97.5																		
MHMF082L□3N		1/9	250.4	91.9																		110	
			284	125.5																			
MHMF082L□4N		1/15	262.9	91.9																			
			296.5	125.5																			
	1/25	262.9	91.9																				
		296.5	125.5																				

*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number.
Please refer to “Model Designation” in P294.

*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

MHMF series (Connector type)



Motor Part No.*1	Motor output (W)	Reduction ratio	L without Brake with Brake	LL without Brake with Brake	(LG)	LR	LQ	LW	LK	S	B×T	H	ST	Y	LB	LA	LE	LZ	LC *2	X	AF *2
MHMF01□L□1N	100	1/5	167	67.5	67.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	40
MHMF01□L□2N			200.9	101.4																	
MHMF01□L□3N		1/9	167	67.5																	
			200.9	101.4																	
MHMF01□L□3N	1/15	177.5	67.5	78																	
		211.4	101.4																		
MHMF02□L□1N	200	1/5	172	67.5	72.5	32	20	18	16	12	4×2.5	4	M5	10	50	60	3	M5	52	12	60
MHMF02□L□2N			201.3	96.8																	
MHMF02□L□2N		1/9	207	67.5	89.5																
			236.3	96.8																	
MHMF02□L□3N		1/15	217.5	67.5	100																
			246.8	96.8																	
MHMF02□L□4N		1/25	217.5	67.5																	
			246.8	96.8																	
MHMF04□L□1N	400	1/5	224	84.5	89.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	60
MHMF04□L□2N			253.3	113.8																	
MHMF04□L□2N		1/9	224	84.5																	
			253.3	113.8																	
MHMF04□L□3N	1/15	234.5	84.5	100																	
		263.8	113.8																		
MHMF082L□1N	750	1/5	235.4	91.9	93.5	50	30	26	22	19	6×3.5	6	M6	12	70	90	3	M6	78	20	80
MHMF082L□2N			269	125.5																	
MHMF082L□2N		1/9	250.4	91.9	97.5																
			284	125.5																	
MHMF082L□3N		1/15	262.9	91.9	110																
			296.5	125.5																	
MHMF082L□4N	1/25	262.9	91.9																		
		296.5	125.5																		

*1 The symbols of the voltage specifications and the motor structure are entered in □ of the motor part number.
Please refer to “Model Designation” in P294.

*2 □LC: flange size of the reduction gear □, AF: □ flange size of the motor

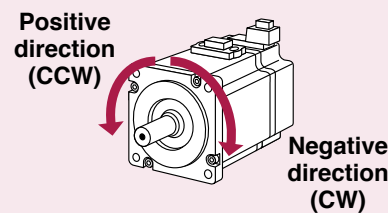
Environmental Conditions

Item		Conditions
Ambient temperature *1		0 °C to 40 °C (free from freezing)
Ambient humidity		20 %RH to 85 %RH (free from condensation*5*6)
Storage temperature *2		−20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*5)
Storage humidity		20 %RH to 85 %RH (free from condensation*5*6)
Vibration	Motor only	Lower than 49 m/s ² (5 G) at running, 24.5 m/s ² (2.5 G) at stall*7
Impact	Motor only	Lower than 98 m/s ² (10 G)
Enclosure rating (Motor only)	IP65 *3	MSMF, MQMF, MHMF (except rotating portion of output shaft and leadwire end.) (MSMF, MQMF, MHMF In case of leadwire type.)
	IP67 *3*4	IP67 motor (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)
	IP44 *3	Excludes output shaft rotating part, connector connection pin part, and motor lead hole part of terminal box.
Altitude		Lower than 1000 m

*1 Ambient temperature to be measured at 5 cm away from the motor.
*2 Permissible temperature for short duration such as transportation.
*3 These motors conform to the test conditions specified in EN standards (EN60529, EN60034-5). Do not use these motors in application where water proof performance is required such as continuous wash-down operation.
*4 This condition is applied when the connector mounting screw are tightened to the recommended tightening torque.
*5 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.
*6 The terminal block of MDMFD22L1□□ is between 45%RH to 85%RH.
*7 For motors with rated output capacity of 5.5 kW or more, both motor rotation and stop will be 24.5 m/s² (2.5 G) or less.

<Note>

Initial setup of rotational direction:
positive = CCW and negative = CW.
Pay an extra attention.



IP65	IP67
(1000 W or less) <Leadwire type>	<Connector type>

Notes on [Motor specification] page

Note) 1. Regenerative resistors are not built in drivers of A and B frames. When regeneration occurs, prepare an optional external regenerative resistor.

[At AC100 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as $1/(m+1)$, where m=load moment of inertia/rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC115 V (at 100 V of the main voltage).
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

[At AC200 V of power voltage]

Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defines as $1/(m+1)$, where m=load moment of inertia/rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is AC230 V (at 200 V of the main voltage).
If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.

- When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

Note) 2. If the effective torque is within the rated torque, there is no limit in generative brake.

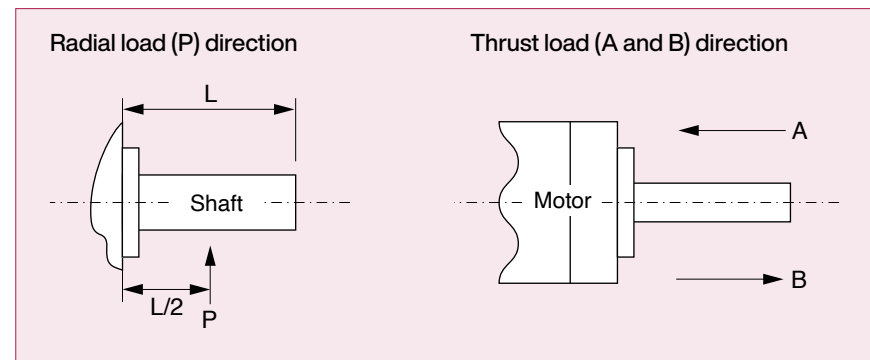
Note) 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.

Permissible Load at Output Shaft

The radial load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the right figure, the permissible value is determined based on the load applied to the L/2 position of the output shaft. The thrust load is defined as a load applied to the output shaft in the axial direction.

Because the radial load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible radial load and thrust load shown in the table below.



Built-in Holding Brake

In the applications where the motor drives the vertical axis, this brake would be used to hold and prevent the work (moving load) from falling by gravity while the power to the servo is shut off.

Use this built-in brake for "Holding" purpose only, that is to hold the stalling status. Never use this for "Brake" purpose to stop the load in motion.

• Output Timing of BRK-OFF Signal

- For the brake release timing at power-on, or braking timing at Servo-OFF/Servo-Alarm while the motor is in motion, refer to the Operating Instructions (Overall).
- With the parameter, Pr4.38 (Setup of mechanical brake action while the motor is in motion), you can set up a time between when the motor enters to a free-run from energized status and when BRK-OFF signal turns off (brake will be engaged), when the Servo-OFF or alarm occurs while the motor is in motion. For details, download a copy of the instruction manual from our website.

<Note>

1. The lining sound of the brake (chattering and etc.) might be generated while running the motor with built-in brake, however this does not affect any functionality.
2. Magnetic flux might be generated through the motor shaft while the brake coil is energized (brake is open). Pay an extra attention when magnetic sensors are used nearby the motor.

●Specifications of Built-in Holding Brake

Motor series	Motor output	Static friction torque N·m	Rotor inertia × 10 ⁻⁴ kg·m ²	Engaging time ms	Releasing time ms	Exciting current DC A (at cool-off)	Releasing voltage DC V Exciting voltage DC V	Permissible work (J) per one braking	Permissible total work × 10 ³ J	Permissible angular acceleration rad/s ²	
MSMF (80 mm sq.) or less	50 W,100 W	0.294 or more	0.002	35 or less	20 or less	0.30	1 or more	39.2	4.9	30000	
	200 W,400 W	1.27 or more	0.018	50 or less	15 or less	0.36	24±1.2	137	44.1		
	750 W	2.45 or more	0.075	70 or less	20 or less	0.42	1 or more	196	147		
	1000 W	3.80 or more					24±2.4	185	80.0		
MSMF (100 mm sq.) or more	1.0 kW, 1.5 kW, 2.0 kW	8.0 or more	0.175	50 or less	15 or less	0.81	2 or more	600	50	10000	
	3.0 kW	12.0 or more		80 or less					900		
	4.0 kW	16.2 or more	1.12	110 or less	50 or less	0.90	24±2.4	1470	2160		
	5.0 kW	22.0 or more					1545	2000			
MQMF (80 mm sq.) or less	100 W	0.39 or more	0.018	15 or less	20 or less	0.30	1 or more	105	44.1	30000	
	200 W, 400 W	1.6 or more	0.075	70 or less		0.36	24±2.4	185	80		
MHMF (80 mm sq.) or less	50 W, 100 W	0.38 or more	0.002	35 or less	20 or less	0.30	1 or more	39.2	4.9	30000	
	200 W, 400 W	1.6 or more	0.018	50 or less		0.36		105	44.1		
	750 W, 1000 W	3.8 or more	0.075	70 or less		0.42		185	80		
MHMF (100 mm sq.) or more	1.0 kW, 1.5 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000	
	2.0 kW, 3.0 kW, 4.0 kW	25.0 or more	4.7	80 or less	25 or less	1.29		24±2.4	1800	3000	5440
	5.0 kW	44.1 or more	4.1	150 or less	30 or less					3100	5108
	7.5 kW	63.0 or more	3.9	200 or less	80 or less						
MDMF (100 mm sq.) or more	1.0 kW, 1.5 kW, 2.0 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000	
	3.0 kW	22.0 or more		110 or less		0.90		1545	2000		
	4.0 kW	25.0 or more	4.7	80 or less	25 or less	1.29		24±2.4	1800	3000	5108
	5.0 kW	44.1 or more	4.1	150 or less	30 or less					3100	
	7.5 kW	63.0 or more	3.9	200 or less	80 or less						
	11.0 kW	100 or more	7.1	300 or less	140 or less	1.08		2000	4000		
	15.0 kW				150 or less	1.72				3000	
	22.0 kW	200 or more	28							3000	
MGMF (100 mm sq.) or more	0.85 kW, 1.3 kW, 1.8 kW	13.7 or more	1.12	100 or less	50 or less	0.79	2 or more	1470	2160	10000	
	2.9 kW	25.0 or more	4.7	80 or less	25 or less	1.29		24±2.4	1800	3000	5440
	4.4 kW	44.1 or more	3.93	150 or less	30 or less					3100	5108
	5.5 kW	63.0 or more	3.9	200 or less	80 or less						

- The engaging time and releasing time represent the delay time of the brake operation.
- Releasing time values represent the ones with DC-cutoff using a varistor.
- Above values (except static friction torque, releasing voltage and exciting voltage) represent typical values.
- Backlash of the built-in holding brake is kept 2° or smaller at ex-factory point.
- Service life of the number of acceleration/deceleration with the above permissible angular acceleration is more than 10 million times. (Life end is defined as when the brake backlash drastically changes.)
- The motor brake power supply must be different from the power supply for the driver's connectors X1, X2, X3, X4, X5, X6.

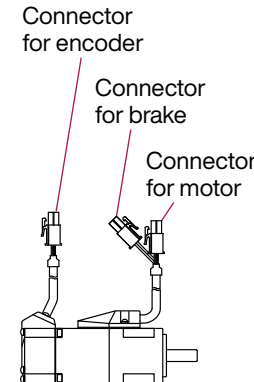
Options

Contents	
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50 W to 1000 W 80 mm sq. or less

● When the motors of <MSMF, MQMF, MHMF (Leadwire type)> are used, they are connected as shown below.
Connector: Tyco Electronics Japan G.K. (The figures below show connectors for the motor.)

[Connector for encoder]



Connector for encoder
Connector for brake
Connector for motor

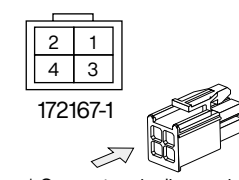
172169-1
23-bit Absolute

PIN No.	Application
1	BAT+*
2	BAT-*
3	FG(SHIELD)
4	PS
5	PS
6	NC
7	E5V
8	E0V
9	NC

<Remarks>
Do not connect anything to NC.

* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

[Connector for motor]

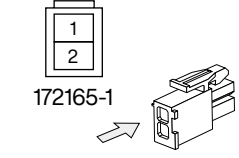


172167-1

PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	Ground

* Connector pin diagram is viewed from the direction of the arrow.

[Connector for Brake]



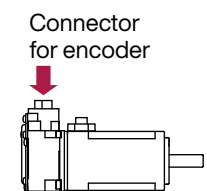
172165-1

PIN No.	Application
1	Brake
2	Brake

* Electromagnetic brake is a nonpolar device.

* Connector pin diagram is viewed from the direction of the arrow.

● When the motors of <MSMF, MQMF, MHMF (Connector type)> are used, they are connected as shown below.
Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)



Connector for encoder

1 2 3 4 5 6 7

JN6CR07PM2
JN6CR07PM4

* Top view of the motor.

23-bit Absolute

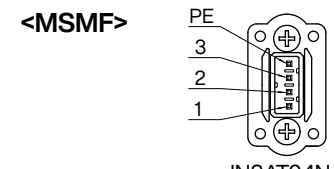
PIN No.	Application
1	FG(SHIELD)
2	BAT-*
3	E0V
4	PS
5	BAT+*
6	E5V
7	PS

Tightening torque of the screw (M2)
0.19 N·m to 0.21 N·m

* Be sure to use only the screw supplied with the connector, to avoid damage.

* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

<MSMF>



PE 3 2 1

JN8AT04NJ1

* Top view of the motor.

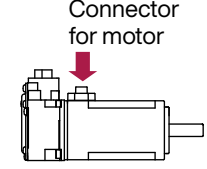
PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
PE	Ground

Tightening torque of the screw (M2)
0.085 N·m to 0.095 N·m (screwed to plastic)

* Be sure to use only the screw supplied with the connector, to avoid damage.

* Secure the gasket in place without removing it from the connector.

<MHMF 50 W, 100 W>



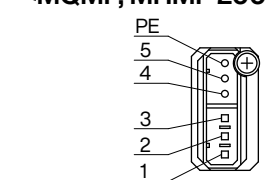
Connector for motor

PE 5 4 3 2 1

JN11AH06NN2

* Top view of the motor.

<MQMF, MHMF 200 W to 1000 W>



PE 5 4 3 2 1

JN11AH06NN1

* Top view of the motor.

without Brake		with Brake	
PIN No.	Application	PIN No.	Application
1	U-phase	1	U-phase
2	V-phase	2	V-phase
3	W-phase	3	W-phase
4	NC	4	Brake
5	NC	5	Brake
PE	Ground	PE	Ground

Tightening torque of the screw (M2)
0.085 N·m to 0.095 N·m

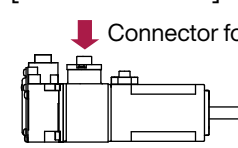
* Electromagnetic brake is a nonpolar device.

* Be sure to use only the screw supplied with the connector, to avoid damage.

* Secure the gasket in place without removing it from the connector.

<Remarks> Do not connect anything to NC.

[Motor with brake] <MSMF>



Connector for brake

1 2

JN4AT02PJM-R

* Top view of the motor.

PIN No.	Application
1	Brake
2	Brake

Tightening torque of the screw (M2)
0.19 N·m to 0.21 N·m

* Electromagnetic brake is a nonpolar device.

* Be sure to use only the screw supplied with the connector, to avoid damage.

* Secure the gasket in place without removing it from the connector.

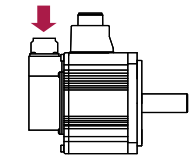
0.85 kW to 5.0 kW 100 mm sq. or more

● When the motors of <MSMF, MDMF, MGMF, MHMF> are used, they are connected as shown below.
Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)

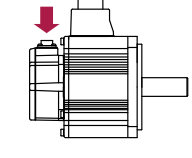
■ Connector for encoder

<Large size Encoder connector> <Small size Encoder connector>

IP67 motor
Connector for encoder
(Large size)



IP67 motor
Connector for encoder
(Small size)



JL10-2A20-29P
23-bit Absolute

PIN No.	Application
A	NC
B	NC
C	NC
D	NC
E	NC
F	NC
G	E0V
H	E5V
J	FG(SHIELD)

JN2AS10ML3-R
23-bit Absolute

PIN No.	Application
1	E0V
2	NC
3	PS
4	E5V
5	BAT-*
6	BAT+*
7	PS
8	NC
9	FG(SHIELD)
10	NC

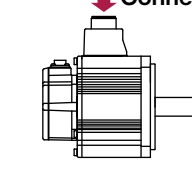
<Remarks>
Do not connect anything to NC.

* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

■ Connector for motor/brake
Table for motor connector and brake connector

Motor part No.	Motor output	200 V	
		without Brake	with Brake
MSMF	1.0 kW to 2.0 kW	A	C
	3.0 kW to 5.0 kW	B	D
MDMF	1.0 kW to 2.0 kW	A	C
	3.0 kW to 5.0 kW	B	D
	7.5 kW to 15.0 kW	E	E, F
MGMF	22.0 kW	G	G, F
	0.85 kW to 1.8 kW	A	C
	2.4 kW to 4.4 kW	B	D
MHMF	5.5 kW	E	E, F
	1.0 kW to 1.5 kW	A	C
	2.0 kW to 5.0 kW	B	D
	7.5 kW	E	E, F

Connector for motor/brake



* Electromagnetic brake is a nonpolar device.

A JL10-2E20-4PE-B

B JL10-2E22-22PE-B

C JL10-2E20-18PE-B

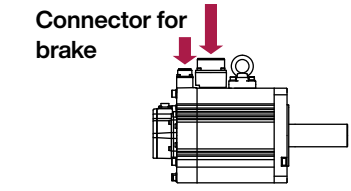
PIN No.	Application
G	with Brake: Brake without Brake: NC
H	with Brake: Brake without Brake: NC
A	NC
F	U-phase
I	V-phase
B	W-phase
E	Ground
D	Ground
C	NC

D JL10-2E24-11PE-B

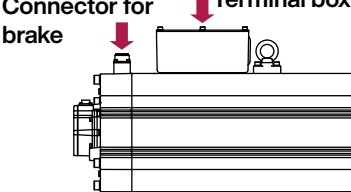
PIN No.	Application
A	with Brake: Brake without Brake: NC
B	with Brake: Brake without Brake: NC
C	NC
D	U-phase
E	V-phase
F	W-phase
G	Ground
H	Ground
I	NC

<Remarks> Do not connect anything to NC.

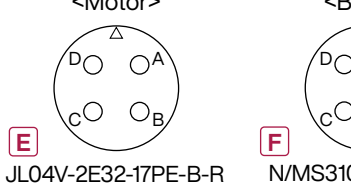
Connector for motor



Connector for brake



Terminal box for motor



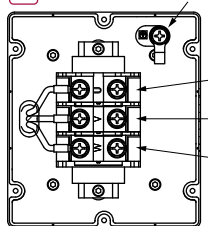
<Motor> JL04V-2E32-17PE-B-R

PIN No.	Application
A	U-phase
B	V-phase
C	W-phase
D	Ground

<Brake> N/MS3102A 14S-2P

PIN No.	Application
A	Brake
B	Brake
C	NC
D	NC

<Terminal block>



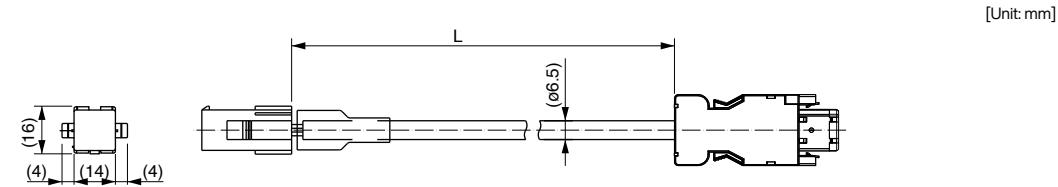
Ground U V W

Terminal	Application
U	U-phase
V	V-phase
W	W-phase
Ground	Ground

* U, V, W, Earth screw
Nominal: M8
Tightening torque:
12.0 N·m

* Electromagnetic brake is a nonpolar device.

Part No.	MFECA0 * * 0EAD	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
Specifications	23-bit absolute encoder When used in incremental system (without battery box)			

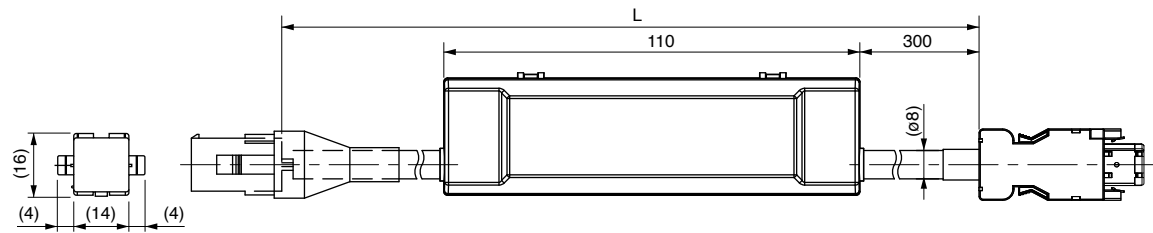


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan (or equivalent)	3	MFECA0030EAD
Shell kit	3E306-3200-008		5	MFECA0050EAD
Connector (Motor side)	172161-1	Tyco Electronics Japan G.K.	10	MFECA0100EAD
Connector pin	170365-1		20	MFECA0200EAD
Cable	0.20 mm ² ×3P (6-wire)	Ok Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EAE	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
Specifications	23-bit absolute encoder When used in absolute system (with battery box) *			

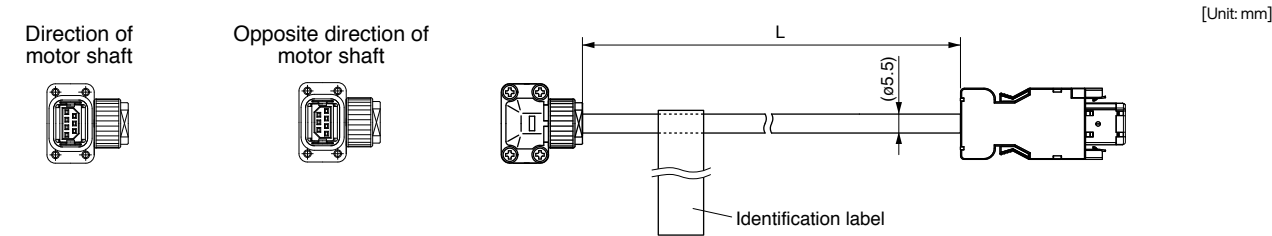
* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan (or equivalent)	3	MFECA0030EAE
Shell kit	3E306-3200-008		5	MFECA0050EAE
Connector (Motor side)	172161-1	Tyco Electronics Japan G.K.	10	MFECA0100EAE
Connector pin	170365-1		20	MFECA0200EAE
Cable	0.20 mm ² ×4P (8-wire)	Ok Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0MJD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W
	MFECA0 * * 0MKD (Highly bendable type, Opposite direction of motor shaft)		MQMF 100 W to 400 W
	MFECA0 * * 0TJD (Standard bendable type, Direction of motor shaft)		MHMF 50 W to 1000 W
	MFECA0 * * 0TKD (Standard bendable type, Opposite direction of motor shaft)		(Connector type)
Specifications	23-bit absolute encoder When used in incremental system (without battery box)		

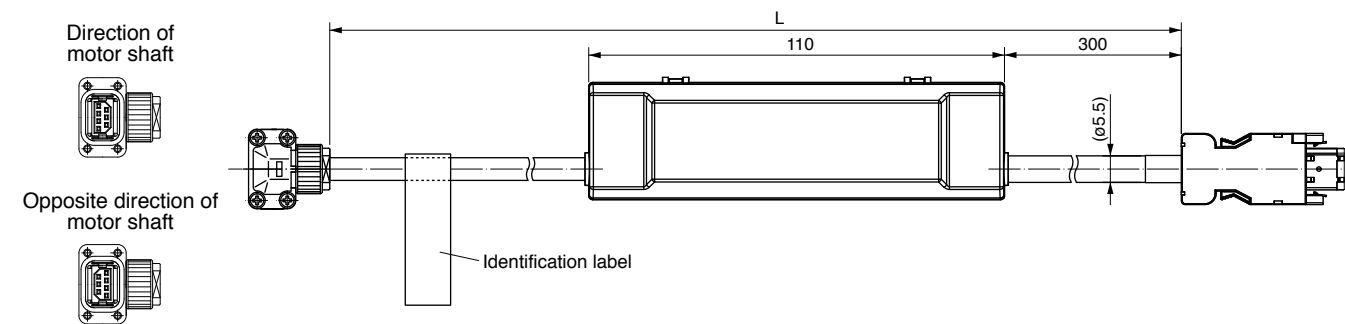


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan (or equivalent)	3	MFECA0030MJD
Shell kit	3E306-3200-008		5	MFECA0050MJD
Connector (Motor side)	JN6FR07SM1	Japan Aviation Electronics Ind.	10	MFECA0100MJD
Connector pin	LY10-C1-A1-10000		20	MFECA0200MJD
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Proterial, Ltd.		

Part No.	MFECA0 * * OMJE (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF	50 W to 1000 W
	MFECA0 * * OMKE (Highly bendable type, Opposite direction of motor shaft)		MQMF	100 W to 400 W
	MFECA0 * * OTJE (Standard bendable type, Direction of motor shaft)		MHMF	50 W to 1000 W
	MFECA0 * * OTKE (Standard bendable type, Opposite direction of motor shaft)		(Connector type)	
Specifications	23-bit absolute encoder When used in absolute system (with battery box) *			

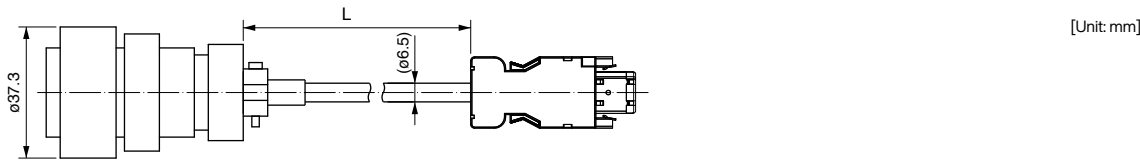
* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan (or equivalent)	3	MFECA0030MJE
Shell kit	3E306-3200-008		5	MFECA0050MJE
Connector (Motor side)	JN6FR07SM1	Japan Aviation Electronics Ind.	10	MFECA0100MJE
Connector pin	LY10-C1-A1-10000		20	MFECA0200MJE
Cable	AWG24 4-wire, AWG22 2-wire (ø5.5)	Proterial, Ltd.		

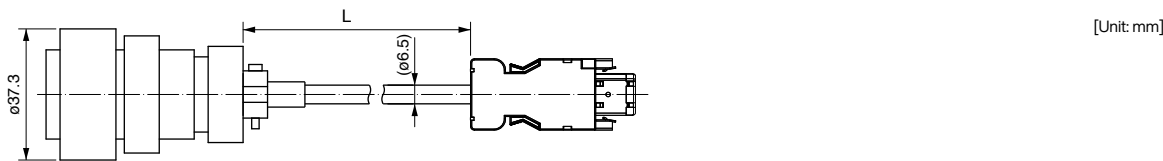
Part No.	MFECA0 * * 0EPD	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW
Specifications	23-bit absolute encoder When used in incremental system (without battery box) <Large one-touch lock type>		



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030EPD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPD
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPD
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPD
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ESD	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW
Specifications	23-bit absolute encoder When used in incremental system (without battery box) <Large screwed type>		



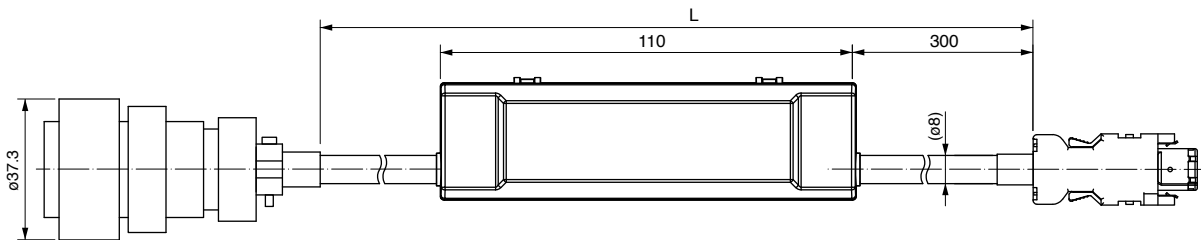
[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030ESD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESD
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESD
Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESD
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EPE	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
Specifications	23-bit absolute encoder When used in absolute system (with battery box) * <Large one-touch lock type>		

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

[Unit: mm]

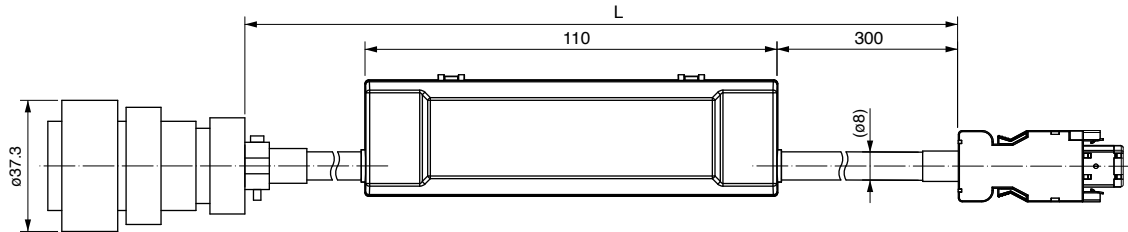


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030EPE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPE
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPE
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPE
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ESE	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
Specifications	23-bit absolute encoder When used in absolute system (with battery box) * <Large screwed type>		

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

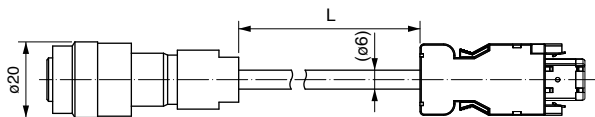
[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030ESE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESE
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESE
Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESE
Cable	0.2 mm ² ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ETD	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
Specifications	23-bit absolute encoder When used in incremental system (without battery box) <Small one-touch lock type>		

[Unit: mm]

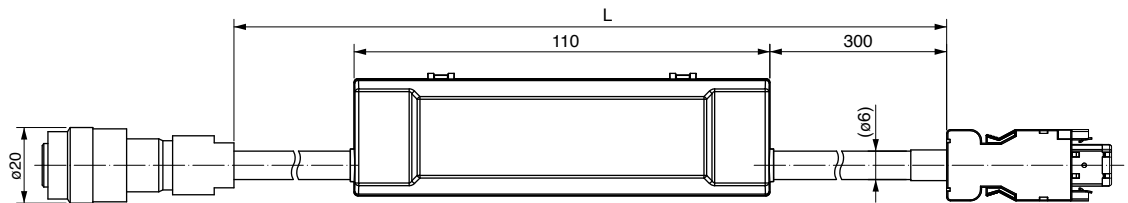


Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030ETD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETD
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETD
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETD
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ETE	100 mm sq. or more Applicable motor output	0.85 kW to 22.0 kW (IP67 motor)
Specifications	23-bit absolute encoder When used in absolute system (with battery box) * <Small one-touch lock type>		

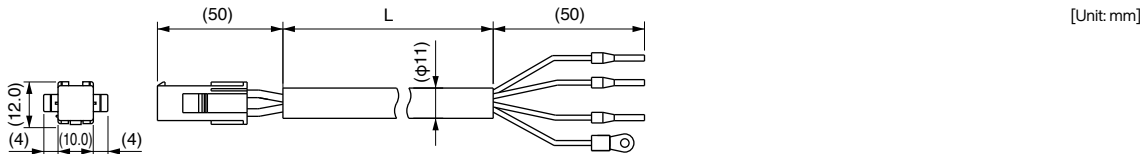
* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

[Unit: mm]



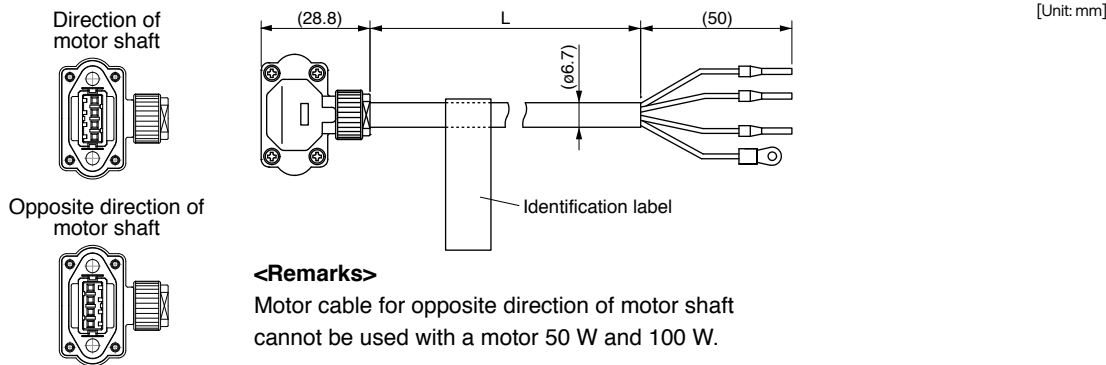
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	3M Japan	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETE
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETE
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFMCA0 * * 0EED	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
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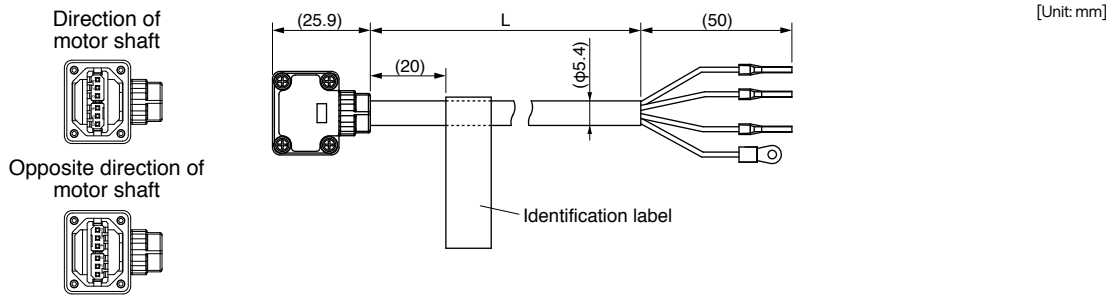
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	172159-1	Tyco Electronics Japan G.K.	3	MFMCA0030EED
Cable clamp	170366-1		5	MFMCA0050EED
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100EED
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200EED
Cable	ROBO-TOP 600V 0.75 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCA0 * * 0NJD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W (Connector type)
	MFMCA0 * * 0RJD (Standard bendable type, Direction of motor shaft)		
	MFMCA0 * * 0NKD (Highly bendable type, Opposite direction of motor shaft)		MSMF 200 W to 1000 W (Connector type)
	MFMCA0 * * 0RKD (Standard bendable type, Opposite direction of motor shaft)		



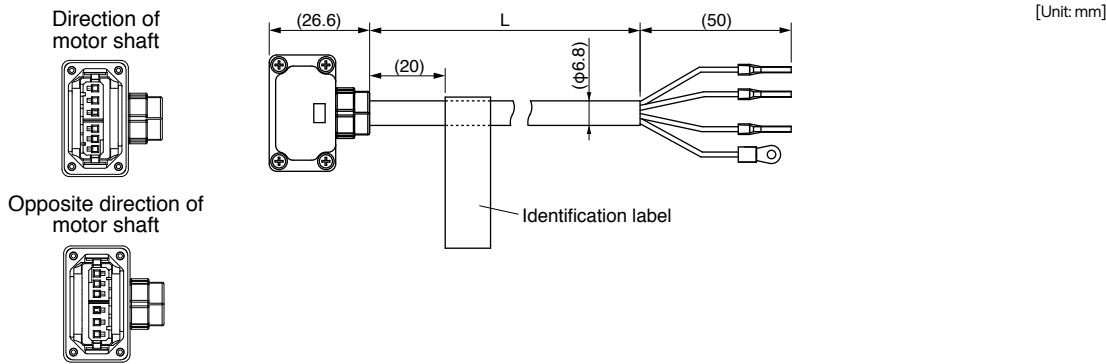
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN8FT04SJ1	Japan Aviation Electronics Ind.	3	MFMCA0030NJD
Cable clamp	ST-TMH-S-C1B-3500		5	MFMCA0050NJD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100NJD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200NJD
Cable	AWG18 4-wire (φ6.7 mm)	Proterial, Ltd.		

Part No.	MFMCA0 * * 7UFD (Movable/fixed common-use, direction of motor shaft)	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type)
	MFMCA0 * * 7UGD (Movable/fixed common-use, opposite direction of motor shaft)		



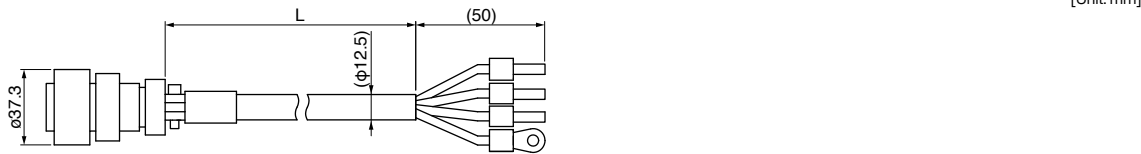
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation Electronics Ind.	3	MFMCA0037UFD
Cable clamp	JN11S10K4A1		5	MFMCA0057UFD
Rod terminal	AI0.34-8TQ	PHOENIX CONTACT	10	MFMCA0107UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207UFD
Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO.,LTD		

Part No.	MFMCA0 * * 0UFD (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MQMF 100 W to 400 W MHMF 200 W to 1000 W (Connector type)
	MFMCA0 * * 0UGD (Highly bendable type, Opposite direction of motor shaft)		
	MFMCA0 * * 0WFD (Standard bendable type, Direction of motor shaft)		
	MFMCA0 * * 0WGD (Standard bendable type, Opposite direction of motor shaft)		



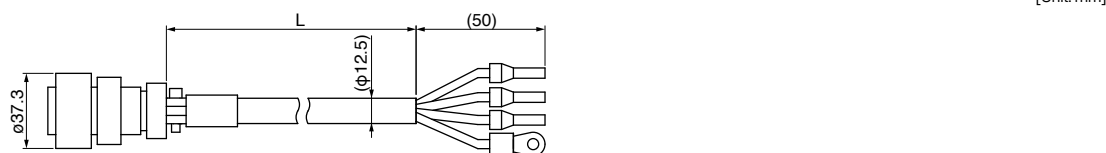
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation Electronics Ind.	3	MFMCA0030UFD
Cable clamp	JN11S35H3A1		5	MFMCA0050UFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200UFD
Cable	AWG18 6-wire (φ6.8)	NIKKO ELECTRIC WIRE CO.,LTD		

Part No.	MFMCDO * * 2EUD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW, 1.5 kW, <One-touch lock type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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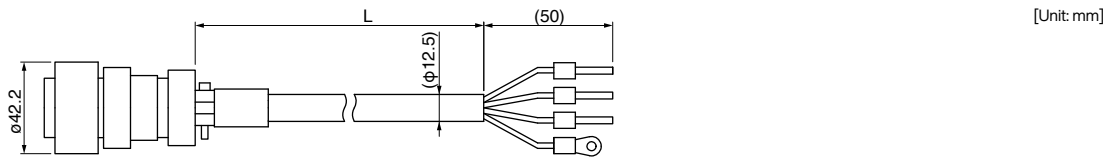
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A20-4SE-EB	Japan Aviation Electronics Ind.	3	MFMCD0032EUD
Cable clamp	JL04-2022CK(14)-R		5	MFMCD0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202EUD
Cable	ROBO-TOP 600V 2.0mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCDO * * 2ECD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW, 1.5 kW, <Screw type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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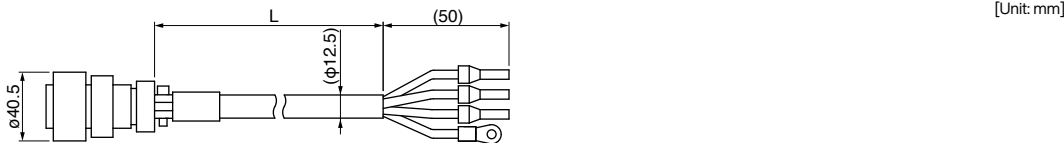
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-4SE-EB-RK	Japan Aviation Electronics Ind.	3	MFMCD0032ECD
Cable clamp	JL04-2022CK(14)-R		5	MFMCD0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202ECD
Cable	ROBO-TOP 600V 2.0mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCEO * * 2EUD	100 mm sq. or more Applicable model	MHMF 2.0 kW <One-touch lock type>
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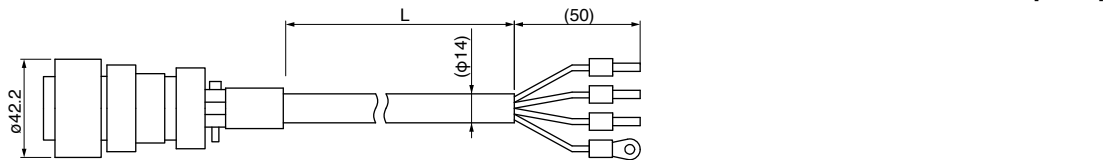
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0032EUD
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCE0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202EUD
Cable	ROBO-TOP DP6/2501 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCEO * * 2ECD	100 mm sq. or more Applicable model	MHMF 2.0 kW <Screwed type>
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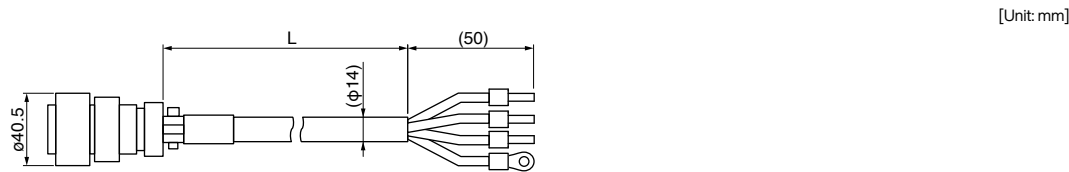
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCE0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202ECD
Cable	ROBO-TOP 600V 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCEO * * 3EUT	100 mm sq. or more Applicable model	MGMF 2.4 kW <One-touch lock type>
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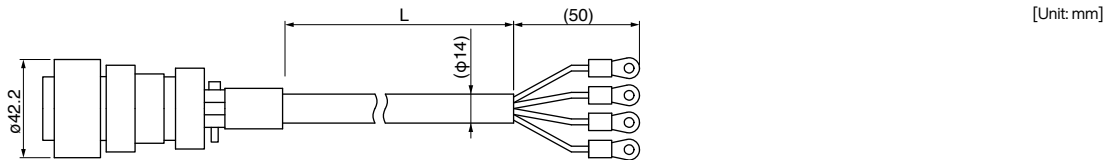
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0033EUT
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCE0053EUT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCE0103EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCE0203EUT
Cable	ROBO-TOP DP6/2501 3.5 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCEO * * 3ECT	100 mm sq. or more Applicable model	MGMF 2.4 kW <Screwed type>
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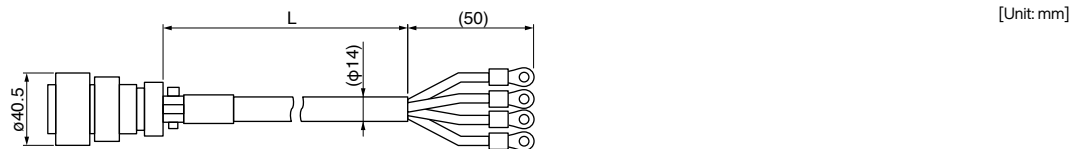
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0033ECT
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCE0053ECT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCE0103ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	20	MFMCE0203ECT
Cable	ROBO-TOP 600V 3.5 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCAO * * 3EUT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <One-touch lock type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW to 4.4 kW
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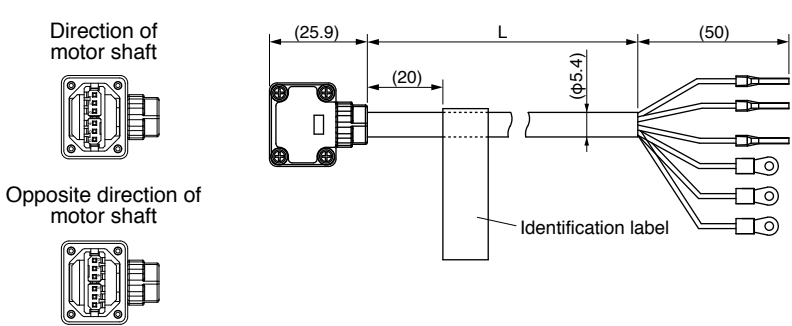
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-22SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0033EUT
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCA0053EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103EUT
Cable	ROBO-TOP DP6/2501 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCA0203EUT

Part No.	MFMCAO * * 3ECT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <Screwed type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW to 4.4 kW
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Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0033ECT
Cable clamp	JL04-2022CK(14)-R	J.S.T Mfg. Co., Ltd.	5	MFMCA0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103ECT
Cable	ROBO-TOP 600V 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

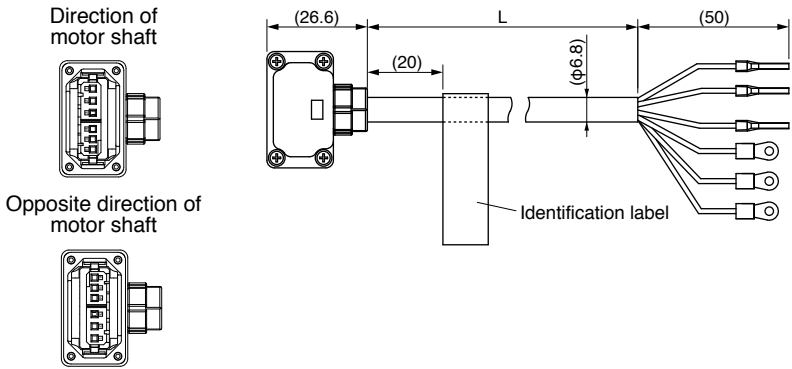
Part No.	MFMCA0 ** 7VFD	(Movable/fixed common-use, direction of motor shaft)	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type)
	MFMCA0 ** 7VGD	(Movable/fixed common-use, opposite direction of motor shaft)		



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation Electronics Ind.	3	MFMCA0037VFD
Cable clamp	JN11S10K4A1	Japan Aviation Electronics Ind.	5	MFMCA0057VFD
Rod terminal	AI0.34-8TQ	PHOENIX CONTACT	10	MFMCA0107VFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207VFD
Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO.,LTD		

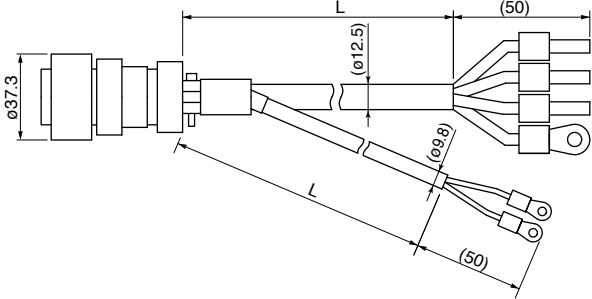
Part No.	MFMCA0 ** 0VFD	(Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MQMF 100 W to 400 W MHMF 200 W to 1000 W (Connector type)
	MFMCA0 ** 0VGD	(Highly bendable type, Opposite direction of motor shaft)		
	MFMCA0 ** 0XFD	(Standard bendable type, Direction of motor shaft)		
	MFMCA0 ** 0XGD	(Standard bendable type, Opposite direction of motor shaft)		



[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation Electronics Ind.	3	MFMCA0030VFD
Cable clamp	JN11S35H3A1	Japan Aviation Electronics Ind.	5	MFMCA0050VFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100VFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200VFD
Cable	AWG18 6-wire (φ6.8 mm)	NIKKO ELECTRIC WIRE CO.,LTD		

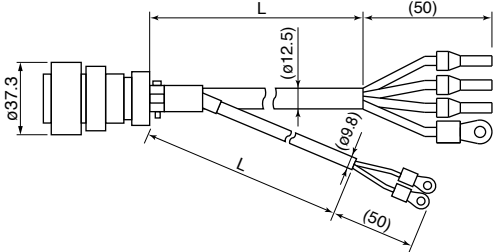
Part No.	MFMCA0 ** 2FUD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW to 1.5 kW, <One-touch lock type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A20-18SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0032FUD
Cable clamp	JL042022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCA0052FUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FUD
Nylon insulated round terminal	Earth Brake N2-M4 N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FUD
Cable	ROBO-TOP 600V 2.0 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION		

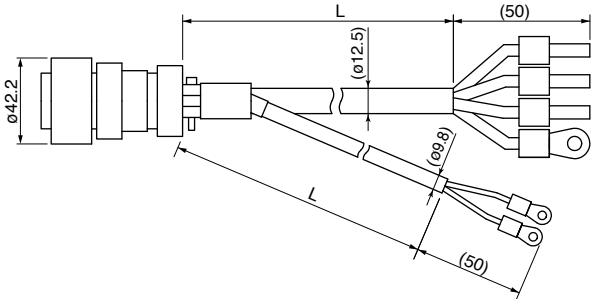
Part No.	MFMCA0 ** 2FCD	100 mm sq. or more Applicable model	MSMF 1.0 kW to 2.0 kW, MHMF 1.0 kW to 1.5 kW, <Screwed type>	MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-18SE-EB-RK	Japan Aviation Electronics Ind.	3	MFMCA0032FCD
Cable clamp	JL04-2022CK(14)-R	Japan Aviation Electronics Ind.	5	MFMCA0052FCD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FCD
Nylon insulated round terminal	Earth Brake N2-M4 N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FCD
Cable	ROBO-TOP 600V 2.0 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION		

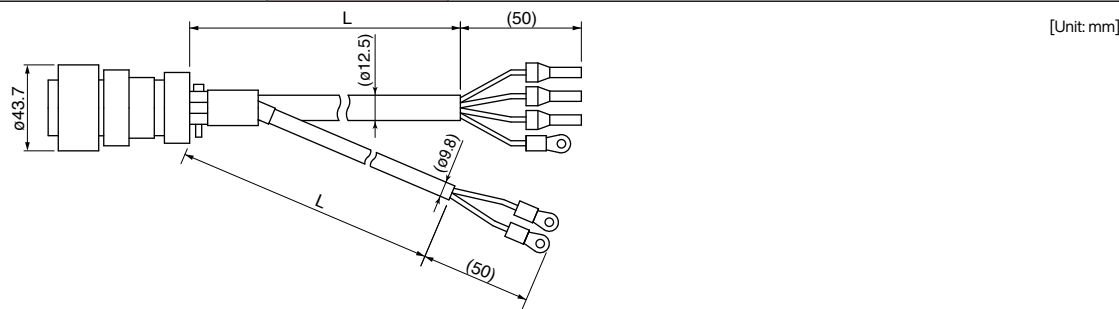
Part No.	MFMCE0 ** 2FUD	100 mm sq. or more Applicable model	MHMF 2.0 kW <One-touch lock type>
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCE0032FUD
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCE0052FUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FUD
Nylon insulated round terminal	Earth Brake N2-M4 N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202FUD
Cable	ROBO-TOP DP6/2501 2.0 mm ² 4-wire ROBO-TOP DP6/2501 0.75 mm ² 2-wire	DYDEN CORPORATION		

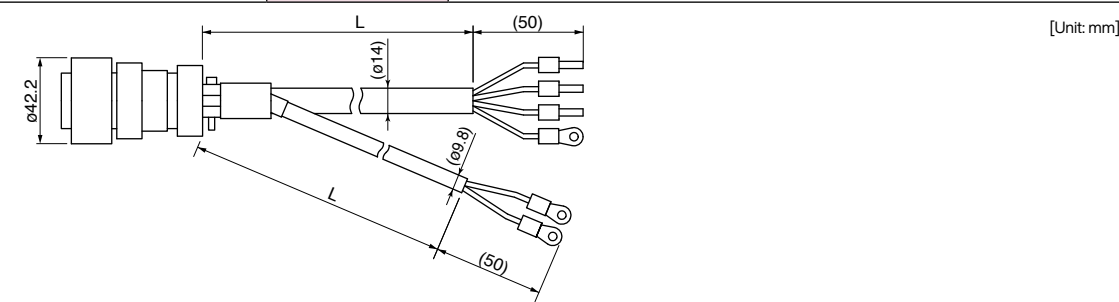
Part No.	MFMCEO * * 2FCD	100 mm sq. or more Applicable model	MHMF 2.0 kW <Screwed type>
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCE0032FCD
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCE0052FCD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FCD
Nylon insulated round terminal	Earth Brake	N2-M4 N1.25-M4	20	MFMCE0202FCD
Cable	ROBO-TOP 600V 2.0 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION		

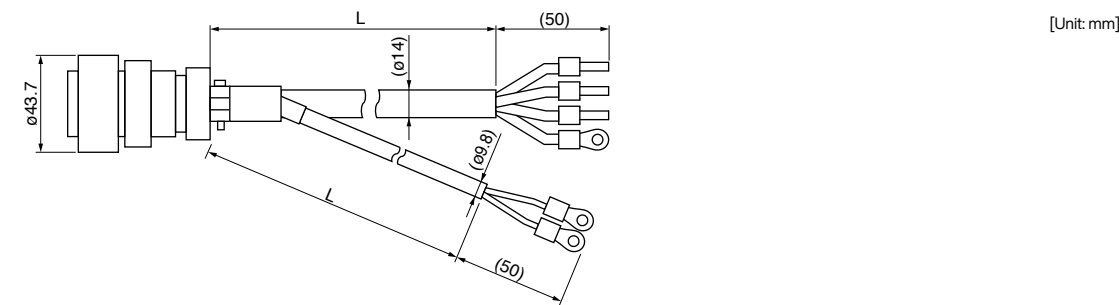
Part No.	MFMCD0 * * 3FUT	100 mm sq. or more Applicable model	MGMF 2.4 kW <One-touch lock type>
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCD0033FUT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCD0053FUT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCD0103FUT
Nylon insulated round terminal	Earth Brake	N5.5-5 N1.25-M4	20	MFMCD0203FUT
Cable	ROBO-TOP DP6/2501 3.5 mm ² 4-wire ROBO-TOP DP6/2501 0.75 mm ² 2-wire	DYDEN CORPORATION		

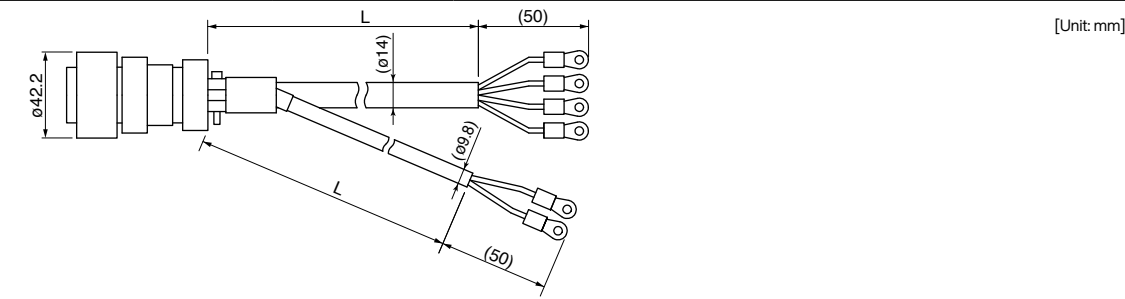
Part No.	MFMCD0 * * 3FCT	100 mm sq. or more Applicable model	MGMF 2.4 kW <Screwed type>
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCD0033FCT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCD0053FCT
Rod terminal	TMENTC3.5-11S	NICHIFU Co., Ltd.	10	MFMCD0103FCT
Nylon insulated round terminal	Earth Brake	N5.5-5 N1.25-M4	20	MFMCD0203FCT
Cable	ROBO-TOP 600V 3.5 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION		

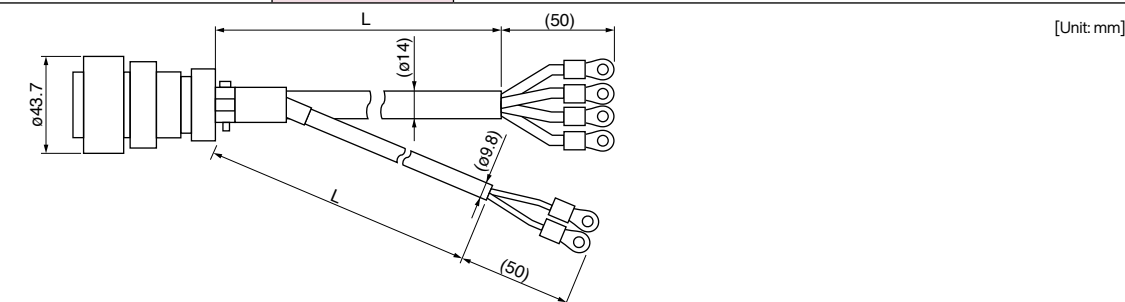
Part No.	MFMCA0 * * 3FUT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <One-touch lock type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A24-11SE-EB	Japan Aviation Electronics Ind.	3	MFMCA0033FUT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCA0053FUT
Nylon insulated round terminal	Earth Brake	N5.5-5 N1.25-M4	10	MFMCA0103FUT
Cable	ROBO-TOP DP6/2501 3.5 mm ² 4-wire ROBO-TOP DP6/2501 0.75 mm ² 2-wire	DYDEN CORPORATION	20	MFMCA0203FUT

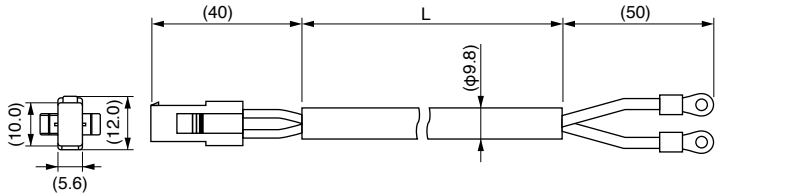
Part No.	MFMCA0 * * 3FCT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <Screwed type>	MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A24-11SE-EB-R	Japan Aviation Electronics Ind.	3	MFMCA0033FCT
Cable clamp	JL04-2428CK(17)-R	Japan Aviation Electronics Ind.	5	MFMCA0053FCT
Nylon insulated round terminal	Earth Brake	N5.5-5 N1.25-M4	10	MFMCA0103FCT
Cable	ROBO-TOP 600V 3.5 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION	20	MFMCA0203FCT

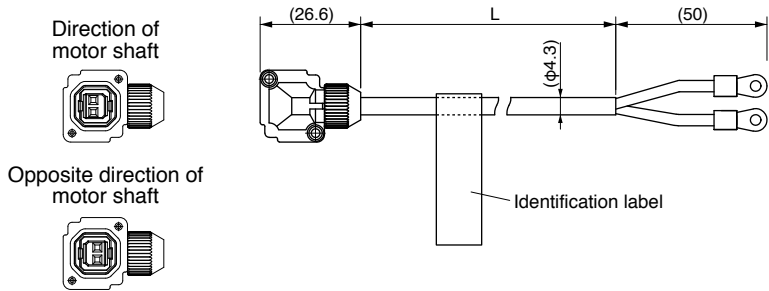
Part No.	MFMCB0 * * 0GET	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MHMF 50 W to 1000 W (Leadwire type)	MQMF 100 W to 400 W
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[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	172157-1	Tyco Electronics Japan G.K.	3	MFMCB0030GET
Connector pin	170366-1, 170362-1		5	MFMCB0050GET
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100GET
Cable	ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION	20	MFMCB0200GET

Part No.	MFMCB0 * * 0PJT (Highly bendable type, Direction of motor shaft)	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W (Connector type)
	MFMCB0 * * 0PKT (Highly bendable type, Opposite direction of motor shaft)		
	MFMCB0 * * 0SJT (Standard bendable type, Direction of motor shaft)		
	MFMCB0 * * 0SKT (Standard bendable type, Opposite direction of motor shaft)		

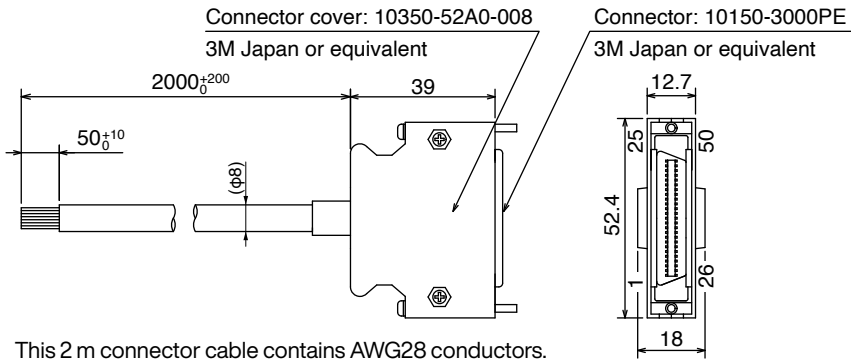


[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN4FT02SJMR	Japan Aviation Electronics Ind.	3	MFMCB0030PJT
Connector pin	ST-TMH-S-C1B-3500		5	MFMCB0050PJT
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	10	MFMCB0100PJT
Cable	AWG22 2-wire (φ4.3)	Proterial, Ltd.	20	MFMCB0200PJT

Cable for Interface

Part No.	DV0P4360
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This 2 m connector cable contains AWG28 conductors.

[Unit: mm]

Table for wiring

Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color
1	Orange (Red1)	11	Orange (Black2)	21	Orange (Red3)	31	Orange (Red4)	41	Orange (Red5)
2	Orange (Black1)	12	Yellow (Black1)	22	Orange (Black3)	32	Orange (Black4)	42	Orange (Black5)
3	Gray (Red1)	13	Gray (Red2)	23	Gray (Red3)	33	Gray (Red4)	43	Gray (Red5)
4	Gray (Black1)	14	Gray (Black2)	24	Gray (Black3)	34	White (Red4)	44	White (Red5)
5	White (Red1)	15	White (Red2)	25	White (Red3)	35	White (Black4)	45	White (Black5)
6	White (Black1)	16	Yellow (Red2)	26	White (Black3)	36	Yellow (Red4)	46	Yellow (Red5)
7	Yellow (Red1)	17	Yel (Blk2)/Pink (Blk2)	27	Yellow (Red3)	37	Yellow (Black4)	47	Yellow (Black5)
8	Pink (Red1)	18	Pink (Red2)	28	Yellow (Black3)	38	Pink (Red4)	48	Pink (Red5)
9	Pink (Black1)	19	White (Black2)	29	Pink (Red3)	39	Pink (Black4)	49	Pink (Black5)
10	Orange (Red2)	20	—	30	Pink (Black3)	40	Gray (Black4)	50	Gray (Black5)

<Remarks>
Color designation of the cable
e.g.) Pin-1
Cable color : Orange
(Red1) : One red dot on the
cable

<Caution>

Cable pin No. 50 is not connected to the connector shell (housing) or shielded wire (net wire).
Pin No. 50 of the Driver is connected to the shell (housing) of the connector.
The shielded wire (net wire) of the cable is connected to the shell (housing) of the connector of the cable, and by connecting the connector of the optional cable to the Driver, pin No. 50 of the cable and the shielded wire (net wire) of the cable gets connected via the Driver.

Interface Conversion Cable

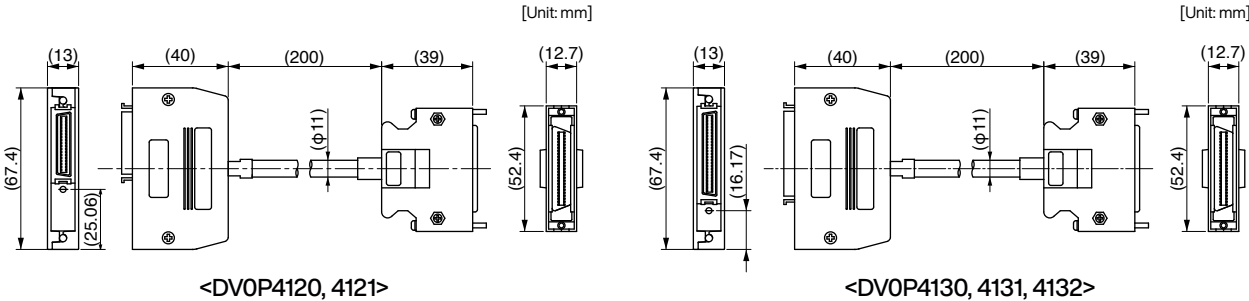
Part No.	DV0P4120, 4121, 4130, 4131, 4132
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Interface cables for old product (XX series or V series) can be connected to the current product by using the connector conversion cable shown below.

DV0P4120	MINAS XX → A6 series (A5II, A5, A4, A series) for position control/ velocity control
DV0P4121	MINAS XX → A6 series (A5II, A5, A4, A series) for torque control
DV0P4130	MINAS V → A6 series (A5II, A5, A4, A series) for position control
DV0P4131	MINAS V → A6 series (A5II, A5, A4, A series) for velocity control
DV0P4132	MINAS V → A6 series (A5II, A5, A4, A series) for torque control

* For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.



Connector Kit for Power Supply Input

Part No.	DV0PM20032 (For A-frame to D-frame: Single row type)
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• Components

● Please refer to the Dimensions of driver P.57 for connector XA.

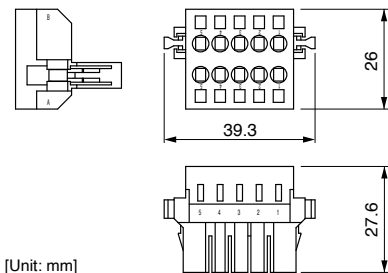
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGGKK-A	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

Part No.	DV0PM20033 (For A-frame to D-frame: Double row type)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-C	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

• Dimensions



[Unit: mm]

* When connection multiple axes in series, make sure the sum of the current value does not exceed the rated current (11.25 A) of DV0PM20033.

Remarks

When using drivers MDDL * 55 * * in single-phase power supply, do not use DV0PM20033.

Driver part No.	Power supply	Rated input current
MADL * 01 * *	Single phase 100 V	1.7 A
MADL * 11 * *	Single phase 100 V	2.0 A
MADL * 05 * *	Single phase/3-phase 200 V	1.6 A/0.9 A
MADL * 15 * *	Single phase/3-phase 200 V	2.0 A/1.1 A
MBDL * 21 * *	Single phase 100 V	4.5 A
MBDL * 25 * *	Single phase/3-phase 200 V	3.7 A/2.1 A
MCDL * 31 * *	Single phase 100 V	7.0 A
MCDL * 35 * *	Single phase/3-phase 200 V	6.4 A/3.4 A
MDDL * 45 * *	Single phase/3-phase 200 V	7.9 A/4.6 A
MDDL * 55 * *	Single phase/3-phase 200 V	13.6 A/7.2 A

Part No.	DV0PM20044 (For E-frame)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT-L	2		

Connector Kit for Regenerative Resistor Connection

Part No.	DV0PM20045 (For E-frame)
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	200 V: For Connector XC * Jumper wire is included.
Handle lever	J-FAT-OT-L	2		

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Connector Kit for Motor Connection (Driver side)

Part No.	DV0PM20034 (For A-frame to D-frame)
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• Components

● Please refer to the Dimensions of driver P.57 for connector XB.

Title	Part No.	Number	Manufacturer	Note
Connector	06JFAT-SAXGGKK-A	1	J.S.T Mfg. Co., Ltd.	For Connector XB * Jumper wire is included.
Handle lever	J-FAT-OT	2		

Part No.	DV0PM20046 (For E-frame)
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• Components

● Please refer to the Dimensions of driver P.59 for connector XB.

Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XB
Handle lever	J-FAT-OT-L	2		

Connector Kit for Motor/Encoder Connection

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

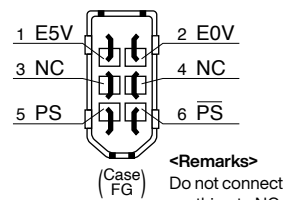
Part No.	DV0P4290	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W *, MQMF 100 W to 400 W MHMF 50 W to 1000 W * (Leadwire type IP65)
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* MSMF092□1□2, MHMF092□1□□

• Components

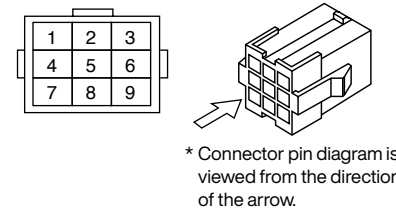
Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Connector	172161-1	1	Tyco Electronics Japan G.K.	For Encoder cable (9-pins)
Connector pin	170365-1	9		
Connector	172159-1	1	Tyco Electronics Japan G.K.	For Motor cable (4-pins)
Connector pin	170366-1	4		

• Pin disposition of connector,
connector X6



(Viewed from cable)

• Pin disposition of connector
for encoder cable

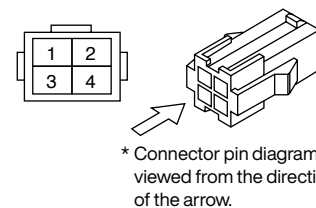


PIN No.	Application
1	BAT+*
2	BAT-*
3	FG(SHIELD)
4	PS
5	PS
6	NC
7	E5V
8	E0V
9	NC

* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

<Remarks>
Do not connect anything to NC.

• Pin disposition of connector
for motor cable



PIN No.	Application
1	U-phase
2	V-phase
3	W-phase
4	Ground

* When you connect the battery for absolute encoder, refer to P.338, "When you make your own cable for 23-bit absolute encoder"

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

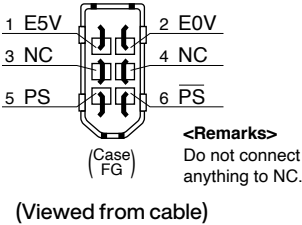
Part No.	DV0PM20035	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W * (Connector type IP67)
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* MSMF092L1□1

• Components

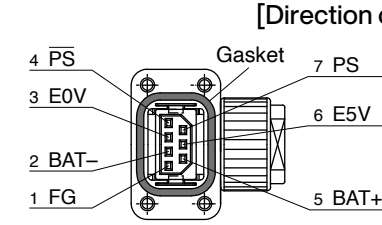
Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	
Motor connector	JN8FT04SJ1	1	Japan Aviation	For Motor cable (4-pins)
Socket contact	ST-TMH-S-C1B-3500	4	Electronics Ind.	

• Pin disposition of connector
connector X6

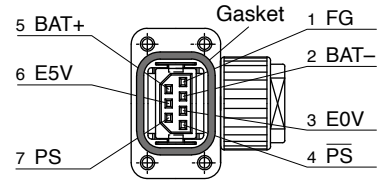


<Remarks>
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

• Pin disposition of connector
for encoder cable

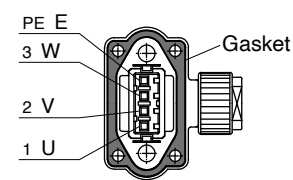
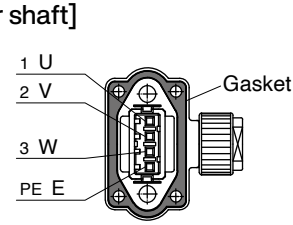


[Opposite direction of motor shaft]



* Pins 2 and 5 are left unused (NC) when used in incremental system.

• Pin disposition of connector
for motor cable



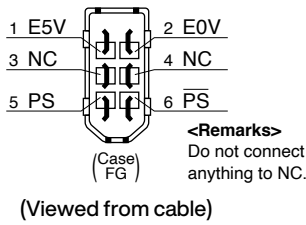
<Remarks>
• For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM24581	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type IP67)	with/without brake common use
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• Components

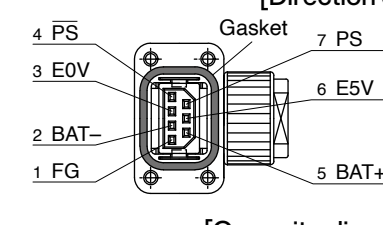
Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	
Motor connector	JN11FH06SN2	1	Japan Aviation	For Motor cable (6-pins)
Socket contact	JN11S10K4A1	6	Electronics Ind.	

• Pin disposition of connector
connector X6

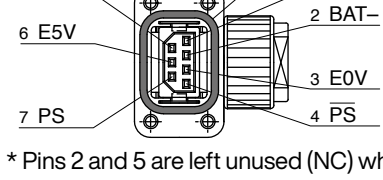


<Remarks>
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

• Pin disposition of connector
for encoder cable

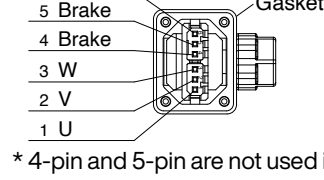
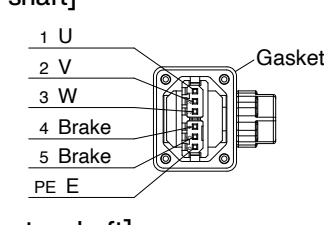


[Opposite direction of motor shaft]



* Pins 2 and 5 are left unused (NC) when used in incremental system.

• Pin disposition of connector
for motor cable



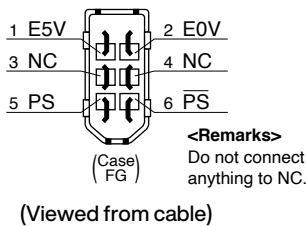
* 4-pin and 5-pin are not used in case of no brake.

Part No.	DV0PM24582	80 mm sq. or less Applicable model	MQMF 100 W to 400 W, MHMF 200 W to 1000 W (Connector type IP67)	with/without brake common use
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• Components

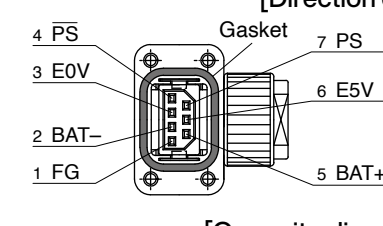
Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable (7-pins)
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	
Motor connector	JN11FH06SN1	1	Japan Aviation	For Motor cable (6-pins)
Socket contact	JN11S35H3A1	6	Electronics Ind.	

• Pin disposition of connector
connector X6

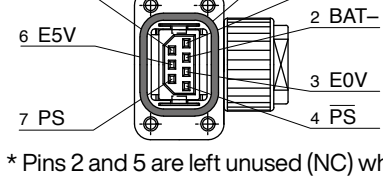


<Remarks>
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

• Pin disposition of connector
for encoder cable

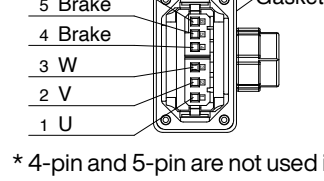
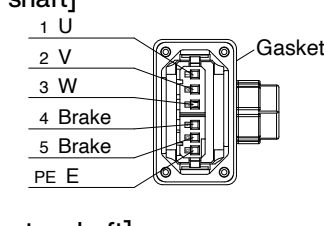


[Opposite direction of motor shaft]



* Pins 2 and 5 are left unused (NC) when used in incremental system.

• Pin disposition of connector
for motor cable



* 4-pin and 5-pin are not used in case of no brake.

Part No.	DV0PM24583	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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* MSMF102□1□□, MHMF102□1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

Part No.	DV0PM24585	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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* MSMF102□1□□, MHMF102□1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

Part No.	DV0PM24587	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

Part No.	DV0PM24589	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM24584	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

Part No.	DV0PM24586	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	

Part No.	DV0PM24588	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	

Part No.	DV0PM24590	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable (One-touch lock type)
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20036	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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* MSMF102□1□□, MHMF102□1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A20-4SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0PM20038	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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* MSMF102□1□□, MHMF102□1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A20-18SE-EB-RK	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0P4310	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Without brake
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* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B20-4S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

Part No.	DV0P4330	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	With brake
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* MSMF102L1□□, MHMF102L1□□

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B20-18S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20037	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1		(Screwed type)

Part No.	DV0PM20039	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5		(One-touch lock type)
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1		(Screwed type)

Part No.	DV0P4320	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B22-22S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-12A	1		(Screwed type)

Part No.	DV0P4340	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 kW MHMF 2.0 kW to 5.0 kW, MGMF 2.4 kW to 4.4 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable
Cable clamp	N/MS3057-12A	1		(Screwed type)
Motor connector	N/MS3106B24-11S	1	Japan Aviation Electronics Ind.	For Motor cable
Cable clamp	N/MS3057-16A	1		(Screwed type)

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20107	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20108	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20111	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable (Screwed type)
Cable clamp	N/MS3057-12A	1	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20112	100 mm sq. or more Applicable model	(IP67 motor) Encoder JL10 <Large size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable (Screwed type)
Cable clamp	N/MS3057-12A	1	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20056	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

Part No.	DV0PM20057	100 mm sq. or more Applicable model	(IP67 motor) Encoder JN2 <Small size connector> MDMF 7.5 kW to 15.0 kW MGMF 5.5 kW, MHMF 7.5 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	
Motor connector	JL04V-6A32-17SE-EB-RK	1	Japan Aviation	For Motor cable (Screwed type)
Cable clamp	JL04-32CK(24)-RK ^{*1}	1	Electronics Ind.	
Brake connector	N/MS3106B14S-2S	1	Japan Aviation	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1	Electronics Ind.	

*1 Casing size: φ 22 to φ 25. There is no specified cable wire material. Prepare a wire according to the connector used by the customer.

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20109	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	Without brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1		

Part No.	DV0PM20110	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	With brake
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• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	JL10-6A20-29S-EB	1	Japan Aviation Electronics Ind.	For Encoder cable (One-touch lock type)
Cable clamp	JL04-2022CK(09)-R	1		
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1		

Part No.	DV0PM20113	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	Without brake
----------	------------	--	--	------------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable (Screwed type)
Cable clamp	N/MS3057-12A	1		

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Part No.	DV0PM20114	100 mm sq. or more Applicable model	(IP44 motor) Encoder JL10 <Large size connector> MDMF 22.0 kW	With brake
----------	------------	--	--	---------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	N/MS3106B20-29S	1	Japan Aviation Electronics Ind.	For Encoder cable (Screwed type)
Cable clamp	N/MS3057-12A	1		
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1		

Part No.	DV0PM20115	100 mm sq. or more Applicable model	(IP44 motor) Encoder JN2 <Small size connector> MDMF 22.0 kW	Without brake
----------	------------	--	---	------------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5		

Part No.	DV0PM20116	100 mm sq. or more Applicable model	(IP44 motor) Encoder JN2 <Small size connector> MDMF 22.0 kW	With brake
----------	------------	--	---	---------------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100KV	1	3M Japan (or equivalent)	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1		
Encoder connector	JN2DS10SL1-R	1	Japan Aviation Electronics Ind.	For Encoder cable (One-touch lock type)
Connector pin	JN1-22-22S-PKG100	5		
Brake connector	N/MS3106B14S-2S	1	Japan Aviation Electronics Ind.	For Brake cable (Screwed type)
Cable clamp	N/MS3057-6A	1		

* The motor / encoder connection connector kit for MDMF 22.0 kW does not include the connection parts for motor cable (terminal block). Please prepare a round terminal by yourself. (For details, see P.27)

<Remarks>

- For the crimping tools required for cable production, please check the manufacturer's website or contact the manufacturer. For manufacturer inquiries, refer to P.347 "Peripheral Device Manufacturers List".

Connector Kit for Motor/Brake Connection

Part No.	DV0PM20040	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W * (Connector type IP67)
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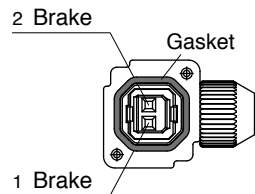
* MSMF092L1□1

• Components

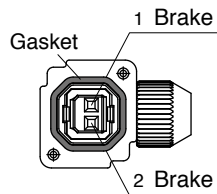
Title	Part No.	Number	Manufacturer	Note
Connector	JN4FT02SJM-R	1	Japan Aviation Electronics Ind.	For brake cable
Socket contact	ST-TMH-S-C1B-3500	2		

• Pin disposition of connector for brake cable

[Direction of motor shaft]



[Opposite direction of motor shaft]



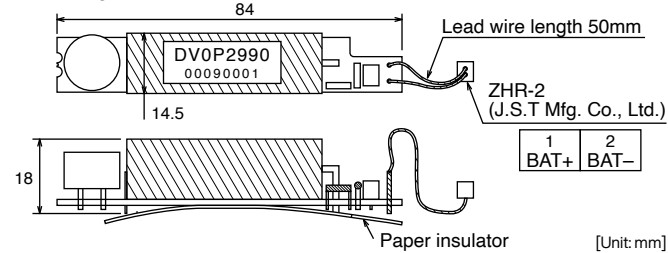
<Remarks>

Secure the gasket in place without removing it from the connector.
Otherwise, the degree of protection of IP67 will not be guaranteed.

Battery for Absolute Encoder

Part No.	DV0P2990
----------	----------

• Lithium battery: 3.6 V 2000 mAh



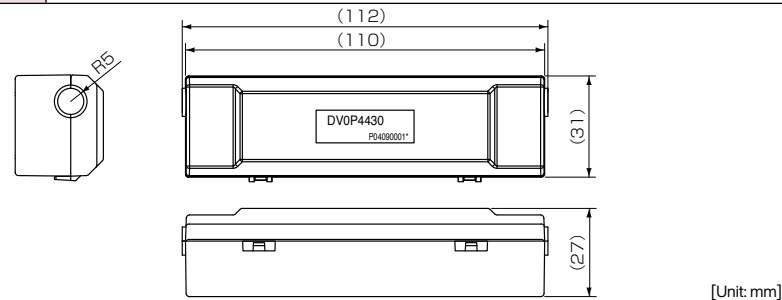
<Caution>

This battery is categorized as hazardous substance, and you may be required to present an application of hazardous substance when you transport by air (both passenger and cargo airlines).

Battery Box for Absolute Encoder *

* Battery is not included. Please buy the absolute encoder battery "DV0P2990" separately.

Part No.	DV0P4430
----------	----------



When waking a cable for 23-bit absolute encoder by yourself

When you make your own cable for 23-bit absolute encoder, connect the optional battery for absolute encoder, DV0P2990 as per the wiring diagram below. Connector of the battery for absolute encoder shall be provided by customer as well.

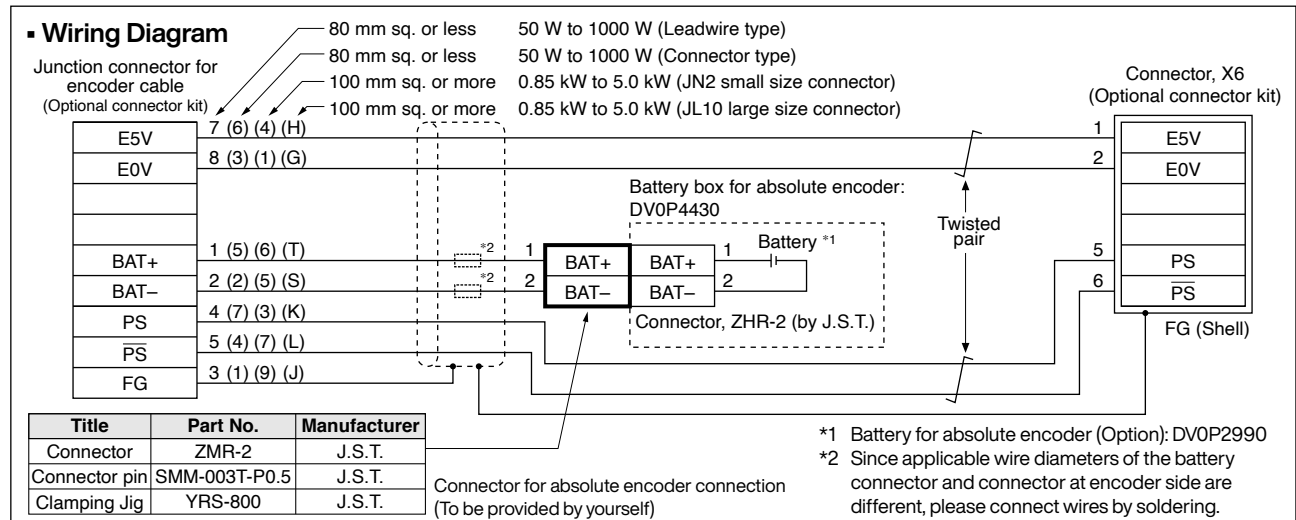
<Caution>

Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery.

Refer to the instruction manual of the battery for handling the battery.

• Installation Place of Battery

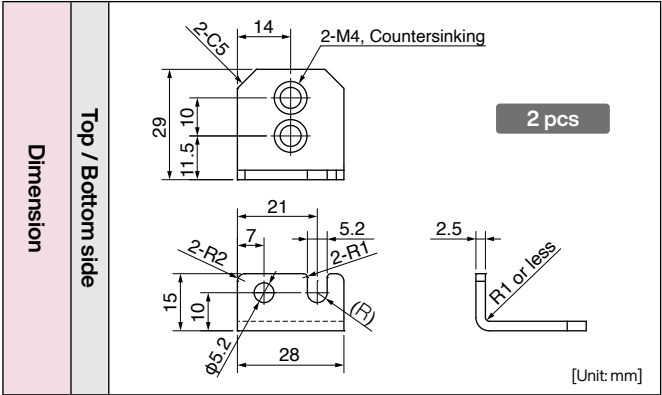
- 1) Indoors, where the products are not subjected to rain or direct sun beam.
- 2) Where the products are not subjected to corrosive atmospheres such as hydrogen sulfide, sulfurous acid, chlorine, ammonia, chloric gas, sulfuric gas, acid, alkaline and salt and so on, and are free from splash of inflammable gas, grinding oil, oil mist, iron powder or chips and etc.
- 3) Well-ventilated and humid and dust-free place.
- 4) Vibration-free place

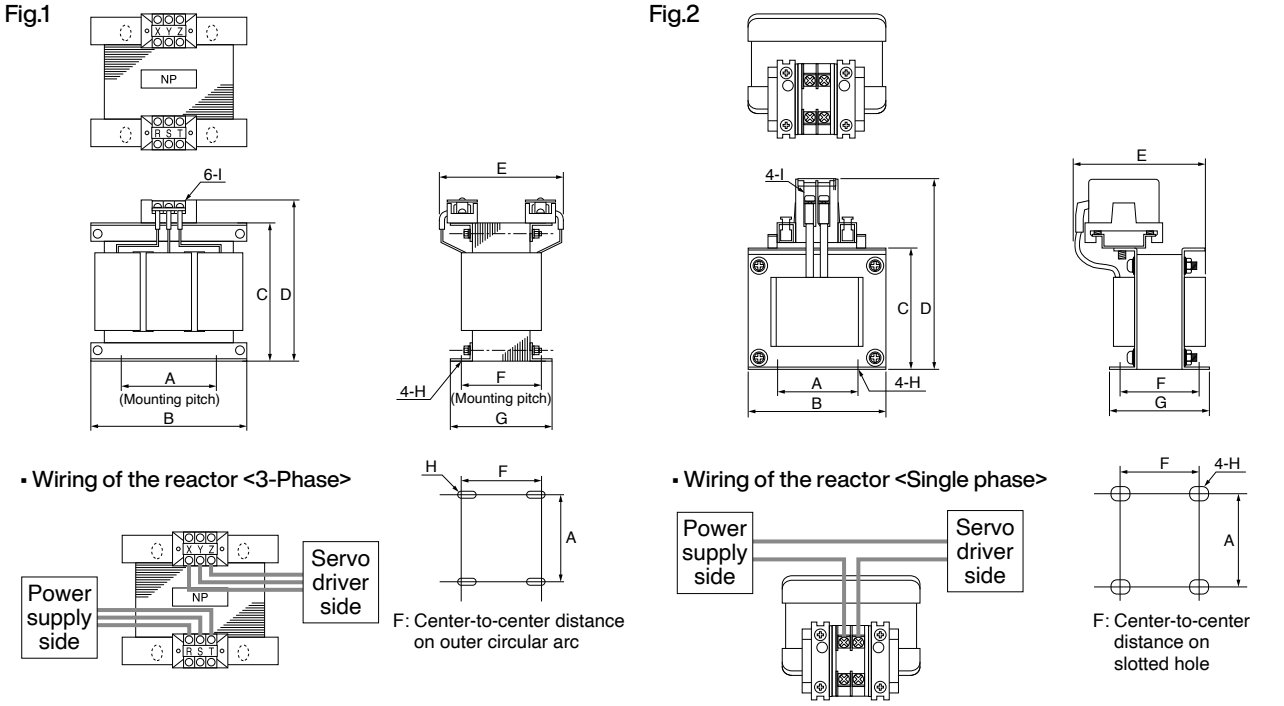
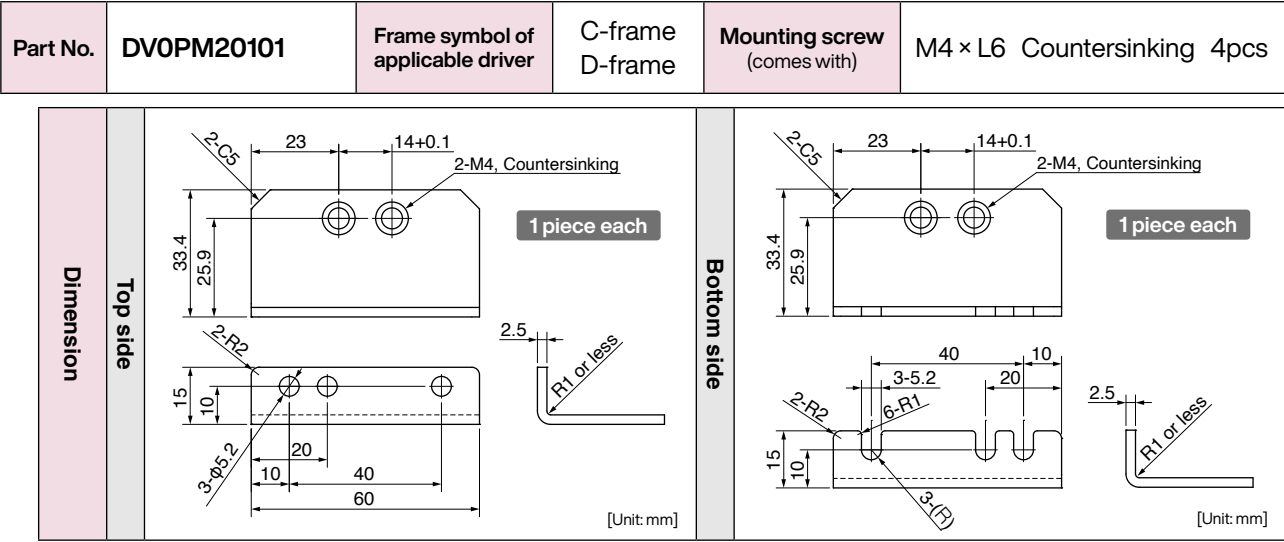


Recommended components

Motor		Part No.	Manufacturer
MSMF	50 W to 1000 W	TND14V-271K	NIPPON CHEMI-CON CORPORATION
	1.0 kW to 3.0 kW	Z15D151	SEMITEC Corporation
	4.0 kW, 5.0 kW	NVD07SCD082	KOA Corporation
MQMF	100W to 400 W	TND14V-271K	NIPPON CHEMI-CON CORPORATION
MHMF	50 W to 1000 W		
	1.0 kW, 1.5 kW		
	2.0 kW to 4.0 kW		
	5.0 kW, 7.5 kW	NVD07SCD082	KOA Corporation
MDMF	1.0 kW to 3.0 kW	NVD07SCD082	KOA Corporation
	4.0 kW	Z15D151	SEMITEC Corporation
	5.0 kW to 22.0 kW	NVD07SCD082	KOA Corporation
MGMF	0.85 kW to 1.8 kW	NVD07SCD082	KOA Corporation
	2.4 kW, 2.9 kW	Z15D151	SEMITEC Corporation
	4.4 kW, 5.5 kW	NVD07SCD082	KOA Corporation

Part No.	DV0PM20100	Frame symbol of applicable driver	A-frame B-frame	Mounting screw (comes with)	M4 × L6 Countersinking 4pcs
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• Wiring of the reactor <3-Phase>

• Wiring of the reactor <Single phase>

	Part No.	A	B	C	D	E (Max)	F	G	H	I	Inductance (mH)	Rated current (A)
Fig.1	DV0P220	65±1	125±1	(93)	136 _{Max}	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3
	DV0P221	60±1	150±1	(113)	155 _{Max}	130	60+3/-0	75±2	4-7φ×12	M4	4.02	5
	DV0P222	60±1	150±1	(113)	155 _{Max}	140	70+3/-0	85±2	4-7φ×12	M4	2	8
	DV0P223	60±1	150±1	(113)	155 _{Max}	150	79+3/-0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160 _{Max}	155	84+3/-0	100±2	4-7φ×12	M5	0.848	16
	DV0P225	60±1	150±1	(113)	160 _{Max}	170	100+3/-0	115±2	4-7φ×12	M5	0.557	25
Fig.2	DV0P227	55±0.7	76.5±1	66.5±1	110 _{Max}	90	43.6±2	56±2	4-5φ×10	M3.5	4.02	5
	DV0P228	55±0.7	76.5±1	66.5±1	110 _{Max}	95	48.0±2	61±2	4-5φ×10	M3.5	2	8
	DV0PM20047	55±0.7	76.5±1	66.5±1	110 _{Max}	105	58.6±2	71±2	4-5φ×10	M4	1.39	11

* For application, refer to P.29 to P.42 and P.205 to P.210 “Table of Part Numbers and Options”.

Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

When installing a product for Japan, refer to the instruction manual available on our website.

【Panasonic Industry Co., Ltd. web site】
industrial.panasonic.com/ac/e/

<Remarks>

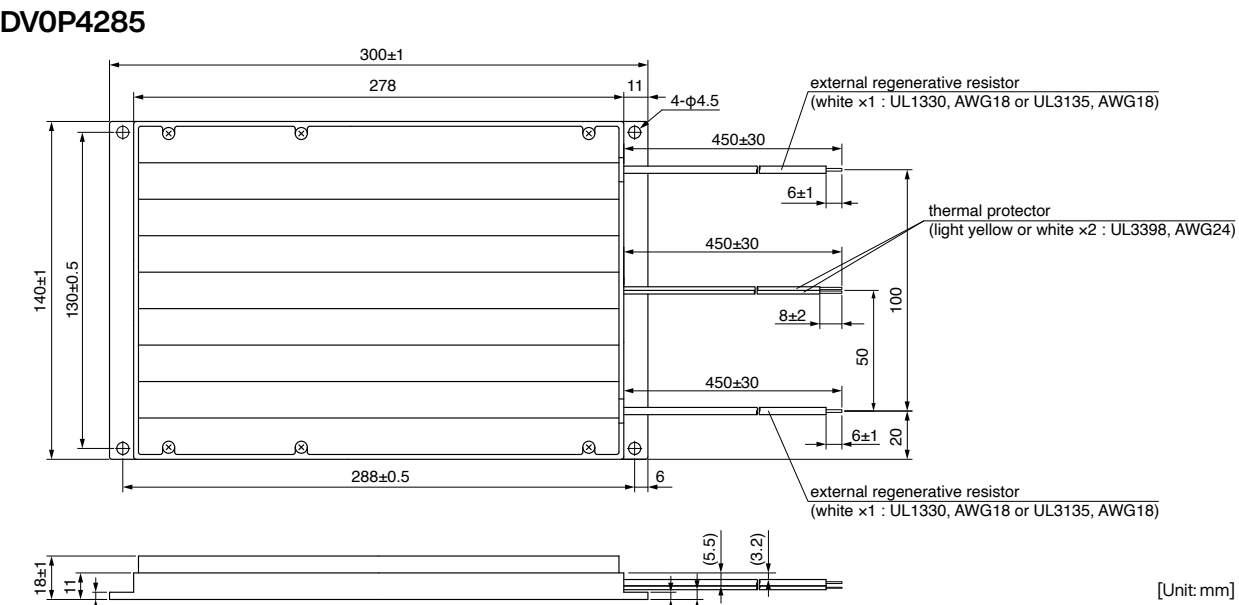
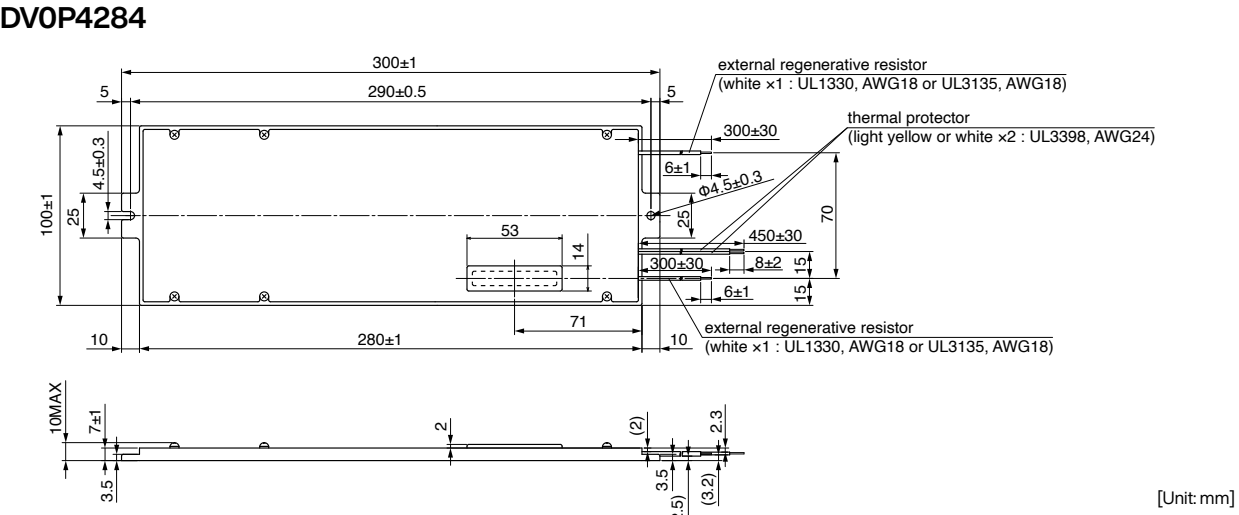
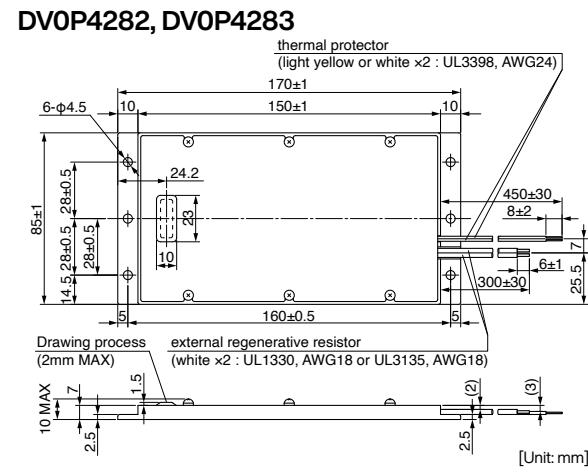
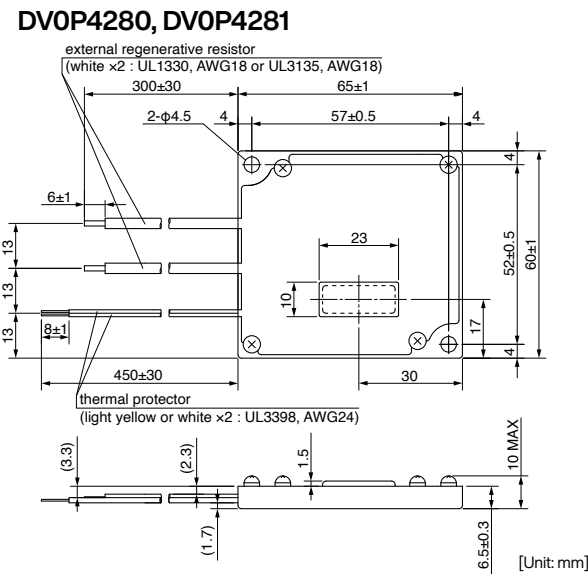
When using a reactor, be sure to install one reactor to one servo driver.

Part No.	Manufacturer's part No.	Specifications					Activation temperature of built-in thermal protector
		Resistance	cable core outside diameter	Weight	Rated power (reference) ^{*1}		
					Free air	with fan 1 m/s ^{*2}	
DV0P4280	RF70M	50	φ1.27 (AWG18 stranded wire)	0.1	10	25	140±5 °C B-contact Open/Close capacity (resistance load) 1 A 125 VAC 6000 times 0.5 A 250 VAC 10000 times
DV0P4281	RF70M	100		0.1	10	25	
DV0P4282	RF180B	25		0.4	17	50	
DV0P4283	RF180B	50		0.2	17	50	
DV0P4284	RF240	30		0.5	40	100	
DV0P4285	RH450F	20		1.2	52	130	

Manufacturer : Iwaki Musen Kenkyusho

- *1 Power with which the driver can be used without activating the built-in thermal protector.
- A built-in thermal fuse and a thermal protector are provided for safety.
- The circuit should be so designed that the power supply will be turned off as the thermal protector operates.
- The built-in thermal fuse blows depending on changes in heat dissipation condition, operating temperature limit, power supply voltage or load.
- Mount the regenerative resistor on a machine operating under aggressive regenerating condition (high power supply voltage, large load inertia, shorter deceleration time, etc.) and make sure that the surface temperature will not exceed 100 °C.
- *2 If the wind speed is 1m / s by the fan.

Frame	Power supply	
	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V
A	DV0P4280	DV0P4281 (100 W or less) DV0P4283 (200 W)
B	DV0P4283	DV0P4283
C	DV0P4282	
D		DV0P4284
E		DV0P4284 × 2 in parallel or DV0P4285
F	—	DV0P4285 × 2 in parallel
G		DV0P4285 × 3 in parallel
H		DV0P4285 × 6 in parallel



<Caution when using external regenerative resistor>

- Regenerative resistor gets very hot.
- Configure a circuit so that a power supply shuts down when built-in thermal protector of the regenerative resistor works. Because it is automatic reset thermal protector, please apply a self-holding circuit to the outside in order to maintain safety in case of sudden activation. During the failure of the driver, the surface temperature of the regenerative resistor may exceed the operating temperature before thermal protector starts to work.
- Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.
- Be attached the regenerative resistance to non-combustible material such as metal.
 - Built-in thermal fuse of regenerative resistor is intended to prevent from ignition during the failure of the driver and not intended to suppress the surface temperature of the resistor.
 - Do not install the regenerative resistor near flammable materials.

Daisy Chain

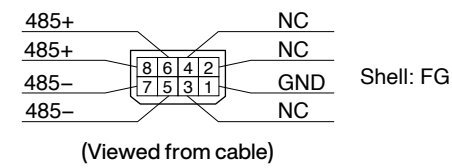
(Excluding A6SE, A6NE, A6BE Series)

Part No.	DV0PM24610
----------	------------

• Components

Title	Part No.	Manufacturer	Note
Connector	CIF-PCNS08KK-072R	J.S.T Mfg. Co., Ltd.	For Connector X2 (2-pins)
Cable	3-core cable with shield	—	Core diameter AWG24

• Pin disposition of connector, connector X2



<Remarks>

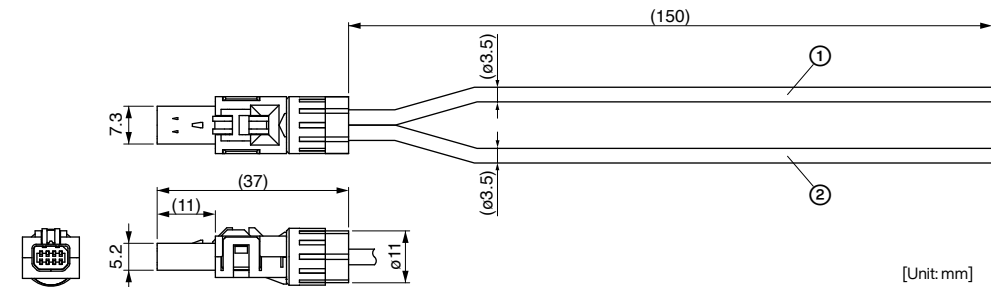
- Do not connect anything to NC.
- The braided wire of the cable is connected to the shell (housing) of the connector.

• Table for wiring

Pin No.	Signal name	Core color
8	485+	Red
7	485-	Yellow
1	GND	White

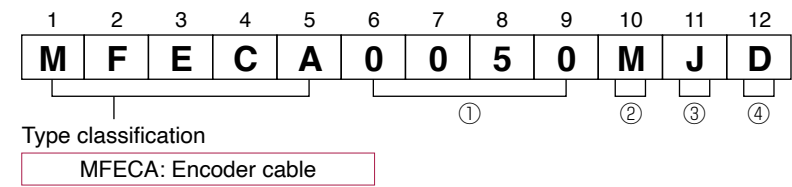
Pin No.	Signal name	Core color
6	485+	Red
5	485-	Yellow
1	GND	White

• Dimensions



Encoder Cable

For available optional items, please refer to P.309 to P.312.



① Cable length	
0030	3 m
0050	5 m
0100	10 m
0200	20 m

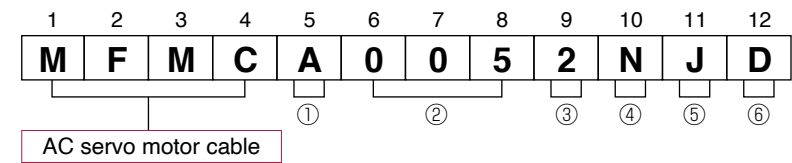
② Cable type	
E	PVC cable with shield by Oki Electric Cable Co., 0.20 mm ² × 4P(8-wire), 3P(6-wire)
M	Proterial, Ltd. Highly bendable type
T	Proterial, Ltd. Standard bendable type

③ Cable end (Encoder side)	
A	Tyco Electronics Japan G.K. connector
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
K	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
P	Japan Aviation Electronics Industry, Ltd. plug connector
S	“S” shaped cannonplug
T	Japan Aviation Electronics Industry, Ltd. plug connector

④ Cable end (Driver side)	
D	Connector (Without battery box)
E	Connector (With battery box)

Motor Cable, Brake Cable

For available optional items, please refer to P.309 to P.312.



① Type classification	
A	Standard
B	Special
:	Design order

② Cable length	
003	3 m
005	5 m
010	10 m
020	20 m

③ Sectional area of cable core	
0	0.75 mm ²
1	1.25 mm ²
2	2.0 mm ²
3	3.5 mm ²
7	0.3 mm ²

④ Cable type	
E	ROBO-TOP® 4-wire by DYDEN CORPORATION
F	ROBO-TOP® 6-wire by DYDEN CORPORATION
G	ROBO-TOP® 2-wire by DYDEN CORPORATION
N	4-wire by Proterial, Ltd. (Highly bendable type)
P	4-wire by Proterial, Ltd. (Standard bendable type)
R	2-wire by Proterial, Ltd. (Highly bendable type)
S	2-wire by Proterial, Ltd. (Standard bendable type)
U	4-wire for A6 series small motor* (Highly bendable type)
V	6-wire for A6 series small motor* (Highly bendable type)
W	4-wire for A6 series small motor* (Standard bendable type)
X	6-wire for A6 series small motor* (Standard bendable type)

⑤ Cable end at motor side	
C	S type cannon plug
E	Tyco Electronics Japan G.K. connector
F	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
G	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
K	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
U	Japan Aviation Electronics Industry, Ltd. plug connector

⑥ Cable end at driver side	
D	Rod terminal
T	Clamp terminal

Manufacturer	Tel No. / Home Page	Peripheral components
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
KOA Corporation	+81-42-336-5300 http://www.koanet.co.jp/en/index.htm	Surge absorber for holding brake
NIPPON CHEMI-CON CORPORATION	+81-3-5436-7711 http://www.chemi-con.co.jp/e/index.html	
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	Ferrite core
NISSHIN ELECTRIC Co., LTD.	+81-4-2934-4151 http://www.nisshin-electric.com	
Konno Kogyosho Co., Ltd.	+81-184-53-2307	
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
SOSHIN ELECTRIC Co., Ltd.	+81-3-5730-4500 http://www.soshin-ele.com/	Noise filter
Japan Aviation Electronics Industry, Ltd.	+81-3-3780-2717 http://www.jae.com/en/index.html	Connector
Molex Japan LLC	+81-462-65-2313 http://www.molex.co.jp	
J.S.T. Mfg. Co., Ltd.	+81-45-543-1271 http://www.jst-mfg.com/index_e.php	
3M Japan Limited	+81-3-5716-7290 http://solutions.3m.com/wps/portal/3M/ja_JP/WW2/Country/	
Tyco Electronics Japan G.K.	+81-44-844-8052 http://www.te.com/ja/home.html	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable
DR. JOHANNES HEIDENHAIN GmbH	+81-3-3234-7781 http://www.heidenhain.de/de_EN/company/contact/	External scale
Fagor Automation S.Coop.	+34-943-719-200 http://www.fagorautomation.com	
Magnescale Co., Ltd.	+81-463-92-7971 http://www.mgscale.com/mgs/language/english/	
Mitutoyo Corporation	+81-44-813-8234 http://www.mitutoyo.co.jp/eng/	
Nidec Instruments Corporation	+81-3-5740-3006 https://www.nidec.com/en/nidec-instruments/	
Renishaw plc	+44 1453 524524 www.renishaw.com	

* The above list is for reference only. We may change the manufacturer without notice.

MEMO

Communication
cycle **0.0625 ms**

Ultra-high-speed network driver

RTEX
Realtime Express

Realtime Express(RTEX)

AC servo motor & driver

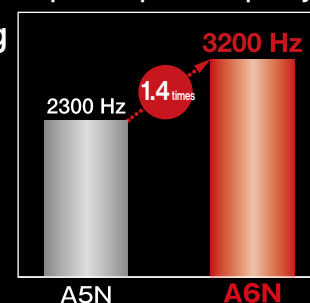
MINAS A6N Series



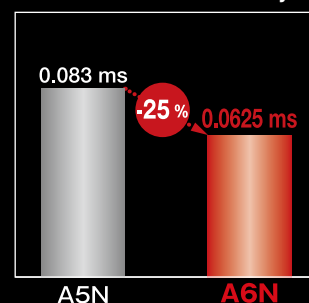
Pursuit of ultimate real-time processing

Pursuit of ultimate
real-time processing

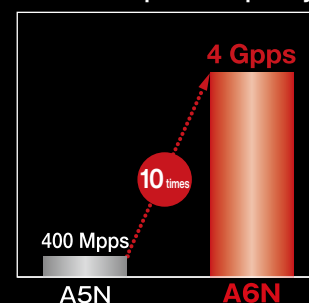
■ Speed response frequency



■ Minimum communication cycle



■ Maximum pulse frequency



● Max.4 Mpps,when using AB-phase external scale

Multifunctional capabilities to match various needs

- ◎ Supports all positions,speeds and torque modes (w/built-in positioning function)
- ◎ High-precision position latch and comparison
- ◎ Communication cycle can be set to any time between 2 ms and 62.5 μ s.

● Easy setup with setup support software "PANATERM".

Simple network

- ◎ Satisfies both high performance and low cost requirements
- ◎ Synchronization established by communication IC
- ◎ Easier development of compatible equipment

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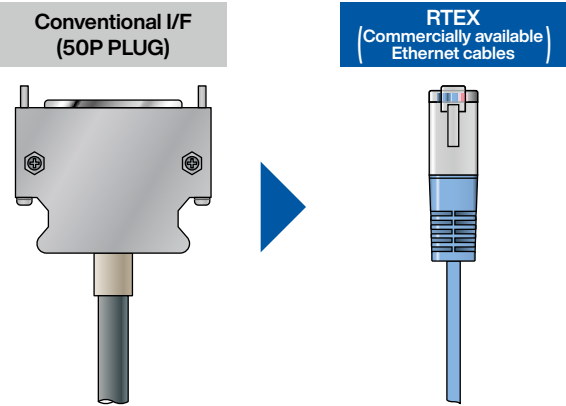
* For options other than for Interface cable and connector kit for interface,see P.29 to P.42.

● Realtime Express and RTEX are registered trademarks of Panasonic Holdings Corporation..

● The "Conventional I/F" used in this document means a pulse train and analog I/F.

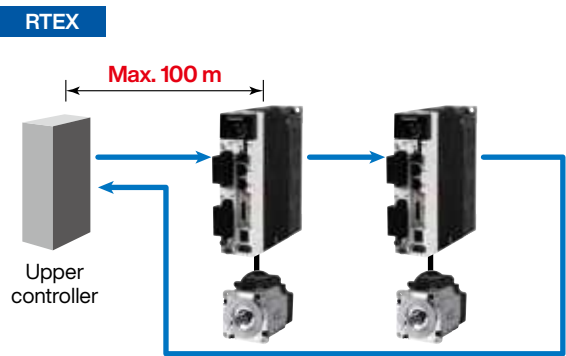
Wire-saving

Wire-saving reduces various troubles relating to wires. The cables used are widely available Ethernet cables, which are easy to obtain and inexpensive.



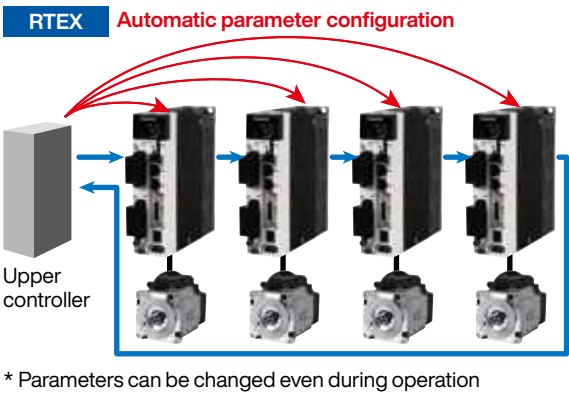
Maximum length of the node-to-node cable is 100 m.

Flexibility increases in the layout of an upper controller and servo motors. The RTEXs can also support large-scale systems.



Configurable parameter settings

Upper controllers can configure servo parameters. This enables parameters to be configured automatically instead by human at installation.



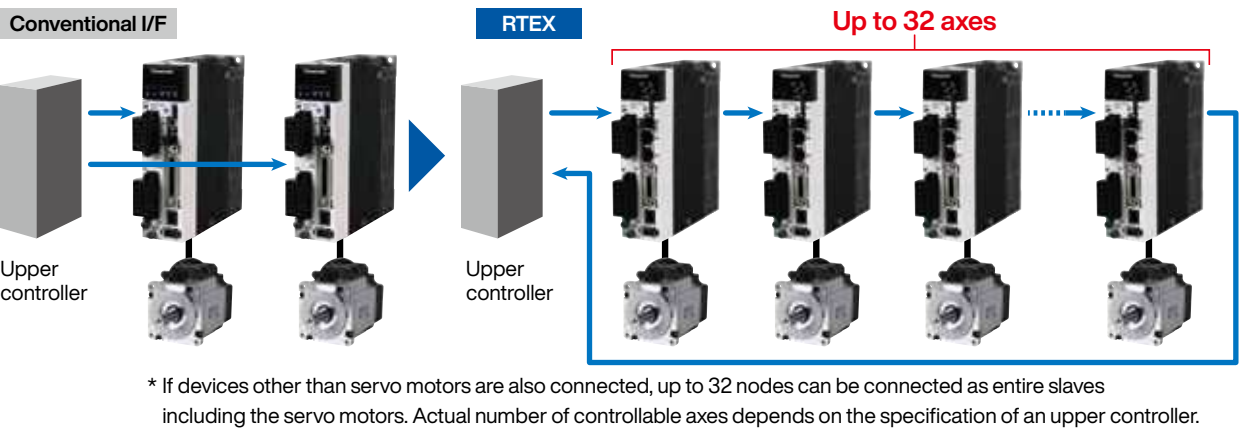
Real time monitoring is enabled.

Upper controllers can monitor various information, such as position, speed, and torque, etc. in real time. Since alarm codes can also be read out, analysis can be performed promptly at trouble occurrence.



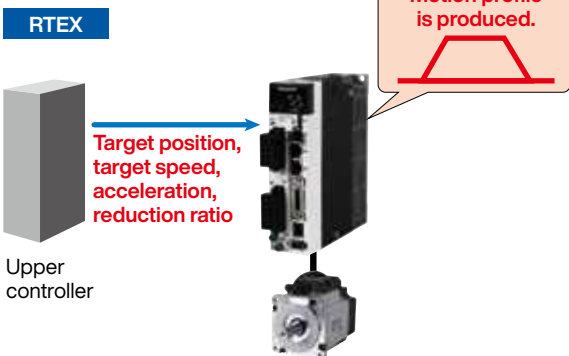
Up to 32 axes can be controlled.

In comparison with conventional I/Fs, the number of axes increases that can be controlled by next upper controllers.



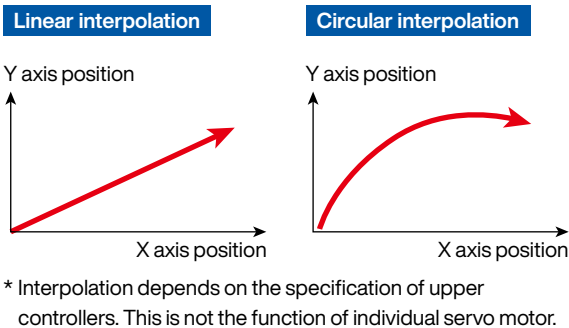
Profile position mode is supported

Profile position mode is supported for PTP control as well as cyclic position, speed, and torque. The processing done by upper controllers can be simplified.



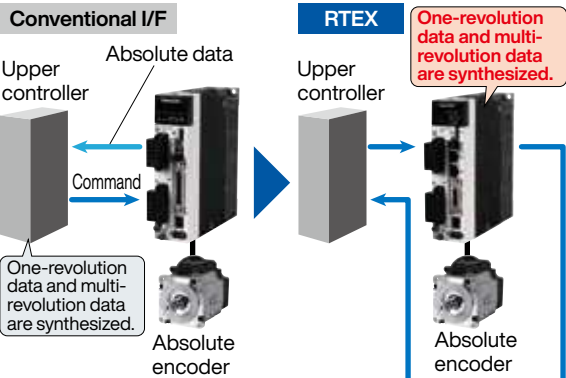
High synchronization capability among axes

Upper controllers synchronize with entire servo motor axes at high accuracy. With the synchronization capability higher than that of conventional I/F, the RTEX is best suitable for machine tools, robots, gantry systems, and others.



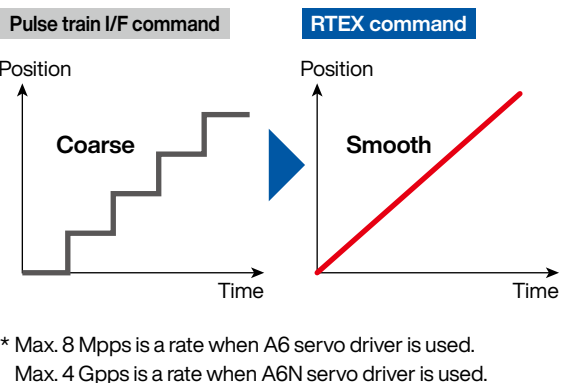
Absolute system can easily be built.

Conventional I/F requires an additional wire to transmit absolute data, while the RTEX doesn't. Each servo motor synthesizes one-revolution data and multi-revolution data to produce an actual position, so that the amount of work to be done by an upper controller is decreased.



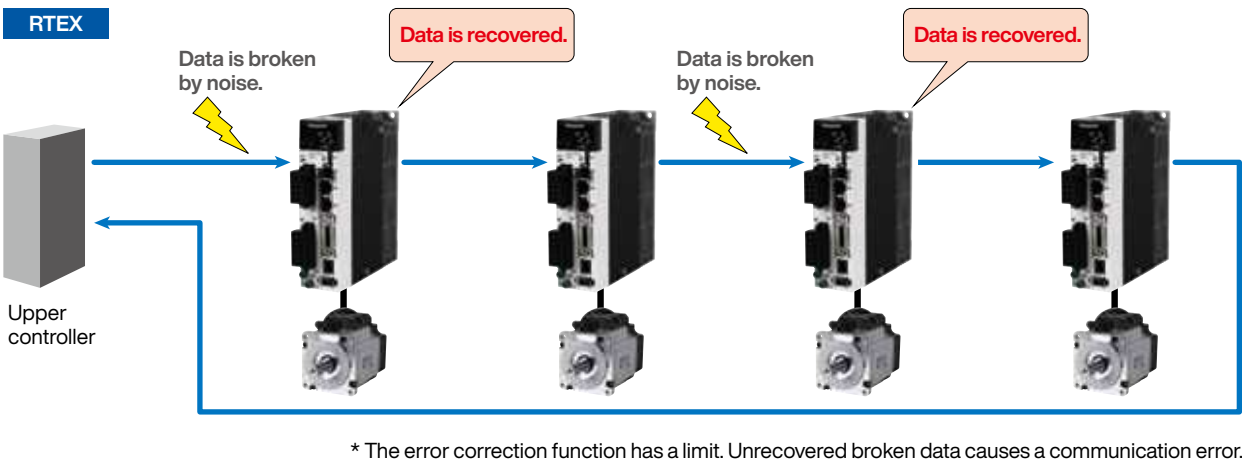
High resolution command is enabled

The position command rate of max. 8 Mpps* in a pulse train I/F is improved to 4 Gpps* in the RTEX. Vibrations are reduced due to a smooth command sent to a servo motor using the advantage of the high-resolution encoder.



High noise-proof property

With a patented error correction function, noise-proof property is at least 2.5 KV. This conforms to IEC61000-4-4 standard.



MINAS A6N Series

Model Designation

* For combination of elements of model number, refer to Index P.411.

Servo Motor

M S M F 5 A Z L 1 A 1 *

① ② ③ ④ ⑤ ⑥ ⑦

Special specifications

① Type ② Series ⑦ Motor specifications: 80 mm sq. or less MSMF 50 W to 1000 W

Symbol	Type
MSM	Low inertia (50 W to 5.0 kW)
MQM	Middle inertia (100 W to 400 W)
MDM	Middle inertia (1.0 kW to 22.0 kW)
MGM	Middle inertia (0.85 kW to 5.5 kW)
MHM	High inertia (50 W to 7.5 kW)

Symbol	Series name
F	A6 Family

Symbol	Shaft	Holding brake	Oil seal	Motor encoder terminal ¹⁾
	Round	without	without	Connector JN
A	1	●	●	●
A	2	●	●	●
B	1	●	●	●
B	2	●	●	●
C	1	●	●	●
C	2	●	●	●
D	1	●	●	●
D	2	●	●	●
S	1	●	●	●
S	2	●	●	●
T	1	●	●	●
T	2	●	●	●
U	1	●	●	●
U	2	●	●	●
V	1	●	●	●
V	2	●	●	●

Symbol	Rated output
5A	50 W
01	100 W
02	200 W
04	400 W
08	750 W
09	0.85 kW, 1000 W (130 mm sq.) (80 mm sq.)
10	1.0 kW

Symbol	Rated output
13	1.3 kW
15	1.5 kW
18	1.8 kW
20	2.0 kW
24	2.4 kW
29	2.9 kW
30	3.0 kW
40	4.0 kW

Symbol	Rated output
44	4.4 kW
50	5.0 kW
55	5.5 kW
75	7.5 kW
C1	11.0 kW
C5	15.0 kW
D2	22.0 kW

Symbol	Specifications
1	100 V
2	200 V
Z	100 V/200 V common (50 W only)

Symbol	Specifications
1	Standard

<Note>
When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

⑦ Motor specifications: IP67²⁾ 100 mm sq. to 220 mm sq.
MSMF, MHMF, MDMF, MGMF

Symbol	Shaft	Holding brake	Oil seal	Encoder terminal
	Round	without	without	Connector JN2 (Small size)
C	5	●	●	●
C	6	●	●	●
C	7	●	●	●
C	8	●	●	●
D	5	●	●	●
D	6	●	●	●
D	7	●	●	●
D	8	●	●	●
G	5	●	●	●
G	6	●	●	●
G	7	●	●	●
G	8	●	●	●
H	5	●	●	●
H	6	●	●	●
H	7	●	●	●
H	8	●	●	●

⑦ Motor specifications: 80 mm sq. or less MHMF 50 W to 1000 W
MQMF 100 W to 400 W

Symbol	Shaft	Holding brake	Oil seal	Motor encoder terminal ¹⁾
	Round	without	without	Connector JN
A	1	●	●	●
A	2	●	●	●
B	1	●	●	●
B	2	●	●	●
C	1	●	●	●
C	2	●	●	●
C	3	●	●	●
C	4	●	●	●
D	1	●	●	●
D	2	●	●	●
D	3	●	●	●
D	4	●	●	●
S	1	●	●	●
S	2	●	●	●
T	1	●	●	●
T	2	●	●	●
U	1	●	●	●
U	2	●	●	●
U	3	●	●	●
U	4	●	●	●
V	1	●	●	●
V	2	●	●	●
V	3	●	●	●
V	4	●	●	●

*1 Connector type: IP67, Lead wire type: IP65 *2 22.0 kW: IP44
*3 Connector on the motor side encoder. (Also applicable to screwed type.)

Servo Driver

M A D L N 1 5 N E * * *

① ② ③ ④ ⑤ ⑥ ⑦

Special specifications

Symbol	Frame
MAD	A-Frame
MBD	B-Frame
MCD	C-Frame
MDD	D-Frame
MED	E-Frame
MFD	F-Frame
MGD	G-Frame
MHD	H-Frame

Symbol	Series name
L	A6 Family

Symbol	Current rating
0	6 A
1	8 A
2	12 A
3	22 A
4	24 A
5	40 A
8	60 A

Symbol	Current rating
9	80 A
A	100 A
B	120 A
C	160 A
E	240 A
F	360 A

Symbol	Specifications
1	Single phase 100 V
3	3-phase 200 V
5	Single/3-phase 200 V

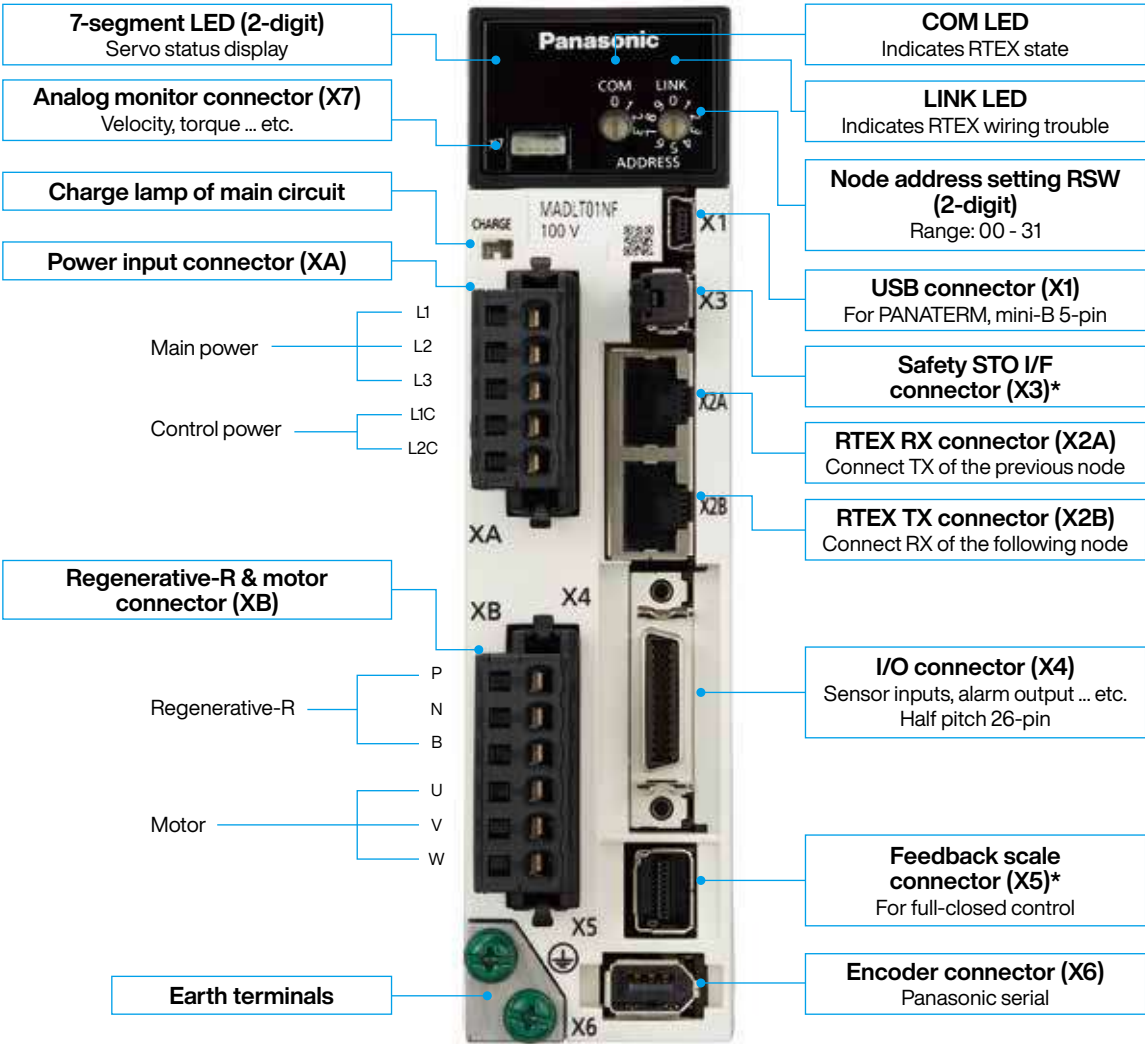
Symbol	Specification
E	Standard for rotary motor
F	Multifunction for rotary motor
L	Standard for linear/DD motor
M	Multifunction for linear/DD motor

*4 Standard type (with a part number ending in E or L) has no safety function. Multi-function type (with a part number ending in F or M) has a safety function.

MINAS A6N Series

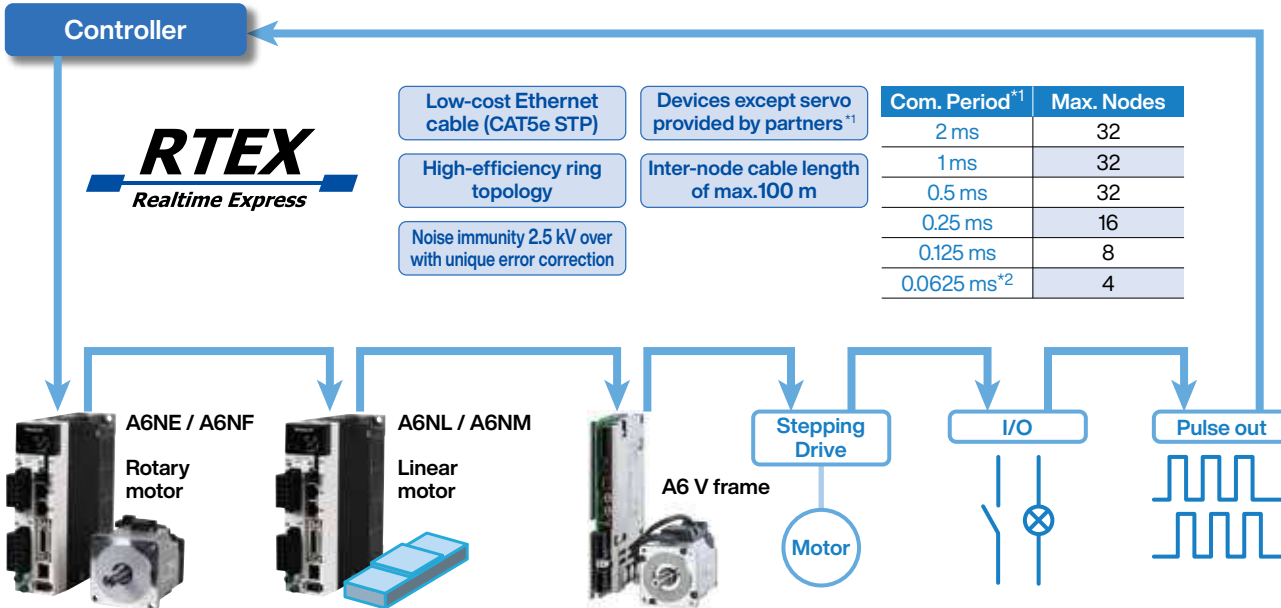
Appearance/ System configuration

Appearance



* The photo is A6NF series. There are no X3 and X5 connectors in the A6NE series.

Typical system configuration



*1: The communication period and connection of slave devices depend on the controller specification.
*2: For communication period 0.0625 ms, command update period is 0.125 ms only.

80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF Leadwire type IP65

Motor				Driver		Power capacity (at rated load)	
Motor series		Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Leadwire type) 3000 r/min Low inertia		Single phase 100 V	50	MSMF5AZL1 □ 2	MADL☆01N☆	A-frame	Approx. 0.4 kVA
			100	MSMF011L1 □ 2	MADL☆11N☆		
			200	MSMF021L1 □ 2	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MSMF041L1 □ 2	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 2 *	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			100	MSMF012L1 □ 2 *			
			200	MSMF022L1 □ 2 *	MADL☆15N☆	B-frame	Approx. 0.9 kVA
			400	MSMF042L1 □ 2 *	MBDL☆25N☆		
			750	MSMF082L1 □ 2 *	MCDL☆35N☆	C-frame	Approx. 1.8 kVA
			1000	MSMF092L1 □ 2 *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
MQMF (Leadwire type) 3000 r/min Middle inertia Flat type		Single phase 100 V	100	MQMF011L1 □ □	MADL☆11N☆	A-frame	Approx. 0.4 kVA
			200	MQMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MQMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	100	MQMF012L1 □ □ *	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			200	MQMF022L1 □ □ *	MADL☆15N☆		
			400	MQMF042L1 □ □ *	MBDL☆25N☆	B-frame	Approx. 0.9 kVA
MHMF (Leadwire type) 3000 r/min High inertia		Single phase 100 V	50	MHMF5AZL1 □ □	MADL☆01N☆	A-frame	Approx. 0.4 kVA
			100	MHMF011L1 □ □	MADL☆11N☆		
			200	MHMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MHMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ □ *	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			100	MHMF012L1 □ □ *			
			200	MHMF022L1 □ □ *	MADL☆15N☆	B-frame	Approx. 0.9 kVA
			400	MHMF042L1 □ □ *	MBDL☆25N☆		
			750	MHMF082L1 □ □ *	MCDL☆35N☆	C-frame	Approx. 1.8 kVA
			1000	MHMF092L1 □ □ *	MDDL☆55N☆	D-frame	Approx. 2.4 kVA

□ ☆ * : For more information, refer to “Model Designation” on P.353.

80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF Connector type IP67

Motor				Driver		Power capacity (at rated load)	
Motor series		Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MSMF (Connector type) 3000 r/min Low inertia		Single phase 100 V	50	MSMF5AZL1 □ 1	MADL☆01N☆	A-frame	Approx. 0.4 kVA
			100	MSMF011L1 □ 1	MADL☆11N☆		
			200	MSMF021L1 □ 1	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MSMF041L1 □ 1	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	50	MSMF5AZL1 □ 1	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			100	MSMF012L1 □ 1			
			200	MSMF022L1 □ 1	MADL☆15N☆	B-frame	Approx. 0.9 kVA
			400	MSMF042L1 □ 1	MBDL☆25N☆		
			750	MSMF082L1 □ 1	MCDL☆35N☆	C-frame	Approx. 1.8 kVA
			1000	MSMF092L1 □ 1	MDDL☆45N☆	D-frame	Approx. 2.4 kVA
MQMF (Connector type) 3000 r/min Middle inertia Flat type		Single phase 100 V	100	MQMF011L1 □ □	MADL☆11N☆	A-frame	Approx. 0.4 kVA
			200	MQMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MQMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	100	MQMF012L1 □ □	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			200	MQMF022L1 □ □	MADL☆15N☆		
			400	MQMF042L1 □ □	MBDL☆25N☆	B-frame	Approx. 0.9 kVA
MHMF (Connector type) 3000 r/min High inertia		Single phase 100 V	50	MHMF5AZL1 □ □	MADL☆01N☆	A-frame	Approx. 0.4 kVA
			100	MHMF011L1 □ □	MADL☆11N☆		
			200	MHMF021L1 □ □	MBDL☆21N☆	B-frame	Approx. 0.5 kVA
			400	MHMF041L1 □ □	MCDL☆31N☆	C-frame	Approx. 0.9 kVA
		Single phase/ 3-phase 200 V	50	MHMF5AZL1 □ □	MADL☆05N☆	A-frame	Approx. 0.5 kVA
			100	MHMF012L1 □ □			
			200	MHMF022L1 □ □	MADL☆15N☆	B-frame	Approx. 0.9 kVA
			400	MHMF042L1 □ □	MBDL☆25N☆		
			750	MHMF082L1 □ □	MCDL☆35N☆	C-frame	Approx. 1.8 kVA
			1000	MHMF092L1 □ □	MDDL☆55N☆	D-frame	Approx. 2.4 kVA

□ ☆ : For more information, refer to “Model Designation” on P.353.

● 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF
Encoder connector (Large size JL10)*1 type IP67

Motor				Driver		Power capacity (at rated load)		
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame			
MSMF (Large size JL10 type) 3000 r/min Low inertia IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □□ *	MDDL☆55N☆	D-frame	Approx. 2.9 kVA		
		1500	MSMF152L1 □□ *					
	3-phase 200 V	2000	MSMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MSMF302L1 □□ *	MFDL☆A3N☆			F-frame	Approx. 5.2 kVA
		4000	MSMF402L1 □□ *	MFDL☆B3N☆				
MDMF (Large size JL10 type) 2000 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1500	MDMF152L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	2000	MDMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MDMF302L1 □□ *	MFDL☆A3N☆		F-frame	Approx. 5.2 kVA	
		4000	MDMF402L1 □□ *	MFDL☆B3N☆				
		5000	MDMF502L1 □□ *					
MGMF (Large size JL10 type) 〔 Low speed/ High torque type 〕 1500 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1300	MGMF132L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	1800	MGMF182L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		2400	MGMF242L1 □□ *	MEDL☆93N☆		Approx. 4.5 kVA		
		2900	MGMF292L1 □□ *	MFDL☆B3N☆	F-frame	Approx. 7.8 kVA		
		4400	MGMF442L1 □□ *					
MHMF (Large size JL10 type) 2000 r/min High inertia IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □□ *	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1500	MHMF152L1 □□ *	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	2000	MHMF202L1 □□ *	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MHMF302L1 □□ *	MFDL☆A3N☆			F-frame	Approx. 5.2 kVA
		4000	MHMF402L1 □□ *	MFDL☆B3N☆				
5000	MHMF502L1 □□ *							

□ ☆ * : For more information, refer to “Model Designation” on P.353.

● 100 mm sq. or more 0.85 kW to 5.0 kW MSMF, MDMF, MGMF, MHMF
Encoder connector (Small size JN2)^{*2} type IP67

Motor				Driver		Power capacity (at rated load)		
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame			
MSMF (Small size JN2 type) 3000 r/min Low inertia IP67	Single phase/ 3-phase 200 V	1000	MSMF102L1 □□	MDDL☆55N☆	D-frame	Approx. 2.9 kVA		
		1500	MSMF152L1 □□					
	3-phase 200 V	2000	MSMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MSMF302L1 □□	MFDL☆A3N☆			F-frame	Approx. 5.2 kVA
		4000	MSMF402L1 □□	MFDL☆B3N☆				
5000	MSMF502L1 □□							
MDMF (Small size JN2 type) 2000 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	1000	MDMF102L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1500	MDMF152L1 □□	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	2000	MDMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MDMF302L1 □□	MFDL☆A3N☆		F-frame	Approx. 5.2 kVA	
		4000	MDMF402L1 □□	MFDL☆B3N☆				
		5000	MDMF502L1 □□					
MGMF (Small size JN2 type) 〔 Low speed/ High torque type 〕 1500 r/min Middle inertia IP67	Single phase/ 3-phase 200 V	850	MGMF092L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1300	MGMF132L1 □□	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	1800	MGMF182L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		2400	MGMF242L1 □□	MEDL☆93N☆		F-frame	Approx. 4.5 kVA	
		2900	MGMF292L1 □□	MFDL☆B3N☆				
		4400	MGMF442L1 □□					
MHMF (Small size JN2 type) 2000 r/min High inertia IP67	Single phase/ 3-phase 200 V	1000	MHMF102L1 □□	MDDL☆45N☆	D-frame	Approx. 2.4 kVA		
		1500	MHMF152L1 □□	MDDL☆55N☆		Approx. 2.9 kVA		
	3-phase 200 V	2000	MHMF202L1 □□	MEDL☆83N☆	E-frame	Approx. 3.8 kVA		
		3000	MHMF302L1 □□	MFDL☆A3N☆		F-frame	Approx. 5.2 kVA	
		4000	MHMF402L1 □□	MFDL☆B3N☆				
		5000	MHMF502L1 □□					

□ ☆ : For more information, refer to “Model Designation” on P.353.

● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF
Encoder connector (Large size JL10)*1 type IP67

Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MDMF (Large size JL10 type) 1500 r/min Middle inertia IP67 ^{*3}	3-phase 200 V	7500	MDMF752L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 11 kVA
		11000	MDMFC12L1 □ 6	MHDLTE3NF	H-frame	Approx. 15 kVA
		15000	MDMFC52L1 □ 6	MHDLTE3NF		Approx. 20 kVA
		22000 ^{*3}	MDMFD22L1 □ 6	MHDLTF3NF		Approx. 28 kVA
MGMF (Large size JL10 type) 〔 Low speed/ High torque type 〕 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 8.5 kVA
MHMF (Large size JL10 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 □ 6 *	MGDLTC3NF	G-frame	Approx. 11 kVA

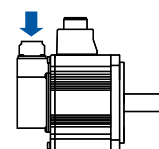
□ ☆ * : For more information, refer to “Model Designation” on P.353.

● 176 mm sq. or more 5.5 kW or more MDMF, MGMF, MHMF
Encoder connector (Small size JN2)*² type IP67

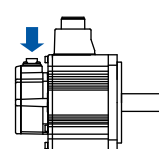
Motor				Driver		Power capacity (at rated load)
Motor series	Power supply	Output (W)	Part No.	A6N series Part No.	Dimension Frame	
MDMF (Small size JN2 type) 1500 r/min Middle inertia IP67 ³	3-phase 200 V	7500	MDMF752L1 □ 5	MGDLTC3NF	G-frame	Approx. 11 kVA
		11000	MDMFC12L1 □ 5	MHDLTE3NF	H-frame	Approx. 15 kVA
		15000	MDMFC52L1 □ 5	MHDLTE3NF		Approx. 20 kVA
		22000 ³	MDMFD22L1 □ 5	MHDLTF3NF		Approx. 28 kVA
MGMF (Small size JN2 type) 〔 Low speed/ High torque type 〕 1500 r/min Middle inertia IP67	3-phase 200 V	5500	MGMF552L1 □ 5	MGDLTC3NF	G-frame	Approx. 8.5 kVA
MHMF (Small size JN2 type) 1500 r/min High inertia IP67	3-phase 200 V	7500	MHMF752L1 □ 5	MGDLTC3NF	G-frame	Approx. 11 kVA

□ ☆ : For more information, refer to “Model Designation” on P.353.

*1: Encoder connector
(Large size JL10)



*2: Encoder connector
(Small size JN2)



*3: 22.0 kW motor is IP44.

Input power	100 V	Main circuit		Single phase 100 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 120 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
		Control circuit		Single phase 100 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 120 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
	200 V	Main circuit	A-frame to D-frame	Single/3-phase 200 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
			E-frame to H-frame	3-phase 200 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
		Control circuit	A-frame to D-frame	Single phase 200 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
			E-frame to H-frame	Single phase 200 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ to 240 V $\begin{smallmatrix} +10\% \\ -15\% \end{smallmatrix}$ 50 Hz / 60 Hz				
Environment		temperature		Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation ¹⁾)				
		humidity		Both operating and storage : 20 %RH to 85 %RH (free from condensation ¹⁾)				
		Altitude		Lower than 1000 m				
		Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz				
Control method				IGBT PWM Sinusoidal wave drive				
Encoder feedback				23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to “1” (factory settings).				
External scale feedback				A/B phase, homing signal differential input. Serial communication is also supported. Manufacturers that support serial communication scale: Fagor Automation S.Coop., HEIDENHAIN, Magnescale Co., Ltd., Mitutoyo Corporation Nidec Instruments Corporation, Renishaw plc				
Interface connector	Control signal		Input	Each 8 input can be assigned by the parameter.				
			Output	Each 3 output can be assigned by the parameter.				
	Analog signal		Output	2 outputs for analog monitors 1 and 2				
	Pulse signal		Output	Line driver output for encoder pulses (A/B phase signal) or external scale pulses.				
Communication		Realtime Express (RTEX)		Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.				
		USB		USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.				
Safety terminal				Terminal to support safety function.				
Front panel				(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM) (3) Rotary switch for node address setting (4) Analog monitor output(Analog monitors 1 and 2)				
Regeneration				Size A, B, G and H: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)				
Dynamic brake				A to G frame: built-in H frame: External resistor only				
Control mode				(1) Semi-closed control Position control: Profile position control (PP), Cyclic position control (CP) Velocity control: Cyclic velocity control (CV) Torque control: Cyclic torque control (CT) (2) Full-closed control Position control: Profile position control (PP), Cyclic position control (CP) • The two modes, [1] and [2] above are switched by parameters. • Switch PP/CP/CV/CT mode according to the RTEX communication command.				

*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Position control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, Near home position, etc
	Control output		Positioning completion etc.
	Position command input	Input mode	Command type by RTEX command
		Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.
	Damping control		Available (Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)
	Model type damping filter		Available (2 filter available used simultaneously)
	Feed forward function		Available (speed/torque)
	Load variation suppression control		Available
	Gain 3 switching function		Available
	Quadrant glitch inhibit function		Available
	Two-degree-of-freedom control mode		Available
	Motor operatable setup function		Available
	External scale position information monitor		Available
	Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function
Speed control	Control input		Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, etc
	Control output		At speed etc.
	Position command input	Input mode	Command type by RTEX command
		Soft start/slowdown function	
	Feed forward function		Available (torque)
	Load variation suppression control		Available
	Two-degree-of-freedom control mode		Available (standard type)
	External scale position information monitor		Available
Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function	
Torque control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc
	Control output		At speed etc.
	Position command input	Input mode	Command type by RTEX command
		Speed limit function	
	External scale position information monitor		Available
	Other available functions		Single-turn absolute function Continuous rotating absolute encoder function
Full-closed control	Control input		Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, Near home position , etc
	Control output		Positioning completion etc.
	Position command input	Input mode	Command type by RTEX command
		Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.
	Setting range of external scale division/multiplication.		1/40 times to 125200 times Although the ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be set anywhere between the range of 1 to 2 ²³ for the numerator and 1 to 2 ²³ for the denominator, Please use within the range indicated above.
	Damping control		Available(Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)
	Feed forward function		Available (speed/torque)
	Load variation suppression control		Available
	Gain 3 switching function		Available
	Hybrid vibration suppression function		Available
	Quadrant glitch inhibit function		Available
	Two-degree-of-freedom control mode		Available (standard type)
	Motor operatable setup function		Available
	External scale position information monitor		Available
Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function	
Common	Electronic gear ratio setting		Applicable scaling ratio: 1/1000 to 8000 Although any value of 1 to 2 ³⁰ (numerator) and any value of 1 to 2 ³⁰ (denominator) can be used,resulting value should be within the range shown above.
	Auto tuning		Identifies the load inertia real-time and automatically sets up the gain that meets the stiffness setting when the motor is running with upper and internal operation commands.
	Notch filter		Available (5 filters available)
	Gain switching function		Available
	2-step torque filter		Available
	Position comparison output function		Available
	Protective function		Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current, encoder error, excess position deviation, EEPROM error etc.
	Alarm data trace back function		Tracing back of alarm data is available
	Deterioration diagnosis function		Available

Basic Specifications	Input power	100 V	Main circuit		Single phase 100 V $\overset{+10\%}{\underset{-15\%}{}}$ to 120 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz			
			Control circuit		Single phase 100 V $\overset{+10\%}{\underset{-15\%}{}}$ to 120 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz			
		200 V	Main circuit	A-frame to D-frame	Single/3-phase 200 V $\overset{+10\%}{\underset{-15\%}{}}$		to 240 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz	
				E-frame, F-frame	3-phase 200 V $\overset{+10\%}{\underset{-15\%}{}}$		to 240 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz	
			Control circuit	A-frame to D-frame	Single phase 200 V $\overset{+10\%}{\underset{-15\%}{}}$		to 240 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz	
				E-frame, F-frame	Single phase 200 V $\overset{+10\%}{\underset{-15\%}{}}$		to 240 V $\overset{+10\%}{\underset{-15\%}{}}$ 50 Hz / 60 Hz	
	Environment	temperature		Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation*1)				
		humidity		Both operating and storage : 20 %RH to 85 %RH (free from condensation*1)				
		Altitude		Lower than 1000 m				
		Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz				
	Control method			IGBT PWM Sinusoidal wave drive				
	Encoder feedback			23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using it as an incremental system (not using multi-turn data), do not connect the battery for absolute encoder. Parameter Pr. 0.15 must be set to “1” (factory settings).				
	Interface connector	Control signal		Input	Each 8 input can be assigned by the parameter.			
				Output	Each 3 output can be assigned by the parameter.			
		Analog signal		Output	2 outputs for analog monitors 1 and 2			
		Pulse signal		Output	Line driver output for encoder pulses (A/B phase signal).			
	Communication	Realtime Express (RTEX)		Communication for transmission of a real-time operation command, the parameter setting, or the status monitoring.				
		USB		USB interface to connect to computers (setup support software PANATERM) for parameter setting or status monitoring.				
Front panel			(1) 7 segment LED (double digits) (2) Network status LED(LINK,COM) (3) Rotary switch for node address setting (4) Analog monitor output(Analog monitors 1 and 2)					
Regeneration			Size A and B: Without built-in regenerative resistor (use external resistor) Size C to F: Built-in regenerative resistor (External regenerative resistor is also available)					
Dynamic brake			A to F frame: built-in					
Control mode			(1) Semi-closed control Position control: Profile position control (PP), Cyclic position control (CP) Velocity control: Cyclic velocity control (CV) Torque control: Cyclic torque control (CT) • Switch PP/CP/CV/CT mode according to the RTEX communication command.					

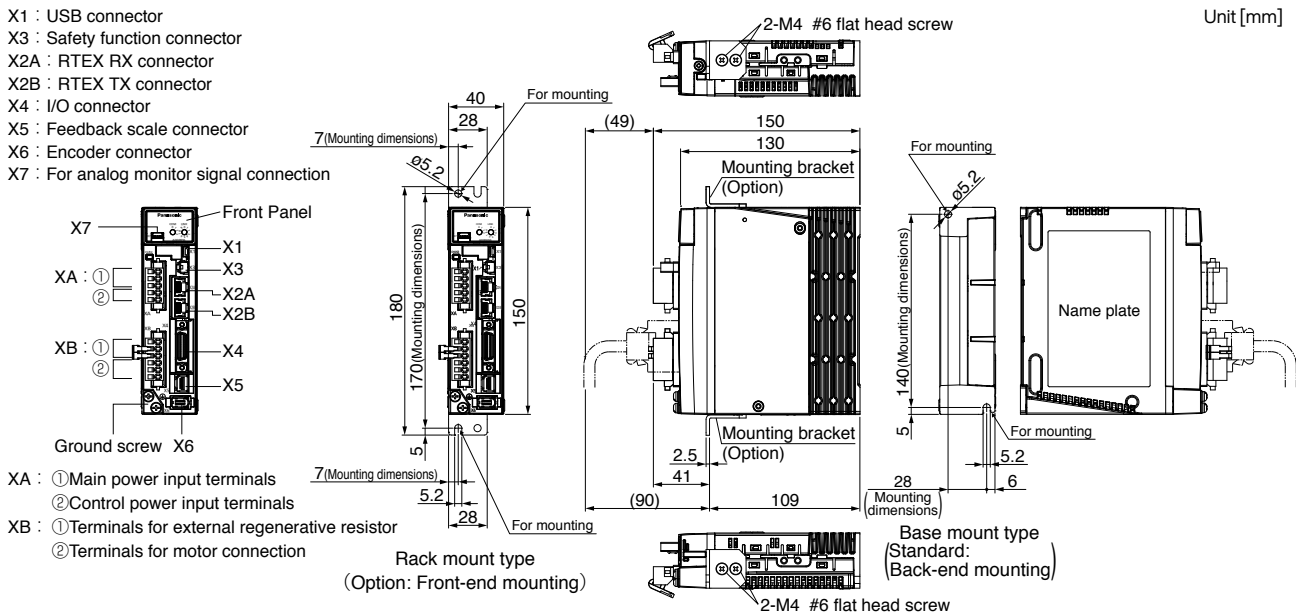
*1 Air containing water vapor will become saturated with water vapor as the temperature falls, causing dew.

Function	Position control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, Near home position , etc
		Control output		Positioning completion etc.
		Position command input	Input mode	Command type by RTEX command
			Smoothing filter	Either a primary delay filter or a FIR type filter can be selected against command input.
		Damping control		Available(Up to 3 frequency settings,out of 4 settings in total,can be used simultaneously.)
		Model type damping filter		Available(2 filter available used simultaneously)
		Feed forward function		Available (speed/torque)
		Load variation suppression control		Available
		Gain 3 switching function		Available
		Quadrant glitch inhibit function		Available
		Two-degree-of-freedom control mode		Available
		Motor operatable setup function		Available
		Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function
	Speed control	Control input		Positive direction drive inhibit input , Negative direction drive inhibit, Latch signal, etc
		Control output		At speed etc.
		Position command input	Input mode	Command type by RTEX command
			Soft start/slowdown function	0 s to 10 s / 1000 r/min Acceleration and deceleration can be set separately. S-curve acceleration/deceleration is also available.
		Feed forward function		Available (torque)
		Load variation suppression control		Available
		Two-degree-of-freedom control mode		Available (standard type)
		Other available functions		Friction torque compensation, Torque limit switching function, Torque saturation protection function, Single-turn absolute function, Continuous rotating absolute encoder function
	Torque control	Control input		Positive direction drive inhibit input, Negative direction drive inhibit, Latch signal, etc
		Control output		At speed etc.
		Position command input	Input mode	Command type by RTEX command
			Speed limit function	Speed limit value can be set by parameter. (Switched by RTEX command.)
		Other available functions		Single-turn absolute function Continuous rotating absolute encoder function
	Common	Electronic gear ratio setting		Applicable scaling ratio: 1/1000 to 8000 Although any value of 1 to 2 ³⁰ (numerator) and any value of 1 to 2 ³⁰ (denominator) can be used,resulting value should be within the range shown above.
		Auto tuning		Identifies the load inertia real-time and automatically sets up the gain that meets the stiffness setting when the motor is running with upper and internal operation commands.
		Notch filter		Available (5 filters available)
		Gain switching function		Available
		2-step torque filter		Available
		Position comparison output function		Available
		Protective function		Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current, encoder error, excess position deviation, EEPROM error etc.
		Alarm data trace back function		Tracing back of alarm data is available
		Deterioration diagnosis function		Available

* All dimensions shown in this catalog are for the A6NF series, but outer dimensions are the same as the A6NE series.

A-frame

- X1 : USB connector
X3 : Safety function connector
X2A : RTEX RX connector
X2B : RTEX TX connector
X4 : I/O connector
X5 : Feedback scale connector
X6 : Encoder connector
X7 : For analog monitor signal connection



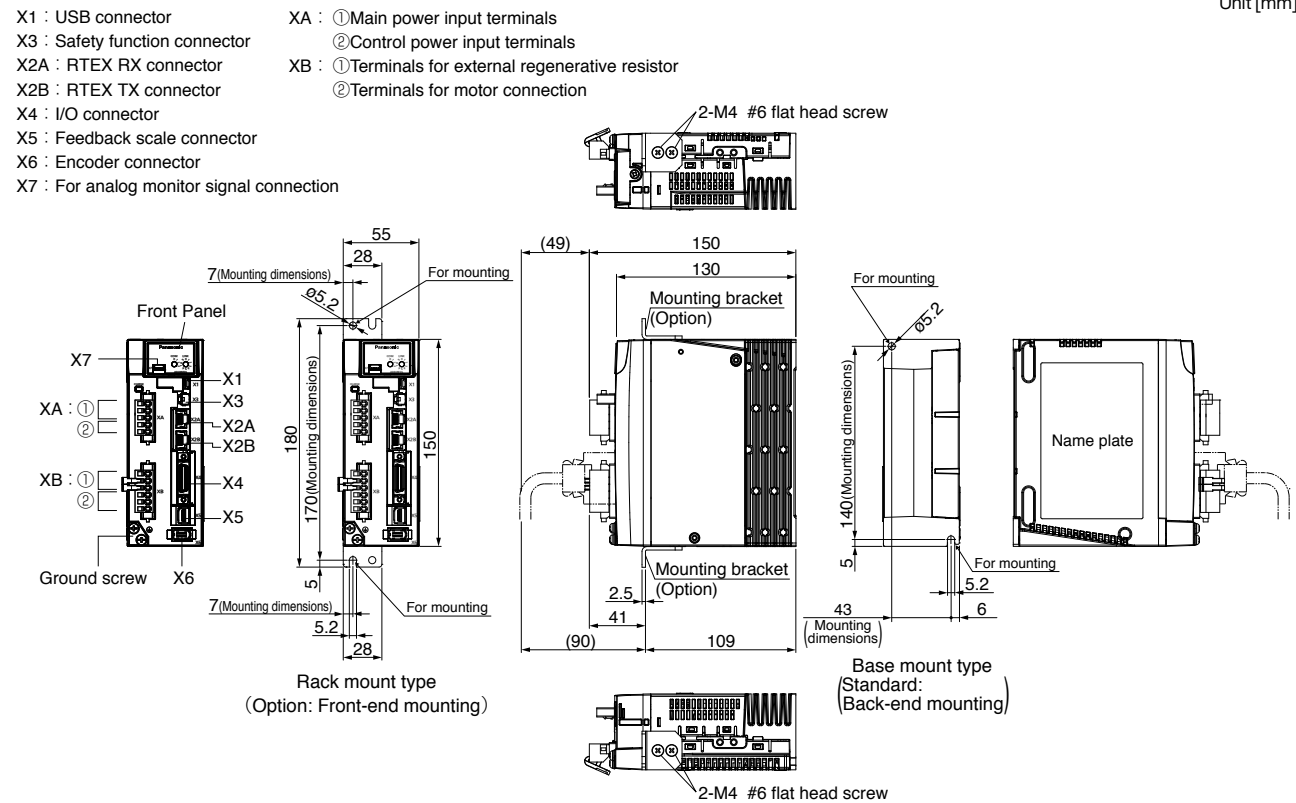
A-frame: Connector of driver side			Multifunction type	Basic type
Connector XA	S05B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	S06B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X1	UB-M5BR-S14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X3	CIF-HS08SS-071-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X2A	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X2B	MOD-WRJ88LY1G-TP+ (or equivalent)	HTK	●	●
Connector X4	DF02R026NA2 (or equivalent)	Japan Aviation Electronics Ind.	●	●
Connector X5	MUF-RS10SK-GKX-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X6	3E106-2230KV (or equivalent)	3M Japan	●	●
Connector X7	533984005 (5pin)	Molex	●	●

<Attached to the driver>

Connector of power and motor side		
Connector XA	05JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.
Connector XB	06JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.

B-frame

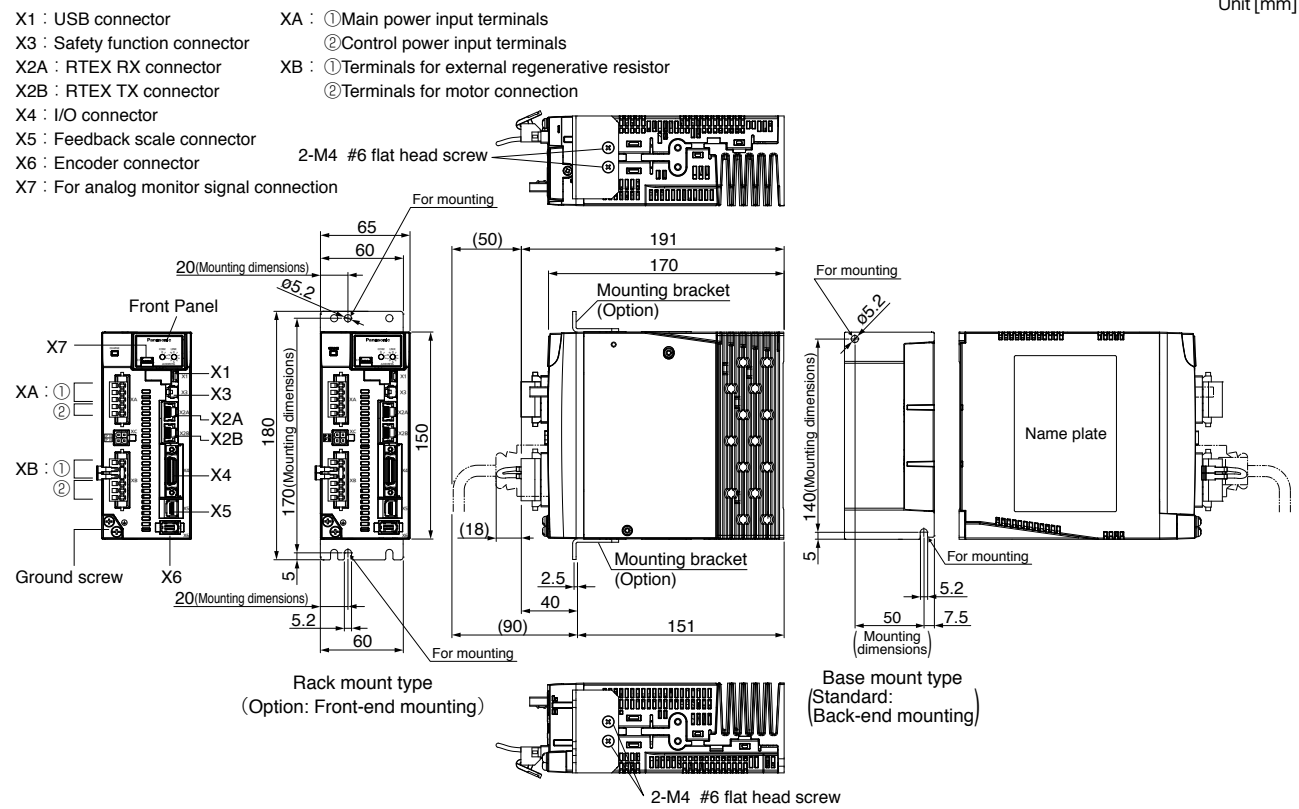
- X1 : USB connector
X3 : Safety function connector
X2A : RTEX RX connector
X2B : RTEX TX connector
X4 : I/O connector
X5 : Feedback scale connector
X6 : Encoder connector
X7 : For analog monitor signal connection
- XA : ①Main power input terminals
②Control power input terminals
XB : ①Terminals for external regenerative resistor
②Terminals for motor connection



* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

C-frame

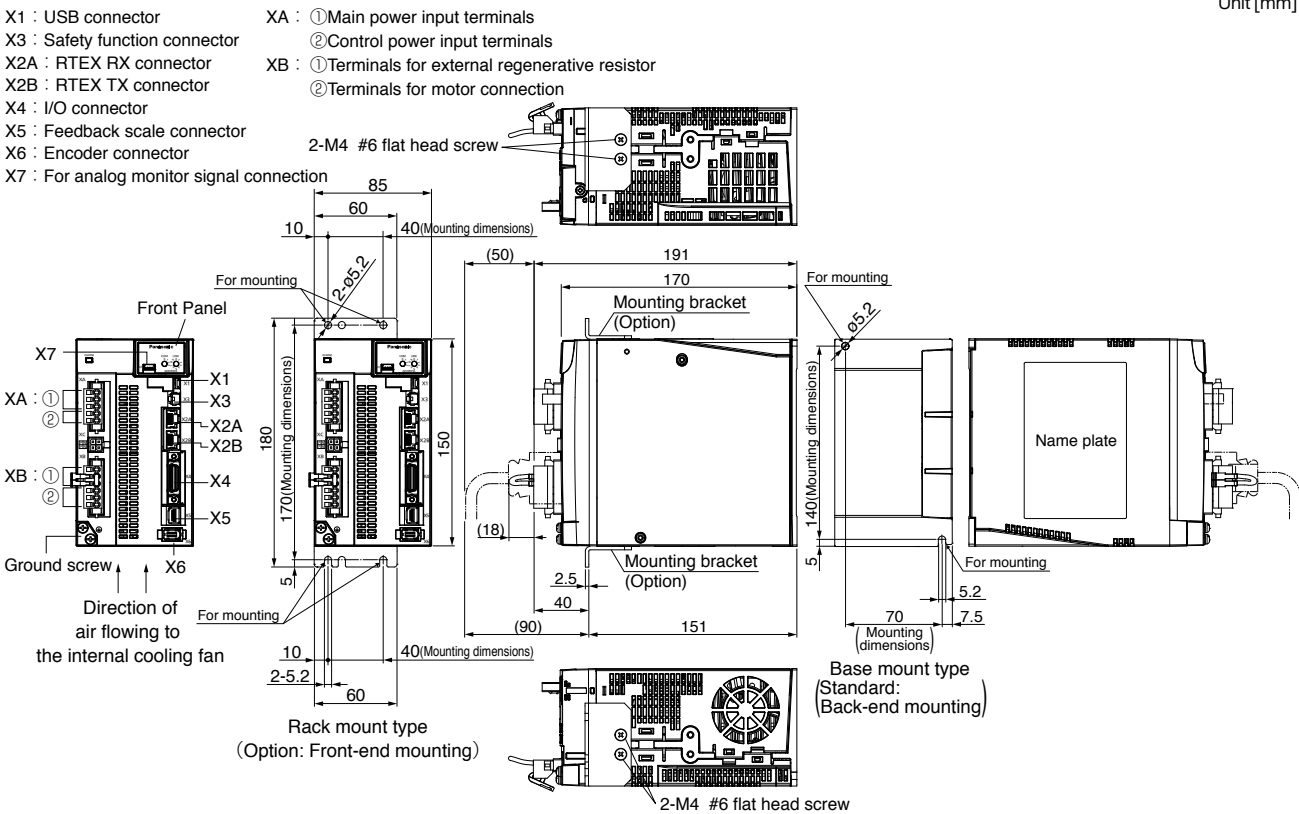
- X1 : USB connector
X3 : Safety function connector
X2A : RTEX RX connector
X2B : RTEX TX connector
X4 : I/O connector
X5 : Feedback scale connector
X6 : Encoder connector
X7 : For analog monitor signal connection
- XA : ①Main power input terminals
②Control power input terminals
XB : ①Terminals for external regenerative resistor
②Terminals for motor connection



* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

D-frame (200 V)

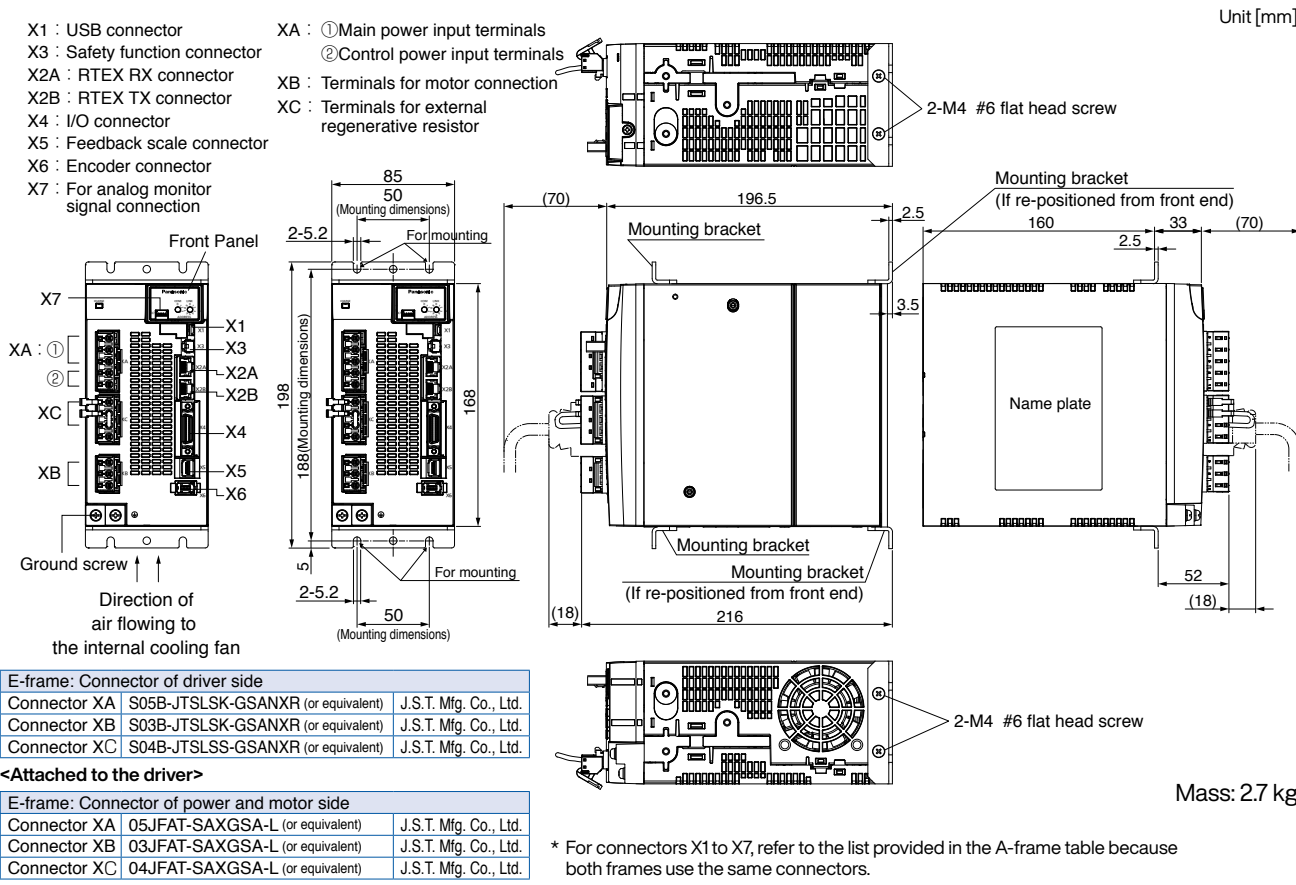
- X1 : USB connector
X3 : Safety function connector
X2A : RTEX RX connector
X2B : RTEX TX connector
X4 : I/O connector
X5 : Feedback scale connector
X6 : Encoder connector
X7 : For analog monitor signal connection
- XA : ①Main power input terminals
②Control power input terminals
XB : ①Terminals for external regenerative resistor
②Terminals for motor connection



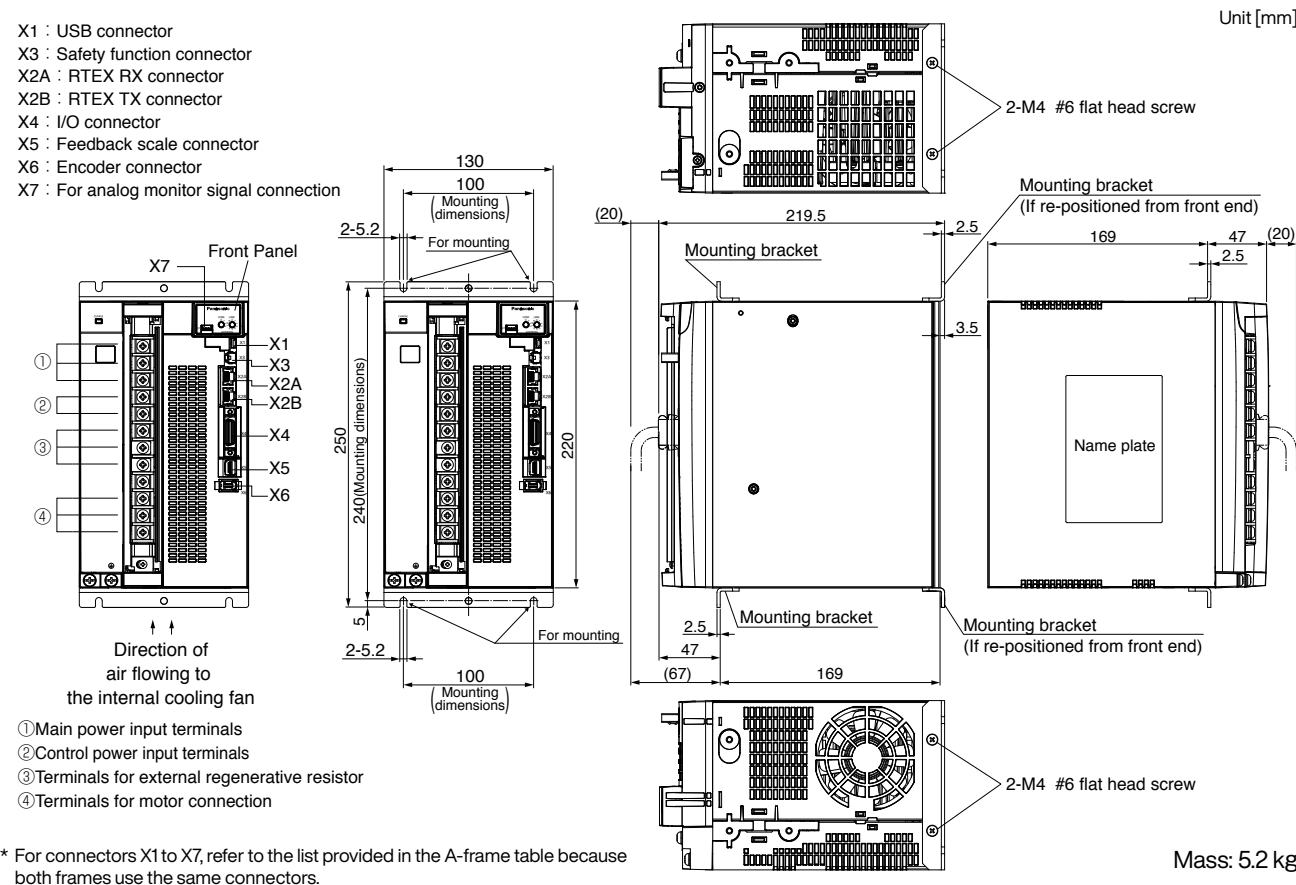
* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

* All dimensions shown in this catalog are for the A6NF series, but outer dimensions are the same as the A6NE series.

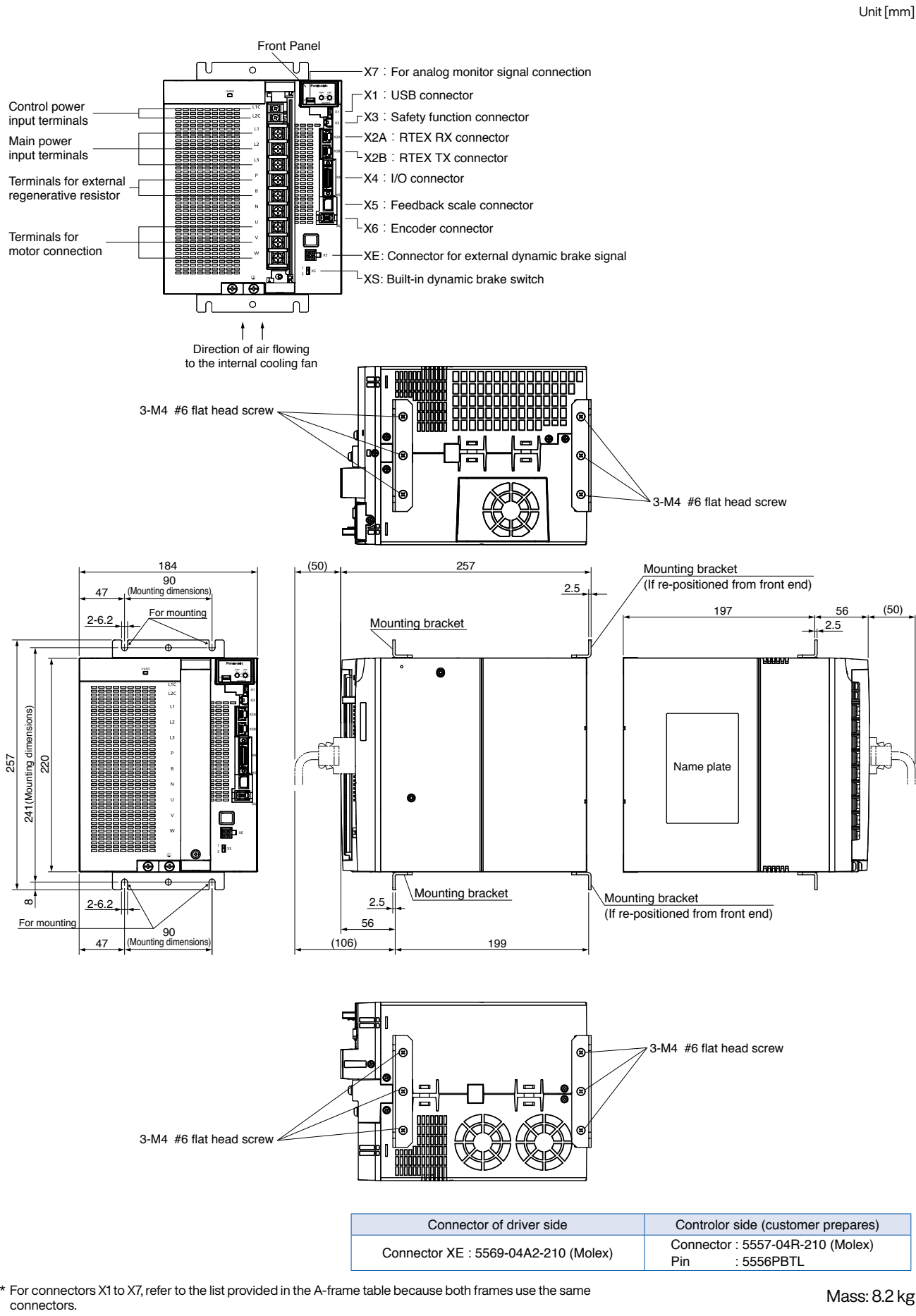
E-frame (200 V)



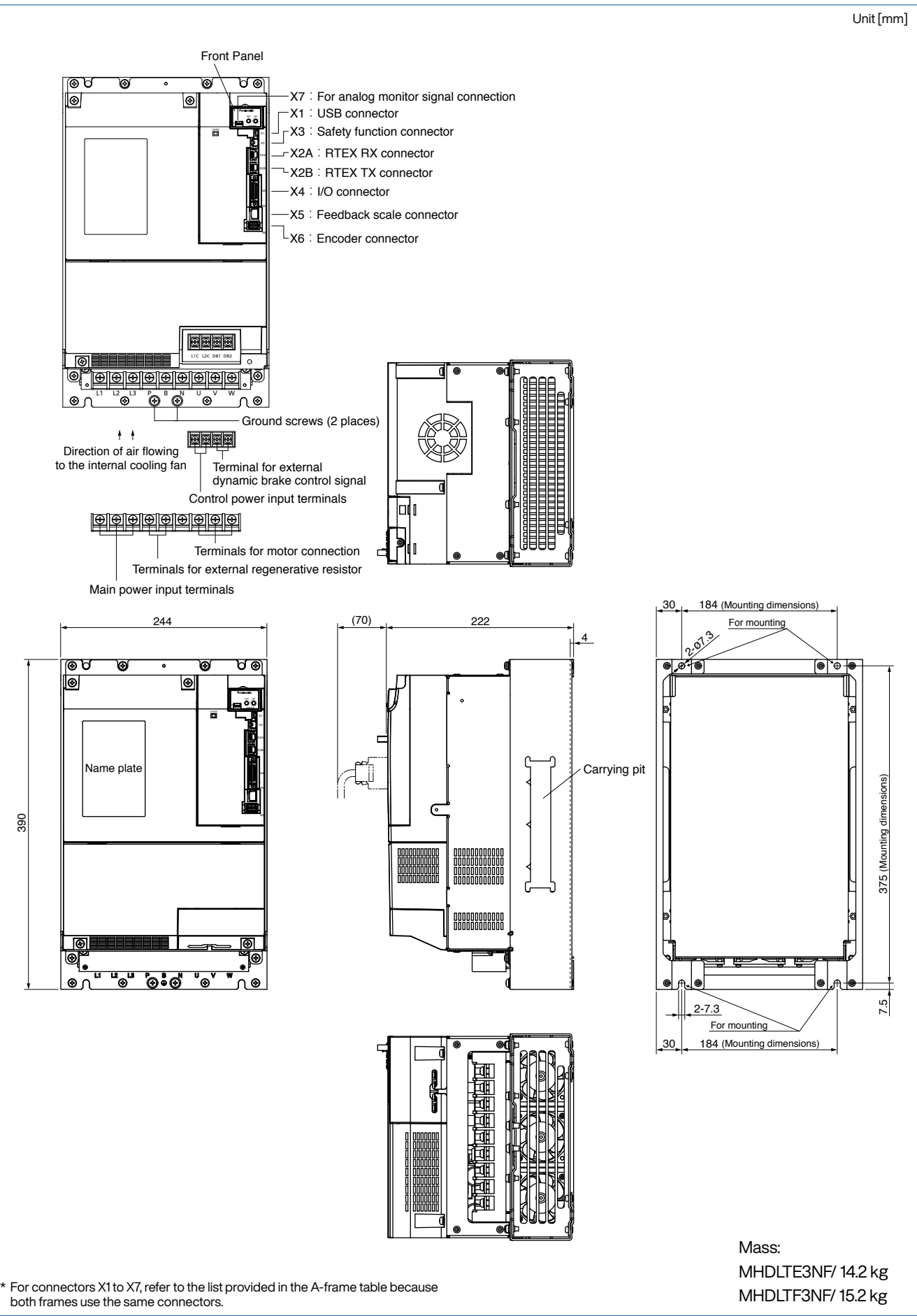
F-frame (200 V)



G-frame (200 V) (A6NE series are not available.)



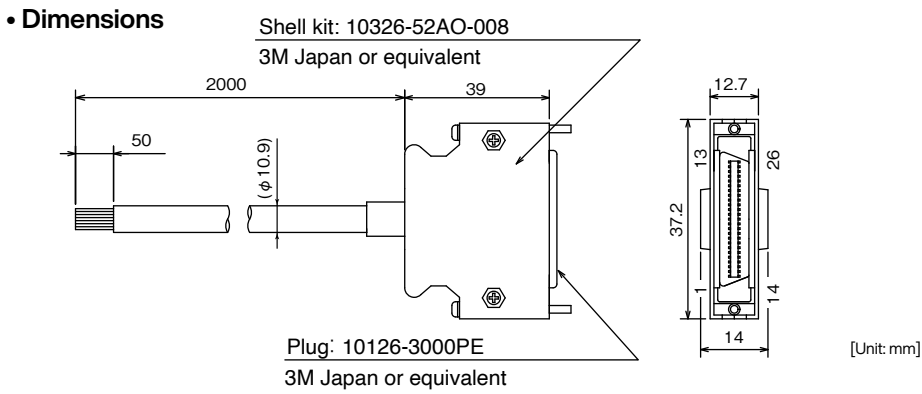
H-frame (200 V) (A6NE series are not available.)



Refer to P.29 to P.42 for other options than the interface cable and interface connector kit.

Cable for Interface

Part No.	DV0P0800	Cable length 2 m, core wire AWG 26 is connected.
----------	----------	--



• Table for wiring

Pin No.	Signal name	color	Pin No.	Signal name	color	Pin No.	Signal name	color
1*	BRK-OFF+	Orange (Red1)	10*	HOME	Pink (Black1)	19	OB-/OCMP2-	Pink (Red2)
2*	BRK-OFF-	Orange (Black1)	11*	EXT2	Orange (Red2)	20	OB+/OCMP2+	Pink (Black2)
3*	ALM+	Gray (Red1)	12*	EXT3	Orange (Black2)	21	OCMP3+	Orange (Red3)
4*	ALM-	Gray (Black1)	13*	SI-MON4	Gray (Red2)	22	OCMP3-	Gray (Red3)
5*	SI-MON5	White (Red1)	14	BTP-I	Gray (Black2)	23	-	Gray (Black3)
6	I-COM	White (Black1)	15	BTN-I	White (Red2)	24	-	White (Red3)
7*	POT	Yellow (Red1)	16	GND	White (Black2)	25*	EX-OUT1+	White (Black3)
8*	NOT	Yellow (Black1)	17	OA+/OCMP1+	Yellow (Red2)	26*	EX-OUT1-	Orange (Black3)
9*	SI-MON1	Pink (Red1)	18	OA-/OCMP1-	Yellow (Black2)			

The signals allocated to the pin No. with " * " in the table are factory default.

<Remarks>
Color designation of the cable e.g.) Pin-1 Cable color : Orange (Red1) : One red dot on the cable

<Caution>
The shield of this cable is not connected to the terminal of the connector.
The shielded wire of the cable is connected to the connector shell of the cable, and is connected to the FG via the connector shell on the Driver side. When connecting the shielded wire of the cable to GND, use the connector kit DV0P0770 for the interface. At that time, please note that if you connect the shield and the connector shell on the cable side and process it, FG and GND will be connected.

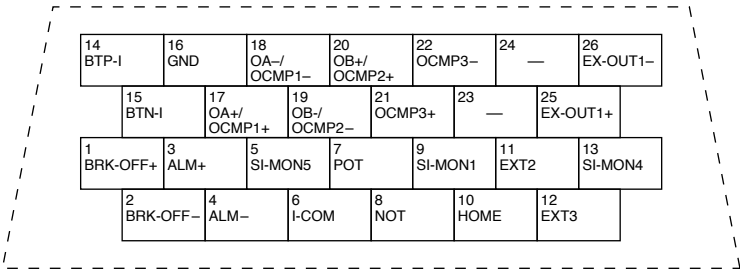
Connector Kit for Interface

Part No.	DV0P0770
----------	----------

• Components

Title	Part No.	Number	Manufacturer	Note
Connector	10126-3000PE	1	3M Japan (or equivalent)	For CN X4 (26-pins)
Connector cover	10326-52AO-008	1		

• Pin disposition: Connector X4 (26 pins) (viewed from the soldering side)



<Remarks>

- Check the stamped pin-No. on the connector body while making a wiring.
- For the symbols representing the signal names or the functions of the signals in the figure above, refer to the operation manual.

Servo driver with EtherCAT open network

EtherCAT®

EtherCAT
AC servo motor & driver

MINAS A6B Series **Special Order Product**



A6BE Series
A6BF Series

Quickly

Response frequency 3200 Hz & communication rate 100 Mbps enable fast and highly accurate operation.

Configurable even for motors with a maximum rotating speed 6500 r/min.*

* MHMF and MQMF types with a maximum wattage 400 W

Wisely

New algorithm “Two-degree-of-freedom control method” is used to improve machining accuracy and productivity.

Easily

Easy and speedy set-up with set-up support software “PANATERM”

● Fully-featured EtherCAT application (7 control modes, 32 origin-return modes, 2 synchronous modes, and an asynchronous mode.) ● Capable of system upgrade with various slaves. ● Capable of establishing PC-based systems without needing dedicated hardware. ● Planned to pass official EtherCAT Conformance Test. ● A6BF with safety I/F *2 corresponding to international standard, and A6BL/A6BM supporting linear motors *2 : IEC61800-5-2 STO, IEC61508 SIL3.

● The EtherCAT is a registered trademark of patented technology licensed from Beckhoff Automation GmbH in Germany.

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MINAS A6B Series

Model Designation **Special Order Product**

For more information, please visit our website or request to our distributors separately.

Servo Driver

M A D L N 1 5 B E * * * ————— **Special specifications**

① Frame symbol

Symbol	Frame	Symbol	Frame
MAD	A-Frame	MED	E-Frame
MBD	B-Frame	MFD	F-Frame
MCD	C-Frame	MGD	G-Frame
MDD	D-Frame	MHD	H-Frame

② Series

Symbol	Series name
L	A6 Family

③ Safety Function *1

Symbol	Specifications
N	without the safety function
T	with the safety function

④ Max. current rating

Symbol	Current rating	Symbol	Current rating
0	6 A	9	80 A
1	8 A	A	100 A
2	12 A	B	120 A
3	22 A	C	160 A
4	24 A	E	240 A
5	40 A	F	360 A
8	60 A		

⑤ Supply voltage specifications

Symbol	Specifications
1	Single phase 100 V
3	3-phase 200 V
5	Single/3-phase 200 V

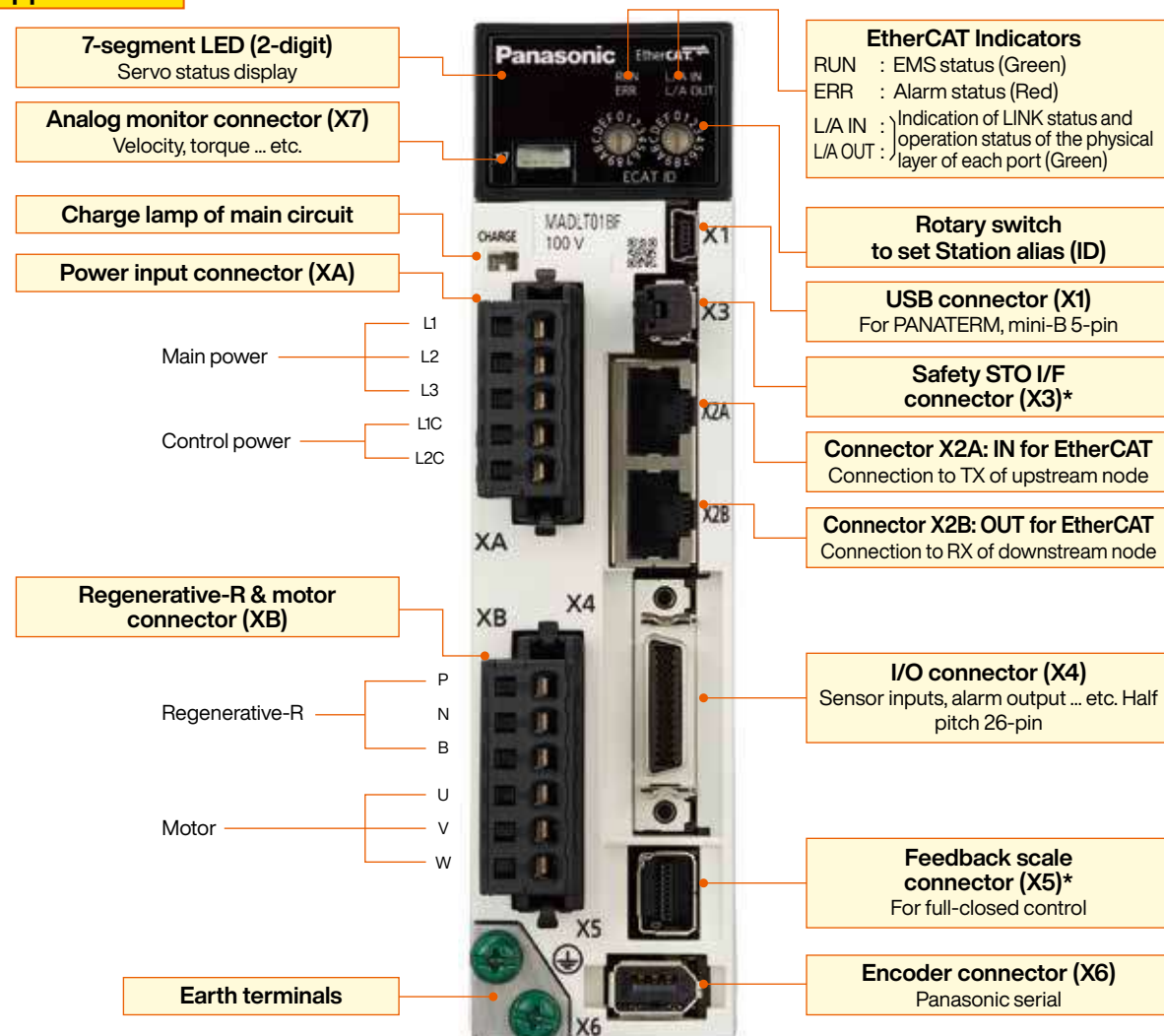
⑥ I/f specifications

Symbol (specification)	Symbol	Specification
B (EtherCAT)	E	Standard for rotary motor Special Order Product
	F	Multifunction for rotary motor Special Order Product
	L	Standard for linear/ DD motor Special Order Product
	M	Multifunction for linear/ DD motor Special Order Product

⑦ Classification of type *1

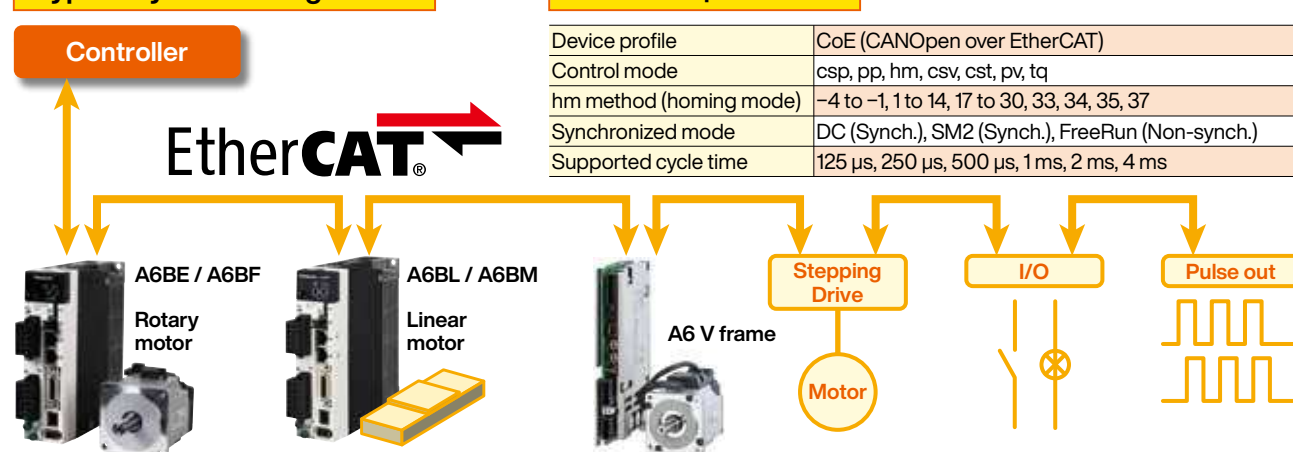
*1 Standard type (with a part number ending in E or L) has no safety function.
Multi-function type (with a part number ending in F or M) has a safety function.

Appearance



* The photo is A6BF series. There are no X3 and X5 connectors in the A6BE series.

Typical system configuration



EtherCAT specification

Device profile	CoE (CANOpen over EtherCAT)
Control mode	csp, pp, hm, csv, cst, pv, tq
hm method (homing mode)	-4 to -1, 1 to 14, 17 to 30, 33, 34, 35, 37
Synchronized mode	DC (Synch.), SM2 (Synch.), FreeRun (Non-synch.)
Supported cycle time	125 μ s, 250 μ s, 500 μ s, 1 ms, 2 ms, 4 ms

Applicable motor

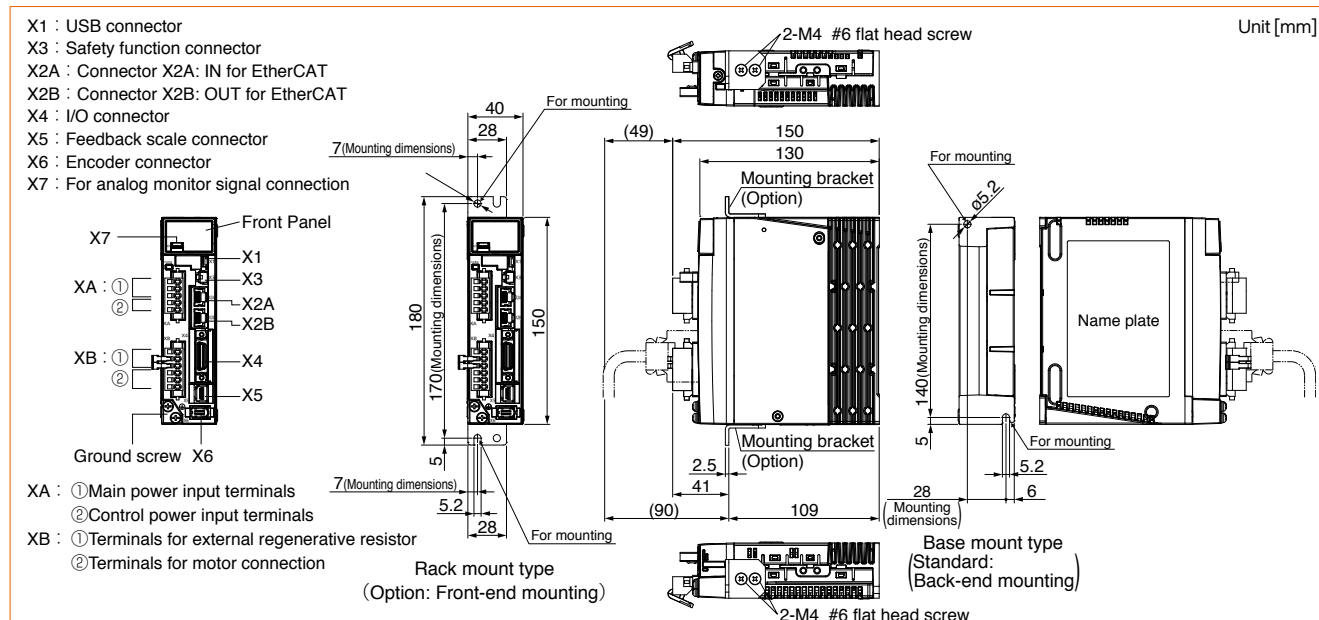
Please refer to P.29 to P.42 of the A6 series.

Applicable option

Interface cable	DV0P0800
Interface connector kit	DV0P0770
Options other than interface cables and interface connectors	Please refer to P.29 to P.42 of the A6 series.

* Refer to P.368 of the A6N series for the "parallel I/O connector (X4)" option. The "signal names" and "pin assignments" for the parallel I/O connector (X4) option "interface cable" and "interface connector kit" are different from those described on P.368. For details, please refer to the specifications of the A6B series.

A-frame



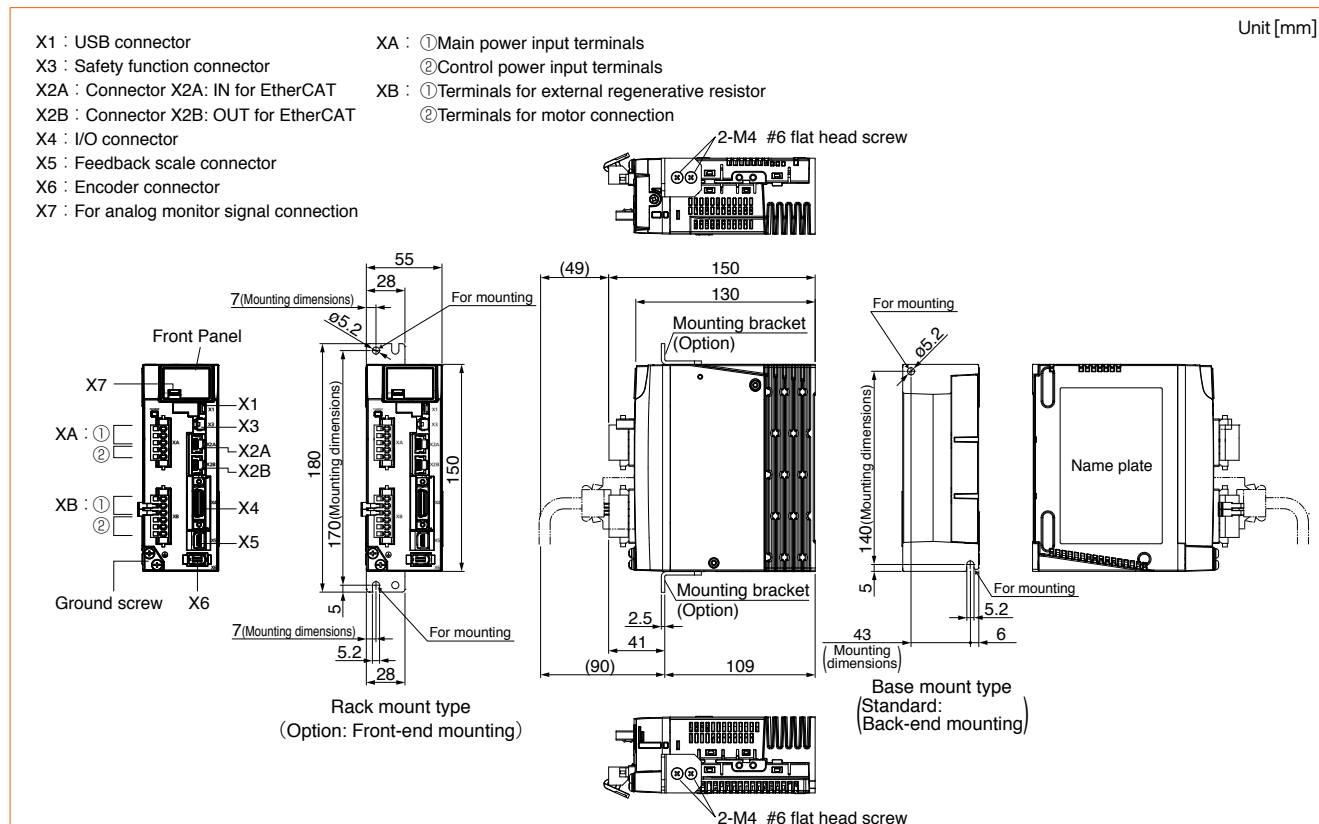
A-frame: Connector of driver side			Multifunction type	Basic type
Connector XA	S05B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector XB	S06B-F32SK-GGXR (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X1	UB-M5BR-S14-4S (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	●
Connector X3	C1F-HS08S-S071-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	—
Connector X2A	MOD-WRJ88LY1G-GP+ (or equivalent)	HTK	●	●
Connector X2B	MOD-WRJ88LY1G-GP+ (or equivalent)	HTK	●	●
Connector X4	DF02R026NA2 (or equivalent)	Japan Aviation Electronics Ind.	●	●
Connector X5	MUF-RS10SK-GKX-TB (or equivalent)	J.S.T. Mfg. Co., Ltd.	●	—
Connector X6	3E106-2230KV (or equivalent)	3M Japan	●	●
Connector X7	533984005 (Spin)	Molex	●	●

Mass: 0.8 kg

<Attached to the driver>

Connector of power and motor side		
Connector XA	05JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.
Connector XB	06JFAT-SAXGGKK-A	J.S.T. Mfg. Co., Ltd.

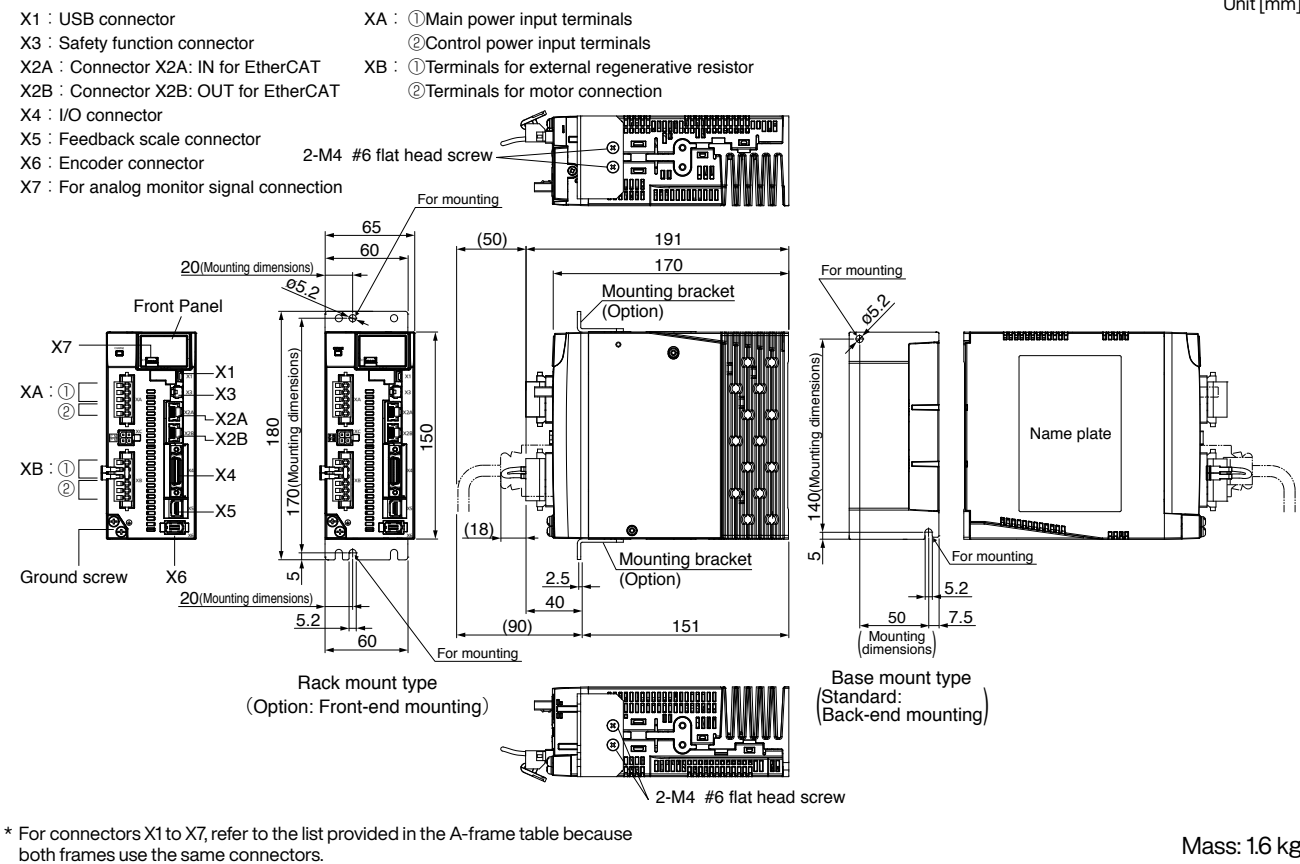
B-frame



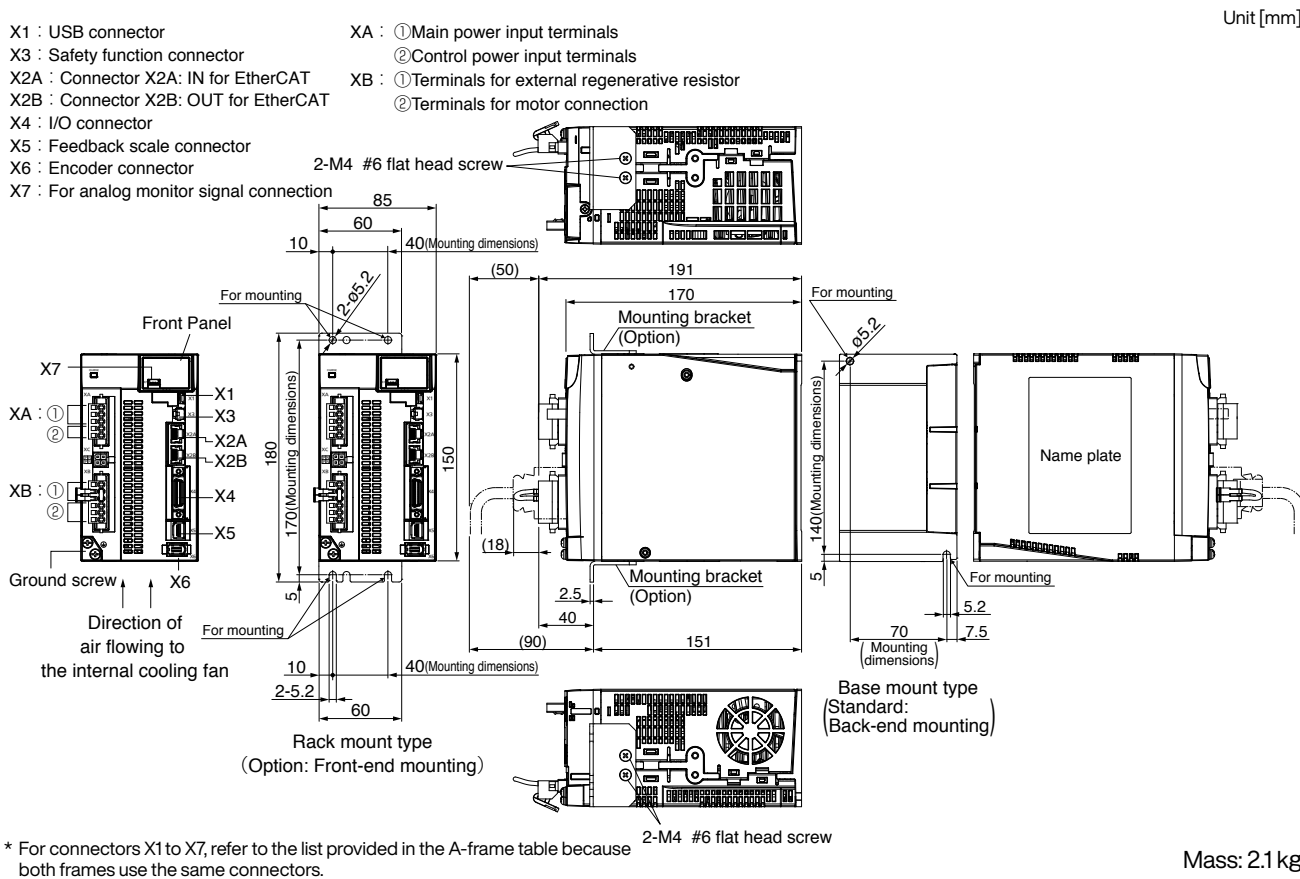
* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 1.0 kg

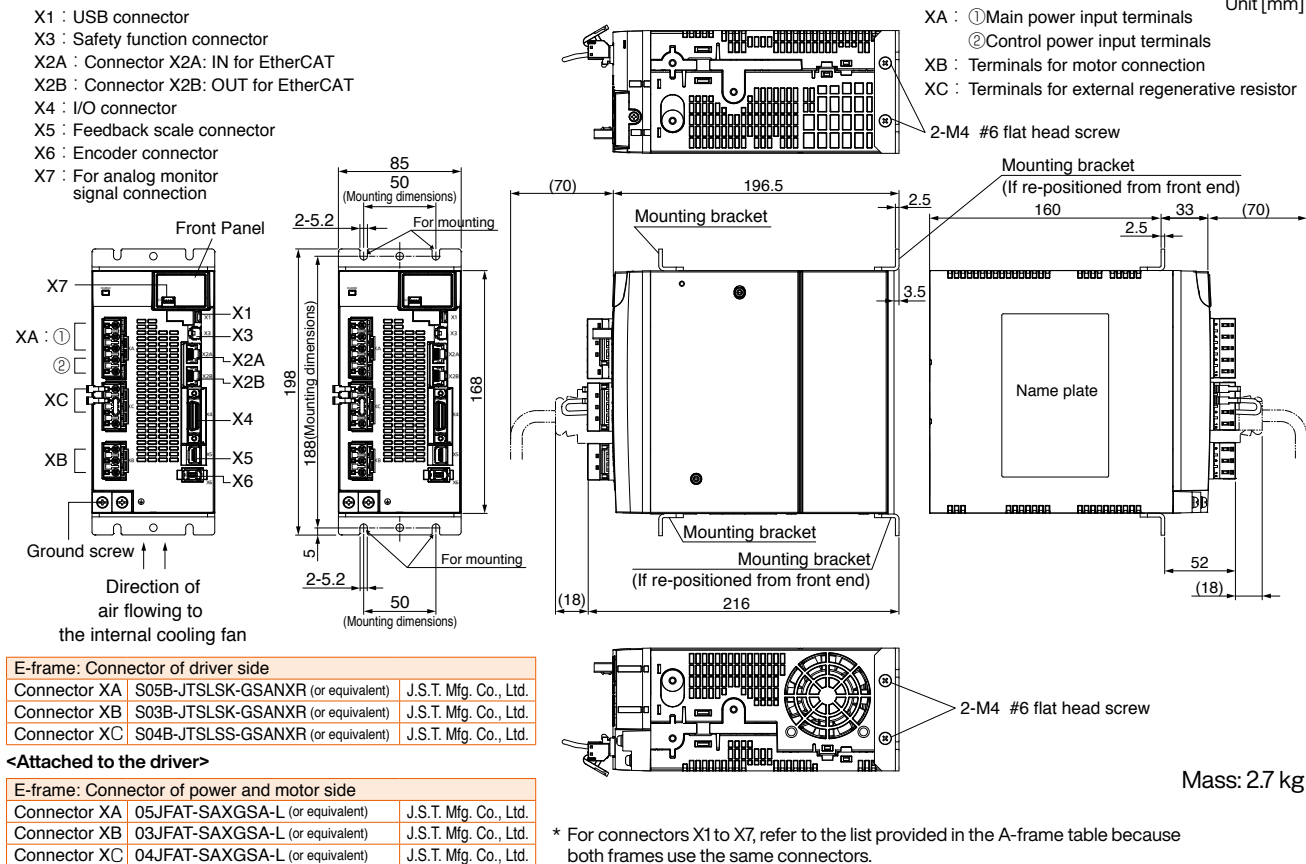
C-frame



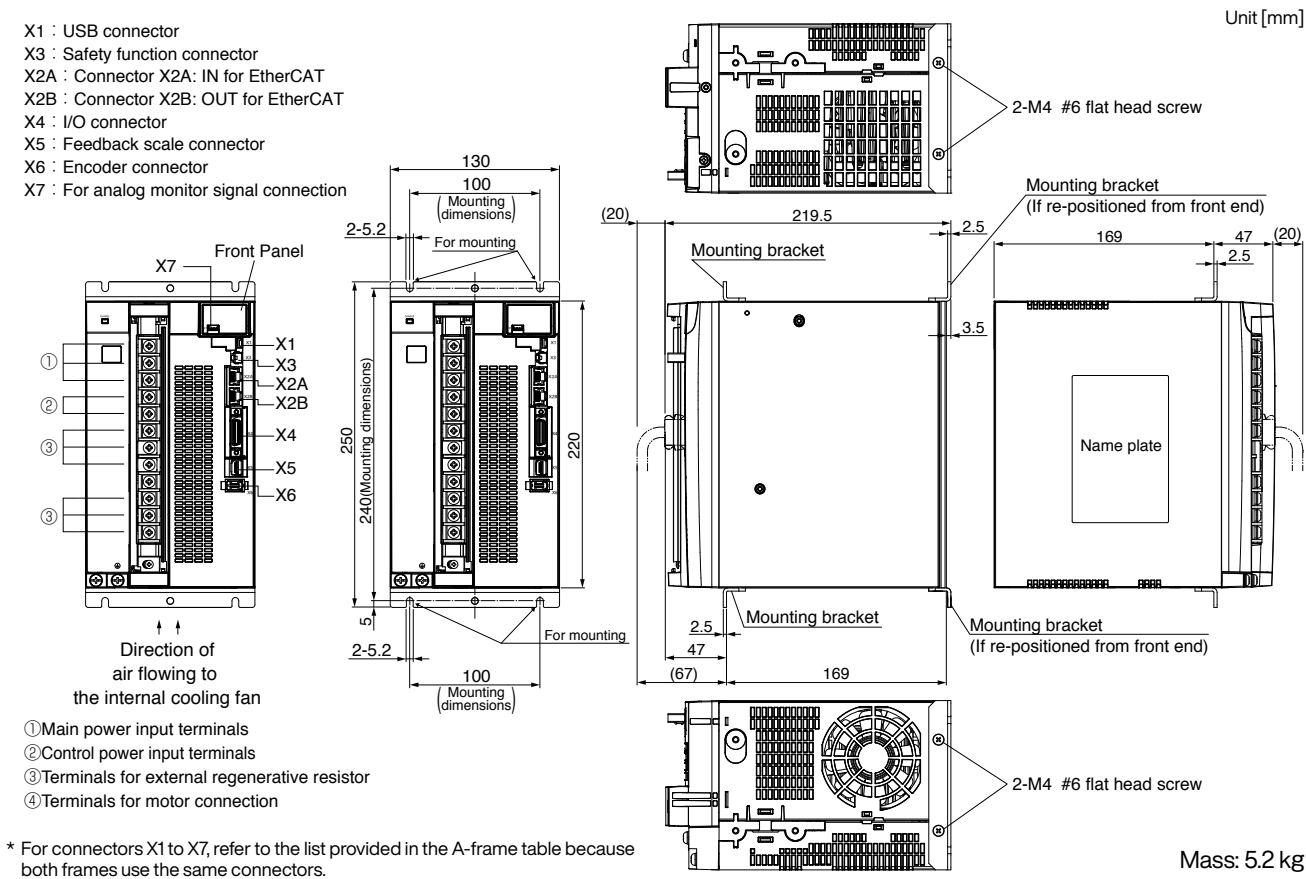
D-frame (200 V)



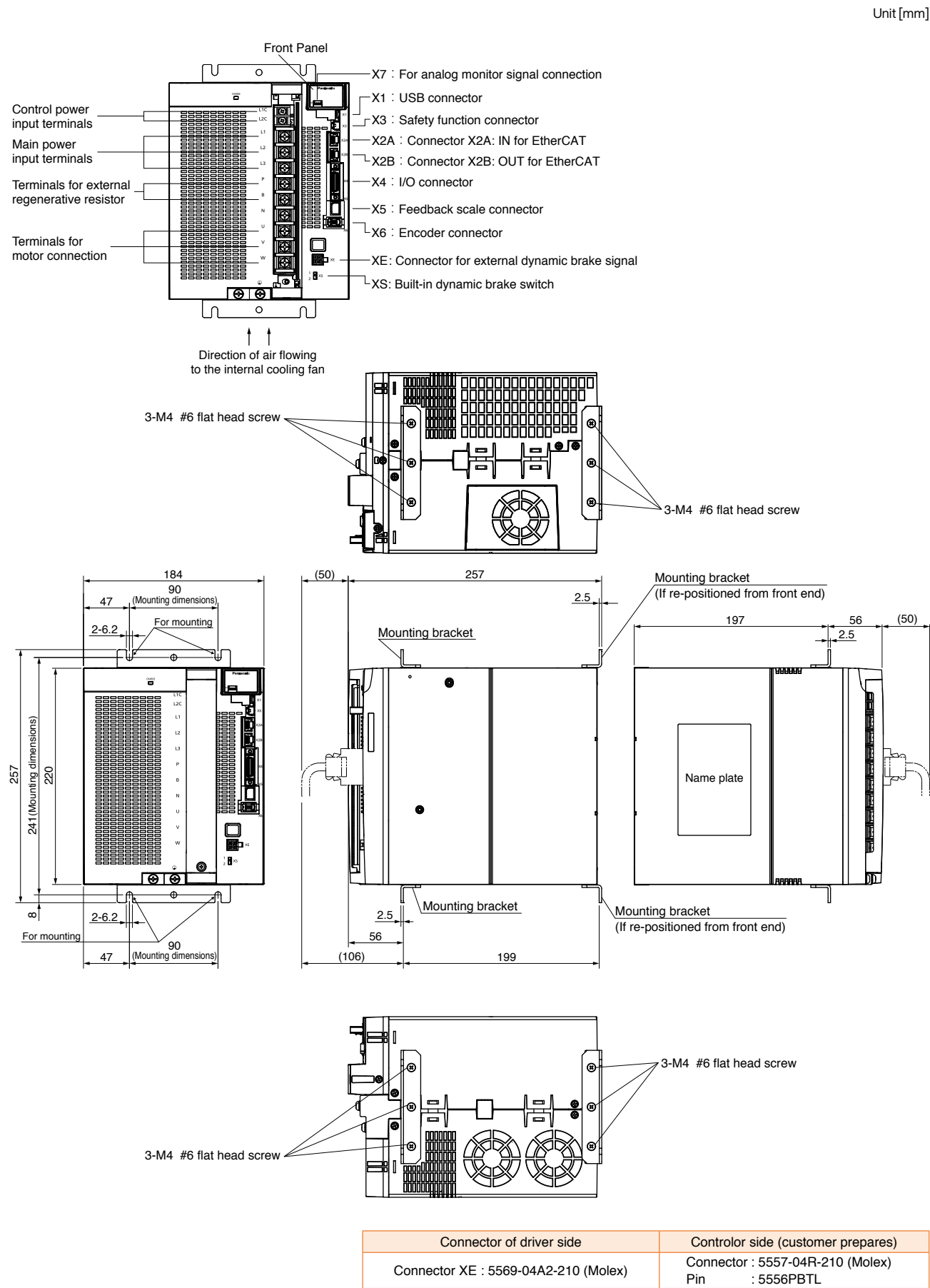
E-frame (200 V)



F-frame (200 V)



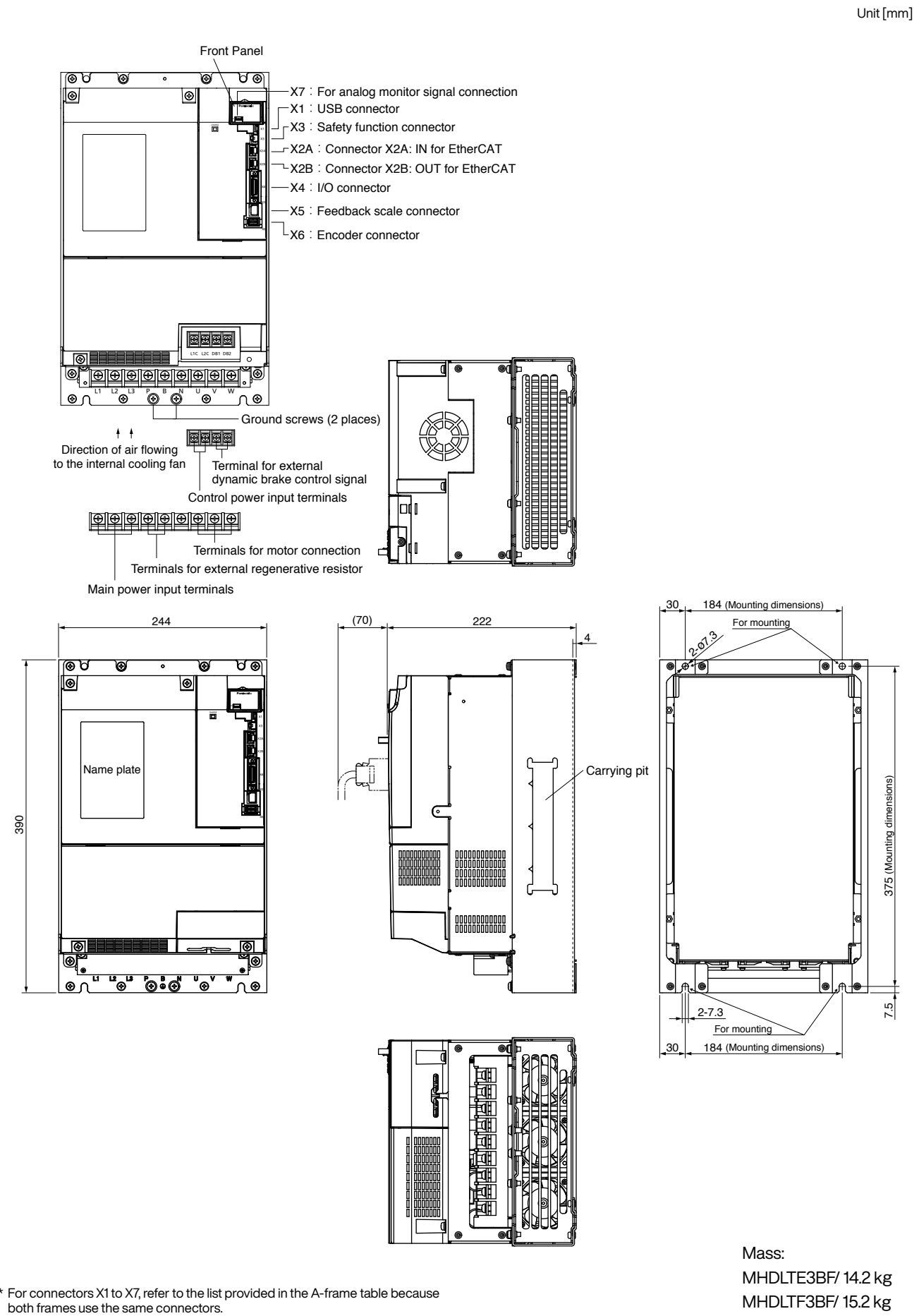
G-frame (200 V) (A6BE series are not available.)



* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

Mass: 8.2 kg

H-frame (200 V) (A6BE series are not available.)



* For connectors X1 to X7, refer to the list provided in the A-frame table because both frames use the same connectors.

MEMO

Information

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A6 Series

A6N Series

A6B Series
Special Order Product

Information

EU Directives/ UK Regulation

The EU Directives/ UK Regulation apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products.
However, our AC servos meet the relevant EU Directives for EU Low Voltage Directives/UK Low Voltage Regulation Equipment so that the machine or equipment comprising our AC servos can meet EU Directives.

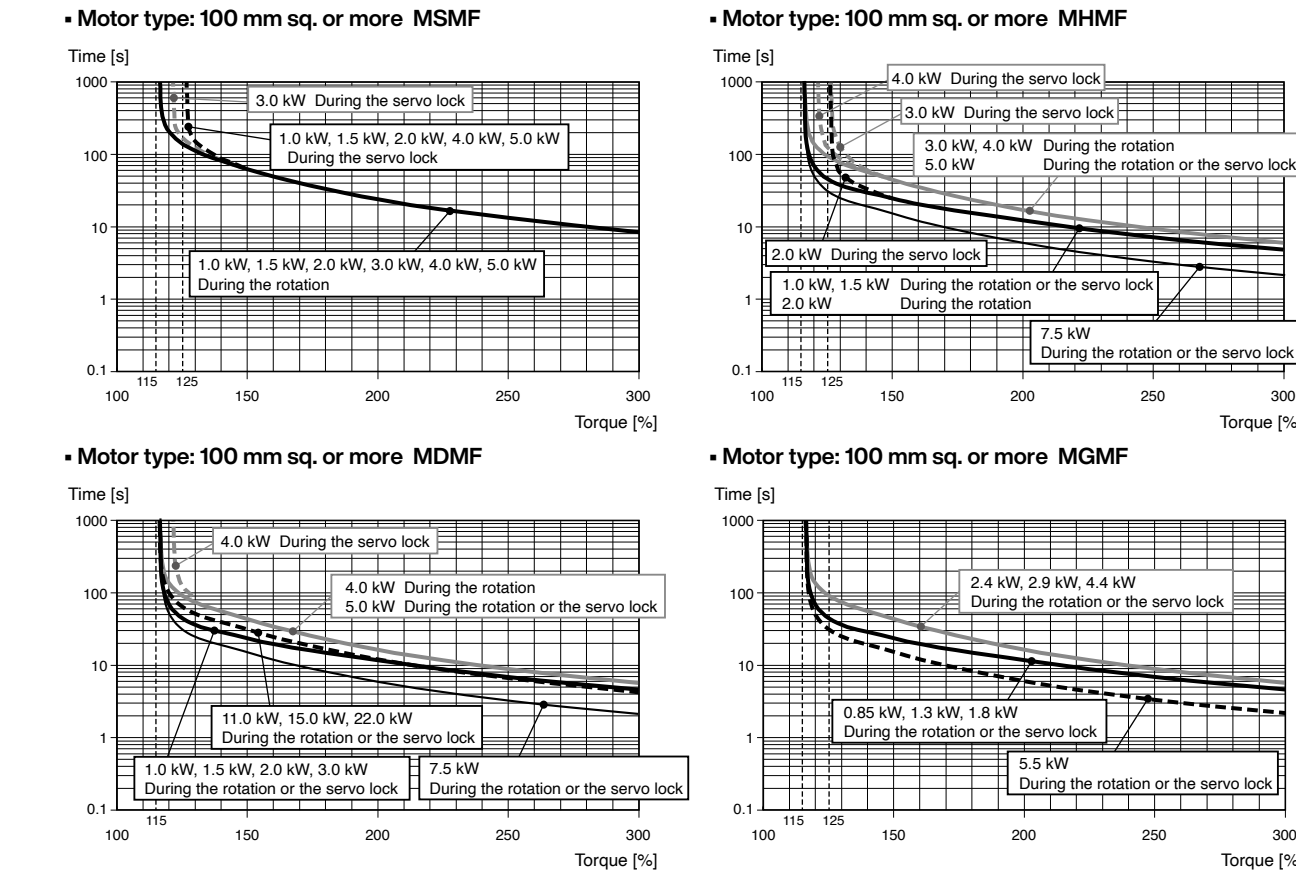
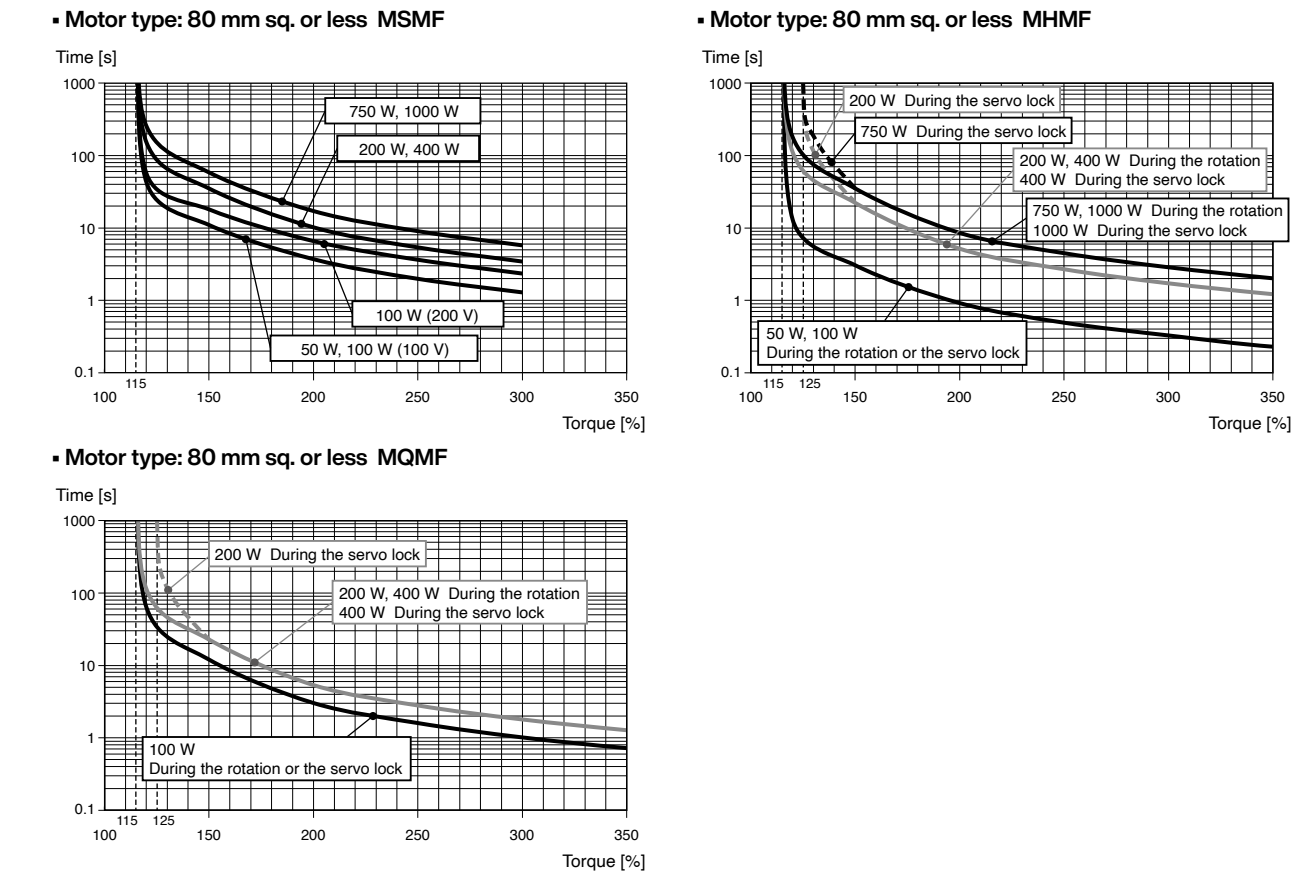
EU EMC Directives/UK EMC Regulation

MINAS Servo System conforms to relevant standard under EU EMC Directives/UK EMC Regulation setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EU EMC Directives/UK EMC Regulation, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

Conformity to UL Standards

- Observe the following conditions of (1) and (2) to make the system conform to UL61800-5-1 (E164620).
- (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1.
(e.g. Install in the control box with IP54 enclosure.)
 - (2) Make sure to install a circuit breaker or fuse which are UL recognized (Listed  marked) between the power supply and the noise filter.
For rated current of circuit breaker and fuse, refer to P.27 “Driver and List of Applicable Peripheral Devices”.
Use a copper cable with temperature rating of 75 °C or higher.
- (3) Over-load protection level
Over-load protective function will be activated when the effective current exceeds 115 % or more than the rated current based on the time characteristics (see the graph). Confirm that the effective current of the driver does not exceed the rated current.
Set up the peak permissible current with Pr0.13 (Setup of 1st torque limit) and Pr5.22 (Setup 2nd torque limit).

Overload protection time characteristics



Conformed Standards

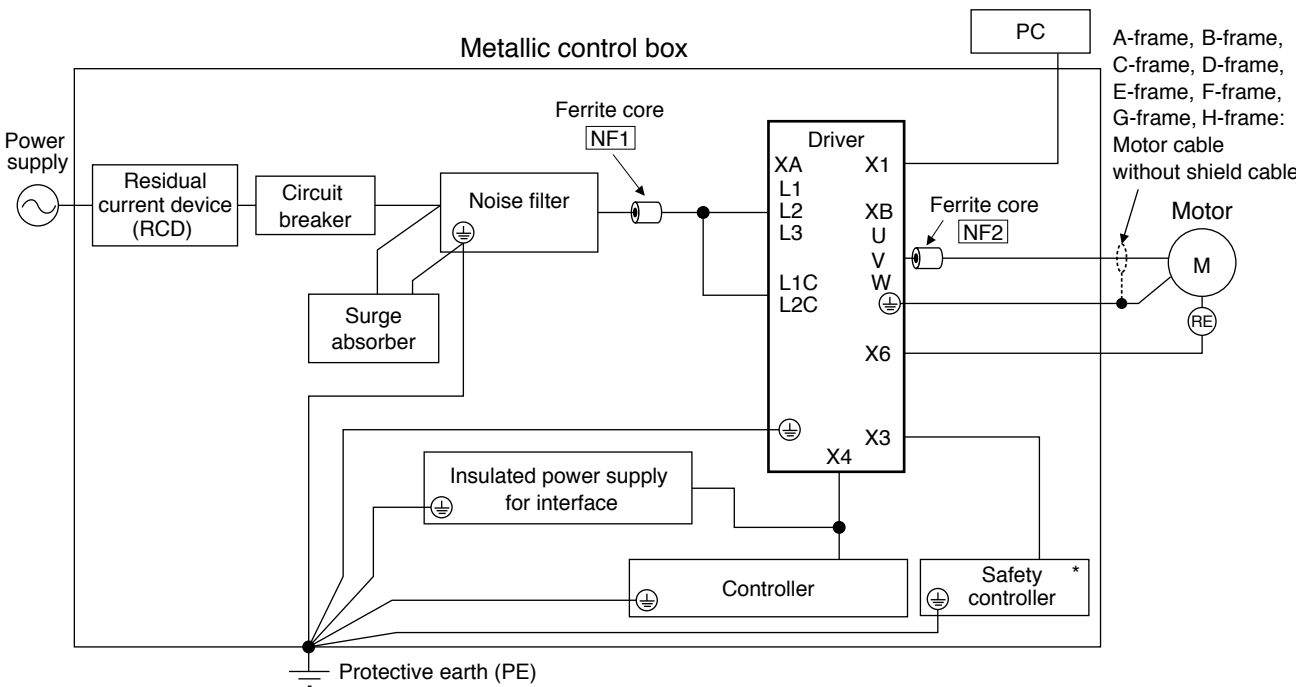
		Driver	Motor
EU/UK Standards	EU EMC Directives/ UK EMC Regulation	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3	—
	EU Low Voltage Directives/ UK Low Voltage Regulation	EN61800-5-1	EN60034-1 EN60034-5
	Machinery (Functional safety *1)	EN ISO13849-1(Ple, Cat.3) EN61508(SIL3) EN IEC62061(maximum SIL 3) EN61800-5-2(SIL3, STO)	—
UL Standards		UL61800-5-1 (E164620)	UL1004-1, UL1004-6 (E327868)
CSA Standards		C22.2 No.274	C22.2 No.100
Radio Waves Act (South Korea) (KC) *2		KN11 KN61000-4-2,3,4,5,6,8,11	—

- IEC : International Electrotechnical Commission
EN : Europaischen Normen
EMC : Electromagnetic Compatibility
UL : Underwriters Laboratories
CSA : Canadian Standards Association
- When export this product, follow statutory provisions of the destination country.
- *1 A6SE, A6SG, A6NE, A6BE series doesn't correspond to the functional safety standard.
- *2 Information related to the Korea Radio Law
This servo driver is a Class A commercial broadcasting radio wave generator not designed for home use. The user and dealer should be aware of this fact.

A 급 기기 (업무용 방송통신기자재)
이 기기는 업무용(A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
(대상기종 : Servo Driver)

Installation Environment

Use the servo driver in the environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



For [NF1] to [NF2], refer to the Table “Ferrite core” (P384).
* A6SE, A6SG, A6NE, A6BE is not provided with X3 terminal.

<Caution>
Use options correctly after reading Operating Instructions of the options to better understand the precautions.
Take care not to apply excessive stress to each optional part.

Power Supply

100 V type (A-frame to C-frame)	Single phase, 100 V	+10 % -15 %	to	120 V	+10 % -15 %	50 Hz/60 Hz
200 V type (A-frame to D-frame)	Single/3-phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz
200 V type (E-frame to H-frame)	3-phase, 200 V	+10 % -15 %	to	240 V	+10 % -15 %	50 Hz/60 Hz

- (1) This product is designed to be used in over-voltage category (installation category) III of EN 61800-5-1:2007.
(2) Use an insulated power supply of DC12 V to 24 V which has CE marking or complies with EN60950.

Circuit Breaker

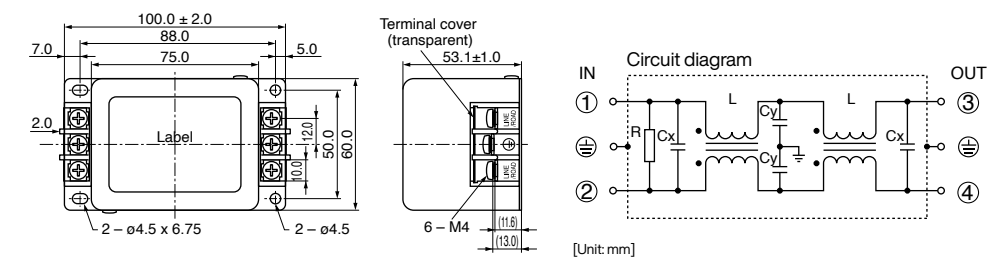
Install a circuit breaker which complies with IEC Standards and UL recognized (Listed and marked) between power supply and noise filter.
The short-circuit protection circuit on the product is not for protection of branch circuit.
The branch circuit should be protected in accordance with NEC and the applicable local regulations in your area.

Noise Filter

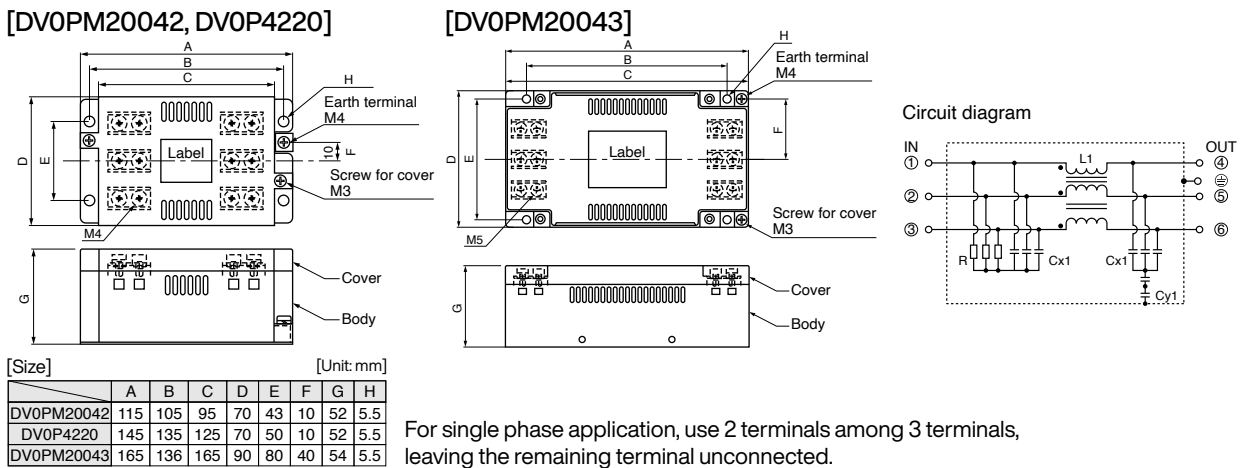
When you install one noise filter at the power supply for multi-axes application, contact the manufacturer of the noise filter. If noise margin is required, connect 2 filters in series to emphasize effectiveness.

Options

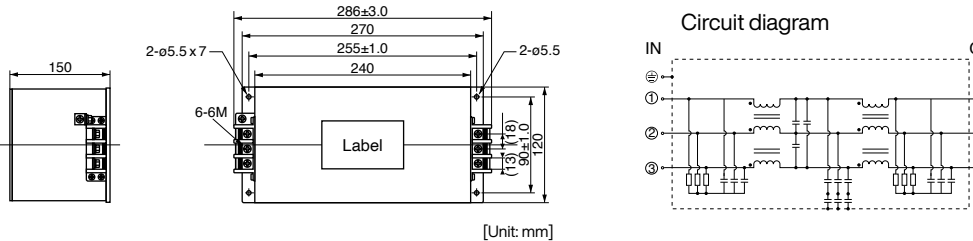
Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P4170	Single phase 100 V, 200 V	SUP-EK5-ER-6	A-frame and B-frame	Okaya Electric Ind.



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0PM20042	3-phase 200 V	3SUP-HU10-ER-6	A-frame and B-frame	Okaya Electric Ind.
DV0P4220	Single phase 100 V, 200 V		C-frame	
DV0PM20043	3-phase 200 V	3SUP-HU30-ER-6	D-frame	
	3-phase 200 V		E-frame	



Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P3410	3-phase 200 V	3SUP-HL50-ER-6B	F-frame	Okaya Electric Ind.



<Remarks>
• Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
• For detailed specification of the filter, contact the manufacturer.

AC Servo Motor Capacity Selection Software

We have prepared PC software “M-SELECT” for AC servo motor capacity selection. Consult our sales representative or authorized distributor.

Three-step selection

1. Select components and specified values

Select appropriate mechanical parameter items and fill them with parameter values derived from the real machine. To simulate the target machine as practical as possible, use maximum number of parameters available.



2. Enter operation pattern

Input the planned operation pattern that will contain [speed and rotation standard] or [absolute position standard] with optional settings such as S-acceleration/deceleration.



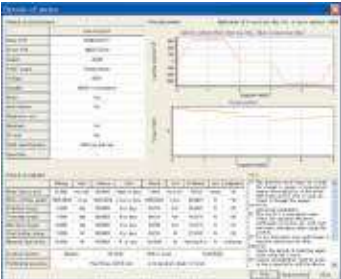
3. Select the motor

When the data required in step 1 and 2 above have been input, the software lists the motors, which will be appropriate to use with your machine. Select the motor that is best suitable for your machine application.



Details of motor

Once the motor is selected, specifications of the motor and driver, and details of reason for determination are displayed and may be printed out.



Option Selection Software for AC Servo Motor

We have prepared PC software to enable fast, easy, and correct option selection, a complicated job without the software.

Two procedures for option selection

1. Selection according to driver series and motor type

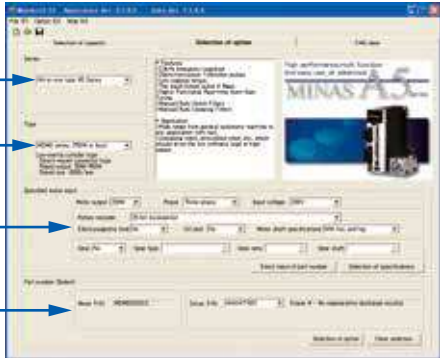
Suitable option can be selected by selecting driver series, motor type and motor specification through pulldown menu.

Driver series

Motor type

Motor specification

Model number input area



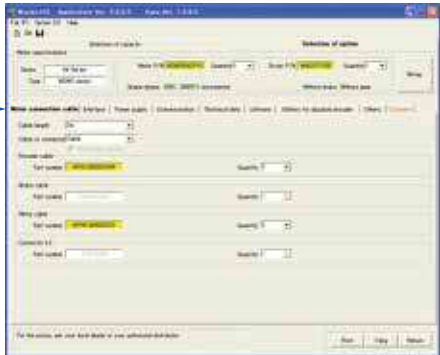
2. Entry of model number

If you know the model number based on the servo motor and driver currently used, enter the model number.

Result of selection

Tab sheet specific to each of option model numbers is used for easier identification of the desired option.

Tab



* When you are using the motor capacity selection software, simply press [Option Selection] tab and the screen as shown right will appear.

Please download from our web site and use after install to the PC.
<https://industrial.panasonic.com/ww/products/motors-compressors/fa-motors/ac-servo-motors/minas-a5-panaterm>

Organization of the System of Units

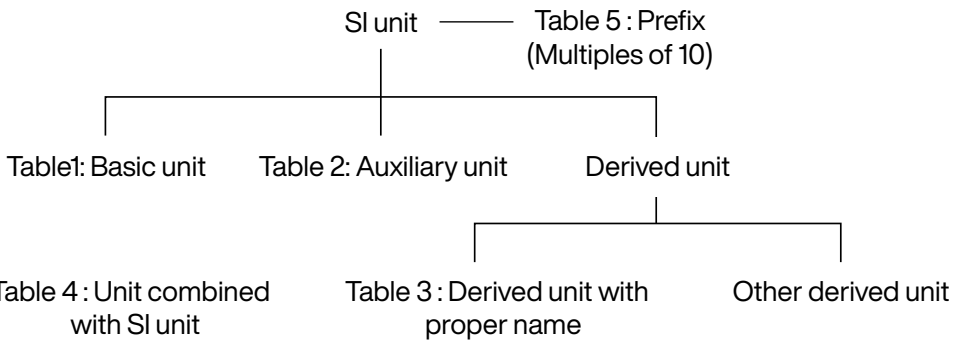


Table1: Basic unit

Quantity	Name of unit	Symbol of unit
Length	meter	m
Weight	kilogram	kg
Time	second	s
Current	ampere	A
Thermodynamic temperature	kelvin	K
Amount of substance	mol	mol
Luminous intensity	candela	cd

Table 2: Auxiliary unit

Quantity	Name of unit	Symbol of unit
Plane angle	radian	rad
Solid angle	steradian	sr

Table 3: Major derived unit with proper name

Quantity	Name	Symbol of unit	Derivation from basic unit, auxiliary unit or other derived unit
Frequency	hertz	Hz	1 Hz = 1 s ⁻¹
Force	newton	N	1 N = 1 kg·m/s ²
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m ²
Energy, Work, Amount of heat	joule	J	1 J = 1 N·m
Amount of work, Work efficiency, Power, Electric power	watt	W	1 W = 1 J/s
Electric charge, Amount of electricity	coulomb	C	1 C = 1 A·s
Electric potential, Potential difference, Voltage, Electromotive force	volt	V	1 V = 1 J/C
Electrostatic capacity, Capacitance	farad	F	1 F = 1 C/V
Electric resistance	ohm	Ω	1 Ω = 1 V/A
Electric conductance	siemens	S	1 S = 1 Ω ⁻¹
Magnetic flux	weber	Wb	1 Wb = 1 V·s
Magnetic flux density, Magnetic induction	tesla	T	1 T = 1 Wb/m ²
Inductance	henry	H	1 H = 1 Wb/A
Degree centigrade (Celsius)	degree centigrade (Celsius) / degree	°C	t °C = (t+273.15) K
Luminous flux	lumen	lm	1 lm = 1 cd·sr
Illuminance	lux	lx	1 lx = 1 lm/m ²

Table 4: Unit combined with SI unit

Quantity	Name	Symbol of unit
Time	minute	min
	hour	h
	day	d
Plane angle	degree	°
	minute	'
	second	"
Volume	liter	l, L
Weight	ton	t

Table 5: Prefix

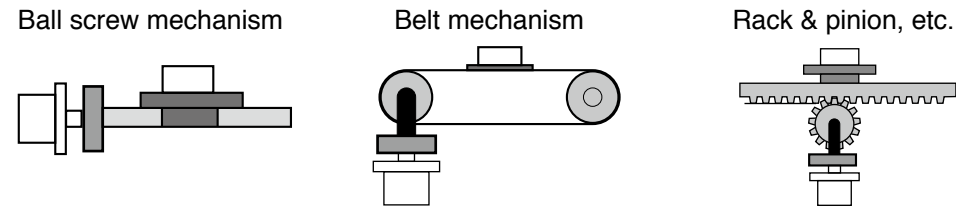
Multiples powered to unit	Prefix	
	Name	Symbol
10 ¹⁸	exa	E
10 ¹⁵	peta	P
10 ¹²	tera	T
10 ⁹	giga	G
10 ⁶	mega	M
10 ³	kilo	k
10 ²	hecto	h
10	deca	da
10 ⁻¹	deci	d
10 ⁻²	centi	c
10 ⁻³	milli	m
10 ⁻⁶	micro	μ
10 ⁻⁹	nano	n
10 ⁻¹²	pico	p
10 ⁻¹⁵	femto	f
10 ⁻¹⁸	atto	a

Quantity	Symbol of conventional unit	Symbol of SI unit and compatible unit	Conversion value
Length	μ (micron)	μm	1 μ = 1 μm (micrometer)
Acceleration	Gal	m/s ²	1 Gal = 10 ⁻² m/s ²
	G	m/s ²	1 G = 9.80665 m/s ²
Frequency	c/s, c	Hz	1 c/s = Hz
Revolving speed, Number of revolutions	rpm	s ⁻¹ or min ⁻¹ , r/min	1 rpm = 1 min ⁻¹
Weight	kgf	—	} Same value
Mass	—	kg	
Weight flow rate	kgf/s	—	} Same value
Mass flow rate	—	kg/s	
Specific weight	kgf/m ³	—	} Same value
Density	—	kg/m ³	
Specific volume	m ³ /kgf	m ³ /kg	Same value
Load	kgf	N	1 kgf = 9.80665 N
Force	kgf	N	1 kgf = 9.80665 N
	dyn	N	1 dyn = 10 ⁻⁵ N
Moment of force	kgf·m	N·m	1 kgf·m = 9.806 N·m
Pressure	kgf/cm ²	Pa, bar ⁽¹⁾ or kgf/cm ²	1 kgf/cm ² = 9.80665 × 10 ⁴ Pa = 0.980665 bar
	at (Engineering atmospheric pressure)	Pa	1 at = 9.80665 × 10 ⁴ Pa
	atm (Atmospheric pressure)	Pa	1 atm = 1.01325 × 10 ⁵ Pa
	mH ₂ O, mAq	Pa	1 mH ₂ O = 9.80665 × 10 ³ Pa
	mmHg	Pa or mmHg ⁽²⁾	1 mmHg = 133.322 Pa
	Torr	Pa	
Stress	kgf/mm ²	Pa or N/m ²	1 kgf/mm ² = 9.80665 × 10 ⁶ Pa = 9.80665 × 10 ⁶ N/m ²
	kgf/cm ²	Pa or N/m ²	1 kgf/cm ² = 9.80665 × 10 ⁴ Pa = 9.80665 × 10 ⁴ N/m ²
Elastic modulus	kgf/m ²	Pa or N/m ²	1 kgf/m ² = 9.80665 Pa = 9.80665 N/m ² 1 kgf/cm ² = 9.80665 × 10 ⁴ N/m ²
Energy, Work	kgf·m	J (joule)	1 kgf·m = 9.80665 J
	erg	J	1 erg = 10 ⁻⁷ J
Work efficiency, Power	kgf·m/s	W (watt)	1 kgf·m/s = 9.80665 W
	PS	W	1 PS = 0.7355 kW
Viscosity	PP	Pa·s	1 P = 0.1 Pa·s
Kinetic viscosity	St	mm ² /s	10 ⁻² St = 1 mm ² /s
Thermodynamic temperature	K	K (kelvin)	1 K = 1 K
Temperature interval	deg	K ⁽³⁾	1 deg = 1 K
Amount of heat	cal	J	1 cal = 4.18605 J
Heat capacity	cal/°C	J/K ⁽³⁾	1 cal/°C = 4.18605 J/K
Specific heat, Specific heat capacity	cal/ (kgf·°C)	cal/ (kgf·K) ⁽³⁾	1 cal/ (kgf·°C) = 4.18605 J/ (kg·K)
Entropy	cal/K	J/K	1 cal/K = 4.18605 J/K
Specific entropy	cal/ (kgf·K)	J/ (kg·K)	1 cal/ (kgf·K) = 4.18605 J/ (kg·K)
Internal energy (Enthalpy)	cal	J	1 cal = 4.18605 J
Specific internal energy (Specific enthalpy)	cal/kgf	J/kg	1 cal/kgf = 4.18605 J/kg
Heat flux	cal/h	W	1 kcal/h = 1.16279 W
Heat flux density	cal/ (h·m ²)	W/m ²	1 kcal/ (h·m ²) = 1.16279 W/m ²
Thermal conductivity	cal/ (h·m·°C)	W/ (m·K) ⁽³⁾	1 kcal/ (h·m·°C) = 1.16279 W/ (m·K)
Coefficient of thermal conductivity	cal/ (h·m ² ·°C)	W/ (m ² ·K) ⁽³⁾	1 kcal/ (h·m ² ·°C) = 1.16279 W/ (m ² ·K)
Intensity of magnetic field	Oe	A/m	1 Oe = 10 ³ / (4π) A/m
Magnetic flux	Mx	Wb (weber)	1 Mx = 10 ⁻⁸ Wb
Magnetic flux density	Gs, G	T (tesla)	1 Gs = 10 ⁻⁴ T

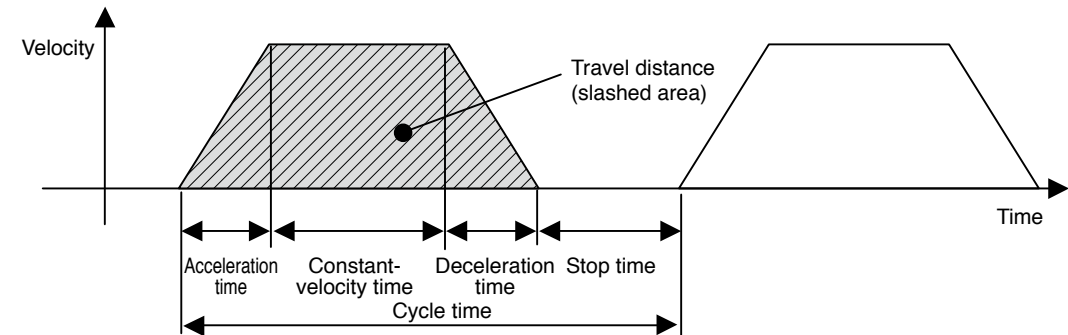
Note
(1) Applicable to liquid pressure. Also applicable to atmospheric pressure of meteorological data, when “bar” is used in international standard.
(2) Applicable to scale or indication of blood pressure manometers.
(3) “°C” can be substituted for “K”.

1. **Definition of mechanism to be driven by motor.**
Define details of individual mechanical components (ball screw length, lead and pulley diameters, etc.)

<Typical mechanism>



2. **Definition of operating pattern.**
Acceleration/deceleration time, Constant-velocity time, Stop time, Cycle time, Travel distance



Note) Selection of motor capacity significantly varies depending on the operating pattern.
The motor capacity can be reduced if the acceleration/deceleration time and stop time are set as long as possible.

3. **Calculation of load inertia and inertia ratio.**
Calculate load inertia for each mechanical component. (Refer to "General inertia calculation method" described later.)
Divide the calculated load inertia by the inertia of the selected motor to check the inertia ratio.
For calculation of the inertia ratio, note that the catalog value of the motor inertia is expressed as "× 10⁻⁴ kg·m²".

4. **Calculation of motor velocity**
Calculate the motor velocity from the moving distance, acceleration / deceleration time and constant-velocity time.

5. **Calculation of torque**
Calculate the required motor torque from the load inertia, acceleration/deceleration time and constant-velocity time.

6. **Calculation of motor**
Select a motor that meets the above 3 to 5 requirements.

Description on the Items Related to Motor Selection

1. Torque

(1) Peak torque

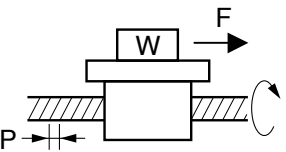
Indicate the maximum torque that the motor requires during operation (mainly in acceleration and deceleration steps). The reference value is 80% or less of the maximum motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

(2) Traveling torque, Stop holding torque

Indicates the torque that the motor requires for a long time. The reference value is 80% or less of the rated motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

Traveling torque calculation formula for each mechanism

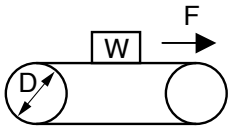
Ball screw mechanism



Traveling torque $T_f = \frac{P}{2\pi\eta} (\mu g W + F)$

W : Weight [kg] η : Mechanical efficiency
P : Lead [m] μ : Coefficient of friction
F : External force [N] g : Acceleration of gravity 9.8[m/s²]

Belt mechanism



Traveling torque $T_f = \frac{D}{2\pi\eta} (\mu g W + F)$

W : Weight [kg] η : Mechanical efficiency
P : Pulley diameter [m] μ : Coefficient of friction
F : External force [N] g : Acceleration of gravity 9.8[m/s²]

(3) Effective torque

Indicates a root-mean-square value of the total torque required for running and stopping the motor per unit time. The reference value is approx. 80% or less of the rated motor torque.

$$T_{rms} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$

T_a : Acceleration torque [N·m] t_a : Acceleration time [s] t_c : Cycle time [s]
T_f : Traveling torque [N·m] t_b : Constant-velocity time [s] (Run time + Stop time)
T_d : Deceleration torque [N·m] t_d : Deceleration time [s]

2. Motor velocity

Maximum velocity

Maximum velocity of motor in operation: The reference value is the rated velocity or lower value. When the motor runs at the maximum velocity, you must pay attention to the motor torque and temperature rise. For actual calculation of motor velocity, see "Example of motor selection" described later.

3. Inertia and inertia ratio

Inertia is like the force to retain the current moving condition.
Inertia ratio is calculated by dividing load inertia by rotor inertia.
Generally, for motors with 750 W or lower capacity, the inertia ratio should be "20" or less. For motors with 1000 W or higher capacity, the inertia ratio should be "10" or less.
If you need quicker response, a lower inertia ratio is required.
(For example, when the motor takes several seconds in acceleration step, the inertia ratio can be further increased.)

General inertia calculation method

Shape	J calculation formula	Shape	J calculation formula
Disk 	$J = \frac{1}{8} W D^2$ [kg·m ²] W : Weight [kg] D : Outer diameter [m]	Hollow cylinder 	$J = \frac{1}{8} W (D^2 + d^2)$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] d : Inner diameter [m]
Prism 	$J = \frac{1}{12} W (a^2 + b^2)$ [kg·m ²] W : Weight [kg] a, b, c : Side length [m]	Uniform rod 	$J = \frac{1}{48} W (3D^2 + 4L^2)$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] L : Length [m]
Straight rod 	$J = \frac{1}{3} W L^2$ [kg·m ²] W : Weight [kg] L : Length [m]	Separated rod 	$J = \frac{1}{8} W D^2 + W S^2$ [kg·m ²] W : Weight [kg] D : Outer diameter [m] S : Distance [m]
Reduction gear 	Inertia on shaft "a" $J = J_1 + \left(\frac{n_2}{n_1}\right)^2 J_2$ [kg·m ²] n ₁ : A rotational speed of a shaft [r/min] n ₂ : A rotational speed of b shaft [r/min]		
Conveyor 	$J = \frac{1}{4} W D^2$ [kg·m ²] W : Workpiece weight on conveyor [kg] D : Drum diameter [m] * Excluding drum J	Ball screw 	$J = J_B + \frac{W \cdot P^2}{4\pi^2}$ [kg·m ²] W : Weight [kg] P : Lead J _B : J of ball screw

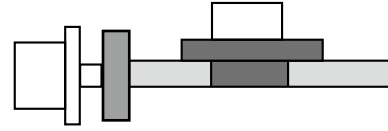
If weight (W [kg]) is unknown, calculate it with the following formula:

Weight W[kg]=Density ρ [kg/m³] x Volume V[m³]
Density of each material
Iron ρ =7.9 x 10³ [kg/m³] Aluminum ρ =2.8 x 10³ [kg/m³]
Brass ρ =8.5 x 10³ [kg/m³]

To Drive Ball Screw Mechanism

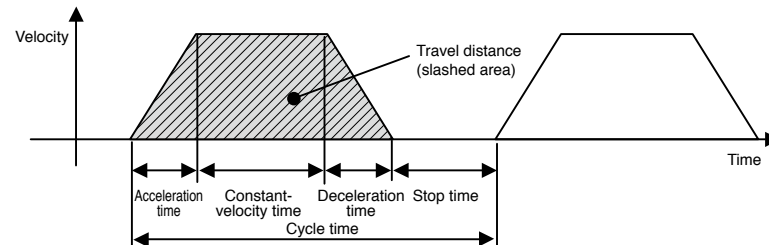
1. Example of motor selection for driving ball screw mechanism

Workpiece weight	WA = 10 [kg]
Ball screw length	BL = 0.5 [m]
Ball screw diameter	BD = 0.02 [m]
Ball screw lead	BP = 0.02 [m]
Ball screw efficiency	Bη = 0.9
Travel distance	0.3[m]
Coupling inertia	Jc = 10 × 10 ⁻⁶ [kg·m ²] (Use manufacturer-specified catalog value, or calculation value.)



2. Running pattern :

Acceleration time	ta = 0.1 [s]
Constant-velocity time	tb = 0.8 [s]
Deceleration time	td = 0.1 [s]
Cycle time	tc = 2 [s]
Travel distance	0.3[m]



3. Ball screw weight $BW = \rho \times \pi \times \left(\frac{BD}{2}\right)^2 \times BL = 7.9 \times 10^3 \times \pi \times \left(\frac{0.02}{2}\right)^2 \times 0.5 = 1.24 \text{ [kg]}$

4. Load inertia $JL = JC + JB = JC + \frac{1}{8}BW \times BD^2 + \frac{WA \cdot BP^2}{4\pi^2} = 0.00001 + (1.24 \times 0.02^2) / 8 + 10 \times 0.02^2 / 4\pi^2 = 1.73 \times 10^{-4} \text{ [kg·m}^2\text{]}$

5. Provisional motor selection

In case of MSMF 200 W motor : JM = 0.14 × 10⁻⁴ [kg·m²]

6. Calculation of inertia ratio

$JL / JM = 1.73 \times 10^{-4} / 0.14 \times 10^{-4}$ Therefore, the inertia ratio is "12.3" (less than "30")
(In case of MSMF 100 W motor: JM = 0.048 × 10⁻⁴ Therefore, the inertia ratio is "36.0".)

7. Calculation of maximum velocity (Vmax)

$$\frac{1}{2} \times \text{Acceleration time} \times V_{\max} + \text{Constant-velocity time} \times V_{\max} + \frac{1}{2} \times \text{Deceleration time} \times V_{\max} = \text{Travel distance}$$

$$\frac{1}{2} \times 0.1 \times V_{\max} + 0.8 \times V_{\max} + \frac{1}{2} \times 0.1 \times V_{\max} = 0.3$$

$$0.9 \times V_{\max} = 0.3$$

$$V_{\max} = 0.3 / 0.9 = 0.334 \text{ [m/s]}$$

8. Calculation of motor velocity (N [r/min]) Ball screw lead per resolution: BP = 0.02 [m]

$$N = 0.334 / 0.02 = 16.7 \text{ [r/s]}$$

$$= 16.7 \times 60 = 1002 \text{ [r/min]} < 3000 \text{ [r/min]} \text{ (Rated velocity of MSMF 200 W motor)}$$

9. Calculation of torque

$$\text{Traveling torque } T_f = \frac{BP}{2\pi B\eta} (\mu g WA + F) = \frac{0.02}{2\pi \times 0.9} (0.1 \times 9.8 \times 10 + 0) = 0.035 \text{ [N·m]}$$

$$\text{Acceleration torque } T_a = \frac{(JL + JM) \times 2\pi N \text{ [r/s]}}{\text{Acceleration time [s]}} + \text{Traveling torque}$$

$$= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} + 0.035$$

$$= 0.196 + 0.035 = 0.231 \text{ [N·m]}$$

$$\text{Deceleration torque } T_d = \frac{(JL + JM) \times 2\pi N \text{ [r/s]}}{\text{Deceleration time [s]}} - \text{Traveling torque}$$

$$= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} - 0.035$$

$$= 0.196 - 0.035 = 0.161 \text{ [N·m]}$$

10. Verification of maximum torque

$$\text{Acceleration torque} = T_a = 0.231 \text{ [N·m]} < 1.91 \text{ [N·m]} \text{ (Maximum torque of MSMF 200 W motor)}$$

11. Verification of effective torque

$$T_{\text{rms}} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$

$$= \sqrt{\frac{0.231^2 \times 0.1 + 0.035^2 \times 0.8 + 0.161^2 \times 0.1}{2}}$$

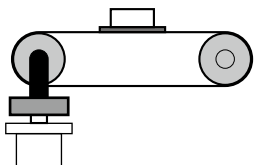
$$= 0.067 \text{ [N·m]} < 0.64 \text{ [N·m]} \text{ (Rated torque of MSMF 200 W motor)}$$

12. Judging from the inertia ratio calculated above, selection of 200 W motor is preferable, although the torque margin is significantly large.

Example of Motor Selection

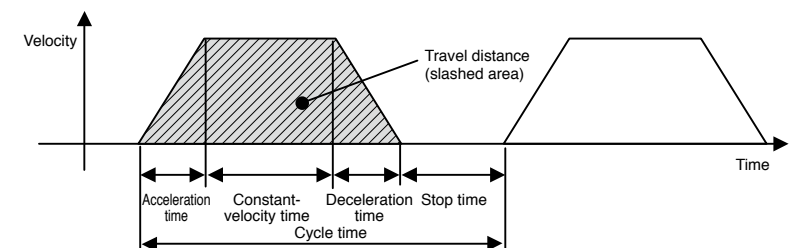
Example of motor selection for timing belt mechanism

1.Mechanism	Workpiece weight	WA = 2[kg] (including belt)
	Pulley diameter	PD = 0.05[m]
	Pulley weight	WP = 0.5[kg] (Use manufacturer-specified catalog value, or calculation value.)
	Mechanical efficiency	Bη = 0.8
	Coupling inertia	Jc = 0 (Direct connection to motor shaft)
	Belt mechanism inertia	JB
	Pulley inertia	JP



2. Running pattern

Acceleration time	ta = 0.1[s]
Constant-velocity time	tb = 0.8[s]
Deceleration time	td = 0.1[s]
Cycle time	tc = 2[s]
Travel distance	1[m]



3. Load inertia JL = JC + JB + JP

$$= JC + \frac{1}{4}WA \times PD^2 + \frac{1}{8}WP \times PD^2 \times 2$$

$$= 0 + \frac{1}{4} \times 2 \times 0.05^2 + \frac{1}{8} \times 0.5 \times 0.05^2 \times 2$$

$$= 0.00156 = 15.6 \times 10^{-4} \text{ [kg·m}^2\text{]}$$

4. Provisional motor selection

In case of MSMF 750 W motor : JM = 0.96 × 10⁻⁴ [kg·m²]

5. Calculation of inertia ratio

$JL / JM = 15.6 \times 10^{-4} / 0.96 \times 10^{-4}$ Therefore, the inertia ratio is "16.3" (less than "20")

6. Calculation of maximum velocity (Vmax)

$$\frac{1}{2} \times \text{Acceleration time} \times V_{\text{max}} + \text{Constant-velocity time} \times V_{\text{max}} + \frac{1}{2} \times \text{Deceleration time} \times V_{\text{max}} = \text{Travel distance}$$
$$\frac{1}{2} \times 0.1 \times V_{\text{max}} + 0.8 \times V_{\text{max}} + \frac{1}{2} \times 0.1 \times V_{\text{max}} = 1$$
$$0.9 \times V_{\text{max}} = 1$$
$$V_{\text{max}} = 1 / 0.9 = 1.111 [\text{m/s}]$$

7. Calculation of motor velocity (N [r/min])

A single rotation of pulley : $\pi \times PD = 0.157 [\text{m}]$
 $N = 1.111 / 0.157 = 7.08 [\text{r/s}]$
 $= 7.08 \times 60 = 424.8 [\text{r/min}] < 3000 [\text{r/min}]$ (Rated velocity of MSMF 750 W motor)

8. Calculation of torque

Traveling torque $T_f = \frac{PD}{2\eta} (\mu g W_A + F) = \frac{0.05}{2 \times 0.8} (0.1 \times 9.8 \times 3 + 0)$
 $= 0.061 [\text{N}\cdot\text{m}]$

Acceleration torque $T_a = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Acceleration time} [\text{s}]} + \text{Traveling torque}$
 $= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} + 0.061$
 $= 0.736 + 0.061 = 0.797 [\text{N}\cdot\text{m}]$

Deceleration torque $T_d = \frac{(J_L + J_M) \times 2\pi N [\text{r/s}]}{\text{Deceleration time} [\text{s}]} - \text{Traveling torque}$
 $= \frac{(15.6 \times 10^{-4} + 0.96 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} - 0.061$
 $= 0.736 - 0.061 = 0.675 [\text{N}\cdot\text{m}]$

9. Verification of maximum torque

Acceleration torque $T_a = 0.797 [\text{N}\cdot\text{m}] < 7.1 [\text{N}\cdot\text{m}]$ (Maximum torque of MSMF 750 W motor)

10. Verification of effective torque

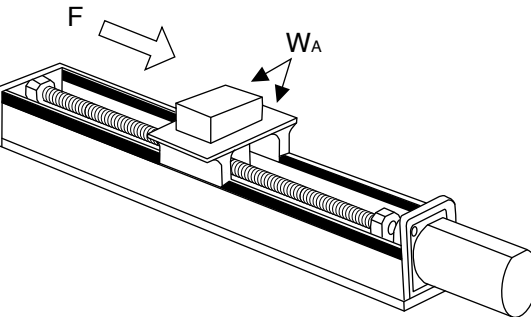
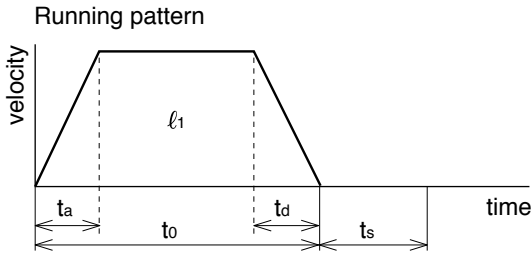
$$T_{\text{rms}} = \sqrt{\frac{T_a^2 \times t_a + T_f^2 \times t_b + T_d^2 \times t_d}{t_c}}$$
$$= \sqrt{\frac{0.797^2 \times 0.1 + 0.061^2 \times 0.8 + 0.675^2 \times 0.1}{2}}$$
$$= 0.237 [\text{N}\cdot\text{m}] < 2.4 [\text{N}\cdot\text{m}]$$
 (Rated torque of MSMF 750 W motor)

11. Judging from the above calculation result, selection of MSMF 750W motor is acceptable.

Request for motor selection I : Ball screw drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	l<sub>1</sub>: mm
2) Cycle time	t<sub>0</sub>: s
(Fill in items 3) and 4) if required.)	
3) Acceleration time	t<sub>a</sub>: s
4) Deceleration time	t<sub>d</sub>: s
5) Stopping time	t<sub>s</sub>: s
6) Max. velocity	V: mm/s
7) External force	F: N
8) Positioning accuracy of the work load	± mm
9) Total weight of the work load and the table	W<sub>A</sub>: kg
10) Power supply voltage	V
11) Diameter of the ball screw	mm
12) Total length of the ball	mm
13) Lead of the ball screw	mm



14) Traveling direction (horizontal, vertical etc.)

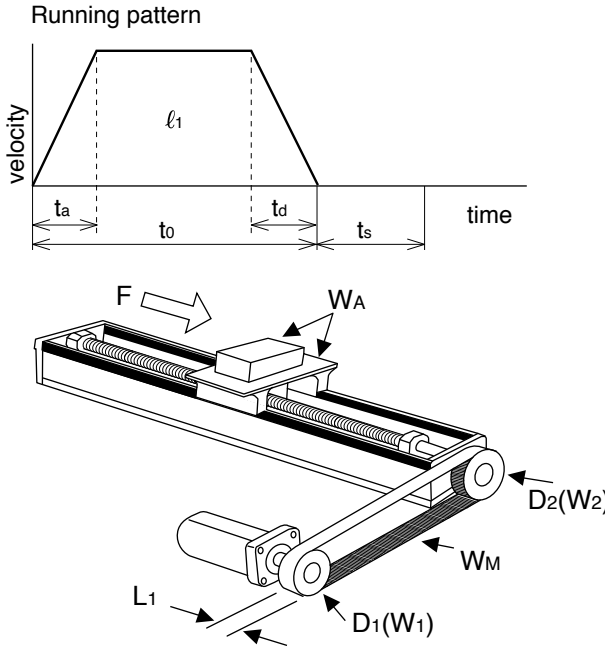
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name :
	Department/Section :
	Name :
	Address :
	Tel :
	Fax :
	E-mail address:

Request Sheet for Motor Selection

Request for motor selection II : Timing pulley + Ball screw drive

1. Driven mechanism and running data

			Motor side	Ball screw side
1) Travel distance of the work load per one cycle	ℓ_1 : mm	15) Diameter of the pulley	D_1 : mm	D_2 : mm
2) Cycle time	t_0 : s	16) Weight of the pulley	W_1 : kg	W_2 : kg
(Fill in items 3) and 4) if required.)		(or item 17) and 18))		
3) Acceleration time	t_a : s	17) Width of the pulley	L_1 : mm	
4) Deceleration time	t_d : s	18) Material of the pulley		
5) Stopping time	t_s : s	19) Weight of the belt	W_M : kg	
6) Max. velocity	V : mm/s			
7) External force	F : N			
8) Positioning accuracy of the work load	$\pm$ mm			
9) Total weight of the work load and the table	W_A : kg			
10) Power supply voltage	V			
11) Diameter of the ball screw	mm			
12) Total length of the ball screw	mm			
13) Lead of the ball screw	mm			
14) Traveling direction (horizontal, vertical etc.)				

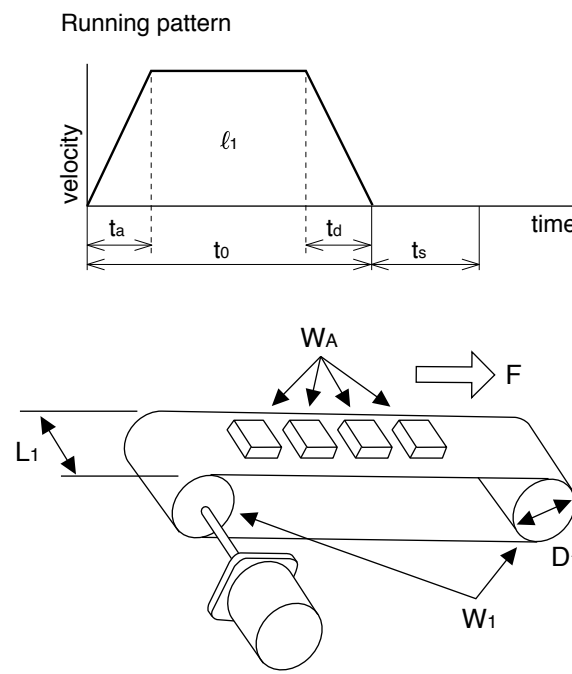
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request Sheet for Motor Selection

Request for motor selection III : Belt drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	ℓ_1 : mm		
2) Cycle time	t_0 : s		
(Fill in items 3) and 4) if required.)			
3) Acceleration time	t_a : s		
4) Deceleration time	t_d : s		
5) Stopping time	t_s : s	(or item 14) and 15))	
6) Max. velocity	V : mm/s		
7) External force	F : N		
8) Positioning accuracy of the work load	$\pm$ mm		
9) Total weight of the work load	W_A : kg		
10) Power supply voltage	V	14) Width of the pulley	L_1 : mm
11) Weight of the belt	W_M : kg	15) Material of the pulley	
12) Diameter of the driving pulley	D_1 : mm	16) Traveling direction (horizontal, vertical etc.)	
13) Total weight of the pulley	W_1 : kg		

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request Sheet for Motor Selection

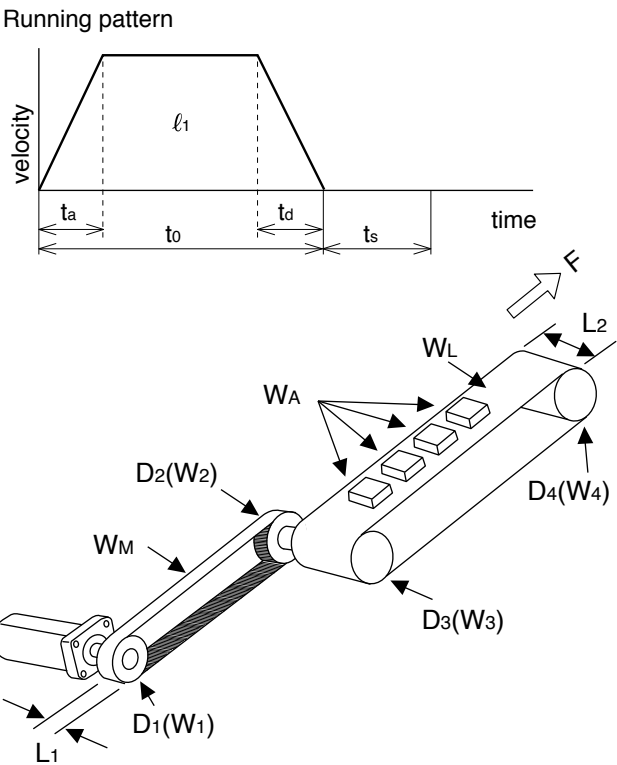
Request for motor selection IV : Timing pulley + Belt drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	ℓ_1 : mm	16) Diameter of the pulley	Motor side D_3 : mm	Belt side D_4 : mm
2) Cycle time	t_0 : s	17) Weight of the pulley	W_3 : kg	W_4 : kg

(Fill in items 3) and 4) if required.) (or item 18) and 19))

3) Acceleration time	t_a : s	18) Width of the pulley	L_2 : mm
4) Deceleration time	t_d : s	19) Material of the pulley	
5) Stopping time	t_s : s	20) Weight of the belt	W_L : kg
6) Max. velocity	V : mm/s	21) Traveling direction (horizontal, vertical etc.)	
7) External force	F : N		
8) Positioning accuracy of the work load	$\pm$ mm		
9) Total weight of the work load	W_A : kg		
10) Power supply voltage	V		
11) Weight of motor side belt	W_M : kg		



2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request Sheet for Motor Selection

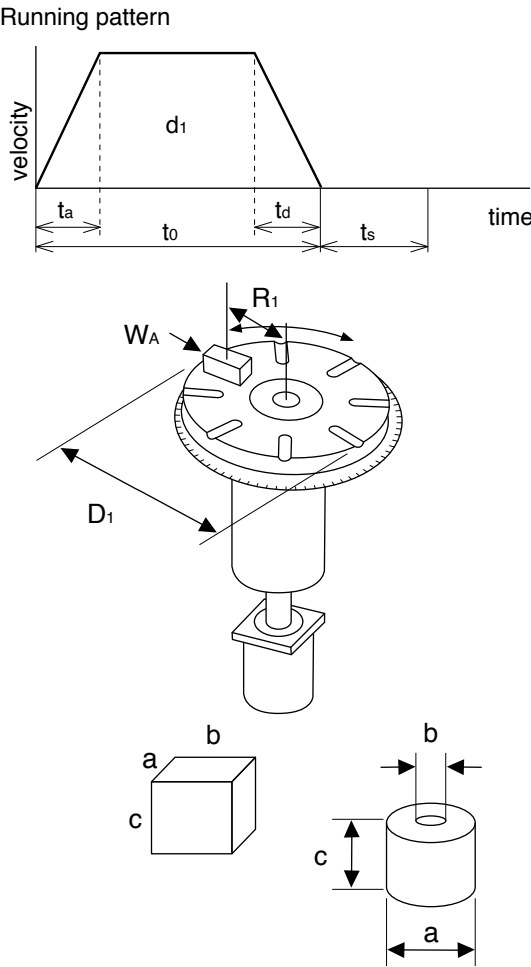
Request for motor selection V : Turntable drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	d_1 : deg	14) Dimensions of the work load	Prism a : mm	Cylinder a : mm
2) Cycle time	t_0 : s		b : mm	b : mm
			c : mm	c : mm

(Fill in items 3) and 4) if required.)

3) Acceleration time	t_a : s	15) Number of work loads	pcs
4) Deceleration time	t_d : s		
5) Stopping time	t_s : s		
6) Max. rotational speed of the table	v : deg/s		
	(or) V : r/s		
7) Positioning accuracy of the work load	$\pm$ deg		
8) Weight of one work load	W_A : kg		
9) Driving radius of the center of gravity of the work	R_1 : mm		
10) Diameter of the table	D_1 : mm		
11) Mass of the table	W_1 : kg		
12) Diameter of the table support	T_1 : mm		
13) Power supply voltage	V		



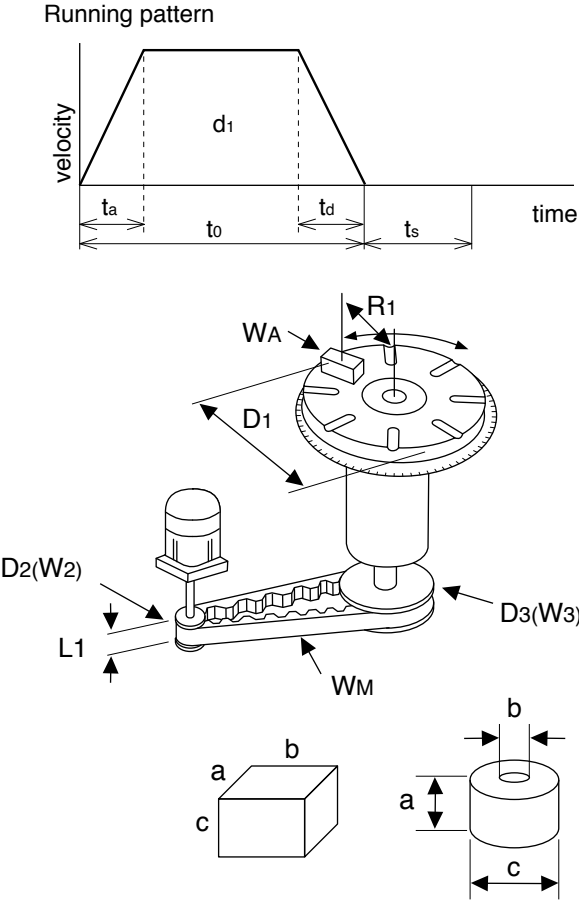
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request Sheet for Motor Selection

Request for motor selection VI : Timing pulley + Turntable drive

1. Driven mechanism and running data

			Motor side	Turntable side
1) Travel distance of the work load per one cycle	d ₁ :	deg	16) Diameter of the pulley D ₂ :	D ₃ : mm
2) Cycle time	t ₀ :	s	17) Weight of the pulley W ₂ :	W ₃ : kg
(Fill in items 3) and 4) if required.)		(or item 18) and 19))		
3) Acceleration time	t _a :	s	18) Width of the pulley L ₁ :	mm
4) Deceleration time	t _d :	s	19) Material of the pulley	
5) Stopping time	t _s :	s	20) Weight of the belt W _M :	kg
6) Max. rotational speed of the table	v:	deg/s		
(or)	V:	r/s		
7) Positioning accuracy of the work load	±	deg		
8) Weight of one work load	W _A :	kg		
9) Driving radius of the center of gravity of the work	R ₁ :	mm		
10) Diameter of the table	D ₁ :	mm		
11) Mass of the table	W ₁ :	kg		
12) Diameter of the table support	T ₁ :	mm		
13) Power supply voltage		V		
14) Dimension of the work load	(Prism) a:	mm	(Cylinder) a:	mm
	b:	mm	b:	mm
	c:	mm	c:	mm
15) Number of work loads		pcs		

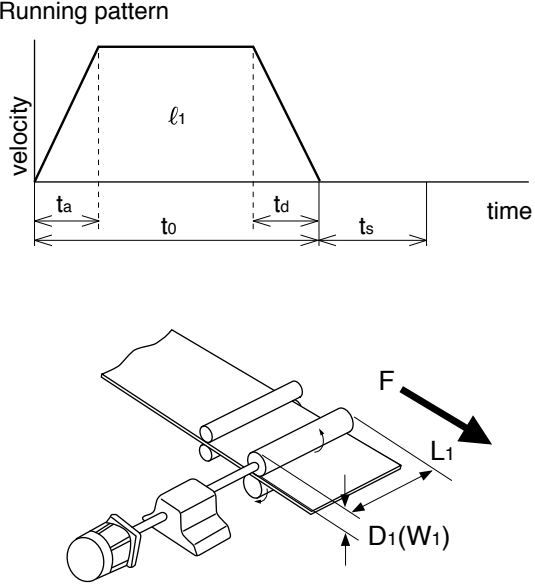
2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

	Company name : Department/Section : Name : Address : Tel : Fax : E-mail address:
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Request Sheet for Motor Selection

Request for motor selection VII : Roller feed drive

1. Driven mechanism and running data

1) Travel distance of the work load per one cycle	ℓ ₁ :	mm		
2) Cycle time	t ₀ :	s		
(Fill in items 3) and 4) if required.)				
3) Acceleration time	t _a :	s	(or item 13) and 14))	
4) Deceleration time	t _d :	s		
5) Stopping time	t _s :	s		
6) Max. velocity	v:	mm/s		
7) External pulling force	F:	N		
8) Positioning accuracy of the work load	±	mm		
9) Number of rollers		pcs		
10) Power supply voltage		V		
11) Diameter of the roller	D ₁ :	mm	13) Width of the roller L ₁ :	mm
12) Mass of the roller	W ₁ :	kg	14) Material of the roller	

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

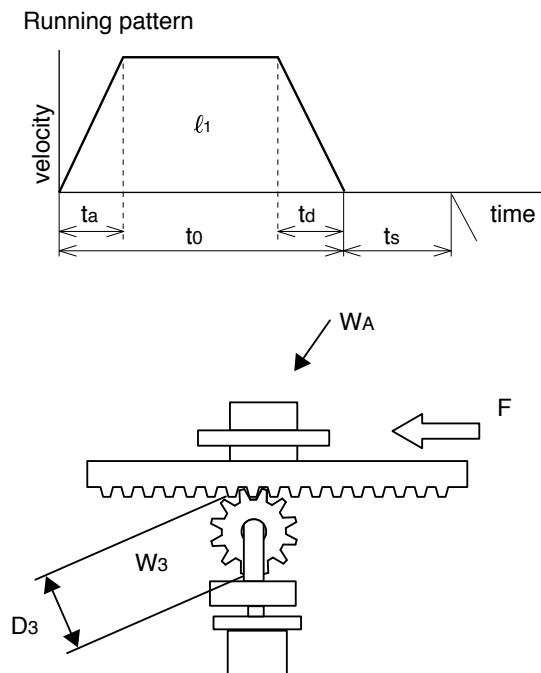
	Company name : Department/Section : Name : Address : Tel : Fax : E-mail address:
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Request Sheet for Motor Selection

Request for motor selection VIII : Driving with Rack & Pinion

1. Driven mechanism and running data

- Travel distance of the work load per one cycle
 l_1 : mm
- Cycle time
 t_0 : s
 (Fill in items 3) and 4) if required.)
- Acceleration time
 t_a : s
- Deceleration time
 t_d : s
- Stopping time
 t_s : s
- Max. velocity
 V : mm/s
- External force
 F : N
- Positioning accuracy of the work load
 $\pm$ mm
- Total weight of the work load
 W_A : kg
- Power supply voltage
 V
- Diameter of the pinion
 D_3 : mm
- Mass of the pinion
 W_3 : kg
- Traveling direction
 (horizontal, vertical, etc.)



2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name : _____

Department/Section : _____

Name : _____

Address : _____

Tel : _____

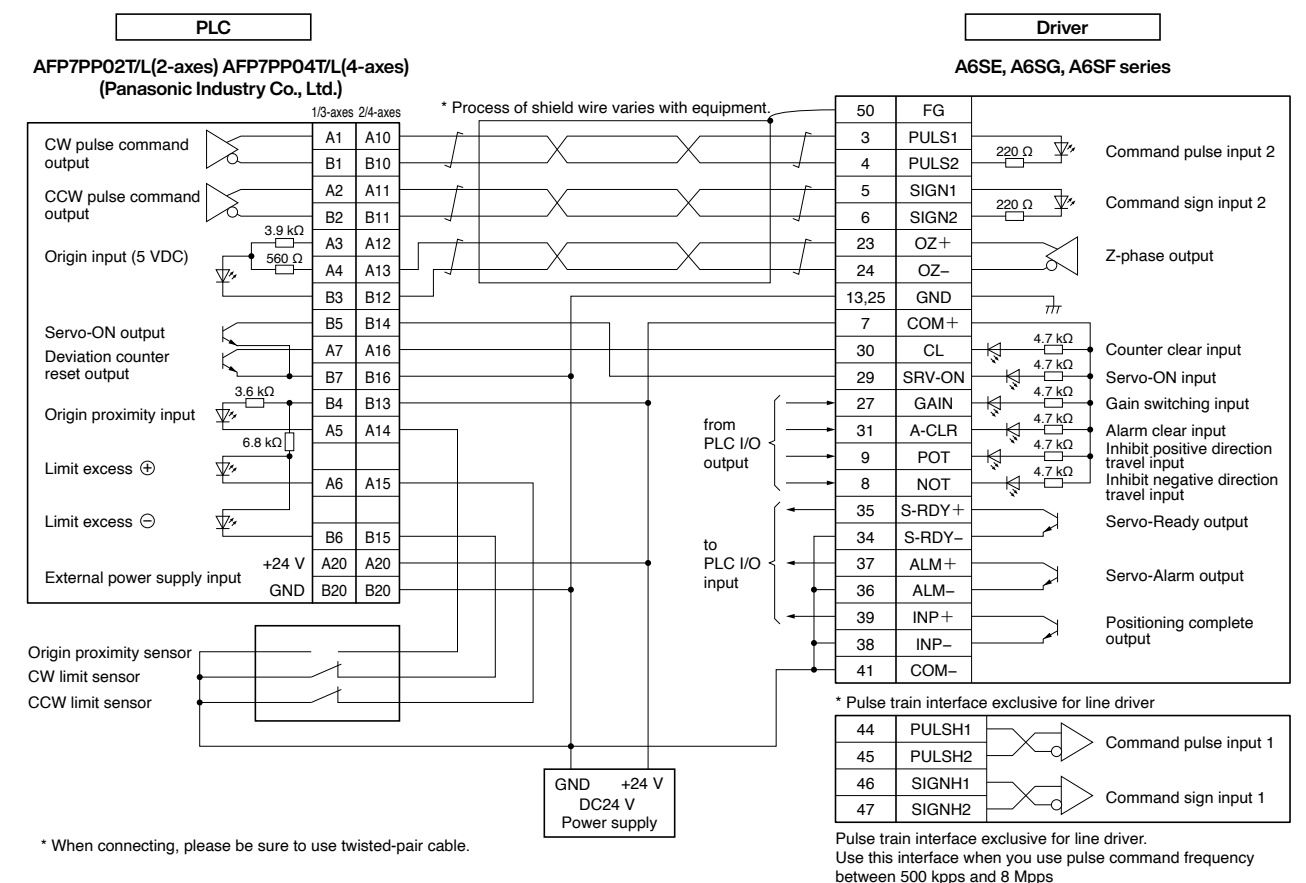
Fax : _____

E-mail address: _____

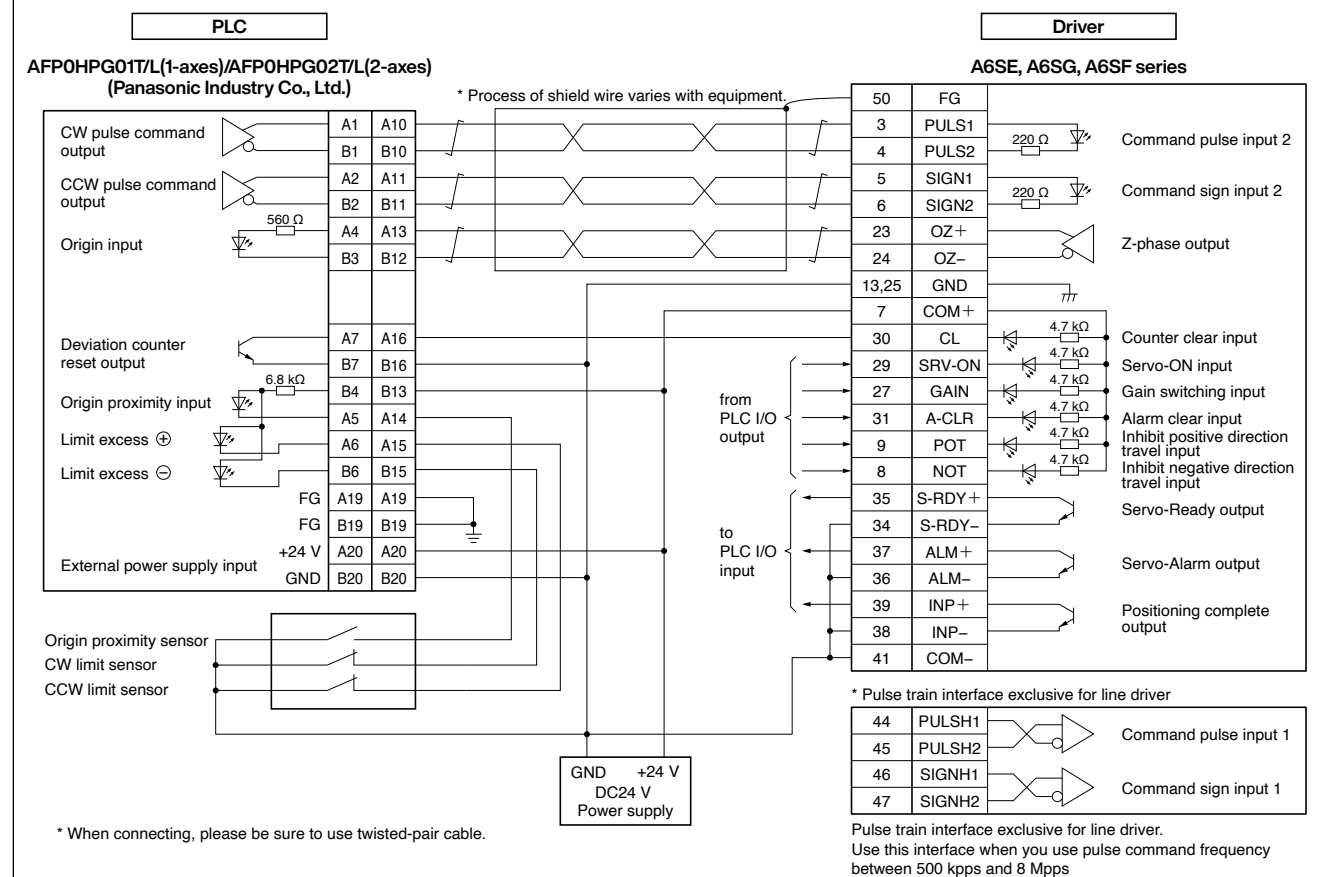
Connection Between Driver and Controller

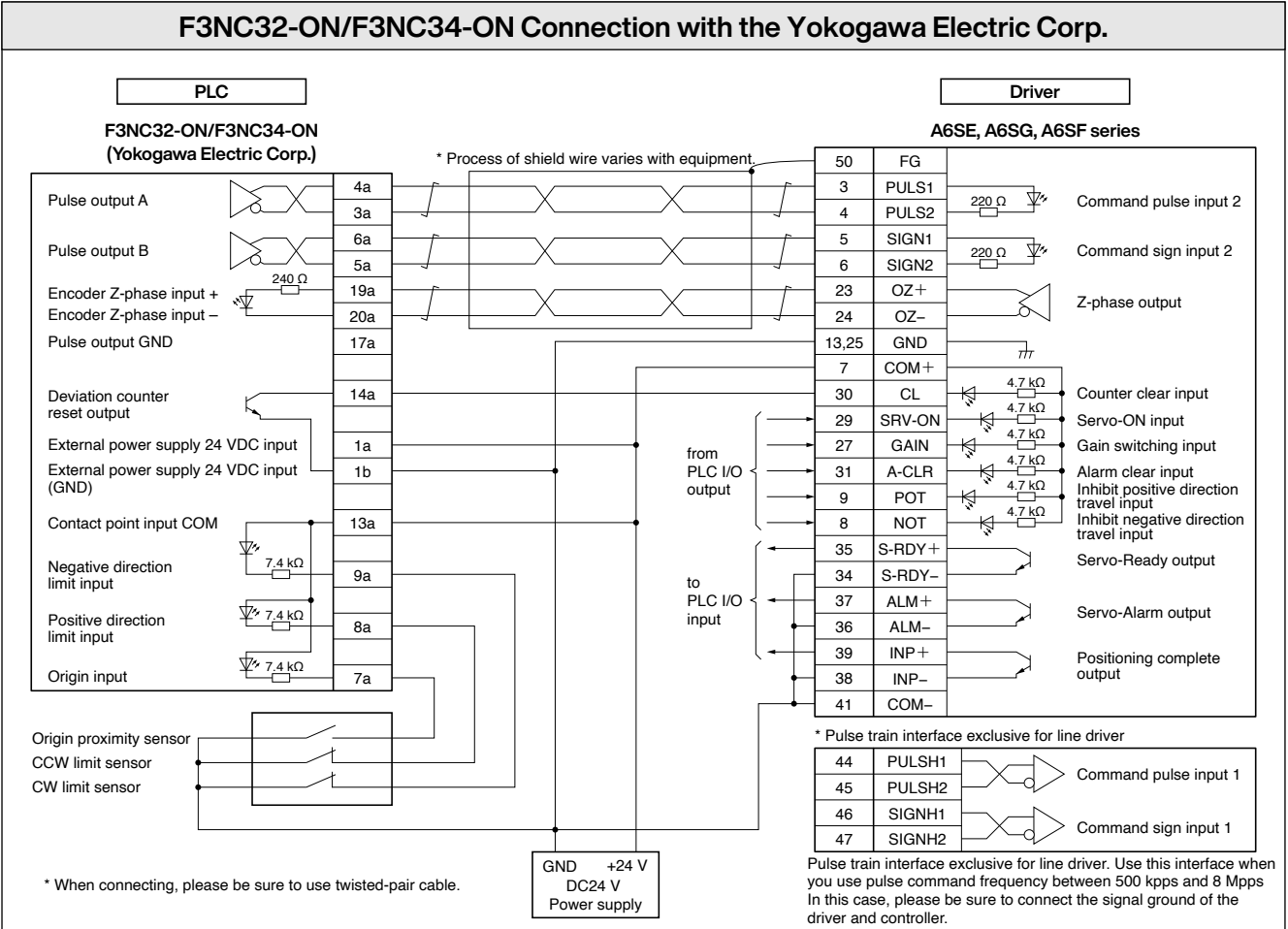
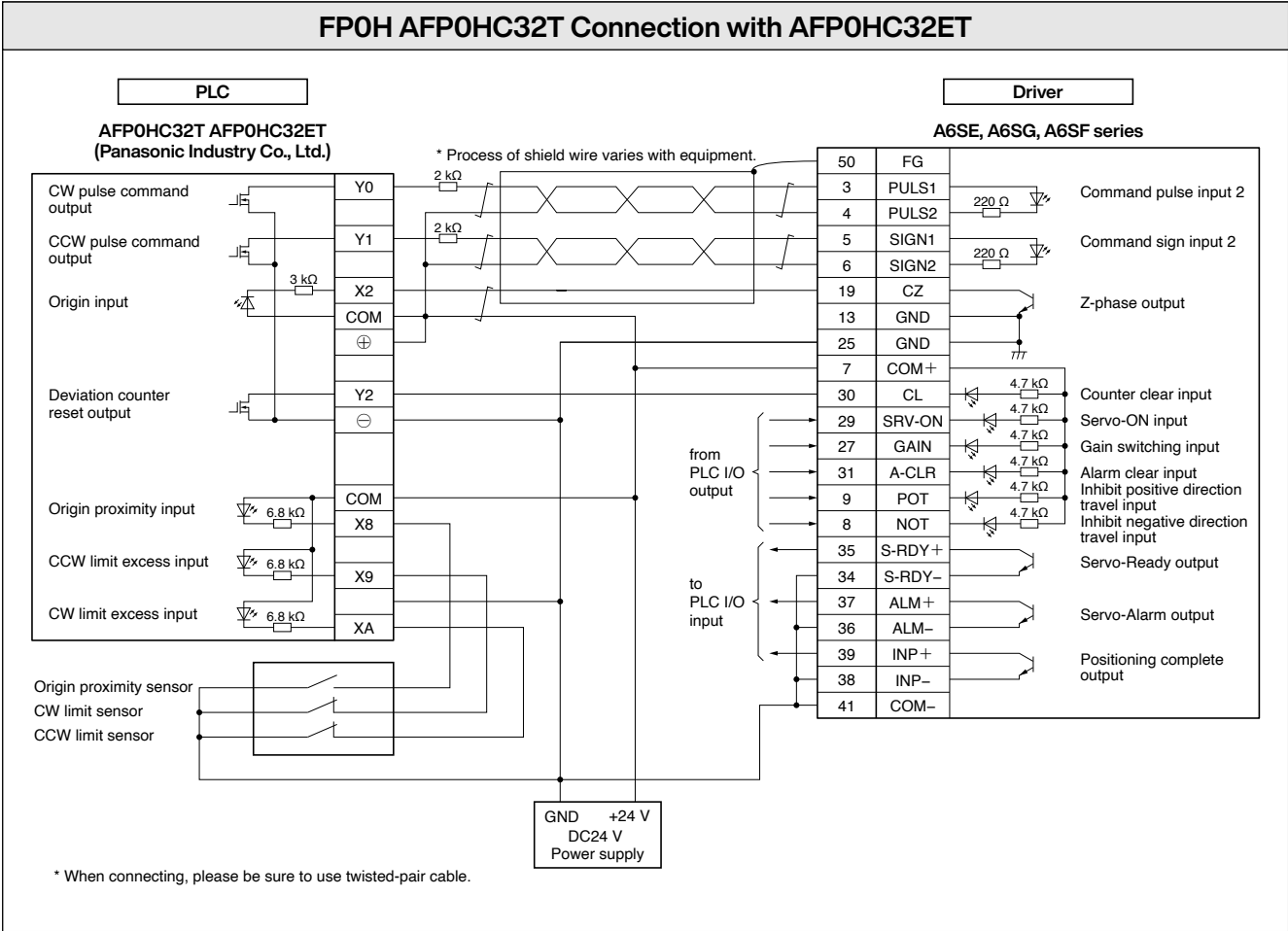
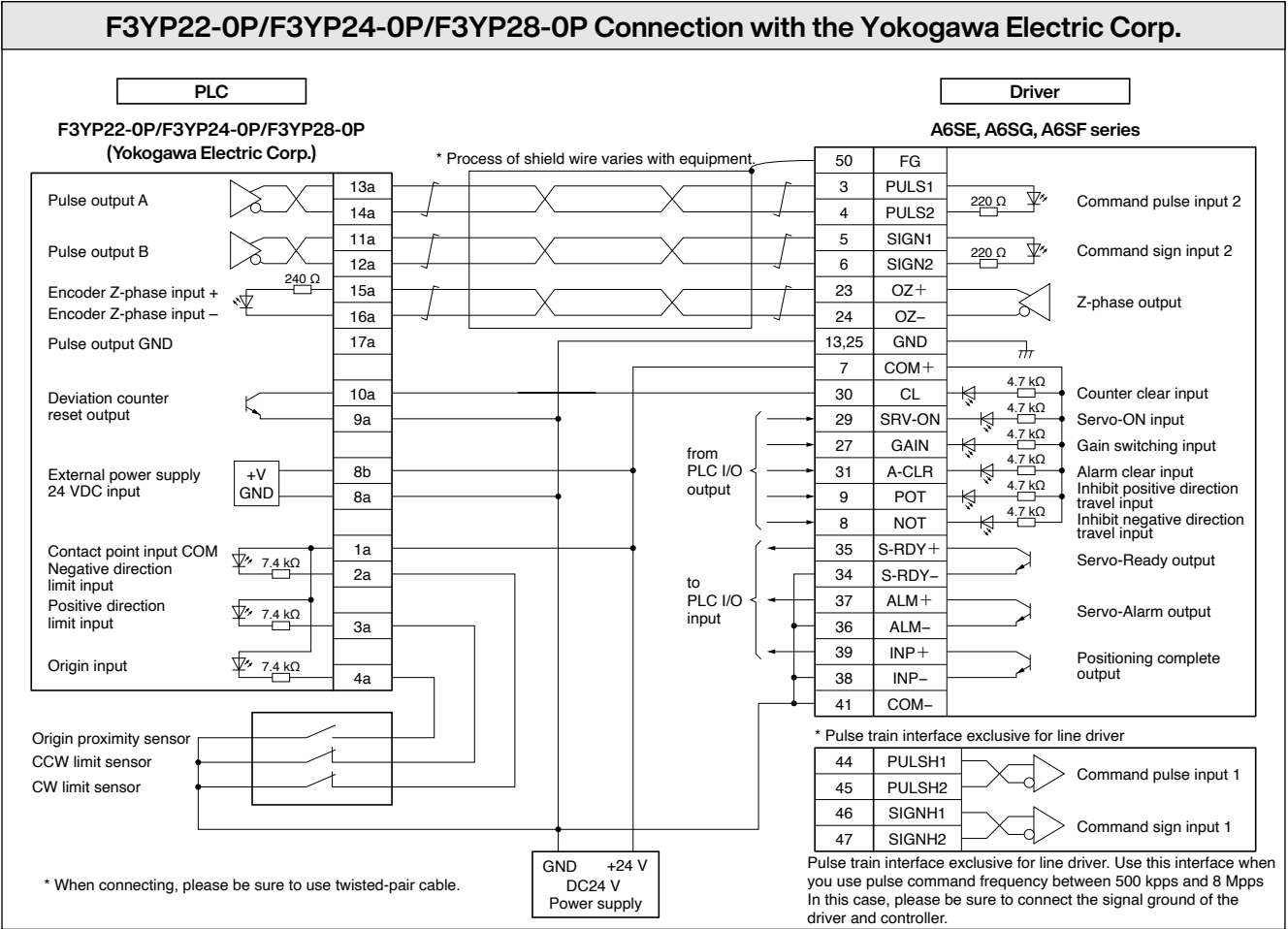
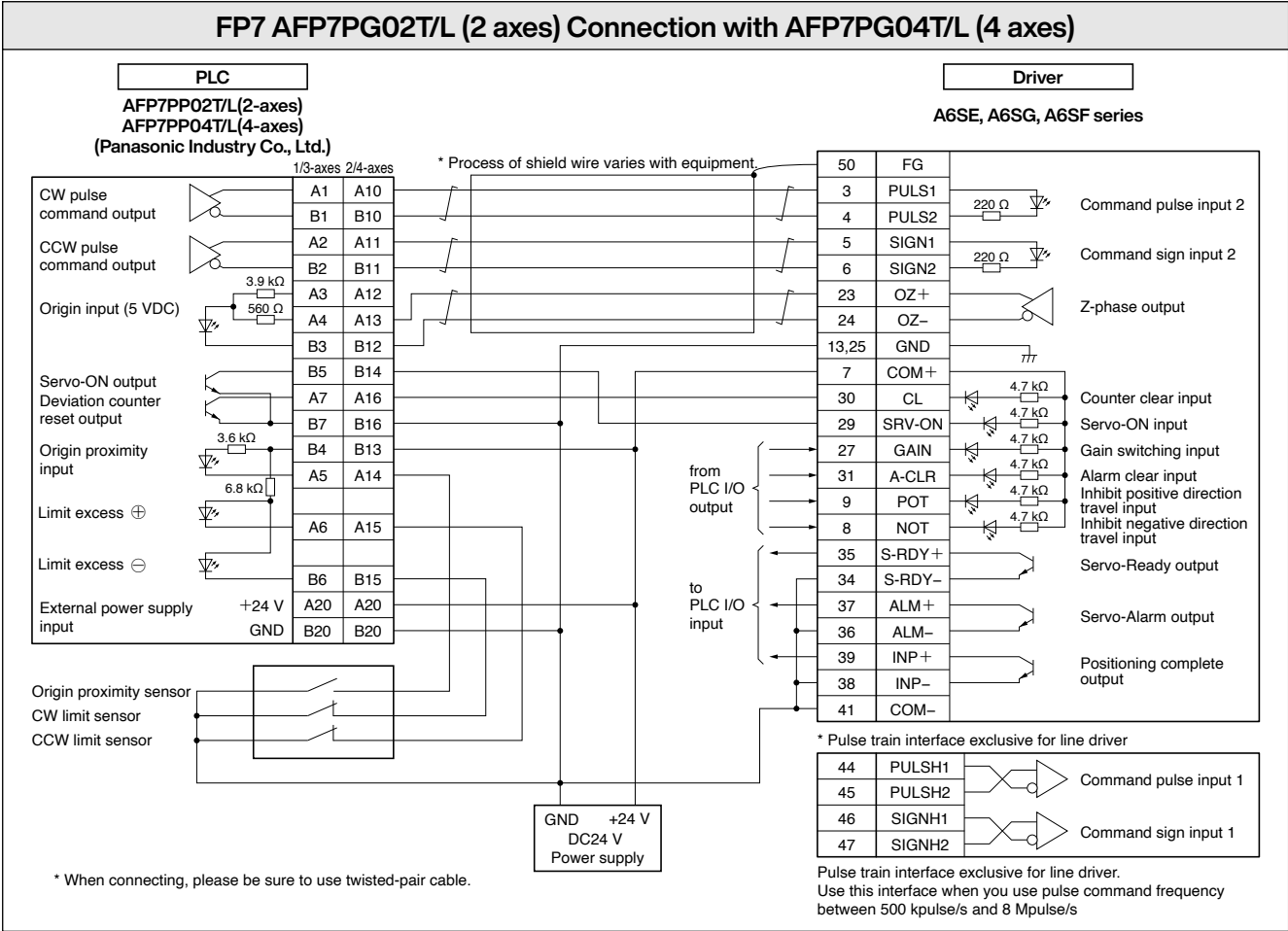
Connection Between Driver and Controller A6 Series

FP7 AFP7PPL02T/L (2 axes) Connection with AFP7PP04T/L (4 axes)

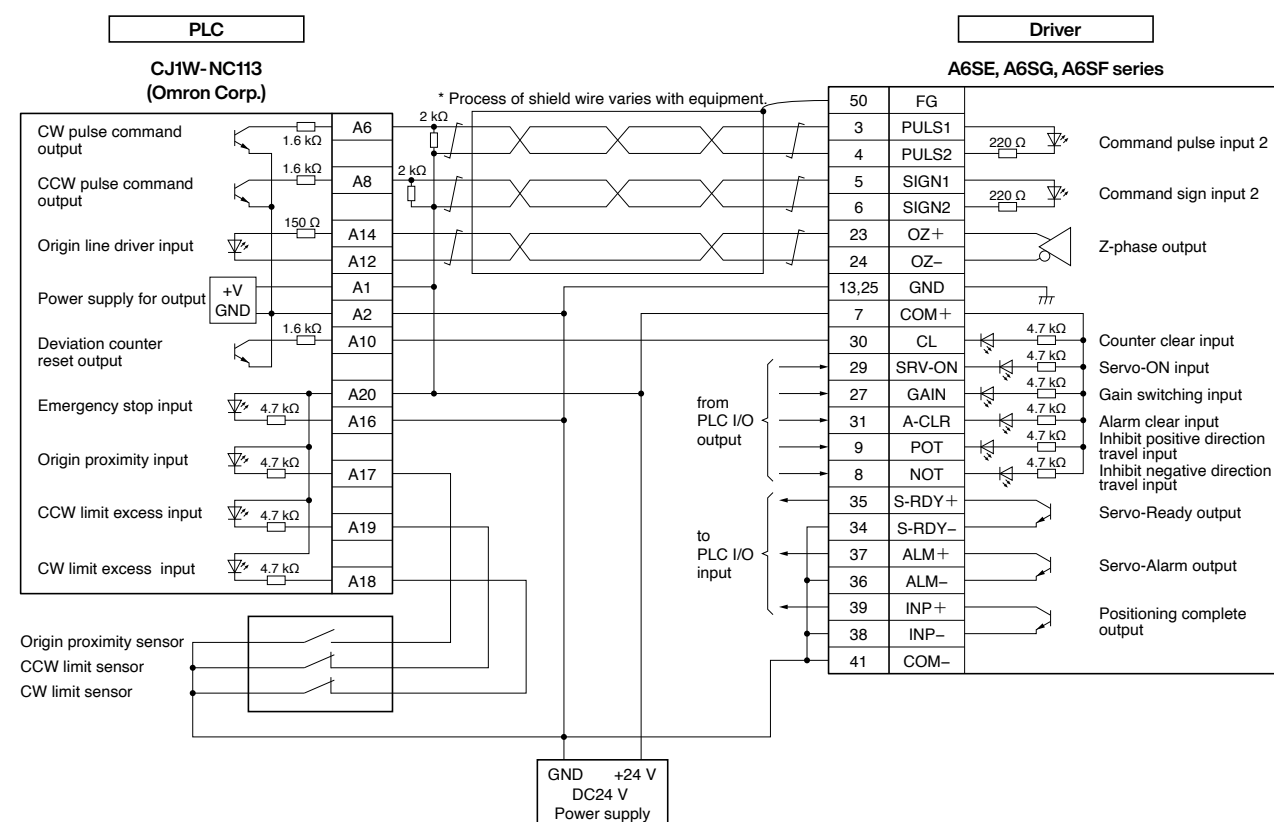


FP0H AFP0HPG01T/L (1 axis) Connection with AFP0HPG02T/L (2 axes)



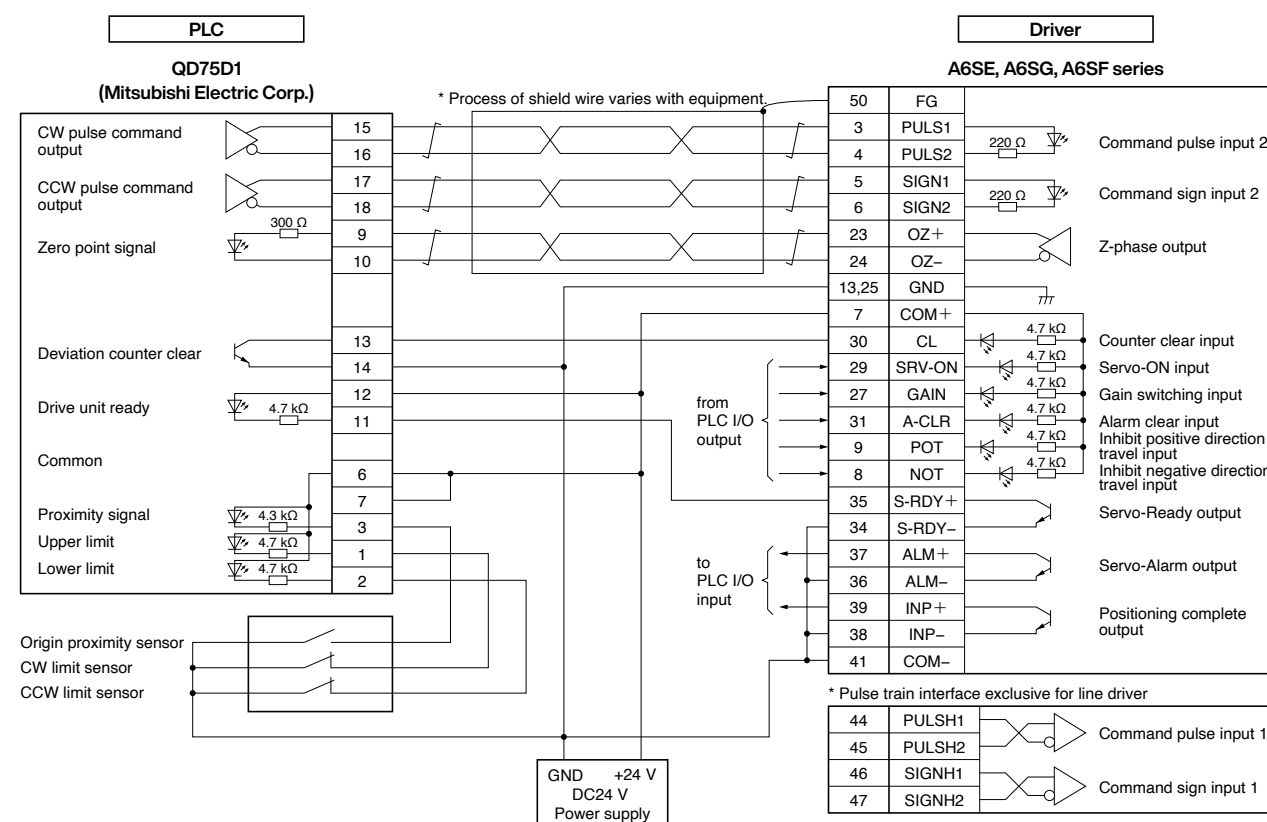


CJ1W-NC113 Connection with the Omron Corp.



* When connecting, please be sure to use twisted-pair cable.

QD75D1 Connection with the Mitsubishi Electric Corp.



* When connecting, please be sure to use twisted-pair cable.

* Pulse train interface exclusive for line driver

44	PULSH1	
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44	PU1 SH1		Command pulse input
45	PU1 SH2		

45	POLSH2	✓
46	SIGNH1	✓

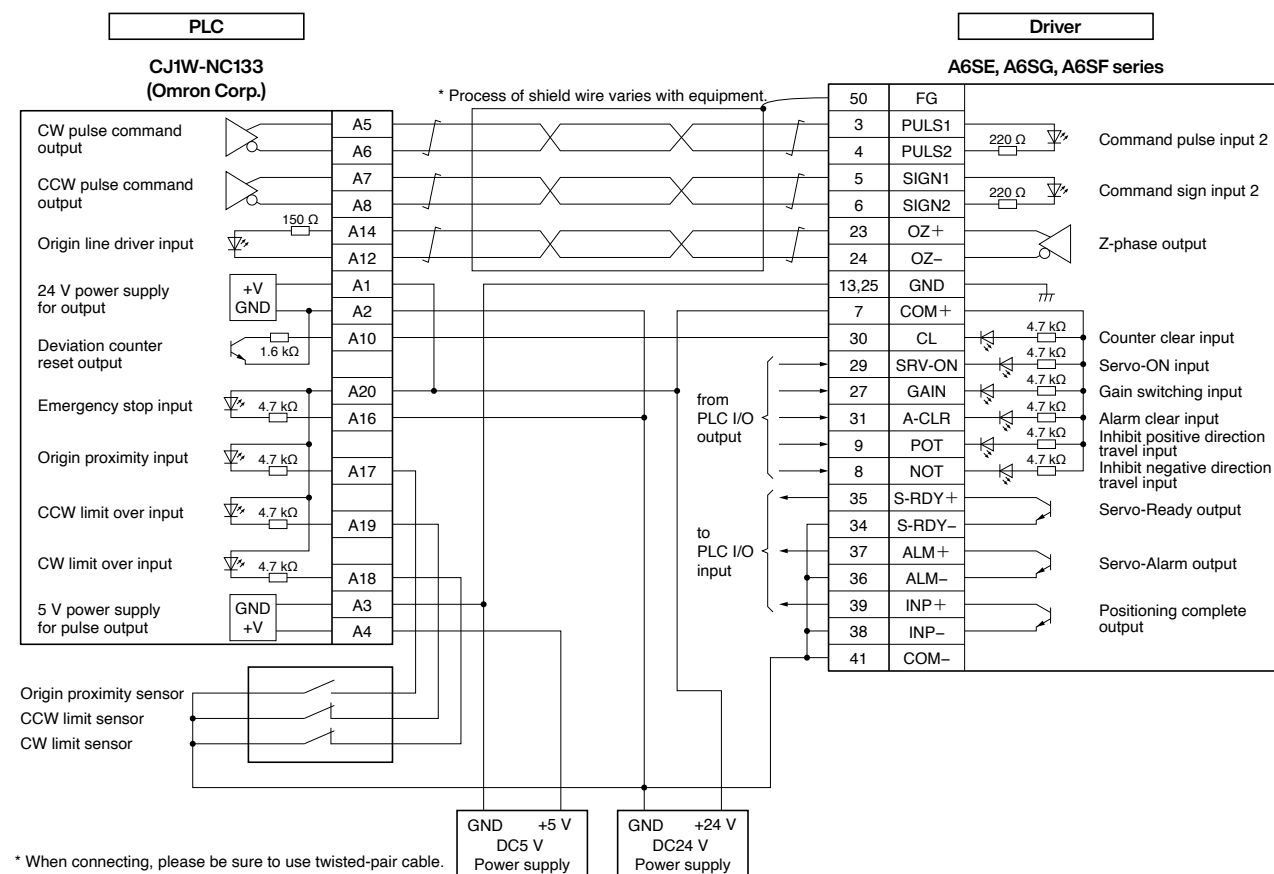
46	SIGNH1		Command sign input
47	SIGNH2		

47	SIGNH2		
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Pulse train interface exclusive for line driver.
Use this interface when you use pulse command frequency.

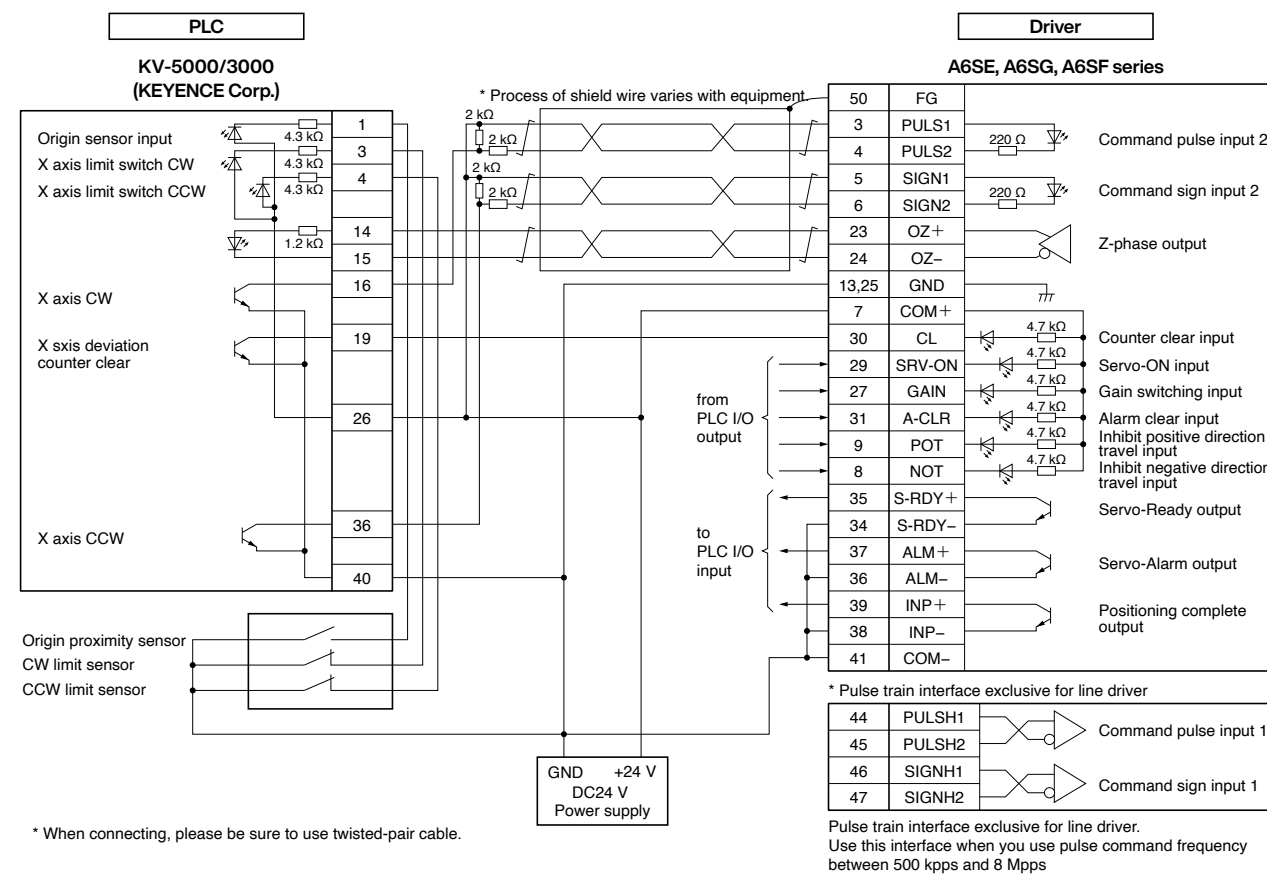
Use this interface when you use pulse command frequency between 500 kpps and 8 Mpps

CJ1W-NC133 Connection with the Omron Corp.



* When connecting, please be sure to use twisted-pair cable.

KV-5000/3000 Connection with the KEYENCE Corp.



* When connecting, please be sure to use twisted-pair cable.

* Pulse train interface exclusive for line driver

44	PULSH1	
----	--------	---

45	PULSH2		Command pulse input
----	--------	--	---------------------

46	SIGNH1		
----	--------	--	--

46	SIGNH1		Command sign input
47	SIGNH2		

47	SIGNHZ	—	✓
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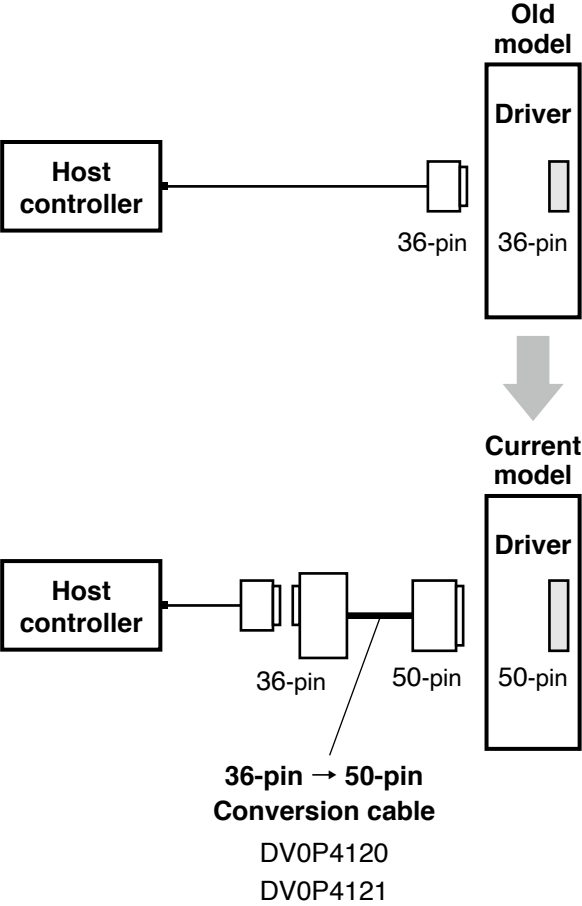
Bulge train interface, exclusive for line driver

Use this interface when you use pulse command frequency.

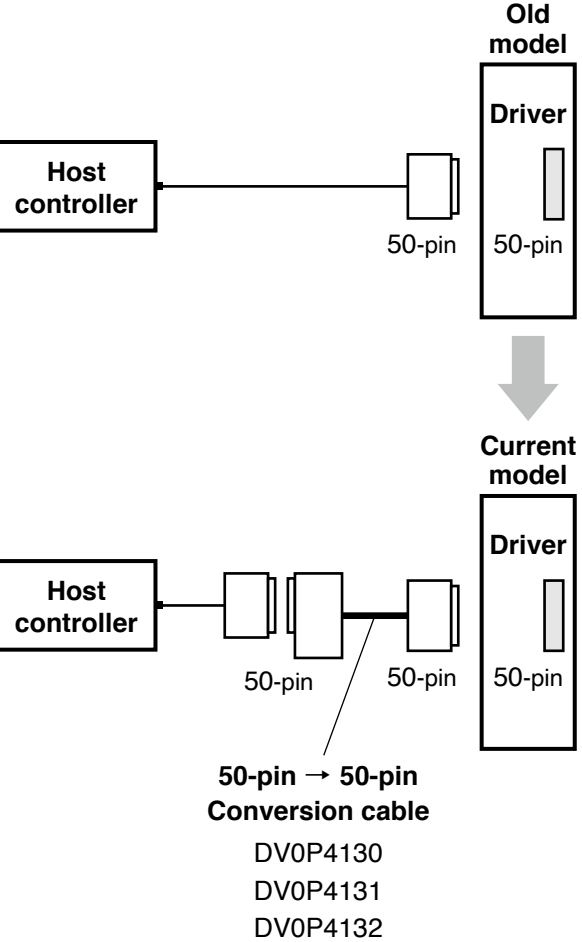
Use this interface when you use pulse command frequency between 500 kpps and 8 Mpps

For easier replacement of old driver (MINAS X/XX/V series) with A6 series, use the interface conversion connector.

〈36-pin → 50-pin〉



〈50-pin → 50-pin〉



When selecting the cable, refer to the table below because the part number of the cable is specific to the control mode of the old model.

Old model	Control mode	Conversion cable part No.	Conversion wiring table
X series XX series (36-pin)	Position/velocity control	DV0P4120	P.408
	Torque control	DV0P4121	
V series (50-pin)	Position control	DV0P4130	P.409
	Velocity control	DV0P4131	
	Torque control	DV0P4132	P.410

* For external dimensions, refer to P.322.

Conversion Wiring Table

Pin No. on Old Model	DV0P4120			Pin No. on Current Model	DV0P4121	
	Pin No. on Current Model	Signal Name	Symbol		Signal Name	Symbol
1	23	Z-phase output	OZ+	23	Z-phase output	OZ+
2	24	Z-phase output	OZ-	24	Z-phase output	OZ-
3	13	Signal ground	GND	13	Signal ground	GND
4	19	Z-phase output	CZ	19	Z-phase output	CZ
5	4	Command pulse input 2	PULS2	4	Command pulse input 2	PULS2
6	3	Command pulse input 2	PULS1	3	Command pulse input 2	PULS1
7	6	Command pulse sign input 2	SIGN2	6	Command pulse sign input 2	SIGN2
8	5	Command pulse sign input 2	SIGN1	5	Command pulse sign input 2	SIGN1
9	33	Command pulse inhibition input	INH	33	Command pulse inhibition input	INH
10	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD
11	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
12	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
13	30	Deviation counter clear input	CL	30	Deviation counter clear input	CL
14	14	Speed command input	SPR	NC		
15	15	Signal ground	GND	15	Signal ground	GND
16	43	Speed monitor output	SP	43	Speed monitor output	SP
17	25	Signal ground	GND	25	Signal ground	GND
18	50	Frame ground	FG	50	Frame ground	FG
19	21	A-phase output	OA+	21	A-phase output	OA+
20	22	A-phase output	OA-	22	A-phase output	OA-
21	48	B-phase output	OB+	48	B-phase output	OB+
22	49	B-phase output	OB-	49	B-phase output	OB-
23	NC			NC		
24	NC			NC		
25	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED+	39	Positioning complete output Speed arrival output	COIN+ AT-SPEED+
26	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+
27	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+
28	34	Positioning complete output (-) Speed arrival output (-)	COIN- AT-SPEED-	34	Positioning complete output (-) Speed arrival output (-)	COIN- AT-SPEED-
	36	Servo-Alarm output (-)	ALM-	36	Servo-Alarm output (-)	ALM-
	38	Servo-Ready output (-)	S-RDY-	38	Servo-Ready output (-)	S-RDY-
	41	Power supply for control signal (-)	COM-	41	Power supply for control signal (-)	COM-
29	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
30	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE
33	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
34	16	CCW direction torque limit input	CCWTL	14	Torque command input	TRQR
35	17	Signal ground	GND	17	Signal ground	GND
36	42	Torque monitor output	IM	42	Torque monitor output	IM

* "NC" is no connect.

Pin No. on Old Model	DV0P4130			DV0P4131		
	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
3	3	Command pulse input 2	PULS1	NC		
4	4	Command pulse input 2	PULS2	NC		
5	5	Command pulse sign input 2	SIGN1	NC		
6	6	Command pulse sign input 2	SIGN2	NC		
7	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
8	NC			NC		
9	NC			NC		
10	NC			NC		
11	11	External brake release signal	BRK-OFF+	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC	13	Torque in-limit signal output	TLC
14	NC			14	Speed command input	SPR
15	15	Signal ground	GND	15	Signal ground	GND
16	16	CCW direction torque limit input	CCWTL	16	CCW direction torque limit input	CCWTL
17	17	Signal ground	GND	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ	19	Z-phase output	CZ
20	NC			NC		
21	21	A-phase output	OA+	21	A-phase output	OA+
22	22	A-phase output	OA-	22	A-phase output	OA-
23	23	Z-phase output	OZ+	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-	24	Z-phase output	OZ-
25	50	Frame ground	FG	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN	27	Gain switching input	GAIN
28	NC			33	Selection 1 input of internal command speed	INTSPD1
29	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
30	30	Deviation counter clear input	CL	NC		
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE	32	Control mode switching input	C-MODE
33	33	Command pulse inhibition input	INH	NC		
34	NC			NC		
35	35	Servo-Ready output	S-RDY+	35	Servo-Ready output	S-RDY+
36	NC			NC		
37	37	Servo-Alarm output	ALM+	37	Servo-Alarm output	ALM+
38	NC			NC		
39	39	Positioning complete output	COIN+	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC	40	Torque in-limit signal output	TLC
41	10	External brake release signal (–)	BRK-OFF–	10	External brake release signal (–)	BRK-OFF–
	34	Positioning complete output (–)	COIN–	34	Speed arrival output (–)	AT-SPEED–
	36	Servo-Alarm output (–)	ALM–	36	Servo-Alarm output (–)	ALM–
	38	Servo-Ready output (–)	S-RDY–	38	Servo-Ready output (–)	S-RDY–
	41	Power supply for control signal (–)	COM–	41	Power supply for control signal (–)	COM–
42	42	Torque monitor output	IM	42	Torque monitor output	IM
43	43	Speed monitor output	SP	43	Speed monitor output	SP
44	25	Signal ground	GND	25	Signal ground	GND
45	25	Signal ground	GND	25	Signal ground	GND
46	25	Signal ground	GND	25	Signal ground	GND
47	NC			NC		
48	48	B-phase output	OB+	48	B-phase output	OB+
49	49	B-phase output	OB–	49	B-phase output	OB–
50	50	Frame ground	FG	50	Frame ground	FG

* “NC” is no connect.

Pin No. on Old Model	DV0P4132		
	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL
3	NC		
4	NC		
5	NC		
6	NC		
7	7	Power supply for control signal (+)	COM+
8	NC		
9	NC		
10	NC		
11	11	External brake release signal	BRK-OFF+
12	12	Zero-speed detection output signal	ZSP
13	13	Torque in-limit signal output	TLC
14	NC		
15	15	Signal ground	GND
16	16	Torque command input	TRQR
17	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ
20	NC		
21	21	A-phase output	OA+
22	22	A-phase output	OA-
23	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-
25	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN
28	NC		
29	29	Servo-ON input	SRV-ON
30	NC		
31	31	Alarm clear input	A-CLR
32	32	Control mode switching input	C-MODE
33	NC		
34	NC		
35	35	Servo-Ready output	S-RDY+
36	NC		
37	37	Servo-Alarm output	ALM+
38	NC		
39	39	Speed arrival output	AT-SPEED+
40	40	Torque in-limit signal output	TLC
41	10	External brake release signal (–)	BRK-OFF–
	34	Speed arrival output (–)	AT-SPEED–
	36	Servo-Alarm output (–)	ALM–
	38	Servo-Ready output (–)	S-RDY–
	41	Power supply for control signal (–)	COM–
42	42	Torque monitor output	IM
43	43	Speed monitor output	SP
44	25	Signal ground	GND
45	25	Signal ground	GND
46	25	Signal ground	GND
47	NC		
48	48	B-phase output	OB+
49	49	B-phase output	OB–
50	50	Frame ground	FG

* “NC” is no connect.

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Sales Office

[Panasonic Industry Co., Ltd. Sales Office of Motors] (May 01, 2025)

Region	Company Name [Category]	City	Address	TEL
				FAX
U.S.A	Panasonic Industrial Devices Sales Company of America [Sales office]	New Jersey	Two Riverfront Plaza, 10th Floor Newark, NJ 07102-5490, U.S.A	+1-800-344-2112
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			Web site	http://na.industrial.panasonic.com/
Brazil	Panasonic Do Brasil Limitada [Sales office]	Sao Paulo	Rua Alexandre Dumas, 1711 - 8 Andar torre 11, Chácara Santo Antônio, São Paulo SP Brazil	—
				—
Germany	Panasonic Electric Works Europe AG European Headquarters [Sales office]	Munich	Caroline-Herschel-Straße 100, 85521 Ottobrunn, Germany	+49-89-45354-1000
				+49-89-45354-2111
			Web site	http://www.panasonic-electric-works.com/
France	Panasonic Electric Works Sales Western Europe B.V. [Sales office]	Verrières-Le-Buisson	10, rue des petits ruisseaux, 91370 Verrières-Le-Buisson, France	+ 33 (0) 1-60-13-5757
				+ 33 (0) 1-60-13-5758
			Web site	http://www.panasonic-electric-works.fr/
Italy	Panasonic Industry Italia s.r.l. [Subsidiary]	Verona	Via del Commercio 3-5, 37012 Bussolengo-Ferlina, Italy	+39-45-6752711
				+39-45-6700444
			Web site	http://www.panasonic-electric-works.it/
Great Britain	Panasonic Electric Works UK Ltd. [Sales office]	Milton Keynes	Sunrise Parkway, Linford Wood, Milton Keynes MK14 6LF, United Kingdom	+44-1908-231-555
				+44-1908-231-599
			Web site	http://www.panasonic-electric-works.co.uk/
Austria	Panasonic Industry Austria GmbH [Sales office]	Biedermannsdorf	Josef Madersperger Straße 2, 2362 Biedermannsdorf, Austria	+43-2236-26846-7
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			Web site	http://www.panasonic-electric-works.at/
Poland	Panasonic Industry Poland [Sales office]	Warszawa	Ul. Dowborczykow 25, 90-019 Lodz, Poland	+48-42-230-9633
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			Web site	http://www.panasonic-electric-works.pl/
Benelux	Panasonic Electric Works Sales Western Europe B.V. [Sales office]	PJ Best	De Rijn 4, 5684 PJ Best, Netherlands	+31(0)499-37-27-27
				+31(0)499-37-21-85
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Czech Republic	Panasonic Electric Works Europe AG Czech Representative Office [Sales office]	Brno	Veveri 3163/111, 61600 Brno, Czech Republic	+420-541-217-001
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Hungary	Panasonic Electric Works Europe AG Hungarian Representative Office [Sales office]	Budapest	Neumann Janos u. 1., 1117 Budapest, Hungary	+43 2236 26846-25
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Turkey	DMY Elektrik Otomasyon Aydinlatma San. ve Tic. A.Ş. [Distributors]	Istanbul	Emek Mah. Ordu Cad. No:49/51 34785 Sancaktepe /Istanbul, Türkiye	+90 216 394 0155
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China	Panasonic Hong Kong Co., Limited (PHK) Panasonic Industrial Devices Sales (Hong Kong) Co., Ltd. [Sales office]	Hong Kong	Level 9, Tower II, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong	+852-2367-0181
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	Panasonic Industry (China) Co.,Ltd. [Sales office]	Shenzhen	10F, Tower D, China Resources Land Building, No.91 Kefa Road, Nanshan District, Shenzhen, 518057, China	+86-755-22074488
				+86-755-22074498
			Web site	https://industrial.panasonic.com/ea/
India	Panasonic Life Solutions India Private Limited INDD - Industrial Devices Division- Sales & Marketing (Gurgaon(HQ)) [Sales office]	Delhi	12th Floor, Ambience Corporate Office, Tower-2, Ambience Island, NH-8, Gurgaon-122002, Haryana, India	+91-124-4871300
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Taiwan	Panasonic Industrial Devices Sales Taiwan Co.,Ltd. [Sales office]	Taipei	12F, No. 9, SongGao Rd. , Taipei 110, Taiwan	+886-2-2757-1900
				+886-2-2758-7502

Sales Office

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Region	Company Name [Category]	City	Address		TEL
					FAX
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					+65-6390-3801
	Singapore	Singapore	2 Woodlands Sector 1 #03-25, Woodlands Spectrum 1 Singapore 738068		+65-6751-5088
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			Web site	http://www.intermech.com.sg	
	Malaysia	Penang	18, Persiaran Mahsuri 1/2, Sunway Tunas, Penang, 11900		+60-4-645-1635
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			Web site	http://panamech.com.my/	
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			Web site	https://www.carlocontrols.com/	
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					+63-2-633-7526
			e-mail	sales@movaflex.com	

A6 Series

A6N Series

A6B Series

Special Order Product

Information

MEMO

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