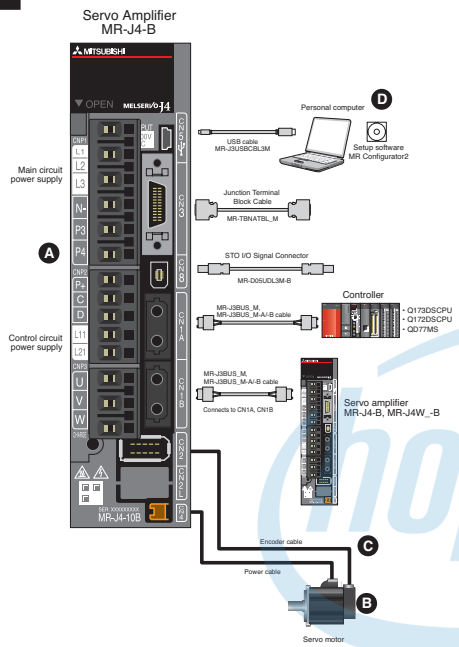
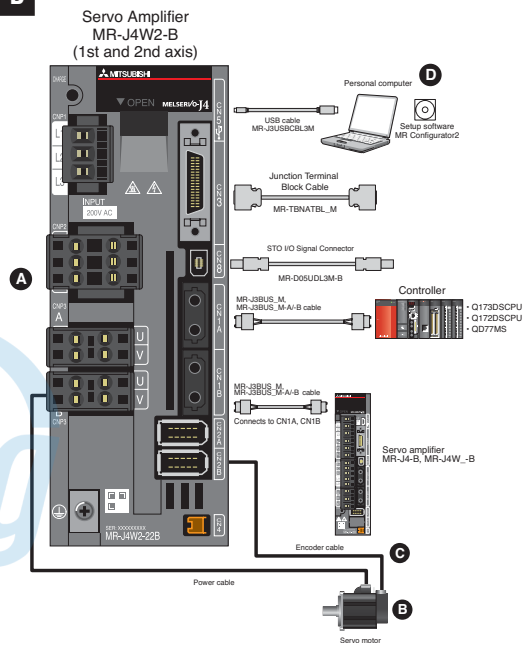
MR-J4 Servomotors and Amplifiers

With a capacity range of 50W to 7kW (200V only), both the amplifier and motor size is reduced. We added a high resolution encoder of 4 million pulse/rev, with a speed frequency response of 2500Hz. Additional fetures include advanced one-touch auto tuning and advanced vibration suppression control II functions. The MR-J4 motors ahve the same flance size as J3 notors with the lenght of the motor bing the same or smaller than the J3. The same cables for power, encoder and brake can be used for the MR-J3 and MR-J4. MR-J4 Series has four models: MR-J4A (analog/pulse train), MR-J4B, (SSCNET III/H), MR-J4W2B (Dual axis amplifier with SSCNET III/H) and ME-J4W3B (Three axis in one amplifier with SSCNET III/H). In addition, MR-J4 has three motor models available: HG-KR similar to HF-KP, HG-MR similar to HF-MP, and HG-SR similar to HF-SP Series. M-Size software is used to size HG Series motors and setup is made easy using MR-Configurator.

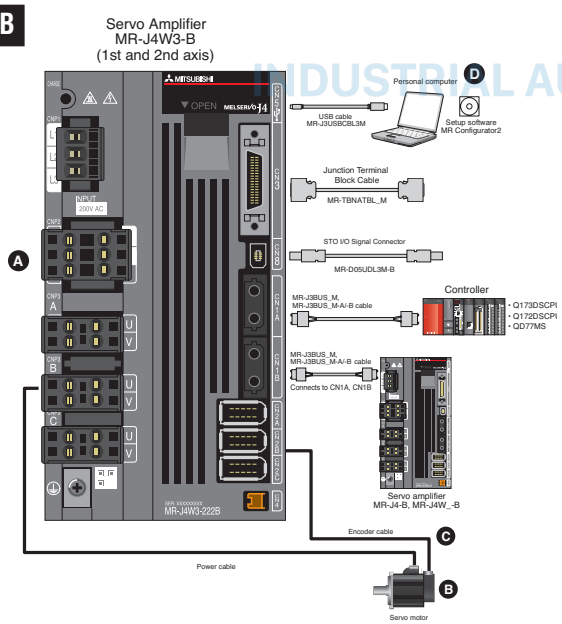
MR-J4-B



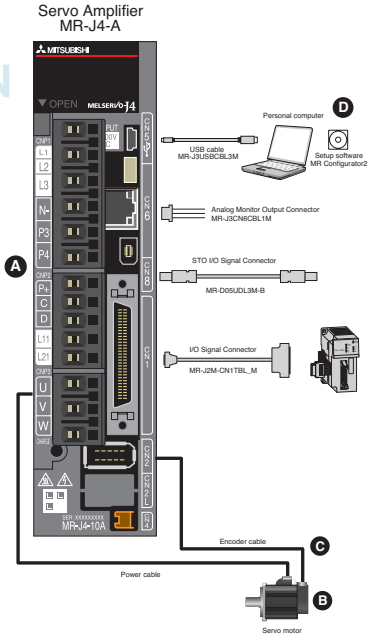
MR-J4W2-B



MR-J4W3-B



MR-J4-A



A. MR-J4 Amplifiers

X = Compatible
- = Not compatible

Amplifier Types

Type		Interface				Control Mode				Number of Control Axes	Power	Rated Output (kW) (*1)	Compatible Motor Series							
		Pulse Train	Analog	SSCNET III / H	RS-422 Multi-Drop	Position	Speed	Torque	Fully Closed Loop Control				HG-KR	HG-MR	HG-SR	LM-H3	LM-F	LM-K2	LM-U2	TM-RFM
SSCNET III / H Interface	MR-J4-B 	-	-	X	-	X	X	X	X	1 axis	3-Phase 200VAC	0.01 ~ 7kW	X	X	X	X	X	X	X	X
	MR-J4W2-B 	-	-	X	-	X	X	X	X	2 axes	3-Phase 200VAC	0.02 ~ 1kW	X	X	X	X	-	X	X	X
	MR-J4W3-B 	-	-	X	-	X	X	X	-	3 axes	3-Phase 200VAC	0.02 ~ 0.04kW	X	X	-	X	-	X	X	X
General Purpose Interface	MR-J4-A 	X	X	-	X	X	X	X	X	1 axis	3-Phase 200VAC	0.01 ~ 7kW	X	X	X	X	X	X	X	X

Note:
1. The values in the table shows the rated output of the servo amplifiers. Refer to theMR-J4 brochure for the compatible servo motor.

1-Axis Servo Amplifier Selection
(Example Part No. = MR-J4-10B-ED)

MR-J4-□□-ED

Mitsubishi General Purpose AC Servo Amplifier

Symbol	Special Specification
ED	Without a dynamic brake (*1)

Symbol	Interface
A	General-purpose
B	SSCNET III/H

Symbol	Rated Output [kW]
10	0.1
20	0.2
40	0.4
60	0.6
70	0.75
100	1
200	2
350	3.5
500	5
700	7

Multi-Axis Servo Amplifier Selection
(Example Part No. = MR-J4W2-22B-ED)

MR-J4W□-□B-ED

Mitsubishi General Purpose AC Servo Amplifier

Symbol	Special Specification
ED	Without a dynamic brake (*1)

Symbol	Interface
B	SSCNET III/H

Symbol	Rated Output [kW]		
	A-Axis	B-Axis	C-Axis (*2)
22	0.2	0.2	-
44	0.4	0.4	-
77	0.75	0.75	-
1010	1	1	-
222	0.2	0.2	0.2
444	0.4	0.4	0.4

Symbol	Number of Axes
W2	2 axes
W3	3 axes

Notes:
1. When using the servo amplifier without a dynamic brake, the servo motor does not stop immediately at alarm occurrence or power failure. Take measures to ensure safety on the entire system.
2. For 3-axis servo amplifier.

Combinations of 1-Axis Servo Amplifier and Servo Motor

Servo Amplifier	Stocked Item	Rotary Servo Motor	Linear Servo Motor (Primary Side) (*1)	Direct Drive Motor
MR-J4-10B	S	HG-KR053, 13 HG-MR053, 13	-	-
MR-J4-20B	S	HG-KR23 HG-MR23	LM-U2PAB-05M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20
MR-J4-40B	S	HG-KR43 HG-MR43	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-K2P1A-01M-2SS1 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0	TM-RFM004C20
MR-J4-60B	S	HG-SR51, 52	LM-U2PBD-15M-1SS0	TM-RFM006C20 TM-RFM006E20
MR-J4-70B	S	HG-KR73 HG-MR73	LM-H3P3B-24P-CSS0 LM-H3P3C-36P-CSS0 LM-H3P7A-24P-ASS0 LM-K2P2A-02M-1SS1 LM-U2PBF-22M-1SS0	TM-RFM012E20 TM-RFM012G20 TM-RFM040J10
MR-J4-200B	S	HG-SR121, 201, 152, 202	LM-H3P3D-48P-CSS0 LM-H3P7B-48P-ASS0 LM-H3P7C-72P-ASS0 LM-FP2B-06M-1SS0 LM-K2P1C-03M-2SS1 LM-U2P2B-40M-2SS0	-
MR-J4-350B	S	HG-SR301, 352	LM-H3P7D-96P-ASS0 LM-K2P2C-07M-1SS1 LM-K2P3C-14M-1SS1 LM-U2P2C-60M-2SS0	TM-RFM048G20 TM-RFM072G20 TM-RFM120J10
MR-J4-500B	S	HG-SR421, 502	LM-FP2D-12M-1SS0 LM-FP4B-12M-1SS0 LM-K2P2E-12M-1SS1 LM-K2P3E-24M-1SS1 LM-U2P2D-80M-2SS0	TM-RFM240J10
MR-J4-700B	S	HG-SR702	LM-FP2F-18M-1SS0 LM-FP4D-24M-1SS0	-

With MR-J4-A servo amplifier

Servo Amplifier	Stocked Item	Rotary Servo Motor	Linear Servo Motor (Primary Side) (*1)	Direct Drive Motor
MR-J4-10A	S	HG-KR053, 13 HG-MR053, 13	Available in the future	Available in the future
MR-J4-20A	S	HG-KR23 HG-MR23		
MR-J4-40A	S	HG-KR43 HG-MR43		
MR-J4-60A	S	HG-SR51, 52		
MR-J4-70A	S	HG-KR73 HG-MR73		
MR-J4-100A	S	HG-SR81, 102		
MR-J4-200A	S	HG-SR121, 201, 152, 202		
MR-J4-350A	S	HG-SR301, 352		
MR-J4-500A	S	HG-SR421, 502		
MR-J4-700A	S	HG-SR702		

Note:
1. Refer to "Combinations of Linear Servo Motor and Servo Amplifier" under section 3 Linear Servo Motor for the combinations of the primary and the secondary sides of the linear servo motors.

Combinations of Multi-Axis Servo Amplifier and Servo Motor
With MR-J4W2-B Servo Amplifier

Servo Amplifier	Stocked Item	Rotary Servo Motor	Linear Servo Motor (Primary Side) (*1)	Direct Drive Motor
MR-J4W2-22B	S	HG-KR053, 13, 23 HG-MR053, 13, 23	LM-U2PAB-05M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20
MR-J4W2-44B	S	HG-KR053, 13, 23, 43 HG-MR053, 13, 23, 43	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-K2P1A-01M-2SS1 LM-U2PAB-05M-0SS0 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20 TM-RFM004C20
MR-J4W2-77B	S	HG-KR43, 73 HG-MR43, 73 HG-SR51, 52	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-H3P3B-24P-CSS0 LM-H3P3C-36P-CSS0 LM-H3P7A-24P-ASS0 LM-K2P1A-01M-2SS1 LM-K2P2A-02M-1SS1 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0 LM-U2PBD-15M-1SS0 LM-U2PBF-22M-1SS0	TM-RFM004C20 TM-RFM006C20 TM-RFM006E20 TM-RFM012E20 TM-RFM012G20 TM-RFM040J10
MR-J4W2-1010B	S	HG-KR43, 73 HG-MR43, 73 HG-SR51, 81, 52, 102	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-H3P3B-24P-CSS0 LM-H3P3C-36P-CSS0 LM-H3P7A-24P-ASS0 LM-K2P1A-01M-2SS1 LM-K2P2A-02M-1SS1 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0 LM-U2PBD-15M-1SS0 LM-U2PBF-22M-1SS0	TM-RFM004C20 TM-RFM006C20 TM-RFM006E20 TM-RFM012E20 TM-RFM018E20 TM-RFM012G20 TM-RFM040J10

With MR-J4W3-B Servo Amplifier

Servo Amplifier	Stocked Item	Rotary Servo Motor	Linear Servo Motor (Primary Side) (*1)	Direct Drive Motor
MR-J4W3-222B	S	HG-KR053, 13, 23 HG-MR053, 13, 23	LM-U2PAB-05M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20
MR-J4W3-444B	S	HG-KR053, 13, 23, 43 HG-MR053, 13, 23, 43	LM-H3P2A-07P-BSS0 LM-H3P3A-12P-CSS0 LM-K2P1A-01M-2SS1 LM-U2PAB-05M-0SS0 LM-U2PAD-10M-0SS0 LM-U2PAF-15M-0SS0 LM-U2PBB-07M-1SS0	TM-RFM002C20 TM-RFM004C20

Note:
1. Refer to "Combinations of Linear Servo Motor and Servo Amplifier" in this guide for the combinations of the primary and the secondary sides of the linear servo motors.

MR-J4-B (SSCNET III/H Interface) Specifications

Servo Amplifier Model MR-J4-		10B	20B	40B	60B	70B	100B	200B	350B	500B	700B
Stocked Item		S	S	S	S	S	S	S	S	S	S
Output	Rated Voltage	3-phase 170 VAC									
	Rated Current (A)	1.1	1.5	2.8	3.2	5.8	6.0	11.0	17.0	28.0	37.0
Main Circuit Power Supply	Voltage/Frequency (*1, *2)	3-phase or 1-phase 200 VAC to 240 VAC, 50/60 Hz					3-phase 200 VAC to 240 VAC, 50/60 Hz				
	Rated Current (A)	0.9	1.5	2.6	3.2 (*9)	3.8	5.0	10.5	16.0	21.7	28.9
	Permissible Voltage Fluctuation	3-phase or 1-phase 170 VAC to 264 VAC					3-phase 170 VAC to 264 VAC				
	Permissible Frequency Fluctuation	±5% maximum									
Control Circuit Power Supply	Voltage/Frequency	1-phase 200 VAC to 240 VAC, 50/60 Hz									
	Rated Current (A)	0.2								0.3	
	Permissible Voltage Fluctuation	1-phase 170 VAC to 264 VAC									
	Permissible Frequency Fluctuation	±5% maximum									
	Power Consumption (W)	30								45	
Interface Power Supply		24 VDC ±10% (required current capacity: 0.3 A (including CN8 connector signal))									
Load-Side Encoder Interface (*8)		Mitsubishi high-speed serial communication									
Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)		-	10	10	10	20	20	100	100	130	170
Control Method		Sine-wave PWM control/current control method									
Dynamic Brake		Built-in (*4)									
Protective Functions		Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, over-speed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection									
Fully Closed Loop Control		Available in the future									
Safety Function (*10)		STO (IEC/EN 61800-5-2)									
Safety Performance	Standards Certified by CB	EN ISO 13849-1 Category 3 PL d, EN 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2									
	Response Performance	8 ms or less (STO input OFF — energy shut-off)									
	Test Pulse Input (STO) (*7)	Test pulse frequency: 1 Hz to 25 Hz; Test pulse off time: 1 ms maximum									
	Mean Time to Dangerous Failure (MTTFd)	100 years									
	Average Diagnostic Coverage (DCavg)	90%									
	Probability of Dangerous Failure Per Hour (PFH)	1.01×10^{-7} [1/h]									
Communication Function		USB: Connect a personal computer (MR Configurator2 compatible)									
Compliance to Standards	CE Marking	LVD: EN 61800-5-1; EMC: EN 61800-3; MD: EN ISO 13849-1, EN 61800-5-2, EN 62061									
	UL Standard (*10)	UL 508C									
Structure (IP Rating)		Natural cooling, open (IP20)				Force cooling, open (IP20)				Force cooling, open (IP20) (*5)	
Close Mounting		Possible (*6)								Not possible	
Weight kg		0.8	0.8	1.0	1.0	1.4	1.4	2.1	2.3	4.0	6.2

Notes:
1. Rated output and speed of a rotary servo motor and a direct drive motor; and rated thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Optimal regenerative option varies for each system. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4-_B Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. Terminal blocks are excluded.
6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use them with 75% or less of the effective load rate.
7. This function makes a failure diagnosis on contacts including external circuits by instantaneously turning off the signals from a controller to a servo amplifier at constant period when the input signals of the servo amplifier are on.
8. Not compatible with pulse train interface (A/B/Z-phase differential output type).
9. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor.
10. Some of the models are under application. Contact your local sales office for more details.

MR-J4W2-B (2-Axis) Specifications

Servo Amplifier Model MR-J4W2-			22B	44B	77B	1010B
Stocked Item			S	S	S	S
Rated Output			0.2	0.4	0.75	1
Output	Rated Voltage		3-phase 170 VAC			
	Rated Current (A)		1.5	2.8	5.8	6.0
Main Circuit Power Supply	Voltage/Frequency (*1, *2)		3-phase or 1-phase 200 VAC to 240 VAC, 50/60 Hz			3-phase 200 VAC to 240 VAC, 50/60 Hz
	Rated Current (A)		2.9	5.2	7.5	9.8
	Permissible Voltage Fluctuation		3-phase or 1-phase 170 VAC to 264 VAC			3-phase 170 VAC to 264 VAC
	Permissible Frequency Fluctuation		±5% maximum			
Control Circuit Power Supply	Voltage/Frequency		1-phase 200 VAC to 240 VAC, 50/60 Hz			
	Rated Current (A)		0.4			
	Permissible Voltage Fluctuation		1-phase 170 VAC to 264 VAC			
	Permissible Frequency Fluctuation		±5% maximum			
	Power Consumption (W)		55			
Interface Power Supply			24 VDC ±10% (required current capacity: 0.35 A (including CN8 connector signal))			
Load-Side Encoder Interface (*8)			Mitsubishi high-speed serial communication			
Capacitor Regeneration	Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)		17	21	44	
	Moment of inertia (J) Equivalent to Permissible Charging Amount (× 10^{-4} kg•m^2) (*6)		3.45	4.26	8.92	
	Mass Equivalent to Permissible Charging Amount (kg) (*7)	LM-H3	3.8	4.7	9.8	
		LM-K2 LM-U2	8.5	10.5	22.0	
Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)			20		100	
Control Method			Sine-wave PWM control/current control method			
Dynamic Brake			Built-in (*4)			
Protective Functions			Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection			
Fully Closed Loop Control			Available in the future			
Safety Function (*10)			STO (IEC/EN 61800-5-2)			
Safety Performance	Standards Certified by CB		EN ISO 13849-1 Category 3 PL d, EN 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2			
	Response Performance		8 ms or less (STO input OFF — energy shut-off)			
	Test Pulse Input (STO) (*7)		Test pulse frequency: 1 Hz to 25 Hz; Test pulse off time: 1 ms maximum			
	Mean Time to Dangerous Failure (MTTFd)		100 years			
	Average Diagnostic Coverage (DCavg)		90%			
	Probability of Dangerous Failure Per Hour (PFH)		1.01 × 10^{-7} [1/h]			
Communication Function			USB: Connect a personal computer (MR Configurator2 compatible)			
Compliance to Standards	CE Marking		LVD: EN 61800-5-1; EMC: EN 61800-3; MD: EN ISO 13849-1, EN 61800-5-2, EN 62061			
	UL Standard (*10)		UL 508C			
Structure (IP Rating)			Natural cooling, open (IP20)	Force cooling, open (IP20)		
Close Mounting			Possible			
Weight kg			1.5	1.5	2.0	2.0

Notes:
1. Rated output and speed of a rotary servo motor and a direct drive motor; and rated thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Optimal regenerative option varies for each system. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4W_-_B Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. For rotary servo motors and direct drive motors, "regenerative energy" is the energy generated when a machine, which has a moment of inertia equivalent to the permissible charging amount, decelerates from the rated speed to a stop. For linear servo motors, "regenerative energy" is the energy generated when a machine, which has mass equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.
6. This is applicable for the rotary servo motor and the direct drive motor. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the two axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis.
7. This is applicable for the linear servo motor. Mass of primary side (coil) is included. When two axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the two axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.
8. This function makes a failure diagnosis on contacts including external circuits by instantaneously turning off the signals from a controller to a servo amplifier at constant period when the input signals of the servo amplifier are on.
9. Not compatible with pulse train interface (A/B/Z-phase differential output type).
10. STO is common for all axes.
11. Some of the models are under application. Contact your local sales office for more details.

MR-J4W3-B (3-Axis) Specifications

Servo Amplifier Model MR-J4W3-			222B	444B
Stocked Item			S	S
Rated Output			0.2	0.4
Output	Rated Voltage		3-phase 170 VAC	
	Rated Current (A)		1.5	2.8
Main Circuit Power Supply	Voltage/Frequency (*1, *2)		3-phase or 1-phase 200 VAC to 240 VAC, 50/60 Hz	
	Rated Current (A)		4.3	7.8
	Permissible Voltage Fluctuation		3-phase or 1-phase 170 VAC to 264 VAC	
	Permissible Frequency Fluctuation		±5% maximum	
Control Circuit Power Supply	Voltage/Frequency		1-phase 200 VAC to 240 VAC, 50/60 Hz	
	Rated Current (A)		0.4	
	Permissible Voltage Fluctuation		1-phase 170 VAC to 264 VAC	
	Permissible Frequency Fluctuation		±5% maximum	
	Power Consumption (W)		55	
Interface Power Supply			24 VDC ±10% (required current capacity: 0.45 A (including CN8 connector signal))	
Load-Side Encoder Interface (*8)			Mitsubishi high-speed serial communication	
Capacitor Regeneration	Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)		21	30
	Moment of inertia (J) Equivalent to Permissible Charging Amount (× 10^{-4} kg•m^2) (*6)		4.26	6.08
	Mass Equivalent to Permissible Charging Amount (kg) (*7)	LM-H3	4.7	6.7
		LM-K2 LM-U2	10.5	15.0
Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)			30	
Control Method			Sine-wave PWM control/current control method	
Dynamic Brake			Built-in (*4)	
Protective Functions			Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, overspeed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection	
Fully Closed Loop Control			Not compatible	
Safety Function (*10)			STO (IEC/EN 61800-5-2) (*9)	
Safety Performance	Standards Certified by CB		EN ISO 13849-1 Category 3 PL d, EN 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2	
	Response Performance		8 ms or less (STO input OFF — energy shut-off)	
	Test Pulse Input (STO) (*7)		Test pulse frequency: 1 Hz to 25 Hz; Test pulse off time: 1 ms maximum	
	Mean Time to Dangerous Failure (MTTFd)		100 years	
	Average Diagnostic Coverage (DCavg)		90%	
	Probability of Dangerous Failure Per Hour (PFH)		1.01 × 10^{-7} [1/h]	
Communication Function			USB: Connect a personal computer (MR Configurator2 compatible)	
Compliance to Standards	CE Marking		LVD: EN 61800-5-1; EMC: EN 61800-3; MD: EN ISO 13849-1, EN 61800-5-2, EN 62061	
	UL Standard (*10)		UL 508C	
Structure (IP Rating)			Natural cooling, open (IP20)	
Close Mounting			Possible	
Weight kg			1.9	1.9

Notes:
1. Rated output and speed of a rotary servo motor and a direct drive motor; and rated thrust and maximum speed of a linear servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
2. Optimal regenerative option varies for each system. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4W_-_B Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio and the permissible load to mass ratio.
5. For rotary servo motors and direct drive motors, "regenerative energy" is the energy generated when a machine, which has a moment of inertia equivalent to the permissible charging amount, decelerates from the rated speed to a stop. For linear servo motors, "regenerative energy" is the energy generated when a machine, which has mass equivalent to the permissible charging amount, decelerates from the maximum speed to a stop.
6. This is applicable for the rotary servo motor and the direct drive motor. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total moments of inertia of the three axes. Otherwise, the permissible charging amount is equivalent to the moment of inertia of each axis.
7. This is applicable for the linear servo motor. Mass of primary side (coil) is included. When three axes are simultaneously decelerated, the permissible charging amount is equivalent to the total masses of the three axes. Otherwise, the permissible charging amount is equivalent to the mass of each axis.
8. This function makes a failure diagnosis on contacts including external circuits by instantaneously turning off the signals from a controller to a servo amplifier at constant period when the input signals of the servo amplifier are on.
9. STO is common for all axes.
10. Some of the models are under application. Contact your local sales office for more details.

MR-J4-A (General Purpose Interface) Specifications

Servo Amplifier Model MR-J4-		10A	20A	40A	60A	70A	100A	200A	350A	500A	700A
Stocked Item		S	S	S	S	S	S	S	S	S	S
Output	Rated Voltage	3-phase 170 VAC									
	Rated Current (A)	1.1	1.5	2.8	3.2	5.8	6.0	11.0	17.0	28.0	37.0
Main Circuit Power Supply	Voltage/Frequency (*1, *2)	3-phase or 1-phase 200 VAC to 240 VAC, 50/60 Hz					3-phase 200 VAC to 240 VAC, 50/60 Hz				
	Rated Current (A)	0.9	1.5	2.6	3.2 (*8)	3.8	5.0	10.5	16.0	21.7	28.9
	Permissible Voltage Fluctuation	3-phase or 1-phase 170 VAC to 264 VAC					3-phase 170 VAC to 264 VAC				
	Permissible Frequency Fluctuation	±5% maximum									
Control Circuit Power Supply	Voltage/Frequency	1-phase 200 VAC to 240 VAC, 50/60 Hz									
	Rated Current (A)	0.2								0.3	
	Permissible Voltage Fluctuation	1-phase 170 VAC to 264 VAC									
	Permissible Frequency Fluctuation	±5% maximum									
	Power Consumption (W)	30								45	
Interface Power Supply		24 VDC ±10% (required current capacity: 0.5 A (including CN8 connector signal))									
Load-Side Encoder Interface (*8)		Mitsubishi high-speed serial communication									
Tolerable Regenerative Power of the Built-in Regenerative Resistor (*2, *3) (W)		-	10	10	10	20	20	100	100	130	170
Control Method		Sine-wave PWM control/current control method									
Dynamic Brake		Built-in (*4)									
Protective Functions		Overcurrent shut-off, regenerative overvoltage shut-off, overload shut-off (electronic thermal), servo motor overheat protection, encoder error protection, regenerative error protection, undervoltage protection, instantaneous power failure protection, over-speed protection, error excessive protection, magnetic pole detection protection, linear servo control fault protection									
Position Control Mode	Maximum Input Pulse Frequency	4 Mpps (when using differential receiver), 200 kpps (when using open-collector)									
	Positioning Feedback Pulse	Encoder resolution: 22 bits									
	Command Pulse Multiplying Factor	Electronic gear A/B multiple, A: 1 to 16777216, B: 1 to 16777216, 1/10 < A/B < 4000									
	Positioning Complete Width Setting	0 pulse to ±65535 pulses (command pulse unit)									
	Error Excessive	±3 rotations									
	Torque Limit	Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)									
Speed Control Mode	Speed Control Range	Analog speed command 1:2000, internal speed command 1:5000									
	Analog Speed Command Input	0 V DC to ±10 V DC/rated speed (Speed at 10 V is changeable with [Pr. PC12].)									
	Speed Fluctuation Rate	±0.01% maximum (load fluctuation 0% to 100%), 0% (power fluctuation: ±10%) ±0.2% maximum (ambient temperature: 25 °C ± 10 °C) only when using analog speed command									
	Torque Limit	Set by parameters or external analog input (0 V DC to +10 V DC/maximum torque)									
Torque Control Mode	Analog Torque Command Input	0 V DC to ±8 V DC/maximum torque (input impedance: 10 kΩ to 12 kΩ)									
	Speed Limit	Set by parameters or external analog input (0 V DC to ± 10 V DC/rated speed)									
Fully Closed Loop Control		Available in the future									
Safety Function (*10)		STO (IEC/EN 61800-5-2)									
Safety Performance	Standards Certified by CB	EN ISO 13849-1 Category 3 PL d, EN 61508 SIL 2, EN 62061 SIL CL 2, EN 61800-5-2 SIL 2									
	Response Performance	8 ms or less (STO input OFF — energy shut-off)									
	Test Pulse Input (STO) (*7)	Test pulse frequency: 1 Hz to 25 Hz; Test pulse off time: 1 ms maximum									
	Mean Time to Dangerous Failure (MTTFd)	100 years									
	Average Diagnostic Coverage (DCavg)	90%									
	Probability of Dangerous Failure Per Hour (PFH)	1.01×10^{-7} [1/h]									
Communication Function		USB: Connect a personal computer (MR Configurator2 compatible)									
Compliance to Standards	CE Marking	LVD: EN 61800-5-1; EMC: EN 61800-3; MD: EN ISO 13849-1, EN 61800-5-2, EN 62061									
	UL Standard (*10)	UL 508C									
Communication Function		USB: Connect a personal computer (MR Configurator2 compatible)									
		RS-422: 1 : n communication (up to 32 axes) (Available in the future)									
Structure (IP Rating)		Natural cooling, open (IP20)				Force cooling, open (IP20)				Force cooling, open (IP20) (*5)	
Close Mounting		Possible (*6)								Not possible	
Weight kg		0.8	0.8	1.0	1.0	1.4	1.4	2.1	2.3	4.0	6.2

Notes:
1. Rated output and speed of a rotary servo motor are applicable when the servo amplifier, combined with the rotary servo motor, is operated within the specified power supply voltage and frequency.
2. Optimal regenerative option varies for each system. Select the most suitable regenerative option for your system with our capacity selection software.
3. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
4. When using the built-in dynamic brake, refer to "MR-J4-_A Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio.
5. Terminal blocks are excluded.
6. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use them with 75% or less of the effective load rate.
7. This function makes a failure diagnosis on contacts including external circuits by instantaneously turning off the signals from a controller to a servo amplifier at constant period when the input signals of the servo amplifier are on.
8. The rated current is 2.9 A when the servo amplifier is used with UL or CSA compliant servo motor.
9. Not compatible with pulse train interface (A/B/Z-phase differential output type).
10. Some of the models are under application. Contact your local sales office for more details.

B. MR-J4 Rotary Servomotors

X = Available
- = Not Available

Rotary servo motor series		Rated Speed (Max. r/min)	Rated Output Capacity (kW)	Servo Motor Type			Protective Degree (*2)	Compatible Series	Features	Application Examples
				Electromagnetic Brake Available	With Reducer (G1) (*1)	With Reducer (G5, G7) (*1)				
Small Capacity	HG-KR 	3000 (6000)	5 Types 0.05, 0.1, 0.2, 0.4, 0.75	X	X	X	IP65	HF-KP	Low inertia: perfect for general industrial machines	• Belt Drive • Robots • Mounters • Sewing Machines • X-Y Tables • Food Processing Machines • Semiconductor manufacturing devices • Knitting and embroidery machines
	HG-MR 	3000 (6000)	5 Types 0.05, 0.1, 0.2, 0.4, 0.75	X	-	-	IP65	HF-MP	Ultra-low inertia Well suited for high-throughput operations	• Inserters • Mounters
Medium Capacity	HG-SR 	1000 (1500)	6 Types 0.5, 0.85, 1.2, 2.0, 3.0, 4.2	X	-	-	IP67	HF-SP	Medium inertia This series is available with two rated speeds	• Material handling systems • Robots • X-Y tables
		2000 (3000)	7 Types 0.5, 1.0, 1.5, 2.0, 3.5, 5.0, 7.0	X	X	X	IP67			

Notes:
1. G1 for general industrial machines. G5 and G7 for high precision applications.
2. The shaft-through portion is excluded. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 2-13 in this catalog for the shaft-through portion. For geared servo motor, IP rating of the reducer portion is equivalent to IP44.

Servo Motor Selection (Example Part No. = HG-KR053BG1)
Not all options available for every motor.

HG-□ □□□□□□

Symbol	Shaft End
None	Standard (Straight shaft)(*7)
K	Key shaft (with/without key)(*8)
D	D-cut shaft (*8)

Symbol	Reducer(*5)
None	None
G1	With reducer for general industrial machines, flange mounting
G1H	With reducer for general industrial machines, foot mounting(*6)
G5	With flange-output type reducer for high precision applications, flange mounting
G7	With shaft-output type reducer for high precision applications, flange mounting

Symbol	Oil Seal
None	None
J	Installed (*2, *3, *4)

Symbol	Electromagnetic Brake
None	None
B	Installed(*1)

Symbol	Rated Speed [r/min]
1	1000
2	2000
3	3000

Symbol	Rated Output [kW]
05	0.05
1 to 8	0.1 to 0.85
10 to 70	1.0 to 7.0

Symbol	Inertia/Capacity
HG-KR	Low inertia, small capacity
HG-MR	Ultra-low inertia, small capacity
HG-SR	Medium inertia, medium capacity

Stocked Motors

Model Number
HG-KR053(B)
HG-KR13(B)
HG-KR23(B)
HG-KR43(B)
HG-KR73(B)
HG-KR053(B)D
HG-KR13(B)D
HG-KR23(B)K
HG-KR43(B)K
HG-KR73(B)K
HG-MR053(B)
HG-MR13(B)
HG-MR23(B)
HG-MR43(B)
HG-MR73(B)
HG-MR053(B)D
HG-MR13(B)D
HG-MR23(B)K
HG-MR43(B)K
HG-MR73(B)K

Model Number
HG-SR52(B)
HG-SR102(B)
HG-SR152(B)
HG-SR202(B)
HG-SR352(B)
HG-SR-502(B)
HG-SR702(B)
HG-SR52(B)K
HG-SR102(B)K
HG-SR152(B)K
HG-SR202(B)K
HG-SR502(B)K
HG-SR702(B)K

Notes:
1. Refer to electromagnetic brake specifications of each servo motor series in this catalog for the available models and detailed specifications.
2. Available in 0.1 kW or larger HG-KR/HG-MR series and all HG-SR series.
3. Oil seal is not installed in the geared servo motor.
4. Dimensions for HG-KR/HG-MR/HG-SR series with an oil seal are different from the standard models. Contact your local sales office for more details.
5. Refer to "Geared Servo Motor Specifications" in this catalog for the available models and detailed specifications.
6. Available only in HF-SR 2000 r/min series.
7. Standard HG-SR G1/G1H has a key shaft (with key).
8. Refer to special shaft end specifications of each servo motor series in this catalog for the available models and detailed specifications.

Combinations of Rotary Servo Motor and Servo Amplifier
With MR-J4 Servo Amplifier

Rotary Servo Motor			Servo Amplifier
HG-KR	HG-MR	HG-SR	
053, 13	053, 13	-	MR-J4-10A/B
23	23	-	MR-J4-20A/B
43	43	-	MR-J4-40A/B
-	-	51, 52	MR-J4-60A/B
73	73	-	MR-J4-70A/B
-	-	81, 102	MR-J4-100A/B
-	-	121, 201, 152, 202	MR-J4-200A/B
-	-	301, 352	MR-J4-350A/B
-	-	421, 502	MR-J4-500A/B
-	-	702	MR-J4-700A/B

With MR-J4W2 Servo Amplifier

Rotary Servo Motor			Servo Amplifier	Axis (*1)
HG-KR	HG-MR	HG-SR		
053, 13, 23	053, 13, 23	-	MR-J4W2-22B	A/B
053, 13, 23, 43	053, 13, 23, 43	-	MR-J4W2-44B	A/B
43, 73	43, 73	51, 52	MR-J4W2-77B	A/B
43, 73	43, 73	51, 81, 52, 102	MR-J4W2-1010B	A/B

With MR-J4W3 Servo Amplifier

Rotary Servo Motor			Servo Amplifier	Axis (*2)
HG-KR	HG-MR	HG-SR		
053, 13, 23	053, 13, 23	-	MR-J4W3-222B	A/B/C
053, 13, 23, 43	053, 13, 23, 43	-	MR-J4W3-444B	A/B/C

Notes:
1. Any combination of the servo motors is available such as rotary servo motor for A-axis, and linear servo motor or direct drive motor for B-axis. Refer to "Combinations of Linear Servo Motor and Servo Amplifier" and "Combinations of Direct Drive Motor and Servo Amplifier" in the MR-J4 brochure.
2. Any combination of the servo motors is available such as rotary servo motor for A-axis, linear servo motor for B-axis, and direct drive motor for C-axis. Refer to "Combinations of Linear Servo Motor and Servo Amplifier" and "Combinations of Direct Drive Motor and Servo Amplifier" in the MR-J4 brochure.

HG-KR Series (Low Inertia, Small Capacity) Specifications

Servomotor Model HG-KR_		053(B)	13(B)	23(B)	43(B)	73(B)
Servo Amplifier Model	MR-J4-_	Refer to "Combinations of Servo Motor and Servo Amplifier" in this guide.				
	MR-J4W_-_					
Power Supply Capacity (kVA) (*1)		0.3	0.3	0.5	0.9	1.3
Continuous Running Duty	Rated Output (kW)	5.0	100	200	400	750
	Rated Torque (N•m) (*3)	0.16	0.32	0.64	1.3	2.4
Maximum Torque (N•m)		0.56	1.1	2.2	4.5	8.4
Rated Speed (r/min)		3000				
Maximum Speed (r/min)		6000				
Permissible Instantaneous Speed (r/min)		6900				
Power Rate Continuous Rated Torque (kW/s)	Standard (kW/s)	5.63	13.0	18.3	43.7	45.2
	With Electromagnetic Brake (kW/s)	5.37	12.1	16.7	41.3	41.6
Rated Current (A)		0.9	0.8	1.3	2.6	4.8
Maximum Current (A)		3.2	2.5	4.6	9.1	17.2
Regenerative Braking Frequency (times/min) (*2)	MR-J4- (times/min)	(*4)	(*4)	453	268	157
	MR-J4W_- (times/min)	2540	1370	451	268	393
Moment of inertia J ($x10^{-4}$kg•m^2) [J (oz•in^2)]	Standard	0.0450	0.0777	0.221	0.371	1.26
	With Electromagnetic Brake	0.0472	0.0837	0.243	0.393	1.37
Recommended Load/Motor Inertia Moment Ratio		15 times or less		24 times or less	22 times or less	15 times or less
Speed/Position Detector		Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil Seal		None	None (Servo motors with oil seal are available. (HG-KR_J))			
Insulation Class		130 (B)				
Structure		Totally enclosed, natural cooling (IP rating: IP65) (*2)				
Environment	Ambient Temperature	0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient Humidity	80% RH maximum (non-condensing), storage: 90% RH maximum (non-condensing)				
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Elevation / Vibration (*5)	1000 m or less above sea level; X: 49 m/s^2 Y: 49 m/s^2				
Vibration Rank		V10 (*6)				
Permissible Load for the Shaft (*5)	L (mm)	25	25	30	30	40
	Radial (N)	88	88	245	245	392
	Thrust (N)	59	59	98	98	147
Weight kg	Standard	0.34	0.54	0.91	1.4	2.8
	With Electromagnetic Brake	0.54	0.74	1.3	1.8	3.8

Notes:
1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. IP67 for the servo motor with oil seal. Equivalent to IP44 for the reducer portion on the geared servo motor. Refer to this guide for the shaft-through portion.
3. When unbalanced torque is generated, such as in a vertical lift machine, it is recommended that the unbalanced torque of the machine be kept under 70% of the servo motor rated torque.
4. When the servo motor decelerates to a stop from the rated speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range.
   When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the following requirements are met.
   • HG-KR053(B): The load to motor inertia ratio is 8 times or less, and the effective torque is within the rated torque range.
   • HG-KR13(B): The load to motor inertia ratio is 4 times or less, and the effective torque is within the rated torque range.
5. The vibration direction is shown in the diagram below. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

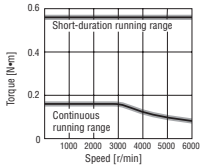
6. Refer to the MR-J4 Servo Amplifier and Motors brochure for more detailed specifications.

HG-KR Series Electromagnetic Brake Specifications (*1)

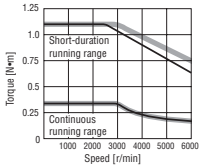
Servomotor Model HG-KR_		053B	13B	23B	43B	73B
Type		Spring actuated type safety brake				
Rated Voltage		24 VDC^{-10} 0%				
Power Consumption (W) at 20 °C		6.3	6.3	7.9	7.9	10
Electromagnetic Brake Static Friction Torque (N•m)		0.32	0.32	1.3	1.3	2.4
Permissible Braking Work	Per Braking (J)	5.6	5.6	22	22	64
	Per Hour (J)	56	56	220	220	640
Electromagnetic Brake Life (*2)	Number of Times (Times)	20000				
	Work Per Braking (J)	5.6	5.6	22	22	64

Notes:
1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-KR053(B) (*1, *2)



HG-KR13(B) (*1, *2)



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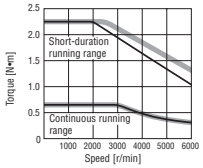
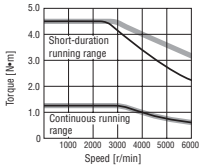
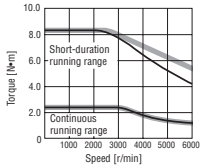


HG-KR43(B) (*1, *2)



HG-KR73(B) (*1, *2)



Notes: 1. ▬ : For 3-phase 200 VAC or 1-phase 230 VAC.
2. ——— : For 1-phase 200 VAC.
3. Torque drops when the power supply voltage is below the specified value.

HG-MR Series (Ultra Low Inertia, Small Capacity) Specifications

Servomotor Model HG-MR_		053(B)	13(B)	23(B)	43(B)	73(B)
Servo Amplifier Model	MR-J4-_	Refer to "Combinations of Servo Motor and Servo Amplifier" in this guide.				
	MR-J4W_-_					
Power Supply Capacity (kVA) (*1)		0.3	0.3	0.5	0.9	1.3
Continuous Running Duty	Rated Output (kW)	5.0	100	200	400	750
	Rated Torque (N•m) (*3)	0.16	0.32	0.64	1.3	2.4
Maximum Torque (N•m)		0.48	0.95	1.9	3.8	7/2
Rated Speed (r/min)		3000				
Maximum Speed (r/min)		6000				
Permissible Instantaneous Speed (r/min)		6900				
Power Rate Continuous Rated Torque (kW/s)	Standard (kW/s)	15.6	33.8	46.9	114.2	97.3
	With Electromagnetic Brake (kW/s)	11.3	28.0	37.2	98.8	82.1
Rated Current (A)		1.0	0.9	1.5	2.6	5.8
Maximum Current (A)		3.1	2.5	5.3	9.0	20.0
Regenerative Braking Frequency (times/min) (*2)	MR-J4- (times/min)	(*4)	(*4)	1180	713	338
	MR-J4W_- (times/min)	7540	3640	1170	710	846
Moment of Inertia J ($x10^{-4}$kg•m^2) [J (oz•in^2)]	Standard	0.0162	0.0300	0.0865	0.142	0.586
	With Electromagnetic Brake	0.0224	0.0362	0.109	0.164	0.694
Recommended Load/Motor Inertia Moment Ratio		30 times or less				
Speed/Position Detector		Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)				
Oil Seal		None	None (Servo motors with oil seal are available. (HG-MR_J))			
Insulation Class		130 (B)				
Structure		Totally enclosed, natural cooling (IP rating: IP65) (*2)				
Environment	Ambient Temperature	0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient Humidity	80% RH maximum (non-condensing), storage: 90% RH maximum (non-condensing)				
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Elevation / Vibration (*5)	1000 m or less above sea level; X: 49 m/s^2 Y: 49 m/s^2				
Vibration Rank		V10 (*6)				
Permissible Load for the Shaft (*5)	L (mm)	25	25	30	30	40
	Radial (N)	88	88	245	245	392
	Thrust (N)	59	59	98	98	147
Weight kg	Standard	0.34	0.54	0.91	1.4	2.8
	With Electromagnetic Brake	0.54	0.74	1.3	1.8	3.8

Notes:
1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. IP67 for the servo motor with oil seal. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 2-13 in this catalog for the shaft-through portion.
3. When unbalanced torque is generated, such as in a vertical lift machine, it is recommended that the unbalanced torque of the machine be kept under 70% of the servo motor rated torque.
4. When the servo motor decelerates to a stop from the rated speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range.
   When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the following requirements are met.
   • HG-MR053(B): The load to motor inertia ratio is 24 times or less, and the effective torque is within the rated torque range.
   • HG-MR13(B): The load to motor inertia ratio is 12 times or less, and the effective torque is within the rated torque range.
5. The vibration direction is shown in the diagram below. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

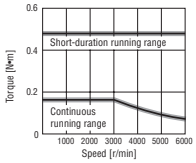
6. Refer to the MR-J4 Servo Amplifier and Motors brochure for more detailed specifications.

HG-MR Series Electromagnetic Brake Specifications (*1)

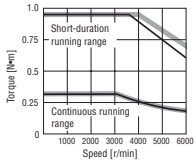
Servomotor Model HG-MR_		053B	13B	23B	43B	73B
Type		Spring actuated type safety brake				
Rated Voltage		24 VDC^{-10} 0%				
Power Consumption (W) at 20 °C		6.3	6.3	7.9	7.9	10
Electromagnetic Brake Static Friction Torque (N•m)		0.32	0.32	1.3	1.3	2.4
Permissible Braking Work	Per Braking (J)	5.6	5.6	22	22	64
	Per Hour (J)	56	56	220	220	640
Electromagnetic Brake Life (*2)	Number of Times (Times)	20000				
	Work Per Braking (J)	5.6	5.6	22	22	64

Notes:
1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

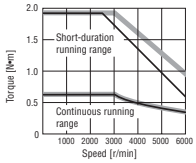
HG-MR053(B) (*1, *2)



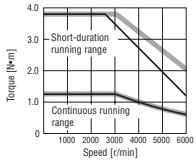
HG-MR13(B) (*1, *2)



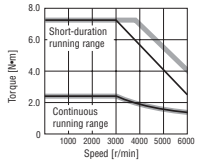
HG-MR23(B) (*1, *2)



HG-MR43(B) (*1, *2)



HG-MR73(B) (*1, *2)



Notes: 1. ——— : For 3-phase 200 VAC or 1-phase 230 VAC.
2. ——— : For 1-phase 200 VAC.
3. Torque drops when the power supply voltage is below the specified value.

HG-SR 1000 Series (Medium Inertia, Medium Capacity) Specifications

Servomotor Model HG-SR_		51(B)	81(B)	121(B)	201(B)	301(B)	421(B)
Servo Amplifier Model	MR-J4-_	Refer to "Combinations of Servo Motor and Servo Amplifier" in this guide.					
	MR-J4W_-_						
Power Supply Capacity (kVA) (*1)		1.0	1.5	2.1	3.5	4.8	6.3
Continuous Running Duty	Rated Output (kW)	0.5	0.85	1.2	2.0	3.0	4.2
	Rated Torque (N•m) (*3)	4.8	8.1	11.5	19.1	28.6	40.1
Maximum Torque (N•m)		14.3	24.4	34.4	57.3	85.9	129
Rated Speed (r/min)		1000					
Maximum Speed (r/min)		1500					
Permissible Instantaneous Speed (r/min)		1725					
Power Rate Continuous Rated Torque (kW/s)	Standard (kW/s)	19.7	41.2	28.1	46.4	82.3	107
	With Electromagnetic Brake (kW/s)	16.5	36.2	23.2	41.4	75.3	99.9
Rated Current (A)		2.8	5.2	7.1	9.4	13	19
Maximum Current (A)		9.0	16.6	22.7	30.1	41.6	60.8
Regenerative Braking Frequency (times/min) (*2)	MR-J4- (times/min)	77	114	191	113	89	76
	MR-J4W_- (times/min)	392	286	-	-	-	-
Moment of Inertia J ($x10^{-4}$kg•m^2) [J (oz•in^2)]	Standard	11.6	16.0	46.8	78.6	99.7	151
	With Electromagnetic Brake	13.8	18.2	56.5	88.2	109	161
Recommended Load/Motor Inertia Moment Ratio		15 times or less					
Speed/Position Detector		Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)					
Oil Seal		None (Servo motors with oil seal are available. (HG-SR_J))					
Insulation Class		155 (F)					
Structure		Totally enclosed, natural cooling (IP rating: IP67) (*2)					
Environment	Ambient Temperature	0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient Humidity	80% RH maximum (non-condensing), storage: 90% RH maximum (non-condensing)					
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Elevation	1000 m or less above sea level					
	Vibration (*4)	X: 24.5 m/s² Y: 24.5 m/s²		X: 24.5 m/s² Y: 49 m/s²		X: 24.5 m/s² Y: 29.4 m/s²	
Vibration Rank		V10 (*6)					
Permissible Load for the Shaft (*5)	L (mm)	55	55	79	79	79	79
	Radial (N)	980	980	2058	2058	2058	2058
	Thrust (N)	490	490	980	980	980	980
Weight kg	Standard	6.2	7.3	11	16	20	27
	With Electromagnetic Brake	8.2	9.3	17	22	26	33

Notes:
1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. IP67 for the servo motor with oil seal. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 2-13 in this catalog for the shaft-through portion.
3. When unbalanced torque is generated, such as in a vertical lift machine, it is recommended that the unbalanced torque of the machine be kept under 70% of the servo motor rated torque.
4. The vibration direction is shown in the diagram below. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

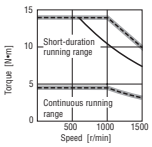
5. Refer to the MR-J4 Servo Amplifier and Motors brochure for more detailed specifications.

HG-SR 1000 Series Electromagnetic Brake Specifications (*1)

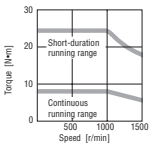
Servomotor Model HG-SR_		51B	81B	121B	201B	301B	421B
Type		Spring actuated type safety brake					
Rated Voltage		24 VDC^{-10} 0%					
Power Consumption (W) at 20 °C		20	20	34	34	34	34
Electromagnetic Brake Static Friction Torque (N•m)		8.5	8.5	44	44	44	44
Permissible Braking Work	Per Braking (J)	400	400	4500	4500	4500	4500
	Per Hour (J)	4000	4000	45000	45000	45000	45000
Electromagnetic Brake Life (*2)	Number of Times (Times)	20000					
	Work Per Braking (J)	200	200	1000	1000	1000	1000

Notes:
1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

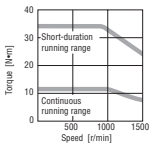
HG-SR51(B) (*1, *2, *3)



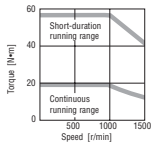
HG-SR81(B) (*1)



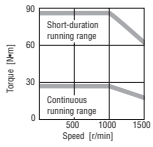
HG-SR121(B) (*1)



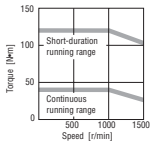
HG-SR201(B) (*1)



HG-SR301(B) (*1)



HG-SR421(B) (*1)



Notes: 1. ——— : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. ——— : For 1-phase 200 V AC. This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

HG-SR 2000 Series (Medium Inertia, Medium Capacity) Specifications

Servomotor Model HG-SR_		52(B)	102(B)	152(B)	202(B)	352(B)	502(B)	702(B)
Servo Amplifier Model	MR-J4-	Refer to "Combinations of Servo Motor and Servo Amplifier" in this guide.						
	MR-J4W_-_							
Power Supply Capacity (kVA) (*1)		1.0	1.7	2.5	3.5	5.5	7.5	10
Continuous Running Duty	Rated Output (kW)	0.5	1.0	1.5	2.0	3.5	5.0	7.0
	Rated Torque (N•m) (*3)	2.4	4.8	7.2	9.5	16.7	23.9	33.4
Maximum Torque (N•m)		7.2	14.3	21.5	28.6	50.1	71.6	1000
Rated Speed (r/min)		2000						
Maximum Speed (r/min)		3000						
Permissible Instantaneous Speed (r/min)		3450						
Power Rate Continuous Rated Torque (kW/s)	Standard (kW/s)	7.85	19.7	32.1	19.5	35.5	57.2	74.0
	With Electromagnetic Brake (kW/s)	6.01	16.5	28.2	16.1	31.7	52.3	69.4
Rated Current (A)		2.9	5.6	9.4	9.6	14	22	26
Maximum Current (A)		9.0	17.4	29.1	30.7	44.8	70.4	83.2
Regenerative Braking Frequency (times/min) (*2)	MR-J4- (times/min)	31	38	139	47	28	29	25
	MR-J4W_- (times/min)	154	96	-	-	-	-	-
Moment of inertia J ($x10^{-4}$kg•m^2) [J (oz•in^2)]	Standard	7.26	11.6	16.0	46.8	78.6	99.7	151
	With Electromagnetic Brake	9.48	13.8	18.2	56.5	88.2	109	161
Recommended Load/Motor Inertia Moment Ratio		15 times or less						
Speed/Position Detector		Absolute/incremental 22-bit encoder (resolution: 4194304 pulses/rev)						
Oil Seal		None (Servo motors with oil seal are available. (HG-SR_J))						
Insulation Class		155 (F)						
Structure		Totally enclosed, natural cooling (IP rating: IP67) (*2)						
Environment	Ambient Temperature	0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)						
	Ambient Humidity	80% RH maximum (non-condensing), storage: 90% RH maximum (non-condensing)						
	Atmosphere	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust						
	Elevation	1000 m or less above sea level						
	Vibration (*4)	X: 24.5 m/s^2 Y: 24.5 m/s^2			X: 24.5 m/s^2 Y: 49 m/s^2		X: 24.5 m/s^2 Y: 29.4 m/s^2	
Vibration Rank		V10 (*6)						
Permissible Load for the Shaft (*5)	L (mm)	55	55	55	79	79	79	79
	Radial (N)	980	980	980	2058	2058	2058	2058
	Thrust (N)	490	490	490	980	980	980	980
Weight kg	Standard	4.8	6.2	7.3	11	16	20	27
	With Electromagnetic Brake	6.7	8.2	9.3	17	22	26	33

Notes:
1. Contact your local sales office if the load to motor inertia ratio exceeds the value in the table.
2. The shaft-through portion is excluded. IP67 for the servo motor with oil seal. Refer to the asterisk 7 of "Annotations for Rotary Servo Motor Specifications" on p. 2-13 in this catalog for the shaft-through portion.
3. When unbalanced torque is generated, such as in a vertical lift machine, it is recommended that the unbalanced torque of the machine be kept under 70% of the servo motor rated torque.
4. The vibration direction is shown in the diagram below. The numeric value indicates the maximum value of the component (commonly the bracket in the opposite direction of the motor shaft). Fretting of the bearing occurs easily when the motor stops, so maintain vibration to approximately one-half of the allowable value.

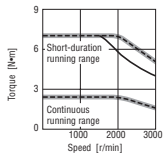
5. Refer to the MR-J4 Servo Amplifier and Motors brochure for more detailed specifications.

HG-SR 2000 Series Electromagnetic Brake Specifications (*1)

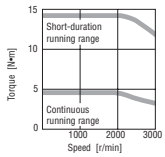
Servomotor Model HG-SR_		52B	102B	152B	202B	352B	502B	702B
Type		Spring actuated type safety brake						
Rated Voltage		24 VDC^{-10} 0%						
Power Consumption (W) at 20 °C		20	20	34	34	34	34	34
Electromagnetic Brake Static Friction Torque (N•m)		8.5	8.5	44	44	44	44	44
Permissible Braking Work	Per Braking (J)	400	400	4500	4500	4500	4500	4500
	Per Hour (J)	4000	4000	45000	45000	45000	45000	45000
Electromagnetic Brake Life (*2)	Number of Times (Times)	20000						
	Work Per Braking (J)	200	200	1000	1000	1000	1000	1000

Notes:
1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

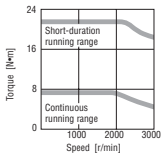
HG-SR52(B) (*1, *2, *3)



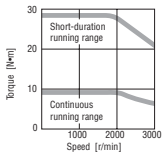
HG-SR102(B) (*1)



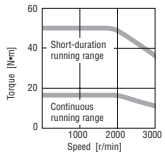
HG-SR152(B) (*1)



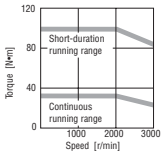
HG-SR202(B) (*1)



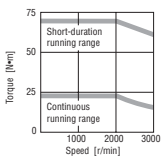
HG-SR352(B) (*1)



HG-SR702(B) (*1)



HG-SR502(B) (*1)

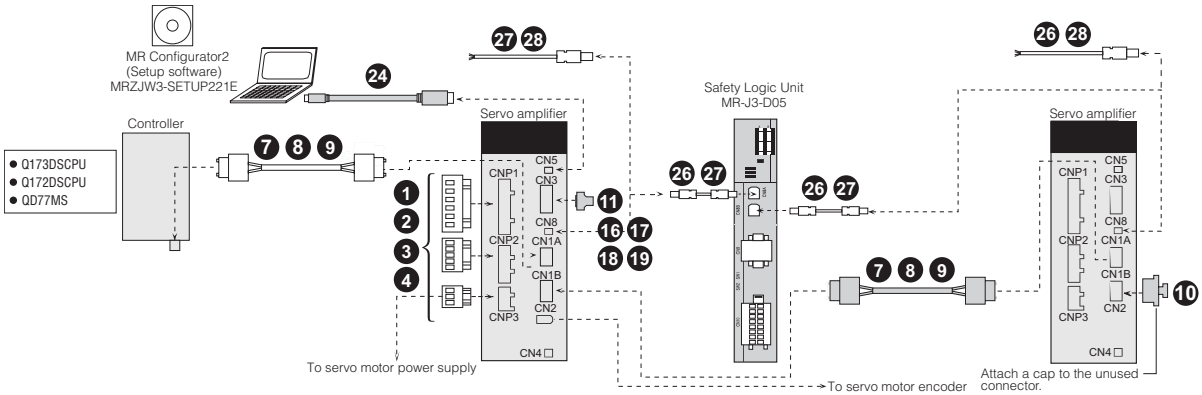


Notes: 1. : For 3-phase 200 V AC.
2. : For 1-phase 230 V AC.
3. : For 1-phase 200 V AC.
This line is drawn only where differs from the other two lines.
4. Torque drops when the power supply voltage is below the specified value.

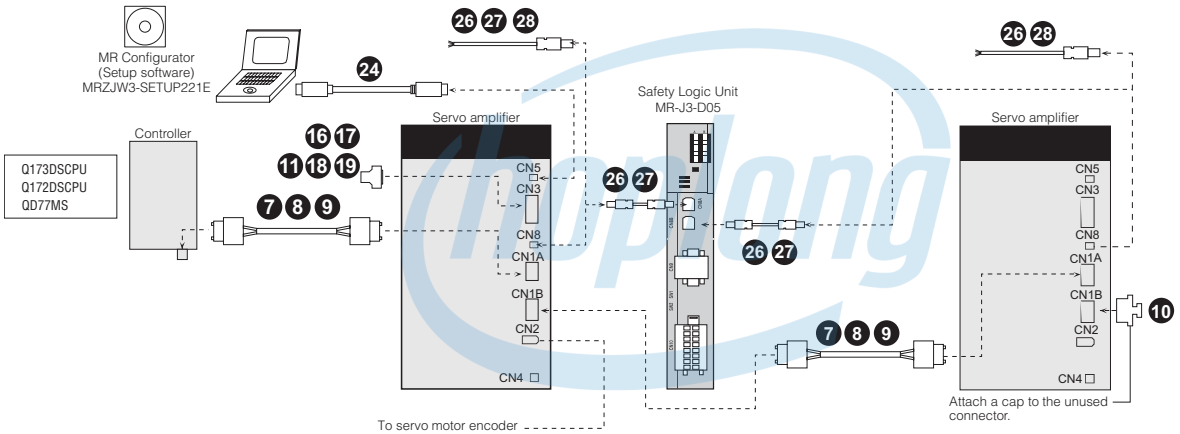
C. Servo Amplifier Cables and Connectors

MR-J4-B Type Amplifier Cables and Connectors

For 3.5 kW or smaller

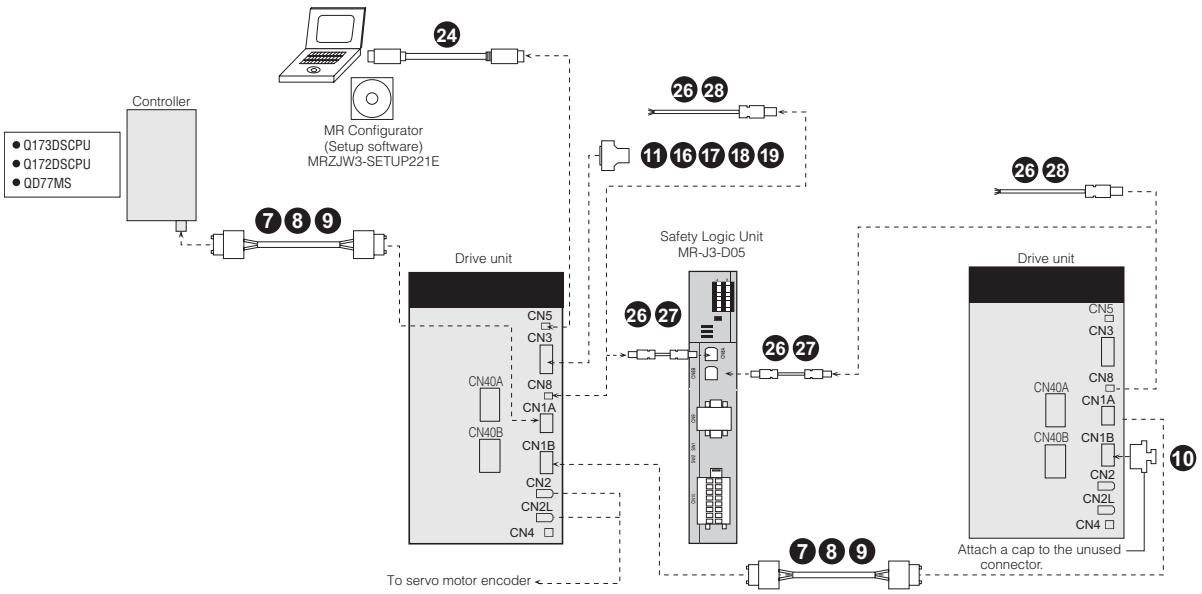


For 5 kW or larger



Note: Attach a SSCNET III connector cap to the unused connector.

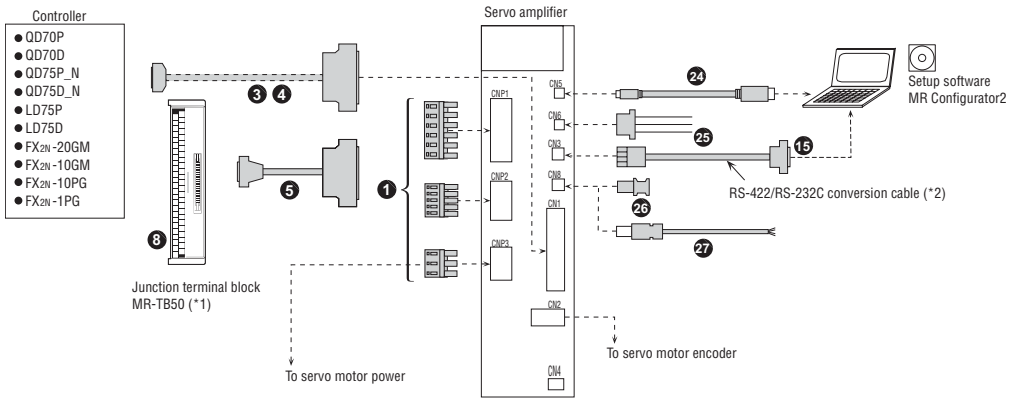
MR-J4W2-B and MR-J4W3-B Type Amplifier Cables and Connectors



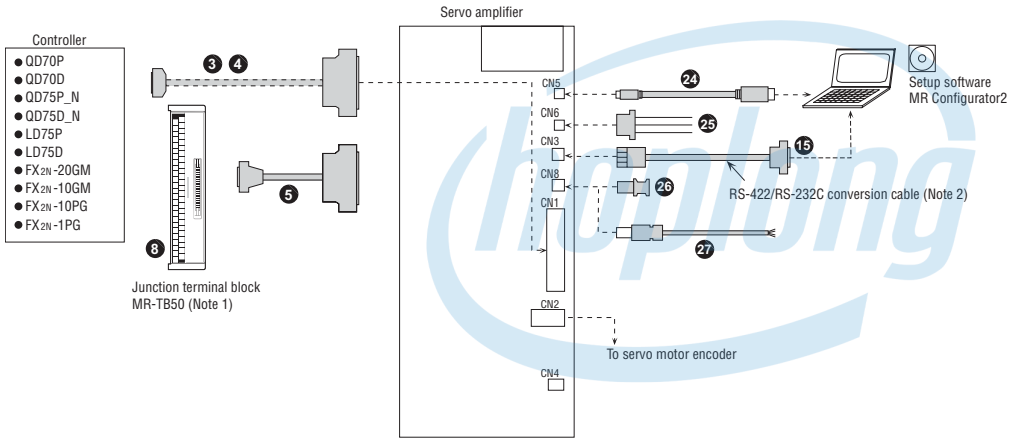
Notes:
1. MR-BT6VCASE and MR-BAT6V1 are not required when using the linear servo motor or when configuring incremental system with the MR-J4W_-B servo amplifier.
2. Attach a SSCNET III connector cap to the unused connector.
3. Refer to "Junction Terminal Block" in this catalog.
4. CNP3C and CN2C connectors are available for MR-J4W3-B servo amplifier.

MR-J4-A Type Amplifier Cables and Connectors

For 3.5 kW or smaller



For 5 kW or larger



Notes:
1. Refer to "Junction Terminal Block" in this catalog.
2. Refer to "Products on the Market for Servo Amplifiers" in this catalog.

For CNP1, CNP2, CNP3

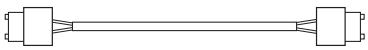
Item		Model Number	Stocked Item	Protection Level	Description
❶	**Servo Amplifier Power Connector Set (Insertion Type) For MR-J4-100A or Smaller/MR-J4-100B or Smaller (*1)**	Supplied with Amplifier	-	-	CNP1 connector, CNP2 connector, CNP3 connector, Open tool
	Servo Amplifier Power Connector Set (Insertion Type) For MR-J4-200A/MR-J4-200B/MR-J4-350A/ MR-J4-350B (*1)	Supplied with Amplifier	-	-	CNP1 connector, CNP2 connector, CNP3 connector, Open tool
❷	**Servo Amplifier Power Connector Set (Insertion Type) For MR-J4W2-B/MR-J4W3-B (*3)**	Supplied with Amplifier	-	-	CNP1 connector, CNP2 connector, CNP3A/CNP3B/ CNP3C connector, Open tool

Notes:
1. This connector set is not required for 5 kW or larger servo amplifiers since terminal blocks are mounted. Refer to servo amplifier dimensions in this catalog for more details.
2. The wire size shows wiring specification of the connector. Refer to "Selection Example in HIV Wires for Servo Motors" in this catalog for examples of wire size selection.
3. Press bonding type is also available. Refer to "MR-J4W_-_B Servo Amplifier Instruction Manual" for details.

For CN1

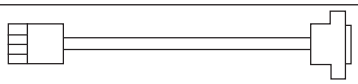
Item		Model Number	Stocked Lengths	Protection Level	Description
3	Connector Set For MR-J4-A	MR-J3CN1	S	-	
4	CN1 Pigtail Cable (50 Pin)	MR-J3CCN1CBL-_M _ = cable length 3, 5m	3, 5	-	
5	Junction Terminal Block Cable For Connecting MRJ4-A and MR-TB50	MR-J2M-CN1TBL_M (_ = cable length 0.5, 1m)	05, 1	-	
6	Junction Terminal Block	MR-TB50	S	-	
		MR-TB50MIN (reduced size - width = 145mm (5.71 in))	S	-	

For Controller, CN1A, CN1B

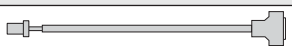
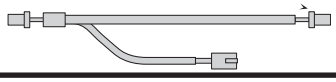
Item		Model Number	Stocked Lengths	Protection Level	Description
7	SSCNET III Cable (Standard Cord for Inside Cabinet) Compatible With SSCNET III(/H) For MR-J4-B/MR-J4W2-B/MR-J4W3-B (*1)	MR-J3BUS_M _ (= cable length 0.15, 0.3, 0.5, 1, 3m)	S	-	
8	SSCNET III Cable (Standard Cable for Outside cabinet) Compatible With SSCNET III(/H) For MR-J4-B/MR-J4W2-B/MR-J4W3-B (*1)	MR-J3BUS_M-A (_ = cable length 5, 10, 20m)	S	-	
9	SSCNET III Cable (Long Distance Cable, Long Bending Life) Compatible With SSCNET III(/H) For MR-J4-B/MR-J4W2-B/MR-J4W3-B (*1, *3)	MR-J3BUS_M-B (_ = cable length 30, 40, 50m)	S	-	
10	SSCNET III Connector Cap. Compatible With SSCNET III(/H). For MR-J4-B/MR-J4W2-B/MR-J4W3-B	Supplied with Amplifier	S	-	

Notes:
1. Read carefully through the precautions enclosed with the options before use.
2. Dedicated tools are required. Contact your local sales office for more details.
3. When SSCNET III/H is used, refer to "Products on the Market for Servo Amplifiers" in this catalog for cables over 50 m or with ultra-long bending life.

For CN3

Item		Model Number	Stocked Item	Protection Level	Description
11	Connector Set For MR-J4-B	MR-CCN1	-	-	
12	Connector Set (Qty: 1 pc) For MR-J4W2-B/ MR-J4W3-B	MR-J2CMP2	S	-	
13	Connector Set For MR-J4W2-B/MR-J4W3-B	MR-ECN1	S	-	
14	Junction Terminal Block Cable For Connecting MR-J4W2-B/MR-J4W3-B and MR-TB26A	MR-TBNATBL_M _ = cable length 0.5, 1m	S	-	
15	RS-232 to RS-485 Converter PC to CN3 (3M)	SC-FRPC (Cable length 3m)	S	-	
16	CN10 or CN3 Signal Connector (20 pin)	MR-J2CN1	S	-	
17	CN10 or CN3 Pigtail Cable (20 pin)	MR-CCN1CBL-_M (_ = cable length 3, 5m)	3, 5	-	
18	Cable for PS7DW-20V14B-F Terminal Block	MR-J2HBUS_M	05, 1, 3, 5	-	
19	20 Pin Terminal B Lock for J4-B (TB20 cannot be used)	PS7DW-20V14B-F	S	-	
20	CN6 Pigtail Cable (26 Pin)	MR-ECN1CBL-3M	S	-	
21	Junction Terminal Block	MR-TB26A	S	-	

For CN4

Item		Model Number	Stocked Lengths	Protection Level	Description
22	Battery Cable For Connecting MR-J4W2-B/ MR-J4W3-B and MR-BT6VCASE	MR-BT6V1CBL_M _ = cable length 0.3, 1m	S	-	
23	Junction Battery Cable For MR-J4W2-B/MR-J4W3-B	MR-BT6V2CBL_M _ = cable length 0.3, 1m	S	-	

For CN5 and CN6

Item		Model Number	Stocked Lengths	Protection Level	Description
24	CN5 Personal Computer Communication Cable (USB cable) For MR-J4-A/MR-J4-B/MR-J4W2-B/ MR-J4W3-B	MR-J3USBCBL3M	3m	-	
25	CN6 Monitor Cable For MR-J4-A	MR-J3CN6CBL1M	1m	-	

For CN8

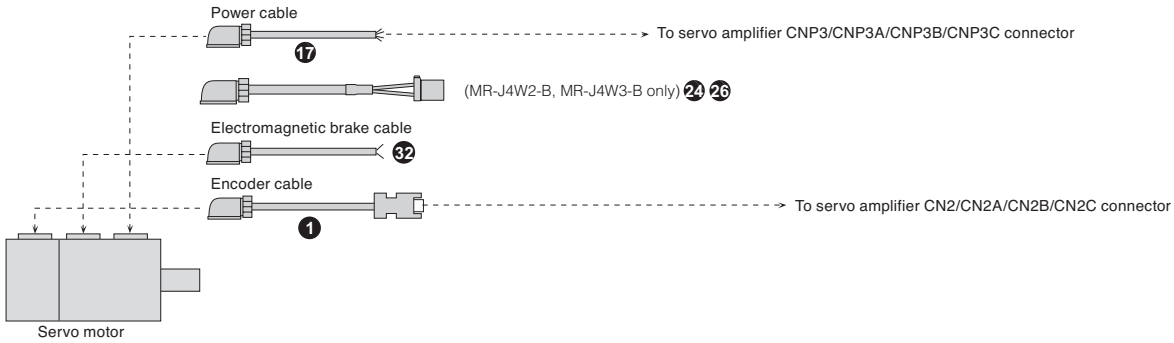
Item		Model Number	Stocked Lengths	Protection Level	Description
26	Short-Circuit Connector For MR-J4-A/MR-J4-B/ MR-J4W2-B/MR-J4W3-B	Supplied with Amplifier	-	-	
27	STO Cable	MR-D05UDL-_M _ = cable length 0.3, 1, 3m	0.3, 1, 3		
28	STO Cable For Connecting Servo Amplifier with MRJ3-D05 or Other Safety Control Device	MR-D05UDL3M-B	3m	-	

For CN9 AND CN10

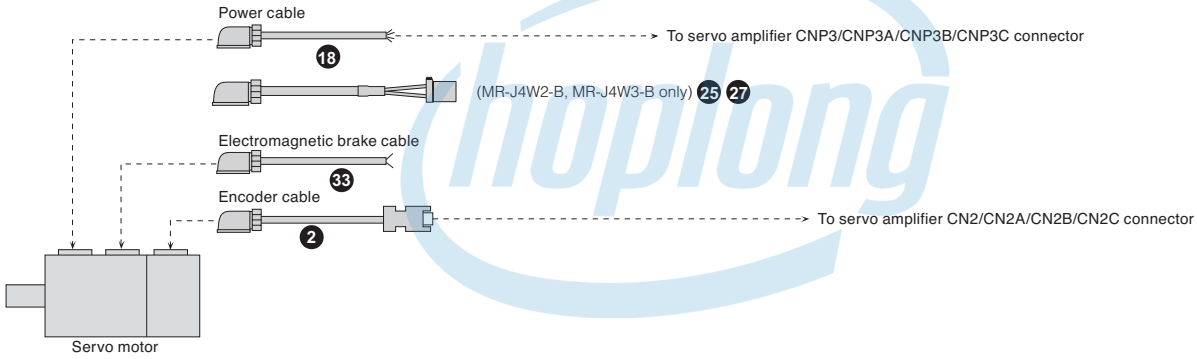
Item		Model Number	Stocked Lengths	Protection Level	Description
29	CN9 Connector	(Standard accessory of MR-J3-D05)	-	-	
30	CN10 Connector	(Standard accessory of MR-J3-D05)	3m	-	

C. Servo Motor Cables and Connectors

For HG-KR/HG-MR Servo Motor Series: Encoder Cable Length 10m or Shorter
For leading the cables out in direction of load side (*1)

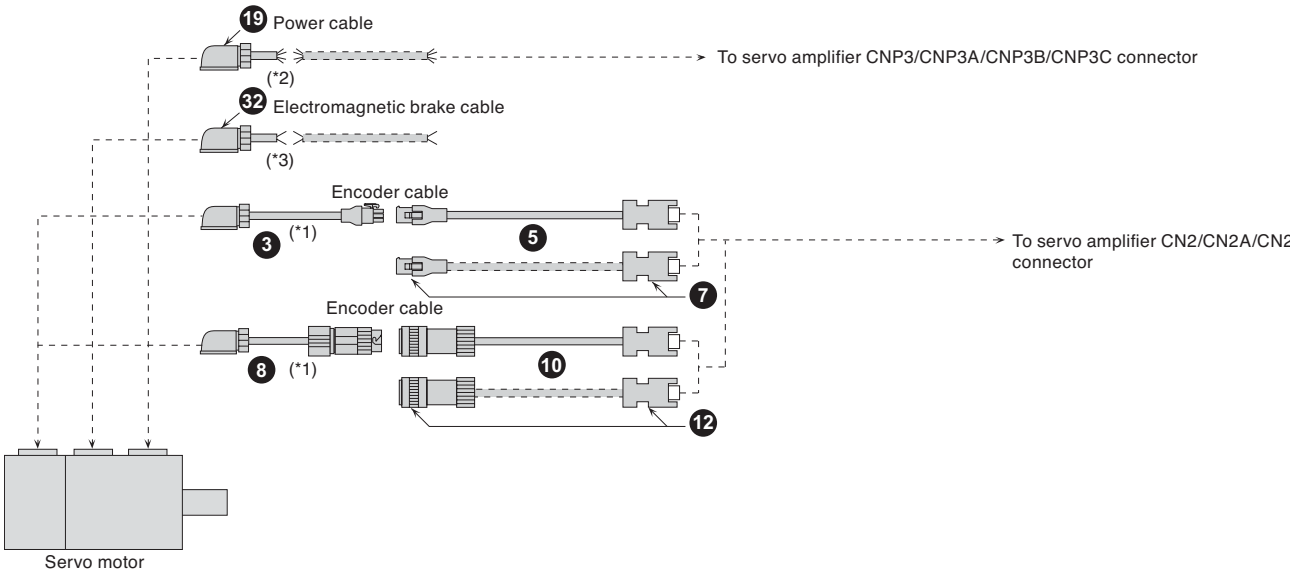


For HG-KR/HG-MR Servo Motor Series: Encoder Cable Length 10m or Shorter
For leading the cables out in opposite direction of load side (*1)

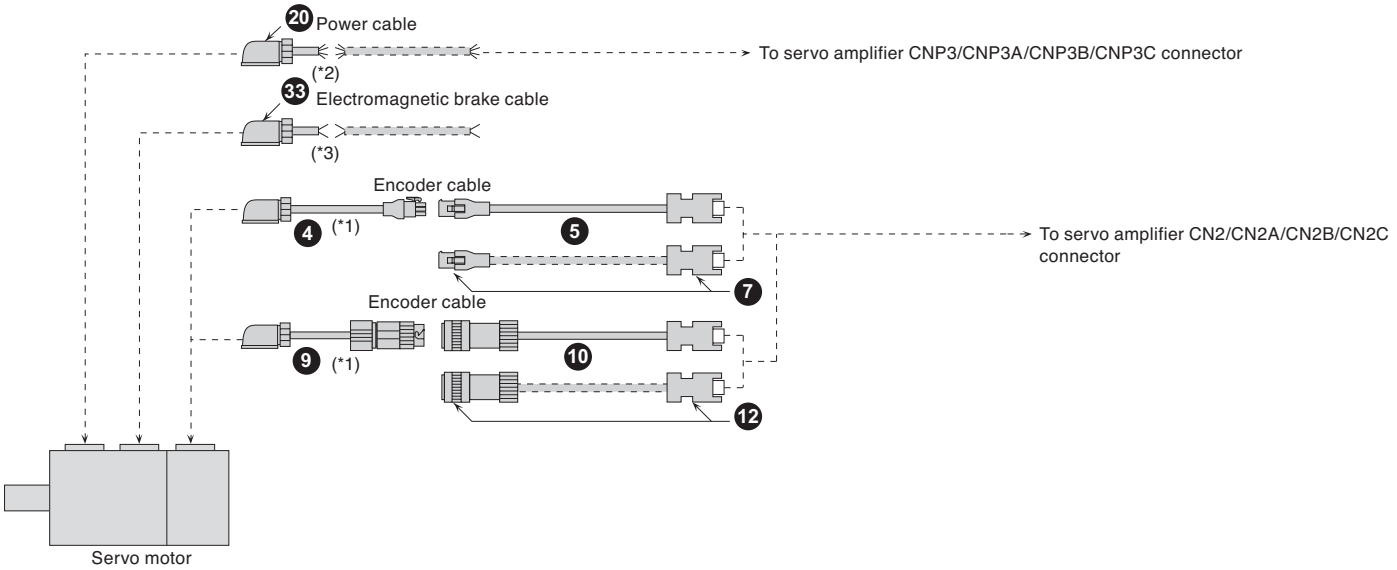


Note: Cables for leading two different directions may be used for one servo motor.

For HG-KR/HG-MR Servo Motor Series: Encoder Cable Length Over 10m
For leading the cables out in direction of load side (*4)

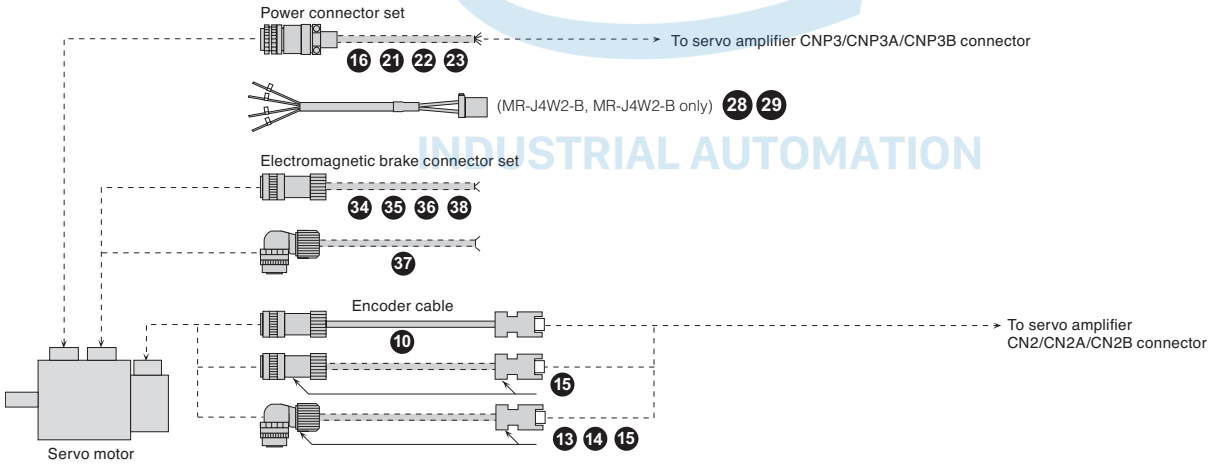


For HG-KR/HG-MR Servo Motor Series: Encoder Cable Length Over 10m
For leading the cables out in opposite direction of load side (*4)

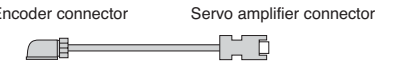
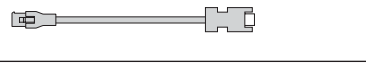
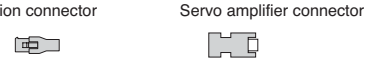
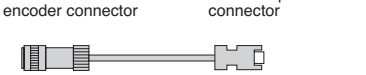


Notes:
1. This cable does not have a long bending life. Thus, be sure to fix the cable before using.
2. Relay a cable using MR-PWS2CBL03M-A1-L or MR-PWS2CBL03M-A2-L. This cable does not have a long bending life. Thus, be sure to fix the cable before using.
3. Relay a cable using MR-BKS2CBL03M-A1-L or MR-BKS2CBL03M-A2-L. This cable does not have a long bending life. Thus, be sure to fix the cable before using.
4. Cables for leading two different directions may be used for one servo motor.
5. Cables drawn with dashed lines need to be fabricated by user. Refer to relevant Servo Motor Instruction Manual for fabricating the cables.

For HG-SR Servo Motor Series



Encoder Cables and Connectors

Item			Model Number (_ =cable length in meters)	Stocked Lengths	Protection Level	Diagram
1	Encoder Cable 10m or Shorter (Direct Connection Type) (*2)	Lead Out in Direction of Motor Shaft For HG-KR/HG-MR	MR-J3ENCBL_M-A1-H _= 2, 5 or 10 (*1)	2, 5, 10	IP65	
			MR-J3ENCBL_M-A1-L _= 2, 5, or 10 (*1)	2, 5, 10	IP65	
2		Lead Out in Opposite Direction of Motor Shaft For HG-KR/ HG-MR	MR-J3ENCBL_M-A2-H _= 2, 5, or 10 (*1)	2, 5, 10	IP65	
			MR-J3ENCBL_M-A2-L _= 2, 5, or 10 (*1)	2, 5, 10	IP65	
3	Encoder Cable. (Junction Type) Use This In Combination With (5) or (7). (*2)	Lead Out in Direction of Motor Shaft For HG-KR/HG-MR	MR-J3JCBL03M-A1-L cable length 0.3 (*1)	S	IP20	
4		Lead Out in Opposite Direction of Motor Shaft For HG-KR/ HG-MR	MR-J3JCBL03M-A2-L cable length 0.3 (*1)	S	IP20	
5	Encoder Cable. Use This In Combination With (3) or (4).	For HG-KR/HG-MR (Junction Type)	MR-EKCBL_M-H _= 20, 30, 40, or 50 (*1, *3)	20, 30	IP20	
			MR-EKCBL_M-L _= 20 or 30 (*1, *3)	-	IP20	
7	For Connecting Linear Encoder (*5)	Amplifier-Side Connector (Junction Type)	MR-ECNM	S	IP20	
8	Exceeding 10m (Relay Type) Use this in combination with (10) or (11).	For HG-KR/HG-MR (Junction Type)	MR-J3JSCBL03M-A1-L Cable length 0.3m (*1, *3)	S	IP65 (*4)	
9		For HG-KR/HG-MR (Junction Type)	MR-J3JSCBL03M-A2-L Cable length 0.3m (*1)	S	IP65 (*4)	
10	Encoder Cable (*2) For HG-KR/HG-MR (Junction Type) For HG-SR (Direct Connection Type) Use this in combination with (8) or (9) for HG-KR/ HG-MR Series.		MR-J3ENSCBL_M-H _ = cable length 2, 5, 10, 20, 30, 40, 50m (*1)	2, 5, 10, 20, 30	IP67	
			MR-J3ENSCBL_M-L _ = cable length 2, 5, 10, 20, 30m (*1)	2, 5	IP67	
11	Encoder Connector Set (One-Touch Connection Type) For HG-KR/HG-MR (Junction Type) For HG-SR (Direct Connection Type) (Straight Type)		MR-J3SCNS	S	IP67	
12	Encoder Connector Set (Screw Type) (*2, *3, *6, *7) For HG-SR (Straight Type)		MR-ENCNS2	S	IP67	
13	Encoder Connector Set (One-Touch Connection Type) For HG-SR (Angle Type) (*2, *7)		MR-J3SCNSA	S	IP67	
14	Encoder Connector Set (Screw Type) (*2, *3, *6, *7) For HG-SR (Angle Type)		MR-ENCNS2A	S	IP67	
15	CN2 Connector Only		MR-J3CN2	S	-	

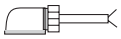
Notes:
1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. -H and -L indicate a bending life. -H indicates a long bending life, and -L indicates a standard bending life.
3. This encoder cable is available in four-wire type. Parameter setting is required to use the four-wire type encoder cable. Refer to relevant Servo Amplifier Instruction Manual for more details.
4. The encoder cable is rated IP65 while the junction connector itself is rated IP67.
5. MR-EKCBL_M-H and MR-ECNM can be connected to an output cable for Mitutoyo Corporation scale AT343A, AT543A-SC or AT545A-SC.
6. A screw thread is cut on the encoder connector of HG-SR series, and the screw type connector can be used.
7. Cable clamps and bushings for cable OD of 5.5 mm to 7.5 mm and of 7.0 mm to 9.0 mm are included in the set.

Motor Power Supply Cables

Item		Motor Model Number	Cable Number (_ = cable length 2, 5, 10, 15, 20, 25, 30 meter)	Stocked Lengths	Protection Level	Description
16	Standard-Flex, Unshielded Type Cables (Straight Type Connector Only) (*2)	HG-SR51(B), HG-SR52(B) (*1)	MR-J3P1-_M	2, 5, 10, 20, 30	IP65	
		HG-SR81(B), HG-SR102(B), HG-SR152(B) (*1)	MR-J3P2-_M			
		HG-SR121(B), HG-SR201(B), HG-SR202(B) (*1)	MR-J3P4-_M			
		HG-SR502(B) (*1)	MR-J3P6-_M			
		HG-SR421(B), HG-SR702(B) (*1)	MR-J3P7-_M			
		HG-SR301(B), HG-SR352(B) (*1)	MR-J3P8-_M			
	High-Flex, Shielded Type Cables (Straight Type Connector Only) (*2)	HG-SR51(B), HG-SR52(B), HG-SR152(B) (*1)	MR-J3PWS1-_M	2, 5 10, 15, 20, 30	IP67	
		HG-SR81(B), HG-SR102(B) (*1)	MR-J3PWS2-_M			
		HG-SR121(B), HG-SR201(B), HG-SR202(B) (*1)	MR-J3PWS4-_M			
		HG-SR502(B) (*1)	MR-J3PWS6-_M			
		HG-SR421(B), HG-SR702(B) (*1)	MR-J3PWS7-_M			
		HG-SR301(B), HG-SR352(B) (*1)	MR-J3PWS9-_M			

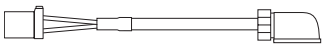
Notes:
1. Must order separate brake cable for these motors.

Motor Power Supply Cables

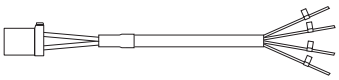
Item			Model Number	Stocked Lengths	Protection Level (*1)	Description
17	10m Or Shorter (Direct Connection Type	Power Supply Cable For HG-KR/ HG-MR. Lead Out In Direction Of Motor Shaft (Non-Shielded) (*2)	MR-PWS1CBL_M-A1-H (_ = cable length 2, 5, 10m) (*1)	2, 5, 10	IP65	
			MR-PWS1CBL_M-A1-L (_ = cable length 2, 5, 10m) (*1)	2, 5, 10	IP65	
18		Power Supply Cable For HG-KR/ HG-MR. Lead Out In Opposite Direction of Motor Shaft (Non-Shielded) (*2)	MR-PWS1CBL_M-A2-H (_ = cable length 2, 5, 10m) (*1)	2, 5, 10	IP65	
			MR-PWS1CBL_M-A2-L (_ = cable length 2, 5, 10m) (*1)	2, 5, 10	IP65	
19	Exceeding 10m (Relay Type)	Power Supply Cable For HG-KR/ HG-MR (Junction Type) Motor Lead Out In Direction Of Motor Shaft (Non-Shielded) (*2)	MR-PWS2CBL03M-A1-L (Cable length 0.3m)	S	IP55	
20		Power Supply Cable For HG-KR/ HG-MR (Junction Type) Motor Lead Out In Opposite Direction Of Motor Shaft (Non-Shielded) (*2)	MR-PWS2CBL03M-A2-L (Cable length 0.3m)	S	IP55	
21	Power Connector Set For HG-SR51, 81, 52, 102, 152		MR-PWCNS4 (*2)	-	IP67	
22	Power Connector Set For HG-SR121, 201, 301, 202, 352, 502		MR-PWCNS5 (*2)	-	IP67	
23	Power Connector Set For HG-SR421, 702		MR-PWCNS3 (*2)	-	IP67	

Notes:
1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. -H and -L indicate a bending life. -H indicates a long bending life, and -L indicates a standard bending life.

Power Supply Cable for HF-KP/HF-MP Rotary Servo Motors (Direct Connection Type)

Item		Model (*1)	Stocked Lengths	Protection Level	Description
24	Lead Out in Direction of Motor Shaft Standard Bending Life	SC-EPWS1CBL_M-A1-L (_= cable length: 2, 5, 10m)	-	-	
25	Lead Out in Opposite Direction of Motor Shaft Standard Bending Life	SC-EPWS1CBL_M-A2-L (_= cable length: 2, 5, 10m)	-	-	
26	Lead Out in Direction of Motor Shaft Long Bending Life	SC-EPWS1CBL_M-A1-H (_= cable length: 2, 5, 10m)	2, 5, 10	-	
27	Lead out in Opposite Direction of Motor Shaft Long Bending Life	SC-EPWS1CBL_M-A2-H (_= cable length: 2, 5, 10m)	2, 5, 10	-	

Power Supply Cable for MR-J4W2 and MR-J4W3

Item		Model (*1)	Stocked Lengths	Protection Level	Description
28	Standard Bending Life	SC-EPWS2CBL_M-L (_= cable length: 2, 5, 10, 20, 30m)	-	-	
29	Long Bending Life	SC-EPWS2CBL_M-H (_= cable length: 2, 5, 10, 20, 30m)	2, 5, 10	-	

Note:
1. A separate motor-side power supply connector (listed below) is required for HF-SP/HC-LP/HC-UP rotary servo motors.

Motor Brake Cables for HG-KR/HG-MR Rotary Servo Motors

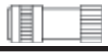
Item			Model Number (_=cable length in meters)	Stocked Lengths	Protection Level (*1)	Diagram
30	Brake Cable for HG-KR/HG-MR Series 10m or Shorter (Direct Connection Type) (*2)	Lead Out in Direction of Motor Shaft	MR-BKS1CBL_M-A1-H (_= 2, 5, or 10) (*1)	2, 5, 10	IP65	
			MR-BKS1CBL_M-A1-L (_= 2, 5, or 10) (*1)	-	IP65	
31		Lead Out in Opposite Direction of Motor Shaft	MR-BKS1CBL_M-A2-H (_= 2, 5, or 10) (*1)	2, 5, 10	IP65	
			MR-BKS1CBL_M-A2-L _= 2, 5, or 10 (*1)	-	IP65	
32	Brake Cable for HG-KR/HG-MR Series Exceeding 10m (Relay Type) (*2)	Lead Out in Direction of Motor Shaft	MR-BKS2CBL03M-A1-L (cable length 0.3) (*1)	S	IP55	
33		Lead Out in Opposite Direction of Motor Shaft	MR-BKS2CBL03M-A2-L (cable length 0.3) (*1)	S	IP55	

Notes:
1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. -H and -L indicate a bending life. -H indicates a long bending life, and -L indicates a standard bending life.
3. A screw thread is cut on the electromagnetic brake connector of HG-SR Series and the screw type connector can be used.

Brake Cables for HG-SR Servo Motor Series

Item		Model Number (_ = cable length 2, 5, 10, 15, 20, 25, 30 Meter)	Stocked Lengths	Protection Level	Diagram
34	Standard-Flex, Unshielded Type Cables	MR-J3BK-_M	2, 5, 10, 20, 30	IP65	
	High-Flex, Shielded Type Cables	MR-J3BRKS1-_M	2, 5, 10, 15, 20, 30	IP65	

Brake Connector Set

Item		Model Number	Stocked Lengths	Protection Level (*1)	Diagram
35	Electromagnetic Brake Connector Set (One-Touch Connection Type) For HG-SR (Straight Type)	MR-BKCNS1	S	IP67	
36	Electromagnetic Brake Connector Set (Screw Type) For HG-SR (Straight Type) (*3)	MR-BKCNS2	S	IP67	
37	Electromagnetic Brake Connector Set (One-Touch Connection Type) For HG-SR (Angle Type)	MR-BKCNS1A	S	IP67	
38	Electromagnetic Brake Connector Set (Screw type) For HG-SR (Angle Type) (*3)	MR-BKCNS1A	S	IP67	

Notes:
1. The IP rating indicated is for the connector's protection against ingress of dust and water when coupled to a servo amplifier/servo motor. If the IP rating of the servo amplifier/servo motor differs from that of these connectors, overall IP rating depends on the lowest of all.
2. -H and -L indicate a bending life. -H indicates a long bending life, and -L indicates a standard bending life.
3. A screw thread is cut on the electromagnetic brake connector of HG-SR Series and the screw type connector can be used.

D. Software and Manuals

Servo Support Software • (MRZJW3-MOTSZ111E)

This software makes it easy to perform setup, tuning, monitor display, diagnostics, reading and writing of parameters, and test operations with a personal computer. User-satisfying functions that enable the balance with the machine system, optimum control and short start up time are available.

- This software can set up and tune your servo system easily with a personal computer.
- Multiple monitor functions. Graphic display functions are provided to display the servo motor status with the input signal triggers, such as the command pulse, droop pulse and speed.
- Test operations with a personal computer. Test operation of the servo motors can be performed with a personal computer using multiple test mode menus.
- Further advanced tuning is possible with the improved advanced functions.

Manuals

Hardware Description	Model Number	Stocked Item
MR-J4B Instruction Manual	SH(NA)030106-A	MEAU.com
MR-J4A Instruction Manual	SH(NA)030107-A	MEAU.com
MR-J4W Instruction Manual	SH(NA)030105-A	MEAU.com

Description	Model Number	Stocked Item
Windows Communication Software	MR-CONFIGURATOR2	S
Communication Cable	MR-J3USBCBL3M	S

E. System Options

Line Noise Filter

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4_ For wire size 3.5mm² (AWG12) or smaller	FR-BSF01	S	
MR-J4_ For wire size 5.5mm² (AWG10) or larger	FR-BLF	S	

Radio Noise Filter

Servo Amplifier Type	Model Number	Stocked Item	Description
All J4 Models	FR-BIF	S	

Extension I/O Unit

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4-B Only	MR-J3-D05	S	

Manual Pulse Generator

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4-A Only	MR-HDP01	S	

EMC Filter (*1)

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4-10A/B to 100A/B MR-J4W2-22B MR-J4W3-222B	HF3010A-UN (*1)	-	
MR-J4W2-44B	HF3010A-UN2 (*1)	-	
MR-J4-200A/B, 350A/B MR-J4W2-77B, 1010B MR-J4W3-444B	HF3030A-UN (*1)	-	
MR-J4-500A/B, 700A/B	HF3040A-UN (*1)	-	

Note: Contact MEAU for additional filter opportunities.
1. Manufactured by Soshin Electric Co., Ltd. A surge protector is separately required to use this EMC filter. Refer to "EMC Installation Guidelines."

20 Pin Terminal Block (*1)

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J3-B Safety Only	PS7DW-20V14B-F	S	

Note: MR-TB20 terminal block cannot be used for MR-J3-B Safety.

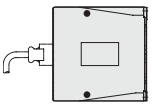
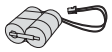
Power Factor Improving DC Reactor

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4-10A/B, MR-J4-20A/B	FR-HEL-0.4K	-	
MR-J4-40A/B	FR-HEL-0.75K	-	
MR-J4-60A/B, MR-J4-70A/B	FR-HEL-1.5K	-	
MR-J4-100A/B	FR-HEL-2.2K	-	
MR-J4-200A/B	FR-HEL-3.7K	-	
MR-J4-350A/B	FR-HEL-7.5K	-	
MR-J4-500A/B	FR-HEL-11K	-	
MR-J4-700A/B	FR-HEL-15K	-	

Power Factor Improving AC Reactor

Servo Amplifier Type	Model Number	Stocked Item	Description
MR-J4-10A/B, MR-J4-20A/B	FR-HAL-0.4K	-	
MR-J4-40A/B	FR-HAL-0.75K	-	
MR-J4-60A/B, MR-J4-70A/B	FR-HAL-1.5K	-	
MR-J4-100A/B	FR-HAL-2.2K	-	
MR-J4-200A/B	FR-HAL-3.7K	-	
MR-J4-350A/B	FR-HAL-7.5K	-	
MR-J4-500A/B	FR-HAL-11K	-	
MR-J4-700A/B	FR-HAL-15K	-	

Battery

Item Number	Model Number	Description	Stocked Item	Description
Battery	MR-BAT6V1SET	The servo motor's absolute value can be maintained by installing the battery in the servo amplifier. The battery is not required when the servo system is used in an incremental mode.	S	
Battery	MR-BAT6V1	The battery case and the batteries are required when configuring absolute position detection system using the rotary servo motor or the direct drive motor. MR-BT6VCASE is a case that stores 5 pieces of MR-BAT6V1 batteries by connecting the connectors. Up to 8 axes of MR-J4W_-_B servo amplifiers are able to be connected to this battery case. Use optional MR-BT6V2CBL_M junction battery cable for branching off the connection when connecting multiple servo amplifiers. MR-BT6VCASE and MR-BAT6V1 are not required when using the linear servo motor or when configuring incremental system with the MR-J4W_-B servo amplifier. MR-BAT6V1 is not included with MR-BT6VCASE. Please purchase the batteries separately.	S	
Battery Case	MR-BT6VCASE		S	

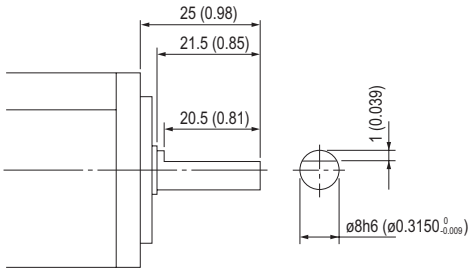
Optional Regeneration Resistors

Servo Amplifier Model MR-J4-_	Built-in Regenerative Resistor/Tolerable Regenerative Power (W)	Optional Regeneration Resistors/Tolerable Regenerative Power (W) (*2)										
		MR-RB										
		032 (40Ω)	12 (40Ω)	30 (13Ω)	3N (9Ω)	31 (6.7Ω)	32 (40Ω)	50 (13Ω) (*1)	5N (9Ω) (*1)	51 (6.7Ω) (*1)	14 (26Ω)	34 (26Ω)
Stocked Item	-	S	S	S	S	S	S	S	S	S	-	-
MR-J4-10A/B	-	30	-	-	-	-	-	-	-	-	-	-
MR-J4-20A/B	10	30	100	-	-	-	-	-	-	-	-	-
MR-J4-40A/B	10	30	100	-	-	-	-	-	-	-	-	-
MR-J4-60A/B	10	30	100	-	-	-	-	-	-	-	-	-
MR-J4-70A/B	20	30	100	-	-	-	300	-	-	-	-	-
MR-J4-100A/B	20	30	100	-	-	-	300	-	-	-	-	-
MR-J4-200A/B	100	-	-	300	-	-	-	500	-	-	-	-
MR-J4-350A/B	100	-	-	-	300	-	-	-	500	-	-	-
MR-J4-500A/B	130	-	-	-	-	300	-	-	-	500	-	-
MR-J4-700A/B	170	-	-	-	-	300	-	-	-	500	-	-
MR-J4W2-22B	20	-	-	-	-	-	-	-	-	-	100	-
MR-J4W2-44B	20	-	-	-	-	-	-	-	-	-	100	-
MR-J4W2-77B	100	-	-	-	300	-	-	-	-	-	-	-
MR-J4W2-1010B	100	-	-	-	300	-	-	-	-	-	-	-
MR-J4W3-222B	30	-	-	-	-	-	-	-	-	-	100	300
MR-J4W3-444B	30	-	-	-	-	-	-	-	-	-	100	300

Notes:
1. Be sure to cool the unit forcibly with a cooling fan (92 mm × 92 mm, minimum air flow: 1.0 m³/min). The cooling fan must be prepared by user.
2. The power values in this table are resistor-generated powers, not rated powers

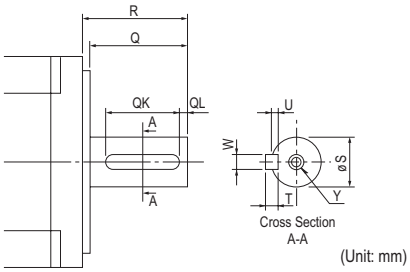
MR-J4 Motor Shaft Details and Servomotor Dimensions

HG-KR / HG-MR Series: D-Cut Shaft (50W & 100W Motors Only)



Unit: mm (inch)

Keyway With Key Included



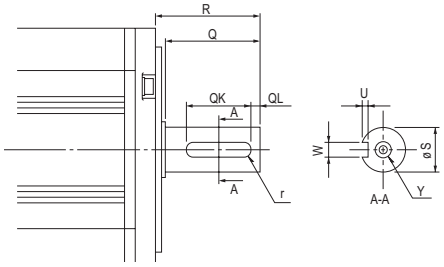
(Unit: mm)

Motor Model	Capacity (W)	Variable Dimensions								
		T	S	R	Q	W	QK	QL	U	Y
HG-KR_K	23(B), 43(B)	5 (0.20)	14h6 (0.554)	30 (1.18)	26	5 (0.20)	20 (0.79)	3 (0.12)	3 (0.12)	M4 Depth 15 (0.59)
	73(B)	6 (0.24)	19h6 (0.7480)	40 (1.57)	36	6 (0.24)	25 (0.98)	5 (0.20)	3.5 (0.14)	M5 Depth 20 (0.79)

Motor Model	Capacity (W)	Variable Dimensions								
		T	S	R	Q	W	QK	QL	U	Y
HG-MR_K	23(B), 43(B)	5 (0.20)	14h6 (0.554)	30 (1.18)	26	5 (0.20)	20 (0.79)	3 (0.12)	3 (0.12)	M4 Depth 15 (0.59)
	73(B)	6 (0.24)	19h6 (0.7480)	40 (1.57)	36	6 (0.24)	25 (0.98)	5 (0.20)	3.5 (0.14)	M5 Depth 20 (0.79)

HG-SR Series

Keyway With No Key Supplied (Customer must supply key or order key part separately below)

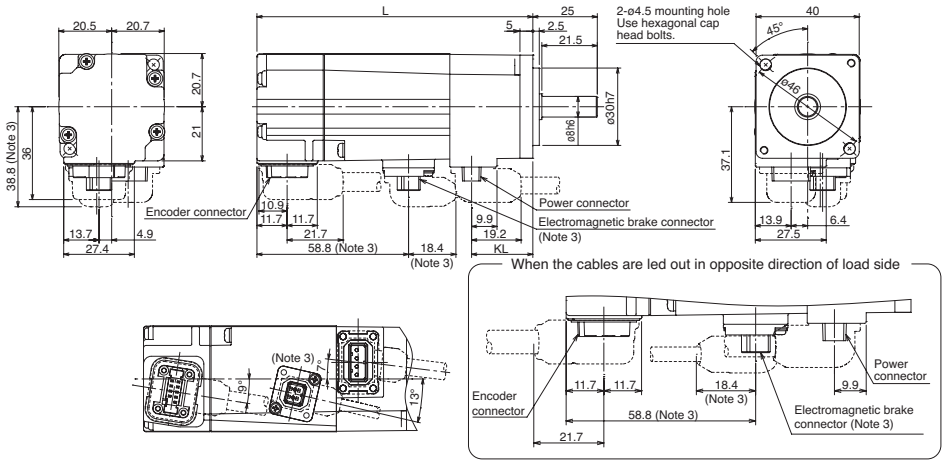


Motor Model	Capacity (W)	Variable Dimensions											
		S	R	Q	W	QK	QL	U	r	Y	Key Dimensions	Key Model Number	Stocked Item
HG-SR_K	51(B), 81(B)	14h6 (0.554)	55	50	8 0 -0.030	36	5 (0.20)	4 +0.2 0	4	M8 screw depth 20	8x7x28	MTR KEY 8-7-28	S
	121(B) 201(B) 301(B) 421(B)	35 +0.01 0	79	75	10 0 -0.030	55	5 (0.20)	5 +0.2 0	5		10x8x45	MTR KEY 10-8-45	S

Motor Model	Capacity (W)	Variable Dimensions											
		S	R	Q	W	QK	QL	U	r	Y	Key Dimensions	Key Model Number	Stocked Item
HG-SR_K	52(B), 102(B) 152(B)	14h6 (0.554)	55	50	8 0 -0.030	36	5 (0.20)	4 +0.2 0	4	M8 screw depth 20	8x7x28	MTR KEY 8-7-28	S
	202(B) 352(B) 502(B) 702(B)	35 +0.01 0	79	75	10 0 -0.030	55	5 (0.20)	5 +0.2 0	5		10x8x45	MTR KEY 10-8-45	S

HG-KR/HG-MR Series Dimensions (*1, *5, *6)

HG-KR053(B), HG-KR13(B)
HG-MR053(B), HG-MR13(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

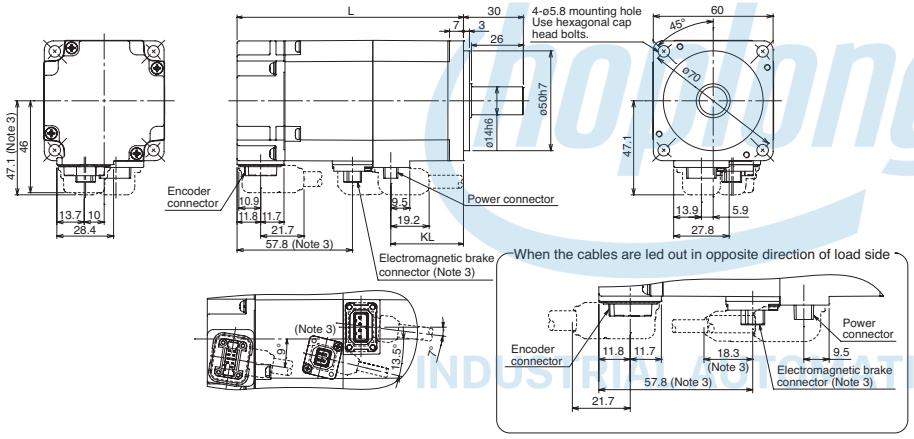
Electromagnetic brake connector (Note 2)

Pin No.	Signal name
1	B1
2	B2

Model	Variable dimensions (Note 4)	
	L	KL
HG-KR053(B) HG-MR053(B)	66.4 (107)	23.8
HG-KR13(B) HG-MR13(B)	82.4 (123)	39.8

[Unit: mm]

HG-KR23(B), HG-KR43(B))
HG-MR23(B), HG-MR43(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

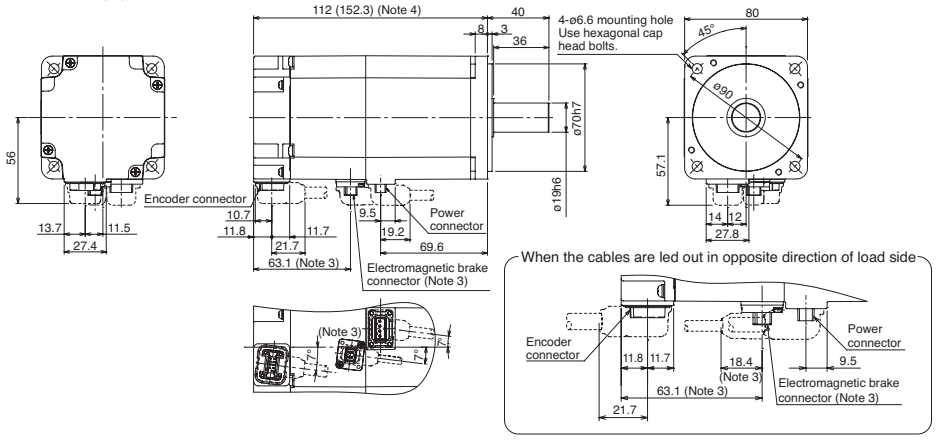
Electromagnetic brake connector (Note 2)

Pin No.	Signal name
1	B1
2	B2

Model	Variable dimensions (Note 4)	
	L	KL
HG-KR23(B) HG-MR23(B)	76.6 (113.4)	36.4
HG-KR43(B) HG-MR43(B)	98.3 (135.1)	58.1

[Unit: mm]

HG-KR73(B)
HG-MR73(B)



Power connector

Pin No.	Signal name
1	⏚ (PE)
2	U
3	V
4	W

Electromagnetic brake connector (Note 2)

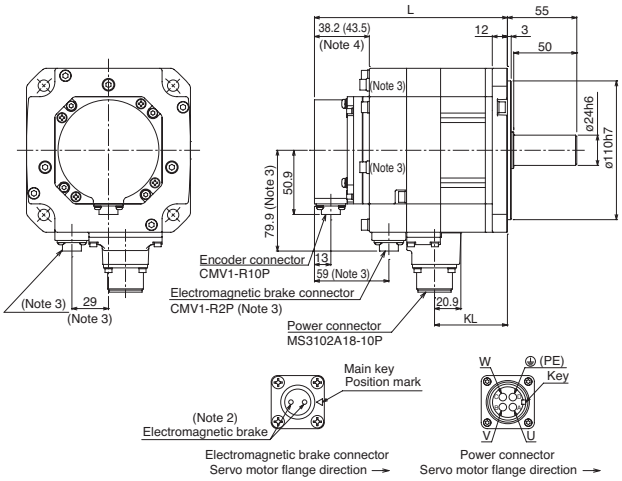
Pin No.	Signal name
1	B1
2	B2

[Unit: mm]

Notes:
1. For dimensions without tolerance, general tolerance applies.
2. The electromagnetic brake terminals (B1, B2) do not have polarity.
3. Only for the models with electromagnetic brake.
4. Dimensions inside ( ) are for the models with electromagnetic brake.
5. Use a friction coupling to fasten a load.
6. Servo motors with oil seal (HG-KR_J and HG-MR_J) have different dimensions. Contact your local sales office for more details.

HG-SR Series Dimensions (*1, *5)

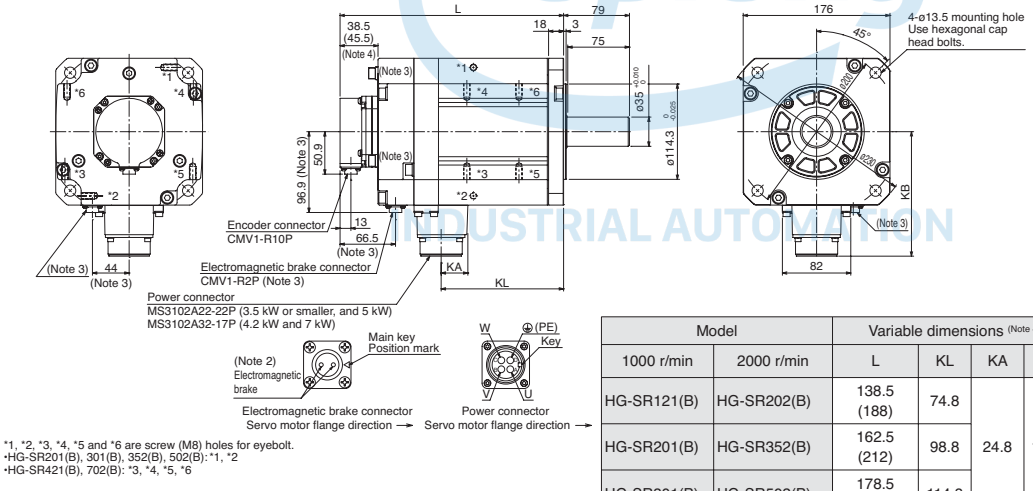
HG-SR51(B), HG-SR81(B)
HG-SR52(B), HG-SR102(B), HG-SR152(B)



Model		Variable dimensions (Note 4)	
1000 r/min	2000 r/min	L	KL
-	HG-SR52(B)	118.5 (153)	57.8
HG-SR51(B)	HG-SR102(B)	132.5 (167)	71.8
HG-SR81(B)	HG-SR152(B)	146.5 (181)	85.8

[Unit: mm]

HG-SR121(B), HG-SR201(B), HG-SR301(B), HG-SR421(B)
HG-SR202(B), HG-SR352(B), HG-SR502(B), HG-SR702(B)



*1, *2, *3, *4, *5 and *6 are screw (M8) holes for eyebolt.
•HG-SR201(B), 301(B), 352(B), 502(B): *1, *2
•HG-SR421(B), 702(B): *3, *4, *5, *6

Model		Variable dimensions (Note 4)			
1000 r/min	2000 r/min	L	KL	KA	KB
HG-SR121(B)	HG-SR202(B)	138.5 (188)	74.8	24.8	140.9
HG-SR201(B)	HG-SR352(B)	162.5 (212)	98.8		
HG-SR301(B)	HG-SR502(B)	178.5 (228)	114.8		
HG-SR421(B)	HG-SR702(B)	218.5 (268)	146.8	32	149.1

[Unit: mm]