

Servo Amplifiers

Model Designation

C B A

MR-JE-10C

Mitsubishi Electric
general-purpose
AC servo amplifier
MELSERVO-JE
Series

Symbol	Rated output [kW]
10	0.1
20	0.2
40	0.4
70	0.75
100	1
200	2
300	3

Symbol	Interface
C	Ethernet
B	SSCNET III/H
A	General-purpose

Combinations of Servo Amplifier and Servo Motor

C B A

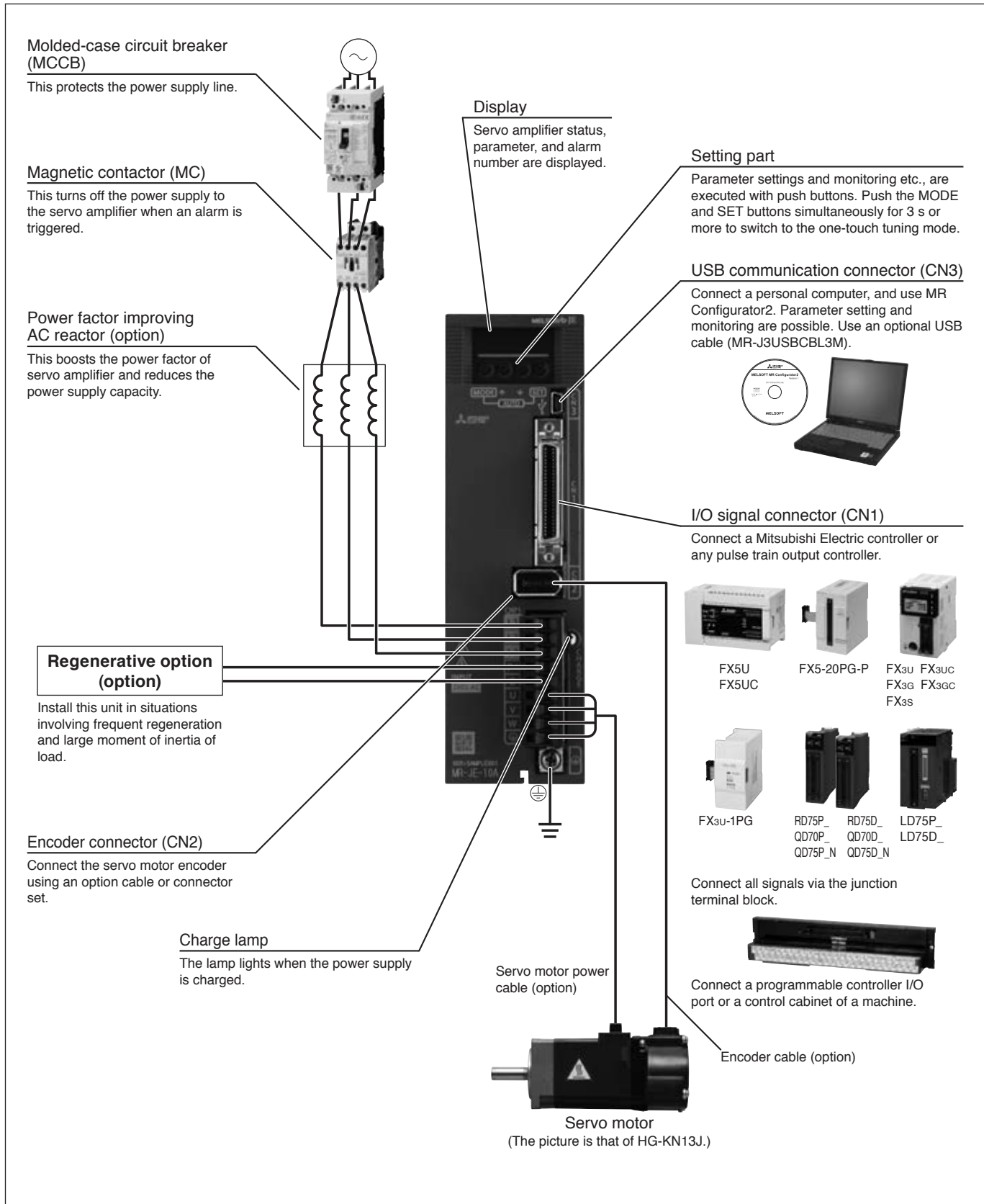
Servo amplifier	Servo motor	
	HG-KN series	HG-SN series
MR-JE-10C, MR-JE-10B, MR-JE-10A	HG-KN13(B)J	-
MR-JE-20C, MR-JE-20B, MR-JE-20A	HG-KN23(B)J	-
MR-JE-40C, MR-JE-40B, MR-JE-40A	HG-KN43(B)J	-
MR-JE-70C, MR-JE-70B, MR-JE-70A	HG-KN73(B)J	HG-SN52(B)J
MR-JE-100C, MR-JE-100B, MR-JE-100A	-	HG-SN102(B)J
MR-JE-200C, MR-JE-200B, MR-JE-200A	-	HG-SN152(B)J, HG-SN202(B)J
MR-JE-300C, MR-JE-300B, MR-JE-300A	-	HG-SN302(B)J

Servo Amplifiers

MR-JE-A Connections with Peripheral Equipment (Note 1)

A

Peripheral equipment is connected to MR-JE-A as described below. Connectors, cables, options, and other necessary equipment are available so that users can set up the servo amplifier easily and start using it right away.



Notes: 1. The connection with the peripheral equipment is an example for MR-JE-100A or smaller servo amplifiers. Refer to "MR-JE- A Servo Amplifier Instruction Manual" for the actual connections.

MR-JE-A (General-Purpose Interface) Specifications

A

Servo amplifier model MR-JE-		10A	20A	40A	70A	100A	200A	300A	
Output	Rated voltage	3-phase 170 V AC							
	Rated current [A]	1.1	1.5	2.8	5.8	6.0	11.0	11.0	
Power supply input	Voltage/frequency (Note 1)	3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz				3-phase or 1-phase 200 V AC to 240 V AC, 50 Hz/60 Hz (Note 9)		3-phase 200 V AC to 240 V AC, 50 Hz/60 Hz	
	Rated current (Note 7) [A]	0.9	1.5	2.6	3.8	5.0	10.5	14.0	
	Permissible voltage fluctuation	3-phase or 1-phase 170 V AC to 264 V AC				3-phase or 1-phase 170 V AC to 264 V AC (Note 9)		3-phase 170 V AC to 264 V AC	
	Permissible frequency fluctuation	±5% maximum							
Interface power supply		24 V DC ± 10% (required current capacity: 0.3 A)							
Control method		Sine-wave PWM control/current control method							
Permissible regenerative power of the built-in regenerative resistor (Note 2, 3) [W]		-	-	10	20	20	100	100	
Dynamic brake (Note 4, 8)		Built-in							
Communication function	USB	Connect a personal computer (MR Configurator2 compatible)							
	RS-422/RS-485 (Note 10)	Connect a controller (1:n communication up to 32 axes) (Note 6)							
Encoder output pulse		Compatible (A/B/Z-phase pulse)							
Analog monitor		2 channels							
Position control mode	Maximum input pulse frequency	4 Mpulses/s (when using differential receiver), 200 kpulses/s (when using open-collector)							
	Positioning feedback pulse	Encoder resolution: 131072 pulses/rev							
	Command pulse multiplying factor	Electronic gear A/B multiple, A: 1 to 16777215, B: 1 to 16777215, 1/10 < A/B < 4000							
	In-position range 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)							
Positioning mode		Point table method, program method							
Servo function		Advanced vibration suppression control II, adaptive filter II, robust filter, auto tuning, one-touch tuning, tough drive function, drive recorder function, machine diagnosis function, power monitoring function, lost motion compensation function							
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							
Compliance with global standards		Refer to "Compliance with Global Standards and Regulations" on p. 25 in this catalog.							
Structure (IP rating)		Natural cooling, open (IP20)					Force cooling, open (IP20)		
Close mounting (Note 5)	3-phase power supply input	Possible							
	1-phase power supply input	Possible				Not possible		-	
Environment	Ambient temperature	Operation: 0 °C to 55 °C (non-freezing), storage: -20 °C to 65 °C (non-freezing)							
	Ambient humidity	Operation/storage: 5 %RH to 90 %RH (non-condensing)							
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust							
	Altitude	2000 m or less above sea level (Note 11)							
Vibration resistance		5.9 m/s ² at 10 Hz to 55 Hz (directions of X, Y and Z axes)							
Mass [kg]		0.8	0.8	0.8	1.5	1.5	2.1	2.1	

- Notes: 1. Rated output and speed of a servo motor are applicable when the servo amplifier, combined with the servo motor, is operated within the specified power supply voltage and frequency.
 2. Select the most suitable regenerative option for your system with our capacity selection software.
 3. Refer to "Regenerative Option" in this catalog for the permissible regenerative power [W] when a regenerative option is used.
 4. When using the dynamic brake, refer to "MR-JE-_A Servo Amplifier Instruction Manual" for the permissible load to motor inertia ratio.
 5. When the servo amplifiers are closely mounted, keep the ambient temperature within 0 °C to 45 °C, or use the servo amplifiers at 75% or less of the effective load ratio.
 6. RS-422 communication function is supported by the servo amplifiers manufactured on December 2013 or later. RS-485 communication function is supported by the servo amplifiers manufactured on May 2015 or later. Refer to "MR-JE-_A Servo Amplifier Instruction Manual" for how to identify the manufacturing date of the products.
 7. This value is applicable when a 3-phase power supply is used.
 8. The coast distance by dynamic brake of HG-KN/HG-SN servo motor series may be different from prior HF-KN/HF-SN. Contact your local sales office for more details.
 9. When 1-phase 200 V AC to 240 V AC power supply is used, use the servo amplifiers at 75% or less of the effective load ratio.
 10. Compatible with Mitsubishi Electric general-purpose AC servo protocol (RS-422/RS-485 communication) and MODBUS® RTU protocol (RS-485 communication).
 11. Refer to "MR-JE-_A Servo Amplifier Instruction Manual" for the restrictions when using the servo amplifiers at altitude exceeding 1000 m and up to 2000 m above sea level.

Servo Amplifiers

Servo Motors

Options/Peripheral Equipment

LVS/Wires

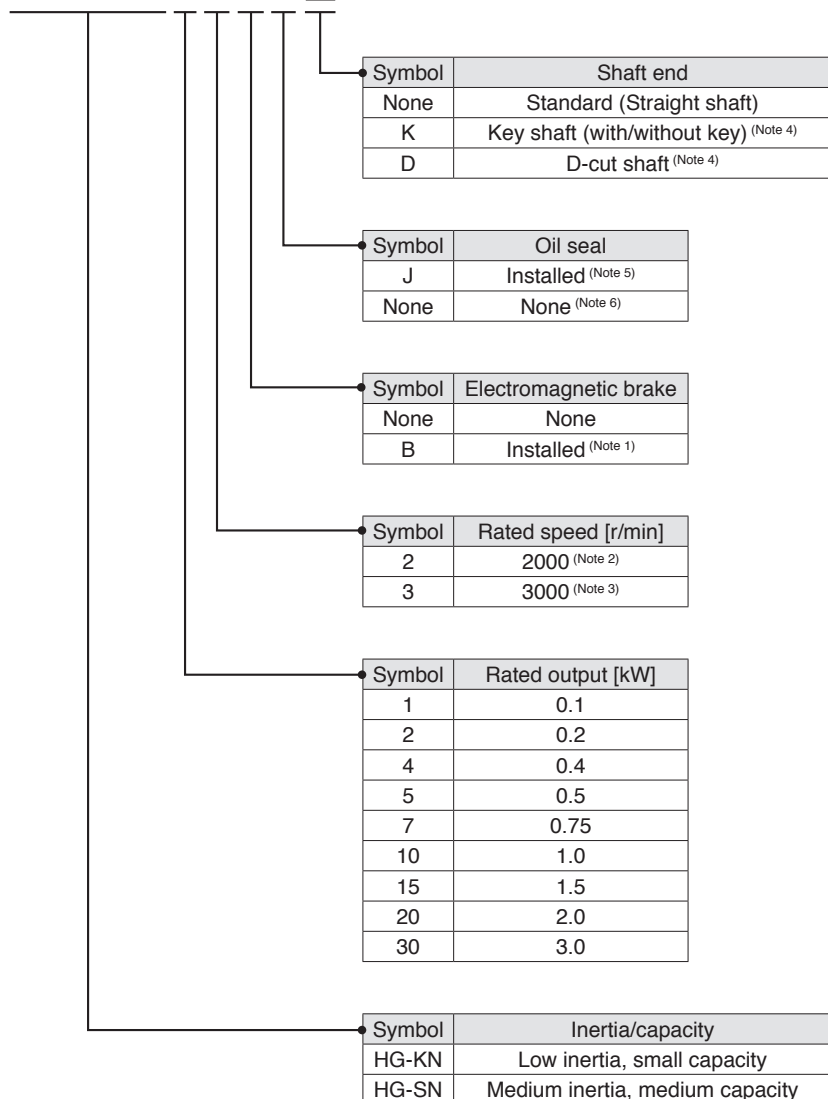
Product List

Cautions

Servo Motors

Model Designation

H G - K N 1 3 B J □



- Notes: 1. Refer to electromagnetic brake specifications of each servo motor series in this catalog for the detailed specifications.
 2. 2000 r/min is for HG-SN series only.
 3. 3000 r/min is for HG-KN series only.
 4. Refer to special shaft end specifications of each servo motor series in this catalog for the available models and detailed specifications.
 5. An oil seal is attached as a standard for all servo motors.
 6. Available in HG-KN13 to HG-KN43.

Combinations of Servo Motor and Servo Amplifier

	Servo motor	Servo amplifier
HG-KN series	HG-KN13(B)J	MR-JE-10C, MR-JE-10B, MR-JE-10A
	HG-KN23(B)J	MR-JE-20C, MR-JE-20B, MR-JE-20A
	HG-KN43(B)J	MR-JE-40C, MR-JE-40B, MR-JE-40A
	HG-KN73(B)J	MR-JE-70C, MR-JE-70B, MR-JE-70A
HG-SN series	HG-SN52(B)J	MR-JE-70C, MR-JE-70B, MR-JE-70A
	HG-SN102(B)J	MR-JE-100C, MR-JE-100B, MR-JE-100A
	HG-SN152(B)J	MR-JE-200C, MR-JE-200B, MR-JE-200A
	HG-SN202(B)J	MR-JE-200C, MR-JE-200B, MR-JE-200A
	HG-SN302(B)J	MR-JE-300C, MR-JE-300B, MR-JE-300A

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

Servo motor model		HG-KN	13(B)J	23(B)J	43(B)J	73(B)J
Compatible servo amplifier model		Refer to "Combinations of Servo Motor and Servo Amplifier" on p. 2-1 in this catalog.				
Power supply capacity ¹		[kVA]	0.3	0.5	0.9	1.3
Continuous running duty	Rated output	[W]	100	200	400	750
	Rated torque ^(Note 3)	[N·m]	0.32	0.64	1.3	2.4
Maximum torque		[N·m]	0.95	1.9	3.8	7.2
Rated speed		[r/min]	3000			
Maximum speed		[r/min]	5000 (6000) ^(Note 6)			
Permissible instantaneous speed		[r/min]	5750 (6900) ^(Note 6)			
Power rate at continuous rated torque	Standard	[kW/s]	12.9	18.0	43.2	44.5
	With electromagnetic brake	[kW/s]	12.0	16.4	40.8	41.0
Rated current		[A]	0.8	1.3	2.6	4.8
Maximum current		[A]	2.4	3.9	7.8	14
Regenerative braking frequency ^{2,3}		[times/min]	(Note 4)	(Note 5)	276	159
Moment of inertia J	Standard	[× 10 ⁻⁴ kg·m ²]	0.0783	0.225	0.375	1.28
	With electromagnetic brake	[× 10 ⁻⁴ kg·m ²]	0.0843	0.247	0.397	1.39
Recommended load to motor inertia ratio ^(Note 1)			15 times or less			
Speed/position detector	Combination with MR-JE-C/MR-JE-B		Absolute ^(Note 7) /incremental 17-bit encoder (resolution: 131072 pulses/rev)			
	Combination with MR-JE-A		Incremental 17-bit encoder (resolution: 131072 pulses/rev)			
Oil seal			Installed. Without oil seal is also available.			Installed
Thermistor			None			
Insulation class			130 (B)			
Structure			Totally enclosed, natural cooling (IP rating: IP65) ^(Note 2)			
Environment ⁴	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)			
	Ambient humidity		Operation: 10 %RH to 80 %RH (non-condensing), storage: 10 %RH to 90 %RH (non-condensing)			
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust			
	Altitude		2000 m or less above sea level ^(Note 8)			
Vibration resistance ⁵			X: 49 m/s ² Y: 49 m/s ²			
Vibration rank			V10 ⁷			
Compliance with global standards			Refer to "Compliance with Global Standards and Regulations" on p. 25 in this catalog.			
Permissible load for the shaft ⁶	L	[mm]	25	30	30	40
	Radial	[N]	88	245	245	392
	Thrust	[N]	59	98	98	147
Mass	Standard	[kg]	0.57	0.98	1.5	3.0
	With electromagnetic brake	[kg]	0.77	1.4	1.9	4.0

- 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. Refer to the asterisk 8 of "Annotations for Servo Motor Specifications" on p. 2-6 in this catalog for the shaft-through portion.
 3. When unbalanced torque is generated, such as in a vertical lift machine, keep the unbalanced torque of the machine 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. When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the load to motor inertia ratio is 11 times or less.
 5. When the servo motor decelerates to a stop from the rated speed, the regenerative frequency will not be limited if the load to motor inertia ratio is 9 times or less. When the servo motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the load to motor inertia ratio is 3 times or less.
 6. The value in brackets is applicable with parameter setting. Refer to relevant Servo Amplifier Instruction Manual for details.
 7. When absolute position detection system is used with MR-JE-C, absolute position data is read with the Ethernet communication. Refer to "MR-JE- C Servo Amplifier Instruction Manual" for details.
 8. Refer to "HG-KN HG-SN Servo Motor Instruction Manual" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Servo Motor Specifications" on p. 2-6 in this catalog for the asterisks 1 to 7.

Servo Amplifiers

Servo Motors

Options/Peripheral Equipment

LVS/Wires

Product List

Cautions

Servo Motors

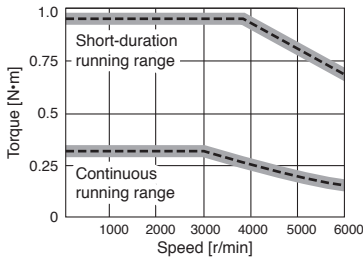
HG-KN Series Electromagnetic Brake Specifications (Note 1)

Servo motor model	HG-KN	13BJ	23BJ	43BJ	73BJ
Type	Spring actuated type safety brake				
Rated voltage	24 V DC ⁰ _{-10%}				
Power consumption [W] at 20 °C		6.3	7.9	7.9	10
Electromagnetic brake static friction torque [N·m]		0.32	1.3	1.3	2.4
Permissible braking work	Per braking [J]	5.6	22	22	64
	Per hour [J]	56	220	220	640
Electromagnetic brake life (Note 2)	Number of braking times	20000	20000	20000	20000
	Work per braking [J]	5.6	22	22	64

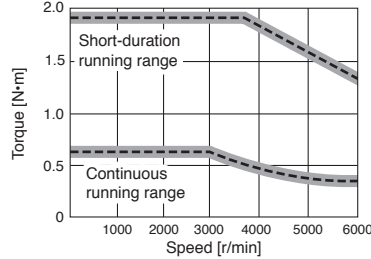
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
 2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-KN Series Torque Characteristics

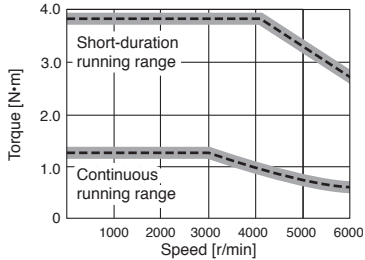
HG-KN13(B)J (Note 1, 2, 3)



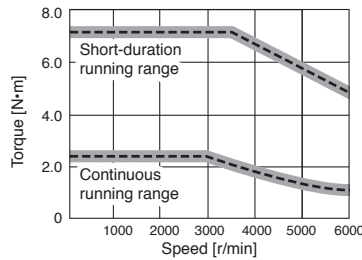
HG-KN23(B)J (Note 1, 2, 3)



HG-KN43(B)J (Note 1, 2, 3)



HG-KN73(B)J (Note 1, 2, 3)

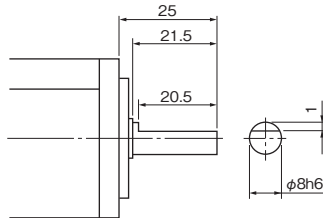


Notes: 1. ——— : For 3-phase 200 V AC.
 2. - - - - : For 1-phase 230 V AC.
 3. Torque drops when the power supply voltage is below the specified value.

HG-KN Series Special Shaft End Specifications

Motors with the following specifications are also available.

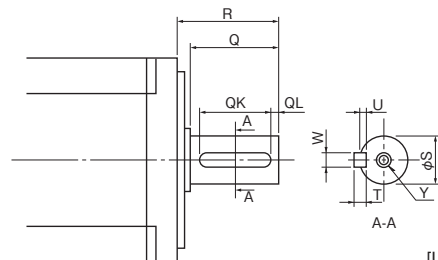
D-cut shaft (Note 1): 100 W



[Unit: mm]

Key shaft (with key) (Note 1, 2): 200 W, 400 W, and 750 W

Model	Variable dimensions								
	T	S	R	Q	W	QK	QL	U	Y
HG-KN23(B)JK, 43(B)JK	5	14h6	30	27	5	20	3	3	M4 screw Depth: 15
HG-KN73(B)JK	6	19h6	40	37	6	25	5	3.5	M5 screw Depth: 20



[Unit: mm]

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
 2. 2 round end key is attached.

HG-SN Series (Medium Inertia, Medium Capacity) Specifications

Servo motor model		HG-SN	52(B)J	102(B)J	152(B)J	202(B)J	302(B)J	
Compatible servo amplifier model		Refer to "Combinations of Servo Motor and Servo Amplifier" on p. 2-1 in this catalog.						
Power supply capacity ¹		[kVA]	1.0	1.7	2.5	3.5	4.8	
Continuous running duty	Rated output	[kW]	0.5	1.0	1.5	2.0	3.0	
	Rated torque ^(Note 3)	[N·m]	2.39	4.77	7.16	9.55	14.3	
Maximum torque		[N·m]	7.16	14.3	21.5	28.6	42.9	
Rated speed		[r/min]	2000					
Maximum speed		[r/min]	3000					2500
Permissible instantaneous speed		[r/min]	3450					2875
Power rate at continuous rated torque	Standard	[kW/s]	7.85	19.7	32.1	19.5	26.1	
	With electromagnetic brake	[kW/s]	6.01	16.5	28.2	16.1	23.3	
Rated current		[A]	2.9	5.6	9.4	9.6	11	
Maximum current		[A]	9.0	17	29	31	33	
Regenerative braking frequency ^{2,3}		[times/min]	62	38	139	47	28	
Moment of inertia J	Standard	[× 10 ⁻⁴ kg·m ²]	7.26	11.6	16.0	46.8	78.6	
	With electromagnetic brake	[× 10 ⁻⁴ kg·m ²]	9.48	13.8	18.2	56.5	88.2	
Recommended load to motor inertia ratio ^(Note 1)			15 times or less					
Speed/position detector	Combination with MR-JE-C/ MR-JE-B		Absolute ^(Note 4) /incremental 17-bit encoder (resolution: 131072 pulses/rev)					
	Combination with MR-JE-A		Incremental 17-bit encoder (resolution: 131072 pulses/rev)					
Oil seal			Installed					
Thermistor			None					
Insulation class			155 (F)					
Structure			Totally enclosed, natural cooling (IP rating: IP67) ^(Note 2)					
Environment ⁴	Ambient temperature		Operation: 0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)					
	Ambient humidity		Operation: 10 %RH to 80 %RH (non-condensing), storage: 10 %RH to 90 %RH (non-condensing)					
	Ambience		Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust					
	Altitude		2000 m or less above sea level ^(Note 5)					
Vibration resistance ⁵			X: 24.5 m/s ² Y: 24.5 m/s ²			X: 24.5 m/s ² Y: 49 m/s ²		
Vibration rank			V10 ⁷					
Compliance with global standards			Refer to "Compliance with Global Standards and Regulations" on p. 25 in this catalog.					
Permissible load for the shaft ⁶	L	[mm]	55	55	55	79	79	
	Radial	[N]	980	980	980	2058	2058	
	Thrust	[N]	490	490	490	980	980	
Mass	Standard	[kg]	4.8	6.2	7.3	11	16	
	With electromagnetic brake	[kg]	6.7	8.2	9.3	17	22	

- 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. Refer to the asterisk 8 of "Annotations for Servo Motor Specifications" on p. 2-6 in this catalog for the shaft-through portion.
 3. When unbalanced torque is generated, such as in a vertical lift machine, keep the unbalanced torque of the machine under 70% of the servo motor rated torque.
 4. When absolute position detection system is used with MR-JE-C, absolute position data is read with the Ethernet communication. Refer to "MR-JE-C Servo Amplifier Instruction Manual" for details.
 5. Refer to "HG-KN HG-SN Servo Motor Instruction Manual" for the restrictions when using the servo motors at altitude exceeding 1000 m and up to 2000 m above sea level.

Refer to "Annotations for Servo Motor Specifications" on p. 2-6 in this catalog for the asterisks 1 to 7.

Servo Amplifiers

Servo Motors

Options/Peripheral Equipment

LVS/Wires

Product List

Cautions

Servo Motors

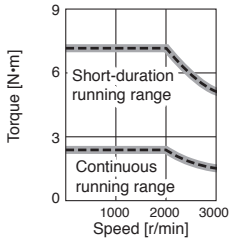
HG-SN Series Electromagnetic Brake Specifications (Note 1)

Servo motor model	HG-SN	52BJ	102BJ	152BJ	202BJ	302BJ
Type	Spring actuated type safety brake					
Rated voltage	24 V DC $^{0}_{-10}\%$					
Power consumption [W] at 20 °C		20	20	20	34	34
Electromagnetic brake static friction torque [N·m]		8.5	8.5	8.5	44	44
Permissible braking work	Per braking [J]	400	400	400	4500	4500
	Per hour [J]	4000	4000	4000	45000	45000
Electromagnetic brake life (Note 2)	Number of braking times	20000	20000	20000	20000	20000
	Work per braking [J]	200	200	200	1000	1000

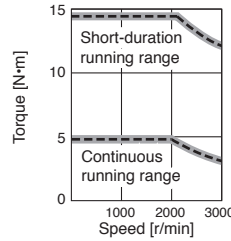
Notes: 1. The electromagnetic brake is for holding. It should not be used for deceleration applications.
 2. Brake gap is not adjustable. Electromagnetic brake life is defined as the time period until the readjustment is needed.

HG-SN Series Torque Characteristics

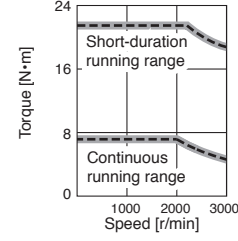
HG-SN52(B)J (Note 1, 2, 3)



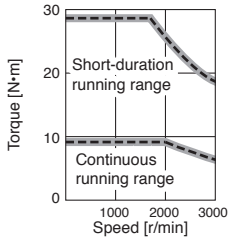
HG-SN102(B)J (Note 1, 2, 3)



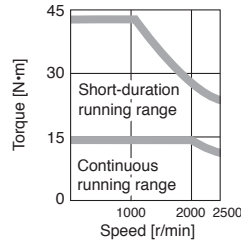
HG-SN152(B)J (Note 1, 2, 3)



HG-SN202(B)J (Note 1, 2, 3)



HG-SN302(B)J (Note 1, 2, 3)



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

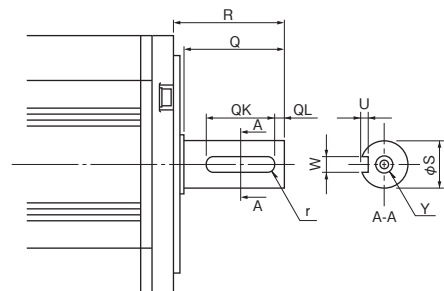
HG-SN Series Special Shaft End Specifications

Motors with the following specifications are also available.

Key shaft (without key) (Note 1, 2)

Model	Variable dimensions								
	S	R	Q	W	QK	QL	U	r	Y
HG-SN52(B)JK, 102(B)JK, 152(B)JK	24h6	55	50	8 ⁰ _{-0.036}	36	5	4 ^{+0.2} ₀	4	M8 screw Depth: 20
HG-SN202(B)JK, 302(B)JK	35 ^{+0.010} ₀	79	75	10 ⁰ _{-0.036}	55	5	5 ^{+0.2} ₀	5	

Notes: 1. The servo motors with special shaft end are not suitable for frequent start/stop applications.
 2. A key is not supplied with the servo motor. The key shall be installed by the user.



[Unit: mm]