MR-JE Servo Motors

HG- □□□□□□

Symbol	Oil Seal
J	Installed (*5)
None	None (*6)

Symbol	Electromagnetic Brake
None	None
B	Installed (*1)

Symbol	Rated Speed (r/min)
2	2000 (*2)
3	3000 (*3)

Symbol	Rated Output (kW)
1	0.1
2	0.2
4	0.4
5	0.5
7	0.75
10	1.0
15	1.5
20	2.0
30	3.0

Symbol	Inertia/Capacity
HG-KN	Low inertia, small capacity
HG-SN	Medium inertia, medium capacity

Symbol	Shaft End
None	Standard (Straight shaft)
K	Key shaft (with/without key) (*4)
D	D-cut shaft (*4)

Notes:
1. Refer to electromagnetic brake specifications of each Servo Motor series in this catalog for the available models and detailed specifications.
2. 2000 r/min is for HF-SN series only.
3. 3000 r/min is for HF-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 HF-KN13 to HF-KN43.

Combinations of Servo Motor and Servo Amplifier

Servo Motor		Servo Amplifier
HG-KN Series	HG-KN13(B)J	MR-JE-10B/MR-JE-10A
	HG-KN23(B)J	MR-JE-20B/MR-JE-20A
	HG-KN43(B)J	MR-JE-40B/MR-JE-40A
	HG-KN73(B)J	MR-JE-70B/MR-JE-70A
HG-SN Series	HG-SN52(B)J	MR-JE-70B/MR-JE-70A
	HG-SN102(B)J	MR-JE-100B/MR-JE-100A
	HG-SN152(B)J	MR-JE-200B/MR-JE-200A
	HG-SN202(B)J	MR-JE-200B/MR-JE-200A
	HG-SN302(B)J	MR-JE-300B/MR-JE-300A

Stocked Motors	
HG-KN	HG-KN13J
	HG-KN13JD
	HG-KN13BJ
	HG-KN13BJD
	HG-KN23JK
	HG-KN23BJK
	HG-KN43JK
	HG-KN43BJK
	HG-KN73JK
	HG-KN73BJK
HG-SN	HG-SN52JK
	HG-SN52BJK
	HG-SN102JK
	HG-SN102BJK
	HG-SN152JK
	HG-SN152BJK
	HG-SN202JK
	HG-SN202BJK
	HG-SN302JK
	HG-SN302BJK

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 MR-JE Amplifier section in this manual			
Power Supply Capacity (kVA) (*6)		0.3	0.5	0.9	1.3
Continuous Running Duty	Rated Output (W)	100	200	400	750
	Rated Torque (N•m) (Note 3)	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			
Permissible Instantaneous Speed (r/min)		5750			
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 (Times/Min) (*6)		(Note 4)	(Note 5)	276	159
Moment of Inertia J	Standard (x 10-4 kg•m^2)	0.0783	0.225	0.375	1.28
	With Electromagnetic Brake (x 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		Incremental 17-bit encoder (resolution: 131072 pulses/rev)			
Oil Seal		Installed, without oil seal is also available			Installed
Insulation Class		130 (B)			
Structure		Totally enclosed, natural cooling (IP rating: IP65) (Note 2)			
Environment (*4)	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)			
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust			
	Altitude	1000 m or less above sea level			
	Vibration Resistance (*6)	X: 49 m/s^2 Y: 49 m/s^2			
Vibration Rank		V10 (*6)			
Compliance to Standards		CE: EN 60034-1, RoHS compliant, UL: 1004-1/UL 1004-6			
Permissible Load for the Shaft (*6)	L (mm)	25	30	30	40
	Radial (N)	88	245	245	392
	Thrust (N)	59	98	98	147
Weight (kg)	Standard	0.6	0.98	1.5	3.0
	With Electromagnetic Brake	0.8	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 end of this section for information on 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. 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.

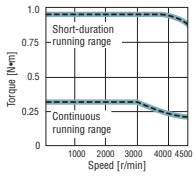
Refer to end of the section for the notes for asterisks (*) 1 to 7.

HG-KN Series Electromagnetic Brake Specifications (Note 1)

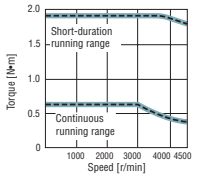
Servo Motor Model HG-KN		13BJ	23BJ	43BJ	73BJ
Type		Spring actuated type safety brake			
Rated Voltage		24 VDC 0/-10%			
Power Consumption [W] at 20 °C		6.3	7.9	7.9	10
Electromagnetic Brake Static Friction Torque [N•m]		0.32	1.3	1.3	2.4
Permissible Braking Work	Per Braking [J]	5.6	22	22	64
	Per Hour [J]	56	220	220	640
Electromagnetic Brake Life (Note 2)	Number of Braking (Times)	20000			
	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.

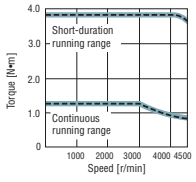
HG-KN13(B)J (*1, *2, *3)



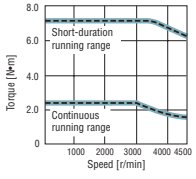
HG-KN23(B)J (*1, *2, *3)



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



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



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 (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		See MR-JE Amplifiers				
Power Supply Capacity (kVA) (*4)		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 (N•m) (Note 3)	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 (times/min) (*4)		62	38	139	47	28
Moment of Inertia J	Standard (x 10^{-4} kg•m^2)	7.26	11.6	16.0	46.8	78.6
	With Electromagnetic Brake (x 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		Incremental 17-bit encoder (resolution: 131072 pulses/rev)				
Oil Seal		Installed				
Insulation Class		155 (F)				
Structure		Totally enclosed, natural cooling (IP rating: IP67) (Note 2)				
Environment (*4)	Ambient Temperature	0 °C to 40 °C (non-freezing), storage: -15 °C to 70 °C (non-freezing)				
	Ambient Humidity	Operation: 80%RH maximum (non-condensing), storage: 90%RH maximum (non-condensing)				
	Ambience	Indoors (no direct sunlight); no corrosive gas, inflammable gas, oil mist or dust				
	Altitude	1000 m or less above sea level				
	Vibration Resistance (*4)	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 (*4)				
Compliance to Standards		EN 60034-1, EN 60034-1, RoHS compliant, UL: UL 1004-1 / UL 1004-6				
Permissible Load for the Shaft (*4)	L (mm)	55	55	55	79	79
	Radial (N)	980	980	980	2058	2058
	Thrust (N)	490	490	490	980	980
Environment	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 end of this section for information on 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.

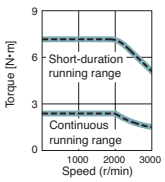
Refer to end of the section for the notes for asterisks (*) 1 to 7.

HG-SN Series Electromagnetic Brake Specifications (*1)

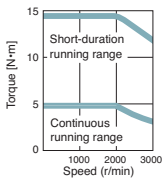
Servo Motor Model HG-SN		52BJ	102BJ	152BJ	202BJ	302BJ
Type		Spring actuated type safety brake				
Rated Voltage		24 VDC 0/-10%				
Power Consumption [W] at 20 °C		20	20	20	34	34
Electromagnetic Brake Static Friction Torque [N•m]		8.5	8.5	8.5	44	44
Permissible Braking Work	Per Braking [J]	400	400	400	4500	4500
	Per Hour [J]	4000	4000	4000	45000	45000
Electromagnetic Brake Life (Note 2)	Number of Braking (Times)	20000				
	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.

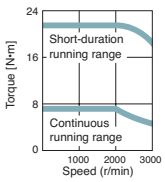
HG-SN52(B)J(*1, *2, *3)



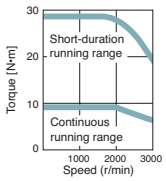
HG-SN102(B)J(*1, *3)



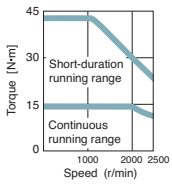
HG-SN152(B)J(*1, *3)



HG-SN202(B)J(*1, *3)



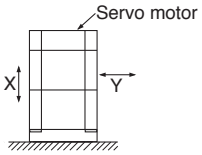
HG-SN302(B)J(*1, *3)



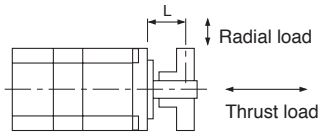
Notes: 1. ——— : For 3-phase 200 V AC.
2. - - - - : For 1-phase 230 V AC.
3. Torque drops when the power supply voltage is below the specified value.

Annotations for Servo Motor Specifications

1. The power supply capacity varies depending on the power supply impedance.
2. The regenerative braking frequency shows the permissible frequency when the Servo Motor, without a load and a regenerative option, decelerates from the rated speed to a stop. When a load is connected; however, the value will be the table value/(m+1), where m = Moment of inertia of load/Moment of inertia of Servo Motor. When the operating speed exceeds the rated speed, the regenerative braking frequency is inversely proportional to the square of (operating speed/rated speed). Take measures to keep the regenerative power [W] during operation below the tolerable regenerative power [W]. Use caution, especially when the operating speed changes frequently or when the regeneration is constant (as with vertical feeds). Select the most suitable regenerative option for your system with our capacity selection software. Refer to "Regenerative Option" in this catalog for the tolerable regenerative power [W] when regenerative option is used.
3. For 400 W or smaller servo amplifiers, the regenerative braking frequency may change affected by the power supply voltage due to the large ratio of the energy charged into the electrolytic capacitor in the servo amplifier.
4. In the environment where the Servo Motor is exposed to oil mist, oil and/or water, a standard specification Servo Motor may not be usable. Contact your local sales office for more details.
5. The vibration direction is shown in the diagram below. The numerical value indicates the maximum value of the component (commonly the bracket in the opposite direction of the Servo Motor shaft). Fretting more likely occurs on the bearing when the Servo Motor stops. Thus, maintain vibration level at approximately one-half of the allowable value.

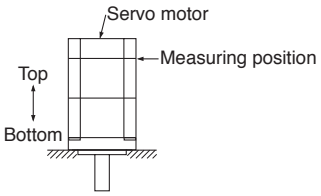


6. Refer to the diagram below for the permissible load for the shaft. Do not apply a load exceeding the value specified in the table on the shaft. The values in the table are applicable when each load is applied singly.



L: Distance between the flange mounting surface and the center of load.

7. V10 indicates that the amplitude of the Servo Motor itself is 10 µm or less. The following shows mounting posture and measuring position of the Servo Motor during the measurement:



8. Refer to the diagram below for shaft-through portion.