MR-JN Servo Motors

Servo Motor Selection

HF-KN □ 3 □ □

Low inertia, small capacity.

Conforms to the following standards: EN, UL, cUL

Rated Speed 3000 (r/min)

Symbol	Shaft Shape
None	Standard (Straight Shaft)
K	With Keyway (Note)
D	D-Cut (Note)

Note: Refer to "Special Shaft End Specifications" in this guide for the available models and detailed specifications.

Symbol	Electromagnetic Brake
None	Without Brake
B	With Brake

Symbol	Rated Output (kW)
05	0.05
1	0.1
2	0.2
4	0.4

Stocked Motors

Model Number
HF-KN053
HF-KN053B
HF-KN13
HF-KN13B
HF-KN23K
HF-KN23BK
HF-KN43K
HF-KN43BK

HF-KP □ 3 □ □ □

Low inertia, small capacity.

Conforms to the following standards: EN, UL, cUL

Rated Speed 3000 (r/min)

Symbol	Shaft Shape
None	Standard (Straight Shaft)
K	With Keyway (Note)

Note: Refer to "Special Shaft End Specifications" in this guide for the available models and detailed specifications.

Symbol	Reducer
G1	For general industrial machines
G5	Flange output type for precision application, flange mounting
G7	Shaft output type for precision application, flange mounting

Note: Refer to "Geared Servo Motor Specifications" in this guide for the available model and detailed specifications.

Symbol	Electromagnetic Brake
None	Without Brake
B	With Brake

Symbol	Rated Output (kW)
05	0.05
1	0.1
2	0.2
4	0.4

Stocked Motors

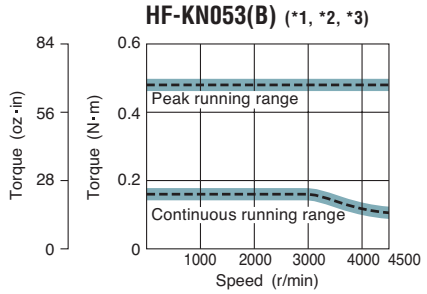
Model Number
HF-KP13
HF-KP13B
HF-KP23
HF-KP23B
HF-KP053
HF-KP053B
HF-KP43

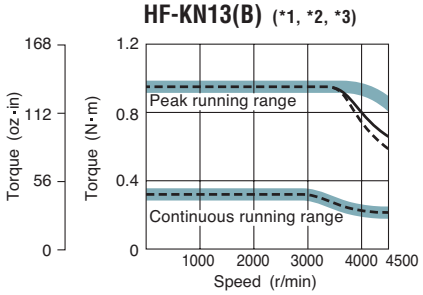
HF-KN Servo Motor Specifications

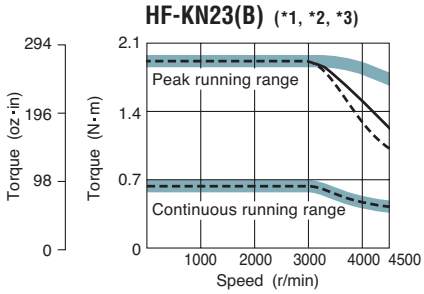
Servo Motor Model HF-KN_		053(B)	13(B)	23(B)	43(B)
Servo Amplifier Model MR-J3-_-_		MR-JN-10A (1)		MR-JN-20A (1)	MR-JN-40A
Power Supply Capacity (kVA) (*1)		0.3	0.3	0.5	0.9
Continuous Running Duty	Rated Output (W)	50	100	200	400
	Rated Torque (N•m [oz•in]) (*8)	0.16 (22.7)	0.32 (45.3)	0.64 (90.6)	1.3 (184)
Maximum Torque (N•m [oz•in])		0.48 (68.0)	0.95 (135)	1.9 (269)	3.8 (538)
Rated Speed (r/min)		3000			
Maximum Speed (r/min)		4500			
Permissible Instantaneous Speed (r/min)		5175			
Power Rate Continuous Rated Torque (kW/s)		4.87	11.5	16.9	38.6
Rated Current (A)		0.9	0.8	1.4	2.7
Maximum Current (A)		2.7	2.4	4.2	8.1
Regenerative Braking Freq. (times/min) (*2)		(*3)	(*3)	470	261
Moment of inertia J (x10^{-4}kg•m^2) [J (oz•in^2)]	Standard	0.052 (0.284)	0.088 (0.481)	0.24 (1.31)	0.42 (2.30)
	With Electromagnetic Brake	0.054 (0.295)	0.090 (0.492)	0.31 (1.69)	0.50 (2.73)
Recommended Load / Motor Inertia Moment Ratio (*4)		15 times maximum		24 times maximum	22 times maximum
Speed/Position Detector		Incremental 17-bit encoder (resolution: 131072 p/rev)			
Insulation Class		Class B			
Structure		Totally enclosed non-ventilated (protection level: IP65) (*5)			
Environment	Ambient Temperature (*7)	0 to 40°C (32 to 104°F) (non-freezing), storage: -15 to 70°C (5 to 158°F) (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 (*6)	1000m or less above sea level X: 49m/s^2 Y: 49m/s^2			
Weight kg (lb)	Standard	0.4 (0.89)	0.5 (1.1)	1.0 (2.2)	1.4 (3.1)
	With Electromagnetic Brake	0.6 (1.3)	0.7 (1.5)	1.4 (3.1)	1.8 (4.0)

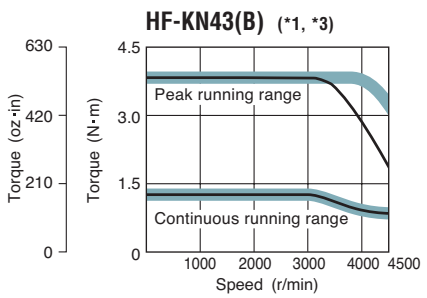
Notes:

1. The power supply capacity varies depending on the power supply's impedance.
2. The regenerative braking frequency shows the permissible frequency when the motor, without a load and an optional regeneration unit, 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=load inertia moment/motor inertia moment. When the operating speed exceeds the rated speed, the regenerative braking frequency is inversely proportional to the square of (operating speed/rated speed). If the operating speed changes frequently or when the regeneration is constant (as with vertical feeds), find the regenerative heating value (W) in operation. Provisions must be made to keep this heating value below the tolerable regenerative power (W).Optimal regenerative resistor varies for each system. Select the most suitable regenerative resistor by using the capacity selection software. Refer to the section "Options • Optional regeneration unit" in this catalog for details on the tolerable regenerative power (W).
3. When the 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 motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range and if the load to motor inertia moment is 8 times or less for HF-KN053(B) or 4 time or less for HF-KN13(B).
4. Contact your local sales office if the load to motor inertia moment ratio exceeds the value in the table.
5. The shaft-through portion is excluded.
6. The vibration direction is shown in the diagram to the right. The value indicates the maximum value of the component (normally 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.
7. 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.
8. 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 motor's rated torque.









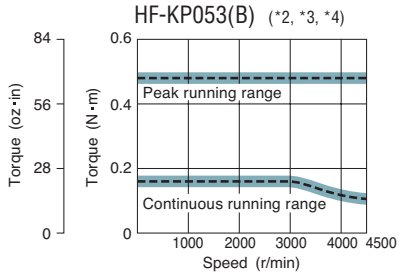
Notes: 1. ▬ : For 1-phase 230VAC.
2. - - - - : For 1-phase 100VAC.
3. ——— : For 1-phase 200VAC.
The line is drawn only where differs from the other two lines.

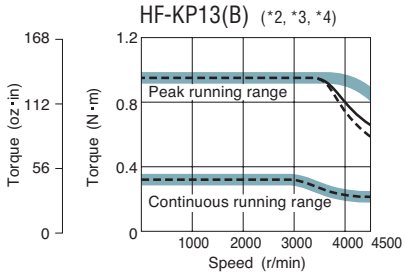
HF-KP Geared Servo Motor Specifications

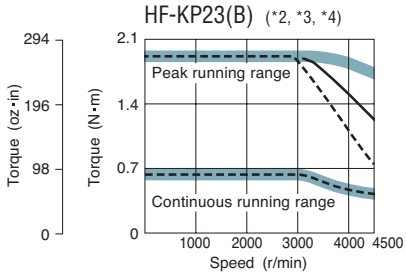
Servo Motor Model HF-KP_		053(B)G_	13(B)G_	23(B)G_	43(B)G_
Servo Amplifier Model MR-J3-_-_		MR-JN-10A (1)		MR-JN-20A (1)	MR-JN-40A
Power Supply Capacity (kVA) (*1)		0.3	0.3	0.5	0.9
Continuous Running Duty	Rated Output (W)	50	100	200	400
	Rated Torque (N•m [oz•in]) (*8, *11)	0.16 (22.7)	0.32 (45.3)	0.64 (90.6)	1.3 (184)
Maximum Torque (N•m [oz•in])		0.48 (68.0)	0.95 (135)	1.9 (269)	3.8 (538)
Rated Speed (r/min) (*9)		3000			
Maximum Speed (r/min) (*9)		4500 (*6)			
Permissible Speed (r/min)		Refer to HF-KP Series Geared Servo Motor Dimensions in this guide			
Power Rate Continuous Rated Torque (kW/s) (*8)		4.87	11.5	16.9	38.6
Rated Current (A)		0.9	0.8	1.4	2.7
Maximum Current (A)		2.7	2.4	4.2	8.1
Regenerative Braking Frequency (times/min) (*2, *6)		(*3)	(*3)	474	276
Moment of inertia J ($x10^{-4}$kg•m^2) [J (oz•in^2)]	Standard	Refer to HF-KP Series Geared Servo Motor Dimensions in this selection guide			
	With Electromagnetic Brake				
Permissible Load to Motor Inertia Moment Ratio		Refer to "Geared Servo Motor Specifications" in this selection guide			
Speed/Position Detector		Absolute/incremental 18-bit encoder (resolution 262144 p/rev) (*10)			
Insulation Class		Class B			
Structure		Totally enclosed non-ventilated (protection level: IP44) (*4)			
Environment (*7)	Ambient Temperature	0 to 40°C (32 to 104°F) (non-freezing), storage: -15 to 70°C (5 to 158°F) (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, *8)	1000m or less above sea level X: 49m/s^2 Y: 49m/s^2			
Weight kg (lb)	Standard	Refer to HF-KP Series Geared Servo Motor Dimensions in this selection guide			
	With Electromagnetic Brake				

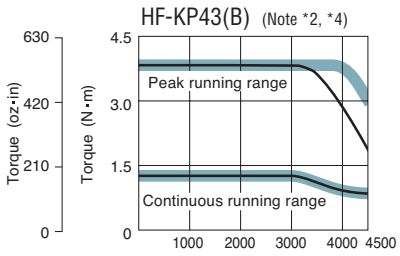
Notes:

1. The power supply capacity varies depending on the power supply's impedance.
2. The regenerative braking frequency shows the permissible frequency when the motor, without a load and an optional regeneration unit, 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=load inertia moment/motor inertia moment. When the operating speed exceeds the rated speed, the regenerative braking frequency is inversely proportional to the square of (operating speed/rated speed). If the operating speed changes frequently or when the regeneration is constant (as with vertical feeds), find the regenerative heating value (W) in operation. Provisions must be made to keep this heating value below the tolerable regenerative power (W).Optimal regenerative resistor varies for each system. Select the most suitable regenerative resistor by using the capacity selection software. Refer to the section "Options • Optional Regeneration Unit" in this catalog for details on the tolerable regenerative power (W).
3. When the 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 motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the effective torque is within the rated torque range and if the load to motor inertia moment is 8 times or less for HF-KP053(B)G_ or 4 time or less for HF-KP13(B)G_.
4. The shaft-through portion is excluded.
5. The vibration direction is shown in the diagram to the right. The value indicates the maximum value of the component (normally 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. The values are applicable when combining with MR-JN servo amplifier series.
7. 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.
8. The values are applicable for the Servo Motor without reducer.
9. The values are applicable at the reducer input shaft.
10. When combined with MR-JN servo amplifier series, the detector performance is equivalent to an incremental 17-bit encoder.
11. 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 motor's rated torque.









Notes: 1. For the servo motor without reducer.
2. ▬▬: For 1-phase 230VAC.
3. - - - -: For 1-phase 100VAC.
4. ——: For 1-phase 200VAC.
The line is drawn only where differs from the other two lines.