

General-Purpose AC Servo MELSERVO-J3

Servo Amplifier <MR-J3-500A> <MR-J3-700A> Servo Motor <HF-SP502, HF-SP702>

The servo amplifiers, MR-J3-500A and MR-J3-700A have now been added to the MELSERVO-J3 series.

In addition, the servo motors HF-SP502 (5kW) and HF-SP702 (7kW) have been added to the HF-SP 2000r/min, medium-inertia, medium-capacity motor series.

With these medium-capacity amplifiers and motors, a wider variety of applications can now be satisfied.

The servo amplifiers MR-J3-500A and MR-J3-700A, and the servo motors HF-SP502 and HF-SP702 also conform to global standards (EN, UL, cUL standards).



■ Servo amplifier specifications

Servo amplifier model		MR-J3-500A	MR-J3-700A
Main circuit power supply	Voltage / frequency (Note 1)	3-phase 200 to 230VAC 50/60Hz	
	Permissible voltage fluctuation	3-phase 170 to 253VAC	
	Permissible frequency fluctuation	±5% maximum	
Control circuit power supply	Voltage / frequency	1-phase 200 to 230VAC 50/60Hz	
	Permissible voltage fluctuation	1-phase 170 to 253VAC 50/60Hz	
	Permissible frequency fluctuation	±5% maximum	
	Power consumption (W)	45	
Interface power supply		24VDC ±10% (required current capacity : 300mA (Note3))	
Control system		Sine-wave PWM control / current control system	
Dynamic brake		Built-in (Note 2)	
Safety features		Overcurrent shutdown, regeneration overvoltage shutdown, overload shutdown (electronic thermal), servo motor overheat protection, encoder fault protection, regeneration fault protection, undervoltage / sudden power outage protection, overspeed protection, excess error protection	
Position control mode	Maximum input pulse frequency	1Mpps (when using differential receiver), 200kpps (when using open collector)	
	Positioning feedback pulse	Resolution per encoder / servo motor rotation: 262144 p/rev	
	Command pulse multiple	Electronic gear A/B multiple, A: 1 to 1048576, B: 1 to 1048576 1/10 < A/B < 2000	
	Positioning complete width setting	0 to ±10000 pulses (command pulse unit)	
	Excess error	±3 rotations	
Speed control mode	Torque limit	Set by parameters or external analog input (0 to +10VDC, maximum torque)	
	Speed control range	Analog speed command 1:2000, internal speed command 1:5000	
	Analog speed command input	0 to ±10VDC / rated speed (It is possible to change the speed in 10V using the parameter No.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), when using analog speed command	
Torque control mode	Torque limit	Set by parameters or external analog input (0 to +10VDC, maximum torque)	
	Analog torque command input	0 to ±8VDC maximum torque (input impedance 10 to 12k Ω)	
	Speed limit	Set by parameters or external analog input (0 to ±10VDC, rated speed)	
Structure		Fan cooling open (IP00)	
Environment	Ambient temperature	0 to 55° C (non freezing), storage: -20 to 65° C (non freezing)	
	Ambient humidity	90% 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	1000m or less above sea level / 5.9m/s ² maximum	
Mass (kg)		4.6	6.2

Notes: 1. Rated output and rated speed of the servo motor used in combination with the servo amplifier are as indicated when using the power supply voltage and frequency listed.

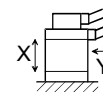
2. For products without a dynamic brake (MR-J3- □ A-ED), special compliance is possible.

3. 300A is the value when all of the input / output points are used.

Servo motor specifications

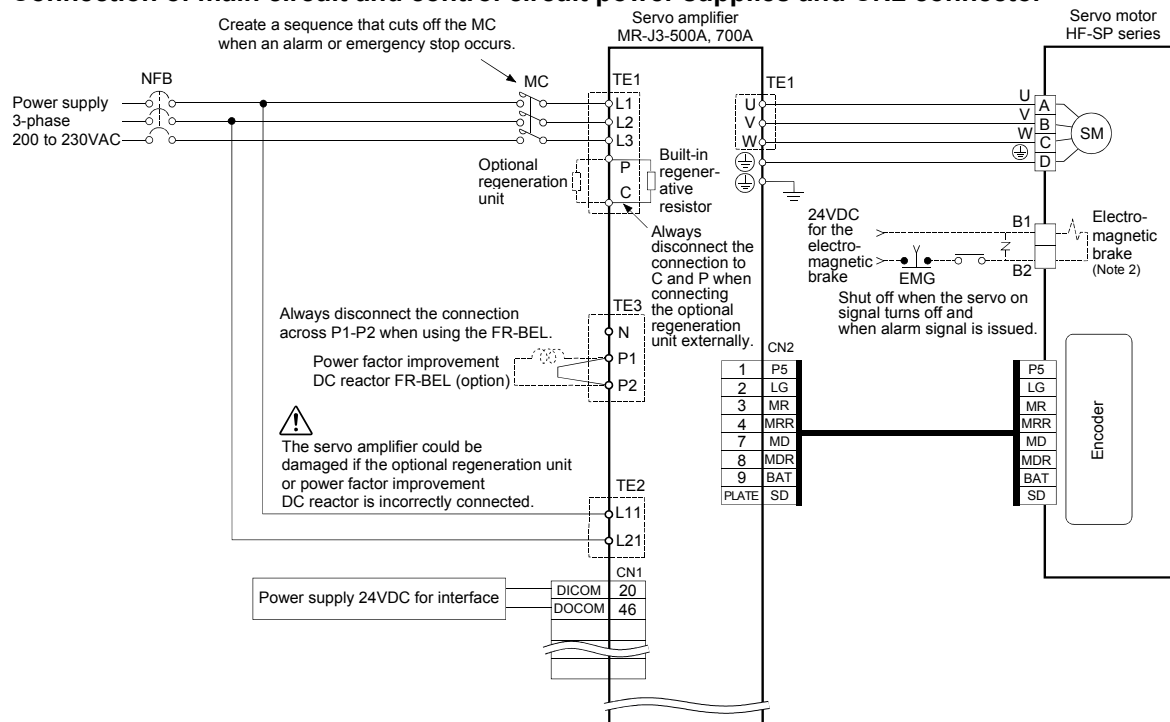
Servo motor model		HF-SP502(B)	HF-SP702(B)
Compatible servo amplifier model		MR-J3-500A	MR-J3-700A
Power facility capacity (Note 1)	(kVA)	7.5	10
Continuous running duty	Rated output (kW)	5.0	7.0
	Rated torque (N•m)	23.9	33.4
Maximum torque	(N•m)	71.6	100
Rated speed	(r/min)	2000	
Maximum speed	(r/min)	3000	
Permissible instantaneous speed	(r/min)	3450	
Power rate at continuous rated torque	(kW/s)	58.8	72.5
Rated current	(A)	24	33
Maximum current	(A)	72	99
Regenerative braking frequency (times/min) (Note 2)	With no options	37	31
	MR-RB31 (300W)	86	54
	MR-RB51 (500W)	144	90
Moment of inertia J ($\times 10^{-4} \text{kg}\cdot\text{m}^2$)	Standard	97	154
	With electromagnetic brake	107	164
Recommended load/motor inertia moment ratio		15 times the servo motor's inertia moment maximum (Note 3)	
Speed/position detector		18-bit encoder (Resolution per encoder/servo motor rotation: 262144p/rev)	
Attachments		– (Note 6)	
Insulation class		Class F	
Structure		Totally enclosed non ventilated (protection level: IP67) (Note 4)	
Environment	Ambient temperature	0 to 40°C (non freezing), storage: –15 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	1000m or less above sea level	
Mass (kg)	Vibration (Note 5)	X: 24.5m/s ² Y: 29.4m/s ²	
	Standard	22	32
	With electromagnetic brake	28	38

- Notes:
- The power facility capacity varies depending on the power supply's impedance.
 - The regenerative brake frequency shows the permissible frequency for decelerating the motor without a load from rated speed to a stop.
 - Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
 - The shaft-through portion is excluded.
 - The vibration direction is shown in the right-side diagram. 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 a motor stops, so please maintain vibration to approximately one-half of the allowable value.
 - For the motor with an oil seal (MR-SP □ J), special compliance is possible.



Standard wiring diagram

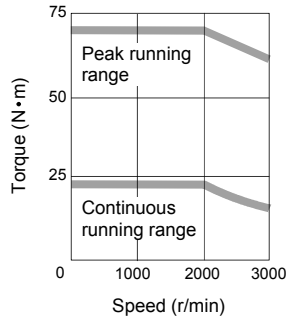
● Connection of main circuit and control circuit power supplies and CN2 connector



- Notes:
- Refer to "MR-J3-□ A SERVO AMPLIFIER INSTRUCTION MANUAL" for details on the connection.
 - The electromagnetic brake terminals (B1, B2) do not have the polarity.
 - For the connection of the main circuit power supply, MR-J3-500A and MR-J3-700A are different from MR-J3-350A or smaller. However, the other connections are same as ones of MR-J3-350A or smaller, so refer to "MELSERVO-J3 catalogue".

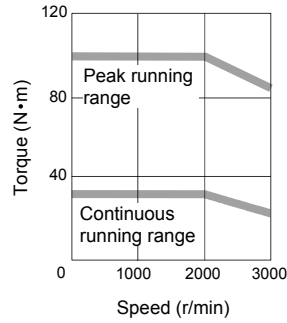
Servo motor torque characteristics

● HF-SP502(B)



Note : ■ For 3-phase 200VAC.

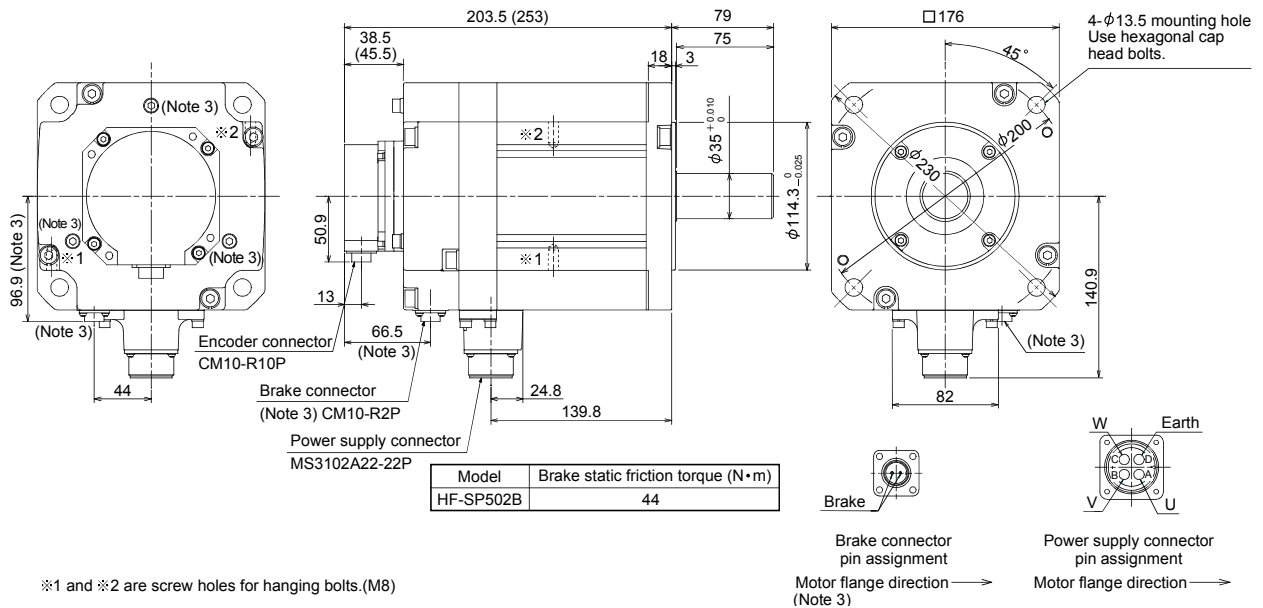
● HF-SP702(B)



Servo motor dimensions

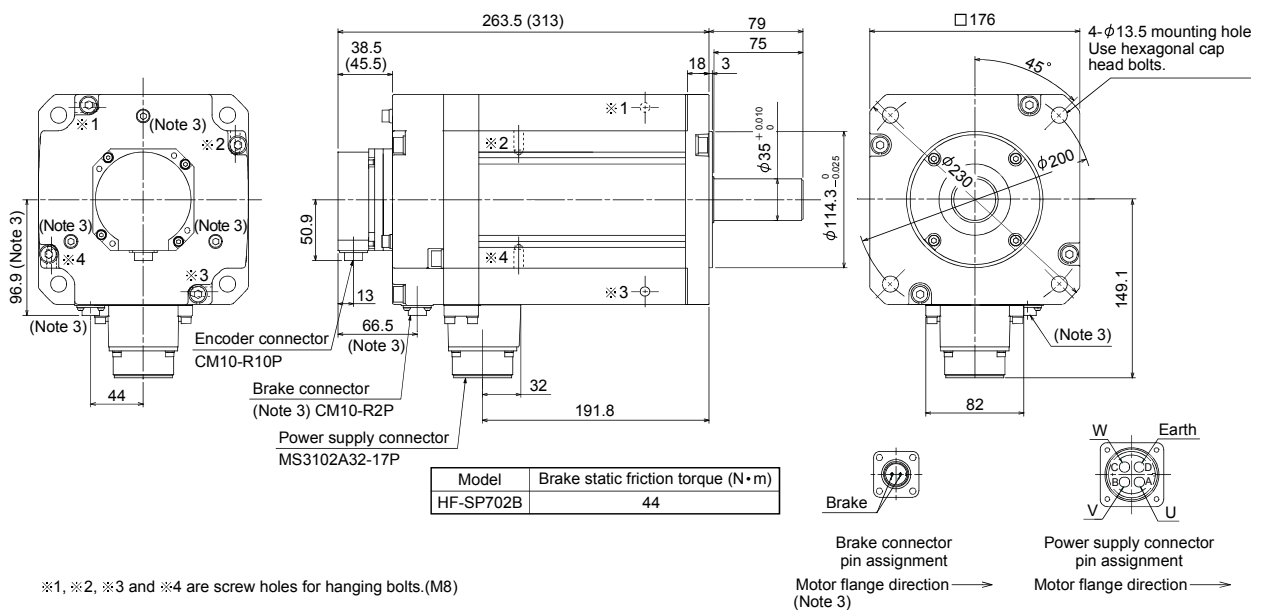
● HF-SP502(B)

Unit: mm



● HF-SP702(B)

Unit: mm



- Notes: 1. Use a friction coupling to fasten a load.
 2. Dimensions inside () are for the models with electromagnetic brake.
 3. Only for the models with electromagnetic brake.
 4. For dimensions where there is no tolerance listed, use general tolerance.
 5. For the HF-SP502(B), the optional power supply connector "MR-PWCNS5" is provided. For the HF-SP702(B), the optional power supply connector "MR-PWCNS3" is provided.

Electrical wires, circuit breakers, magnetic contactors and optional regeneration unit

Servo amplifier model	Circuit breaker	Magnetic contactor	Power factor improvement reactor	Optional regeneration unit	Electrical wire size mm ² (Note 1)				
					L1,L2,L3, P1,P2,⊕	L11,L21	U,V,W ⊕	P,C (Note 2)	B1,B2
MR-J3-500A	50A frame 50A	S-N35	FR-BEL-11K FR-BAL-11K	MR-RB31 (tolerable regenerative power 300W)	5.5 (AWG10)	1.25 (AWG16)	5.5 (AWG10)	2 (AWG14)	1.25 (AWG16)
MR-J3-700A	100A frame 75A	S-N50	FR-BEL-15K FR-BAL-15K	MR-RB51 (tolerable regenerative power 500W)	8 (AWG8)		8 (AWG8)	3.5 (AWG12)	

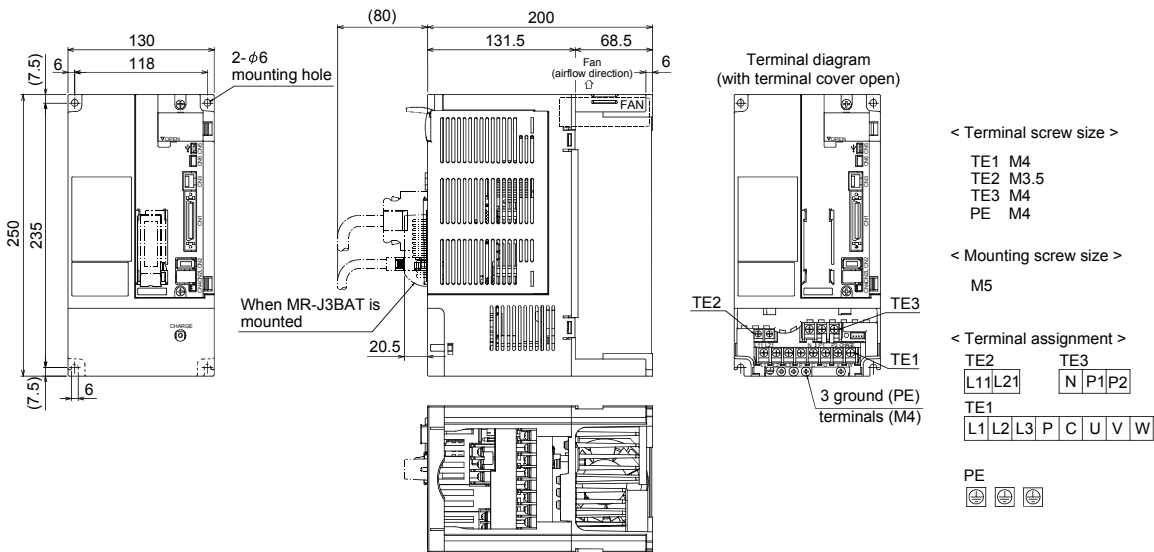
Notes: 1. The wires in the above table are assumed to use 600V polyvinyl chloride electrical wire having a length of 30m. Use wire with the above size or larger.

2. Connect a reactor or an optional regeneration unit using 5m or shorter length electrical wire.

Servo amplifier dimensions

MR-J3-500A

Unit: mm



MR-J3-700A

Unit: mm

