

General-Purpose AC Servo MELSERVO-J3

Servo Motor HF-MP Series

The ultra-low inertia, small capacity motor series, HF-MP has been introduced into the MELSERVO-J3 series.

The HF-MP series are high speed, ultra-low inertia motors with high resolution encoders 262,144 [pulses / rev] (18-bit).

For small capacity motor needs, the HF-MP and HF-KP series are now available. These two series allow selection of a specific motor according to purpose.

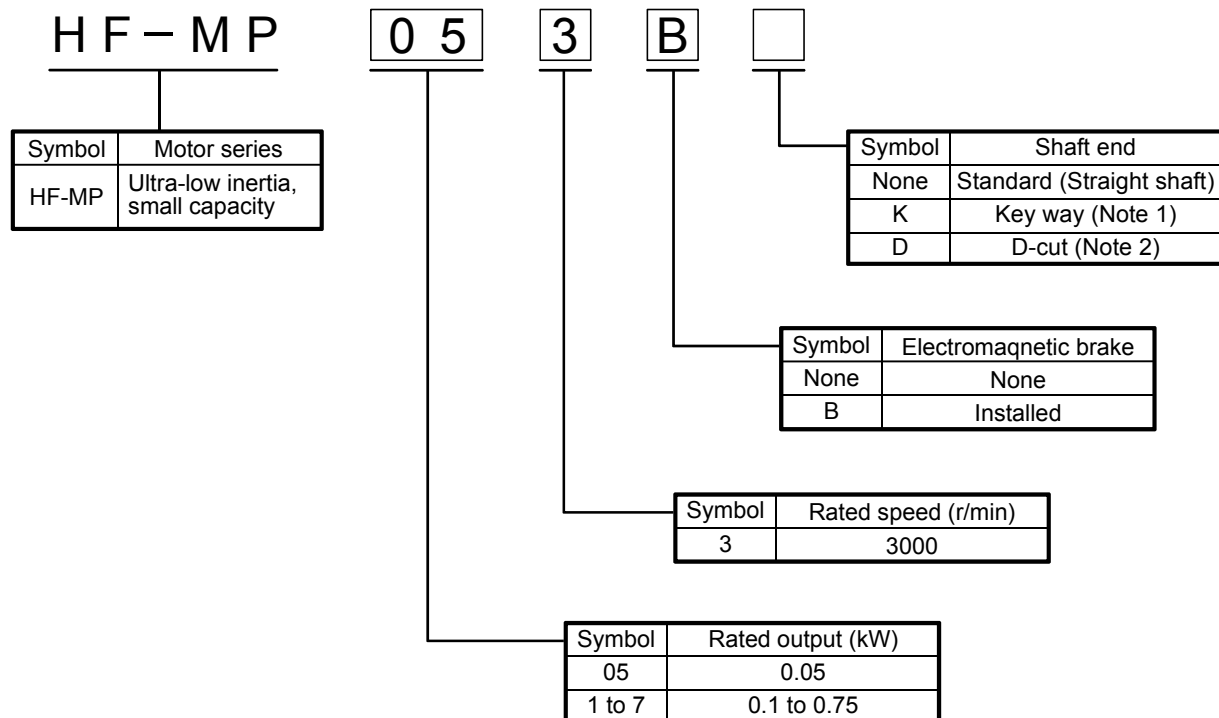
The HF-MP series is smaller than the existing HC-MFS series so overall space can be reduced.

The HF-MP series are suitable for high duty profile applications such as inserters or mounters.

The HF-MP series also conforms to global standards (EN, UL, cUL standards).



■ Model configurations

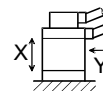


- Notes : 1. 200W or larger capacity HF-MP□K has a key.
2. D-cut is available for 100W or smaller capacity.

■ Servo motor specifications

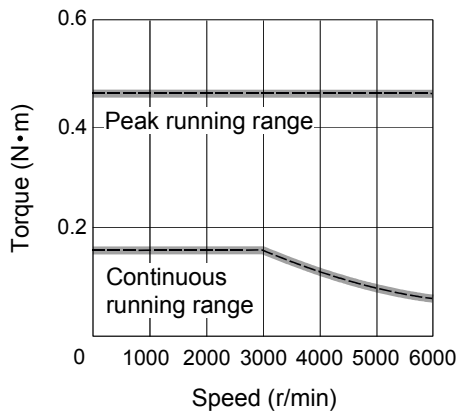
| Servo motor model | | HF-MP053(B) | HF-MP13(B) | HF-MP23(B) | HF-MP43(B) | HF-MP73(B) |
|-------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------|------------|--------------|--------------|------------|
| Compatible servo amplifier model | | MR-J3-10A(1) | | MR-J3-20A(1) | MR-J3-40A(1) | MR-J3-70A |
| Power facility capacity (Note 1) (kVA) | | 0.3 | 0.3 | 0.5 | 0.9 | 1.3 |
| Continuous running duty | Rated output (W) | 50 | 100 | 200 | 400 | 750 |
| | Rated torque (N•m) | 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 at continuous rated torque (kW/s) | | 13.3 | 31.7 | 46.1 | 111.6 | 95.5 |
| Rated current (A) | | 1.1 | 0.9 | 1.6 | 2.7 | 5.6 |
| Maximum current (A) | | 3.2 | 2.8 | 5.0 | 8.6 | 16.7 |
| Regenerative braking frequency (times/min) (Note 2) | With no options | (Note 2-1) | (Note 2-2) | 1570 | 920 | 420 |
| | MR-RB032 (30W) | (Note 3) | 16600 | 4710 | 2760 | 640 |
| | MR-RB12 (100W) | – | – | 15700 | 9190 | 2120 |
| | MR-RB32 (300W) | – | – | – | – | 6360 |
| Moment of inertia J ($\times 10^{-4} \text{kg}\cdot\text{m}^2$) | Standard | 0.019 | 0.032 | 0.088 | 0.15 | 0.60 |
| | With electromagnetic brake | 0.025 | 0.039 | 0.12 | 0.18 | 0.70 |
| Recommended load/motor inertia moment ratio | | 30 times the servo motor's inertia moment maximum (Note 4) | | | | |
| Speed/position detector | | 18-bit encoder (Resolution per encoder/servo motor rotation: 262144p/rev) | | | | |
| Attachments | | – | | | | |
| Insulation class | | Class B | | | | |
| Structure | | Totally enclosed non ventilated (protection level: IP65) (Note 5) | | | | |
| 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 | | | | |
| | Vibration (Note 6) | X, Y: 49m/s ² | | | | |
| Mass (kg) | Standard | 0.35 | 0.56 | 0.94 | 1.5 | 2.9 |
| | With electromagnetic brake | 0.65 | 0.86 | 1.6 | 2.1 | 3.9 |

- Notes: 1. The power facility capacity varies depending on the power supply's impedance.
2. The regenerative brake frequency shows the permissible frequency for decelerating the motor without a load from rated speed to a stop. When a load is connected, however, the value becomes the table value divided by (m+1) where m is the load inertia moment divided by the motor inertia moment. When the operating speed exceeds the rated speed, the regenerative brake frequency is inversely proportional to the square of (Operating speed / rated speed.) When the operating speed varies with the frequency or when regeneration is constant (as with vertical feeds), find the regeneration heat generated (W) while operating and do not exceed the permissible value.
- 2-1. When a 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 a motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the load inertia moment is 26-fold or less and the effective torque is within the rated torque range.
- 2-2. When a 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 a motor decelerates to a stop from the maximum speed, the regenerative frequency will not be limited if the load inertia moment is 15-fold or less and the effective torque is within the rated torque range.
3. There are no limits on regeneration frequency as long as the effective torque is within the rated torque range.
4. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.
5. The shaft-through portion is excluded.
6. 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.

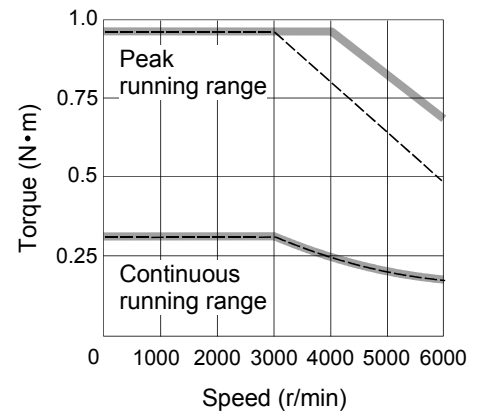


■ Servo motor torque characteristics

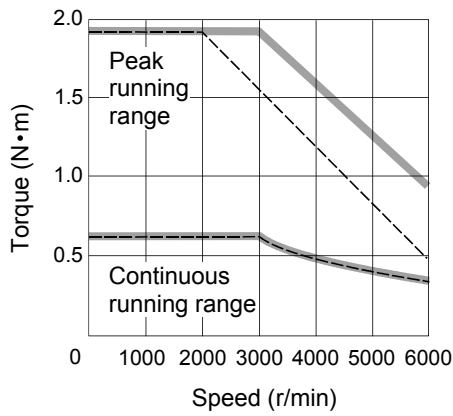
● HF-MP053(B) (Note 1, 2)



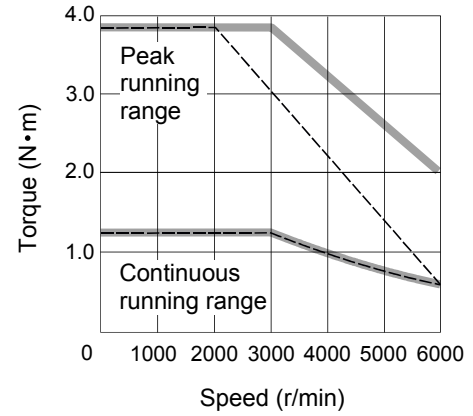
● HF-MP13(B) (Note 1, 2)



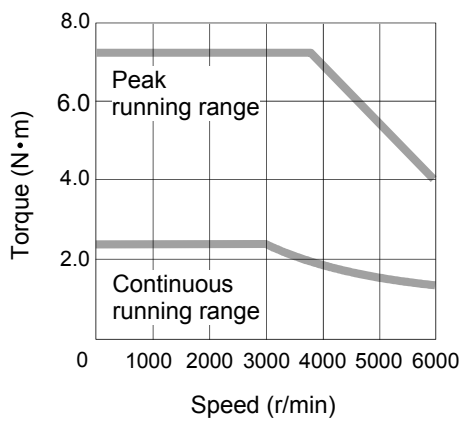
● HF-MP23(B) (Note 1, 2)





● HF-MP43(B) (Note 1, 2)



● HF-MP73(B) (Note 1)

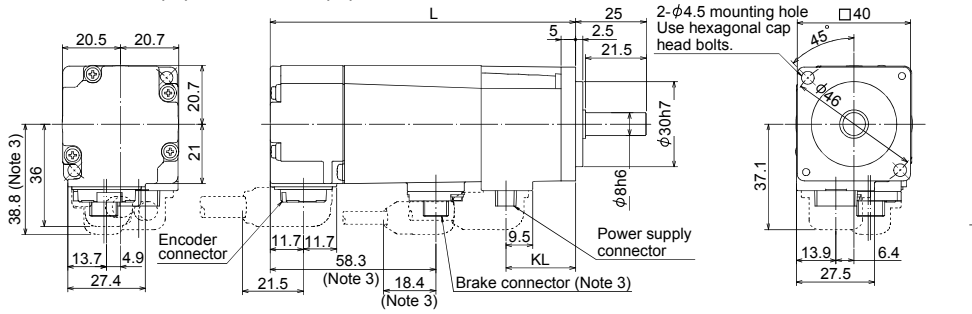


Notes: 1.  : For 3-phase 200VAC or 1-phase 230VAC.
 2.  : For 1-phase 100VAC.

Servo motor dimensions

Unit: mm

● HF-MP053(B), HF-MP13(B)

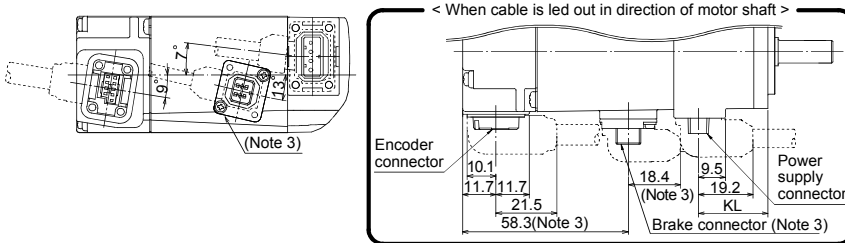


Power supply connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | Earth |
| 2 | U |
| 3 | V |
| 4 | W |

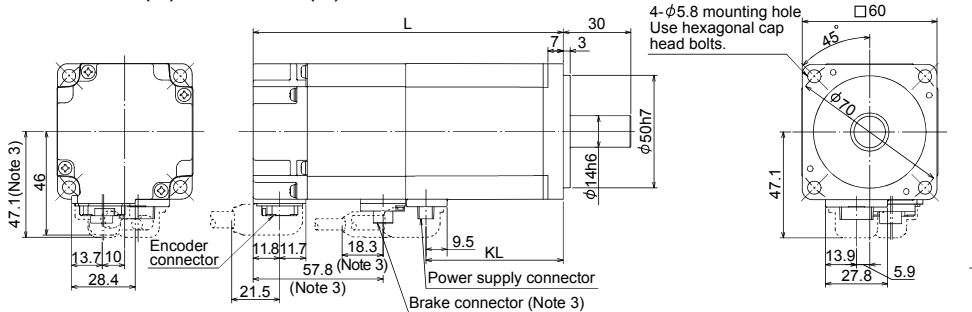
Brake connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | B1 |
| 2 | B2 |



| Model | Variable dimensions | |
|-------------|---------------------|------|
| | L | KL |
| HF-MP053(B) | 66.4 (107.5) | 24.5 |
| HF-MP13(B) | 82.4 (123.5) | 40.5 |

● HF-MP23(B), HF-MP43(B)

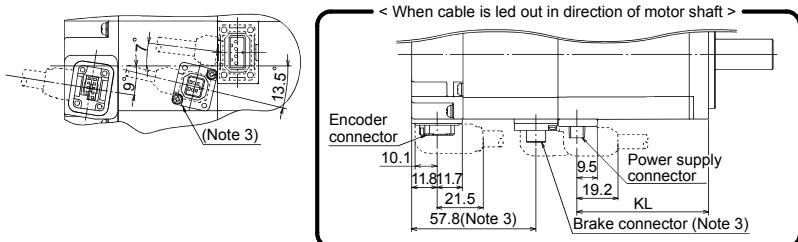


Power supply connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | Earth |
| 2 | U |
| 3 | V |
| 4 | W |

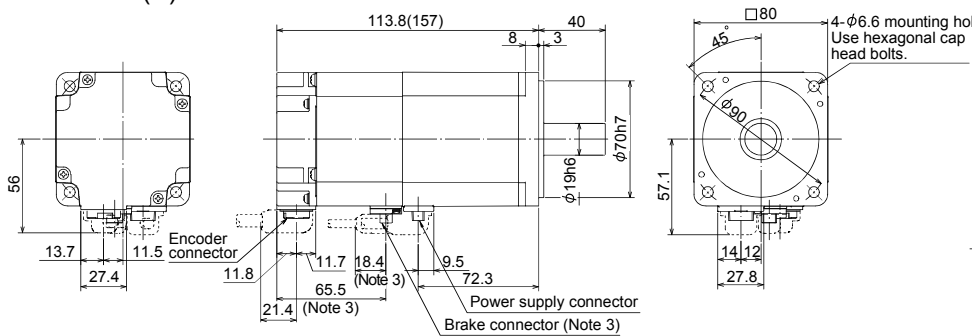
Brake connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | B1 |
| 2 | B2 |



| Model | Variable dimensions | |
|------------|---------------------|------|
| | L | KL |
| HF-MP23(B) | 76.6 (116.1) | 39.3 |
| HF-MP43(B) | 98.5 (138) | 61.2 |

● HF-MP73(B)

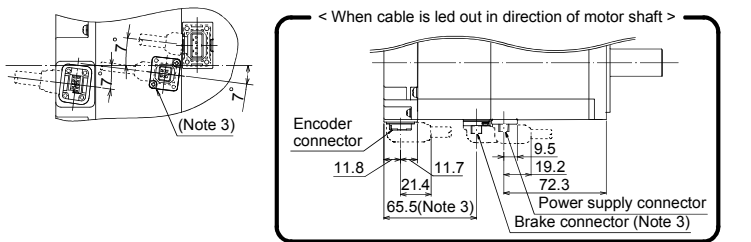


Power supply connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | Earth |
| 2 | U |
| 3 | V |
| 4 | W |

Brake connector pin assignment

| Pin No. | Signal name |
|---------|-------------|
| 1 | B1 |
| 2 | B2 |



- 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.