

## General-Purpose AC Servo MELSERVO-J3

### Servo Motor <HC-LP, HC-RP, HC-UP Series>

MELSERVO-J3 Series motor lineup has been expanded to include the following new motors:

- HC-LP series – low inertia medium capacity motor
- HC-RP series – ultra-low inertia medium capacity motor
- HC-UP series – flat type medium capacity motor

All the HC-LP, HC-RP and HC-UP series motors are equipped with high-resolution absolute encoders, 262144p/rev as standard specifications.

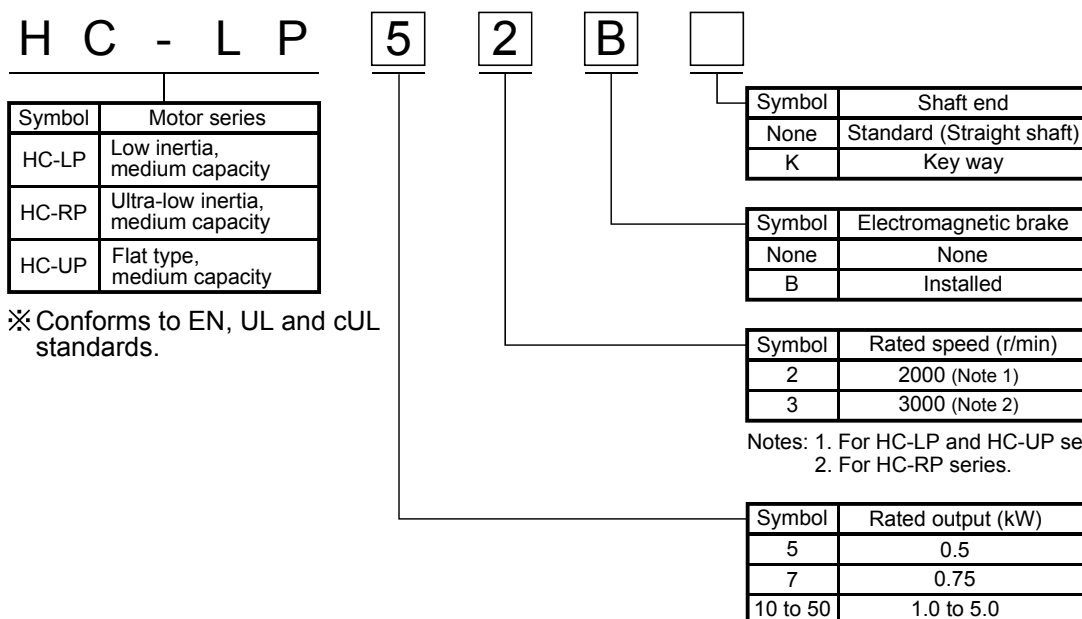
Together with the existing HF-SP series, a wide variety of medium capacity motors are now available to select the one that is best suited for your applications.

The HC-LP or HC-RP series is well suited for the applications such as mounters which involve high-frequency positioning, and the flat type HC-UP series is ideal for the robot applications in which the installation space is restricted.

The HC-LP, HC-RP and HC-UP series motors also conform to the global standards (EN, UL and, cUL standards).



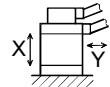
#### ■ Model configurations



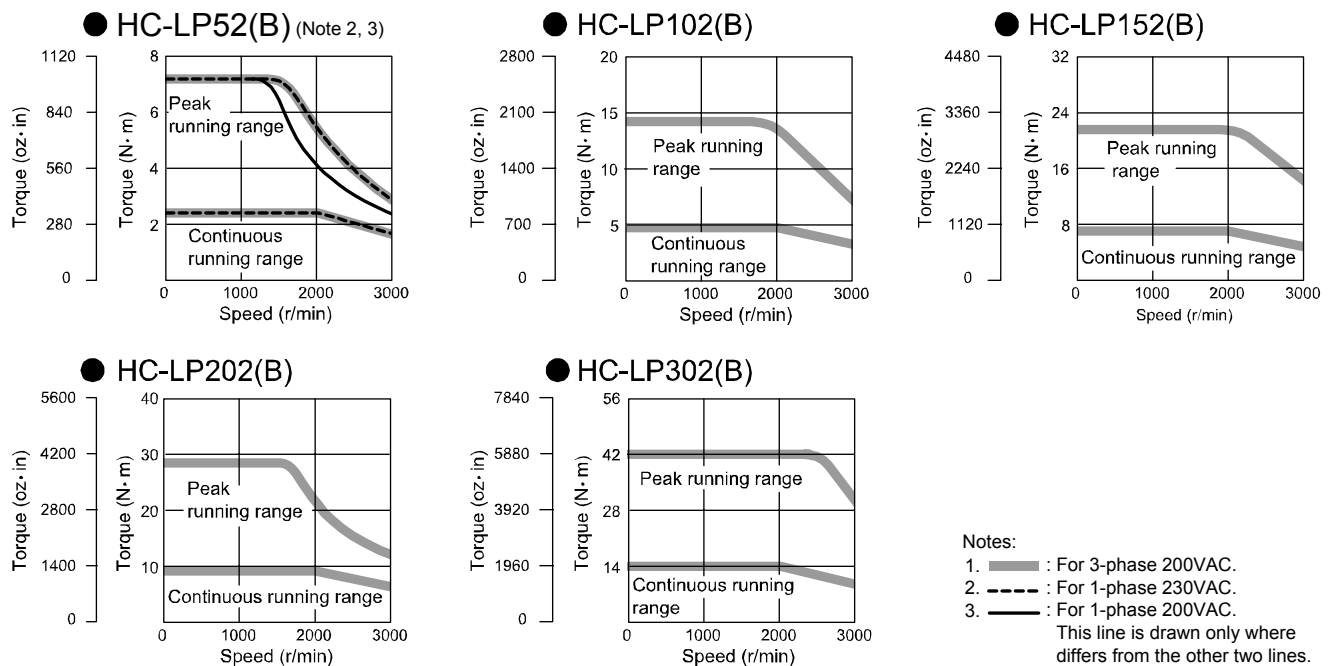
## HC-LP series servo motor specifications

| Servo motor model (Note 7)   |                                | HC-LP52(B)   | HC-LP102(B)  | HC-LP152(B)   | HC-LP202(B)  | HC-LP302(B)  |
|--|--------------------------------|--|--------------|---|--------------|--------------|
| Servo amplifier model (Note 6)   |                                | MR-J3-60A/B  | MR-J3-100A/B | MR-J3-200A/B  | MR-J3-350A/B | MR-J3-500A/B |
| Power facility capacity (Note 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 (N·m [oz·in])     | 2.39 (338)   | 4.78 (677)   | 7.16 (1010)   | 9.55 (1350)  | 14.3 (2020)  |
| Maximum torque (N·m [oz·in])   |                                | 7.16 (1010)  | 14.4 (2040)  | 21.6 (3060)   | 28.5 (4040)  | 42.9 (6070)  |
| Rated speed (r/min)  |                                | 2000   |              |   |              |              |
| Maximum speed (r/min)  |                                | 3000   |              |   |              |              |
| Permissible instantaneous speed (r/min)  |                                | 3450   |              |   |              |              |
| Power rate at continuous rated torque (kW/s)   |                                | 18.4   | 49.3         | 79.8  | 41.5         | 56.8         |
| Rated current (A)  |                                | 3.2  | 5.9          | 9.9   | 14           | 23           |
| Maximum current (A)  |                                | 9.6  | 18           | 30  | 42           | 69           |
| Regenerative braking frequency (Note 2) (times/min)                                  |                                | 115  | 160          | 425   | 120          | 70           |
| Moment of inertia J ( $\times 10^{-4}$ kg·m <sup>2</sup> ) [J (oz·in <sup>2</sup> )] | Standard                       | 3.10 (16.9)  | 4.62 (25.3)  | 6.42 (35.1)   | 22.0 (120)   | 36.0 (197)   |
|  | With electromagnetic brake     | 5.20 (28.4)  | 6.72 (36.7)  | 8.52 (46.6)   | 32.0 (175)   | 46.0 (252)   |
| Recommended load/motor inertia moment ratio  |                                | 10 times the servo motor's inertia moment maximum (Note 3)                               |              |   |              |              |
| Speed/position detector  |                                | 18-bit encoder<br>(Resolution per encoder/servo motor rotation: 262144p/rev)             |              |   |              |              |
| Attachments  |                                | Oil seal   |              |   |              |              |
| Insulation class   |                                | Class F  |              |   |              |              |
| Structure  |                                | Totally enclosed non ventilated (protection level: IP65) (Note 4)                        |              |   |              |              |
| Environment  | 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 (Note 5) | 1000m or less above sea level/<br>X: 9.8m/s <sup>2</sup> Y: 24.5m/s <sup>2</sup>         |              | 1000m or less above sea level/<br>X: 19.6m/s <sup>2</sup> Y: 49m/s <sup>2</sup> |              |              |
| Mass (kg [lb])   | Standard                       | 6.5 (15)   | 8.0 (18)     | 10 (22)   | 21 (47)      | 28 (62)      |
|  | With electromagnetic brake     | 9.0 (20)   | 11 (25)      | 13 (29)   | 27 (60)      | 34 (75)      |

- Notes: 1. The power facility capacity varies depending on the power supply's impedance.  
 2. The regenerative braking frequency shows the permissible frequency for decelerating the motor without a load and the optional regeneration unit from the rated speed to a stop.  
 3. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.  
 4. The shaft-through portion is excluded.  
 5. 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 the motor stops, so maintain vibration to approximately one-half of the allowable value.  
 6. The amplifier software version compatible with the HC-LP series is as follows:  
 A type: Version B0 or above      B type: Version A0 or above  
 7. MRZJW3-SETUP221E software version B1 or above is planned to be compatible with the HC-LP series.



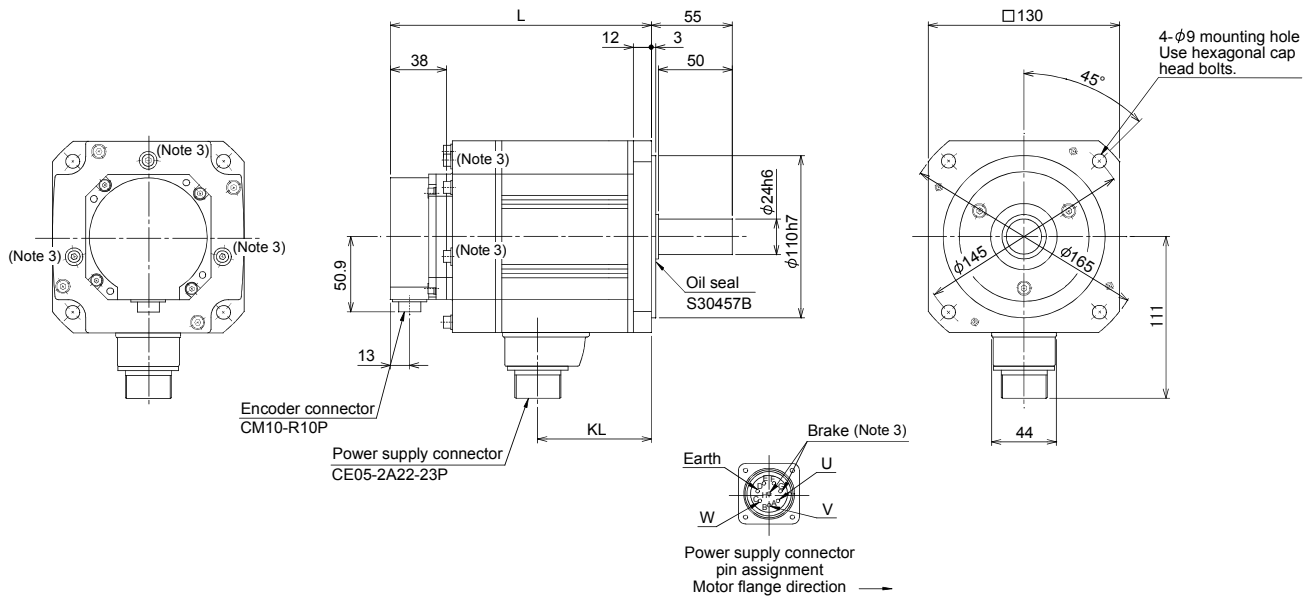
## HC-LP series servo motor torque characteristics (Note 1)



## HC-LP series servo motor dimensions

### HC-LP52(B), HC-LP102(B), HC-LP152(B)

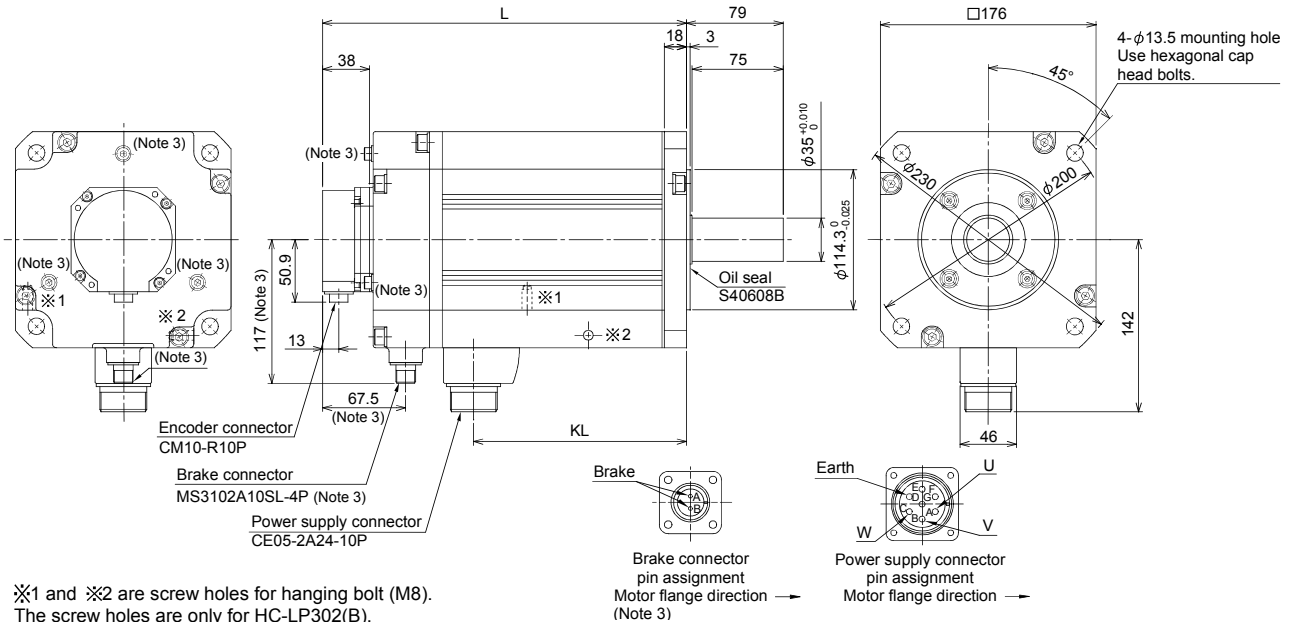
(Unit: mm)



| Model       | Variable dimensions |       |
|-------------|---------------------|-------|
|             | L                   | KL    |
| HC-LP52(B)  | 144<br>(177)        | 77    |
| HC-LP102(B) | 164<br>(197)        | 97    |
| HC-LP152(B) | 191.5<br>(224.5)    | 124.5 |

| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-LP52B  | 8.5<br>(1200)                              |
| HC-LP102B |  |
| HC-LP152B |  |

### HC-LP202(B), HC-LP302(B)



※1 and ※2 are screw holes for hanging bolt (M8).  
The screw holes are only for HC-LP302(B).

| Model       | Variable dimensions |       |
|-------------|---------------------|-------|
|             | L                   | KL    |
| HC-LP202(B) | 198.5<br>(246.5)    | 123.5 |
| HC-LP302(B) | 248.5<br>(296.5)    | 173.5 |

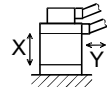
| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-LP202B | 44<br>(6230)                               |
| HC-LP302B |  |

- Notes: 1. Use a friction coupling to fasten a load.  
 2. Dimensions inside ( ) are for the models with an electromagnetic brake.  
 3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.  
 4. For dimensions where there is no tolerance listed, use general tolerance.

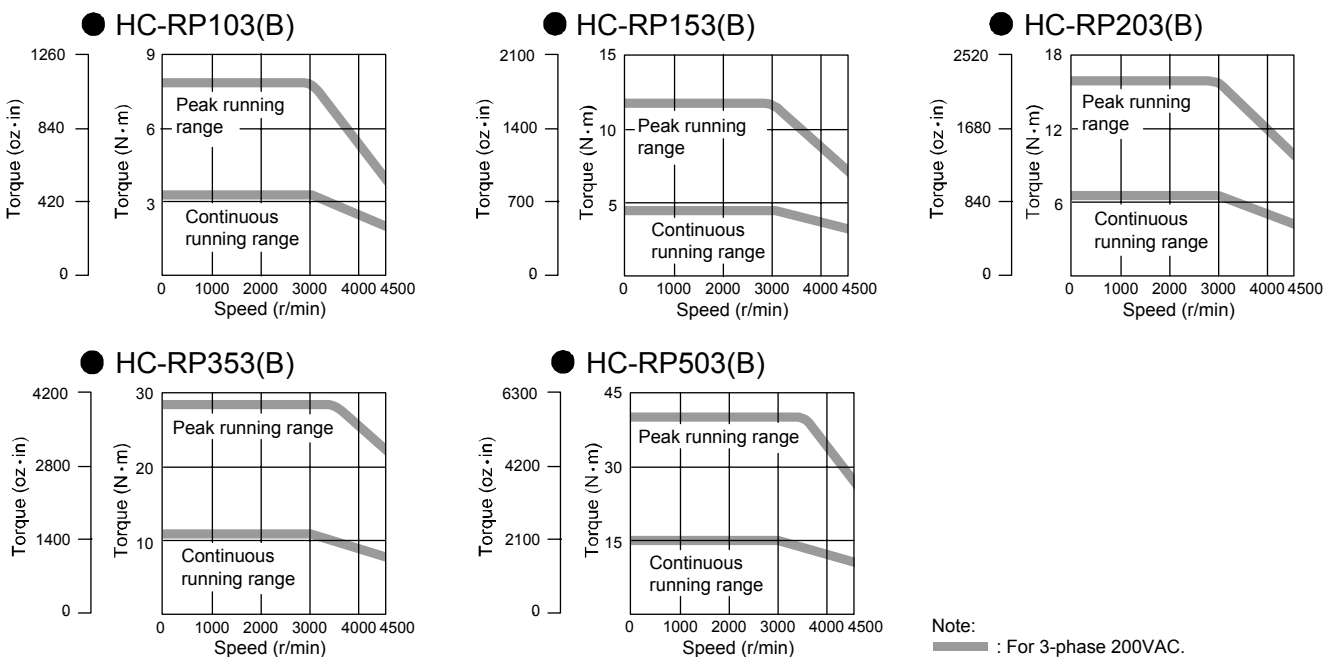
## HC-RP series servo motor specifications

| Servo motor model (Note 7)   |                                | HC-RP103(B)  | HC-RP153(B) | HC-RP203(B)  | HC-RP353(B)  | HC-RP503(B) |
|--|--------------------------------|--|-------------|--------------|--------------|-------------|
| Servo amplifier model (Note 6)   |                                | MR-J3-200A/B   |             | MR-J3-350A/B | MR-J3-500A/B |             |
| Power facility capacity (Note 1) (kVA)   |                                | 1.7  | 2.5         | 3.5          | 5.5          | 7.5         |
| Continuous running duty  | Rated output (kW)              | 1.0  | 1.5         | 2.0          | 3.5          | 5.0         |
|  | Rated torque (N·m [oz·in])     | 3.18 (450)   | 4.78 (677)  | 6.37 (902)   | 11.1 (1570)  | 15.9 (2250) |
| Maximum torque (N·m [oz·in])   |                                | 7.95 (1130)  | 11.9 (1690) | 15.9 (2250)  | 27.9 (3950)  | 39.7 (5620) |
| Rated speed (r/min)  |                                | 3000   |             |              |              |             |
| Maximum speed (r/min)  |                                | 4500   |             |              |              |             |
| Permissible instantaneous speed (r/min)  |                                | 5175   |             |              |              |             |
| Power rate at continuous rated torque (kW/s)   |                                | 67.4   | 120         | 176          | 150          | 211         |
| Rated current (A)  |                                | 6.1  | 8.8         | 14           | 23           | 28          |
| Maximum current (A)  |                                | 18   | 23          | 37           | 58           | 70          |
| Regenerative braking frequency (Note 2) (times/min)                                  |                                | 1090   | 860         | 710          | 174          | 125         |
| Moment of inertia J ( $\times 10^{-4}$ kg·m <sup>2</sup> ) [J (oz·in <sup>2</sup> )] | Standard                       | 1.50 (8.20)  | 1.90 (10.4) | 2.30 (12.6)  | 8.30 (45.4)  | 12.0 (65.6) |
|  | With electromagnetic brake     | 1.85 (10.1)  | 2.25 (12.3) | 2.65 (14.5)  | 11.8 (64.5)  | 15.5 (84.7) |
| Recommended load/motor inertia moment ratio  |                                | 5 times the servo motor's inertia moment maximum (Note 3)                                |             |              |              |             |
| Speed/position detector  |                                | 18-bit encoder<br>(Resolution per encoder/servo motor rotation: 262144p/rev)             |             |              |              |             |
| Attachments  |                                | Oil seal   |             |              |              |             |
| Insulation class   |                                | Class F  |             |              |              |             |
| Structure  |                                | Totally enclosed non ventilated (protection level: IP65) (Note 4)                        |             |              |              |             |
| Environment  | 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 (Note 5) | 1000m or less above sea level/<br>X, Y: 24.5m/s <sup>2</sup>                             |             |              |              |             |
| Mass (kg [lb])   | Standard                       | 3.9 (8.6)  | 5.0 (11)    | 6.2 (14)     | 12 (27)      | 17 (38)     |
|  | With electromagnetic brake     | 6.0 (14)   | 7.0 (16)    | 8.3 (19)     | 15 (33)      | 21 (47)     |

- Notes: 1. The power facility capacity varies depending on the power supply's impedance.  
 2. The regenerative braking frequency shows the permissible frequency for decelerating the motor without a load and the optional regeneration unit from the rated speed to a stop.  
 3. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.  
 4. The shaft-through portion is excluded.  
 5. 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 the motor stops, so maintain vibration to approximately one-half of the allowable value.  
 6. The amplifier software version compatible with the HC-RP series is as follows:  
 A type: Version B0 or above      B type: Version A0 or above  
 7. MRZJW3-SETUP221E software version B1 or above is planned to be compatible with the HC-RP series.



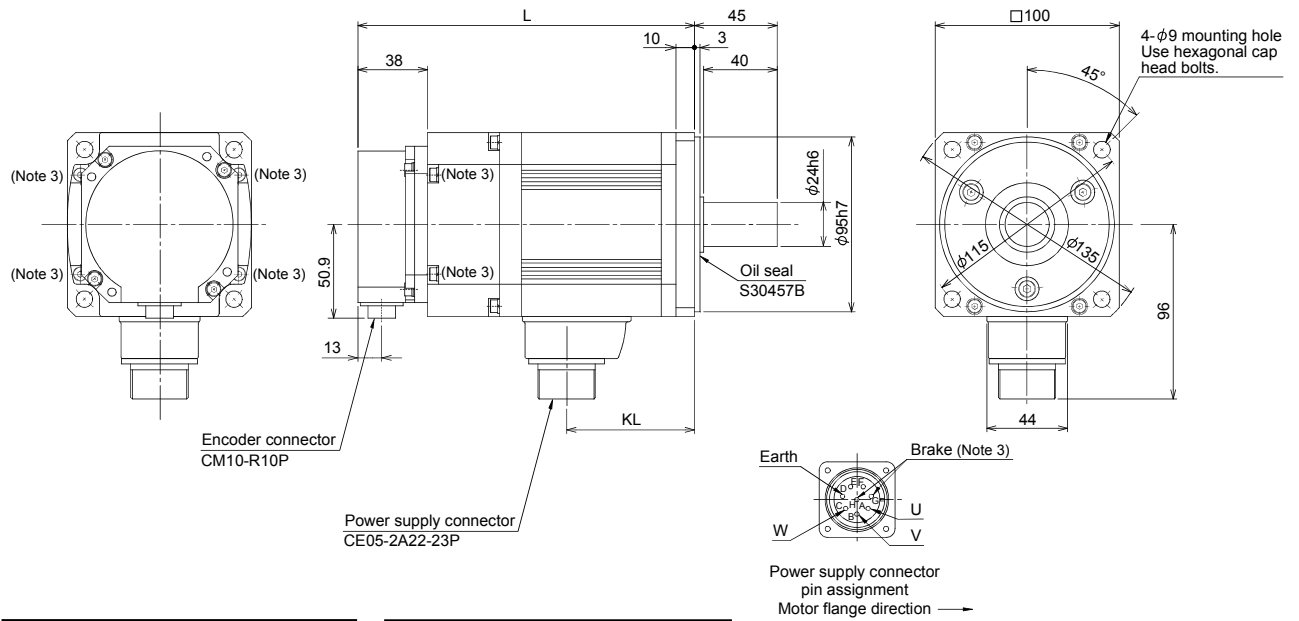
## HC-RP series servo motor torque characteristics (Note)



## HC-RP series servo motor dimensions

### ● HC-RP103(B), HC-RP153(B), HC-RP203(B)

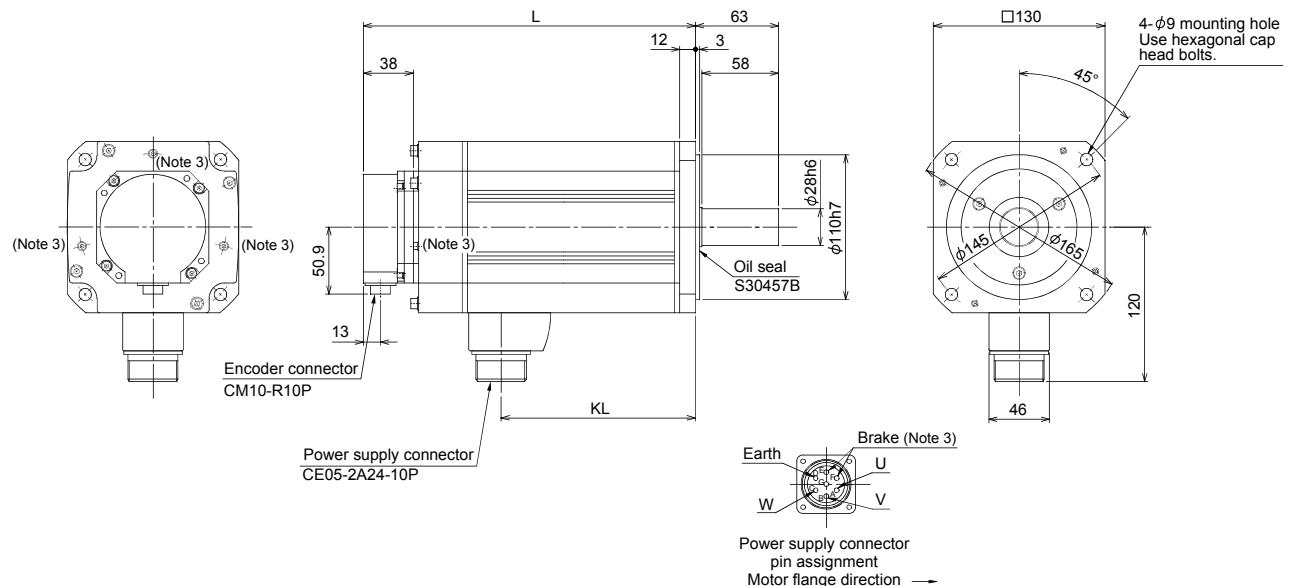
(Unit: mm)



| Model       | Variable dimensions |       |
|-------------|---------------------|-------|
|             | L                   | KL    |
| HC-RP103(B) | 145.5<br>(183.5)    | 69.5  |
| HC-RP153(B) | 170.5<br>(208.5)    | 94.5  |
| HC-RP203(B) | 195.5<br>(233.5)    | 119.5 |

| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-RP103B | 7<br>(991)                                 |
| HC-RP153B |  |
| HC-RP203B |  |

### ● HC-RP353(B), HC-RP503(B)



| Model       | Variable dimensions |     |
|-------------|---------------------|-----|
|             | L                   | KL  |
| HC-RP353(B) | 215.5<br>(252.5)    | 148 |
| HC-RP503(B) | 272.5<br>(309.5)    | 205 |

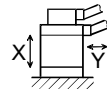
| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-RP353B | 17<br>(2410)                               |
| HC-RP503B |  |

- Notes: 1. Use a friction coupling to fasten a load.  
 2. Dimensions inside ( ) are for the models with an electromagnetic brake.  
 3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.  
 4. For dimensions where there is no tolerance listed, use general tolerance.

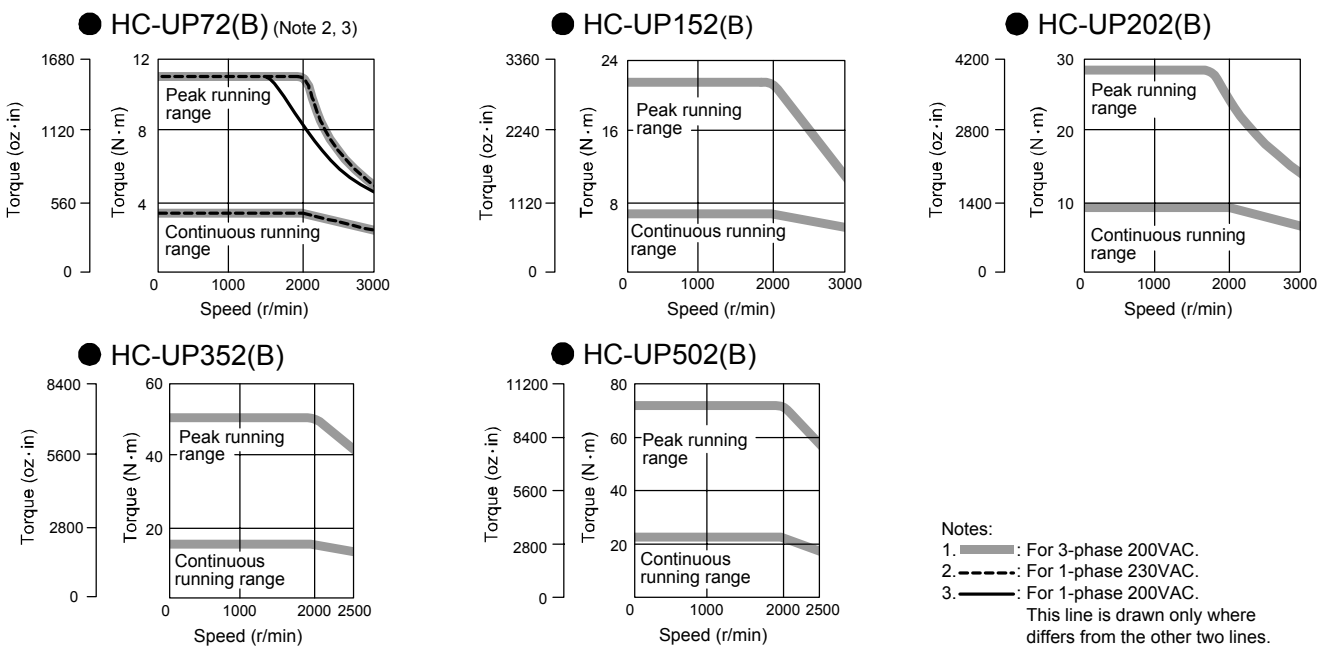
## HC-UP series servo motor specifications

| Servo motor model (Note 7)   |                                | HC-UP72(B)   | HC-UP152(B)  | HC-UP202(B)   | HC-UP352(B)  | HC-UP502(B)  |
|--|--------------------------------|--|--------------|---|--------------|--------------|
| Servo amplifier model (Note 6)   |                                | MR-J3-70A/B  | MR-J3-200A/B | MR-J3-350A/B  | MR-J3-500A/B |              |
| Power facility capacity (Note 1) (kVA)   |                                | 1.3  | 2.5          | 3.5   | 5.5          | 7.5          |
| Continuous running duty  | Rated output (kW)              | 0.75   | 1.5          | 2.0   | 3.5          | 5.0          |
|  | Rated torque (N·m [oz·in])     | 3.58 (507)   | 7.16 (1010)  | 9.55 (1350)   | 16.7 (2360)  | 23.9 (3380)  |
| Maximum torque (N·m [oz·in])   |                                | 10.7 (1520)  | 21.6 (3060)  | 28.5 (4040)   | 50.1 (7090)  | 71.6 (10100) |
| Rated speed (r/min)  |                                | 2000   |              |   |              |              |
| Maximum speed (r/min)  |                                | 3000   |              |   | 2500         |              |
| Permissible instantaneous speed (r/min)  |                                | 3450   |              |   | 2875         |              |
| Power rate at continuous rated torque (kW/s)   |                                | 12.3   | 23.2         | 23.9  | 36.5         | 49.6         |
| Rated current (A)  |                                | 5.4  | 9.7          | 14  | 23           | 28           |
| Maximum current (A)  |                                | 16   | 29           | 42  | 69           | 84           |
| Regenerative braking frequency (Note 2) (times/min)                                  |                                | 53   | 124          | 68  | 44           | 31           |
| Moment of inertia J ( $\times 10^{-4}$ kg·m <sup>2</sup> ) [J (oz·in <sup>2</sup> )] | Standard                       | 10.4 (56.9)  | 22.1 (121)   | 38.2 (209)  | 76.5 (418)   | 115 (629)    |
|  | With electromagnetic brake     | 12.5 (68.3)  | 24.2 (132)   | 46.8 (256)  | 85.1 (465)   | 124 (678)    |
| Recommended load/motor inertia moment ratio  |                                | 15 times the servo motor's inertia moment maximum (Note 3)                               |              |   |              |              |
| Speed/position detector  |                                | 18-bit encoder<br>(Resolution per encoder/servo motor rotation: 262144p/rev)             |              |   |              |              |
| Attachments  |                                | Oil seal   |              |   |              |              |
| Insulation class   |                                | Class F  |              |   |              |              |
| Structure  |                                | Totally enclosed non ventilated (protection level: IP65) (Note 4)                        |              |   |              |              |
| Environment  | 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 (Note 5) | 1000m or less above sea level/<br>X, Y: 24.5m/s <sup>2</sup>                             |              | 1000m or less above sea level/<br>X: 24.5m/s <sup>2</sup> Y: 49m/s <sup>2</sup> |              |              |
| Mass (kg [lb])   | Standard                       | 8.0 (18)   | 11 (25)      | 16 (36)   | 20 (44)      | 24 (53)      |
|  | With electromagnetic brake     | 10 (22)  | 13 (29)      | 22 (49)   | 26 (58)      | 30 (67)      |

- Notes: 1. The power facility capacity varies depending on the power supply's impedance.  
 2. The regenerative braking frequency shows the permissible frequency for decelerating the motor without a load and the optional regeneration unit from the rated speed to a stop.  
 3. Contact Mitsubishi if the load/motor of inertia moment ratio exceeds the value in the table.  
 4. The shaft-through portion is excluded.  
 5. 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 the motor stops, so maintain vibration to approximately one-half of the allowable value.  
 6. The amplifier software version compatible with the HC-UP series is as follows:  
 A type: Version B0 or above      B type: Version A0 or above  
 7. MRZJW3-SETUP221E software version B1 or above is planned to be compatible with the HC-UP series.



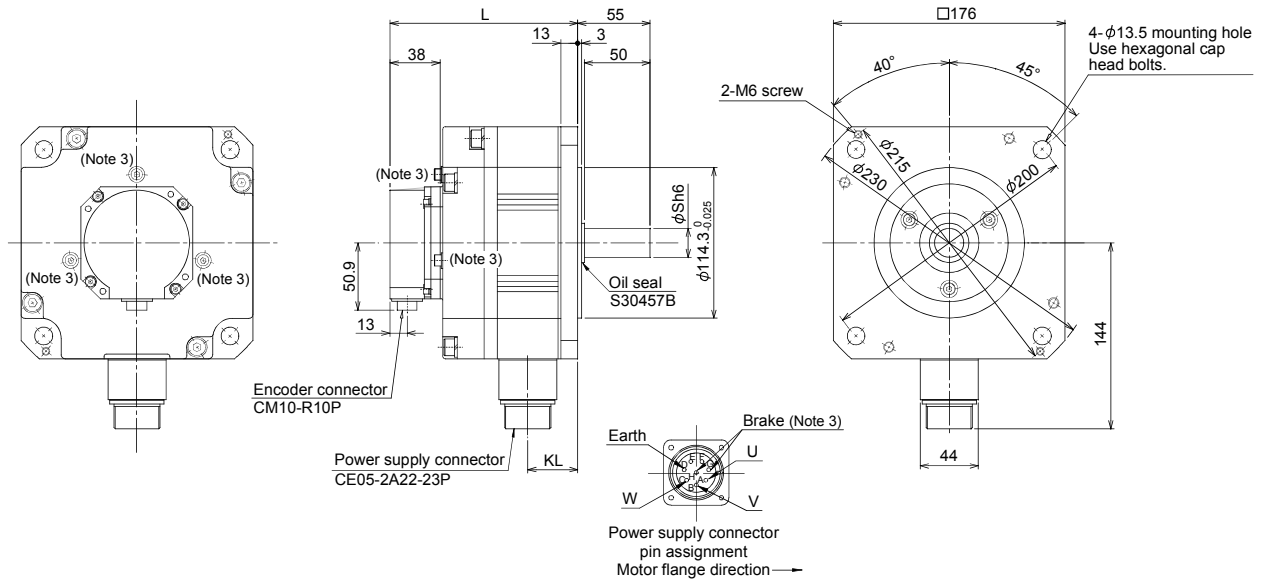
## HC-UP series servo motor torque characteristics (Note 1)



## HC-UP series servo motor dimensions

### ● HC-UP72(B), HC-UP152(B)

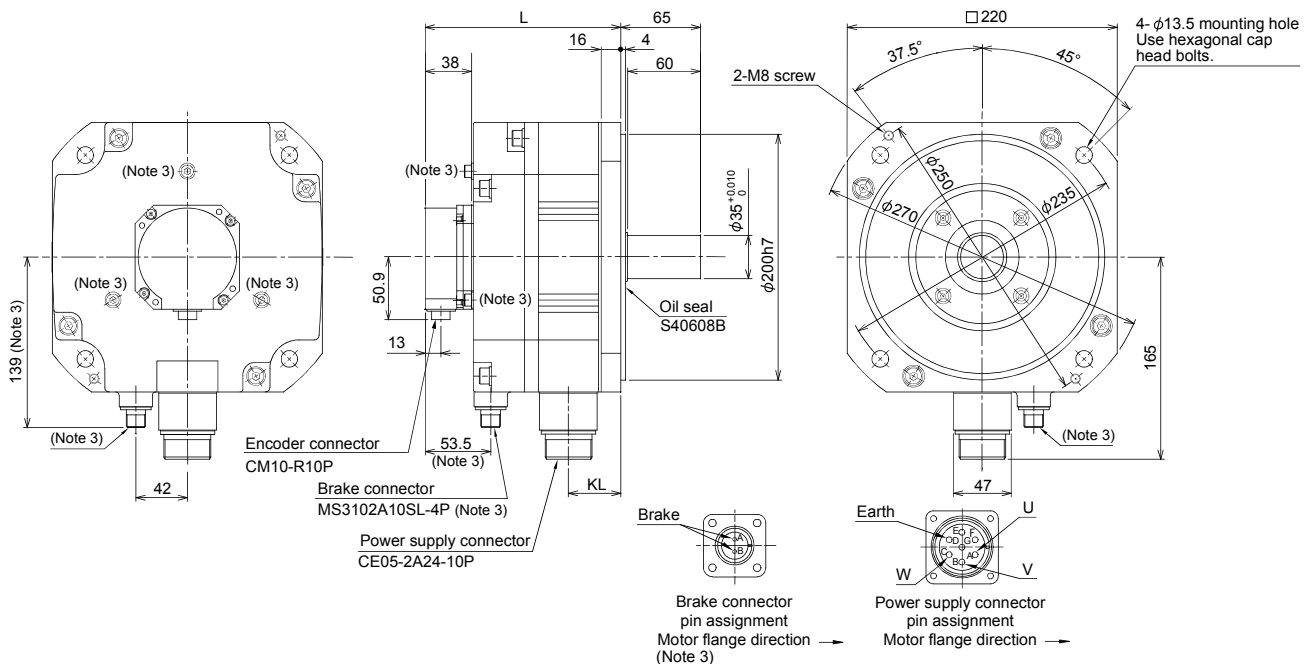
(Unit: mm)



| Model       | Variable dimensions |      |    |
|-------------|---------------------|------|----|
|             | L                   | KL   | S  |
| HC-UP72(B)  | 109<br>(142.5)      | 38   | 22 |
| HC-UP152(B) | 118.5<br>(152)      | 47.5 | 28 |

| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-UP72B  | 8.5<br>(1200)                              |
| HC-UP152B |  |

### ● HC-UP202(B), HC-UP352(B), HC-UP502(B)



| Model       | Variable dimensions |      |
|-------------|---------------------|------|
|             | L                   | KL   |
| HC-UP202(B) | 116.5<br>(159.5)    | 42.5 |
| HC-UP352(B) | 140.5<br>(183.5)    | 66.5 |
| HC-UP502(B) | 164.5<br>(207.5)    | 90.5 |

| Model     | Brake static friction torque (N·m [oz·in]) |
|-----------|--|
| HC-UP202B | 44<br>(6230)                               |
| HC-UP352B |  |
| HC-UP502B |  |

- Notes: 1. Use a friction coupling to fasten a load.  
2. Dimensions inside ( ) are for the models with an electromagnetic brake.  
3. Only for the models with an electromagnetic brake. The electromagnetic brake terminals do not have the polarity.  
4. For dimensions where there is no tolerance listed, use general tolerance.

■ MEMO