

Standard AC Motors

Watertight, Dust-Resistant Motors

Overview,
Product
Series

Constant
Speed
Motors

Single-Phase
Induction
Motors

Three-Phase
Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

Torque
Motors

**Watertight,
Dust-Resistant Motors**

Watertight,
Dust-Resistant
Motors

Brake Pack

Accessories

Installation

Watertight, Dust-Resistant Motors

FPW Series

Induction Type



- Geared motors that conform to IEC Standard IP67.
- Suitable for use in locations where the equipment is splashed or needs to be washed with water periodically.
- Output powers of 25 W, 40 W, 60 W and 90 W are available.

Features

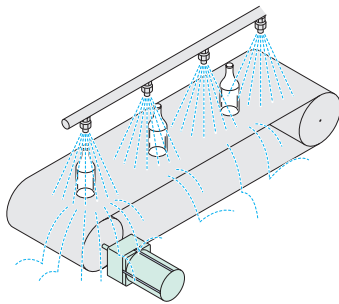
● Watertight and Dust-Resistant Performance IP67

The **FPW** Series motors are watertight, dust-resistant geared induction motors which conform to the IEC Standard IP67. They can be used where they are splashed with water.

- Not available for use under high pressure jets of water or immersion in water

IP67: IP codes indicating the grade of dust-resistance and waterproofing are specified under IEC 60529 and IEC 60034-5.

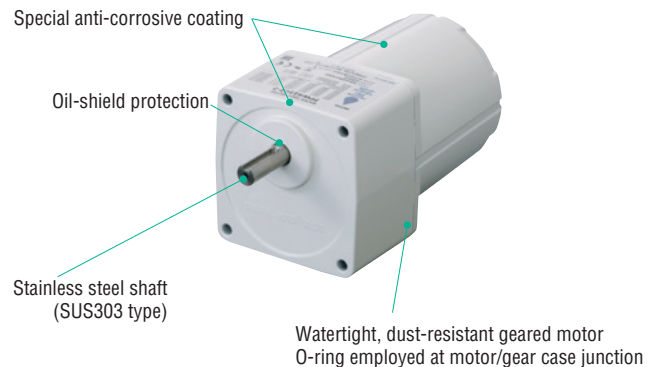
FPW Series recognized by UL conforms to IP67 (UL File No. E166348).



● Improved Anti-Corrosion Properties

High corrosion resistance is achieved through special anti-corrosive coating and shaft material of stainless steel (SUS303 type).

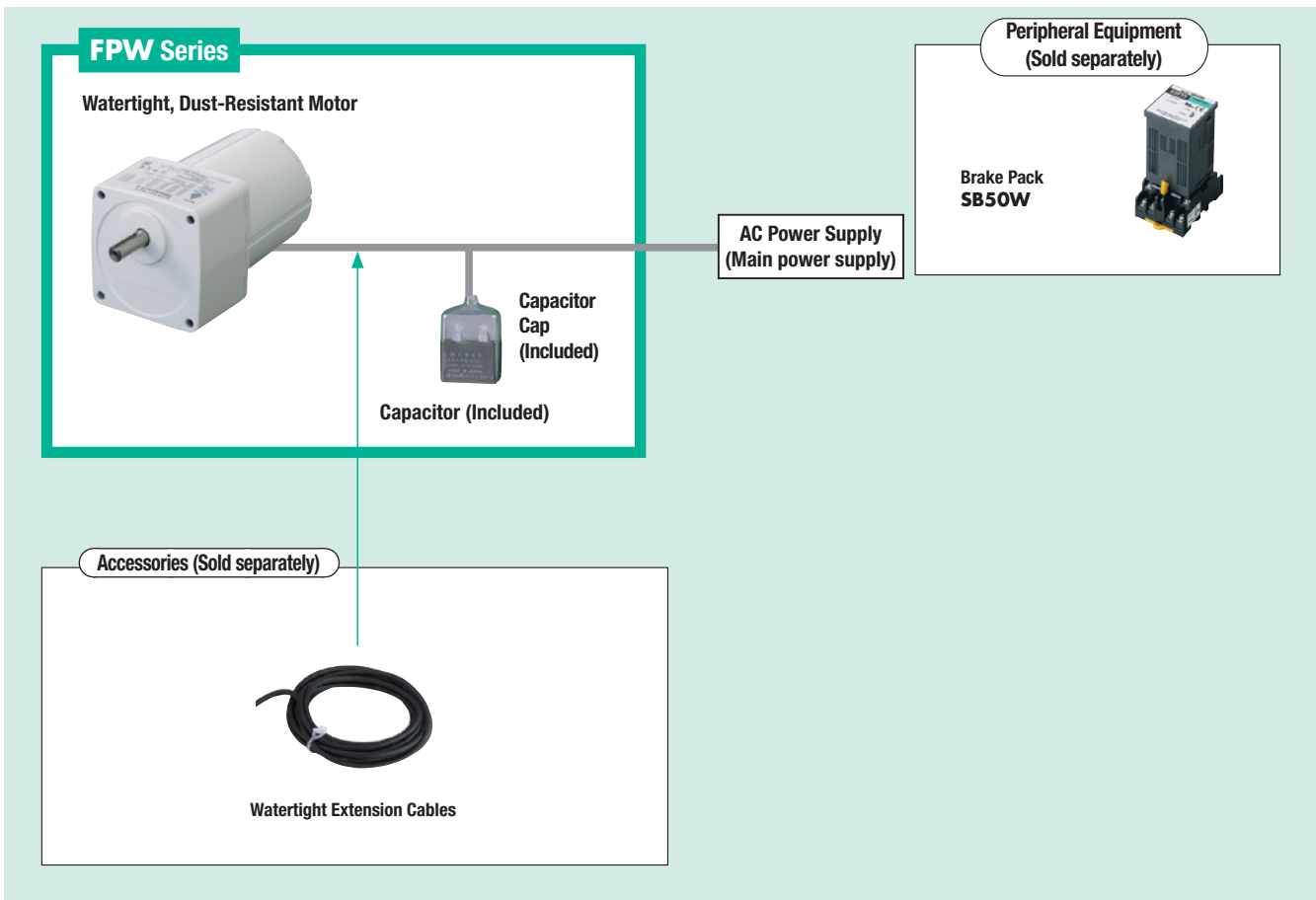
● Designed and Constructed for Watertight and Dust-Resistance



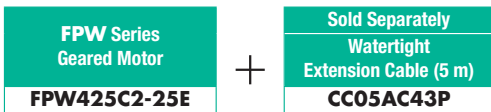
● Conforms to Standards

The **FPW** Series is recognized by UL/CSA Standards and conforms to CE Marking (Low Voltage Directive). These motors are also certified under the China Compulsory Certification System (CCC System).

System Configuration



System Configuration Example



- The system configuration shown above is an example. Other combinations are available.
- A capacitor is included with single-phase motors. The capacitors for the motors are neither watertight nor dust-resistant.

Product Number

FPW 4 25 C 2 - 15 E

① ② ③ ④ ⑤ ⑥ ⑦

| | | |
|---|--------------------------|---|
| ① | Series Name | FPW: FPW Series |
| ② | Motor Frame Size | 4: 80 mm 5: 90 mm 6: 104 mm |
| ③ | Output Power (W) | (Example) 25: 25 W |
| ④ | Power Supply Voltage | C: Single-Phase 220/230 VAC S: Three-Phase 200/220/230 VAC |
| ⑤ | RoHS Directive-Compliant | 2: RoHS Directive-Compliant |
| ⑥ | Gear Ratio | |
| ⑦ | Included Capacitor | E: Capacitor for Single-Phase 220/230 VAC |

- The product name listed on the motor nameplate does not include the code (E) that indicates the type of capacitor. Certification regarding various safety standards is acquired for the product name on the motor nameplate, please visit www.orientalmotor.eu. (Example) Product Name: **FPW425C2-15E**
→ Motor nameplate and product approved under various safety standards: **FPW425C2-15**

Overview, Product Series

Constant Speed Induction Motors

Single-Phase Induction Motors

Three-Phase Induction Motors

Reversible Motors

Electromagnetic Brake Motors

Torque Motors

Watertight, Dust-Resistant Motors

Brake Pack

Accessories

Installation

Product Line

For the single-phase 100 VAC, the single-phase 110/115 VAC and the single-phase 200 VAC models, please contact the nearest Oriental Motor sales office.

| Output Power | Power Supply Voltage | Product Name | Gear Ratio |
|--------------|--|--------------------|-----------------|
| 25 W | Single-Phase 220/230 VAC | FPW425C2-□E | 3 - 18 |
| | | | 25 - 36 |
| | | | 50 - 180 |
| | Three-Phase 200 VAC Three-Phase 220/230 VAC | FPW425S2-□ | 3 - 18 |
| | | | 25 - 36 |
| | | | 50 - 180 |
| 40 W | Single-Phase 220/230 VAC | FPW540C2-□E | 3 - 18 |
| | | | 25 - 36 |
| | | | 50 - 180 |
| | Three-Phase 200 VAC Three-Phase 220/230 VAC | FPW540S2-□ | 3 - 18 |
| | | | 25 - 36 |
| | | | 50 - 180 |

| Output Power | Power Supply Voltage | Product Name | Gear Ratio |
|--------------|--|--------------------|------------------|
| 60 W | Single-Phase 220/230 VAC | FPW560C2-□E | 3 - 9 |
| | | | 12.5 - 18 |
| | | | 25 - 60 |
| | Three-Phase 200 VAC Three-Phase 220/230 VAC | FPW560S2-□ | 3 - 9 |
| | | | 12.5 - 18 |
| | | | 25 - 60 |
| 90 W | Single-Phase 220/230 VAC | FPW690C2-□E | 3 - 9 |
| | | | 12.5 - 36 |
| | | | 50 - 180 |
| | Three-Phase 200 VAC Three-Phase 220/230 VAC | FPW690S2-□ | 3 - 9 |
| | | | 12.5 - 36 |
| | | | 50 - 180 |

The following items are included in each product.
 Motor, Capacitor*, Capacitor Cap*, Mounting Screws, Parallel Key, Operating Manual
 *Single-phase motors only

Specifications – Continuous Rating



| Product Name | Output Power W | Voltage VAC | Frequency Hz | Current A | Starting Torque mNm | Rated Torque mNm | Rated Speed r/min | Capacitor μF | Overheat Protection Device |
|--------------------|----------------|------------------|-----------------|-----------|---------------------|------------------|-------------------|--------------|----------------------------|
| FPW425C2-□E | 25 | Single-Phase 220 | 50 | 0.27 | 110 | 205 | 1200 | 1.5 | TP |
| | | | 60 | 0.23 | | 170 | 1450 | | |
| | | Single-Phase 230 | 50 | 0.27 | 120 | 205 | 1200 | | |
| | | | 60 | 0.23 | | 170 | 1450 | | |
| FPW425S2-□ | 25 | Three-Phase 200 | 50 | 0.23 | 240 | 190 | 1300 | - | TP |
| | | | 60 | 0.21 | | 160 | 1550 | | |
| | | Three-Phase 220 | 60 | 0.21 | 160 | 160 | 1600 | | |
| | | | Three-Phase 230 | 0.22 | | | | | |
| FPW540C2-□E | 40 | Single-Phase 220 | 50 | 0.39 | 200 | 315 | 1250 | 2.3 | TP |
| | | | 60 | 0.35 | | 260 | 1500 | | |
| | | Single-Phase 230 | 50 | 0.39 | | 300 | 1300 | | |
| | | | 60 | 0.34 | | 260 | 1500 | | |
| FPW540S2-□ | 40 | Three-Phase 200 | 50 | 0.32 | 400 | 300 | 1300 | - | TP |
| | | | 60 | 0.30 | | 260 | 1550 | | |
| | | Three-Phase 220 | 60 | 0.30 | 260 | 260 | 1600 | | |
| | | | Three-Phase 230 | 0.31 | | | | | |
| FPW560C2-□E | 55 | Single-Phase 220 | 50 | 0.52 | 300 | 430 | 1250 | 3.0 | TP |
| | | | 60 | 0.48 | | 405 | 1450 | | |
| | | Single-Phase 230 | 50 | 0.51 | | 430 | 1250 | | |
| | | | 60 | 0.47 | | 405 | 1450 | | |
| FPW560S2-□ | 60 | Three-Phase 200 | 50 | 0.48 | 600 | 450 | 1300 | - | TP |
| | | | 60 | 0.43 | | 500 | 1550 | | |
| | | Three-Phase 220 | 60 | 0.44 | 500 | 380 | 1600 | | |
| | | | Three-Phase 230 | 0.45 | | | | | |
| FPW690C2-□E | 90 | Single-Phase 220 | 50 | 0.82 | 400 | 700 | 1250 | 4.5 | TP |
| | | | 60 | 0.73 | | 605 | 1450 | | |
| | | Single-Phase 230 | 50 | 0.81 | | 700 | 1250 | | |
| | | | 60 | 0.71 | | 605 | 1450 | | |
| FPW690S2-□ | 90 | Three-Phase 200 | 50 | 0.54 | 700 | 680 | 1300 | - | TP |
| | | | 60 | 0.51 | | 570 | 1550 | | |
| | | Three-Phase 220 | 60 | 0.50 | 700 | 570 | 1600 | | |
| | | | Three-Phase 230 | 0.49 | | | | | |

TP: This indicates that there is a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped.

When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the power supply off before inspecting.

● The values for each specification are the characteristics for when there is only a motor.

● A number indicating the gear ratio is entered where the box □ is located within the product name.

General Specifications

| Item | Specifications |
|-------------------------------|--|
| Insulation Resistance | The measured value is 100 MΩ or more when a 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity. |
| Dielectric Strength | No abnormality is judged even with application of 1.5 kVAC at 50 Hz or 60 Hz between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity. |
| Temperature Rise | The winding temperature rise is measured at 80°C or less (70°C or less for three-phase type) using the resistance change method after rated operation under normal ambient temperature and humidity. |
| Thermal Class | 130 (B) |
| Overheat Protection | Built-in thermal protector (automatic return type) Open: 130±5°C, Close: 82±15°C |
| Operating Ambient Temperature | -10 - +40°C (non-freezing) Three-Phase 200 VAC: -10 - +50°C (non-freezing) |
| Degree of Protection | IP67 |

Note

- Since these are special watertight, dust-resistant geared motors, the motor and gearhead sections cannot be disassembled.
- The capacitors for the motors are neither watertight nor dust-resistant.

Permissible Torque

50 Hz

Unit: Nm

| Product Name | Speed r/min | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 60 | 50 | 42 | 30 | 25 | 20 | 17 | 15 | 12.5 | 10 | 8.3 | |
|-----------------------|-------------|------------|----------|------------|----------|----------|------------|----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| | | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
| FPW425C2-□E (220 VAC) | Rated | 0.50 | 0.60 | 0.83 | 1.0 | 1.2 | 1.5 | 2.1 | 2.5 | 3.0 | 3.7 | 4.5 | 5.4 | 6.8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.27 | 0.32 | 0.45 | 0.53 | 0.67 | 0.80 | 1.1 | 1.3 | 1.6 | 2.0 | 2.4 | 2.9 | 3.6 | 4.4 | 5.4 | 6.5 | 7.3 | 8 | 8 | 8 | 8 |
| FPW425C2-□E (230 VAC) | Rated | 0.50 | 0.60 | 0.83 | 1.0 | 1.2 | 1.5 | 2.1 | 2.5 | 3.0 | 3.7 | 4.5 | 5.4 | 6.8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.29 | 0.35 | 0.49 | 0.58 | 0.73 | 0.87 | 1.2 | 1.5 | 1.7 | 2.2 | 2.6 | 3.2 | 4.0 | 4.8 | 5.9 | 7.1 | 7.9 | 8 | 8 | 8 | 8 |
| FPW425S2-□ | Rated | 0.46 | 0.55 | 0.77 | 0.92 | 1.2 | 1.4 | 1.9 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.46 | 0.55 | 0.77 | 0.92 | 1.2 | 1.4 | 1.9 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| FPW540C2-□E (220 VAC) | Rated | 0.77 | 0.92 | 1.3 | 1.5 | 1.9 | 2.3 | 3.2 | 3.8 | 4.6 | 5.7 | 6.9 | 8.3 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW540C2-□E (230 VAC) | Rated | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW540S2-□ | Rated | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 3.0 | 3.6 | 4.4 | 5.5 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW560C2-□E | Rated | 1.0 | 1.3 | 1.7 | 2.1 | 2.6 | 3.1 | 3.9 | 4.7 | 5.7 | 7.1 | 8.5 | 10.2 | 14.2 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 2.7 | 3.3 | 3.9 | 5.0 | 5.9 | 7.1 | 9.9 | 11.9 | 13.3 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW560S2-□ | Rated | 1.1 | 1.3 | 1.8 | 2.2 | 2.7 | 3.3 | 4.1 | 4.9 | 5.9 | 7.4 | 8.9 | 10.7 | 14.9 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 1.1 | 1.3 | 1.8 | 2.2 | 2.7 | 3.3 | 4.1 | 4.9 | 5.9 | 7.4 | 8.9 | 10.7 | 14.9 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW690C2-□E | Rated | 1.7 | 2.0 | 2.8 | 3.4 | 4.3 | 5.1 | 6.4 | 7.7 | 9.2 | 12.8 | 15.3 | 18.4 | 23.1 | 27.7 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 0.97 | 1.2 | 1.6 | 1.9 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 7.3 | 8.8 | 10.5 | 13.2 | 15.8 | 19.8 | 23.8 | 26.4 | 30 | 30 | 30 | 30 |
| FPW690S2-□ | Rated | 1.7 | 2.0 | 2.8 | 3.3 | 4.1 | 5.0 | 6.2 | 7.4 | 8.9 | 12.4 | 14.9 | 17.9 | 22.4 | 26.9 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 1.7 | 2.0 | 2.8 | 3.3 | 4.1 | 5.0 | 6.2 | 7.4 | 8.9 | 12.4 | 14.9 | 17.9 | 22.4 | 26.9 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

60 Hz

Unit: Nm

| Product Name | Speed r/min | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 | |
|-----------------------|-------------|------------|----------|------------|----------|----------|------------|----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| | | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
| FPW425C2-□E (230 VAC) | Rated | 0.41 | 0.50 | 0.69 | 0.83 | 1.0 | 1.2 | 1.7 | 2.1 | 2.5 | 3.1 | 3.7 | 4.5 | 5.6 | 6.7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.29 | 0.35 | 0.49 | 0.58 | 0.73 | 0.87 | 1.2 | 1.5 | 1.7 | 2.2 | 2.6 | 3.2 | 4.0 | 4.8 | 5.9 | 7.1 | 7.9 | 8 | 8 | 8 | 8 |
| FPW425C2-□E (220 VAC) | Rated | 0.41 | 0.50 | 0.69 | 0.83 | 1.0 | 1.2 | 1.7 | 2.1 | 2.5 | 3.1 | 3.7 | 4.5 | 5.6 | 6.7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.27 | 0.32 | 0.45 | 0.53 | 0.67 | 0.80 | 1.1 | 1.3 | 1.6 | 2.0 | 2.4 | 2.9 | 3.6 | 4.4 | 5.4 | 6.5 | 7.3 | 8 | 8 | 8 | 8 |
| FPW425S2-□ | Rated | 0.39 | 0.47 | 0.65 | 0.78 | 0.97 | 1.2 | 1.6 | 1.9 | 2.3 | 2.9 | 3.5 | 4.2 | 5.3 | 6.3 | 7.9 | 8 | 8 | 8 | 8 | 8 | 8 |
| | Starting | 0.39 | 0.47 | 0.65 | 0.78 | 0.97 | 1.2 | 1.6 | 1.9 | 2.3 | 2.9 | 3.5 | 4.2 | 5.3 | 6.3 | 7.9 | 8 | 8 | 8 | 8 | 8 | 8 |
| FPW540C2-□E | Rated | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.49 | 0.58 | 0.81 | 0.97 | 1.2 | 1.5 | 2.0 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 6.6 | 7.9 | 9.9 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW540S2-□ | Rated | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| | Starting | 0.63 | 0.76 | 1.1 | 1.3 | 1.6 | 1.9 | 2.6 | 3.2 | 3.8 | 4.7 | 5.7 | 6.8 | 8.6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| FPW560C2-□E | Rated | 0.98 | 1.2 | 1.6 | 2.0 | 2.5 | 3.0 | 3.7 | 4.4 | 5.3 | 6.7 | 8.0 | 9.6 | 13.4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.73 | 0.87 | 1.2 | 1.5 | 1.8 | 2.2 | 2.7 | 3.3 | 3.9 | 5.0 | 5.9 | 7.1 | 9.9 | 11.9 | 13.3 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW560S2-□ | Rated | 0.92 | 1.1 | 1.5 | 1.8 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 9.0 | 12.5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| | Starting | 0.92 | 1.1 | 1.5 | 1.8 | 2.3 | 2.8 | 3.5 | 4.2 | 5.0 | 6.3 | 7.5 | 9.0 | 12.5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| FPW690C2-□E | Rated | 1.5 | 1.8 | 2.5 | 2.9 | 3.7 | 4.4 | 5.5 | 6.6 | 7.9 | 11.0 | 13.2 | 15.9 | 20.0 | 24.0 | 29.9 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 0.97 | 1.2 | 1.6 | 1.9 | 2.4 | 2.9 | 3.7 | 4.4 | 5.3 | 7.3 | 8.8 | 10.5 | 13.2 | 15.8 | 19.8 | 23.8 | 26.4 | 30 | 30 | 30 | 30 |
| FPW690S2-□ | Rated | 1.4 | 1.7 | 2.3 | 2.8 | 3.5 | 4.2 | 5.2 | 6.2 | 7.5 | 10.4 | 12.5 | 15.0 | 18.8 | 22.6 | 28.2 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Starting | 1.4 | 1.7 | 2.3 | 2.8 | 3.5 | 4.2 | 5.2 | 6.2 | 7.5 | 10.4 | 12.5 | 15.0 | 18.8 | 22.6 | 28.2 | 30 | 30 | 30 | 30 | 30 | 30 |

- A number indicating the gear ratio is entered where the box □ is located within the product name.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio.
The actual speed is 2 - 20% less than the displayed value, depending on the load.

Overview, Product Series

Constant Speed Induction Motors

Single-Phase Induction Motors

Three-Phase Induction Motors

Reversible Motors

Electromagnetic Brake Motors

Torque Motors

Watertight, Dust-Resistant Motors

Brake Pack

Accessories

Installation

Permissible Radial Load and Permissible Axial Load

| Product Name | Gear Ratio | Permissible Radial Load | | Permissible Axial Load |
|--------------|------------|-----------------------------|-----------------------------|------------------------|
| | | 10 mm from Output Shaft End | 20 mm from Output Shaft End | |
| FPW425 Type | 3 - 18 | N | N | 50 |
| | 25 - 180 | 100 | 150 | |
| FPW540 Type | 3 - 18 | 200 | 300 | 100 |
| | 25 - 180 | 250 | 350 | |
| FPW560 Type | 3 - 9 | 300 | 450 | 150 |
| | 12.5 - 18 | 400 | 500 | |
| | 25 - 180 | 450 | 600 | |
| FPW690 Type | 3 - 9 | 500 | 700 | 200 |
| | 12.5 - 180 | 550 | 800 | |
| | | 650 | 1000 | |

Permissible Inertia J

Unit: $\times 10^{-4}$ kgm²

| Product Name \ Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|------|
| FPW425 Type | 2.79 | 4.02 | 7.75 | 11.2 | 17.4 | 25.1 | 48.4 | 69.8 | 100 | 194 | 279 | 402 | 775 | 775 | 775 | 775 | 775 | 775 | 775 | 775 |
| FPW540 Type | 6.75 | 9.72 | 18.8 | 27 | 42.2 | 60.8 | 117 | 169 | 243 | 469 | 675 | 972 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 | 1875 |
| FPW560 Type | 9.9 | 14.3 | 27.5 | 39.6 | 61.9 | 89.1 | 172 | 248 | 356 | 688 | 990 | 1426 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 | 2750 |
| FPW690 Type | 18 | 25.9 | 50 | 72 | 113 | 162 | 313 | 450 | 648 | 1250 | 1800 | 2592 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 | 5000 |

Dimensions (Unit mm)

- Mounting screws are included.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

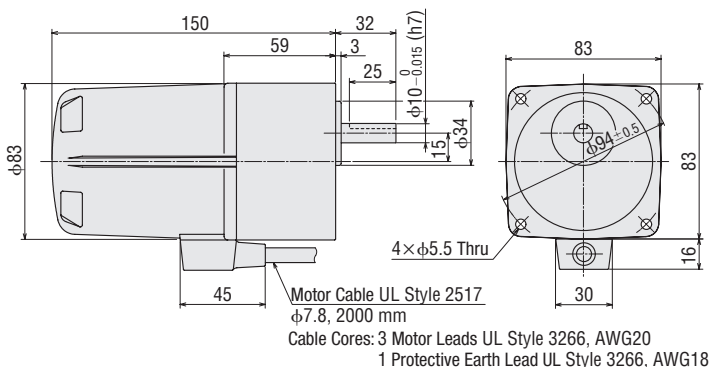
● 25 W

◇ Geared Motor

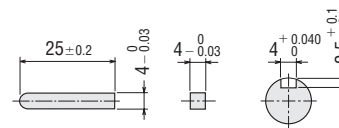
FPW425C2-□E, FPW425S2-□

Motor: FPW425C2-□, FPW425S2-□

Mass: 3.0 kg



◇ Key and Key Slot (Included)



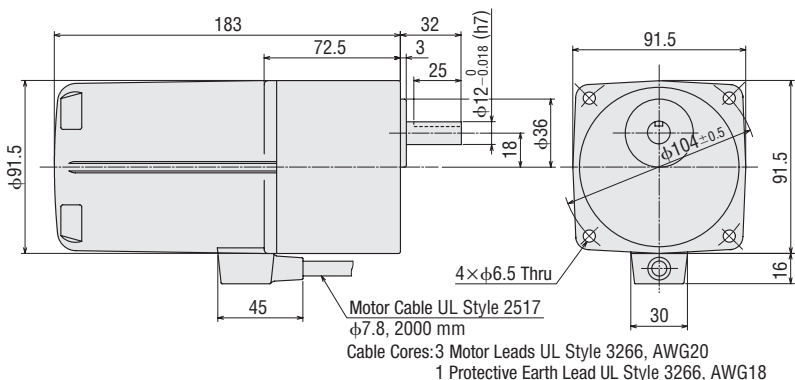
● 40 W

◇ Geared Motor

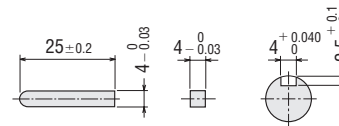
FPW540C2-□E, FPW540S2-□

Motor: FPW540C2-□, FPW540S2-□

Mass: 4.0 kg



◇ Key and Key Slot (Included)



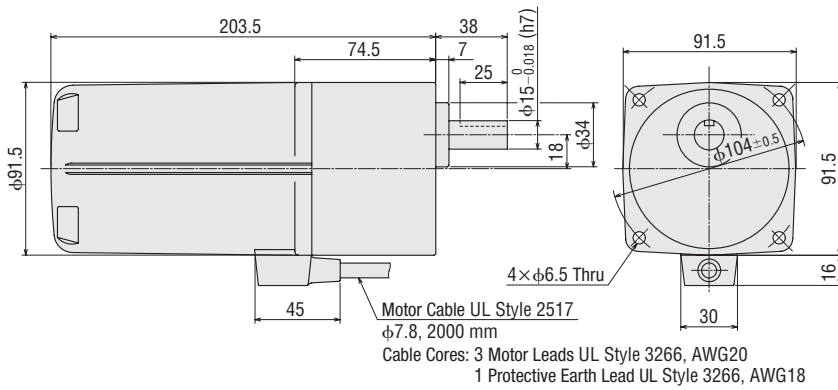
● 60 W

◇ Geared Motor

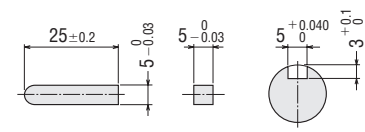
FPW560C2-□E, FPW560S2-□

Motor: FPW560C2-□, FPW560S2-□

Mass: 5.0 kg



◇ Key and Key Slot (Included)



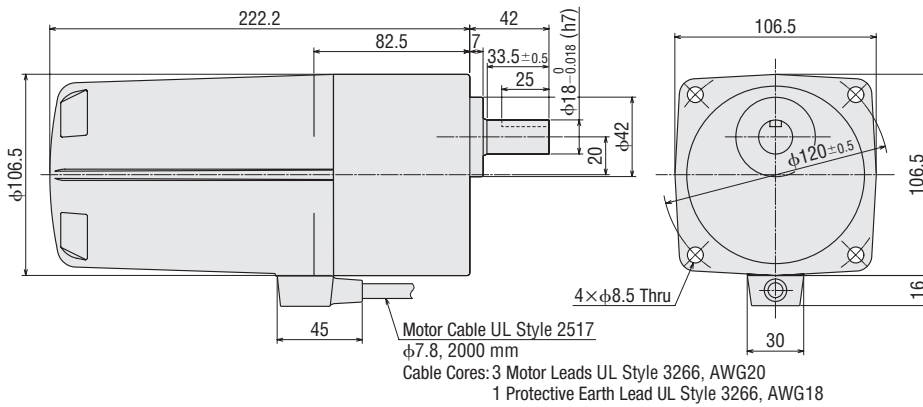
● 90 W

◇ Geared Motor

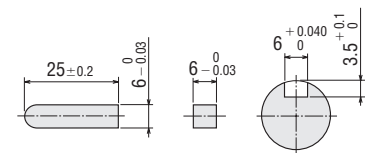
FPW690C2-□E, FPW690S2-□

Motor: FPW690C2-□, FPW690S2-□

Mass: 7.5 kg



◇ Key and Key Slot (Included)



◇ Mounting Screws (Material: Stainless Steel)



| | Length: L [mm] | Screw Size |
|-------------|----------------|------------|
| FPW425 Type | 80 | M5 P0.8 |
| FPW540 Type | 90 | M6 P1.0 |
| FPW560 Type | 90 | M6 P1.0 |
| FPW690 Type | 100 | M8 P1.25 |

● 4 flat washers and hexagonal nuts are included.

Overview, Product Series

Constant Speed Motors

Single-Phase Induction Motors

Three-Phase Induction Motors

Reversible Motors

Electromagnetic Brake Motors

Torque Motors

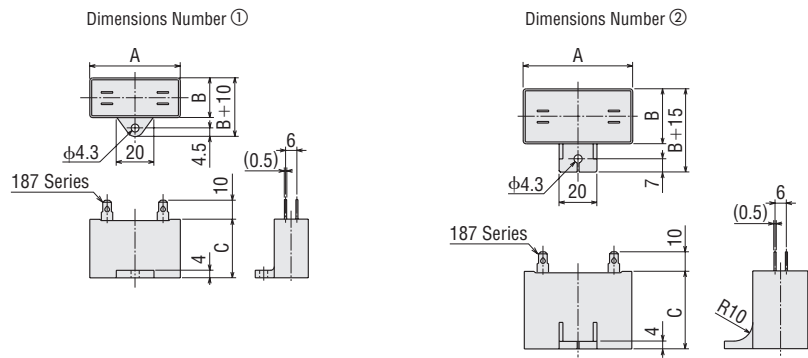
Watertight, Dust-Resistant Motors

Brake Pack

Accessories

Installation

◇ Capacitor (Included with single-phase motors)



◇ Capacitor Dimensions (mm)

| Product Name | Capacitor Product Name | A | B | C | Mass [g] | Dimensions No. |
|--------------|------------------------|----|------|----|----------|----------------|
| FPW425C2-□E | CH15BFAUL | 38 | 21 | 31 | 37 | ① |
| FPW540C2-□E | CH23BFAUL | 48 | 21 | 31 | 43 | ① |
| FPW560C2-□E | CH30BFAUL | 58 | 21 | 31 | 50 | ① |
| FPW690C2-□E | CH45BFAUL | 58 | 23.5 | 37 | 73 | ② |

- A capacitor cap is included with the capacitor.
- A number indicating the gear ratio is entered where the box □ is located within the product name.

■ Connection and Operation

- The rotation direction of the motor is as viewed from the output shaft of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- The connection method varies with the output power or the gear ratio.
- For added safety, it is advisable to use a ground fault interrupter in situations where the motor is likely to get wet during operation.

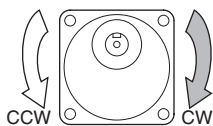
| | Single-Phase 220/230 VAC | | Three-Phase 200/220/230 VAC | |
|--------------|--|---|--|--|
| 25 W 40 W | Gear Ratio 3 - 18 50 - 180 | Gear Ratio 25 - 36 | Gear Ratio 3 - 18 50 - 180 | Gear Ratio 25 - 36 |
| 60 W | Gear Ratio 3 - 9 25 - 60 | Gear Ratio 12.5 - 18 75 - 180 | Gear Ratio 3 - 9 25 - 60 | Gear Ratio 12.5 - 18 75 - 180 |
| 90 W | Gear Ratio 3 - 9 50 - 180 | Gear Ratio 12.5 - 36 | Gear Ratio 3 - 9 50 - 180 | Gear Ratio 12.5 - 36 |
| | <p>Clockwise</p> | <p>Clockwise</p> | <p>Clockwise</p> | <p>Clockwise</p> |
| | <p>Counterclockwise</p> | <p>Counterclockwise</p> | <p>Counterclockwise</p> <p>To change the rotation direction to counterclockwise, change any two connections between R, S and T.</p> | <p>Counterclockwise</p> <p>To change the rotation direction to counterclockwise, change any two connections between R, S and T.</p> |

Note

- Change the direction of single-phase motor rotation only after bringing the motor to a stop. If an attempt is made to change the direction of rotation while the motor is rotating, the motor may ignore the reversing command or change its direction of rotation after some delay.

● Rotation Direction

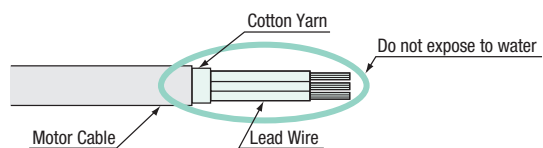
The rotation direction of the motor is indicated when viewed from the output shaft side of the motor. CW is used to indicate clockwise rotation and CCW is used for counterclockwise rotation.



The rotation direction when viewed from the output shaft side of the motor

● Notes on Wiring

The terminals of the motor cable are not waterproofed. Be sure not to splash water on the cable terminal. If water is splashed here, water could seep inside the motor through the lead wire or the cotton yarn, resulting in damage to the motor.



Standard AC Motors

Accessories

Accessories

| | <u>Page</u> |
|---|-------------|
| Motor and Gearhead Mounting Brackets..... | C-154 |
| Flexible Couplings | C-158 |
| Watertight Extension Cables | C-163 |
| CR Circuit for Surge Suppression | C-163 |

Motor and Gearhead Mounting Brackets

This is an aluminum die cast mounting bracket for gearheads and geared motors. There are also high-strength models available for high-power motors and gearheads. Long, horizontal holes make it easy to make fine adjustments during installation.



Product Line

Material: Aluminum alloy Surface treatment: paint

Standard AC Motors, Speed Control Motors

Select the pinion shaft type based on the gearhead to be attached.

| Product Name | Applicable Product | | | | | |
|----------------|--|--|-------------------------|--|--|--|
| | Standard AC Motors | | Brushless Motors | | AC Speed Control Motors | |
| | Combination Type Geared Motor | Round Shaft Type | Combination Type | Round Shaft Type | Combination Type | Round Shaft Type |
| SOL0M3 | – | – | – | BLH015-A | – | – |
| SOL0B | – | – | BLH015-□ | – | – | – |
| SOL2M4F | 2IK6, 2RK6 | 2IK6, 2RK6 | BLM230 | BLM230, BLM260 | DSCI26 | DSCI26 |
| SOL2M4 | – | – | BXS230, BLH230 | BXS230, BLH230 | – | – |
| SOL3M5F | – | 3IK15, 3RK15 | – | – | – | DSCI315 |
| SOL3M6F | 3IK15, 3RK15 | – | – | – | DSCI315 | – |
| SOL4M5F | – | 4IK25, 4RK25 | – | – | – | DSCI425 |
| SOL4M5 | – | – | – | – | – | – |
| SOL4M6F | 4IK25, 4RK25 | – | BLM460 | – | DSCI425 | – |
| SOL4M6 | – | – | BXS460, BLH450 | BXS460, BLH450 | – | – |
| SOL5M6F | – | 5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90 5IK100 | – | – | – | DSCI540, DSCI560, DSCI590 |
| SOL5M6 | – | – | – | – | – | – |
| SOL5M8F | 5IK40, 5RK40 5IK60, 5RK60 5IK90, 5RK90 5IK100 | – | BLM5120 | BLM5120, BLM5200, BLM5300 | DSCI540, DSCI560, DSCI590 | – |
| SOL5M8 | – | – | BXS5120, BLH5100 | BXS5120, BLH5100 | – | – |
| SOL6M8F | 7IK200 | – | BLM6200, BLM6300 | – | – | – |
| SOL6M8 | – | – | BXS6200, BXS6400 | BXS6200, BXS6400 | – | – |

Letters are provided in the applicable products table for identifying the series.

Note

Not available for the following products.

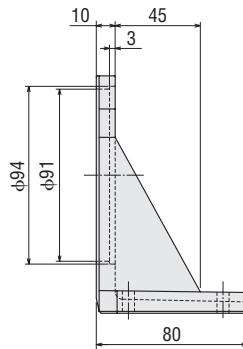
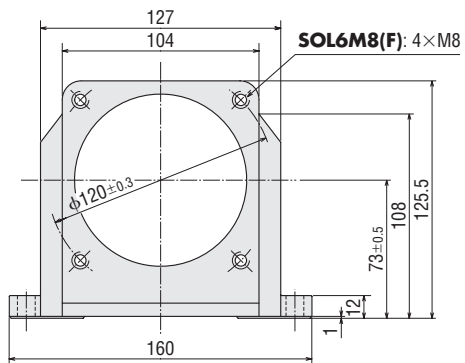
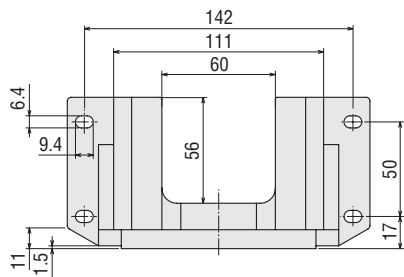
KIS Series Right-Angle Geared Motor

Hollow Shaft Flat Gearhead (**GFS2G□FR, GFS4G□FR, GFS5G□FR, GFS6G□FR**)

A number indicating the gear ratio is entered where the box □ is located within the product name.

SOL6M8F, SOL6M8

Mass: 430 g

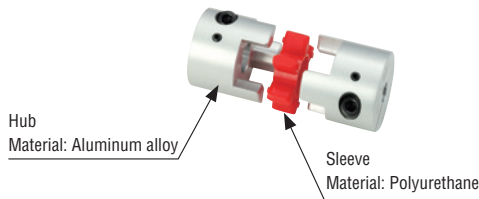


Flexible Couplings

These are clamp type couplings for connecting the motor/gearhead shaft with the driven shaft. Once the motor or gearhead is determined, the coupling can be selected.

Features

- Can be used with high torque
- Excellent for preventing eccentricity
- The structure features a separated hub and sleeve, so workability during installation is improved.



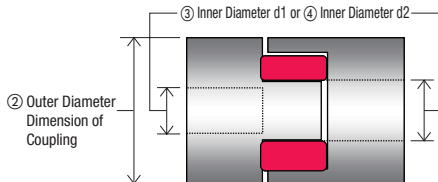
Product Number Code

MCL 40 12 15

- ① ② ③ ④

| | |
|---|--|
| ① | Flexible Coupling |
| ② | Outer Diameter Dimension of Coupling 20 : $\phi 20$ mm - 65 : $\phi 65$ mm |
| ③ | Inner Diameter d1 (Smaller side) 05 : $\phi 5$ mm - 25 : $\phi 25$ mm |
| ④ | Inner Diameter d2 (Larger side) 05 : $\phi 5$ mm - 25 : $\phi 25$ mm |

● Applicable products → Page C-246



Product Line

| Product Name |
|---------------------------------------|
| MCL20 <input type="checkbox"/> |
| MCL30 <input type="checkbox"/> |
| MCL40 <input type="checkbox"/> |
| MCL55 <input type="checkbox"/> |
| MCL65 <input type="checkbox"/> |

● A number indicating the coupling inner diameter is entered where the box is located within the product name.



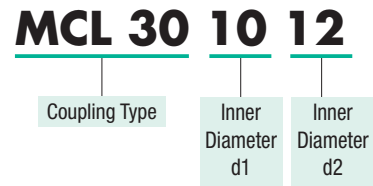
Selecting a Flexible Coupling

Once you have decided on a motor and gearhead as well as the driven shaft diameter, this determines the necessary coupling to use.

The coupling selection process is explained using the conditions below.

- Condition
 - Model: **2IK6** (shaft diameter $\phi 10$ mm)
 - Applicable Driven Shaft Diameter: $\phi 12$ mm
 - Uniform load*
 - Selection Procedure
1. Select a coupling appropriate for the **2IK6** with a uniform load from the applicable products table on the following page.
Coupling Type: **MCL30**
 2. From the applicable products table on the following page, find a product from the **MCL30** type that is compatible with a shaft diameter of $\phi 10$ mm and a driven shaft diameter of $\phi 12$ mm.

● Applicable Coupling Model



* Uniform load and impact load are the two types of load conditions.
Uniform Load: When a uniform load is applied such as with a conveyor etc.
Shock Load: When shock-inducing loads are applied from frequent starting and stopping

■ Applicable Products

● Standard AC Motors, Speed Control Motors

- Couplings can also be used with round shaft types. Select a coupling with the same inner diameter size as the motor shaft diameter.
- For the **BXII** Series round shaft type, refer to the **MCS** coupling.

■ Coupling Selection Table

● Standard AC Motors, Speed Control Motors

○: Uniform load ●: Compatible with uniform and shock load

| Gearhead Model | | Coupling Type | Shaft Diameter | | Connected Device Shaft Diameter mm | | | | | | | | | | | |
|---|---|---------------|----------------|-----|------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| | | | | | 05 | 06 | 08 | 10 | 12 | 14 | 15 | 16 | 18 | 20 | 22 | 25 |
| Uniform Load | Shock Load | | [mm] | φ5 | φ6 | φ8 | φ10 | φ12 | φ14 | φ15 | φ16 | φ18 | φ20 | φ22 | φ25 | |
| BLH015 | BLH015 | MCL20 | 06 | φ6 | ● | ● | ● | | | | | | | | | |
| 2IK, 2RK, BLM230, BXS230, BLH230, DSCI26 | 2IK, 2RK, BLM230, BXS230, BLH230, DSCI26 | MCL30 | 10 | φ10 | | | ● | ● | ● | | | | | | | |
| 3IK15, 3RK15, DSCI315 | — | | 12 | φ12 | | | ○ | ○ | ○ | | | | | | | |
| — | 3IK15, 3RK15, DSCI315 | MCL40 | 12 | φ12 | | | ● | ● | ● | ● | ● | | | | | |
| 4IK25, 4RK25, BLM460, BXS460, BLH450, DSCI425 | — | | 15 | φ15 | | | | ○ | ○ | ○ | ○ | ○ | | | | |
| — | 4IK25, 4RK25, BLM460, BXS460, BLH450, DSCI425 | MCL55 | 15 | φ15 | | | | | | | ● | ● | ● | ● | ● | |
| 5IK40, 5RK40, 5IK60, 5RK60, 5IK90, 5RK90, 5IK100, BLM5120, BXS5120, BLH5100, DSCI540, DSCI560, DSCI590 | 5IK40, 5RK40, 5IK60, 5RK60, 5IK90, 5RK90, 5IK100, BLM5120, BXS5120, BLH5100, DSCI540, DSCI560, DSCI590 | | 18 | φ18 | | | | | | | | ● | ● | ● | ● | ● |
| BLM6200, BLM6300, BXS6200, BXS6400, 7IK200 | BLM6200, BLM6300, BXS6200, BXS6400, 7IK200 | MCL65 | 22 | φ22 | | | | | | | | | | ● | ● | ● |

● The load in this table are of common use. Check the specifications values of each coupling for details.

● Letters are provided in the applicable products table for identifying the series.

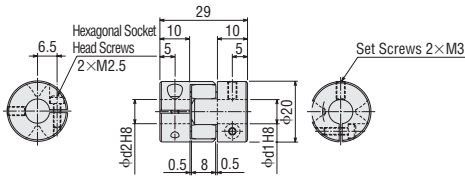
Specifications

| Coupling Type | Product Name | Dimensions | | | | Normal Torque [Nm] | Mass [g] | Inertia J [$\times 10^{-4}$ kgm ²] | Permissible Eccentricity [mm] | Permissible Declination [°] | End Play [mm] | | | | | | | | | |
|---------------|--------------|---------------------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------|-------------|--|-------------------------------------|-----------------------------------|------------------|------|----|----|-----|-----|-----|-----|-----|-----------|
| | | Outer Diameter [mm] | Overall Length [mm] | Shaft Hole Diameter d1 [mm] | Shaft Hole Diameter d2 [mm] | | | | | | | | | | | | | | | |
| MCL20 | MCL200505 | φ20 | 29 | 5 | 5 | 5.0 | 19 | 0.01 | 0.15 | 1.0 | +0.8 0 | | | | | | | | | |
| | MCL200506 | | | 5 | 6 | | | | | | | | | | | | | | | |
| | MCL200508 | | | 5 | 8 | | | | | | | | | | | | | | | |
| | MCL200606 | | | 6 | 6 | | | | | | | | | | | | | | | |
| | MCL200608 | | | 6 | 8 | | | | | | | | | | | | | | | |
| | MCL200808 | | | 8 | 8 | | | | | | | | | | | | | | | |
| MCL30 | MCL300808 | φ30 | 43.5 | 8 | 8 | 12.5 | 66 | 0.083 | 0.2 | 1.0 | +1.0 0 | | | | | | | | | |
| | MCL300810 | | | 8 | 10 | | | | | | | | | | | | | | | |
| | MCL300812 | | | 8 | 12 | | | | | | | | | | | | | | | |
| | MCL301010 | | | 10 | 10 | | | | | | | | | | | | | | | |
| | MCL301012 | | | 10 | 12 | | | | | | | | | | | | | | | |
| | MCL301212 | | | 12 | 12 | | | | | | | | | | | | | | | |
| MCL40 | MCL401010 | φ40 | 64 | 10 | 10 | 25.0 | 150 | 0.36 | 0.2 | 1.0 | +1.2 0 | | | | | | | | | |
| | MCL401012 | | | 10 | 12 | | | | | | | | | | | | | | | |
| | MCL401014 | | | 10 | 14 | | | | | | | | | | | | | | | |
| | MCL401015 | | | 10 | 15 | | | | | | | | | | | | | | | |
| | MCL401016 | | | 10 | 16 | | | | | | | | | | | | | | | |
| | MCL401212 | | | 12 | 12 | | | | | | | | | | | | | | | |
| | MCL401214 | | | 12 | 14 | | | | | | | | | | | | | | | |
| | MCL401215 | | | 12 | 15 | | | | | | | | | | | | | | | |
| | MCL401216 | | | 12 | 16 | | | | | | | | | | | | | | | |
| | MCL401414 | | | 14 | 14 | | | | | | | | | | | | | | | |
| | MCL401415 | | | 14 | 15 | | | | | | | | | | | | | | | |
| | MCL401416 | | | 14 | 16 | | | | | | | | | | | | | | | |
| | MCL401515 | | | 15 | 15 | | | | | | | | | | | | | | | |
| | MCL401516 | | | 15 | 16 | | | | | | | | | | | | | | | |
| MCL401616 | 16 | 16 | | | | | | | | | | | | | | | | | | |
| MCL55 | MCL551515 | φ55 | 76 | 15 | 15 | 60.0 | 350 | 1.6 | 0.2 | 1.0 | +1.4 0 | | | | | | | | | |
| | MCL551516 | | | 15 | 16 | | | | | | | | | | | | | | | |
| | MCL551518 | | | 15 | 18 | | | | | | | | | | | | | | | |
| | MCL551520 | | | 15 | 20 | | | | | | | | | | | | | | | |
| | MCL551525 | | | 15 | 25 | | | | | | | | | | | | | | | |
| | MCL551616 | | | 16 | 16 | | | | | | | | | | | | | | | |
| | MCL551618 | | | 16 | 18 | | | | | | | | | | | | | | | |
| | MCL551620 | | | 16 | 20 | | | | | | | | | | | | | | | |
| | MCL551625 | | | 16 | 25 | | | | | | | | | | | | | | | |
| | MCL551818 | | | 18 | 18 | | | | | | | | | | | | | | | |
| | MCL551820 | | | 18 | 20 | | | | | | | | | | | | | | | |
| | MCL551825 | | | 18 | 25 | | | | | | | | | | | | | | | |
| | MCL65 | | | MCL651515 | φ65 | | | | | | | 87.5 | 15 | 15 | 160 | 570 | 3.7 | 0.2 | 1.0 | +1.5 0 |
| | | | | MCL651516 | | | | | | | | | 15 | 16 | | | | | | |
| MCL651518 | | 15 | 18 | | | | | | | | | | | | | | | | | |
| MCL651520 | | 15 | 20 | | | | | | | | | | | | | | | | | |
| MCL651525 | | 15 | 25 | | | | | | | | | | | | | | | | | |
| MCL651616 | | 16 | 16 | | | | | | | | | | | | | | | | | |
| MCL651618 | | 16 | 18 | | | | | | | | | | | | | | | | | |
| MCL651620 | | 16 | 20 | | | | | | | | | | | | | | | | | |
| MCL651625 | | 16 | 25 | | | | | | | | | | | | | | | | | |
| MCL651818 | | 18 | 18 | | | | | | | | | | | | | | | | | |
| MCL651820 | | 18 | 20 | | | | | | | | | | | | | | | | | |
| MCL651825 | | 18 | 25 | | | | | | | | | | | | | | | | | |
| MCL652022 | | 20 | 22 | | | | | | | | | | | | | | | | | |
| MCL652222 | | 22 | 22 | | | | | | | | | | | | | | | | | |
| MCL652225 | 22 | 25 | | | | | | | | | | | | | | | | | | |

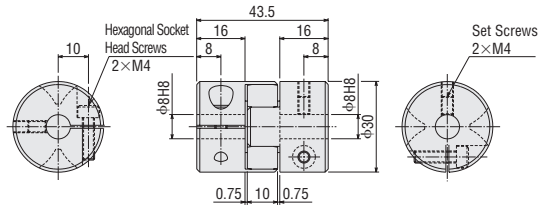
● The specifications above are the values when combined with Oriental Motor's motor and gearhead.

Dimensions (Unit mm)

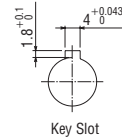
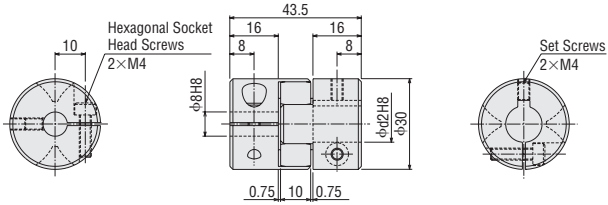
MCL20 Type



MCL300808



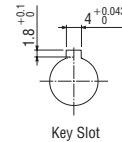
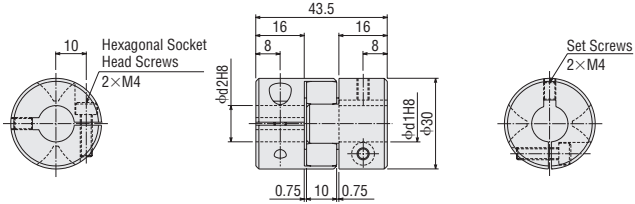
MCL300810 MCL300812



Shaft Hole Diameter ($\phi d2$)

$\phi 10, \phi 12$

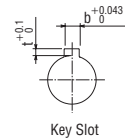
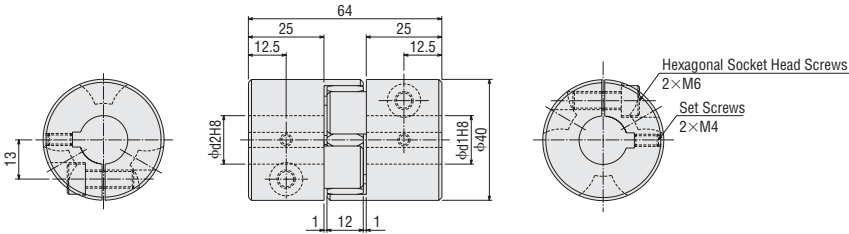
MCL301010 MCL301012 MCL301212



Shaft Hole Diameter ($\phi d1, \phi d2$)

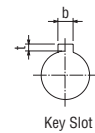
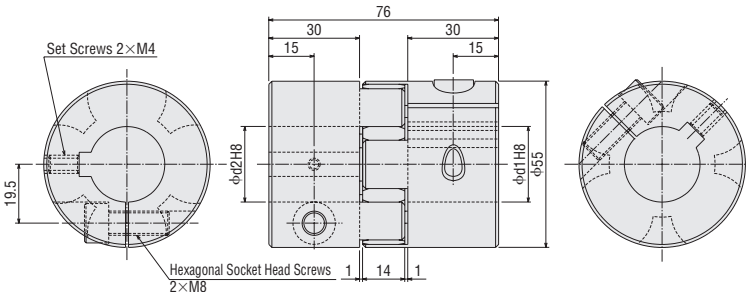
$\phi 10, \phi 12$

MCL40 Type



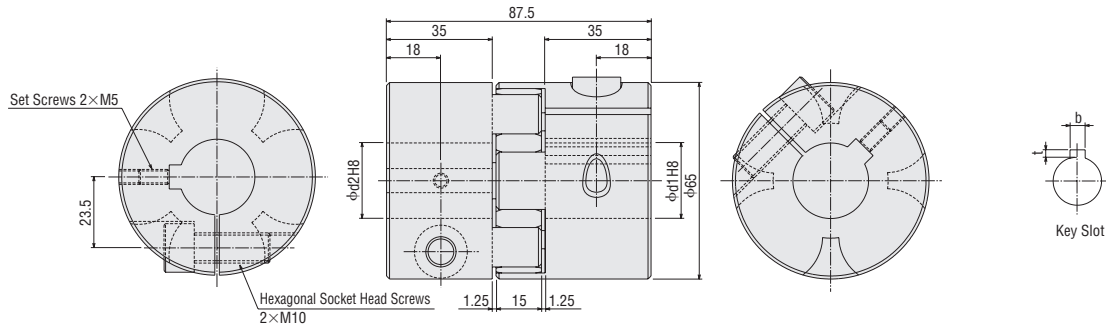
| Shaft Hole Diameter ($\phi d1, \phi d2$) | Key Slot Width b | Key Slot Length t |
|--|------------------|-------------------|
| $\phi 10, \phi 12$ | 4 | 1.8 |
| $\phi 14, \phi 15, \phi 16$ | 5 | 2.3 |

MCL55 Type



| Shaft Hole Diameter ($\phi d1, \phi d2$) | Key Slot Width b | Key Slot Length t |
|--|------------------|-------------------|
| $\phi 15, \phi 16$ | $5^{+0.043}_0$ | $2.3^{+0.1}_0$ |
| $\phi 18, \phi 20$ | $6^{+0.052}_0$ | $2.8^{+0.1}_0$ |
| $\phi 25$ | $8^{+0.052}_0$ | $3.3^{+0.2}_0$ |

MCL65 Type



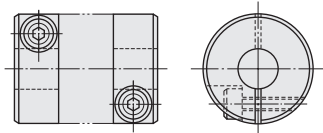
| Shaft Hole Diameter (φd1, φd2) | Key Slot Width b | Key Slot Length t |
|--------------------------------|------------------|-------------------|
| φ15, φ16 | $5^{+0.043}_0$ | $2.3^{+0.1}_0$ |
| φ18, φ20, φ22 | $6^{+0.052}_0$ | $2.8^{+0.1}_0$ |
| φ25 | $8^{+0.052}_0$ | $3.3^{+0.2}_0$ |

Mounting to a Shaft

MCL couplings are clamp type couplings.

Clamp Type

Clamp type couplings use the tightening force of the screw to compress the shaft hole diameter and thereby fasten the coupling to the shaft. This does not damage the shaft and is easy to mount and remove. The following table shows the screw tightening torque. We recommend using a torque wrench to fasten.



| Type | MCL20* | MCL30 | MCL40 | MCL55 | MCL65 |
|---|--------|-------|-------|-------|-------|
| Tightening Torque [Nm] | 1 | 2.5 | 12 | 25 | 50 |
| Tightening Torque of Key Press Screw [Nm] | 0.7 | 1.7 | 1.7 | 1.7 | 4 |

*The MCL20 type are screws used to clamp flat sections.

Watertight Extension Cables

These cables are used with watertight power relay boxes. Extensions of 5 m and 10 m are available.

Product Line

| Number of Conductors | Product Name | Applicable Products | Length L [m] |
|----------------------|------------------|---------------------|--------------|
| 4 Conductors | CC05AC43P | FPW Series | 5 |
| | CC10AC43P | | 10 |



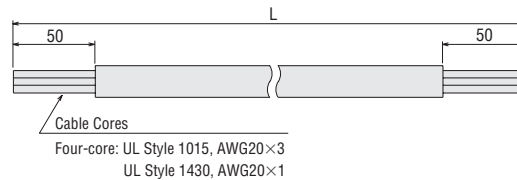
Specifications

Cable Cores Construction: Refer to the dimension on the right

Finished Outer Diameter: $\phi 7.8$

Outer Sheath: Heat-resistant vinyl chloride

Dimensions (Unit mm)



CR Circuit for Surge Suppression

This is used to protect the contacts of the relay or switch used in the bi-directional circuit or the instantaneous stop circuit of a motor.

Product Line

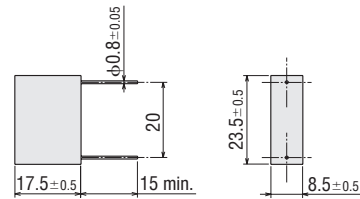
250 VAC (120 Ω , 0.1 μ F)

| Product Name |
|-------------------|
| EPCR1201-2 |



Dimensions (Unit mm)

Mass: 5 g



Orientalmotor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in May 2024.

ORIENTAL MOTOR (EUROPA) GmbH

European Headquarters

Schießstraße 44
40549 Düsseldorf, Germany
Tel: 0211 5206700 Fax: 0211 52067099

Spanish Office

Ronda de Poniente 2, Ed. 12, 2ª planta
28109 Tres Cantos (Madrid), Spain
Tel: +34 919 61 06 76

ORIENTAL MOTOR (UK) LTD.

UK Headquarters

Unit 5, Faraday Office Park,
Rankine Road, Basingstoke,
Hampshire RG24 8AH, U.K.
Tel: +44 1256 347090 Fax: +44 1256 347099

ORIENTAL MOTOR ITALIA s.r.l.

Italy Headquarters

Via XXV Aprile 5
20016 Pero (MI), Italy
Tel: +39 2 93906346 Fax: +39 2 93906348

ORIENTAL MOTOR (FRANCE) SARL

France Headquarters

56, Rue des Hautes Pâtures
92000 Nanterre, France
Tel: +33 1 47 86 97 50 Fax: +33 1 47 82 45 16

Customer Service Center

(Support in German & English)

00800 22 55 66 22*

Mon - Thu: 08:00 - 16:30 CET

Friday: 08:00 - 15:00 CET

*Free Call Europe

info@orientalmotor.de

WWW.ORIENTALMOTOR.EU

EN | DE | UK | IT | FR | ES