

Standard AC Motors

Watertight, Dust-Resistant Motors

Watertight, Dust-Resistant
Motors

Introduction

Induction
Motors

Reversible
Motors

Electromagnetic
Brake Motors

V Series

Clutch &
Brake Motors

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Motors

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Synchronous
Motors

Watertight,
Dust-Resistant
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Installation

The **FPW** Series are geared motors which conform to the IEC Standard IP67 (Recognized by UL). They are ideal for applications where they are splashed or where the equipment needs washing periodically. These watertight motors are available in 25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP) and 90 W (1/8 HP) models and conform to the RoHS Directive.



● For detailed product safety standard information including standards, file number and certification body, please visit www.orientalmotor.com.



■ Features

● Watertight and Dust-Resistant Performance IP67

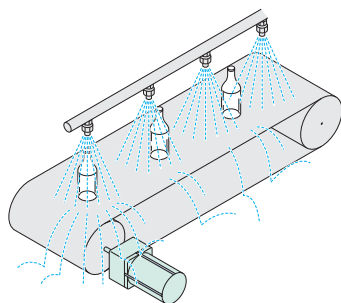
The **FPW** Series motors are watertight, dust-resistant geared induction motors which conform to the IEC Standard IP67.

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

Special anti-corrosive coating

Oil-shield protection

Stainless steel shaft
(SUS303 type)

Watertight, dust-resistant geared motor
O-ring employed at motor/gear case junction

● Conforms to Safety 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).

— For Speed Control of the FPW Series —

Combined use of Speed Controller **FE100/FE200** and an **FPW** Series three-phase induction motor enables speed control.



FE100/FE200 **FPW** Series

● Speed Controller **FE100/FE200** (Sold separately)

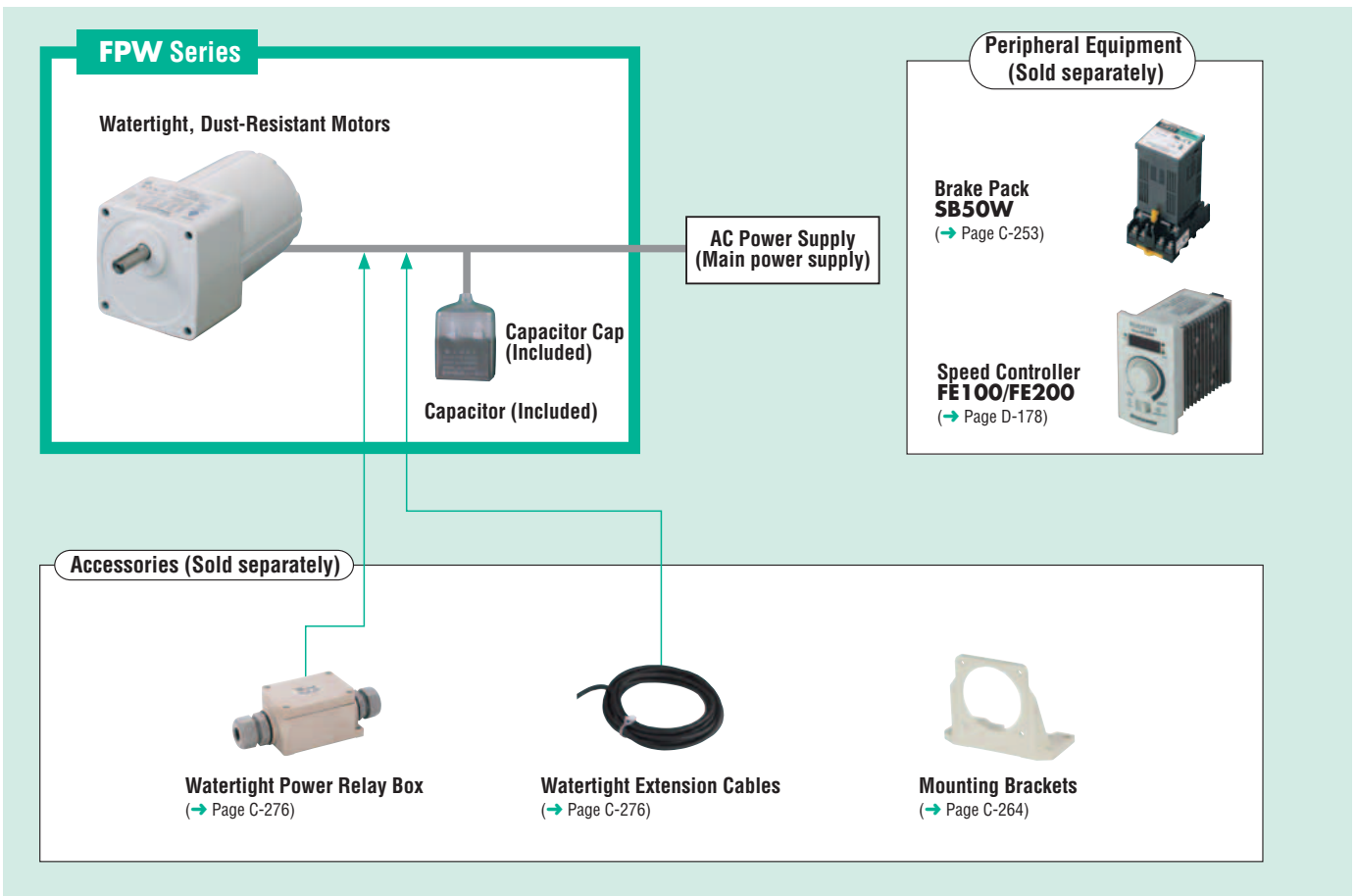
These products feature a digital display and enable easy settings for speed control.

Speed Setting Range : 200 to 2400 r/min

(Set Frequency Range : 6.6 to 80 Hz)

- Speed Controller **FE100/FE200** → Page D-178

System Configuration



● Example of System Configuration

FPW Series Geared Motor FPW425A2-25U	+ Sold Separately	
	Watertight Power Relay Box TB4-0608	Watertight Extension Cable [5 m (16.4 ft.)] CC05AC43P

- 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 Code

FPW 4 25 A 2 - 15 U

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	FPW: FPW Series
②	Motor Frame Size	4: 80 mm (3.15 in.) 5: 90 mm (3.54 in.) 6: 104 mm (4.09 in.)
③	Output Power (W)	(Example) 25: 25 W (1/30 HP)
④	Power Supply Voltage	A: Single-Phase 110/115 VAC C: Single-Phase 220/230 VAC S: Three-Phase 200/220/230 VAC
⑤	2: RoHS-Compliant	
⑥	Gear Ratio	
⑦	Included Capacitor	U: For Single-Phase 110/115 VAC E: For Single-Phase 220/230 VAC Blank: Three-Phase Type

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.

When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

(Example) Model: **FPW425A2-15U**

→ Motor nameplate and product approved under various safety standards: **FPW425A2-15**

Product Line (RoHS)

Output Power	Power Supply Voltage	Model	Gear Ratio
25 W (1/30 HP)	Single-Phase 110/115 VAC	FPW425A2-□U	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Single-Phase 220/230 VAC	FPW425C2-□E	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Three-Phase 200/220/230 VAC	FPW425S2-□	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
40 W (1/19 HP)	Single-Phase 110/115 VAC	FPW540A2-□U	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Single-Phase 220/230 VAC	FPW540C2-□E	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Three-Phase 200/220/230 VAC	FPW540S2-□	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
60 W (1/12 HP)	Single-Phase 110/115 VAC	FPW560A2-□U	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Single-Phase 220/230 VAC	FPW560C2-□E	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Three-Phase 200/220/230 VAC	FPW560S2-□	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
90 W (1/8 HP)	Single-Phase 110/115 VAC	FPW690A2-□U	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Single-Phase 220/230 VAC	FPW690C2-□E	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	Three-Phase 200/220/230 VAC	FPW690S2-□	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180

● Enter the gear ratio in the box (□) within the model name.

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

Specifications – Continuous Rating (RoHS)



Model	Output Power W HP	Voltage VAC	Frequency Hz	Current A	Starting Torque mN·m oz·in	Rated Torque mN·m oz·in	Rated Speed r/min	Capacitor μF
TP FPW425A2-□U	25 1/30	Single-Phase 110	60	0.46	120 17	170 24	1450	6.5
		Single-Phase 115						
TP FPW425C2-□E	25 1/30	Single-Phase 220	50	0.27	110 15	205 29	1200	1.5
			60	0.23		170 24	1450	
		Single-Phase 230	50	0.27	120 17	205 29	1200	
			60	0.23		170 24	1450	
TP FPW425S2-□	25 1/30	Three-Phase 200	50	0.23	240 34	190 26	1300	-
		Three-Phase 220	60	0.21	160 22	160 22	1550	
		Three-Phase 230		0.22		160 22	1600	
TP FPW540A2-□U	40 1/19	Single-Phase 110	60	0.68	200 28	260 36	1500	9.0
		Single-Phase 115		0.67				
TP FPW540C2-□E	40 1/19	Single-Phase 220	50	0.39	200 28	315 44	1250	2.3
			60	0.35		260 36	1500	
		Single-Phase 230	50	0.39		300 42	1300	
			60	0.34		260 36	1500	
TP FPW540S2-□	40 1/19	Three-Phase 200	50	0.32	400 56	300 42	1300	-
		Three-Phase 220	60	0.30	260 36	260 36	1550	
		Three-Phase 230		0.31		260 36	1600	
TP FPW560A2-□U	60 1/12	Single-Phase 110	60	1.04	300 42	405 57	1450	12
		Single-Phase 115		1.02				
TP FPW560C2-□E	55 1/14 60 1/12 55 1/14 60 1/12	Single-Phase 220	50	0.52	300 42	430 61	1250	3.0
			60	0.48		405 57	1450	
		Single-Phase 230	50	0.51		430 61	1250	
			60	0.47		405 57	1450	
TP FPW560S2-□	60 1/12	Three-Phase 200	50	0.48	600 85	450 63	1300	-
		Three-Phase 220	60	0.43	500 71	380 53	1550	
		Three-Phase 230		0.44	500 71	380 53	1600	
		0.45						
TP FPW690A2-□U	90 1/8	Single-Phase 110	60	1.54	400 56	585 83	1500	18
		Single-Phase 115		1.51				
TP FPW690C2-□E	90 1/8	Single-Phase 220	50	0.82	400 56	700 99	1250	4.5
			60	0.73		605 85	1450	
		Single-Phase 230	50	0.81		700 99	1250	
			60	0.71		605 85	1450	
TP FPW690S2-□	90 1/8	Three-Phase 200	50	0.54	700 99	680 96	1300	-
		Three-Phase 220	60	0.51	700 99	570 80	1550	
		Three-Phase 230		0.50		570 80	1600	
			60	0.49				

TP: Contains 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 motor power off before inspecting.

- Enter the gear ratio in the box (□) within the model name.
- The values for each specification apply to the motor only.

General Specifications

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kVAC at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings is 80°C (144°F) or less measured by the resistance change method after rated operation under normal ambient temperature and humidity. (Three-phase type: 70°C (126°F) or less)
Thermal Class	130 (B)
Overheat Protection	Built-in thermal protector (Automatic return type) Open: 130±5°C (266±9°F), Close: 82±15°C (179.6±27°F)
Ambient Temperature	Three-phase 200 VAC: -10~+50°C (+14~+122°F) (non-freezing) Single-phase 110/115 VAC, Single-Phase 220/230 VAC, Three-phase 220/230 VAC: -10~+40°C (+14~+104°F) (non-freezing)
Degree of Protection	IP67

Notes

- 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.

Gearmotor – Torque Table

● 50 Hz

Unit = N·m (lb-in)

Model	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 Torque	0.50 (4.4)	0.60 (5.3)	0.83 (7.3)	1.0 (8.8)	1.2 (10.6)	1.5 (13.2)	2.1 (18.5)	2.5 (22)	3.0 (26)	3.7 (32)	4.5 (39)	5.4 (47)	6.8 (60)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)
	Starting Torque	0.27 (2.3)	0.32 (2.8)	0.45 (3.9)	0.53 (4.6)	0.67 (5.9)	0.80 (7.0)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.6 (31)	4.4 (38)	5.4 (47)	6.5 (57)	7.3 (64)	8 (70)	8 (70)	8 (70)	8 (70)
FPW425C2-□E (230 VAC)	Rated Torque	0.50 (4.4)	0.60 (5.3)	0.83 (7.3)	1.0 (8.8)	1.2 (10.6)	1.5 (13.2)	2.1 (18.5)	2.5 (22)	3.0 (26)	3.7 (32)	4.5 (39)	5.4 (47)	6.8 (60)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)
	Starting Torque	0.29 (2.5)	0.35 (3.0)	0.49 (4.3)	0.58 (5.1)	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.7 (15.0)	2.2 (19.4)	2.6 (23)	3.2 (28)	4.0 (35)	4.8 (42)	5.9 (52)	7.1 (62)	7.9 (69)	8 (70)	8 (70)	8 (70)	8 (70)
FPW425S2-□	Rated Torque	0.46 (4.0)	0.55 (4.8)	0.77 (6.8)	0.92 (8.1)	1.2 (10.6)	1.4 (12.3)	1.9 (16.8)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	5.0 (44)	6.3 (55)	7.5 (66)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)
	Starting Torque	0.46 (4.0)	0.55 (4.8)	0.77 (6.8)	0.92 (8.1)	1.2 (10.6)	1.4 (12.3)	1.9 (16.8)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	5.0 (44)	6.3 (55)	7.5 (66)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)
FPW540C2-□E (220 VAC)	Rated Torque	0.77 (6.8)	0.92 (8.1)	1.3 (11.5)	1.5 (13.2)	1.9 (16.8)	2.3 (20)	3.2 (28)	3.8 (33)	4.6 (40)	5.7 (50)	6.9 (61)	8.3 (73)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
	Starting Torque	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW540C2-□E (230 VAC)	Rated Torque	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	3.0 (26)	3.6 (31)	4.4 (38)	5.5 (48)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
	Starting Torque	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW540S2-□	Rated Torque	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	3.0 (26)	3.6 (31)	4.4 (38)	5.5 (48)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
	Starting Torque	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	3.0 (26)	3.6 (31)	4.4 (38)	5.5 (48)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW560C2-□E	Rated Torque	1.0 (8.8)	1.3 (11.5)	1.7 (15.0)	2.1 (18.5)	2.6 (23)	3.1 (27)	3.9 (34)	4.7 (41)	5.7 (50)	7.1 (62)	8.5 (75)	10.2 (90)	14.2 (125)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
	Starting Torque	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.3 (29)	3.9 (34)	5.0 (44)	5.9 (52)	7.1 (62)	9.9 (87)	11.9 (105)	13.3 (117)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
FPW560S2-□	Rated Torque	1.1 (9.7)	1.3 (11.5)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.3 (29)	4.1 (36)	4.9 (43)	5.9 (52)	7.4 (65)	8.9 (78)	10.7 (94)	14.9 (131)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
	Starting Torque	1.1 (9.7)	1.3 (11.5)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.3 (29)	4.1 (36)	4.9 (43)	5.9 (52)	7.4 (65)	8.9 (78)	10.7 (94)	14.9 (131)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
FPW690C2-□E	Rated Torque	1.7 (15.0)	2.0 (17.7)	2.8 (24)	3.4 (30)	4.3 (38)	5.1 (45)	6.4 (56)	7.7 (68)	9.2 (81)	12.8 (113)	15.3 (135)	18.4 (162)	23.1 (200)	27.7 (240)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)
	Starting Torque	0.97 (8.5)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	7.3 (64)	8.8 (77)	10.5 (92)	13.2 (116)	15.8 (139)	19.8 (175)	23.8 (210)	26.4 (230)	30 (260)	30 (260)	30 (260)	30 (260)
FPW690S2-□	Rated Torque	1.7 (15.0)	2.0 (17.7)	2.8 (24)	3.4 (30)	4.1 (36)	5.0 (44)	6.2 (54)	7.4 (65)	8.9 (78)	12.4 (109)	14.9 (131)	17.9 (158)	22.4 (198)	26.9 (230)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)
	Starting Torque	1.7 (15.0)	2.0 (17.7)	2.8 (24)	3.4 (30)	4.1 (36)	5.0 (44)	6.2 (54)	7.4 (65)	8.9 (78)	12.4 (109)	14.9 (131)	17.9 (158)	22.4 (198)	26.9 (230)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)

● Enter the gear ratio in the box (□) within the model 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.

60 Hz

Unit = N-m (lb-in)

Model	Speed r/min	Gear Ratio																				
		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 (220 VAC)	Rated Torque	0.41 (3.6)	0.50 (4.4)	0.69 (6.1)	0.83 (7.3)	1.0 (8.8)	1.2 (10.6)	1.7 (15)	2.1 (18.5)	2.5 (22)	3.1 (27)	3.7 (32)	4.5 (39)	5.6 (49)	6.7 (59)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
	Starting Torque	0.27 (2.3)	0.32 (2.8)	0.45 (3.9)	0.53 (4.6)	0.67 (5.9)	0.80 (7.0)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.6 (31)	4.4 (38)	5.4 (47)	6.5 (57)	7.3 (64)	8 (70)	8 (70)	8 (70)	8 (70)
FPW425A2-□U FPW425C2-□E (230 VAC)	Rated Torque	0.41 (3.6)	0.50 (4.4)	0.69 (6.1)	0.83 (7.3)	1.0 (8.8)	1.2 (10.6)	1.7 (15.0)	2.1 (18.5)	2.5 (22)	3.1 (27)	3.7 (32)	4.5 (39)	5.6 (49)	6.7 (59)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
	Starting Torque	0.29 (2.5)	0.35 (3.0)	0.49 (4.3)	0.58 (5.1)	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.7 (15.0)	2.2 (19.4)	2.6 (23)	3.2 (28)	4.0 (35)	4.8 (42)	5.9 (52)	7.1 (62)	7.9 (69)	8 (70)	8 (70)	8 (70)	8 (70)
FPW425S2-□	Rated Torque	0.39 (3.4)	0.47 (4.1)	0.65 (5.7)	0.78 (6.9)	0.97 (8.5)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.3 (20)	2.9 (25)	3.5 (30)	4.2 (37)	5.3 (46)	6.3 (55)	7.9 (69)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
	Starting Torque	0.47 (4.1)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW540A2-□U FPW540C2-□E	Rated Torque	0.63 (5.5)	0.76 (6.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	1.9 (16.8)	2.6 (23)	3.2 (28)	3.8 (33)	4.7 (41)	5.7 (50)	6.8 (60)	8.6 (76)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	
	Starting Torque	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW540S2-□	Rated Torque	0.63 (5.5)	0.76 (6.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	1.9 (16.8)	2.6 (23)	3.2 (28)	3.8 (33)	4.7 (41)	5.7 (50)	6.8 (60)	8.6 (76)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	
	Starting Torque	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	9.9 (87)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
FPW560A2-□U FPW560C2-□E	Rated Torque	0.98 (8.6)	1.2 (10.6)	1.6 (14.1)	2.0 (17.7)	2.5 (22)	3.0 (26)	3.7 (32)	4.4 (38)	5.3 (46)	6.7 (59)	8.0 (70)	9.6 (84)	13.4 (118)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
	Starting Torque	0.73 (6.4)	0.87 (7.6)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.3 (29)	3.9 (34)	5.0 (44)	5.9 (52)	7.1 (62)	9.9 (87)	11.9 (105)	13.3 (117)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
FPW560S2-□	Rated Torque	0.92 (8.1)	1.1 (9.7)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	5.0 (44)	6.3 (55)	7.5 (66)	9.0 (79)	12.5 (110)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
	Starting Torque	0.92 (8.1)	1.1 (9.7)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	5.0 (44)	6.3 (55)	7.5 (66)	9.0 (79)	12.5 (110)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)	15 (132)
FPW690A2-□U	Rated Torque	1.4 (12.3)	1.7 (15.0)	2.4 (21)	2.8 (24)	3.6 (31)	4.3 (38)	5.3 (46)	6.4 (56)	7.7 (68)	10.7 (94)	12.8 (113)	15.4 (136)	19.3 (170)	23.2 (200)	29.0 (250)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)
	Starting Torque	0.97 (8.5)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	7.3 (64)	8.8 (77)	10.5 (92)	13.2 (116)	15.8 (139)	19.8 (175)	23.8 (210)	26.4 (230)	30 (260)	30 (260)	30 (260)	30 (260)
FPW690C2-□E	Rated Torque	1.5 (13.2)	1.8 (15.9)	2.5 (22)	2.9 (25)	3.7 (32)	4.4 (38)	5.5 (48)	6.6 (58)	7.9 (69)	11.0 (97)	13.2 (116)	15.9 (140)	20.0 (177)	24.0 (210)	29.9 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)
	Starting Torque	0.97 (8.5)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	7.3 (64)	8.8 (77)	10.5 (92)	13.2 (116)	15.8 (139)	19.8 (175)	23.8 (210)	26.4 (230)	30 (260)	30 (260)	30 (260)	30 (260)
FPW690S2-□	Rated Torque	1.4 (12.3)	1.7 (15.0)	2.4 (21)	2.8 (24)	3.6 (31)	4.3 (38)	5.3 (46)	6.4 (54)	7.7 (66)	10.4 (92)	12.5 (110)	15.0 (132)	18.8 (166)	22.6 (200)	28.2 (240)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)
	Starting Torque	1.4 (12.3)	1.7 (15.0)	2.4 (21)	2.8 (24)	3.5 (30)	4.2 (37)	5.2 (46)	6.2 (54)	7.5 (66)	10.4 (92)	12.5 (110)	15.0 (132)	18.8 (166)	22.6 (200)	28.2 (240)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)	30 (260)

- Enter the gear ratio in the box (□) within the model 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.

Permissible Overhung Load and Permissible Thrust Load

Model	Gear Ratio	Permissible Overhung Load				Permissible Thrust Load	
		10 mm (0.39 in.) from shaft end		20 mm (0.79 in.) from shaft end		N	lb.
		N	lb.	N	lb.		
FPW425 Type	3~18	100	22	150	33	50	11.2
	25~180	200	45	300	67		
FPW540 Type	3~18	250	56	350	78	100	22
	25~180	300	67	450	101		
FPW560 Type	3~9	400	90	500	112	150	33
	12.5~18	450	101	600	135		
	25~180	500	112	700	157		
FPW690 Type	3~9	550	123	800	180	200	45
	12.5~180	650	146	1000	220		

Permissible Load Inertia J

Unit = $\times 10^{-4} \text{kg}\cdot\text{m}^2 \text{ (oz}\cdot\text{in}^2)$

Model \ 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 (15.3)	4.02 (22)	7.75 (42)	11.2 (61)	17.4 (95)	25.1 (137)	48.4 (260)	69.8 (380)	100 (550)	194 (1060)	279 (1530)	402 (2200)	775 (4200)	775 (4200)	775 (4200)	775 (4200)	775 (4200)	775 (4200)	775 (4200)	775 (4200)
FPW540 Type	6.75 (37)	9.72 (53)	18.8 (103)	27 (148)	42.2 (230)	60.8 (330)	117 (640)	169 (920)	243 (1330)	469 (2600)	675 (3700)	972 (5300)	1875 (10300)	1875 (10300)	1875 (10300)	1875 (10300)	1875 (10300)	1875 (10300)	1875 (10300)	1875 (10300)
FPW560 Type	9.9 (54)	14.3 (78)	27.5 (150)	39.6 (220)	61.9 (340)	89.1 (490)	172 (940)	248 (1360)	356 (1950)	688 (3800)	990 (5400)	1426 (7800)	2750 (15000)	2750 (15000)	2750 (15000)	2750 (15000)	2750 (15000)	2750 (15000)	2750 (15000)	2750 (15000)
FPW690 Type	18 (98)	25.9 (142)	50 (270)	72 (390)	113 (620)	162 (890)	313 (1710)	450 (2500)	648 (3500)	1250 (6800)	1800 (9800)	2592 (14200)	5000 (27000)	5000 (27000)	5000 (27000)	5000 (27000)	5000 (27000)	5000 (27000)	5000 (27000)	5000 (27000)

Dimensions Unit = mm (in.)

- Mounting screws are included with the motor. Dimensions for mounting screws → Page C-280
- Enter the gear ratio in the box (□) within the model name.

● 25 W (1/30 HP)

◇ Geared Motors

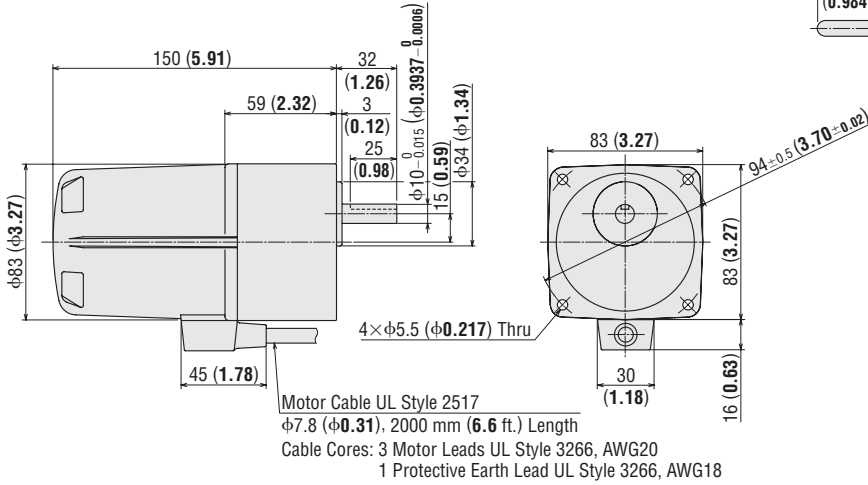
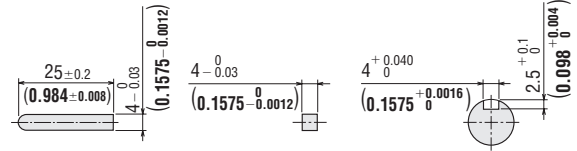
FPW425A2-□U, FPW425C2-□E, FPW425S2-□

Motor: FPW425A2-□, FPW425C2-□, FPW425S2-□

Mass: 3.0 kg (6.6 lb.)

DXF A226

◇ Key and Key Slot (Included)



● 40 W (1/19 HP)

◇ Geared Motors

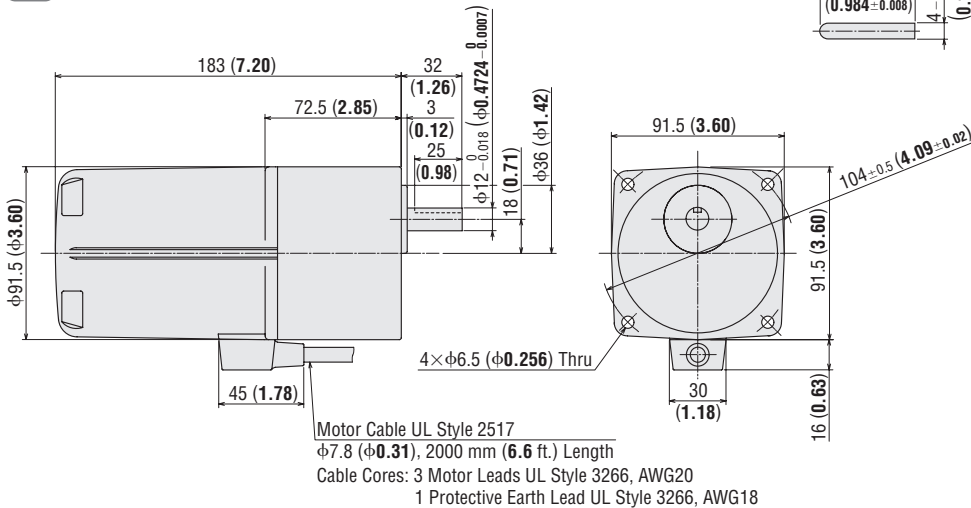
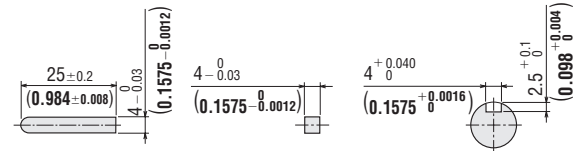
FPW540A2-□U, FPW540C2-□E, FPW540S2-□

Motor: FPW540A2-□, FPW540C2-□, FPW540S2-□

Mass: 4.0 kg (8.8 lb.)

DXF A227

◇ Key and Key Slot (Included)



● 60 W (1/12 HP)

◇ Geared Motors

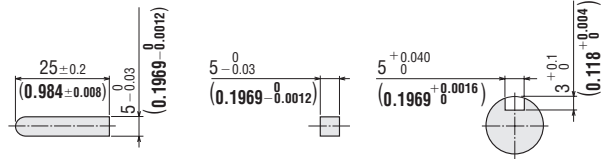
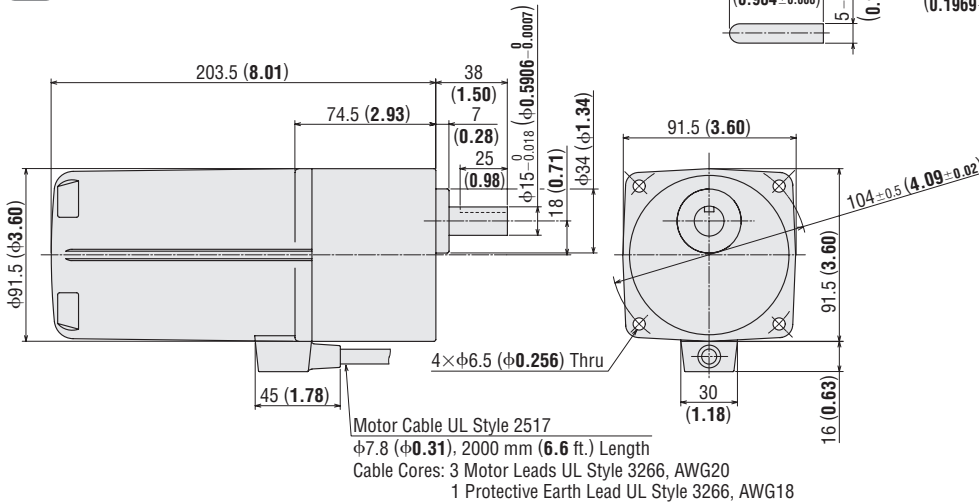
FPW560A2-□U, **FPW560C2**-□E, **FPW560S2**-□

Motor: FPW560A2-□, FPW560C2-□, FPW560S2-□

Mass: 5.0 kg (11 lb.)

DXF A228

◇ Key and Key Slot (Included)



● 90 W (1/8 HP)

◇ Geared Motors

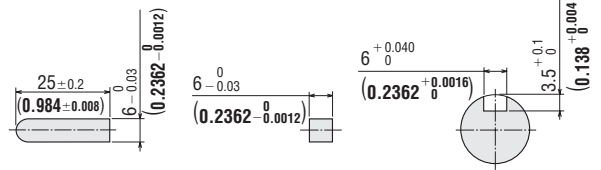
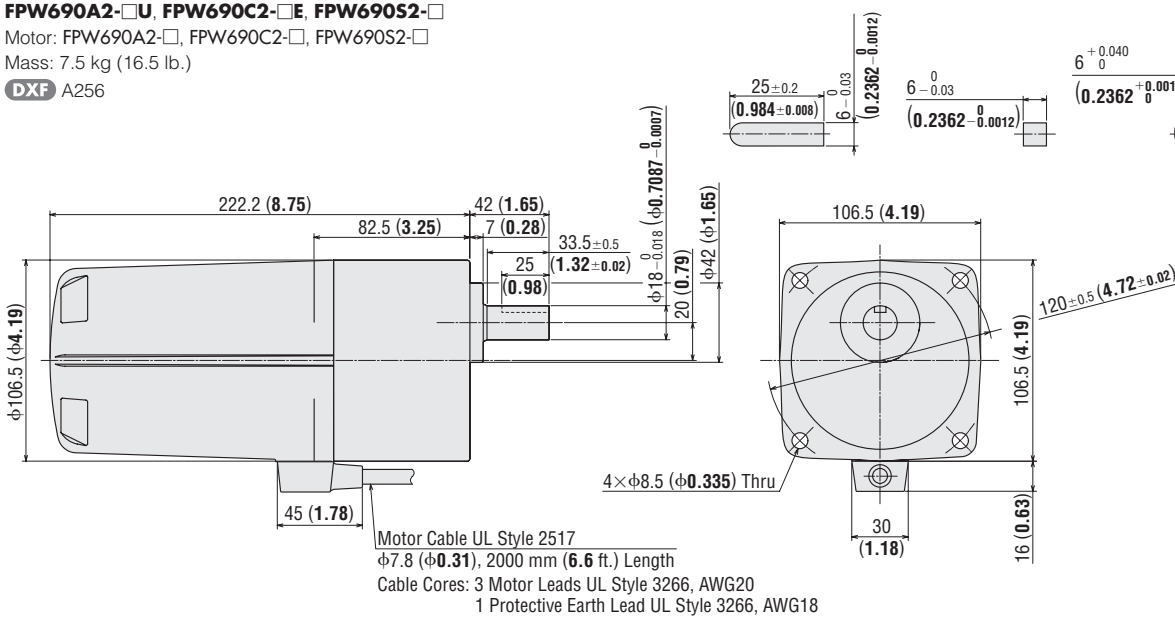
FPW690A2-□U, **FPW690C2**-□E, **FPW690S2**-□

Motor: FPW690A2-□, FPW690C2-□, FPW690S2-□

Mass: 7.5 kg (16.5 lb.)

DXF A256

◇ Key and Key Slot (Included)



◇ Mounting Screws (Included) (Material: Stainless steel)



	Length: L mm (in.)	Size
FPW425 Type	80 (3.15)	M5 P0.8
FPW540 Type	90 (3.54)	M6 P1.0
FPW560 Type	90 (3.54)	M6 P1.0
FPW690 Type	100 (3.94)	M8 P1.25

● 4 flat washers and 4 hexagonal nuts are included.

Introduction

Induction Motors

Reversible Motors

Electromagnetic Brake Motors

V Series

Clutch & Brake Motors

Synchronous Motors

Low-Speed Synchronous Motors

Waterlight Dust-Resistant Motors

Torque Motors

Right-Angle Gearheads

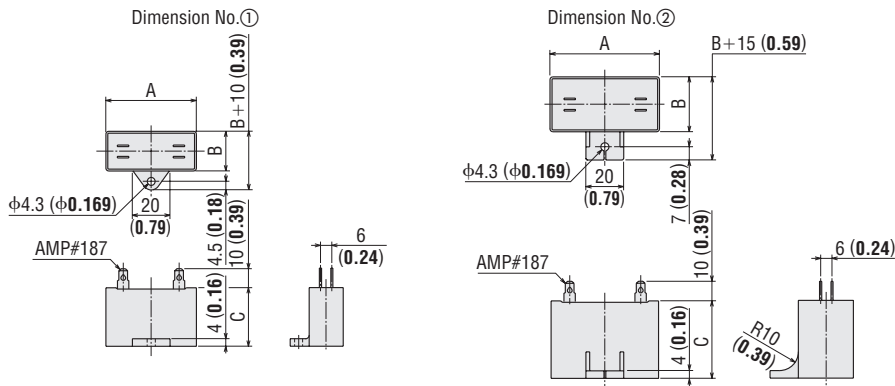
Linear Heads

Brake Pack

Accessories

Installation

◇ Capacitor (Included with single-phase motors)



◇ Capacitor Dimensions Unit = mm (in.)

Model	Capacitor Model	A	B	C	Mass g (oz.)	Dimension No.	Capacitor Cap
FPW425A2-□U	CH65CFAUL2	48 (1.89)	19 (0.75)	29 (1.14)	35 (1.24)	①	Included
FPW425C2-□E	CH15BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	37 (1.31)		
FPW540A2-□U	CH90CFAUL2	48 (1.89)	22.5 (0.89)	31.5 (1.24)	45 (1.59)	①	
FPW540C2-□E	CH23BFAUL	48 (1.89)	21 (0.83)	31 (1.22)	43 (1.52)	①	
FPW560A2-□U	CH120CFAUL2	58 (2.28)	22 (0.87)	35 (1.38)	60 (2.1)	①	
FPW560C2-□E	CH30BFAUL	58 (2.28)	21 (0.83)	31 (1.22)	50 (1.77)	①	
FPW690A2-□U	CH180CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	92 (3.2)	②	
FPW690C2-□E	CH45BFAUL	58 (2.28)	23.5 (0.93)	37 (1.46)	73 (2.6)		

● Enter the gear ratio in the box (□) within the model name.

■ Connection Diagrams

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

	Single-Phase 110/115 VAC, Single-Phase 220/230 VAC		Three-Phase 220/230 VAC	
25 W (1/30 HP) 40 W (1/19 HP)	Gear Ratio 3~18, 50~180	Gear Ratio 25~36	Gear Ratio 3~18, 50~180	Gear Ratio 25~36
60 W (1/12 HP)	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 (1/8 HP)	Gear Ratio 3~9, 50~180	Gear Ratio 12.5~36	Gear Ratio 3~9, 50~180	Gear Ratio 12.5~36
	Clockwise 	Clockwise 	Clockwise 	Clockwise
	Counterclockwise 	Counterclockwise 	Counterclockwise To change the rotation direction, change any two connections between L1 (R), L2 (S) and L3 (T).	Counterclockwise To change the rotation direction, change any two connections between L1 (S), L2 (R) and L3 (T).

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 reversing command or change its direction of rotation after some delay.

● How to connect a capacitor → Page C-282

● Wiring Precautions

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

