

Standard AC Motors

Watertight, Dust-Resistant Motors

Introduction

Induction
Motors

Reversible
Motors

Electro-
magnetic
Brake Motors

V Series

Clutch &
Brake
Motors

Synchronous
Motors

Low-Speed
Synchronous
Motors

Watertight, Dust-Resistant Motors

Watertight,
Dust-Resistant
Motors

Torque
Motors

Right-Angle
Gearheads

Linear
Heads

Brake Pack

Accessories

Installation

RoHS RoHS-Compliant

Watertight, Dust-Resistant Motors

FPW Series

Induction Type

● Additional Information ●
 Technical reference → Page F-1
 Safety standards → Page G-2

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.



● List of safety standard approved products (Model, Standards, File No., Certification Body)
 → Page G-11



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

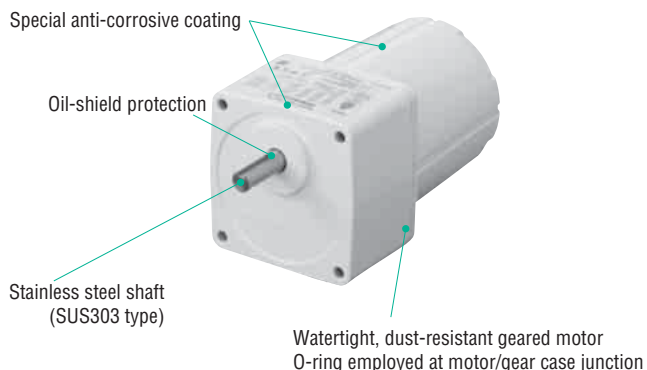
IP67: IP codes indicating the grade of dust-resistance and waterproofing are specified under IEC 60529 and EN 60034-5 (= IEC 60034-5).

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 Safety Standards

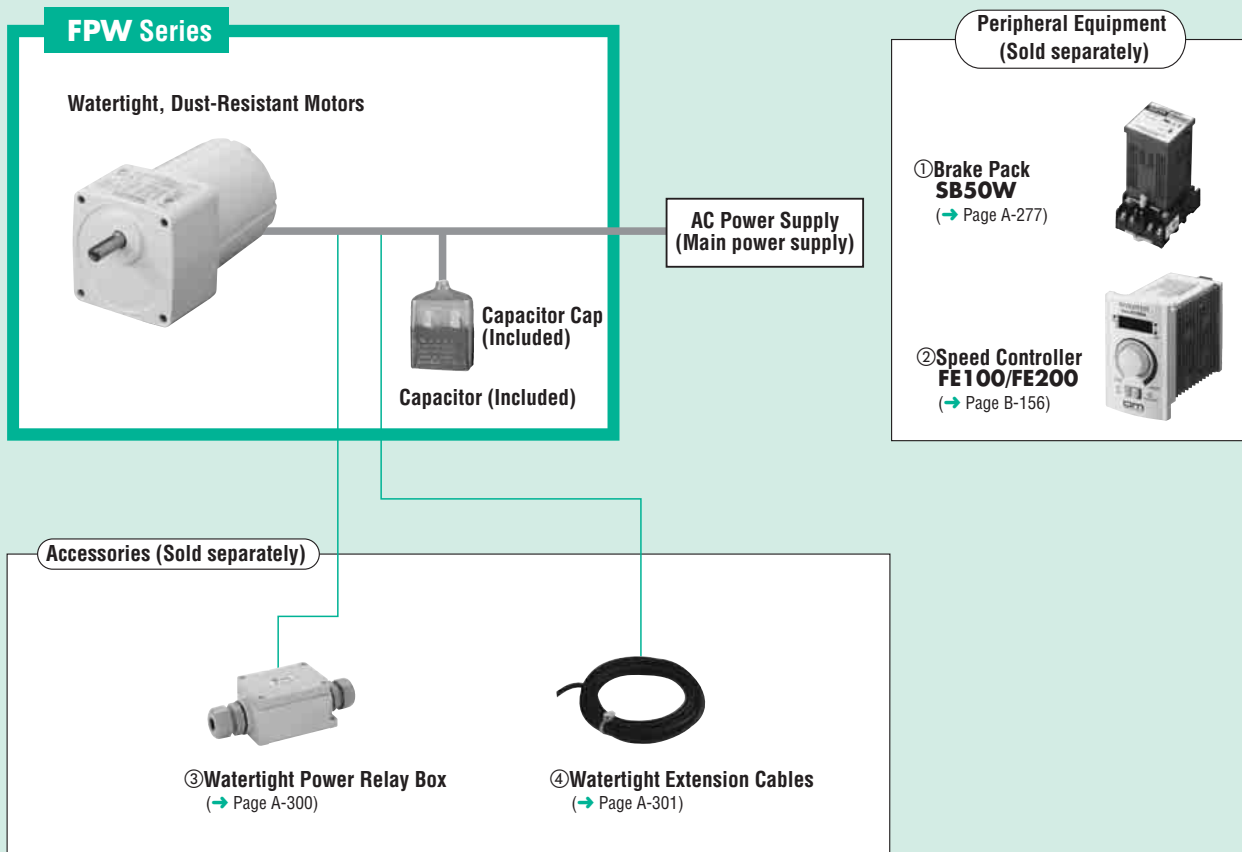
The **FPW** Series is recognized by UL/CSA Standards and conforms to CE Marking (Low Voltage Directive). These motors are also certified under the China Compulsory Certification System (CCC System).

● **RoHS** RoHS-Compliant

The **FPW** Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

● Details of RoHS Directive → Page G-38

System Configuration



No.	Product Name	Overview	Page
①	Brake Pack	Use this brake pack to stop the motor instantaneously, perform bi-directional operation, and more.	A-277
②	Speed Controller	Combine this speed controller with a three-phase motor for easy speed control. Equipped with a digital display.	B-156
③	Watertight Power Relay Box	When the cable of a watertight motor is extended, use this terminal box to connect cables (TB4-0608).	A-300
④	Watertight Extension Cables	Cable for extending the wiring distance between the motor and power supply. Use this cable together with the watertight power relay box [5 m (16.4 ft.), 10 m (32.8 ft.)].	A-301

● Example of System Configuration

(Sold separately)

FPW Series Geared Motor FPW425A2-25U	+	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	RoHS-Compliant	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		Voltage VAC	Frequency Hz	Current A	Starting Torque		Rated Torque		Rated Speed r/min	Capacitor μ F			
	W	HP				mN·m	oz·in	mN·m	oz·in					
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	-			
				60	0.21							160	22	160
			Three-Phase 220	60	0.21	160	22	160	22	1600				
					0.22									
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									
			Single-Phase 230	50	0.39							260	36	1500
				60	0.34									
TP FPW540S2-□	40	1/19	Three-Phase 200	50	0.32	400	56	300	42	1300	-			
				60	0.30							260	36	260
			Three-Phase 220	60	0.30	260	36	260	36	1600				
					0.31									
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	Single-Phase 220	50	0.52	300	42	430	61	1250	3.0			
				60	0.48									
			Single-Phase 230	50	0.51							405	57	1450
				60	0.47									
TP FPW560S2-□	60	1/12	Three-Phase 200	50	0.48	600	85	450	63	1300	-			
				60	0.43							500	71	380
			Three-Phase 220	60	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									
			Single-Phase 230	50	0.81							605	85	1450
				60	0.71									
TP FPW690S2-□	90	1/8	Three-Phase 200	50	0.54	700	99	680	96	1300	-			
				60	0.51							570	80	1550
			Three-Phase 220	60	0.50	700	99	570	80	1600				
					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 M Ω 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)
Insulation Class	Class B [130°C (266°F)]
Overheat Protection	Built-in thermal protector (Automatic return type) Open: 130 \pm 5°C (266 \pm 9°F), Close: 82 \pm 15°C (179.6 \pm 27°F)
Ambient Temperature	Three-phase 200 VAC: -10 \sim +50°C (+14 \sim +122°F) (non-freezing) Single-phase 110/115 VAC, Single-Phase 220/230 VAC, Three-phase 220/230 VAC: -10 \sim +40°C (+14 \sim +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)	
	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)	
	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 (15.0)	1.7 (19.4)	2.2 (23)	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)	
	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)	
	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)	
	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)	
	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	
		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	0.29 (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)
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)	
	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)	
	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)
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)	3.5 (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)
	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)

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 = ×10⁻⁴kg-m² (oz-in²)

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)	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)	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)

Introduction

Induction Motors

Reversible Motors

Electro-magnetic Brake Motors

V Series

Clutch & Brake Motors

Synchronous Motors

Low-Speed Synchronous Motors

Wateright Dust-Resistant Motors

Torque Motors

Right-Angle Gearheads

Linear Heads

Brake Pack

Accessories

Installation

Dimensions Unit = mm (in.)

- Mounting screws are included with the motor. Dimensions for mounting screws → Page A-311
- Enter the gear ratio in the box (□) within the model name.

● 25 W (1/30 HP)

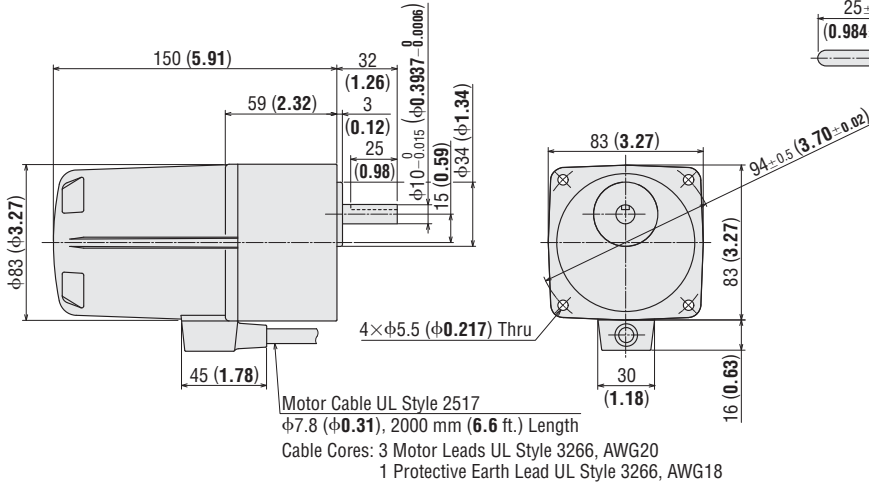
◇ Geared Motors

FPW425A2-□U, FPW425C2-□E, FPW425S2-□

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

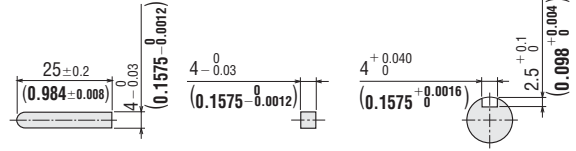
Mass: 3.0 kg (6.6 lb.)

DXF A226



◇ Key and Key Slot

(The key is included with the gearhead)



● 40 W (1/19 HP)

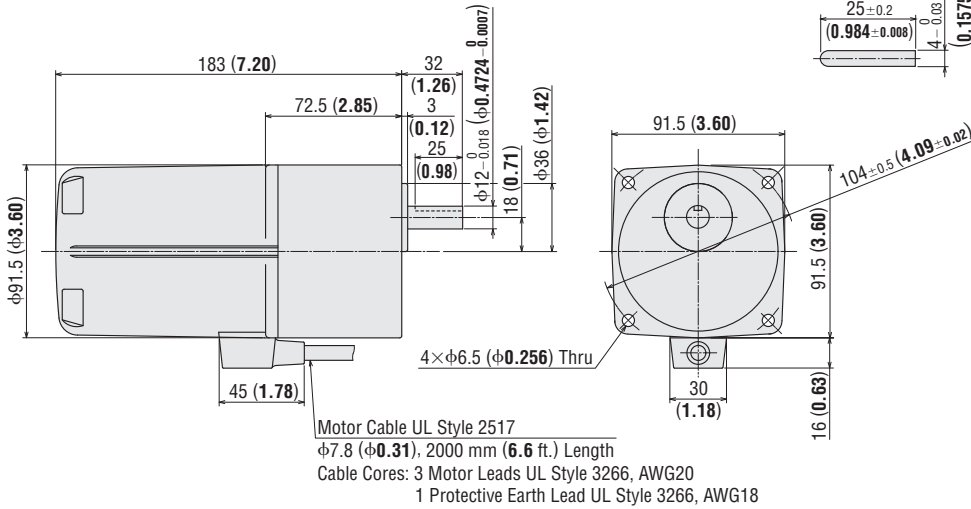
◇ Geared Motors

FPW540A2-□U, FPW540C2-□E, FPW540S2-□

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

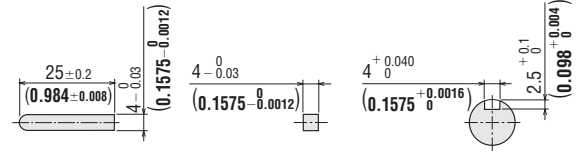
Mass: 4.0 kg (8.8 lb.)

DXF A227



◇ Key and Key Slot

(The key is included with the gearhead)



● 60 W (1/12 HP)

◇ Geared Motors

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

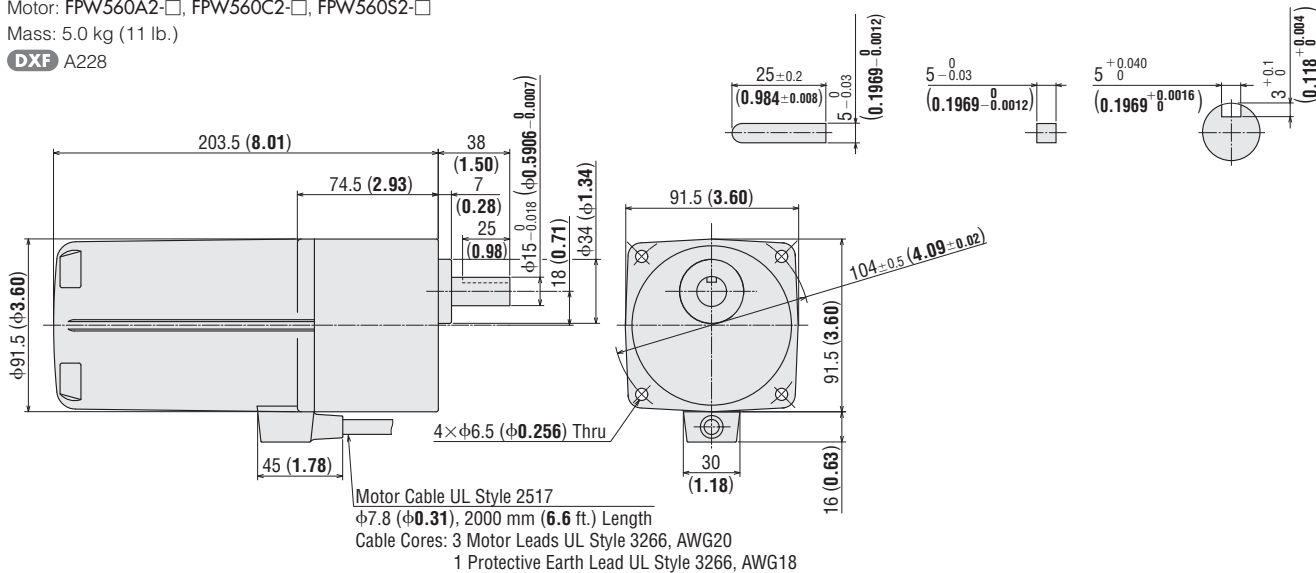
Motor: FPW560A2-□, FPW560C2-□, FPW560S2-□

Mass: 5.0 kg (11 lb.)

DXF A228

◇ Key and Key Slot

(The key is included with the gearhead)



● 90 W (1/8 HP)

◇ Geared Motors

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

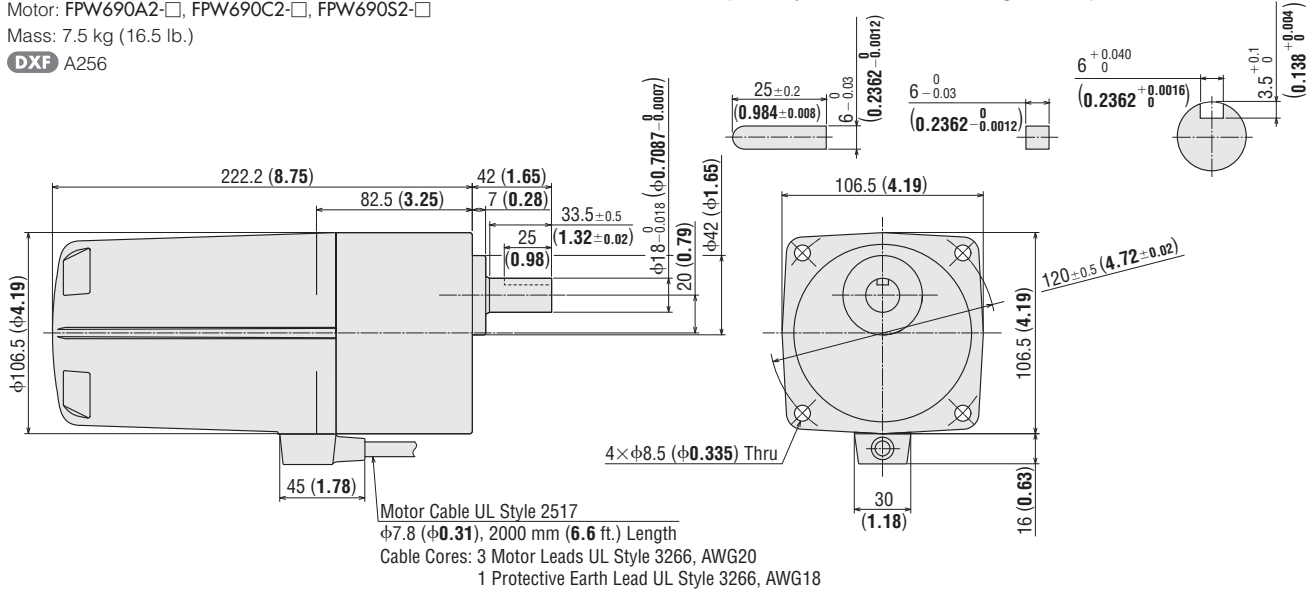
Motor: FPW690A2-□, FPW690C2-□, FPW690S2-□

Mass: 7.5 kg (16.5 lb.)

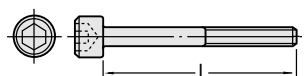
DXF A256

◇ Key and Key Slot

(The key is included with the gearhead)



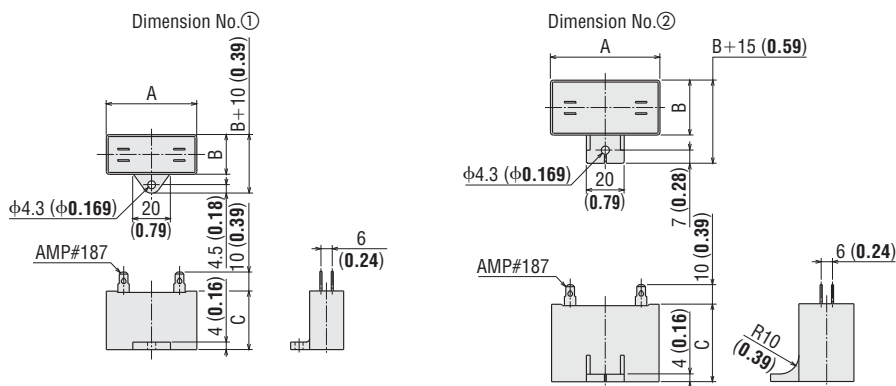
◇ Mounting Screws (Included) (Material: Stainless steel)



	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.

◇ 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)		
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)		
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				
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 A-313

● 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.

