

F2/F3 Type

Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Standard Specification
Model and Type Codes
Standard Model Lineup

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Standard Specification

F2 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Hollow Bore/F2S, Concentric Right Angle Shaft/F2F>

Series		MINI	
Motor Unit	Number of Phases	3-Phase	1-Phase
	Power	15 W to 90 W	
	Power Supply	Standard voltage 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz	Standard voltage 100 V/50 Hz, 100 V/60 Hz
		High Voltage (400 V Class) 380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz	High Voltage (200 V Class) 200 V/50 Hz, 200 V/60 Hz
	Insulation Class	Ins. B	
	Startup Method	Direct Power Input	Capacitor Run
	Cooling Method	Totally Enclosed Non-Ventilated (TENV) (IC410) or Totally Enclosed Fan Cooled (TEFC) (IC411)	
	Number of Motor Poles	4	
	Rating	Continuous	
Reducer	Reduction Method	Hypoid Gear and Helical Gear	
	Lubrication Type	Grease Lubrication (Maintenance-free)	
	Output Shaft	JIS Key (JIS B 1301-1996) (Plain form) * The key material is included with concentric right angle shaft types.	
	Output Shaft Material	Carbon Steel	
	Case Material	Aluminum	
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C	
	Ambient Humidity	85 % max (No Condensation)	
	Altitude	1,000 m max	
	Installation Environment	A place free from corrosive gas, explosive gas and/or vapor. Well ventilated place with no dust.	
	Installation Place	Indoors	
Paint	Paint Color	Gray	
Mounting Direction		No limitations in mounting angle	
Motor Characteristics		P.420 (F2S Type), P.423 (F2F Type)	
Performance Table		P.425 (F2S Type), P.431 (F2F Type)	
Drawings		P.436	

G/G3 Type
Parallel ShaftH/H2 Type
Right Angle ShaftF/F4 Type
Right Angle Hollow Bore/
Right Angle ShaftF2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Hollow Bore/F3S, Concentric Right Angle Shaft/F3F>

Series		MID			
Motor Unit	Number of Phases	3-Phase			1-Phase (Note 4)
	Power	0.1 kW to 2.2 kW			0.1 kW to 0.4 kW (1/8 HP to 1/2 HP)
	Power Supply	Type	Global Standards Conformance	Power Supply/Frequency	
		Standard Voltage	UL/CE/CCC	200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz	
		High Voltage (400 V Class)	UL/CE/CCC	380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz	
		Special Voltage	South Korea/Taiwan UL/CE/CCC	220 V/60 Hz, 380 V/60 Hz (Dual Voltage)	
			China UL/CE/CCC	220 V/50 Hz, 230 V/50 Hz, 380 V/50 Hz (Dual Voltage)	
			China/South Korea/Taiwan UL/CE/CCC	220 V/50 Hz, 220 V/60 Hz, 380 V/50 Hz, 380 V/60 Hz (Dual Voltage) (Note 1)	
			Europe/North America UL/cUL/CE/CCC	415 V/50 Hz, 440 V/50 Hz, 480 V/60 Hz	
			North America/ Europe UL/cUL/CE/CCC	230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz (Dual Voltage) (Note 2)	
			North America/ Europe UL/cUL/CE/CCC	208 V/60 Hz, 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz (Note 3)	
			Canada UL/cUL	575 V/60 Hz	
	Insulation Class	Ins. F			Ins. B
	Startup Method	Direct Power Input			Capacitor Start (0.1 kW: Capacitor Run)
Reducer	Cooling Method	Totally Enclosed Fan Cooled (TEFC) (IC411) (All of 0.1 kW and 0.2 kW models without brake are totally enclosed non-ventilated (TENV) (IC410))			Totally Enclosed Fan Cooled (TEFC) (IC411)
	Number of Motor Poles	4			
	Rating	Power	Motor Efficiency	UL/CE Standard	CCC Standard
		0.1 kW	IE1	Continuous	Continuous
		0.2 kW, 0.4 kW (Note 5)	IE2	Continuous	Short Time (120 minutes)
		0.75 kW or above	IE3, GB3	Continuous	Continuous
Reducer	Reduction Method	Hypoid Gear and Helical Gear			
	Lubrication Type	Grease Lubrication (Maintenance-free)			
	Output Shaft	JIS Key (JIS B 1301-1996) (Plain form) * The key material is included with concentric right angle shaft types.			
	Output Shaft Material	Carbon Steel			
	Case Material	Aluminum			
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C (Note 6)			
	Ambient Humidity	85 % max (No Condensation)			
	Altitude	1,000 m max			
	Installation Environment	A well ventilated place free from corrosive gas, explosive gas, vapor and/or chemicals Not to be exposed to direct rain. Not to be exposed to direct sunlight. The brake should not to be exposed to water, dust, oil/grease, or oil mist. Models with water protection rating IPX0 shall not be exposed directly to water.			
Paint	Paint Color	Gray			
Protective Structure (Note 7)		IP44 or IP40			IP40 or IP44
Mounting Direction		No limitations in mounting angle			
Motor Characteristics		P.421 (F3S Type), P.424 (F3F Type)			P.422
Performance Table		P.427 (F3S Type), P.433 (F3F Type)			P.430
Drawings		P.440			P.441

Note 1: Applicable motor power is 0.1 kW to 0.75 kW.

Note 2: Applicable motor power is 0.75 kW to 2.2 kW.

Note 3: Applicable motor power is 0.1 kW to 0.4 kW.

Note 4: Concentric right angle shaft types are not available in Single-Phase motors.

Note 5: For CCC Standard, Three-phase 0.2 kW and Three-phase 0.4 kW are certified under limited duty cycle. Please be cautious upon selecting the product.

Note 6: The ambient temperature for Single-phase motors with a power of 0.1 kW (capacitor run) is 0 °C to 40 °C.

Note 7: The protective structure differs depending on the model.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F2/F3 Type IP65 Gearmotors/IP65 Gearmotors with Brake <Concentric Right Angle Hollow Bore/F2S, F3S>

Series		MINI		MID				
Motor Unit	Number of Phases	3-Phase		1-Phase		3-Phase		
	Power	15 W to 90 W		15 W to 90 W		0.1 kW to 2.2 kW		
	Power Supply	Standard Voltage 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz	Standard Voltage 100 V/50 Hz, 100 V/60 Hz	Type	Global Standards Conformance	Power Supply/ Frequency		
				Standard Voltage	UL/CE/CCC		200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz	
				High Voltage (400 V Class)	UL/CE/CCC		380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz	
				Special Voltage	South Korea/ Taiwan UL/CE/CCC	220 V/60 Hz, 380 V/60 Hz (Dual Voltage)		
					China UL/CE/CCC	220 V/50 Hz, 230 V/50 Hz, 380 V/50 Hz (Dual Voltage)		
					China/South Korea/Taiwan UL/CE/CCC	220 V/50 Hz, 220 V/60 Hz, 380 V/50 Hz, 380 V/60 Hz (Dual Voltage) (Note 1)		
					Europe/North America UL/cUL/CE/CCC	415 V/50 Hz, 440 V/50 Hz, 480 V/60 Hz		
					North America/ Europe UL/cUL/CE/CCC	230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz (Dual Voltage) (Note 2)		
					North America/ Europe UL/cUL/CE/CCC	208 V/60 Hz, 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz (Note 3)		
					Canada UL/cUL	575 V/60 Hz		
	Insulation Class	Ins. B			Ins. F			
Startup Method	Direct Power Input		Capacitor Run		Direct Power Input			
Cooling Method	Totally Enclosed Non-Ventilated (TENV) (IC410)			Totally Enclosed Fan Cooled (TEFC) (IC411) (All of 0.1 kW and 0.2 kW models without brake are totally enclosed non-ventilated (TENV) (IC410))				
Number of Motor Poles	4							
Rating	Continuous		Power	Motor Efficiency	UL/CE Standard	CCC Standard		
			0.1 kW	IE1	Continuous	Continuous		
			0.2 kW, 0.4 kW (Note 4)	IE2	Continuous	Short Time (120 minutes)		
			0.75 kW or above	IE3, GB3	Continuous	Continuous		
Reducer	Reduction Method	Hypoid Gear and Helical Gear						
	Lubrication Type	Grease Lubrication (Maintenance-free)						
	Output Shaft	JIS Key (JIS B 1301-1996) (Plain form)						
	Output Shaft Material	Stainless Steel			Stainless steel or carbon steel			
	Case Material	Aluminum			Aluminum (Frame size 50: Aluminum Casting, Frame No. 55: Cast Iron)			
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C						
	Ambient Humidity	100 % max (No Condensation)						
	Altitude	1,000 m max						
	Installation Environment	A place free from corrosive gas, explosive gas and/or vapor. Not to be exposed to strong rain or wind. Not to be exposed to direct sunlight. Not suitable for use under water, under environments with exposure to high pressure such as water splashes, and under exposure to cleansing chemicals.						
Paint	Paint Color	Gray						
Protective Structure		IP65						
Mounting Direction		No limitations in mounting angle						
Motor Characteristics		P.456			P.457			
Performance Table		P.458			P.460			
Drawings		P.463			P.465			

F2 Type Speed Control Gearmotors <Concentric Right Angle Hollow Bore/F2S, Concentric Right Angle Shaft/F2F>

Series		MINI
Motor Unit	Number of Phases	1-Phase
	Power	15 W to 90 W
	Power Supply	Standard Voltage 100 V/50 Hz, 100 V/60 Hz
		High Voltage (200 V Class) 200 V/50 Hz, 200 V/60 Hz
	Insulation Class	Ins. B
	Startup Method	Capacitor Run
	Cooling Method	Totally Enclosed Non-Ventilated (TENV) (IC410) (60 to 90 W: provided with a forced fan)
	Number of Motor Poles	4
	Rating	Continuous
Reducer	Reduction Method	Hypoid Gear and Helical Gear
	Lubrication Type	Grease Lubrication (Maintenance-free)
	Output Shaft	JIS Key (JIS B 1301-1996) (Plain form)
	Output Shaft Material	Carbon Steel
	Case Material	Aluminum
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C
	Ambient Humidity	85 % max (No Condensation)
	Altitude	1,000 m max
	Installation Environment	A place free from corrosive gas, explosive gas and/or vapor. Well ventilated place with no dust.
	Installation Place	Indoors
Paint	Paint Color	Gray
Mounting Direction		No limitations in mounting angle
Motor Characteristics		P.470
Performance Table		P.472
Drawings		P.476

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type Reducers (Double Shaft Type) <Concentric Right Angle Hollow Bore/F3S>

Series		MID
4 Poles Motor Power Class		0.1 kW Class to 2.2 kW Class
Reducer	Reduction Method	Hypoid Gear and Helical Gear
	Lubrication Type	Grease Lubrication (Maintenance-free)
	Output Shaft	JIS Key (JIS B 1301-1996 plain form) * The key is not included with the motor.
	Input Shaft	JIS Key (JIS B 1301-1996 plain form) * The key is not included with the motor.
	Output Shaft Material	Carbon Steel
	Input Shaft Material	Carbon Steel
	Case Material	Aluminum
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C
	Ambient Humidity	85 % max (No Condensation)
	Altitude	1,000 m max
	Installation Environment	A place free from corrosive gas, explosive gas and/or vapor. Well ventilated place with no dust.
	Installation Place	Indoors
Paint	Paint Color	Gray
Mounting Direction		No limitations in mounting angle
Performance Table		P.480
Drawings		P.482

F3 Type S-Type Reducers <Concentric Right Angle Hollow Bore/F3S>

Series		MID
4 Poles Motor Power Class		0.1 kW Class to 2.2 kW Class
Reducer	Reduction Method	Hypoid Gear and Helical Gear
	Lubrication Type	Grease Lubrication (Maintenance-free)
	Output Shaft	JIS Key (JIS B 1301-1996) (Plain form) * Key not included.
	Output Shaft Material	Carbon Steel
	Case Material	Aluminum
Ambient Conditions	Ambient Temperature	-10 °C to 40 °C
	Ambient Humidity	85 % max (No Condensation)
	Altitude	1,000 m max
	Installation Environment	A place free from corrosive gas, explosive gas and/or vapor. Well ventilated place with no dust.
Paint	Paint Color	Gray
	Paint Color	Gray
Mounting Direction		No limitations in mounting angle
Performance Table		P.486
Drawings		P.488

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F2 Type Gearmotors/Gearmotors with Brake MINI Series <Concentric Right Angle Hollow Bore/F2S, Concentric Right Angle Shaft/F2F>

Mounting Type	Motor Type	Frame Size	Shaft Arrangement	Reduction Ratio	Motor Power	Supply Voltage	Terminal Box	Option	Option Code
F2S	M	12		30	T25				
F2F	B	18	L	200	S60	W	C	X	T6
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Mounting Type	F2S : Concentric Right Angle Hollow Bore F2F : Concentric Right Angle Shaft
② Motor Type	M : With Motor B : Brakemotor MR : Motor with Simple Brake (option)
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter
④ Shaft Arrangement	Concentric Right Angle Hollow Bore Blank Concentric Right Angle Shaft Viewing from the input shaft, the output shaft would be on the left side L Viewing from the input shaft, the output shaft would be on the both sides T
⑤ Reduction Ratio	10: 1/10 to 240: 1/240 T15 : 3-Phase 15 W T25 : 3-Phase 25 W T40 : 3-Phase 40 W T60 : 3-Phase 60 W T90 : 3-Phase 90 W S15 : 1-Phase 15 W S25 : 1-Phase 25 W S40 : 1-Phase 40 W S60 : 1-Phase 60 W S90 : 1-Phase 90 W
⑥ Motor Power	
⑦ Supply Voltage (High Voltage (400 V Class): is Option)	Blank : Standard Voltage 3-Phase: 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz 1-Phase: 100 V/50 Hz, 100 V/60 Hz W : High Voltage 3-Phase: 380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz 1-Phase: 200 V/50 Hz, 200 V/60 Hz
⑧ Terminal Box (Option)	Blank : Flying Leads (Standard Type) T : T Type Terminal Box K : K Type Terminal Box C : Terminal Box with Built-in Rectifier for Gearmotor with Brake (Note 1)
⑨ Option	Blank : Standard Specification X : Special Specification Code
⑩ Option Code (Note 2)	Lead Wires/Terminal Box Position Code Please refer to the list of option codes on page 557 for details.

Note 1: When using an inverter for a C type terminal box, be sure to designate an AC switching (A) connection.

Please refer to page 567 for details.

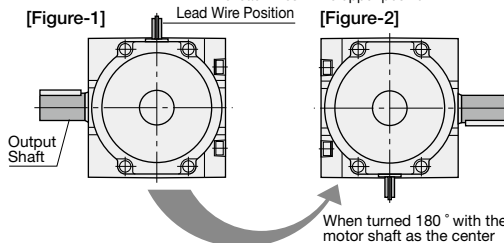
Note 2: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

■ F2F (right angle shaft) shaft arrangement

The L shaft of the F2F (concentric right angle shaft) is as shown in [Figure-1]. The F2 type is designed for concentric flange mount on both sides, and the output shaft can therefore be positioned on the right side as shown in [Figure-2] by rotating the gearmotor to 180°.

In this case, however, the lead wires will be in the lower position. If you want to set the lead wires in the upper position for the convenience of use, place an order for the lead wire lower position (option code "T6") for a standard product [Figure-1]. By rotating the gearmotor to 180° in this state, the output shaft will be positioned on the right side with the lead wires in the upper position. Please refer to page 557 for changes of the lead wire position.

<Figure when viewed from the motor side>



G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type Gearmotors/Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/F3S, Concentric Right Angle Shaft/F3F> [3-Phase]

Gearhead Type					Motor Type							Brake Specifications	Option	
Mounting Type	Frame Size	Shaft Arrangement	Reduction Ratio		Motor Type	Motor Specifications	Motor Power	Number of Phases	Supply Voltage	Standards	Terminal Box	Brake	Option	Option Code
F3F	18	T	15	—	M	M	01	T	N	N	T	N		
F3S	35	N	100	—	M	M	04	T	W	N	T	B4	X	AA
F3S	55	N	240	—	M	R	15	T	K	N	T	B2	X	T9HZ
①	②	③	④		⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

① Mounting Type	F3S : Concentric Right Angle Hollow Bore F3F : Concentric Right Angle Shaft				
② Frame Size and Output Shaft Diameter	Output Shaft Diameter				
③ Shaft Arrangement	Material	Shaft Arrangement			
		Right Angle Hollow Bore	Right Angle Shaft		
		Carbon Steel	N	Viewing from the input shaft (↑), the output shaft would be on the left side ↑	Viewing from the input shaft (↑), the output shaft would be on the right side ↑
④ Reduction Ratio	5: 1/5 to 15X: 1/1500				
⑤ Motor Type	M : Standard Induction Motor (IP40 or IP44)				
⑥ Motor Specifications (Note 1)	M : IE1 Efficiency Ins. F (0.1 kW)				
	IE2 Efficiency Ins. F (0.2 kW to 0.4 kW)				
⑦ Motor Power	R : IE3 Efficiency Ins. F (0.75 kW to 2.2 kW)				
	01 : 0.1 kW				
	02 : 0.2 kW				
	04 : 0.4 kW				
	08 : 0.75 kW				
	15 : 1.5 kW				
⑧ Number of Phases	22 : 2.2 kW				
	T : 3-Phase				
⑨ Supply Voltage	⑨ Supply Voltage (Note 2)				⑫ Brake Specifications (Note 3)
	N : 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz				N B2 B4 J2 J4
	W : 380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz				○ ○ ○ ○ ○
	K : 220 V/60 Hz, 380 V/60 Hz				○ ○ ○ ○ ○
	C : 220 V/50 Hz, 230 V/50 Hz, 380 V/50 Hz				○ ○ ○ ○ ○
	D : 220 V/50 Hz, 220 V/60 Hz, 380 V/50 Hz, 380 V/60 Hz				○ ○ ○ ○ ○
	E : 415 V/50 Hz, 440 V/50 Hz, 480 V/60 Hz				○ ○ ○ ○ ○
	U : 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz				○ ○ ○ ○ ○
	A : 208 V/60 Hz, 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz				○ ○ ○ ○ ○
	M : 575 V/60 Hz				○ ○ ○ ○ ○
⑩ Standards	N : CE/UL/CCC				
	A : UL				
⑪ Terminal Box (Note 4)	Note: Supply Voltage : M (575 V/60 Hz) only				
	T : T Type Terminal Box (Steel Plate)				
⑫ Brake Specifications (Note 5)	N : Flying Leads				
	N : No Brake				
	B2 : 200 V Class Brake				
	B4 : 400 V Class Brake				
	J2 : 200 V Class Brake with Manual Brake Release Lever (optional)				
⑬ Option	J4 : 400 V Class Brake with Manual Brake Release Lever (optional)				
	Blank : Standard Specification				
⑭ Option Code (Note 6)	X : Special Specification Code				
	Built-in Rectifier Connection Code				
	Please refer to the list of option codes on page 537 for details.				
	Terminal Box Position Code				
	Please refer to the list of option codes on page 559 for details.				
	Please refer to the option code list on page 970 for codes used for other special options.				

Note 1: For CCC Standard, 0.2 kW and 0.4 kW are certified under limited duty cycle. Please be cautious upon selecting the product.

Note 2: Refer to the following for the corresponding motor powers for supply voltages.

Supply voltage D: 0.1 kW to 0.75 kW Supply voltage U: 0.75 kW to 2.2 kW Supply voltage A: 0.1 kW to 0.4 kW

Dual voltage is not available for gearmotors with brake and supply the voltage code "K", "C", "D", "U" and "A".

The motor voltage is limited by the brake specifications.

Note 3: ○ indicates a brake specification that can be manufactured.

Note 4: With regard to the types of flying leads, only supply voltage codes N are covered.

Note 5: The rectifier is included with the product.

Note 6: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

F3 Type Gearmotors/Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/ F3S> [1-Phase]

Gearhead Type				Motor Type								Brake Specifications	Option	
Mounting Type	Frame Size	Shaft Arrangement	Reduction Ratio	Motor Type	Motor Specifications	Motor Power	Number of Phases	Supply Voltage	Standards	Terminal Box	Brake	Option	Option Code	
F3S	20	N	5	M	M	01	S	N	J	A	N			
F3S	30	N	120	M	M	02	C	W	J	A	B2			
F3S	35	N	80	M	M	04	C	N	J	A	B2	X	T9HZ	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	

① Mounting Type (Note 1)	F3S : Concentric Right Angle Hollow Bore
② Frame Size and Output Shaft Diameter	Output Shaft (Internal Diameter)
③ Shaft Arrangement	N : Concentric Right Angle Hollow Bore
④ Reduction Ratio	5: 1/5 to 12X: 1/1200
⑤ Motor Type	M : Standard Induction Motor (IP44 or IP40)
⑥ Motor Specifications	M : IE1 Efficiency Ins. B
⑦ Motor Power	01 : 0.1 kW
	02 : 0.2 kW
	04 : 0.4 kW
⑧ Number of Phases	S : 1-Phase Capacitor Run (Note 2)
	C : 1-Phase Capacitor Start
⑨ Supply Voltage (Note 3)	N : 100 V/50 Hz, 100 V/60 Hz
	W : 200 V/50 Hz, 200 V/60 Hz
⑩ Standards	J : No Standards
⑪ Terminal Box	A : A Type Terminal Box (Aluminum)
⑫ Brake Specifications	N : No Brake
	B2 : 200 V Class Brake
⑬ Option	Blank : Standard Specification
	X : Special Specification Code
⑭ Option Code (Note 4)	Terminal Box Position Code Please refer to page 561 for details.

Note 1: Concentric right angle shaft types are not available.

Note 2: 1-phase capacitor run type motors have built-in thermal protectors.

Refer to page 618 for the cautions for use.

Note 3: For voltages/frequencies not listed above, please contact your nearest Sales Office or the CS Center.

Note 4: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F2 Type IP65 Gearmotors/IP65 Gearmotors with Brake MINI Series <Concentric Right Angle Hollow Bore/ F2S>

Mounting Type	Motor Type	Frame Size	Reduction Ratio	Motor Power	Option	Option Code
F2S	W	12	30	T25		
F2S	V	15	200	S40	X	H3
①	②	③	④	⑤	⑥	⑦

① Mounting Type (Note 1)	F2S : Concentric Right Angle Hollow Bore
② Motor Type	W : IP65 Motor V : IP65 Brakemotor
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter
④ Reduction Ratio	10: 1/10 to 240: 1/240
⑤ Motor Power and Supply Voltage/ Frequency	T15 : 3-Phase 15 W
	T25 : 3-Phase 25 W
	T40 : 3-Phase 40 W
	T60 : 3-Phase 60 W
	T90 : 3-Phase 90 W
	S15 : 1-Phase 15 W
	S25 : 1-Phase 25 W
	S40 : 1-Phase 40 W
⑥ Option	3-Phase : 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz 1-Phase : 100 V/50 Hz, 100 V/60 Hz
	Blank : Standard Specification X : Special Specification Code
⑦ Option Code (Note 2)	Cabtyre Cable Position Code Please refer to the list of option codes on page 557 for details.

Note 1: Concentric right angle shaft types are not available.

Note 2: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type IP65 Gearmotors/IP65 Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/ F3S> [3-Phase]

Gearhead Type					Motor Type							Brake Specifications	Option	
Mounting Type	Frame Size	Shaft Arrangement	Reduction Ratio		Motor Type	Motor Specifications	Motor Power	Number of Phases	Supply Voltage	Standards	Terminal Box	Brake	Option	Option Code
F3S	20	N	15	—	W	M	01	T	N	N	E	N		
F3S	35	S	100	—	W	M	04	T	W	N	E	V4	X	AA
F3S	55	N	240	—	W	R	15	T	K	N	E	N		
①	②	③	④		⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

① Mounting Type (Note 1)	F3S : Concentric Right Angle Hollow Bore		
② Frame Size and Output Shaft Diameter	Output Shaft Diameter		
③ Shaft Arrangement	Material		Shaft Arrangement
			Right Angle Hollow Bore
	Carbon Steel		N
	Stainless Steel		S
④ Reduction Ratio	5: 1/5 to 15X: 1/1500		
⑤ Motor Type	W : IP65 Induction Motor		
⑥ Motor Specifications (Note 2)	M : IE1 Efficiency Ins. F (0.1 kW)		
	IE2 Efficiency Ins. F (0.2 kW to 0.4 kW)		
	R : IE3 Efficiency Ins. F (0.75 kW to 2.2 kW)		
⑦ Motor Power	01 : 0.1 kW		
	02 : 0.2 kW		
	04 : 0.4 kW		
	08 : 0.75 kW		
	15 : 1.5 kW		
	22 : 2.2 kW		
⑧ Number of Phases (Note 3)	T : 3-Phase		
⑨ Supply Voltage	⑨ Supply Voltage (Note 4)		⑫ Brake Specifications (Note 5)
			N V2 V4
	N : 200 V/50 Hz, 200 V/60 Hz, 220 V/60 Hz		○ ○ ○
	W : 380 V/50 Hz, 400 V/50 Hz, 400 V/60 Hz, 440 V/60 Hz		○ ○ ○
	K : 220 V/60 Hz, 380 V/60 Hz		○ ○ ○
	C : 220 V/50 Hz, 230 V/50 Hz, 380 V/50 Hz		○ ○ ○
	D : 220 V/50 Hz, 220 V/60 Hz, 380 V/50 Hz, 380 V/60 Hz		○ ○ ○
	E : 415 V/50 Hz, 440 V/50 Hz, 480 V/60 Hz		○ ○ ○
	U : 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz		○ ○ ○
	A : 208 V/60 Hz, 230 V/60 Hz, 460 V/60 Hz, 400 V/50 Hz		○ ○ ○
	M : 575 V/60 Hz		○ ○ ○
⑩ Standards	N : CE/UL/CCC		
	A : UL		
	* Supply Voltage : M (575 V/60 Hz) only		
⑪ Terminal Box	E : E Type Terminal Box (Aluminum)		
⑫ Brake Specifications	N : No Brake		
	V2 : IP65 200 V Class Brake (Note 6)		
	V4 : IP65 400 V Class Brake (Note 6)		
⑬ Option	Blank : Standard Specification		
	X : Special Specification Code		
⑭ Option Code (Note 7)	Built-in Rectifier Connection Code		
	Please refer to the list of option codes on page 537 for details.		
	Terminal Box Position Code		
	Please refer to the list of option codes on page 559 for details.		
	Please refer to the option code list on page 970 for codes used for other special options.		

Note 1: Concentric right angle shaft types are not available.

Note 2: For CCC Standard, 0.2 kW and 0.4 kW are certified under limited duty cycle. Please be cautious upon selecting the product.

Note 3: Single-phase types are not available.

Note 4: Refer to the following for the corresponding motor powers for supply voltages.

Supply voltage D: 0.1 kW to 0.75 kW Supply voltage U: 0.75 kW to 2.2 kW Supply voltage A: 0.1 kW to 0.4 kW

Dual voltage is not available for gearmotors with brake and supply the voltage code "K", "C", "D", "U" and "A".

The motor voltage is limited by the brake specifications.

Note 5: ○ indicates a brake specification that can be manufactured.

Note 6: IP65 gearmotors with a brake are not available with motor powers of 1.5 kW and 2.2 kW.

Note 7: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F2 Type Speed Control Gearmotors MINI Series <Concentric Right Angle Hollow Bore/F2S, Concentric Right Angle Shaft/F2F> [1-Phase]

Mounting Type	Motor Type	Frame Size	Shaft Arrangement	Reduction Ratio	Motor Power	Supply Voltage	Terminal Box	Option	Option Code
F2S	U	12		30	S25				
F2F	P	18	T	240	S90	W	C	X	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

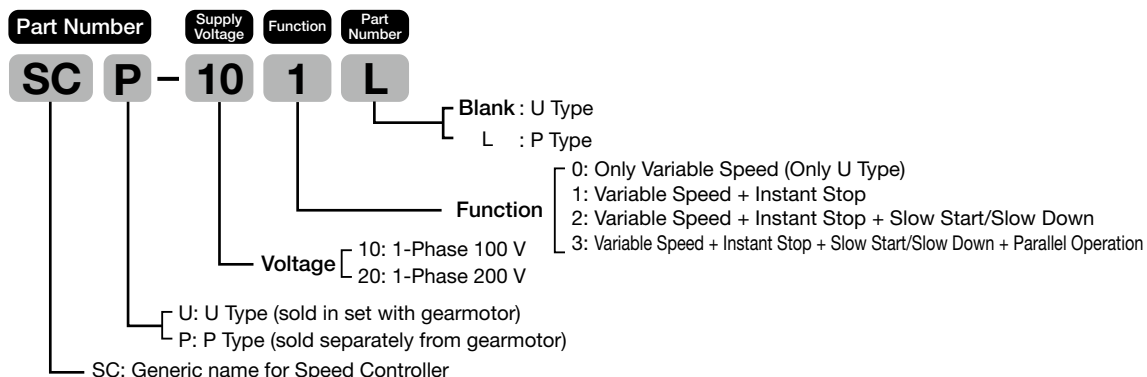
① Mounting Type	F2S : Concentric Right Angle Hollow Bore F2F : Concentric Right Angle Shaft	
② Motor Type	U : U Type with Speed Control Motor (Controller Set) P : P Type with Speed Control Motor (Controller: Sold Separately)	
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter	
④ Shaft Arrangement	Concentric Right Angle Hollow Bore	Blank
	Concentric Right Angle Shaft	Viewing from the input shaft, the output shaft would be on the left side  L Viewing from the input shaft, the output shaft would be on the both sides  T
⑤ Reduction Ratio	10: 1/10 to 240: 1/240	
⑥ Motor Power	S15 : 1-Phase 15 W	
	S25 : 1-Phase 25 W	
	S40 : 1-Phase 40 W	
	S60 : 1-Phase 60 W	
	S90 : 1-Phase 90 W	
⑦ Supply Voltage (High Voltage (200 V Class): is Option)	Blank : Standard Voltage 1-Phase 100 V/50 Hz, 100 V/60 Hz	
	W : High Voltage 1-Phase 200 V/50 Hz, 200 V/60 Hz	
⑧ Terminal Box (Option) (Note 1)	Blank : Flying Leads (Standard Type)	
	C : Terminal Box for P Type	
⑨ Option	Blank : Standard Specification	
	X : Special Specification Code	
⑩ Option Code (Note 2)	Lead Wires/Terminal Box Position Code Please refer to the list of option codes on page 557 for details.	

Note 1: Please refer to page 614 for the specifications of terminal boxes.

Note 2: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

Controllers

Type Code



F3 Type Reducers (Double Shaft Type) MID Series <Concentric Right Angle Hollow Bore/F3S>

Mounting Type	Motor Type	Frame Size	Reduction Ratio	Motor Power Class	Option	Terminal Box	Option	Option Code
F3S		30	50	040				
F3S		45	240	075			X	
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Mounting Type (Note 1)	F3S : Concentric Right Angle Hollow Bore
② Motor Type	Blank : Without Motor (Double Shaft Type)
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter (Internal Diameter)
④ Reduction Ratio	5: 1/5 240: 1/240
⑤ Motor Power Class	010 : 0.1 kW Class
	020 : 0.2 kW Class
	040 : 0.4 kW Class
	075 : 0.75 kW Class
	150 : 1.5 kW Class
⑥ ⑦ Options	220 : 2.2 kW Class
	Blank : Standard Specification There is no applicable option.
⑧ Option	Blank : Standard Specification
	X : Special Specification Code
⑨ Option Code (Note 2)	Blank : Standard Specification

Note 1: Right angle shaft types are not available.

Note 2: The option code will not be shown in the nomenclature on the nameplate. But it will be shown in the Option code row of the nameplate.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type S-Type Reducers MID Series <Concentric Right Angle Hollow Bore/F3S>

Mounting Type	Motor Type	Frame Size	Reduction Ratio	Motor Power Class	Option	Terminal Box	Option
F3S	S	30	50	040			
F3S	S	45	240	075			X
①	②	③	④	⑤	⑥	⑦	⑧

① Mounting Type (Note 1)	F3S : Right Angle Hollow Bore
② Motor Type	S : Reducer designed for Designated Motor (S-Type)
③ Frame Size and Output Shaft Diameter	Output Shaft Diameter (Hollow Bore Size)
④ Reduction Ratio	5: 1/5 240: 1/240
⑤ Motor Power Class	010 : 0.1 kW Class
	020 : 0.2 kW Class
	040 : 0.4 kW Class
	075 : 0.75 kW Class
	150 : 1.5 kW Class
	220 : 2.2 kW Class
⑥ ⑦ Options	Blank : Standard Specification
⑧ Option	Blank : Standard Specification
	X : Special Specification Code

Note 1: Right angle shaft types are not available.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

Standard Model Lineup

Model and Type Codes Standard Model Lineup

F2 Type Gearmotors/Gearmotors with Brake MINI Series <Concentric Right Angle Hollow Bore/ F2S>

Part Number	4 Poles Motor Power	Frame Size	Reduction Ratio							
Gearmotors	3-Phase 15 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 15 W		1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 25 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 25 W		1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 40 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 40 W	15	1/80	1/100	1/120					
			1/160	1/200	1/240					
	3-Phase 60 W	(Note 1) 12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 60 W	15	1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 90 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
Gearmotors with Brake	1-Phase 90 W		1/80	1/100	1/120	1/160	1/200	1/240		

Note 1: The frame size for types other than Three-phase standard voltage types will be 15. The frame size for all Single-phase types is 15.

Note 2: indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

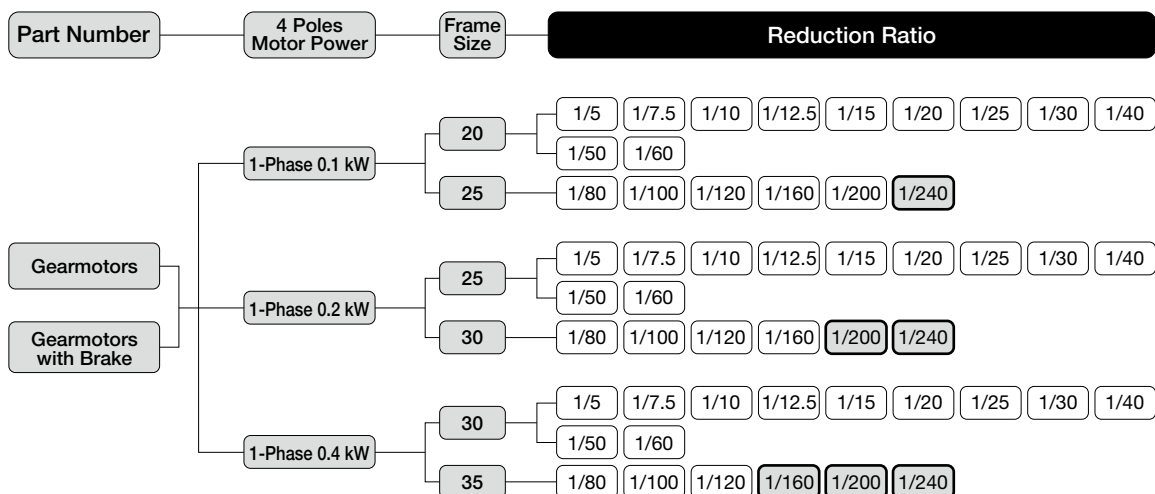
F3 Type Gearmotors/Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/ F3S>

Part Number	4 Poles Motor Power	Frame Size	Reduction Ratio										
G/G3 Type Parallel Shaft	3-Phase 0.1 kW	20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
		25	1/50	1/60									
H/H2 Type Right Angle Shaft	3-Phase 0.2 kW	(Note 1) 20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
		25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
F/F4 Type Right Angle Hollow Bore/ Right Angle Shaft	3-Phase 0.4 kW	(Note 1) 25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
		30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	3-Phase 0.75 kW	(Note 1) 30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
		35	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
Technical Documentation	3-Phase 1.5 kW	(Note 1) 35	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
		45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
Option	3-Phase 2.2 kW	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			

Note 1: Small frame size type.

Note 2: indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F3 Type Gearmotors/Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/ F3S>



Note 1:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F2 Type Gearmotors/Gearmotors with Brake MINI Series <Concentric Right Angle Shaft/ F2F>

Part Number	4 Poles Motor Power	Frame Size	Shaft Arrangement	Reduction Ratio							
Gearmotors	3-Phase 15 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 15 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 25 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 25 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 40 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120					
	1-Phase 40 W	18	L	1/160	1/200	1/240					
			T								
Gearmotors with Brake	3-Phase 60 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T								
	1-Phase 60 W	18	L	1/80	1/100	1/120	1/160	1/200	1/240		
			T								
	3-Phase 90 W	18	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 90 W	18	L	1/160	1/200	1/240					
			T								

Note 1: The frame size for types other than Three-phase standard voltage types is 18. The frame size for all Single-phase types is 18.

Note 2:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F3 Type Gearmotors/Gearmotors with Brake MID Series <Concentric Right Angle Shaft/ F3F>

Part Number	4 Poles Motor Power	Frame Size	Shaft Arrangement	Reduction Ratio														
Gearmotors	3-Phase 0.1 kW	18	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40	G/G3 Type Parallel Shaft					
			R	1/50	1/60													
			T															
		22	L	1/80	1/100	1/120	1/160	1/200	1/240									
			R															
			T															
	3-Phase 0.2 kW	(Note 1) 18	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	H/H2 Type Right Angle Shaft						
			R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30							
			T	1/50	1/60													
		22	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
			R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
			T	1/50	1/60													
		28	L	1/80	1/100	1/120	1/160	1/200	1/240									
			R	1/80	1/100	1/120	1/160	1/200	1/240									
		3-Phase 0.4 kW	(Note 1) 22	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	F/FA Type Right Angle Hollow Bore/ Right Angle Shaft					
				R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30						
				T	1/50	1/60												
	28		L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
			R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
			T	1/50	1/60													
	Gearmotors with Brake	3-Phase 0.4 kW	32	L	1/80	1/100	1/120	1/160	1/200	1/240								
				R	1/80	1/100	1/120	1/160	1/200	1/240								
				T	1/80	1/100	1/120	1/160	1/200	1/240								
Brakemotors with Manual Release			3-Phase 0.75 kW	(Note 1) 28	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft				
					R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30					
					T	1/50	1/60											
	32	L		1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
		R		1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40						
		T		1/50	1/60													
	40	L	1/80	1/100	1/120	1/160	1/200	1/240										
		R	1/80	1/100	1/120	1/160	1/200	1/240										
		T	1/80	1/100	1/120	1/160	1/200	1/240										
3-Phase 1.5 kW	(Note 1) 32	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	Technical Documentation							
		R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30								
		T	1/50	1/60														
	40	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40							
		R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40							
		T	1/50	1/60														
3-Phase 2.2 kW	40	L	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	Option							
		R	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30								
		T	1/50	1/60														

Note 1: Small frame size type.

Note 2: indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F2 Type IP65 Gearmotors/IP65 Gearmotors with Brake MINI Series <Concentric Right Angle Hollow Bore/ F2S>

Part Number	4 Poles Motor Power	Frame Size	Reduction Ratio							
IP65 Gearmotors	3-Phase 15 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 15 W		1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 25 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
	1-Phase 25 W		1/80	1/100	1/120	1/160	1/200	1/240		
IP65 Gearmotors with Brake	3-Phase 40 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120					
		15	1/160	1/200	1/240					
	1-Phase 40 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 60 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	3-Phase 90 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		

Note 1: Single-phase types are not available for 60 W and 90 W.

Note 2:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F3 Type IP65 Gearmotors/IP65 Gearmotors with Brake MID Series <Concentric Right Angle Hollow Bore/ F3S>

Part Number	4 Poles Motor Power	Frame Size	Reduction Ratio										
IP65 Gearmotors	3-Phase 0.1 kW	20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		25	1/80	1/100	1/120	1/160	1/200	1/240					
	3-Phase 0.2 kW	(Note 1) 20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
			1/50	1/60									
		25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		30	1/80	1/100	1/120	1/160	1/200	1/240					
	3-Phase 0.4 kW	(Note 1) 25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			
			1/50	1/60									
		30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		35	1/80	1/100	1/120	1/160	1/200	1/240					
	IP65 Gearmotors with Brake	3-Phase 0.75 kW	(Note 1) 30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30		
				1/50	1/60								
35			1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
45		1/80	1/100	1/120	1/160	1/200	1/240						
3-Phase 1.5 kW	(Note 2) (Note 1) 35	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30				
		1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40			
		1/50	1/60										
	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40			
		1/50	1/60										
3-Phase 2.2 kW	(Note 2) 45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30				

Note 1: Small frame size type.

Note 2: IP65 gearmotors with a brake are not available with motor powers of 1.5 kW and 2.2 kW.

Note 3: indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

Technical Documentation

Option

F2 Type Speed Control Gearmotors MINI Series <Concentric Right Angle Hollow Bore/F2S>

Part Number	4 Poles Motor Power	Frame Size	Reduction Ratio							
Speed Control Gearmotors	1-Phase 15 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 25 W	12	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 40 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 60 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 90 W	15	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			1/80	1/100	1/120	1/160	1/200	1/240		

Note 1:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F2 Type Speed Control Gearmotors MINI Series <Concentric Right Angle Shaft/F2F>

Part Number	4 Poles Motor Power	Frame Size	Shaft Arrangement	Reduction Ratio							
Speed Control Gearmotors	1-Phase 15 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 25 W	15	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 40 W	18	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 60 W	18	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		
	1-Phase 90 W	18	L	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
			T	1/80	1/100	1/120	1/160	1/200	1/240		

Note 1:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F3 Type Reducers (Double Shaft Type) MID Series <Concentric Right Angle Hollow Bore/F3S>

Part Number	Motor Power Class	Frame Size	Reduction Ratio													
Reducers (Double Shaft Type)	0.1 kW	20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40	G/G3 Type Parallel Shaft				
			1/50	1/60												
	0.1 kW	25	1/80	1/100	1/120	1/160	1/200	1/240								
	0.2 kW	25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		H/H2 Type Right Angle Shaft			
			1/50	1/60												
	0.2 kW	30	1/80	1/100	1/120	1/160	1/200	1/240								
	0.4 kW	30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40			F/FA Type Right Angle Hollow Bore/ Right Angle Shaft		
			1/50	1/60												
	0.4 kW	35	1/80	1/100	1/120	1/160	1/200	1/240								
	0.75 kW	35	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40				F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	
			1/50	1/60												
	0.75 kW	45	1/80	1/100	1/120	1/160	1/200	1/240								
	1.5 kW	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40					
			1/50	1/60												
	2.2 kW	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30						

Note 1:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

F3 Type S-Type Reducers MID Series <Concentric Right Angle Hollow Bore/F3S>

Part Number	Motor Power Class	Frame Size	Reduction Ratio										
S-Type Reducers	0.1 kW	20	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		25	1/80	1/100	1/120	1/160	1/200	1/240					
	0.2 kW	25	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		30	1/80	1/100	1/120	1/160	1/200	1/240					
	0.4 kW	30	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		35	1/80	1/100	1/120	1/160	1/200	1/240					
	0.75 kW	35	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
		45	1/80	1/100	1/120	1/160	1/200	1/240					
	1.5 kW	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30	1/40		
			1/50	1/60									
	2.2 kW	45	1/5	1/7.5	1/10	1/12.5	1/15	1/20	1/25	1/30			

Note 1:  indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

MEMO

Option	Technical Documentation	F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	F/FA Type Right Angle Hollow Bore/ Right Angle Shaft	H/H2 Type Right Angle Shaft	G/G3 Type Parallel Shaft
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1. Gearmotors

Gearmotors with Brake

1-1. Motor Characteristics Table

F2 Type 3-Phase Standard Voltage <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)
MINI	15	200/200/220	50/60/60	12	0.14/0.13/0.13	1350/1550/1600	0.30/0.28/0.31
	25	200/200/220	50/60/60	12	0.21/0.19/0.19	1350/1550/1600	0.44/0.42/0.46
	40	200/200/220	50/60/60	12	0.29/0.27/0.27	1350/1550/1600	0.67/0.62/0.68
				15	0.27/0.26/0.26	1350/1550/1550	0.73/0.69/0.76
	60	200/200/220	50/60/60	12	0.42/0.39/0.39	1350/1550/1550	0.94/0.86/1.00
				15	0.40/0.36/0.36	1350/1550/1600	1.04/0.97/1.07
	90	200/200/220	50/60/60	15	0.51/0.48/0.48	1350/1550/1550	1.42/1.36/1.49

F2 Type 3-Phase High Voltage (400 V Class) <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)
MINI	15	380/400/400/440	50/50/60/60	12	0.11/0.12/0.10/0.11	1400/1400/1700/1700	0.26/0.28/0.26/0.29
	25	380/400/400/440	50/50/60/60	12	0.11/0.12/0.11/0.12	1350/1400/1600/1650	0.26/0.28/0.26/0.29
	40	380/400/400/440	50/50/60/60	12	0.14/0.14/0.14/0.14	1300/1350/1550/1600	0.30/0.32/0.30/0.33
				15	0.13/0.14/0.13/0.14	1300/1350/1550/1600	0.33/0.35/0.33/0.37
	60	380/400/400/440	50/50/60/60	15	0.17/0.17/0.17/0.17	1300/1350/1550/1600	0.43/0.45/0.43/0.47
	90	380/400/400/440	50/50/60/60	15	0.26/0.26/0.26/0.26	1300/1350/1550/1600	0.70/0.74/0.69/0.77

F2 Type 1-Phase Standard Voltage <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)	Capacitor (μF)
MINI	15	100/100	50/60	12	0.39/0.35	1350/1650	0.72/0.67	5
	25	100/100	50/60	12	0.48/0.48	1350/1600	0.86/0.80	7
	40	100/100	50/60	12	0.67/0.80	1400/1650	1.26/1.23	12
				15	0.61/0.66	1350/1650	1.43/1.36	10
	60	100/100	50/60	15	0.90/1.00	1350/1600	2.11/1.98	15
	90	100/100	50/60	15	1.30/1.40	1350/1600	2.89/2.68	20

F2 Type 1-Phase High Voltage (200 V Class) <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)	Capacitor (μF)
MINI	15	200/200	50/60	12	0.21/0.19	1350/1650	0.35/0.33	1.2
	25	200/200	50/60	12	0.26/0.25	1350/1600	0.47/0.44	1.7
	40	200/200	50/60	12	0.34/0.33	1350/1600	0.66/0.60	2.5
				15	0.29/0.34	1350/1600	0.64/0.61	2.5
	60	200/200	50/60	15	0.45/0.48	1350/1600	1.06/1.00	3.5
	90	200/200	50/60	15	0.65/0.66	1350/1600	1.44/1.35	5

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

1-1. Motor Characteristics Table

F3 Type 3-Phase Standard Voltage/High Voltage (400 V Class)/Special Voltage <Concentric Right Angle Hollow Bore/F3S>

Series	Power	Power Supply/ Certification Codes	Voltage (V)	Frequency (Hz)	Rated Current (A)	Startup Current (A)	Rated Speed (r/min)
MID	0.1 kW	NN	200/200/220	50/60/60	0.61/0.54/0.54	2.39/2.27/2.52	1410/1690/1710
		WN	380/400/400/440	50/50/60/60	0.31/0.31/0.28/0.28	1.12/1.18/1.12/1.22	1400/1410/1690/1720
		KN	220/380	60/60	0.52/0.30	1.90/1.10	1680/1680
		CN	220/230/380	50/50/50	0.55/0.54/0.31	1.94/2.03/1.12	1400/1410/1400
		DN	220/220/380/380	50/60/50/60	0.55/0.52/0.31/0.30	1.94/1.90/1.12/1.10	1400/1680/1400/1680
		EN	415/440/480	50/50/60	0.30/0.29/0.26	1.06/1.12/1.17	1390/1420/1720
		AN	208/230/460/400	60/60/60/50	0.54/0.57/0.29/0.31	2.35/2.62/1.26/1.21	1690/1730/1730/1410
		MA	575	60	0.20	0.87	1700
	0.2 kW IE2	NN	200/200/220	50/60/60	1.1/1.0/1.0	4.70/4.35/4.85	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	0.56/0.56/0.50/0.50	2.29/2.38/2.29/2.48	1390/1400/1680/1710
		KN	220/380	60/60	0.93/0.52	3.70/2.20	1680/1680
		CN	220/230/380	50/50/50	0.99/0.98/0.56	3.97/4.15/2.29	1400/1410/1390
		DN	220/220/380/380	50/60/50/60	0.99/0.93/0.56/0.52	3.97/3.70/2.29/2.20	1400/1680/1390/1680
		EN	415/440/480	50/50/60	0.50/0.50/0.45	1.75/1.86/2.00	1370/1400/1700
		AN	208/230/460/400	60/60/60/50	1.0/1.0/0.50/0.56	4.78/5.16/2.56/2.44	1680/1720/1720/1400
		MA	575	60	0.40	1.78	1710
	0.4 kW IE2	NN	200/200/220	50/60/60	2.1/1.8/1.8	9.50/8.60/9.60	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	1.0/1.0/0.9/0.9	4.35/4.65/4.30/4.75	1390/1400/1680/1710
		KN	220/380	60/60	1.7/1.0	7.10/4.09	1670/1670
		CN	220/230/380	50/50/50	1.8/1.8/1.0	7.63/7.88/4.43	1390/1400/1390
		DN	220/220/380/380	50/60/50/60	1.8/1.7/1.0/1.0	7.63/7.10/4.43/4.09	1390/1670/1390/1670
		EN	415/440/480	50/50/60	0.96/0.95/0.82	3.96/4.20/4.20	1390/1410/1680
		AN	208/230/460/400	60/60/60/50	1.8/1.8/0.9/1.0	8.90/9.76/4.73/4.78	1680/1720/1720/1400
		MA	575	60	0.68	3.51	1700
	0.75 kW IE3	NN	200/200/220	50/60/60	3.5/3.2/3.1	21.8/19.0/21.1	1450/1740/1750
		WN	380/400/400/440	50/50/60/60	1.73/1.72/1.58/1.54	10.2/10.8/9.8/10.7	1440/1450/1740/1750
		KN	220/380	60/60	2.9/1.7	16.9/9.8	1740/1740
		CN	220/230/380	50/50/50	3.0/3.0/1.7	17.8/18.7/10.3	1450/1450/1440
		DN	220/220/380/380	50/60/50/60	3.1/2.9/1.8/1.7	19.3/16.9/11.2/9.8	1450/1740/1450/1740
		EN	415/440/480	50/50/60	1.54/1.52/1.36	8.6/9.3/9.0	1440/1450/1750
		UN	230/460/400	60/60/50	3.1/1.5/1.7	22.3/11.2/10.8	1760/1760/1450
		MA	575	60	1.16	7.2	1750
	1.5 kW IE3	NN	200/200/220	50/60/60	6.7/6.1/5.9	45.6/40.3/45.1	1450/1740/1760
		WN	380/400/400/440	50/50/60/60	3.4/3.4/3.1/3.0	21.9/23.2/20.4/22.8	1450/1450/1750/1760
		KN	220/380	60/60	5.9/3.4	45.1/25.8	1760/1760
		CN	220/230/380	50/50/50	5.9/5.9/3.4	38.5/40.4/22.1	1450/1450/1450
		EN	415/440/480	50/50/60	3.1/3.1/2.8	20.8/22.2/21.2	1450/1460/1760
		UN	230/460/400	60/60/50	5.9/2.9/3.3	44.9/22.6/23.2	1760/1760/1450
		MA	575	60	2.2	17.0	1760
	2.2 kW IE3	NN	200/200/220	50/60/60	9.3/8.6/8.2	70.3/56.9/63.7	1470/1760/1770
		WN	380/400/400/440	50/50/60/60	4.5/4.4/4.2/3.9	30.0/32.0/25.0/28.0	1440/1450/1740/1750
		KN	220/380	60/60	8.3/4.8	65.0/38.0	1770/1770
		CN	220/230/380	50/50/50	7.9/7.7/4.5	52.0/54.3/30.0	1460/1470/1440
		EN	415/440/480	50/50/60	4.3/4.3/3.8	33.1/35.5/29.8	1460/1470/1770
		UN	230/460/400	60/60/50	7.9/4.0/4.5	65.2/34.8/36.3	1770/1770/1470
		MA	575	60	3.3	24.4	1760

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type 1-Phase Standard Voltage <Concentric Right Angle Hollow Bore/F3S>

Series	Power	Startup Method	Voltage (V)	Frequency (Hz)	Rated Current (A)	Startup Current (A)	Rated Speed (r/min)	Startup Torque (%)	Breakdown Torque (%)
MID	0.1 kW	Capacitor Run	100/100	50/60	1.7/1.9	4.40/4.07	1400/1700	60/70	165/172
	0.2 kW	Capacitor Start	100/100	50/60	5.1/4.5	20.0/20.0	1420/1700	276/294	194/187
	0.4 kW	Capacitor Start	100/100	50/60	8.7/7.9	32.0/32.0	1440/1730	210/205	189/178

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

F3 Type 1-Phase High Voltage (200 V Class) <Concentric Right Angle Hollow Bore/F3S>

Series	Power	Startup Method	Voltage (V)	Frequency (Hz)	Rated Current (A)	Startup Current (A)	Rated Speed (r/min)	Startup Torque (%)	Breakdown Torque (%)
MID	0.1 kW	Capacitor Run	200/200	50/60	0.82/0.96	2.10/2.00	1410/1700	65/81	163/178
	0.2 kW	Capacitor Start	200/200	50/60	2.5/2.2	10.0/10.0	1420/1700	254/250	203/205
	0.4 kW	Capacitor Start	200/200	50/60	4.3/3.9	19.0/18.0	1440/1730	181/190	240/217

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

1-1. Motor Characteristics Table

F2 Type 3-Phase Standard Voltage <Concentric Right Angle Shaft/F2F>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)
MINI	15	200/200/220	50/60/60	15	0.14/0.13/0.13	1350/1550/1600	0.30/0.28/0.31
	25	200/200/220	50/60/60	15	0.21/0.19/0.19	1350/1550/1600	0.44/0.42/0.46
	40	200/200/220	50/60/60	15	0.29/0.27/0.27	1350/1550/1600	0.67/0.62/0.68
				18	0.27/0.26/0.26	1350/1550/1550	0.73/0.69/0.76
	60	200/200/220	50/60/60	15	0.42/0.39/0.39	1350/1550/1550	0.94/0.86/1.00
				18	0.40/0.36/0.36	1350/1550/1600	1.04/0.97/1.07
	90	200/200/220	50/60/60	18	0.51/0.48/0.48	1350/1550/1550	1.42/1.36/1.49

F2 Type 3-Phase High Voltage (400 V Class) <Concentric Right Angle Shaft/F2F>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)
MINI	15	380/400/400/440	50/50/60/60	15	0.11/0.12/0.10/0.11	1400/1400/1700/1700	0.26/0.28/0.26/0.29
	25	380/400/400/440	50/50/60/60	15	0.11/0.12/0.11/0.12	1350/1400/1600/1650	0.26/0.28/0.26/0.29
	40	380/400/400/440	50/50/60/60	15	0.14/0.14/0.14/0.14	1300/1350/1550/1600	0.30/0.32/0.30/0.33
				18	0.13/0.14/0.13/0.14	1300/1350/1550/1600	0.33/0.35/0.33/0.37
	60	380/400/400/440	50/50/60/60	18	0.17/0.17/0.17/0.17	1300/1350/1550/1600	0.43/0.45/0.43/0.47
	90	380/400/400/440	50/50/60/60	18	0.26/0.26/0.26/0.26	1300/1350/1550/1600	0.70/0.74/0.69/0.77

F2 Type 1-Phase Standard Voltage <Concentric Right Angle Shaft/F2F>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)	Capacitor (μF)
MINI	15	100/100	50/60	15	0.39/0.35	1350/1650	0.72/0.67	5
	25	100/100	50/60	15	0.48/0.48	1350/1600	0.86/0.80	7
	40	100/100	50/60	15	0.67/0.80	1400/1650	1.26/1.23	12
				18	0.61/0.66	1350/1650	1.43/1.36	10
	60	100/100	50/60	18	0.90/1.00	1350/1600	2.11/1.98	15
	90	100/100	50/60	18	1.30/1.40	1350/1600	2.89/2.68	20

F2 Type 1-Phase High Voltage (200 V Class) <Concentric Right Angle Shaft/F2F>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)	Capacitor (μF)
MINI	15	200/200	50/60	15	0.21/0.19	1350/1650	0.35/0.33	1.2
	25	200/200	50/60	15	0.26/0.25	1350/1600	0.47/0.44	1.7
	40	200/200	50/60	15	0.34/0.33	1350/1600	0.66/0.60	2.5
				18	0.29/0.34	1350/1600	0.64/0.61	2.5
	60	200/200	50/60	18	0.45/0.48	1350/1600	1.06/1.00	3.5
	90	200/200	50/60	18	0.65/0.66	1350/1600	1.44/1.35	5

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

F3 Type 3-Phase Standard Voltage/High Voltage (400 V Class)/Special Voltage <Concentric Right Angle Shaft/F3F>

Series	Power	Power Supply/ Certification Codes	Voltage (V)	Frequency (Hz)	Rated Current (A)	Startup Current (A)	Rated Speed (r/min)
MID	0.1 kW	NN	200/200/220	50/60/60	0.61/0.54/0.54	2.39/2.27/2.52	1410/1690/1710
		WN	380/400/400/440	50/50/60/60	0.31/0.31/0.28/0.28	1.12/1.18/1.12/1.22	1400/1410/1690/1720
		KN	220/380	60/60	0.52/0.30	1.90/1.10	1680/1680
		CN	220/230/380	50/50/50	0.55/0.54/0.31	1.94/2.03/1.12	1400/1410/1400
		DN	220/220/380/380	50/60/50/60	0.55/0.52/0.31/0.30	1.94/1.90/1.12/1.10	1400/1680/1400/1680
		EN	415/440/480	50/50/60	0.30/0.29/0.26	1.06/1.12/1.17	1390/1420/1720
		AN	208/230/460/400	60/60/60/50	0.54/0.57/0.29/0.31	2.35/2.62/1.26/1.21	1690/1730/1730/1410
		MA	575	60	0.20	0.87	1700
	0.2 kW IE2	NN	200/200/220	50/60/60	1.1/1.0/1.0	4.70/4.35/4.85	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	0.56/0.56/0.50/0.50	2.29/2.38/2.29/2.48	1390/1400/1680/1710
		KN	220/380	60/60	0.93/0.52	3.70/2.20	1680/1680
		CN	220/230/380	50/50/50	0.99/0.98/0.56	3.97/4.15/2.29	1400/1410/1390
		DN	220/220/380/380	50/60/50/60	0.99/0.93/0.56/0.52	3.97/3.70/2.29/2.20	1400/1680/1390/1680
		EN	415/440/480	50/50/60	0.50/0.50/0.45	1.75/1.86/2.00	1370/1400/1700
		AN	208/230/460/400	60/60/60/50	1.0/1.0/0.50/0.56	4.78/5.16/2.56/2.44	1680/1720/1720/1400
		MA	575	60	0.40	1.78	1710
	0.4 kW IE2	NN	200/200/220	50/60/60	2.1/1.8/1.8	9.50/8.60/9.60	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	1.0/1.0/0.9/0.9	4.35/4.65/4.30/4.75	1390/1400/1680/1710
		KN	220/380	60/60	1.7/1.0	7.10/4.09	1670/1670
		CN	220/230/380	50/50/50	1.8/1.8/1.0	7.63/7.88/4.43	1390/1400/1390
		DN	220/220/380/380	50/60/50/60	1.8/1.7/1.0/1.0	7.63/7.10/4.43/4.09	1390/1670/1390/1670
		EN	415/440/480	50/50/60	0.96/0.95/0.82	3.96/4.20/4.20	1390/1410/1680
		AN	208/230/460/400	60/60/60/50	1.8/1.8/0.9/1.0	8.90/9.76/4.73/4.78	1680/1720/1720/1400
		MA	575	60	0.68	3.51	1700
	0.75 kW IE3	NN	200/200/220	50/60/60	3.5/3.2/3.1	21.8/19.0/21.1	1450/1740/1750
		WN	380/400/400/440	50/50/60/60	1.73/1.72/1.58/1.54	10.2/10.8/9.8/10.7	1440/1450/1740/1750
		KN	220/380	60/60	2.9/1.7	16.9/9.8	1740/1740
		CN	220/230/380	50/50/50	3.0/3.0/1.7	17.8/18.7/10.3	1450/1450/1440
		DN	220/220/380/380	50/60/50/60	3.1/2.9/1.8/1.7	19.3/16.9/11.2/9.8	1450/1740/1450/1740
		EN	415/440/480	50/50/60	1.54/1.52/1.36	8.6/9.3/9.0	1440/1450/1750
		UN	230/460/400	60/60/50	3.1/1.5/1.7	22.3/11.2/10.8	1760/1760/1450
		MA	575	60	1.16	7.2	1750
	1.5 kW IE3	NN	200/200/220	50/60/60	6.7/6.1/5.9	45.6/40.3/45.1	1450/1740/1760
		WN	380/400/400/440	50/50/60/60	3.4/3.4/3.1/3.0	21.9/23.2/20.4/22.8	1450/1450/1750/1760
		KN	220/380	60/60	5.9/3.4	45.1/25.8	1760/1760
		CN	220/230/380	50/50/50	5.9/5.9/3.4	38.5/40.4/22.1	1450/1450/1450
		EN	415/440/480	50/50/60	3.1/3.1/2.8	20.8/22.2/21.2	1450/1460/1760
		UN	230/460/400	60/60/50	5.9/2.9/3.3	44.9/22.6/23.2	1760/1760/1450
		MA	575	60	2.2	17.0	1760
	2.2 kW IE3	NN	200/200/220	50/60/60	9.3/8.6/8.2	70.3/56.9/63.7	1470/1760/1770
		WN	380/400/400/440	50/50/60/60	4.5/4.4/4.2/3.9	30.0/32.0/25.0/28.0	1440/1450/1740/1750
		KN	220/380	60/60	8.3/4.8	65.0/38.0	1770/1770
		CN	220/230/380	50/50/50	7.9/7.7/4.5	52.0/54.3/30.0	1460/1470/1440
		EN	415/440/480	50/50/60	4.3/4.3/3.8	33.1/35.5/29.8	1460/1470/1770
		UN	230/460/400	60/60/50	7.9/4.0/4.5	65.2/34.8/36.3	1770/1770/1470
		MA	575	60	3.3	24.4	1760

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

1-1. Motor Characteristics Table

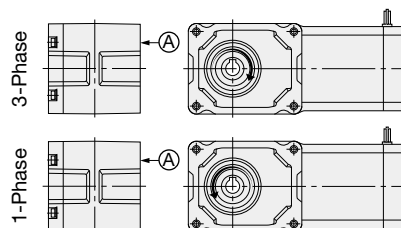
1-2. Performance Table

1-2. Performance Table

F2 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Hollow Bore/F2S>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- Allowable output shaft O.H.L. is the value at 10 mm from the end of the output shaft.
- The "***" mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.
- The key for the output shaft is not included.
- In the performance table, the reduction ratio in indicates that when the connection is made as shown on page 522 (CW), the direction of rotation is clockwise in the case of a three-Phase motor or counterclockwise in the case of a single-Phase motor when viewed from the side indicated by arrow (A) shown in the figure on the right. (Refer to the figure on the right)



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings	
					r/min						
					50 Hz	60 Hz	N·m	N	N		
MINI	15 W	12	1/10	4/41	150	180	0.69	343	88	P.436	
			1/15	8/123	100	120	0.98	441	108		
			1/20	2/41	75	90	1.27	539	137		
			1/25	8/205	60	72	1.67	588	147		
			1/30	4/123	50	60	1.96	686	177		
			1/40	1/41	37.5	45	2.65	784	196		
			1/50	4/205	30	36	3.33	882	226		
			1/60	20/1189	25	30	3.92	882	226		
			1/80	1/82	18.8	22.5	5.00	980	245		
			1/100	2/205	15	18	6.27	980	245		
			1/120	1/123	12.5	15	7.45	1080	275		
			1/160	1/164	9.4	11.2	9.80	1080	275		
			1/200	1/205	7.5	9	12.7	1080	275		
			1/240	5/1189	6.3	7.5	14.7	1080	275		
	25 W	12	1/10	4/41	150	180	1.08	343	88	P.436	
			1/15	8/123	100	120	1.67	441	108		
			1/20	2/41	75	90	2.25	539	137		
			1/25	8/205	60	72	2.74	588	147		
			1/30	4/123	50	60	3.33	686	177		
			1/40	1/41	37.5	45	4.41	784	196		
			1/50	4/205	30	36	5.49	882	226		
			1/60	20/1189	25	30	6.66	882	226		
			1/80	1/82	18.8	22.5	8.43	980	245		
			1/100	2/205	15	18	10.8	980	245		
			1/120	1/123	12.5	15	12.7	1080	275		
			1/160	1/164	9.4	11.2	16.7	1080	275		
			1/200	1/205	7.5	9	20.6	1080	275		
			1/240	5/1189	6.3	7.5	25.5	1080	275		
	40 W	12	1/10	4/41	150	180	1.76	343	88	P.436	
			1/15	8/123	100	120	2.65	441	108		
			1/20	2/41	75	90	3.53	539	137		
			1/25	8/205	60	72	4.41	588	147		
			1/30	4/123	50	60	5.29	686	177		
			1/40	1/41	37.5	45	7.06	784	196		
			1/50	4/205	30	36	8.82	882	226		
			1/60	20/1189	25	30	10.8	882	226		
1/80			1/82	18.8	22.5	13.7	980	245			
1/100			2/205	15	18	16.7	980	245			
1/120			1/123	12.5	15	20.6	1080	275			
1/160			1/164	9.4	11.2	26.5	1370	343			
15			1/200	1/205	7.5	9	33.3	1370	343		P.437
			1/240	1/246	6.3	7.5	40.2	1370	343		

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings			
					r/min								
					50 Hz	60 Hz	N-m	N	N				
MINI	60 W	12 (Note 1)	1/10	4/41	150	180	2.74	343	88	P.436			
			1/15	8/123	100	120	4.12	441	108				
			1/20	2/41	75	90	5.49	539	137				
			1/25	8/205	60	72	6.96	588	147				
			1/30	4/123	50	60	8.33	686	177				
			1/40	1/41	37.5	45	10.8	784	196				
			1/50	4/205	30	36	13.7	882	226				
			1/60	20/1189	25	30	16.7	882	226				
		15 (Note 1)	1/10	4/41	150	180	2.74	343	108	P.437			
			1/15	8/123	100	120	4.12	441	147				
			1/20	2/41	75	90	5.49	539	186				
			1/25	8/205	60	72	6.96	588	226				
			1/30	4/123	50	60	8.33	686	245				
			1/40	1/41	37.5	45	10.8	784	275				
			1/50	4/205	30	36	13.7	882	294				
			1/60	2/123	25	30	16.7	882	294				
		15	1/80	1/82	18.8	22.5	20.6	1270	324	P.437			
			1/100	2/205	15	18	26.5	1270	324				
			1/120	1/123	12.5	15	31.4	1370	343				
			1/160	1/164	9.4	11.2	42.1	1370	343				
			1/200	1/205	7.5	9	52.9	1370	343				
			* 1/240	1/246	6.3	7.5	53.9	1370	343				
			90 W	15	1/10	4/41	150	180	4.12		441	108	P.437
					1/15	8/123	100	120	6.17		588	147	
	1/20	2/41			75	90	8.33	735	186				
	1/25	8/205			60	72	10.8	882	226				
	1/30	4/123			50	60	12.7	980	245				
	1/40	1/41			37.5	45	16.7	1080	275				
	1/50	4/205			30	36	20.6	1180	294				
	1/60	2/123			25	30	24.5	1180	294				
	1/80	1/82			18.8	22.5	31.4	1270	324				
	1/100	2/205			15	18	39.2	1270	324				
	1/120	1/123			12.5	15	47.0	1370	343				
	* 1/160	1/164			9.4	11.2	53.9	1370	343				
	* 1/200	1/205	7.5	9	53.9	1370	343						
	* 1/240	1/246	6.3	7.5	53.9	1370	343						

• Please read the notes on page 425.

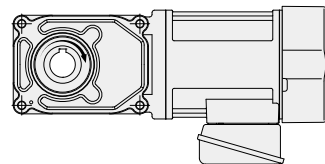
Note 1: Only Three-phase standard voltage (200 V Class) motors are available for 60 W motors with frame size 12. Please note that the frame size for Three-phase High Voltage (400 V class) and Single-phase motors is 15.

1-2. Performance Table

F3 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Hollow Bore/F3S>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- The key for the output shaft is not included.
- In the performance table,  indicates that the shaft rotates clockwise when viewed from the flange surface side on the right when the connection is made as shown on page 523 (CW). (Refer to the figure on the right)
- Allowable output shaft O.H.L. is the value at 20 mm from the end of the output shaft.
- The "***" mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings		
					r/min		N·m						
					50 Hz	60 Hz	50 Hz	60 Hz					
MID	3-Phase 0.1 kW	20	1/5	1/5	300	360	2.5	2.2	980	244	P.440		
			1/7.5	2/15	200	240	3.8	3.2	1080	270			
			1/10	1/10	150	180	5.2	4.3	1180	294			
			1/12.5	2/25	120	144	6.5	5.4	1270	316			
			1/15	1/15	100	120	7.7	6.5	1320	333			
			1/20	1/20	75	90	11	8.6	1470	373			
			1/25	1/25	60	72	13	11	1570	392			
			1/30	2/59	50	60	16	13	1670	422			
			1/40	1/40	37.5	45	21	18	1810	451			
		1/50	1/50	30	36	25	22	1860	471				
		1/60	1/59	25	30	31	25	1860	471				
		25	1/80	1/80	18.8	22.5	39	32	2550	637	P.442		
			1/100	19/1880	15	18	49	41	2550	637			
			1/120	1/120	12.5	15	59	49	2550	637			
			1/160	1/160	9.4	11.3	78	66	2550	637			
			1/200	1/200	7.5	9	98	81	2550	637			
			* 1/240	1/240	6.3	7.5	101	98	2550	637			
			3-Phase 0.2 kW	20 (Small Frame Model)	1/5	1/5	300	360	5.5	4.6		980	244
	1/7.5				2/15	200	240	8.3	7	1080		270	
	1/10				1/10	150	180	11	9.2	1180		294	
	1/12.5	2/25			120	144	14	12	1270	316			
	1/15	1/15			100	120	17	14	1320	333			
	1/20	1/20			75	90	23	19	1470	373			
	1/25	1/25			60	72	27	24	1570	392			
	1/30	2/59			50	60	33	27	1670	422			
	25	1/5		1/5	300	360	5.5	4.6	1230	307	P.442		
		1/7.5		2/15	200	240	8.3	7	1370	342			
		1/10		1/10	150	180	11	9.2	1520	380			
		1/12.5		19/235	120	144	14	12	1620	405			
		1/15		1/15	100	120	17	14	1720	429			
		1/20		1/20	75	90	23	19	1860	466			
		1/25	1/25	60	72	27	24	2010	502				
		1/30	1/30	50	60	33	27	2110	527				
		1/40	1/40	37.5	45	44	37	2300	576				
		1/50	1/50	30	36	55	46	2450	613				
	1/60	1/60	25	30	67	55	2550	637					
	30	1/80	1/80	18.8	22.5	84	71	3090	775	P.446			
		1/100	19/1880	15	18	105	87	3140	785				
		1/120	1/120	12.5	15	126	105	3140	785				
		1/160	1/160	9.4	11.3	169	140	3140	785				
		* 1/200	1/200	7.5	9	184	175	3140	785				
		* 1/240	1/240	6.3	7.5	184	184	3140	785				

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings	
					r/min		N·m					
					50 Hz	60 Hz	50 Hz	60 Hz				N
MID	3-Phase 0.4 kW	25 (Small Frame Model)	1/5	1/5	300	360	11	9.2	1230	307	P.442	
			1/7.5	2/15	200	240	17	14	1370	342		
			1/10	1/10	150	180	23	19	1520	380		
			1/12.5	19/235	120	144	27	24	1620	405		
			1/15	1/15	100	120	33	27	1720	429		
			1/ 20	1/20	75	90	44	37	1860	466		
			1/25	1/25	60	72	55	46	2010	502		
		1/30	1/30	50	60	67	55	2110	527	P.446		
		1/5	1/5	300	360	11	9.2	1520	375			
		1/7.5	2/15	200	240	17	14	1760	438			
		1/10	1/10	150	180	23	19	1910	475			
		1/12.5	19/235	120	144	27	24	2060	506			
		1/15	1/15	100	120	33	27	2160	539			
		1/20	1/20	75	90	44	37	2400	600			
		1/25	1/25	60	72	55	46	2550	637			
		1/30	1/30	50	60	67	55	2650	662			
		1/40	1/40	37.5	45	88	74	2840	711			
		1/50	1/50	30	36	111	92	2990	747			
		1/60	1/60	25	30	133	111	3090	767	P.448		
		1/80	1/80	18.8	22.5	169	140	3480	873			
		1/100	19/1880	15	18	211	175	3530	883			
		1/120	1/120	12.5	15	253	211	3530	883			
		* 1/160	1/160	9.4	11.3	270	270	3630	912			
		3-Phase 0.75 kW	30 (Small Frame Model)	* 1/200	1/200	7.5	9	270	270	3630	912	P.446
				* 1/240	1/240	6.3	7.5	270	270	3630	912	
				1/5	1/5	300	360	21	18	1520	375	
				1/7.5	2/15	200	240	31	25	1760	438	
				1/10	1/10	150	180	41	34	1910	475	
				1/12.5	19/235	120	144	52	43	2060	506	
				1/15	1/15	100	120	63	52	2160	539	
			1/20	1/20	75	90	83	70	2400	600	P.448	
			1/25	1/25	60	72	104	86	2550	637		
			1/30	1/30	50	60	124	104	2650	662		
			1/5	1/5	300	360	21	18	1960	500		
			1/7.5	2/15	200	240	31	25	2250	567		
			1/10	1/10	150	180	41	34	2450	613		
			1/12.5	19/235	120	144	52	43	2600	669		
			1/15	1/15	100	120	63	52	2740	686		
			1/20	1/20	75	90	83	70	2990	747		
			1/25	1/25	60	72	104	86	3190	796		
			1/30	1/30	50	60	124	104	3280	821		
			1/40	1/40	37.5	45	166	138	3480	870		
			1/50	1/50	30	36	208	173	3480	870	P.448	
			1/60	1/60	25	30	249	208	3480	870		
			1/80	1/80	18.8	22.5	316	263	4750	1177		
1/100	19/1880		15	18	395	328	4750	1177				
1/120	1/120		12.5	15	473	395	4750	1177				
* 1/160	1/160		9.4	11.3	554	526	5190	1275				
* 1/200	1/200		7.5	9	554	554	5190	1275				
* 1/240	1/240		6.3	7.5	554	554	5190	1275				
45	1/80	1/80	18.8	22.5	316	263	4750	1177	P.450			
	1/100	19/1880	15	18	395	328	4750	1177				
	1/120	1/120	12.5	15	473	395	4750	1177				
	* 1/160	1/160	9.4	11.3	554	526	5190	1275				
	* 1/200	1/200	7.5	9	554	554	5190	1275				

- Please read the notes on page 427.

1-2. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
					r/min		N·m				
					50 Hz	60 Hz	50 Hz	60 Hz			
MID	3-Phase 1.5 kW	35 (Small Frame Model)	1/5	1/5	300	360	41	34	1960	500	P.448
			1/7.5	2/15	200	240	63	52	2250	567	
			1/10	1/10	150	180	83	70	2450	613	
			1/12.5	19/235	120	144	104	86	2600	669	
			1/15	1/15	100	120	124	104	2740	686	
			1/20	1/20	75	90	166	138	2990	747	
			1/25	1/25	60	72	208	173	3190	796	
			1/30	1/30	50	60	249	208	3280	821	
		45	1/5	1/5	300	360	41	34	2940	800	P.450
			1/7.5	2/15	200	240	63	52	3330	900	
			1/10	1/10	150	180	83	70	3630	967	
			1/12.5	19/235	120	144	104	86	3920	1040	
			1/15	1/15	100	120	124	104	4070	1067	
			1/20	1/20	75	90	166	138	4460	1067	
			1/25	1/25	60	72	208	173	4700	1067	
			1/30	1/30	50	60	249	208	4750	1067	
	3-Phase 2.2 kW	45	1/40	1/40	37.5	45	332	276	4750	1067	P.450
			1/50	1/50	30	36	416	345	4750	1067	
			1/60	1/60	25	30	498	416	4750	1067	
			1/5	1/5	300	360	61	51	3140	800	
			1/7.5	2/15	200	240	91	76	3530	900	
			1/10	1/10	150	180	122	102	3920	967	
			1/12.5	19/235	120	144	152	126	4120	1040	
			1/15	1/15	100	120	182	152	4410	1067	
			1/20	1/20	75	90	244	203	4750	1067	

• Please read the notes on page 427.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

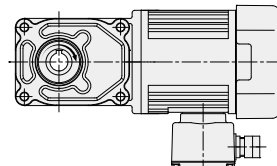
Technical Documentation

Option

F3 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Hollow Bore/F3S>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- The key for the output shaft is not included.
- In the performance table, indicates that the shaft rotates clockwise when viewed from the flange surface side on the right when the connection is made as shown on page 524 (CW).
- The startup torque of the single-Phase 0.1 kW motor is 60 to 80 % due to the unit being a capacitor run motor.
- Allowable output shaft O.H.L. is the value at 20 mm from the end of the output shaft.
- The "***" mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.



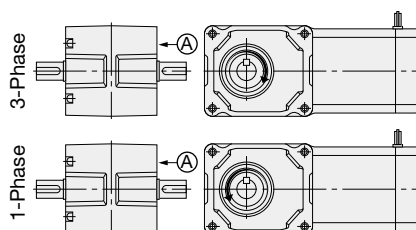
Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
					r/min		N·m				
					50 Hz	60 Hz	50 Hz	60 Hz			
MID	1-Phase 0.1 kW	20	1/5	1/5	300	360	2.5	2.2	980	244	P.441
			1/7.5	2/15	200	240	3.8	3.2	1080	270	
			1/10	1/10	150	180	5.2	4.3	1180	294	
			1/12.5	2/25	120	144	6.5	5.4	1270	316	
			1/15	1/15	100	120	7.7	6.5	1320	333	
			1/20	1/20	75	90	11	8.6	1470	373	
			1/25	1/25	60	72	13	11	1570	392	
			1/30	2/59	50	60	16	13	1670	422	
			1/40	1/40	37.5	45	21	18	1810	451	
			1/50	1/50	30	36	25	22	1860	471	
		1/60	1/59	25	30	31	25	1860	471		
		25	1/80	1/80	18.8	22.5	39	32	2550	637	P.444
			1/100	19/1880	15	18	49	41	2550	637	
			1/120	1/120	12.5	15	59	49	2550	637	
			1/160	1/160	9.4	11.3	78	66	2550	637	
			1/200	1/200	7.5	9	98	81	2550	637	
			* 1/240	1/240	6.3	7.5	101	98	2550	637	
	1/5		1/5	300	360	5.5	4.6	1230	307	P.445	
	1/7.5	2/15	200	240	8.3	7	1370	342			
	1/10	1/10	150	180	11	9.2	1520	380			
	1/12.5	19/235	120	144	14	12	1620	405			
	1/15	1/15	100	120	17	14	1720	429			
	1/20	1/20	75	90	23	19	1860	466			
	1/25	1/25	60	72	27	24	2010	502			
	1/30	1/30	50	60	33	27	2110	527			
	1/40	1/40	37.5	45	44	37	2300	576			
	1/50	1/50	30	36	55	46	2450	613			
	1/60	1/60	25	30	67	55	2550	637	P.447		
	1/80	1/80	18.8	22.5	84	71	3090	775			
	1/100	19/1880	15	18	105	87	3140	785			
	1/120	1/120	12.5	15	126	105	3140	785			
	1/160	1/160	9.4	11.3	169	140	3140	785			
	* 1/200	1/200	7.5	9	184	175	3140	785			
	* 1/240	1/240	6.3	7.5	184	184	3140	785			
	1-Phase 0.4 kW	30	1/5	1/5	300	360	11	9.2	1520	375	P.447
			1/7.5	2/15	200	240	17	14	1760	438	
			1/10	1/10	150	180	23	19	1910	475	
			1/12.5	19/235	120	144	27	24	2060	506	
			1/15	1/15	100	120	33	27	2160	539	
			1/20	1/20	75	90	44	37	2400	600	
			1/25	1/25	60	72	55	46	2550	637	
1/30			1/30	50	60	67	55	2650	662		
1/40			1/40	37.5	45	88	74	2840	711		
1/50			1/50	30	36	111	92	2990	747		
1/60		1/60	25	30	133	111	3090	767	P.449		
1/80		1/80	18.8	22.5	169	140	3480	873			
1/100		19/1880	15	18	211	175	3530	883			
1/120		1/120	12.5	15	253	211	3530	883			
* 1/160		1/160	9.4	11.3	270	270	3630	912			
* 1/200		1/200	7.5	9	270	270	3630	912			
* 1/240		1/240	6.3	7.5	270	270	3630	912			

1-2. Performance Table

F2 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Shaft/F2F>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synchronous speed and the reduction ratio.
- Allowable output shaft O.H.L. is the value at the middle of the output shaft.
- Two shaft arrangements, L and T, are available for the F2F (concentric Right Angle Hollow Bore).
- The “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque value in the performance table.
- In the performance table, the reduction ratio in indicates that when the connection is made as shown on page 522 (CW), the direction of rotation is clockwise in the case of a three-Phase motor or counterclockwise in the case of a single-Phase motor when viewed from the side indicated by arrow (A) shown in the figure on the right. (Refer to the figure on the right)



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Drawings
					r/min				
					50 Hz	60 Hz	N-m	N	
MINI	15 W	15	1/10	4/41	150	180	0.69	343	P.438
			1/15	8/123	100	120	0.98	441	
			1/20	2/41	75	90	1.27	539	
			1/25	8/205	60	72	1.67	588	
			1/30	4/123	50	60	1.96	686	
			1/40	1/41	37.5	45	2.65	784	
			1/50	4/205	30	36	3.33	882	
			1/60	20/1189	25	30	3.92	882	
			1/80	1/82	18.8	22.5	5.00	980	
			1/100	2/205	15	18	6.27	980	
			1/120	1/123	12.5	15	7.45	1080	
			1/160	1/164	9.4	11.2	9.80	1080	
	1/200	1/205	7.5	9	12.7	1080			
	1/240	5/1189	6.3	7.5	14.7	1080			
	25 W	15	1/10	4/41	150	180	1.08	343	P.438
			1/15	8/123	100	120	1.67	441	
			1/20	2/41	75	90	2.25	539	
			1/25	8/205	60	72	2.74	588	
			1/30	4/123	50	60	3.33	686	
			1/40	1/41	37.5	45	4.41	784	
			1/50	4/205	30	36	5.49	882	
			1/60	20/1189	25	30	6.66	882	
			1/80	1/82	18.8	22.5	8.43	980	
			1/100	2/205	15	18	10.8	980	
			1/120	1/123	12.5	15	12.7	1080	
			1/160	1/164	9.4	11.2	16.7	1080	
	1/200	1/205	7.5	9	20.6	1080			
	1/240	5/1189	6.3	7.5	25.5	1080			
	40 W	15	1/10	4/41	150	180	1.76	343	P.438
			1/15	8/123	100	120	2.65	441	
			1/20	2/41	75	90	3.53	539	
			1/25	8/205	60	72	4.41	588	
			1/30	4/123	50	60	5.29	686	
			1/40	1/41	37.5	45	7.06	784	
			1/50	4/205	30	36	8.82	882	
			1/60	20/1189	25	30	10.8	882	
1/80			1/82	18.8	22.5	13.7	980		
1/100			2/205	15	18	16.7	980		
1/120			1/123	12.5	15	20.6	1080		
1/160			1/164	9.4	11.2	26.5	1370		
18	1/200	1/205	7.5	9	33.3	1370	P.439		
	1/240	1/246	6.3	7.5	40.2	1370			

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

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Option

G/G3 Type Parallel Shaft	Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Drawings
						r/min		N-m	N	
						50 Hz	60 Hz			
H/H2 Type Right Angle Shaft	MINI	60 W	15 (Note 1)	1/10	4/41	150	180	2.74	343	P.438
				1/15	8/123	100	120	4.12	441	
				1/20	2/41	75	90	5.49	539	
				1/25	8/205	60	72	6.96	588	
				1/30	4/123	50	60	8.33	686	
				1/40	1/41	37.5	45	10.8	784	
				1/50	4/205	30	36	13.7	882	
				1/60	20/1189	25	30	16.7	882	
18 (Note 1)			1/10	4/41	150	180	2.74	343	P.439	
			1/15	8/123	100	120	4.12	441		
			1/20	2/41	75	90	5.49	539		
			1/25	8/205	60	72	6.96	588		
			1/30	4/123	50	60	8.33	686		
			1/40	1/41	37.5	45	10.8	784		
			1/50	4/205	30	36	13.7	882		
			1/60	2/123	25	30	16.7	882		
18			1/80	1/82	18.8	22.5	20.6	1270	P.439	
			1/100	2/205	15	18	26.5	1270		
			1/120	1/123	12.5	15	31.4	1370		
			1/160	1/164	9.4	11.2	42.1	1370		
			1/200	1/205	7.5	9	52.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
90 W		18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
F/A Type Right Angle Hollow Bore/ Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
F/H Type Right Angle Hollow Bore/ Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
G/H Type Parallel Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
H/H2 Type Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
F/A Type Right Angle Hollow Bore/ Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
H/H2 Type Right Angle Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		
G/G3 Type Parallel Shaft	90 W	18	1/10	4/41	150	180	4.12	441	P.439	
			1/15	8/123	100	120	6.17	588		
			1/20	2/41	75	90	8.33	735		
			1/25	8/205	60	72	10.8	882		
			1/30	4/123	50	60	12.7	980		
			1/40	1/41	37.5	45	16.7	1080		
			1/50	4/205	30	36	20.6	1180		
			1/60	2/123	25	30	24.5	1180		
			1/80	1/82	18.8	22.5	31.4	1270		
			1/100	2/205	15	18	39.2	1270		
			1/120	1/123	12.5	15	47.0	1370		
			* 1/160	1/164	9.4	11.2	53.9	1370		
			* 1/200	1/205	7.5	9	53.9	1370		
			* 1/240	1/246	6.3	7.5	53.9	1370		

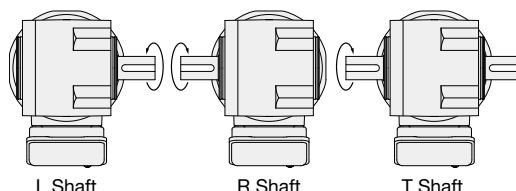
Note 1: The frame size 15 for 60 W motors is only available for Three-phase standard voltage motors (200 V class). Please note that the frame size for Three-phase High Voltage (400 V class) and Single-phase motors will be 18.

1-2. Performance Table

F3 Type Gearmotors/Gearmotors with Brake <Concentric Right Angle Shaft/F3F>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value relative to the synchronous speed of the motor and the reduction ratio.
- In the performance table, indicates that the L shaft rotates clockwise and the R and T shafts rotate counterclockwise when viewed from the output shaft direction when the connection is made as shown on page 523 (CW). (Refer to the figure on the right)
- Allowable output shaft O.H.L. is the value at the middle of the output shaft.
- “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Drawings
					r/min		N·m			
					50 Hz	60 Hz	50 Hz	60 Hz	N	
MID	3-Phase 0.1 kW	18	1/5	1/5	300	360	2.5	2.2	880	P.451
			1/7.5	2/15	200	240	3.8	3.2	980	
			1/10	1/10	150	180	5.2	4.3	1080	
			1/12.5	2/25	120	144	6.5	5.4	1180	
			1/15	1/15	100	120	7.7	6.5	1230	
			1/20	1/20	75	90	11	8.6	1370	
			1/25	1/25	60	72	13	11	1470	
			1/30	2/59	50	60	16	13	1570	
			1/40	1/40	37.5	45	21	18	1720	
		22	1/50	1/50	30	36	25	22	1860	P.452
			1/60	1/59	25	30	31	25	1860	
			1/80	1/80	18.8	22.5	39	32	2550	
			1/100	19/1880	15	18	49	41	2550	
			1/120	1/120	12.5	15	59	49	2550	
			1/160	1/160	9.4	11.3	78	66	2550	
			1/200	1/200	7.5	9	98	81	2550	
			* 1/240	1/240	6.3	7.5	101	98	2550	
	3-Phase 0.2 kW	18 (Small Frame Model)	1/5	1/5	300	360	5.5	4.6	880	P.451
			1/7.5	2/15	200	240	8.3	7	980	
			1/10	1/10	150	180	11	9.2	1080	
			1/12.5	2/25	120	144	14	12	1180	
			1/15	1/15	100	120	17	14	1230	
			1/20	1/20	75	90	23	19	1370	
			1/25	1/25	60	72	27	24	1470	
			1/30	2/59	50	60	33	27	1570	
		22	1/5	1/5	300	360	5.5	4.6	1270	P.452
			1/7.5	2/15	200	240	8.3	7.0	1420	
			1/10	1/10	150	180	11	9.2	1520	
			1/12.5	19/235	120	144	14	12	1620	
			1/15	1/15	100	120	17	14	1720	
			1/20	1/20	75	90	23	19	1910	
			1/25	1/25	60	72	27	24	2060	
			1/30	1/30	50	60	33	27	2160	
			1/40	1/40	37.5	45	44	37	2400	
		28	1/50	1/50	30	36	55	46	2550	P.453
			1/60	1/60	25	30	67	55	2550	
			1/80	1/80	18.8	22.5	84	71	3090	
			1/100	19/1880	15	18	105	87	3140	
			1/120	1/120	12.5	15	126	105	3140	
			1/160	1/160	9.4	11.3	169	140	3140	
			* 1/200	1/200	7.5	9	184	175	3140	
			* 1/240	1/240	6.3	7.5	184	184	3140	

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

	Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Drawings	
						r/min		N·m				
						50 Hz	60 Hz	50 Hz	60 Hz			N
G/G3 Type Parallel Shaft	MID	3-Phase 0.4 kW	22 (Small Frame Model)	1/5	1/5	300	360	11	9.2	1270	P.452	
				1/7.5	2/15	200	240	17	14	1420		
				1/10	1/10	150	180	23	19	1520		
				1/12.5	19/235	120	144	27	24	1620		
				1/15	1/15	100	120	33	27	1720		
				1/20	1/20	75	90	44	37	1910		
				1/25	1/25	60	72	55	46	2060		
1/30			1/30	50	60	67	55	2160				
28			1/5	1/5	300	360	11	9.2	1470	P.453		
			1/7.5	2/15	200	240	17	14	1670			
			1/10	1/10	150	180	23	19	1810			
			1/12.5	19/235	120	144	27	24	1960			
			1/15	1/15	100	120	33	27	2060			
			1/20	1/20	75	90	44	37	2300			
			1/25	1/25	60	72	55	46	2450			
1/30			1/30	50	60	67	55	2600				
F/FA Type Right Angle Hollow Bore/ Right Angle Shaft			1/40	1/40	37.5	45	88	74	2790	P.454		
			1/50	1/50	30	36	111	92	2990			
			1/60	1/60	25	30	133	111	3090			
			32	1/80	1/80	18.8	22.5	169	140		3330	P.454
				1/100	19/1880	15	18	211	175		3380	
				1/120	1/120	12.5	15	253	211		3380	
				* 1/160	1/160	9.4	11.3	270	270		3580	
* 1/200				1/200	7.5	9	270	270	3630			
28 (Small Frame Model)		1/5	1/5	300	360	21	18	1470	P.453			
		1/7.5	2/15	200	240	31	25	1670				
		1/10	1/10	150	180	41	34	1810				
		1/12.5	19/235	120	144	52	43	1960				
		1/15	1/15	100	120	63	52	2060				
		1/20	1/20	75	90	83	70	2300				
		1/25	1/25	60	72	104	86	2450				
		1/30	1/30	50	60	124	104	2600				
		32	1/5	1/5	300	360	21	18	1760	P.454		
			1/7.5	2/15	200	240	31	25	2010			
			1/10	1/10	150	180	41	34	2210			
			1/12.5	19/235	120	144	52	43	2350			
			1/15	1/15	100	120	63	52	2500			
			1/20	1/20	75	90	83	70	2700			
			1/25	1/25	60	72	104	86	2890			
			1/30	1/30	50	60	124	104	3040			
1/40			1/40	37.5	45	166	138	3280				
1/50			1/50	30	36	208	173	3330				
1/60		1/60	25	30	249	208	3330					
40		1/80	1/80	18.8	22.5	316	263	4460	P.455			
		1/100	19/1880	15	18	395	328	4460				
		1/120	1/120	12.5	15	473	395	4460				
		* 1/160	1/160	9.4	11.3	554	526	4850				
		* 1/200	1/200	7.5	9	554	554	5190				

• Please read the notes on page 433.

1-2. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Drawings
					r/min		N-m			
					50 Hz	60 Hz	50 Hz	60 Hz		
MID	3-Phase 1.5 kW	32 (Small Frame Model)	1/5	1/5	300	360	41	34	1760	P.454
			1/7.5	2/15	200	240	63	52	2010	
			1/10	1/10	150	180	83	70	2210	
			1/12.5	19/235	120	144	104	86	2350	
			1/15	1/15	100	120	124	104	2500	
			1/20	1/20	75	90	166	138	2700	
			1/25	1/25	60	72	208	173	2890	
			1/30	1/30	50	60	249	208	3040	
		40	1/5	1/5	300	360	41	34	2500	P.455
			1/7.5	2/15	200	240	63	52	2840	
			1/10	1/10	150	180	83	70	3140	
			1/12.5	19/235	120	144	104	86	3380	
			1/15	1/15	100	120	124	104	3530	
			1/20	1/20	75	90	166	138	3870	
			1/25	1/25	60	72	208	173	4170	
			1/30	1/30	50	60	249	208	4310	
	3-Phase 2.2 kW	40	1/40	1/40	37.5	45	332	276	4460	P.455
			1/50	1/50	30	36	416	346	4460	
			1/60	1/60	25	30	498	416	4460	
			1/5	1/5	300	360	61	51	2940	
			1/7.5	2/15	200	240	91	76	3230	
			1/10	1/10	150	180	122	102	3530	
			1/12.5	19/235	120	144	152	126	3820	
			1/15	1/15	100	120	182	152	4120	
			1/20	1/20	75	90	244	203	4410	
			1/25	1/25	60	72	305	254	4410	
			1/30	1/30	50	60	366	305	4410	

• Please read the notes on page 433.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

1-3. Drawings

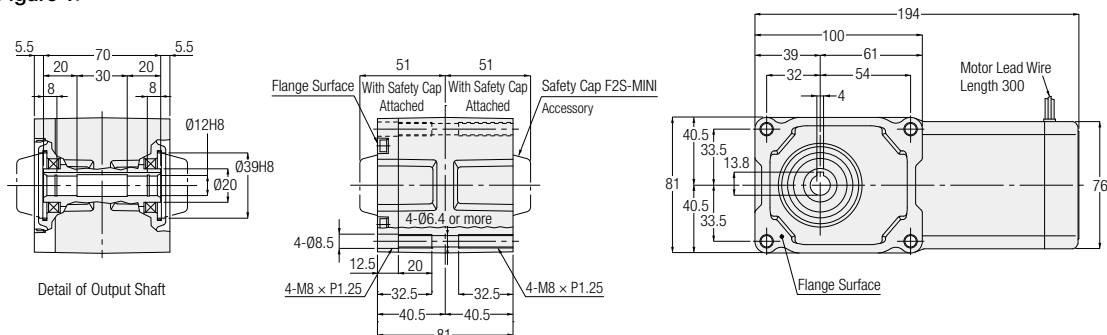
F2S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter 12

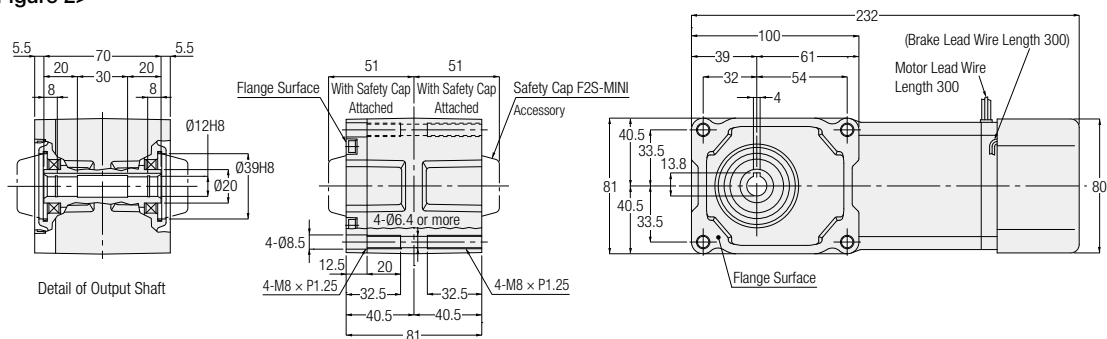
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	15 W	F2SM-12-***-T15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	3
		F2SM-12-***-T15W				
		F2SB-12-***-T15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	3.5
		F2SB-12-***-T15W				
	25 W	F2SM-12-***-T25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	3
		F2SM-12-***-T25W				
		F2SB-12-***-T25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	3.5
		F2SB-12-***-T25W				
	40 W	F2SM-12-***-T40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120	1	No	3
		F2SM-12-***-T40W		2	No	3.5
		F2SB-12-***-T40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120	2	Yes	3.5
		F2SB-12-***-T40W				
1-Phase	15 W	F2SM-12-***-T60	10, 15, 20, 25, 30, 40, 50, 60	2	No	3.5
		F2SM-12-***-T60W		2	Yes	3.5
		F2SB-12-***-T60				
		F2SB-12-***-T60W				
	25 W	F2SM-12-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	3
		F2SM-12-***-S15W				
		F2SB-12-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	3.5
		F2SB-12-***-S15W				
		F2SM-12-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	3
		F2SM-12-***-S25W				
		F2SB-12-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	3.5
		F2SB-12-***-S25W				
	40 W	F2SM-12-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120	2	No	3.5
		F2SM-12-***-S40W				
		F2SB-12-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120	2	Yes	3.5
		F2SB-12-***-S40W				

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 425 for the performance table.

1-3. Drawings

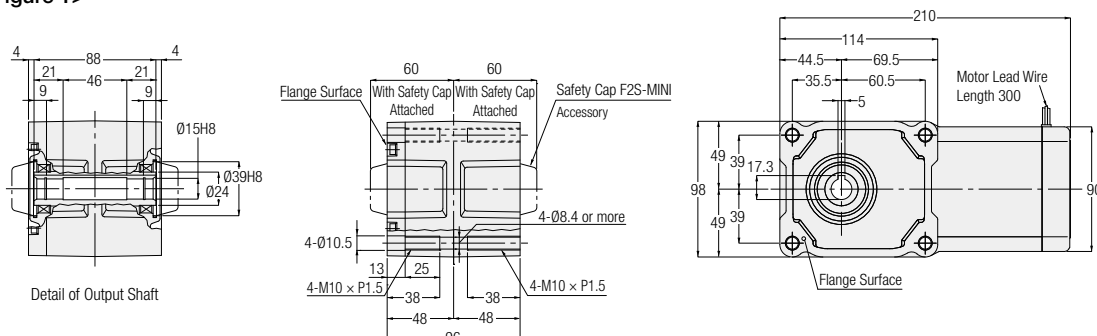
F2S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter 15

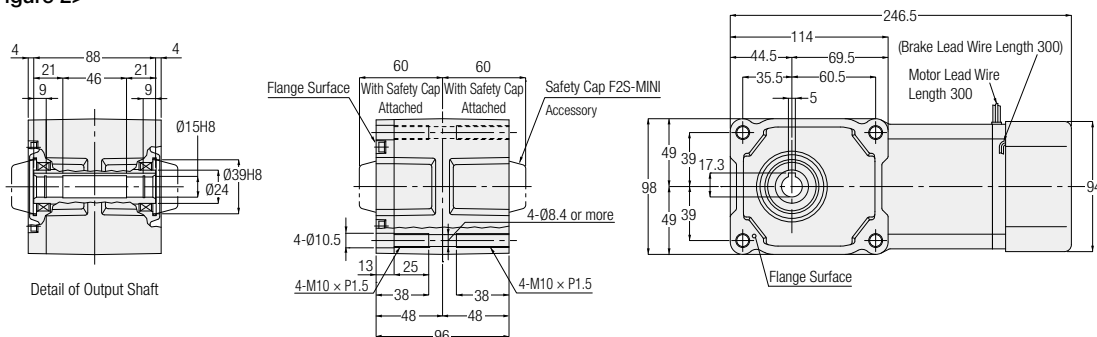
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	40 W	F2SM-15-***-T40	160, 200, 240	1	No	4
		F2SM-15-***-T40W				
		F2SB-15-***-T40	160, 200, 240	2	Yes	4.5
		F2SB-15-***-T40W				
	60 W	F2SM-15-***-T60	80, 100, 120, 160, 200, 240	1	No	4
		F2SM-15-***-T60W	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1		
		F2SB-15-***-T60	80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2SB-15-***-T60W	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2		
	90 W	F2SM-15-***-T90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	4
		F2SM-15-***-T90W		2	No	4.5
		F2SB-15-***-T90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2SB-15-***-T90W				
1-Phase	40 W	F2SM-15-***-S40	160, 200, 240	1	No	4
		F2SM-15-***-S40W				
		F2SB-15-***-S40	160, 200, 240	2	Yes	4.5
		F2SB-15-***-S40W				
	60 W	F2SM-15-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	4
		F2SM-15-***-S60W				
		F2SB-15-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2SB-15-***-S60W				
	90 W	F2SM-15-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	No	4.5
		F2SM-15-***-S90W				
		F2SB-15-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2SB-15-***-S90W				

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 425 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

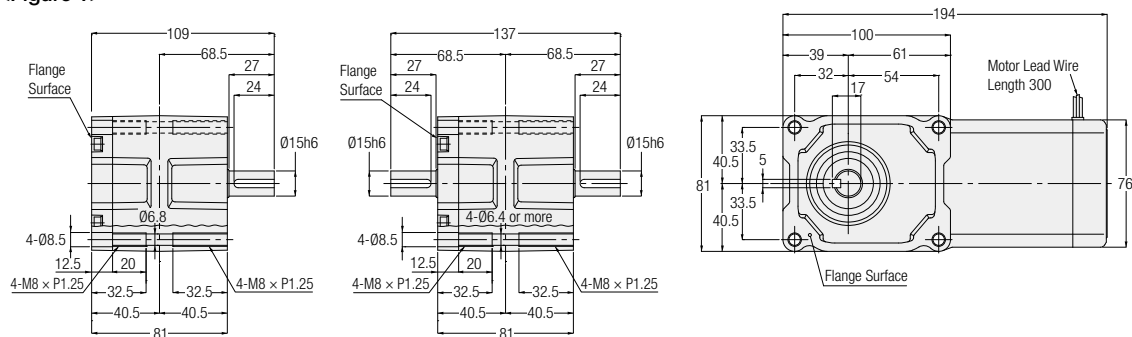
F2F Type Concentric Right Angle Shaft

Shaft
Diameter 15

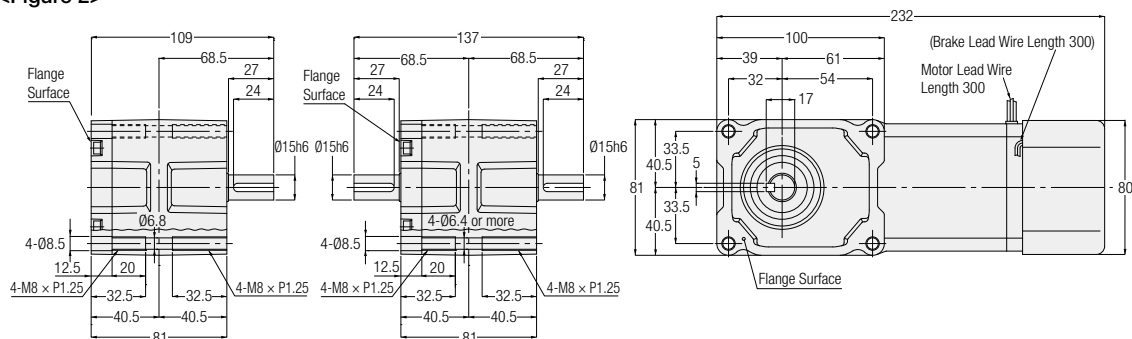
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



L Shaft

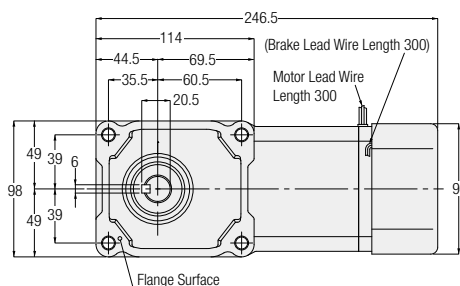
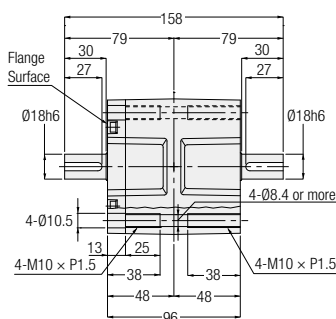
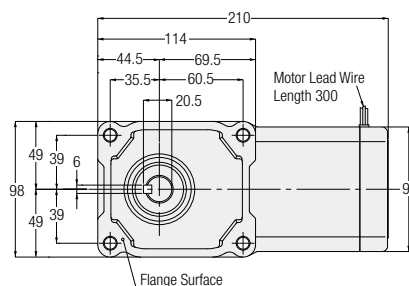
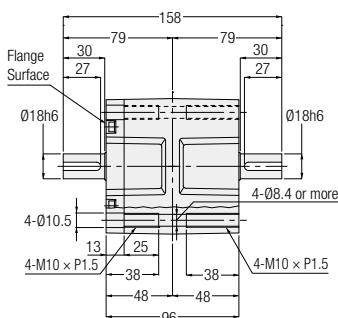
T Shaft

Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	15 W	F2FM-15#-***-T15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3
		F2FM-15#-***-T15W	120, 160, 200, 240			
		F2FB-15#-***-T15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-T15W	120, 160, 200, 240			
	25 W	F2FM-15#-***-T25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3
		F2FM-15#-***-T25W	120, 160, 200, 240			
		F2FB-15#-***-T25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-T25W	120, 160, 200, 240			
	40 W	F2FM-15#-***-T40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3
		F2FM-15#-***-T40W	120	2	No	3.5
		F2FB-15#-***-T40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-T40W	120			
1-Phase	15 W	F2FM-15#-***-T60	10, 15, 20, 25, 30, 40, 50, 60	2	No	3.5
		F2FB-15#-***-T60		2	Yes	
	25 W	F2FM-15#-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3
		F2FM-15#-***-S15W	120, 160, 200, 240			
		F2FB-15#-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-S15W	120, 160, 200, 240			
		F2FM-15#-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3
		F2FM-15#-***-S25W	120, 160, 200, 240			
		F2FB-15#-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-S25W	120, 160, 200, 240			
	40 W	F2FM-15#-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	No	3.5
		F2FM-15#-***-S40W	120			
		F2FB-15#-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	2	Yes	3.5
		F2FB-15#-***-S40W	120			

Note: A shaft arrangement (L, T) will be indicated as # in the nomenclature. In addition, a reduction ratio is indicated as ***.

Note: Please refer to page 431 for the performance table.

The values in parentheses () are the indications for gearmotors with brake.

[illegible]

T Shaft

Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	40 W	F2FM-18#-***-T40	160, 200, 240	1	No	4
		F2FM-18#-***-T40W				
		F2FB-18#-***-T40	160, 200, 240	2	Yes	4.5
		F2FB-18#-***-T40W				
	60 W	F2FM-18#-***-T60	80, 100, 120, 160, 200, 240	1	No	4
		F2FM-18#-***-T60W	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1		
		F2FB-18#-***-T60	80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2FB-18#-***-T60W	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2		
	90 W	F2FM-18#-***-T90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	4
		F2FM-18#-***-T90W	120, 160, 200, 240	2	No	4.5
		F2FB-18#-***-T90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2FB-18#-***-T90W				
1-Phase	40 W	F2FM-18#-***-S40	160, 200, 240	1	No	4
		F2FM-18#-***-S40W				
		F2FB-18#-***-S40	160, 200, 240	2	Yes	4.5
		F2FB-18#-***-S40W				
	60 W	F2FM-18#-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	No	4
		F2FM-18#-***-S60W	120, 160, 200, 240			
		F2FB-18#-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2FB-18#-***-S60W	120, 160, 200, 240			
	90 W	F2FM-18#-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	No	4.5
		F2FM-18#-***-S90W	120, 160, 200, 240			
		F2FB-18#-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Yes	4.5
		F2FB-18#-***-S90W	120, 160, 200, 240			

Note: Please refer to page 431 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type

Technical Documentation

Option

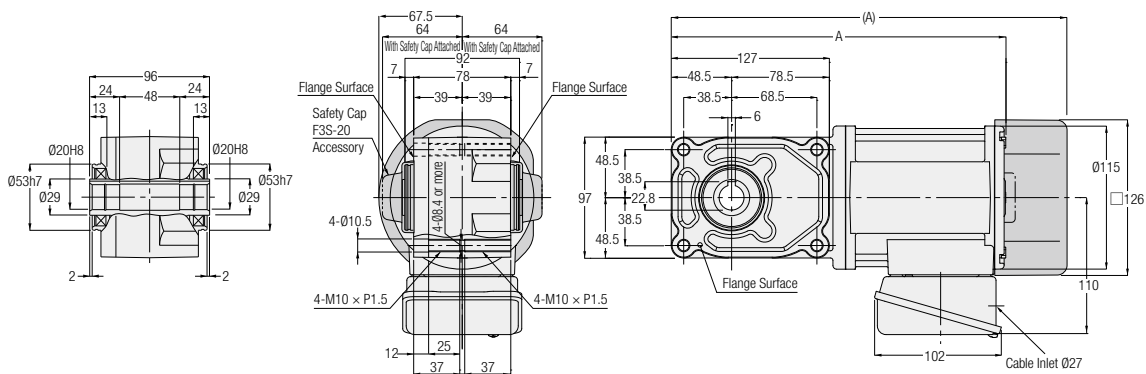
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **20**

Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A
3-Phase	0.1 kW	F3S20N***-MM01T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	No	6.5	254
	0.1 kW	F3S20N***-MM01T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	Yes	8	294
	0.2 kW	F3S20N***-MM02T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	1	No	7.5	269
	0.2 kW	F3S20N***-MM02T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30	1	Yes	9	319.5

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 427 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

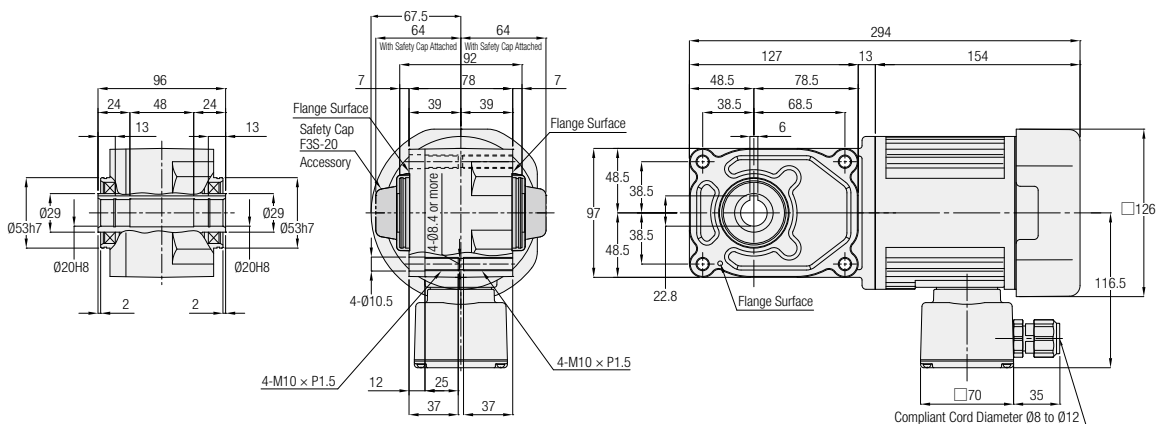
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **20**

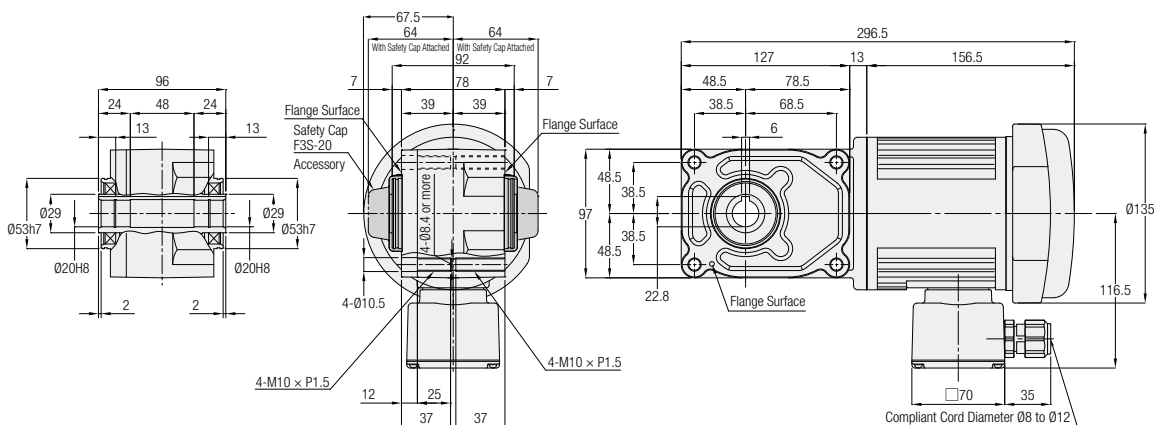
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
1-Phase	0.1 kW	F3S20N***-MM01S◇JAN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	No	7
		F3S20N***-MM01S◇JAB2	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	Yes	8

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage code will be indicated as ◇.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 430 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

MEMO

Option	Technical Documentation	F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	F/FA Type Right Angle Hollow Bore/ Right Angle Shaft	H/H2 Type Right Angle Shaft	G/G3 Type Parallel Shaft
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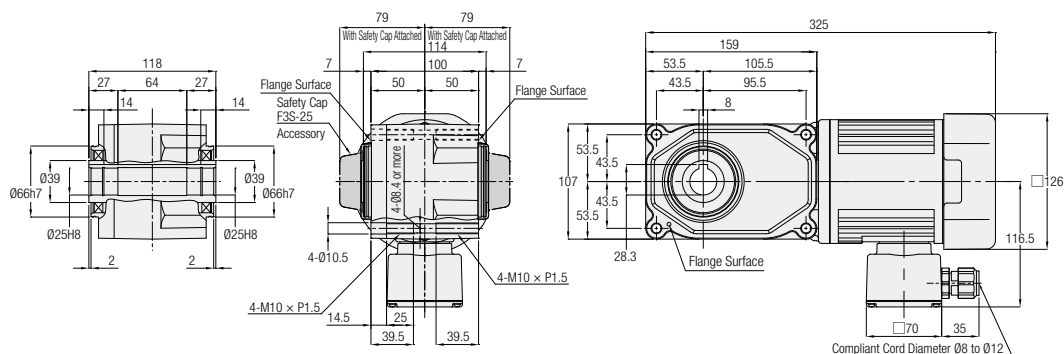
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **25**

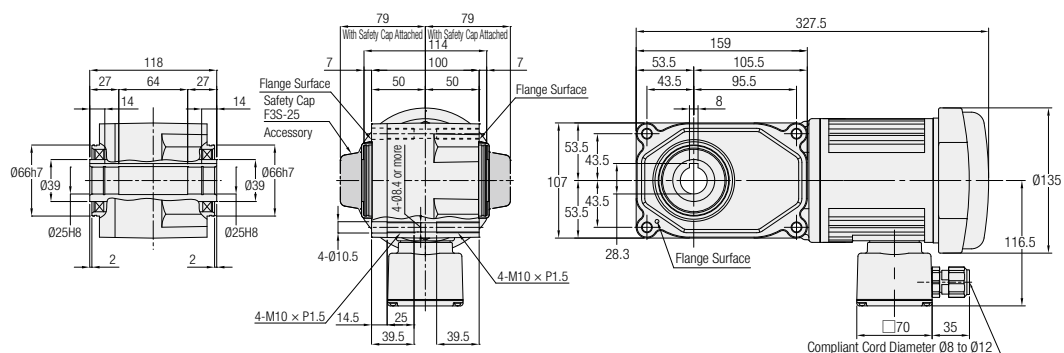
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
1-Phase	0.1 kW	F3S25N***-MM01S◇JAN	80, 100, 120, 160, 200, 240	1	No	9
		F3S25N***-MM01S◇JAB2	80, 100, 120, 160, 200, 240	2	Yes	10

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage code will be indicated as ◇.

Note: Please refer to page 430 for the performance table.

Technical drawings of the E35-25 safety cap assembly, showing front, side, and detail views with dimensions and labels.

Front View (Left): Shows the front of the cap with a total width of 118. The mounting holes are spaced 27 apart, with a central hole of diameter 14. The cap has a thickness of 14. The mounting holes are labeled $\varnothing 66h7$ and $\varnothing 39$. The base holes are labeled $\varnothing 25H8$ and 2.

Side View (Middle): Shows the side profile of the cap. The total height is 79. The cap is labeled "Safety Cap E35-25" and "Accessory". The flange surface is labeled "Flange Surface". The cap is shown with "Safety Cap Attached" and "With Safety Cap Attached". The cap has a thickness of 7. The base has a diameter of 114. The cap is labeled "4-Ø0.4 or more" and "4-M10 x P1.5". The base has a diameter of 85.5. The cap is labeled "4-Ø10.5" and "4-M10 x P1.5". The cap is labeled "14.5" and "25". The cap is labeled "39.5" and "39.5".

Top View (Right): Shows the top of the cap with a total width of 140. The mounting holes are spaced 53.5 apart, with a central hole of diameter 8. The cap has a thickness of 8. The mounting holes are labeled $\varnothing 66h7$ and $\varnothing 39$. The base holes are labeled $\varnothing 25H8$ and 2. The cap is labeled "Flange Surface". The cap is labeled "53.5" and "86.5". The cap is labeled "43.5" and "76.5". The cap is labeled "107" and "53.5". The cap is labeled "28.3" and "116.5". The cap is labeled "70" and "35". The cap is labeled "Compliant Cord Diameter Ø8 to Ø12".

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage code will be indicated as ◇.

Note: When the reduction ratio is 7.5, “7” will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, “12” will be indicated as *** in the nomenclature.

Note: Please refer to page 430 for the performance table.

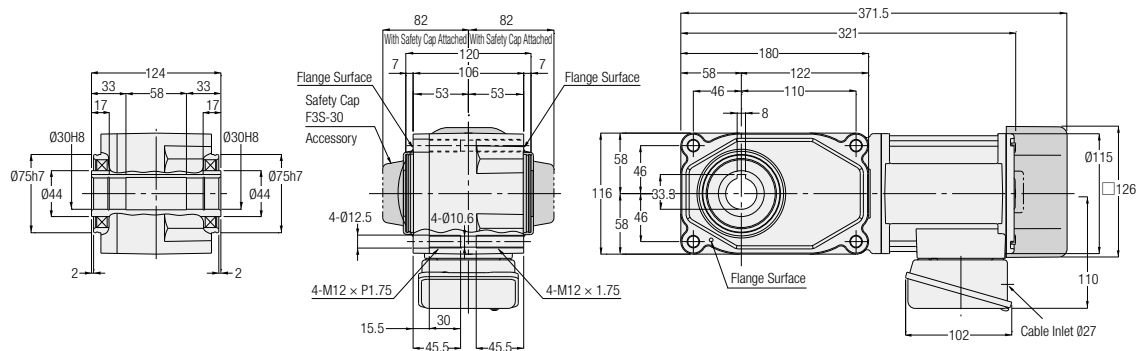
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **30**

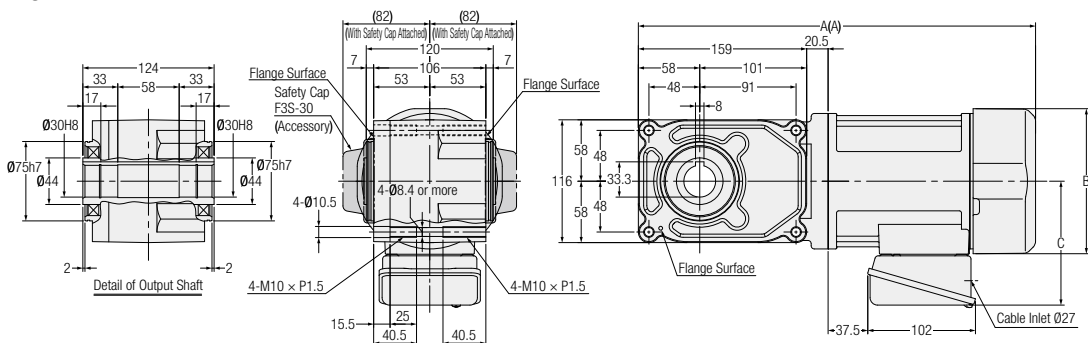
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

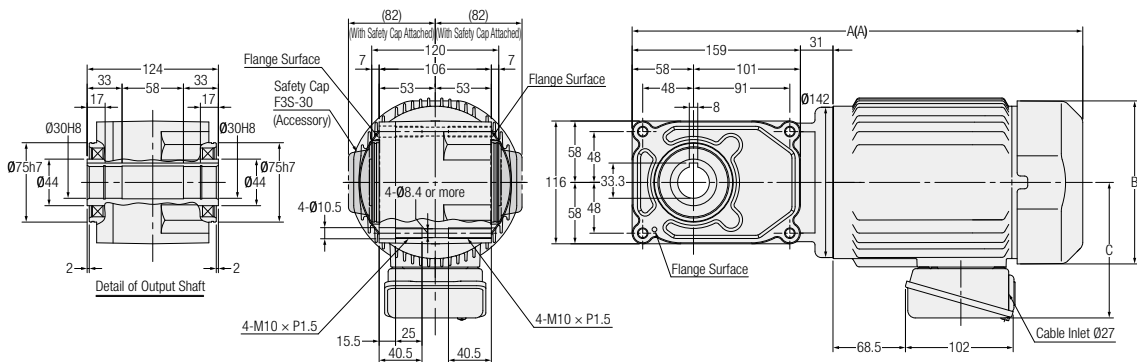
<Figure 1>



<Figure 2>



<Figure 3>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C
3-Phase	0.2 kW	F3S30N***-MM02T◇◇TN	80, 100, 120, 160, 200, 240	1	No	10	-	-	-
		F3S30N***-MM02T◇◇TB◆			Yes	11.5	-	-	-
	0.4 kW	F3S30N***-MM04T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	11.5	355.5	□137	117
		F3S30N***-MM04T◇◇TB◆			Yes	13	375.5	□137	117
	0.75 kW	F3S30N***-MR08T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	18.5	407	□154	128
		F3S30N***-MR08T◇◇TB◆			Yes	20.5	426	□154	128

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 427 for the performance table.

The values in parentheses () are the indications for gearmotors with brake.

Technical drawing of the F3S-30 safety cap accessory, showing front, side, and detail views with dimensions in mm.

Front View Dimensions:

- Overall width: 124
- Flange width: 33
- Central width: 58
- Flange thickness: 17
- Central thickness: 33
- Flange surface diameter: $\varnothing 75h7$
- Central hole diameter: $\varnothing 44$
- Flange hole diameter: $\varnothing 30H8$
- Flange hole spacing: 2

Side View Dimensions:

- Overall height: 82
- Flange height: 7
- Central height: 106
- Flange surface diameter: $\varnothing 75h7$
- Central hole diameter: $\varnothing 44$
- Flange hole diameter: $\varnothing 30H8$
- Flange hole spacing: 2

Detail View Dimensions:

- Flange surface diameter: $\varnothing 75h7$
- Central hole diameter: $\varnothing 44$
- Flange hole diameter: $\varnothing 30H8$
- Flange hole spacing: 2

Top View Dimensions:

- Overall width: 180
- Flange width: 58
- Central width: 122
- Flange thickness: 46
- Central thickness: 8
- Flange surface diameter: $\varnothing 116$
- Central hole diameter: $\varnothing 46$
- Flange hole diameter: $\varnothing 33.3$
- Flange hole spacing: 8

Bottom View Dimensions:

- Overall width: 421.5
- Flange width: 58
- Central width: 122
- Flange thickness: 46
- Central thickness: 8
- Flange surface diameter: $\varnothing 116.5$
- Central hole diameter: $\varnothing 46$
- Flange hole diameter: $\varnothing 33.3$
- Flange hole spacing: 8

Compliant Cord Diameter: $\varnothing 8$ to $\varnothing 12$

[illegible]

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage code will be indicated as ◇.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 430 for the performance table.

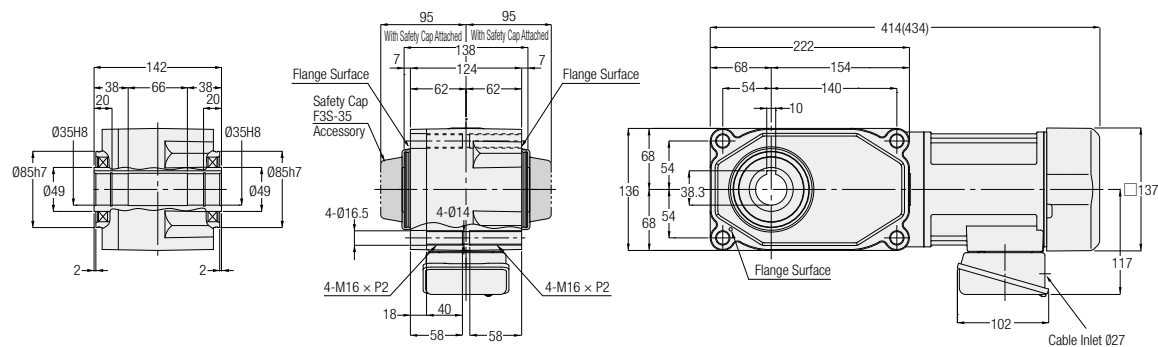
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **35**

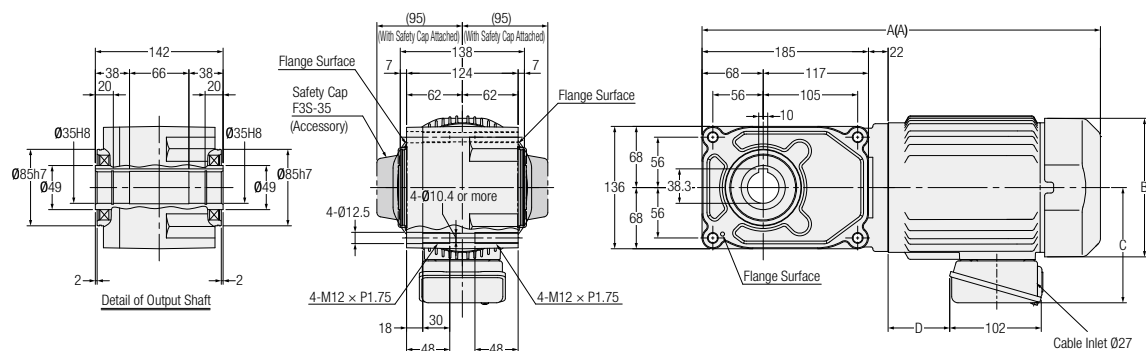
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C	D
3-Phase	0.4 kW	F3S35N***-MM04T◇◇TN	80, 100, 120, 160, 200, 240	1	No	15	-	-	-	-
		F3S35N***-MM04T◇◇TB◆			Yes	17	-	-	-	-
	0.75 kW	F3S35N***-MR08T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	21	424	□154	128	68.5
		F3S35N***-MR08T◇◇TB◆			Yes	23	443	□154	128	68.5
	1.5 kW	F3S35N***-MR15T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	28	475	□178	139	91
		F3S35N***-MR15T◇◇TB◆			Yes	31	504	□178	139	91

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 428 for the performance table.

1-3. Drawings

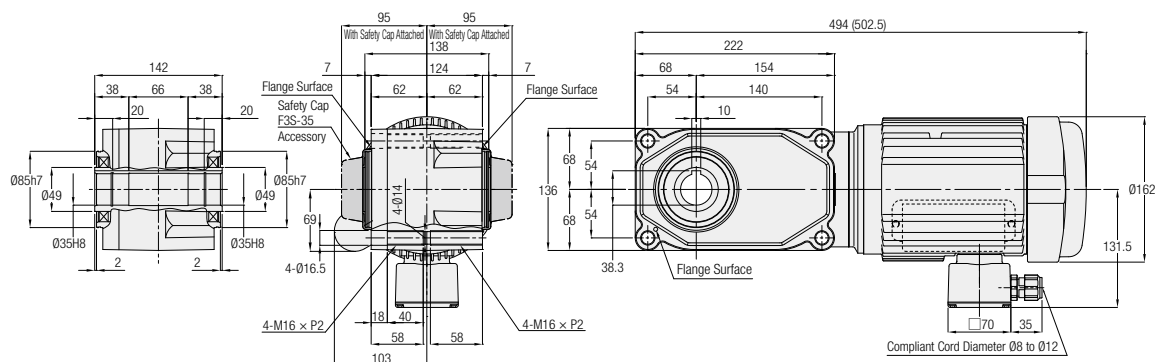
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **35**

Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
1-Phase	0.4 kW	F3S35N***-MM04C◇JAN	80, 100, 120, 160, 200, 240	1	No	21
		F3S35N***-MM04C◇JAB2			Yes	23.5

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage code will be indicated as ◇.

Note: Please refer to page 430 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

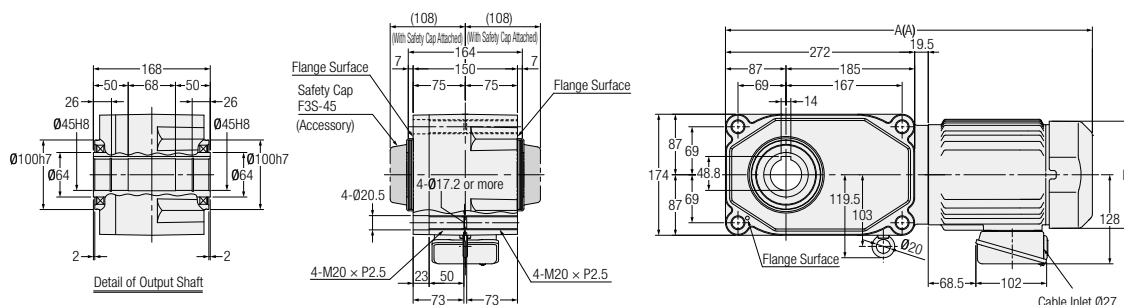
F3S Type Concentric Right Angle Hollow Bore

Shaft
Diameter **45**

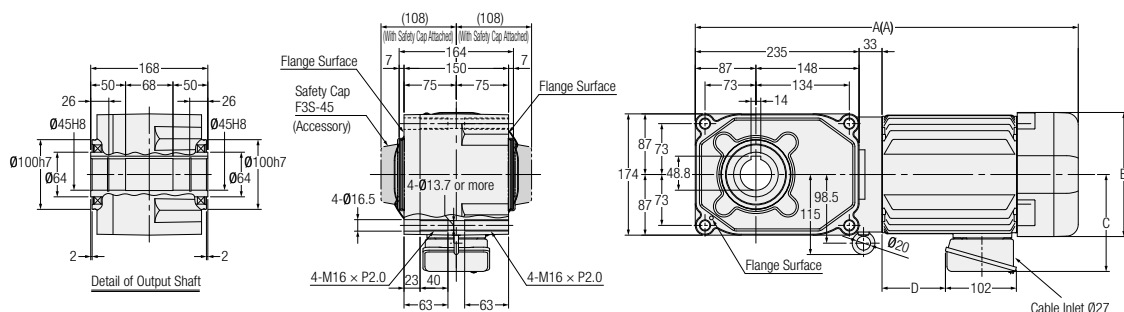
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C	D
3-Phase	0.75 kW	F3S45N***-MR08T◇◇TN	80, 100, 120, 160, 200, 240	1	No	28.5	508.5	□154	-	-
		F3S45N***-MR08T◇◇TB◆			Yes	30.5	527.5	□154	-	-
	1.5 kW	F3S45N***-MR15T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	35.5	520.5	□178	139	91
		F3S45N***-MR15T◇◇TB◆			Yes	38.5	549.5	□178	139	91
	2.2 kW	F3S45N***-MR22T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	42	570	□192	149	140
		F3S45N***-MR22T◇◇TB◆			Yes	45	599	□192	149	140

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 428 for the performance table.

1-3. Drawings

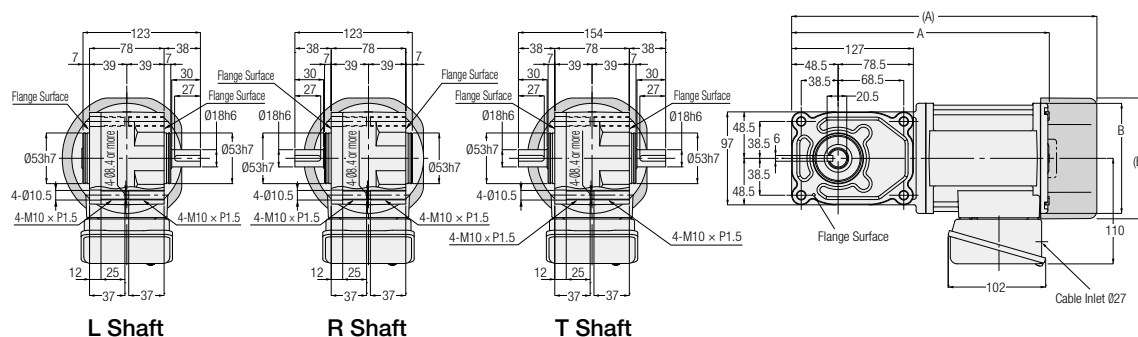
F3F Type Concentric Right Angle
Shaft

Shaft
Diameter 18

Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B
3-Phase	0.1 kW	F3F18****-MM01T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	No	6.5	254	Ø115
	0.1 kW	F3F18****-MM01T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	Yes	8	293.9	□126
	0.2 kW	F3F18****-MM02T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	1	No	7.5	269	Ø115
	0.2 kW	F3F18****-MM02T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30	1	Yes	9	319.5	□126

Note: A shaft arrangement (L, R, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, a supply voltage/certification code will be indicated as ◇◇, and a brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 433 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

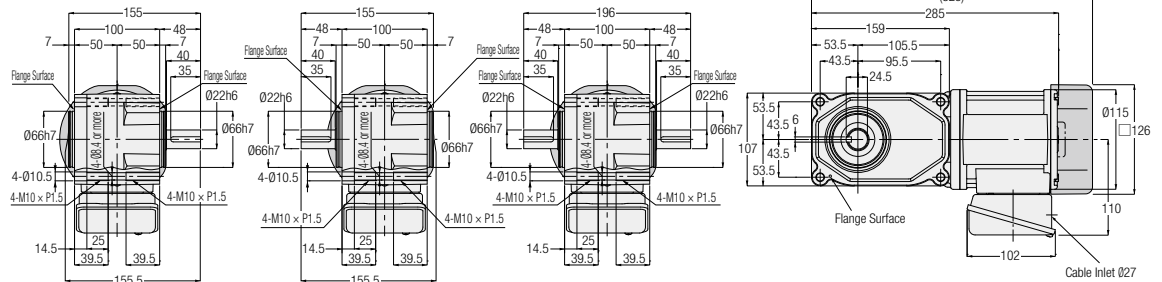
F3F Type Concentric Right Angle Shaft

Shaft Diameter 22

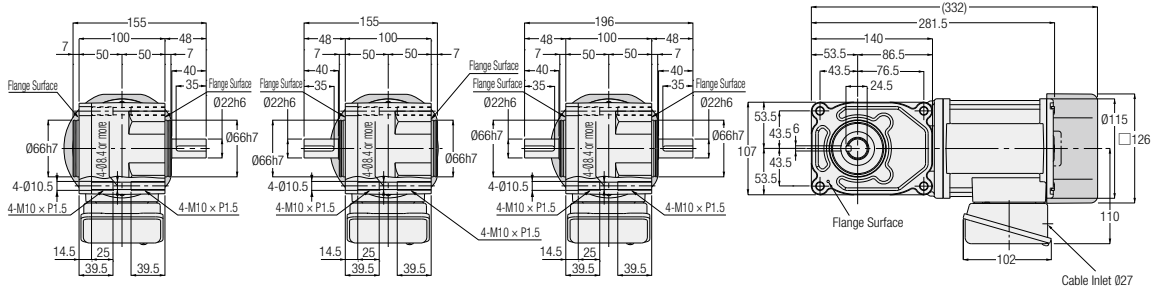
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

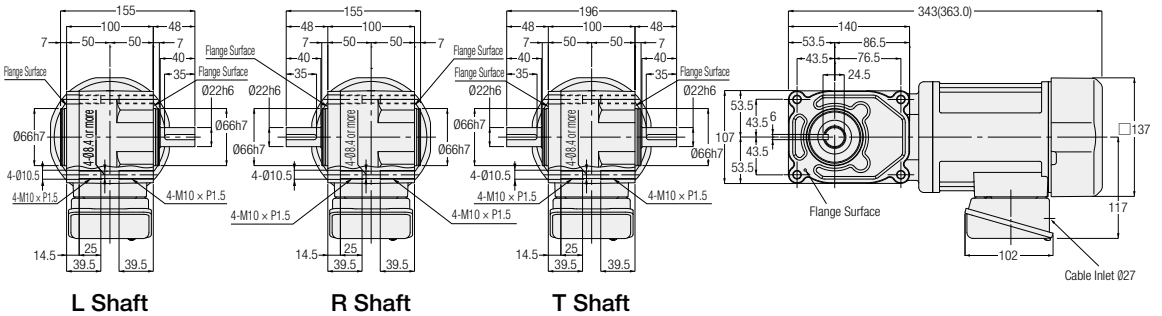
<Figure 1>



<Figure 2>



<Figure 3>



L Shaft

R Shaft

T Shaft

Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	0.1 kW	F3F22#***-MM01T◇◇TN	80, 100, 120, 160, 200, 240	1	No	8.5
		F3F22#***-MM01T◇◇TB◆			Yes	10
	0.2 kW	F3F22#***-MM02T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	9.5
		F3F22#***-MM02T◇◇TB◆			Yes	11
	0.4 kW	F3F22#***-MM04T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	11.5
		F3F22#***-MM04T◇◇TB◆			Yes	13

Note: A shaft arrangement (L, R, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, a supply voltage/certification code will be indicated as ◇◇, and a brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 433 for the performance table.

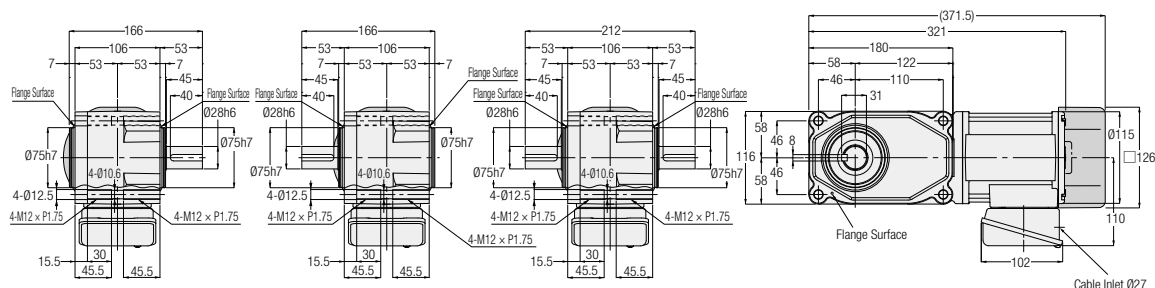
F3F Type Concentric Right Angle Shaft

Shaft
Diameter 28

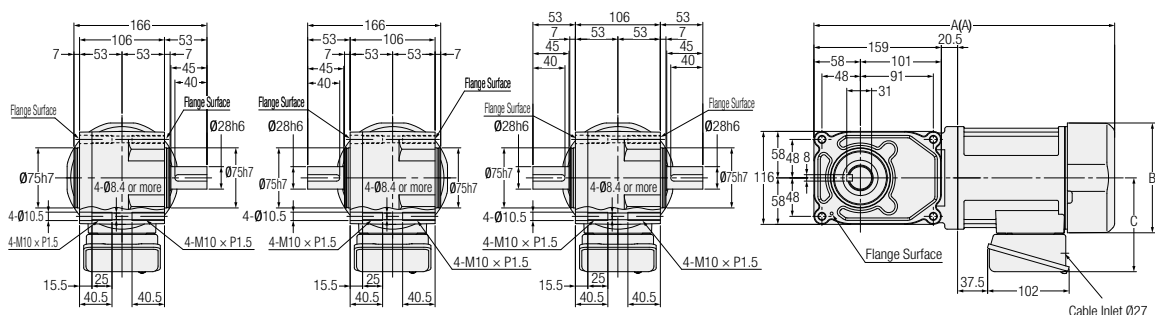
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

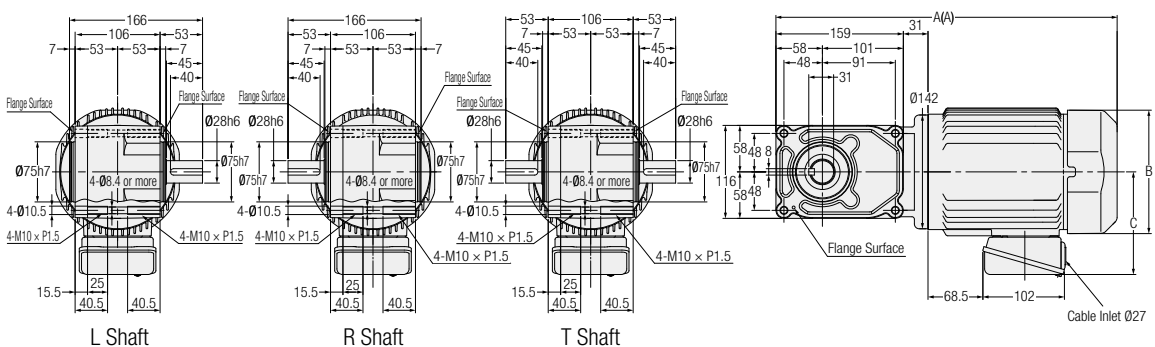
<Figure 1>



<Figure 2>



<Figure 3>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C
3-Phase	0.2 kW	F3F28****-MM02T◇◇TN	80, 100, 120, 160, 200, 240	1	No	11	-	-	-
		F3F28****-MM02T◇◇TB◆			Yes	12.5	-	-	-
	0.4 kW	F3F28****-MM04T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	13	355.5	□137	117
		F3F28****-MM04T◇◇TB◆			Yes	14.5	375.5	□137	117
	0.75 kW	F3F28****-MR08T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	20	407	□154	128
		F3F28****-MR08T◇◇TB◆			Yes	22	426	□154	128

Note: A shaft arrangement (L, R, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, a supply voltage/certification code will be indicated as ◇◇, and a brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 433 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

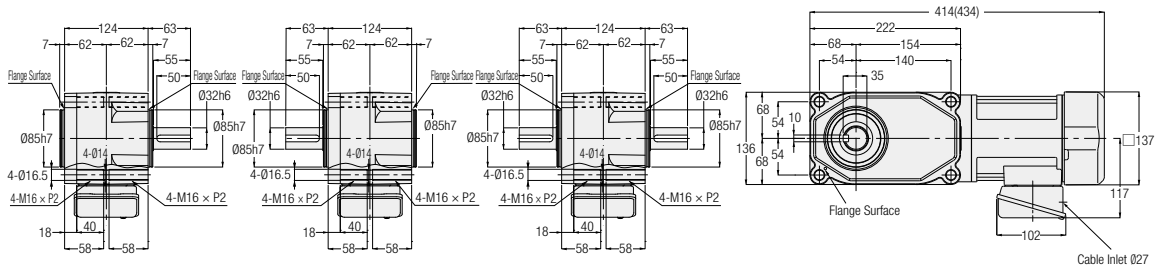
F3F Type Concentric Right Angle Shaft

Shaft
Diameter 32

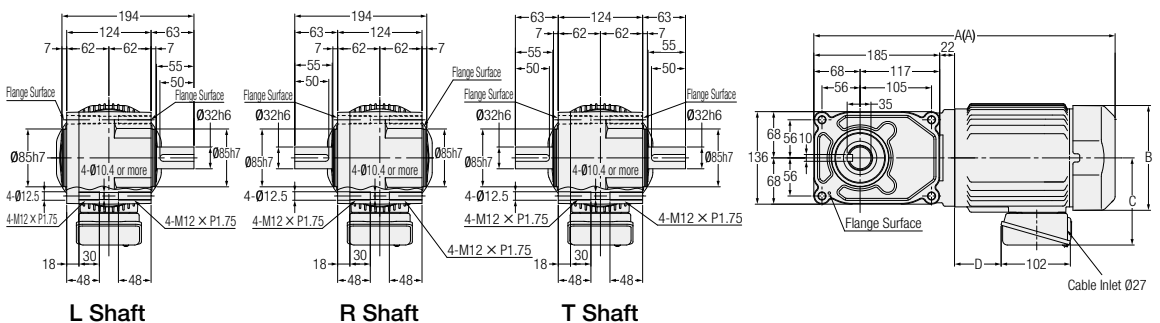
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Note: Gearmotors with a motor power of 0.75kW does not include the hanging plate.

Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C	D
3-Phase	0.4 kW	F3F32***-MM04T◇◇TN	80, 100, 120, 160, 200, 240	1	No	17	-	-	-	-
		F3F32***-MM04T◇◇TB◆	80, 100, 120, 160, 200, 240	1	Yes	19	-	-	-	-
	0.75 kW	F3F32***-MR08T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	22.5	424	□154	128	68.5
		F3F32***-MR08T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	Yes	24.5	443	□154	128	68.5
	1.5 kW	F3F32***-MR15T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	29.5	475	□178	139	91
		F3F32***-MR15T◇◇TB◆	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	Yes	32.5	504	□178	139	91

Note: A shaft arrangement (L, R, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, a supply voltage/certification code will be indicated as ◇◇, and a brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 434 for the performance table.

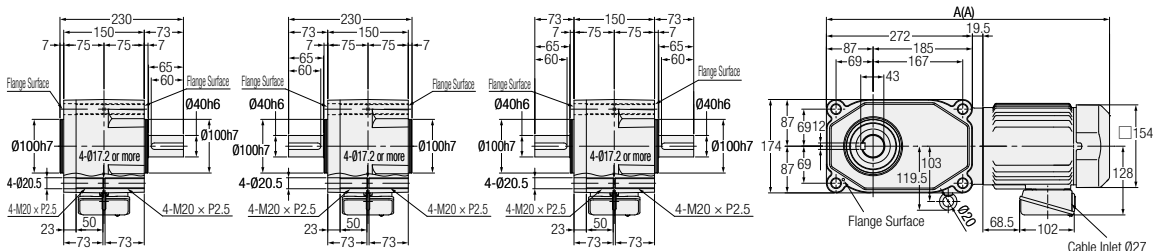
F3F Type Concentric Right Angle Shaft

Shaft Diameter **40**

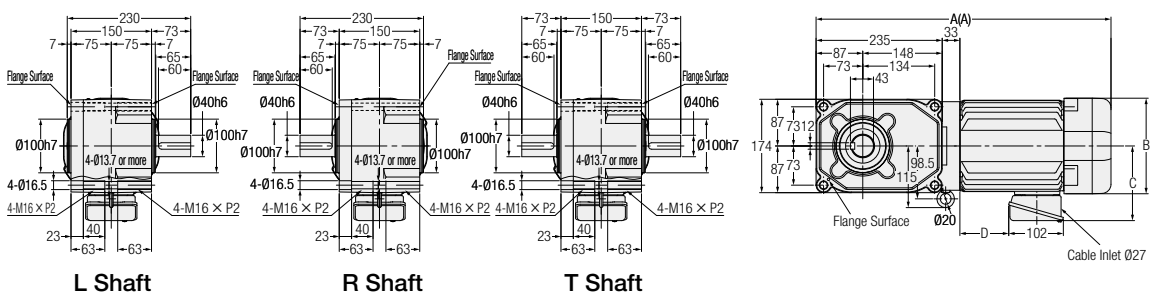
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C	D
3-Phase	0.75 kW	F3F40#***-MR08T◇◇TN	80, 100, 120, 160, 200, 240	1	No	30.5	508.5	-	-	-
		F3F40#***-MR08T◇◇TB◆			Yes	32.5	527.5	-	-	-
	1.5 kW	F3F40#***-MR15T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	38.5	520.5	□178	139	91
		F3F40#***-MR15T◇◇TB◆			Yes	41.5	549.5	□178	139	91
	2.2 kW	F3F40#***-MR22T◇◇TN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	45	570	□192	149	140
		F3F40#***-MR22T◇◇TB◆			Yes	48	599	□192	149	140

Note: A shaft arrangement (L, R, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***, a supply voltage/certification code will be indicated as $\diamond$, and a brake specification will be indicated as $\blacklozenge$.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 434 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type

Technical Documentation

Option

2. IP65 Gearmotors

IP65 Gearmotors with Brake

2-1. Motor Characteristics Table

F2 Type 3-Phase Standard Voltage <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)
MINI	15	200/200/220	50/60/60	12	0.14/0.13/0.13	1350/1550/1600	0.30/0.28/0.31
	25	200/200/220	50/60/60	12	0.21/0.19/0.19	1350/1550/1600	0.44/0.42/0.46
	40	200/200/220	50/60/60	12	0.29/0.27/0.27	1350/1550/1600	0.67/0.62/0.68
				15	0.27/0.26/0.26	1350/1550/1550	0.73/0.69/0.76
	60	200/200/220	50/60/60	15	0.40/0.36/0.36	1350/1550/1600	1.04/0.97/1.07
	90	200/200/220	50/60/60	15	0.51/0.48/0.48	1350/1550/1550	1.42/1.36/1.49

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

F2 Type 1-Phase Standard Voltage <Concentric Right Angle Hollow Bore/F2S>

Series	Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Rated Current (A)	Rated Speed (r/min)	Startup Current (A)	Capacitor (μF)
MINI	15	100/100	50/60	12	0.39/0.35	1350/1650	0.72/0.67	5
	25	100/100	50/60	12	0.48/0.48	1350/1600	0.86/0.80	7
	40	100/100	50/60	15	0.61/0.66	1350/1650	1.43/1.36	10

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

2-1. Motor Characteristics Table

F3 Type 3-Phase Standard Voltage/High Voltage (400 V Class)/Special Voltage <Concentric Right Angle Hollow Bore/F3S>

Series	Power	Power Supply/ Certification Codes	Voltage (V)	Frequency (Hz)	Rated Current (A)	Startup Current (A)	Rated Speed (r/min)
MID	0.1 kW	NN	200/200/220	50/60/60	0.61/0.54/0.54	2.39/2.27/2.52	1410/1690/1710
		WN	380/400/400/440	50/50/60/60	0.31/0.31/0.28/0.28	1.12/1.18/1.12/1.22	1400/1410/1690/1720
		KN	220/380	60/60	0.52/0.30	1.90/1.10	1680/1680
		CN	220/230/380	50/50/50	0.55/0.54/0.31	1.94/2.03/1.12	1400/1410/1400
		DN	220/220/380/380	50/60/50/60	0.55/0.52/0.31/0.30	1.94/1.90/1.12/1.10	1400/1680/1400/1680
		EN	415/440/480	50/50/60	0.30/0.29/0.26	1.06/1.12/1.17	1390/1420/1720
		AN	208/230/460/400	60/60/60/50	0.54/0.57/0.29/0.31	2.35/2.62/1.26/1.21	1690/1730/1730/1410
		MA	575	60	0.20	0.87	1700
	0.2 kW IE2	NN	200/200/220	50/60/60	1.1/1.0/1.0	4.70/4.35/4.85	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	0.56/0.56/0.50/0.50	2.29/2.38/2.29/2.48	1390/1400/1680/1710
		KN	220/380	60/60	0.93/0.52	3.70/2.20	1680/1680
		CN	220/230/380	50/50/50	0.99/0.98/0.56	3.97/4.15/2.29	1400/1410/1390
		DN	220/220/380/380	50/60/50/60	0.99/0.93/0.56/0.52	3.97/3.70/2.29/2.20	1400/1680/1390/1680
		EN	415/440/480	50/50/60	0.50/0.50/0.45	1.75/1.86/2.00	1370/1400/1700
		AN	208/230/460/400	60/60/60/50	1.0/1.0/0.50/0.56	4.78/5.16/2.56/2.44	1680/1720/1720/1400
		MA	575	60	0.40	1.78	1710
	0.4 kW IE2	NN	200/200/220	50/60/60	2.1/1.8/1.8	9.50/8.60/9.60	1400/1680/1700
		WN	380/400/400/440	50/50/60/60	1.0/1.0/0.9/0.9	4.35/4.65/4.30/4.75	1390/1400/1680/1710
		KN	220/380	60/60	1.7/1.0	7.10/4.09	1670/1670
		CN	220/230/380	50/50/50	1.8/1.8/1.0	7.63/7.88/4.43	1390/1400/1390
		DN	220/220/380/380	50/60/50/60	1.8/1.7/1.0/1.0	7.63/7.10/4.43/4.09	1390/1670/1390/1670
		EN	415/440/480	50/50/60	0.96/0.95/0.82	3.96/4.20/4.20	1390/1410/1680
		AN	208/230/460/400	60/60/60/50	1.8/1.8/0.9/1.0	8.90/9.76/4.73/4.78	1680/1720/1720/1400
		MA	575	60	0.68	3.51	1700
	0.75 kW IE3	NN	200/200/220	50/60/60	3.5/3.2/3.1	21.8/19.0/21.1	1450/1740/1750
		WN	380/400/400/440	50/50/60/60	1.73/1.72/1.58/1.54	10.2/10.8/9.8/10.7	1440/1450/1740/1750
		KN	220/380	60/60	2.9/1.7	16.9/9.8	1740/1740
		CN	220/230/380	50/50/50	3.0/3.0/1.7	17.8/18.7/10.3	1450/1450/1440
		DN	220/220/380/380	50/60/50/60	3.1/2.9/1.8/1.7	19.3/16.9/11.2/9.8	1450/1740/1450/1740
		EN	415/440/480	50/50/60	1.54/1.52/1.36	8.6/9.3/9.0	1440/1450/1750
		UN	230/460/400	60/60/50	3.1/1.5/1.7	22.3/11.2/10.8	1760/1760/1450
		MA	575	60	1.16	7.2	1750
	1.5 kW IE3	NN	200/200/220	50/60/60	6.7/6.1/5.9	45.6/40.3/45.1	1450/1740/1760
		WN	380/400/400/440	50/50/60/60	3.4/3.4/3.1/3.0	21.9/23.2/20.4/22.8	1450/1450/1750/1760
		KN	220/380	60/60	5.9/3.4	45.1/25.8	1760/1760
		CN	220/230/380	50/50/50	5.9/5.9/3.4	38.5/40.4/22.1	1450/1450/1450
		EN	415/440/480	50/50/60	3.1/3.1/2.8	20.8/22.2/21.2	1450/1460/1760
		UN	230/460/400	60/60/50	5.9/2.9/3.3	44.9/22.6/23.2	1760/1760/1450
		MA	575	60	2.2	17.0	1760
	2.2 kW IE3	NN	200/200/220	50/60/60	9.3/8.6/8.2	70.3/56.9/63.7	1470/1760/1770
		WN	380/400/400/440	50/50/60/60	4.5/4.4/4.2/3.9	30.0/32.0/25.0/28.0	1440/1450/1740/1750
		KN	220/380	60/60	8.3/4.8	65.0/38.0	1770/1770
		CN	220/230/380	50/50/50	7.9/7.7/4.5	52.0/54.3/30.0	1460/1470/1440
		EN	415/440/480	50/50/60	4.3/4.3/3.8	33.1/35.5/29.8	1460/1470/1770
		UN	230/460/400	60/60/50	7.9/4.0/4.5	65.2/34.8/36.3	1770/1770/1470
		MA	575	60	3.3	24.4	1760

The rated current in the motor characteristics table is the current data for the motor operating without a gearbox.

With regard to gearmotors with a brake, it is necessary to consider the current value flowing through the brake as needed.

For more details, please contact your nearest Sales Office or the CS Center.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

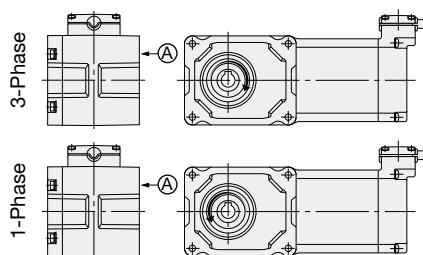
Option

2-2. Performance Table

F2 Type IP65 Gearmotors/IP65 Gearmotors with Brake <Concentric Right Angle Hollow Bore/F2S>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- Allowable output shaft O.H.L. is the value at 10 mm from the end of the output shaft.
- The “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.
- The key for the output shaft is not included.
- In the performance table, the reduction ratio in indicates that when the connection is made as shown on page 522 (CW), the direction of rotation is clockwise in the case of a three-Phase motor or counterclockwise in the case of a single-Phase motor when viewed from the side indicated by arrow ① shown in the figure on the right. (Refer to the figure on the right)



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
					r/min					
					50 Hz	60 Hz	N·m	N	N	
MINI	15 W	12	1/10	4/41	150	180	0.69	343	88	P.463
			1/15	8/123	100	120	0.98	441	108	
			1/20	2/41	75	90	1.27	539	137	
			1/25	8/205	60	72	1.67	588	147	
			1/30	4/123	50	60	1.96	686	177	
			1/40	1/41	37.5	45	2.65	784	195	
			1/50	4/205	30	36	3.33	882	226	
			1/60	20/1189	25	30	3.92	882	226	
			1/80	1/82	18.8	22.5	5.00	980	245	
			1/100	2/205	15	18	6.27	980	245	
			1/120	1/123	12.5	15	7.45	1080	275	
			1/160	1/164	9.4	11.2	9.80	1080	275	
			1/200	1/205	7.5	9	12.7	1080	275	
			1/240	5/1189	6.3	7.5	14.7	1080	275	
	25 W	12	1/10	4/41	150	180	1.08	343	88	P.463
			1/15	8/123	100	120	1.67	441	108	
			1/20	2/41	75	90	2.25	539	137	
			1/25	8/205	60	72	2.74	588	147	
			1/30	4/123	50	60	3.33	686	177	
			1/40	1/41	37.5	45	4.41	784	196	
			1/50	4/205	30	36	5.49	882	226	
			1/60	20/1189	25	30	6.66	882	226	
			1/80	1/82	18.8	22.5	8.43	980	245	
			1/100	2/205	15	18	10.8	980	245	
			1/120	1/123	12.5	15	12.7	1080	275	
			1/160	1/164	9.4	11.2	16.7	1080	275	
			1/200	1/205	7.5	9	20.6	1080	275	
			1/240	5/1189	6.3	7.5	25.5	1080	275	
	40 W	12 (Note 1)	1/10	4/41	150	180	1.76	343	88	P.463
			1/15	8/123	100	120	2.65	441	108	
			1/20	2/41	75	90	3.53	539	137	
			1/25	8/205	60	72	4.41	588	147	
			1/30	4/123	50	60	5.29	686	177	
			1/40	1/41	37.5	45	7.06	784	196	
			1/50	4/205	30	36	8.82	882	226	
			1/60	20/1189	25	30	10.8	882	226	
			1/80	1/82	18.8	22.5	13.7	980	245	
			1/100	2/205	15	18	16.7	980	245	
			1/120	1/123	12.5	15	20.6	1080	275	
			1/160	1/164	9.4	11.2	26.5	1370	343	
15	1/200	1/205	7.5	9	33.3	1370	343	P.464		
	1/240	1/246	6.3	7.5	40.2	1370	343			

2-2. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque	Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
					r/min					
					50 Hz	60 Hz	N·m	N	N	
MINI	60 W	15	1/10	4/41	150	180	2.74	343	108	P.464
			1/15	8/123	100	120	4.12	441	147	
			1/20	2/41	75	90	5.49	539	186	
			1/25	8/205	60	72	6.96	588	226	
			1/30	4/123	50	60	8.33	686	245	
			1/40	1/41	37.5	45	10.8	784	275	
			1/50	4/205	30	36	13.7	882	294	
			1/60	2/123	25	30	16.7	882	294	
			1/80	1/82	18.8	22.5	20.6	1270	324	
			1/100	2/205	15	18	26.5	1270	324	
			1/120	1/123	12.5	15	31.4	1370	343	
			1/160	1/164	9.4	11.2	42.1	1370	343	
			1/200	1/205	7.5	9	52.9	1370	343	
			* 1/240	1/246	6.3	7.5	53.9	1370	343	
	90 W	15	1/10	4/41	150	180	4.12	441	108	P.464
			1/15	8/123	100	120	6.17	588	147	
			1/20	2/41	75	90	8.33	735	186	
			1/25	8/205	60	72	10.8	882	226	
			1/30	4/123	50	60	12.7	980	245	
			1/40	1/41	37.5	45	16.7	1080	275	
			1/50	4/205	30	36	20.6	1180	294	
			1/60	2/123	25	30	24.5	1180	294	
			1/80	1/82	18.8	22.5	31.4	1270	324	
			1/100	2/205	15	18	39.2	1270	324	
			1/120	1/123	12.5	15	47.0	1370	343	
			* 1/160	1/164	9.4	11.2	53.9	1370	343	
			* 1/200	1/205	7.5	9	53.9	1370	343	
			* 1/240	1/246	6.3	7.5	53.9	1370	343	

Note 1: The frame size for Single-phase types will be 15.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

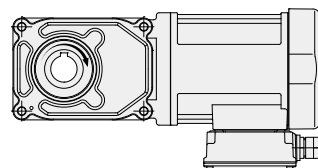
Technical Documentation

Option

F3 Type IP65 Gearmotors/IP65 Gearmotors with Brake <Concentric Right Angle Hollow Bore/F3S>

[Notes]

- The values in parentheses () in the drawings are the indications for gearmotors with brake.
- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- The key for the output shaft is not included.
- In the performance table, indicates that the shaft rotates clockwise when viewed from the flange surface side on the right when the connection is made as shown on page 523 (CW). (Refer to the figure on the right)
- Allowable output shaft O.H.L. is the value at 20 mm from the end of the output shaft.
- The “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
					r/min		N·m				
					50 Hz	60 Hz	50 Hz	60 Hz			
MID	3-Phase 0.1 kW	20	1/5	1/5	300	360	2.5	2.2	980	244	P.465
			1/7.5	2/15	200	240	3.8	3.2	1080	270	
			1/10	1/10	150	180	5.2	4.3	1180	294	
			1/12.5	2/25	120	144	6.5	5.4	1270	316	
			1/15	1/15	100	120	7.7	6.5	1320	333	
			1/20	1/20	75	90	11	8.6	1470	373	
			1/25	1/25	60	72	13	11	1570	392	
			1/30	2/59	50	60	16	13	1670	422	
			1/40	1/40	37.5	45	21	18	1810	451	
		1/50	1/50	30	36	25	22	1860	471		
		1/60	1/59	25	30	31	25	1860	471		
	25	1/80	1/80	18.8	22.5	39	32	2550	637	P.466	
		1/100	19/1880	15	18	49	41	2550	637		
		1/120	1/120	12.5	15	59	49	2550	637		
		1/160	1/160	9.4	11.3	78	66	2550	637		
		1/200	1/200	7.5	9	98	81	2550	637		
	* 1/240	1/240	6.3	7.5	101	98	2550	637			
	20 (Small Frame Model)	1/5	1/5	300	360	5.5	4.6	980	244	P.465	
		1/7.5	2/15	200	240	8.3	7	1080	270		
		1/10	1/10	150	180	11	9.2	1180	294		
		1/12.5	2/25	120	144	14	12	1270	316		
		1/15	1/15	100	120	17	14	1320	333		
		1/20	1/20	75	90	23	19	1470	373		
		1/25	1/25	60	72	27	24	1570	392		
		1/30	2/59	50	60	33	27	1670	422		
		3-Phase 0.2 kW	1/5	1/5	300	360	5.5	4.6	1230	307	P.466
			1/7.5	2/15	200	240	8.3	7	1370	342	
			1/10	1/10	150	180	11	9.2	1520	380	
			1/12.5	19/235	120	144	14	12	1620	405	
			1/15	1/15	100	120	17	14	1720	429	
			1/20	1/20	75	90	23	19	1860	466	
			1/25	1/25	60	72	27	24	2010	502	
			1/30	1/30	50	60	33	27	2110	527	
			1/40	1/40	37.5	45	44	37	2300	576	
			1/50	1/50	30	36	55	46	2450	613	
			1/60	1/60	25	30	67	55	2550	637	
			1/80	1/80	18.8	22.5	84	71	3090	775	P.467
			1/100	19/1880	15	18	105	87	3140	785	
			1/120	1/120	12.5	15	126	105	3140	785	
			1/160	1/160	9.4	11.3	169	140	3140	785	
			* 1/200	1/200	7.5	9	184	175	3140	785	
	* 1/240	1/240	6.3	7.5	184	184	3140	785			

2-2. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings	
					r/min		N·m					
					50 Hz	60 Hz	50 Hz	60 Hz				
MID	3-Phase 0.4 kW	25 (Small Frame Model)	1/5	1/5	300	360	11	9.2	1230	307	P.466	
			1/7.5	2/15	200	240	17	14	1370	342		
			1/10	1/10	150	180	23	19	1520	380		
			1/12.5	19/235	120	144	27	24	1620	405		
			1/15	1/15	100	120	33	27	1720	429		
			1/20	1/20	75	90	44	37	1860	466		
			1/25	1/25	60	72	55	46	2010	502		
			1/30	1/30	50	60	67	55	2110	527		
		30	1/5	1/5	300	360	11	9.2	1520	375	P.467	
			1/7.5	2/15	200	240	17	14	1760	438		
			1/10	1/10	150	180	23	19	1910	475		
			1/12.5	19/235	120	144	27	24	2060	506		
			1/15	1/15	100	120	33	27	2160	539		
			1/20	1/20	75	90	44	37	2400	600		
			1/25	1/25	60	72	55	46	2550	637		
			1/30	1/30	50	60	67	55	2650	662		
			1/40	1/40	37.5	45	88	74	2840	711		
			1/50	1/50	30	36	111	92	2990	747		
		1/60	1/60	25	30	133	111	3090	767			
		35	1/80	1/80	18.8	22.5	169	140	3480	873	P.468	
			1/100	19/1880	15	18	211	175	3530	883		
			1/120	1/120	12.5	15	253	211	3530	883		
			* 1/160	1/160	9.4	11.3	270	270	3630	912		
			* 1/200	1/200	7.5	9	270	270	3630	912		
			* 1/240	1/240	6.3	7.5	270	270	3630	912		
		3-Phase 0.75 kW	30 (Small Frame Model)	1/5	1/5	300	360	21	18	1520	375	P.467
				1/7.5	2/15	200	240	31	25	1760	438	
				1/10	1/10	150	180	41	34	1910	475	
				1/12.5	19/235	120	144	52	43	2060	506	
				1/15	1/15	100	120	63	52	2160	539	
	1/20			1/20	75	90	83	70	2400	600		
	1/25			1/25	60	72	104	86	2550	637		
	1/30			1/30	50	60	124	104	2650	662		
	35		1/5	1/5	300	360	21	18	1960	500	P.468	
			1/7.5	2/15	200	240	31	25	2250	567		
			1/10	1/10	150	180	41	34	2450	613		
			1/12.5	19/235	120	144	52	43	2600	669		
			1/15	1/15	100	120	63	52	2740	686		
			1/20	1/20	75	90	83	70	2990	747		
			1/25	1/25	60	72	104	86	3190	796		
			1/30	1/30	50	60	124	104	3280	821		
			1/40	1/40	37.5	45	166	138	3480	870		
			1/50	1/50	30	36	208	173	3480	870		
	1/60		1/60	25	30	249	208	3480	870			
	45		1/80	1/80	18.8	22.5	316	263	4750	1177	P.469	
			1/100	19/1880	15	18	395	328	4750	1177		
			1/120	1/120	12.5	15	473	395	4750	1177		
			* 1/160	1/160	9.4	11.3	554	526	5190	1275		
			* 1/200	1/200	7.5	9	554	554	5190	1275		
		* 1/240	1/240	6.3	7.5	554	554	5190	1275			

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

G/G3 Type Parallel Shaft	Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings	
						r/min		N·m					
						50 Hz	60 Hz	50 Hz	60 Hz				
H/H2 Type Right Angle Shaft	MID	3-Phase 1.5 kW	35 (Small Frame Model)	1/5	1/5	300	360	41	34	1960	500	P.468	
				1/7.5	2/15	200	240	63	52	2250	567		
				1/10	1/10	150	180	83	70	2450	613		
				1/12.5	19/235	120	144	104	86	2600	669		
				1/15	1/15	100	120	124	104	2740	686		
				1/20	1/20	75	90	166	138	2990	747		
				1/25	1/25	60	72	208	173	3190	796		
				1/30	1/30	50	60	249	208	3280	821		
45			1/5	1/5	300	360	41	34	2940	800	P.469		
			1/7.5	2/15	200	240	63	52	3330	900			
			1/10	1/10	150	180	83	70	3630	967			
			1/12.5	19/235	120	144	104	86	3920	1040			
			1/15	1/15	100	120	124	104	4070	1067			
			1/20	1/20	75	90	166	138	4460	1067			
3-Phase 2.2 kW		45	1/25	1/25	60	72	208	173	4700	1067		P.469	
			1/30	1/30	50	60	249	208	4750	1067			
			1/40	1/40	37.5	45	332	276	4750	1067			
			1/50	1/50	30	36	416	345	4750	1067			
			1/60	1/60	25	30	498	416	4750	1067			
			1/5	1/5	300	360	61	51	3140	800			
			1/7.5	2/15	200	240	91	76	3530	900			
			1/10	1/10	150	180	122	102	3920	967			
F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft		3-Phase 2.2 kW	45	1/12.5	19/235	120	144	152	126	4120	1040		
				1/15	1/15	100	120	182	152	4410	1067		
				1/20	1/20	75	90	244	203	4750	1067		
				1/25	1/25	60	72	305	254	4750	1067		
				1/30	1/30	50	60	366	305	4750	1067		
	• Please read the notes on page 460.												
	Technical Documentation			Option									

• Please read the notes on page 460.

2-3. Drawings

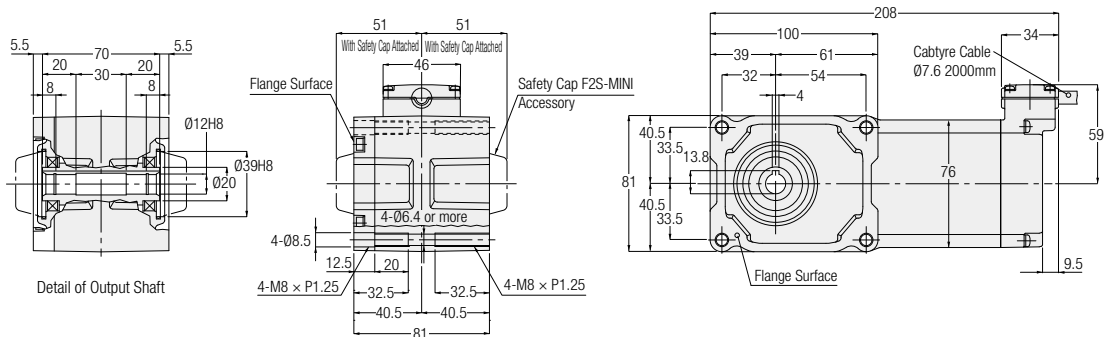
F2S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter 12

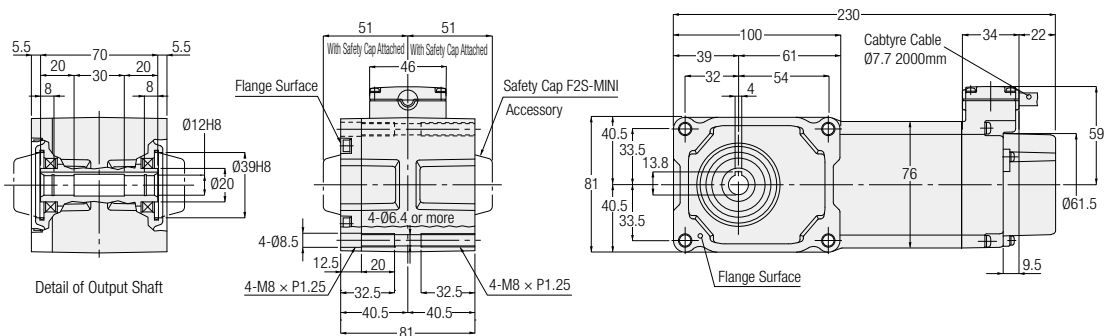
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	15 W	F2SW-12-***-T15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3.5
		F2SV-12-***-T15	120, 160, 200, 240	2	Yes	4
	25 W	F2SW-12-***-T25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3.5
		F2SV-12-***-T25	120, 160, 200, 240	2	Yes	4
1-Phase	40 W	F2SW-12-***-T40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3.5
		F2SV-12-***-T40	120	2	Yes	4
	15 W	F2SW-12-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3.5
		F2SV-12-***-S15	120, 160, 200, 240	2	Yes	4
	25 W	F2SW-12-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100,	1	No	3.5
		F2SV-12-***-S25	120, 160, 200, 240	2	Yes	4

Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 458 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

2-3. Drawings

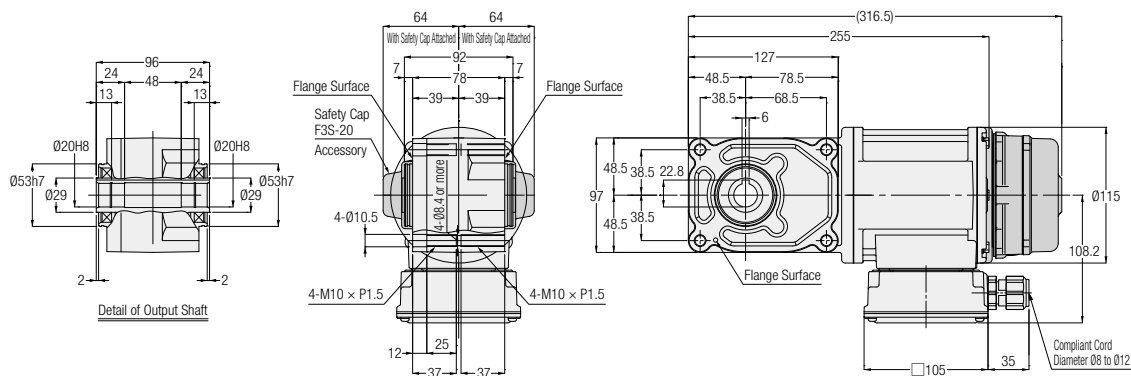
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **20**

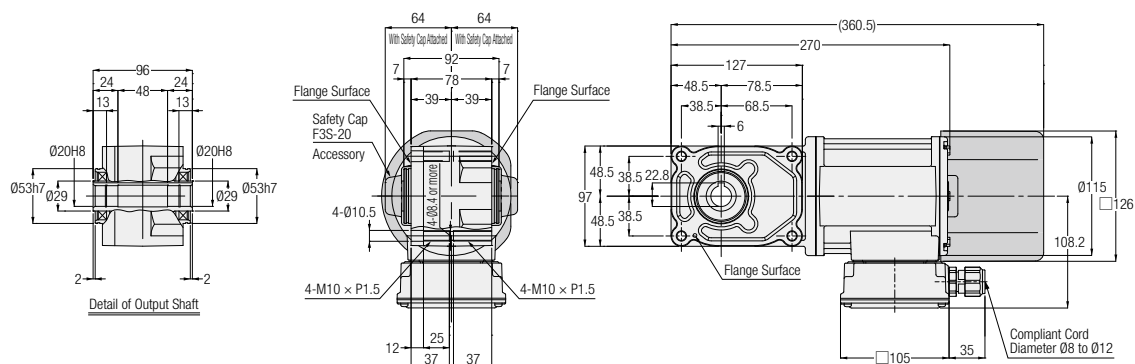
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Output Shaft: Stainless Steel	Output Shaft: Carbon Steel	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	0.1 kW	F3S20S***-WM01T◇◇EN	F3S20N***-WM01T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	1	No	6.5
		F3S20S***-WM01T◇◇EV◆	F3S20N***-WM01T◇◇EV◆			Yes	8
	0.2 kW	F3S20S***-WM02T◇◇EN	F3S20N***-WM02T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	7.5
		F3S20S***-WM02T◇◇EV◆	F3S20N***-WM02T◇◇EV◆			Yes	9

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 460 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

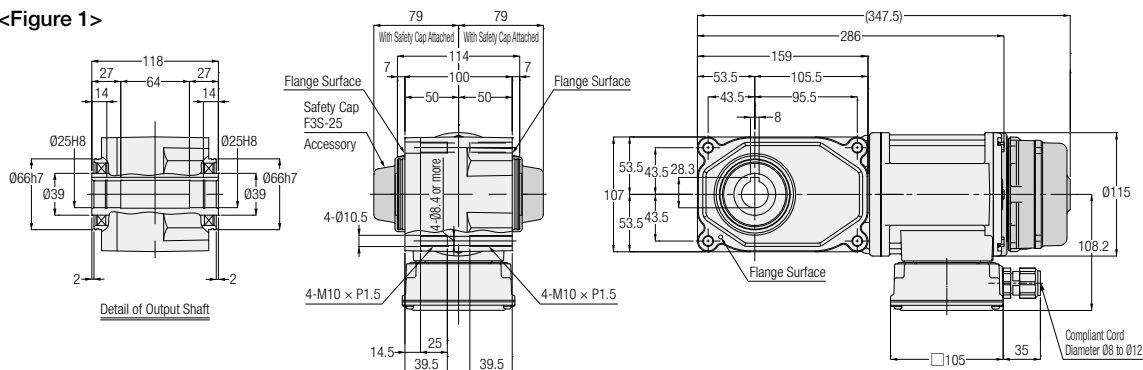
F3S Type Concentric Right Angle Hollow Bore

Shaft
Diameter 25

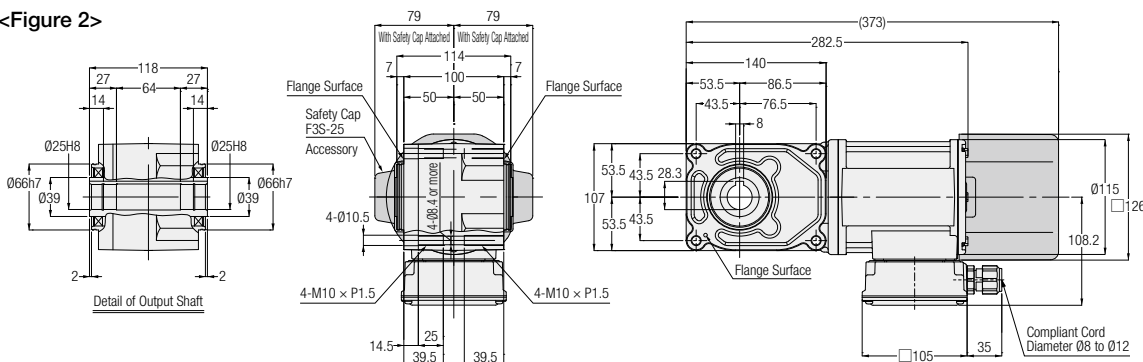
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

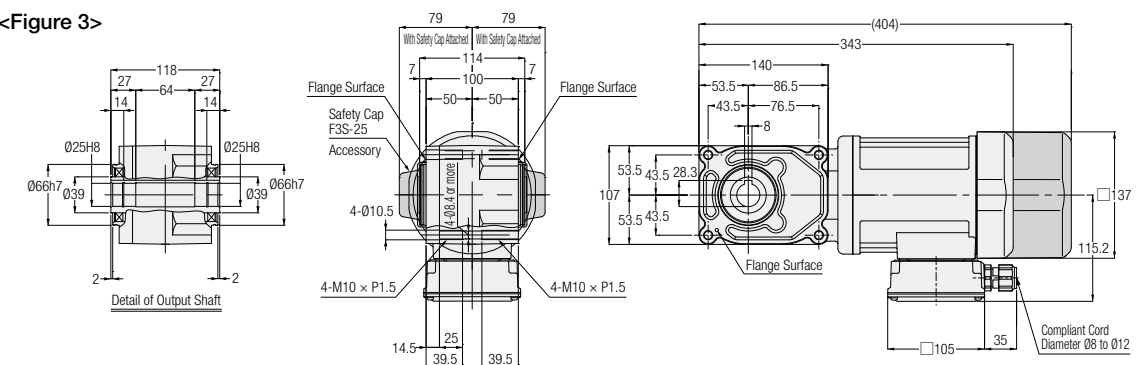
<Figure 1>



<Figure 2>



<Figure 3>



Number of Phases	Power	Output Shaft: Stainless Steel	Output Shaft: Carbon Steel	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	0.1 kW	F3S25S***-WM01T◇◇EN	F3S25N***-WM01T◇◇EN	80, 100, 120, 160, 200, 240	1	No	8
		F3S25S***-WM01T◇◇EV◆	F3S25N***-WM01T◇◇EV◆			Yes	9.5
	0.2 kW	F3S25S***-WM02T◇◇EN	F3S25N***-WM02T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	8.5
		F3S25S***-WM02T◇◇EV◆	F3S25N***-WM02T◇◇EV◆			Yes	10
	0.4 kW	F3S25S***-WM04T◇◇EN	F3S25N***-WM04T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	10.5
		F3S25S***-WM04T◇◇EV◆	F3S25N***-WM04T◇◇EV◆			Yes	12

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 460 for the performance table.

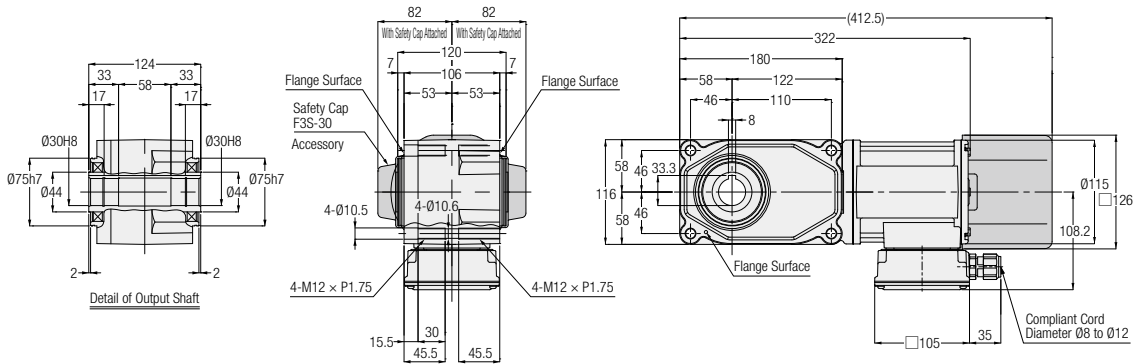
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **30**

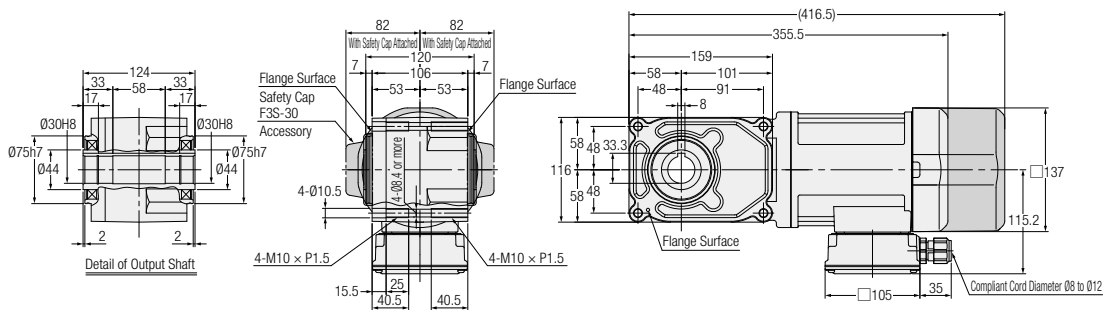
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

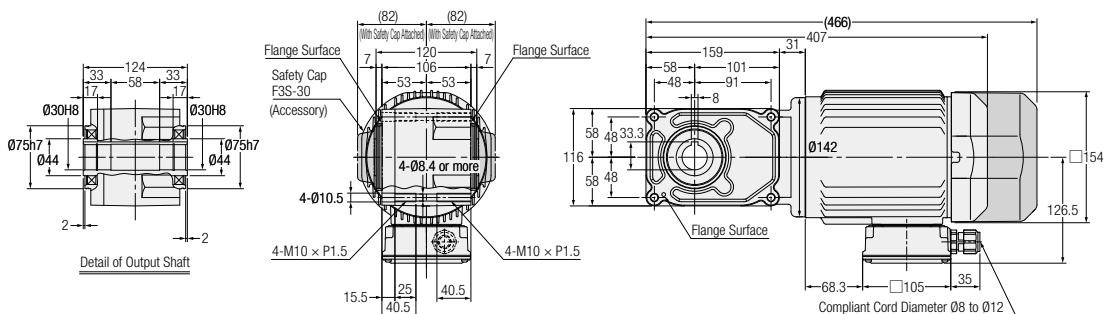
<Figure 1>



<Figure 2>



<Figure 3>



Number of Phases	Power	Output Shaft: Stainless Steel	Output Shaft: Carbon Steel	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	0.2 kW	F3S30S***-WM02T◇◇EN	F3S30N***-WM02T◇◇EN	80, 100, 120, 160, 200, 240	1	No	10
		F3S30S***-WM02T◇◇EV◆	F3S30N***-WM02T◇◇EV◆			Yes	11.5
	0.4 kW	F3S30S***-WM04T◇◇EN	F3S30N***-WM04T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	11.5
		F3S30S***-WM04T◇◇EV◆	F3S30N***-WM04T◇◇EV◆			Yes	13
	0.75 kW	F3S30S***-WR08T◇◇EN	F3S30N***-WR08T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	18.5
		F3S30S***-WR08T◇◇EV◆	F3S30N***-WR08T◇◇EV◆			Yes	20.5

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: Please refer to page 460 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

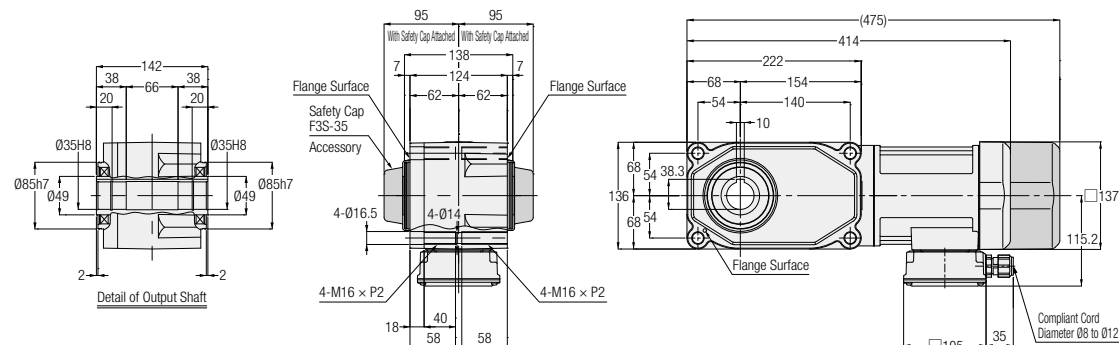
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **35**

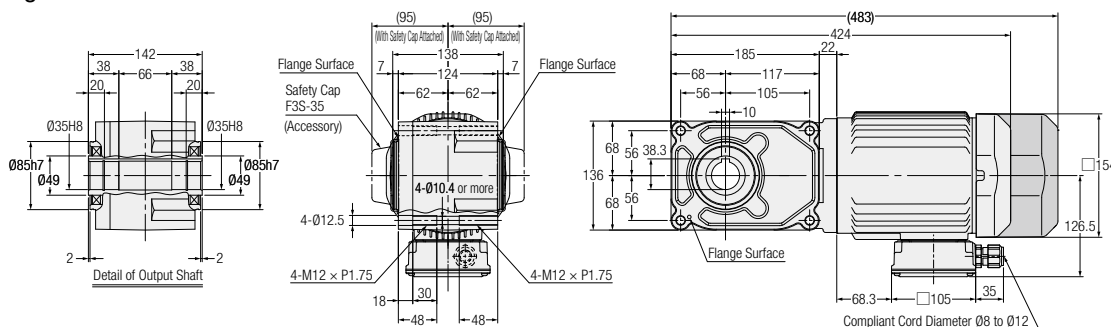
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>

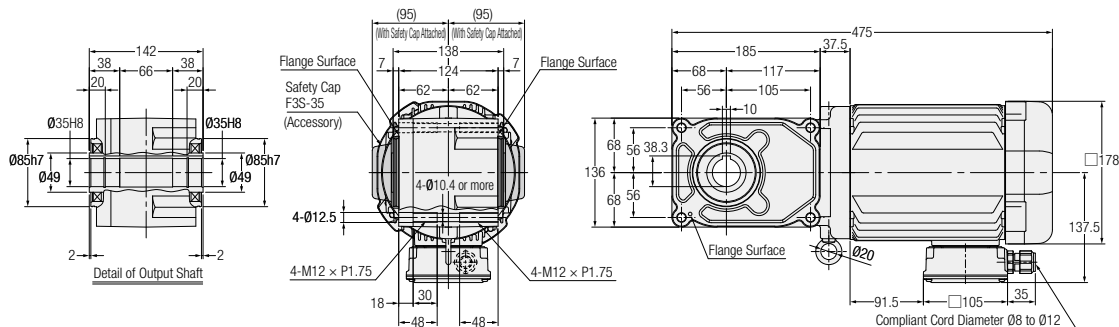


<Figure 2>



Note: Gearmotors with a motor power of 0.75 kW does not include the hanging plate.

<Figure 3>



Number of Phases	Power	Output Shaft: Stainless Steel	Output Shaft: Carbon Steel	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)
3-Phase	0.4 kW	F3S35S***-WM04T◇◇EN	F3S35N***-WM04T◇◇EN	80, 100, 120, 160, 200, 240	1	No	15
		F3S35S***-WM04T◇◇EV◆	F3S35N***-WM04T◇◇EV◆			Yes	17
	0.75 kW	F3S35S***-WR08T◇◇EN	F3S35N***-WR08T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	21
		F3S35S***-WR08T◇◇EV◆	F3S35N***-WR08T◇◇EV◆			Yes	23
	1.5 kW	F3S35S***-WR15T◇◇EN	F3S35N***-WR15T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30	3	No	28

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: There are no gearmotors with motor power of 1.5 kW that have a brake.

Note: Please refer to page 461 for the performance table.

2-3. Drawings

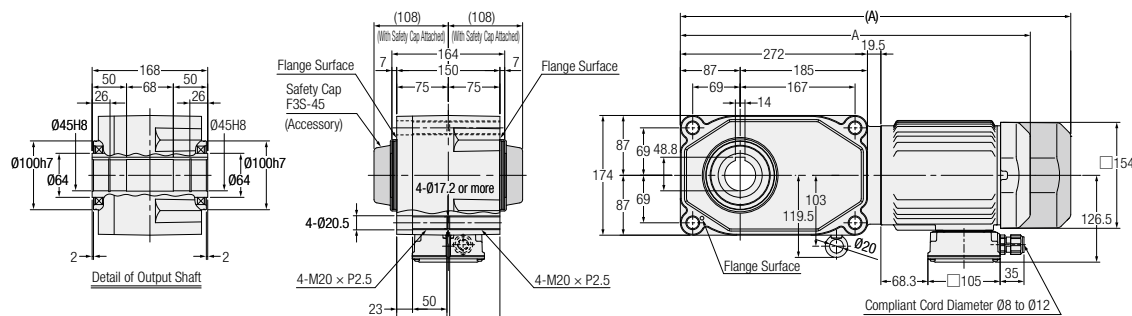
F3S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter **45**

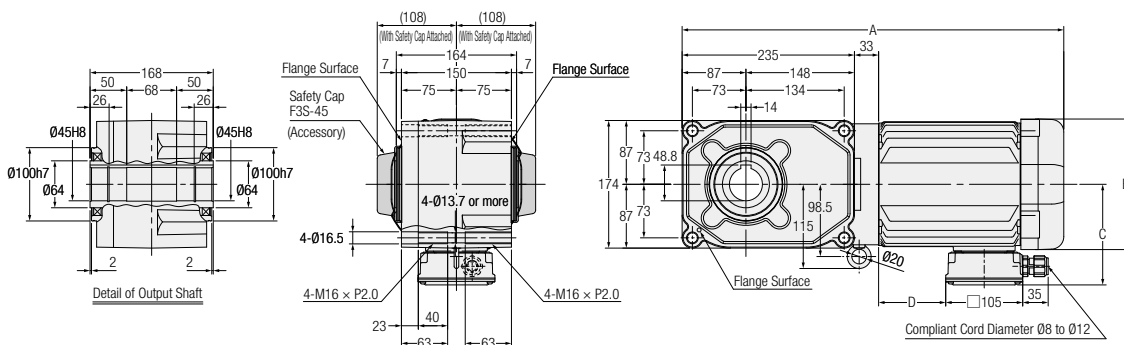
Flange Mounting

The values in parentheses () are the indications for gearmotors with brake.

<Figure 1>



<Figure 2>



Number of Phases	Power	Output Shaft: Stainless Steel	Output Shaft: Carbon Steel	Reduction Ratio	Figure Number	Brake	Approx. Weight (kg)	A	B	C	D
3-Phase	0.75 kW	F3S45S***-WR08T◇◇EN	F3S45N***-WR08T◇◇EN	80, 100, 120, 160, 200, 240	1	No	28.5	508.5	-	-	-
		F3S45S***-WR08T◇◇EV◆	F3S45N***-WR08T◇◇EV◆			Yes	30.5	567.5	-	-	-
	1.5 kW	F3S45S***-WR15T◇◇EN	F3S45N***-WR15T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	No	35.5	520.5	□178	137.5	91.5
	2.2 kW	F3S45S***-WR22T◇◇EN	F3S45N***-WR22T◇◇EN	5, 7.5, 10, 12.5, 15, 20, 25, 30	2	No	42	570	□192	147.5	140.5

Note: A reduction ratio will be indicated as *** in the nomenclature. In addition, a supply voltage/certification code will be indicated as ◇◇, and brake specification will be indicated as ◆.

Note: When the reduction ratio is 7.5, "7" will be indicated as *** in the nomenclature, and when the reduction ratio is 12.5, "12" will be indicated as *** in the nomenclature.

Note: There are no gearmotors with motor power of 1.5 kW and 2.2 kW that have a brake.

Note: Please refer to page 461 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

3. Speed Control Gearmotors

3-1. Properties and Motor Characteristics Table

Properties

This gearmotor can be controlled under a wide speed range of 50 to 1400 r/min(50 Hz) or 50 to 1700 r/min(60 Hz) with a designated speed controller via a rate generator (AC generator) installed on the motor.

■ Features

① Wide variable speed range

Our original circuit design enables the induction gearmotor to operate continuously from a low speed range of 50 r/min.

Power Source Frequency	Variable speed range
50 Hz	50 to 1400 r/min
60 Hz	50 to 1700 r/min

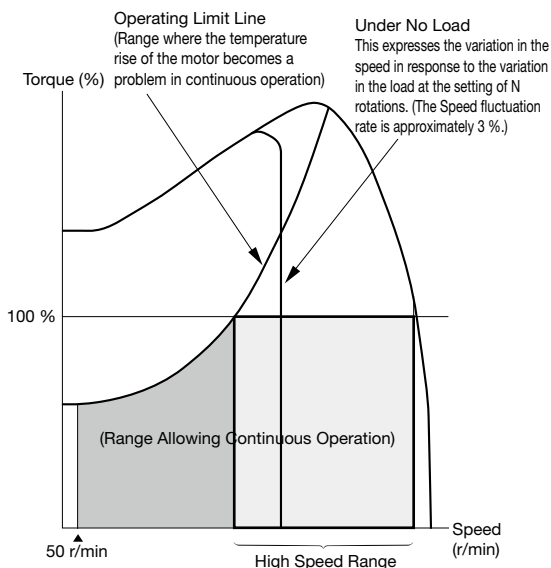
② Outstanding output characteristic

The induction motor has a high allowable load torque value in the low speed range and has a wide high-speed range characteristic as shown in the figure on the right.

③ Wide variety of types

Products available in eight main types according to applications: two U types (100 V, 200 V) connectable by means of a lead wire with a connector and six plug-in P types (100 V, 200 V).

Note: Please refer to page 606 for detailed specifications.



Note: The same speed can be obtained from a speed control gearmotor, regardless of the power source frequency. For example, a speed set in the 50 Hz region remains unchanged in the 60 Hz region, and the same speed can be obtained. (However, the maximum speed is within the range of 1400 r/min.)

Motor Characteristics Table

F2 Type 1-Phase (Speed Control Gearmotors) <Concentric Right Angle Hollow Bore/F2S, Concentric Right Angle Shaft/F2F>

Power (W)	Voltage (V)	Frequency (Hz)	Frame Size	Max Current (A)	High Speed Range (r/min)	Capacitor (μF)
15 W	100/100	50/60	12(15)	0.6/0.6	500 to 1350/550 to 1650	6
	200/200	50/60	12(15)	0.3/0.3	600 to 1400/750 to 1700	1.5
25 W	100/100	50/60	12(15)	0.6/0.6	750 to 1350/1000 to 1650	8
	200/200	50/60	12(15)	0.4/0.4	850 to 1350/1000 to 1650	2
40 W	100/100	50/60	15(18)	0.9/0.9	800 to 1350/1050 to 1650	12
	200/200	50/60	15(18)	0.5/0.5	900 to 1350/1300 to 1650	3
60 W	100/100	50/60	15(18)	1.0/1.7	700 to 1350/800 to 1650	20
	200/200	50/60	15(18)	0.8/0.9	700 to 1350/800 to 1650	5
90 W	100/100	50/60	15(18)	1.4/2.0	950 to 1300/1150 to 1600	26
	200/200	50/60	15(18)	0.9/1.0	1000 to 1350/1150 to 1600	6.5

Note: The number in the parentheses indicates the frame size of the right angle shaft model.

3-1. Properties and Motor Characteristics Table

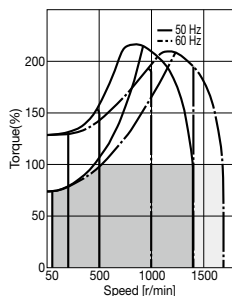
3-2. Graph for Speed Characteristics

3-2. Graph for Speed Characteristics

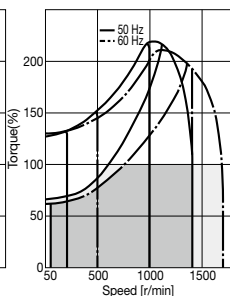
Torque-Speed Characteristic Graph

<1-Phase 15 W>

■ 100 V

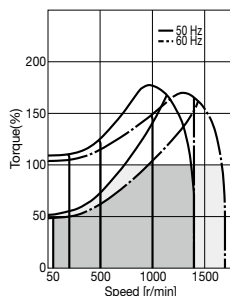


■ 200 V

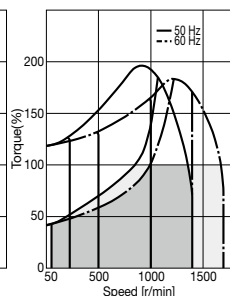


<1-Phase 25 W>

■ 100 V

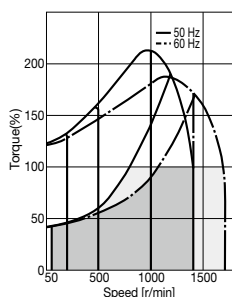


■ 200 V

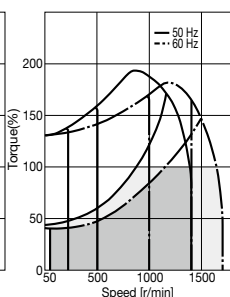


<1-Phase 40 W>

■ 100 V

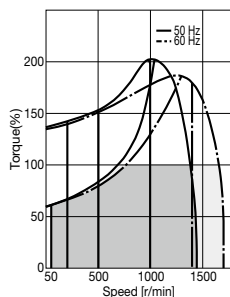


■ 200 V

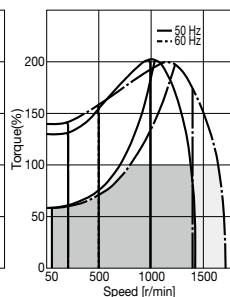


<1-Phase 60 W>

■ 100 V

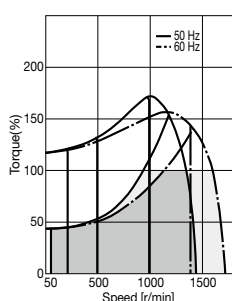


■ 200 V

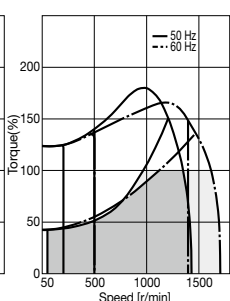


<1-Phase 90 W>

■ 100 V



■ 200 V



Note: 100 % torque represents the allowable output shaft torque at high speed.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

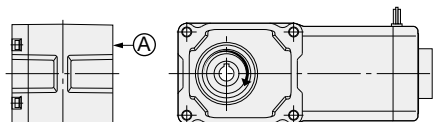
Option

3-3. Performance Table

F2 Type Speed Control Gearmotors <Concentric Right Angle Hollow Bore/F2S>

[Notes]

- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- Allowable output shaft O.H.L. is the value at 10 mm from the end of the output shaft.
- The "***" mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.
- The key for the output shaft is not included.
- In the performance table, the reduction ratio in indicates that the direction of rotation is clockwise when viewed from the side indicated by arrow (A) shown in the figure on the right when the connection is made as shown on page 522 (CW).



Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Allowable Output Shaft Torque		Drawings
					r/min				at High Speed	At 50 r/min (%)	
					50 Hz	60 Hz	N	N	N·m		
MINI	15 W	12	1/10	4/41	150	180	343	88	0.69	70 (100 V) 60 (200 V)	P.476
			1/15	8/123	100	120	441	108	0.98		
			1/20	2/41	75	90	539	137	1.27		
			1/25	8/205	60	72	588	147	1.67		
			1/30	4/123	50	60	686	177	1.96		
			1/40	1/41	37.5	45	784	195	2.65		
			1/50	4/205	30	36	882	226	3.33		
			1/60	20/1189	25	30	882	226	3.92		
			1/80	1/82	18.8	22.5	980	245	5.00		
			1/100	2/205	15	18	980	245	6.27		
			1/120	1/123	12.5	15	1080	275	7.45		
			1/160	1/164	9.4	11.2	1080	275	9.80		
			1/200	1/205	7.5	9	1080	275	12.7		
			1/240	5/1189	6.3	7.5	1080	275	14.7		
	25 W	12	1/10	4/41	150	180	343	88	1.08	50 (100 V) 45 (200 V)	P.476
			1/15	8/123	100	120	441	108	1.67		
			1/20	2/41	75	90	539	137	2.25		
			1/25	8/205	60	72	588	147	2.74		
			1/30	4/123	50	60	686	177	3.33		
			1/40	1/41	37.5	45	784	196	4.41		
			1/50	4/205	30	36	882	226	5.49		
			1/60	20/1189	25	30	882	226	6.66		
			1/80	1/82	18.8	22.5	980	245	8.43		
			1/100	2/205	15	18	980	245	10.8		
			1/120	1/123	12.5	15	1080	275	12.7		
			1/160	1/164	9.4	11.2	1080	275	16.7		
			1/200	1/205	7.5	9	1080	275	20.6		
			1/240	5/1189	6.3	7.5	1080	275	25.5		
	40 W	15	1/10	4/41	150	180	343	108	1.76	40 (100 V) (200 V)	P.477
			1/15	8/123	100	120	441	147	2.65		
			1/20	2/41	75	90	539	186	3.53		
			1/25	8/205	60	72	588	226	4.41		
			1/30	4/123	50	60	686	245	5.29		
			1/40	1/41	37.5	45	784	275	7.06		
			1/50	4/205	30	36	882	294	8.82		
			1/60	20/1189	25	30	882	294	10.8		
			1/80	1/82	18.8	22.5	980	324	13.7		
			1/100	2/205	15	18	980	324	16.7		
			1/120	1/123	12.5	15	1080	343	20.6		
			1/160	1/164	9.4	11.2	1370	343	26.5		
			1/200	1/205	7.5	9	1370	343	33.3		
			1/240	1/246	6.3	7.5	1370	343	40.2		

3-3. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Allowable Output Shaft Torque		Drawings
					r/min				at High Speed	At 50 r/min (%)	
					50 Hz	60 Hz	N	N			
MINI	60 W	15	1/10	4/41	150	180	343	108	2.74	60 (100 V) 55 (200 V)	P.477
			1/15	8/123	100	120	441	147	4.12		
			1/20	2/41	75	90	539	186	5.49		
			1/25	8/205	60	72	588	226	6.96		
			1/30	4/123	50	60	686	245	8.33		
			1/40	1/41	37.5	45	784	275	10.8		
			1/50	4/205	30	36	882	294	13.7		
			1/60	2/123	25	30	882	294	16.7		
			1/80	1/82	18.8	22.5	1270	324	20.6		
			1/100	2/205	15	18	1270	324	26.5		
			1/120	1/123	12.5	15	1370	343	31.4		
			1/160	1/164	9.4	11.2	1370	343	42.1		
			1/200	1/205	7.5	9	1370	343	52.9		
			* 1/240	1/246	6.3	7.5	1370	343	53.9		
	90 W	15	1/10	4/41	150	180	441	108	4.12	40	P.477
			1/15	8/123	100	120	588	147	6.17		
			1/20	2/41	75	90	735	186	8.33		
			1/25	8/205	60	72	882	226	10.8		
			1/30	4/123	50	60	980	245	12.7		
			1/40	1/41	37.5	45	1080	275	16.7		
			1/50	4/205	30	36	1180	294	20.6		
			1/60	2/123	25	30	1180	294	24.5		
			1/80	1/82	18.8	22.5	1270	324	31.4		
			1/100	2/205	15	18	1270	324	39.2		
			1/120	1/123	12.5	15	1370	343	47.0		
			* 1/160	1/164	9.4	11.2	1370	343	53.9		
			* 1/200	1/205	7.5	9	1370	343	53.9		
			* 1/240	1/246	6.3	7.5	1370	343	53.9		

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

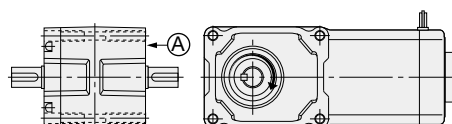
Technical Documentation

Option

F2 Type Speed Control Gearmotors <Concentric Right Angle Shaft/F2F>

[Notes]

- The output shaft speed is the value determined with the motor's synch-speed and the reduction ratio.
- Allowable output shaft O.H.L. is the value at the middle of the output shaft.
- The “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.
- In the performance table, the reduction ratio in indicates that the direction of rotation is clockwise when viewed from the side indicated by arrow ① shown in the figure on the right when the connection is made as shown on page 522 (CW).

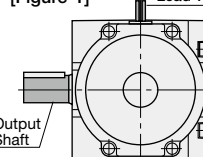


■ F2F (right angle shaft) shaft arrangement

The L shaft of the F2F (concentric right angle shaft) is as shown in [Figure-1]. The F2 type is designed for concentric flange mounting on both sides, and the output shaft can therefore be positioned on the right side as shown in [Figure-2] by rotating the gearmotor to 180° about the motor shaft. In this case, however, the lead wires will be in the lower position. If you want to set the lead wires in the upper position for the convenience of use, place an order for the lead wire lower position (option code “T6”) for a standard product [Figure-1]. By rotating the gearmotor to 180° in this state, the output shaft will be positioned on the right side with the lead wires in the upper position. Please refer to page 557 for changes of the lead wire position.

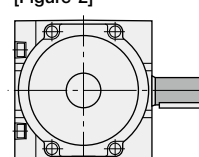
<Figure when viewed from the motor side>

[Figure-1]



When the output shaft is an L shaft, it is on the left side when viewed from the motor side with the lead wires in the upper position.

[Figure-2]



When turned 180° with the motor shaft as the center

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft O.H.L.	Allowable Output Shaft Torque		Drawings
					r/min			at High Speed	At 50 r/min (%)	
					50 Hz	60 Hz	N			
MINI	15 W	15	1/10	4/41	150	180	343	0.69	70 (100 V) 60 (200 V)	P.478
			1/15	8/123	100	120	441	0.98		
			1/20	2/41	75	90	539	1.27		
			1/25	8/205	60	72	588	1.67		
			1/30	4/123	50	60	686	1.96		
			1/40	1/41	37.5	45	784	2.65		
			1/50	4/205	30	36	882	3.33		
			1/60	20/1189	25	30	882	3.92		
			1/80	1/82	18.8	22.5	980	5.00		
			1/100	2/205	15	18	980	6.27		
			1/120	1/123	12.5	15	1080	7.45		
			1/160	1/164	9.4	11.2	1080	9.80		
			1/200	1/205	7.5	9	1080	12.7		
			1/240	5/1189	6.3	7.5	1080	14.7		
	25 W	15	1/10	4/41	150	180	343	1.08	50 (100 V) 45 (200 V)	P.478
			1/15	8/123	100	120	441	1.67		
			1/20	2/41	75	90	539	2.25		
			1/25	8/205	60	72	588	2.74		
			1/30	4/123	50	60	686	3.33		
			1/40	1/41	37.5	45	784	4.41		
			1/50	4/205	30	36	882	5.49		
			1/60	20/1189	25	30	882	6.66		
			1/80	1/82	18.8	22.5	980	8.43		
			1/100	2/205	15	18	980	10.8		
			1/120	1/123	12.5	15	1080	12.7		
			1/160	1/164	9.4	11.2	1080	16.7		
			1/200	1/205	7.5	9	1080	20.6		
			1/240	5/1189	6.3	7.5	1080	25.5		

3-3. Performance Table

Series	Motor Power	Frame Size	Reduction Ratio	Actual Reduction Ratio	Output Shaft Speed		Allowable Output Shaft O.H.L.	Allowable Output Shaft Torque		Drawings
					r/min		N	at High Speed	At 50 r/min (%)	
					50 Hz	60 Hz		N·m		
MINI	40 W	18	1/10	4/41	150	180	343	1.76	40 (100 V) (200 V)	P.479
			1/15	8/123	100	120	441	2.65		
			1/20	2/41	75	90	539	3.53		
			1/25	8/205	60	72	588	4.41		
			1/30	4/123	50	60	686	5.29		
			1/40	1/41	37.5	45	784	7.06		
			1/50	4/205	30	36	882	8.82		
			1/60	20/1189	25	30	882	10.8		
			1/80	1/82	18.8	22.5	980	13.7		
			1/100	2/205	15	18	980	16.7		
			1/120	1/123	12.5	15	1080	20.6		
			1/160	1/164	9.4	11.2	1370	26.5		
			1/200	1/205	7.5	9	1370	33.3		
			1/240	1/246	6.3	7.5	1370	40.2		
	60 W	18	1/10	4/41	150	180	343	2.74	60 (100 V) 55 (200 V)	P.479
			1/15	8/123	100	120	441	4.12		
			1/20	2/41	75	90	539	5.49		
			1/25	8/205	60	72	588	6.96		
			1/30	4/123	50	60	686	8.33		
			1/40	1/41	37.5	45	784	10.8		
			1/50	4/205	30	36	882	13.7		
			1/60	2/123	25	30	882	16.7		
			1/80	1/82	18.8	22.5	1270	20.6		
			1/100	2/205	15	18	1270	26.5		
			1/120	1/123	12.5	15	1370	31.4		
			1/160	1/164	9.4	11.2	1370	42.1		
			1/200	1/205	7.5	9	1370	52.9		
			* 1/240	1/246	6.3	7.5	1370	53.9		
	90 W	18	1/10	4/41	150	180	441	4.12	40	P.479
			1/15	8/123	100	120	588	6.17		
			1/20	2/41	75	90	735	8.33		
			1/25	8/205	60	72	882	10.8		
			1/30	4/123	50	60	980	12.7		
			1/40	1/41	37.5	45	1080	16.7		
			1/50	4/205	30	36	1180	20.6		
			1/60	2/123	25	30	1180	24.5		
			1/80	1/82	18.8	22.5	1270	31.4		
			1/100	2/205	15	18	1270	39.2		
			1/120	1/123	12.5	15	1370	47.0		
			* 1/160	1/164	9.4	11.2	1370	53.9		
			* 1/200	1/205	7.5	9	1370	53.9		
			* 1/240	1/246	6.3	7.5	1370	53.9		

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

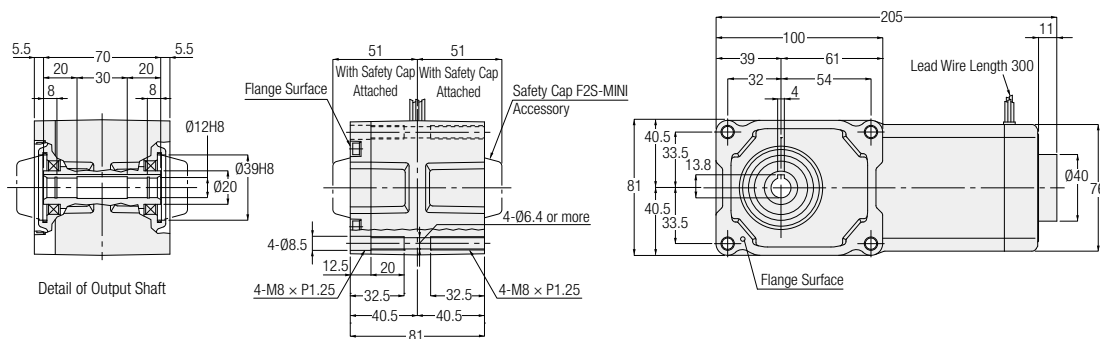
3-4. Drawings

F2S Type Concentric Right Angle
Hollow Bore

Shaft
Diameter 12

Flange Mounting

<Figure 1>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Controller	Approx. Weight (kg)
1-Phase	15 W	F2SU-12-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold as a set	3
		F2SU-12-***-S15W				
		F2SP-12-***-S15	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold Separately	3
		F2SP-12-***-S15W				
	25 W	F2SU-12-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold as a set	3
		F2SU-12-***-S25W				
		F2SP-12-***-S25	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold Separately	3
		F2SP-12-***-S25W				

Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 472 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

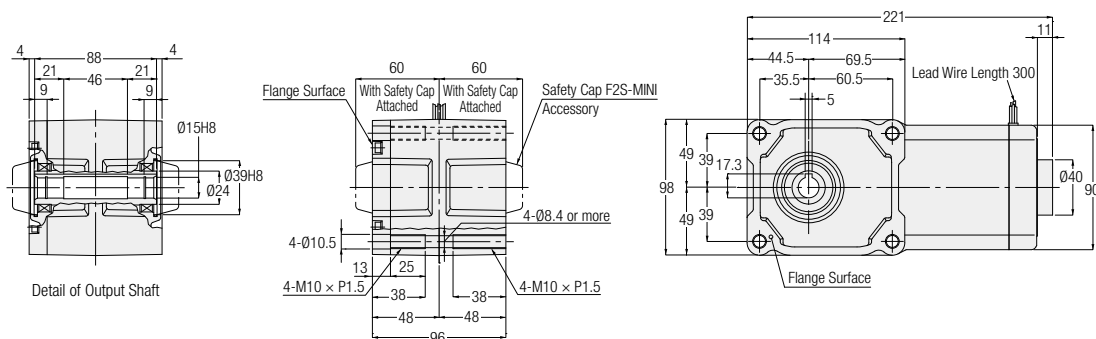
F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

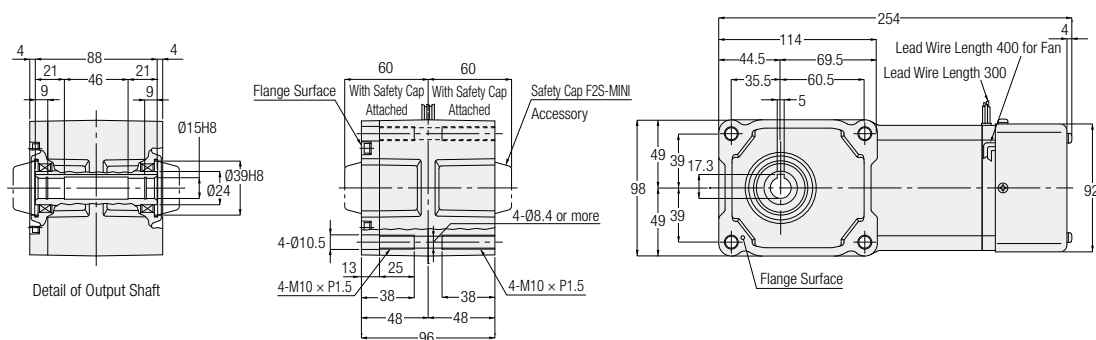
Option

F2S Type Concentric Right Angle Hollow Bore Shaft Diameter **15** Flange Mounting

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Controller	Approx. Weight (kg)
1-Phase	40 W	F2SU-15-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold as a set	4
		F2SU-15-***-S40W				
		F2SP-15-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold Separately	4
		F2SP-15-***-S40W				
	60 W	F2SU-15-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold as a set	4
		F2SU-15-***-S60W				
		F2SP-15-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold Separately	4
		F2SP-15-***-S60W				
	90 W	F2SU-15-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold as a set	4
		F2SU-15-***-S90W				
		F2SP-15-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold Separately	4
		F2SP-15-***-S90W				

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 472 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

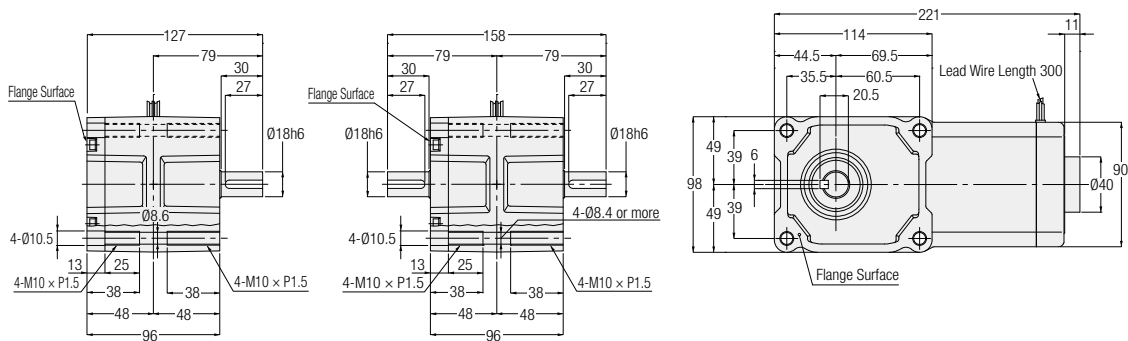
Technical Documentation

Option

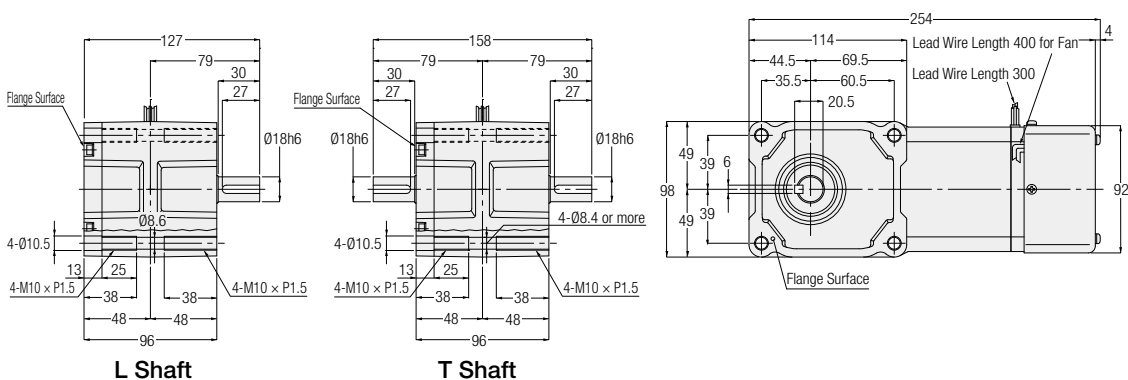
3-4. Drawings

F2F Type Concentric Right Angle Shaft Diameter 18 Flange Mounting

<Figure 1>



<Figure 2>



Number of Phases	Power	Part Number	Reduction Ratio	Figure Number	Controller	Approx. Weight (kg)
1-Phase	40 W	F2FU-18#-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold as a set	4
		F2FU-18#-***-S40W				
		F2FP-18#-***-S40	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	1	Sold Separately	4
		F2FP-18#-***-S40W				
	60 W	F2FU-18#-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold as a set	4
		F2FU-18#-***-S60W				
		F2FP-18#-***-S60	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold Separately	4
		F2FP-18#-***-S60W				
	90 W	F2FU-18#-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold as a set	4
		F2FU-18#-***-S90W				
		F2FP-18#-***-S90	10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 160, 200, 240	2	Sold Separately	4
		F2FP-18#-***-S90W				

Note: A shaft arrangement (L, T) will be indicated as # in the nomenclature. In addition, a reduction ratio will be indicated as ***.

Note: Please refer to page 475 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

4. Reducers (Double Shaft Type)

4-1. Performance Table

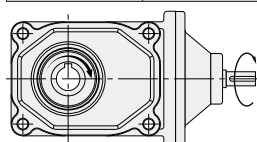
[Notes]

- The motor power class value is based on usage with a 4 poles motor.
- When using a motor other than a 4 poles motor, the value obtained by multiplying the torque by the torque correction coefficient shown on page 601 shall be the allowable output shaft torque at the rotation.
- Allowable output shaft O.H.L. is the value at 20 mm from the end of the output shaft.
- Please refer to “**■ Rotational Direction Relationship (when viewed from the flange surface side)**” for the rotational direction of the output shaft.
- The “*” mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.
- The key for the output shaft is not included.

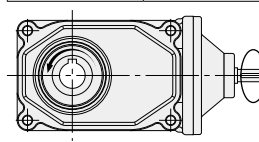
■ Rotational Direction Relationship (when viewed from the flange surface side)

The rotational direction shown with arrow illustrates the rotation relationship between the output shaft and input shaft/ and is no way illustrating limitations in rotational direction.

Type	Power	Reduction Ratio
Concentric Right Angle Hollow Bore/F3S Type	0.1 kW to 2.2 kW	1/5 to 1/60



Type	Power	Reduction Ratio
Concentric Right Angle Hollow Bore/F3S Type	0.1 kW to 0.75 kW	1/80 to 1/240



4 Poles Motor Power Class	Frame Size	Reduction Ratio	Actual Reduction Ratio	Allowable Output Shaft Torque Input (1500 r/min)	Allowable O.H.L.		Allowable Output Shaft Thrust Load	Drawings
					N			
				Input Shaft	Output Shaft	N		
0.1 kW	20	1/5	1/5	2.5	196	980	244	P.482
		1/7.5	2/15	3.8		1080	270	
		1/10	1/10	5.2		1180	294	
		1/12.5	2/25	6.5		1270	316	
		1/15	1/15	7.7		1320	333	
		1/20	1/20	11		1470	373	
		1/25	1/25	13		1570	392	
		1/30	2/59	16		1670	422	
		1/40	1/40	21		1810	451	
		1/50	1/50	25		1860	471	
	1/60	1/59	31	1860	471			
	25	1/80	1/80	39	196	2550	637	P.482
		1/100	19/1880	49		2550	637	
		1/120	1/120	59		2550	637	
		1/160	1/160	78		2550	637	
		1/200	1/200	98		2550	637	
		* 1/240	1/240	101		2550	637	
	0.2 kW	25	1/5	1/5	5.5	245	1230	307
1/7.5			2/15	8.3	1370		342	
1/10			1/10	11	1520		380	
1/12.5			19/235	14	1620		405	
1/15			1/15	17	1720		429	
1/20			1/20	23	1860		466	
1/25			1/25	27	2010		502	
1/30			1/30	33	2110		527	
1/40			1/40	44	2300		576	
1/50			1/50	55	2450		613	
1/60		1/60	67	2550	637			
30		1/80	1/80	84	245	3090	775	P.483
		1/100	19/1880	105		3140	785	
		1/120	1/120	126		3140	785	
		1/160	1/160	169		3140	785	
		* 1/200	1/200	184		3140	785	
		* 1/240	1/240	184		3140	785	

4-1. Performance Table

4 Poles Motor Power Class	Frame Size	Reduction Ratio	Actual Reduction Ratio	Allowable Output Shaft Torque Input (1500 r/min)	Allowable O.H.L.		Allowable Output Shaft Thrust Load	Drawings	
					N				
				Input Shaft	Output Shaft	N			
0.4 kW	30	1/5	1/5	11	294	1520	375	P.483	
		1/7.5	2/15	17		1760	438		
		1/10	1/10	23		1910	475		
		1/12.5	19/235	27		2060	506		
		1/15	1/15	33		2160	539		
		1/20	1/20	44		2400	600		
		1/25	1/25	55		2550	637		
		1/30	1/30	67		2650	662		
		1/40	1/40	88		2840	711		
		1/50	1/50	111		2990	747		
		1/60	1/60	133		3090	767		
	35	1/80	1/80	169	294	3480	873	P.484	
		1/100	19/1880	211		3530	883		
		1/120	1/120	253		3530	883		
		* 1/160	1/160	270		3630	912		
		* 1/200	1/200	270		3630	912		
		* 1/240	1/240	270		3630	912		
0.75 kW	35	1/5	1/5	21	392	1960	500	P.484	
		1/7.5	2/15	31		2250	567		
		1/10	1/10	41		2450	613		
		1/12.5	19/235	52		2600	669		
		1/15	1/15	63		2740	686		
		1/20	1/20	83		2990	747		
		1/25	1/25	104		3190	796		
		1/30	1/30	124		3280	821		
		1/40	1/40	166		3480	870		
		1/50	1/50	208		3480	870		
		1/60	1/60	249		3480	870		
	45	1/80	1/80	316	392	4750	1177	P.485	
		1/100	19/1880	395		4750	1177		
		1/120	1/120	473		4750	1177		
		* 1/160	1/160	554		5190	1275		
		* 1/200	1/200	554		5190	1275		
		* 1/240	1/240	554		5190	1275		
		1.5 kW	45	1/5		1/5	41		392
	1/7.5			2/15	63	3330	900		
	1/10			1/10	83	3630	967		
	1/12.5			19/235	104	3920	1040		
	1/15			1/15	124	4070	1067		
	1/20			1/20	166	4460	1067		
	1/25			1/25	208	4700	1067		
	1/30			1/30	249	4750	1067		
	1/40			1/40	332	4750	1067		
	1/50			1/50	416	4750	1067		
	1/60			1/60	498	4750	1067		
2.2 kW	45	1/5	1/5	61	392	3140	800	P.485	
		1/7.5	2/15	91		3530	900		
		1/10	1/10	122		3920	967		
		1/12.5	19/235	152		4120	1040		
		1/15	1/15	182		4410	1067		
		1/20	1/20	244		4750	1067		
		1/25	1/25	305		4750	1067		
		1/30	1/30	366		4750	1067		
		1/5	1/5	61		3140	800		
		1/7.5	2/15	91		3530	900		

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

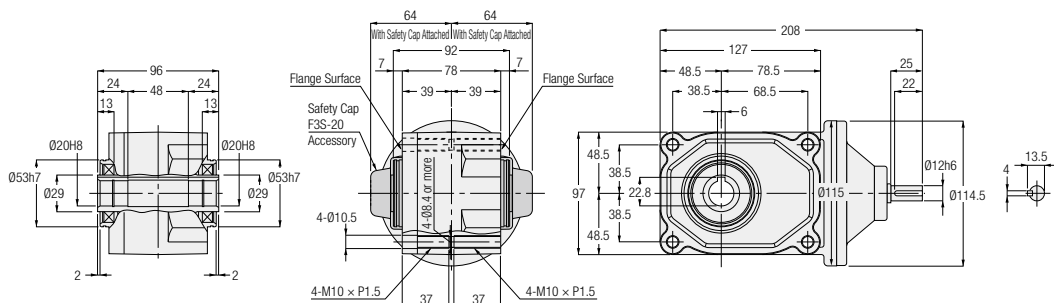
4-2. Drawings

F3S Type Concentric Right Angle Hollow Bore

Shaft
Diameter **20**

Flange Mounting

<Figure 1>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.1 kW	F3S-20-***-010	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	1	3.5

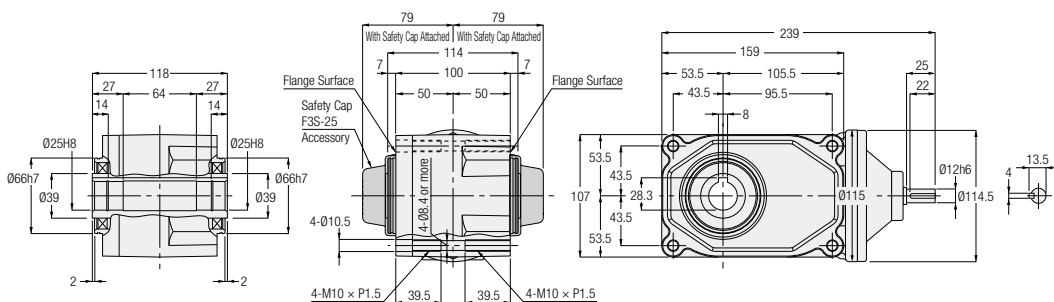
Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 480 for the performance table.

F3S Type Concentric Right Angle Hollow Bore

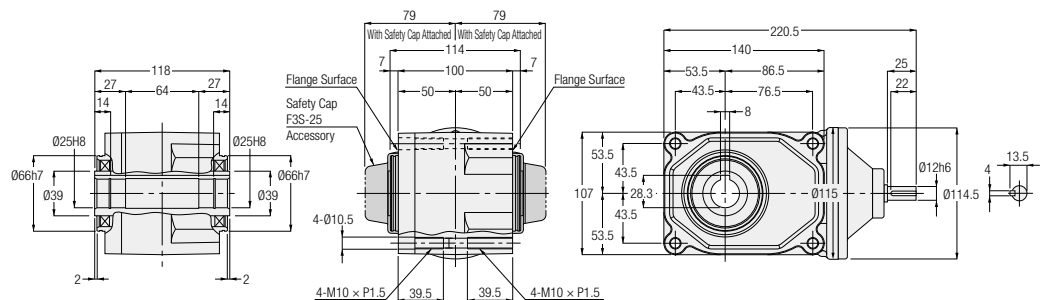
Shaft
Diameter **25**

Flange Mounting

<Figure 2>



<Figure 3>

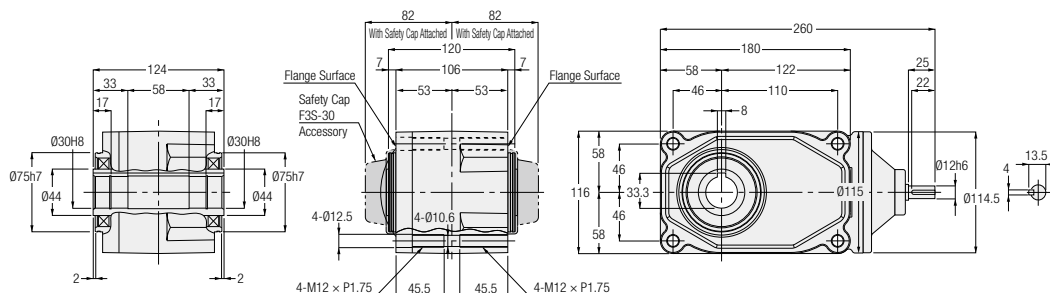


Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.1 kW	F3S-25-***-010	80, 100, 120, 160, 200, 240	2	5
0.2 kW	F3S-25-***-020	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	3	5

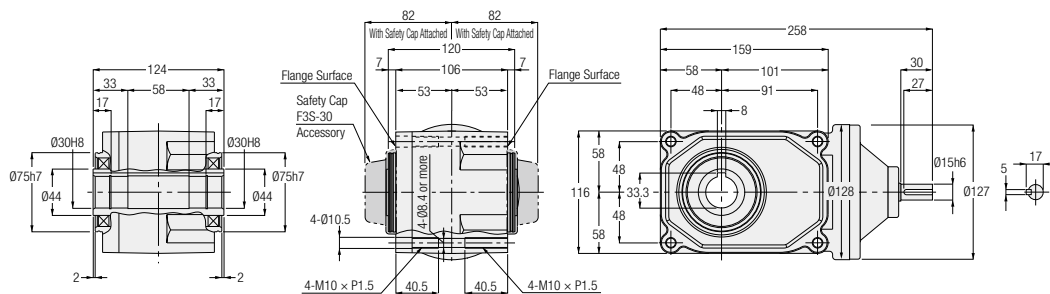
Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 480 for the performance table.

F3S Type Concentric Right Angle Hollow Bore Shaft Diameter **30** Flange Mounting

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.2 kW	F3S-30-***-020	80, 100, 120, 160, 200, 240	1	6.5
0.4 kW	F3S-30-***-040	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	2	6.5

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 480 for the performance table.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

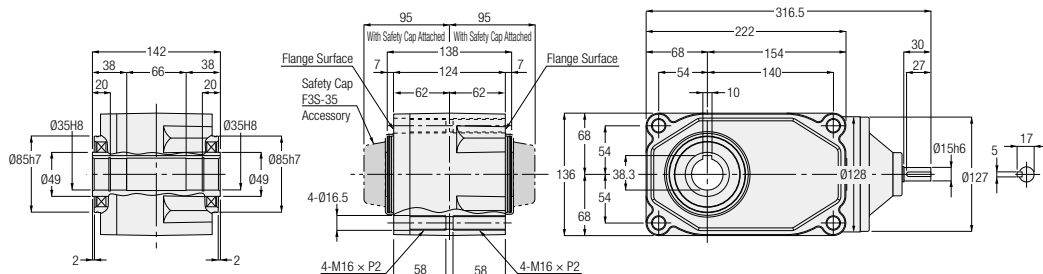
F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

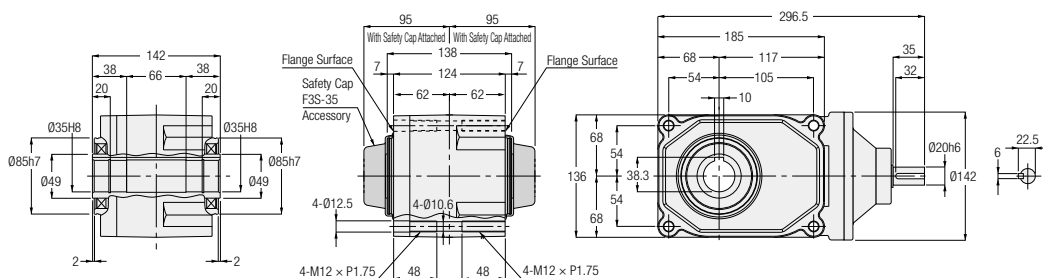
Option

F3S Type Concentric Right Angle
Hollow Bore Shaft Diameter **35** **Flange Mounting**

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.4 kW	F3S-35-***-040	80, 100, 120, 160, 200, 240	1	9
0.75 kW	F3S-35-***-075	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	2	9

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 481 for the performance table.

5. S-Type Reducers (Type Which Can Be Equipped with Designated Motor)

5-1. Performance Table

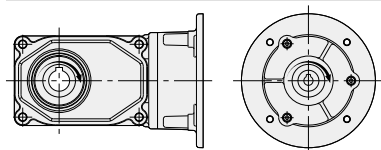
[Notes]

- The value of the allowable output shaft torque is the value when a 4 poles motor is used.
- When using a motor other than a 4 poles motor, the value obtained by multiplying the torque by the torque correction coefficient shown on page 601 shall be the allowable output shaft torque at the rotation.
- The key for the output shaft is not included.
- Allowable output shaft O.H.L. is the value at 20 mm from the end of the output shaft.
- Please refer to "■ Rotational Direction Relationship (when viewed from the flange surface side)" for the rotational direction of the output shaft.
- The "*" mark indicates a limited torque type. Please make sure to check the allowable output shaft torque in the performance table.

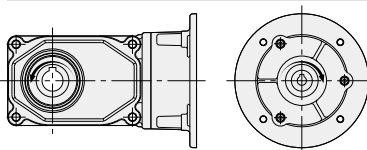
■ Rotational Direction Relationship (when viewed from the flange surface side)

The rotational direction shown with arrow illustrates the rotation relationship between the output shaft and input shaft/ and is no way illustrating limitations in rotational direction.

Type	Power	Reduction Ratio
Concentric Right Angle Hollow Bore/F3S Type	0.1 kW to 2.2 kW	1/5 to 1/60



Type	Power	Reduction Ratio
Concentric Right Angle Hollow Bore/F3S Type	0.1 kW to 0.75 kW	1/80 to 1/240



4 Poles Motor Power Class	Frame Size	Reduction Ratio	Actual Reduction Ratio	Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
				N·m				
				50 Hz	60 Hz	N	N	
0.1 kW	20	1/5	1/5	2.5	2.2	980	244	P.488
		1/7.5	2/15	3.8	3.2	1080	270	
		1/10	1/10	5.2	4.3	1180	294	
		1/12.5	2/25	6.5	5.4	1270	316	
		1/15	1/15	7.7	6.5	1320	333	
		1/20	1/20	11	8.6	1470	373	
		1/25	1/25	13	11	1570	392	
		1/30	2/59	16	13	1670	422	
	25	1/40	1/40	21	18	1810	451	P.488
		1/50	1/50	25	22	1860	471	
		1/60	1/59	31	25	1860	471	
		1/80	1/80	39	32	2550	637	
		1/100	19/1880	49	41	2550	637	
		1/120	1/120	59	49	2550	637	
0.2 kW	25	1/160	1/160	78	66	2550	637	P.488
		1/200	1/200	98	81	2550	637	
		* 1/240	1/240	101	98	2550	637	
		1/5	1/5	5.5	4.6	1230	307	
		1/7.5	2/15	8.3	7	1370	342	
		1/10	1/10	11	9.2	1520	380	
		1/12.5	19/235	14	12	1620	405	
		1/15	1/15	17	14	1720	429	
		1/20	1/20	23	19	1860	466	
		1/25	1/25	27	24	2010	502	
	30	1/30	1/30	33	27	2110	527	P.488
		1/40	1/40	44	37	2300	576	
		1/50	1/50	55	46	2450	613	
		1/60	1/60	67	55	2550	637	
1/80		1/80	84	71	3090	775		
1/100		19/1880	105	87	3140	785		
30	1/120	1/120	126	105	3140	785	P.489	
	1/160	1/160	169	140	3140	785		
	* 1/200	1/200	184	175	3140	785		
	* 1/240	1/240	184	184	3140	785		

5-1. Performance Table

4 Poles Motor Power Class	Frame Size	Reduction Ratio	Actual Reduction Ratio	Allowable Output Shaft Torque		Allowable Output Shaft O.H.L.	Allowable Output Shaft Thrust Load	Drawings
				N·m				
				50 Hz	60 Hz	N	N	
0.4 kW	30	1/5	1/5	11	9.2	1520	375	P.489
		1/7.5	2/15	17	14	1760	438	
		1/10	1/10	23	19	1910	475	
		1/12.5	19/235	27	24	2060	506	
		1/15	1/15	33	27	2160	539	
		1/20	1/20	44	37	2400	600	
		1/25	1/25	55	46	2550	637	
		1/30	1/30	67	55	2650	662	
		1/40	1/40	88	74	2840	711	
	35	1/50	1/50	111	92	2990	747	P.490
		1/60	1/60	133	111	3090	767	
		1/80	1/80	169	140	3480	873	
		1/100	19/1880	211	175	3530	883	
		1/120	1/120	253	211	3530	883	
		* 1/160	1/160	270	270	3630	912	
		* 1/200	1/200	270	270	3630	912	
		* 1/240	1/240	270	270	3630	912	
0.75 kW	35	1/5	1/5	21	18	1960	500	P.490
		1/7.5	2/15	31	25	2250	567	
		1/10	1/10	41	34	2450	613	
		1/12.5	19/235	52	43	2600	669	
		1/15	1/15	63	52	2740	686	
		1/20	1/20	83	70	2990	747	
		1/25	1/25	104	86	3190	796	
		1/30	1/30	124	104	3280	821	
		1/40	1/40	166	138	3480	870	
	45	1/50	1/50	208	173	3480	870	P.491
		1/60	1/60	249	208	3480	870	
		1/80	1/80	316	263	4750	1177	
		1/100	19/1880	395	328	4750	1177	
		1/120	1/120	473	395	4750	1177	
		* 1/160	1/160	554	526	5190	1275	
		* 1/200	1/200	554	554	5190	1275	
		* 1/240	1/240	554	554	5190	1275	
1.5 kW	45	1/5	1/5	41	34	2940	800	P.491
		1/7.5	2/15	63	52	3330	900	
		1/10	1/10	83	70	3630	967	
		1/12.5	19/235	104	86	3920	1040	
		1/15	1/15	124	104	4070	1067	
		1/20	1/20	166	138	4460	1067	
		1/25	1/25	208	173	4700	1067	
		1/30	1/30	249	208	4750	1067	
		1/40	1/40	332	276	4750	1067	
2.2 kW	45	1/50	1/50	416	345	4750	1067	P.491
		1/60	1/60	498	416	4750	1067	
		1/5	1/5	61	51	3140	800	
		1/7.5	2/15	91	76	3530	900	
		1/10	1/10	122	102	3920	967	
		1/12.5	19/235	152	126	4120	1040	
		1/15	1/15	182	152	4410	1067	
		1/20	1/20	244	203	4750	1067	
		1/25	1/25	305	254	4750	1067	

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

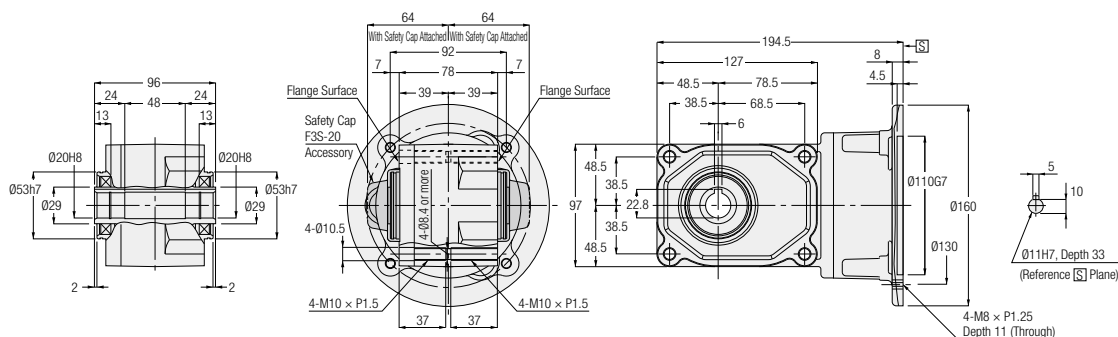
5-2. Drawings

F3S Type Concentric Right Angle Hollow Bore

Shaft
Diameter **20**

Flange Mounting

<Figure 1>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.1 kW	F3SS-20-***-010	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	1	4

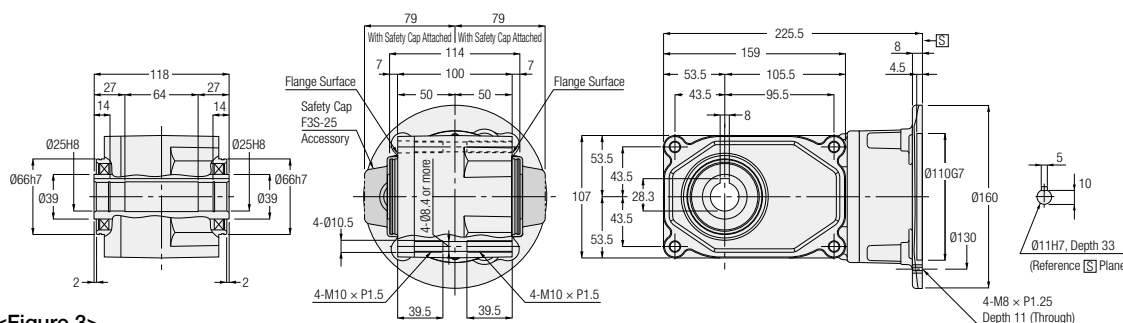
Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 486 for the performance table.
Note: Please refer to page 605 for the details of the motor mounting area.

F3S Type Concentric Right Angle Hollow Bore

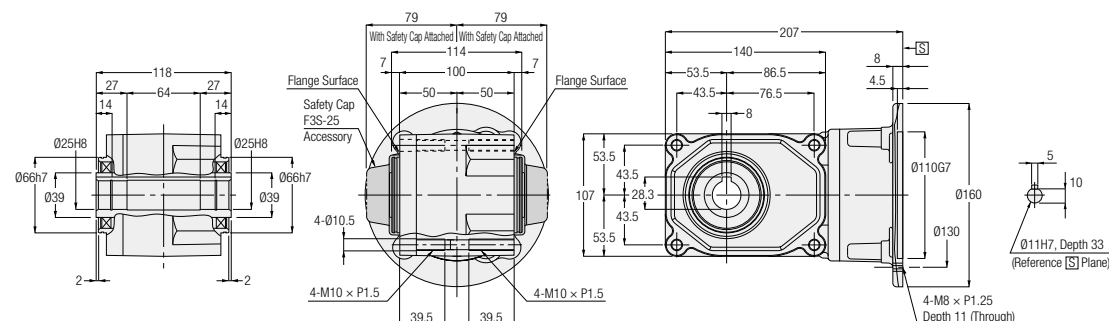
Shaft
Diameter **25**

Flange Mounting

<Figure 2>



<Figure 3>



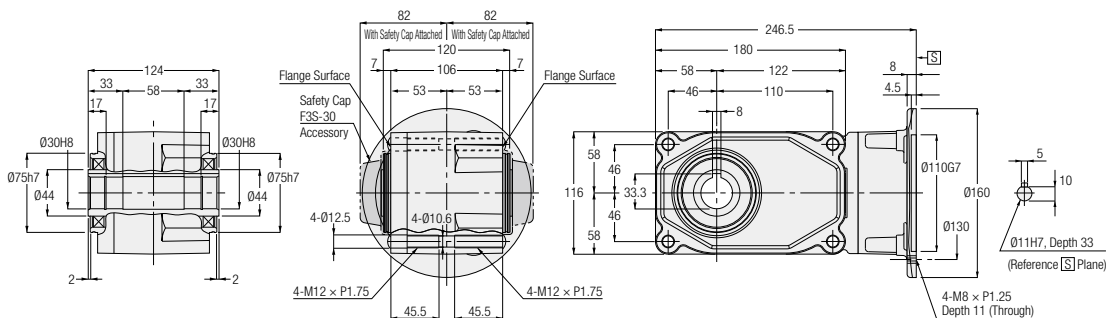
Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.1 kW	F3SS-25-***-010	80, 100, 120, 160, 200, 240	2	5.5
0.2 kW	F3SS-25-***-020	5, 7.5, 10, 12.5, 20, 25, 30, 40, 50, 60	3	5.5

Note: A reduction ratio will be indicated as *** in the nomenclature.
Note: Please refer to page 486 for the performance table.
Note: Please refer to page 605 for the details of the motor mounting area.

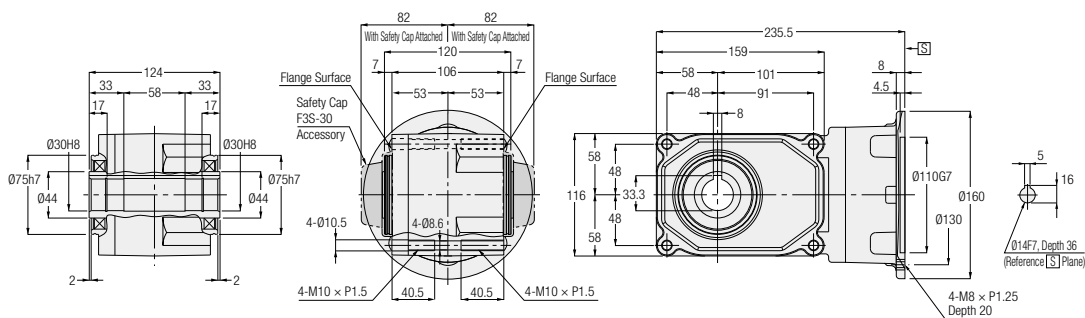
5-2. Drawings

F3S Type Concentric Right Angle Hollow Bore Shaft Diameter 30 Flange Mounting

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.2 kW	F3SS-30-***-020	80, 100, 120, 160, 200, 240	1	7
0.4 kW	F3SS-30-***-040	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	7

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 486 for the performance table.

Note: Please refer to page 605 for the details of the motor mounting area.

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/FA Type
Right Angle Hollow Bore/
Right Angle Shaft

F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

Option

G/G3 Type
Parallel Shaft

H/H2 Type
Right Angle Shaft

F/F4 Type
Right Angle Hollow Bore/
Right Angle Shaft

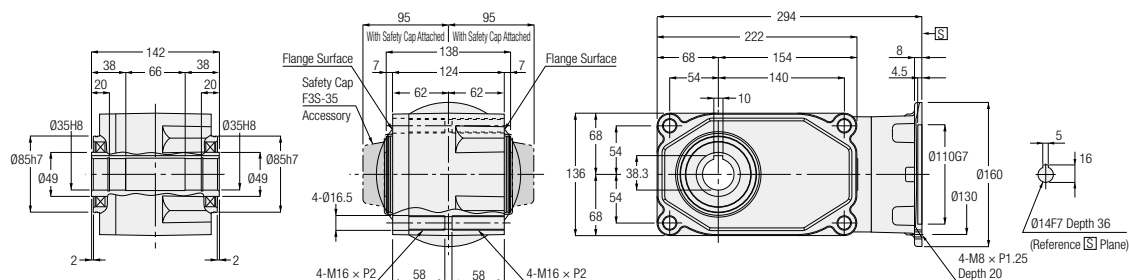
F2/F3 Type
Concentric Right Angle Hollow Bore/
Concentric Right Angle Shaft

Technical Documentation

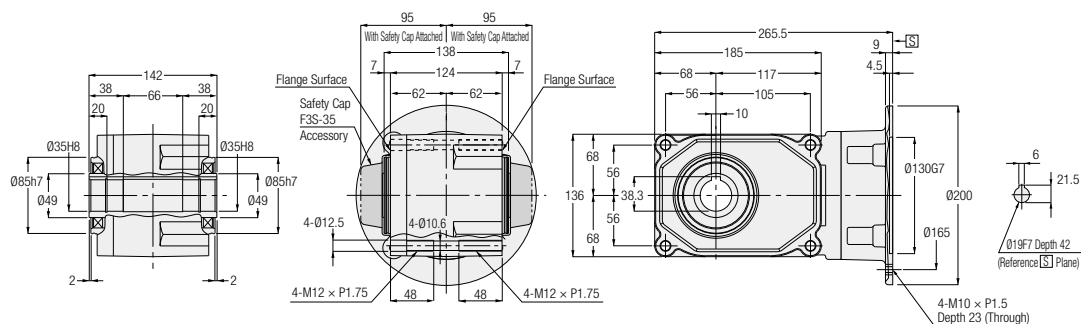
Option

F3S Type Concentric Right Angle
Hollow Bore Shaft Diameter **35** Flange Mounting

<Figure 1>



<Figure 2>



Motor Power Class	Part Number	Reduction Ratio	Figure Number	Approx. Weight (kg)
0.4 kW	F3SS-35-***-040	80, 100, 120, 160, 200, 240	1	10.5
0.75 kW	F3SS-35-***-075	5, 7.5, 10, 12.5, 15, 20, 25, 30, 40, 50, 60	2	10.5

Note: A reduction ratio will be indicated as *** in the nomenclature.

Note: Please refer to page 487 for the performance table.

Note: Please refer to page 605 for the details of the motor mounting area.

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G/G3 Type Parallel Shaft	H/H2 Type Right Angle Shaft	F/FA Type Right Angle Hollow Bore/ Right Angle Shaft	F2/F3 Type Concentric Right Angle Hollow Bore/ Concentric Right Angle Shaft	Technical Documentation	Option
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