

RoHS RoHS-Compliant

Speed Control Motor and Control Unit Package

US Series

**Single-Phase 110/115 VAC
Single-Phase 220/230 VAC**



RoHS RoHS-Compliant

Speed Control Motor and Control Unit Package

US Series

Single-Phase 110/115 VAC, Single-Phase 220/230 VAC



The **US** Series is a panel mounted control unit and speed control motor package, which conforms to the RoHS Directive. Wiring is performed by connecting with easy-to-use connectors. This series is optimal for easy speed control applications.

● Instantaneous stop function is not available.



Gearhead shown in the photograph is sold separately.

Features

● Easy Connection

The operation is possible just by connecting the control unit into the power supply after connecting the motor and control unit through easy-to-use connectors.

● Easy Operation

The speed can be set easily with the potentiometer on the front panel of the control unit.

● Approved by Major Safety Standards

The **US** Series is recognized by UL and CSA, and certified under the China Compulsory Certification System (CCC System). CE Marking is used in accordance with the Low Voltage Directive and EMC Directive.

● Long Life, Low Noise **GN-S** Gearhead is Available.

[Applicable motors: 6 W (1/125 HP) to 40 W (1/19 HP)]

The new "long life, low noise **GN-S** gearhead" achieves a long rated life of 10000 hours, twice the level of a conventional gearhead, by adopting innovative technologies and structure. Also, the gearhead is low noise designed.

● Protective Earth Terminal on Motor

[6 W (1/125 HP) to 40 W (1/19 HP)]

● **RoHS** RoHS-Compliant

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

RoHS (Restriction of Hazardous Substances) Directive:

Directive on restriction of the use of certain hazardous substances in electrical and electronic equipment (2002/95/EC). The RoHS Directive prohibits the use of six chemical substances in electrical and electronic products sold in the EU member states. The six controlled substances are: lead, hexavalent chromium, cadmium, mercury and two specific brominated flame-retardants (PBB and PBDE).

Safety Standards and CE Marking

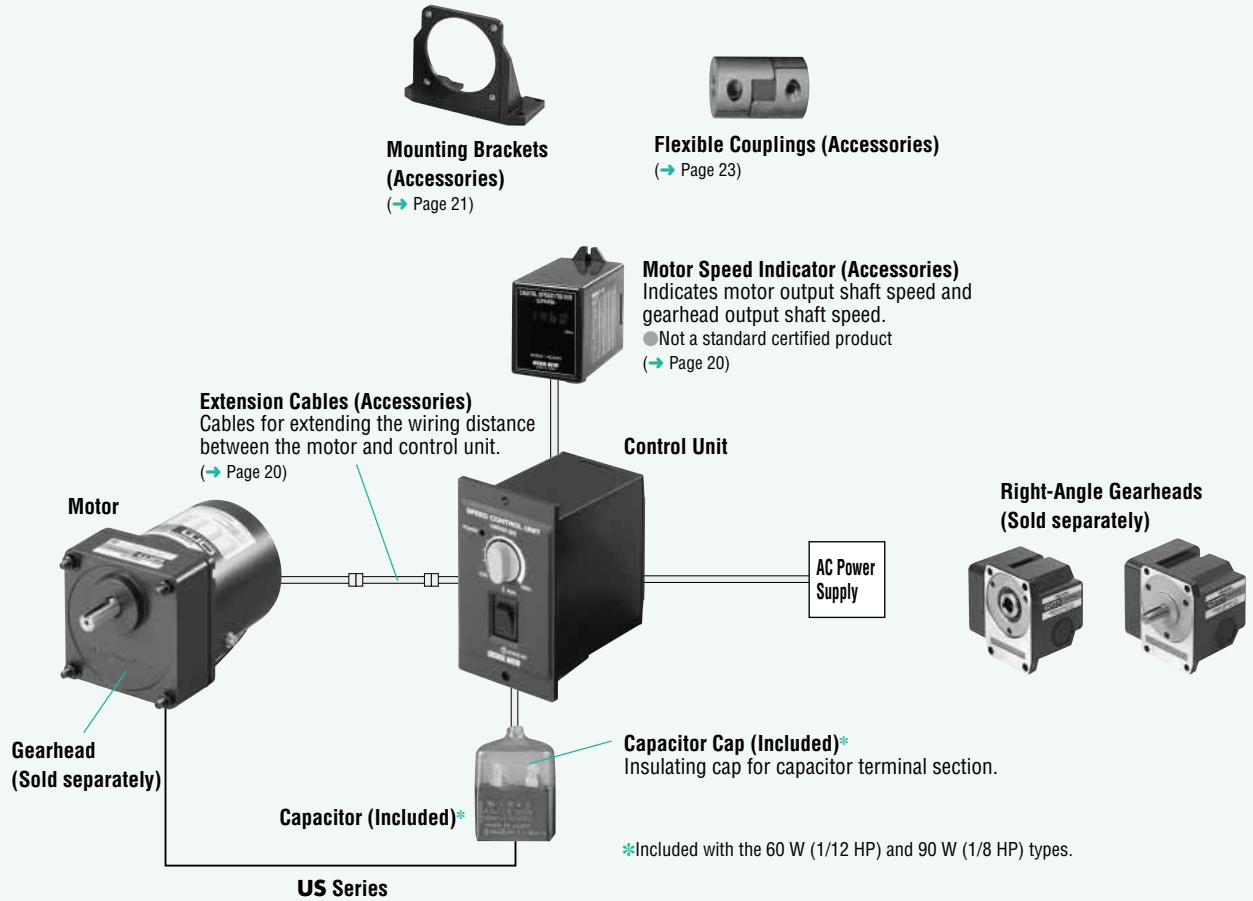
Applicable Standard		Certification Body	Standards File No.	CE Marking
Motor	UL 1004 UL 2111	UL	E64199 [6 W (1/125 HP)] E64197 [15 W (1/50 HP) to 90 W (1/8 HP)]	Low Voltage Directives EMC Directives
	CSA C22.2 No.100 CSA C22.2 No.77			
	EN 60034-1 EN 60034-5 EN 60950-1 IEC 60664-1	Conform to EN/IEC standards		
	GB 12350	CQC	2003010401091525 [6 W (1/125 HP)] 2003010401091522 [15 W (1/50 HP) to 90 W (1/8 HP)]	
Control Unit	UL 508	UL	E91291	
	CSA C22.2 No.14			
	EN 50178 EN 60950-1	Conform to EN standards		

● When the package is approved under various safety standards, the model names on the motor and control unit nameplates are the approved model name.

List of motor and control unit combinations → Page 18

● The EMC value changes according to the wiring and layout. Therefore, the final EMC level must be checked with the motor/control unit incorporated in the user's equipment.

System Configuration



● Example of System Configuration

- ⊙: Required under this system.
○: Optional accessory offered by Oriental Motor

US Series (Pinion Shaft) US425-401U2	+	Long Life, Low Noise Gearhead 4GN25SA	Extension Cable [1 m (3.3 ft.)] CC01SU05	Mounting Bracket SOL4U10	Flexible Coupling MCL30F06F08	Motor Speed Indicator SDM496
		⊙	○	○	○	○

● The system configuration shown above is an example. Other configurations are available.

Product Number Code

US Series

US 5 40 - 4 0 1U 2

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	US: US Series
②	Motor Frame Size	2: 60 mm (2.36 in.) 3: 70 mm (2.76 in.) 4: 80 mm (3.15 in.) 5: 90 mm (3.54 in.)
③	Output Power (W)	(Example) 40: 40 W (1/19 HP)
④	Motor Shaft Type, Type of Pinion	0: Round Shaft 4: GN Type Pinion Shaft 5: GU Type Pinion Shaft
⑤	Motor Type	0: Induction Motor
⑥	Power Supply Voltage	1U: Single-Phase 110/115 VAC 2E: Single-Phase 220/230 VAC
⑦	2: RoHS-Compliant	

Gearhead

5 GN 50 SA

① ② ③ ④

①	Gearhead Frame Size	2: 60 mm (2.36 in.) 3: 70 mm (2.76 in.) 4: 80 mm (3.15 in.) 5: 90 mm (3.54 in.)
②	Type of Pinion	GN: GN Type Pinion GU: GU Type Pinion
③	Gear Ratio	(Example) 50: Gear Ratio of 50:1 10X denotes the decimal gearhead of gear ratio 10:1
④	GN Type Pinion	SA: Long Life, Low Noise GN-S Gearhead, RoHS-Compliant RH: Right-Angle, Hollow Shaft Gearhead, RoHS-Compliant RAA: Right-Angle, Solid Shaft Gearhead, RoHS-Compliant
	GU Type Pinion	KA: GU Gearhead (Box type), RoHS-Compliant RH: Right-Angle, Hollow Shaft Gearhead, RoHS-Compliant RAA: Right-Angle, Solid Shaft Gearhead, RoHS-Compliant

Product Line

US Series (RoHS)

Output Power	Power Supply Voltage	Model	
		Pinion Shaft Type	Round Shaft Type
6 W (1/125 HP)	Single-Phase 110/115 VAC	US206-401U2	US206-001U2
	Single-Phase 220/230 VAC	US206-402E2	US206-002E2
15 W (1/50 HP)	Single-Phase 110/115 VAC	US315-401U2	US315-001U2
	Single-Phase 220/230 VAC	US315-402E2	US315-002E2
25 W (1/30 HP)	Single-Phase 110/115 VAC	US425-401U2	US425-001U2
	Single-Phase 220/230 VAC	US425-402E2	US425-002E2
40 W (1/19 HP)	Single-Phase 110/115 VAC	US540-401U2	US540-001U2
	Single-Phase 220/230 VAC	US540-402E2	US540-002E2
60 W (1/12 HP)	Single-Phase 110/115 VAC	US560-501U2	US560-001U2
	Single-Phase 220/230 VAC	US560-502E2	US560-002E2
90 W (1/8 HP)	Single-Phase 110/115 VAC	US590-501U2	US590-001U2
	Single-Phase 220/230 VAC	US590-502E2	US590-002E2

Parallel Shaft Gearhead (Sold separately)

◇ Long Life, Low Noise **GN-S** Gearhead (RoHS)

Applicable Motor Output Power (Pinion shaft)	Gearhead Model	Gear Ratio
6 W (1/125 HP)	2GN□SA	3~180
	2GN10XS (Decimal gearhead)	
15 W (1/50 HP)	3GN□SA	3~180
	3GN10XS (Decimal gearhead)	
25 W (1/30 HP)	4GN□SA	3~180
	4GN10XS (Decimal gearhead)	
40 W (1/19 HP)	5GN□SA	3~180
	5GN10XS (Decimal gearhead)	

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

◇ **GU** Gearhead (RoHS)

Applicable Motor Output Power (Pinion shaft)	Gearhead Model	Gear Ratio
60 W (1/12 HP)	5GU□KA	3~180
90 W (1/8 HP)	5GU10XKB (Decimal gearhead)	

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

Right-Angle Gearhead (Sold separately)

◇ Hollow Shaft Type (RoHS)

Applicable Motor Output Power (Pinion shaft)	Gearhead Model	Gear Ratio
25 W (1/30 HP)	4GN□RH	3~180
40 W (1/19 HP)	5GN□RH	3~180
60 W (1/12 HP)	5GU□RH	3~180
90 W (1/8 HP)		

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

◇ Solid Shaft Type (RoHS)

Applicable Motor Output Power (Pinion shaft)	Gearhead Model	Gear Ratio
25 W (1/30 HP)	4GN□RAA	3~180
40 W (1/19 HP)	5GN□RAA	3~180
60 W (1/12 HP)	5GU□RAA	3~180
90 W (1/8 HP)		

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

Model		Max. Output Power W (HP)	Voltage VAC	Frequency Hz	Variable Speed Range* r/min	Permissible Torque		Starting Torque mN-m (oz-in)	Current A	Power Consumption W	
Pinion Shaft Type	Round Shaft Type					1200 r/min	90 r/min				
Ⓢ	US206-401U2	6 (1/125)	Single-Phase 110	60	90~1600	50 (7.1)	37 (5.2)	40 (5.6)	0.28	28	
			Single-Phase 115								
Ⓢ	US206-402E2	6 (1/125)	Single-Phase 220	50	90~1400	44 (6.2)	40 (5.6)	38 (5.3)	0.13	28	
			Single-Phase 230	60	90~1600	50 (7.1)	39 (5.5)				40 (5.6)
				50	90~1400	47 (6.6)	38 (5.3)	40 (5.6)			
				60	90~1600	50 (7.1)	37 (5.2)				
Ⓢ	US315-401U2	15 (1/50)	Single-Phase 110	60	90~1600	125 (17.7)	45 (6.3)	55 (7.8)	0.47	44	
			Single-Phase 115						0.50		
Ⓢ	US315-402E2	15 (1/50)	Single-Phase 220	50	90~1400	125 (17.7)	35 (4.9)	54 (7.6)	0.21	40	
			Single-Phase 230	60	90~1600	85 (12.0)			52 (7.3)	0.18	39
				50	90~1400	125 (17.7)		54 (7.6)	0.21	41	
				60	90~1600	105 (14.9)		55 (7.8)	0.22	44	
Ⓢ	US425-401U2	25 (1/30)	Single-Phase 110	60	90~1600	200 (28)	50 (7.1)	105 (14.9)	0.74	70	
			Single-Phase 115						73		
Ⓢ	US425-402E2	25 (1/30)	Single-Phase 220	50	90~1400	205 (29)	40 (5.6)	100 (14.2)	0.36	68	
			Single-Phase 230	60	90~1600	160 (22)			0.37		
				50	90~1400	205 (29)	40 (5.6)	0.35			
				60	90~1600	140 (19.8)	35 (4.9)	0.36			
Ⓢ	US540-401U2	40 (1/19)	Single-Phase 110	60	90~1600	260 (36)	70 (9.9)	180 (25)	1.1	102	
			Single-Phase 115						105		
Ⓢ	US540-402E2	40 (1/19)	Single-Phase 220	50	90~1400	300 (42)	63 (8.9)	140 (19.8)	0.53	90	
			Single-Phase 230	60	90~1600	230 (32)			125 (17.7)	0.55	98
				50	90~1400	300 (42)		140 (19.8)	0.53	90	
				60	90~1600	230 (32)		140 (19.8)	0.55	100	
Ⓢ	US560-501U2	60 (1/12)	Single-Phase 110	60	90~1600	490 (69)	200 (28)	285 (40)	2.0	178	
			Single-Phase 115						2.1	186	
Ⓢ	US560-502E2	60 (1/12)	Single-Phase 220	50	90~1400	490 (69)	140 (19.8)	240 (34)	0.85	154	
			Single-Phase 230	60	90~1600	450 (63)	160 (22)	210 (29)	0.86	159	
				50	90~1400	490 (69)	140 (19.8)	240 (34)	0.89	154	
				60	90~1600	450 (63)	160 (22)	240 (34)	0.88	165	
Ⓢ	US590-501U2	90 (1/8)	Single-Phase 110	60	90~1600	730 (103)	200 (28)	405 (57)	2.6	230	
			Single-Phase 115						246		
Ⓢ	US590-502E2	90 (1/8)	Single-Phase 220	50	90~1400	730 (103)	230 (32)	360 (51)	1.1	200	
			Single-Phase 230	60	90~1600				260 (36)	360 (51)	1.2
				50	90~1400			230 (32)	400 (56)	201	
				60	90~1600			260 (36)	400 (56)	227	

*The variable speed ranges shown are under no load conditions.

Ⓢ : Impedance protected

Ⓢ : Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is activated and the motor is stopped. When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

General Specifications

Item	Motor	Control Unit
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the case after rated operation under normal ambient temperature and humidity.	100 MΩ or more when 500 VDC megger is applied between all the pins and the case after rated operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kV at 50 Hz or 60 Hz applied between the windings and the case for 1 minute after rated operation under normal ambient temperature and humidity.	Sufficient to withstand 2.3 kV (3.0 kV for single-phase 220/230 VAC) at 60 Hz applied between all the pins and the case for 1 minute after rated operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 80°C (144°F) or less measured by the resistance change method after rated operation with no load under normal ambient temperature and humidity with connecting a gearhead or equivalent heat radiation plate* to a motor.	—
Overheat Protection	US206 type has impedance protection. All others have built-in thermal protector (automatic return type). Operating temperature; open: 130±5°C (266±9°F), close: 82±15°C (179.6±27°F)	—
Operating Environment	Ambient Temperature	−10 ~ +40°C (+14~+104°F) (non-freezing)
	Ambient Humidity	85% or less (non-condensing)
	Altitude	Up to 1000 m (3300 ft.) above sea level
Insulation Class	Class B [130°C (266°F)]	—
Degree of Protection	US206, US315, US425 and US540 types: IP20 US560 and US590 types: IP40	IP10

*Heat radiation plate (Material: Aluminum)

Motor Type (Output power)	Size mm (in.)	Thickness mm (in.)
US206 type (6 W) (1/125 HP)	115×115 (4.53×4.53)	5 (0.20)
US315 type (15 W) (1/50 HP)	125×125 (4.92×4.92)	
US425 type (25 W) (1/30 HP)	135×135 (5.31×5.31)	
US540 type (40 W) (1/19 HP)	165×165 (6.50×6.50)	
US560 type (60 W) (1/12 HP)	200×200 (7.87×7.87)	
US590 type (90 W) (1/8 HP)	200×200 (7.87×7.87)	

Variable Speed Range When Gearhead is Attached

Unit = r/min

Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
High Speed	50 Hz	466	388	280	233	186	155	112	93	77	56	46	38	28	23	18	15	14	11	9	7
	60 Hz	533	444	320	266	213	177	128	106	88	64	53	44	32	26	21	17	16	13	10	8.8
Low Speed		30	25	18	15	12	10	7.2	6	5	3.6	3	2.5	1.8	1.5	1.2	1	0.9	0.75	0.6	0.5

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the model name.
- A colored background (□) indicates gear shaft rotation in the same direction as the motor shaft, while the others rotate in the opposite direction.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead of gear ratio 10:1 between the gearhead and the motor. In that case, the permissible torques are as follows.

2GN□SA: 3 N·m (26 lb-in), **3GN□SA:** 5 N·m (44 lb-in)

4GN□SA: 8 N·m (70 lb-in) [6 N·m (53 lb-in) when a gearhead of 25:1 to 36:1 is attached]

5GN□SA: 10 N·m (88 lb-in), **5GU□KA:** 20 N·m (177 lb-in)

Single-Phase 110/115 VAC

Unit = N·m (lb-in)

Model	Gear Ratio	Motor Speed r/min																			
		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
US206-401U2 /2GN□SA	1200	0.12 (1.06)	0.15 (1.32)	0.20 (1.77)	0.24 (2.1)	0.30 (2.6)	0.36 (3.1)	0.51 (4.5)	0.61 (5.3)	0.73 (6.4)	0.91 (8.0)	1.1 (9.7)	1.3 (11.5)	1.7 (15.0)	2.0 (17.7)	2.5 (22)	3 (26)	3 (26)	3 (26)	3 (26)	3 (26)
	90	0.09 (0.79)	0.11 (0.97)	0.15 (1.32)	0.18 (1.59)	0.22 (1.94)	0.27 (2.3)	0.37 (3.2)	0.45 (3.9)	0.54 (4.7)	0.68 (6.0)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.4 (21)	2.9 (25)	3 (26)	3 (26)
US315-401U2 /3GN□SA	1200	0.30 (2.6)	0.36 (3.1)	0.51 (4.5)	0.61 (5.3)	0.76 (6.7)	0.91 (8.0)	1.3 (11.5)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.7 (23)	3.3 (29)	4.1 (36)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)
	90	0.11 (0.97)	0.13 (1.15)	0.18 (1.59)	0.22 (1.94)	0.27 (2.3)	0.33 (2.9)	0.46 (4.0)	0.55 (4.8)	0.66 (5.8)	0.82 (7.2)	0.99 (8.7)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.0 (26)	3.6 (31)	4.5 (39)	5 (44)
US425-401U2 /4GN□SA	1200	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	2.0 (17.7)	2.4 (21)	2.9 (25)	3.7 (32)	4.4 (38)	5.3 (46)	6.6 (58)	7.9 (69)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)
	90	0.12 (1.06)	0.15 (1.32)	0.20 (1.77)	0.24 (2.1)	0.30 (2.6)	0.36 (3.1)	0.51 (4.5)	0.61 (5.3)	0.73 (6.4)	0.91 (8.0)	1.1 (9.7)	1.3 (11.5)	1.7 (15.0)	2.0 (17.7)	2.5 (22)	3.0 (26)	3.3 (29)	4.0 (35)	5.0 (44)	5.9 (52)
US540-401U2 /5GN□SA	1200	0.63 (5.5)	0.76 (6.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	1.9 (16.8)	2.6 (23)	3.2 (28)	3.8 (33)	4.7 (41)	5.7 (50)	6.8 (60)	8.6 (76)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
	90	0.17 (1.50)	0.20 (1.77)	0.28 (2.4)	0.34 (3.0)	0.43 (3.8)	0.51 (4.5)	0.71 (6.2)	0.85 (7.5)	1.0 (8.8)	1.3 (11.5)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	4.6 (40)	5.5 (48)	6.9 (61)	8.3 (73)
US560-501U2 /5GU□KA	1200	1.2 (10.6)	1.4 (12.3)	2.0 (17.7)	2.4 (21)	3.0 (26)	3.6 (31)	4.5 (39)	5.4 (47)	6.4 (56)	8.1 (71)	9.7 (85)	11.6 (102)	16.2 (143)	19.4 (171)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)
	90	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.6 (23)	3.3 (29)	4.0 (35)	4.8 (42)	6.6 (58)	7.9 (69)	8.9 (78)	10.6 (93)	11.8 (104)	14.2 (125)	17.7 (156)	20 (177)
US590-501U2 /5GU□KA	1200	1.8 (15.9)	2.1 (18.5)	3.0 (26)	3.5 (30)	4.4 (38)	5.3 (46)	6.7 (59)	8.0 (70)	9.6 (84)	12.0 (106)	14.5 (128)	17.3 (153)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)
	90	0.49 (4.3)	0.58 (5.1)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.6 (23)	3.3 (29)	4.0 (35)	4.8 (42)	6.6 (58)	7.9 (69)	8.9 (78)	10.6 (93)	11.8 (104)	14.2 (125)	17.7 (156)	20 (177)

● Single-Phase 220/230 VAC

Unit = N·m (lb·in)

Model	Gear Ratio																						
	Motor Speed r/min		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	
US206-402E2 /2GN□SA	1200	220/230 VAC 60 Hz	0.12 (1.06)	0.15 (1.32)	0.20 (1.77)	0.24 (2.1)	0.30 (2.6)	0.36 (3.1)	0.51 (4.5)	0.61 (5.3)	0.73 (6.4)	0.91 (8.0)	1.1 (9.7)	1.3 (11.5)	1.7 (15.0)	2.0 (17.7)	2.5 (22)	3 (26)	3 (26)	3 (26)	3 (26)	3 (26)	
		220 VAC 50 Hz	0.11 (0.97)	0.13 (1.15)	0.18 (1.59)	0.21 (1.85)	0.27 (2.3)	0.32 (2.8)	0.45 (3.9)	0.53 (4.6)	0.64 (5.6)	0.80 (7.0)	0.96 (8.4)	1.2 (10.6)	1.5 (13.2)	1.7 (15.0)	2.2 (19.4)	2.6 (23)	2.9 (25)	3 (26)	3 (26)	3 (26)	3 (26)
		230 VAC 50 Hz	0.11 (0.97)	0.14 (1.23)	0.19 (1.68)	0.23 (2.0)	0.29 (2.5)	0.34 (3.0)	0.48 (4.2)	0.57 (5.0)	0.69 (6.1)	0.86 (7.6)	1.0 (8.8)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.3 (20)	2.8 (24)	3 (26)	3 (26)	3 (26)	3 (26)	3 (26)
	90	220 VAC 60 Hz	0.095 (0.84)	0.11 (0.97)	0.16 (1.41)	0.19 (1.68)	0.24 (2.1)	0.28 (2.4)	0.39 (3.4)	0.47 (4.1)	0.57 (5.0)	0.71 (6.2)	0.85 (7.5)	1.0 (8.8)	1.3 (11.5)	1.5 (13.2)	1.9 (16.8)	2.3 (20)	2.6 (23)	3 (26)	3 (26)	3 (26)	3 (26)
		230 VAC 60 Hz	0.09 (0.79)	0.11 (0.97)	0.15 (1.32)	0.18 (1.59)	0.22 (1.94)	0.27 (2.3)	0.37 (3.2)	0.45 (3.9)	0.54 (4.7)	0.68 (6.0)	0.81 (7.1)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.2 (19.4)	2.4 (21)	2.9 (25)	3 (26)	3 (26)	3 (26)
		220 VAC 50 Hz	0.097 (0.85)	0.12 (1.06)	0.16 (1.41)	0.19 (1.68)	0.24 (2.1)	0.29 (2.5)	0.41 (3.6)	0.49 (4.3)	0.58 (5.1)	0.73 (6.4)	0.88 (7.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	2.0 (17.7)	2.4 (21)	2.6 (23)	3 (26)	3 (26)	3 (26)	3 (26)
90	230 VAC 50 Hz	0.092 (0.81)	0.11 (0.97)	0.15 (1.32)	0.18 (1.59)	0.23 (2.0)	0.28 (2.4)	0.38 (3.3)	0.46 (4.0)	0.55 (4.8)	0.69 (6.1)	0.83 (7.3)	1.0 (8.8)	1.3 (11.5)	1.5 (13.2)	1.9 (16.8)	2.3 (20)	2.5 (22)	3 (26)	3 (26)	3 (26)	3 (26)	
	220 VAC 60 Hz	0.21 (1.85)	0.25 (2.2)	0.34 (3.0)	0.41 (3.6)	0.52 (4.6)	0.62 (5.4)	0.86 (7.6)	1.0 (8.8)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.2 (19.4)	2.8 (24)	3.4 (30)	4.2 (37)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	
	220/230 VAC 50 Hz	0.30 (2.6)	0.36 (3.1)	0.51 (4.5)	0.61 (5.3)	0.76 (6.7)	0.91 (8.0)	1.3 (11.5)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.7 (23)	3.3 (29)	4.1 (36)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	
90	230 VAC 60 Hz	0.26 (2.3)	0.31 (2.7)	0.43 (3.8)	0.51 (4.5)	0.64 (5.6)	0.77 (6.8)	1.1 (9.7)	1.3 (11.5)	1.5 (13.2)	1.9 (16.8)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	5 (44)	
	90	0.085 (0.75)	0.10 (0.88)	0.14 (1.23)	0.17 (1.50)	0.21 (1.85)	0.26 (2.3)	0.35 (3.0)	0.43 (3.8)	0.51 (4.5)	0.64 (5.6)	0.77 (6.8)	0.92 (8.1)	1.2 (10.6)	1.4 (12.3)	1.7 (15.0)	2.1 (18.5)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	4.2 (37)	
	220 VAC 60 Hz	0.39 (3.4)	0.47 (4.1)	0.65 (5.7)	0.78 (6.9)	0.97 (8.5)	1.2 (10.6)	1.6 (14.1)	1.9 (16.8)	2.3 (20)	2.9 (25)	3.5 (30)	4.2 (37)	5.3 (46)	6.3 (55)	7.9 (69)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
US425-402E2 /4GN□SA	1200	230 VAC 60 Hz	0.34 (3.0)	0.41 (3.6)	0.57 (5.0)	0.68 (6.0)	0.85 (7.5)	1.0 (8.8)	1.4 (12.3)	1.7 (15.0)	2.0 (17.7)	2.6 (23)	3.1 (27)	3.7 (32)	4.6 (40)	5.5 (48)	6.9 (61)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
		220/230 VAC 50 Hz	0.50 (4.4)	0.60 (5.3)	0.83 (7.3)	1.0 (8.8)	1.2 (10.6)	1.5 (13.2)	2.1 (18.5)	2.5 (22)	3.0 (26)	3.7 (32)	4.5 (39)	5.4 (47)	6.8 (60)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	8 (70)	
		90	0.097 (0.85)	0.12 (1.06)	0.16 (1.41)	0.19 (1.68)	0.24 (2.1)	0.29 (2.5)	0.41 (3.6)	0.49 (4.3)	0.58 (5.1)	0.73 (6.4)	0.88 (7.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	2.0 (17.7)	2.4 (21)	2.6 (23)	3.2 (28)	4.0 (35)	4.8 (42)	4.8 (42)
	90	230 VAC 60 Hz	0.085 (0.75)	0.10 (0.88)	0.14 (1.23)	0.17 (1.50)	0.21 (1.85)	0.26 (2.3)	0.35 (3.0)	0.43 (3.8)	0.51 (4.5)	0.64 (5.6)	0.77 (6.8)	0.92 (8.1)	1.2 (10.6)	1.4 (12.3)	1.7 (15.0)	2.1 (18.5)	2.3 (20)	2.8 (24)	3.5 (30)	4.2 (37)	4.2 (37)
		220 VAC 60 Hz	0.56 (4.9)	0.67 (5.9)	0.93 (8.2)	1.1 (9.7)	1.4 (12.3)	1.7 (15.0)	2.3 (20)	2.8 (24)	3.4 (30)	4.2 (37)	5.0 (44)	6.0 (53)	7.6 (67)	9.1 (80)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)	10 (88)
		90	0.15 (1.32)	0.18 (1.59)	0.26 (2.3)	0.31 (2.7)	0.38 (3.3)	0.46 (4.0)	0.64 (5.6)	0.77 (6.8)	0.92 (8.1)	1.1 (9.7)	1.4 (12.3)	1.7 (15.0)	2.1 (18.5)	2.5 (22)	3.1 (27)	3.7 (32)	4.2 (37)	5.0 (44)	6.2 (54)	7.5 (66)	7.5 (66)
US560-502E2 /5GU□KA	1200	220/230 VAC 60 Hz	1.1 (9.7)	1.3 (11.5)	1.8 (15.9)	2.2 (19.4)	2.7 (23)	3.3 (29)	4.1 (36)	4.9 (43)	5.9 (52)	7.4 (65)	8.9 (78)	10.7 (94)	14.9 (131)	17.8 (157)	19.9 (176)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	
		220/230 VAC 50 Hz	1.2 (10.6)	1.4 (12.3)	2.0 (17.7)	2.4 (21)	3.0 (26)	3.6 (31)	4.5 (39)	5.4 (47)	6.4 (56)	8.1 (71)	9.7 (85)	11.6 (102)	16.2 (143)	19.4 (171)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	
	90	220/230 VAC 60 Hz	0.39 (3.4)	0.47 (4.1)	0.65 (5.7)	0.78 (6.9)	0.97 (8.5)	1.2 (10.6)	1.5 (13.2)	1.8 (15.9)	2.1 (18.5)	2.6 (23)	3.2 (28)	3.8 (33)	5.3 (46)	6.3 (55)	7.1 (62)	8.5 (75)	9.4 (83)	11.3 (100)	14.2 (125)	17.0 (150)	17.0 (150)
		220/230 VAC 50 Hz	0.34 (3.0)	0.41 (3.6)	0.57 (5.0)	0.68 (6.0)	0.85 (7.5)	1.0 (8.8)	1.3 (11.5)	1.5 (13.2)	1.8 (15.9)	2.3 (20)	2.8 (24)	3.3 (29)	4.6 (40)	5.5 (48)	6.2 (54)	7.4 (65)	8.3 (73)	9.9 (87)	12.4 (109)	14.9 (131)	14.9 (131)
US590-502E2 /5GU□KA	1200	90	1.8 (15.9)	2.1 (18.5)	3.0 (26)	3.5 (30)	4.4 (38)	5.3 (46)	6.7 (59)	8.0 (70)	9.6 (84)	12.0 (106)	14.5 (128)	17.3 (153)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	20 (177)	
		220/230 VAC 60 Hz	0.63 (5.5)	0.76 (6.7)	1.1 (9.7)	1.3 (11.5)	1.6 (14.1)	1.9 (16.8)	2.4 (21)	2.8 (24)	3.4 (30)	4.3 (38)	5.1 (45)	6.2 (54)	8.6 (76)	10.3 (91)	11.5 (101)	13.8 (122)	15.3 (135)	18.4 (162)	20 (177)	20 (177)	20 (177)
	220/230 VAC 50 Hz	0.56 (4.9)	0.67 (5.9)	0.93 (8.2)	1.1 (9.7)	1.4 (12.3)	1.7 (15.0)	2.1 (18.5)	2.5 (22)	3.0 (26)	3.8 (33)	4.6 (40)	5.5 (48)	7.6 (67)	9.1 (80)	10.2 (90)	12.2 (107)	13.6 (120)	16.3 (144)	20 (177)	20 (177)	20 (177)	

■ Permissible Overhung Load and Permissible Thrust Load

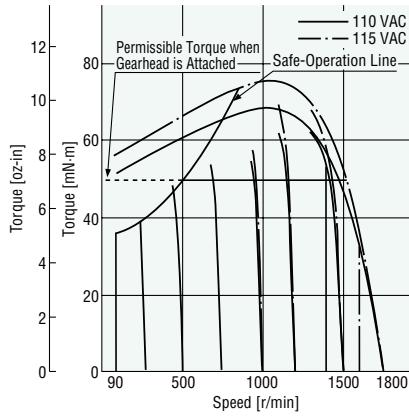
Motor (Round shaft type) → Page 19
Gearhead → Page 19

■ Permissible Load Inertia of Gearhead: J

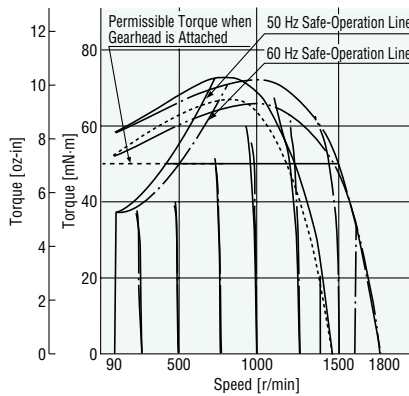
→ Page 19

Speed – Torque Characteristics

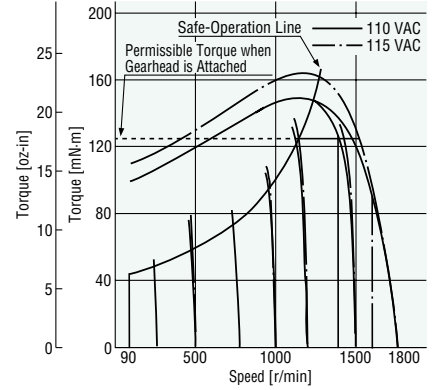
US206-401U2
US206-001U2



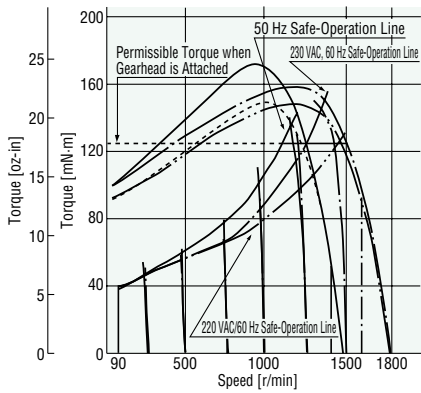
US206-402E2
US206-002E2



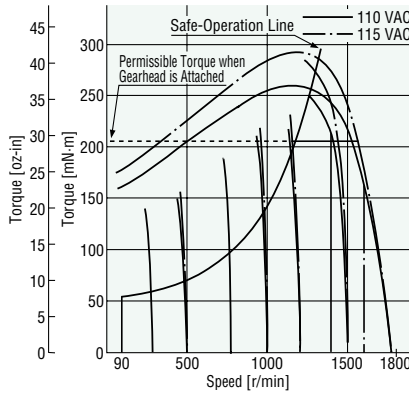
US315-401U2
US315-001U2



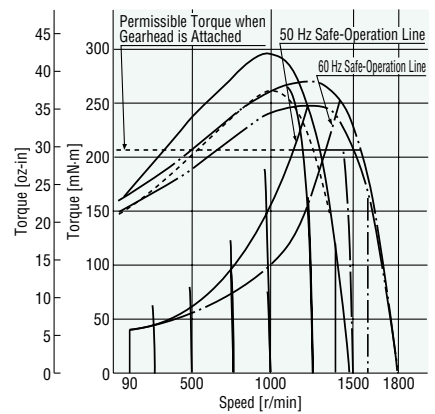
US315-402E2
US315-002E2



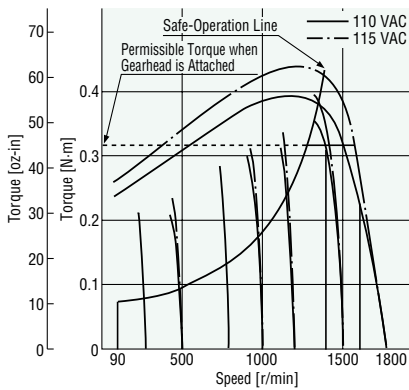
US425-401U2
US425-001U2



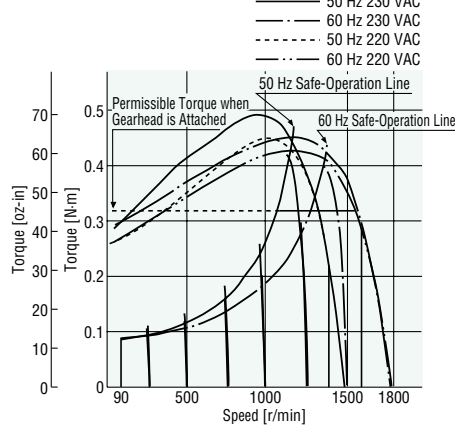
US425-402E2
US425-002E2



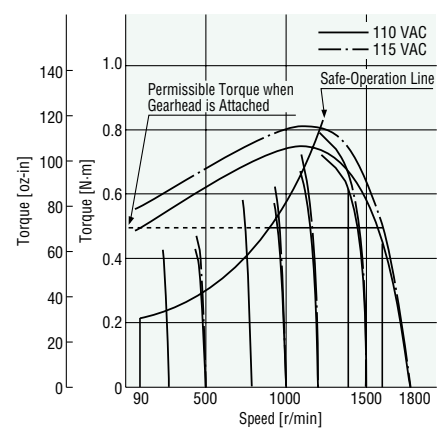
US540-401U2
US540-001U2



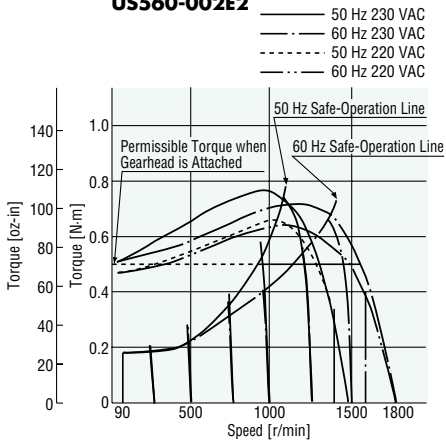
US540-402E2
US540-002E2



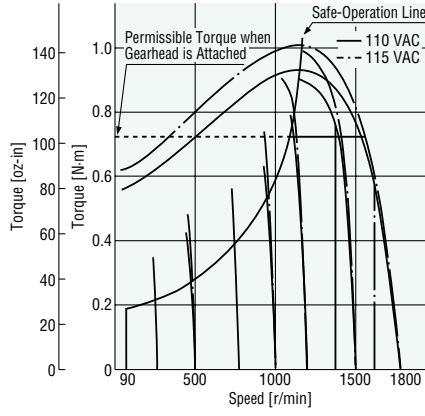
US560-501U2
US560-001U2



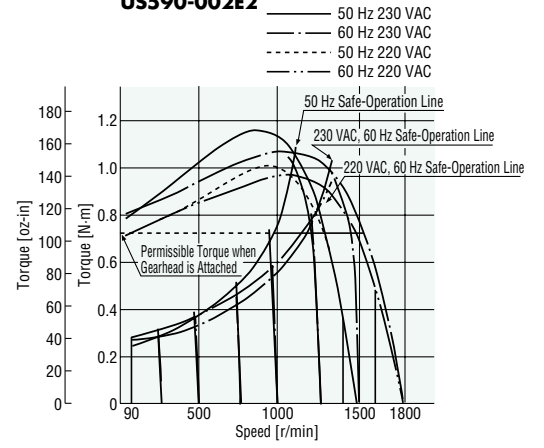
US560-502E2
US560-002E2



US590-501U2
US590-001U2



US590-502E2
US590-002E2



Dimensions Unit = mm (in.)

● Mounting screws are included with gearheads.

● 6 W (1/125 HP)

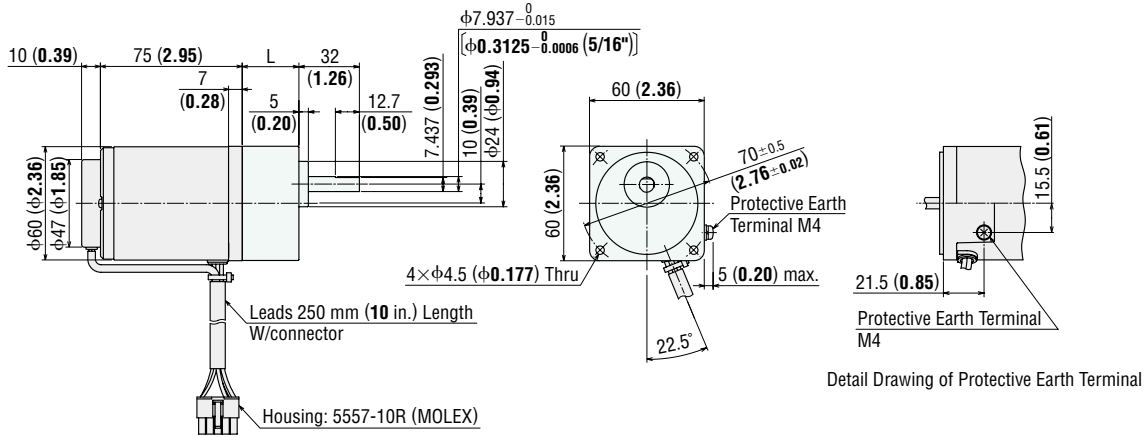
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	DXF
US206-401U2	USM206-401W2	2GN□SA	3-18	30 (1.18)	A486AU
US206-402E2	USM206-402W2		25-180	40 (1.57)	A486BU

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

Mass: Motor 0.8 kg (1.76 lb.)

Gearhead 0.4 kg (0.88 lb.)



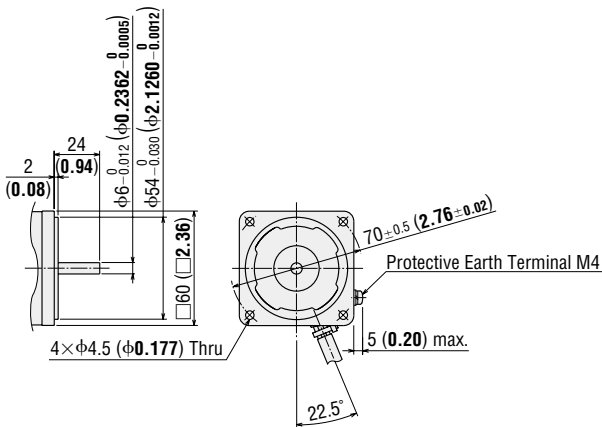
◇ Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

US206-001U2, US206-002E2

Motor: USM206-001W2, USM206-002W2

Mass: 0.8 kg (1.76 lb.)



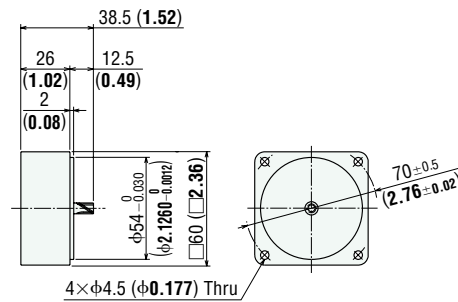
◇ Decimal Gearhead

Can be connected to **US206** pinion shaft type.

2GN10XS

Mass: 0.2 kg (0.44 lb.)

DXF A003



● 15 W (1/50 HP)

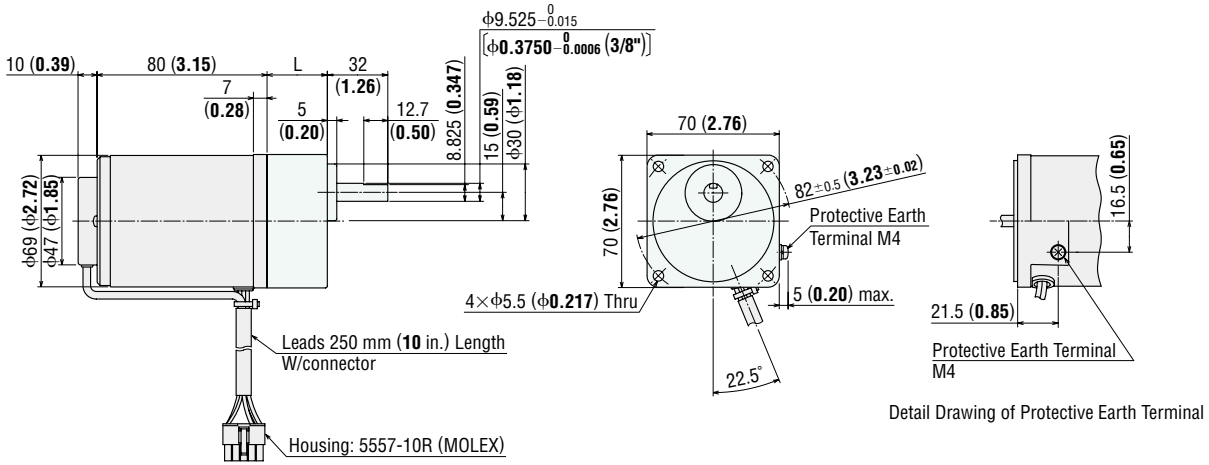
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	DXF
US315-401U2	USM315-401W2	3GN□SA	3-18	32 (1.26)	A488AU
US315-402E2	USM315-402W2		25-180	42 (1.65)	A488BU

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

Mass: Motor 1.2 kg (2.6 lb.)

Gearhead 0.55 kg (1.21 lb.)



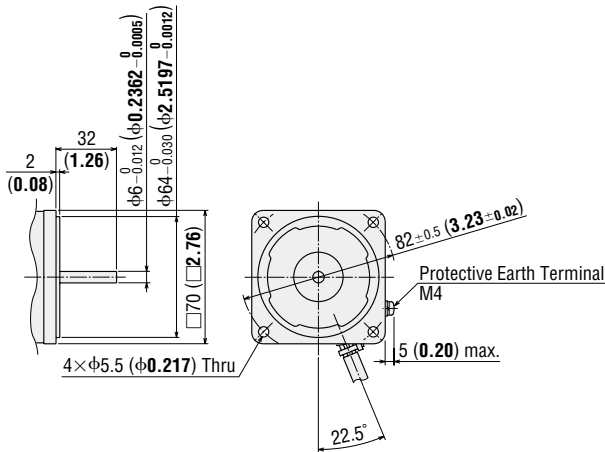
◇ Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

US315-001U2, US315-002E2

Motor: USM315-001W2, USM315-002W2

Mass: 1.2 kg (2.6 lb.)



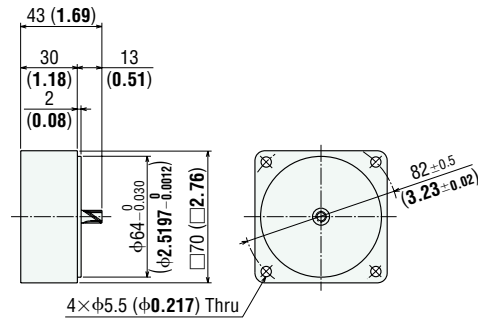
◇ Decimal Gearhead

Can be connected to **US315** pinion shaft type.

3GN10XS

Mass: 0.3 kg (0.66 lb.)

DXF A009



● 25 W (1/30 HP)

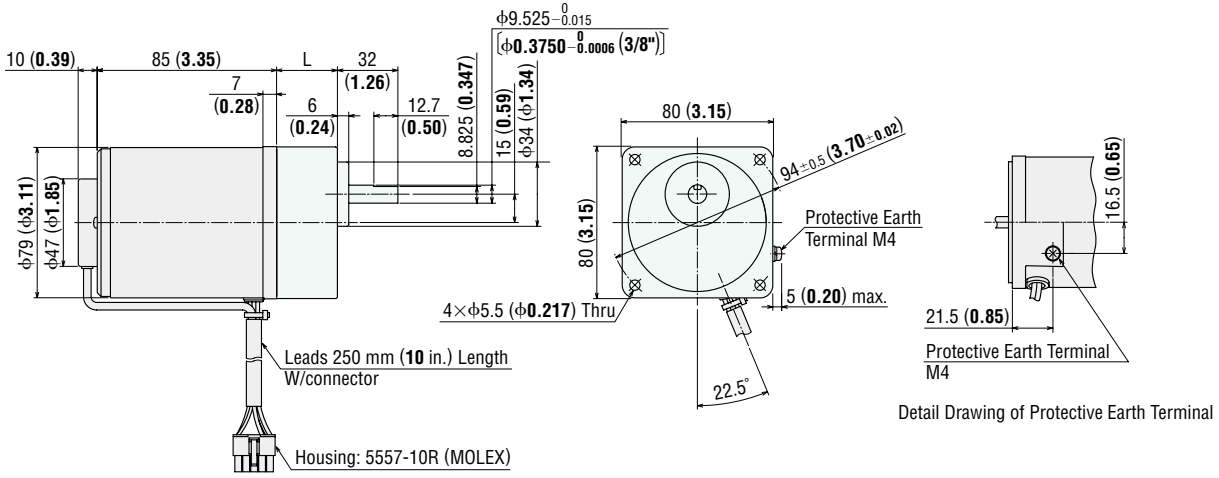
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	DXF
US425-401U2	USM425-401W2	4GN□SA	3~18	32 (1.26)	A490AU
US425-402E2	USM425-402W2		25~180	42.5 (1.67)	A490BU

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

Mass: Motor 1.6 kg (3.5 lb.)

Gearhead 0.65 kg (1.43 lb.)



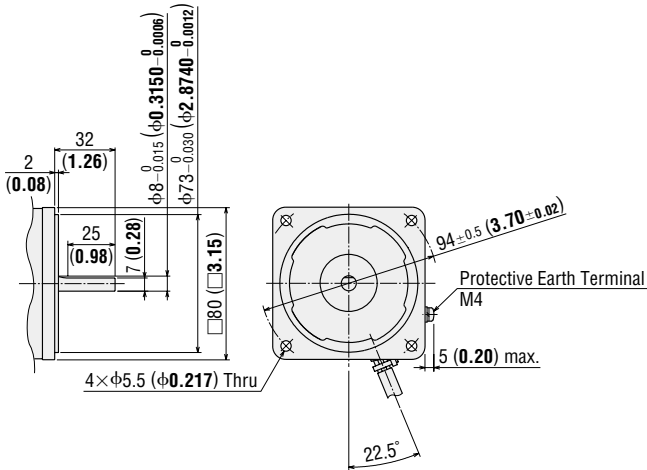
◇ Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

US425-001U2, US425-002E2

Motor: USM425-001W2, USM425-002W2

Mass: 1.6 kg (3.5 lb.)



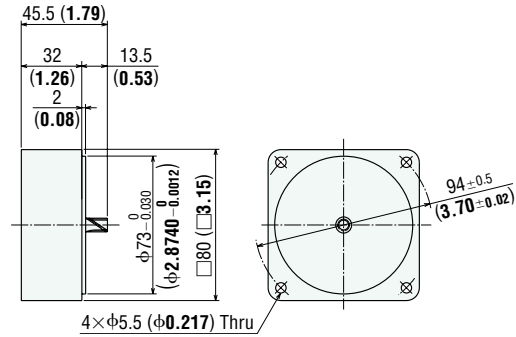
◇ Decimal Gearhead

Can be connected to **US425** pinion shaft type.

4GN10XS

Mass: 0.4 kg (0.88 lb.)

DXF A013



● 40 W (1/19 HP)

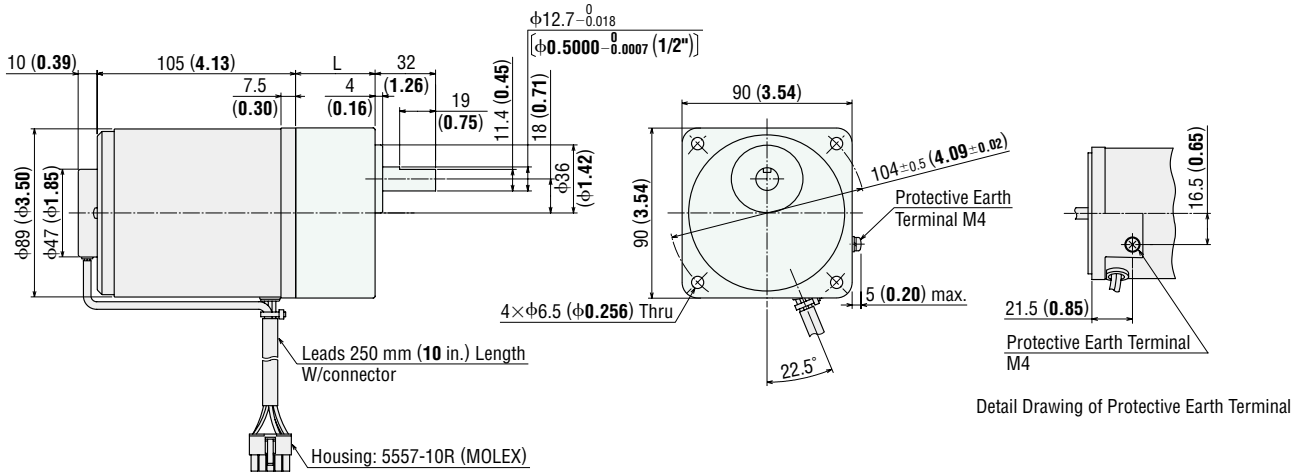
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	DXF
US540-401U2	USM540-401W2	5GN□SA	3-18	42 (1.65)	A492AU
US540-402E2	USM540-402W2		25-180	60 (2.36)	A492BU

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

Mass: Motor 2.6 kg (5.7 lb.)

Gearhead 1.5 kg (3.3 lb.)



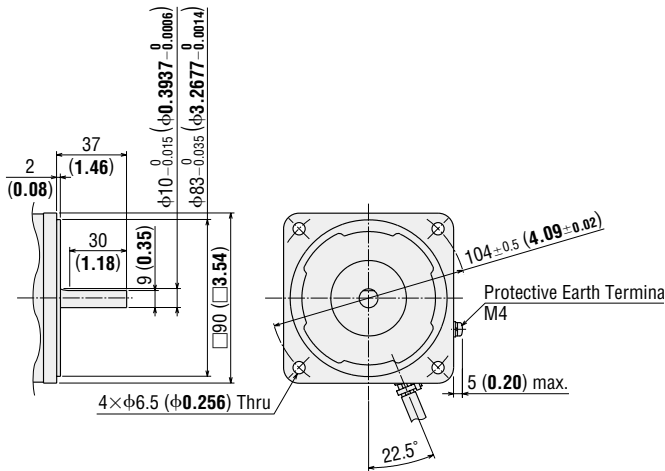
◇ Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

US540-001U2, US540-002E2

Motor: USM540-001W2, USM540-002W2

Mass: 2.6 kg (5.7 lb.)



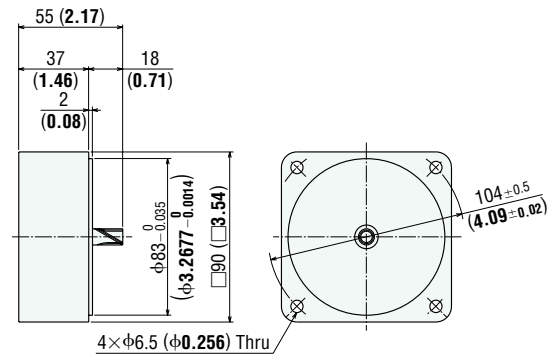
◇ Decimal Gearhead

Can be connected to **US540** pinion shaft type.

5GN10XS

Mass: 0.6 kg (1.32 lb.)

DXF A022



● 60 W (1/12 HP)

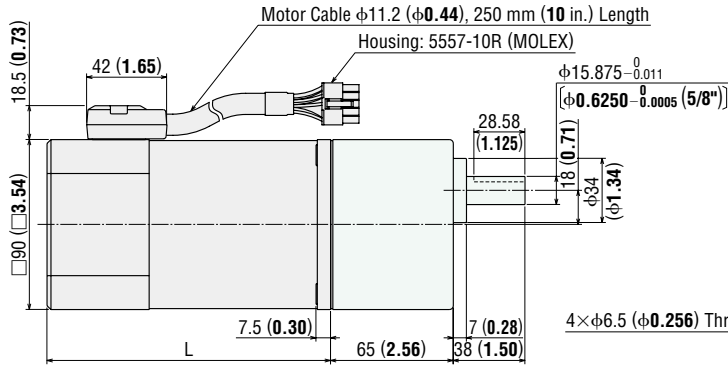
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	L	DXF
US560-501U2	USM560-501W-1	5GU□KA	150 (5.91)	A494U
US560-502E2	USM560-502W-1			

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

Mass: Motor 2.8 kg (6.2 lb.)

Gearhead 1.5 kg (3.3 lb.)



● 90 W (1/8 HP)

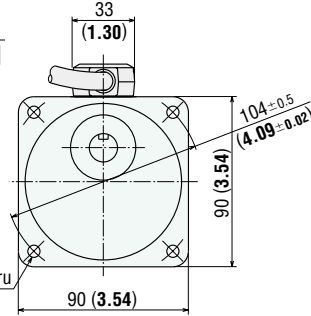
◇ Motor/Gearhead

Model	Motor Model	Gearhead Model	L	DXF
US590-501U2	USM590-501W-1	5GU□KA	165 (6.50)	A496U
US590-502E2	USM590-502W-1			

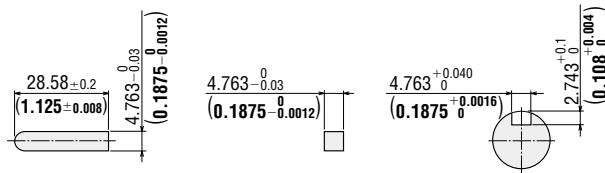
● Enter the gear ratio in the box (□) within the model name.

Mass: Motor 3.6 kg (7.9 lb.)

Gearhead 1.5 kg (3.3 lb.)



◇ Key and Key Slot (The key is included with the gearhead)



◇ Shaft Section of Round Shaft Type

The motor's dimensions (excluding the shaft section) are the same as those of the pinion shaft types.

US560-001U2, US560-002E2

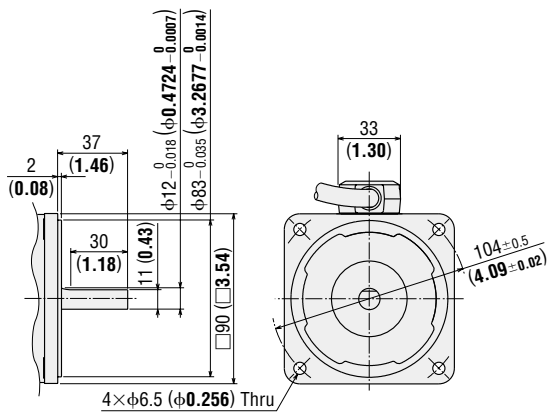
Motor: USM560-001W-1, USM560-002W-1

Mass: 2.8 kg (6.2 lb.)

US590-001U2, US590-002E2

Motor: USM590-001W-1, USM590-002W-1

Mass: 3.6 kg (7.9 lb.)



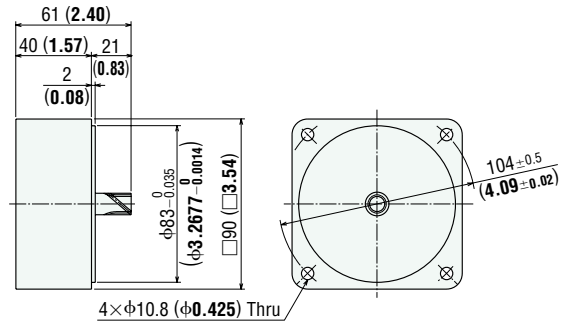
◇ Decimal Gearhead

Can be connected to **US560** or **US590** pinion shaft types.

5GU10XKB

Mass: 0.6 kg (1.32 lb.)

DXF A029

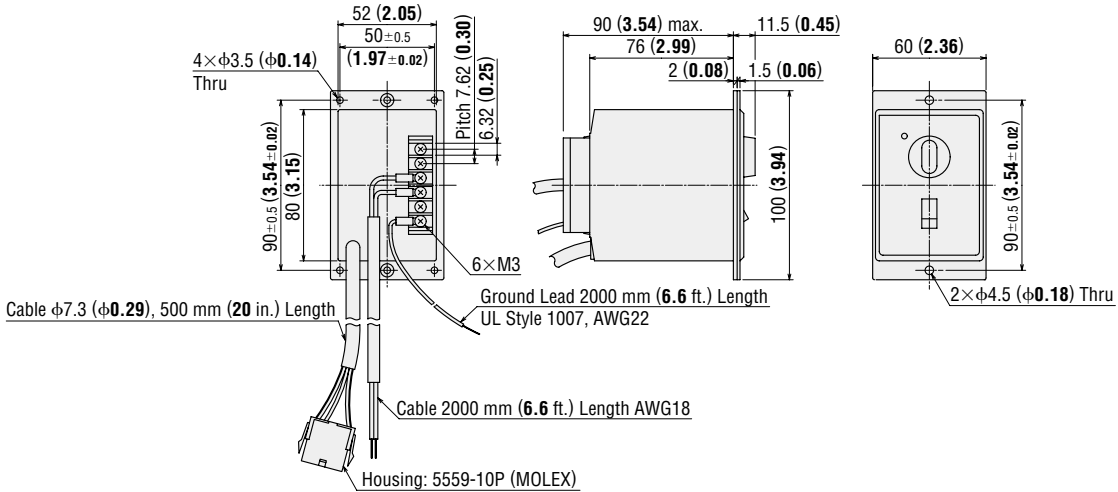


◇Control Unit

Common to **US206**, **US315**, **US425** and **US540** Types

USP206-1U2/USP206-2E2
 USP315-1U2/USP315-2E2
 USP425-1U2/USP425-2E2
 USP540-1U2/USP540-2E2
 Mass: 0.45 kg (0.99 lb.)

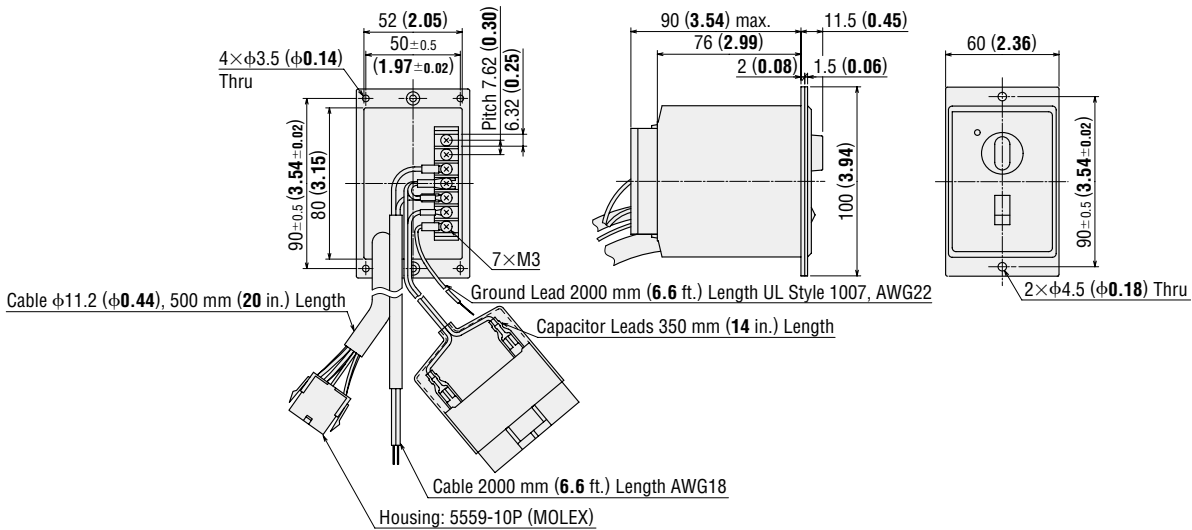
DXF A498



Common to **US560** and **US590** Types

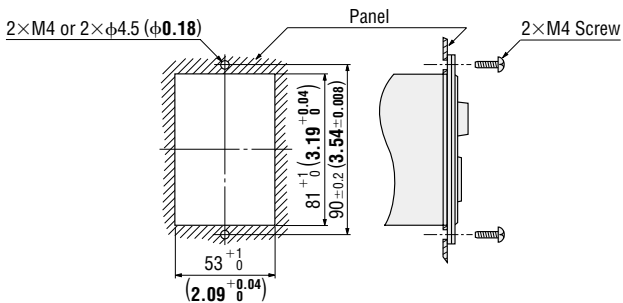
USP560-1U2/USP560-2E2
 USP590-1U2/USP590-2E2
 Mass: 0.5 kg (1.1 lb.)

DXF A499

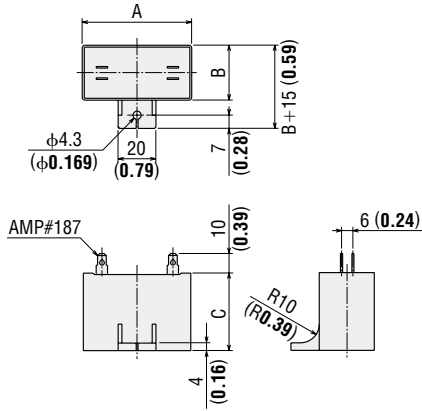


◇Panel Cut-Out for Control Unit

Installation Method by Cutting a Square Hole



◇Capacitor (Included)



◇Capacitor Dimensions mm (in.)

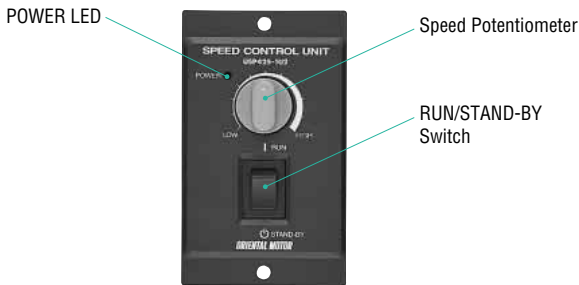
Model		Capacitor Model	A	B	C	Mass g (oz.)
Pinion Shaft Type	Round Shaft Type					
US560-501U2	US560-001U2	CH180CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)
US560-502E2	US560-002E2	CH40BFAUL	58 (2.28)	23.5 (0.93)	37 (1.46)	70 (2.5)
US590-501U2	US590-001U2	CH200CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)
US590-502E2	US590-002E2	CH60BFAUL	58 (2.28)	29 (1.14)	41 (1.61)	85 (3.0)

● A capacitor cap is included with a capacitor.

■ Connection and Operation

● Names and Functions of Speed Control Unit Parts

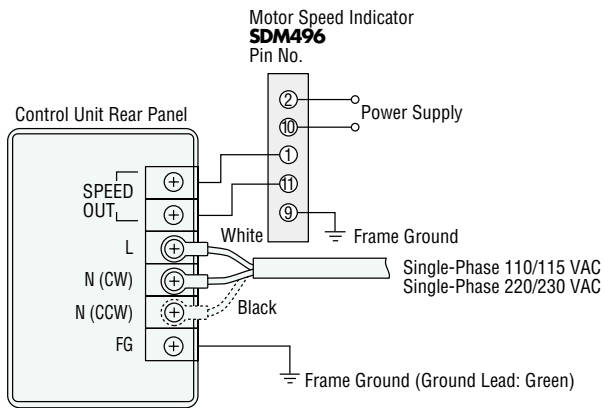
Control Unit Front Panel



● Connection Diagrams

◇US206, US315, US454 and US540 Types

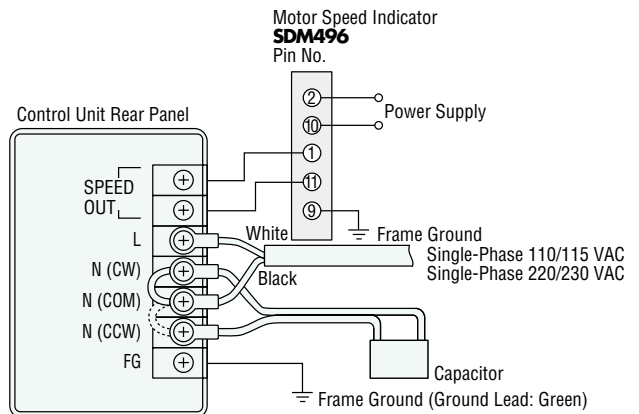
Uni-Directional Rotation:



● In the diagrams above, the motor shaft rotates in the clockwise direction. When changed to the dotted line [N (CCW)] position, the motor shaft rotates in the counterclockwise direction.

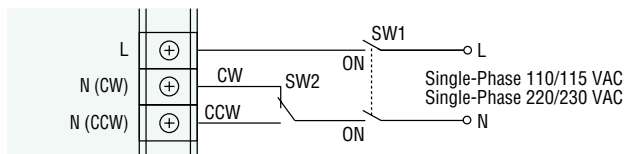
◇US560 and US590 Types

Uni-Directional Rotation:



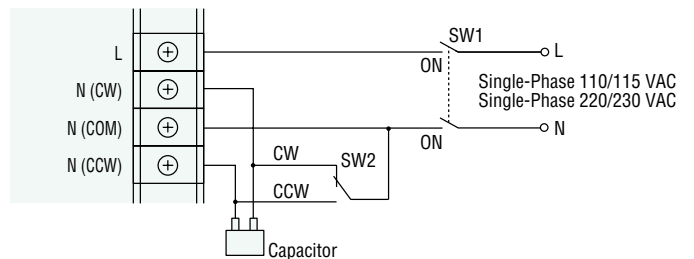
● In the diagrams above, the motor shaft rotates in the clockwise direction. When changed to the dotted line [N (CCW)] position, the motor shaft rotates in the counterclockwise direction.

Bi-Directional Rotation:



Contact Capacity of Switch
250 VAC 5 A min. (Inductive load)

Bi-Directional Rotation:



Contact Capacity of Switch
250 VAC 5 A min. (Inductive load)

● Operation Method

There is a difference in operation method between the **US206, US315, US425, US540** types and the **US560, US590** types.

◇ Rotation

Connect the motor lead wire connectors to the control unit. Then connect the power cable [2 m (6.6 ft.), AWG18] to the AC power supply. When the RUN/STAND-BY switch on the control unit is set to RUN, the motor rotates in the clockwise (CW) direction as viewed from the motor output shaft. Control units are set for clockwise rotation at shipment. The rotation direction on the gearhead output shaft may be the opposite direction of the motor shaft depending on the gear ratio.

◇ Changing Speed

When dial on the speed potentiometer located on the control unit is turned in a clockwise direction, motor speed increases; when turned in the counterclockwise direction, motor speed decreases. Motor speed can be set and adjusted over a range of 90 to 1400 r/min at 50 Hz, 90 to 1600 r/min at 60 Hz.

◇ Stopping

When the RUN/STAND-BY switch on the control unit is set to STAND-BY, the motor stops. This switch is not a power ON/OFF switch. If the motor is to be stopped for a long time, a separate power ON/OFF switch should be installed.

◇ Switching the Rotation Direction

· **US206, US315, US425 and US540 Types**
(Capacitor is included in the control unit.)

Uni-Directional Rotation:

When the rotation direction of motor needs to be reversed, change the terminal used for attaching the power cable, located at the rear panel of control unit, from terminal N (CW) to terminal N (CCW). The power cable connections are located at terminals L and N (CW) at shipment. This should always be done with the power OFF.

Bi-Directional Rotation:

Install an additional power switch (SW1) and CW/CCW switch (SW2) as shown on page 17, and use these switches to change the rotation direction. Motor cannot be reversed instantaneously. Turn SW1 off and wait until the motor has come to a complete stop before switching SW2.

· **US560 and US590 Types**

(Connection of the included capacitor is necessary.)

Uni-Directional Rotation:

When the rotation direction of motor needs to be reversed, change the terminal used for attaching the power cable, located at the rear panel of control unit, from terminals N (CW) and N (COM) to terminals N (COM) and N (CCW). The power cable connections are located at terminals N (CW) and N (COM) at shipment. This should always be done with the power OFF.

Bi-Directional Rotation:

Install an additional power switch (SW1) and CW/CCW switch (SW2) as shown on page 17, and use these switches to change the rotation direction. Motor cannot be reversed instantaneously. Turn SW1 off and wait until the motor has come to a complete stop before switching SW2.

■ List of Motor and Control Unit Combinations

Model names for motor and control unit combinations are shown below.

● Single-Phase 110/115 VAC

Output Power	Model	Motor Model	Control Unit Model
6 W (1/125 HP)	US206-401U2	USM206-401W2	USP206-1U2
	US206-001U2	USM206-001W2	
15 W (1/50 HP)	US315-401U2	USM315-401W2	USP315-1U2
	US315-001U2	USM315-001W2	
25 W (1/30 HP)	US425-401U2	USM425-401W2	USP425-1U2
	US425-001U2	USM425-001W2	
40 W (1/19 HP)	US540-401U2	USM540-401W2	USP540-1U2
	US540-001U2	USM540-001W2	
60 W (1/12 HP)	US560-501U2	USM560-501W-1	USP560-1U2
	US560-001U2	USM560-001W-1	
90 W (1/8 HP)	US590-501U2	USM590-501W-1	USP590-1U2
	US590-001U2	USM590-001W-1	

● Single-Phase 220/230 VAC

Output Power	Model	Motor Model	Control Unit Model
6 W (1/125 HP)	US206-402E2	USM206-402W2	USP206-2E2
	US206-002E2	USM206-002W2	
15 W (1/50 HP)	US315-402E2	USM315-402W2	USP315-2E2
	US315-002E2	USM315-002W2	
25 W (1/30 HP)	US425-402E2	USM425-402W2	USP425-2E2
	US425-002E2	USM425-002W2	
40 W (1/19 HP)	US540-402E2	USM540-402W2	USP540-2E2
	US540-002E2	USM540-002W2	
60 W (1/12 HP)	US560-502E2	USM560-502W-1	USP560-2E2
	US560-002E2	USM560-002W-1	
90 W (1/8 HP)	US590-502E2	USM590-502W-1	USP590-2E2
	US590-002E2	USM590-002W-1	

Common Specifications

Permissible Overhung Load and Permissible Thrust Load of Motors

Permissible Overhung Load

Motor		Permissible Overhung Load N (lb.)	
Frame Size □mm (in.)	Output Shaft Diameter φmm (in.)	Distance from Shaft End	
		10 mm (0.39 in.)	20 mm (0.79 in.)
60 (2.36)	6 (0.2362)	50 (11.2)	110 (24)
70 (2.76)	6 (0.2362)	40 (9)	60 (13.5)
80 (3.15)	8 (0.3150)	90 (20)	140 (31)
90 (3.54)	10 (0.3937)	140 (31)	200 (45)
	12 (0.4724)	240 (54)	270 (60)

Permissible Thrust Load

Avoid thrust loads as much as possible. If thrust load is unavoidable, keep it to half or less of the motor mass.

Permissible Overhung Load and Permissible Thrust Load of Gearheads

Model	Gear Ratio	Max. Permissible Torque N·m (lb-in)	Permissible Overhung Load N (lb.)		Permissible Thrust Load N (lb.)
			10 mm (0.39 in.) from Shaft End	20 mm (0.79 in.) from Shaft End	
2GN □SA	3~18	3.0 (26)	50 (11.2)	80 (18)	30 (6.7)
	25~180		120 (27)	180 (40)	
3GN □SA	3~18	5.0 (44)	80 (18)	120 (27)	40 (9)
	25~180		150 (33)	250 (56)	
4GN □SA	3~18	8.0 (70)	100 (22)	150 (33)	50 (11.2)
	25~180		200 (45)	300 (67)	
5GN □SA	3~18	10 (88)	250 (56)	350 (78)	100 (22)
	25~180		300 (67)	450 (101)	
5GU □KA	3~9	20 (177)	400 (90)	500 (112)	150 (33)
	12.5~18		450 (101)	600 (135)	
	25~180		500 (112)	700 (157)	

Permissible Load Inertia of Gearhead: J

When a high load inertia (J) is connected to a gearhead, high torque is exerted instantaneously on the gearhead when starting up in frequent, discontinuous operations (or when stopped instantaneously). Excessive impact loads can cause the gearhead or motor damage.

The table below gives values for permissible load inertia on the motor shaft. Use the motor and gearhead within these parameters.

The permissible load inertia (J) on the gearhead output shaft is calculated with the following formulas.

The life of the gearhead when operating at the permissible load inertia with instantaneous stops of the speed control motors is approximately two million cycles.

Permissible Load Inertia at the Gearhead Output Shaft

$$\begin{aligned} \text{Gear ratio 3:1 to 50:1} & \quad J_G = J_M \times i^2 & \quad J_G & : \text{Permissible load inertia at the gearhead output shaft } J [\times 10^{-4} \text{kg}\cdot\text{m}^2 \text{ (oz}\cdot\text{in}^2)] \\ \text{Gear ratio 60:1 or higher} & \quad J_G = J_M \times 2500 & \quad J_M & : \text{Permissible load inertia at the motor shaft } J [\times 10^{-4} \text{kg}\cdot\text{m}^2 \text{ (oz}\cdot\text{in}^2)] \\ & & \quad i & : \text{Gear ratio (Example: } i = 3 \text{ means the gear ratio of 3:1)} \end{aligned}$$

Permissible Load Inertia at the Motor Shaft

No. of Phase	Frame Size	Output Power	Permissible Load Inertia at the Motor Shaft J [$\times 10^{-4}$ kg·m ² (oz·in ²)]
Single-Phase	□60 mm (2.36 in.)	6 W (1/125 HP)	0.062 (0.34)
	□70 mm (2.76 in.)	15 W (1/50 HP)	0.14 (0.77)
	□80 mm (3.15 in.)	25 W (1/30 HP)	0.31 (1.70)
		40 W (1/19 HP)	0.75 (4.1)
		60 W (1/12 HP)	1.1 (6.0)
	□90 mm (3.54 in.)	90 W (1/8 HP)	1.1 (6.0)

Accessories

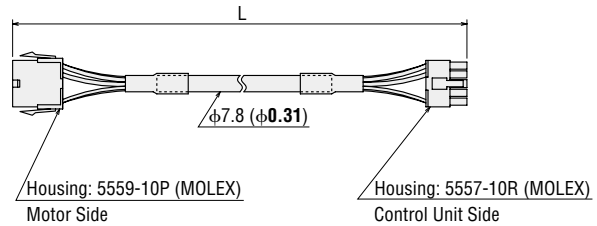
Extension Cables RoHS

Extension cables for connecting the **US** Series motor and control unit. Two types are available, depending on the motor output power. The maximum extension length is 4.75 m (15.6 ft.).

Applicable Motors

◇ **US206, US315, US425** and **US540** Types

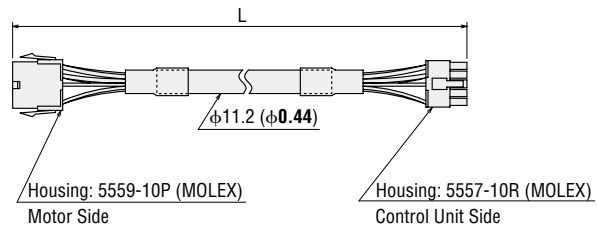
Model	Cable Length: L m (ft.)
CC01SU05	1 (3.3)
CC02SU05	2 (6.6)
CC03SU05	3 (9.8)
CC04SU05	4 (13.1)



Applicable Motors

◇ **US560** and **US590** Types

Model	Cable Length: L m (ft.)
CC01SU07	1 (3.3)
CC02SU07	2 (6.6)
CC03SU07	3 (9.8)
CC04SU07	4 (13.1)



Digital Display Type Motor Speed Indicator RoHS

Model: **SDM496**

Power supply voltage: Single-phase 100 VAC to 240 VAC



This product is a digital speed indicator that directly displays the speed at the output shaft of the motor or gearhead.

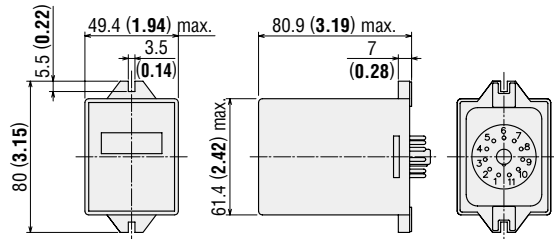
SDM496 is not approved by any safety standards.

Included with **SDM496**

To mount in a panel, a recessed mounting adapter **EPUA-31** and round shape socket **EP11MS** are provided with the speed indicator.

Dimensions Unit = mm (in.)

Mass: 200 g (7.1 oz.) DXF A100



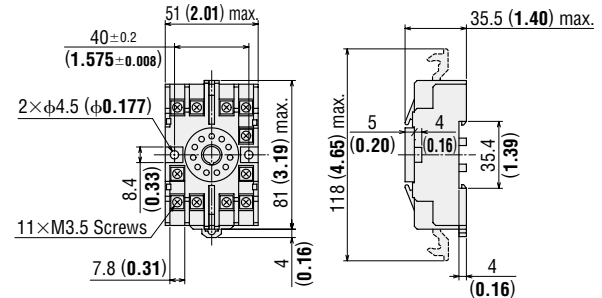
Flush Mounting Socket for Mounting DIN Rail RoHS

This mounting socket is used for installing the motor speed indicators on DIN rails.

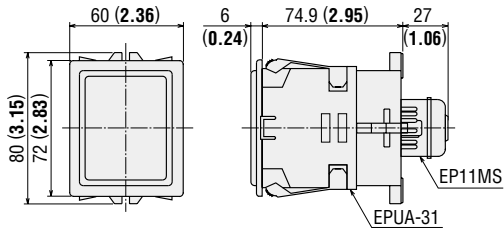
Model: **EP11PF** (Sold separately)

◇ **Dimensions** Unit = mm (in.)

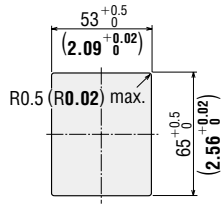
Mass: 75 g (2.6 oz.)



● **Dimensions with Adapter Attached** Unit = mm (in.)



● **Panel Cut-Out**



■ **Motor/Gearhead Mounting Brackets** (RoHS)

Mounting brackets for attaching and securing a motor and gearhead. They are high-strength types, which can be used with high power motors/gearheads. These brackets come with tapped holes. To mount the motor and gearhead, simply fasten with the screws provided to the gearhead. To mount the motor alone, mounting screws must be provided separately.

Please note that these mounting brackets cannot be used with the following products.

- Right-angle gearheads (**RH** type, **RAA** type)



For motor frame size: □60 mm (□2.36 in.)

● **Model: SOL2U08**

Mass: 135 g (4.7 oz.) Material: Aluminum alloy

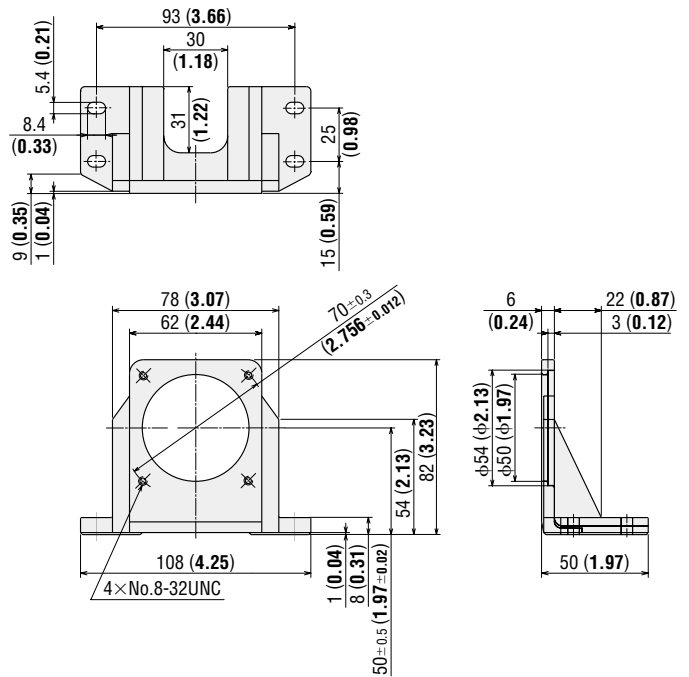
DXF A321U

◇ **Applicable Products**

2GN gearhead

Frame size 60 mm (2.36 in.) motor

● **Dimensions** Unit = mm (in.)



For motor frame size: □70 mm (□2.76 in.)

● **Model: SOL3U10**

Mass: 175 g (6.2 oz.) Material: Aluminum alloy

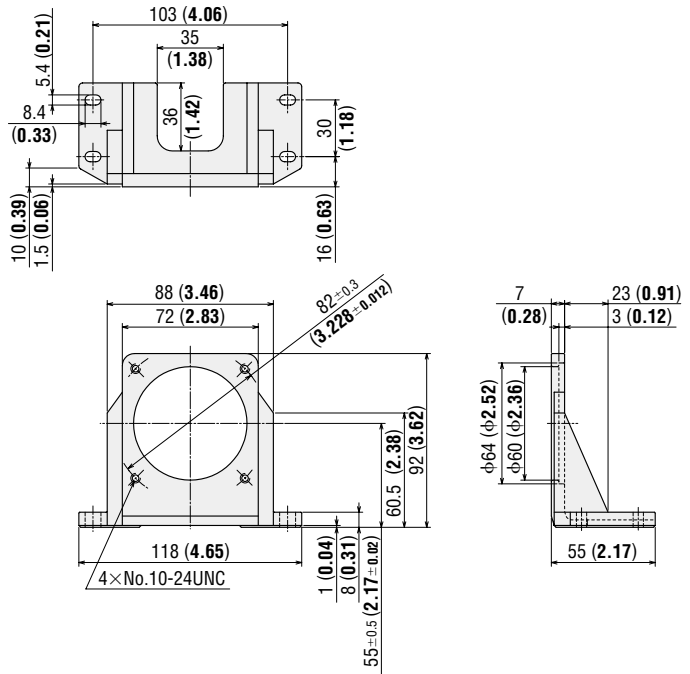
DXF A322U

◇ **Applicable Products**

3GN gearhead

Frame size 70 mm (2.76 in.) motor

● **Dimensions** Unit = mm (in.)



For motor frame size: □80 mm (□3.15 in.)

● **Model: SOL4U10**

Mass: 210 g (7.4 oz.) Material: Aluminum alloy

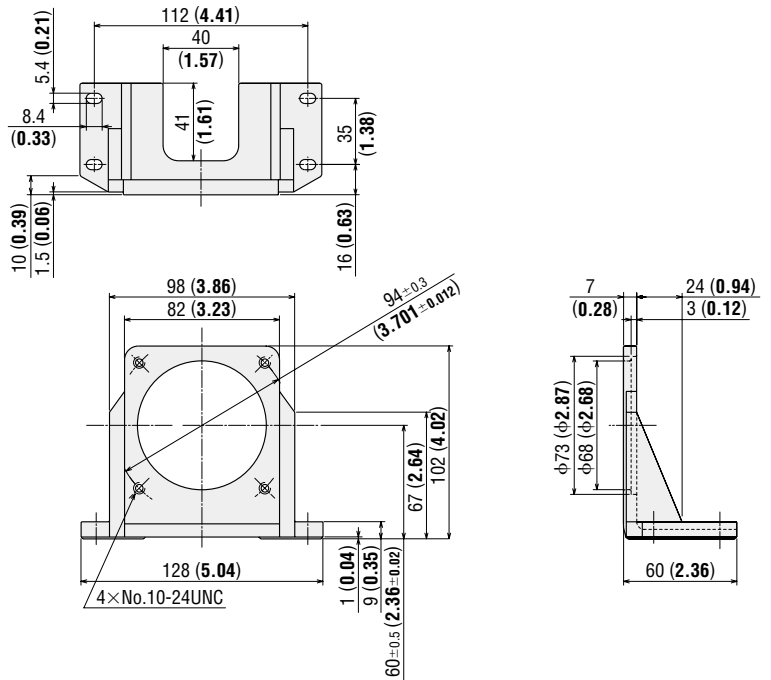
DXF A236U

◇ **Applicable Products**

4GN gearhead

Frame size 80 mm (3.15 in.) motor

● **Dimensions** Unit = mm (in.)



For motor frame size: 90 mm (3.54 in.)

● Model: SOL5UA

Mass: 270 g (9.5 oz.) Material: Aluminum alloy

DXF A238U

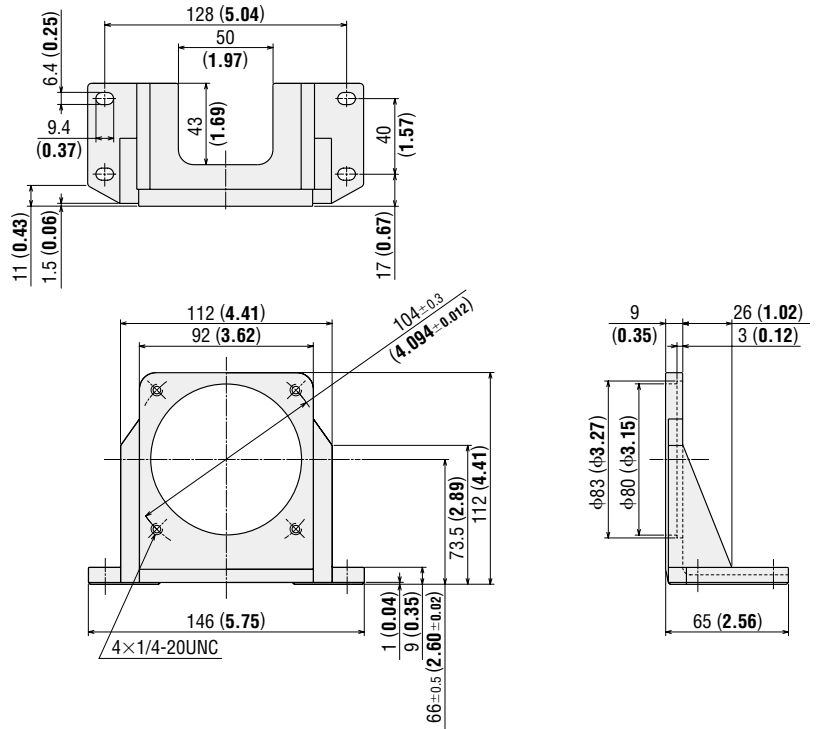
◇ Applicable Products

5GN gearhead

5GU gearhead

Frame size 90 mm (3.54 in.) motor

● Dimensions Unit = mm (in.)



Flexible Couplings **RoHS**

These products are clamp type couplings to connect motor or gearhead shaft to the shaft of the equipment to be connected. Once the motor or gearhead are determined, the coupling can be selected.



● Features

- Couplings come with shaft holes and have standardized combinations for different diameter shaft holes.
- Characteristics are the same for clockwise and counterclockwise rotation.
- Oil-resistant and electrically insulated
- Aluminum alloy construction
- The driven shaft is not damaged, since shafts are joined by clamping.
- Easy installation due to a separated hub and sleeve design
- Refer to page A-208 of the General Catalog 2006/2007 for details of the products.

Gearhead Model	Coupling Type
2GN <input type="checkbox"/> SA	MCL20
	MCL30
3GN <input type="checkbox"/> SA	MCL30
4GN <input type="checkbox"/> SA	MCL30
4GN <input type="checkbox"/> RAA	MCL40
5GN <input type="checkbox"/> SA	MCL30
5GN <input type="checkbox"/> RAA	MCL40
5GU <input type="checkbox"/> KA	MCL40
5GU <input type="checkbox"/> RAA	MCL55

- Enter the gear ratio in the box () within the model name.
- Type of coupling varies depending on condition of the load.

This product is manufactured at a plant certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** (for systems of environmental management).

Specifications are subject to change without notice.
This catalog was published in March, 2008.

ORIENTAL MOTOR U.S.A. CORP.

Western Sales and Customer Service Center

Tel: (310) 715-3301 Fax: (310) 225-2594

Los Angeles

Tel: (310) 715-3301

San Jose

Tel: (408) 392-9735

Midwest Sales and Customer Service Center

Tel: (847) 285-5100 Fax: (847) 843-4121

Chicago

Tel: (847) 285-5100

Dallas

Tel: (214) 432-3386

Toronto

Tel: (905) 502-5333

Eastern Sales and Customer Service Center

Tel: (781) 848-2426 Fax: (781) 848-2617

Boston

Tel: (781) 848-2426

Charlotte

Tel: (704) 696-1036

New York

Tel: (973) 359-1100

Technical Support

Tel: (800) 468-3982 / 8:30 A.M. to 5:00 P.M., P.S.T. (M-F)
7:30 A.M. to 5:00 P.M., C.S.T. (M-F)

E-mail: techsupport@orientalmotor.com

Obtain Specifications, Online Training and Purchase Products at:

www.orientalmotor.com

