Oriental motor

NEW PRODUCTS

RoHS RoHS-Compliant

Standard AC Motors

World K Series

Induction Motors
Reversible Motors
Electromagnetic Brake Motors
Torque Motors

The **World K Series** - Standard AC Motors Offering the Greatest Utility for around the World

The **World K Series** is the global name of our standard AC motors that are usable around the world. Its lineup has been extended with the addition of models conforming to the RoHS Directive.

Offering high reliability and a wide range of variations, the **World K Series** supports effective equipment design.

WORLD K SERIES

Induction Motors


Motor Frame Size
□42 mm (□1.65 in.)
Lead Wire Type


Lead Wire Type


Terminal Box Type


2-Pole, High-Speed Type

Reversible Motors


Motor Frame Size
□42 mm (□1.65 in.)
Lead Wire Type


Lead Wire Type


Terminal Box Type

Electromagnetic Brake Motors

Torque Motors

INDEX

Features of the World K Series

If you're looking for reliable motors that can be used in various locations around the world, Oriental Motor has the answer with the **World K Series**. These high-performance models are compatible with major international safety standards and voltage standards of each country and region, and also come in a range of configurations, gearhead types and accessories.

Safety Standards for Safe, Reliable Operation

All World K Series models have a built-in overheat protection device and conform to major international safety standards.

■ Applicable Standards
UL/CSA Standards
CE Marking (Low Voltage Directive)

Models certified under CCC (China Compulsory Certification system) are also available. For details, please contact your nearest Oriental Motor sales office.

■ Motor Overheat Protection Device
● Thermal Protector:
A built-in feature of all motors with a frame size of □70 mm (□2.76 in.) or more.
● Impedance Protection:
Implemented in all motors with a frame size of □60 mm (□2.36 in.) or less*.

* Torque motors with a frame size of □60 mm (□2.36 in.) are also equipped with a built-in thermal protector.

Worldwide Voltage Compatibility

Usable with the power supply voltages in major countries.

The **World K Series** supports the power supply voltages used in major countries. Motors meeting the local voltage standard are readily available in major countries in North America, Europe and Asia.

RoHS-Compliant

The World K 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).

Wide Variations

Select from a total of 4 models encompassing 336 types.

Oriental Motor has expanded its lineup with the addition of □42 mm (□1.65 in.) motors, 2-pole, high-speed type induction motors and torque motors. You can choose the ideal motor from a total of 336 types according to your specific needs for motor type, voltage specification, output and application requirements.

■ **World K Series** Output Table

Model/Type \ Frame Size		□42 mm (□1.65 in.)	□60 mm (□2.36 in.)	□70 mm (□2.76 in.)	□80 mm (□3.15 in.)	□90 mm (□3.54 in.)
Induction Motors	Lead Wire Type	1 W (1/750 HP) 3 W (1/250 HP)	6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP) 60 W (1/12 HP) 90 W (1/8 HP)
	Terminal Box Type	—	6 W (1/125 HP)	—	25 W (1/30 HP)	40 W (1/19 HP) 60 W (1/12 HP) 90 W (1/8 HP)
	2-Pole, High-Speed Type	—	—	—	40 W (1/19 HP) 60 W (1/12 HP)	60 W (1/12 HP) 90 W (1/8 HP) 150 W (1/5 HP)
Reversible Motors	Lead Wire Type	1 W (1/750 HP)	6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP) 60 W (1/12 HP) 90 W (1/8 HP)
	Terminal Box Type	—	6 W (1/125 HP)	—	25 W (1/30 HP)	40 W (1/19 HP) 60 W (1/12 HP) 90 W (1/8 HP)
Electro-magnetic Brake Motors		—	6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP) 60 W (1/12 HP) 90 W (1/8 HP)
Torque Motors		—	3 W (1/250 HP)	6 W (1/125 HP)	10 W (1/75 HP)	20 W (1/38 HP)

Gearheads

"Long life, parallel shaft gearheads" as well as various other gearheads are available.

■ Gearheads

We have dedicated gearheads offering wide gear ratios, as well as right-angle gearheads that minimize the installation space for your equipment.

Parallel Shaft Gearhead RoHS

Right-Angle Gearhead Hollow Shaft Type RoHS

Right-Angle Gearhead Solid Shaft Type RoHS

■ Parallel Shaft Gearhead with a Rated Life of 10000 hours

Adopting innovative technologies and structures, the new "long life, parallel shaft gearhead" achieves a rated life of 10000 hours, which is twice as long as the life of our conventional gearheads. The reliable gearheads reduces maintenance problems. Gearhead noise has also been reduced.

■ Motor's Bearing also Lasts 2 Times Longer

A motor's life is determined by its bearing. We adopted high-performance bearing grease to lubricate this important component. As a result, the bearings of **World K Series** motors last twice as long as our conventional bearings.

Brake Pack/ Accessories

We offer a standard-compliant brake pack, as well as a range of accessories.

■ Standard-Compliant Brake Pack **SB50W** RoHS

An ideal brake pack for the **World K Series**, the **SB50W** provides useful functions such as instantaneous stop, forward/reverse operation, electromagnetic brake control and thermal protector open detection.

■ Accessories

A range of accessories is available to facilitate motor installation in your equipment. Choose one according to the motor type you've selected.

Mounting Bracket RoHS

Coupling RoHS

Lineup of the World K Series

Induction Motors

Ideal for uni-directional continuous operation.

Frame Size
□42 mm (□1.65 in.)

Lead Wire Type

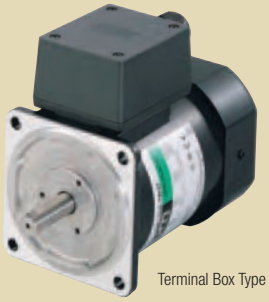
Lead Wire Type

Terminal Box Type

● 2-Pole, High-Speed Type

Perfect for high-speed applications.

Lead Wire Type



Terminal Box Type

Reversible Motors

Most suitable for applications where instantaneous reversal of direction is frequently required.

Frame Size
□42 mm (□1.65 in.)

Lead Wire Type

Lead Wire Type

Terminal Box Type

Electromagnetic Brake Motors

Optimal for applications in which loads must be held. Motors come with a power off activated type electromagnetic brake.

Torque Motors

Suitable for winding and other operations involving tension control, as well as for applications requiring braking.

● For your catalogue, please contact your nearest Oriental Motor sales office.

Induction Motors

Voltage/Type \ Frame Size/Output Power		□42 mm (□1.65 in)	□60 mm (□2.36 in)	□70 mm (□2.76 in)	□80 mm (□3.15 in)	□90 mm (□3.54 in)			Page
		1 W (1/750 HP)・3 W (1/250 HP)	6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP)	60 W (1/12 HP)	90 W (1/8 HP)	
Single-Phase 110/115 VAC	Lead Wire Type	●	●	●	●	●	●	●	8
	Terminal Box Type				●	●	●	●	
Single-Phase 220/230 VAC	Lead Wire Type		●	●	●	●	●	●	
	Terminal Box Type				●	●	●	●	
Three-Phase 200/220/230 VAC	Lead Wire Type		●		●	●	●	●	
	Terminal Box Type				●	●	●	●	

2-Pole, High-Speed Type

Voltage/Type \ Frame Size/Output Power				□80 mm (□3.15 in)		□90 mm (□3.54 in)			Page
				40 W (1/19 HP)	60 W (1/12 HP)	60 W (1/12 HP)	90 W (1/8 HP)	150 W (1/5 HP)	
Single-Phase 110/115 VAC	Lead Wire Type			●	●	●	●	●	35
Single-Phase 220/230 VAC	Lead Wire Type			●	●	●	●	●	
Three-Phase 200/220/230 VAC	Lead Wire Type					●	●	●	
	Terminal Box Type							●	

Reversible Motors

Voltage/Type \ Frame Size/Output Power		□42 mm (□1.65 in)	□60 mm (□2.36 in)	□70 mm (□2.76 in)	□80 mm (□3.15 in)	□90 mm (□3.54 in)			Page
		1 W (1/750 HP)	6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP)	60 W (1/12 HP)	90 W (1/8 HP)	
Single-Phase 110/115 VAC	Lead Wire Type	●	●	●	●	●	●	●	39
	Terminal Box Type				●	●	●	●	
Single-Phase 220/230 VAC	Lead Wire Type		●	●	●	●	●	●	
	Terminal Box Type				●	●	●	●	

Electromagnetic Brake Motors

Voltage \ Frame Size/Output Power		□60 mm (□2.36 in)	□70 mm (□2.76 in)	□80 mm (□3.15 in)	□90 mm (□3.54 in)			Page
		6 W (1/125 HP)	15 W (1/50 HP)	25 W (1/30 HP)	40 W (1/19 HP)	60 W (1/12 HP)	90 W (1/8 HP)	
Single-Phase 110/115 VAC		●	●	●	●	●	●	66
Single-Phase 220/230 VAC		●	●	●	●	●	●	
Three-Phase 200/220/230 VAC		●		●	●	●	●	

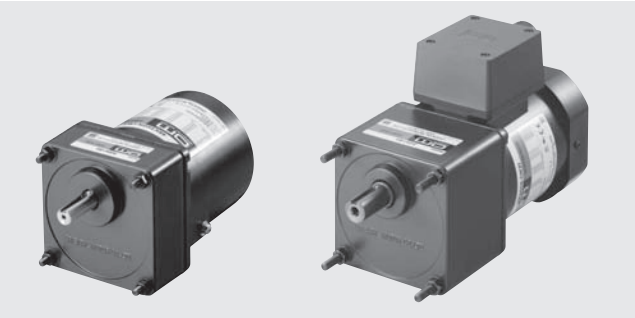
Torque Motors

Voltage \ Frame Size/Output Power		□60 mm (□2.36 in)	□70 mm (□2.76 in)	□80 mm (□3.15 in)	□90 mm (□3.54 in)			Page
		3 W (1/250 HP)	6 W (1/125 HP)	10 W (1/75 HP)	20 W (1/38 HP)			
Single-Phase 110/115 VAC		●	●	●	●			93
Single-Phase 220/230 VAC		●	●	●	●			

● Products for single-phase 100 VAC and single-phase 200 VAC are available. Please contact the nearest Oriental Motor sales office.

RoHS RoHS-Compliant

Induction Motors



Features

Optimal for Uni-Directional Continuous Operation

Induction motors are optimal for uni-directional continuous operation such as a conveyor system.

Safety Standards and CE Marking

Standards	Certification Body	Standards File No.	CE Marking
UL 1004 UL 2111	UL	E64199 [1 W～6 W (1/750 HP～1/125 HP) Type] E64197 [15 W～150 W (1/50 HP～1/5 HP) Type]	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77			
EN 60950-1 EN 60034-1 EN 60034-5 IEC 60664-1	Conform to EN/IEC Standards		
GB 12350	CQC	2005010401150786 [Single-Phase 1 W (1/750 HP), 3 W (1/250 HP) Type] 2003010401091525 [Single-Phase 6 W (1/125 HP) Type] 2003010401091527 [Three-Phase 6 W (1/125 HP) Type] 2003010401091522 [Single-Phase 15 W～90W (1/50 HP～1/8 HP) Type] 2003010401091520 [Three-Phase 25 W～90W (1/30 HP～1/8 HP) Type] 2005010401150785 [2-Pole, High-Speed Type, Single-Phase 40 W～150 W (1/19 HP～1/5 HP) Type] 2005010401150788 [2-Pole, High-Speed Type, Three-Phase 60 W～150 W (1/12 HP～1/5 HP) Type]	

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

System Configuration

Mounting Brackets (Accessories)
(➜ Page 117)

Flexible Couplings (Accessories)
(➜ Page 119)

Brake Pack
SB50W (Sold separately)
Equipped with instantaneous stopping functions, thermal protector open detection functions.
(➜ Page 110)

Right-Angle Gearheads (Sold separately)
(➜ Page 104)

Motor

AC Power Supply

Gearheads (Sold separately)

Capacitor Cap* (Included)
Insulating cap for capacitor terminal section.

Capacitor (Included)

●Example of System Configuration

(Body) (Sold separately)

Motor (Pinion Shaft)		Long Life/Low Noise GN-S Gearhead	Mounting Bracket	Flexible Coupling
4IK25GN-AW2U	+	4GN25SA	SOL4U10	MCL30F06F08
		◎	○	○

◎: Required under this system.
○: Optional accessory offered by Oriental Motor.
*Capacitor cap is included.

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

Product Number Code

●Motor

5 I K 40 GN - AW 2 T U
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Frame Size	**0**: 42 mm (1.65 in.) **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	Motor Type	**I**: Induction Motor		
③	Series	**K**: **K** Series		
④	Output Power (W)	(Example) **40**: 40 W (1/19 HP)		
⑤	Motor Shaft Type	**GN**: **GN** Type Pinion Shaft **GE**: **GE** Type Pinion Shaft **A**: Round Shaft		
⑥	Power Supply Voltage/ Number of Poles	**AW**: Single-Phase 110/115 VAC 4-Pole **DW**: Single-Phase 220/230 VAC 2-Pole	**BW**: Single-Phase 110/115 VAC 2-Pole **SW**: Three-Phase 200/220/230 VAC 4-Pole	**CW**: Single-Phase 220/230 VAC 4-Pole **TW**: Three-Phase 200/220/230 VAC 2-Pole
⑦	**2**, **3**: RoHS-Compliant			
⑧	**T**: Terminal Box Type			
⑨	Included Capacitor	**U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC Blank: Three-Phase Type		

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
(Example) Model: **5IK40GN-AW2U** ➜ Motor nameplate and product approved under various safety standards: **5IK40GN-AW2**

●Gearhead

5 GN 50 SA
① ② ③ ④

①	Gearhead Frame Size	**0**: 42 mm (1.65 in.) **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 **GE**: **GE** 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	**KA**: **GN-K** Gearhead* **RAA**: Right-Angle/Solid Shaft Gearhead, RoHS-Compliant
	GE Type Pinion	**SA**: Long Life **GE-S** Gearhead, RoHS-Compliant **RH**: Right-Angle/Hollow Shaft Gearhead, RoHS-Compliant	**RAA**: Right-Angle/Solid Shaft Gearhead, RoHS-Compliant

***GN-K** gearhead for frame size 42 mm (1.65 in.) complies to RoHS directive.

General Specifications of Induction Motors

1 W (1/750 HP), 3 W (1/250 HP) Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 75°C (135°F) or less measured by the resistance change method after rated motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate*1.
Insulation Class	UL/CSA standards: Class A [105°C (221°F)], EN standards: Class E [120°C (248°F)]
Overheat Protection	Impedance protected
Ambient Temperature	−10°C~+40°C (+14°F~+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	IP20

6 W (1/125 HP)~90 W (1/8 HP) Type, 2-Pole, High-Speed Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor 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 under normal ambient temperature and humidity, after rated motor operation with connecting a gearhead or equivalent heat radiation plate*. [Three-phase type: 70°C (126°F) or less]
Insulation Class	Class B [130°C (266°F)]
Overheat Protection	6 W (1/125 HP) type has impedance protection. All others have built-in thermal protector (automatic return type) Operating temperature; open: 130°C±5°C (266°F±9°F), close: 82°C±15°C (179.6°F±27°F)
Ambient Temperature	Three-phase 200 VAC: −10°C~+50°C (+14°F~+122°F) (nonfreezing) Other voltage: −10°C~+40°C (+14°F~+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	Lead Wire Type: IP20 Terminal Box Type: 25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP), 90 W (1/8 HP) Type IP54 (excluding the installation surface of the round shaft type)

* Heat radiation plate (Material: Aluminum)

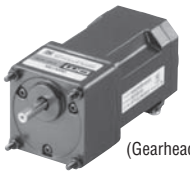
Motor Type	Size: mm (in.)	Thickness: mm (in.)
1 W (1/750 HP), 3 W (1/250 HP) Type	80×80 (3.15×3.15)	5 (0.20)
6 W (1/125 HP) Type	115×115 (4.53×4.53)	
15 W (1/50 HP) Type	125×125 (4.92×4.92)	
25 W (1/30 HP) Type (2-Pole, High-Speed **4IK40** Type, **4IK60** Type)	135×135 (5.31×5.31)	
40 W (1/19 HP) Type (2-Pole, High-Speed **5IK60** Type)	165×165 (6.50×6.50)	
60 W (1/12 HP), 90 W (1/8 HP), 150 W (1/5 HP) Type	200×200 (7.87×7.87)	

RoHS

Induction Motors

1 W (1/750 HP) / 3 W (1/250 HP)

Frame Size: □42 mm (□1.65 in.)



(Gearhead sold separately)

■Specifications – Continuous Rating RoHS

Model Lead Wire Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
ZP 0IK1GN-AW3U	0IK1A-AW3U	1 1/750	Single-Phase 110	60	0.074	8 1.13	8 1.13	1200	1.0
			Single-Phase 115		0.078				
ZP 0IK3GN-BW3U	0IK3A-BW3U	3 1/250	Single-Phase 110	60	0.115	6 0.85	10 1.42	3000	1.5
			Single-Phase 115		0.118				

- The **U** at the end of the model name indicates that the unit includes a capacitor. This letter is not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

ZP: Impedance protected

■Product Line

●Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**0IK1GN-AW3U**	**0IK1A-AW3U**
	0IK3GN-BW3U	**0IK3A-BW3U**

●Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Parallel Shaft	**0GN□KA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

■Gearmotor – Torque Table

- Gearheads are sold separately. Decimal gearheads are not available.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (4-pole type; 50 Hz: 1500 r/min, 60 Hz: 1800 r/min, 2-pole type; 50 Hz: 3000 r/min, 60 Hz: 3600 r/min) by the gear ratio. The actual speed is 2 - 33% less than the displayed value, depending on the size of the load.

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
0IK1GN-AW3U	**0GN□KA**	0.019 0.168	0.023 0.20	0.032 0.28	0.039 0.34	0.049 0.43	0.058 0.51	0.073 0.64	0.088 0.77	0.11 0.97	0.13 1.15	0.16 1.41	0.19 1.68	0.26 2.3	0.32 2.8	0.35 3.0	0.42 3.7	0.47 4.1	0.57 5.0	0.71 6.2	0.85 7.5

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	1200	1000	720	600	480	400	288	240	200	144	120	100	72	60	48	40	36	30	24	20
Motor/ Gearhead	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**
0IK3GN-BW3U	**0GN□KA**	0.024 0.21	0.029 0.25	0.041 0.36	0.049 0.43	0.061 0.54	0.073 0.64	0.091 0.80	0.11 0.97	0.13 1.15	0.17 1.50	0.2 1.77	0.24 2.1	0.33 2.9	0.4 3.5	0.44 3.9	0.53 4.9	0.59 5.2	0.71 6.2	0.89 7.8	1 8.8

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

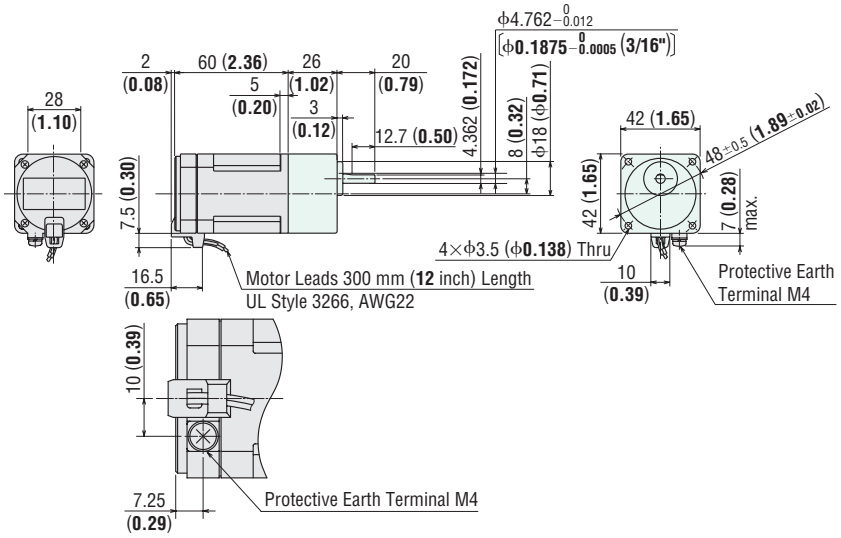
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇Lead Wire Type

Mass: Motor 0.3 kg (0.66 lb.)
Gearhead 0.2 kg (0.44 lb.)

CAD A441U

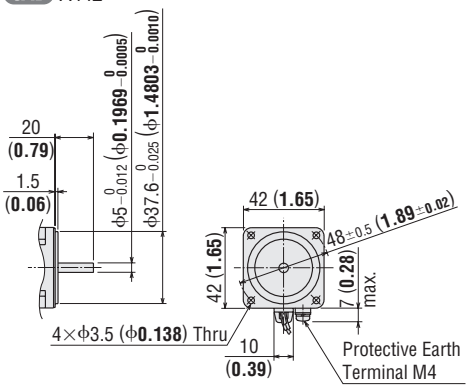


Detail Drawing of Protective Earth Terminal

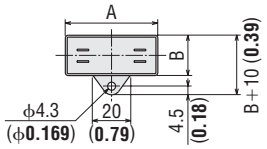
◇Round Shaft Type

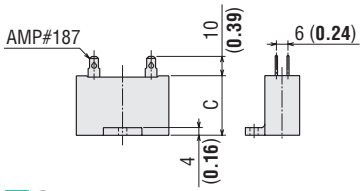
Mass: 0.3 kg (0.66 lb.)

CAD A442



◇Capacitor (Included with the motors)





◇Capacitor Dimensions mm (inch)

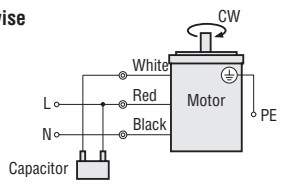
Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
0IK1GN-AW3U	**0IK1A-AW3U**	CH10FAUL	31 (1.22)	14.5 (0.57)	23.5 (0.93)	18 (0.64)	Included
0IK3GN-BW3U	**0IK3A-BW3U**	CH15FAUL	31 (1.22)	14.5 (0.57)	23.5 (0.93)	18 (0.64)	

Connection Diagrams

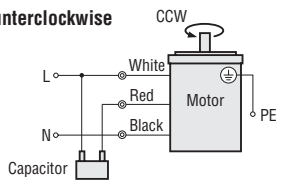
- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

0IK1GN-AW3U, 0IK3GN-BW3U

Clockwise



Counterclockwise



PE: Protective Earth

Note:

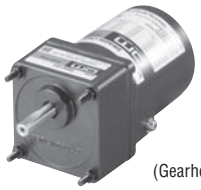
Change the direction of single-phase motor rotation only after bringing the motor to a stop.
If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors

6 W (1/125 HP)

Frame Size: □60 mm (□2.36 in.)



(Gearhead sold separately)

■Specifications – Continuous Rating RoHS

Model Lead Wire Type		Output Power W HP	Voltage VAC	Frequency Hz	Current A	Starting Torque mN·m oz-in	Rated Torque mN·m oz-in	Rated Speed r/min	Capacitor μF
Pinion Shaft Type	Round Shaft Type								
ZP 2IK6GN-AW2U	2IK6A-AW2U	6 1/125	Single-Phase 110	60	0.178	40 5.6	41 5.8	1450	2.5
			Single-Phase 115		0.182				
ZP 2IK6GN-CW2E	2IK6A-CW2E	6 1/125	Single-Phase 220	50	0.103	38 5.3	49 6.9	1150	0.6
				60	0.091	40 5.6	41 5.8	1450	
			Single-Phase 230	50	0.107	45 6.3	49 6.9	1200	
				60	0.094	40 5.6	41 5.8	1450	
ZP 2IK6GN-SW2	2IK6A-SW2	6 1/125	Three-Phase 200	50	0.081	49 6.9	49 6.9	1200	–
				60	0.072	41 5.8	41 5.8	1400	
			Three-Phase 220	60	0.076	41 5.8	41 5.8	1500	
			Three-Phase 230	60	0.079	41 5.8	41 5.8	1500	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

ZP: Impedance protected

■Product Line

●Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**2IK6GN-AW2U**	**2IK6A-AW2U**
	2IK6GN-CW2E	**2IK6A-CW2E**
	2IK6GN-SW2	**2IK6A-SW2**

●Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**2GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	2GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 3 N·m (26 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
2IK6GN-CW2E **2IK6GN-SW2** / **2GN□SA**		0.12 1.06	0.14 1.23	0.20 1.77	0.24 2.1	0.30 2.6	0.36 3.1	0.50 4.4	0.60 5.3	0.71 6.2	0.89 7.8	1.1 9.7	1.3 11.5	1.6 14.1	1.9 16.8	2.4 21	2.9 25	3 26	3 26	3 26	3 26

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
2IK6GN-AW2U **2IK6GN-CW2E** **2IK6GN-SW2** / **2GN□SA**		0.10 0.88	0.12 1.06	0.17 1.5	0.20 1.77	0.25 2.2	0.30 2.6	0.42 3.7	0.50 4.4	0.60 5.3	0.75 6.6	0.90 7.9	1.1 9.7	1.4 12.3	1.6 14.1	2.0 17.7	2.4 21	2.7 23	3 26	3 26	3 26

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

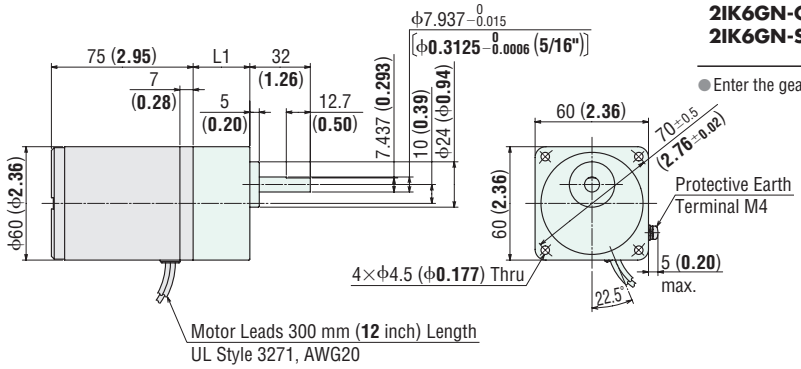
➜ Page 103

Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

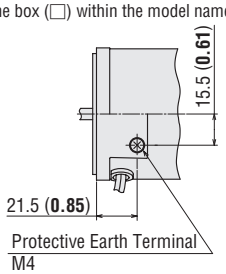
◇Lead Wire Type

Mass: Motor 0.7 kg (1.54 lb.)
Gearhead 0.4 kg (0.88 lb.)



Motor Model	Gearhead Model	Gear Ratio	L1	CAD
2IK6GN-AW2U **2IK6GN-CW2E** **2IK6GN-SW2**	**2GN□SA**	**3~18**	30 (1.18)	A443AU
		25~180	40 (1.57)	A443BU

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

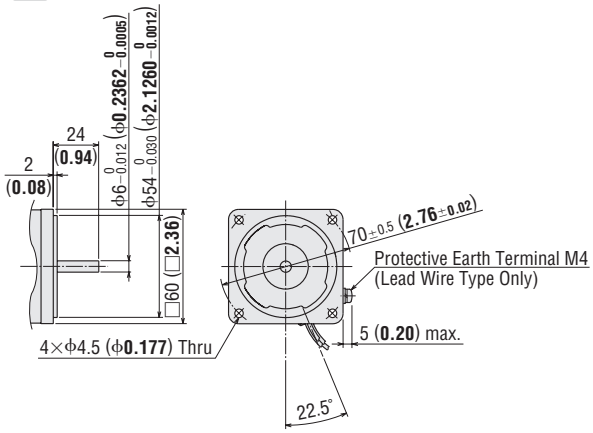


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 0.7 kg (1.54 lb.)

CAD A444



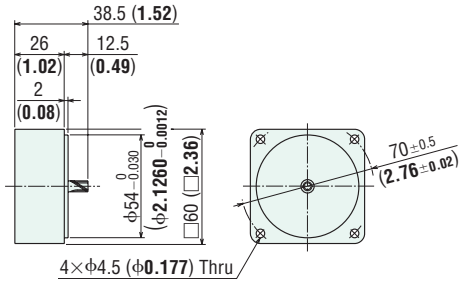
◇Decimal Gearhead

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

2GN10XS

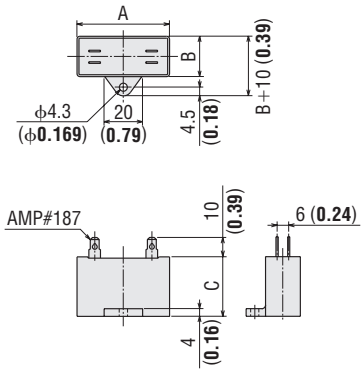
Mass: 0.2 kg (0.44 lb.)

CAD A003



◇Capacitor

(Included with single-phase motors)

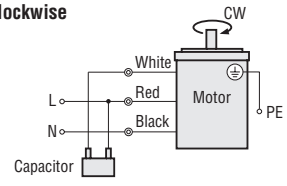
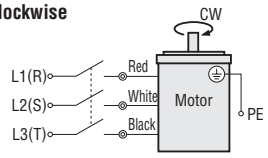
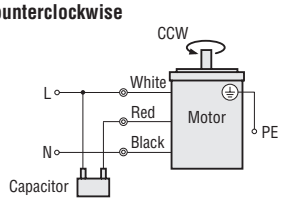


◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
2IK6GN-AW2U	**2IK6A-AW2U**	CH25FAUL2	31 (1.22)	17 (0.67)	27 (1.06)	25 (0.88)	Included
2IK6GN-CW2E	**2IK6A-CW2E**	CH06BFAUL	31 (1.22)	14.5 (0.57)	23.5 (0.93)	15 (0.53)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

2IK6GN-AW2U **2IK6GN-CW2E**	**2IK6GN-SW2**
Clockwise 	**Clockwise** 
Counterclockwise 	**Counterclockwise** To change the rotation direction, change any two connections between R, S and T.

PE: Protective Earth

Note:

Change the direction of single-phase motor rotation only after bringing the motor to a stop.

If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors

15 W (1/50 HP)

Frame Size: □70 mm (□2.76 in.)

(Gearhead sold separately)

Specifications – Continuous Rating RoHS

Model Lead Wire Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
(TP) **3IK15GN-AW2U**	**3IK15A-AW2U**	15 1/50	Single-Phase 110	60	0.33	65 9.2	105 14.9	1450	4.5
			Single-Phase 115		0.34				
(TP) **3IK15GN-CW2E**	**3IK15A-CW2E**	15 1/50	Single-Phase 220	50	0.19	70 9.9	125 17.7	1200	1.0
				60	0.16	65 9.2	105 14.9	1450	
			Single-Phase 230	50	0.19	75 10.6	125 17.7	1200	
				60	0.16	65 9.2	105 14.9	1450	

- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**3IK15GN-AW2U**	**3IK15A-AW2U**
	3IK15GN-CW2E	**3IK15A-CW2E**

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**3GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	3GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 5 N·m (44 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
3IK15GN-CW2E	**3GN□SA**	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
3IK15GN-AW2U **3IK15GN-CW2E**	**3GN□SA**	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

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

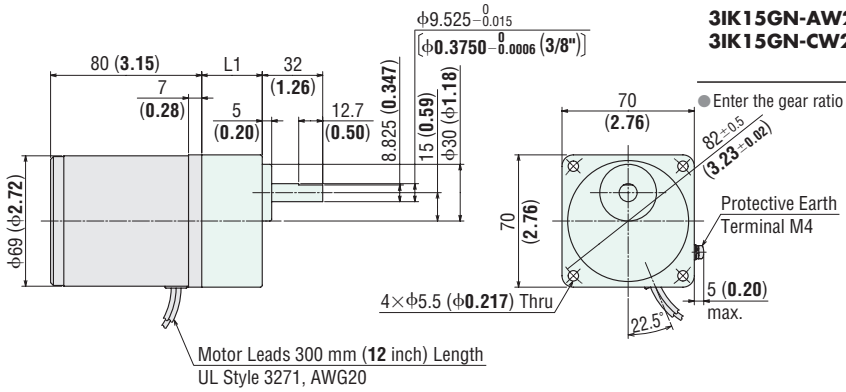
Mounting screws are included with gearheads.

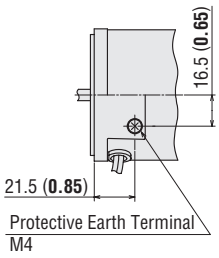
◇Lead Wire Type

Mass: Motor 1.1 kg (2.4 lb.)
Gearhead 0.55 kg (1.21 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
3IK15GN-AW2U 3IK15GN-CW2E	3GN□SA	3~18	32 (1.26)	A447AU
		25~180	42 (1.65)	A447BU

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



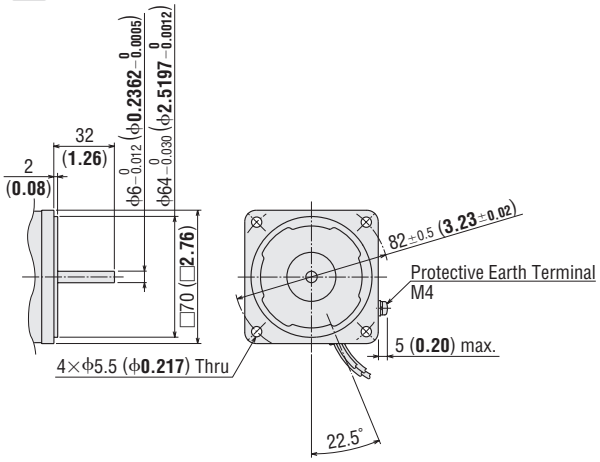


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 1.1 kg (2.4 lb.)

CAD A448



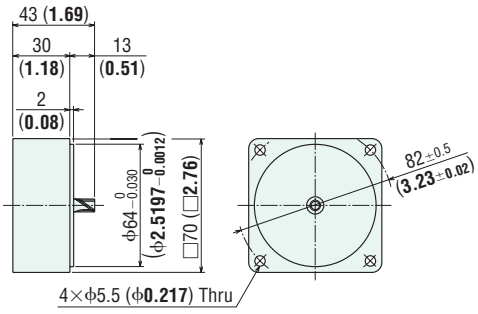
◇Decimal Gearhead

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

3GN10XS

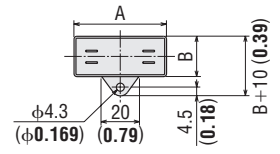
Mass: 0.3 kg (0.66 lb.)

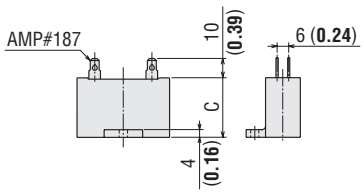
CAD A009



◇Capacitor

(Included with single-phase motors)





◇Capacitor Dimensions mm (inch)

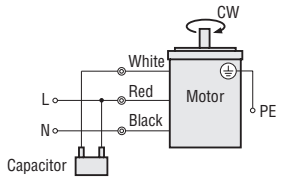
Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
3IK15GN-AW2U	3IK15A-AW2U	CH45FAUL2	37 (1.46)	18 (0.71)	27 (1.06)	30 (1.06)	Included
3IK15GN-CW2E	3IK15A-CW2E	CH10BFAUL	37 (1.46)	18 (0.71)	27 (1.06)	30 (1.06)	

Connection Diagrams

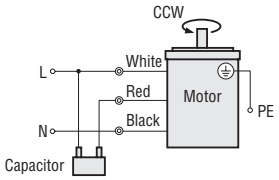
- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

3IK15GN-AW2U
3IK15GN-CW2E

Clockwise



Conterclockwise



PE: Protective Earth

Note:

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

RoHS

Induction Motors

25 W (1/30 HP)

Frame Size: □80 mm (□3.15 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104

Specifications – Continuous Rating RoHS

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **4IK25GN-AW2U** **(4IK25A-AW2U)**	**4IK25GN-AW2TU** **(4IK25A-AW2TU)**	25 1/30	Single-Phase 110 Single-Phase 115	60	0.46	120 17.0	170 24	1450	6.5
TP **4IK25GN-CW2E** **(4IK25A-CW2E)**	**4IK25GN-CW2TE** **(4IK25A-CW2TE)**	25 1/30	Single-Phase 220	50	0.27	110 15.6	205 29	1200	1.5
				60	0.23		170 24	1450	
			Single-Phase 230	50	0.27	120 17.0	205 29	1200	
				60	0.23		170 24	1450	
TP **4IK25GN-SW2** **(4IK25A-SW2)**	**4IK25GN-SW2T** **(4IK25A-SW2T)**	25 1/30	Three-Phase 200	50	0.23	240 34	190 26	1300	–
				60	0.21	160 22	160 22	1550	
			Three-Phase 220	60	0.21	160 22	160 22	1600	
			Three-Phase 230	60	0.22	160 22	160 22	1600	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

● Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**4IK25GN-AW2U**	**4IK25A-AW2U**
	4IK25GN-CW2E	**4IK25A-CW2E**
	4IK25GN-SW2	**4IK25A-SW2**
Terminal Box	**4IK25GN-AW2TU**	**4IK25A-AW2TU**
	4IK25GN-CW2TE	**4IK25A-CW2TE**
	4IK25GN-SW2T	**4IK25A-SW2T**

● Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**4GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	4GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**4GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**4GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 8 N·m (70 lb-in). When a gearhead of 1/25～1/36 is connected, the value for permissible torque is 6 N·m (53 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
4IK25GN-CW2□E	**4GN□SA**	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
4IK25GN-SW2□	**4GN□SA**	0.46 4.0	0.55 4.8	0.77 6.8	0.92 8.1	1.2 10.6	1.4 12.3	1.9 16.8	2.3 20	2.8 24	3.5 30	4.2 37	5.0 44	6.3 55	7.5 66	8 70	8 70	8 70	8 70	8 70	8 70

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
4IK25GN-AW2□U **4IK25GN-CW2□E**	**4GN□SA**	0.41 3.6	0.50 4.4	0.69 6.1	0.83 7.3	1.0 8.8	1.2 10.6	1.7 15.0	2.1 18.5	2.5 22	3.1 27	3.7 32	4.5 39	5.6 49	6.7 59	8 70	8 70	8 70	8 70	8 70	8 70
4IK25GN-SW2□	**4GN□SA**	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

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

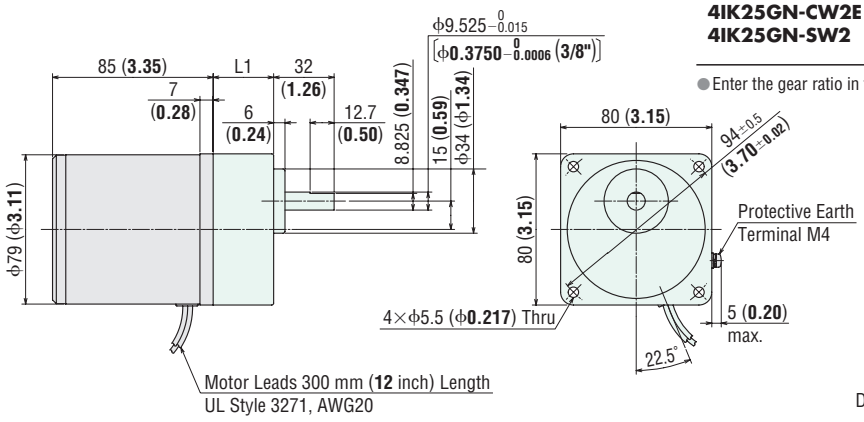
Mounting screws are included with gearheads.

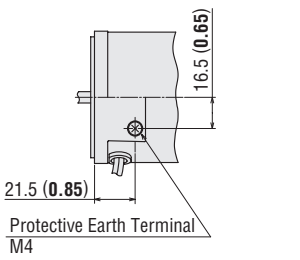
◇Lead Wire Type ①

Mass: Motor 1.5 kg (3.3 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4IK25GN-AW2U **4IK25GN-CW2E** **4IK25GN-SW2**	**4GN□SA**	**3～18**	32 (1.26)	A449AU
		25～180	42.5 (1.67)	A449BU

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





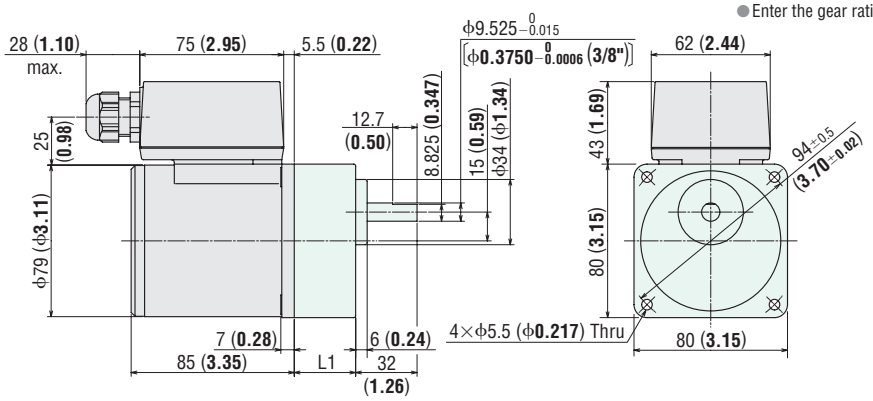
Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 1.7 kg (3.7 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4IK25GN-AW2TU **4IK25GN-CW2TE** **4IK25GN-SW2T**	**4GN□SA**	**3～18**	32 (1.26)	A451AU
		25～180	42.5 (1.67)	A451BU

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



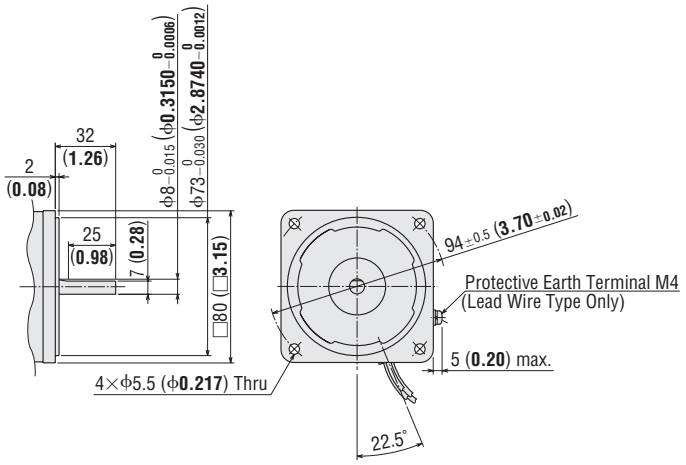
● Use cable with a diameter of ϕ6 ～ ϕ12 mm (ϕ0.24 ～ ϕ0.47 inch).

◇Round Shaft Type

Mass: 1.5 kg (3.3 lb.) (Lead Wire Type)
1.7 kg (3.7 lb.) (Terminal Box Type)

CAD A450 (Lead Wire Type)
A328 (Terminal Box Type)

✻ The dimensions below only indicate the shaft section of the round shaft type motors.



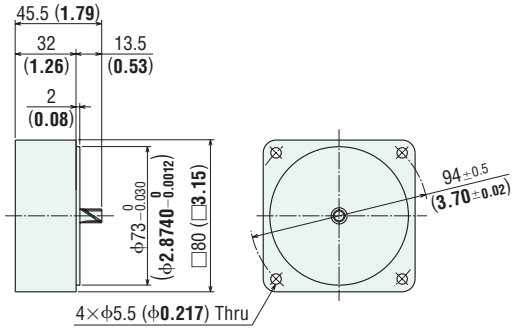
◇Decimal Gearhead

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

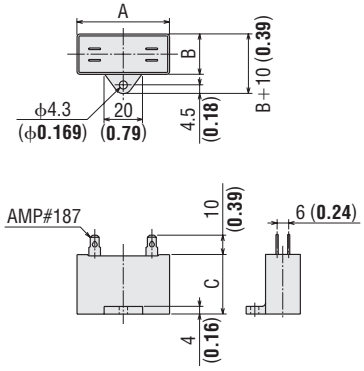
4GN10XS

Mass: 0.4 kg (0.88 lb.)

CAD A013



◇Capacitor
(Included with single-phase motors)

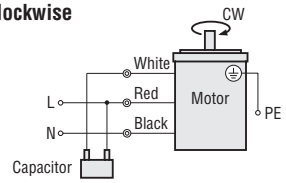
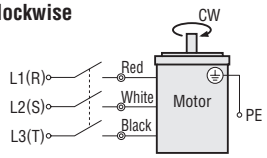


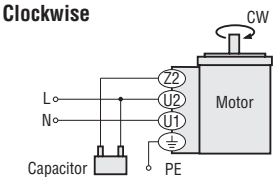
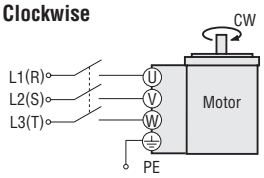
◇Capacitor Dimensions mm (inch)

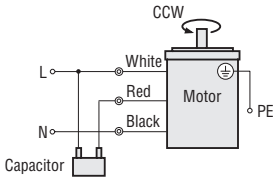
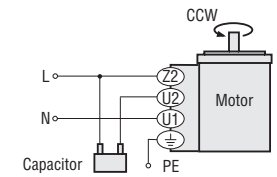
Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
4IK25GN-AW2U (4IK25A-AW2U)	**4IK25GN-AW2TU (4IK25A-AW2TU)**	CH65CFAUL2	48 (1.89)	19 (0.75)	29 (1.14)	40 (1.41)	Included
4IK25GN-CW2E (4IK25A-CW2E)	**4IK25GN-CW2TE (4IK25A-CW2TE)**	CH15BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	35 (1.24)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

<table>
<tr><th colspan="2">Lead Wire Type</th><th colspan="2">Terminal Box Type</th></tr>
<tr><th>4IK25GN-AW2U
4IK25GN-CW2E</th><th>4IK25GN-SW2</th><th>4IK25GN-AW2TU
4IK25GN-CW2TE</th><th>4IK25GN-SW2T</th></tr>
<tr>
<td>Clockwise
 
</td>
<td rowspan="2">Clockwise
 

Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td>
<td>Clockwise
 
</td>
<td rowspan="2">Clockwise
 

Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td>
</tr>
<tr>
<td>Counterclockwise
 
</td>
<td>Counterclockwise
 
</td>
</tr>
</table>

PE: Protective Earth

Note:

Change the direction of single-phase motor rotation only after bringing the motor to a stop.

If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors

40 W (1/19 HP)

Frame Size: □90 mm (□3.54 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.

Right-Angle Gearheads ➜ Page 104

Specifications – Continuous Rating RoHS

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **5IK40GN-AW2U (5IK40A-AW2U)**	**5IK40GN-AW2TU (5IK40A-AW2TU)**	40 1/19	Single-Phase 110	60	0.68	200 28	260 36	1500	9.0
			Single-Phase 115		0.67				
TP **5IK40GN-CW2E (5IK40A-CW2E)**	**5IK40GN-CW2TE (5IK40A-CW2TE)**	40 1/19	Single-Phase 220	50	0.39	200 28	315 44	1250	2.3
				60	0.35		260 36	1500	
			Single-Phase 230	50	0.39		300 42	1300	
				60	0.34		260 36	1500	
TP **5IK40GN-SW2 (5IK40A-SW2)**	**5IK40GN-SW2T (5IK40A-SW2T)**	40 1/19	Three-Phase 200	50	0.32	400 56	300 42	1300	–
				60	0.30	260 36	260 36	1550	
			Three-Phase 220	60	0.30	260 36	260 36	1600	
			Three-Phase 230	60	0.31	260 36	260 36	1600	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

● Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5IK40GN-AW2U**	**5IK40A-AW2U**
	5IK40GN-CW2E	**5IK40A-CW2E**
	5IK40GN-SW2	**5IK40A-SW2**
Terminal Box	**5IK40GN-AW2TU**	**5IK40A-AW2TU**
	5IK40GN-CW2TE	**5IK40A-CW2TE**
	5IK40GN-SW2T	**5IK40A-SW2T**

● Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**5GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 10 N·m (88 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5IK40GN-CW2□E (Single-phase 220 VAC) / **5GN□SA**		0.77 6.8	0.92 8.1	1.3 11.5	1.5 13.2	1.9 16.8	2.3 20	3.2 28	3.8 33	4.6 40	5.7 50	6.9 61	8.3 73	10 88	10 88	10 88	10 88	10 88	10 88	10 88	10 88
5IK40GN-CW2□E (Single-phase 230 VAC) **5IK40GN-SW2□** / **5GN□SA**		0.73 6.4	0.87 7.6	1.2 10.6	1.5 13.2	1.8 15.9	2.2 19.4	3.0 26	3.6 31	4.4 38	5.5 48	6.6 58	7.9 69	9.9 87	10 88	10 88	10 88	10 88	10 88	10 88	10 88

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5IK40GN-AW2□U **5IK40GN-CW2□E** **5IK40GN-SW2□** / **5GN□SA**		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

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

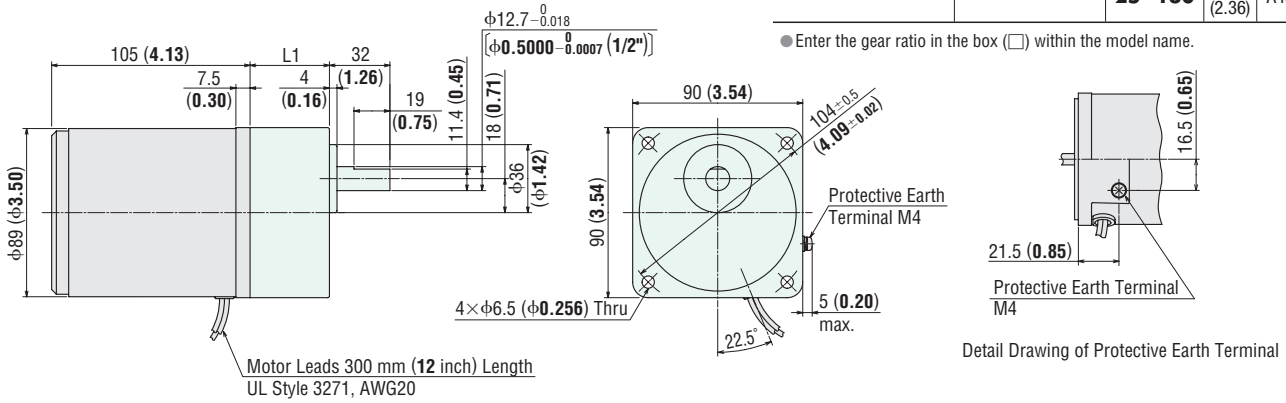
Mounting screws are included with gearheads.

◇Lead Wire Type ①

Mass: Motor 2.5 kg (5.5 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5IK40GN-AW2U **5IK40GN-CW2E** **5IK40GN-SW2**	**5GN□SA**	**3～18**	42 (1.65)	A452AU
		25～180	60 (2.36)	A452BU

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



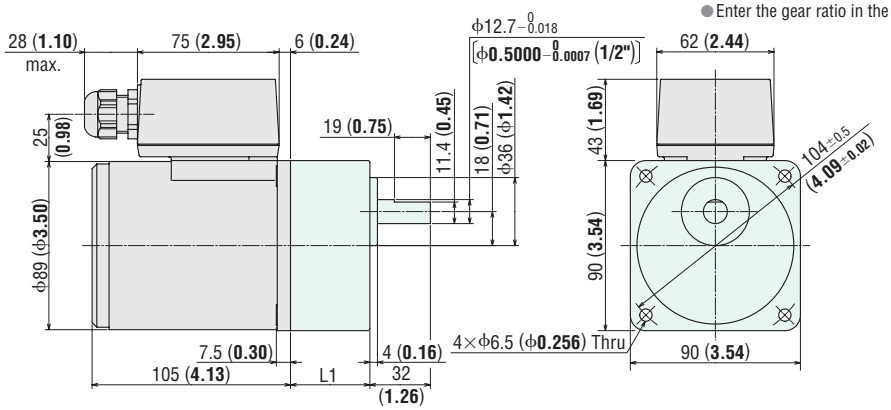
Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 2.6 kg (5.7 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5IK40GN-AW2TU **5IK40GN-CW2TE** **5IK40GN-SW2T**	**5GN□SA**	**3～18**	42 (1.65)	A454AU
		25～180	60 (2.36)	A454BU

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



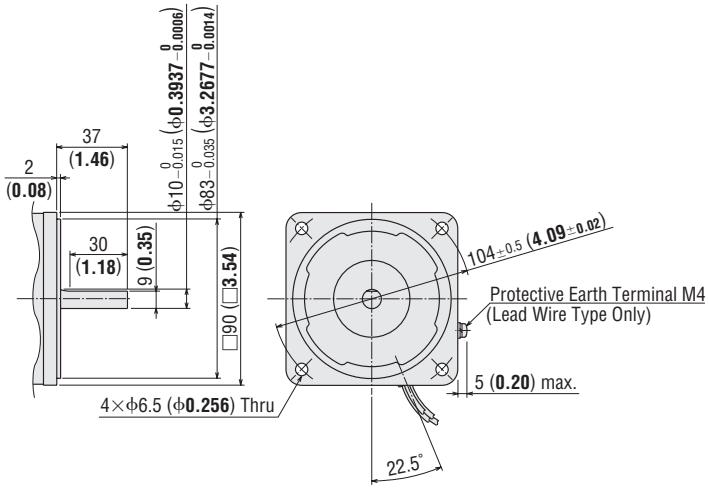
● Use cable with a diameter of ϕ6 ～ ϕ12 mm (ϕ0.24 ～ ϕ0.47 inch).

◇Round Shaft Type

Mass: 2.5 kg (5.5 lb.) (Lead Wire Type)
2.6 kg (5.7 lb.) (Terminal Box Type)

CAD A453 (Lead Wire Type)
A330 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



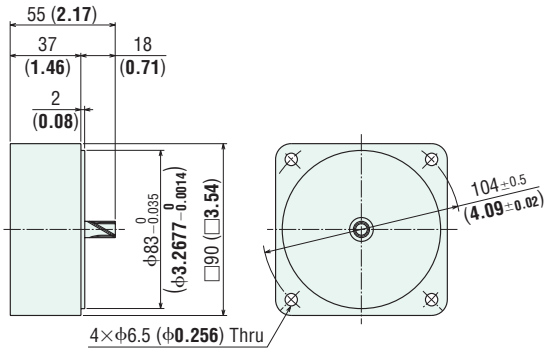
◇Decimal Gearhead

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

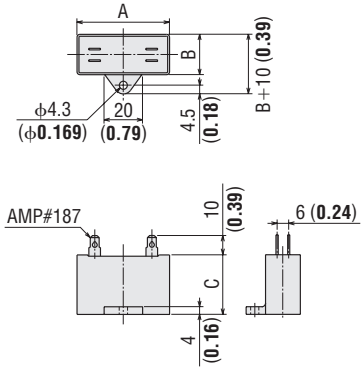
5GN10XS

Mass: 0.6 kg (1.32 lb.)

CAD A022



◇Capacitor
(Included with single-phase motors)

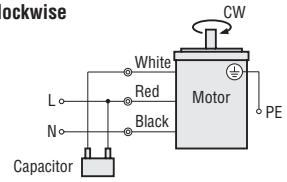
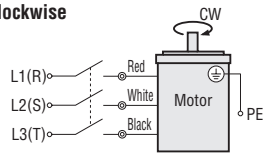


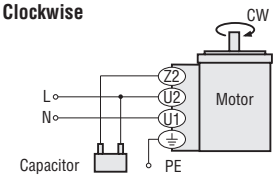
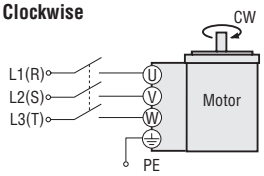
◇Capacitor Dimensions mm (inch)

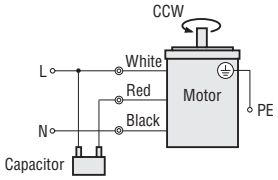
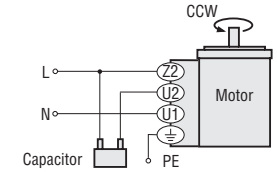
Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5IK40GN-AW2U (5IK40A-AW2U)	**5IK40GN-AW2TU (5IK40A-AW2TU)**	CH90CFAUL2	48 (1.89)	22.5 (0.89)	31.5 (1.24)	45 (1.59)	Included
5IK40GN-CW2E (5IK40A-CW2E)	**5IK40GN-CW2TE (5IK40A-CW2TE)**	CH23BFAUL	48 (1.89)	21 (0.83)	31 (1.22)	40 (1.41)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

<table>
<tr><th colspan="2">Lead Wire Type</th><th colspan="2">Terminal Box Type</th></tr>
<tr><th>5IK40GN-AW2U
5IK40GN-CW2E</th><th>5IK40GN-SW2</th><th>5IK40GN-AW2TU
5IK40GN-CW2TE</th><th>5IK40GN-SW2T</th></tr>
<tr>
<td>Clockwise
 
</td>
<td rowspan="2">Clockwise
 

Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td>
<td>Clockwise
 
</td>
<td rowspan="2">Clockwise
 

Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td>
</tr>
<tr>
<td>Counterclockwise
 
</td>
<td>Counterclockwise
 
</td>
</tr>
</table>

PE: Protective Earth

Note:

Change the direction of single-phase motor rotation only after bringing the motor to a stop.

If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors

60 W (1/12 HP)

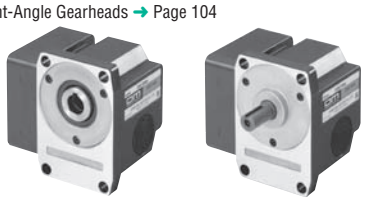
Frame Size: □90 mm (□3.54 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads → Page 104



Specifications – Continuous Rating RoHS

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **5IK60GE-AW2U** **(5IK60A-AW2U)**	**5IK60GE-AW2TU** **(5IK60A-AW2TU)**	60 1/12	Single-Phase 110	60	1.09	320 45	405 57	1450	18
			Single-Phase 115		1.10				
TP **5IK60GE-CW2E** **(5IK60A-CW2E)**	**5IK60GE-CW2TE** **(5IK60A-CW2TE)**	60 1/12	Single-Phase 220	50	0.55	320 45	490 69	1200	4.0
				60	0.54		405 57	1450	
			Single-Phase 230	50	0.57		490 69	1200	
				60	0.54		405 57	1450	
TP **5IK60GE-SW2** **(5IK60A-SW2)**	**5IK60GE-SW2T** **(5IK60A-SW2T)**	60 1/12	Three-Phase 200	50	0.50	600 85	450 63	1300	–
				60	0.43	500 71	380 53	1550	
			Three-Phase 220	60	0.45	500 71	380 53	1600	
			Three-Phase 230	60	0.46	500 71	380 53	1600	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

● Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5IK60GE-AW2U**	**5IK60A-AW2U**
	5IK60GE-CW2E	**5IK60A-CW2E**
	5IK60GE-SW2	**5IK60A-SW2**
Terminal Box	**5IK60GE-AW2TU**	**5IK60A-AW2TU**
	5IK60GE-CW2TE	**5IK60A-CW2TE**
	5IK60GE-SW2T	**5IK60A-SW2T**

● Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	**5GE□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GE□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GE□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5IK60GE-CW2□E / **5GE□SA**		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
5IK60GE-SW2□ / **5GE□SA**		1.1 9.7	1.3 11.5	1.8 15.9	2.2 19.7	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5IK60GE-AW2□U **5IK60GE-CW2□E** / **5GE□SA**		0.98 8.6	1.2 10.6	1.6 14.1	2.0 17.7	2.5 22	3.0 26	3.7 32	4.4 38	5.3 46	6.7 59	8.0 70	9.6 84	13.4 118	16.0 141	17.9 158	20 177	20 177	20 177	20 177	20 177
5IK60GE-SW2□ / **5GE□SA**		0.92 8.1	1.1 9.7	1.5 13.2	1.8 15.9	2.3 20	2.8 24	3.5 30	4.2 37	5.0 44	6.3 55	7.5 66	9.0 79	12.5 110	15.0 132	16.8 148	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

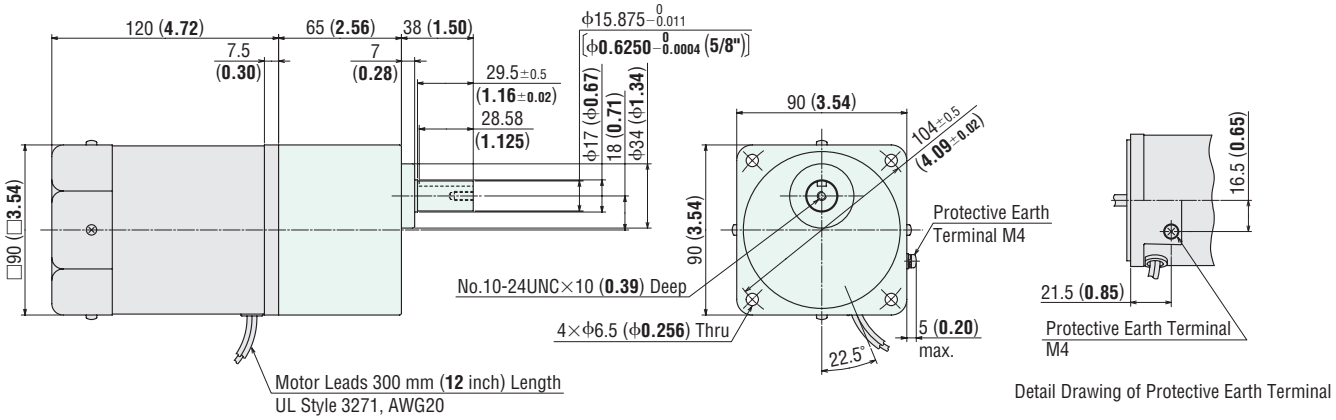
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇Lead Wire Type ①

Mass: Motor 2.7 kg (5.9 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A455U

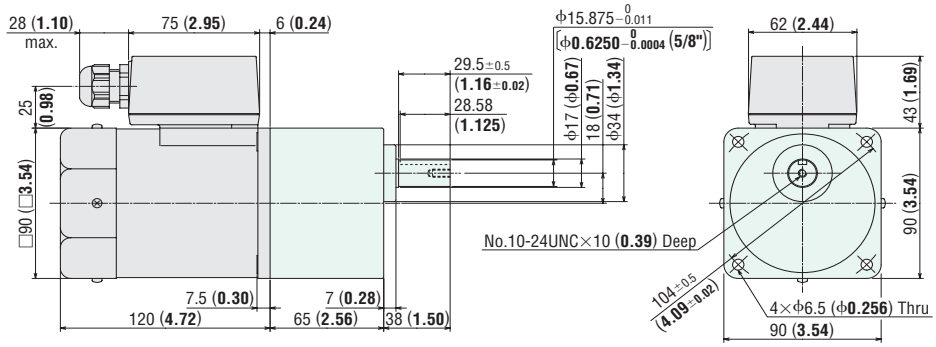


Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 2.8 kg (6.2 lb.)
Gearhead 1.5 kg (3.3 lb.)

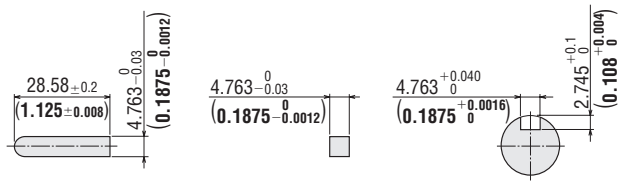
CAD A457U



● Use cable with a diameter of ϕ6 ~ ϕ12 mm (ϕ0.24 ~ ϕ0.47 inch).

◇Key and Key Slot

(The key is included with the gearhead)

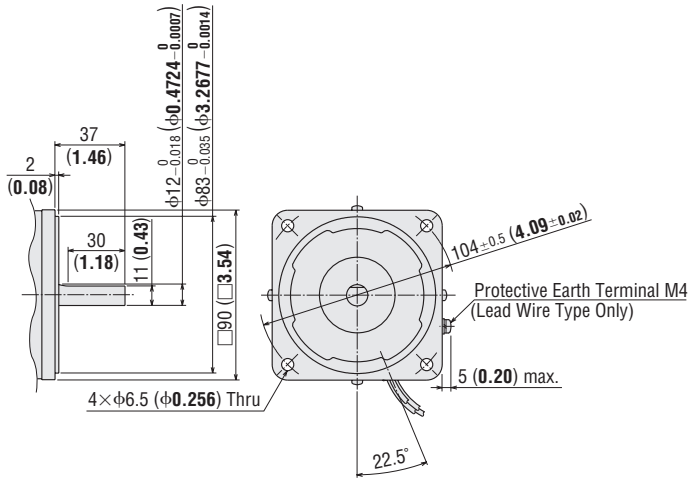


◇Round Shaft Type

Mass: 2.7 kg (5.9 lb.) (Lead Wire Type)
2.8 kg (6.2 lb.) (Terminal Box Type)

CAD A456 (Lead Wire Type)
A332 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



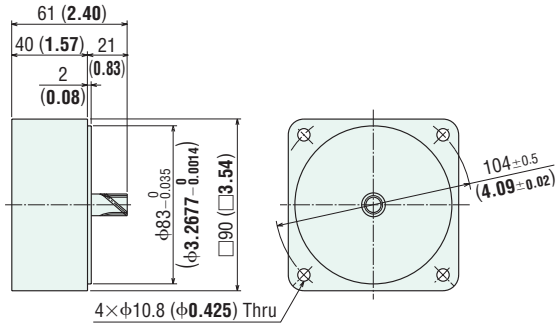
◇Decimal Gearhead

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

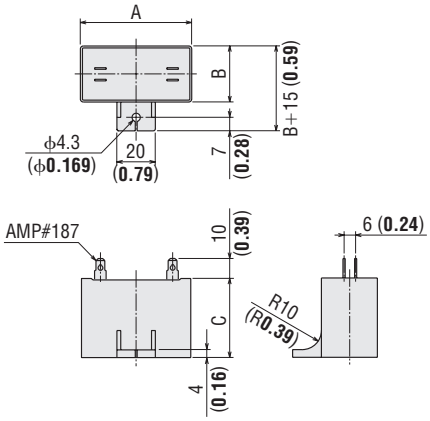
5GE10XS

Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor
(Included with single-phase motors)

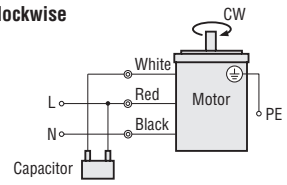
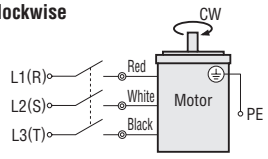
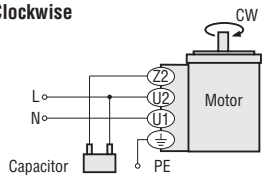
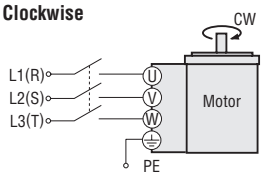
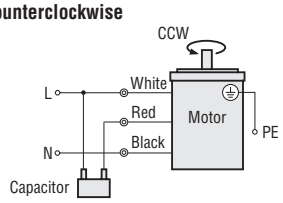
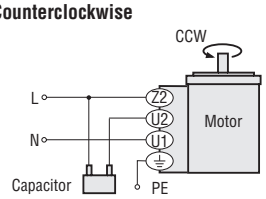


◇Capacitor Dimensions mm (inch)

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5IK60GE-AW2U (5IK60A-AW2U)	**5IK60GE-AW2TU (5IK60A-AW2TU)**	CH180CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)	Included
5IK60GE-CW2E (5IK60A-CW2E)	**5IK60GE-CW2TE (5IK60A-CW2TE)**	CH40BFAUL	58 (2.28)	23.5 (0.93)	37 (1.46)	70 (2.5)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type		Terminal Box Type	
5IK60GE-AW2U 5IK60GE-CW2E	**5IK60GE-SW2**	**5IK60GE-AW2TU 5IK60GE-CW2TE**	**5IK60GE-SW2T**
Clockwise  	**Clockwise**  **Counterclockwise** To change the rotation direction, change any two connections between R, S and T.	**Clockwise**  	**Clockwise**  **Counterclockwise** To change the rotation direction, change any two connections between R, S and T.
Counterclockwise  		**Counterclockwise**  	

PE: Protective Earth

Note:

Change the direction of single-phase motor rotation only after bringing the motor to a stop.

If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors

90 W (1/8 HP)

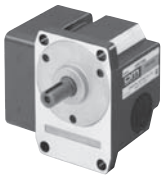
Frame Size: □90 mm (□3.54 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104



Specifications – Continuous Rating RoHS

cULus CE

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **5IK90GE-AW2U** **(5IK90A-AW2U)**	**5IK90GE-AW2TU** **(5IK90A-AW2TU)**	90 1/8	Single-Phase 110	60	1.45	450 63	585 83	1500	20
			Single-Phase 115		1.44				
TP **5IK90GE-CW2E** **(5IK90A-CW2E)**	**5IK90GE-CW2TE** **(5IK90A-CW2TE)**	90 1/8	Single-Phase 220	50	0.74	450 63	730 103	1200	6.0
				60	0.82		605 85	1450	
			Single-Phase 230	50	0.76		730 103	1200	
				60	0.81		605 85	1450	
TP **5IK90GE-SW2** **(5IK90A-SW2)**	**5IK90GE-SW2T** **(5IK90A-SW2T)**	90 1/8	Three-Phase 200	50	0.64	850 120	680 96	1300	–
				60	0.59	700 99	570 80	1550	
			Three-Phase 220	60	0.60	700 99	570 80	1600	
			Three-Phase 230	60	0.61	700 99	570 80	1600	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

● Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5IK90GE-AW2U**	**5IK90A-AW2U**
	5IK90GE-CW2E	**5IK90A-CW2E**
	5IK90GE-SW2	**5IK90A-SW2**
Terminal Box	**5IK90GE-AW2TU**	**5IK90A-AW2TU**
	5IK90GE-CW2TE	**5IK90A-CW2TE**
	5IK90GE-SW2T	**5IK90A-SW2T**

● Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	**5GE□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GE□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GE□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5IK90GE-CW2□E	**5GE□SA**	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
5IK90GE-SW2□	**5GE□SA**	1.7 15.0	2.0 17.7	2.8 24	3.3 29	4.1 36	5.0 44	6.2 54	7.4 65	8.9 78	11.2 99	13.5 119	16.2 143	20 177	20 177	20 177	20 177	20 177	20 177	20 177	20 177

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5IK90GE-AW2□U	**5GE□SA**	1.4 12.3	1.7 15.0	2.4 21	2.8 24	3.6 31	4.3 38	5.3 46	6.4 56	7.7 68	9.7 85	11.6 102	13.9 123	19.3 170	20 177	20 177	20 177	20 177	20 177	20 177	20 177
5IK90GE-CW2□E	**5GE□SA**	1.5 13.2	1.8 15.9	2.5 22	2.9 25	3.7 32	4.4 38	5.5 48	6.6 58	7.9 69	10.0 88	12.0 106	14.4 127	20 177	20 177	20 177	20 177	20 177	20 177	20 177	20 177
5IK90GE-SW2□	**5GE□SA**	1.4 12.3	1.7 15.0	2.3 20	2.8 24	3.5 30	4.2 37	5.2 46	6.2 54	7.5 66	9.4 83	11.3 100	13.5 119	18.8 166	20 177	20 177	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

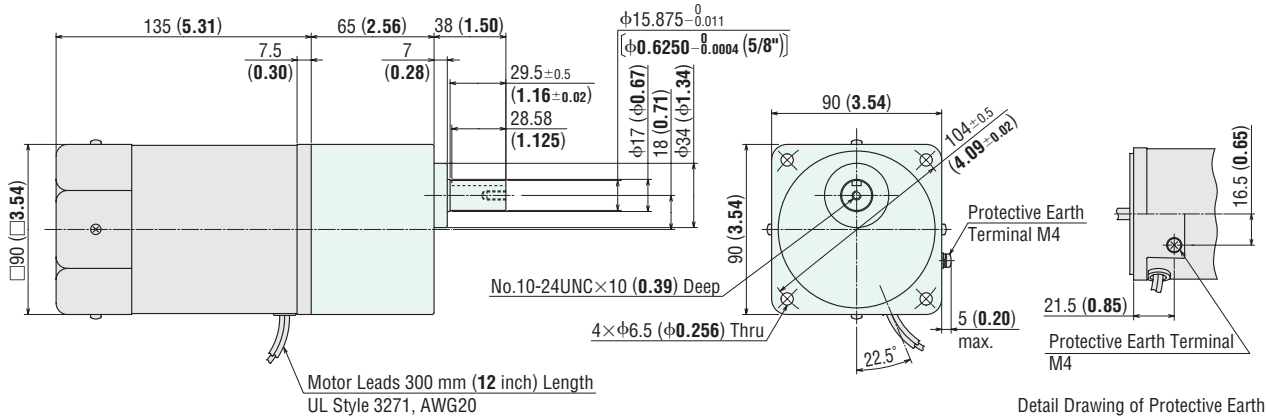
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇Lead Wire Type ①

Mass: Motor 3.2 kg (7.0 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A458U

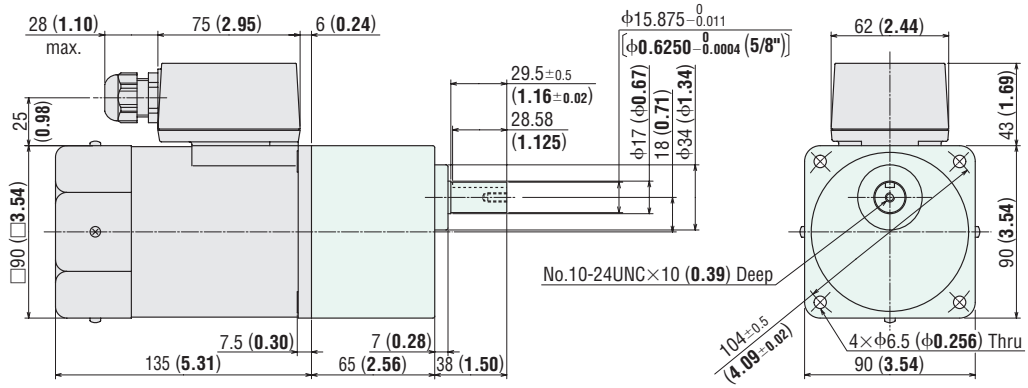


Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 3.3 kg (7.3 lb.)
Gearhead 1.5 kg (3.3 lb.)

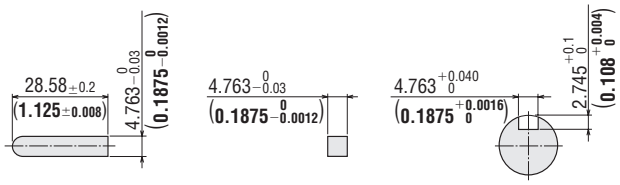
CAD A460U



● Use cable with a diameter of Φ6 ~ Φ12 mm (Φ0.24 ~ Φ0.47 inch).

◇Key and Key Slot

(The key is included with the gearhead)

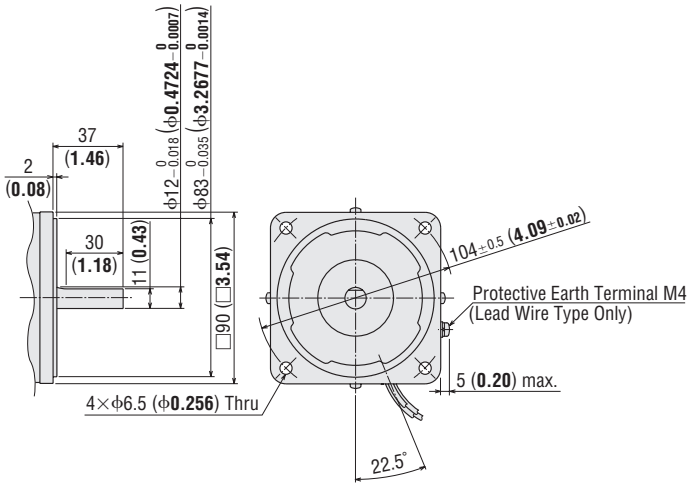


◇Round Shaft Type

Mass: 3.2 kg (7.0 lb.) (Lead Wire Type)
3.3 kg (7.3 lb.) (Terminal Box Type)

CAD A459 (Lead Wire Type)
A334 (Terminal Box Type)

✻ The dimensions below only indicate the shaft section of the round shaft type motors.



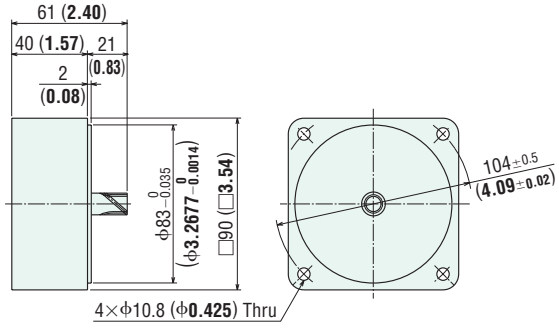
◇Decimal Gearhead

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

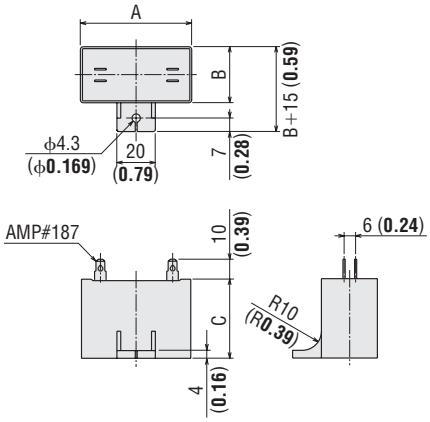
5GE10XS

Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor
(Included with single-phase motors)

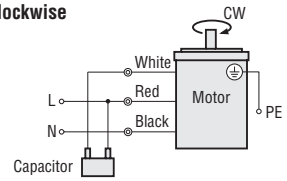
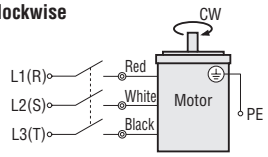
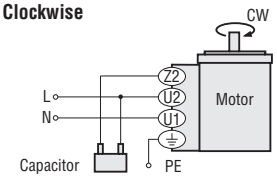
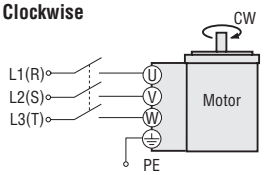
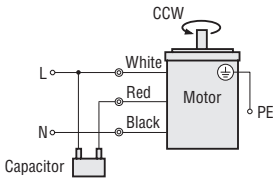
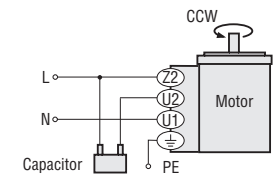


◇Capacitor Dimensions mm (inch)

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5IK90GE-AW2U (5IK90A-AW2U)	**5IK90GE-AW2TU (5IK90A-AW2TU)**	CH200CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)	Included
5IK90GE-CW2E (5IK90A-CW2E)	**5IK90GE-CW2TE (5IK90A-CW2TE)**	CH60BFAUL	58 (2.28)	29 (1.14)	41 (1.61)	85 (3.0)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type		Terminal Box Type	
5IK90GE-AW2U 5IK90GE-CW2E	**5IK90GE-SW2**	**5IK90GE-AW2TU 5IK90GE-CW2TE**	**5IK90GE-SW2T**
Clockwise  	**Clockwise**  **Counterclockwise** To change the rotation direction, change any two connections between R, S and T.	**Clockwise**  	**Clockwise**  **Counterclockwise** To change the rotation direction, change any two connections between R, S and T.
Counterclockwise  		**Counterclockwise**  	

PE: Protective Earth

Note:

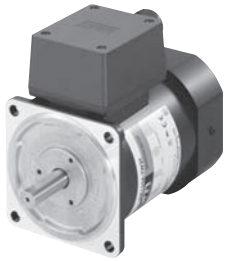
Change the direction of single-phase motor rotation only after bringing the motor to a stop.
If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS

Induction Motors 2-Pole, High-Speed Type

40 W (1/19 HP)·60 W (1/12 HP)·90 W (1/8 HP)·150 W (1/5 HP)

Frame Size: □80 mm (□3.15 in.)·□90 mm (□3.54 in.)



Specifications – Continuous Rating RoHS

Model	Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Round Shaft Type	W	HP	VAC	Hz	A	mN·m	oz-in	mN·m	oz-in	r/min	μF
TP 4IK40A-BW2U	40	1/19	Single-Phase 110	60	0.68	90	12.7	135	19.1	2900	7.5
			Single-Phase 115		0.66						
TP 4IK40A-DW3E	36	1/20	Single-Phase 220	50	0.30	90	12.7	145	20	2400	1.8
				60	0.31			120	17.0	2900	
	40	1/19	Single-Phase 230	50	0.33			160	22	2400	
				60	0.32			135	19.1	2900	
TP 4IK60A-BW2U	60	1/12	Single-Phase 110	60	0.98	160	22	190	26	3000	10
			Single-Phase 115		0.97						
TP 4IK60A-DW3E	55	1/14	Single-Phase 220	50	0.44	160	22	210	29	2500	2.5
				60	0.51			180	25	3000	
	60	1/12	Single-Phase 230	50	0.47			230	32	2500	
				60	0.52			190	26	3000	
TP 5IK60A-BW2U	60	1/12	Single-Phase 110	60	0.94	140	19.8	185	26	3200	14
			Single-Phase 115		0.93						
TP 5IK60A-DW3E	60	1/12	Single-Phase 220	50	0.46	120	17.0	220	31	2650	3.0
				60				185	26	3200	
			Single-Phase 230	50	0.45	140	19.8	220	31	2650	
				60				185	26	3200	
TP 5IK60A-TW2	60	1/12	Three-Phase 200	50	0.47	270	38	220	31	2650	–
				60	0.40	230	32	185	26	3200	
			Three-Phase 220	60	0.42	230	32	185	26	3200	
			Three-Phase 230	60	0.44	230	32	185	26	3200	
TP 5IK90A-BW2U	90	1/8	Single-Phase 110	60	1.61	240	34	280	39	3200	25
			Single-Phase 115		1.57						
TP 5IK90A-DW3E	90	1/8	Single-Phase 220	50	0.70	240	34	330	46	2650	6.0
				60	0.84			280	39	3200	
			Single-Phase 230	50	0.69			330	46	2650	
				60	0.84			280	39	3200	
TP 5IK90A-TW2	90	1/8	Three-Phase 200	50	0.63	500	71	340	48	2600	–
				60	0.55	400	56	285	40	3100	
			Three-Phase 220	60	0.57	400	56	285	40	3200	
			Three-Phase 230	60	0.59	400	56	285	40	3200	
TP 5IK150A-BW2U	150	1/5	Single-Phase 110	60	2.12	380	53	460	65	3200	30
			Single-Phase 115		2.09						
TP 5IK150A-DW3E	140	1/5	Single-Phase 220	50	0.98	380	53	510	72	2650	8.0
				60	1.07			420	59	3200	
	150	1/5	Single-Phase 230	50	1.04			560	79	2650	
				60	1.13			460	65	3200	
TP 5IK150A-TW2 5IK150A-TW2T	150	1/5	Three-Phase 200	50	1.11	680	96	550	78	2650	–
				60	0.93	570	80	460	65	3100	
			Three-Phase 220	60	0.97	570	80	460	65	3150	
			Three-Phase 230	60	1.01	570	80	460	65	3200	

● High-speed type with a frame size □42 mm (□1.65 inch) is also available. ➜ Page 11

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

Product Line

Motor RoHS

Output Power	Power Supply Voltage	Model
40 W (1/19 HP)	Single-Phase 110/115 VAC	**4IK40A-BW2U**
	Single-Phase 220/230 VAC	**4IK40A-DW3E**
60 W (1/12 HP)	Single-Phase 110/115 VAC	**4IK60A-BW2U**
	Single-Phase 220/230 VAC	**4IK60A-DW3E**
	Single-Phase 110/115 VAC	**5IK60A-BW2U**
	Single-Phase 220/230 VAC	**5IK60A-DW3E**
	Three-Phase 200/220/230 VAC	**5IK60A-TW2**

Output Power	Power Supply Voltage	Model
90 W (1/8 HP)	Single-Phase 110/115 VAC	**5IK90A-BW2U**
	Single-Phase 220/230 VAC	**5IK90A-DW3E**
	Three-Phase 200/220/230 VAC	**5IK90A-TW2**
150 W (1/5 HP)	Single-Phase 110/115 VAC	**5IK150A-BW2U**
	Single-Phase 220/230 VAC	**5IK150A-DW3E**
	Three-Phase 200/220/230 VAC	**5IK150A-TW2**
	Three-Phase 200/220/230 VAC	**5IK150A-TW2T**

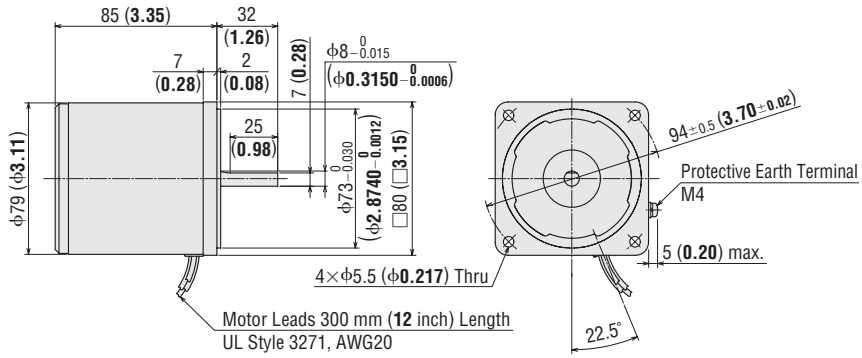
Dimensions Unit = mm (inch)

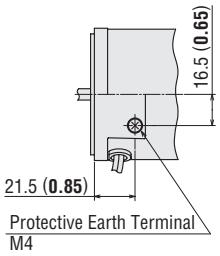
40 W (1/19 HP)

◇Motor

4IK40A-BW2U, **4IK40A-DW3E**

Mass: 1.5 kg (3.3 lb.) CAD A450





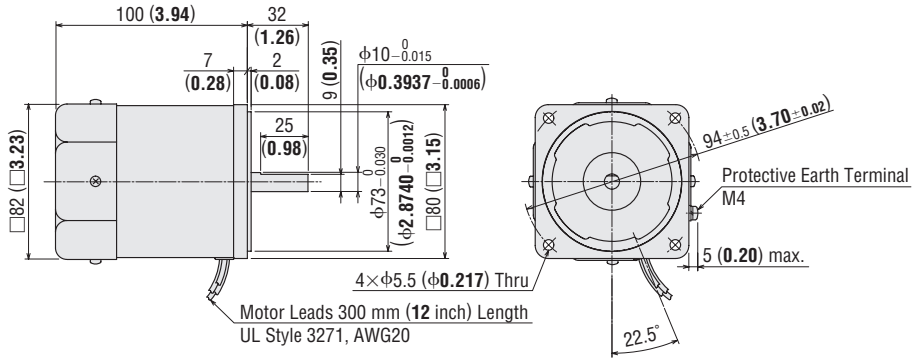
Detail Drawing of Protective Earth Terminal

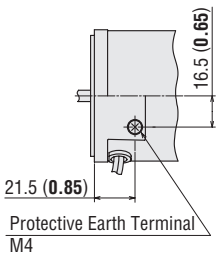
60 W (1/12 HP)

◇Motor

4IK60A-BW2U, **4IK60A-DW3E**

Mass: 1.8 kg (4.0 lb.) CAD A513



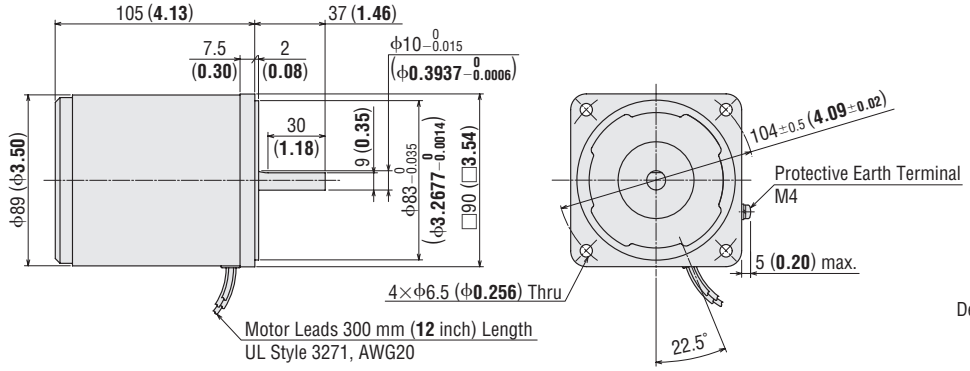


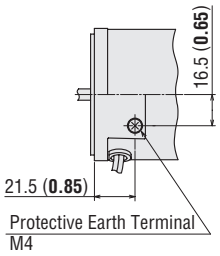
Detail Drawing of Protective Earth Terminal

◇Motor

5IK60A-BW2U, **5IK60A-DW3E**, **5IK60A-TW2**

Mass: 2.5 kg (5.5 lb.) CAD A453





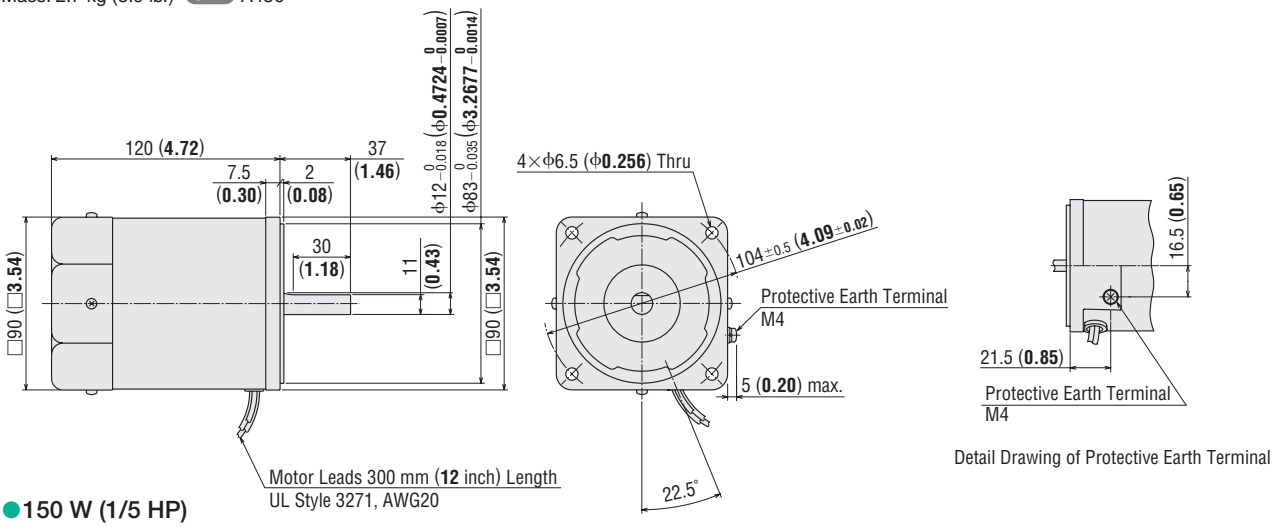
Detail Drawing of Protective Earth Terminal

●90 W (1/8 HP)

◇Motor

5IK90A-BW2U, **5IK90A-DW3E**, **5IK90A-TW2**

Mass: 2.7 kg (5.9 lb.) CAD A456

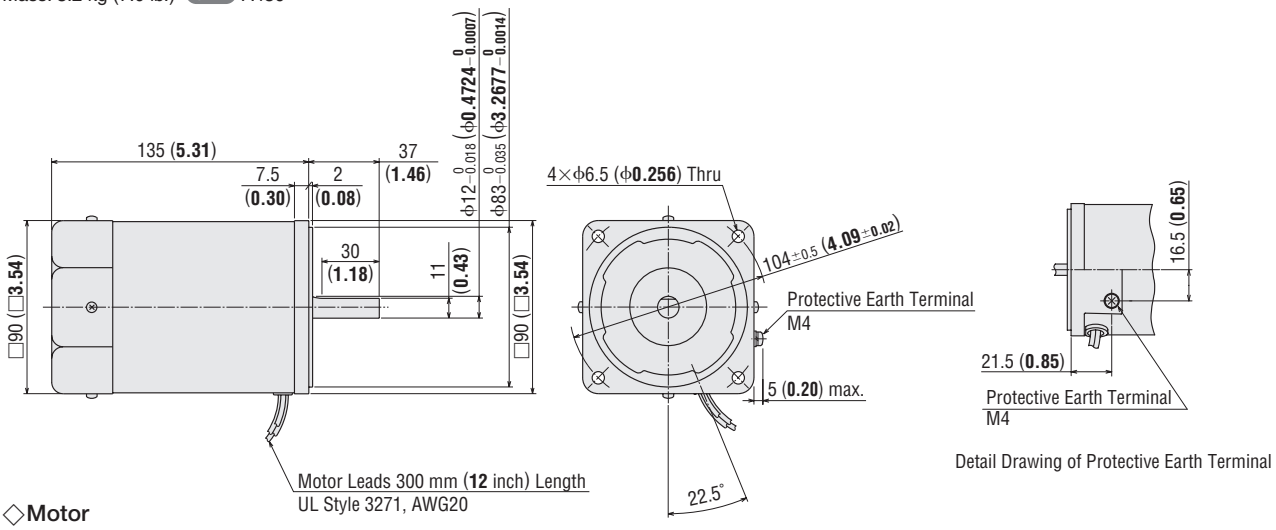


●150 W (1/5 HP)

◇Motor

5IK150A-BW2U, **5IK150A-DW3E**, **5IK150A-TW2**

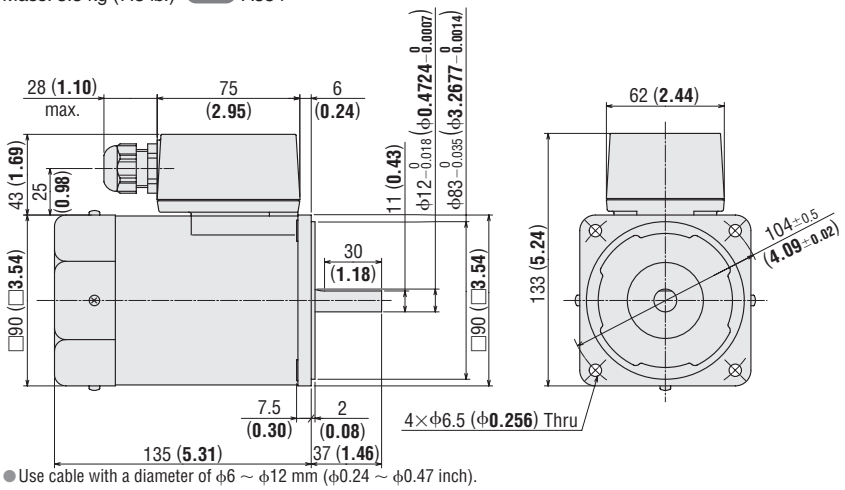
Mass: 3.2 kg (7.0 lb.) CAD A459



◇Motor

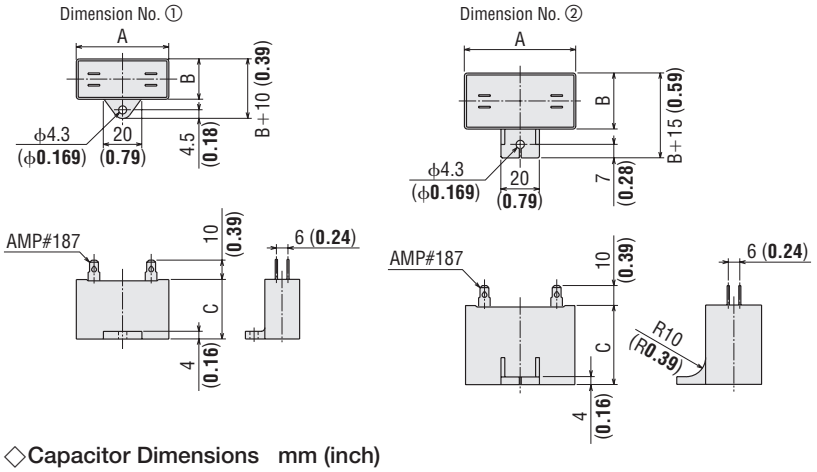
5IK150A-TW2T

Mass: 3.3 kg (7.3 lb.) CAD A334



● Use cable with a diameter of ϕ6 ~ ϕ12 mm (ϕ0.24 ~ ϕ0.47 inch).

◇Capacitor (Included with single-phase motors)

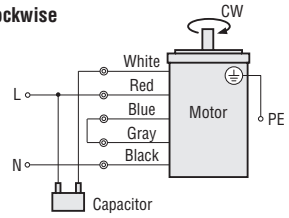
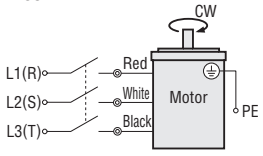
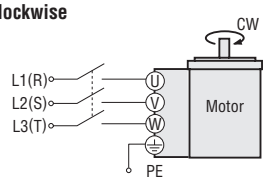
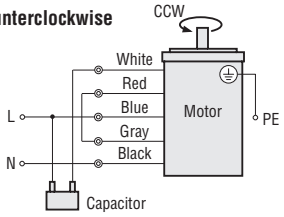


◇Capacitor Dimensions mm (inch)

Model	Capacitor Model	A	B	C	Mass g (oz.)	Dimension No.	Capacitor Cap
4IK40A-BW2U	CH75CFAUL2	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	①	Included
4IK40A-DW3E	CH18BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	35 (1.24)	①	
4IK60A-BW2U	CH100CFAUL2	58 (2.28)	21 (0.83)	31 (1.22)	50 (1.77)	①	
4IK60A-DW3E	CH25BFAUL	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	①	
5IK60A-BW2U	CH140CFAUL2	58 (2.28)	22 (0.87)	35 (1.38)	61 (2.2)	①	
5IK60A-DW3E	CH30BFAUL	58 (2.28)	21 (0.83)	31 (1.22)	50 (1.77)	①	
5IK90A-BW2U	CH250CFAUL2	58 (2.28)	35 (1.38)	50 (1.97)	140 (4.9)	②	
5IK90A-DW3E	CH60BFAUL	58 (2.28)	29 (1.14)	41 (1.61)	85 (3.0)	②	
5IK150A-BW2U	CH300CFAUL2	58 (2.28)	35 (1.38)	50 (1.97)	140 (4.9)	②	
5IK150A-DW3E	CH80BFAUL	58 (2.28)	35 (1.38)	50 (1.97)	130 (4.6)	②	

Connection Diagrams

●The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.

<table>
<tr><th rowspan="2">Single-Phase 110/115 VAC
Single-Phase 220/230 VAC</th><th colspan="2">Three-Phase 200/220/230 VAC</th></tr>
<tr><th>5IK60A-TW2
5IK90A-TW2
5IK150A-TW2</th><th>5IK150A-TW2T</th></tr>
<tr><td>Clockwise
 
</td><td>Clockwise
 
</td><td>Clockwise
 
</td></tr>
<tr><td>Counterclockwise
 
</td><td>Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td><td>Counterclockwise
To change the rotation direction, change any two connections between R, S and T.</td></tr>
</table>

PE: Protective Earth

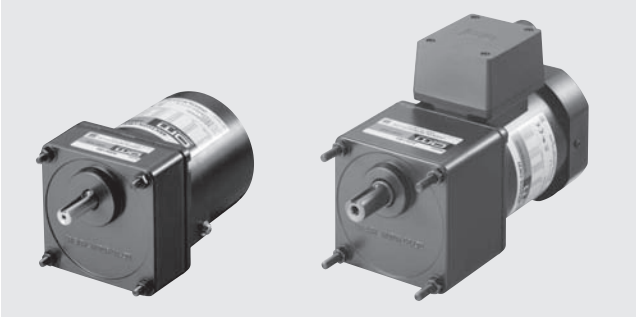
Note:

Change the direction of single-phase motor rotation only after bringing the motor to a stop.

If an attempt is made to change the direction of rotation while the motor is rotating, motor may ignore reversing command or change its direction of rotation after some delay.

RoHS RoHS-Compliant

Reversible Motors



Features

Optimal for Bi-Directional Operation

These are 30 minute rated motors that can change directions instantaneously. They are designed for applications where reversal of direction is frequently required.

✻30 minute rating: The motors may be operated continuously for 30 minutes, but depending on operating conditions (intermittent operation, etc), they can be operated for more than 30 minutes.

Safety Standards and CE Marking

Standards	Certification Body	Standards File No.	CE Marking
UL 1004 UL 2111	UL	E64199 [1 W～6 W (1/750 HP～1/125 HP) Type] E64197 [15 W～90W (1/50 HP～1/8 HP) Type]	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77			
EN 60950-1 EN 60034-1 EN 60034-5 IEC 60664-1	Conform to EN/IEC Standards		
GB 12350	CQC	2005010401150787 [Single-Phase 1 W (1/750 HP) Type] 2003010401091525 [Single-Phase 6 W (1/125 HP) Type] 2003010401091522 [Single-Phase 15 W～90W (1/50 HP～1/8 HP) Type]	

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

System Configuration

Mounting Brackets (Accessories)
(➜ Page 117)

Flexible Couplings (Accessories)
(➜ Page 119)

Brake Pack
SB50W (Sold separately)
Equipped with instantaneous stopping functions, thermal protector open detection functions.
(➜ Page 110)

Right-Angle Gearheads (Sold separately)
(➜ Page 104)

Motor

AC Power Supply

Gearheads (Sold separately)

Capacitor Cap* (Included)
Insulating cap for capacitor terminal section.

Capacitor (Included)

●Example of System Configuration

(Body) | (Sold separately)

Motor (Pinion Shaft)		Long Life/Low Noise GN-S Gearhead	Mounting Bracket	Flexible Coupling
4RK25GN-AW2U	+	4GN25SA	SOL4U10	MCL30F06F08
		◎	○	○

◎: Required under this system.
○: Optional accessory offered by Oriental Motor.
*Capacitor cap is included.

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

Product Number Code

●Motor

5 R K 40 GN - AW 2 T U
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Motor Frame Size	**0**: 42 mm (1.65 in.) **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	Motor Type	**R**: Reversible Motor
③	Series	**K**: **K** Series
④	Output Power (W)	(Example) **40**: 40 W (1/19 HP)
⑤	Motor Shaft Type	**GN**: **GN** Type Pinion Shaft **GE**: **GE** Type Pinion Shaft **A**: Round Shaft
⑥	Power Supply Voltage	**AW**: Single-Phase 110/115 VAC **CW**: Single-Phase 220/230 VAC
⑦	**2**, **3**: RoHS-Compliant	
⑧	**T**: Terminal Box Type	
⑨	Included Capacitor	**U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
(Example) Model: **5RK40GN-AW2U** ➜ Motor nameplate and product approved under various safety standards: **5RK40GN-AW2**

●Gearhead

5 GN 50 SA
① ② ③ ④

①	Gearhead Frame Size	**0**: 42 mm (1.65 in.) **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 **GE**: **GE** 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 **KA**: **GN-K** Gearhead* **RH**: Right-Angle/Hollow Shaft Gearhead, RoHS-Compliant **RAA**: Right-Angle/Solid Shaft Gearhead, RoHS-Compliant
	GE Type Pinion	**SA**: Long Life **GE-S** Gearhead, RoHS-Compliant **RH**: Right-Angle/Hollow Shaft Gearhead, RoHS-Compliant **RAA**: Right-Angle/Solid Shaft Gearhead, RoHS-Compliant

*__GN-K__ gearhead of frame size 42 mm (1.65 inch) complies to RoHS directive.

General Specifications of Reversible Motors

1 W (1/750 HP) Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 75°C (135°F) or less measured by the resistance change method after rated motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate*.
Insulation Class	UL/CSA standards: Class A [105°C (221°F)], EN standards: Class E [120°C (248°F)]
Overheat Protection	Impedance protected
Ambient Temperature	−10°C～+40°C (+14°F～+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	IP20

6 W (1/125 HP)～90 W (1/8 HP) Type

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor 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 motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate*. However, a heat radiation plate that is 200×200 mm (7.87×7.87 in.) with a thickness of 5 mm (0.20 in.) is necessary even when the gearhead is connected for the 90 W (1/8 HP) type.
Insulation Class	Class B [130°C (266°F)]
Overheat Protection	6 W (1/125 HP) type has impedance protection. All others have built-in thermal protector (automatic return type) Operating temperature; open: 130°C ± 5°C (266°F ± 9°F), close: 82°C ± 15°C (179.6°F ± 27°F)
Ambient Temperature	−10°C～+40°C (+14°F～+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	Lead Wire Type: IP20 Terminal Box Type: 25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP), 90 W (1/8 HP) Type IP40

*Heat radiation plate (Material: Aluminum)

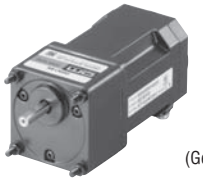
Motor Type	Size: mm (in.)	Thickness: mm (in.)
1 W (1/750 HP) Type	80×80 (3.15×3.15)	5 (0.20)
6 W (1/125 HP) Type	115×115 (4.53×4.53)	
15 W (1/50 HP) Type	125×125 (4.92×4.92)	
25 W (1/30 HP) Type	135×135 (5.31×5.31)	
40 W (1/19 HP) Type	165×165 (6.50×6.50)	
60 W (1/12 HP) Type	200×200 (7.87×7.87)	
90 W (1/8 HP) Type	200×200 (7.87×7.87)	10 (0.39)

RoHS

Reversible Motors

1 W (1/750 HP)

Frame Size: □42 mm (□1.65 in.)



(Gearhead sold separately)

Specifications – 30 Minute Rating RoHS

Model Lead Wire Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
ZP 0RK1GN-AW3U	0RK1A-AW3U	1 1/750	Single-Phase 110	60	0.090	8 1.13	8 1.13	1200	1.2
			Single-Phase 115		0.095				

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** at the end of the model name indicates that the unit includes a capacitor. This letter is not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

ZP: Impedance protected

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**0RK1GN-AW3U**	**0RK1A-AW3U**

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Parallel Shaft	**0GN□KA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads are sold separately. Decimal gearheads are not available.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 33% less than the displayed value, depending on the size of the load.

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
0RK1GN-AW3U	**0GN□KA**	0.019 0.168	0.023 0.20	0.032 0.28	0.039 0.34	0.049 0.43	0.058 0.51	0.073 0.64	0.088 0.77	0.11 0.97	0.13 1.15	0.16 1.41	0.19 1.68	0.26 2.3	0.32 2.8	0.35 3.0	0.42 3.7	0.47 4.1	0.57 5.0	0.71 6.2	0.85 7.5

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

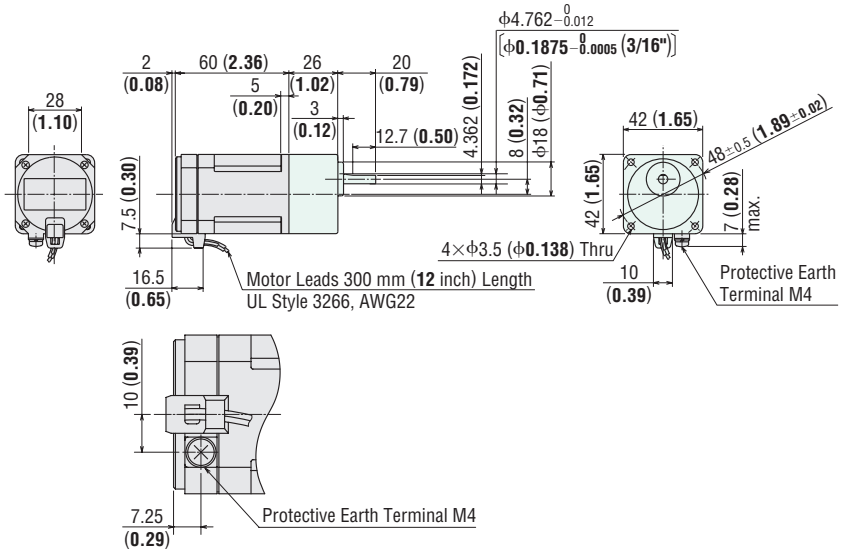
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇Lead Wire Type

Mass: Motor 0.3 kg (0.66 lb.)
Gearhead 0.2 kg (0.44 lb.)

CAD A441U

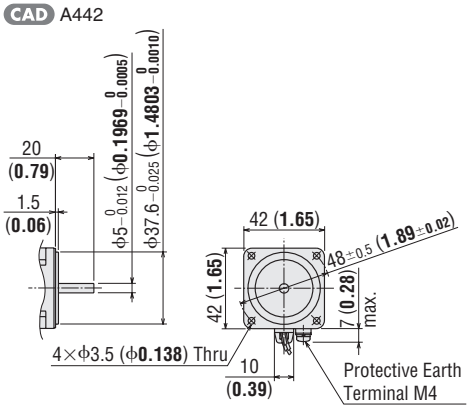


Detail Drawing of Protective Earth Terminal

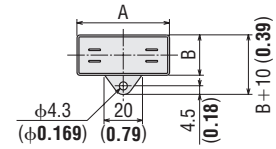
◇Round Shaft Type

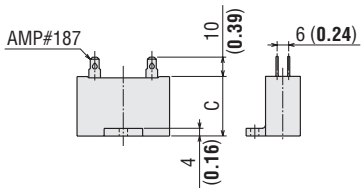
Mass: 0.3 kg (0.66 lb.)

CAD A442



◇Capacitor
(Included with the motors)



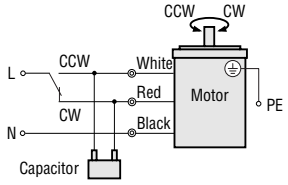


◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
0RK1GN-AW3U	**0RK1A-AW3U**	CH12FAUL	31 (1.22)	14.5 (0.57)	23.5 (0.93)	18 (0.64)	Included

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

0RK1GN-AW3U	

Clockwise:
To rotate the motor in a clockwise (CW) direction, turn the switch to CW.

Counterclockwise:
To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:

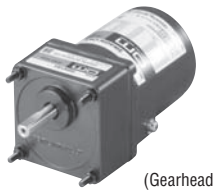
Connect a CR circuit to the forward/reverse select switch to protect the contact.
EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Reversible Motors

6 W (1/125 HP)

Frame Size: □60 mm (□2.36 in.)



(Gearhead sold separately)

Specifications – 30 Minute Rating RoHS

Model Lead Wire Type		Output Power W HP	Voltage VAC	Frequency Hz	Current A	Starting Torque mN·m oz-in	Rated Torque mN·m oz-in	Rated Speed r/min	Capacitor μF
Pinion Shaft Type	Round Shaft Type								
ZP 2RK6GN-AW2U	2RK6A-AW2U	6 1/125	Single-Phase 110	60	0.251	45 6.3	41 5.8	1450	3.5
			Single-Phase 115		0.256				
ZP 2RK6GN-CW2E	2RK6A-CW2E	6 1/125	Single-Phase 220	50	0.113	45 6.3	49 6.9	1150	0.8
				60	0.117		41 5.8	1450	
			Single-Phase 230	50	0.117	50 7.1	49 6.9	1200	
				60	0.120	45 6.3	41 5.8	1450	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

ZP: Impedance protected

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	2RK6GN-AW2U	2RK6A-AW2U
	2RK6GN-CW2E	2RK6A-CW2E

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	2GN□SA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	2GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 3 N·m (26 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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
2RK6GN-CW2E / 2GN□SA		0.12 1.06	0.14 1.23	0.20 1.77	0.24 2.1	0.30 2.6	0.36 3.1	0.50 4.4	0.60 5.3	0.71 6.2	0.89 7.8	1.1 9.7	1.3 11.5	1.6 14.1	1.9 16.8	2.4 21	2.9 25	3 26	3 26	3 26	3 26

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
2RK6GN-AW2U **2RK6GN-CW2E**	**2GN□SA**	0.10 0.88	0.12 1.06	0.17 1.50	0.20 1.77	0.25 2.2	0.30 2.6	0.42 3.7	0.50 4.4	0.60 5.3	0.75 6.6	0.90 7.9	1.1 9.7	1.4 12.3	1.6 14.1	2.0 17.7	2.4 21	2.7 23	3 26	3 26	3 26

■Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

■Permissible Load Inertia J for Gearhead

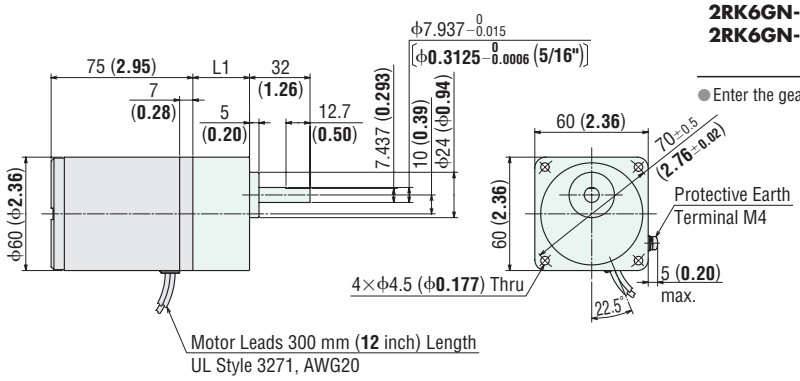
➜ Page 103

■Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

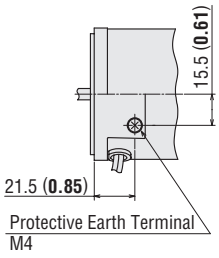
◇Lead Wire Type

Mass: Motor 0.7 kg (1.54 lb.)
Gearhead 0.4 kg (0.88 lb.)



Motor Model	Gearhead Model	Gear Ratio	L1	CAD
2RK6GN-AW2U **2RK6GN-CW2E**	**2GN□SA**	**3~18**	30 (1.18)	A443AU
		25~180	40 (1.57)	A443BU

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

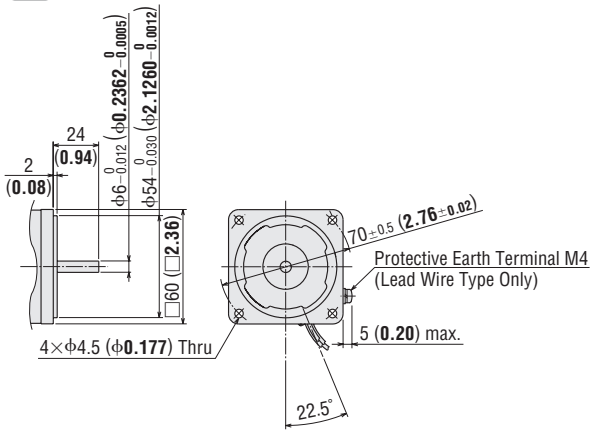


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 0.7 kg (1.54 lb.)

CAD A444



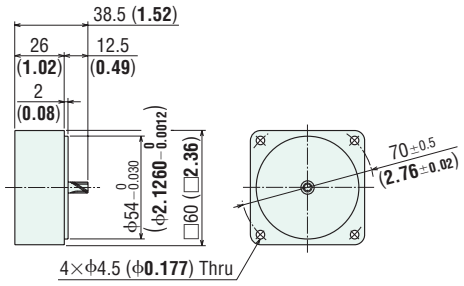
◇Decimal Gearhead

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

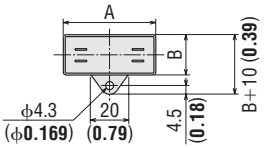
2GN10XS

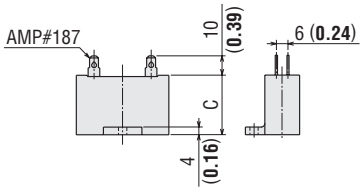
Mass: 0.2 kg (0.44 lb.)

CAD A003



◇Capacitor
(Included with the motors)





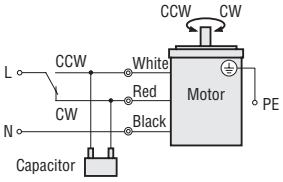
◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
2RK6GN-AW2U	**2RK6A-AW2U**	CH35FAUL2	31 (1.22)	17 (0.67)	27 (1.06)	25 (0.88)	Included
2RK6GN-CW2U	**2RK6A-CW2U**	CH08BFAUL	31 (1.22)	17 (0.67)	27 (1.06)	20 (0.71)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

2RK6GN-AW2U
2RK6GN-CW2E



Clockwise
To rotate the motor in a clockwise (CW) direction, turn the switch to CW.

Counterclockwise
To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:
Connect a CR circuit to the forward/reverse select switch to protect the contact.
EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Reversible Motors

15 W (1/50 HP)

Frame Size: □70 mm (□2.76 in.)

(Gearhead sold separately)

Specifications – 30 Minute Rating RoHS

Model Lead Wire Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP 3RK15GN-AW2U	3RK15A-AW2U	15 1/50	Single-Phase 110	60	0.41	100 14.2	105 14.9	1450	6.0
			Single-Phase 115		0.41				
TP 3RK15GN-CW2E	3RK15A-CW2E	15 1/50	Single-Phase 220	50	0.20	100 14.2	125 17.7	1200	1.5
				60	0.21		105 14.9	1450	
			Single-Phase 230	50	0.20		125 17.7	1200	
				60	0.21		105 14.9	1450	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**3RK15GN-AW2U**	**3RK15A-AW2U**
	3RK15GN-CW2E	**3RK15A-CW2E**

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**3GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	3GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 5 N·m (44 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
3RK15GN-CW2E / **3GN□SA**		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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
3RK15GN-AW2U **3RK15GN-CW2E** / **3GN□SA**		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

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

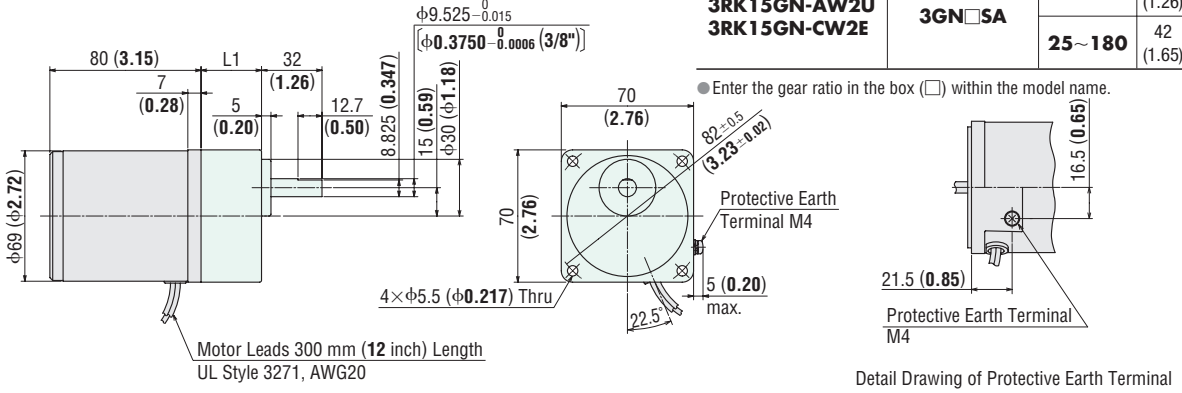
Mounting screws are included with gearheads.

◇Lead Wire Type

Mass: Motor 1.1 kg (2.4 lb.)
Gearhead 0.55 kg (1.21 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
3RK15GN-AW2U **3RK15GN-CW2E**	**3GN□SA**	**3**~**18**	32 (1.26)	A447AU
		25~**180**	42 (1.65)	A447BU

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

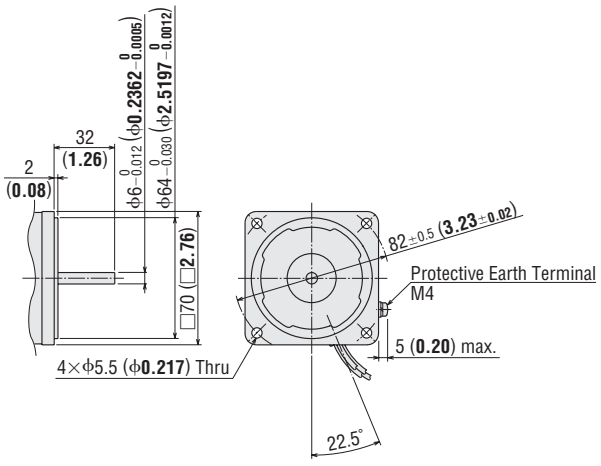


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 1.1 kg (2.4 lb.)

CAD A448



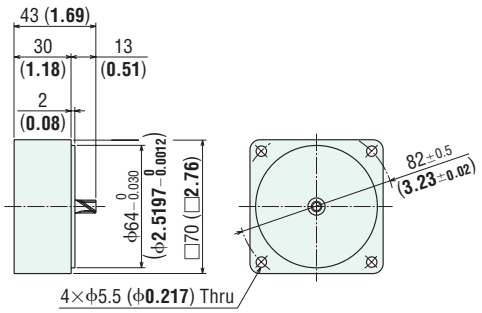
◇Decimal Gearhead

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

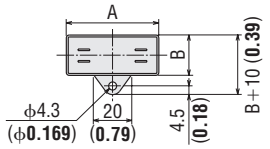
3GN10XS

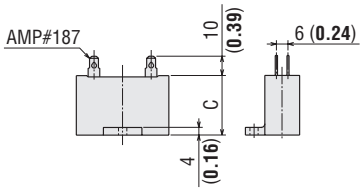
Mass: 0.3 kg (0.66 lb.)

CAD A009



◇Capacitor (Included with the motors)



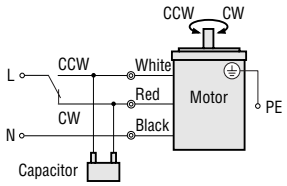


◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
3RK15GN-AW2U	**3RK15A-AW2U**	CH60CFAUL2	38 (1.50)	21 (0.83)	31 (1.22)	40 (1.41)	Included
3RK15GN-CW2E	**3RK15A-CW2E**	CH15BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	35 (1.24)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

3RK15GN-AW2U **3RK15GN-CW2E**	 **Clockwise:** To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise:** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:

Connect a CR circuit to the forward/reverse select switch to protect the contact.

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Reversible Motors

25 W (1/30 HP)

Frame Size: □80 mm (□3.15 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104

Specifications – 30 Minute Rating RoHS

cULus CE

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **4RK25GN-AW2U (4RK25A-AW2U)**	**4RK25GN-AW2TU (4RK25A-AW2TU)**	25 1/30	Single-Phase 110	60	0.56	140 19.8	170 24	1450	8.0
			Single-Phase 115						
TP **4RK25GN-CW2E (4RK25A-CW2E)**	**4RK25GN-CW2TE (4RK25A-CW2TE)**	25 1/30	Single-Phase 220	50	0.29	140 19.8	205 29	1200	2.5
				60	0.35		170 24	1450	
			Single-Phase 230	50	0.30	160 22	205 29	1200	
				60	0.35	140 19.8	170 24	1450	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**4RK25GN-AW2U**	**4RK25A-AW2U**
	4RK25GN-CW2E	**4RK25A-CW2E**
Terminal Box	**4RK25GN-AW2TU**	**4RK25A-AW2TU**
	4RK25GN-CW2TE	**4RK25A-CW2TE**

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**4GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	4GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**4GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**4GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 8 N·m (70 lb-in). When a gearhead of 1/25~1/36 is connected, the value for permissible torque is 6 N·m (53 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
4RK25GN-CW2□E	**4GN□SA**	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
4RK25GN-AW2□U **4RK25GN-CW2□E**	**4GN□SA**	0.41 3.6	0.50 4.4	0.69 6.1	0.83 7.3	1.0 8.8	1.2 10.6	1.7 15.0	2.1 18.5	2.5 22	3.1 27	3.7 32	4.5 39	5.6 49	6.7 59	8 70	8 70	8 70	8 70	8 70	8 70

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

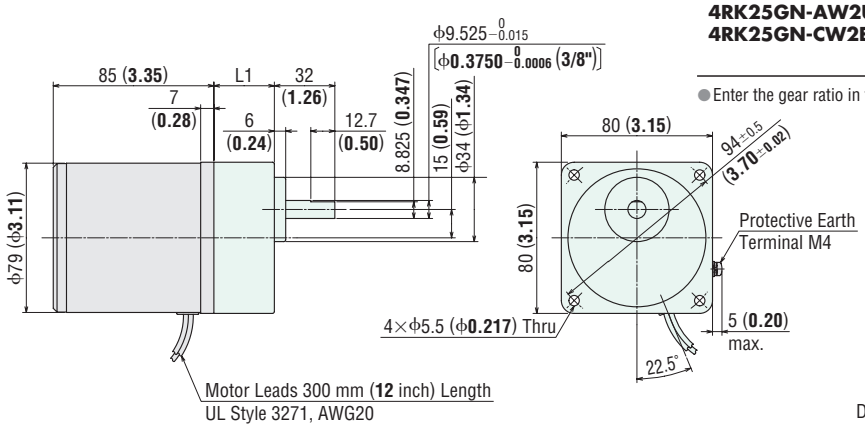
Mounting screws are included with gearheads.

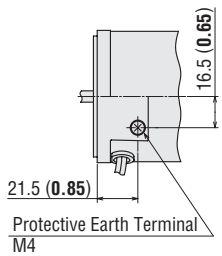
◇Lead Wire Type ①

Mass: Motor 1.5 kg (3.3 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4RK25GN-AW2U **4RK25GN-CW2E**	**4GN□SA**	**3~18**	32 (1.26)	A449AU
		25~180	42.5 (1.67)	A449BU

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





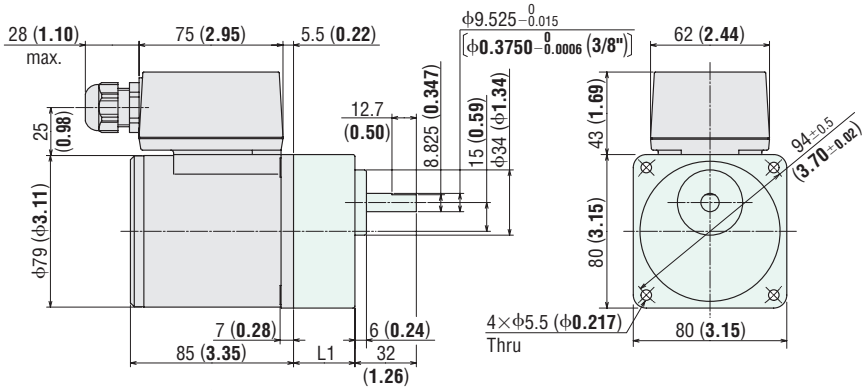
Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 1.7 kg (3.7 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4RK25GN-AW2TU **4RK25GN-CW2TE**	**4GN□SA**	**3**～**18**	32 (1.26)	A451AU
		25～**180**	42.5 (1.67)	A451BU

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



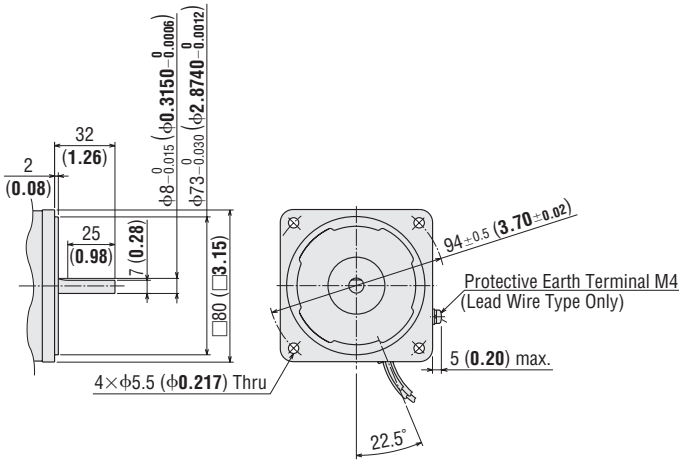
● Use cable with a diameter of ϕ6 ～ ϕ12 mm (ϕ0.24 ～ ϕ0.47 inch).

◇Round Shaft Type

Mass: 1.5 kg (3.3 lb.) (Lead Wire Type)
1.7 kg (3.7 lb.) (Terminal Box Type)

CAD A450 (Lead Wire Type)
A328 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



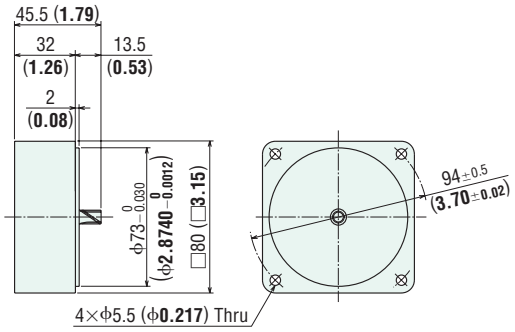
◇Decimal Gearhead

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

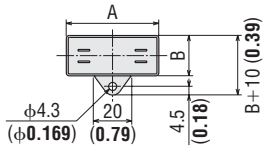
4GN10XS

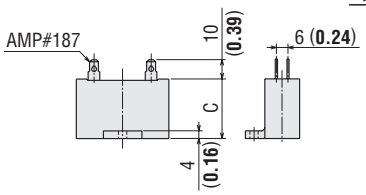
Mass: 0.4 kg (0.88 lb.)

CAD A013



◇Capacitor
(Included with the motors)





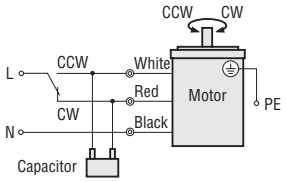
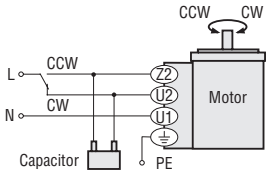
◇Capacitor Dimensions mm (inch)

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
4RK25GN-AW2U **(4RK25A-AW2U)**	**4RK25GN-AW2TU** **(4RK25A-AW2TU)**	CH80CFAUL2	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	Included
4RK25GN-CW2E **(4RK25A-CW2E)**	**4RK25GN-CW2TE** **(4RK25A-CW2TE)**	CH25BFAUL	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	

Connection Diagrams

●The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.

●Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type	Terminal Box Type
4RK25GN-AW2U **4RK25GN-CW2E**	**4RK25GN-AW2TU** **4RK25GN-CW2TE**
 **Clockwise** To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.	 **Clockwise** To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:

Connect a CR circuit to the forward/reverse select switch to protect the contact.

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

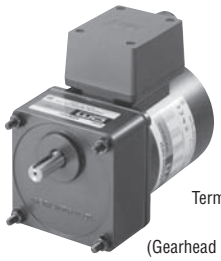
RoHS

Reversible Motors

40 W (1/19 HP)

Frame Size: □90 mm (□3.54 in.)

Lead Wire Type



Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104

Specifications – 30 Minute Rating RoHS

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power W HP	Voltage VAC	Frequency Hz	Current A	Starting Torque mN·m oz-in	Rated Torque mN·m oz-in	Rated Speed r/min	Capacitor μF
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②								
TP **5RK40GN-AW2U (5RK40A-AW2U)**	**5RK40GN-AW2TU (5RK40A-AW2TU)**	40 1/19	Single-Phase 110	60	0.88	260 36	270 38	1450	12
			Single-Phase 115		0.87				
TP **5RK40GN-CW2E (5RK40A-CW2E)**	**5RK40GN-CW2TE (5RK40A-CW2TE)**	40 1/19	Single-Phase 220	50	0.43	270 38	315 44	1250	3.5
				60	0.48	260 36	260 36	1500	
			Single-Phase 230	50	0.43	270 38	315 44	1250	
				60	0.48	260 36	260 36	1500	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5RK40GN-AW2U**	**5RK40A-AW2U**
	5RK40GN-CW2E	**5RK40A-CW2E**
Terminal Box	**5RK40GN-AW2TU**	**5RK40A-AW2TU**
	5RK40GN-CW2TE	**5RK40A-CW2TE**

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**5GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 10 N·m (88 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK40GN-CW2□E	**5GN□SA**	0.77 6.8	0.92 8.1	1.3 11.5	1.5 13.2	1.9 16.8	2.3 20	3.2 28	3.8 33	4.6 40	5.7 50	6.9 61	8.3 73	10 88	10 88	10 88	10 88	10 88	10 88	10 88	10 88

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK40GN-AW2□U	**5GN□SA**	0.66 5.8	0.79 6.9	1.1 9.7	1.3 11.5	1.6 14.1	2.0 17.7	2.7 23	3.3 29	3.9 34	4.9 43	5.9 52	7.1 62	8.9 78	10 88	10 88	10 88	10 88	10 88	10 88	10 88
5RK40GN-CW2□E	**5GN□SA**	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

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Dimensions Unit = mm (inch)

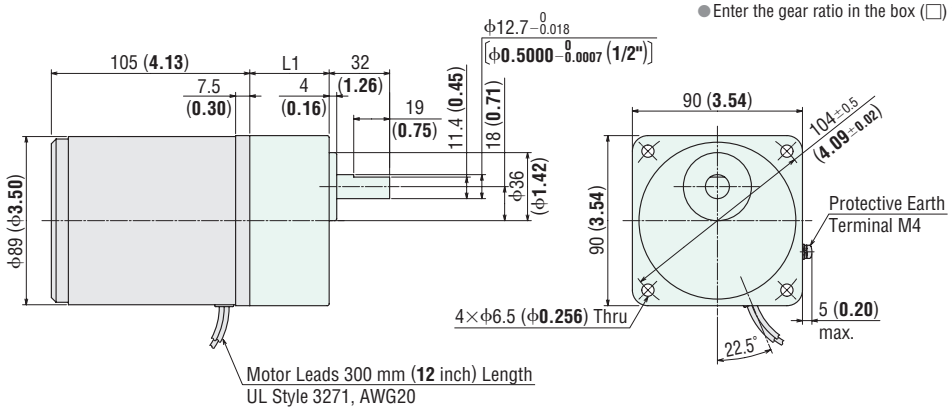
Mounting screws are included with gearheads.

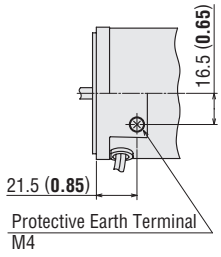
◇Lead Wire Type ①

Mass: Motor 2.5 kg (5.5 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5RK40GN-AW2U **5RK40GN-CW2E**	**5GN□SA**	**3**~**18**	42 (1.65)	A452AU
		25~**180**	60 (2.36)	A452BU

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





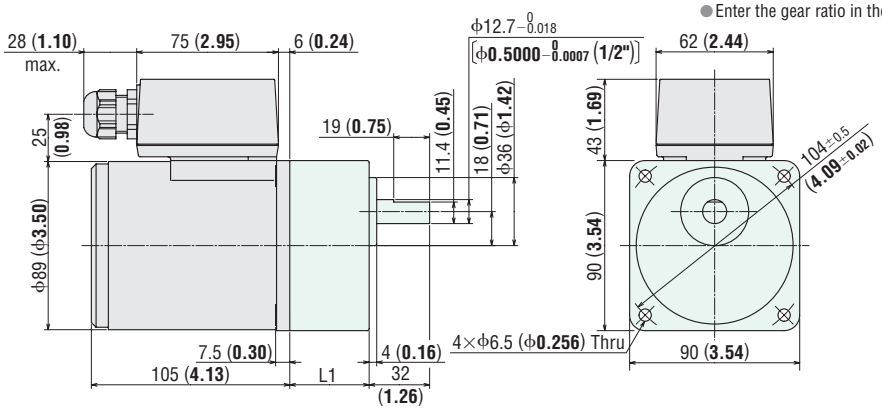
Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 2.6 kg (5.7 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5RK40GN-AW2TU **5RK40GN-CW2TE**	**5GN□SA**	**3～18**	42 (1.65)	A454AU
		25～180	60 (2.36)	A454BU

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



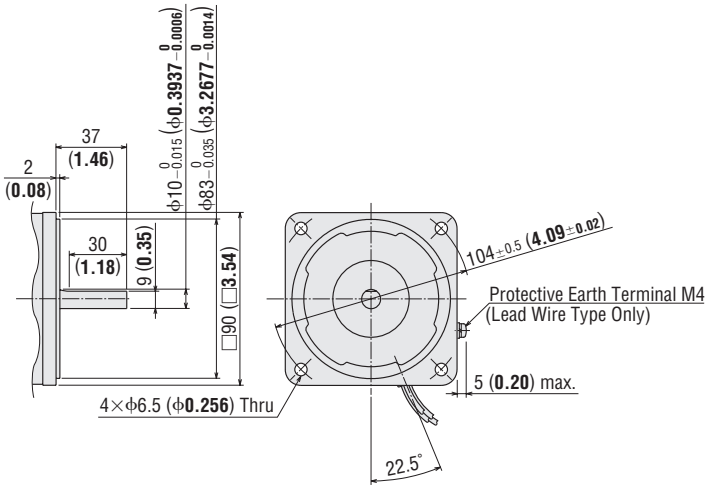
● Use cable with a diameter of ϕ6 ～ ϕ12 mm (ϕ0.24 ～ ϕ0.47 inch).

◇Round Shaft Type

Mass: 2.5 kg (5.5 lb.) (Lead Wire Type)
2.6 kg (5.7 lb.) (Terminal Box Type)

CAD A453 (Lead Wire Type)
A330 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



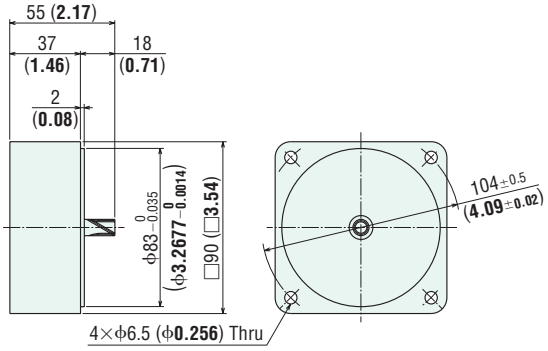
◇Decimal Gearhead

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

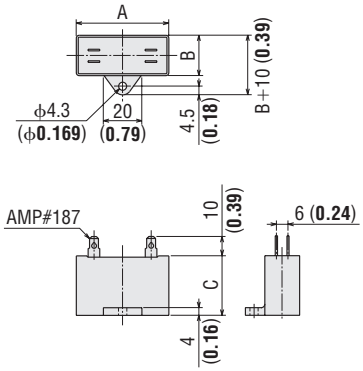
5GN10XS

Mass: 0.6 kg (1.32 lb.)

CAD A022



◇Capacitor
(Included with the motors)

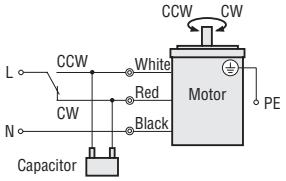
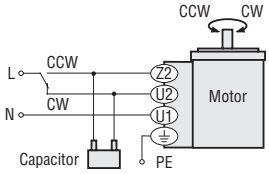


◇Capacitor Dimensions mm (inch)

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5RK40GN-AW2U (5RK40A-AW2U)	**5RK40GN-AW2TU (5RK40A-AW2TU)**	CH120CFAUL2	58 (2.28)	22 (0.87)	35 (1.38)	60 (2.1)	Included
5RK40GN-CW2E (5RK40A-CW2E)	**5RK40GN-CW2TE (5RK40A-CW2TE)**	CH35BFAUL	58 (2.28)	22 (0.87)	35 (1.38)	55 (1.94)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type	Terminal Box Type
5RK40GN-AW2U **5RK40GN-CW2E**	**5RK40GN-AW2TU** **5RK40GN-CW2TE**
	
Clockwise To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.	**Clockwise** To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:

Connect a CR circuit to the forward/reverse select switch to protect the contact.

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Reversible Motors

60 W (1/12 HP)

Frame Size: □90 mm (□3.54 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104

Specifications – 30 Minute Rating RoHS

Model (Upper Model Name: Pinion Shaft Type; Lower Model Name ( ): Round Shaft Type)		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **5RK60GE-AW2U (5RK60A-AW2U)**	**5RK60GE-AW2TU (5RK60A-AW2TU)**	60 1/12	Single-Phase 110	60	1.27	380 53	405 57	1450	20
			Single-Phase 115						
TP **5RK60GE-CW2E (5RK60A-CW2E)**	**5RK60GE-CW2TE (5RK60A-CW2TE)**	60 1/12	Single-Phase 220	50	0.61	420 59	490 69	1200	5.0
				60	0.67	380 53	405 57	1450	
			Single-Phase 230	50	0.63	470 66	490 69	1200	
				60	0.66	380 53	405 57	1450	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5RK60GE-AW2U**	**5RK60A-AW2U**
	5RK60GE-CW2E	**5RK60A-CW2E**
Terminal Box	**5RK60GE-AW2TU**	**5RK60A-AW2TU**
	5RK60GE-CW2TE	**5RK60A-CW2TE**

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	**5GE□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GE□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GE□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇**50 Hz**

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK60GE-CW2□E	**5GE□SA**	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

◇**60 Hz**

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK60GE-AW2□U **5RK60GE-CW2□E**	**5GE□SA**	0.98 8.6	1.2 10.6	1.6 14.1	2.0 17.7	2.5 22	3.0 26	3.7 32	4.4 38	5.3 46	6.7 59	8.0 70	9.6 84	13.4 118	16.0 141	17.9 158	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

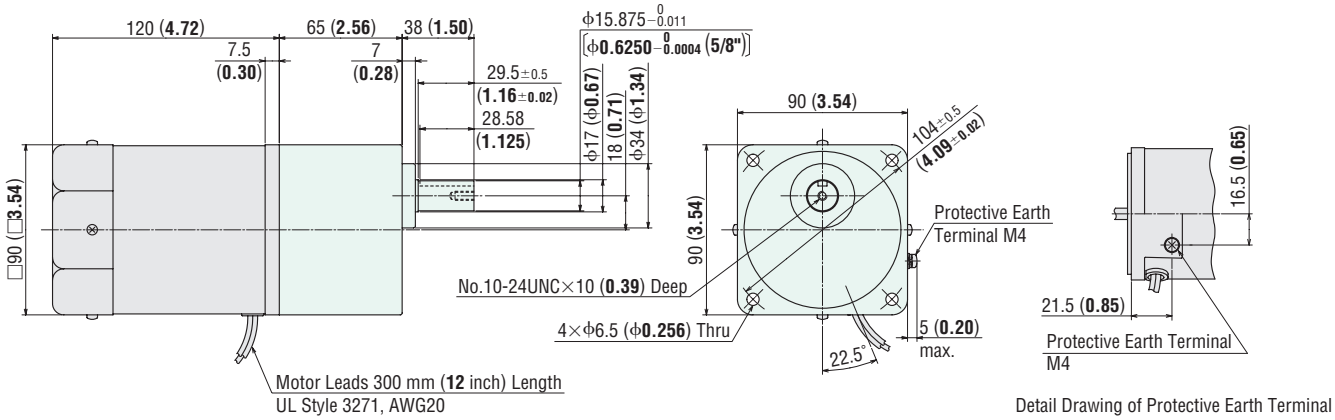
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇**Lead Wire Type** ①

Mass: Motor 2.7 kg (5.9 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A455U

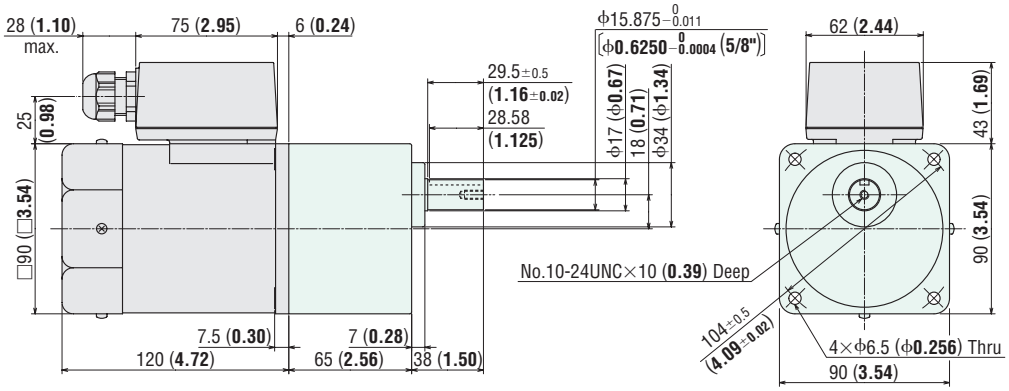


Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 2.8 kg (6.2 lb.)
Gearhead 1.5 kg (3.3 lb.)

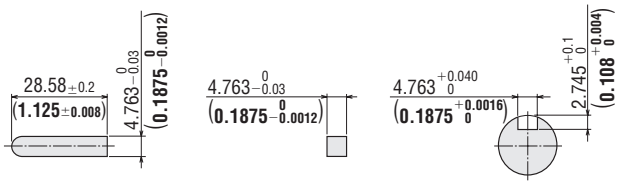
CAD A457U



● Use cable with a diameter of Φ6 ~ Φ12 mm (Φ0.24 ~ Φ0.47 inch).

◇Key and Key Slot

(The key is included with the gearhead)

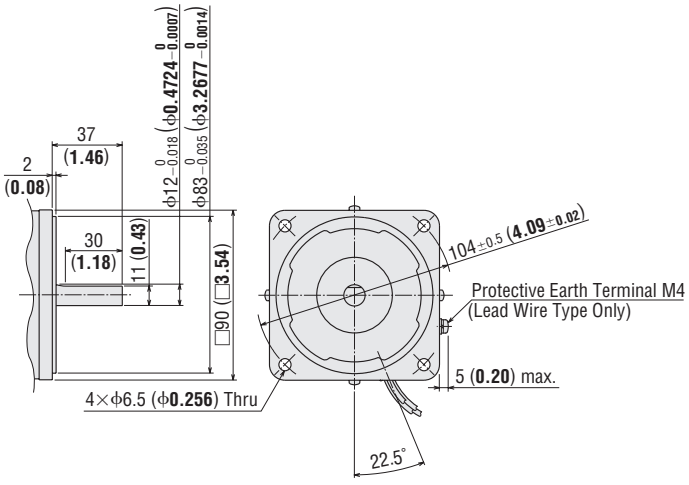


◇Round Shaft Type

Mass: 2.7 kg (5.9 lb.) (Lead Wire Type)
2.8 kg (6.2 lb.) (Terminal Box Type)

CAD A456 (Lead Wire Type)
A332 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



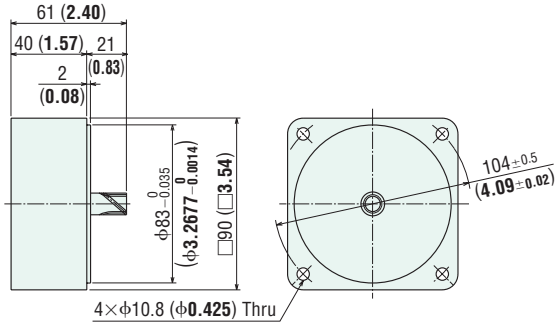
◇Decimal Gearhead

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

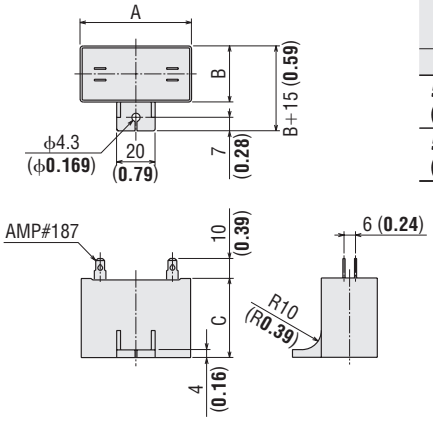
5GE10XS

Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor
(Included with the motors)



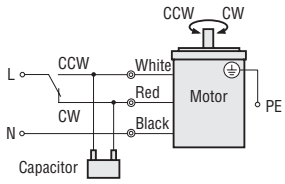
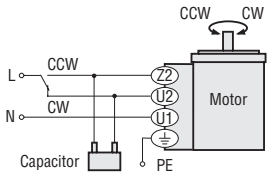
◇Capacitor Dimensions mm (inch)

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5RK60GE-AW2U (5RK60A-AW2U)	**5RK60GE-AW2TU (5RK60A-AW2TU)**	CH200CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)	Included
5RK60GE-CW2E (5RK60A-CW2E)	**5RK60GE-CW2TE (5RK60A-CW2TE)**	CH50BFAUL	58 (2.28)	29 (1.14)	41 (1.61)	85 (3.0)	

■Connection Diagrams

●The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.

●Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type	Terminal Box Type
5RK60GE-AW2U 5RK60GE-CW2E	**5RK60GE-AW2TU 5RK60GE-CW2TE**
	
Clockwise To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.	**Clockwise** To rotate the motor in a clockwise (CW) direction, turn the switch to CW. **Counterclockwise** To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

Note:

Connect a CR circuit to the forward/reverse select switch to protect the contact.

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Reversible Motors

90 W (1/8 HP)

Frame Size: □90 mm (□3.54 in.)

Lead Wire Type

Terminal Box Type

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104

Specifications – 30 Minute Rating RoHS

cULus CE

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Lead Wire Type Dimension ①	Terminal Box Type Dimension ②	W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **5RK90GE-AW2U (5RK90A-AW2U)**	**5RK90GE-AW2TU (5RK90A-AW2TU)**	90 1/8	Single-Phase 110	60	1.87	590 83	585 83	1500	30
			Single-Phase 115		1.86				
TP **5RK90GE-CW3E (5RK90A-CW3E)**	**5RK90GE-CW3TE (5RK90A-CW3TE)**	90 1/8	Single-Phase 220	50	0.83	600 85	730 103	1200	7.0
				60	0.96	590 83	605 85	1450	
			Single-Phase 230	50	0.83	600 85	730 103	1200	
				60	0.95	590 83	605 85	1450	

- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

Product Line

Motor RoHS

Type	Model	
	Pinion Shaft Type	Round Shaft Type
Lead Wire	**5RK90GE-AW2U**	**5RK90A-AW2U**
	5RK90GE-CW3E	**5RK90A-CW3E**
Terminal Box	**5RK90GE-AW2TU**	**5RK90A-AW2TU**
	5RK90GE-CW3TE	**5RK90A-CW3TE**

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	**5GE□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**5GE□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**5GE□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the code that represents the terminal box type "**T**" in the box (□) within the motor model name.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK90GE-CW3□E	**5GE□SA**	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK90GE-AW2□U	**5GE□SA**	1.4 12.3	1.7 15.0	2.4 21	2.8 24	3.6 31	4.3 38	5.3 46	6.4 56	7.7 68	9.7 85	11.6 102	13.9 123	19.3 170	20 177	20 177	20 177	20 177	20 177	20 177	20 177
5RK90GE-CW3□E	**5GE□SA**	1.5 13.2	1.8 15.9	2.5 22	2.9 25	3.7 32	4.4 38	5.5 48	6.6 58	7.9 69	10.0 88	12.0 106	14.4 127	20 177	20 177	20 177	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

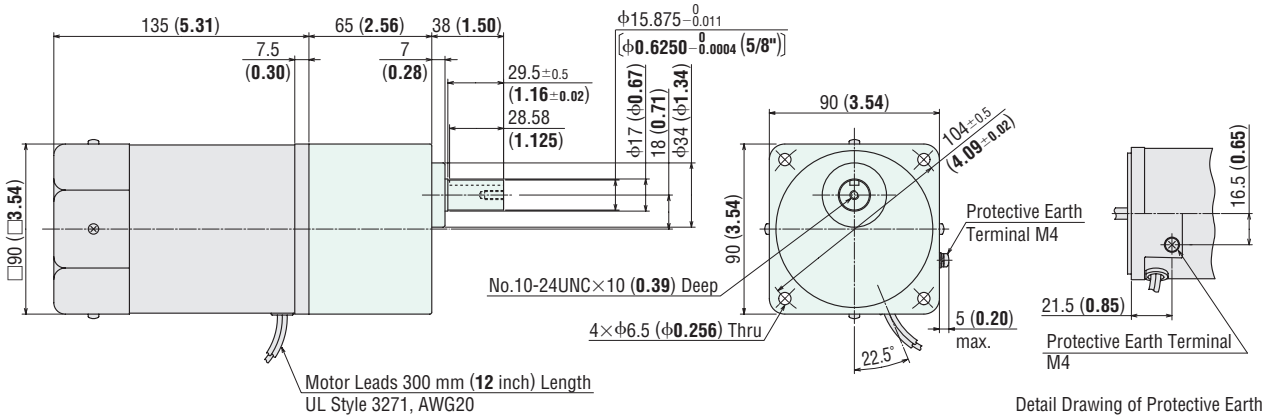
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

◇Lead Wire Type ①

Mass: Motor 3.2 kg (7.0 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A458U

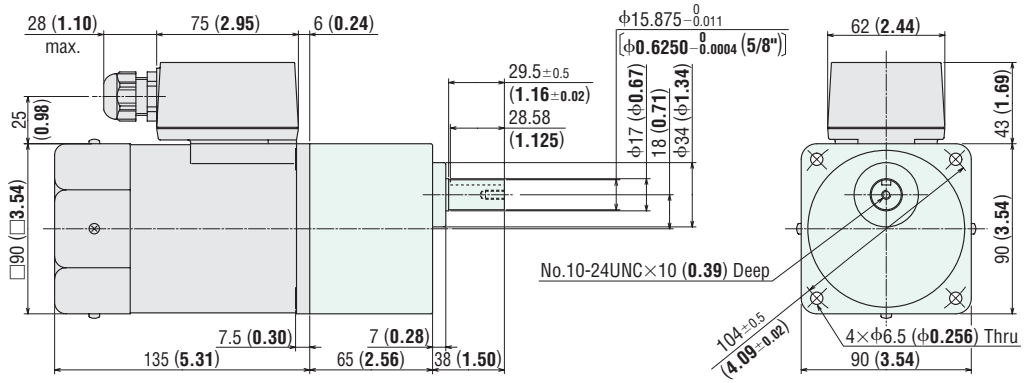


Detail Drawing of Protective Earth Terminal

◇Terminal Box Type ②

Mass: Motor 3.3 kg (7.3 lb.)
Gearhead 1.5 kg (3.3 lb.)

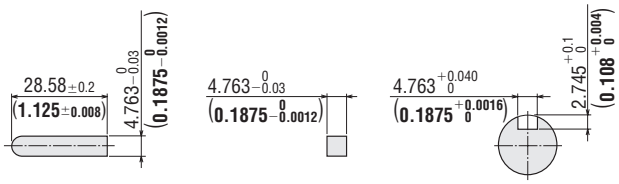
CAD A460U



● Use cable with a diameter of Φ6 ~ Φ12 mm (Φ0.24 ~ Φ0.47 inch).

◇Key and Key Slot

(The key is included with the gearhead)

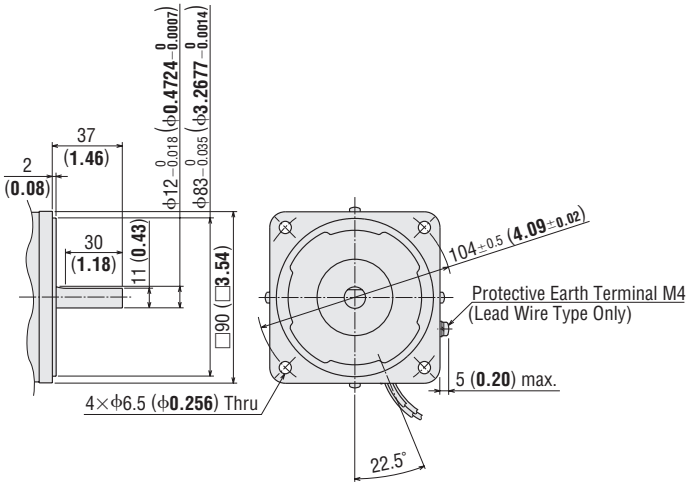


◇Round Shaft Type

Mass: 3.2 kg (7.0 lb.) (Lead Wire Type)
3.3 kg (7.3 lb.) (Terminal Box Type)

CAD A459 (Lead Wire Type)
A334 (Terminal Box Type)

✻The dimensions below only indicate the shaft section of the round shaft type motors.



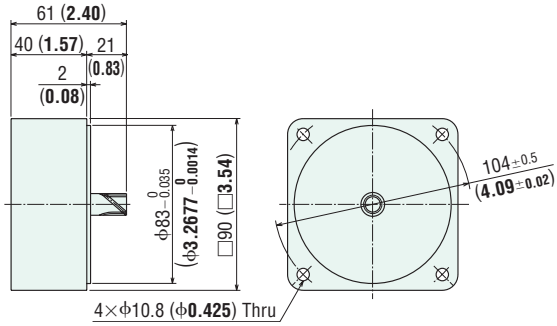
◇Decimal Gearhead

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

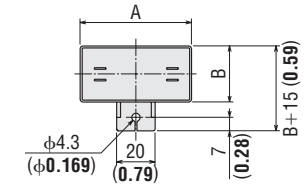
5GE10XS

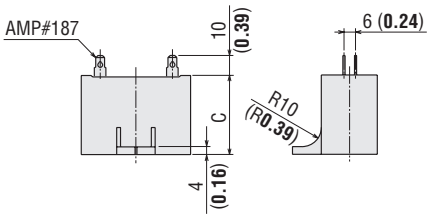
Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor
(Included with the motors)





◇Capacitor Dimensions mm (inch)

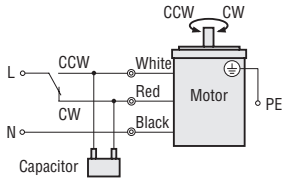
Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Lead Wire Type	Terminal Box Type						
5RK90GE-AW2U (5RK90A-AW2U)	**5RK90GE-AW2TU (5RK90A-AW2TU)**	CH300CFAUL2	58 (2.28)	35 (1.38)	50 (1.97)	140 (4.9)	Included
5RK90GE-CW3E (5RK90A-CW3E)	**5RK90GE-CW3TE (5RK90A-CW3TE)**	CH70BFAUL	58 (2.28)	35 (1.38)	50 (1.97)	130 (4.6)	

■Connection Diagrams

●The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.

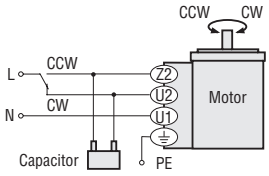
●Connection diagrams are also valid for the equivalent round shaft type.

Lead Wire Type	Terminal Box Type
5RK90GE-AW2U **5RK90GE-CW3E**	**5RK90GE-AW2TU** **5RK90GE-CW3TE**



Clockwise
To rotate the motor in a clockwise (CW) direction, turn the switch to CW.

Counterclockwise
To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.



Clockwise
To rotate the motor in a clockwise (CW) direction, turn the switch to CW.

Counterclockwise
To rotate the motor in a counterclockwise (CCW) direction, turn the switch to CCW.

PE: Protective Earth

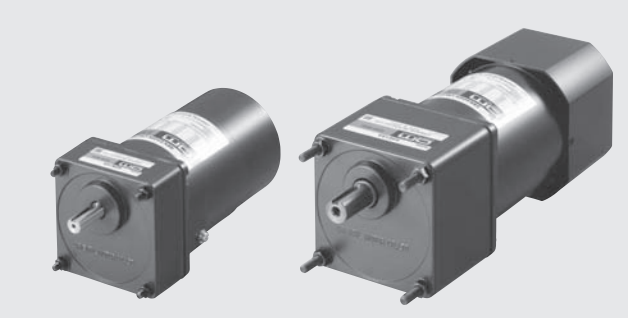
Note:

Connect a CR circuit to the forward/reverse select switch to protect the contact.

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS RoHS-Compliant

Electromagnetic Brake Motors



Features

Power Off Activated Type Electromagnetic Brake

These motors are directly coupled to an AC electromagnetic brake which is activated when power is not applied. When the power source is turned off, the motor stops instantaneously and holds the load. Since the electromagnetic brakes exert holding power even while the power is off, they are highly suitable for use in power down situations.
The holding brake force is, depending upon the size of the output, 30～500 mN·m (4.2～7.1 oz-in).

Safety Standards and CE Marking

Standards	Certification Body	Standards File No.	CE Marking
UL 1004 UL 2111 CSA C22.2 No.100 CSA C22.2 No.77	UL	E64199 [6 W (1/125 HP) Type] E64197 [15 W～90W (1/50 HP～1/8 HP) Type]	Low Voltage Directives
EN 60950-1 EN 60034-1 EN 60034-5 IEC 60664-1	Conform to EN/IEC Standards		
GB 12350	CQC	2003010401091525 [Single-Phase 6 W (1/125 HP)] 2003010401091527 [Three-Phase 6 W (1/125 HP)] 2003010401091522 [Single-Phase 15 W～90W (1/50 HP～1/8 HP) Type] 2003010401091520 [Three-Phase 25 W～90W (1/30 HP～1/8 HP) Type]	

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

System Configuration

Mounting Brackets (Accessories)
(➜ Page 117)

Flexible Couplings (Accessories)
(➜ Page 119)

Right-Angle Gearheads (Sold separately)
(➜ Page 104)

Brake Pack
SB50W (Sold separately)
Equipped with instantaneous stopping functions, thermal protector open detection functions.
(➜ Page 110)

Electromagnetic Brake Motor

Programmable Controller

AC Power Supply

24 VDC Power Supply

Gearheads (Sold separately)

Capacitor Cap* (Included)
Insulating cap for capacitor terminal section.

Capacitor (Included)

●**Example of System Configuration**

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

(Body)	(Sold separately)			
Motor (Pinion Shaft)	Long Life/Low Noise GN-S Gearhead	Mounting Bracket	Flexible Coupling	Brake Pack
4RK25GN-AW2MU	4GN25SA	SOL4U10	MCL40F06F08	SB50W
	◎	○	○	○

*Capacitor cap is included.

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

Product Number Code

●Motor

5 R K 40 GN - AW 2 M U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	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.)
②	Motor Type	**I**: Induction Motor **R**: Reversible Motor
③	Series	**K**: **K** Series
④	Output Power (W)	(Example) **40**: 40 W (1/19 HP)
⑤	Motor Shaft Type	**GN**: **GN** Type Pinion Shaft **GE**: **GE** Type Pinion Shaft **A**: Round Shaft
⑥	Power Supply Voltage	**AW**: Single-Phase 110/115 VAC **CW**: Single-Phase 220/230 VAC **SW**: Three-Phase 200/220/230 VAC
⑦	**2**: RoHS-Compliant	
⑧	**M**: Power Off Activated Electromagnetic Brake	
⑨	Included Capacitor*	**U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC Blank: Three-Phase Type

*For some products, type of capacitor varies. Refer to the pages where each product is listed.

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
(Example) Model: **5RK40GN-AW2MU** ➜ Motor nameplate and product approved under various safety standards: **5RK40GN-AW2M**

●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 **GE**: **GE** Type Pinion
③	Gear Ratio	(Example) **50**: Gear Ratio of 50:1 **10X** denotes the decimal gearhead of gear ratio 10:1
④	**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	

General Specifications of Electromagnetic Brake Motors

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor 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 motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate*. [Three-phase type: 70°C (126°F) or less]
Insulation Class	Class B [130°C (266°F)]
Overheat Protection	6 W (1/125 HP) type has impedance protection. All others have built-in thermal protector (automatic return type) Operating temperature; open: 130°C±5°C (266°F±9°F), close: 82°C±15°C (179.6°F±27°F)
Ambient Temperature	Three-phase 200 VAC: −10°C～+50°C (+14°F～+122°F) (nonfreezing) Other voltage: −10°C～+40°C (+14°F～+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	6 W (1/125 HP), 15 W (1/50 HP), 25 W (1/30 HP), 40 W (1/19 HP) Type: IP20 60 W (1/12 HP), 90 W (1/8 HP) Type: IP40

*Heat radiation plate (Material: Aluminum)

Motor Type	Size: mm (in.)	Thickness: mm (in.)
6 W (1/125 HP) Type	115×115 (4.53×4.53)	5 (0.20)
15 W (1/50 HP) Type	125×125 (4.92×4.92)	
25 W (1/30 HP) Type	135×135 (5.31×5.31)	
40 W (1/19 HP) Type	165×165 (6.50×6.50)	
60 W (1/12 HP), 90 W (1/8 HP) Type	200×200 (7.87×7.87)	

RoHS

Power Off Activated Type Electromagnetic Brake Motors

6 W (1/125 HP)

Frame Size: □60 mm (□2.36 in.)

(Gearhead sold separately)

Specifications RoHS

Motor

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
ZP **2RK6GN-AW2MU**	**2RK6A-AW2MU**	30 minutes	6 1/125	Single-Phase 110	60	0.235	45 6.3	41 5.8	1450	3.5
				Single-Phase 115		0.242				
ZP **2RK6GN-CW2ME**	**2RK6A-CW2ME**	30 minutes	6 1/125	Single-Phase 220	50	0.107	50 7.1	49 6.9	1150	0.8
					60	0.109	45 6.3	41 5.8	1450	
				Single-Phase 230	50	0.112	50 7.1	49 6.9	1200	
					60	0.113	45 6.3	41 5.8	1450	
ZP **2IK6GN-SW2M**	**2IK6A-SW2M**	Continuous	6 1/125	Three-Phase 200	50	0.081	49 6.9	49 6.9	1200	–
					60	0.072	41 5.8	41 5.8	1400	
				Three-Phase 220	60	0.076	41 5.8	41 5.8	1500	
				Three-Phase 230		0.079				

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

ZP: Impedance protected

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
2RK6GN-AW2MU **2RK6A-AW2MU**	Single-Phase 110	60	0.03	3	30 4.2
	Single-Phase 115				
2RK6GN-CW2ME **2RK6A-CW2ME**	Single-Phase 220	50	0.02	3	30 4.2
		60			
	Single-Phase 230	50			
		60			
2IK6GN-SW2M **2IK6A-SW2M**	Single-Phase 200	50	0.02	3	30 4.2
		60			
	Single-Phase 220	60			
	Single-Phase 230				

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
2RK6GN-AW2MU	**2RK6A-AW2MU**
2RK6GN-CW2ME	**2RK6A-CW2ME**
2IK6GN-SW2M	**2IK6A-SW2M**

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**2GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	2GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 3 N·m (26 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
2RK6GN-CW2ME 2IK6GN-SW2M	**2GN□SA**	0.12 1.06	0.14 1.23	0.20 1.77	0.24 2.1	0.30 2.6	0.36 3.1	0.50 4.4	0.60 5.3	0.71 6.2	0.89 7.8	1.1 9.7	1.3 11.5	1.6 14.1	1.9 16.8	2.4 21	2.9 25	3 26	3 26	3 26	3 26

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
2RK6GN-AW2MU 2RK6GN-CW2ME 2IK6GN-SW2M	**2GN□SA**	0.10 0.88	0.12 1.06	0.17 1.50	0.20 1.77	0.25 2.2	0.30 2.6	0.42 3.7	0.50 4.4	0.60 5.3	0.75 6.6	0.90 7.9	1.1 9.7	1.4 12.3	1.6 14.1	2.0 17.7	2.4 21	2.7 23	3 26	3 26	3 26

Permissible Overhung Load and Permissible Thrust Load

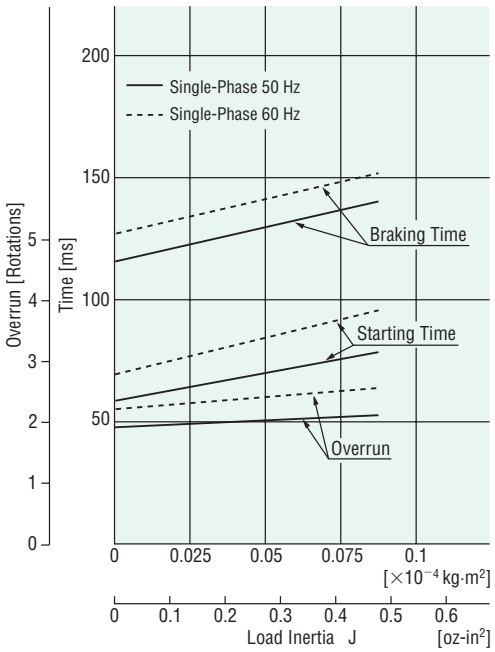
Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

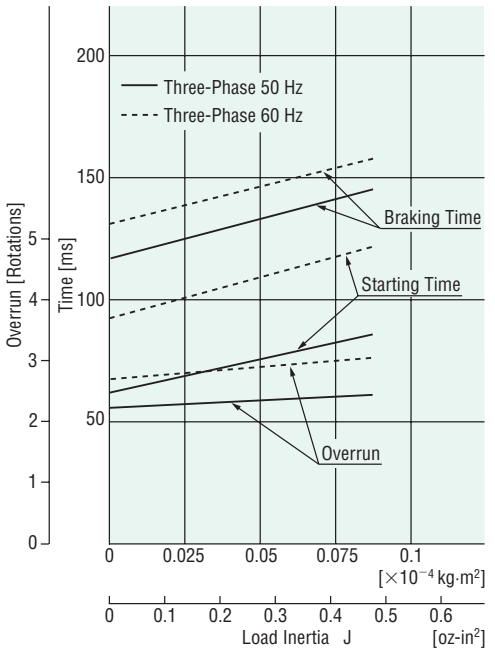
➜ Page 103

Starting and Braking Characteristics (Reference Values)

Single-Phase Motor



Three-Phase Motor



Dimensions Unit = mm (inch)

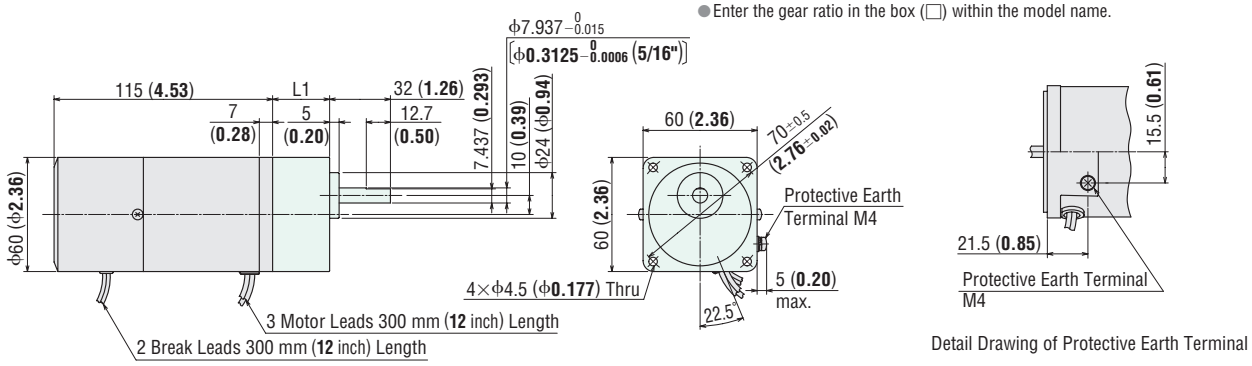
Mounting screws are included with gearheads.

◇Motor/Gearhead

Mass: Motor 0.9 kg (1.98 lb.)
Gearhead 0.4 kg (0.88 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
2RK6GN-AW2MU **2RK6GN-CW2ME** **2IK6GN-SW2M**	**2GN□SA**	**3～18**	30 (1.18)	A462AU
		25～180	40 (1.57)	A462BU

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

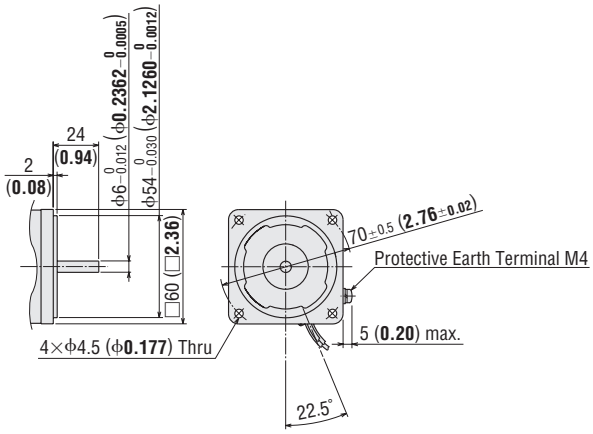


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 0.9 kg (1.98 lb.)

CAD A463



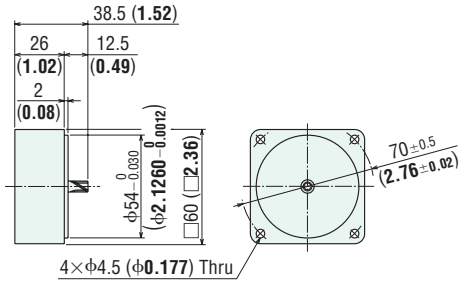
◇Decimal Gearhead

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

2GN10XS

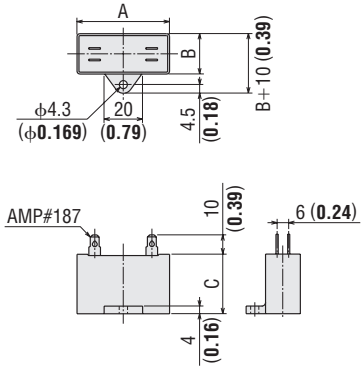
Mass: 0.2 kg (0.44 lb.)

CAD A003



◇Capacitor

(Included with single-phase motors)



◇Capacitor Dimensions mm (inch)

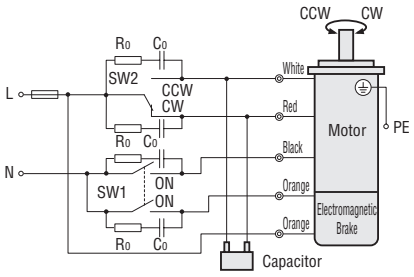
Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
2RK6GN-AW2MU	**2RK6A-AW2MU**	CH35FAUL2	31 (1.22)	17 (0.67)	27 (1.06)	25 (0.88)	Included
2RK6GN-CW2ME	**2RK6A-CW2ME**	CH08BFAUL	31 (1.22)	17 (0.67)	27 (1.06)	20 (0.71)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Single-Phase Motor

2RK6GN-AW2MU
2RK6GN-CW2ME



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

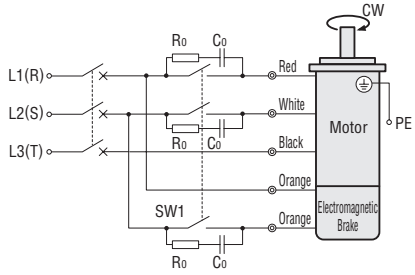
If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 3 A minimum (Inductive Load)	250 VAC 1.5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

Three-Phase Motor

2IK6GN-SW2M



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To change the rotation direction, change any two connections between R, S and T.

Switch No.	Specifications	Note
SW1	250 VAC 1.5 A minimum (Inductive Load)	Switched Simultaneously

PE: Protective Earth

- Ro and Co indicate surge suppressor circuit. [Ro=5~200 Ω, Co=0.1~0.2 μF, 200 WV (400 WV)]
  EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Power Off Activated Type Electromagnetic Brake Motors

15 W (1/50 HP)

Frame Size: □70 mm (□2.76 in.)

(Gearhead sold separately)

Specifications RoHS

Motor

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP 3RK15GN-AW2MU	3RK15A-AW2MU	30 minutes	15 1/50	Single-Phase 110	60	0.42	100 14.2	105 14.9	1450	6.0
				Single-Phase 115		0.41				
TP 3RK15GN-CW2ME	3RK15A-CW2ME	30 minutes	15 1/50	Single-Phase 220	50	0.18	100 14.2	125 17.7	1200	1.5
					60	0.20		105 14.9	1450	
				Single-Phase 230	50	0.19	100 14.2	125 17.7	1200	
					60	0.20		105 14.9	1450	

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is opened and the motor stops. (The power supply to the electromagnetic brake is kept and the brake is released.) When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
3RK15GN-AW2MU 3RK15A-AW2MU	Single-Phase 110	60	0.09	7	80 11.3
	Single-Phase 115				
3RK15GN-CW2ME 3RK15A-CW2ME	Single-Phase 220	50	0.05	7	80 11.3
		60			
	Single-Phase 230	50			
		60			

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
3RK15GN-AW2MU	3RK15A-AW2MU
3RK15GN-CW2ME	3RK15A-CW2ME

Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	3GN□SA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	3GN10XS (Decimal gearhead)	

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 5 N·m (44 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
3RK15GN-CW2ME	**3GN□SA**	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
3RK15GN-AW2MU **3RK15GN-CW2ME**	**3GN□SA**	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

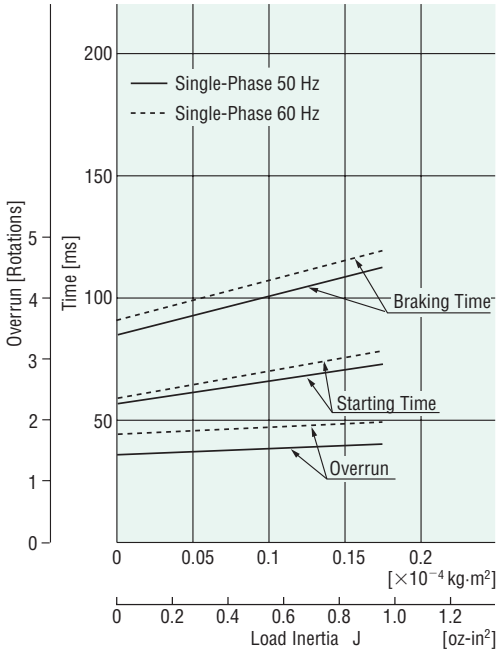
Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

➜ Page 103

Starting and Braking Characteristics (Reference Values)



Dimensions Unit = mm (inch)

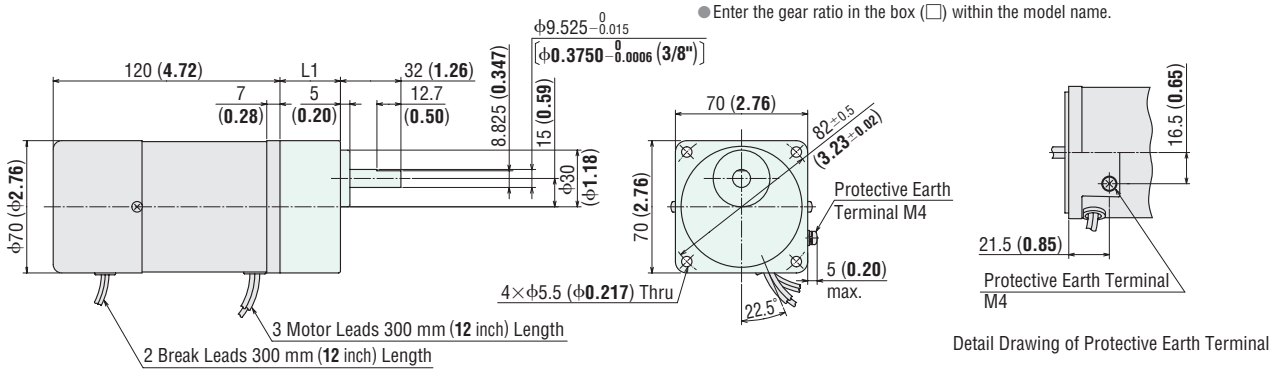
Mounting screws are included with gearheads.

◇Motor/Gearhead

Mass: Motor 1.3 kg (2.9 lb.)
Gearhead 0.55 kg (1.21 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
3RK15GN-AW2MU **3RK15GN-CW2ME**	**3GN□SA**	**3~18**	32 (1.26)	A464AU
		25~180	42 (1.65)	A464BU

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

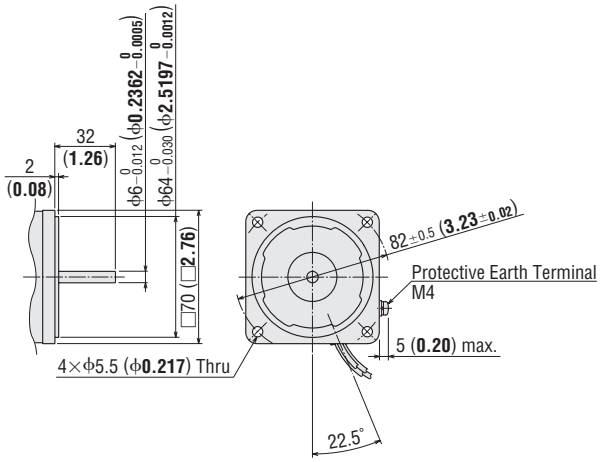


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 1.3 kg (2.9 lb.)

CAD A465



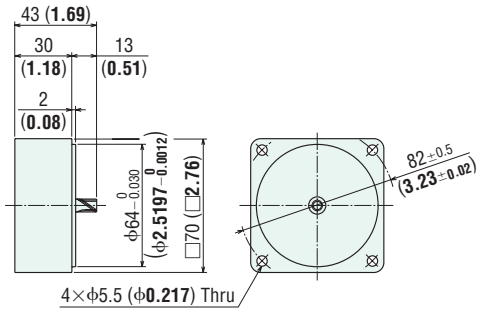
◇Decimal Gearhead

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

3GN10XS

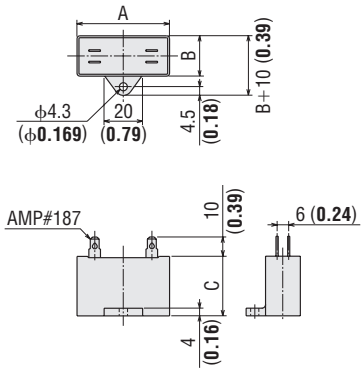
Mass: 0.3 kg (0.66 lb.)

CAD A009



◇Capacitor

(Included with the motors)



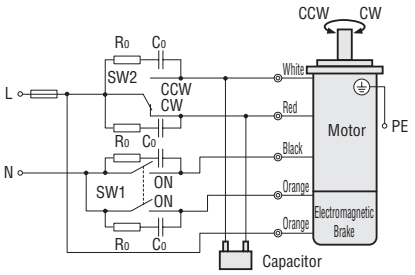
◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
3RK15GN-AW2MU	**3RK15A-AW2MU**	CH60CFAUL2	38 (1.50)	21 (0.83)	31 (1.22)	40 (1.41)	Included
3RK15GN-CW2ME	**3RK15A-CW2ME**	CH15BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	35 (1.24)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

3RK15GN-AW2MU
3RK15GN-CW2ME



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 3 A minimum (Inductive Load)	250 VAC 1.5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

PE: Protective Earth

- R_0 and C_0 indicate surge suppressor circuit. [R_0=5～200 Ω, C_0=0.1～0.2 μF, 200 WV (400 WV)]
  EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

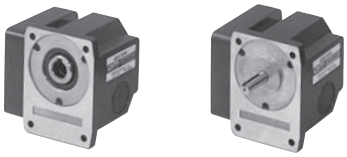
Power Off Activated Type Electromagnetic Brake Motors

25 W (1/30 HP)

Frame Size: □80 mm (□3.15 in.)

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104



Specifications RoHS

Motor

c UL us CE

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP **4RK25GN-AW2MU**	**4RK25A-AW2MU**	30 minutes	25 1/30	Single-Phase 110	60	0.54	140 19.8	170 24	1450	8.0
				Single-Phase 115						
TP **4RK25GN-CW2ME**	**4RK25A-CW2ME**	30 minutes	25 1/30	Single-Phase 220	60	0.28	140 19.8	170 24	1450	2.0
				Single-Phase 230	50	0.25	160 22	205 29	1200	
					60	0.28	140 19.8	170 24	1450	
TP **4IK25GN-SW2M**	**4IK25A-SW2M**	Continuous	25 1/30	Three-Phase 200	50	0.23	240 34	190 26	1300	–
					60	0.21	160 22	160 22	1550	
				Three-Phase 220	60	0.20	160 22	150 21	1600	
				Three-Phase 230		0.21				

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is opened and the motor stops. (The power supply to the electromagnetic brake is kept and the brake is released.) When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
4RK25GN-AW2MU **4RK25A-AW2MU**	Single-Phase 110	60	0.09	6	100 14.2
	Single-Phase 115				
4RK25GN-CW2ME **4RK25A-CW2ME**	Single-Phase 220	60	0.05	7	100 14.2
	Single-Phase 230	50			
		60			
4IK25GN-SW2M **4IK25A-SW2M**	Single-Phase 200	50	0.05	7	100 14.2
		60			
	Single-Phase 220	60			
	Single-Phase 230				

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
4RK25GN-AW2MU	**4RK25A-AW2MU**
4RK25GN-CW2ME	**4RK25A-CW2ME**
4IK25GN-SW2M	**4IK25A-SW2M**

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	**4GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	4GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	**4GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Right-Angle/ Solid Shaft	**4GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 8 N·m (70 lb-in). When a gearhead of 1/25～1/36 is connected, the value for permissible torque is 6 N·m (53 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
4RK25GN-CW2ME / **4GN□SA**		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
4IK25GN-SW2M / **4GN□SA**		0.46 4.0	0.55 4.8	0.77 6.8	0.92 8.1	1.2 10.6	1.4 12.3	1.9 16.8	2.3 20	2.8 24	3.5 30	4.2 37	5.0 44	6.3 55	7.5 66	8 70	8 70	8 70	8 70	8 70	8 70

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
4RK25GN-AW2MU **4RK25GN-CW2ME** / **4GN□SA**		0.41 3.6	0.50 4.4	0.69 6.1	0.83 7.3	1.0 8.8	1.2 10.6	1.7 15.0	2.1 18.5	2.5 22	3.1 27	3.7 32	4.5 39	5.6 49	6.7 59	8 70	8 70	8 70	8 70	8 70	8 70
4IK25GN-SW2M (200 VAC) / **4GN□SA**		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
4IK25GN-SW2M (220/230 VAC) / **4GN□SA**		0.36 3.1	0.44 3.8	0.61 5.3	0.73 6.4	0.91 8.0	1.1 9.7	1.5 13.2	1.8 15.9	2.2 19.4	2.7 23	3.3 29	3.9 34	5.0 44	5.9 52	7.4 65	8 70	8 70	8 70	8 70	8 70

Permissible Overhung Load and Permissible Thrust Load

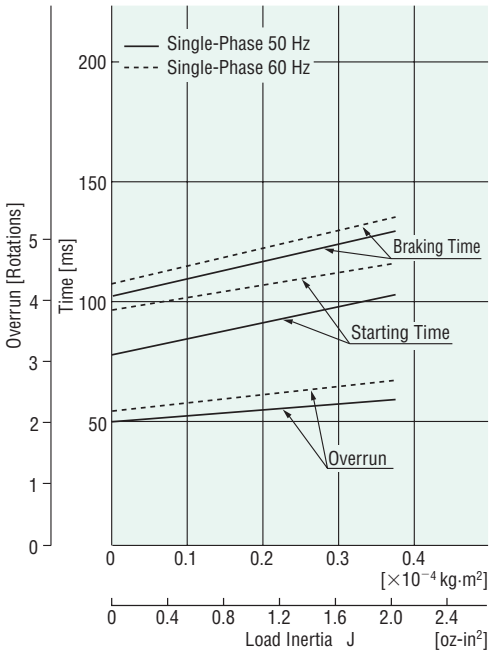
Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

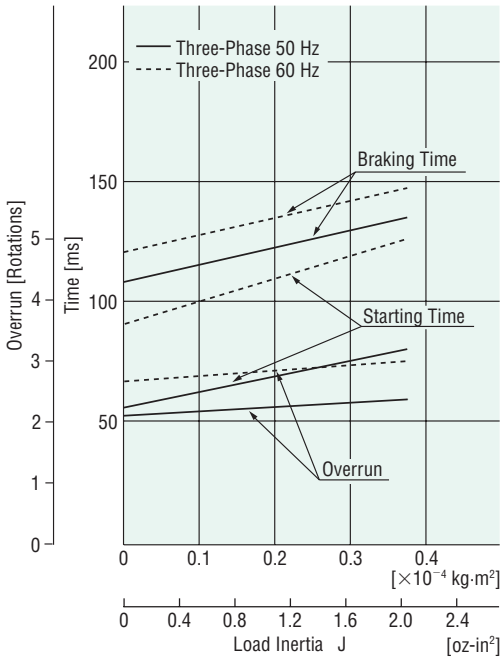
➜ Page 103

Starting and Braking Characteristics (Reference Values)

●Single-Phase Motor



●Three-Phase Motor



Dimensions Unit = mm (inch)

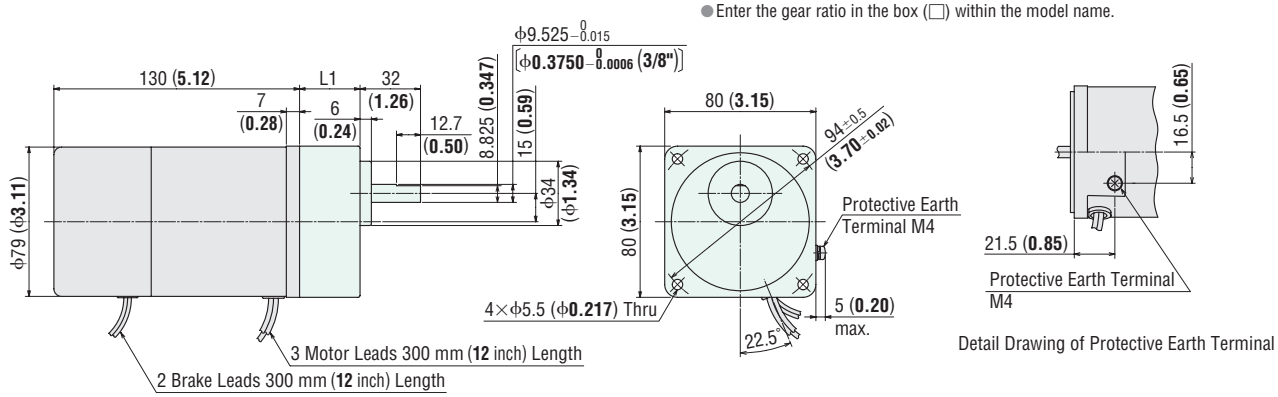
Mounting screws are included with gearheads.

◇Motor/Gearhead

Mass: Motor 2.0 kg (4.4 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4RK25GN-AW2MU **4RK25GN-CW2ME** **4IK25GN-SW2M**	**4GN□SA**	**3~18**	32 (1.26)	A466AU
		25~180	42.5 (1.67)	A466BU

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

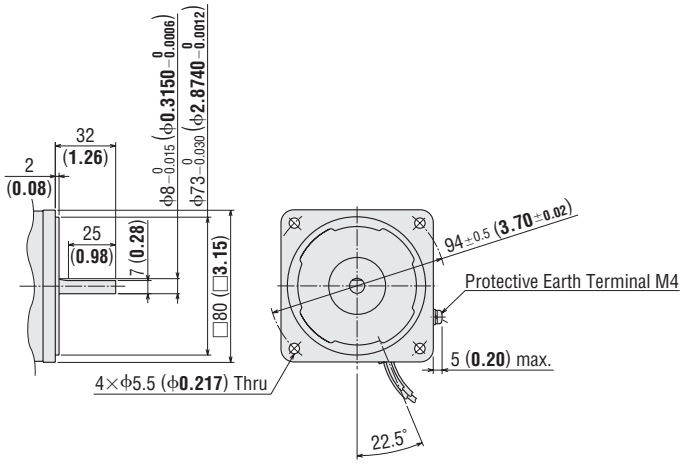


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 2.0 kg (4.4 lb.)

CAD A467



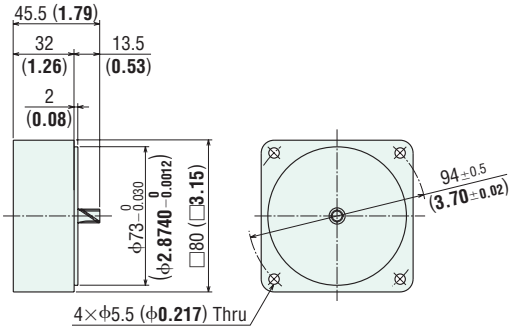
◇Decimal Gearhead

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

4GN10XS

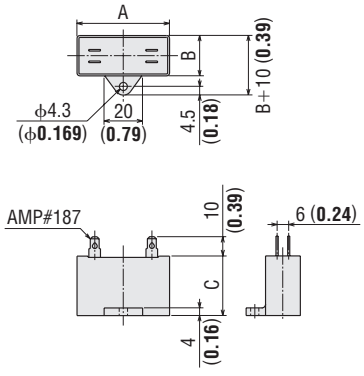
Mass: 0.4 kg (0.88 lb.)

CAD A013



◇Capacitor

(Included with single-phase motors)



◇Capacitor Dimensions mm (inch)

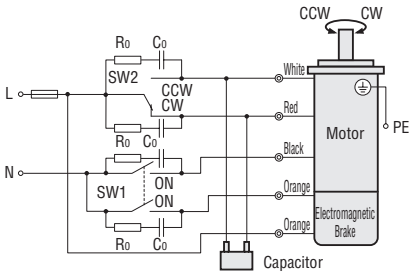
Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
4RK25GN-AW2MU	**4RK25A-AW2MU**	CH80CFAUL2	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	Included
4RK25GN-CW2ME	**4RK25A-CW2ME**	CH20BFAUL	48 (1.89)	19 (0.75)	29 (1.14)	35 (1.24)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Single-Phase Motor

4RK25GN-AW2MU
4RK25GN-CW2ME



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

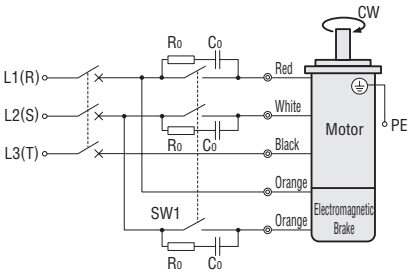
If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 3 A minimum (Inductive Load)	250 VAC 1.5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

Three-Phase Motor

4IK25GN-SW2M



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To change the rotation direction, change any two connections between R, S and T.

Switch No.	Specifications	Note
SW1	250 VAC 1.5 A minimum (Inductive Load)	Switched Simultaneously

PE: Protective Earth

- Ro and Co indicate surge suppressor circuit. [Ro=5~200 Ω, Co=0.1~0.2 μF, 200 WV (400 WV)]
  EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

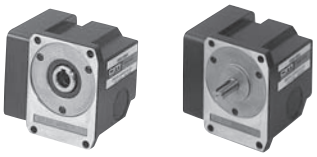
Power Off Activated Type Electromagnetic Brake Motors

40 W (1/19 HP)

Frame Size: □90 mm (□3.54 in.)

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104



Specifications RoHS

Motor

c UL us CCC CE

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP 5RK40GN-AW2MU	5RK40A-AW2MU	30 minutes	40 1/19	Single-Phase 110	60	0.81	260 36	270 38	1450	12
				Single-Phase 115						
TP 5RK40GN-CW2ME	5RK40A-CW2ME	30 minutes	40 1/19	Single-Phase 220	60	0.43	260 36	260 36	1500	3.5
				Single-Phase 230	50	0.38	270 38	315 44	1250	
					60	0.43	260 36	260 36	1500	
TP 5IK40GN-SW2M	5IK40A-SW2M	Continuous	40 1/19	Three-Phase 200	50	0.32	400 56	300 42	1300	–
					60	0.30	260 36	260 36	1550	
				Three-Phase 220	60	0.30	260 36	260 36	1600	
				Three-Phase 230		0.31				

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is opened and the motor stops. (The power supply to the electromagnetic brake is kept and the brake is released.) When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
5RK40GN-AW2MU 5RK40A-AW2MU	Single-Phase 110	60	0.09	6	200 28
	Single-Phase 115				
5RK40GN-CW2ME 5RK40A-CW2ME	Single-Phase 220	60	0.05	7	200 28
	Single-Phase 230	50			
		60			
5IK40GN-SW2M 5IK40A-SW2M	Single-Phase 200	50	0.05	7	200 28
		60			
	Single-Phase 220	60			
	Single-Phase 230				

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
5RK40GN-AW2MU	5RK40A-AW2MU
5RK40GN-CW2ME	5RK40A-CW2ME
5IK40GN-SW2M	5IK40A-SW2M

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/Low Noise/ Parallel Shaft	5GN□SA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	5GN10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	5GN□RH	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
Right-Angle/ Solid Shaft	5GN□RAA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 10 N·m (88 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK40GN-CW2ME / **5GN□SA**		0.77 6.8	0.92 8.1	1.3 11.5	1.5 13.2	1.9 16.8	2.3 20	3.2 28	3.8 33	4.6 40	5.7 50	6.9 61	8.3 73	10 88	10 88	10 88	10 88	10 88	10 88	10 88	10 88
5IK40GN-SW2M / **5GN□SA**		0.73 6.4	0.87 7.6	1.2 10.6	1.5 13.2	1.8 15.9	2.2 19.4	3.0 26	3.6 31	4.4 38	5.5 48	6.6 58	7.9 69	9.9 87	10 88	10 88	10 88	10 88	10 88	10 88	10 88

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK40GN-AW2MU / **5GN□SA**		0.66 5.8	0.79 6.9	1.1 9.7	1.3 11.5	1.6 14.1	2.0 17.7	2.7 23	3.3 29	3.9 34	4.9 43	5.9 52	7.1 62	8.9 78	10 88	10 88	10 88	10 88	10 88	10 88	10 88
5RK40GN-CW2ME **5IK40GN-SW2M** / **5GN□SA**		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

Permissible Overhung Load and Permissible Thrust Load

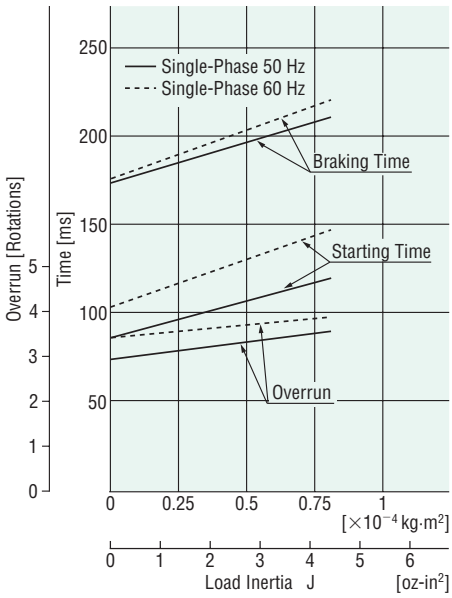
Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

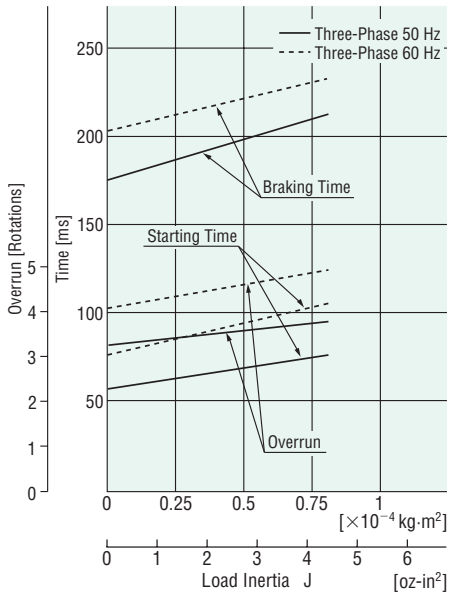
➜ Page 103

Starting and Braking Characteristics (Reference Values)

Single-Phase Motor



Three-Phase Motor



Dimensions Unit = mm (inch)

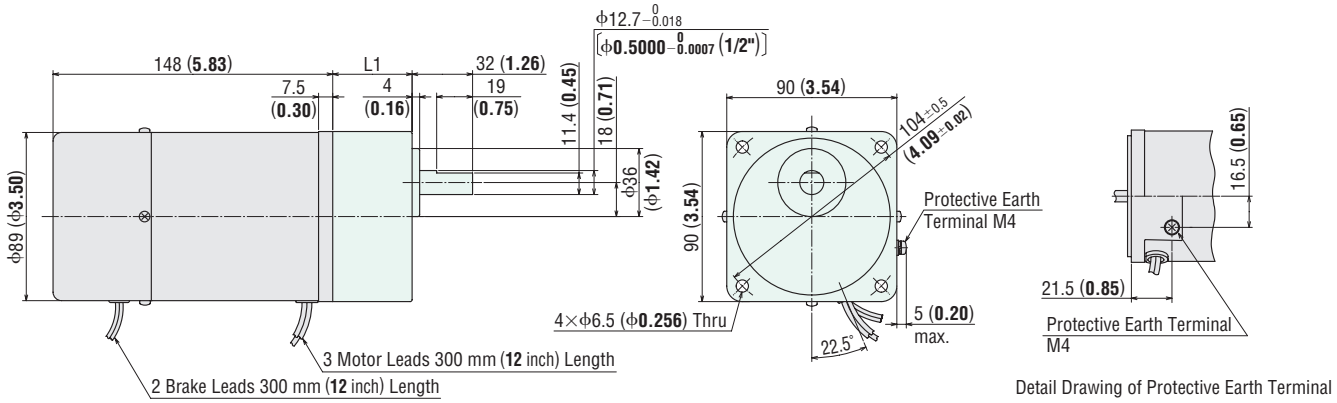
Mounting screws are included with gearheads.

◇Motor/Gearhead

Mass: Motor 2.8 kg (6.2 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5RK40GN-AW2MU **5RK40GN-CW2ME** **5IK40GN-SW2M**	**5GN□SA**	**3～18**	42 (1.65)	A468AU
		25～180	60 (2.36)	A468BU

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

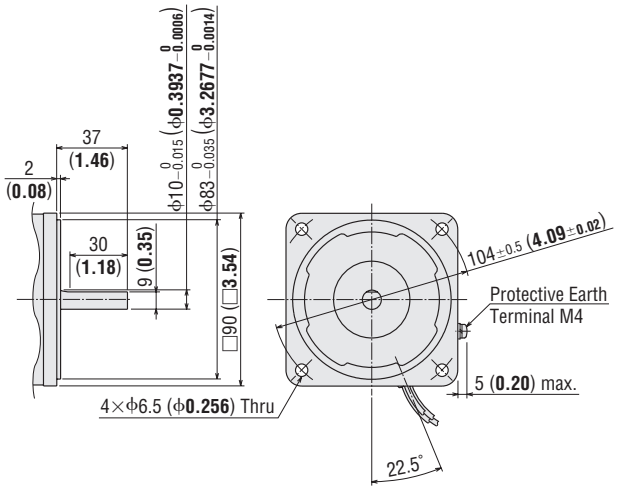


Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

Mass: 2.8 kg (6.2 lb.)

CAD A469



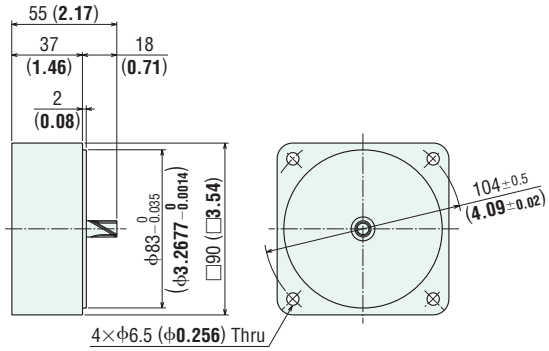
◇Decimal Gearhead

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

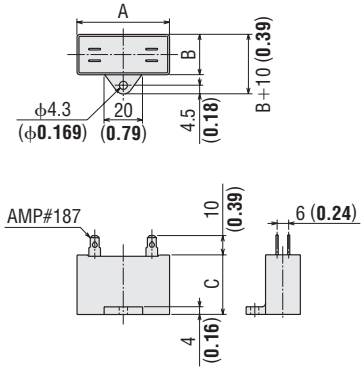
5GN10XS

Mass: 0.6 kg (1.32 lb.)

CAD A022



◇Capacitor (Included with single-phase motors)



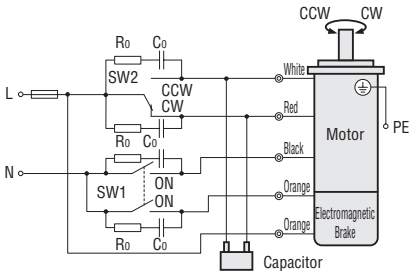
◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
5RK40GN-AW2MU	**5RK40A-AW2MU**	CH120CFAUL2	58 (2.28)	22 (0.87)	35 (1.38)	60 (2.1)	Included
5RK40GN-CW2ME	**5RK40A-CW2ME**	CH35BFAUL	58 (2.28)	22 (0.87)	35 (1.38)	55 (1.94)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Single-Phase Motor — 5RK40GN-AW2MU, 5RK40GN-CW2ME



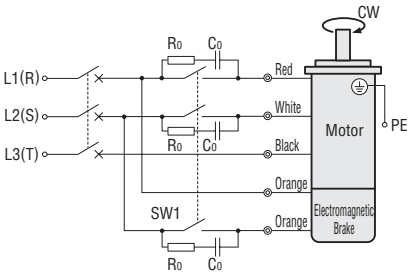
SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 5 A minimum (Inductive Load)	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

Three-Phase Motor — 5IK40GN-SW2M



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To change the rotation direction, change any two connections between R, S and T.

Switch No.	Specifications	Note
SW1	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously

PE: Protective Earth

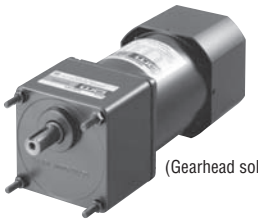
- Ro and Co indicate surge suppressor circuit. [Ro=5~200 Ω, Co=0.1~0.2 μF, 200 WV (400 WV)]
  EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

Power Off Activated Type Electromagnetic Brake Motors

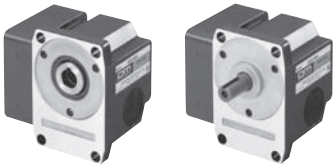
60 W (1/12 HP)

Frame Size: □90 mm (□3.54 in.)



(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104



Specifications RoHS

Motor

cULus CE

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP 5RK60GE-AW2MU	5RK60A-AW2MU	30 minutes	60 1/12	Single-Phase 110 Single-Phase 115	60	1.24	380 53	405 57	1450	20
TP 5RK60GE-CW2ME	5RK60A-CW2ME	30 minutes	60 1/12	Single-Phase 220	60	0.61	380 53	405 57	1450	5.0
				Single-Phase 230	50	0.59	470 66	490 69	1200	
					60	0.61	380 53	405 57	1450	
TP 5IK60GE-SW2M	5IK60A-SW2M	Continuous	60 1/12	Three-Phase 200	50	0.50	600 85	450 63	1300	–
					60	0.43	500 71	380 53	1550	
				Three-Phase 220 Three-Phase 230	60	0.45 0.46	500 71	380 53	1600	

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is opened and the motor stops. (The power supply to the electromagnetic brake is kept and the brake is released.) When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
5RK60GE-AW2MU 5RK60A-AW2MU	Single-Phase 110 Single-Phase 115	60	0.13	10	500 71
5RK60GE-CW2ME 5RK60A-CW2ME	Single-Phase 220	60	0.07	10	500 71
	Single-Phase 230	50 60			
5IK60GE-SW2M 5IK60A-SW2M	Single-Phase 200	50 60	0.07	10	500 71
	Single-Phase 220 Single-Phase 230	60			

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
5RK60GE-AW2MU	5RK60A-AW2MU
5RK60GE-CW2ME	5RK60A-CW2ME
5IK60GE-SW2M	5IK60A-SW2M

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	5GE□SA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	5GE□RH	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
Right-Angle/ Solid Shaft	5GE□RAA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK60GE-CW2ME / **5GE□SA**		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
5IK60GE-SW2M / **5GE□SA**		1.1 9.7	1.3 11.5	1.8 15.9	2.2 19.7	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

◇60 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK60GE-AW2MU **5RK60GE-CW2ME** / **5GE□SA**		0.98 8.6	1.2 10.6	1.6 14.1	2.0 17.7	2.5 22	3.0 26	3.7 32	4.4 38	5.3 46	6.7 59	8.0 70	9.6 84	13.4 118	16.0 141	17.9 158	20 177	20 177	20 177	20 177	20 177
5IK60GE-SW2M / **5GE□SA**		0.92 8.1	1.1 9.7	1.5 13.2	1.8 15.9	2.3 20	2.8 24	3.5 30	4.2 37	5.0 44	6.3 55	7.5 66	9.0 79	12.5 110	15.0 132	16.8 148	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

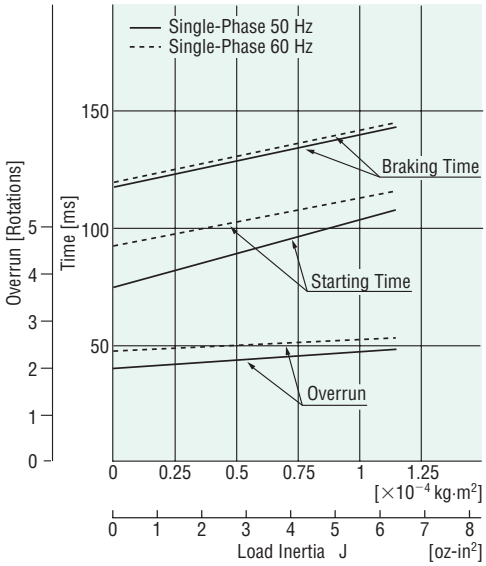
Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

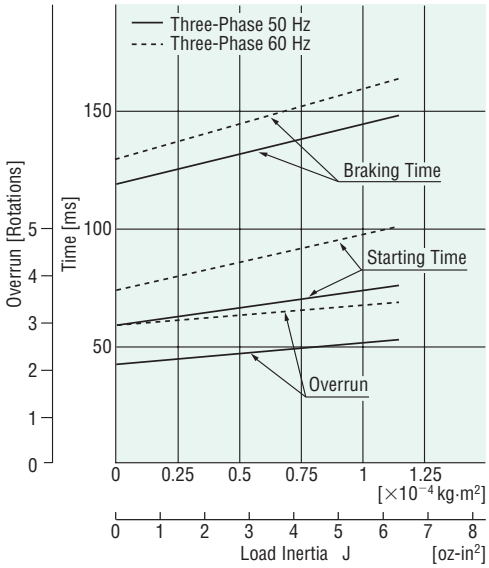
➜ Page 103

Starting and Braking Characteristics (Reference Values)

Single-Phase Motor



Three-Phase Motor



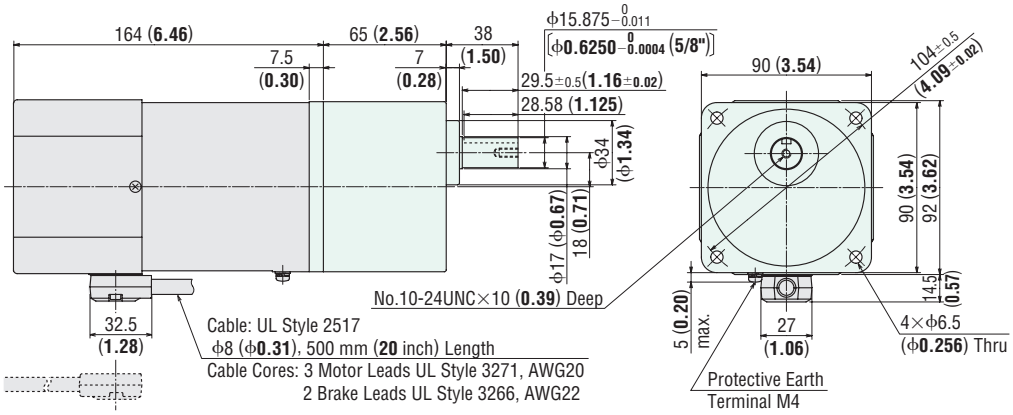
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

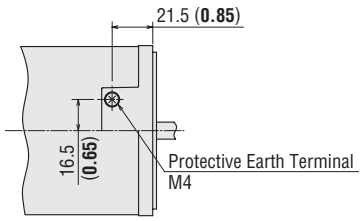
◇Motor/Gearhead

Mass: Motor 3.4 kg (7.5 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A470U

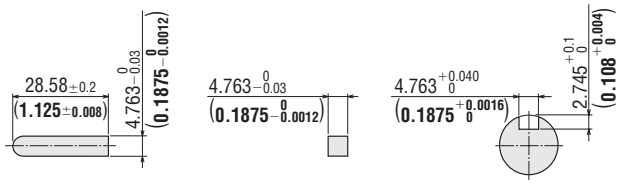


● Cable direction can be switched to the opposite direction.



Detail Drawing of Protective Earth Terminal

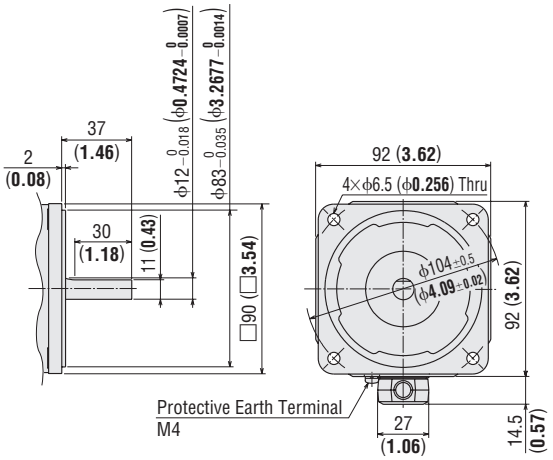
◇Key and Key Slot (The key is included with the gearhead)



◇Round Shaft Type

Mass: 3.4 kg (7.5 lb.)

CAD A471



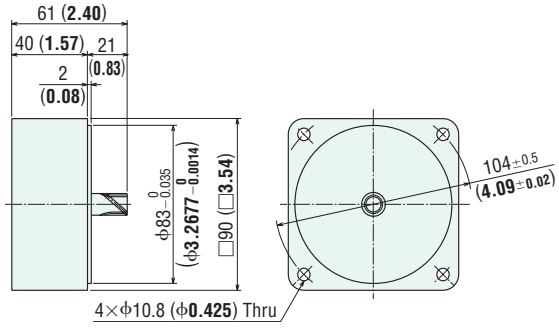
◇Decimal Gearhead

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

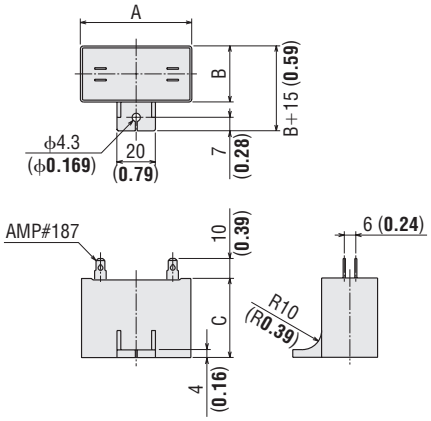
5GE10XS

Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor
(Included with single-phase motors)



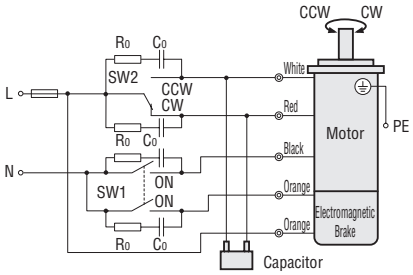
◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
5RK60GE-AW2MU	**5RK60A-AW2MU**	CH200CFAUL2	58 (2.28)	29 (1.14)	41 (1.61)	95 (3.4)	Included
5RK60GE-CW2ME	**5RK60A-CW2ME**	CH50BFAUL	58 (2.28)	29 (1.14)	41 (1.61)	85 (3.0)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Single-Phase Motor — 5RK60GE-AW2MU, 5RK60GE-CW2ME



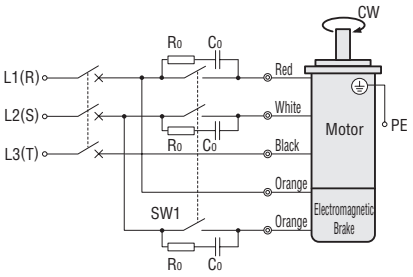
SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 5 A minimum (Inductive Load)	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

Three-Phase Motor — 5IK60GE-SW2M



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To change the rotation direction, change any two connections between R, S and T.

Switch No.	Specifications	Note
SW1	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously

PE: Protective Earth

- Ro and Co indicate surge suppressor circuit. [Ro=5～200 Ω, Co=0.1～0.2 μF, 200 WV (400 WV)]
  EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

RoHS

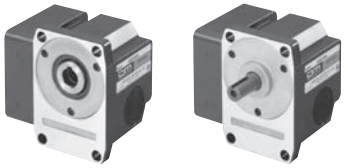
Power Off Activated Type Electromagnetic Brake Motors

90 W (1/8 HP)

Frame Size: □90 mm (□3.54 in.)

(Gearhead sold separately)

Right-angle gearheads (hollow shaft or solid shaft) can be combined.
Right-Angle Gearheads ➜ Page 104



Specifications RoHS

Motor

c UL us CE

Model		Rating	Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor
Pinion Shaft Type	Round Shaft Type		W HP	VAC	Hz	A	mN·m oz-in	mN·m oz-in	r/min	μF
TP 5RK90GE-AW2MU	5RK90A-AW2MU	30 minutes	90 1/8	Single-Phase 110	60	1.81	590 83	585 83	1500	30
				Single-Phase 115						
TP 5RK90GE-CW2ME	5RK90A-CW2ME	30 minutes	90 1/8	Single-Phase 220	60	0.96	590 83	605 85	1450	7.0
				Single-Phase 230	50	0.82	600 85	730 103	1200	
					60	0.96	590 83	605 85	1450	
TP 5IK90GE-SW2M	5IK90A-SW2M	Continuous	90 1/8	Three-Phase 200	50	0.64	850 120	680 96	1300	–
					60	0.59	700 99	570 80	1550	
				Three-Phase 220	60	0.60	700 99	570 80	1600	
				Three-Phase 230		0.61				

- This type of motor does not contain a built-in friction brake mechanism.
- The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate. When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

TP: Contains a built-in thermal protector (automatic return type). If a motor overheats for any reason, the thermal protector is opened and the motor stops. (The power supply to the electromagnetic brake is kept and the brake is released.) When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

Electromagnetic Brake (Power Off Activated Type)

Motor Model	Voltage VAC	Frequency Hz	Current A	Input W	Holding Brake Torque mN·m oz-in
5RK90GE-AW2MU 5RK90A-AW2MU	Single-Phase 110	60	0.13	10	500 71
	Single-Phase 115				
5RK90GE-CW2ME 5RK90A-CW2ME	Single-Phase 220	60	0.07	10	500 71
	Single-Phase 230	50			
		60			
5IK90GE-SW2M 5IK90A-SW2M	Single-Phase 200	50	0.07	10	500 71
		60			
	Single-Phase 220	60			
	Single-Phase 230				

Product Line

Motor RoHS

Model	
Pinion Shaft Type	Round Shaft Type
5RK90GE-AW2MU	5RK90A-AW2MU
5RK90GE-CW2ME	5RK90A-CW2ME
5IK90GE-SW2M	5IK90A-SW2M

Gearhead/Right-Angle Gearhead (Sold Separately) RoHS

Type	Gearhead Model	Gear Ratio
Long Life/ Parallel Shaft	5GE□SA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
	5GE10XS (Decimal gearhead)	
Right-Angle/ Hollow Shaft	5GE□RH	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180
Right-Angle/ Solid Shaft	5GE□RAA	3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180

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

Gearmotor – Torque Table

- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the gearhead 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.
- The speed is calculated by dividing the motor's synchronous speed (50 Hz: 1500 r/min, 60 Hz: 1800 r/min) by the gear ratio. The actual speed is 2 - 20% less than the displayed value, depending on the size of the load.
- To reduce the speed beyond the gear ratio in the table, attach a decimal gearhead (gear ratio 10:1) between the gearhead and the motor. In that case, the permissible torque is 20 N·m (177 lb-in).

◇50 Hz

Unit = Upper values: N·m/ Lower values: lb-in

Model	Speed r/min	500	416	300	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
Motor/ Gearhead	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**
5RK90GE-CW2ME / **5GE□SA**		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
5IK90GE-SW2M / **5GE□SA**		1.7 15.0	2.0 17.7	2.8 24	3.3 29	4.1 36	5.0 44	6.2 54	7.4 65	8.9 78	11.2 99	13.5 119	16.2 143	20 177	20 177	20 177	20 177	20 177	20 177	20 177	20 177

◇60 Hz

Unit = Uppper values: N·m/ Lower values: lb-in

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Motor/ Gearhead	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**
5RK90GE-AW2MU / **5GE□SA**		1.4 12.3	1.7 15.0	2.4 21	2.8 24	3.6 31	4.3 38	5.3 46	6.4 56	7.7 68	9.7 85	11.6 102	13.9 123	19.3 170	20 177	20 177	20 177	20 177	20 177	20 177	20 177
5RK90GE-CW2ME / **5GE□SA**		1.5 13.2	1.8 15.9	2.5 22	2.9 25	3.7 32	4.4 38	5.5 48	6.6 58	7.9 69	10.0 88	12.0 106	14.4 127	20 177	20 177	20 177	20 177	20 177	20 177	20 177	20 177
5IK90GE-SW2M / **5GE□SA**		1.4 12.3	1.7 15.0	2.3 20	2.8 24	3.5 30	4.2 37	5.2 46	6.2 54	7.5 66	9.4 83	11.3 100	13.5 119	18.8 166	20 177	20 177	20 177	20 177	20 177	20 177	20 177

Permissible Overhung Load and Permissible Thrust Load

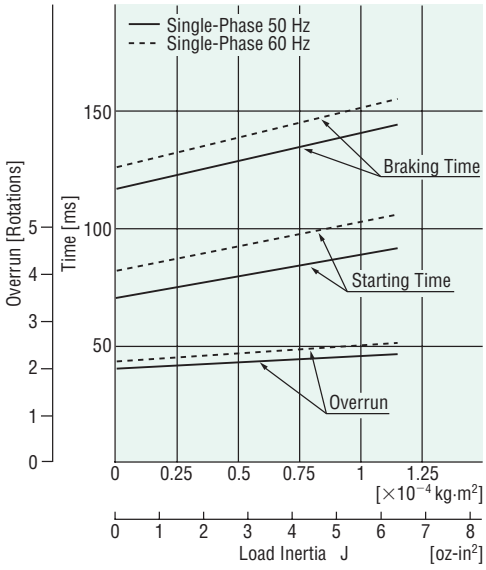
Motor (Round shaft type) ➜ Page 103
Gearhead ➜ Page 103

Permissible Load Inertia J for Gearhead

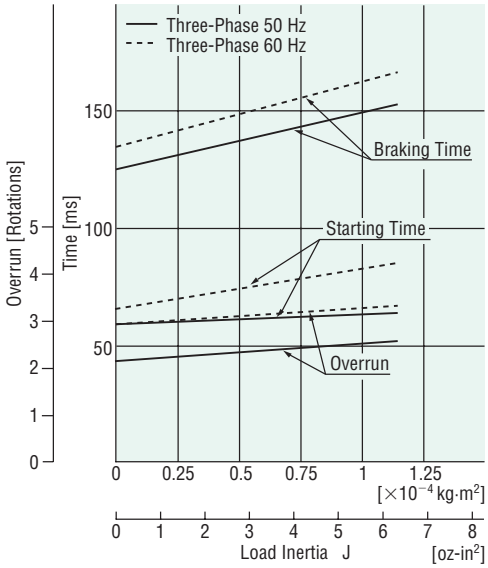
➜ Page 103

Starting and Braking Characteristics (Reference Values)

Single-Phase Motor



Three-Phase Motor



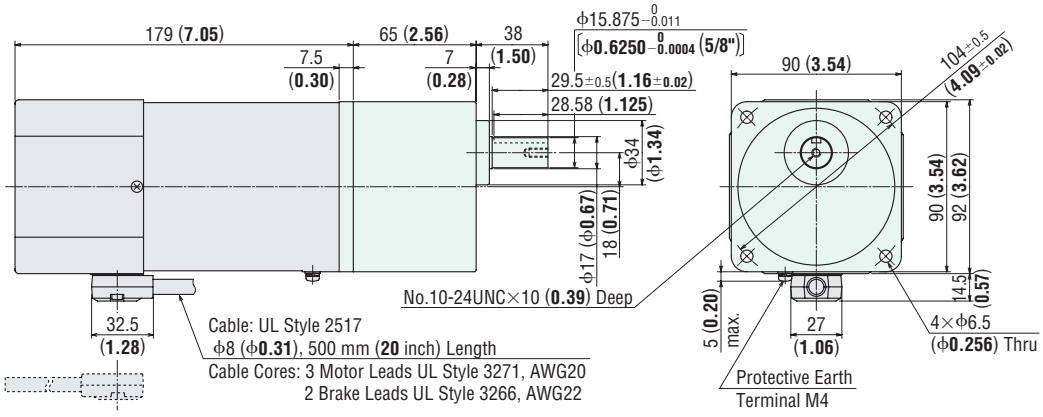
Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

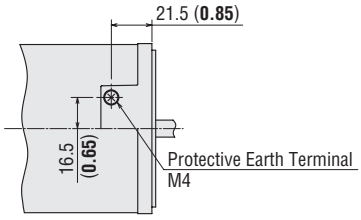
◇Motor/Gearhead

Mass: Motor 3.9 kg (8.6 lb.)
Gearhead 1.5 kg (3.3 lb.)

CAD A472U



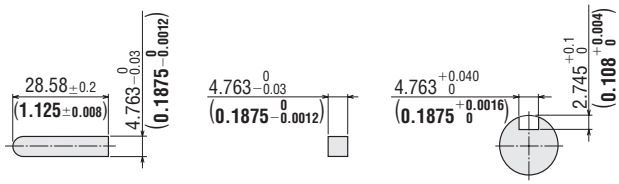
● Cable direction can be switched to the opposite direction.



Detail Drawing of Protective Earth Terminal

◇Key and Key Slot

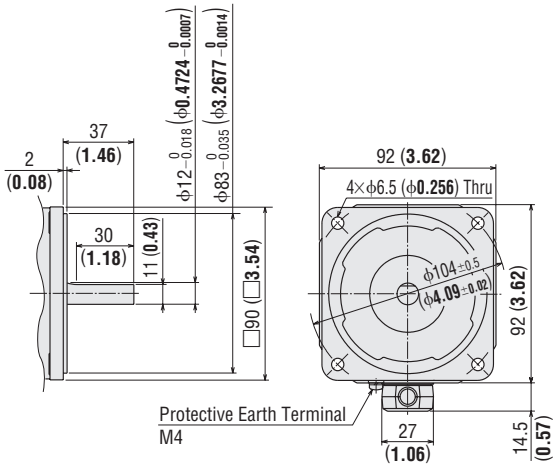
(The key is included with the gearhead)



◇Round Shaft Type

Mass: 3.9 kg (8.6 lb.)

CAD A473



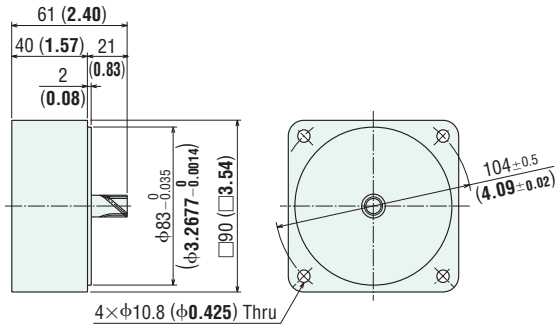
◇Decimal Gearhead

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

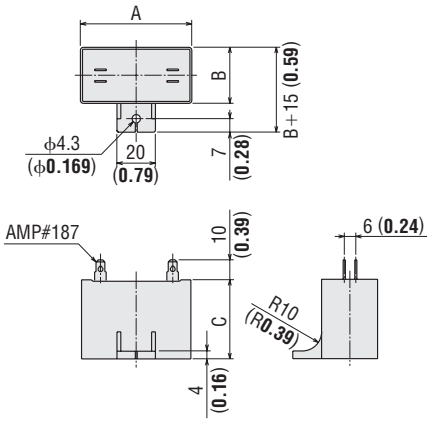
5GE10XS

Mass: 0.6 kg (1.32 lb.)

CAD A029



◇Capacitor (Included with single-phase motors)



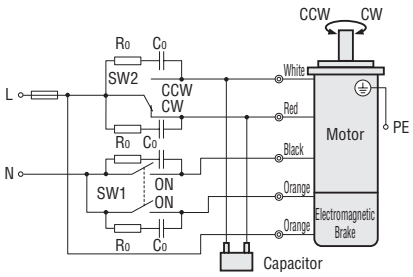
◇Capacitor Dimensions mm (inch)

Model		Capacitor Model	A	B	C	Mass g (oz.)	Capacitor Cap
Pinion Shaft Type	Round Shaft Type						
5RK90GE-AW2MU	**5RK90A-AW2MU**	CH300CFAUL2	58 (2.28)	35 (1.38)	50 (1.97)	140 (4.9)	Included
5RK90GE-CW2ME	**5RK90A-CW2ME**	CH70BFAUL	58 (2.28)	35 (1.38)	50 (1.97)	130 (4.6)	

Connection Diagrams

- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

Single-Phase Motor — 5RK90GE-AW2MU, 5RK90GE-CW2ME



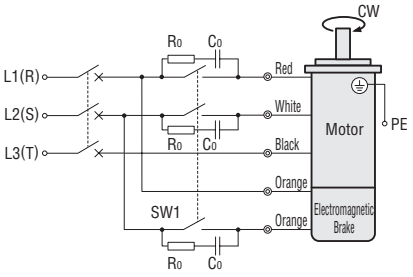
SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

Switch No.	Specifications		Note
	Single-Phase 110/115 VAC Input	Single-Phase 220/230 VAC Input	
SW1	125 VAC 5 A minimum (Inductive Load)	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously
SW2			—

Three-Phase Motor — 5IK90GE-SW2M



SW1 operates both motor and electromagnetic brake action.
The motor will rotate when SW1 is switched simultaneously to ON.
When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.

If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (orange).

Direction of Rotation
To change the rotation direction, change any two connections between R, S and T.

Switch No.	Specifications	Note
SW1	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously

PE: Protective Earth

- Ro and Co indicate surge suppressor circuit. [Ro=5～200 Ω, Co=0.1～0.2 μF, 200 WV (400 WV)]

EPCR1201-2 is available as an optional surge suppressor. ➜ Page 119

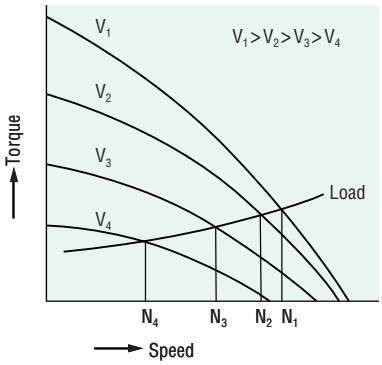
RoHS RoHS-Compliant

Torque Motors

Features

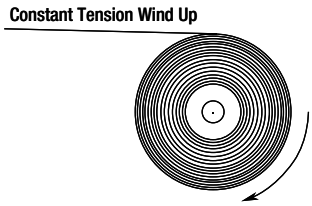
The Speed Can Vary Widely

Torque motors have a high starting torque and torque that decreases as speed increases and varies with the voltage applied to the motor, allowing easy speed control simply by changing the voltage of the power supply. (The motor torque changes approximately in proportion to the square of the voltage.)



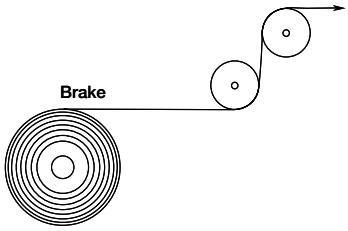
Suitable for Winding Applications

In an application where an object is released continuously at a constant speed and wound up with constant tension, the torque must be doubled and the speed must be halved if the diameter of the winding spool is doubled.



Use as a Brake

By using the motor in the braking region of the speed–torque characteristics, it can serve as a brake.
Constant tension operation can be achieved by applying a DC voltage.



Safety Standards and CE Marking

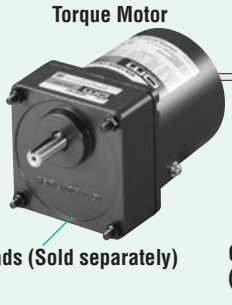
Standards	Certification Body	Standards File No.	CE Marking
UL 1004 UL 2111	UL	E64197	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77			
EN 60950-1 EN 60034-1 EN 60034-5 IEC 60664-1	Conform to EN/IEC Standards		
GB 12350	CQC	2005010401150784 [3 W～20 W (1/250 HP～1/38 HP)]	

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

System Configuration

Mounting Brackets (Accessories)
(➜ Page 117)

Flexible Couplings (Accessories)
(➜ Page 119)



●**Example of System Configuration**

(Body)

Motor (Pinion Shaft)
4TK10GN-AW2U

+

(Sold separately)

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

Long Life/Low Noise GN-S Gearhead	Mounting Bracket	Flexible Coupling
4GN25SA	SOL4U10	MCL40F06F08
◎	○	○

*Capacitor cap is included.

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

Product Number Code

Motor

5 T K 20 GN - AW 2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	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.)
②	Motor Type	**T**: Torque Motors
③	Series	**K**: **K** Series
④	Output Power (W)	(Example) **20**: 20 W (1/38 HP)
⑤	Motor Shaft Type	**GN**: **GN** Type Pinion Shaft **A**: Round Shaft
⑥	Power Supply Voltage	**AW**: Single-Phase 110/115 VAC **CW**: Single-Phase 220/230 VAC
⑦	**2**: RoHS-Compliant	
⑧	Included Capacitor	**U**: For Single-Phase 110/115 VAC **E**: For Single-Phase 220/230 VAC

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.
(Example) Model: **5TK20GN-AW2U**
➜ Motor nameplate and product approved under various safety standards: **5TK20GN-AW2**

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
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

Note:
A right-angle gearhead cannot be combined.

Product Line

Motor (RoHS)

Output Power	Model	
	Pinion Shaft Type	Round Shaft Type
3 W 1/250 HP	**2TK3GN-AW2U**	**2TK3A-AW2U**
	2TK3GN-CW2E	**2TK3A-CW2E**
6 W 1/125 HP	**3TK6GN-AW2U**	**3TK6A-AW2U**
	3TK6GN-CW2E	**3TK6A-CW2E**
10 W 1/75 HP	**4TK10GN-AW2U**	**4TK10A-AW2U**
	4TK10GN-CW2E	**4TK10A-CW2E**
20 W 1/38 HP	**5TK20GN-AW2U**	**5TK20A-AW2U**
	5TK20GN-CW2E	**5TK20A-CW2E**

Gearhead (Sold Separately) (RoHS)

Applicable Motor Output Power (Pinion Shaft Type)	Gearhead Model	Gear Ratio
3 W 1/250 HP	**2GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	2GN10XS (Decimal gearhead)	
6 W 1/125 HP	**3GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	3GN10XS (Decimal gearhead)	
10 W 1/75 HP	**4GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	4GN10XS (Decimal gearhead)	
20 W 1/38 HP	**5GN□SA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GN10XS (Decimal gearhead)	

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

Specifications

●3 W (1/250 HP), 6 W (1/125 HP), 10 W (1/75 HP), 20 W (1/38 HP) RoHS

Model		Rating at Locked Rotor	Voltage	Frequency	Starting Torque		Max. Output Power		Speed at Max. Output Power	Torque at Max. Output Power		Current at Max. Output Power	Input Power at Max. Output Power	Capacitor
Pinion Shaft Type	Round Shaft Type		VAC	Hz	mN·m	oz-in	W	HP	r/min	mN·m	oz-in	A	W	μF
TP 2TK3GN-AW2U	2TK3A-AW2U	5 minutes	110	60	70	9.9	3.5	1/214	900	38	5.3	0.42	45	6.0
			115									0.45	50	
		Continuous	60	60	25	3.5	1.2	1/625	900	13	1.84	0.26	15	
TP 2TK3GN-CW2E	2TK3A-CW2E	5 minutes	220	50	70	9.9	3	1/250	750	39	5.5	0.220	45	1.5
			230									0.240	50	
			220	60	70	9.9	3.5	1/214	900	38	5.3	0.215	45	
			230									0.230	50	
		Continuous	115	50	18	2.5	0.8	1/937	750	10	1.42	0.095	10	
				60	25	3.5	1.2	1/625	900	13	1.84	0.130	14	
TP 3TK6GN-AW2U	3TK6A-AW2U	5 minutes	110	60	150	21	8	1/93	900	87	12.3	0.60	65	9.0
			115									0.65	70	
		Continuous	60	60	55	7.8	2.6	1/288	900	28	3.9	0.37	20	
TP 3TK6GN-CW2E	3TK6A-CW2E	5 minutes	220	50	140	19.8	6	1/125	750	78	11.0	0.390	70	2.5
			230									0.440	80	
			220	60	150	21	8	1/93	900	87	12.3	0.320	70	
			230									0.350	75	
		Continuous	115	50	45	6.3	1.8	1/416	750	24	3.4	0.145	15	
				60	55	7.8	2.6	1/288	900	28	3.9	0.210	24	
TP 4TK10GN-AW2U	4TK10A-AW2U	5 minutes	110	60	210	29	12	1/62	900	130	18.4	0.74	80	11
			115									0.76	85	
		Continuous	60	60	70	9.9	3.3	1/227	900	35	4.9	0.45	25	
TP 4TK10GN-CW2E	4TK10A-CW2E	5 minutes	220	50	220	31	10	1/75	750	130	18.4	0.41	80	3.0
			230									0.45	90	
			220	60	210	29	12	1/62	900	130	18.4	0.39	80	
			230									0.40	80	
		Continuous	115	50	65	9.2	2.8	1/267	750	35	4.9	0.18	20	
				60	70	9.9	3.3	1/227	900	35	4.9	0.24	25	
TP 5TK20GN-AW2U	5TK20A-AW2U	5 minutes	110	60	350	49	23	1/32	900	250	35	1.00	110	14
			115									1.02	115	
		Continuous	60	60	100	14.2	5.5	1/136	900	60	8.5	0.58	34	
TP 5TK20GN-CW2E	5TK20A-CW2E	5 minutes	220	50	350	49	20	1/38	750	260	36	0.63	120	4.0
			230									0.68	130	
			220	60	350	49	20	1/38	900	220	31	0.53	115	
			230									0.54	120	
		Continuous	115	50	85	12.0	4.5	1/166	750	60	8.5	0.26	29	
				60	100	14.2	5.5	1/136	900	60	8.5	0.30	34	

● The **U** and **E** at the end of the model name indicate that the unit includes a capacitor. These letters are not listed on the motor nameplate.
When the motor is approved under various safety standards, the model name on the nameplate is the approved model name.

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

General Specifications

●3 W (1/250 HP), 6 W (1/125 HP), 10 W (1/75 HP), 20 W (1/38 HP)

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the windings and the frame after rated motor 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 frame for 1 minute after rated motor 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 motor operation under normal ambient temperature and humidity, with connecting a gearhead or equivalent heat radiation plate*.
Insulation Class	Class B [130°C (266°F)]
Overheat Protection	Built-in thermal protector (automatic return type) 3W type open: 130°C±5°C (266°F±9°F), close: 90°C±15°C (194°F±27°F) Other type open: 130°C±5°C (266°F±9°F), close: 82°C±15°C (179.6°F±27°F)
Ambient Temperature	−10°C～+40°C (+14°F～+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	IP20

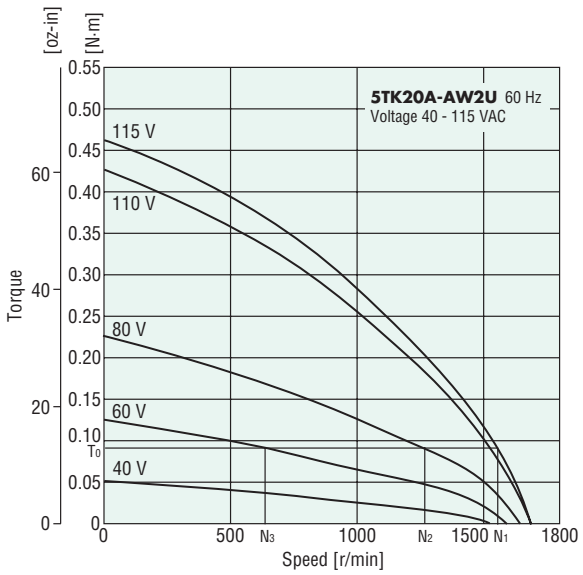
*Heat radiation plate (Material: Aluminum)

Motor Type	Size: mm (in.)	Thickness: mm (in.)
3 W (1/250 HP) Type	115×115 (4.53×4.53)	5 (0.20)
6 W (1/125 HP) Type	125×125 (4.92×4.92)	
10 W (1/75 HP) Type	135×135 (5.31×5.31)	
20 W (1/38 HP) Type	165×165 (6.50×6.50)	

How to Read Speed – Torque Characteristics

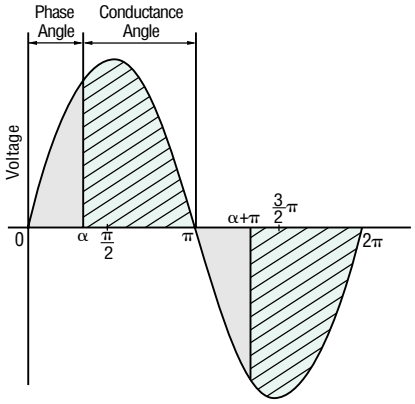
The motor torque changes approximately proportion to the square of the voltage. When the voltage supplied to the motor is changed, the speed – torque curves (torque is highest at zero speed and decreases steadily with increasing speed) shifts to that of the corresponding voltage.
When the voltage is changed to 115 VAC, 80 VAC and 60 VAC while the load torque is T_0, the motor rotates at the speeds N_1, N_2 and N_3 respectively. Thus, the speed can be changed easily by varying the voltage.

When choosing a torque motor, first determine the required torque and speed. Then select a motor using the speed – torque characteristics curves to determine whether the motor should be operated under continuous duty or limited duty. When used under locked rotor conditions, only the torque factor is considered. The temperature rise of the motor may cause a problem during continuous operation. In this case, choose a motor with an output power large enough for continuous operation and adjust the voltage to control the torque and speed.



Voltage Control of Torque Motors

The method most commonly used to control voltage is by phase control using a triac. As shown on the right figure, by changing the phase angle "α" at which the triac switches, the input voltage is controlled as represented by the phase angle areas of the graph.



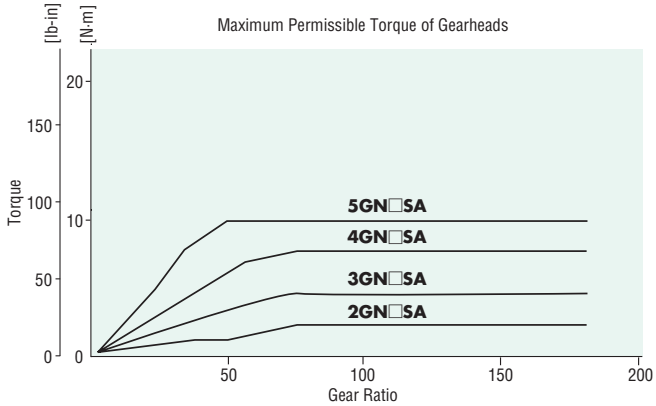
Phase Control

Gearmotor – Torque Table

Due to the speed – torque characteristics, torque motors can be operated over a wide speed range, from locked rotor condition to the maximum speed. The permissible torque when a gearhead and a decimal gearhead are directly connected can be calculated according to the following formula, using the speed and torque determined from the speed – torque characteristics.

Speed of gearhead output shaft N_G=Motor speed×1/gearhead gear ratio
Output torque of gearhead T_G=Motor torque×Gearhead gear ratio×Gearhead efficiency

The output torque of the gearhead must be lower than the maximum permissible torque.

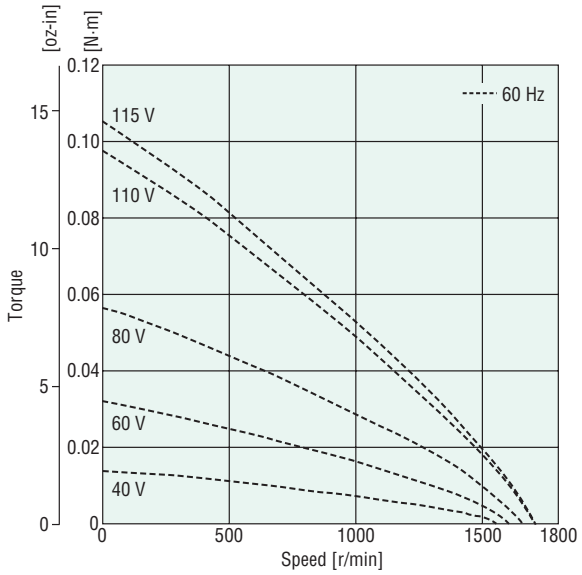


Gearhead Model	Gearhead Gear Ratio	Gearhead Efficiency
2GN□SA 3GN□SA 4GN□SA 5GN□SA	3~18	81%
	25~36	73%
	50~180	66%

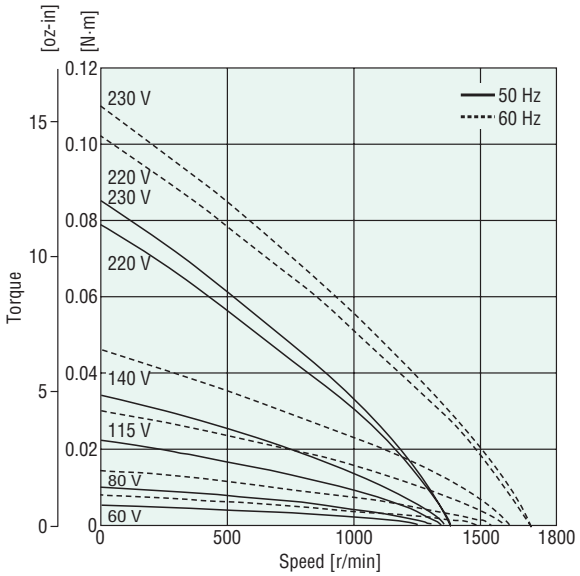
- Gearheads and decimal gearheads are sold separately.
- Enter the gear ratio in the box (□) within the model name.

Speed – Torque Characteristics (Reference Values)

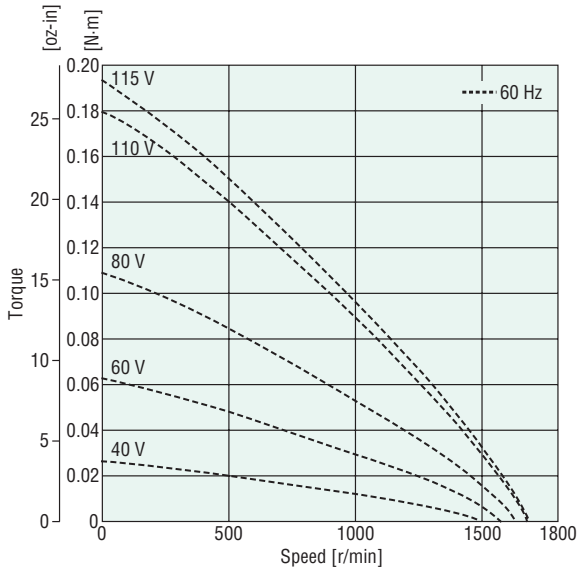
2TK3GN-AW2U, 2TK3A-AW2U



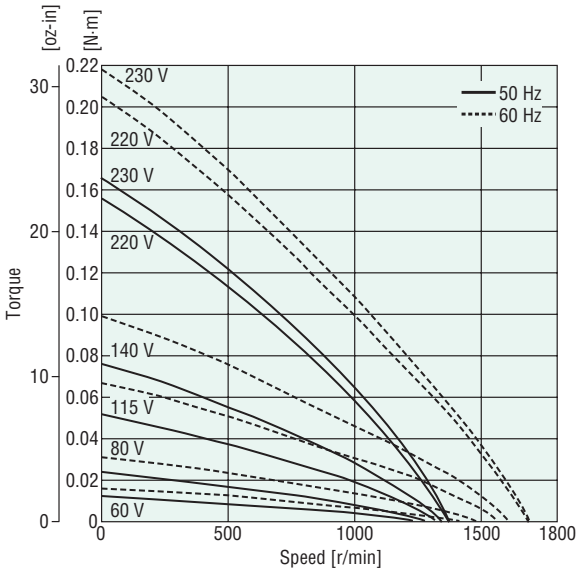
2TK3GN-CW2E, 2TK3A-CW2E



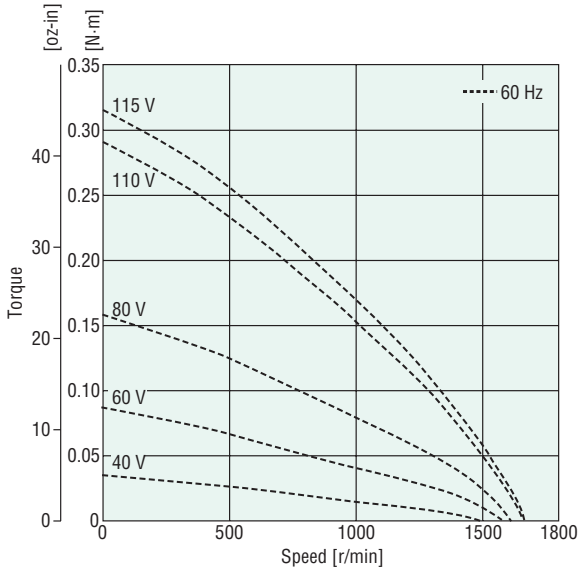
3TK6GN-AW2U, 3TK6A-AW2U



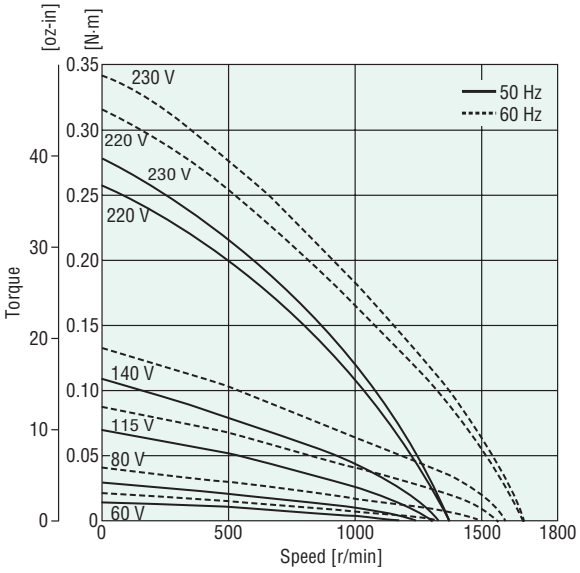
3TK6GN-CW2E, 3TK6A-CW2E



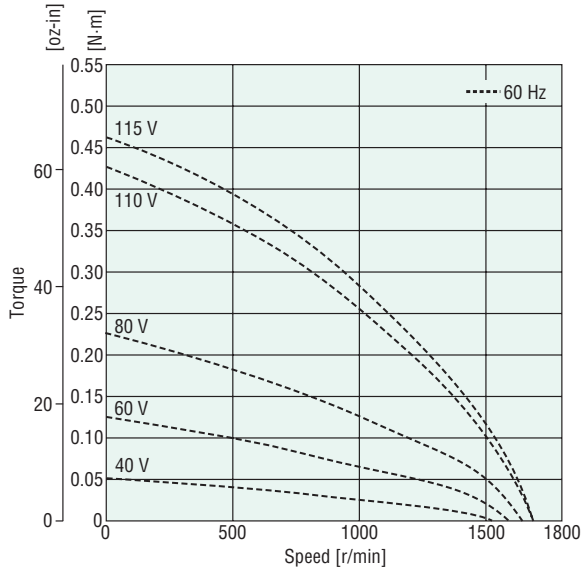
4TK10GN-AW2U, 4TK10A-AW2U



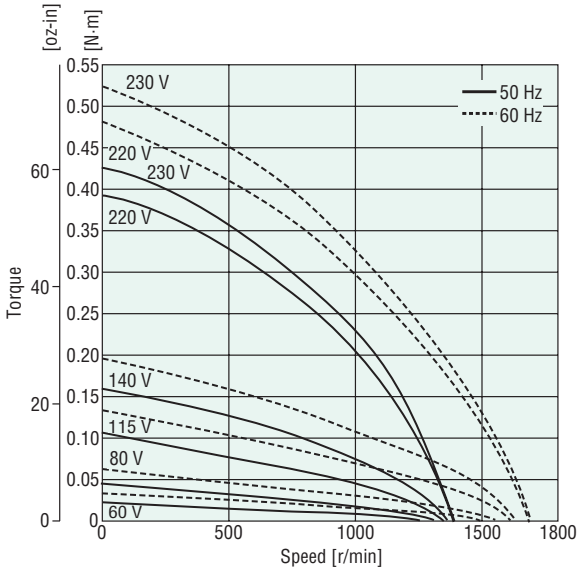
4TK10GN-CW2E, 4TK10A-CW2E



5TK20GN-AW2U, 5TK20A-AW2U



5TK20GN-CW2E, 5TK20A-CW2E



Dimensions Unit = mm (inch)

Mounting screws are included with gearheads.

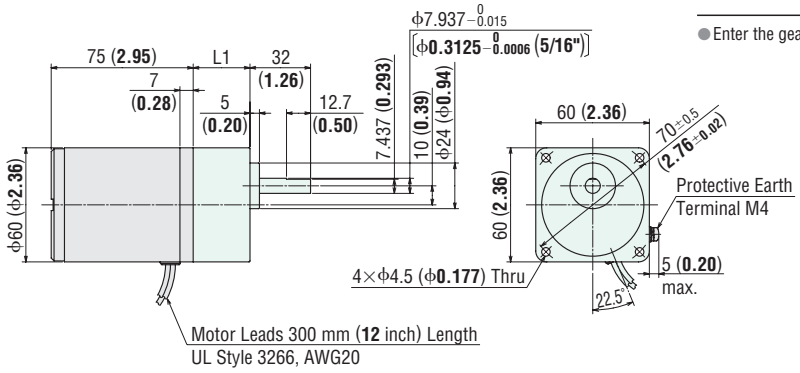
●3 W (1/250 HP)

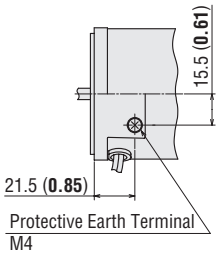
◇Motor/Gearhead

Mass: Motor 0.7 kg (1.54 lb.)
Gearhead 0.4 kg (0.88 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
2TK3GN-AW2U **2TK3GN-CW2E**	**2GN□SA**	**3~18**	30 (1.18)	A443AU
		25~180	40 (1.57)	A443BU

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





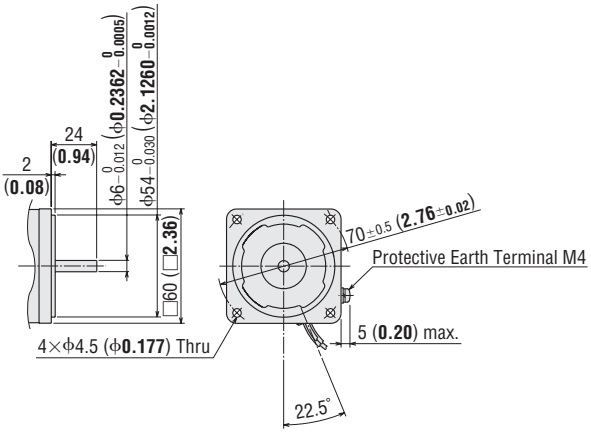
Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

2TK3A-AW2U
2TK3A-CW2E

Mass: 0.7 kg (1.54 lb.)

CAD A444



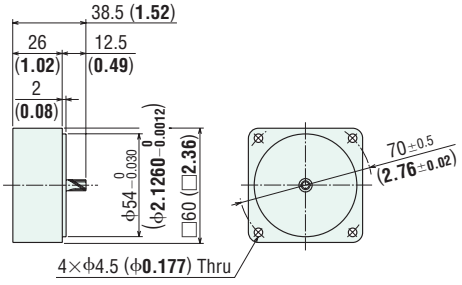
◇Decimal Gearhead

Can be connected to **2TK3GN** type.

2GN10XS

Mass: 0.2 kg (0.44 lb.)

CAD A003



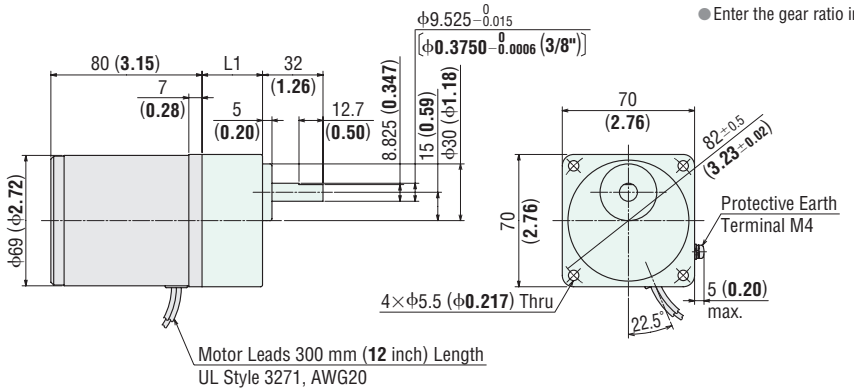
●6 W (1/125 HP)

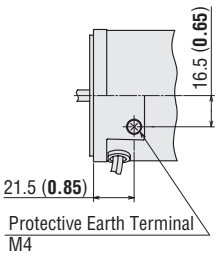
◇Motor/Gearhead

Mass: Motor 1.1 kg (2.4 lb.)
Gearhead 0.55 kg (1.21 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
3TK6GN-AW2U **3TK6GN-CW2E**	**3GN□SA**	**3**~**18**	32 (1.26)	A447AU
		25~**180**	42 (1.65)	A447BU

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





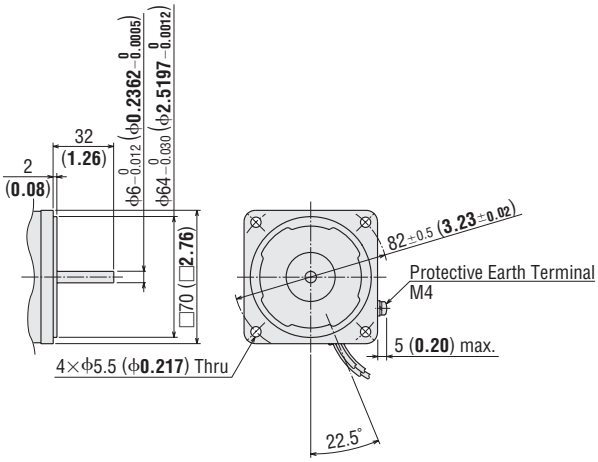
Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

3TK6A-AW2U
3TK6A-CW2E

Mass: 1.1 kg (2.4 lb.)

CAD A448



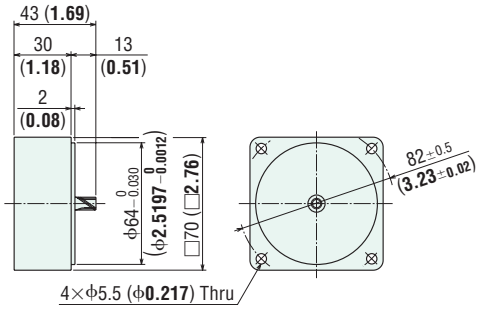
◇Decimal Gearhead

Can be connected to **3TK6GN** type.

3GN10XS

Mass: 0.3 kg (0.66 lb.)

CAD A009



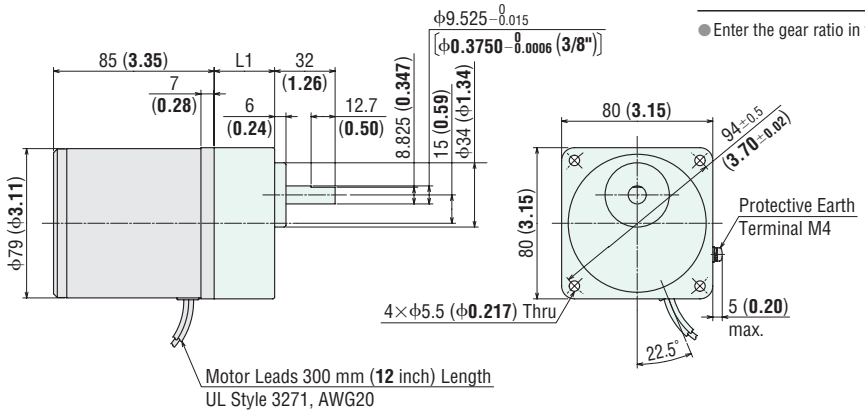
●10 W (1/75 HP)

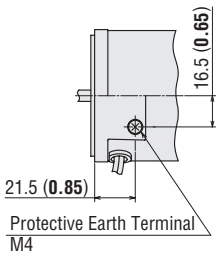
◇Motor/Gearhead

Mass: Motor 1.5 kg (3.3 lb.)
Gearhead 0.65 kg (1.43 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
4TK10GN-AW2U **4TK10GN-CW2E**	**4GN□SA**	**3**~**18**	32 (1.26)	A449AU
		25~**180**	42.5 (1.67)	A449BU

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





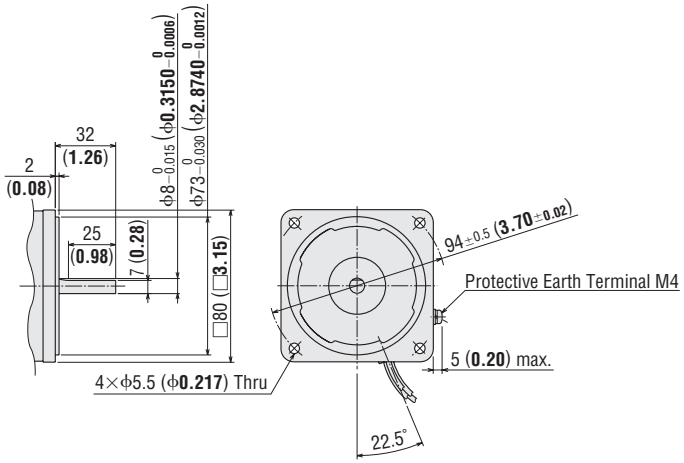
Detail Drawing of Protective Earth Terminal

◇Round Shaft Type

4TK10A-AW2U
4TK10A-CW2E

Mass: 1.5 kg (3.3 lb.)

CAD A450



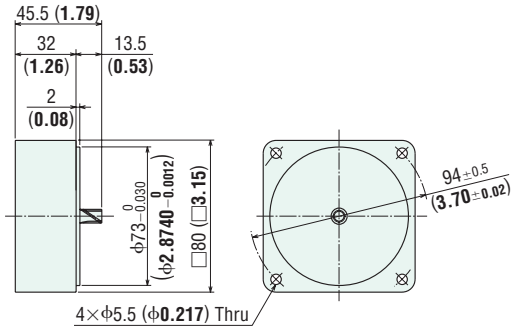
◇Decimal Gearhead

Can be connected to **4TK10GN** type.

4GN10XS

Mass: 0.4 kg (0.88 lb.)

CAD A013



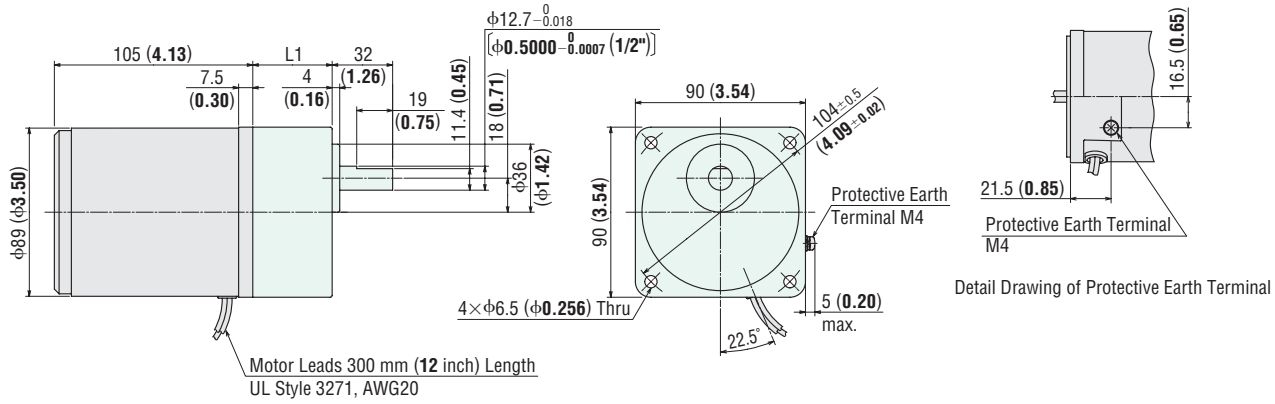
●20 W (1/38 HP)

◇Motor/Gearhead

Mass: Motor 2.5 kg (5.5 lb.)
Gearhead 1.5 kg (3.3 lb.)

Motor Model	Gearhead Model	Gear Ratio	L1	CAD
5TK20GN-AW2U **5TK20GN-CW2E**	**5GN□SA**	**3~18**	42 (1.65)	A452AU
		25~180	60 (2.36)	A452BU

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

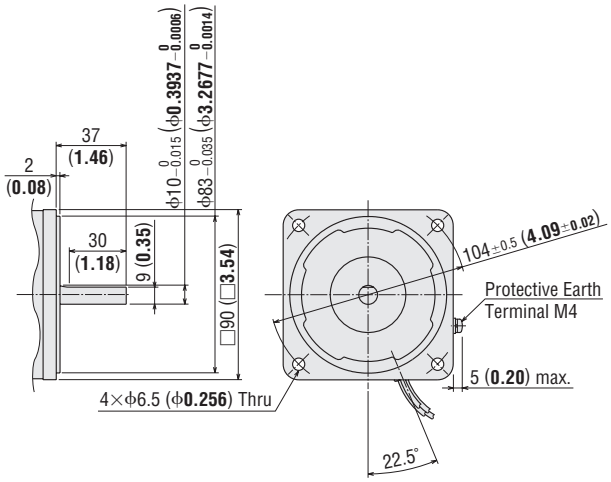


◇Round Shaft Type

5TK20A-AW2U
5TK20A-CW2E

Mass: 2.5 kg (5.5 lb.)

CAD A453



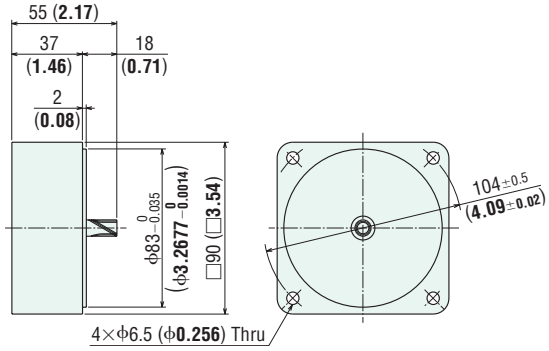
◇Decimal Gearhead

Can be connected to **5TK20GN** type.

5GN10XS

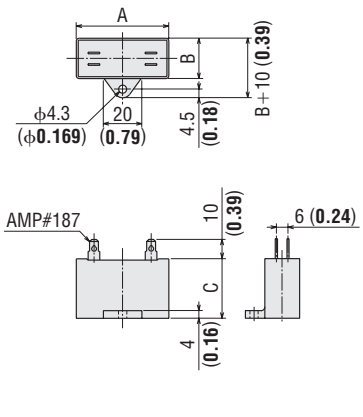
Mass: 0.6 kg (1.32 lb.)

CAD A022

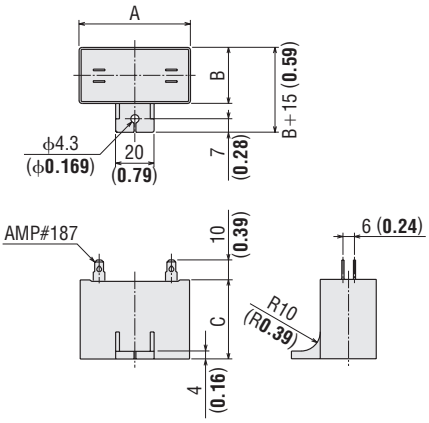


◇Capacitor (Included with the motors)

Dimension No. ①



Dimension No. ②



◇Capacitor Dimensions mm (inch)

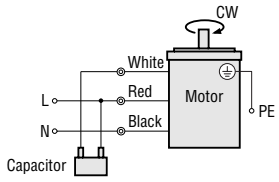
Model		Capacitor Model	A	B	C	Mass g (oz.)	Dimension No.	Capacitor Cap
Pinion Shaft Type	Round Shaft Type							
2TK3GN-AW2U	**2TK3A-AW2U**	CH60CFAUL2	38 (1.50)	21 (0.83)	31 (1.22)	40 (1.41)	①	Included
2TK3GN-CW2E	**2TK3A-CW2E**	CH15BFAUL	38 (1.50)	21 (0.83)	31 (1.22)	35 (1.24)	①	
3TK6GN-AW2U	**3TK6A-AW2U**	CH90CFAUL2	48 (1.89)	22.5 (0.89)	31.5 (1.24)	45 (1.59)	①	
3TK6GN-CW2E	**3TK6A-CW2E**	CH25BFAUL	48 (1.89)	21 (0.83)	31 (1.22)	45 (1.59)	①	
4TK10GN-AW2U	**4TK10A-AW2U**	CH110CFAUL2	58 (2.28)	21 (0.83)	31 (1.22)	50 (1.77)	①	
4TK10GN-CW2E	**4TK10A-CW2E**	CH30BFAUL	58 (2.28)	21 (0.83)	31 (1.22)	50 (1.77)	①	
5TK20GN-AW2U	**5TK20A-AW2U**	CH140CFAUL2	58 (2.28)	22 (0.87)	35 (1.38)	61 (2.2)	①	
5TK20GN-CW2E	**5TK20A-CW2E**	CH40BFAUL	58 (2.28)	23.5 (0.93)	37 (1.46)	70 (2.5)	②	

Connection Diagrams

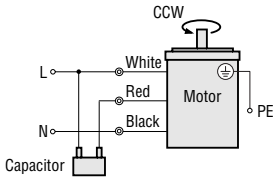
- The direction of motor rotation is as viewed from the shaft end of the motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.

2TK3GN-AW2U, 2TK3GN-CW2E, 3TK6GN-AW2U, 3TK6GN-CW2E
4TK10GN-AW2U, 4TK10GN-CW2E, 5TK20GN-AW2U, 5TK20GN-CW2E

Clockwise



Counterclockwise



PE: Protective Earth

Common Specifications

Permissible Overhung Load and Permissible Thrust Load of Motor

Permissible Overhung Load

Motor		Permissible Overhung Load N lb.			
Motor Frame Size □ mm (inch)	Output Shaft Diameter ϕ mm (inch)	Distance from Shaft End			
		10 mm (0.39 in.)		20 mm (0.79 in.)	
42 (1.65)	5 (0.1969)	40	9	–	
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
	10 (0.3937)	110	24	120	27
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	Maximum Permissible Torque		Permissible Overhung Load N lb.				Permissible Thrust Load	
		N·m	lb-in	10 mm (0.39 in.) from Shaft End		20 mm (0.79 in.) from Shaft End		N	lb.
0GN□KA	**3~180**	1.0	8.8	20	4.5	–		15	3.3
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		
5GE□SA	**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 for 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 by an electromagnetic brake, or when stopped instantaneously by a brake pack). 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 inertial load value shown for three-phase motors is the value when reversing after a stop.

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

The life of the gearhead when operating at the permissible inertial load with instantaneous stops of the motors with electromagnetic brakes, brake packs or speed control motors is at least 2 million cycles.

Permissible Load Inertia for Gearhead Output Shaft

Gear ratio 3:1~50:1 $J_G = J_M \times i^2$

Gear ratio 60:1 or higher $J_G = J_M \times 2500$

J_G: Permissible load inertia for gearhead output shaft J ($\times 10^{-4}$ kg·m^2)

J_M: Pemissible load inertia at the motor shaft J ($\times 10^{-4}$ kg·m^2)

i : Gear ratio (Example: $i=3$ means the gear ratio of 3:1)

Permissible Load Inertia at the Motor Shaft

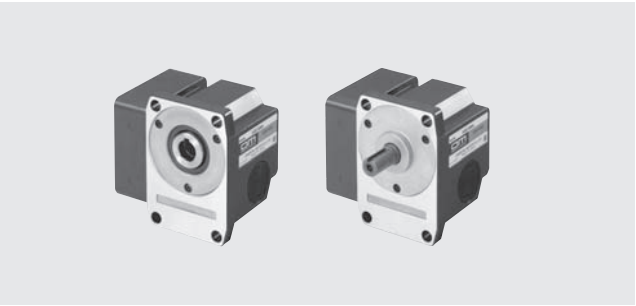
No. of Phase	Motor Frame Size	Output Power	Permissible Load Inertia at the Motor Shaft	
			J ($\times 10^{-4}$kg·m^2)	oz-in^2
Single-Phase	□ 42 mm (1.65 in.)	1 W (1/750 HP), 3 W (1/250 HP)	0.016	0.088
	□ 60 mm (2.36 in.)	3 W* (1/250 HP*), 6 W (1/125 HP)	0.062	0.34
	□ 70 mm (2.76 in.)	6 W* (1/125 HP*), 15 W (1/50 HP)	0.14	0.77
	□ 80 mm (3.15 in.)	10 W* (1/75 HP*), 25 W (1/30 HP)	0.31	1.7
	□ 90 mm (3.54 in.)	20 W* (1/38 HP*), 40 W (1/19 HP)	0.75	4.1
		60 W (1/12 HP)	1.1	6.0
		90 W (1/8 HP)	1.1	6.0
Three-Phase	□ 60 mm (2.36 in.)	6 W (1/125 HP)	0.062	0.34
	□ 80 mm (3.15 in.)	25 W (1/30 HP)	0.31	1.7
	□ 90 mm (3.54 in.)	40 W (1/19 HP)	0.75	4.1
		60 W (1/12 HP)	1.1	6.0
		90 W (1/8 HP)	1.1	6.0

*Output power for torque motors

RoHS RoHS-Compliant

Right-Angle Gearheads

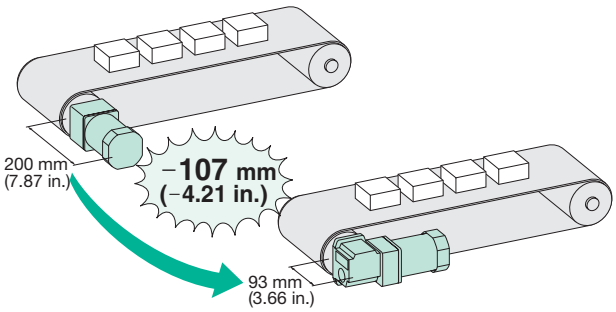
Right-angle gearheads are flange-mounted gearheads that use worm gears and special helical gears. They allow motors to be installed at right angles to the axis of equipment such as belt conveyors. They are available in hollow shaft **RH** and solid shaft **RAA** models and are ideal for keeping equipment compact.



Features

Space-Saving

●The output shaft is perpendicular to the motor shaft, so the motor can be installed perpendicularly to the axis being driven, enabling space-saving.



Comparison between **5IK90GE-AW2U** and gearhead with a gear ratio of 18:1

●Hollow shaft gearheads allow additional space savings and simpler mechanism designs due to the removal of some parts of mechanism as they do not require couplings for mounting. When mounted with a torque arm*, no centering is needed, so it is faster to mount the gearhead on the device.

*Mounting Using Torque Arm
Usually, hollow shaft gearheads are locked with a torque arm when mounted so the gearhead does not rotate from the reactive force of the load. The torque arm is available as an accessory for the **5GE□RH**. Torque Arm ➜ Page 113

Wide Variation

A wide variety of gear ratio (20 types, from **3** to **180**) is available. The optimum gear ratio can be selected as the same with ordinary gearheads. The maximum permissible torques are also the same as for ordinary gearheads.

Applicable Products

GN and **GE** pinion motors with matching mounting frame sizes can be installed.

Example) **4IK25GN-CW2U** → **4GN□RH** (or **4GN□RAA**)
5IK60GE-CW2U → **5GE□RH** (or **5GE□RAA**)

Gearheads can be used with pinion shaft type motors listed below.

Motor	Output Power
Induction Motors	25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP), 90 W (1/8 HP)
Reversible Motors	25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP), 90 W (1/8 HP)
Electromagnetic Brake Motors	25 W (1/30 HP), 40 W (1/19 HP), 60 W (1/12 HP), 90 W (1/8 HP)

●The right-angle gearheads cannot be used with torque motors.

Product Number Code

5 GE 25 R H
① ② ③ ④ ⑤

①	Gearhead Frame Size	**4**: 80 mm (3.15 in.) **5**: 90 mm (3.54 in.)
②	Type	**GN**: **GN** Pinion Gear **GE**: **GE** Pinion Gear
③	Gear Ratio	(Example) **25**: Gear Ratio of 25:1
④	**R**: Right-Angle Gearhead	
⑤	Shaft Type	**H**: Hollow Shaft Type **AA**: Solid Shaft Type

Product Line RoHS

Shaft Type	Gearhead Model	Gear Ratio
Hollow Shaft	**4GN□RH**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GN□RH	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE□RH	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
Solid Shaft	**4GN□RAA**	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GN□RAA	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**
	5GE□RAA	**3, 3.6, 5, 6, 7.5, 9, 12.5, 15, 18, 25, 30, 36, 50, 60, 75, 90, 100, 120, 150, 180**

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

Specifications

Gearhead Model	Gear Ratio	Maximum Permissible Torque		Permissible Overhung Load N lb.				Permissible Thrust Load	
		N·m	lb-in	10 mm (0.39 in.) from Shaft End		20 mm (0.79 in.) from Shaft End		N	lb.
4GN□RH	**3~180**	8.0	70	250*	56*	220*	49*	100	22
5GN□RH	**3~180**	10	88	350*	78*	310*	69*	200	45
5GE□RH	**3~180**	20	177	560*	126*	500*	112*	250	56
4GN□RAA	**3~18**	8.0	70	100	22	150	33	100	22
	25~180			200	45	300	67		
5GN□RAA	**3~18**	10	88	250	56	350	78	200	45
	25~180			300	67	450	101		
5GE□RAA	**3~9**	20	177	400	90	500	112	250	56
	12.5~25			450	101	600	135		
	30~180			500	112	700	157		

*With the hollow shaft type, the permissible overhung load is measured from the flange-mounting surface.

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

Note:

The right-angle gearhead does not have self-locking capabilities.

Gearmotor – Torque Table

Use the efficiency value in the table below for your calculations. When making a selection, remember that the transfer efficiency at startup is lower than at the rated speed.

Permissible torque ·····$T_G = T_M \times i \times \eta$

T_G : Permissible torque of gearhead
T_M : Motor torque
i : Gearhead gear ratio
η : Gearhead efficiency

● Gearhead Efficiency

Gearhead Model \ Gear Ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
4GN□RH	Rating	40%				50%		60%													
	Startup	40%				50%		54%													
5GN□RH	Rating	50%				68%					60%										
	Startup	50%				60%					54%										
5GE□RH	Rating	50%				68%						60%						50%			
	Startup	50%				60%						54%						45%			
4GN□RAA	Rating	50%						60%													
	Startup	50%						54%													
5GN□RAA	Rating	68%									60%										
	Startup	60%									54%										
5GE□RAA	Rating	68%										60%						50%			
	Startup	60%										54%						45%			

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

Calculating Permissible Overhung Load for Hollow Shaft Models

When the end of the shaft being driven is not supported by a bearing as in the figure shown below, calculate the permissible overhung load using the following equations.
(This mechanism is the most demanding in terms of overhung load.)

●4GN□RH

$$\text{Permissible overhung load } W\,[\text{N (lb.)}] = \frac{59.5\text{ mm (2.34 in.)}}{59.5\text{ mm (2.34 in.)} + Lp} \times 295\text{ N (66 lb.)}^{*}$$

*295 N (66 lb.): Permissible overhung load at the flange mounting surface

●5GN□RH

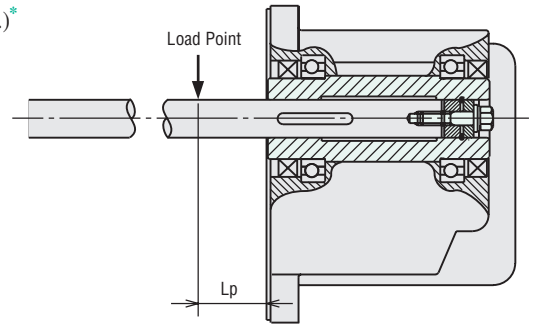
$$\text{Permissible overhung load } W\,[\text{N (lb.)}] = \frac{70\text{ mm (2.76 in.)}}{70\text{ mm (2.76 in.)} + Lp} \times 400\text{ N (90 lb.)}^{*}$$

*400 N (90 lb.): Permissible overhung load at the flange mounting surface

●5GE□RH

$$\text{Permissible overhung load } W\,[\text{N (lb.)}] = \frac{68.5\text{ mm (2.70 in.)}}{68.5\text{ mm (2.70 in.)} + Lp} \times 645\text{ N (145 lb.)}^{*}$$

*645 N (145 lb.): Permissible overhung load at the flange mounting surface

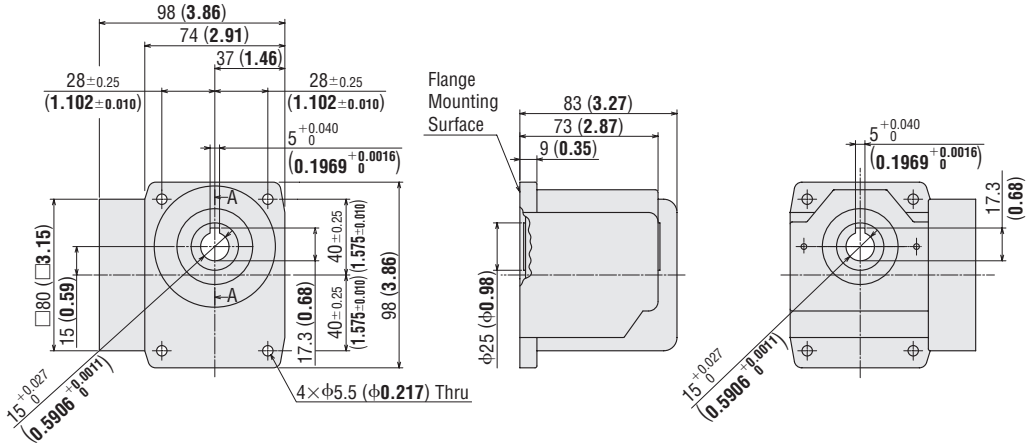


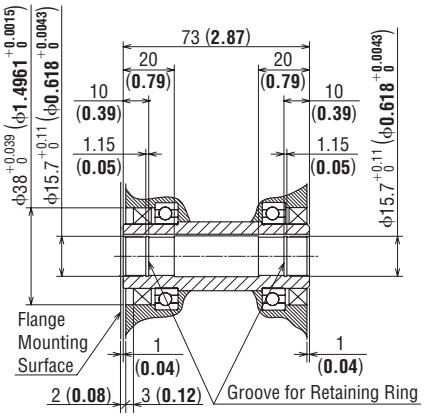
Lp (mm): Distance from flange mounting surface to overhung load point

Dimensions Unit = mm (inch)

●Mounting screws are included with gearheads.
●Enter the gear ratio in the box (□) within the model name.

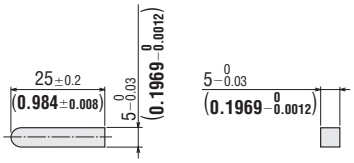
◇**Hollow Shaft Type**
4GN□RH
Mass: 1.6 kg (3.5 lb.)
CAD A254





Cross Section AA
(Detail Drawing of Output Shaft)

◇**Key** (The key is included with the gearhead)

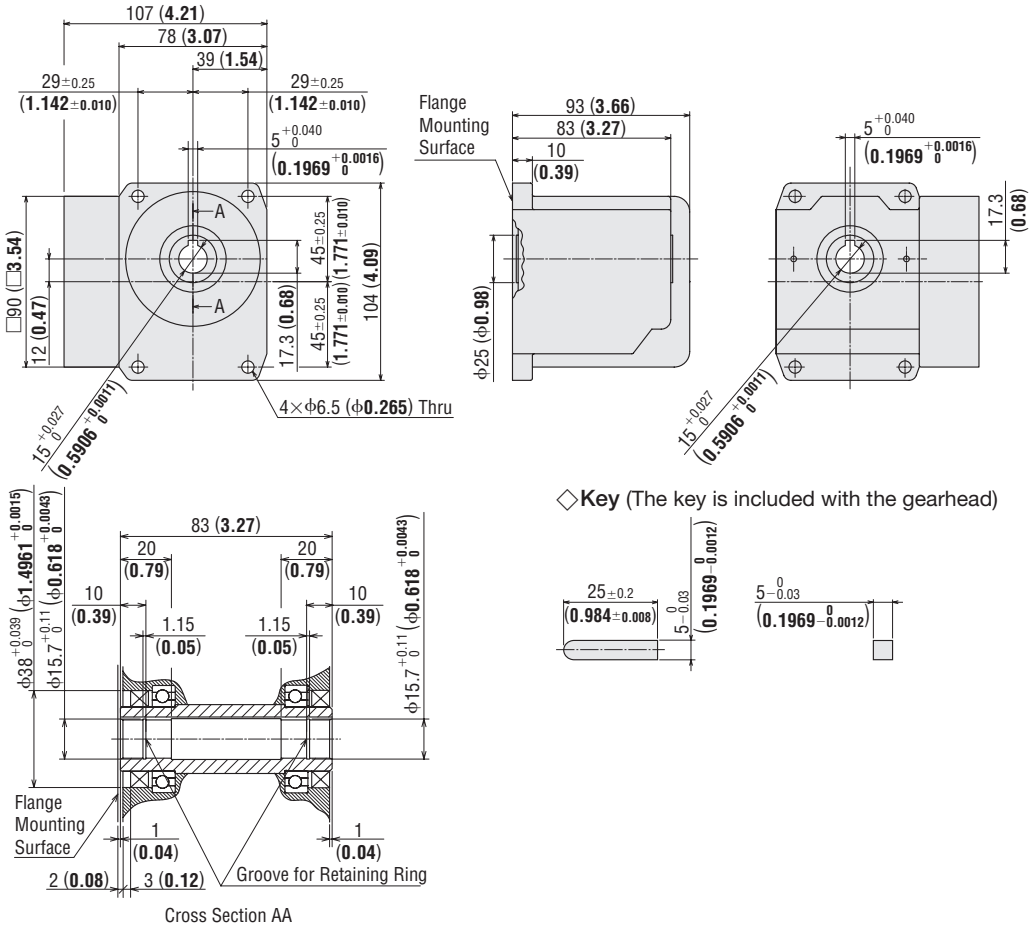


◇Hollow Shaft Type

5GN□RH

Mass: 2.0 kg (4.4 lb.)

CAD A229



◇**Key** (The key is included with the gearhead)

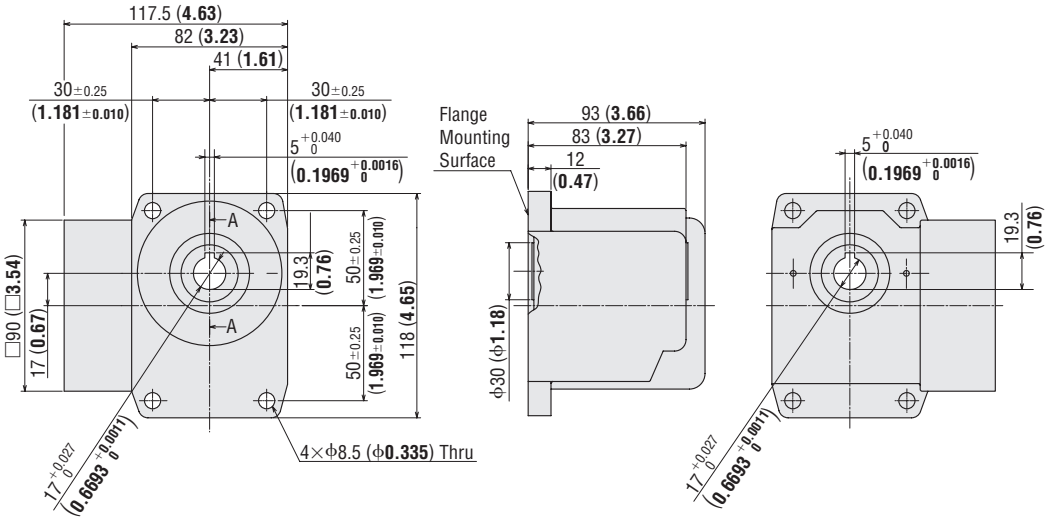
Cross Section AA
(Detail Drawing of Output Shaft)

◇Hollow Shaft Type

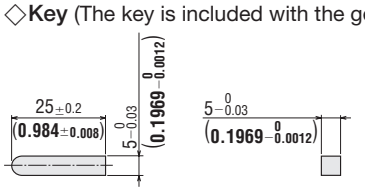
5GE□RH

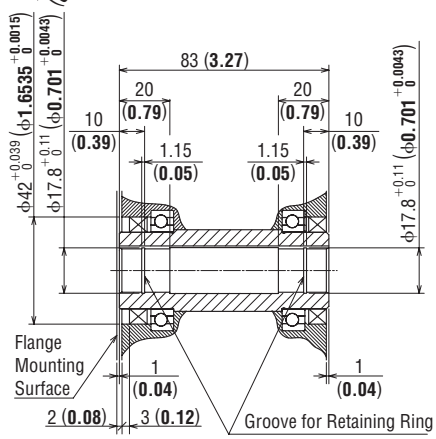
Mass: 2.5 kg (5.5 lb.)

CAD A230



◇**Key** (The key is included with the gearhead)



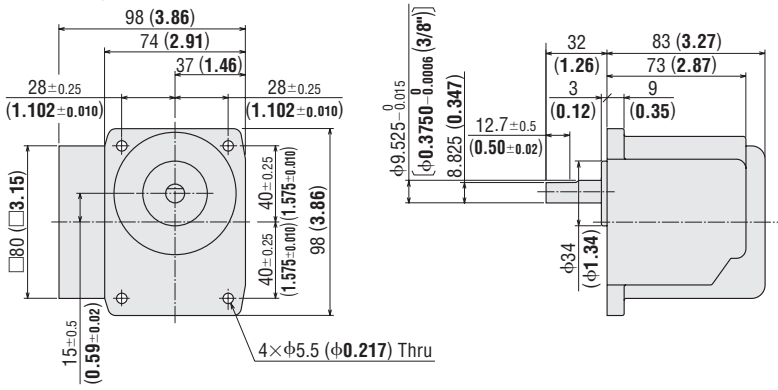


Cross Section AA
(Detail Drawing of Output Shaft)

◇Solid Shaft Type

4GN□RAA

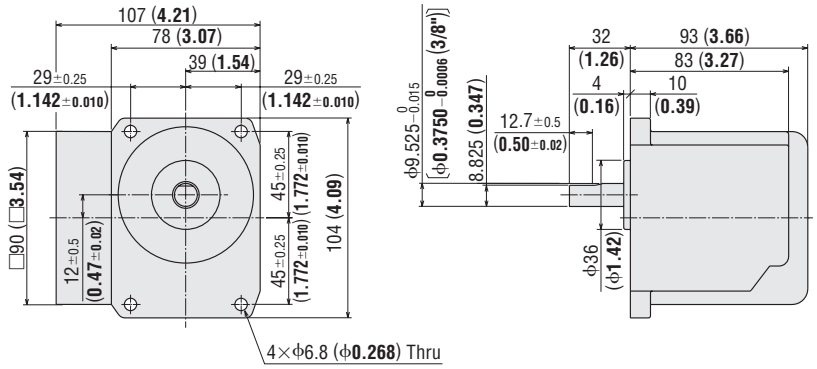
Mass: 1.6 kg (3.5 lb.) CAD A255U



◇Solid Shaft Type

5GN□RAA

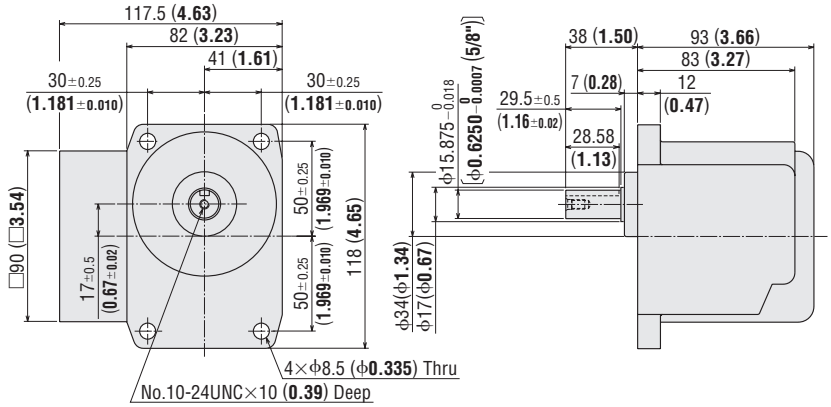
Mass: 2.0 kg (4.4 lb.) CAD A025U



◇Solid Shaft Type

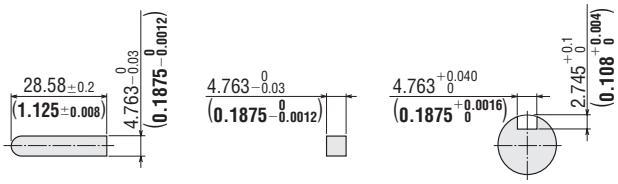
5GE□RAA

Mass: 2.5 kg (5.5 lb.) CAD A512U



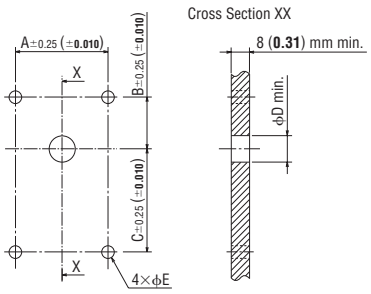
◇Key and Key Slot

(The key is included with the gearhead)



◇Dimensions of the Gearhead Mounting Surface

Allow at least 8 mm (0.31 inch) for the thickness of the mounting plate and use screws of the appropriate length.



Unit = mm (inch)

Shaft Type	Model	A	B	C	ΦD	ΦE
Hollow Shaft	**4GN□RH**	56 (2.20)	25 (0.98)	55 (2.17)	Φ15 (Φ0.59)	Φ5.5 (Φ0.22)
	5GN□RH	58 (2.28)	33 (1.30)	57 (2.24)	Φ15 (Φ0.59)	Φ6.5 (Φ0.26)
	5GE□RH	60 (2.36)	33 (1.30)	67 (2.64)	Φ17 (Φ0.67)	Φ8.5 (Φ0.33)
Solid Shaft	**4GN□RAA**	56 (2.20)	25 (0.98)	55 (2.17)	Φ35 (Φ1.38)	Φ5.5 (Φ0.22)
	5GN□RAA	58 (2.28)	33 (1.30)	57 (2.24)	Φ37 (Φ1.46)	Φ6.8 (Φ0.27)
	5GE□RAA	60 (2.36)	33 (1.30)	67 (2.64)	Φ35 (Φ1.38)	Φ8.5 (Φ0.33)

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

■Mounting Method for Hollow Shaft Type Gearhead

●Example of Mounting the Load

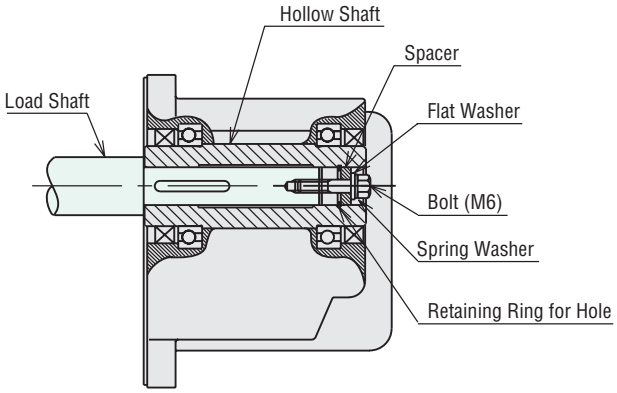
These diagrams show how to mount loads depending on the shape of the shaft.
The tolerance of the inner diameter for the hollow shaft is finished as H8, and "key slot" processing is given to mount the load shaft. The recommended tolerance of the load shaft is h7. Use the key provided with the product by fastening it to the shaft. Apply a coating of molybdenum disulfide or similar grease to the inner diameter of the load shaft to prevent binding. Recommended load shaft dimensions are shown on the right.

Unit = mm (inch)

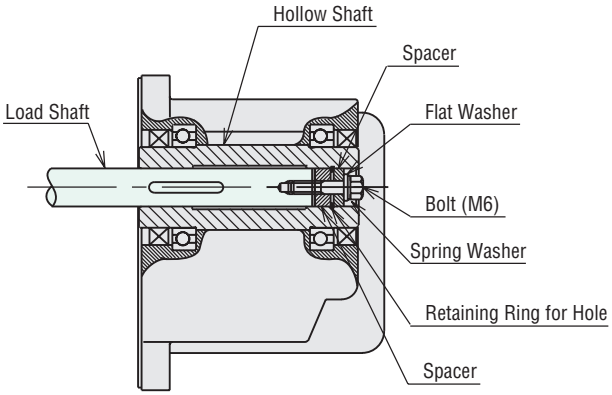
Model	Inner Diameter of Hollow Shaft H8	Recommended Load Shaft Diameter h7
4GN□RH	$\phi15^{+0.027}_{0}$ $\left(\phi0.5906^{+0.0011}_{0}\right)$	$\phi15_{-0.018}^{0}$ $\left(\phi0.5906_{-0.0007}^{0}\right)$
5GN□RH	$\phi15^{+0.027}_{0}$ $\left(\phi0.5906^{+0.0011}_{0}\right)$	$\phi15_{-0.018}^{0}$ $\left(\phi0.5906_{-0.0007}^{0}\right)$
5GE□RH	$\phi17^{+0.027}_{0}$ $\left(\phi0.6693^{+0.0011}_{0}\right)$	$\phi17_{-0.018}^{0}$ $\left(\phi0.6693_{-0.0007}^{0}\right)$

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

◇Stepped Load Shaft



◇Straight Load Shaft



Note:
If the bolt extends out more than 4 mm (0.16 inch) from the end of the hollow shaft, a safety cover can not be installed. (Hollow shaft type gearheads include safety covers.)

■Torque Arm RoHS

The torque arm serves as an anti-rotation guide for the gearhead when a right-angle hollow shaft type gearhead is used in a shaft-mounted fashion (with the gearhead mounted on the shaft of a connected device).
When using it as a shaft-mounted gearhead, be sure to use a torque arm and secure the gearhead to the device.

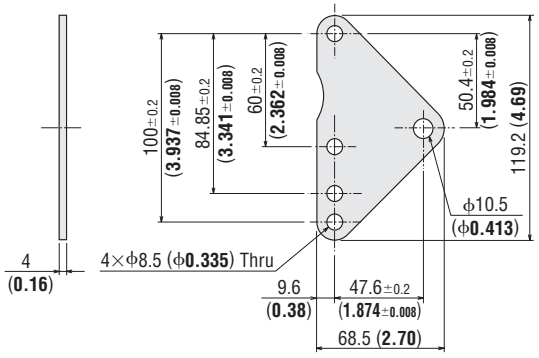
●Model: SOT6

◇Applicable Product

5GE□RH Gearhead

●Dimensions Unit = mm (inch)

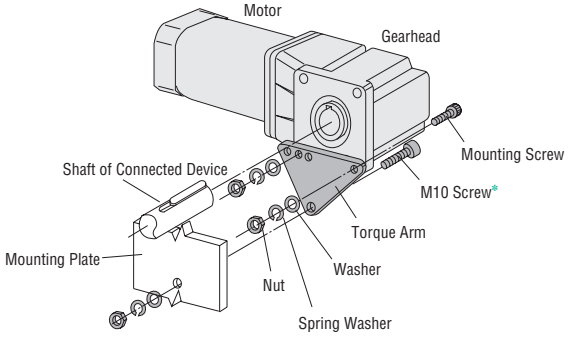
Mass: 145 g (5.1 oz.)



●Mounting Method

When mounting on a device, secure the torque arm firmly using an M10 screw.

✻M10 screws must be purchased separately.



RoHS RoHS-Compliant

Brake Pack for Standard AC Motors

SB50W

The **SB50W** provides instantaneous stop, forward/reverse operation, electromagnetic brake control and thermal protector open detection functions integrated into one unit. These brake packs can sense when the thermal protector is opened, further ensuring the safety of your equipment.

Features

●Four Functions in One Integrated Unit

The **SB50W** provides instantaneous stop, forward/reverse operation, electromagnetic brake control and thermal protector open detection functions*.

*Thermal protector open detection function
(Available only when combined with a motor having a built-in thermal protector) When the motor's thermal protector (overheat protection device) is activated, the **SB50W** outputs an alarm signal and automatically cuts the power supply to the motor. The motor will not restart by itself, even after the temperature drops and the thermal protector recovers, until the power is cycled. Possible to reset the alarm through external signals.

●Wide Voltage Range of 100 to 230 VAC

The **SB50W** covers a single-phase voltage range of 100 to 230 VAC ±10%, 50/60 Hz, accommodating all of the world's key voltage specifications.

●Conforms to Safety Standards

This is the world first brake pack which conforms to safety standards. The CE marking is used in accordance with the EMC directives and low voltage directives.

●Supports Motors with 1 to 90 W (1/750 to 1/8 HP) Output

The **SB50W** can be used with induction, reversible, electromagnetic brake and watertight, dust-resistant motors with an output range of 1 to 90 W (1/750 to 1/8 HP).

●Switchable Sink/Source Logic

Select the sink mode or source mode for the input/output circuit. You can change the setting at any time.

Safety Standards and CE Marking

Standards	Certification Body	Standards File No.	CE Marking
UL 508	UL	E91291	Low Voltage Directives EMC Directives
CSA C22.2 No.14			
EN 50178 EN 60950-1	Conform to EN Standards		

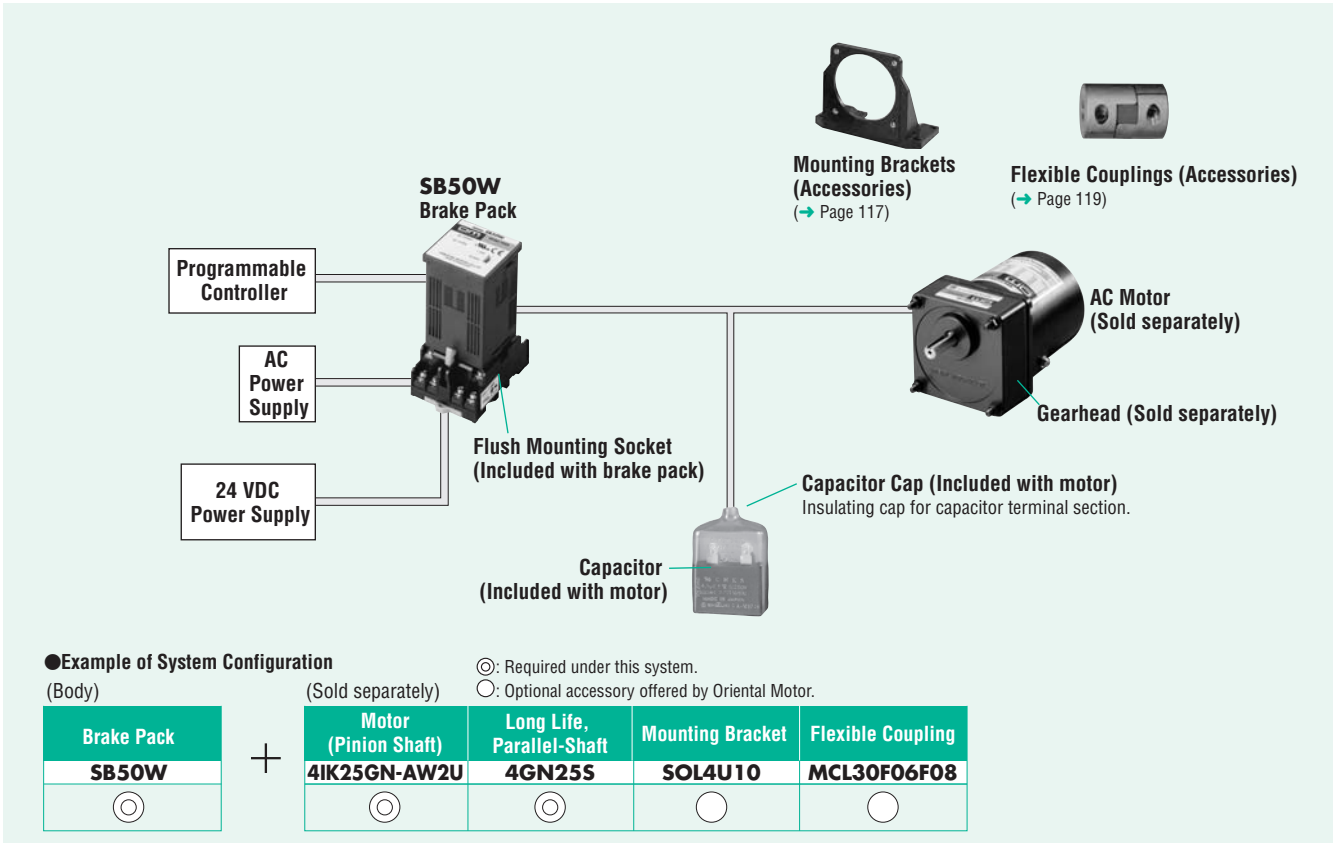
●The EMC value changes according to the wiring and layout. Therefore, the final EMC level must be checked with the brake pack incorporated in the user's equipment.

Applicable Products

World **K** Series 1~90 W (1/750~1/8 HP)	Induction Motors* Reversible Motors Electromagnetic Brake Motors

*Except for 2-pole type

System Configuration



●**Example of System Configuration**

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

(Body)		(Sold separately)			
Brake Pack	+	Motor (Pinion Shaft)	Long Life, Parallel-Shaft	Mounting Bracket	Flexible Coupling
SB50W		4IK25GN-AW2U	4GN25S	SOL4U10	MCL30F06F08
◎		◎	◎	○	○

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

Specifications RoHS

cULus CE

Model	Power Supply Voltage	Frequency	Applicable Motor Output Voltage	Functions	Power Source for Control	Input Signals	Output Signals	Braking Current Duration
SB50W	Single-phase 100-230 VAC ±10%	50/60 Hz	1～90 W (1/750～1/8 HP)	Instantaneous stop Forward/reverse operation Electromagnetic brake control (Electromagnetic brake motors) Thermal protector open detection (Alarm output) Sink/Source logic switch	24 VDC ±10% 0.1 A min.	CW, CW, FREE/ALARM-RESET Input specifications Photocoupler input Input impedance 4.7 kΩ 24 VDC ±10%	ALARM Output specifications Open collector output External use conditions 26.4 VDC max. 10 mA max.	Approximately 0.2～0.4 seconds

General Specifications

Item	Specifications
Insulation Resistance	100 MΩ or more when measured by a 500 VDC megger between the power supply input terminal and the signal input terminal after rated motor operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 3.0 kV at 50 Hz or 60 Hz applied between the power supply input terminal and the signal input terminal for 1 minute after rated motor operation under normal ambient temperature and humidity.
Ambient Temperature	0°C～+40°C (+32°F～+104°F) (nonfreezing)
Ambient Humidity	85% or less (noncondensing)
Degree of Protection	IP10

Braking Current

When a motor is stopped suddenly, a large half-wave rectified current flows through the motor for approximately 0.2 to 0.4 seconds. When connecting a circuit breaker, fuse or transformer, refer to the table below for the braking current (peak value) and select its current capacity.

Motor Output Power	Braking Current [A] (Peak Value)	
	100/110/115 VAC	200/220/230 VAC
1 W (1/750 HP)	1.0	0.3*
6 W (1/125 HP)	1.5	1.0
15 W (1/50 HP)	4.5	2.5
25 W (1/30 HP)	7.5	4.0
40 W (1/19 HP)	12	7.0
60 W (1/12 HP)	18	8.5
90 W (1/8 HP)	26	17

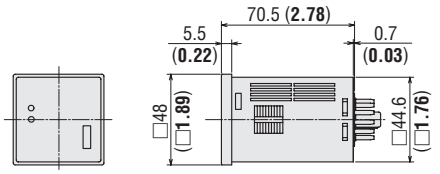
*Can be used only for 200 VAC.

Dimensions Unit = mm (inch)

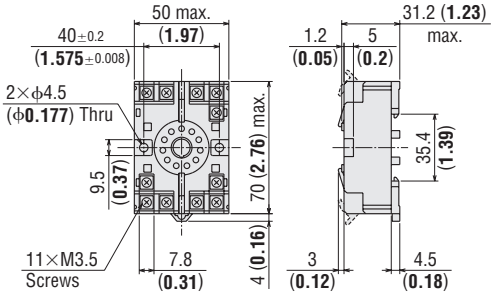
◇SB50W

Mass: 0.1 kg (0.22 lb.)

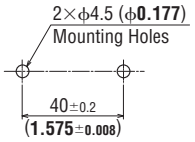
CAD A092



◇Flush Mounting Socket (Included with brake pack)



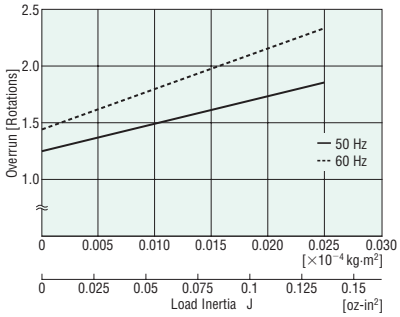
◇Flush Mounting Socket Panel Cut-Out



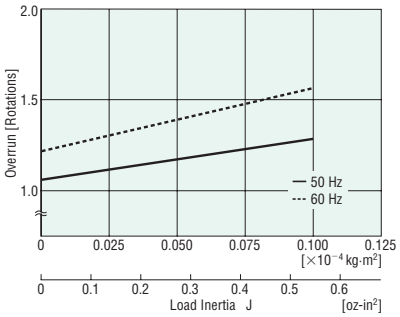
Braking Characteristics (Reference Values)

●Induction Motors

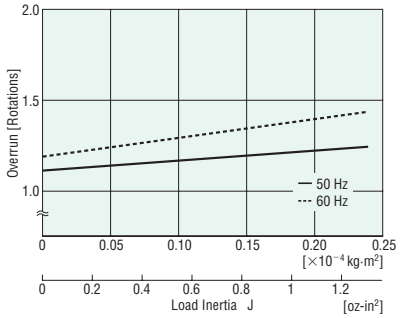
1 W (1/750 HP)



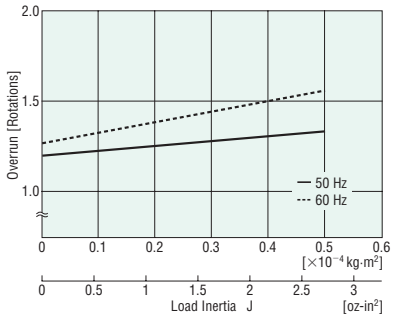
6 W (1/125 HP)



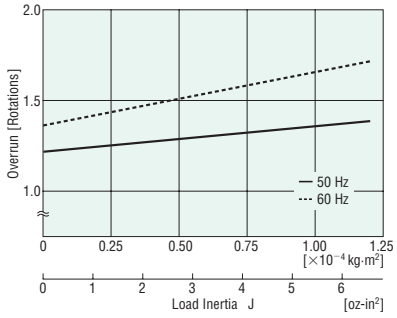
15 W (1/50 HP)



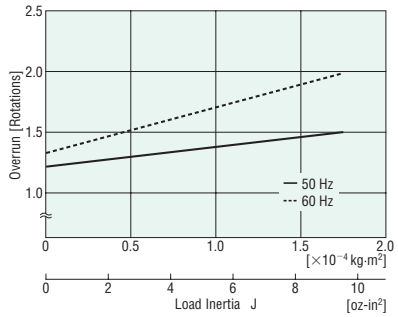
25 W (1/30 HP)



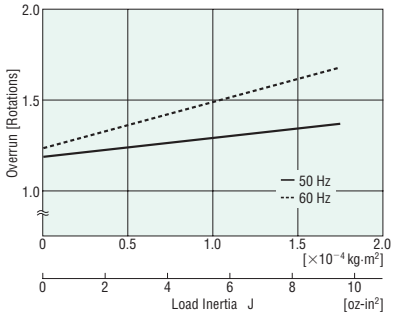
40 W (1/19 HP)



60 W (1/12 HP)

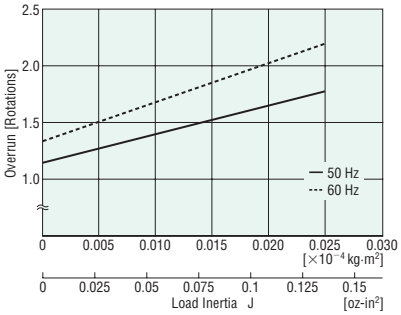


90 W (1/8 HP)

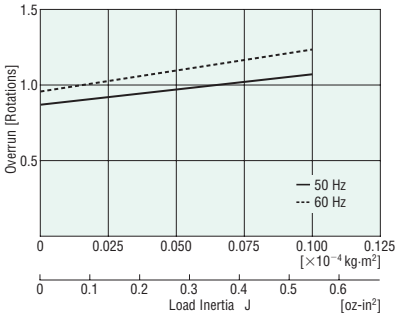


Reversible Motors

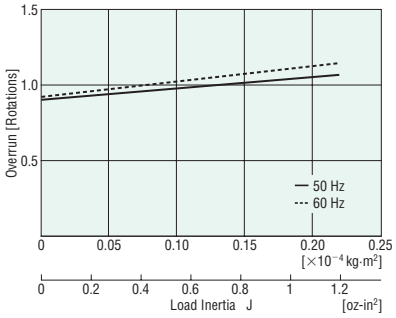
1 W (1/750 HP)



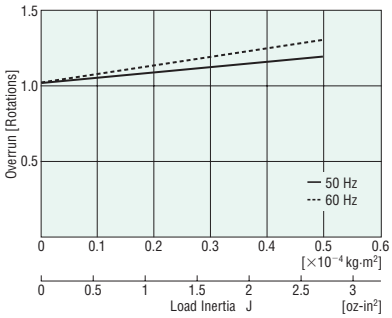
6 W (1/125 HP)



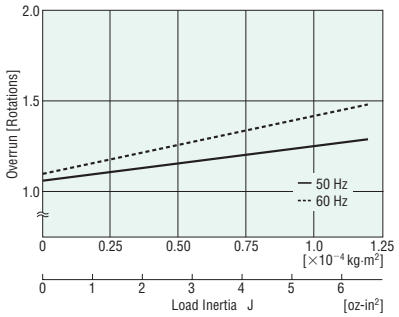
15 W (1/50 HP)



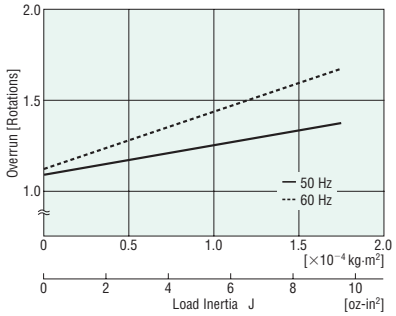
25 W (1/30 HP)



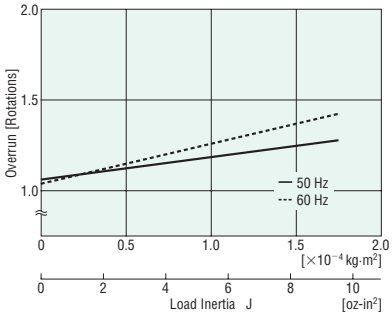
40 W (1/19 HP)



60 W (1/12 HP)

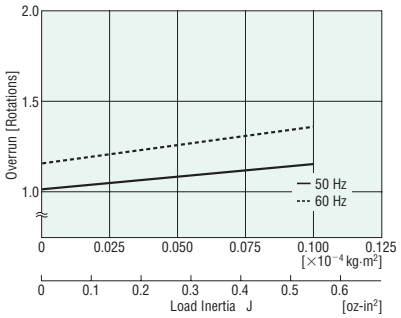


90 W (1/8 HP)

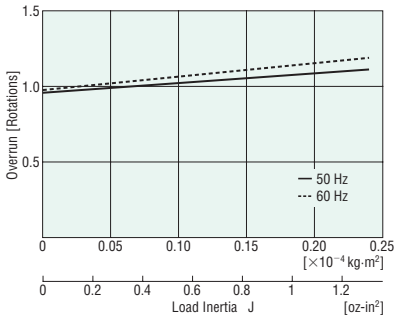


Electromagnetic Brake Motors

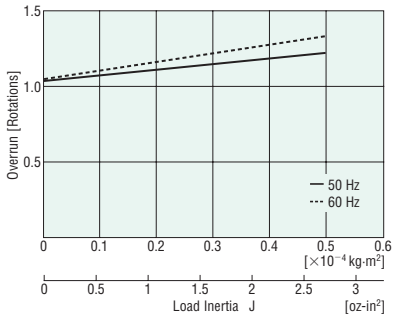
6 W (1/125 HP)



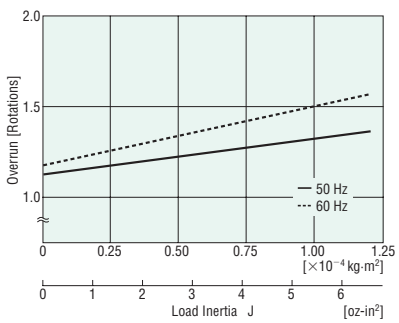
15 W (1/50 HP)



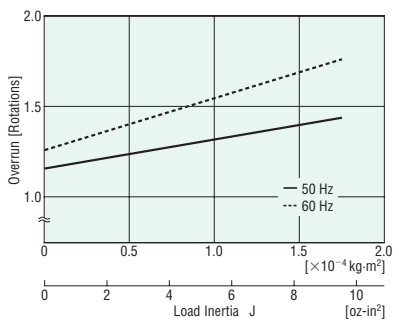
25 W (1/30 HP)



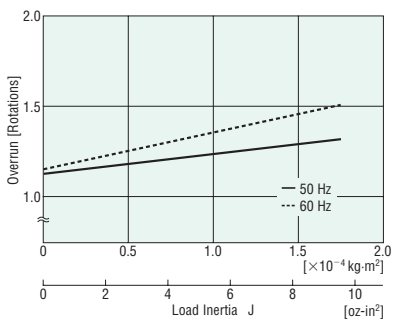
40 W (1/19 HP)



60 W (1/12 HP)

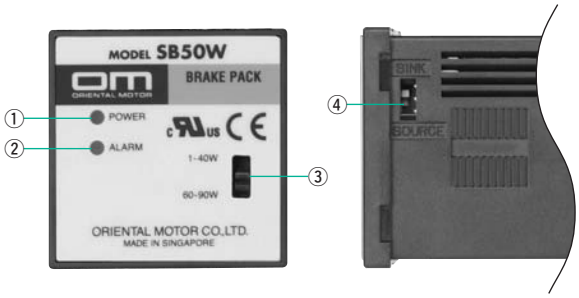


90 W (1/8 HP)



Connection and Operation

Names and Functions of Brake Pack Parts

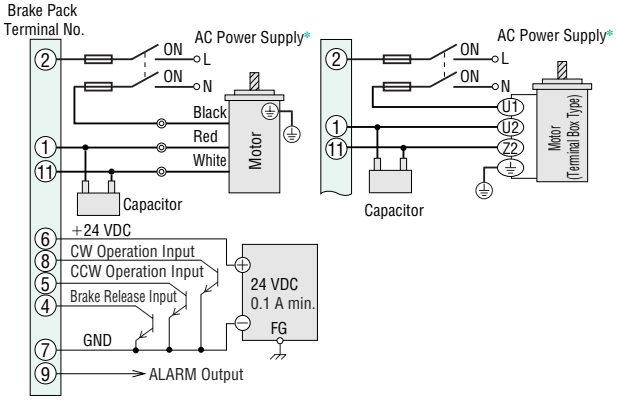


No.	Name	Factory Setting	Functions
①	POWER Indicator (Green)	–	Lit when 24 VDC is supplied.
②	ALARM Indicator (Red)	–	Lit when the ALARM output is "OFF."
③	Motor Output Select Switch	60−90 W (1/12−1/8 HP)	Used to set the motor output.
④	SINK/SOURCE Select Switch	SINK	Used to switch between Sink/Source for the control signal output.

Connection Diagrams

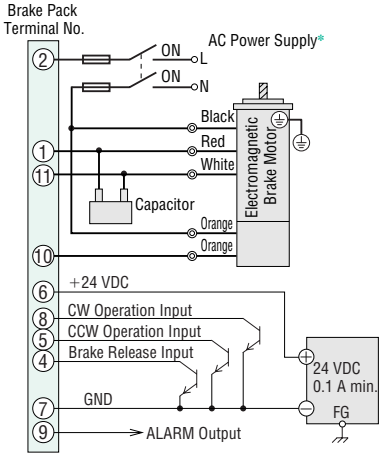
The wiring diagram is for when the SINK/SOURCE select switch is set to the "SINK" side.

◇Induction Motors/Reversible Motors



*Single-phase 100/110/115 VAC, single-phase 200/220/230 VAC

◇Electromagnetic Brake Motors



*Single-phase 100/110/115 VAC, single-phase 200/220/230 VAC

Terminal Arrangement for Flush Mounting Socket

Terminal No.	Signal Name	Description
①	Motor/Capacitor	Connect the motor and capacitor.
②	AC Power Input (L)	Single-phase 100−115 VAC Single-phase 200−230 VAC
③	NC	Not used. Leave this terminal unconnected.
④*1	Brake Release Input*2	Not an instantaneous stop but a natural stop
	ALARM-RESET Input	Reset ALARM Output.
⑤	CCW Operation Input*3	Motor runs in the CCW direction during "ON."
⑥	DC Power Input	+24 VDC input
⑦	GND	GND
⑧	CW Operation Input	Motor runs in the CCW direction during "ON."
⑨	ALARM Output	Turns "OFF" when the motor's thermal protector is "open."
⑩	Electromagnetic Brake*4	Connect to the electromagnetic brake.
⑪	Motor/Capacitor	Connect the motor and capacitor.

*1 Functions as a brake release input during normal operation, and as an ALARM-RESET input when the ALARM output is OFF.
*2 Releases the electromagnetic brake for electromagnetic brake motors.
*3 Not used with an induction motor with four lead wires.
*4 Only for electromagnetic brake motors.

Notes:

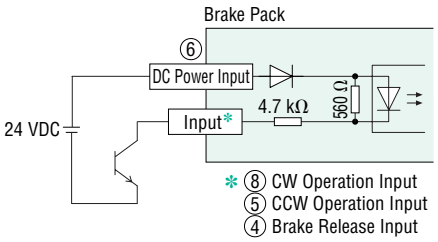
- The input-signal voltage is 24 VDC±10% and 0.1 A or more.
- Minimize the length of the motor cable and the input/output signal cable to reduce EMI.
- Use a cable of AWG18 (0.75 mm^2) or more in diameter for the motor cable and power cable.
- Be sure to connect the GND terminal to GND (negative side) of the external controller, or the unit will not operate.

●I/O Signal Circuit

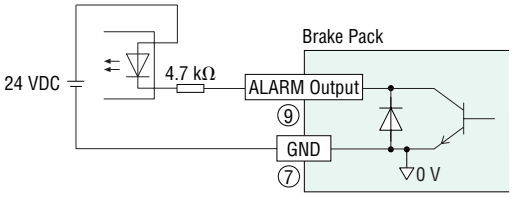
The I/O signal circuit can be switched between the sink mode and source mode using the sink/source select switch on the brake pack. The factory setting is the sink mode.

◇Sink Logic

•Input Circuit

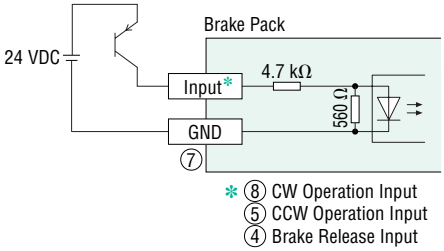


•Output Circuit

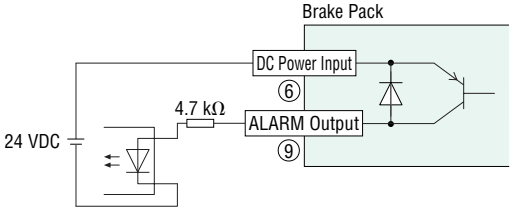


◇Source Logic

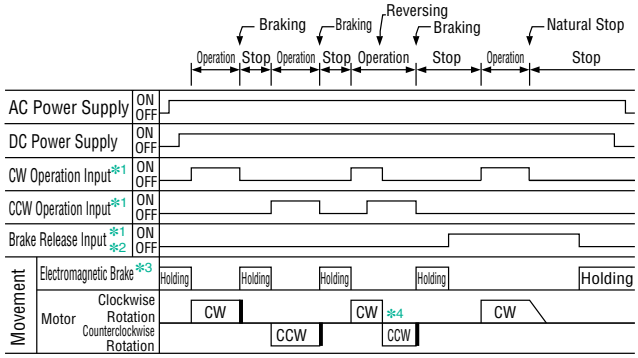
•Input Circuit



•Output Circuit



●Timing Chart



*1 Turn on CW operation input, CCW operation input, and brake release input after turning on AC power.
The motor does not operate if they are input ahead of AC power.
The ALARM indicator will light and ALARM output will switch to "OFF."

*2 The brake release input becomes ALARM-RESET input when the ALARM output is OFF.

*3 Only for electromagnetic brake motors.

*4 The induction motor will not accommodate instantaneous forward/reverse switching.

◇CW Operation Input

Turning the CW operation signal to "ON" causes the motor's output shaft to turn in the CW direction. Turning it to "OFF" triggers an instantaneous stop.

◇CCW Operation Input

Turning the CCW operation signal to "ON" causes the motor's output shaft to turn in the CCW direction. Turning it to "OFF" triggers an instantaneous stop.

If both the CW and CCW operation signals are simultaneously turned to "ON," the CW operation signal will take priority. Therefore, the wiring must be changed with an induction motor having four lead wires.

◇Brake Release Input [ALARM-RESET Input]

Functions as a brake release input during normal operation, and as an ALARM-RESET input when the ALARM output is OFF.

•When normal: [Brake Release Input]

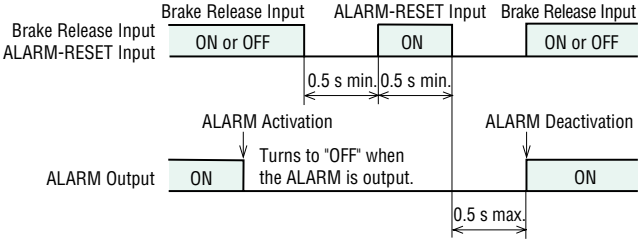
Turning the brake release signal to "ON" disables both the electronic brake and electromagnetic brake. When the CW and CCW operation signals are turned to "OFF," the motor operates via inertial force before coming to a natural stop. When the motor is stationary, the electromagnetic brake is not activated, so the motor's output shaft can be moved freely.

Turning the brake release signal to "OFF" (or leaving the signal unconnected) and turning both CW and CCW operation signals to "OFF" will activate the electronic brake and electromagnetic brake, bringing the motor to an instantaneous stop. Once the motor stops, the electronic brake will release automatically. However, the electromagnetic brake will continue to operate and hold the load.

•When ALARM output is OFF: [ALARM-RESET Input]

When ALARM output is turned OFF, turn all input signals "OFF" and input 0.5 seconds or more for ALARM-RESET input.

Wait at least 0.5 seconds after turning the ALARM-RESET input OFF before restarting operation.



It is also possible to deactivate the alarm by turning off the power and turning it on again. Turn off the DC or AC power, and turn all input signals "OFF" before turning on the power again.

◇ALARM Output (Thermal Protector Open Detection)

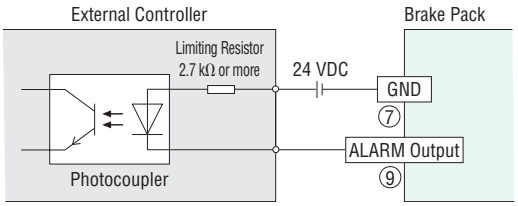
Since the **SB50W** ALARM output function detects the operations of the thermal protector, the current flowing in the motor is monitored. Operation occurs under the following conditions:

- When the thermal protector built-in to the motor is opened
- When there is improper connection/disconnection of the power supply cable and motor cable
- When the input signal is turned "ON" before the AC power is turned on
- When the AC power is turned off while the motor is in operation or while it is stopped

In the above conditions, state of the **SB50W** ALARM output is "OFF," the ALARM indicator lamp (red) on the panel lights up, and power supply to the motor is stopped.

With electromagnetic brake motors, the brake is activated in order to hold the load in position.

✻When the DC power is turned on, the alarm indication lamp lights up instantaneously, but this is not an abnormality.



Use a power source of 26.4 VDC or less, and limit the output current to 10 mA or less.

■Operating/Braking Repetition Cycle

The repeated operation and braking of a motor will cause about a temperature increase in the motor and brake pack, thereby limiting the continuous operating time.

Observe the repetition cycle given in the table below for the operation and braking of the motor. The motor may generate heat depending on the conditions in which it is driven. Ensure that the temperature of the motor case does not exceed 90℃.

Motor Output Power	Repetition Cycle
1～25 W (1/750～1/30 HP)	2 seconds or more
40～90 W (1/19～1/8 HP)	4 seconds or more

(A repetition cycle of two seconds represents operation for one second and stopping for one second.)

Accessories

Motor/Gearhead Mounting Brackets RoHS

Mounting Brackets for attaching and securing a motor and gearhead. They are high-strength type, 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: □42 mm (□1.65 in.)

● Model: **SOL0U04**

Mass: 80 g (2.8 oz.) Material: Aluminum

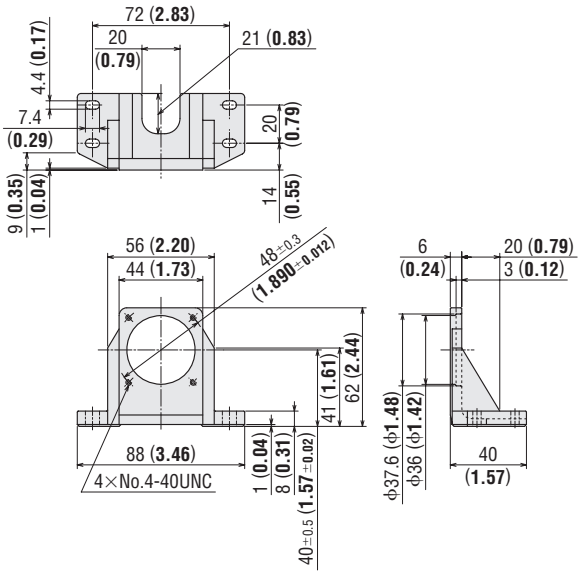
CAD A320U

◇Applicable Products

0GN Gearhead

Motor with the frame size of □42 mm (□1.65 in.)

● Dimensions Unit = mm (inch)



For Motor Frame Size: □60 mm (□2.36 in.)

● Model: **SOL2U08**

Mass: 120 g (4.2 oz.) Material: Aluminum

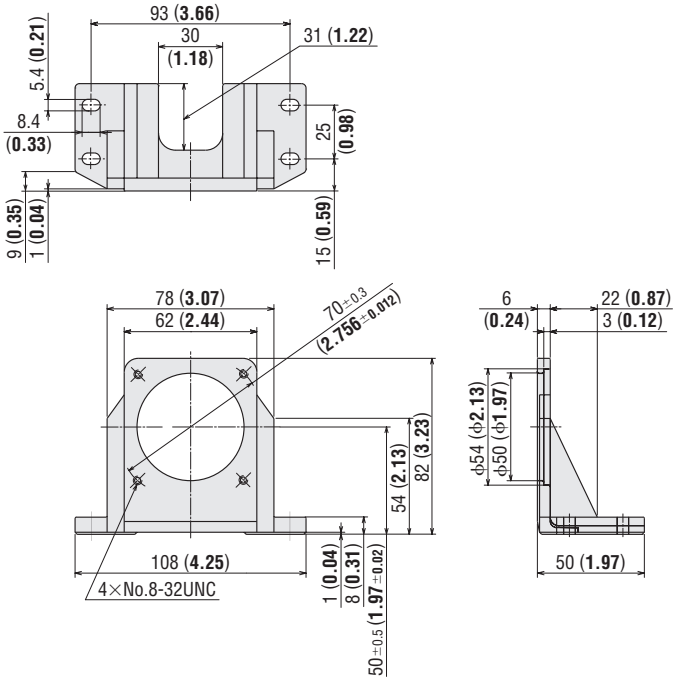
CAD A321U

◇Applicable Products

2GN Gearhead

Motor with the frame size of □60 mm (□2.36 in.)

● Dimensions Unit = mm (inch)



For Motor Frame Size: □70 mm (□2.76 in.)

● Model: **SOL3U10**

Mass: 160 g (5.6 oz.) Material: Aluminum

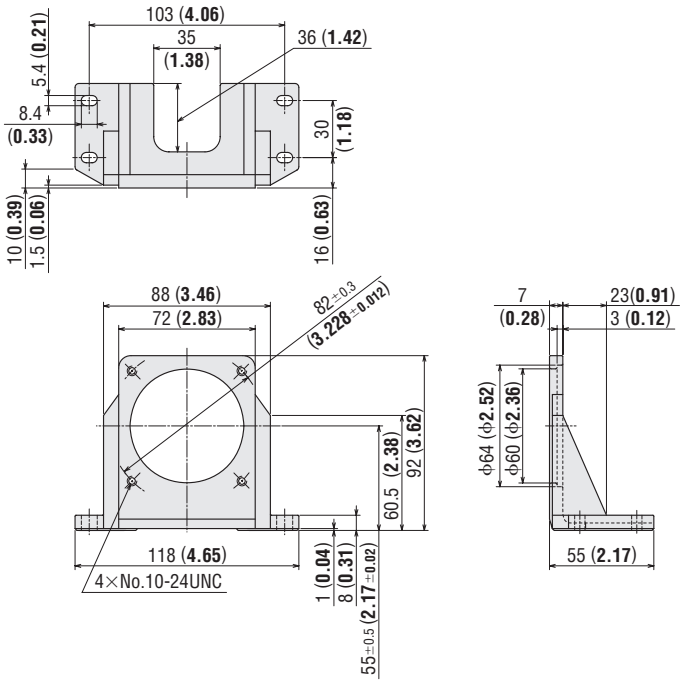
CAD A322U

◇Applicable Products

3GN Gearhead

Motor with the frame size of □70 mm (□2.76 in.)

● Dimensions Unit = mm (inch)



For Motor Frame Size: □80 mm (□3.15 in.)

● Model: **SOL4U10**

Mass: 200 g (7.1 oz.) Material: Aluminum

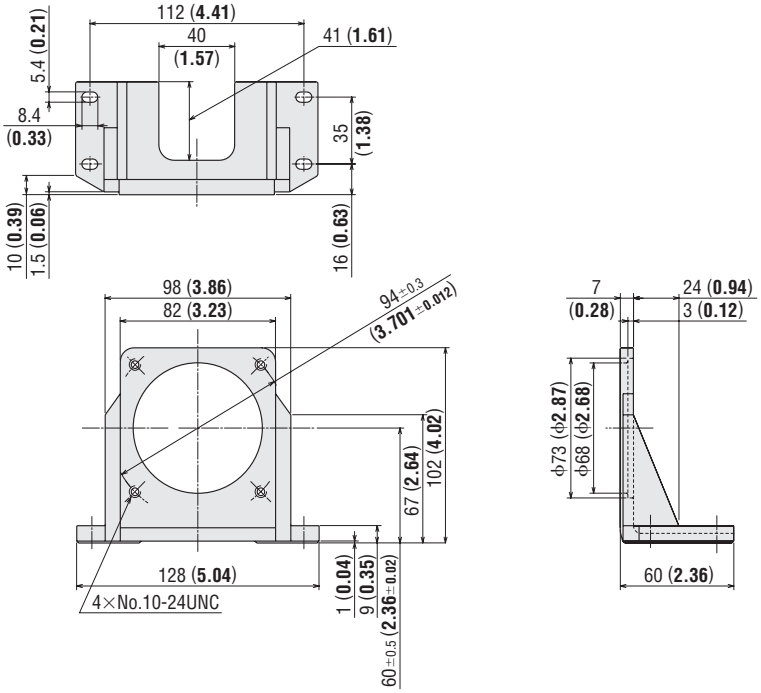
CAD A236U

◇Applicable Products

4GN Gearhead

Motor with the frame size of □80 mm (□3.15 in.)

● Dimensions Unit = mm (inch)



For Motor Frame Size: □90 mm (□3.54 in.)

● Model: **SOL5UA**

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

CAD A238U

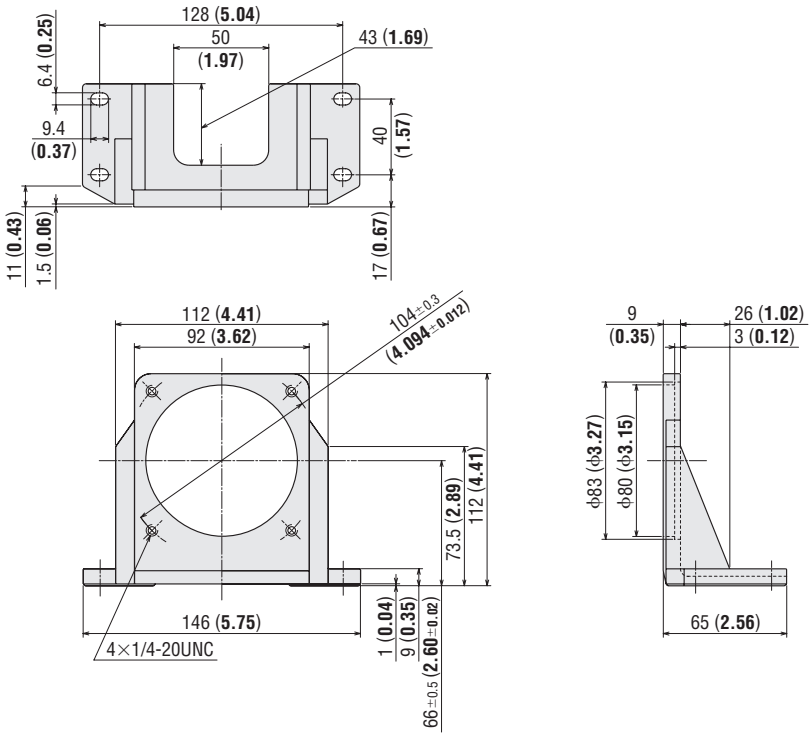
◇Applicable Products

5GN Gearhead

5GE Gearhead

Motor with the frame size of □90 mm (□3.54 in.)

● Dimensions Unit = mm (inch)



Flexible Couplings RoHS

These products are the clamping type couplings to connect between the shaft of motor/gearhead and the shaft of the equipment to be connected.
Once the motor and gearhead are determined, the coupling can be done.

● 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 shaft being driven is not damaged, since shafts are joined by clamping.
- Easy installation due to a separated hub and sleeve design.

Gearhead Model	Coupling Type
0GN□KA	**MCL20**
2GN□SA	**MCL20** **MCL30**
3GN□SA	**MCL30**
4GN□SA **4GN□RAA**	**MCL30** **MCL40**
5GN□SA **5GN□RAA**	**MCL30** **MCL40**
5GE□SA **5GE□RAA**	**MCL40** **MCL55**

✻Type of coupling varies depending on condition of the load.

CR Circuit for Surge Suppression RoHS

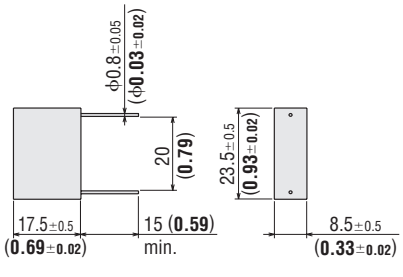
This product is used to protect the contacts of the relay and/or switch used for controlling the reversal of direction and the electromagnetic brake.

● Model: **EPCR1201-2**

250 VAC (120 Ω, 0.1 μF)

● Dimensions Unit = mm (inch)

Mass: 5 g (0.18 oz.)



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 June, 2007.

ORIENTAL MOTOR U.S.A. CORP.

Western Sales and Customer Service Center
Tel: (310) 715-3301 Fax: (310) 225-2594

Dallas
Tel: (214) 432-3386
Denver
Tel: (303) 202-5111
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
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

Printed in Japan 07T 3K 53098T #380