Reversible Motors

Additional Information

Reversible Motors

World **K** Series
(Lead Wire Type)

V Series
(Terminal Box Type)

✻ Gearheads shown in the photograph are sold separately. The **V** Series is combination type. (Pre-assembled Gearmotor)

Features

Optimal for Bi-Directional Operation

These are 30-minute rated motors designed for applications where instantaneous 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.

Wide Variety of Products

World **K** Series, **K** Series and **V** Series motors are available. For connection with the power supply, you can select from lead wire and terminal box types.

Conform to Safety Standards and Conforms to Global Power Supply Voltages

Conforms to UL/CSA/EN standards and the CE Marking is being used in accordance with the low voltage directive. Also, our wide range of products includes those that meet the power supply voltages of North America, Asia and major countries in Europe.

✻ Some of models are not certified by EN standards.

Combination Type (Pre-assembled Gearmotors) (V Series)

The combination type (pre-assembled gearmotors) come with the motor and its dedicated gearhead already assembled. This simplifies installation in equipment. Motors and gearheads are also available separately so they can be on hand to make changes or repairs.

Safety Standards and CE Marking

World K Series, V Series

Standards	Certification Body	Standards File No.	CE Marking
UL1004 UL2111	UL	E64199 (6 W) E64197 (15 W～90 W)	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77			
EN60950	VDE	114919 (6 W) 6751 (15 W～90 W)✻2	
EN60034-1 EN60034-5 IEC60034-11✻1	Conform to EN/IEC Standards		

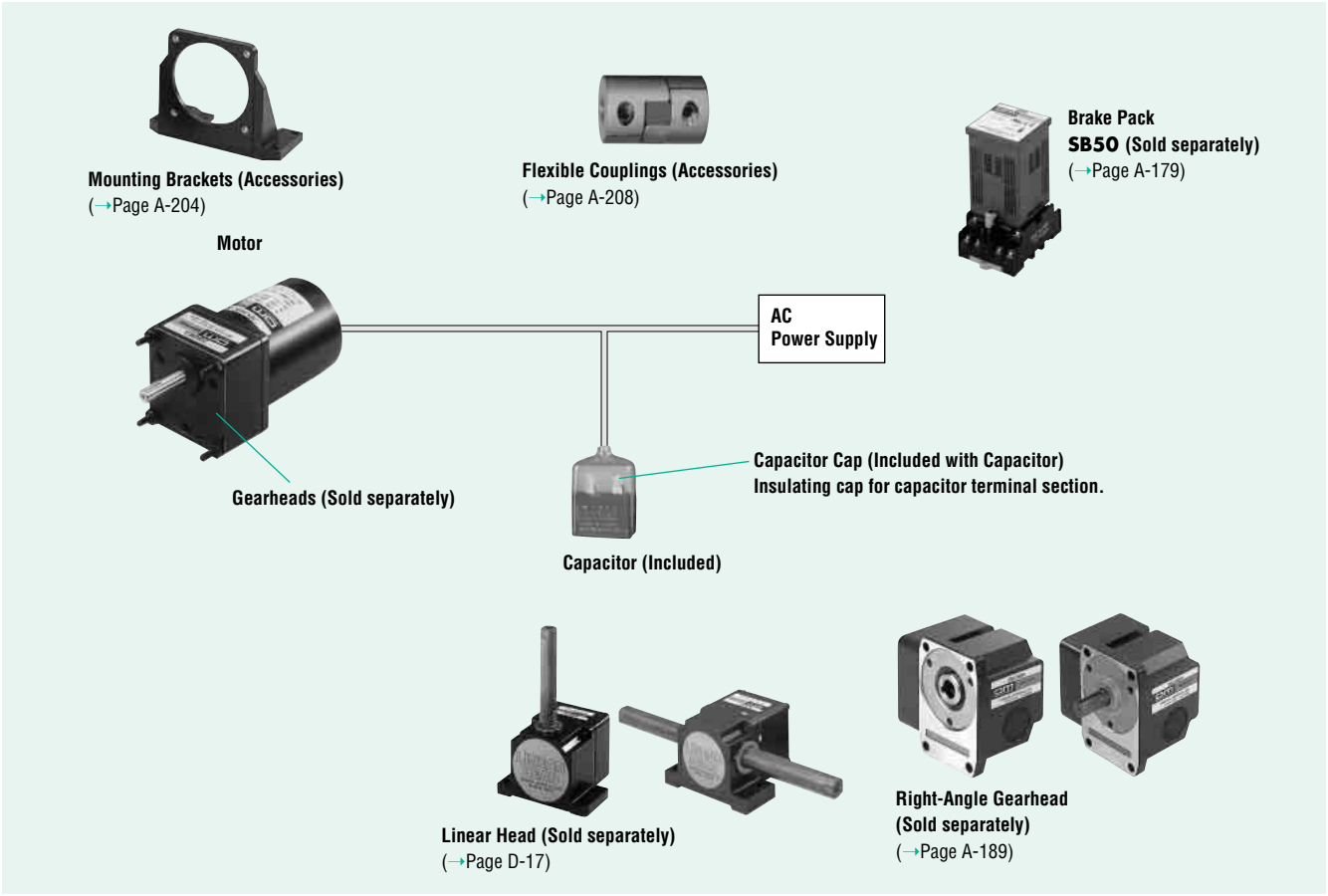
✻1 15 W～90 W types.
✻2 Except **V** Series 90 W.
● When the motor is approved under various standards, the model name on the nameplate is the approved model name.
● **Details of Safety Standards**→Page G-2
● **List of Safety Standard Approved Products**→Page G-10～G-13

K Series (1 W only)

Standards	Certification Body	Standards File No.	CE Marking
UL1004 UL519	UL	E64199	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77	CSA	LR47296	
EN60950	VDE	5876ÜG	

● **Details of Safety Standards**→Page G-2

System Configuration



The System configuration shown is an example. Other configurations are available.

Product Number Code

World K Series

4 R K 25 GN - AW T U

- **Motor Frame Size** 2: 2.36 in. sq. (60 mm sq.) 4: 3.15 in. sq. (80 mm sq.) 3: 2.76 in. sq. (70 mm sq.) 5: 3.54 in. sq. (90 mm sq.)
- **Motor Type** R: Reversible Motor
- **Motor Series** K: **K** Series
- **Output Power** (Example) 25: 25 W
- **Motor Shaft Type**
  GN: Pinion Shaft (for use with **GN** type gearhead)
  GU: Pinion Shaft (for use with **GU** type gearhead)
  A: Round Shaft
- **Voltage**
  AW: Single-Phase 100/110/115 VAC, 4 Poles
  CW: Single-Phase 200/220/230 VAC, 4 Poles
- T: Terminal Box Type
- **Included Capacitor**
  U: For Single-Phase110/115 VAC
  E: For Single-Phase220/230 VAC

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

World K Series and K Series Gearhead

4 GN 50 KA

- **Gearhead Frame Size** 0: 1.65 in. sq. (42 mm sq.) 2: 2.36 in. sq. (60 mm sq.) 3: 2.76 in. sq. (70 mm sq.) 4: 3.15 in. sq. (80 mm sq.) 5: 3.54 in. sq. (90 mm sq.)
- **Gearhead Type**
  GN: **GN** Type (for use with **GN** type pinion shaft motor)
  GU: **GU** Type (for use with **GU** type pinion shaft motor)
- **Gear Ratio** (Example) 50: Gear Ratio of 50:1
  10X denotes the decimal gearhead of gear ratio 10:1
- **Type of Bearings or Shaft Type**
  KA: Ball Bearing Type (inch size)
  RAA: Right Angle Solid Shaft Type (inch size)
  RH: Right Angle Hollow Shaft Type

V Series

V H R 5 40 A T - 300 U

- **Motor Series** V: **V** Series
- High Power
- **Motor Type** R: Reversible Motor
- **Motor Frame Size** 2: 2.36 in. sq. (60 mm sq.) 3: 2.76 in. sq. (70 mm sq.) 4: 3.15 in. sq. (80 mm sq.) 5: 3.54 in. sq. (90 mm sq.)
- **Output Power** (Example) 40: 40 W
- **Voltage**
  A: Single-Phase 100/110/115 VAC
  C: Single-Phase 200/220/230 VAC
- T: Terminal Box Type
- **Gear Ratio** (Example) 300: Gear Ratio of 300:1
- **Included Capacitor**
  U: For Single-Phase110/115 VAC
  E: For Single-Phase220/230 VAC

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

K Series

0 R K 1 GN - A UL

- **Motor Frame Size** 0: 1.65 in. sq. (42 mm sq.)
- **Motor Type** R: Reversible Motor
- **Motor Series** K: **K** Series
- **Output Power** 1 W
- **Motor Shaft Type**
  GN: Pinion Shaft (for use with **GN** type gearhead)
  A: Round Shaft
- **Voltage**
  A: Single-Phase 115 VAC, 4 Poles
- UL: UL Recognized and CSA, VDE certified

General Specifications

World K Series, V Series

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC 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 and 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 144°F (80°C) or less measured by the resistance change method after rated motor operation with a connected a gearhead or equivalent heat radiation plate.*
Insulation Class	Class B (266°F [130°C])
Overheat Protection	6 W type has impedance protection. All others have a built-in thermal protector (Automatic return type) Operating temperature, open: 266°F±9°F (130°C±5°C) close: 179.6°F±27°F (82°C±15°C)
Ambient Temperature Range	14°F~104°F (−10°C~+40°C) (nonfreezing)
Ambient Humidity	85% maximum (noncondensing)
Degree of Protection	Lead wire type (World **K** Series, **V** Series): IP 20 Terminal box type (World **K** Series, **V** Series): IP 40

*Heat radiation plate (material: Aluminum)

Model (output)	Size: in. (mm)	Thickness: in. (mm)
2RK Type (6 W)	4.53×4.53 (115×115)	0.20 (5)
3RK Type (15 W)	4.92×4.92 (125×125)	
4RK Type (25 W)	5.31×5.31 (135×135)	
5RK40 Type (40 W)	6.50×6.50 (165×165)	
5RK60 Type (60 W)	7.87×7.87 (200×200)	
5RK90 Type (90 W)	7.87×7.87 (200×200)	

K Series (1W only)

Item	Specifications
Insulation Resistance	100 MΩ or more when 500 VDC is applied between the windings and frame after the rated motor operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5 kV at 60 Hz applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 135°F (75°C) or less measured by the resistance change method after rated motor operation.
Insulation Class	UL, CSA Standard Class A [221°F (105°C)] EN Standard Class E [248°F (120°C)]
Overheat Protection	Impedance protected
Ambient Temperature Range	14°F~104°F (−10°C~+40°C) (nonfreezing)
Ambient Humidity	85% maximum (noncondensing)
Degree of Protection	IP20

Reversible Motors

1 W (1/750 HP)

Frame Size: □ 1.65 in. (□ 42 mm)

(Gearhead Sold Separately)

Specifications — 30 Minutes Rating

Model Upper Model Name: Pinion Shaft Type Lower Model Name ( ): Round Shaft Type	Output Power HP	W	Voltage VAC	Frequency Hz	Current A	Starting Torque oz-in	mN·m	Rated Torque oz-in	mN·m	Rated Speed r/min	Capacitor μF
(ZP) **0RK1GN-AUL (0RK1A-AUL)**	1/750	1	Single-Phase 115	60	0.10	1.13	8	1.13	8	1200	1.2

(ZP) Impedance protected.
- Values shown for rated torque and starting torque are measured for operation without the friction brake installed.
- **Details of Safety Standards**→Page G-2

Gearhead (Sold Separately)

Parallel Shaft

Gearhead Model	Gear Ratio
0GN□KA	**3～180**

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

Gearmotor — Torque Table

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
0RK1GN-AUL / 0GN□KA		0.168	0.2	0.28	0.34	0.43	0.51	0.64	0.77	0.97	1.15	1.41	1.68	2.3	2.8	3	3.7	4.1	5	6.2	7.5
		0.019	0.023	0.032	0.039	0.049	0.058	0.073	0.088	0.11	0.13	0.16	0.19	0.26	0.32	0.35	0.42	0.47	0.57	0.71	0.85

- Gearheads are sold separately. Decimal gearheads are not available for 1 W motors.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- The speed is calculated by dividing the motor's synchronous speed (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.

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft type)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

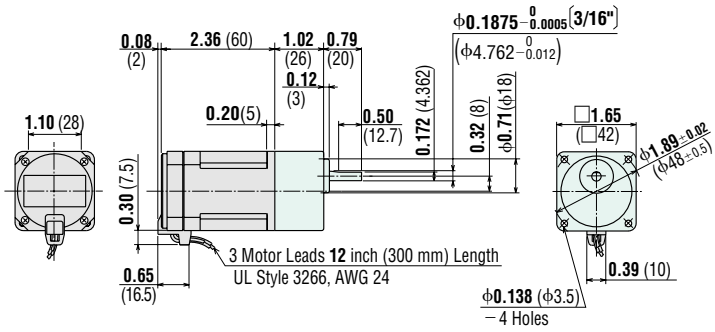
Mounting screws are included with gearheads. Dimensions for screws→A-223

◆ Lead Wire Type

Motor **0RK1GN-AUL** Weight: 0.66 lb. (0.3 kg)

Gearhead **0GN□KA** Weight: 0.44 lb. (0.2 kg)

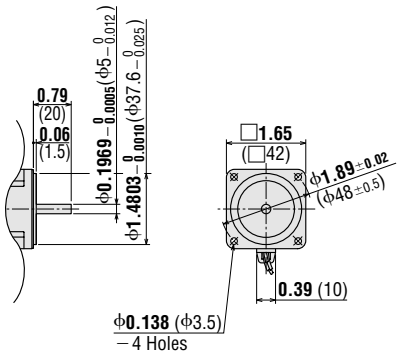
DXF A001U (**0GN3KA**~**180KA**)



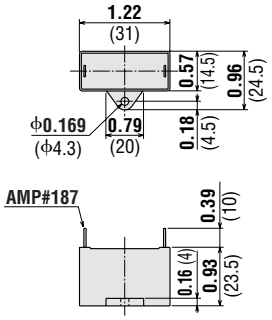
Round Shaft Type

0RK1A-AUL Weight: 0.66 lb. (0.3 kg)

DXF A372



● Capacitor (included with the motors)

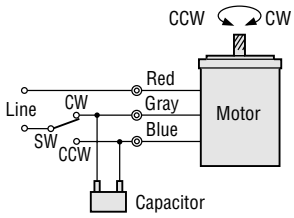


Motor Model	Capacitor Model	Weight oz. (g)
0RK1GN-AUL **0RK1A-AUL**	CH12UL	0.60 (17)

- If you need to order a capacitor without a motor, add "-C" to the capacitor model number shown. A capacitor cap is included with a capacitor.

Connection Diagrams

0RK1GN-AUL



- 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.
- **How to connect a capacitor**→Page A-225

Note:

- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact. Connecting CR circuit, contact capacity→Page A-226

Reversible Motors
6 W (1/125 HP)
Frame Size: □ 2.36 in. (□ 60 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

Specifications — 30 Minute Rating

World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(ZP) **2RK6GN-AWU** **(2RK6A-AWU)**	**2RK6GN-AWTU** **(2RK6A-AWTU)**	1/125	6	Single-Phase 110	60	0.25	6.3	45	5.8	41	1450	3.5
				Single-Phase 115	60	0.26						
(ZP) **2RK6GN-CWE** **(2RK6A-CWE)**	**2RK6GN-CWTE** **(2RK6A-CWTE)**			Single-Phase 220	50	0.12	6.3	45	6.9	49	1200	0.8
				Single-Phase 220	60	0.11	6.3	45	5.8	41	1450	
				Single-Phase 230	50	0.12	7.1	50	6.9	49	1200	
				Single-Phase 230	60	0.12	6.3	45	5.8	41	1450	

(ZP) Impedance protected.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ③	Terminal Box Type	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(ZP) **VHR206A-□U**	—	1/125	6	Single-Phase 110	60	0.25	6.3	45	5.8	41	1450	3.5
				Single-Phase 115		0.26						
(ZP) **VHR206C-□E**	—			Single-Phase 220	50	0.12	6.3	45	6.9	49	1200	0.8
				Single-Phase 220	60	0.11	6.3	45	5.8	41	1450	
				Single-Phase 230	50	0.12	7.1	50	6.9	49	1200	
				Single-Phase 230	60	0.12	6.3	45	5.8	41	1450	

(ZP) Impedance protected.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12.
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

Gearheads for World K Series (Sold Separately)

Parallel Shaft

Gearhead Model	Gear Ratio
2GN□KA	**3~180**
2GN10XK (Decimal Gearhead)	

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

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque with a decimal gearhead with a gear ratio of 10:1 is 26 lb-in (3 N·m).

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
2RK6GN-AWU **2RK6GN-AWTU** **2RK6GN-CWE** **2RK6GN-CWTE** / **2GN□KA**		0.88 0.10	1.06 0.12	1.5 0.17	1.77 0.20	2.2 0.25	2.6 0.30	3.7 0.42	4.4 0.50	5.3 0.60	6.6 0.75	7.9 0.90	9.7 1.1	12.3 1.4	14.1 1.6	17.7 2.0	21 2.4	23 2.7	26 3	26 3	26 3

Single-Phase 230 VAC 50 Hz

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

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
	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-CWE **2RK6GN-CWTE** / **2GN□KA**		1.06 0.12	1.23 0.14	1.77 0.20	2.1 0.24	2.6 0.30	3.1 0.36	4.4 0.50	5.3 0.60	6.2 0.71	7.8 0.89	9.7 1.1	11.5 1.3	14.1 1.6	16.8 1.9	21 2.4	25 2.9	26 3	26 3	26 3	26 3

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10	6	5
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR206A-□U **VHR206C-□E**		1.59 0.18	1.94 0.22	2.9 0.33	4.8 0.55	5.8 0.66	9.7 1.1	11.5 1.3	18.5 2.1	28 3.2	37 4.2	53 6	53 6	53 6

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3	5	4.2
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR206C-□E		1.94 0.22	2.3 0.26	3.5 0.4	5.8 0.66	6.9 0.79	11.5 1.3	13.2 1.5	22 2.5	33 3.8	45 5.1	53 6	53 6	53 6

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

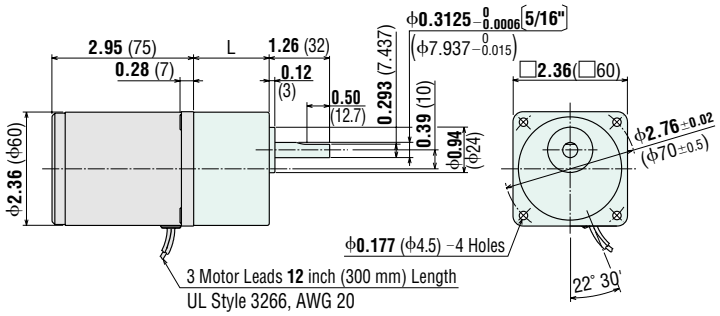
World K Series

Lead Wire Type ①

Motor
2RK6GN-AWU
2RK6GN-CWE
Weight: 1.5 lb. (0.7 kg)

Gearhead
2GN□KA
Weight: 0.88 lb. (0.4 kg)

DXF A004AU (**2GN3KA**~**18KA**)
A004BU (**2GN25KA**~**180KA**)

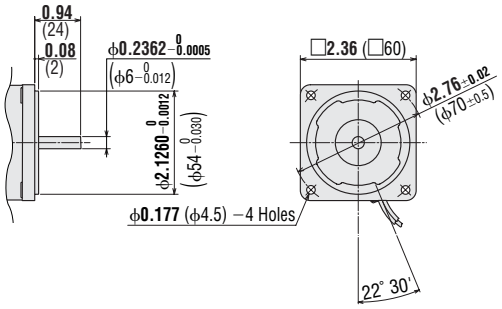


2GN3KA~**18KA**: L = **1.18** (30)
2GN25KA~**180KA**: L = **1.57** (40)

Round Shaft Type
2RK6A-AWU
2RK6A-CWE
Weight: 1.5 lb. (0.7 kg)

1/4 inch shaft motors are also available. Contact your Oriental Motor Representative for more information.

DXF A324

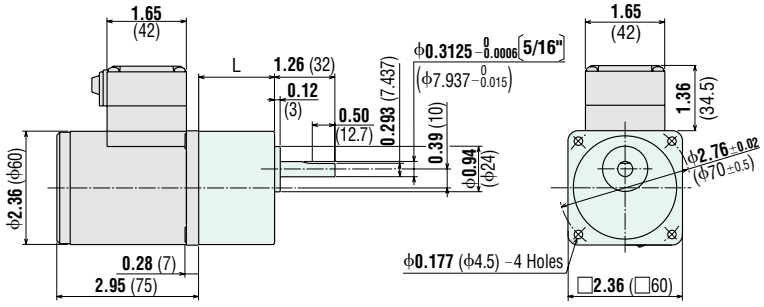


Terminal Box Type ②

Motor
2RK6GN-AWTU
2RK6GN-CWTE
Weight: 1.7 lb. (0.75 kg)

Gearhead
2GN□KA
Weight: 0.88 lb. (0.4 kg)

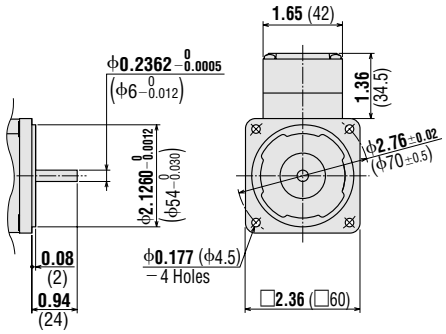
DXF A005AU (**2GN3KA**~**18KA**)
A005BU (**2GN25KA**~**180KA**)



2GN3KA~**18KA**: L = **1.18** (30)
2GN25KA~**180KA**: L = **1.57** (40)

Round Shaft Type
2RK6A-AWTU
2RK6A-CWTE
Weight: 1.7 lb. (0.75 kg)

DXF A325

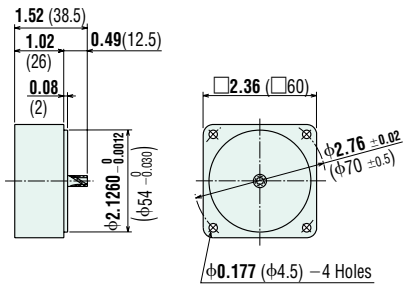


- Use cable (VCTF) with a diameter of ϕ**0.27** inch (ϕ6.8 mm)~ϕ**0.34** inch (ϕ8.6 mm).
- Cable entry is possible at any of the four sides of the terminal box.
- **Details of Terminal Box**→Page A-224

Decimal Gearhead (for World K Series)

2GN10XK Weight: 0.44 lb. (0.2 kg)

DXF A003

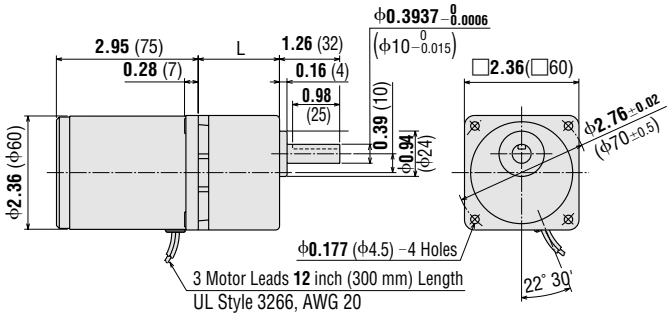


● V Series

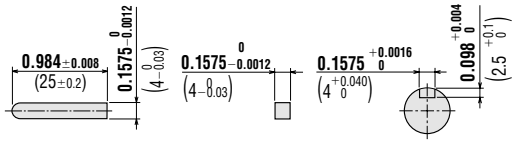
◆ Lead Wire Type ③

VHR206A-□U, **VHR206C-□E** (Combination Type)
Weight: 2.6 lb. (1.2 kg) including gearhead
Motor Model: VHR206A-GV, VHR206C-GV
Gearhead Model: GV2G□

DXF A201A (GV2G5～18)
A201B (GV2G30～120)
A201C (GV2G180～360)

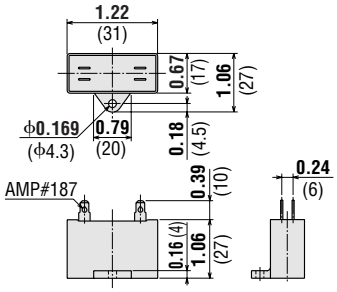


●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)



GV2G5~GV2G18: L = **1.34** (34)
GV2G30~GV2G120: L = **1.5** (38)
GV2G180~GV2G360: L = **1.69** (43)

● Capacitor (included with the motors)

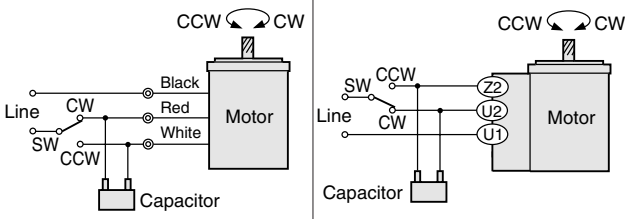


Motor Model	Capacitor Model	Weight oz. (g)
2RK6GN-AW(T)U **2RK6A-AW(T)U** **VHR206A-□U**	CH35FAUL	0.71 (20)
2RK6GN-CW(T)E **2RK6A-CW(T)E** **VHR206C-□E**	CH08BFAUL	

- If you need to order a capacitor without a motor, add "-C" to the capacitor model number shown.
  A capacitor cap is included with a capacitor.

■ Connection Diagrams

Lead Wire Type	Terminal Box Type
2RK6GN-AWU **2RK6GN-CWE** **VHR206A-□U** **VHR206C-□E**	**2RK6GN-AWTU** **2RK6GN-CWTE**

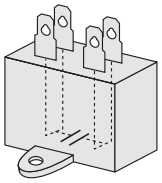


- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.
- **How to connect a capacitor**→Page A-225

Note:
- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact.
  Connecting CR circuit, contact capacity→Page A-226

● Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



■ List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR206A-□U	VHR206A-GV	GV2G□
VHR206C-□E	VHR206C-GV	

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

Reversible Motors
15 W (1/50 HP)
Frame Size: □ 2.76 in. (□ 70 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

Specifications — 30 Minute Rating

World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **3RK15GN-AWU** **(3RK15A-AWU)**	1/50	15	Single-Phase 110	60	0.42	14.2	100	14.9	105	1450	6
			Single-Phase 115	60	0.41						
(TP) **3RK15GN-CWE** **(3RK15A-CWE)**			Single-Phase 220	50	0.19	14.2	100	17.7	125	1200	1.5
			Single-Phase 220	60	0.21	14.2	100	14.9	105	1450	
			Single-Phase 230	50	0.20	14.2	100	17.7	125	1200	
			Single-Phase 230	60	0.21	14.2	100	14.9	105	1450	

(TP) Contains a built-in thermal protector. 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.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type	Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ②	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **VHR315A-□U**	1/50	15	Single-Phase 110	60	0.42	14.2	100	14.9	105	1450	6
			Single-Phase 115		0.41						
(TP) **VHR315C-□E**			Single-Phase 220	50	0.19	14.2	100	17.7	125	1200	1.5
			Single-Phase 220	60	0.21			14.9	105	1450	
			Single-Phase 230	50	0.2			17.7	125	1200	
			Single-Phase 230	60	0.21			14.9	105	1450	

(TP) Contains a built-in thermal protector. 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.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

Gearheads for World K Series (Sold Separately)

Parallel Shaft

Gearhead Model	Gear Ratio
3GN□KA	**3～180**
3GN10XK (Decimal Gearhead)	

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

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque with a decimal gearhead with a gear ratio of 10:1 is 44 lb-in (5 N·m).

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
3RK15GN-AWU / **3RK15GN-CWE** / **3GN□KA**		2.3 0.26	2.7 0.31	3.8 0.43	4.5 0.51	5.6 0.64	6.8 0.77	9.7 1.1	11.5 1.3	13.2 1.5	16.8 1.9	20 2.3	24 2.8	30 3.5	37 4.2	44 5	44 5	44 5	44 5	44 5	44 5

Single-Phase 230 VAC 50 Hz

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

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
	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-CWE / **3GN□KA**		2.6 0.30	3.1 0.36	4.5 0.51	5.3 0.61	6.7 0.76	8 0.91	11.5 1.3	13.2 1.5	15.9 1.8	20 2.3	23 2.7	29 3.3	36 4.1	44 5	44 5	44 5	44 5	44 5	44 5	44 5

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10	6	5
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR315A-□U **VHR315C-□E**		4.1 0.47	5 0.57	7.5 0.85	12.3 1.4	15 1.7	23 2.7	29 3.3	47 5.4	71 8.1	88 10	88 10	88 10	88 10

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3	5	4.2
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR315C-□E		4.9 0.56	6 0.68	8.8 1	15 1.7	17.7 2	28 3.2	34 3.9	57 6.5	85 9.7	88 10	88 10	88 10	88 10

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

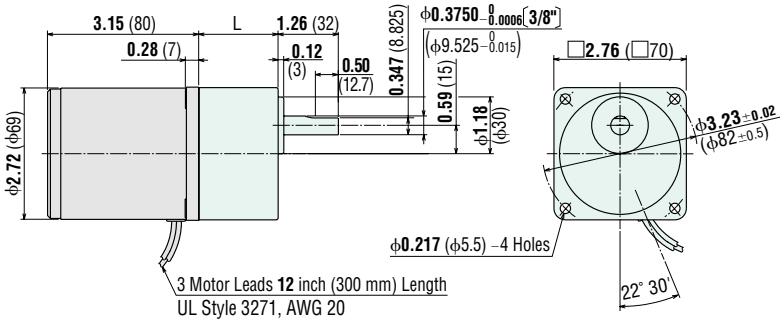
World K Series

Lead Wire Type ①

Motor
3RK15GN-AWU
3RK15GN-CWE
Weight: 2.4 lb. (1.1 kg)

Gearhead
3GN□KA
Weight: 1.2 lb. (0.55 kg)

DXF A010AU (**3GN3KA**~**18KA**)
A010BU (**3GN25KA**~**180KA**)



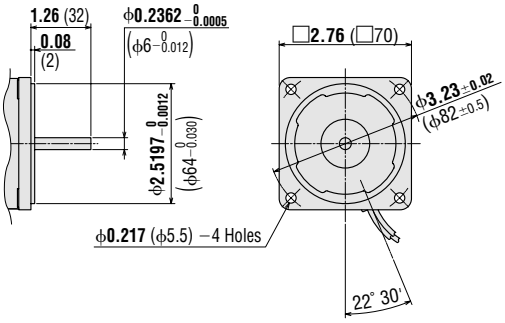
3GN3KA~**18KA**: L = **1.26** (32)
3GN25KA~**180KA**: L = **1.65** (42)

Round Shaft Type

3RK15A-AWU
3RK15A-CWE
Weight: 2.4 lb. (1.1 kg)

DXF A326

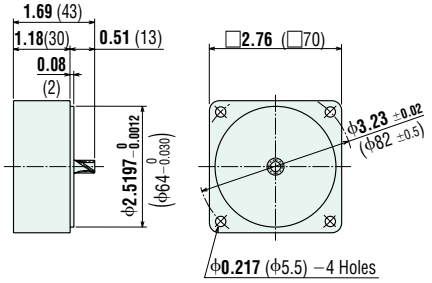
1/4 inch shaft motors are also available. Contact your Oriental Motor Representative for more information.



Decimal Gearhead (for World K Series)

3GN10XK Weight: 0.66 lb. (0.3 kg)

DXF A009

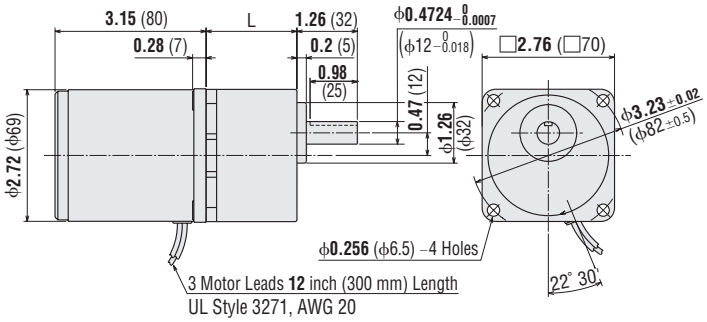


V Series

Lead Wire Type ②

VHR315A-□U, **VHR315C-□E** (Combination Type)
Weight: 3.7 lb. (1.7 kg) including gearhead
Motor Model: VHR315A-GV, VHR315C-GV
Gearhead Model: GV3G□

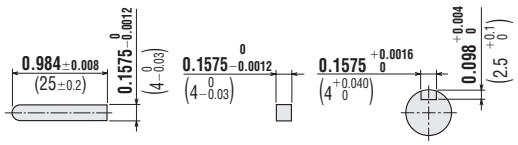
DXF A242A (GV3G5~18)
A242B (GV3G30~120)
A242C (GV3G180~360)



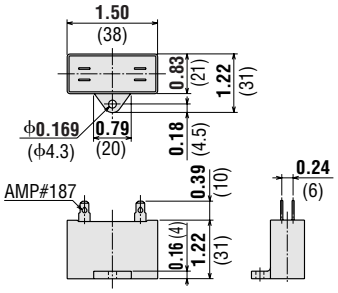
GV3G5~GV3G18: L = **1.5** (38)
GV3G30~GV3G120: L = **1.69** (43)
GV3G180~GV3G360: L = **1.89** (48)

●Key and Key Slot (Scale 1/2)

(The key is provided with the gearhead)



Capacitor (included with the motors)

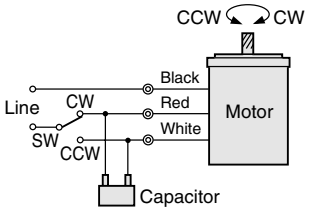


Motor Model	Capacitor Model	Weight oz. (g)
3RK15GN-AWU **3RK15A-AWU** **VHR315A-□U**	CH60CFAUL	1.4 (40)
3RK15GN-CWE **3RK15A-CWE** **VHR315C-□E**	CH15BFAUL	1.2 (35)

- If you need to order a capacitor without a motor, add "-C" to the capacitor model name shown.
  A capacitor cap is included with a capacitor.

Connection Diagrams

Lead Wire Type
3RK15GN-AWU **3RK15GN-CWE** **VHR315A-□U** **VHR315C-□E**



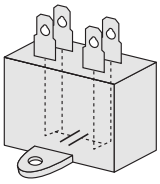
- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.
- **How to connect a capacitor**→Page A-225

Note:

- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact.
  Connecting CR circuit, contact capacity→Page A-226

Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR315A-□U	VHR315A-GV	GV3G□
VHR315C-□E	VHR315C-GV	

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

Reversible Motors
25 W (1/30 HP)
Frame Size: □ 3.15 in. (□ 80 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

Specifications — 30 Minute Rating

World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **4RK25GN-AWU** **(4RK25A-AWU)**	**4RK25GN-AWTU** **(4RK25A-AWTU)**	1/30	25	Single-Phase 110	60	0.54	19.8	140	24	170	1450	8
				Single-Phase 115	60							
(TP) **4RK25GN-CWE** **(4RK25A-CWE)**	**4RK25GN-CWTE** **(4RK25A-CWTE)**			Single-Phase 220	50	0.26	19.8	140	29	205	1200	2
				Single-Phase 220	60	0.28	19.8	140	24	170	1450	
				Single-Phase 230	50	0.26	22	160	29	205	1200	
				Single-Phase 230	60	0.28	19.8	140	24	170	1450	

(TP) Contains a built-in thermal protector. 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.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ③	Terminal Box Type Dimension ④	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **VHR425A-□U**	**VHR425AT-□U**	1/30	25	Single-Phase 110	60	0.54	19.8	140	24	170	1450	8
				Single-Phase 115	60							
(TP) **VHR425C-□E**	**VHR425CT-□E**			Single-Phase 220	50	0.26	19.8	140	29	205	1200	2
				Single-Phase 220	60	0.28	19.8	140	24	170	1450	
				Single-Phase 230	50	0.26	22	160	29	205	1200	
				Single-Phase 230	60	0.28	19.8	140	24	170	1450	

(TP) Contains a built-in thermal protector. 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.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

Gearheads for World K Series (Sold Separately)

Parallel Shaft

Gearhead Model	Gear Ratio
4GN□KA	**3~180**
4GN10XK (Decimal Gearhead)	

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

Right-Angle

Type	Gearhead Model	Gear Ratio
Hollow Shaft	**4GN□RH**	**3.6~180**
Solid Shaft	**4GN□RAA**	**3.6~180**

- Enter the gear ratio in the box (□) within the model name.
- **Right-Angle Gearheads**→Page A-189

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque with a decimal gearhead with a gear ratio of 10:1 is 70 lb-in (8 N·m).
The value is 53 lb-in (6 N·m) when 25:1～36:1 gearheads are connected.

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
4RK25GN-AWU **4RK25GN-AWTU** **4RK25GN-CWE** **4RK25GN-CWTE** / **4GN□KA**		3.6 0.41	4.4 0.50	6.1 0.69	7.3 0.83	8.8 1.0	10.6 1.2	15 1.7	18.5 2.1	22 2.5	27 3.1	32 3.7	39 4.5	49 5.6	59 6.7	70 8	70 8	70 8	70 8	70 8	70 8

Single-Phase 230 VAC 50 Hz

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

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
	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-CWE **4RK25GN-CWTE** / **4GN□KA**		4.4 0.50	5.3 0.60	7.3 0.83	8.8 1.0	10.6 1.2	13.2 1.5	18.5 2.1	22 2.5	26 3.0	32 3.7	39 4.5	47 5.4	60 6.8	70 8	70 8	70 8	70 8	70 8	70 8	70 8

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10	6	5
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR425A-□U **VHR425AT-□U** **VHR425C-□E** **VHR425CT-□E**		6.8 0.77	8.1 0.92	12.3 1.4	20 2.3	24 2.8	38 4.4	46 5.3	77 8.8	116 13.2	141 16	141 16	141 16	141 16

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3	5	4.2
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**	**360**
VHR425C-□E **VHR425CT-□E**		8.1 0.92	9.7 1.1	15 1.7	24 2.8	29 3.3	46 5.3	55 6.3	93 10.6	140 15.9	141 16	141 16	141 16	141 16

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Gearmotor — Torque Table when Right-Angle Gearhead is Attached

Right-Angle Gearheads are available for World **K** Series only.

→Page A-196

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

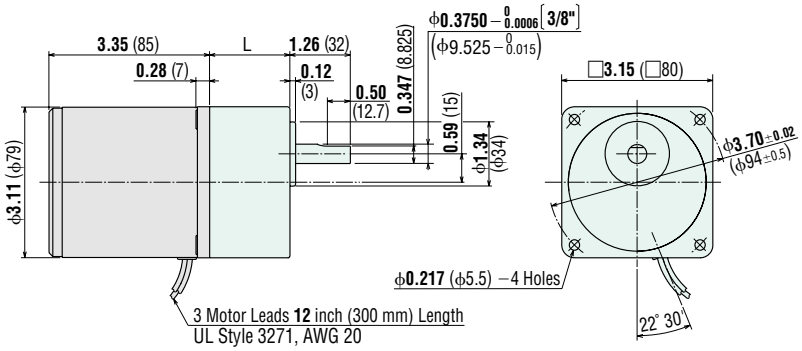
World K Series

Lead Wire Type ①

Motor
4RK25GN-AWU
4RK25GN-CWE
Weight: 3.3 lb. (1.5 kg)

Gearhead
4GN□KA
Weight: 1.4 lb. (0.65 kg)

DXF A014AU (**4GN3KA**~**18KA**)
A014BU (**4GN25KA**~**180KA**)

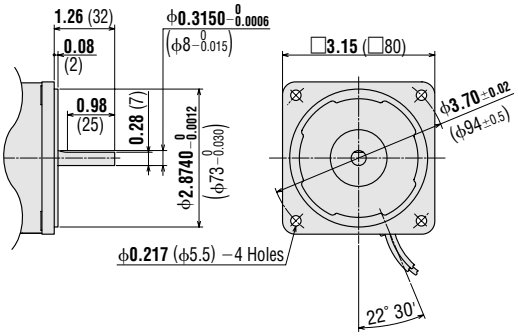


4GN3KA~**18KA**: L = **1.26** (32)
4GN25KA~**180KA**: L = **1.67** (42.5)

Round Shaft Type
4RK25A-AWU
4RK25A-CWE
Weight: 3.3 lb. (1.5 kg)

5/16 inch shaft motors are also available. Contact your Oriental Motor Representative for more information.

DXF A327

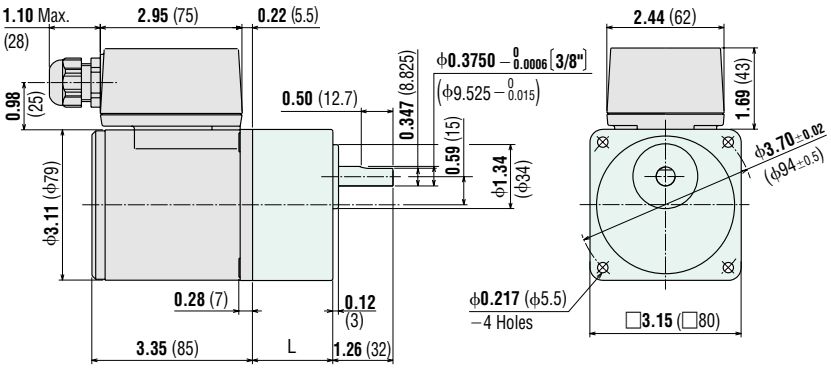


Terminal Box Type ②

Motor
4RK25GN-AWTU
4RK25GN-CWTE
Weight: 3.7 lb. (1.7 kg)

Gearhead
4GN□KA
Weight: 1.4 lb. (0.65 kg)

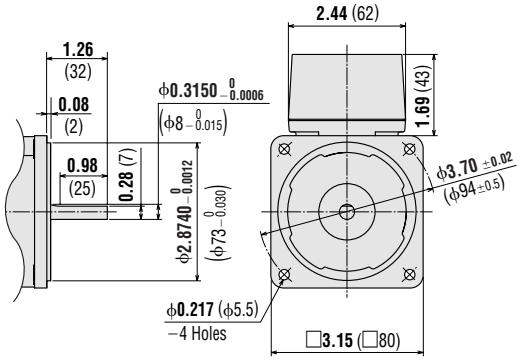
DXF A015AU (**4GN3KA**~**18KA**)
A015BU (**4GN25KA**~**180KA**)



4GN3KA~**18KA**: L = **1.26** (32)
4GN25KA~**180KA**: L = **1.67** (42.5)

Round Shaft Type
4RK25A-AWTU
4RK25A-CWTE
Weight: 3.7 lb. (1.7 kg)

DXF A328

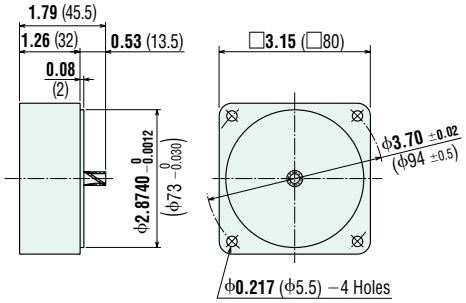


● Use cable (VCTF) with a diameter of ϕ**0.24** inch (ϕ6 mm)~ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

Decimal Gearhead (for World K Series)

4GN10XK Weight: 0.88 lb. (0.4 kg)

DXF A013

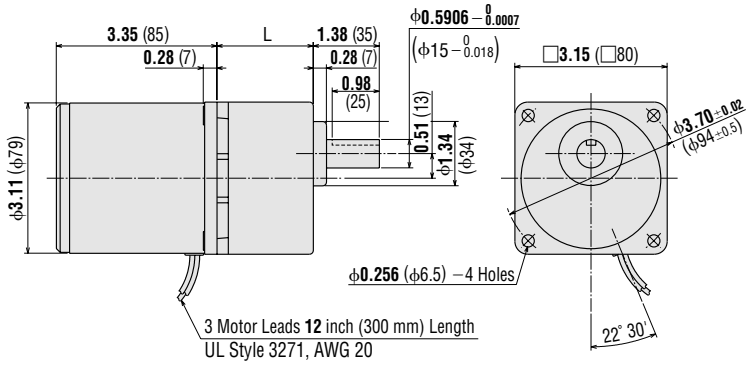


● V Series

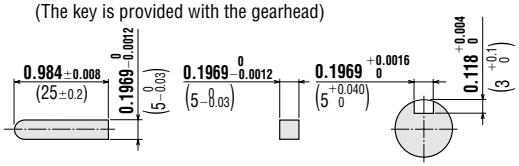
◆ Lead Wire Type ③

VHR425A-□U, **VHR425C-□E** (Combination Type)
Weight: 5.5 lb. (2.5 kg) including gearhead
Motor Model: VHR425A-GV, VHR425C-GV
Gearhead Model: GV4G□

DXF A202A (GV4G5~18)
A202B (GV4G30~120)
A202C (GV4G180~360)



●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)

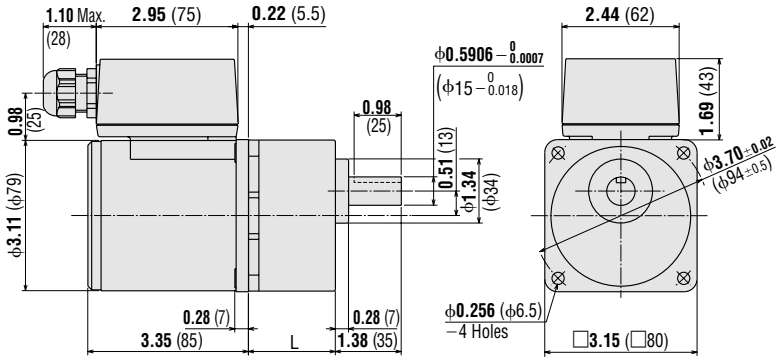


GV4G5~GV4G18: L = **1.61** (41)
GV4G30~GV4G120: L = **1.81** (46)
GV4G180~GV4G360: L = **2.01** (51)

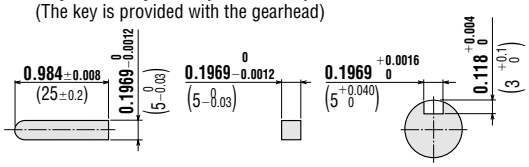
◆ Terminal Box Type ④

VHR425AT-□U, **VHR425CT-□E** (Combination Type)
Weight: 5.9 lb. (2.7 kg) including gearhead
Motor Model: VHR425AT-GV, VHR425CT-GV
Gearhead Model: GV4G□

DXF A211A (GV4G5~18)
A211B (GV4G30~120)
A211C (GV4G180~360)



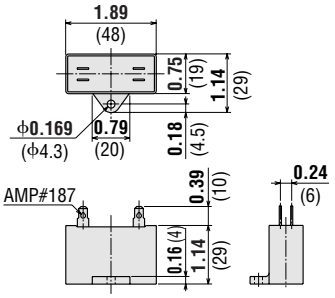
●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)



GV4G5~GV4G18: L = **1.61** (41)
GV4G30~GV4G120: L = **1.81** (46)
GV4G180~GV4G360: L = **2.01** (51)

●Use cable (VCTF) with the diameter of ϕ**0.24** inch (ϕ6 mm)~ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

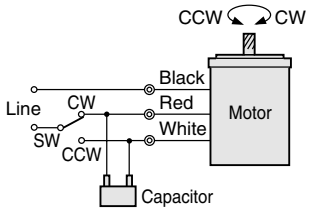
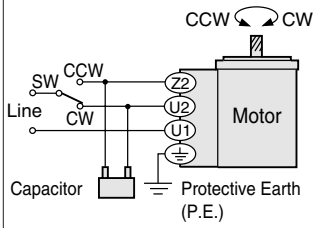
Capacitor (included with the motors)



Motor Model	Capacitor Model	Weight oz. (g)
4RK25GN-AW(T)U **4RK25A-AW(T)U** **VHR425A(T)-□U**	CH80CFAUL	1.4 (40)
4RK25GN-CW(T)E **4RK25A-CW(T)E** **VHR425C(T)-□E**	CH20BFAUL	1.2 (35)

- If you need to order a capacitor without a motor, add "-C" to the capacitor model name shown.
  A capacitor cap is included with a capacitor.

Connection Diagrams

Lead Wire Type	Terminal Box Type
4RK25GN-AWU **4RK25GN-CWE** **VHR425A-□U** **VHR425C-□E**	**4RK25GN-AWTU** **4RK25GN-CWTE** **VHR425AT-□U** **VHR425CT-□E**
	

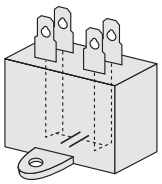
- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.
- **How to connect a capacitor**→Page A-225

Note:

- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact.
  Connecting CR circuit, contact capacity→Page A-226

Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR425A-□U	VHR425A-GV	GV4G□
VHR425C-□E	VHR425C-GV	
VHR425AT-□U	VHR425AT-GV	
VHR425CT-□E	VHR425CT-GV	

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

Reversible Motors

40 W (1/19 HP)

Frame Size: □ 3.54 in. (□ 90 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

■ Specifications — 30 Minute Rating

● World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **5RK40GN-AWU** **(5RK40A-AWU)**	**5RK40GN-AWTU** **(5RK40A-AWTU)**	1/19	40	Single-Phase 110	60	0.81	36	260	38	270	1450	12
				Single-Phase 115	60							
(TP) **5RK40GN-CWE** **(5RK40A-CWE)**	**5RK40GN-CWTE** **(5RK40A-CWTE)**			Single-Phase 220	50	0.40	38	270	44	315	1250	3.5
				Single-Phase 220	60	0.46	36	260	36	260	1500	
				Single-Phase 230	50	0.40	38	270	44	315	1250	
				Single-Phase 230	60	0.46	36	260	36	260	1500	

(TP) Contains a built-in thermal protector. 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.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

● V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ③	Terminal Box Type Dimension ④	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **VHR540A-□U**	**VHR540AT-□U**	1/19	40	Single-Phase 110	60	0.81	36	260	38	270	1450	12
				Single-Phase 115								
(TP) **VHR540C-□E**	**VHR540CT-□E**			Single-Phase 220	50	0.40	38	270	44	315	1250	3.5
				Single-Phase 220	60	0.46	36	260	36	260	1500	
				Single-Phase 230	50	0.40	38	270	44	315	1250	
				Single-Phase 230	60	0.46	36	260	36	260	1500	

(TP) Contains a built-in thermal protector. 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.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

■ Gearheads for World K Series (Sold Separately)

● Parallel Shaft

Gearhead Model	Gear Ratio
5GN□KA	**3~180**
5GN10XK (Decimal Gearhead)	

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

● Right-Angle

Type	Gearhead Model	Gear Ratio
Hollow Shaft	**5GN□RH**	**3.6~180**
Solid Shaft	**5GN□RAA**	**3~180**

- Enter the gear ratio in the box (□) within the model name.
- **Right-Angle Gearheads**→Page A-189

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque with a decimal gearhead with a gear ratio of 10:1 is 88 lb-in (10 N·m).

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5RK40GN-AWU / **5RK40GN-AWTU**	**5GN□KA**	5.8 0.66	6.9 0.79	9.7 1.1	11.5 1.3	14.1 1.6	17.7 2.0	23 2.7	29 3.3	34 3.9	43 4.9	52 5.9	62 7.1	78 8.9	88 10	88 10	88 10	88 10	88 10	88 10	88 10
5RK40GN-CWE / **5RK40GN-CWTE**	**5GN□KA**	5.5 0.63	6.7 0.76	9.7 1.1	11.5 1.3	14.1 1.6	16.8 1.9	23 2.6	28 3.2	33 3.8	41 4.7	50 5.7	60 6.8	76 8.6	88 10	88 10	88 10	88 10	88 10	88 10	88 10

Single-Phase 230 VAC 50 Hz

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

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
	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-CWE / **5RK40GN-CWTE**	**5GN□KA**	6.8 0.77	8.1 0.92	11.5 1.3	13.2 1.5	16.8 1.9	20 2.3	28 3.2	33 3.8	40 4.6	50 5.7	61 6.9	73 8.3	88 10	88 10	88 10	88 10	88 10	88 10	88 10	88 10

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10	6
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**
VHR540A-□U **VHR540AT-□U**		10.6 1.2	13.2 1.5	19.4 2.2	31 3.6	38 4.4	62 7	74 8.4	123 13.9	184 20.9	230 26.2	260 30	260 30
VHR540C-□E **VHR540CT-□E**		10.6 1.2	12.3 1.4	18.5 2.1	30 3.5	37 4.2	59 6.7	70 8	118 13.4	177 20.1	220 25.3	260 30	260 30

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3	5
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**
VHR540C-□E **VHR540CT-□E**		12.3 1.4	15 1.7	23 2.6	38 4.3	45 5.1	71 8.1	86 9.8	144 16.3	210 24.4	260 30	260 30	260 30

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Gearmotor — Torque Table when Right-Angle Gearhead is Attached

Right-Angle Gearheads are available for World **K** Series only.

→Page A-196

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

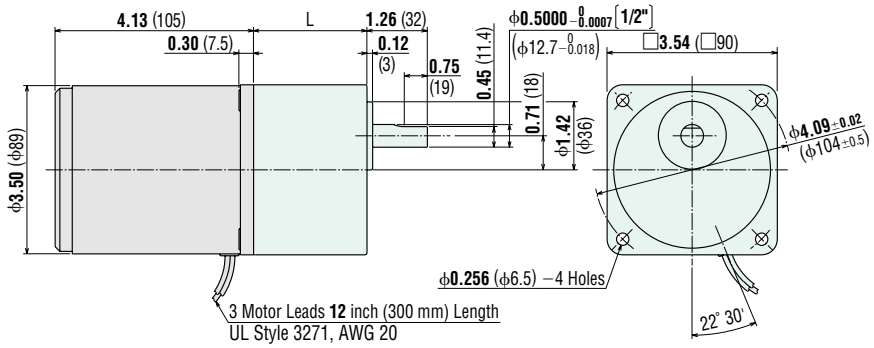
World K Series

Lead Wire Type ①

Motor
5RK40GN-AWU
5RK40GN-CWE
Weight: 5.5 lb. (2.5 kg)

Gearhead
5GN□KA
Weight: 3.3 lb. (1.5 kg)

DXF A019AU (**5GN3KA~18KA**)
A019BU (**5GN25KA~180KA**)



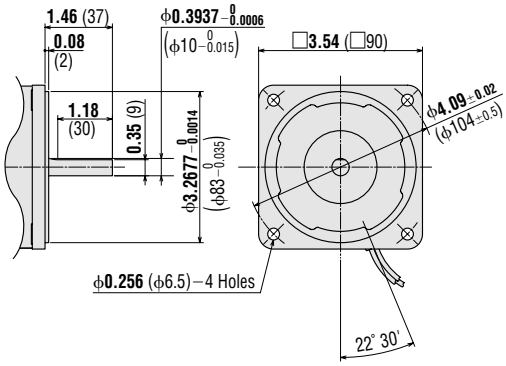
5GN3KA~18KA: L = **1.65** (42)
5GN25KA~180KA: L = **2.36** (60)

Round Shaft Type

5RK40A-AWU
5RK40A-CWE
Weight: 5.5 lb. (2.5 kg)

DXF A329

3/8 inch shaft motors are also available. Contact your Oriental Motor Representative for more information.

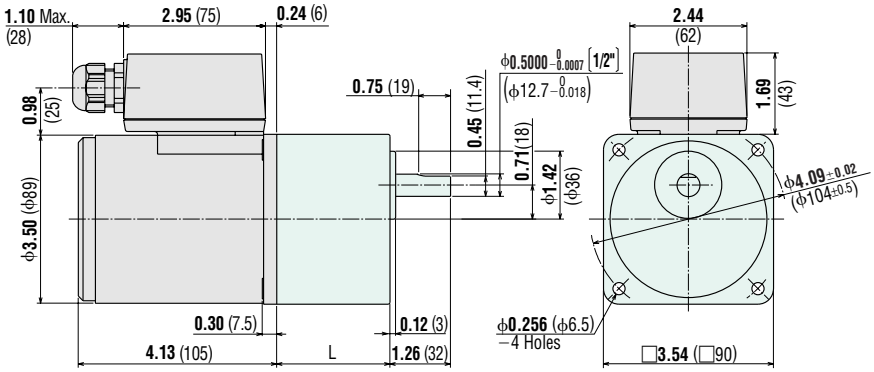


Terminal Box Type ②

Motor
5RK40GN-AWTU
5RK40GN-CWTE
Weight: 5.7 lb. (2.6 kg)

Gearhead
5GN□KA
Weight: 3.3 lb. (1.5 kg)

DXF A021AU (**5GN3KA~18KA**)
A021BU (**5GN25KA~180KA**)

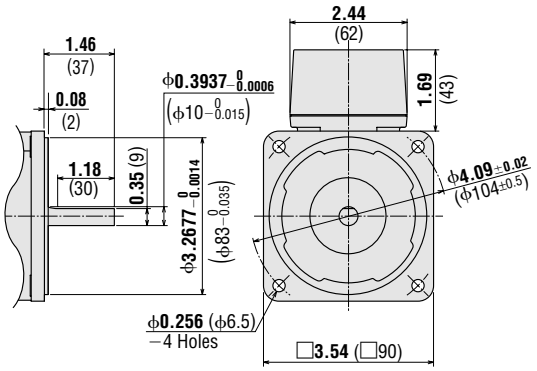


5GN3KA~18KA: L = **1.65** (42)
5GN25KA~180KA: L = **2.36** (60)

Round Shaft Type

5RK40A-AWTU
5RK40A-CWTE
Weight: 5.7 lb. (2.6 kg)

DXF A330

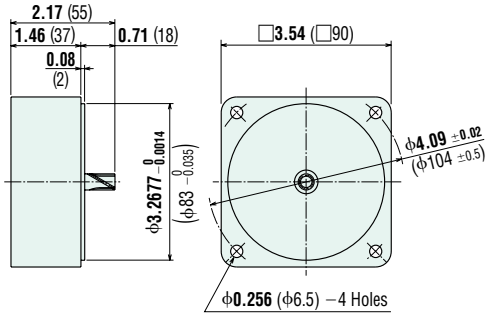


● Use cable (VCTF) with a diameter of φ**0.24** inch (φ6 mm)~φ**0.47** inch (φ12 mm).
●**Details of Terminal Box**→Page A-224

Decimal Gearhead (for World K Series)

5GN10XK Weight: 1.3 lb. (0.6 kg)

DXF A022

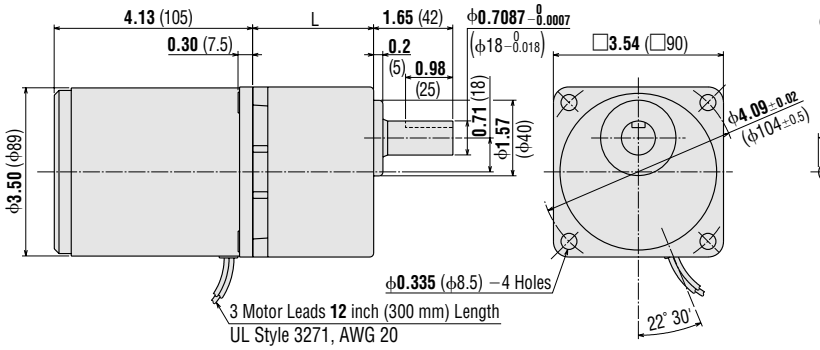


● V Series

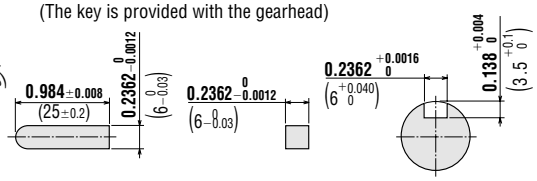
◆ Lead Wire Type ③

VHR540A-□U, **VHR540C-□E** (Combination Type)
Weight: 8.8 lb. (4.0 kg) including gearhead
Motor Model: VHR540A-GVH, VHR540C-GVH
Gearhead Model: GVH5G□

DXF A203A (GVH5G5~18)
A203B (GVH5G30~90)
A203C (GVH5G120~300)



●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)

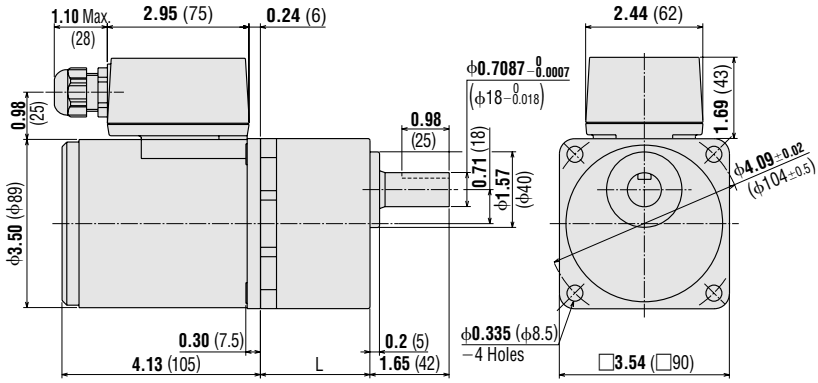


GVH5G5~GVH5G18: L = **1.77** (45)
GVH5G30~GVH5G90: L = **2.28** (58)
GVH5G120~GVH5G300: L = **2.52** (64)

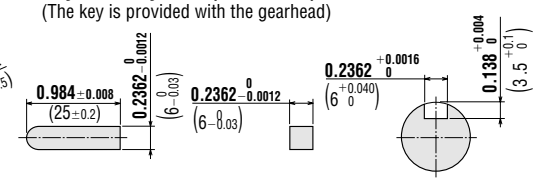
◆ Terminal Box Type ④

VHR540AT-□U, **VHR540CT-□E** (Combination Type)
Weight: 9.0 lb. (4.1 kg) including gearhead
Motor Model: VHR540AT-GVH, VHR540CT-GVH
Gearhead Model: GVH5G□

DXF A212A (GVH5G5~18)
A212B (GVH5G30~90)
A212C (GVH5G120~300)



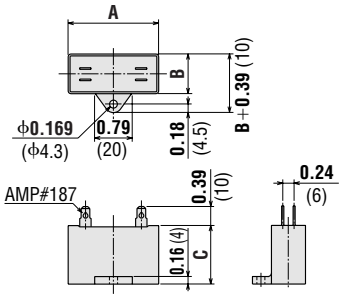
●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)



GVH5G5~GVH5G18: L = **1.77** (45)
GVH5G30~GVH5G90: L = **2.28** (58)
GVH5G120~GVH5G300: L = **2.52** (64)

●Use cable (VCTF) with the diameter of ϕ**0.24** inch (ϕ6 mm)~ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

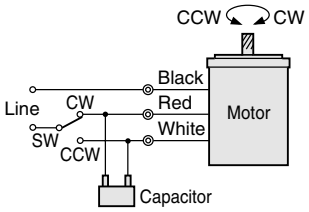
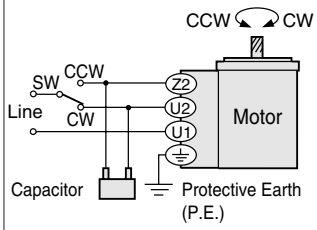
Capacitor (included with the motors)



Motor Model	Capacitor Model	Dimension inch (mm) A	B	C	Weight oz. (g)
5RK40GN-AW(T)U **5RK40A-AW(T)U** **VHR540A(T)-□U**	CH120CFAUL	2.28 (58)	0.83 (21)	1.22 (31)	1.8 (50)
5RK40GN-CW(T)E **5RK40A-CW(T)E** **VHR540C(T)-□E**	CH35BFAUL	2.28 (58)	0.87 (22)	1.38 (35)	1.9 (55)

- If you need to order a capacitor without a motor, add "-C" to the capacitor model name shown. A capacitor cap is always included with a capacitor.

Connection Diagrams

Lead Wire Type	Terminal Box Type
5RK40GN-AWU **5RK40GN-CWE** **VHR540A-□U** **VHR540C-□E**	**5RK40GN-AWTU** **5RK40GN-CWTE** **VHR540AT-□U** **VHR540CT-□E**
	

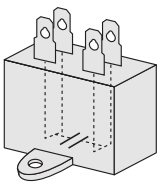
- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.
- **How to connect a capacitor**→Page A-225

Note:

- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact. Connecting CR circuit, contact capacity→Page A-226

Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR540A-□U	VHR540A-GVH	GVH5G□
VHR540C-□E	VHR540C-GVH	
VHR540AT-□U	VHR540AT-GVH	
VHR540CT-□E	VHR540CT-GVH	

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

Reversible Motors
60 W (1/12 HP)
Frame Size: □ 3.54 in. (□ 90 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

Specifications — 30 Minute Rating

World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **5RK60GU-AWU** **(5RK60A-AWU)**	**5RK60GU-AWTU** **(5RK60A-AWTU)**	1/12	60	Single-Phase 110	60	1.24	53	380	57	405	1450	20
				Single-Phase 115	60							
(TP) **5RK60GU-CWE** **(5RK60A-CWE)**	**5RK60GU-CWTE** **(5RK60A-CWTE)**			Single-Phase 220	50	0.6	59	420	69	490	1200	5
				Single-Phase 220	60	0.67	53	380	57	405	1450	
				Single-Phase 230	50	0.61	66	470	69	490	1200	
				Single-Phase 230	60	0.67	53	380	57	405	1450	

(TP) Contains a built-in thermal protector. 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.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ③	Terminal Box Type Dimension ④	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **VHR560A-□U**	**VHR560AT-□U**	1/12	60	Single-Phase 110	60	1.24	53	380	57	405	1450	20
				Single-Phase 115	60							
(TP) **VHR560C-□E**	**VHR560CT-□E**			Single-Phase 220	50	0.6	59	420	69	490	1200	5
				Single-Phase 220	60	0.67	53	380	57	405	1450	
				Single-Phase 230	50	0.61	66	470	69	490	1200	
				Single-Phase 230	60	0.67	53	380	57	405	1450	

(TP) Contains a built-in thermal protector. 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.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

Gearheads for World K Series (Sold Separately)

Parallel Shaft

Gearhead Model	Gear Ratio
5GU□KA	**3~180**
5GU10XKB (Decimal Gearhead)	

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

Right-Angle

Type	Gearhead Model	Gear Ratio
Hollow Shaft	**5GU□RH**	**3.6~180**
Solid Shaft	**5GU□RAA**	**3~180**

- Enter the gear ratio in the box (□) within the model name.
- **Right-Angle Gearheads**→Page A-189

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque with a decimal gearhead with a gear ratio of 10:1 is 177 lb-in (20 N·m).

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5RK60GU-AWU **5RK60GU-AWTU** **5RK60GU-CWE** **5RK60GU-CWTE** / **5GU□KA**		8.6 0.98	10.6 1.2	14.1 1.6	17.7 2.0	22 2.5	26 3.0	32 3.7	38 4.4	46 5.3	59 6.7	70 8.0	84 9.6	118 13.4	141 16.0	158 17.9	177 20	177 20	177 20	177 20	177 20

Single-Phase 230 VAC 50 Hz

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

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
	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**
5RK60GU-CWE **5RK60GU-CWTE** / **5GU□KA**		10.6 1.2	12.3 1.4	17.7 2.0	21 2.4	26 3.0	31 3.6	39 4.5	47 5.4	56 6.4	71 8.1	85 9.7	102 11.6	143 16.2	171 19.4	177 20	177 20	177 20	177 20	177 20	177 20

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10	6
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**
VHR560A-□U **VHR560AT-□U** **VHR560C-□E** **VHR560CT-□E**		15.9 1.8	19.4 2.2	29 3.3	48 5.5	58 6.6	92 10.4	110 12.5	184 20.9	260 30	260 30	260 30	260 30

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3	5
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**	**300**
VHR560C-□E **VHR560CT-□E**		19.4 2.2	23 2.6	35 4	58 6.6	69 7.9	111 12.6	134 15.2	220 25.3	260 30	260 30	260 30	260 30

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Gearmotor — Torque Table when Right-Angle Gearhead is Attached

Right-Angle Gearheads are available for World **K** Series only.

→Page A-196

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11

Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

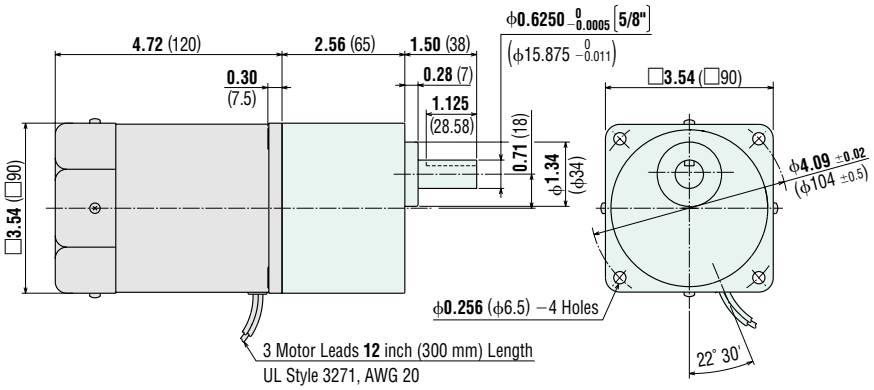
World K Series

Lead Wire Type ①

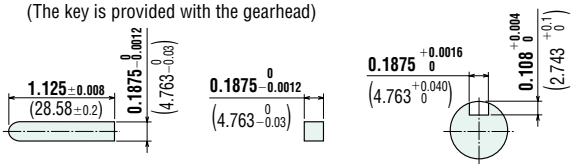
Motor
5RK60GU-AWU
5RK60GU-CWE
Weight: 5.9 lb. (2.7 kg)

Gearhead
5GU□KA
Weight: 3.3 lb. (1.5 kg)

DXF A026U (**5GU3KA**～**180KA**)



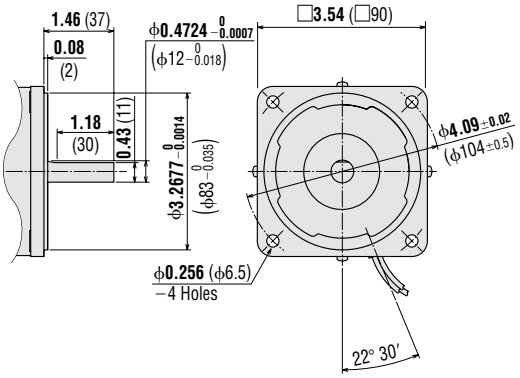
●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)



Round Shaft Type

5RK60A-AWU
5RK60A-CWE
Weight: 5.9 lb. (2.7 kg)

DXF A331

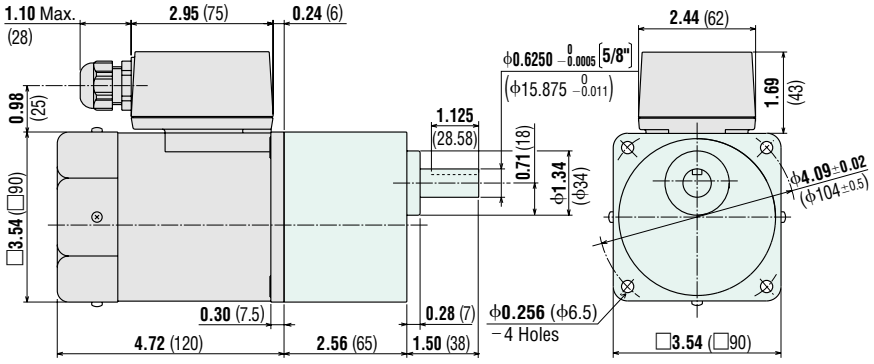


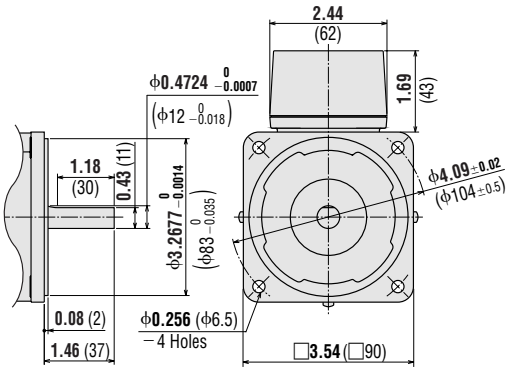
Terminal Box Type ②

Motor
5RK60GU-AWTU
5RK60GU-CWTE
Weight: 6.2 lb. (2.8 kg)

Gearhead
5GU□KA
Weight: 3.3 lb. (1.5 kg)

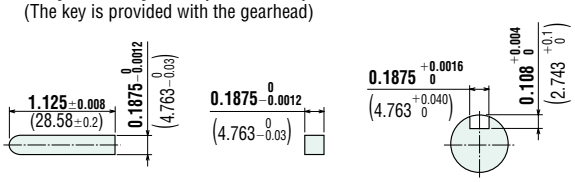
DXF A027U (**5GU3KA**～**180KA**)





●Use cable (VCTF) with a diameter of ϕ**0.24** inch (ϕ6 mm)～ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

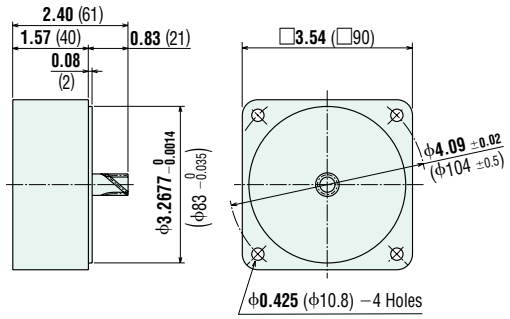
●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)



● Decimal Gearhead (for World K Series)

5GU10XKB Weight: 1.3 lb. (0.6 kg)

DXF A029

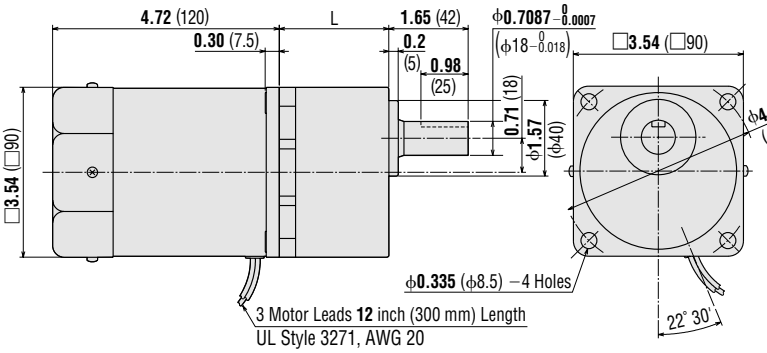


● V Series

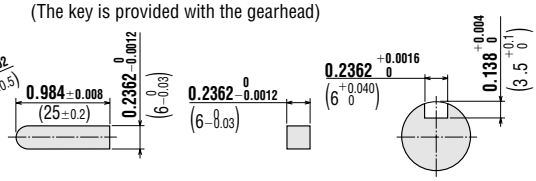
◆ Lead Wire Type ③

VHR560A-□U, **VHR560C-□E** (Combination Type)
Weight: 9.2 lb. (4.2 kg) including gearhead
Motor Model: VHR560A-GVH, VHR560C-GVH
Gearhead Model: GVH5G□

DXF A244A (GVH5G5~18)
A244B (GVH5G30~90)
A244C (GVH5G120~300)



●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)

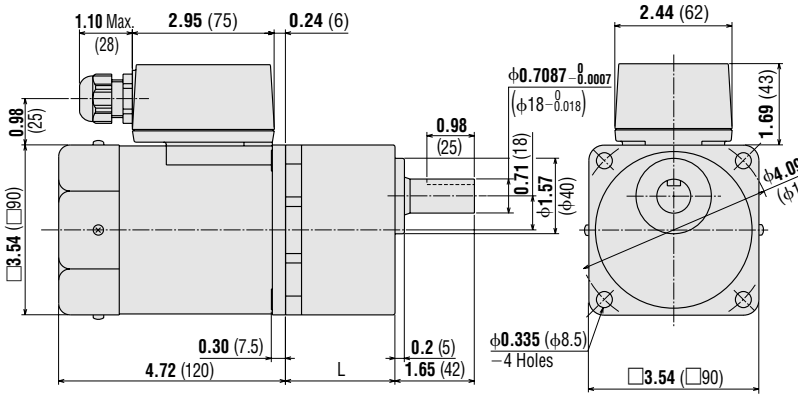


GVH5G5~GVH5G18: L = **1.77** (45)
GVH5G30~GVH5G90: L = **2.28** (58)
GVH5G120~GVH5G300: L = **2.52** (64)

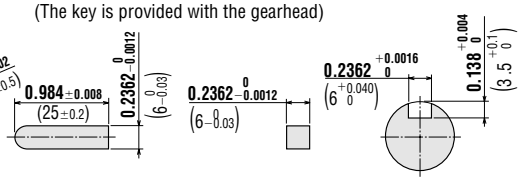
◆ Terminal Box Type ④

VHR560AT-□U, **VHR560CT-□E** (Combination Type)
Weight: 9.5 lb. (4.3 kg) including gearhead
Motor Model: VHR560AT-GVH, VHR560CT-GVH
Gearhead Model: GVH5G□

DXF A245A (GVH5G5~18)
A245B (GVH5G30~90)
A245C (GVH5G120~300)



●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)

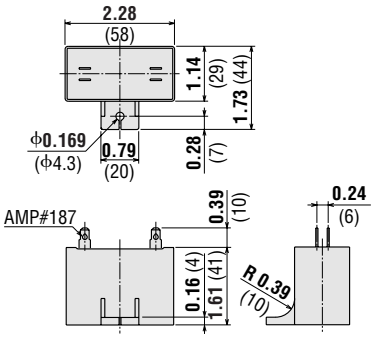


GVH5G5~GVH5G18: L = **1.77** (45)
GVH5G30~GVH5G90: L = **2.28** (58)
GVH5G120~GVH5G300: L = **2.52** (64)

●Use cable (VCTF) with a diameter of ϕ**0.24** inch (ϕ6 mm)~ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

Dimensions A-94 | Connection Diagrames A-96 | List of Motor and Gearhead Combinations for V Series A-96

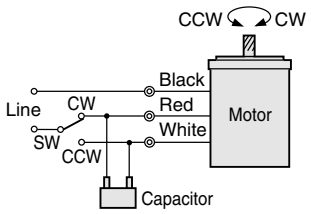
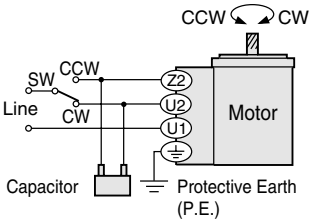
Capacitor (included with the motors)



Motor Model	Capacitor Model	Weight oz. (g)
5RK60GU-AW(T)U **5RK60A-AW(T)U** **VHR560A(T)-□U**	CH200CFAUL	3.4 (95)
5RK60GU-CW(T)E **5RK60A-CW(T)E** **VHR560C(T)-□E**	CH50BFAUL	3.0 (85)

- If you need to order a capacitor without a motor, add "-C" to the capacitor model name shown.
  A capacitor cap is included with a capacitor.

Connection Diagrams

Lead Wire Type	Terminal Box Type
5RK60GU-AWU **5RK60GU-CWE** **VHR560A-□U** **VHR560C-□E**	**5RK60GU-AWTU** **5RK60GU-CWTE** **VHR560AT-□U** **VHR560CT-□E**
	

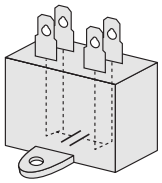
- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- Connection diagrams are also valid for the equivalent round shaft type.
- **How to connect a capacitor**→Page A-225

Note:

- Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact.
  Connecting CR circuit, contact capacity→Page A-226

Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR560A-□U	VHR560A-GVH	GVH5G□
VHR560C-□E	VHR560C-GVH	
VHR560AT-□U	VHR560AT-GVH	
VHR560CT-□E	VHR560CT-GVH	

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

Reversible Motors
90 W (1/8 HP)
Frame Size: □ 3.54 in. (□ 90 mm)

World **K** Series
(Gearhead Sold Separately)

V Series/Combination Type
(Pre-assembled Gearmotor)

■ Specifications — 30 Minute Rating

● World K Series (General Purpose)

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	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **5RK90GU-AWU** (**5RK90A-AWU**)	**5RK90GU-AWTU** (**5RK90A-AWTU**)	1/8	90	Single-Phase 110 Single-Phase 115	60	1.81	83	590	83	585	1500	30
(TP) **5RK90GU-CWE** (**5RK90A-CWE**)	**5RK90GU-CWTE** (**5RK90A-CWTE**)	1/8	90	Single-Phase 220	50	0.82	85	600	103	730	1200	7
				Single-Phase 220	60	0.96	83	590	85	605	1450	
				Single-Phase 230	50	0.82	85	600	103	730	1200	
				Single-Phase 230	60	0.96	83	590	85	605	1450	

(TP) Contains a built-in thermal protector. 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.
- 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 two 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.→Page G-10
- **Details of Safety Standards**→Page G-2

● V Series (Quiet Operation, High Strength, Long Life)

Model Combination Type		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor
Lead Wire Type Dimension ③	Terminal Box Type Dimension ④	HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF
(TP) **VHR590A-□U**	**VHR590AT-□U**	1/8	90	Single-Phase 110 Single-Phase 115	60	1.81	83	590	83	585	1500	30
(TP) **VHR590C-□E**	**VHR590CT-□E**	1/8	90	Single-Phase 220	50	0.82	85	600	103	730	1200	7
				Single-Phase 220	60	0.96	83	590	85	605	1450	
				Single-Phase 230	50	0.82	85	600	103	730	1200	
				Single-Phase 230	60	0.96	83	590	85	605	1450	

(TP) Contains a built-in thermal protector. 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.
- Values shown for rated torque and starting torque are measured for operation without the brake applied.
- The "**U**" and "**E**" at the end of the model name indicate that the unit includes a capacitor. These two 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.→Page G-12
- **Details of Safety Standards**→Page G-2
- Models above are provided as combination types with motor and gearhead pre-assembled.
- Enter gear ratio in the box (□) within the model name.
- The values in the table are for the motor only.

■ Gearheads for World K Series (Sold Separately)

● Parallel Shaft

Gearhead Model	Gear Ratio
5GU□KA	**3**~**180**
5GU□KHA (High Power Type)	**50**~**180**
5GU10XKB (Decimal Gearhead) [for **5GU□KA**]	
5GU10XK (Decimal Gearhead) [for **5GU□KHA**]	

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

● Right-Angle

Type	Gearhead Model	Gear Ratio
Hollow Shaft	**5GU□RH**	**3.6**~**180**
Solid Shaft	**5GU□RAA**	**3**~**180**

- Enter the gear ratio in the box (□) within the model name.
- **Right-Angle Gearheads**→Page A-189

Gearmotor — Torque Table

World K Series (General Purpose)

The maximum permissible torque when a decimal gearhead with a gear ratio of 10:1 is attached are as follows;
5GU□KA: 177 lb-in (20 N·m)
5GU□KHA: 260 lb-in (30 N·m)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	**3**	**3.6**	**5**	**6**	**7.5**	**9**	**12.5**	**15**	**18**	**25**	**30**	**36**	**50**	**60**	**75**	**90**	**100**	**120**	**150**	**180**
5RK90GU-AWU **5RK90GU-AWTU**	**5GU□KA**	12.3 1.4	15 1.7	21 2.4	24 2.8	31 3.6	38 4.3	46 5.3	56 6.4	68 7.7	85 9.7	102 11.6	123 13.9	170 19.3	177 20	177 20	177 20	177 20	177 20	177 20	177 20
	5GU□KHA	—	—	—	—	—	—	—	—	—	—	—	—	170 19.3	200 23.2	220 25.9	260 30	260 30	260 30	260 30	260 30
5RK90GU-CWE **5RK90GU-CWTE**	**5GU□KA**	13.2 1.5	15.9 1.8	22 2.5	25 2.9	32 3.7	38 4.4	48 5.5	58 6.6	69 7.9	88 10.0	106 12.0	127 14.4	177 20	177 20	177 20	177 20	177 20	177 20	177 20	177 20
	5GU□KHA	—	—	—	—	—	—	—	—	—	—	—	—	177 20	210 24	230 26.8	260 30	260 30	260 30	260 30	260 30

- **KA** type is standard gearhead. **KHA** type is high-powered gearhead.

Single-Phase 230 VAC 50 Hz

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

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
	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**
5RK90GU-CWE **5RK90GU-CWTE**	**5GU□KA**	15.9 1.8	18.5 2.1	26 3.0	30 3.5	38 4.4	46 5.3	59 6.7	70 8.0	84 9.6	106 12.0	128 14.5	153 17.3	177 20	177 20	177 20	177 20	177 20	177 20	177 20	177 20
	5GU□KHA	—	—	—	—	—	—	—	—	—	—	—	—	210 24.1	250 28.9	260 30	260 30	260 30	260 30	260 30	260 30

- **KA** type is standard gearhead. **KHA** type is high-powered gearhead.

V Series (Quiet Operation, High Strength, Long Life)

Single-Phase 115/230 VAC 60 Hz

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

Model	Speed r/min	360	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
VHR590A-□U **VHR590AT-□U**		23 2.6	28 3.2	41 4.7	69 7.9	80 9.1	133 15.1	160 18.1	260 30.2	350 40	350 40	350 40
VHR590C-□E **VHR590CT-□E**		23 2.7	29 3.3	43 4.9	72 8.2	83 9.4	138 15.6	165 18.7	270 31.2	350 40	350 40	350 40

Single-Phase 230 VAC 50 Hz

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

Model	Speed r/min	300	250	166	100	83	50	41	25	16	12.5	8.3
	Gear Ratio	**5**	**6**	**9**	**15**	**18**	**30**	**36**	**60**	**90**	**120**	**180**
VHR590C-□E **VHR590CT-□E**		29 3.3	34 3.9	52 5.9	87 9.9	100 11.3	166 18.8	200 22.6	330 37.7	350 40	350 40	350 40

- Gearheads and decimal gearheads are sold separately. Decimal gearheads are not available for **V** Series.
- Enter the gear ratio in the box (□) within the model name. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation 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.

Gearmotor — Torque Table when Right-Angle Gearhead is Attached

Right-Angle Gearheads are available for World **K** Series only.
→Page A-196

Permissible Overhung Load and Permissible Thrust Load

Motor (Round shaft motor)→Page A-11
Gearhead→Page A-11

Permissible Load Inertia J for Gearhead

→Page A-12

Dimensions Scale 1/4, Unit = **inch** (mm)

Mounting screws are included with gearheads. Dimensions for screws→A-223

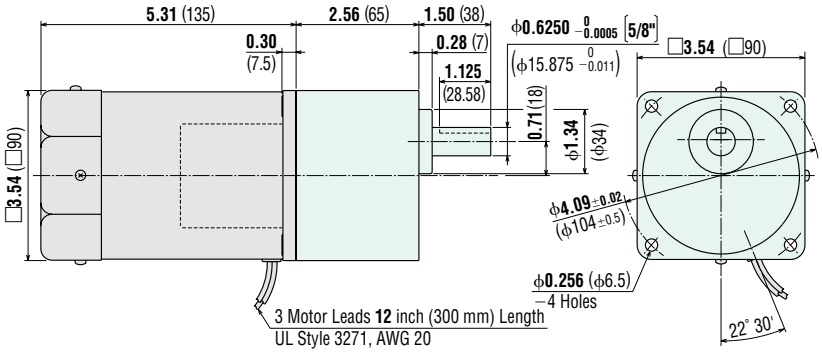
World K Series

Lead Wire Type ①

Motor
5RK90GU-AWU
5RK90GU-CWE
Weight: 7.0 lb. (3.2 kg)

Gearhead
5GU□KA
Weight: 3.3 lb. (1.5 kg)

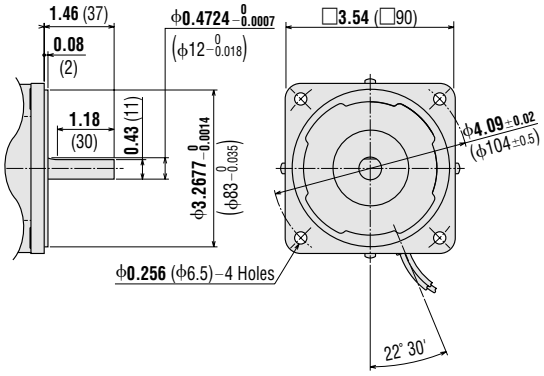
DXF A035U (**5GU3KA**~**180KA**)



Round Shaft Type

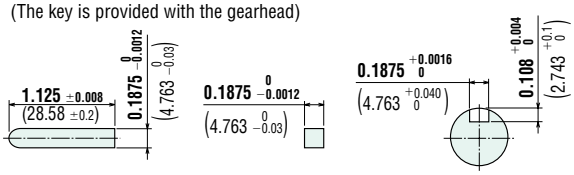
5RK90A-AWU
5RK90A-CWE
Weight: 7.0 lb. (3.2 kg)

DXF A333



●Key and Key Slot (Scale 1/2)

(The key is provided with the gearhead)

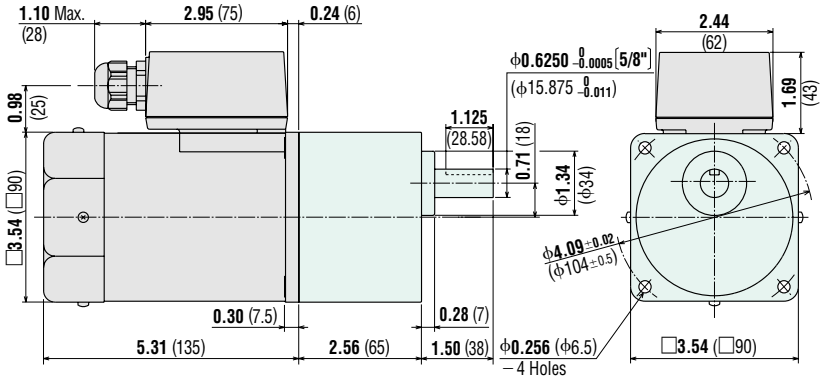


Terminal Box Type ②

Motor
5RK90GU-AWTU
5RK90GU-CWTE
Weight: 7.3 lb. (3.3 kg)

Gearhead
5GU□KA
Weight: 3.3 lb. (1.5 kg)

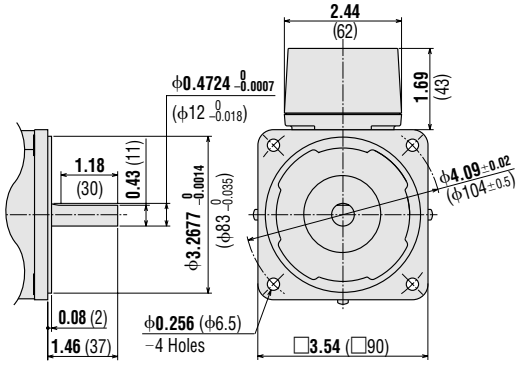
DXF A036U (**5GU3KA**~**180KA**)



Round Shaft Type

5RK90A-AWTU
5RK90A-CWTE
Weight: 7.3 lb. (3.3 kg)

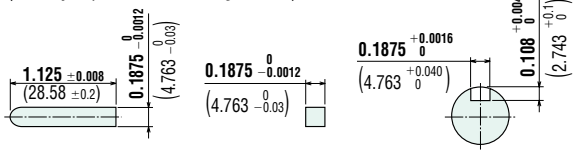
DXF A334



●Use cable (VCTF) with a diameter of ϕ**0.24** inch (ϕ6 mm)~ϕ**0.47** inch (ϕ12 mm).
●**Details of Terminal Box**→Page A-224

●Key and Key Slot (Scale 1/2)

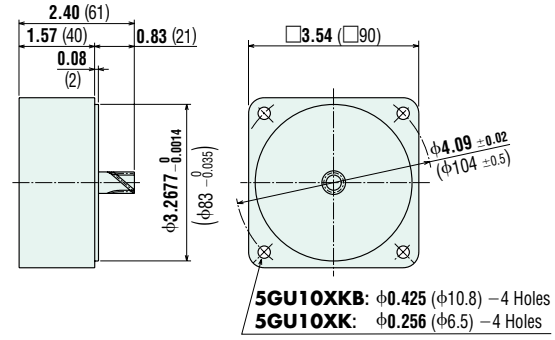
(The key is provided with the gearhead)



● Decimal Gearhead (for World K Series)

5GU10XKB (for **5GU□KA**)
5GU10XK (for **5GU□KHA**)
Weight: 1.3 lb. (0.6 kg)

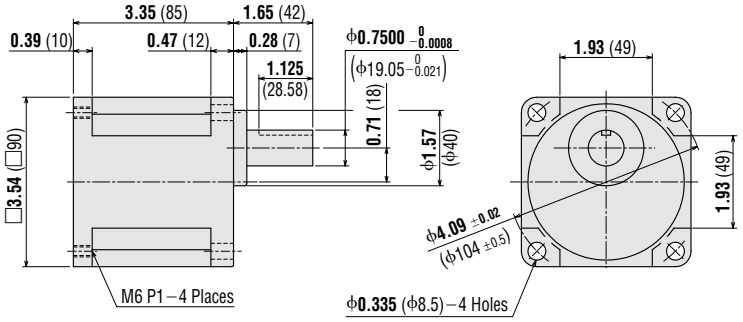
DXF A029



● High-Power Type Gearhead (for World K Series)

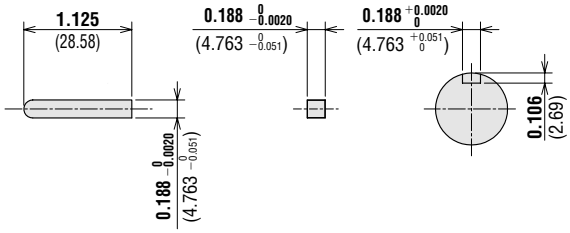
5GU□KHA Weight: 4.2 lb. (1.9 kg)

DXF A038U



●Key and Key Slot (Scale 1/2)

(The key is provided with the gearhead)

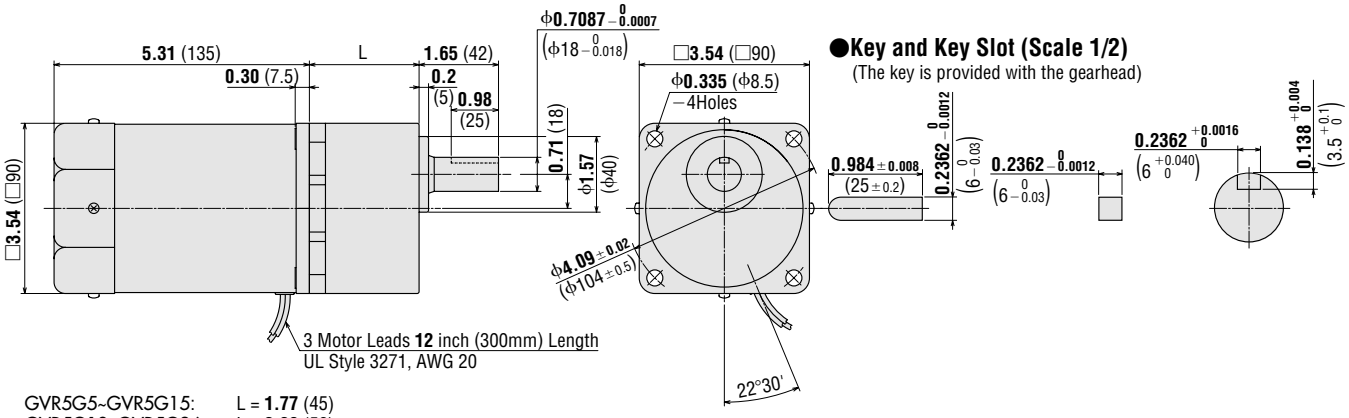


● V Series

◆ Lead Wire Type ③

VHR590A-□U, **VHR590C-□E** (Combination Type)
Weight: 10 lb. (4.7 kg) including gearhead
Motor Model: VHR590A-GVR, VHR590C-GVR
Gearhead Model: GVR5G□

DXF A397A (GVR5G5~15)
A397B (GVR5G18~36)
A397C (GVR5G60~180)



●Key and Key Slot (Scale 1/2)

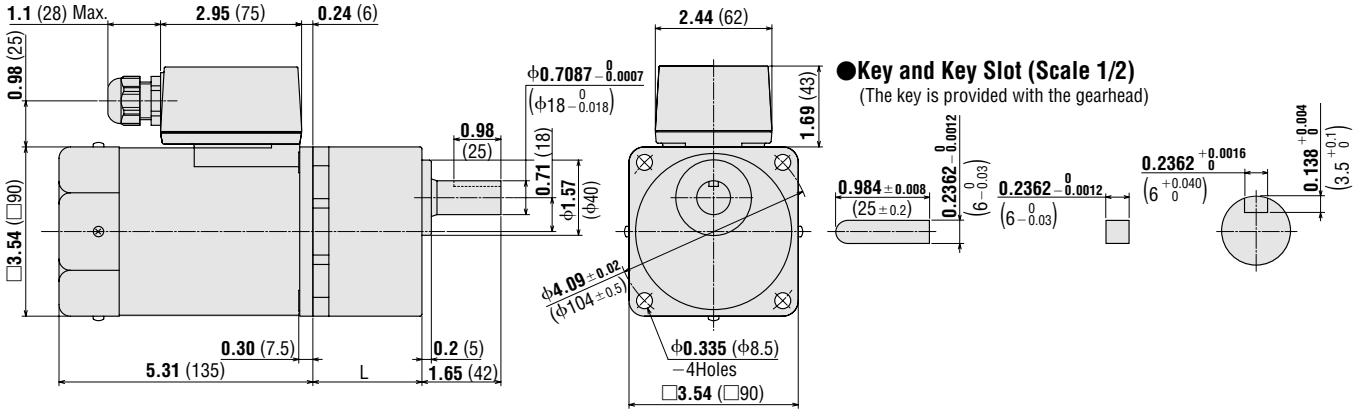
(The key is provided with the gearhead)

GVR5G5~GVR5G15: L = **1.77** (45)
GVR5G18~GVR5G36: L = **2.28** (58)
GVR5G60~GVR5G180: L = **2.76** (70)

◆ Terminal Box Type ④

VHR590AT-□U, **VHR590CT-□E** (Combination Type)
Weight: 11 lb. (4.8 kg) including gearhead
Motor Model: VHR590AT-GVR, VHR590CT-GVR
Gearhead Model: GVR5G□

DXF A398A (GVR5G5~15)
A398B (GVR5G18~36)
A398C (GVR5G60~180)

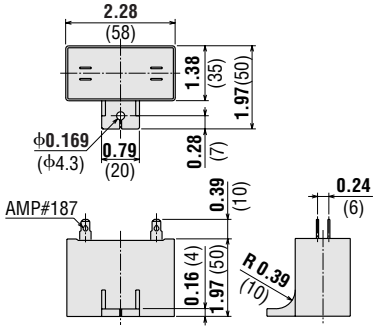


●Key and Key Slot (Scale 1/2)
(The key is provided with the gearhead)

GVR5G5~GVR5G15: L = **1.77** (45)
GVR5G18~GVR5G36: L = **2.28** (58)
GVR5G60~GVR5G180: L = **2.76** (70)

●Use cable (VCTF) with a diameter of Φ**0.24** inch (Φ6 mm)~Φ**0.47** inch (Φ12 mm).
●**Details of Terminal Box**→Page A-224

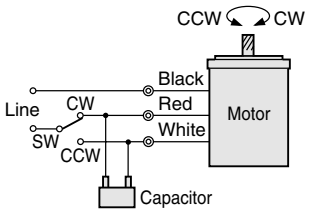
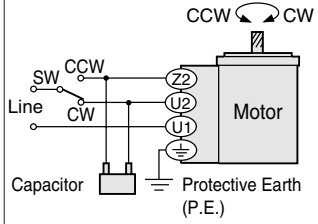
● Capacitor (included with the motors)



Motor Model	Capacitor Model	Weight oz. (g)
5RK90GU-AW(T)U **5RK90A-AW(T)U** **VHR590A(T)-□U**	CH300CFAUL	4.9 (140)
5RK90GU-CW(T)E **5RK90A-CW(T)E** **VHR590C(T)-□E**	CH70BFAUL	4.6 (130)

● If you need to order a capacitor without a motor, add "-C" to the capacitor model name shown.
A capacitor cap is included with a capacitor.

■ Connection Diagrams

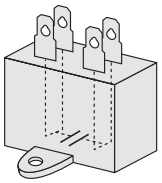
Lead Wire Type	Terminal Box Type
5RK90GU-AWU **5RK90GU-CWE** **VHR590A-□U** **VHR590C-□E**	**5RK90GU-AWTU** **5RK90GU-CWTE** **VHR590AT-□U** **VHR590CT-□E**
	

● 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.
● **How to connect a capacitor**→Page A-225

Note:
● Connect a CR circuit to the forward/reverse select switch (SW) to protect the contact.
Connecting CR circuit, contact capacity→Page A-226

● Inner Connection Diagram for 4-Terminal Capacitor

Terminals of the capacitor are connected as shown in the figure. For lead wire connection, use one lead wire per terminal.



List of Motor and Gearhead Combinations for V Series

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VHR590A-□U	VHR590A-GVR	GVR5G□
VHR590C-□E	VHR590C-GVR	
VHR590AT-□U	VHR590AT-GVR	
VHR590CT-□E	VHR590CT-GVR	

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