

# 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  |   | Output Power     |    | Voltage          | Frequency | Current | Starting Torque |      | Rated Torque |      | Rated Speed | Capacitor |
|--|---|------------------|----|------------------|-----------|---------|-----------------|------|--------------|------|-------------|-----------|
| Upper Model Name: Pinion Shaft Type<br>Lower Model Name( ): Round Shaft Type |   | HP               | W  | VAC              | Hz        | A       | oz-in           | mN·m | oz-in        | mN·m | r/min       | μF        |
| Lead Wire Type<br>Dimension ①  |   |                  |    |                  |           |         |                 |      |              |      |             |           |
| TP   | <b>3RK15GN-AWU</b><br>( <b>3RK15A-AWU</b> ) |                  |    | Single-Phase 110 | 60        | 0.42    | 14.2            | 100  | 14.9         | 105  | 1450        | 6         |
|  |   |                  |    | Single-Phase 115 | 60        | 0.41    |                 |      |              |      |             |           |
| TP   | <b>3RK15GN-CWE</b><br>( <b>3RK15A-CWE</b> ) | 1/50             | 15 | Single-Phase 220 | 50        | 0.19    | 14.2            | 100  | 17.7         | 125  | 1200        |           |
|  |   |                  |    | Single-Phase 220 | 60        | 0.21    | 14.2            | 100  | 14.9         | 105  | 1450        | 1.5       |
|  |   | 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<br>Combination Type     |                   | Output Power     |    | Voltage          | Frequency | Current | Starting Torque |      | Rated Torque |      | Rated Speed | Capacitor |
|-------------------------------|-------------------|------------------|----|------------------|-----------|---------|-----------------|------|--------------|------|-------------|-----------|
| Lead Wire Type<br>Dimension ② |                   | HP               | W  | VAC              | Hz        | A       | oz-in           | mN·m | oz-in        | mN·m | r/min       | μF        |
| TP                            | <b>VHR315A-□U</b> |                  |    | Single-Phase 110 | 60        | 0.42    | 14.2            | 100  | 14.9         | 105  | 1450        | 6         |
|                               |                   |                  |    | Single-Phase 115 | 60        | 0.41    |                 |      |              |      |             |           |
| TP                            | <b>VHR315C-□E</b> | 1/50             | 15 | Single-Phase 220 | 50        | 0.19    |                 |      | 17.7         | 125  | 1200        |           |
|                               |                   |                  |    | Single-Phase 220 | 60        | 0.21    | 14.2            | 100  | 14.9         | 105  | 1450        | 1.5       |
|                               |                   | 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   |
|-----------------------------------|--------------|
| <b>3GN□KA</b>                     | <b>3~180</b> |
| <b>3GN10XK</b> (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  | <b>3</b> | <b>3.6</b> | <b>5</b> | <b>6</b> | <b>7.5</b> | <b>9</b> | <b>12.5</b> | <b>15</b> | <b>18</b> | <b>25</b> | <b>30</b> | <b>36</b> | <b>50</b> | <b>60</b> | <b>75</b> | <b>90</b> | <b>100</b> | <b>120</b> | <b>150</b> | <b>180</b> |
| <b>3RK15GN-AWU</b><br><b>3RK15GN-CWE</b> / <b>3GN□KA</b> |             | 2.3      | 2.7        | 3.8      | 4.5      | 5.6        | 6.8      | 9.7         | 11.5      | 13.2      | 16.8      | 20        | 24        | 30        | 37        | 44        | 44        | 44         | 44         | 44         | 44         |
|  |             | 0.26     | 0.31       | 0.43     | 0.51     | 0.64       | 0.77     | 1.1         | 1.3       | 1.5       | 1.9       | 2.3       | 2.8       | 3.5       | 4.2       | 5         | 5         | 5          | 5          | 5          | 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  | <b>3</b> | <b>3.6</b> | <b>5</b> | <b>6</b> | <b>7.5</b> | <b>9</b> | <b>12.5</b> | <b>15</b> | <b>18</b> | <b>25</b> | <b>30</b> | <b>36</b> | <b>50</b> | <b>60</b> | <b>75</b> | <b>90</b> | <b>100</b> | <b>120</b> | <b>150</b> | <b>180</b> |
| <b>3RK15GN-CWE</b> / <b>3GN□KA</b> |             | 2.6      | 3.1        | 4.5      | 5.3      | 6.7        | 8        | 11.5        | 13.2      | 15.9      | 20        | 23        | 29        | 36        | 44        | 44        | 44        | 44         | 44         | 44         | 44         |
|                                    |             | 0.30     | 0.36       | 0.51     | 0.61     | 0.76       | 0.91     | 1.3         | 1.5       | 1.8       | 2.3       | 2.7       | 3.3       | 4.1       | 5         | 5         | 5         | 5          | 5          | 5          | 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  | <b>5</b> | <b>6</b> | <b>9</b> | <b>15</b> | <b>18</b> | <b>30</b> | <b>36</b> | <b>60</b> | <b>90</b> | <b>120</b> | <b>180</b> | <b>300</b> | <b>360</b> |
| <b>VHR315A-□U</b><br><b>VHR315C-□E</b> |             | 4.1      | 5        | 7.5      | 12.3      | 15        | 23        | 29        | 47        | 71        | 88         | 88         | 88         | 88         |
|  |             | 0.47     | 0.57     | 0.85     | 1.4       | 1.7       | 2.7       | 3.3       | 5.4       | 8.1       | 10         | 10         | 10         | 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  | <b>5</b> | <b>6</b> | <b>9</b> | <b>15</b> | <b>18</b> | <b>30</b> | <b>36</b> | <b>60</b> | <b>90</b> | <b>120</b> | <b>180</b> | <b>300</b> | <b>360</b> |
| <b>VHR315C-□E</b> |             | 4.9      | 6        | 8.8      | 15        | 17.7      | 28        | 34        | 57        | 85        | 88         | 88         | 88         | 88         |
|                   |             | 0.56     | 0.68     | 1        | 1.7       | 2         | 3.2       | 3.9       | 6.5       | 9.7       | 10         | 10         | 10         | 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

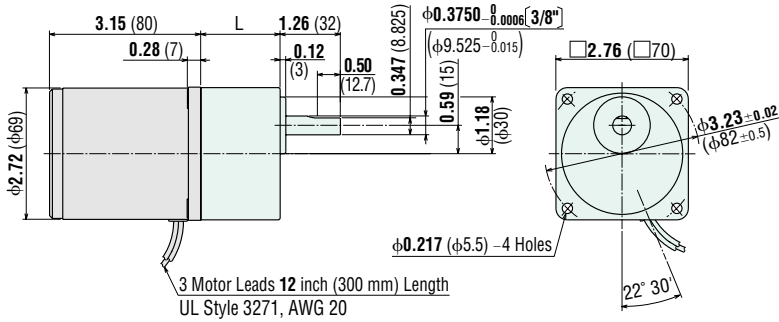
### World K Series

#### 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)



3 Motor Leads 12 inch (300 mm) Length  
UL Style 3271, AWG 20

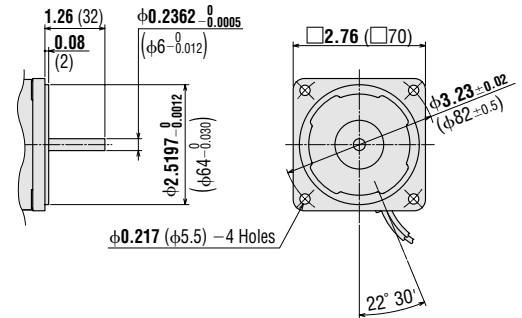
**3GN3KA-18KA:** L = 1.26 (32)  
**3GN25KA-180KA:** L = 1.65 (42)

#### Round Shaft Type 3RK15A-AWU 3RK15A-CWE

Weight: 2.4 lb. (1.1 kg)

**DXF** A326

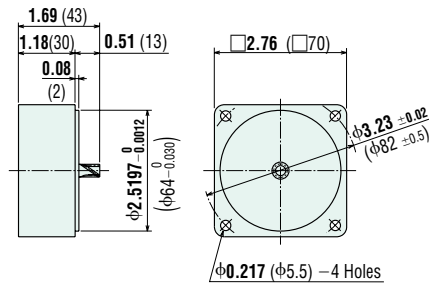
1/4 inch shaft motors are also available. Contact your Oriental Motor Representative for more information.



### Decimal Gearhead (for World K Series)

**3GN10XK** Weight: 0.66 lb. (0.3 kg)

**DXF** A009



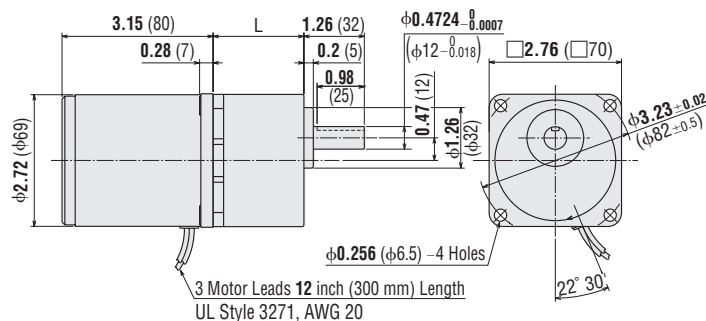
### V Series

#### 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□

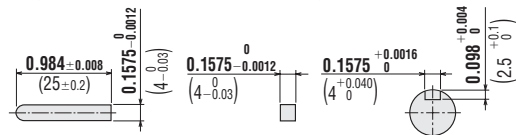
**DXF** A242A (GV3G5~18)  
A242B (GV3G30~120)  
A242C (GV3G180~360)



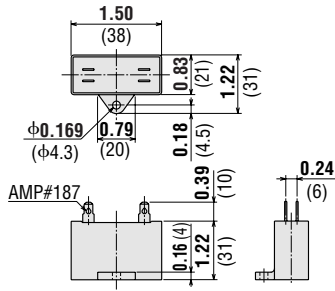
GV3G5-GV3G18: L = 1.5 (38)  
GV3G30-GV3G120: L = 1.69 (43)  
GV3G180-GV3G360: L = 1.89 (48)

### Key and Key Slot (Scale 1/2)

(The key is provided with the gearhead)



● **Capacitor** (included with the motors)

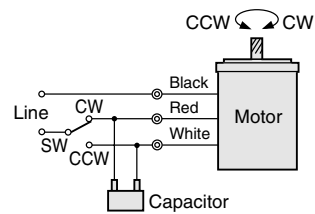


| Motor Model  | Capacitor Model | Weight oz. (g) |
|--|-----------------|----------------|
| <b>3RK15GN-AWU</b><br><b>3RK15A-AWU</b><br><b>VHR315A-□U</b> | CH60CFAUL       | 1.4 (40)       |
| <b>3RK15GN-CWE</b><br><b>3RK15A-CWE</b><br><b>VHR315C-□E</b> | CH15BFAUL       | 1.2 (35)       |

- 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**

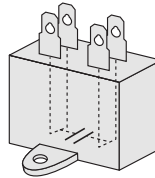
| Lead Wire Type   |
|--|
| <b>3RK15GN-AWU</b><br><b>3RK15GN-CWE</b><br><b>VHR315A-□U</b><br><b>VHR315C-□E</b> |



- 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 |
|-------------------|-------------|----------------|
| <b>VHR315A-□U</b> | VHR315A-GV  | GV3G□          |
| <b>VHR315C-□E</b> | VHR315C-GV  |                |

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