

Induction 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 — Continuous 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 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 Dimension ①	Terminal Box Type Dimension ②	Conduit Box Type Dimension ③														
(TP) 5IK40GN-AWU (5IK40A-AWU)	5IK40GN-AWTU (5IK40A-AWTU)	5IK40GN-FCH (5IK40AA-FCH)	1/19	40	Single-Phase 110		60	0.68	28	200	36	260	1500	9		
Single-Phase 115																
Single-Phase 220*		50			0.39	28	200	36	260	1500	2.3					
Single-Phase 220																
Single-Phase 230																
Single-Phase 230		50	0.32	56	400	42	300	1300	—							
Three-Phase 200																
Three-Phase 200										60	0.3	36	260	36	260	1550
Three-Phase 220																
Three-Phase 230		60	0.31	36	260	36	260	1600								
Three-Phase 230																

(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.

• 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 Standard →Page G-2

* The conduit box type of the motors are not VDE approved. The conduit box type does not have a specification for Single-Phase 220 VAC 50 Hz.

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



Model			Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor						
Combination Type			HP	W	VAC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF			
Lead Wire Type Dimension ④	Terminal Box Type Dimension ⑤															
(TP) VHI540A-□U	VHI540AT-□U	1/19	40	Single-Phase 110		60	0.68	28	200	36	260	1500	9			
Single-Phase 115																
Single-Phase 220				50	0.39	28	200	36	260	1500	2.3					
Single-Phase 220																
Single-Phase 230																
Single-Phase 230		50	0.32	56	400	42	300	1300	—							
Three-Phase 200																
Three-Phase 200										60	0.3	36	260	36	260	1550
Three-Phase 220																
Three-Phase 230		60	0.31	36	260	36	260	1600								
Three-Phase 230																

(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.

• 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-11

• Details of Safety Standard →Page G-2

• Models above are provided as combination type 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, Three-Phase 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
5IK40GN-AWU 5IK40GN-AWTU 5IK40GN-CWE 5IK40GN-CWTE 5IK40GN-SW 5IK40GN-SWT 5IK40GN-FCH 5IK40GN-ECH 5IK40GN-SH	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
5IK40GN-CWE 5IK40GN-CWTE 5IK40GN-ECH	5GN□KA	6.4 0.73	7.6 0.87	10.6 1.2	13.2 1.5	15.9 1.8	19.4 2.2	26 3.0	31 3.6	38 4.4	48 5.5	58 6.6	69 7.9	87 9.9	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, Three-Phase 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
VHI540A-□U VHI540AT-□U VHI540C-□E VHI540CT-□E VHI540S-□ VHI540ST-□		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
VHI540C-□E VHI540CT-□E		12.3 1.4	14.1 1.6	21 2.4	36 4.1	43 4.9	68 7.7	82 9.3	137 15.5	200 23.2	250 29.2	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 the World K Series only.

→Page A-196

■ 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

◆ Conduit Box Type ③

Motor
5IK40GN-FCH
5IK40GN-ECH

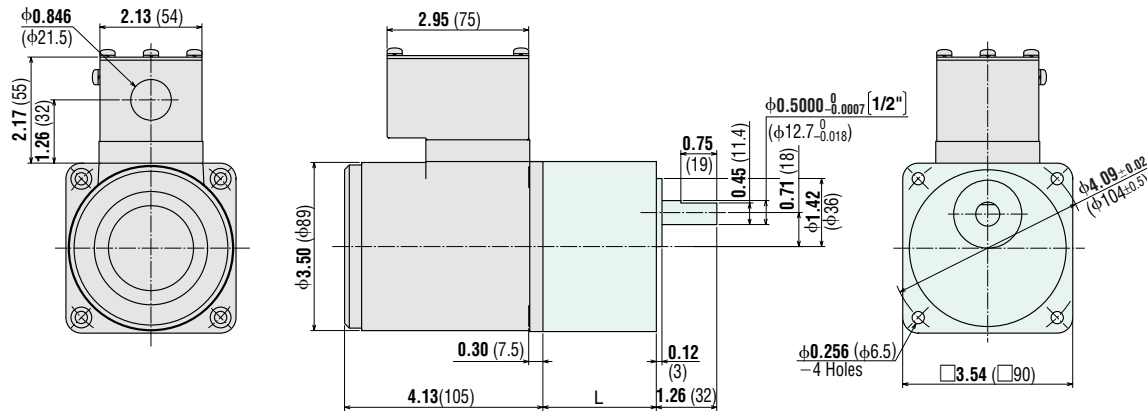
Weight: 5.9 lb. (2.7 kg)

Gearhead

5GN□KA

Weight: 3.3 lb. (1.5 kg)

DXF A802A (5GN3KA~18KA)
 A802B (5GN25KA~180KA)



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

3 Motor Leads: UL Style 3266, AWG 20
 1 Ground Lead: UL Style 3266, AWG 18

●Details of Terminal Box → Page A-224

Motor
5IK40GN-SH

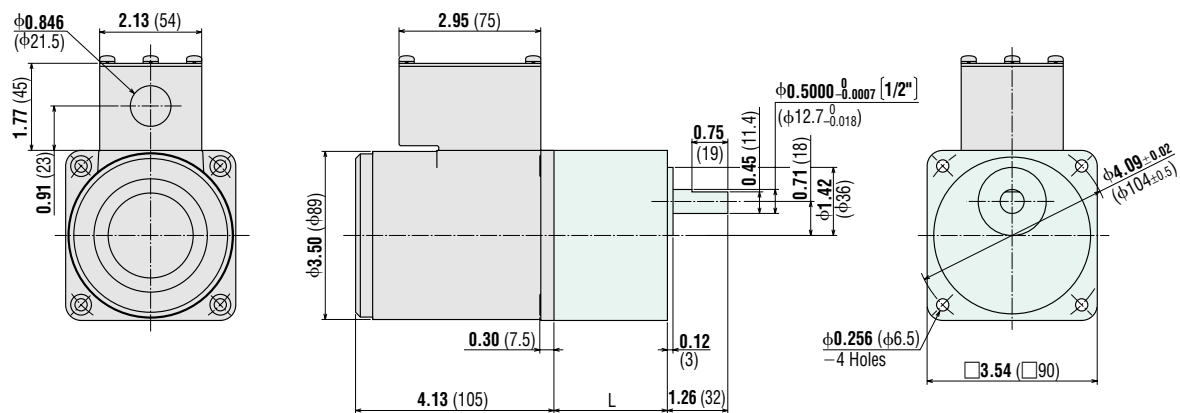
Weight: 5.5 lb. (2.5 kg)

Gearhead

5GN□KA

Weight: 3.3 lb. (1.5 kg)

DXF A803A (5GN3KA~18KA)
 A803B (5GN25KA~180KA)



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

3 Motor Leads: UL Style 3266, AWG 20
 1 Ground Lead: UL Style 3266, AWG 18

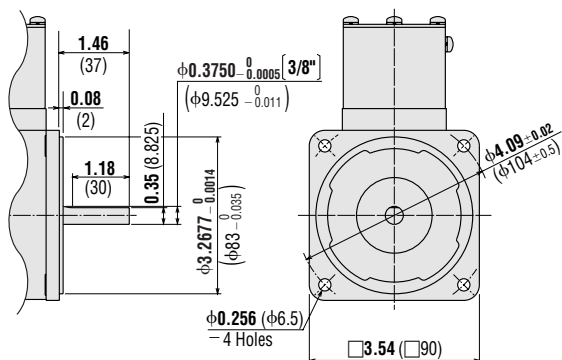
●Details of Terminal Box → Page A-224

Round Shaft Type

5IK40AA-FCH
5IK40AA-ECH

Weight: 5.9 lb. (2.7 kg)

DXF A811

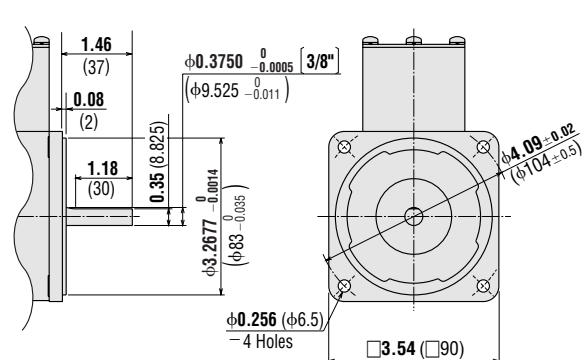


Round Shaft Type

5IK40AA-SH

Weight: 5.5 lb. (2.5 kg)

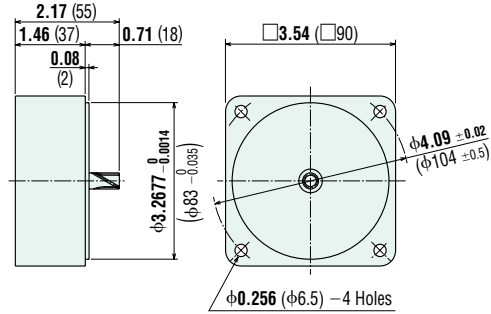
DXF A812



● **Decimal Gearhead (for World K Series)**

5GN10XK Weight: 1.3 lb. (0.6 kg)

DXF A022



● **V Series**

◆ **Lead Wire Type ④**

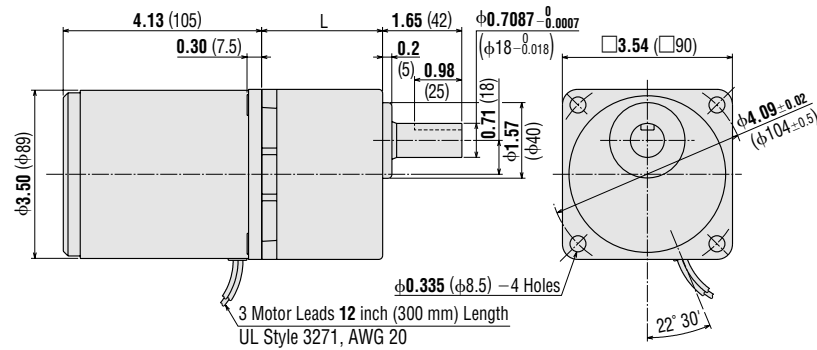
VHI540A-□U, VHI540C-□E, VHI540S-□

Weight: 8.8 lb. (4.0 kg) including gearhead

Motor Model: VHI540A-GVH, VHI540C-GVH, VHI540S-GVH

Gearhead Model: GVH5G□

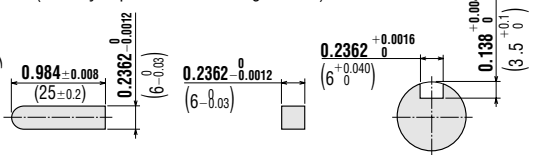
DXF A203A (GVH5G5~18)
A203B (GVH5G30~90)
A203C (GVH5G120~300)



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

● **Key and Key Slot (Scale 1/2)**

(The key is provided with the gearhead)



◆ **Terminal Box Type ⑤**

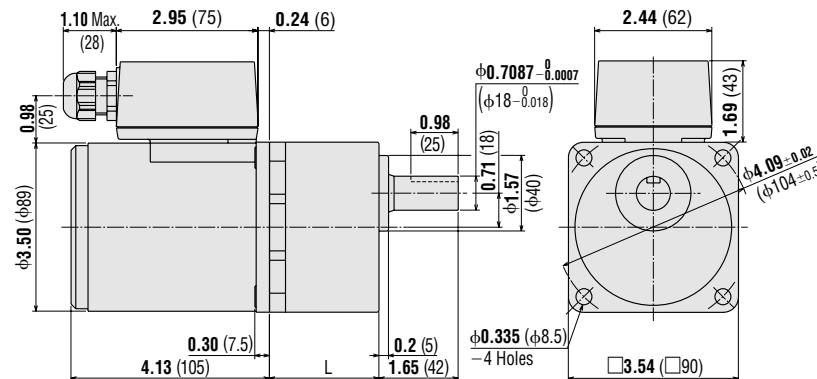
VHI540AT-□U, VHI540CT-□E, VHI540ST-□

Weight: 9.0 lb. (4.1 kg) including gearhead

Motor Model: VHI540AT-GVH, VHI540CT-GVH, VHI540ST-GVH

Gearhead Model: GVH5G□

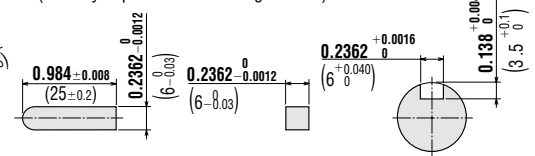
DXF A212A (GVH5G5~18)
A212B (GVH5G30~90)
A212C (GVH5G120~300)



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

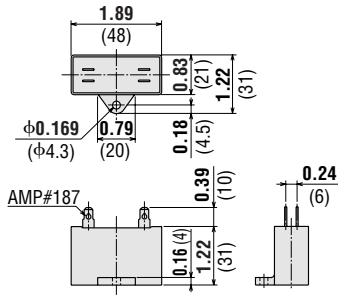
● **Key and Key Slot (Scale 1/2)**

(The key is provided with the gearhead)



- Use cable (VCTF) with a diameter of $\phi 0.24$ inch ($\phi 6$ mm)~ $\phi 0.47$ inch ($\phi 12$ mm).
- Details of Terminal Box → Page A-224

● **Capacitor** (included with single-phase motors)



Motor Model	Capacitor Model	Weight oz. (g)
51K40GN-AW(T)U 51K40A-AW(T)U VH1540A-□U VH1540AT-□U	CH90CFAUL	1.4 (40)
51K40GN-CW(T)E 51K40A-CW(T)E VH1540C-□E VH1540CT-□E	CH23BFAUL	

● 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**

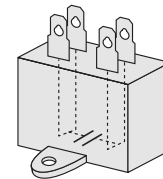
Lead Wire Type	
<p>51K40GN-AWU 51K40GN-CWE VH1540A-□U VH1540C-□E</p> <p>To rotate the motor in a clockwise (CW) direction, flip switch SW to CW. To rotate it in a counterclockwise (CCW) direction, flip switch SW to CCW.</p>	<p>51K40GN-SW VH1540S-□</p> <p>To change the rotation direction, change any two connections between U, V and W.</p>

Terminal Box Type	
<p>51K40GN-AWTU 51K40GN-CWTE VH1540AT-□U VH1540CT-□E</p> <p>To rotate the motor in a clockwise (CW) direction, flip switch SW to CW. To rotate it in a counterclockwise (CCW) direction, flip switch SW to CCW.</p>	<p>51K40GN-SWT VH1540ST-□</p> <p>To change the rotation direction, change any two connections between U, V and W.</p>

Conduit Box Type	
<p>51K40GN-FCH 51K40GN-ECH</p> <p>To rotate the motor in a clockwise (CW) direction, flip switch SW to CW. To rotate it in a counterclockwise (CCW) direction, flip switch SW to CCW.</p>	<p>51K40GN-SH</p> <p>To change the rotation direction, change any two connections between U, V and W.</p>

● **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.



- 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:

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

■ **List of Motor and Gearhead Combinations for V Series**

Model numbers for motor and gearhead combinations are shown below.

Model	Motor Model	Gearhead Model
VH1540A-□U	VH1540A-GVH	GVH5G□
VH1540C-□E	VH1540C-GVH	
VH1540S-□	VH1540S-GVH	
VH1540AT-□U	VH1540AT-GVH	
VH1540CT-□E	VH1540CT-GVH	
VH1540ST-□	VH1540ST-GVH	

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