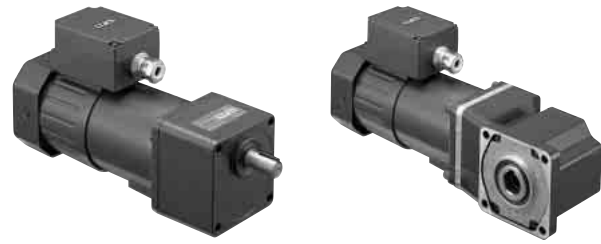


Induction Motors BH Series

Power Off Activated Electromagnetic Brake

200 W (1/4 HP)

Frame Size: 4.09 in. (104 mm)



Features

- BH Series motors provide 200 W output power and up to 530 lb-in. (60 N·m) of torque in a compact 4.09 in. sq. (120mm sq.) mounting configuration.
- Electromagnetic brakes provide holding torque of up to 210 oz-in. (1.5 N·m).
- For easy installation, the BH Series motor and gearhead come pre-assembled.
- Right-angle gearheads are available in hollow and solid shaft versions.

*Motors and gearheads are also available separately.

*The combination type comes with the motor and its dedicated gearhead already pre-assembled. This simplifies installation in equipment. There are various combinations of motors and gearheads available. Motors and gearheads are also available separately so that they can be on hand to make changes or repairs.

Specifications — Continuous Rating

Motor Specifications



Model		Output Power	Voltage	Frequency	Current	Starting Torque	Rated Torque	Rated Speed	Capacitor			
Combination Type	Round Shaft	HP	W	VAC	Hz	A	oz-in	N·m	r/min	μF		
(TP) BHI62FMT-<input type="checkbox"/>RH BHI62FMT-<input type="checkbox"/>RA BHI62FMT-<input type="checkbox"/>	BHI62FMT-A			Single-Phase 110	60	3	124	0.88	1500	40		
				Single-Phase 115			139	0.98				
(TP) BHI62EMT-<input type="checkbox"/>RH BHI62EMT-<input type="checkbox"/>RA BHI62EMT-<input type="checkbox"/>	BHI62EMT-A	1/4 200		Single-Phase 220	60	1.5	139	0.98	1500	10		
				Single-Phase 230			50	1.5			139	0.98
							60	1.5			139	0.98
(TP) BHI62SMT-<input type="checkbox"/>RH BHI62SMT-<input type="checkbox"/>RA BHI62SMT-<input type="checkbox"/>	BHI62SMT-A			Three-Phase 200	60	1.1	210	1.49	1500	—		
				Three-Phase 220			50	1.1			177	1.25
				Three-Phase 230			60	0.95			174	1.23

(TP) The product 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.

- Enter the gear ratio in the box () within the model name.
- **Details of Safety Standards** → Page G-2

Electromagnetic Brake (Power Off Activated Type) Specifications

Model	Voltage	Frequency	Current	Input	Holding Brake Torque	
	VAC	Hz	A	W	oz-in	N·m
BHI62FMT-<input type="checkbox"/>RH BHI62FMT-<input type="checkbox"/>RA BHI62FMT-<input type="checkbox"/> BHI62FMT-A	Single-Phase 110		60	0.17	12	210
	Single-Phase 115					
BHI62EMT-<input type="checkbox"/>RH BHI62EMT-<input type="checkbox"/>RA BHI62EMT-<input type="checkbox"/> BHI62EMT-A	Single-Phase 220		60	0.09	12	210
	Single-Phase 230					
BHI62SMT-<input type="checkbox"/>RH BHI62SMT-<input type="checkbox"/>RA BHI62SMT-<input type="checkbox"/> BHI62SMT-A	Single-Phase 200		60	0.09	12	210
	Single-Phase 220					
	Single-Phase 230					

• The values in the table are the motor only.

Product Line

● Combination Type

◆ Right-Angle Shaft

Type	Power Supply Voltage	Model	Gear Ratio
Hollow Shaft	Single-Phase 110/115 VAC	BHI62FMT-□RH	6~180
	Single-Phase 220/230 VAC	BHI62EMT-□RH	6~180
	Three-Phase 200/220/230 VAC	BHI62SMT-□RH	6~180
Solid Shaft	Single-Phase 110/115 VAC	BHI62FMT-□RA	6~180
	Single-Phase 220/230 VAC	BHI62EMT-□RA	6~180
	Three-Phase 200/220/230 VAC	BHI62SMT-□RA	6~180

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

● Round Shaft Type

Power Supply Voltage	Model
Single-Phase 110/115 VAC	BHI62FMT-A
Single-Phase 220/230 VAC	BHI62EMT-A
Three-Phase 200/220/230 VAC	BHI62SMT-A

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

◆ Parallel Shaft

Power Supply Voltage	Model	Gear Ratio
Single-Phase 110/115 VAC	BHI62FMT-□	3.6~180
Single-Phase 220/230 VAC	BHI62EMT-□	3.6~180
Three-Phase 200/220/230 VAC	BHI62SMT-□	3.6~180

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

Gearmotor — Torque Table

● Right-Angle Shaft 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	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	6	9	15	18	30	36	60	90	120	180
BHI62FMT-□RH, BHI62FMT-□RA		49	73	123	147	240	290	380	450	530	530
BHI62EMT-□RH, BHI62EMT-□RA		5.6	8.3	13.9	16.7	27.8	33.4	43	51.5	60	60
BHI62SMT-□RH, BHI62SMT-□RA		46	69	114	137	220	270	380	450	530	530
		5.2	7.8	12.9	15.5	25.8	31	43	51.5	60	60

● Right-Angle Shaft Single-Phase 230 VAC 50 Hz

Unit = Upper Values: lb-in/Lower Values: N-m

Model	Speed r/min	250	167	100	83	50	42	25	17	12.5	8.3
	Gear Ratio	6	9	15	18	30	36	60	90	120	180
BHI62EMT-□RH, BHI62EMT-□RA		59	88	146	177	290	310	380	450	530	530
		6.7	10	16.6	20	33.3	36	43	51.5	60	60

● Parallel Shaft 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	500	300	200	120	100	60	50	30	20	15	10
	Gear Ratio	3.6	6	9	15	18	30	36	60	90	120	180
BHI62FMT-□, BHI62EMT-□		36	61	91	145	174	290	340	350	350	350	350
		4.1	6.9	10.3	16.4	19.7	32.8	39.3	40	40	40	40
BHI62SMT-□ (230 VAC)		33	56	84	134	161	260	320	350	350	350	350
		3.8	6.4	9.6	15.2	18.3	30.4	36.5	40	40	40	40

● Parallel Shaft Single-Phase 230 VAC 50 Hz

Unit = Upper Values: lb-in/Lower Values: N-m

Model	Speed r/min	417	250	167	100	83	50	42	25	17	12.5	8.3
	Gear Ratio	3.6	6	9	15	18	30	36	60	90	120	180
BHI62EMT-□		43	72	108	173	200	340	350	350	350	350	350
		4.9	8.2	12.3	19.6	23.5	39.2	40	40	40	40	40

● 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 2~20% less than the displayed value, depending on the size of the load.

● Decimal gearheads are not available for the **BH** Series.

■ Permissible Overhung Load and Permissible Thrust Load

Combination Type →Page A-11

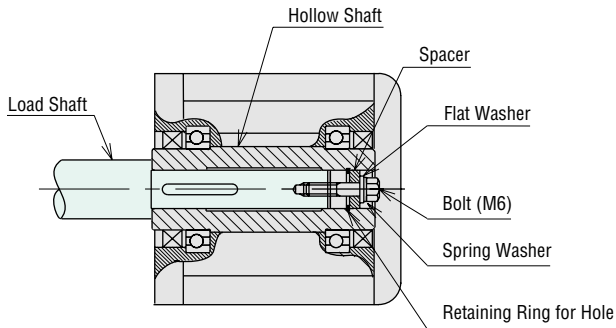
Round Shaft Motor →Page A-11

■ Permissible Load Inertia J for Gearhead

→Page A-12

■ Mounting Method of Hollow Shaft Gearheads

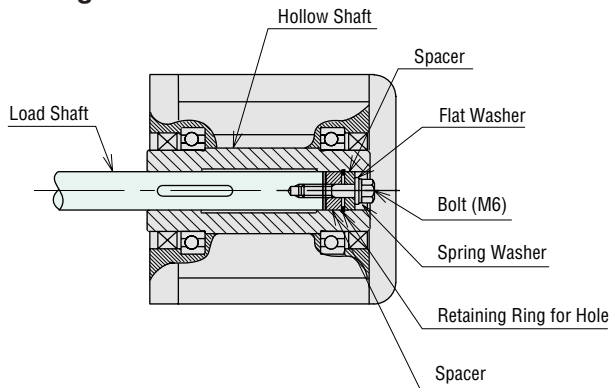
● Stepped-Down Shaft



These diagrams show how to mount loads depending on the shape of the shaft.

The tolerance of the inner diameter for the hollow shaft is finished as H8, and "key slot" processing is given to mount the load shaft. The recommended tolerance of the load shaft is h7. Apply a coating of molybdenum disulfide or similar grease to the inner diameter of the load shaft to prevent binding. Recommended load shaft dimensions are shown below.

● Straight Load Shaft



Recommended size of inner diameter for the hollow shaft and load shaft

Unit = inch (mm)

Model	BH6G2-□RH
Inner diameter of hollow shaft H8	$\phi 0.9843^{+0.0013}_0$ ($\phi 25^{+0.033}_0$)
Recommended load shaft diameter h7	$\phi 0.9843^{+0.0008}_0$ ($\phi 25^{+0.021}_0$)

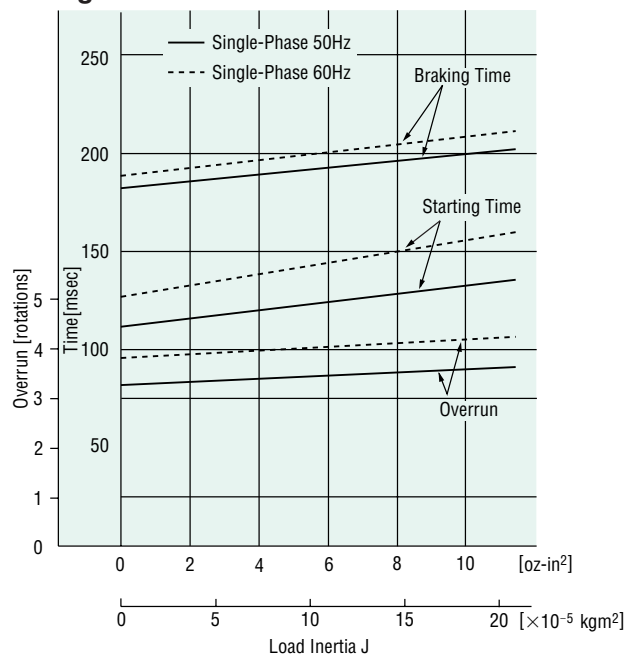
● Replace the safety cover after installing the load shaft.

Note:

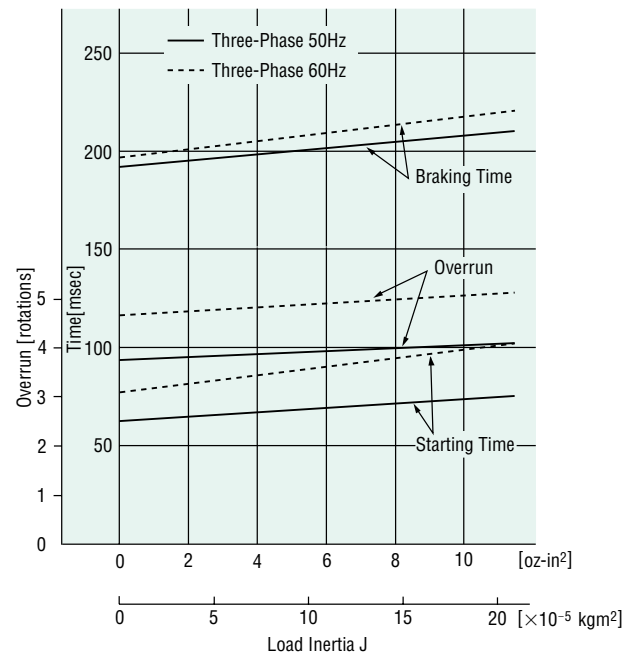
● Be careful not to apply a shock to the hollow shaft when mounting a load. It may damage the bearing inside the gearhead.

■ Starting and Braking Characteristics (Reference Values)

● Single-Phase Motor



● Three-Phase Motor



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Brake Pack

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Accessories

Before Using a Standard AC Motor

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

Mounting screws are included with the combination type parallel shaft. → A-223

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

◆ Combination Type Right-Angle Shaft, Hollow Shaft

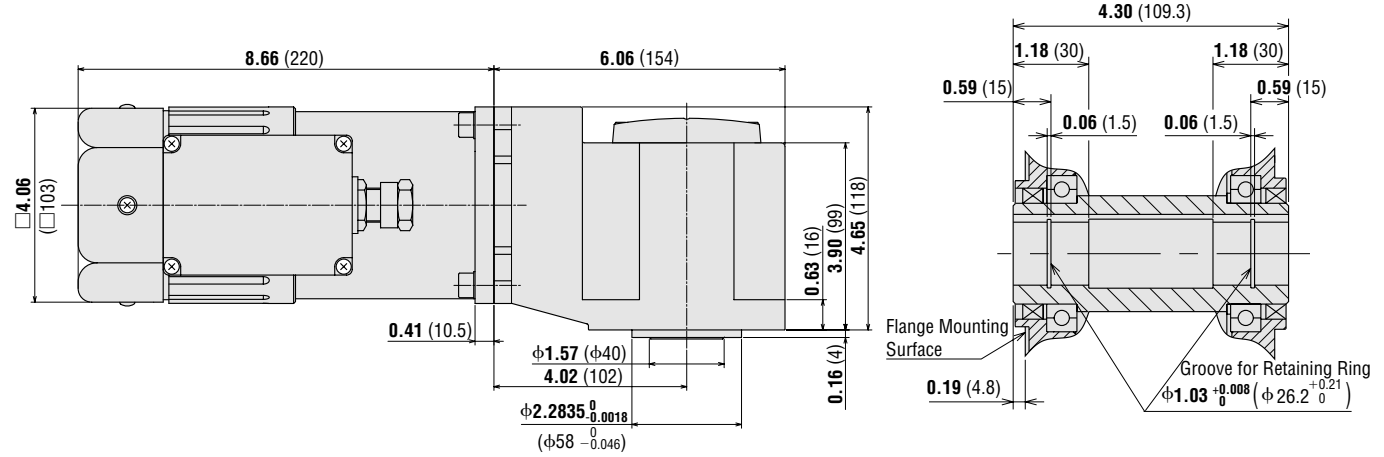
BHI62FMT-□RH, BHI62EMT-□RH, BHI62SMT-□RH

Weight: 25 lb. (11.5 kg) including gearhead

Motor Model: BHI62FMT-G2, BHI62EMT-G2, BHI62SMT-G2

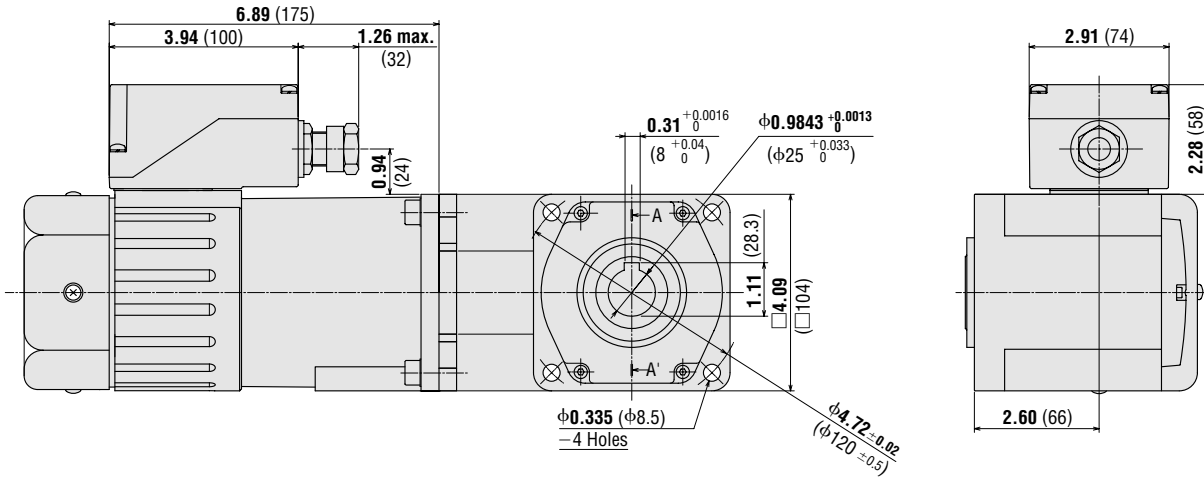
Gearhead Model: BH6G2-□RH

DXF A384



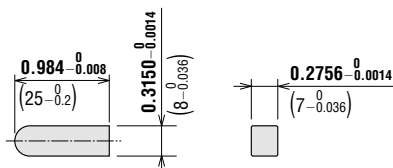
Section AA'
(Detail drawing of output shaft)

- Use cable (VCTF) with a diameter of $\phi 0.31$ inch ($\phi 8$ mm) ~ $\phi 0.47$ inch ($\phi 12$ mm)
- Details of Terminal Box → Page A-224



- Use cable (VCTF) with a diameter of $\phi 0.31$ inch ($\phi 8$ mm) ~ $\phi 0.47$ inch ($\phi 12$ mm)
- Details of Terminal Box → Page A-224

● Key (Included) (Scale 1/2)



◆ Combination Type Right-Angle Shaft, Solid Shaft

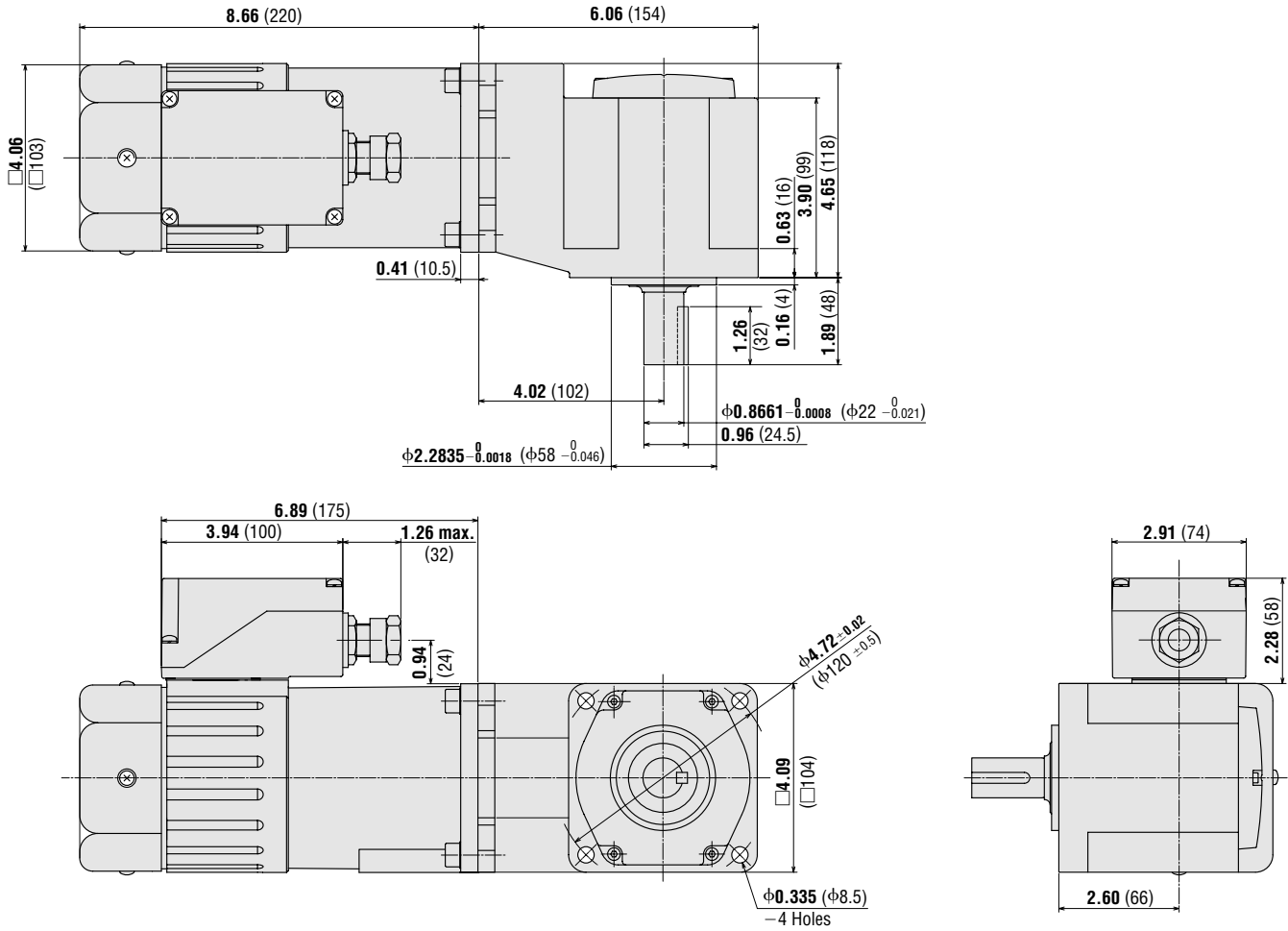
BHI62FMT-□RA, BHI62EMT-□RA, BHI62SMT-□RA

Weight: 25 lb. (11.5 kg) including gearhead

Motor Model: BHI62FMT-G2, BHI62EMT-G2, BHI62SMT-G2

Gearhead Model: BH6G2-□RA

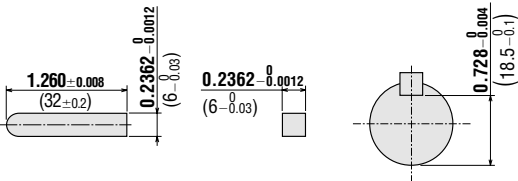
DXF A385



- Use cable (VCTF) with a diameter of $\phi 0.31$ inch ($\phi 8$ mm) ~ $\phi 0.47$ inch ($\phi 12$ mm)
- Details of Terminal Box → Page A-224

● Key and Key Slot (Included) (Scale 1/2)

*At the time of shipment, a parallel key is inserted on the gearhead's shaft.



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Before Using a Standard AC Motor

◆ Combination Type Parallel Shaft

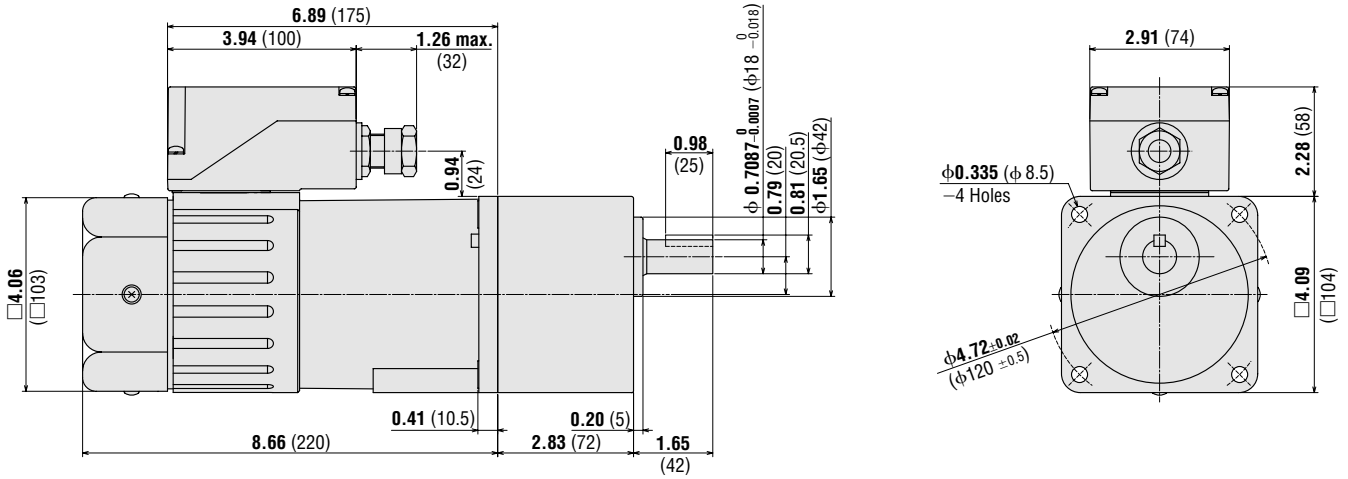
BHI62FMT-□, BHI62EMT-□, BHI62SMT-□

Weight: 21 lb. (9.5 kg)

Motor Model: BHI62FMT-G2, BHI62EMT-G2, BHI62SMT-G2

Gearhead Model: BH6G2-□

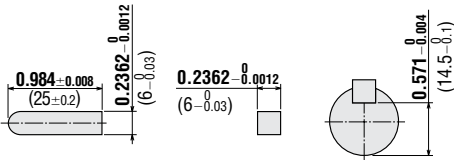
DXF A386



- Use cable (VCTF) with a diameter of $\phi 0.31$ inch ($\phi 8$ mm) ~ $\phi 0.47$ inch ($\phi 12$ mm)
- Details of Terminal Box → Page A-224

● Key and Key Slot (Included) (Scale 1/2)

*At the time of shipment, a parallel key is inserted on the gearhead's shaft.

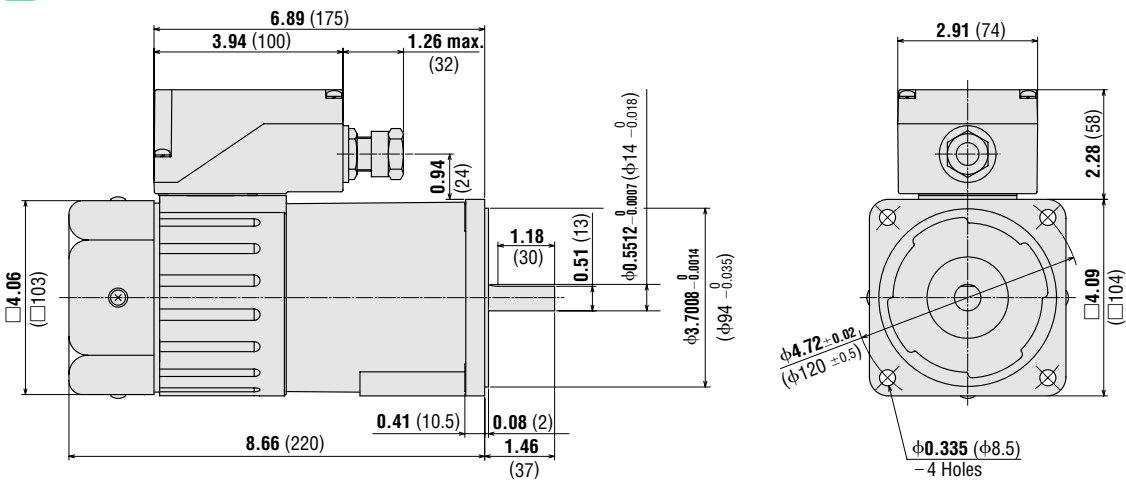


◆ Round Shaft

BHI62FMT-A, BHI62EMT-A, BHI62SMT-A

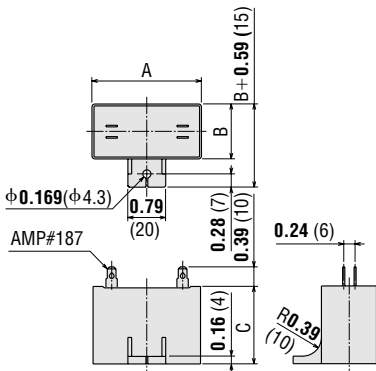
Weight: 14 lb. (6.5 kg)

DXF A387



- Use cable (VCTF) with a diameter of $\phi 0.31$ inch ($\phi 8$ mm) ~ $\phi 0.47$ inch ($\phi 12$ mm)
- Details of Terminal Box → Page A-224

◆ **Capacitor** (Included with single-phase motors)



◆ **Capacitor Dimensions** Unit = inch (mm)

Model	Capacitor Model	A	B	C	Weight oz. (g)
BHI62FMT-□RH BHI62FMT-□RA BHI62FMT-□ BHI62FMT-A	CH400CFAUL2	2.28 (58)	1.61 (41)	2.28 (58)	6.2 (175)
BHI62EMT-□RH BHI62EMT-□RA BHI62EMT-□ BHI62EMT-A	CH100BFAUL	2.28 (58)	1.38 (35)	1.97 (50)	4.7 (132)

● 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**

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

Motor	Single-Phase Induction Motor	Three-Phase Induction Motor
Parallel Shaft Combination Type BHI62□MT-3.6~9 BHI62□MT-60~180 Round Shaft BHI62□MT-A		
Parallel Shaft Combination Type BHI62□MT-15~36 Right-Angle Shaft Combination Type BHI62□MT-6RH~180RH BHI62□MT-6RA~180RA		
Direction of Rotation	To rotate the motor in a clockwise (CW) direction, flip SW2 to CW. To rotate the motor in a counterclockwise (CCW) direction, flip SW2 to CCW.	To rotate the motor in a counterclockwise (CCW) direction, change any two connections between U, V and W.

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

Switch No.	Specifications			Note
	Single-Phase 110V AC Input	Single-Phase 220 VAC Input Single-Phase 115V AC Input Single-Phase 230 VAC Input	Three-Phase 200/220/230 VAC Input	
SW1	125 VAC 5 A minimum	250 VAC 5 A minimum	250 VAC 5 A minimum (Inductive Load)	Switched Simultaneously
SW2	(Inductive Load)	(Inductive Load)	—	—

In order to protect the relay contacts, CR circuit (R₀ C₀) for surge suppression must be connected.

R₀=5~200Ω C₀=0.1~0.2 μF 200WV

Optional of the Oriental Motor's surge absorber is available. Product name **EPCR1201-2** (sold separately)

● Enter **F** or **E** (power supply voltage) in the box (□) with in the model name.

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

Note:

● Change the direction of 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.

● Connecting Motor and Speed Control Pack

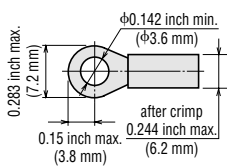
◆ Connecting the motor

Appropriate lead wires

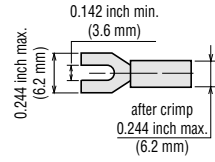
AWG 18 (0.75 mm²) min.

[Terminals] (Use a crimp terminal for the electromagnetic brake type.)

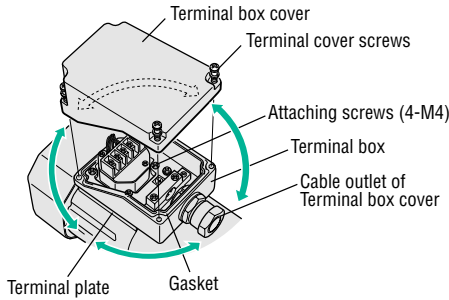
Round Terminal with Insulation



U-Shape Terminal with Insulation



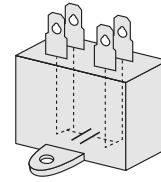
<Installing Terminal Box>



- When installing the terminal box cover, be sure to use the rubber gasket in order to maintain a tight seal.
- Cable entry is possible at any of the four sides of the terminal box. Undo the screws which fixed the terminal box to the motor case, position the terminal box so that the outlet faces in the desired direction and refasten the screws.
In order to maintain a tight seal around the terminal box, a rubber sheet is used between the terminal box and terminal plate.

● 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

Model numbers for the motor and gearhead combinations are shown below.

● Right-Angle Shaft

Model	Motor Model	Gearhead Model
BHI62FMT-□RH	BHI62FMT-G2	BH6G2-□RH
BHI62FMT-□RA		BH6G2-□RA
BHI62EMT-□RH	BHI62EMT-G2	BH6G2-□RH
BHI62EMT-□RA		BH6G2-□RA
BHI62SMT-□RH	BHI62SMT-G2	BH6G2-□RH
BHI62SMT-□RA		BH6G2-□RA

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

● Parallel Shaft

Model	Motor Model	Gearhead Model
BHI62FMT-□	BHI62FMT-G2	BH6G2-□
BHI62EMT-□	BHI62EMT-G2	
BHI62SMT-□	BHI62SMT-G2	

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