Electromagnetic Brake Motors

Additional Information

Power Off Activated Type

Electromagnetic Brake Motors

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

V Series
(Lead Wire Type)

BH Series
(Terminal Box Type)

✻ Gearheads shown in the photograph are sold separately. The **V** Series and the **BH** Series are Combination Type. (Pre-assembled Gearmotor)

Features

Power Off Activated Type Electromagnetic Brake

These motors are directly coupled to an AC electromagnetic brake which is activated when power is not applied. When the power source is turned off, the motor stops instantaneously and holds the load. Since the electromagnetic brakes exert holding power even while the power is off, they are highly suitable for use as emergency brakes and vertical load applications.

Conforms to Safety Standards, 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 models are not certified by EN standard. (CE marking appears on all models)

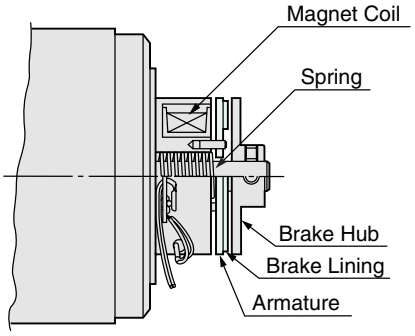
Wide Variety of Product Lines

World **K** Series, **V** Series and **BH** Series are available.

Combination Type (Pre-assembled Gearmotors) (V Series, BH 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 repair.

Structure



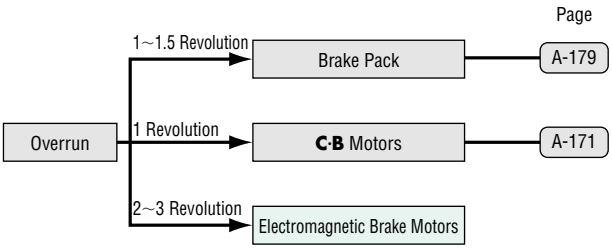
The figure above provides an example of the electromagnetic brake motors structure.
The electromagnetic brake operates on the basis of a spring which presses the armature against the brake hub, stopping the motor and holding the load. When the electromagnetic brake is excited, it attracts the armature and the brake lining is pulled away from the brake hub. The motor is then able to rotate freely.

Other Motor Braking Options

Oriental Motor provides various braking options to suit a variety of applications.

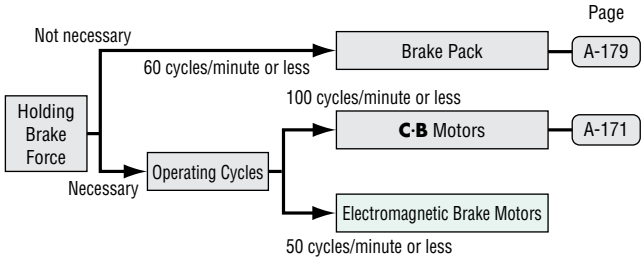
How to Select a Brake Motor

Selecting from stopping accuracy



✻ The overrun values are those of an individual motor.

Selecting based on frequency of use



Notes:

- The operating cycles are based merely on brake response. The value specified above is the maximum, so it may not be possible to repeat braking operation at this frequency.
- In an actual application, be certain the surface temperature of the motor case remains below 194˚F (90˚C) by considering a rise in motor temperature.

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	
	DEMKO	138642 (Three-phase 90 W)✻2	
EN60034-1 EN60034-5 IEC60034-11✻1	Conform to EN/IEC Standards		

✻1 15 W~90 W type.
✻2 Except **V** Series 90 W type.

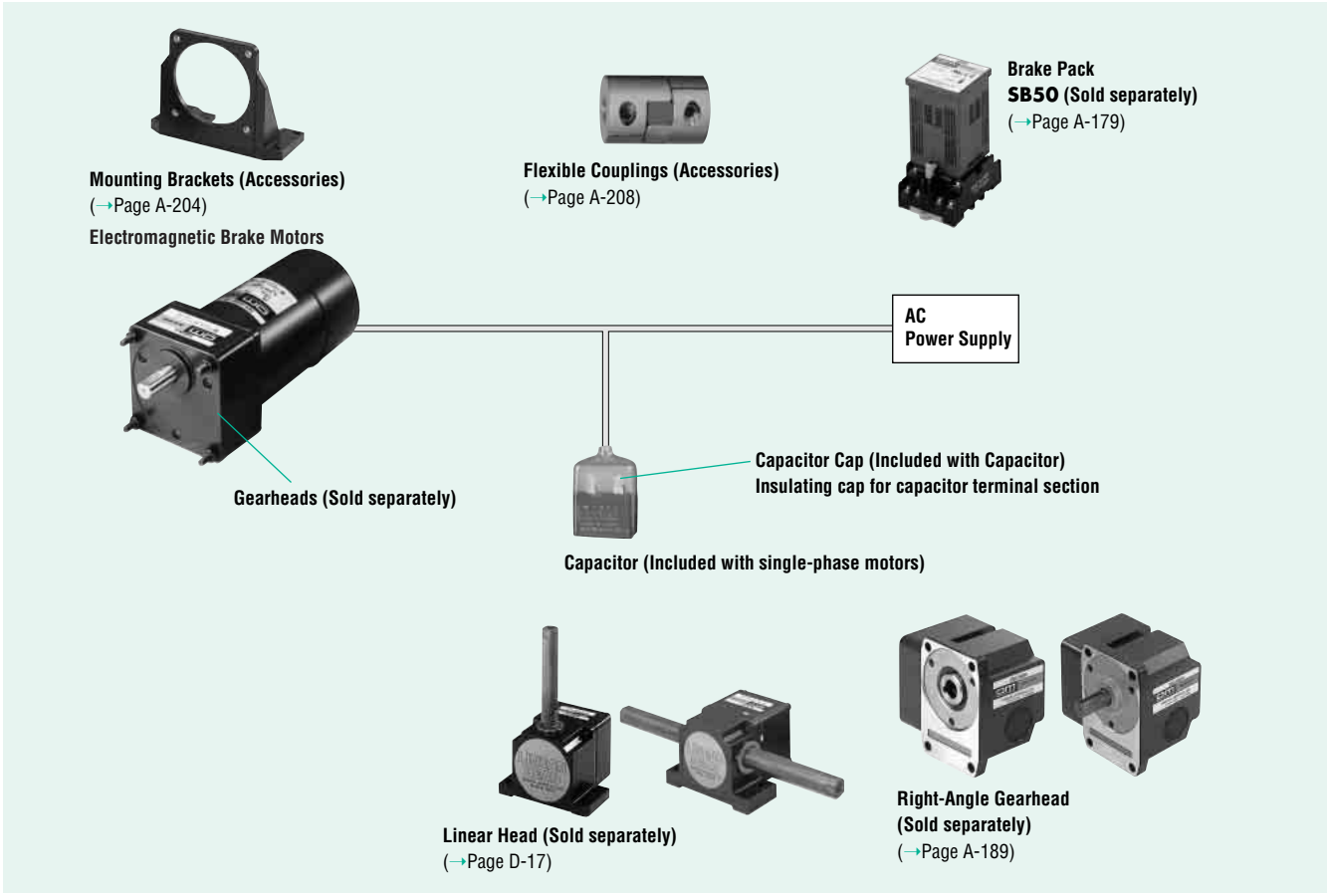
- **Details of Safety Standards**→Page G-2
- **List of Safety Standard Approved Products**→Page G-11, G-12
- When the motor is approved under various standards, the model name on the nameplate is the approved model name.

BH Series

Standards	Certification Body	Standards File No.	CE Marking
UL1004 UL2111	UL	E64197	Low Voltage Directives
CSA C22.2 No.100 CSA C22.2 No.77			
EN60950 EN60034-1 EN60034-5 IEC60034-11 IEC60664-1	Conform to EN/IEC Standards		

- **Details of Safety Standards**→Page G-2
- When the motor is approved under various standards, the model name on the nameplate is the approved model name.

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 M 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** **I**: Induction Motor **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 **SW**: Three-Phase 200/220/230 VAC, 4 Poles
- **M**: Power off activated electromagnetic brake
- **Included Capacitor** **U**: For Single-Phase110/115 VAC **E**: For Single-Phase220/230 VAC None: Three-Phase type

Gearhead for World K Series

4 GN 50 KA

- **Gearhead 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.)
- **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

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.

● V Series

V H R 5 40 A M - 300 U

- **Included Capacitor**
  - **U**: For Single-Phase 110/115 VAC
  - **E**: For Single-Phase 220/230 VAC
  - None : Three-Phase type
- **Gear Ratio**
  (Example) **300**: Gear Ratio of 300:1
- **M**: Power off activated electromagnetic brake
- **Voltage**
  - **A**: Single-Phase 100/110/115 VAC
  - **C**: Single-Phase 200/220/230 VAC
  - **S**: Three-Phase 200/220/230 VAC
- **Output Power**
  (Example) **40**: 40 W
- **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.)
- High Power
- **Motor Series**: **V** series
- **Motor Type**
  I: Induction motor
  R: Reversible motor

● BH Series

BH I 6 2 F M T - 5 RH

- **Gearhead Type**
  (Combination Type Only)
  RH: Right-Angle/Hollow Shaft
  RA: Right-Angle/Solid Shaft
  No letter: Parallel Shaft
- Number: Gear Ratio
  (Pre-assembled gearmotor)
  A: Round Shaft Type
- **T**: Terminal Box Type
- **M**:Power Off Activated Electromagnetic Brake
- **Voltage**
  F: Single-Phase 110/115 VAC
  E: Single-Phase 220/230 VAC
  S: Three-Phase 200/220/230 VAC
- **Output Power** **2**: 200 W
- **Motor Frame Size**
  6: 4.09 in. sq. (104 mm sq.)
- **Motor Type** **I**: Induction Motor
- **Motor Series**
  BH:**BH** Series

■ General Specifications for Motors

● 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 and 60 Hz applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity for 1 minute.
Temperature Rise	Temperature rise of windings are 144°F (80°C) or less measured by the resistance change method after rated motor operation with connecting a gearhead or equivalent heat radiation plate.*
Insulation Class	Class B [266°F (130°C)]
Overheat Protection Device	6 W type is impedance protected. All others have a built-in thermal protector (Automatic return type) 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) [Three-Phase 200 VAC: 14°F~122°F (−10°C~+50°C)] (nonfreezing)
Ambient Humidity	85% maximum (noncondensing)
Degree of Protection	6W~40W type: IP20　　60 W and 90 W type: IP40

✻Heat radiation plate (material: Aluminum)

Type (output)	Size: in. (mm)	Thickness: in. (mm)
2IK, **2RK** Type (6 W)	4.53×4.53 (115×115)	0.20 (5)
3RK Type (15 W)	4.92×4.92 (125×125)	
4IK, **4RK** Type (25 W)	5.31×5.31 (135×135)	
5IK40, **5RK40** Type (40 W)	6.50×6.50 (165×165)	
5IK60, **5RK60** Type (60 W)	7.87×7.87 (200×200)	
5IK90, **5RK90** Type (90 W)	7.87×7.87 (200×200)	

● BH 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 126°F (70°C) or less measured by the resistance change method after rated motor operation with connecting a gearehead or equivalent heat radiation plate.
Insulation Class	Class B [266°F (130°C)]
Overheat Protection	Built-in thermal protector (Automatic return type) Operating temperature, open: 302°F±9°F (150°C±5°C) close: 204.8°F±27°F (96°C±15°C)
Ambient Temperature Range	14°F~104°F (−10°C~+40°C) [Three-Phase 200 VAC: 14°F~122°F (−10°C~+50°C)] (nonfreezing)
Ambient Humidity	85% maximum (noncondensing)
Degree of Protection	IP54

✻ Heat Radiation Plate 9.06 inch×9.06 inch (230 mm×230 mm), 0.20 inch (5 mm) thickness (Material: Aluminum).