AC/DC Geared Motor and Gearbox

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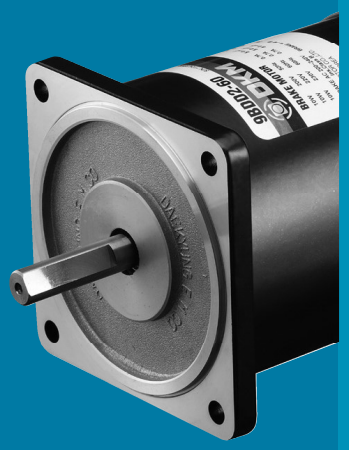
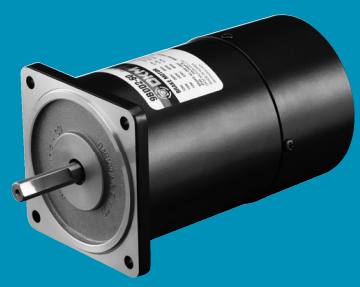
**OPIS Engineering k.s.**



# Electromagnetic Brake Motor





## Index

# B AC Motors

## Outline of E.M. Brake Motor

### Power Off Activated Type Electromagnetic Brake

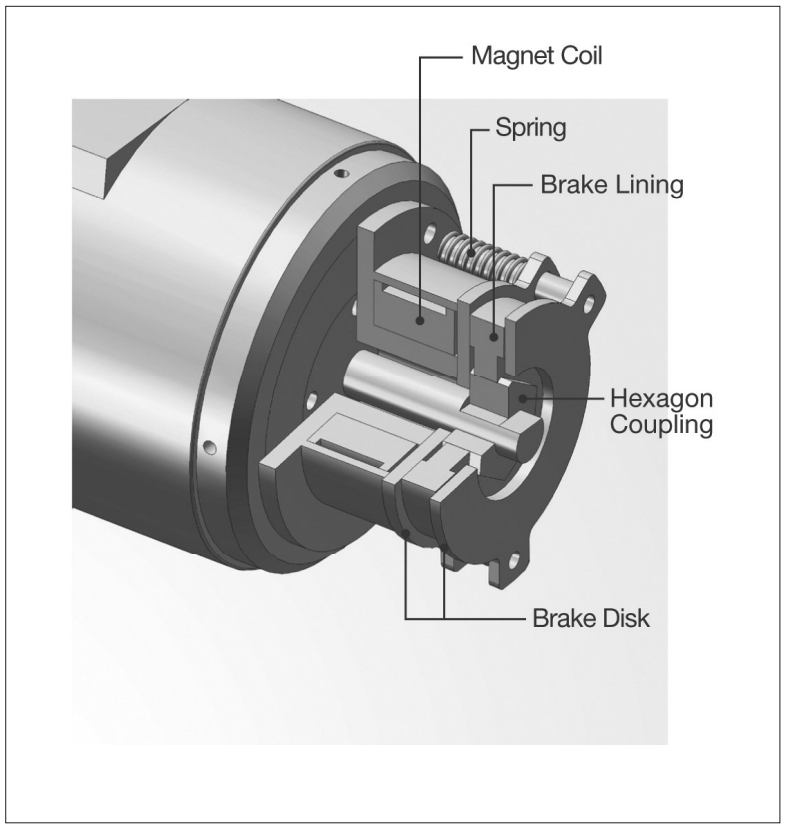
- AC electromagnetic brake is employed in electromagnetic brake motors. When the power source is turned off, the brake is activated and the motor stops instantaneously and holds the load. The electromagnetic brake has holding power in power-off, so it is optimal for emergency brakes and vertical load applications.

### Operation

- There is 2-3 times of overrun rotation at the time the power is turned off as individual motor. (Induction motor: 30~40 times overrun, Reversible motor: 5~6 times overrun)
- The frequent and instantaneous directional changes are possible. By a simple control, it is possible to make 6 stops per minute with more than 3 seconds of stoppage. Roughly the operating cycle is 50 cylces per minute or less. (Note: This value is based merely on brake response. And this value is maximum, so it may not be possible to repeat braking operation at this frequency. Please make the treatment so that the surface of the motor case remains below 90℃.)
- The motor and the brake use the same power source. (For example, if motor voltage is 110V, that of brake is 110V.)

### Structure

- An electromagnetic brake motor is equipped with a power-off activated type electromagnetic brake. As shown in the figure, when voltage is applied to the magnet coil, the armature is attracted to the electromagnet against the force of the spring, thereby releasing the brake and allowing the motor shaft to rotate freely. When no voltage is applied, the spring works to press the armature onto the brake hub and hold the motor's shaft in place, thereby actuating the brake.

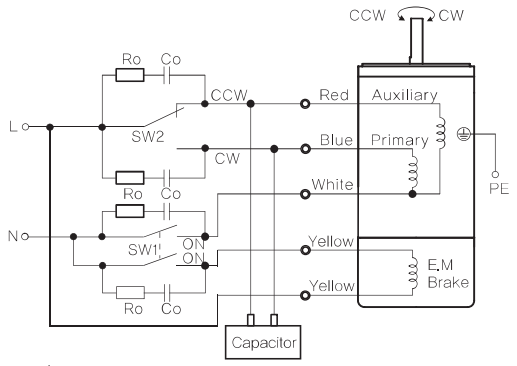


## General Specifications

| Item | Specification |
|---|---|
| Insulation Resistance | 100MΩ or more when DC500V MEGA is applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity. |
| Dielectric Strength | Sufficient to withstand 1.5KV at 50Hz and 60Hz 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 80℃ 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 [130℃] |
| Overheat Protection | Operating temperature (Built-in thermal protector type motor): Open 120℃±5℃, Close 90℃±5℃ |
| Ambient Temperature | -10℃~+40℃ (Three phase 220VAC: -10℃~+50℃) |
| Ambient Humidity | 85% maximum |

## Connection Diagrams

### Single Phase

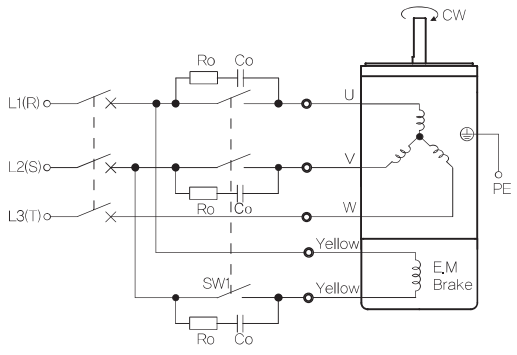



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) SW1 operates both motor and electromagnetic brake action.
2) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON.
3) When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
4) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
5) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# B AC Motors

## E.M. Brake Motor 6W (□70mm)

# 6W Electromagnetic Brake Motor
6W(□70mm)

## Motor Specification

| Model<br>7BDG□-6G: Gear Type Shaft<br>7BDD□-6: D-Cut Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7BDGA-6G | 6 | 1ø110 | 60 | 4 | 30min. | 0.64 | 0.064 | 1600 | 0.29 | 0.50 | 0.050 | 3.0 / 250 |
| 7BDGD-6G | 6 | 1ø220 | 60 | 4 | 30min. | 0.85 | 0.085 | 1600 | 0.16 | 0.60 | 0.060 | 1.0 / 450 |
| 7BDGE-6G | 6 | 1ø220 | 50 | 4 | 30min. | 0.61 | 0.061 | 1250 | 0.13 | 0.68 | 0.068 | 0.8 / 450 |
| | | 1ø240 | | | | 0.75 | 0.075 | | 0.14 | 0.76 | 0.076 | |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut Type Shaft is for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 7BDG□-6G | 7GBK□BMH | kgfcm | 1.5 | 1.8 | 3.0 | 3.7 | 4.5 | 6.2 | 7.5 | 9.0 | 11.3 | 13.5 | 14.7 | 20.4 | 24.5 | 30.6 | 36.7 | 40.8 | 49.0 | 50.0 | 50.0 |
| | | N.m | 0.15 | 0.18 | 0.29 | 0.37 | 0.44 | 0.61 | 0.73 | 0.88 | 1.10 | 1.32 | 1.44 | 2.00 | 2.40 | 3.00 | 3.60 | 4.00 | 4.80 | 4.90 | 4.90 |

### 50Hz

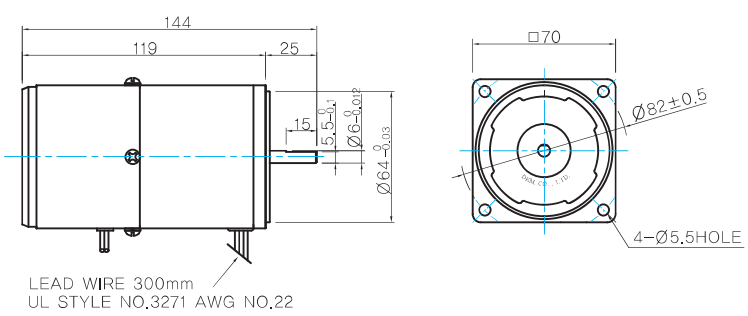
| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 416 | 250 | 200 | 166 | 120 | 100 | 83 | 60 | 50 | 41 | 30 | 25 | 20 | 16 | 15 | 12.5 | 10 | 8.3 |
| 7BDG□-6G | 7GBK□BMH | kgfcm | 1.7 | 2.0 | 3.4 | 4.2 | 5.1 | 7.1 | 8.5 | 10.2 | 12.8 | 15.3 | 16.6 | 23.1 | 27.7 | 34.7 | 41.6 | 46.2 | 50.0 | 50.0 | 50.0 |
| | | N.m | 0.17 | 0.20 | 0.33 | 0.41 | 0.50 | 0.69 | 0.83 | 1.00 | 1.25 | 1.50 | 1.63 | 2.27 | 2.72 | 3.40 | 4.08 | 4.53 | 4.90 | 4.90 | 4.90 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

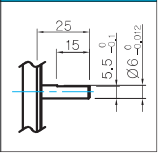
## Dimensions

### MOTOR ONLY

● MOTOR MODEL: 7BDD□-6 (NO FAN)



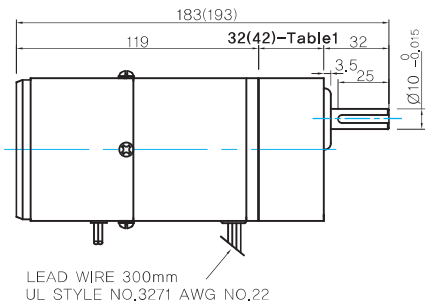

● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |

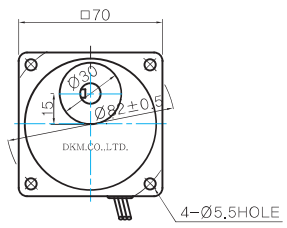
## GEARED MOTOR

### G TYPE GEARHEAD

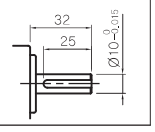
● MOTOR MODEL:
7BDG□-6G (NO FAN)




● GEARHEAD MODEL:
7GBK□BMH

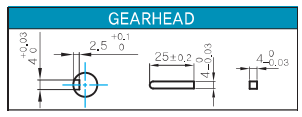



● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |



● KEY SPEC




### WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 1.3 |
| GEAR HEAD | 7GBK3BMH – 7GBK18BMH | 0.36 |
| | 7GBK25BMH – 7GBK30BMH | 0.44 |
| | 7GBK36BMH – 7GBK180BMH | 0.5 |

● 32(42)-Table1

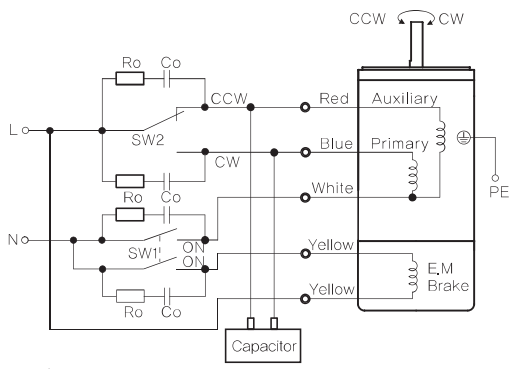
| SIZE(mm) | GEAR RATIO |
|---|---|
| 32 | 7GBK3BMH – 7GBK18BMH |
| 42 | 7GBK25BMH – 7GBK180BMH |

## Motor Images

| 7BDD□-6 | 7BDG□-6G+7GBK□BMH |
|---|---|
|  |  |

## Connection Diagrams

### Single Phase




*** Rotation Direction:**
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# B AC Motors

## E.M. Brake Motor 10W (□70mm)

# 10W Electromagnetic Brake Motor 10W(□70mm)

## Motor Specification

| Model<br>7BDG□–10G: Gear Type Shaft<br>7BDD□–10: D-Cut Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7BDGA–10G | 10 | 1ø110 | 60 | 4 | 30min. | 0.83 | 0.083 | 1550 | 0.31 | 0.70 | 0.070 | 3.5 / 250 |
| 7BDGD–10G | 10 | 1ø220 | 60 | 4 | 30min. | 1.00 | 0.100 | 1550 | 0.20 | 0.79 | 0.079 | 1.2 / 450 |
| 7BDGE–10G | 10 | 1ø220 | 50 | 4 | 30min. | 0.86 | 0.086 | 1250 | 0.16 | 0.82 | 0.082 | 1.0 / 450 |
| | | 1ø240 | | | | 0.99 | 0.099 | | 0.18 | 0.90 | 0.090 | |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut Type Shaft is for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 7BDG□–10G | 7GBK□BMH | kgfcm | 2.0 | 2.4 | 3.9 | 4.9 | 5.9 | 8.2 | 9.8 | 11.8 | 14.8 | 17.8 | 19.3 | 26.9 | 32.2 | 40.3 | 48.3 | 50.0 | 50.0 | 50.0 | 50.0 |
| | | N.m | 0.19 | 0.23 | 0.39 | 0.48 | 0.58 | 0.80 | 0.96 | 1.16 | 1.45 | 1.74 | 1.90 | 2.63 | 3.16 | 3.95 | 4.74 | 4.90 | 4.90 | 4.90 | 4.90 |

### 50Hz

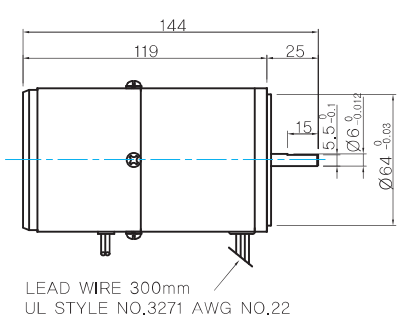
| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 416 | 250 | 200 | 166 | 120 | 100 | 83 | 60 | 50 | 41 | 30 | 25 | 20 | 16 | 15 | 12.5 | 10 | 8.3 |
| 7BDG□–10G | 7GBK□BMH | kgfcm | 2.0 | 2.5 | 4.1 | 5.1 | 6.1 | 8.5 | 10.2 | 12.3 | 15.4 | 18.5 | 20.1 | 27.9 | 33.5 | 41.8 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| | | N.m | 0.20 | 0.24 | 0.40 | 0.50 | 0.60 | 0.83 | 1.00 | 1.20 | 1.51 | 1.81 | 1.97 | 2.73 | 3.28 | 4.10 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 |

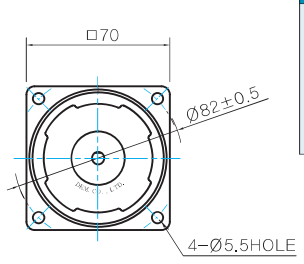
1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

## Dimensions

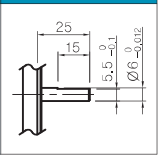
### MOTOR ONLY

● MOTOR MODEL: 7BDD□–10 (NO FAN)




● MOTOR OUTPUT SHAFT

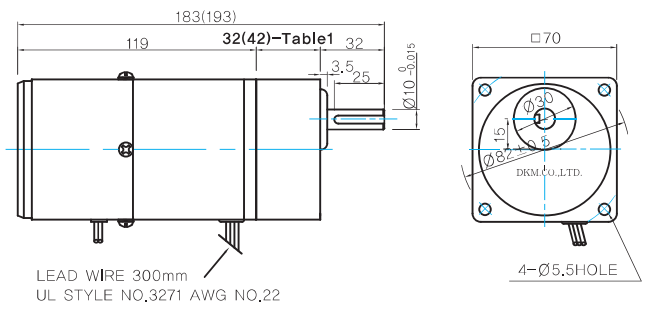
| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |

## GEARED MOTOR

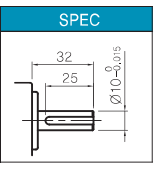
### G TYPE GEARHEAD

● MOTOR MODEL:
7BDG□-10G (NO FAN)

● GEARHEAD MODEL:
7GBK□BMH




● GEARHEAD OUTPUT SHAFT

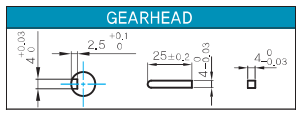
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |



### WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 1.3 |
| GEAR HEAD | 7GBK3BMH – 7GBK18BMH | 0.36 |
| | 7GBK25BMH – 7GBK30BMH | 0.44 |
| | 7GBK36BMH – 7GBK180BMH | 0.5 |

● KEY SPEC

| GEARHEAD |
|---|
|  |



● 32(42)-Table1

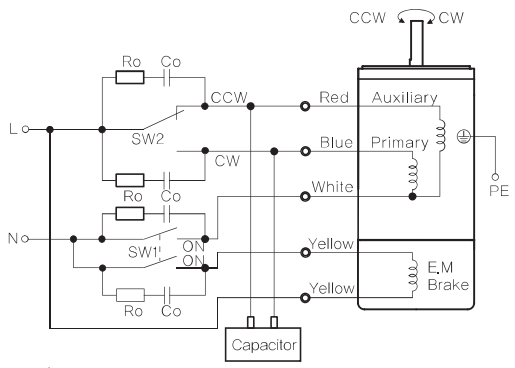
| SIZE(mm) | GEAR RATIO |
|---|---|
| 32 | 7GBK3BMH – 7GBK18BMH |
| 42 | 7GBK25BMH – 7GBK180BMH |

## Motor Images

| 7BDD□-10 | 7BDG□-10G+7GBK□BMH |
|---|---|
|  |  |

## Connection Diagrams

### Single Phase




*** Rotation Direction:**
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# B AC Motors

## E.M. Brake Motor 15W (□70mm)

# 15W Electromagnetic Brake Motor 15W(□70mm)

## Motor Specification

| Model<br>7BDG□–15G: Gear Type Shaft<br>7BDD□–15: D–Cut Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7BDGA–15G | 15 | 1ø110 | 60 | 4 | 30min. | 1.30 | 0.130 | 1600 | 0.46 | 1.05 | 0.105 | 6.0 / 250 |
| 7BDGD–15G | 15 | 1ø220 | 60 | 4 | 30min. | 1.25 | 0.125 | 1600 | 0.23 | 1.10 | 0.110 | 1.5 / 450 |
| 7BDGE–15G | 15 | 1ø220 | 50 | 4 | 30min. | 1.10 | 0.110 | 1250 | 0.17 | 1.25 | 0.125 | 1.2 / 450 |
| | | 1ø240 | | | | 1.30 | 0.130 | | 0.18 | 1.45 | 0.145 | |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut Type Shaft is for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 7BDG□–15G | 7GBK□BMH | kgfcm | 2.7 | 3.3 | 5.5 | 6.8 | 8.2 | 11.4 | 13.7 | 16.4 | 20.6 | 24.8 | 26.9 | 37.4 | 44.9 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| | | N.m | 0.27 | 0.32 | 0.54 | 0.67 | 0.81 | 1.12 | 1.34 | 1.61 | 2.02 | 2.43 | 2.64 | 3.67 | 4.40 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 |

### 50Hz

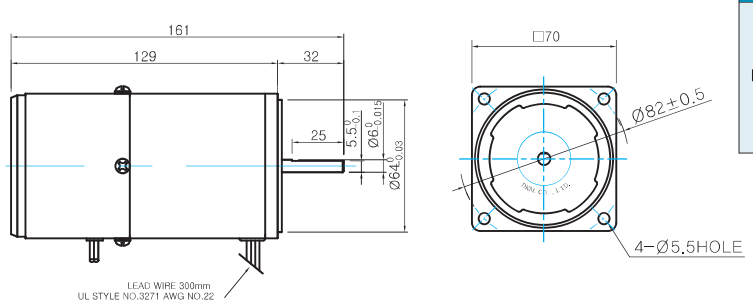
| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 416 | 250 | 200 | 166 | 120 | 100 | 83 | 60 | 50 | 41 | 30 | 25 | 20 | 16 | 15 | 12.5 | 10 | 8.3 |
| 7BDG□–15G | 7GBK□BMH | kgfcm | 3.6 | 4.3 | 7.2 | 9.0 | 10.8 | 15.0 | 18.1 | 21.7 | 27.2 | 32.6 | 35.5 | 49.3 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| | | N.m | 0.35 | 0.42 | 0.71 | 0.88 | 1.06 | 1.47 | 1.77 | 2.12 | 2.66 | 3.20 | 3.48 | 4.83 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

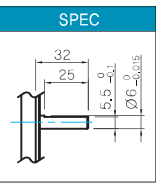
## Dimensions

### MOTOR ONLY

● MOTOR MODEL: 7BDD□–15 (NO FAN)



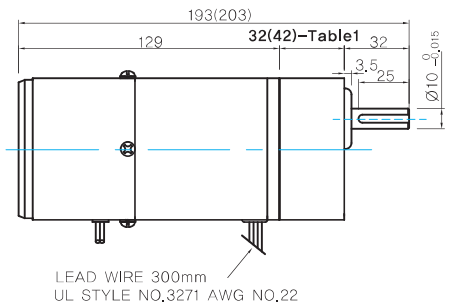

● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D–CUT TYPE |  |

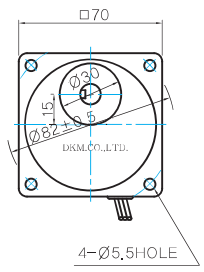
## GEARED MOTOR

### G TYPE GEARHEAD

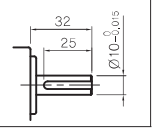
● MOTOR MODEL:
7BDG□-15G (NO FAN)




● GEARHEAD MODEL:
7GBK□BMH

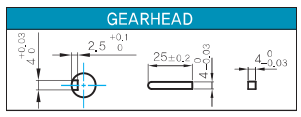



● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |



● KEY SPEC




### WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 1.5 |
| GEAR HEAD | 7GBK3BMH – 7GBK18BMH | 0.36 |
| | 7GBK25BMH – 7GBK30BMH | 0.44 |
| | 7GBK36BMH – 7GBK180BMH | 0.5 |

● 32(42)-Table1

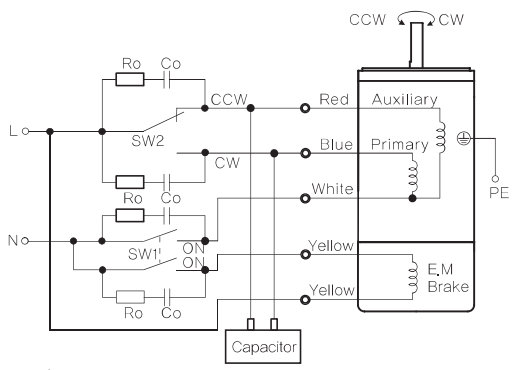
| SIZE(mm) | GEAR RATIO |
|---|---|
| 32 | 7GBK3BMH – 7GBK18BMH |
| 42 | 7GBK25BMH – 7GBK180BMH |

## Motor Images

| 7BDD□-15 | 7BDG□-15G+7GBK□BMH |
|---|---|
|  |  |

## Connection Diagrams

### Single Phase




*** Rotation Direction:**
To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# B AC Motors

## E.M. Brake Motor 15W (□80mm)

# 15W Electromagnetic Brake Motor
15W(□80mm)

## Motor Specification

| Model<br>8BDG*-15□: Gear Type Shaft<br>8BDD*-15: D-Cut Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8BDGA-15□ | 15 | 1ø110 | 60 | 4 | 30min. | 1.55 | 0.155 | 1600 | 0.44 | 1.20 | 0.120 | 6.0 / 250 |
| 8BDGD-15□ | 15 | 1ø220 | 60 | 4 | 30min. | 1.50 | 0.150 | 1600 | 0.25 | 1.00 | 0.100 | 1.5 / 450 |
| 8BDGE-15□ | 15 | 1ø220 | 50 | 4 | 30min. | 1.25 | 0.125 | 1200 | 0.16 | 1.30 | 0.130 | 1.5 / 450 |
| | | 1ø240 | | | | 1.45 | 0.145 | | 0.17 | 1.40 | 0.140 | |
| 8BDGG-15□ | 15 | 3ø220 | 50 | 4 | Cont. | 4.80 | 0.480 | 1300 | 0.22 | 1.40 | 0.140 | – |
| | | | 60 | | | 4.00 | 0.400 | 1600 | 0.18 | 1.00 | 0.100 | |
| 8BDGK-15□ | 15 | 3ø380 | 50 | 4 | Cont. | 4.60 | 0.460 | 1300 | 0.13 | 1.20 | 0.120 | – |
| | | | 60 | | | 3.60 | 0.360 | 1550 | 0.11 | 1.00 | 0.100 | |
| | | 3ø400 | 50 | 4 | Cont. | 5.00 | 0.500 | 1300 | 0.14 | 1.40 | 0.140 | |
| | | | 60 | | | 4.00 | 0.400 | 1600 | 0.12 | 1.00 | 0.100 | |
| | | 3ø415 | 50 | 4 | Cont. | 5.40 | 0.540 | 1350 | 0.15 | 1.20 | 0.120 | |
| | | | 60 | | | 4.20 | 0.420 | 1600 | 0.13 | 1.00 | 0.100 | |
| | | 3ø440 | 50 | 4 | Cont. | 6.00 | 0.600 | 1350 | 0.16 | 1.40 | 0.140 | |
| | | | 60 | | | 4.60 | 0.460 | 1600 | 0.14 | 1.40 | 0.140 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut Type Shaft is for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 8BDG□-15G | 8GBK□BMH | kgfcm | 3.0 | 3.6 | 5.0 | 6.0 | 7.5 | 9.0 | 12.5 | 14.9 | 17.9 | 22.5 | 27.0 | 29.4 | 32.6 | 40.8 | 49.0 | 61.2 | 73.4 | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 0.29 | 0.35 | 0.49 | 0.59 | 0.73 | 0.88 | 1.22 | 1.46 | 1.76 | 2.21 | 2.65 | 2.88 | 3.20 | 4.00 | 4.80 | 6.00 | 7.20 | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 200 | 250 | 300 | 360 |
|---|---|---|---|---|---|---|
| | | r/min | 9 | 7 | 6 | 5 |
| 8BDG□-15G | 8GBK□BMH | kgfcm | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 8BDG□-15W | 8WD□BL/□BR/□BRL | kgfcm | 9.8 | 11.5 | 13.9 | 16.0 | 21.0 | 23.8 | 27.6 | 36.0 | 39.6 |
| | | N.m | 0.96 | 1.13 | 1.36 | 1.57 | 2.06 | 2.33 | 2.71 | 3.53 | 3.88 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 8BDG□-15G | 8GBK□BMH | kgfcm | 3.5 | 4.2 | 5.8 | 7.0 | 8.7 | 10.5 | 14.5 | 17.4 | 20.9 | 26.3 | 31.5 | 34.3 | 38.1 | 47.6 | 57.1 | 71.4 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 0.34 | 0.41 | 0.57 | 0.68 | 0.85 | 1.02 | 1.42 | 1.71 | 2.05 | 2.57 | 3.09 | 3.36 | 3.73 | 4.66 | 5.60 | 7.00 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 200 | 250 | 300 | 360 |
|---|---|---|---|---|---|---|
| | | r/min | 7 | 6 | 5 | 5 |
| 8BDG□-15G | 8GBK□BMH | kgfcm | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 7.84 | 7.84 | 7.84 | 7.84 |

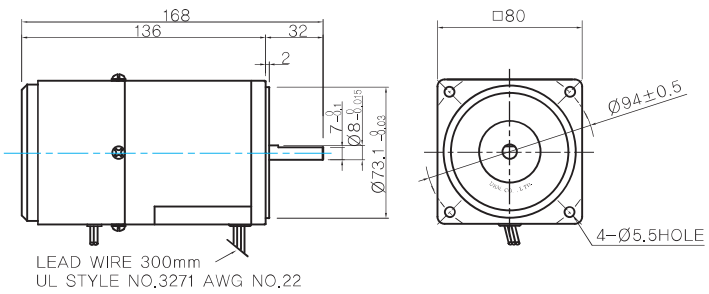
| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 8BDG□-15W | 8WD□BL/□BR/□BRL | kgfcm | 11.5 | 13.4 | 16.2 | 18.6 | 24.5 | 27.7 | 32.3 | 42.0 | 46.2 |
| | | N.m | 1.13 | 1.32 | 1.58 | 1.83 | 2.40 | 2.72 | 3.16 | 4.12 | 4.53 |

1) Enter the phase & voltage code in the box (□) within the motor model name. 2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio. The actual speed is 2~20% less than the displayed value, depending on the size of the load.

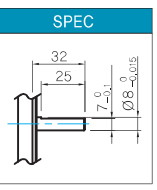
# Dimensions

## MOTOR ONLY

● MOTOR MODEL: 8BDD□–15 (NO FAN)

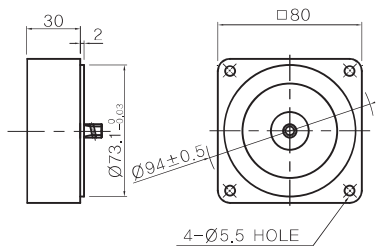



● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |

## INTER-DECIMAL GEARHEAD

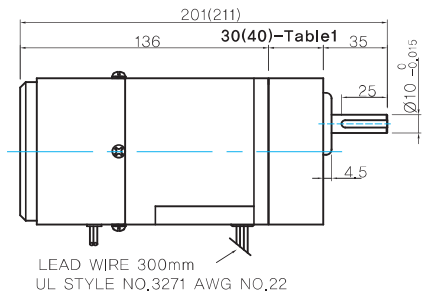
● MODEL: 8XD10M□



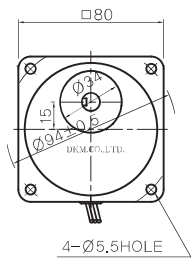

## GEARED MOTOR

## G TYPE GEARHEAD

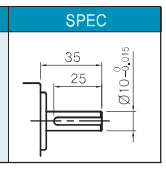
● MOTOR MODEL:
8BDG□–15G (NO FAN)




● GEARHEAD MODEL:
8GBK□BMH



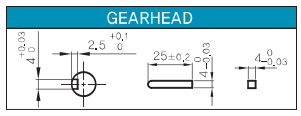

● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |

● 30(40)-Table1

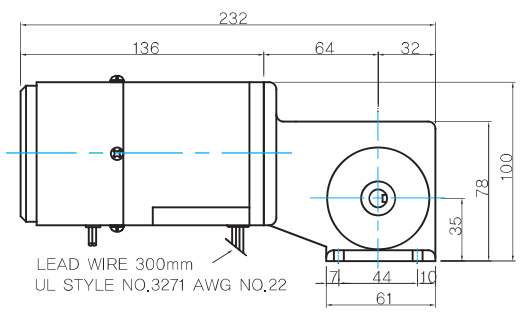
| SIZE(mm) | GEAR RATIO |
|---|---|
| 30 | 8GBK3BMH – 8GBK18BMH |
| 40 | 8GBK25BMH – 8GBK360BMH |

● KEY SPEC

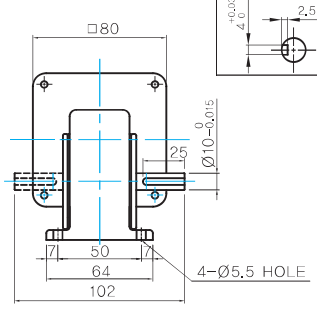



## W TYPE GEARHEAD

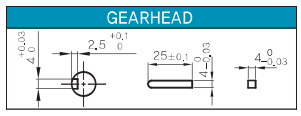
● MOTOR MODEL:
8BDG□–15W (NO FAN)




● GEARHEAD MODEL:
8WD□BL/BR/BRL




● KEY SPEC




## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 2.0 |
| GEAR HEAD | 8GBK3BMH – 8GBK18BMH | 0.48 |
| | 8GBK25BMH – 8GBK30BMH | 0.61 |
| | 8GBK36BMH – 8GBK180BMH | 0.67 |
| | 8GBK200BMH – 8GBK360BMH | 0.63 |
| | 8WD□BL/BR/BRL | 0.67 |
| | 8XD10M□ | 0.44 |

# Motor Images

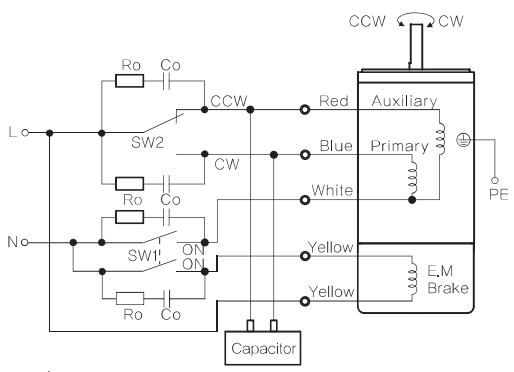
| 8BDD□–15 | 8BDG□–15G+8GBK□BMH | 8BDG□–15W+8WD□BL |
|---|---|---|
|  |  |  |

# B AC Motors

## E.M. Brake Motor 15W (□80mm)

## Connection Diagrams

### Single Phase

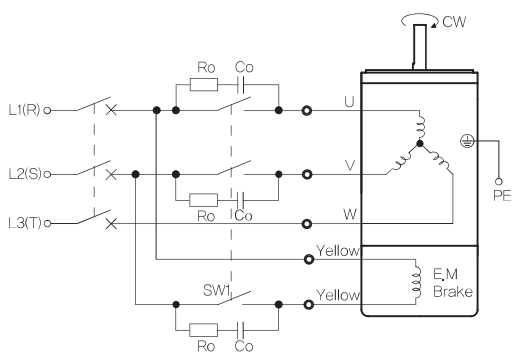



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# E.M. Brake Motor 25W (□80mm)

**25W** Electromagnetic Brake Motor
25W(□80mm)

## Motor Specification

| Model<br>8BDG*-25□: Gear Type Shaft<br>8BDD*-25: D-Cut Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8BDGA-25□ | 25 | 1ø110 | 60 | 4 | 30min. | 2.40 | 0.240 | 1550 | 0.73 | 1.62 | 0.162 | 10.0 / 250 |
| 8BDGD-25□ | 25 | 1ø220 | 60 | 4 | 30min. | 2.40 | 0.240 | 1550 | 0.36 | 1.62 | 0.162 | 2.5 / 450 |
| 8BDGE-25□ | 25 | 1ø220 | 50 | 4 | 30min. | 2.10 | 0.210 | 1250 | 0.28 | 2.00 | 0.200 | 2.0 / 450 |
| | | 1ø240 | | | | 2.50 | 0.250 | | 0.30 | 2.10 | 0.210 | |
| 8BDGG-25□ | 25 | 3ø220 | 50 | 4 | Cont. | 5.00 | 0.500 | 1300 | 0.32 | 2.00 | 0.200 | - |
| | | | 60 | | | 0.40 | 0.040 | 1600 | 0.25 | 1.60 | 0.160 | |
| 8BDGK-25□ | 25 | 3ø380 | 50 | 4 | Cont. | 3.60 | 0.360 | 1250 | 0.14 | 2.00 | 0.200 | - |
| | | | 60 | | | 3.00 | 0.300 | 1500 | 0.12 | 1.65 | 0.165 | |
| | | 3ø400 | 50 | 4 | Cont. | 3.80 | 0.380 | 1250 | 0.15 | 2.20 | 0.220 | |
| | | | 60 | | | 3.20 | 0.320 | 1500 | 0.13 | 1.80 | 0.180 | |
| | | 3ø415 | 50 | 4 | Cont. | 4.10 | 0.410 | 1300 | 0.15 | 2.00 | 0.200 | |
| | | | 60 | | | 3.40 | 0.340 | 1550 | 0.13 | 1.80 | 0.180 | |
| | | 3ø440 | 50 | 4 | Cont. | 4.40 | 0.440 | 1300 | 0.17 | 2.20 | 0.220 | |
| | | | 60 | | | 3.60 | 0.360 | 1600 | 0.14 | 1.60 | 0.160 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut Type Shaft is for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 8BDG□-25G | 8GBK□BMH | kgfcm | 4.5 | 5.4 | 7.5 | 9.0 | 11.2 | 13.4 | 18.7 | 22.4 | 26.9 | 33.8 | 40.5 | 44.1 | 49.0 | 61.2 | 73.4 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 0.44 | 0.53 | 0.73 | 0.88 | 1.10 | 1.32 | 1.83 | 2.20 | 2.64 | 3.31 | 3.97 | 4.32 | 4.80 | 6.00 | 7.20 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 200 | 250 | 300 | 360 |
|---|---|---|---|---|---|---|
| | | r/min | 9 | 7 | 6 | 5 |
| 8BDG□-25G | 8GBK□BMH | kgfcm | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 8BDG□-25W | 8WD□BL/□BR/□BRL | kgfcm | 13.3 | 15.6 | 18.7 | 21.6 | 28.4 | 32.1 | 37.3 | 48.6 | 53.5 |
| | | N.m | 1.30 | 1.52 | 1.83 | 2.11 | 2.78 | 3.14 | 3.66 | 4.76 | 5.24 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 8BDG□-25G | 8GBK□BMH | kgfcm | 5.0 | 6.0 | 8.3 | 10.0 | 12.5 | 14.9 | 20.8 | 24.9 | 29.9 | 37.5 | 45.0 | 49.0 | 54.4 | 68.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 0.49 | 0.59 | 0.81 | 0.98 | 1.22 | 1.46 | 2.03 | 2.44 | 2.93 | 3.68 | 4.41 | 4.80 | 5.33 | 6.66 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 200 | 250 | 300 | 360 |
|---|---|---|---|---|---|---|
| | | r/min | 7 | 6 | 5 | 5 |
| 8BDG□-25G | 8GBK□BMH | kgfcm | 80.0 | 80.0 | 80.0 | 80.0 |
| | | N.m | 7.84 | 7.84 | 7.84 | 7.84 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 8BDG□-25W | 8WD□BL/□BR/□BRL | kgfcm | 17.2 | 20.2 | 24.3 | 28.0 | 36.8 | 41.6 | 48.4 | 63.0 | 69.3 |
| | | N.m | 1.69 | 1.98 | 2.38 | 2.74 | 3.60 | 4.07 | 4.74 | 6.17 | 6.79 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

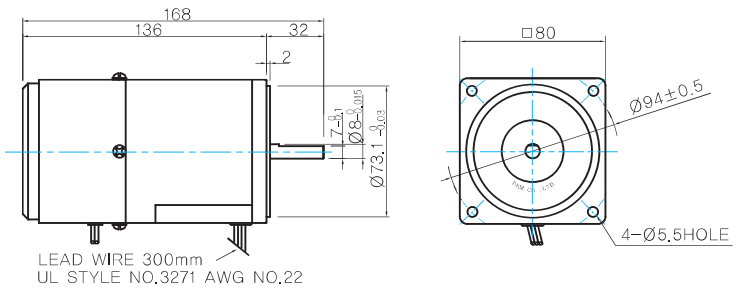
# B AC Motors

## E.M. Brake Motor 25W (□80mm)

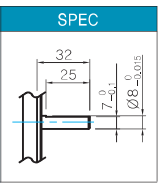
## Dimensions

### MOTOR ONLY

● MOTOR MODEL: 8BDD□-25 (NO FAN)

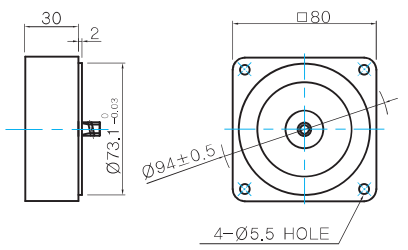



● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |

### INTER-DECIMAL GEARHEAD

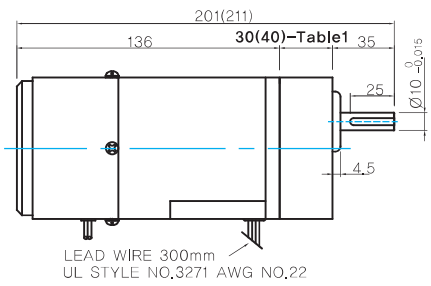
● MODEL: 8XD10M□



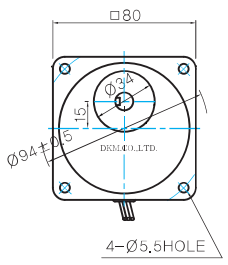

## GEARED MOTOR

### G TYPE GEARHEAD

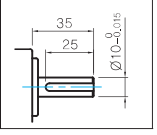
● MOTOR MODEL:
8BDG□-25G (NO FAN)




● GEARHEAD MODEL:
8GBK□BMH



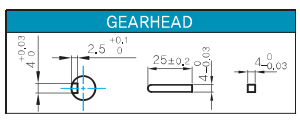

● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |

● 30(40)-Table1

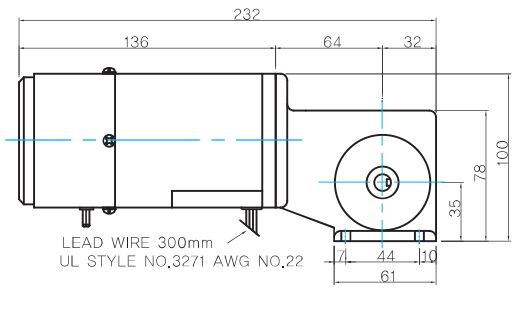
| SIZE(mm) | GEAR RATIO |
|---|---|
| 30 | 8GBK3BMH – 8GBK18BMH |
| 40 | 8GBK25BMH – 8GBK360BMH |

● KEY SPEC

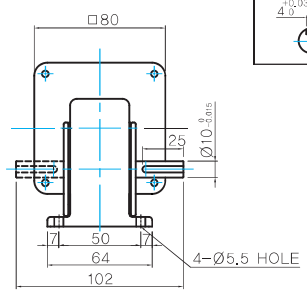



### W TYPE GEARHEAD

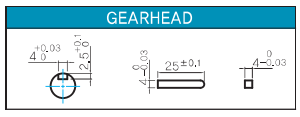
● MOTOR MODEL:
8BDG□-25W (NO FAN)




● GEARHEAD MODEL:
8WD□BL/BR/BRL




● KEY SPEC




### WEIGHT

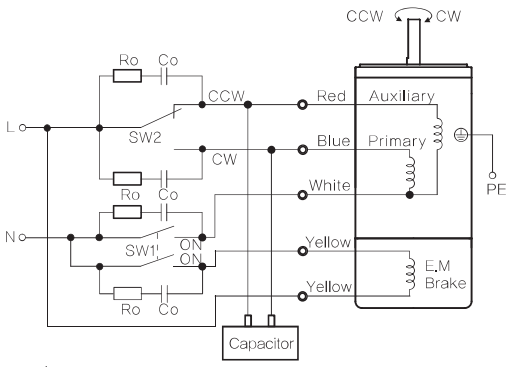
| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 2.0 |
| GEAR HEAD | 8GBK3BMH – 8GBK18BMH | 0.48 |
| | 8GBK25BMH – 8GBK30BMH | 0.61 |
| | 8GBK36BMH – 8GBK180BMH | 0.67 |
| | 8GBK200BMH – 8GBK360BMH | 0.63 |
| | 8WD□BL/BR/BRL | 0.67 |
| | 8XD10M□ | 0.44 |

## Motor Images

| 8BDD□-25 | 8BDG□-25G+8GBK□BMH | 8BDG□-25W+8WD□BL |
|---|---|---|
|  |  |  |

## Connection Diagrams

### Single Phase

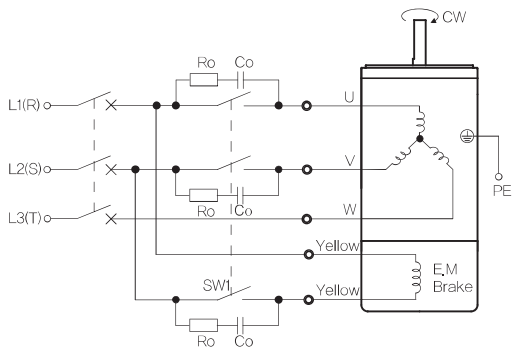



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

## E.M. Brake Motor 40W (□90mm)

# 40W Electromagnetic Brake Motor
40W(□90mm)

## Motor Specification

| Model<br>9BDG*-40□: Gear Type Shaft<br>9BDD*-40: D-Cut Type Shaft<br>9BDK*-40: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9BDGA-40□ | 40 | 1ø110 | 60 | 4 | 30min. | 4.20 | 0.420 | 1600 | 1.25 | 2.60 | 0.260 | 16.0 / 250 |
| 9BDGD-40□ | 40 | 1ø220 | 60 | 4 | 30min. | 4.20 | 0.420 | 1600 | 0.61 | 2.60 | 0.260 | 4.0 / 450 |
| 9BDGE-40□ | 40 | 1ø220 | 50 | 4 | 30min. | 3.00 | 0.300 | 1350 | 0.36 | 3.00 | 0.300 | 3.0 / 450 |
| | | 1ø240 | | | | 3.60 | 0.360 | | 0.39 | 3.40 | 0.340 | |
| 9BDGG-40□ | 40 | 3ø220 | 50 | 4 | Cont. | 9.00 | 0.900 | 1300 | 0.31 | 3.20 | 0.320 | – |
| | | | 60 | | | 7.40 | 0.740 | 1600 | 0.27 | 2.45 | 0.245 | |
| 9BDGK-40□ | 40 | 3ø380 | 50 | 4 | Cont. | 9.00 | 0.900 | 1300 | 0.20 | 3.20 | 0.320 | – |
| | | | 60 | | | 7.20 | 0.720 | 1550 | 0.18 | 2.80 | 0.280 | |
| | | 3ø400 | 50 | 4 | Cont. | 10.00 | 1.000 | 1300 | 0.20 | 3.40 | 0.340 | |
| | | | 60 | | | 7.80 | 0.780 | 1550 | 0.18 | 3.00 | 0.300 | |
| | | 3ø415 | 50 | 4 | Cont. | 11.00 | 1.100 | 1350 | 0.20 | 3.00 | 0.300 | |
| | | | 60 | | | 8.60 | 0.860 | 1600 | 0.18 | 2.80 | 0.280 | |
| | | 3ø440 | 50 | 4 | Cont. | 12.00 | 1.200 | 1350 | 0.21 | 3.40 | 0.340 | |
| | | | 60 | | | 9.80 | 0.980 | 1600 | 0.19 | 3.00 | 0.300 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 10 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 900 | 600 | 500 | 360 | 300 | 240 | 200 | 180 | 144 | 120 | 100 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□-40G | 9GBK□<br>BMH | kgfcm | 4.6 | 7.0 | 8.4 | 11.6 | 13.9 | 17.4 | 20.9 | 23.2 | 29.1 | 34.9 | 37.8 | 52.5 | 63.0 | 68.5 | 76.2 | 95.2 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | | N.m | 0.46 | 0.68 | 0.82 | 1.14 | 1.37 | 1.71 | 2.05 | 2.28 | 2.85 | 3.42 | 3.70 | 5.15 | 6.17 | 6.72 | 7.46 | 9.33 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 9BDG□-40W | 9WD□BL/□BR/<br>□BRL | kgfcm | 21.3 | 25.0 | 30.0 | 34.6 | 45.5 | 51.5 | 59.9 | 78.0 | 85.8 |
| | | N.m | 2.09 | 2.45 | 2.94 | 3.39 | 4.46 | 5.05 | 5.87 | 7.64 | 8.41 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 10 | 12.5 | 15 | 18 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 750 | 500 | 417 | 300 | 250 | 200 | 167 | 150 | 120 | 100 | 83 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□-40G | 9GBK□<br>BMH | kgfcm | 5.6 | 8.5 | 10.2 | 14.1 | 16.9 | 21.2 | 25.4 | 28.2 | 35.3 | 42.3 | 45.9 | 63.8 | 76.5 | 83.2 | 92.5 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | | N.m | 0.55 | 0.83 | 1.00 | 1.38 | 1.66 | 2.07 | 2.49 | 2.77 | 3.46 | 4.15 | 4.50 | 6.25 | 7.50 | 8.16 | 9.06 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 | 9.80 |

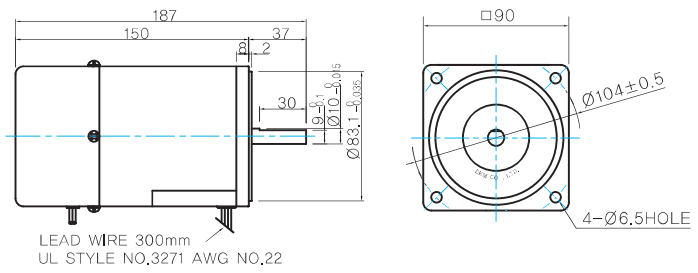
| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 9BDG□-40W | 9WD□BL/□BR/<br>□BRL | kgfcm | 27.9 | 32.6 | 39.3 | 45.3 | 59.5 | 67.3 | 78.3 | 102.0 | 112.2 |
| | | N.m | 2.73 | 3.20 | 3.85 | 4.44 | 5.83 | 6.60 | 7.68 | 10.00 | 11.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

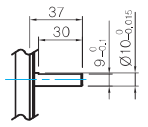
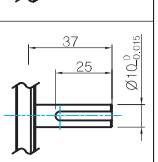
# Dimensions

## MOTOR ONLY

● MOTOR MODEL: 9BDD□-40 (NO FAN)

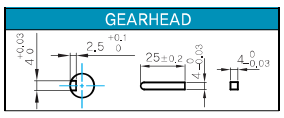



● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□-40 | |
| KEY TYPE |  |
| 9BDK□-40 | |

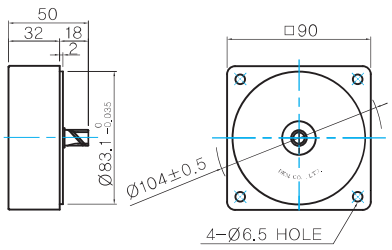


● KEY SPEC




## INTER-DECIMAL GEARHEAD

● MODEL: 9XD10M□

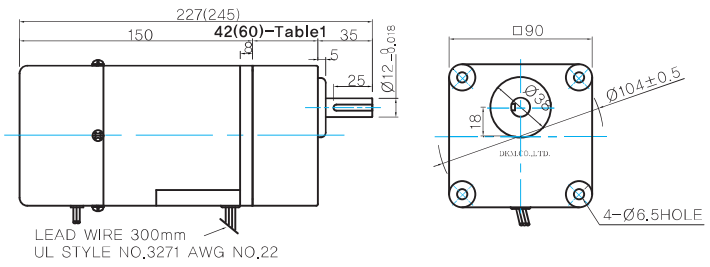



## GEARED MOTOR

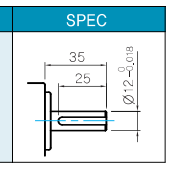
## G TYPE GEARHEAD

● MOTOR MODEL:
9BDG□-40G (NO FAN)

● GEARHEAD MODEL:
9GBK□BMH

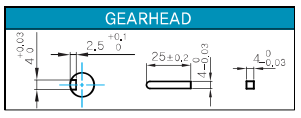



● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |



● KEY SPEC



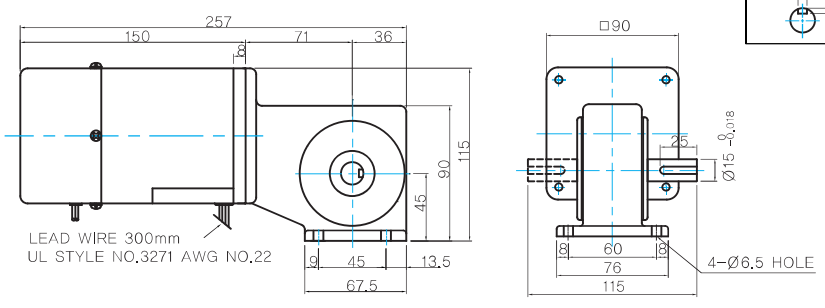

● 42(60)-Table1

| SIZE(mm) | GEAR RATIO |
|---|---|
| 42 | 9GBK2BMH – 9GBK15BMH |
| 60 | 9GBK18BMH – 9GBK180BMH |

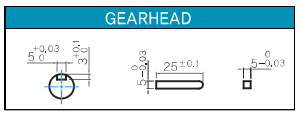
## W TYPE GEARHEAD

● MOTOR MODEL:
9BDG□-40W (NO FAN)

● GEARHEAD MODEL:
9WD□BL/BR/BRL




● KEY SPEC




## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 3.0 |
| GEAR HEAD | 9GBK2BMH – 9GBK15BMH | 0.67 |
| | 9GBK18BMH – 9GBK30BMH | 0.96 |
| | 9GBK36BMH – 9GBK180BMH | 1.07 |
| | 8WD□BL/BR/BRL | 1.0 |
| | 8XD10M□ | 0.5 |

# Motor Images

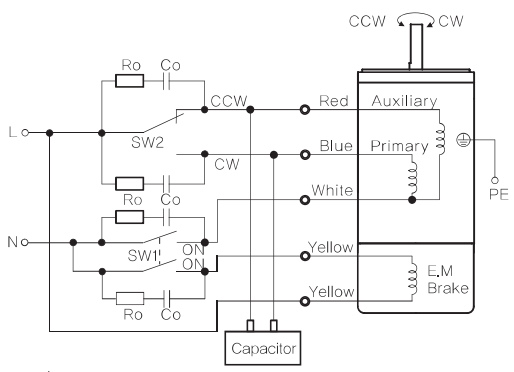
| 9BDD□-40 | 9BDG□-40G+9GBK□BMH | 9BDG□-40W+9WD□BL |
|---|---|---|
|  |  |  |

# B AC Motors

## E.M. Brake Motor 40W (□90mm)

## Connection Diagrams

### Single Phase

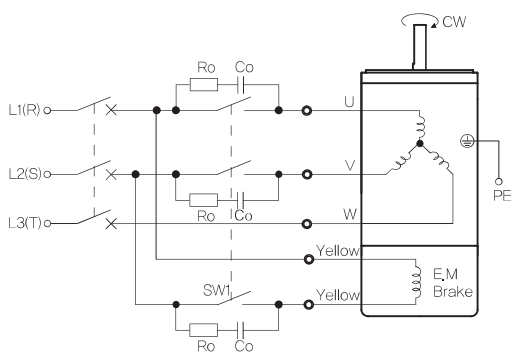



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# 60W Electromagnetic Brake Motor 60W(□90mm)

## Motor Specification

| Model<br>9BDG*-60F□: Gear Type Shaft<br>9BDD*-60F: D-Cut Type Shaft<br>9BDK*-60F: Key Type Shaft | Output | Voltage | Frequency | Poles | Duty | Starting Torque | | Rated Load | | | | Capacitor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Speed | Current | Torque | | |
| | W | V | Hz | | | kgfcm | N.m | r/min | A | kgfcm | N.m | μF / VAC |
| 9BDGA-60F□ | 60 | 1ø110 | 60 | 4 | 30min. | 5.20 | 0.520 | 1600 | 1.60 | 5.00 | 0.500 | 20.0 / 250 |
| 9BDGD-60F□ | 60 | 1ø220 | 60 | 4 | 30min. | 5.00 | 0.500 | 1600 | 0.75 | 4.60 | 0.460 | 5.0 / 450 |
| 9BDGE-60F□ | 60 | 1ø220 | 50 | 4 | 30min. | 5.40 | 0.540 | 1300 | 0.59 | 5.00 | 0.500 | 5.0 / 450 |
| | | 1ø240 | | | | 6.60 | 0.660 | | 0.64 | 5.60 | 0.560 | |
| 9BDGG-60F□ | 60 | 3ø220 | 50 | 4 | Cont. | 15.00 | 1.500 | 1350 | 0.59 | 4.60 | 0.460 | – |
| | | | 60 | | | 12.80 | 1.280 | 1600 | 0.49 | 4.20 | 0.420 | |
| 9BDGK-60F□ | 60 | 3ø380 | 50 | 4 | Cont. | 17.00 | 1.700 | 1350 | 0.33 | 4.80 | 0.480 | – |
| | | | 60 | | | 13.80 | 1.380 | 1600 | 0.29 | 4.60 | 0.460 | |
| | | 3ø400 | 50 | 4 | Cont. | 18.60 | 1.860 | 1350 | 0.36 | 5.20 | 0.520 | |
| | | | 60 | | | 15.20 | 1.520 | 1600 | 0.30 | 5.00 | 0.500 | |
| | | 3ø415 | 50 | 4 | Cont. | 20.00 | 2.000 | 1350 | 0.40 | 5.60 | 0.560 | |
| | | | 60 | | | 16.20 | 1.620 | 1600 | 0.33 | 5.20 | 0.520 | |
| | | 3ø440 | 50 | 4 | Cont. | 22.00 | 2.200 | 1350 | 0.44 | 6.00 | 0.600 | |
| | | | 60 | | | 18.20 | 1.820 | 1600 | 0.36 | 5.80 | 0.580 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 900 | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□ -60FP | 9PBK□BH 9PFK□BH | kgfcm | 7.6 | 11.5 | 13.7 | 19.1 | 22.9 | 28.6 | 34.4 | 43.1 | 51.8 | 62.1 | 62.6 | 78.2 | 93.8 | 112.6 | 125.1 | 156.4 | 187.7 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 0.75 | 1.12 | 1.35 | 1.87 | 2.24 | 2.81 | 3.37 | 4.23 | 5.07 | 6.09 | 6.13 | 7.66 | 9.20 | 11.04 | 12.26 | 15.33 | 18.39 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□ -60FH | 9HBK□BH 9HFK□BH | kgfcm | – | 11.5 | 13.7 | – | 22.9 | – | 34.4 | 43.1 | 51.8 | 62.1 | 62.6 | 78.2 | 93.8 | 112.6 | – | 156.4 | 187.7 | 210.5 | 252.5 | 280.6 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 1.12 | 1.35 | | 2.24 | | 3.37 | 4.23 | 5.07 | 6.09 | 6.13 | 7.66 | 9.20 | 11.04 | | 15.33 | 18.39 | 20.62 | 24.75 | 27.50 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 9BDG□ -60FW | 9WD□BL/ □BR/□BRL | kgfcm | 41.0 | 48.0 | 57.8 | 66.6 | 87.5 | 99.0 | 115.2 | 142.9 | 122.4 |
| | | N.m | 4.02 | 4.70 | 5.66 | 6.53 | 8.58 | 9.70 | 11.29 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□ -60FWH | 9WHD□ | kgfcm | 29.0 | 37.3 | 52.4 | 66.2 | 75.9 | 88.3 | 108.6 | 124.2 | 138.0 | 132.7 |
| | | N.m | 2.84 | 3.65 | 5.14 | 6.49 | 7.44 | 8.66 | 10.64 | 12.17 | 13.52 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 750 | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□ -60FP | 9PBK□BH 9PFK□BH | kgfcm | 8.3 | 12.5 | 14.9 | 20.8 | 24.9 | 31.1 | 37.4 | 46.9 | 56.3 | 67.5 | 68.0 | 85.0 | 102.0 | 122.4 | 136.0 | 170.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 0.81 | 1.22 | 1.46 | 2.03 | 2.44 | 3.05 | 3.66 | 4.59 | 5.51 | 6.62 | 6.66 | 8.33 | 10.00 | 12.00 | 13.33 | 16.66 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□ -60FH | 9HBK□BH 9HFK□BH | kgfcm | – | 12.5 | 14.9 | – | 24.9 | – | 37.4 | 46.9 | 56.3 | 67.5 | 68.0 | 85.0 | 102.0 | 122.4 | – | 170.0 | 204.0 | 228.8 | 274.5 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 1.22 | 1.46 | | 2.44 | | 3.66 | 4.59 | 5.51 | 6.62 | 6.66 | 8.33 | 10.00 | 12.00 | | 16.66 | 19.99 | 22.42 | 26.90 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 9BDG□ -60FW | 9WD□BL/ □BR/□BRL | kgfcm | 45.9 | 53.8 | 64.7 | 74.6 | 98.0 | 110.9 | 129.0 | 142.9 | 122.4 |
| | | N.m | 4.50 | 5.27 | 6.34 | 7.31 | 9.60 | 10.87 | 12.64 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□ -60FWH | 9WHD□ | kgfcm | 31.5 | 40.5 | 57.0 | 72.0 | 82.5 | 96.0 | 118.0 | 135.0 | 150.0 | 132.7 |
| | | N.m | 3.09 | 3.97 | 5.59 | 7.06 | 8.09 | 9.41 | 11.56 | 13.23 | 14.70 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name. 2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

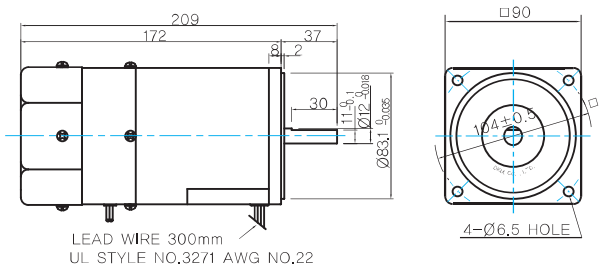
# B AC Motors

## E.M. Brake Motor 60W (□90mm)

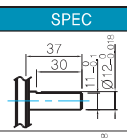
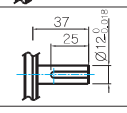
## Dimensions

### MOTOR ONLY

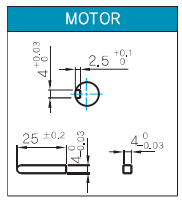
● MOTOR MODEL:
9BDD□-60F (GENERAL FAN)




● MOTOR OUTPUT SHAFT

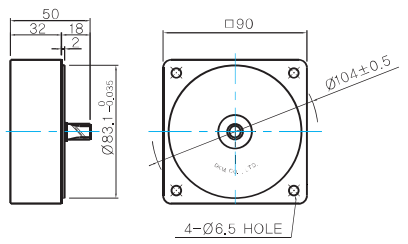
| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□-60F | |
| KEY TYPE |  |
| 9BDK□-60F | |

● KEY SPEC




### INTER-DECIMAL GEARHEAD

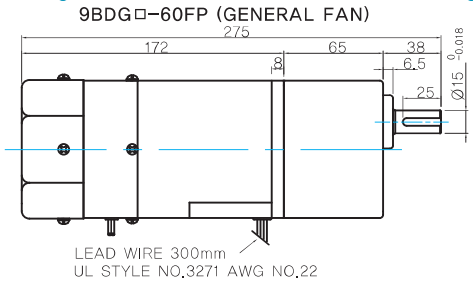
● MODEL:
9XD10M□




## GEARED MOTOR

### P TYPE GEARHEAD

● MOTOR MODEL:
9BDG□-60FP (GENERAL FAN)

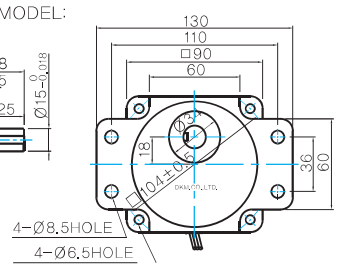



● GEARHEAD MODEL:
9PBK□BH

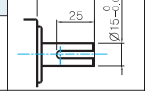



● GEARHEAD MODEL:
9PFK□BH

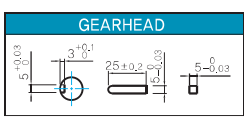



● GEARHEAD OUTPUT SHAFT

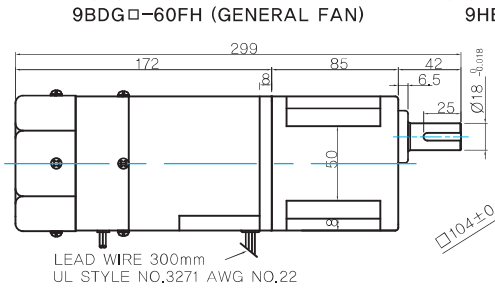
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9PBK□BH<br>9PFK□BH | |

● KEY SPEC

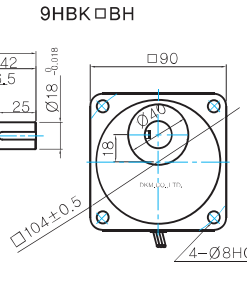



### H TYPE GEARHEAD

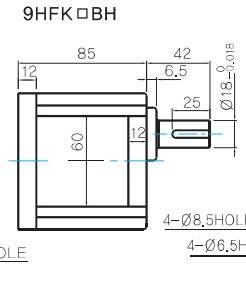
● MOTOR MODEL:
9BDG□-60FH (GENERAL FAN)

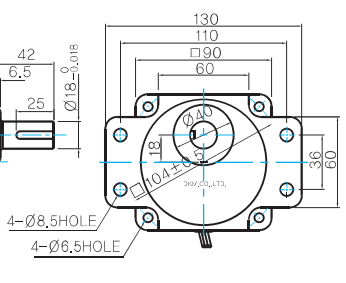



● GEARHEAD MODEL:
9HBK□BH

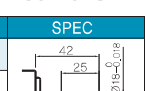



● GEARHEAD MODEL:
9HFK□BH

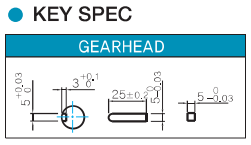



● GEARHEAD OUTPUT SHAFT

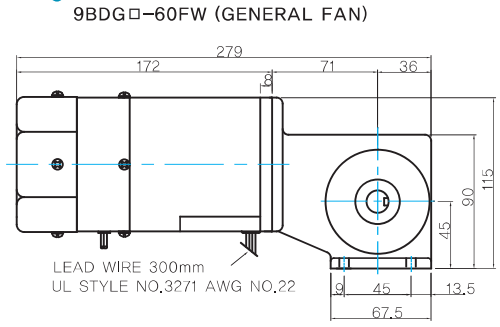
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

● KEY SPEC

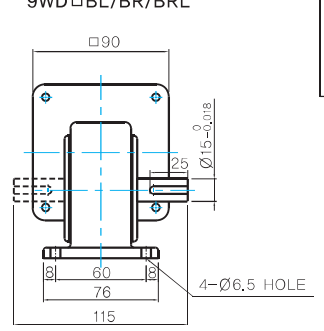



### W TYPE GEARHEAD

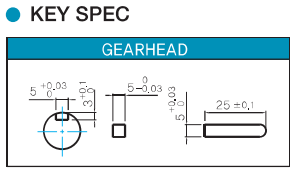
● MOTOR MODEL:
9BDG□-60FW (GENERAL FAN)




● GEARHEAD MODEL:
9WD□BL/BR/BRL

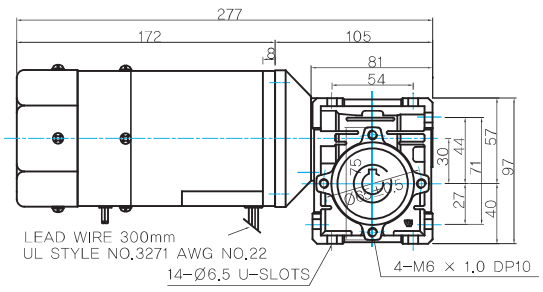



● KEY SPEC

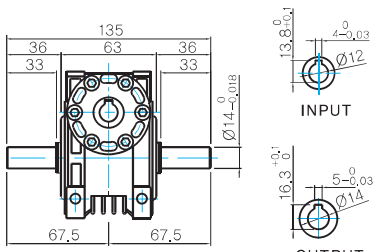


## WH TYPE GEARHEAD

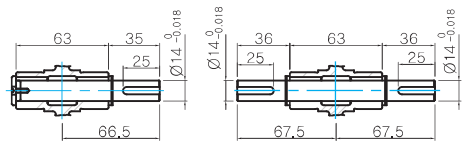
● MOTOR MODEL:
9BDG□-60FWH (GENERAL FAN)



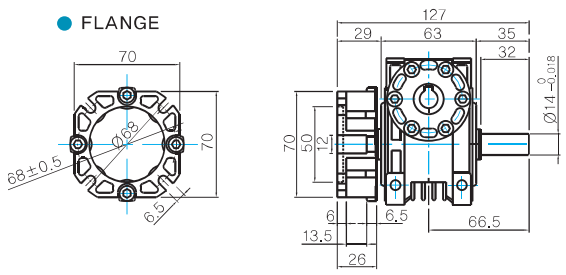

● GEARHEAD MODEL:
9WHD□



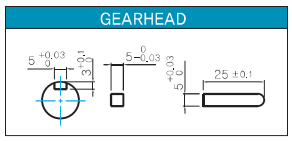

● SHAFT(한방향, 양방향)




● FLANGE




● KEY SPEC




## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 3.0 |
| GEAR HEAD | 9PB(F)K2BH ~ 9PB(F)K18BH | 1.3 |
| | 9PB(F)K20BH ~ 9PB(F)K180BH | 1.4 |
| | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WD□BL/BR/BRL | 1.0 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

## Motor Images

| 9BDD□-60F | 9BDG□-60FP+9PBK□BH | 9BDG□-60FP+9PFK□BH | 9BDG□-60FH+9HBK□BH | 9BDG□-60FH+9HFK□BH | 9BDG□-60FW+9WD□BL |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

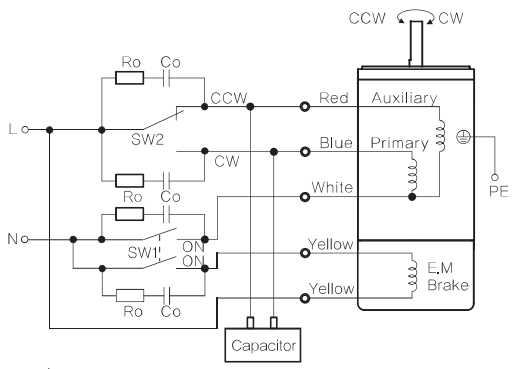
| 9BDG□-60FWH+9WHD□ |
|---|
|  |

# B AC Motors

## E.M. Brake Motor 60W (□90mm)

## Connection Diagrams

### Single Phase

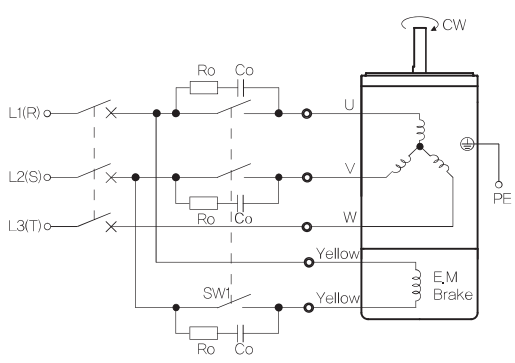



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# 90W Electromagnetic Brake Motor 90W(□90mm)

## Motor Specification

| Model<br>9BDG*-90F□: Gear Type Shaft<br>9BDD*-90F: D-Cut Type Shaft<br>9BDK*-90F: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9BDGA-90F□ | 90 | 1ø110 | 60 | 4 | 30min. | 6.60 | 0.660 | 1600 | 2.00 | 6.40 | 0.640 | 25.0 / 250 |
| 9BDGD-90F□ | 90 | 1ø220 | 60 | 4 | 30min. | 6.00 | 0.600 | 1600 | 0.97 | 6.60 | 0.660 | 6.0 / 450 |
| 9BDGE-90F□ | 90 | 1ø220 | 50 | 4 | 30min. | 6.40 | 0.640 | 1250 | 0.90 | 7.80 | 0.780 | 6.0 / 450 |
| | | 1ø240 | | | | 7.80 | 0.780 | | 1.00 | 8.90 | 0.890 | |
| 9BDGG-90F□ | 90 | 3ø220 | 50 | 4 | Cont. | 20.00 | 2.000 | 1300 | 0.66 | 7.80 | 0.780 | – |
| | | | 60 | | | 16.60 | 1.660 | 1600 | 0.55 | 5.80 | 0.580 | |
| 9BDGK-90F□ | 90 | 3ø380 | 50 | 4 | Cont. | 21.80 | 2.180 | 1300 | 0.40 | 7.80 | 0.780 | – |
| | | | 60 | | | 17.20 | 1.720 | 1600 | 0.33 | 5.80 | 0.580 | |
| | | 3ø400 | 50 | 4 | Cont. | 24.00 | 2.400 | 1300 | 0.43 | 8.60 | 0.860 | |
| | | | 60 | | | 19.20 | 1.920 | 1600 | 0.36 | 6.20 | 0.620 | |
| | | 3ø415 | 50 | 4 | Cont. | 26.00 | 2.600 | 1350 | 0.43 | 7.40 | 0.740 | |
| | | | 60 | | | 20.20 | 2.020 | 1600 | 0.37 | 6.80 | 0.680 | |
| | | 3ø440 | 50 | 4 | Cont. | 29.00 | 2.900 | 1350 | 0.48 | 8.00 | 0.800 | |
| | | | 60 | | | 23.80 | 2.380 | 1650 | 0.37 | 6.00 | 0.600 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 900 | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□-90FP | 9PBK□BH<br>9PFK□BH | kgfcm | 11.5 | 17.2 | 20.6 | 28.6 | 34.4 | 43.0 | 51.5 | 64.7 | 77.6 | 93.2 | 93.8 | 117.3 | 140.8 | 168.9 | 187.7 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 1.12 | 1.68 | 2.02 | 2.81 | 3.37 | 4.21 | 5.05 | 6.34 | 7.61 | 9.13 | 9.20 | 11.50 | 13.79 | 16.55 | 18.39 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□-90FH | 9HBK□BH<br>9HFK□BH | kgfcm | – | 17.2 | 20.6 | – | 34.4 | – | 51.5 | 64.7 | 77.6 | 93.2 | 93.8 | 117.3 | 140.8 | 168.9 | – | 234.6 | 281.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 1.68 | 2.02 | | 3.37 | | 5.05 | 6.34 | 7.61 | 9.13 | 9.20 | 11.50 | 13.79 | 16.55 | | 22.99 | 27.59 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 9BDG□-90FW | 9WD□BL/<br>□BR/□BRL | kgfcm | 56.6 | 66.2 | 79.7 | 91.9 | 120.8 | 136.6 | 153.1 | 142.9 | 122.4 |
| | | N.m | 5.54 | 6.49 | 7.81 | 9.01 | 11.83 | 13.39 | 15.00 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□-90FWH | 9WHD□ | kgfcm | 43.5 | 55.9 | 78.7 | 99.4 | 113.9 | 132.5 | 162.8 | 173.5 | 163.3 | 132.7 |
| | | N.m | 4.26 | 5.48 | 7.71 | 9.74 | 11.16 | 12.98 | 15.96 | 17.00 | 16.00 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 750 | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□-90FP | 9PBK□BH<br>9PFK□BH | kgfcm | 12.9 | 19.4 | 23.3 | 32.4 | 38.8 | 48.6 | 58.3 | 73.1 | 87.8 | 105.3 | 106.1 | 132.6 | 159.1 | 190.9 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 1.27 | 1.90 | 2.28 | 3.17 | 3.81 | 4.76 | 5.71 | 7.17 | 8.60 | 10.32 | 10.40 | 12.99 | 15.59 | 18.71 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□-90FH | 9HBK□BH<br>9HFK□BH | kgfcm | – | 19.4 | 23.3 | – | 38.8 | – | 58.3 | 73.1 | 87.8 | 105.3 | 106.1 | 132.6 | 159.1 | 190.9 | – | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 1.90 | 2.28 | | 3.81 | | 5.71 | 7.17 | 8.60 | 10.32 | 10.40 | 12.99 | 15.59 | 18.71 | | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 9BDG□-90FW | 9WD□BL/<br>□BR/□BRL | kgfcm | 64.0 | 74.9 | 90.1 | 103.9 | 136.5 | 154.4 | 153.1 | 142.9 | 122.4 |
| | | N.m | 6.27 | 7.34 | 8.83 | 10.18 | 13.38 | 15.14 | 15.00 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□-90FWH | 9WHD□ | kgfcm | 49.1 | 63.2 | 88.9 | 112.3 | 128.7 | 149.8 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 4.82 | 6.19 | 8.71 | 11.01 | 12.61 | 14.68 | 18.00 | 17.00 | 16.00 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name. 2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

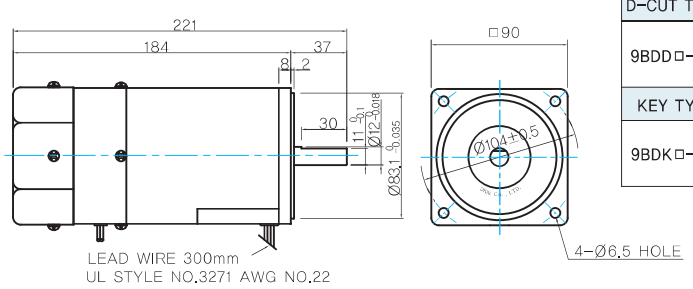
# B AC Motors

## E.M. Brake Motor 90W (□90mm)

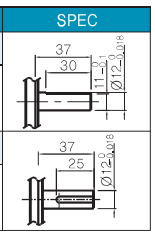
## Dimensions

### MOTOR ONLY

● MOTOR MODEL:
9BDD□-90F (GENERAL FAN)

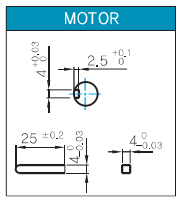



● MOTOR OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□-90F | |
| KEY TYPE |  |
| 9BDK□-90F | |

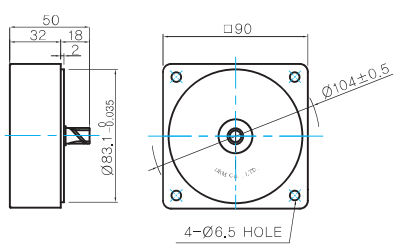


● KEY SPEC




### INTER-DECIMAL GEARHEAD

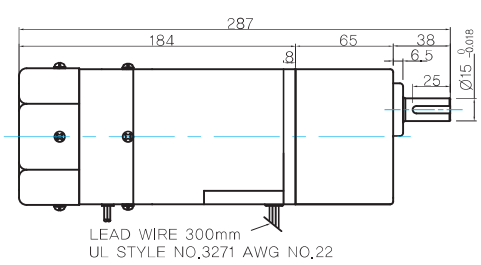
● MODEL:
9XD10M□



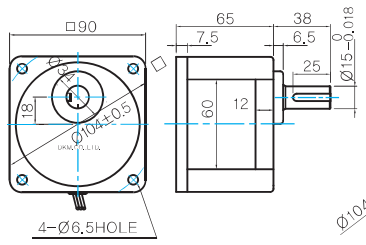

## GEARED MOTOR

### P TYPE GEARHEAD

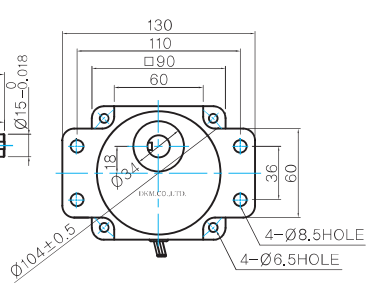
● MOTOR MODEL:
9BDG□-90FP (GENERAL FAN)



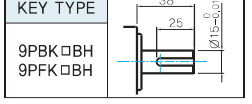

● GEARHEAD MODEL:
9PBK□BH




● GEARHEAD MODEL:
9PFK□BH

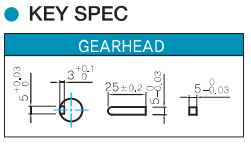



● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9PBK□BH<br>9PFK□BH | |



● KEY SPEC

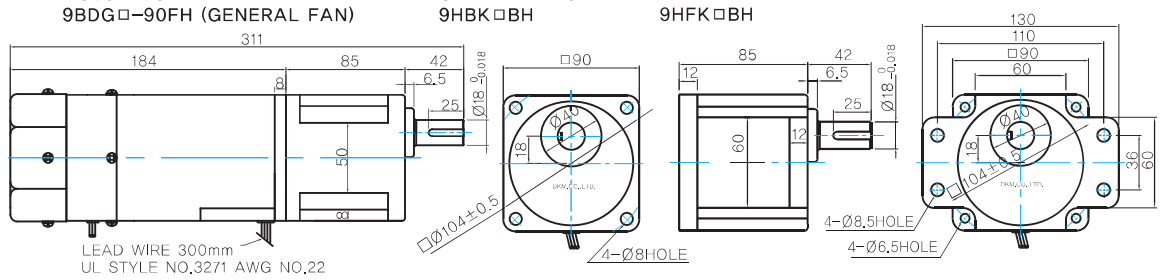



### H TYPE GEARHEAD

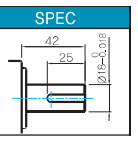
● MOTOR MODEL:
9BDG□-90FH (GENERAL FAN)

● GEARHEAD MODEL:
9HBK□BH

● GEARHEAD MODEL:
9HFK□BH

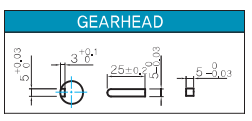



● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

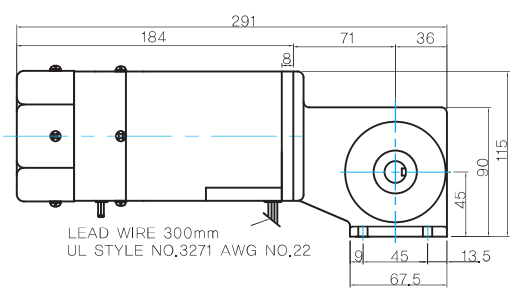


● KEY SPEC

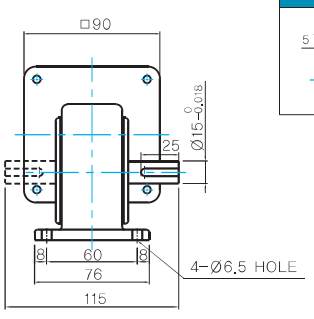



### W TYPE GEARHEAD

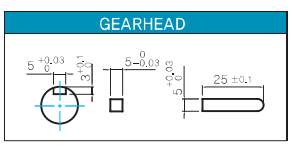
● MOTOR MODEL:
9BDG□-90FW (GENERAL FAN)




● GEARHEAD MODEL:
9WD□BL/BR/BRL

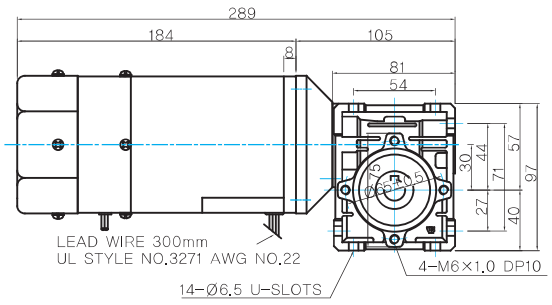



● KEY SPEC

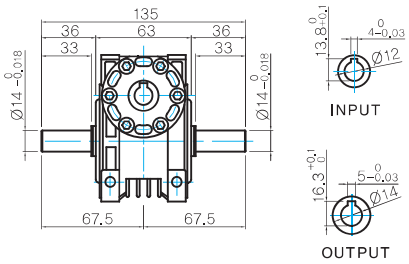


## WH TYPE GEARHEAD

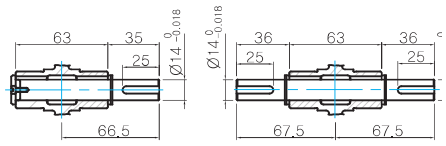
● MOTOR MODEL:
9BDG□-90FWH (GENERAL FAN)



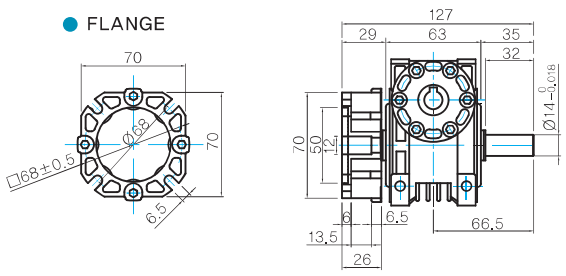

● GEARHEAD MODEL:
9WHD□



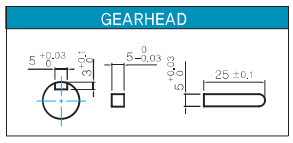

● SHAFT(Unidirectional, Bi-directional)




● FLANGE




● KEY SPEC




## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 3.5 |
| GEAR HEAD | 9PB(F)K2BH ~ 9PB(F)K18BH | 1.3 |
| | 9PB(F)K20BH ~ 9PB(F)K180BH | 1.4 |
| | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WD□BL/BR/BRL | 1.0 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

* The output flange and shafts are sold separately.

## Motor Images

| 9BDD□-90F | 9BDG□-90FP+9PBK□BH | 9BDG□-90FP+9PFK□BH | 9BDG□-90FH+9HBK□BH | 9BDG□-90FH+9HFK□BH | 9BDG□-90FW+9WD□BL |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

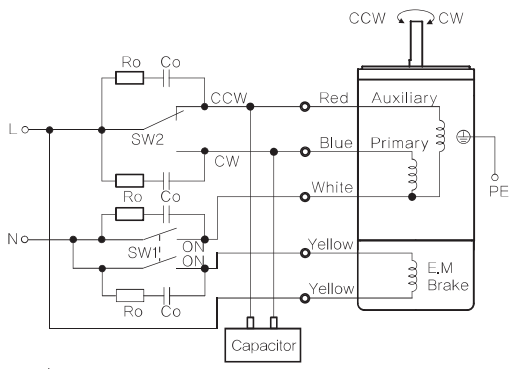
| 9BDG□-90FWH+9WHD□ |
|---|
|  |

# B AC Motors

## E.M. Brake Motor 90W (□90mm)

## Connection Diagrams

### Single Phase

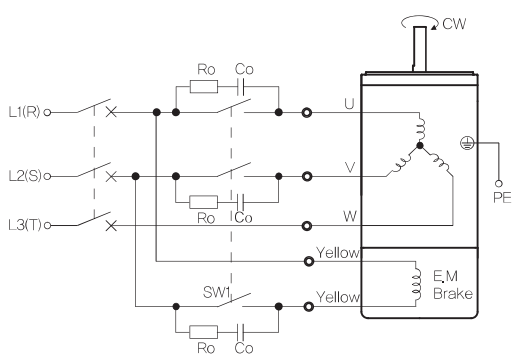



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# 120W Electromagnetic Brake Motor 120W(□90mm)

## Motor Specification

| Model<br>9BDG*-120F□: Gear Type Shaft<br>9BDD*-120F: D-Cut Type Shaft<br>9BDK*-120F: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9BDGA-120F□ | 120 | 1ø110 | 60 | 4 | 30min. | 7.60 | 0.760 | 1550 | 2.50 | 7.60 | 0.760 | 30.0 / 250 |
| 9BDGD-120F□ | 120 | 1ø220 | 60 | 4 | 30min. | 6.60 | 0.660 | 1600 | 1.10 | 7.40 | 0.740 | 6.5 / 450 |
| 9BDGE-120F□ | 120 | 1ø220 | 50 | 4 | 30min. | 6.40 | 0.640 | 1250 | 1.00 | 9.40 | 0.940 | 6.5 / 450 |
| | | 1ø240 | | | | 7.80 | 0.780 | | 1.10 | 10.20 | 1.020 | |
| 9BDGG-120F□ | 120 | 3ø220 | 50 | 4 | Cont. | 22.00 | 2.200 | 1300 | 0.82 | 9.20 | 0.920 | - |
| | | | 60 | | | 20.00 | 2.000 | 1550 | 0.78 | 7.80 | 0.780 | |
| 9BDGK-120F□ | 120 | 3ø380 | 50 | 4 | Cont. | 25.00 | 2.500 | 1300 | 0.48 | 9.00 | 0.900 | - |
| | | | 60 | | | 20.00 | 2.000 | 1550 | 0.43 | 8.00 | 0.800 | |
| | | 3ø400 | 50 | 4 | Cont. | 27.40 | 2.740 | 1300 | 0.53 | 9.80 | 0.980 | |
| | | | 60 | | | 21.80 | 2.180 | 1550 | 0.45 | 8.60 | 0.860 | |
| | | 3ø415 | 50 | 4 | Cont. | 29.80 | 2.980 | 1300 | 0.57 | 10.00 | 1.000 | |
| | | | 60 | | | 23.80 | 2.380 | 1600 | 0.44 | 7.80 | 0.780 | |
| | | 3ø440 | 50 | 4 | Cont. | 32.00 | 3.200 | 1350 | 0.64 | 8.80 | 0.880 | |
| | | | 60 | | | 26.80 | 2.680 | 1600 | 0.48 | 8.60 | 0.860 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 900 | 600 | 500 | 360 | 300 | 240 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 45 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□-120FP | 9PBK□BH<br>9PFK□BH | kgfcm | 12.9 | 19.4 | 23.3 | 32.4 | 38.8 | 48.6 | 58.3 | 73.1 | 87.8 | 105.3 | 106.1 | 132.6 | 159.1 | 190.9 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 1.27 | 1.90 | 2.28 | 3.17 | 3.81 | 4.76 | 5.71 | 7.17 | 8.60 | 10.32 | 10.40 | 12.99 | 15.59 | 18.71 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□-120FH | 9HBK□BH<br>9HFK□BH | kgfcm | - | 19.4 | 23.3 | - | 38.8 | - | 58.3 | 73.1 | 87.8 | 105.3 | 106.1 | 132.6 | 159.1 | 190.9 | - | 265.2 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 1.90 | 2.28 | | 3.81 | | 5.71 | 7.17 | 8.60 | 10.32 | 10.40 | 12.99 | 15.59 | 18.71 | | 25.99 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 180 | 150 | 120 | 100 | 72 | 60 | 50 | 36 | 30 |
| 9BDG□-120FW | 9WD□BL/□BR/□BRL | kgfcm | 60.7 | 71.0 | 85.5 | 98.6 | 129.5 | 146.5 | 153.1 | 142.9 | 122.4 |
| | | N.m | 5.95 | 6.96 | 8.38 | 9.66 | 12.69 | 14.36 | 15.00 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□-120FWH | 9WHD□ | kgfcm | 49.1 | 63.2 | 88.9 | 112.3 | 128.7 | 149.8 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 4.82 | 6.19 | 8.71 | 11.01 | 12.61 | 14.68 | 18.00 | 17.00 | 16.00 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 2 | 3 | 3.6 | 5 | 6 | 7.5 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 40 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 750 | 500 | 417 | 300 | 250 | 200 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 38 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□-120FP | 9PBK□BH<br>9PFK□BH | kgfcm | 15.6 | 23.4 | 28.1 | 39.0 | 46.8 | 58.5 | 70.2 | 88.1 | 105.8 | 126.9 | 127.8 | 159.8 | 191.8 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 | 200.0 |
| | | N.m | 1.53 | 2.29 | 2.75 | 3.82 | 4.59 | 5.73 | 6.88 | 8.64 | 10.36 | 12.44 | 12.53 | 15.66 | 18.79 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 | 19.60 |
| 9BDG□-120FH | 9HBK□BH<br>9HFK□BH | kgfcm | - | 23.4 | 28.1 | - | 46.8 | - | 70.2 | 88.1 | 105.8 | 126.9 | 127.8 | 159.8 | 191.8 | 230.1 | - | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | | 2.29 | 2.75 | | 4.59 | | 6.88 | 8.64 | 10.36 | 12.44 | 12.53 | 15.66 | 18.79 | 22.55 | | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 10 | 12 | 15 | 18 | 25 | 30 | 36 | 50 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 150 | 125 | 100 | 83 | 60 | 50 | 42 | 30 | 25 |
| 9BDG□-120FW | 9WD□BL/□BR/□BRL | kgfcm | 77.1 | 90.2 | 108.6 | 125.2 | 142.9 | 163.3 | 153.1 | 142.9 | 122.4 |
| | | N.m | 7.55 | 8.84 | 10.64 | 12.27 | 14.00 | 16.00 | 15.00 | 14.00 | 12.00 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□-120FWH | 9WHD□ | kgfcm | 59.2 | 76.1 | 107.2 | 135.4 | 155.1 | 180.5 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 5.80 | 7.46 | 10.50 | 13.27 | 15.20 | 17.69 | 18.00 | 17.00 | 16.00 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name. 2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

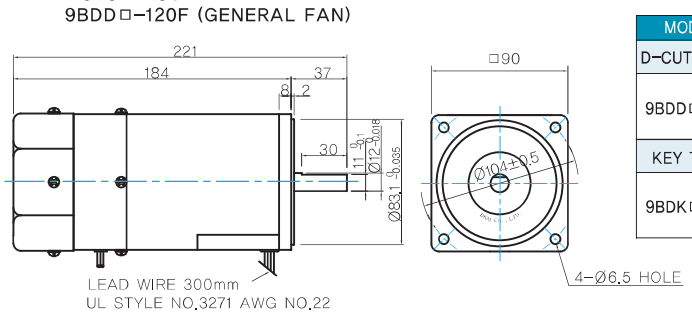
# B AC Motors

## E.M. Brake Motor 120W (□90mm)

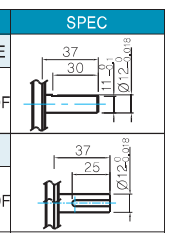
## Dimensions

### MOTOR ONLY

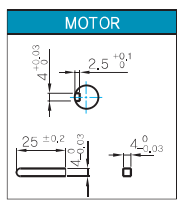
● MOTOR MODEL:
9BDD□–120F (GENERAL FAN)




● MOTOR OUTPUT SHAFT

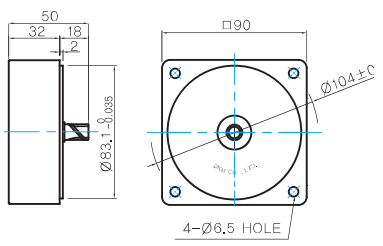
| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□–120F | |
| KEY TYPE |  |
| 9BDK□–120F | |

● KEY SPEC




### INTER-DECIMAL GEARHEAD

● MODEL:
9XD10M□



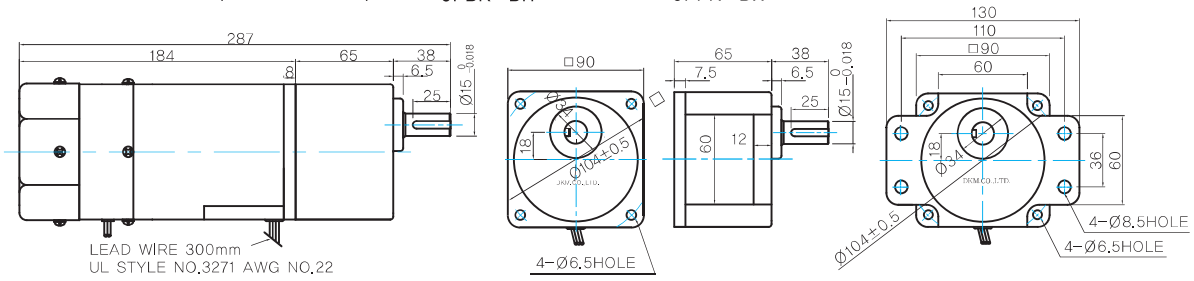

## GEARED MOTOR

### P TYPE GEARHEAD

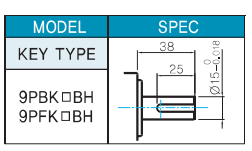
● MOTOR MODEL:
9BDG□–120FP (GENERAL FAN)

● GEARHEAD MODEL:
9PBK□BH

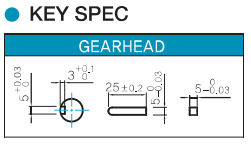
● GEARHEAD MODEL:
9PFK□BH




● GEARHEAD OUTPUT SHAFT

| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9PBK□BH<br>9PFK□BH | |

● KEY SPEC

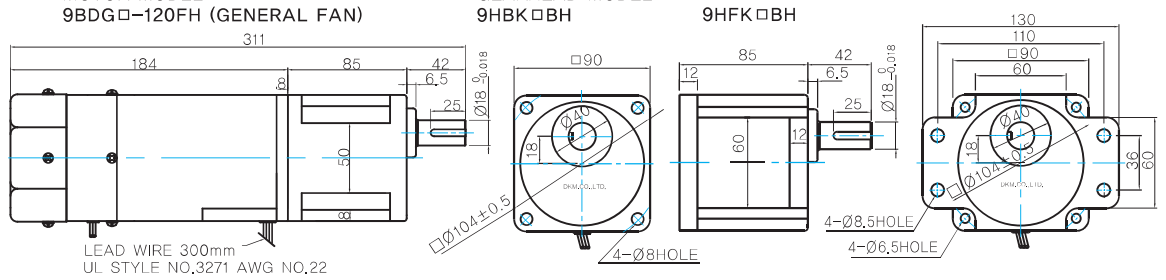



### H TYPE GEARHEAD

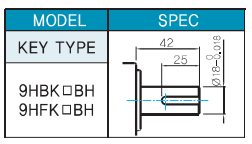
● MOTOR MODEL:
9BDG□–120FH (GENERAL FAN)

● GEARHEAD MODEL:
9HBK□BH

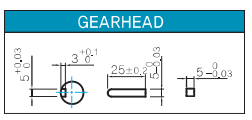
● GEARHEAD MODEL:
9HFK□BH




● GEARHEAD OUTPUT SHAFT

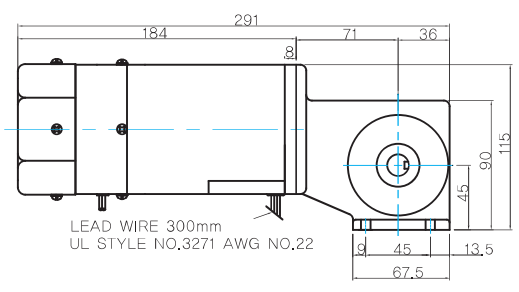
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

● KEY SPEC

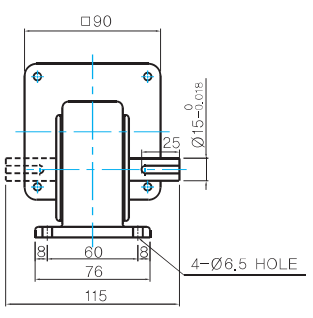



### W TYPE GEARHEAD

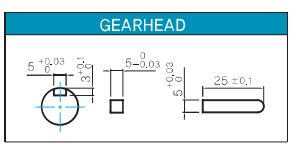
● MOTOR MODEL:
9BDG□–120FW (GENERAL FAN)




● GEARHEAD MODEL:
9WD□BL/BR/BRL

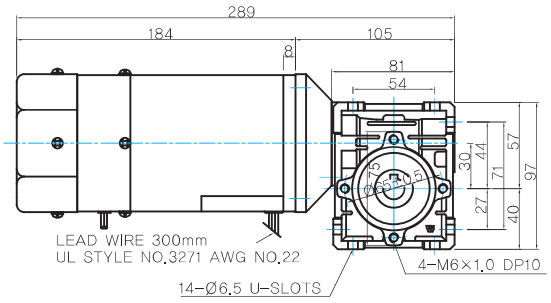



● KEY SPEC

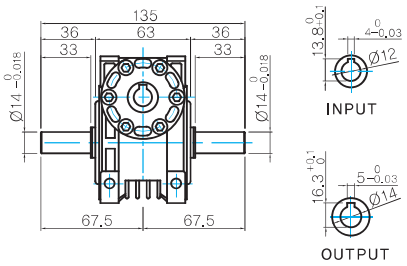


## WH TYPE GEARHEAD

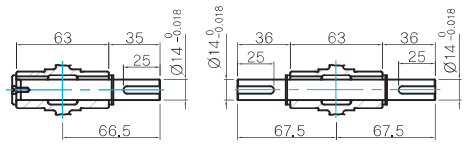
● MOTOR MODEL:
9BDG□–120FWH (GENERAL FAN)



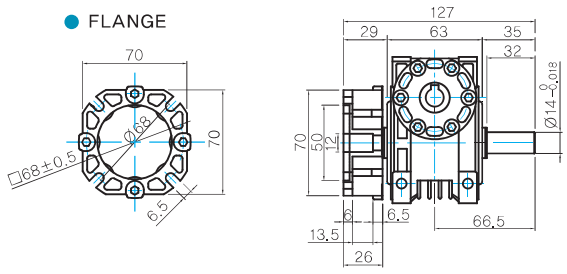

● GEARHEAD MODEL:
9WHD□



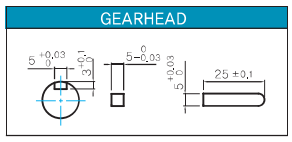

● SHAFT(Unidirectional, Bi–directional)




● FLANGE




● KEY SPEC




## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 3.5 |
| GEAR HEAD | 9PB(F)K2BH ~ 9PB(F)K18BH | 1.3 |
| | 9PB(F)K20BH ~ 9PB(F)K180BH | 1.4 |
| | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WD□BL/BR/BRL | 1.0 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

* The output flange and shafts are sold separately.

## Motor Images

| 9BDD□–120F | 9BDG□–120FP+9PBK□BH | 9BDG□–120FP+9PFK□BH | 9BDG□–120FH+9HBK□BH | 9BDG□–120FH+9HFK□BH | 9BDG□–120FW+9WD□BL |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

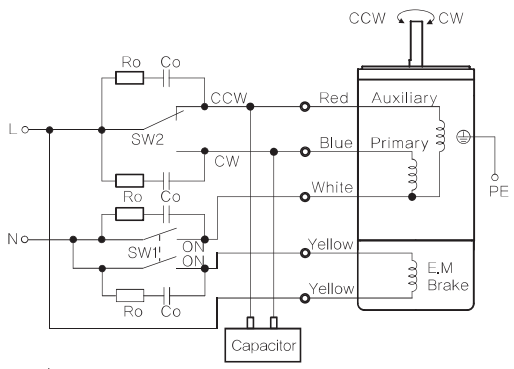
| 9BDG□–120FWH+9WHD□ |
|---|
|  |

# B AC Motors

## E.M. Brake Motor 120W (□90mm)

## Connection Diagrams

### Single Phase

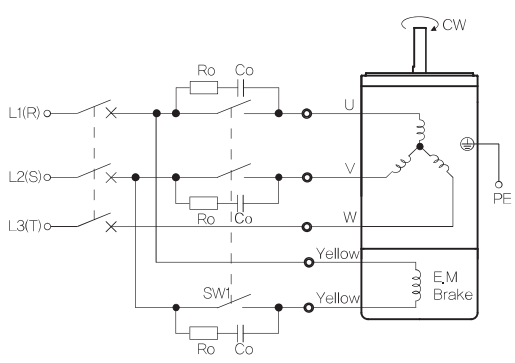



*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

### Three Phase




*** CCW Direction:**

Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

## E.M. Brake Motor 150W (□90mm)

# 150W Electromagnetic Brake Motor

150W(□90mm)

## Motor Specification

| Model<br>9BDG*-150F□: Gear Type Shaft<br>9BDD*-150F: D-Cut Type Shaft<br>9BDK*-150F: Key Type Shaft | Output | Voltage | Frequency | Poles | Duty | Starting Torque | | Rated Load | | | | Capacitor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Speed | Current | Torque | | |
| | W | V | Hz | | | kgfcm | N.m | r/min | A | kgfcm | N.m | μF / VAC |
| 9BDGG-150F□ | 150 | 3ø220 | 50 | 4 | Cont. | 22.00 | 2.200 | 1300 | 1.00 | 11.30 | 1.130 | – |
| | | | 60 | | | 19.00 | 1.900 | 1550 | 0.90 | 9.40 | 0.940 | |
| 9BDGK-150F□ | 150 | 3ø380 | 50 | 4 | Cont. | 18.00 | 1.800 | 1250 | 0.46 | 11.70 | 1.170 | – |
| | | | 60 | | | 15.00 | 1.500 | 1500 | 0.42 | 9.70 | 0.970 | |
| | | 3ø400 | 50 | 4 | Cont. | 19.00 | 1.900 | 1250 | 0.49 | 11.70 | 1.170 | |
| | | | 60 | | | 16.00 | 1.600 | 1500 | 0.43 | 9.70 | 0.970 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□<br>-150FH | 9HBK□BH<br>9HFK□BH | kgfcm | 24.2 | 29.0 | 48.3 | 72.5 | 90.9 | 109.1 | 131.0 | 131.9 | 164.9 | 197.9 | 237.5 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 2.37 | 2.84 | 4.73 | 7.10 | 8.91 | 10.69 | 12.83 | 12.93 | 16.16 | 19.39 | 23.27 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□<br>-150FWH | 9WHD□ | kgfcm | 61.1 | 78.6 | 110.6 | 139.7 | 160.1 | 186.2 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 5.99 | 7.70 | 10.84 | 13.69 | 15.68 | 18.25 | 18.00 | 17.00 | 16.00 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 417 | 250 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□<br>-150FH | 9HBK□BH<br>9HFK□BH | kgfcm | 28.1 | 33.8 | 56.3 | 84.4 | 105.9 | 127.1 | 152.6 | 153.7 | 192.1 | 230.5 | 276.6 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 2.76 | 3.31 | 5.51 | 8.27 | 10.38 | 12.46 | 14.95 | 15.06 | 18.83 | 22.59 | 27.11 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□<br>-150FWH | 9WHD□ | kgfcm | 71.2 | 91.5 | 128.8 | 162.7 | 186.5 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 6.98 | 8.97 | 12.62 | 15.95 | 18.27 | 20.00 | 18.00 | 17.00 | 16.00 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

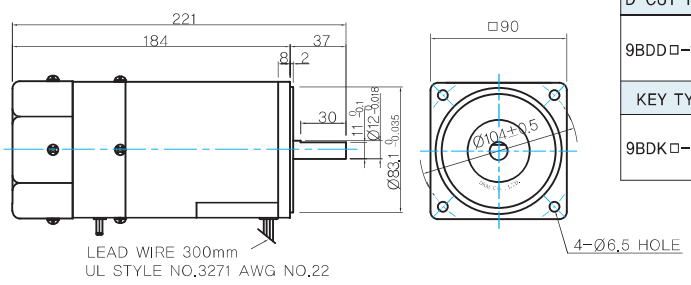
# B AC Motors

## E.M. Brake Motor 150W (□90mm)

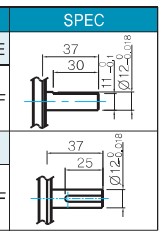
## Dimensions

### MOTOR ONLY

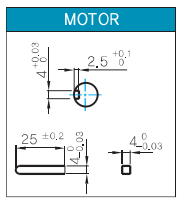
● MOTOR MODEL:
9BDD□–150F (GENERAL FAN)




● MOTOR OUTPUT SHAFT

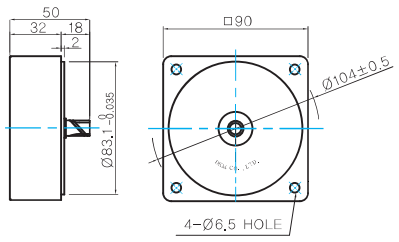
| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□–150F | |
| KEY TYPE |  |
| 9BDK□–150F | |

● KEY SPEC




### INTER-DECIMAL GEARHEAD

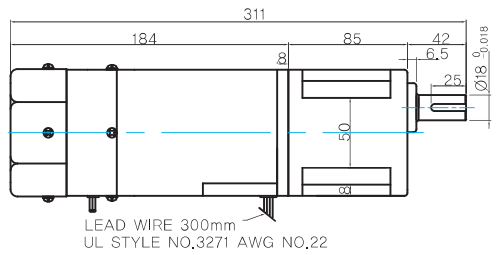
● MODEL:
9XD10M□



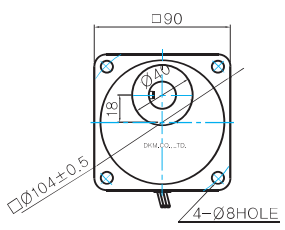

## GEARED MOTOR

### H TYPE GEARHEAD

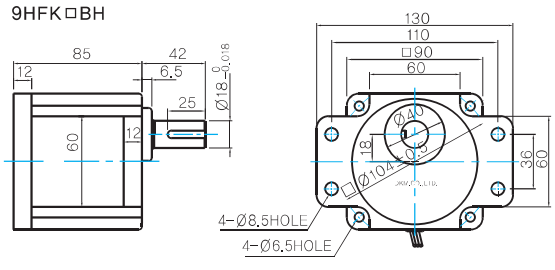
● MOTOR MODEL:
9BDG□–150FH (GENERAL FAN)




● GEARHEAD MODEL:
9HBK□BH



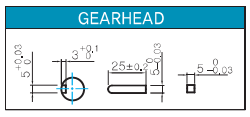

● GEARHEAD MODEL:
9HFK□BH




● GEARHEAD OUTPUT SHAFT

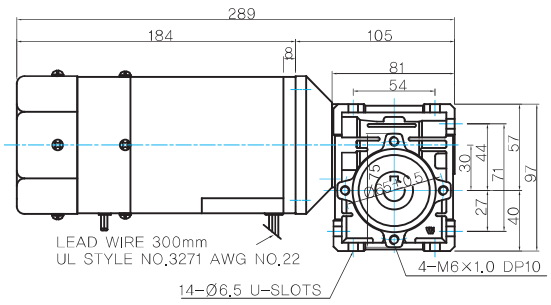
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

● KEY SPEC

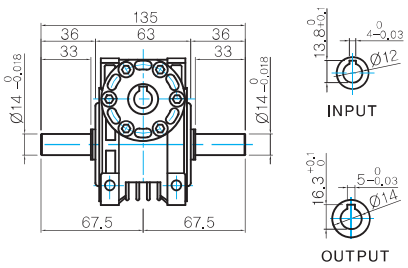



### WH TYPE GEARHEAD

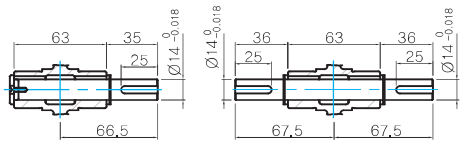
● MOTOR MODEL:
9BDG□–150FWH (GENERAL FAN)



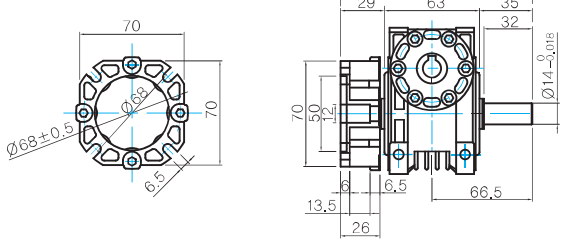

● GEARHEAD MODEL:
9WHD□



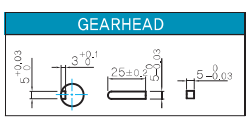

● SHAFT(Unidirectional, Bi-directional)




● FLANGE




● KEY SPEC




* The output flange and shafts are sold separately.

### WEIGHT

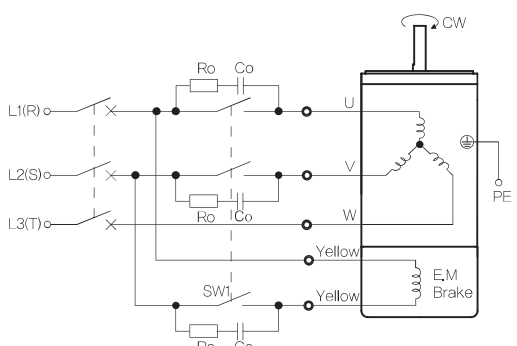
| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 3.5 |
| GEAR HEAD | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

## Motor Images

| 9BDD□-150F | 9BDG□-150FH+9HBK□BH | 9BDG□-150FH+9HFK□BH | 9BDG□-150FWH+9WHD□ |
|---|---|---|---|
|  |  |  |  |

## Connection Diagrams

### Three Phase




*** CCW Direction:**
Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON.
   When SW1 is switched simultaneously to OFF,
   the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

## E.M. Brake Motor 180W (□90mm)

# 180W Electromagnetic Brake Motor

180W(□90mm)

## Motor Specification

| Model<br>9BDG*-180F□: Gear Type Shaft<br>9BDD*-180F: D-Cut Type Shaft<br>9BDK*-180F: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9BDGD-180F□ | 180 | 1ø220 | 60 | 4 | 30min. | 7.40 | 0.740 | 1550 | 1.60 | 11.40 | 1.140 | 8.0 / 450 |
| 9BDGE-180F□ | 180 | 1ø220 | 50 | 4 | 30min. | 7.00 | 0.700 | 1250 | 1.50 | 14.00 | 1.400 | 8.0 / 450 |
| | | 1ø240 | | | | 7.80 | 0.780 | | 1.60 | 14.80 | 1.480 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□<br>-180FH | 9HBK□BH<br>9HFK□BH | kgfcm | 28.4 | 34.1 | 56.8 | 85.2 | 106.9 | 128.3 | 153.9 | 155.0 | 193.8 | 232.6 | 279.1 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 2.78 | 3.34 | 5.56 | 8.35 | 10.47 | 12.57 | 15.08 | 15.19 | 18.99 | 22.79 | 27.35 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□-180FWH | 9WHD□ | kgfcm | 71.8 | 92.3 | 130.0 | 164.2 | 188.1 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 7.04 | 9.05 | 12.74 | 16.09 | 18.43 | 20.00 | 18.00 | 17.00 | 16.00 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 417 | 250 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□<br>-180FH | 9HBK□BH<br>9HFK□BH | kgfcm | 36.9 | 44.2 | 73.7 | 110.6 | 138.8 | 166.5 | 199.8 | 201.3 | 251.6 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 3.61 | 4.33 | 7.22 | 10.83 | 13.60 | 16.32 | 19.58 | 19.73 | 24.66 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

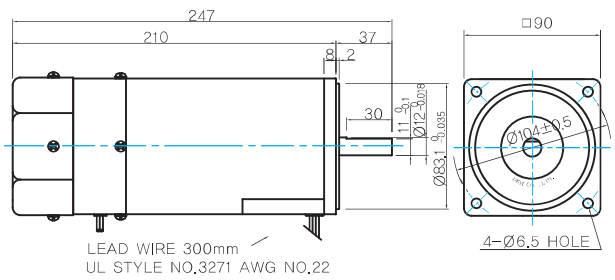
| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□-180FWH | 9WHD□ | kgfcm | 93.2 | 119.9 | 168.7 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 9.14 | 11.75 | 16.53 | 18.00 | 21.00 | 20.00 | 18.00 | 17.00 | 16.00 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

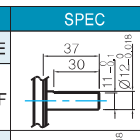
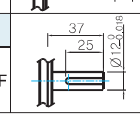
# Dimensions

## MOTOR ONLY

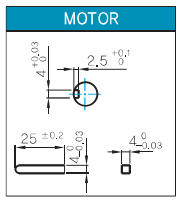
● MOTOR MODEL:
9BDD□–180F (GENERAL FAN)




● MOTOR OUTPUT SHAFT

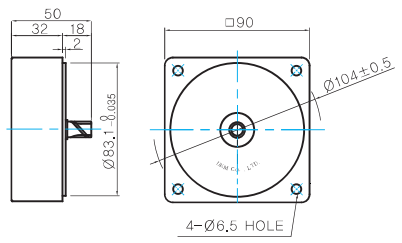
| MODEL | SPEC |
|---|---|
| D–CUT TYPE |  |
| 9BDD□–180F | |
| KEY TYPE |  |
| 9BDK□–180F | |

● KEY SPEC

| MOTOR |
|---|
|  |

## INTER-DECIMAL GEARHEAD

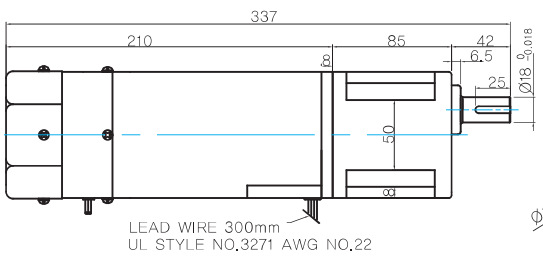
● MODEL:
9XD10M□



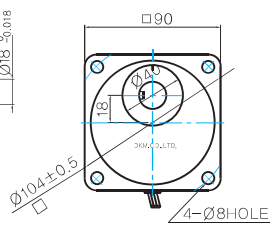

## GEARED MOTOR

## H TYPE GEARHEAD

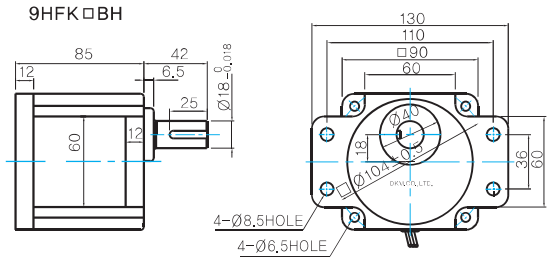
● MOTOR MODEL:
9BDG□–180FH (GENERAL FAN)



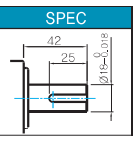

● GEARHEAD MODEL:
9HBK□BH



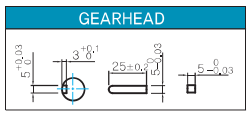

● GEARHEAD MODEL:
9HFK□BH




● GEARHEAD OUTPUT SHAFT

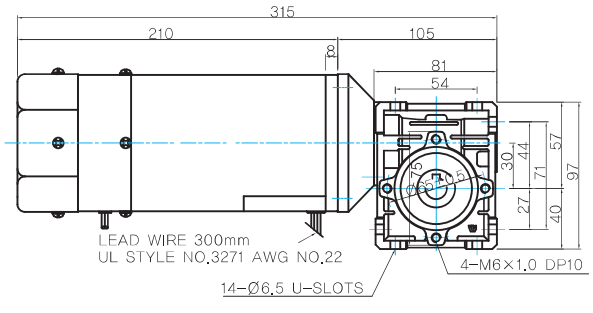
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

● KEY SPEC

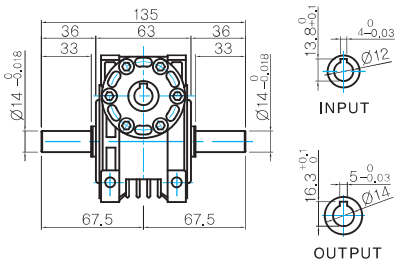
| GEARHEAD |
|---|
|  |

## WH TYPE GEARHEAD

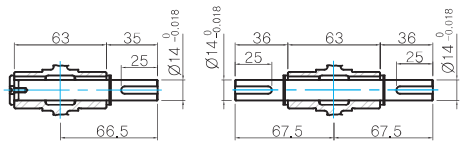
● MOTOR MODEL:
9BDG□–180FWH (GENERAL FAN)



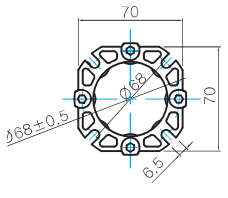

● GEARHEAD MODEL:
9WHD□

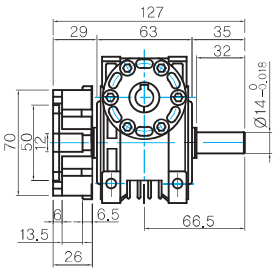



● SHAFT(Unidirectional, Bi–directional)

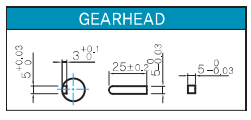



● FLANGE




● KEY SPEC

| GEARHEAD |
|---|
|  |

## WEIGHT

| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 4.3 |
| GEAR HEAD | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

* The output flange and shafts are sold separately.

# B AC Motors

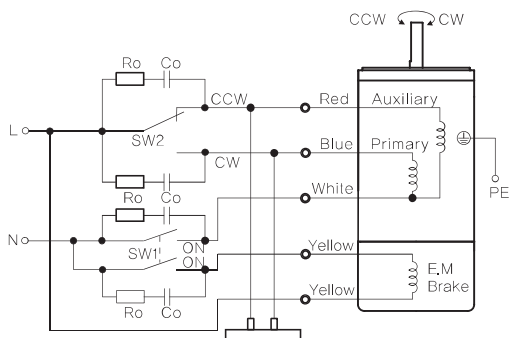
## E.M. Brake Motor 180W (□90mm)

### Motor Images

| 9BDD□-180F | 9BDG□-180FH+9HBK□BH | 9BDG□-180FH+9HFK□BH | 9BDG□-180FWH+9WHD□ |
|---|---|---|---|
|  |  |  |  |

### Connection Diagrams

#### Single Phase




*** Rotation Direction:**

To rotate the motor in a clockwise (CW) direction, turn SW2 to CW.
To rotate the motor in a counterclockwise (CCW) direction, turn SW2 to CCW.

| Switch No. | Specifications | | Note |
|---|---|---|---|
| | Single Phase 110V/115V Input | Single Phase 220V/230V Input | |
| SW1 | AC 125V 3A minimum (Inductive load) | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |
| SW2 | | | – |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON. When SW1 is switched simultaneously to OFF, the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]

# 200W Electromagnetic Brake Motor 200W(□90mm)

## Motor Specification

| Model<br>9BDG*-200F□: Gear Type Shaft<br>9BDD*-200F: D-Cut Type Shaft<br>9BDK*-200F: Key Type Shaft | Output<br>W | Voltage<br>V | Frequency<br>Hz | Poles | Duty | Starting Torque<br>kgfcm | <br>N.m | Rated Load<br>Speed<br>r/min | <br>Current<br>A | <br>Torque<br>kgfcm | <br>N.m | Capacitor<br>μF / VAC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9BDGG-200F□ | 200 | 3ø220 | 50 | 4 | Cont. | 38.00 | 3.800 | 1300 | 1.40 | 15.00 | 1.500 | – |
| | | | 60 | | | 30.00 | 3.000 | 1550 | 1.20 | 13.00 | 1.300 | |
| 9BDGK-200F□ | 200 | 3ø380 | 50 | 4 | Cont. | 26.00 | 2.600 | 1300 | 0.69 | 15.00 | 1.500 | – |
| | | | 60 | | | 22.00 | 2.200 | 1550 | 0.61 | 12.80 | 1.280 | |
| | | 3ø400 | 50 | 4 | Cont. | 30.00 | 3.000 | 1300 | 0.75 | 15.00 | 1.500 | |
| | | | 60 | | | 25.00 | 2.500 | 1600 | 0.60 | 12.20 | 1.220 | |

1) Enter the phase & voltage code in the place * and enter the model type of attaching gearhead in the box (□) within the motor model name.
2) All models contain a built-in thermal protector.
3) Gear Type Shaft is for attaching gearhead and D-Cut & Key Type Shafts are for using motor only.

## Max. Permissible Torque at Output Shaft of Gearhead

### 60Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 600 | 500 | 300 | 200 | 144 | 120 | 100 | 90 | 72 | 60 | 50 | 36 | 30 | 24 | 20 | 18 | 15 | 12 | 10 |
| 9BDG□<br>-200FH | 9HBK□BH<br>9HFK□BH | kgfcm | 32.4 | 38.8 | 64.7 | 97.1 | 121.9 | 146.3 | 175.5 | 176.8 | 221.0 | 265.2 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 3.17 | 3.81 | 6.34 | 9.52 | 11.94 | 14.33 | 17.20 | 17.33 | 21.66 | 25.99 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 240 | 180 | 120 | 90 | 72 | 60 | 45 | 36 | 30 | 22 |
| 9BDG□<br>-200FWH | 9WHD□ | kgfcm | 81.9 | 105.3 | 148.2 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 8.03 | 10.32 | 14.52 | 18.00 | 21.00 | 20.00 | 18.00 | 17.00 | 16.00 | 13.00 |

### 50Hz

| Motor Model | Gearhead Model | Gear Ratio | 3 | 3.6 | 6 | 9 | 12.5 | 15 | 18 | 20 | 25 | 30 | 36 | 50 | 60 | 75 | 90 | 100 | 120 | 150 | 180 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 500 | 417 | 250 | 167 | 120 | 100 | 83 | 75 | 60 | 50 | 42 | 30 | 25 | 20 | 17 | 15 | 13 | 10 | 8 |
| 9BDG□<br>-200FH | 9HBK□BH<br>9HFK□BH | kgfcm | 37.4 | 44.8 | 74.7 | 112.1 | 140.6 | 168.8 | 202.5 | 204.0 | 255.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 | 300.0 |
| | | N.m | 3.66 | 4.39 | 7.32 | 10.98 | 13.78 | 16.54 | 19.85 | 19.99 | 24.99 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 | 29.40 |

| Motor Model | Gearhead Model | Gear Ratio | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | r/min | 200 | 150 | 100 | 75 | 60 | 50 | 38 | 30 | 25 | 18 |
| 9BDG□<br>-200FWH | 9WHD□ | kgfcm | 94.5 | 121.5 | 171 | 183.7 | 214.3 | 204.1 | 183.7 | 173.5 | 163.3 | 132.7 |
| | | N.m | 9.26 | 11.91 | 16.76 | 18.00 | 21.00 | 20.00 | 18.00 | 17.00 | 16.00 | 13.00 |

1) Enter the phase & voltage code in the box (□) within the motor model name.
2) Enter the gear ratio in the box (□) within the gearhead model name.
3) A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.
The actual speed is 2~20% less than the displayed value, depending on the size of the load.

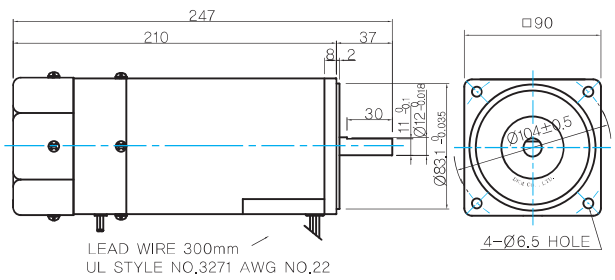
# B AC Motors

## E.M. Brake Motor 200W (□90mm)

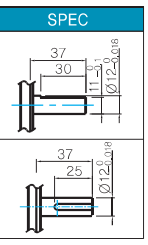
## Dimensions

### MOTOR ONLY

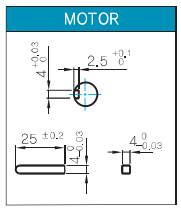
● MOTOR MODEL:
9BDD□-200F (GENERAL FAN)




● MOTOR OUTPUT SHAFT

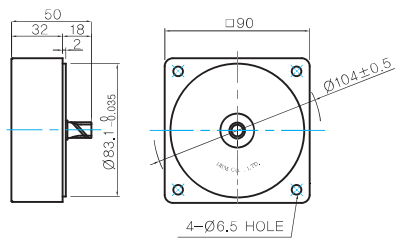
| MODEL | SPEC |
|---|---|
| D-CUT TYPE |  |
| 9BDD□-200F | |
| KEY TYPE |  |
| 9BDK□-200F | |

● KEY SPEC




### INTER-DECIMAL GEARHEAD

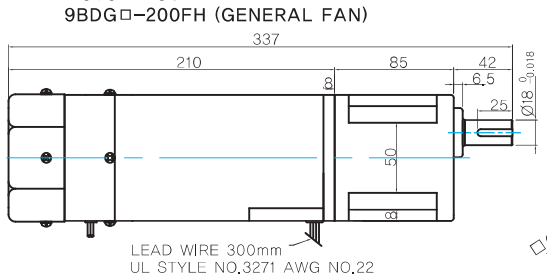
● MODEL:
9XD10M□



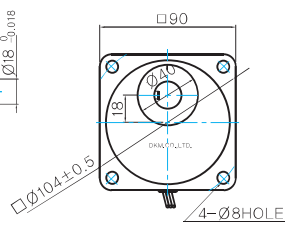

## GEARED MOTOR

### H TYPE GEARHEAD

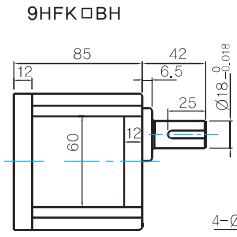
● MOTOR MODEL:
9BDG□-200FH (GENERAL FAN)

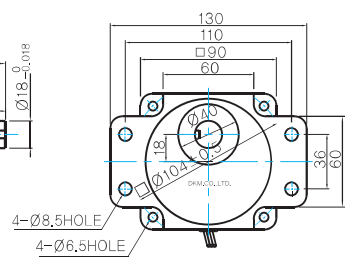



● GEARHEAD MODEL:
9HBK□BH

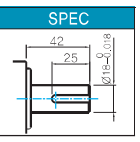



● GEARHEAD MODEL:
9HFK□BH

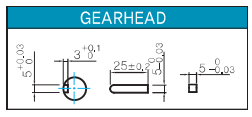



● GEARHEAD OUTPUT SHAFT

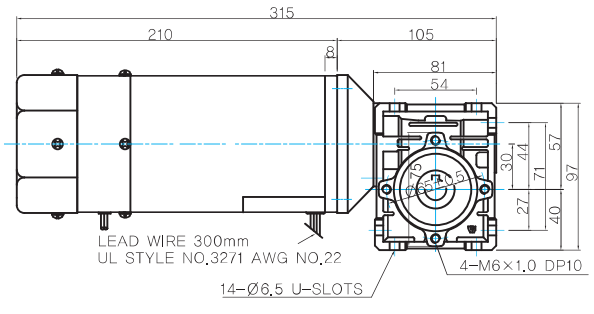
| MODEL | SPEC |
|---|---|
| KEY TYPE |  |
| 9HBK□BH<br>9HFK□BH | |

● KEY SPEC

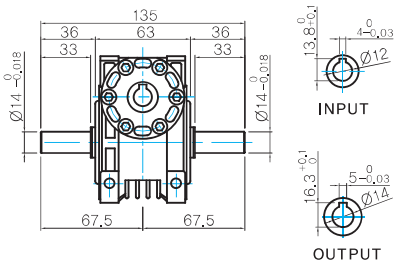



### WH TYPE GEARHEAD

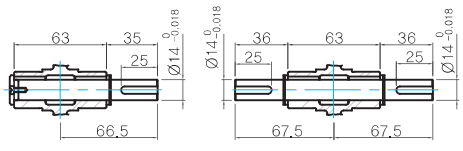
● MOTOR MODEL:
9BDG□-200FWH (GENERAL FAN)



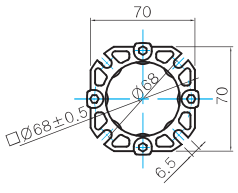

● GEARHEAD MODEL:
9WHD□

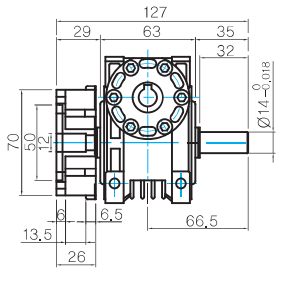



● SHAFT(Unidirectional, Bi-directional)

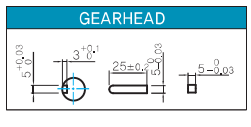



● FLANGE




● KEY SPEC




* The output flange and shafts are sold separately.

### WEIGHT

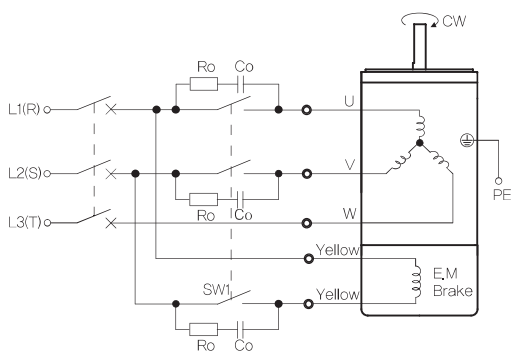
| PART | | WEIGHT(Kg) |
|---|---|---|
| MOTOR | | 4.3 |
| GEAR HEAD | 9HB(F)K3BH ~ 9HB(F)K9BH | 1.45 |
| | 9HB(F)K12.5BH ~ 9HB(F)K18BH | 1.5 |
| | 9HB(F)K20BH ~ 9HB(F)K60BH | 1.7 |
| | 9HB(F)K75BH ~ 9HB(F)K180BH | 1.8 |
| | 9WHD□ | 1.13 |
| | 9XD10M□ | 0.5 |

## Motor Images

| 9BDD□-200F | 9BDG□-200FH+9HBK□BH | 9BDG□-200FH+9HFK□BH | 9BDG□-200FWH+9WHD□ |
|---|---|---|---|
|  |  |  |  |

## Connection Diagrams

### Three Phase




*** CCW Direction:**
Change any two connections between R, S and T.

| Switch No. | Specifications | Note |
|---|---|---|
| SW1 | AC 250V 1.5A minimum (Inductive load) | Switched Simultaneously |

1) The direction of motor rotation is as viewed from the shaft end of the motor.
2) CW represents the clockwise direction, while CCW represents the counterclockwise direction.
3) SW1 operates both motor and electromagnetic brake action.
4) The electromagnetic brake will be released and the motor will rotate when SW1 is switched simultaneously to ON.
   When SW1 is switched simultaneously to OFF,
   the motor stops immediately with the electromagnetic brake and holds the load.
5) If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
6) Ro and Co indicate CR circuit for surge suppression. [Ro=5~200Ω, Co=0.1~0.2μF, 200WV (400WV)]