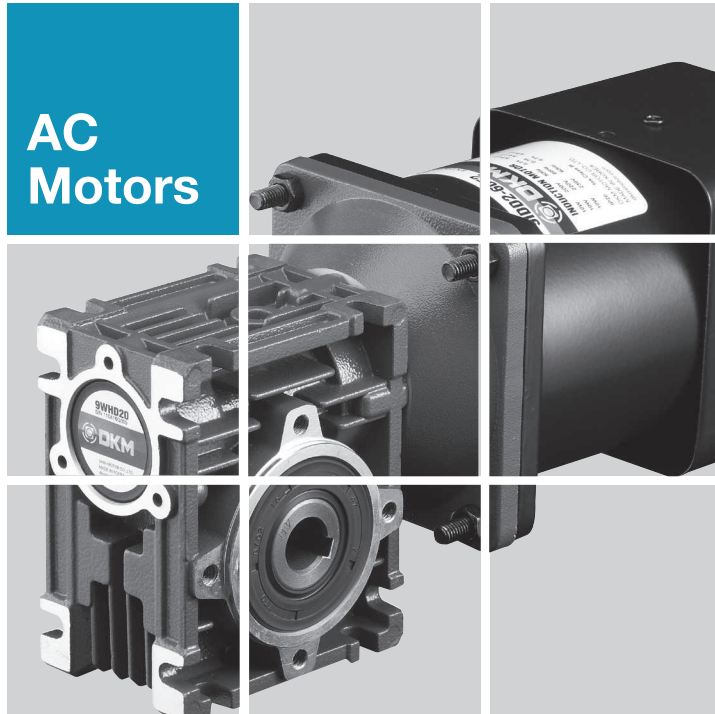


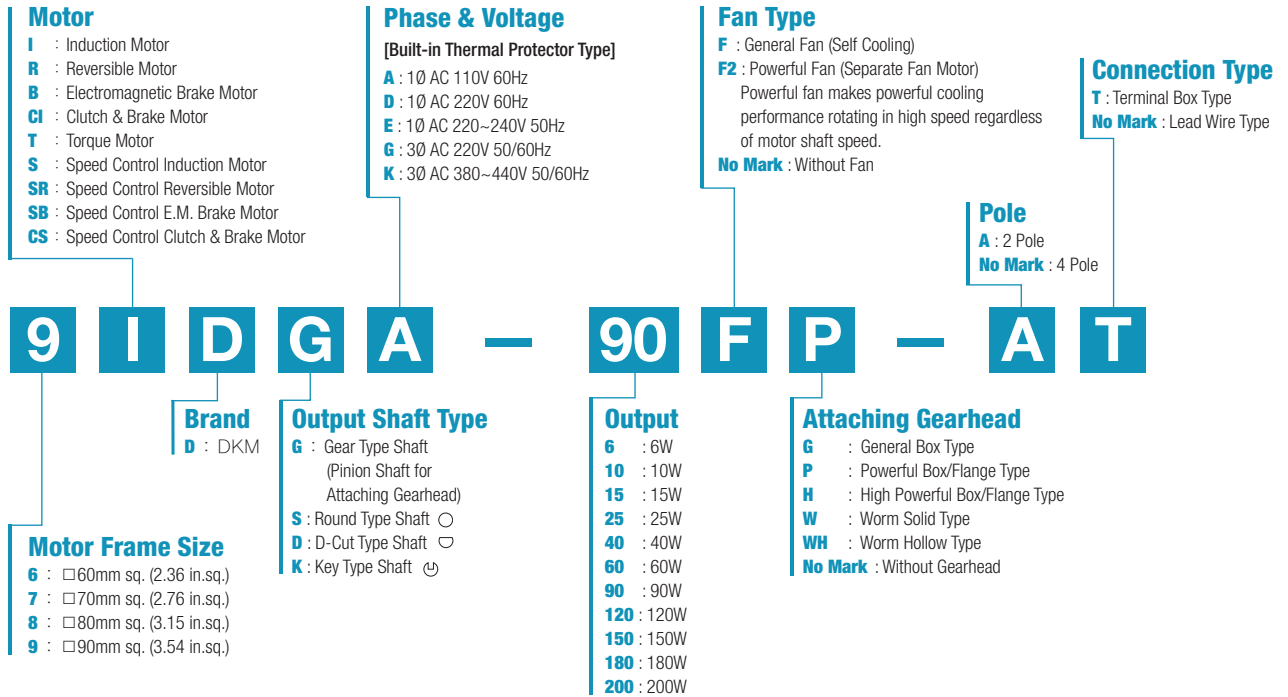
**AC
Motors**



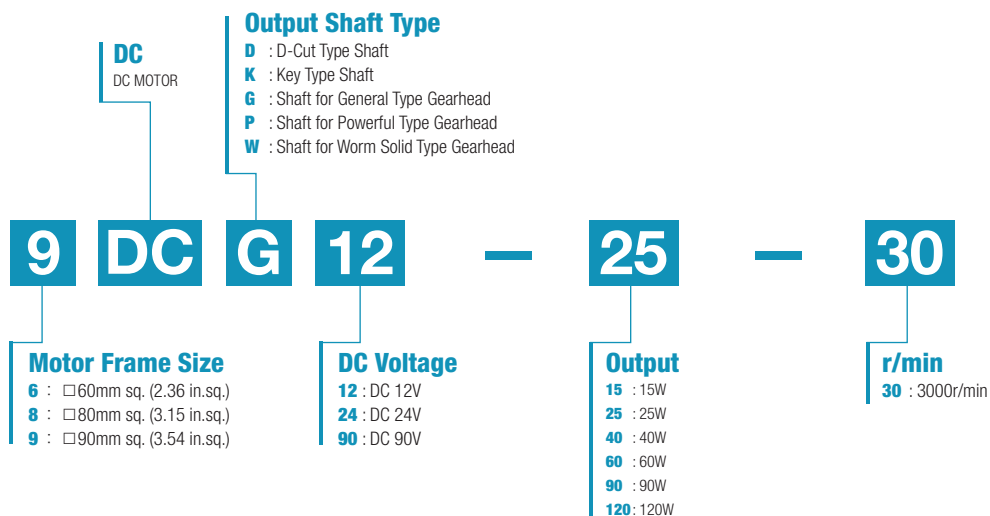
A Information

Product Coding System

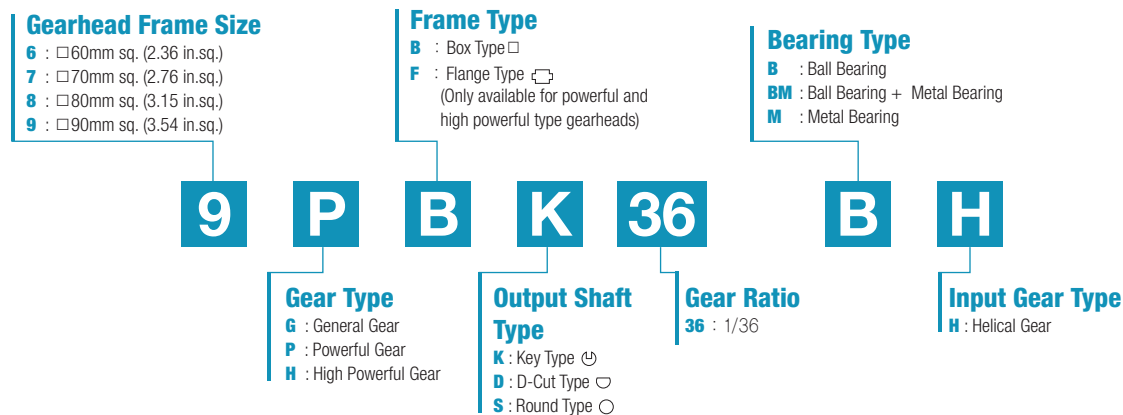
AC Motors



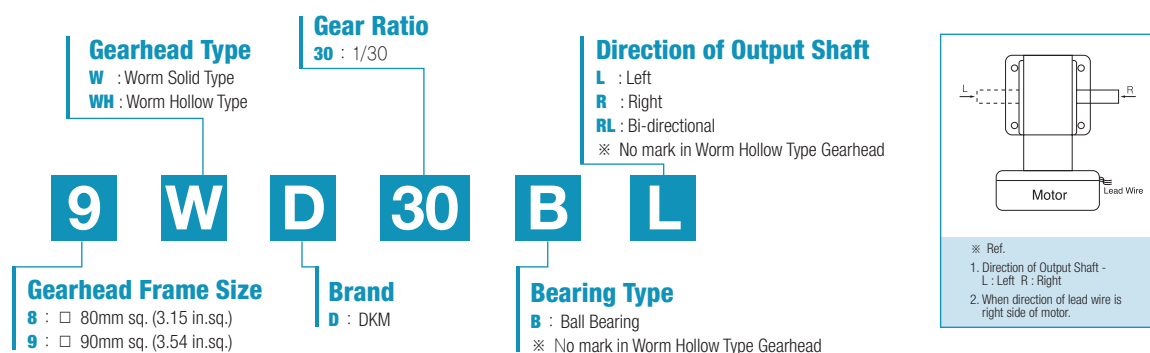
DC Motors



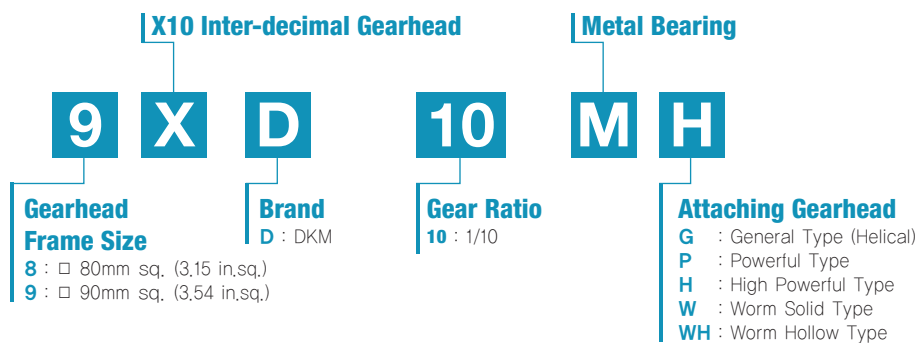
Parallel Gearhead



Worm Gearhead



Inter-decimal Gearhead



In case of requiring high gear reduction ratio that cannot be generated by single gearhead, please use Inter-decimal gearhead with general gearhead. And please be advised that in this case only revolution speed of output shaft will reduce by 10:1 without increasing of maximum permissible torque.

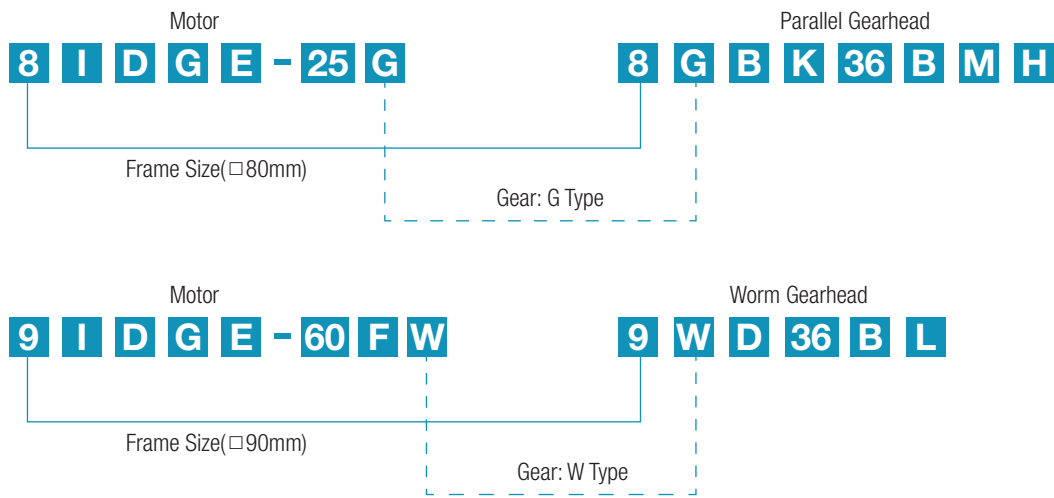
A Information

Product Coding System

Assembly of Motor and Gearhead

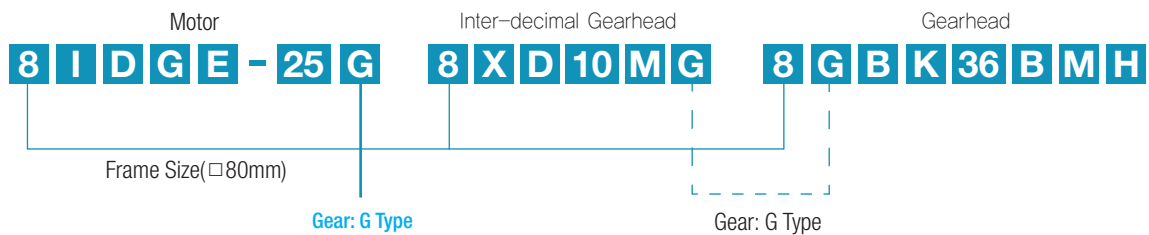
Motor + Gearhead

- As shown in the following scheme, motor and gearhead which have same frame size and gear type could be assembled.

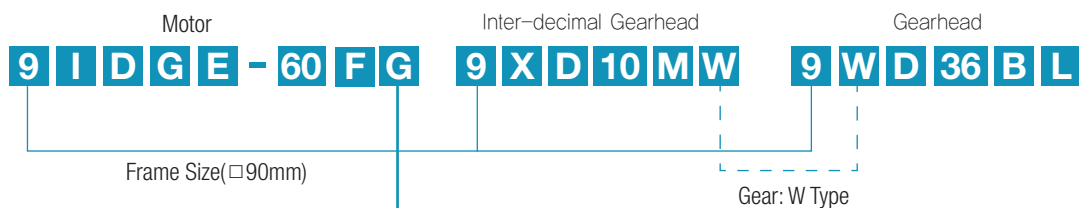


Motor + Inter-decimal Gearhead + Gearhead

- When using an inter-decimal gearhead together, give attention to the gear types of motor, gearhead and inter-decimal gearhead.



- When attaching inter-decimal gearhead, the output shaft type of the motor is always G Type. For example, when using P/H/W/WH type gearhead, only the gear type of inter-decimal gearhead is identical with attached gearhead and the output shaft type of the motor is G type. (Refer to the scheme below.)



Gear types of gearhead and inter-decimal gearhead have to be identical.
The output shaft type of motor is always G type regardless of gear type of gearhead.

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Definition of Motor

Motor is a machine to get a driving force for rotation or straight movement by converting the electrical energy into mechanical energy and the light-weighted motor which enables to select the model suitable for the load, has less noise and vibration as well as no exhaust pollution.

Features of DKM AC Motor

DKM AC geared motor was developed first in Korea in 1987 and has been used in a good reputation throughout the whole areas of domestic/overseas industry up to know. Our AC geared motor is proud of various and wide range of specification which satisfies various electrical requirements from all over the world.

Various and Abundant Models

- There are various and abundant models in frame size covering □ 60/70/80/90mm such as Induction Motor, 2 Pole Motor, Reversible Motor, E.M. Brake Motor, Clutch & Brake Motor, Torque Motor and Speed Control Motor.
- For use voltage, we have various voltage specification covering all areas in the globe: 100V 50/60Hz(Japan), 200V 50/60Hz(Japan), 110V 60Hz(Taiwan), 220V 60Hz(Korea, Taiwan), 115V 60Hz(North America), 230V 50Hz(Europe, Oceania), 220V/240V 50Hz(South-East Asia)

Low Noise and Low Vibration

- Due to the enhancement of quality standard such as places and conditions for motors to use, the low noise and low vibration are required.
- To satisfy these conditions, we employed high precision of gear processing and skiving cutting method and we are making a rotor which is the root cause of vibration by verifying with balance machine for low noise and low vibration.

Easy to Use

- Easy and safe to use as motor and gearhead are sold according to the requirements so that it can be designed and manufactured optimally.
- It is easy to drive to get a driving force by connecting capacitor to the commercial power available to be used anywhere and anytime. As capacitor is not needed for three phase power, it is available to get a driving force easily by connecting three phase power to the motor directly.

Just-In-Time System

- Just-In-Time system is available in DKM Motor Co., Ltd. for the best delivery system. DKM realized user's satisfaction with the world best delivery system.

Types of Motor

Classification by Power

- **AC motor:** A motor operated by AC power. For example, inductive motor, synchronous motor, AC commutator motor etc.

1) Single Phase Motor

- Single phase power is composed of one phase as commercial power for home.
- As power itself does not make motor rotate, capacitor is connected to auxiliary coil to start.

2) Three Phase Motor

- Three phase motor stands for electrical power and it is consisted of three electrical sources with a phase offset of 120° in voltage.
- Connect the power to motor to start and the rotor will start to run easily.
- The efficiency of motor is high and the starting torque is relatively big.

- **DC motor:** A motor which rotates by supplying the direct current to the armature. The torque generated by placing the coil between magnetic poles N and S and applying the current to this coil rotates the motor. Whenever this coil passes the neutral shaft, it turns the direction of current reversely and rotates continuously

Classification by Function

● Motor with Constant Speed

1) Induction Motor: An induction motor is a type of AC motor where power is supplied to the rotor by means of electromagnetic induction. These motors are widely used in industrial drives, particularly polyphase induction motors, because they are rugged and have no brushes. Their speed is determined by the frequency of the supply current, so they are most widely used in constant-speed applications, although variable speed versions, using variable frequency drives are becoming more common.

2) Reversible Motor: A kind of induction motor and a motor having the same characteristic in any direction such as left turn or right turn. In principle, it is same as induction motor but there is no relation of main coil and auxiliary coil like general induction motor in order to stand frequent normal/reverse rotation and get a big starting torque.

● Electromagnetic Brake Motor

It is a motor embedded with fail-safe electromagnetic brake. Perfect braking enables to get a staying power. Brake runs only when the power is shutdown, so this is suitable as a brake for safe use.

※ DKM has 'A Type' electronic brake motor which runs when the power is applied. (Customized specification)

● Clutch & Brake Motor

DKM Clutch & Brake motor is equipped with Clutch & Brake mechanism available to be used with gearhead. As the continuously rotating induction motor and Clutch & Brake are combined, this can be used for frequent start/stop, position control, index operation and relative value feeding operation etc.

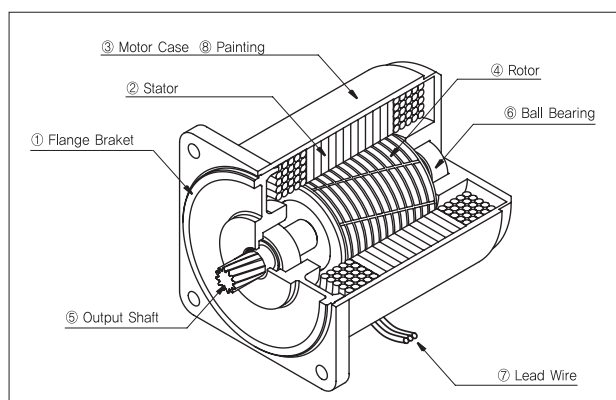
● Torque Motor

DKM torque motor has big starting torque and sloping characteristics. It runs safely over the whole area of rotation speed-torque characteristics. (Torque is highest at zero speed and decreases steadily with increasing speed.) With these characteristics, this can be used for more application as a winding or tension motor.

● Speed Control Motor

User can easily set and adjust the motor speed. There are three kinds of speed controller for AC speed motors. Select the best system depending upon your application.

Structure of AC Motor



① Flange Bracket

Die-cast aluminum bracket is press-fitted into the motor case. The flange and the housing are a single body type which plays an important part to attach the motor alone or combine the gearhead.

② Stator

This is comprised of a stator core made from laminated silicon/steel plates, a polyester-coated copper coil and insulation film. The roles are to generate magnetic field, form the rotation and run the rotor.

③ Motor Case

Die-cast aluminum with a machined finish inside

④ Rotor

It is comprised of laminated silicon/steel plates with die-cast aluminum. Rotor plays the part to change the electric energy to mechanical energy and transfer it to outside through shaft.

⑤ Output Shaft

There are round type shaft, D-cut type shaft, key type shaft which are for using by motor itself and gear type shaft (pinion shaft) which is for attaching gearhead. It is made by S45C with a machined finish.

⑥ Ball Bearing

It ensures that the rotor remains at the right position for the reliability and fast rotational motion.

⑦ Lead Wire

Lead wires with heat-resistant polyethylene coating

⑧ Painting

Backed finish of acrylic resin and melamine resin with beautiful look

Temperature Rise of AC Motor

Temperature Rise

- In operation of motor, the loss inside of motor is changed to heat causing the motor's temperature to rise.
 - Induction Motor (for continuous duty) reaches the saturation point of temperature rise in about two or three hours of operation and temperature stabilizes.
 - Reversible Motor (30 minutes rating) reaches their limit of temperature rise in about 30 minutes of operation. If operation continues as it is, the temperature will increase further.

Measuring Temperature Rise

- DKM uses the following methods for temperature measurement and for the determination of a motor's allowable temperature rise.
 - Thermometer Method: The temperature rise at which the temperature rise becomes saturated during motor operation is measured by using a thermometer or thermocouple installed in the center of the motor case. The temperature rise is the difference between the ambient temperature and measured temperature during motor operation.
 - Resistance Method: This is the way of measuring the winding temperature according to the change in resistance value. The motor's winding resistance and ambient temperature is measured by using a resistance meter and thermostat.

Overheating Protection Device

- In case of that a running motor locks due to overload or the input current increases due to any reason or ambient temperature increases suddenly, the motor's temperature rises abruptly. If this state continues, the insulation performance may deteriorate and, in extreme cases, it may cause a fire. To avoid this case, DKM employs the following overheating protection devices.
 - Thermal Protector (TP)**
DKM installs the thermal protector for overheating protection of the motor. The TP employs a bimetal contact with pure silver used in the contacts. Pure silver has the lowest electrical resistance of all materials and has thermal conductivity second only to copper. (Operating Temperature: Open 120°C±5°C / Close 90 °C±5°C)
 - Impedance Protection**
Impedance-protected motor has higher impedance in the motor windings so although the motor locks, the increase in input current is minimized and temperature will not rise.

Insulation Class

- DKM Motor's insulation class is B class. Insulation class is according to heat-resistance class. According to JIS C4003(IEC60085), it is defined as below. It is also available to use other materials for some particular insulation class according to operating conditions or user's request. (Customized specification)

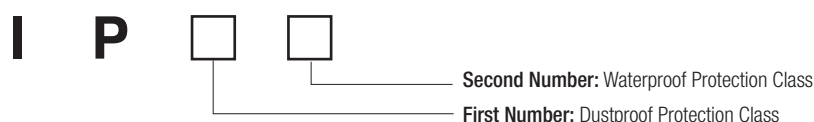
Insulation Class	Max. Permissible Temp.
Y	90°C
A	105°C
E	120°C
B	130°C
F	155°C
H	180°C

FAN

- It is available to attach two kinds of fan to the DKM's motor; 'General Fan (F type)' and 'Powerful Fan (F2 type)'.
General fan is attached to motor shaft rotating in same speed as that of motor shaft. (1,800r/min in 60Hz, 1,500r/min in 50Hz) Powerful fan makes powerful cooling performance rotating in high speed regardless of motor shaft speed. (3,200r/min in 60Hz. Temperature reducing over 10°C is available comparing general fan.)
DKM employs general fan to the motors with continuous speed and employs powerful fan by customers' special order to the continuous speed's motor. But in case of speed control motor in which speed control is needed, powerful fan is employed basically because there is little cooling effect in low speed if general fan is used.

Equipment Protection Structure (IP Code)

- The IP code is one of the equipment protection structures and indicates the dust-resistance and waterproofing degrees of protection for the equipment.
- The code consists of the first number and the second number.



- “X” is used when one of the two protection classes is not specified in the name. (e.g. IPX5, IP4X)
- Meanings of IP code and testing conditions are as below;

1) The Classification of Dustproof

IP Code	Protection Specifications for Dustproof	
First Number	Protection Level	Test Condition
IP0□	None	None
IP1□	Protection against approach by hands	Solid objects with a diameter of 50mm or more do not enter.
IP2□	Protection against approach by fingers	Solid objects with a diameter of 12mm or more do not enter.
IP3□	Protection against tips of tools etc.	Solid objects with a diameter of 2.5mm or more do not enter.
IP4□	Protection against ingress of wires etc.	Solid objects with a diameter of 1.0mm or more do not enter.
IP5□	Protection against powdery dust	Powdery dust that may inhibit normal operation does not enter.
IP6□	Completely dustproof design	Cannot be penetrated by powdery dust.

2) The Classification of Waterproof

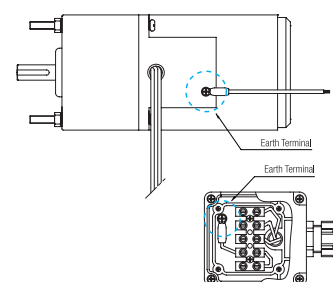
IP Code	Protection Specifications for Waterproof	
Second Number	Protection Level	Test Condition
IP□0	None	None
IP□1	Protection against water drops falling vertically	Water drops at a rate of 3 to 5L/min. for 10 minutes from a height of 200mm
IP□2	Protection against water drops from directions within a range of 15° relative to the vertical plane	Water drops at a rate of 3 to 5L/min. for 10 minutes from directions within 15° from a height of 200mm
IP□3	Protection against raindrops from directions within a range of 60° relative to the vertical plane	Sprayed water at a rate of 10L/min. for 10 minutes from directions within 60° from a height of 200mm
IP□4	Protection against ingress of splashes from all directions	Sprayed water at a rate of 10L/min. for 10 minutes from all directions at a distance of 300 to 500mm
IP□5	Protection against water jet from all directions	Sprayed water jet of 30kPa at a rate of 12.5L/min. for 3 minutes from all directions at a distance of 3m
IP□6	Protection against strong water jet such as ocean waves	Sprayed water jet of 100kPa at a rate of 100L/min. for 3 minutes from all directions at a distance of 3m
IP□7	Usable after immersion in water under specified conditions	Immersion to a depth of 1m for 30 minutes
IP□8	Usable under water	Determined through cooperation between user and manufacturer.

- The IP code of DKM's motor is indicated in the name plate (motor label).

Earth Method

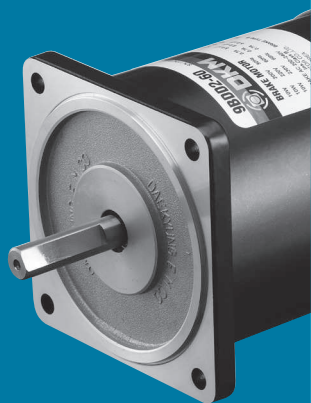
Lead Wire Type

- As shown in the figure, connect the earth wire to the earth hole in the side of the motor.
Screw the earth wire to the earth hole. (Sequence: earth hole → washer → earth wire → screw bolt)

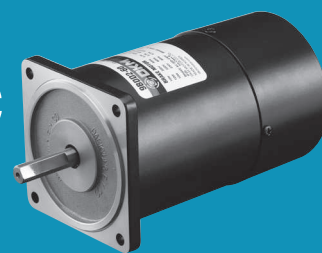


Terminal Box Type

- Connect the earth wire to the earth terminal in the terminal box.



Electromagnetic Brake Motor



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E.M. Brake Motor 120W (□90mm)	B-124
E.M. Brake Motor 150W (□90mm)	B-128
E.M. Brake Motor 180W (□90mm)	B-131
E.M. Brake Motor 200W (□90mm)	B-134

B AC Motors

Outline of E.M. Brake Motor

☉ Power Off Activated Type Electromagnetic Brake

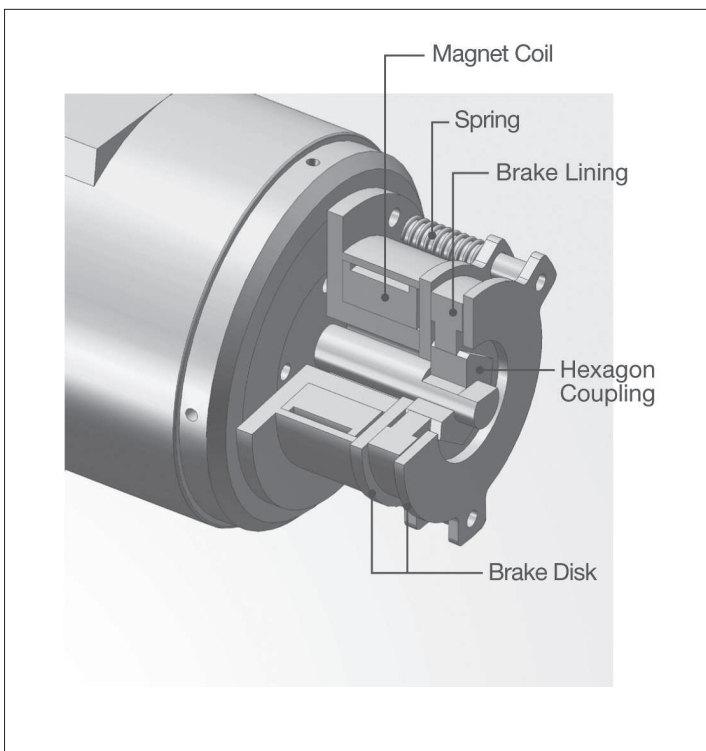
- AC electromagnetic brake is employed in electromagnetic brake motors. When the power source is turned off, the brake is activated and the motor stops instantaneously and holds the load. The electromagnetic brake has holding power in power-off, so it is optimal for emergency brakes and vertical load 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 cycles 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°C.)
- The motor and the brake use the same power source. (For example, if motor voltage is 110V, that of brake is 110V.)

☉ Structure

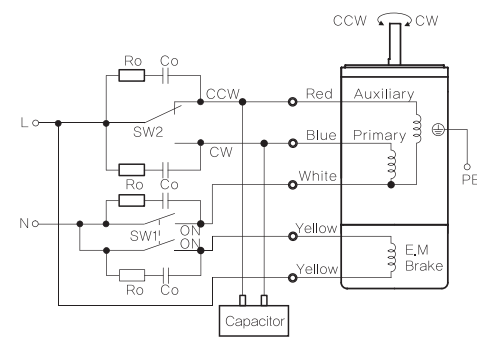
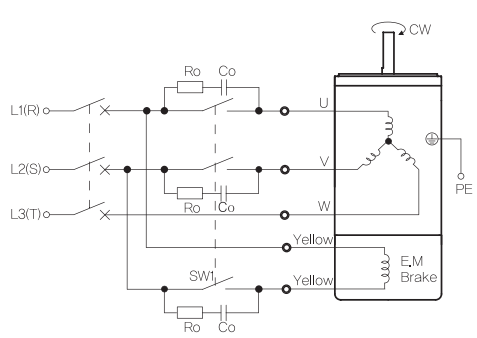
- An electromagnetic brake motor is equipped with a power-off activated type electromagnetic brake. As shown in the figure, when voltage is applied to the magnet coil, the armature is attracted to the electromagnet against the force of the spring, thereby releasing the brake and allowing the motor shaft 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	100M Ω 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°C or less measured by the resistance change method after rated motor operation with connecting a gearhead or equivalent heat radiation plate.
Insulation Class	Class B [130°C]
Overheat Protection	Operating temperature (Built-in thermal protector type motor): Open 120°C \pm 5°C, Close 90°C \pm 5°C
Ambient Temperature	-10°C~+40°C (Three phase 220VAC: -10°C~+50°C)
Ambient Humidity	85% maximum

Connection Diagrams

Single Phase	Three Phase																				
 <p>* 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.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
Switch No.		Specifications			Note																
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SW2			-																		
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=5~200 Ω , Co=0.1~0.2 μ F, 200WV (400WV)]

B AC Motors

E.M. Brake Motor 6W (□70mm)

6W

Electromagnetic
Brake Motor
6W(□70mm)

Motor Specification

Model 7BDG□-6G: Gear Type Shaft 7BDD□-6: D-Cut Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load			Capacitor μF / VAC	
						kgfcm	N.m	Speed r/min	Current A	Torque kgfcm N.m		
7BDGA-6G	6	1φ110	60	4	30min.	0.64	0.064	1600	0.29	0.50	0.050	3.0 / 250
7BDGD-6G	6	1φ220	60	4	30min.	0.85	0.085	1600	0.16	0.60	0.060	1.0 / 450
7BDGE-6G	6	1φ220	50	4	30min.	0.61	0.061	1250	0.13	0.68	0.068	0.8 / 450
		0.75				0.075	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
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

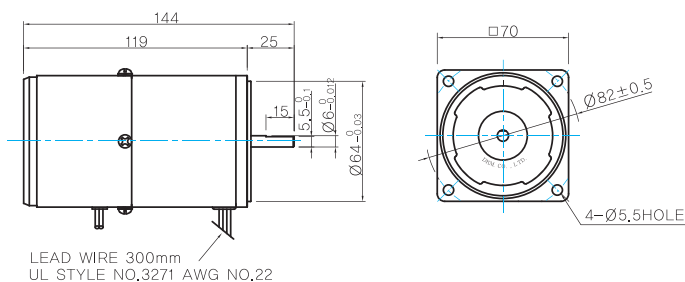
Motor Model	Gearhead Model	Gear Ratio	3	3.6	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
			r/min	500	416	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10
7BDG□-6G	7GBK□BMH	kgfcm	1.7	2.0	3.4	4.2	5.1	7.1	8.5	10.2	12.8	15.3	16.6	23.1	27.7	34.7	41.6	46.2	50.0	50.0	50.0
		N.m	0.17	0.20	0.33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

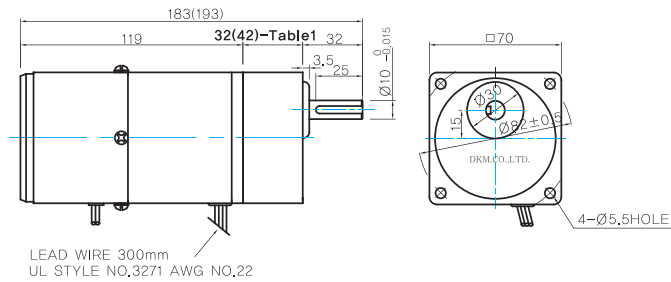
MODEL	SPEC
D-CUT TYPE	

GEARED MOTOR

G TYPE GEARHEAD

- MOTOR MODEL:
7BDG□-6G (NO FAN)

- GEARHEAD MODEL:
7GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC

GEARHEAD	

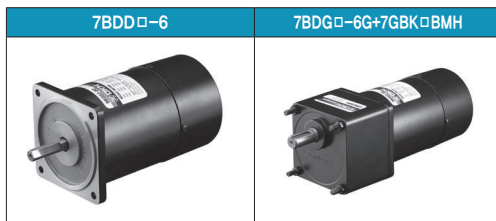
WEIGHT

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

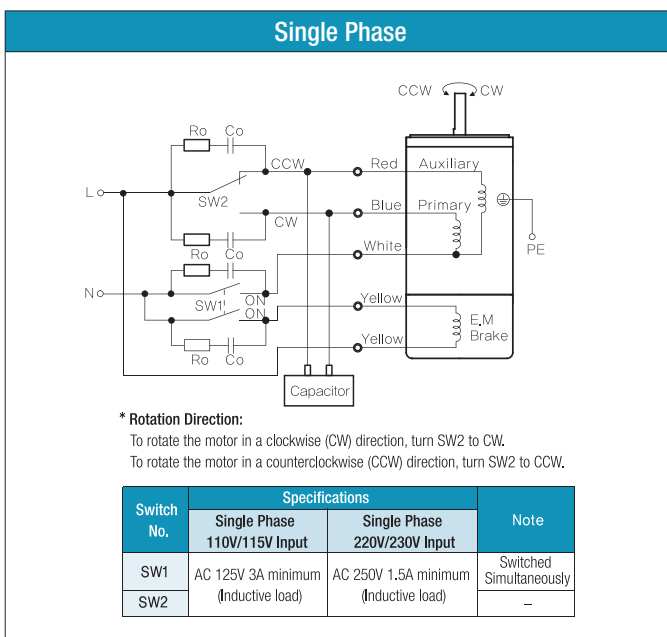
32(42)-Table1

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

Motor Images



Connection Diagrams



- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- SW1 operates both motor and electromagnetic brake action.
- 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.
- If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
- 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 7BDG□-10G: Gear Type Shaft 7BDD□-10: D-Cut Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load			Capacitor μF / VAC	
						kgfcm	N.m	Speed r/min	Current A	Torque kgfcm N.m		
7BDGA-10G	10	1φ110	60	4	30min.	0.83	0.083	1550	0.31	0.70	0.070	3.5 / 250
7BDGD-10G	10	1φ220	60	4	30min.	1.00	0.100	1550	0.20	0.79	0.079	1.2 / 450
7BDGE-10G	10	1φ220	50	4	30min.	0.86	0.086	1250	0.16	0.82	0.082	1.0 / 450
		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
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

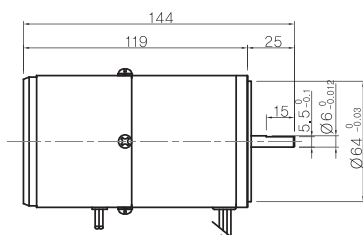
Motor Model	Gearhead Model	Gear Ratio	3	3.6	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
			r/min	500	416	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10
7BDG□-10G	7GBK□BMH	kgfcm	2.0	2.5	4.1	5.1	6.1	8.5	10.2	12.3	15.4	18.5	20.1	27.9	33.5	41.8	50.0	50.0	50.0	50.0	50.0
		N.m	0.20	0.24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

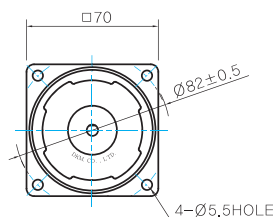
Dimensions

MOTOR ONLY

● MOTOR MODEL: 7BDD□-10 (NO FAN)



LEAD WIRE 300mm
UL STYLE NO.3271 AWG NO.22



MOTOR OUTPUT SHAFT

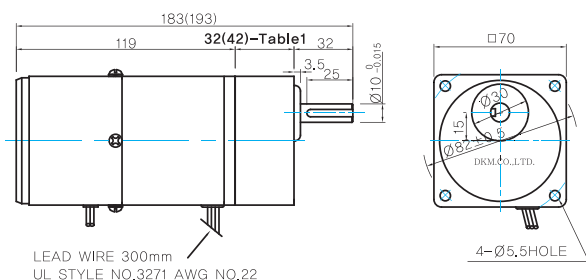
MODEL	SPEC
D-CUT TYPE	

GEARED MOTOR

G TYPE GEARHEAD

● MOTOR MODEL:
7BDG□-10G (NO FAN)

● GEARHEAD MODEL:
7GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC

GEARHEAD	

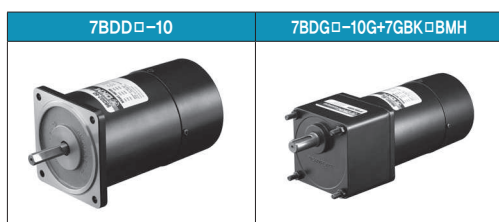
WEIGHT

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

32(42)-Table1

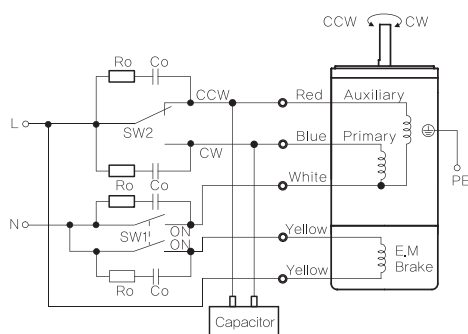
SIZE(mm)	GEAR RATIO
32	7GBK3BMH - 7GBK18BMH
42	7GBK25BMH - 7GBK180BMH

Motor Images



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) R_o and C_o indicate CR circuit for surge suppression. [R_o=5~200Ω, C_o=0.1~0.2μF, 200WV (400WV)]

B AC Motors

E.M. Brake Motor 15W (□70mm)

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

Motor Specification

Model 7BDG□-15G: Gear Type Shaft 7BDD□-15: D-Cut Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque kgfcm N.m		Rated Load			Capacitor μF / VAC	
								Speed r/min	Current A	Torque kgfcm N.m		
7BDGA-15G	15	1∅110	60	4	30min.	1.30	0.130	1600	0.46	1.05	0.105	6.0 / 250
7BDGD-15G	15	1∅220	60	4	30min.	1.25	0.125	1600	0.23	1.10	0.110	1.5 / 450
7BDGE-15G	15	1∅220	50	4	30min.	1.10	0.110	1250	0.17	1.25	0.125	1.2 / 450
		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	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	4.90

50Hz

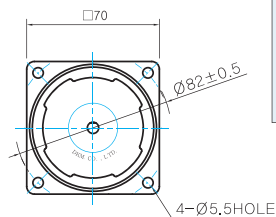
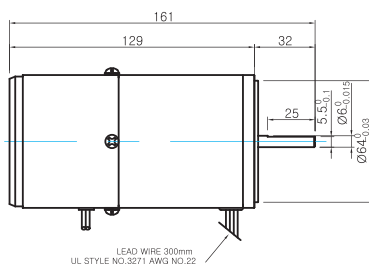
Motor Model	Gearhead Model	Gear Ratio	3	3.6	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	
			r/min	500	416	250	200	166	120	100	83	60	50	41	30	25	20	16	15	12.5	10	8.3
7BDG□-15G	7GBK□BMH	kgfcm	3.6	4.3	7.2	9.0	10.8	15.0	18.1	21.7	27.2	32.6	35.5	49.3	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
		N.m	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	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)



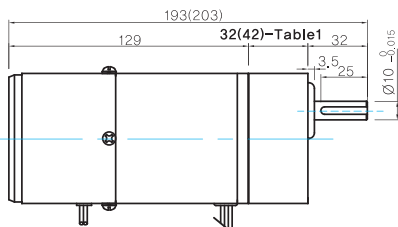
MOTOR OUTPUT SHAFT

MODEL	SPEC
D-CUT TYPE	

GEARED MOTOR

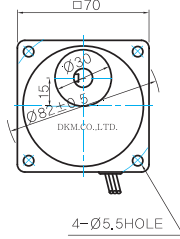
G TYPE GEARHEAD

- MOTOR MODEL:
7BDG□-15G (NO FAN)



LEAD WIRE 300mm
UL STYLE NO.3271 AWG NO.22

- GEARHEAD MODEL:
7GBK□BMH



- GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

- KEY SPEC

GEARHEAD	

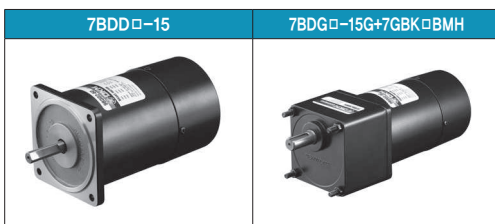
WEIGHT

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

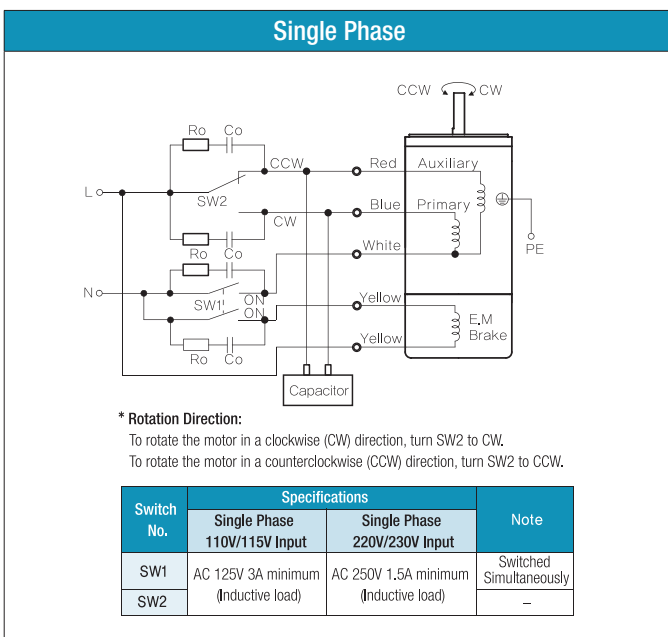
- 32(42)-Table1

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

Motor Images



Connection Diagrams



- The direction of motor rotation is as viewed from the shaft end of the motor.
- CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- SW1 operates both motor and electromagnetic brake action.
- 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.
- If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow).
- 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 8BDG*-15□: Gear Type Shaft 8BDD*-15: D-Cut Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque kgfcm N.m		Rated Load			Capacitor μF / VAC	
								Speed r/min	Current A	Torque kgfcm N.m		
8BDGA-15□	15	1∅110	60	4	30min.	1.55	0.155	1600	0.44	1.20	0.120	6.0 / 250
8BDGD-15□	15	1∅220	60	4	30min.	1.50	0.150	1600	0.25	1.00	0.100	1.5 / 450
8BDGE-15□	15	1∅220	50	4	30min.	1.25	0.125	1200	0.16	1.30	0.130	1.5 / 450
		1∅240				1.45	0.145		0.17	1.40	0.140	
8BDGG-15□	15	3∅220	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	3∅380	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	
		3∅400	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	
		3∅415	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	
		3∅440	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
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
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
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
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
8BDG□-15G	8GBK□BMH	kgfcm	80.0	80.0	80.0	80.0
		N.m	7.84	7.84	7.84	7.84

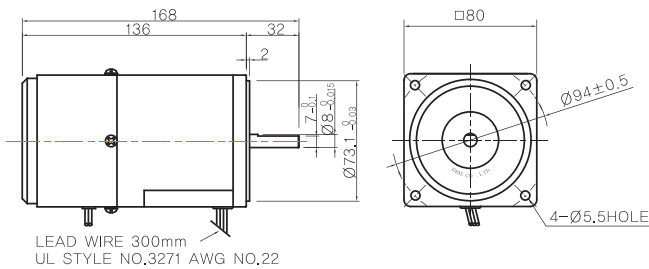
Motor Model	Gearhead Model	Gear Ratio	10	12	15	18	25	30	36	50	60
			r/min	150	125	100	83	60	50	42	30
8BDG□-15W	8WD□BL/□BR/□BRL	kgfcm	11.5	13.4	16.2	18.6	24.5	27.7	32.3	42.0	46.2
		N.m	1.13	1.32	1.58	1.83	2.40	2.72	3.16	4.12	4.53

- 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.

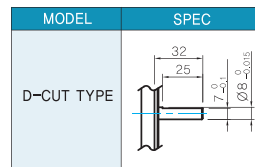
Dimensions

MOTOR ONLY

- MOTOR MODEL: 8BDD□-15 (NO FAN)

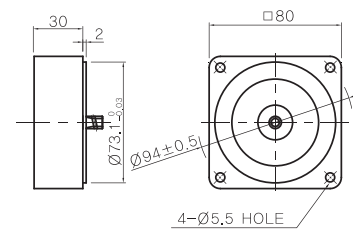


- MOTOR OUTPUT SHAFT



INTER-DECIMAL GEARHEAD

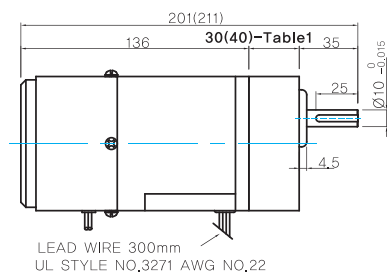
- MODEL: 8XD10M□



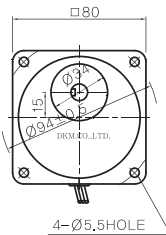
GEARED MOTOR

G TYPE GEARHEAD

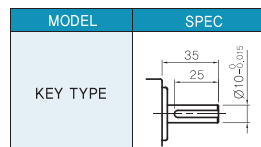
- MOTOR MODEL: 8BDG□-15G (NO FAN)



- GEARHEAD MODEL: 8GBK□BMH



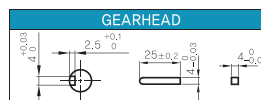
- GEARHEAD OUTPUT SHAFT



- 30(40)-Table1

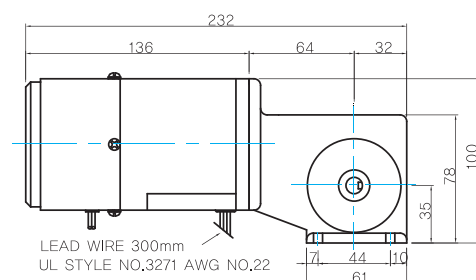
SIZE(mm)	GEAR RATIO
30	8GBK3BMH - 8GBK18BMH
40	8GBK25BMH - 8GBK360BMH

- KEY SPEC

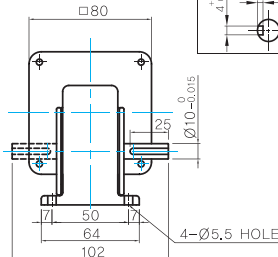


W TYPE GEARHEAD

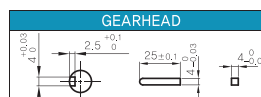
- MOTOR MODEL: 8BDG□-15W (NO FAN)



- GEARHEAD MODEL: 8WD□BL/BR/BRL



- KEY SPEC



WEIGHT

PART	WEIGHT(Kg)
MOTOR	2.0
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

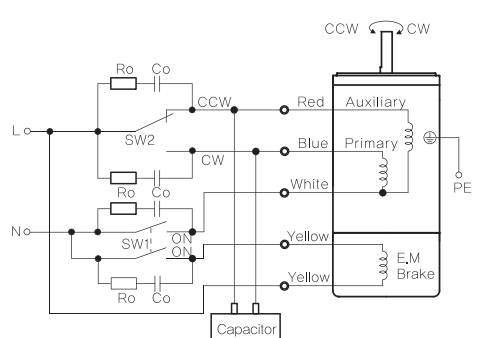
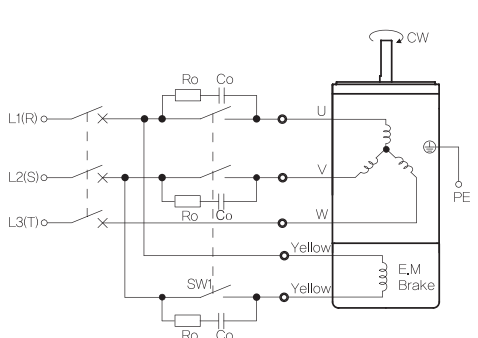
Motor Images



B AC Motors

E.M. Brake Motor 15W (□80mm)

Connection Diagrams

Single Phase	Three Phase																				
 <p>The diagram shows a single-phase AC input (L and N) connected to a motor. The motor has an Auxiliary winding (Red), Primary winding (Blue), and E.M. Brake winding (Yellow). A capacitor is connected to the motor. Two switches, SW1 and SW2, are used for control. SW2 is used to change rotation direction (CW or CCW). SW1 is used to operate the motor and brake simultaneously. Surge suppression components (Ro and Co) are shown in the circuit.</p> <p>* 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.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr style="background-color: #0070C0; color: white;"> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>The diagram shows a three-phase AC input (L1(R), L2(S), L3(T)) connected to a motor. The motor has three main windings (U, V, W) and an E.M. Brake winding (Yellow). A capacitor is connected to the motor. A switch SW1 is used to operate the motor and brake simultaneously. Surge suppression components (Ro and Co) are shown in the circuit.</p> <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
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			-																		
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 8BDG*-25□: Gear Type Shaft 8BDD*-25: D-Cut Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque kgfcm N.m		Rated Load			Capacitor μF / VAC	
								Speed r/min	Current A	Torque kgfcm N.m		
8BDGA-25□	25	1∅110	60	4	30min.	2.40	0.240	1550	0.73	1.62	0.162	10.0 / 250
8BDGD-25□	25	1∅220	60	4	30min.	2.40	0.240	1550	0.36	1.62	0.162	2.5 / 450
8BDGE-25□	25	1∅220	50	4	30min.	2.10	0.210	1250	0.28	2.00	0.200	2.0 / 450
		1∅240				2.50	0.250		0.30	2.10	0.210	
8BDGG-25□	25	3∅220	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	3∅380	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	
		3∅400	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	
		3∅415	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	
		3∅440	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 r/min	3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	40	50	60	75	90	100	120	150	180
			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 N.m	4.5 0.44	5.4 0.53	7.5 0.73	9.0 0.88	11.2 1.10	13.4 1.32	18.7 1.83	22.4 2.20	26.9 2.64	33.8 3.31	40.5 3.97	44.1 4.32	49.0 4.80	61.2 6.00	73.4 7.20	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84

Motor Model	Gearhead Model	Gear Ratio r/min	200	250	300	360	Motor Model	Gearhead Model	Gear Ratio r/min	10	12	15	18	25	30	36	50	60
			9	7	6	5				8BDG□-25W	8WD□BL/□BR/□BRL	180	150	120	100	72	60	50
8BDG□-25G	8GBK□BMH	kgfcm N.m	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	8BDG□-25W	8WD□BL/□BR/□BRL	kgfcm N.m	13.3 1.30	15.6 1.52	18.7 1.83	21.6 2.11	28.4 2.78	32.1 3.14	37.3 3.66	48.6 4.76	53.5 5.24

50Hz

Motor Model	Gearhead Model	Gear Ratio r/min	3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	40	50	60	75	90	100	120	150	180
			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 N.m	5.0 0.49	6.0 0.59	8.3 0.81	10.0 0.98	12.5 1.22	14.9 1.46	20.8 2.03	24.9 2.44	29.9 2.93	37.5 3.68	45.0 4.41	49.0 4.80	54.4 5.33	68.0 6.66	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	

Motor Model	Gearhead Model	Gear Ratio r/min	200	250	300	360	Motor Model	Gearhead Model	Gear Ratio r/min	10	12	15	18	25	30	36	50	60
			7	6	5	5				8BDG□-25W	8WD□BL/□BR/□BRL	150	125	100	83	60	50	42
8BDG□-25G	8GBK□BMH	kgfcm N.m	80.0 7.84	80.0 7.84	80.0 7.84	80.0 7.84	8BDG□-25W	8WD□BL/□BR/□BRL	kgfcm N.m	17.2 1.69	20.2 1.98	24.3 2.38	28.0 2.74	36.8 3.60	41.6 4.07	48.4 4.74	63.0 6.17	69.3 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.

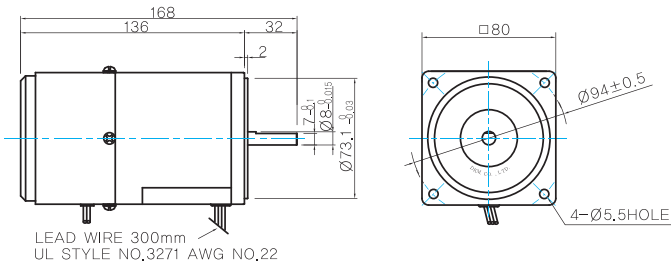
B AC Motors

E.M. Brake Motor 25W (□80mm)

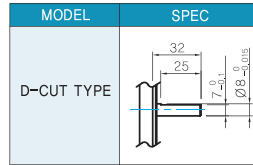
Dimensions

MOTOR ONLY

- MOTOR MODEL: 8BDD□-25 (NO FAN)

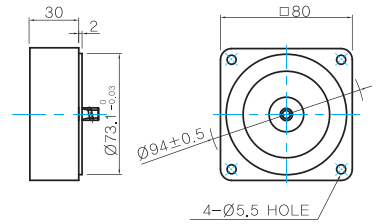


MOTOR OUTPUT SHAFT



INTER-DECIMAL GEARHEAD

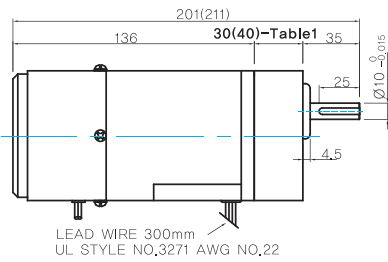
- MODEL: 8XD10M□



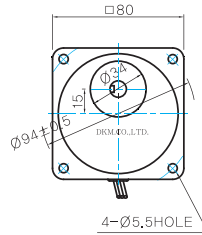
GEARED MOTOR

G TYPE GEARHEAD

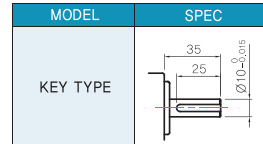
- MOTOR MODEL: 8BDG□-25G (NO FAN)



- GEARHEAD MODEL: 8GBK□BMH



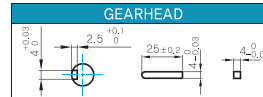
GEARHEAD OUTPUT SHAFT



- 30(40)-Table1

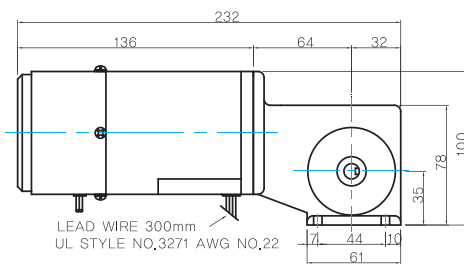
SIZE(mm)	GEAR RATIO
30	8GBK3BMH - 8GBK18BMH
40	8GBK25BMH - 8GBK360BMH

KEY SPEC

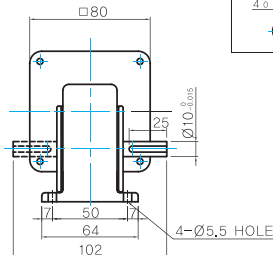


W TYPE GEARHEAD

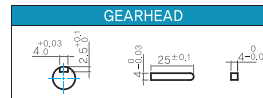
- MOTOR MODEL: 8BDG□-25W (NO FAN)



- GEARHEAD MODEL: 8WD□BL/BR/BRL



KEY SPEC



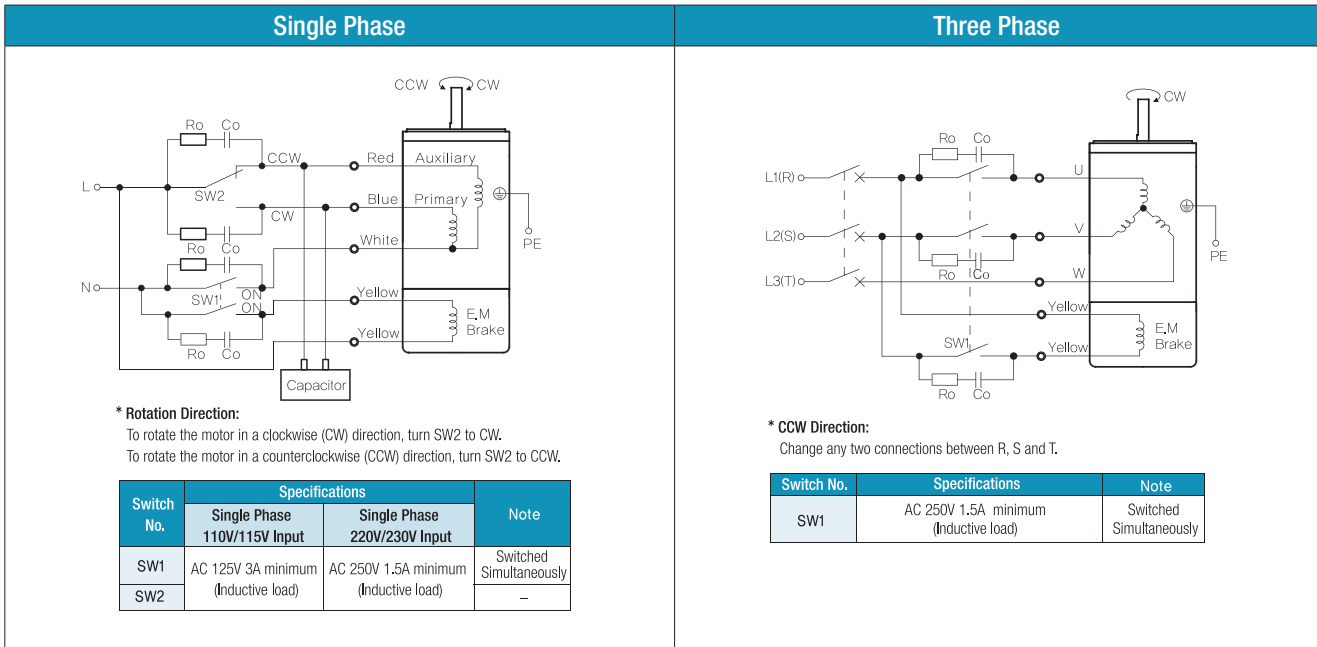
WEIGHT

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



Connection Diagrams



- 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 40W (□90mm)

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

Motor Specification

Model 9BDG ⁺ -40□: Gear Type Shaft 9BDD ⁺ -40: D-Cut Type Shaft 9BDK ⁺ -40: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque kgfcm N.m		Rated Load			Capacitor μF / VAC	
								Speed r/min	Current A	Torque kgfcm N.m		
9BDGA-40□	40	1∅110	60	4	30min.	4.20	0.420	1600	1.25	2.60	0.260	16.0 / 250
9BDGD-40□	40	1∅220	60	4	30min.	4.20	0.420	1600	0.61	2.60	0.260	4.0 / 450
9BDGE-40□	40	1∅220	50	4	30min.	3.00	0.300	1350	0.36	3.00	0.300	3.0 / 450
		1∅240				3.60	0.360		0.39	3.40	0.340	
9BDGG-40□	40	3∅220	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	3∅380	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	
		3∅400	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	
		3∅415	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	
		3∅440	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 r/min	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
			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□ BMH	kgfcm N.m	4.6 0.46	7.0 0.68	8.4 0.82	11.6 1.14	13.9 1.37	17.4 1.71	20.9 2.05	23.2 2.28	29.1 2.85	34.9 3.42	37.8 3.70	52.5 5.15	63.0 6.17	68.5 6.72	76.2 7.46	95.2 9.33	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80

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

50Hz

Motor Model	Gearhead Model	Gear Ratio r/min	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
			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□ BMH	kgfcm N.m	5.6 0.55	8.5 0.83	10.2 1.00	14.1 1.38	16.9 1.66	21.2 2.07	25.4 2.49	28.2 2.77	35.3 3.46	42.3 4.15	45.9 4.50	63.8 6.25	76.5 7.50	83.2 8.16	92.5 9.06	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	100.0 9.80	

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

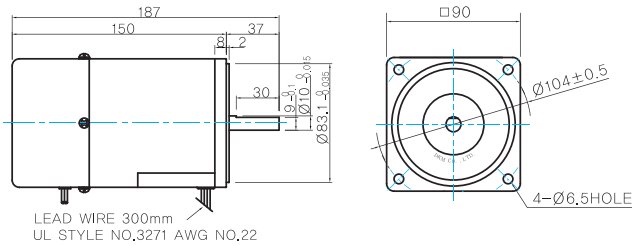
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.

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)

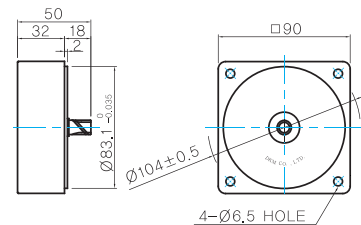


MOTOR OUTPUT SHAFT

MODEL	SPEC
D-CUT TYPE	
KEY TYPE	

INTER-DECIMAL GEARHEAD

- MODEL: 9XD10M□



KEY SPEC

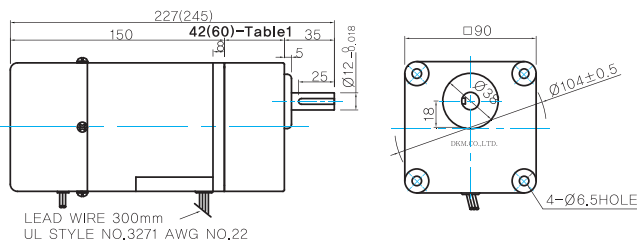
GEARHEAD	

GEARED MOTOR

G TYPE GEARHEAD

- MOTOR MODEL: 9BDG□-40G (NO FAN)

- GEARHEAD MODEL: 9GBK□BMH



GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	

KEY SPEC

GEARHEAD	

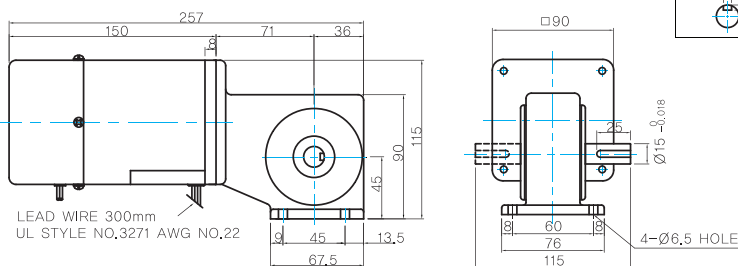
- 42(60)-Table1

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

W TYPE GEARHEAD

- MOTOR MODEL: 9BDW□-40W (NO FAN)

- GEARHEAD MODEL: 9WD□BL/BR/BRL



KEY SPEC

GEARHEAD	

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

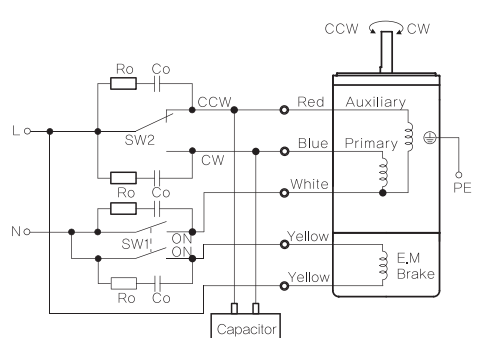
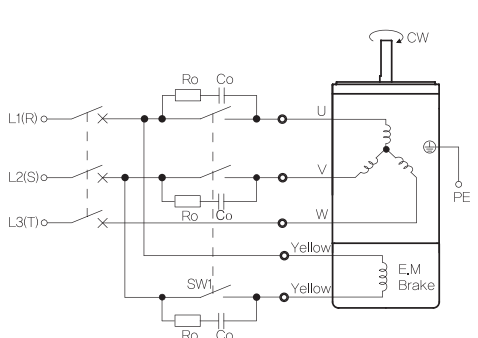
Motor Images



B AC Motors

E.M. Brake Motor 40W (□90mm)

Connection Diagrams

Single Phase	Three Phase																				
 <p>The diagram shows a single-phase AC input (L and N) connected to a motor. The motor has an Auxiliary winding (Red), Primary winding (Blue), and E.M. Brake winding (Yellow). A capacitor is connected between the primary and auxiliary windings. Two switches, SW1 and SW2, are used for control. SW1 is a simultaneous switch for the motor and brake. SW2 is used to select rotation direction: CW (clockwise) or CCW (counterclockwise). Surge suppression components (Ro and Co) are connected to the input lines.</p> <p>* 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.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr style="background-color: #0070C0; color: white;"> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>The diagram shows a three-phase AC input (L1(R), L2(S), L3(T)) connected to a motor. The motor has three main windings (U, V, W) and an E.M. Brake winding (Yellow). A capacitor is connected between the main windings. A switch SW1 is used for simultaneous motor and brake control. Surge suppression components (Ro and Co) are connected to the input lines.</p> <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
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- 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 60W (□90mm)

60W

Electromagnetic
Brake Motor
60W(□90mm)

Motor Specification

Model 9BDG*-60F□: Gear Type Shaft 9BDD*-60F: D-Cut Type Shaft 9BDK*-60F: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load				Capacitor μF / VAC
								Speed r/min	Current A	Torque		
										kgfcm	N.m	
9BDGA-60F□	60	1∅110	60	4	30min.	5.20	0.520	1600	1.60	5.00	0.500	20.0 / 250
9BDGD-60F□	60	1∅220	60	4	30min.	5.00	0.500	1600	0.75	4.60	0.460	5.0 / 450
9BDGE-60F□	60	1∅220	50	4	30min.	5.40	0.540	1300	0.59	5.00	0.500	5.0 / 450
		1∅240				6.60	0.660		0.64	5.60	0.560	
9BDGG-60F□	60	3∅220	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	3∅380	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	
		3∅400	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	
		3∅415	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	
		3∅440	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
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	Motor Model	Gearhead Model	Gear Ratio	7.5	10	15	20	25	30	40	50	60	80
			r/min	180	150	120	100	72	60	50	36				30	r/min	240	180	120	90	72	60	45	36
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	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	4.02	4.70	5.66	6.53	8.58	9.70	11.29	14.00	12.00			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
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	Motor Model	Gearhead Model	Gear Ratio	7.5	10	15	20	25	30	40	50	60	80
			r/min	150	125	100	83	60	50	42	30				25	r/min	200	150	100	75	60	50	38	30
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	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	4.50	5.27	6.34	7.31	9.60	10.87	12.64	14.00	12.00			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.

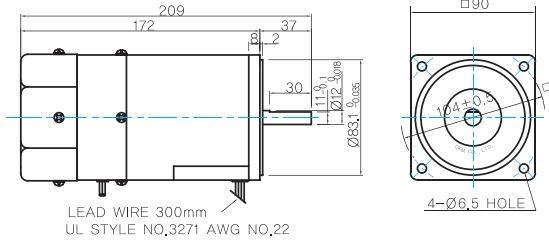
B AC Motors

E.M. Brake Motor 60W (□90mm)

Dimensions

MOTOR ONLY

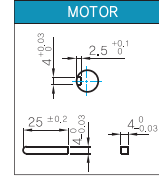
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9BDD□-60F (GENERAL FAN)



MOTOR OUTPUT SHAFT

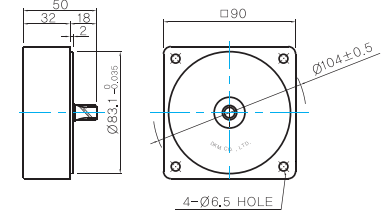
MODEL	SPEC
D-CUT TYPE 9BDD□-60F	
KEY TYPE 9BDD□-60F	

KEY SPEC



INTER-DECIMAL GEARHEAD

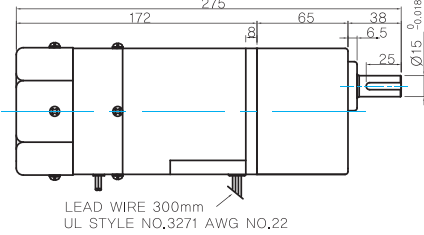
- MODEL:
9XD10M□



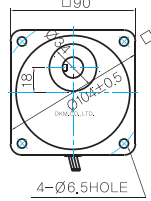
GEARED MOTOR

P TYPE GEARHEAD

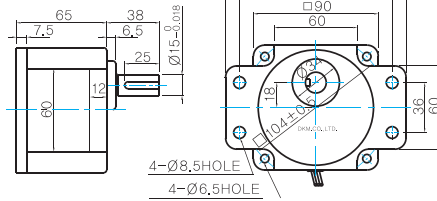
- MOTOR MODEL:
9BDG□-60FP (GENERAL FAN)



- GEARHEAD MODEL:
9PBK□BH



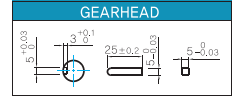
- GEARHEAD MODEL:
9PFK□BH



GEARHEAD OUTPUT SHAFT

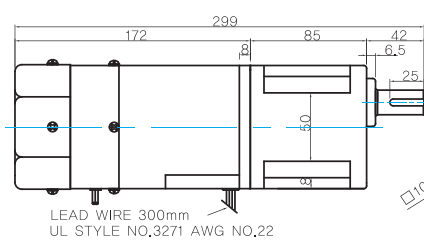
MODEL	SPEC
KEY TYPE 9PBK□BH 9PFK□BH	

KEY SPEC

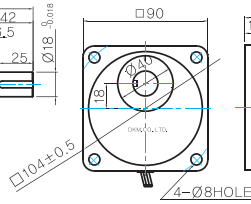


H TYPE GEARHEAD

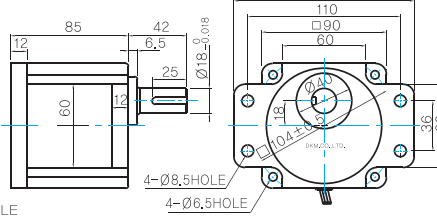
- MOTOR MODEL:
9BDG□-60FH (GENERAL FAN)



- GEARHEAD MODEL:
9HBK□BH



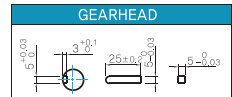
- GEARHEAD MODEL:
9HFK□BH



GEARHEAD OUTPUT SHAFT

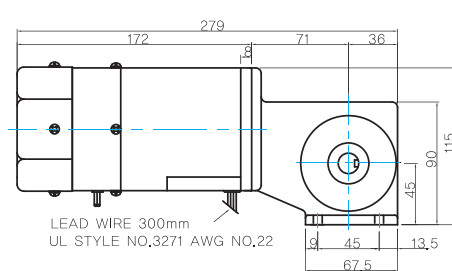
MODEL	SPEC
KEY TYPE 9HBK□BH 9HFK□BH	

KEY SPEC

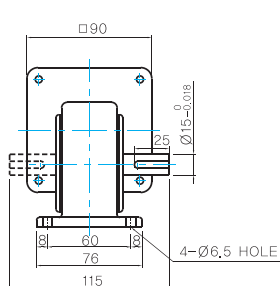


W TYPE GEARHEAD

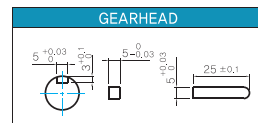
- MOTOR MODEL:
9BDG□-60FW (GENERAL FAN)



- GEARHEAD MODEL:
9WD□BL/BR/BRL

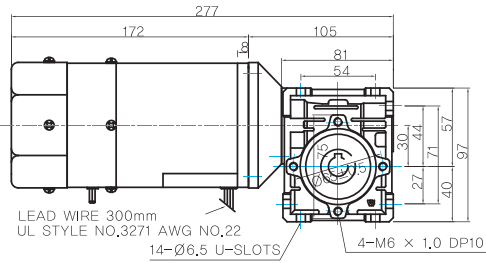


KEY SPEC

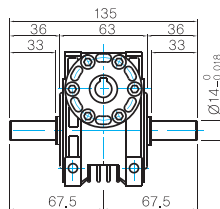


WH TYPE GEARHEAD

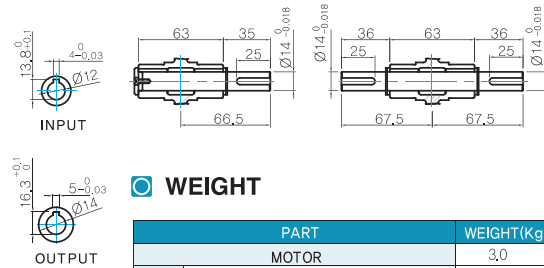
● MOTOR MODEL:
9BDG□-60FWH (GENERAL FAN)



● GEARHEAD MODEL:
9WHD□



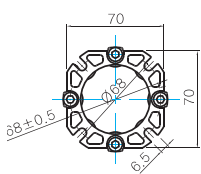
● SHAFT (한방향, 양방향)



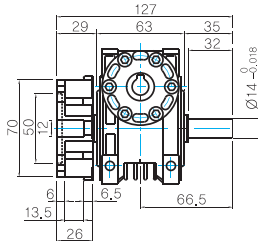
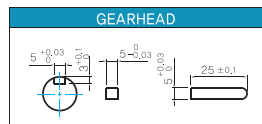
WEIGHT

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

● FLANGE



● KEY SPEC



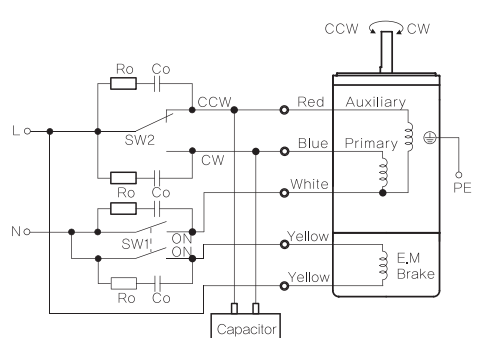
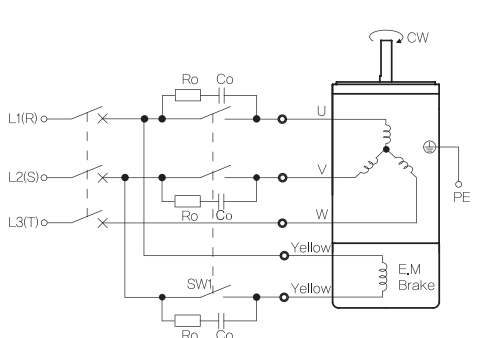
Motor Images



B AC Motors

E.M. Brake Motor 60W (□90mm)

Connection Diagrams

Single Phase	Three Phase																				
 <p>The diagram shows a single-phase AC input (L and N) connected to a motor. The motor has a primary winding (Blue, White) and an auxiliary winding (Red, Yellow). A capacitor is connected between the two windings. Two switches, SW1 and SW2, control the motor. SW1 is a simultaneous switch for the motor and the E.M. Brake. SW2 is used to select the rotation direction: CW (clockwise) or CCW (counterclockwise). Surge suppression components (Ro and Co) are connected in parallel with the motor windings.</p> <p>* 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.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr style="background-color: #0070C0; color: white;"> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>The diagram shows a three-phase AC input (L1(R), L2(S), L3(T)) connected to a motor. The motor has three main windings (U, V, W) and an auxiliary winding (Yellow). A capacitor is connected between the main windings. A switch SW1 controls the motor and the E.M. Brake simultaneously. Surge suppression components (Ro and Co) are connected in parallel with the motor windings.</p> <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
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SW1	AC 125V 3A minimum (Inductive load)	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously																		
SW2			-																		
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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, 200W (400WV)]

E.M. Brake Motor 90W (□90mm)

90W

Electromagnetic
Brake Motor
90W(□90mm)

Motor Specification

Model 9BDG*-90F□: Gear Type Shaft 9BDD*-90F: D-Cut Type Shaft 9BDK*-90F: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load				Capacitor μF / VAC		
								Speed		Current			Torque	
								r/min	A	kgfcm	N.m			
9BDGA-90F□	90	1∅110	60	4	30min.	6.60	0.660	1600	2.00	6.40	0.640	25.0 / 250		
9BDGD-90F□	90	1∅220	60	4	30min.	6.00	0.600	1600	0.97	6.60	0.660	6.0 / 450		
9BDGE-90F□	90	1∅220	50	4	30min.	6.40	0.640	1250	0.90	7.80	0.780	6.0 / 450		
		1∅240				7.80	0.780		1.00	8.90	0.890			
9BDGG-90F□	90	3∅220	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	3∅380	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			
		3∅400	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			
		3∅415	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			
		3∅440	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 r/min	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
9BDG□ -90FP	9PBK□BH 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 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	
		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	

Motor Model	Gearhead Model	Gear Ratio r/min	Gear Ratio						Motor Model	Gearhead Model	Gear Ratio r/min	Gear Ratio												
			10	12	15	18	25	30				36	50	60	7.5	10	15	20	25	30	40	50	60	80
9BDG□ -90FW	9WD□BL/ □BR/□BRL	kgfcm	56.6	66.2	79.7	91.9	120.8	136.6	153.1	142.9	122.4	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	5.54	6.49	7.81	9.01	11.83	13.39	15.00	14.00	12.00			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 r/min	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
9BDG□ -90FP	9PBK□BH 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
		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
9BDG□ -90FH	9HBK□BH 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
		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

Motor Model	Gearhead Model	Gear Ratio r/min	Gear Ratio						Motor Model	Gearhead Model	Gear Ratio r/min	Gear Ratio												
			10	12	15	18	25	30				36	50	60	7.5	10	15	20	25	30	40	50	60	80
9BDG□ -90FW	9WD□BL/ □BR/□BRL	kgfcm	64.0	74.9	90.1	103.9	136.5	154.4	153.1	142.9	122.4	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	6.27	7.34	8.83	10.18	13.38	15.14	15.00	14.00	12.00			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.

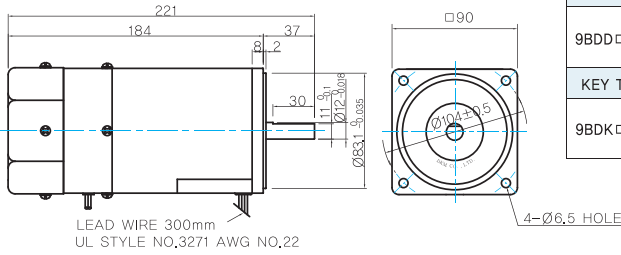
B AC Motors

E.M. Brake Motor 90W (□90mm)

Dimensions

MOTOR ONLY

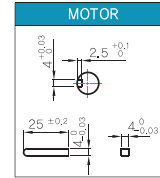
- MOTOR MODEL:
9BDD□-90F (GENERAL FAN)



MOTOR OUTPUT SHAFT

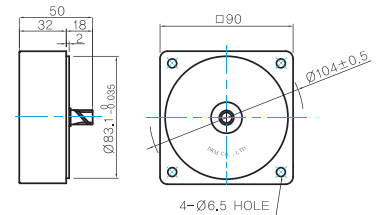
MODEL	SPEC
D-CUT TYPE	
9BDD□-90F	
KEY TYPE	
9BDK□-90F	

KEY SPEC



INTER-DECIMAL GEARHEAD

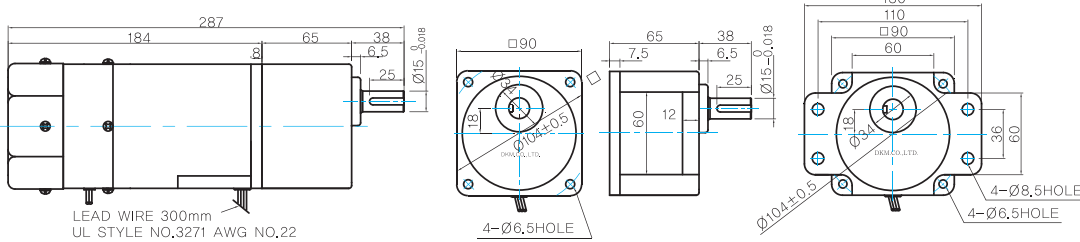
- MODEL:
9XD10M□



GEARED MOTOR

P TYPE GEARHEAD

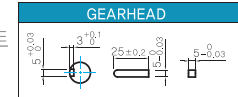
- MOTOR MODEL:
9BDG□-90FP (GENERAL FAN)
- GEARHEAD MODEL:
9PBK□BH
- GEARHEAD MODEL:
9PFK□BH



GEARHEAD OUTPUT SHAFT

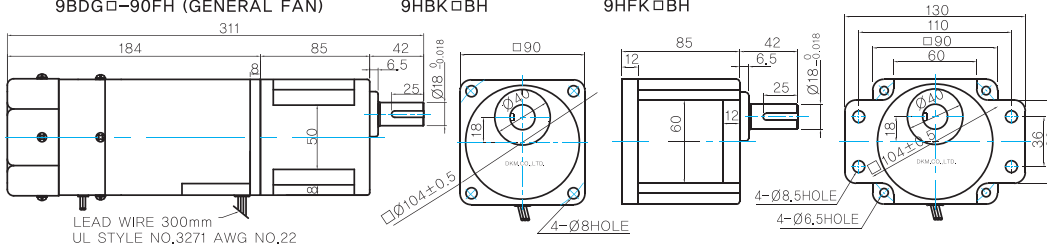
MODEL	SPEC
KEY TYPE	
9PBK□BH	
9PFK□BH	

KEY SPEC



H TYPE GEARHEAD

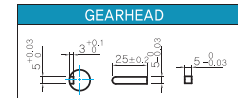
- MOTOR MODEL:
9BDG□-90FH (GENERAL FAN)
- GEARHEAD MODEL:
9HBK□BH
- GEARHEAD MODEL:
9HFK□BH



GEARHEAD OUTPUT SHAFT

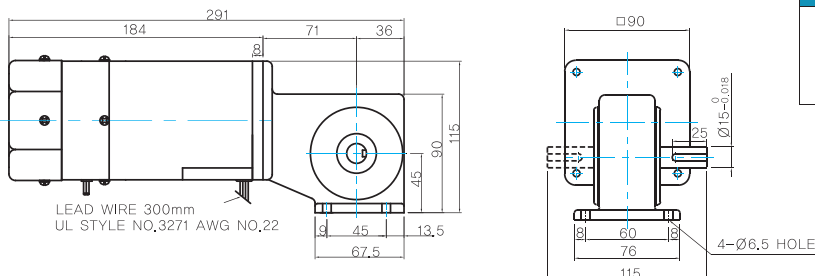
MODEL	SPEC
KEY TYPE	
9HBK□BH	
9HFK□BH	

KEY SPEC

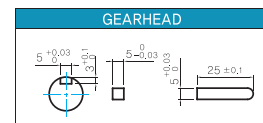


W TYPE GEARHEAD

- MOTOR MODEL:
9BDG□-90FW (GENERAL FAN)
- GEARHEAD MODEL:
9WD□BL/BR/BRL

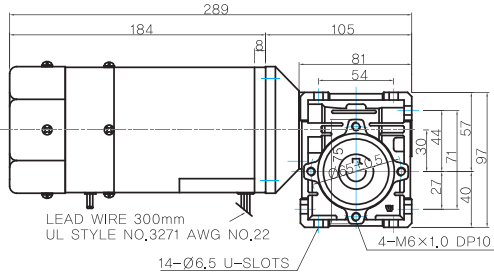


KEY SPEC

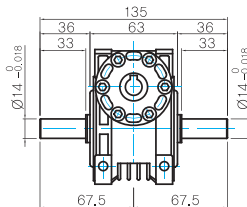


WH TYPE GEARHEAD

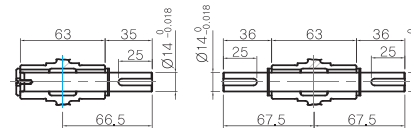
- MOTOR MODEL:
9BDG□-90FWH (GENERAL FAN)



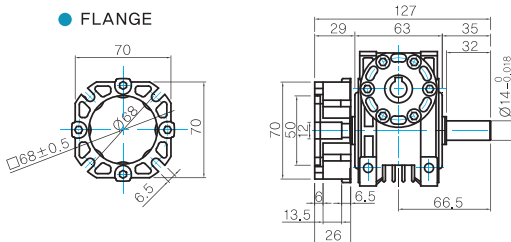
- GEARHEAD MODEL:
9WHD□



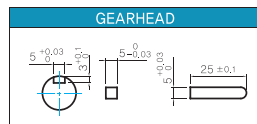
- SHAFT (Unidirectional, Bi-directional)



- FLANGE



- KEY SPEC



WEIGHT

	PART	WEIGHT(Kg)
GEAR HEAD	MOTOR	3,5
	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.

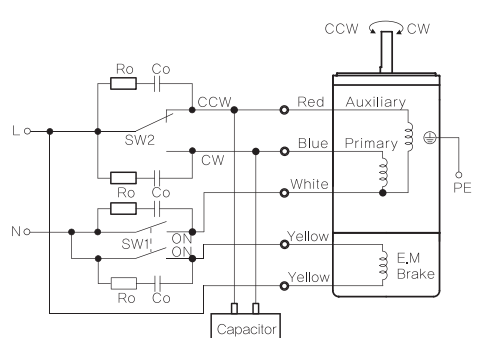
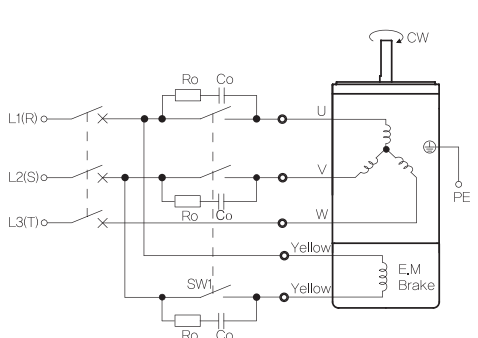
Motor Images



B AC Motors

E.M. Brake Motor 90W (□90mm)

Connection Diagrams

Single Phase	Three Phase																				
 <p>The diagram shows a single-phase AC input (L and N) connected to a motor. The motor has an Auxiliary winding (Red), Primary winding (Blue), and E.M. Brake winding (Yellow). A capacitor is connected between the Yellow wires. Two switches, SW1 and SW2, are used for control. SW2 is connected to the Auxiliary winding and the capacitor. SW1 is connected to the Primary winding and the E.M. Brake winding. Surge suppression components (Ro and Co) are shown in parallel with the motor windings.</p> <p>* 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.</p> <table border="1"> <thead> <tr> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>The diagram shows a three-phase AC input (L1(R), L2(S), L3(T)) connected to a motor. The motor has three main windings (U, V, W) and an E.M. Brake winding (Yellow). A capacitor is connected between the Yellow wires. A switch SW1 is connected to the E.M. Brake winding. Surge suppression components (Ro and Co) are shown in parallel with the motor windings.</p> <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1"> <thead> <tr> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
Switch No.		Specifications			Note																
	Single Phase 110V/115V Input	Single Phase 220V/230V Input																			
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SW2			-																		
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, 200W (400W)]

E.M. Brake Motor 120W (□90mm)

120W

Electromagnetic
Brake Motor
120W(□90mm)

Motor Specification

Model 9BDG*-120F□: Gear Type Shaft 9BDD*-120F: D-Cut Type Shaft 9BDK*-120F: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load				Capacitor μF / VAC
						kgfcm	N.m	Speed r/min	Current A	Torque kgfcm N.m		
9BDGA-120F□	120	1∅110	60	4	30min.	7.60	0.760	1550	2.50	7.60	0.760	30.0 / 250
9BDGD-120F□	120	1∅220	60	4	30min.	6.60	0.660	1600	1.10	7.40	0.740	6.5 / 450
9BDGE-120F□	120	1∅220	50	4	30min.	6.40	0.640	1250	1.00	9.40	0.940	6.5 / 450
		1∅240				7.80	0.780		1.10	10.20	1.020	
9BDGG-120F□	120	3∅220	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	3∅380	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	
		3∅400	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	
		3∅415	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	
		3∅440	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	r/min																						
			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
9BDG□ -120FP	9PBK□BH 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 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	r/min						Motor Model	Gearhead Model	Gear Ratio	r/min												
			10	12	15	18	25	30				7.5	10	15	20	25	30	40	50	60	80			
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	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	5.95	6.96	8.38	9.66	12.69	14.36	15.00	14.00	12.00			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	r/min																						
			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
9BDG□ -120FP	9PBK□BH 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 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	r/min						Motor Model	Gearhead Model	Gear Ratio	r/min												
			10	12	15	18	25	30				7.5	10	15	20	25	30	40	50	60	80			
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	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	7.55	8.84	10.64	12.27	14.00	16.00	15.00	14.00	12.00			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.

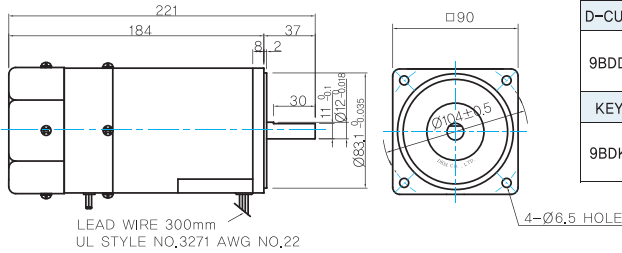
4) The rotating speed is calculated by dividing the motor's synchronous speed (50Hz: 1,500r/min, 60Hz: 1,800r/min) by the gear ratio.

The actual speed is 2~20% less than the displayed value, depending on the size of the load.

Dimensions

MOTOR ONLY

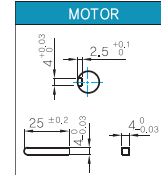
- MOTOR MODEL: 9BDD□-120F (GENERAL FAN)



MOTOR OUTPUT SHAFT

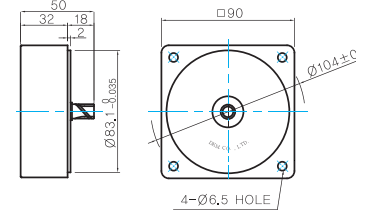
MODEL	SPEC
D-CUT TYPE	37 30 11.7 ^{+0.1} Ø12.0 ^{+0.018}
KEY TYPE	37 25 Ø12.0 ^{+0.018}

KEY SPEC



INTER-DECIMAL GEARHEAD

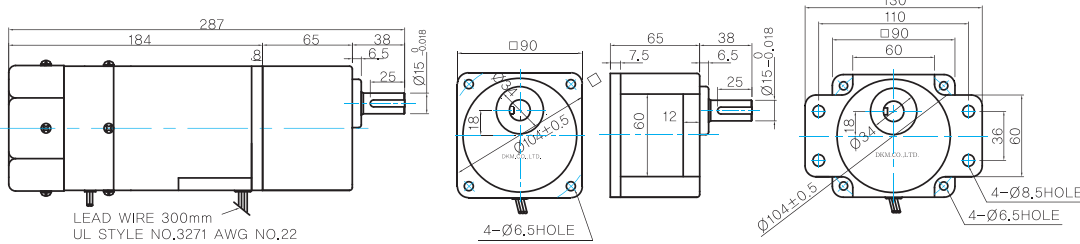
- MODEL: 9XD10M□



GEARED MOTOR

P TYPE GEARHEAD

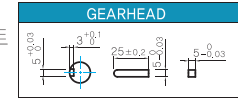
- MOTOR MODEL: 9BDG□-120FP (GENERAL FAN)
- GEARHEAD MODEL: 9PBK□BH
- GEARHEAD MODEL: 9PFK□BH



GEARHEAD OUTPUT SHAFT

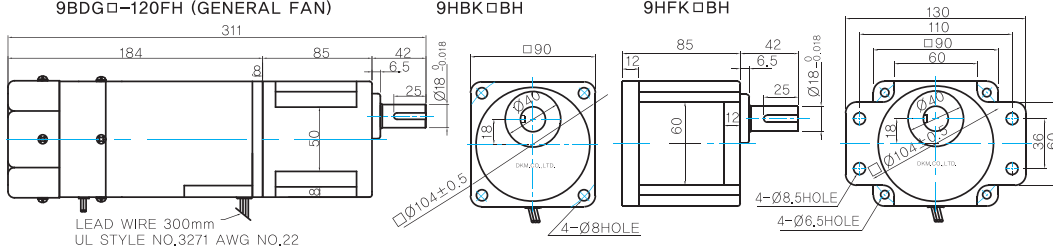
MODEL	SPEC
KEY TYPE	38 25 Ø15.0 ^{+0.018}

KEY SPEC



H TYPE GEARHEAD

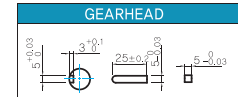
- MOTOR MODEL: 9BDG□-120FH (GENERAL FAN)
- GEARHEAD MODEL: 9HBK□BH
- GEARHEAD MODEL: 9HFK□BH



GEARHEAD OUTPUT SHAFT

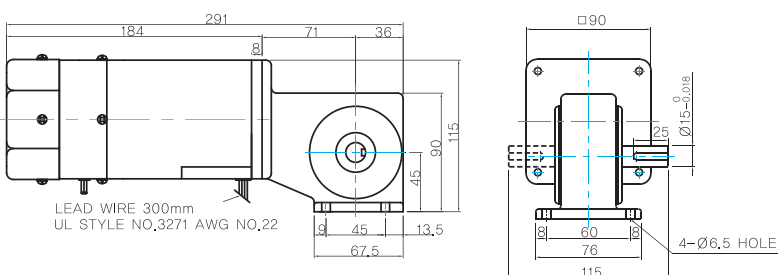
MODEL	SPEC
KEY TYPE	42 25 Ø18.0 ^{+0.018}

KEY SPEC

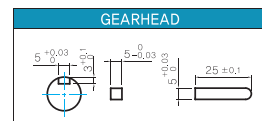


W TYPE GEARHEAD

- MOTOR MODEL: 9BDG□-120FW (GENERAL FAN)
- GEARHEAD MODEL: 9WD□BL/BR/BRL

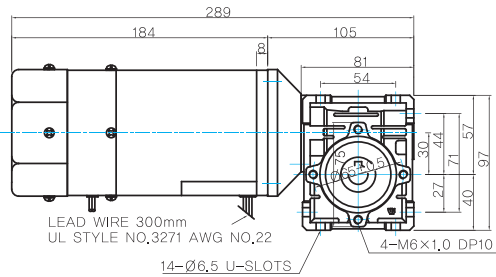


KEY SPEC

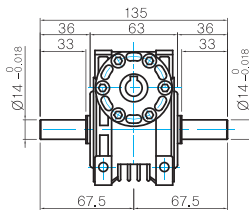


WH TYPE GEARHEAD

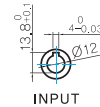
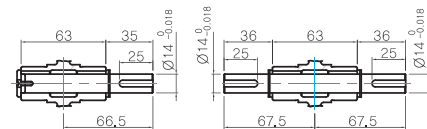
- MOTOR MODEL:
9BDG□-120FWH (GENERAL FAN)



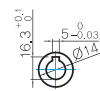
- GEARHEAD MODEL:
9WHD□



- SHAFT(Unidirectional, Bi-directional)



INPUT

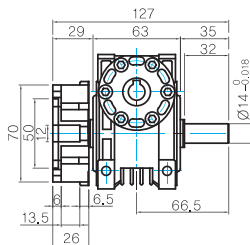
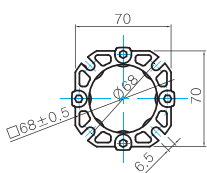


OUTPUT

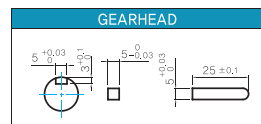
WEIGHT

	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

- FLANGE



- KEY SPEC



* The output flange and shafts are sold separately.

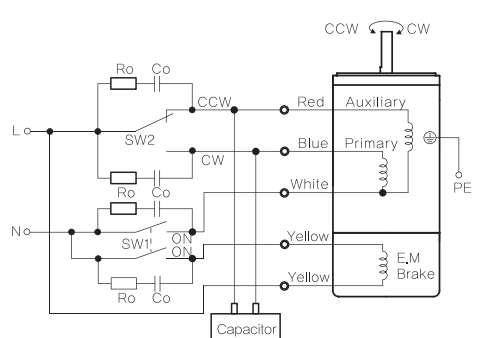
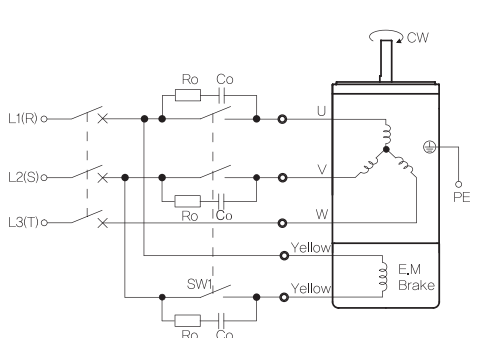
Motor Images



B AC Motors

E.M. Brake Motor 120W (□90mm)

Connection Diagrams

Single Phase	Three Phase																				
 <p>The diagram shows a single-phase AC input (L and N) connected to a motor. The motor has an Auxiliary winding (Red), Primary winding (Blue), and E.M. Brake winding (Yellow). A capacitor is connected between the primary and auxiliary windings. Two switches, SW1 and SW2, control the motor. SW1 is a simultaneous switch for the motor and brake. SW2 is a selector switch for rotation direction (CW or CCW). Surge suppression components (Ro and Co) are connected to the input lines.</p> <p>* 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.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th rowspan="2">Switch No.</th> <th colspan="2">Specifications</th> <th rowspan="2">Note</th> </tr> <tr style="background-color: #0070C0; color: white;"> <th>Single Phase 110V/115V Input</th> <th>Single Phase 220V/230V Input</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 125V 3A minimum (Inductive load)</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> <tr> <td>SW2</td> <td></td> <td></td> <td>-</td> </tr> </tbody> </table>	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			-	 <p>The diagram shows a three-phase AC input (L1(R), L2(S), L3(T)) connected to a motor. The motor has three main windings (U, V, W) and an E.M. Brake winding (Yellow). A capacitor is connected between the main windings. A switch SW1 controls the motor and brake simultaneously. Surge suppression components (Ro and Co) are connected to the input lines.</p> <p>* CCW Direction: Change any two connections between R, S and T.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr style="background-color: #0070C0; color: white;"> <th>Switch No.</th> <th>Specifications</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>AC 250V 1.5A minimum (Inductive load)</td> <td>Switched Simultaneously</td> </tr> </tbody> </table>	Switch No.	Specifications	Note	SW1	AC 250V 1.5A minimum (Inductive load)	Switched Simultaneously
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			-																		
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, 200W (400WV)]

E.M. Brake Motor 150W (□90mm)

150W

Electromagnetic
Brake Motor
150W(□90mm)

Motor Specification

Model <small>9BDG*-150F□: Gear Type Shaft 9BDD*-150F: D-Cut Type Shaft 9BDK*-150F: Key Type Shaft</small>	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque kgfcm N.m		Rated Load				Capacitor μF / VAC
								Speed r/min	Current A	Torque		
										kgfcm	N.m	
9BDGG-150F□	150	3∅220	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	3∅380	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	
		3∅400	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
9BDG□ -150FH	9HBK□BH 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
9BDG□ -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
9BDG□ -150FH	9HBK□BH 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
9BDG□ -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.

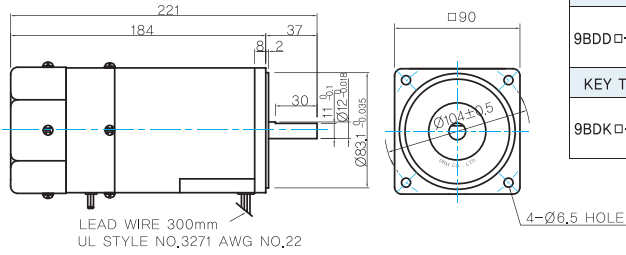
B AC Motors

E.M. Brake Motor 150W (□90mm)

Dimensions

MOTOR ONLY

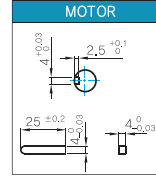
- MOTOR MODEL:
9BDD□-150F (GENERAL FAN)



MOTOR OUTPUT SHAFT

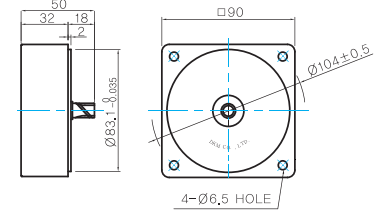
MODEL	SPEC
D-CUT TYPE	
9BDD□-150F	
KEY TYPE	
9BDK□-150F	

KEY SPEC



INTER-DECIMAL GEARHEAD

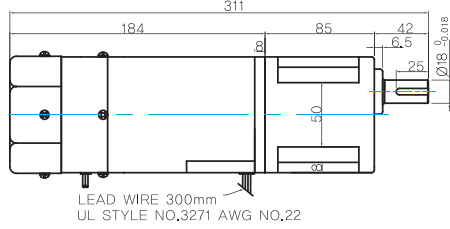
- MODEL:
9XD10M□



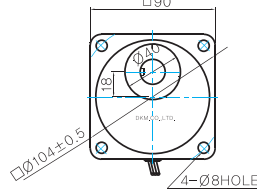
GEARED MOTOR

H TYPE GEARHEAD

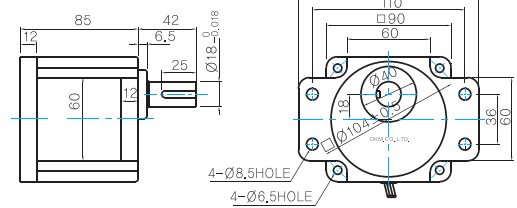
- MOTOR MODEL:
9BDG□-150FH (GENERAL FAN)



- GEARHEAD MODEL:
9HBK□BH



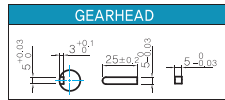
- GEARHEAD MODEL:
9HFK□BH



GEARHEAD OUTPUT SHAFT

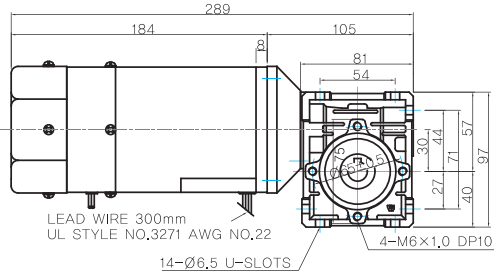
KEY SPEC

MODEL	SPEC
KEY TYPE	
9HBK□BH	
9HFK□BH	

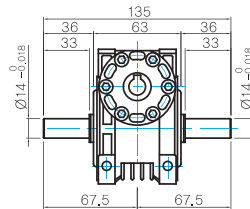


WH TYPE GEARHEAD

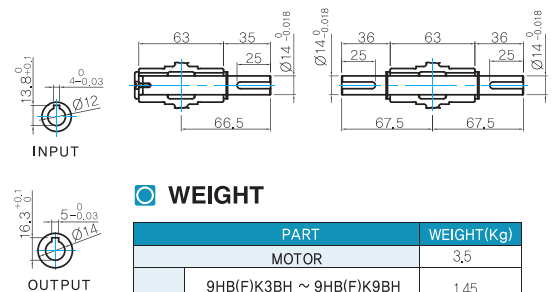
- MOTOR MODEL:
9BDG□-150FWH (GENERAL FAN)



- GEARHEAD MODEL:
9WHD□



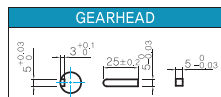
- SHAFT (Unidirectional, Bi-directional)



WEIGHT

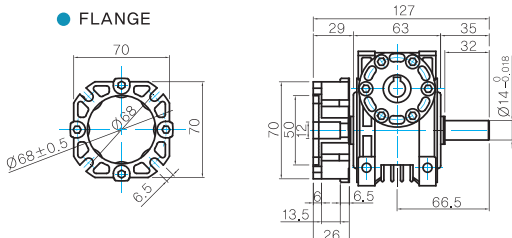
PART	WEIGHT(Kg)	
MOTOR	3,5	
GEAR HEAD	9HB(F)K3BH ~ 9HB(F)K9BH	1,45
	9HB(F)K12.5BH ~ 9HB(F)K18BH	1,5
	9HB(F)K20BH ~ 9HB(F)K60BH	1,7
	9HB(F)K75BH ~ 9HB(F)K180BH	1,8
	9WHD□	1,13
9XD10M□	0,5	

KEY SPEC

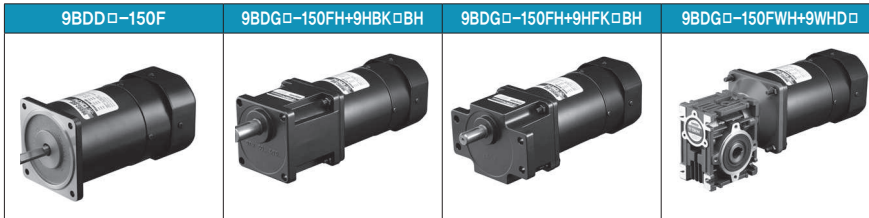


* The output flange and shafts are sold separately.

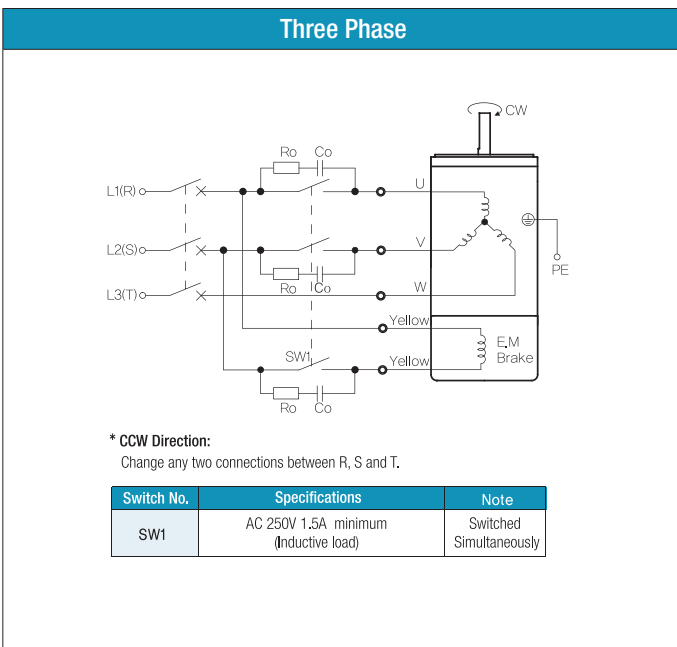
FLANGE



Motor Images



Connection Diagrams



- 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 180W (□90mm)

180W

Electromagnetic
Brake Motor
180W(□90mm)

Motor Specification

Model 9BDG*-180F□: Gear Type Shaft 9BDD*-180F: D-Cut Type Shaft 9BDK*-180F: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load			Capacitor μF / VAC	
						kgfcm	N.m	Speed r/min	Current A	Torque kgfcm N.m		
9BDGD-180F□	180	1∅220	60	4	30min.	7.40	0.740	1550	1.60	11.40	1.140	8.0 / 450
9BDGE-180F□	180	1∅220	50	4	30min.	7.00	0.700	1250	1.50	14.00	1.400	8.0 / 450
		1∅240				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 r/min	3	3.6	6	9	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	
			kgfcm	500	300	200	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	
9BDG□ -180FH	9HBK□BH 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	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	29.40

Motor Model	Gearhead Model	Gear Ratio r/min	7.5	10	15	20	25	30	40	50	60	80
			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 r/min	3	3.6	6	9	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	
			kgfcm	417	250	167	120	100	83	75	60	50	42	30	25	20	17	15	13	10	8	
9BDG□ -180FH	9HBK□BH 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	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	29.40

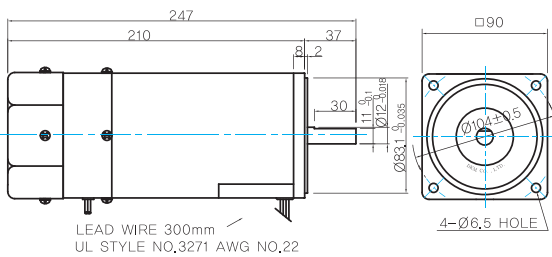
Motor Model	Gearhead Model	Gear Ratio r/min	7.5	10	15	20	25	30	40	50	60	80
			200	150	100	75	60	50	38	30	25	18
9BDG□-180FWH	9WHD□	kgfcm	93.2	119.9	168.7	183.7	214.3	204.1	183.7	173.5	163.3	132.7
		N.m	9.14	11.75	16.53	18.00	21.00	20.00	18.00	17.00	16.00	13.00

- 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

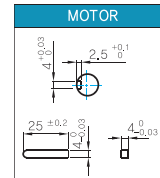
- MOTOR MODEL:
9BDD□-180F (GENERAL FAN)



MOTOR OUTPUT SHAFT

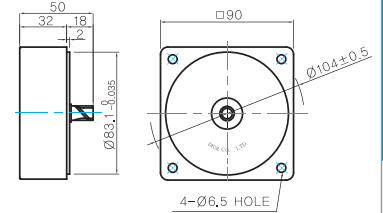
MODEL	SPEC
D-CUT TYPE	
9BDD□-180F	
KEY TYPE	
9BDK□-180F	

KEY SPEC



INTER-DECIMAL GEARHEAD

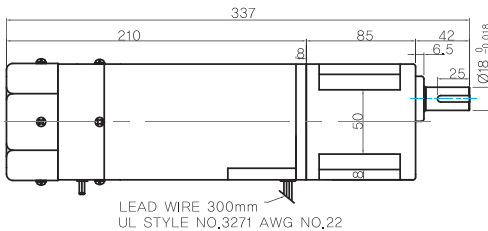
- MODEL:
9XD10M□



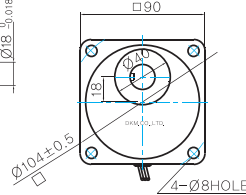
GEARED MOTOR

H TYPE GEARHEAD

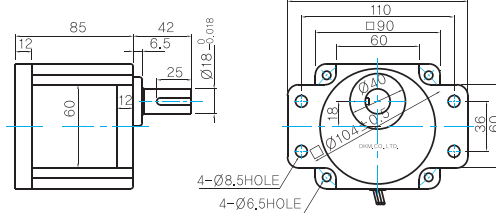
- MOTOR MODEL:
9BDG□-180FH (GENERAL FAN)



- GEARHEAD MODEL:
9HBK□BH

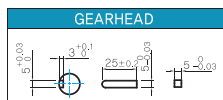


- GEARHEAD MODEL:
9HFK□BH



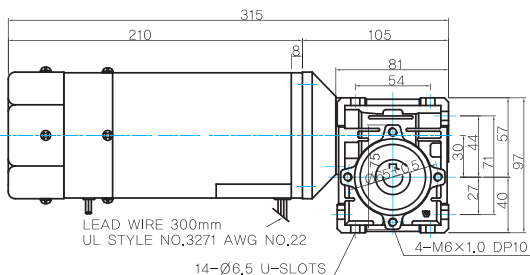
GEARHEAD OUTPUT SHAFT

MODEL	SPEC
KEY TYPE	
9HBK□BH	
9HFK□BH	

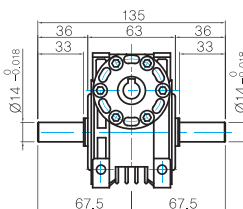


WH TYPE GEARHEAD

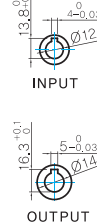
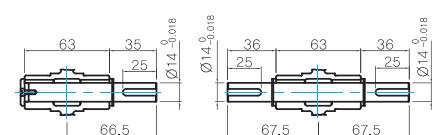
- MOTOR MODEL:
9BDG□-180FWH (GENERAL FAN)



- GEARHEAD MODEL:
9WHD□



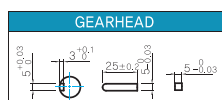
- SHAFT(Unidirectional, Bi-directional)



WEIGHT

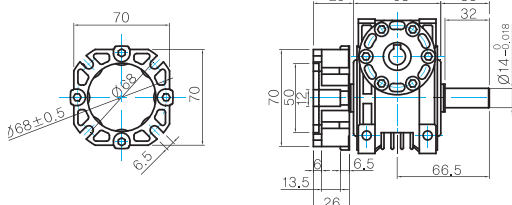
PART		WEIGHT(Kg)
MOTOR		4.3
GEAR HEAD	9HB(F)K3BH ~ 9HB(F)K9BH	1.45
	9HB(F)K12.5BH ~ 9HB(F)K18BH	1.5
	9HB(F)K20BH ~ 9HB(F)K60BH	1.7
	9HB(F)K75BH ~ 9HB(F)K180BH	1.8
	9WHD□	1.13
	9XD10M□	0.5

KEY SPEC



* The output flange and shafts are sold separately.

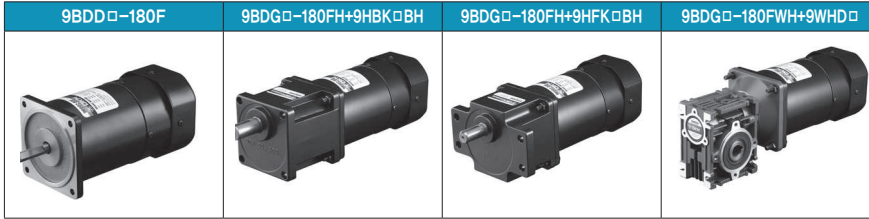
FLANGE



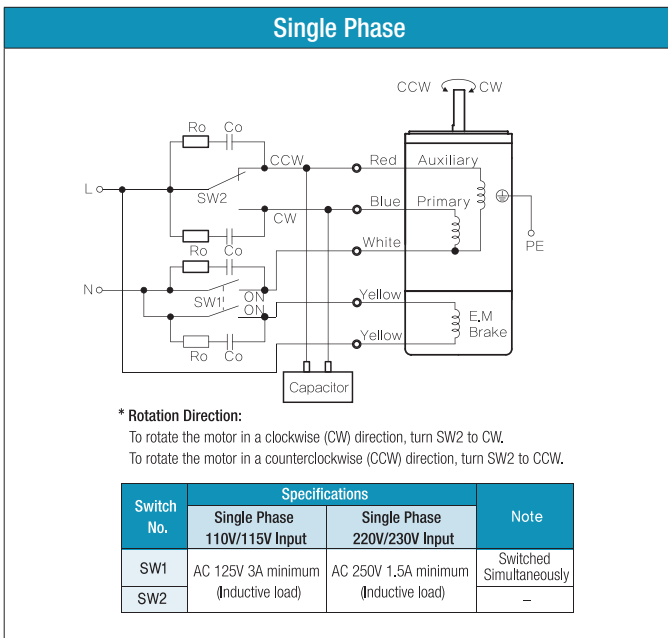
B AC Motors

E.M. Brake Motor 180W (□90mm)

Motor Images



Connection Diagrams



- 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 200W (□90mm)

200W

Electromagnetic
Brake Motor
200W(□90mm)

Motor Specification

Model 9BDG*-200F□: Gear Type Shaft 9BDD*-200F: D-Cut Type Shaft 9BDK*-200F: Key Type Shaft	Output W	Voltage V	Frequency Hz	Poles	Duty	Starting Torque		Rated Load				Capacitor μF / VAC
						kgfcm	N.m	Speed r/min	Current A	Torque kgfcm N.m		
9BDGG-200F□	200	3φ220	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	3φ380	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	
		3φ400	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	Gear Ratio																	
			3	3.6	6	9	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150
9BDG□ -200FH	9HBK□BH 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
		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

Motor Model	Gearhead Model	Gear Ratio	Gear Ratio									
			7.5	10	15	20	25	30	40	50	60	80
9BDG□ -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	Gear Ratio																	
			3	3.6	6	9	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150
9BDG□ -200FH	9HBK□BH 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
		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

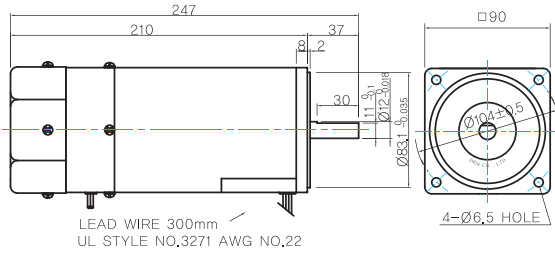
Motor Model	Gearhead Model	Gear Ratio	Gear Ratio									
			7.5	10	15	20	25	30	40	50	60	80
9BDG□ -200FWH	9WHD□	kgfcm	94.5	121.5	171	183.7	214.3	204.1	183.7	173.5	163.3	132.7
		N.m	9.26	11.91	16.76	18.00	21.00	20.00	18.00	17.00	16.00	13.00

- 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.

Dimensions

MOTOR ONLY

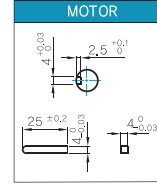
- MOTOR MODEL:
9BDD□-200F (GENERAL FAN)



MOTOR OUTPUT SHAFT

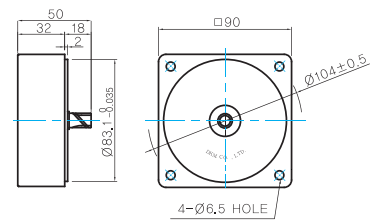
MODEL	SPEC
D-CUT TYPE	
KEY TYPE	
9BDD□-200F	
9BDK□-200F	

KEY SPEC



INTER-DECIMAL GEARHEAD

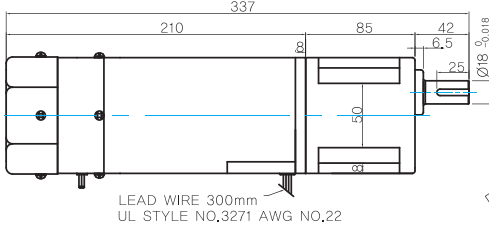
- MODEL:
9XD10M□



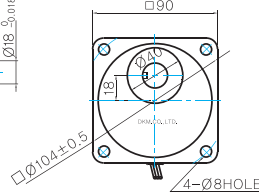
GEARED MOTOR

H TYPE GEARHEAD

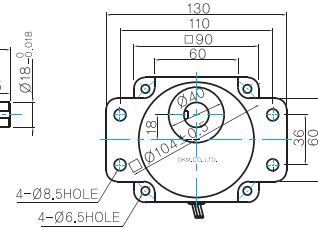
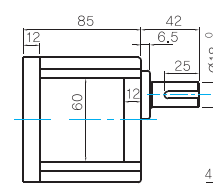
- MOTOR MODEL:
9BDG□-200FH (GENERAL FAN)



- GEARHEAD MODEL:
9HBK□BH



- GEARHEAD MODEL:
9HFK□BH

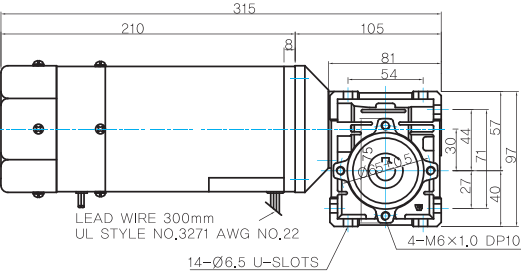


GEARHEAD OUTPUT SHAFT KEY SPEC

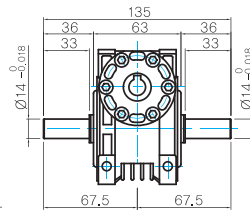
MODEL	SPEC	GEARHEAD
KEY TYPE		
9HBK□BH		
9HFK□BH		

WH TYPE GEARHEAD

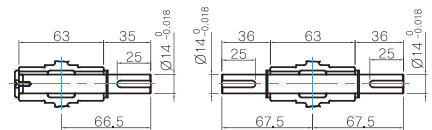
- MOTOR MODEL:
9BDG□-200FWH (GENERAL FAN)



- GEARHEAD MODEL:
9WHD□



- SHAFT (Unidirectional, Bi-directional)



WEIGHT

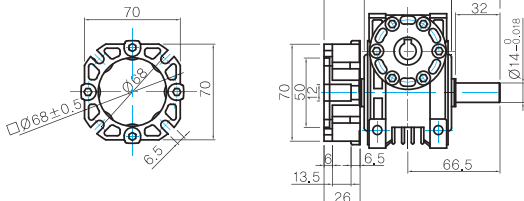
PART	WEIGHT (Kg)	
MOTOR	4.3	
GEAR HEAD	9HB(F)K3BH ~ 9HB(F)K9BH	1.45
	9HB(F)K12.5BH ~ 9HB(F)K18BH	1.5
	9HB(F)K20BH ~ 9HB(F)K60BH	1.7
	9HB(F)K75BH ~ 9HB(F)K180BH	1.8
	9WHD□	1.13
9XD10M□	0.5	

KEY SPEC

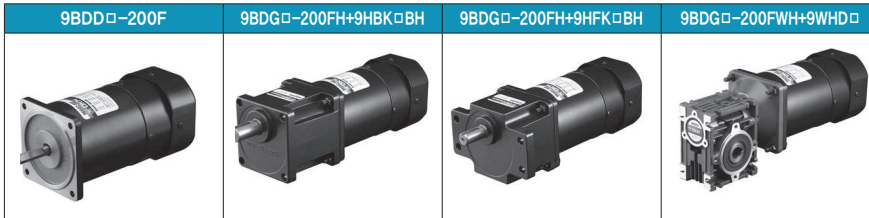
GEARHEAD

* The output flange and shafts are sold separately.

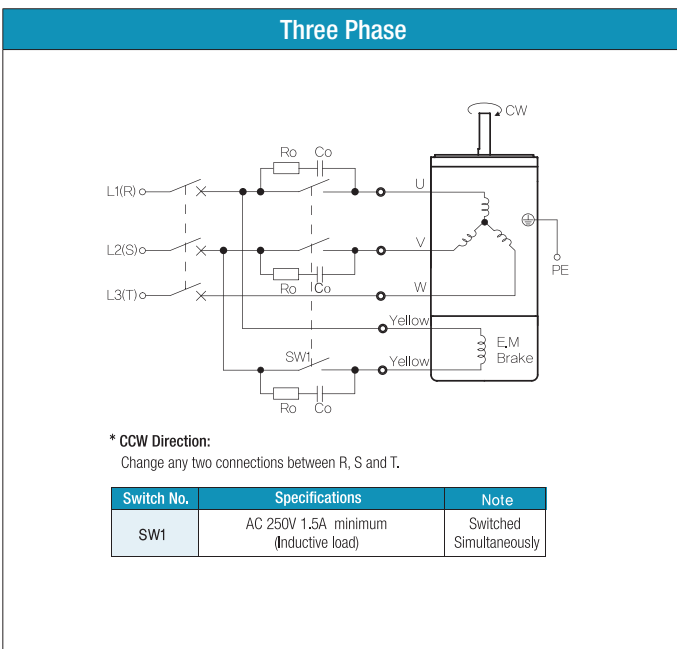
FLANGE



Motor Images



Connection Diagrams



- 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.
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- 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)]



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- E-02** Extension Cable
- E-03** Output Flange / Output Shaft

E Options

Mounting Plate

Mounting Plate

It enables motor/gearhead to be mounted on installation place.

There are mounting plates of frame size □70/80/90mm for motor and gearhead.



Product Code

D BK M - 70

Brand
D : DKM

Product
BK : Bracket

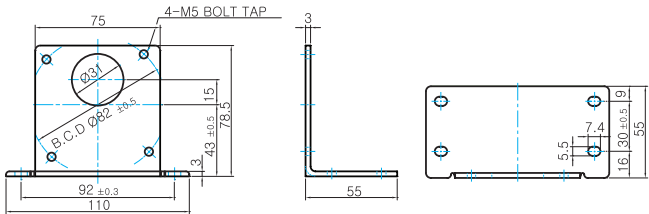
Attaching Item
M : Motor
G : Gearhead

Frame Size
70 : □70mm Motor / Gearhead
80 : □80mm Motor / Gearhead
90 : □90mm Motor / Gearhead

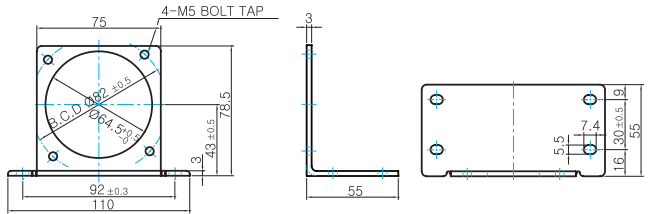
Dimensions

For Frame Size □70mm

● Model: DBKG-70

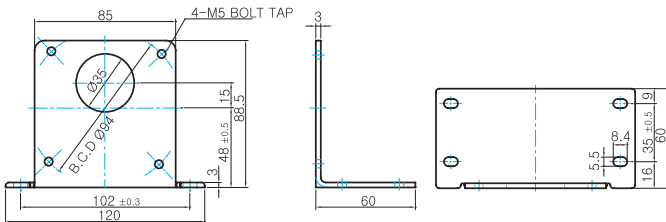


● Model: DBKM-70

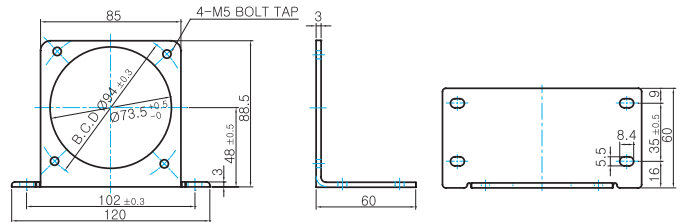


For Frame Size □80mm

● Model: DBKG-80

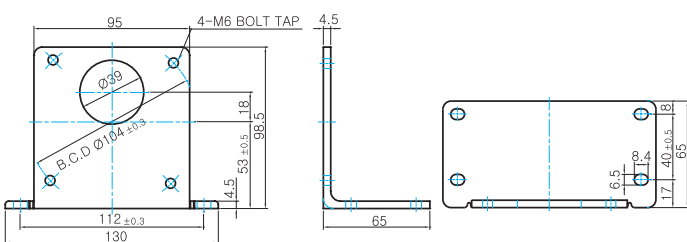


● Model: DBKM-80

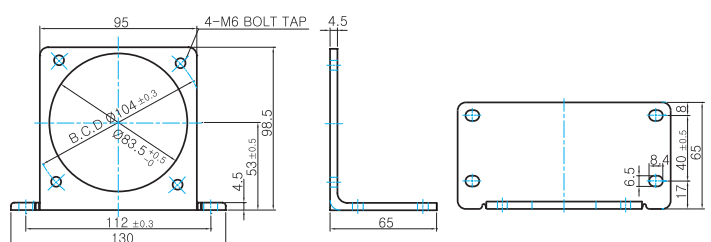


For Frame Size □90mm

● Model: DBKG-90



● Model: DBKM-90

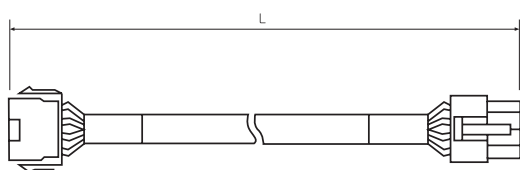


Extension Cable

This is for the connection between speed control motor and speed controller.
 The basic length of extension cable is 0.3m. So if longer needed,
 please order the cable additionally. There are 0.5/1.0/1.5/2.0/3.0/5.0m extension cables.



Dimension



MODEL	Length of cable (L)
DEW-05	0.5m
DEW-10	1.0m
DEW-15	1.5m
DEW-20	2.0m
DEW-30	3.0m
DEW-50	5.0m

E Options

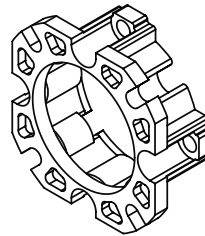
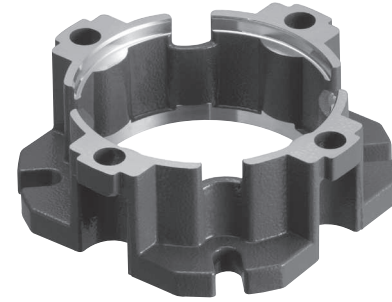
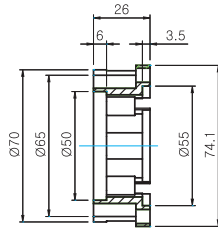
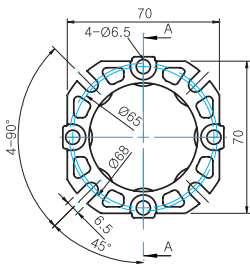
Output Flange / Output Shaft

Output Flange

It is available to fix/install worm hollow type gearhead by attaching output flange to the gearhead.

Dimensions

● MODEL: WHG-030-F

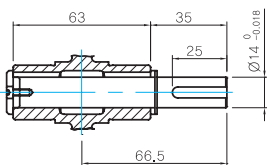


Output Shaft

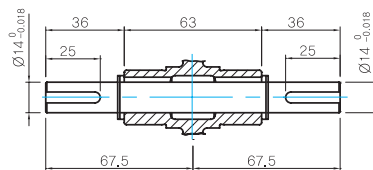
These are output shafts to be attached to worm hollow type gearhead. There are unidirectional output shaft and bi-directional output shaft.

Dimensions

● Unidirectional MODEL: 15X92L



● Bi-directional MODEL: 14X135L



● KEY SPEC

