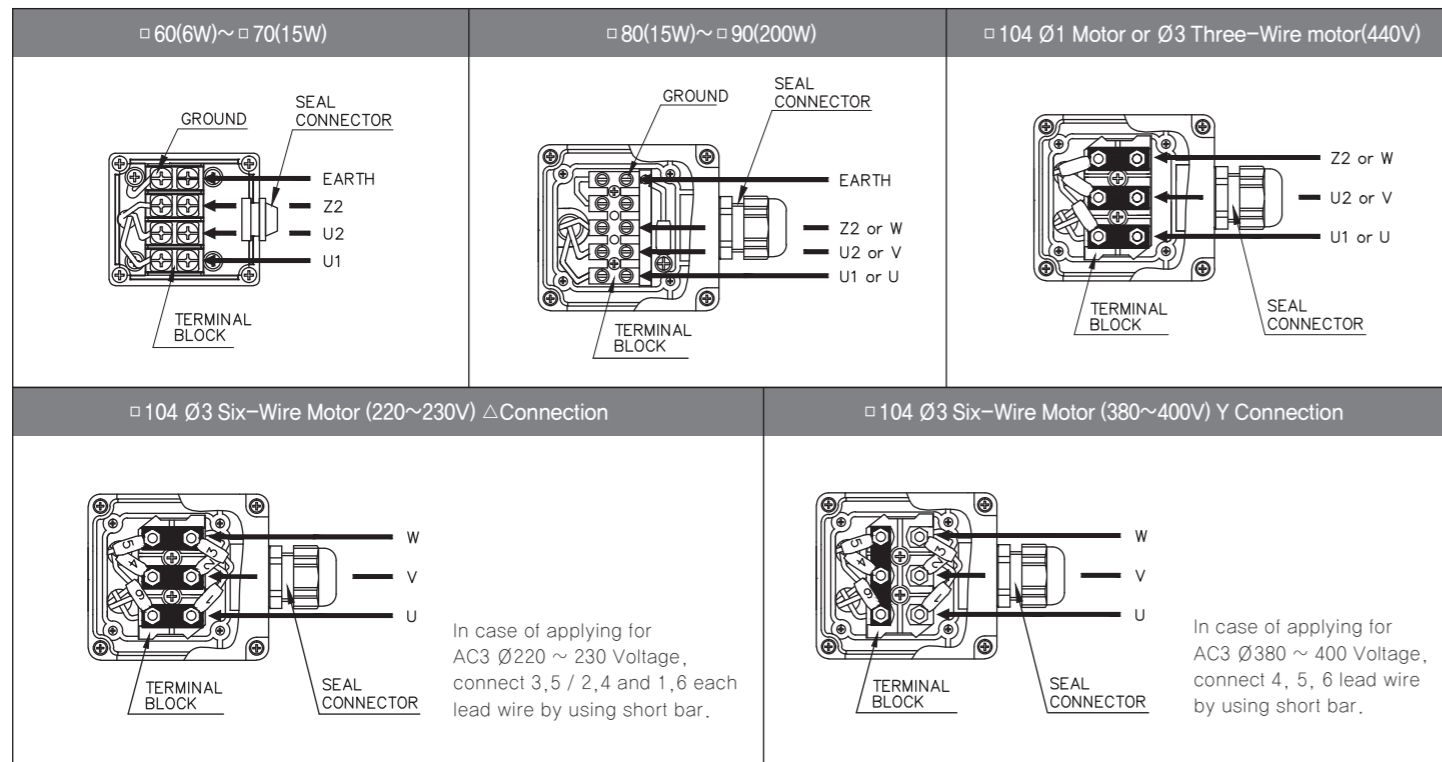


## TERMINAL BOX TYPE MOTOR



## Overheating Protection Device

### Thermal Protector (T.P)

- DKM motor have Thermal Protector (T.P) which prevents the burn-out from wrong overheat. (Optional order)
- If motor overheats for any reason, the Thermal Protector opens and motor stops.
- If motor temperature goes down, motor restarts automatically because it is automatic return type.
- Working temperature of T.P → Opening temp : 120°C±5°C, Closing temp : 90°C±5°C
- Caution) If the inspection is done with motor powered on, the accident can occur by sudden operation of the motor. Please do inspection with motor powered off.

### Impedance Protector

- 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.
- Impedance protector is applied to all of 60mm, 6W Motor and they don't have thermal protector.

## Trouble Shooting

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Is the rated voltage applied to the motor?</li> <li>Is the connection with power correct?</li> <li>Is there too big load for motor capacity?</li> <li>In case of using extension appliance like terminal, Is there no bad connection part?</li> <li>In case of brake motor, is the rated voltage applied to the brake through the lead wire?</li> </ul> | <ul style="list-style-type: none"> <li>Isn't wiring according to wiring diagram?</li> <li>The direction of gearbox shaft rotation may differ depending on the gear ratio of gearbox. For more, please refer to the gearbox manual.</li> <li>Are same pinion specification of motor and gearbox mounted?</li> <li>Is ambient temperature over 40°C (104°F) ?</li> <li>Is capacitor connected according to wiring diagram?</li> </ul> |
|--|---|

## Maintenance or Repair procedures



※ DKM decides whether repair service is free or in charge after defining whether it is caused by user's fault or manufacturer's fault by strict inspection rule.

### Agents Information

- Please visit our website : [www.dkmmotor.com](http://www.dkmmotor.com)

\* For the dimension data and more information, please visit our website and download them.

\* Please be informed that the specification and dimension data could be changed without information for product improvement.

# MOTOR User's Manual

Thanks for using products of DKM Motor Co., Ltd.  
Before using please read this user's manual for the product knowledge and information about safety, handling with care and correct using.  
Also keep this user's manual for your reference at any time.

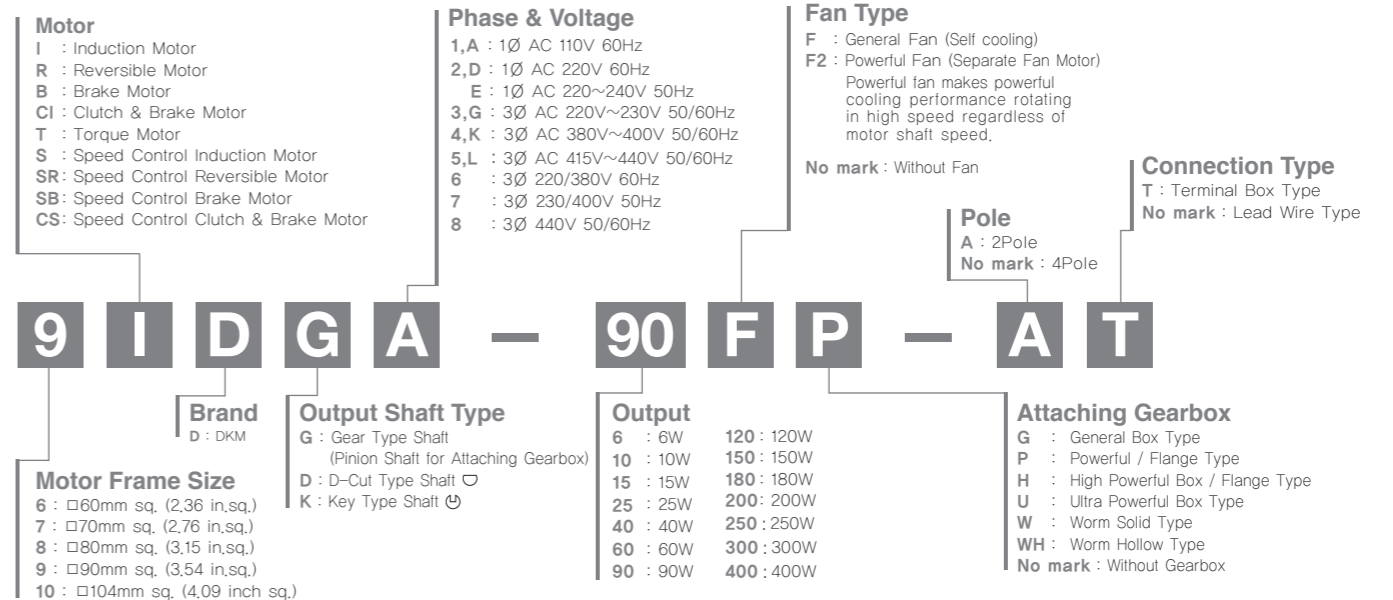


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## Product Coding System



## Check List of Product After Receiving

### Checking the products contents

Make sure that you have received all of the items listed below. If there is any shortage or any damage, please contact the sales department or local agent.  
1) Motor → 1 pc. 2) Capacitor → 1 pc. (for only single-phase motor) 3) This user's manual → 1 pc.

### Checking the specification

Please check the combination of motor and capacitor whether they are appropriate or not. For checking this point, please refer to the specification like model name, voltage, output and capacitor capacity in product label.

### Checking the model name

Please check the model name in 'Product Coding System' and if there is any problem or difference, contact the sales point.

## Caution Point in Installation and Operation

### Caution in installation

- Do not install motor in near explosive material, inflammable gas, corrosive material and water splashing area.
- Do not force to bend, push or pull the lead wire.
- Install the protection appliance(Encloser) for avoiding touch by hand. In the condition of touch by hand, install the protection earth without fail by using its terminal.
- It is not possible to use inverter for three phase 380~440V motor. When inverter is used, the insulation of winding coil becomes hot and may cause damage to the motor.
- Make installation by an engineer who has expert knowledge.

### Caution in operation

- The temperature of motor surface may exceed 90°C, so do not touch the motor in running and do not touch the motor for some time after running. There is worry for a burn. Put the caution sticker on visible place in case of the possibility of approaching motor.
- Turn off the power without fail before inspecting motor has overheat protection appliance (Thermal Protector) because the motor attached with T.P runs automatically if the temperature goes down to fixed temperature.

### ☉ Daily inspection after the installation

- Our products are shipped under the strict quality control. However, there are possibility that some problems come up such as noise or vibration due to carelessness on the installation or other reasons. Please do daily inspection of the products to prevent a secondary damage. If there is a risk of the problem, contact us anytime.

### Rated Running Time

#### ☉ Induction Motor, Clutch & Brake Motor, 2Pole Motor, Speed Control Induction Motor, Speed Control Clutch & Brake Motor.

- The continuous running is available.
- ※ In case that Motor's output is more than 60W for speed control Induction Motor, Continuous running is available for only powerful fan(F2) type and 30 minutes is rated duty for general fan (F) type.

#### ☉ Reversible Motor, EM Brake Motor, Speed Control Reversible Motor, Speed Control EM Brake Motor

- The recommended running time is 30min, printed in product label.

#### ☉ Torque Motor

- The recommended running time is 5min. (As decreasing the voltage, running time could be extended.)

### Installation

#### ☉ Install motor and capacitor in place with below condition

Otherwise it can get damaged.

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Inside of a house</li> <li>Ambient temperature <math>-10^{\circ}\text{C} \sim +40^{\circ}\text{C}</math> (non-freezing)</li> <li>Ambient humidity : same and less than 85% (non-condensing)</li> <li>No influence from explosive gas, inflammable gas and corrosive gas.</li> <li>No influence from continuous vibration, excessive impact</li> </ul> | <ul style="list-style-type: none"> <li>No direct ray of the sun</li> <li>No splashing water and oil</li> <li>No dust</li> <li>Good radiation of heat</li> <li>The altitude : same and less than 1,000m</li> </ul> |
|--|---|

#### ☉ Installation of motor

☉ Installation of motor and gearbox

Screw provided with Gearbox (BOLT)

Nut

Frame size	Screw Type	Recommended Torque for Screw-in
60mm	M4	2.0N.m (20kgfcm)
70mm	M5	2.5N.m (25kgfcm)
80mm	M5	2.5N.m (25kgfcm)
90mm	M6	3.0N.m (30kgfcm)
104mm	M8	6.0N.m (60kgfcm)

Make holes in mounting plate and fix motor and gearbox on the mounting plate by using 4 pcs of screw provided with Gearbox. Be sure that there should be no-gap between motor flange and gearbox assembly plate. For more information in detail please refer to gearbox user's manual. Caution) Please make assembly of same pinion specification of motor and gearbox.

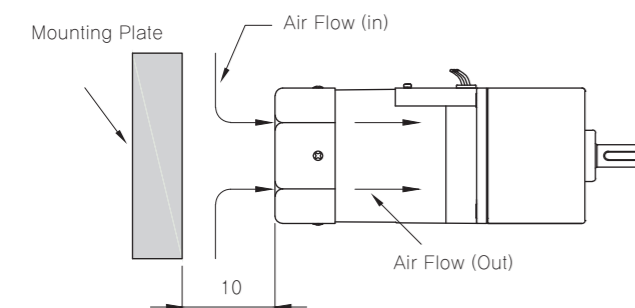
☉ Installation of motor only

BOLT

Nut

Make holes in mounting plate and fix motor on the mounting plate by using bolt, nut, and washer. Be sure that there should be no-gap between motor flange and mounting plate. Caution) Do not input motor slantly or by force into the mounting plate, otherwise, motor can be damaged by the gap.

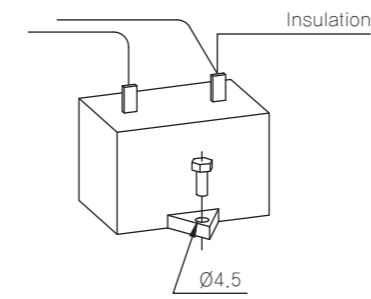
#### ☉ The motor with cooling fan



Make the gap by min. 10mm or ventilation hole on rear side of motor

Caution) If the air flowing space is blocked, it can be a reason of breakdown or shortage in life time.

### ☉ Installation of capacitor and Insulation of connection part



#### ☉ Capacitor installation

- Check the capacitor specification if it is same as that of motor label and install the capacitor.
- Use M4 screw for installing capacitor. (That screw is not provided.)
- Caution) Don't exceed 1N.m (10kgfcm) as a installing torque of the screw so that the frame could not be destroyed, and install capacitor at the place away 10cm from motor. Otherwise the length of capacitor life could be shortened.

#### ☉ Insulation of connecting part

- Make the insulation for all connecting part like lead wire, power input part, capacitor terminal part and so on.
- Caution) For the treatment of insulation of all connecting parts, please do it in the power-off situation. Otherwise there could be electric shock or another accident.

### Connection and the way of Running

#### ☉ Wiring diagram

- The direction of motor rotation is as viewed from the shaft and of motor. CW represents the clockwise direction, while CCW represents the counterclockwise direction.
- This diagram is the basic diagram. So in case of connection of speed control motor to speed controller, please refer to the manual of the speed controller.

INDUCTION, REVERSIBLE MOTOR		CLUTCH & BRAKE MOTOR
Single phase (CW, CCW)	Three phase (CW, CCW)	
	To change the rotation direction, change any connections among U, V and W.	Clutch & Brake Motors employ Induction Motor, so please refer to the connection diagram of induction motor.

BRAKE MOTOR					
Single phase (CW, CCW)	Three phase (CW, CCW)				
	Electromagnetic BRAKE				
	Electromagnetic BRAKE				
	<table border="1"> <thead> <tr> <th>Switch number</th> <th>Specifications</th> </tr> </thead> <tbody> <tr> <td>SW1</td> <td>250Vac 1.5A minimum (Inductive load)</td> </tr> </tbody> </table>	Switch number	Specifications	SW1	250Vac 1.5A minimum (Inductive load)
Switch number	Specifications				
SW1	250Vac 1.5A minimum (Inductive load)				
Direction of rotation	<ul style="list-style-type: none"> <li>To rotate motor in a CCW direction, change any two connection among U, V and W.</li> <li>The Brake input voltage is 220V~240V for 104mm Brake Motor (10BD □ □ - □ F □ - T) Be careful not to input more than 240V</li> </ul>				
<ul style="list-style-type: none"> <li>SW1 operates both motor and electromagnetic brake action.</li> <li>The electromanetic 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.</li> <li>If you wish to release the brake while the motor is stopped, apply voltage between the two brake lead wires (yellow)</li> <li>Ro and Co indicate CR circuit for surge suppression. [ Ro=5~200Ω, Co=0.1~0.2uF, 200WV(400WV) ]</li> </ul>					

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

Caution) The insulation class of motor is class 'B' [130°C (266°F)]. Check the temperature on surface of running motor if it exceeds 90°C(194°F) or not. if it exceeds 90°C(194°F), the winding and ball bearing will be weakened and the length of life will be shortened. By attaching the thermometer on the surface of motor, the temperature can be measured. For single-phase motor, please connect the provided capacitor for start and keep connecting continuously after starting.