

Thank you for buying GGM products.

Before use this product, read well manual certainly and understand all about knowledge, safety information and cautions of product, and use right way. After read, please be sure to keep fixed place to refer at anytime.

1. Confirmation at product arrival

1-1 Confirmation for product

Confirm following parts whether were equipped all.

In case of insufficient or was damaged, please contact our sales representative or distributor.

- Motor 1unit
- Manual(this booklet) 1 copy
- condenser.....1 unit(Only Single-phase motor)

1-2 Check Items

When product arrives, read tabature and please check combination motor with capacitor.

Check names of goods , voltage, output, condenser capacity of motor mentioned on tabature.

2. Caution at use

2-1 Installation Precautions

- Do not use it near explosive materials, flammable gases around, corrosive materials, water splashing place, flammable materials.
- Do not bend, pull, or insert by perforce
- In case of install motor on unit, please install hand to avoid touching or ground.
- The installation should be performed by a person with specialized knowledge.

2-2 Operational Precaution

- In the normal operating condition, motor surface temperature may exceed 70 °C
In case of available to access motor in operation, attach warning sticker as following in sight for sure.
- Turn off power in the advance certainly in case of inspect and other work for motor attached THERMAL PROTECTOR.
When temperature falls below a certain level, motor attached THERMAL PROTECTOR will restart automatically.
- In the case of THERMINAL BOX TYPE MOTOR, use wire AWG 24 ~ AWG 10 (0.24mm²~4.0mm²) for LEAD WIRE.
This time, cut LEAD WIRE away in length 5~8mm

3. Characteristics of product

3-1 INDUCTION MOTOR

- INDUCTION MOTOR is classified by single phase motor and three phase motor according to use power.
- CONDENSER RUN INDUCTION MOTOR is used mainly for single-phase motor
but, CONDENSER is used always to auxiliary winding while operation as well as starting. Usually, starting TORQUE is not so high but structure is simple and reliable and wiring is simple. When use single-phase INDUCTION MOTOR, use MOTOR attachment CONDENSER certainly depending on capacity that registered in MOTOR tabature.
- Single Phase INDUCTION MOTOR is supposed to change the direction of rotation while rotation, there is producing antidromic TORQUE against rotational direction, therefore, in case of inertia load, the load is impossible to reverse in a short time so that stop motor once and then exchange direction of rotation. If you do not do so, MOTOR can be burned.
- Three-phase motor can be connected three power lines directly to power that connection is simple and reliable with high efficiency and has recommendable starting characteristics compared with single-phase motor.
- It is designed to be used continuous rating.
- It is designed to use by one-way operation.
- Rated rotational speed of MOTOR is changed according to amount load
- It is used where speed control does not need.

3-2 REVERSIBLE MOTOR

- REVERSIBLE MOTOR is a CONDENSER operating type single phase induction motor. Therefore, general special quality and characteristic are same with INDUCTION MOTOR.
- Forward - Stop - Reverse operation is possible.
- There is built-in simple BRAKE device that is possible to forward, stop, reverse in a short time, and wiring of STATOR is designed to be same main wiring with secondary wiring that has same characteristics when rotate forward and reverse.
- Also, it is designed to be great TORQUE to have good instantaneous activation reversibility for forward, stop, reverse in a short time.
- There used simplicity BRAKE to prevent OVER RUN that has some preservation power by this simplicity BRAKE so that instantaneous stop brake force is excelled by preventing OVER RUN at stop.
- Direction of rotation of MOTOR can be reversed simply by conversion SWITCH in a short time that is suitable to use for the purpose of frequent forward, stop, reverse usages.
- It was designed to operate to control for forward, stop, reverse in a short time with excellent properties that damage input is large and temperature rise is higher than INDUCTION MOTOR.
Therefore, rate operation time is fixed by 30 minutes.
- In general, RPM, TORQUE characteristics, voltage characteristics, CONDENSER characteristics are same with INDUCTION MOTOR.

3-3 TERMINAL BOX TYPE MOTOR

- Rescue line etc.. charging of MOTOR is sealed by TERMINAL BOX that protects against dust and moisture.
- Therefore, it is easy to use where environment-resisting is weighed.
- Also, was sealed certainly using GASKET.
- Grade of Unit Protection Structure of our TERMINAL BOX MOTOR is IP54
- It is designed by COMPACT
- GROUND terminal has attached.
- Piping is structured with convenient that working is excellent at connection, and CABLE is fixed certainly that tension is high after wiring cable.

4.About Time Rating

INDUCTION MOTOR is possible continuous operation (continuous rating).

possible continuous operation time of REVERSIBLE MOTOR is 30 minutes. (30 minutes Rated: Was recorded that it is 30 mins on tablature.)

5. About burnout protection during arrest

This motor has burnout protection function at arrest. There are two kinds of protection in the following.

Thermal protector method (it is recorded THERMALLY PROTECTED on tablature.)

If becomes fixed temperature, built-in thermal protector operates and motor stops.

It is automatic return type that restarts operation automatically if temperature of motor goes down. Turn off power certainly and should be carried checking work

Impedance protector method (It is recorded IMPEDANCE PROTECTED on tablature.)

If become arrest state at abnormal, winding impedance grows and controls input to motor. Motor winding is designed not to be burned.

6. Installation of the product

6.1 Installation conditions

Install Motor, condenser in place that fulfill condition as followings.

If use in where it is not this extent, product can be damaged.

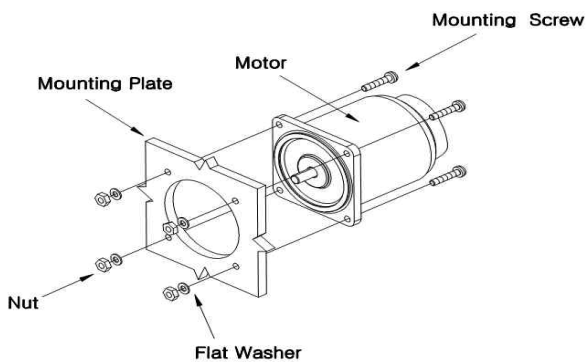
- Indoors (This product is designed, manufactured for device mounting.)
- Where ambient temperature is $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (not to freeze)
- (Only, $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$ when operate by 100V/200V)
- Where is (where dew does not condensate) below ambient humidity 85%
- Where is not affected by explosive gas, flammable gas, corrosive gas
- Where no direct sunlight
- Where dust does not pile and water, oil do not bound
- Where heat goes well
- Where do not receive continuous vibration, excessive shock
- Where is altitude below 1,000 m

6.2 Installation of the motor

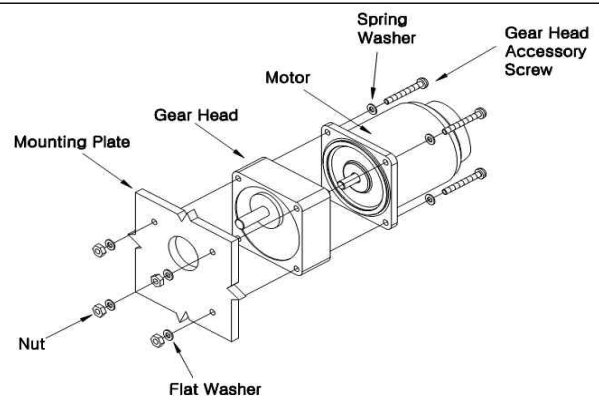
Mounting instruction changes according to shape of motor output shaft

■ INDUCTION/ REVERSIBLE MOTOR

Straight Shaft Type

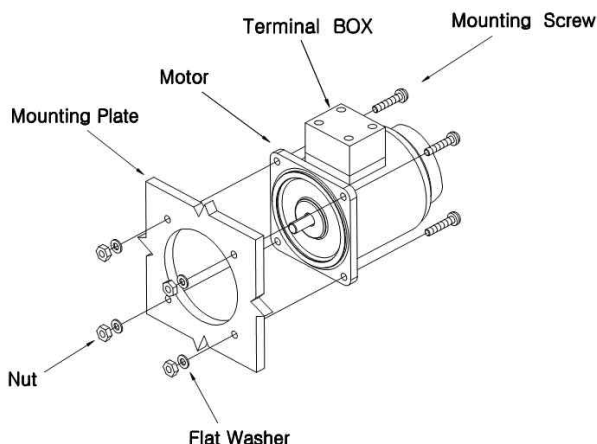


Pinion shaft type

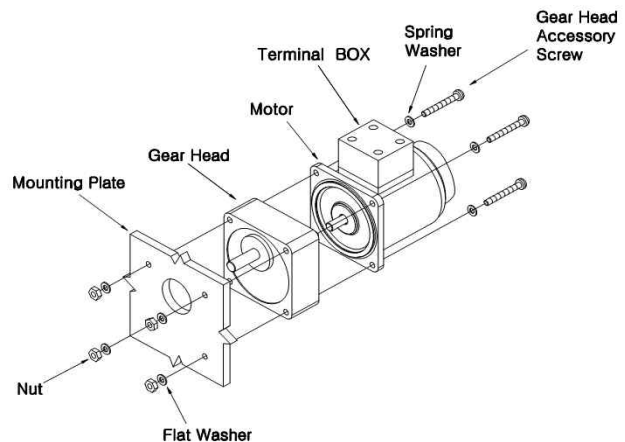


■ TERMINAL BOX TYPE MOTOR

Straight Shaft Type



Pinion shaft type



Make hole at mounting plate and fix motor on mounting plate using BOLT, NUT, WASHER. (Mounting screws are not offered.)

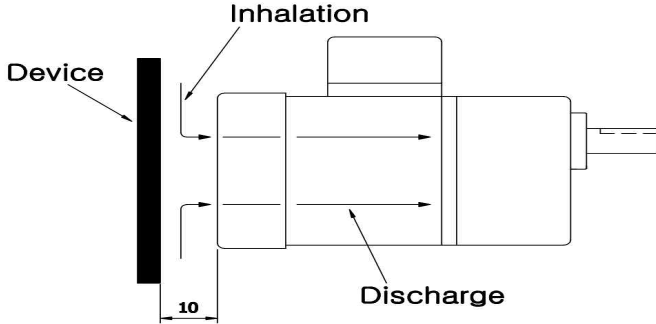
This time, take care to avoid occurring notch between MOTOR mounting surface and mounting plate.

■ Mounting Screws

MOTOR Name	Screw Dimensions	Recommended tightening TORQUE
K6	M4	2.0N·m(20Kg·cm)
K7	M5	2.5N·m(25Kg·cm)
K8	M5	2.5N·m(25Kg·cm)
K9	M6	3.0N·m(30Kg·cm)

Cautions) Do not insert motor obliquely at mounting hole, or do not mount by force. Motor can be damaged due to the grooves in flange.

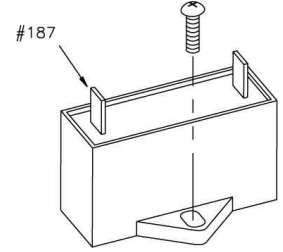
6.3 Installation of motor with fan



In case of install motor attached cooling fan, separate back of ventilator cover more than 10mm or make ventilating hole so that cooling intake of motor back part is not blocked.

6.4 Condenser install (Only single phase motor)

After confirm whether condenser capacity meets with capacity that recorded on motor tabature, please, attach condenser. Use M4 screw for install condenser. (Mounting Screws are not included)



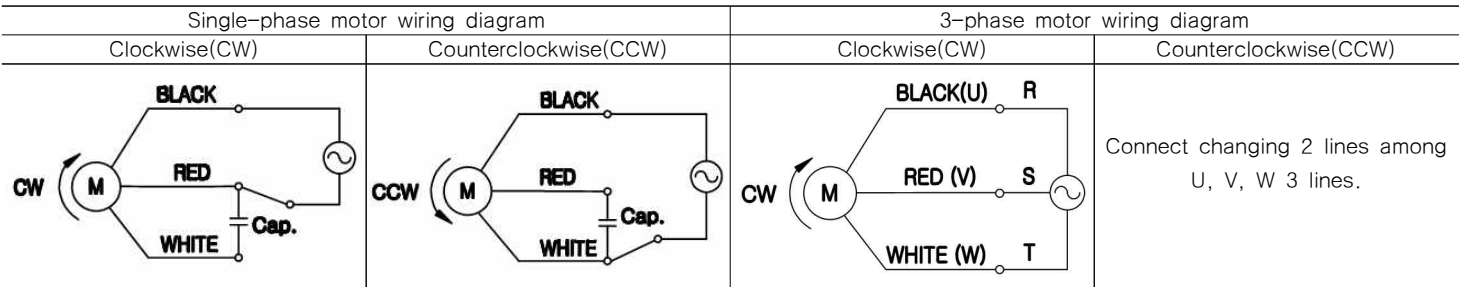
Note) Tightening torque of Condenser Mounting Screws shall be given by below 1 N·m (10 kgf·cm) of install angle for damage prevention.

Please leave at least 10cm away from the motor. Otherwise, the life-time of condenser will shorten by the heat of the motor.

7. Connection and operation

- Connect motor depending on connection wiring diagram, please.
 - All the connection parts such as motor leads and power connections, condenser terminal connection part etc. shall be insulated.
- Direction of rotation is an instance seeing from motor output shaft. Clockwise is CW, and counter clockwise is CCW.

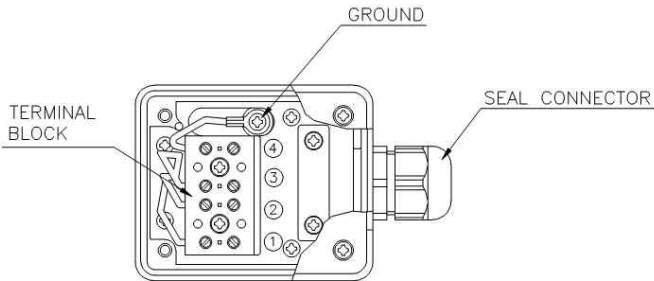
■ INDUCTION/ REVERSIBLE MOTOR



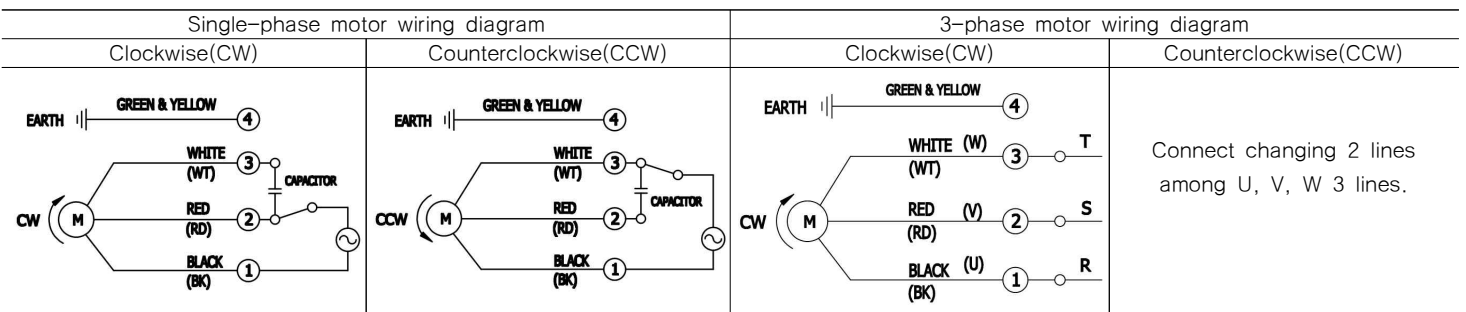
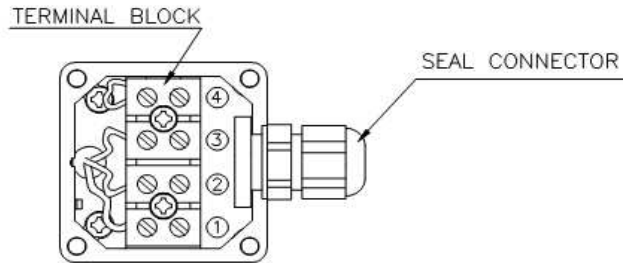
※ REVERSIBLE MOTOR is only single-phase motor.

■ TERMINAL BOX TYPE MOTOR

- □80 25W~□90 200W



- □60 6W~□70 15W



* Cap. is abbreviation of CAPACITOR and also called (CONDENSER)

주의) • This MOTOR is E Class insulation MOTOR

Confirm whether Temperature of MOTOR case exceed 90°C while motor operation.

If operate MOTOR at temperature exceeding 90°C, winding, ball bearing become deterioration significantly and shorten the life. Temperature of MOTOR case can measure fixing thermometer on the MOTOR surface.

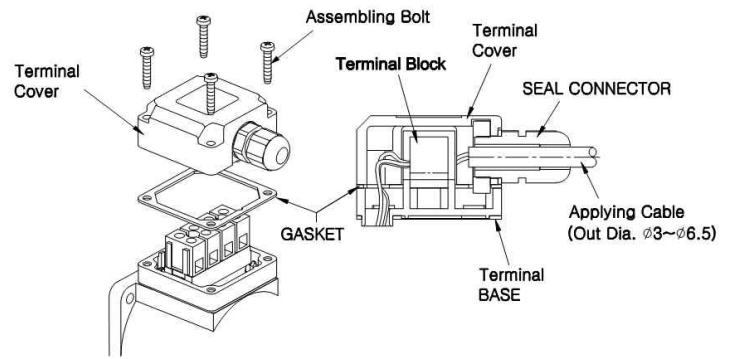
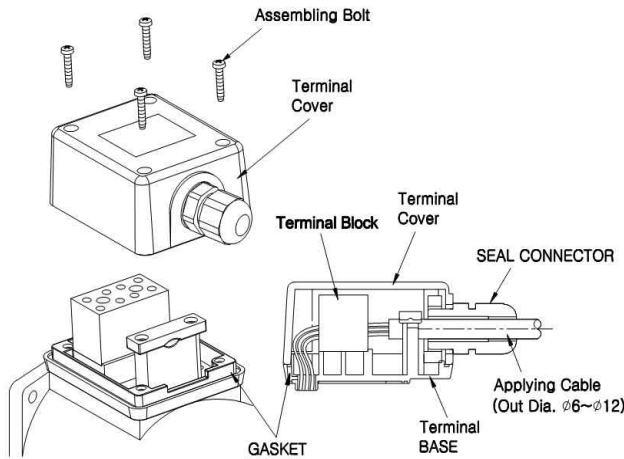
Also, can measure using thermo tape or thermocouple

- Replacement of direction of rotation of Single Phase INDUCTION MOTOR MOTOR shall be done after stop motor perfectly. Otherwise, direction of rotation does not change or there is in case of taking somewhat time.
- For single phase motor, connect CONDENSER always even after MOTOR is moved using attached CONDENSER.

■ TERMINAL BOX Structure

- □80 25W ~ □90 200W

- □60 6W ~ □70 15W



• Breakaway length of LEAD WIRE that is inserted into terminal block shall be 5~8mm..

8. Check points in case of does not work normally

In case of motor does not work normally, please check the table below as a reference. According to check result, despite it is all normally, in case of motor does not work right, do not decompose or repair, please contact our sales representative or distributor.

Phenomenon	Confirmation
Motor does not rotate Or, rotate slow	Is normal voltage applied to motor? Is power connected correctly? Is the load too big? In case of is extending using terminal block or crimp-terminal, is not there any bad connection? In case of single motor, condenser capacity recorded on tablature or attached condenser was connected with connection wiring diagram ?
Motor rotates and then does not rotate	Is connection with power correct? In case of is using terminal block and crimp-terminal, is not there any bad connection? In case of single-phase motor, condenser capacity recorded on tablature or attached condenser was connected with connection wiring diagram ?
rotate in the reverse direction	Was not connected differed from connection wiring diagram? Check connection wiring diagram again. Direction of rotation of gearheads output shaft changes according to deceleration ratio of gear head. Please refer to manual of gear head. In case of single-phase motor, condenser capacity recorded on tablature or attached condenser was connected with connection wiring diagram ? Is not differ from viewing direction? When see in motor output shaft side, it is called direction of rotation is clockwise or anticlockwise.
The motor is too hot (temperature of motor case is exceeding 90°C.)	Is normal voltage applied to motor? Does not ambient temperature range exceed limit? In case of single-phase motor, condenser capacity recorded on tablature or attached condenser was connected with connection wiring diagram ?
Producing abnormal sound	Did you put motor and gear head correctly? Please refer to manual of gear head. Did install same toothwheel shaft type reducer such as motor?

※ Please contact your dealer or our 2nd factory for Product inquiries and A/S request

GGM CO. LTD., Leader of geared motor.

<http://www.ggm.co.kr>

Head office/the first factory
327-3 Songnae-dong, Sosa-gu, Bucheon-city, Gyeonggi-do
TEL : +82-32-664-7790 FAX : +82-32-611-7791

The second factory
272-11 Dodang-dong, Wonmi-gu, Bucheon-city, Gyeonggi-do
TEL : +82-32-684-7791 FAX : +82-32-683-5059