

Thank you for purchasing of GGM product. Read well manual certainly before use this product after know well about know-how about product, safety information and all about caution and please use correctly. Please keep in fixed place certainly so that can refer always after read.

1. Confirmation at product arrival

Open package BOX and confirms whether all parts were equipped as follow.

- MOTOR ----- 1 unit
- CONDENSER ----- 1unit
- Manual ----- 1 sheet

Please see tablature at product undertaking and confirm collating with motor and capacitance. Confirm name, voltage, output of motor, and condenser capacity seeing tablature mentioned item.

2. Characteristic of product

SPEED CONTROL MOTOR is INDUCTION MOTOR having AC generator (TACHO GENERATOR, T.G) for speed detection for speed Control.

Regarding SPEED CONTROL MOTOR, heat generation is small because can not but be approved low voltage that is phase control in variable resistor for exclusive speed setting attached on CONTROLLER when RPM of MOTOR is low and when load of MOTOR is light.

There are 2 kinds of SPEED CONTROL MOTOR, UNIT TYPE (SU TYPE) and SOCKET TYPE (SP TYPE) greatly. For reference, command of AC generator (T.G) for speed detection of our GGM is 24V.

2-1 INDUCTION SPEED CONTROL MOTOR

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2-2 REVERSIBLE SPEED CONTROL MOTOR

External appearance structure is almost similar with induction motor but there is mounted simple brake BLOCK inside motor to reverse direction of rotation of motor simply so that it is suitable when often use integral domain operation repeatedly.

2-3 SPEED CONTROL BRAKE MOTOR

It is a motor equipped with non-electromagnetic brake operation type. Braking operates certainly that can get preservation power.

Operation of braking acts when power is breakdown (Interruption) that is suitable by using brake safely. Electromagnetic brake motor makes rotation (OVER RUN) 1~4 times in case of motor unit no-load at power OFF. Instant frequent integral domain rotaion is available. It is possible to stop 6 times per minute by simple cutting. (Only, please secure stop time more than 3 seconds.)

3. Caution at use

3-1. Caution of setting up

- Do not use near explosive material, neighborhood of flammable gas, corrosive material, water bounding places, flammable material.
- Do not bend or pull out or insert lead wire by perforce.
- Use motor only class I device (Electrical appliances of EN/IEC standard).
- Please establish protection device (ENCLOSER) so that hand could not reach to product.
- Install should be done only by expert.

MANUAL

SPEED CONTROL MOTOR /

SPEED CONTROL & BRAKE MOTOR

3-2. Caution at operation

- Surface temperature of motor may exceed 70°C in running condition ordinarily. Take care not to wound burn to motor while operation.
 - Please turn off power in the advance certainly in case of checking and other work of motor that attached thermal protector.
- If temperature of overheat protection attached motor goes down low under constant level, it resets automatically.
- Electromagnetic brake does not fix load certainly. Also, load is not kept when thermal protector (T/P) operated. Please set up special safety action in case of use by safety brake..

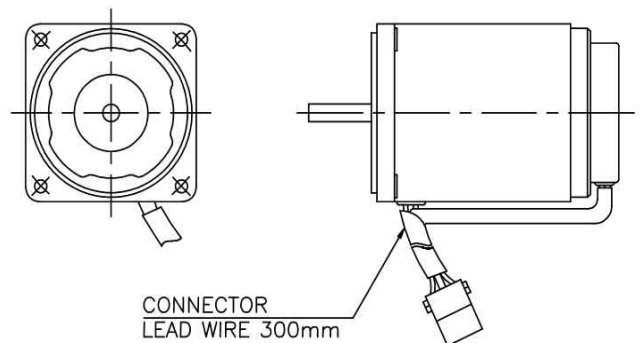
4. Comprehension of time rating

- Induction motor is available continuous operation.
(DUTY of motor tablature : It was recorded as CONT..)
- Recommedable time is 30 minutes of continuous operation for reversible motor.
(DUTY of motor tablature : It was recorded as 30 MINT..)

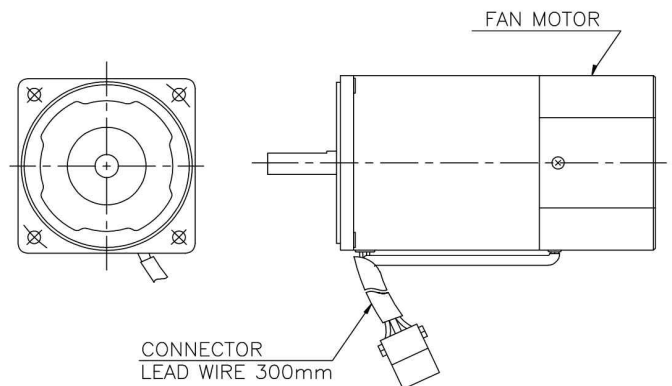
5. Profile drawing of Product

5-1 SPEED CONTROL MOTOR - SU TYPE

- NON FAN



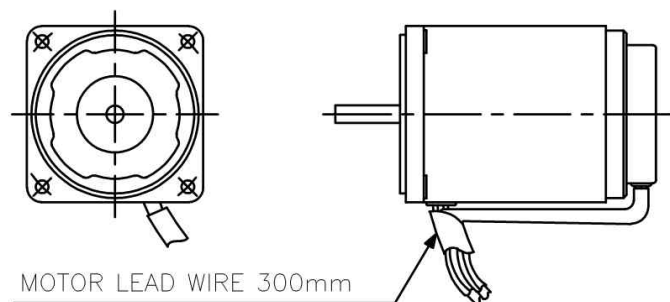
- FAN



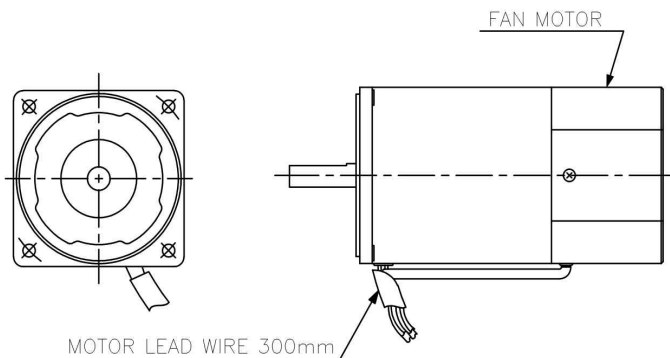
※ SPEED CONTROL BRAKE MOTOR SU TYPE is added 2 lines (Orange color) of BRAKE in above descriptions external form.

5-2. SPEED CONTROL MOTOR SP TYPE

- NON FAN type



- FAN attached type



* Regarding SPEED CONTROL BRAKE MOTOR SP TYPE, 2 lines (Orange color) of BRAKE are added in descriptions external form.

6. Product Install

6-1 Install condition

Install motor and capacitance in place of condition possessing such as following. If use in where is not this extent, product can be damaged.

- indoor (This product was designed and made for installation on device.)
- In place where ambient temperature is $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (not freezing)
- where surroundings humidity is below 85% (not condensation)
- where is no impact of fire damp, flammable gas, corrosive gas.
- where do not receive excessive serial shock, impact.
- where do not receive direct ray of light • where water, oil do not bound
- where dust do not accumulate • where radiation of heat goes well
- where altitude is under 1000 M

6-2 motor install

Mounting instruction may be changed according to shape of motor output shaft.

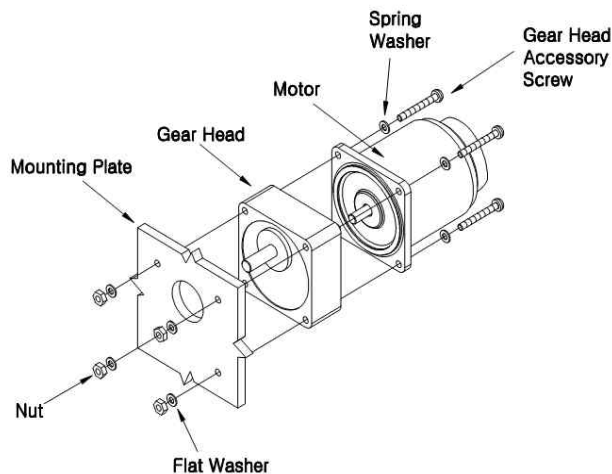
- Drill hole on mounting plate and fix motor and reducer on mounting surface using 4 reducer attachment screws.
- Please take care not to occur aperture in motor flange surface and reducer jointing surface.

Please refer to separated reducer manual about detailed contents of install.

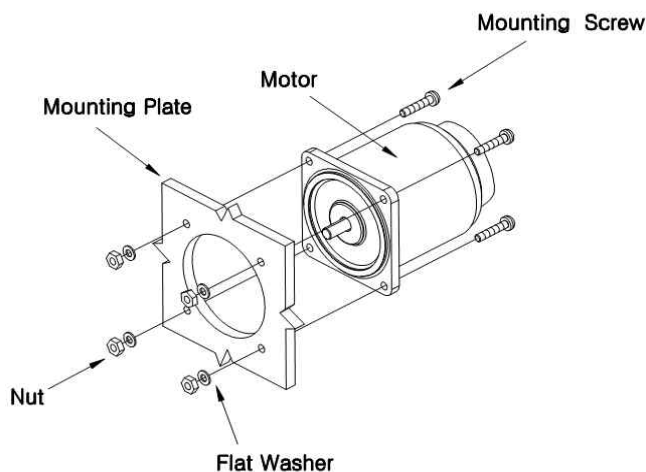
- Use same specification of gear shaft with motor for reducer.
- Do not insert motor obliquely, or do not mount perforce.

There is worry about motor damage by occurring scar in flange padding.

- Pinion Shaft Type

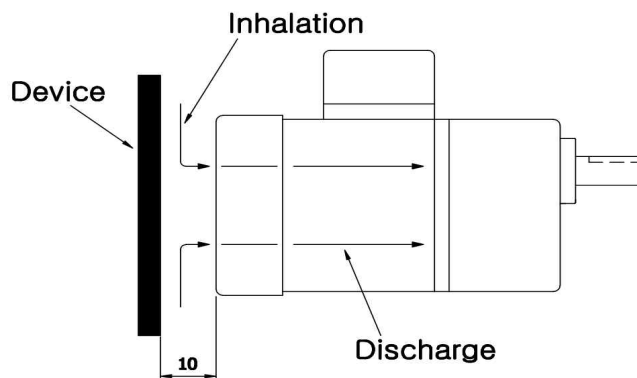


- Straight shaft type



model	bolt	torque
K6	M4	2.0N·m(20kgf·cm)
K7	M5	2.5N·m(25kgf·cm)
K8	M5	2.5N·m(25kgf·cm)
K9	M6	3.0N·m(30kgf·cm)

- Motor for Cooling Fan



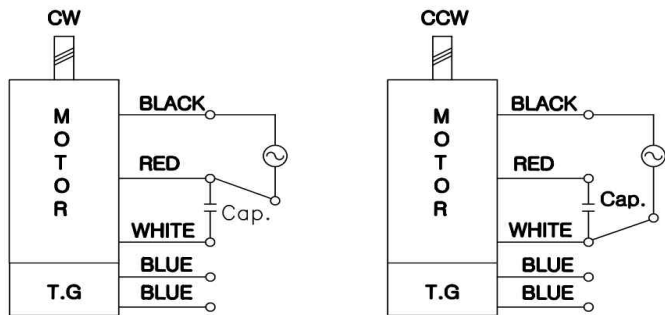
In case of install motor mounted cooling fan on device, leave space more than 10mm from back of ventilator cover or make ventilating hole so that intake of motor back is not blocked.

(If cooling intake is blocked, it is responsible for life shortening and damage by rising temperature of motor.)

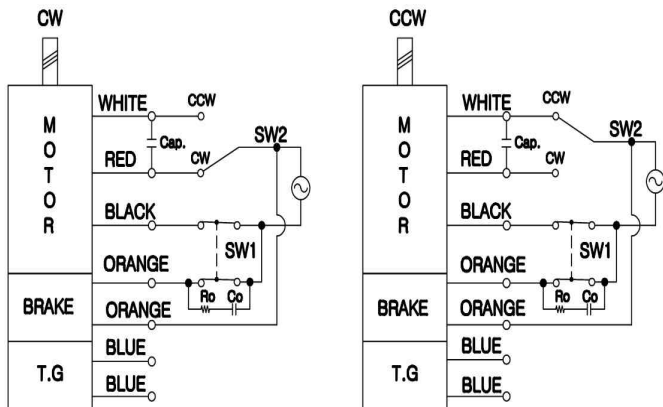
7. connection and operational method

Connection wiring diagram of below picture is basis connection of motor so that please refer wiring diagram of CONTROLLER description. Direction of rotation is seen at motor output axis side and clockwise is C.W and anticlockwise is C.C.W.

7-1 connection wiring diagram



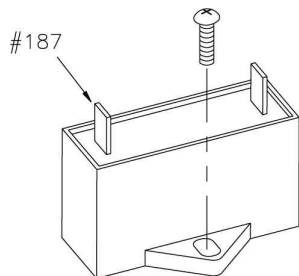
<Basis wiring connection of SPEED CONTROL MOTOR >



<Basis wiring connection of SPEED CONTROL BRAKE MOTOR>

- Cap. is acronym of CAPACITOR and so called as condenser (CONDENSER).
- Ro, Co in connection wiring of upside picture are SURGE absorbing circuit. SURGE absorbing circuit controls flame (SPARK) happened by ON/OFF of switch point of contact, and it is to increase life of point of contact. There is not hindrance in action even though do not use, if consider preservation of point of contact, recommend to use. Ro=5~200Ω(over 1/4W), Co=0.1~0.2μF(400V)
- this motor is E CLASS insulation motor.
- Please confirm whether temperature of motor case exceeded over 90°C while motor operation. If operate motor at temperature more than 90°C, winding and ball bearing are depleted remarkably and life-time is shoten. Temperature of motor case can measure fixing thermometer on the motor surface. Also, can measure using thermal tape or thermocouples (THERMO-COUPLE).
- Replace of direction of rotation of single phase induction motor after motor stops perfectly. Otherwise, direction of rotation does not change or in case of it takes time some more.
- For attached single-phase motor, connects capacitance always even after motor is operated using capacitance.
- All connections of power connections of motor, condenser terminal connection etc.. should be insulated.

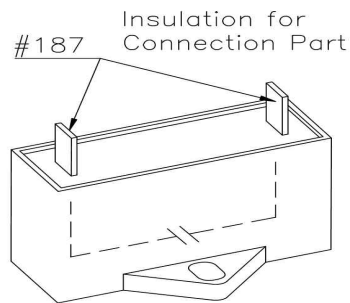
7-2. Install of condenser(only for single-phase motor)



- Please install capacitance after confirm whether attached condenser capacity fits with capacity had recorded on motor tablature. (Screw for install has not attached.)

- When install condenser, please do properly conclusion torque of screw not to be damaged for assembly segment.
- Please separate more than 10cm from motor. Otherwise, life-time of condenser is shoten by heat of motor.

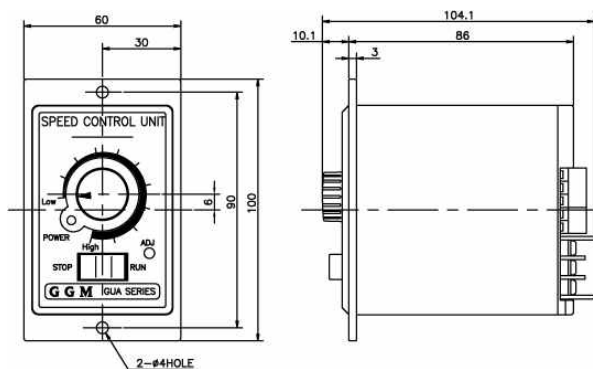
7-3. Connection of condenser (only for single-phase motor)



- condenser internal connection is same as upside picture.
- Terminal of condenser is 2 Terminals.
- in case of use simple crimp-style terminal, use connection #187 series terminal. There may be in case of condenser is in state of charging after use. This time, may get electric shocks if touch terminal part so that keep being discharged certainly after use.

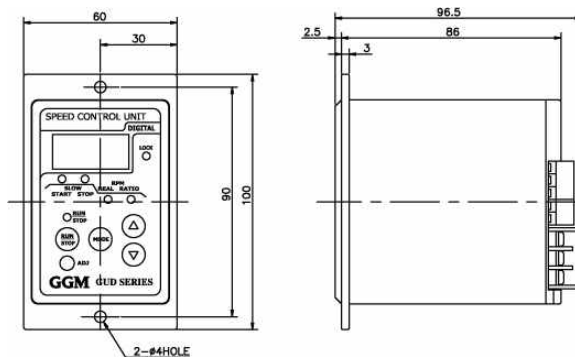
8. Application CONTROLLER

8-1 GUA CONTROLLER (UNIT TYPE, ANALOGUE)



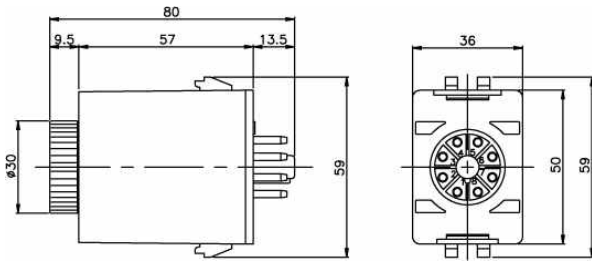
- It is UNIT product of separation type CONTROL MOTOR UNIT.
- Connect CONNECTOR by ONE TOUCH. It is most suitable in doing usage of needed remote control. (there is not moment stop function.)
- There was assembled all needed things of speed control circuit, MOTOR CONDENSER, speed CONTROL UNIT etc.. in CONTROL UNIT. (There is also CONDENSER for outside mounting.)
- Bind together MOTOR and CONTROL UNIT by exclusive use CONNECTOR and speed control of MOTOR is performed briefly only by connection AC PLUG CORD to single-phase 220V (110V)
- If use middle CONNECTOR CORD (option), it is elongated up to the largest 2.0m with MOTOR and CONTROL UNIT part, and speed control is available

8-2 GUD CONTROLLER (UNIT TYPE, DIGITAL)



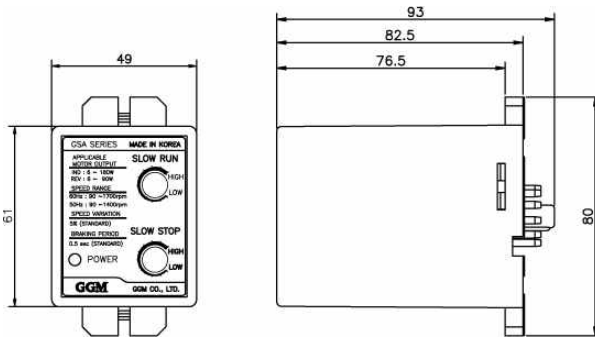
- AC phase control system by DIGITAL PID arithmetic by MICOM
- Motor PRM indication is available on LED state window.
- There are SLOW RUN, SLOW stop functions to control moving and dead lock softly. It is available to set acceleration and deceleration time by switch of CONTROLLER front.

8-3 GPA CONTROLLER (8PIN SOCKET TYPE)



- It is SPEED CONTROLLER for small size GEARED MOTOR developed corresponding to variableness inside request of MOTOR.
- speed setting is available to control rotation speed by variable resistor for speed setting in front of internal CASE
- Remote operation and manufacturing are available by setting up speed setter separately.
- Moment stop function is possible by electricity BRAKE.
- Employed tiny 8 PIN PLUG IN system.

8-4 GSA CONTROLLER (11PIN SOCKET TYPE)



- Moment stop is available by electricity BRAKE except SPEED CONTROL. There is no preservation power.
- Can control and set speed of revolution of MOTOR by outside speed setter.
- Handling and install are simple because it is a COMPACT PLUG-IN (11 PINs) TYPE
- There are SLOW RUN, SLOW STOP function to control moving and dead lock softly. Also, by VOLUME built-in PACK, can control and setting up wanted SLOW RUN, SLOW STOP time.
- Parallel operation is available.(parallel operation means possibility of operation plural MOTOR, CONTROL PACK setting up same speed at same time by 1 speed setters.)

9. Burnout protection when constrain

Regarding this motor, has function to prevent burnout by generating abnormal heat of motor caused by unkwon reason. There are 2 protection ways as followings.

9-1 THERMAL PROTECTOR(T/P) system

(There is recorded 'THERMALLY PROTECTED' on motor tabature.)
If reaches normal temperature, built-in thermal protector(THERMAL PROTECTOR) starts action and motor suspends.

It is same return type that restart operation automatically if temperature of motor goes down.

Do checking work after turn off power certainly.

THERMAL PROTECTOR action temperature : 130°C±5°C

9-2 IMPEDANCE PROTECTOR 방식system

If becomes detention state at abnormal, winding IMPEDANCE grows and controls input to motor so that motor winding is designed not burnout.

IMPEDANCE PROTECTOR method can be applied to all appliances of 6 W and this kind hass no THERMAL PROTECTOR method.

10. checking items when does not run normally

phenomenon	Confirmation contents
Motor does not rotate. Or, rotate with low speed.	① Is normal mode voltage supplied to motor? ② Is connection linked with power right? ③ Is load too heavy? ④ Is there any place of connection badness in case of extending using terminal block or crimp-style terminal? ⑤ Is attachment condenser or condenser of capacity had recorded in tabature connected according to connection wiring diagram? ⑥ Is normal mode voltage approved to lead line for electron brake? ⑦ Is wiring connected exactly with controller?
Motor sometime rotates and sometime does not.	① Is connection with power correct? Is there any connection badness when is using crimp-style terminal of terminal block? ② Is attachment condenser or condenser of capacity had recorded in tabature connected to connection wiring diagram?
Rotate to backward.	① Was connected differently with connection wiring diagram? ② Check connection wiring diagram again. ③ Direction of rotation of reducer output axis is changed according to deceleration ratio of reducer. ④ Please refer to manual of reducer. ⑤ Is attachment condenser or condenser of capacity had recorded in tabature connected according to connection wiring diagram? Is it mistaken seeing direction? When see in motor output axis side, direction of rotation is clockwise or anticlockwise. ⑥ Is circuit connected exactly with controller?
Motor is so hot. Motor case temperature exceeds 100°C.	① Is normal mode voltage approved to motor? ② Does not exceed surroundings range of temperature? ③ Is attachment condenser or condenser had recorded on tabature connected according to connection wiring diagram?
Strange sound is heard.	① Did you install motor and reducer right? Please refer manual of reducer. ② Are you installing geared shaft TYPE reducer such as motor?

※ Regarding inquiry for product and A/S request, please contact to buying agency or second factory of our company.

Front-running man of geared motor, GGM CO.,LTD.

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