



บริษัท เอดีดี เฟอร์เนส จำกัด

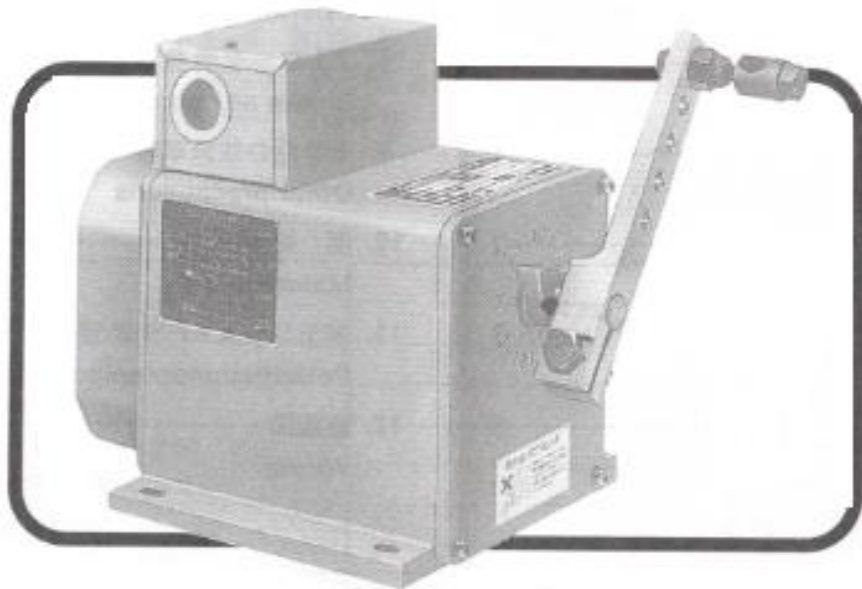
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CONTROL MOTOR OPERATING MANUAL



CM-101T Series


NISSYO




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Please read this operating manual carefully to ensure proper usage, and keep it handy for easy reference.

 This symbol indicates that serious injury or only material damage may result if the 'Warning' instruction is ignored.

 This symbol indicates 'Prohibition', that something should not be done.

 This symbol indicates a 'Mandatory' instruction, that something must be done.



1. Model identification

CM-101T

P
PP

With potentiometer (1pc.)

With potentiometer (2pc.)

H/L
C
CC

Model equipped with high (H) and low (L) side alarm limit switches (one each)

Model equipped with random setting alarm limit switch (1pc.)

Model equipped with random setting alarm limit switches (2pc.)

2. Specifications

Power	AC100V or 200V 50/60Hz
Timing 90° - <input type="checkbox"/> sec.	43/36 (50/60Hz)
Torque N · m	12.5
Rating	Continuous
Power Consumption (W)	Approx.20
Protective Structure	IP 40
Insulation	Class E
Potentiometer (Ω)	135,200,500,1kor2k
Contact Capacity	Resistance load AC250V 10A DC30V 6A
Ambient temperature (° C)	-10~+50
Mass (kg)	3

3. Unpacking

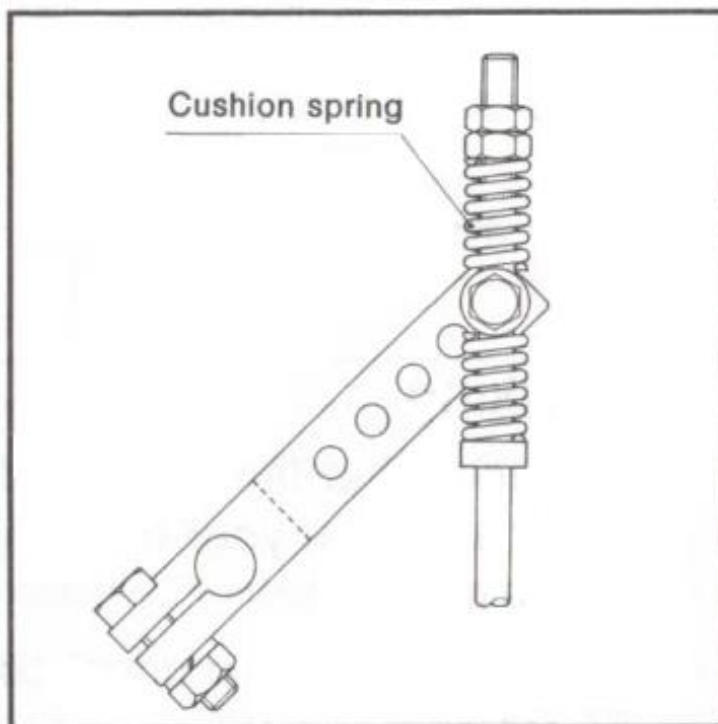
3-1 Check that the product delivered matches the specifications of your order by reading the nameplate on the product.

3-2 Check that the product comes with all the accessories ordered.



4.Installation Location and Setting

- 4-1 Use the product within the ambient temperature range specified in the operating manual.
If used outside the range, the motor may burn or the product may not deliver its intended performance.
- 4-2 Avoid operating the product in an excessively vibrating place.
- 4-3 Avoid operating the product in a dusty place.
- 4-4 Avoid operating the product in places where it will be exposed to rain and water drops.
- 4-5 Place a cover over it to prevent direct exposure to the sun.
- 4-6 Set the control motor as follows.
 - 4-6-1 Set the control motor so that its main shaft center is in parallel with the matching main shaft.
 - 4-6-2 Set the control motor so that the lever on the control motor is in the same plane with the matching lever.
 - 4-6-3 Set the control motor so that the lever operating range is divided equally based on the vertical line of the tangent.
- 4-7 If the matching unit has a stopper like a back sheet,a buffer like the one shown in the figure at below should be used.

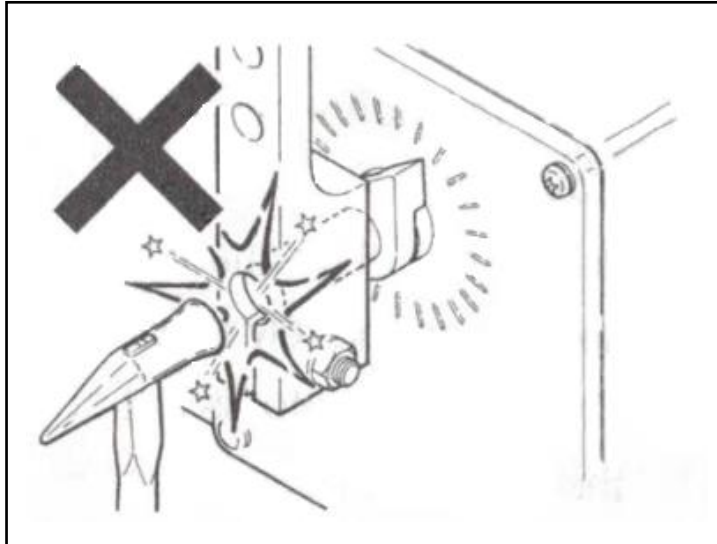




5. Lever Installation

⊘ Do not hammer here!

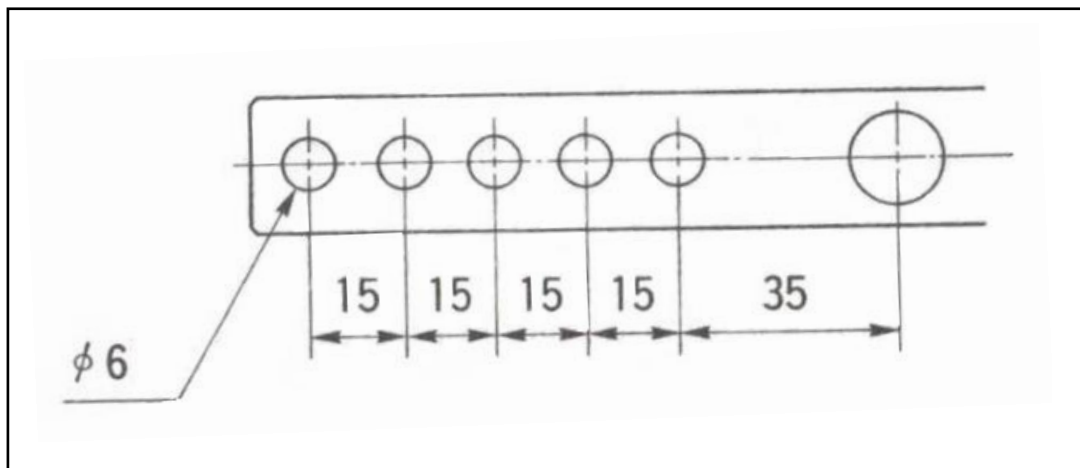
Never hit the shaft and lever when setting the lever on the shaft.
If hit, proper operation may be impeded.



5-1 Matching unit

In case the lever and lever joint fittings supplied by Nissyo are not used, it is necessary to prepare the following in advance.

5-1-1 Prepare a lever which mounting hole positions are identical to the lever supplied by Nissyo.



5-1-2 Lever joint fittings

- They must be able to move in synchronization with the movements of the levers, and must be protected from seizure and rusting.
- They must be of construction in which it is not caused to slip when thrust (700N) is applied to the connecting rod.



5-2 Connecting rod

Prepare a connecting rod of $\varnothing 8 \times (L+2 \ell)$.

Where,

L : Distance between main shafts

ℓ : Distance from the center of the lever joint fitting to the end of the connecting rod (30 to 50mm)

5-3 Mounting

In the case of a square main shaft or a main shaft with keyway, see the separately available operating manual.

The control motor is set at the clockwise rotation limit . (or at the specified position)

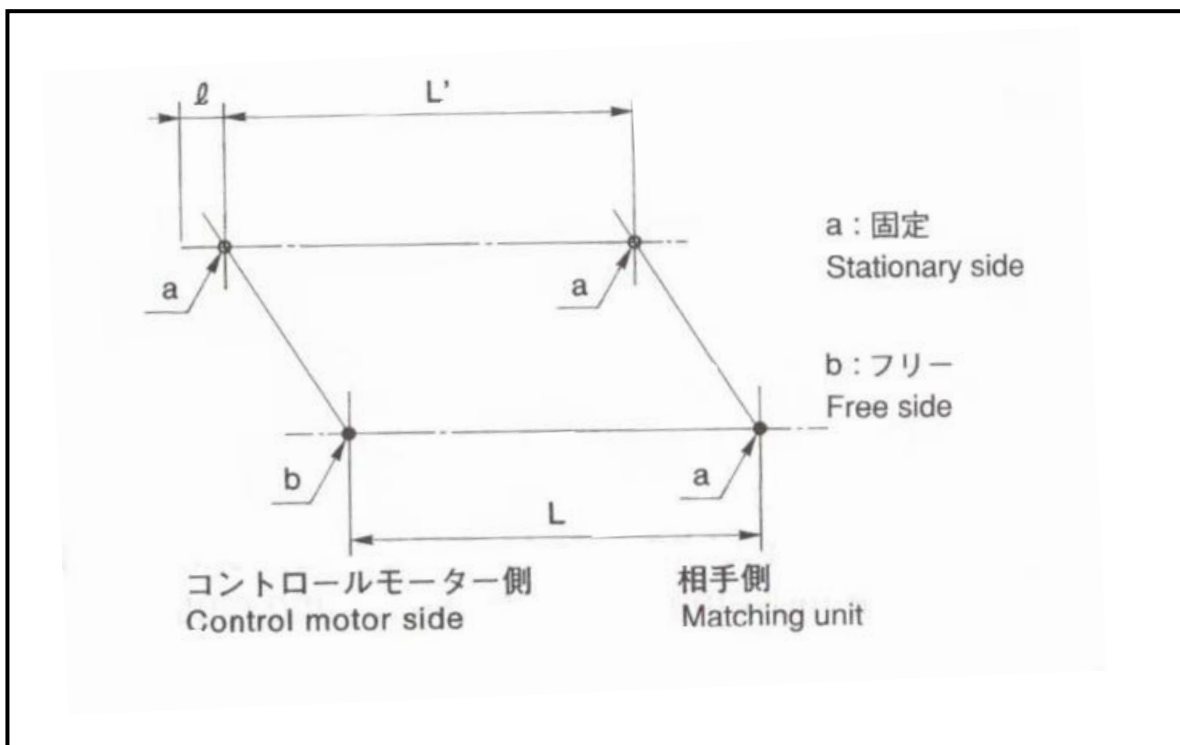
5-3-1 Secure the matching lever at position 0% (counterclockwise rotation limit) .

5-3-2 Apply power across MH and MC terminals until the main shaft comes to the 0% position.

5-3-3 Secure the connecting rod to the lever joint fittings (distance from the center of the lever joint fitting to the end of the connecting rod : 30 or 50mm)

Note : The mounting distance should be equal to distance between main shafts ($L=L'$)

5-3-4 Place the lever over the control motor main shaft. At this time, the lever should be kept free.



5-3-5 Make sure that the connecting rod moves smoothly by moving it to the right and left.

5-3-6 At position 0%, secure the control motor lever to the main shaft.



6 Wiring

- 6-1 Take proper measures to prevent water from entering through the lead hole.
- 6-2 Tighten all wires to their terminals securely.



6-3 Be sure to ground the grounding terminal. An electric shock may occur if used without grounding the terminal.

- 6-4 Before turning the power on, check that the application voltage and wiring are correct. If the voltage is too high, the motor may be burnt. If the voltage is too low, the control motor will not operate.

- 6-5 Check the connections between the control motor and the regulator as well as the controller are all correct.

7. Operational Checkup

- 7-1 Confirmation of position 0%

- 7-1-1 Apply power to terminals ML-MC for about 3 seconds.

- 7-1-2 Apply power to terminals MH-MC (at the counter-clockwise rotation limit).

- If the matching unit is not positioned at 0% even though the SH limit switch is activated. loosen the lever on the control motor and readjust so that the SH limit switch is activated at the 0% position of the matching unit.

- 7-2 Confirmation of position 100%

- Apply power to terminals ML-MC (at the clockwise rotation limit).

- If the matching Unit is not positioned at 100% even though the SL limit switch is activated. check:

- 7-2-1 That the mounting hole radius is the same at all holes of the lever joint fitting:

- 7-2-2 That the mounting distance of the connecting rod is the same as the distance between main shafts.

- 7-2-3 If the radius or distance is not the same, readjust it.

- 7-2-4 If the radius or distance is the same, loosen the lever on the control motor and make an adjustment so that the SL limit switch turns off at position 100%.

- 7-3 Check

- 7-3-1 Check that the limit switches are activated properly by changing the control motor opening between position 0% and 100% alternately.

- 7-3-2 Check that the control motor moves smoothly and that no excessive force is exerted on it.

8. Stroke adjustment



An incorrect stroke adjustment on units equipped with a potentiometer will result in improper meter indication which will make proportional control impossible. Never attempt onsite stroke adjustment on units equipped with a potentiometer.



Make sure that the power is off when removing or installing the rear cover for cam adjustment. This is important to prevent accidents such as electric shock and shortcircuiting.

Be sure to retighten the screws that have been loosened for adjustment. Removing the rear cover discloses the inside as shown in the figure below.



Do not attempt to move the limit switch.

For adjustment, loosen the cam fixing screw and adjust the cam position. Do not attempt to loosen the cam boss set screw for the cam.

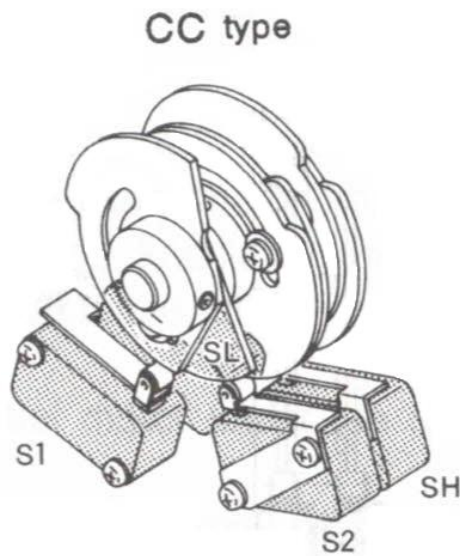
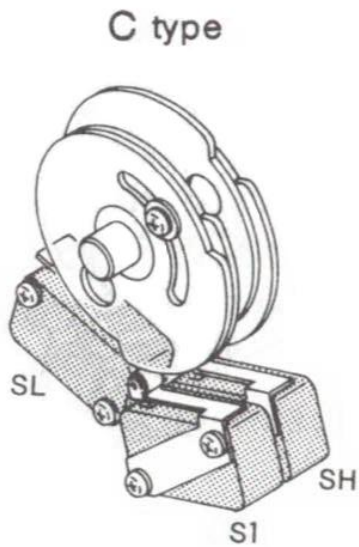
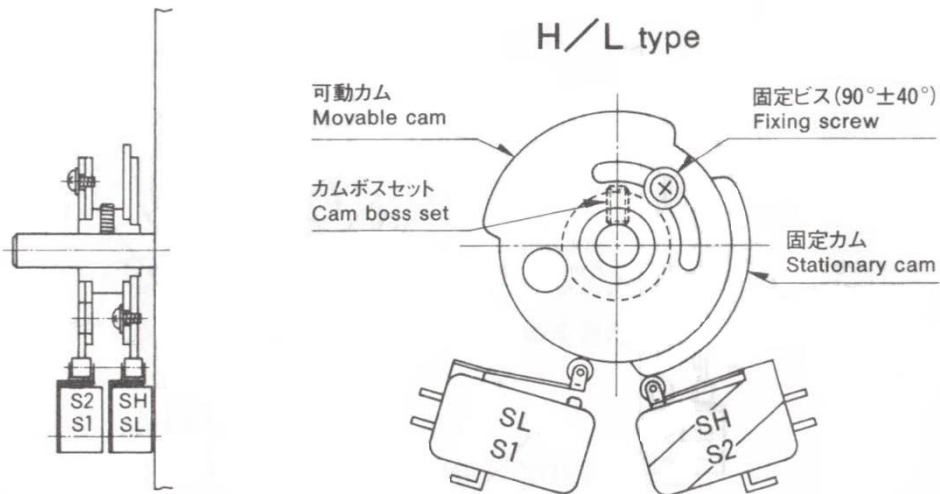


8-1 H/L type

8-1-1 The cam for the SH limit switch is a stationary cam.

8-1-2 The cam for the SL limit switch is adjustable at 90° plus or minus 40° using the fixing screw.

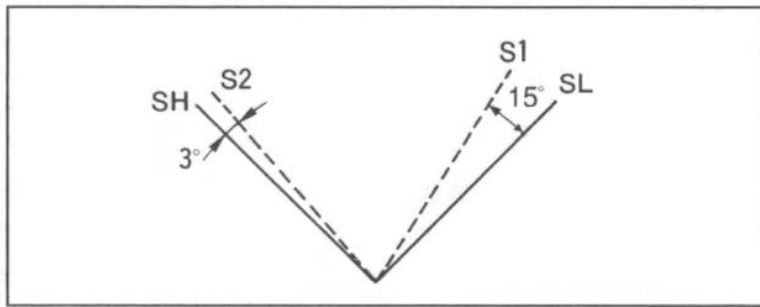
8-1-3 The control motor is shipped from the factory with the angle between the high and low sides set at 90f or with the angle specified at the time of order placement. On-sift adjustment is not required unless otherwise necessary.



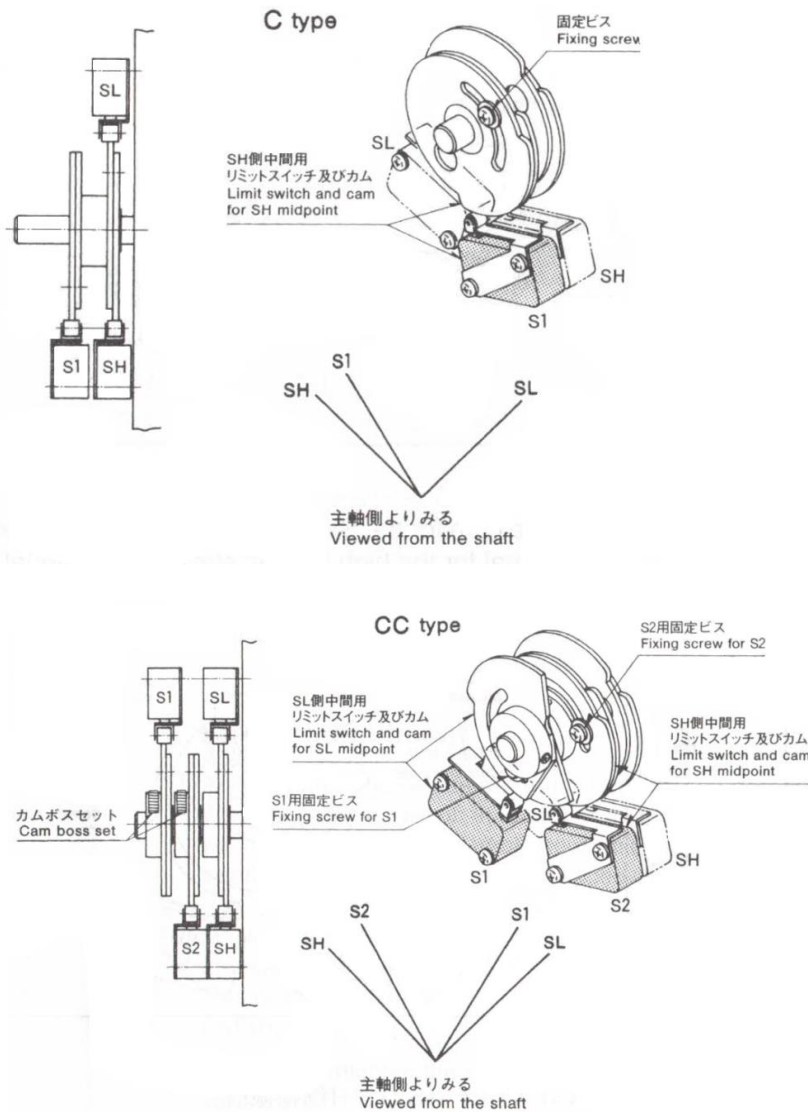
8-1-4 Alarm signal

a) The cam for the SH side limit switch "S2" (alarm signal for the high side) is stationary.(A signal is generated at the place approximately 3 degrees before the SH position.)

b) The cam for SL-side limit switch "S 1"(for L-side alarm signal) can be adjusted within the range of any angles from approx 15 degrees ahead of SL to SL setting. To make this adjustment, loosen the fixing screw.



8-2 C and CCtypes.



8-2-1 Adjusting the SL limit switch

a) C type

By loosening the fixing screw securing the S1 cam and moving the cam, the SL cam adjustment screw will appear.



b) CC type

Before extracting the cam for the signal limit switch, put mating marks on the cam boss for the signal limit switch and the shaft, then loosen the cam boss set.

When extracting the cam, pay attention not to hitch it on the roller of the limit switch actuator.

8-2-2 The cams for the S1 and S2 limit switches can be set at any position over the entire span (between 0 and 90), then loosen the each fixing screw.

9. Other precautions

9-1 Do not forcibly rotate the main shaft with external force. Also do not apply shock to the main shaft. Otherwise, the gear may be damaged, the knock pin may be broken, or screws may become loose, affecting proper operation.

9-2 Be sure to operate the control motor under the rated load. If used under an overload, the motor may be burnt or the internal mechanism may be damaged.

10. Maintenance

In order to ensure stable operation of the product, check the following periodically.

10-1 Turn off the power and check the following.

- 1) Check that all the bolts are tight.
- 2) Check that the moving part of the lever joint fittings is sufficiently lubricated.
- 3) Check that all the terminal screws are tight.

10-2 Check the following, and if an abnormality is found, contact us immediately without attempting to disassemble the product for repair.

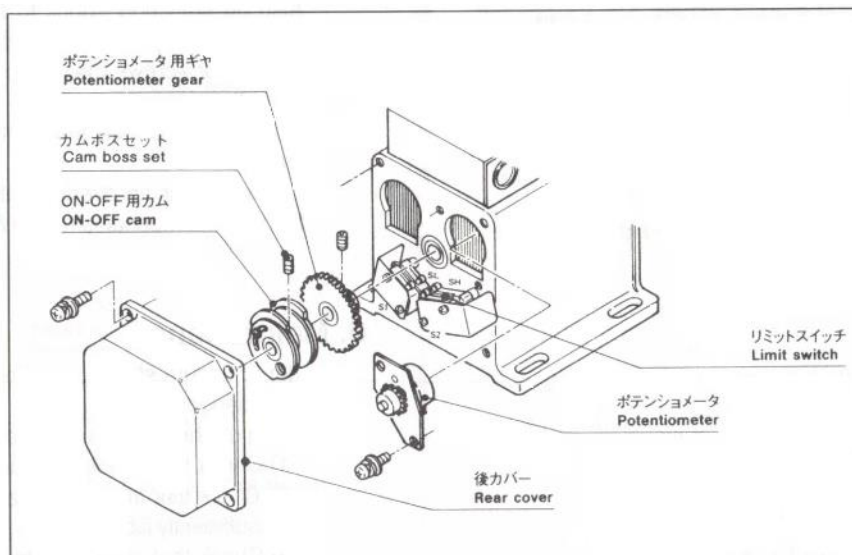
- 1) In case of the case is deformed or cracked.
- 2) In case of there are abnormal sounds.
- 3) In case of the product operates not properly.

If the product is returned for repair in the disassembled condition, it will be difficult for us to locate the cause.

Please do not attempt to repair the product, and return it to us as it is.

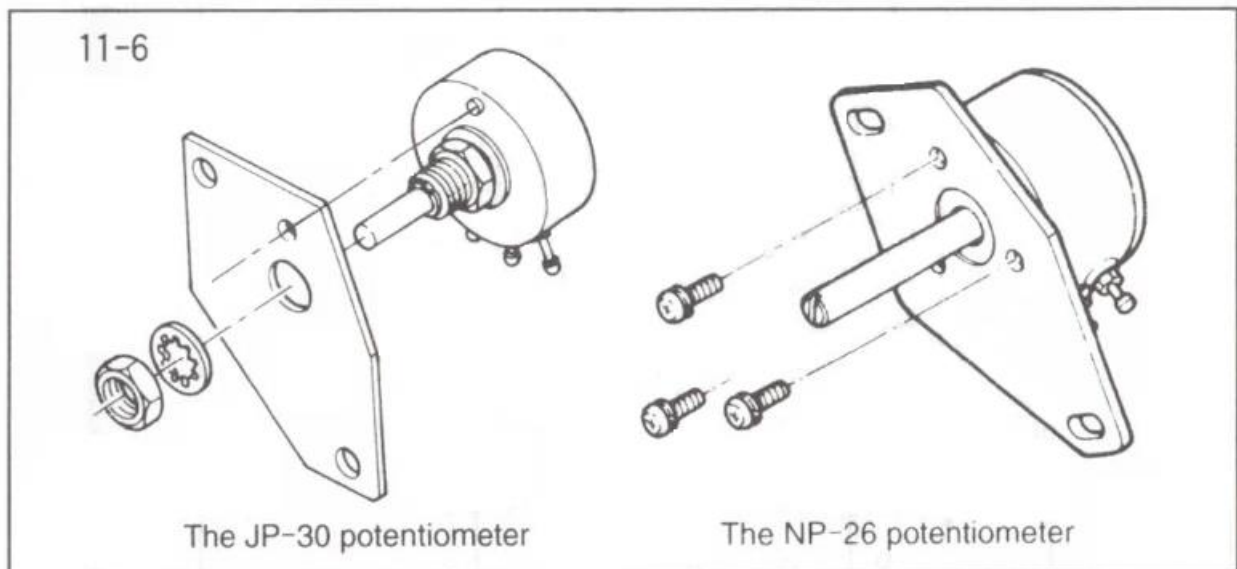
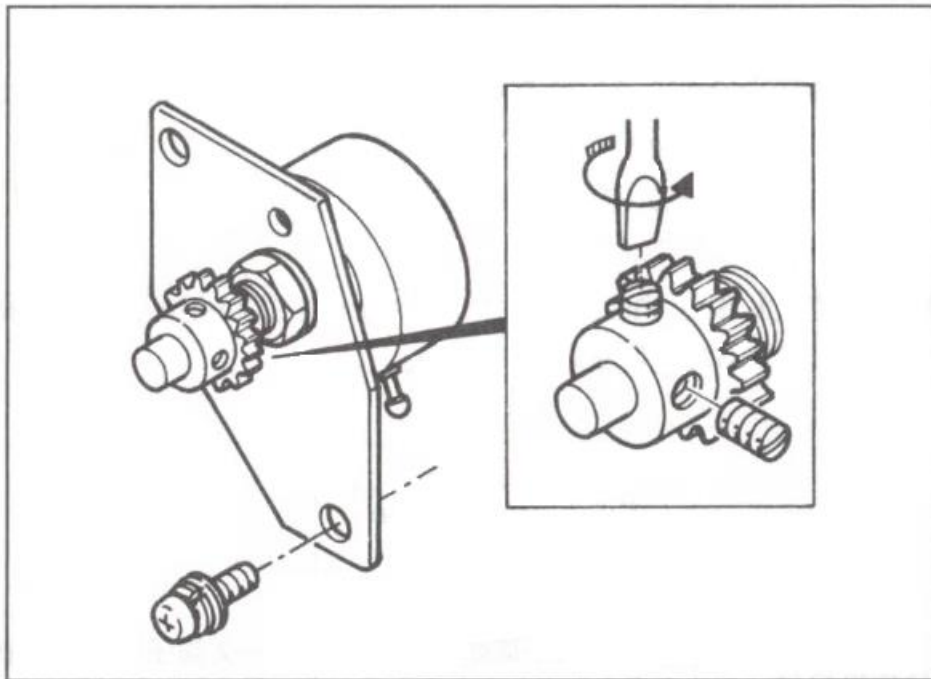
11. Potentiometer replacement

Follow the procedure below to replace the potentiometer.

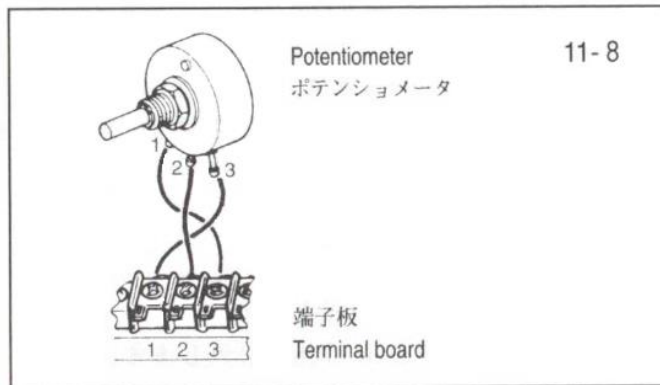




- 11-1 Position the control motor at 0% and turn the power
- 11-2 Remove the rear cover.
- 11-3 Check that the type and resistance of the new potentiometer are the same as the old one.
- 11-4 Remove the potentiometer mounting plate by loosening the two screws.
- 11-5 Remove the gear from the potentiometer shaft.
- 11-6 Remove the potentiometer from its mounting plate.



- 11-7 Fit a new potentiometer into the mounting plate.
- 11-8 Cut lead wires from the old potentiometer and solder them to the new one in accordance with figure 11-8.

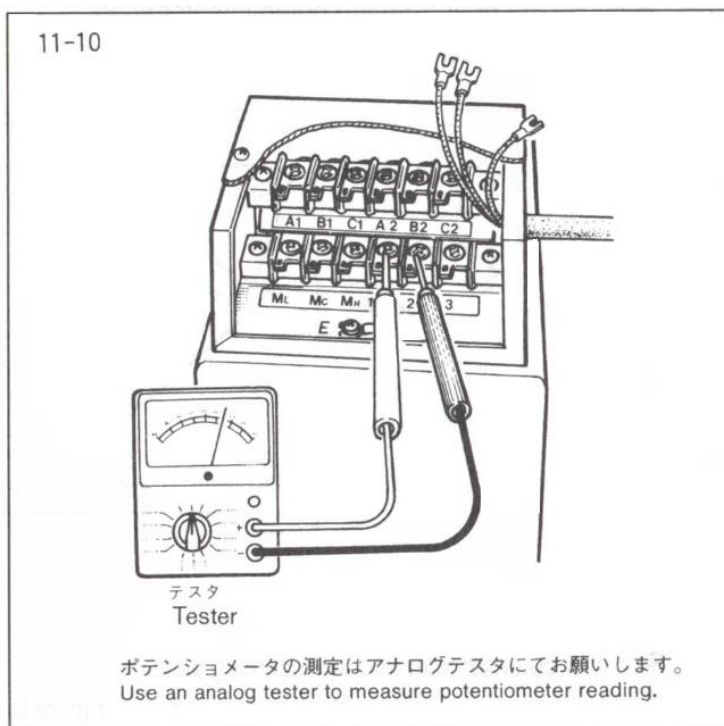


11-9 Assembly

Assemble the parts by reversing the disassembly procedure described above (11-4 ~ 5).

11-10 Remove the wires for potentiometer (terminals 1, 2 and

11-11 Check that the resistances shown at below are obtained at positions 0% and 100%.

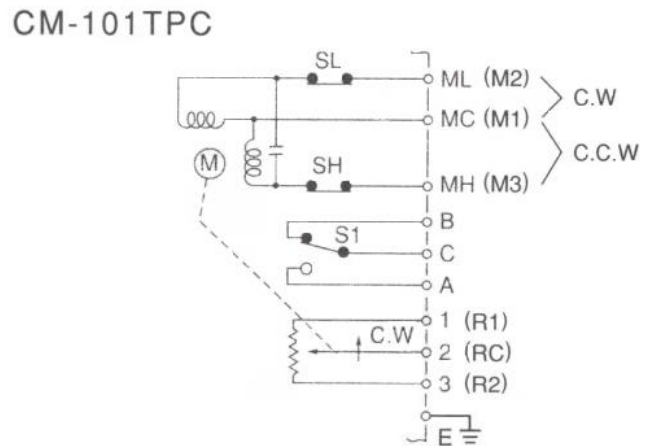
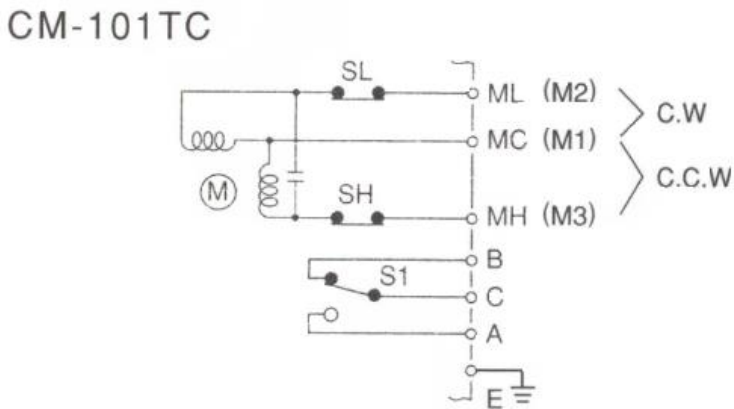
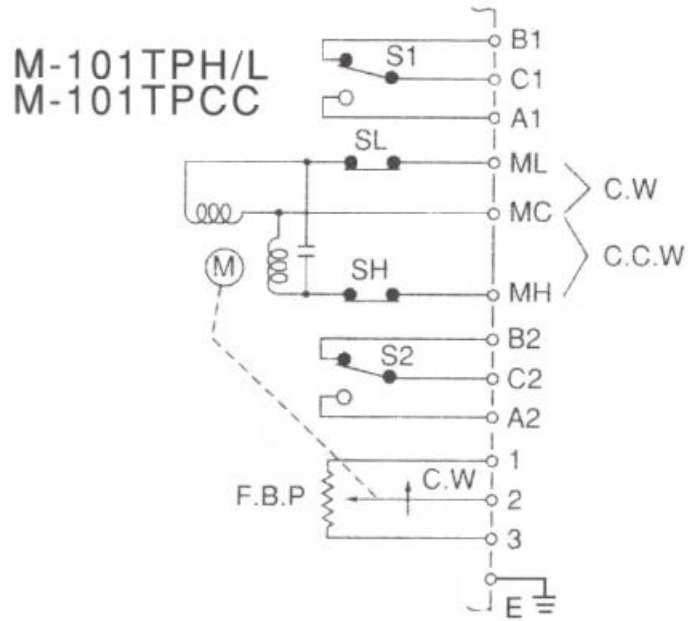
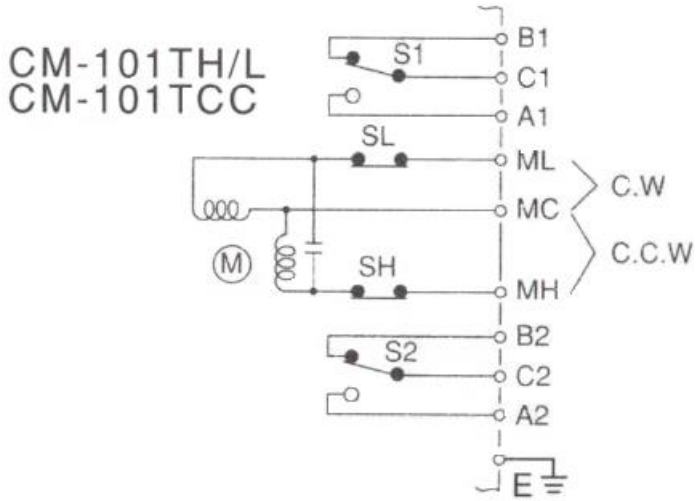


	Counterclockwise rotation limit (C.C.W)	clockwise rotation limit (C.W)
Nominal resistance	②-③ Residual resistance between terminals ②-③	①-② Residual resistance between terminals ①-②
135Ω	Approx. 6Ω	Approx. 6Ω
2000 Ω	Approx. 90 Ω	Approx. 90 Ω

Set the gears with the ratio of residual resistance of right to left adjusted to 1:1.(Residual resistances given in the above chart are only for reference.)



12.Wiring



Rotating direction as viewed from the main shaft

C.W : Clockwise rotation

C.C.W :Counterclockwise rotation



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PRECAUTIONS

- ① DO NOT attempt to switch the motor between normal and reverse rotation by using contacts C. In addition, be sure to add an interlock circuit to the switching circuit.
- ② Make a brief halt between normal and reverse rotation to switch between both.
- ③ Prevent a surge current from entering the supply power circuit of the control motor. Failure to do this could cause the drive capacitor to open. To be worse, Repetitive surge currents could cause excessive currents to overheat the capacitor, eventually leading to fuming and firing.