

IM 046-150-02



取扱説明書
INSTRUCTION MANUAL

方位ローテータシステム
AZIMUTH
ROTATOR SYSTEM

RC5-1D

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クリエートデザイン株式会社
Creative Design Corp.

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SECTION 1

GENERAL

1.1 GENERAL AND PURPOSE

This RC5-1D is an antenna rotator set of DC power supply type. The mechanical structure of this rotator is almost the same as the CD's standard type of RC5-1 rotator. However the big difference point between the standard type of rotator and this RC5-1D is that a DC type of motor is being used in the rotor unit instead of AC type. As it is constructed with 1/77 turning speed ratio of worm gear in the very initial stage of rotor unit, it offers an intensive drive and steady torque against reversing load raised from an antenna in couple with low-noise rotational. Refer to the instruction manual for installation and operation details. There are some parts in the manual that the specification, the contents of supplied parts and schematic diagram are different. These points which are different from the manual are as follows.

SPECIFICATION: RC5-1D

1.1.1 Mechanical Specification

Rotating Torque	Max. 5kg.m
Rotating Angle	360° ±20
Brake Torque	90kg.m
Maximum Vertical Load	400kg
Rotational Speed Maximum	Max. 1rpm
Drive Method	Worm Gear
Mast Diameter	48~65mm
Weight	
Rotor Unit	5kg
Indicator Controller	1.7kg

1.1.2 Electrical Specification

Drive Motor Output Power	6W
Power Supply	12~15VDC. Max. 3A
Indicator Accuracy	±3°

Note: 360° end indication function is not included in the RC5-1D.

1.2 EQUIPMENT PARTS BUT NOT SUPPLIED AND NECESSARY TOOLS

The following equipments are required for the installation of RC5-1D. These are equipments that customer must furnished since they are not supplied.

EQUIPMENT REQUIRED BUT NOT SUPPLIED AND THEIR PURPOSE

1. 5-Contact Cable: For Connection between Rotor Unit and Indicator Controller Unit (600V 0.5mm²)
2. Compass: For Direction Setting
3. Standard Tools: Installation Tools, Philip Head Screw Driver, Spanner Wrench, Vinyl Tape

1.3 EQUIPMENTS SUPPLIED

This RC5-1D is shipped and supplied standard with indicator controller unit and rotor unit in which the following parts are included.

TABLE 1. RC5-1D SUPPLIED EQUIPMENTS LIST

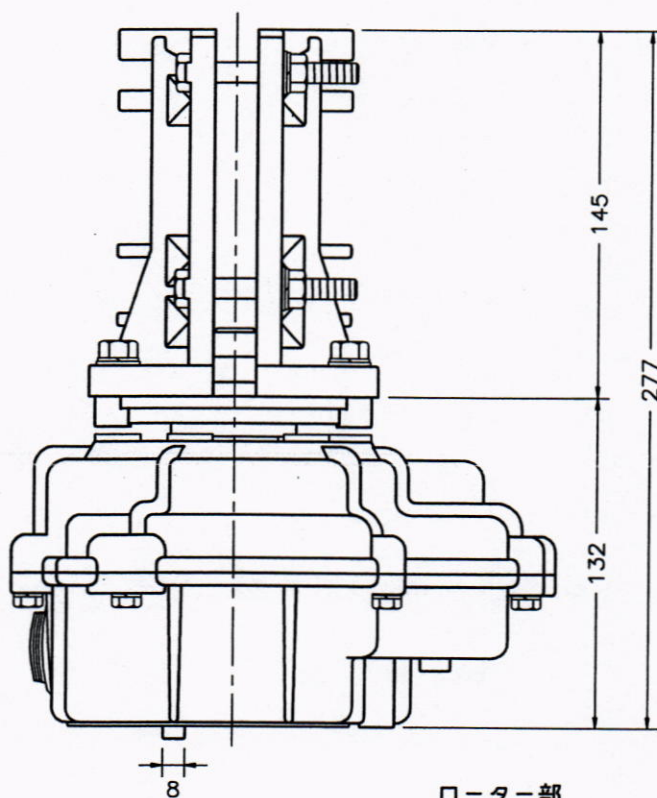
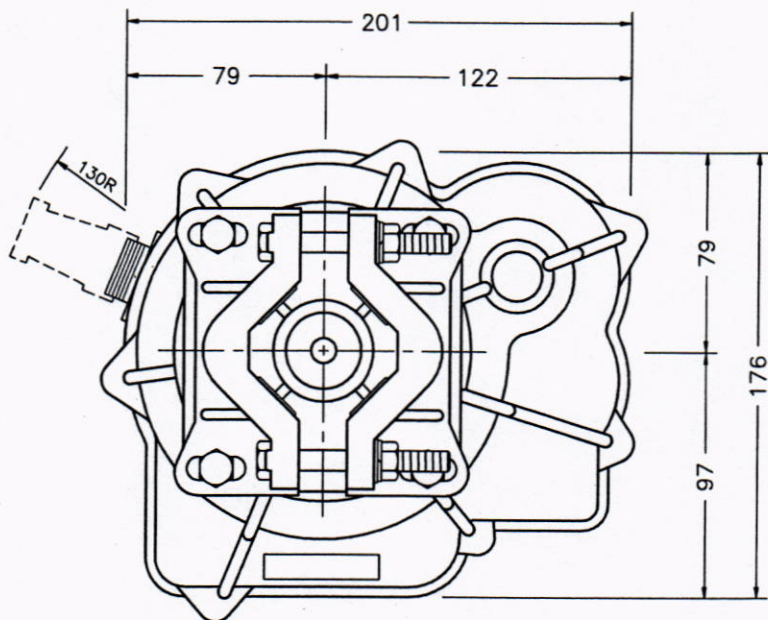
NO.	ITEM	DESCRIPTION	Q'TY
1	Indicator Controller Unit	RC5-1D	1
2	Rotor Unit	RC5-1D	1
3	Terminal Hug	1.25-YAS3	7
4	Fuse	3A	1
5	Lamp	18V	1
6	Connector	7P-25 Plug	1
7	Mast Clamp	MC60-1	1
8	Bolt	M8×19 W	5
9	Bolt	M8×30 PW,W.	4
10	Bolt	M8×75 PW,W.N	4

NOTE

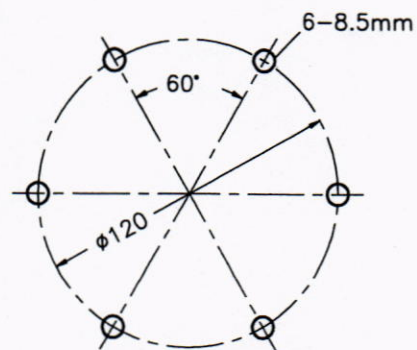
For connecting with a power supply source, be sure not to mis-connect ± polarity in the cable.

ローテータの外観と取付穴
Outer View of Rotator and Installation Dimension.

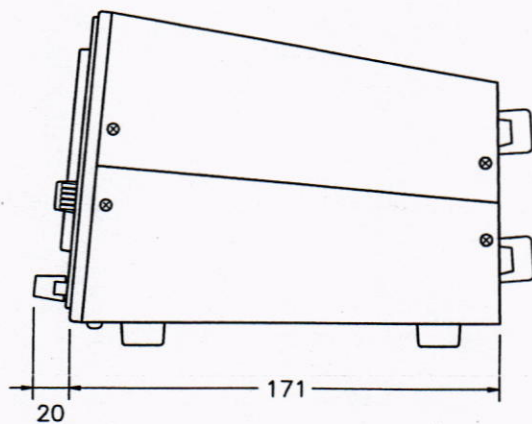
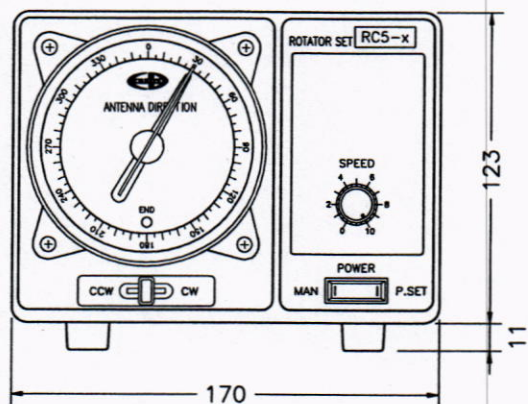
インジケータ部の外観寸法は Fig.1-3 の通りです。
Overall dimensions of Indicator are given in Fig.1-3.



ローター部
Rotator Unit



底部取付穴寸法
Rotator Bottom,
Mount Feet Dimension



インジケータ部
Indicator Control Unit

- Notes: 1. Dimensions are in millimeters.
記 寸法はミリメートル
2. Allowable mast diameter is 48~65mm.
適合マストはφ48~65mm

外観寸法図

Figure 1-3. RC5-1D, Outline and Mounting Dimension.

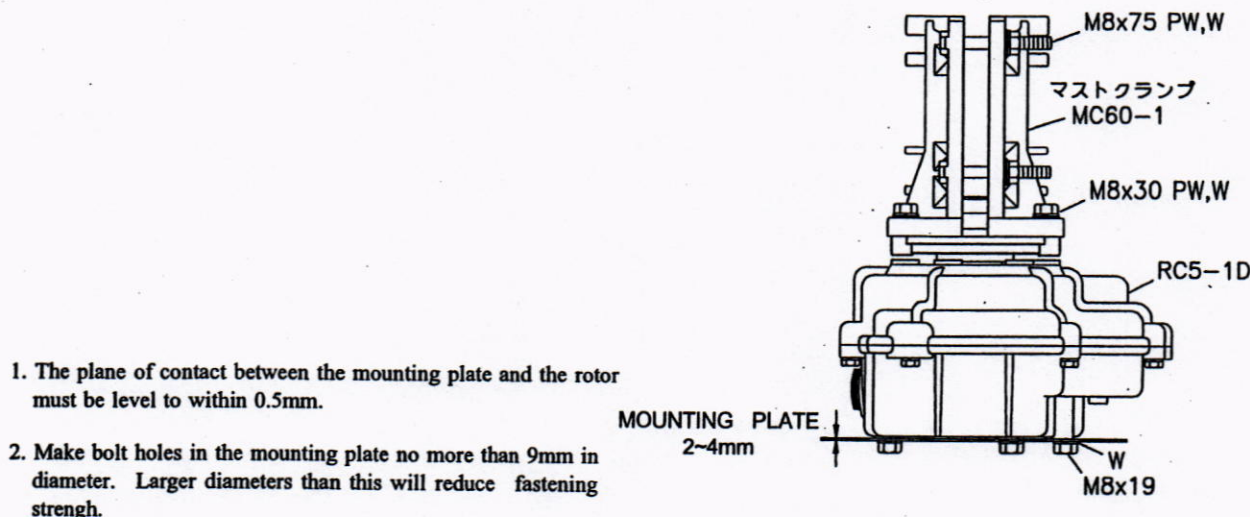
SECTION 2 INSTALLATION

2.1 GENERAL

This section explains for the installation of RC5-1D.

2.2 ROTATOR INSTALLATION

The RC5-1D basically consists of a rotor and an indicator/control unit. Place the rotor on top of a flat mounting plate with the mast clamp pointing up, as shown in Fig. 1.1. The mast must be perfectly vertical. Screw the five M8x19 bolts with S-washers up through five of six holes in the mounting plate to secure the rotor. If a mounting plate of thickness other than 2-4 mm is used, then bolts of different length must be used. Use zinc galvanized or electroplated - not stainless steel - bolts. These will minimize electrical contact with the rotor.



1. The plane of contact between the mounting plate and the rotor must be level to within 0.5mm.
2. Make bolt holes in the mounting plate no more than 9mm in diameter. Larger diameters than this will reduce fastening strength.

Figure 2-1. Rotator Installation, RC5-1D

DWGR.064

2.3 WIRING

Connect 6-conductor cable between rotator unit and indicator controller after installation of rotator is completed. Rotator unit is connected by 7-pin connector and the indicator unit is by terminal TB-1 provided in rear panel of indicator unit. It is required to attach cable to the connector by means of soldering, and attaching terminal hugs to the each conductor by pressing the hug using press wrench. It is alternative to precess them with soldring if the pressing wrench is not available. Be sure to take notes of the relationship between the pin number and cable identification (wire color) to be able to connect cable ends to terminal of the controller without making wrong connection. It is required to apply a protective taping for water proof.

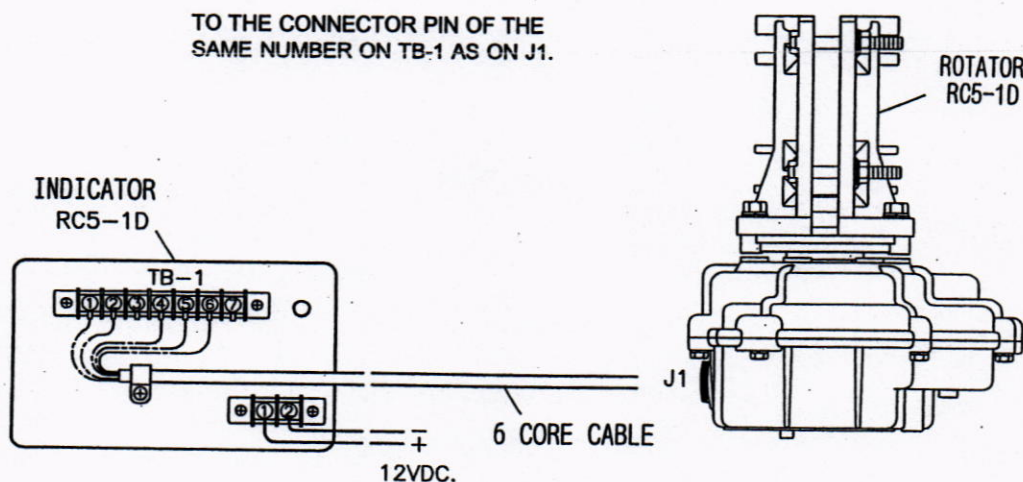


Figure 2-2. Remote Cable Wiring

DWR.009

SECTION 3 OPERATION

3.1 INSPECTION

Carefully check whether there is no mis-connection in wiring between the rotator and indicator remote controller before turning on the power. An improper wiring can result in damage to the potentiometer in the rotor or to the indicator control unit circuitry when the power is switched on.

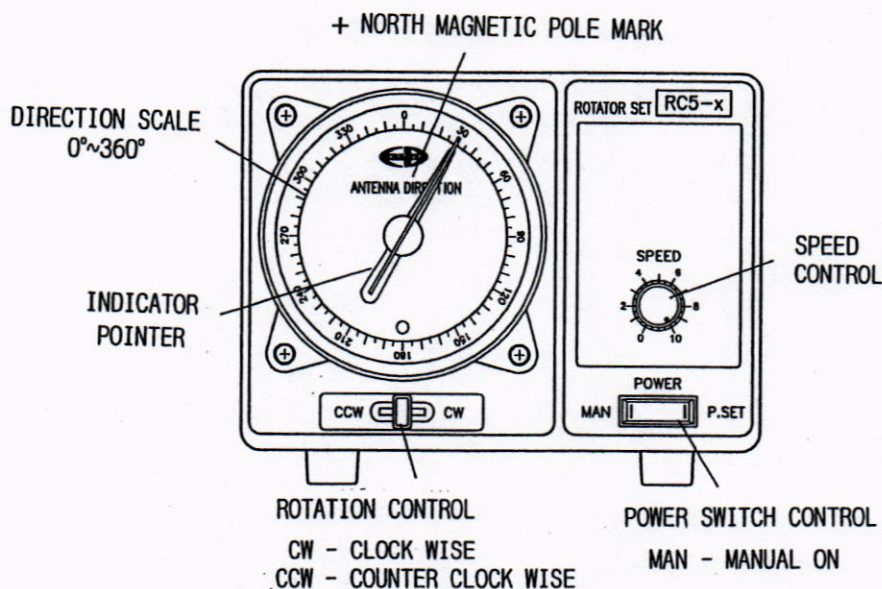


Figure 3-1. Indicator Control, RC5-1D

DWR.009

3.2 CCW-CW: ROTATION CONTROL

Rotation operation of the rotor is done by rotation control lever for either "CW" or "CCW." As this rotator are provided with RDC (reversal delay control function to extend rotor life by preventing sudden reversals of turning direction, so imposed a two or three second delay when the operator reverses directions in turning the antenna.

3.3 SPEED: SPEED CONTROL

RC5-1D is equipped with a circuit for varying the rotor turning speed. Turn the knob clockwise to increase the speed and counterclockwise to reduce it. Rotation is constant at high speed, regardless of antenna size, but is uneven at low speed. Turning the rotor fast is not desirable for the durability of the rotor braking mechanism, so low speed should be used when operating the rotator in strong wind or near to its rated limites.

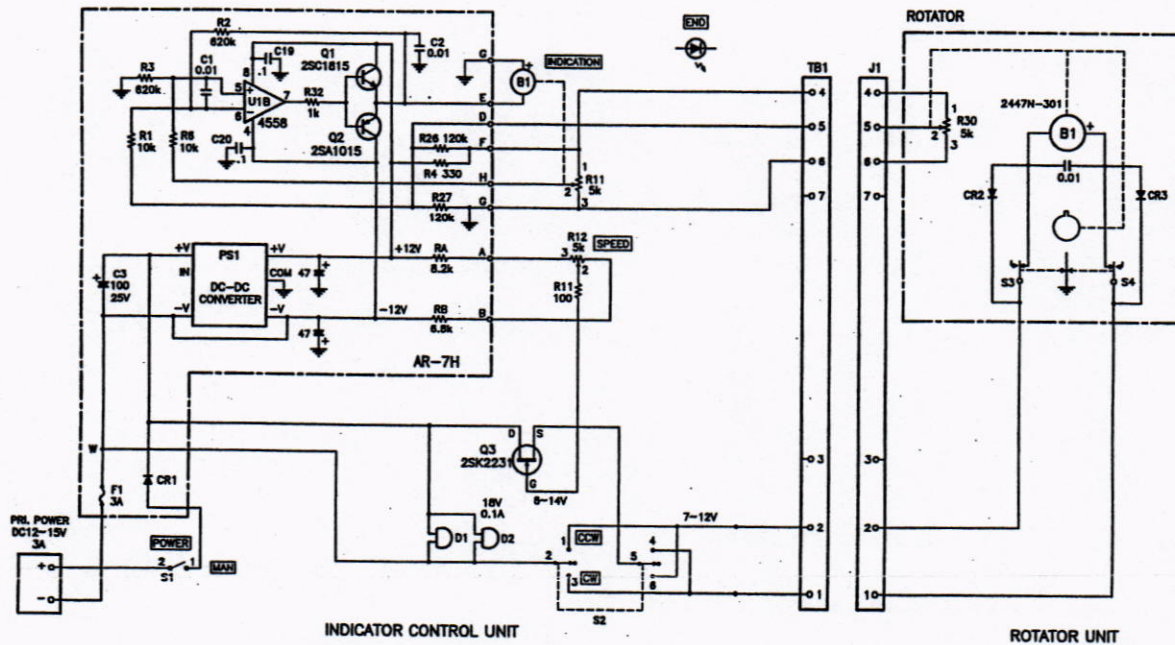
3.4 END: END INDICATION

Maximum rotaing range of RC5-1D is limited in approximately 380°.

SECTION 6 CIRCUIT DIAGRAM

6.1 ROTATOR SET

The circuit diagram for the both rotor unit and indicator control of the model RC5-1D are shown in the Fig. 6-2A.



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL CAPACITOR VALUES ARE IN MICROFARADS.
2. UNLESS OTHERWISE INDICATED, ALL DIODE VALUES ARE IN 30D-1

Figure 6-2A. Rotator Set RC5-1D, Schematic Diagram.

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SECTION 7 MAINTENANCE

7.1 ROTATOR INITIAL INSPECTION

The rotor must be regularly inspected and repaired if the rotator is to maintain a long operating life. Timing of the first rotor inspection will vary with the installation location, but it is usually desirable to conduct it around six months after installing the rotator set. This initial inspection consists of carefully examining the tightness of the external bolts used with the rotor. The cast aluminum housing undergoes more deformation in the early stages of use than would steel, and this can loosen bolts, especially when the rotator is used with a large antenna.

7.2 ROTATOR ANTICORROSIVE TREATMENT

Extent damage or corrosion is the next most common cause of rotor trouble after gear damage. Resistance to corrosion varies 150~200 percent from coastal locations to industrial zones to rural areas. The accumulation of windborne salt is a serious problem within about two kilometers of the ocean. In industrial zones, sulfur dioxide dissolved in rainwater is extremely corrosive. RC5-1D rotator is coated with anticorrosive paint at the factory, but regular painting is necessary to keep a unit rust-free. Ordinary anticorrosive paint for ferrous metals is best, although spray paint can also be used.

7.3 ROTOR LUBRICATION SCHEDULE

RC5-1D rotor should ideally be lubricated at about every 300 hours of operation. This means the rotor needs lubrication every couple of years when it is used for an average of a half-hour a day. However, there is no real need to lubricate the rotor unless it has slowed or unless operating noise has increased. The most critical lubrication point is the worm gear mechanism, and enclosure in optimum quality grease in a sealed chamber ensures long-term, maintenance-free lubrication of this mechanism. Special grease (e.g. Dow-Corning EM-30L) must be used when the rotor is installed where the surrounding temperature will fall below -20°C.

7.4 INDICATOR

The indicator/control unit does not require regular mechanical inspection and maintenance. Repairs and service required with this unit generally relate to the deterioration or malfunctioning of electrical parts, such as indicator lamp etc.

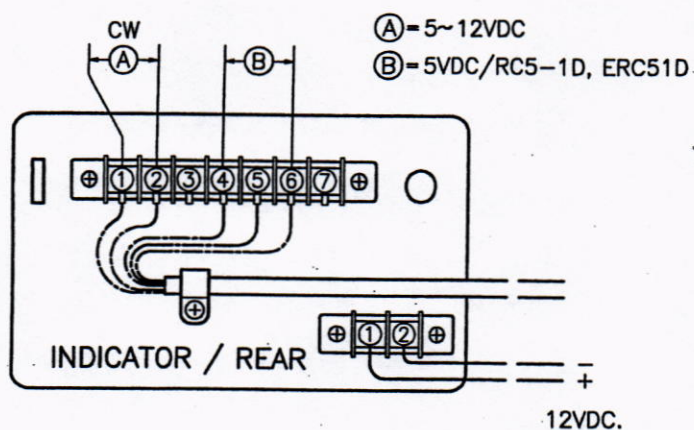
7.5 MULTIFUNCTION AND REPAIR

If the rotator is being operated for long periods, it is likely to have a defect in the control cable as well as internal parts used in both rotor or indicator control unit. Each of the defects can be occurred either electrically and mechanically. It is a wise and a lot help to have an scope for solving the problem by conducting and inspecting the possible hardwares visually and tracing it electrical thoughts too. Refer to the Table 7-1, is the typical type of symptoms troubles possibly to be raised in the rotator units and their corresponding countermeasures. Note that listed instruction includes an improper processed soldering. Contact CD if the problem is beyond your technical scope for having it appropriate repaired.

TABLE 7-1. Typical Defects and Countermeasure

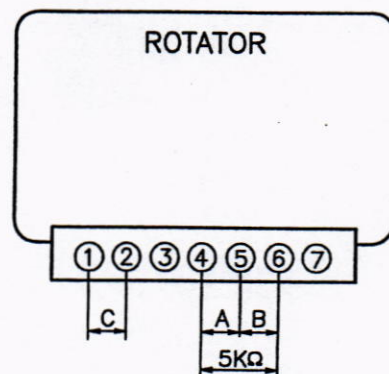
Symptoms	Inspection	Possible Defect Parts and Countermeasures
1. Power can not be on. (Fuse is blow out)	Remove remote wires from indicator, then inspect the cause of the failure is whether subjected to either indicator, remote cable or rotor unit	Remove remote wires from indicator, then inspect the cause of the failure is whether subjected to either indicator, remote cable or rotor unit
2. Does not turn nither CW and CCW direction. 3. Rotate either CW or CCW.	Check the voltage of both A and B as referred to Fig. 7-1.	Check remote cable or resistive value of C, and D as referred to Fig. 7-2, must be in trouble either one. If none of both, may by in trouble in the indicator unit.
4. Stopped the rotation on the way in rotating process.	Check to see whether the lead-out coaxial cable is twisted and tangled or not.	Attempt to amend the tangled part of coaxial cable.
5. The circuit braker is on and the power is down when started rotation.	Remove remote cable from indicator and check to see what causes the failure, whether it is raised in the remote cable, indicator or the rotator unit.	The indicator unit is considered to be defective if leakage braker is cut the power, or remote cable if not. If neither of them, it is caused in the rotator unit.
6. Indicator pointer does not move and is standstill pointing at 0°(degree).	Make a short pin No. 4-5, and 5-6 respectively of output terminal of the indicator unit and check the malfunction of indicator pointer.	Make a short pin No. 4-5, and 5-6 respectively of output terminal of the indicator unit and check the malfunction of indicator pointer.
7. When the power is on, indicator pointer alone moves straight to CW or CCW ends. 8. Indicator pointer move unsteadily or move totterly.	Remove remote cable from indicator and check to see the caused failure is raised whether in the remote cable, indicator or the rotator unit is	The indicator unit is considered to be failure if the pointer is still stayed at standstilled position meanwhile either the remote cable or rotator unit is the one if the pointer started and stopped at 0°. Check the malfunction also as instructed in Note-3 Fig. 7-2.
9. The speed control does not fuction.	The indicator malfunction might be the cause of the failure.	

Note: In case that the symptom of trouble of rotator is not applicable with the condition stipulated above table or distinct part of defects is not defined yet, check to see also the voltage as instructed in Fig. 7-1 and resistive value of each pin of the terminal as stated in Fig. 7-2. Check also a water protectiveness and soldering in the connector too.



- NOTE: 1. Be sure to disconnect the cable to check output voltage.
2. Speed control must be set in high speed position as the voltage at A, detected may be dropped down if the speed control is set in the low speed position.
3. Each voltage is 10% tolerance.

Figure 7-1. Output Voltage of Indicator Unit



- NOTE: 1. Resistor value of C: 3 Ω
2. Total resistor value of A and B is 5k Ω.
3. Each resistor value has 20% tolerance.

DWGR.061

Figure 7-2. Internal Resistor Value of

7.6 PART REPLACEMENT

A part must be replaced with an equivalent part when it has been identified as a source of trouble. Parts not readily available elsewhere can be obtained from Creative Design Corp. Submit orders to the point of purchase or directly to the Rotator Service Division at Creative Design Corp. Be sure to specify the rotator model number, the date of purchase, and the part numbers(s) for the needed part(s) as given on the part lists of Section 5 and circuit diagrams of Section 6.

7.7 REPAIR REQUESTS

Repairs beyond the technical scope of the rotator owner can be entrusted to Creative Design Corp. The defective unit may be sent to Creative Design Corp. either directly or via the dealer from who the rotator was purchased. In the case of repairs not covered by the warranty, we will inform the owner beforehand of how much the repair will cost. There will be a charge for repairs necessitated by operation of the rotator under conditions exceeding those specified by Creative Design Corp., even within the warranty period.

We will ordinarily repair and return units within five days, although somewhat more time is something required when needed parts have been replaced in the course of design improvements and are no longer in stock. When sending an unit directly to Creative Design Corp for repair, make certain to indicate the name and address of the purchaser, the name of the dealer that sold the rotator set, and the nature of the problem.