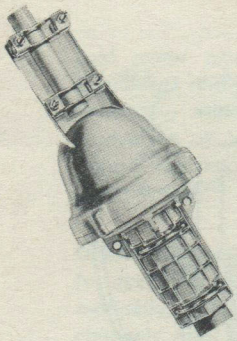
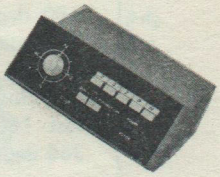


CORNELL-DUBILIER AR-33



autorotor™

GENERAL

The Cornell-Dubilier Model AR-33 Autorotor Rotor is designed to support and rotate the largest television antennae. The AR-33 is not intended for large Ham beams. For extremely windy areas or large beams, the CDE Ham-M rotor is recommended.

The AR-33 is rated to support a dead vertical weight of 150 pounds, has 500 inch pounds of motor stall torque, and resists an overturning moment of approximately 4000 inch pounds without guying. Rotation is controlled within two degrees accuracy. The rotor is lubricated for long life and will operate suitably at minus 20 degrees Fahrenheit.

The unit is shipped from the factory set at the end of rotation in full "North" counter-clockwise position (looking down at top of rotor).

Note that the rotor mast clamps are reversible thus allowing clamping to large diameter (up to 2") or small diameter (down to 7/8") masts. The lower mast support, which is shipped unmounted, is not used when the rotor is mounted in a tower.

Standard five-wire rotor control cable is available from any electronics supply house. The following wire sizes are recommended:

Wire Guage	Max. Length In Feet
22	100
20	150
18	220
16	350
14	550

PRE-INSTALLATION

The AR-33 operates from 115 VAC—50/60 HZ. The AR-33-220V operates from 220 VAC 50/60 HZ.

1. Carefully remove the control box, mounting hardware, rotor unit, and lower mast support from the carton. Inspect all items to insure no shipping damage has occurred.

2. Measure out the amount of five-wire control cable required for your particular installation. At each end of this cable separate into individual wires approximately two inches from the end. Strip the insulation off each wire so that 1/4 to 3/8 inch of bare wire is exposed. Note: One wire may be silver colored and the other four copper colored. Use this silver colored wire for number one (1) lead. Twist the bared ends tightly and lightly tin these with solder to prevent unravelling of single strands. Do not tin up to insulation as this will hinder identification of the number one (1), silver colored wire.

3. It is recommended that the unit be "bench tested" prior to installation. Connect the rotor and control box in accordance with Figure 1 using the full length of cable prepared in step two (2). Care must be exercised to prevent short circuits between cable pairs.

4. Your unit is now ready for checking:

   a. Set the compass knob to "North" (Full Counter-clockwise).

   b. Set the "Dial-Off-Pushbutton" switch to "Off".

   c. Plug the control box AC line cord into 115 VAC line.

   d. Set the "Dial-Off-Pushbutton" switch to "Dial". The amber "power" indicator light will come on.

CDE autorotor™ Patent No. 3,043,998. Other Patents Pending.

e. Rotate the compass dial to "South". Rotor will turn 180 degrees clockwise. Red "Rotor" light will come on indicating rotor is turning. After the rotor has stopped at "South", continue to rotate the compass dial clockwise to "North". The rotor will now turn the last 180 degrees clockwise thus completing the full 360 degrees of rotation.

f. Turn the compass dial counter-clockwise back to "North". The rotor will turn counter-clockwise 360 degrees back to "North" and stop.

g. Set the "Dial-Off-Pushbutton" switch to "Pushbutton". The amber "power" light will be on. Randomly push the push-buttons while checking rotation changes. These pushbuttons are not preset at the factory. Return the rotor to "North" as per step "f".

h. Set the "Dial-Off-Pushbutton" switch to "Off". Unplug the control box from the wall outlet. Disconnect the control cable from the rotor and control box.

i. Your rotor is now ready for installation.

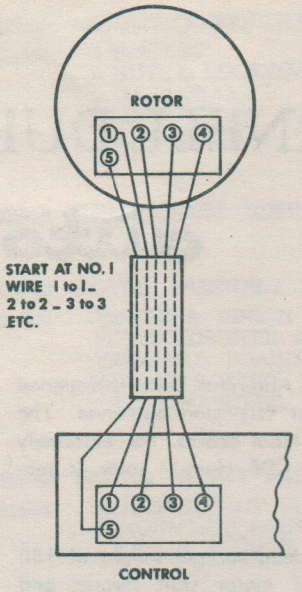


FIGURE 1

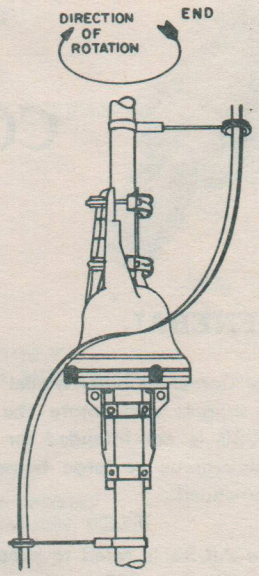


FIGURE 2

INSTALLATION

GENERAL—The lower mast support casting is shipped unmounted; feed the cable through the rubber grommet in the terminal cover plate. Connect as shown in Figure 1. Then mount the lower mast support casting to the rotor base with four hex head bolts and lockwashers, tighten them securely.

To relieve strain on the antenna lead in cable, stand-off insulators should be mounted on the mast as follows: With the rotor in "end" position, mount a stand-off insulator directly above upper mast support as shown in Figure 2. The stand-offs should be 180 degrees apart. Dress the antenna lead-in through the stand-offs, allowing sufficient slack for complete rotation. Note the direction the rotor is to turn; clockwise. Improper direction of lead-in around rotor will cause breakage of lead-in wire.

GUYING—Two guy wires lugs are provided on the lower mast support casting for guying purposes. The use of standard 3/16" or ¼" guy thimbles with adequate size wires, using turnbuckle adjustments, is recommended. Care should be taken not to tighten guy wires excessively. The installation should have a slight freedom of movement to prevent storm damage.

UHF & COLOR—Special care must be exercised when installing UHF or Color TV antenna lead-ins. Special lead in cable should be used that is made especially for color or UHF.

LIGHTNING PROTECTION—Radio and television equipment installation is covered in Article 810 of the National Electrical Code. The code, Pamphlet NFPA 70, is prepared and published by National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts, copies of which are available for $1.00 (1962 edition). We recommend that the provisions be adopted in AR-33 installations. The provisions call for certain minimum clearances between power lines and antenna lead-ins. Lead in conductors attached to buildings must be installed so that they cannot swing closer than 2 feet to conductors carrying 250 volts or closer than 4 inches to 150 volts. Obviously, tall mast installations with considerable whip or installations that could be blown over in storms, should be mounted further from power lines and in such a way that they will not contact power lines if fractured or bent in a storm. The code specifies that approved lightning arrestors should be used for each lead-in unless the lead is enclosed in metal conduit in which case the shield should be protected with arrestors or be grounded. The arrestors should be located outside the building as close as possible to the point of entry to the building.

Masts and metal parts should be permanently grounded using #10 copper or #8 aluminum building wire. Grounding wires should not make sharp bends and should run as straight as possible to the grounding stake or if possible to the nearest

cold water pipe outside the building. Clamps should be permanent and secure. Do not bury aluminum wire in ground. Grounding stakes should be ¾" I.D. galvanized pipe or equivalent at least 18" away from house foundation. The ground rod should be driven as deeply as possible but not less than 4 feet.

OPERATION—A three position, center off, switch provides for operating the rotor manually, via a compass dial, or automatically, via five (5) pushbuttons which are preset for channels most frequently viewed. (These are set at time of installation.)
The AR-33 Autorotor is the only rotor system offering both manual and pushbutton direction control. When the function switch is on either pushbutton or manual position you will notice that the amber "Power" indicator light is on indicating the unit is on. It is recommended that function switch be in off position (Center) when unit is not in use.

NOTE: When switching to "Pushbutton", always depress the desired channel button first. If the function switch is left in the "Pushbutton" position, one of the channel buttons should be depressed.

The red "Rotor" light will come on when the manual selector knob or pushbuttons are used. When the selected antenna direction is reached, the light will go off.

ADJUSTMENT OF PUSHBUTTONS—To preset pushbuttons (5 selected channels), the following steps should be taken.

A. Remove escutcheon strip above switch button by inserting fingernail or sharp object behind center and gently pulling forward until strip lifts out. Note that there is a top and bottom to the strip (See Figure 3A).

B. Note adjusting potentiometer above and behind each switch button (See Figue 3).

C. Depress first button. Turn on T.V. set and select desired channel.

D. Insert small screwdriver in potentiometer slot above depressed button and slowly rotate potentiometer. When potentiometer is turned, rotor light will come on and remain on until rotor stops rotating. (Rotate potentiometer about 10° and watch operation and notice picture change due to antenna changing position). Continue in small steps until peak picture is obtained.

NOTE: If you are located near a strong station, you may have more than one peak picture. The best picture will be received when front of antenna faces the station location.

This button is now set.

E. Follow above procedure for remaining four buttons.

F. Place dry transfer number on the escutcheon strip to indicate proper channel. Place number in desired position and rub front of transfer with stylus or ball point pen to transfer number to the strip. Remove backing paper. Number is now on strip. Repeat above for remaining channels selected.

G. Replace escutcheon strip above channel select pushbuttons being careful that top of the strip is at top of unit. (See Figure 3A).

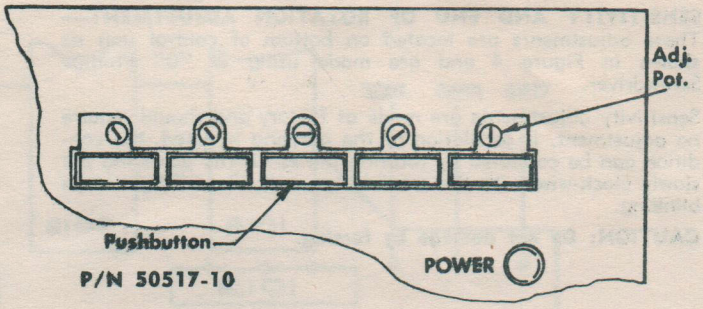
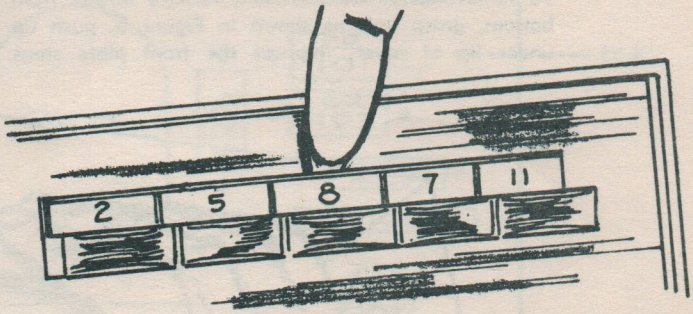


FIGURE 3



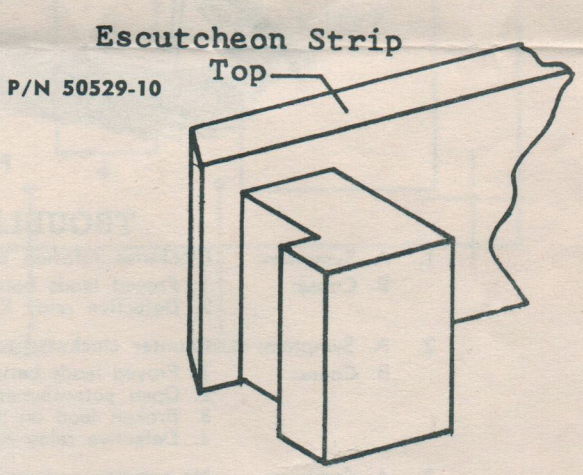


FIGURE 3A

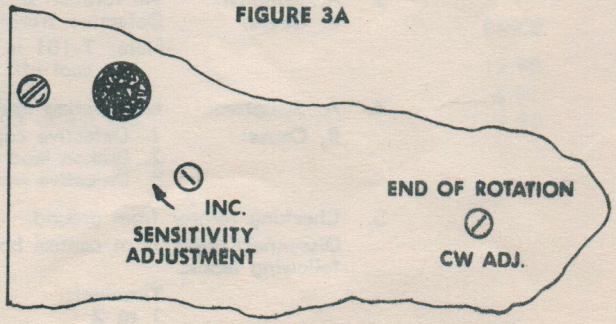


FIGURE 4

SENSITIVITY AND END OF ROTATION ADJUSTMENT— These adjustments are located on bottom of control unit as shown in Figure 4 and are made using # "0" Phillips Screwdriver.

Sensitivity adjustments are made at factory and should require no adjustment. If oscillation of the antenna is noted, the condition can be corrected by rotating the sensitivity adjusting pot slowly clock-wise with the screwdriver until "Rotor" light stops blinking.

CAUTION: Do not damage by forcing.

END OF ROTATION ADJUSTMENT—This adjustment is also made at factory and field adjustments are rarely necessary. If with the compass dial at the end of rotation (C.W.), the "Rotor" light remains on, adjustment is necessary. This adjustment is made by using the screwdriver and rotating the "end of rotation" pot slowly until light goes out.

TROUBLE SHOOTING AND SERVICE

To remove cover from chassis, remove screws from bottom, grasp unit as shown in Figure 5, push up under lip of cover, then as the front plate stops clear the face plate upper edge, push back on the front plate. Chassis will come out through the bottom of the cover. Care must be exercised.

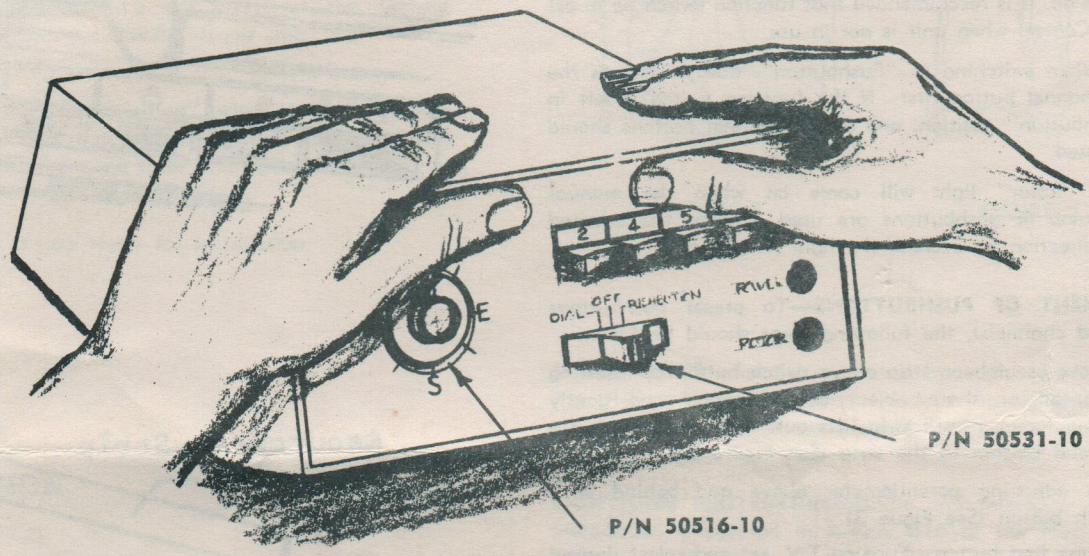


FIGURE 5

TROUBLE SHOOTING

1. A. Symptom: Clockwise rotation only.
   B. Cause:
   1. Frayed leads between terminals one and two.
   2. Defective relay K-102.

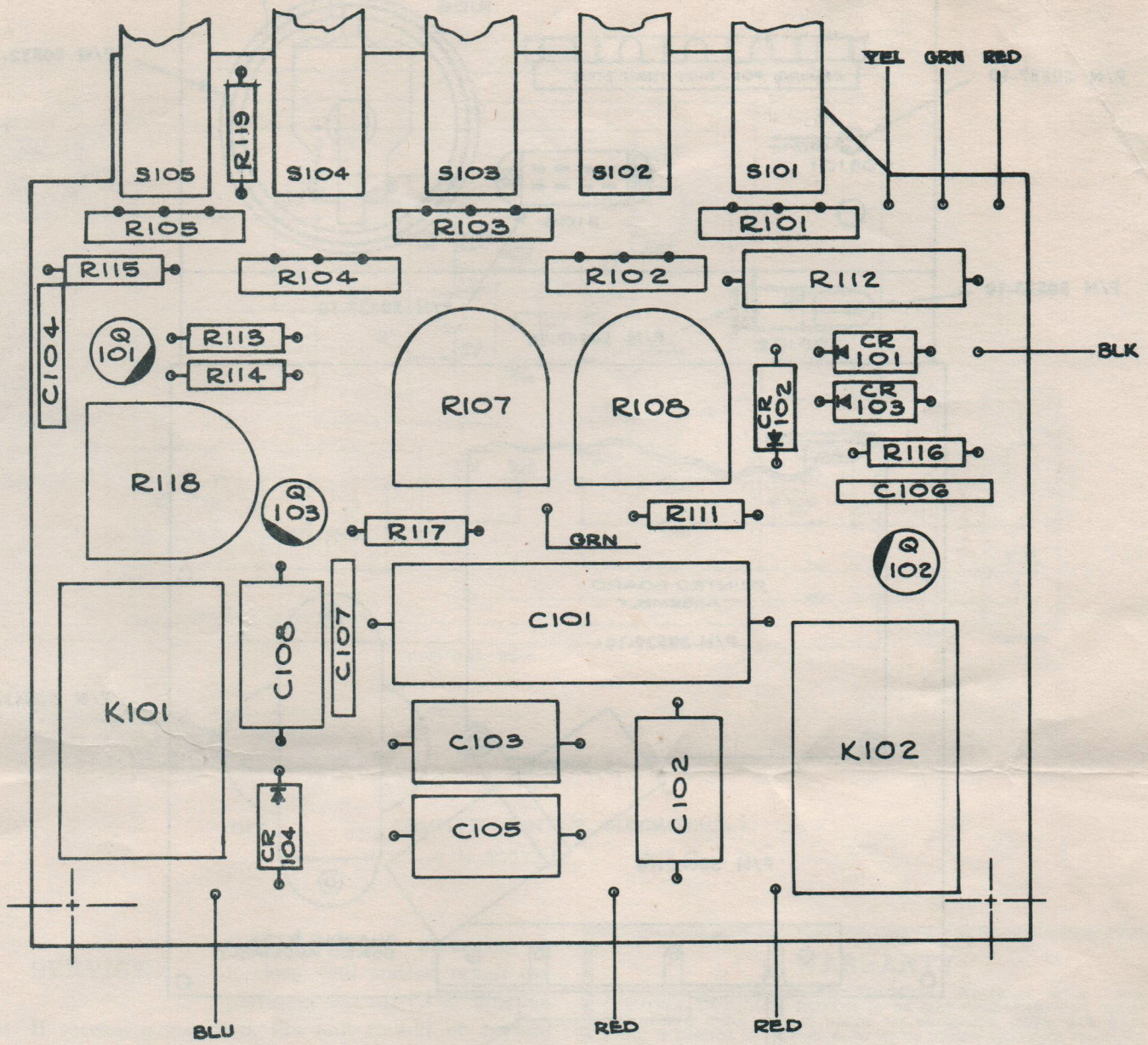
2. A. Symptom: Counter clockwise rotation only.
   B. Cause:
   1. Frayed leads between terminals two and three.
   2. Open potentiometer in rotator unit or control unit.
   3. Broken lead on terminal one or two.
   4. Defective relay K-101.

3. A. Symptom: No rotation and no rotor light.
   B. Cause: Defective transformer T-101.
   Note: T-101 is equipped with a thermo switch. Allow 10 minutes for cool off, then re-check.

4. A. Symptom: No rotation and rotor light on.
   B. Cause:
   1. Defective capacitor C-109.
   2. Broken lead on terminals 3, 4, or 5.
   3. Defective motor or gears in rotator.

5. Checking rotator from ground:
   Disconnect cable from control box. With an ohmmeter, check resistances between the following leads:

Terminals	Resistance
1 to 2	0 to 1000 ohms (Dependent on Rotor Position)
3 to 4	2.5 ohms plus cable resistance
3 to 5	2.5 ohms plus cable resistance
4 to 5	5.0 ohms plus cable resistance



PARTS LIST

P/N	DESCRIPTION	PRICE
50539-10	Printed Ckt. Bd., Complete	19.90
50701-10	Relay Kit, K-101 & 102 (1 per kit)	4.50
50702-10	Transistor Kit, Q101, 102, & 103 (3 per kit)	1.90

FIGURE 6

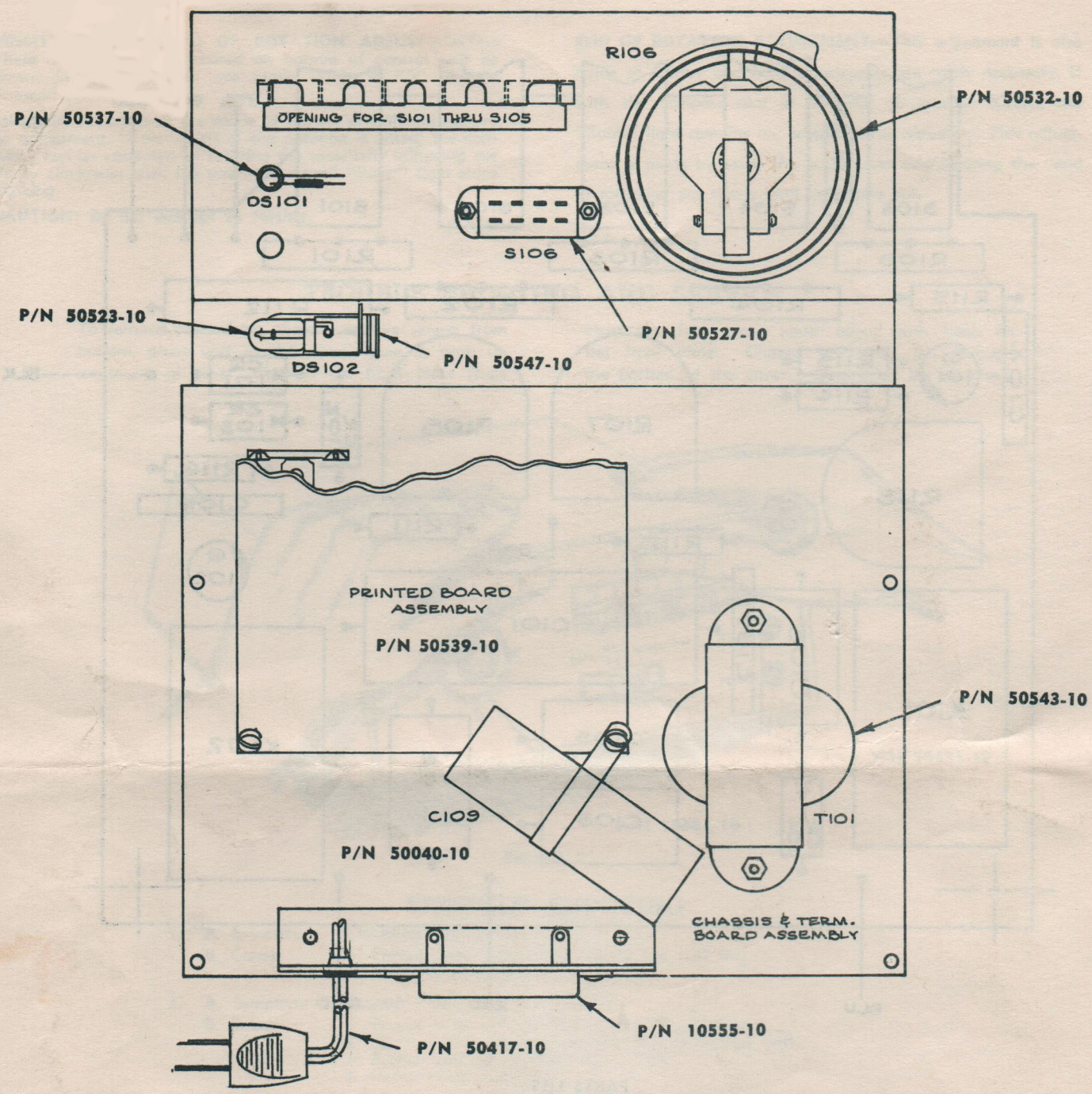


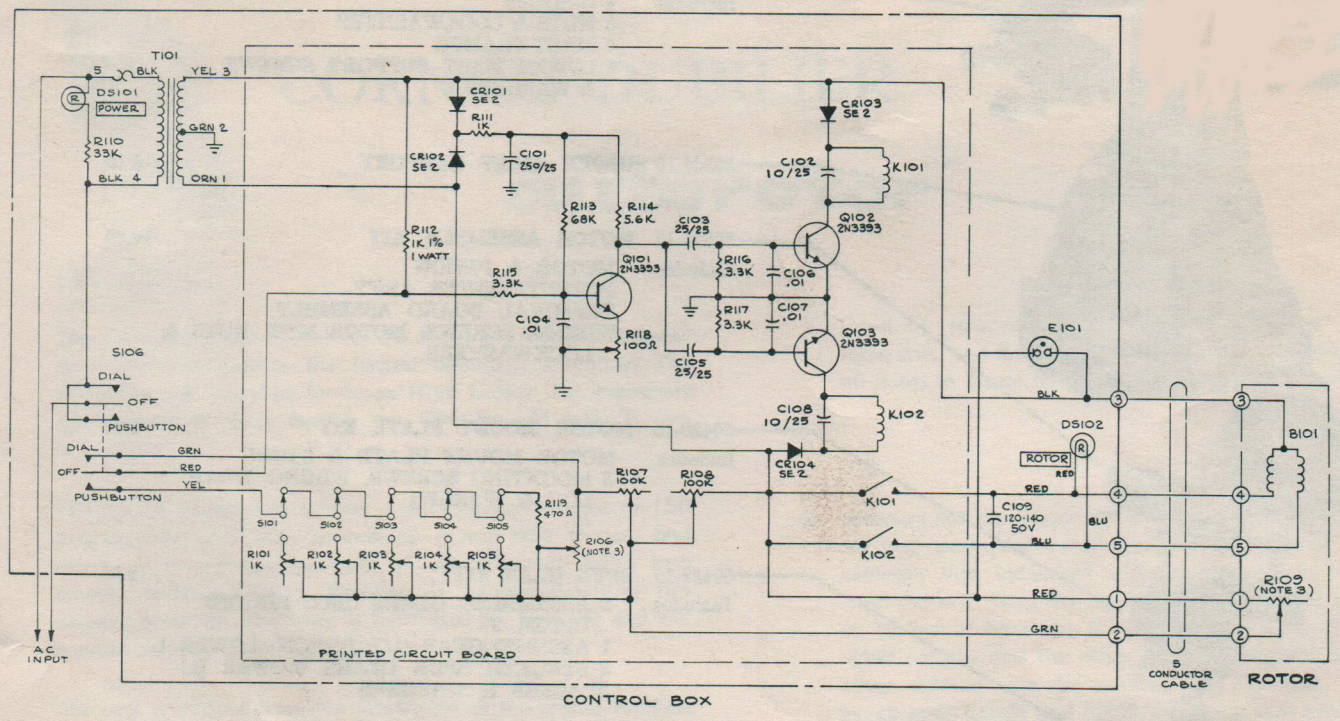
FIGURE 7

Top View of Chassis with Cover (50514-10) Removed

50535-10	Control Box Ass'y Complete	$42.45
50536-10	Chassis & Term. Bd. Assy.	$ 2.70/each
50514-10	Cover (Exterior)	$ 1.80/each
50040-10	Cap. (C 109) 120-140 Mfd. 50 VAC	$ 1.65/each
50543-10	Transformer (T 101)	$ 5.20/each
50539-10	Printed Board Assembly	$19.90/each
10555-10	Solder Terminal	$ .40/each
50547-10	Lamp Holder	$ .50/each
50518-10	Face Plate	$ .50/each
50523-10	Lamp (DS 102)	$ .70/each
50537-10	Neon Lamp (DS 101)	$ .75/each
50527-10	Slide Switch (S 106)	$ .70/each
50531-10	Slide Switch Knob	$ .45/each
50532-10	Potentiometer (R 106)	$4.50/each
50516-10	Dial Compass Knob	$ .65/each
50529-10	Escutcheon Strip	$ .50/each
50417-10	A. C. Line Cord E/W U-2165 Strain Relief	$1.00/each
50517-10	Push Button	$ .65/each

ORDER PARTS USING COMPLETE NUMBER & DESCRIPTION

To order parts, remit check or money order for total parts cost plus $.50 for postage and handling to: Cornell-Dubilier Electronics, Department "C", 118 E. Jones Street, Fuquay-Varina, N. C. 27526



NOTES:
1. ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITORS ARE IN MICRO FARADS.
3. RESISTORS, R101 THRU R105 ARE: -0 +20% RESISTORS, R106 & R109 ARE: 1,020 OHMS +20, -15 OHMS.

FIGURE 8

COMPLETE CONTROL BOX ASSEMBLY

P/N 50535-10 $42.45

SERVICE

Cornell-Dubilier maintains a modern well staffed repair department for all CDE antenna rotors. If service is required, the unit should be packed securely and sent prepaid to:

Cornell-Dubilier Electronics
Rotor Service Department
118 East Jones Street
Fuquay-Varina, N. C 27526

For units that are in warranty, no charge will be made for repair. If the unit is out of warranty, the following flat rate charges apply:

Control box only	$10.00
Rotator only	$10.00
Complete unit	$15.00

A check or money order for the amount indicated above should be included. The flat rate charge includes rebuilding the unit and replacing all defective parts.

WARRANTY

CORNELL-DUBILIER ELECTRONICS warrants each new CORNELL-DUBILIER ROTOR to be free from defect in material arising from normal usage. Its obligation under this warranty is limited to replacing, or at its option repairing the rotor which, after regular installation and under normal usage and service, shall be returned within **ONE (1) YEAR** from date of original consumer purchase of the rotor to **Cornell-Dubilier Electronics, Rotor Service Dept., 118 E. Jones St., Fuquay-Varina, N. C. 27526**, together with satisfactory evidence of such purchase, and which shall be found to have been thus defective in accordance with the policies established by CORNELL-DUBILIER ELECTRONICS.

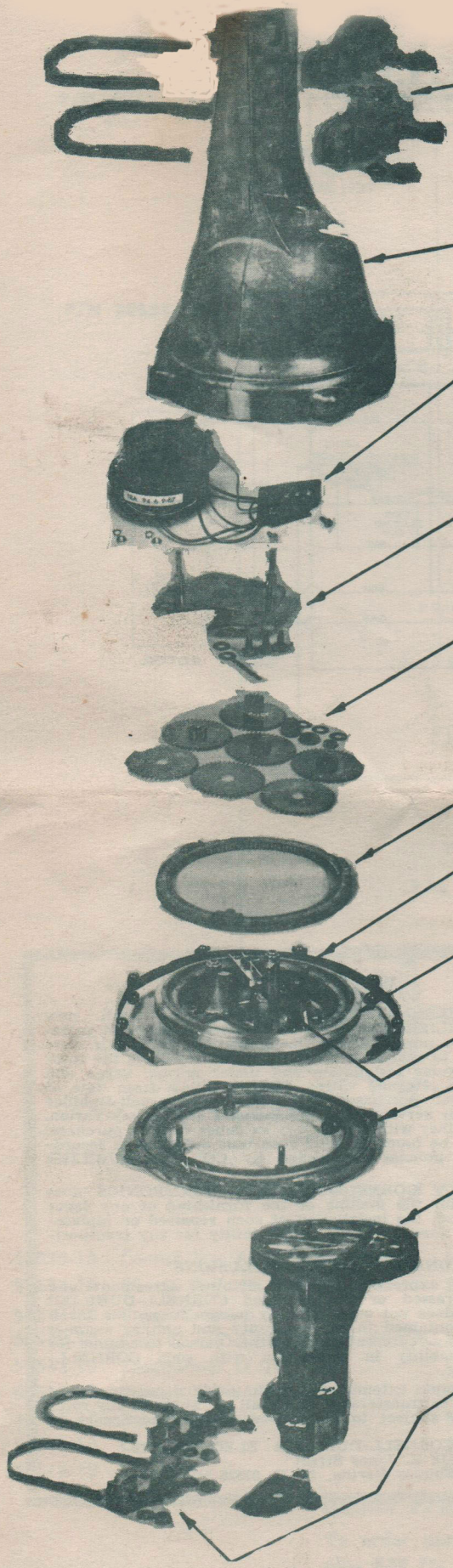
The obligation of CORNELL-DUBILIER ELECTRONICS does not include either the making or the furnishing of any labor in connection with the installation of such repaired or replacement rotor, nor does it include responsibility for any transportation expense.

CONDITIONS AND EXCLUSIONS

This warranty is expressly in lieu of all other agreements and warranties, expressed or implied, and CORNELL-DUBILIER ELECTRONICS does not authorize any person to assume for it the obligation contained in this warranty and neither assumes nor authorizes any representative or other person to assume for it any other liability in connection with such CORNELL-DUBILIER Rotor.

The warranty herein extends only to the original consumer and is not assignable or transferable, and shall not apply to any rotor which has been subject to alternation, misuse, negligence or accident.

CORNELL-DUBILIER ELECTRONICS
118 E. Jones Street
Fuquay-Varina, N. C. 27526



50638-10	**ROTATOR ASSEMBLY, COMPLETE**	$41.50
Includes	LOWER MAST SUPPORT & HDWE.	
50425-10	**MOUNTING HARDWARE KIT**	3.60
Includes	4 U-BOLTS 8 NUTS & LOCKWASHERS 4 MAST CLAMPS 4 LOWER MAST SUPPORT SCREWS & WASHERS	
50304-10	**UPPER MAST SUPPORT**	6.10
50578-10	**MOTOR ASSEMBLY KIT**	14.70
Includes	MOTOR & PINION POTENTIOMETER ASS'Y TERMINAL BOARD ASSEMBLY WIRING, SCREWS, MOTOR MTG. NUTS & LOCKWASHERS.	
50420-10	**MOTOR MOUNT PLATE KIT**	1.80
Includes	MOTOR MOUNT PLATE & STUDS 3 MOUNTING SCREWS, WIRING WRAP LUG & WASHER	
50422-10	**SPUR GEAR KIT**	3.00
Includes	3 ASSEMBLED GEARS (SHT. PINION) UPPER 3 1 ASSEM'D GEAR (LG. PINION) LOWER L. 3 STACKED SPUR GEARS (LOWER R.) SPACERS & WASHERS	
50313-10	**RING GEAR**	1.40
50427-10	**BEARING STRAP ASSEMBLY**	1.60
Includes	12 BALL BEARINGS	
50370-10	**BASE INCLUDING POSTS** (Does Not Include Stop Below)	4.25
50423-10	**STOP ARM KIT**	.60
50424-10	**BEARING RACE KIT**	2.25
Includes	RACE & 4 MOUNTING SCREWS	
50349-10	**MAST SUPPORT KIT**	3.70
Includes	LOWER MAST SUPPORT, INSPECTION PLATE & GROMMET, 2 MOUNTING SCREWS FOR INSPECTION PLATE	
50428-10	**GREASE FOR ONE ASSEMBLY**	.35

HDWE. INCLUDED IN 50425-10 KIT

AR-33 ROTATOR

ORDER PARTS USING COMPLETE NUMBER & DESCRIPTION

To order parts, remit check or money order for total parts cost plus $.50 for postage and handling to: Cornell-Dubilier Electronics, Department "C", 118 E. Jones Street, Fuquay-Varina, N. C. 27526