

Assembly and Operation of the



COAXIAL SWITCH

MODEL HD-1234

TABLE OF CONTENTS

Introduction	1
Parts List	2
Step-by-Step Assembly	4
Installation and Applications	9
In Case of Difficulty	13
Specifications	14
Warranty	Inside front cover
Customer Service	Inside rear cover

INTRODUCTION

The Model HD-1234 Coaxial Switch is designed to switch one RF source or receiver to any **one of several antennas** or RF loads, while grounding the unused connectors.

The Coaxial Switch can be used in conjunction with the Heathkit RF Load Wattmeter for off-the-air tuneup, and can then be immediately switched to an antenna for normal transmission and reception.

A mounting bracket is provided to permit you to conveniently hang the switch on the side of an equipment enclosure, onto a desk, or on a wall. The switch may be used handily without the mounting bracket in any application which suits the needs of your transmission system.

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022



PARTS LIST

Unpack all the parts in the kit and check each part against the following list. The key numbers correspond to numbers on the Parts Pictorial.

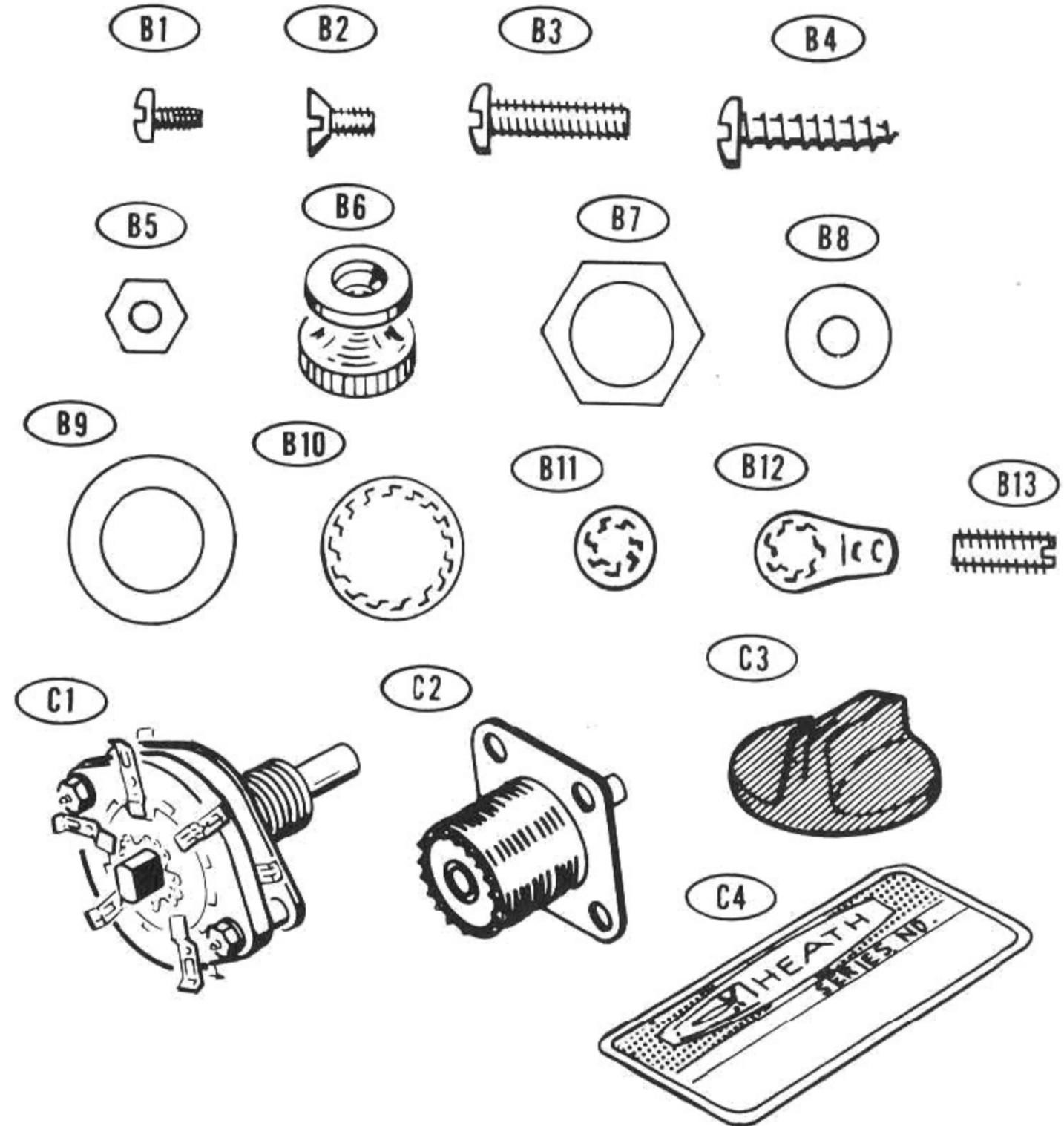
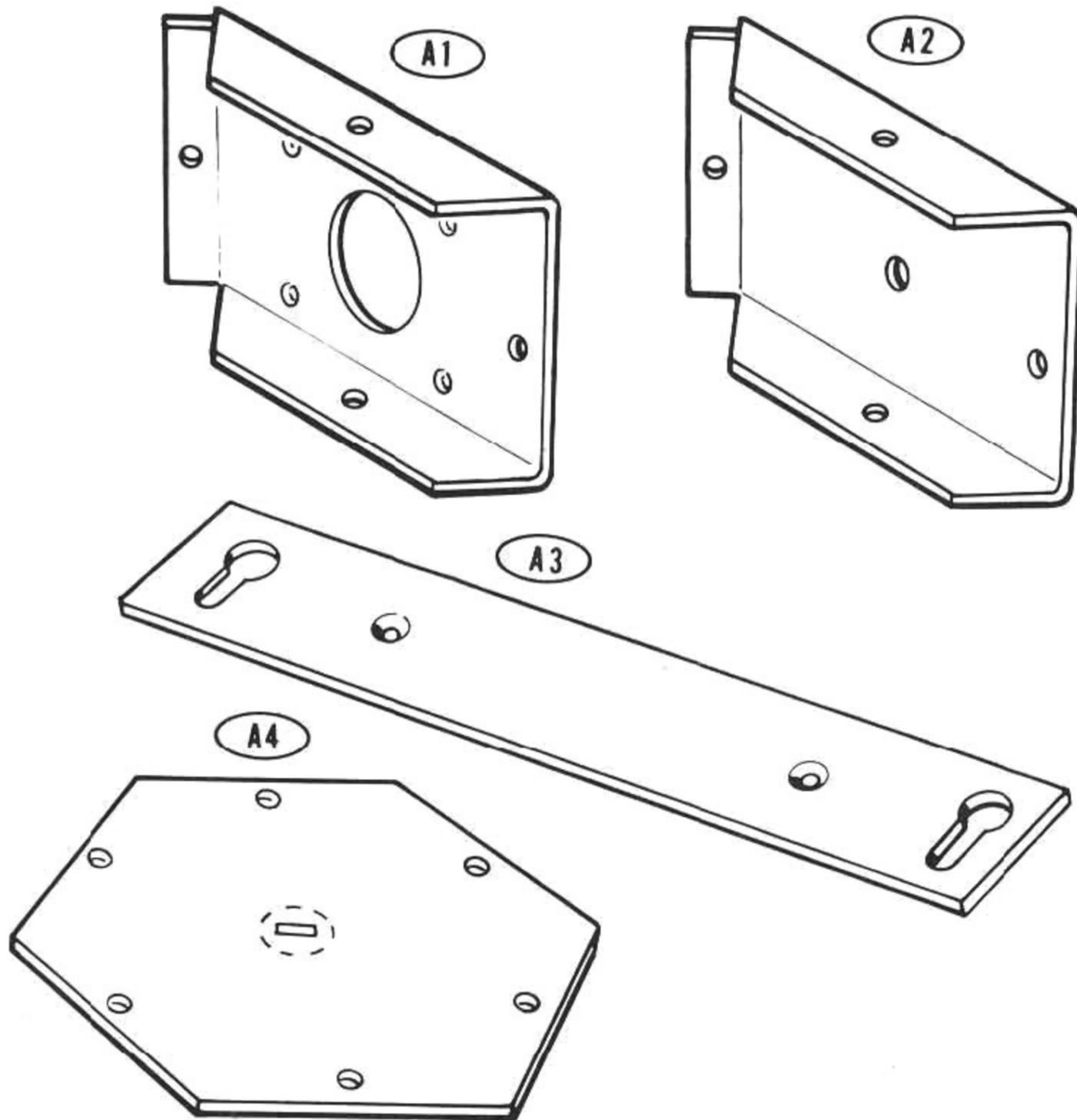
KEY PART No.	KEY PART No.	PARTS Per Kit	DESCRIPTION	PRICE Each
METAL PARTS				
A1	203-1519	5	Connector panel	.25
A2	203-1520	1	Ground panel	.45
A3	204-1923	1	Mounting bracket	.90
A4	205-1437	2	Cover plate	.70
HARDWARE				
B1	250-1184	38	4-40 x 1/4" self-tapping screw	.05
B2	250-428	2	4-40 x 1/4" flat head screw	.05
B3	250-234	1	6-32 x 1/2" screw	.05
B4	250-12	2	#6 x 5/8" sheet metal screw	.05
B5	252-77	1	6-32 nut	.05
B6	252-23	1	Thumbnut	.05
B7	252-7	1	Control nut	.05
B8	253-60	2	#6 flat washer	.05
B9	253-10	1	Control flat washer	.05
B10	254-5	1	Control lockwasher	.05
B11	254-25	1	#6 lockwasher	.05
B12	259-1	1	#6 solder lug	.05
B13	250-1193	1	8-32 x 3/8" setscrew	.05

KEY PART No.	KEY PART No.	PARTS Per Kit	DESCRIPTION	PRICE Each
MISCELLANEOUS				
C1	63-683	1	Rotary switch	4.30
C2	436-5	5	Coaxial jack	.85
C3	462-24	1	Knob	.30
	390-1023	1	Label set	.40
C4	391-34	1	Blue and white label	.15
	597-260	1	Parts Order Form	
	597-308	1	Kit Builders Guide	
		1	Manual (See front cover for part number.)	2.00
			Solder (Additional 3' rolls of solder, #331-6, can be ordered for 25 cents each.)	

The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering from a Heathkit Electronic Center to cover local sales tax, postage, and handling. Outside the U.S.A., parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.



PARTS PICTORIAL





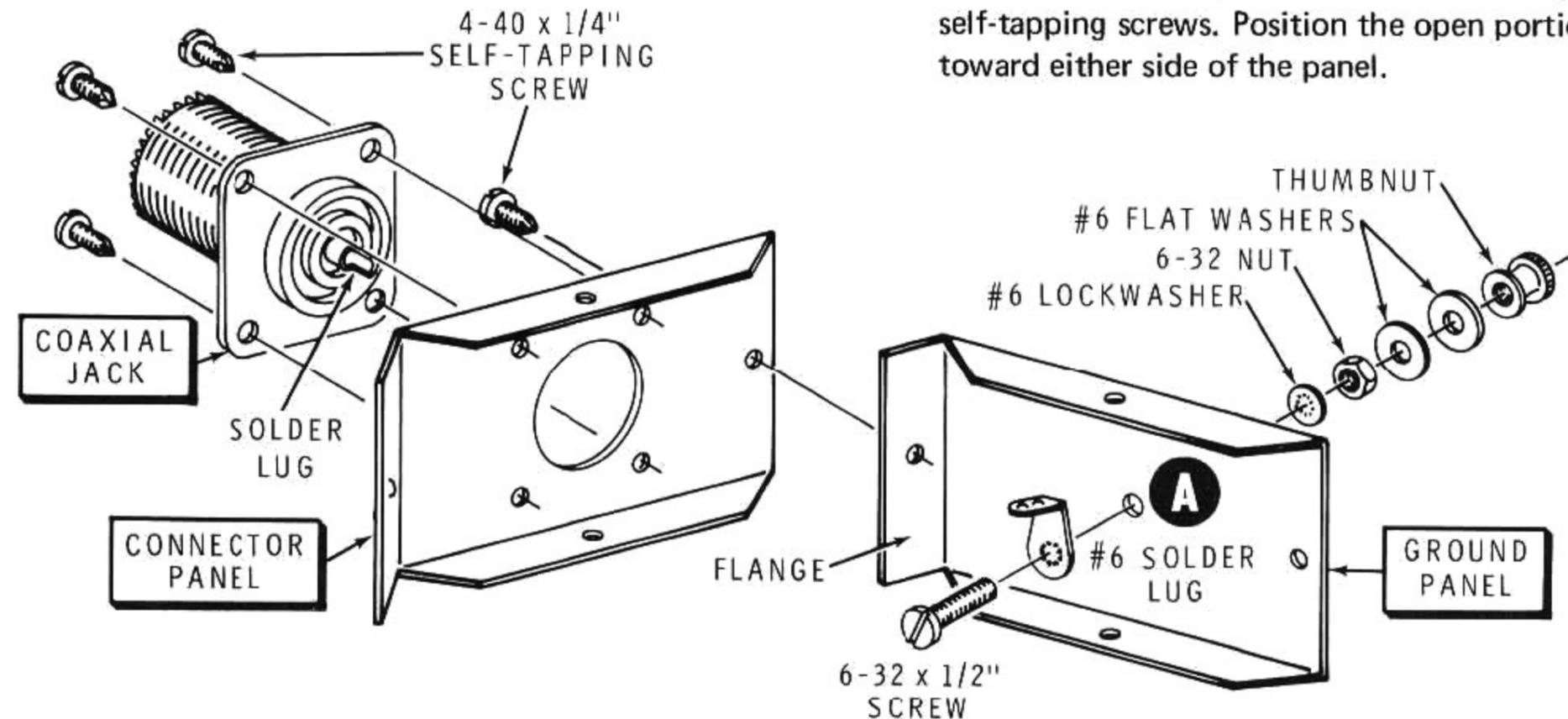
STEP-BY-STEP ASSEMBLY

Before you start to assemble this kit, read the "Kit Builders Guide" for complete information on soldering and step-by-step assembly procedures.

Position all parts as shown in the Pictorials. Follow the instructions carefully, and read the entire step before you perform the operation.

Solder a part or a group of parts only when instructed to do so.

Refer to Pictorial 1 for the following steps.



PICTORIAL 1

- () Install a 6-32 x 1/2" screw and a #6 solder lug through the ground panel as shown. Secure the screw with a #6 lockwasher and a 6-32 nut. Position the solder lug straight up toward the edge of the panel with the panel flange to the left.

- () Place two #6 flat washers and a thumbnut on screw. Turn the thumbnut finger tight.

NOTE: When you use self-tapping screws in this kit, as in the following step, do not overtighten the screws. This can strip the threads in the metal parts.

- () Mount a coaxial jack on a connector panel with four 4-40 x 1/4" self-tapping screws. Position the open portion of the connector solder post toward either side of the panel.

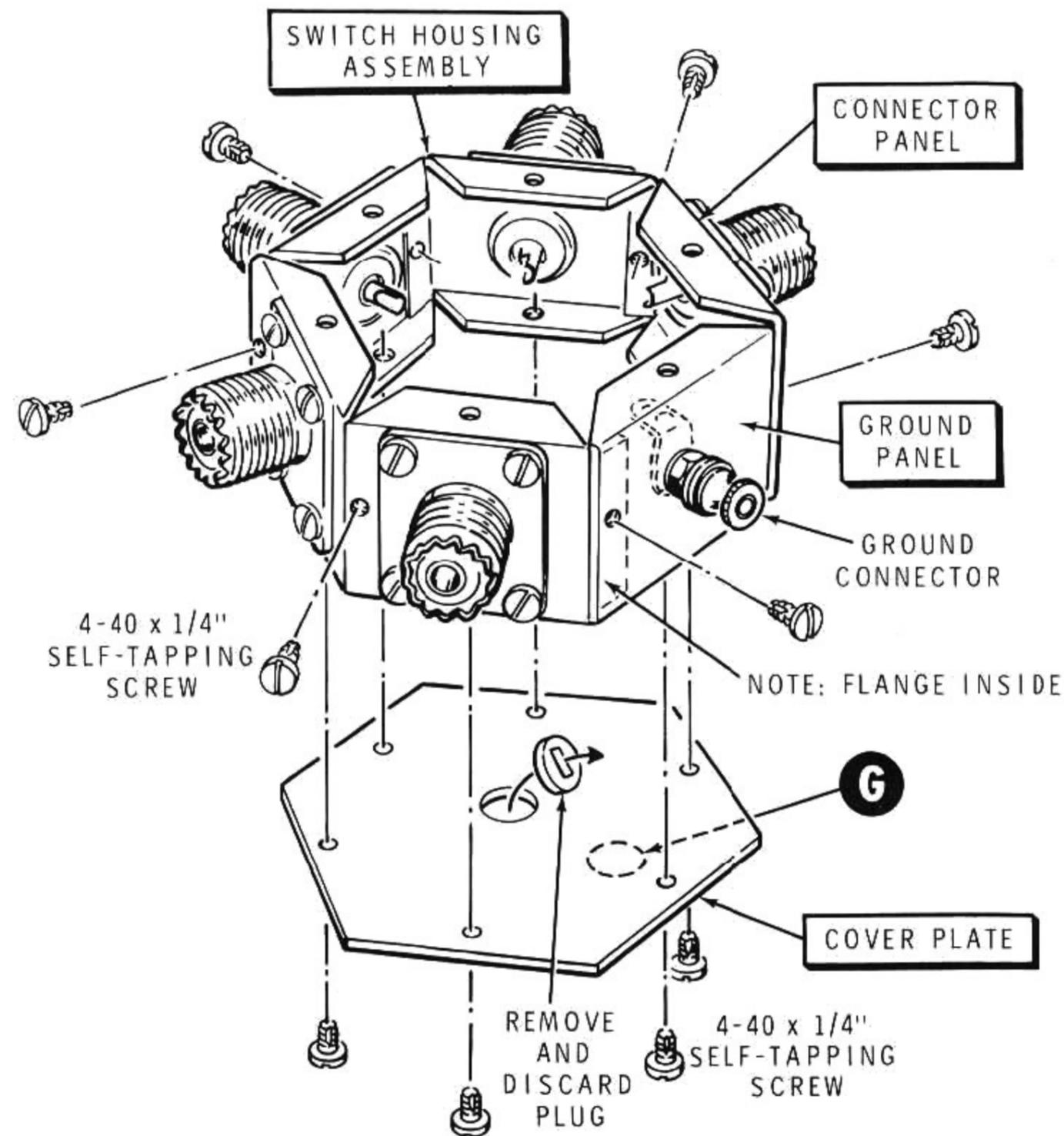


- () In the same manner, mount the four remaining coaxial jacks onto four connector panels with 4-40 x 1/4" self-tapping screws.
- () Add a small amount of solder to pre-tin each connector solder post.

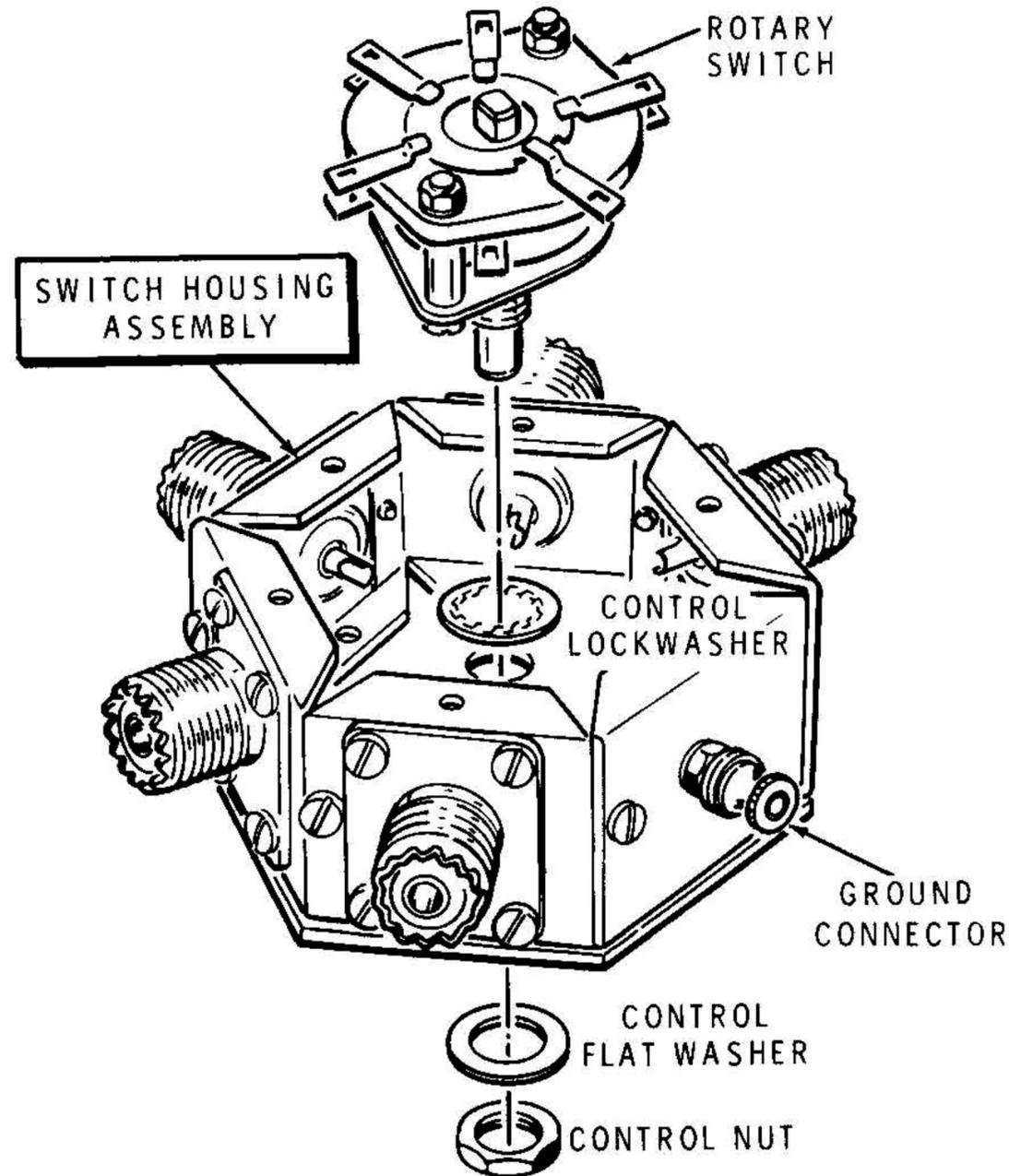
Refer to Pictorial 2 for the following steps.

NOTE: In the following steps, you will fasten connector panels and the ground panel together. Be sure the flange end of each panel fits inside the panel to which it is attached. Tighten each screw as it is installed; then loosen it 1/4 turn. The screws will be tightened later.

- () Connect the ground panel to one of the connector panels with a 4-40 x 1/4" self-tapping screw as shown in Pictorials 1 and 2.
- () Similarly, attach a connector panel to the other end of the ground panel with a 4-40 x 1/4" self-tapping screw.
- () In the same manner, attach the remaining three connector panels to those previously assembled. Use four 4-40 x 1/4" self-tapping screws.
- () Secure one of the cover plates to the connector and ground panels with six 4-40 x 1/4" self-tapping screws. Position the cover plate so the embossed lettering is visible on the outside and so the embossed G is adjacent to the ground connector as shown. Note the position of the solder lug.
- () Tighten the six cover screws. Then tighten the six screws that connect the six connector and ground panels.
- () Turn the assembly so the cover plate is up. Bend the plug out of the center of the cover plate with the blade of a screwdriver.



PICTORIAL 2

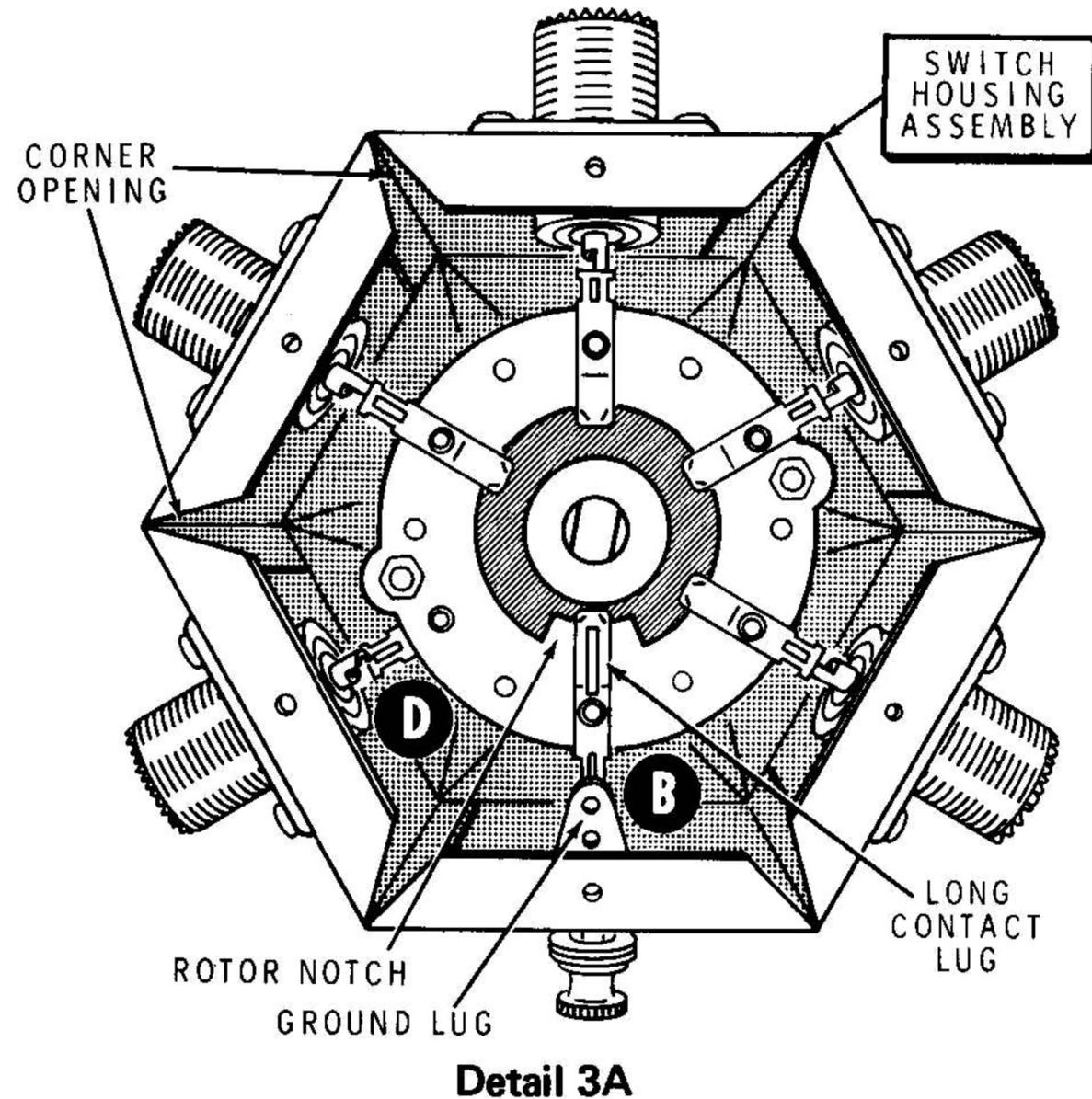


PICTORIAL 3

Refer to Detail 3A and to Pictorial 3 for the following steps.

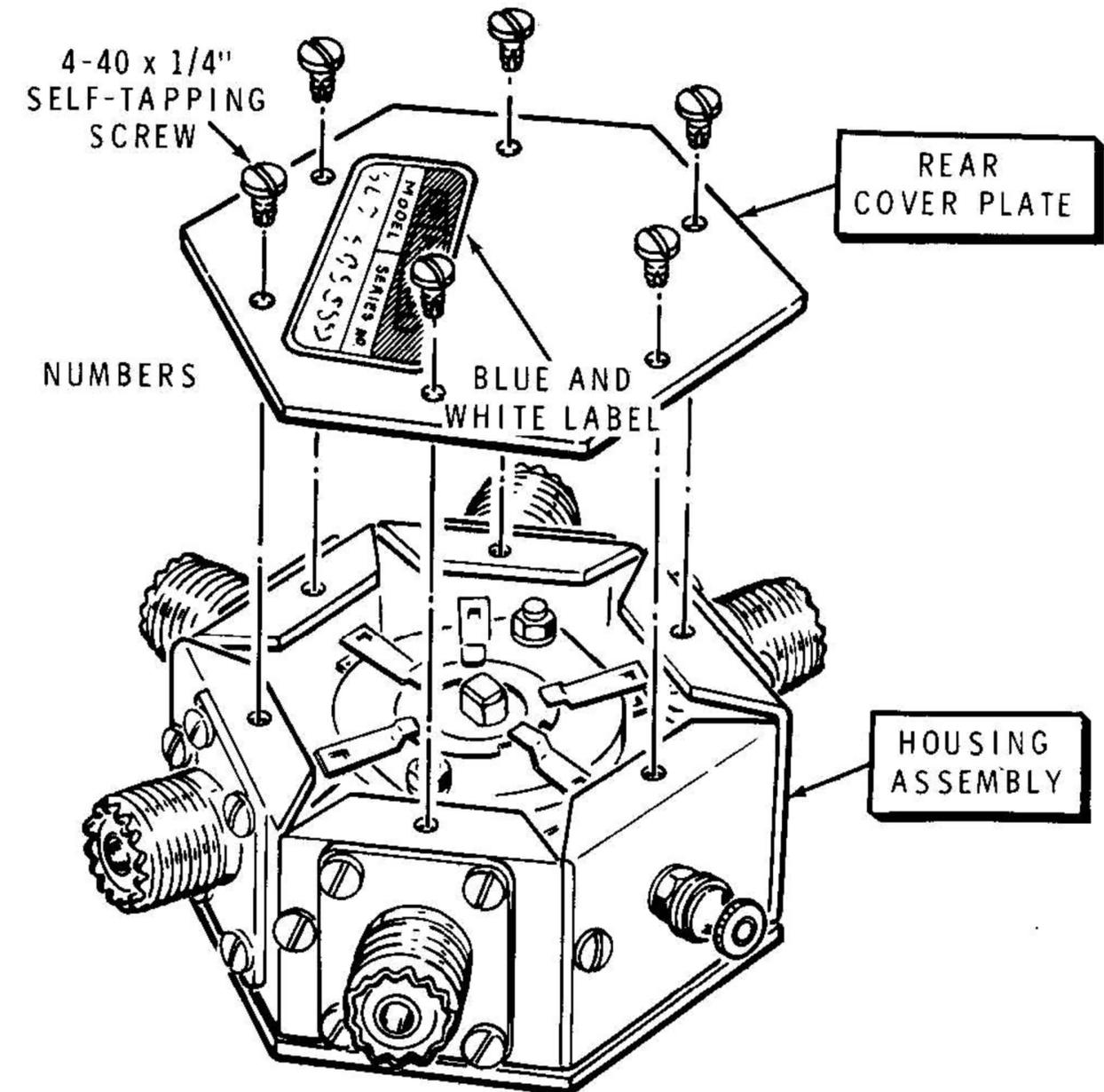
NOTE: Carefully study the rear of the rotary switch as shown in Detail 3A. Note that there is one long contact lug on the switch wafer at B, and also there is a notch in the rotary center portion of the switch.

- () Grasp the switch shaft with a pair of pliers and turn the switch rotor until the long contact lug and the rotor notch are positioned together as shown in the Detail. Do not turn the rotor again until the knob has been secured to the switch shaft.
- () Carefully bend each of the lugs so it is flat and straight out from the surface.
- () Refer to the Pictorial and carefully insert the rotary switch into the switch housing assembly; the switch lugs will easily drop through the corner openings in the assembly. Rotate the switch and position the long contact lug near the ground lug inside the housing as shown.
- () Place the control flat washer and the control nut on the switch shaft; do not tighten the nut.
- () Reach inside the housing and turn the body of the switch until the long contact lug is directly under the ground lug as shown in Detail 3A. Note that one single lug on the front of the switch wafer will be under the connector center conductor at D. The remaining pairs of switch lugs will be in a position above and below each of the remaining four connector center conductors.
- () Hold the switch firmly in this position and tighten the control nut.
- () Bend the ground lug downward with the blade of a screwdriver until it touches the long switch lug. Solder the two lugs together.

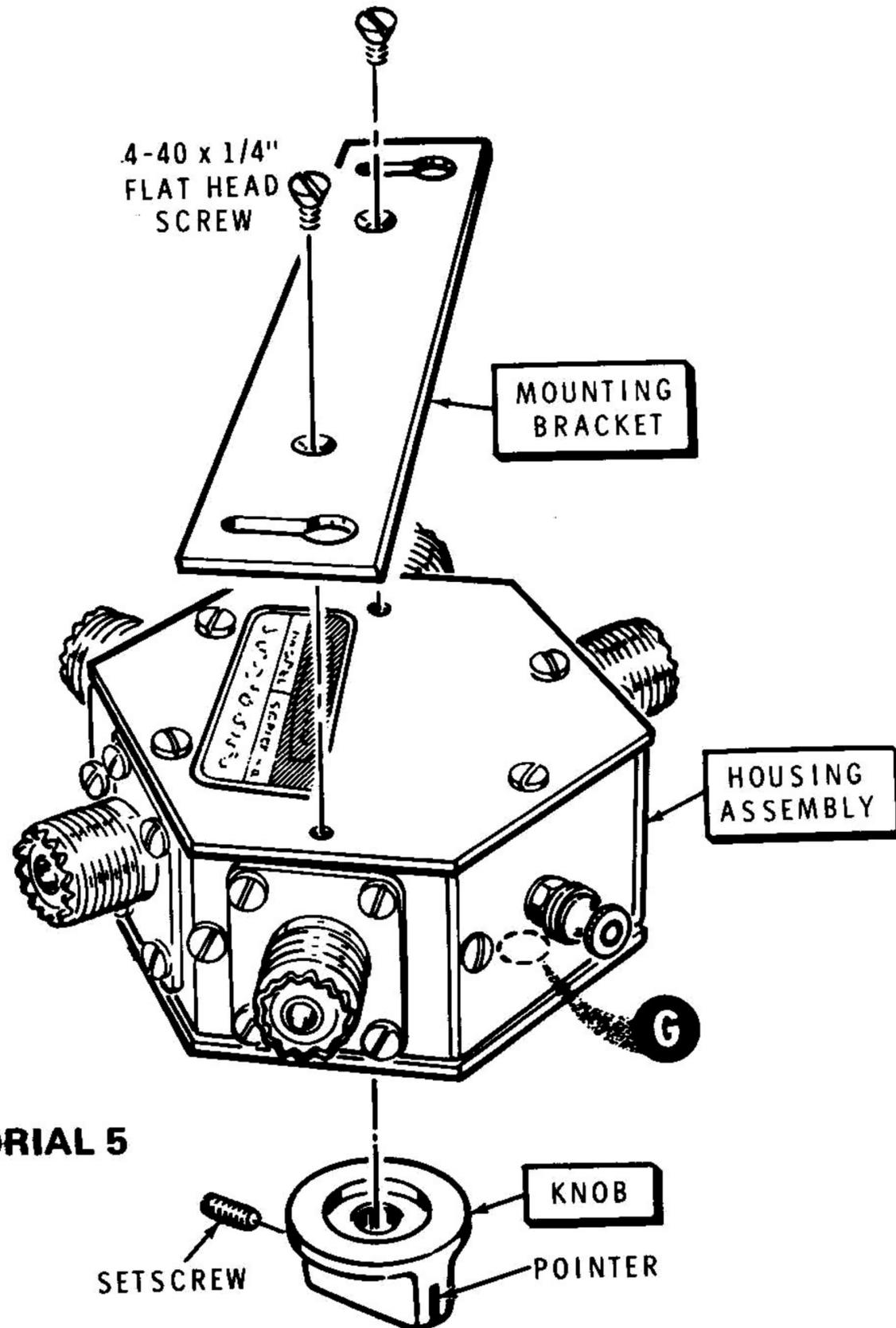


- () Bend the remaining rotary switch lugs until they all touch the center conductors of the coaxial jacks. Solder all five of the coaxial center conductors to their respective switch lugs. NOTE: Be sure that both the top and bottom switch lugs are securely soldered. Use enough solder to be sure the job is well done, but avoid an excess that will short the inner conductor and switch lugs to the housing assembly.

Refer to Pictorial 4 for the following steps.



- () Secure the remaining cover plate to the rear of the switch housing assembly with six 4-40 x 1/4" self-tapping screws. Turn the cover so the embossed markings are toward the outside of the housing.
- () Start an 8-32 x 3/8" setscrew in the tapped hole of the knob.



Refer to Pictorial 5 for the following steps.

- () Place the knob on the switch shaft so the pointer is toward **(G)**. Tighten the setscrew in the knob securely. You may now rotate the switch as desired.

NOTE: You may wish to hang the Coaxial Switch on a wall or on an equipment enclosure. A mounting bracket has been furnished for this purpose. Any two of the opposite screws holding the rear cover plate may be removed to install the mounting bracket in the following step. If you do not wish to use the mounting bracket, skip the next step and also the third step (which tell you to install the mounting bracket).

- () Note the numbers on the top cover and remove the two screws opposite the "2" and the "C".
- () Place the blue and white label on the rear cover so the stamped numbers are positioned as close to two adjacent screw heads as possible. Positioning the label in this manner will permit you to read these numbers after the mounting bracket is installed. **NOTE:** The Model Number and Production Series Number of your kit are shown on this label. Refer to these numbers in any communications you have with the Heath Company about this kit.
- () Install the mounting bracket on the rear cover plate with two 4-40 x 1/4" flat head screws as shown in the Pictorial.

This completes the "Step-by-Step Assembly" of your Coaxial Switch. You will be instructed to apply the decals from your label set during the "Installation and Applications" section which follows.



INSTALLATION AND APPLICATION

NOTE: There are many ways that your Coaxial Switch may be installed and there are various applications for its use. One method for installing the Switch is outlined below, and two methods for its use will be covered. Your individual needs will dictate your specific application.

INSTALLATION

Refer to Figure 1 for the following steps.

- () Place the Switch against the wall or panel where it is to be installed. Mark the tip of each keyhole slot in the mounting bracket on the selected surface.
- () Drill $3/32''$ holes at the marked locations.
- () Turn the two $\#6 \times 5/8''$ sheet metal screws into the holes until only $1/8''$ of the shank is showing. Hang the mounting bracket onto the two screws; then tighten the screws securely.
- () Loosen the thumbnut on the ground connection screw. Place the earth-ground lead between the two flat washers; then tighten the thumbnut securely.

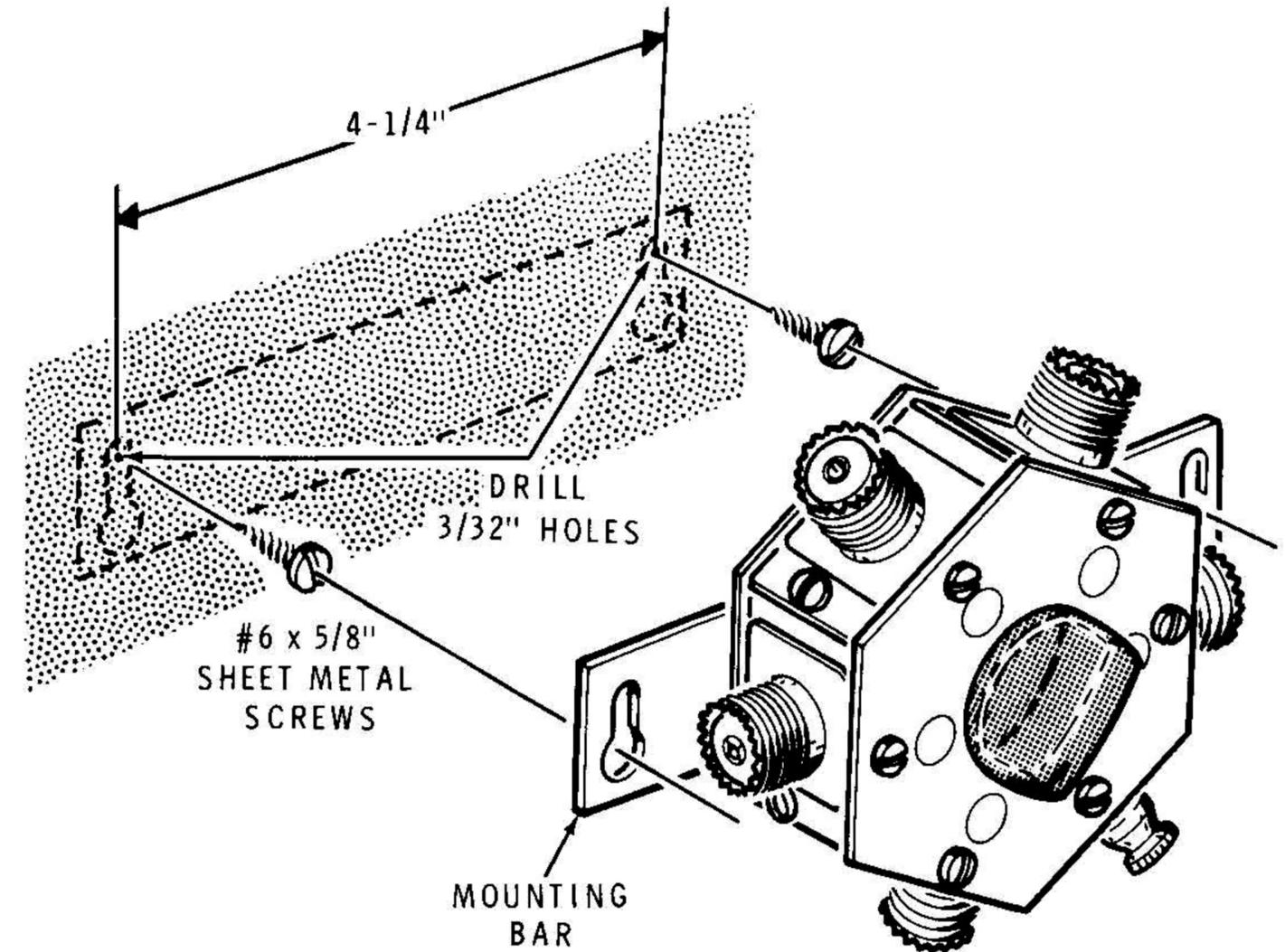


Figure 1

APPLICATIONS

Refer to Figure 2 for the following steps.

Primary Method

- () Connect a dummy load to connector #4. Connect the transceiver (through a reflected power meter, if one is used) to the C (common) connector. Then connect from one to three antennas to connectors #1 through #3.

Alternate Method (requires two Coaxial switches)

Refer to Figure 3 for the following steps.

- () Connect the C (common) connectors of two coaxial switches together with a length of RG-8/U coaxial cable. Connect up to three transceiver units to connectors #1 through #3 on one Coaxial Switch. Then connect up to three antennas to connectors #1 through #3 of the other coaxial switch.
- () When you have chosen the arrangement that best suits your requirements, select the appropriate decals in your label set. Remove those selected, one at a time, from the paper backing and press each into place over the embossed circles on the front panel of the switch assembly. NOTE: This step may be omitted if desired.

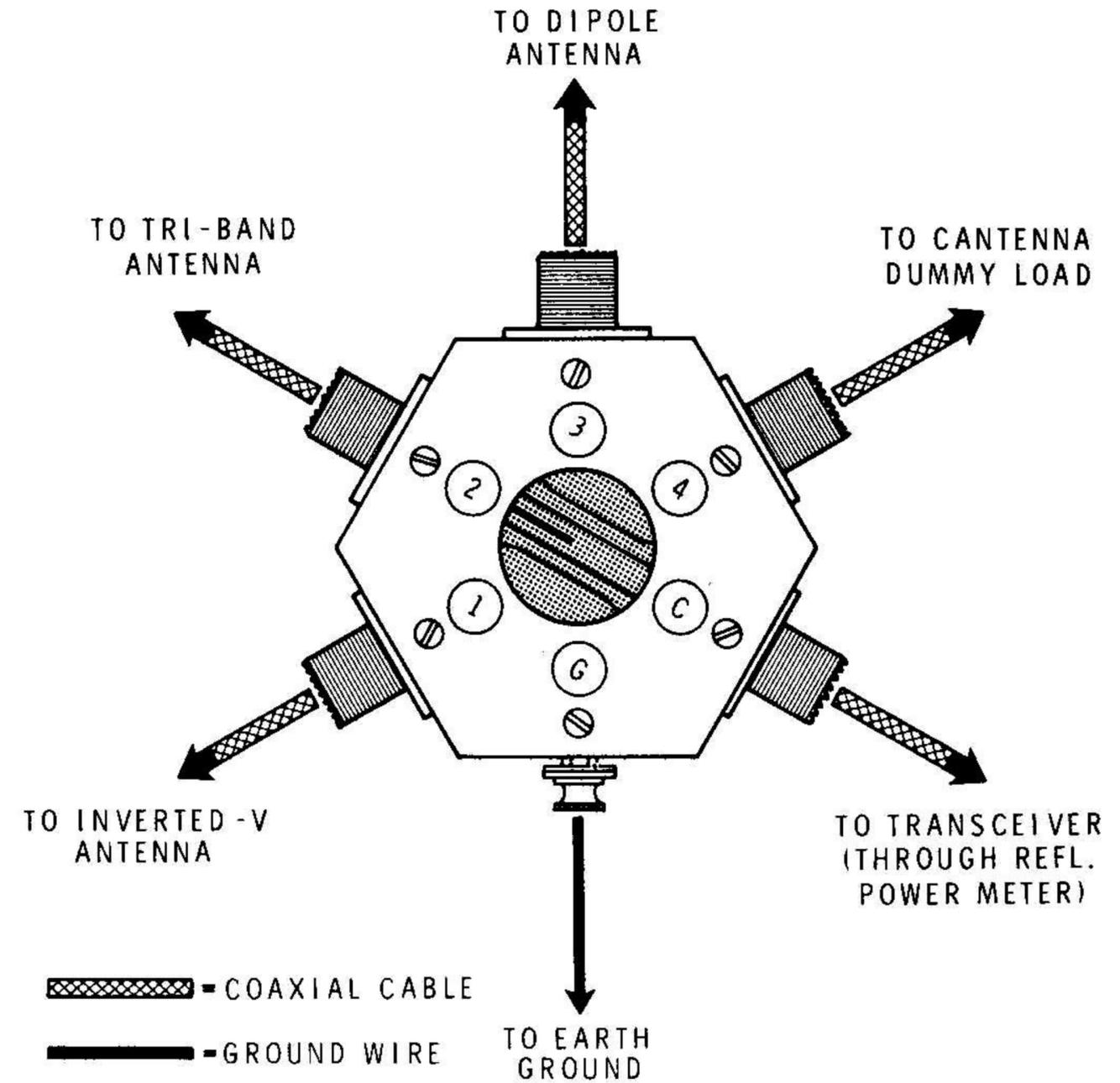


Figure 2

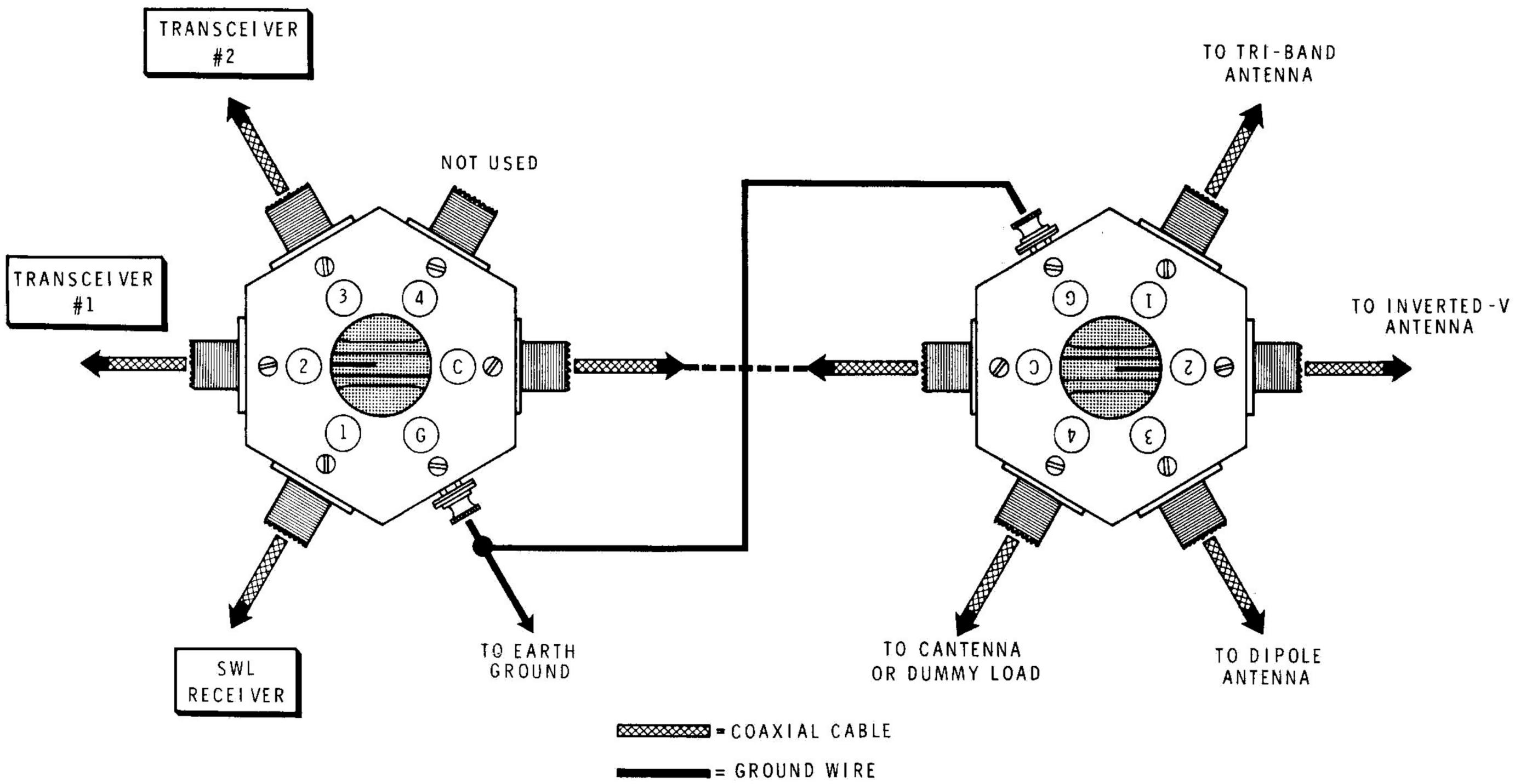


Figure 3



OPERATION

Refer to Schematic Diagram, Figure 4.

When the switch knob is rotated to either the **C** or the **G** positions, all output connectors are grounded except the C connector. **WARNING: DO NOT OPERATE THE TRANSMITTER INTO THE COAXIAL SWITCH WHEN THE POINTER IS AT THE **C** OR THE **G** POSITION.** When the Switch is in either of these positions, the transmitter is connected to an open circuit.

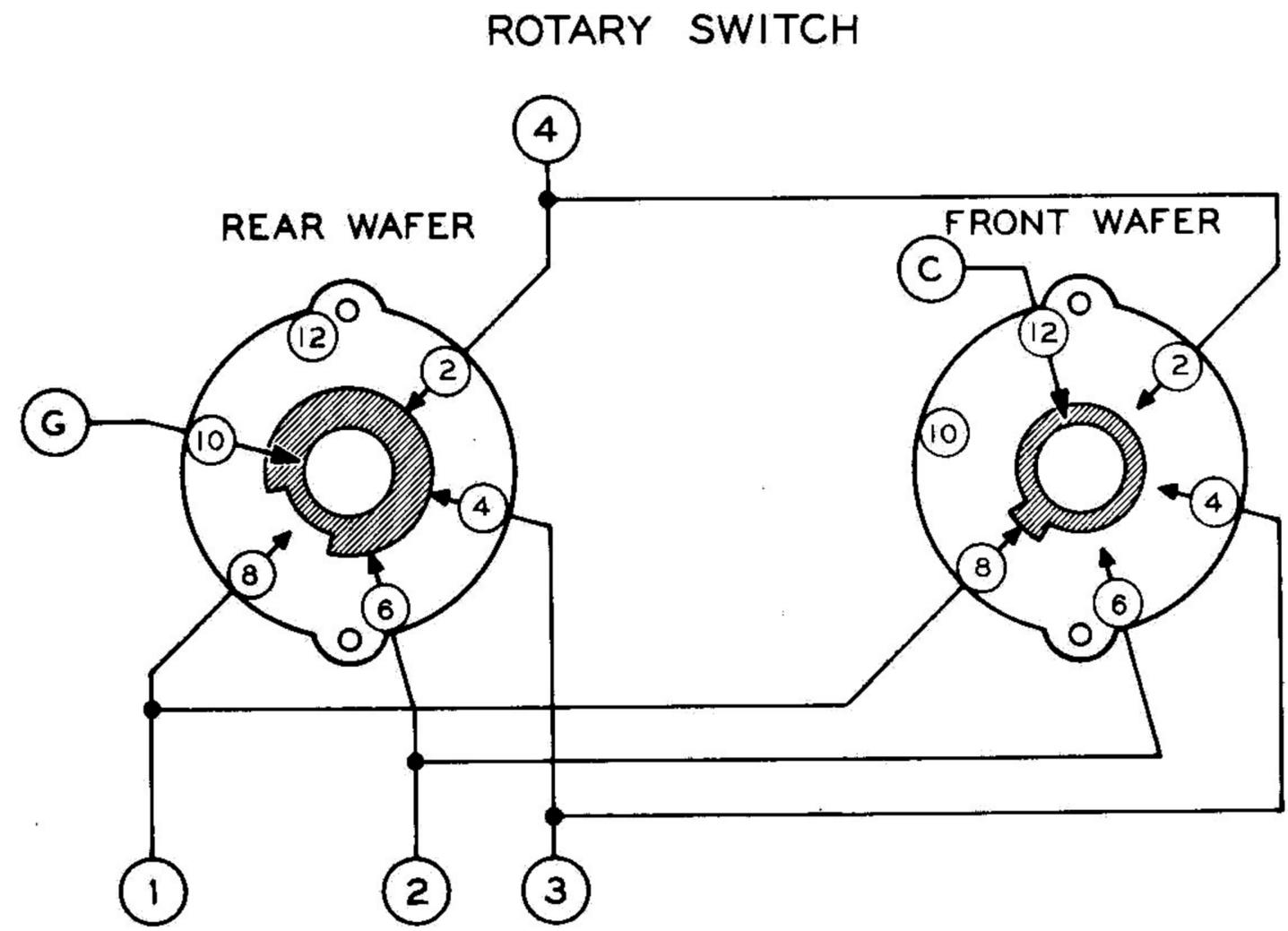


Figure 4



IN CASE OF DIFFICULTY

There are only two possible difficulties that can be found in the Coaxial Switch, with the exception of parts failure. These would be either an open circuit or a shorted circuit when the opposite should be the case.

In either event, remove the rear cover from the switch assembly and carefully inspect each solder connection. Be sure that no solder has run from any of the center conductors to the metal parts of the assembly. If a circuit is known to be open, try moving the switch lugs where they touch the coaxial jack center conductors. Be sure both the upper and lower switch lugs not only make contact with these center conductors, but that they are well soldered and immovable.

Finally, check each of the coaxial jacks with an ohmmeter and make sure that they are properly grounded, or are connected through from input to output as they should be.

It is suggested, if there still appears to be a problem, that you reheat each solder connection and melt a small additional amount of solder onto each connection. Then recheck the Switch for proper continuity with an ohmmeter once again.



SPECIFICATIONS

Standing Wave Ratio (to 250 MHz)	1.1:1 maximum.
Power Capability	1000 watts (2000 watts PEP) maximum.

The Heath Company reserves the right to discontinue instruments and to change specifications at any time without incurring any obligation to incorporate new features in instruments previously sold.

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