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TECHNICAL MANUAL

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for

203047

TRANSMITTING ANTENNA COUPLER

MODEL TRC-5000



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N. Y.

OTTAWA, CANADA

★



THE TECHNICAL MATERIEL CORPORATION

C O M M U N I C A T I O N S E N G I N E E R S

700 FENIMORE ROAD

MAMARONECK, N. Y.

W a r r a n t y

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes, fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.
2. That the defect is not the result of damage incurred in shipment from or to the factory.
3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.
4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

Electron tubes furnished by TMC, but manufactured by others, bear only the warranty given by such other manufacturers. Electron tube warranty claims should be made directly to the manufacturer of such tubes.

TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by TMC and the foregoing warranty shall constitute the Buyers sole right and remedy. In no event does TMC assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of TMC Products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

PROCEDURE FOR RETURN OF MATERIAL OR EQUIPMENT

Should it be necessary to return equipment or material for repair or replacement, whether within warranty or otherwise, a return authorization must be obtained from TMC prior to shipment. The request for return authorization should include the following information:

1. Model Number of Equipment.
2. Serial Number of Equipment.
3. TMC Part Number.
4. Nature of defect or cause of failure.
5. The contract or purchase order under which equipment was delivered.

PROCEDURE FOR ORDERING REPLACEMENT PARTS

When ordering replacement parts, the following information must be included in the order as applicable:

1. Quantity Required.
2. TMC Part Number.
3. Equipment in which used by TMC or Military Model Number.
4. Brief Description of the Item.
5. The *Crystal Frequency* if the order includes crystals.

PROCEDURE IN THE EVENT OF DAMAGE INCURRED IN SHIPMENT

TMC's Warranty specifically excludes damage incurred in shipment to or from the factory. In the event equipment is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved and not with TMC.

All correspondence pertaining to Warranty Claims, return, repair, or replacement and all material or equipment returned for repair or replacement, within Warranty or otherwise, should be addressed as follows:

THE TECHNICAL MATERIEL CORPORATION
Engineering Services Department
700 Fenimore Road
Mamaroneck, New York

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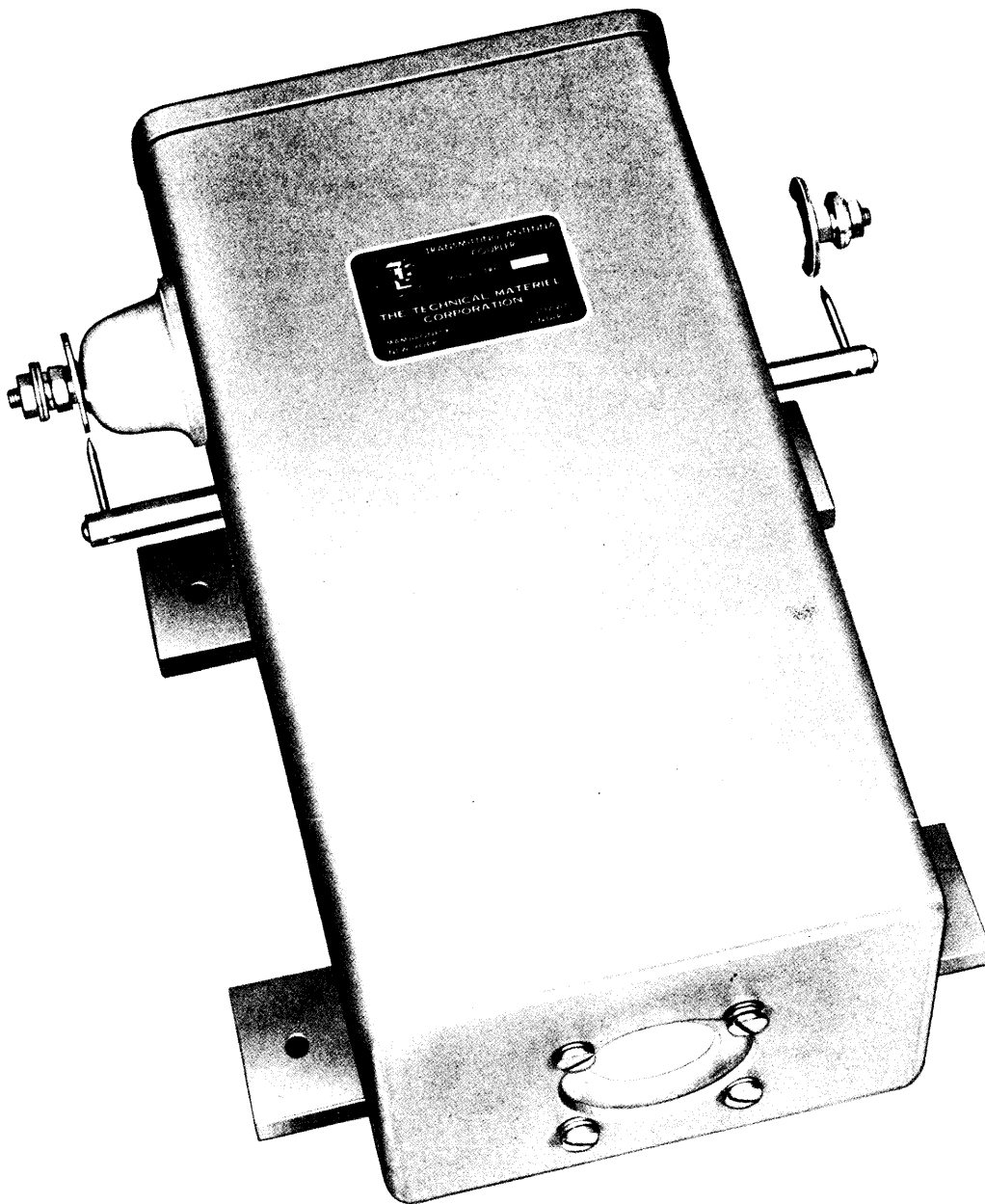


Figure 1. Transmitter Antenna Coupler, Model TRC-5000

1. INTRODUCTION

a. PURPOSE. Model TRC-5000 (figure 1) is a broadband transmitting coupling transformer used for matching coaxial transmission lines to Rhombic or other antennas requiring a 600 ohm impedance.

Use of the TRC-5000 at a transmitting facility will allow uniform coaxial transmission and coaxial antenna transfer by providing the proper impedance match at the transmitting antenna.

The TRC-5000 provides an efficient means of coupling to match RF impedances at power levels of 5000 watts average or 10,000 watts PEP over the frequency range of 2 to 28 megacycles. It provides an insertion loss of less than 1 db.

b. DESCRIPTION. The model TRC-5000 is a broadband RF transformer housed in a fiberglass

reinforced case for operation in any ambient environment from -50°C to $+75^{\circ}\text{C}$.

Spark gaps provide protection against static electricity on the antenna as well as lightning discharge. Mounts are provided for either wall or pole mounting and may be placed in any isolated area, such as an antenna farm, since no maintenance is required. Outline and mounting dimensions of the TRC-5000 are shown in figure 3.

MODEL TRC-5000-50U-600B - The model TRC-5000-50U-600B is used for matching a 50 ohm unbalanced impedance to a 600 ohm balanced impedance.

MODEL TRC-5000-70U-600B - The model TRC-5000-70U-600B is used for matching a 70 ohm unbalanced impedance to a 600 ohm balanced impedance.

2. TECHNICAL SPECIFICATIONS

AVERAGE POWER:	5000 watts.
PEAK POWER:	10,000 watts.
FREQUENCY RANGE:	2-28 megacycles.
MATCHING CAPABILITY:	TRC-5000-50U-600B 50 ohm unbalanced to 600 ohm balanced. TRC-5000-70U-600B 70 ohm unbalanced to 600 ohm balanced.
RF CONNECTORS (BALANCED):	Mykroy bowls.
RF CONNECTORS (UNBALANCED):	Several connectors are available for this unit as outlined below: For 1-5/8" EIA flange 70 ohm, use TMC part no. AX-271-1. (supplied with model TRC-5000-70U-600B) For 1-5/8" EIA flange 50 ohm, use TMC part no. AX-272-1. (supplied with model TRC-5000-50U-600B) To match RG-17 or RG-18/U coax, use TMC part no. AX-287-3. (LC) To match RG-17, 18, 35 or 164/U coax, use TMC part no. AX-273-4. (QDL) To match RG-85/U or 85A/U coax, use TMC part no. AX-274-1 flange assy or TMC part no. AX-274-2 flange with ES-85/U end seal. Refer to TMC Connector Products catalog for additional connector and mating assemblies available.
INSERTION LOSS:	Less than 1 db.
DIMENSIONS:	5" x 8" x 14"
WEIGHT:	20 lbs.
SHIPPING CUBE:	Approximately 2 cu. ft.
SHIPPING WEIGHT:	Approximately 32 lbs.

2. TECHNICAL SPECIFICATIONS (CONT'D)

SAFETY FEATURE:

Spark gap for protection against static charge or lightning.

COMPONENTS AND CONSTRUCTION:

Equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

3. INSTALLATION

The TRC-5000 is shipped in one crate and is completely assembled at the time of delivery.

When the unit is uncrated, it should be inspected for any damage incurred in transit. Inspect all packing material for parts which may have been shipped as "loose items".

With respect to damage to the equipment for which the carrier is liable, The Technical Materiel Corporation will assist in describing methods of repair and the furnishing of replacement parts.

Each unit has been factory tested and arrives ready for immediate installation and operation. No preliminary adjustments are necessary.

The TRC-5000 has been so designed that it may be either pole or wall mounted. For pole mounting of the TRC-5000, two mounting straps and the necessary lag bolts are provided. For wall mounting of the TRC-5000, the four mounting brackets on the

unit case are used. Refer to Figure 2 for a schematic illustration of a typical Rhombic antenna system in conjunction with the model TRC-5000. Figure 3 will illustrate the necessary outline and mounting dimensions of the TRC-5000.

The two antenna input leads are to be connected to the two insulated bowl terminal connectors of the TRC-5000. The monitor receiver lead-in coaxial cable is connected to the RF connector assembly located on the bottom of the TRC-5000 case. See figure 2 for a schematic illustration of a typical Rhombic antenna system.

4. MAINTENANCE

Due to the simplicity of construction and design of the TRC-5000, maintenance may consist of simply observing for secure connections and unit cleanliness.

Check for secure connections of antenna lead-in cable from receiver to TRC-5000.

Check for cracks or stress on insulator bowls.

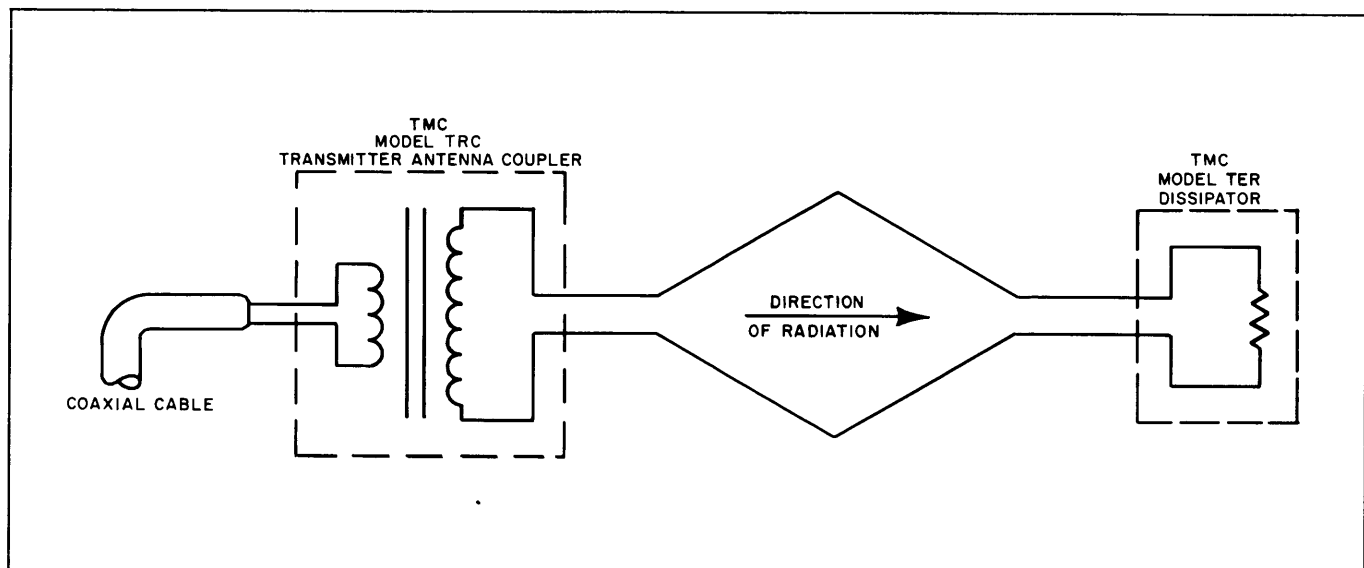


Figure 2. Schematic Illustration, Rhombic Antenna System

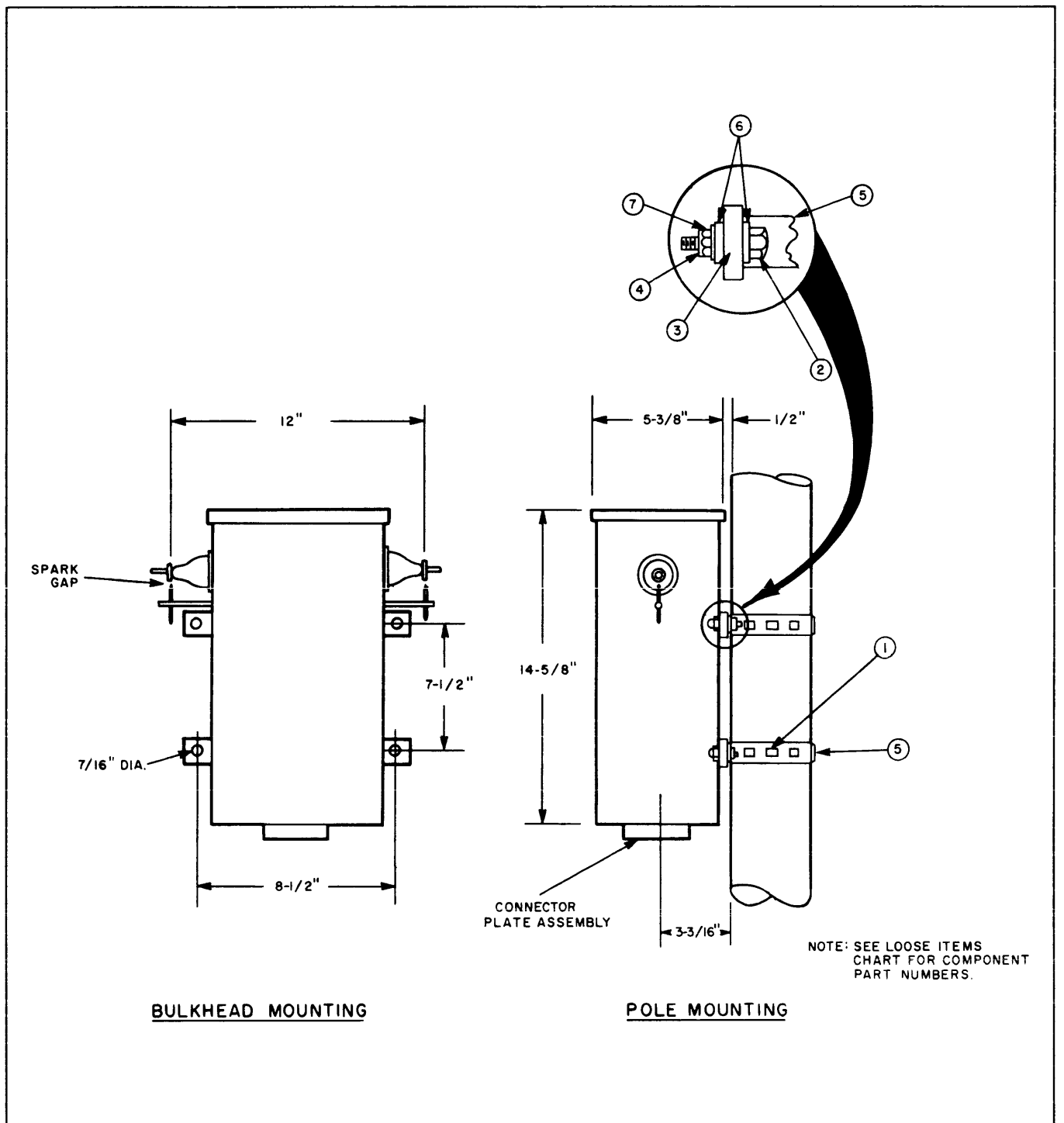


Figure 3. Model TRC-5000 Outline and Mounting Dimensions

PARTS LIST

(See figure 4)

ITEM	DESCRIPTION	QUANTITY PER UNIT	TMC PART NO.
<p>CAUTION</p> <p>The TRC unit has been factory sealed for weather proofing purposes. Any attempt to remove the case cover for any reason, will void the warranty coverage of the unit.</p>			
1	Bowl, Insulator	4	NS-115
2	Contact, Round, Spark Gap	2	PM-723-INR
3	Gasket, Inner	4	GA-126
4	Gasket, Shoulder	4	GA-151-1
5	Rod, Spark Gap	2	PM-724-INR
<p>LOOSE ITEMS</p> <p>(See figure 3)</p>			
1	Bolt, Lag	8	SC-145-2
2	Bolt, Machine	4	SCHH3118SS20
3	Bracket, Mounting	4	MS-2680
4	Nut, Hex	4	NTH3118SS16
5	Strap, Mounting	4	MS-619-1
6	Washer, Flat	8	FW31HSS
7	Washer, Lock, Split	4	LWS31MSS

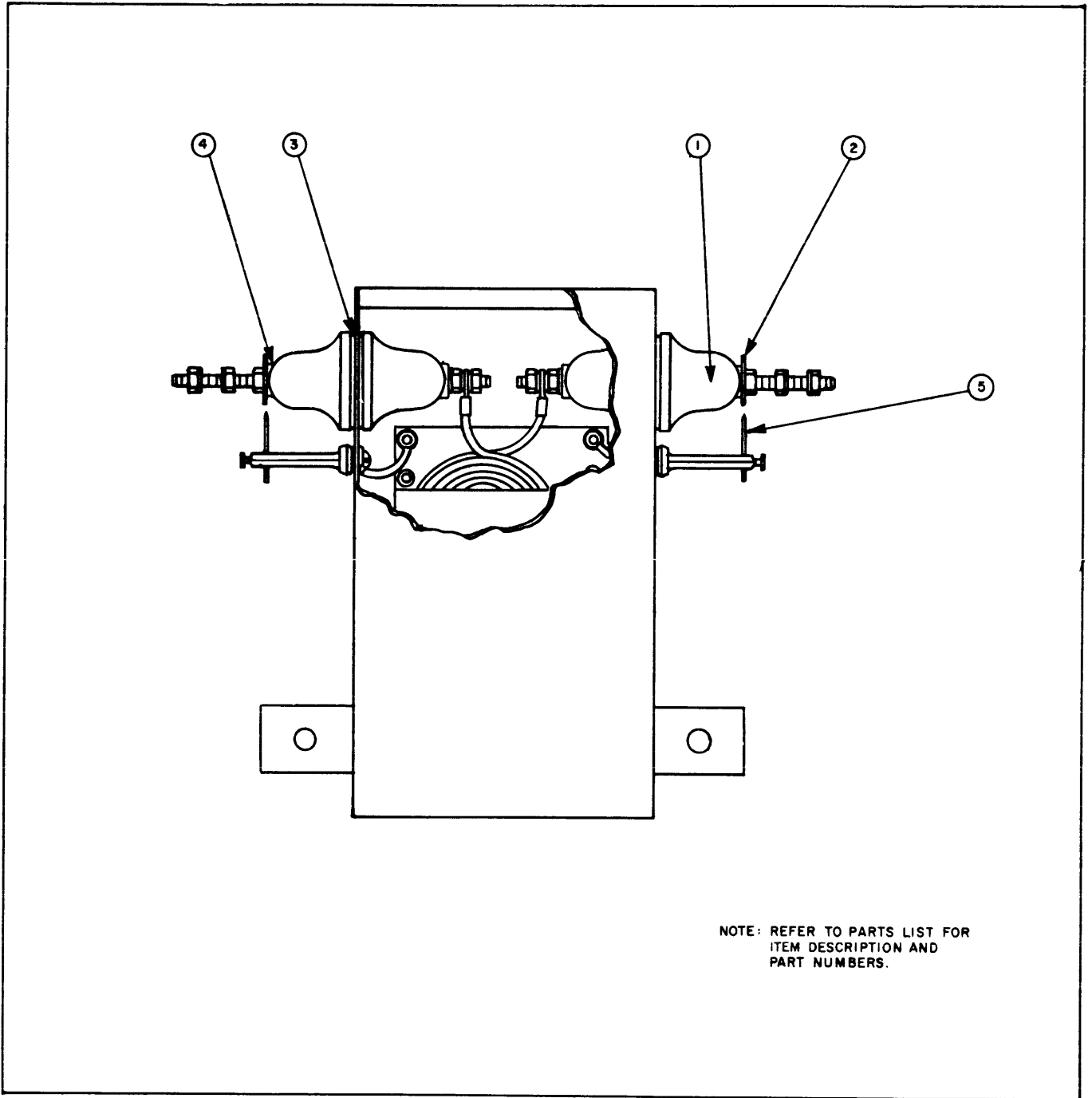


Figure 4. Model TRC-5000. Cutaway View