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TECHNICAL MANUAL

for

TRANSMITTER ANTENNA COUPLER

MODEL TRC-500



THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, N. Y.

OTTAWA, CANADA

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CHANGE NO. 1



INSTRUCTION BOOK CHANGE NOTICE

Date 3/27/67

Manual affected: Transmitter Antenna Coupler, TRC-500 IN 8015C

1. Page 1-1. Paragraph 1-1

Change upper limit frequency range given in paragraph 1-1 from 30 mcs to 28 mcs.

2. Page 1-2. Paragraphs 1-2a, and 1-2b

Change the upper limit of the frequency range given in paragraphs 1-2a, and 1-2b from 30 mcs to 28 mcs.

3. Page 1-2. Paragraphs 1-3 (TECHNICAL SPECIFICATIONS)

Change upper limit of frequency range entry from 30 mcs to 28 mcs.

SHOULD ADDITIONAL COPIES OF THIS CHANGE NOTICE BE REQUIRED, PLEASE CONTACT:

THE TECHNICAL MATERIEL CORP., 700 Fenimore Road, Mamaroneck, New York

Attn.: Director of Eng. Services.

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SECTION 1
INTRODUCTION

1-1. GENERAL

Model TRC-500 (figure 1-1) 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-500 at a transmitting facility will allow uniform coaxial transmission and coaxial antenna transfer by providing proper impedance match at the transmitting antenna.

The TRC-500 provides an efficient means of coupling to match RF impedances at power levels of 500 watts average or 1000 watts PEP over the frequency range of 2 to 30 megacycles with an insertion loss less than 1 db.

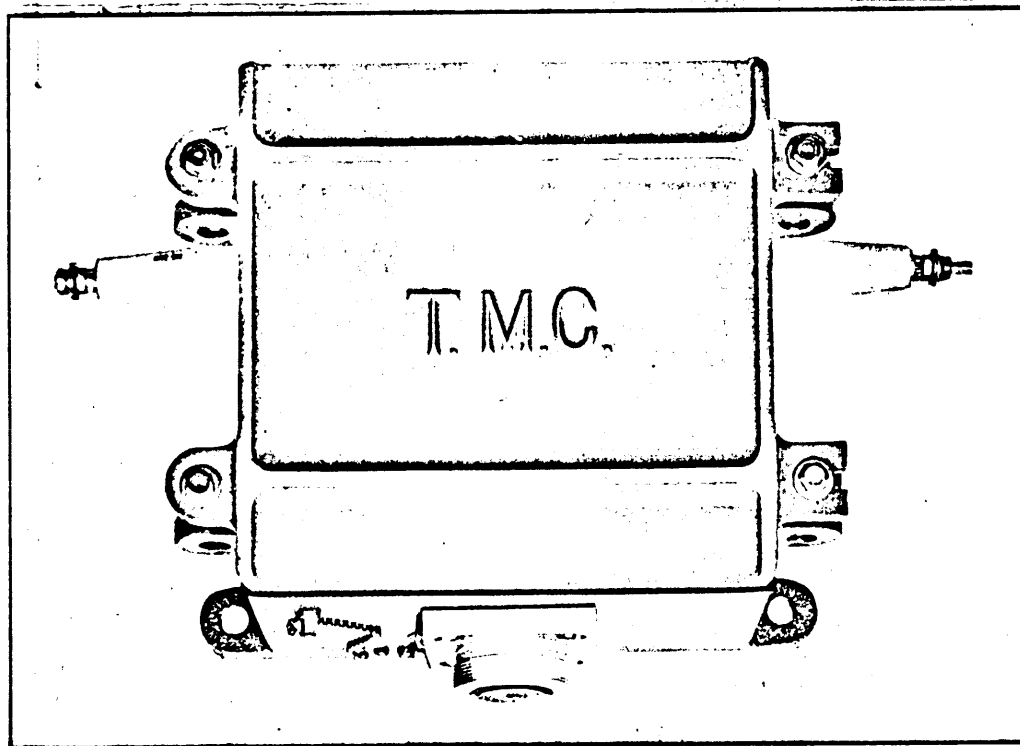


FIGURE 1-1. TRANSMITTER ANTENNA COUPLER, MODEL TRC-500

1-2. DESCRIPTION

Model TRC-500 is a broadband RF transformer housed in a stress relieved cast aluminum case designed for operation in any ambient environment from -40°C to $+75^{\circ}\text{C}$. 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-500 are shown in figure 2-1.

a. MODEL TRC-500-50U/600B - The TRC-500-50U/600B is a broadband transformer unit capable of coupling a 50 ohm unbalanced 500 watt transmitter to a balanced 100 ohm, 200 ohm or 600 ohm antenna in the frequency range of 2 to 30 megacycles.

b. MODEL TRC-500-70U/600B - The TRC-500-70U/600B is a broadband transformer unit capable of coupling a 70 ohm unbalanced 500 watt transmitter to a balanced 150 ohm, 300 ohm or 600 ohm antenna in the frequency range of 2 to 30 megacycles.

1-3. TECHNICAL SPECIFICATIONS

AVERAGE POWER:	500 watts
PEAK POWER:	1000 watts
FREQUENCY RANGE:	2-30 megacycles
MATCHING CAPABILITIES:	TRC-500-50U/600B: 50 ohm unbalanced to 100 ohm, 200 ohm or 600 ohm balanced. TRC-500-70U/600B: 70 ohm unbalanced to 150 ohm, 300 ohm or 600 ohm balanced.
RF CONNECTORS (BALANCED):	Mykroy bowls
RF CONNECTOR (UNBALANCED):	TMC part no. AX-274, for RG-85/U coax. (supplied as standard item. For other connector assemblies avail- able, see table 1-1.)

1-3 TECHNICAL SPECIFICATIONS (Cont)

INSERTION LOSS: Less than 1 db.

DIMENSIONS: 9 inches high x 9 inches wide x 5 inches deep.

WEIGHT: 15 lbs.

SHIPPING CUBE: Approximately 1.8 cu. ft

SHIPPING WEIGHT: 28 lbs.

OPERATING TEMPERATURE: -40°C. to +75°C. Ambient

COMPONENTS AND CONSTRUCTION: Equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

TABLE 1-1. MOUNTING PLATE, CONNECTOR ASSEMBLIES.

DESCRIPTION	TMC PART NO.
Mounting Plate, Connector Assy., type QDL	AX-273
Mounting Plate, Connector Assy., type UHF	AX-281
Mounting Plate, Connector Assy., type UHF (Twin)	AX-282
Mounting Plate, Connector Assy., type BN	AX-283
Mounting Plate, Connector Assy., type BNC	AX-284
Mounting Plate, Connector Assy., type HN	AX-285
Mounting Plate, Connector Assy., type C	AX-286
Mounting Plate, Connector Assy., type LC	AX-287
Mounting Plate, Connector Assy., typ QDS	AX-289
Mounting Plat , Connector Assy , typ N	AX-259

NOTE: For additional connector assemblies available for us
with the TRC-500, see TMC CONNECTOR PRODUCTS catalog

SECTION 2
INSTALLATION

2-1. UNPACKING

The TRC-500 is shipped in one crate and is completely assembled at the time of delivery. Each unit has been factory tested and arrives ready for immediate installation and operation. No preliminary adjustments are necessary.

When the unit is uncrated, it should be inspected for damage that may have 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.

2-2. MECHANICAL INSTALLATION

The TRC-500 has been so designed that it may be either pole or wall mounted. Pole mounting of the TRC-500 is achieved by use of two mounting straps and lag bolts. Wall mounting of the TRC-500 is achieved by use of the four mounting brackets located on the unit case. Figure 2-1 illustrates the necessary outline and mounting dimensions of the TRC-500.

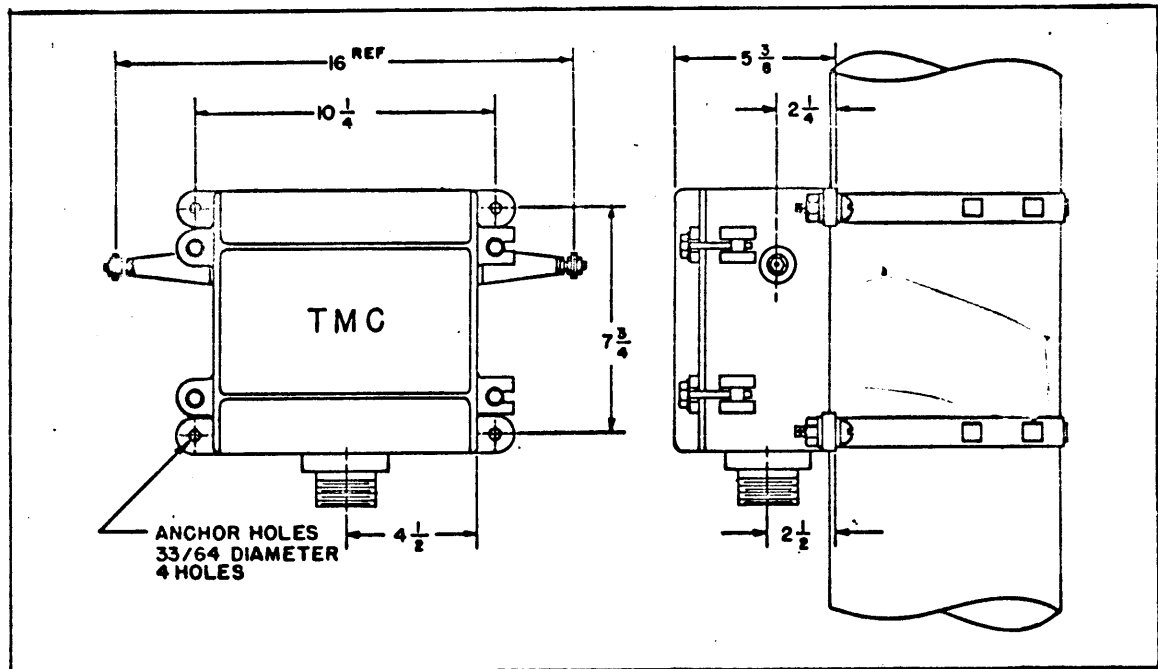


FIGURE 2-1. OUTLINE AND MOUNTING DIMENSIONS, MODEL TRC-500

2-3. ELECTRICAL INSTALLATION

Connection of the two antenna input leads are made at the two insulated bowl terminals of the TRC-500.

The transmitter coaxial feed line is to be connected to the RF connector assembly located on the bottom of the TRC-500 case. See figure 2-2 for a schematic illustration of a typical Rhombic antenna system.

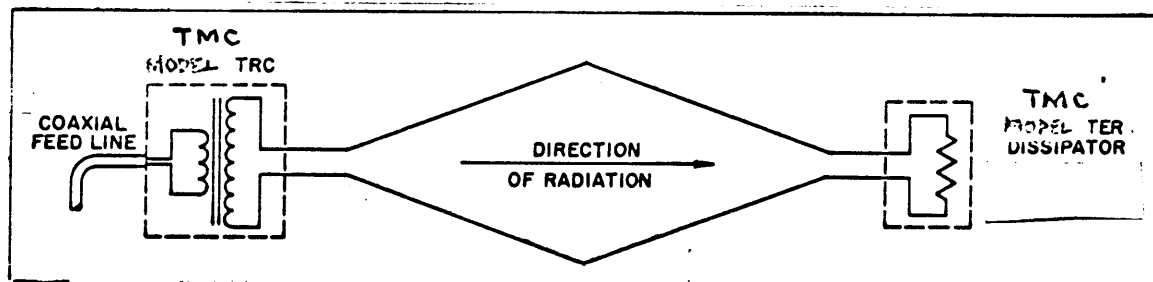


FIGURE 2-2 RHOMBIC ANTENNA SYSTEM, SCHEMATIC ILLUSTRATION

SECTION 3
MAINTENANCE

3-1. GENERAL

Due to the simplicity of construction and design of the TRC-500, maintenance may consist of simply observing for secure connections and unit cleanliness.

Check for cracks or stress on insulator bowls and connection of antenna leads.

See figures 5-1 and 5-2 for a schematic representation of the models TRC-500.

SECTION 4

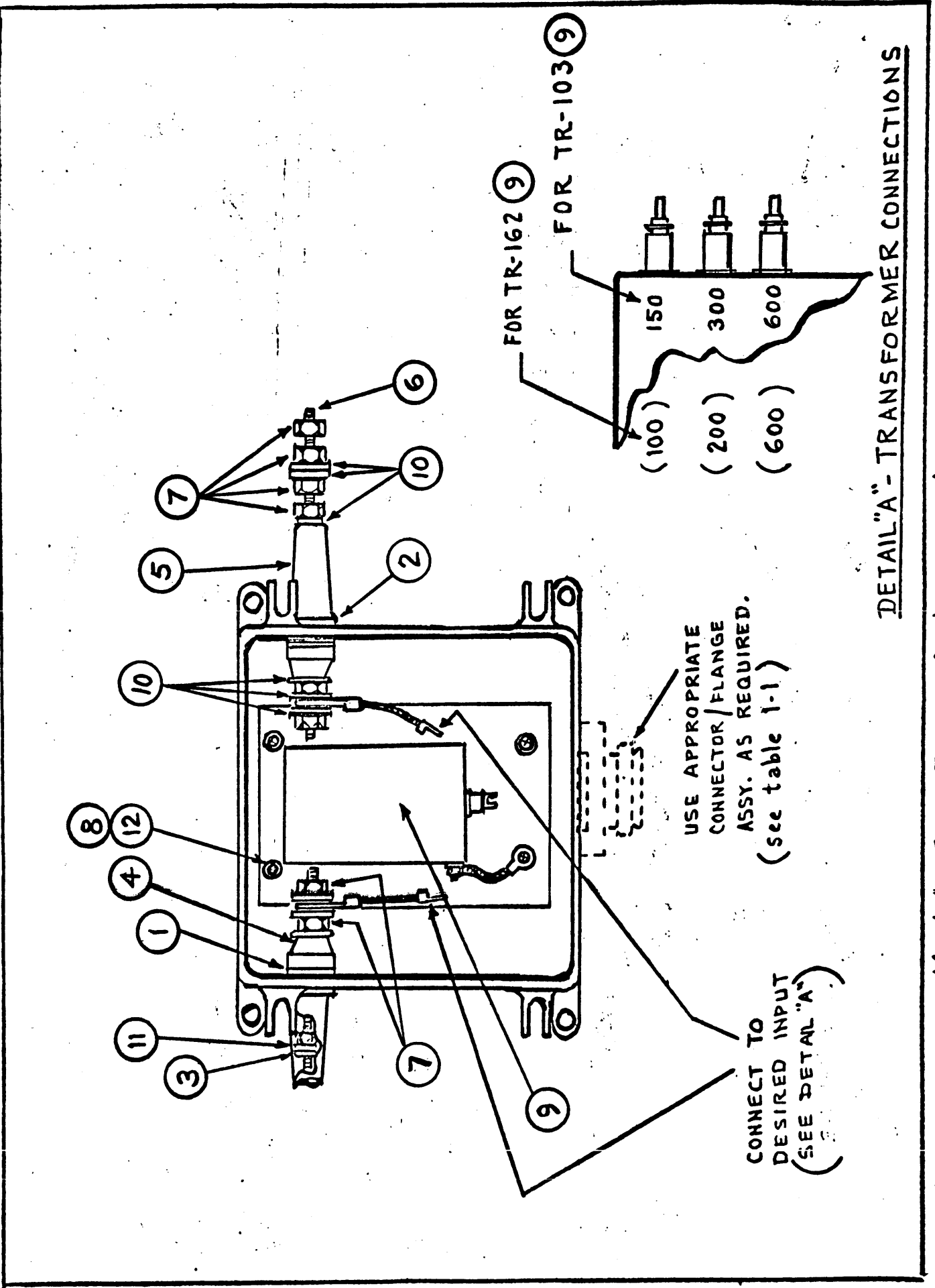
PARTS LIST

4-1 INTRODUCTION

The parts list contained in this section pertains to both versions of the model TRC-500. This list is to be used in conjunction with figure 4-1. For a list of the various connector assemblies available for use with the TRC-500, refer to table 1-1

TABLE 4-1. PARTS LIST, MODEL TRC-500

ITEM (See figure 4-1)	DESCRIPTION	TMC PART NO
1	Gasket, Inside	GA-101
2	Gasket, Outside	GA-100
3	Gasket, Stud Assy.	GA-104
4	Insulator, Inside	NS-101
5	Insulator, Outside	NS-100
6	Insulator, Stud Assy.	A-3016
7	Nut, Hex	NTH2500SS14
8	Screw, Machine	SCBPO332B11G
9	Transformer, RF (Model TRC-500-50U/600B) (Model TRC-500-70U/600B)	TR-162 TR-103
10	Washer, Flat	FW25HSS
11	Washer, Flat	FW25LBN
12	Washer, Lock	LWE08MRN



DETAIL "A" - TRANSFORMER CONNECTIONS

USE APPROPRIATE
CONNECTOR/FLANGE
ASSY. AS REQUIRED.
(see table 1-1)

CONNECT TO
DESIRED INPUT
(SEE DETAIL "A")

FOR TR-162 9

FOR TR-103 9

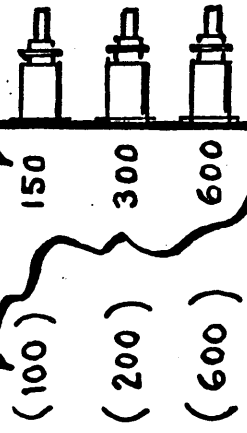


Figure 4-1. Model TRC-500. Cutaway View.

SECTION 5

SCHEMATIC DIAGRAMS

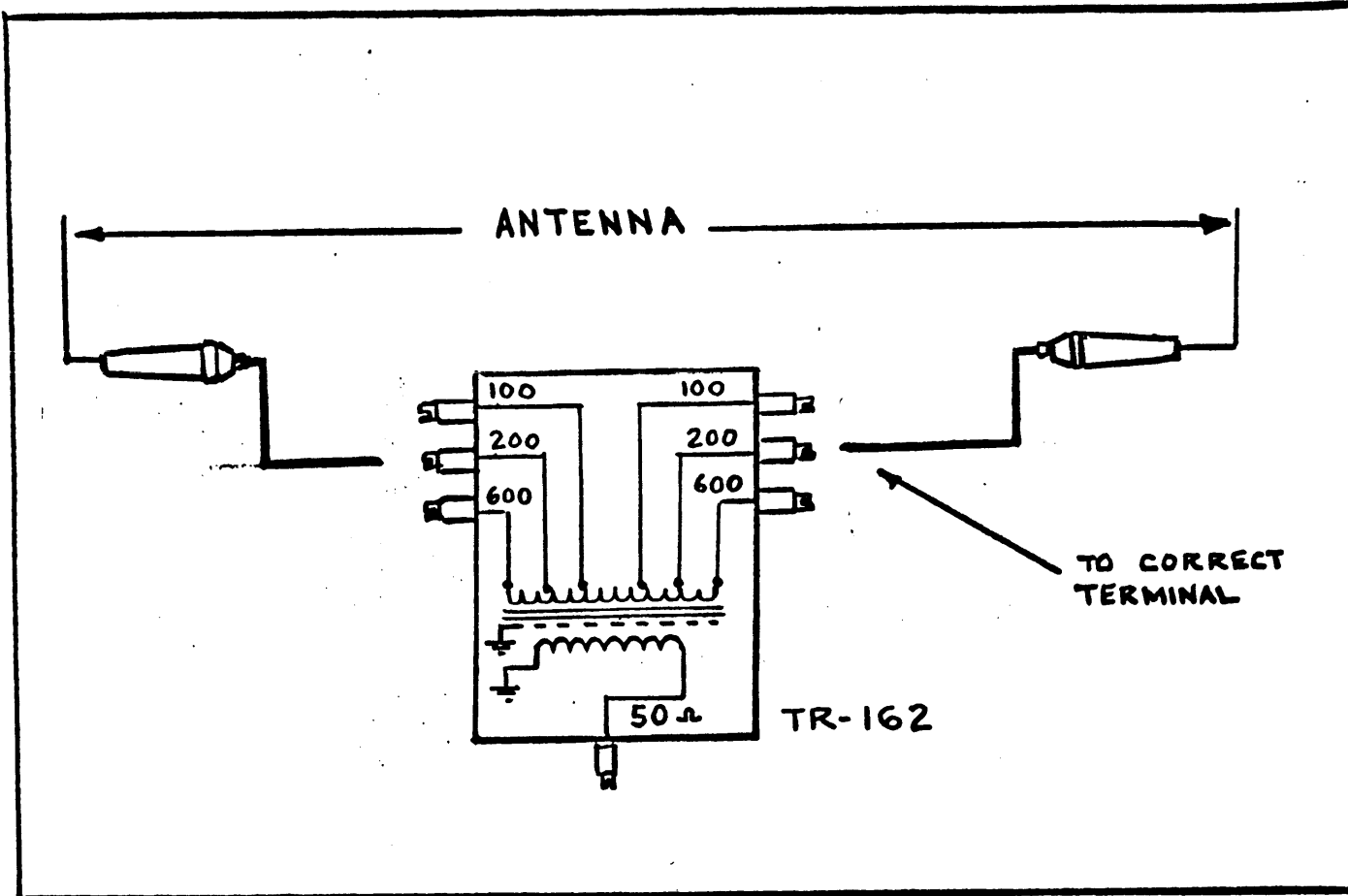


FIGURE 5-1. SCHEMATIC DIAGRAM, MODEL TRC-500-50U/600B.

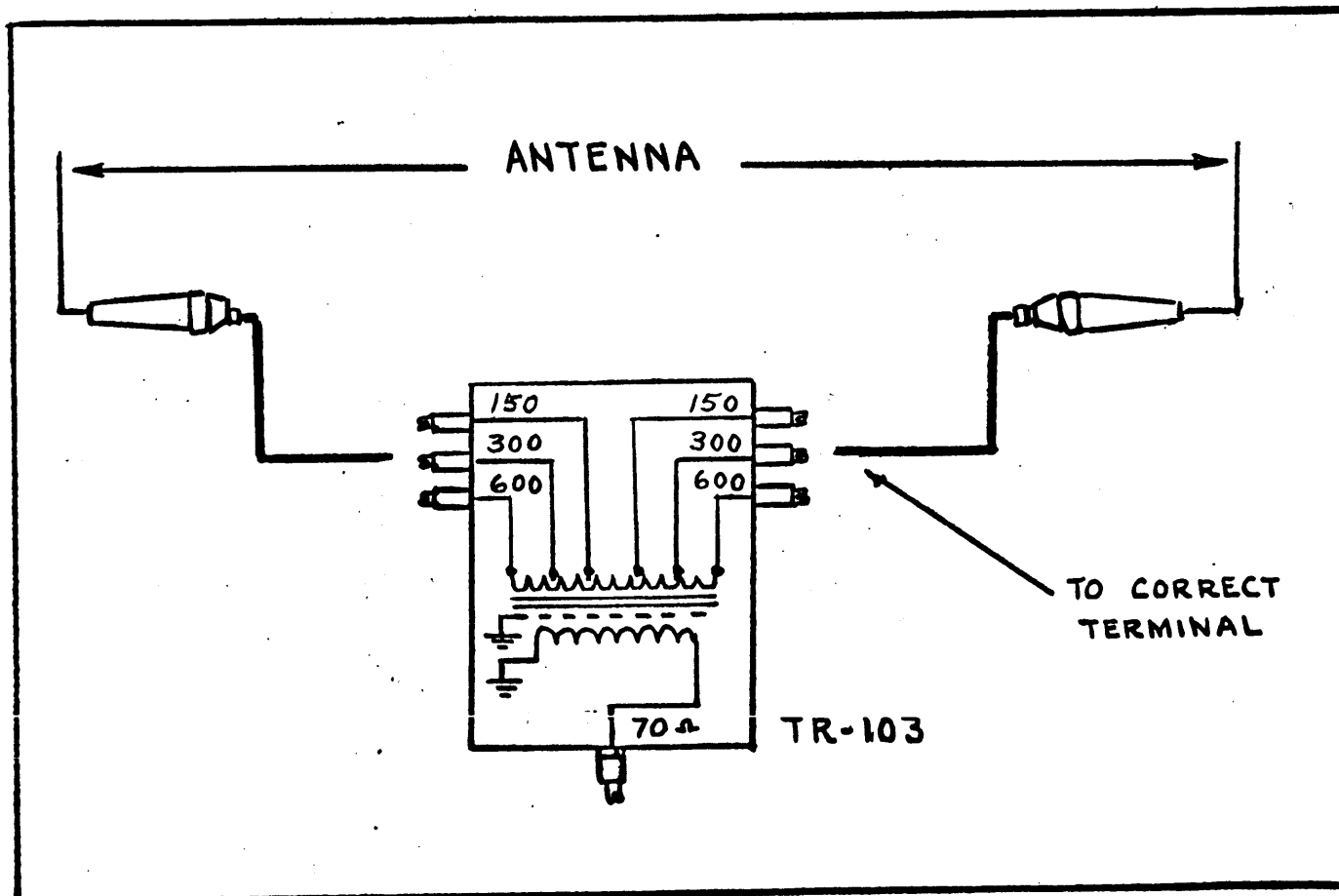


FIGURE 5-2 SCHEMATIC DIAGRAM; MODEL TRC-500-70U/600B