

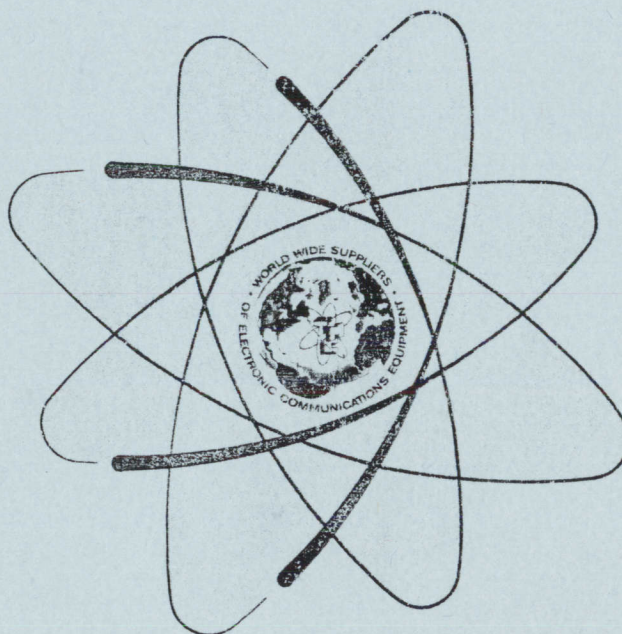
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TECHNICAL MANUAL
for
SM-C-396943-B

TRANSMITTER ANTENNA COUPLER

MODEL TRC-500

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THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y.

OTTAWA, ONTARIO

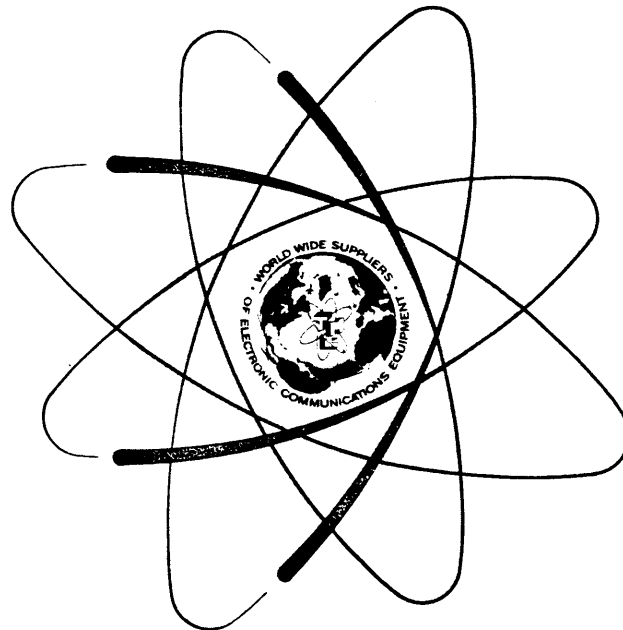
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IN-8015C

Printed in U.S.A.
ISSUE DATE: 15 MAY 1965
REVISED DATE: 14 NOV 1972

TECHNICAL MANUAL
for
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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.

*Electron tubes also include semi-conductor devices.

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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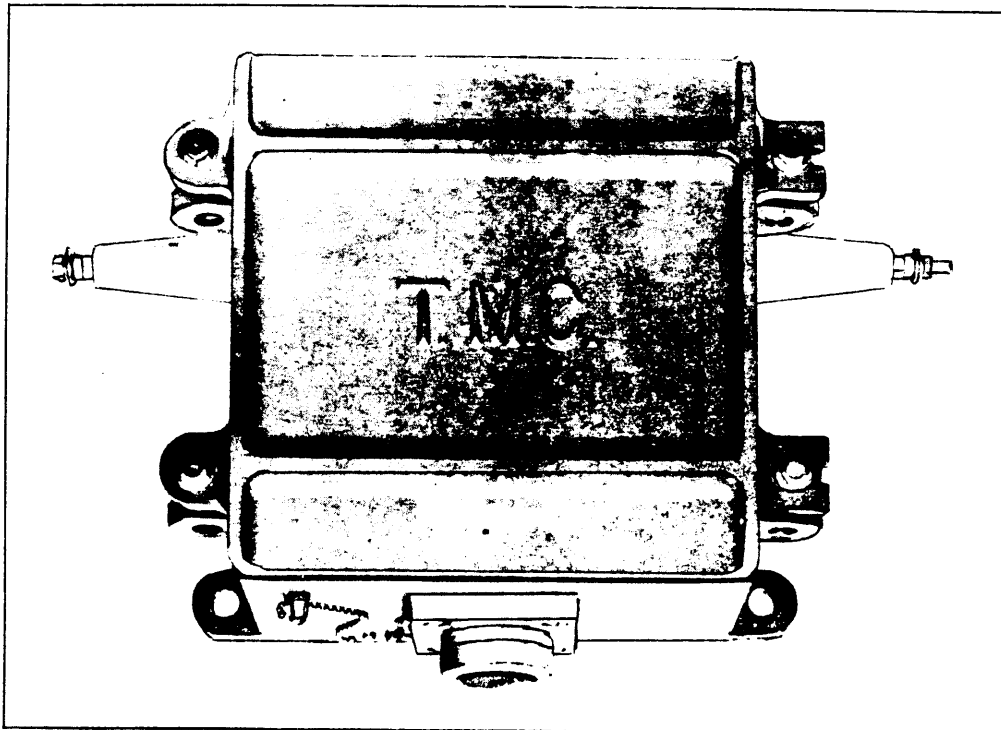
SECTION 1
INTRODUCTION

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 28 megacycles with an insertion loss of less than 1 db.



0011728015 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 28 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 28 megacycles.

1-3. TECHNICAL SPECIFICATIONS

AVERAGE POWER:	500 watts
PEAK POWER:	1000 watts
FREQUENCY RANGE:	2 to 28 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 CONNECTORS (UNBALANCED):	TMC part no. AX274, for RG-85/U coax. (supplied as standard item. For other connector assemblies available, 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., type QDS	AX-289
Mounting Plate, Connector Assy., type N	AX-259

NOTE: For additional connector assemblies available for use 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 replacements 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.

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.

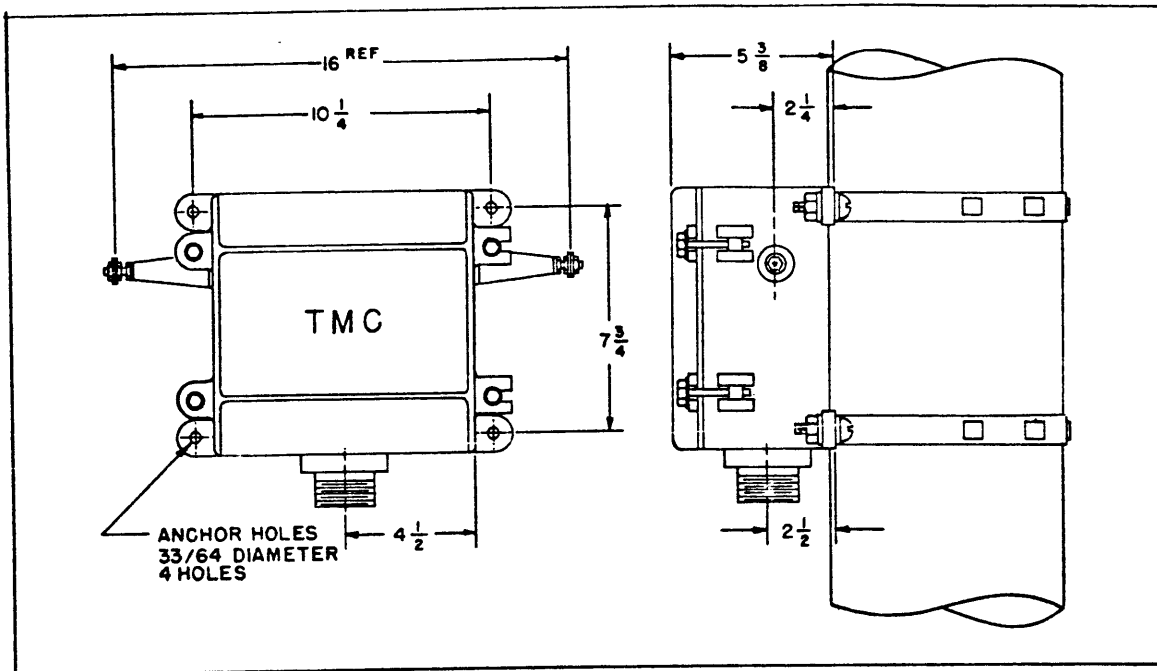


Figure 2-1. Outline and Mounting Dimensions, Model TRC-500

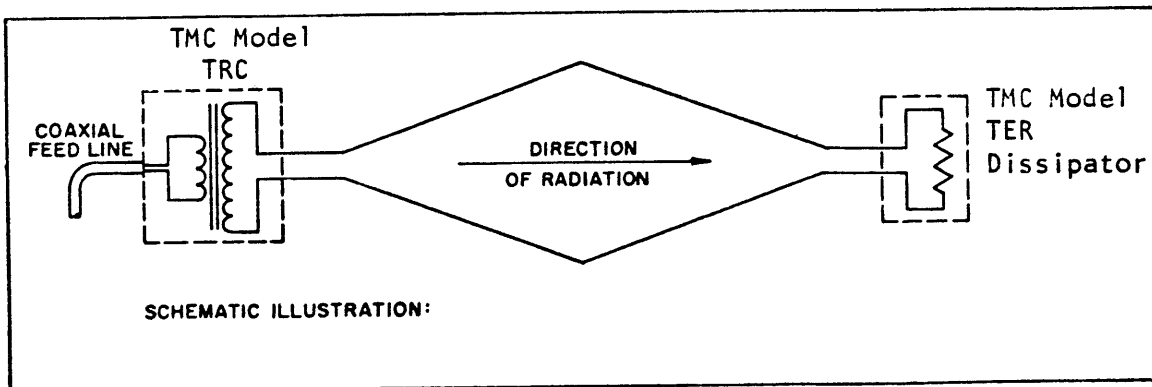


Figure 2-2. Rhombic Antenna System, Schematic Illustration

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

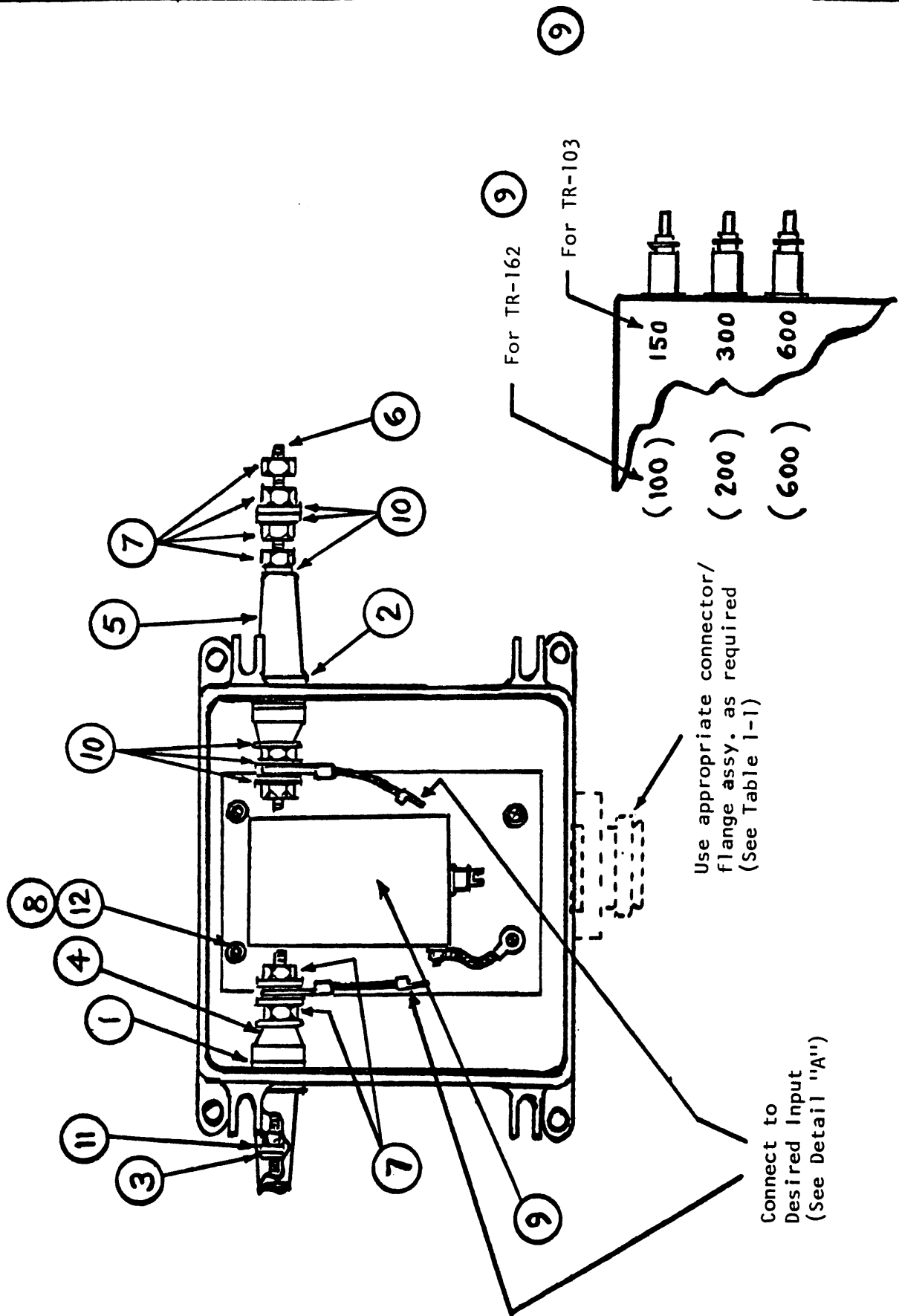
PARTS LIST

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	SCBP0332B11G
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

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

SECTION 5
SCHEMATIC DIAGRAMS

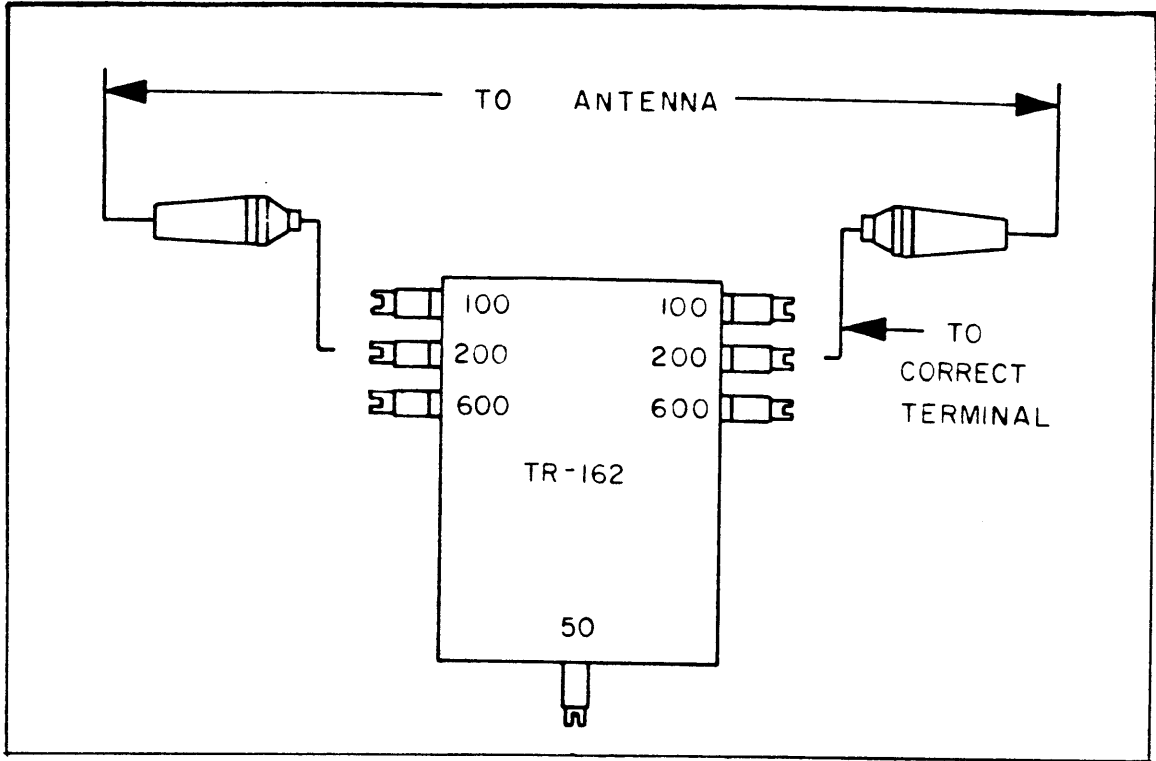


Figure 5-1. Schematic Diagram, Model TRC-500-50U/600B

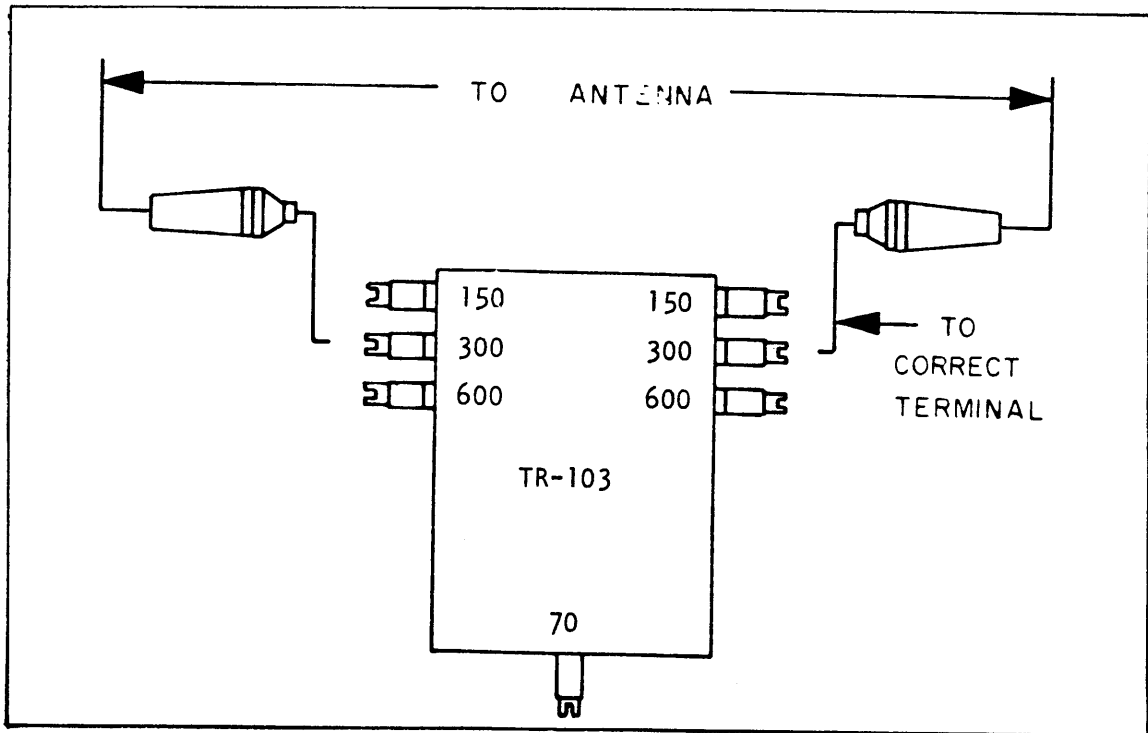


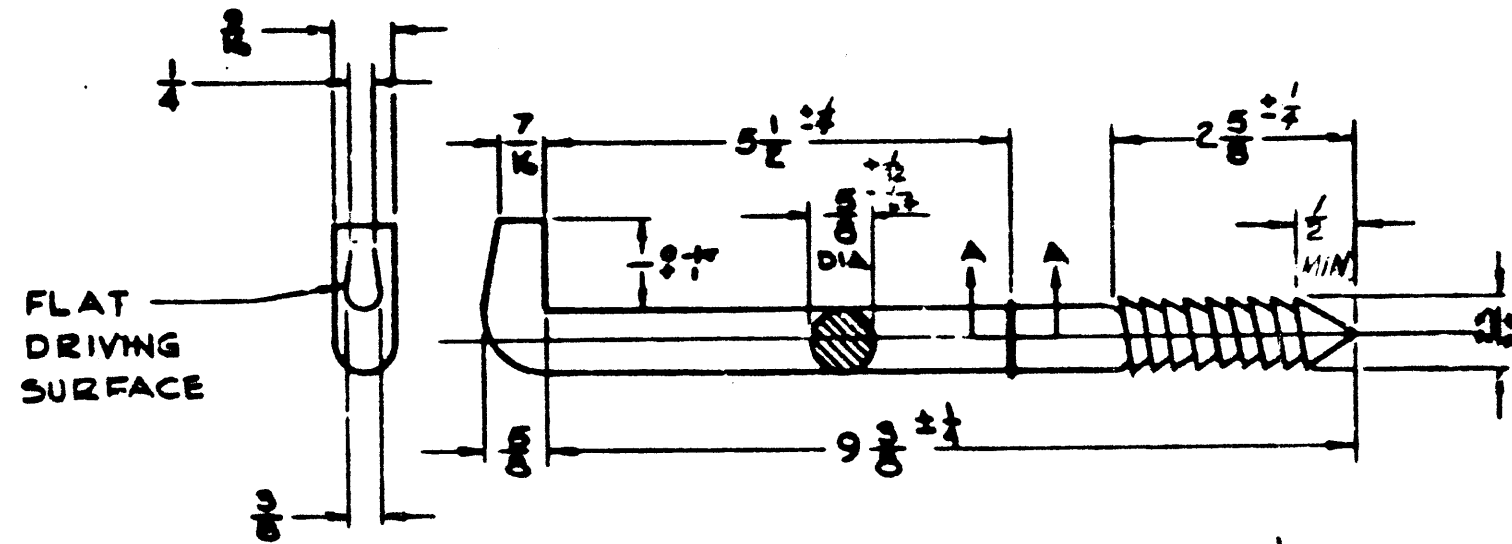
Figure 5-2. Schematic Diagram, Model TRC-500-70U/600B

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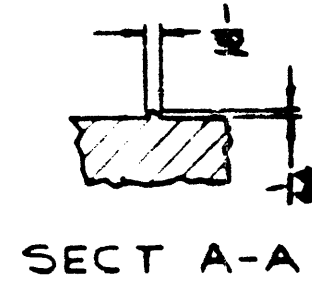
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REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



- NOTES
- SUPPLIED BY HUBBARD AND COMPANY PITTSBURGH 1, PA. OR EQUAL
 - MATERIAL: OPEN HARTH STEEL
 - FINISH: HOT GALVANIZED

PART NO.	REFERENCE HUBBARD PART NO.
SM-B-393319	7125



QTY	PART NO.	DESCRIPTION	SPECIFICATION
1	103-96	STEP, POLE	

DEPARTMENT OF THE ARMY
U. S. ARMY SIGNAL CENTER
SUPPORT AGENCY
FORT MONMOUTH NEW JERSEY
SM-B-393319

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
FRACTIONS DECIMALS ANGLES	
SM-C-376934	
SM-C-376900	
SM-B-396979	SGD-397050
DESIGNER E. SIMO	
DATE 25 OCT 1961	
CHECKED KENNY BAKER	
APPROVED	162
NEXT ASSY	USED ON
APPLICATION	

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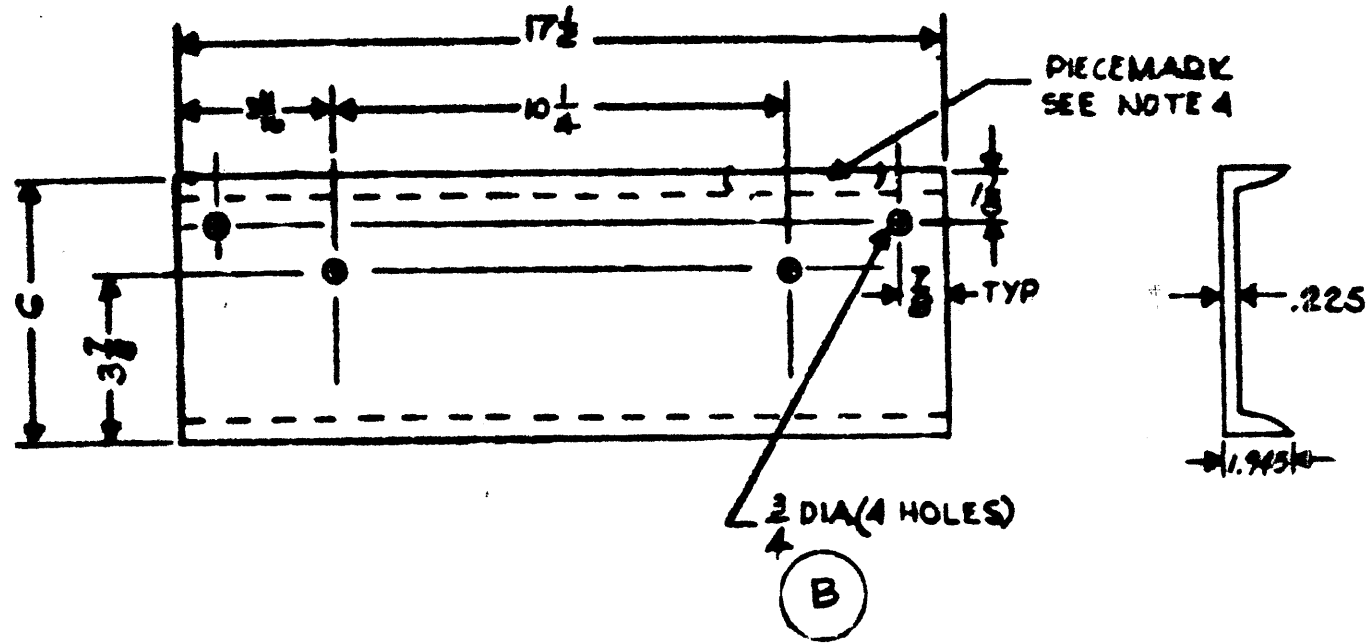
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* ECN 1532

REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL
A	DRAWING REDRAWN WITH MULTIPLE CHANGES	FEB 61	4175-PP-66
B	WAS 1/2	DEC 67	EC-2(EM)



NOTES:

- 1 MATERIAL: ALUM. STRUCTURAL CHANNEL PER QQ-A-328, COME 6061, TEMP. T6
- 2 REMOVE ALL BURRS & SHARP EDGES
- 3 FINISH: PS13 PER MIL-F-1072 & APPLY OLIVE DRAB SEM-GLOSS ENAMEL PER FED-STD 595
- 4 STENCIL & GOTHIC CHARACTERS & CENTER AS SHOWN USING LUSTERLESS BLACK INK PER MIL-F-16557, COLOR NO 37038 PER FED-STD-595 & COVER CHARACTERS WITH CLEAR VARNISH PER MIL-UTS TYPE B
- 5 MARKINGS SHALL MEET THE REQUIREMENTS OF MIL-M-13231

* 1047-417D14

TOLERANCES UNLESS OTHERWISE SPECIFIED	
BASIC DIMENSIONS	FRACTIONAL DIMENSIONS
UP TO 6	± 1/64
ABOVE 6 TO 24	± 1/32
ABOVE 24	± 1/16

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
FRACTIONS	DECIMALS ANGLES
SM-B-396992	SCDL-391050
SM-C-39253M	SCDL-392482
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DRAWN M PAWNE
DATE 7 JAN 61
CHECKED K RUTLAND 9 JAN 61
APPROVED [Signature]

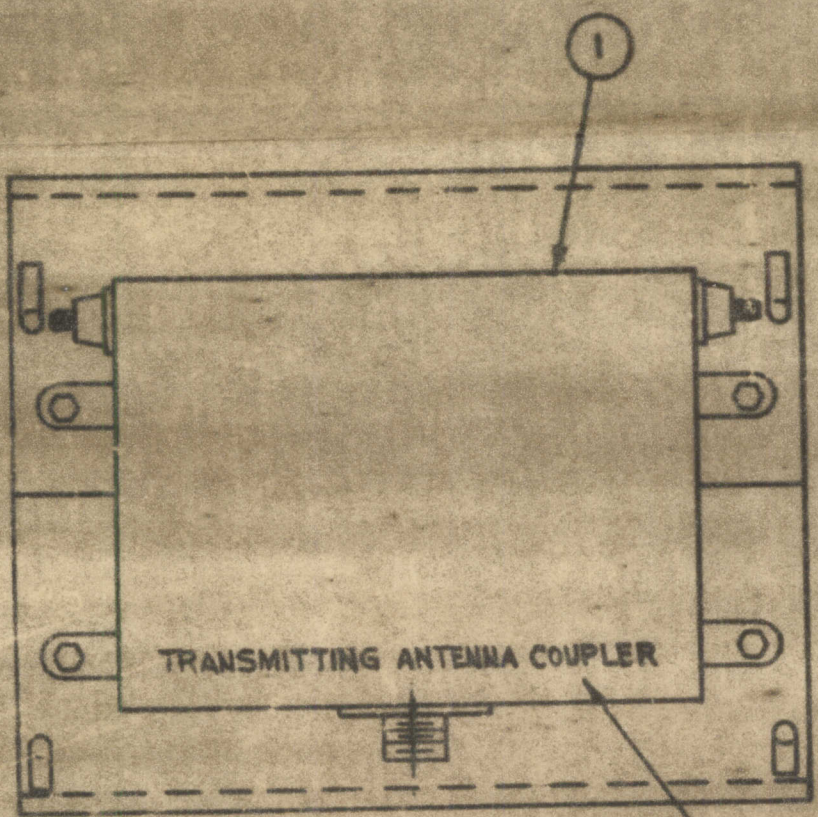
REQD	PART NO.	DESCRIPTION	SPECIFICATION
* 1047-417D14 LIST OF MATERIAL			
4140-PP-81-A1-A1		GROUND PLATE	DEPARTMENT OF THE ARMY
SIGNAL CORPS			U. S. ARMY SIGNAL MATERIEL SUPPORT AGENCY
REVIEWED P.M.E. APPROVED P.M.E.			FORT MONMOUTH NEW JERSEY
DATE 7 JAN 61		SCALE 1/4	SM-B-396992
			CODE 80053

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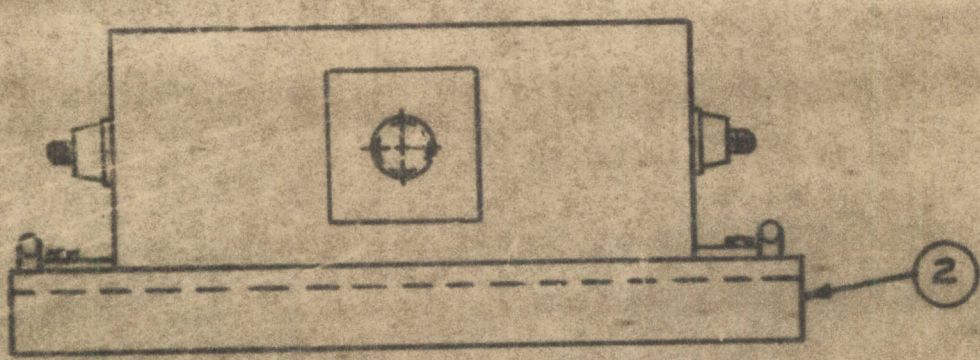
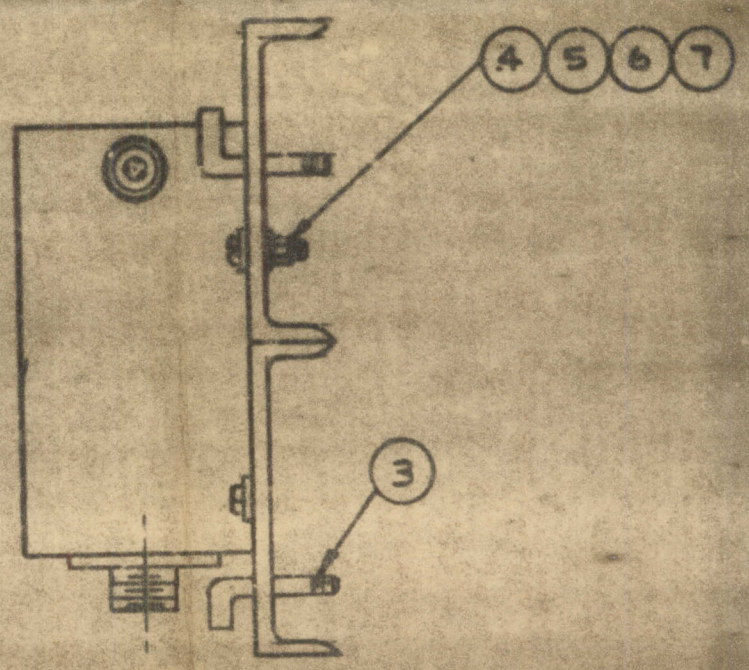
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SEE NOTE 1



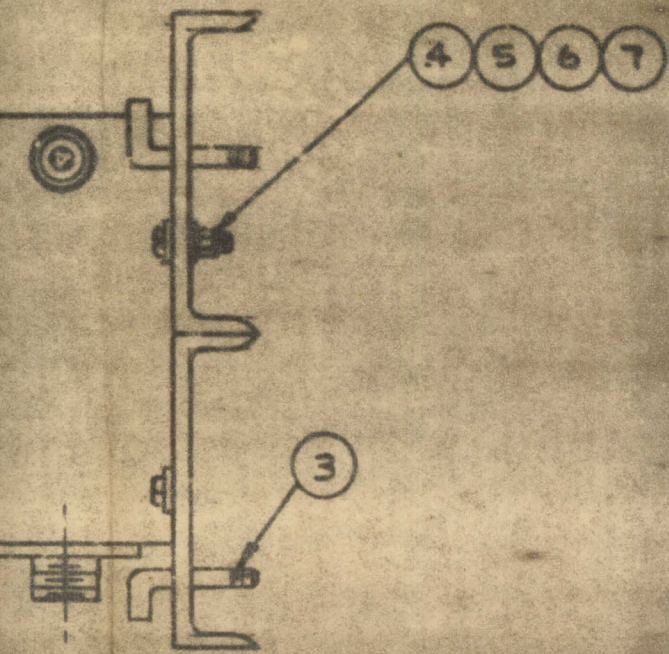
	8
	7
	6
	5
	4
103-26+	3
1047-47DUS	2
331-7+	1
ADLER - N.C.	ITEM

		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN INCHES	
		TOLERANCES ON	
		FRACTIONS DECIMALS ANGLES	
		DRAWN <i>E. Alford</i>	
		DATE 8 MAY 1963	
54-D-396907	SC-DL-397050	CHECKED <i>[Signature]</i>	
NEXT ASSY	USED ON	APPROVED <i>[Signature]</i>	
APPLICATION			

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* ECN 1532

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	DRAWING REDRAWN WITH MULTIPLE CHANGES	24 FEB 61	440-PRM REV'D



NOTES:

1. STENCIL "TRANSMITTING ANTENNA COUPLER" IN AREA DESIGNATED. GOTHIC 1/8 HIGH, USING LUSTERLESS WHITE INK PER MIL-1-16557 COLOR NO. 37875 PER FED-STD-595 AND COVER CHARACTERS WITH CLEAR VARNISH PER MIL-V-173, TYPE II.
2. MARKING SHALL MEET THE REQUIREMENTS OF MIL-M3231
3. SUPPLIED BY TECHNICAL MATERIAL CORP, MANAROCK NECK, N.Y., PART NO. TMC-TRC 500(600B)A1991 OR EQUAL

ADLER NO.	ITEM	REQD	PART NO.	DESCRIPTION	SPECIFICATION	NOTE
	8					
	7	4	MS35690-610	NUT		
	6	4	MS35338-84	WASHER		
	5	4	MS15795-314	WASHER		
	4	4	MS35307-62	SCREW		
103-26+	3	4	SM-B-393319-1	POLE STEP		
1047-47DUB	2	2	SM-B-396992	GROUND PLATE		
331-7+	1	1	SM-C-396943-1	COUPLER		3

LIST OF MATERIAL

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DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		SIGNAL CORPS			
DRAWN <i>E. P. ...</i>		REVIEWED EC-2 (CTS)			
DATE 8 MAY 1963		APPROVED EC-2 (CTS)			
USED ON		DATE 8 MAY 1963		SCALE NONE	SM-C-396943
APPLICATION		APPROVED			CODE 80053