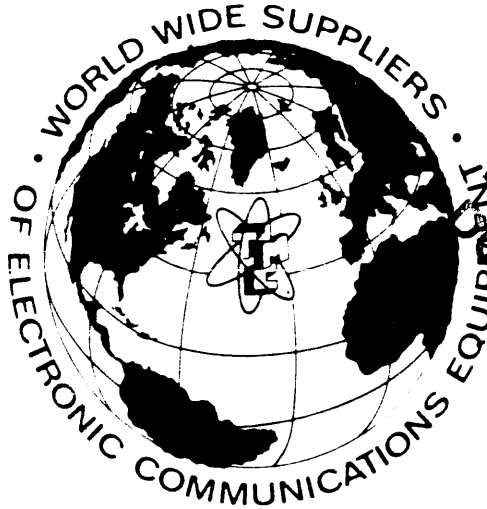
UNCLASSIFIED

TECHNICAL MANUAL

for

RHOMBIC TERMINAL UNIT MODEL RTB



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y. OTTAWA, CANADA

IN-8012 Issue Date: 15 February 1963

WORLD WIDE SUPPLIERS OF ELECTRONIC COMMUNICATIONS EQUIPMENT

THE TECHNICAL MATERIEL CORPORATION

COMMUNICATIONS ENGINEERS

700 FENIMORE ROAD MAMARONECK, N. Y.

Warranty

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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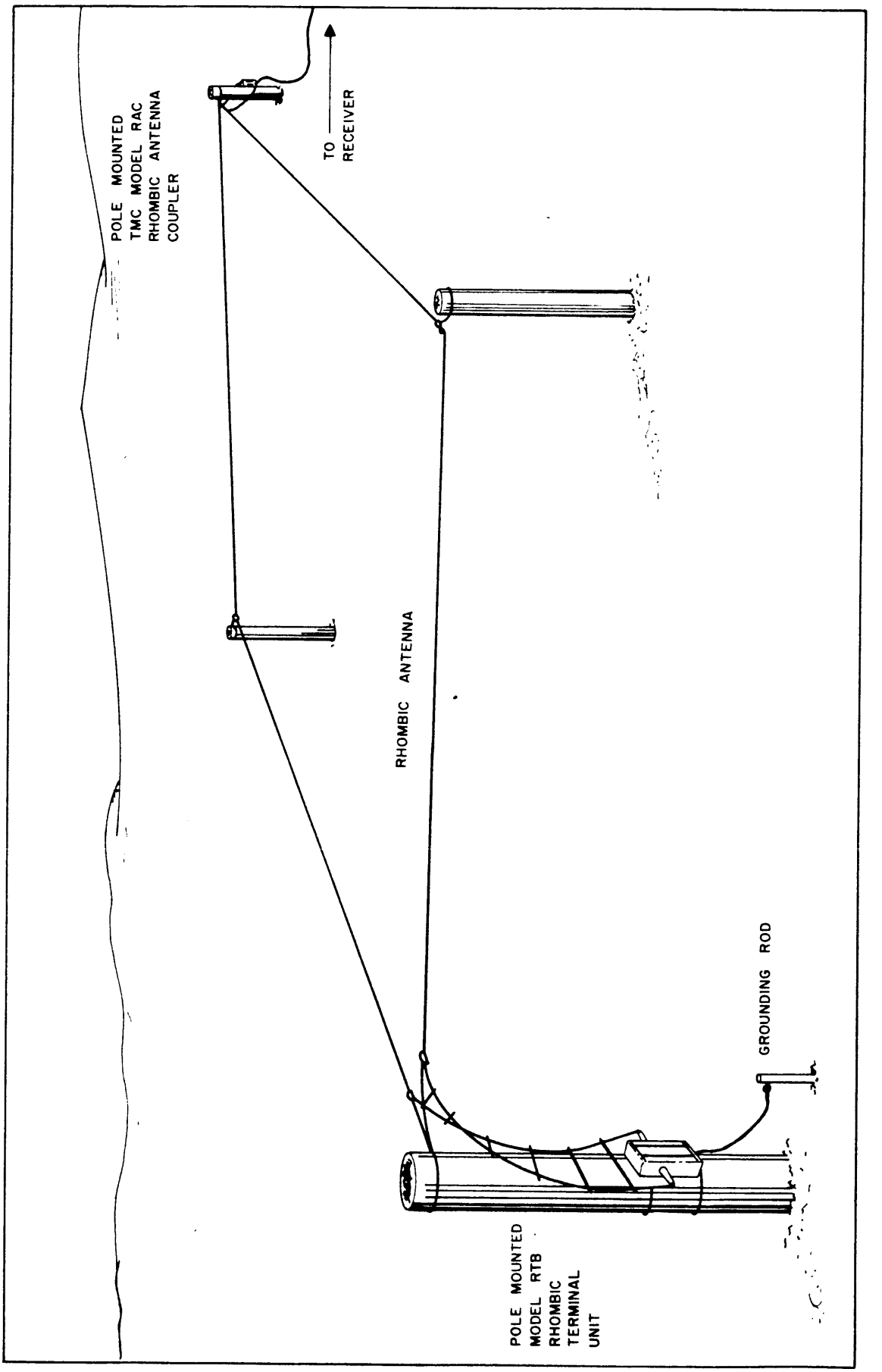

Figure 1-1. Typical Rhombic Antenna System

SECTION 1
GENERAL DESCRIPTION

1-1. PURPOSE

The Rhombic Terminal Unit, Model RTB provides rugged and proper resistive terminations for rhombic and sloping Vee antennas. Use of the RTB also increases efficiency and provides uniform antenna characteristics due to its environmental shielding. Figure 1-1 illustrates a typical rhombic antenna system employing an RTB terminating unit.

1-2. DESCRIPTION

The RTB consists of non-inductive resistors mounted in weatherproof cast aluminum cases designed to be pole mounted by means of four heavy cast mounting flanges. For mounting and outline dimensions, refer to figure 2-1.

The resistors used in the RTB are plug-in ferrule type, for ease of replacement. A spare resistor is provided within the case. Internal spark gaps are also provided for protection against lighting and static charges. See figures 1-2 and 1-3 for a front and inside view of a typical Rhombic Terminal Unit, Model RTB.

1-3. TECHNICAL SPECIFICATIONS

Table 1-1 lists the technical specifications to which the RTB series are built. Table 1-2 lists the various RTB models and their corresponding characteristics.

TABLE 1-1. RTB TECHNICAL SPECIFICATIONS

ITEM	CHARACTERISTIC
TERMINATION RESISTANCE:	Refer to table 1-2.
EQUIPMENT CASE:	Weatherproof, cast aluminum alloy.
INPUT TERMINALS:	Two ceramic insulators properly spaced to accommodate a rhombic antenna or one ceramic insulator for a sloping Vee antenna.
GROUND CONNECTION:	A ground connection is provided at the side or bottom of the case.
MOUNTING:	Pole mounting by means of four heavy cast mounting flanges. Four 1/2" dia. holes on 7-3/4" x 10-1/4" mounting centers.
DIMENSIONS:	9" x 9" x 5".
WEIGHT:	18 lbs.
SHIPPING WEIGHT:	35 lbs.
COMPONENTS AND CONSTRUCTION:	All equipment is manufactured in accoraance with JAN/MIL specifications wherever practicable.

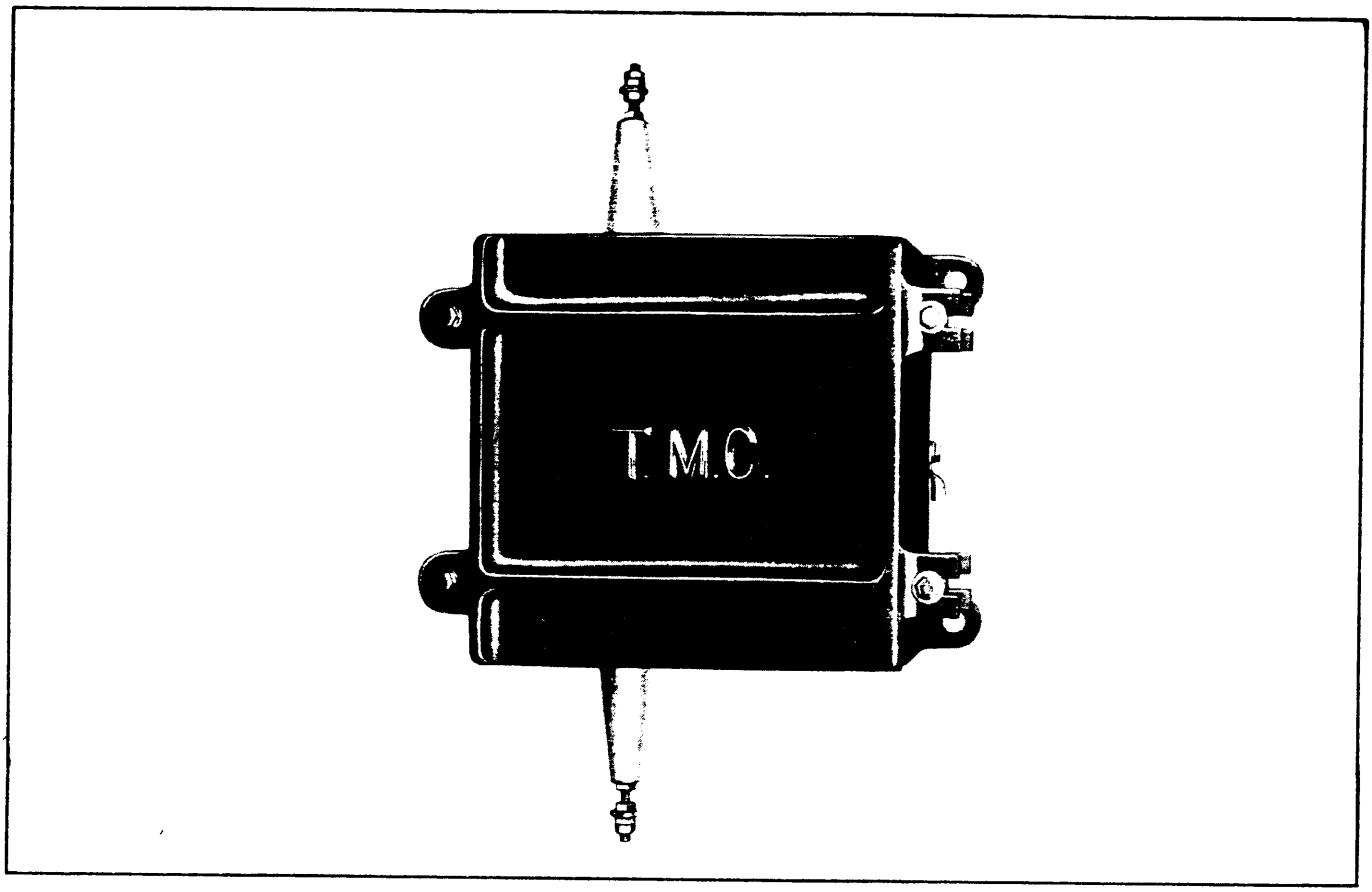

Figure 1-2. Front View, Rhombic Terminal Unit, Model RTB

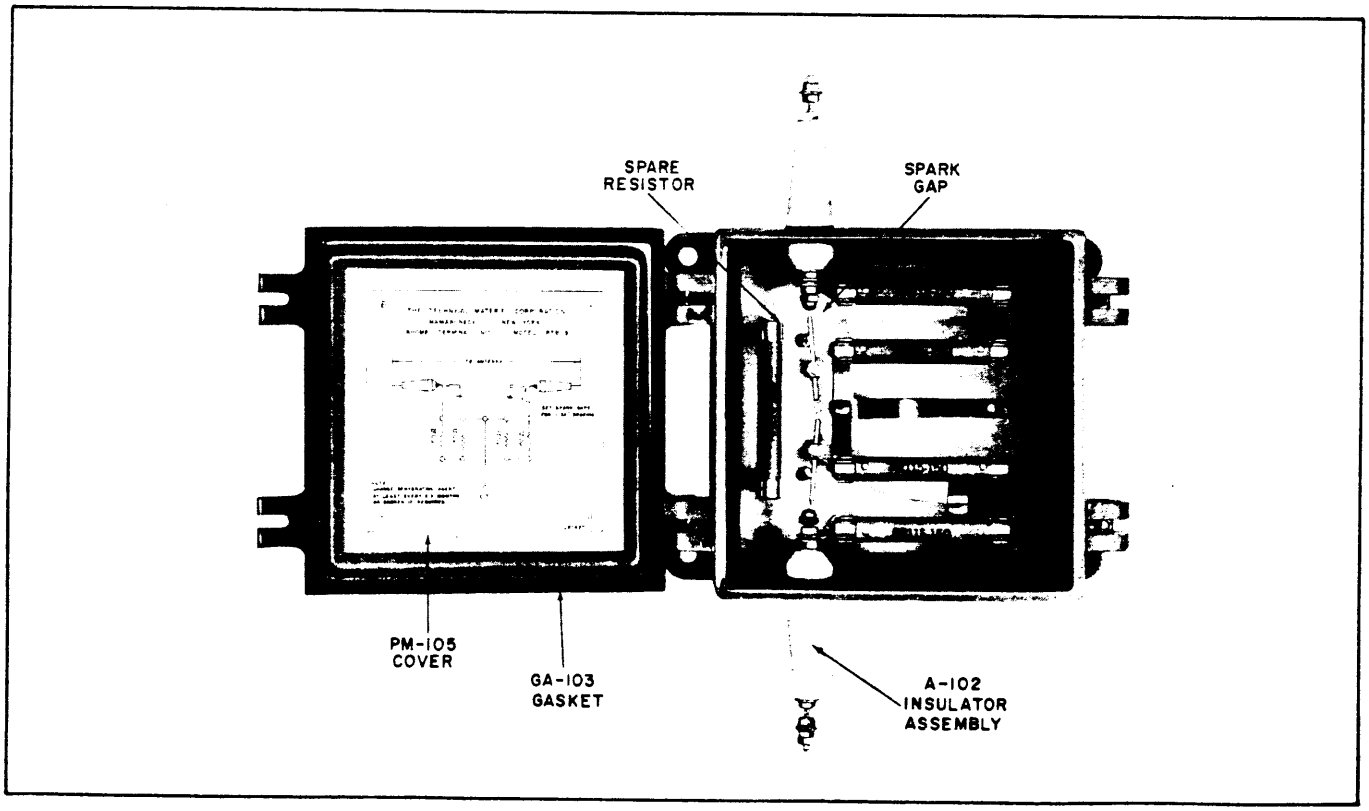

Figure 1-3. Inside View, Rhombic Terminal Unit, Model RTB

TABLE 1-2. RTB MODEL CHARACTERISTICS

TMC MODEL	MILITARY NOMENCLATURE	TERMINATING RESISTANCE (OHMS)	BALANCED	UNBALANCED	CENTER TAPPED	GROUNDED	RESISTOR * COMPLEMENT				NOTES	TMC MODEL
							RR-115-100	RR-115-140	RR-115-150	RR-115-175		
RTB-1		700	X		X					4		RTB-1
RTB-3		280	X		X	X		2				RTB-3
RTB-4	MX-2379/FRR	700	X		X	X						RTB-4
RTB-5		600	X		X	X			4			RTB-5
RTB-6		500		X					1	2		RTB-6
RTB-9		650	X		X	X			2	2		RTB-9
RTB-10		400		X		X	4					RTB-10
RTB-11		650	X		X	X		2	2	2	GROUNDED THRU 280 OHMS	RTB-11
RTB-12		425	X				1		1	1		RTB-12
RTB-13		400	X		X		4					RTB-13

NOTE: Each RTB model contains one spare resistor within the case.

* To order replacement resistors, specify RR-115-resistance as shown on chart.

ADDITIONAL REPLACEMENT PARTS
- Hardware Kit — BM-212
- Insulator Assy. — A-102
- Cover Gasket — GA-103

SECTION 2
INSTALLATION

2-1. UNPACKING

The RTB is shipped in one crate and can be completely assembled at the time of delivery. Each unit has been factory tested before shipment. When the unit is uncrated, it should be inspected for any damage incurred in transit. Although the carrier is liable for any damage to the equipment, TMC will assist in describing and providing for repair or replacement of damage.

2-2. INSTALLATION

The RTB is designed to be pole mounted by means of four heavy cast mounting flanges. Figure 2-1 indicates the dimensions and information for a typical pole mounting of the RTB unit. The case size and mounting holes are the same for all RTB units.

The two antenna terminating leads are to be terminated at the two ceramic input terminals of the RTB being careful as not to break or damage the ceramic insulators.

The ground connection, located on the side or bottom of the RTB case, is to be securely connected, by means of an adequate grounding cable, to a permanent ground. This can be accomplished by use of a grounding rod or series of grounding rods, inbedded into the soil. The length of the grounding rod is dependent upon the prevailing soil conditions.

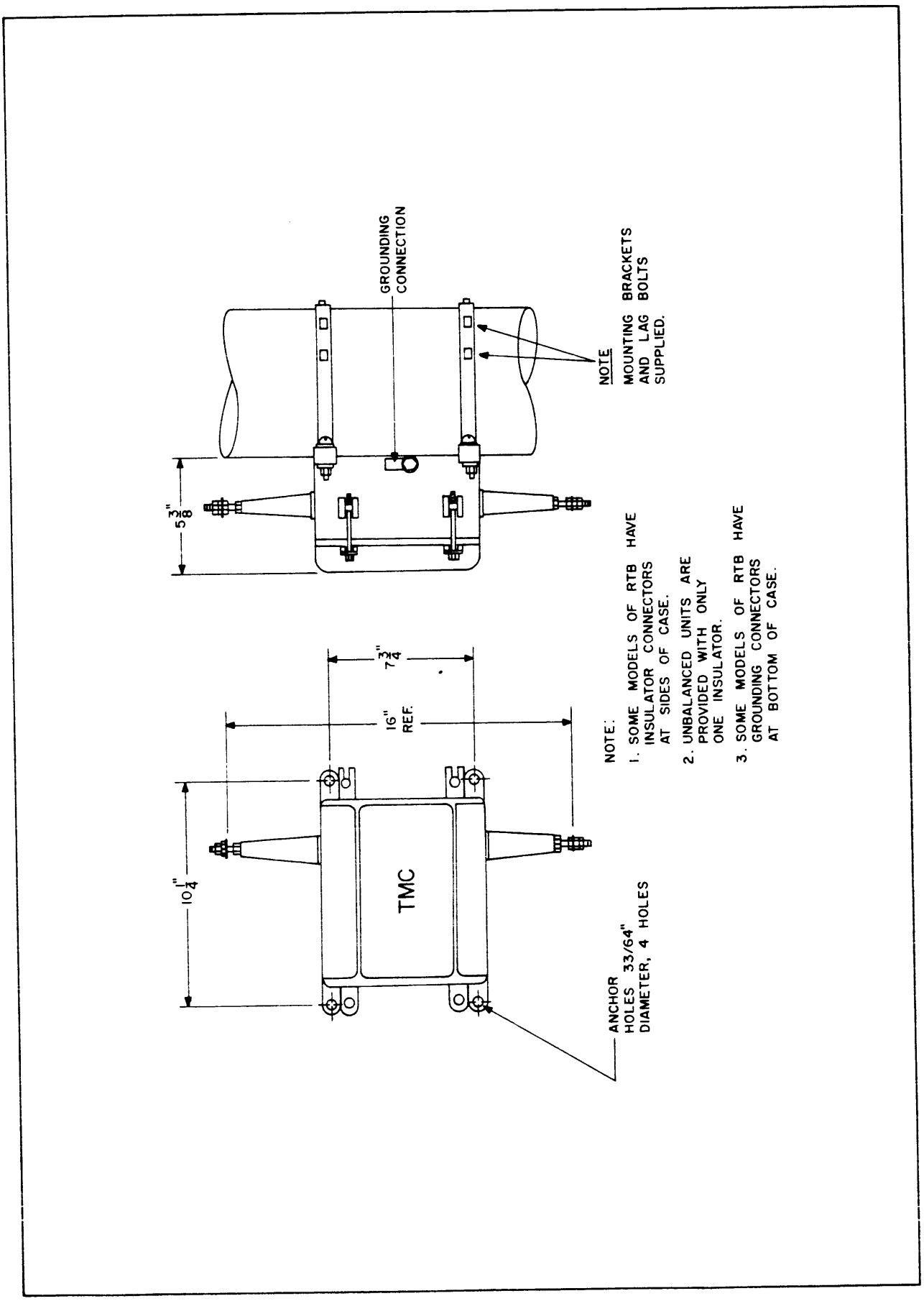

Figure 2-1. RTB, Installation Mounting Dimensions

SECTION 3
THEORY OF OPERATION

3-1. GENERAL

The primary purpose of the terminating impedance of a rhombic antenna is to produce a sharp, unidirectional radiation pattern. The Rhombic Terminal Unit, Model RTB provides the proper termination impedance by the use of a series of noninductive resistors.

Undesirable capacitance and resonance effects may result from metallic insulators and supporting elements used in the antenna system. The RTB units minimize these undesirable resonance and capacitance effects by proper spacing of the terminal connectors and series connection of the terminating resistors. Uniform antenna termination impedance is also ensured by environmental shielding of the termination network in a weatherproof case.

SECTION 4
PREVENTIVE MAINTENANCE

4-1. GENERAL

Due to the simplicity of design and operation of the RTB unit, preventive maintenance requirements are few.

Preventive maintenance will consist of periodic cleaning of internal and external connections and checking for secure connections of the RTB unit. The internal spark gaps should also be checked periodically for proper gap spacing.

Figure 4-1 illustrates a simplified schematic diagram and spark gap spacing of the RTB. Simple continuity and resistance checks can be made by use of the proper schematic diagram shown on the inside case cover of the RTB unit in use.

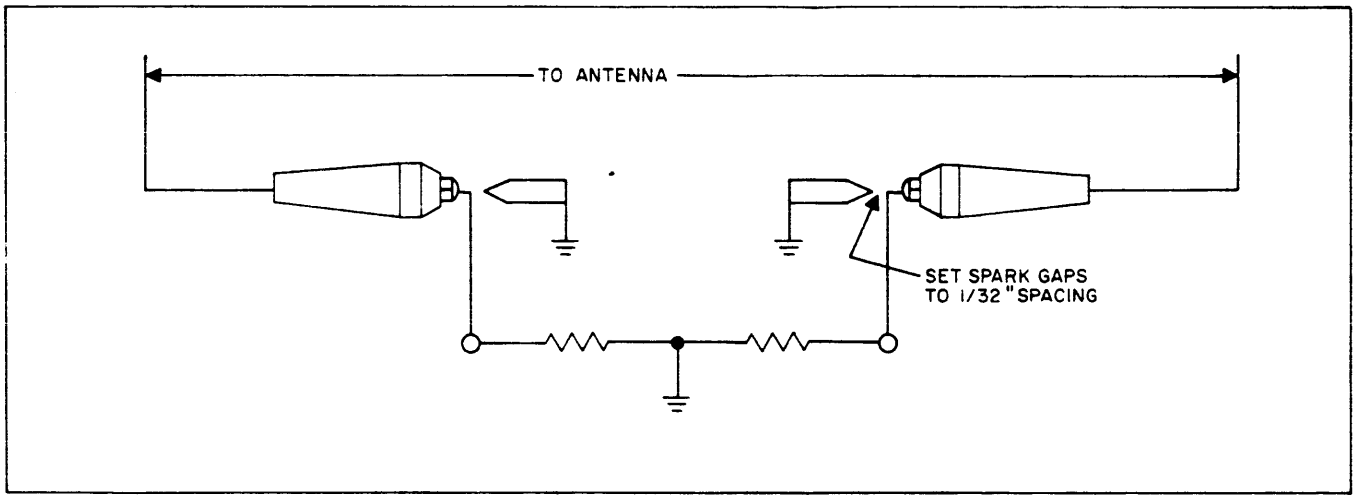

Figure 4-1. RTB, Simplified Schematic Diagram

REQUEST FOR SPARE PARTS

REQUESTED BY:

NAME _____

COMPANY _____

ADDRESS _____

_____

— *Fold*

CITY _____ *STATE/PROV* _____

COUNTRY _____ *TELEPHONE/TLX/TWX* _____

SPARE PARTS REQUIRED:

Part Number	*Description*	*Qty*	*Symbol*	*Notes/Used On*

— *Fold*

DATE _____ *SIGNED BY:* _____

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FIRST CLASS PERMIT No. 10, MAMARONECK, N. Y.

THE TECHNICAL MATERIEL CORPORATION

P. O. Box 142

Mamaroneck, New York, 10543 U. S. A.

THE TECHNICAL MATERIEL CORP.
700 Fenimore Road
Mamaroneck, N.Y. 10543
U. S. A.

REQUEST FOR FIELD SERVICE

REQUESTED BY:

NAME _____

COMPANY _____

ADDRESS _____

_____

CITY _____ *STATE/PROV* _____

COUNTRY _____ *TELEPHONE/TLX/TWX* _____

— *Fold*

EQUIPMENT TO BE SERVICED:

Model No.	*Qty*	*Serial No.*	*Field Service Required/Comments*

— *Fold*

SPARE PARTS REQUIRED: *(Note: Use Request for Spare Parts form if required.)*

Part Number	*Qty*	*Symbol*	*Part Number*	*Qty*	*Symbol*

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Mamaroneck, N.Y. 10543
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REQUEST FOR TRAINING

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COUNTRY _____ *TELEPHONE/TLX/TWX* _____

— *Fold*

TRAINING REQUIRED:

*Course**	*Description*	*Students*	*Notes*

— *Fold*

**General Theory, Operation, Maintenance, or Programmed Study.*

SPECIAL REQUIREMENTS: _____

_____

_____

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Mamaroneck, N.Y. 10543
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SERVICE LOG

CUSTOMER/USER/OPERATOR:

NAME _____

COMPANY _____

ADDRESS _____

_____

CITY _____ *STATE/PROV* _____

COUNTRY _____ *TELEPHONE/TLX/TWX* _____

RECORD OF SERVICE PERFORMED:

Model	*Serial*	*Date*	*Service/Status*	*/S/*

RECORD OF SERVICE PERFORMED: *(Continued)*

Model	*Serial*	*Date*	*Service/Status*	*/S/*

FIELD REPORT

	Service		Routine		Other

PROJECT	Report Number
LOCATION/DURATION	Report Date

INSTRUCTIONS: *For Field Service, describe project, note deficiencies with corrective action taken and detail your recommendations for improving later product designs. Name all customer representatives witnessing services performed.*

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—Fold

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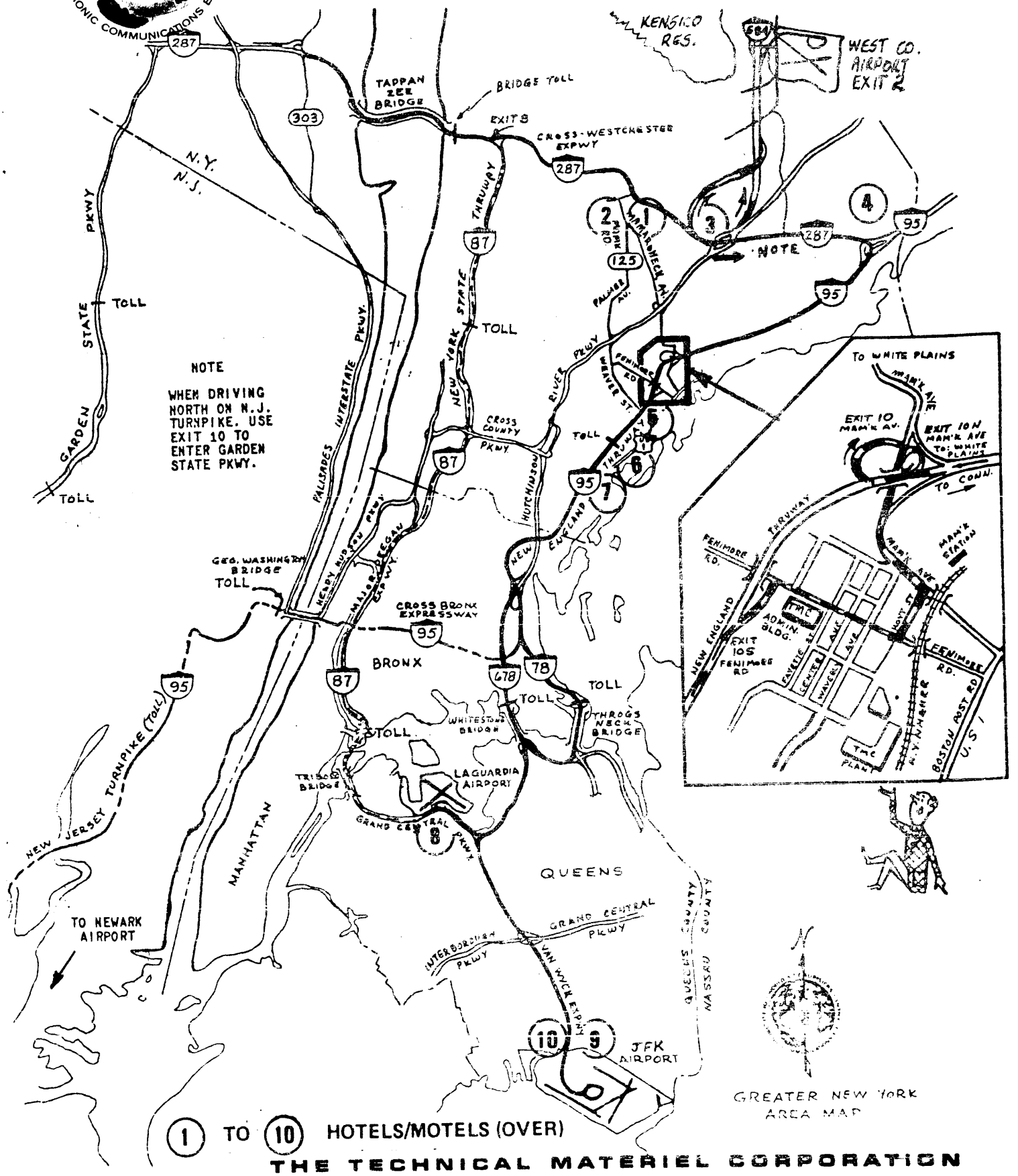
TMC LOCATION MAP



(1) TO (10) HOTELS/MOTELS (OVER)

THE TECHNICAL MATERIEL CORPORATION

LOCAL ACCOMMODATIONS

1 WHITE PLAINS HOTEL
South Broadway and Lyon Place
White Plains, NY 10601

Telephone: 914 761 8100

2 COACHMAN HOTEL
123 East Post Road
White Plains, NY 10601

Telephone: 914 949 1000

4 RYE TOWN HILTON
699 Westchester Avenue
Port Chester, NY 10573

Telephone: 914 939 6300

3 STOUFFER'S
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White Plains, NY 10604

Telephone: 914 694 5400

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Mamaroneck, NY 10543

Telephone: 914 698 0671

6 LARCHMONT MOTEL
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Larchmont, NY 10538

Telephone: 914 834 4300

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New Rochelle, NY 10801

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8 HOLIDAY INN
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9 HILTON HOTEL
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Jamaica, NY 11436

Telephone: 212 322 8700

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Jamaica, NY 11430

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Telex: 146–320

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Your comments concerning this publication are very helpful in improving the quality of literature we provide for your use. Your views and suggestions will be reviewed by those responsible for the writing and publishing of literature at TMC. Thank you for co-operating with us.

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