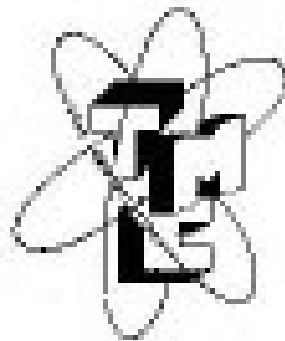


INSTRUCTION BOOK
for
**ANTENNA TUNING
UNIT
MODEL TAC**



THE TECHNICAL MATERIEL CORPORATION
Manassas, New York

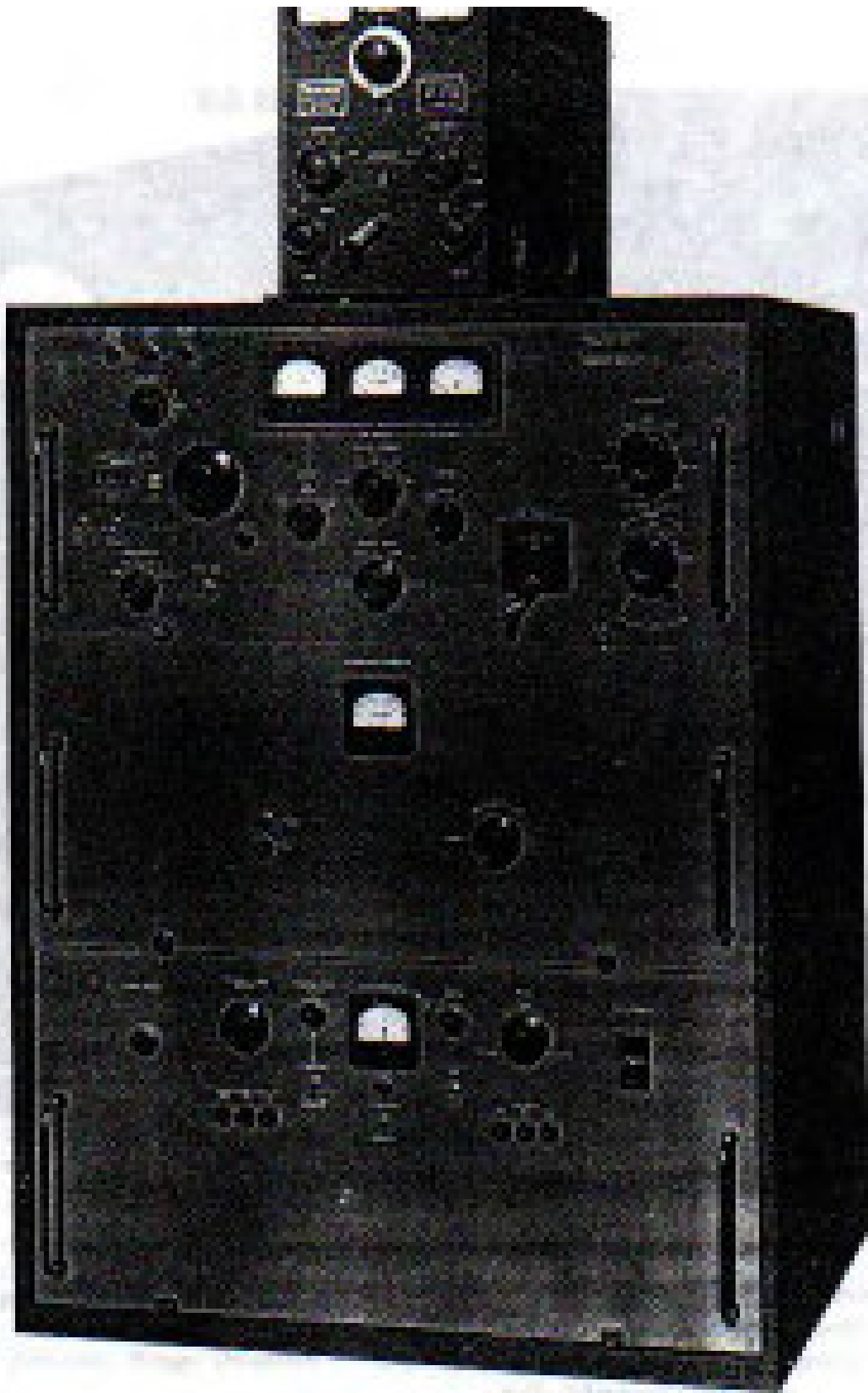
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SECTION I

GENERAL DESCRIPTION

1. PURPOSE AND BASIC PRINCIPLES.

The Antenna Tuning Unit, Model TAC-1 has been designed to couple the output of the GIFT-79 transmitter, or any transmitter with a nominal output impedance of 70 ohms, to balanced or unbalanced loads from 50 to 1200 ohms. The unit covers the frequency range of 2 to 18 mc. with very little insertion loss and will, in addition, cover the range of 18 to 30 mc. at slightly lower efficiencies. Provisions are also included in the unit which will permit operation down to 1.7 mc. with a balanced load and 1.5 mc. with an unbalanced load. These loads are taken to mean antennas or transmission lines.

The unit consists of a tapped inductance tuned by a split stator capacitor. Portions of the inductance are shorted out as the frequency of operation increases. A variable contact on the inductance serves to vary the ratio of inductance in the tank circuit to that inductance in the load circuit hence matching the load to the transmitter.

2. DESCRIPTION OF THE UNIT

The entire unit is housed in a steel case with a removable cover. However, the unit is so designed that all adjustments may be made without removing the cover. The unit is 9 1/4 in. wide by 14 1/2 in. high by 22 in. long and weighs approximately 25 pounds.

Mounting channels are provided with holes appropriately spaced to match transmission rods. All controls, and meters for monitoring the antenna current are located on the front panel. Isolated terminal posts which are easily reached through apertures on the rear of the cover permit connections to balanced or unbalanced loads. Particular care has been taken to insulate the unit from the high voltages which may occur in such a device.

3. REFERENCE DATA.

a. FREQUENCY RANGE.

2 to 30 mc. in most bands, balanced/unbalanced loads.

1.7 to 2 mc. balanced load using additional vacuum capacitor furnished.

1.5 to 2 mc. unbalanced load using shunting bar furnished.

b. INPUT IMPEDANCE.

Nominally 70 ohms.

c. OUTPUT IMPEDANCE.

Continuously adjustable 50 to 1200 ohms.

d. INPUT CONNECTIONS.

UHF series UG-39C/U receptacle. (Same as 9C-239 but with Teflon insert.)

e. OUTPUT CONNECTIONS.

Isolated stand-offs at rear of unit.

f. EFFICIENCY.

Exceeds 80% in the range 2 to 18 mc. Slightly lower efficiency in the range 18 to 30 mc.

g. POWER.

Designed for 1000 watts continuous carrier.

h. FRONT PANEL CONTROLS.

COUPLING switch

BAND switch

BAL/UNBAL LOAD switch

GRD/UNGRD ROTOR switch

LOAD ADJUST inductor

TUNING dial

ANTENNA CURRENT thermocouple meter 0 to 5 amp.

i. COMPONENTS AND CONSTRUCTION.

All parts of the unit are manufactured in accordance with JAN/MIL specifications wherever possible.

SECTION II

THEORY OF OPERATION

1. THEORY OF OPERATION.

In coupling a transmitter to a transmission line or antenna, the basic problem is one of impedance matching. The coupling device introduced between the transmitter and the load should be capable of transforming the impedance of the load, so that the transmitter appears to be working into the proper resistance. The tube is working into the proper resistance when the load tank circuit is tuned to resonance, and the loading is such that the tube is drawing stand plate current. The optimum value of load resistance is, therefore, reached

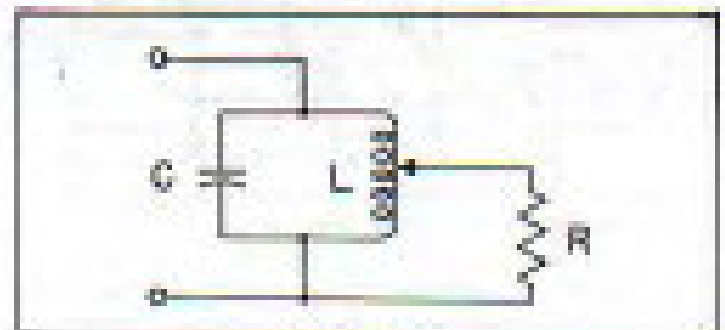


Figure 2-1

when the coupling is adjusted to bring the plate current to the normal operating value.

It is the property of a tuned parallel circuit that a resistive load tapped across a portion of the circuit is equivalent to a higher value of resistance tapped across the whole circuit.

Since the unloaded resonant impedance of the L,C combination is considerably higher than the load R, it is possible to match a range of impedances in this manner.

When the transmission line or antenna presents a reactive component, in addition to the resistive component, the reactive component being either inductive or capacitive, they will appear as a series combination as shown in Figure 3-2.

This series combination may be transformed by analytical methods to its equivalent parallel combination as in Figure 3-3.

The reactive portion of the load is reflected into the tuned circuit along with the resistive portion. If the load has an equivalent parallel combination of an inductive reactance, it will detune the tank circuit off resonance, and the capacitance of C must be decreased to bring the tank back to resonance.

If the load has an equivalent capacitive reactance, C must be increased to bring the tank back to resonance. Therefore, it is evident that the reactance of the load is balanced out by the tuning condenser in bringing the system to true resonance. When this resonance has been obtained, the load R is transformed to a higher value by the action of the tuned resonant circuit.

Figure 3-4 is a simplified schematic diagram of the Antenna Tuning Unit and a transmitter final. The transmitter final is fully coupled to the unit input through a short length of RG-11/U coaxial cable. The coupling coil in the unit electro-magnetically couples to the tank circuit, composed of L₁, L₂, C₁ and C₂, which are tuned to the resonant frequency. The load is connected to the unit through a set of wheels which ride on the inside edges of L₁ and L₂. These wheels are on a common shaft and are positioned by the LOAD ADJUST control. Since the coils L₁ and L₂ are oppositely wound, the wheels move in or out from the ground plane symmetrically. It is these wheels which tap the coils properly for the desired impedance transformation. Note that this is a balanced system providing properly phased currents to a balanced load. In the event of an unbalanced load, one half of the system is used.

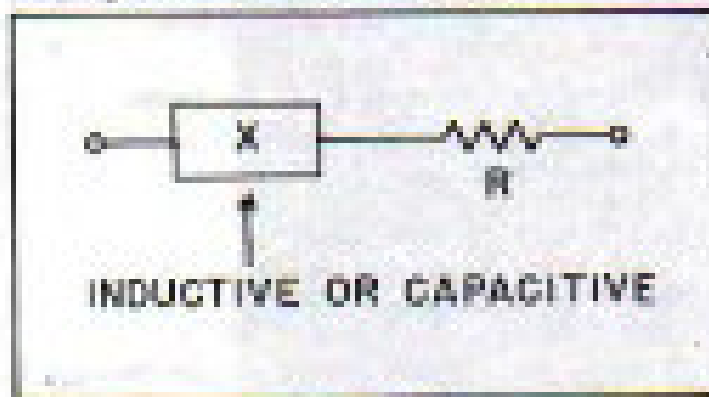


Figure 3-2

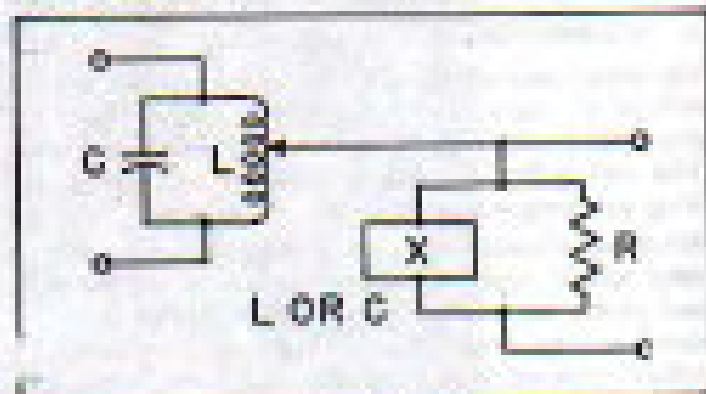


Figure 3-3

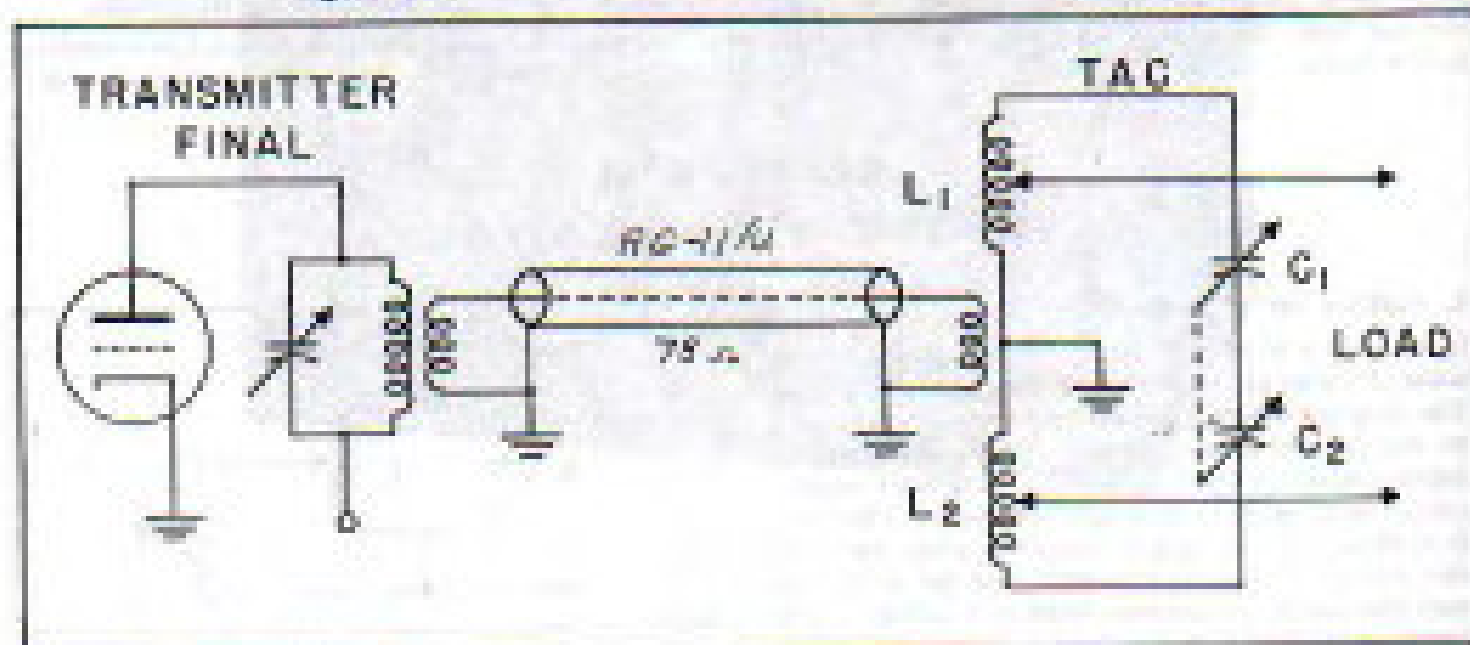


Figure 3-4

INSTALLATION AND OPERATION

1. INSTALLATION

a. UNPACKING

The Antenna Tuning Unit is designed for ease of installation and minimum effort in operation. The unit is packed, and preserved when required, in its individual container. The equipment should be carefully unpacked and a close visual inspection made to ascertain any physical damage due to rough handling during shipment.

A UHF type plug PL-159A has been provided as a spare item, and is packed in a bag attached to the front panel.

b. MOUNTING

The Antenna Tuning Unit is fastened securely to the top of a transmitter by means of four wing nuts. A short length of RG-11/U coaxial cable serves to connect the output of the transmitter to the input of the unit. The input terminal has been placed on the rear left corner of the unit so that the connecting cable does not interfere with transmitter operation. The input jack is a UG-296/U connector with Teflon insulation capable of withstanding high voltage surges.

2. ELECTRICAL CONNECTIONS

After the unit has been installed on the transmitter, attach the load. The load terminal connections on the rear of the unit are shown in Figure 3-1. It is not necessary to remove the cover to attach the load. Ample holes in the rear of the cover give easy access to the connectors. Note the difference between BALANCED and UNBALANCED load terminals as indicated by arrows. When working into an unbalanced load, CONNECT NOTHING TO THE LEFT HAND MAIN TERMINAL.

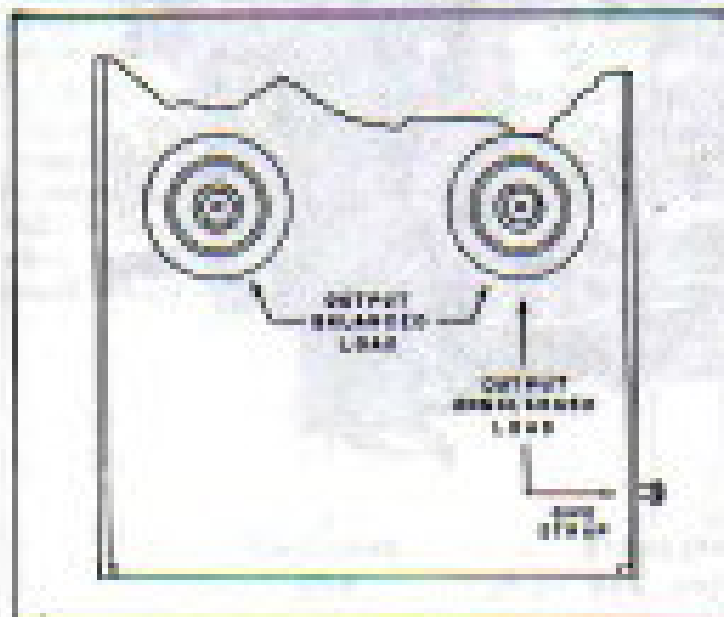


Figure 3-1

3. OPERATION AND CONTROLS

All controls are identified by front panel markings for ease of identification. Figure 1-1 clearly shows all controls necessary for operation of the unit.

a. CONTROL FUNCTIONS

The COUPLING switch allows for selection of the number of turns in the coupling coil. There are 8 positions from MAX to MIN. The proper setting of the COUPLING switch is a function of frequency and may be found in the tuning charts.

In general, a low transmitter plate final current reading indicates insufficient coupling, and the COUPLING switch should be rotated toward MAX in steps of one until plate current has reached its normal value when the transmitter is tuned to resonance. Conversely, a plate current meter reading which is three normal is an indication of over-coupling, and the COUPLING switch should be rotated toward MIN until the proper plate current is observed when the transmitter is tuned to resonance.

The BAND SWITCH allows for the selection of tank inductance, so that the frequency range is covered by the tuning capacitor. There are seven positions with LO indicating the lowest frequency and HI indicating the highest frequency. Proper positioning of this switch is a function of frequency and may be obtained in the tuning charts.

The TUNING control is a calibrated control which serves to vary the tank capacity of the unit. It tunes to resonance the inductance selected by the BAND switch. Approximate settings for this dial may be obtained by referring to the tuning charts.

The LOAD ADJUST control serves to tap the tank circuit at the proper point for optimum impedance matching. Its associated counter gives the relative position of the wiper with respect to the ground end of the circuit. Approximate settings for the various loads may be found in the tuning charts.

The LOAD switch serves to employ either the total tank for balanced loads or half the tank for unbalanced loads. Set the switch to BAL for balanced loads and UNBAL for unbalanced loads.

The ROTOR switch serves to ground or unground the rotor of the tuning capacitor. In general, set to GND for unbalanced loads and UNWIND for balanced loads. However, it may be possible that at the higher frequencies, 24 to 30 mc., better performance may be obtained if the ROTOR switch is set to UNWIND. This is, in effect, placing both halves of the tuning capacitor in series across that portion of the tank coil which is being varied. This is advantageous as the higher frequencies cause the condenser minimum to be less halved; hence, the tank inductance may be increased, resulting in a better L/C ratio.

SECTION III

INSTALLATION AND OPERATION

1. INSTALLATION

a. UNPACKING.

The Antenna Tuning Unit is designed for ease of installation and minimum effort in operation. The unit is packed, and preserved when required, in its individual containers. The equipment should be carefully unpacked and a close visual inspection made to ascertain any physical damage due to rough handling during shipment.

A UHF type plug PL-233A has been provided as a loose item, and is packed in a bag attached to the front panel.

b. MOUNTING.

The Antenna Tuning Unit is fastened securely to the top of a transmitter by means of four wing nuts. A short length of RG-11/U coaxial cable serves to connect the output of the transmitter to the input of the unit. The input terminal has been placed on the rear left corner of the unit so that the connecting cable does not interfere with transmitter operation. The input jack is a UG-294/U connector with Teflon insulation capable of withstanding high voltage surges.

2. ELECTRICAL CONNECTIONS.

After the unit has been installed on the transmitter, attach the load. The load terminal connections on the rear of the unit are shown in Figure 3-1. It is not necessary to remove the cover to attach the load. Ample holes in the rear of the cover give easy access to the connectors. Note the difference between **BALANCED** and **UNBALANCED** load terminals as indicated by arrows. When working into an unbalanced load, **CONNECT NOTHING TO THE LEFT HAND MAIN TERMINAL.**

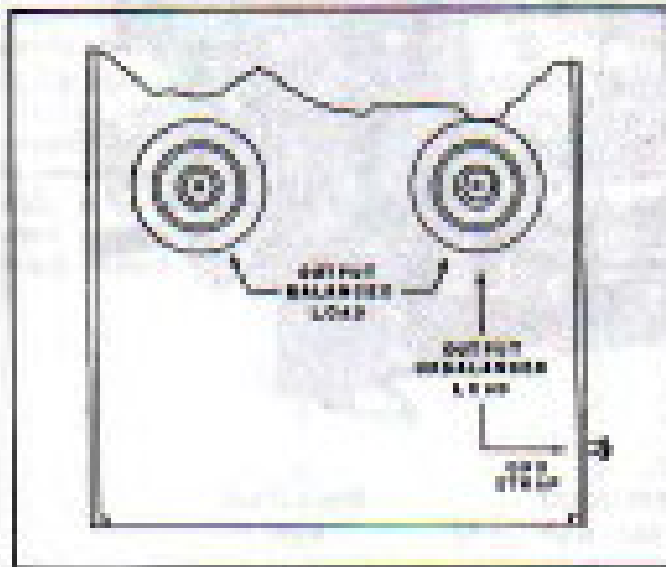


Figure 3-1

3. OPERATION AND CONTROLS.

All controls are identified by front panel markings for ease of identification. Figure 1-1 clearly shows all controls necessary for operation of the unit.

a. CONTROL FUNCTIONS.

The **COUPLING** switch allows for selection of the number of turns in the coupling coil. There are 8 positions from **MAX** to **MIN**. The proper setting of the **COUPLING** switch is a function of frequency and may be found in the tuning charts.

In general, a low transmitter plate load current reading indicates insufficient coupling, and the **COUPLING** switch should be rotated toward **MAX** in steps of one until plate current has reached its normal value when the transmitter is tuned to resonance. Conversely, a plate current meter reading which is above normal is an indication of over-coupling, and the **COUPLING** switch should be rotated toward **MIN** until the proper plate current is observed when the transmitter is tuned to resonance.

The **BAND SWITCH** allows for the selection of tank inductance, so that the frequency range is covered by the tuning capacitor. There are seven positions with **LO** indicating the lowest frequency and **H** indicating the highest frequency. Proper positioning of this switch is a function of frequency and may be obtained in the tuning charts.

The **TUNING** control is a calibrated control which serves to vary the tank capacity of the unit. It serves to compensate the inductance selected by the **BAND** switch. Approximate settings for this dial may be obtained by referring to the tuning charts.

The **LOAD ADJUST** control serves to set the tank circuit at the proper point for optimum impedance matching. Its associated counter gives the relative position of the wheels with respect to the ground end of the circuit. Approximate settings for the various loads may be found in the tuning charts.

The **LOAD** switch serves to employ either the total tank for balanced loads or half the tank for unbalanced loads. Set the switch to **BAL** for balanced loads and **UNBAL** for unbalanced loads.

The **ROTOR** switch serves to ground or unground the rotor of the tuning capacitor. In general, set to **GND** for unbalanced loads and **UNGND** for balanced loads. However, it may be possible that at the higher frequencies, 24 to 30 mc., better performance may be obtained if the **ROTOR** switch is set to **UNGND**. This is, in effect, placing both halves of the tuning capacitor in series across that portion of the tank coil which is being moved. This is advantageous at the higher frequencies since the reactance minimum has been hit and, hence, the tank inductance may be increased, resulting in a better L_c ratio.

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The ANTENNA CURRENT is measured by two external thermocouple ammeters, each being in series with the output lead connections. As the current indicates, both meters are used for balanced loads, each meter indicating the current in it's leg of the load. In a truly balanced load, magnitude being equal, both meters will indicate identical currents. This will seldom happen as a truly balanced load is rarely obtained. As the single arrow indicates, only the left hand meter is used for unbalanced loads. Therefore, for unbalanced loads disregard any deflection of the right hand meter.

It should be noted that these meters are in series only as indicating devices. Their accuracy is acceptable at the lower frequencies, but little reliance is to be placed on their indications as a measure of absolute load at

the higher frequencies. They are not, in any case, a quantitative indication of output.

a. TUNING PROCEDURE.

CAUTION

BEFORE PUTTING FULL POWER ON THE TRANSMITTER, CHECK THAT THE FOLLOWING HAS BEEN DONE CORRECTLY.

a. PROPER TRANSMITTER TUNING ACCORDING TO THE TRANSMITTER TUNING CHARTS.

b. PROPER ANTENNA TUNING UNIT CONTROL SETTINGS AS OBTAINED FROM THE UNIT TUNING CHARTS.

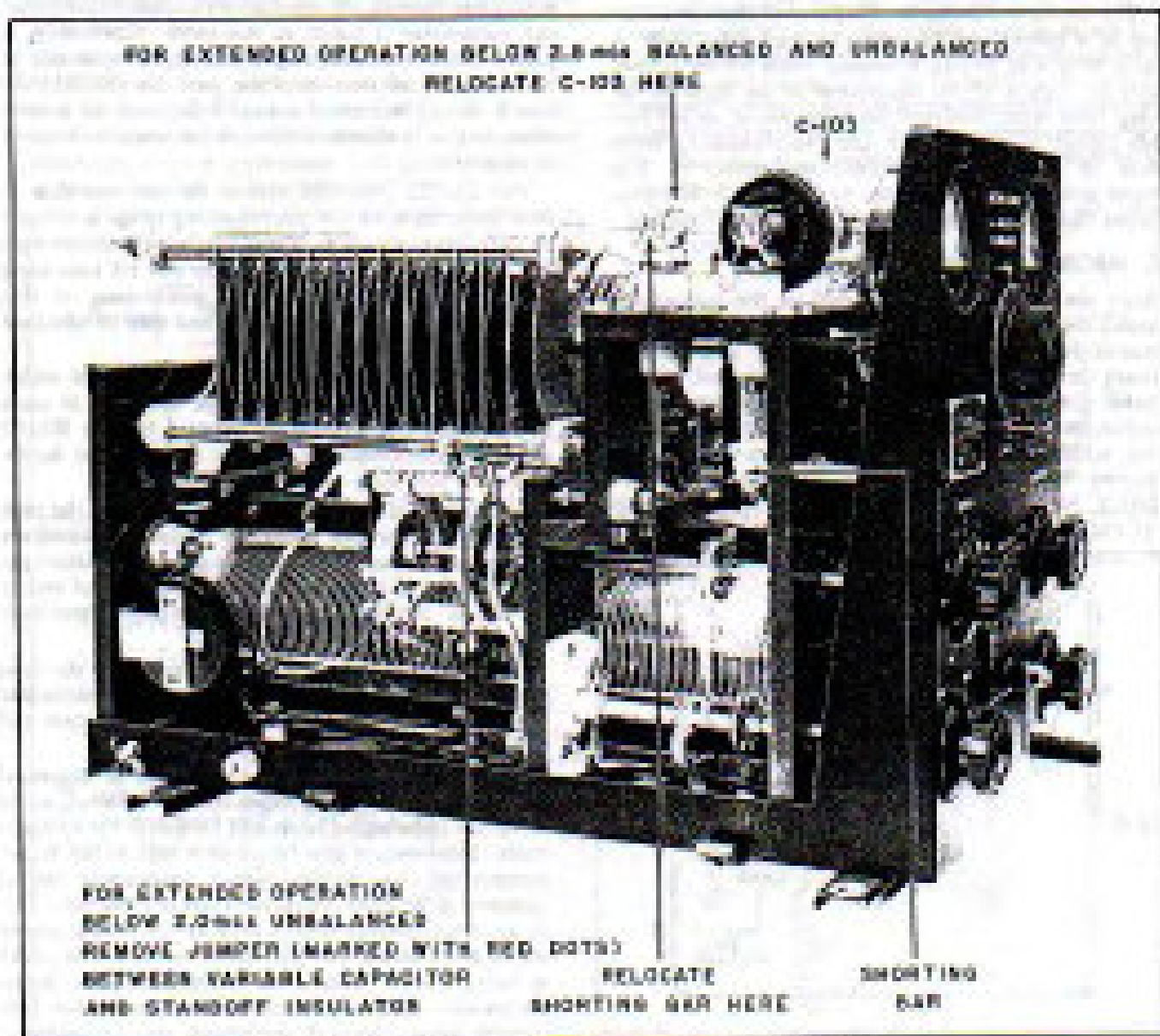


Figure 3-2. Extended Frequency Range Operation

In any operation of the Antenna Tuning Unit, the frequency of operation and nature of the load are known.

For a balanced load, set
LOAD switch to BAL
ROTOR switch to UNGND

For an unbalanced load, set
LOAD switch to UNBAL
ROTOR switch to GND
(except as noted in [a.])

The tuning charts contain information for the approximate settings of the BAND, TUNING, LOAD ADJUST and COUPLING controls.

The charts are set up in 1000 kc. steps from 2000 to 30000 kc. and for loads of 75, 500, 600 and 1200 ohms.

Any variation from chart frequency and load will require an interpolation of the tables for the desired frequency and load. To achieve this, set controls to the chart frequency nearest to the desired frequency. Then slide the TUNING and LOAD ADJUST controls for optimum output.

1. EXAMPLE

To set up the Antenna Tuning Unit at a frequency of 3000 kc. to work into a balanced transmission line of a nominal 600 ohm impedance.

Connect transmission line to BALANCED terminals on rear of unit.

Set LOAD switch to BAL.
Set ROTOR switch to UNGND.

Refer to tuning charts, Figure 1-11, for approximate control settings for a frequency of 3000 kc. and a balanced load of 600 ohms.

Set TUNING control to 34
Set COUPLING switch to I
Set BAND switch to 2
Set LOAD ADJUST to 147

When these settings have been made, raise both the transmitter and the Antenna Tuning Unit to optimum output on LOW POWER.

Switch transmitter to HIGH POWER. Readjust TUNING and LOAD ADJUST controls as required. If the transmitter plate current is above normal when tuned to resonance, move the COUPLING switch toward MIN. If the transmitter plate current is below normal when tuned to resonance, move the COUPLING switch toward MAX. Remember, if the load is not

truly balanced the ANTENNA CURRENT meters will not read identically.

CAUTION

Most transmitters have output coupling networks which can be varied. An excessive deviation from optimum coupling will result in large reactive currents in the transmitter output-TAC input circuit.

If one does not already exist, it is recommended that an R.F. Arcsuppressor be installed at the transmitter output terminals.

An excessive transmitter R.F. output current results in increased losses in the coupling networks and lower transmission efficiency. If this condition appears to exist, adjustments should be made to the transmitter OUTPUT COUPLING network and the TAC COUPLING, TUNING and LOAD ADJUST controls to reduce the TRANSMITTER OUTPUT CURRENT to a minimum while maintaining proper transmitter loading.

6. EXTENDED FREQUENCY RANGE OPERATION

The Antenna Tuning Unit is basically designed for a frequency range of 1 to 35 mc. but will operate up to 50 mc. Keep transmitter on LOW POWER when tuning above 10 mc. The unit will raise and put out appreciable power at these higher frequencies, but variation of the control settings may be considerable.

A "horn gap", set to 1/4 in. spacing, on the rear of the unit, is provided to prevent damage to the unit in the event of improper adjustments.

For operation below 2.5 mc. with both balanced and unbalanced loads, remove vacuum capacitor C303 from its storage clips in the upper front portion of the unit. Place it in slotted operating clips which are connected to the outer plates of the tuning capacitor C100. (See Figure 1-1.) This lowers the operating range of the unit to below 2 mc.

For further reduction of the operating range, in the unbalanced condition only, replace the vacuum capacitor C303 with the metal shorting bar E104 and disconnect the jumper (marked with red dots) between the tuning capacitor C100 and the stand-off insulator on the upper left hand portion of the unit. (See Figure 1-2.)

SECTION IV MAINTENANCE

I. MAINTENANCE INSTRUCTIONS.

a. TOOLS FURNISHED.

1 TP-301 Punch, drive pin, to remove or replace roll pins.

1 WB-100-5 Wrench, Allen, for #15 and #16 set screws.

1 WB-100-5 Wrench, Allen, for #18 and #13 set screws.

1 WB-100-18 Wrench, Allen, for #18 set screws.

b. GENERAL.

Keep interior of the unit thoroughly clean and dust free.

Material Required.

Sandpaper #2000.

Dry brush or lint free cloth.

Carbon Tetrachloride for electrical connection.

Dry Cleaning Solvent for other parts.

Compressed air may be used to remove dust from inaccessible areas.

c. PREVENTIVE.

Materials Required.

Lubricating Compound, Silicone.

Insulating Compound, MIL-I-17384A, Type PR, Monthly.

Lubricate all sliding contacts connected with the wheel assembly (LOAD ADJUST) with Lubricating Compound, Silicone.

Check and tighten backwash and set screws where necessary. (Tighten nuts and screws carefully. Excess tightening beyond the point for which they are intended will be damaged or broken.)

Quarterly.

Check switches for dirt, corrosion or loose contacts.

Check variable condenser and coils for dirt, corrosion, brass plates or damaged turns.

Abnormal Conditions.

In the event of excessive power input or if switching the unit with POWER OFF, an arc-over may occur, usually in the ROTOR or LOAD switch or both. Should this happen, clean the affected area, sand away all carbon deposits, coat area lightly with Insulating Compound.

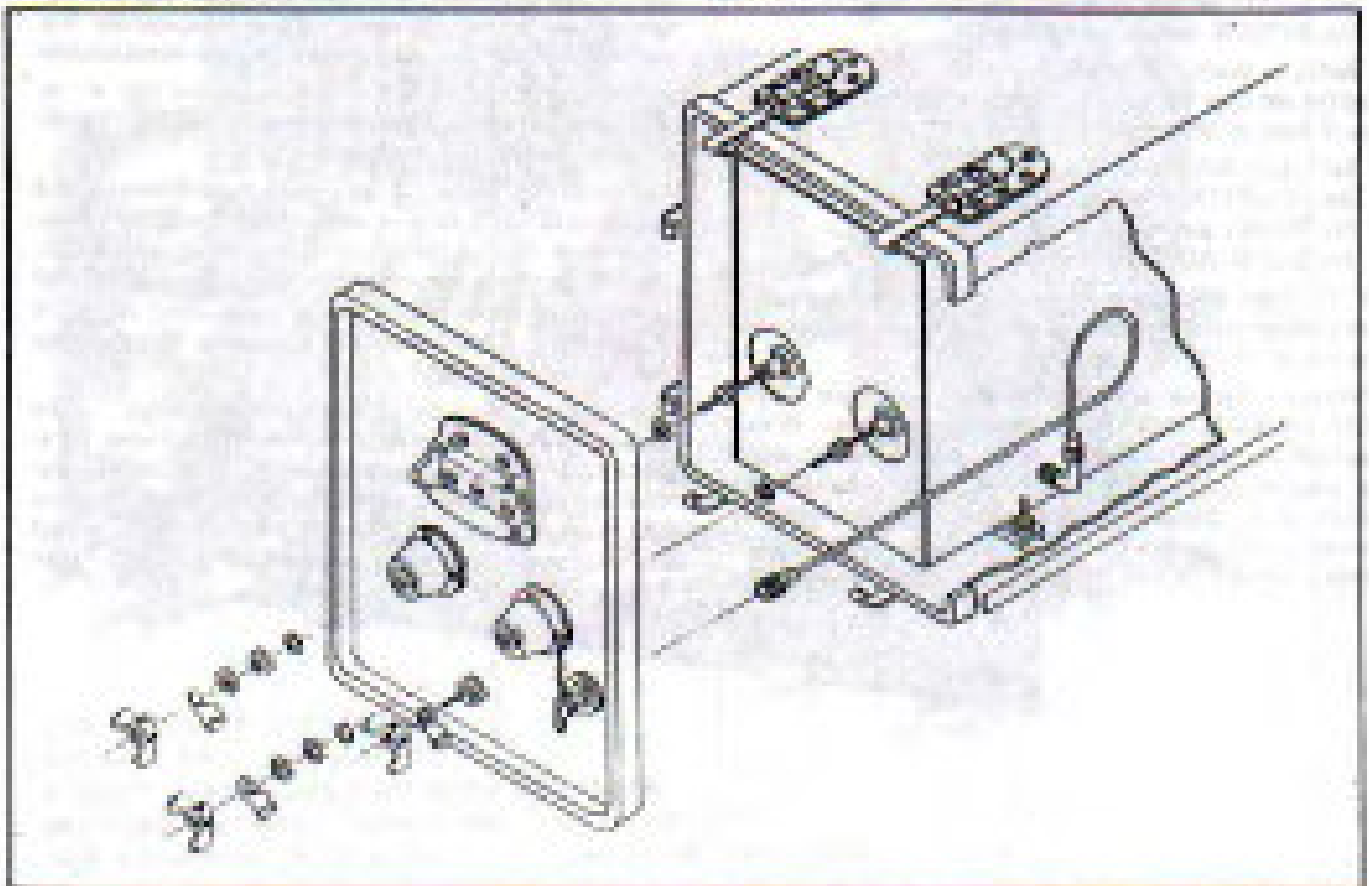
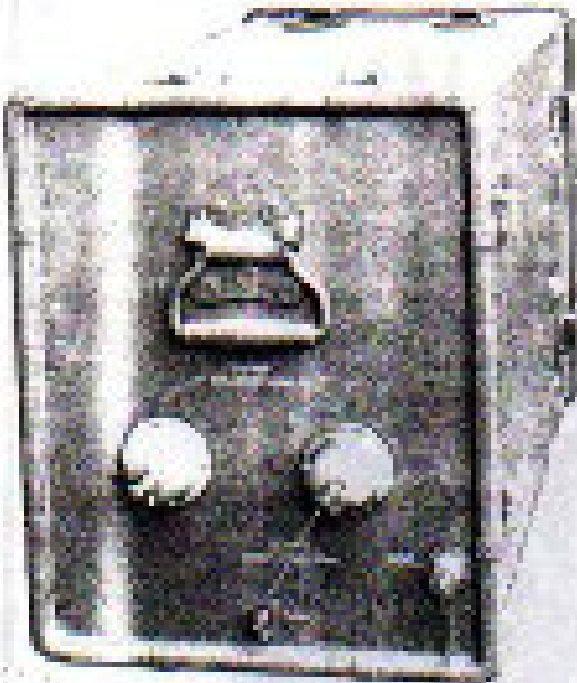
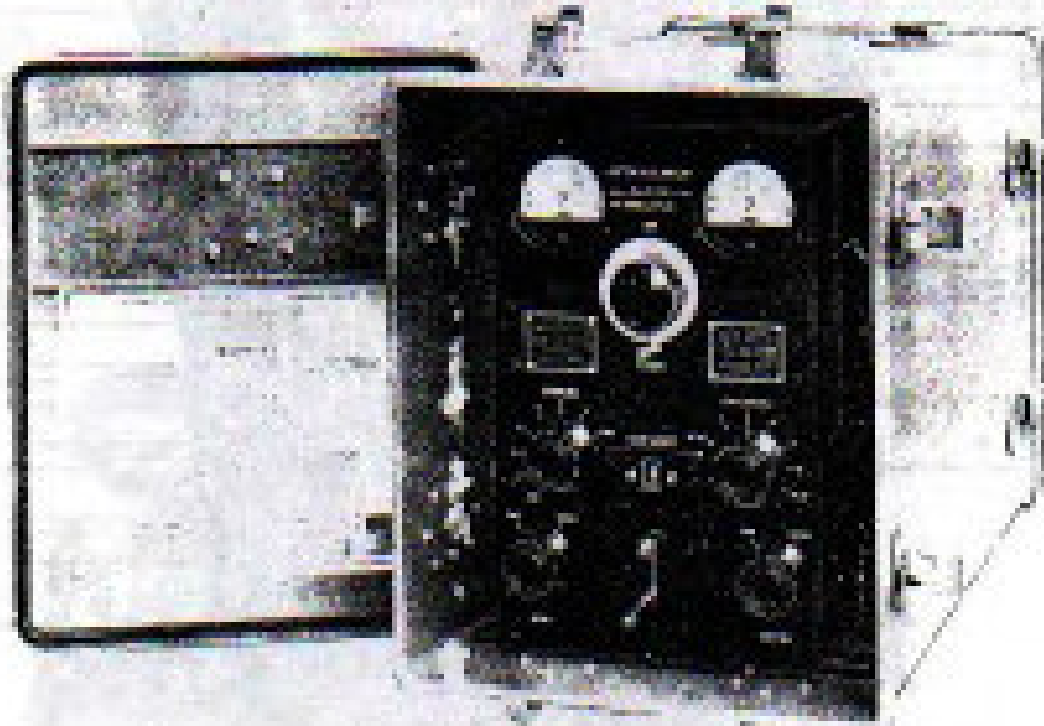


Figure 4-1. Front and Rear Views, Model TAC-1 with Protective case, Model CTAC.



As illustrated, the Antenna Testing Unit can be furnished with and shipped in a protective case, Model CTAC. The case is constructed of fiberglass reinforced plastic, and is both waterproof and weatherproof.



The unit will mount on the transmitter and operate either with or without this protective case. Special studs, which mount the unit in the case, are furnished for mounting the case to the transmitter in the event that the transmitter mounting studs are too short.

Figure 4-2. Rear View, Input and Output Connections Between Unit and Case

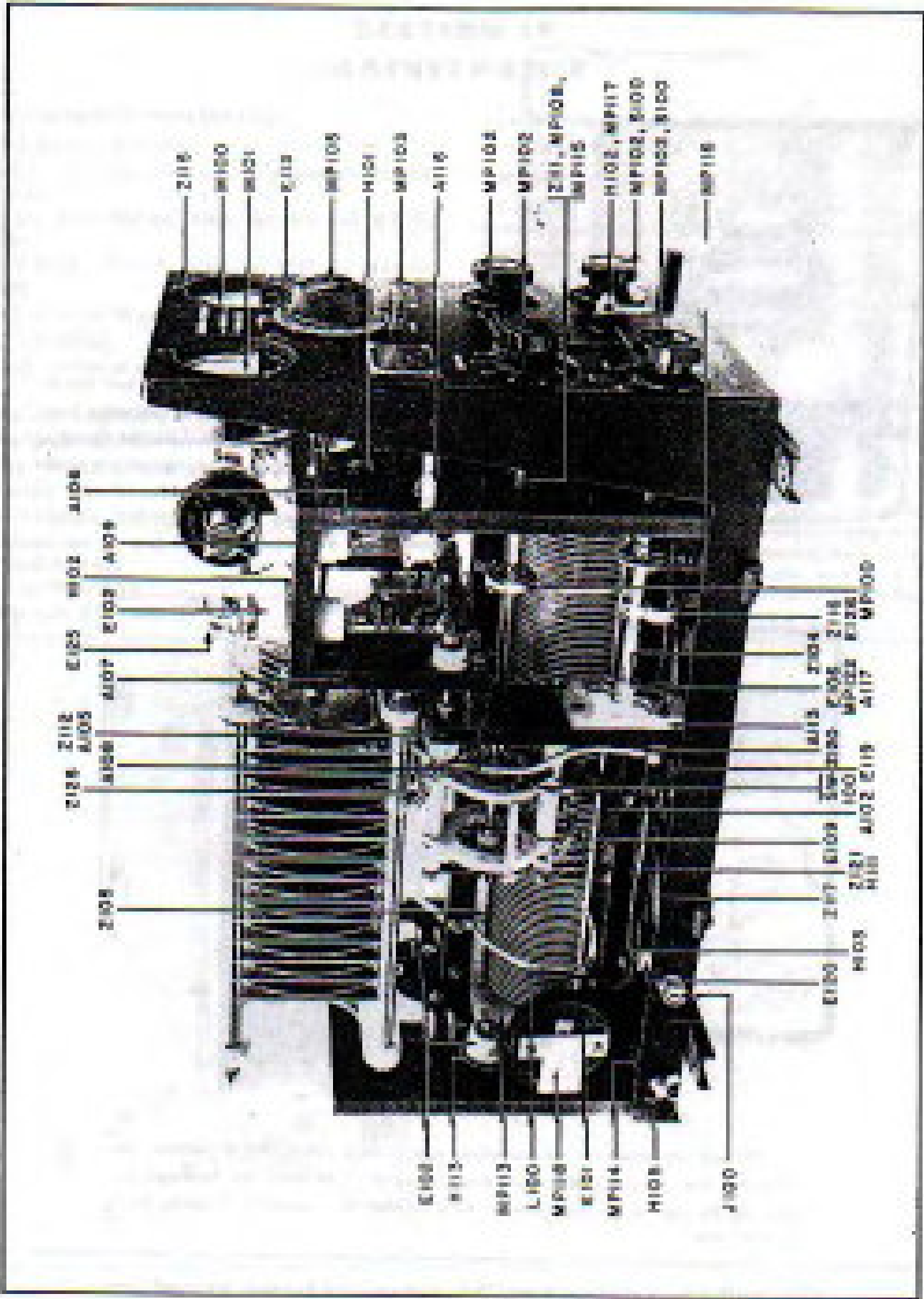


Figure 4-1. Front and Left Side View

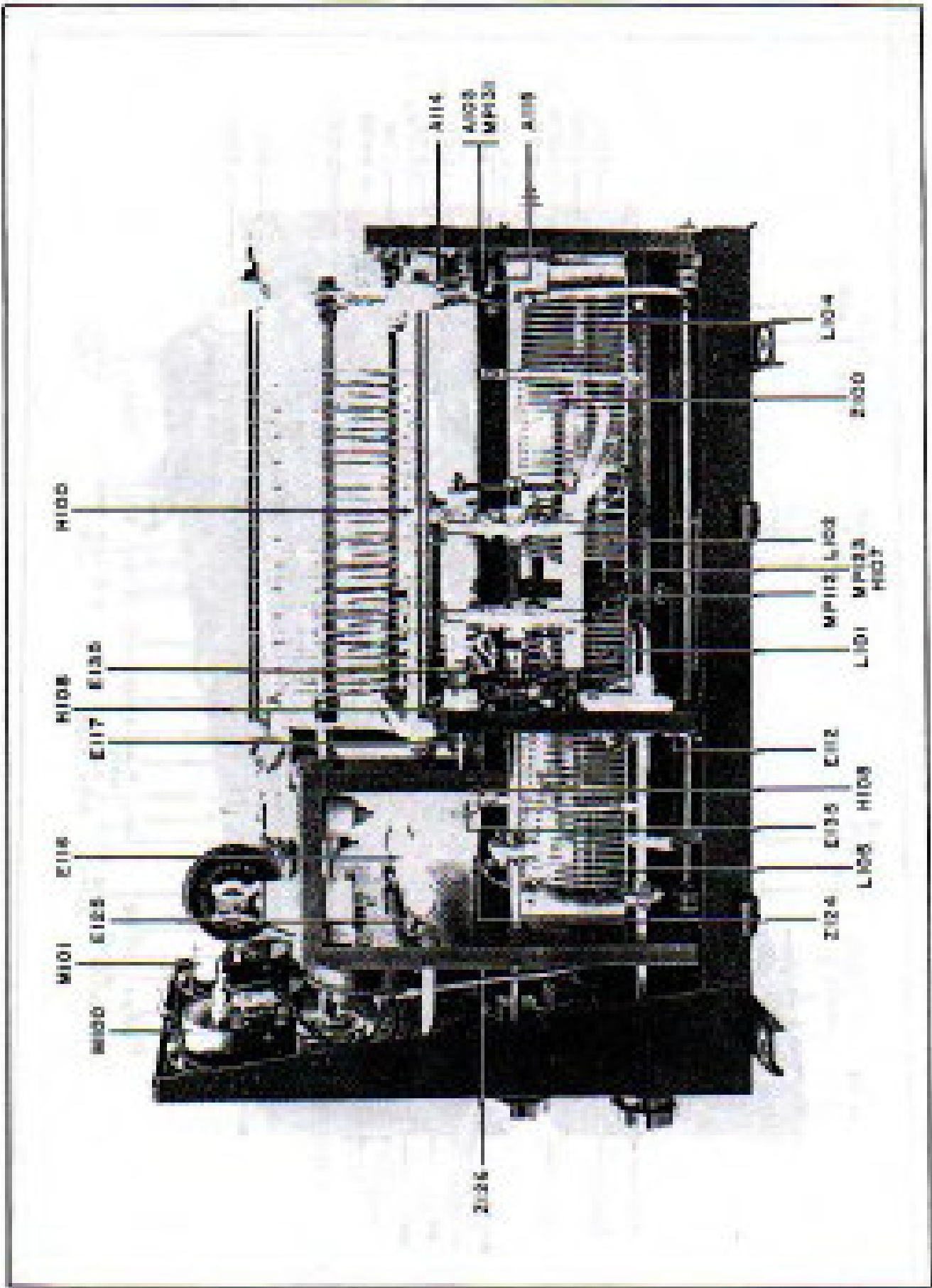


Figure 4-4 Right Side View

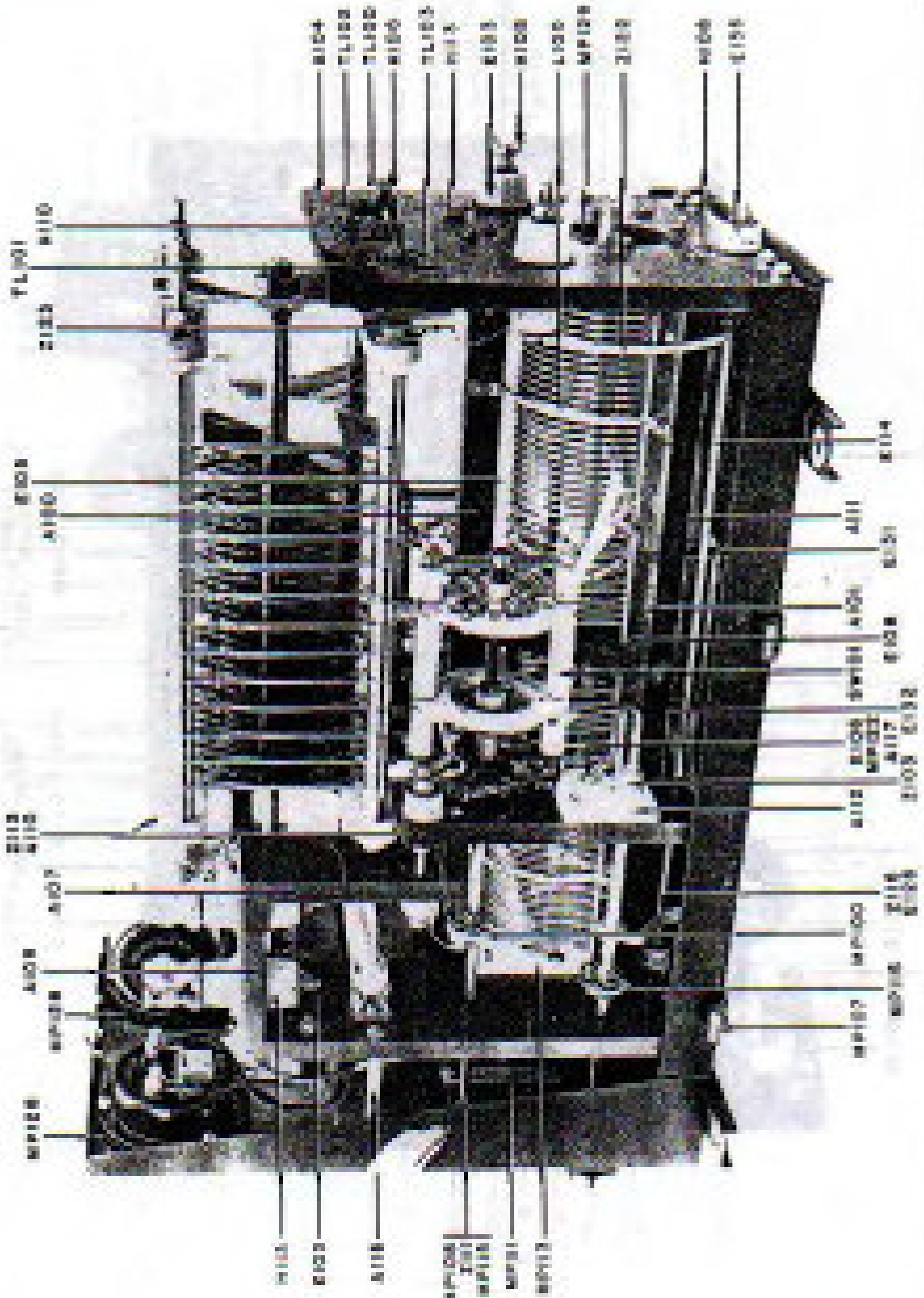


Figure 4-5. Right Side and Rear View

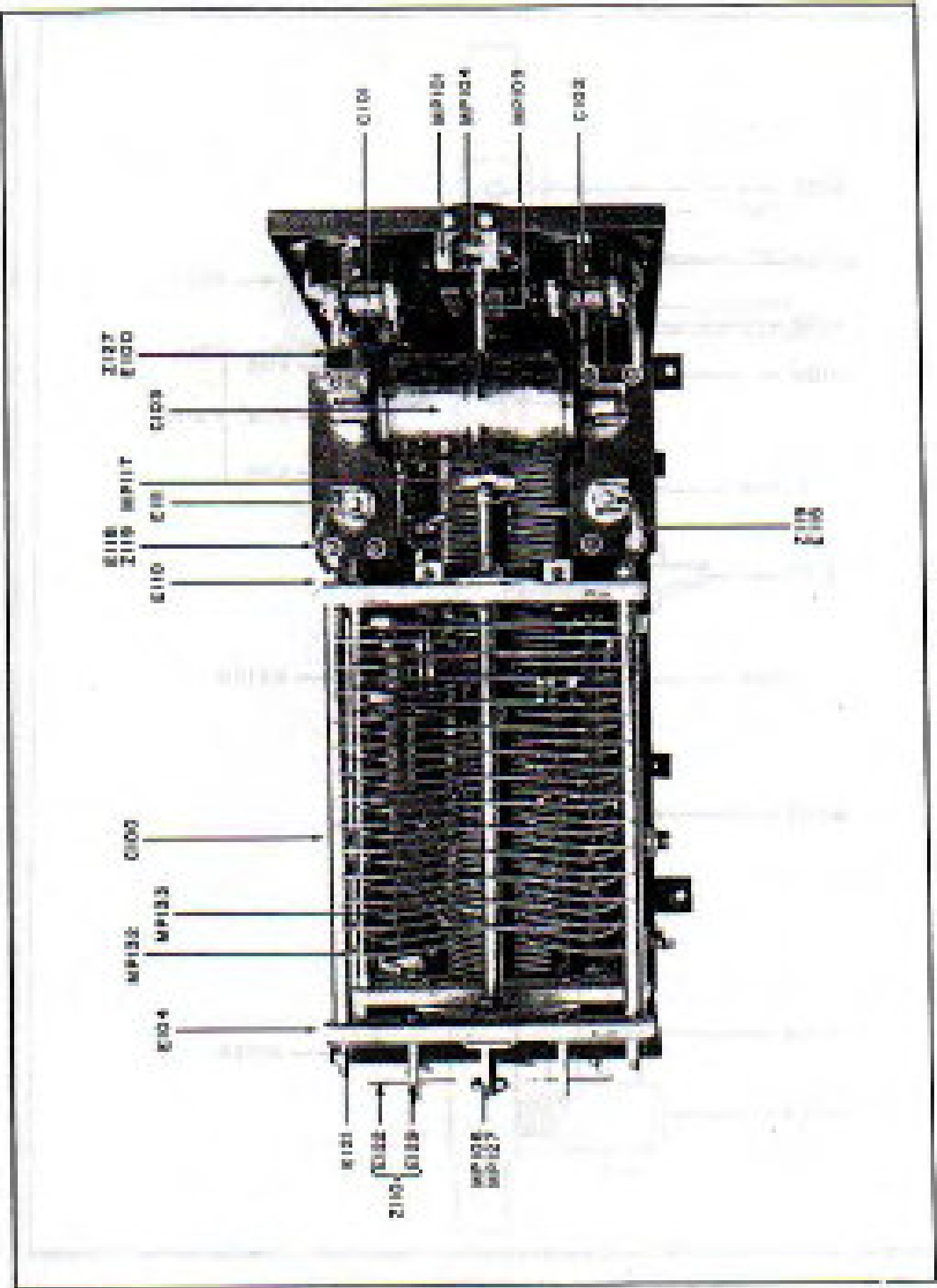


Figure 4-4. Top View

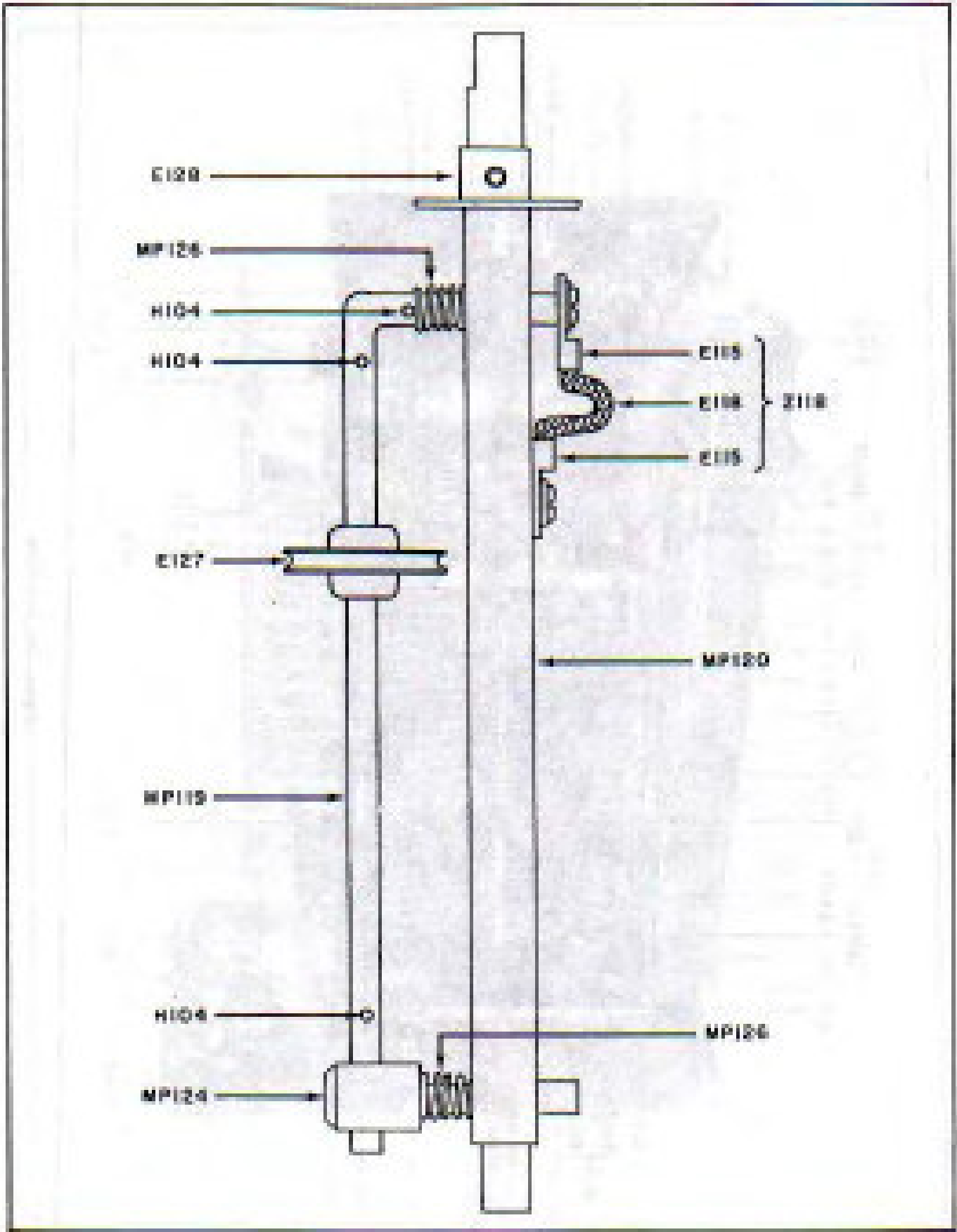


Figure 4-F. Contact Wheel and Shaft Assembly 2387

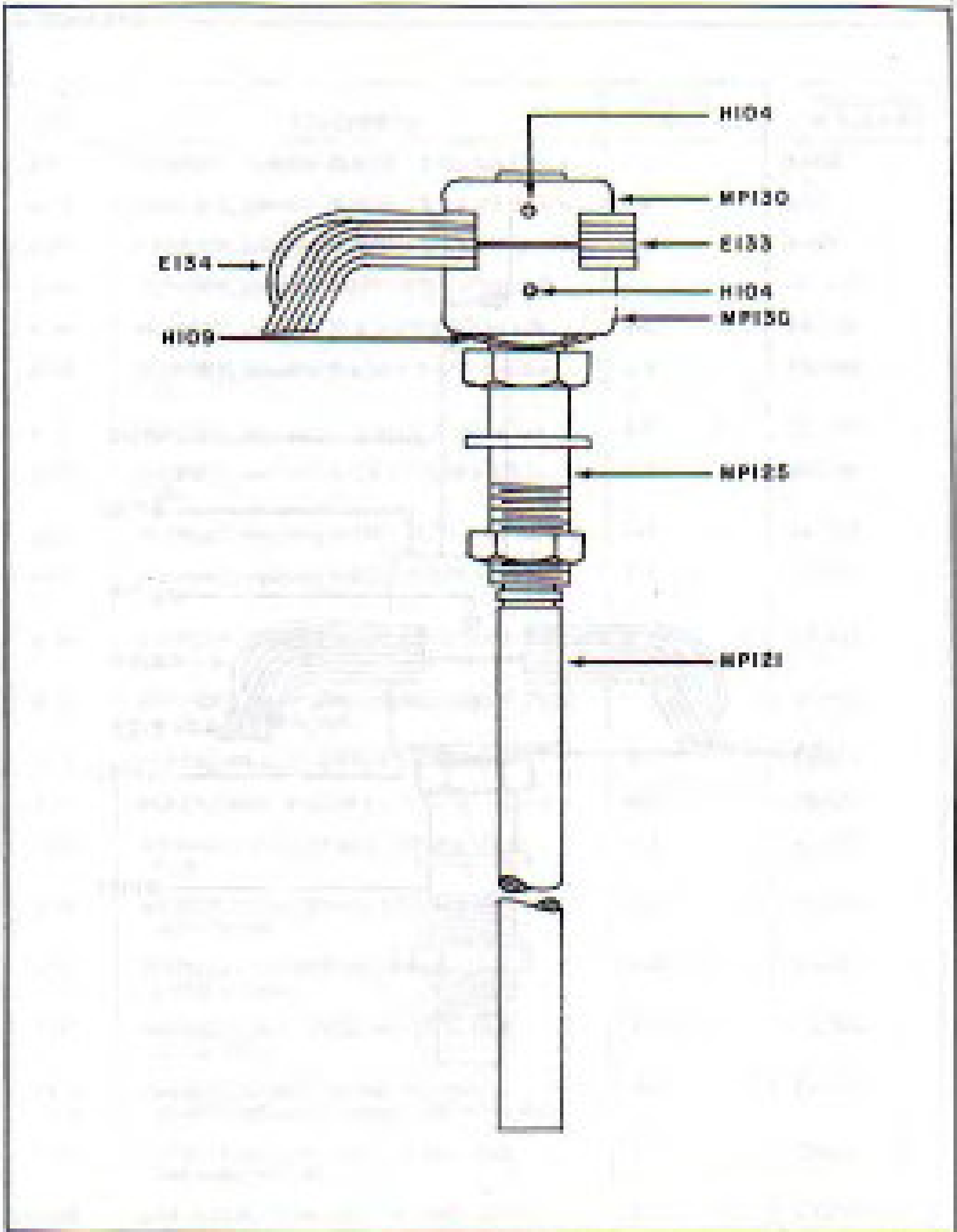


Figure 4-8. Single Leaf Switch Assembly 2183

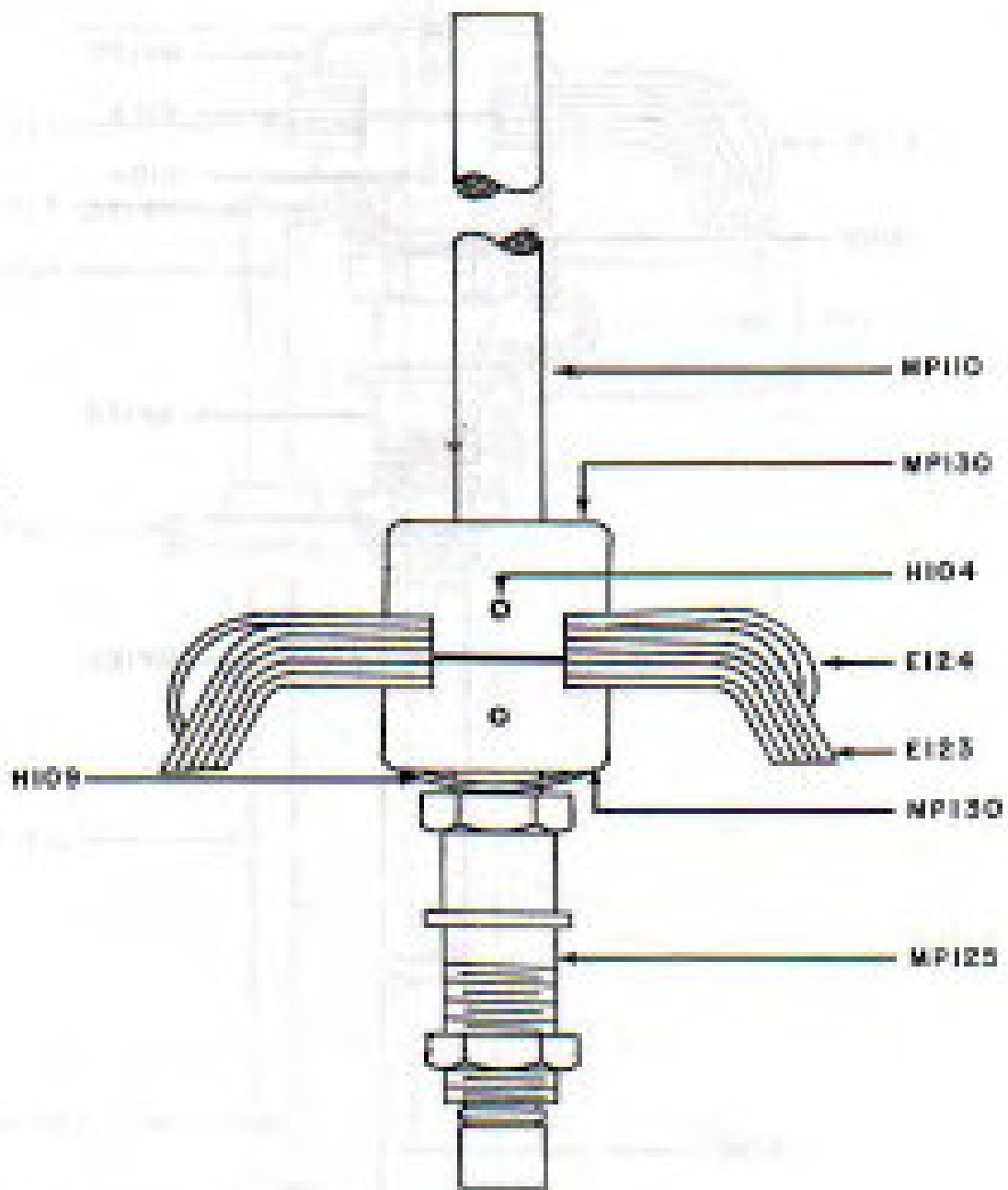


Figure 4-8. Double Leaf Switch Assembly 2384

2. PARTS LIST

SYM.	DESCRIPTION	FIGURE NO.	TMC DWG OR PART NO.
A100	SUPPORT, phenolic; 26-87/32 x 3/4 x 3/4 in. o/a.	4-3	A-710
A101	SUPPORT, phenolic; 26-87/32 x 3/4 x 3/4 in. o/a.	4-3	A-711
A102	SUPPORT, phenolic; 26-87/32 x 3/4 x 3/4 in. o/a.	4-3	A-712
A103	SUPPORT, phenolic; 4-1/2 x 5/8 x 1/2 in. o/a.	4-4, 4-5	PX-189
A104	SUPPORT, phenolic; 10 x 6-1/2 x 1/2 in. o/a.	4-5	PX-188
A105	SUPPORT, phenolic; 7-1/16 x 2-1/16 x 1/2 in. o/a.	4-3	PX-200
A106	SUPPORT, phenolic; 16 x 8-1/2 x 1/2 in. o/a.	4-3	PX-186
A107	SUPPORT, phenolic; 4-1/4 x 2-1/16 x 1/2 in. o/a.	4-3	PX-202
A108	SUPPORT, phenolic; 8-1/2 x 15/16 x 1/2 in. o/a.	4-3	PX-189
A109	SUPPORT, phenolic; 4-1/2 x 2-1/16 x 1/2 in. o/a.	4-3, 4-5	PX-201
A110	SUPPORT, phenolic; 7-1/16 x 2-1/16 x 1/2 in. o/a.	4-3	PX-201
A111	BRACKET, brass; silver plated; .002 x 1-11/32 x 3/4 x 2-3/16 in. o/a.	4-5	MS-455
A112	PLATE, teflon; 2 x 1-3/8 x 1/4 in. o/a.	4-5	PX-208
A113	PLATE, teflon; 2-25/32 x 1-3/8 x 1/4 in. o/a.	4-5	PX-207
A114	WASHER, teflon; 3/4 od x 7/32 id x 1/8 in. thick.	4-4	PX-204-2
A115	WASHER, teflon; 3/4 od x 7/32 id x 1/8 in. thick; fluted.	4-4	PX-204-1
A116	SPACER, brass; cadmium plated; 5 in. lg. x 5/16 in. diam.	4-3, 4-5	PM-276
A117	WASHER, teflon; 1/2 in. od x 13/64 id x 1/8 in. thick.	4-3, 4-5	PX-203
C100 A,B	CAPACITOR, variable; air; two sections; 42-248 mmd; each section. .200 in air gap.	4-4	CB-112
C101	CAPACITOR, fixed; mica; .01 mfd, ±10%, 300 wdc; char. B.	4-4	CM35B10K
C102	CAPACITOR, fixed; mica; .01 mfd, ±10%, 300 wdc; char. B. Same as C101.	4-5	CM35B10K

SYM.	DESCRIPTION	FIGURE NO.	TWC DWG. OR PART NO.
C100	CAPACITOR, fixed; vacuum, 50 mudd, 35 Kv peak; 65 amps max current.	4-6	CB-100-4
E100	THERMOCOUPLE, vertical mount; 2-5/8" o.d. x 1-1/2" wide overall.	4-6	TR-100-4
E101	THERMOCOUPLE, vertical mount; 2-5/8" o.d. x 1-1/2" wide overall.	4-6	TR-100-4
E102	INSULATOR, feed thru; female; white glazed ceramic; 3/4 in. lg. o/s x 1-1/8 in. diam. tapered flange; 3/4 in. diam. x 9/16 in. deep well; 13/64 in. diam. hole.	4-3, 4-5	NS-100-1
E103	INSULATOR, feed thru; male; white glazed ceramic; 1-1/2 in. lg. o/s x 1-1/8 in. diam. tapered flange; 3/4 in. diam. x 3/8 in. lg. insert; 13/64 in. diam. hole.	4-5	NS-100-2
E104	INSULATOR, ceramic; 8-2/8 x 2/8 x 1/8 in. o/s.	4-6	p/o CB-100
E105	INSULATOR, below; 7-32/32 x 18/32 x 1/4 in. o/s.	4-3, 4-5	FX-217
E106	CONTACT, brass; silver plated; 1/2 in. diam. x 1-1/8 in. o/s; 10-22 tld.	4-3, 4-5	SM-100
E107	LUG, terminal; brass; hot tin dipped; 51/64 x 1/8 x .030 in. o/s; 1/4 in. id hole.	4-3	TE-100
E108	INSULATOR, below; 7-32/32 x 18/32 x 1/4 in. o/s.	4-3, 4-5	FX-218
E109	INSULATOR, below; 7-32/32 x 18/32 x 1/4 in. o/s.	4-3	FX-219
E110	LUG, terminal; copper; electro tinned; 1 in. lg. x 1/4 id hole.	4-6	TE-241-4
E111	LUG, terminal; copper; electro tinned; 48/64 in. lg.; 3/16 in. id hole.	4-6	TE-241-3
E112	BAR, shorting; brass; silver plated; 6-1/2 in. lg. x 3/4 in. diam.	4-4	MS-204
E113	PLATE, disk aluminum; etched; 2-3/8 in. diam.; 0-50 scale.	4-3	LD-100
E114	ROD, brass; silver plated; 10-3/8 in. lg. x 3/16 in. diam. 10-22 x 2-1/2 in. lg. end each end.	4-6	PM-207
E115	LUG, terminal; copper; electro tinned; 48/64 in. lg. 5/12 in. id hole.	4-7	TE-241-1
E116	LUG, terminal; copper; electro tinned; 1-1/8 in. lg. 3/8 in. id hole.	4-4	TE-241-5

SYM.	DESCRIPTION	FIGURE NO.	TMC D/W, OR PART NO.
E117	BOD, threaded; brass; silver plated; 10-32 x 4 in. lg. w/ beveled end of center.	4-4	A-185
E118	SHIELD, flexible; copper; flanged; 3/16 in. wd.	4-6, 4-7	WL-100-4
E119	INSULATOR, pillar; round; white glazed; standing; 3/4 in. lg. x 1/2 in. diam; tapped 8-32 x 1/4 in. deep each end.	4-3	MS-9008
E120	INSULATOR, pillar; round; white glazed; standing; 1-1/4 in. lg. x 1/2 in. diam; tapped 8-32 x 3/8 in. deep each end.	4-3	MS-9009
E121	STRAP, brass; silver plated; 2-7/32 x 5/8 x 1/32 in. o/a.	4-6	MS-900
E122	BOD, brass, nickel plated; 1-1/4 in. lg. x 1/8 in. diam.	4-6	PM-100
E123	LEAF, contact; nickel silver; 2-3/16 x 3/16 x .004 in. o/a.	4-6	MS-690
E124	LEAF, pressure; nickel silver; 1-2/16 x 1/8 x 1/16 in. o/a.	4-6	MS-692
E125	CLIP, electrical; phosphor bronze; silver plated; accommodates 1/4 in. diam.	4-3, 4-4	PH-100
E126	COLLAR, brass; silver plated; 5/8 in. diam. x 1/4 in. wd.	4-3	PM-371
E127	WHEEL, brass; silver plated; 1/4 in. dia. x 1-1/2 in. o.d.	4-7	PM-351
E128	BUSHING, brass; silver plated; 1-1/4 in. diam. x 3/8 in. wd. w/ 1/8 in. diam hole.	4-7	PM-354
E129	POST, brass; cadmium plated; 1-5/8 in. lg. x 1/4 in. diam.	4-6	PM-373
E130	PLATE, brass; silver plated; 4-1/8 x 1-3/8 x .002 in. o/a.	---	MS-443
E131	STRAP, brass; silver plated; 4 x 7/8 x .002 in. o/a.	4-4	MS-452
E132	STRAP, brass; silver plated; 8-1/2 x 5/8 x .002 in. o/a.	4-4	MS-453
E133	LEAF, contact; nickel silver; 1-6/32 x 7/32 x .014 in. o/a.	4-6	MS-483
E134	LEAF, pressure; nickel silver; 21/32 x 3/8 x 1/32 in. o/a.	4-6	MS-484
E135	INSULATOR, lead free; male; white glazed; standing; 7/8 in. lg. o/a x 1/8 in. diam. tapered flange; 1/2 in. diam. x 3/8 in. lg. insert; 3/16 in. diam. hole.	4-4	MS-452-1

SYM.	DESCRIPTION	FIGURE NO.	TMC DWG. OR PART NO.
E136	INSULATOR, feed thru; female; white glazed stamite; 1/2 in. lg. o/a x 7/8 in. diam. tapered flange; 1/2 in. diam. x 3/8 in. deep well; 1/16 in. diam. hole.	4-3	MS-187-2
E138	CLAMP, "O" type; nickel silver; 1/4 x 3/8 in. o/a; .025 thk.	4-4	MS-189
E139	CLAMP, "O" type; plastic; 7/8 x 1/2 in. o/a; 5/16 in. I.D.	4-3	CU-188-4
E140	COUNTER; C.C.W. rotation to lscr.; 000-000.	4-3	PO-113
E141	CLAMP, "O" type; plastic; 11/16 x 1/2 in. o/a; .188 in. I.D.	4-3	CU-188-5
E144	PIN, roll steel; 1/2 in. lg. x 1/16 in. diam.	4-7,4-8,4-9	PN-109-3
E145	NUT, wing; brass; nickel plated; 10-32 thd.	4-3, 4-5	NT-115-1032NS
E146	CLAMP, "O" type; plastic; 3/4 x 1/2 in. o/a; .175 in. I.D.	4-5	CU-188-6
E147	PIN, roll steel; 11/16 in. lg. x 1/16 in. diam.	4-4	PN-109-4
E148	GASKET, corklike cork; 11/16 in. o.d. x 1/2 in. I.D. x 1/16 in. thk.	4-4, 4-5	GA-118
E149	WASHER, spring; phosphor bronze; silver plated; 3/16 in. o.d. x 1/4 in. I.D. x .015 in. thk.	4-3, 4-9	WA-119
E110	CLIP, spring double unit; brass nickel plated; 1-3/2 x 3/8 x 3/8 in. o/a.	4-3, 4-1	CU-203-1
E111	SPACER, stand off; brass; cadmium plated; 1/4 in. lg. x 1/4 in. diam.; 5/16 in. hole.	4-3	TE-117-1
E112	GASKET, corklike cork; 1-3/16 in. o.d. x 1/4 in. I.D. x 1/32 in. thk.	4-3	GA-117
J300	CONNECTOR, receptacle; coaxial; female; VHF series; teflon insulation.	4-3	UG-299/U
L300	COIL, link copper; silver plated; 4-1/2 in. lg. x 1/4 in. diam. o/a three 1/2 turns p/o A-674.	4-3, 4-4	CL-116
L391	COIL, link copper; silver plated; 3 in. I.D. x 3-1/2 in. o.d.; 3-1/4 turns p/o A-676.	4-4	CL-115-2
L392, 185	COIL, sub-assembly; copper; silver plated; 3 in. I.D. x 3-1/2 in. o.d.; 3 turns p/o A-677.	4-4	CL-114-1
L393	COIL, link copper; silver plated; 4-1/2 in. lg. x 1/4 in. diam. o/a; three 1/2 turns p/o A-674.	4-4	CL-118

SYM.	DESCRIPTION	FIGURE NO.	TMC DWG. OR PART NO.
L184	COIL, tank copper; silver plated; 5 in. l.d. x 3-1/2 in. o.d.; 28-3/4 turns. p/o A-678.	4-4	CL-114-2
L185	PART, of L184	4-4	
M186	METER, HF; 0-3 amper; milled case; 3-1/2 in. diam. x 2 in. o/a.	4-3, 4-4	MR-301-3
M187	METER, HF; 0-3 amper; milled case; 3-1/2 in. diam. x 2 in. o/a.	4-3, 4-4	MR-303-3
MP188	COUPLING, flexible; brass, stainless bra- sion 1-1/4 x 11/16 in. o/a; 1/4 in. hole.	4-3	MC-121
MP189	SPRING, contact phosphor bronze, silver plated 1-1/2 x 1-3/8 x .025 in. o/a.	4-3, 4-5	MS-457
MP190	KNOB, instrument slide type; white lac- color Has 3-1/16 in. dia. x 7/8 in. deep o/a; for 1/4 in. shaft.	4-3	MP-302-2
MP193	LOCK, dial; brass, nickel plated; 1-3/8 in. lg. x 3/8 in. dia. o/a.	4-3	PO-318
MP194	COUPLING, variable: 5 to 1 reduction 3-8/16 x 1-49/64 in. o.a.	4-6	DS-188
MP195	KNOB, instrument type; black bakelite, 1 in. x 2 in. dia. o/a.	4-3	MP-185
MP196	BOLDER, spark gap; brass 3/8 in. lg. x 4-32 NC2 threads.	4-6	SM-128
MP197	STRIP, case steel 3-13/32 in. lg. x 13/32 in. wide.	4-5	PO-327
MP198	SHAFT, extension; brass 5-1/16 in. lg. x 1/4 in. dia.	4-3, 4-6	PM-376
MP199	SHAFT, extension; brass 5-1/16 in. lg. x 1/8 in. dia.	4-6	PM-379
MP110	SHAFT, double swirl; brass; cadmium plated 5-1/4 in. long x 1/4 in. dia.	4-8	PM-375
MP111	SUPPORT, counter; aluminum 3-1/8 x 1/2 x .041 in. o/a.	4-3	MS-508
MP112	SUPPORT, coil center; phenolic, 2 in. OD x 1/2 in. thick o/a.	4-4	FX-197
MP113	SUPPORT, contact shaft; talcon; 3-8/16 x 3-11/16 x 1/4 in. o/a.	4-3, 4-6	FX-228
MP114	BRACKET, center support; aluminum, 1-13/16 x 1/2 x .021 in. o/a.	4-3	MS-458

SYM.	DESCRIPTION	FIGURE NO.	TMC DARG, OR PART NO.
MP115	BEARING, pencil: brass; nickel plated 1/2 in. lg. x 3/8 in. dia. 1/8 in. ID hole.	4-3, 4-5	BB-101
MP116	COUPLING, flexible; non-insulated; brass 1-1/4 in. dia. x 11/32 in. thick α/a .	4-3, 4-5	MC-115
MP117	COUPLING, flexible; stainless; 900 T peak flashover, 3-1/16 x 1-1/16 in. α/a .	4-3, 4-5	MC-116
MP118	BRACKET, thermocouple, aluminum 2-15/16 x 1/8 x .064 in. α/a .	4-3	MS-485
MP119	SHAFT, wheel; brass; silver plated, 5-1/4 x 1-11/16 x 1/4 in. dia. α/a .	4-3	PM-353
MP120	COUNTER SHAFT, brass, silver plated 2-1/2 in. lg. x 1/2 in. dia.	4-3	PM-356
MP121	ROD, switch connecting; brass 6-5/8 in. lg. x 1/4 in. dia.	4-6	PM-368
MP122	BUSHING, contact; nylon, 1/16 in. OD x 11/64 in. ID x 11/32 in. wide.	4-3, 4-5	PK-323
MP123	BUSHING, connecting; phenolic, 1-5/16 x 1 x 3/8 in. ID α/a .	4-4	A-718
MP124	ROD, connecting; phenolic, 1-3/16 x 1/2 in. α/a .	4-7	PK-197
MP125	BEARING, pencil: brass, nickel plated, 1/8 in. long x 1/8 -32 NCE threads x 1/8 in. ID hole.	4-5, 4-6	SM-124
MP126	SPRING, copper, 1/16 in. lg. x 3/8 in. OD.	4-7	SP-315-5
MP127	BASE, spark gap; brass, nickel plated, 1-3/16 in. lg. x 3/8 in. dia.	4-6	PM-377
MP128	RING, meter spring; phenolic, 3-1/2 in. OD x 2-3/4 in. ID x 5/16 in. thick.	4-5	PK-356
MP129	BUSHING, connecting; brass; w/lockwasher and nut 11/16 in. lg. x 1/8-16 NCE threads x 7/8 in. hex head.	4-5	PM-347
MP130	BUSHING, switch; brass, 1/8 in. dia. x 5/16 in. thick.	4-5, 4-6	PM-366
MP131	BUSHING, capacitor support; nylon, 1/8 in. OD x 3/16 in. ID x 5/16 in. lg.	4-4	PK-328
MP132	STATOR PLATE, capacitor.	4-5	EX-100
MP133	ROTOR PLATE, capacitor.	4-5	EX-101
H100	TUNING CHART.	---	CH-124
P100	CONNECTION, plug; coaxial; male; DHP series; nylon insulation, 1-5/16 in. lg. x 3/8 in. dia. α/a .	Loose Item	PL-250A

SYM.	DESCRIPTION	FIGURE NO.	TMC DWG. OR PART NO.
S300	SWITCH INDEX, 90 degree thread steel 3-1/4 x 3-8/32 x 1-9/16 in. o/d, 1/8 in. Dotted shaft.	4-3	SW-143
SW100	SWITCH, rotary; two sections; one pole; eight positions each section; stellite insulation.	4-3	SW-144
SW101	SWITCH, rotary; two sections; one pole; seven positions each section; stellite insulation.	4-3	SW-145
TL104	PUNCH, drive pin; steel, 4 in. lg. x 3/8 in. dia., tapered.	4-5	TP-100
TL101	WRENCH, hex; steel, 3-34/7 in. lg. for #5, 6 Allen head set screws.	4-5	WH-100-3
TL102	WRENCH, hex; steel, 3 in. lg. for #10, 12 Allen head set screws.	4-5	WH-100-5
TL103	WRENCH, hex; steel, 6 in. lg. for #6 Allen head set screws.	4-5	WH-100-18
Z100	DOUBLE LEAF SWITCH SUB ASSEMBLY: Consisting of: E118, E127, H304, MP116 and MP120.	4-4	A-897
Z101	CONTACT WHEEL AND SHAFT ASSEMBLY: Consisting of: E123, E128, H304, MP118, MP120, MP124, MP128 and Z115.	4-7	A-898
Z102	SINGLE LEAF SWITCH SUB ASSEMBLY: Consisting of: E133, H304, H304, MP123 and MP130.	4-5	A-895
Z103	SINGLE LEAF SWITCH ASSEMBLY: Consisting of: E133, MP125 and Z102.	4-8	A-872
Z104	DOUBLE LEAF SWITCH ASSEMBLY: Consisting of: E128, MP125 and Z100.	4-9	A-873
Z105	COIL ASSEMBLY: Consisting of: A100, A101, A333, A111, E105, E104, E108, E115, L300, MP112, MP122, Z106, Z107 and Z109.	4-3	A-874
Z106	TANK COIL SUB ASSEMBLY (clockwise)	4-3	A-875-877
Z107	TANK COIL SUB ASSEMBLY (counterclockwise)	4-3	A-878
Z108	NOT USED.		
Z109	LINE COIL SUB ASSEMBLY (counterclockwise)	4-3	A-879
Z110	SPARE PCD ASSEMBLY: Consisting of: E122 and E129.	4-6	A-888

SYM.	DESCRIPTION	FIGURE NO.	TRC DWG, OR PART NO.
E111	EXTENSION SHAFT ASSEMBLY: coupling and band switch. Consisting of: MP128 and MP129.	4-3, 4-5	A-714
E112	COUPLING SWITCH BRACKET SUB ASSEMBLY: Consisting of: A125, A117, E108 and MP122.	4-3	A-720
E113	BAND SWITCH BRACKET SUB ASSEMBLY: Consisting of: A110, A117, MP129 and E103.	4-5	A-722
E114	COVER ASSEMBLY.	1-3	A-644
E115	CHASSIS SUB ASSEMBLY.	4-3	A-645
E116	GROUND STRAP ASSEMBLY: Consisting of: E111, E112 and E113.	4-3, 4-5	A-711
E117	INPUT CONNECTOR ASSEMBLY: 1/2 in. lg. x 1-3/4 in. wide α/α .	4-3, 4-7	A-1153
E118	GROUND LEAD ASSEMBLY: Consisting of: E115 and E116.	4-3	A-647
E119	FUSEHOLDER STRAP ASSEMBLY: Consisting of: E110, E111 and E118.	4-6	A-711
E120	FEED THRU CONNECTOR ASSEMBLY: 3-1/2 in. lg. x 1-3/8 in. wide α/α .	4-3	A-726
E121	CONNECTOR ASSEMBLY: coil to coil; 3-1/8 in. lg. x 7/8 in. wide α/α .	4-3	A-722
E122	OUTPUT CONNECTOR ASSEMBLY: 6 in. straight length, 2 in. radius.	4-3	A-713
E123	CONDENSER STRAP ASSEMBLY: rear; 4-7/8 in. lg. x 1/2 in.	4-3	A-734
E124	FEED THRU STRAP ASSEMBLY: 4-1/8 in. lg. x 1/2 in. wide α/α .	4-4	A-735
E125	CONNECTOR ASSEMBLY: condenser to feed-thru; 2-3/8 in. lg. α/α .	4-3	A-725
E126	CONNECTOR ASSEMBLY: thermocouple to wiper coil; 3-3/4 in. lg. α/α .	4-4	A-727
E127	CONNECTOR ASSEMBLY: thermocouple to coil; 5-3/8 in. lg. α/α .	4-3	A-729-2
<p>NOTE: IN CASES WHERE A PART IS USED SEVERAL TIMES THROUGHOUT THE UNIT IT IS ONLY LISTED ONCE.</p> <p>ALL HARDWARE ARE STANDARD COMMERCIAL ITEMS EXCEPT AS LISTED.</p>			

ANTENNA TUNING UNIT

MODEL TAC

TUNING CHART

2000-5000 KC

APPROXIMATE SETTINGS FOR RESISTIVE LOADS

EQ #	LOAD OHMS	BALANCED				UNBALANCED			
		TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNTER
00	70	15	MAX	LO	142	8	MAX	LO	155
	300	17	MAX	LO	141	8	MAX	LO	160
104)600 stai- d)	1200	19	MAX	LO	159	8	MAX	LO	220
	1200	20	MAX	LO	208	8	MAX	LO	260
00	70	17	MAX	LO	147	15	MAX	LO	155
	300	17	MAX	LO	164	16	MAX	LO	182
	600	17	MAX	LO	174	16	MAX	LO	182
	1200	18	MAX	LO	183	18	MAX	LO	211
00	70	32	MAX	LO	141	32	MAX	LO	150
	300	33	MAX	LO	159	32	MAX	LO	170
	600	34	MAX	LO	167	32	MAX	LO	177
	1200	35	MAX	LO	177	33	MAX	LO	190
00	70	43	MAX	LO	210	40	MAX	LO	138
	300	43	MAX	LO	160	40	MAX	LO	155
	600	43	MAX	LO	171	42	MAX	LO	172
	1200	35	MAX	LO	180	42	MAX	LO	172

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ANTENNA TUNING UNIT

MODEL TAC

TUNING CHART

2000-5000 KCS

APPROXIMATE SETTINGS FOR RESISTIVE LOADS

BALANCED

UNBALANCED

<u>FREQ</u> <u>KCS</u>	<u>LOAD</u> <u>OHMS</u>	<u>TUNE</u> <u>COND</u>	<u>COUP</u> <u>TAP</u>	<u>BAND</u> <u>SW</u> <u>TAP</u>	<u>LOAD</u> <u>ADJ</u> <u>COUNT</u>	<u>TUNE</u> <u>COND</u>	<u>COUP</u> <u>TAP</u>	<u>BAND</u> <u>SW</u> <u>TAP</u>	<u>LOAD</u> <u>ADJ</u> <u>COUNT</u>
2000	70	15	MAX	LO	142	8	MAX	LO	155
	300	17	MAX	LO	141	8	MAX	LO	160
	(G104)600 instal- led)	19	MAX	LO	149	8	MAX	LO	220
	1200	20	MAX	LO	204	8	MAX	LO	240
3000	70	17	MAX	LO	147	15	MAX	LO	155
	300	17	MAX	LO	164	14	MAX	LO	182
	600	17	MAX	LO	174	16	MAX	LO	182
	1200	18	MAX	LO	183	14	MAX	LO	211
3500	70	32	MAX	LO	141	32	MAX	LO	150
	300	33	MAX	LO	159	32	MAX	LO	170
	600	34	MAX	LO	167	32	MAX	LO	177
	1200	35	MAX	LO	177	33	MAX	LO	190
5000	70	43	MAX	LO	210	40	MAX	LO	158
	300	43	MAX	LO	160	40	MAX	LO	165
	600	43	MAX	LO	171	42	MAX	LO	172
	1200	35	MAX	LO	180	42	MAX	LO	172

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FREQ KCS	LOAD OHMS	BALANCED				UNBALANCED			
		TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT
4000	70	9	2	2	122	8	MAX	2	138
	300	9	2	2	133	8	MAX	2	141
	600	18	2	2	137	8	MAX	2	150
	1300	19	2	2	143	10	2	2	168
4500	70	22	2	2	128	22	2	2	128
	300	22	2	2	131	22	2	2	142
	600	23	2	2	135	22	2	2	144
	1300	23	2	2	141	23	2	2	155
5000	70	32	2	2	129	32	2	2	129
	300	33	2	2	139	33	2	2	142
	600	34	2	2	147	34	2	2	150
	1300	35	2	2	150	34	2	2	152

ANTENNA TUNING UNIT

MODEL TAC

TUNING CHART

6000-12000 Kcs

APPROXIMATE SETTINGS FOR RESISTIVE LOADS

FREQ KCS	LOAD OHMS	TUNE COND	BALANCED			TUNE COND	UNBALANCED		
			COUP TAP	BAND SW TAP	LOAD ADJ COUNT		COUP TAP	BAND SW TAP	LOAD ADJ COUNT
6000	70	42	2	2	129	41	2	2	128
	300	43	2	2	131	42	2	2	130
	600	44	2	2	134	42	2	2	142
	1200	44	2	2	139	43	2	2	143
7000	70	18	2	3	122	15	2	3	120
	300	21	2	3	133	21	2	3	130
	600	27	2	3	135	22	2	3	137
	1200	31	2	3	141	24	2	3	142
8000	70	26	2	3	127	26	2	3	125
	300	37	2	3	131	30	2	3	134
	600	27	2	3	135	32	2	3	140
	1200	31	2	3	141	24	2	3	147
9000	70	28	3	3	131	40	3	3	127
	300	38	3	3	129	46	3	3	130
	600	43	3	3	130	48	3	3	133
	1200	44	3	3	134	50	3	3	132

FREQ KCS	LOAD OHMS	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT
10000	70	41	3	3	121	40	3	3	126
	300	41	3	3	126	42	3	3	133
	600	42	3	3	127	44	3	3	132
	1200	44	3	3	129	34	3	3	135
11000	70	50	6	3	138	19	6	4	117
	300	24	8	4	119	21	6	4	126
	600	22	7	4	111	21	6	4	123
	1200	24	7	4	116	22	6	4	122
12000	70	26	6	4	122	26	6	4	120
	300	26	6	4	126	27	6	4	120
	600	32	6	4	123	28	6	4	120
	1200	36	6	4	123	30	6	4	121

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ANTENNA TUNING UNIT

MODEL TAC

TUNING CHART

13000-19000 Kcs

APPROXIMATE SETTINGS FOR RESISTIVE LOADS

UNBALANCED

FREQ KCS	LOAD OHMS	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT	UNBALANCED			
						TUNING COND	COUP. TAP	BAND SW TAP	LOAD ADJ COUNT
13000	70	14	6	4	124	25	4	4	130
	300	22	4	4	115	32	4	4	135
	600	24	4	4	113	42	7	4	120
	1200	24	4	4	114	43	7	4	118
14500	70	30	6	4	123	34	6	4	122
	300	40	6	4	120	38	6	4	122
	600	45	6	4	120	38	5	4	116
	1200	47	6	4	120	40	6	4	116
15000	70	36	6	4	120	40	4	4	120
	300	43	7	4	117	43	4	4	122
	600	47	7	4	115	45	4	4	120
	1200	50	7	4	114	45	4	4	117
18000	703	30	MIN	5	119	32	6	5	119
	300	41	MIN	5	113	34	6	5	116
	600	42	MIN	5	111	36	6	5	116
	1200	39	MIN	5	111	37	6	5	116

FREQ ICS	LOAD COSMS	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COUP TAP	BAND SW TAP	LOAD ADJ COUNT
7000	70	35	7	5	120	38	6	5	119
	300	41	MIN	5	114	39	6	5	119
	600	42	MIN	5	111	42	4	5	114
	1200	48	MIN	5	111	42	4	5	115
8000	70	40	7	5	118	43	5	5	120
	300	40	7	5	115	43	6	5	117
	600	39	7	5	115	44	6	5	118
	1200	45	7	5	115	50	6	5	114
9000	70	14	7	6	202	34	3	6	168
	300	10	7	6	199	24	6	6	178
	600	11	7	6	199	25	6	6	178
	1200	11	7	6	201	25	6	6	176

TUNING CHART
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REQ IN	LOAD CHMS	BALANCED				UNBALANCED			
		TUNING COND	COMP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COMP TAP	BAND SW TAP	LOAD ADJ COUNT
1000	70	33	5	6	155	30	4	6	190
	300	14	7	6	178	29	4	6	174
	600	14	7	6	178	30	4	6	174
	1200	13	7	6	173	30	4	6	174
1000	70	26	7	6	202	31	6	6	182
	300	24	7	6	200	32	6	6	182
	600	25	7	6	200	33	6	6	180
	1200	25	7	6	194	33	6	6	179
1000	70	37	7	6	181	34	6	6	182
	300	20	7	6	180	35	5	6	176
	600	22	7	6	170	35	5	6	179
	1200	22	7	6	185	35	5	6	188
1000	70	30	7	6	188	36	7	6	185
	300	32	7	6	194	36	7	6	183
	600	33	7	6	186	36	7	6	182
	1200	30	7	6	188	36	7	6	182
000	70	30	7	6	180	39	7	6	184
	300	30	7	6	182	39	7	6	181
	600	30	7	6	182	40	7	6	180
	1200	30	7	6	182	40	7	6	180

NO	TUNE COND	COOP TAP	BAND SW TAP	LOAD ADJ COUNT	TUNE COND	COOP TAP	BAND SW TAP	LOAD ADJ COUNT	
600	70	35	7	6	188	13	7	6	197
	300	40	7	6	194	13	7	6	197
	600	40	7	6	194	13	7	6	197
	1200	40	7	6	194	13	7	6	191
600	70	35	7	6	197	20	6	6	150
	300	35	7	6	188	25	6	6	141
	600	35	7	6	188	25	6	6	151
	1200	35	7	6	168	13	6	6	160

Q	LOAD DBMS	BALANCED				TUNING CHART 27000-30000 Kcs		UNBALANCED		
		TUNE COND	COUP TAP	BAND SWITCH TAP	LOCAL ADJ COUNT	TUNE COND	COUP TAP	BAND SW TAP	LOCAL ADJ COUNT	
K90	70	37	5	6	129	40	6	6	128	
	300	42	6	6	124	47	6	6	132	
	600	42	6	6	124	38	6	6	132	
	1200	42 2	6	6	128	19	5	6	109	
K90	70	44	7	6	129	44	6	6	133	
	300	44	7	6	129	50	6	6	132	
	600	44	7	6	129	50	6	6	132	
	1200	44	7	6	129	50	6	6	132	
K90	70	40	7	6	132	45	5	6	143	
	300	40	7	6	132	50	5	6	132	
	600	40	7	6	132	48	5	6	133	
	1200	40	7	6	132	35	5	6	131	
K90	70	50	7	6	143	20	4	HI	130	
	300	50	MIN	6	127	22	4	HI	130	
	600	50	MIN	6	127	22	4	HI	120	
	1200	50	MIN	6	127	18	4	HI	123	

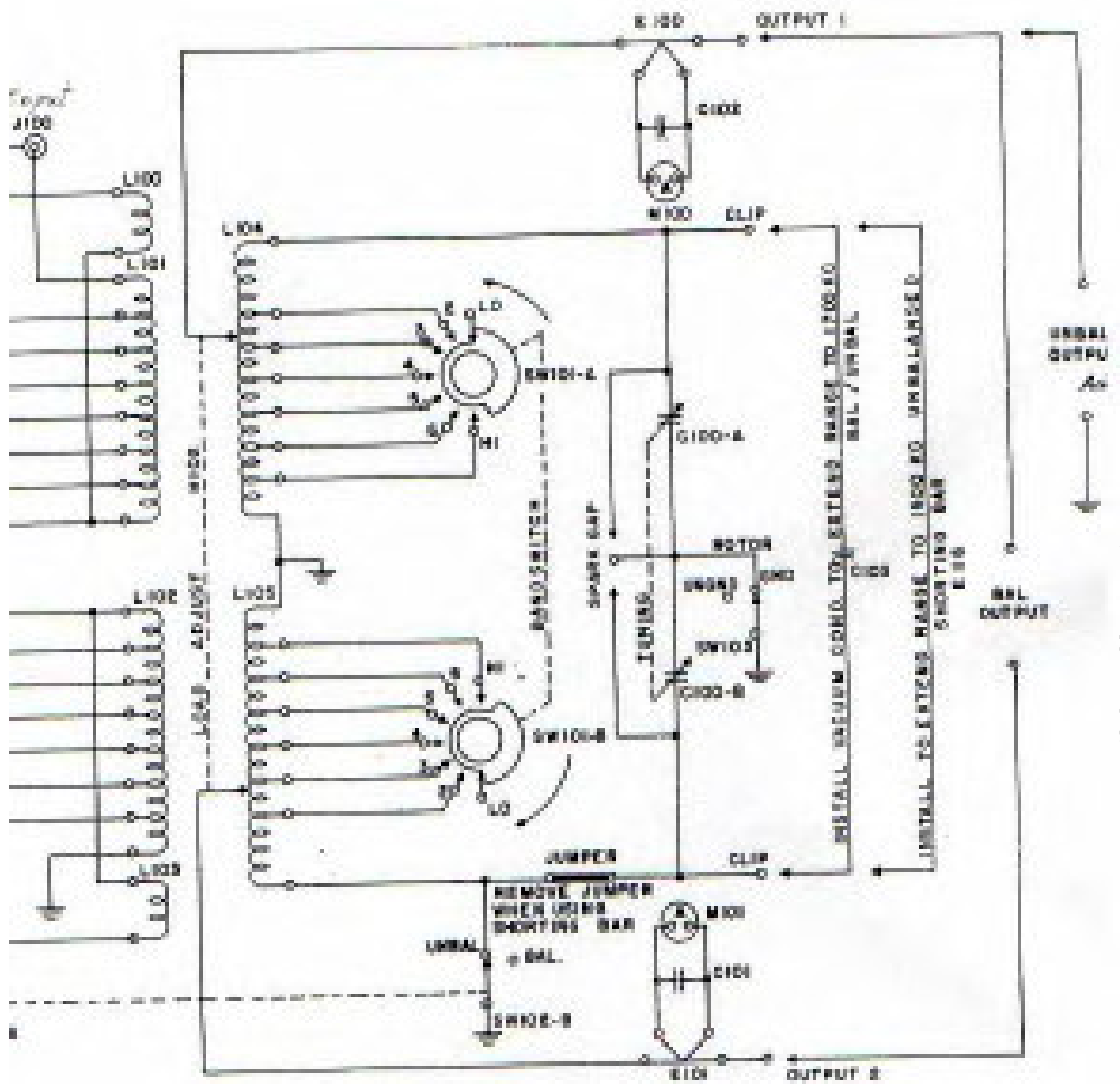


Figure 4-12. Schematic Diagram, Antenna Tuning Unit, Model T-1

