SUPPLEMENTARY INSTRUCTION MANUAL

MODEL GPT-750(D)

IN-191

THE TECHNICAL MATERIEL CORP.

Mamaroneck, N.Y. Ottawa, Ontario

SUPPLEMENTARY INSTRUCTION MANUAL

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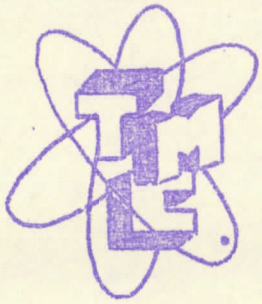


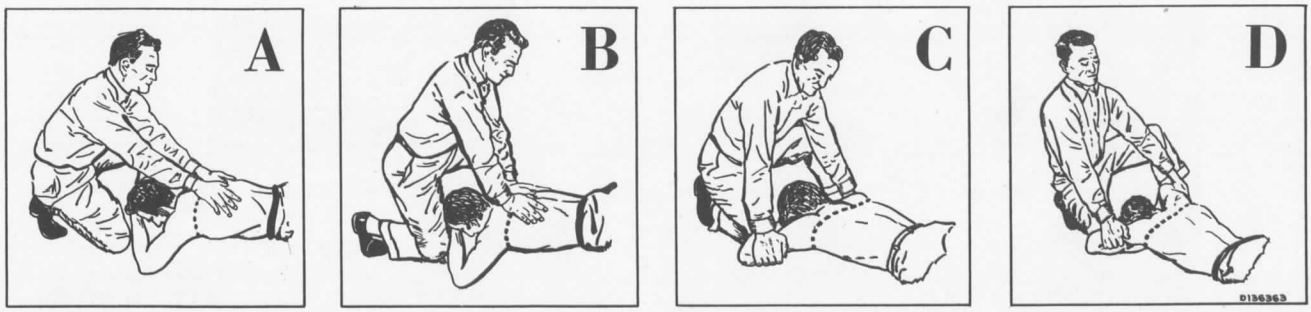
THE TECHNICAL MATERIEL CORPORATION

MAMARONECK, NEW YORK

Front View Model GPT-750 (D)

FIRST AID IN CASE OF ELECTRIC SHOCK

1. PROTECT YOURSELF with dry insulating material.
2. BREAK THE CIRCUIT by opening the power switch or by pulling the victim free of the live conductor. DON'T TOUCH THE VICTIM WITH YOUR BARE HANDS until the circuit is broken.
3. START ARTIFICIAL RESPIRATION IMMEDIATELY, SECONDS COUNT. Do not wait to look for help, to loosen clothing, to warm the victim, or to apply stimulants.



4. LAY VICTIM ON HIS STOMACH, preferably with head downhill.
5. CHECK MOUTH FOR OBSTRUCTIONS, remove foreign objects, pull tongue forward.
6. PLACE VICTIM'S FOREHEAD on his crossed hands, face down.
7. KNEEL AT VICTIM'S HEAD on either knee. See (A)
8. PLACE HANDS, fingers spread with thumbs about two inches apart, heels of hands below line connecting armpits. See (A)
9. WITH ELBOWS STRAIGHT, ROCK FORWARD slowly until arms are vertical. See (B) Do not apply more than 35 pounds pressure.
10. ROCK BACK SLOWLY to release pressure.
11. GRASP VICTIM'S ARMS just above elbows and continue backward. See (C)
12. LIFT ARMS until tension is felt. See (D)
13. LOWER ARMS to complete the cycle.
14. AFTER TWO SECONDS, START AGAIN with step 6.
15. REPEAT THE CYCLE 12 to 15 times per minute.
16. WHILE ARTIFICIAL RESPIRATION IS CONTINUED, HAVE SOMEONE ELSE:
    (a) Loosen the victim's clothing. (b) Summon medical aid.
    (c) Keep the victim warm.
17. DON'T GIVE UP. Continue without interruption until the victim is breathing without help or is certainly dead.
    Four hours or more may be required.
18. REMAIN IN POSITION after victim revives. Be ready to resume artificial respiration if necessary.
19. DO NOT GIVE LIQUIDS WHILE VICTIM IS UNCONSCIOUS.

GPT-750(D)

SUPPLEMENTARY INSTRUCTION MANUAL

1. INSTALLATION

A. UNPACKING

The Model GPT-750(D) will usually be shipped in several containers. Open each carefully and inspect for damage due to rough handling during shipment. If damage is found, notify the carrier immediately.

B. LOCATION OF TRANSMITTER

After unpacking and inspecting the Cabinet/Frame assembly place it in its operating location. This is advised because the combined weight of the cabinet and equipment drawers will make movement more difficult when the installation is completed. Dimensions pertinent to mounting of the cabinet are found on Page 28 of this Instruction Book.

C. INSTALLATION OF DRAWERS

CAUTION

TO PREVENT TIPPING OF THE CABINET
INSTALL POWER SUPPLY DRAWER FIRST

Each cabinet compartment is equipped with slides which attach to the sides of the equipment drawers. Pull the center section of each slide out until it locks in an extended position. Hold the drawer to be inserted so that the rails on each side address the extended slides evenly and on the same plane. Engage the rails and slides and ease the drawer forward into the cabinet. Hold the lock buttons on the sides of the rails depressed so that the rail will continue to move into the slide. The drawer rails will stop when the locking buttons engage the lock holes about three inches from the end of the slide. Again depress the lock buttons. The drawer will now close completely.

D. POWER REQUIREMENTS

All transmitters leave the factory wired for 115 volts 50/60 cps. Change may be made to 230 volt, 50/60 cps operation by making wiring alterations to T501, T601, T602, T705, CB601, E301, and E302 of the transmitter, TB101 of the O-503A/URA-23 Exciter, and T401, T402, of the PP-1769/URA-23 Exciter Power Supply. Consult the respective schematic diagrams of the units involved for detailed information. All line fuses will have to be reduced to one half their rated current values to assure adequate circuit protection. Regulated and high voltage fuses, of course, remain the same with either line voltage.

E. ELECTRICAL CONNECTIONS (INTERNAL)

The following connections should be made in the step by step sequence indicated. Reference should be made to the cabling diagram (ID-176) included in this manual. Double check each connection by referring to plug (P) and jack (J) numbers stamped on the chassis, and to labels on each cable, not to color coding alone. This precaution will assure correct connection of cables and prevent possible damage to the equipment.

1. Pull out the RTP (Transmitter power supply) drawer (lower) for access to connectors in rear.

2. Connect P502 of CA-265 (cabinet cable) to J601 of the RTP.

3. Connect P503 of CA-264 to J602 of the RTP.

4. Insert both 872-A rectifier tubes into their respective sockets in the RTP deck and connect one of the high voltage leads to each plate cap. These leads are interchangeable so there is no possibility of having them reversed.

5. Connect P601, high voltage lead of the RTP to J503 of the cabinet.

6. Remove the long cover from the relay deck of the RTP by loosening the twist lock fasteners and insert the time delay relay, K603, and its shield.

7. Install the remainder of the tubes in the RTP deck. They are: V601 (OB2), V602 (OB2), V603 (6X4), V604 (5R4GY), V605 (5R4GY).

8. Close the RTP drawer.

9. Pull out the RTF drawer (upper) until it locks in the extended position.

10. Connect P506 of CA-275 (cabinet assembly) to J303 of the RTF.

11. Connect P504 of CA-264 from the RTP deck to J405 of the RTF.

12. Make the following intra-chassis connections on the RTF deck:
    a. J402 to P301
    b. J401 to P302
    c. J201 to P401

13. Connect P508 (yellow) of CA-288-3 to J202 (yellow) of the RTF.

14. Connect P509 (blue) of CA-288-2 to J403 (blue) of the RTF.

15. Install all tubes in the RTF drawer.

16. Close the RTF drawer.

17. Open the A-1279 (center) drawer.

18. Connect P507 (yellow) of CA-288-3 from the RTF to J2 (yellow) of the A-1279.

19. Connect P510 (blue) of CA-288-2 from the RTF to J1 (blue) of the A-1279.

20. Connect P501 of CA-265 from the Cabinet to J3 of the A-1279.

21. Check all cable connections on the A-1279 to see that all plugs are twist locked in their respective jacks.

22. Close the A-1279 drawer. See that all tubes are properly installed.

GPT-750(D)

TUBE COMPLEMENT

TRANSMITTER

SYMBOL	COMMERCIAL TUBE TYPE
V101	4-250A
V102	4-250A
V201	6AH6
V202	12AT7
V203	0A2
V204	6BF5
V205	6146
V206	12AT7
V301	6C4
V302	12AU7
V401	0A2
V402	6C4
V403	6AH6
V404	12AU7
V405	6BE6
V406	12AU7
V601	0B2
V602	0B2
V603	6X4
V604	5R4GY
V605	5R4GY
V606	872A
V607	872A

SEE-2

EXCITER

SYMBOL	COMMERCIAL TUBE TYPE
V101	6AB4
V102	6AB4
V103	6AB4
V104	6U8
V105	12AU7
V106	0A2
V107	12AT7
V108	12AT7
V109	12AT7
V110	6U8
V111	6AL5
V112	12AU7
V113	12AT7
V114	6AH6
V115	12AU7
V116	6CL6
V117	6U8
V118	6AH6
V119	6CL6
V120	6146
V401	5R4
V402	0A2

F. ELECTRICAL CONNECTIONS (EXTERNAL)

1. RF OUTPUT

Connect a suitable antenna or resistive dummy load as appropriate to the HN type coaxial connector J502 on the right side of the transmitter cabinet. A mating coaxial plug which is suitable for use with RG-8/U, RG-9/U, RG-11/U, and RG-12/U coaxial cable is furnished with the equipment as a loose item.

(CONTINUED ON FOLLOWING PAGE)

2. AC POWER INPUT

This equipment may be operated on 115/230 volts, 50/60 cycle single phase only. The power source must be capable of providing 3000 watts at a power factor of 87%. A three conductor power cable (not supplied) of sufficient current carrying ability and length must be connected between the AC power source and J501, the three conductor twist-lock connector on the rear of the transmitter cabinet. A mating plug, PL-134-N6, is furnished with the equipment as a loose item. Connections to the plug are as shown below.

WARNING

FIRM GROUND CONNECTION MUST
BE MADE TO TERMINAL SHOWN

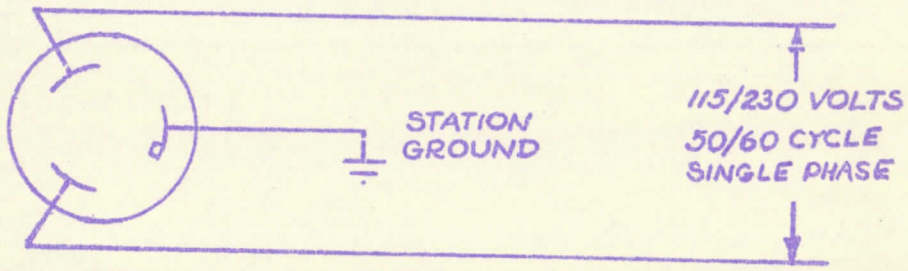


FIGURE 1

3. The transmitter frame and base or foundation, if used, must be connected to the station ground system by means of a heavy copper strap or braid.

4. OTHER EXTERNAL CONNECTIONS

A. All external connections with the exception of the AC power line, station grounding strap, and RF output (antenna) are made to terminal strip E501 (and E505 when supplied) on the rear of the transmitter cabinet. The connections to terminal strip E501 are as follows:

E501 (Terminal Numbers)	FUNCTIONS
1 and 2	Channel 1 } 600Ω Audio
13 and 14	Channel 2 } Inputs
3 and *4	Push to Talk
5 and *4	Key
6 and 7	AC Line Out
8 and 9	Antenna Relay (115 VAC)
11 and *10	XMTR ON/OFF
12 and *10	270 VDC Out

*Ground

B. Operation with a carbon microphone attached to channel 1 or channel 2 inputs is accomplished as shown in the following diagram.

The resistance shown is correct to hold the current through most carbon microphones to the commonly recommended range of 20 to 30 Ma. If some excitation other than 6 volts is to be used, the value of the resistor must be changed accordingly. When connected as shown, either microphone Push-to-talk button will energize its own microphone and the transmitter.

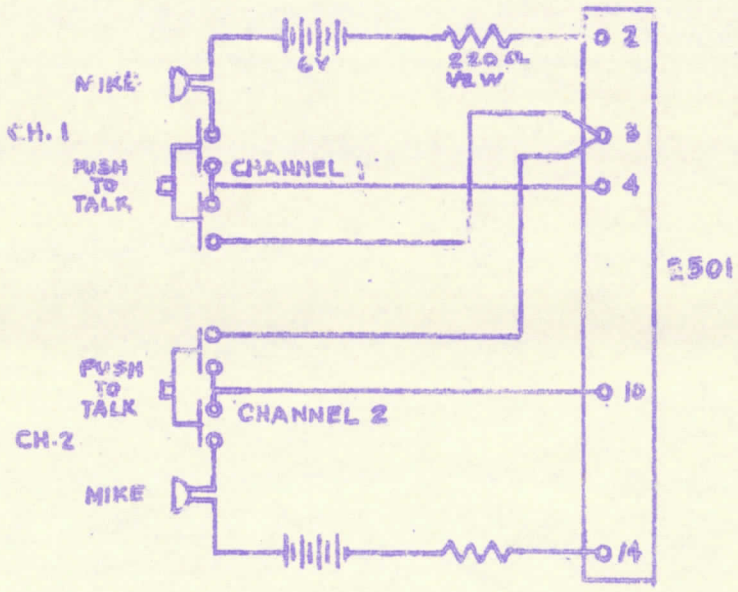
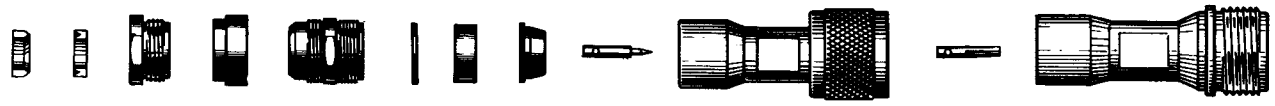


FIGURE 2

NOTE: For operation on channel 1 it will be necessary to short terminals 7 and 9 of E101 on the exciter.

For operation on channel 2 it will be necessary to short terminals 9 and 11 of E101 on the exciter.

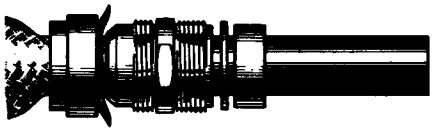
SERIES HN CONNECTOR ASSEMBLY INSTRUCTIONS



*GLAND *GASKET NUT #1 CAP NUT #2 WASHER GASKET CLAMP MALE CONTACT PLUG BODY FEMALE CONTACT JACK BODY

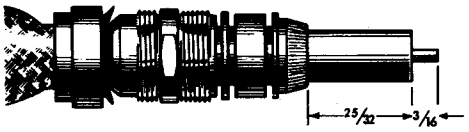
(CROSS SECTION VIEWS)

*REPLACE WASHER AND GASKET IN:
UG-59B/U (82-804)
UG-60B/U (82-814)
UG-61B/U (82-815)



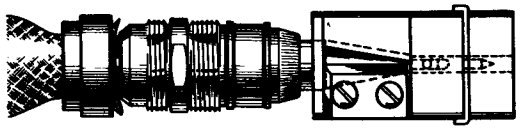
Cut end of cable even. Insert cap over cable armor. Bulge armor braid by pushing armor back on cable 6". Push nut #2, washer and gasket over cable jacket. When assembling connectors with gland, be sure knife-edge is toward end of cable and groove in gasket is toward the gland.

Remove vinyl jacket 1⅛" from end of cable. For double shield cables, remove vinyl jacket 1³⁄₁₆" from end of cable.

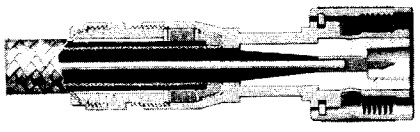


Push clamp over copper braid, flush against cable jacket. Cut exposed copper braid so that approximately 3/16" remains and fan over clamp. Trim braid even with end of taper. Cut cable dielectric 25/32" from braid. Tin exposed conductor.

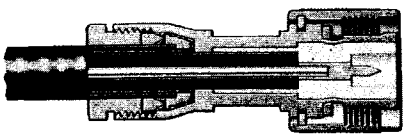
Solder contact pin to conductor. Do not overheat dielectric. Do not use excess solder. Wipe clean; see that dielectric is free from solder, resin and foreign material.



Taper dielectric with AMPHENOL 103-301 (MX-103/U) trimming tool. When tapering dielectric of cable for plug assembly, push contact stop of tool to bottom of slot. Tool will stop cutting when shoulder of contact butts against stop. For jack assembly see that stop is at top of slot. Cable will be properly tapered when end of center contact is flush with end of trimmer body. (Omit this operation for UG-59B, -60B, -61B/U.)



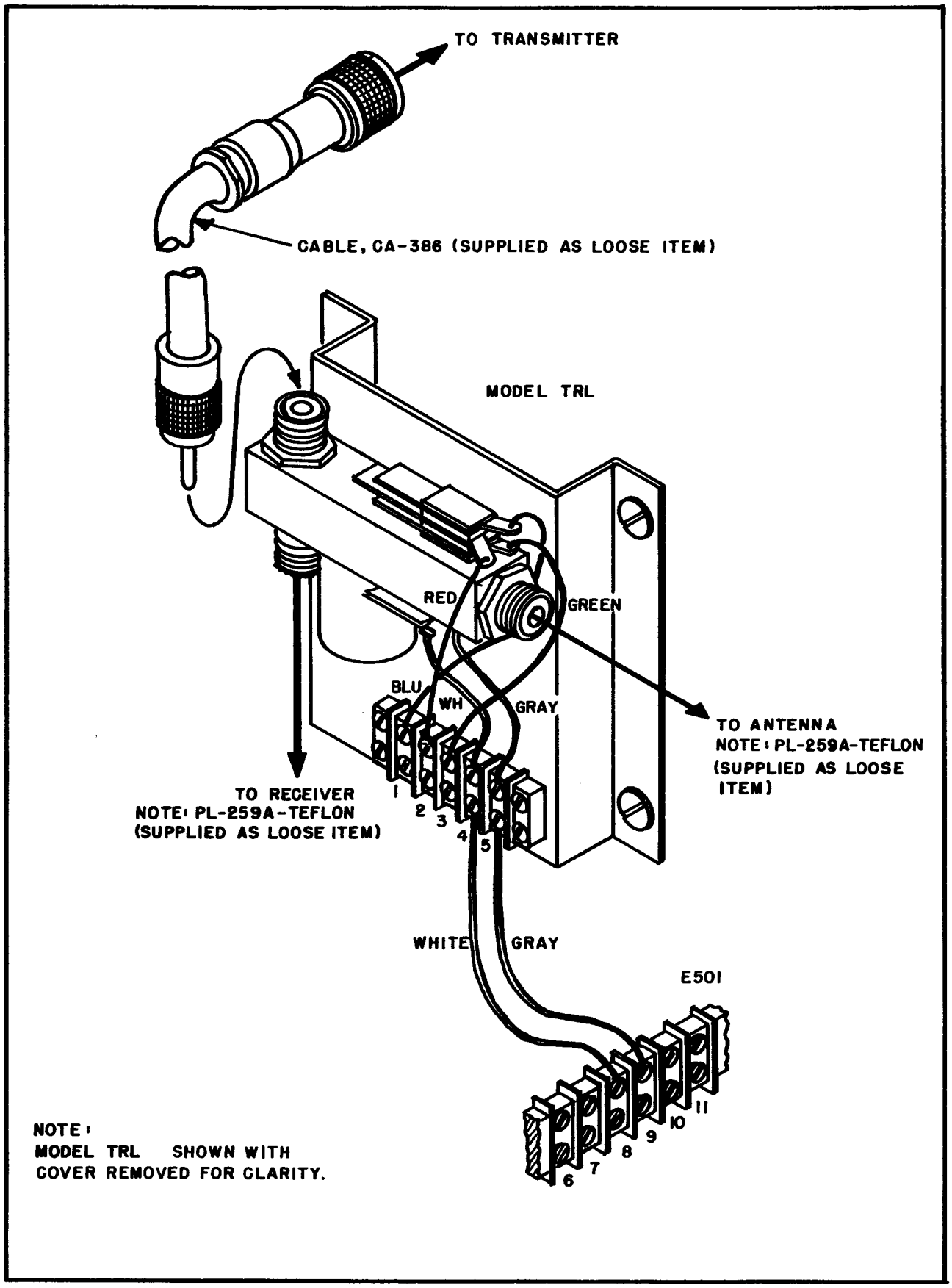
UG-59A/U illustrated



UG-59B/U illustrated

Apply small amount of AMPHENOL 307 Silicone Compound on tapered surface of dielectric. Insert assembly into connector body. Tighten Nut #1 (or Nut #2 if cable is armored) securely with wrench. Straighten bulge in armor. Cut armor so that it can be clamped between Nut #2 and cap. Tighten cap securely on Nut #2 with wrench. In connectors with gland, knife-edge should cut gasket in half by tightening sufficiently.

NOTE: When cable without armor is used, the cap and Nut #2 (Armor Clamps MX-564/U and MX-564A/U, AMPHENOL 82-48 and 82-109 respectively) are not required. Instead Nut #1 as supplied with connector is used and instructions pertaining to armor disregarded.



Cable Connections Model TRL

G. ACCESSORIES

1. OPTIONAL 12V POWER SUPPLY

A 12 volt DC power supply (A-1504) is available with the GPT-750(D) transmitter. When ordered, it is installed on the center deck (A-1279) of the console. It may be used as a source of power for the operation of standard remote RADIOPHONE UNITS.

The connections necessary to complete installation of the RADIOPHONE UNITS are made on terminal strips E501 and E505 located on the outside of the GPT-750 cabinet/frame assembly (A-958) at the rear. Wires used for this purpose must not be smaller than #22 and should be insulated for 500 volts or more. Technicians making the installation are advised to consider voltage drop over the entire length of wire being used when choosing its proper size.

The accompanying diagram (page 29) shows how one or two C-1207/UR units may be used. There are several ways in which operation may be conducted. For example, it is possible to have each RADIOPHONE UNIT operate independently at the same time over separate sidebands of the same GPT-750(D) transmitter. This and any other mode of operation is determined by the positions of the exciter controls.

2. COAXIAL TRANSMIT/RECEIVE ANTENNA RELAY

Two coaxial antenna relays, Models TRL are available, on order, for use with the GPT-750 Transmitter. Model TRL-1 is designed for use with 70 ohm, and Model TRL-2 for use with 50 ohm coaxial transmission lines.

2. OPERATION

A. DESCRIPTION OF CONTROLS

All controls are identified by engravings on the front panels of the units. The following chart briefly explains the functions of the controls of the AN/URT-17, GPT-750(D).

MODEL RTP

CONTROL	FUNCTION
MAIN POWER	Applies A.C. voltage to the transmitter and provides line overload (circuit breaker) protection.
FILAMENT LINE ADJUST	Selects taps on the filament transformer to maintain the desired voltage of 115 VAC.

TRANSMITTER PLATES	Applies plate voltage to the low level stages (including the VMO) of the transmitter and high voltage to the PA stage when the final plate switch is ON.
OVERLOAD RESET	Resets overload relay system when tripped by excessive P.A. plate or screen grid currents.
MODE	Selects PHONE, TUNE or CW-FS operation.
FINAL PLATES	When TRANSMITTER PLATES switch is on, this switch applies high voltage to the PA stage.

MODEL RTF

INNER OVEN Indicator	Lights during warming periods of the inner oven.
ZERO BEAT Indicator	During calibration, as zero beat is approached this indicator will begin to flash at a rate which corresponds to the number of cycles away from zero beat the instrument is set.
OUTER OVEN	Lights during warming periods of the outer oven.
CALIBRATE	When the oscillator dial is set to the nearest 50 Kc check point which is closest to the desired frequency the CALIBRATE control is rotated until a zero beat is obtained.
MASTER OSCILLATOR FREQUENCY	Tunes the MO within the oven to the frequency indicated on the counter.
KEY	Permits ON/OFF keying of the transmitter for CW operation.
PHONES	Audible monitoring of the zero beat signal.
OSCILLATOR	Rotation of this switch permits calibration of the MO, use of the MO, or use of one of the three crystals to drive the transmitter.

MULTI-METER	Provides metering of the driver plate, P.A. grid or P.A. screen grid currents through a switch.
DR PL/PA GRID/PA SG	Switches the METER into the driver and P.A. circuits to indicate the current drain.
PA PLATE METER	Provides meter indication of the P.A. plate current.
RF OUTPUT AMMETER	Provides meter indication of the Radio Frequency output current.
DRIVER TUNING	Varies the multiplier and P.A. driver tuning capacitors.
DRIVER INCR.	Varies the amount of drive to the P.A. grids.
DRIVER BAND	Switches in and out various tuned circuits to change the frequency range of the driver and multiplier circuits.
PA TUNING	Varies the main tuning vacuum capacitor which is an integral part of the P.A. Pi tank.
PA BAND	Sets the P.A. tank to the proper frequency band by tapping the output coil.
ANTENNA LOADING INCR.	Adjusts the amount of coupling to the load.
2 INCR. 1	Switches in an additional loading capacitor for loads of lower impedance.
TEST KEY	Provides emergency and test keying.

SBE
EXCITER UNIT

POWER ON/OFF (S103)	ON - Applies line voltage to SBE Power Supply. OFF - Disconnects line voltage from Power Supply.
EXCITER ON/STANDBY (S105)	ON - Activates RF stages of the exciter without need for VOX or push-to-talk keying and without operating transmitter.

	STANDBY - Allows MIKE voice (VOX) or push-to-talk to activate the RF stages of the exciter and the associated transmitter when the XMTR ON/OFF switch is in the OFF position.
XMTR ON/OFF (S104)	ON - Applies high voltage to the transmitter when Transmitter Plates switch is in stand-by remote position and Final Plates switch is on. By-passes and eliminates need for VOX or push-to-talk. OFF - Permits operation of the transmitter by VOX or push-to-talk circuit when EXCITER switch is in STANDBY position.
LSB	Switch selects audio input source (MIKE or external line) for lower sideband channel. GAIN - Adjusts level of LSB audio input.
USB	Switch selects audio input source (MIKE or external line) for Upper Sideband channel. GAIN - Adjusts level of USB Audio input.
VOX GAIN	Voice operated transmitter circuit gain control.
SQUELCH GAIN	Used in conjunction with VOX circuit (See Sections K and L OPERATION).
MF XTAL SW	Selects either external oscillator (VMO) or proper crystal for mid frequency oscillator.
BAND MCS	Indicates mixing frequency range of the HF modulator in 2 megacycle increments. It is controlled by the knob beneath the dial.
CARRIER INSERT	Controls level of carrier insertion from 0 to 100%.
OUTPUT TUNING	Selects output frequency band and adjusts setting of main tuning dial centrally located above knob.
MF TUNING	Tunes mid frequency circuits of the exciter the frequency of which is indicated by a dial below the lower section of main tuning dial.

OUTPUT	Adjust exciter output power level.
METER SW	CAL position is used to zero meter. Selects point in system to be measured by built-in VTVM circuit.
CAL	Adjustment located directly beneath meter. Use screwdriver to zero meter when METER SW is in CAL position.
EXCITER Lamp	Glows during operation when EXCITER switch is manually thrown to "ON" position or exciter is activated through VOX or push-to-talk circuit.
OVEN Lamp	Glows during operation when thermostats demand oven heating (automatic).
MIKE	Input jack to audio pre-amp for all high impedance (500K) microphones.

EXCITER POWER SUPPLY (A-1279 Deck)

LAMP	-	Glows during operation. Indicates MAIN fuse intact and power is applied.
B+ FUSE	-	These fuses protect their respective circuits.
MAIN FUSE	-	
OVEN FUSE	-	

B. VMO VS CRYSTAL FREQUENCY CONTROL

The mode of operation as well as the output frequency and power level of the transmitter is normally controlled by the exciter (SBE). The mid-frequency (MF) modulator section of the exciter is the actual frequency controlling stage. It can be supplied with an injection frequency controlled by the crystals in its own thermostatically governed oven, or with an injection frequency from an external VMO (Variable Master Oscillator). Figure ___, page 26, illustrates how the associated switches are used to apply the VMO of the RTF as an external variable oscillator for MF injection to the exciter.

Crystal control offers the highest degree of stability and the advantage of switching to any of ten preselected crystals, thereby reducing the number of adjustments necessary in changing frequency. Master oscillator control offers the advantage of a high degree of stability accompanied by an infinite number of output frequency possibilities immediately available within the transmitter range.

Although the crystals X-1, X-2, X-3 of the RTF will also serve for MF injection, they are not normally used in this manner. These crystals normally serve as fixed frequency oscillators when the GPT-750(D) is used for other modes of operation without the use of the exciter (SBE).

C. PRELIMINARY ADJUSTMENTS, POWER-OFF

1. Place the following controls in the positions indicated before applying AC power to the transmitter:

RTF

DRIVE	-	Fully counter-clockwise
*S204	-	SSB
*DRIVE SW (S402)	-	To be in FS EXT position, if VMO is used with exciter, in FS INT position if not.

A-1279

XMTR ON/OFF	-	OFF
EXCITER ON/STANDBY	-	STANDBY
POWER ON/OFF	-	OFF
OUTPUT	-	Fully counter-clockwise

RTP

FILAMENT LINE ADJUST	-	Position two from full counter-clockwise
TRANSMITTER PLATES	-	STANDBY REMOTE
FINAL PLATE	-	OFF
MODE	-	TUNE
MAIN POWER	-	OFF

*Located on RTF deck. Open drawer for access. Controls are marked plainly.

D. PRELIMINARY ADJUSTMENTS

1. Turn MAIN POWER switch to ON. MAIN POWER indicator lamp should light.
2. The FILAMENT LINE meter should read 115 V whether line voltage is 115V or 230V, if not, adjust "Filament Line Adjust (S605)" control until a reading of 115V is obtained.

E. PA GRID BIAS ADJUSTMENT

Although the grid bias is set correctly at the factory, it is advisable to check it to assure optimum service. The correct procedure is as follows:

1. Set the MODE switch to the CW-FS position.
2. Be sure the output control on the SBE is fully counter-clockwise.
3. Turn the TRANSMITTER PLATES OPERATE/STANDBY REMOTE switch to the OPERATE position.
4. Turn the FINAL PLATES ON/OFF switch to the ON position.
5. The PA PLATE current meter should read 100 ma. This is the correct "no-signal" indication.
6. If reading is not correct adjust R608 (screwdriver adjust) until the meter indication is as close to 100 ma as possible. R608 is located on the relay chassis in the RTP drawer.

7. When the PA grid adjustment is completed, turn the FINAL PLATES ON/OFF switch to the OFF position.

F. CALIBRATION OF VMO

1. The VMO, when used, should be calibrated from time to time and before each frequency change. The calibration procedure is very simple and easily accomplished within a few moments. No test equipment or attachments are required but a set of headphones may be used if desired. Allow a twenty-four hour warm up period before use of VMO if most stable operation is desired. Transmitters in regular service should be kept with ovens always turned on.

2. Turn OSCILIATOR switch to CAL position.

3. Turn MASTER OSCILLATOR FREQUENCY knob until dial rests on check point nearest desired operated frequency. Check points are frequencies at every multiple of 50 Kc from 2.0 Mc to 4.0 Mc. For example, principal check points are found at the following frequencies:

CYCLES PER SECOND

2,000,000	2,150,000	2,300,000	2,450,000	2,600,000	etc.
2,050,000	2,200,000	2,350,000	2,500,000	2,650,000	etc.
2,100,000	2,250,000	2,400,000	2,550,000	2,700,000	etc.

Accurate calibration extends at least 25 Kc on either side of each check point so that if a frequency of 3.626 Mc is desired, for example, the check point will be 3.650 Mc.

4. Rotate the CALIBRATE knob until a beat frequency of five or less cycles per second is indicated by the ZERO BEAT lamp or by the headset if one is used. This completes the Master Oscillator calibration.

5. For determination of correct frequency see EXCITER OPERATION (immediately following). When frequency has been chosen, be sure that check point and final frequency are approached from the same direction of knob rotation. If by accident, the dial should be turned too fast and the proper point is passed, go back at least 1 Kc and again approach the point from the original direction.

3. EXCITER OPERATION

The exciter used in the GPT-750(D) is the AN/URA-23, Mode Selector, Transmitting. A complete instruction book covering this unit in detail is provided with each equipment. The exciter is known commercially as the Model SBE and is often referred to as such in these manuals.

A. GENERAL

The Model SBE tuning is done in a series of steps, depending upon the mode of operation required. The following is a general tuning procedure giving specific examples where needed for clarity. The built-in VTVM may be used for all measurements necessary for operation. Voltage checks called out in the following text may be obtained by use of the exciter METER SW.

B. INITIAL ADJUSTMENTS

1. If the VMO in the GPT-750(D) is to be used, throw the TRANSMITTER PLATES switch to "OPERATE".

2. Be sure the transmitter FINAL PLATE switch is OFF and the SBE OUTPUT control is fully counter-clockwise.

3. Turn the Exciter POWER ON/OFF switch to ON. Allow a one hour warm-up period.

4. Turn the Exciter METER SW to the CAL position and zero the meter by use of the screwdriver adjustment (labeled "CAL") located directly below the meter on the front panel.

5. Place USB, LSB and XMTR switches in their OFF positions.

6. Turn the VOX GAIN and SQUELCH GAIN controls fully counter-clockwise.

7. Place the EXCITER ON/STANDBY switch in the STANDBY position. The equipment is now ready to be tuned.

8. Place XMTR switch in "OFF" position.

C. SELECTION OF VMO OR CRYSTAL FREQUENCY

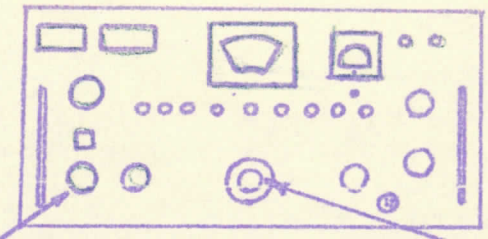
The MF XTAL OVEN of the Exciter contains sockets for ten crystals any of which may be selected for use by the MF XTAL SW located on the front panel. The formula for selecting the proper crystal for MF injection according to the output frequency desired is as follows. This formula also applies to the VMO frequency if such is to be used instead of crystals. (VMO frequency adjustments are made as explained in Section 4, Paragraph F.)

1. FORMULAS FOR THE GENERAL CASE

For crystal or VMO operation from 4.27 Mcs to 32.27 Mcs.

$$F_{\text{xtal or vmo}} = 2.000\ (N) - F_{\text{output}} + .270$$

Where all frequencies are in Mcs and F_{output} is assumed to be the frequency of the (transmitted or suppressed) output carrier. The factor (N) is obtained from the table below. For RF output frequencies in the range of 2.0 to 4.27 Mc $F_{\text{xtal or VMO}} = F_{\text{output}} + .270$ Mc.



MODULATOR BAND	N	OUTPUT BAND
4.27 - 6.27	4	4 - 8
6.27 - 8.27	5	4 - 8 & 8 - 16
8.27 - 10.27	6	8 - 16
10.27 - 12.27	7	8 - 16
12.27 - 14.27	8	8 - 16
14.27 - 16.27	9	8 - 16 & 16 - 32
16.27 - 18.27	10	16 - 32
18.27 - 20.27	11	16 - 32
20.27 - 22.27	12	16 - 32
22.27 - 24.27	13	16 - 32
24.27 - 26.27	14	16 - 32
26.27 - 28.27	15	16 - 32
28.27 - 30.27	16	16 - 32
30.27 - 32.27	17	16 - 32

Example:

Suppose an output frequency of 10.5 Mcs is desired

$F_{xtal\ or\ vmo} = 2.000\ (7) - 10.500 + .270$

$F_{xtal\ or\ vmo} = 3.770$ Mcs.

The single exception to the use of this formula is the case where the frequency range of the MF injection source (the VMO in the GPT-750(D), for example) is not sufficient to permit generation of frequencies above 4.0 Mc (for output frequencies in the range of 3.73 to 4.27 Mc). Apply the following formula when such conditions exist.

2. PROCEDURE FOR SPECIAL CASE INJECTION FREQUENCIES FOR THE MODEL SBE FOR OUTPUT FREQUENCIES FROM 3.27 Mc to 4.27 Mc WHEN THE RANGE OF THE VMO IS NOT EFFICIENT TO PERMIT GENERATION OF FREQUENCIES ABOVE 4.0 Mcs.

OPERATING FREQUENCY (F_o):	3.27 to 4.27
BAND MCS SWITCH POSITION:	2 to 4.27
OUTPUT TUNING BANDSWITCH:	2 to 4
VMO:	$F_o - .270$
MF TUNING DIAL READING:	$F_o + .270$
OUTPUT TUNING DIAL:	F_o

NOTE: All above in megacycles. Upper and Lower Sideband Audio Channel inputs must be reversed.

E EXCITER TUNING
1. TURN XMTR Switch to ON
2. INSURE FINAL PLATE Switch IS OFF

A ~~B.~~ MF TUNING, ~~GENERAL~~ 4.270 TO 32.000 MHz

The mid-frequency stages of the exciter must now be tuned to the injection frequency. Proceed as follows:

1. Place the Exciter METER SW in the MF position.
2. Be sure MF XTAL SW is turned to VMO ~~or Crystal~~ position of injection frequency desired.
3. Using MF TUNING control, set MF dial reading to correspond to VMO ~~or crystal (injection)~~ frequency selected. ~~(Note exception indicated in paragraph 302 above).~~
4. Place the EXCITER ON/STANDBY switch in the STANDBY position.
5. Turn the CARRIER INSERT control fully clockwise.
6. Adjust the MF TUNING control for a peak reading on the meter. If the meter pins it may be necessary to reduce the setting of the CARRIER INSERT control. Very little control movement will be necessary if the dial reading has been carefully set as indicated in 3 above. Rely on the dial reading. Do not tune to an adjacent peak even though it may produce a higher reading on the meter.

b. MF TUNING, ~~SPECIAL~~ 3.270 TO 4.270 MHz

This special tuning procedure applies only to the case outlined in paragraph C, above, where MF injection frequencies above 4.00 Mcs are not available for the provision of output frequencies in the range of 3.27 Mc to 4.27 Mc, generated in the normal manner. ~~See the Model SBE Instruction Book if a more theoretical explanation is desired.~~

1. Turn the exciter METER SW to the MF position.
2. Turn MF XTAL SW to VMO.
3. Set the MF dial to read 270 Kc above the MF injection frequency.
4. Place the EXCITER ON/STANDBY switch in the STANDBY position.
5. Turn the CARRIER INSERT control to its fully clockwise position.
6. Adjust the MF TUNING control for a peak reading on the meter. If the meter pins it may be necessary to reduce the setting of the CARRIER INSERT control. Very little control movement should be necessary. Rely on the dial reading. Do not tune to an adjacent peak even though it may produce a higher reading on the meter.

NOTE! 7. When operating on sidebands under these conditions it is necessary that the sideband inputs be reversed in order to maintain their proper relationship in the output. This means that a signal which is to be transmitted on upper sideband, for example, must be connected to the LSB input. This reversal can be accomplished by proper use of the LSB and USB switches.

F. RF TUNING

1. DO NOT ALTER THE MF TUNING.
2. Set the BAND MCS switch to the range which includes the frequency to be transmitted.
3. Set the OUTPUT TUNING bandswitch to the range which includes the frequency to be transmitted.
4. Place the METER SW in the RF position.
5. Carefully set the output tuning dial to the output frequency.
6. Place the EXCITER ON/STANDBY switch to the ON position.
7. Advance the OUTPUT control for any reading on the meter.

8. Use the OUTPUT TUNING control to obtain a peak reading on the meter. Very little control movement should be necessary. Rely on the dial reading. Do not tune to an adjacent peak even though it may produce a higher reading on the meter.
9. Turn the OUTPUT control fully counter-clockwise.
10. Throw the TRANSMITTER PLATES switch on the RTP to "STANDBY-REMOTE".
11. Throw the Exciter ON/STANDBY switch to "STANDBY".

4. TRANSMITTER TUNING

4.1. DRIVER

A 1. Set the DRIVER BAND switch to the range of the desired output frequency.
B 2. Set the DRIVER TUNING control to the position nearest the final output frequency.

NOTE

The basic DRIVER TUNING range as indicated by the engravings on the front panel is 2 to 4 Mc. This holds only when the DRIVER BAND switch is in the 2 to 4 Mc position. When the DRIVER BAND switch is in the 4 to 8 Mc position the DRIVER TUNING markings are multiplied by 2. In the band of 8 to 16 Mc the markings are to be multiplied by 4 and in the band of 16 to 32 Mc they are to be multiplied by 8.

C 3. Set the METER switch to PA GRID position.
D 4. Throw the XMTR switch on the SBE to "ON".
E 5. Advance the OUTPUT control of the SBE to a setting of 5.
F 6. Turn the DRIVER TUNING control slightly clockwise or counter-clockwise until the PA GRID current is at a maximum.
G 7. Return the OUTPUT control of the SBE to the fully counter-clockwise position.
H 8. Throw XMTR switch on the SBE to the "OFF" position.

4.2. PA TUNING

A 1. Set the PA BAND switch to the range which includes the final output frequency.
B 2. Turn the MODE switch to the TUNE position.
C 3. Turn the FINAL PLATES switch ON.
D 4. Turn the ANTENNA LOADING knob to its fully counter-clockwise position.
E 5. Set the ANTENNA LOADING switch to position 1 or 2 as indicated in the table below.
F 6. Set the PA TUNING to the approximate final output frequency according to the following tables:

Output f (MCS) Frequency	P.A. Band (MCS)	POWER INPUT APPX. 1200 W.				POWER INPUT 750 W.			
		Load Impedance 52 ohm non-reactive		Load Impedance 150 ohm non-reactive		Load Impedance 52 ohm non-reactive		Load Impedance 150 ohm non-reactive	
		P.A. Tuning (appx)	Antenna Loading No. (appx)	P.A. Tuning (appx)	Antenna Loading No. (appx)	P.A. Tuning (appx)	Antenna Loading No. (appx)	P.A. Tuning (appx)	Antenna Loading No. (appx)
2.0	2.0-2.5	07.0	50	05.8	60	06.9	85 *	06.6	10
2.5	2.0-2.5	12.9	90	11.7	70	12.5	30	12.4	50
2.5	2.5-3.0	07.3	20	05.1	40	07.7	60 *	06.6	15
3.0	2.5-3.0	11.9	50	10.7	65	12.1	15	11.6	40
3.0	3.0-4.0	07.4	10	06.2	30	07.9	60 *	07.1	10
4.0	3.0-4.0	13.8	55	12.8	70	14.0	25	13.4	55
4.0	4.0-6.0	05.8	00	04.6	35	06.5	50 *	05.6	00
6.0	4.0-6.0	14.7	60	14.1	75	14.9	30	14.5	55
6.0	6.0-8.0	11.7	40	10.5	60	12.0	15	11.1	30
8.0	6.0-8.0	16.0	65	15.4	80	16.1	50	15.7	70
8.0	8.0-12	14.1	50	13.5	70	14.3	30	13.9	60
12	8.0-12	18.2	80	17.7	90	18.3	70	17.9	80
12	12-16	17.4	50	16.9	70	17.5	30	17.1	50
16	12-16	20.1	75	20.0	85	20.3	60	20.1	75
16	16-24	16.7	40	16.2	55	16.9	20	16.4	45
24	16-24	20.0	75	19.9	85	20.4	65	20.1	75
24	24-32	17.8	60	17.5	75	17.9	45	17.7	65
32	24-32	20.1	80	20.0	95	20.5	70	20.1	85

The antenna loading switch is set in position #2 except when indicated by * where position #1 is used.

NOTE: In Bands: 8.0-12, 12-16, 16-24, and 24-32 MCS. The antenna loading switch is not used.

7. Thrown XMTR switch to "ON".
8. Advance the SBE OUTPUT control until the PA PLATE current meter reads approximately 120 Ma.

CAUTION

A SHUNTING BAR IS PROVIDED FOR THE PROTECTION OF THE RF AMMETER THERMOCOUPLE. IT SHOULD BE USED TO PREVENT THE METER FROM PINNING WHEN A LOW IMPEDANCE, HIGHLY REACTIVE (HIGH VSWR) LOAD IS TO BE MATCHED.

9. Rotate the PA TUNING control until a definite dip in the PA PLATE current is obtained.
10. Adjust the OUTPUT control of the SBE until PA grid current just begins to flow. Reduce the OUTPUT control setting slightly below this point so that PA GRID creases to flow.
11. Set the transmitter METER SW to the PA SG position.
12. Advance the ANTENNA LOADING control clockwise until the screen grid current drops almost to zero and the plate current begins to rise.
13. Readjust the PA TUNING control until the PA plate current dips again and the screen current rises.
14. Continue to advance the ANTENNA LOADING control and the exciter OUTPUT control alternately (each time readjusting the PA TUNING control for a dip in the plate current) until the PA screen current is approximately 2 Ma and the PA plate current is approximately 175 Ma.

CAUTION

THE DIP MUST BE OBTAINED AT THE LOWEST PA TUNING READING TO AVOID DOUBLING IN THE FINAL. IF THE TABLE IS FOLLOWED, NO SUCH TROUBLE WILL OCCUR.

15. Rotate the MODE switch to the CW-FS position.
16. Load and tune the PA uning the procedure indicated in 11, 12 and 13 above, until the PA screen current is approximately 20 Ma and the PA plate current is approximately 450 Ma. Final adjustment should be made on the PA tuning for a peak in screen current which is accompanied by a peak in RF output. When the transmitter is fully loaded it is much easier to adjust the PA tuning for a screen current peak than for a plate current dip.
17. Set the meter switch to PA GR.
18. Adjust the OUTPUT control of the SBE until the PA grid current reads 0. Reduce the SBE OUTPUT slightly below this point.
19. Set the METER SW to the "PA SG" position.
20. Reload and tune the PA until the results indicated in 16 (above) are obtained. Remember that the output from the SBE must always be such that no PA grid current is indicated on the PA GRID meter.
21. Turn the CARRIER INSERT control on the SBE to its fully counter-clockwise position.
22. Turn the OUTPUT control of the SBE to its fully counter-clockwise position.
23. Throw the FINAL PLATES switch to the OFF position.

5. ADDITIONAL INFORMATION

A. The absolute values of the ANTENNA LOADING switch settings are not definite because this control also serves to balance out reactances in the antenna system. Settings may be expected to vary with frequency of operation and type of antenna used. It will be found that the ANTENNA LOADING switch is seldom used in position 1 unless the output frequency is in the range of 2 to 4 Mc.

B. If excessive screen or plate currents are drawn the overload relay system will trip. This relay may be reset by use of the OVERLOAD RESET button.

C. When tuning to the top end of the last two bands (24 to 32 Mc) it will be necessary to advance the ANTENNA LOADING to nearly its maximum clockwise position in order to obtain a plate current dip with the PA TUNING control.

6. MODE SELECTION, PRELIMINARY INFORMATION

A. The SBE provides for the following modes of operation:

1. Single Sideband (SSB) with any degree of carrier insertion.
2. Double Sideband (DSB) with any degree of carrier insertion.
3. Double Sideband with full carrier insertion (Low Level AM).
4. Independent Sideband (ISB) with any degree of carrier insertion.
5. Continuous Wave Telegraphy (CW).

B. GAIN CONTROLS AND METERING

1. Consult 5 for an illustration of where the carrier insertion, audio gain and metering circuits are located electrically and the function of each.
2. The USB and LSB GAIN controls vary the audio input levels to the upper and lower sideband respectively.
3. The CARRIER INSERT control varies the carrier insertion from 0 to 100%.
4. The meter circuits are selected by means of a front panel switch. They are used to indicate the USB and LSB audio levels, the MF radio frequency level, and the RF output level.

C. RF OUTPUT COMPONENTS

The RF output normally consists of the following, the sum of which, as indicated by the RF output meter, must never exceed a reading of 100%.

1. Upper Sideband
2. Lower Sideband
3. Carrier

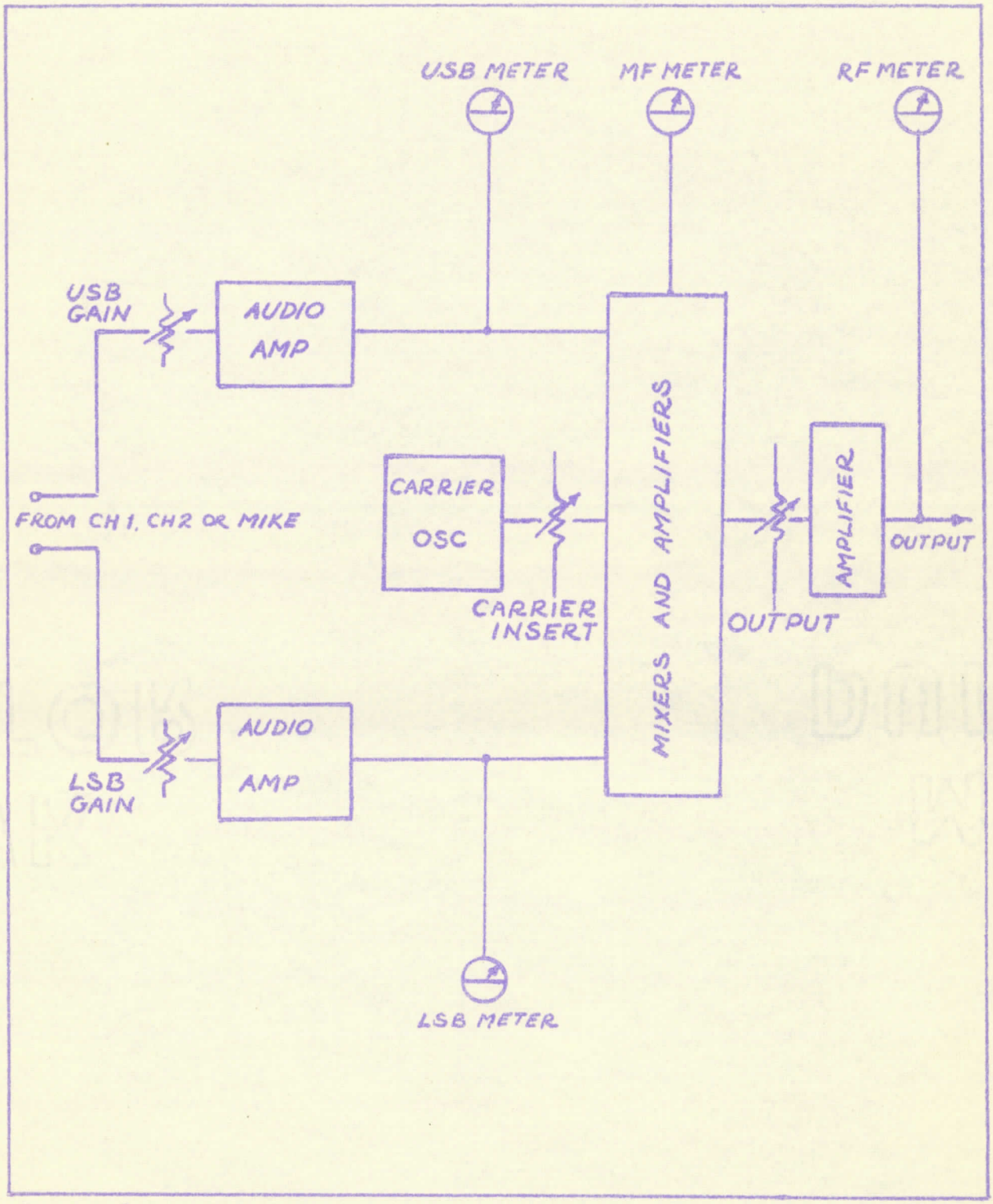


FIGURE 5 METERING AND GAIN CONTROLS BLOCK DIAGRAM

D. FORMULAS

The following formulas may be used to determine the proper output levels of the various RF components:

1.	SSB with Carrier	= USB or LSB + carrier = 100% RF out
2.	SSB without Carrier	= USB or LSB + carrier = 100% RF out
3.	AM (Conventional Low Level AM)	= *USB = 25%, LSB = 25%, carrier = 50%, USB + LSB + carrier = 100% RF out
4.	Double Sideband with Carrier	= *USB + *LSB + carrier = 100% RF out
5.	Double Sideband without Carrier	= *USB (50%) + *LSB (50%) = 100% RF out
6.	Independent Sideband (ISB) with Carrier	= USB + LSB + carrier = 100% RF out
7.	Independent Sideband (ISB) without Carrier	= USB + LSB = 100% RF out
8.	Continuous Wave Telegraphy (CW)	= carrier = 100% RF out

*USB and LSB must be equal

E. PREPARATORY

Setting of the SBE controls for apportionment of Sidebands:

1. Turn USB and LSB switches OFF.
2. Turn USB GAIN, LSB GAIN, VOX GAIN, SQUELCH GAIN, and OUTPUT controls to their fully counter-clockwise positions.
3. Set METER SW to the CAL position.
4. Adjust METER for zero indication by use of the screwdriver adjustment located directly beneath the meter itself.
5. Turn the CARRIER INSERT control to its fully clockwise position.
6. Tune the MF and RF sections of the SBE as outlined on pages 17 and 18.
7. Turn the METER SW to the RF position.
8. Advance the OUTPUT control until the meter reads 100.
9. Turn the CARRIER INSERT control fully counter-clockwise.

NOTE: In making the adjustments indicated in Paragraph 7 above do not alter the setting of the SBE output control. If the control is inadvertently disturbed repeat steps 5, 7, 8, and 9 above before proceeding further.

F. APPORTIONMENT OF RF OUTPUT COMPONENTS

Choose one of the following instructions according to the mode of operation desired and with reference to the formulas in section D above.

1. Upper Sideband Component (USB)
   a. Set the USB switch to CH 1, CH 2 or MIKE, as appropriate.
   b. Apply audio modulation to input selected in "a" above.
   c. Advance USB GAIN control until meter indicates desired percentage on peaks.

2. Lower Sideband Component (LSB)

a. Set LSB switch to CH 1, CH 2, or MIKE as appropriate.
b. Apply audio modulation to input selected in "a" above.
c. Advance LSB GAIN control until meter indicates desired percentage on peaks.

3. Both Sidebands

a. Set USB switch to CH 1, CH 2, or MIKE as appropriate.
b. Apply audio modulation to input selected in "a" above.
c. Advance USB GAIN control until meter indicates desired percentage on peaks.
d. Set the LSB switch to CH 1, CH 2, or MIKE as appropriate.
e. Apply audio modulation to input selected in "d" above.
f. Advance the LSB GAIN control until the meter indicates the desired percentage on peaks. The meter will indicate the arithmetical sum of the percentages of the components (USB, LSB, carrier) applied.

4. Carrier

a. Turn USB and LSB switches to their OFF positions.
b. Advance the CARRIER INSERT control until the meter indicates the desired percentage of carrier insertion.

NOTE

The sum of the USB, LSB and Carrier components of the RF output must never exceed 100% as indicated by the RF meter, although each individually may comprise 100% when used alone. Once the USB, LSB and Carrier percentages have been set, the OUTPUT control can be varied to provide the proper drive level to the transmitter without altering the RF component proportions in any way.

7. VOX AND SQUELCH ADJUSTMENTS

A. VOX CONTROL

The VOX circuit will only function in the SSB, ISB and DSB modes of operation without carrier and not with conventional AM, SSB, ISB or DSB with carrier.

1. Apply audio modulation to CH 1, CH 2 or MIKE as appropriate and adjust the VOX GAIN until the EXCITER lamp remains on with a normal speech level applied but extinguishes with no speech input.
2. Further adjustments may be necessary to prevent background noises from actuating the exciter.

B. SQUELCH GAIN

1. Make connections from the 600 ohm audio output terminals of the appropriate station receiver to terminals 13 and 14 of E101 on the exciter.
2. Advance the SQUELCH GAIN until audio from the station receiver will disable the VOX circuit.

8. DRIVING THE TRANSMITTER IN SSB, DSB, ISB OR AM MODES OF OPERATION

A. CONTROL SETTINGS

The exciter and transmitter must be prepared, as instructed in previous sections, for operation in any of the above four modes.

1. Turn the OUTPUT control of the SBE fully counter-clockwise.
2. Throw the FINAL PLATES switch of the transmitter to the ON position.
3. Set the METER SW to the "PA GR" position.
4. Advance the OUTPUT control of the exciter while modulating the input until the PA GRID current just begins to flow on peaks. Reduce the OUTPUT control setting slightly below this point so that there is no indication of PA GRID current on the PA GRID meter.
5. Throw the XMTR ON/OFF switch of the exciter to the OFF position.

B. OPERATION, SSB, DSB, ISB, AM

The transmitter is now ready to be used on the air. It may be activated by the VOX or push-to-talk controls. Push-to-talk operation only must be used in any mode in which carrier is used.

9. DRIVING THE TRANSMITTER IN THE CW MODE OF OPERATION

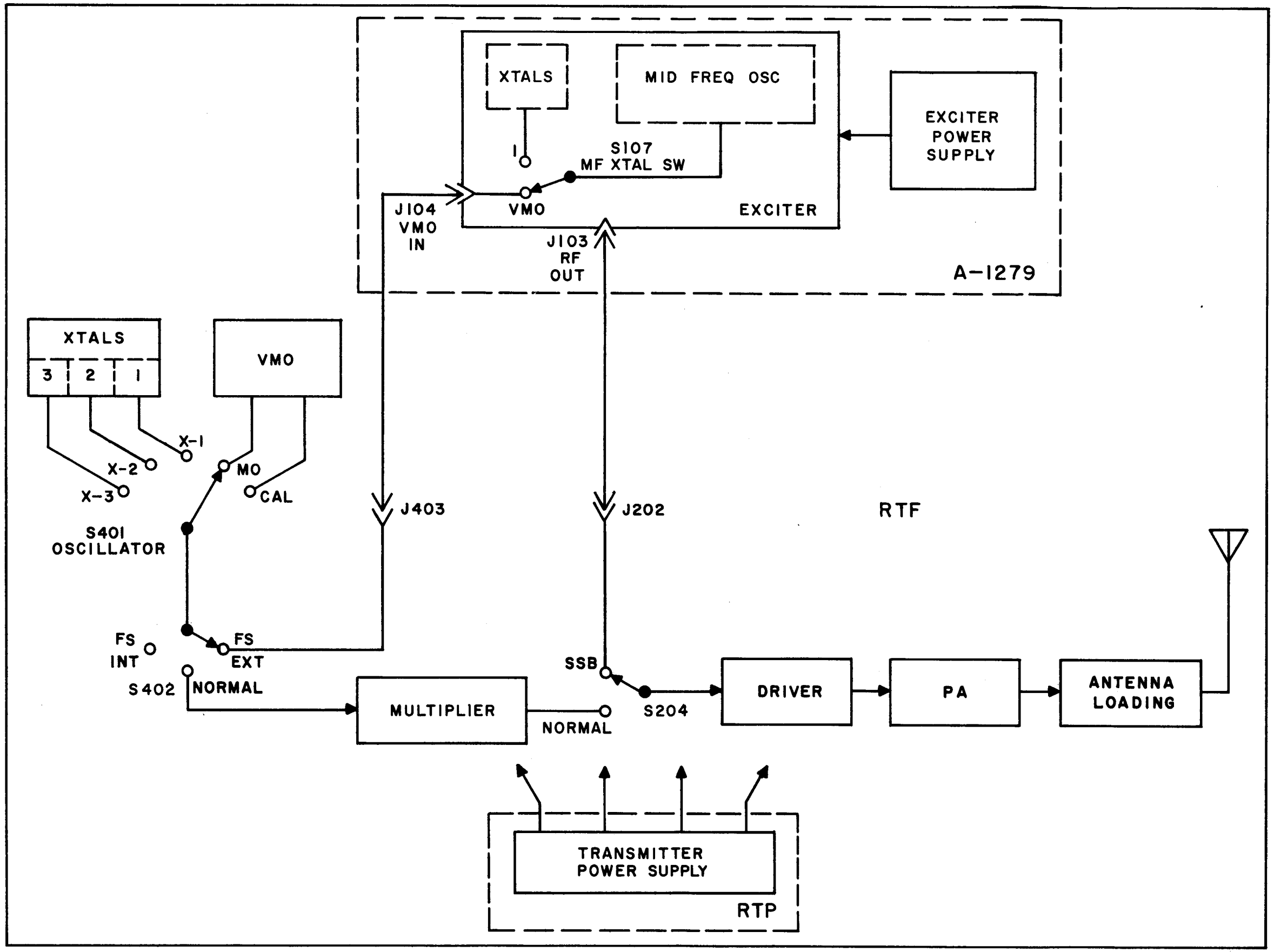
A. CONTROL SETTINGS

1. Remove the jumper from terminals 2 and 3 of terminal board E101 located on the rear of the exciter chassis.
2. Attach a telegraph key between terminals 4 and 5 of terminal board E501 located on the rear (outside) of the transmitter cabinet.
3. Turn the OUTPUT control of the SBE fully counter-clockwise.
4. Throw the XMTR ON/OFF switch to the "ON" position.
5. Set the METER SW to the "PA GR" position.
6. Key the transmitter by closing the telegraph key.
7. Adjust the exciter OUTPUT and transmitter PA TUNING and ANTENNA LOADING controls alternately in the manner described in Section 4,B until the PA screen current is 90 Ma and the PA plate current is 500 Ma.
8. Open the telegraph key.

9. If it is desired to turn the transmitter on and off (TRANSMITTER PLATES and FINAL PLATE) remotely as well as remotely keying the transmitter this may be done by connecting a remote on/off switch to terminals 10 and 11 on terminal strip E501. A code key may be connected to terminals 4 and 5 of E501. The XMTR ON/OFF switch on the SBE front panel must be placed in the "OFF" position.

B. OPERATION, CW

The transmitter is now ready to be used on the air in the CW mode of operation.


XTALS
MID FREQ OSC
EXCITER POWER SUPPLY
1
S107
MF XTAL SW
J104
VMO
IN
VMO
EXCITER
J103
RF
OUT
A-1279
XTALS
3
2
1
VMO
X-1
X-2
X-3
MO
CAL
S401
OSCILLATOR
J403
J202
RTF
FS
INT
FS
EXT
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MULTIPLIER
NORMAL
SSB
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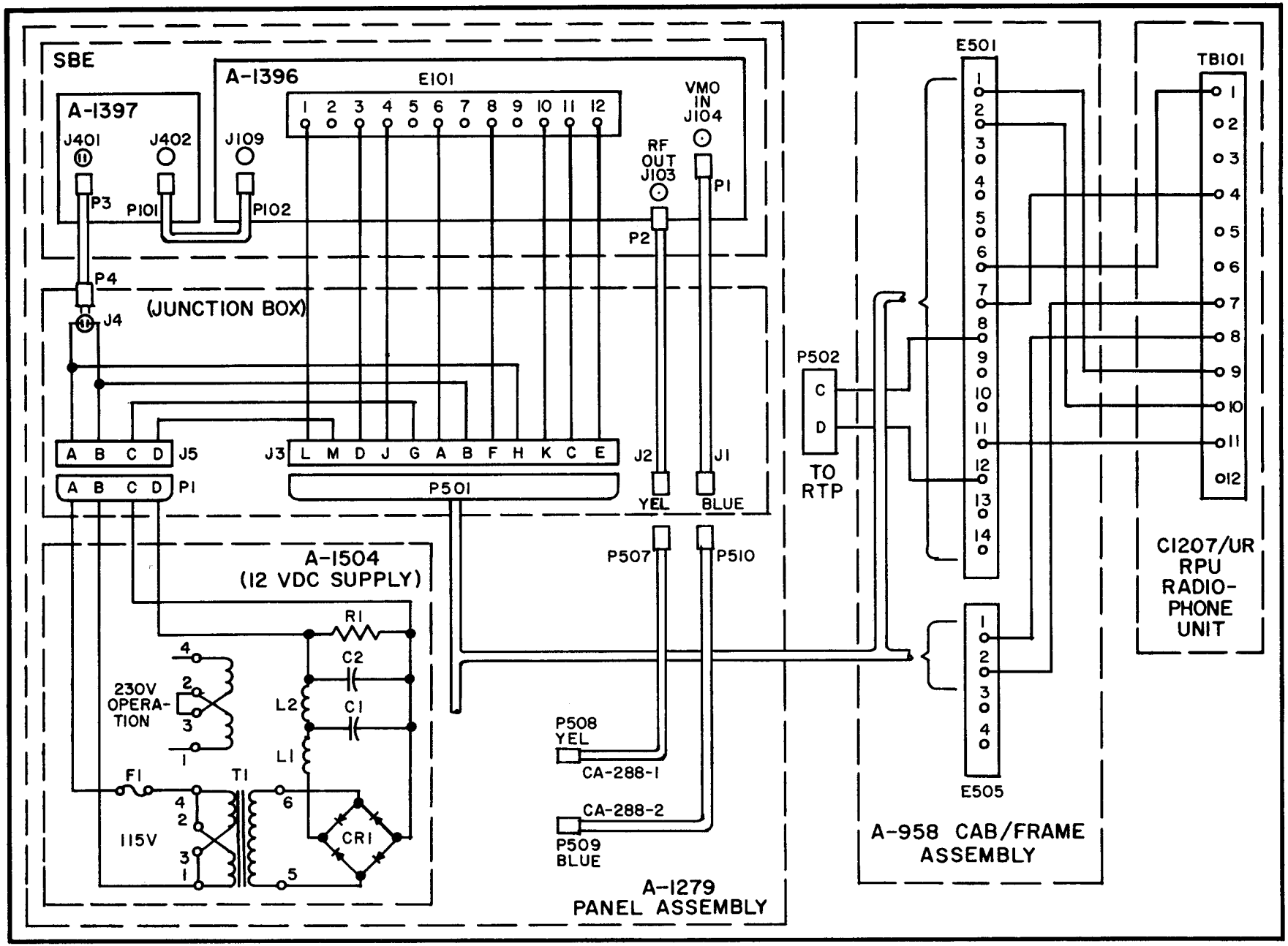
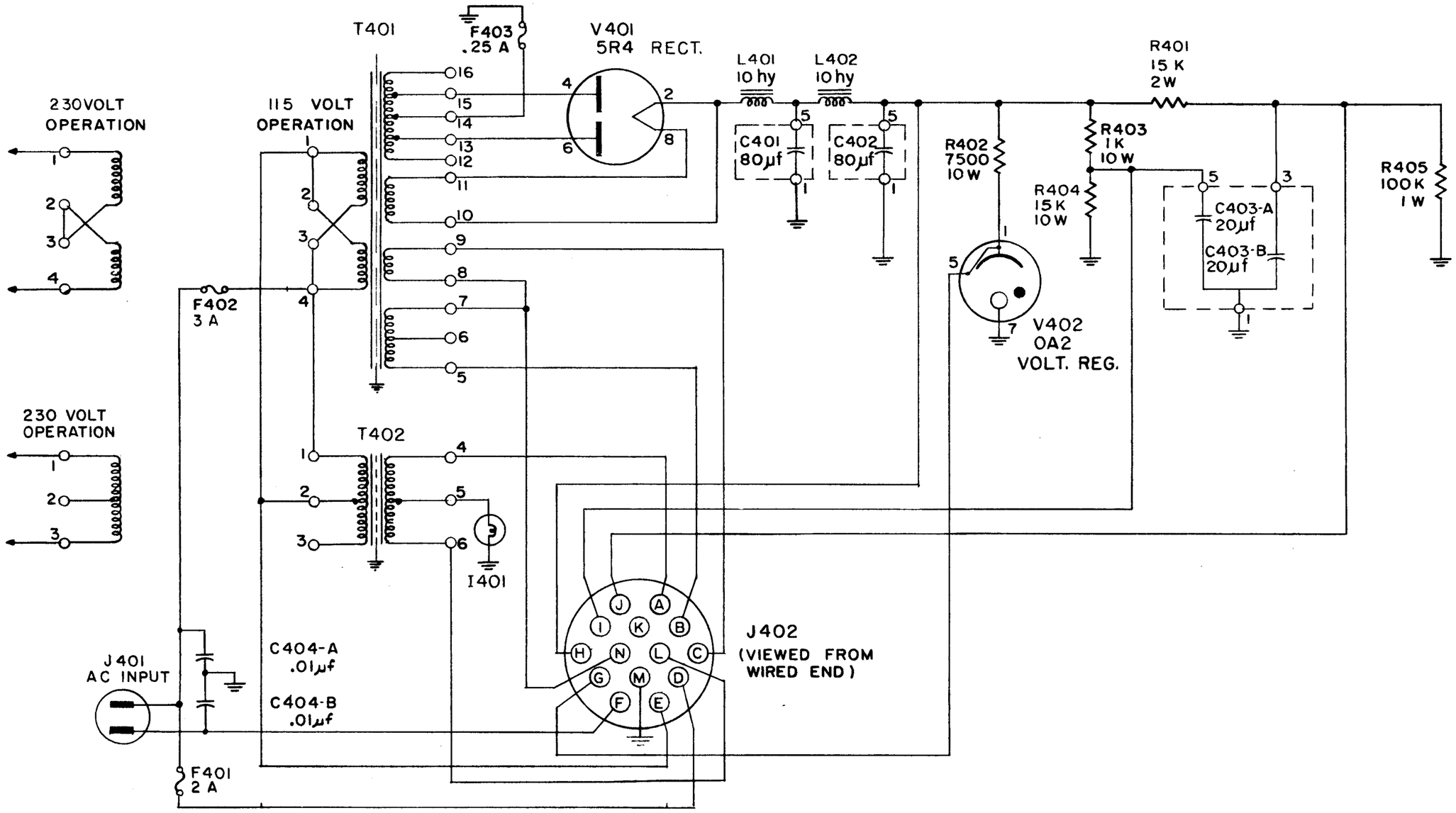
DRIVER
PA
ANTENNA
LOADING
TRANSMITTER
POWER SUPPLY
RTP



INTERCONNECT DIAGRAM MODEL GPT-750(D) WITH 12 VOLT POWER SUPPLY

CK-343 C



ISSUE	ITEM	CHANGED FROM	DATE	CH. NO.	DRAFTS	CHECKER	ENG. APP.
C	1	F403 RELOCATED	12/30/57	3	MR	LDA	AJJ
B	3	F402 WAS 2.5A (Error)	12/10/57	2	MR	DB	AJJ
	1	F401 WAS 1/2A (Error)					
A	6	C404 A+B ADDED	7/23/57	1	MR	DB	A.J.J
	5	R405 WAS 1W					
	4	R403 WAS 4K					
	3	R404 WAS 10K					
	2	L & M CONN. SWITCHED					
	1	JUMPER DELE. FROM H to K					

TOLERANCES

DEC. DIM. ±
FRAC. DIM. ±
ANGULAR DIM. ±

SCALE:

MAXIMUM ALLOWABLE TOLERANCES HAVE BEEN DETERMINED AND ANY DEVIATIONS WILL BE CAUSE FOR REJECTION.
REMOVE ALL BURRS AND SHARP EDGES

REQ. PER UNIT	MODEL	PROJECT NO.	USED ON	DATE
1	A-1397		SBE-1 & 2	5-13-57

USED ON

Ref. CK-339 (Roll) EXCITER UNIT

REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL

STOCK SIZE

MATERIAL

TYPE & TEMPER | HEAT TREAT. SPEC. | FINISH & SPEC. NO.

THE TECHNICAL MATERIEL CORP.
MAMARONECK. NEW YORK

SCHEMATIC DIAGRAM,
Model A-1397, Power Supply

DRAWN	CHECKED	FINAL APPROVAL
12-13-57 MR	DB	A.J.J.

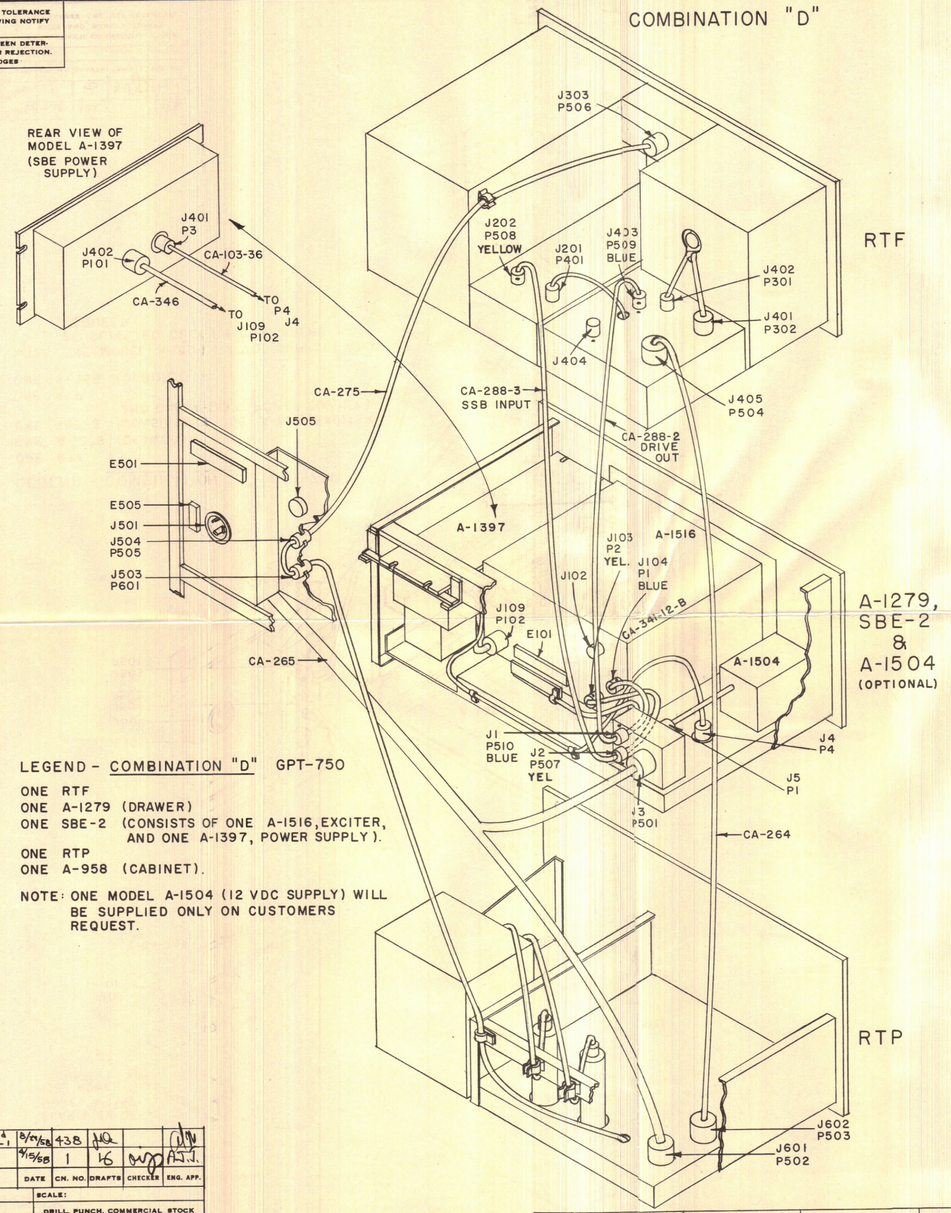
ELEC. DES. APP.	MECH. DES. APP.	CK-343	C
AJJ	DB		

FORM - 109 - A

IF IT IS FOUND DESIRABLE TO CHANGE ANY TOLERANCE OR OTHER DETAIL SPECIFIED ON THIS DRAWING NOTIFY THE PURCHASER PROMPTLY.

MAXIMUM ALLOWABLE TOLERANCES HAVE BEEN DETERMINED AND DEVIATIONS WILL BE CAUSE FOR REJECTION. REMOVE ALL BURRS AND SHARP EDGES

COMBINATION "D"



ID-176 B

LEGEND - COMBINATION "D" GPT-750

ONE RTF
ONE A-1279 (DRAWER)
ONE SBE-2 (CONSISTS OF ONE A-1516, EXCITER, AND ONE A-1397, POWER SUPPLY).
ONE RTP
ONE A-958 (CABINET).

NOTE: ONE MODEL A-1504 (12 VDC SUPPLY) WILL BE SUPPLIED ONLY ON CUSTOMERS REQUEST.

ISSUE	ITEM	CHANGED FROM	DATE	CN. NO.	DRAFTS	CHECKER	ENG. APP.
B	1	J103 was Red, J2 was Red, J2 was Red, CA-288-2 was -1	8/19/58	438	MG		
A	1	REDRAWN & REVISED	8/15/58	1	LG		A.J.J.

TOLERANCES

ALL OTHERS: DEC. DIM. ±, FRAC. DIM. ±, ANGULAR DIM. ±

SCALE:

DRILL, PUNCH, COMMERCIAL STOCK SIZES AND MANUFACTURERS TOLERANCES ARE NOT INCLUDED.

REQ. PER UNIT	MODEL	PROJECT NO.	ASS'Y. NO.	DATE
	USED ON			

REQ.	ITEM	PART NO.	DESCRIPTION	SYMBOL

STOCK SIZE | MATERIAL | WEIGHT PER PC. | TYPE & TEMPER | HEAT TREAT. SPEC. | FINISH & SPEC. NO.

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

CABLING DIAGRAM, MODEL GPT-750
COMBINATION "D"

LG 4-15-58 | DRAWN | ELEC. DES. APP. | MECH. DES. APP.
CHECKED | FINAL APPROVAL: A.J.J.

ID-176 B

FORM — 110