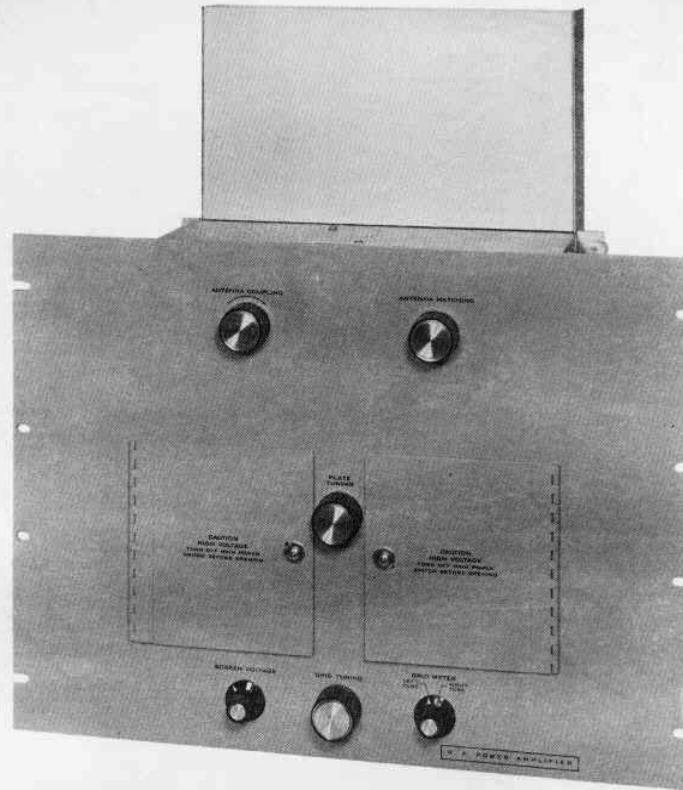


250/375 W POWER AMPLIFIER



MODEL TABLE

MODEL	FREQUENCY RANGE
TLD5081A	136-150.8 MHz
TLD5082A	150.8-162 MHz
TLD5083A	162-174 MHz

1. DESCRIPTION

This chassis contains a push-pull amplifier circuit that amplifies the rf power output of an exciter-driver. All tuning adjustments are located on the front panel. Filament voltage is regulated to increase tube life and provide trouble-free performance. Heat sinks are used to dissipate heat generated in the power amplifier and a

chimney aids in air circulation (exhausts heated air through top of cabinet). Safety interlocks are used on each access door to disconnect the high voltage supply whenever the doors are opened.

2. SERVICE AIDS

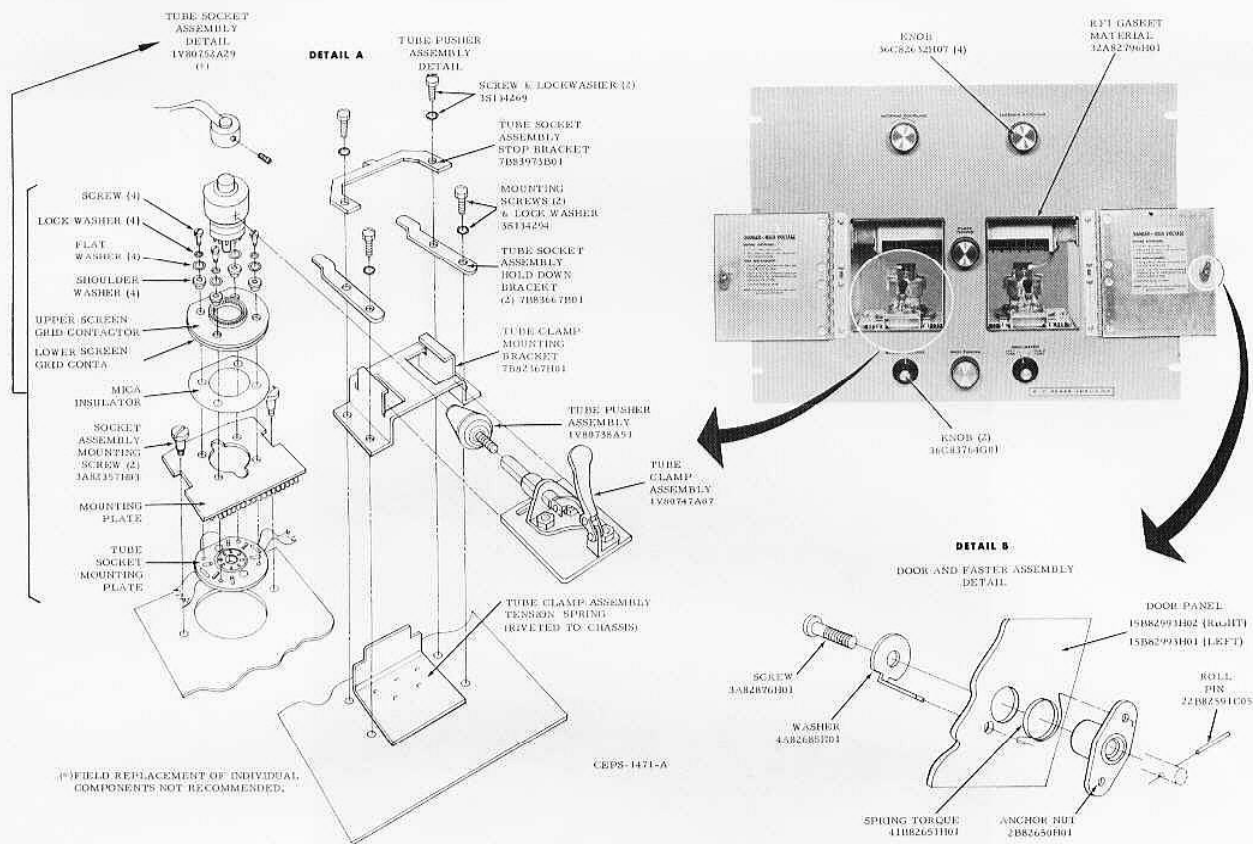
2.1 GENERAL

The following paragraphs describe procedures for servicing the power amplifier chassis. Observe standard servicing practices such as tagging of leads and identification of connecting points.



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Communications Division

service publications
1301 E. Algonquin Road, Schaumburg, IL 60196



2.2 TUBE REPLACEMENT

To replace a tube, proceed as follows:

Step 1. Turn the equipment off by placing the MAIN POWER switch at the rear of the cabinet in the OFF position.

Step 2. Open the access door by turning the locking screw counterclockwise. Short the plate cap to ground using an insulated screwdriver to insure discharge of power supply capacitors.

Step 3. Pull the release lever up and back.

Step 4. Loosen the set screw in the plate cap.

Step 5. Remove the plate cap from the tube by lifting up.

Step 6. Remove the tube by pulling up.

Step 7. Before replacing the same or a new tube, coat the flat mating surface of the tube with thermal compound (Motorola Part No. 11A83166A01).

Step 8. Insert the tube in the socket making sure it is well seated.

Step 9. Reset the release lever.

Step 10. Replace the plate cap and tighten the set screw.

NOTE

The filament voltage must be adjusted whenever a tube is replaced. Refer to the filament voltage adjustment procedure described in the low voltage power supply section within this instruction manual.

Step 11. Retune the amplifier according to the alignment procedure.

2.3 PLATE LINE REMOVAL

Step 1. Turn the equipment off by placing the MAIN POWER switch at the rear of the cabinet in the OFF position.

Step 2. Disconnect the ac line cable as a safety precaution.

Step 3. Open the rear door of the cabinet, disconnect the coaxial cables at the harmonic filter, remove the two air duct mounting screws and lift the air duct up and out.

Step 4. Unplug the main power cable and the white high voltage cable from the power amplifier.

Step 5. Open the access doors by turning the locking screws counterclockwise.

Step 6. Short one plate cap to ground using an insulated screwdriver to insure discharge of power supply capacitors.

Step 7. Pull the release levers up and back.

Step 8. Loosen the set screws in the plate caps.

Step 9. Remove the plate caps from the tubes by lifting up.

Step 10. Remove the PLATE TUNING knob and shaft together by loosening the two screws in the flexible coupler.

Step 11. Remove the amplifier back cover by loosening the 12 mounting screws.

Step 12. Remove the screw connecting the high voltage lead to the upper end of the plate line.

Step 13. Remove the mounting screws (four on Models TLD5081 and TLD5082 and three on Model TLD5083) and lift the plate line out the back of the power amplifier chassis.

Step 14. When replacing the plate line, reverse this procedure.

2.4 COUPLING MECHANISM AND MATCHING CAPACITOR ASSEMBLY REMOVAL

Step 1. Remove the plate line as described in paragraph 2.3.

Step 2. Disconnect the copper rope from the ceramic standoff insulator mounted on the amplifier roof by heating the junction with a soldering iron and removing the mounting screw.

Step 3. From the front of the chassis, remove the ANTENNA COUPLING and ANTENNA MATCHING control knobs.

Step 4. Remove the hex nut mounting the matching capacitor.

Step 5. Remove the two screws mounting the coupling mechanism to the front panel.

Step 6. Lift the coupling mechanism and capacitor assembly out the back of the power amplifier chassis.

2.5 HEAT SINK REMOVAL

Step 1. Turn the equipment off by placing the MAIN POWER switch at the rear of the cabinet in the OFF position.

Step 2. Disconnect the ac line cable as a safety precaution.

Step 3. Open the rear door of the cabinet, disconnect the coaxial cables at the harmonic filter, remove the two air duct mounting screws and lift the air duct up and out.

Step 4. Unplug the main power cable and the white high voltage cable from the power amplifier.

Step 5. Open the access door (opposite the heat sink to be removed) by turning the locking screws counterclockwise.

Step 6. Short the plate cap to ground using an insulated screwdriver to insure discharge of power supply capacitors.

Step 7. Pull the tube release lever up and back.

Step 8. From the back of the cabinet, remove the eight screws located around the edge of the heat sink.

Step 9. When replacing the heat sink, reverse this procedure.

2.6 BERYLLIUM OXIDE THERMAL CONDUCTORS

Normally, the beryllium oxide thermal conductors need never be removed from the heat sinks. Should they be removed, however, the thin layer of thermal compound (Motorola Part No. 11A83166A01 between the two surfaces must be replaced.

2.7 POWER AMPLIFIER CHASSIS REMOVAL

Step 1. Place the MAIN POWER switch located at the rear of the cabinet in the OFF position.

Step 2. Disconnect the ac line cable as a safety precaution.

Step 3. Open the rear door of the cabinet, disconnect the coaxial cables at the harmonic filter, remove the two air duct mounting screws and lift the air duct up and out.

Step 4. Unplug the main power cable and the white high voltage cable from the power amplifier.

Step 5. Disconnect the rf input cable and the 3 rf cables which are connected to the antenna relay terminals.

Step 6. Open the tube access doors from the front to provide a handhold.

Step 7. Remove the eight mounting screws starting with the top screws and working down. Lift the amplifier out of the cabinet.

Step 8. When replacing the amplifier, reverse this procedure.

2.8 FILAMENT, SCREEN AND CONTROL GRID CIRCUITRY

To gain access to the filament, screen and control grid circuitry proceed as follows:

Step 1. Remove the power amplifier chassis from the cabinet as described in paragraph 2.7.

Step 2. Remove the bottom cover of the power amplifier chassis by loosening the 12 mounting screws. The filament, screen and control grid circuitry may now be serviced.

2.9 HARMONIC FILTER REMOVAL

Step 1. Remove the coaxial cables from the harmonic filter.

Step 2. Remove the 12 screws located around the edge of the harmonic filter.

Step 3. Pull the harmonic filter away from the air duct.

Step 4. When replacing the harmonic filter, reverse this procedure.

2.10 ANTENNA RELAY

Step 1. If mounted in an indoor cabinet, remove the right cabinet panel as you face the front. If mounted in an outdoor cabinet, remove the power amplifier chassis as described in paragraph 2.7.

Step 2. Unplug the two leads of the antenna relay at the remote chassis. Remove the cable retainers from the cabinet framework.

Step 3. Remove the four mounting screws from the top of the relay. Note lead polarity.

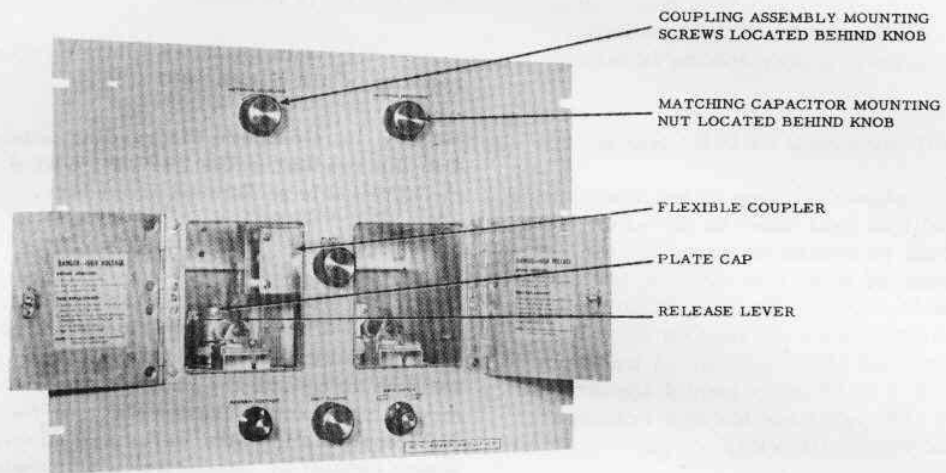
Step 4. When replacing the antenna relay, reverse this procedure. Observe lead polarity.

3. TROUBLESHOOTING

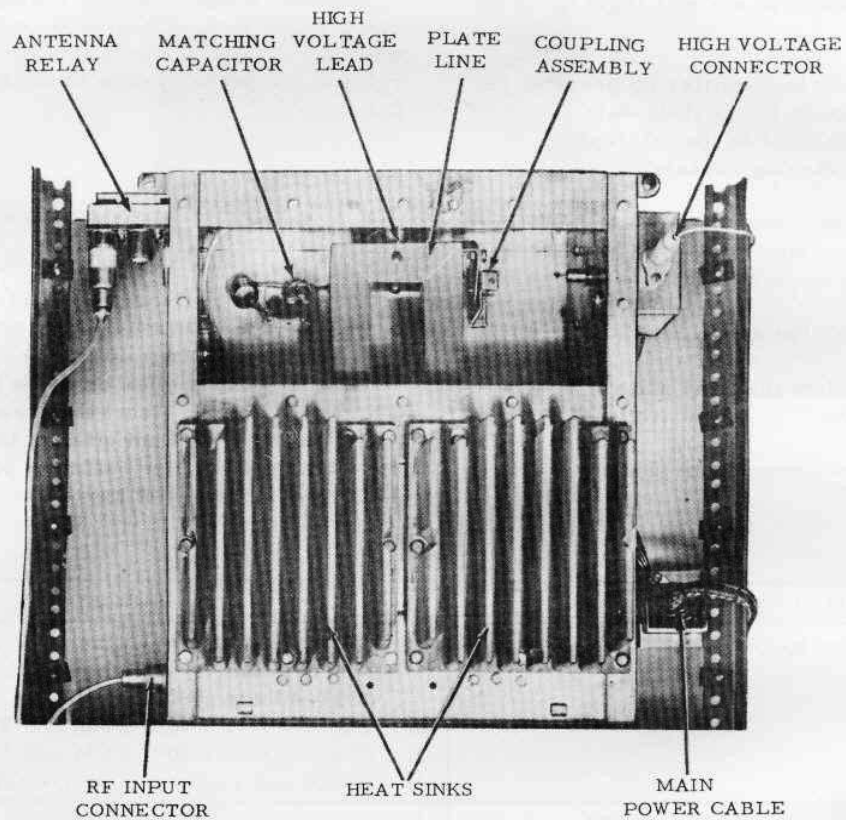
WARNING - HIGH VOLTAGE
WHEN SERVICING THIS EQUIPMENT,
OBSERVE THE FOLLOWING SAFETY
PRECAUTIONS:

1. MAIN POWER SWITCH MUST BE IN THE "OFF" POSITION.
2. DO NOT DEFEAT INTERLOCK SWITCHES.

It is good service practice to assume that high voltages are present whenever the main power switch is in the "on" position. Never connect test equipment or attempt to replace



Parts Location Detail, Front View



FAEPS-15083-O

Parts Location Detail, Back View

components in any circuit in which high voltage may be present unless the interlock switches are open and the main power source is turned off.

3.1 FIXED BIAS AND DRIVE CHECK

As a preliminary step to troubleshooting, the power amplifier grid drive to each tube (left and right) should be measured using the tuning meter. The unkeyed fixed bias reading for each tube should be 50 volts. When the station is keyed, the reading should be at least 20 volts higher than the fixed bias reading. A minimum grid drive reading of 70 volts should appear at each tube (left and right) and the two readings should be equal within 10 volts.

3.2 INPUT POWER CHECK

The initial approach in locating a power amplifier malfunction is a power input measurement.

Step 1. Key the transmitter by pressing the XMIT switch or using the push-to-talk switch of a microphone connected to the microphone receptacle on the metering chassis.

Step 2. With the transmitter keyed, observe plate current and plate voltage readings as indicated on the plate current and plate voltage meters.

Step 3. Record the above readings.

Step 4. Calculate the final plate input power using the formula:

$$E_p \times I_p = \text{Power Input (watts)}$$

Where: E_p is in volts

I_p is in amperes (plate current meter reading in mA times .001).

Step 5. Compare the reading obtained in step 4 to the reading in the INPUT POWER TABLE of the applicable alignment procedure.

3.3 OUTPUT POWER CHECK

Connect a wattmeter to the antenna receptacle and make a power output measurement. If rated power output is not obtained, check the antenna relay and the harmonic filter. The harmonic filter and antenna relay can be bypassed (to determine if these items are causing a loss of power output) by connecting a wattmeter and a load at the rf output connector of the final amplifier chassis. Use a Motorola Model T1003A Wattmeter, or equivalent. A Model T1001A "ThruLine" Wattmeter with appropriate element can also be used. Excessive reflected power will be indicated if the harmonic filter, antenna relay, or antenna system is causing the malfunction.

3.4 DEFECTIVE COMPONENT REPLACEMENT

Visual inspection can aid in locating defective components. Look for overheating as evidenced by discoloration. Check for loose tube socket assemblies or loose heat sinks. Field repair of tube socket assemblies is not recommended. Do not attempt to repair the harmonic filter. For optimum performance, Motorola replacement parts should be used.

LOW OR NO RF OUTPUT CONDITIONS

SYMPTOM	PROCEDURE
Loss of grid bias to V301 and V302	<ol style="list-style-type: none"> 1. Check bias supply voltage. Reading should be approximately -50 V dc measured between J301-A3 and ground. 2. Check R301, R302, R304 and R305. 3. Check C302, C303, C304 and C308. 4. Check and replace defective tube(s).
Loss of grid drive to V301 and V302	<ol style="list-style-type: none"> 1. Check for open or shorted rf input lead and connector. 2. Check L301, L302 and L303 coupling. 3. Check C306 and C307. 4. Check and replace defective tube(s).

LOW OR NO RF OUTPUT CONDITIONS (CONT'D)

SYMPTOM	PROCEDURE
Loss of high voltage	<ol style="list-style-type: none"> 1. Check for main power supply failure. 2. Check for exciter-driver power supply failure. 3. Check "feed-thru" capacitors C304, C310 and C325. 4. Check remote control chassis. 5. Check interlock circuit.
Power Supply Overload (overload circuit actuates to disconnect 1500 V supply).	<p>Disconnect high voltage connector P2 and check:</p> <ol style="list-style-type: none"> 1. Plate voltage meter reading (1500 V). 2. For short between J302 or J303 and ground.
Loss of plate current (high plate voltage)	<ol style="list-style-type: none"> 1. Check and replace defective tube(s). 2. Check screen voltage. Reading should be approximately 300 V dc measured between J301-B1 and ground. 3. Check R306. 4. Check filament voltage. Reading should be 5.5 V ac (nominal) measured between J301-B3 and ground, and 11 V dc between J301-B2 and ground. 5. Check screen control. Resistance should be 10K from J301-B1 to ground. 6. Check grid drive. Transmitter keyed reading should be at least 20 V higher than the fixed bias (unkeyed) reading.
Excessive plate current	<ol style="list-style-type: none"> 1. Check bias supply voltage. Reading should be approximately -50 V dc measured between J301-A3 and ground. 2. Check R306 setting. 3. Check and replace defective tube(s). 4. Check alignment. Refer to the appropriate alignment procedure included with these instructions. 5. Check for defective components in the plate circuit. 6. Check for shorted harmonic filter and open or shorted antenna transmission line.
Improper input power to final (as licensed by FCC)	<ol style="list-style-type: none"> 1. Check supply voltages. 2. Check alignment. Refer to the appropriate alignment procedure. 3. Replace defective tube(s). 4. Check antenna system.
DC input power OK, rf output power low.	<ol style="list-style-type: none"> 1. Check antenna relay (where applicable) for pitted or dirty contacts. 2. Check harmonic filter. 3. Check alignment. Refer to the appropriate alignment procedure. 4. Check and replace defective tube(s).

EXCERPTS FROM FCC REGULATIONS

FCC Regulations state that:

1. Radio transmitters may be tuned or adjusted only by persons holding a 1st or 2nd class commercial radiotelephone operator's license or by personnel working under their immediate supervision.
2. The rf power output of a radio transmitter shall be no more than that required for satisfactory technical operation considering the area to be covered and the local conditions.
3. Frequency and deviation of a transmitter must be checked before it is placed in service and rechecked once each year thereafter.

TEST EQUIPMENT REQUIRED

Motorola Model S1350 Wattmeter or equivalent.

HOW TO KEY THE TRANSMITTER

The serviceman may key the transmitter without modulation by pressing the XMIT switch located on the station control module within the remote control chassis. The transmitter may be keyed with modulation by using a microphone connected to the metering panel.

CAUTION

Do not key the transmitter for more than a few seconds at a time until the procedure is completed. Current is excessive in untuned stages and may cause damage.

FREQUENCY CALCULATIONS

$$f_o = \frac{f_c}{12}$$

where: f_o = oscillator frequency
 f_c = carrier frequency

PRELIMINARY ADJUSTMENTS

1. Before attempting to align the power amplifier, make certain the exciter-driver is properly aligned.
2. On multiple frequency transmitters, push the frequency select switch on the remote control chassis to the higher frequency (only momentary contact is required).
3. Series connect a 500 Watt Wattmeter between the antenna output connector and the antenna.
4. Set station switches as indicated in the following table.

STATION SWITCH POSITIONS

CHASSIS	CONTROL	POSITION
High Power Amplifier	SCREEN VOLTAGE	Fully counterclockwise
	ANTENNA COUPLING	Fully counterclockwise
	PLATE TUNING	Fully clockwise
Metering Chassis	METER	PWR AMPL
Remote Control Chassis	LINE DISABLE switch	To the right
Outlet Box	MAIN POWER	ON

5. Unless otherwise noted, key the transmitter without modulation while performing each step of the alignment procedure.

ALIGNMENT PROCEDURE

STEP	ADJUSTMENT CONTROL	METER	READING	PROCEDURE
1	GRID TUNING	TUNING	Maximum	Adjust GRID TUNING control for maximum PA grid voltage.
2	GRID METER Switch	TUNING	70 volts minimum	Set the GRID METER switch to the LEFT TUBE and RIGHT TUBE positions. Meter readings should be equal within 10 volts and higher than 70 volts.
3	PLATE TUNING	PLATE CURRENT	Minimum	Rotate the PLATE TUNING control counterclockwise until the plate current dips to its minimum value. <u>NOTE</u> As plate resonance is approached, the plate current will rise before dipping.
4	ANTENNA MATCHING	Watt-meter	Maximum	Adjust the ANTENNA MATCHING control for maximum power output.
5				Repeat steps 3 and 4 two times.
6	ANTENNA COUPLING	Watt-meter	Maximum	Increase ANTENNA COUPLING (clockwise) until power output is maximum.
7				Repeat steps 3 and 4 until readjustment of respective controls does not result in lower plate current or higher power output. <u>NOTE</u> Do not readjust ANTENNA MATCHING after this step.
8	SCREEN VOLTAGE	PLATE CURRENT	267 mA	Increase SCREEN VOLTAGE (clockwise) until plate current is 267 mA. <u>NOTE</u> If 267 mA cannot be obtained with the SCREEN VOLTAGE control, increase ANTENNA COUPLING to obtain 267 mA.
9				Repeat step 1.
10		PLATE VOLTAGE		Note the indicated plate voltage and calculate (or refer to the 400 W POWER INPUT table) the required plate current for a 400 watt input. $I_p \text{ (mA)} = \frac{400 \text{ watts}}{E_p \text{ (volts)}} \times 1000$ <u>CAUTION</u> DO NOT EXCEED 400 W INPUT POWER.
11	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Readjust the SCREEN VOLTAGE control and if necessary the ANTENNA COUPLING control until the calculated current is obtained. <u>NOTE</u> If calculated current is much higher or lower than 267 mA, the indicated plate voltage will change from its step 11 value. Recalculate the plate current required for 400 watts input using the new plate to voltage and adjust the SCREEN VOLTAGE control for this current.

ALIGNMENT PROCEDURE (CONT'D)

STEP	ADJUSTMENT CONTROL	METER	READING	PROCEDURE
12	ANTENNA COUPLING	PLATE CURRENT	Calculated current plus 20 mA	Increase ANTENNA COUPLING until plate current is increased by approximately 20 mA.
13	PLATE TUNING	PLATE CURRENT	Minimum	Adjust the PLATE TUNING control for minimum plate current.
14	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Reduce the SCREEN VOLTAGE until the current returns to the calculated value.
15		Wattmeter	Maximum	Note the obtained output power. Repeat steps 12, 13 and 14. If power output increases with 400 watts input, continue repeating this sequence. When the sequence results in a lower power output, proceed with the following steps.
16	ANTENNA COUPLING	PLATE CURRENT	Calculated current minus 10 mA	Decrease ANTENNA COUPLING until plate current is reduced 10 mA.
17	PLATE TUNING	PLATE CURRENT	Minimum	Adjust the PLATE TUNING control for minimum plate current.
18	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Increase SCREEN VOLTAGE until the current returns to its calculated value.
19		Wattmeter	Maximum	If necessary, repeat steps 16, 17 and 18 until maximum power output (obtained in step 15) is restored.
20	SCREEN VOLTAGE	Wattmeter	250 watts	Adjust SCREEN VOLTAGE for an output power of 250 watts. Power input should be 375-425 watts.

NOTES:

1. It is recommended that the METER switch be left in the PWR AMPL position after the tuning is completed.
2. Neutralization of the power amplifier is fixed for all frequencies.
3. After aligning a multiple-frequency transmitter, switch to each of the other frequencies and reduce ANTENNA COUPLING if necessary, to avoid exceeding 400 watt input.
4. Return the LINE DISABLE switch located on the remote control chassis to the left.

400 W POWER INPUT TABLE

PLATE VOLTAGE	PLATE CURRENT
1700 V	235 mA
1600 V	250 mA
1500 V	267 mA
1400 V	385 mA
1300 V	307 mA

UNDER NO CIRCUMSTANCES MAY TUBE POWER DISSIPATION EXCEED 300 WATTS.

DO NOT EXCEED 500 mA PLATE CURRENT

Dissipation = Input Power - Output Power

Input Power Formula: $E_p \times I_p = 400 \text{ W } P_{in}$

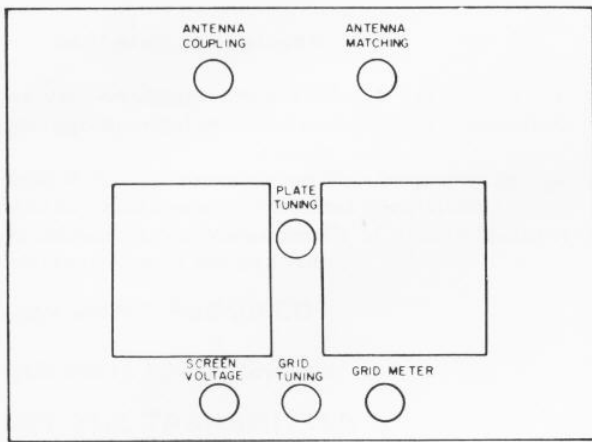


DIAGRAM NO. AEPD-10811-0

EXCERPTS FROM FCC REGULATIONS

FCC Regulations state that:

1. Radio transmitters may be tuned or adjusted only by persons holding a 1st or 2nd class commercial radiotelephone operator's license or by personnel working under their immediate supervision.
2. The rf power output of a radio transmitter shall be no more than that required for satisfactory technical operation considering the area to be covered and the local conditions.
3. Frequency and deviation of a transmitter must be checked before it is placed in service and rechecked once each year thereafter.

TEST EQUIPMENT REQUIRED

Motorola Model S1350A Wattmeter or equivalent.

HOW TO KEY THE TRANSMITTER

The serviceman may key the transmitter without modulation by pressing the XMIT switch located on the station control module within the remote control chassis. The transmitter may be keyed with modulation by using a microphone connected to the metering panel.

CAUTION

Do not key the transmitter for more than a few seconds at a time until the procedure is completed. Current is excessive in untuned stages and may cause damage.

FREQUENCY CALCULATIONS

$$f_o = \frac{f_c}{12} \quad \text{where: } \begin{array}{l} f_o = \text{oscillator frequency} \\ f_c = \text{carrier frequency} \end{array}$$

PRELIMINARY ADJUSTMENTS

1. Before attempting to align the power amplifier, make certain the exciter-driver is properly aligned.
2. On multiple frequency transmitters, push the frequency select switch on the remote control chassis to the higher frequency (only momentary contact is required).
3. Series connect a 500 Watt Wattmeter between the antenna output connector and the antenna.
4. Set station switches as indicated in the following table.

STATION SWITCH POSITIONS

CHASSIS	CONTROL	POSITION
High Power Amplifier	SCREEN VOLTAGE	Fully counterclockwise
	ANTENNA COUPLING	Fully counterclockwise
	PLATE TUNING	Fully clockwise
Metering Chassis	METER	PWR AMPL
Remote Control Chassis	LINE DISABLE switch	To the right
Outlet Box	MAIN POWER	ON

5. Unless otherwise noted, key the transmitter without modulation while performing each step of the alignment procedure.

375 W Power Amplifier
Alignment Procedure
Motorola No. EPS-15085-B
8/29/77-UP

ALIGNMENT PROCEDURE

STEP	ADJUSTMENT CONTROL	METER	READING	PROCEDURE
1	GRID TUNING	TUNING	Maximum	Adjust GRID TUNING control for maximum PA grid voltage.
2	GRID METER Switch	TUNING	70 volts minimum	Set the GRID METER switch to the LEFT TUBE and RIGHT TUBE positions. Meter readings should be equal within 10 volts and higher than 70 volts.
3	PLATE TUNING	PLATE CURRENT	Minimum	Rotate the PLATE TUNING control counterclockwise until the plate current dips to its minimum value. <u>NOTE</u> As plate resonance is approached, the plate current will rise before dipping.
4	ANTENNA MATCHING	Watt-meter	Maximum	Adjust the ANTENNA MATCHING control for maximum power output.
5				Repeat steps 3 and 4 two times.
6	ANTENNA COUPLING	Watt-meter	Maximum	Increase ANTENNA COUPLING (clockwise) until power output is maximum.
7				Repeat steps 3 and 4 until readjustment of respective controls does not result in lower plate current or higher power output. <u>NOTE</u> Do not readjust ANTENNA MATCHING after this step.
8	SCREEN VOLTAGE	PLATE CURRENT	267 mA	Increase SCREEN VOLTAGE (clockwise) until plate current is 400 mA. <u>NOTE</u> If 400 mA cannot be obtained with the SCREEN VOLTAGE control, increase ANTENNA COUPLING to obtain 400 mA.
9				Repeat step 1.
10		PLATE VOLTAGE		Note the indicated plate voltage and calculate (or refer to the 600 W POWER INPUT table) the required plate current for a 600 watt input. $I_p \text{ (mA)} = \frac{600 \text{ watts}}{E_p \text{ (volts)}} \times 1000$ <u>CAUTION</u> DO NOT EXCEED 400 W INPUT POWER.
11	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Readjust the SCREEN VOLTAGE control and if necessary the ANTENNA COUPLING control until the calculated current is obtained. <u>NOTE</u> If calculated current is much higher or lower than 400 mA, the indicated plate voltage will change from its step 11 value. Recalculate the plate current required for 600 watts input using the new plate to voltage and adjust the SCREEN VOLTAGE control for this current.

ALIGNMENT PROCEDURE (CONT'D)

STEP	ADJUSTMENT CONTROL	METER	READING	PROCEDURE
12	ANTENNA COUPLING	PLATE CURRENT	Calculated current plus 20 mA	Increase ANTENNA COUPLING until plate current is increased by approximately 20 mA.
13	PLATE TUNING	PLATE CURRENT	Minimum	Adjust the PLATE TUNING control for minimum plate current.
14	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Reduce the SCREEN VOLTAGE until the current returns to the calculated value.
15		Wattmeter	Maximum	Note the obtained output power. Repeat steps 12, 13 and 14. If power output increases with 600 watts input, continue repeating this sequence. When the sequence results in a lower power output, proceed with the following steps.
16	ANTENNA COUPLING	PLATE CURRENT	Calculated current minus 10 mA	Decrease ANTENNA COUPLING until plate current is reduced 10 mA.
17	PLATE TUNING	PLATE CURRENT	Minimum	Adjust the PLATE TUNING control for minimum plate current.
18	SCREEN VOLTAGE	PLATE CURRENT	Calculated current	Increase SCREEN VOLTAGE until the current returns to its calculated value.
19		Wattmeter	Maximum	If necessary, repeat steps 16, 17 and 18 until maximum power output (obtained in step 15) is restored.

NOTES:

1. It is recommended that the METER switch be left in the PWR AMPL position after the tuning is completed.
2. Neutralization of the power amplifier is fixed for all frequencies.
3. After aligning a multiple-frequency transmitter, switch to each of the other frequencies and reduce ANTENNA COUPLING if necessary, to avoid exceeding 400 watt input.
4. Return the LINE DISABLE switch located on the remote control chassis to the left.

600 W POWER INPUT TABLE

PLATE VOLTAGE	PLATE CURRENT
1700 V	353 mA
1600 V	375 mA
1500 V	400 mA
1400 V	430 mA
1300 V	460 mA

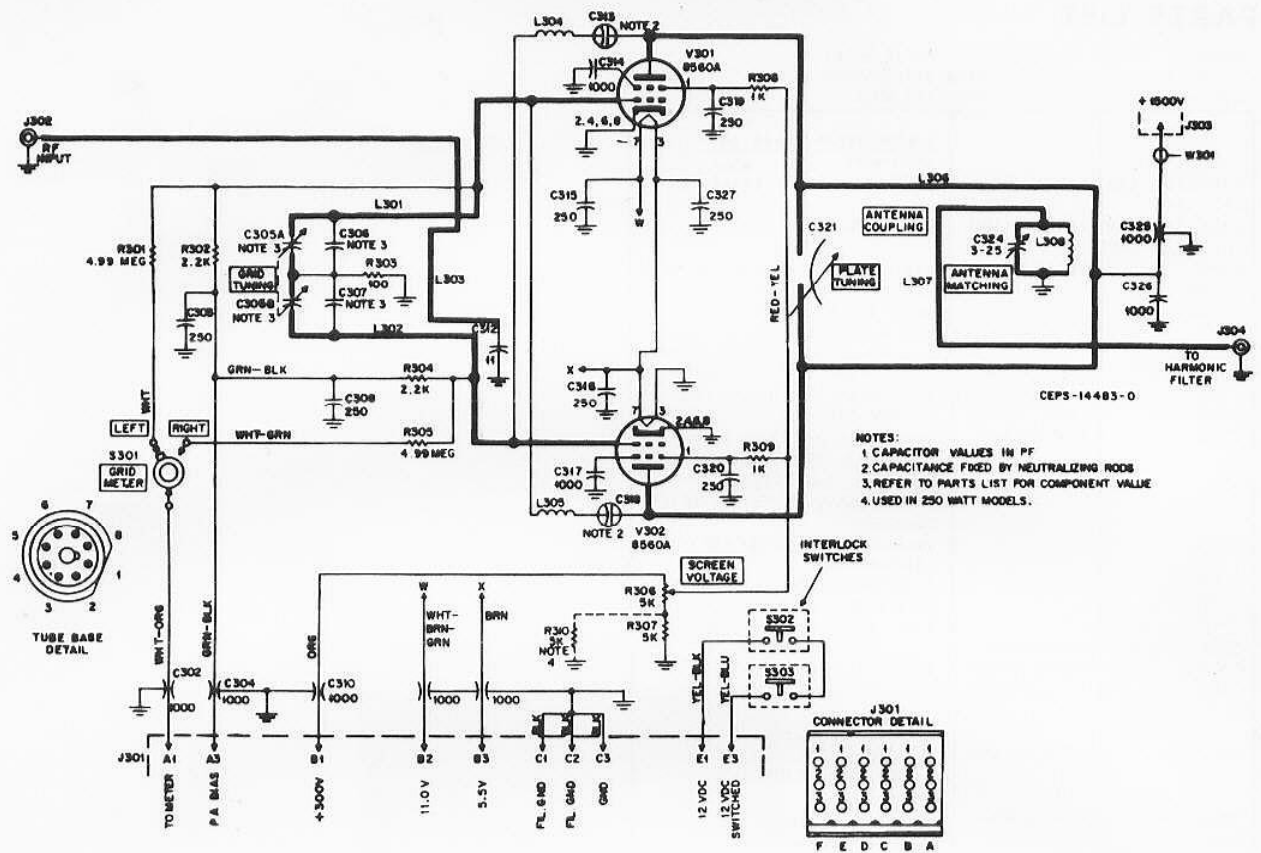
UNDER NO CIRCUMSTANCES MAY TUBE POWER DISSIPATION EXCEED 300 WATTS.

DO NOT EXCEED 500 mA PLATE CURRENT

Dissipation = Input Power - Output Power

Input Power Formula: $E_p \times I_p = 600 \text{ W } P_{in}$

POWER AMPLIFIER



250/375 W POWER AMPLIFIER

PARTS LIST SHOWN ON
BACK OF THIS DIAGRAM

250 & 375 W RF Power Amplifier
Motorola No. CEPS-14483-A
10/22/76-UP

REFERENCE SYMBOL	MOTOROLA PART NO	DESCRIPTION
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PARTS LIST

TLD5081A Power Amplifier (136-150.8 MHz)

TLD5082A Power Amplifier (150.8-162 MHz)

TLD5083A Power Amplifier (162-174 MHz) PL-2831-O

		<u>CAPACITOR, fixed pF</u> unl stated 1000 GMV, 500 v, coded RED
C302, 304 310, 311, 328	21K861219	
C303, 308, 315, 316, 319, 320, 327	21C82785H01	250 ±10%, 400 v
C305	19C82774H02	c/o 2 sections; (150.8-174 MHz) var., 3-9.6, 1600 v var., 3-9.6, 1600 v
C305A	or 19C82774H03	c/o 2 sections; each section var 5.5-15, 1600 v (136-150.8 MHz)
C305B		6.8 ± 25 pF, NP0 (136-162 MHz) 4.7 ± 25 pF, NP0 (162-174 MHz)
C306, 307	21D82934H03 or 21D82934H04	11 ± 10%, 250 v
C312	21C82785H02	assy, 1000, incl 14B82653H01 IN-
C314, 317	1V80743A89	SULATOR; 39B83690A03 CON- TACTOR, tube (upper); 39B83690A01 CONTACTOR tube (bottom)
C321		var; c/o 1C82350H01 ASSY, disc 58B82895H01 COUPLING, 1V80739A21 BRACKET & STOP- NUT ASSY; 14K854262 INSULA- TOR, stand-off (4 req'd)
C324	19C82915H01	var., 3-25, 1700 v
C325	21C83289A02	1000 +100-0%, 2500 v
C326	21C83663A01	1000 +50-20%, 5000 v
		<u>CONNECTOR, receptacle</u>
J301	14C82337A07	male, does not include 29C82335A01 TERMINAL (12 req'd)
J302, 304	9C82442E03	female, single cont.
J303		male, single cont, p/o W1
		<u>COIL, RF</u>
L301	30C8277H01	line, grid (150.8-174 MHz)
	or 30C83839B01	line, grid (136-150.8 MHz)
L302	30C8277H03	line, grid (150.8-174 MHz)
	or 30C83839B03	line, grid (136-150.8 MHz)
L303	24A82922H01	loop, grid
L304, 305	24B82772H01	choke, 4 turns
L306	7C83921A01	line, bracket plate (150.8- 162 MHz)
	or 7C83569A03	line, bracket plate (162- 174 MHz)
	or 7C83741B01	line, bracket plate (136-150.8 MHz)
L307	24A82362H01	loop, coupling (150.8-174 MHz)
	or 24B83838B01	loop, coupling (136-150.8 MHz)
L308	24A82933H01	3-1/2 turns
		<u>RESISTOR, fixed ±10%,</u> unl stated
R301, 305	6D82475B60	4.99 meg ±10%, 1/2 w
R302, 304	17C82291B09	2.2K ±5%, 5 w
R303	6S3963	100; 2 w
R306	18C82782H01	var., 5K, 25 w
R307	17C82177B22	5K, 10 w
R308, 309	17C82177B21	1K, 5 w
		<u>SWITCH</u>
S301	40C82786H01	rotary, 1 pole, 2 position
S302, 303	40C82874H01	slide; 1 form "X"
		<u>ELECTRON TUBE</u> type 8560A
V301, 302	65C83382D01	
		<u>CABLE</u>
W301	30C82904H01	#20 wire, stranded, incl. P1
		<u>SOCKET, tube</u>
XV301, 302	9C82351H01	female 8 cont.
<u>NON-REFERENCED ITEMS</u>		
	36C82632H01	KNOB, control (4 req'd)
	36B82631H03	KNOB, control (2 req'd)
	15C82349H01	COVER, housing (2 req'd)