



**Barker & Williamson**  
**HF Linear Amplifier**  
**PT-2500A**  
**Instruction Manual**

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# 1.0 Specifications

## 1.1 RF Specifications

### Frequency Range

160 meters	1.8 to 2.0 MHz
80 meters	3.5 to 4.0 MHz
40 meters	7.0 to 7.3 MHz
30 meters	10.1 to 10.15 MHz
20 meters	14.0 to 14.35 MHz
17 meters	18.068 to 18.168 MHz
15 meters	21.0 to 21.45 MHz
12 meters	24.85 to 24.95 MHz

### Drive Power

100 W nominal to 125 W maximum for full output

### RF Output Power

SSB 1.5 KW PEP continuous  
CW 1.5 KW Average continuous

### Plate Voltage (Operate position)

RTTY/AM/ATV SSB/CW 3.0 KV VDC

### Efficiency

60% minimum on all bands.

### Input Impedance

50 ohms. Tuned impedance matching circuit, SWR <1.5:1 (16 db return loss)

### Output Impedance

50 ohms SWR <2:1

### Harmonic Suppression

50 db minimum

### Intermodulation Distortion Products

33 dB down minimum

## 1.2 General Information

### Power Tubes

Two Eimac 3-500Z zero bias triodes

### Circuit Type

Class AB<sub>2</sub> grounded grid

### Tube Cooling

Pressurized plenum and chimney cooling system. 60 cubic ft. per minute. Low noise squirrel cage blower. External muffin fan for extended continuous service.

\*FCC rules permit any properly licensed amateur to modify his own amplifier for 10 meter use. Consult the factory for details. If this modification is done with reasonable skill and care, the warranty will not be void.

### Type of Emission

SSB, CW, RTTY, AM, ATV

### Duty Cycle

Continuous duty in all modes

### ALC Circuit

Negative, adjustable to -30 VDC

### Antenna Relay

DC relay for hum-free operation

### Metering

1 Meter measures plate current  
2nd Meter measures plate voltage, grid voltage, output power, reflected power

### Output Circuit

Pi-L network (silver plated air coil) and 6KV tuning capacitor.

### Input Circuit

Pi network input for each band for maximum drive and linearity.

### Protective Devices

AC line fuses, cathode zener fuse, SCR crowbar grid protect circuit

### Safety Feature

Interlock for AC line input.

### Power Requirements

115/230 VAC, 30/15 amps (230 VAC factory wired and recommended)

### Power Transformer

Special power transformer designed for continuous service. Rated at 1300 VA 60 Hz. Weight 40 lb (18.2 kg) Separate filament transformer.

### Dimensions

17" W x 8-1/2" H x 19" D (including dials)  
(43.2 x 21.6 x 49.3 cm)

### Weight

80 lb (36.3 kg). Shipped in three cartons.

## 1.3 Tube Specifications

### Filament

Voltage .....	5.0V
Current .....	14.2A

### Direct Interelectrode Capacitances (grounded grid)

Input .....	8.3pF
Output .....	4.7pF
Feedback .....	0.07pF

### Frequency of Maximum Rating

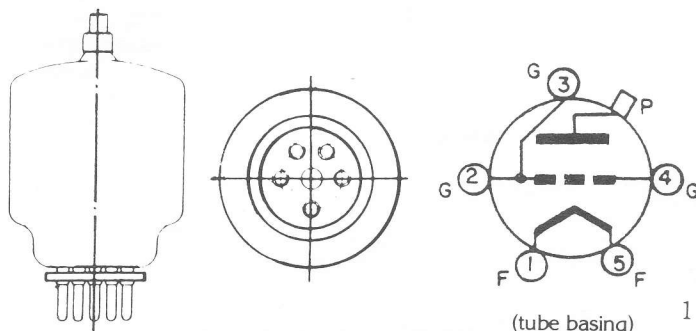
CW .....	110 MHz
Operating Position .....	Vertical, base down or up

### Maximum Operating Temperature

Plate Seal .....	225° C
Base Seals .....	200° C
Cooling .....	Radiation and forced air
Base .....	5 Pin Special

### Maximum Ratings

DC Plate Voltage .....	4000 Volts
DC Plate Current .....	0.40 Ampere
Plate Dissipation .....	500 Watts
Grid Dissipation .....	20 Watts



## 2.0 Introduction

The PT-2500A Linear Amplifier is a one stage, class AB<sub>2</sub> Linear Amplifier using two glass envelope, high performance Eimac 3-500Z power tubes. It is a completely self-contained table-top unit capable of 1500 watts PEP or CW output, designed to provide reliable, stable, high RF output power. It is equipped with a pressurized plenum cooling system to ensure optimum operation for extended periods of continuous use. The circuit and components are conservatively designed and selected for effortless operation under all conditions.

## 2.1 Features

- 2.1.1 Designed for SSB, CW, RTTY, AM or ATV operation on the amateur bands between 1.8 MHz and 21 MHz. (Including WARC bands and MARS operation.) May be customer modified to cover the 28 MHz band. Please consult the factory.
- 2.1.2 Can be modified for frequencies outside the amateur bands for commercial or military use. Please consult the factory.
- 2.1.3 Fast heating high performance 3-500Z triodes ensure rapid turn-on time.
- 2.1.4 Continuous duty squirrel cage blower plus external muffin fan for extreme extended use.
- 2.1.5 The Pi-L circuit features;
  - a) Heavy duty, 7KV rotary switch with silver plated contacts.
  - b) A high quality, dual section 6KV plate tuning capacitor which maintains constant Q.
- 2.1.6 Pi network input for each band.
- 2.1.7 The power supply features a special heavy duty (40 lb.) "continuous" rated 1300 VA power transformer, a separate filament transformer and computer grade filter capacitors for maximum reliability.
- 2.1.8 Power transformer transient protected.
- 2.1.9 By-Pass standby switch on front panel.
- 2.1.10 Adjustable ALC Control (up to -30V).
- 2.1.11 Dual backlit meter system to monitor all critical voltages and currents.
- 2.1.12 Mode switch for optimum efficiency in all modes of operation.
- 2.1.13 Vernier tuning for smooth and accurate settings on all bands.
- 2.1.14 Safety interlock disconnects AC line voltage when the top cover is removed.
- 2.1.15 SCR actuated grid protect circuit.

## 3.0 Installation

**PLEASE READ THE INSTRUCTIONS** carefully and fully before attempting to operate the amplifier.

**CAUTION:** There are very dangerous voltages present inside the amplifier when the power is on. Two interlock switches will automatically disconnect the AC line voltage when the top cover is removed. Use the utmost caution and care if AC power must be on while the top cover is removed.

## 3.1 Unpacking

Remove the amplifier from the shipping carton and examine for damage, (notify the transport company immediately if any damage is present.)

Save the carton for future shipment to another location or storage.

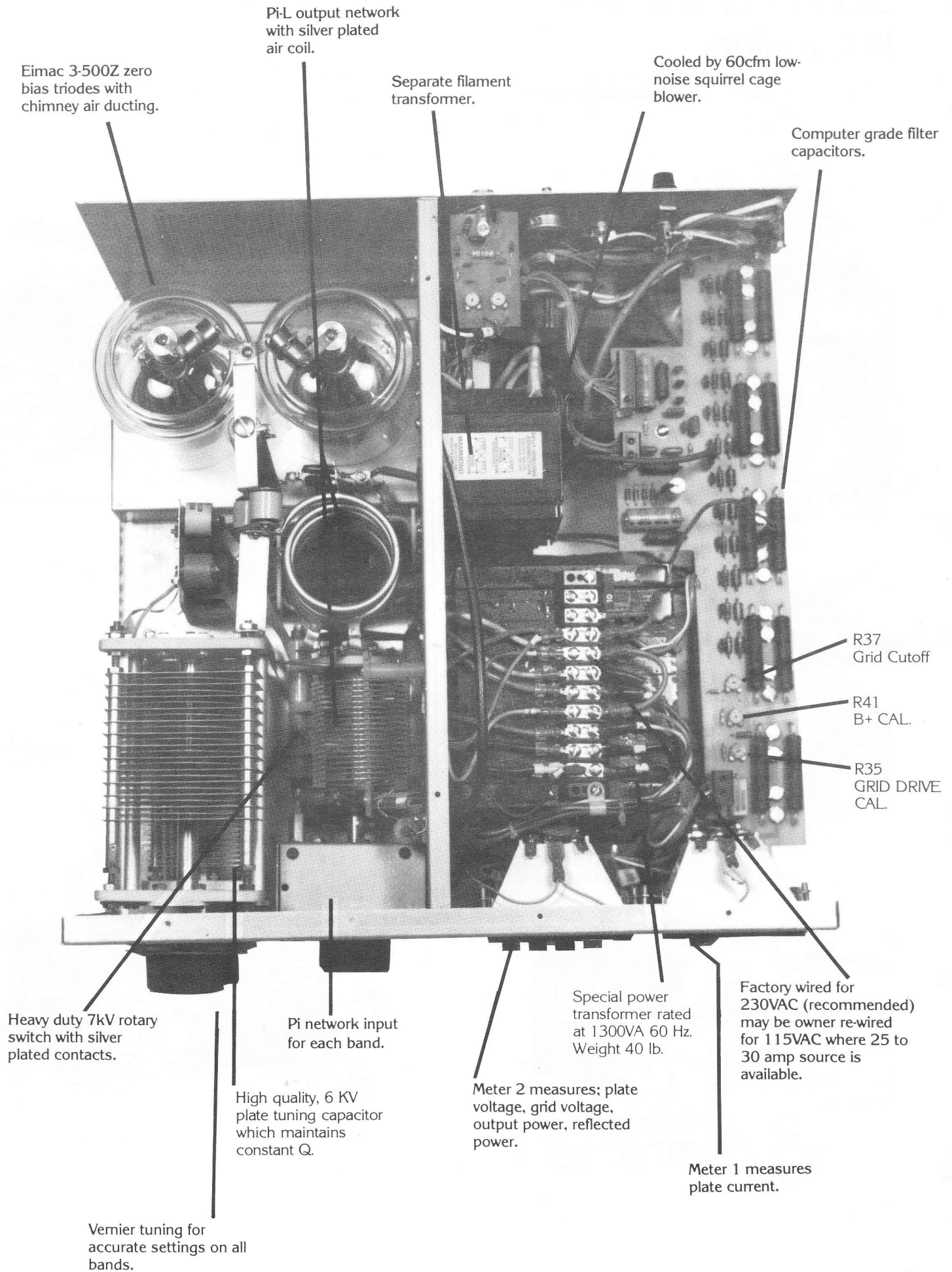
The 3-500Z triode tubes and the power transformer are shipped separately and must be installed before operating the amplifier in any way.

The following items and accessories are included with your PT-2500A amplifier:

1. Instruction Manual
2. Warranty Card
3. Two 3-500Z Tubes
4. Two Glass Chimneys (packed in amplifier)
5. Power Transformer
6. Control Cable (2)
7. AC Power Cord
8. Jumper Wire
9. Two Plate Cap Heat Sinks
10. Extra Fuses (One Zener - AGC 1 and two ABC15)
11. 7/16" T Wrench
12. Three 1/4-20 Hex Nuts

## 3.2 Operating Location

The amplifier must be located in an open area such that the flow of air from the top (and back for the muffin fan) is unrestricted. Location should be as close as possible to a reliable 115/230 VAC source to minimize any AC voltage drop.



Eimac 3-500Z zero bias triodes with chimney air ducting.

Pi-L output network with silver plated air coil.

Separate filament transformer.

Cooled by 60cfm low-noise squirrel cage blower.

Computer grade filter capacitors.

R37  
Grid Cutoff

R41  
B+ CAL.

R35  
GRID DRIVE  
CAL.

Heavy duty 7kV rotary switch with silver plated contacts.

Pi network input for each band.

High quality, 6 KV plate tuning capacitor which maintains constant Q.

Special power transformer rated at 1300VA 60 Hz. Weight 40 lb.

Meter 2 measures: plate voltage, grid voltage, output power, reflected power.

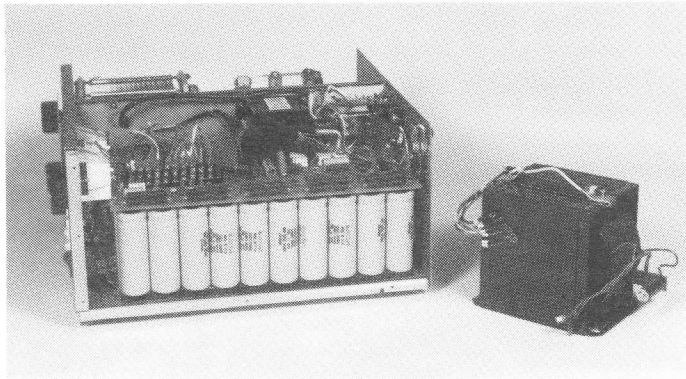
Factory wired for 230VAC (recommended) may be owner re-wired for 115VAC where 25 to 30 amp source is available.

Meter 1 measures plate current.

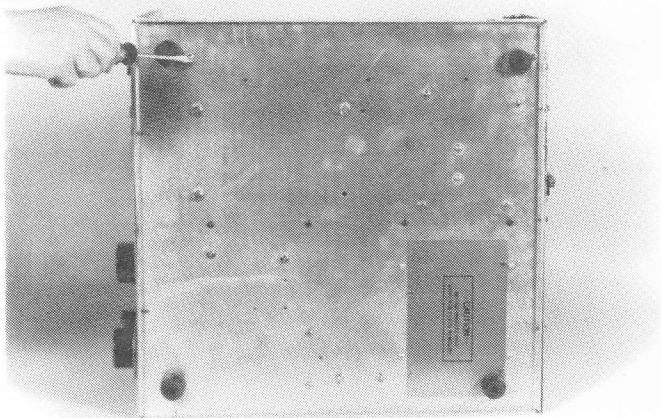
Vernier tuning for accurate settings on all bands.

# 3.3 Power Transformer Installation

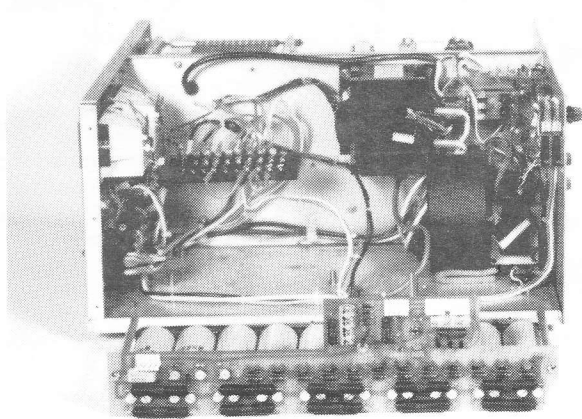
1. Remove the cover. Remove all cover screws. Note that all screws along base are machine screws while all others are self-tapping screws.
2. Remove the packing material found in the RF and power supply sections and remove the packed chimneys.



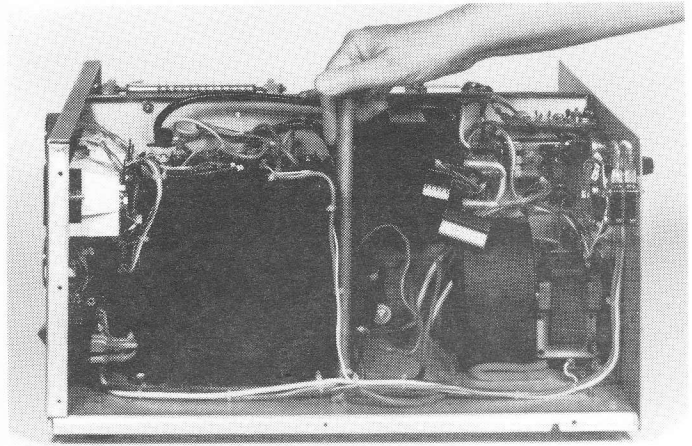
3. Disengage the filter capacitor assembly by removing 3 - #8-32 machine screws found on the filter printed circuit board. Place the filter assembly on the work surface along side the amplifier.



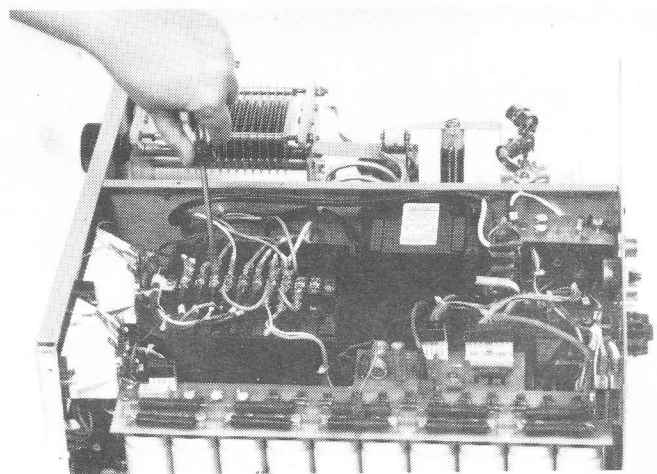
4. Position the terminal block with attached harness to allow clear access to the transformer area.



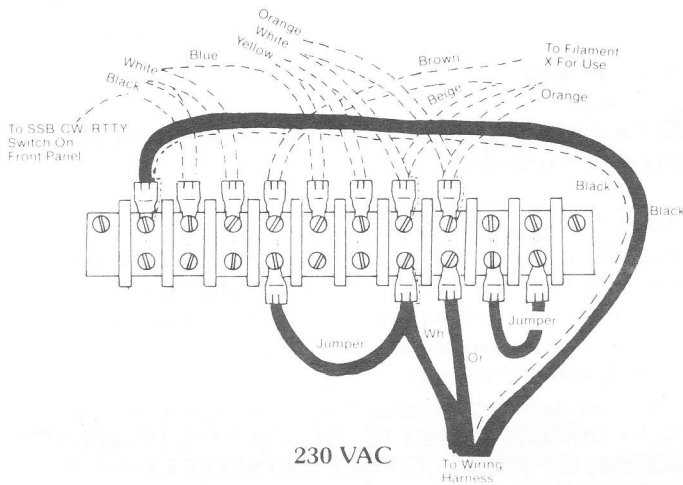
5. Carefully place the transformer over the 3 1/4-20 transformer mounting studs. To install 1/4-20 hex. nuts, press a nut into the driver end of "T" wrench supplied with the amplifier. The nut will remain in the wrench until nut/stud threads are started.



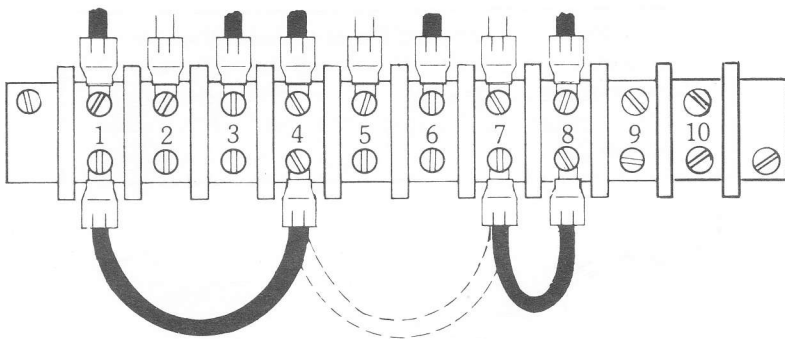
6. Remove 2 - #6-32 machine screws holding the terminal I.D. board on the top of the transformer.  
(a) Place the terminal block over the I.D. board and secure both to the transformer with the 2 #6-32 screws.



- (b) Attach the 6 transformer primary leads and plate harness leads to the terminal block contacts. The transformer leads are numbered to correspond with terminal block numbering. Do not over-tighten terminal block screws.

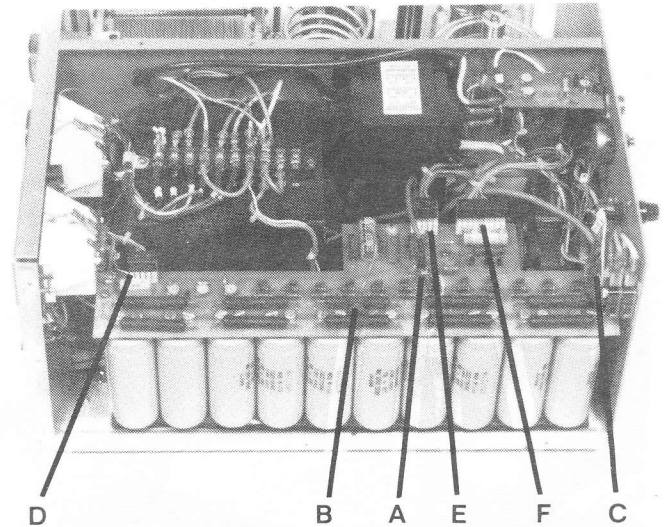


7. The terminal block is wired for 230 VAC operation. For 115 VAC operation (not recommended unless 25 - 30 amp source is available), remove the jumper connected between terminals 4 and 7 on the terminal block and connect it between terminals 1 and 4. Take a short jumper from the accessory kit and connect it between terminals 7 and 8.



8. Re-attach the filter assembly to the vertical rods using 3 #8-32 machine screws.

9. Connect the black lead from the power resistor mounted on the plate transformer to the terminal indicated on the filter capacitor board. (Lead A in photo below.)
10. The last step is the connection of the plate transformer secondary start lead (red) and high voltage lead (red). This is done with the use of male-female slip-on lugs.



11. Connect the black lead A, red lead B, and red high voltage lead C as indicated in the photograph. Reconnect the three multipin connectors D, E and F as shown. Be sure to establish positive contact for all connections. This completes the transformer installation. Double check all connections to avoid possible damage.

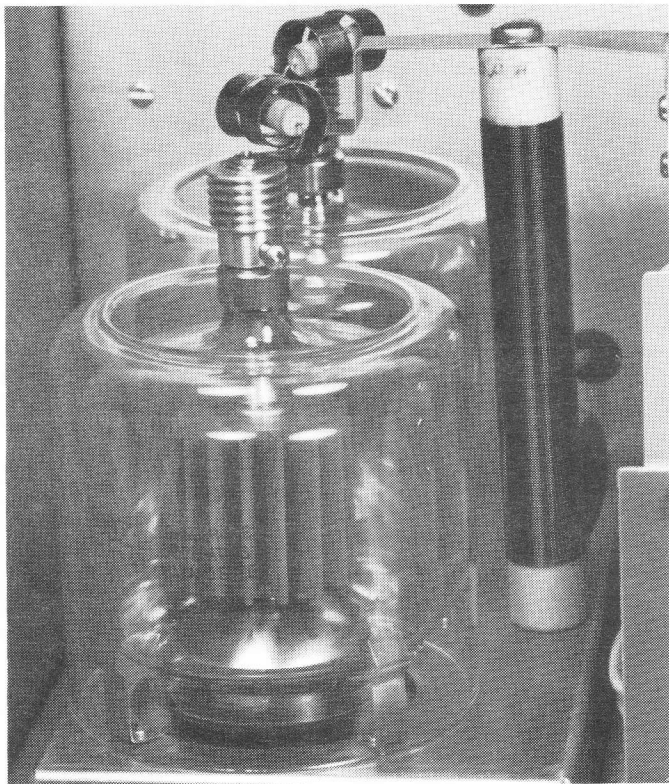
## 3.4 Power Tubes Installation

For the power tube installation you will need:

- Two 3-500Z tubes (packed separately)
- Two glass chimneys (packed inside the amplifier)
- Two plate cap heat sinks (provided in accessory kit)

1. Unpack all items and inspect for damage. Any damage should be reported to the carrier.
2. If cover not yet removed, see Steps 1. and 2. in Section 3.3 for instructions on cover removal.
3. Carefully install the two power tubes in their sockets. **Be very careful not to exert lateral or twisting pressure on the glass portion of the tubes. They are very easily damaged. Excessive pressure can cause a hairline fracture in the tube's glass envelope, destroying the tube. The pins are also particularly delicate and can easily break if the tube is not inserted and removed very carefully.**

4. Carefully set the glass chimneys in place over the power tubes making sure all holding clips are **inside** the chimneys.
5. Set the plate cap heat sinks in place on the anode connectors of the power tubes. Gently tighten the set screws.
6. Remove the screws and lock washers from the tops of the heat sinks and attach the parasitic chokes.  
**Caution:** Hold the heat sinks firmly when attaching these leads to avoid transferring any twisting pressure to the power tubes.
7. This completes the power tubes installation.
8. You are now ready to re-assemble the cabinet.



9. **Re-assemble the cover**  
Before re-assembly, note the red safety lock microswitches mounted on the rear panel. The switch buttons must be engaged by the underside of the cabinet. When positioning the cabinet over the amplifier, listen for the click of the microswitches to ensure they are engaged.
10. Attach the cover screws near the microswitches first, then install the remainder of the screws ensuring that the machine screws go in the tapped holes at the chassis base.

### 3.5 Cabling

All the following cables must be connected before the amplifier is operated.

#### 3.5.1 AC Power Cable:

Your PT - 2500A amplifier comes from the factory wired for operation from a 230 VAC single phase, 60 Hz power source. For 115 VAC operation, several jumper connections on the power transformer terminal strip have to be changed. See page 5.

The green wire in the power cord is the ground wire and **MUST BE CONNECTED TO THE GROUND PIN (GREEN SCREW) OF THE PLUG THAT YOU SELECT FOR CONNECTION INTO THE POWER LINE.** The socket of the AC cord plugs directly into the back panel AC input plug.

**CAUTION:** The amplifier will be damaged if the green wire is connected incorrectly. Be sure to disconnect the AC plug from the amplifier before changing jumpers on the terminal strip.

**3.5.2 Antenna Coax:** Use only RG 8/U coax (or its equivalent) to connect the PT-2500A to the antenna. The antenna connector mates with the connector marked RF OUT, on the rear panel of the amplifier.

**CAUTION:** Do not operate the amplifier without a load or into a load with SWR greater than 2:1. Measure the antenna's SWR with an SWR meter or in-line Watt-meter and determine that the SWR is in fact less than 2:1.



**3.5.3 Input Cable:** A cable must be connected from the output of your exciter to the RF IN connector on the back panel of the amplifier.

**3.5.4 ALC (automatic level control) Cable:** Plug the ALC cable into the phono jack located on the back panel (marked ALC) and into the ALC feedback connection (or equivalent) on the exciter. If the exciter does not have provision for feedback of ALC voltage from the amplifier, then simply omit the use of the cable.

**3.5.5 Antenna Relay:** A control cable should be plugged into the phono socket marked ANT RELAY on the back panel of the amplifier. This cable connects the keying signal from the exciter to switch the amplifier to the transmit condition and must be plugged into the socket or connector marked Antenna Relay (or equiv.) on the exciter. The exciter need only supply a shorting relay contact (during transmit) to key the amplifier.

**CAUTION:** Do not apply any voltage to the antenna relay phono jack. The internal relay is activated by a self-contained power supply.



## 4.0 Operating Controls

### 4.1 Front Panel Controls:

**4.1.1 Off/On Power Switch:** Used to turn the amplifier on and off.

**4.1.2 Multimeter Switch:** Four section pushbutton switch selects the multimeter functions as described below.

**HV:** With this pushbutton depressed, the meter monitors the amplifier's plate voltage. The full scale reading in this mode is 4000 VDC. Normal plate voltage with the amplifier in the standby position (unkeyed) is about 3500 VDC for SSB/CW operation and 2400 VDC for RTTY operation. Line voltage variations will cause corresponding variations in the plate voltage. (Note: Reading for plate volts is X10.)

**GRID:** With this pushbutton depressed, the meter monitors the amplifier's grid current. The full scale meter reading in this mode is 400 ma DC. The nominal grid current during SSB on peaks is approximately 100 ma.

**Maximum** tune-up grid current in SSB or CW single tone is 240 ma marked on the dial as a red bar.

**FWD:** In this mode, the meter monitors the output power of the amplifier - maximum reading is 2000 watts.

**REFL:** In this mode, the meter monitors the reflected power. The full scale reading of the reflected power scale is 200 watts.

**4.1.3 SSB/CW/RTTY Switch:** This 2 position switch selects the two plate voltages to ensure correct loading and output for each type of emission.

**4.1.4 Standby/Operate Switch:** This switch allows the exciter bypass feature i.e. in the STANDBY position, the power of the exciter bypasses the linear amplifier and appears unchanged at the output connector. In the OPERATE mode the linear amplifier is ready for transmitting.

**4.1.5 Standby/Operate Lights:** These pilot lights marked "Standby" and "Operate" indicate the status of the STANDBY/OPERATE switch. In the STANDBY mode, the red light is on and in the OPERATE mode, the green light is on.

### Tune and Load Settings

These are approximate settings for a 52 ohm load, mid band, CW mode, with 100 watts drive.

FREQ. (MHz)	Tune	Load
1.85	95	75
3.85	40	40
7.25	35	60
10.00	42	58
14.25	15	85
18.00	20	80
21.25	11	90

**4.1.6 Load Control:** This control matches the amplifier's output network to the load. Refer to table above for the approximate initial settings for the frequency range desired. A load setting of 0 corresponds to maximum capacitor mesh and 100 represents minimum capacitor setting.

**4.1.7 Tune Control:** The TUNE control is a vernier dial connected to an air variable capacitor in the RF section. The disc dial is screened 100 to 0 indicating that maximum capacitance is at 100 and minimum at zero. Approximate settings for the tune control for the amateur bands are given in the table above for your convenience.

**4.1.8 Band Switch:** The band switch selects the applicable input and output circuits for the PT-2500A to operate in any one of the following bands:

- (a) 160 meters 1.8 to 2.0 MHz
- (b) 80 meters 3.5 to 4.0 MHz
- (c) 40 meters 7.0 to 7.3 MHz
- (d) 30 meters 10.1 to 10.15 MHz
- (e) 20 meters 14.0 to 14.35 MHz
- (f) 17 meters 18.068 to 18.168 MHz
- (g) 15 meters 21.0 to 21.45 MHz

**NOTE:** The amplifier has the capability to transmit on many frequencies outside the above bands by switching the amplifier to the band closest in frequency to the desired operating frequency. For services other than amateur use, this may be applicable.

**CAUTION:** Never move the band switch while the linear amplifier is keyed or operating.

**4.2 Back Panel** (See also Section 3.5, Cabling Pg. 7)

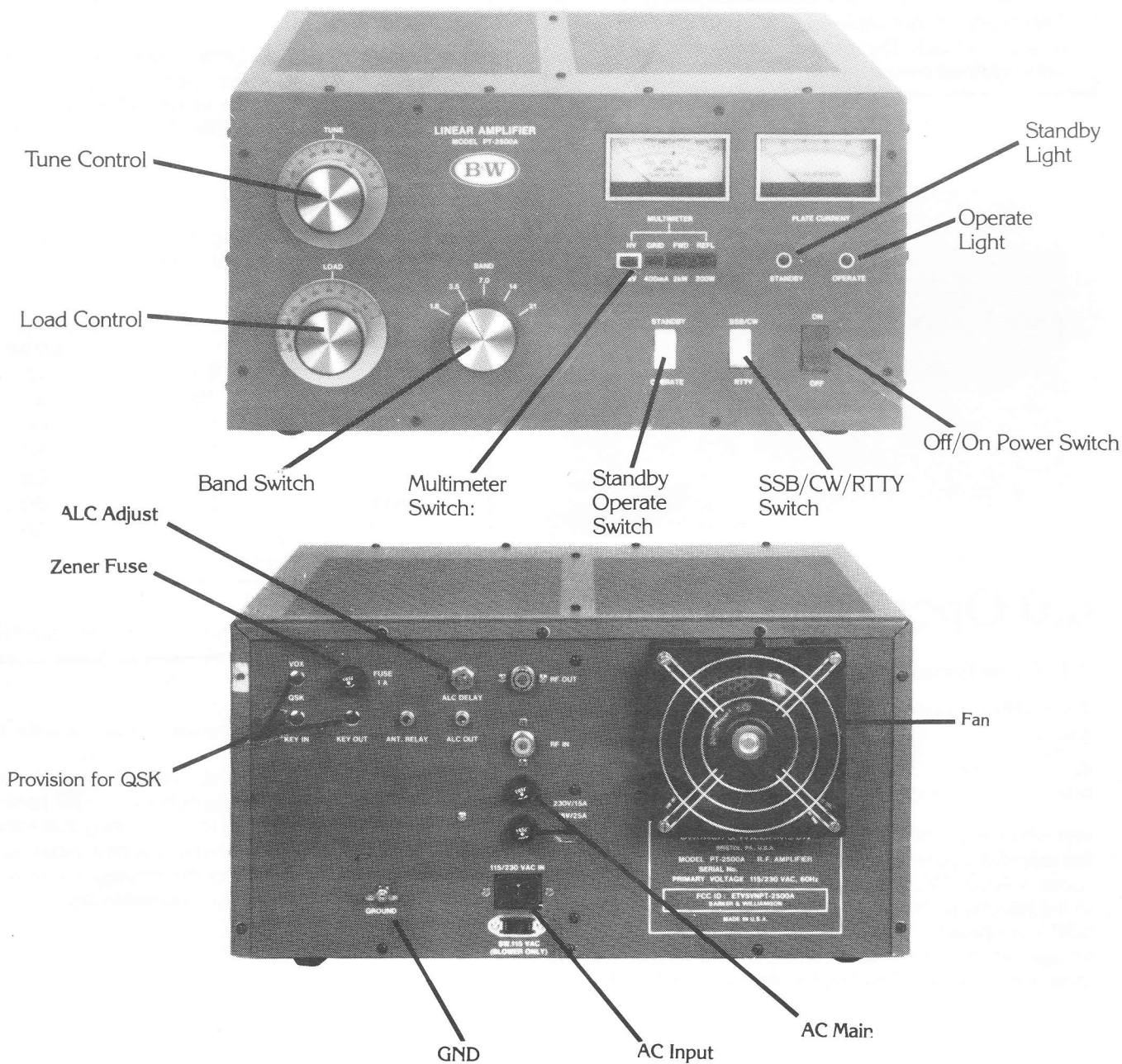
**4.2.1 Zener Fuse:** Protects the cathode circuit from overcurrent. It is a 1 amp fast-blo type.

**4.2.2 ALC Adjust:** Controls the delay of the PT-2500A's ALC circuit.

**4.2.3 AC Main:** Two fuses for the 115/230 VAC line input. They are ABC ceramics and must not be substituted by any other types.

**GND:** This lug is provided to ground the amplifier. It should be connected to a good earth ground to minimize radiated interference or the danger of electrical shock.

**4.2.4 AC Input:** This is the AC line input plug that accepts a heavy duty power cord. Note the 3 pin arrangement on the plug and the fact that the center pin is ground. Push the socket of the power cord when ready for use so that it is fully seated in the plug. The use of a substitute cord is not recommended.



# 5.0 Operation:

**NOTE:** Use a 50 ohm dummy load only for all the following adjustments. Adjustments into an antenna can result in illegal output power levels and/or interference on the amateur bands.

## 5.1 Preliminary Settings

- |                           |         |
|---------------------------|---------|
| 1. STANDBY/OPERATE switch | STANDBY |
| 2. SSB/CW/RTTY switch     | RTTY    |
| 3. Multimeter switch      | GRID    |
| 4. ON/OFF switch          | OFF     |

Activate the ON switch and the red STANDBY pilot lamp and the meters should light. Look into the interior of the amplifier to make sure that the tube filaments are lit and that there is a flow of air from the top of the cabinet. This can be done by putting your hand over each tube from the top to feel the flow of air.



## 5.2 Operation

The 3-500Z requires no warm-up time.

1. Push the HV pushbutton on the MULTIMETER switch bank. The meter should read approximately 2.80 indicating a plate voltage of 2800 in the RTTY mode.
2. Set the SSB/CW/RTTY switch to SSB/CW. This should give a corresponding reading of 3800 VDC.
3. Set the SSB/CW/RTTY switch back to RTTY position.
4. Push GRID on the MULTIMETER switch bank.
5. Set the BAND switch to the desired band.
6. Pre-set the TUNE and LOAD vernier dials to those settings referred to in calibration chart below.

FREQ. (MHz)	Tune	Load
1.85	95	75
3.85	40	40
7.25	35	60
10.00	42	58
14.25	15	85
18.00	20	80
21.25	11	90

## 5.2.1 SSB Operation:

1. Set the STANDBY/OPERATE switch to OPERATE. The green OPERATE lamp should light.
2. With the exciter adjusted for zero output, press the PTT switch of the exciter causing the PT2500/A and the exciter to go into the transmit mode.
3. The amplifier's plate current meter should register approximately 40 ma. (Note SSB/CW/RTTY switch in RTTY). Set the SSB/CW/RTTY switch to SSB/CW. This should register a plate current reading of approximately 100 ma. Set the SSB/CW/RTTY switch back to CW.
4. Increase the RF output of the exciter until the amplifier's grid current is about 90 ma. Adjust the TUNE control for a minimum plate current reading indicating resonance. If the LOAD control is set properly, the plate current will be approximately 400 ma. If the plate current is less than 400 ma increase the load slightly by moving the LOAD control to a higher number on the dial. If the plate current is more than 420 ma, decrease the load slightly by moving the LOAD control to a lower number.

Do not forget to re-dip the TUNE control each time the LOAD control is changed.

Check that the grid current reading is approximately 80-90 ma. If not, re-adjust the exciter output to give the required 80 ma  $\pm$  10% grid current reading. Under normal conditions, there will be some interaction between the TUNE control, LOAD and the grid current.

**NOTE:** The tuning, loading and exciter control adjustments may have to be repeated several times until the ratio of 80 ma grid to 400 ma plate current is obtained. Note that at higher frequencies, the adjustments are sharper while at lower frequencies they are broad.

5. To verify the peak power condition increase the RF output of the exciter for a plate current reading of 800 ma. With the full drive, the grid current should be 240 ma (red mark on dial). Single tone adjustments while tuning should be made such that the grid current never exceeds 240 ma. Exceeding these limits very quickly reduces the life of the tubes. (Use dummy load only for these measurements.)

**NOTE:** It is normal for the 3-500Z tubes to show colour, glowing a pale red with 400 ma of plate current and possibly a brighter cherry red at 800 ma. When operated in this manner, the tubes are within their ratings and can be operated in this way only if the plate circuit is at resonance (plate current dipped to a minimum with tune control). The amplifier should never be operated for any length of time in an off resonance condition.

**CAUTION:** Under no circumstances should the plate current exceed 800 ma nor the grid current exceed 240 ma.

6. Release the PTT switch of the exciter to allow the amplifier and exciter to go into the unkeyed status. Place the exciter into the SSB/CW mode and while speaking into a microphone, adjust the audio gain control for voice peak plate current readings of around 350 ma. Since the meter is average reading and cannot follow the peaks (which are about 800 ma), the meter will indicate the highest average plate current. The grid current peaks, should be around 50 - 100 ma. Check for proper output power with a monitor scope if one is available.

**5.2.2 CW Operation:** Set the SSB/CW/RTTY switch to SSB/CW and tune the amplifier as above in 5.2.1.

**5.2.3 AM Operation:** SSB/CW/RTTY switch should be in RTTY position. Do not apply modulation. If not already tuned as per 5.2.2, tune the amplifier as per 5.2.1, Step 4 with plate current at 650 ma max. and grid current at approximately 200 ma. Reduce the carrier output so that plate current is 1/2 of previous reading. grid current will be approximately 100 ma. Apply 1000 Hz tone at 100% modulation. Plate current should not exceed previous maximum value. If it does, reduce the mic. gain, as necessary. If an oscilloscope or modulation monitor is available, check that the modulation does not exceed 100%.

**5.2.4 RTTY Operation:** SSB/CW/RTTY switch should be in RTTY position. The PT-2500A is designed to operate at the 1 kilowatt level continuously. If not already tuned for CW (5.2.2), tune the amplifier as per 5.2.4 Step 1 with plate current at 650 ma max and grid current at approximately 200 ma.

**5.2.5 ALC Adjustment:** Loosen the ALC control lock nut. The control should be in the minimum voltage, or clockwise position. Drive the amplifier to the desired output level and then rotate the ALC control (CCW) until the grid current just begins to decrease.

**5.2.6 Power Readings:** When the FWD push-button is depressed, the MULTIMETER reads the output power into a dummy load or antenna. The full scale reading is 2000 watts. When the REFL push-button is depressed, the MULTIMETER reads the reflected power. The full scale reading is 200 watts.

The amplifier should never be operated into a load with an SWR greater than 1.5:1, which represents approximately 5% reflected power. The SWR should be regularly checked when connected to an antenna. If VSWR of less than 1.5:1 cannot be achieved, Barker & Williamson Transmatch, Model VS 1500A, or equivalent, should be connected between the amplifier and the antenna.

**5.2.6 Grid Protection Circuit:** The PT-2500A is equipped with a grid protection circuit. If during tune up or normal operation a momentary grid current of 400 ma is exceeded, the amplifier will shut down and automatically switch to the bypass mode. The operate pilot lamp will be extinguished. To restore amplifier operation, reduce input drive to the unit, press the standby/operate switch to standby and then back to operate.

#### NOTE:

With the STANDBY/OPERATE switch in the STANDBY position, the exciter output will bypass the amplifier and feed directly to the antenna. The amplifier does not have to be off to accomplish this bypass.

## Warranty

All goods sold hereunder are warranted to be free from defects in material and workmanship, for a period of one year from date of shipment, and this express warranty is in lieu of and excludes all other warranties whether expressed or implied by operation of law or otherwise including any warranty on the merchantability or fitness for a particular purpose. Defective material may be returned to the seller after inspection by the seller and upon receipt of definite shipping instructions by the seller. Goods so returned will be replaced or repaired without charge, but the seller shall not be liable for loss, damage or expense directly or indirectly arising from the use of material or from any other cause, the exclusive remedy against the seller being to require the replacement or repair of defective material. Every claim on account of defective material or workmanship or from any other cause shall be deemed waived by the purchaser unless made in writing prior to the expiry date of the warranty.

#### NOTE:

The 3-500Z tubes are warranted on a one year pro-rata basis by the tube manufacturer. Any warranty claims must be accompanied by the tube warranty claim form packaged with your new tubes. All claims must be filed with tube manufacturer. Warranty claims on the amplifier must be accompanied by proof of purchase and purchase date.

Specifications and/or improvements subject to change without prior notice or obligation.

# LIST OF REPLACEABLE PARTS

SYMBOL	DESCRIPTION	PART NO.	SYMBOL	DESCRIPTION	PART NO.
CAPACITORS			C34	CERAMIC, 40PF, 7500V	41-002
C1	MICA, 2634PF, 1000V	43-016	C35	SAME AS C34	
C2	MICA, 1000PF, 1000V	43-014	C36	MICA, 1200PF, 5000V	43-021
C3	MICA, 820PF, 1000V	43-001	C37	VARIABLE, 1000PF, 2500V	45-007
C4	MICA, 47PF, 1000V	43-004	C38	MICA, 10PF, 1000V	43-018
C6	MICA, 47PF, 500V	42-027	C39	VARIABLE, 2-22PF	45-002
C7	MICA, 2710PF, 1000V	43-017	C40	MICA, 220PF, 1000V	43-010
C8	MICA, 1068PF, 1000V	43-015	C41	CERAMIC, .01MF, 50V	40-007
C9	SAME AS C2		C42	SAME AS C41	
C10	MICA, 91PF, 1000V	43-005	C43	SAME AC C41	
C11	VARIABLE, 235PF, 6000V	45-006	C44	SAME AS C41	
C12	MICA, 100PF, 1000V	43-006	C45	FILM, 0.1MF, 250V	46-001
C13	FILM, 0.1MF, 250V	46-005	C46	SAME AS C41	
C14	CERAMIC, .01MF, 1400V	40-010	C47	SAME AS C41	
C15	SAME AS C13		C48	ELECTROLYTIC, 22MFD, 160V	44-001
C16	SAME AS C14		C49	SAME AS C48	
C17	SAME AS C14		C50	SAME AS C45	
C18	SAME AS C14		C51	SAME AS C45	
C19	MICA, 33PF, 500V	42-002	C52	ELECTROLYTIC, 1000MFD, 10V	44-006
C20	MICA, 68PF, 500V	42-004	C53	SAME AS C29	
C21	FILM, .022MF, 400V	46-003	C54	SAME AS C29	
C22	FILM, .0068MF, 600V	46-004	C55	SAME AS C29	
C23	CERAMIC, .001MF, 1000V	40-004	C56	SAME AS C29	
C24	SAME AS C14		C57	SAME AS C29	
C25	SAME AS C13		C58	SAME AS C29	
C26	FILM, .01MF, 400V	46-002	C59	ELECTROLYTIC, 210MFD, 450V	44-002
C27	SAME AS C14		C60	SAME AS C59	
C28	SAME AS C13		061	SAME AS C59	
C29	SAME AS C23		C62	SAME AS C59	
C30	CERAMIC, 1000MF, 5000V	41-010	C63	SAME AS C59	
C31	SAME AS C30		C64	SAME AS C29	
C32	CERAMIC, .01MF, 5000V	41-012	C65	SAME AS C29	
C33	CERAMIC, .001MF, 6000V	41-005	C66	SAME AS C29	
			C67	SAME AS C29	
			C68	SAME AS C29	

SYMBOL	DESCRIPTION	PART NO.	SYMBOL	DESCRIPTION	PART NO.
C69	SAME AS C29		R26	SAME AS R11	
C70	SAME AS C59		R27	SAME AS R11	
C71	SAME AS C59		R28	SAME AS R17	
C72	SAME AS C59		R29	SAME AS R17	
C73	SAME AS C59		R30	SAME AS R17	
C74	SAME AS C59		R31	SAME AS R17	
C75	CERAMIC, .01MF 1000V	40-001	R32	SAME AS R17	
C76	SAME AS C45		R33	CARBON, 15 K OHMS, 5 W	25-024
C77	CERAMIC, 100PF, 5000V	41-003	R34	CARBON, 4.7 K OHMS, 1/4 W	20-031
C78	SAME AS C77		R35	POTENTIOMETER, 25 K OHMS	15-007

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RESISTORS

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R1	CARBON, 47 K OHMS, 1/4 W	20-013
R2	CARBON, 15 K OHMS, 1/4 W	20-012
R3	POTENTIOMETER, LOCKING, 100 K OHMS	15-004
R4	SAME AS R1	
R6	SAME AS R2	
R7	POTENTIOMETER, 250 K OHMS	15-006
R8	POTENTIOMETER, 50 K OHMS	15-005
R9	CARBON, 68 OHMS, 2 W	20-009
R10	WIREWOUND, 15 OHMS, 25 W	25-034
R11	CARBON, 1 M OHMS, 1/2 W	20-015
R12	SAME AS R11	
R13	SAME AS R11	
R14	SAME AS R11	
R15	SAME AS R11	
R16	SAME AS R11	
R17	WIREWOUND, 25 K OHMS, 10 W	25-026
R18	SAME AS R17	
R19	SAME AS R17	
R20	SAME AS R17	
R21	SAME AS R17	
R22	SAME AS R11	
R23	SAME AS R11	
R24	SAME AS R11	
R25	SAME AS R11	

R36	WIREWOUND, 5 OHMS, 5 W	25-021
R37	POTENTIOMETER, 1 K OHMS	15-002
R38	CARBON, 220 OHMS, 1/4 W	20-001
R39	CARBON, 10 K OHMS, 5 W	25-023
R40	SAME AS R11	
R41	POTENTIOMETER, 10 K OHMS	15-003
R42	CARBON, 82 K OHMS, 1/4 W	20-008
R43	SAME AS R33	
R44	CARBON, 3.9 K OHMS, 1/4 W	20-030
R45	SAME AS R34	
R46	WIREWOUND 3 K OHMS, 5 W	25-020
VDR1	VARISTOR, 250 V	29-001
VDR2	SAME AS BDR1	

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SEMICONDUCTORS

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CR1	DIODE 1N4148	70-006
CR2	SAME AS CR1	
CR3	DIODE 1N4004	70-014
CR4	DIODE 1N4007	70-005
CR5	SAME AS CR4	
CR6	SAME AS CR4	
CR7	SAME AS CR4	
CR8	DIODE MR510	70-007
CR19	THROUGH	
CR21	DIODE 1N270	70-001
CR22	SAME AS CR21	

SYMBOL	DESCRIPTION	PART NO.
VR1	DIODE, ZENER, 1N3313B	70-003
Q1	TRANSISTOR, 2N6515	75-003
Q2	SAME AS Q1	
Q3	TRANSISTOR, SCR, 2N5064	75-002

#### INDUCTORS AND TRANSFORMERS

L1	INDUCTOR, TOROIDAL, 1.8 MHZ	62-023
L2	INDUCTOR, TOROIDAL, 3.5 MHZ	62-021
L3	INDUCTOR, INPUT, 7.0 MHZ	60-011
L4	INDUCTOR, INPUT, 14 MHZ	60-010
L5	INDUCTOR, INPUT, 21 MHZ	60-008
L6	INDUCTOR, SAME AS L5	
L7	PLATE CHOKE, 110 UH, 1000 MA	62-010
L8	R.F. CHOKE, 10 UH, 1.5 AMP	62-011
L9	INDUCTOR, 28/21/14 MHZ	60-004
L10	INDUCTOR, TOROIDAL, 7/3.5 MHZ	60-002
L11	INDUCTOR, TOROIDAL, 1.8 MHZ	60-001
L12	INDUCTOR, LOADING COIL	60-003
L13	R.F. CHOKE, 2.5 MH, 160 MA	62-009
FC1	FILAMENT CHOKE, 25 AMP.	62-008
T1	TRANSFORMER, FILAMENT, L V	H0-003
T2	TRANSFORMER, POWER, H V	H0-002
T3	TRANSFORMER, METER	62-030
PS1	PARASITIC SUPPRESSOR ASSY	63-001
PS2	SAME AS PS1	

#### SWITCHES

K1	RELAY, 3PDT, 120 VDC	80-005
S1AB	SWITCH, DP6T, ROTARY	B5-017
S1C.D.E	SWITCH, 3P6T, ROTARY, H V	B5-018
S2	SWITCH, SPDT, MICROSWITCH	B5-003
S3	SAME AS S2	
S4	SWITCH, DPDT, ROCKER, POWER	B5-009
S5	SWITCH, DPDT, ROCKER, MODE	B5-002
S6	SAME AS S5	
S7	SWITCH, PUSHBUTTON, 4 SECTION, DPDT	B5-004

SYMBOL	DESCRIPTION	PART NO.
CONNECTORS		
J1	RECEPTACLE, 9 PIN	CO-008
J2	RECEPTACLE (FILAMENT XFMR)	CO-006
J3	RECEPTACLE, 5 PIN	CO-007
J4	CONNECTOR, POWER, PLUG	CO-027
J5	CONNECTOR, BLOWER, SOCKET	CO-026
J6	CONNECTOR, UHF TYPE	CO-031
J7	CONNECTOR, UHF TYPE	CO-035
J8	CONNECTOR, PHONO TYPE	CO-033
J9	SAME AS J8	

#### MISCELLANEOUS

F1	FUSE, (230VAC), 15 AMP, SLO BLO	79-014
	(115VAC), 25 AMP, SLO BLO	79-015
F2	SAME AS F1	
F3	FUSE, 1A, FAST BLO	79-013
BL1	BLOWER, 115VAC, (INTERNAL)	90-002
BL2	BLOWER, 115VAC, (EXTERNAL)	90-003
V1	TUBE, 3-500Z	78-001
V2	SAME AS V1	
M1	METER, MULTIMETER	95-001
M2	METER, PLATE CURRENT	95-002
I1	PILOT LIGHT, 6V, TYPE 328	
I2	SAME AS I1	
I3	SAME AS I1	
I4	SAME AS I1	
I5	PILOT LIGHT, NEON, 115V, RED	79-001
I6	PILOT LIGHT, NEON, 115V, GREEN	79-002
W1	POWER CORD ASSEMBLY	CO-042
W2	CONTROL CABLE ASSEMBLY	CO-034
W3	SAME AS W2	
(NONE)	GLASS TUBE CHIMNEY	GO-200
TB1	TERMINAL BLOCK (XFMR)	CO-015
(NONE)	GUARD, EXTERNAL BLOWER	90-004



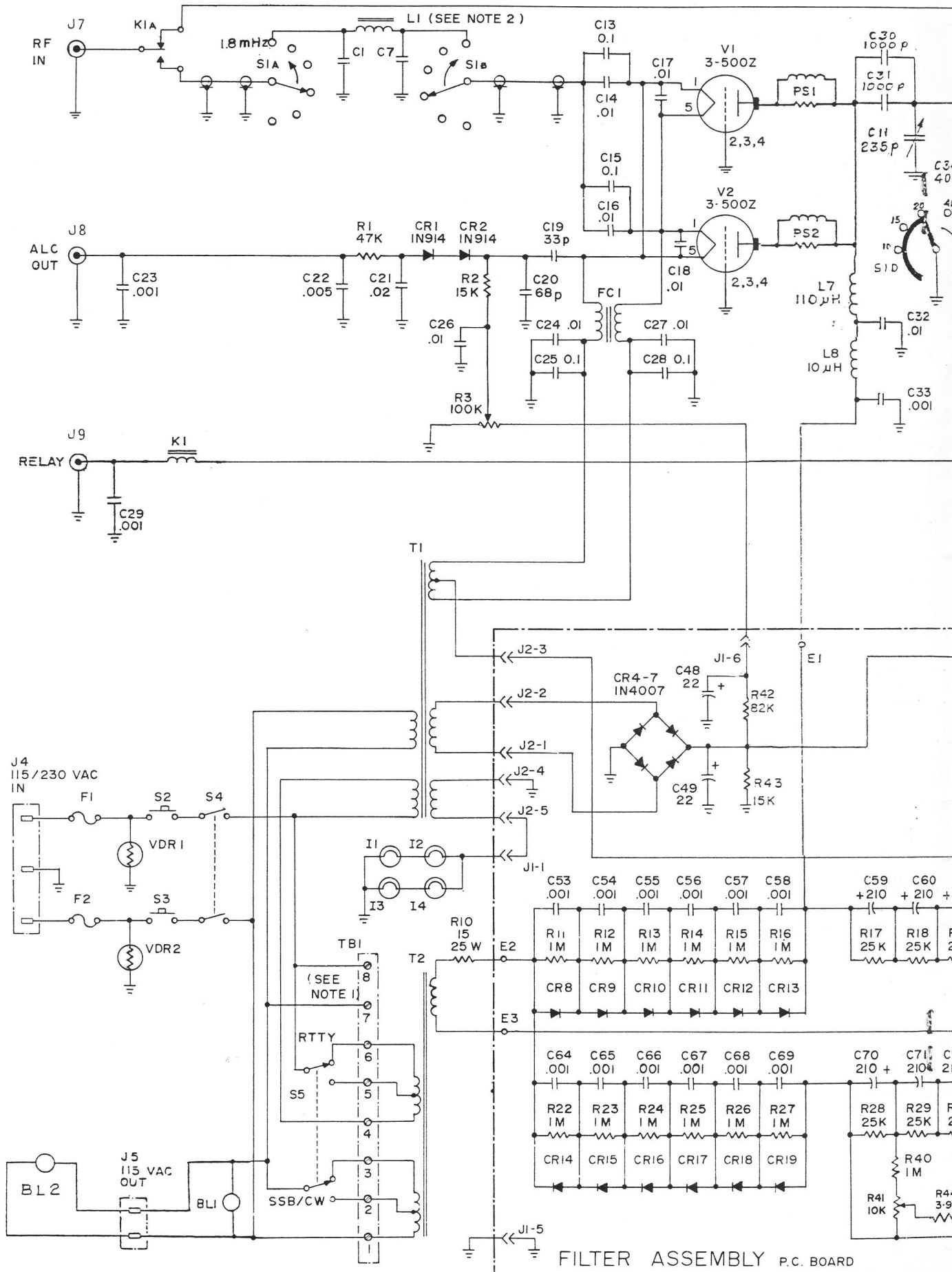
**BARKER & WILLIAMSON**

BRISTOL, PENNSYLVANIA 19007

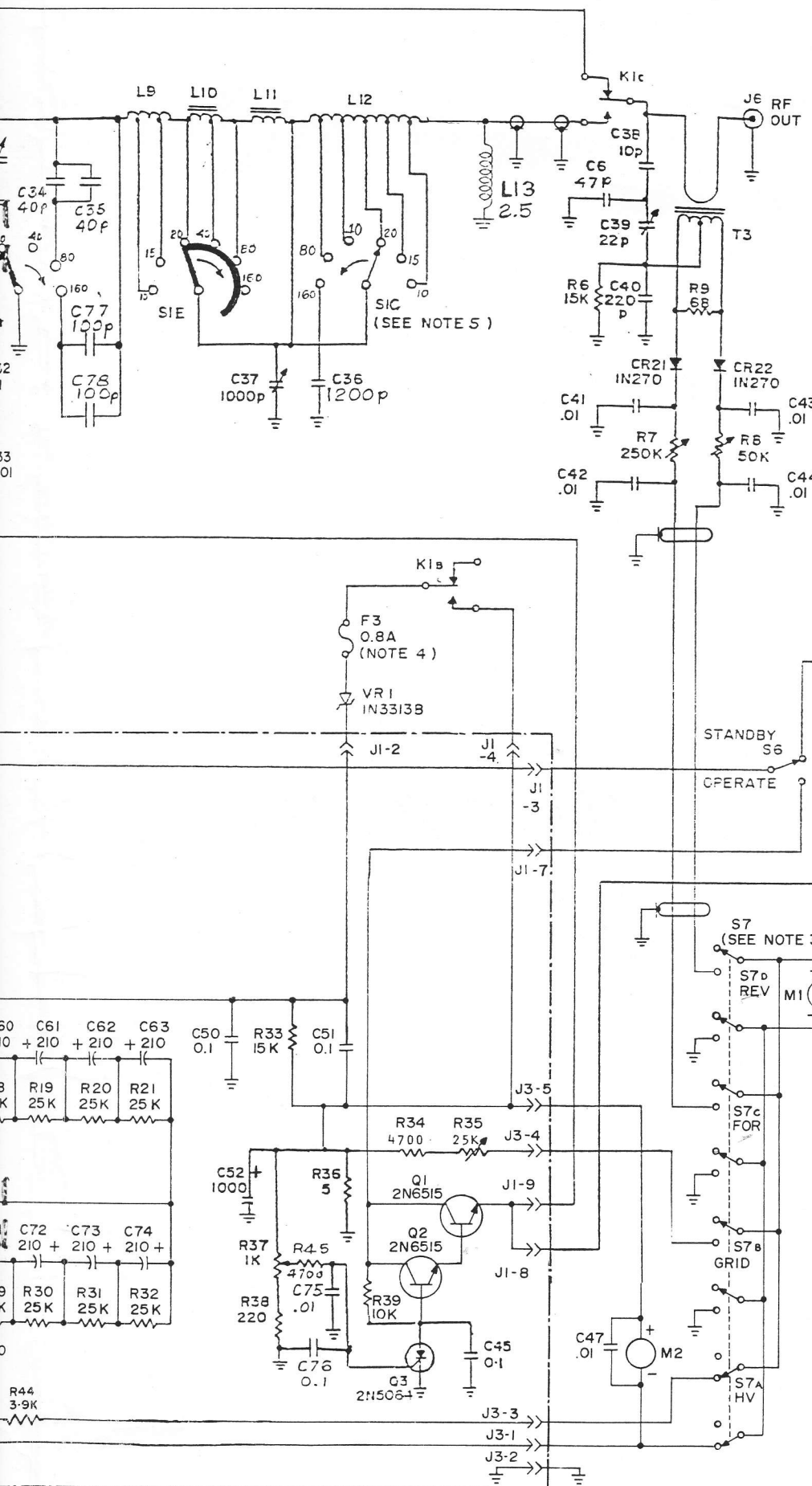
TEL: 215-788-5581

TWX 510 667-1389






FILTER ASSEMBLY P.C. BOARD



NOTES :

1. FOR 115 VAC OPERATION (NOT RECOMMENDED)  
 JUMPER TBI-1 TO TBI-4  
 TBI-7 TO TBI-8  
 F1 AND F2 25 A. MDA CERAMIC ONLY.
- FOR 230 VAC OPERATION (RECOMMENDED)  
 JUMPER TBI-4 TO TBI-7  
 F1 AND F2 15 A. MDA CERAMIC ONLY.
2. 1.8 MHz AND 28 MHz INPUT NETWORKS  
 SHOWN ONLY FOR CLARITY.
3. MULTIMETER SWITCH, S7, SHOWN IN HV  
 POSITION. ALL POSITIONS ARE INTER-  
 LOCKED, i.e., ONLY ONE SWITCH MAY BE  
 DEPRESSED.
4. ZENER FUSE, F3, IS 1 AMP. FAST BLOW ONLY.
5. S1 SHOWN IN 14 MHz POSITION.
6. ALL CAPACITOR VALUES SHOWN IN Mfd.  
 UNLESS OTHERWISE SHOWN. ALL  
 RESISTOR VALUES ARE IN OHMS.

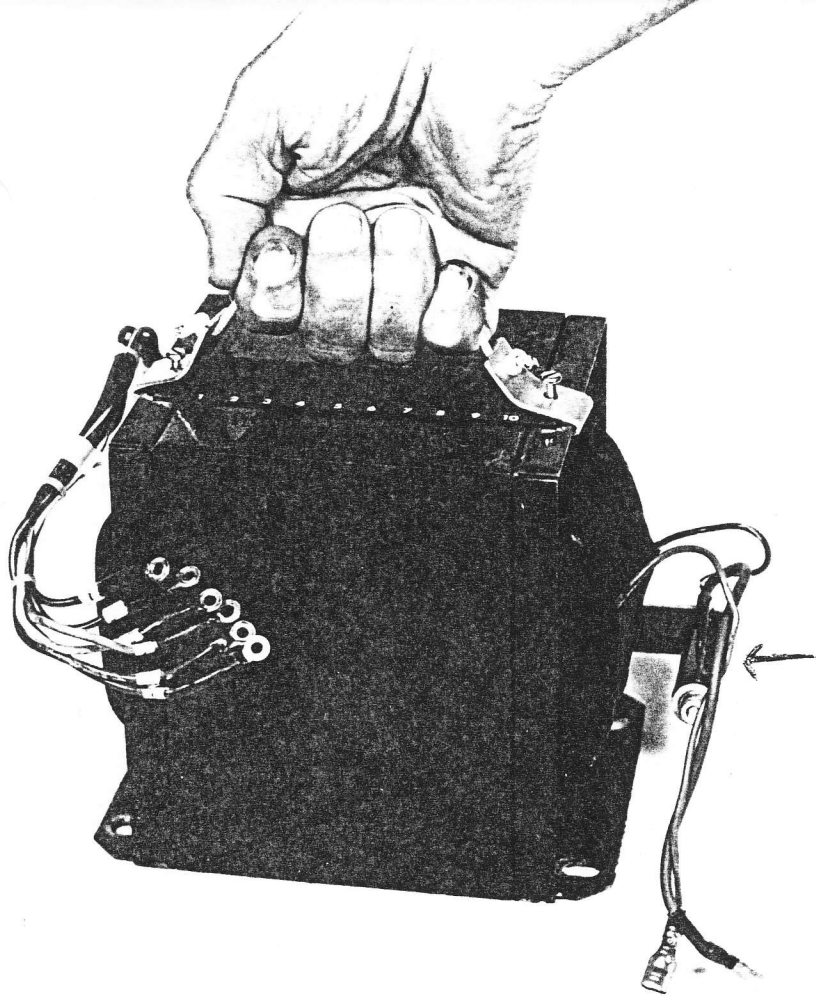


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 BRISTOL, PENNSYLVANIA 19007  
 TEL: 215-788-5581

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**SCHEMATIC - PT 2500A  
 LINEAR AMPLIFIER**

MATERIAL	DRAWN BY	SHEET 1 OF 1
	CHECKED BY	DRAWING NUMBER
SCALE	DATE	
	14 NOV. '83	



1. INSTALL RESISTOR PER ILLUSTRATION.
2. TRANSFORMER IS SHIPPED WITH DISPOSABLE LIFTING STRAP FOR EASE OF INSTALLING IN AMPLIFIER. AFTER INSTALLING REMOVE LIFTING STRAP AND USE THE SAME SCREWS TO SECURE TERMINAL BLOCK.

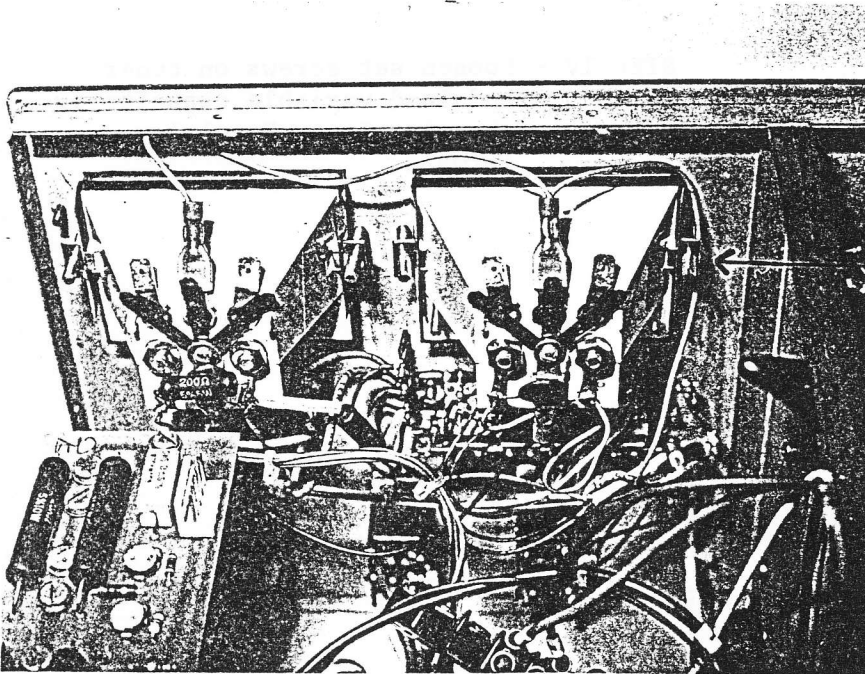
TEN METER MODIFICATION  
FOR PT-2500A

STEP I - Remove Knobs, Dial Skirts,  
and screws (8 places).

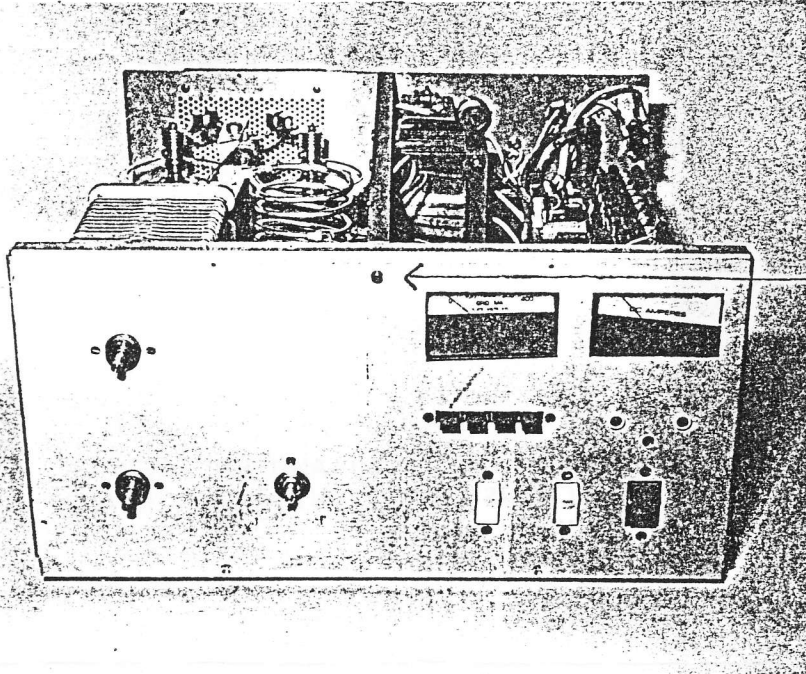


\*SERIAL NOS. 200 AND UP. REMOVE  
3 SCREWS. BAND SWITCH KNOB AND  
3/8" NUT ONLY.

STEP II - Remove Meter Bezel Hardware  
(4 places), then remove Front  
Panel.

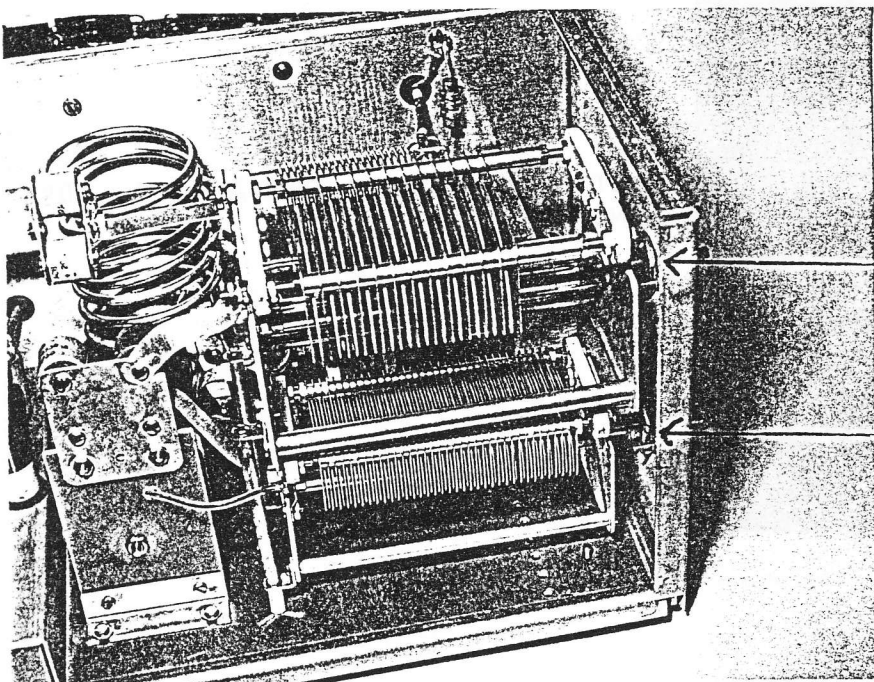


\*NOT REQUIRED FOR SERIAL NOS. 200  
AND UP.

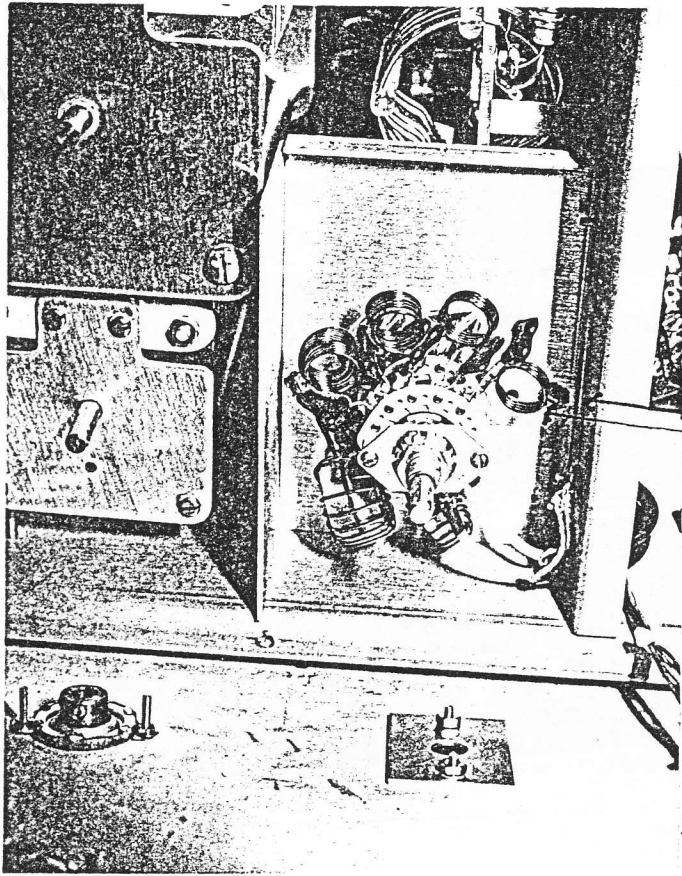


STEP III - Remove the screw with nut and lockwasher located on top center of Inner Panel. Remove 3/8 nut.

\*NOT REQUIRED FOR SERIAL NOS. 200 AND UP.



STEP IV - Loosen set screws on tuner and load variable capacitors, then let Inner Panel lay forward.



STEP V - Install 10 Meter Coil from unused contact on Front Switch deck to unused contact on rear deck, as shown. Install 100 pf capacitor to forward Deck Switch contact and ground lug on rear of Input Shield. Space coil turns to approximately 1/16 inch.

STEP VI - Reverse procedure to reassemble unit. Extreme care should be taken when tightening the set screws on the variable capacitors.

NOTE: When fully meshed the tune variable is set at "100" on dial skirt and the load variable is set at "0" on dial skirt. See Page 7, Paragraph 4.1.6 and 4.1.7 of instruction manual.