

HENRY RADIO

LINEAR AMPLIFIERS

Operating and

Maintenance Manual

2K-Classic

2K-Classic X

2KD-Classic

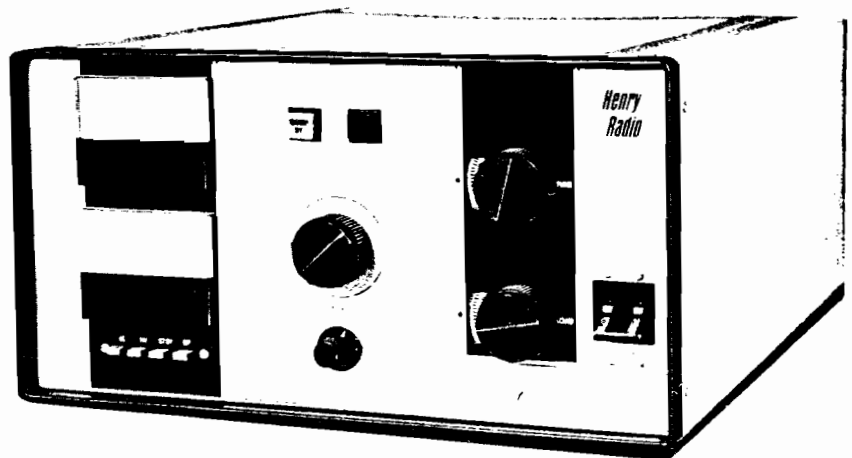
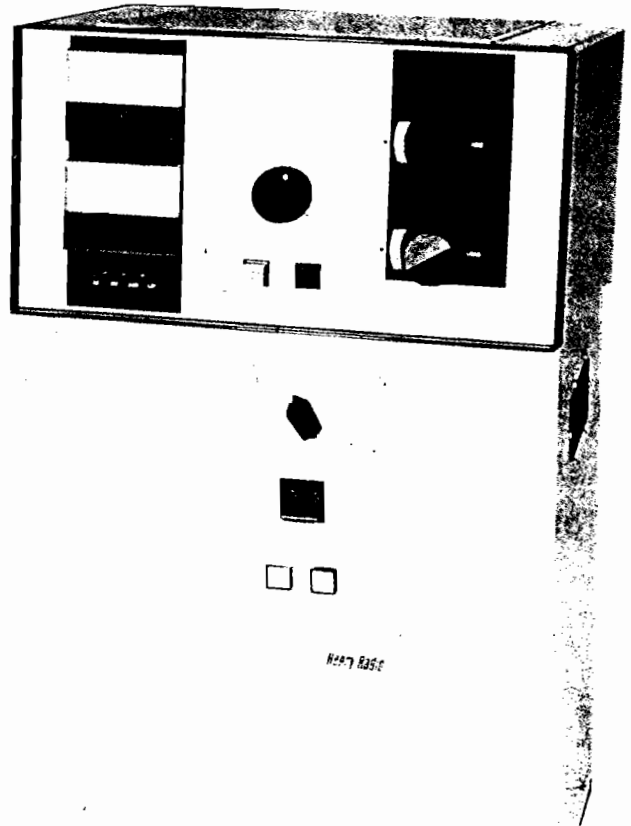


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SECTION 1. SPECIFICATIONS

TYPE AND FUNCTION OF EQUIPMENT.....
2KD-Classic - A desk top 2000 watt PEP input (1200 watt PEP nominal output) RF linear power amplifier covering the 3.5 to 30.0 MHz frequency range.

2K-Classic - A floor console 2000 watt PEP input (1200 watt PEP nominal output) RF linear amplifier covering the 3.5 to 30.0 MHz frequency range.

2K-Classic X - A special version of the 2K-Classic using special heavy duty power supply and RF deck components for reliable operation under heavy use in military, industrial, or commercial operation.

TYPE OF EMISSION.....SSB/AM/CW or RTTY (class AB operation).

OUTPUT POWER.....
2KD-Classic/2K-Classic/2K-Classic X (Domestic Model) - 1200 watts PEP nominal (2000 watts PEP nominal input).
2K-Classic X (Export Model) - 1800 watts PEP nominal (3000 watts PEP nominal input).

DRIVE POWER.....80 to 120 watts nominal input drive power.

DIMENSIONS.....
2KD-Classic - 9.5" high x 17.25" wide x 19.75" deep.
2K-Classic and 2K-Classic X - 32.75" high x 15.0" wide x 16.5" deep.

SHIPPING WEIGHT.....
2KD-Classic - Approximately 80 pounds.
2K-Classic - Approximately 125 pounds.
2K-Classic X (Domestic Model) - Approximately 140 pounds.
2K-Classic X (Export Model) - Approximately 160 pounds.

DUTY CYCLE.....
2KD-Classic - Full output in intermittent amateur service.
2K-Classic and 2K-Classic X - Continuous at rated output.

POWER REQUIREMENTS.....
2KD-Classic/2K-Classic/ 2K-Classic X (Domestic Model) - 115 VAC at 30 amps or 230 VAC at 15 amps, 50 or 60 Hz. (Factory setup required for 2 wire 230 VAC use)

2K-Classic X (Export Model) - 230 VAC at 20 amps, 60 Hz. (Factory setup required for 2 wire 230 VAC or 50 Hz use)

ALC CIRCUIT.....Prevents overdrive from high power exciters and boosts the average talk power of your signal.

COOLING.....Forced air cooled.

PLATE POWER INPUT.....
2KD-Classic/2K-Classic/2K-Classic X - Nominal average in-

put of 1000 watts with speech. Distortion products are at least 35 dB down from the signal.
2K-Classic X (Export) - Nominal average input of 1500 watt with speech. Distortion products are at least 35 dB down from the signal.

FREQUENCY RANGE.....

80 Meters - 3.5 to 4.0 MHz
40 Meters - 7.0 to 7.5 MHz
20 Meters - 14.0 to 14.5 MHz
15 Meters - 21.0 to 21.5 MHz
10 Meters - 28.0 to 30.0 MHz

*10 Meters available only on models shipped outside the United States. All amplifiers will work on all WARC bands and most frequencies between 3.5 and 30.0 MHz.

INPUT IMPEDANCE.....50 ohms nominal with tuned input circuits.

OUTPUT IMPEDANCE.....50 ohms unbalanced (SWR < 2:1).

TUBE COMPLEMENT.....Two Eimac 3-500Z glass envelope triodes.

HARMONIC AND SPURIOUS RADIATION.....

2nd Harmonic - better than 50 dB down.
3rd Order Distortion - better than -35 dB at full output.

NOISE LEVEL.....

40 dB or better below 1-tone carrier at 1000 watts output.

PLATE VOLTAGE.....(Depends on AC line voltage)

2KD-Classic - SSB 3000 to 3200 VDC.
CW 2000 to 2200 VDC.
2K-Classic - SSB 3000 to 3200 VDC.
CW 2000 to 2200 VDC.
2K-Classic X (Export) - SSB 3700 to 3900 VDC.
- CW 2700 to 2900 VDC.

CABINETY.....

All aluminum cabinets, double shielded in RF sections.

ANTENNA RELAY SYSTEM.....

Built-in 12 VDC antenna relays automatically transfer the exciter to the antenna when the power switch is in the standby or off position. Built-in DC power supply to offer hum-free relay operation.

METERING.....

Plate current, plate voltage, grid current are metered.

PROTECTION DEVICES.....

All circuits are protected by fuses, circuit breakers or cabinet interlocks.

ACCESSORIES SUPPLIED.....

RF drive cable, ALC cable, relay cable, fuses, manual and spline wrenches for removing the knobs.

SECTION 2. INTRODUCTION

The 2K-Classic, 2KD-Classic, and the 2K-Classic X are a family of high quality one stage linear RF amplifiers using two rugged, economical, and proven glass envelope Eimac 3-500Z triodes operating in a grounded grid circuit. The amplifiers are completely self-contained and offer a choice of 2000 watt PEP input amplifiers using only the highest quality components.

The 2KD-Classic is a desk model amplifier with a lighter duty power supply for the operator who is primarily intending SSB, CW or other non-demanding operation. The 2K-Classic is a floor console amplifier offering a heavier duty power supply for the operator who is serious about contesting, rtty, slow scan, or other more demanding modes of operation. The 2K-Classic X comes in two formats - - a domestic version for sale in the United States, and an export version for sale outside the United States. There are two differences between the domestic and export amplifiers. The first is that all models of amplifiers sold in the U.S. are not supplied with a 10 meter band because of FCC regulations regarding amplifier operation above 24 MHz. Also the domestic version is supplied with a smaller plate transformer because of FCC regulations regarding the maximum allowable output from an amplifier. The 2K-Classic X differs from the 2K-Classic by including a separate filament transformer, heavy duty power supply section, a larger transformer (for export), and heavier components in the RF section (bandswitch and coil).

These are a family unit of amplifiers because they are all designed around the same basic RF deck design which employs a unique rotary tank inductor not found in any other line of production amplifiers. All of the amplifiers are designed for SSB, CW, RTTY, or AM operation on the amateur bands between 3.5 and 30 MHz (subject to 10 meter restrictions). The amplifiers can also operate on frequencies outside the amateur bands for military, commercial, or industrial applications.

Please read the instruction manual carefully before operating your new equipment. Power amplifiers can be damaged by operation out of resonance. The amplifiers are shipped with the tubes not installed, therefore the 3-500Z tubes must be inserted before you can operate the equipment.

CAUTION: There are dangerously high voltages present inside the amplifier whenever the power switch is in the ON position. Do not remove the top cover unless you exercise the utmost CAUTION! THE VOLTAGES FROM THESE POWER SUPPLIES CAN BE LETHAL.

SECTION 3. INSTALLATION

SECTION 3.1 UNPACKING

Remove the amplifier from its shipping carton and packing material. Please note that the tubes, chimneys, manual, cables and other accessories are packed in a separate box from the amplifier. Examine both boxes and all of the equipment carefully for shipping damage. If there is any shipping damage, save the box and packing material and notify the transportation company immediately. It is a good idea to save the box and packing in any case because the box is expensive to replace and will be useful in protecting your amplifier should you ever decide to ship or move it to another location. The amplifier is shipped without the two tubes and chimneys installed. Before operation you must install the 3-500Z tubes as described in Section 3.3.

The following are included in the accessory box:

2	3-500Z Tubes	1	Each relay and ALC Cable
2	Chimneys	1	Box Each Type fuses
1	Manual & Warranty	1	PL-259 Antenna Connector
1	RF Input Cable	1	Ea Size Spline Wrench

SECTION 3.2 OPERATING LOCATION

The amplifier may be located wherever desired provided there is adequate air flow from the bottom of the unit up through the top. Do not enclose the amplifier or restrict the air flow. The floor console models have adjustable feet to level the amplifier if the floor at the operating location is not level. You will also require a location that has an appropriate AC power source. An operation which avoids environmental extremes of heat, humidity, and dust will keep the amplifier new looking and insure years of reliable operation.

SECTION 3.3 INSTALLATION OF TUBES

Be certain that the power switch is OFF and that the power cord has not been plugged into the wall before inserting the tubes. Remove the perforated top cover of the amplifier and the interior top shield, giving access to the interior of the RF section of your amplifier.

Put the two 3-500Z tubes carefully into their sockets. Install the rear tube so that the screw which holds the plate strap is toward the front of the amplifier. Install the front tube so that the screw is toward the back of the amplifier. Be careful not to put any strain on the glass portion of the tubes. They can easily break. Install the glass chimneys over the tubes, being sure that all four chassis clips are engaged onto the chimney, and that the bottom of the chimneys are pushed down flush against the chassis. To fasten each plate lead to its appropriate tube, flex the parasitic choke assembly and plate lead until the connecting hole in the plate lead is positioned directly above the screw hole on the anode connector of the tube. Hold the plate lead firmly while you insert and tighten

FIGURE 1. AC LINE VOLTAGE CONNECTIONS.

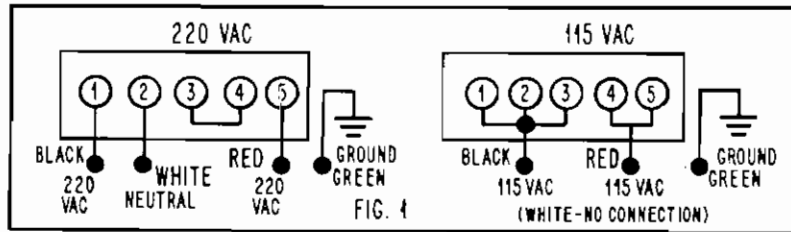


FIGURE 2. ASSEMBLING A PL-259 CONNECTOR.

	<p>Cut end of cable even. Remove vinyl jacket 1 1/8", except 83-1SP plug remove vinyl jacket 1 1/4".</p>
	<p>Bare 5/8" of center conductor. Trim braided shield. Slide coupling ring on cable. Tin exposed center conductor and braid.</p>
	<p>Screw the plug assembly on cable. Solder assembly to braid through solder holes, making a good bond between braid and shell. Solder conductor to contact. Do not use excessive heat.</p>
	<p>For final assembly, screw coupling ring on plug sub-assembly.</p>

the screw, but do not exert excessive pressure on the plate cap -
- you can crack the tube!

Be very careful when inserting the tubes into their sockets! A twist or too much pressure on the anode connector of the tube can cause hairline fractures in the envelope of the tube, destroying the tube. The tube's pins are also very delicate, and can be broken if the tubes are not inserted and removed very carefully. Broken tubes ARE NOT covered by the Henry or Eimac warranty.

Replace the interior top shield onto the RF deck, but leave the outside cover off until the amplifier has been connected and tested. Be certain that the high voltage shorting strap on the RF chassis is not shorting after the top shield has been replaced. Never attempt to disable the high voltage shorting strap, and never attempt to operate the amplifier with the top shield off. DC voltages inside the amplifier can be lethal!

SECTION 3.4 CABLING

Each of the following cables must be connected before the amplifier can be used properly.

POWER CABLE - The standard 2KD-Classic, 2K-Classic, and 2K-Classic X (Domestic Version) come from the factory equipped with a 4 wire AC power cable which must be connected to a 220 VAC, single phase, 60 Hz power source. The amplifiers are not supplied with an AC plug because of the variety of socket types available in the United States. It is your responsibility to obtain and correctly connect the AC plug to your amplifier. The green wire in the power cord is chassis ground. The white wire is neutral and must be connected to the neutral leg of the 220 VAC line. The black and red wires are the two hot wires in the 220 VAC circuit. Figure 1 shows the wire connections and also shows how the terminal block on the back of the amplifier can be rejumped for 110 VAC operation. The terminal board is located behind a small cover on the desk model. On the floor console the terminal board is located on the bottom power supply level. To access the terminal board the back panel must be removed. This is accomplished by removing the six screws holding the back panel in place. All amplifiers are factory wired for 220 VAC operation unless otherwise specified. Whenever possible, 220 VAC operation is preferred over 110 VAC operation because the voltage regulation is better and because the current is lower.

The 2K-Classic X will only operate from a 220 VAC power source. The power cord is connected in the same manner as for the other models. All models of amplifiers which will be operated on a two wire 220 VAC line or will be operated from 50 Hz must be specially ordered from our factory because special modifications are required.

Please remember that the amplifier can be damaged if the wires are connected incorrectly. Disconnect the power cord from the power source before making any changes in the cord or terminal board. Damage caused by incorrect AC connection or operation from a power source out of specification with your model will not be covered by your warranty!

ANTENNA COAX - Use only RG-8/U coax (RG-11 is acceptable if you are using a 72 ohm antenna) or its equivalent to connect your amplifier to the antenna. A PL-259 (UHF type) coax connector is included with the accessory kit. Prepare the cable and connector as described in Figure 2. The coax connector mates with the jack marked OUTPUT on the rear panel of your amplifier.

Never operate the amplifier without a 50 ohm (or 72 ohm) antenna or dummy load. Do not operate your amplifier into a load with an SWR of greater than 2:1. Measure the SWR of your antenna with an SWR meter using only your exciter before operating the amplifier. With the amplifier turned off, the exciter's output goes directly to the antenna. You can damage the amplifier if you operate into a load with an SWR greater than 2:1.

DRIVE CABLE - An RG-58A/U coax connector is supplied to connect your exciter to the INPUT connector on your amplifier. Use an appropriate coax adapter if the connector on the cable does not match the connector on your exciter.

ALC CABLE - This cord controls the automatic level control feedback between the exciter and the amplifier. Plug the gray ALC cable into the RCA jack marked ALC OUT on the rear panel of the amplifier and into the ALC feedback connection on the exciter. If the exciter has no provision for ALC feedback, simply ignore the ALC connection. Each exciter has different provisions for ALC feedback so examine the operating manual to find the connection if there is any question. The RCA connector can be removed if the exciter needs a solder connection.

RELAY CABLE - The gray relay control cable must be plugged into the RCA socket marked RELAY CONTROL on the rear panel of the amplifier. This cable conducts the keying signal from the exciter to switch the amplifier to the transmit condition and must be plugged into the socket marked antenna relay (or its equivalent) on the exciter. The RCA connector can be removed if your exciter requires a solder type connection. The exciter needs to supply only a shorting relay contact during transmit to key the amplifier. Some Kenwood transceivers may require the addition of a series resistor in the circuit.

Never apply any voltage to the amplifier's relay control circuit! Your amplifier has a relay power supply which provides the necessary voltage.

Most modern transmitters or transceivers make easy provision for a relay control connection. If it is not obvious to you, examine the operating manual of the exciter to find an available unused relay contact that is normally open during receive and normally closed during transmit.

Some modern transceivers use diode switching rather than relay switching. Since all Henry amplifiers use a 12 VDC relay control voltage, any resistance across the relay control line may keep the amplifier from keying. If your exciter will not key the amplifier, you should check the resistance across the contact you are using. If there is too much resistance, contact the exciter's manufacturer about possible solutions to the problem.

SECTION 4. OPERATING CONTROLS

SECTION 4.1 FRONT PANEL CONTROLS

OFF/ON POWER SWITCH - On the desk model this switch is located on the front operating panel. On the floor console models the switch is located on the front panel of the power supply pedestal. The switch is used to turn the amplifier on and off. It is also a circuit breaker for overload protection on the AC lines. When the amplifier is turned off or in the standby position, the output from the exciter passes through the amplifier directly to the antenna.

FUNCTION SWITCH - This four position pushbutton switch is located just below the meters. It has two interlocked switch pairs. The two on the left select the function of the multimeter. When the far left button (IG) is pushed in the multimeter reads the grid current of the final tubes on a 0 to 400 ma scale. When the second button (HV) is pushed in the multimeter reads the high voltage from the power supply on a 0 to 4000 VDC scale. The pair of switches on the right side enables or disables the relay circuit of the amplifier. When the standby (STBY) switch is selected the amplifier will not key during transmit so you can use your exciter "barefoot" without turning off the power switch of the amplifier. When the operate (OP) switch is selected the amplifier will automatically key during transmit.

MULTIMETER - The first meter above the function switch shows either the grid current of the final tubes on a 0 to 400 ma scale or the high voltage from the power supply on a 0 to 4000 VDC scale. The two left buttons on the function switch select the reading on the multimeter.

PLATE CURRENT METER - The top meter monitors the plate current to the two 3-500Z tubes. Nominal plate current is between 650 and 800 ma for full output.

CW/SSB SWITCH - On the desk model this switch is located on the front operating panel. On the floor models the switch is located below the RF level on the front panel of the power supply pedestal. This 2-position rotary switch selects between two plate voltage taps on the power transformer to assure correct loading and output for each type of emission.

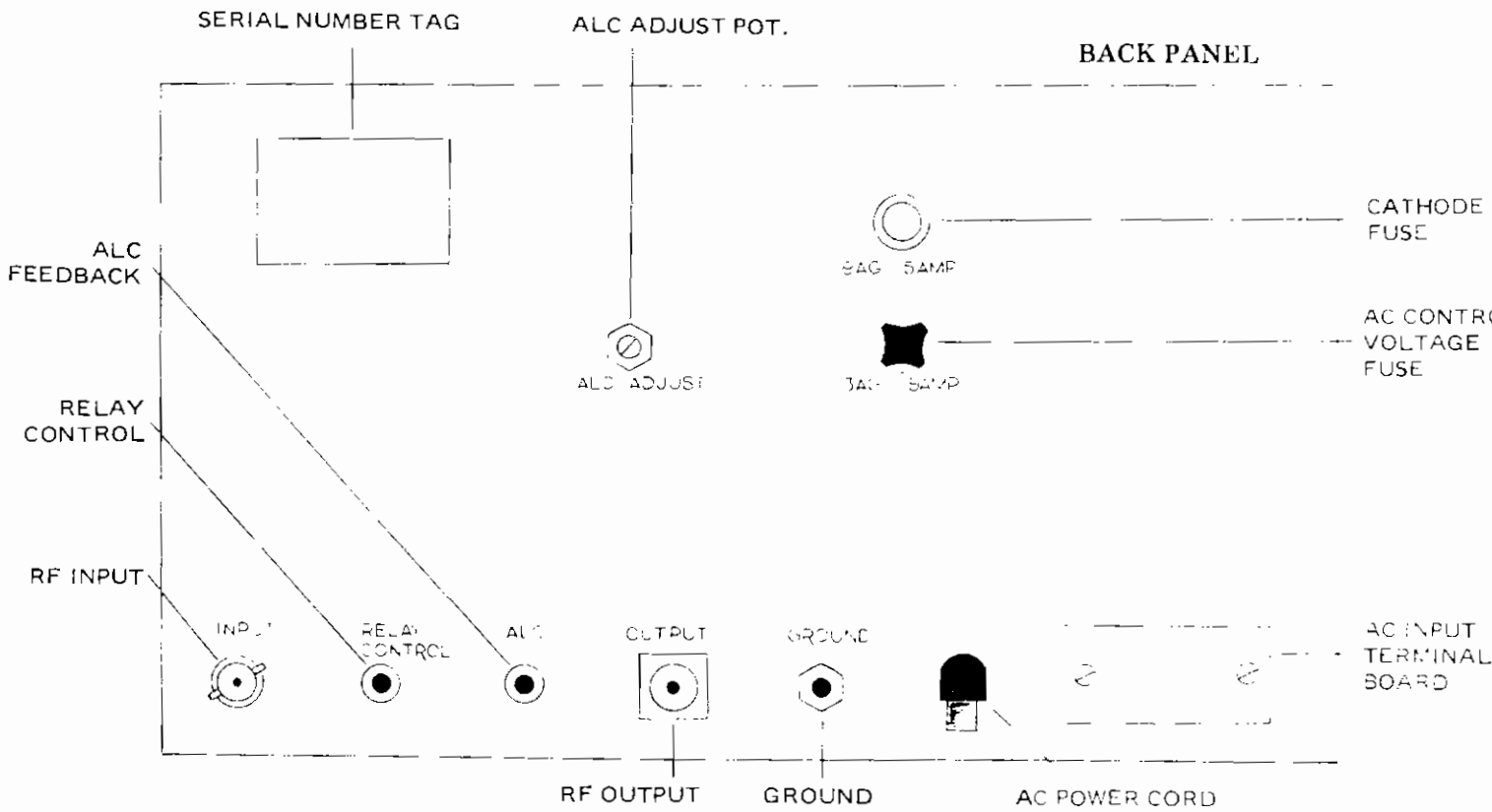
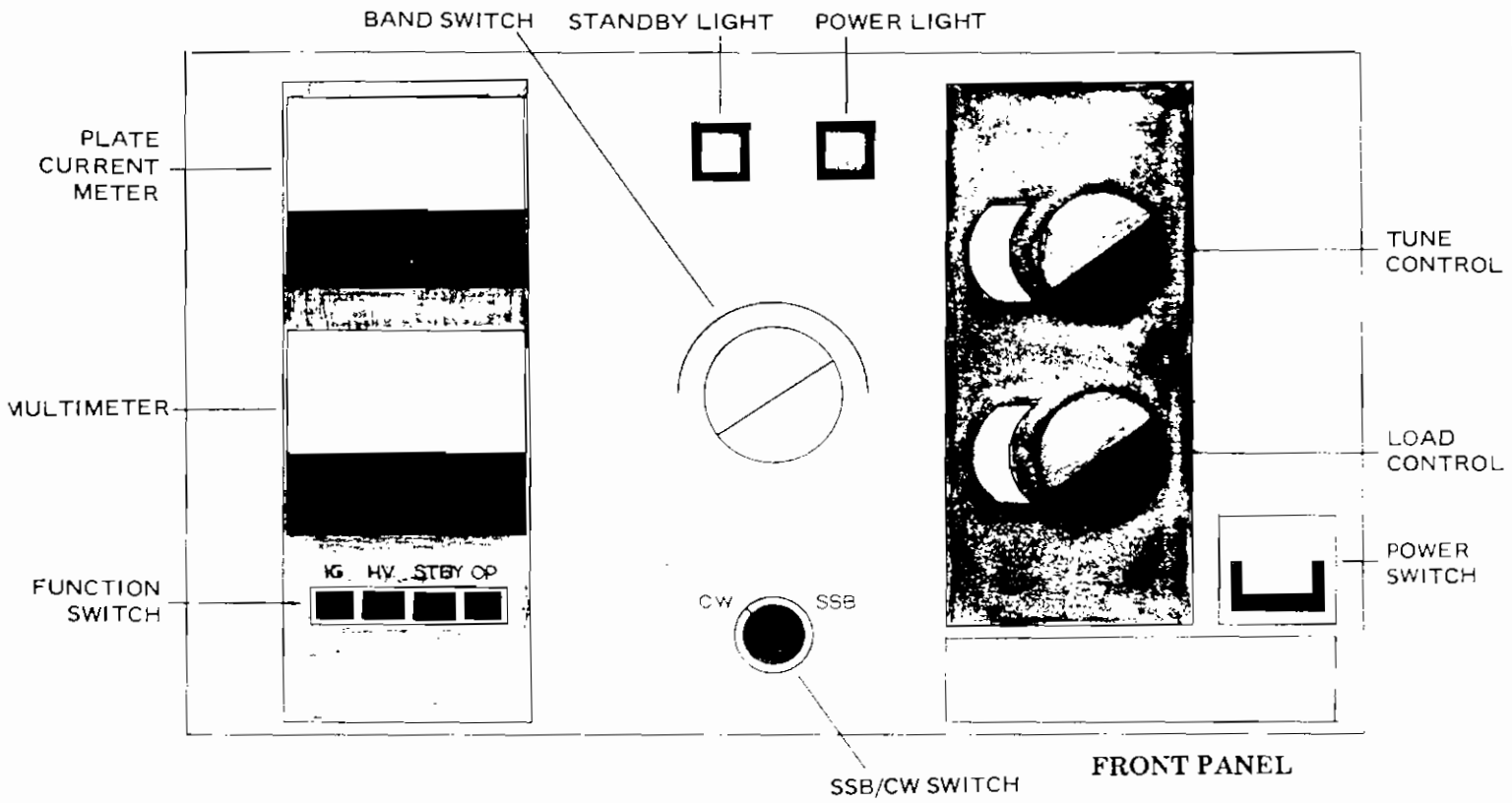
STANDBY LIGHT - The yellow standby light is lighted when the amplifier is on and the function switch is in the standby position.

POWER LIGHT - The red power light is lighted when the amplifier is on and the function switch is in the operate position.

PILOT LIGHTS - The two lights behind the TUNE and LOAD dials come on indicating the power switch is on.

TUNE CONTROL - The tune control is a 20-turn vernier dial connected to the variable inductance tank coil. This control is attached to a tune dial which is read through the window directly

FIGURE 3. 2KD-CLASSIC OPERATING CONTROLS.



to the left of the knob. The TUNE and LOAD controls are used to adjust the amplifier to resonance for the selected frequency of operation. A chart in the back of this manual gives preliminary settings for the tune control to begin the tune-up procedure.

LOAD CONTROL - This control matches the amplifier's output network to the load. It is attached to a load dial which is read through the window directly to the left of the knob. A load setting of 0 corresponds to minimum loading and a setting of 100 corresponds to maximum load capacitor mesh. The TUNE and LOAD controls are used to adjust the amplifier to resonance and proper load match for the selected frequency of operation. A chart in the back of this manual gives preliminary settings for the load control to begin the tune-up procedure.

BAND SWITCH - The band switch selects the necessary input and output circuits for the amplifier to operate in any one of the following frequency range:

80	3.500 to 4.000 MHz	15	21.000 to 21.500 MHz
40	7.000 to 7.500 MHz	10*	28.000 to 30.000 MHz
20	14.000 to 14.500 MHz		

* 10 meter coverage is provided only on amplifiers shipped to the military or for sale outside the United States.

The amplifier can be operated on most frequencies outside the amateur bands by switching the amplifier to the band closest to the desired operating frequency. NEVER MOVE THE BAND SWITCH WHEN THE AMPLIFIER IS KEYED!

FUSES - On the desk model, the fuses are located on the back panel. On the floor console there are two fuses on the power supply pedestal below the RF section. They are both 3 AG, 3 amp fuses. One is for the meter circuit. The other is for the blower and low voltage control circuits. A cathode circuit protection fuse is located on the back panel of the amplifiers.

SECTION 4.2 REAR PANEL CONTROLS (See Figure 3 and 4.)

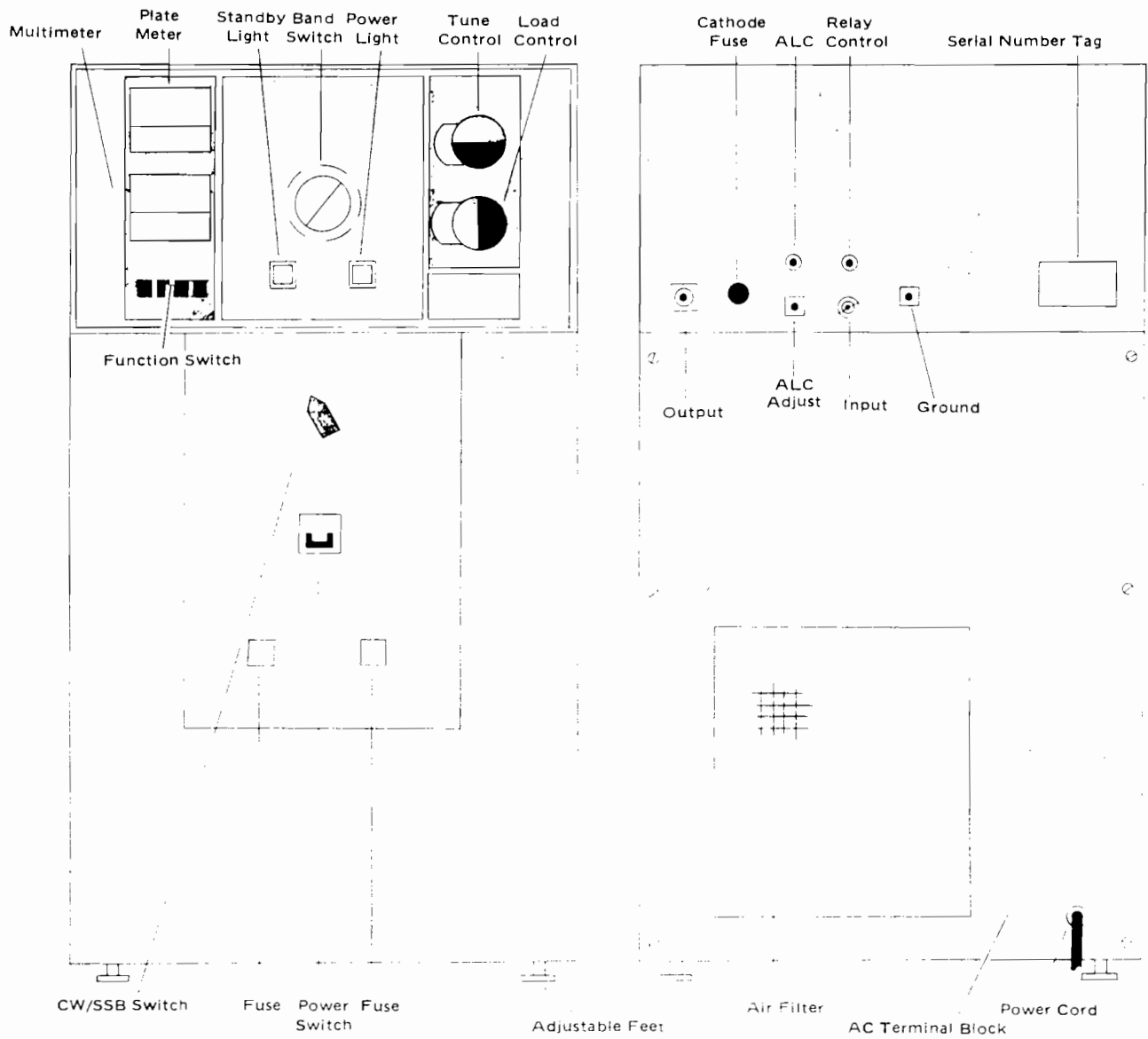
RF INPUT CONNECTOR - The RF input connector is a BNC type coax jack which accepts the drive cable from the exciter. The amplifier has tuned input circuits to match the 50 ohms impedance of the exciter.

RELAY CONTROL JACK - The RELAY CONTROL jack accepts an RCA type plug (the relay control cable is supplied with the accessory kit). When the socket is shorted to ground the amplifier's antenna relay closes. If the amplifier is turned off the relay will not key. Never apply any voltage to this socket.

ALC JACK - This socket accepts an RCA type plug (the ALC cable is supplied with the accessory kit). The ALC feedback to the exciter is available at this socket.

RF OUTPUT CONNECTOR - The RF OUTPUT connector is a UHF type coax connector. The nominal output impedance of the amplifiers is 50 ohms. Never operate the equipment without a load, or into a load

FIGURE 4. OPERATING CONTROLS - - FLOOR CONSOLES.



or antenna with an SWR of more than 2:1. Use only RG-8/U or better coax to connect this SO-239 connector to an appropriate antenna or dummy load. If the antenna represents a 72 ohm load then RG-11/U is the correct coax lead.

GROUND LUG - This bolt is provided to give a solid chassis ground for your amplifier. Usually connecting the amplifier to a standard 3 wire electrical system is adequate grounding. If such a system is not used it is wise to ground the unit using the ground lug and connecting it to a good earth ground to prevent radiated interference or the danger of electrical shocks.

ALC ADJUSTMENT POTENTIOMETER - This potentiometer controls the sensitivity of the amplifier's ALC circuit. Refer to the operating instructions for the adjustment procedure. The potentiometer's shaft has a locking nut to tighten after adjustment.

CATHODE FUSE - This 8 AG, 1.5 amp fuse protects the cathode circuit of the tubes from overload or short circuit. Never replace the fuse with one of greater current specification.

AC VOLTAGE CIRCUIT FUSE - THIS 3 AG, 1.5 amp fuse protects all of the circuits outside the high voltage circuit. Never replace the fuse with one of greater current specification.

POWER CORD - The power cord must be connected to an appropriate power source as discussed in the installation section. No plug is provided on this 10 foot cord. Be certain that the power transformer is jumpered correctly for the desired AC voltage before connecting the plug. See Figure 1. All amplifiers are factory wired for 220 VAC, single phase, three wire AC systems unless otherwise requested.

AC POWER CONNECTION TERMINAL BOARD - This terminal board is located behind a cover on the rear panel of the desk model. On the floor console, the terminal board is accessed by removing the back panel. It is located on the bottom level of the power supply just behind the back panel. Connect the jumpers for the desired AC line voltage as shown in Figure 1.

SECTION 5. OPERATION

SECTION 5.1 PRELIMINARY SETTINGS

After connecting all of the necessary cables as previously described, set the band switch to the desired band. Leave the amplifier turned off and tune your exciter to the desired operating frequency and then return the exciter's drive level back to zero. Set the TUNE and LOAD controls to the calibration listed for the desired frequency in Table 2 at the back of the manual. With the amplifier off, its internal relay circuit automatically connects the exciter directly to the antenna transmission line.

Turn the amplifier on by switching the circuit breaker power switch to the on position. The dial lights and STANDBY or POWER light should come on and you should hear the blower operating. Look down through the top shield to verify that the filaments of both tubes are lighted, and place your hand directly above each tube to make sure that air is circulating in the cooling system. The 3-500Z tubes require no warm-up period.

Push the HV button on the function switch so that the multimeter is showing the high voltage in the amplifier. The reading should be between 280 and 320, indicating a plate voltage of 2800 to 3200 VDC. The high voltage for the 2K-Classic X export version will be between 3600 and 4000 VDC. The high voltage in your amplifier depends greatly on the AC line voltage at the operating location. High line voltage means higher DC plate voltage and lower line voltage means lower DC plate voltage.

Push the OP button on the function switch so that the amplifier is switched into the operate mode. With the amplifier keyed (relays closed) but no RF drive applied from the exciter the plate current meter should show a resting current between 140 and 200 ma (in the SSB switch position). This resting current varies with individual tubes and the value of the high voltage. It is not a critical operating parameter.

SECTION 5.2 EXAMINE THE TUBES

The 3-500Z tubes should show color when they are operating properly - - a dull cherry red glow when the plate current is about 400 ma and a bright orange when the plate current is about 800 ma. When operating within these parameters the tubes are well within their rated operating limits and no damage will result, provided the amplifier has been tuned to resonance as described in the next section. Never operate the tubes at 800 ma of plate current in an off resonance condition, and do not operate the tubes for very long at 400 ma of plate current in an off resonance condition. Depending on the AC line voltage at the operating position, the plate current will be between 650 and 800 ma for 1000 watts output. A good output wattmeter is recommended for easier amplifier tuning. It is also a good indication of the health of your amplifier and tubes.

SECTION 5.3 SSB OPERATION

Turn the SSB/CW switch to CW and attach a 1000 watt output meter at the amplifier output. With no drive from the exciter, switch the exciter into transmit causing the amplifier and exciter to be keyed into the transmit mode. The plate current meter on the amplifier will still show about:

2KD-CLASSIC
70-80 MA

2K-CLASSIC
140-180 MA

2K-CLASSIC X
140-180 MA

Increase the RF output from your exciter to drive the amplifier until the plate current reaches approximately 400 ma. Remember that the TUNE and LOAD controls have already been set at the preliminary calibrations listed in the table at the back of the manual for the operating frequency. Adjust the TUNE control carefully for maximum RF output as indicated on the wattmeter attached to the output of the amplifier. Push the IG button on the function switch so that the multimeter is reading grid current, and readjust the drive from the exciter until the grid current reading is between:

2KD-CLASSIC
200-250 MA

2K-CLASSIC
250-270 MA

2K-CLASSIC X
250-270 MA

- STEP 1. If the plate current is less than 600 ma, increase the LOAD control setting slightly. If the plate current reading is more than 600 ma, decrease the LOAD control setting slightly.
- STEP 2. Turn the TUNE control for a minimum plate current reading (dip the plate current).
- STEP 3. Readjust the drive from the exciter until the grid current reading is again between:

2KD-CLASSIC
200-250 MA

2K-CLASSIC
250-270 MA

2K-CLASSIC X
250-270 MA

Repeat steps 1, 2 and 3 until the correct operating parameters are reached - - grid current (IG): between 200 and 250 ma (2KD-Classic) or 250 and 270 ma (Floor consoles) - - plate current (IP): approximately 600 ma - - TUNE control adjusted to dip the plate current.

Release the exciter from the transmit mode. Turn the SSB/CW switch to SSB and again key the exciter and amplifier. Adjust the drive from the exciter until the grid current is again between 250 and 270 ma. The plate current should now be approximately 800 ma depending on your AC line voltage. If it is not, readjust the TUNE and LOAD controls as described above until the plate current is close to 800 ma. A few seconds should suffice to confirm the prescribed operating conditions.

Please be careful how long the amplifier is keyed when the plate current is 800 ma. The desk model particularly can be damaged by key down operation at 800 ma if maintained at that level for

extended periods of time.

Switch the exciter to its SSB mode and adjust its microphone gain control until the amplifier's plate current reading is about 400 ma during voice peaks (while you are speaking). The grid current meter reading will peak between 50 and 100 ma. Check for proper drive on a monitor scope if you have one. Because of the complex wave form of the human voice, 400 ma on the plate current meter is indicating 800 ma for voice peaks. A sustained whistle will verify this fact.

SECTION 5.4 CW OPERATION

Turn the SSB/CW switch to CW and tune the amplifier as described in the previous section substituting the following tube parameters - - grid current : 200 to 250 ma (desk model) or 250 to 270 ma (floor consoles) - - plate current : 500 to 550 ma.

The above plate current readings for both SSB and CW operation apply for operation from a 220 VAC voltage source. For operation from a 110 VAC line, the plate current may have to be reduced because of poor voltage regulation. With adequate AC service however, operation will be the same for 220 or 110 VAC operation.

SECTION 5.5 ALC ADJUSTMENT

The amplifier is shipped with the ALC ADJUST potentiometer full counter-clockwise (off). If the ALC feedback is not desired, just leave the control as it comes from the factory. If ALC feedback is desired, the adjustment need be made only once, unless a new exciter is used. After the ALC adjustment is made, use the locknut on the potentiometer shaft to lock the control in place.

With the control fully off, tune your amplifier for SSB operation on a selected frequency. Drive the amplifier to about 800 ma of plate current and then carefully rotate the ALC ADJUST potentiometer clockwise until the grid current reading on the amplifier just begins to decrease. If your exciter can not drive the amplifier to 800 ma of plate current, just leave the ALC ADJUST control fully counter-clockwise.

The ALC circuit prevents overdrive from a high power exciter when it is adjusted properly. For the cleanest, sharpest signal, avoid plate current voice peaks higher than 400 ma.

SECTION 5.6 ALTERNATE TUNING METHOD

When you have verified the TUNE and LOAD dial settings for each band, and are more comfortable with your amplifier, the entire tuning procedure can be completed in a few seconds.

This alternate tuning method (tuning for maximum output) requires a good RF power meter at the output of the amplifier. Set the TUNE and LOAD controls at the predetermined settings for the frequency desired. Apply drive from your exciter to the amplifier and bring the RF output reading up to about 600 or 700

watts. Adjust the TUNE and LOAD controls carefully to peak the amplifier's output reading on the wattmeter. The amplifier will now be tuned to resonance.

SECTION 5.7 OPERATING PRECAUTIONS

Keep the following precautions in mind to insure safe and reliable operation of your amplifier for many years.

Voltages inside the amplifier are lethal. Never try to disable the protection circuits and operate your amplifier without the cabinet.

Always tune your amplifier for resonance at the operating frequency before transmitting.

Never switch the BAND switch while the amplifier is transmitting. You will be likely to have a very expensive repair bill to replace the band switch if you do this.

Never operate your amplifier into a load with an SWR exceeding 2:1.

Never switch the BAND switch when the amplifier is keyed.

The components in your amplifier are specifically designed for operating parameters in line with the rated output as listed in the specifications. Excessive drive causing output in excess of specification will shorten tube life and endanger the reliability of other components.

SECTION 6. MAINTENANCE PROCEDURES

SECTION 6.1 INPUT MISMATCH

All of these amplifiers have a tuned input coil for each band so that there is a relatively good match between the amplifier and exciter. If for some reason you find a high reflected power from the amplifier during transmit, you will have to retune the input coil of the band where the problem exists. The RF section must be removed from the wraparound to tune these circuits. refer to section 7 for a description of the disassembly procedure. The input coils are adjusted through holes in the left side of the chassis of the RF section. The coils are labeled as to which band they tune.

To tune the input, you must insert an SWR meter in the drive cable. Key the exciter at the desired operating frequency and tune the amplifier, then adjust the input coil for minimum reflected power in the drive cable.

SECTION 6.2 TUBE PROBLEMS

EXCESSIVE PLATE CURRENT - This symptom is usually caused by a defective 3-500Z tube, and the only cure is to replace the tube. The amplifier can not be operated with just one tube because the filaments are in series - - 10 volts at 15 amps (5 volts per tube).

Excessive resting plate current can often be caused by a failure of D1, the bias diode. Replace the diode to solve the problem.

GRID/FILAMENT SHORT - A failure of this nature in the 3-500Z can cause the amplifier to show plate current even when it is not keyed. Another indication of this problem is negative grid current on the meter. Again the tube must be replaced to correct the problem.

PLATE SHORT - A failure of this nature will cause the circuit breaker to blow. Other high voltage shorts can cause the same symptom so you must isolate the cause. If the shorted condition causes excessive plate current, the cathode fuse will blow.

LOW OUTPUT - A 3-500Z can offer many years of reliable service, but if you operate the amplifier out of resonance the tubes will eventually go "soft" making it impossible to drive the amplifier to full output.

SECTION 6.3 RELAY CIRCUIT PROBLEMS

RESTING CURRENT WHEN AMPLIFIER NOT KEYED - If the relay is keyed you will see normal tube resting current, therefore you must suspect that the relay cable, exciter's relay, or one of the relays is malfunctioning. Isolate the problem by disconnecting the relay cable. If the problem persists, the cause is in the amplifier. If the problem disappears the cause is in the exciter or cable. A problem in the amplifier would normally be caused by a short in the 12 VDC circuit or a defective relay.

THE AMPLIFIER WILL NOT KEY - Suspect first the relay cable, then check the exciter's relay circuit. Henry amplifiers key with 12 VDC and some modern exciters use diode switching. This combination sometimes causes a voltage drop in the relay line so that the relays will not key. Measure the resistance across the exciter's relay contact. Any resistance can cause a voltage drop. If this is the case, a higher voltage external relay may be required or a modification might be required to the exciter. Another cause could be the relay power supply is not providing the 12 VDC. Check the voltage at the center pin of the relay jack, it should be between 12 and 20 VDC. If there is not voltage check first the 3 AG fuses, then the components in the relay power supply. A last cause of the problem could be a defective relay.

SECTION 6.4 HIGH VOLTAGE CIRCUIT PROBLEMS

The high voltage in your amplifier can be lethal! Always disconnect the amplifier from its AC power source and turn off the power switch before repairing it.

NO PLATE CURRENT WITH HIGH GRID CURRENT - This is a sure indication of a break in the high voltage line between the power supply and the tube. You must unplug the amplifier and trace the circuit with an ohm meter to find the break.

HIGH VOLTAGE SHORT - A high voltage short will usually result in the circuit breaker turning the amplifier off. Also there will often be an arc indicating the source of the short. Isolate the short by disconnecting the high voltage lead between the RF section and the power supply. If the short persists, the problem is in the power supply. If it disappears the problem is in the RF section. If the short is in the RF section, remove the top cover and search for visible evidence. Then use an ohm meter to trace the circuit from the high voltage input socket to the blocking capacitors, including the tubes. If the problem exists in the power supply you will again have to use an ohm meter to trace the circuit to find the location of the short. Bad rectifier diodes can often be isolated by measuring their resistance. Good diodes have infinite reverse resistance and bad diodes have a very low reverse resistance. Some of the components such as the transformer, choke, and diodes may only short when the high voltage is applied. To isolate the problem here you will have to progressively disconnect components from the circuit until the short no longer happens. Start with the filter capacitor, progress to the filter choke, then the diodes, then the power transformer. Remember, a short in the RF section may require replacement of the 1.5 amp cathode fuse.

LOW HIGH VOLTAGE - This problem is usually an indication of low AC line voltage.

EXCESSIVE HIGH VOLTAGE - This is a problem that can be seen when the filter choke is out of resonance. A resonated filter choke is used because of the superb linearity and voltage regulation provided. However, the choke must be resonated by a capacitor. If that capacitor fails, or changes value the choke is no longer resonated and the voltage regulation becomes poor. The result

will be excessive high voltage when the amplifier is not transmitting and excessive voltage drop during transmit. This means the power supply is set up for 60 Hz operation but is operating at 50 Hz. Additional capacitance is required to resonate the choke at 50 Hz.

NO HIGH VOLTAGE METER READING - The most likely cause is a failure of the 8 AG, 1-1/2 amp meter protection fuse. Another cause is a failure or value change in the high voltage multiplier resistors in the power supply.

SECTION 6.5 BLOWER PROBLEMS

The blower is one of the most susceptible parts to transportation damage. Henry amplifiers use squirrel cage blowers because of their exceptional air blowing capability in a small size. But the blower assembly can be easily damaged if the amplifier is dropped during shipment. Therefore when the amplifier is installed make certain that a strong flow of air is coming out the top of the amplifier when it is turned on. Other indications of blower damage can be a resonance in the amplifier cabinet caused by an unbalanced fan, or an unequal flow of air between the two tubes.

If the blower is not operating, check the 3 AG fuses. A good indication that they are blown is that the pilot lights are not working.

SECTION 6.6 OUTPUT PROBLEMS

The first thing to check if there is low output is the check for adequate drive from the exciter. Eimac 3-500Z tubes will give approximately 10 dB of gain (about 10 times amplification). Some modern solid state exciters have power drop off on some bands so therefore the output from the amplifier will put out correspondingly less power. Since the amplifier is a superbly linear device its output varies directly with its input.

The next thing to check is input and output cabling. An intermittent or shorted drive cable can cause low input or no input to the amplifier. This will usually show up by operating the exciter through the amplifier (in standby) and measuring the power. Low drive power can be seen as low grid current during transmit. Also check the output cables. Shorted coax is not uncommon and a poor job of installing coax connectors can cause severe output problems.

Other problems that can reduce output are low plate current, insufficient filament voltage, low AC line voltage, or bad tubes.

SECTION 6.7 AC LINE VOLTAGE

The transformers in your amplifier have taps to compensate for unusual AC line voltage at the operating location. Normally the transformers are wired for 220 VAC operation. If your AC line voltage is far different from the norm then most of the operating parameters of your amplifier will be different. To help

compensate for this difference the power transformers have taps for 200 VAC, 220 VAC, or 240 VAC operation on their primary. The primaries of the transformers should be wired to the following taps:

	200 VAC	220 VAC	240 VAC
2K-D Classic....	Taps 2 and 5..	Taps 1 and 6.....	none.....
2K-Classic.....	none.....	none.....	none.....
2K-Classic X....	Taps 1 and 2..	Taps 1 and 3..	Taps 1 and 4

SECTION 6.8 OTHER PROBLEMS

AMPLIFIER WILL NOT TURN ON - The most likely cause is the circuit breaker. Check the continuity of the circuit breaker with an ohm meter if the amplifier will not turn on or off. Another possible cause is the improper installation of the power plug on to the power cable. If the high voltage turns on, but the pilot lights, blower, and relay supply do not come on the 3 AG fuse has blown.

ALC CIRCUIT SHORTED - A defect in the ALC circuit can prevent the tubes from being driven properly.

FILAMENT VOLTAGE FAILURE - Check the tubes when the amplifier is first turned on to make certain that they are lighting. If they are not check the filament connection between the power supply and RF deck, and then the filament transformer or filament windings of the power transformer on the 2KD-Classic and the 2K-Classic.

SECTION 6.9 CONTACTING THE FACTORY

If you have any questions concerning the servicing of your amplifier, you should call or write the amplifier service department at Henry Radio. Should it ever be necessary to return the amplifier to the factory for repair, decide first if you need to send the whole amplifier or just a certain section. Next pack the equipment in proper packing material to prevent shipping damage, include a short letter describing the exact problem, insure the package for the value of the merchandise, and ship to our amplifier service department. The glass 3-500Z tubes **MUST BE REMOVED** for shipping. They will invariably be broken if they are shipped inside the amplifier.

FIGURE 9. RF DECK PARTS LOCATIONS.

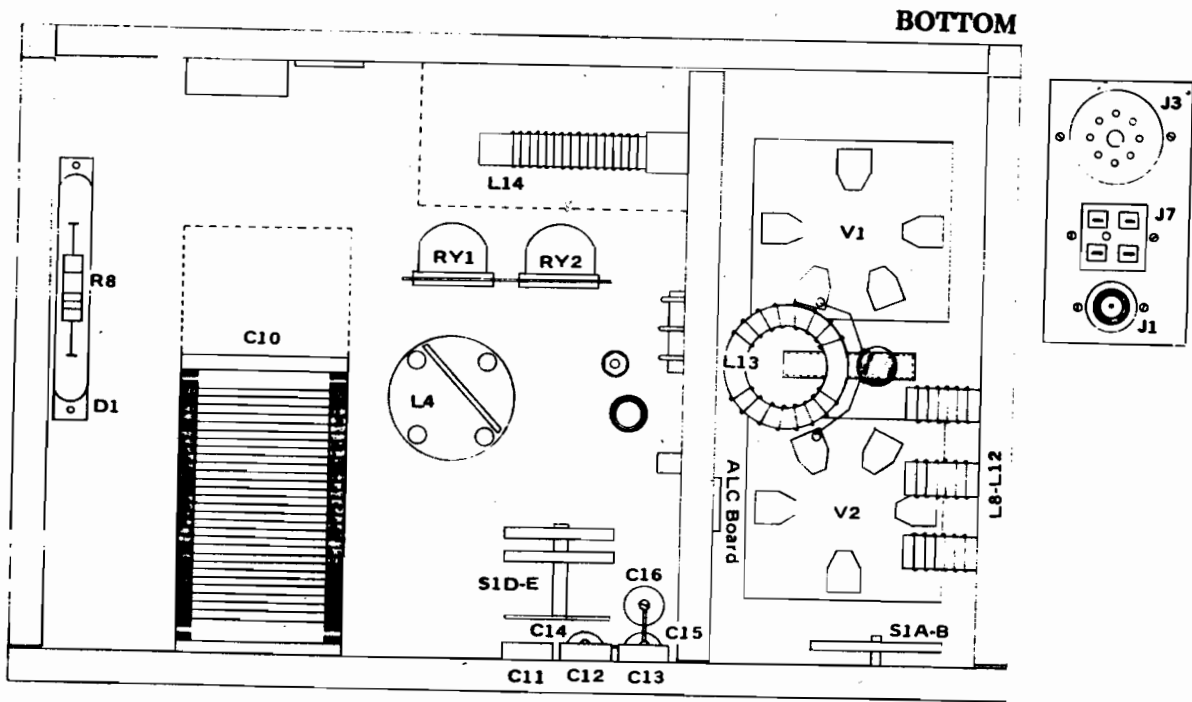
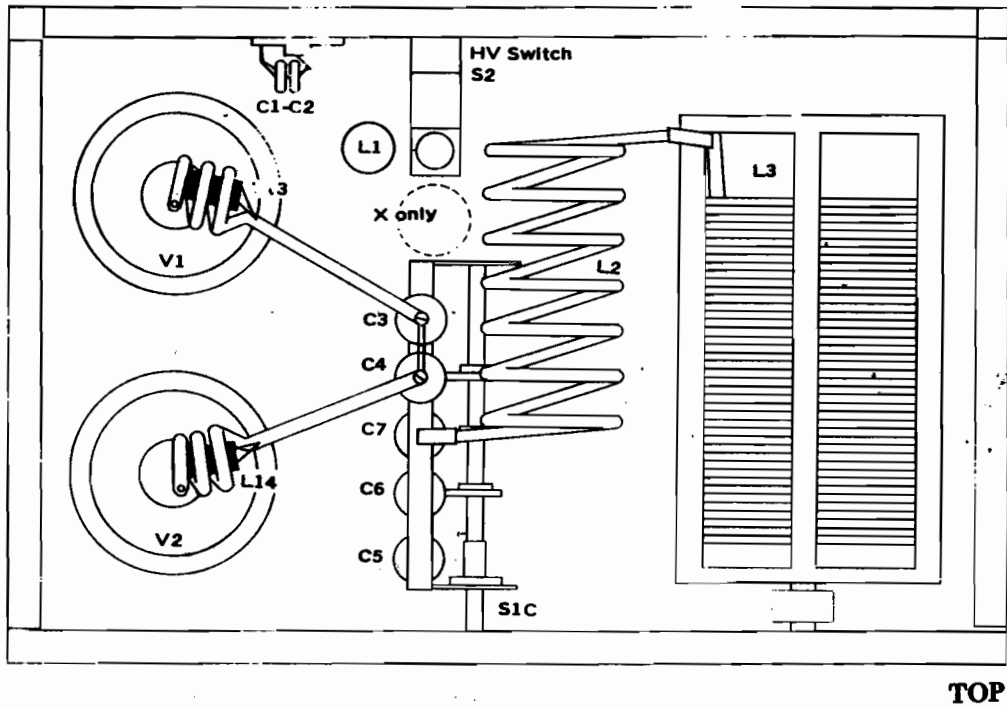
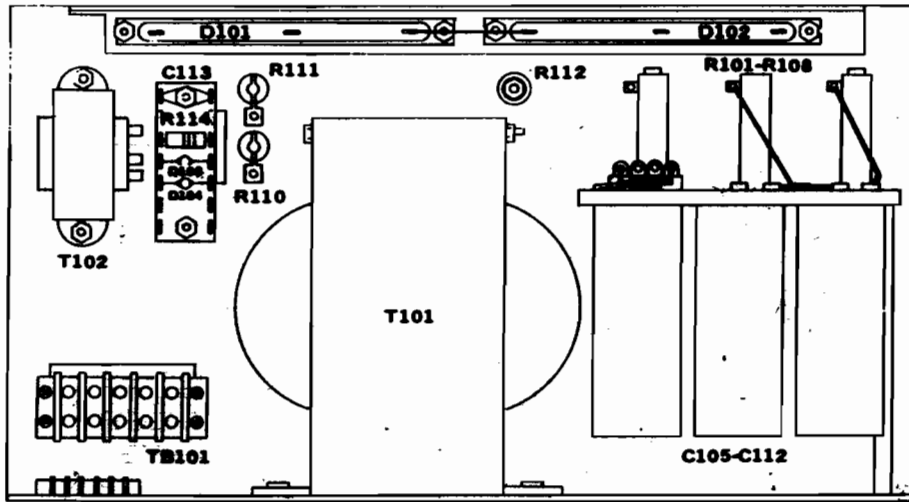
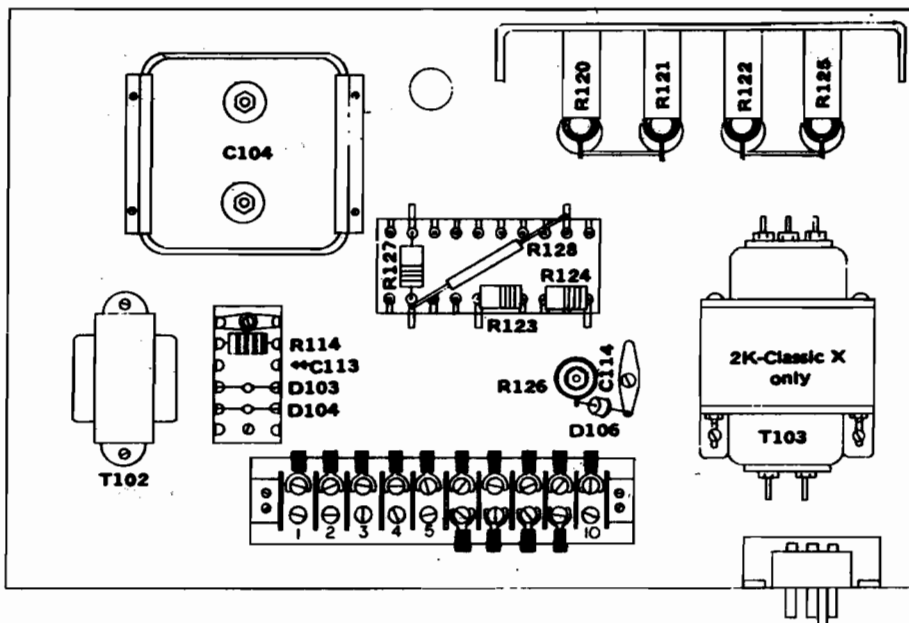


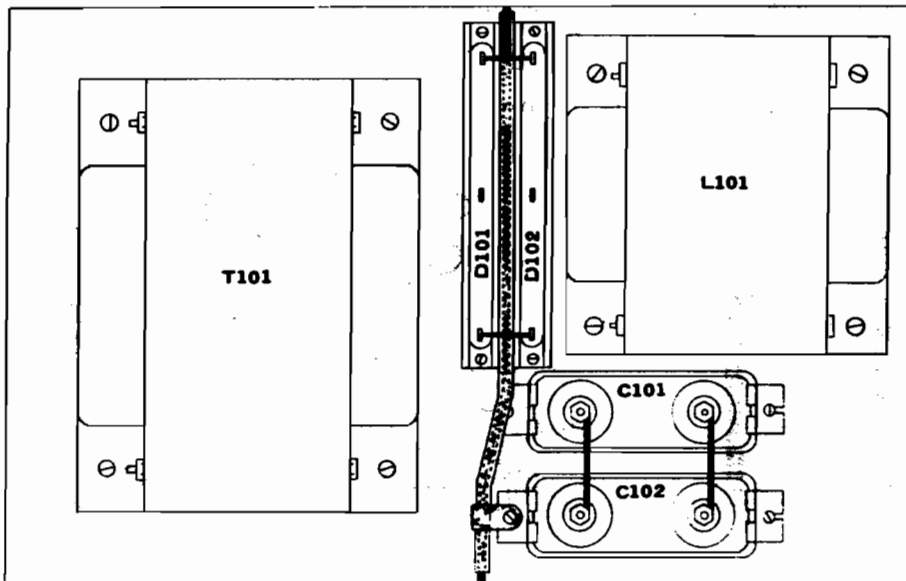
FIGURE 10. POWER SUPPLY PARTS LOCATIONS.



2KD-Class



**2K-Class X
(Top Level)**



**2K-Class X
(Bottom Level)**

SECTION 7. DISASSEMBLING YOUR AMPLIFIER

SECTION 7.1 DESK MODEL (See Figure 11)

The description of this procedure involves screws which are numbered on Figure 11, so refer to the diagram as necessary.

REMOVE THE TOP SCREEN - The painted perforated top screen is removed by unscrewing screws 4, 5, 11 and 12 and lifting off the top panel.

REMOVE THE INNER PANEL - Next unscrew the nine screws holding the unpainted perforated sub-top screen (not shown on the diagram). Lift this inner screen off of the amplifier.

DISCONNECT CABLES - Unplug or unscrew all wiring connections between the power supply (at rear of amplifier) and the RF section (towards the front).

REMOVING THE POWER SUPPLY - The power supply is mounted on its own plate which is secured from the bottom by screws 14, 15, 23 and 22. Do not remove the rubber feet. The top of the rear panel is secured by a single screw accessed from the top of the amplifier in the center of the back strip (not shown in diagram). Remove this screw and slide the back panel and power supply assembly about 4 inches out of the cabinet. This is adequate for servicing the power supply or blower assembly.

REMOVING BOTTOM PLATES - The two panels attached to the bottom of the amplifier allow access to two areas of the bottom of the RF section. Remove the perforated panel by unscrewing screws 20, 21, 25, 26 and 27. This panel gives access to the relays and I-section circuits for service to these areas. The solid panel covers the internal panel where the blower is attached. This area must be accessed to change the blower because you must secure the blower's nuts on the inside of the chassis. Remove screws 28 and 29 and loosen screws 30 and 31 to access this area.

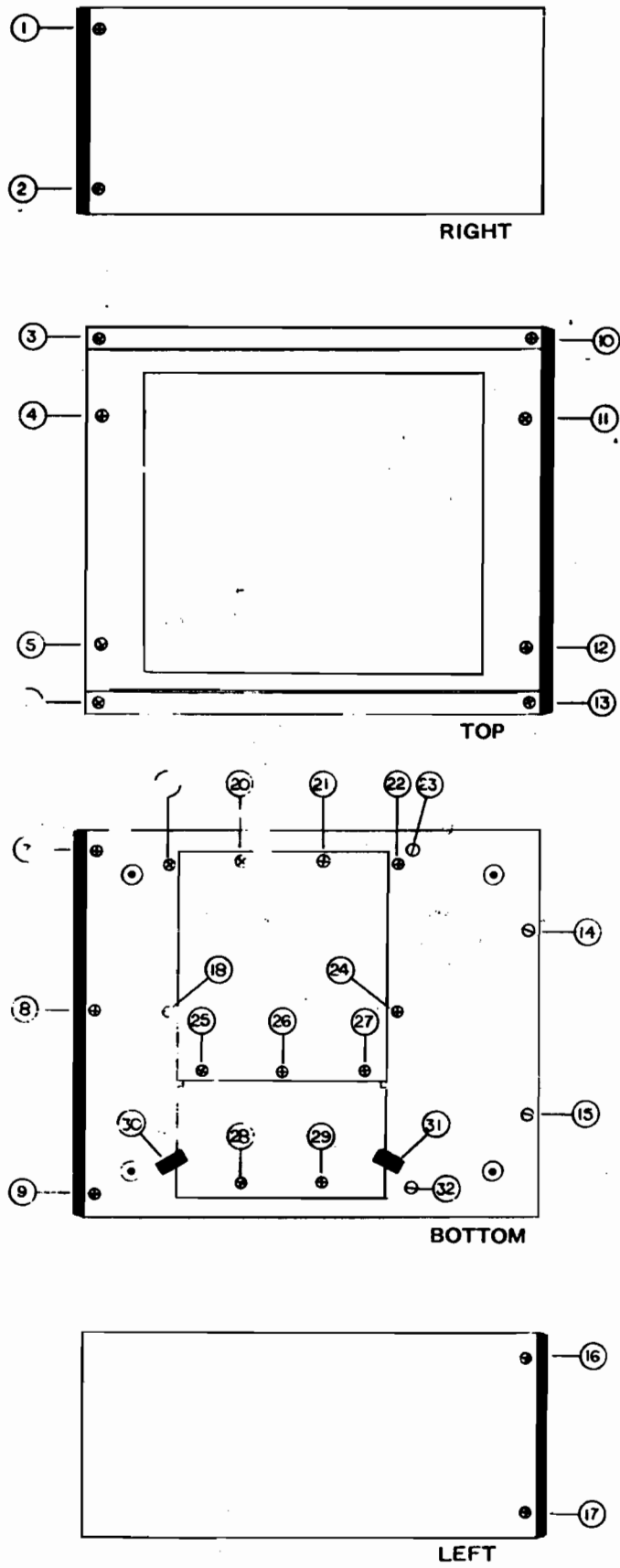
REMOVING THE FRONT PANEL - Remove the front panel to service the meters, front panel controls, etc. The first step is to remove the BAND, TUNE and LOAD knobs. Then remove 9 screws - 1, 2, 7, 8, 9, 10, 13, 16 and 17. The front panel should now lay forward away from the TUNE, LOAD and BAND control shafts.

REMOVING THE RF SECTION - Most servicing of the amplifier can be accomplished without actually removing the RF section from the cabinet. But if you must, remove the rest of the screws from the bottom of the amplifier (6) - 18, 19, 22, 24, 30 and 31. It is not necessary to remove the rubber feet.

SECTION 7.2 FLOOR CONSOLE (See Figure 12)

The description of this procedure uses screw numbers which are shown on Figure 12. Therefore refer to that diagram as necessary.

FIGURE 11. DISASSEMBLING THE DESK MODEL.



REMOVE THE TOP PANEL - Remove screws 2, 3, 6 and 7 and pull the top perforated painted panel off of the amplifier.

REMOVE THE BACK PANEL OF THE POWER SUPPLY - Remove screws 13, 14, 15, 16, 17 and 18 and pull the back panel away from the power supply section.

REMOVE CABLES - Disconnect all of the cables between the RF section and the power supply section.

REMOVE THE RF DECK - First remove the BAND, TUNE and LOAD knobs from the front panel. Then remove two screws from the bottom of the back of the top wraparound. These are accessed by reaching up from the back of the power supply section. They are not shown on the diagram. Remove two screws from the area overhanging the front - screws 19 and 20. The RF deck should now slide out of the back of the wraparound. If you should need to send the RF section back for repair you should send just the RF chassis, not the entire wraparound. Most service of the amplifier can be accomplished without any further disassembly. The front panel can now be accessed from the rear, the blower from the top and bottom, and the power supply from the back.

REMOVING THE RF WRAPAROUND - Should you find it necessary to remove the top wrap around, remove the seven screws spaced around the inside bottom lip of the wraparound. They are accessed through the top of the amplifier. Next disconnect the meter wiring harness and disconnect the wiring to the blower (below the RF wraparound). The cabinet will then lift off of the power supply cabinet.

REMOVING THE POWER SUPPLY WRAPAROUND - Tip the power supply over carefully and remove the four screws holding the painted wraparound on to the bottom plate of the power supply. Tip the power supply back upright and VERY CAREFULLY spread the back edges of the wraparound and slide it off the front of the frame.

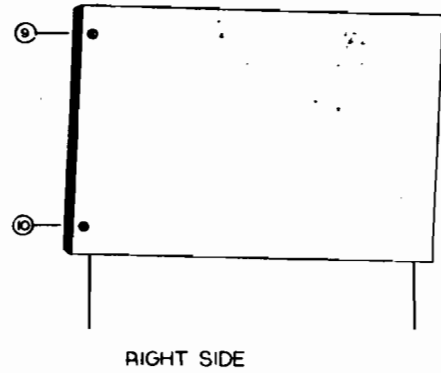
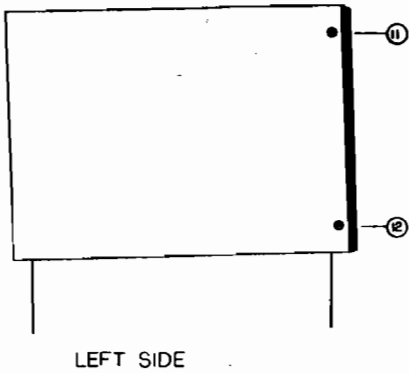
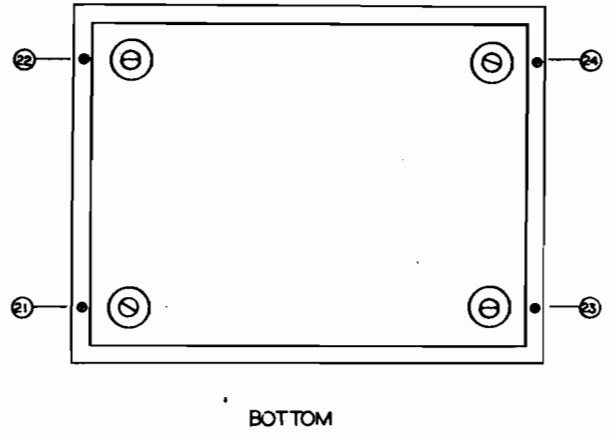
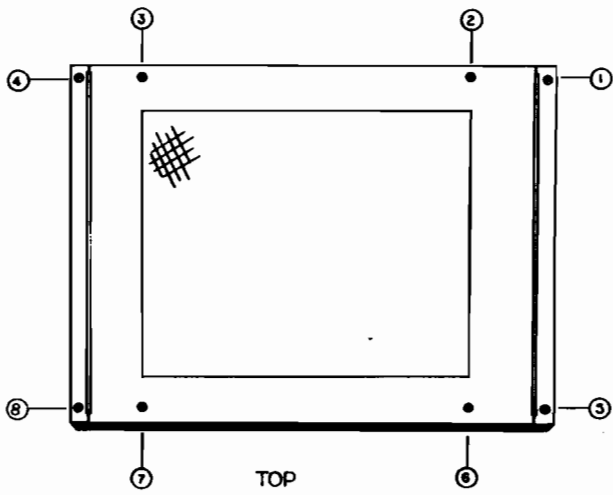
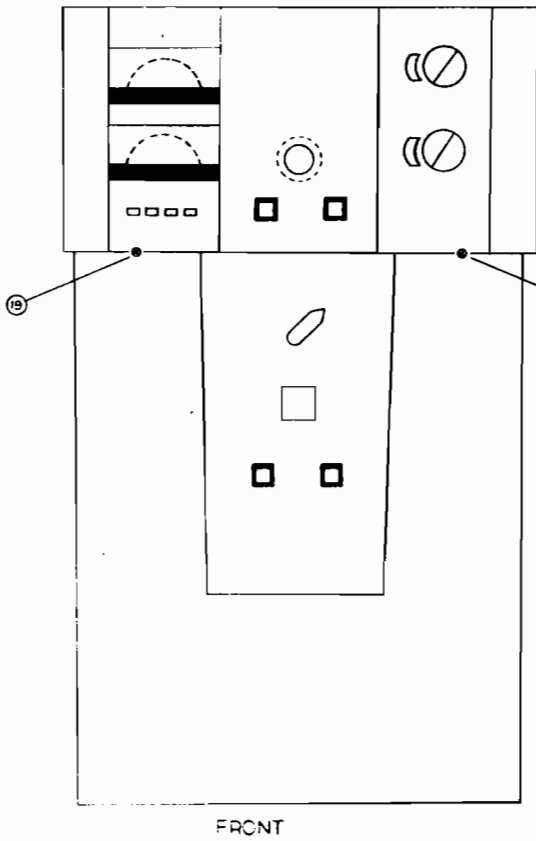
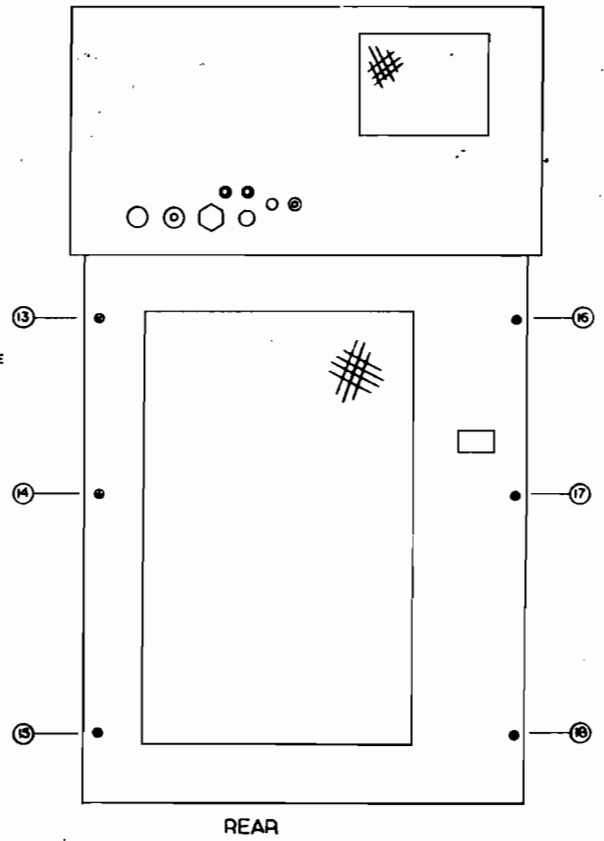


FIGURE 12. DISASSEMBLING THE FLOOR CONSOLE.



NOTE
SCREWS 19 AND 20
ARE LOCATED ON THE
BOTTOM OF THIS
SURFACE.



SECTION 8. PARTS LIST

SECTION 3. RF SECTIONS

BLOWERS

B101.....	.Desk Model - 110 VAC.....	.Ripley BV2175.....
B101.....	.2K-Classic - 110 VAC.....	.Redmond 80239.....
B101.....	.2K-Classic X - 220 VAC.....	.Dayton 2C915A.....

CAPACITORS

C1 and C2.....	.Ceramic disc, .0047 mf, 6 KV.....	.Sprague 60GAD47.....
C3 and C4.....	.Ceramic transmitting, 1000 pf, 5 KV.....	.ITT Jennings 700002.....
C5 and C6.....	.Ceramic transmitting, 25 pf, 7.5 KV.....	.ITT Jennings 700024.....
C7, C8 and C9.....	.Ceramic transmitting, 75 pf, 7.5 KV.....	.ITT Jennings 700018.....
C10.....	.2KD-Classic and 2K-Classic, Variable air type, LOAD, 2KV.....	.All Star 73-1-45-45.....
C10.....	.2K-Classic X, Variable air type, LOAD control, 3 KV.....	.All Star 73-1-75-75.....
C11 through C16.....	.Ceramic transmitting, 100 pf, 7.5 KV.....	.ITT Jennings 700066.....
C17 and C18.....	.Ceramic feedthrough, 2000 pf, 500 VDC.....	.Trusonix 202M.....
C19, C20, and C21.....	.Ceramic disc, .01 mf, 600 VDC.....	.Centralab DD6-103.....
C22 and C23.....	.Mica, 470 pf, 500 VDC.....	.Arco DM15-471J.....
C24 through C28.....	.Ceramic disc, .01 mf, 600 VDC.....	.Centralab DD6-103.....
C29 and C30.....	.Ceramic disc, .003 mf, 1000 VDC.....	.Centralab DD-302.....
C33.....	.Ceramic feedthrough, 2000 pf, 500 VDC.....	.Trusonix 202M.....
C34 through C37.....	.Ceramic disc, .01 mf, 600 VDC.....	.Centralab DD6-103.....
C38, C39 and C40.....	.Mica, 470 pf, 500 VDC.....	.Arco DM15-471J.....
C41 and C42.....	.Mica, 820 pf, 500 VDC.....	.Arco DM15-821J.....
C43.....	.Mica, 620 pf, 500 VDC.....	.Arco DM15-621J.....
C44 and C45.....	.Mica, 430 pf, 500 VDC.....	.Arco DM15-431J.....
C46 and C47.....	.Mica, 390 pf, 500 VDC.....	.Arco DM15-391J.....
C48.....	.Mica, 220 pf, 500 VDC.....	.Arco DM15-221J.....
C49 through C52.....	.Mica, 160 pf, 500 VDC.....	.Arco DM15-161J.....
C53 and C54.....	.Mica, 100 pf, 500 VDC.....	.Arco DM15-101J.....
C55 and C56.....	.Mica, 91 pf, 500 VDC.....	.Arco DM15-910J.....
C57.....	.Mica, 82 pf, 500 VDC.....	.Arco DM15-820J.....
C58.....	.Mica, 75 pf, 500 VDC.....	.Arco DM15-750J.....
C59 and C60.....	.Mica, 68 pf, 500 VDC.....	.Arco DM15-680J.....

DIODES

D1.....	.Zener, 1.2 amps, 10 VDC.....	.Semtech SA-5534.....
D2.....	.Rectifier, 1.0 amp, 200 PIV, ALC.....	.Motorola 1N458.....

FUSES

F1.....	.8 AG, 1.5 amps, 250 VAC.....	.Littelfuse 312 001.5.....
.....	.8 AG fuseholder.....	.Littelfuse 3/2 001A.....
F2.....	.2KD-Classic, 3 AG, 1.5 amps, 250 VAC.....	.Littelfuse 312 001.5.....
.....	.2KD-Classic, 3 AG fuseholder.....	.Littelfuse 342 001A.....

CONNECTORS

J1.....	.High voltage socket and plug.....	.Millen 3750.....
J2.....	.RF in, BNC type coax connector.....	.Amphenol UG647/U.....
J3.....	.Harness connections, 8-pin keyed socket.....	.Amphenol 78S8.....
J4.....	.RF out, UHF type coax connector.....	.Amphenol SO239.....
J5.....	.ALC feedback, RCA type phono jack.....	.Switchcraft 3501FP.....
J6.....	.Relay control, RCA type phono jack.....	.Switchcraft 3501FP.....
J7.....	.Filament, 4-pin Jones plug.....	.Cinch P404AB.....

KNOBS

.....	.BAND switch, TUNE and LOAD controls.....	.Raytheon 175-1-2G.....
.....	.SSB/CW switch.....	.Raytheon 70-7WL-2G.....

INDUCTORS

L1.....	.High voltage RF plate choke.....	.Henry L1-2K-Classic.....
L2 (Domestic).....	.15 meter RF coil.....	.Henry L2-2K-Classic (Domestic).....
L2 (Export).....	.10 meter RF coil.....	.Henry L2-2K-Classic (Export).....
L3.....	.TUNE control rotary inductor.....	.Henry L3-2K-Classic.....

L4	.L-Section Coil	.B&W 1608-002
L5	.RF antenna choke, 2.5 mH, 150 ma	.Miller 4555
L6	.RF choke	.Miller 6302
L7	.RF choke, input center tap	.Henry L7-2K-Classic
L8	.Input coil, 3.5 MHz	.Henry L8-2K-Classic
L9	.Input coil, 7.0 MHz	.Henry L9-2K-Classic
L10	.Input coil, 14.0 MHz	.Henry L10-2K-Classic
L11	.Input coil, 21.0 MHz	.Henry L11-2K-Classic
L12	.Input coil, 28.0 MHz	.Henry L12-2K-Classic
L13	.Filament choke	.Miller B5344
L14	.Filament surge suppressing choke	.Henry L14-2K-Classic

RESISTORS

R1	.Wirewound, 150 K ohms, 10 watts, 5%	.Resistor
R2 through R5	.Carbon, 150 ohms, 2 watts, 10%	.Resistor
R6	.Carbon, 1 K ohms, 1 watt, 10%	.Resistor
R7	.Carbon, 67 K ohms, 1 watt, 10%	.Resistor

RELAYS

RY1 and RY2	.Antenna changeover, 12 VDC, 2PDT	.Guardlan 1365PC-2C-12D
	.Relay socket	.Guardlan 1365

SWITCHES

S1A and S1B	.Band switch, input section	.Centralab 2504
S1C	.Band switch, TUNE circuit section	.Henry S1C-2K-Classic
S1D and S1E	.2KD-Classic and 2K-Classic, Band switch, L-Section circuit	.Centralab PS-284
S1D and S1E	.2K-Classic X, Band switch, L-Section circuit	.Radio Switch Model 80

POTENTIOMETER

VR1	.ALC adjust potentiometer	.Allen Bradley JLU-1041
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TUBES

V1 and V2	.Glass envelope power triode	.Eimac 3-500Z
	.Tube socket	.Johnson 122-0275-001
	.Tube chimney	.Radnoti glass chimney
	.Tube plate cab	.Henry

SECTION 8.2 POWER SUPPLIES

CAPACITORS

C101	.Console models, Oil Filled, .1 mf, 7500 VDC	.Plastic Capacitors LK80-104
C102	.2K-Classic only, oil filled, .1 mf, 7500 VDC (50 Hz models)	.Plastic Capacitors LK80-104
C102	.2K-Classic X, oil filled, .1 mf, 7500 VDC (all models)	.Plastic Capacitors LK80-104
C103	.2K-Classic X, oil filled, .1 mf, 7500 VDC (50 Hz models)	.Plastic Capacitors LK80-104
C104	.2K-Classic X, oil filled, 16 mf, 8000 VDC	.Aerovox BX0015 D0008A
C105 through C112	.2KD-Classic and 2K-Classic, Electrolytic, 180 mf, 450 VDC	.Cornell FAHM-180-450-A3
C113	.Electrolytic, 470 mf, 50 VDC	.Arco ME-470-50
C114	.Ceramic disc, .05 mf, 16 VDC	.Centralab UK16-503

CIRCUIT BREAKER

CB101	.2KD-Classic and 2K-Classic, 20 amps	.P&B W92X11-2-20
CB101	.2K-Classic X, 30 amps	.P&B W92X11-2-30

DIODES

D101 and D102	.Rectifier, 1.2 amps, 15 KV	.CsdC 45XV246
D103 and D104	.Rectifier, 1.0 amps, 1000 VDC	.GE-509
D105	.2KD-Classic and 2K-Classic, Zener, 5 watts, 100 VDC	.Motorola 1N5378
D106	.Rectifier, 3.0 amps, 100 PIV	.Motorola 1N4720
D107	.Rectifier, 1.0 amps, 400 PIV	.Motorola 1N4004
D108	.2K-Classic and 2K-Classic X, Voltage spike protector, 250 VAC	.GE V250LA40A

FUSES

F101 and F102	.3 AG, 1.5 amps, 250 VAC	.Littelfuse 312 001.5
	.3 AG fuseholder	.Littelfuse 348 875

CONNECTORS

J101	.Filament, 4-pin Jones socket	.Cinch S404CCT
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J102	.High voltage plug and socket	.Millen 37501
J103	.Harness interconnect	.Amphenol 86CP8

INDUCTORS

L101	.2K-Classic, high voltage resonating filter choke, 8 H, 800 ma	.ECA5023
L101	.2K-Classic X, high voltage resonating filter choke 8H, 1.2 amp.	.ECA5020

METERS

M101	.Plate current meter, 0 to 1 amp movement.	.Beede 913105
M102	.Multimeter, 0 to 1 ma movement	.Beede 913104

PILOT LAMPS

	.Light holder assembly	.Compulite 621-1-B
PL101 and PL102	.Standby light and Power light, 12 VDC	.Sylvania 330
PL103 and PL104	.TUNE and LOAD dial lights	.Sylvania 1815
	.Light holder assembly	.Smith 1931

RESISTORS

R101 through R107	.2KD-Classic and 2K-Classic, Wirewound, 20 K ohms, 20 watts	.Resistor
R108	.2KD-Classic and 2K-Classic, Wirewound, 40 K ohms, 20 watts	.Resistor
R109	.2KD-Classic and 2K-Classic, Wirewound, 25 ohms, 25 watts	.Resistor
R110 and R111	.2KD-Classic and 2K-Classic, Precision 4 M ohm, 2 watt, 1%	.Resistor
R112	.2KD-Classic and 2K-Classic, Carbon, 10 K ohms, 2 watts, 10%	.Resistor
R113	.2KD-Classic and 2K-Classic, Wirewound, 22.5 K ohms, 10 watts	.Resistor
R114	.Carbon, 150 ohms, 2 watt, 10%	.Resistor
R115 and R116	.Carbon, .2 ohms, 1 watt, 10%	.Resistor
R117	.Carbon, 30 ohms, 1 watt, 10%	.Resistor
R118	.Carbon, .2 ohms, 1 watt, 10%	.Resistor
R119	.Carbon, 150 ohms, 2 watts, 10%	.Resistor
R120 through R122	.Wirewound, 20 K ohms, 100 watts, 5%	.Resistor
R123 and R124	.Carbon, 47 K ohm, 2 watts, 10%	.Resistor
R125	.Wirewound, 20 K ohms, 100 watts, 5%	.Resistor
R126	.Wirewound, 25 ohms, 25 watts, 5%	.Resistor
R127	.Carbon, 10 K ohms, 2 watts, 10%	.Resistor
R128	.Precision, 10 M ohms, 7.5 watts, 1%	.Resistor

SWITCHES

S101	.SSB/CW switch	.Henry S101-2K-Classic
S102	.Function switch	.Switchcraft 65041K206

TRANSFORMERS

T101	.2KD-Classic, High voltage and filament transformer	.ECA1120
T101	.2K-Classic, High voltage and filament transformer	.ECA1092A
T101	.2K-Classic X, High voltage and filament transformer	.ECA1171
T102	.2KD-Classic and 2K-Classic, Relay supply transformer	.Signal 241-6-24
T102	.2K-Classic X, Relay supply transformer	.ECA1161
T103	.2K-Classic X, Filament transformer	.ECA1073

All parts and specifications subject to change without notice.

SECTION 9. TUNE AND LOAD SETTINGS

Serial Number 54-539

These are approximate settings for a 52 ohm load.

FACTORY DATA

$I_p = 800 \text{ ma}$

BAND	TUNE DIAL	LOAD DIAL	GRID MA	OUTPUT WATTS
6				
5 80	156	76	7	
4 40	82	48		
3 20	44	78		
2 15	26	58		
1 10	06	56		

10/24 14 70

USER DATA

BAND	TUNE DIAL	LOAD DIAL	GRID MA	OUTPUT WATTS
6				
80 ⁵				
40 ⁴				
20 ³				
15 ² 18mk	35	70		
10 ¹				

SECTION 10. WARRANTY

LIMITED WARRANTY

Henry Radio warrants each new Henry and Tempo product to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use, and service discloses such defect, provided the unit, or part is delivered by the original owner to us intact for our examination, with all transportation charges prepaid to our factory, within ninety days from the date of sale to the original purchaser and provided that such examination discloses in our judgment that it is thus defective. Should a malfunction be suspected, write in detail to our service department for suggestions concerning the operation, repair, or return of your unit if it should prove necessary.

EXCLUSION: Henry Radio does not warrant vacuum tubes used in their equipment. Eimac tubes are warranted by Eimac on a pro-rated one year basis. All other tubes are not warranted.

EXCLUSION: Warranty claims will only be honored when accompanied by proof of purchase which shows the purchase date.

EXCLUSION: This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of the instructions furnished by us, nor extend to units which have been repaired or altered outside of our factory, without our permission, nor in cases where the serial number thereof has been removed or defaced or changed, nor to units used with accessories not manufactured or recommended by us.

The above warranty does not include incidental or consequential damages and the distributor disclaims any liability for any such damages. All implied warranties, if any, are limited in duration to the above-stated 90 day warranty period. Some states do not allow the exclusion or limitation of incidental or consequential damages or on how long an implied warranty lasts, so the above limitations may not apply to you.

Henry Radio reserves the right to make any improvements to its products which it may deem desirable without obligation to install such improvements in its previously sold products.