

connected, the transceiver will be directly connected to your load (antenna or dummy load) so that you can perform this test. After checking your SWR, turn off the amplifier and reconnect the relay control cable.

REMOTE CONTROL CABLE: The standard interconnection cable between the controller and the amplifier is 20 feet long. Longer cables are optionally available from Henry. Plug the 30 pin TRW connectors into the back panel of the controller and amplifier. Be sure to connect the separate ground lead at each end.

DRIVE CABLE: An RG58/U drive cable is supplied with the amplifier. Connect the BNC end of the cable into the RF INPUT connector on the rear panel of the amplifier. The other end has a PL259 connector designed to plug into your transceiver. An adapter will be required if your transceiver does not have a matching SO239 output connector.

ALC CABLE (Automatic Level Control): A shielded cable with RCA connectors is supplied to connect an ALC feedback connection between your transceiver and the controller to limit the drive power to the amplifier. You will have to check the manual of your transceiver to find how to interface this cable. If your transceiver has no provision for ALC feedback, no connection is necessary.

RELAY CABLE: A shielded cable with RCA connectors is supplied to connect the relay signal between the transceiver and controller. This cable conducts the keying signal from the transceiver to switch the amplifier to the transmit condition and must be connected to the socket marked ANTENNA RELAY or ACCESSORY on the transceiver. The transceiver needs to supply a shorting relay contact, grounded during transmit to key the amplifier. Most modern transceivers use DIN type plugs, while older transceivers use RCA type jacks. It may be necessary to solder the cable to a DIN plug for this function. All modern HF transmitters and transceivers have provisions for a relay control connection. If the connection is not obvious to you, check the

operating manual for the transceiver to find an available unused relay contact that is normally closed during transmit.

CAUTION: Never apply any voltage to the relay jack of the dest top controller!

Some modern transceivers use diode switching rather than relay switching. This may cause a problem with the voltage drop across the diode preventing sufficient voltage drop across the relay coil to activate the relay in the Henry amplifier. These amplifiers used a 26 VDC relay control voltage. If your transceiver will not key the amplifier, you should check the resistance across the contact you are using. If there is too much resistance, contact the transceiver's manufacturer about possible solutions to this problem.

SECTION 4.4 TRANSFORMER TAPS.

HIGH VOLTAGE/FILAMENT TRANSFORMER: The 3K Ultra is normally supplied with an ECA 1214A HV transformer, and the 8K Ultra is normally supplied with an ECA 1504 HV transformer. These transformers are factory wired for 230 VAC operation, with the actual primary voltage being selectable by the proper tapping of the terminal strip on the transformer. The proper taps for each transformer is shown in Figure 4.2.

Both the high voltage and filament transformers must be tapped for the correct AC mains line voltage. The filament voltage ranges that are recommended for proper performance and optimum tube life are as follows:

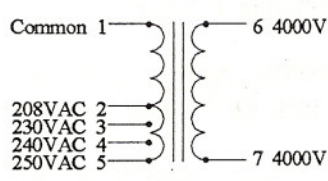
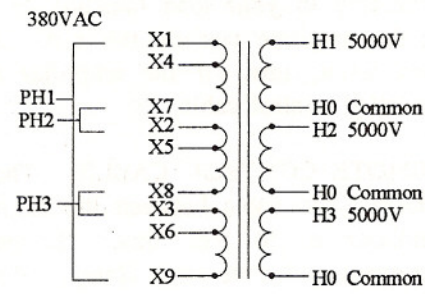
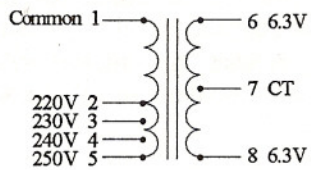
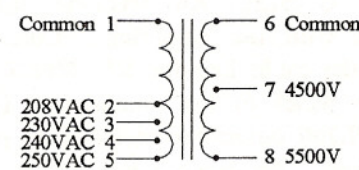
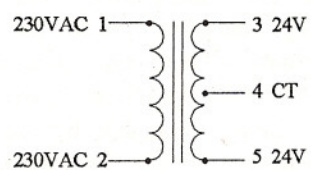
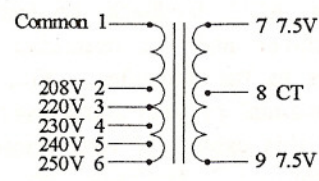
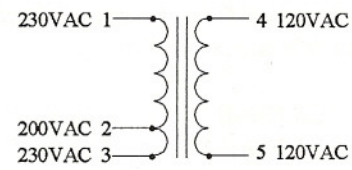


3CX1200D7 - - - 5.98 to 6.62 VAC
3CX3000A7 - - - 7.12 to 7.87 VAC

The taps for each transformer are shown in Figure 4.2.

RELAY SUPPLY TRANSFORMER: The relay power supply transformers do not have variable taps at their input, and experience has shown that even under worst case conditions, there is sufficient voltage to activate the relays.

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Figure 4.2. Transformer Tap Diagram.

<p>ECA 1214A High Voltage 3K Ultra P: 208-240V S: 4000V 1A</p> 	<p>ECA 26142 3 Ph High Voltage 8K Ultra P: 380 3PH S: 5000 V 1 A</p> 
<p>ECA 1228 Filament 3CX1200D7 3K Ultra P: 208-250V S: 6.3V 30 amps</p> 	<p>ECA 1504 High Voltage 8K Ultra 1 PH P: 208-240V S: 5500V 1A</p> 
<p>ECA 1188 Relay Supply P: 230V S: 24V 2A</p> 	<p>ECA 1102 Filament 3CX3000A7 8K Ultra P: 208-250V S: 7.5V 52A</p> 
<p>ECA 1347 Stepdown P: 230V S: 120V 2.5 A</p> 	
<p>ECA 5020 Choke 3K Ultra 8 Henry 1 Amp</p> 	<p>ECA 5024 Choke 8K Ultra 8 Henry 1 Amp</p> 

Section 5: Operating Controls

SECTION 5.1: FRONT PANEL CONTROLS - CONTROLLER

POWER SWITCH: This switch is used to turn the AC power to the console on and off. When the power is turned off, the output of the transceiver feeds through the amplifier, directly to the load.

MULTIMETER SWITCH: This rotary switch selects the function of the multimeter.

MULTIMETER: The multimeter reads three different tube parameters, depending on the position of the multimeter switch, as follows:

Grid Current (IG): 0 to 1000 ma
High Voltage (HV): 0 to 10,000 VDC
Filament (VF): 0 to 10 VAC

PLATE CURRENT METER: This meter continuously monitors the plate current of the amplifier tube on a 0 to 1 amp scale (3K Ultra) or a 0 to 2 amp scale (8K Ultra).

POWER METER: This meter monitors either the forward power to your load, or the reflected power from you load, depending on the position of the SWR switch. In the forward power mode the meter scale is 0 to 2500 watts (3K Ultra) or 0 to 5000 watts (8K Ultra). In the reflected power mode, the meter scale is 0 to 250 watts (3K Ultra) or 0 to 500 watts (8K Ultra).

LOAD CONTROL: This control matches the amplifier's output network to your load. A calibration chart at the end of this manual shows initial settings for the frequency of operation that you have selected. A dial setting of zero (0) corresponds to a minimum loading with the capacitor's plates unmeshed. A dial setting of one hundred (100) corresponds to maximum loading, with the capacitor's plates fully meshed. The LOAD control you turn is actually a 10-turn potentiometer, part of a Wheatstone bridge circuit. When this circuit is unbalanced, it provides a signal to drive a DC servo-motor which is connected to the vacuum loading capacitor.

TUNE CONTROL: The TUNE control is also a 10-turn potentiometer which operates as the LOAD control described above. The signal from this circuit drives the motor connected to the rotary inductor PI and L coils.

BANDSWITCH: The BAND switch selects the appropriate capacitors on the output circuit for the frequency of operation. Guidelines for the BAND switch position versus frequencies are listed below:

160	- - - -	1.8 to 3.0 MHz
80	- - - -	3.0 to 5.0 MHz
40	- - - -	5.0 to 10.0 MHz
20	- - - -	10.0 to 17.0 MHz
15/10	- - - -	17.0 to 30.0 MHz

CAUTION: Never change the BAND switch when the amplifier is keyed! You will destroy many of the components in the amplifier and it will cause you to have an expensive repair bill!

CW SWITCH AND SSB SWITCH: The CW and SSB switches select two different plate voltages on single-phase power supplies. They are not used in three-phase power supplies.

3K Ultra - CW: 2800-3200V SSB: 3800-4200V
8K Ultra - CW: 3800-4200V SSB: 5000-5800V
8K Ultra (three-phase): 4800-5800V

The above numbers are approximate, in an unkeyed condition. They may vary considerably depending on the AC mains at the operating location.

SECTION 5.2 REAR PANEL CONTROLS AND JACKS - CONTROLLER

ALC POTENTIOMETER: This potentiometer controls the sensitivity of the amplifier's ALC feedback circuit. See Section 6.3 for instructions on how to adjust the ALC feedback.

REMOTE SOCKET: This 30 pin Cinch style socket connects the controller and console through

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a 20 foot cable provided with the unit. Optional cables up to 100 feet long are available.

ALC JACK - This RCA type socket connects the feedback voltage from the amplifier to the transceiver. No connection is necessary if your transceiver has no provisions for ALC feedback.

RELAY CONTROL JACK - This RCA type socket connects the amplifier to your transceiver to key the amplifier when your transceiver is transmitting. An interconnect cable is supplied in the accessory kit for this purpose. When the socket is shorted to ground, the amplifier's antenna relay closes. If the amplifier is turned off, the relay cannot be keyed.

CAUTION: Never apply any voltage to the relay control socket! There is a built-in power supply that provides the proper voltage to actuate the relay! You only need to supply a shorting contact to activate the T/R relay!

SECTION 5.3: FRONT PANEL CONTROLS - CONSOLE

MAIN CIRCUIT BREAKER: The main circuit breaker for the amplifier system is on the front panel of the console on the bottom right. There is an indicator light marked AC MAINS to the left of the circuit breaker.

FUSES: Two fuses protect all the AC circuits other than the high voltage supply. They protect the blower, and control circuits. A third fuse protects only the relay supply.

SECTION 5.5: REAR PANEL CONNECTIONS - CONSOLE

RF INPUT JACK: This BNC type jack accepts the drive cable from your transceiver. The input impedance of the amplifier is nominally 50 ohms unbalanced. A drive cable is supplied in the accessory kit. It is an RG58/U type coax cable with a BNC plug on one end and a PL259 plug on the other end.

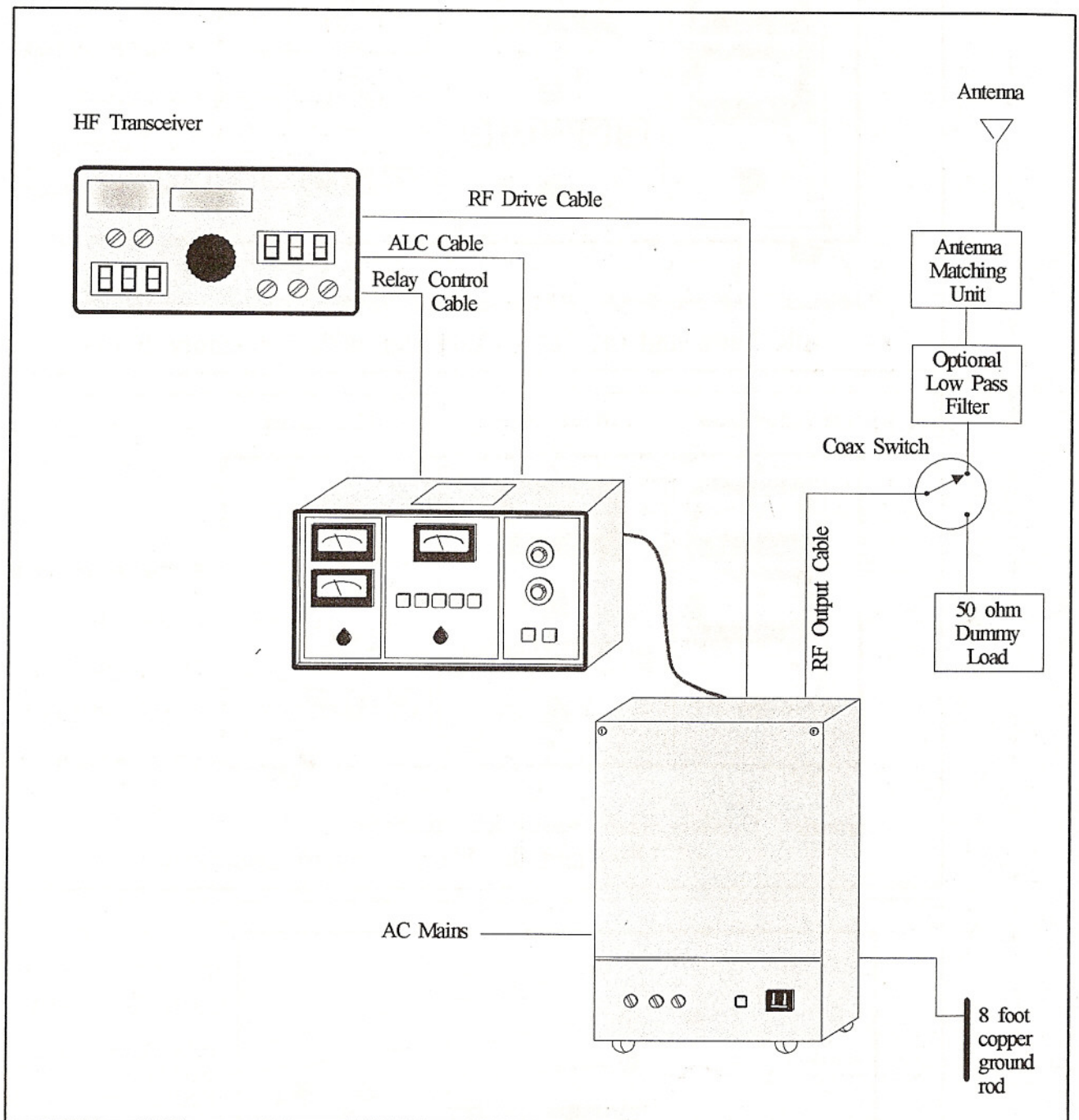
RF OUTPUT JACK: This N female type coax connector transfers power from the amplifier to the output coax and ultimately to your antenna or dummy load. The output impedance of the amplifier is nominally 50 ohms unbalanced. The load VSWR should never exceed 2:1. This means the reflected power from the load should never exceed 10% of the forward or incident power. It is the user's responsibility to choose a cable type that will handle the expected operating power from the amplifier at the frequency of operation. A minimum choice of coax would be RG8 or RG213 type.

GROUND LUG: This lug is provided for an earth ground for the amplifier's chassis. A good earth ground is required for safety reasons and to minimize cabinet radiation. An 8 foot ground rod is a good choice for a grounding system.

REMOTE SOCKET: This 30 pin Cinch type socket is the mate for the control cable from the controller. Be sure to ground the external ground connection from the cable.

POWER CORD: The AC power cable must be connected to an AC power source capable of supplying the necessary voltage and current required by the amplifier. No AC power plug is provided because there is no standard 220 VAC socket used in the United States. Consult your local electrician as to the proper plug for your operating location.

Henry 3K Ultra and 8K Ultra Interconnect Diagram



Henry 3K Ultra and 8K Ultra Operating Controls

