

OPERATOR'S MANUAL

SCHEMATHEEK

Beh. T. Hultermans

Postbus 4228

5604 EE Eindhoven



L75

LINEAR AMPLIFIER



CHAPTER 1 INTRODUCTION

1-1. GENERAL DESCRIPTION

The R. L. Drake Model L75 Linear Amplifier is designed for 1200 Watts PEP SSB (continuous) and 1000 Watts CW (50% duty cycle) operation covering the ham bands 160 through 15 meters. Non-amateur frequencies from 1.8 to 4.0 MHz and 6.5 to 21.5 MHz may be covered with modification of the input circuit.

The L75 uses a 3-500Z zero-bias triode in a class B grounded-grid circuit configuration that uses RF negative feedback for lower odd-order distortion products. A transmitting AGC circuit controls the exciter gain to allow the highest average power without peak clipping. An internal changeover relay feeds the antenna through when the L75 is turned off. A pair of relay contacts bias the output tubes to cut-off, eliminating unwanted heat and thermal noise when receiving. The front panel meter indicates plate current, grid current, plate voltage, and an indication of relative output power. The self-contained solid state Power Supply requires no warm-up period and provides excellent dynamic and static voltage regulation.

1-2. MANUAL COVERAGE

This manual is presented in 5 chapters with supporting illustrations and is arranged for the convenience of the operator and service technician as follows:

Chapter 1	Introduction (self-explanatory).
Chapter 2	Installation. Describes the procedures to be followed prior to operation.
Chapter 3	Operation. Illustration and describes front panel controls and describes tune-up and operation in SSB, CW and TUNE modes.
Chapter 4	Theory of Operation. Describes all critical circuits and networks.
Chapter 5	Maintenance. Provides maintenance instructions, troubleshooting and parts ordering information.

SPECIFICATIONS

Frequency Coverage:	Ham bands 160 through 15 meters. Non-amateur frequencies between 1.8-4.0 and 6.5-21.5 MHz may be covered with some modification of the input circuit.*	Intermodulation Distortion Products:	In excess of -33 dB below PEP.
Plate Input:	1200 W PEP SSB; 1000 W CW, AM, FTY and SSTV at 50% duty cycle.	Power Requirements:	240 Volts 50-60 Hertz 10 Amperes, or 120 Volts 60 Hertz 20 Amperes.
Drive Requirements:	Typically, 60 Watts PEP on SSB and 50 Watts on CW.	Tube Complement:	One 3-500Z or 8802/500Z zero-bias triode.
Input Impedance:	50 Ohms (Tuned Input).	Dimensions:	13-11/16 in. W x 6-3/4 in. H x 1-1/4 in. D (34.8 cm W x 17.1 cm H x 3.8 cm D.)
Output Impedance:	Adjustable pi-network matches 50 ohm line with SWR not to exceed 2:1.	Weight:	42.2 lbs. (19.2 kg)
		*Export model includes coverage of 10 meter Band.	

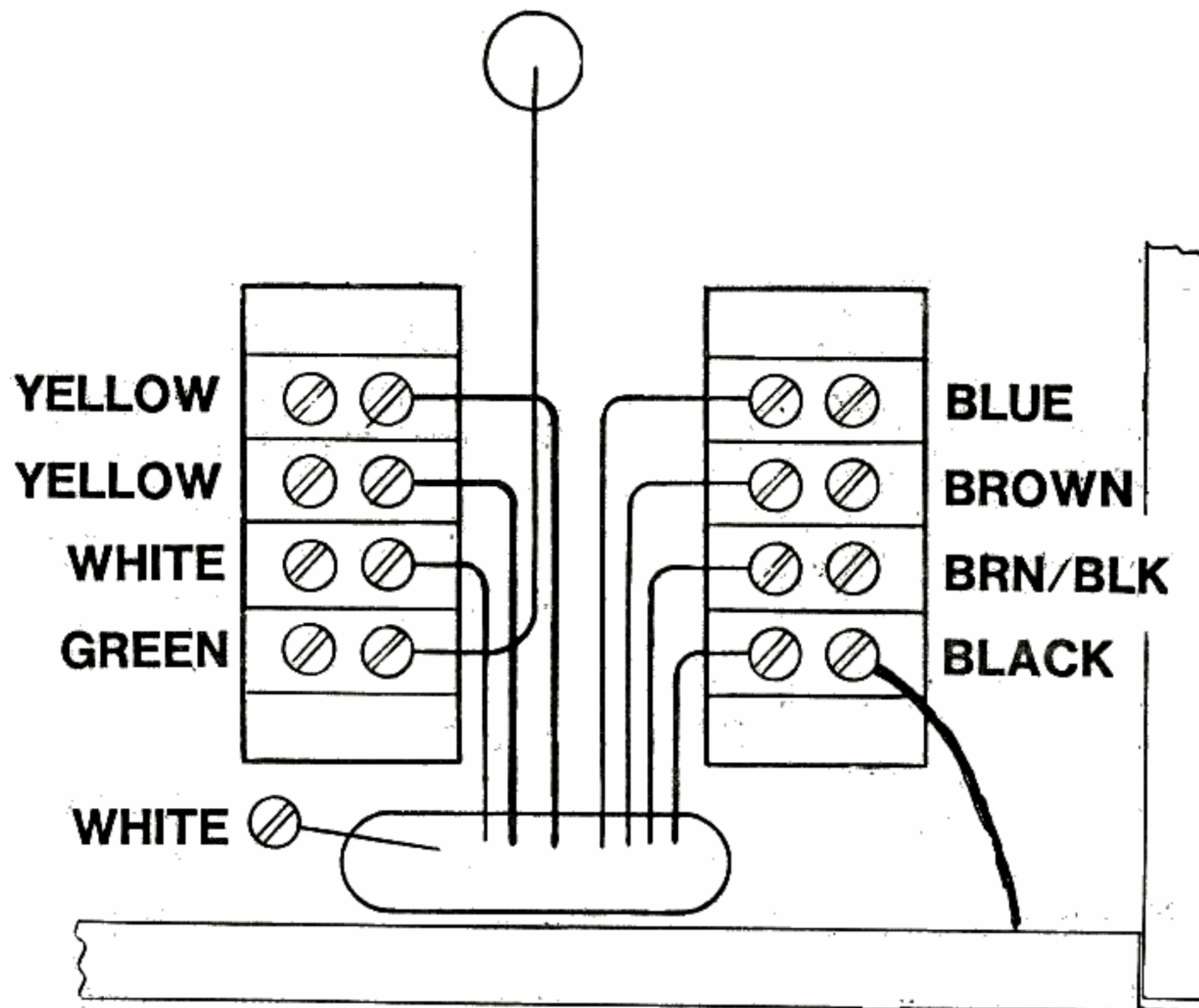


Figure 2-2 Transformer Lead Connections

2-3. TUBE INSTALLATION

- Refer to figure 5-1. Insert the tube into the socket on the amplifier chassis.
- Install the plate cap on the tube and secure it with the 6-32 screw provided.
- Attach the parasitic choke to the top of the plate cap with the screw and lockwasher provided. Make sure that the coil of the choke hangs **DOWN**. The word **TOP** stamped on the choke must be visible from the top of the amplifier.
- Attach the remaining lead on the parasitic choke to the top of the plate RF choke using the 1/4-20 aluminium screw which also secures the mounting bracket for the coupling capacitor. **DO NOT** overtighten this screw.
- Replace the cabinet and secure it with the 6 screws removed in section 2-2.

2-4. LOCATION

In general, the location of the L75 is not critical; however, the back of the Amplifier case must not be obstructed and should not be placed closer than 1 inch from a wall or the air outlet for the blower will be blocked and overheating of the tubes may occur.

2-5. POWER REQUIREMENTS

The L75 is equipped with an internal Power Supply which can be operated from either 120 VAC or 240 VAC 50-60 Hertz. Because of the large variety of plug and socket configurations for 240 volt service, and because the L75 can be operated from either 120 Volts or 240 Volts, a line plug is not furnished with the amplifier. The L75 is shipped from the factory with jumpers connected to operate on 240 VAC. It is recommended that the L75 be operated from its own separate 240 volt AC supply. If the amplifier must be operated from a 120 V lighting circuit, then the circuit should be rated and fused for 20 Amp service. No other devices should be operated from the same line.

2-6. JUMPER CONNECTIONS

Figure 2-3 shows the jumper connections required for 120 and 240 Volt operation. These jumpers are connected at the factory for 240 volt operation. Make sure the L75 is wired correctly for the power source to be used. Also be sure the correct fuse is installed at the rear of the amplifier. 10 Amp for 240 V operation and 20 Amp for 110 V operation.

PRIMARY TERMINAL BLOCK

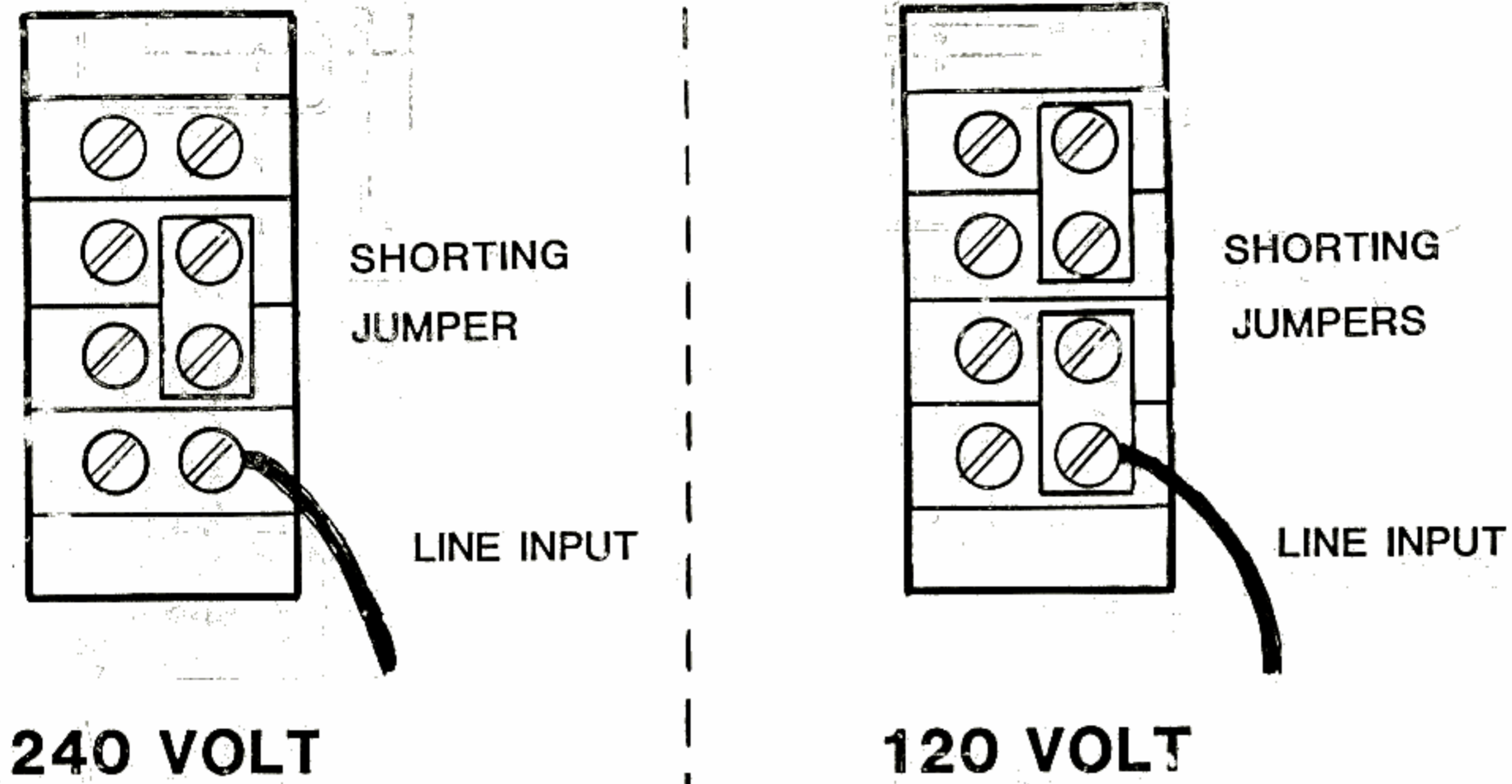


Figure 2-3 Transformer Primary Jumper Connections

2-7. ANTENNA REQUIREMENTS

The L75 has been designed for use with antennas resonant at the operating frequency and having approximate impedances within the limits of 25 to 100 Ohms. The nominal output impedance of the amplifier is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half wave dipole centered with 52 Ohm coax. For a detailed discussion on antennas, refer to an appropriate antenna book.

2-8. LOW PASS FILTER

The amplifier has been designed in accordance with good engineering practices, and harmonic attenuation meets or exceeds current FCC specifications. However, to reduce the chance of television interference in severe RFI environments, it is recommended that a suitable low pass filter such as the R. L. Drake Model 100-LP be used with the L75.

2-9. MATCHING NETWORK

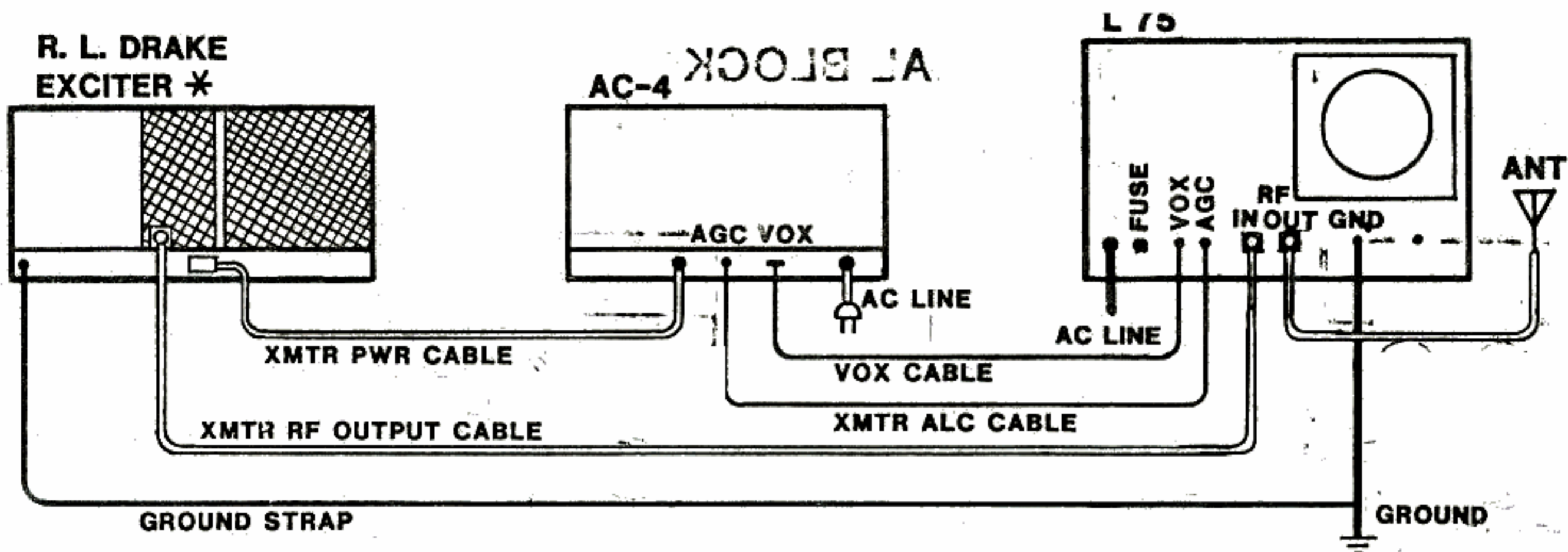
Many practical antennas exhibit an SWR range over a complete amateur band that exceeds 2:1. For this reason we recommend using an antenna matching network such as the R. L. Drake MN2700 which will allow the L75 to work into a 50 Ohm load for maximum power transfer into the antenna.

CAUTION

Never attempt to operate the L75 without first connecting it to an antenna or 50 Ohm Dummy Load of sufficient power handling capacity or serious damage may result.

2-10. GROUND REQUIREMENTS

For best results, the amplifier should be attached to a good earth ground through as short and as large a ground strap as possible. A binding post is provided on the rear of the amplifier chassis for the ground



* LIST OF EXCITERS: T-4 T-4B T-4C
T-4X T-4XB T-4XC TR-3 TR-4 TR-4C

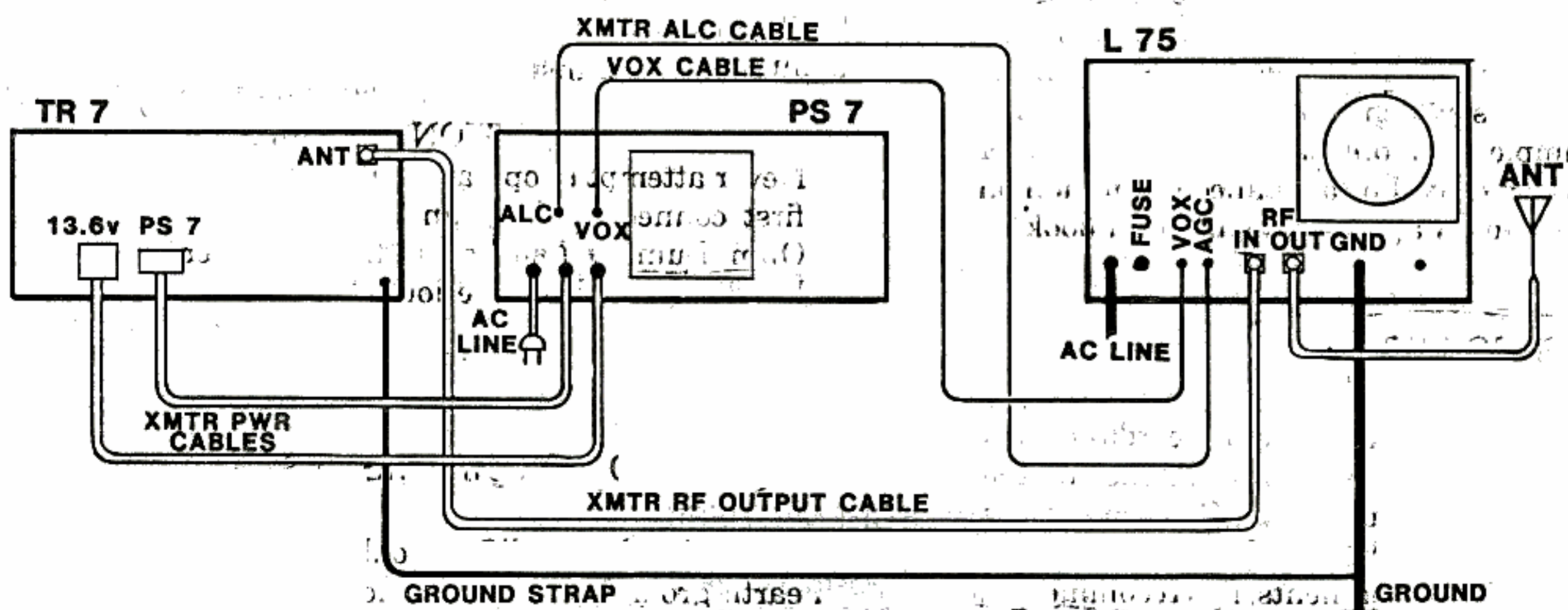
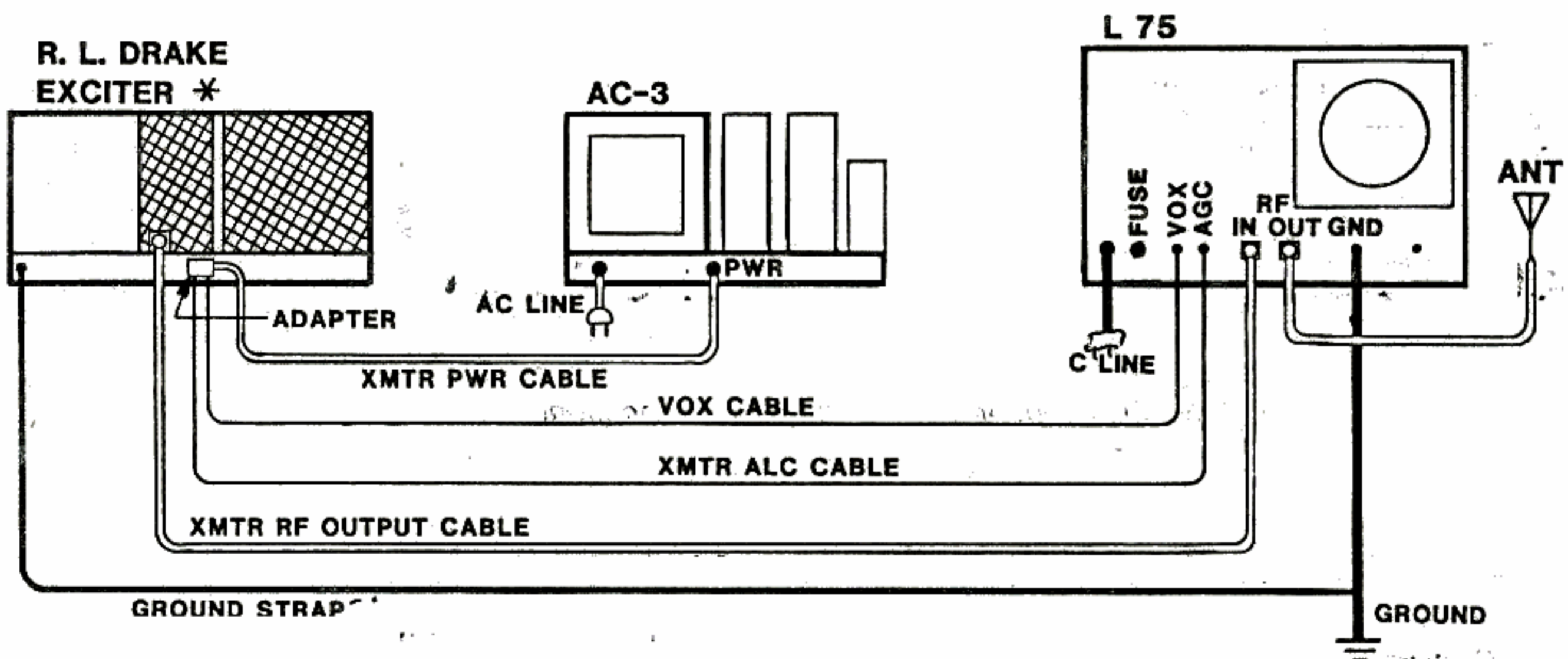
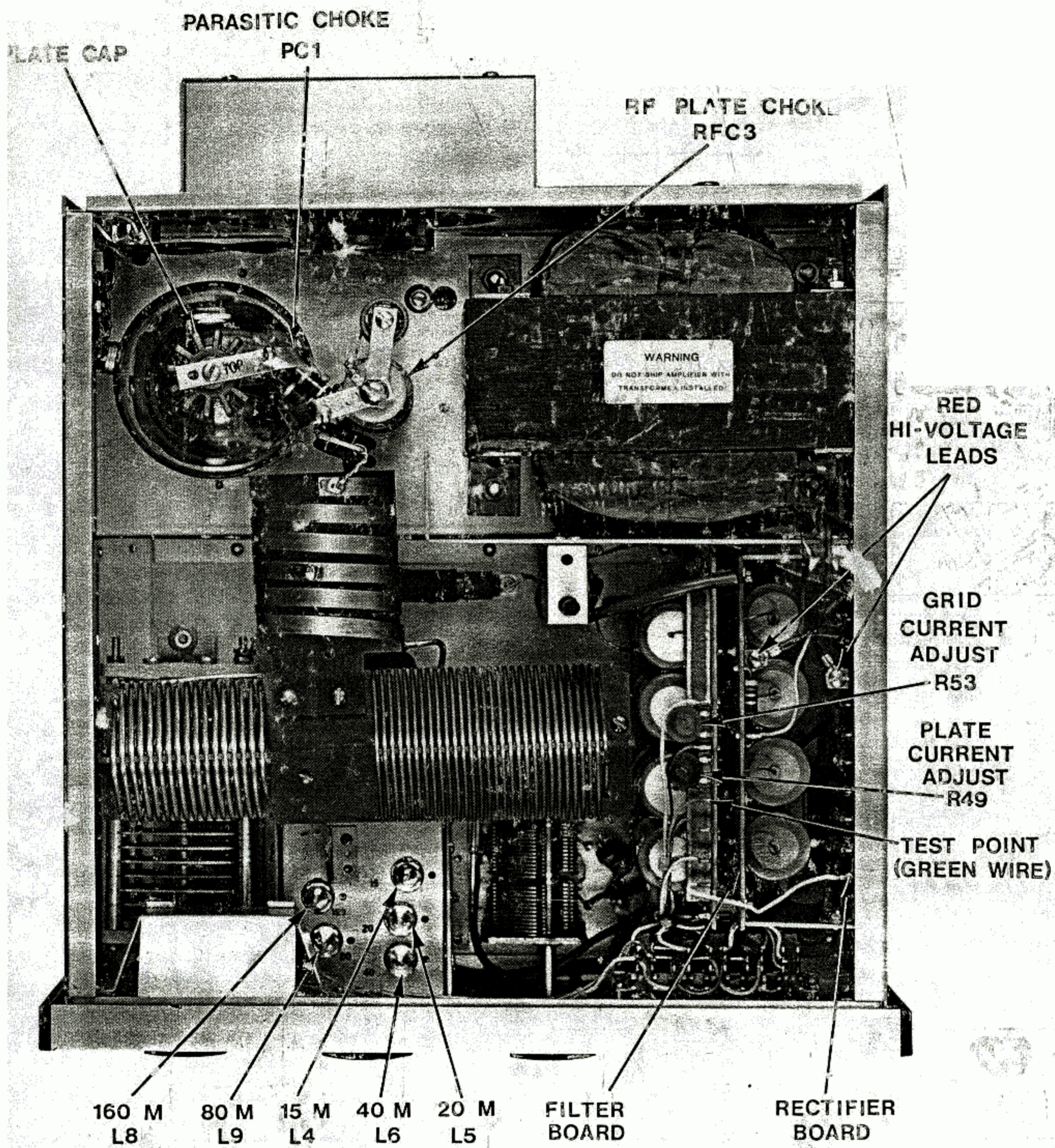
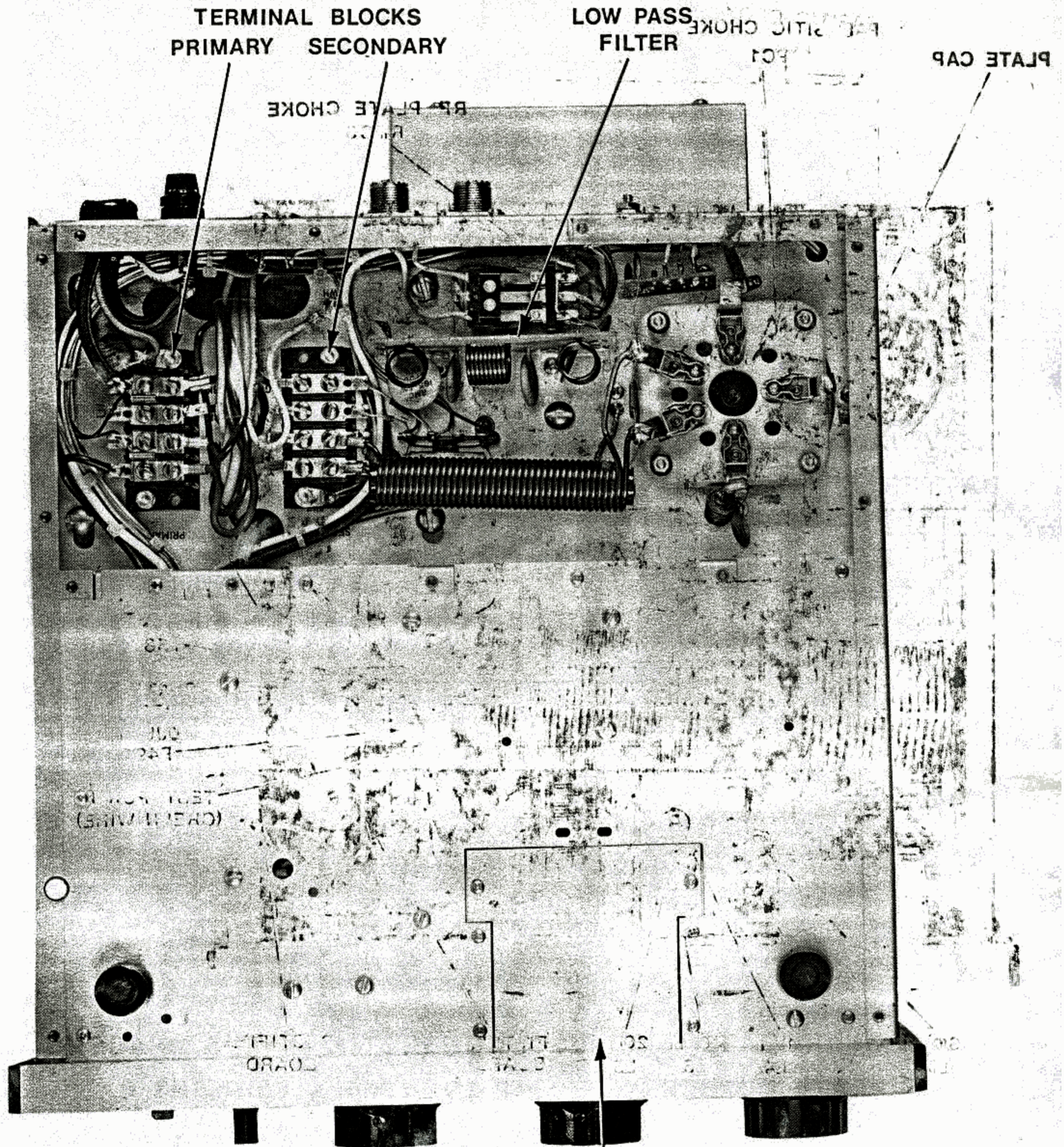


Figure 2-5 Connecting the L75 to the R. L. Drake Line of Compatible Exciters



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Figure 5-1 Component Locations, Top View



TERMINAL BLOCKS
PRIMARY SECONDARY

LOW PASS
FILTER

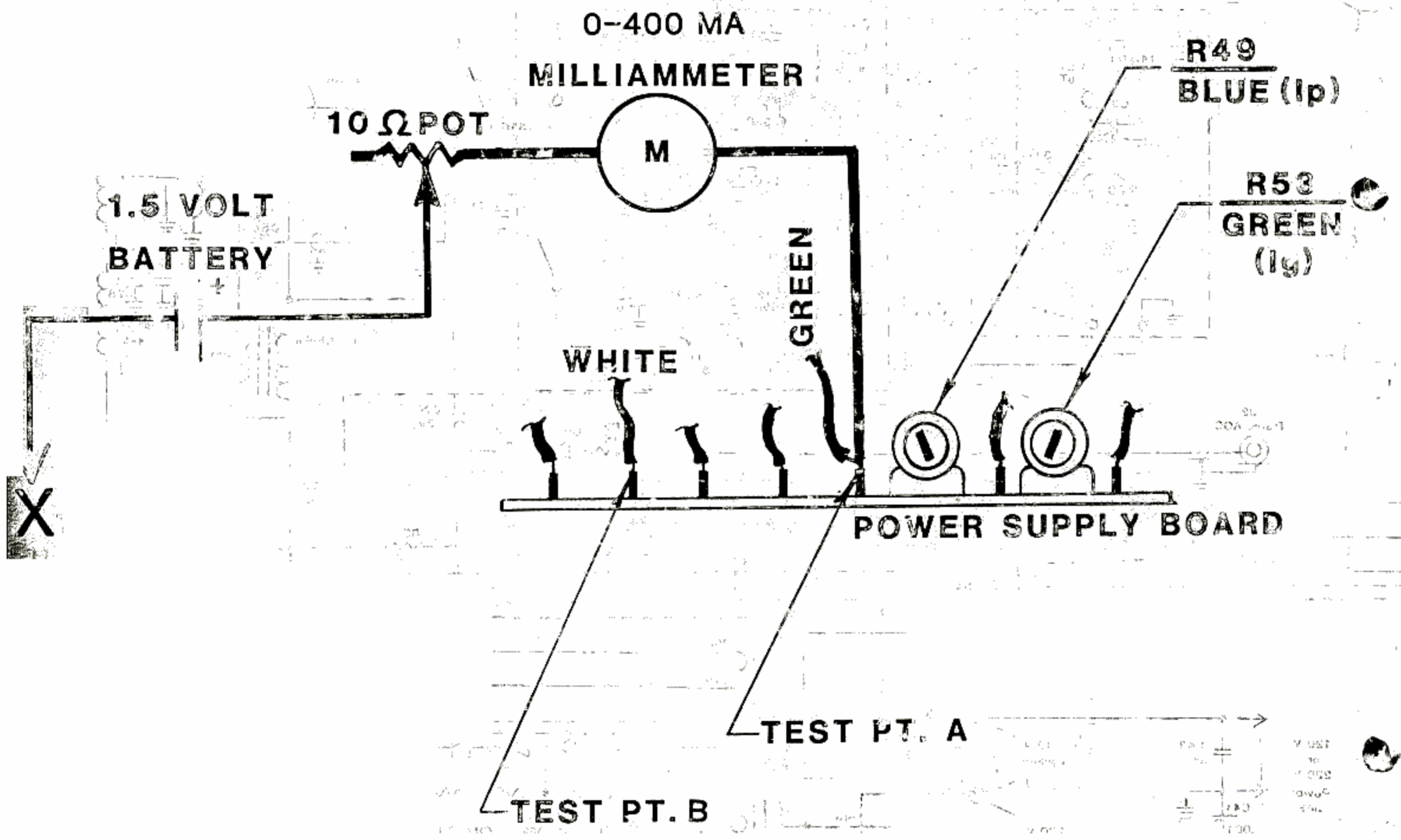
PLATE CAP

RP-PLATE CHOKE

INPUT MATCHING
FILTERS

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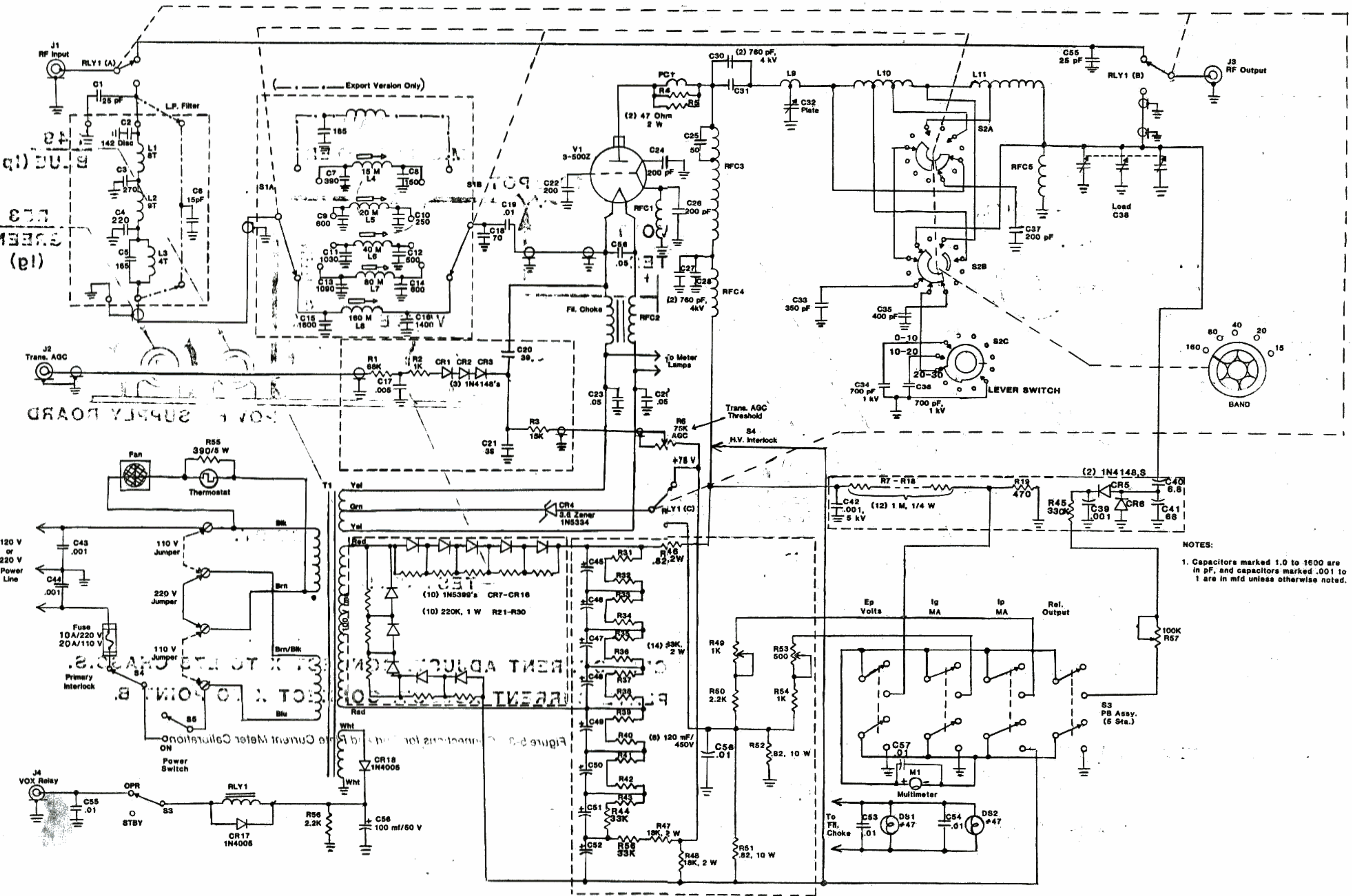
Figure 5-2 Component Locations, Bottom View



- 1) FOR GRID CURRENT ADJUST. CONNECT X TO L75 CHASSIS.
- 2) FOR PLATE CURRENT ADJUST. CONNECT X TO POINT B.

Figure 5-3 Connections for Grid and Plate Current Measurement Calibration

A2



NOTES:
1. Capacitors marked 1.0 to 1000 are in pF, and capacitors marked .001 to 1 are in mfd unless otherwise noted.

Figure 5-4 L75 Schematic