
INSTRUCTION AND OPERATING MANUAL

Your new Clegg 99'er six meter transceiver is a superb instrument, carefully engineered and manufactured to give you years of trouble free service. Its performance will be limited only by the degree of care used in its installation.

The receiver is designed to tune only the first two megacycles of the six meter band as there is virtually no occupancy above 52 mc. This arrangement makes possible exceptional electrical bandwidth and visual ease of tuning particularly during contests and other periods of heavy band activity.

The 99'er is designed to operate directly from any 115V AC 60 cycle outlet or from a 12 or 6 volt battery through the use of 12 or 6 volts inverters having a rate of 75 watts or more. A less expensive 50 watt inverter may be used by drawing heater current directly from the battery. Provision is made for this in the 11 pin power receptacle at the rear of the chassis. The power receptacle also provides auxiliary outlets for external VFO control, external speaker and headphones to actually monitor your signal while operating. Connections for these functions are detailed in a schematic diagram on another page.

INITIAL INSTALLATION AND OPERATION

It is recommended that the 99'er be operated initially with normal 115 Volt, 60 cycle AC supply with an antenna system of known performance, with a standing wave ratio of less than 2 to 1.

Unlike other less sensitive units each of the ten tuned circuits in your 99'er have been finely adjusted on special laboratory instruments to provide almost unbelievable sensitivity and selectivity at an extremely low noise figure. To take advantage of these desirable characteristics it is essential that the antenna SWR does not exceed 2 to 1. With higher ratios than this it is possible for the R. F. Amplifier stage to go into self oscillation resulting in annoying "birdies" or heterodynes on incoming signals.

In certain highly congested areas, powerful TV and FM signals may emit spurious radiations falling within the six meter band causing unwanted modulation and heterodynes with incoming six meter signals. This condition may be eliminated by inserting a Clegg low pass filter in the feed line right at the transmitter.

1. Connect power cable to receptacle in rear.
2. Connect antenna cable to coaxial receptacle in rear.
3. Connect unit to 108 to 118 Volt, 60 cps power source.
4. Set SEND-RECEIVE switch to RECEIVE position.
5. Turn VOLUME control clockwise from OFF position.
6. After a 2 minute warm up adjust volume control to convenient level.
7. After 5 to 15 minute warm up period, S meter zero setting can be adjusted by tuning receiver to an unoccupied frequency and adjusting S meter control on rear of chassis to read "S1."
8. Receiver is now ready for high performance operation over the 50-52 mc. range
9. Insert a suitable crystal into XTAL receptacle on panel. (Crystal in either the 8.33 mc. or 12.5 mc. range may be used with equal performance. For greater freedom from TVI use of 12.5 mc. range crystal are recommended.)
10. Depress SPOT push button, and transmitter frequency can be spotted on receiver.
11. To transmit, push RECEIVE-SEND switch to SEND position.
12. Transmitter tune up consists of adjusting MULT, PLATE and LOAD controls for maximum meter reading in that order. The PLATE and LOAD controls will be found to interact on each other so that they should be alternately adjusted for maximum meter reading.

13. Normal 5 Watt transmitter power output (into a 50 ohm antenna with low SWR) is indicated by meter reading of about 1/2 scale. (If antenna has excessive SWR, meter readings may be somewhat higher or lower than full scale.)
14. Connect a suitable high impedance crystal or equivalent microphone having a rated output of not less than -55 db to the panel MIC connector.
15. While speaking into microphone in normal operating voice adjust microphone gain control on rear of unit for proper modulation level. In the absence of a scope or other modulation monitor, the microphone gain can be set to that point where carrier level indicated on panel meter varies slightly with modulation. (Alternate microphone gain level can be adjusted by establishing QSO with another station and adjusting gain to the point where he reports proper modulation level. Preferably, the other station should be at sufficient distance so your signal is less than S9.) As a second alternate, modulation may be monitored locally by listening with headphones connected across pins #3 and #4 on the power cable connector socket at the rear of the 99'er (see Fig. 1C). Gain should be adjusted to just below that point where distortion becomes noticeable by ear.
16. Frequency changes up to 150 KC can normally be made without retuning the 99'er. With low SWR, frequency changes up to 300 KC can be made with little sacrifice in performance. Conversely, some critical antenna systems may require readjustment of PLATE and LOAD controls with a frequency change of less than 100 KC.

CABLE CONNECTIONS FOR MOBILE OPERATION AND AUXILIARY EQUIPMENT

USING THE 99'ER WITH A 12 VOLT 50 WATT INVERTER

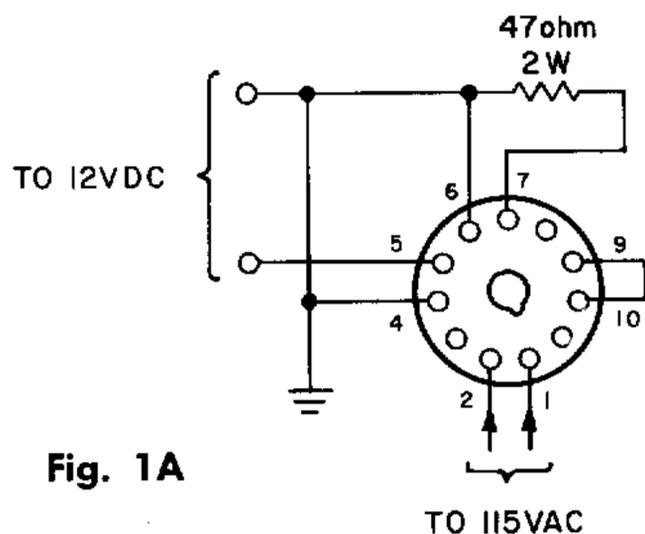


Fig. 1A

USING THE 99'ER WITH A 6 VOLT 50 WATT INVERTER

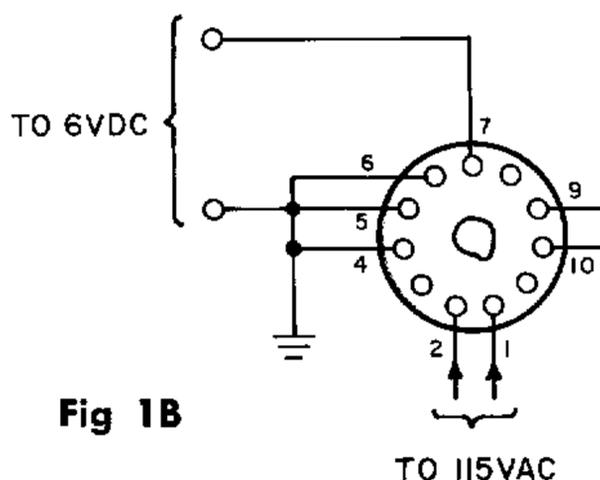


Fig 1B

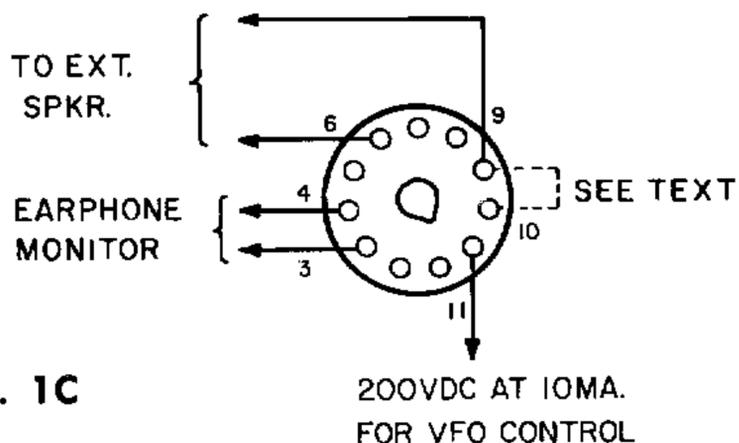


Fig. 1C

Fig. 1C shows power cable connections for various auxiliary equipment. (See text (opposite)).

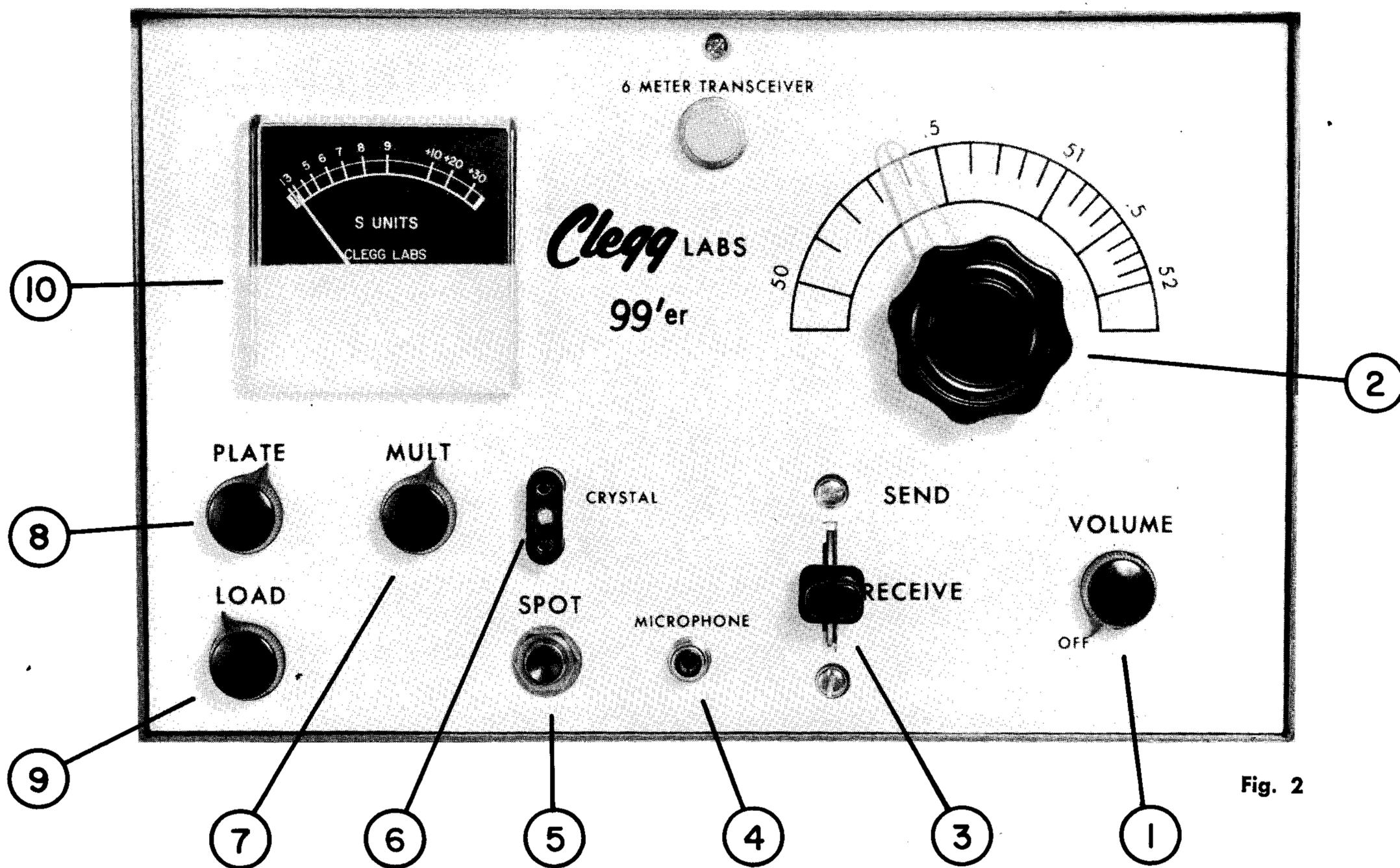


Fig. 2

FUNCTION OF CONTROLS, CONNECTORS AND INDICATORS

1. VOLUME — Adjust speaker volume on receive position. Also actuates AC ON-OFF power switch in conventional manner.
2. RECEIVER TUNE — Tunes receiver from 50 to 52 mc. with 5 to 1 ratio Vernier dial.
3. SEND-RECEIVE — Switches all internal circuits from SEND to RECEIVE functions. Automatically switches antenna and speaker.
4. MIC — Standard "RCA" type microphone receptacle.
5. SPOT — Provides means for locating transmitter frequency in band. Depressing button while in RECEIVE position actuates Crystal Oscillator.
6. XTAL — Socket receptacle for transmitter crystal. Accepts standard FT-243 and similar type crystal holders.
7. MULT. — Tunes plate of transmitter multiplier stage over 50 to 54 mc. range.
8. PLATE — Tunes plate of transmitter output stage over 50 to 54 mc. range.
9. LOAD — In conjunction with #8 PLATE control, adjusts output circuit of transmitter to match antenna for maximum power transfer.
10. METER — Serves dual function:
 - a. Calibrated S meter for receiving.
 - b. RF output meter for tuning and monitoring transmitter.

MOBILE OPERATION

Figs. 1A & 1B

Two different methods of battery operation are possible with the 99'er. The unit may be completely powered with either a 12 or 6 Volt inverter* of greater than 75 watts capacity or the filaments may be powered directly from the battery while plate voltage can be obtained through a less expensive fifty watt inverter. The 90 watt system is recommended for its simplicity and easy of portability. To use 50 watt inverters, either on 12 or 6 volts DC, separate power cables (not provided) must be prepared. Connections are diagrammed in Figs. 1A and 1B on the opposite page.

*ATR., Heath, Teradio etc., (available through your distributor).

AUXILIARY EQUIPMENT

Fig. 1C

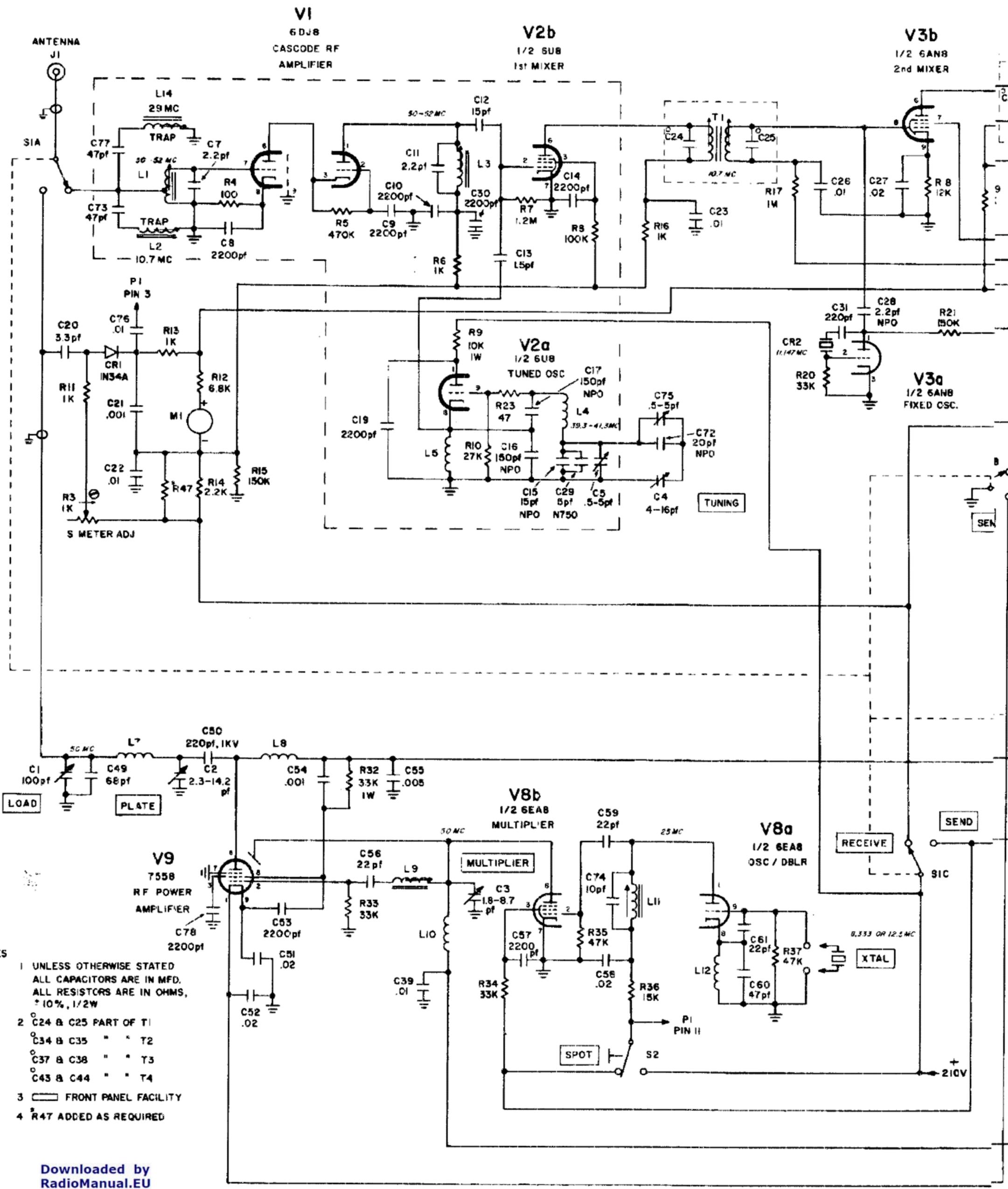
Through the 11 prong male power socket at the rear of the chassis it is possible to, 1.) connect an external speaker, 2.) obtain voltage to control an external VFO and 3.) to monitor your own transmissions by earphones. To utilize any or all of these circuits special power cables (not provided) must be prepared. If no external speaker is used but you wish to monitor your signal a jumper between pins 9 and 10 (indicated by dotted lines Fig.1C) should be added. When this jumper is removed the speaker in the 99'er is disabled. Connections for these functions are shown in Fig. 1C.

RESISTANCE CHART-TUBE SOCKETS

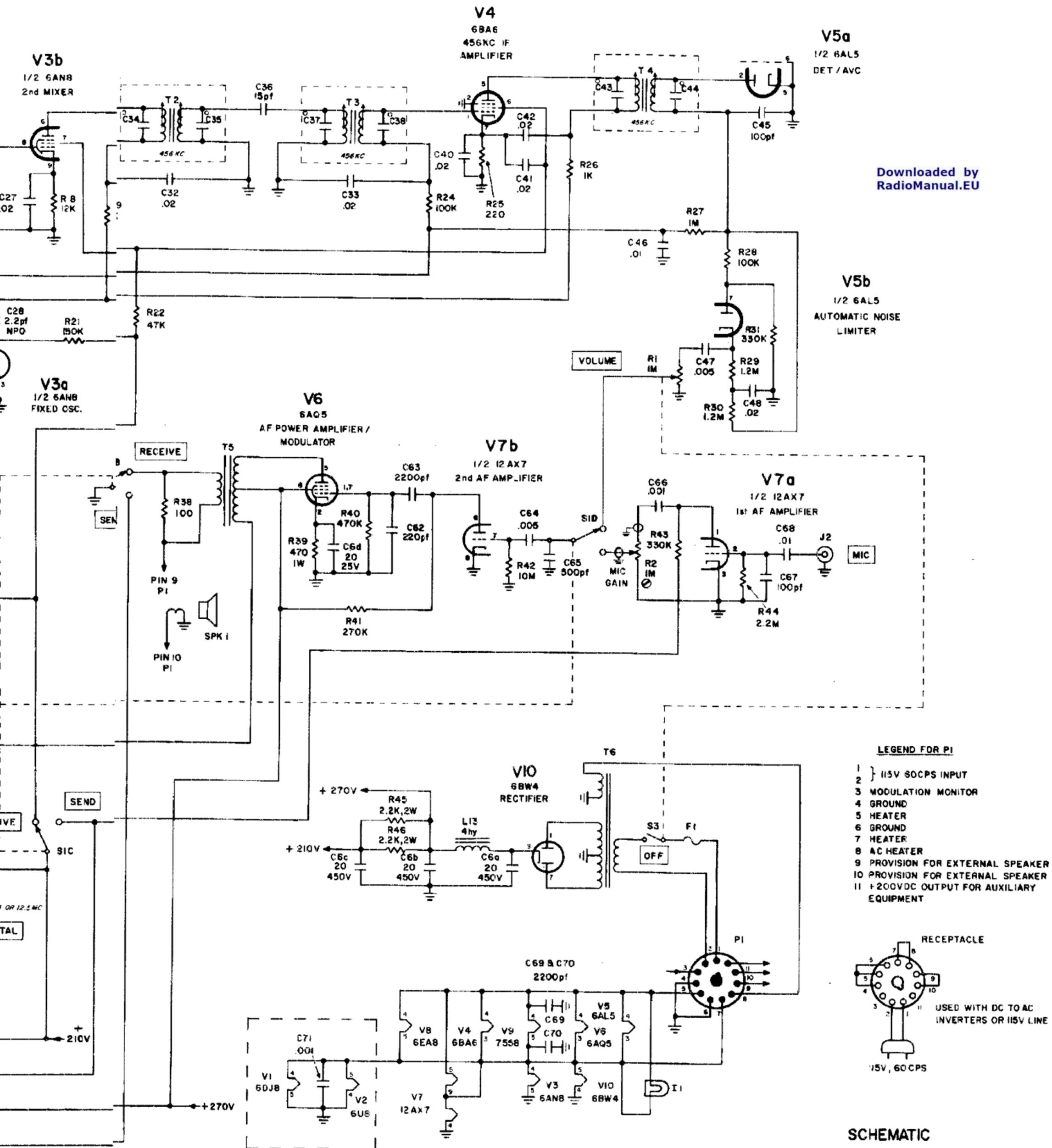
TUBE	MODE	PIN NUMBERS								
		1	2	3	4	5	6	7	8	9
V1 6DJ8	SEND	200K	INF	INF	0.5	0	INF	0	100	0
	RCVE	200K	INF	INF	0.5	0	INF	0	100	0
V2 6U8	SEND	200K	1.2M	300K	0	0.5	200K	0	1.3	27K
	RCVE	200K	1.2M	300K	0	0.5	200K	0	1.3	27K
V3 6AN8	SEND	200K	33K	0	0.5	0	200K	220K	2.6M	12K
	RCVE	200K	33K	0	0.5	0	200K	220K	2.6M	12K
V4 6BA6	SEND	1.6M	0	0.5	1	180K	220K	220		
	RCVE	1.6M	0	0.5	1	180K	220K	220		
V5 6AL5	SEND	2.8M	470K	0.5	1	0	0	330K		
	RCVE	2.8M	470K	0.5	1	0	0	330K		
V6 6AQ5	SEND	500K	470	0.5	1	1M	1M	500K		
	RCVE	500K	470	0.5	1	1M	1M	500K		
V7 12AX7	SEND	5M	2.2M	0	0	1	470K	10M	0	0.5
	RCVE	INF	2.2M	0	0	1	470K	10M	0	0.5
V8 6EA8	SEND	200K	47K	200K	1	0.5	100K	0	3	47K
	RCVE	INF	47K	INF	1	0.5	200K	0	3	47K
V9 7558	SEND	0	33K	100K	1	0.5	100K	0	100K	0
	RCVE	INF	33K	200K	1	0.5	150K	0	200K	INF
V10 6BW4	SEND	125			0	0.5		125		100K
	RCVE	125			0	0.5		125		100K

ELECTRICAL PARTS LIST (CONTINUED ON LAST PAGE)

SYMBOL	DESCRIPTION	MFR.	TYPE
CAPACITORS			
C1 C2	100 pf 2.3-14, 2 pf	Hammarlund	APC100B
C3 C4 C5, C75 C6 A, B, C, D	1.8-8.7 4-16 pf .5-5 pf 20/20/20/20 mfd 450/450/450/25V	Hammarlund Johnson Radio Cond. Erie	MAC15 9M11 Model 251/w. drive 532-A
C7, C11, C28 C8, C9, C10, C14 C19, C53, C57, C63 C69, C70, C78, C30 C12 C13	2.2 pf, 1KV 2200 pf. 500V 15 pf, 1KV 1.5 pf, 1KV	Planet RMC Aerovox RMC RMC	CCTO 2R2 BCD-500V-GMV CCTO-150 CNO-515
C16, C17 C20 C21, C54, C66, C71 C22, C23, C26, C39 C46, C68, C76	150 pf, 5%, NPO, 500V 3.3 pf, 1KV .001 mfd, 500V .01 mfd, 500V	Elmenco RMC Aerovox Aerovox	CM-15-151J CCTO-4R7 BCD-500V-GMV BCD-500V-GMV
C24, C25 C27, C32, C33, C40 C41, C42, C48, C51 C52, C58	part of T1 .02 mfd, 500V	Aerovox	BCD-500V-GMV
C31 C34, C35 C36 C37, C38 C43, C44 C45, C67 C47, C55, C64 C49 C50 C56, C59, C61	220 pf, 1KV part of T2 15 pf, 1KV part of T3 part of T4 100 pf, 500V .005 mfd, 500V 68 pf, 1KV 220 pf, 1KV 22 pf, 1KV	RMC RMC Aerovox Aerovox Elmenco RMC RMC	CCTO-330 CCTO-150 BCD-500V-GMV BCD-500V-GMV CCTO-680 CCTO-220



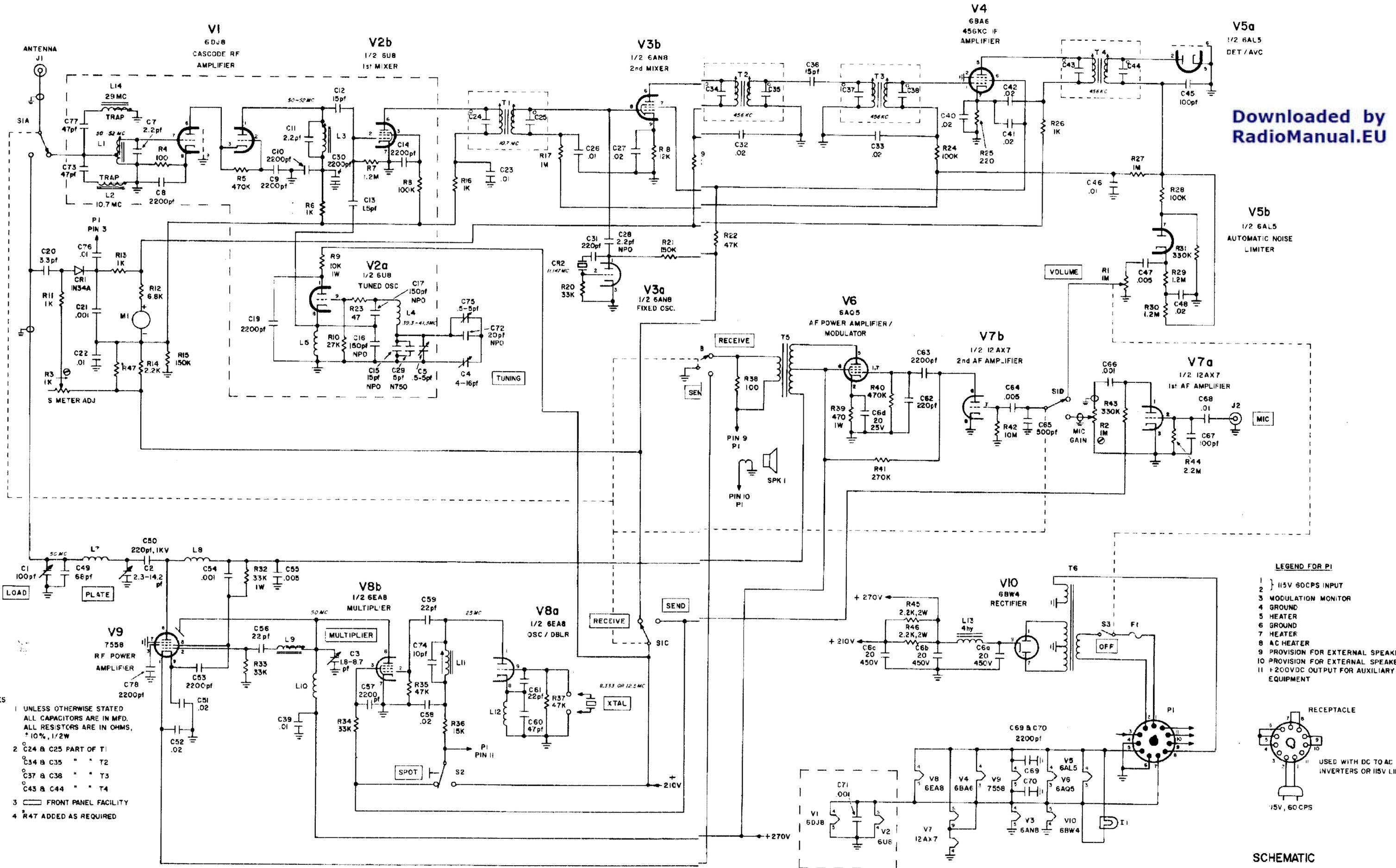
- NOTES
- UNLESS OTHERWISE STATED ALL CAPACITORS ARE IN MFD. ALL RESISTORS ARE IN OHMS, ± 10%, 1/2W
 - C24 & C25 PART OF T1
C34 & C35 " " T2
C37 & C38 " " T3
C43 & C44 " " T4
 - FRONT PANEL FACILITY
 - R47 ADDED AS REQUIRED



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SCHEMATIC

99er 6 METER TRANSCEIVER
REFERENCE NO. CL-10-266c



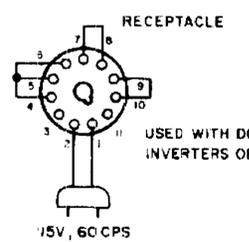
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V5a
1/2 6AL5
DET / AVC

V5b
1/2 6AL5
AUTOMATIC NOISE
LIMITER

LEGEND FOR P1

- 1 } 115V 60CPS INPUT
- 2 } MODULATION MONITOR
- 3 GROUND
- 4 GROUND
- 5 HEATER
- 6 GROUND
- 7 HEATER
- 8 AC HEATER
- 9 PROVISION FOR EXTERNAL SPEAKER
- 10 PROVISION FOR EXTERNAL SPEAKER
- 11 +200VDC OUTPUT FOR AUXILIARY EQUIPMENT



USED WITH DC TO AC
INVERTERS OR 115V LINE

115V, 60CPS

- NOTES
- 1 UNLESS OTHERWISE STATED ALL CAPACITORS ARE IN MFD. ALL RESISTORS ARE IN OHMS, * 10%, 1/2W
 - 2 C24 & C25 PART OF T1
C34 & C35 " " T2
C37 & C38 " " T3
C43 & C44 " " T4
 - 3 FRONT PANEL FACILITY
 - 4 R47 ADDED AS REQUIRED

SCHMATIC
99'er 6 METER TRANSCEIVER
REFERENCE NO. CL-10-266c