RECEIVER TUNING CHART		
METER POSITION	TUNING ADJUSTMENT (TUNE FOR MAX. READING)	METER READING (0-1 MA.)
OSC. GRID	L1-R	0.2 - 0.6
2ND MULT. GRID	L2-R	0.1 - 0.14
3RD MULT. GRID	L3-R	0.08 - 0.1
A.V.C.	L4-R	MEASURE WITH VTVM ON A.V.C. BUSS
TRANSMITTER TUNING CHART		
METER POSITION	TUNING ADJUSTMENT (TUNE FOR MAX. READING)	METER READING (0-1 MA.)
OSC. GRID	——	0.2
1ST MULT. GRID	L1-T — L2-T	0.3 - 0.5
2ND MULT. GRID	L3-T — L4-T	0.3 - 0.5
3RD MULT. GRID	L5-T	0.3 - 0.5
R.F. AMP. GRID	C6-T	0.25
R.F. AMP. GRID	L8-T	0.25
R.F. AMP. PLATE	L9-T (MIN. READING)	0.5

Figure 67
METER CHART FOR TUNING RT-19/ARC-4

the slugs of cascode coils L-1 and L-2 for best signal reception.

The crystal is now plugged in the transmitter and the multiplier circuits are tuned for maximum meter current, as indicated in figure 67. Load the antenna by increasing the loading capacitor (C10-T) and then tune the r.f. amplifier stage for minimum dip. Repeat until maximum loading is obtained while still observing a plate current dip.

Modern, TVI-Proof Conversion of the SCR-522 Transmitter

Many conversions have been shown for the BC-624 transmitter portion of the SCR-522 v.h.f. receiver-transmitter. The conversion described in this section is recommended for two and six meters, as it eliminates the t.v.i. difficulties normally encountered with this equipment. The unconverted transmitter is shown in figure 68.

First of all, remove the transmitter from the cabinet and strip off unnecessary components, such as the tuning slides, etc. Move the power connector to the rear of the chassis as shown in figure 69A. Make up a power cable as shown in figure 69B, using #14 wire for the filament leads, as shown. Next, mount a SO-239 coaxial connector near the tripler stage, as shown in figure 69C, and run a coaxial lead from the connector to the antenna link of the transmitter.

If a carbon microphone is used, it is necessary to install four "pen-lite" batteries in series with the primary winding of the microphone transformer. Better still, a crystal microphone can be employed with the transmitter if the simple transistorized speech amplifier shown in figure 70 is installed in the transmitter. It is recommended over vacuum tube amplifiers since there is less danger of audio feedback. A 1N34 diode rectifies the filament voltage to deliver a small negative potential suitable for the transistor. Remove the microphone transformer and connect the output of the transistor amplifier to the "hot" terminal of volume control #125.

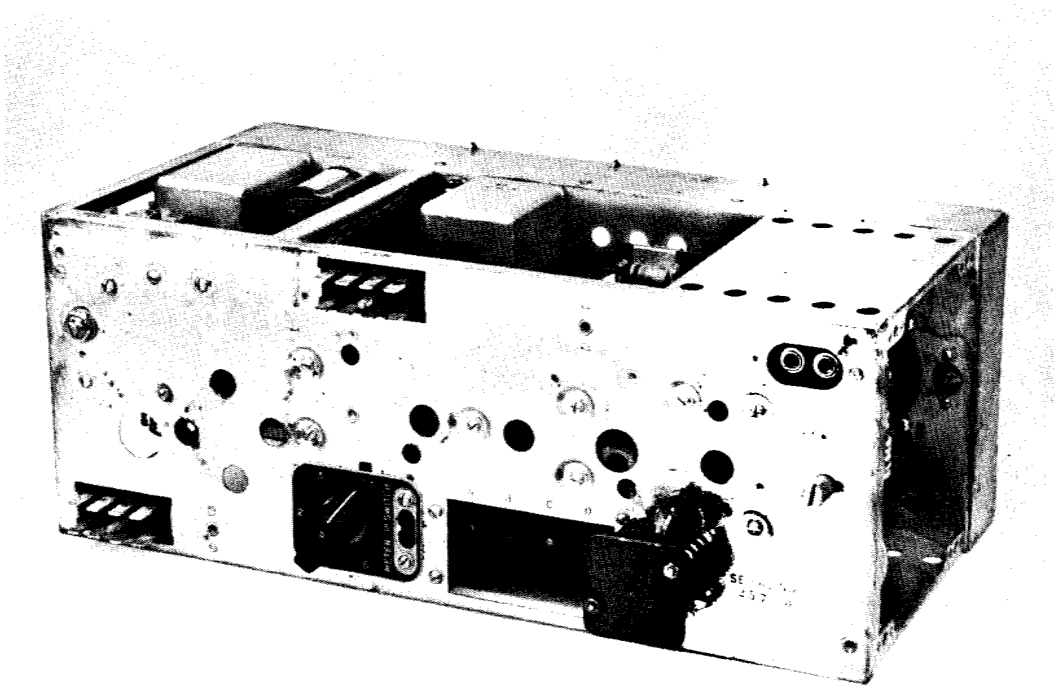


Figure 68
THE UNMODIFIED BC-624 TRANSMITTER SECTION OF THE SCR-522 V.H.F. TRANSMITTER-RECEIVER

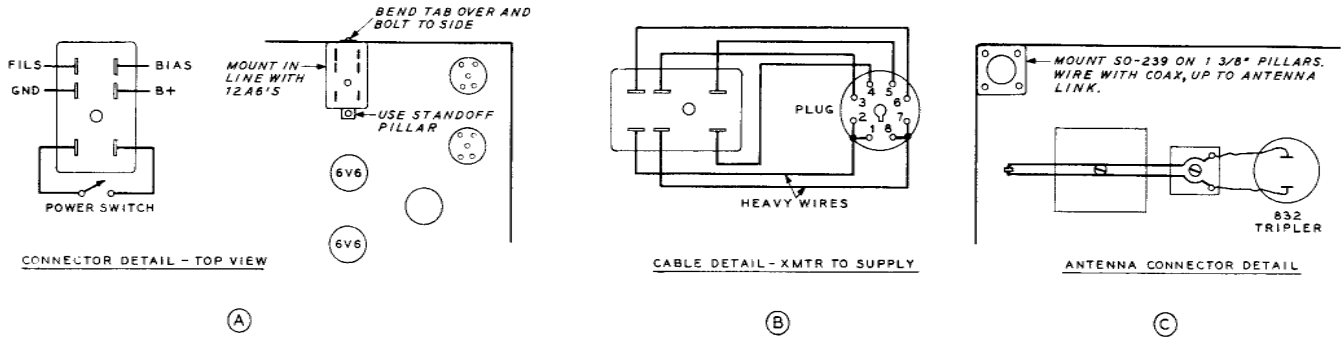


Figure 69
A—Power plug modification for 522 transmitter, for use with a.c. supply shown in figure 75.
B—Connecting cable between transmitter and power supply.
C—New coaxial antenna receptacle is mounted in corner of transmitter chassis near 832-A tripler stage.

T.V.I.-Proofing the Transmitter Install a 0.001 μfd. disc ceramic capacitor across the filament pins of each tube socket. Bypass all leads on the power connector with 0.001 μfd. disc ceramic capacitors. In addition, bypass each meter lead with 1.5 KV, 0.001 μfd. disc ceramic capacitors. Use a meter with a metal case, or else cut a section of a tin can to cover the rear of the meter if a phenolic-cased meter is used. Ground the can to the transmitter panel, permitting the meter terminals to pass through holes cut in the rear disc of the can.

To shield the transmitter completely, it may be mounted in the metal case from a BC-375 tuning unit. Small, ¼-inch holes should be drilled in the case to aid ventilation. The completed transmitter, mounted on a relay rack panel is shown in figure 71.

Circuit Modifications The braid straps that connect the plate terminals of the 832-A tubes to the tank circuits should be removed and replaced with copper strap. The braid gets warm during operation of the transmitter because of the high r.f. resistance. Transmitter output increases when the braid leads are replaced. Modulation is also improved when the 12A6 audio tubes are replaced with 12V6-GT's. No wiring changes are necessary.

A crystal–v.f.o. selector switch that may be incorporated in the transmitter oscillator circuit is shown in figure 72.

To operate the 522 transmitter on six meters, the following coil changes are necessary: Replace the tripler (first 832-A) plate coil with a new inductance consisting of 14 turns of #14 enamel wire, ⅝" diameter, and about 1½" long. The B-plus lead is attached to the center of the coil. The antenna coil consists of 5 turns of #14 insulated wire wound over the center of the plate coil. The tripler stage now acts as a six-

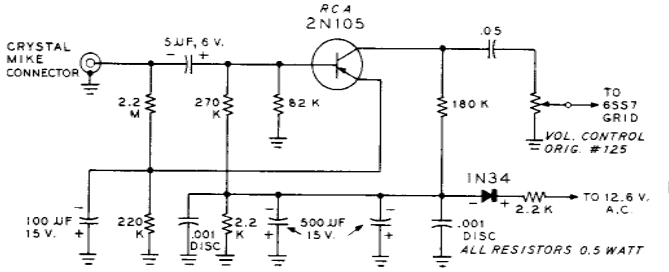


Figure 70
SIMPLE TRANSISTOR SPEECH AMPLIFIER PERMITS USE OF CRYSTAL MICROPHONE WITH SCR-522 TRANSMITTER
Small amplifier may be mounted between volume control and the microphone jack on the inside of the chassis.

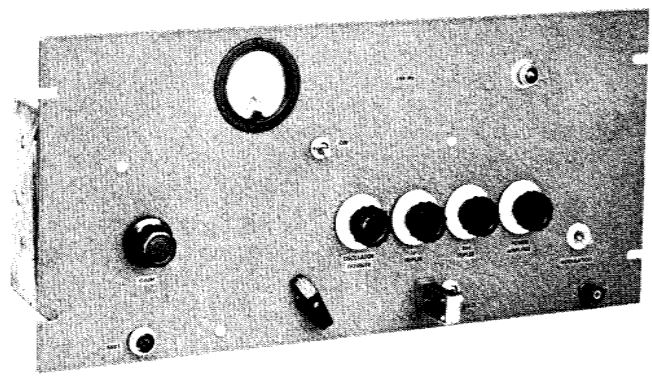


Figure 71
MODIFIED 522 TRANSMITTER IS MOUNTED ON RELAY RACK PANEL
Case from BC-375 tuning unit is slipped over chassis to complete anti-T.V.I. shielding. Additional conversion information is given in Vol. I of the "Surplus Radio Conversion Manual."

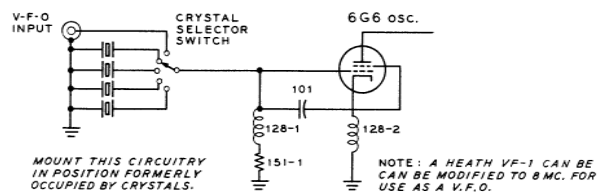


Figure 72
MODIFIED TRANSMITTER OSCILLATOR CIRCUIT PERMITS USE OF HEATH VF-1 V.F.O. (RETUNED TO 8 MC.) WITH 522 TRANSMITTER

meter amplifier, and the 832-A two-meter amplifier tube is removed. Six Mc. crystals are used, and all multiplier stages can be retuned for six-meter operation. See Volume I of the Surplus Conversion Manual series for additional circuit modification information.

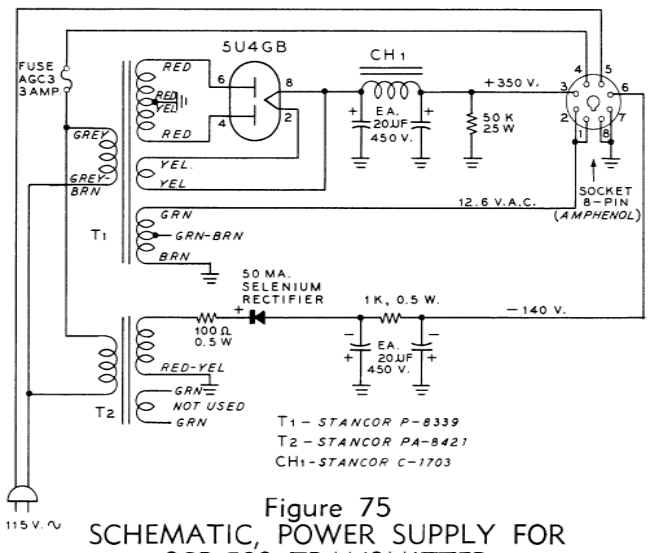


Figure 75
SCHEMATIC, POWER SUPPLY FOR SCR-522 TRANSMITTER
Transformer T-1 delivers 325-0-325 volts at 255 ma., C.C.S., 5 volts at 3 amperes, and 12.6 volts at 5.3 amperes. Transformer T-2 delivers 125 volts at 50 milliamperes. Choke CH-1 is 4 henries at 250 ma.

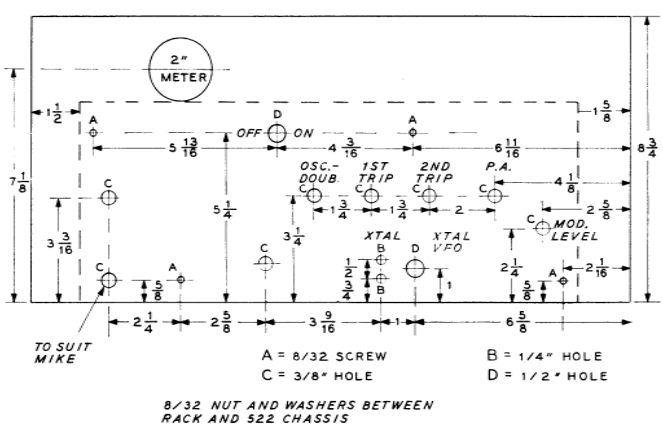
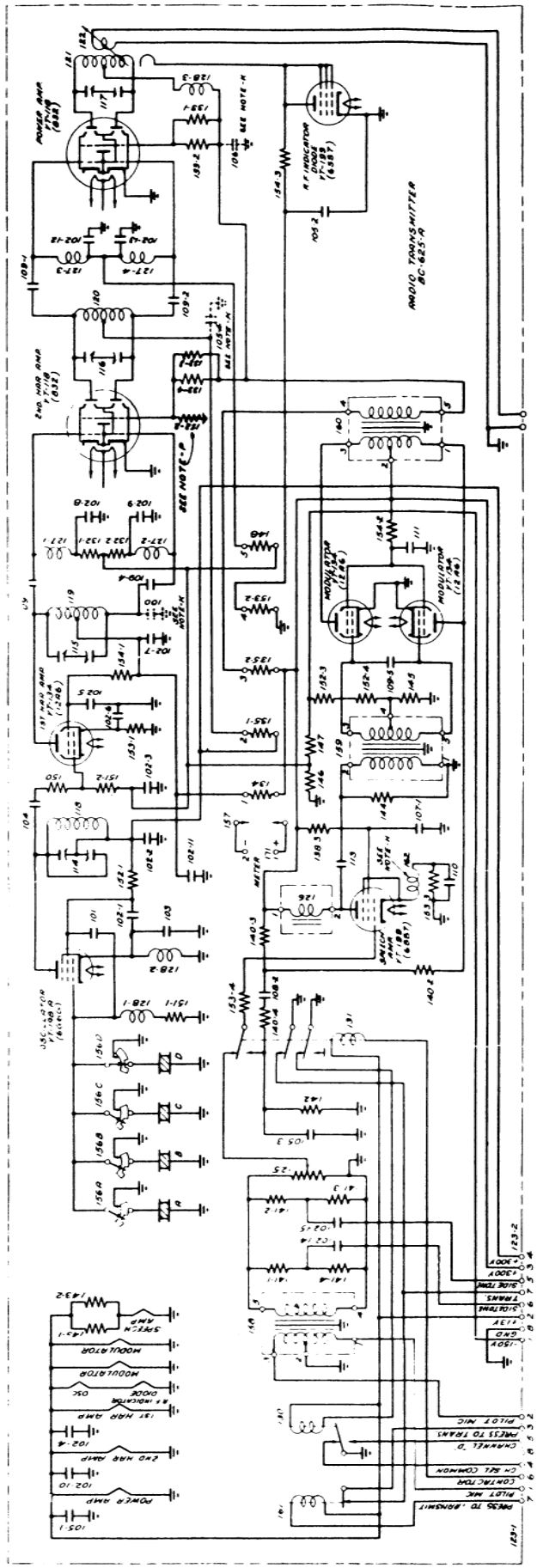


Figure 76
LAYOUT OF PANEL FOR SCR-522 TRANSMITTER



ORIGINAL SCR-522 TRANSMITTER SCHEMATIC DIAGRAM
Figure 73