INSTRUCTION MANUAL

for the

WRL

"Globe Scout"

TRANSMITTER MODEL 680

Manufactured by WRL ELECTRONICS, INC.
Council Bluffs, Iowa

MANUFACTURERS OF

World Famous Globe Transmitters

TABLE OF CONTENTS

ELECTRICAL SPECIFICATIONS

POWER INPUT: 50 watts Phone; 65 watts CW.

OUTPUT LOAD: Pi network through coaxial connector 52 to 1000 ohms 80 through 10 meters. Link coupled through coaxial connector on 6 meters.

FREQUENCY RANGES*: Six switch positions.

80 Meters	3.3-5.4 Mcs.
40 Meters	6.4-10.5 Mcs.
20-15 Meters	13.7-23.0 Mcs.
11-10 Meters	27.0-31.0 Mcs.
6 Meters	50.0-54.0 Mcs.

*52 Ohm Load.

TUBE COMPLEMENT.

Quan.	Type	Function
1	6V6	Crystal Oscillator
1	6146	Final Amplifier
1	6U8	Speech Amplifier/Driver
1	6L6GB	Modulator
1	5U4GB	Rectifier

POWER REQUIREMENTS: 115 volts AC 50/60 cycles (Power Consumption 160 watts CW, 210 watts phone).

Globe Scout Transmitter Model 680

Inside Top View Of Chassis

SECTION I

GENERAL DESCRIPTION

1-1. GENERAL.

1-2. The Globe Scout Transmitter, Model 680, is made by WRL Electronics, Inc. of Council Bluffs, Iowa. The transmitter is rated 65 watts DC plate input power to the R.F. Power Amplifier Radio Telegraphy (CW) and 50 watts Radio Telephony (AM) operation.

1-3. DESCRIPTION.

1-4. The Model 680 transmitter is completely self-contained in a metal cabinet of handsome design. Dimensions are 8 inches high, 8 inches deep and 14 inches wide. Net weight is approximately 25 pounds. Ventilating grilles provide adequate ventilation and heat dissipation. Normal TVI precautions have been taken and the meter is provided with a special type shielding to prevent radiation through the meter. The pi network (used 80 through 10 meters) provides a high degree of harmonic attenuation when properly tuned, eliminating the necessity of a low-pass filter in most cases. Six meter output is independent of the pi network and is coupled to the antenna through a link coil. While primarily designed for fixed station operation, this transmitter may be used very effectively for mobile operation by the installation of a suitable dynamotor or vibrator supply to provide the necessary B plus voltages. The pi network in the final amplifier stage will load into any random length antenna or into a mobile whip antenna. The six meter link coil will load into a beam for fixed station operation or into a one-quarter wave whip for mobile use. Complete bandswitching of the transmitter is accomplished with a single switch. Band changing entails only resetting of the band change switch and the changing of the crystal (or the switching of a VFO).

1-5. The chassis may easily be removed from the cabinet for inspection and servicing. Power requirements are 115 volts, 50/60 cycles single phase alternating current. Tube complement is shown in Table I.

TABLE I, TUBE COMPLEMENT.

Quan.	Type	Function
1	6V6	Crystal Oscillator
1	6146	Final Amplifier
1	6U8	Speech Amplifier/Driver
1	6L6GB	Modulator
1	5U4GB	Rectifier

1-6. THEORY OF OPERATION.

1-7. A 6V6 tube is employed in a controlled regenerative crystal oscillator circuit. Although the circuit was primarily designed for crystal operation, any VFO with an output of 10 to 50 volts RF will work equally well. The stage allows the use of standard 80 and 40 meter crystals for operation on 80 through 10 meters. 8 megacycle crystals are required for operation on 6 meters. Bandswitching is incorporated in this stage and the cathode keying has proved to be crisp and clear on all bands. On straight through operation the excitation to the final amplifier may be in excess of requirements. In this instance, the oscillator tuning control must be detuned to reduce the amount of drive to the proper level (complete details are given in the tune-up procedure). The oscillator stage is capacity-coupled to the final amplifier.

1-8. The RF power amplifier stage employs a 6146 tube operated as a Class C amplifier. Two types of bias are applied to this stage; one is cathode, or self-bias, and the other is excitation bias. The cathode of this stage is keyed as well as that of the oscillator. The final amplifier operates straight through on all bands except 10 and 6 meters. The final amplifier doubles on those two bands. Due to high efficiency, doubling in this stage does not affect the output to any appreciable extent. Design of the plate circuit in the final amplifier stage utilizes bandswitching plus a pi network (80 through 10 meters). A separate final tank coil, link coupled to the antenna, is used on 6 meters.

1-9. The speech amplifier and driver stage circuits are of conventional design. The pentode section of a dual purpose type 6U8 is employed as a speech amplifier. The amplified speech signal is fed into the triode section of the tube through the volume control. The triode section of the tube operates as the driver stage. Printed circuit couplates are utilized in the speech amplifier and driver stages increasing efficiency. Capacity coupling is used between the driver stage and a modified Heising type modulator circuit. Modification of the original Heising circuit consists of heavily modulating the screen of the 6146, as well as the plate, so it contributes materially to the carrier output. Metering of either the final grid or final plate circuits by means of a dual scale meter provides constant monitoring of circuit operation.

1-10. The power supply utilizes a 5U4GB tube as a full wave rectifier. The voltage and current supplied are 500 volts DC at 200 ma., which is adequate to power the complete transmitter. An accessory socket mounted on the rear of the transmitter provides 500 V. DC 6.3V. AC and 115V. AC for external accessories which may be used with the transmitter such as relays, VFO, etc. Power requirements for mobile operation are 6 volts DC at 4 amperes and 500 volts DC at 200 ma. This voltage may be applied to the transmitter through the accessory socket after removal of the accessory plug.

SECTION I

GENERAL DESCRIPTION

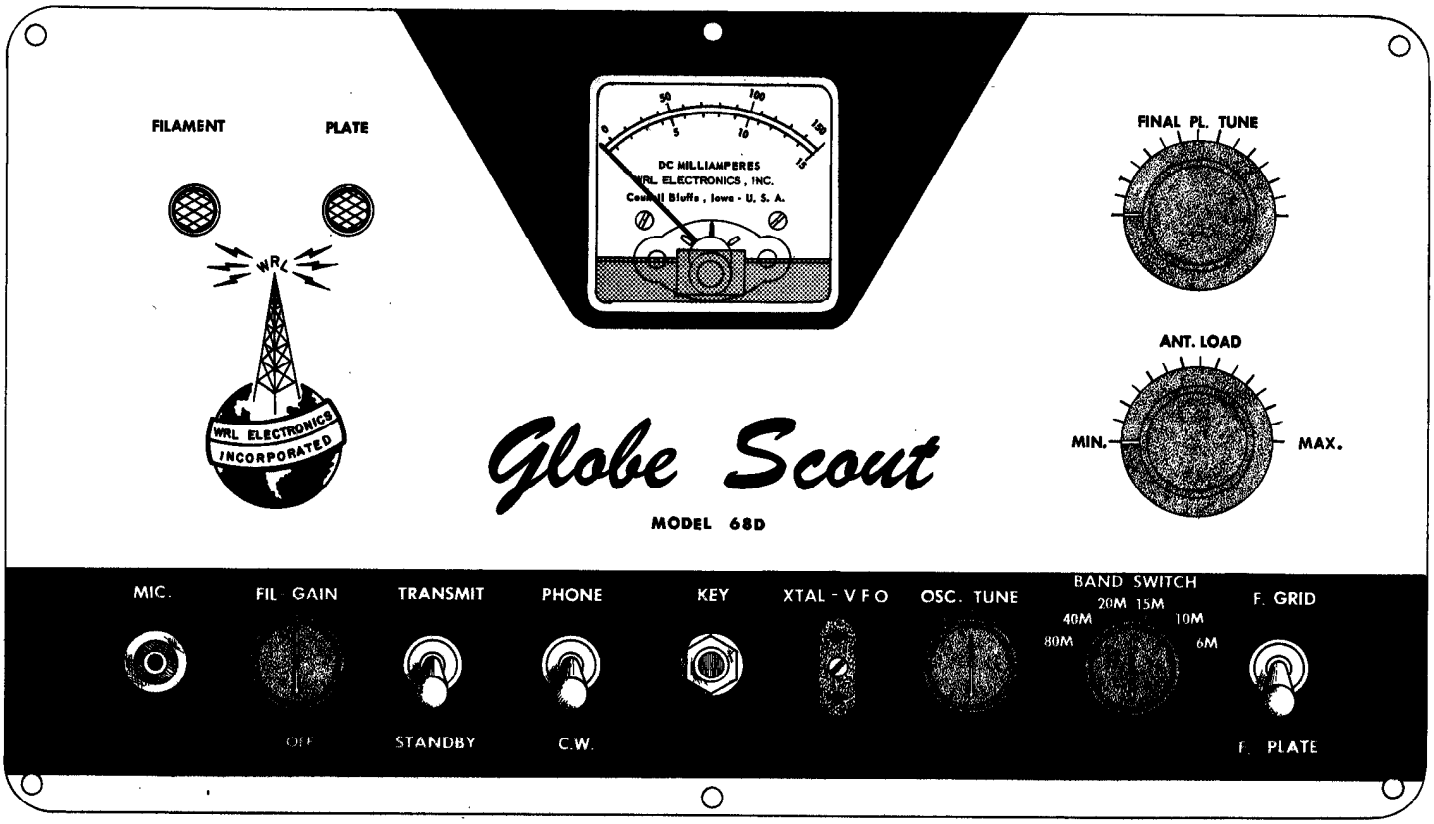


Figure 1. Front Panel View.

SECTION II

OPERATING PROCEDURES

2-1. GENERAL.

2-2. The following paragraphs describe the various panel controls of the Globe Scout Transmitter, Model 680. Tune-up and operating procedures are outlined following the description of controls. It is recommended that this section be studied thoroughly before any attempt is made to place the transmitter in operation.

2-3. DESCRIPTION OF CONTROLS.

2-4. FIL-GAIN. Combined AC power switch and audio gain control. AC switch is the master power switch.

2-5. TRANSMIT-STANDBY. A toggle switch. In STANDBY position it opens the B minus circuit and disables the transmitter. Also opens 115V AC circuit between pins 4 and 5 of the accessory socket (SO-6). In TRANSMIT position the B minus circuit is completed. 115V AC is applied between pins 4 and 5 of the accessory socket to energize an external antenna change-over relay (Relay is optional equipment and is not supplied with the transmitter).

2-6. PHONE-CW. A toggle switch. In CW position the modulator screen voltage is removed and the cathode circuit of the modulator tube is opened disabling this stage. Also the modulation choke is shorted to prevent high voltage transients when keying.

2-7. OSC. TUNE. This variable capacitor tunes the oscillator plate circuit to the fundamental, second, or third harmonic of the crystal (or VFO) frequency.

2-8. BAND SWITCH. A two-section rotary switch permits instant choice of bands through the entire range of amateur frequencies from 80 through 6 meters by selecting the proper taps on the oscillator and final amplifier coils.

2-9. F. GRID-F. PLATE. A toggle switch. Meters the final grid or final plate current depending on switch position.

2-10. FINAL PL. TUNE. This variable capacitor tunes the final amplifier plate circuit to resonance at the desired operating frequency.

2-11. ANT. LOAD. This variable capacitor matches the antenna or feedline impedance to the final amplifier plate circuit impedance for proper loading and maximum R.F. output to the antenna This control is used only 80 through 10 meters. Place in MIN position when operating on the 6 meter band.

2-12. VFO-XTAL. A slide switch located on rear of the transmitter. Place in XTAL position for crystal control of transmitter or in VFO position when VFO operation is desired. This switch controls oscillator regeneration.

2-13. LOAD. A slide switch located on rear of the transmitter. In up position shorts "L" coil. Place in up position when using high impedance antennas (folded dipole, long wire, etc.). Place in down position when using low impedance antennas such as a doublet, beam, etc.

2-14. EXTERNAL CONNECTIONS.

WARNING

Before making any external connections to the transmitter remove the AC power cord plug from the AC source receptacle. Also place the FIL-GAIN control in the OFF position. The first external connection should be a good ground to the GROUND connection on the rear of the transmitter. See paragraph 2-21.

2-15. MIC. Input receptacle for crystal or high impedance dynamic microphone.

2-16. KEY. Key jack for CW operation. Closed circuit type. In cathode circuit of both oscillator and final amplifier tubes.

2-17. XTAL-VFO. Insertion of proper crystal, or VFO output plug, allows operation on all amateur bands 80 through 6 meters.

2-18. 80-10M. Coaxial antenna receptacle located on rear of transmitter. For use on all bands except 6 meters.

2-19. 6M. ANT. Coaxial receptacle located on rear of transmitter. For use with low impedance 6 meter antennas such as doublet or beam type antenna. Used only for 6 meter operation.

2-20. ACCESSORY. Socket on rear of transmitter. Provides 115 volt AC source between pins 4 and 5 for external antenna change-over relay. Also may provide B plus at pin 3 and filament voltage at pin 7 . External B plus and filament voltages may be supplied to the transmitter through this socket when used in mobile operation.

2-21. GROUND. Located on the rear of the transmitter. Attach a good electrical ground to this terminal.

CAUTION

Read paragraph 2-14 before making any external connections.

A No. 12 copper wire connected to a cold water pipe, or to a 6 or 8 foot rod driven

into the ground is usually satisfactory. Should difficulty be encountered in achieving a good ground on the higher frequency bands, it may be that the length of the grounding wire is such that it acts like an antenna. The cure is to shorten or lengthen the wire a few feet.

2-22. POWER CORD AND PLUG. Extends out from the rear of the transmitter. Supplies AC power to the transmitter when plugged into a 115 volt 50/60 cycle, single phase alternating current source. Most home wall receptacles provide this type of power.

2-23. TUNE-UP PROCEDURE.

2-24. The following paragraphs describe the tune-up procedure for the Globe Scout Transmitter, Model 680. Prior to the initial tune-up the following preliminary precautions and procedures should be observed.

(1) Remove the transmitter from the cabinet by removing the panel mounting screws. Be careful not to mar the panel during this operation. The unit will slide out of the cabinet upon removal of the screws. Inspect the transmitter for any possible hidden damage and make certain all tubes are in their respective sockets and seated properly.

(2) Replace the transmitter into the cabinet and install the panel mounting screws. Be careful not to mar the panel when replacing the screws.

(3) Attach a good electrical ground to the chassis grounding connection (located next to the coaxial receptacle labeled 80-10M). See paragraph 2-21.

(4) Connect the antenna feedline to the appropriate coaxial receptacle depending on band of operation desired. The use of a coaxial feedline naturally indicates the use of a coaxial connector such as the type 83-1SP. If a twin-lead type feedline is used, simply insert one conductor of the feedline into the center hole of the appropriate coaxial receptacle (a banana plug serves well as a connector for this purpose) and connect the other conductor of the feedline to the grounding connection on the chassis (same place the external ground wire is attached).

(5) Place all switches to the following positions:
FIL-GAIN: extreme left to OFF position.
TRANSMIT-STANDBY: to STANDBY position.
BANDSWITCH: to the desired band of operation.
F. GRID-F. PLATE: to F. GRID position.
XTAL-VFO (on rear of chassis): to XTAL position if a crystal is to be used, or to VFO position if VFO operation is desired.
LOAD (on rear of chassis): Place in up position for use with high impedance antenna, or in down position for use with low impedance antenna (see paragraph 2-13). Position of switch is immaterial for 6 meter operation.

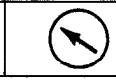
(6) If crystal control is to be used insert a proper crystal into the XTAL socket. Refer to Table II, Crystal Chart.

TABLE II. CRYSTAL CHART.

Band	Crystal Frequency
80 Meters	3500 to 4000 KC
40 Meters	7000 to 7300 KC
20 Meters	7000 to 7175 KC
15 Meters	7000 to 7150 KC
11 Meters	6740 to 6807 KC
10 Meters	7000 to 7425 KC
6 Meters	8333 to 9000 KC

(7) Insert a key plug into the key jack.
(8) Set the three tuning condenser knobs: OSC. TUNE, FINAL PL. TUNE and ANT. LOAD to their maximum capacity settings (indicating arrows on knobs pointing to the left side of the panel as you face the transmitter).
(9) Insert the A.C. power cord plug into a 115 volt AC receptacle.
(10) Turn on the power switch by rotating the FIL-GAIN control knob clockwise until a "click" is heard and felt. Do not advance GAIN control any further.
(11) Place the TRANSMIT-STANDBY switch to the TRANSMIT position.
(12). Close the key contacts and tune the oscillator plate circuit by rotating the OSC. TUNE knob slowly in a clockwise direction until maximum current is indicated on the meter. Typical settings of the OSC. TUNE control knob for each band are shown in Table III.

TABLE III. TYPICAL "OSC. TUNE" CONTROL KNOB SETTINGS.

80 M.	40 M.	20 M.	15 M.*	11-10 M.	6M†
					

*NOTE: When tuning for the 15 meter band an increase in grid current will be noted at the 20 meter setting. Do not stop at this position but continue with a clockwise rotation. A second increase in grid current will be noted at the proper position as indicated in Table II.

†When tuning for the 6 meter band an increase in current will be noted at the crystal doubling point, or, approximately 16 Mc. Do not stop at this setting. Continue with a clockwise rotation until a second increase in current is noted at the proper position as indicated in Table II.

(13) Final grid current for any band should not exceed 3 milliamperes as indicated on the lower scale of the meter. Should grid current exceed 3 milliamperes, advance the

OSC. TUNE control further in a clockwise direction until the meter indicates no more than 3 milliamperes. Open the key.

NOTE: many crystals are not as "active" as others and it may not be possible to obtain 3 milliamperes drive. A maximum current indication between 2 and 3 milliamperes is satisfactory.

CAUTION

Do not exceed 3 milliamperes grid current on the final as this will shorten tube life and may cause excessive harmonic radiation.

(14) Place the F. GRID-F. PLATE switch to the F. PLATE position.

(15) (This step applicable only to 6 meter tune-up. Proceed to step 16 if tuning transmitter on other bands.) Make certain ANT. LOAD control is set at MIN. This control is not used for 6 meter operation. Close key contacts. Advance FINAL PL. TUNE control in a clockwise direction until minimum current dip is reached. Two dips will be noted while advancing control knob. Disregard the first dip and continue to second dip. See Table IV for proper setting of control. Full load for 6 meter operation is 120 ma. Should the transmitter not load to 120 ma. the link coupling should be increased. The transmitter must be removed from the cabinet to perform this adjustment.

WARNING

Operation of this equipment involves the use of high voltages which are dangerous to life. Observe all safety precautions! Do not attempt to make adjustments inside the equipment or change any tubes with the power on. Disconnect-UNPLUG-the power cord before touching any high voltage points or the antenna terminals. Do not do any work on the inside of the transmitter without first unplugging the power cord. It is adviseable to short the B plus to ground using an insulated screwdriver as a shorting stick, before touching any exposed wiring.

Retune the final amplifier after each adjustment of the link coil. If adjustment of the link coil does not bring the final amplifier load current to the proper level of 120 ma., antenna reactance is indicated. The antenna should be re-tuned for best SWR. In the event the final amplifier will not dip down to the proper level of 120 Ma. the coupling is too "tight" and the link coil should be moved out of the final tank coil enough to bring the final amplifier load current down to the proper level. Once the link coupling has been properly adjusted the transmitter may be put back into the cabinet. Proceed to step 20. Steps 16, 17, 18 and 19 are not applicable to 6 meter operation.

(16) Close the key contacts and advance the FINAL PL. TUNE control in a clockwise direction until minimum plate current dip is indicated on the meter (lowest possible reading obtainable). The antenna must be attached or arcing of the tuning capacitors may occur. On some bands two dips in plate current may be noted, however, if the FINAL PL. TUNE control knob settings are as indicated in TABLE IV, TYPICAL FINAL PL. TUNE CONTROL SETTINGS AT RESONANCE, no improper operation should be encountered.

TABLE IV. TYPICAL FINAL PL. TUNE CONTROL SETTINGS AT RESONANCE.

80 M.	40 M.	20 M.	15 M.	11-10 M.	6M.
					

(17) Now that the minimum final plate current has been obtained, antenna loading may be accomplished by advancing the ANT. LOAD control slowly in a clockwise direction. As the control is advanced an increase in plate current will be noted on the meter. The control should be advanced until an indication of 130 milliamperes is reached.

(18) Retune the FINAL PL. TUNE control for minimum current dip. The minimum current indication should be higher than before, indicating the antenna is loading.

(19) Repeat steps 16 and 17 until the minimum final plate current dip is between 125 and 130 milliamperes. This is full load.

(20) Place the F. GRID-F. PLATE switch to the F. GRID position and re-peak the OSC. TONE control so the proper amount of final grid current is indicated. Do not exceed 3 milliamperes as per step 13.

2-25. The tune-up procedure for CW operation is now completed and the transmitter may be placed into CW operation. For Phone operation refer to SECTION III.

SECTION III

RADIO TELEPHONY OPERATION

3-1. PHONE (AM) OPERATION.

3-2. After the transmitter has been properly tuned for CW operation it may be placed in AM operation as follows:

(1) Place the TRANSMIT-STANDBY switch to STANDBY position.
(2) Place the PHONE-CW switch to PHONE position.
(3) Remove the key plug from the key jack.
(4) Connect a Crystal, or high impedance Dynamic microphone to the MIC input receptacle.
(5) Place the TRANSMIT-STANDBY switch to TRANSMIT position.
(6) Place the F. GRID-F. PLATE switch to F. PLATE position.
(7) Advance the GAIN control in a clockwise direction while speaking into the microphone in a normal voice. when a 5% variation of the final plate current is noted on the meter, maximum modulation has been reached. The knob pointer will be approximately in the "Three-O'Clock" position.

3-3. All preliminary procedures have now been performed and the transmitter may be placed into AM operation.

SECTION IV

PARTS MOUNTING PROCEDURE

4-1. GENERAL.

4-2. Following is the parts mounting procedure for kit assembly. It is recommended that this procedure be followed as outlined for ease and accuracy in assembly. Prior to assembly, the large pictorial diagrams included in the manual should be laid out or hung up for ready identification of the various components and mounting holes. Check off each step as it is completed. The complete parts list is given in Section VIII.

☐ 1. Unpack the punched chassis and lay it on a table, open side towards you. Position the chassis so that the holes may be identified as per Fig. 2.

☐ 2. Open container #1. Check the contents against the enclosed parts list to make certain all parts have been included.

☐ 3. Select the three 3/8" rubber grommets. These are GR-1, GR-2 and GR-3.

☐ 4. Install these grommets in their respective holes as shown in Fig. 2.

☐ 5. The remaining rubber grommet ($\frac{1}{2}$") is GR-4. Install as per Fig. 3.

☐ 6. Install an octal wafer socket in the chassis hole marked SO-2. The socket should be mounted on the inside of the chassis. Position the socket key way as shown in Fig. 2. Use two each 6-32x5/16" screws, #6 lockwashers and 6-32x$\frac{1}{4}$" hex nuts. Tighten securely.

☐ 7. Install an octal wafer socket in the chassis hole SO-3. Refer to Fig. 2 for correct key way positioning. Secure the socket using two each 6-32x5/16" screws, #6 lockwashers and 6-32x$\frac{1}{4}$" hex nuts. Tighten securely.

☐ 8. Install an octal wafer socket in the chassis hole SO-5. Refer to Fig. 2 for correct key way positioning. Secure the socket using two each 6-32x5/16" screws, #6 lockwashers and 6-32x$\frac{1}{4}$" hex nuts. Tighten securely.

☐ 9. Install an octal wafer socket in the chassis hole SO-6. Refer to Fig. 2 for correct key way positioning. Secure the socket using two each 6-32x5/16" screws, #6 lockwashers and 6-32x$\frac{1}{4}$" hex nuts. Tighten securely.

☐ 10. Install the octal mica filled socket in the chassis hole SO-4. Place the socket into the hole from the top of the chassis. Position the key way as shown in Fig. 3. Install the socket retainer ring making certain it is firmly seated in the socket groove.

☐ 11. Install the 9-pin miniature socket in chassis hole SO-1. Position the socket lugs as per Fig. 2. Secure the socket with two each 2-56x3/8" screws, 2-56x3/16" hex nuts and #4 lockwashers. Tighten securely but be careful not to strip the screw threads or break the screws.

☐ 12. Install the fuse post in hole FS-1 as follows:

(a) Remove the 7/16" hex nut and the metal washer from the fuse post. Do not remove rubber washer.

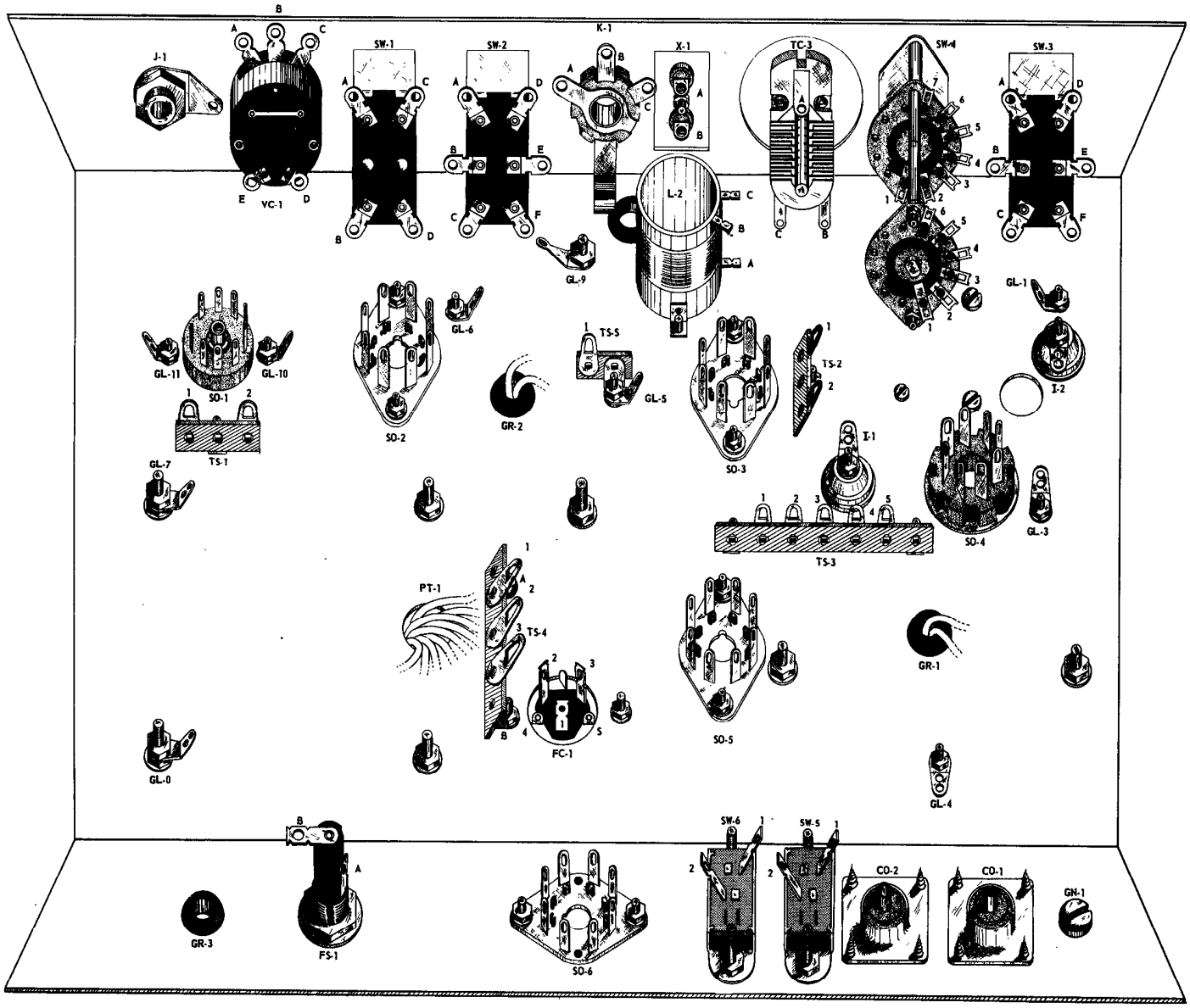


Figure 2. Bottom View, Parts Mounting.

(b) Insert the fuse post into hole FS-1 from the outside of the chassis. Position the fuse post lugs as shown in Fig. 2.

(c) Slip on the large washer you had removed and follow with the 7/16" hex nut.

(d) Tighten securely. Be careful not to break the bakelite fuse post housing.

☐ 13. Install slide switch SW-6 from the inside of the chassis. Only the black bakelite handle should protrude through the slot in the chassis. Position the two switch lugs as shown in Fig. 2. Secure the switch with two each 4-40x 3/8" screws, #4 lockwashers and 4-40x 3/16" hex nuts. Tighten securely.

☐ 14. Install slide switch SW-5. Use the same procedure and same type of mounting hardware as per step 13.

☐ 15. Install the coaxial receptacle CO-2 as follows:

(a) Insert the threaded shank of the receptacle through the respective hole from inside the chassis. Align the four mounting holes.

(b) Insert the four #6x¼" self-tapping screws through the screw holes one at a time.

(c) Tighten each screw so that as their threads "bite in", the receptacle is drawn up snug against the chassis.

☐ 16. Install the coaxial receptacle CO-1 using the same procedure and same type screws as described in step 15.

☐ 17. Insert a 8-32x½" screw into chassis hole GN-1. The screw is inserted from inside the chassis. Place a #8 lockwasher on the screw and then run on a 8-32x5/16" hex nut. Tighten securely then add another 8-32x5/16" hex nut. Tighten this nut only finger tight. This screw and nut will be used for attaching an external ground wire to the transmitter chassis.

☐ 18. Mount a 2-lug tie strip TS-1 on the hole near socket SO-1. Use a 6-32x 5/16" screw, a #6 lockwasher and a 6-32x¼" hex nut. Position the tie strip as per Fig. 2 and tighten securely.

☐ 19. Mount a 2-lug tie strip TS-2 on the hole near SO-3. Use a 6-32x5/16" screw, a #6 lockwasher and a 6-32x¼" hex nut. Position the tie strip as per Fig. 2 and tighten securely.

☐ 20. Mount the 5-lug tie strip TS-3 on the two holes near SO-5. Use two each 6-32x5/16" screws, #6 lockwashers and 6-32x¼" hex nuts. Position the tie strip as per Fig. 2 and tighten the nuts securely.

☐ 21. Mount one end of the 3-lug tie strip TS-4 on the chassis in hole marked "A". Use a 6-32x5/16" screw, a #6 washer and a 6-32x¼" hex nut. Position the tie strip as per Fig. 2, align the remaining mounting hole with chassis hole marked "B". Securely tighten nut on screw in hole "A".

☐ 22. Install the mounting plate for the filter capacitor FC-1 on the chassis hole FC-1. The plate should mount on the top side of the chassis. Position the slots of the plate as per Fig. 2. Use two each 6-32x5/16" screws, #6 lockwashers and 6-32x¼" hex nuts. Center the mounting plate slots in the chassis hole, then secure the nuts. This action also completes the mounting of tie strip TS-4.

☐ 23. Open container #2. Check the contents against the enclosed parts list to make certain all parts have been included.

☐ 24. Mount the 1-lug tie strip TS-5 and the #6 grounding lug GL-5 as follows:

(a) Insert a 6-32x5/26" screw from the top of the chassis.

(b) On the underside of the chassis install tie strip TS-5 and grounding lug GL-5 on the screw.

(c) Position the tie strip and lug per Fig. 2.

(d) Install a #6 lockwasher and a 6-32x¼" hex nut on the screw.

(e) Tighten nut securely.

☐ 25. Mount the two #6 grounding lugs GL-1 and GL-2. GL-2 mounts on the top side of the chassis (position as per Fig. 3) and GL-1 mounts on the underside of the chassis (position as per Fig. 2. Use a 6-32x5/16" screw and a 6-32x ¼" hex nut to secure the lugs. Screwhead should be on top side of the chassis.

☐ 26. Mount a #6 grounding lug, GL-3, in the hole near socket SO-4. Use a 6-32x 5/16" screw and a 6-32x¼" hex nut. Position the lug per Fig. 2 and tighten the nut securely.

☐ 27. Install a #6 grounding lug, GL-4, in the hole near coaxial receptacles CO-

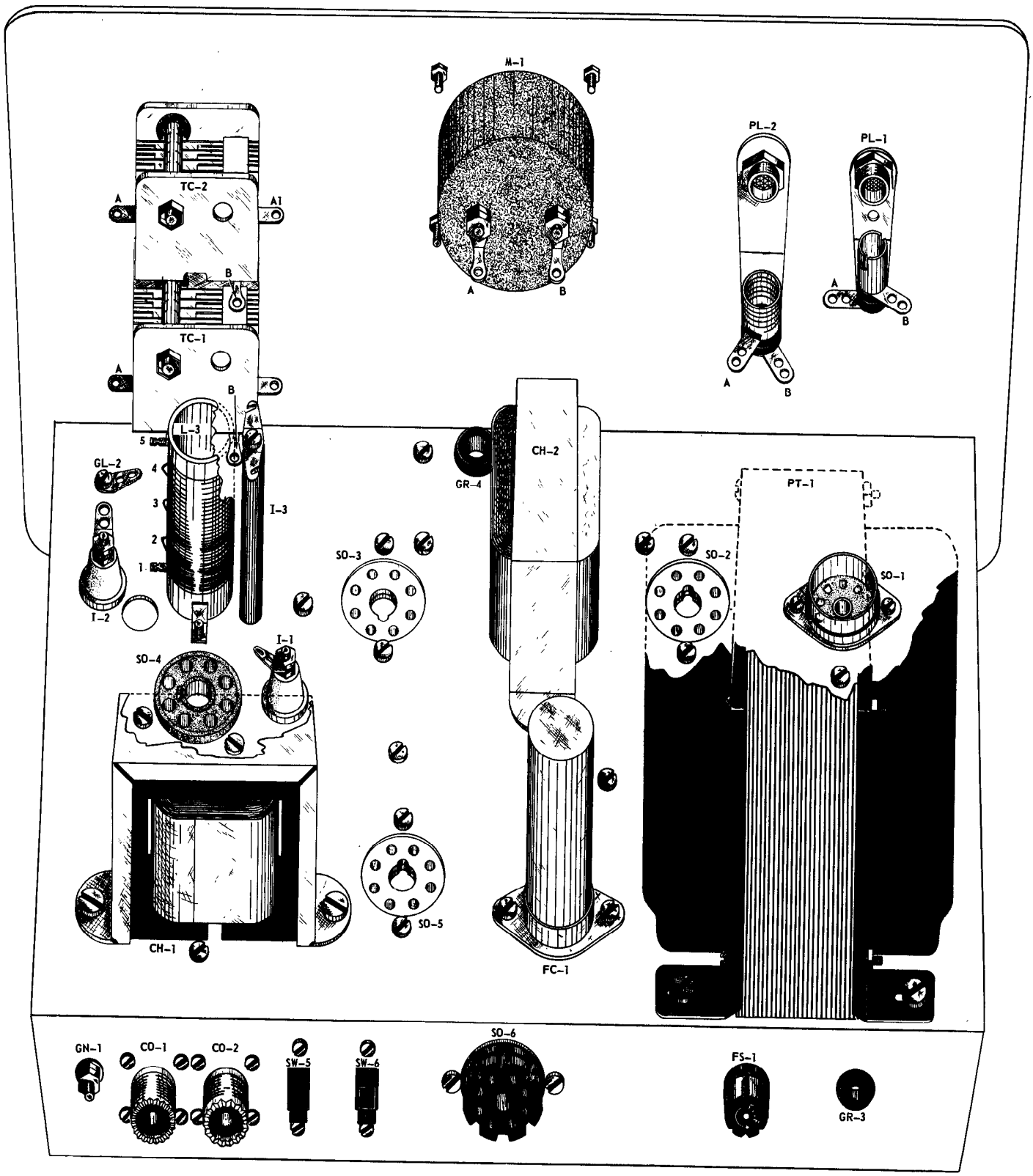


Figure 3. Top View, Parts Mounting.

SECTION IV

PARTS MOUNTING PROCEDURE

1 and CO-2. Use a 6-32x5/16" screw and a 6-32x¼" hex nut. Position the lug per Fig. 2 and tighten the nut securely.

☐ 28. Install a #6 grounding lug, GL-6, in the hole near socket SO-2. Use a 6-32x5/16" screw and a 6-32x¼" hex nut. Position the lug per Fig. 2 and tighten the nut securely.

☐ 29. Install the porcelain feed-through insulator I-1 as follows:

(a) Remove the two 6-32x¼" nuts and the flat washer from the shortest end of the insulator.

(b) Remove the long screw.

(c) Separate the insulator and insert the small end (from the underside of the chassis) through the hole near SO-4. Insert the larger end of the insulator (from the top side of the chassis) over the small end. Make certain the two fiber washers supplied with the insulator are between the flanges of the two sections and the chassis. The fiber washers provide a cushion to prevent cracking the insulator when the nut is tightened.

(d) Insert the long screw (from the underside of the chassis) through the center hole of the insulator. Secure with a 6-32x¼" hex nut.

(e) Place a #6 grounding lug over the nut just tightened. Add the flat washer and another 6-32x¼" hex nut.

(f) Position the lug as per Fig. 3 and securely tighten the nut.

Fig. 4 illustrates complete mounting details.

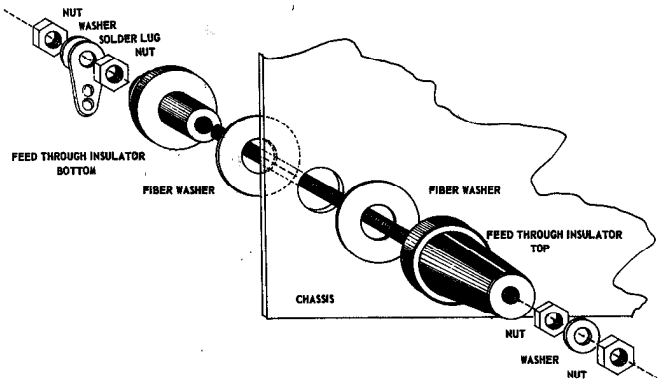


Figure 4. Exploded View Of Insulator Mounting.

☐ 30. Remove one of the 6-32x¼" hex nuts and the flat washer from the short end of insulator I-1 (underside of chassis). Place a #6 grounding lug on the screw. Add the flat washer and finally the 6-32x¼" hex nut previously removed. Position the grounding lug per Fig. 2 and tighten the nut securely.

☐ 31. Install the porcelain feed-through insulator I-2. Use the same procedure and same type hardware as described in steps 29 and 30.

☐ 32. Mount the oscillator coil L-2 on the underside of the chassis near socket SO-3. Place the threaded mounting lugs over the mounting holes in the chassis. Make certain the coil tap lugs face as shown in Fig. 2. Use two 6-32x5/16" screws to secure the coil. Install the screws from the top side of the chassis. Tighten securely.

☐ 33. Mount the modulation choke CH-2 in position as per Fig. 3. Insert the two choke leads through grommet GR-2 then align the mounting holes. Use a 8-32x½" screw, a #8 lockwasher and an 8-32x5/16" nut for each mounting hole. A #8 grounding lug GR-9 should also be placed on the mounting screw nearest the front panel. Position the lug as per Fig. 2. Tighten both nuts securely.

☐ 34. Mount the filter choke CH-1 in position as per Fig. 3. Insert the choke leads through grommet GR-1 then align the mounting holes. Use two each 8-32x½" screws, #8 lockwashers and 8-32x5/16" hex nuts. Tighten securely.

☐ 35. Mount the power transformer PT-1. Insert all the transformer leads through the large hole PT-1 near tie strip TS-4. Align the transformer mounting feet holes with the chassis holes. Use a 8-32x½" screw, a #8 lockwasher and an 8-32x5/16" hex nut in each of the four mounting holes. Tighten securely.

☐ 36. Select the two #8 grounding lugs GL-7 and GL-8. Place one each over two of the transformer mounting screws as per Fig. 2. Secure each with an 8-32x5/16" hex nut.

☐ 37. Mount the triple-section filter condenser onto its mounting plate. The

capacitor mounts on the top side of the chassis. Insert the three condenser tabs into the three slots of the mounting plate as per Fig. 2. Press the condenser firmly against the plate then twist each tab one-eighth of a turn with a pair of pliers. This will secure the condenser to the mounting plate.

☐ 38. Install the 2½" bakelite insulator I-3. Insert a #6x¼" self-tapping screw from the underside of the chassis and thread the insulator on from the top side of the chassis.

☐ 39. Mount the double-ended #6 solder lug on the top end of insulator I-3. Use a #6x¼" self-tapping screw. Position the lug as per Fig. 3 and tighten the screw.

☐ 40. Install the pi network coil L-3. Use the two remaining small holes near socket SO-4. Slip a #6 lockwasher over each of two 6-32x5/16" screws and insert the screws from the underside of the chassis. Position the coil as per Fig. 3. The coil taps should face the side of the chassis. Place the threaded coil mounting lugs over the screws and tighten securely.

☐ 41. Install two #4 grounding lugs, GL-10 and GL-11, on the underside of the chassis. These lugs mount on the two screws holding socket SO-1. Position the lugs as per Fig. 2 and secure with 2-52x3/16" hex nuts.

☐ 42. The mounting of parts on the chassis is now completed. The chassis may be laid aside temporarily and you now proceed to mounting of parts on the panel.

☐ 43. The mounting of parts on the panel should be done on a soft cloth or a piece of cardboard to avoid scratching the paint or marring the lettering.

☐ 44. Attach a tear drop type #6 grounding lug to the rear frame of tuning condenser TC-1. Use a 6-32x¼" screw and attach the lug so that it protrudes from the rear frame of the condenser as per Fig. 5. Tighten securely.

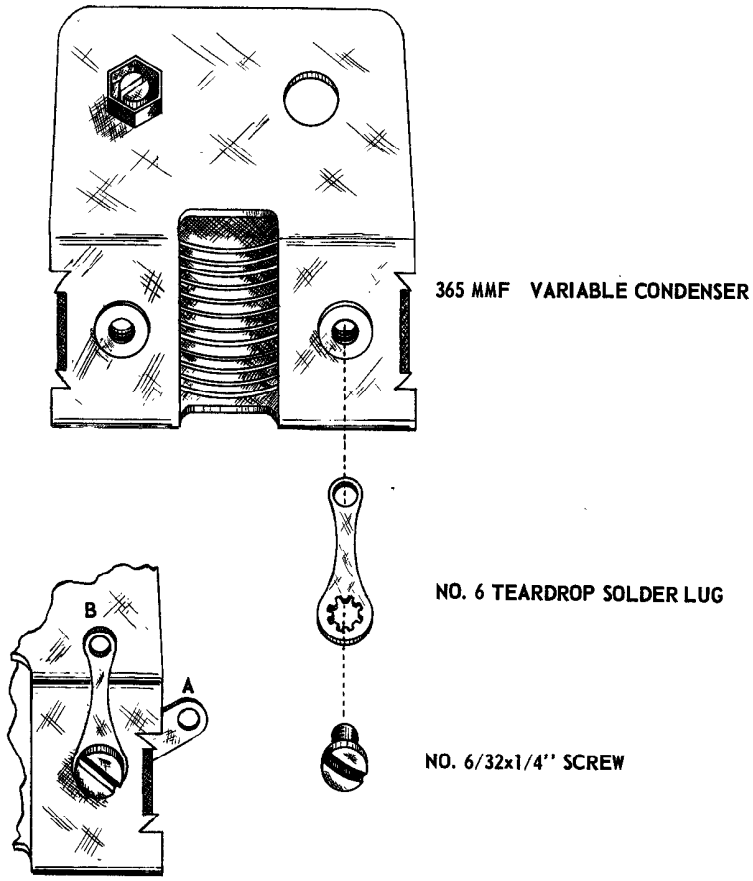


Figure 5.

SECTION IV.

PARTS MOUNTING PROCEDURE

☐ 45. Attach a tear drop type #6 grounding lug to the rear frame of tuning condenser TC-2. Use a 6-32x$\frac{1}{4}$" screw and attach the lug so that it protrudes from the rear frame of the condenser as per Fig. 5. Tighten securely.

☐ 46. Mount the XTAL-VFO socket X-1 from the front of the panel as per Fig. 6. Use a 4-40x3/8" screw and a 4-40x$\frac{1}{2}$" hex nut. Tighten securely.

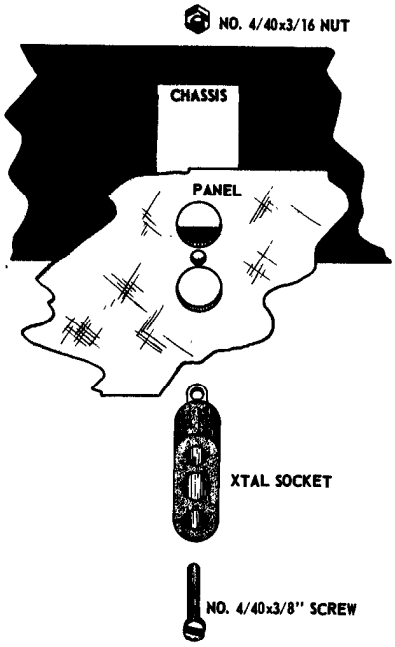


Figure 6.

☐ 47. Mount the FINAL PL. TUNE condenser TC-1 on the rear of the panel as per Fig. 7. Slip a #6 lockwasher over each of two 6-32x$\frac{1}{4}$" screws. Insert the screws from the front of the panel and tighten securely.

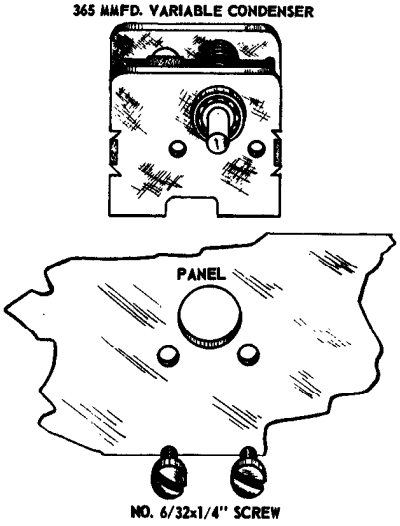


Figure 7.

☐ 48. Mount the ANT. LOAD condenser TC-2 on the rear of the panel as per Fig. 7. Use same type hardware and procedure as per step 47.

☐ 49. Remove the green jewel from pilot light assembly PL-1 by removing the 7/16" hex nut. Insert the threaded shank of the jewel through the appropriate panel hole from the front of the panel. Slip the pilot light socket bracket over the threaded shank of the jewel (rear side of panel). Add the 7/16" hex nut, position assembly properly and tighten the nut securely. See Fig. 8.

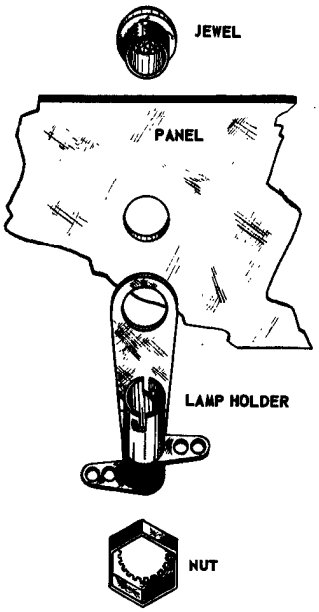


Figure 8.

☐ 50. Mount the red jewel pilot light assembly. Use same procedure as described in step 49.

☐ 51. Install the 2-inch dual scale meter on the panel. Position as per Fig. 3. Use the hardware enclosed with the meter as follows:

(a) Fasten the meter to the panel with the four 4-40x3/16" hex nuts.

(b) Place a flat washer on each of the meter terminals.

(c) Add a #10 solder lug to each of the meter terminals.

(d) Add another flat washer to each of the meter terminals.

(e) Add a 10-32x3/8" hex nut to each of the meter terminals.

(f) Position the solder lugs as per Fig. 3

and tighten the 3/8" hex nuts securely.

(g) See Fig. 9 for complete mounting details.

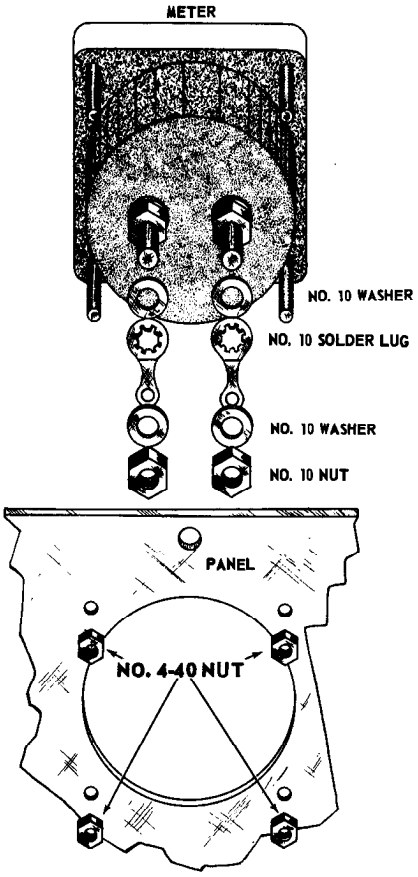


Figure 9.

☐ 52. The panel may now be attached to the chassis. Lay the chassis on the table, rear apron down, front apron up.

☐ 53. Lay the rear of the panel against the chassis and align the panel and chassis holes.

☐ 54. Mount the MIC. connector J-1 as follows:

(a) Remove the 3/8" hex nut, grounding lug and the fiber washers from the connector. The flat steel washer should remain on the connector.

(b) Insert the connector J-1 through the appropriate panel and chassis holes. Insert from front of panel.

(c) Add the grounding lug to the connector from the rear.

(d) Add the 3/8" hex nut to the connector from the rear.

(e) Position the lug as per Fig. 2 and tighten the nut finger tight only.

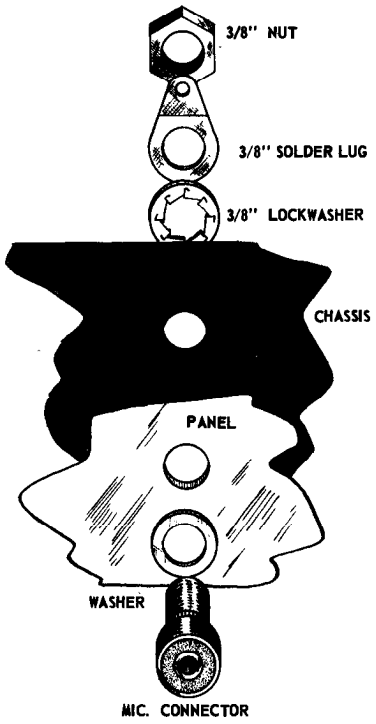


Figure 10.

☐ 55. Mount the BAND SWITCH SW-4 as follows:

(a) Remove the 3/8" hex nut and lockwasher from the switch.

(b) Slip the two fiber washers remaining from the microphone connector J-1 on the threaded shank of the switch.

(c) Add the lockwasher previously removed from the switch to the threaded shank.

(d) Insert the threaded shank into the appropriate chassis and panel holes. Insert from chassis side.

(e) Position the switch contacts as per Fig. 2.

(f) Slip the 3/8" hex nut on the threaded shank of the switch and tighten finger tight only.

(g) See Fig. 11 for complete mounting details.

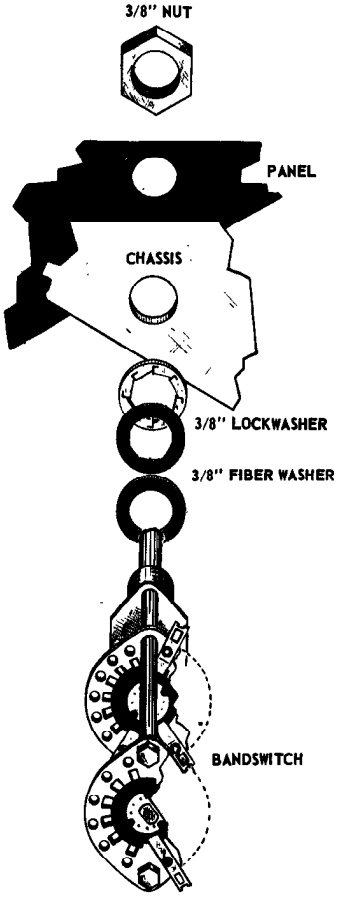


Figure 11.

☐ 56. Install the DPDT meter switch (F. GRID-F. PLATE) SW-3 as follows:

(a) Remove the ring nut from the shank of the switch.

(b) Adjust the hex nut so it is positioned midway on the threaded shank.

(c) Insert the switch through the chassis and panel holes from the rear.

(d) Place the slot in the switch shank towards the bottom of the panel.

(e) Start the ring nut on the shank and tighten finger tight only.

(f) See Fig. 12 for complete mounting details.

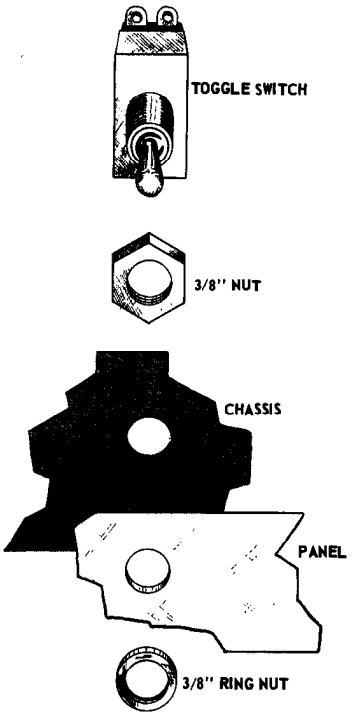


Figure 12.

☐ 57. Mount the OSC. TUNE condenser TC-3. Position as per Figure 3. Secure with two 6-32x1/4" screws. See Fig. 13 for complete mounting details.

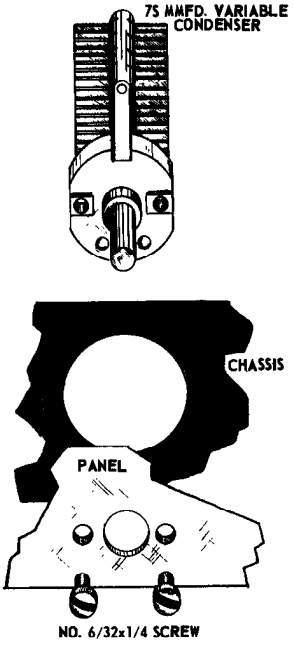


Figure 13.

☐ 58. Install the closed circuit KEY jack K-1. Position as per Fig. 2. Make certain the flat washer is between the panel and the mounting nut. Tighten

finger tight only. See Fig. 14 for complete mounting details.

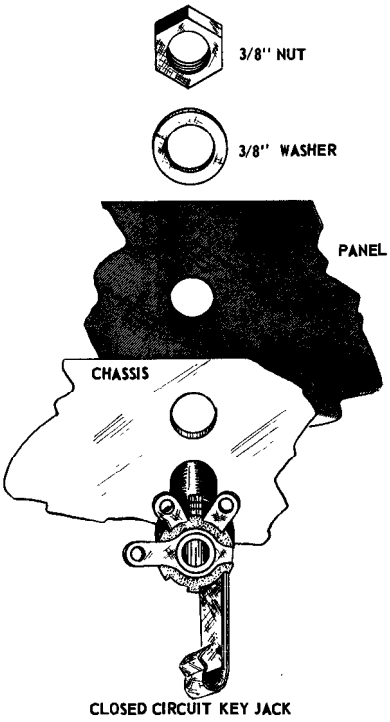


Figure 14.

☐ 59. Install the DPDT PHONE-CW switch SW-2. Use the same procedure as outlined in step 56.

☐ 60. Install the SPDT TRANSMIT-STANDBY switch SW-1. Use the same procedure as outlined in step 56.

☐ 61. Install the FIL.-GAIN control as follows:

(a) Thread a 3/8" hex nut about halfway down the threaded shank.

(b) Insert the shank through the chassis and panel holes from the rear.

(c) Position the terminal lugs as per Fig. 2.

(d) Install another 3/8" hex nut on the shank from the panel side and tighten finger tight only.

(e) See Fig. 15 for complete mounting details.

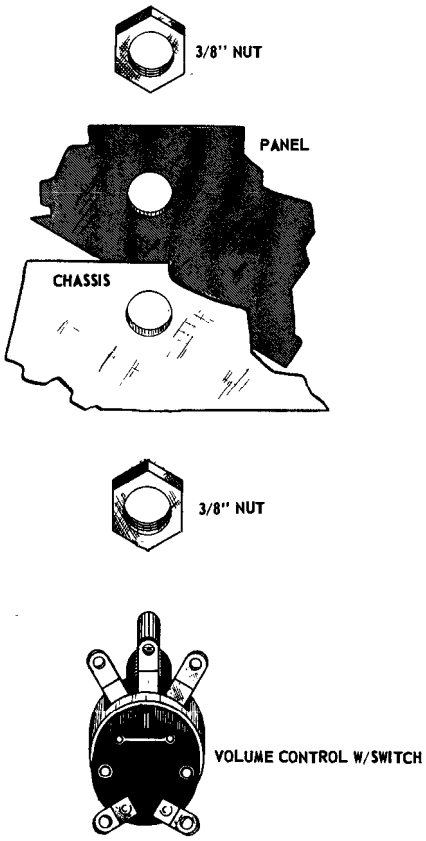


Figure 15.

☐ 62. Take a ruler and check the distance between the bottom of the chassis and the bottom of the panel. Adjust to one-half inch so the panel and chassis will fit into the cabinet properly.

☐ 63. After the proper clearance of one-half inch is obtained, the various panel mounting components should be tightened. In order to prevent marring the panel, lay a piece of rag over the nut to be tightened. Carefully grasp the nut with a pair of pliers and tighten securely. The components should be secured in the following order: J-1, SW-3, VC-1, SW-4, SW-1, SW-2 and K-1. The XTAL-VFO socket X-1 and the OSC. TUNE condenser TC-3 were secured previously.

☐ 64. Install the two largest knobs on the shafts of TC-1 and TC-2 (FINAL PL. TUNE and ANT. LOAD). Rotate the shafts of the two condensers to their extreme left (as you face the panel), then position the knobs so the white indicator lines are to the left in a horizontal position. Tighten the knob setscrews.

SECTION IV

PARTS MOUNTING PROCEDURE

☐ 65. Mesh the plates of the OSC. TUNE condenser TC-3 completely (maximum capacity). Install one of the small knobs on the shaft with the white arrow to the left in a horizontal plane. Tighten the set-screw.

☐ 66. Rotate the shaft of the BAND SWITCH SW-4 to its extreme left. Install one of the small knobs so the white arrow points to the 80M lettering on the panel. Tighten the set-screw.

☐ 67. Rotate the shaft of the FIL.-GAIN control to the left until an audible click is heard. Install the remaining small knob on the shaft with the white arrow pointing straight down towards the bottom of the panel. Tighten the set-screw.

☐ 68. Install the large pilot lamp 6S6 in pilot lamp assembly socket PL-2 (red jewel).

☐ 69. Install the small #47 pilot lamp in pilot lamp assembly socket PL-1 (green jewel).

☐ 70. Install the 3-ampere fuse in the cap of fuse holder FS-1, replace the cap and fuse in the fuse holder.

4-3. The mounting of the parts has now been completed. All parts from the various containers should be used up, with the possible exception of some extra hardware. The transmitter is now ready for wiring. Proceed to Section V.

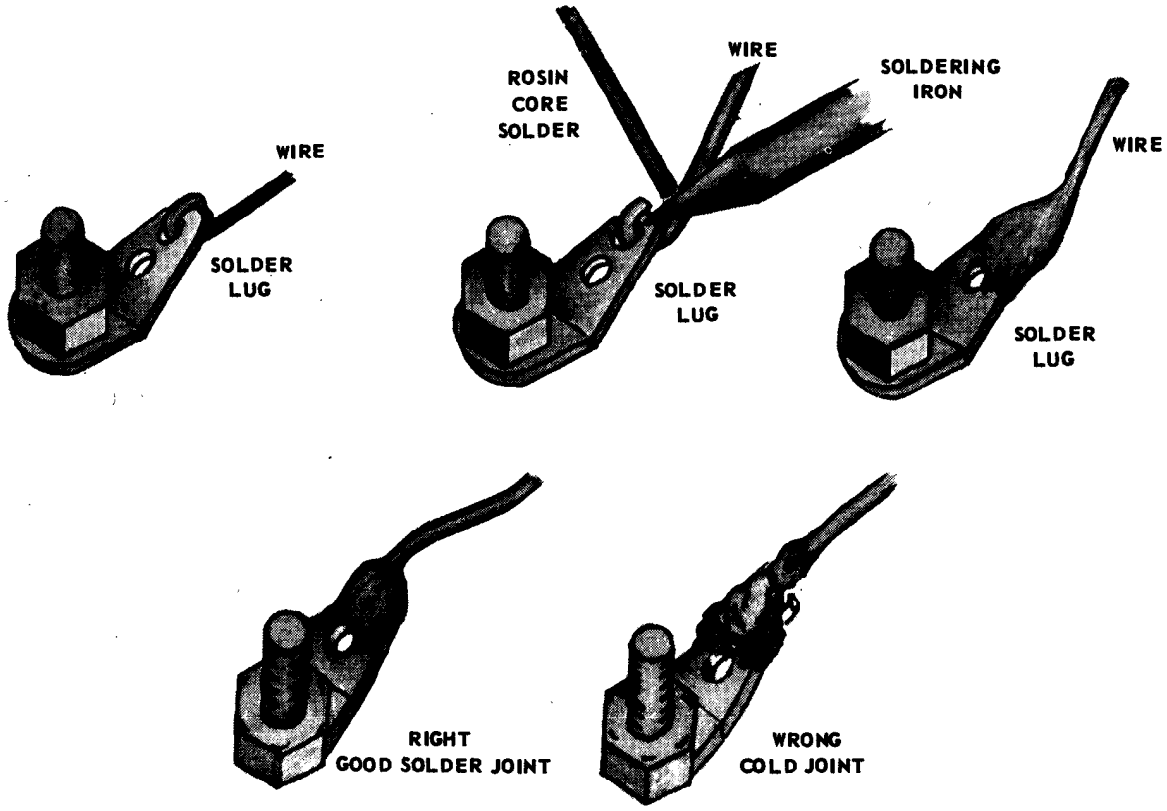


Figure 16. How To Make A Good Solder Joint.

SECTION V

WIRING PROCEDURE

5-1. GENERAL.

5-2. Wiring instructions are given in complete step by step detail. Read each step through before beginning it. Position components and route leads as shown in the pictorial diagrams. Check off each step as it is completed. (NS) means do not solder yet; (S) means solder now. These symbols are used because in many cases more than one wire will connect to a given point, and the connection should not be soldered until all the wires are connected to it. Refer to the pictorial diagrams to determine the routing of all wires and placement of components. Take your time and work carefully; you will be rewarded with a professional looking job and an efficient, smooth-operating transmitter.

CAUTION

Use only Rosin Core Solder. Do not use Acid Core Solder. Do not use Soldering Paste or Flux. If the solder on hand is not marked "Rosin Core" or "Radio" Solder, play safe and obtain a new roll. All Warranties are null and void on any unit on which acid core solder has been used.

5-3. STEP-BY-STEP WIRING PROCEDURE.

☐ 1. Place the chassis on a table, bottom side up with the rear apron of the chassis towards you as per Fig. 17.

☐ 2. Separate the power transformer leads protruding through chassis hole PT-1.

☐ 3. Select one of the two BLACK leads. Route it back towards the fuse holder FS-1. Trim this lead to length and remove $\frac{1}{4}$" of insulation from the end. Connect the trimmed end of the lead to lug A of fuse holder FS-1. Fasten securely. (NS).

☐ 4. Route the other BLACK lead of transformer PT-1 toward the front of the chassis to lug D of the switch cover on VC-1. Trim this lead to length and remove $\frac{1}{4}$" of insulation from the end. Connect the trimmed end of the lead to lug D of VC-1. Fasten securely. (NS).

☐ 5. Loosely twist the two RED leads of transformer PT-1 to their full length. Route these leads along the rear apron of the chassis to rectifier socket SO-5.

☐ 6. Connect one of the RED wires to pin 4 of socket SO-5. (S).

☐ 7. Connect the other RED lead to pin 6 of socket SO-5. (S).

☐ 8. Loosely twist the two YELLOW leads of transformer PT-1 to their full length. Route these leads along the rear apron of the chassis with the RED leads to rectifier socket SO-5.

☐ 9. Connect one of the YELLOW wires to pin 8 of SO-5. (S).

☐ 10. Connect the other YELLOW lead to pin 2 of SO-5. Crimp tightly. (NS).

☐ 11. Route one of the GREEN leads of transformer PT-1 along the rear apron of the chassis (with RED and YELLOW leads) to pin 7 of socket SO-6. Trim this GREEN lead to length. Remove $\frac{1}{4}$" of insulation from the lead and connect to pin 7 of SO-6. (S).

☐ 12. Select the other GREEN lead of transformer PT-1. Measure two inches out from hole PT-1 and cut the lead at this point. Remove $\frac{1}{4}$" insulation from the end of this lead. Connect this lead to the grounded hole of tie strip TS-4. The grounded lug is nearest to lug 1 of the strip. (NS).

☐ 13. Trim the remaining lead (RED/YELLOW) to two inches in length. Remove $\frac{1}{4}$" of insulation from this lead. Connect the RED/YELLOW lead to the grounded hole of the strip TS-4. One GREEN lead of transformer PT-1 is also connected at this point. (S).

☐ 14. Select one of the leads of Choke CH-2. The leads come through grommet GR-2. Route this lead toward the rear apron of the chassis to lug 2 of tie strip TS-4. Trim the lead to length and remove $\frac{1}{4}$" of insulation from the end. Connect the lead to lug 2 of tie strip TS-4. (NS).

☐ 15. Trim the remaining lead of choke CH-2 to $1\frac{1}{2}$" in length. Remove $\frac{1}{4}$" insulation from the end. Connect this lead to pin 3 of socket SO-2. (NS).

☐ 16. Select one of the leads of choke CH-1. The leads come through grommet GR-1. Route the lead to pin 2 of socket SO-5. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect the lead to pin 2 of socket SO-5. (S).

☐ 17. Route the remaining lead of choke CH-1 to lug 2 of tie strip TS-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect the lead to lug 2 of tie strip TS-3. (NS).

☐ 18. Empty the contents of the wire container-Bag #3. Check the contents of the bag against the enclosed packing

SECTION V

WIRING PROCEDURE

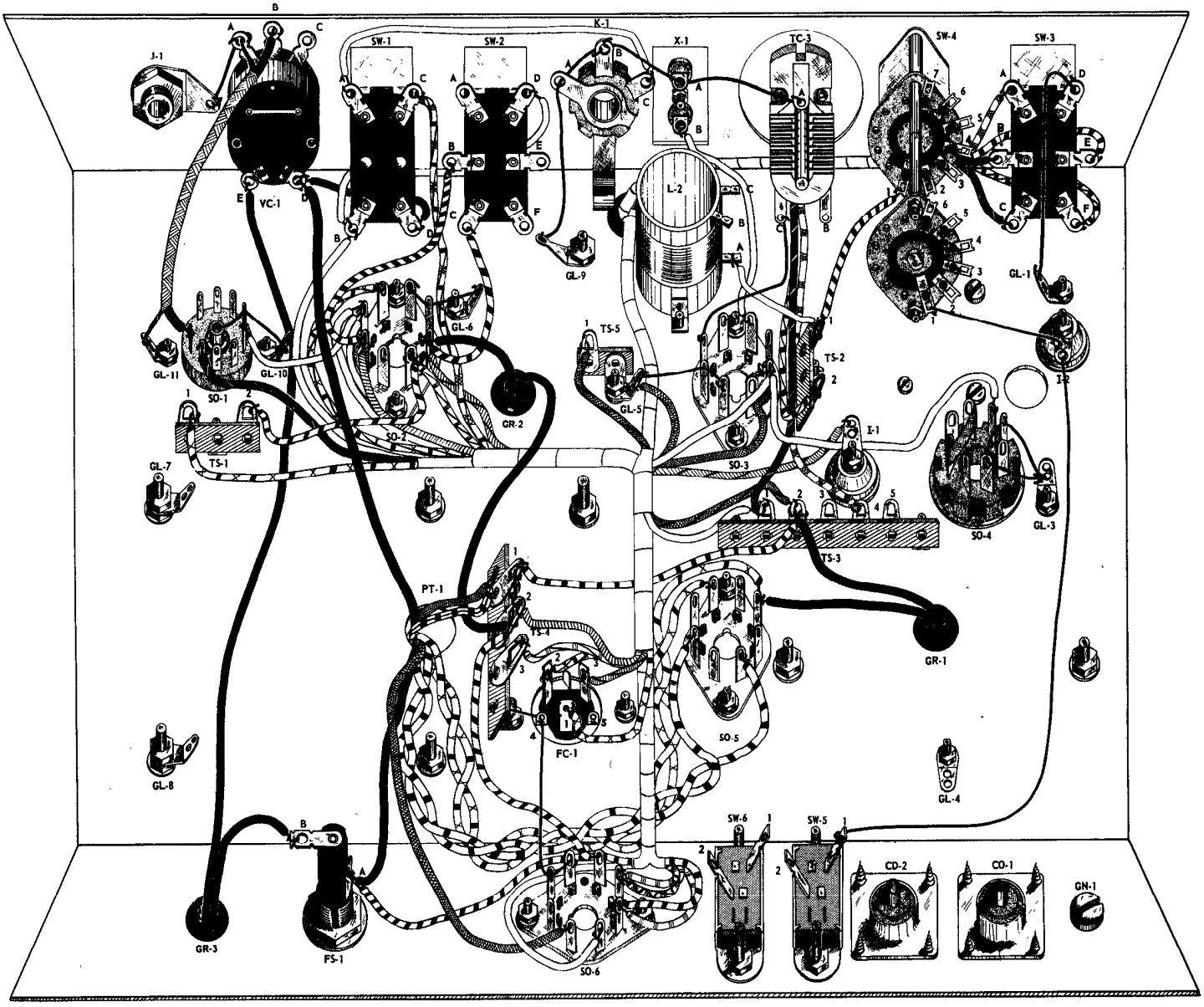


Figure 17. Wiring, Steps 1 through 103.

list. Make certain all the wire is included.

☐ 19. Select the largest cabled harness assembly. Lay it on a flat surface and straighten the wires on all branches so the colors may easily be identified. When ready for installation, the harness should appear as shown in Fig. 18.

☐ 20. Install the large harness assembly in the chassis as shown in Fig. 17. Route branch G through grommet hole GR-4 over to pilot lamp assemblies PL-1 and PL-2.

☐ 21. Route the heavy white lead in branch C around accessory socket SO-6 to pin 6 of this same socket. Trim the lead to length. Remove $\frac{1}{4}$" of insulation from the end and connect to pin 6 of socket SO-6. (S).

☐ 22. Select the red lead of branch C. Route this lead to lug A of the fuse holder FS-1. Trim to length and remove $\frac{1}{4}$" of insulation from the end. Connect to lug A of the fuse holder FS-1. (S).

☐ 23. Route a red lead and a blue lead of branch D to pin 5 of SO-6. Trim to length and remove $\frac{1}{4}$" insulation from the end of each lead. Connect both leads to pin 5 of SO-6. (S).

☐ 24. Route the two remaining leads of branch D to pin 4 of SO-6. These are the blue lead and the white lead with violet tracer. Trim the leads to length and remove $\frac{1}{4}$" insulation from the end of each lead. Connect both leads to pin 4 of SO-6. (S).

☐ 25. Route the yellow lead of branch B to lug 1 of filter condenser FC-1. Trim the lead to length and remove $\frac{1}{4}$" insulation from the end. Connect the lead to lug 1 of FC-1. (S).

☐ 26. Select the white lead with yellow tracer from branch B. Route to lug 2 of filter condenser FC-1. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 2 of FC-1. (S).

☐ 27. Select the white lead with black tracer from branch B. Route to lug 3 of filter condenser FC-1. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 3 of FC-1. (S).

☐ 28. Select the white lead with blue tracer from branch B. Route to lug 3 of tie strip TS-4. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 3 of TS-4. (NS).

☐ 29. Route the remaining lead of branch B (brown lead) to lug 2 of tie strip TS-4. Trim to lengh and remove $\frac{1}{4}$" insulation. Connect to lug 2 of TS-4. (NS).

☐ 30. Route the white lead of branch E to to lug 1 of tie strip TS-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 1 of TS-3. (NS).

☐ 31. Route the remaining lead of branch E (white lead with green tracer) to lug 2 of tie strip TS-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 2 of TS-3. (NS).

☐ 32. Select the white lead and one of the two green leads in branch F. Route the two leads to pin 7 of socket SO-3. Trim leads to length and remove $\frac{1}{4}$" insulation from the end of each lead. Connect the two leads to pin 7 of SO-3. (NS).

☐ 33. Select the white lead with brown tracer of branch F. Route the lead to the solder lug on insulator I-1. Trim to length and remove $\frac{1}{4}$" insulation from the end of the lead. Connect to solder lug on I-1. (NS).

☐ 34. Route the remaining lead of branch F (green lead) to grounding lug GL-5. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug GL-5. (NS).

☐ 35. Select the white lead with green tracer in branch G. The lead emerges from the harness at the junction of branches G-A-F. Route the lead to lug 1 of tie strip TS-5. Trim to length and remove $\frac{1}{4}$" insulation. Connect to lug 1 of TS-5. (NS).

☐ 36. Route the white lead with brown tracer of branch A to pin 3 of socket SO-2. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to pin 3 of SO-2. (NS).

☐ 37. Route the white lead with violet tracer of branch A alongside socket SO-2 and on to lug C of switch SW-1. Trim to length and remove $\frac{1}{4}$" insulation. Connect to lug C of SW-1. (S).

☐ 38. Route the white lead with blue tracer of branch A to pin 4 of socket SO-2. Trim to length and remove $\frac{1}{4}$" insulation. Connect to pin 4 of SO-2. (NS).

☐ 39. Select the small and large diameter

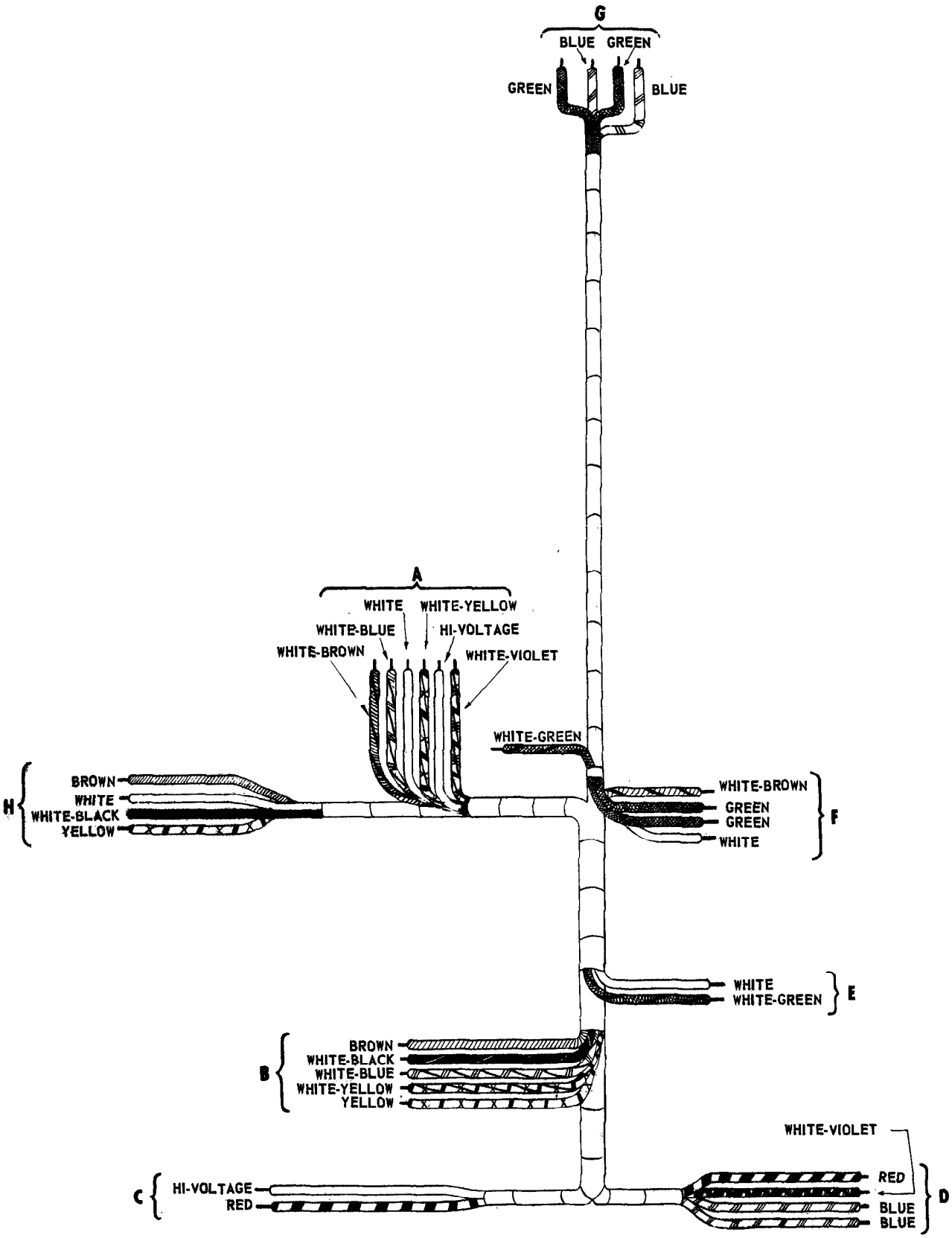


Figure 18. Large Wiring Harness.

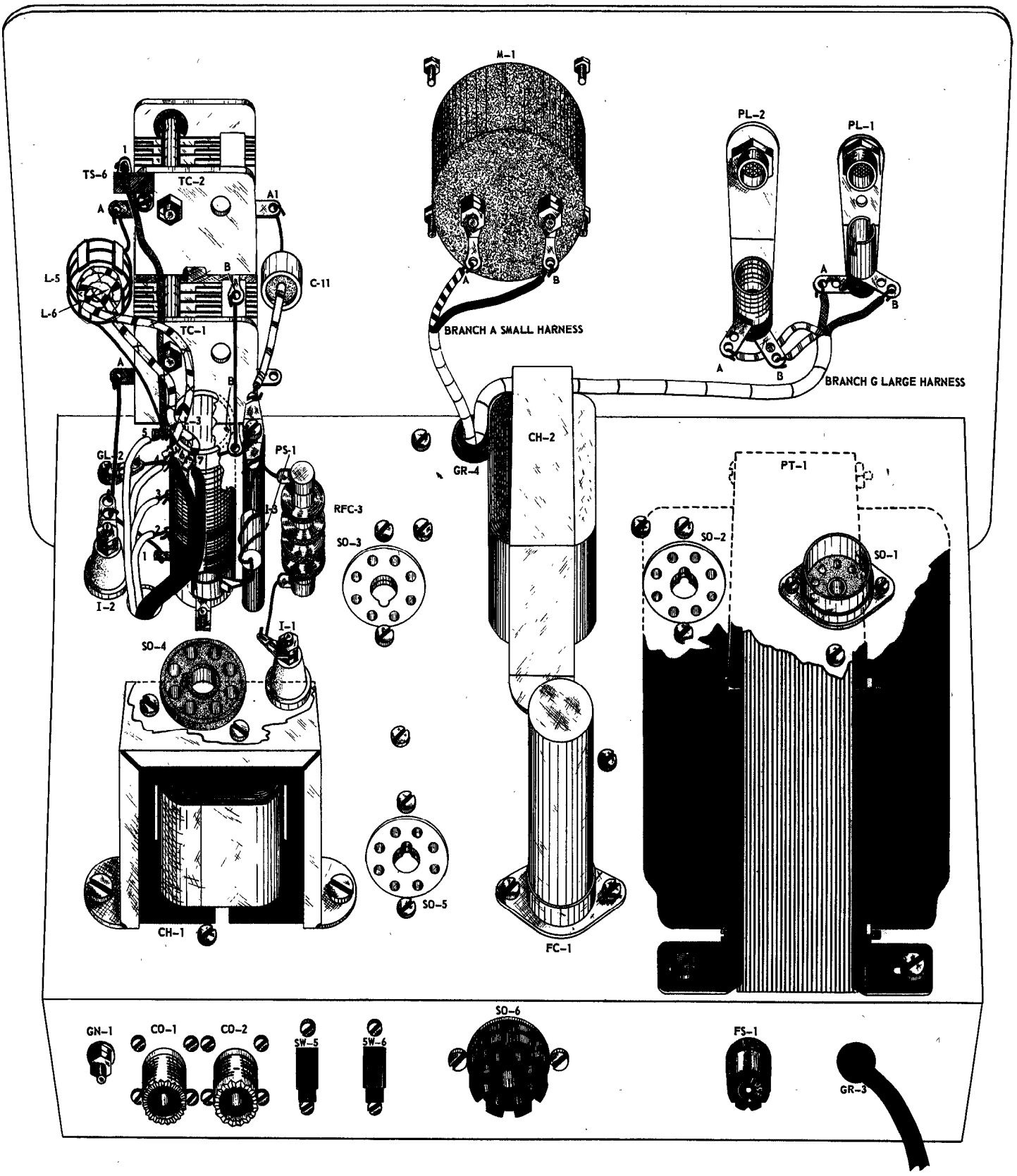


Figure 19. Top Of Chassis Wiring.

white wires in branch A. Route these leads to pin 7 of socket SO-2. Trim to length and remove ¼" insulation from the end of each lead. Connect both leads to pin 7 of SO-2. (NS).

☐ 40. Route the white lead with yellow tracer of branch A to pin 8 of socket SO-2. Trim to length and remove ¼" insulation from the end. Connect to pin 8 of SO-2. (NS).

☐ 41. Route the brown lead of branch H to to pin 6 of socket SO-2. Trim to length and remove ¼" insulation from the end. Connect to pin 6 of SO-2. (NS).

☐ 42. Route the white lead of branch H to lug B of switch SW-1. Trim to length and remove ¼" insulation from the end. Connect to lug B of SW-1. (NS).

☐ 43. Route the white lead with black tracer of branch H to pin 8 of socket SO-1. Trim to length and remove ¼" insulation from the end. Connect to pin 8 of SO-1. (NS).

☐ 44. Route the remaining lead of branch H (yellow lead) to lug 1 of tie strip TS-1. Trim to length and remove ¼" insulation from the end. Connect to lug 1 of TS-1. (NS).

☐ 45. Turn the chassis over so the rear apron is toward you and transformer PT-1 is on your right side. Refer to Fig. 19.

☐ 46. Route branch G of the harness along the right front edge of the chassis where the panel meets the chassis. At the center of PL-1 and PL-2 bend the harness up toward the pilot lamp assemblies.

☐ 47. Route the two blue leads of branch G to lugs A and B of pilot lamp assembly PL-2. Trim to length and remove ¼" insulation from the ends of the two wires. Connect one blue lead to lug A and the other blue lead to lug B of PL-2. (S-both connections).

☐ 48. Route the two green leads of branch G to lugs A and B of pilot lamp assembly PL-1. Trim to length and remove ¼" insulation from the ends of the two wires. Connect one green lead to lug A and the other green lead to lug B of PL-1. (S-both connections).

☐ 49. Turn the chassis upside-down again. Refer to Fig. 17.

☐ 50. Lay out the small harness so it appears as in Fig. 20. Identify the various branches and wire colors.

☐ 51. Install the harness in the chassis as follows: Twist the leads of branch B together. Slip branch B under condenser TC-3 then under switch SW-4. Gently pull on branch B until branch C is directly under condenser TC-3.

☐ 52. Twist the leads of branch A together and insert through grommet GR4. Route the leads to the terminals of meter M1.

☐ 53. Branch C should be routed between socket SO-3 and tie strip TS-2 over to the strip TS-3.

☐ 54. Route the white lead with red tracer of branch C to lug 2 of tie strip TS-2. Trim to length and remove ¼" insulation from the end. Connect to lug 2 of TS-2. (NS).

☐ 55. Route the orange lead of branch C to lug 4 of tie strip TS-3. Trim to length

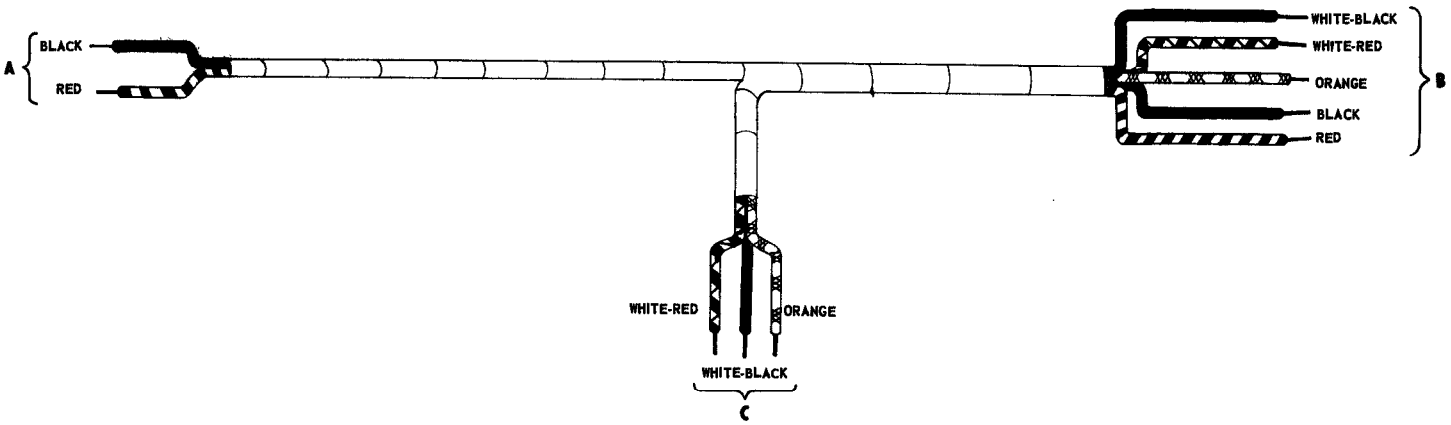


Figure 20. Small Wiring Harness.

and remove $\frac{1}{4}$" insulation from the end. Connect to lug 4 of TS-3. (NS).

☐ 56. Route the remaining lead of branch C (white lead with black tracer) to lug 1 of tie strip TS-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug 1 of TS-3. (NS).

☐ 57. Route the white lead with black tracer of branch B to lug C of switch SW-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug C of SW-3. (S).

☐ 58. Route the white lead with red tracer of branch B to lug F of switch SW-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug F of SW-3. (S).

☐ 59. Route the red lead of branch B to lug E of switch SW-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug E of SW-3. (S).

☐ 60. Route the black lead of branch B to lug B of switch SW-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug B of SW-3. (S).

☐ 61. Route the orange lead of branch B to lug A of switch SW-3. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug A of SW-3. (S).

☐ 62. Dress the five leads that connect to switch SW-3 by tucking them under SW-3 far enough to prevent their interfering with the front wafer of switch SW-4.

☐ 63. Turn the chassis over so it appears as in Fig. 19.

☐ 64. Route the red lead of branch A to lug A of the meter M-1. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug A of M-1. (S).

☐ 65. Route the remaining lead of branch A (black lead) to lug B of the meter M-1. Trim to length and remove $\frac{1}{4}$" insulation from the end. Connect to lug B of M-1. (S).

☐ 66. Select a length of #20 bus wire. Thread this wire through the hole of lug B on condenser TC-2, then through the hole of lug B on condenser TC-1 and then over to grounding lug GL-2. Wrap securely at lug GL-2. Trim the surplus at the lug B on condenser TC-2 and wrap securely. (S-all three points).

☐ 67. Wrap the end of a piece of #20 bus wire on lug A of condenser TC-1, then route the wire through the hole of the solder lug on insulator I-2, then on to lug 1 on coil L-3. Wrap securely. (S-at all three points).

☐ 68. Turn the chassis over so it appears as in Fig. 17.

☐ 69. Thread a length of #20 bus wire through grounding lug GL-10, then through pin 4 of socket SO-1, then to the center post of SO-1. Wrap securely at the center post and at GL-10. (S-at center post and at pin 4 of SO-1 only).

☐ 70. Thread a length of #20 bus wire through the grounding lug of J-1, then through lug A of VC-1. Wrap securely at both points. (S-at J-1 only).

☐ 71. Thread a length of #20 bus wire through grounding lug GL-6, then through pin 2 of socket SO-2, then through pin 1 of SO-2. Wrap securely at GL-6 and at pin 1 of SO-2. (S-at all points).

☐ 72. Thread a length of #20 bus wire through grounding lug GL-9, then through lug A of the key jack K-1, then through lug B of K-1. Wrap securely at lug GL-9 and at lug B of K-1. (S-at GL-9 and lug A of K-1 only).

☐ 73. Thread a length of #20 bus wire through lug B of the key jack K-1, then through lug A of the crystal socket X-1, then through lug A of tuning condenser TC-3. (S-at all points).

☐ 74. Thread a length of #20 bus wire through grounding lug GL-5, then through pin 2 of socket SO-3, then through pin 1 of SO-3. Wrap securely at GL-5 and at pin 1 of SO-3. (S-at GL-5 and pin 1 only).

☐ 75. Thread a length of #20 bus wire through pin 3 of socket SO-3. Route this lead up toward coil L-2, make a right angle bend and connect to lug C of tuning condenser TC-3. Wrap securely at both points. (S). Make certain this lead clears coil L-2.

☐ 76. Connect a length of #20 bus wire from grounding lug GL-1 to lug D of switch SW-3. (S).

☐ 77. Connect a length of #20 bus wire from the lug on insulator I-2 to lug 1, rear wafer, of switch SW-4. Make certain that lug 1 or the wire on it does not touch the retaining nut or screw of switch SW-4. The bus wire should be routed around the front side of the rear wafer to avoid its making contact with any other lugs on this wafer. (S at SW-4 only).

SECTION V

WIRING PROCEDURE

☐ 78. Thread a length of #20 bus wire through grounding lug GL-3, then through pin 2 of socket SO-4, then through pin 8 of SO-4, then back to GL-3. Wrap securely at GL-3. (S at pin 2 of SO-4 only).

☐ 79. Remove ¼" insulation from each end of a 7½" length of #20 solid, insulated, wire. Connect from the lug on insulator I-2 to lug 1 of switch SW-5. Wrap securely at both points. (S-both connections).

☐ 80. Thread a length of #20 bus wire through the grounding hole of tie strip TS-4 (nearest to lug 3 of this tie strip). then through lug 4 of filter condenser FC-1, then through pin 1 of socket SO-6, then through pin 2 of SO-6. Wrap securely at pin 2 of SO-6. (S-at all points except pin 1 of SO-6).

☐ 81. Remove ¼" insulation from each end of a 3-3/4" length of #20 white wire. Connect this lead from pin 7 of socket SO-4 to pin 7 of socket SO-3. (S).

☐ 82. Remove ¼" insulation from each end of a 2½" length of #20 white wire. Connect this lead from pin 7 of socket SO-2 to pin 5 of socket SO-1. (S).

☐ 83. Remove ¼" insulation from each end of a 3" length of #20 black wire. Connect this lead from lug D of VC-1 to lug D of SW-1. (S).

☐ 84. Remove ¼" insulation from each end of a 6" length of #20 white wire. Connect this lead from lug A of switch SW-1 to lug C of key jack K-1. (S).

☐ 85. Remove ¼" insulation from each end of a 5½" length of #20 white wire. Connect this lead from lug B of switch SW-1 to lug D of switch SW-2.

☐ 86. Remove ¼" insulation from each end of a 4" length of #20 red wire. Connect this lead from pin 6 of socket SO-2 to lug B of switch SW-2. (S).

☐ 87. Remove ¼" insulation from each end of a 3-3/4" length of #20 red wire. Connect this lead from lug 2 of tie strip TS-1 to pin 4 of socket SO-2. (NS).

☐ 88. Remove ¼" insulation from each end of a 3¼" length of #20 red wire. Connect this lead from pin 3 of socket SO-2 to lug C of switch SW-2. (S).

☐ 89. Remove ¼" insulation from each end of a 5" length of #20 red wire. Connect this lead from lug 2 of tie strip TS-3 to lug 1 of tie strip TS-4. (NS(.

☐ 90. Connect lugs 1 and 2 of tie strip TS-4 with a length of #20 bus wire. Wrap securely at both points. (NS).

☐ 91. Remove ¼" insulation from each end of a 5½" length of #20 red wire. Connect this lead from pin 3 of socket SO-6 to lug 2 of tie strip TS-4. (S).

☐ 92. Remove ¼" insulation from each end of a 3¼" length of #20 white wire. Connect this lead from lug B of the crystal socket X-1 to pin 5 of socket SO-3. (S-at X-1 only).

☐ 93. Remove ¼" insulation from each end of a 2½" length of #20 white wire. Connect this lead from lug A of coil L-2 to lug 1 of tie strip TS-2. (S-at L-2 only).

☐ 94. Remove ¼" insulation from each end of a 2½" length of #20 red wire. Connect this lead from lug 1 of tie strip TS-2 to lug 1, front wafer, of switch SW-4. (S-at lug 1 SW-4 only).

☐ 95. Select the 5" length of shielded wire. Cut one length to 4". Retain the remaining one inch piece, it will be utilized later.

☐ 96. Prepare the 4" length of shielded lead as follows:

(a) Separate the braided shield at each end for a distance of 1/2 inch.

(b) Bring all the separated strands to one side at a 90 degree angle from the center conductor of the wire. Repeat the same process at the opposite end of the lead.

(c) Twist the unbraided strands together at each end of the wire.

(d) Remove 3/16" insulation from the center conductor at each end of the wire.

☐ 97. Connect the center conductor of the 4" shielded lead to lug B of the volume control VC-1. Wrap securely. (NS). Connect the braid lead of the same end of the shielded lead to lug A of volume control VC-1. Wrap securely. (NS).

☐ 98. Route the other end of the shielded lead to socket SO-1. Connect the braid lead to grounding lug GL-11 and wrap securely. (NS). Connect the center conductor of the lead to pin 9 of SO-1. Wrap securely. (S).

☐ 99. Take up the remaining 1" length of shielded wire. Remove the center conductor from the braid and discard it. Flatten the braid so it has a rectangular shape of ¼" wide by 3/4" long.

Connect the flattened braid from pin 4 to pin 6 of socket SO-4. The braid acts as a shield for pin 5 but must not physically touch pin 5. Wrap the ends of the braid securely around pins 4 and 6. (S-at pin 4 only).

☐100. Open container 4. Check the contents of the container against the enclosed packing list to make certain there is no shortage.

☐101. Select the double conductor AC line cord. Unwind it and insert the stripped ends of the cord through grommet hole GR-3. The end of the cord with the plug should be on the outside of the chassis. Separate the two insulated conductors by gently pulling them apart so they separate along the seam. Separate the leads to a distance of 9½" from the tinned ends. Tie a double knot at the 9½" point and pull the knot back against grommet GR-3.

☐102. Route one AC line cord lead to lug E of VC-1. Run the lead under the harness wiring so it is held in place. Connect the end to lug E of VC-1. (S).

☐103. Route the remaining AC line cord lead to lug B of the fuse holder FS-1. Trim the lead to length and remove 3/8" insulation from the end. Connect to lug B of FS-1. Wrap securely. (S).

☐104. Wrap up the AC cord as it was so it will not become entangled when turning the chassis over. Refer to Fig. 21 for further wiring.

☐105. Select a 12 mfd-700 V. capacitor (C20). Trim each lead to 1" in length. Connect the lead from the positive (+) end of this capacitor to lug 3 of tie strip TS-4. Connect the negative lead to grounding lug GL-8. Wrap securely at both points. (S).

☐106. Select the remaining 12 mfd-700 V. capacitor (C-14). Trim each lead to 1" in length. Connect the negative lead to grounding lug GL-7. Connect the positive (+) lead to lug 1 of tie strip TS-4. Wrap securely at both points. (NS).

☐107. Connect the 50,000 ohm, 10 watt resistor, (R11) from lug 1 of tie lug TS-4 to pin 1 of socket SO-6. Wrap securely at both points. (S).

☐108. Connect the 68,000 ohm, 2 watt resistor, R-16 (Blue-Gray-Orange) from grounding lug GL-7 to lug 1 of tie strip TS-1. Wrap securely at both points and trim away any excess lead length. (S-at GL-7 only).

☐109. Connect the 2200 ohm, 1/2 watt resistor, R14 (Red-Red-Red) from pin 7 of socket SO-1 to grounding lug GL-10. Wrap securely at both points and trim away any excess lead length. (NS).

☐110. Select the 25 mfd-25 V. capacitor (C15). Connect the positive (+) lead to pin 7 of socket SO-1. Connect the negative lead to grounding lug GL-11. Wrap securely at both points and trim away any excess lead length. (S).

☐111. Connect the 220,000 ohm, 1/2 watt resistor, R13 (Red-Red-Yellow) from pin 2 of socket SO-1 to grounding lug GL-10. Wrap securely at both points and trim away any excess lead. (NS).

☐112. Select the 47,000 ohm, 1/2 watt resistor, R12 (Yellow-Violet-Orange). Slip a 1-1/8" length of small spaghetti over one lead of the resistor. Insert this lead into the center hole of the microphone connector J1. (S).

☐113. Slip a 1" length of small spaghetti over the other lead of resistor R12. Connect this lead to pin 2 of socket SO-1. Wrap securely and trim away any excess lead length. (S).

☐114. Prepare Couplate PC91 as follows:

(a) Trim lead #5 to 1-1/8". Slip a 7/8" length of small spaghetti over this lead.

(b) Trim lead #6 to 2-1/8". Slip a 1-7/8" length of small spaghetti over this lead.

(c) Trim lead #3 to 1-5/8". Slip a 1-3/8" length of small spaghetti over this lead.

(d) Connect lead #2 to lead #1. Trim to 1-3/8". Slip a 1" length of spaghetti over this lead.

(e) Trim lead #4 to 1". Slip a 3/4" length of small spaghetti over this lead.

☐115. Connect Couplate PC91 as follows:

(a) Connect combined leads 1 and 2 to the grounded center hole of tie strip TS-1. (S).

(b) Connect lead #3 to lug 1 of tie strip TS-1. Wrap securely. (NS).

(c) Connect lead #4 to pin 3 of socket SO-1. Wrap securely. (S).

(d) Connect lead #5 to pin 6 of socket SO-1. Wrap securely. (S).

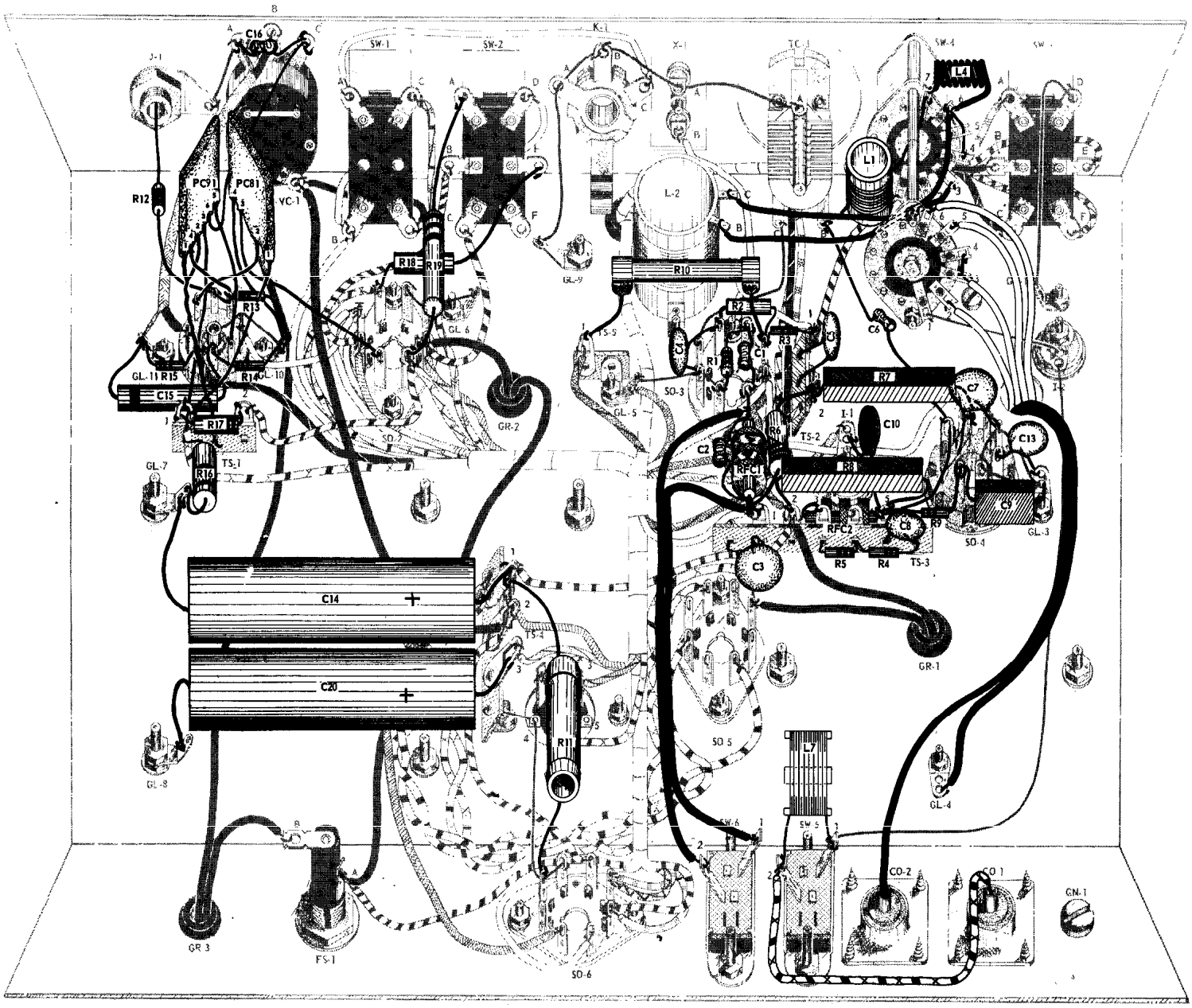


Figure 21. Wiring, Steps 105 through 158.

(e) Connect lead #6 to lug C of volume control VC-1. Wrap securely. (NS).

☐116. Connect the 250 mmfd ceramic tubular capacitor C16. (White-Red-Green-Brown) from lug A to lug C of volume control VC-1. Wrap securely. (S).

☐117. Connect the 22,000 ohm, 1 watt resistor, R17 (Red-Red-Orange) from lug 1 to lug 2 of tie strip TS-1. Wrap securely and trim away excess lead length. (S-at lug 2 only).

☐118. Prepare Couplate PC81 as follows:

(a) Trim lead #1 to 1-1/2". Slip a 1-1/4" length of small spaghetti over this lead.

(b) Trim lead #2 to 1-1/8". Slip a 7/8" length of small spaghetti over this lead.

(c) Trim lead #3 to 2-1/8". Slip a 1-7/8" length of small spaghetti over this lead.

(d) Trim lead #4 to 7/8". Slip a 5/8" length of small spaghetti over this lead.

☐119. Connect Couplate PC81 as follows:

(a) Connect lead #1 to lug 1 of tie strip TS-1. (S).

(b) Connect lead #2 to pin 1 of socket SO-1. (S).

(c) Connect lead #3 to pin 5 of socket SO-2. (S).

(d) Connect lead #4 to grounding lug GL-10. (S).

☐120. Connect the 390 ohm, 2 watt, resistor R18 (Orange-White-Brown) between pin 8 of socket SO-2 and lug E of switch SW-2. Wrap securely and trim excess lead length at both points. (S).

☐121. Connect the 22,000 ohm, 2 watt resistor R19 (Red-Red-Orange) between pin 4 of socket SO-2 and lug A of switch SW-2. Wrap securely and trim any excess lead length at both points. Bridge this resistor over socket SO-2 to SW-2. (S).

☐122. Connect the 47,000 ohm, 1/2 watt resistor, R1 (Yellow-Violet-Orange) between pins 1 and 5 of socket SO-3. Wrap securely and trim any excess lead length. (NS).

☐123. Connect the 15 mmfd tubular capacitor C1 (White-Brown-Green-Black-White) between pins 5 and 8 of socket SO-3. Wrap securely and trim any excess lead length. (S-at pin 5 only).

☐124. Connect a .005 mfd disc capacitor (C4) between pins 2 and 4 of socket SO-3. Route this capacitor around pin 3 of SO-3 and make certain the leads and the capacitor clear this pin. Wrap securely and trim any excess lead length. (S-at pin 2 only.)

☐125. Connect the 22,000 ohm, 1 watt, resistor R2 (Red-Red-Orange) between pins 4 and 6 of socket SO-3. Route this resistor around pin 5 and make certain it clears this pin. Wrap securely and trim any excess lead length. (S-at pin 4 only).

☐126. Select the 120 mmfd tubular ceramic capacitor C2 (White-Brown-Red-Brown-White) and a small RF choke (RFC-1). Wrap the leads of the capacitor around the RF choke leads so the two are paralleled. Solder the leads together. Connect RFC-1 from pin 8 of socket SO-3 to lug 1 of tie strip TS-3. Wrap securely. (NS).

☐127. Connect a .005 mfd disc capacitor C3 between lug 1 and the grounding hole of tie strip TS-3. (S-at grounding hole only).

☐128. Connect a 120 ohm, 1/2 watt resistor R3 (Brown-Red-Brown) from pin 6 of socket SO-3 to lug 1 of tie strip TS-2. Wrap securely and trim away excess. (NS).

☐129. Connect a .005 mfd disc capacitor C5 between lug 1 and the grounding hole of tie strip TS-2. (S).

☐130. Connect the 6000 ohm, 10 watt resistor R10 from lug 1 of tie strip TS-5 to pin 6 of socket SO-3. Bridge this resistor over socket SO-3. Wrap securely. (S).

☐131. Select the special .3 ohm meter shunt R6. The shunt consists of a 1" length of resistance wire wound on a 22 ohm, 1 watt resistor. Connect from lug 2 of tie strip TS-2 to lug 1 of tie strip TS-3. Keep the unit close to RF choke RFC-1. Wrap securely. (NS).

☐132. Select coil L-1. This is the small coil wound on a 1/2" bakelite form. Straighten out the lead on each end of the coil and trim one lead to 5/8" in length and the other lead to 1" in length. Remove 1/4" enamel insulation from the end of each lead. Place the coil between switch SW-4 and condenser TC-3. The 5/8" lead connects to lug B of TC-3.

Wrap securely. (NS). Slip 3/4" length of small spaghetti over remaining lead of coil L1. Route this lead under the wafer retaining screw of Switch SW-4, then up to lug 7, front wafer, of SW-4. Wrap securely. (NS).

☐133. Thread a length of #20 bus wire through lug 6, front wafer, of switch SW-4, then through lug 5, then through lug 4 of the same switch and wafer. Wrap securely at lugs 4 and 6. (S-at lugs 4 and 5 only).

☐134. Remove ¼" insulation from each end of a 3½" length of yellow #20 solid wire. Connect this lead from lug B of coil L-2 to lug 6, front wafer, of switch SW-4. Wrap securely. (S-at L-2 only).

☐135. Remove ¼" insulation from each end of a 4" length of yellow #20 solid wire. Connect this lead from lug C of coil L-2 to lug 3, front wafer, of switch SW-4. Wrap securely. (S).

☐136. Select the small eleven turn coil L-4. Straighten both leads so they both come away from the coil in the same direction. Trim one lead to 1/2" in length. Trim the other lead to 7/8" in length. Remove ¼" insulation from the end of each lead. Place this coil on the front side of the front wafer of switch SW-4 so the 1/2" lead connects to lug 7 of the switch wafer. Wrap securely. (S). Connect the other lead of L-4 to lug 6, front wafer, of SW-4. Wrap securely. (S).

☐137. Connect the 33 mmfd tubular ceramic capacitor C6 (White-Orange-Orange-Black-White) from lug B of condenser TC-3 to pin 5 of socket SO-4. (S-at TC-3 only).

☐138. Select the remaining small RF choke RFC2. Connect from pin 5 of socket SO-4 to lug 3 of tie strip TS-3. Keep choke clear of insulator I-1 and tie strip TS-3. Wrap securely. (S-at SO-4 only).

☐139. Connect the 22,000 ohm, 1/2 watt resistor R5 (Red-Red-Orange) from lug 3 to lug 4 of tie strip TS-3. Wrap securely. (NS).

☐140. Connect the 120 ohm, 1/2 watt resistor R4 (Brown-Red-Brown) from lug 4 of tie strip TS-3 to the grounded hole of TS-3. Wrap securely. (S-at lug 4 only).

☐141. Connect the 56 ohm, 1/2 watt resistor, R9 (Green-Blue-Black) from lug 5 of TS-3 to pin 3 of socket SO-4. Wrap securely. (NS).

☐142. Connect a .005 mfd disc capacitor C8 from lug 5 of tie strip TS-3 to the grounded hole of TS-3. (S-at grounded hole only).

☐143. Connect a 200 mmfd mica capacitor C9 (White-Red-Black-Brown) from pin 3 of socket SO-4 to grounding lug GL-3. (S-at SO-4 only).

☐144. Connect a .005 mfd disc capacitor C7 from pin 8 of socket SO-4 to the center of the shield braid which connects to pins 4 and 6 of socket SO-4. (S).

☐145. Connect a .005 mfd disc capacitor C13 from pin 1 of socket SO-4 to grounding lug GL-3. (S).

☐146. Select the black .0047 mfd disc capacitor C10. Trim each lead length to 5/8". Slip a 1/2" length of spaghetti over each lead. Connect from lug 5 of tie strip TS-3 to the solder lug on insulation I-1. Wrap securely. (S-at I-1 only).

☐147. Connect the 12,500 ohm, 10 watt resistor R8 from lug 2 to lug 5 of tie strip TS-3. Wrap securely. (S).

☐148. Connect the 450 ohm, 10 watt resistor R7 from pin 6 of socket SO-4 to lug 2 of tie strip TS-2. (S).

☐149. Select the L matching coil L7 which is 1" in diameter and has 15 turns-space wound. Trim each of the two coil leads to 1/4" in length. Connect one lead to lug 1 of switch SW-5 and the other lead to lug 2 of SW-5. Wrap securely. (NS).

☐150. Remove ¼" insulation from each end of a 3½" length of #18 insulated wire. Connect the lead from lug 2 of switch SW-5 to the center post of coaxial receptacle CO-1. (S)

☐151. Cut a piece of double conductor cord (rubber lamp cord) to 7" in length. Separate the leads at each end for a distance of 1". Remove ¼" insulation from the leads at both ends. Connect the leads of one end of the lead to lugs 1 and 2 of switch SW-6. Wrap securely. (S). Route the lead along the harness branch past socket SO-5 towards socket SO-3. Connect one lead to pin 8 of SO-3 (S) and connect the other lead to lug 1 of tie strip TS-3. (S).

☐152. Cut-up the high voltage wire (heavy white wire) into pieces of the following lengths: 2-1/4", 3", 4-1/8" and 5". Trim 3/16" insulation from each

end of each piece. These leads will be connected from the rear wafer of the bandswitch SW-4 to the taps on coil L-3. The wires will be routed from the bandswitch, up through the 1/2" chassis hole near I-2, to coil L-3.

☐153. Connect the 2½" length of wire from lug 2, rear wafer, of switch SW-4 to tap 2 on coil L-3. (S).

☐154. Connect the 3" length of wire from lug 3, rear wafer, of switch SW-4 to tap 3 on coil L-3. (S-at L-3 only).

☐155. Connect a short length of #20 bus wire from lug 3 to lug 4 on rear wafer of SW-4. (S).

☐156. Connect the 4-1/8" length of wire from lug 5, rear wafer, of switch SW-4 to tap 4 on coil L-3. (S).

☐157. Connect the 5" length of wire from lug 6, rear wafer, of switch SW-4 to tap 5 on coil L-3. (S).

☐158. Cut a piece of double conductor cord (rubber lamp cord) to 9" in length. Separate the leads at each end for a distance of one inch. Remove ¼" insulation from both leads at each end. Route one end of this 9" cord through the chassis hole near I-2, then connect the ends of the cord to lugs 6 and 7 of coil L-3. (See Fig. 19). Wrap securely. (NS). Route the other end of the 9" cord towards the rear apron of the chassis to coaxial receptacle CO-2. Attach one of the two leads to grounding lug GL-4. Wrap securely. (S). Connect the other lead to the center post of coaxial receptacle CO-2. (S). Dress the double conductor lead down against the chassis.

☐159. Prepare the .001 mfd-1500 V. ceramic capacitor C11 as follows: Remove 1/2" from each lead. Slip a 3/4" length of spaghetti over each lead. See Fig. 19.

☐160. Connect one lead of capacitor C11 to lug A1 of tuning condenser TC-2. (S). Connect the other lead of C11 to the double solder lug on the 2-1/2" high bakelite insulator I-3. (S).

☐161. Remove 1/2" from one lead of the large RF choke RFC-3. Connect this shorter lead to the solder lug which is atop insulator I-1. (S). Connect the other lead of RFC-3 to the double solder lug on the 2-1/2" high bakelite insulator I-3. (NS).

☐162. Remove 7/8" from one lead of the parasitic suppressor choke PS-1. Attach this end to the 3/8" plate cap. (S).

☐163. Remove 5/8" from the other lead of parastic suppressor choke PS-1. Connect this lead to the double solder lug atop the 2-1/2" high bakelite insulator I-3. (S).

☐164. Slip a 3/4" length of spaghetti over the longest lead of coil L-5. Connect this lead to lug A of tuning condenser TC-2. (S). Connect the other lead of coil L-5 to tap 5 of coil L-3. (NS).

☐165. Remove the center conductor from a 2" length of shielded wire. Flatten the braid and connect one end to tap 5 of coil L-3. Connect the other end of the braid to lug 1 of tie strip TS-6. (S). The braid must have some slack to flex easily with any panel movement.

☐166. Select the 6 meter link coil L-6. The coil is 5/8" in diameter and is wound with two turns of insulated wire.

☐167. Remove ¼" insulation from the end of each lead of coil L-6. Connect one lead to tap 6 on coil L-3. (S). Connect the other lead to tap 7 on coil L-3, (S).

☐168. Rotate the Final Plate tuning condenser in a clockwise direction until the indicating mark on the knob points to the eighth screened dial division on the panel (counting from left to right). Leave the tuning condenser in this position.

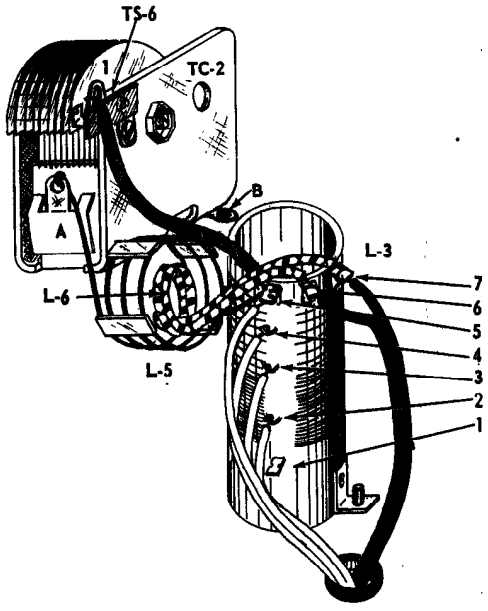


Figure 22.

SECTION V

WIRING PROCEDURE

☐169. Adjust the wiper tab, which is soldered to lug 1 of tie strip TS-6, to make slight contact with the outside rotor plate of tuning condenser TC-2. Properly adjusted, the tab will continue to make a wiping contact with the rotor plate of the tuning condenser as it is advanced in a clockwise direction from its present position. See Fig. 22. This constitutes the 6 meter tuning portion of the Final Plate tuning condenser.

☐170. Remove the octal plug from the accessory socket SO-6. Located on rear apron of chassis.

☐171. Connect a short U shaped piece of #16 bus wire from pin 6 to pin 7 of the octal plug. (S). Trim the excess wire and solder from the plug pins and reinsert the plug into socket SO-6.

☐172. Insert all five tubes into their respective sockets. Place the small tube shield over the 6U8 tube.

☐173. Attach the four rubber mounting feet to the bottom of the cabinet. Use the four #6x3/8" self-tapping screws. Insert the screws in the holes in the rubber mounting feet, then start the screws into the 1/8" holes on the bottom of the cabinet. Do not tighten excessively or the screw head will be pulled through the mounting feet.

5-4. TRANSMITTER CHECK-OUT.

5-5. The transmitter may now be given a preliminary test for proper operation. Follow the tune-up procedure as outlined in Section II. Should any malfunction be indicated during the tune-up procedure refer to Section VII. The transmitter may be placed into the cabinet if the preliminary tests indicate proper operation. Refer to paragraph 5-6.

WARNING

Operation of this equipment involves the use of high voltages which are dangerous to life. Observe all safety precautions! Do not attempt to make any adjustments inside the equipment or change any tubes with the power on. Disconnect-UNPLUG-the power cord before touching any high voltage points or the antenna terminals. Do not do any work on the inside of the transmitter without first unplugging the power cord. It is adviseable to short the B plus to ground using an insulated screwdriver as a shorting stick, before touching any exposed wiring.

5-6. Install the transmitter into the cabinet. Secure the panel to the cabinet with the six #6x$\frac{1}{4}$" self-tapping screws.

5-7. The transmitter may now be placed into operation. Refer to Section II, Operating Procedures.

SECTION VI

OPERATING SUGGESTIONS AND ANTENNA CONSIDERATIONS

6-1. GENERAL.

6-2. Some operators place equipment into operation before they read the instructions, or understand how to operate the equipment; then blame the equipment because it fails to function properly. A careful study of Section II, Operating Procedures, and the observance of suggestions contained in the following paragraphs will assure the operator of proper and efficient operation of the transmitter.

6-3. GROUNDING THE TRANSMITTER.

6-4. A good electrical ground connection to the transmitter chassis is essential for efficient operation and proper loading. The ground wire length should be kept as short as possible to prevent its action as a leg of the antenna. Such action may cause the chassis and cabinet to be very hot with RF, prevent proper loading of the final or cause modulator squeal due to RF feedback into the speech input stage. The use of several ground wires, each a different length and each connected to an independent ground point, may prove to be helpful. Such ground wires, for example, may be, one 4 feet, one 8 feet and one 16 feet in length.

6-5. ANTENNA CONNECTIONS.

6-6. Two antenna receptacles are provided to accommodate all types of antennas with impedances of 52 to 1000 ohms. The receptacles are labeled "80-10M" and "6M ANT". The proper use of each follows.

6-7. The coaxial receptacle labeled "80-10M" accommodates antennas for bands of operation as per Table V

TABLE V

Band	Type Antenna				
10-11 Meters	1/4 wave vertical*	52 ohm beam*	Doublet*	Folded Dipole*	End fed 80 ft. long wire*
15 Meters	1/4 wave vertical*	52 ohm beam*	Doublet*	Folded Dipole*	End fed 80 ft. long wire*
20 Meters	1/4 wave vertical†	52 ohm beam†	Doublet†	Folded Dipole*	End fed 80 ft. long wire*
40 Meters	1/4 wave vertical†	———	Doublet†	Folded Dipole*	End fed 80 ft. long wire*
80 Meters	1/4 wave vertical†	———	Doublet†	Folded Dipole*	End fed 80 ft. long wire*

*-LOAD switch in the up, or shorting, position.
†-LOAD switch in the down, or open, position.

6-8. The coaxial receptacle labeled "6M ANT" accommodates only a 52 to 72 ohm beam or doublet type 6 meter antenna. A folded dipole type antenna may be used if another turn is added to the two turn coupling link.

6-9. LONG WIRE ANTENNAS.

6-10. The long wire type antenna should be avoided wherever possible, especially in TV fringe areas where weak TV signals are encountered. In the event a long wire type antenna must be used, it is recommended that an antenna tuning device be inserted between the transmitter and the antenna. A properly operated antenna tuner will give harmonic attenuation and will be very helpful in loading random length antennas.

6-11. PI NETWORK TUNING.

6-12. Tuning of the pi network is not difficult. It should be noted however, that it is possible to tune the pi network to an undesireable harmonic of the desired frequency. The correct method to determine the proper frequency is to note the final plate current dips. The final plate current dip of the desired frequency will be more pronounced than that of a harmonic. No trouble should be encountered if the FINAL PL. TUNE control settings for each band are as illustrated in Table IV, page 5 .

6-13. OSCILLATOR PLATE TUNING.

6-14. In the case of the pi network, we found the tuning of a harmonic is undesireable. However, in tuning the oscillator plate circuit, in some instances it is necessary to tune this circuit to the second or third harmonic of the fundamental frequency in order to obtain the desired frequency in the final amplifier. No difficulty should be encountered in tuning the oscillator plate circuit if the instructions , as set forth in paragraph 2-24, step 12, are carefully observed.

6-15. ANTENNA LOADING.

6-16. Loading of the final amplifier on the 6 meter band is described in detail in Section II, paragraph 2-24, step 15. On all bands 80 through 10 meters, loading of the final amplifier (with antenna attached) should not require an excessive amount of rotation of the FINAL PL. TUNE control to re-dip the circuit (paragraph 2-24, step 18). Should an excessive amount of rotation of this control

be required to re-dip the final amplifier, excessive antenna reactance is indicated. The logical solution to eliminate this reactance is to change the physical dimensions of the antenna so that when the ANT. LOAD control is advanced to full load (125-130 ma.) very little retuning of the FINAL PL. TUNE control is required to obtain resonance of the final amplifier again.

6-17. ANTENNA CONSIDERATIONS.

6-18. For general all around use, lowest cost, ease of maintenance and good performance, the doublet or folded dipole antennas are recommended. A chart of antennas for each band, and formulas for computing the length of an antenna for a specific frequency are given in Table VI.

6-19. When an antenna is made to the correct length for a specific operating frequency, the length of the feed line is not critical. In practice this is practically impossible so the feed line should be kept as near to even multiples of one-half wave as possible. thus any mis-match at the antenna end will not be exaggerated at the transmitter end. A 72 or 52 ohm (preferably 72 ohm) feed line should be used on a doublet antenna. A 300 ohm feed line should be used on a folded dipole antenna. The junction of the feedline and antenna center should be kept as close as possible as even a small amount of fanning of the feed line may cause a mis-match. See Fig. 23.

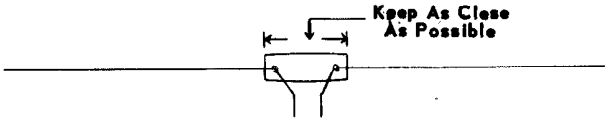


Figure 23.

Should the antenna be less than one-half wave above ground the lengths given in Table VI may not hold true. In this case it may be necessary to adjust the length of the antenna and/or feedline for the best match.

6-20. CHANGE-OVER RELAY.

6-21. The use of an antenna change-over relay is a very great operating convenience. Any DPDT or SPDT, 115 volt AC relay with adequate insulation may be used in conjunction with the Globe Scout, Model 680, transmitter. Suggested methods of relay connections are illustrated below in Figs. 24 and 25.

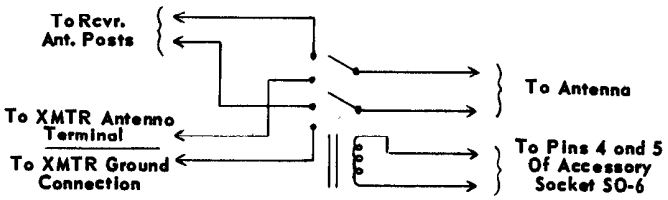


Figure 24. DPDT Relay Connections.

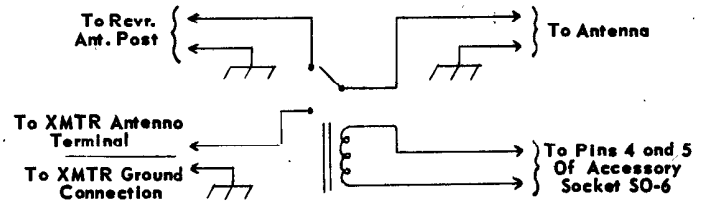


Figure 25. SPDT Relay Connections.

TABLE VI. ANTENNA CHART

Band	1/2 Wave Doublet-72 Ohms	1/2 Wave Folded Dipole-300 Ohms
10 Meters	15'-9" to 16'-6"	15'-8" to 16'-5"
15 Meters	21'-11" to 22'-3"	21'-9" to 22'-1"
20 Meters	32'-10" to 33"-3"	32'-4" to 33'-0"
40 Meters	64'-3" to 66'-3"	63'-6" to 66'-0"
80 Meters	118'-0" to 133'-0"	116'-0" to 132'-0"

Formulas:

For half-wave doublet in feet $\frac{468}{\text{Specific Freq. (MC.)}}$

For half-wave folded dipole in feet $\frac{462}{\text{Specific Freq. (MC.)}}$

SECTION VII

MALFUNCTIONS AND PROBABLE CAUSE-VOLTAGE CHART

7-1. GENERAL.

WARNING

Operation of this equipment involves the use of high voltages which are dangerous to life. Observe all safety precautions! Do not attempt to make adjustments inside the equipment, or change tubes with any power on. Disconnect-UNPLUG-the A.C. power cord and short out the filter condensers with a highly insulated shorting bar before touching any high voltage components.

7-2. This section deals with various malfunctions the operator may encounter. The most likely causes for each type of malfunction are given. The operator should be able to ascertain the nature of the malfunction from this chart and thus, easily repair the equipment. A voltage chart is also given as an aid to determining the nature of various malfunctions.

7-3. MALFUNCTIONS AND PROBABLE CAUSE.

SYMPTOM	PROBABLE CAUSE
1. Transmitter will not operate when AC power applied.	1-1. Defective 3 amp. fuse FS-1. 1-2. Accessory plug not installed.
2. Fuse blows when AC power applied.	2-1. Shorted tube or tubes.
3. Lack of final grid current.	3-1. Defective 6V6, 6146 or 5U4GB tube. 3-2. Key contacts not closed. 3-3. Defective crystal. 3-4. Lack of B plus voltage on 6V6 oscillator tube.
4. Final plate circuit will not tune properly.	4-1. Overloaded pi network. 4-2. Improper oscillator tuning. 4-3. ANT. LOAD and FINAL PL. TUNE control knobs improperly installed giving false indications. 4-4. (6 Meters) Wiping contact on tie-strip TS-6 not making proper contact with rotor plate of tuning condenser.
5. Antenna will not load.	5-1. Defective antenna system. 5-2. Improper antenna dimensions. 5-3. Plates of ANT. LOAD condenser shorting. 5-4. (6 Meters) ANT. LOAD condenser not at MIN position. 5-5. Improper ground system.
6. No modulation on carrier.	6-1. Defective 6U8 or 6L6GB tube. 6-2. "Open" GAIN control. 6-3. "Open" P.C. Couplate. 6-4. Choke CH-2 shorted due to defective switch SW-2. 6-5. MIC jack shorted. 6-6. Defective microphone or microphone cable.
7. Hum in modulation.	7-1. Defective 6U8 or 6L6GB tube. 7-2. Microphone cable "open". 7-3. Defective capacitor C-18 or C-20.
8. Squeal in modulation.	8-1. Insufficient antenna loading. 8-2. Defective ground system. 8-3. Microphone cable is 1/4 wave length of operating frequency.
9. Arcing of FINAL PL. TUNE or ANT. LOAD condensers.	8-1. Insufficient antenna loading. 9-2. Defective antenna system. 9-3. Bent condenser plates.

SECTION VII

MAIFUNCTIONS AND PROBABLE CAUSE-VOLTAGE CHART

7-4. TYPICAL VOLTAGE READINGS.

7-5. The voltage readings given below are typical for the conditions as set forth. Some allowance must be given if the meter used is not a 20,000/ohm per volt meter.

WARNING

Use extreme caution when taking voltage readings. High voltages, dangerous to life, are involved.

CONDITIONS: AC line voltage-115 volts; Test meter-20,000/ohm per volt; BANDSWITCH placed to 40 M. position; PHONE-CW switch placed in PHONE position; final load current-120 ma.; final grid current-2.5 ma.; Meter connected from specified tube pin to chassis ground except where otherwise noted.

TABLE VII. VOLTAGE CHART.

Tube Type	Tube Function	Tube Pin Number								
		1	2	3	4	5	6	7	8	9
6V6	Crystal Oscillator	0	0	+280	+190	0	+300	6.3V AC	.3	—
6146*	Final Amplifier	+55	0	+250	+55	-70	+55	6.3V AC	0	—
6U8	Mic. Amplifier/Driver	+38	0	+10	0	6.3V AC	+50	+1	+1.3	0
6L6GB	Modulator	0	0	+420	+300	0	+440	6.3V AC	+24	—
5U4GB	Rectifier	0	5V AC To Pin #8	0	560V AC	0	560V AC	0	5V AC To Pin #2	—

*6146 Plate-measured at bottom of RFC-3, +440 V.

SECTION VIII

HELPFUL KIT BUILDING INFORMATION

8-1. GENERAL.

8-2. This section contains information useful in building or testing any radio or electronic equipment. The information included will enable identification of capacitors, resistors, transformer leads, the new schematic symbols, etc.

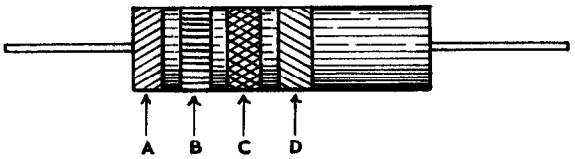
8-3. Standard color codes are used to mark values on such items as resistors and capacitors, and to identify the leads on transformers. The resistor-capacitor color code is given in Table VIII.

TABLE VIII. RESISTOR-CAPACITOR COLOR CODE.

Color	Significant Figure	Decimal Multiplier	Tolerance %	Voltage Rating*
Black	0	1	—	—
Brown	1	10	1*	100
Red	2	100	2*	200
Orange	3	1000	3*	300
Yellow	4	10,000	4*	400
Green	5	100,000	5*	500
Blue	6	1,000,000	6*	600
Violet	7	10,000,000	7*	700
Gray	8	100,000,000	8*	800
White	9	1,000,000,000	9*	900
Gold	—	0.1	5	1000
Silver	—	0.01	10	2000
No color	—	—	20	500

*Capacitors only.

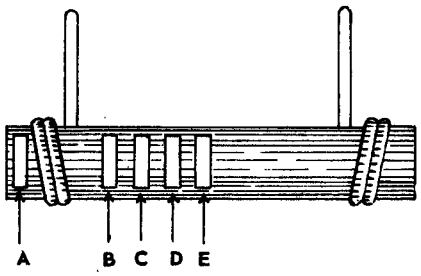
8-4. Composition resistors are color coded as shown in Figure 26. These bands of color refer to the resistor-capacitor color code, Table VIII. If the first band is of double width, it means the resistor is a wire-wound unit. Here is an example: First band, green. Second band, blue. Third band, orange. Fourth band, silver. This would be a 56,000 ohm 10% resistor; the first band, green, means the first figure is a 5; the second band, blue, means the second figure is a 6; the third band, orange, means "multiply by 1000". 56 multiplied by 1000 is 56,000. The fourth band, silver, means the actual resistance is within 10% of the marked value. If there were no fourth band, it would indicate that the resistor was within 20% of the marked value.



A – FIRST SIGNIFICANT FIGURE OF RESISTANCE IN OHMS.
B – SECOND SIGNIFICANT FIGURE.
C – DECIMAL MULTIPLIER.
D – RESISTANCE TOLERANCE IN PER CENT. IF NO COLOR IS SHOWN, THE TOLERANCE IS ±20%.

Figure 26. Fixed Composition Resistor Code.

8-5. Ceramic capacitors of the general purpose type use the same color code with regard to significant figures and multipliers as do resistors. See Figure 27. The fourth band indicates tolerance.



A – DIELECTRIC CHARACTERISTIC.
B – FIRST SIGNIFICANT FIGURE.
C – SECOND SIGNIFICANT FIGURE.
D – MULTIPLIER.
E – TOLERANCE.

Figure 27. Tubular Ceramic Capacitor Code.

8-6. Mica capacitors have been marked with many different color codes in the past. Shown here are the three codes most likely to be encountered. Most of the mica capacitors used in WRL kits have the actual numerical value stamped on the capacitor, making the use of a color code unnecessary in such cases.

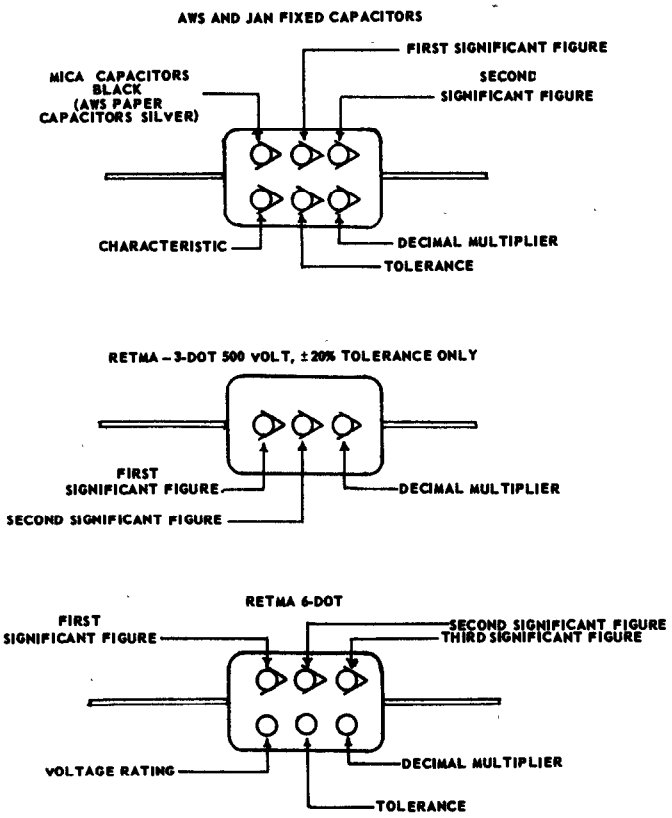
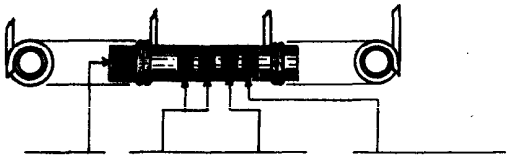


Figure 28. Mica Capacitor Color Code.

SECTION VIII

HELPFUL KIT BUILDING INFORMATION

8-7. With the increasing use of variable frequency oscillators in amateur transmitters, temperature compensating (TC) capacitors are being used with increasing frequency. The color code for temperature compensating capacitors is the same as for resistors in regards significant figures and multipliers, but differs in the tolerance reading and in the showing of temperature coefficient. See Figure 29.



	TEMPERATURE COEFFICIENT	CAPACITY SIGNIFICANT FIGURES	CAPACITY MULTIPLIER	TOLERANCE MMF.	TOLERANCE PERCENT
BLACK	ZERO (TCZ)	0	1	±2.0	± 20%
BROWN	.....	1	10	.....	± 1%
RED	N080	2	100	.....	± 2%
ORANGE	N150	3	1,000	.....	±2½%
YELLOW	.....	4	10,000	.....	.....
GREEN	N330(TCA)	5	.....	± .5	± 5%
BLUE	.....	6	.....	.....	GMV
VIOLET	N750 (TCN)	7	.....	.....	.....
GREY	.....	8	.01	±.25	.....
WHITE	.....	9	.1	±1.0	± 10%
ORANGE-ORANGE	N1500(TCL)	....	.....	.....	.....

Figure 29. Color Coding For TC Type Ceramic Capacitors.

8-8. The leads of a power transformer are of different colors of wire. The wire color indicates to which winding the lead is connected, as follows:

TABLE IX. POWER TRANSFORMER CODING.

Winding	Color Code
Primary Leads	Black
if tapped:	
Common	Black
Tap	Black/Yellow
Finish	Black/Red
High Voltage	Red
Center Tap	Red/Yellow
Rectifier Filament	Yellow
Center Tap	Yellow/Blue
Filament No. 1	Green
Center Tap	Green/Yellow
Filament No. 2	Brown
Center Tap	Brown/Yellow
Filament No. 3	Slate
Center Tap	Slate/Yellow

8-9. In the past, the electronic and electric portions of the industry used different, and sometime mutually confusing, symbols. Recently, a single set of symbols have been adopted. Those most applicable to electronics and radio are shown in Figure 29.

8-10. KIT ASSEMBLY. WRL kits come with all holes prepunched, so that a minimum number of tools will be needed for assembly of the kit. The following are recommended as suitable:

1-small knife for scraping off enamel insulation.

1-small screwdriver.

1-medium screwdriver.

1-long nose pliers.

1-diagonal or side-cutting pliers ("dikes").

1-small-tip soldering iron, at least 100 watts, or.....

1-soldering gun, at least 100 watts.

Rosin core solder, the amount depending on the kit. DO NOT USE ACID CORE SOLDER. USE ONLY ROSIN CORE OR "RADIO" SOLDER.

Additional tools which are helpful, but not absolutely necessary.

1set-"Spintite" or socket wrenches.

1-6 inch crescent wrench.

1-Wire stripper.

In mounting the components of the kit, follow the instructions closely and consult the pictorial diagrams for positioning. You will find in many cases a glance at the diagram will explain far better than several paragraphs of words. Route wires as shown in the pictures, as wire placement may be important. Be sure that socket keyways are positioned as in the pictures, so that the proper pin numbers will be in the proper location.

8-11. SOLDERING. A poor solder joint may cause faulty operation of the equipment. The importance of a good soldering job cannot be overstated. The secret of a good solder joint is simple: GET THE JOINT ITSELF HOT ENOUGH TO MELT THE SOLDER. It is not sufficient to melt the solder with the soldering iron and let it drip upon the joint; the joint itself must be hot enough to melt solder. Only in this way will the solder flow onto the joint and make a secure bond. Also, make a secure mechanical connection before applying solder, as the solder should be depended on only for an electrical connection and not for mechanical strength, i.e., twist the wire around a terminal so that the twist will hold even before solder is applied. Again, USE ONLY ROSIN CORE OR "RADIO" SOLDER. ACID CORE SOLDER WILL EAT AWAY THE WIRING AND IN TIME CAUSE FAILURE OF THE EQUIPMENT. DO NOT USE SOLDERING PASTE

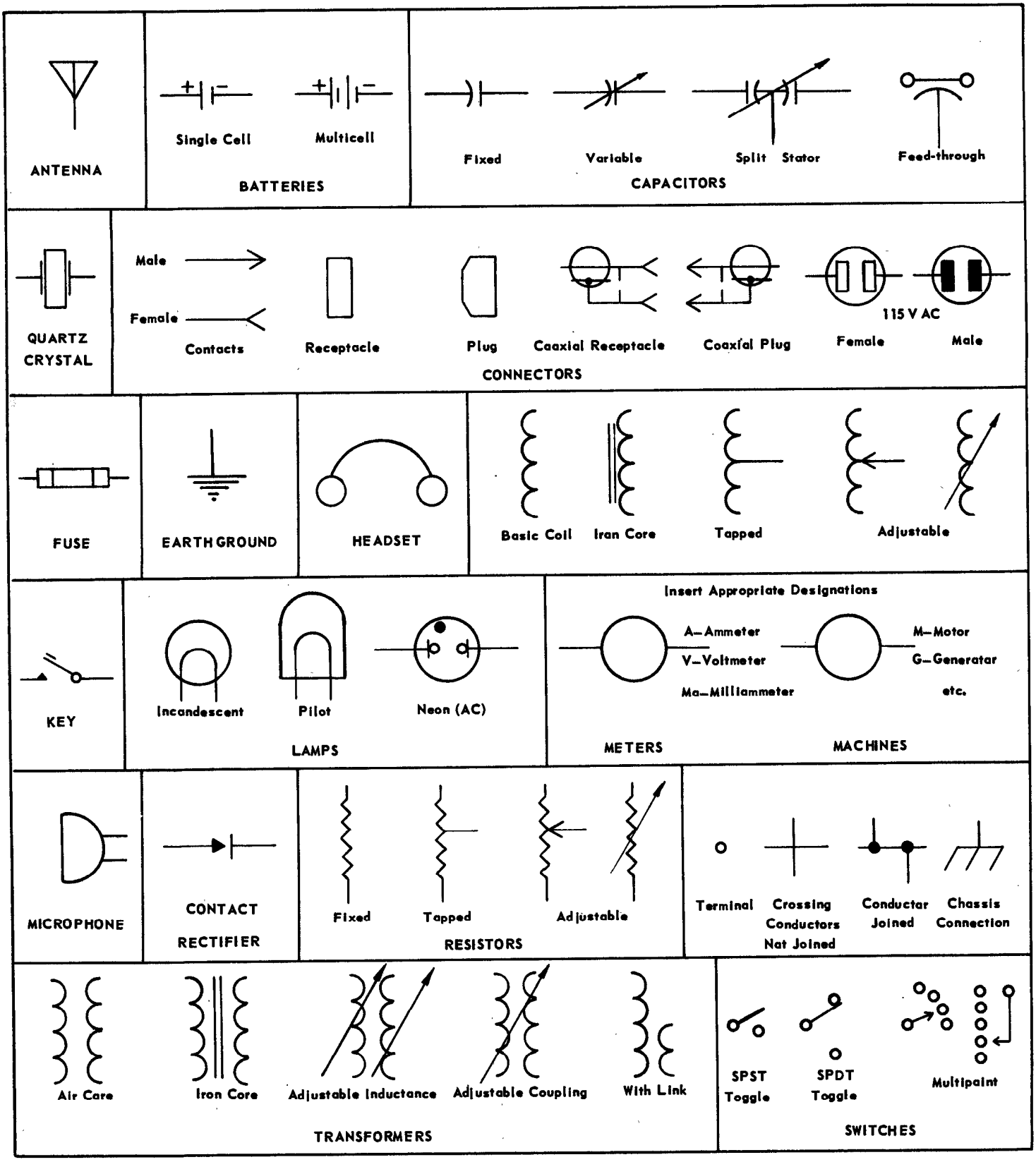


Figure 30. Electronic Symbols.

OR FLUX. AS IT WILL TEND TO BREAK DOWN INSULATION. Be sure that the surfaces to be soldered are clean and bright. Scrape any tarnish or enamel insulation off any wires or terminals which are to be soldered. Keep the tip of the soldering iron clean and bright and well-tinned with solder. A piece of steel wool is an excellent item with which to clean a soldering iron tip, even when the iron is on and hot.

SECTION IX

PARTS LIST

Quan.	Description	Circuit Designation	WRL Part No.
1	Capacitor, 15 mmfd-600 volt, ceramic tubular	C-1	1101-008
1	Capacitor, 120 mmfd-600 volt, ceramic tubular	C-2	1101-002
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-3	1101-003
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-4	1101-003
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-5	1101-003
1	Capacitor, 33 mfd-600 volt, ceramic tubular	C-6	1101-004
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-7	1101-003
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-8	1101-003
1	Capacitor, 200 mmfd, mica	C-9	1102-001
1	Capacitor, .0047 mfd-1000 volt, ceramic disc	C-10	1101-023
1	Capacitor, .001 mfd-1500 volt, ceramic	C-11	1101-011
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-12	1101-003
1	Capacitor, .005 mfd-600 volt, ceramic disc	C-13	1101-003
1	Capacitor, 12 mfd-700 volt, electrolytic	C-14	1106-007
1	Capacitor, 25 mfd-25 volt, electrolytic	C-15	1106-003
1	Capacitor, 250 mmfd, ceramic tubular	C-16	1101-007
1	Capacitor, 12 mfd-700 volt, electrolytic	C-20	1106-007
1	Choke, filter	CH-1	1300-008
1	Choke, filter	CH-2	1300-008
1	Receptacle, coaxial, type 83-1R	CO-1	2000-004
1	Receptacle, coaxial, type 83-1R	CO-2	2000-004
1	Fuse, 3 ampere, type 3AG	F-1	1500-002
1	Capacitor, filter, 10-10-10/500 volt, triple section	FC-1	1106-002
1	Receptacle, microphone	J-1	2000-005
1	Jack, key, closed circuit	K-1	2004-001
1	Coil, 6M oscillator	L-1	1400-033
1	Coil, tapped oscillator (80-40M)	L-2	1400-032
1	Coil, Pi network	L-3	1400-020
1	Coil, 10/20M oscillator	L-4	1400-036
1	Coil, 6M final amplifier	L-5	1400-034
1	Coil, 6M coupling link	L-6	1400-035
1	Coil, L matching	L-7	1400-037
1	Meter, dual scale	M-1	2500-001A
1	Couplate, type PC-91	PC-91	1109-002
1	Couplate, type PC-81	PC-81	1109-001
1	Pilot lamp assembly, green jewel	PL-1	2400-001
1	Pilot lamp assembly, red jewel	PL-2	2400-002
1	Choke, 6M parasitic suppressor	PS-1	1301-013
1	Transformer, power	PT-1	1200-002
1	Resistor, 47K ohms, 1/2 watt	R-1	1000-002
1	Resistor, 22K ohms, 1/2 watt	R-2	1000-008
1	Resistor, 120 ohms, 1/2 watt	R-3	1000-003
1	Resistor, 120 ohms, 1/2 watt	R-4	1000-003
1	Resistor, 22K ohms, 1/2 watt	R-5	1000-008
1	Resistor, meter shunt, .3 ohm	R-6	1010-001
1	Resistor, 450 ohms, 10 watt	R-7	1003-006
1	Resistor, 12,500 ohms, 10 watt	R-8	1003-007
1	Resistor, 56 ohms, 1/2 watt	R-9	1000-010
1	Resistor, 6000 ohms, 10 watt	R-10	1003-010
1	Resistor, 50,000 ohms, 10 watt	R-11	1003-009
1	Resistor, 47K ohms, 1/2 watt	R-12	1000-002
1	Resistor, 220K ohms, 1/2 watt	R-13	1000-019
1	Resistor, 2200 ohms, 1/2 watt	R-14	1000-006
1	Resistor, 1500 ohms, 1/2 watt	R-15	1000-007
1	Resistor, 68,000 ohms, 2 watt	R-16	1002-006
1	Resistor, 22,000 ohms, 1 watt	R-17	1001-010
1	Resistor, 390 ohms, 2 watt	R-18	1002-005
1	Resistor, 22,000 ohms, 2 watts	R-19	1002-003
1	Choke, RF, 2.5 mh-50 ma	RFC-1	1301-001
1	Choke, RF, 2.5 mh-50 ma	RFC-2	1301-001
1	Choke, RF, 2.5 mh-200 ma	RFC-3	1301-002

SECTION IX

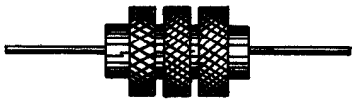
PARTS LIST

Quan.	Description	Circuit Designation	WRL Part No.
1	Switch, toggle, DPST	SW-1	2101-002
1	Switch, toggle, DPDT	SW-2	2101-001
1	Switch, toggle, DPDT	SW-3	2101-001
1	Switch, rotary, 2-wafer	SW-4	2100-002
1	Switch, slide, SPST	SW-5	2102-001
1	Switch, slide, SPST	SW-6	2102-001
1	Condenser, variable, 365 mmfd	TC-1	1105-009
1	Condenser, variable, 365 mmfd	TC-2	1105-009
1	Condenser, variable, 75 mmfd	TC-3	1105-006
1	Potentiometer, 500K w/switch attached	VC-1	2300-002
1	Socket, crystal	X-1	1602-001

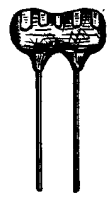
Quan.	Description	WRL Part No.
1	Cabinet	1700-009
1	Chassis, punched	1900-004
1	Condenser mounting plate†	
1	Fuse post	1500-006
1	Grommet, 1/2"	3200-001
3	Grommet, 3/8"	3200-002
1	Harness assembly, large	2703-001
1	Harness assembly, small	2703-002
2	Insulators, Feed through	2200-001
1	Insulator, 2-1/2" bakelite	2201-002
2	Knobs, large skirted	2600-009
3	Knobs, small w/arrow indicator	2600-005
1	Lamp, type 6S6	3800-003
1	Lamp, type #47	3800-002
10	Lug, solder, #6	2006-004
3	Lug, solder, #8	2006-002
1	Lug, double solder, #6	2006-006
2	Lug, teardrop solder, #6	2006-008
2	Lug, solder, #10	2006-003
2	Lug, solder, #4	2006-005
15	Nut, hex, 6-32x1/4	2901-003
4	Nut, hex, 2-56x3/16	2901-007
12	Nut, hex, 8-32x5/16	2901-004
4	Nut, hex, 4-40x3/16	2901-001
3	Nut, hex, 7/16	2901-006
1	Panel	1800-006
1	Plate cap, 3/8"	2500-003
1	Plug, octal, bakelite	2001-009
1	Power cord, AC, w/plug	2700-042
1	Ring, socket retainer*	

Quan.	Description	WRL Part No.
4	Rubber mounting feet	3300-010
2	Screw, 2-56x5/16	2900-021
1	Screw, 4-40x1/2	2900-002
6	Screw, 4-40x3/8	2900-001
6	Screw, 6-32x1/4	2900-003
9	Screw, 8-32x1/2	2900-008
24	Screw, 6-32x5/16	2900-004
16	Screw, self-tapping, #6x1/4	2900-017
4	Screw, self-tapping, #6x3/8	2900-016
1	Shield, tube, for 6U8	1600-020
1	Socket, octal mica	1600-004
4	Socket, octal wafer	1600-008
1	Socket, 9-pin miniature	1600-015
21"	Spaghetti, #16 yellow	2800-001
1	Tie strip, 1-lug	2002-006
1	Tie strip, 2-lug	2002-002
1	Tie strip, 3-lug	2002-003
1	Tie strip, 5-lug	2002-004
1	Tube, 6U8	
1	Tube, 6L6GB	
1	Tube, 6V6	
1	Tube, 6146	
1	Tube, 5U4GB	
6	Washer, lock, #4	3101-001
22	Washer, lock, #6	3101-002
9	Washer, lock, #8	3101-003
1	Washer, lock, 7/16	3101-005
4 ft.	Wire, #20, bus	2700-005
1 ft.	Wire, hook-up, #20 black	2700-015
2 ft.	Wire, hook-up, #20 yellow	2700-032
7"	Wire, shielded,	2700-003
17"	Wire, POSJ, double conductor, rubber	2702-001
20"	Wire, hook-up, #20 solid	2700-001
15"	Wire, high voltage, #20 white	2700-002

* Part of mica-filled octal socket
† Part of triple section filter condenser



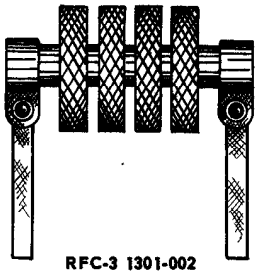
RFC-1 & 2 1301-001



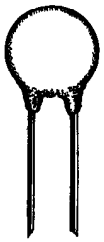
600 V TUBULAR

1/2 WATT RESISTOR

1 WATT RESISTOR

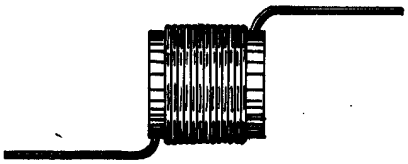


RFC-3 1301-002

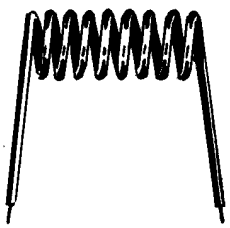


600 V DISC CONDENSER

PS-1 PARASITIC CHOKE



L-4 8½ TURNS 1400-036



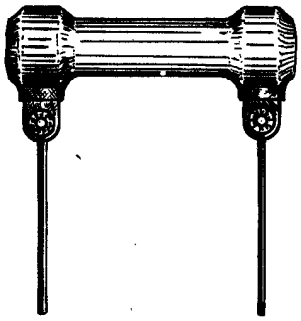
L-1 11 TURNS

C-11 1101-011

NO. 6 TEARDROP SOLDER LUG 2006-008

NO. 10 TEARDROP SOLDER LUG 2006-009

R-6 METER SHUNT
1010-001



R-11 50,000 OHMS 10 WATT

NO. 6 SOLDER LUG 2006-001

NO. 6 DOUBLE SOLDER LUG
2006-006

R-7-8-9-10 PW 10 WATT

Figure 31. Parts Identification.

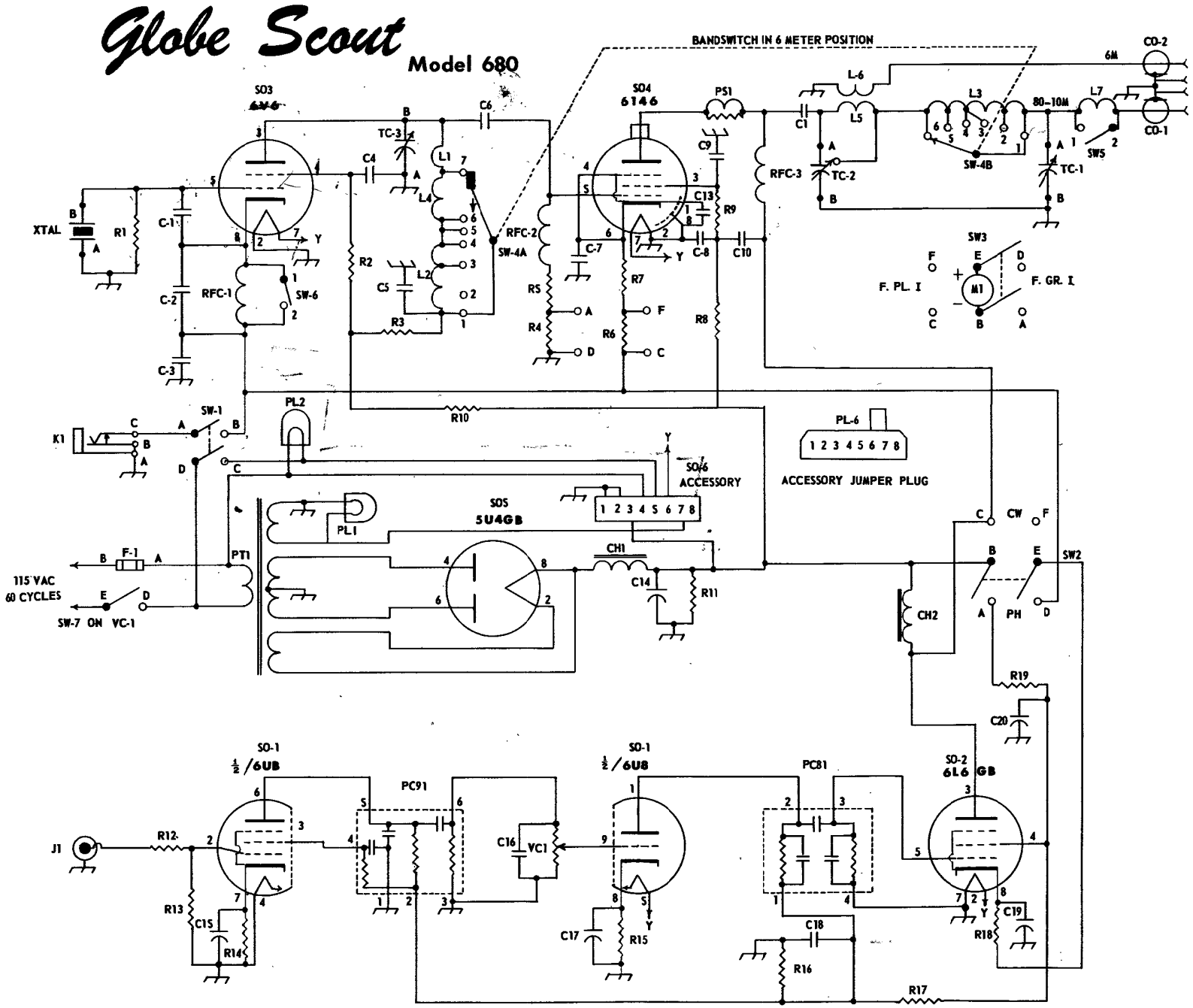


Figure 32. Schematic Drawing Of Globe Scout Model 680.