

**INSTRUCTION MANUAL**

**GONSET**  
**G-77**  
**MOBILE TRANSMITTER**

**GONSET DIVISION**

**L. A. YOUNG SPRING & WIRE CORP.**

**801 S. MAIN ST.**



**BURBANK, CALIF.**

# **GONSET**

## **G-77**

### **MOBILE TRANSMITTER**

#### *Warranty Policy*

The Gonset Company warrants its equipment, when properly registered, against defects in workmanship, materials, and construction under normal use and service for a period of 90 days from the date of original purchase. Under this warranty our obligation is limited to repairing or replacing any defective parts.

This warranty does not apply to any equipment which has been tampered with in any way, or which has been misused or damaged by accident or negligence, or which has had the serial number removed, altered or effaced.

On equipment employing a vibrator, all components are covered by the warranty with the exception of the vibrator itself.

This warranty is valid only when the enclosed card is properly filled in and returned within ten days from purchase date.

**DO NOT SEND EQUIPMENT TO THE FACTORY WITHOUT FIRST SECURING AUTHORIZATION TO DO SO.**

**THIS WARRANTY DOES NOT INCLUDE TRANSPORTATION COSTS TO AND FROM THE FACTORY.**

**GONSET DIVISION**

**L. A. YOUNG SPRING & WIRE CORP.**

801 SOUTH MAIN STREET

BURBANK, CALIFORNIA

## TECHNICAL CHARACTERISTICS

### G-77 TRANSMITTER

{ Consists of Model 3116 RF Section, Model 3117 Modulator-Power Supply }

TYPE OF EMISSION:	AM phone, CW
FREQUENCY RANGE:	3.5 — 4.0 mc 7.0 — 7.3 mc 14.0 — 14.35 mc 21.0 — 21.45 mc 28.0 — 29.7 mc
PLATE POWER INPUT:	50-60 watts, nominal
FREQUENCY CONTROL:	self-contained variable-frequency oscillator optional quartz crystal
ANTENNA REQUIREMENTS:	50-ohms unbalanced
TUBE FUNCTIONS:	6CL6 vfo, 6CM6 multiplier, 6146 final amp, 12AT7 speech amp, 12AU7 driver, (2) 6BQ6-GA class-B modulator, OA2 voltage reg.
MICROPHONE REQUIREMENTS:	high-impedance dynamic or reluctance
POWER REQUIREMENTS:	13.5 v dc at 3 amp (standby) 9 amp (opr) or 6.3 v dc at 5 amp (standby) 17 amp (opr)
OVERALL DIMENSIONS:	4 1/2" h x 6 1/2" w x 9" d (transmitter) 7" h x 7 3/4" w x 10" h (modulator)
WEIGHT:	8 lb. (transmitter) 17 1/2 lb. (modulator)

## GENERAL DESCRIPTION

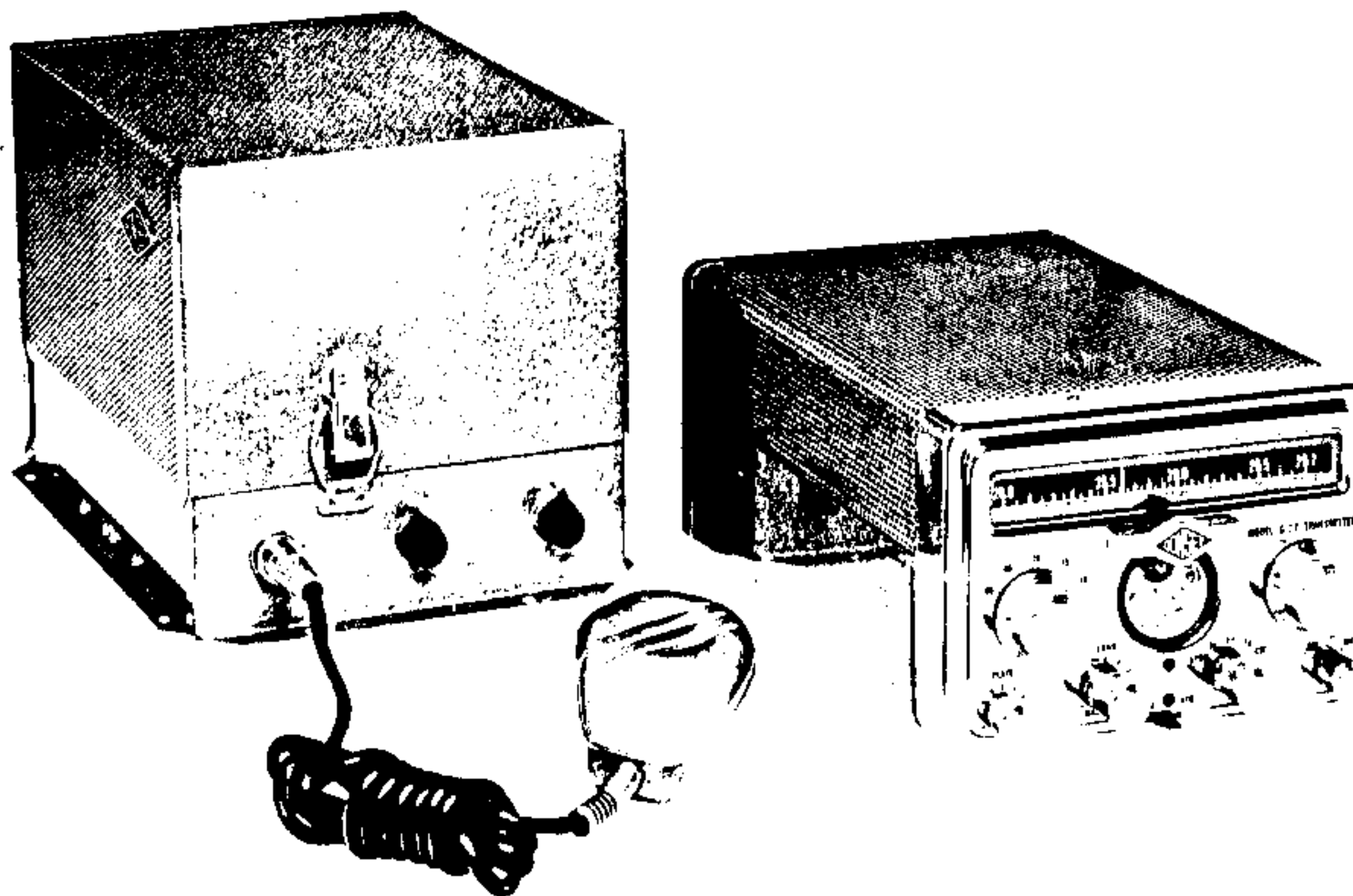
The GONSET G-77 Transmitter, consisting of the Model 3116 RF Section and the Model 3117 Modulator-Power Supply, is designed primarily for the mobile transmission of AM-phone signals in the 10 through 80-meter amateur bands. The unit features a highly-stable variable-frequency oscillator, full band-switching, generous bandspreading, and high-level class-B modulation. Provision for the optional use of a crystal for frequency control is included. A meter is provided which, through a meter switch, monitors important circuits of the transmitter.

The Model 3117 Modulator-Power Supply operates from either a 6 or 12-volt d-c power source and furnishes all required operating and modulating power. A high-gain speech amplifier permits full

modulation of the transmitter from a high-impedance dynamic or reluctance microphone of average output level. The modulator employs optimized integral speech clipping. This increases "talk power" without danger of over-modulation splatter of the "buckshot" type.

High-frequency non-thermionic rectifiers in the power supply combined with class-B operation of the modulator provide an unusually low battery drain during both standby and transmitting periods.

An installation kit consisting of all necessary plugs, cables (except battery cables) and fuses for a normal 12-volt installation is supplied. Sufficient cabling is furnished to locate the modulator-power supply up to 20 feet from the transmitter.



# INSTALLATION

## MOUNTING

Brackets and other hardware are furnished for mounting the Model 3116 RF Section under the dashboard of an average automobile. Mounting details for a typical installation are given in the accompanying illustration. Since the point at which the mounting bracket attaches to the transmitter will vary with different automobiles, no holes are provided in the transmitter case for bracket attachment. These holes ( $\frac{1}{8}$ " ) must be drilled and the 10-32 binding-head attaching screws fastened to the case. Note that these screws are to be fastened with the heads *inside* the case to provide adequate clearance for the transmitter chassis. With the mounting bracket secured to the dashboard, fasten the case to the bracket with the wing nuts furnished. After the firewall brace is installed as shown, insert the transmitter chassis into the case and secure with the three bottom screws.

The Model 3117 Modulator-Power Supply is normally located in the trunk of the automobile. Other locations should be considered only if they provide protection from dust and grease and do not get excessively hot. Proper ventilation of the unit is important; operation in ambient temperatures above 135° F will shorten the life of the vibrator, filter capacitors, and rectifiers.

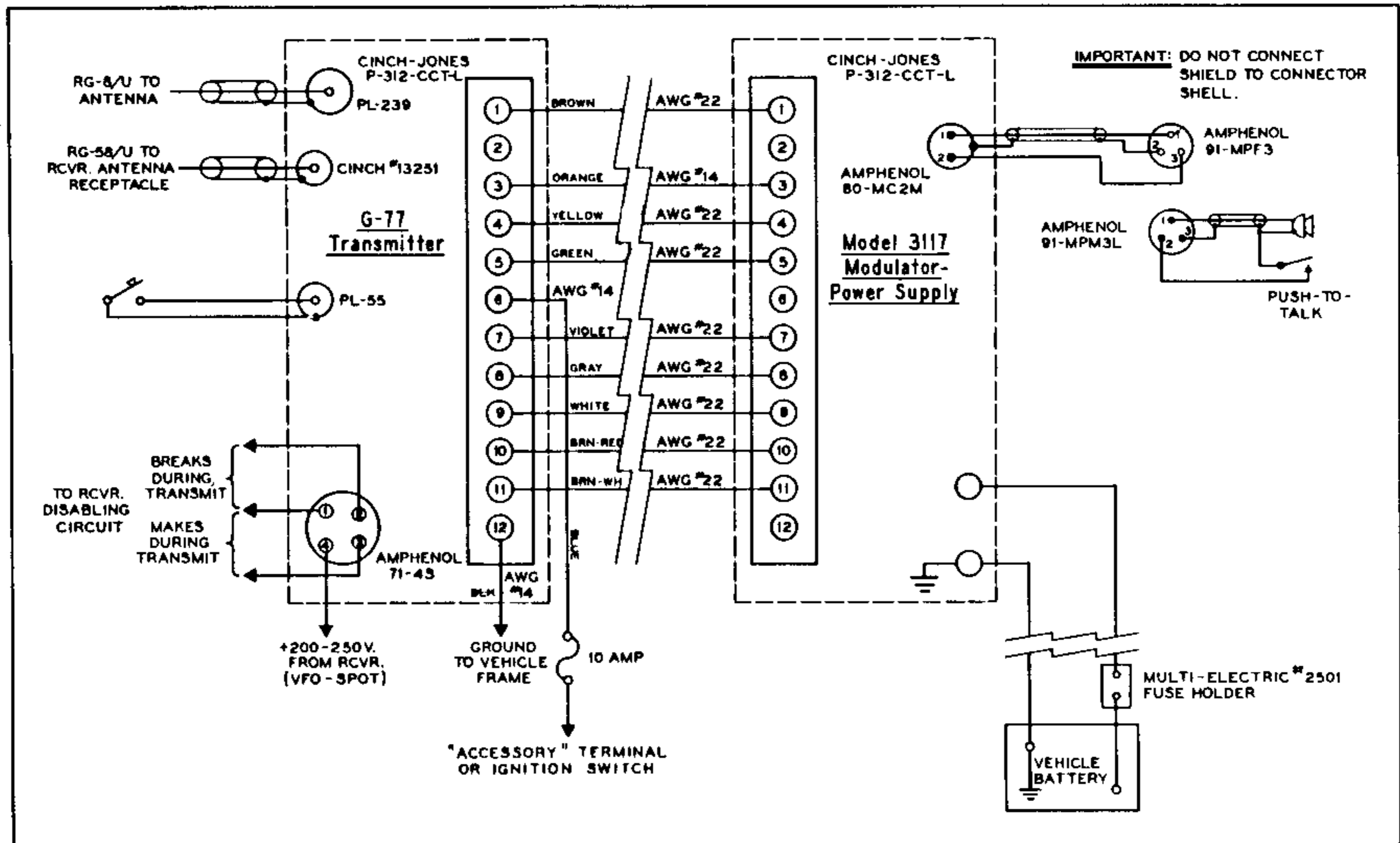
Eight No. 10 x  $\frac{5}{8}$ " self-tapping screws are furnished for securing the modulator-power supply to the vehicle. Do not use the packing screws for this purpose. When drilling the mounting-screw holes, use no larger than a No. 28 drill bit.

## CABLING

After the r-f section and modulator-power supply have been mounted, the power and microphone cables are routed between the two units and cut to correct length. Connections to plugs are given in the accompanying cabling diagram. When wiring the microphone disconnect plugs, make certain that the cable shield is not connected to the plug shells; hum may appear in the modulated output if the cable shield is grounded at any point other than the modulator-power supply chassis. The disconnect plug may be located at any convenient point near the r-f section and does not require mounting holes to be drilled in the vehicle. It is merely necessary to tape the plug to any nearby object.

For those who object to the cost of automotive battery cable for power leads between the battery and the modulator-power supply, a satisfactory substitute for 12-volt installations is RG-8 U coaxial cable or the older, obsolete "PT-5" 50 ohm cable. The center conductor of this cable is adequate for the "hot" battery lead and the outer braid may be used as the return. Regardless of the type cable used, a "cold" battery lead should be run from the modulator-power supply to the grounded terminal of the battery. Do not trust the frame of the automobile for this circuit;

anti-rattle inserts and motor mounts often cause the grounding of various parts of the vehicle to be unreliable.



It is advisable to locate the 15-amp main fuse at a point near the battery since this protects against accidental grounding of the "hot" battery lead at any point along the route to the modulator-power supply. It is recommended that the filament and control battery lead be connected to the ignition switch or to an "accessory" terminal since this prevents operation of the equipment in the owner's absence.

If the installation is to be made in a 6-volt automobile, several modifications are necessary. The main fuse must be changed to one with a 30-amp rating. Also, since current consumption is doubled when operating from a 6-volt source, heavier battery cabling is required. Here again, RG-8/U cable may be used but the center conductor and outer braid must be paralleled to form the "hot" lead. The return lead may be another length of RG-8/U or aluminum TV grounding wire.

Several jumper changes must be made in both the r-f section and modulator-power supply for 6-volt operation. To convert the r-f section, make the following changes:

- a. Locate the small five-connection terminal strip immediately forward of the T/R relay. Disconnect the jumper between terminals D and E. Connect jumpers between terminals A and B and between terminals C and D.
- b. Locate the 30-ohm, 5-watt resistor (R26) on the four-connection terminal strip immediately below key jack J2 on the rear vertical chassis. Shunt this resistor with a wire jumper.

To convert the modulator-power supply, make the following changes:

- a. Remove the jumpers connected between the following pairs of terminals: A and B, E and F, H and I.

- b. Connect jumpers between the following pairs of terminals: B and C, D and E, I and J, K and L, M and N.

## RECEIVER DISABLING AND FREQUENCY SPOTTING VOLTAGE

Receiver disabling contacts on the T/R relay of the r-f section are available at connector J4. Depending upon the type of disabling circuit used, connect either the contacts that make or break to the receiver through short lengths of insulated wire. It should be noted that the relay contacts are "floating" with respect to ground and are heavy enough for practically any disabling scheme.

If the frequency spotting feature of the transmitter is desired, connect a lead from the receiver plate supply to pin 4 of connector J4. This voltage should be in the range 200-250 volts and capable of delivering 25 ma. Most receiver power supplies will safely deliver this additional current for short periods of time.

## ANTENNA CONNECTIONS

The transmitter is designed primarily to operate into a resonated whip antenna through RG-8/U coaxial cable. For satisfactory operation it is imperative that the antenna present a non-reactive impedance of about 50 ohms at the point of connection to the coaxial cable. Various methods for obtaining this condition are outlined in the mobile handbooks published by ARRL and CQ magazine. When installing the antenna cable, be sure that the outer braid is securely grounded near the point of connection to the antenna. *Do not trust the antenna-base mounting bolts for this purpose.*

# OPERATION

## GENERAL

The number of controls used in the G-77 Transmitter has been reduced to a minimum while retaining flexibility of adjustment under various antenna loading conditions. All circuits except the final-amplifier plate and load adjustments are gang tuned so that tuning the transmitter consists merely in setting the slide-rule dial to the desired frequency and adjusting the final amplifier for the correct load condition.

## INITIAL ADJUSTMENT

After installation has been completed the transmitter should be checked for proper operation. With the car engine running at a fast idle, set the meter switch to  $I_r$  and the FIL. switch to ON position. The dial lamps and the modulator filaments should light. Adjust the band change switch to the desired band and the tuning control to frequency. Then set the LOAD control to a position near the clockwise end of rotation. Press the microphone button and quickly adjust the PLATE control for resonance as indicated by a pronounced dip on the meter.

Do not press the button for more than a few seconds at a time during this adjustment since it is possible to permanently damage the final-amplifier tube by prolonged periods of improperly-loaded operation. Note the meter reading as the PLATE control is resonated. If the reading is less than 120 ma., set the LOAD control to a more counterclockwise position and retune the PLATE control. The meter reading at resonance should be somewhat higher. Repeat this procedure until the meter reads 120 ma. with the PLATE control adjusted for *minimum* current. The final-amplifier plate circuit is now properly adjusted.

NOTE: When operating on the 80-meter band it may be found impossible to reduce the meter reading to 120 ma. even with the LOAD control at the full clockwise position. If this condition is encountered, connect a 500 mmf mica capacitor across terminal board J3 at the rear of the transmitter and readjust the LOAD and PLATE controls as before to obtain the correct meter reading. The added capacitor has no effect on bands other than 80 meters.

Turn the meter switch to  $I_r$  position. Press the microphone and note the meter reading. With the vehicle motor running and the battery charging at its normal rate, the reading should be approximately 2.5 ma. If the reading is less than 2.0 ma. or greater than 3.0 ma., adjust potentiometer R6 at the rear of the

transmitter as required. Never attempt to operate the transmitter with an  $I_r$  reading greater than 3 ma.; reduced output and possible tube damage will result. The transmitter has been factory adjusted to provide the correct amount of grid current on all bands under average battery-voltage conditions. If, due to abnormally high battery voltage, it is found that the grid current cannot be reduced to 3 ma. by adjusting potentiometer R6, remove the transmitter from its case and remove the jumper connected across resistor R5. This resistor is located adjacent to the 6CM6 multiplier tube socket.

With the transmitter properly loaded and adjusted for correct grid current, turn the meter switch to  $I_m$  position. Adjust the GAIN control on the modulator-power supply until the meter swings to approximately 80 ma. on peaks when speaking directly into the microphone in a normal tone. Higher readings will increase distortion without any substantial improvement in "talk power." Lower readings indicate that the transmitter is not being modulated to full capacity.

The SPOT function of the meter switch may be checked at this time. Set the meter switch to SPOT position and tune the receiver to the transmitter frequency. A strong carrier signal should be heard. Note that it is not necessary to press the microphone button to obtain the spotting signal. Return the meter to  $I_r$  position. This completes the initial adjustment of the transmitter.

BAND	CRYSTAL FREQ.
80	1.75 - 2.0 MC
	3.5 - 4.0 MC
40	3.5 - 3.65 MC
	7.0 - 7.3 MC
20	3.5 - 3.5875 MC
	7.0 - 7.175 MC
15	3.5 - 3.575 MC
	7.0 - 7.15 MC
10	7.0 - 7.425 MC

CRYSTAL CHART

## **OPERATIONAL PROCEDURES**

Although the G-77 Transmitter contains an extremely stable variable-frequency oscillator, provisions are included for crystal-controlled operation. Crystal operation is obtained by plugging a suitable crystal into the socket immediately below the meter and switching the XTAL-VFO switch to XTAL position. Set the tuning dial to the crystal frequency or the desired harmonic (refer to the crystal chart) and turn the meter switch to I. position. Now press the microphone button and adjust the tuning dial for maximum meter indication. Finally, adjust the PLATE and LOAD controls for proper final-amplifier loading. As with VFO operation, make these adjustments quickly since sustained off-resonance operation may damage the final-amplifier tube.

CW operation of the transmitter without addition of a suitable key-click filter is not recommended except in emergencies. Information on keying filters is given in THE RADIO AMATEUR'S HANDBOOK.



# THEORY OF OPERATION

## GENERAL

The Model 3116 RF Section contains a 6CL6 variable-frequency oscillator, a 6CM6 frequency multiplier, and a 6146 final amplifier. All tuned circuits with the exception of the final-amplifier plate circuit are gang tuned by a single front-panel control. Likewise, a single control accomplishes all circuit switching as the transmitter is changed from one band to another.

A multi-purpose switch provides for phone or CW operation, frequency spotting, and metering of amplifier grid current, amplifier cathode current, and modulator cathode current.

## OSCILLATOR

The variable-frequency oscillator is connected in a modified Colpitts circuit with capacitors C24 and C25 providing the voltage division required for oscillation. The oscillator operates at various sub-multiples of the final output frequency as shown in the chart below. On 80 and 40 meters an r-f choke, broadly resonant at 2500 kc, is inserted in the oscillator plate circuit and the fundamental frequency of oscillation is applied to the next stage. On all other bands the plate circuit is tuned to the second harmonic of the oscillator frequency.

Due to the compact construction of the transmitter, a number of compensating capacitors are required to stabilize the oscillator frequency against changes in temperature. These capacitors are physically located in various parts of the oscillator and their placement is quite critical.

Switch SW2, when in XTAL position, converts the oscillator to crystal-controlled operation. The crystal appears as a parallel-resonant tuned circuit and capacitors C26 and C29 supply the voltage division for the modified Colpitts configuration.

## MULTIPLIER

Output from the oscillator plate circuit is applied to the grid of the 6CM6 multiplier stage. On all bands except 15 meters, this stage doubles the frequency of the signal appearing on the plate of the oscillator tube. On 15 meters the stage operates as a frequency tripler.

OSCILLATOR GRID	OSCILLATOR PLATE	MULTIPLIER PLATE
160	160	80
80	80	40
80	40	20
80	40	15
40	20	10

FREQUENCY MULTIPLICATION CHART

Resistor R5 and potentiometer R6 in the cathode of the multiplier tube adjust the overall output of the stage. The potentiometer provides a limited range of adjustment to insure that the final amplifier will not be overdriven or underdriven. Switch SW1-D in the screen grid circuit of the multiplier sets the screen voltage of the tube so that equal drive is delivered to the final amplifier on all bands. The voltages selected by this switch are obtained from voltage divider R8 through R17. Adjustment of this circuit is made at the factory and should not require changing.

## FINAL AMPLIFIER

Output from the 6CM6 is capacity coupled to the grid of the 6146 which operates as a straight amplifier on all bands. Since excitation is never removed from this tube when the transmitter is operating, no protective bias is required.

Jack J2 in the cathode of the final amplifier permits keying of the stage when CW operation is desired. It should be noted that objectionable key clicks may be produced in nearby receivers when keying the transmitter unless a key-click filter of the inductance-capacity type is inserted in the key lead. No filter was included in the transmitter since the relatively small amount of CW operation encountered in mobile applications would not justify the additional cost and space required. The exciter portion of the transmitter operates continuously when the function switch is in CW position. Therefore, it is necessary to turn the switch to IG during periods between transmissions.

To prevent any possibility of instability in the final amplifier under the various load conditions encountered in mobile applications, a neutralizing circuit is included in the amplifier design. A small amount of signal from the plate of the tube is returned through capacitors C49 and C50 to the bottom end of the multiplier plate coil to cancel the voltage developed by the grid-to-plate capacity of the final-amplifier tube. The neutralizing capacitor is set at the factory and should require no further adjustment.

Pi-section coupling is used to match the amplifier plate to the antenna. A section of the bandswitch adjusts the amount of inductance in this network to obtain correct loading on each band with a nominal 50-ohm antenna impedance. Connector J3 at the rear of the transmitter chassis permits additional capacity to be added to the output side of the pi-section network on 80 meters if required. This added capacity is automatically removed from the circuit when the transmitter is operated on any of the other bands.

## T/R RELAY

In addition to transferring the antenna from the transmitter to the receiver, the transmit-receive relay REL-1 performs several other functions. As the relay becomes de-energized, resistor R25 is shunted across the 250-volt exciter supply and this voltage drops to a very low value. This causes the excitation to be removed from the final amplifier and the increased current drawn by this stage quickly discharges the power-supply filter capacitors. Thus, the transmitter is cut off quickly and without "hangover."

## MODULATOR-POWER SUPPLY

The Model 3117 Modulator-Power Supply has been carefully designed to provide high efficiency with minimum battery drain. The speech amplifier passes only those audio frequencies that contribute to intelligibility. Low audio frequencies are attenuated by the short time constants of the interstage coupling circuits, and high frequencies are rolled off by shunt capacities. The design not only conserves audio power but also reduces the background noise usually encountered in mobile installations.

The class-B modulator is operated with control grids grounded and audio signal applied to the screen grids. Connected in this manner, the tubes operate at very low resting plate current even though no bias is applied. Meter shunt R210 in the cathodes permits metering of the modulator current. Modulation transformer T3 presents a high plate-to-plate load impedance to the modulator tubes which provides a speech-clipping characteristic at modulation percentages approaching 100%. This permits the gain control to be advanced beyond the point that would ordinarily produce overmodulation, thus increasing the transmitter "talk power." High-frequency components generated by this clipping action are attenuated by the leakage inductance of the transformer in conjunction with the secondary shunt capacity.

Power-supply vibrator VIB1 is the center-resting type with separately-connected armature coil. When the armature coil is not energized the battery supply voltage is disconnected from the power supply. Therefore, a heavy on-off relay is not required in the battery circuit. The power-supply rectifiers are connected in a full-wave voltage-doubler circuit. Since these rectifiers require no filament current and exhibit practically no voltage drop they contribute to the low battery drain of the unit.

Relay REL2 protects the vibrator and rectifiers from the heavy charging current that would normally flow when the power supply is first turned on. The relay is designed to close only when the voltage on filter capacitor C303 approaches full charge. Since R217 is in the circuit until this time, charging current is limited to a safe value, thus preventing excessive sparking and "flare" at the vibrator. As the relay closes, R217 is removed from the circuit and, simultaneously, the plate load of the final amplifier and modulator is connected to the power supply.

It may be noted that under normal loading conditions a prolonged whistle into the microphone causes the final-amplifier cathode current to decrease somewhat, while normal speech has little or no effect on the meter. This effect is due to the fluctuating plate current of the class-B modulators causing a slight drop in plate voltage. Under conditions of average speech, the additional power-supply drain due to modulator plate current has only a small effect on power-supply output voltage. However, with a prolonged whistle the output voltage drops, causing decreased final-amplifier current. An r-f indicator (such as a neon lamp) connected to the antenna will show that the transmitter is "modulating upward" under these conditions and the effect should not be considered detrimental to performance. It is *not* downward carrier shift as might occur from non-linearity in the final-amplifier stage.

# SERVICE INSTRUCTIONS

## LUBRICATION

All mechanical parts of the transmitter have been factory lubricated and further lubrication is not recommended until the need becomes obvious. The band-switch and tuning mechanism can become stiff or erratic in operation after extended use and this may be remedied by the sparing application of Lubriplate or a similar lubricant. Clean the wiping parts thoroughly with carbon tetrachloride before applying new lubrication. An occasional dusting of the entire chassis with a small brush or dry compressed air is advisable. Make certain that no components are disturbed during this operation.

## MALFUNCTIONING

Experience has shown that nearly 90% of the causes of malfunctioning are traceable to defective tubes. Therefore, when the reason for lack of performance is not immediately obvious, check all tubes before proceeding further. All component parts in the G-77 Transmitter are operated conservatively and parts failures will be very infrequent.

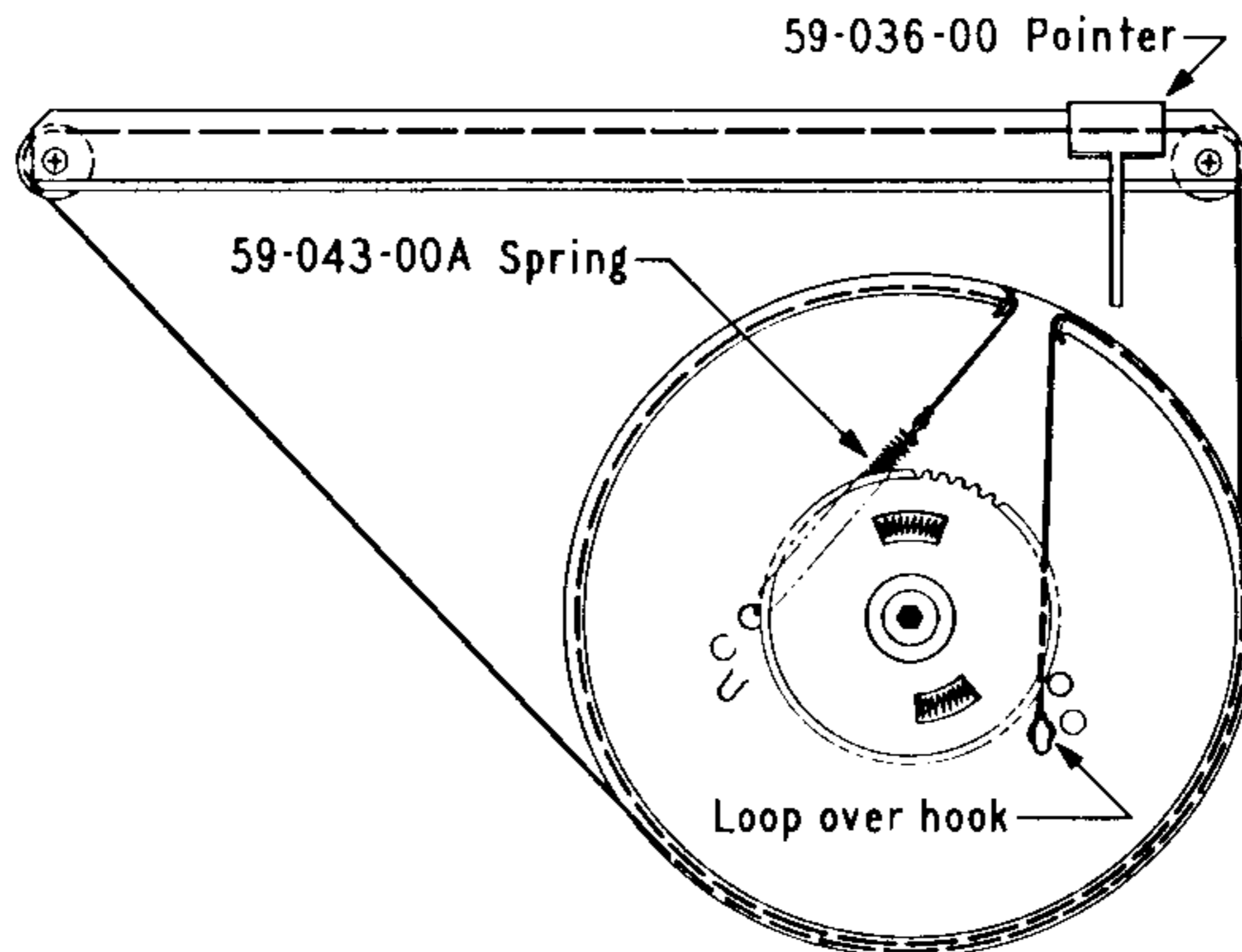
## ALIGNMENT

Misalignment of the transmitter is evidenced by low amplifier grid current and faulty dial calibration. If, after extended use, it is found impossible to obtain at least 2.0 ma. grid current and all other indications are normal, the oscillator plate and multiplier plate coils should be checked for correct alignment. In all cases set the tuning dial to the center of the band and adjust appropriate slugs for maximum grid current. A General Cement No. GC-8606 or equivalent alignment tool is required for these operations.

If the dial calibration becomes faulty, first determine if all bands are in error and if the error is constant across the band. Also, before proceeding further, make certain that the dial pointer is correctly indexed. With the tuning capacitor turned to the maximum-capacity stop, the dial pointer should be aligned with the indexing mark at the low-frequency end of the 10-meter dial scale. If the calibration error appears to be constant at all points across the band and all bands are in error, a slight adjustment of trimmer C14 on the first wafer of the bandswitch may suffice to correct the error. If this adjustment is not sufficient, each band should be touched up with the individual band trimmers. Note that C14 is used to trim the 10-meter band but will affect the calibration on all bands. *It is important, therefore, that the 10-meter band be corrected before attempting to adjust other bands.*

If it is found that calibration error appears at one end of the tuning dial only, it will be necessary to readjust the oscillator-grid coil slugs in addition to the trimmer capacitors. This procedure is similar to the tracking adjustment required in receiver alignment and no specific instructions are needed for those familiar with that technique.

If it is found necessary to replace the 6BQ6 modulator tubes care should be taken that the replacement tubes are well matched. Tubes may be easily tested for proper matching by installing one new tube and noting the resting modulator current with the other socket empty. Then remove this tube and install the other new tube, again noting the current. For correct modulator performance the two currents should be equal within 10%.



TUNING CORD STRINGING DIAGRAM

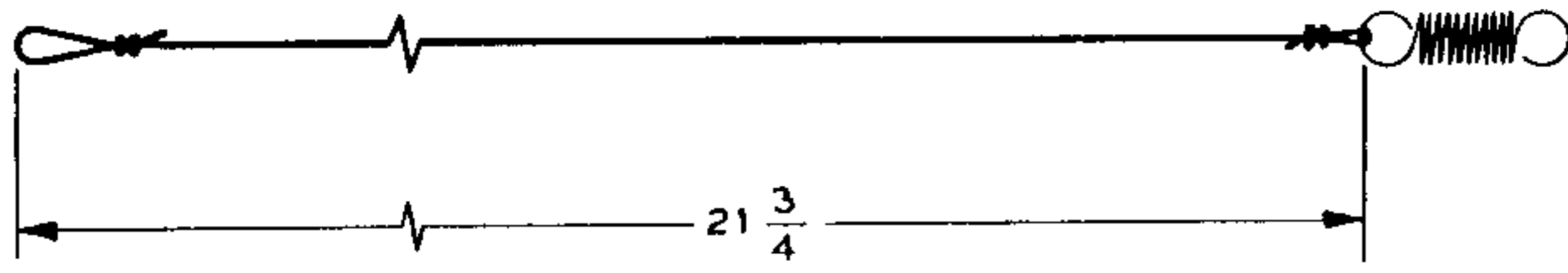
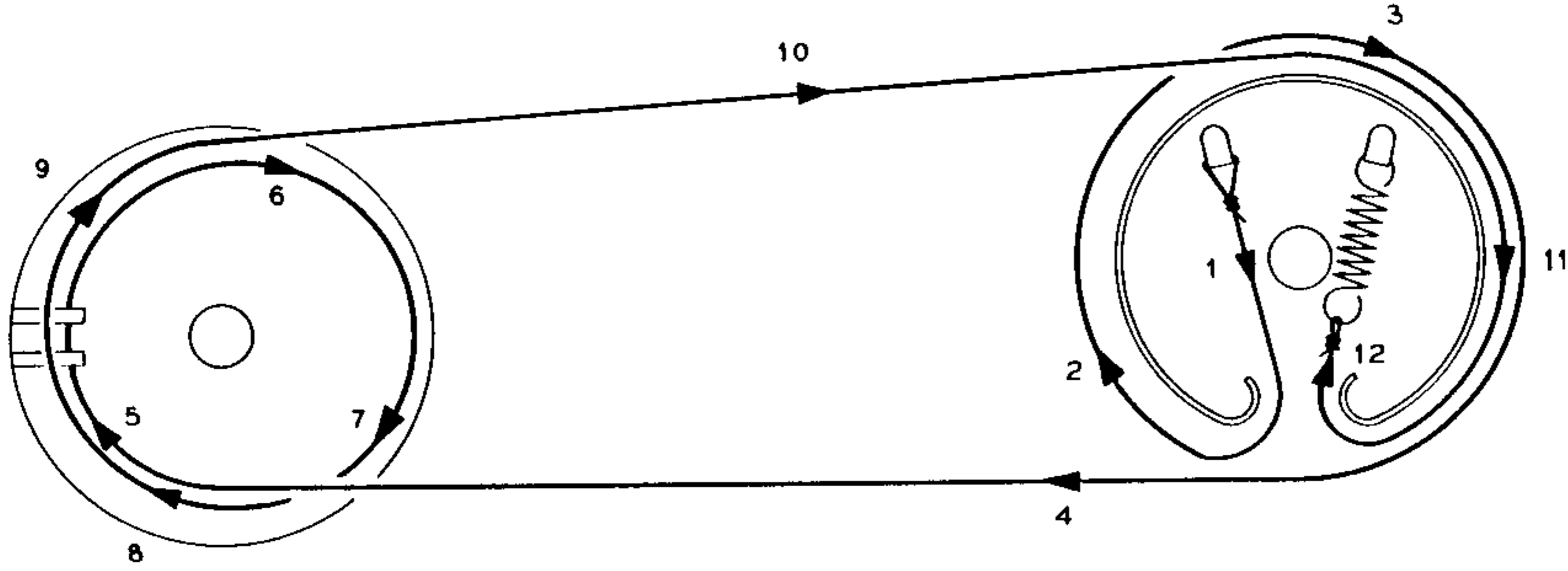
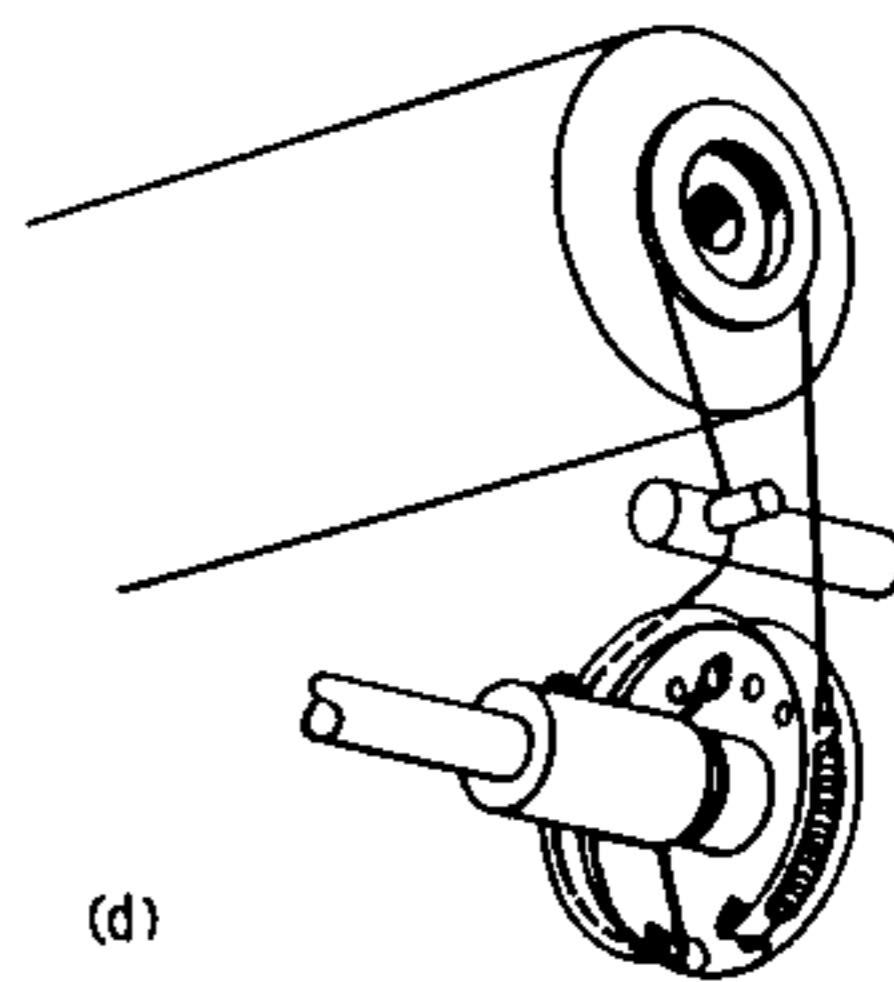
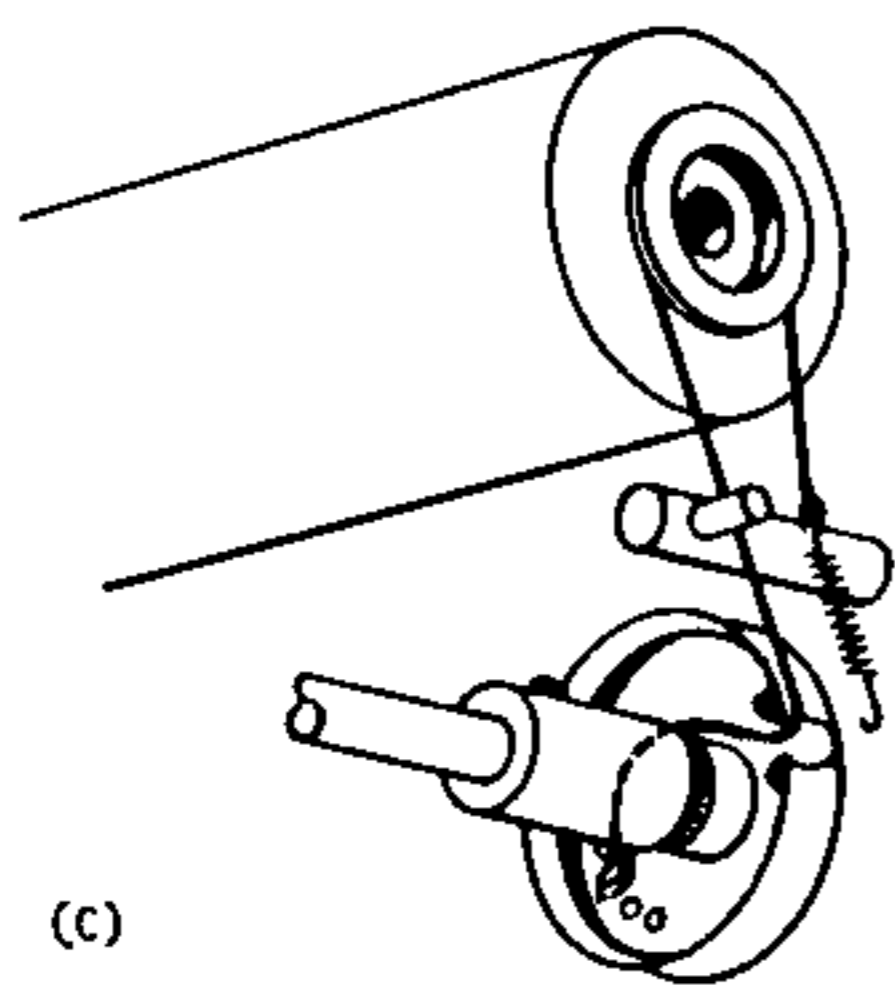
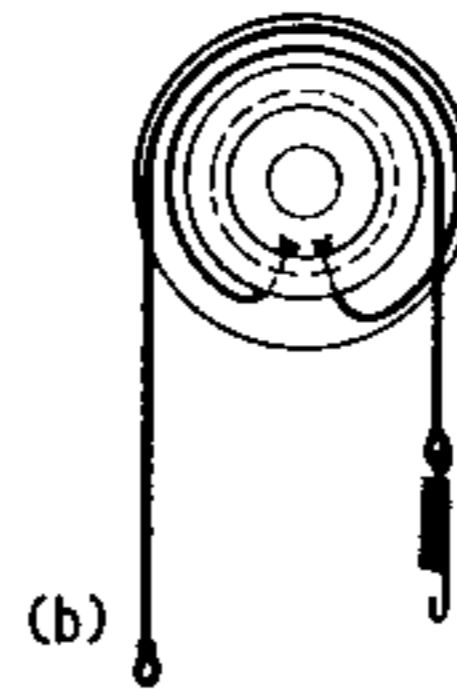
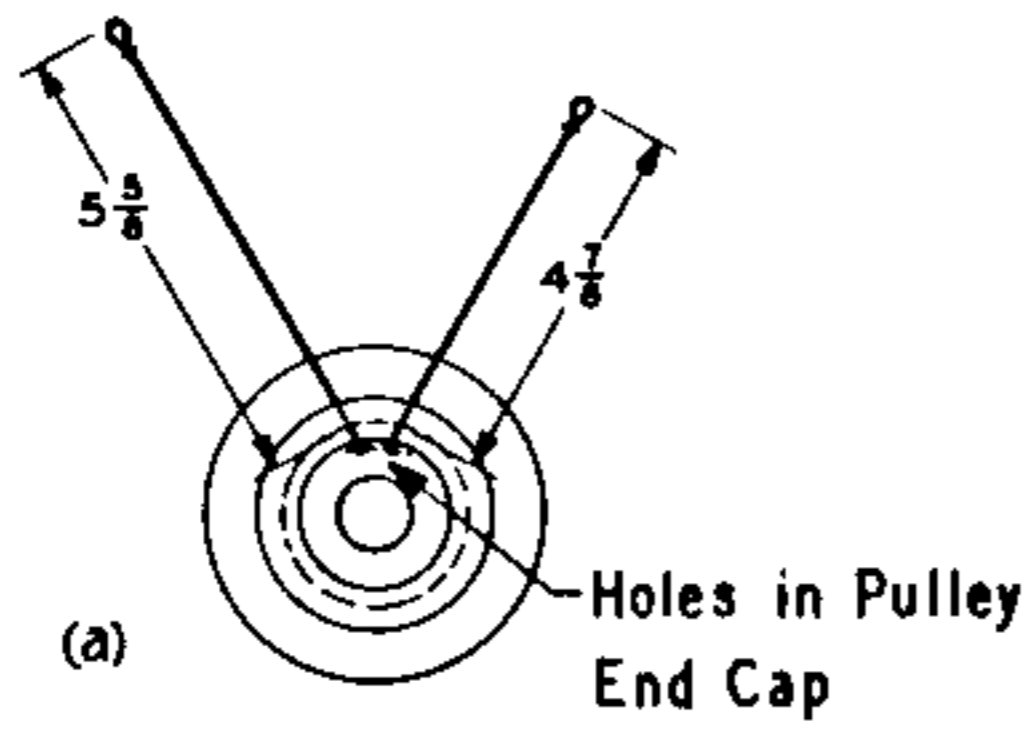
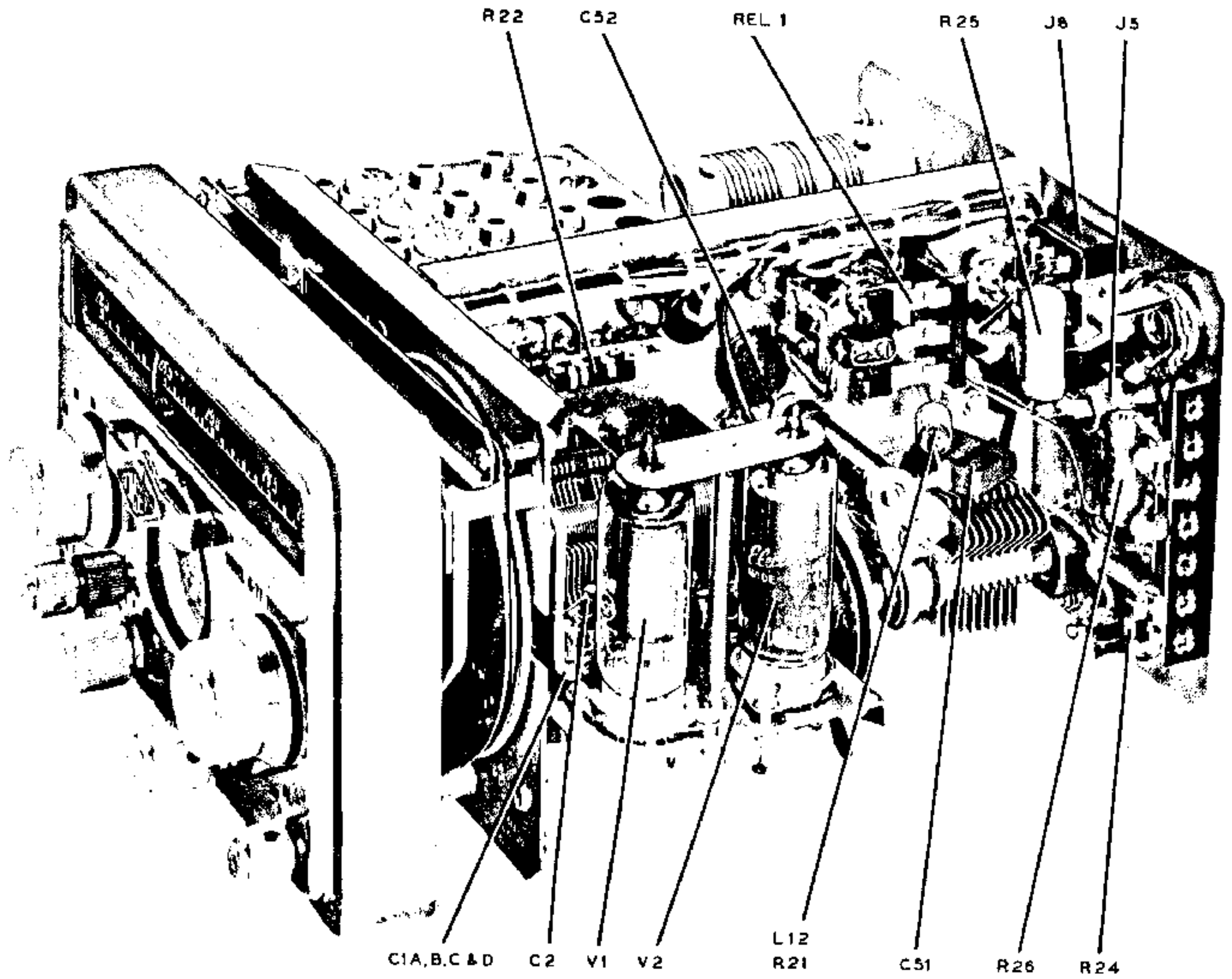


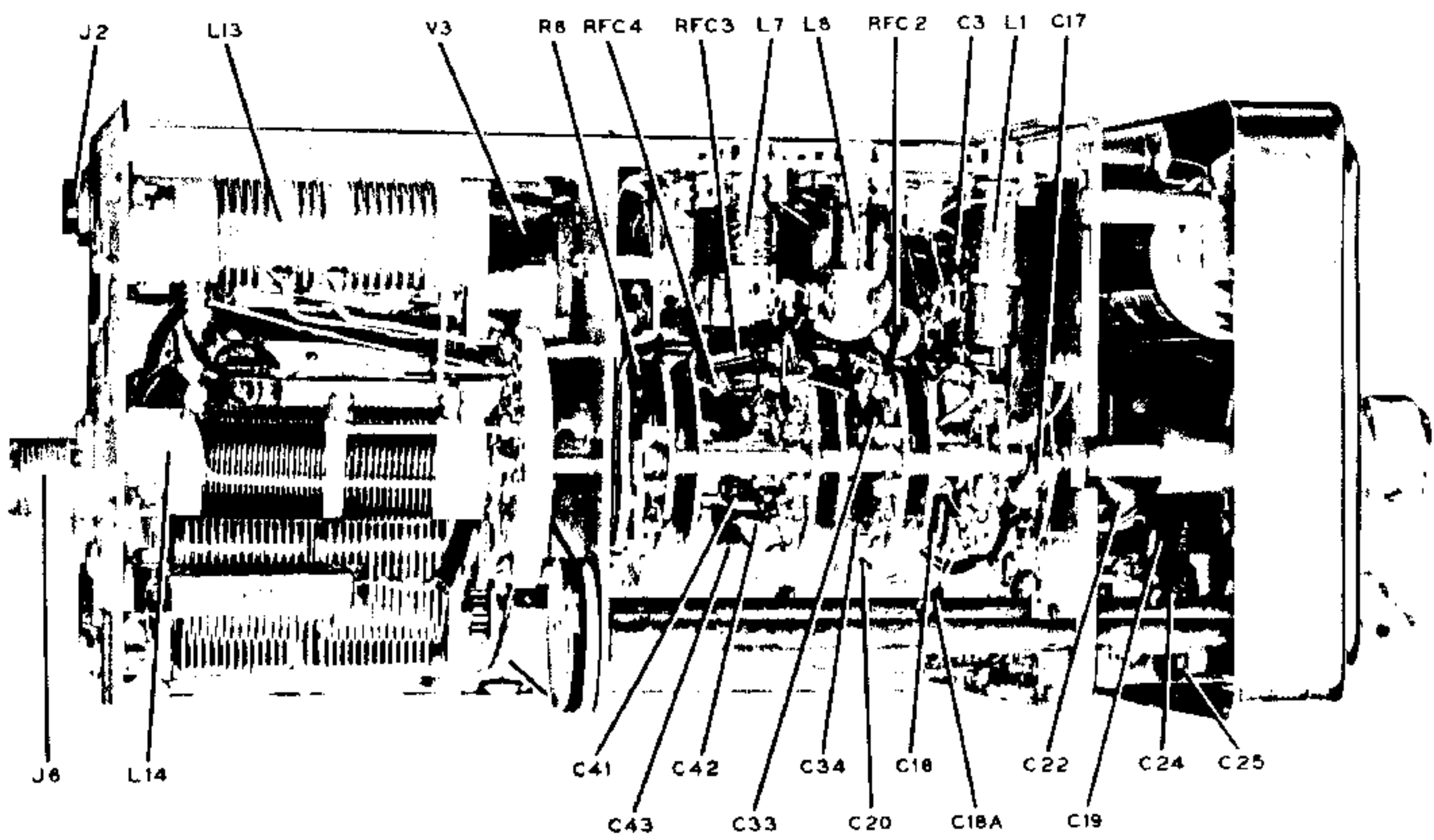
PLATE TUNING DIAL CORD DIAGRAM



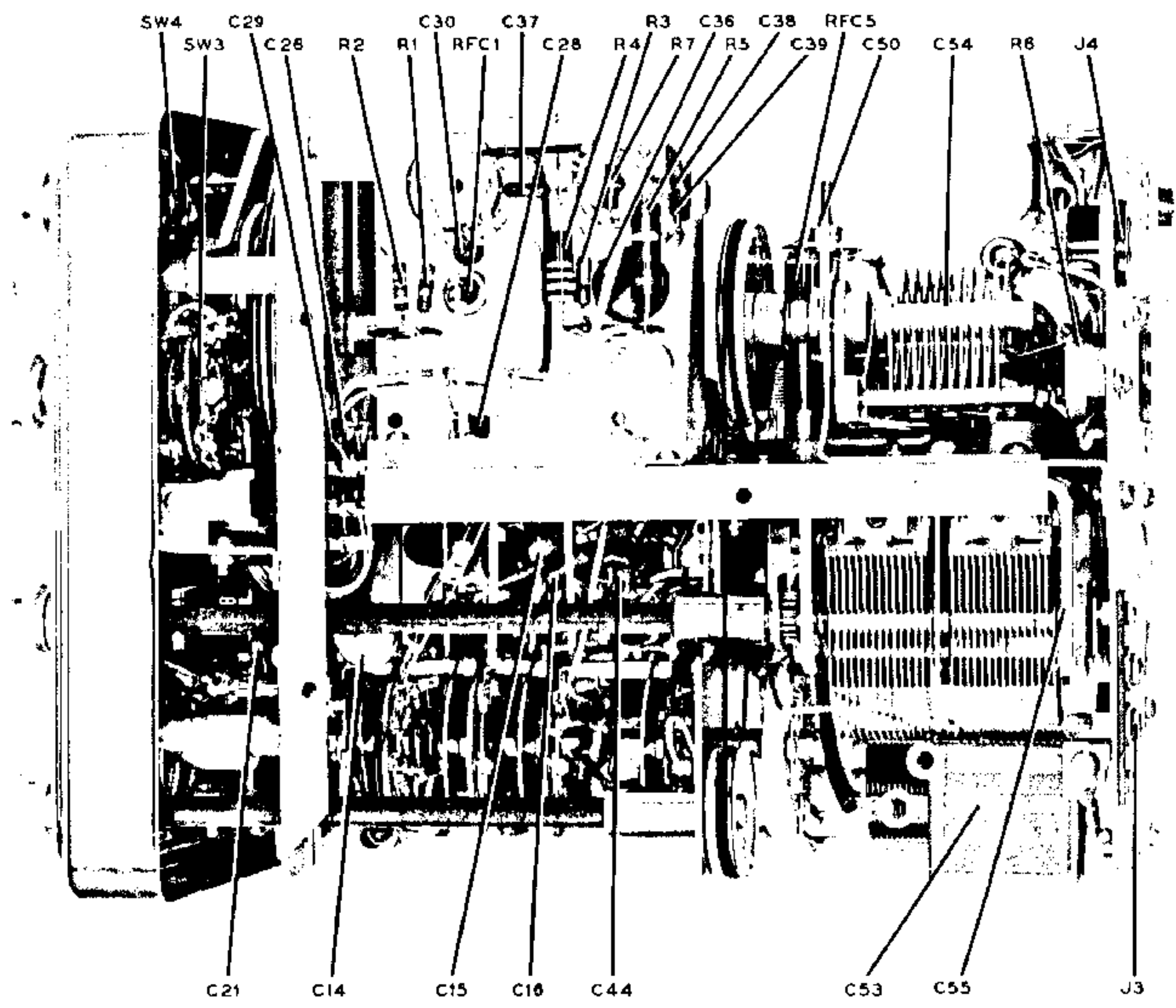
BANDCHANGE CORD STRINGING DIAGRAM



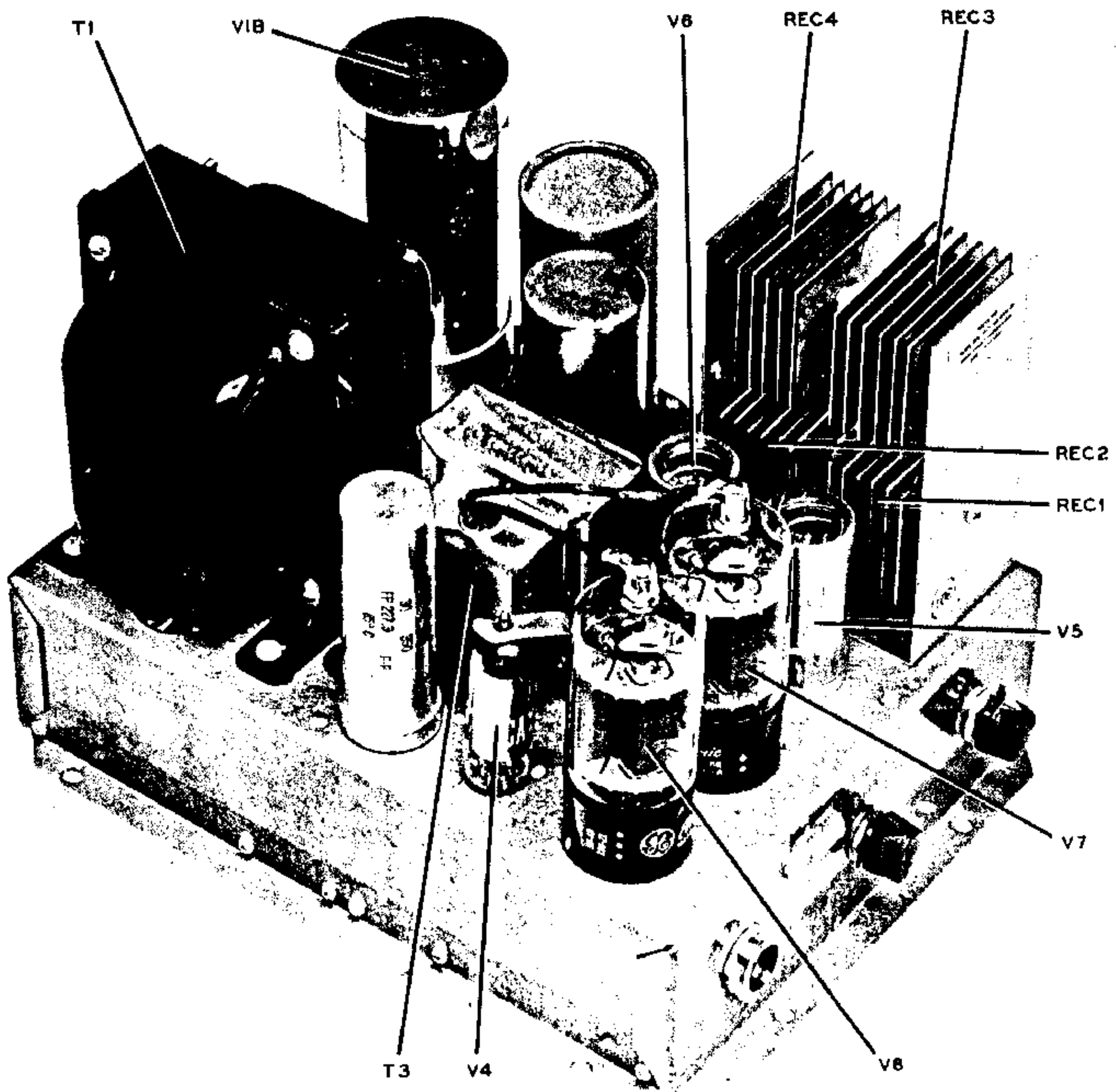
RF SECTION, RIGHT SIDE VIEW



RF SECTION, LEFT SIDE VIEW

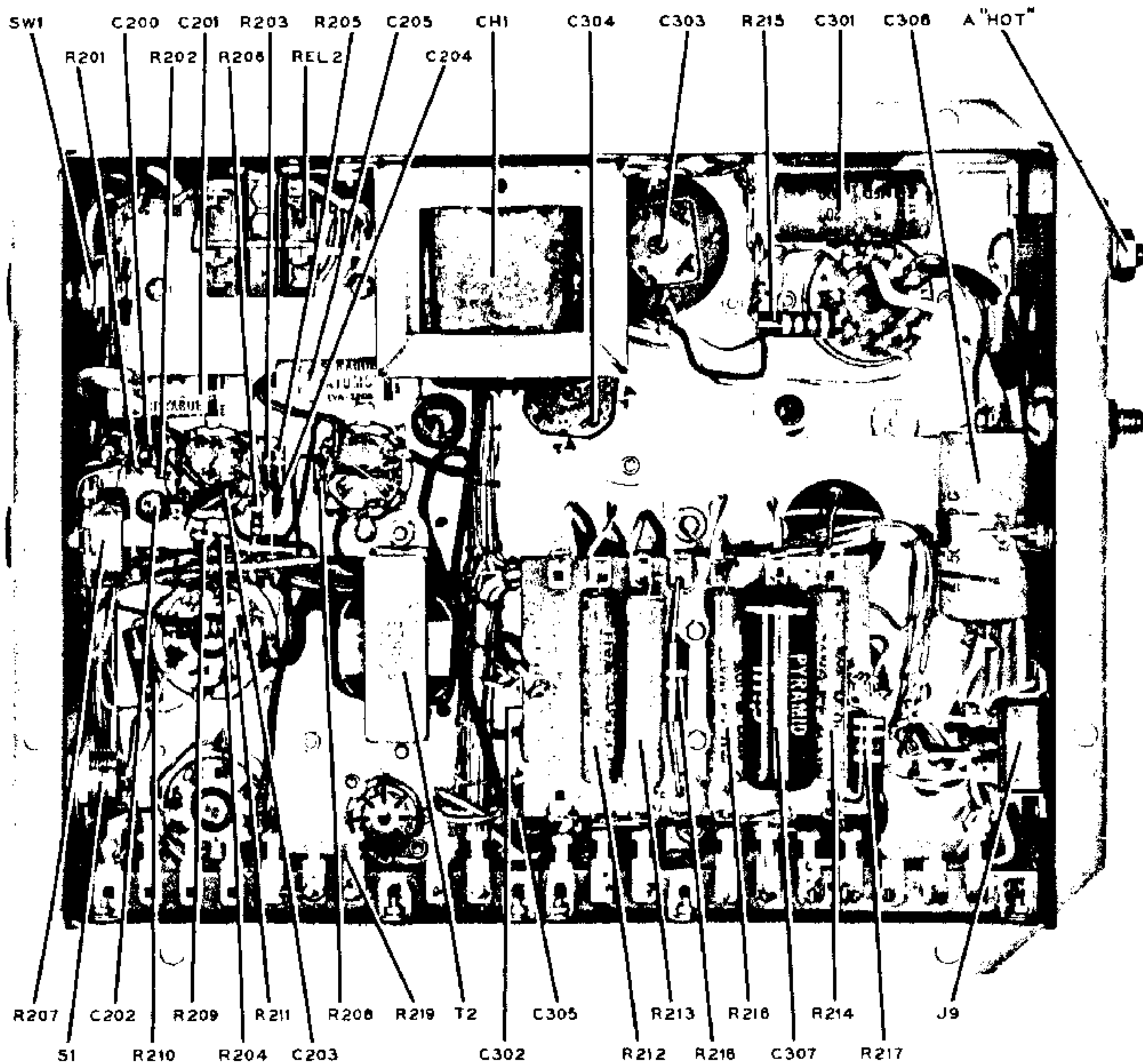


RF SECTION, BOTTOM VIEW



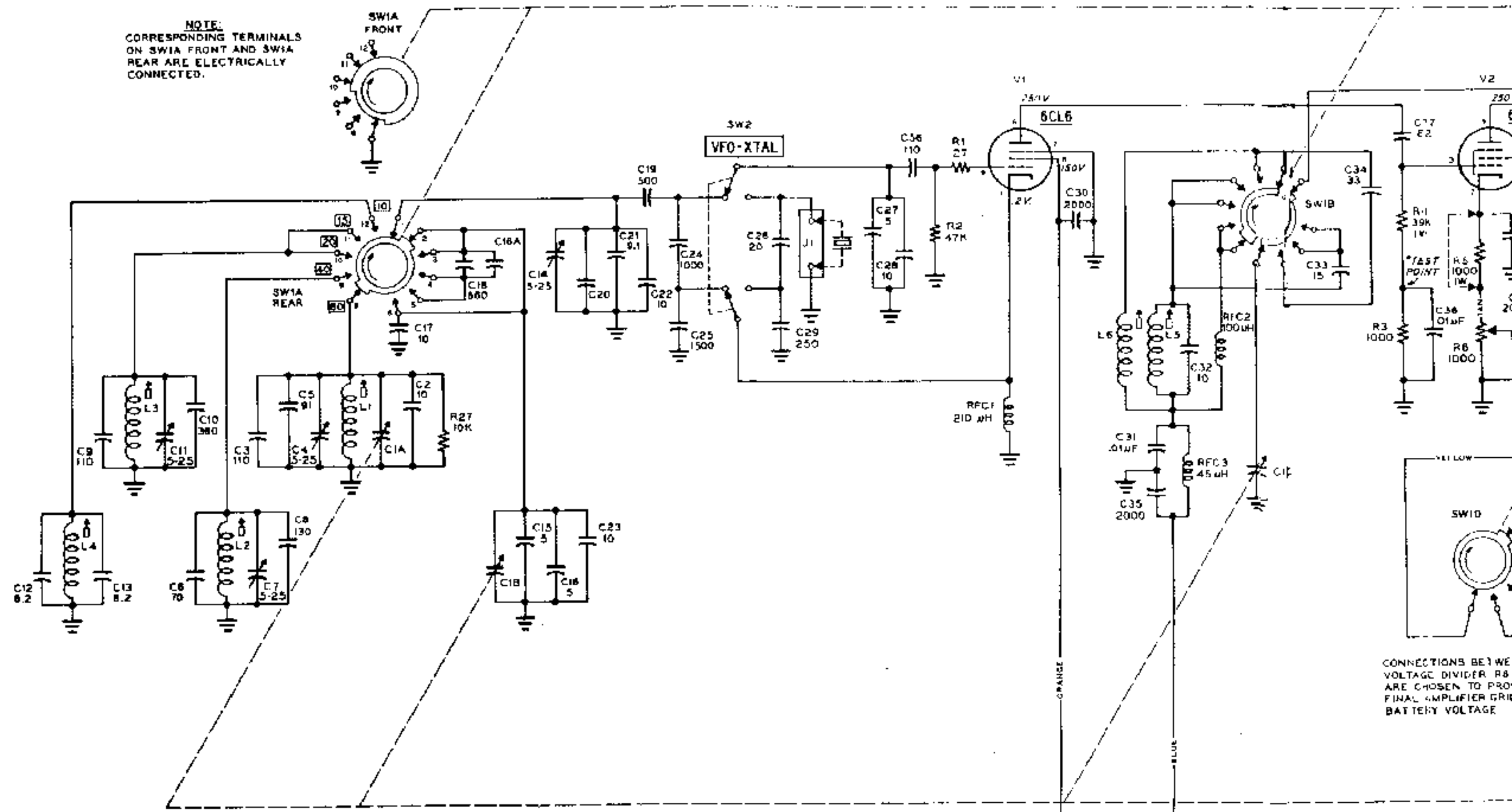
MODULATOR-POWER SUPPLY, TOP VIEW





MODULATOR-POWER SUPPLY, BOTTOM VIEW

NOTE:  
CORRESPONDING TERMINALS  
ON SW1A FRONT AND SW1A  
REAR ARE ELECTRICALLY  
CONNECTED.



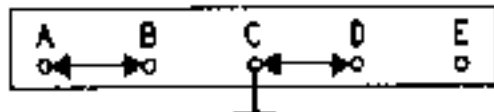
CONNECTIONS BETWEEN  
VOLTAGE DIVIDER R8  
ARE CHOSEN TO PRO-  
VIDE FINAL AMPLIFIER GRID  
BIAS AT BATTERY VOLTAGE

1. RESISTOR VALUES IN OHM AND CAPACITOR VALUES IN  $\mu$ F UNLESS OTHERWISE SHOWN.
2. SW1 AND SW3 SHOWN AS VIEWED FROM FRONT OF SET.
3. SW1 SHOWN IN 60 METER POSITION. SW3 SHOWN IN CW POSITION.
4. VOLTAGES SHOWN ARE NOMINAL USING VTVM WITH FOLLOWING CONDITIONS:

BANDSWITCH - 60 METERS  
METER SWITCH - 10  
TRANSMITTER LOADED TO 120 MA.  
NO MODULATION  
TRANSMITTER CONNECTED TO  
13.5 VOLT POWER SOURCE.  
 $I_a$  - 2.5 MA

\* TEST POINT  
- 1 VOLT = 1 MA.  
80M = 1.4 MA. APPROX.  
40M = 1.8 MA.  
20M = 2.1 MA.  
15M = 1.8 MA.  
10M = 1.5 MA.

\*\* MULT. SCREEN VOLTAGE VARIES BETWEEN  
APPROX. 50 AND 165, DEPENDING ON BAND  
AND TRANSMITTER.

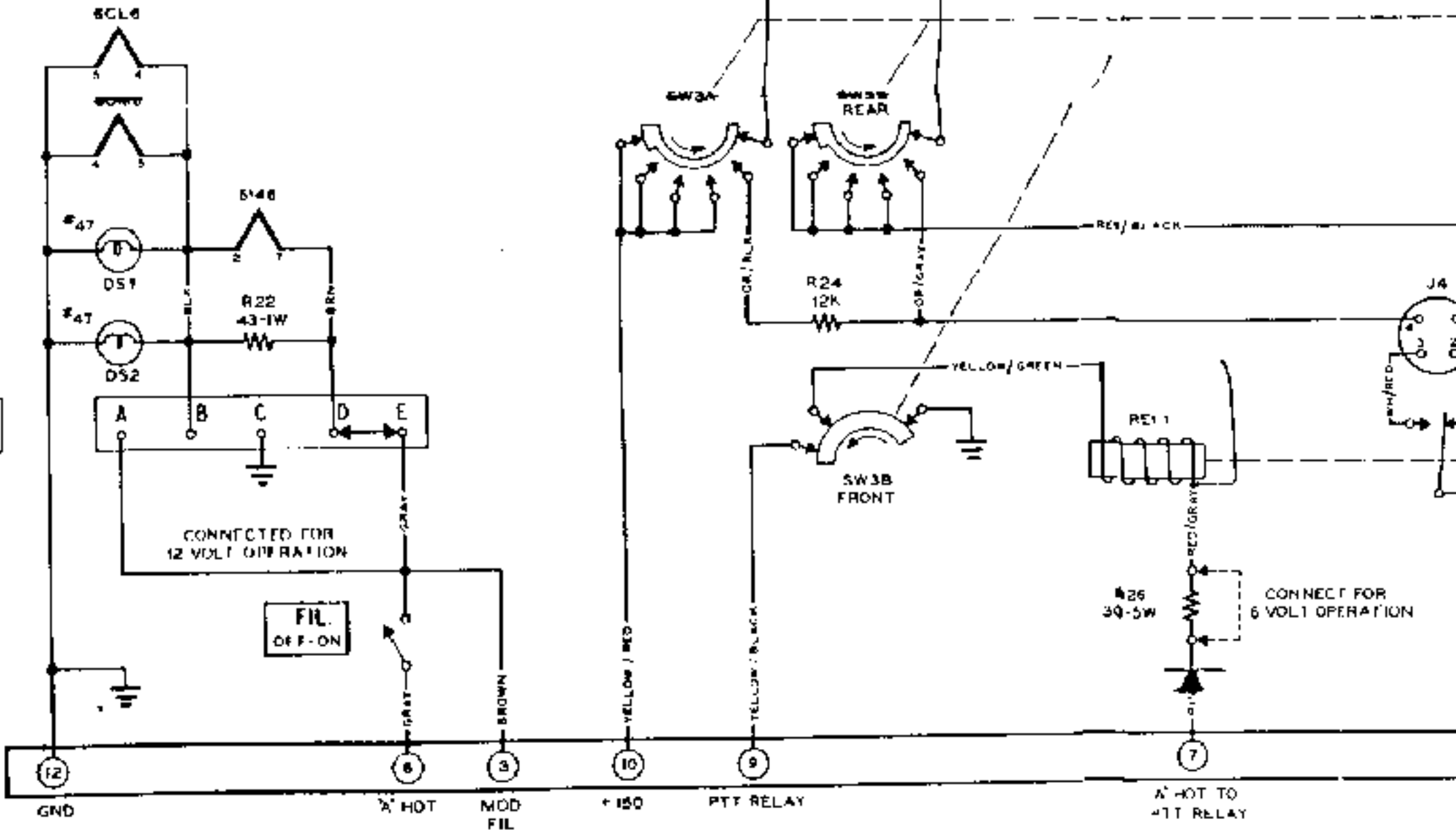


CONNECTED FOR  
6 VOLT OPERATION

CONNECTED FOR  
12 VOLT OPERATION

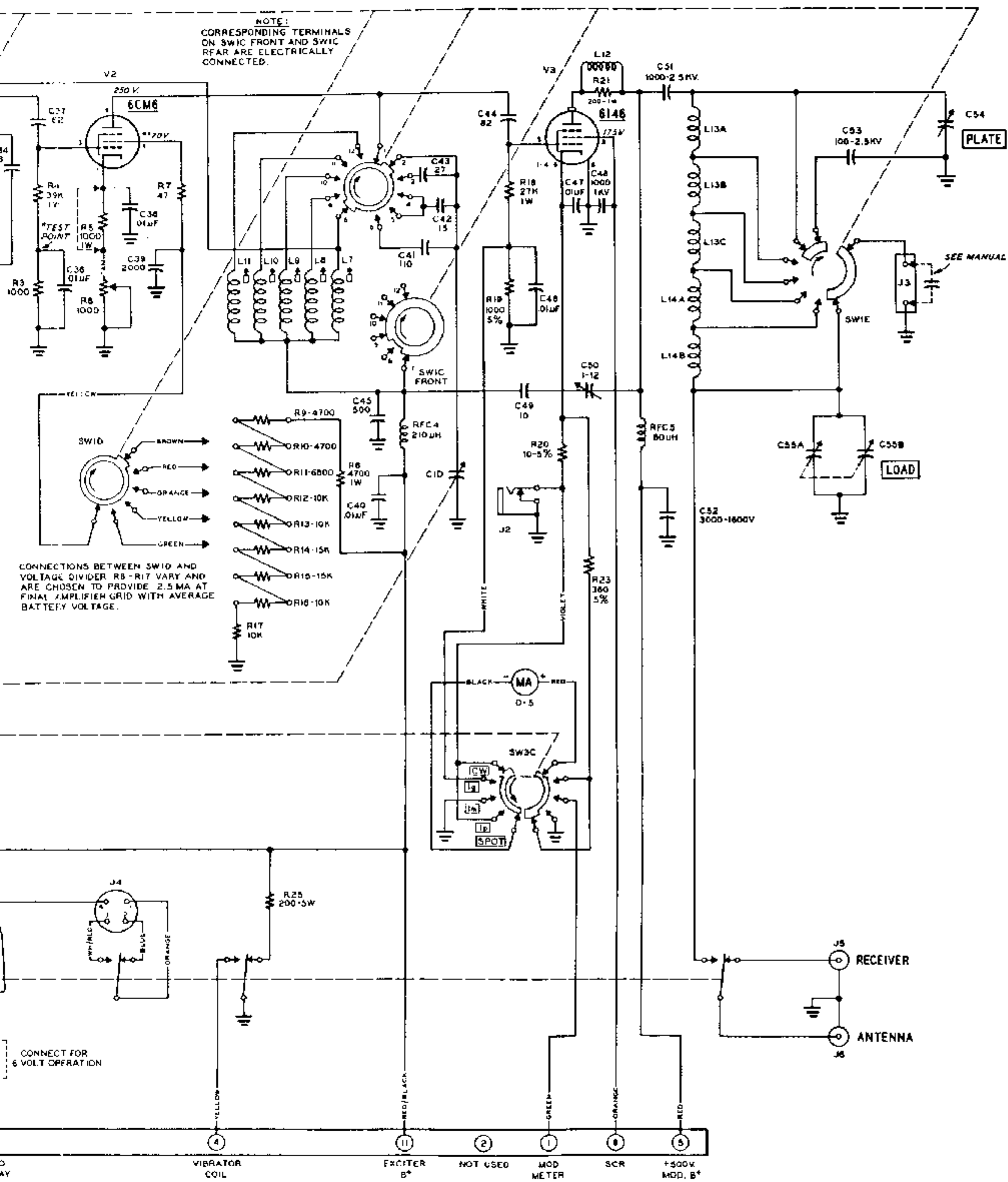


401 S. Main Street Burbank, California



## MODEL 3116 RF SECTION PART OF G-77 MOBILE TRANSMITTER

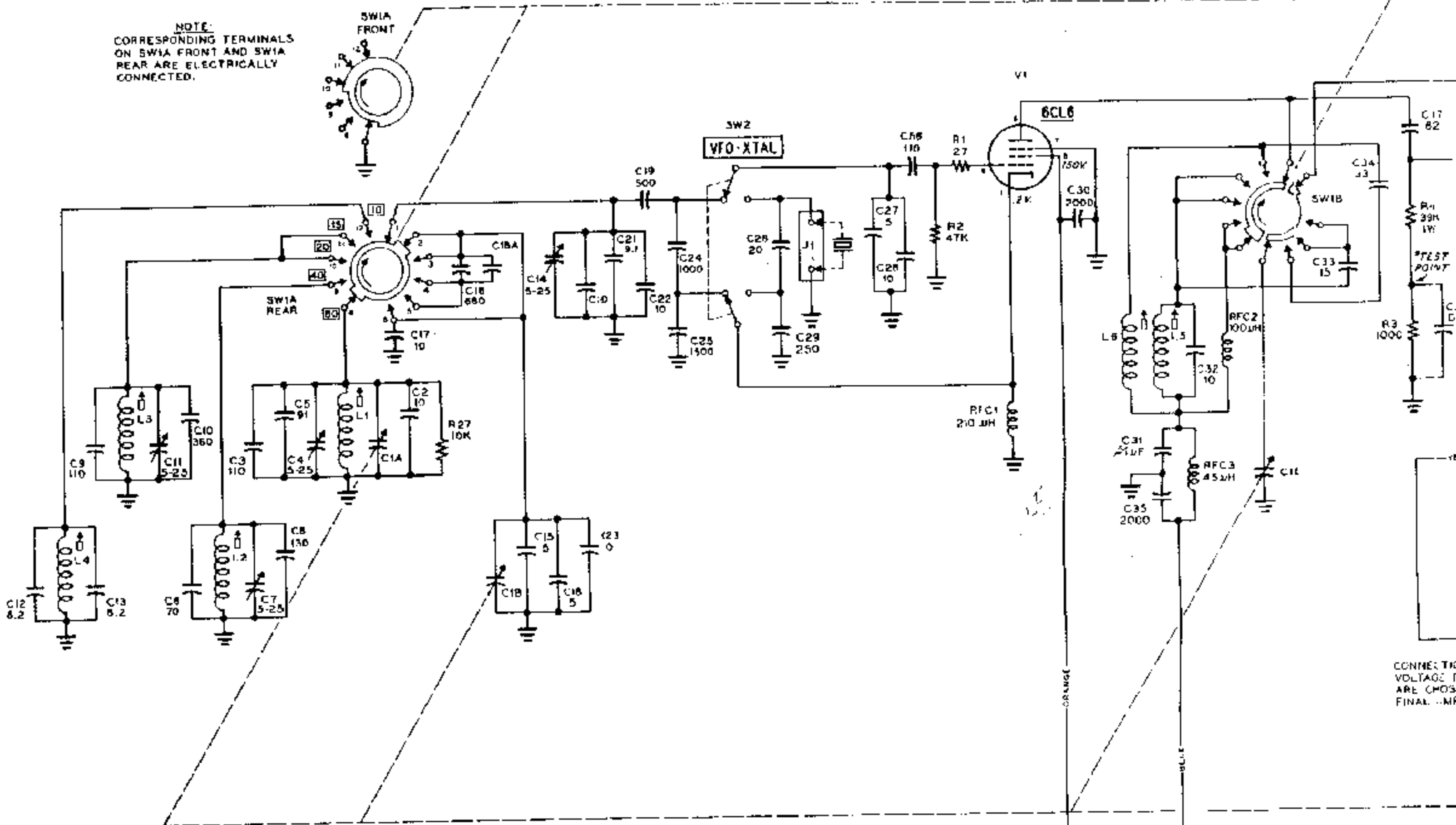
C1A-B-C-D	VFO TUNING CAPACITOR	C14	5-25 $\mu$ F, NPO CERAMIC TRIMMER	C26	20 $\mu$ F, 5% SILVER MICA	C39	2000 $\mu$ F, GMV DISC CERAMIC	C52	3000 $\mu$ F,
C2	10 $\mu$ F, $\pm$ 1 $\mu$ F, N330 CERAMIC	C15	5 $\mu$ F, $\pm$ .5 $\mu$ F, N750 CERAMIC	C27	5 $\mu$ F, $\pm$ .5 $\mu$ F, N750 CERAMIC	C40	.01 $\mu$ F, GMV DISC CERAMIC	C53	100 $\mu$ F,
C3	110 $\mu$ F, 1% SILVER MICA	C16	5 $\mu$ F, $\pm$ .5 $\mu$ F, N750 CERAMIC	C28	10 $\mu$ F, $\pm$ 1 $\mu$ F, N330 CERAMIC	C41	110 $\mu$ F, 5% SILVER MICA	C54	140 $\mu$ F,
C4	5-25 $\mu$ F, NPO CERAMIC TRIMMER	C17	10 $\mu$ F, $\pm$ 1 $\mu$ F, N150 CERAMIC	C29	250 $\mu$ F, 5% SILVER MICA	C42	15 $\mu$ F, 5% SILVER MICA	C55A-B	150 $\mu$ F,
C5	91 $\mu$ F, 2%, N330 DISC CERAMIC	C18	680 $\mu$ F, 1% SILVER MICA	C30	2000 $\mu$ F, GMV DISC CERAMIC	C43	27 $\mu$ F, 5% SILVER MICA	C56	110 $\mu$ F,
C6	70 $\mu$ F, 1% SILVER MICA	C18A	REPLACE WITH IDENTICAL VALUE	C31	.01 $\mu$ F, GMV DISC CERAMIC	C44	82 $\mu$ F, 5% SILVER MICA	R1	27 OHMS,
C7	5-25 $\mu$ F, NPO CERAMIC TRIMMER	C19	500 $\mu$ F, 1% SILVER MICA	C32	10 $\mu$ F, 5% SILVER MICA	C45	500 $\mu$ F, 5% SILVER MICA	R2	17K, $\pm$ 5%
C8	130 $\mu$ F, 2%, N150 DISC CERAMIC	C20	REPLACE WITH IDENTICAL VALUE	C33	15 $\mu$ F, 5% SILVER MICA	C46	.01 $\mu$ F, GMV DISC CERAMIC	R3	1000 OHMS
C9	110 $\mu$ F, 2%, N330 DISC CERAMIC	C21	9.1 $\mu$ F, $\pm$ 1 $\mu$ F, N 080 CERAMIC	C34	33 $\mu$ F, 5% SILVER MICA	C47	.01 $\mu$ F, GMV DISC CERAMIC	R4	39K, 1 WATT
C10	360 $\mu$ F, 1%, SILVER MICA	C22	10 $\mu$ F, $\pm$ 1 $\mu$ F, N750 CERAMIC	C35	2000 $\mu$ F, GMV DISC CERAMIC	C48	1000 $\mu$ F, 1 KV, DISC CERAMIC	R5	1000 OHMS
C11	5-25 $\mu$ F, NPO CERAMIC TRIMMER	C23	10 $\mu$ F, $\pm$ 1 $\mu$ F, N750 CERAMIC	C36	.01 $\mu$ F, GMV DISC CERAMIC	C49	10 $\mu$ F, $\pm$ 1 $\mu$ F, 2.5 KV DISC CERAMIC	R6	100 - 1000
C12	8.2 $\mu$ F, $\pm$ 1 $\mu$ F, N330 CERAMIC	C24	1000 $\mu$ F, 1% SILVER MICA	C37	82 $\mu$ F, 5% SILVER MICA	C50	1-12 $\mu$ F, GLASS TUBULAR	R7	L7 OHMS,
C13	8.2 $\mu$ F, $\pm$ 1 $\mu$ F, N330 CERAMIC	C25	1500 $\mu$ F, 1% SILVER MICA	C38	.01 $\mu$ F, GMV DISC CERAMIC	C51	1000 $\mu$ F, 2.5 KV, MICA	R8	4700 OHMS



# SECTION TRANSMITTER

- |        |  |     |                                   |      |  |
|--------|--|-----|-----------------------------------|------|--|
| C52    | 3000 µF, 1.6 KV DISC CERAMIC             | R9  | 4700 OHMS, 1/2 WATT               | R22  | 43 OHMS, 1 WATT                          |
| C53    | 100 µF, 2.5 KV MICA                      | R10 | 4700 OHMS, 1/2 WATT               | R23  | 360 OHMS, 5%, 1/2 WATT, WIRE-WOUND       |
| C54    | 120 µF, VARIABLE CAPACITOR               | R11 | 6500 OHMS, 1/2 WATT               | R24  | 12K, 1/2 WATT                            |
| C55A-B | 450 µF, EACH SECTION, VARIABLE CAPACITOR | R12 | 10K, 1/2 WATT                     | R25  | 200 OHMS, 5 WATT, WIRE-WOUND             |
| C56    | 110 µF, 5% SILVER MICA                   | R13 | 10K, 1/2 WATT                     | R26  | 30 OHMS, 5 WATT, WIRE-WOUND              |
| R1     | 27 OHMS, 1/2 WATT                        | R14 | 15K, 1/2 WATT                     | R27  | 10K, 1/2 WATT                            |
| R2     | 17K, 1/2 WATT                            | R15 | 15K, 1/2 WATT                     | RFC1 | 210 µH                                   |
| R3     | 1000 OHMS, 5%, 1/2 WATT                  | R16 | 10K, 1/2 WATT                     | RFC2 | 100 µH                                   |
| R4     | 30K, 1 WATT                              | R17 | 10K, 1/2 WATT                     | RFC3 | 45 µH                                    |
| R5     | 1000 OHMS, 1 WATT                        | R18 | 27K, 1 WATT                       | RFC4 | 210 µH                                   |
| R6     | 100 - 1000 OHMS, CLARASTAT TYPE CM-15953 | R19 | 1000 OHMS, 5%, 1/2 WATT           | RFC5 | 80 µH                                    |
| R7     | 47 OHMS, 1/2 WATT                        | R20 | 10 OHMS, 5%, 1/2 WATT, WIRE-WOUND | REL1 | POTTER & BRUMFIELD, KA-1228, 32 OHM COIL |
| R8     | 4700 OHMS, 1 WATT                        | R21 | 200 OHMS, 1 WATT                  |      |  |

NOTE:  
CORRESPONDING TERMINALS  
ON SW1A FRONT AND SW1A  
REAR ARE ELECTRICALLY  
CONNECTED.



1. RESISTOR VALUES IN OHM AND CAPACITOR VALUES IN  $\mu$ F UNLESS OTHERWISE SHOWN.
2. SW1 AND SW3 SHOWN AS VIEWED FROM FRONT OF SET.
3. SW1 SHOWN IN CW METER POSITION. SW3 SHOWN IN CW POSITION.
4. VOLTAGES SHOWN ARE NOMINAL USING VTVM WITH FOLLOWING CONDITIONS:

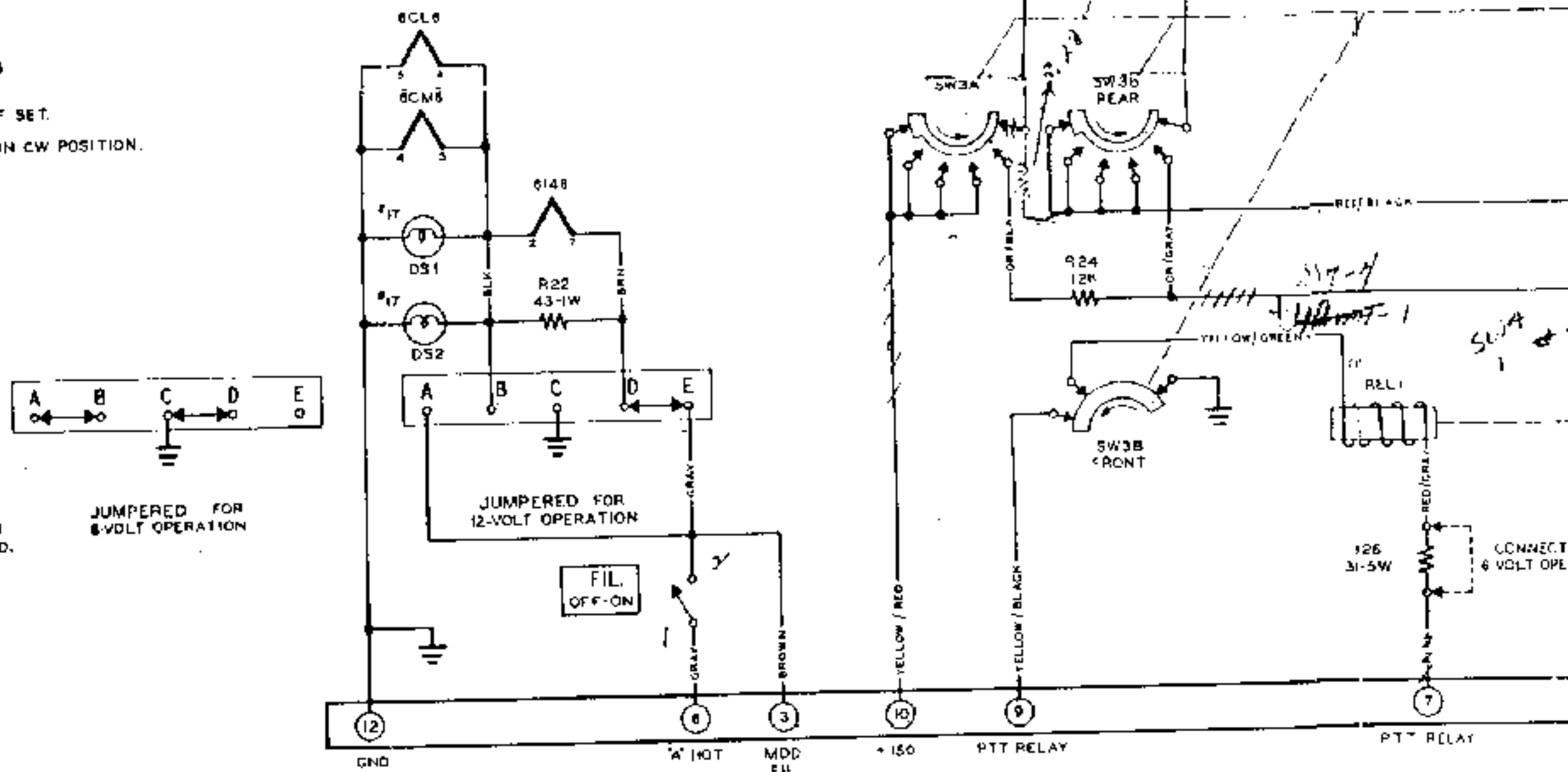
BANDSWITCH - 80 METERS  
METER SWITCH - 10  
TRANSMITTER LOADED TO 120 MA.  
NO MODULATION  
TRANSMITTER CONNECTED TO  
115 VOLTS AC  
1G - 2.6 MA.

\* TEST POINT  
-1 VOLT @ 1 MA.  
80M = 1.4 MA. APPROX.  
40M = 1.8 MA. "  
20M = 2.1 MA. "  
15M = 1.9 MA. "  
10M = 1.5 MA. "

\*\* MULT SCREEN VOLTAGE VARIES BETWEEN APPROX. 50 AND 185, DEPENDING ON BAND.



801 E Main Street, Burbank, California



510-021 11-5-57

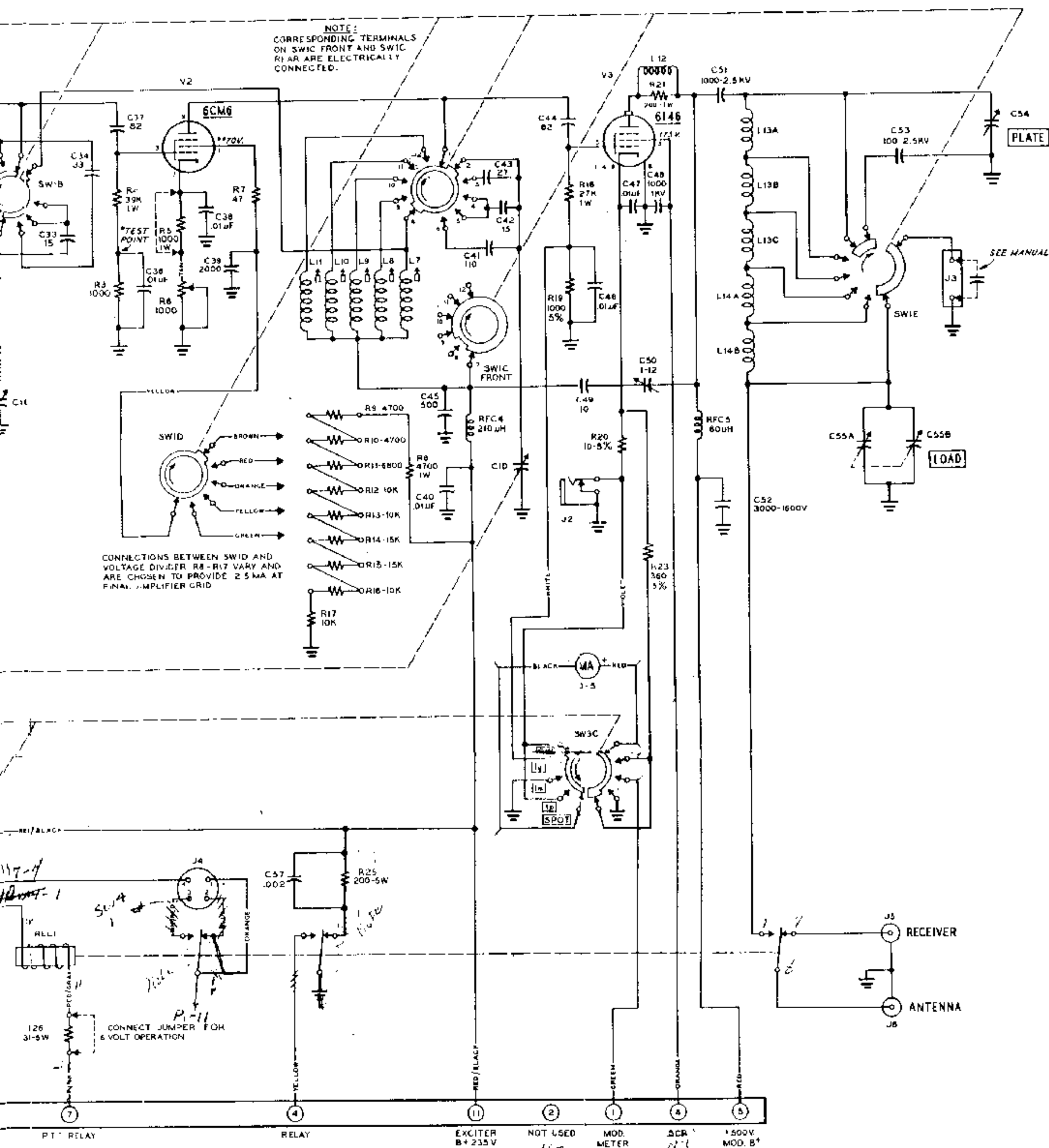
## MODEL 3118 RF SECTION PART OF G77A MOBILE TRANSMITTER

C1A-B-C-D VFO TUNING CAPACITOR  
C2 10  $\mu$ F, + 1  $\mu$ F, N330 CERAMICON  
C3 110  $\mu$ F, 1% SILVER MICA  
C4 5-25  $\mu$ F, NPO CERAMIC TRIMMER  
C5 91  $\mu$ F, 2%, N330 DISC CERAMICON  
C6 70  $\mu$ F, 1% SILVER MICA  
C7 5-25  $\mu$ F, NPO CERAMIC TRIMMER  
C8 130  $\mu$ F, 2%, N150 DISC CERAMICON  
C9 110  $\mu$ F, 2%, N330 DISC CERAMICON  
C10 360  $\mu$ F, 1% SILVER MICA  
C11 5-25  $\mu$ F, NPO CERAMIC TRIMMER  
C12 8.2  $\mu$ F,  $\pm$  1  $\mu$ F, N330 CERAMICON  
C13 8.2  $\mu$ F,  $\pm$  1  $\mu$ F, N330 CERAMICON

C14 5-25  $\mu$ F, NPO CERAMIC TRIMMER  
C15 5  $\mu$ F,  $\pm$  .5  $\mu$ F, N750 CERAMICON  
C16 5  $\mu$ F,  $\pm$  .5  $\mu$ F, N750 CERAMICON  
C17 10  $\mu$ F,  $\pm$  1  $\mu$ F, N150 CERAMICON  
C18 680  $\mu$ F, 1% SILVER MICA  
C18A REPLACE WITH IDENTICAL VALUE  
C19 500  $\mu$ F, 1% SILVER MICA  
C20 REPLACE WITH IDENTICAL VALUE  
C21 9.1  $\mu$ F, + 1  $\mu$ F, N 080 CERAMICON  
C22 10  $\mu$ F,  $\pm$  1  $\mu$ F, N750 CERAMICON  
C23 10  $\mu$ F,  $\pm$  1  $\mu$ F, N750 CERAMICON  
C24 1000  $\mu$ F, 1% SILVER MICA  
C25 1500  $\mu$ F, 1% SILVER MICA

C26 20  $\mu$ F, 5% SILVER MICA  
C27 5  $\mu$ F,  $\pm$  .5  $\mu$ F, N750 CERAMICON  
C28 10  $\mu$ F,  $\pm$  1  $\mu$ F, N330 CERAMICON  
C29 250  $\mu$ F, 5% SILVER MICA  
C30 2000  $\mu$ F, GMV DISC CERAMICON  
C31 .01  $\mu$ F, GMV DISC CERAMICON  
C32 10  $\mu$ F, 5% SILVER MICA  
C33 15  $\mu$ F, 5% SILVER MICA  
C34 33  $\mu$ F, 5% SILVER MICA  
C35 2000  $\mu$ F, GMV DISC CERAMICON  
C36 .01  $\mu$ F, GMV DISC CERAMICON  
C37 82  $\mu$ F, 5% SILVER MICA  
C38 .01  $\mu$ F, GMV DISC CERAMICON

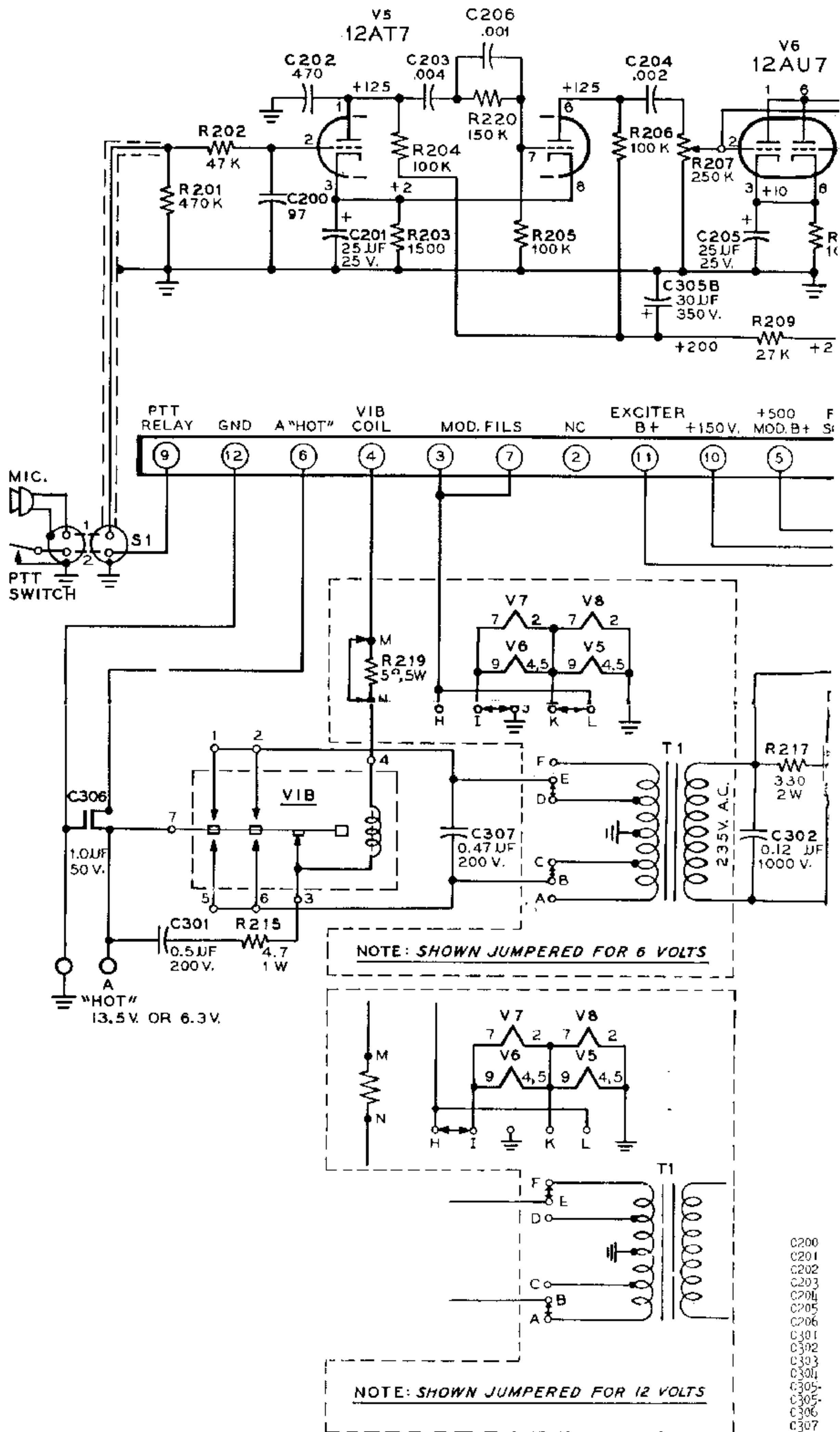
C39 2000  $\mu$ F, GMV DISC CERAMICON  
C40 .01  $\mu$ F, GMV DISC CERAMICON  
C41 110  $\mu$ F, 5% SILVER MICA  
C42 15  $\mu$ F, 5% SILVER MICA  
C43 27  $\mu$ F, 5% SILVER MICA  
C44 82  $\mu$ F, 5% SILVER MICA  
C45 500  $\mu$ F, 5% SILVER MICA  
C46 .01  $\mu$ F, GMV DISC CERAMICON  
C47 .01  $\mu$ F, GMV DISC CERAMICON  
C48 1000  $\mu$ F, 1 KV, DISC CERAMICON  
C49 10  $\mu$ F,  $\pm$  1  $\mu$ F, 2.5 KV DISC CERAMICON  
C50 1-12  $\mu$ F, GLASS LABEL  
C51 1000  $\mu$ F, 2.5 KV, MICA

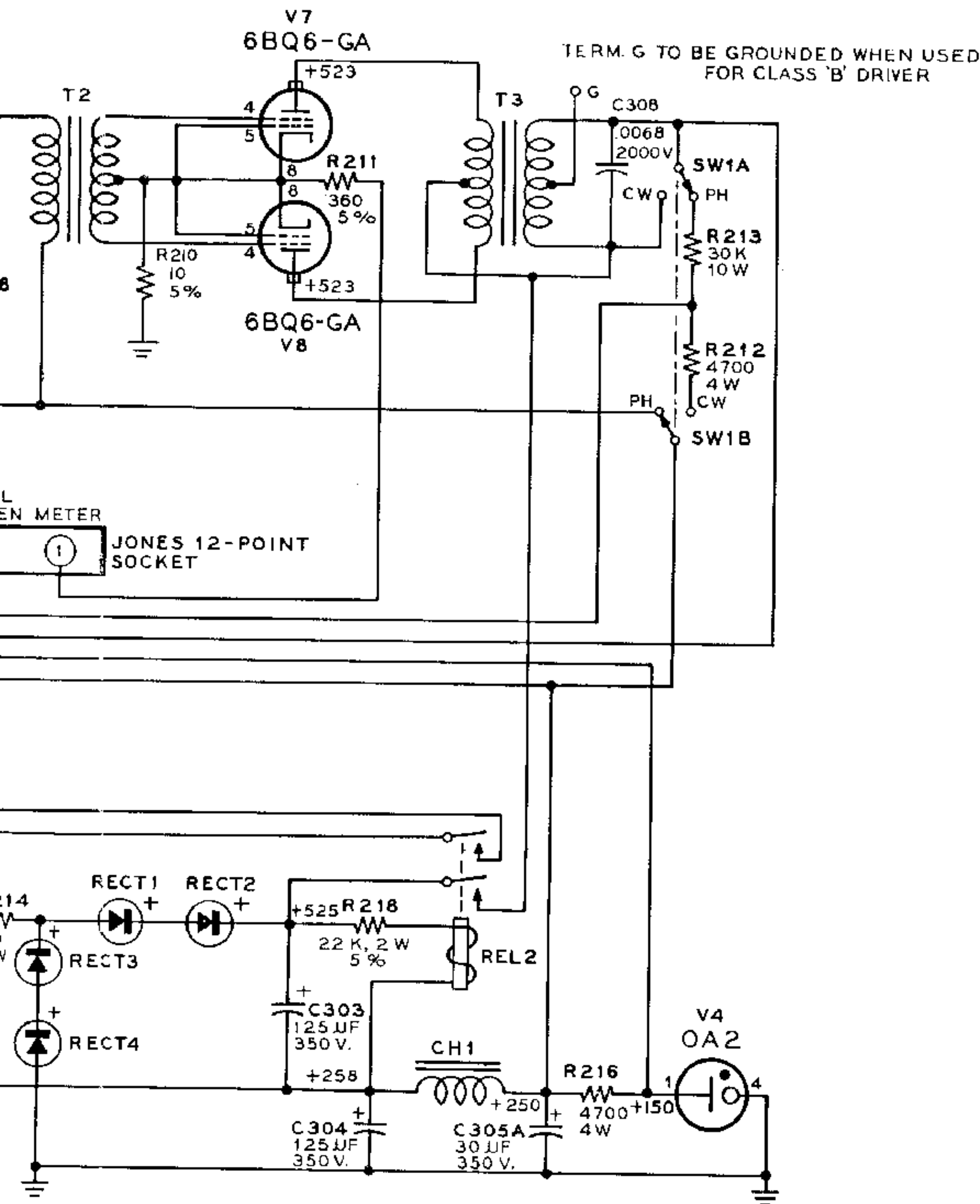


RF SECTION  
MOBILE TRANSMITTER

- C1 100 pF, 50V, 5% tolerance
- C2 100 pF, 50V, 5% tolerance
- C3 100 pF, VARIABLE CAPACITOR
- C4 100 pF, 50V, 5% tolerance, VARIABLE CAPACITOR
- C5 100 pF, 50V, 5% tolerance, VARIABLE CAPACITOR
- C6 100 pF, 50V, 5% tolerance
- C7 100 pF, 50V, 5% tolerance
- C8 100 pF, 50V, 5% tolerance
- C9 100 pF, 50V, 5% tolerance
- C10 100 pF, 50V, 5% tolerance
- C11 100 pF, 50V, 5% tolerance
- C12 100 pF, 50V, 5% tolerance
- C13 100 pF, 50V, 5% tolerance
- C14 100 pF, 50V, 5% tolerance
- C15 100 pF, 50V, 5% tolerance
- C16 100 pF, 50V, 5% tolerance
- C17 100 pF, 50V, 5% tolerance
- C18 100 pF, 50V, 5% tolerance
- C19 100 pF, 50V, 5% tolerance
- C20 100 pF, 50V, 5% tolerance
- C21 100 pF, 50V, 5% tolerance
- C22 100 pF, 50V, 5% tolerance
- C23 100 pF, 50V, 5% tolerance
- C24 100 pF, 50V, 5% tolerance
- C25 100 pF, 50V, 5% tolerance
- C26 100 pF, 50V, 5% tolerance
- C27 100 pF, 50V, 5% tolerance
- C28 100 pF, 50V, 5% tolerance
- C29 100 pF, 50V, 5% tolerance
- C30 100 pF, 50V, 5% tolerance
- C31 100 pF, 50V, 5% tolerance
- C32 100 pF, 50V, 5% tolerance
- C33 100 pF, 50V, 5% tolerance
- C34 100 pF, 50V, 5% tolerance
- C35 100 pF, 50V, 5% tolerance
- C36 100 pF, 50V, 5% tolerance
- C37 100 pF, 50V, 5% tolerance
- C38 100 pF, 50V, 5% tolerance
- C39 100 pF, 50V, 5% tolerance
- C40 100 pF, 50V, 5% tolerance
- C41 100 pF, 50V, 5% tolerance
- C42 100 pF, 50V, 5% tolerance
- C43 100 pF, 50V, 5% tolerance
- C44 100 pF, 50V, 5% tolerance
- C45 100 pF, 50V, 5% tolerance
- C46 100 pF, 50V, 5% tolerance
- C47 100 pF, 50V, 5% tolerance
- C48 100 pF, 50V, 5% tolerance
- C49 100 pF, 50V, 5% tolerance
- C50 100 pF, 50V, 5% tolerance
- C51 1000-2.5KV
- C52 3000-1600V
- C53 100 2.5KV
- C54 PLATE
- C55A
- C55B
- C56
- C57 .002
- R1 100K
- R2 100K
- R3 100K
- R4 100K
- R5 100K
- R6 100K
- R7 47
- R8 4700
- R9 4700
- R10 4700
- R11 4700
- R12 10K
- R13 10K
- R14 15K
- R15 15K
- R16 27K
- R17 10K
- R18 10K
- R19 1000 5%
- R20 10-5%
- R21 200 1W
- R22 360 5%
- R23 360 5%
- R24 10K
- R25 200-5W
- L1 100 pF
- L2 100 pF
- L3 100 pF
- L4 100 pF
- L5 100 pF
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- J5 RECEIVER
- J6 ANTENNA
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- R28 27K 1W
- R29 100K 1/2 WATT
- R30 100K 1/2 WATT
- R31 100K 1/2 WATT
- R32 100K 1/2 WATT
- R33 100K 1/2 WATT
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- R99 100K 1/2 WATT
- R100 100K 1/2 WATT





## POWER SUPPLY & MODULATOR

### G-77 TRANSMITTER

Voltage Tests Made

With A 20,000 Ohms per Volt Meter

C308 .0068 μF, 2000V. TUBULAR  
R201 470K, 1/2 WATT  
R202 47K, 1/2 WATT  
R203 1500 OHM, 1/2 WATT  
R204 100K, 1/2 WATT  
R205 100K, 1/2 WATT  
R206 100K, 1/2 WATT  
R207 250K 100Ω, AI PAPER  
R208 1000 OHM, 1/2 WATT  
R209 22K, 1/2 WATT  
R210 10 OHM, 2 WATT, WIRE-WOUND  
R211 300 OHM, 1/2 WATT, WIRE-WOUND  
R212 4.7K, 1/2 WATT, WIRE-WOUND  
R213 30K, 10 WATT, WIRE-WOUND 5%  
R214 10 OHM, 1/2 WATT, WIRE-WOUND

C303 125 μF, 350 V.  
C304 125 μF, 350 V.  
C305A 30 μF, 350 V.  
REL2 RELAY, POTTER & BRUMFIELD, KA-1211,  
10,000 OHM COIL  
V4 VIBRATOR, CORNELL-DUBILIER, TYPE GV10

R215 4.7 OHM, 1 WATT  
R216 4.7K, 1/2 WATT, WIRE-WOUND  
R217 330 OHM, 2 WATT  
R218 22K, 2 WATT 5%  
R219 5 OHM, 5 WATT, WIRE-WOUND 5%  
R220 150K, 1/2 WATT  
RECT1  
RECT2  
RECT3  
RECT4  
REL2 RELAY, POTTER & BRUMFIELD, KA-1211,  
10,000 OHM COIL  
V4 VIBRATOR, CORNELL-DUBILIER, TYPE GV10