



FIG. 1, CM-1 RECEIVER AND CMS-1 SPEAKER (OPTIONAL)

INTRODUCTION

The Mosley model CM-1 communications receiver is the result of two years of continuous development. This compact, double conversion receiver offers performance to satisfy the most advanced and discriminating amateur. Whether you prefer to work s.s.b., a.m. or c.w., this compact, new double conversion receiver with crystal controlled first oscillator will give you excellent performance in selectivity, stability and freedom from image and other objectionable responses. The design is made possible by a recently

developed dual purpose tube, so versatile it is suitable for all of the multiple functions required in a modern receiver. One tube type is used throughout the receiver and only five tubes are employed. These five dual purpose tubes, plus four semi-conductor diodes, provide the functions of twelve tube sections. This design approach not only minimizes cost and size, but improves performance due to the reduced heat generated inside the receiver cabinet.

FEATURES and PERFORMANCE CHARACTERISTICS

Double conversion with crystal controlled first oscillator, five crystals included.

Diode detector for a.m. and product detector for s.s.b. and c.w.

Covers complete range of all amateur bands - 80 meters through 10 meters. Ten meter band segmented in three overlapping increments of 650 kc. each. Each band and each segment covers the full 12" dial scale. Calibration every five kc. WWV reception at fifteen Mc.

The automatic noise limiter is a series shunt type

employing two type 1N54A diodes.

"S"-meter functions on a.m., c.w. or s.s.b. with or without b.f.o.

Five dual-purpose tubes plus four semi-conductor diodes provide functions of twelve tube sections.

TUBE and DIODE LINEUP: One 6AW8A, triode mixer and crystal oscillator; one 6AW8A, second mixer and tunable oscillator; one 6AW8A, first i.f. and first audio amplifier; one 6AW8A, second i.f. and product detector; one 6AW8A, second audio amplifier and b.f.o.; one 1N34, a.m. detector; one 2F4, power rec-

tifier; two 1N54A's, noise limiter.
SELECTIVITY: 2.5 kc. at -6 db.
SENSITIVITY: ½ microvolt for 10 db. signal-to-noise ratio on ten meters.
STABILITY: Less than 500 cycles drift after one-minute warm-up. Less than 200 cycles change for 10% line voltage change. Temperature compensated and voltage regulated.
IMAGE and I.F. REJECTION: 35 db. minimum.
AUDIO OUTPUT: ½ watt at 6% distortion.

CONTROLS: Tuning knob and frequency dial, band-switch, preselector tuning, r.f. gain control, a.f. gain control, beat frequency pitch control, detector switch, automatic noise limiter switch and stand by switch.
REAR CHASSIS ACCESSORY FACILITIES: Transmitter Relay Terminals, Accessory Power Socket, External Speaker / VOX Terminals.
POWER CONSUMPTION: 33 Watts. (115 volts a.c., 50 to 60 c.p.s.)
EXPORT MODEL: 230 v.a.c., 50 to 60 c.p.s.

OPERATION

Unpack the receiver carefully and preserve the carton as it has been designed to protect the receiver in transit and it may be used again.

CONTROLS

The receiver controls include the tuning knob and frequency dial, the bandswitch, preselector tuning, r.f. gain control, a.f. gain control, beat frequency pitch control, detector switch, noise limiter switch and stand by switch. An "S"-meter indicates the strength of received signals.

The bandswitch indicates the following frequency ranges:

BANDSWITCH POSITION	TUNING RANGE IN MC.
80A	3.490 - 4.140
40D	6.860 - 7.510
20D	13.860 - 14.510
15D	20.860 - 21.510
10A	28.490 - 29.140
10C	29.090 - 29.740
10B	27.990 - 28.640

Frequencies may be read quite accurately from the tuning dial which has calibration marks every 5 kc. on a scale twelve inches in length. Since the whole megacycle numbers are omitted, a little practice is required to become familiar with the tuning dial. The letters A, B, C and D appear on the frequency dial at each end of the range. The figures for rows A, B and C increase to the right while in row D the figures in-

crease to the left. The scale to be used corresponds to the letter on the bandswitch position. Thus, with the receiver switched to 80 meters, frequency is read on scale A. The whole megacycle number must be prefixed to the dial reading. For example, on 80 meters a dial reading of .945 indicates 3,945 megacycles since all 80 meter band frequencies must be in the 3 megacycle range.

Every line marks 5 kc. of frequency on the dial. 3,945 Mc. would be the first mark to the right of .94 on scale A.

For example: 14,305 Mc. would be read on scale D at one mark to the left of .30. 14,310 would be two marks to the left of .30 etc.

With the bandswitch in the 20D position, a reading of .20 would indicate 14,200 megacycles.

PRESELECTOR TUNING DIAL

The preselector tuning dial is adjusted for maximum signal strength on the band to be received. This control compensates for reactance introduced by the antenna. It is not necessary to peak each signal after a change in frequency. On the high frequency bands (20, 15 and 10 meters) one setting will hold for the entire amateur band. On 40 meters one setting will ordinarily be sufficient to cover about half of the band. On 80 meters the preselector adjustment is not used since the first mixer stage in the receiver is not used on 80 meters. The preselector adjust dial is calibrated in megacycles so that the 7, 14, 21 and 28 Mc. bands can be easily located.

In the bandswitch position labeled 15D/10A the 15 meter band will be received, and the frequency will be indicated on the D scale of the main tuning dial when the preselector dial is set at 21 Mc. In the same

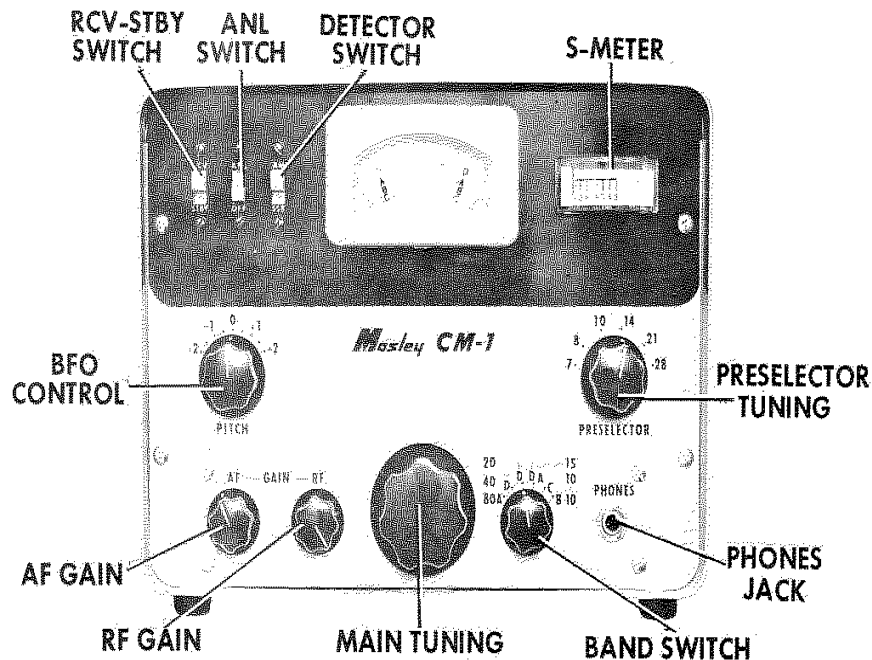


FIG. 2. RECEIVER CONTROLS

bandswitch position, tuning the preselector dial to 28 Mc. will bring in the 10 meter band and frequency will be read on scale A.

Since the 10 meter band is 1700 kc. wide, and therefore more than twice as wide as the tuning range covered by the receiver on any one band, the whole 10 meter band is divided into three overlapping segments of 650 kc. each.

Ranges 10A and 10C cover the 10 meter U.S. phone band. Range 10B is of special interest for DX work since it covers the DX phone band, plus the first 140 kc. of the U.S. phone band.

WWV RECEPTION

The model CM-1 will also receive U.S. Bureau of Standards radio station WWV at 15,000 Mc. if it can be received in your area. This is done by setting the bandswitch to the 40D position and setting the preselector tuning to 15 Mc., or just past the 14 Mc. dial mark. Fifteen Mc. will then be received with the main tuning dial at .00 on scales A and D. When the receiver is tuned for 15 Mc. reception, the A scale has a frequency coverage of 14,490 kc. to 15,140 kc. or a total band spread of 650 kc. This will serve to check the receiver calibration since at exactly the dial setting for WWV, the receiver will be tuned to 7,000 Mc. when the preselector dial is returned to 7 Mc. In this way the 40 meter band edge may be

found with high accuracy.

A.M. - C.W. RECEPTION

To receive a.m. (ordinary phone) stations the detector selector switch should be in the a.m. position. This places the diode detector in the circuit. To receive c.w. (code) or s.s.b. (single sideband suppressed carrier) signals, the selector switch should be in the s.s.b. position. This connects the product detector and at the same time turns on the beat frequency oscillator.

S.S.B. RECEPTION

There are several methods of tuning in s.s.b. signals. Due to the high selectivity, good frequency stability, product detector, and other design features, tuning s.s.b. signals will be found much easier than on receivers of old design not having these refinements. One easy method is to first tune the receiver for maximum reading on the "S"-meter. This may be done with the detector switch in either position. Then the product detector and b.f.o. are switched on, and the b.f.o. pitch control set at -1 on the pitch dial. If the signal is not intelligible, set the pitch control to +1. Usually, in one or the other position the signal will at least be understandable, although not necessarily of natural speech quality. Further small adjustments in the pitch control can then be made to

obtain natural sounding voice quality.

The calibration of the b.f.o. pitch control is + or -2.0 kc. No greater range is ever required because of the narrow bandwidth of the receiver. The plus and the minus are with reference to the center intermediate frequency of 455 kc. and do not indicate the sideband being received.

Under some interference conditions, a.m. may be made more intelligible by receiving it as a s.s.b. station. To do this, however, the signal should not be peaked on the "S"-meter. The pitch control should be set at either +1.5 or -1.5 kc., depending on which results in less interference, then the carrier is tuned for zero beat. This is the so-called "exalted carrier" receiving technique which will frequently reduce fading distortion. C.w. signals are received in the same manner as s.s.b. signals. Setting the b.f.o. at either +1 to +1.5 or -1 to -1.5 will result in "single signal" reception.

"S"-METER

The "S"-meter will require zero adjustment when the receiver is first put in service. Zero adjustment is made with the antenna disconnected (or preselector greatly de-tuned) so that no signal is being received, and the r.f. gain control fully advanced. The control shaft at the rear of the chassis is then adjusted to produce a zero reading on the meter. Each "S"-unit indicates a 3 db. increase in signal strength.

A.F. GAIN CONTROL

The a.f. gain control is used to adjust the volume to a comfortable level and also turn the set on and off. The r.f. gain control may be used on c.w. or with extremely strong signals but will ordinarily be left fully advanced. Automatic volume control will tend to equalize the volume level from stations of different signal strength. One benefit of the product detector is the use of a.v.c. on s.s.b. and c.w. signals. The "S"-meter also functions on c.w. and s.s.b. and is not affected by the b.f.o. The r.f. gain control must, however, be fully advanced for accurate "S"-meter readings. The a.v.c. circuit has been designed to provide the proper time constant for s.s.b. signals.

AUTOMATIC NOISE LIMITER

The receiver is equipped with an automatic noise limiter which is very effective against impulse noise such as automobile ignition interference.

TERMINALS and ACCESSORIES

Antenna and ground terminals are marked on the back of the chassis. The antenna circuit is designed for an input impedance of 50 to 300 ohms. Although a short length of wire will work, best performance will be obtained with any Mosley antenna, high and clear of obstructions. A coax fed Mosley antenna will help you to avoid noise pickup if the antenna lead-in must

pass near noise sources such as TV sets, motors, etc.

The headphone jack on the front panel will disconnect the loudspeaker when the headphones are plugged in. Either high or low impedance phones must be used. Crystal headphones may be used since there is no direct current through the headphones.

Audio output terminals on the rear of the set may be connected to the speaker or to an anti-trip circuit for s.s.b. - v.o.x. operation. The external speaker should have an impedance of 4 ohms.

The stand by switch on the front panel will silence the receiver during transmitting periods. Stand by terminals on the rear of the receiver are in parallel with the switch contacts so that a separate relay may be used to control the receiver. In addition, a separate set of contacts on the stand by switch are connected to the relay terminals on the rear of the set so that if desired the stand by switch may be used to control the antenna or transmitter relay. These contacts are rated to switch 125 volts, 1 amp., non-inductive.

The accessory power socket is also on the rear of the receiver chassis. The accessory power socket may be used to furnish power for a crystal frequency standard or other accessories requiring not more than 6.3 volts at .3 amp. and 125 volts at 5 Ma.

The receiver operates from 115 volts a.c., 50 to 60 c.p.s. Power consumption is 33 watts.

CIRCUIT THEORY

The CM-1 communications receiver is basically a highly selective, 4 tube, superheterodyne set tuning the 80 meter band, plus a single tube crystal controlled converter stage which is used only on 40, 20, 15 and 10 meters to convert those bands to the 80 meter tuning range.

In the 80 meter bandswitch position, the crystal oscillator is turned off and the first mixer is biased to cut off, thus preventing tube noise from being generated by the first mixer. The 80 meter band is the first intermediate frequency approached when tuning the other amateur bands. The second i.f. is 455 kc. This gives the same bandspread, tuning rate and calibration accuracy on the high frequency bands; 40, 20, 15 and 10 meters as are obtained on 80 meters.

The receiver has several unique features representing a departure from previous design practice. The use of one tube type throughout the set has not been done in amateur receivers although several military receivers have followed this practice, to reduce supply problems. Because of the unusual characteristics of the 6AW8A, performance is not compromised through this design.

STABILITY

In stability the CM-1 achieves one of the highest ratings possible in modern communications receivers. This high stability is due primarily to the use of a crystal controlled high frequency oscillator on the higher frequency bands. The tunable oscillator operates at a low frequency near 4 Mc. where it is not difficult to obtain satisfactory stability. The tunable oscillator circuit has no bandswitch since bandswitching is done by changing crystals and circuits in the first mixer stage—an additional reason for good oscillator stability and calibration accuracy. Every tunable oscillator component is selected for the greatest stability. A ceramic coil form is used for the oscillator coil. The tuning capacitor is double spaced and driven by spring loaded gears. The oscillator voltage supply is regulated and the tuned circuit is temperature compensated. Finally, the power consumption of the set is very low and the cabinet is well ventilated to reduce the temperature rise.

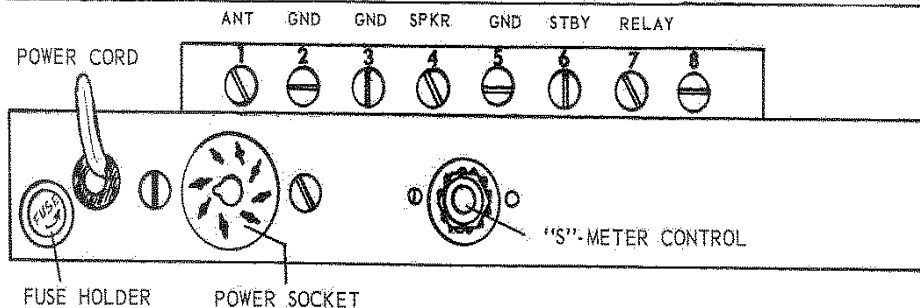
The oscillator tube, tuning capacitor and dial form an independent subassembly which is separately assembled and calibrated. The box-like shield provides sturdy mechanical support as well as electrostatic shielding. The rim driven dial eliminates the chance of slippage found on many string dial drives.

SIGNAL TO NOISE RATIO

Signal to noise ratio is the best index of a receiver's

ability to receive weak signals. Most receivers perform satisfactorily on 80, 40 meters but show a loss in sensitivity on 20, 15 and 10. The model CM-1 will give a 10 db. signal to noise output from a ½ micro-volt signal in the 10 meter band.

One of the most noticeable aspects of the schematic diagram is the absence of an r.f. amplifier stage on any band. The pentode r.f. amplifier stage normally found on many amateur receivers serves three functions: amplification, image rejection and signal to noise ratio improvement. In the CM-1 all of these requirements are met through the use of a multiple tuned triode mixer with better over-all performance. Amplification may be provided at any point between the antenna and the detector with equivalent results. Since there are already two high gain mixers and two i.f. amplifiers in the receiver, no further amplification is necessary. Image rejection is a function of the selectivity of the tuned circuits. The model CM-1 has, in all cases, at least two tuned circuits between the antenna and the input grid and therefore provides the same results as would be produced by the conventional tuned r.f. amplifier. Signal to noise ratio is directly related to the equivalent noise resistance of the first tube in the receiver. It is more difficult to reduce tube noise problems on high frequencies than at 80 meters, where almost any tube gives acceptable performance. On 10 meters, the noisiness of a tube must be carefully considered.



Terminals 1 and 2 are used to connect the antenna lead-in to the receiver.

Connect the coax center conductor to terminal 1 and the ground or coax outer conductor to ground at terminal 2.

Terminals 3 and 4 are used to connect the speaker to the receiver.

Connect one lead from the speaker voice coil to terminal 4 and the other lead to ground at terminal 3. If this circuit is used for v.o.x., anti-trip, be sure to

observe ground polarity.

Terminals 5 through 8 are to be used for transmitter control and receiver muting, if desired.

Terminals 5 and 6 may be controlled by an external switch in the relay for receiver muting, leaving the RCY-STBY switch in the STBY position. An alternate control method would use the RCY-STBY switch to control the transmitter by connecting the transmitter controls to terminals 7 and 8 to control a transmitter relay. The receiver will be muted in the stand-by position.

FIG. 3. TERMINAL STRIP

By calculation, it can be shown that a triode mixer, such as the first mixer in the CM-1, has lower noise than a pentode r.f. amplifier. This has been verified by exhaustive tests of many mixer circuits.

A further reason for lower noise in a double conversion receiver such as the CM-1 is the reduction in oscillator noise as a result of the high first i.f. The oscillator signal is coupled directly into the first mixer with the desired signal. In addition to the desired oscillator frequency, every oscillator also operates as a noise generator, producing a continuous spectrum of noise energy which has an energy distribution shaped exactly like the resonance curve of the oscillator tuned circuits. If the signal frequency and the oscillator circuit resonant frequency are close together, there will be appreciable noise energy from the oscillator at the signal frequency which will add to the noisiness of the receiver. By separating the signal and oscillator frequencies by a higher i.f. the oscillator noise output on the signal frequency is reduced, since the oscillator tuned circuit resonance will be farther from the signal frequency.

Selectivity of the CM-1 is 2.5 kc. at -6 db. and 15 kc. at 60 db. This narrow bandwidth is an optimum compromise for a.m., c.w. and s.s.b. reception. Single signal c.w. reception is achieved without "ringing" or blending of characters and spaces. The selectivity is the result of specially designed i.f. transformers. These transformers use special high Q coils with the input and output terminals tapped down on the windings to prevent lowered selectivity due to circuit loading. The capacitors which resonate the transformers are high capacity, silver mica type to obtain excellent frequency stability. Neutralization of each stage aids in producing a smooth, symmetrical and stable i.f. response curve.

Throughout the receiver a consistent design technique has been followed which places the selectivity producing filters as close as possible to the antenna before the high amplification occurs. Thus, the first mixer input circuit has two tuned circuits, the second mixer input circuit has two tuned circuits and the second i.f. (455 kc.) input circuit has four tuned circuits. More conventional design practice is to distribute the selectivity uniformly between amplifier stages. Concentrating the selectivity close to the antenna allows the CM-1 to give best performance under the most severe test of any communications receiver, that is, reception of a weak signal with a much stronger signal only a few kilocycles away.

There is only one spurious response in the receiver. This occurs on the three 10 meter bands and is a harmonic of the tunable oscillator. Either the product detector or diode detector is selec-

BAND	IMAGE REJECTION	FIRST I.F. REJECTION
10 meters	35 db.	52 db.
15 meters	52 db.	47 db.
20 meters	68 db.	44 db.
40 meters	64 db.	37 db.
80 meters	67 db.	—

ted by the detector selector switch. The product detector is a mixer stage in which the beat frequency oscillator signal is introduced at a high level while the incoming signal is introduced at low level. The product detector isolates the b.f.o. signal from the diode detector and i.f. amplifier, so that the a.v.c. action is not upset by the b.f.o. This allows the "S"-meter to function normally on c.w. and s.s.b. signals as well as a.m. signals. Tuning with the "S"-meter is made easy by the smooth, symmetrical response curve of the receiver.

The automatic noise limiter is a series-shunt type employing two type 1N54A diodes. The diodes are biased by the a.v.c. voltage to pass audio voltages representing up to approximately 90% modulation. Noise pulses, not having a "carrier" are clipped off because no a.v.c. voltage is developed which will bias the diodes in the direction necessary to pass the audio. Since some audio distortion is inevitable with the automatic noise limiter, a switch is provided to remove it from the circuit when it is not needed.

The noise limiter is effective only in the a.m. position of the detector switch.

In the power supply, a silicon rectifier is used which has low voltage drop with consequently good regulation and negligible heating of the receiver chassis. A three section resistance-capacitance filter eliminates power supply hum. The supply voltage on both the b.f.o. and the tunable oscillator are regulated by individual neon bulbs. The regulated voltage changes less than 1% for a 6% fluctuation in the +125 volt B-plus supply, and adds materially to the frequency stability of these oscillators.

If the a.c. supply voltage is interrupted momentarily, the regulator bulbs will fail to light and voltage regulation will be lost. To prevent this, the power switch should be turned off until the tube filaments have cooled approximately 60 seconds before turning the set on again.

MAINTENANCE

To remove the receiver from the cabinet, first disconnect the speaker and antenna leads and remove the power plug from the 115 volt (230 volts if export model) outlet. Next, rotate the preselector tuning knob to the 7 Mc. position to prevent possible damage to the variable capacitor plates as the chassis is removed from the cabinet. Remove the two screws from each side of the front panel and the screws holding the two rear bumper feet on the bottom of the cabinet. The chassis and front panel assembly may then be withdrawn from the front of the cabinet.

If tube replacement does not restore operation, voltage and resistance measurements should be made and compared against the voltage and resistance chart on page nine. Voltage readings for tube socket V2 should be made with the tube removed from the socket.

The diagnosis of receiver trouble is greatly simplified by making a trial insertion of a spare tube into each of the five tube sockets in rotation. Since tube failures can be counted on to be the most common cause of trouble, this method will usually restore the set to normal operating condition. It is therefore recommended that you keep one spare 6AW8A tube on hand for this purpose.

The tunable oscillator operates 455 kc. higher than the frequency reading on the 80A scale. A separate receiver which covers this range, 3945 to 4595 kc., may be used to check for operation of the oscillator, by placing a pickup lead near the tube shield on V2. The crystal oscillator signals may also be monitored in a separate general coverage receiver if one is available. The best way to tune the crystal oscillator coils is to beat the crystal frequency against harmonics of a frequency standard such as a 100 kc. crystal oscillator, tuning L3, L4 and L5 to bring the beat note to zero. A non-metallic screwdriver or tuning wand should be used to tune L3, L4 and L5.

If tube substitution does not restore sensitive performance, and the tunable and crystal oscillators have been found to be operating properly, alignment of the signal, first and second i.f. circuits may be required. Alignment of the receiver requires accurately calibrated test equipment and should not be attempted without it. A 455 kc. crystal oscillator is recommended for alignment of the i.f. stages. The receiver must be removed from the cabinet to perform an alignment. Couple the signal loosely to terminal 2 of T1 to produce a reading on the "S"-meter no greater than S-9. The screw adjustments on the top and bottom of T1, T2, T3 and T4 are then tuned carefully for maximum "S"-meter reading, using a non-metallic screwdriver

or tuning wand. As alignment progresses, the signal generator level or coupling should be reduced to keep the "S"-meter reading below S-9. The b.f.o. transformer, T5, bottom screw adjustment should then be tuned for zero beat in the s.s.b. detector switch position, with the pitch dial set to zero.

The tunable oscillator frequency range may next be checked and adjusted if necessary. A crystal controlled frequency standard such as a 100 kc. oscillator should be connected to the antenna terminal, and the receiver set to the 80 meter band. The oscillator coil (L8) tuning slug is adjusted to bring in a 3500 kc. signal with the dial set at that frequency, while the variable trimmer capacitor, C20, is adjusted to bring in a 4000 kc. signal at that dial setting. These two adjustments interlock and must be made, alternately, several times until dial error is negligible.

After the tunable oscillator covers the proper range, the double tuned second mixer input circuit may be aligned. This is accomplished by adjusting the tuning slugs in L6 and L7 at a frequency setting of 7500 kc., and the trimmer capacitors, C11 and C14 at a frequency setting of 7000 kc. for maximum receiver sensitivity. The receiver should be set on the 40D range to make this alignment.

The final alignment adjustment is the double tuned input circuit for the first mixer. First set the receiver to 6900 kc. on band 40D. Set the preselector tuning dial to the full counter-clockwise position. Tune the slugs in L1 and L2 for maximum sensitivity, peaking on noise, a received signal, or a signal generator at 6900 kc. Next, set the bandswitch on band 10C, leaving the main tuning dial in the same position as before will result in receiving 29,700 kc. Set the preselector tuning dial to the full clockwise position and introduce a signal from a signal generator of 29,700 kc. Peak the trimmer capacitor, C1, on one section of the two-gang capacitor for maximum sensitivity. This completes the alignment.

The receiver is mechanically simple and uncluttered. The rim drive mechanism on the main tuning dial may be adjusted for greater tension by removing the knob, loosening the hex nut on the shaft bushing and sliding the bushing toward the dial center for tighter engagement of the rim drive wheels.

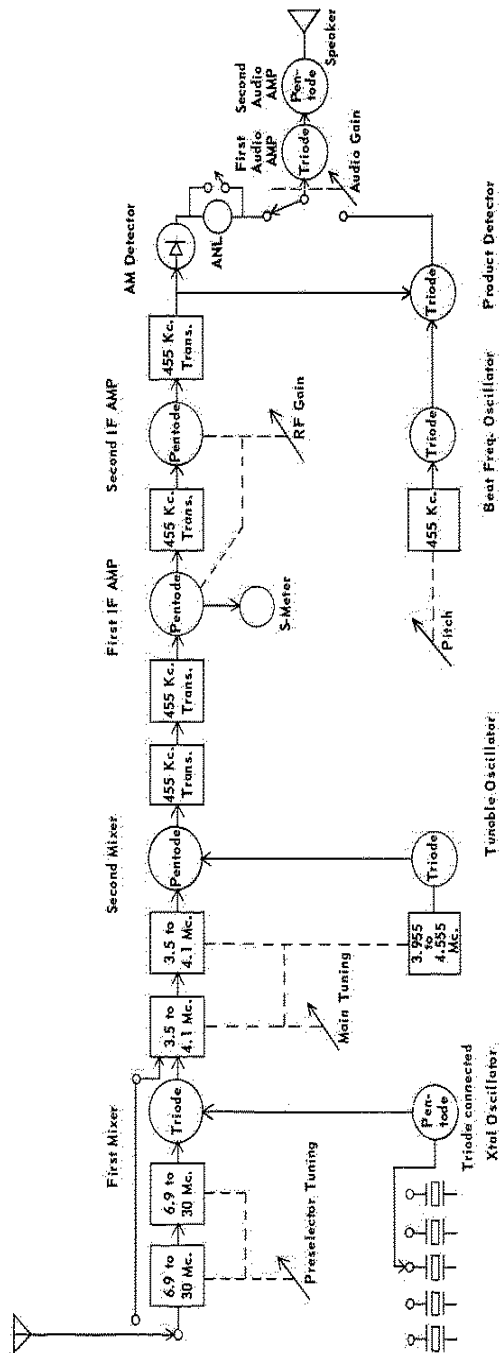


FIG. 4. BLOCK DIAGRAM

TABLE 3 RESISTANCE MEASUREMENTS

TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	2.7K	68	50K	.1	0	0	27K	75K	75K
V2	0	10K	60K	0	.1	1K	0	150K	50K
V3	0	4.7 Meg.	150K	.1	0	270	1 Meg.	50K	50K
V4	2.7K	1K	160K	.1	0	270	1 Meg.	50K	50K
V5	0	100K	75K	.1	0	68	1 Meg.	50K	50K

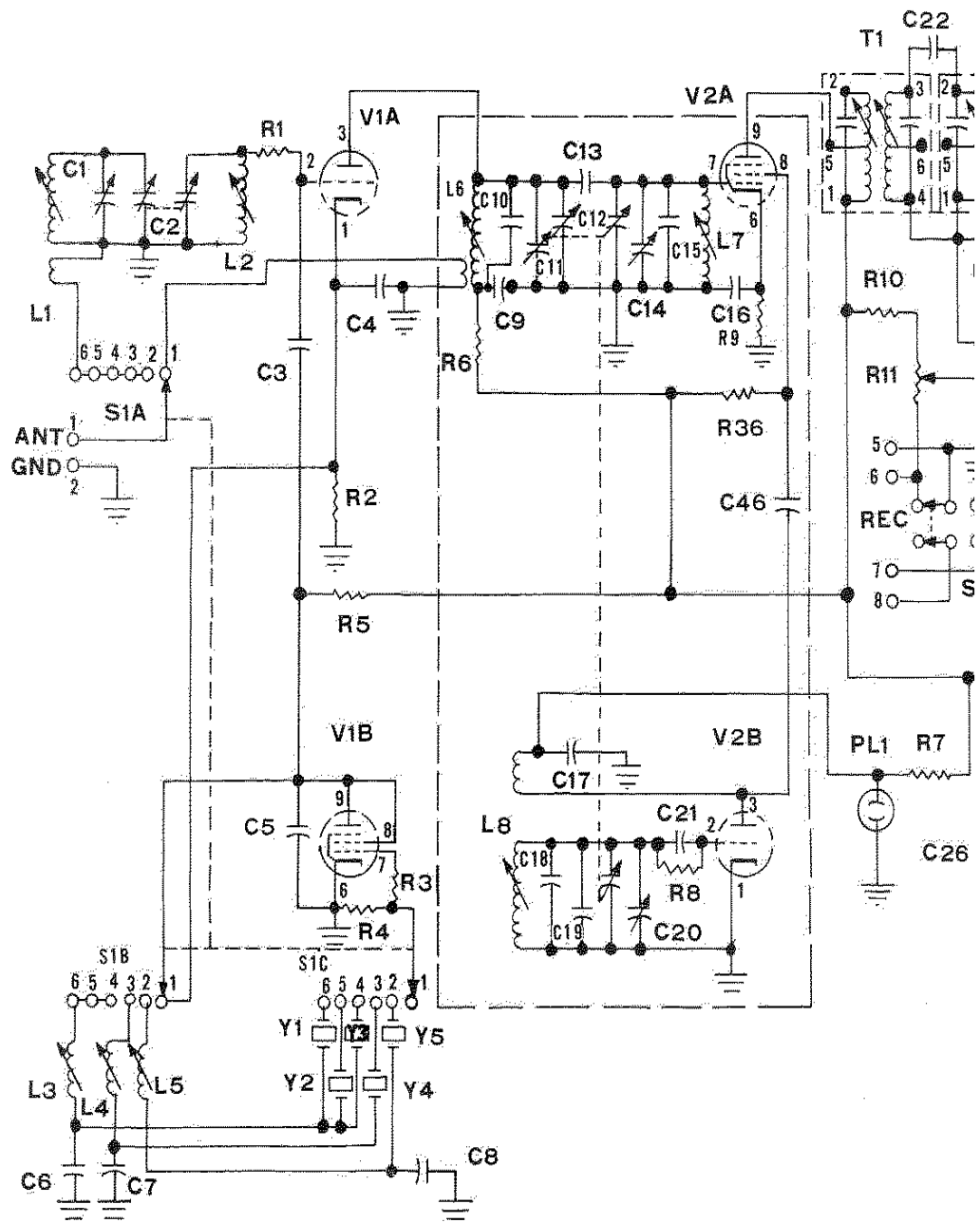
Resistance readings are shown with power disconnected. A.f. gain control is at mid-range and r.f. gain is at maximum clockwise rotation. Detector selector switch is on SSB position and standby switch on RCY.

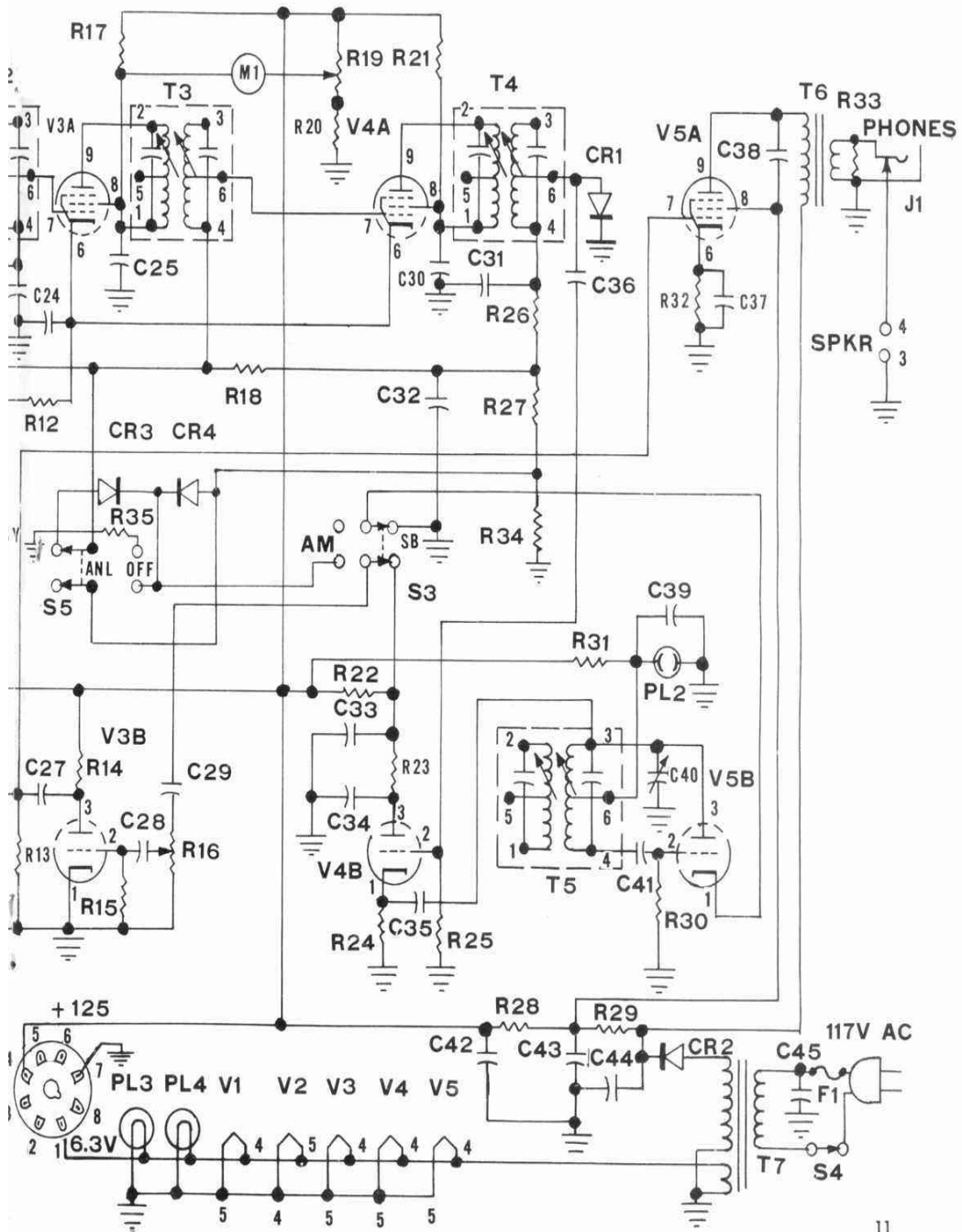
TABLE 4 VOLTAGE MEASUREMENTS

TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	+1.7	0	+120	6.3 v.a.c.	0	0	-2.7 v.	+36	+36
V2*	0	0	+70	0	6.3 v.a.c.	0	0	+70	+125
V3	0	-.75	+55	6.3 v.a.c.	0	+3.3	0	+117	+117
V4	+5	0	+55	6.3 v.a.c.	0	+3.3	0	+115	+115
V5	0	-22	+70	6.3 v.a.c.	0	+1.6	0	+135	+132

Voltage measurements are made with a v.t.v.m. Measured values are made from socket pin to chassis.

* Readings for V2 are made with the tube removed from the socket.





SCHEMATIC DIAGRAM

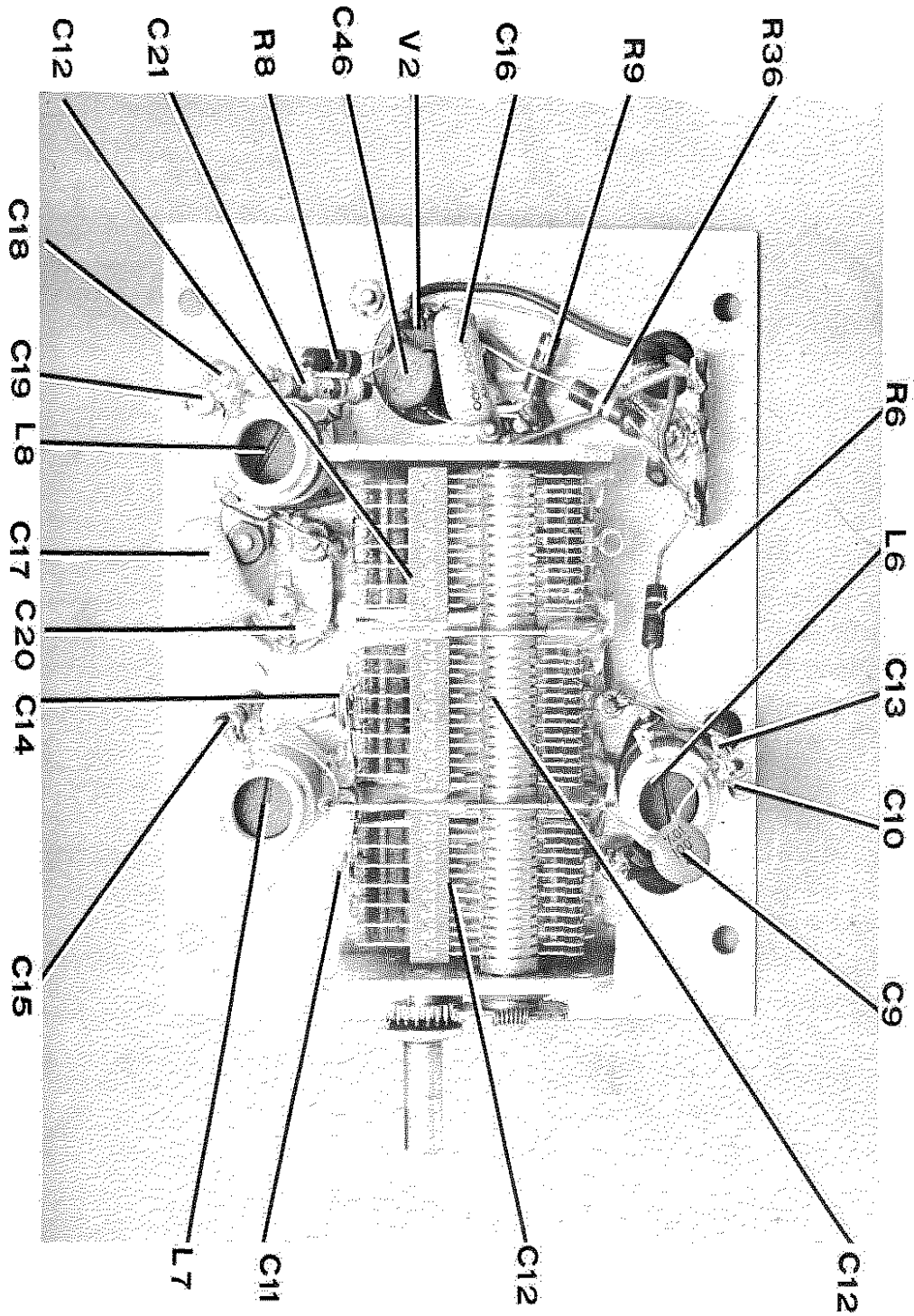


FIG. 6. TUNER SIDE PLATE VIEW

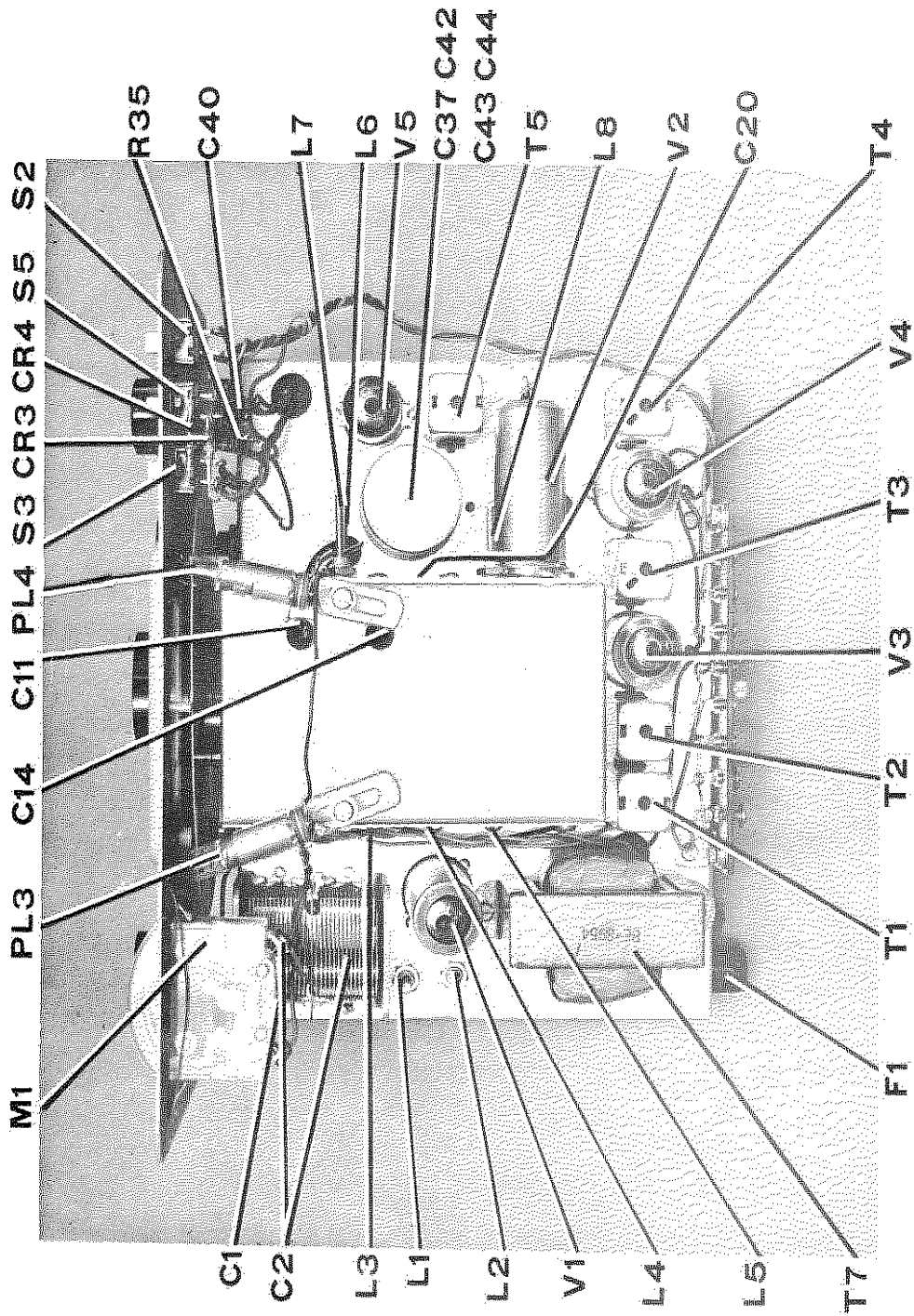


FIG. 7, TOP CHASSIS VIEW

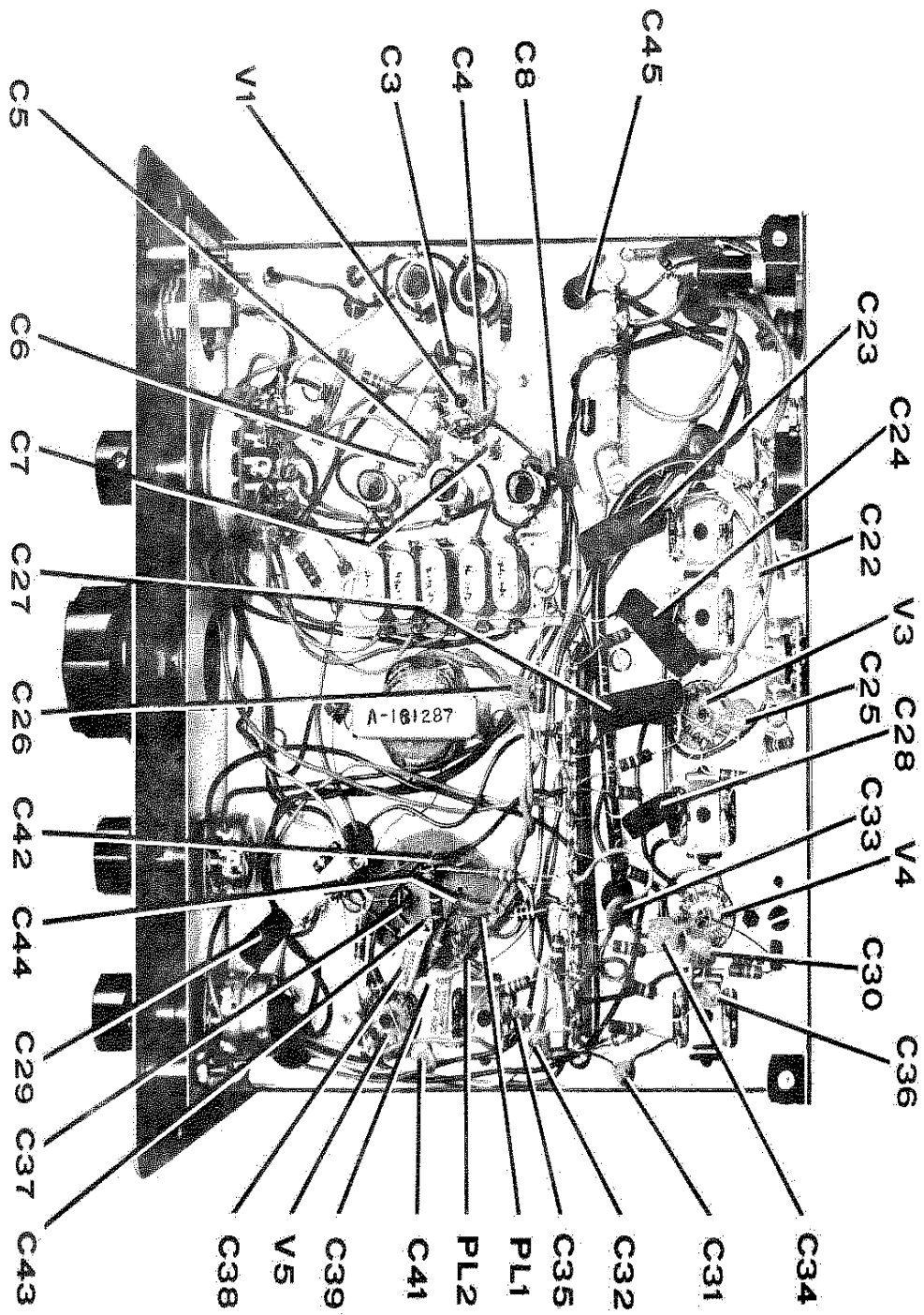


FIG. 8a, BOTTOM CHASSIS VIEW

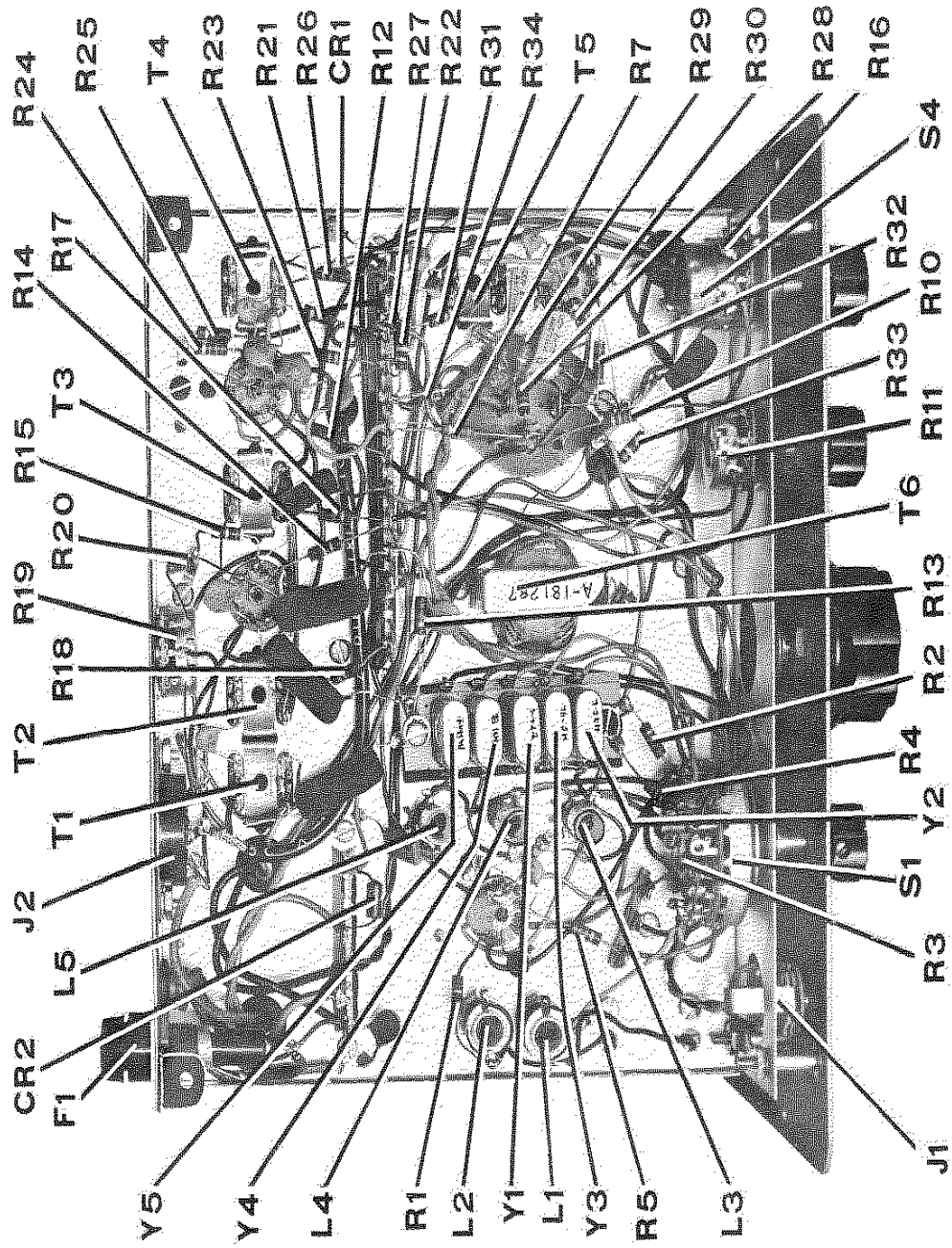


FIG. 86, BOTTOM CHASSIS VIEW

PARTS LIST

C1	5-20 m.m.f. mica trimmer	L1	1.1 uh. adjustable, ceramic, slug tuned
C2	12-465 m.m.f. per section, 2 gang	L2	1.1 uh. adjustable, ceramic, slug tuned
C3	2.7 m.m.f. ceramic	L3	1.4 uh. adjustable, slug tuned
C4	1000 m.m.f. ceramic	L4	2.5 uh. adjustable, slug tuned
C5	20 m.m.f. ceramic	L5	6.25 uh. adjustable, slug tuned
C6	50 m.m.f. NPO ceramic	L6	17 uh. adjustable, ceramic, slug tuned 2-½ turn antenna winding
C7	50 m.m.f. NPO ceramic	L7	17 uh. adjustable, ceramic, slug tuned
C8	100 m.m.f. mica	L8	12 uh. adjustable, ceramic, slug tuned
C9	1000 m.m.f. ceramic	M1	"S"-meter, 1 ma.
C10	50 m.m.f. NPO ceramic	PL1	NE-2H neon bulb
C11	5-20 m.m.f. mica trimmer	PL2	NE-2H neon bulb
C12	11-49 m.m.f. per section, 3 gang	PL3	Pilot lamp, 6.3 v., .15 amp. No. 47
C13	2.7 m.m.f. ceramic	PL4	Pilot lamp, 6.3 v., .15 amp. No. 47
C14	5-20 m.m.f. mica trimmer		
C15	56 m.m.f. NPO ceramic		
C16	4700 m.m.f. mylar 400 volt	ALL RESISTORS ½ WATT, PLUS or MINUS 10%	
C17	4700 m.m.f. mylar 400 volt	R1	68 ohms
C18	56 m.m.f. NPO ceramic	R2	2.7 K
C19	15 m.m.f. N750 ceramic	R3	39 ohms
C20	3-12 m.m.f. NPO ceramic trimmer	R4	27K
C21	56 m.m.f. NPO ceramic	R5	27 K
C22	5 m.m.f. ceramic	R6	1 K
C23	.1 mfd. mylar 200 volt	R7	15 K
C24	.1 mfd. mylar 200 volt	R8	10 K
C25	1000 m.m.f. ceramic	R9	1 K
C26	1000 m.m.f. ceramic	R10	82 K
C27	.1 mfd. mylar 200 volt	R11	10 K Potentiometer, 1 w.
C28	4700 m.m.f. mylar 400 volt	R12	270 ohms
C29	4700 m.m.f. mylar 400 volt	R13	1 meg.
C30	1000 m.m.f. ceramic	R14	100 K
C31	200 m.m.f. ceramic	R15	4.7 meg.
C32	200 m.m.f. ceramic	R16	500 K volume control, 1 w.
C33	1000 m.m.f. ceramic	R17	1 K
C34	1000 m.m.f. ceramic	R18	1 meg.
C35	20 m.m.f. ceramic	R19	10 K Potentiometer, 1 w.
C36	20 m.m.f. ceramic	R20	56K
C37	25 mfd., 25 volt electrolytic	R21	1 K
C38	4700 m.m.f. mylar 400 volt	R22	100 K
C39	4700 m.m.f. mylar 400 volt	R23	10 K
C40	4-32 m.m.f. variable	R24	2.7 K
C41	200 m.m.f. ceramic	R25	1 K
C42	50 mfd. 150 volt electrolytic	R26	10 K
C43	50 mfd. 150 volt electrolytic	R27	82 K
C44	50 mfd. 150 volt electrolytic	R28	470 ohms
C45	1000 m.m.f. ceramic	R29	270 ohms
C46	1000 m.m.f. ceramic	R30	100 K
CR1	1N34 diode	R31	27 K
CR2	2F4 rectifier	R32	68 ohms
CR3	1N54A diode	R33	39 ohms
CR4	1N54A diode	R34	47 K
J1	Headphone jack	R35	2.2 meg.
J2	Accessory socket	R36	100 K

PARTS LIST (cont.)

S1	3 pole 6 position rotary switch	V1	Type 6AW8A tube
S2	DPDT slide switch	V2	Type 6AW8A tube
S3	DPDT slide switch	V3	Type 6AW8A tube
S4	Line switch - part of R16	V4	Type 6AW8A tube
S5	DPDT slide switch	V5	Type 6AW8A tube
T1	455 kc. i.f. transformer, special	Y1	24.500 Mc., third overtone crystal, .005%
T2	455 kc. i.f. transformer, special	Y2	25.600 Mc., third overtone crystal, .005%
T3	455 kc. i.f. transformer, special	Y3	25.000 Mc., third overtone crystal, .005%
T4	455 kc. i.f. transformer, special	Y4	18.000 Mc., third overtone crystal, .005%
T5	455 kc. i.f. transformer, special	Y5	11.000 Mc., third overtone crystal, .005%
T6	Output transformer, 5000 ohms to 4 ohms	F1	Fuse, $\frac{3}{4}$ amp., slow blow
T7	Power transformer, 125 v., 60 Ma.; 6.3 v., 3.5 amp. (Export model, 230 volt primary)		

ACCESSORIES

160 meter converter, Model No. CV - 160

Speaker, Model No CMS - 1

Antennas; For information on any Mosley antenna write to:

Mosley Electronics Inc.

Attn: Sales Department

4610 No. Lindbergh Blvd.

Bridgeton, Missouri

WARRANTY

Mosley Electronics, Inc. warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to us or to our authorized radio dealer or wholesaler from whom purchased, intact, for our examination, with all transportation charges prepaid to our factory, within ninety days from the date of sale to original purchaser and provided that such examination discloses, in our judgement, that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, unauthorized modifications, or to use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside

of our factory, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

The Radio Parts Distributor will assume the responsibility for replacement or exchange of any component part of a unit approved for remedy or exchange hereunder, through the factory Customer Service Department, without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

Mosley Electronics, Inc. reserves the right to make any change in design or to make addition to, or improvements in, its products without imposing any obligations upon itself to install them in its products previously manufactured.