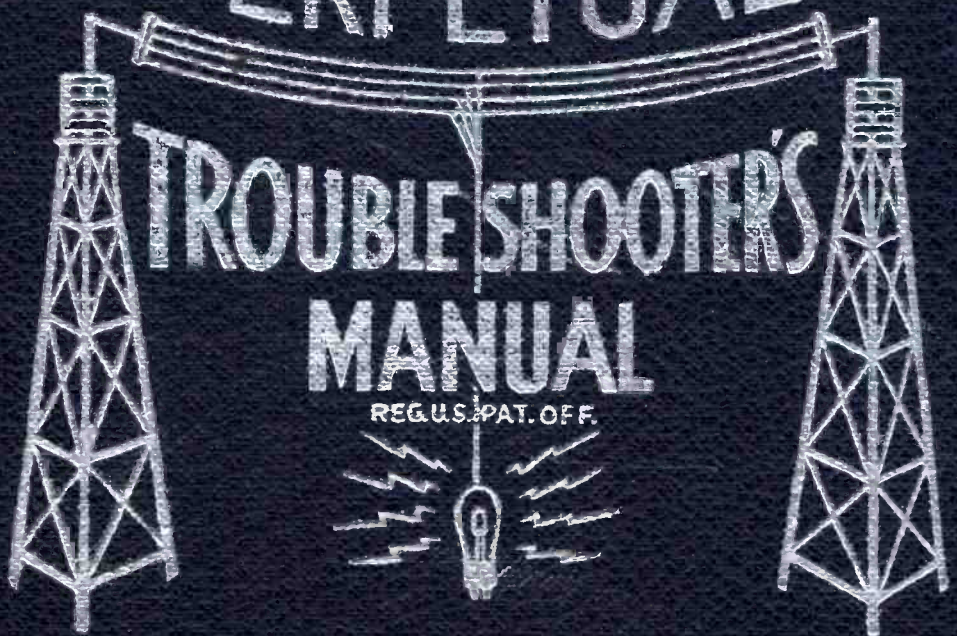
VOLUME XVII

# PERPETUAL TROUBLESHOOTER'S MANUAL




JOHN F. RIDER

# PERPETUAL

# TROUBLE SHOOTER'S MANUAL

Reg. U.S. Pat. Off.

## VOLUME XVII

JOHN F. RIDER PUBLISHER, INC.

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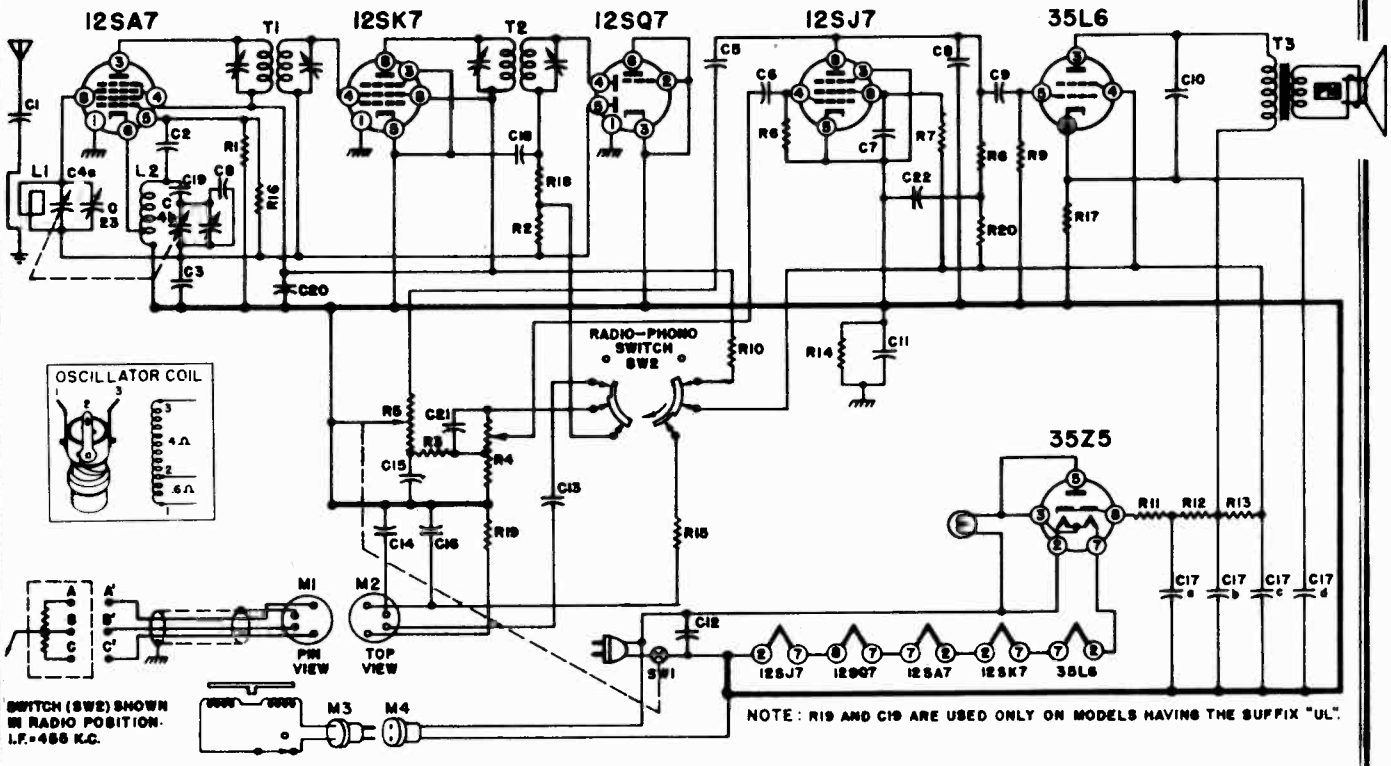
# ADMIRAL CORPORATION

MODELS 7C60, 7C60UL
Chassis 6B1, Early, Late




## REPLACEMENT PARTS

### RESISTORS

| Symbol | | Part No. |
|---|---|---|
| R1 | 22,000 Ohms, ½ Watt | 60B 8-223 |
| R2 | 1 Megohm, ½ Watt | 60B 8-105 |
| R3 | 27,000 Ohms, ½ Watt | 60B 8-273 |
| R4 | 1 Megohm Volume Control (Tapped at 500,000 ohms) | 75B 2-6 |
| R5 | 2 Megohm Tone Control and Switch SW1 | 75B 1-12 |
| R6 | 4.7 Megohms, ½ Watt | 60B 8-475 |
| R7 | 1.8 Megohms, ½ Watt | 60B 8-185 |
| R8 | 100,000 Ohms, ½ Watt | 60B 8-104 |
| R9 | 470,000 Ohms, ½ Watt | 60B 8-474 |
| R10 | 100 Ohms, ½ Watt | 60B 8-101 |
| R11 | 33 Ohms, 1 Watt | 60B 28-3 |
| R12 | 220 Ohms, 1 Watt | 60B 28-7 |
| R13 | 1,000 Ohms, 1 Watt | 60B 28-2 |
| R14 | 150,000 Ohms, ½ Watt | 60B 8-154 |
| R15 | 22,000 Ohms, ½ Watt | 60B 8-223 |
| R16 | 10 Megahms, ½ Watt | 60B 8-106 |
| R17 | 150 Ohms, 1 Watt | 60B 14-151 |
| R18 | 100,000 Ohms, ½ Watt | 60B 8-104 |
| R19 | 33,000 Ohms, ½ Watt (Used only on "UL" models) | 60B 8-333 |
| R20 | 47,000 Ohms, ½ Watt | 60B 8-473 |

### CONDENSERS

| Symbol | | Part No. |
|---|---|---|
| C1 | .005 mfd., 600 Volts, Paper (Used only in early production) | 64B 1-12 |
| C2 | 50 mmfd. ± 20%, Ceramic | 65B 6-4 |
| C3 | .1 mfd., 200 Volts, Paper | 64B 1-30 |
| C4a, C4b | Gang, 0 to 420 mmfd. / Gang, 0 to 162 mmfd. (Spotwelded to drum) | A1341 |
| C5 | .002 mfd., 600 Volts, Paper | 64B 1-14 |
| C6 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C7 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C8 | 15 mmfd. ± 20%, Ceramic | 65B 6-18 |
| C9 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C10 | .03 mfd., 400 Volts, Paper | 64B 1-23 |
| C11 | .18 mfd., 200 Volts, Paper | 64A 2-2 |
| C12 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C13 | .001 mfd., 600 Volts, Paper | 64B 1-15 |
| C14 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C15 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C16 | .1 mfd., 200 Volts, Paper | 64B 1-30 |
| C17a | 30 mfd., 150 Volts | Elect. 67A 14-1 |
| C17b | 30 mfd., 150 Volts | |
| C17c | 20 mfd., 150 Volts | |
| C17d | 20 mfd., 25 Volts | |
| C18 | 250 mmfd. ± 20%, Ceramic | 65B 6-5 |
| C19 | .02 mfd., 400 Volts, Paper (Used only on "UL" models) | 64B 1-24 |
| C20 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C21 | 500 mmfd. ± 20%, Ceramic | 65B 6-6 |
| C22 | .1 mfd., 200 Volts, Paper | 64B 1-30 |
| C23 | 3-30 mmfd., Trimmer (Used only in later production) | Part of L1 |

### COILS, TRANSFORMERS, Etc.

| | | |
|---|---|---|
| L1 | Antenna, Loop | 69B 13 |
| L2 | Coil, Oscillator | 69A 14 |
| T1 | Transformer, 1st I.F. | 72B 3 |
| T2 | Transformer, 2nd I.F. | 72B 4 |
| T3 | Transformer, Output | 98A 33-10 |
| | Speaker (6") & Output Transformer | 78B 31-2 |
| SW1 | Switch, On-Off | Part of R5 |
| SW2 | Switch, Radio-Phono | 77A 16-1 |

### CABINET PARTS

| Description | | Part No. |
|---|---|---|
| Arm, Cabinet Lid Stay | | |
| | for 7C60W, 7C60M | 98A 33-6 |
| | for 7C60B | 98A 33-8 |
| *Cabinet | | |
| | Walnut (7C60W) | 35E 69-1 |
| | Mahogany (7C60M) | 35E 69-2 |
| | Blond (7C60B) | 35E 69-3 |
| Dial Escutcheon, Plastic | | 23A 9-2 |
| Dial Scale, Glass | | 21B 48-1 |

### CABINET PARTS

| Description | | Part No. |
|---|---|---|
| Grille Cloth | | |
| | for 7C60W | 98A 33-11 |
| | for 7C60M | 98A 33-12 |
| | for 7C60B | 98A 33-13 |
| Grille, Metal (for 7C60M, 7C60B) | | 98A 33-4 |
| Hinge, Cabinet Lid | | |
| | for 7C60W, 7C60M | 98A 33-5 |
| | for 7C60B | 98A 33-9 |
| Knob | | 33A 19-6 |
| Lid, Cabinet | | |
| | for 7C60W | 98A 33-1 |
| | for 7C60M | 98A 33-2 |
| | for 7C60B | 98A 33-3 |
| Washer, Felt (under knobs) | | 5A 4-4 |

### PHONOGRAPH PARTS

**Note: See record changer manual for complete parts list.**

| | | |
|---|---|---|
| M1 | Plug, Pickup | 88A 8-5 |
| M2 | Socket, Phono | 88A 8-6 |
| M3 | Plug, Motor | 88A 8-1 |
| M4 | Phono-Motor Socket & Leads (Female connector) | 89A 6-3 |
| Cartridge and Needle, Pickup | | A 1372 |
| Centerpost | | G400B137-1 |
| Drive Disc Assembly | | G 400A 179 |
| Idler Wheel (40783 Motor) | | G 400A 23 |
| Idler Wheel (40781 Motor) | | G 400A 57 |
| Motor, 60 Cycle 115 Volt A.C. | | 407B 3-2 |
| Pickup Cable and Plug | | A 1322 |

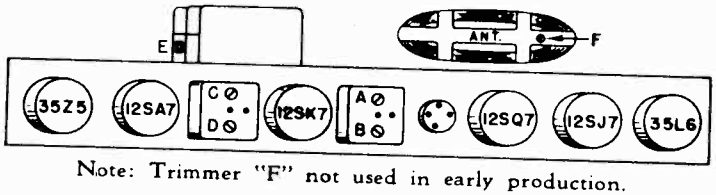
### MISCELLANEOUS

| | |
|---|---|
| Background, Dial | 22B 16 |
| Cord, Dial (44") | 50A 1-3 |
| Grommet, Rubber | 12A 1-2 |
| Pilot Light Socket and Leads | 82A 2-4 |
| Pointer | 25A 27 |
| Pulley (Fibre) and Bracket Assembly | A 1014 |
| Shaft, Tuning | 2BA 11-4 |
| Spring, Dial Drum Cord Tension | 19B 1-3 |

*** Supplied only if old cabinet cannot be repaired. When ordering, describe condition of old cabinet in detail.**

MODELS 7C60,7C60U1 **ADMIRAL CORPORATION**

## TUBE and TRIMMER LOCATION




Note: Trimmer "F" not used in early production.

**TOP VIEW**

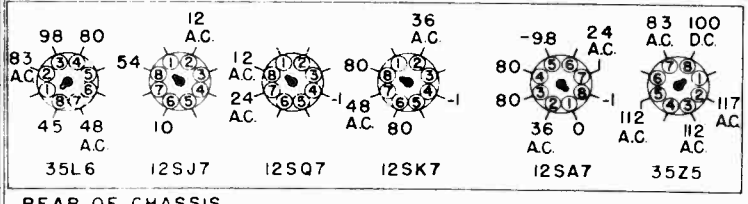
## ALIGNMENT PROCEDURE

- Check pointer position. With tuning gang closed, the left edge of the pointer clip should be over the $\frac{1}{16}$" hole at the extreme left end of the dial background (see stringing diagram).
- Connect Output Meter across Voice Coil.
- Turn Receiver Volume Control—**full** on.
- Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed in the following sequence.
- Repeat adjustments to insure good results.

| Connect Signal Generator to— | Dummy Antenna Between Radio and Generator | Set Generator Frequency to— | Set Receiver Dial Frequency to— | Adjust Following Trimmers | Type of Adjustment |
|---|---|---|---|---|---|
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 455 K.C. | High frequency end of Dial | A-B—2nd I. F.<br>C-D—1st I. F. | Adjust to maximum Output |
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 1630 K.C. | High frequency end of Dial | E—Osc. | Adjust to maximum Output |
| Loop radiator (or place lead from generator close to loop of set to obtain adequate signal) | No actual connection between set and generator. | 1400 K.C. | Tune in generator signal | F—Ant. (See Note) | Adjust to maximum Output |

Note: Antenna Trimmer "F" must be aligned after chassis and loop are mounted in cabinet. Trimmer "F" was not used in early production.

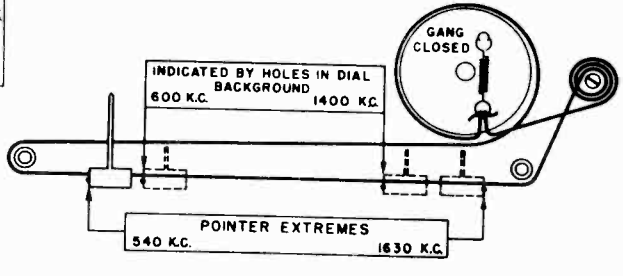
## VOLTAGE DATA




REAR OF CHASSIS

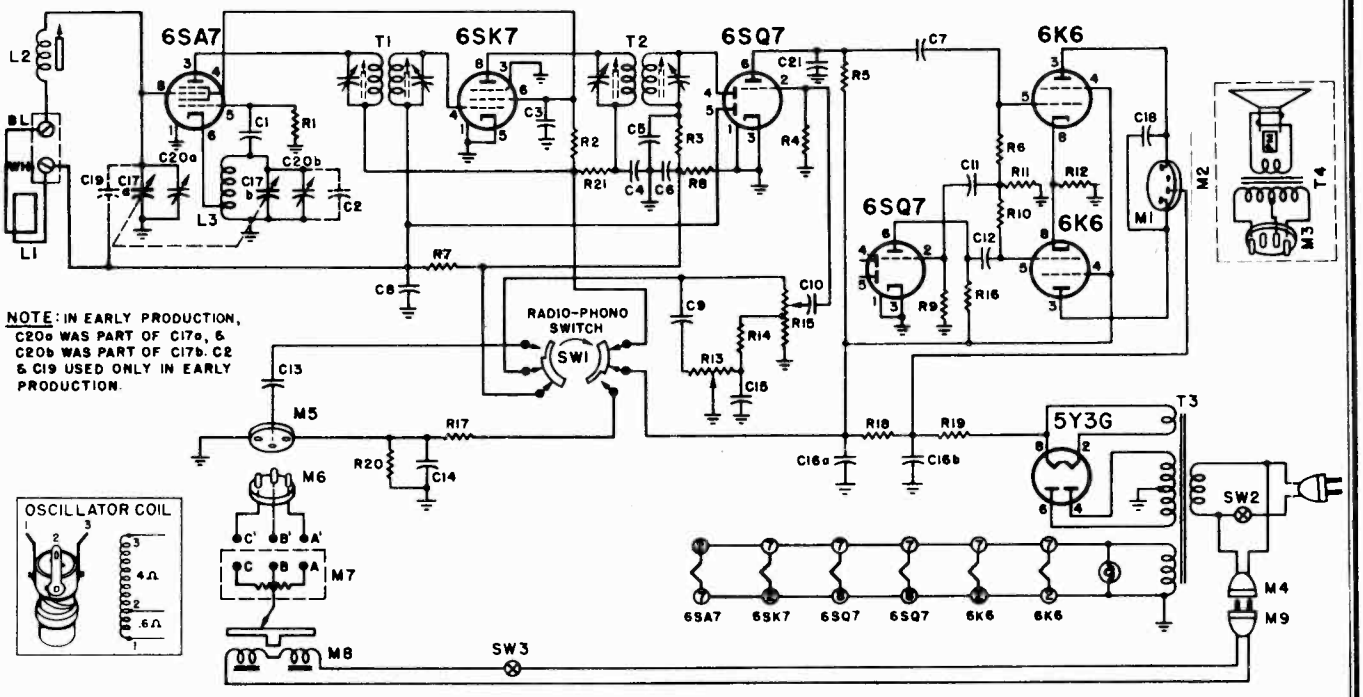
- All readings made between Tube Terminals and B minus (lug on SW1).
- Measured on 117 Volt A.C. line.
- Dial turned to low frequency end, no signal.
- Voltage obtained on Vacuum Tube Voltmeter.
- Switch SW2 in "Radio" position.

## DIAL STRINGING and POINTER SETTING



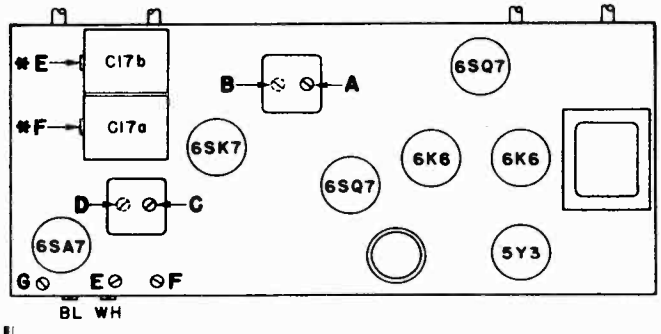
# ADMIRAL CORPORATION

MODEL 7C65, Chassis 7E1



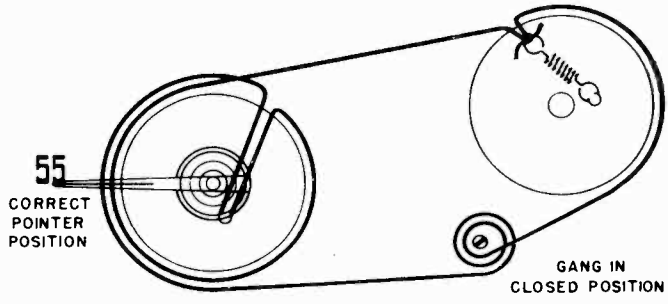

NOTE: IN EARLY PRODUCTION, C20a WAS PART OF C17a, & C20b WAS PART OF C17b. C2 & C19 USED ONLY IN EARLY PRODUCTION.

## TOP VIEW




## TUBE and TRIMMER LOCATION

## DIAL CORD STRINGING and POINTER SETTING




## ALIGNMENT PROCEDURE

- Check pointer position. The center line on the pointer should be at the bottom edge of "55" on the dial with the tuning gang closed (see stringing diagram). If incorrect, move to correct position by hand while holding the gang closed.
- Check set screws on dial drum and spotweld on tuning gang drum to eliminate possibility of backlash. Correct drum positions can be seen in the stringing diagram.
- Loop antenna must be connected to receiver during steps 3, 4 and 5. If disconnected during steps 1 and 2, connect jumper across loop terminals on chassis.
- Connect output meter across voice coil.
- Be sure both the set and the signal generator are thoroughly warmed up before starting alignment.
- Turn receiver volume control full on.
- Set "Radio-Phono" switch to "Radio" position.
- Use lowest output setting of signal generator that gives a satisfactory reading on meter.

| Step | Connect Signal Generator | Generator Frequency | Receiver Dial Setting | Trimmer and Type of Adjustment |
|---|---|---|---|---|
| 1 | Thru .1 mfd. to stator of rear section of gang condenser. | 455 KC | Gang wide open | A, B, C, D to maximum output. Repeat. |
| 2 | Thru 10 mmfd. to Black loop lead. (If 10 mmfd. is not available, wrap several turns of generator lead around black loop lead.) | 1630 KC | Gang wide open | E to maximum output. |
| 3 | | 1400 KC | Tune in signal | F to maximum output. |
| 4 | | 600 KC | Tune in signal | G to maximum output. |
| 5 | | 1400 KC | Tune in signal | F to maximum output. |



RECORD CHANGER: Admiral Model RC160, RCD.CH.15-11

MODEL 7C73, Chassis 9A1

ADMIRAL CORPORATION

# ADMIRAL 9A1 RECEIVER CIRCUIT

Due to the unusual nature of some portions of the circuit, and the fact that their function may not be too apparent, examination of the circuit prior to servicing will simplify the task of locating trouble. This is the purpose of the following information on the function of various portions of the circuit.

### Grounded-Grid R.F. Amplifier

The input signal is introduced between grid and cathode in any amplifier circuit. It is conventional to apply the signal between grid and ground. The cathode is then grounded at signal frequencies. If the grid is grounded, the signal can just as well be applied between cathode and ground. This is the circuit arrangement of a grounded-grid RF amplifier.

Since the cathode circuit of a vacuum tube has a low characteristic impedance, the grounded-grid amplifier has a low input impedance and provides a satisfactory match for a folded dipole antenna. This eliminates complicated antenna coupling devices.

Due to the low impedance and inverted nature of the input circuit of the grounded-grid amplifier, feedback which might result in oscillation, is unlikely. This permits the use of a triode tube. The use of a triode tube greatly reduces circuit noise in comparison to that present in a pentode amplifier stage. A triode RF amplifier circuit provides excellent circuit stability without the use of tricky circuits or adjustments.

### Band-Switching

There is little that is unusual about the operation of the band switch in the FM position. Due to the fact that some of the FM components are not removed from the circuit in the AM setting of the switch, it is rather difficult to trace the operation of the circuit. For AM operation, C7 is still in the circuit. Due to a relatively low capacity, it does not bypass the signal around the RF amplifier grid (but acts as a small portion of the tuned circuit capacity). L4 is also left in the circuit and is in series with the feed to the RF grid. It, like C7, has no appreciable effect due to its low electrical value. A shunt feed system is used on the RF amplifier grid, R3 being the grid return resistor.

C13 and L5 remain in series across the signal grid of the converter stage for AM operation. They have no appreciable effect on the circuit since C13 has a very low capacity. C14 is also across this grid circuit but it is also a very small capacity. The effect of these circuit components is merely that of added capacity.

The band switch shorts the primary of the first IF transformer that is not in use (the FM first IF transformer primary is shorted out for AM operation). This prevents the production of undesired frequencies in the plate circuit of the converter. The unused IF transformer windings which remain in the circuit have a very low impedance at the operating frequency since this frequency is far removed from the resonant frequency of the unused windings. Therefore, they have little effect on the operation of the circuit.

Although it does not cause difficulty in tracing the operation of the circuit, it is important to note that CH4 and C10 form a series resonant circuit at 10.7 Mc. Since this series resonant circuit is effectively connected from plate to ground on the RF amplifier, it acts as an IF wave trap for FM operation. This provides excellent rejection of any strong 10.7 Mc. signals which might be present in the input circuit of the receiver. (It is desirable to detune this trap for FM-IF alignment.)

### FM Second IF Amplifier, AM Second Detector

A 6BA6 tube is used as a second IF amplifier for FM operation. Self-bias is developed in the grid resistor (R15 and R16 in series) of this stage. Since this DC bias voltage is dependent on signal strength, it is used for AVC purposes.

In the AM setting of the band switch, plate and screen voltages are removed from this tube. The grid and cathode of this tube then function as an AM second detector (diode) and AVC tube in a conventional manner.

### Ratio Detector

In AM reception, the transmitter signal varies in amplitude in accordance with the sound being transmitted. The second detector of the receiver converts these amplitude variations into an audio signal that is a duplicate of that used to modulate the transmitter. In the case of FM, the transmitter frequency is made to vary in accordance with the sound to be transmitted. These frequency variations are again converted into an audio signal by the discriminator or ratio detector in an FM receiver.

The conventional discriminator has the disadvantage of being sensitive to amplitude variations as well as to variations in frequency. Amplitude variations, such as might be introduced by noise signals, can be removed by the use of a limiter circuit ahead of the discriminator. However, the input signal to the limiter must exceed a certain minimum amplitude before limiter action takes place. Therefore, the limiter-discriminator type circuit does not provide noise rejection on weak signals.

Since the ratio detector is relatively insensitive to amplitude variations, it can be used without a limiter stage. It provides noise rejection on weak as well as strong signals. This is the reason for the use of the ratio detector in preference to the limiter-discriminator type circuit.

# F.M. SERVICE

Much of F.M. service is similar to the usual service necessary for A.M. receivers such as voltage analysis, parts replacement, etc. The chief differences arise because of the considerably higher frequencies used in F.M. operation, and because of the different type of second detector needed in F.M.

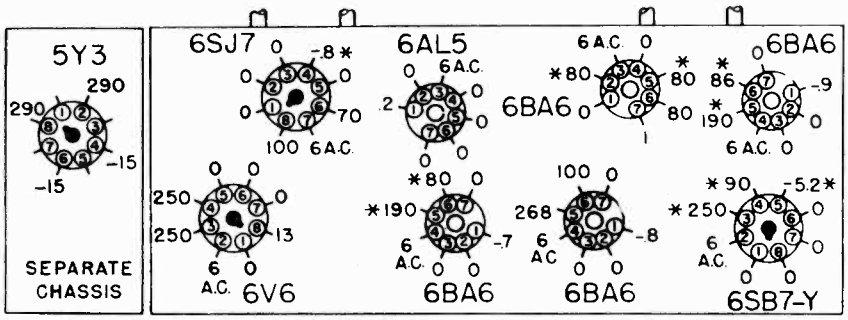
The higher frequencies involved means that more care must be exercised in location and length of leads. Leads tend to act as small inductances or capacities at high frequency and hence may appreciably alter the electrical characteristics of a circuit. For this reason, ground connections should always be maintained as originally made in the set. Also note that in certain circuits, the type by-pass condenser used is critical at the high F.M. frequencies. When replacing condensers it is important that they be replaced with condensers of identical capacity values, tolerances, temperature coefficients and construction. For example: C10 is a 40 MMFD ± 2%, zero temperature coefficient, ceramic capacitor. If defective it should be replaced with a 40 MMFD ± 2%, zero temperature coefficient, ceramic capacitor.



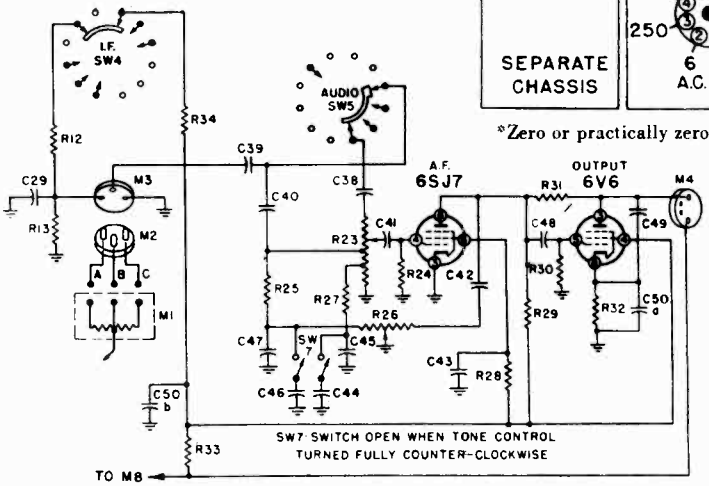
For Schematic, see P. 16-3

## Fig. 8. VOLTAGE DATA

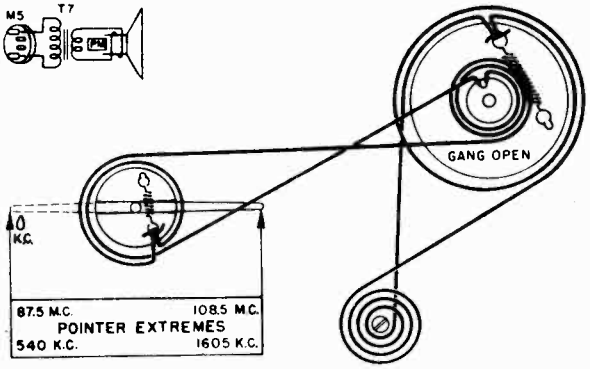
- Measured on 117 Volt A.C. line.
- No station tuned in. Dial turned to high frequency end.
- Voltages measured with a vacuum-tube voltmeter.
- Voltages measured between point indicated and chassis.
- Readings with bandswitch in F.M. position.




*Zero or practically zero if measured with band switch in phono position.




Simplified Schematic, Phono only




### POINTER SETTING

With the gang closed, the lower edge of the pointer should be set at the upper tip of the pear-shaped opening (in the dial scale) on the A.M. range

### FM ALIGNMENT

The model 9A1 chassis should be aligned only with an AM signal generator and a vacuum tube voltmeter. Any standard brand vacuum tube voltmeter with a DC scale of not over 5 volts is suitable. A 3-volt zero center scale is desirable. A signal generator with a frequency range up to 110 MC. is desirable. It is possible however, to align the receiver with a signal generator going to 20 or 30 megacycles, by using the harmonics of these lower frequencies. To do this merely set the signal generator dial as follows and align exactly as explained in the alignment instructions.

*Where alignment chart specifies* 108.5 *MC.*, set signal generator to highest available frequency of the following:

| | |
|---|---|
| 108.5 MC | 27.13 MC |
| 54.25 MC | 21.7 MC |
| 36.17 MC | 18.08 MC |

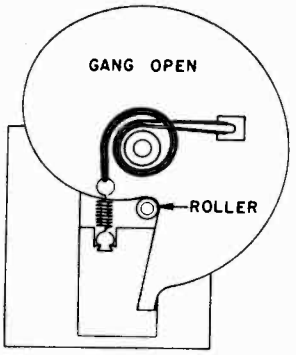
*Where alignment chart specifies* 102 *MC.*, set signal generator to highest available frequency of the following:

| | |
|---|---|
| 102. MC | 25.5 MC |
| 51.0 MC | 20.4 MC |
| 34.0 MC | 17.0 MC |

Signal generators which do not tune to 110 MC or whose harmonics are not strong enough, cannot be used for FM alignment.

In FM alignment, it is essential that every step be followed. Especially important is picking the center of the I.F. curve (step 4 in the FM-IF alignment instructions). During this portion of the alignment it is necessary to tune the signal generator very carefully; it may necessitate having to estimate the dial readings to a tenth of a division.

Alignment of the FM-RF section will require re-alignment of the AM-RF section due to common trimmer capacities during AM operation.




### REPLACING TUNING SLUG

If it becomes necessary to change a tuning slug proceed in the following manner: Set the gang to its wide open position, unsolder and remove the old slug. Set the slug adjusting screw about half way down. Place the new slug in such a position that 1¼ inches of its length is above the coil form (or 1" above the chassis top). Solder it in this position making sure that it does not slip during the operation and that the slug wire is straight.

MODEL 7C73 ADMIRAL CORPORATION

## IMPORTANT PRELIMINARY ALIGNMENT STEPS

- With the gang closed, the lower edge of the pointer should be at the dotted position shown in Fig. 1. That is, the lower edge of the pointer should be at the upper tip of the AM pear-shaped opening in the dial scale. If the pointer is in different position, move it by hand while keeping the gang closed.
- Check the set screws that hold the tuning drum to the shaft to see that they are tight and that the drum has not slipped on the shaft. See Fig. 1 for correct drum position.
- In the wide open position, the roller on the slug tuning platform must be as shown in dial stringing diagram, Fig. 2.
- With the gang wide open, all slugs should be 1¼ inches out of their coil forms. If there is any serious deviation or if there has been any tampering, turn the adjusting screws until this distance is corrected. (See "Replacing Tuning Slug" on p. 1.)

## FM IF AND RATIO DETECTOR ALIGNMENT

- Solder output indicator leads in place and keep them well separated from signal generator leads and chassis wiring.
- While peaking IF's, keep reducing signal generator output so VTVM reading is approximately +1.5 volts DC with exception of Step #5
- FM antenna disconnected during alignment
- Band switch in FM position (red signal at MC on dial)
- Speaker must be connected during alignment

## I.F. SLUG INFORMATION

To avoid splitting the slotted head of the powdered iron core tuning slug in the I.F. transformers, use a screw-driver with a blade ⅛" wide for I.F. alignment.

Under normal operating conditions, mis-alignment of slug-tuned circuits with age is slight. Therefore, re-alignment of the I.F. transformers should be accomplished by only a slight adjustment of the slugs. Do not turn a slug in an extreme amount or it will fall into the center of the coil form. Always try to adjust by first turning slug out. Should an I.F. tuning slug be turned in too far and fall into the center of the coil form, it will be necessary to remove the other tuning slug on the opposite side of the I.F. can. Then, using a thin rod and screw-driver, "jockey" the dislocated slug until it re-engages the threads in the coil form. Since this is a difficult operation, care should be exercised as outlined above in paragraph and this difficulty will be avoided.

If the iron core slug should become stripped or if the slotted head should become rounded or cracked, it may be removed by removing the opposite slug and forcing the defective slug out with a thin screw-driver.

Steps 1 and 2 may be omitted if set is not badly out of alignment so signal comes through in Step 3
Before proceeding, be sure to follow all steps listed above, under "Important Preliminary Alignment Steps."

| | Connect Signal Generator | Generator Frequency | Receiver Dial Setting | Output Indicator and Special Connections | Adjust as Follows (very carefully) |
|---|---|---|---|---|---|
| 1 | Thru .01 cond. to 2nd IF grid (Pin #1 of 6BA6 2nd I.F.). | 10.7 MC unmodulated. | Tuning gang wide open | Connect 3300 ohm carbon resistor across secondaries of both FM-IF transformers. Connect VTVM (DC probe) from point "W" to ground. (See Figure 19.) | "A" (ratio detector primary) for maximum reading on VTVM. |
| 2 | Thru .01 cond. to 1st IF grid (Pin #1 of 6BA6 1st I.F.). | " | " | Same as above. | Iron cores "B" and "C" (2nd IF trans.) for maximum reading on VTVM. |
| 3 | To FM antenna terminals. (Do not feed signal into converter grid.) | " | " | Same as above. In addition, connect a 50 mmfd. condenser in parallel with C10 to detune the IF rejection trap consisting of CH4 and C10. (See note at bottom of page.) This condenser MUST be removed after step 5. | Iron cores D and E for maximum on VTVM. Re-adjust A, B, C, D, E for maximum. (Keep reducing generator output to keep VTVM at 1.5 volts.) |
| 4 | " | a. Remove 3300 ohm resistors from IF transformers.<br>b. Reduce output of signal generator until VTVM reads **exactly** +1.5 volts DC.<br>c. Tune generator frequency above 10.7 MC until VTVM reads **exactly** +1.0 volt. Note **exact** generator frequency. Extreme care in reading this is essential.<br>d. Tune generator frequency below 10.7 MC until VTVM reads **exactly** +1.0 volt. Note **exact** generator frequency. Extreme care in reading this is essential.<br>e. Add generator frequency in step c to generator frequency in step d and divide by 2. The result is the center frequency of the IF curve to be used in step 5. See example on page 10.<br>f. Tune generator frequency above and below 10.7 MC and note voltage reading on VTVM at different frequency points until you have a good impression of the shape of the selectivity curve. If you have two peaks as in Figures 17 or 18. note readings (voltage) of both peaks. A selectivity curve that would require realignment is illustrated by Figure 18. | | | |
| 5 | " | Center of IF selectivity curve per step 4e above. See "EXAMPLE" on p. 10 | Set pointer to upper limit on dial. | Connect VTVM (DC probe) from point "X" to ground. (See Figure 19.) | Iron core "F" (detector secondary) for zero voltage reading on VTVM. (The correct zero point is located between a positive and a negative maximum.) |

If any adjustments were very far off, it is desirable to repeat steps 3, 4 and 5.

Note: Condenser C10 is mounted parallel to the chassis on the bakelite terminal board. Connect added 50 mmfd. condenser between the terminal board lug (junction of CH4 and R5) and pin #1 of the 6BA6 (GG RF stage). With the chassis in the position shown in figure 19, the correct terminal board lug is located on the corner nearest trimmer "G", and on the left side of the terminal board.

## SETTING SIGNAL GENERATOR TO CENTER OF IF SELECTIVITY CURVE

CAUTION: Due to the difficulty of setting a signal generator to the accuracy required by this operation, extreme care must be exercised in making each setting. Otherwise improper alignment of the radio detector and consequent audio distortion will result.

EXAMPLE: (See Figs. 13 and 14)

Voltage reading in Step 4b is + 1.5 volts.

Generator frequency on low side of 10.7 MC for a reading of +1 volt DC = 10.640 MC.

Generator frequency on high side of 10.7 MC for a reading of +1 volt DC = 10.800 MC.

Center frequency is obtained by adding 10.640 and 10.800, then dividing by 2. For these readings it will be 10.72 MC.

Set generator frequency to 10.72 MC as this is center of selectivity curve as shown in Figure 14.

**Note:** Numerical vernier dial readings may be used instead of MC.

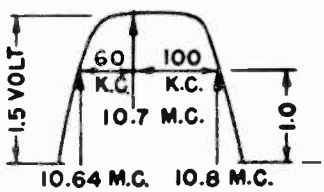


FIGURE 13.

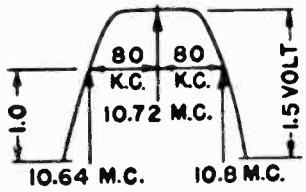


FIGURE 14.

## TYPICAL SELECTIVITY CURVES

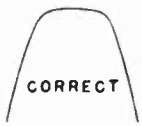


FIGURE 15.

FIGURE 16.

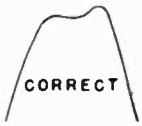


FIGURE 17.

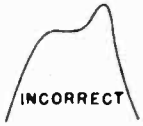


FIGURE 18.

## TRIMMER LOCATION

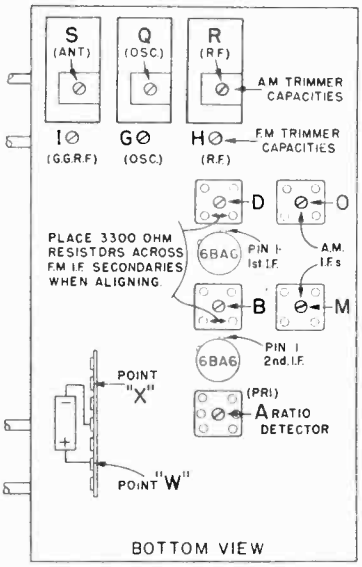


FIGURE 19.

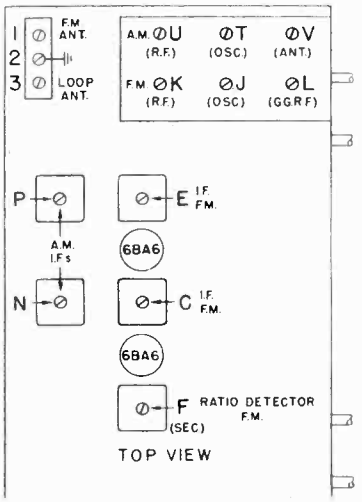
## FM RF ALIGNMENT PROCEDURE

Alignment of FM RF section will require re-alignment of AM RF section due to common trimmer capacities during AM operation. AM RF section can be aligned, however, without affecting FM alignment.

| | Connect Signal Generator | Generator Frequency | Receiver Dial Setting | Output Indicator and Connections | Adjust as follows |
|---|---|---|---|---|---|
| 6 | Thru 270 ohms to FM ant. terminal. | 108.5 MC† (unmodulated). | Tuning gang wide open | Connect VTVM (DC probe) from point "W" to ground. | *Capacity trimmers "G", "H" and "I" for maximum reading on VTVM. |
| 7 | " | 102 MC† (unmodulated). | 102 MC | " | *Iron slugs "J", "K" and "L" for maximum reading on VTVM. |
| 8 | " | 108.5 MC† (unmodulated). | Tuning gang wide open | " | *Repeat Step #6. |
| 9 | Alignment of the FM RF section will affect the AM band also so the AM RF section must be realigned after the FM RF alignment. | | | | |

* It is advisable that generator output be adjusted so that VTVM readings do not exceed approximately +1.5 volts DC after peaking.

† If your signal generator does not reach this frequency, use harmonics as described in paragraph on "FM Alignment" on front page.




## AM ALIGNMENT PROCEDURE

- Use regular output meter connected across speaker voice coil.
- Be sure both the set and the signal generator are thoroughly warmed up before starting alignment.
- Turn receiver Volume Control full on.
- Use lowest output setting of signal generator that gives a satisfactory reading on meter.
- Proceed in sequence as outlined below.

| | Connect Signal Generator | Dummy Antenna Between Radio and Signal Generator | Signal Generator Frequency | Receiver Dial Setting | Adj. Trimmers in Following Order to Max. |
|---|---|---|---|---|---|
| | Set Band Switch to Broadcast position (center) and be sure to follow instructions under heading "Important Preliminary Alignment Steps." (See page 9). Loop antenna can be disconnected from chassis in Steps 1, 2 and 3. | | | | |
| 1 | 6SB7-Y (Pin #8) | .1 MFD | 455 KC | Tuning gang wide open | M, N, O, P |
| 2 | To loop ant. terminal #3 | Direct connection | 1605 KC | Tuning gang wide open | Q, R |
| 3 | To loop ant. terminal #3 | Direct connection | 1300 KC | 1300 KC | T, U |
| | Set Receiver Chassis on table next to back of cabinet. Connect Loop Antenna to Receiver. | | | | |
| 4 | To loop ant. terminal #3 | 10 MMFD (Or wrap several turns of generator lead around white loop lead.) | 1605 KC | Tune in signal | S |
| 5 | To loop ant. terminal #3 | | 1300 KC | Tune in signal | V |

## TRIMMER IDENTIFICATION CHART

| TRIMMER | SYMBOL | FUNCTION |
|---|---|---|
| A,F | T3 | Ratio Detector |
| B,C | T2 | 2nd I.F. Transformer (FM) |
| D,E | T1 | 1st I.F. Transformer (FM) |
| G | C16 | FM Oscillator Trimmer |
| H | C14 | FM Converter Trimmer (RF) |
| I | C7 | FM-RF Trimmer |
| J | L7 | FM Oscillator Coil |
| K | L5 | FM Converter Coil (RF) |
| L | L4 | FM-RF Coil |
| M,N, | T5 | 2nd I.F. Transformer (AM) |
| O,P | T4 | 1st I.F. Transformer (AM) |
| Q | C21 | AM Oscillator Trimmer |
| R | C11 | AM Converter Trimmer (RF) |
| S | C6 | AM Antenna Trimmer |
| T | L8 | AM Oscillator Coil |
| U | L6 | AM Converter Coil (RF) |
| V | L3 | AM Antenna Coil |

### CHASSIS REMOVAL (For Servicing)

Due to the type of chassis mounting used, removal of the entire tilt-out door assembly (with receiver chassis attached) simplifies removal of the receiver chassis. The receiver chassis can then be easily removed from its shock mountings. Removal is a little "tricky" but can be done most readily as described below:

Disconnect all cabinet wiring and cables from the chassis. Difficulty may be experienced in removing the phono pickup plug due to the tight fit in the socket shield. This plug can best be removed with long-nose pliers.

Remove the screw and washer (#1 in figure 5) from both tilt-out spring studs (2), one on each side of the tilt-out assembly. Slip the tilt-out springs (3) off their respective studs. Unscrew the ends of the tie-bar (4). The tie-bar then hangs free on the copper braid used to bond it to the chassis.

Stand at the end of the cabinet (next to the radio compartment) and hold the tilt-out door open slightly with the left hand. Use a screwdriver to pry both tilt-out arms (#5 in figure 6) off their studs (#6). **Then push the tilt-out arms toward the front of the cabinet (against bracket #7).** The tilt-out assembly can now be removed from the front of the cabinet by tipping it forward and then pulling it straight out. CAUTION: In models having record storage compartments below the receiver, the record storage compartment door MUST be closed during the actual process of removing the radio tilt-out door assembly.

### CHASSIS REPLACEMENT

Install chassis on the tilt-out assembly, making sure the chassis shock mounting is assembled exactly as shown in Fig. 7. The chassis bracket must not touch the tilt-out arm.

Make sure the rubber bumpers (#9, Fig. 5) and rubber strips (#8) are in place.

To replace the radio tilt-out door assembly in the cabinet, set the assembly in so that the tilt-out arms (#5) are in back of the studs (#6) they normally hinge on. Use your left hand to hold the assembly in the proper position in the same manner as was done in removing the tilt-out assembly. Use a screwdriver (in your right hand) to spring the tilt-out arm clear of its stud (#6). **Push it forward as far as possible (as shown in figure 6).** When both tilt-out arms are in this position, the assembly can be lifted up and the tilt-out arms slipped into place on their respective studs. The tilt-out assembly will now support itself (in the open position).

Replace the tie-bar (#4). Replace the tilt-out springs (#3. See figure 5). Reconnect the cabinet wiring and cables to the receiver chassis. Check to see that the rubber bumper (#9) and rubber strips (#8) are in place. The assembly should now appear as shown in figure 5.

### CABINET DOOR ADJUSTMENT

If the door on the radio tilt-out assembly is shifted to one side, readjustment of the tilt-out arm will correct the difficulty. If the tilt-out door is too far to the right, the right-hand tilt-out arm can be sprung. If the door is too far to the left, the left-hand arm can be sprung. The tilt-out arms are sprung by holding the lower end of the arm against its bracket and prying the arm toward the chassis with a screwdriver. The screwdriver is used as a lever between the tilt-out arm and the side of the radio compartment.

In the event that the bottom edge of the radio tilt-out door rubs, it can be planed off slightly. Care must be exercised in doing this in order that the door is not marred. Hold the plane flat against the beveled bottom edge of the door while planing off a small amount.

If the door on the record tilt-out assembly is shifted to one side, open the tilt-out door and spring the door arms in the opposite direction. This can be done by exerting pressure against the side of the door.

### RECORD CHANGER REMOVAL (For Servicing)

Removal of the record changer unit can be accomplished as follows: Disconnect the inter-connecting cables from the changer unit. Unscrew the tie-bar and tie rod on underside of changer unit. Hold the changer unit with one hand and spring each of the four tilt-out hinge arms away from the sides of the changer unit. As this is done, the four pivot studs will come out of their sockets and free the changer unit for removal from the cabinet.

To replace the changer unit, place it back in the cabinet. Spring the tilt-out arms out so that the changer will drop down between them. Guide the studs back into their sockets. Replace the tie-bar, tie rod, and interconnecting cables.

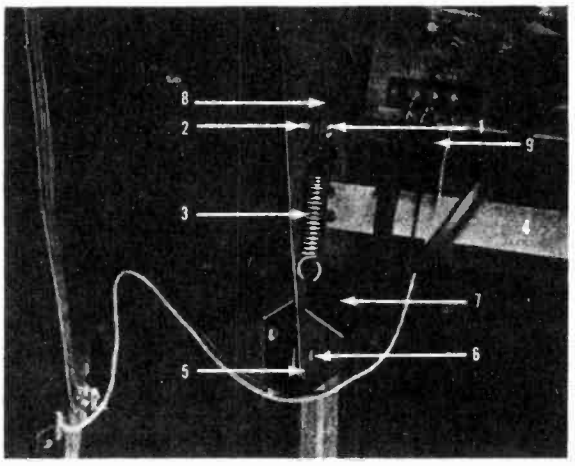



Fig. 5. Receiver Tilt-Out Mounting

| Ref. No. | Description | Part. No. |
|---|---|---|
| 1 | #6—32 x ¼" Screw | |
| 2 | Stud | Part of #5 |
| 3 | Spring, Adjusting (for chassis mtg.) | 19A 15-2 |
| 4 | Tie Bar (for receiver chassis mtg.) | 15B 160 |
| 5 | {Door Arm, left (near center of cab.) | A1440 |
| | {Door Arm, right (nearest side of cab.) | A1441 |
| 6 | Stud | Part of #7 |
| 7 | {Door Bracket, left (near center of cab.) | A1438 |
| | {Door Bracket, right (nearest side of cab.) | A1439 |
| 8 | Rubber Channel (⅜ x ¾ x 2⅜" over-all) | 12A 9-1 |
| 9 | Bumper, Rubber (For radio chassis) | 12A 3-6 |

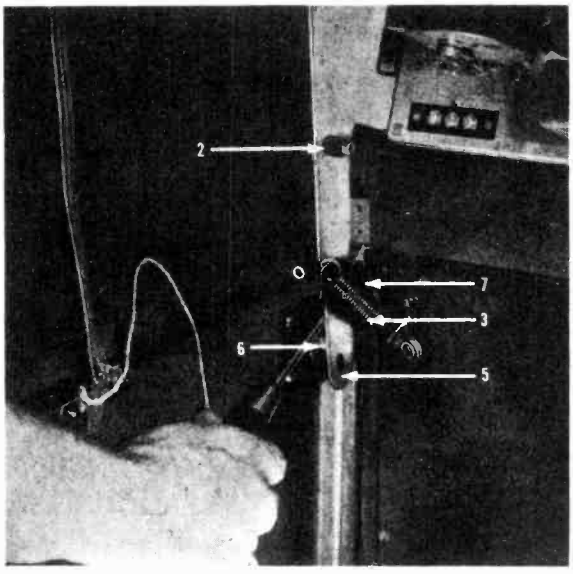



Fig. 6. Receiver Tilt-Out Mounting

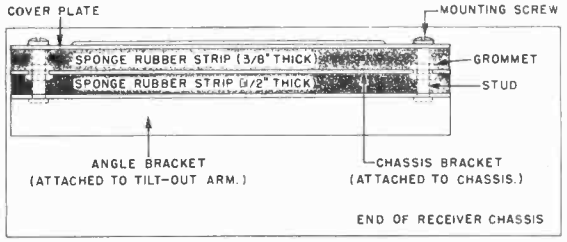
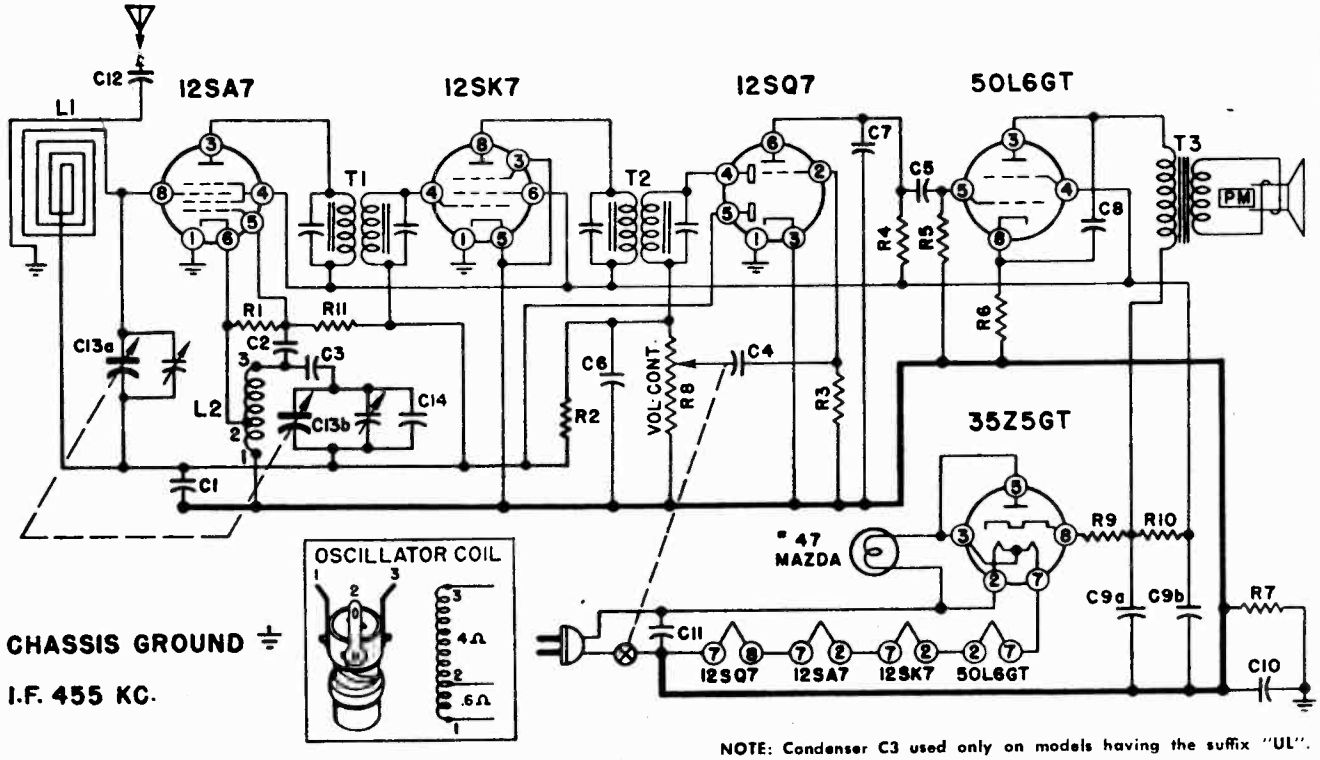



Fig. 7. Chassis Shock-Mounting

# ADMIRAL CORPORATION

MODELS 7T01,7T04,
7T01UL,7T04UL,
Chassis 5N1




NOTE: Condenser C3 used only on models having the suffix "UL".

## REPLACEMENT PARTS

### RESISTORS

| Symbol | Description | Part No. |
|---|---|---|
| R1 | 22,000 Ohms, ½ Watt | 60B 8-223 |
| R2 | 1 Megohm, ½ Watt | 60B 8-105 |
| R3 | 4.7 Megohms, ½ Watt | 60B 8-475 |
| R4 | 470,000 Ohms, ½ Watt | 60B 8-474 |
| R5 | 470,000 Ohms, ½ Watt | 60B 8-474 |
| R6 | 150 Ohms, ½ Watt | 60B 8-151 |
| R7 | 150,000 Ohms, ½ Watt | 60B 8-154 |
| R8 | 1 Megohm Volume Control & Switch | 75B 1-6 |
| R9 | 33 Ohms, 1 Watt | 60B 28-3 |
| R10 | 1,000 Ohms, 1 Watt | 60B 28-2 |
| R11 | 10 Megohms, ¼ Watt | 60B 2-106 |

### CONDENSERS

| Symbol | Description | Part No. |
|---|---|---|
| C1 | .1 mfd., 200 Volts, Paper | 64B 1-30 |
| C2 | 50 mmfd., Ceramic | 65B 6-4 |
| C3 | .02 mfd., 400 Volts, Paper | 64B 1-24 |
| C4 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C5 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C6 | 250 mmfd., Ceramic | 65B 6-5 |
| C7 | 500 mmfd., Ceramic | 65B 6-6 |
| C8 | .02 mfd., 400 Volts, Paper | 64B 1-24 |
| C9a, C9b | 50 mmfd., 150 Volts / 30 mmfd., 150 Volts Elec | 67A 3 |

### CONDENSERS

| Symbol | Description | Part No. |
|---|---|---|
| C10 | .1 mfd., 400 Volts, Paper | 64B 1-20 |
| C11 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C12 | .005 mfd., 600 Volts, Paper | 64B 1-12 |
| C13a, C13b | Gang, 0 to 420 mmfd. / Gang, 0 to 162 mmfd. (Spot welded to drum) | A1364 |
| C14 | 15 mmfd., Ceramic | 65B 6-18 |

### COILS, TRANSFORMERS, ETC.

| | | |
|---|---|---|
| L1 | Antenna, Loop (Includes C12) | 69B 4 |
| L2 | Coil, Oscillator | 67A 14 |
| T1 | Transformer, 1st I.F. | 72B 31 |
| T2 | Transformer, 2nd I.F. | 72B 32 |
| T3 | Transformer, Output | 98A 4 |
| | Speaker (5" PM) and Output Transformer (Can also use 78B 18-1) | 78B 18-2 |

### MISCELLANEOUS

| Description | Part No. |
|---|---|
| Button, Snap (for Dial Background) | 13A 1-3-47 |
| Cabinet, Black Plastic (7T01E) | 34D 1-3 N |
| Cabinet, Ivory Plastic (7T01C) | 34D 1-1 N |
| Cabinet, Mahogany Plastic (7T01M) | 34D 1-2 N |

### MISCELLANEOUS

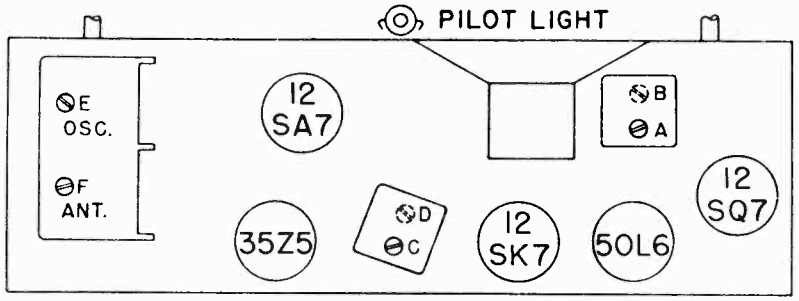
| Description | Part No. |
|---|---|
| *Cabinet, Wood | 35D 59-1 [redacted] |
| Dial Background | 22B 13 |
| Dial Bulb (#47 Mazda) | 81A 1-8 |
| Dial Cord | 50A 1-3 |
| Dial Glass Clip (7T01) | 18A 2 |
| Dial Glass Clip (7T04) | 18A 12 |
| Dial Scale, Glass (7T01) | 21B 36-1 |
| Dial Scale, Glass (7T04) | 21B 43 |
| Knob, Black Plastic (7T01E) | 33A 18-6 |
| Knob, Ivory Plastic (7T01C) | 33A 18-5 |
| Knob, Mahogany Plastic (7T01M) | 33A 18-4 |
| Knob, Wood | 33A 19-4 |
| Pointer, Dial | 25A 25-1 |
| Pulley, Dial (Double) | 17A 5-1 |
| Pulley, Dial (Single) | 17A 1-3 |
| Shaft, Tuning | 28A 11-5 |
| Socket, Tube | 87A 5-1 |
| Socket and Leads (for Dial Bulb) | 82A 2-8 |
| Spring, Tension (Dial Cord) | 19B 1-7 |
| Washer, "C" (for Tuning Shaft) | 4A 4-1 |
| Washer, Felt (for Knobs) | 5A 4-3 |
| Washer, Fibre (for Mounting Oscillator Coil) | 5A 1-5 |
| Washer, Spring (for Tuning Shaft) | 4A 6-3-0 |

*Supplied only if old cabinet cannot be repaired. When ordering, describe condition of old cabinet in detail.

MODELS 7T01,7T04,
7T01UL,7T04UL

# ADMIRAL CORPORATION

## TUBE AND TRIMMER LOCATION



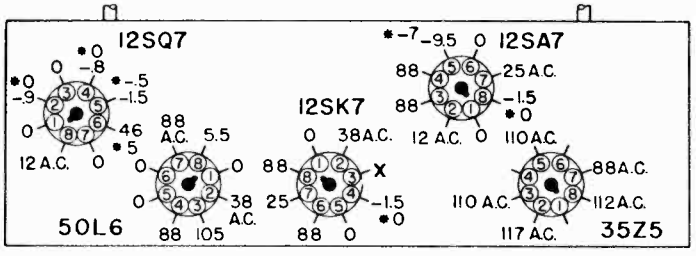

## ALIGNMENT PROCEDURE

1. Check pointer setting: With gang open, the pointer should be at 1630 K.C.
2. Connect Output Meter across Voice Coil.
3. Turn Receiver Volume Control full on.
4. Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed as outlined in chart below.
5. Repeat adjustments to insure good results.

| Connect Signal Generator to— | Dummy Antenna Between Radio and Generator | Set Generator Frequency to— | Set Receiver Dial Frequency to— | Adjust Following Trimmers | Type of Adjustment |
|---|---|---|---|---|---|
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 455 K.C. | High frequency end of Dial | A-B—2nd I. F.<br>C-D—1st I. F.<br>(See note below) | Adjust to maximum Output |
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 1630 K.C. | High frequency end of Dial | E—Osc. | Adjust to maximum Output |
| Loop radiator (or place lead from generator close to loop of set to obtain adequate signal). | No actual connection between set and generator. | 1400 K.C. | Tune in generator signal | F—Ant. | Adjust to maximum Output |

Note: The B and D adjustments must be made from the underside of the chassis.

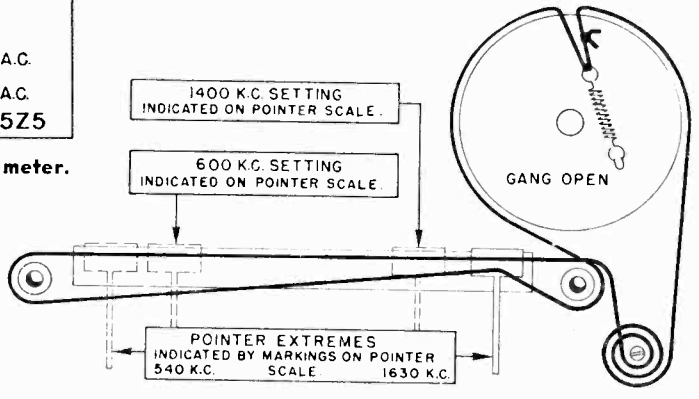
## VOLTAGE CHART




***Indicates second reading taken with 1000 ohm-per-volt meter.**

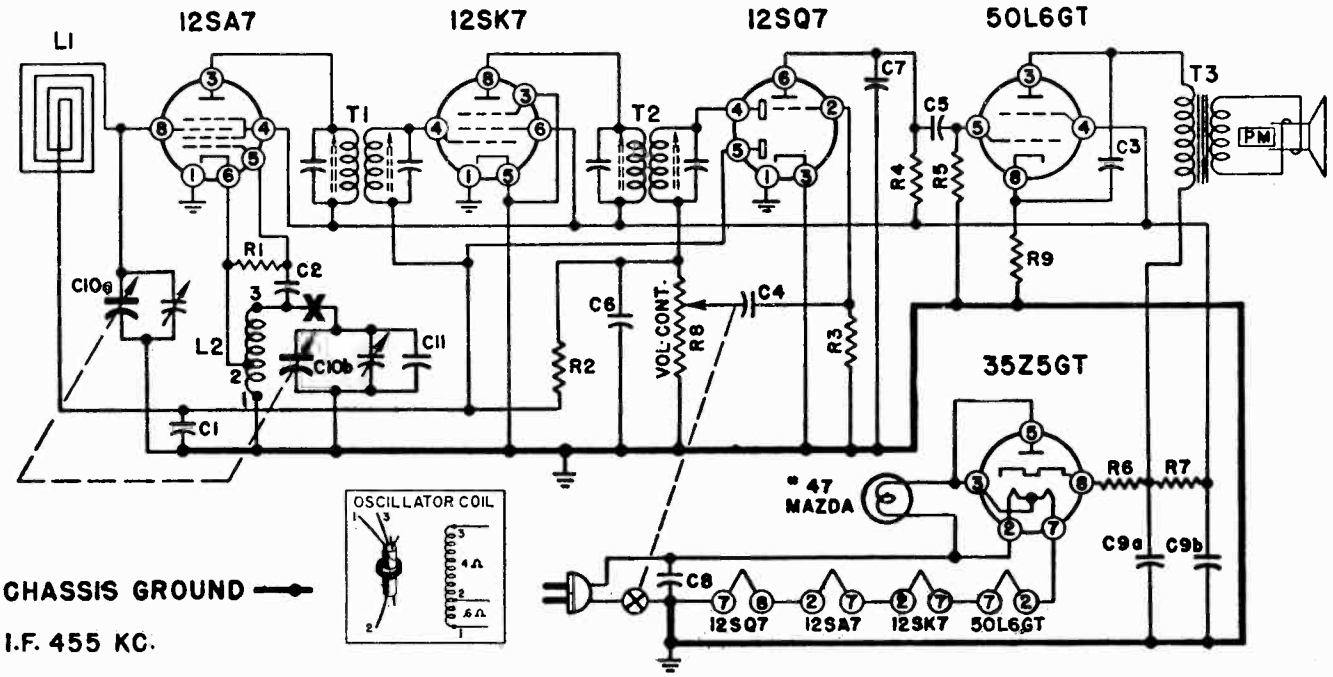
- All readings made between tube socket terminals and pin 3 of 12SK7 (marked "X" on Voltage Chart.
- Voltages measured on a 117 Volt A.C. line.
- Dial turned to low frequency end, no signal.
- Voltages measured with a vacuum-tube voltmeter. A second voltage reading (marked with an asterisk *) indicates readings made with a 1000 ohm-per-volt meter when use of this instrument would result in appreciably lower readings.

## DIAL CORD STRINGING & POINTER SETTING



# ADMIRAL CORPORATION

MODELS 7T10, 7T14, 7T15, Chassis 5K1, UL5K1




**UL5K1 Chassis has circuit changes as described It uses Speaker 78B 26-2.**

1. **.05 mfd. condenser added at point "X" in oscillator circuit.**
2. **B minus is isolated from chassis by 150,000 ohm resistor and .18 mfd. condenser in parallel.**
3. **Gang condenser grounded to chassis and not connected to B minus as in above circuit.**

## REPLACEMENT PARTS

### RESISTORS

| Symbol | Description | Part No. |
|---|---|---|
| R1 | 22,000 Ohms, ½ Watt | 60B 8-223 |
| R2 | 1 Megohm, ½ Watt | 60B 8-105 |
| R3 | 4.7 Megohms, ½ Watt | 60B 8-475 |
| R4 | 470,000 Ohms, ½ Watt | 60B 8-474 |
| R5 | 470,000 Ohms, ½ Watt | 60B 8-474 |
| R6 | 33 Ohms, 1 Watt | 60B 28-3 |
| R7 | 1000 Ohms, 1 Watt | 60B 28-2 |
| R8 | 1 Megohm Volume Control and Switch | 75B 1-16 |
| R9 | 150 Ohms, ½ Watt | 60B 8-151 |

### CONDENSERS

| Symbol | Description | Part No. |
|---|---|---|
| C1 | .1 mfd., 200 Volts, Paper | 64B 1-30 |
| C2 | 50 mmfd., ±20%, Ceramic | 65B 6-4 |
| C3 | .02 mfd., 400 Volts, Paper | 64B 1-24 |
| C4 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C5 | .01 mfd., 400 Volts, Paper | 64B 1-25 |
| C6 | 250 mmfd., ±20%, Ceramic | 65B 6-5 |
| C7 | 500 mmfd., ±20%, Ceramic | 65B 6-6 |
| C8 | .05 mfd., 400 Volts, Paper | 64B 1-22 |
| C9a | 50 mmfd., 150 Volts } Elec | 67A 10 |
| C9b | 30 mmfd., 150 Volts } Elec | 67A 10 |
| C10a | Gang, 0 to 420 mmfd. } | A1460 |
| C10b | Gang, 0 to 162 mmfd. } (Spot welded to drum) | A1460 |
| C11 | 20 mmfd., ±20%, Ceramic | 65B 6-26 |

### COILS, TRANFORMERS, ETC.

| Symbol | Description | Part No. |
|---|---|---|
| L1 | Antenna, Loop | 69C 19 |
| L2 | Coil, Oscillator | 69A 20 |
| T1 | Transformer, 1st I.F. Above I.F. transformer is slug-tuned. Trimmer-tuned I.F. transformer, part number 72B33, also used and is interchangeable with 72B31. | 72B 31 |
| T2 | Transformer, 2nd I.F. Above I. F. transformer is slug-tuned. Trimmer-tuned I.F. transformer, part number 72B34, also used and is interchangeable with 72B32. | 72B 32 |
| T3 | Transformer, Output | 98A 4 |
| | Speaker (5" PM) and Output Transformer | 78B 26-1 |

### MISCELLANEOUS

| Description | Part No. |
|---|---|
| Cabinet, Plastic (Black) | 34D 14-1 |
| Cabinet, Plastic (Black with Ivory Louvre) | 34D 14-4 |
| Cabinet, Plastic (Ivory) | 34D 14-3 |

### MISCELLANEOUS

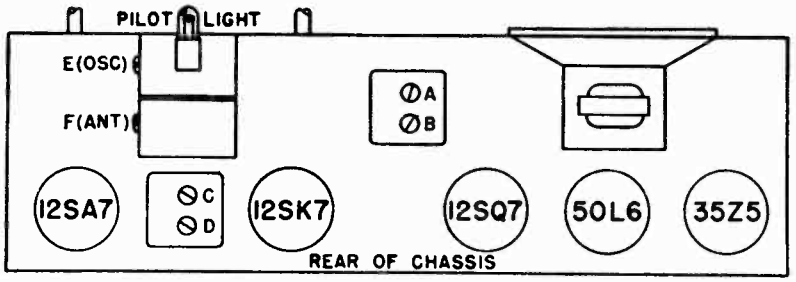
| Description | Part No. |
|---|---|
| Cabinet, Plastic (Ivory with Black Louvre) | 34D 14-5 |
| Cabinet, Plastic (Mahogany) | 34D 14-2 |
| *Cabinet, Wood (7T14) | 35D 61 |
| *Cabinet, Wood (7T15) | 35D 60 |
| Dial Background | 15B 180 |
| Dial Cord | 50A 1-3 |
| Dial Crystal | 24A 4 |
| Diol Drum | See C10 |
| Dial Light (#47 Mazda) | 81A 1-8 |
| Dial Light Socket and Leads | 82A 3-2 |
| Dial Scale | 21B 39 |
| Knob, Plastic (Black) | 33A 18-6 |
| Knob, Plastic (Ivory) | 33A 18-5 |
| Knob, Wood (Walnut) | 33A 18-4 |
| Pointer | 25A 26 |
| Shaft, Tuning | 28A 11-3 |
| Snap, Buttons (For dial scale) | 13A 1-3-47 |
| Snap Ring (For pointer) | 18A 5-3 |
| Socket, Tube | 87A 10-2 |
| Spring, Tension | 19B 1-2 |
| Washer, 'C" (for tuning shaft) | 4A 4-1 |
| Washer, Felt (for knobs) | 5A 4-3 |
| Washer, Fibre | 5A 2-1 |
| Washer, Spring (for tuning shaft) | 4A 6-3-0 |

*Supplied only if old cabinet cannot be repaired. When ordering, describe condition of old cabinet in detail.

MODELS 7T10, 7T14, 7T15

# ADMIRAL CORPORATION

## TUBE AND TRIMMER LOCATION




TOP VIEW

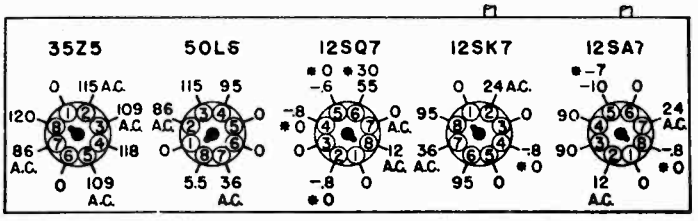
## ALIGNMENT PROCEDURE

1. Check pointer setting: With gang closed, the pointer should be horizontal.
2. Connect Output Meter across Voice Coil.
3. Turn Receiver Volume Control full on.
4. Use lowest Output setting of Signal Generator capable of producing adequate Output Meter indication and then proceed as outlined in chart below.
5. Repeat adjustments to insure good results.

| Connect Signal Generator to— | Dummy Antenna Between Radio and Generator | Set Generator Frequency to— | Set Receiver Dial Frequency to— | Adjust Following Trimmers | Type of Adjustment |
|---|---|---|---|---|---|
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 455 K.C. | High frequency end of Dial | A-B—2nd I. F.<br>C-D—1st. I. F.<br>(See note below) | Adjust to maximum Output |
| Tuning Condenser Antenna Stator | 250 mmfd. Condenser | 1630 K.C. | High frequency end of Dial | E—Osc. | Adjust to maximum Output |
| Loop radiator (or place lead from generator close to loop of set to obtain adequate signal). | No actual connection between set and generator. | 1400 K.C. | Tune in generator signal | F—Ant. | Adjust to maximum Output |

Note: In some sets, the B and D adjustments must be made from the underside of the chassis.

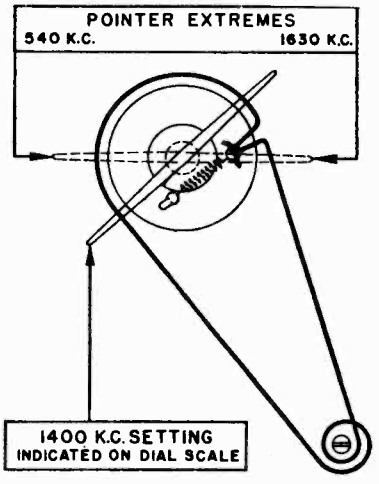
## VOLTAGE CHART




***Indicates second reading taken with 1000 ohm-per-volt meter.**

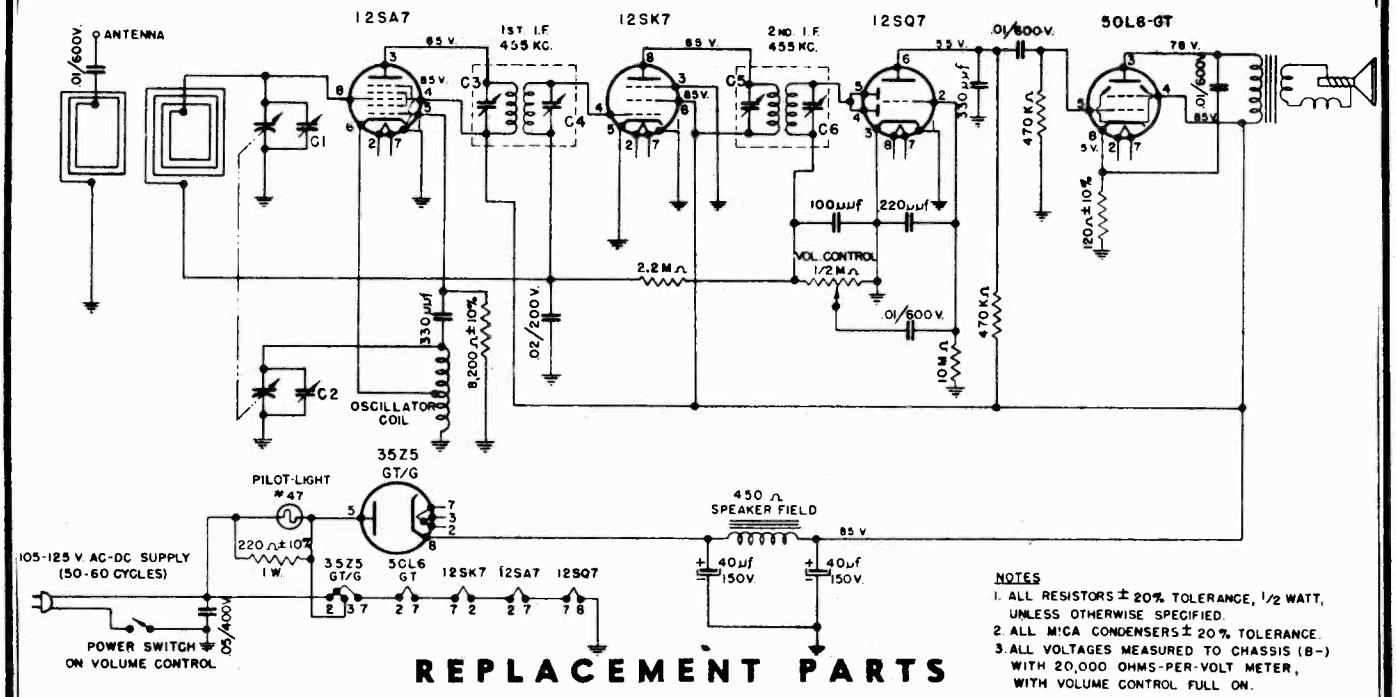
- All readings made between tube socket terminals and chassis.
- Voltages measured on a 117 Volt A.C. line.
- Dial turned to low frequency end, no signal.
- Voltages measured with a vacuum-tube voltmeter. A second voltage reading (marked with an asterisk *) indicates readings made with a 1000 ohm-per-volt meter when use of this instrument would result in appreciably lower readings.

## DIAL CORD STRINGING



# AFFILIATED RETAILERS, INC.

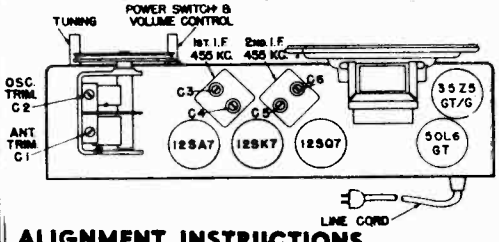
MODELS R-046, R-1046, R-1046M




NOTES
1. ALL RESISTORS ± 20% TOLERANCE, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ± 20% TOLERANCE.
3. ALL VOLTAGES MEASURED TO CHASSIS (B-) WITH 20,000 OHMS-PER-VOLT METER, WITH VOLUME CONTROL FULL ON.

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BU-187 | Pilot light bulb 6.3V (#47 Mazda) |
| CA-350W | Cabinet—Walnut bakelite cabinet |
| CA-350V | Cabinet—Ivory bakelite cabinet |
| CL-159 | Coil—oscillator coil |
| CO-107 | Capacitor—Electrolytic 40+40/150WV |
| CR-169 | Crystal—dial crystal |
| CV-501 | Condenser—2 gang variable tuning condenser |
| KN-470 | Knob—Walnut knob |
| KN-471 | Knob—Ivory knob |
| KN-622 | Knob—Walnut knob for model R-1046M only |
| LP-163 | Loop |
| PO-259 | Pointer—moulded pointer |
| PT-102 | Volume control and power switch |
| RCM20A101M | Capacitor—100 mmf 20% mica |
| RCM20A221M | Capacitor—220 mmf ± 20% mica |
| RCM20A331M | Capacitor—330 mmf ± 20% mica |
| RCP10W2203A | Capacitor—.02 mfd., 200 volts tubular |
| RCP10W4503A | Capacitor—.05 mfd., 400 volts tubular |
| RCP10W6103A | Capacitor—.01 mfd., 600 volts tubular |
| REB106M | Resistor— 10 meg., ± 20% 1/2 watt |
| REB121K | Resistor—120 ohms ± 10% 1/2 watt |
| REB225M | Resistor—2.2 meg., ± 20% 1/2 watt |
| REB474M | Resistor—470,000 ohms ± 20% 1/2 watt |
| REB822K | Resistor—8200 ohms ± 10% 1/2 watt |
| REC221K | Resistor—220 ohms ± 10% 1 watt |
| SK-110 | Speaker—5" Dynamic with output transformer |
| SO-190 | Socket—Dial light socket assembly |
| SP-191 | Spring—Tuning drive lock spring |
| TR-186 | Transformer—1st or 2nd I.F. transformer |




ALIGNMENT PROCEDURE CHART

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO - | SET SIGNAL GENERATOR TO - | TURN RECEIVER DIAL TO - | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT. (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | FULL CLOCKWISE POSITION. (CONDENSER PLATES FULLY OPEN.) | C6, C5, C4, C3 AND REPEAT IN SAME ORDER (1st. AND 2nd. I.F. TRANSFORMERS.) |
| 2 | ANTENNA TERMINAL | 1700 KC. | 1700 KC. (170 ON DIAL.) | C2 (OSCILLATOR) |
| 3 | OF ANTENNA LOOP IN SERIES WITH | 1400 KC. | MAXIMUM SIGNAL (APPROX. 140 ON DIAL.) | C1 (ANTENNA) |
| 4 | 50 MMFD. COND. | REPEAT STEPS 2 AND 3 | | |

## ALIGNMENT INSTRUCTIONS

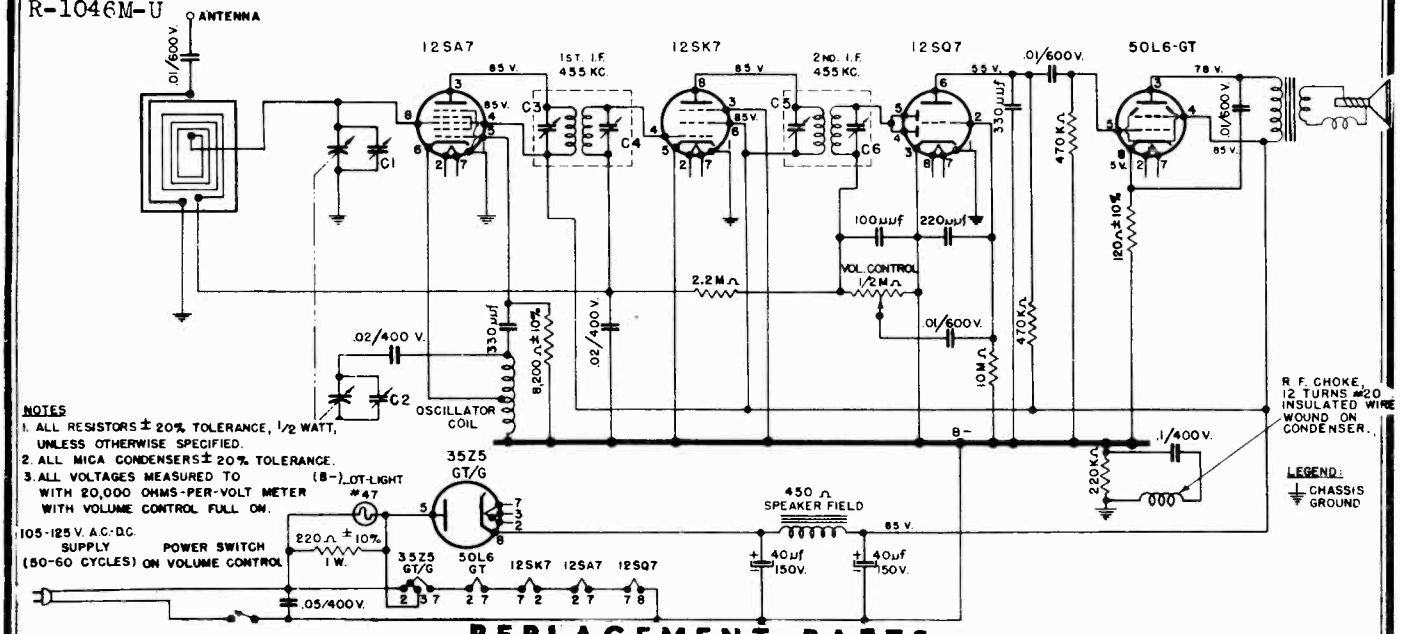
Modulated R.F. signal generator; output meter; insulated screw-driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

To align the receiver it is necessary to remove the chassis from the cabinet, check that the pointer is horizontal and coincides with the two horizontal reference lines on the dial. In this position the condenser should be completely closed. Connect the output meter and signal generator as follows:

Output meter — Connect across voice coil and turn volume control to maximum.

Signal generator — Connect the low side of the signal generator to the receiver chassis thru a .1 mfd condenser and keep the output as low as possible, then proceed in the sequence shown on the alignment chart.

MODELS R-1046-U, R-1046-U R-1046M-U **AFFILIATED RETAILERS, INC.**

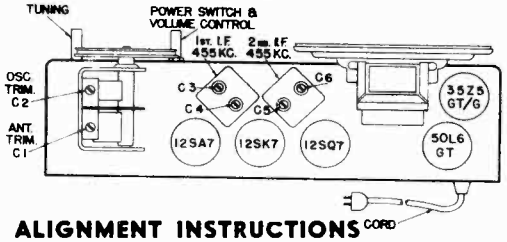



NOTES
1. ALL RESISTORS ± 20% TOLERANCE, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ± 20% TOLERANCE.
3. ALL VOLTAGES MEASURED TO (B−) WITH 20,000 OHMS-PER-VOLT METER WITH VOLUME CONTROL FULL ON.

## REPLACEMENT PARTS

* When ordering specify "with r-f choke"

| Part No. | Description |
|---|---|
| BU-187 | Pilot light bulb 6.3v (#47 Mazda) |
| CA-350W | Cabinet—Walnut bakelite cabinet |
| CA-350V | Cabinet—Ivory bakelite cabinet |
| CL-569 | Coil—oscillator coil |
| CO-107 | Capacitor—Electrolytic 40/40/150WV |
| CR-169 | Crystal—dial crystal |
| CV-501 | Condenser—2 gang variable tuning condenser |
| DL-457-2 | Dial—moulded, lucite dial |
| KN-470 | Knob—Walnut (for R-046-U only) |
| KN-471 | Knob—Ivory knob (for R-1046-U only) |
| KN-622 | Knob—Walnut knob (for R-1046M-U only) |
| LP-163 | Loop—Antenna |
| PO-259W | Pointer—moulded walnut pointer |
| PO-259V | Pointer—moulded ivory pointer |
| PT-102 | Volume control and power switch |
| RCM20A101M | Capacitor—100 mmf ±20% mica |
| RCM20A221M | Capacitor—220 mmf ±20% mica |
| RCM20A331M | Capacitor—330 mmf ±20% mica |
| *RCP10W4104L | .1/400WV tubular paper condenser |
| RCP10W4203A | .02/400WV tubular paper condenser |
| RCP10W4503A | .05/400WV tubular paper condenser |
| RCP10W6103A | .01/600WV tubular paper condenser |
| REB106M | Resistor—10 meg., ±20% 1/2 watt |
| REB121K | Resistor—120 ohms ±10% 1/2 watt |
| REB224M | Resistor—220,000 ohms ±20% 1/2 watt |
| REB225M | Resistor—2.2 meg., ±20% 1/2 watt |
| REB474M | Resistor—470,000 ohms ±20% 1/2 watt |
| REB822K | Resistor—8200 ohms ±10% 1/2 watt |
| REC221K | Resistor—220 ohms ±10% 1 watt |
| SK-110 | Speaker—5" Dynamic with output transformer |
| SO-190 | Socket—Dial light socket assembly |
| SP-191 | Spring—Tuning drive lock spring |
| ST-293-2 | Back—printed cardboard back (for R-1046M-U) |
| ST-516 | Back—printed cardboard back (for Models R-046-U and R-1046-U) |
| TR-186 | Transformer—1st or 2nd I.F. |




## ALIGNMENT INSTRUCTIONS

ALIGNMENT PROCEDURE CHART

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO− | SET SIGNAL GENERATOR TO− | TURN RECEIVER DIAL TO− | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE) |
|---|---|---|---|---|
| 1 | ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | FULL CLOCKWISE POSITION (CONDENSER PLATES FULLY OPEN) | C6, C5, C4, C3 AND REPEAT IN SAME ORDER (1ST AND 2ND I.F. TRANSFORMERS) |
| 2 | ANTENNA TERMINAL OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND. | 1700 KC | 1700 KC (170 ON DIAL) | C2 (OSCILLATOR) |
| 3 | | 1400 KC | MAXIMUM SIGNAL (APPROX. 140 ON DIAL) | C1 (ANTENNA) |
| 4 | | REPEAT STEPS 2 AND 3 | | |

Modulated R.F. signal generator; output meter; insulated screw-driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

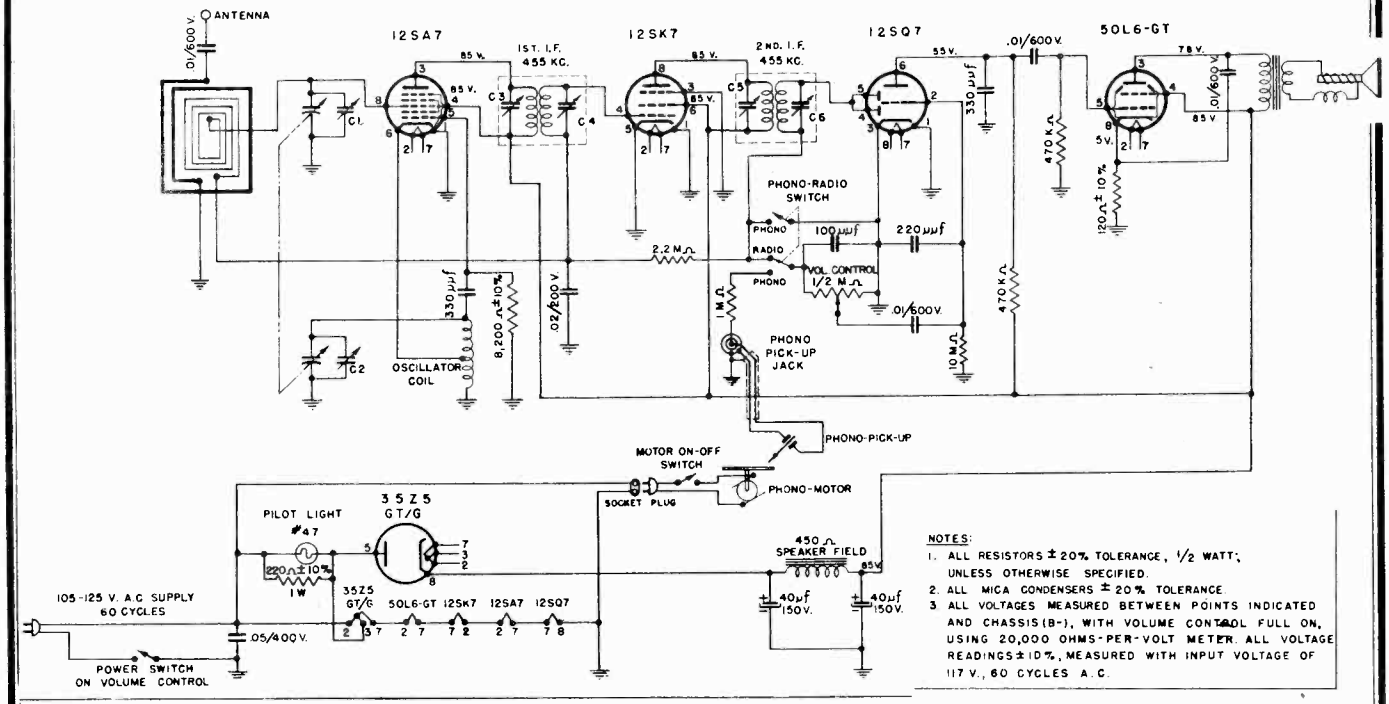
To align the receiver it is necessary to remove the chassis from the cabinet, check that the pointer is horizontal and coincides with the two horizontal reference lines on the dial. In this position the condenser should be completely closed. Connect the output meter and signal generator as follows:

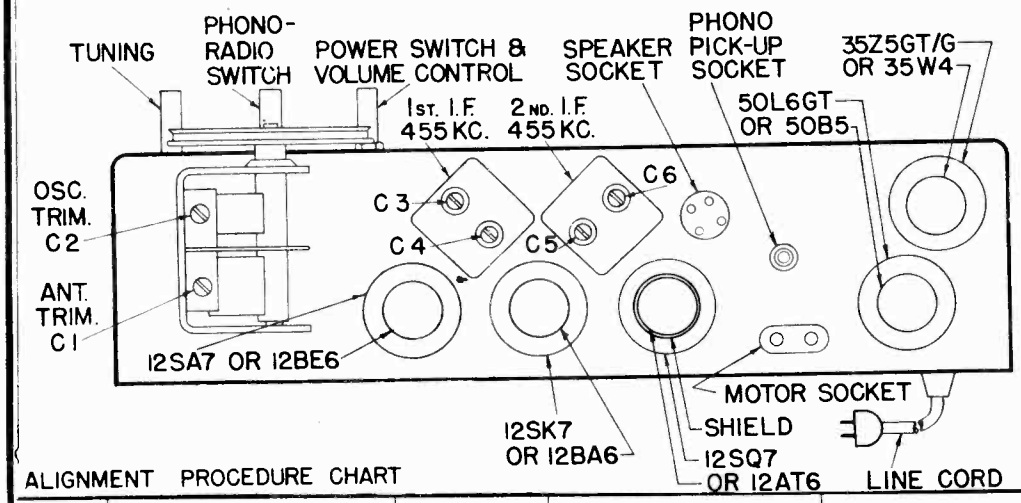
Output meter — Connect across voice coil and turn volume control to maximum.

Signal generator —. Connect the low side of the signal generator to the common B—bus thru a .1 mfd condenser and keep the output as low as possible, then proceed in the sequence shown on the alignment chart.

# AFFILIATED RETAILERS, INC.

MODEL R-146




**CAUTION: A GROUND CONNECTION IS NOT REQUIRED AND MUST NOT BE USED.**

ALIGNMENT PROCEDURE CHART

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO - | SET SIGNAL GENERATOR TO - | TURN RECEIVER DIAL TO - | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | FULL CLOCKWISE POSITION. (CONDENSER PLATES FULLY OPEN.) | C6, C5, C4, C3 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS.) |
| 2 | ANTENNA TERMINAL OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND. | 1700 KC. | 1700 KC. (170 ON DIAL) | C2 (OSCILLATOR) |
| 3 | | 1400 KC | MAXIMUM SIGNAL (APPROX. 140 ON DIAL) | C1 (ANTENNA) |
| 4 | | REPEAT STEPS 2 AND 3 | | |

**Frequency Range of Receiver** 535 - 1700 kc.

**Power Requirement** 105 - 125 volts 60 cycles Alternating Current (a-c) only

**Power Consumption: Receiver** 30 watts — Record Player 35 watts

## ALIGNMENT INSTRUCTIONS

WHEN SERVICING THIS RECEIVER DO NOT PLACE CHASSIS ON A GROUNDED METALLIC BENCH.

Equipment Required:

Modulated r-f signal generator; output meter; insulated screw driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

The receiver should be aligned with chassis and loop mounted in the cabinet. With the condenser completely closed the pointer should be checked so that it coincides with the two horizontal reference lines on the dial. Connect the output meter and signal generator as follows:

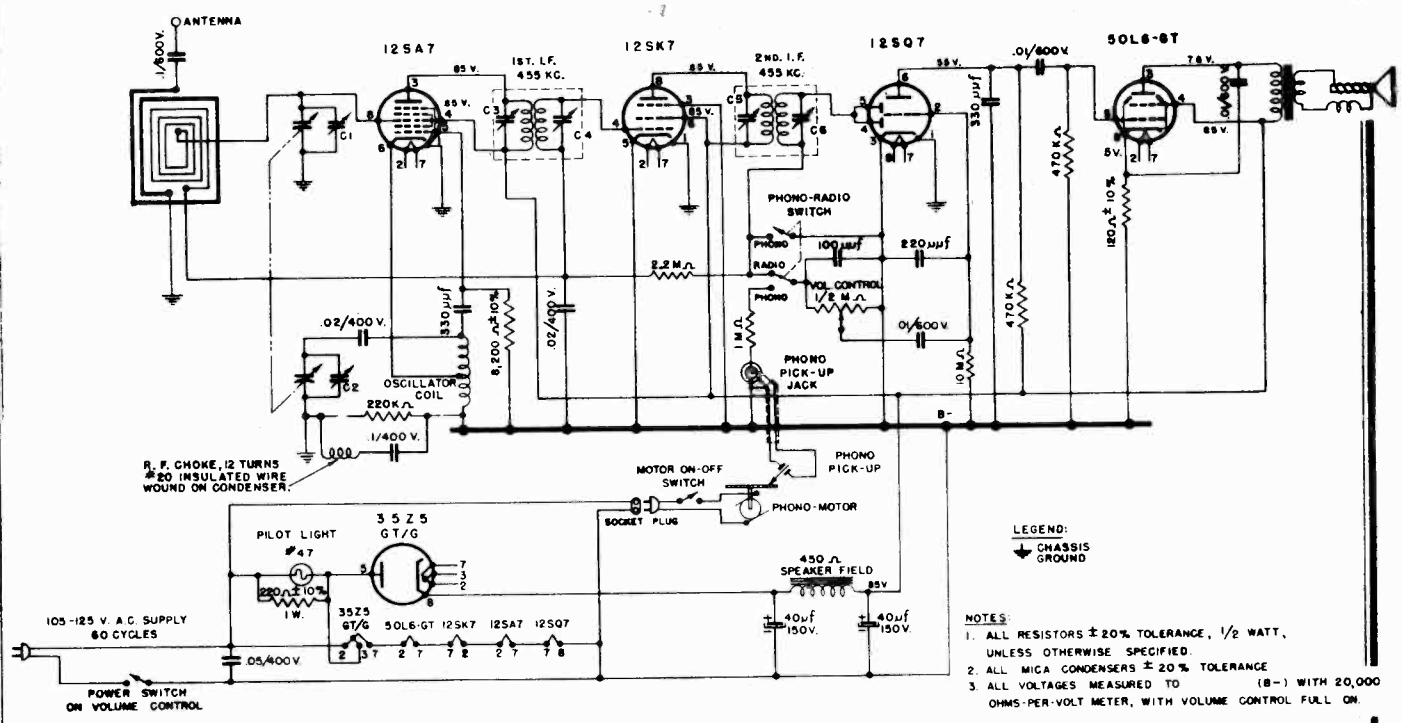
Note: In case of dial light failure, replace the lamp (Mazda #47) as soon as possible to prevent damage to the 35Z5 tube.

Output meter — Connect across voice coil and turn volume control to maximum.

Signal generator — Connect the low side of the signal generator to the receiver chassis thru a .1 mfd condenser and keep the output as low as possible, then proceed in the sequence shown on the alignment chart.

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BU-187 | Pilot light bulb 6.3v (#47 Mazda) |
| CL-159 | Coil-oscillator coil |
| CO-107 | Capacitor-Electrolytic 40-40/150WV |
| CR-170 | Crystal-dial crystal |
| CV-501 | Condenser-2 gang variable tuning condenser |
| DL-457-2 | Dial-moulded lucite dial |
| KN-625 | Knob-Walnut knob marked MOTOR OFF-ON |
| KN-626 | Knob-Walnut knob marked TUNING |
| KN-627 | Knob-Walnut knob marked OFF-ON-VOLUME |
| KN-628 | Knob-Walnut knob marked RADIO-PHONO |
| LP-355 | Loop-Antenna |
| PO-259W | Pointer-moulded walnut pointer |
| PT-102 | Volume control and power switch |
| RCM20A101M | Capacitor-100 mmf± 20% mica |
| RCM20A221M | Capacitor-220 mmf ±20% mica |
| RCM20A331M | Capacitor-330 mmf ±20% mica |
| RCP10W2203A | Capacitor-.02 mfd., 200 volts tubular |
| RCP10W4503A | Capacitor-.05 mfd., 400 volts tubular |
| RCP10W6103A | Capacitor-.01 mfd., 600 volts tubular |
| RE105M | Resistor-1 meg., ±20% 1/2 watt resistor |
| REB106M | Resistor - 10 meg., ±20% 1/2 watt |
| REB121K | Resistor - 120 ohms ±10% 1/2 watt |
| REB225M | Resistor - 2.2 meg., ±20% 1/2 watt |
| REB474M | Resistor - 470,000 ohms ±20% 1/2 watt |
| REB822K | Resistor - 8200 ohms ±10% 1/2 watt |
| REC221K | Resistor - 220 ohms ±10% 1 watt |
| SK-310 | Speaker-5" Dynamic speaker with output transformer |
| SO-190 | Socket - Dial light socket assembly |
| SP-191 | Spring - Tuning drive lock spring |
| ST-482 | Back-Masonite back |
| SW-243 | Switch - Phono-Radio Switch |
| SW-330 | Switch-spst Rotary Switch |
| TR-186 | Transformer - 1st or 2nd I.F. transformer |




## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BU-187 | Pilot light bulb 6.3v (#47 Mazda) |
| CL-569 | Coil-oscillator coil |
| CO-107 | Condenser-40/40/150WV electrolytic condenser |
| CR-170 | Crystal-dial crystal |
| CV-501 | Condenser-2 gang variable tuning condenser |
| DL-457-1 | Dial-molded lucite dial |
| KN-625 | Knob-Walnut knob marked MOTOR OFF-ON |
| KN-626 | Knob-Walnut knob marked TUNING |
| KN-627 | Knob-Walnut knob marked OFF-ON-VOLUME |
| KN-628 | Knob-Walnut knob marked RADIO-PHONO |
| LP-355 | Loop-Antenna |
| PO-259W | Pointer-moulded pointer, walnut |
| PT-102 | Volume control and power switch |
| RCM20A101M | Condenser-100 mmf ±20% mica condenser |
| RCM20A221M | Condenser-220 mmf ±20% mica condenser |
| RCM20A331M | Condenser-330 mmf ±20% mica condenser |
| *RCP10W4104L | Condenser-.1/400W.V. tubular paper condenser |
| RCP10W4203A | Condenser-.02/400W.V. tubular paper condenser |
| RCP10W4503A | Condenser-.05/400W.V. tubular paper condenser |
| RCP10W6103A | Condenser-.01/600W.V. tubular paper condenser |
| REB105M | Resistor-1 megohm ±20% 1/2 Watt Resistor |
| REB106M | Resistor-10 meg., ±20% 1/2 Watt Resistor |
| REB121K | Resistor-120 ohms ±10% 1/2 Watt Resistor |
| REB224M | Resistor-220,000 ohms ±20% 1/2 Watt Resistor |
| REB225M | Resistor-2.2 meg., ±20% 1/2 Watt Resistor |
| REB474M | Resistor-470,000 ohms ±20% 1/2 Watt Resistor |
| REB822K | Resistor-8200 ohms ±10% 1/2 Watt Resistor |
| REC221K | Resistor-220 ohms ±10% 1 Watt Resistor |
| SK-310 | Speaker-5" Dynamic with output transformer |
| SO-190 | Socket-Dial light socket assembly |
| SP-191 | Spring-Tuning drive lock spring |
| ST-482 | Back-Masonite Back |
| SW-243 | Switch-Phono-Radio Switch |
| SW-330 | Switch-s.p.s.t. Rotary Switch |
| TR-186 | Transformer-1st or 2nd I.F. Transformer |

* When ordering specify "with r-f choke"

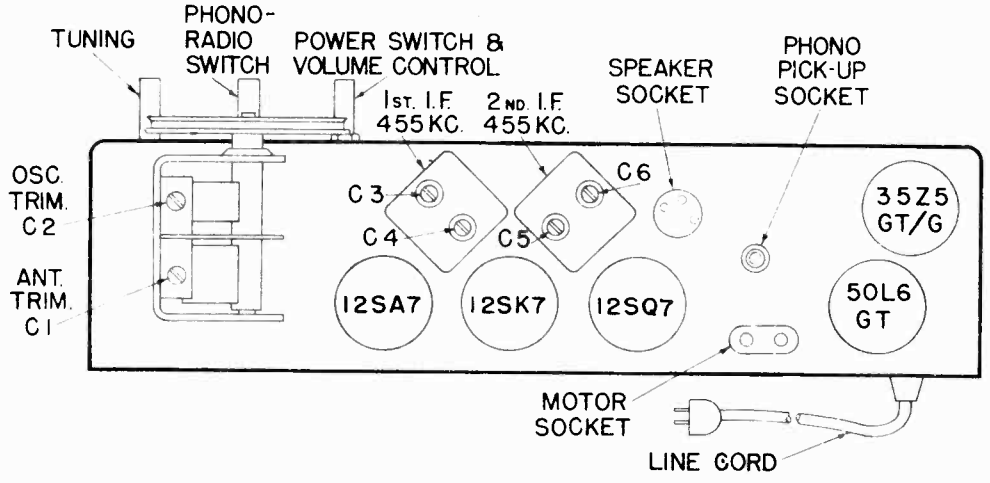
MODEL R-146-U AFFILIATED RETAILERS, INC.

**Frequency Range of Receiver** 535 - 1700 kc.

**Power Requirement** 105 - 125 volts 60 cycles Alternating Current (a-c) only

**Power Consumption: Receiver** 30 watts — Record Player 35 watts

Note: In case of dial light failure, replace the lamp (Mazda #47) as soon as possible to prevent damage to the 35Z5 tube.




## ALIGNMENT INSTRUCTIONS

Equipment Required:

Modulated r-f signal generator; output meter; insulated screw driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

The receiver should be aligned with chassis and loop mounted in the cabinet. With the condenser completely closed the pointer should be checked so that it coincides with the two horizontal reference lines on the dial. Connect the output meter and signal generator as follows:

Output meter — Connect across voice coil and turn volume control to maximum.

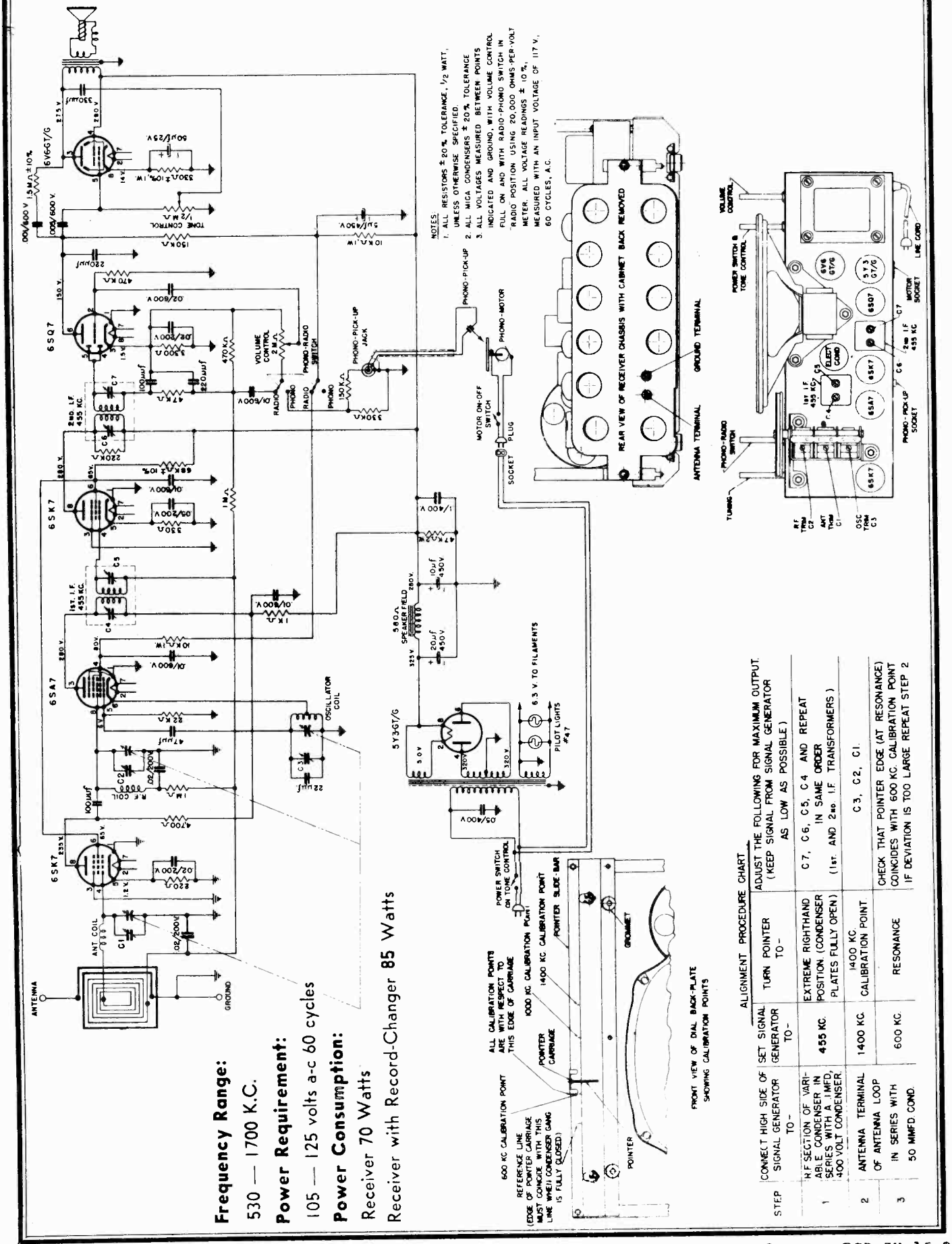
Signal generator — Connect the low side of the signal generator to the common B—bus thru a .1 n denser and keep the output as low as possible, then proceed in the sequence shown on the alignmer

ALIGNMENT PROCEDURE CHART

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO - | SET SIGNAL GENERATOR TO - | TURN RECEIVER DIAL TO - | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | FULL CLOCKWISE POSITION. (CONDENSER PLATES FULLY OPEN) | C6, C5, C4, C3 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS) |
| 2 | ANTENNA TERMINAL OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND. | 1700 KC. | 1700 KC. (170 ON DIAL) | C2 (OSCILLATOR) |
| 3 | | 1400 KC. | MAXIMUM SIGNAL (APPROX. 140 ON DIAL) | C1 (ANTENNA) |
| 4 | | REPEAT STEPS 2 AND 3 | | |

# AFFILIATED RETAILERS, INC.

MODEL R-246



## SERVICE AND ALIGNMENT INSTRUCTIONS

To service this receiver it is first necessary to remove the motorboard with the record changer and then remove the chassis through the top opening of the cabinet. To lift the entire motorboard with the changer, unfasten the six screws holding the motorboard in place, disconnect motor and pick-up plugs from chassis, and lift up. It is unnecessary to remove the screws holding the metal shield in front. CAUTION: WHEN REMOVING THE CHANGER BE SURE TO PLACE IT IN A POSITION WHEREBY THE CHANGER MECHANISM WILL NOT BE DAMAGED.

### ALIGNMENT

Equipment Required: Modulated r-f signal generator; output meter; insulated screw driver; one .1 mfd 400 volts and one 50 mmfd 400 volts condenser.

With the receiver removed from the cabinet, connect output meter across voice coil. Connect ground side of the signal generator to chassis; turn volume control fully on, and keeping the output of the signal generator as low as possible, proceed in the sequence as shown on the alignment chart.

To facilitate alignment of the receiver when removed from cabinet, calibration points are provided on the pointer slide bar (see drawing).

Before aligning, close the variable condenser fully counterclockwise (plates fully closed) and check that pointer carriage coincides with the "reference line" on the pointer slide bar.

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BU-187 | Pilot light bulb 6.3v (#47 Mazda) |
| CL-210 | Coil—oscillator coil |
| CL-608 | Coil—r-f coil |
| CL-609 | Coil—antenna loading coil |
| CO-158 | Condenser—20/10/5/450 WV & 50/25WV electrolytic condenser |
| CV-145 | Condenser—3-gang variable condenser |
| DL-583 | Dial—glass dial scale |
| KN-418 | Knob—Walnut knob marked "VOLUME" |
| KN-419 | Knob—Walnut knob marked "OFF-ON-TONE" |
| KN-420 | Knob—Walnut knob marked "PHONO-RADIO" |
| KN-421 | Knob—Walnut knob marked "TUNING" |
| LP-179 | Loop —antenna |
| PO-181 | Pointer |
| PT-105 | Control—2 megohm volume control |
| PT-106 | Control—½ megohm tone control with power switch S.P.S.T. |
| RCM20A101M | Condenser—100 mmfd ± 20% mica condenser |
| RCM20A220M | Condenser— 22 mmfd ± 20% mica condenser |
| RCM20A221M | Condenser—220 mmfd ± 20% mica condenser |
| RCM20A470M | Condenser— 47 mmfd ± 20% mica condenser |
| RCM40A331M | Condenser— 330 mmfd ± 20% mica condenser (1000 W.V.) |
| RCP10W2203A | Condenser—.02/200WV tubular paper condenser |
| RCP10W2503A | Condenser—.05/200WV tubular paper condenser |
| RCP10W4104L | Condenser—.1/400WV tubular paper condenser |
| RCP10W4503A | Condenser—.05/400WV tubular paper condenser |
| RCP10W6102A | Condenser—.001/600WV tubular paper condenser |
| RCP10W6103A | Condenser—.01/600WV tubular paper condenser |
| RCP10W6502A | Condenser—.005/600WV tubular paper condenser |
| REB102M | Resistor—1000 ohms ± 20% ½ watt resistor |
| REB105M | Resistor—1 megohm ± 20% ½ watt resistor |
| REB154M | Resistor—150,000 ohms ± 20% ½ watt resistor |
| REB155K | Resistor—1.5 megohm ± 10% ½ watt resistor |
| REB221K | Resistor—220 ohms ± 10% ½ watt resistor |
| REB223M | Resistor—22,000 ohms ± 20% ½ watt resistor |
| REB224M | Resistor—220,000 ohms ± 20% ½ watt resistor |
| REB331M | Resistor—330 ohms ± 20% ½ watt resistor |
| REB332M | Resistor—3300 ohms ± 20% ½ watt resistor |
| REB334M | Resistor—330,000 ohms ± 20% ½ watt resistor |
| REB472M | Resistor—4700 ohms ± 20% ½ watt resistor |
| REB473M | Resistor—47,000 ohms ± 20% ½ watt resistor |
| REB474M | Resistor—470,000 ohms ± 20% ½ watt resistor |
| REB683K | Resistor—68,000 ohms ± 10% ½ watt resistor |
| REC103M | Resistor—10,000 ohms ± 20% 1 watt resistor |
| REC331K | Resistor—330 ohms ± 10% 1 watt resistor |
| RED473M | Resistor—47,000 ohms ± 20% 2 watt resistor |
| SK-325 | Speaker—6" x 9" oval dynamic speaker 580 ohms field coil with output transformer |
| SP-191 | Spring—drive shaft retaining spring |
| SP-218 | Spring—⅞" lg. pointer drive spring |
| ST-369 | Back— Masonite back |
| SW-141 | Switch—phono-radio switch D.P.D.T. |
| TR-112 | Transformer —power transformer |
| TR-118 | Transformer—I.F. transformer. 1st & 2nd |

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BK-405 | Bracket-Resistor mounting bracket |
| BT-232 | Battery-4½ volt battery (A) |
| BT-233 | Battery-45 volt battery (B) |
| BU-187 | Bulb-pilot light bulb 6.3v (#47 Mazda) |
| CA-475 | Cabinet-portable cabinet |
| CB-335 | Cable-battery cable |
| CL-176 | Coil-R.F. coil, shielded |
| CL-177 | Coil-oscillator coil |
| CO-182 | Condenser-80/20/150WV & 100/15WV electrolytic condenser |
| CR-299 | Crystal-dial crystal |
| CT-388 | Condenser-220-680 mmfd padder condenser |
| CV-146 | Condenser-3 gang variable condenser (with pulley) |
| DL-391 | Dial-metal dial scale |
| ES-274-2 | Escutcheon-moulded escutcheon |
| KN-260 | Knob-walnut knob |
| KN-261 | Knob-walnut knob with dot |
| LC-315 | Line Cord-540 ohms resistance line cord |
| LP-178 | Loop-Antenna |
| PO-395 | Pointer-dial pointer |
| PT-383 | Control-volume control 2 megohms with D.P.S.T. switch |
| RCM20A100M | Condenser-10 mmfd ±20% mica condenser |
| RCM20A470M | Condenser-47 mmfd ±20% mica condenser |
| RCP10W2104A | Condenser-.1/200WV paper tubular condenser |
| RCP10W2203A | Condenser-.02/200WV paper tubular condenser |
| RCP10W4503A | Condenser-.05/400WV paper tubular condenser |
| RCP10W6103A | Condenser-.01/600WV paper tubular condenser |
| RCP10W6202M | Condenser-.002/600WV paper tubular condenser |
| RCP10W6502A | Condenser-.005/600WV paper tubular condenser |
| RE-407 | Resistor-2600 ohms ±5% 10 watt resistor |
| REB105M | Resistor-1 megohm ±20% ½ watt resistor |
| REB152M | Resistor-1500 ohms ±20% ½ watt resistor |
| REB224M | Resistor-220,000 ohms ±20% ½ watt resistor |
| REB225M | Resistor-2.2 megohms ±20% ½ watt resistor |
| REB270K | Resistor-27 ohms ±10% ½ watt resistor |
| REB335M | Resistor-3.3 megohms ±20% ½ watt resistor |
| REB471M | Resistor-470 ohms ±20% ½ watt resistor |
| REB474M | Resistor-470,000 ohms ±20% ½ watt resistor |
| REB683K | Resistor-68,000 ohms ±10% ½ watt resistor |
| REB685M | Resistor-6.8 megohms ±20% ½ watt resistor |
| REC332K | Resistor-3300 ohms ±10% 1 watt resistor |
| RED101M | Resistor-100 ohms ±20% 2 watt resistor |
| SD-607 | Shield-Tube Shield |
| SK-156 | Speaker-5" P.M. Speaker with output transformer |
| SO-572 | Socket-pilot light socket assembly |
| SP-191 | Spring-Drive shaft retaining spring |
| SW-185 | Switch-battery/electric D.P.D.T. slide switch |
| TR-186 | Transformer-I.F. 455 K.C. Transformer |

## SERVICE AND ALIGNMENT INSTRUCTIONS

WHEN SERVICING THIS RECEIVER DO NOT PLACE CHASSIS ON A GROUNDED METALLIC BENCH.

For tube replacement it is not necessary to remove the chassis from the cabinet. Access to the tubes may be made by removing the center screw on the loop holding same to the bracket, and then lifting loop carefully off the bracket so as to avoid breaking of wires connecting same.

For ALIGNMENT the chassis must be removed from case. Remove first batteries and then the three screws holding chassis to the bottom of the shelf.

### ALIGNMENT

Equipment Required: Modulated r-f signal generator; output meter; insulated screw driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

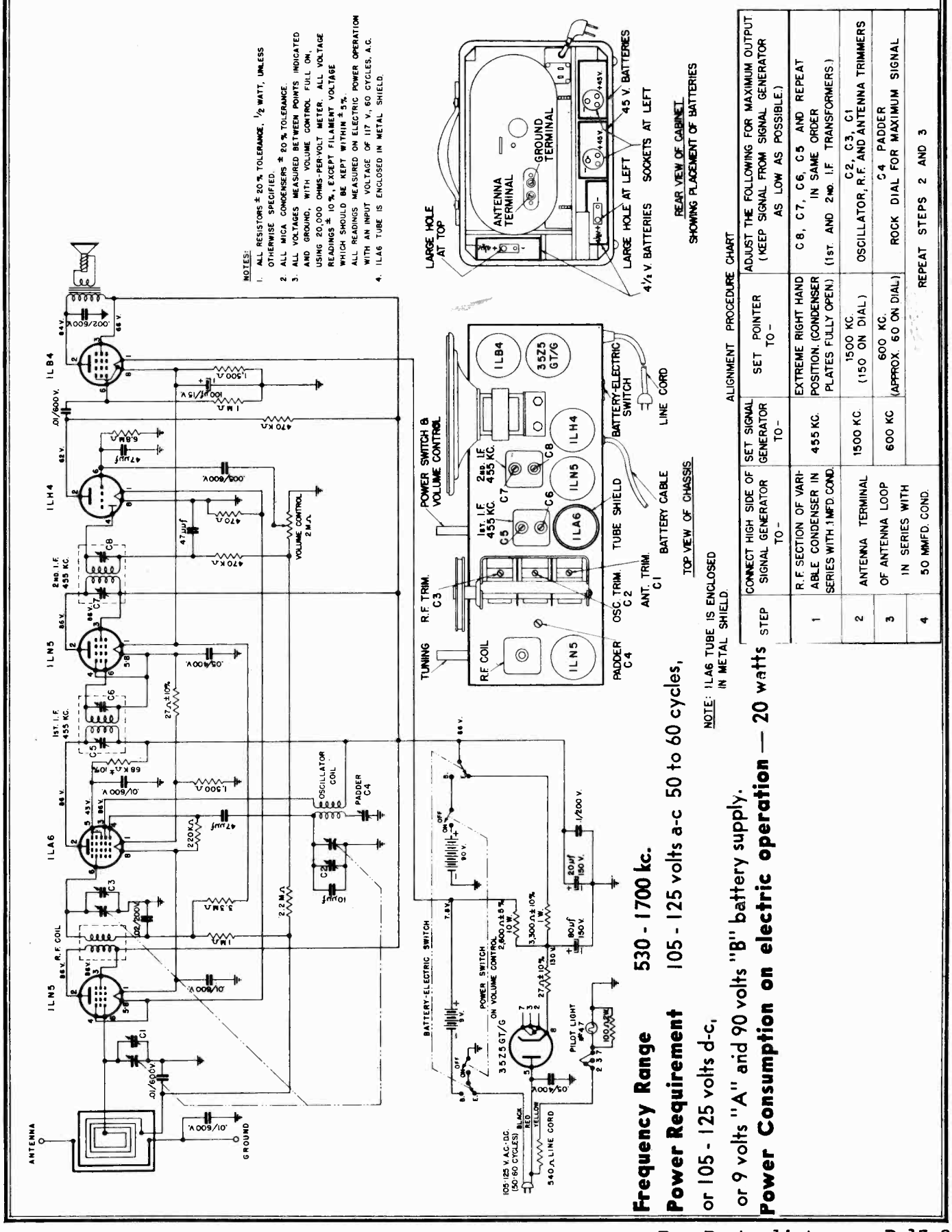
Turn variable condenser fully counterclockwise (plates fully closed) and check that pointer coincides with the first thin calibration mark on the dial. Connect the output meter and signal generator as follows:

Output meter: Connect across voice coil and turn volume control to maximum.

Signal generator: Connect the low side of the signal generator to the receiver chassis thru a .1 mfd condenser and keep output as low as possible, then proceed in the sequence shown on the alignment chart.

# AFFILIATED RETAILERS, INC.

MODEL R-546




**Frequency Range** 530 - 1700 kc.

**Power Requirement** 105 - 125 volts a-c 50 to 60 cycles,
or 105 - 125 volts d-c,
or 9 volts "A" and 90 volts "B" battery supply.

**Power Consumption on electric operation** — 20 watts

NOTE: ILA6 TUBE IS ENCLOSED IN METAL SHIELD.

ALIGNMENT PROCEDURE CHART

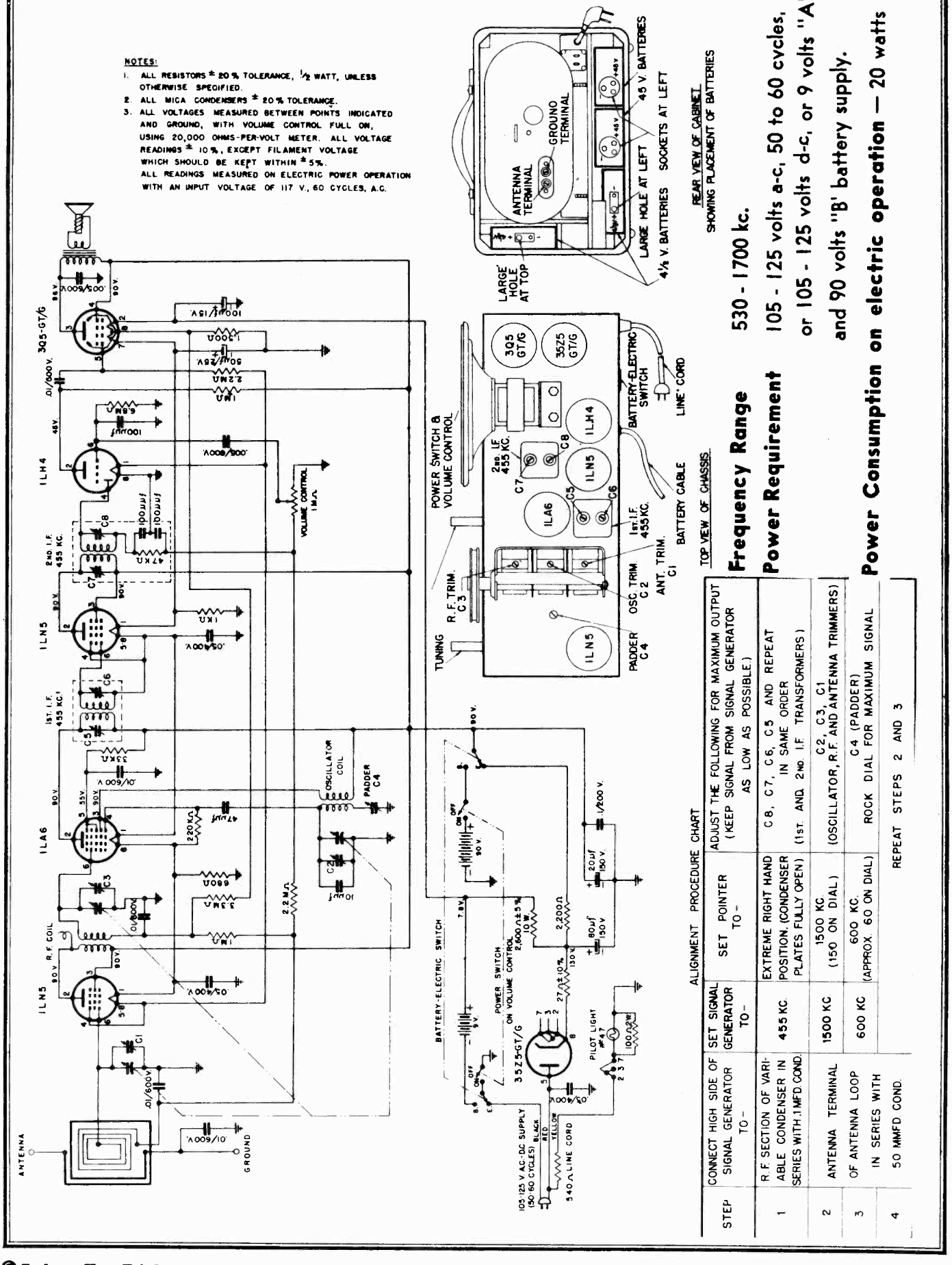
| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO - | SET SIGNAL GENERATOR TO - | SET POINTER TO - | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | R.F. SECTION OF VARIABLE CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | EXTREME RIGHT HAND POSITION (CONDENSER PLATES FULLY OPEN.) | C8, C7, C6, C5 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS.) |
| 2 | ANTENNA TERMINAL | 1500 KC. | 1500 KC. (150 ON DIAL.) | C2, C3, C1 OSCILLATOR, R.F. AND ANTENNA TRIMMERS |
| 3 | OF ANTENNA LOOP IN SERIES WITH | 600 KC. | 600 KC. (APPROX. 60 ON DIAL.) | C4 PADDER ROCK DIAL FOR MAXIMUM SIGNAL |
| 4 | 50 MMFD. COND. | REPEAT STEPS 2 AND 3 | | |



For Parts list, see P.17-8

MODEL R-546-A

# AFFILIATED RETAILERS, INC.




**Frequency Range** 530 - 1700 kc.

**Power Requirement** 105 - 125 volts a-c, 50 to 60 cycles, or 105 - 125 volts d-c, or 9 volts "A" and 90 volts "B" battery supply.

**Power Consumption on electric operation — 20 watts**

ALIGNMENT PROCEDURE CHART

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO - | SET SIGNAL GENERATOR TO - | SET POINTER TO - | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | R.F. SECTION OF VARIABLE CONDENSER IN SERIES WITH .1 MFD COND. | 455 KC. | EXTREME RIGHT HAND POSITION. (CONDENSER PLATES FULLY OPEN) | C8, C7, C6, C5 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS) |
| 2 | ANTENNA TERMINAL | 1500 KC | 1500 KC. (150 ON DIAL) | C2, C3, C1 (OSCILLATOR, R.F. AND ANTENNA TRIMMERS) |
| 3 | OF ANTENNA LOOP | 600 KC | 600 KC. (APPROX. 60 ON DIAL) | C4 (PADDER) ROCK DIAL FOR MAXIMUM SIGNAL |
| 4 | IN SERIES WITH 50 MMFD COND. | REPEAT STEPS 2 AND 3 | | |

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BK-405 | Bracket-Resistor mounting bracket |
| BU-187 | Bulb-pilot light bulb 6.3v (=47 Mazda) |
| CA-475 | Cabinet-portable cabinet |
| CB-335 | Cable-battery cable |
| CL-177 | Coil-oscillator coil |
| CL-630 | Coil-R.F. coil |
| CO-182 | Condenser-80/20/150WV & 100/15WV electrolytic condenser |
| CO 808 | Condenser-50 mfd /25 W.V. electrolytic condenser |
| CR-299 | Crystal-dial crystal |
| CT-388 | Condenser-220-680 mmfd padder condenser |
| CV-146 | Condenser-3 gang variable condenser (with pulley) |
| DL-391 | Dial-metal dial scale |
| ES-274-2 | Escutcheon-moulded escutcheon |
| KN-260 | Knob-walnut knob |
| KN-261 | Knob-walnut knob with dot |
| LC-315 | Line Cord-540 ohms resistance line cord |
| LP-178 | Loop-Antenna |
| PO-395 | Pointer-dial pointer |
| PT-576 | Control-volume control 1 megohm with D.P.S.T. switch |
| RCM20A100M | Condenser-10 mmfd ±20% mica condenser |
| RCM20A101M | Condenser-100 mmf ±20% mica condenser |
| RCM20A470M | Condenser-47 mmfd ±20% mica condenser |
| RCP10W2104A | Condenser-.1/200WV paper tubular condenser |
| RCP10W4503A | Condenser-.05/400WV paper tubular condenser |
| RCP10W6103A | Condenser-.01/600WV paper tubular condenser |
| RCP10W6502A | Condenser-.005/600WV paper tubular condenser |
| RE 407 | Resistor-2600 ohms 5% 10 watt resistor |
| REB102M | Resistor-1000 ohms 20% ½ watt resistor |
| REB105M | Resistor-1 megohm 20% ½ watt resistor |
| REB152M | Resistor-1500 ohms 20% ½ watt resistor |
| REB222M | Resistor-2200 ohms 20% ½ watt resistor |
| REB224M | Resistor-220,000 ohms 20% ½ watt resistor |
| REB225M | Resistor-2.2 megohms 20% ½ watt resistor |
| REB270K | Resistor-27 ohms 10% ½ watt resistor |
| REB333M | Resistor-33,000 ohms 20% ½ watt resistor |
| REB335M | Resistor-3.3 megohms 20% ½ watt resistor |
| REB681M | Resistor-680 Ohms 20% ½ watt resistor |
| REB685M | Resistor-6.8 megohms 20% ½ watt resistor |
| RED101M | Resistor-100 ohms 20% 2 watt resistor |
| SK-476 | Speaker-5" P.M. Speaker with output transformer |
| SO-572 | Socket-pilot light socket assembly |
| SP-191 | Spring-Drive shaft retaining spring |
| SW-185 | Switch-battery-electric D.P.D.T. slide switch |
| TR-707 | Transformer-I.F. 455 K.C. input-Transformer |
| TR-708 | Transformer-Output I.F. 455 K.C. Transformer with built-in I.F. filter |

### SERVICE AND ALIGNMENT INSTRUCTIONS

WHEN SERVICING THIS RECEIVER DO NOT PLACE CHASSIS ON A GROUNDED METALLIC BENCH.

For ALIGNMENT the chassis must be removed from case. Remove first batteries and then the three screws holding chassis to the bottom of the shelf.

### ALIGNMENT

Equipment Required: Modulated r-f signal generator; output meter; insulated screw driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

Turn variable condenser fully counterclockwise (plates fully closed) and check that pointer coincides with the first thin calibration mark on the dial. Connect the output meter and signal generator as follows:

Output meter: Connect across voice coil and turn volume control to maximum.

Signal generator: Connect the low side of the signal generator to the receiver chassis thru a .1 mfd condenser and keep output as low as possible, then proceed in the sequence shown on the alignment chart.

## REPLACEMENT PARTS

| Part No. | Description |
|---|---|
| BK-405 | Bracket-Resistor mounting bracket |
| CA-475 | Cabinet-portable cabinet |
| CB-335 | Cable-battery cable |
| CL-176 | Coil-R.F. coil, shielded |
| CL-177 | Coil-oscillator coil |
| CO-182 | Condenser-80/20/150WV & 100/15WV electrolytic condenser |
| CR-299 | Crystal-dial crystal |
| CT-388 | Condenser-220-680 mmfd padder condenser |
| CV-146 | Condenser-3 gang variable condenser (with pulley) |
| DL-391 | Dial-metal dial scale |
| ES-274-2 | Escutcheon-moulded escutcheon |
| KN-260 | Knob-walnut knob |
| KN-261 | Knob-walnut knob with dot |
| LC-223 | Line Cord |
| LP-178 | Loop-Antenna |
| PO-395 | Pointer-dial pointer |
| PT-383 | Control-volume control 2 megohms with D.P.S.T. switch |
| RCM20A100M | Condenser-10 mmfd ±20% mica condenser |
| RCM20A470M | Condenser-47 mmfd ±20% mica condenser |
| RCP10W2104A | Condenser-.1/200W.V. paper tubular condenser |
| RCP10W2203A | Condenser-.02/200W.V. paper tubular condenser |
| RCP10W2254A | Condenser-.25/200W.V. paper tubular condenser |
| RCP10W4104L | Condenser-.1/400W.V. paper tubular condenser |
| RCP10W4503A | Condenser-.05/400W.V. paper tubular condenser |
| RCP10W6103A | Condenser-.01/600WV paper tubular condenser |
| RCP10W6202M | Condenser-.002/600WV paper tubular condenser |
| RCP10W6502A | Condenser-.005/600WV paper tubular condenser |
| RE-407 | Resistor-2600 ohms ±5% 10 watt resistor |
| REB105M | Resistor-1 megohm ±20% ½ watt resistor |
| REB152M | Resistor-1500 ohms ±20% ½ watt resistor |
| REB224M | Resistor-220,000 ohms ±20% ½ watt resistor |
| REB225M | Resistor-2.2 megohms ±20% ½ watt resistor |
| REB270K | Resistor-27 ohms ±10% ½ watt resistor |
| REB335M | Resistor-3.3 megohms ±20% ½ watt resistor |
| REB471M | Resistor-470 ohms ±20% ½ watt resistor |
| REB474M | Resistor-470,000 ohms ±20% ½ watt resistor |
| REB683K | Resistor-68,000 ohms ±10% ½ watt resistor |
| REB685M | Resistor-6.8 megohms ±20% ½ watt resistor |
| REC332K | Resistor-3300 ohms ±10% 1 watt resistor |
| SD-607 | Shield-Tube Shield |
| SK-156 | Speaker-5" P.M. Speaker with output transformer |
| SP-191 | Spring-Drive shaft retaining spring |
| SW-193 | Switch-battery-electric T.P.D.T. slide switch |
| TR-186 | Transformer-I.F. 455 K.C. Transformer |

### SERVICE AND ALIGNMENT INSTRUCTIONS

For tube replacement it is not necessary to remove the chassis from the cabinet. Access to the tubes may be made by removing the center screw on the loop holding same to the bracket, and then lifting loop carefully off the bracket so as to avoid breaking of wires connecting same.

For ALIGNMENT the chassis must be removed from case. Remove first batteries and then the three screws holding chassis to the bottom of the shelf.

### ALIGNMENT

Equipment Required: Modulated r-f signal generator; output meter; insulated screw driver; two .1 mfd 400 volt and one 50 mmfd 400 volt condensers.

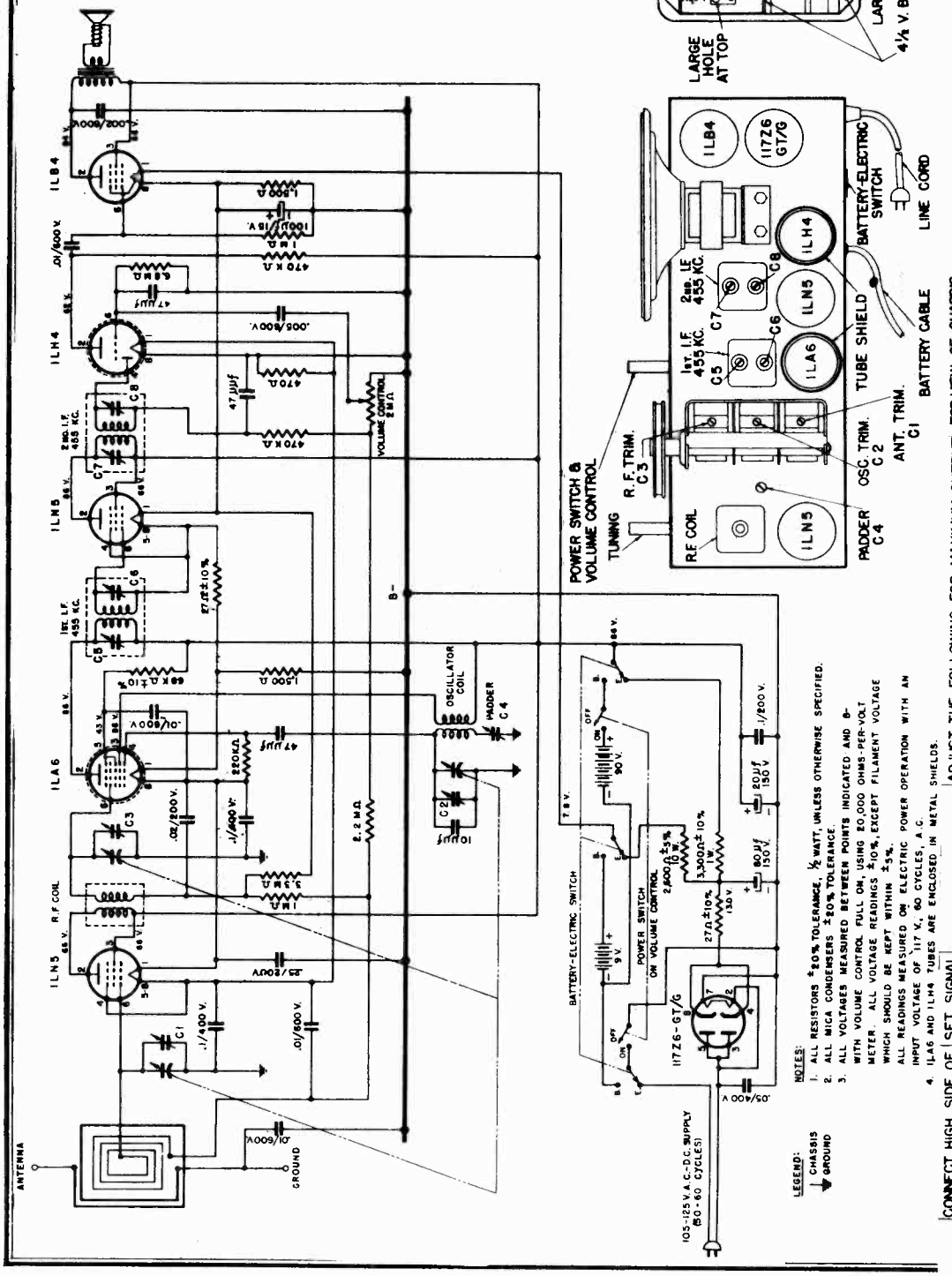
Turn variable condenser fully counterclockwise (plates fully closed) and check that pointer coincides with the first thin calibration mark on the dial. Connect the output meter and signal generator as follows:

Output meter: Connect across voice coil and turn volume control to maximum.

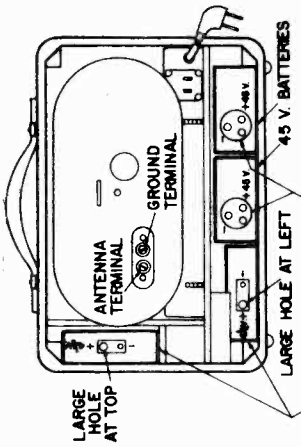
Signal generator: Connect the low side of the signal generator to the receiver chassis thru a .1 mfd condenser and keep output as low as possible, then proceed in the sequence shown on the alignment chart.

MODEL R-546-U

# AFFILIATED RETAILERS, INC.




NOTES:
1. ALL RESISTORS ±20% TOLERANCE, ½ WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ±20% TOLERANCE.
3. ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND B- WITH VOLUME CONTROL FULL ON, USING 20,000 OHMS-PER-VOLT METER. ALL VOLTAGE READINGS ±10%, EXCEPT FILAMENT VOLTAGE WHICH SHOULD BE KEPT WITHIN ±5%. ALL READINGS MEASURED ON ELECTRIC POWER OPERATION WITH AN INPUT VOLTAGE OF 117 V., 60 CYCLES, A.C.
4. ILA6 AND ILH4 TUBES ARE ENCLOSED IN METAL SHIELDS.







**Frequency Range** 530 - 1700 kc.

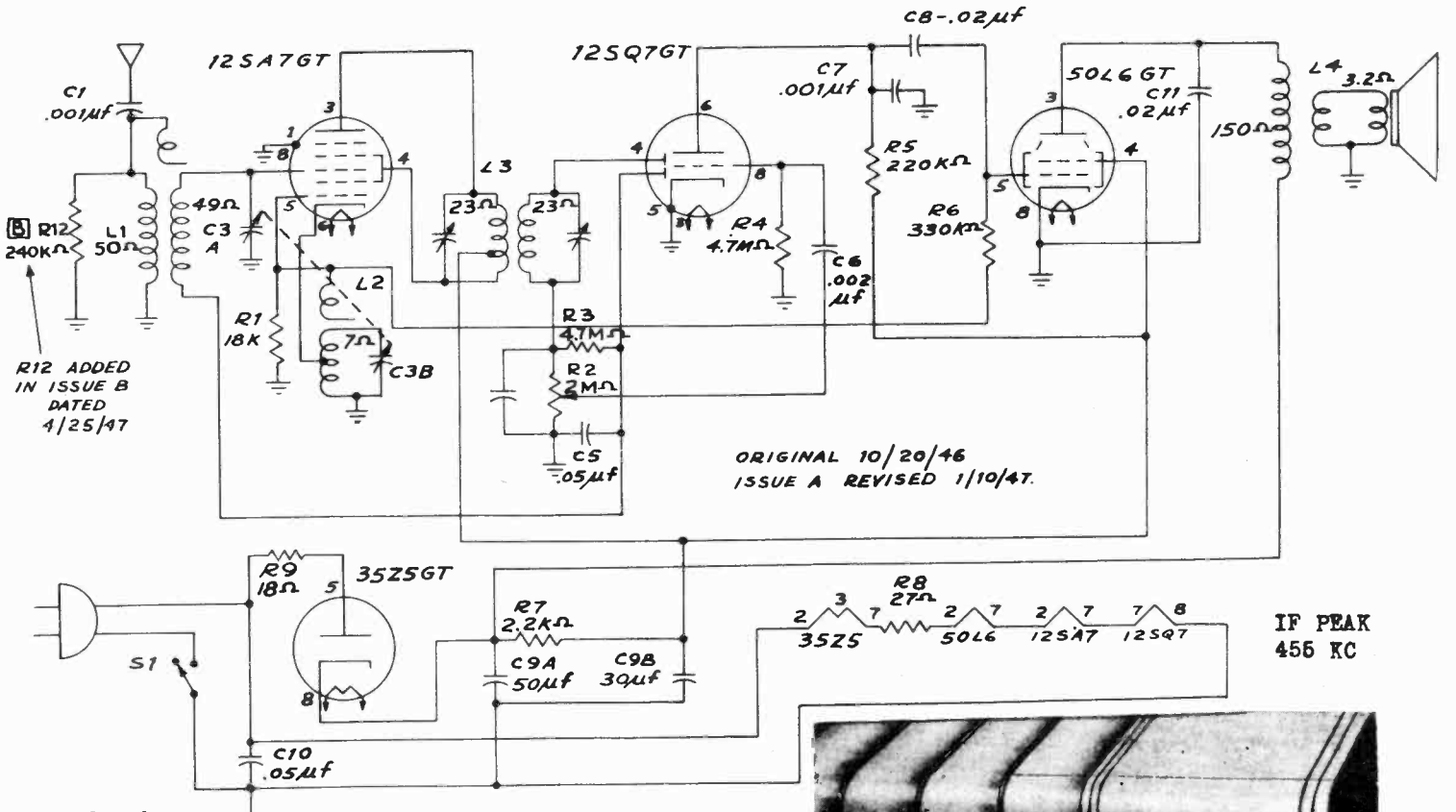
**Power Requirement** 105 - 125 volts a-c 50 to 60 cycles, or 105 - 125 volts d-c, or 9 volts "A" and 90 volts "B" battery supply.

**Power Consumption on electric operation — 20 watts**

| STEP | CONNECT HIGH SIDE OF SIGNAL GENERATOR TO- | SET SIGNAL GENERATOR TO- | SET POINTER TO- | ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT. (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.) |
|---|---|---|---|---|
| 1 | R.F. SECTION OF VARIABLE CONDENSER IN SERIES WITH .1 MFD. COND. | 455 KC. | EXTREME RIGHT HAND POSITION. (CONDENSER PLATES FULLY OPEN) | C8, C7, C6, C5 AND REPEAT IN SAME ORDER (1st. AND 2ND. I.F. TRANSFORMERS) |
| 2 | ANTENNA TERMINAL | 1500 KC. | 1500 KC. (150 ON DIAL) | C2, C3, C1 (OSCILLATOR, R.F. AND ANTENNA TRIMMERS) |
| 3 | OF ANTENNA LOOP IN SERIES WITH 50 MMFD. COND. | 600 KC. | 600 KC. (APPROX. 60 ON DIAL) | C4 (PADDER) ROCK DIAL FOR MAXIMUM SIGNAL |
| 4 | | | REPEAT STEPS 2 AND 3 | |

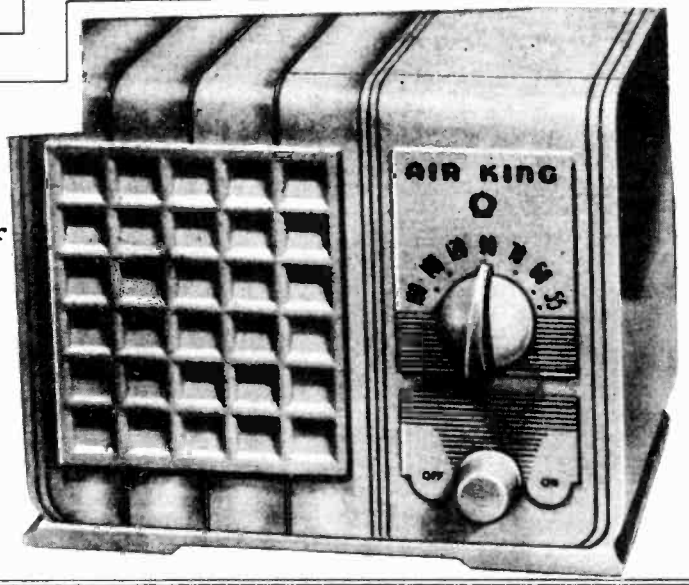


For Parts list, see P.17-11



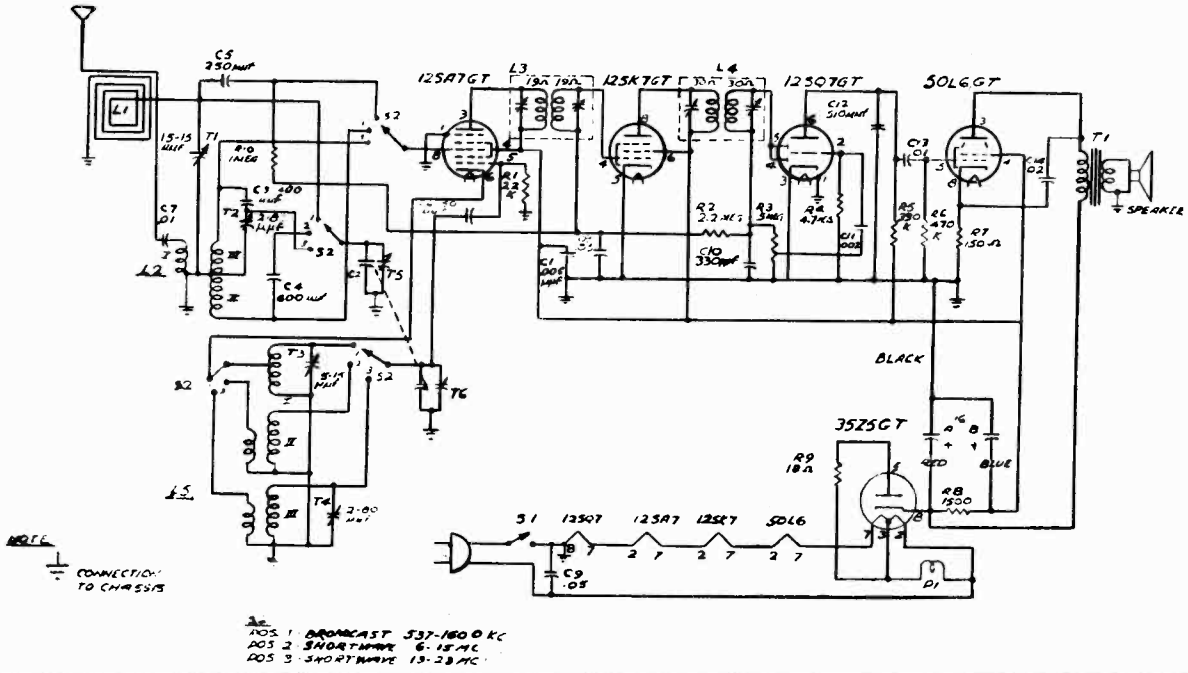

| | | | |
|---|---|---|---|
| 5877 | Speaker | 2479 | Volume Control |
| 39156 | Plastic knob tuning | 28182 | Antenna Coil |
| 39157 | " " volume | 28184 | Oscillator Coil |
| 62192 | Cabinet back | 3376 | I.F. Transformer |
| | Instruction Book | 5580 | Antenna Hank |
| 1673 | Variable Condenser | | |
| 2073 | Electrolytic cond Unit 50-30 MF | | |

| | | | |
|---|---|---|---|
| Paper cond. | .05/400 v. | Resistor | 10K ohm ¼W. |
| " " | .01/ " | " | 4.7 meg. ohm ¼ w. |
| " " | .002/" | " | 220 ohm ¼ w. |
| " " | .02/ " | " | 2200 ohm 2 W |
| " " | .05/200 v. | " | 18 ohm ¼ w. |
| " " | .005/" | " | 46 " 1W. |
| " " | .001/500 V. | " | 330K ohm ¼ W. |
| Mica " | 100 mmf | | |
| " " | 47 " | | |



MODELS A501, A502,
Chassis 465-4

# AIR KING PRODUCTS CO., INC.




## ALIGNMENT PROCEDURE

Output meter connection.....Across voice coil

Output meter reading to indicate ½ watt.....1.25V for 3.2 Ohm voice coil

Connection of generator ground.....Receiver chassis

Generator modulation.....Approximately 30% @ 400 cycles

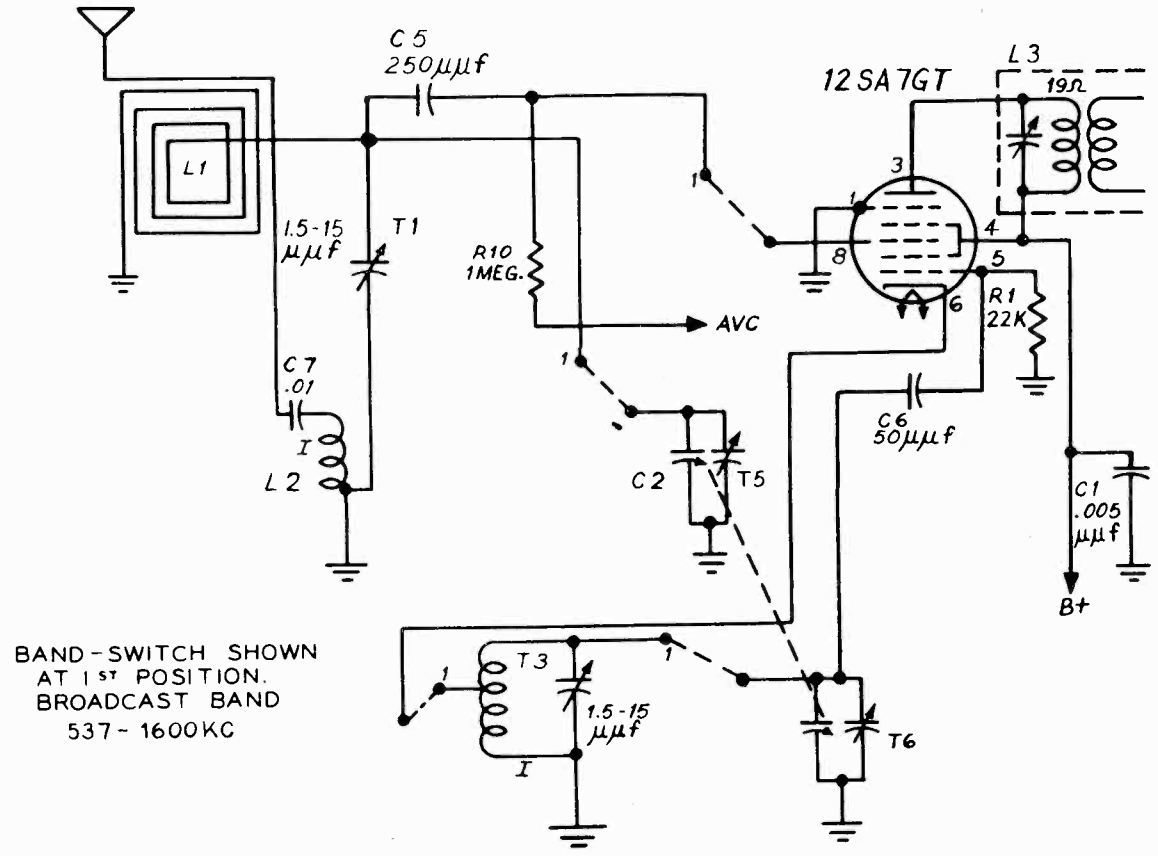
Position of volume control.....Fully clockwise

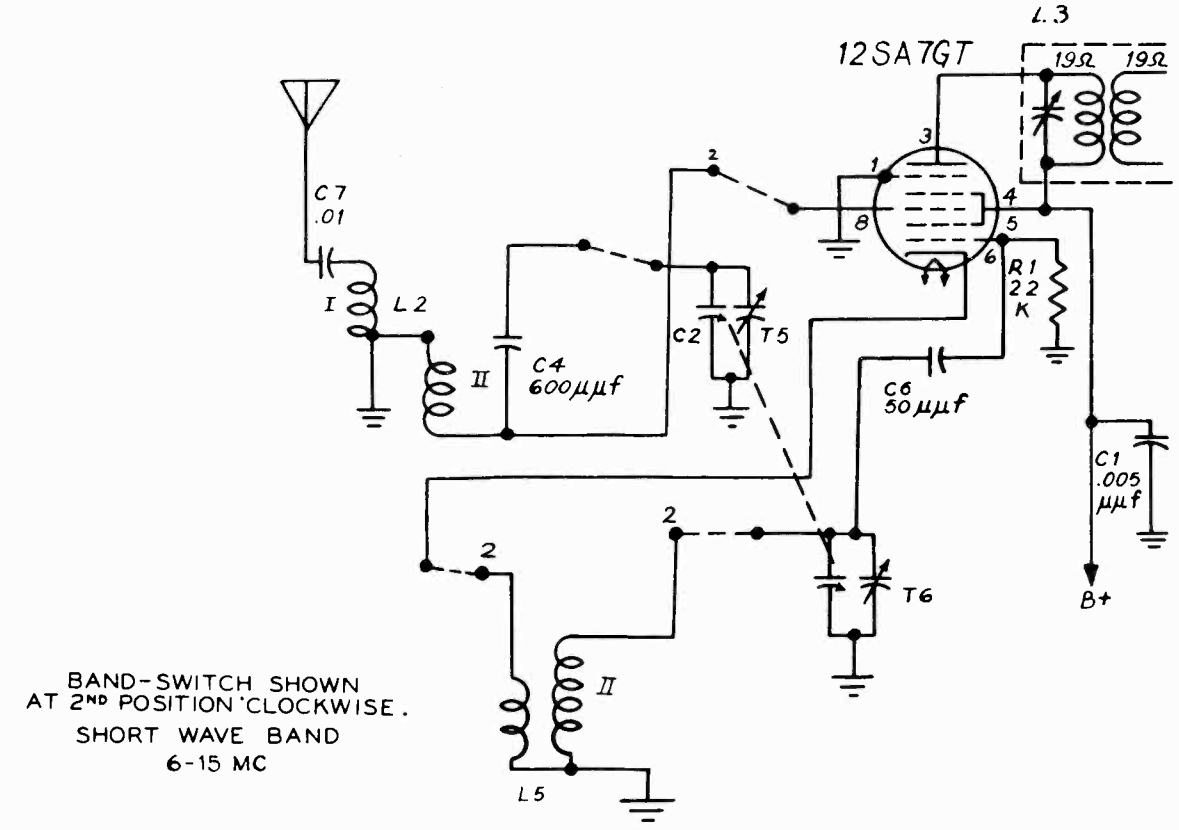
| WAVE BAND SW. | POSITION OF DIAL POINTER | GEN. FREQ. | GEN. CONN. | DUMMY ANT. | TRIMMERS ADJ. IN ORDER | TRIMMER FUNCTION |
|---|---|---|---|---|---|---|
| B. C. | 550 | 455 | 12SA7 Grid | .1 mfd. | I. F. Trimmers | I. F. |
| S. W. 1 | 14 | 14 | Ant. Post | R.M.A. Std. | T6* | Osc. |
| | 14 | 14 | Ant. Post | R.M.A. Std. | T5 | Osc. |
| S. W. 2 | 23 | 23 | Ant. Post | R.M.A. Std. | T4* | Osc. |
| | 23 | 23 | Ant. Post | R.M.A. Std. | T2 | R. F. |
| B. C. | 1500 | 1500 | Ant. Post | R.M.A. Std. | T3 | R. F. |
| | 1500 | 1500 | Ant. Post | R.M.A. Std. | T1 | R. F. |

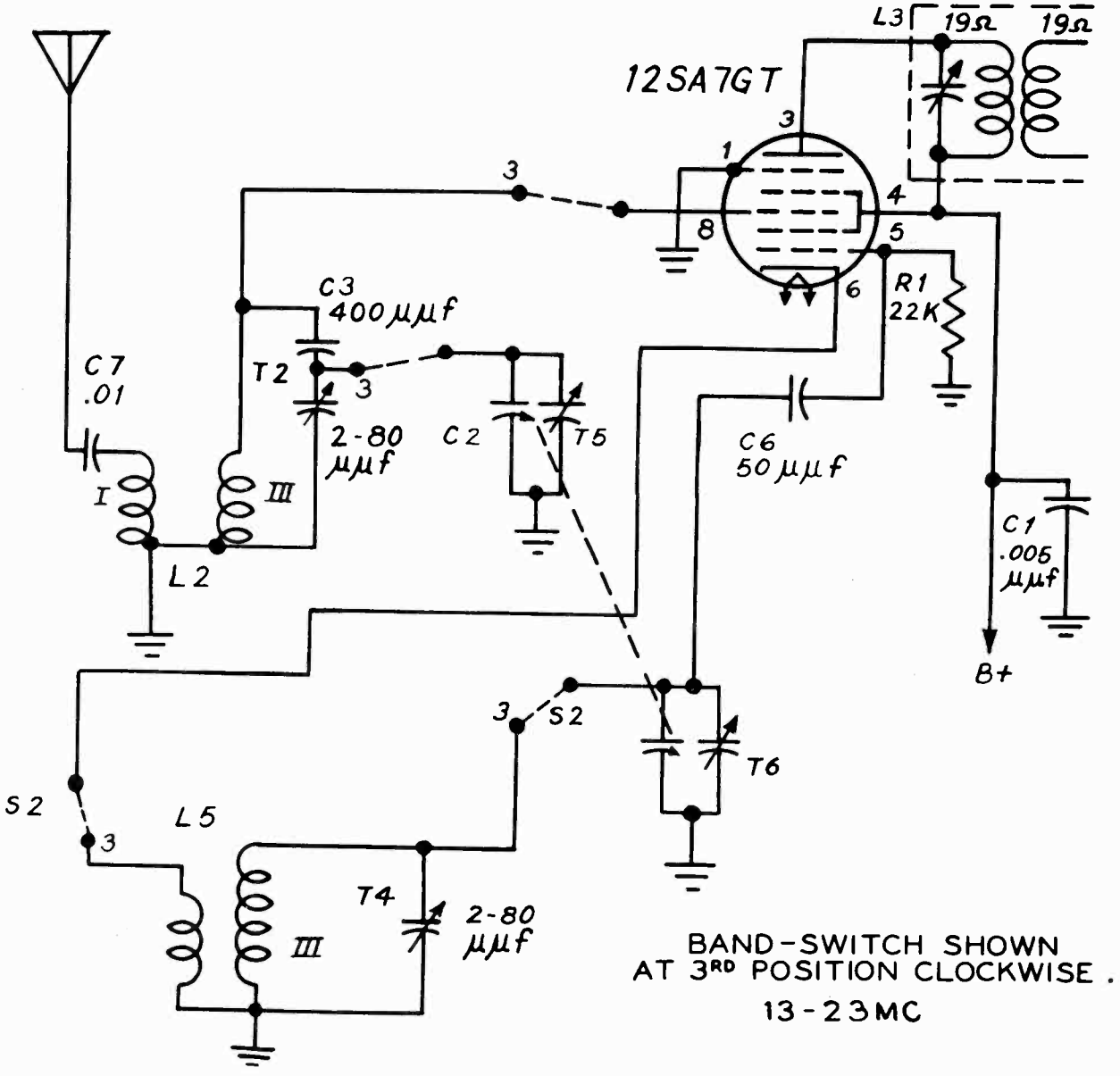
NOTE:

* If two peaks can be had the correct one is with the trimmer screw further out, the other peak is the image. Align set in order shown.

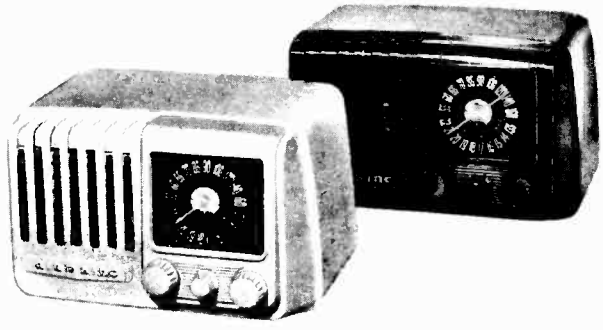
AIR KING PRODUCTS CO., INC. MODELS A501, A502



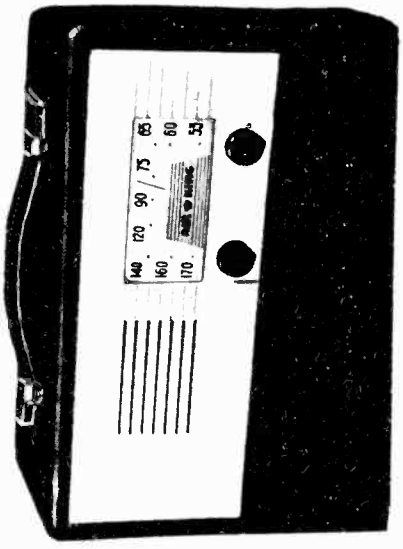



BAND-SWITCH SHOWN
AT 3RD POSITION CLOCKWISE.
13-23MC



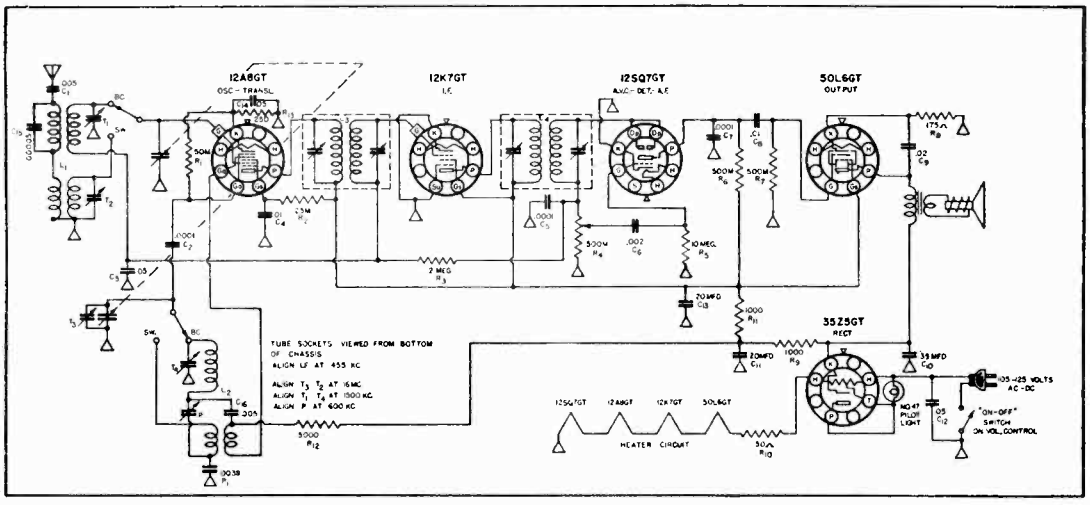
# AIR KING PRODUCTS CO., INC.

MODELS A510, Royal Troubador



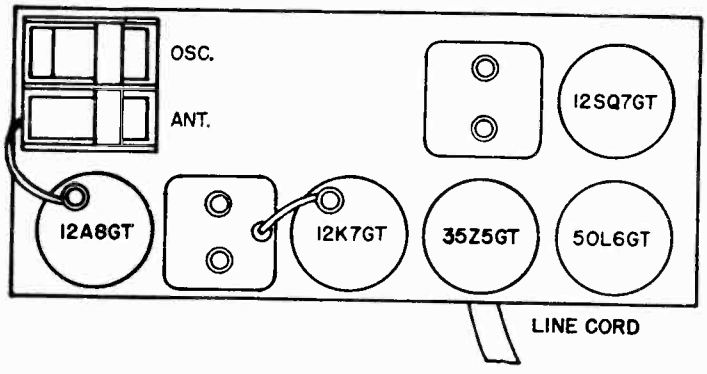
For Parts list, see P.17-9

MODEL 4200 AIR KING PRODUCTS CO., INC.




| SCHEMATIC LOCATION | PART NUMBERS | DESCRIPTION |
|---|---|---|
| | 110T4200 | Cabinet |
| L1 | 11028108 | Coil—2 band antenna |
| L2 | 11028109 | Coil—2 band oscillator |
| L3 | 1103319 | Coil—I.F. Input |
| L4 | 1103519 | Coil—I.F. Output |
| P1 | 1101941 | Condenser—Fixed mica padder |
| C10, C11, C13 | 1102055 | Condenser—Electrolytic |
| R4 | 1102447 | Control—Volume |
| | 1104527 | Dial—Cable |
| | 1104062 | Dial—Scale |
| | 1104120 | Dial—Pointer |
| | 1104911 | Lamp—No. 47 pilot light |
| | 1105574 | Line cord—Rubber |
| | 1105829 | Speaker—5" P.M. dynamic |
| | 1103732 | Switch—Wave change |
| | 1101722 | Trimmers—Strip of 4 |

When no part number is assigned, order by description and rating.

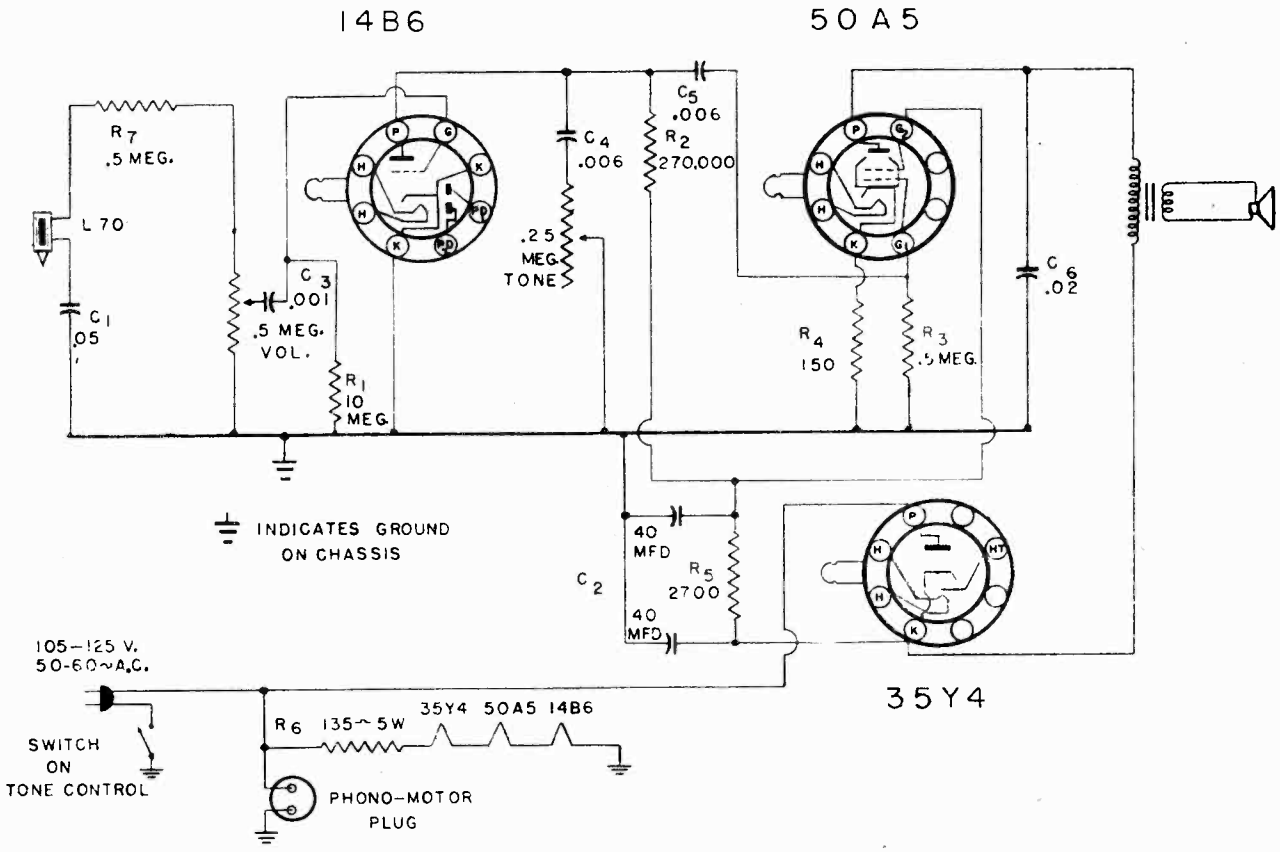



This receiver comprises a five-tube AC-DC two-band superheterodyne incorporating an improved filter circuit, automatic volume control, beam power output tube and oversized dynamic speaker are utilized for improved performance. The tuning range of this instrument accommodates two bands of frequencies from 530 to 1730 kilocycles (standard American broadcast) and 5.75 to 18.5 megacycles (foreign broadcast).

THE RECEIVER WAS DESIGNED TO OPERATE WITHOUT A GROUND. UNDER NO CIRCUMSTANCES SHOULD A GROUND WIRE BE PERMITTED TO COME IN CONTACT WITH ANY PART OF THIS RECEIVER.

# AIR KING PRODUCTS CO., INC.

MODEL 4625 Phono



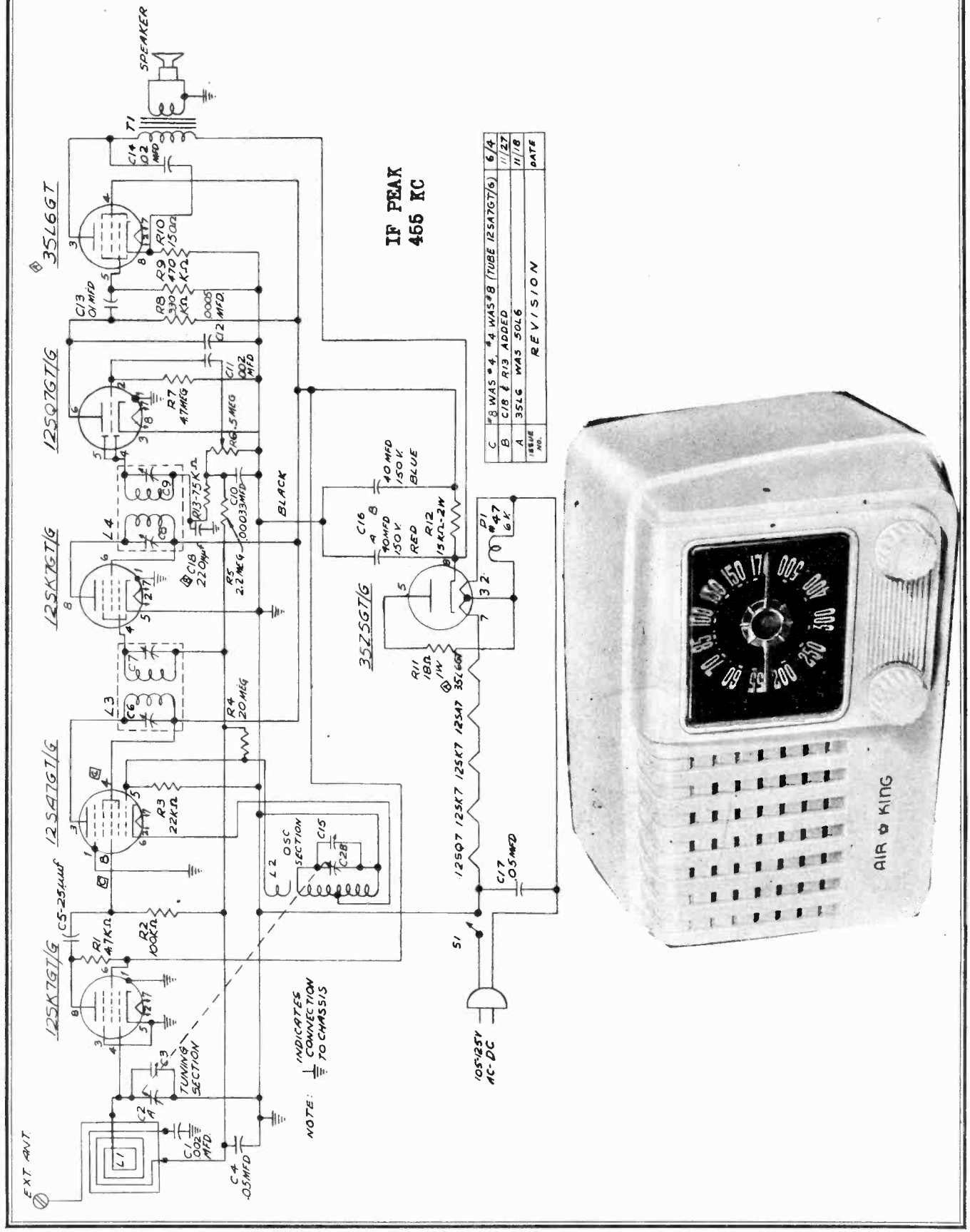

## PARTS LIST

| Schematic Location | Part No. | Description |
|---|---|---|
| | T454 | Cabinet |
| | 62180 | Cover, back |
| C4, C5 | 1971 | Condenser, .006 mfd, mica |
| C1 | 1967 | Condenser, .05 mfd, 200V |
| C2 | 2065 | Condenser, electrolytic, 40-40 mfd, 150V |
| C3 | 1956 | Condenser, .001 mfd |
| C6 | 1963 | Condenser, .02 mfd, 400V |
| | 2473 | Control, Tone, with switch, ¼ Meg. |
| | 2472 | Control, Volume, ½ Meg. |
| | 5559 | Cord, line |
| | 39145 | Knob (2) |
| | 6414 | Motor |
| | 6342 | Pick-up arm with cartridge, L70 |
| | 18103 | Plug, speaker, male |
| | 18111 | Plug, speaker, female |
| | 18112 | Plug, motor, male |
| | 18113 | Plug, motor, female |
| | 18104 | Plug, phono, female |
| | 1861 | Plug, phono, male |
| R6 | 2238 | Resistor, 135 ohms, 5W, wire wound |
| R5 | 2378 | Resistor, 2700 ohms, 1W |
| R2 | 2361 | Resistor, 270,000 ohms, ½W |
| R4 | 2372 | Resistor, 150 ohms, ½W |
| R3, R7 | 2353 | Resistor, 500,000 ohms, ¼W |
| R1 | 2335 | Resistor, 10 Meg., ¼W |
| R8 | 2363 | Resistor, 220,000 ohms, ¼W |
| | 5855 | Speaker, 5", with output trans. |
| | 6417 | Turntable, 9" |
| | 54220 | Needle, Fidelitone Master |

**CAUTION:** The lead wire which emerges from the rear of the tone arm and goes through the motor board is arranged so that it will not restrict the free movement of the tone arm across the record. It is important that this wire be free and loose at all times. Do not attempt to push the excess wire through the panel. Remove clip from stem before placing records on turntable.

MODELS 4705, 4706
Chassis 467

# AIR KING PRODUCTS CO., INC.



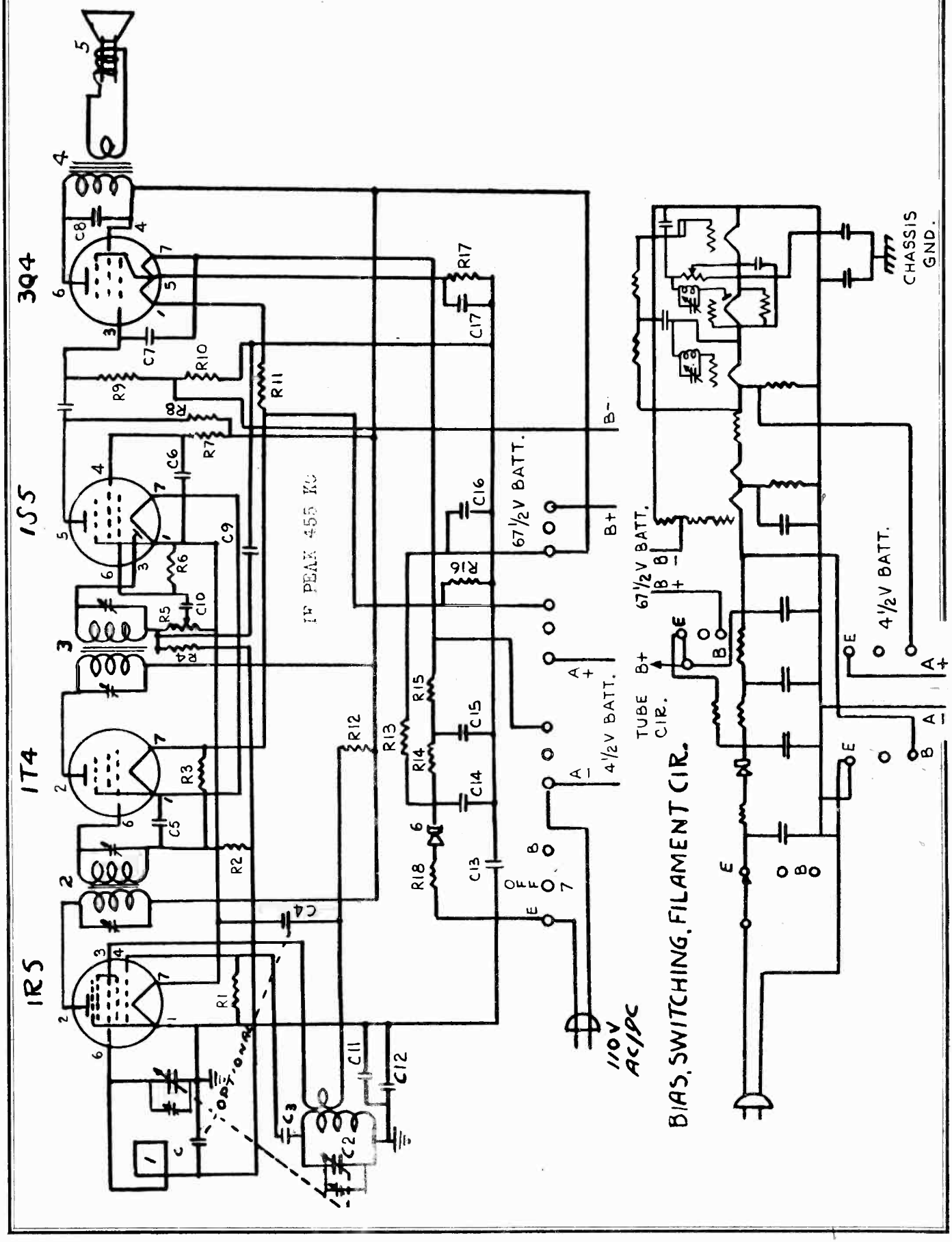
Model 4705 and 4706 Parts,

| Air King No. | DESCRIPTION |
|---|---|
| 4706 | plastic cabinet ivory painted |
| 4705 | plastic cabinet walnut |
| 5868 | 4" speaker with output transformer |
| 39137 | knobs walnut |
| 4275 | dial crystal |
| 54165 | dial pan |
| 4139 | pointer |
| 18109 | pilot socket |
| 54172 | drive shaft assembly |
| | dial cord spring and clasp |
| 47 | pilot light |
| 5582 | line cord |
| 28159 | franklin loop |
| 28156 | oscillator coil |
| 3363 | 1st IF transformer |
| 3583 | 2nd IF " |
| 2471 | volume control ½ meg |
| 1666 | variable condenser |
| 2071 | electrolytic condenser 40-40 150 v |
| | 330 mmf mica 500v cond |
| | 510 " " cond |
| | .05 mf 400v |
| | .01 mf 400v |
| | .02 mf 400v |
| | .002 mf 400v |
| | 22K ohm ¼ watt |
| | 2.2 meg " " |
| | 4.7 " " " |
| | 330K ohm |
| | 470K " |
| | 150 ohm ½ watt |
| | 1500 " 2 " |
| | 18 " 1 " |
| | 20 meg ¼ " |
| 54144 | grommets for variable condenser |
| 18110 | sockets octal wafers |
| 54145 | spacers variable condenser |

| Air King # | Model A510 DESCRIPTION |
|---|---|
| 6011 | Cabinet complete with carton and fittings |
| 5899 | Loud speaker 4" without transformer |
| 5340 | backcover (without loop) |
| 6246 | grille |
| 4098 | dial crystal (mounted on grill) |
| 39164 | knobs (brown) |
| | instruction leaflet |
| 1694 | variable condenser |
| 2075 | electrolytic condenser unit (60,60,25) |
| 20105 | " " single 25mf 25 v. |
| | paper condensers .05mf 400 v. |
| | " " .005mf 200 v. |
| | " " .02mf 200 v. |
| | " " .001mf 400 v. |
| | " " .1mf 200 v. |
| | " " .2mf 200 v. |
| | MICA or Ceramic Condensers 100mmf |
| | " " " 12 mmf |
| 2481 | Volume Control 1 meg w. switch (DPST) |
| | Resistors 270,820,8200,100K, 330K, 470K, 2.2Meg |
| | 3.3 Meg, 4.7 Meg, 10Meg, ¼ watt each |
| | " 33 Ohms 1 watt |
| 2177 | Filter & Filament Dropping Resistor |
| 28197 | Oscillator coil |
| 3371 | I.F. Transformer (input) |
| 3535 | I.F. Transformer (output) |
| 1337 | Output transformer |
| 28199 | Loop |
| 54309 | Dial Pan |
| 54308 | Tuning Control Bracket |
| 4679 | Drive Shaft Dial |
| 5588 | Line Cord (Polarized) |
| 54325 | Flag on-off |
| 41106 | Pointer |
| 18131 | min. tube socket (3Q4) |
| 18130 | " " " (1R5, 1U4, 1T4) |
| 18129 | Battery cable plug |
| 18132 | Wafer Switch (Batt.-A.C.) |
| | Dial Cord |
| | " " Spring only |
| | Speaker clips (2) |
| | Selenium Rectifier |
| | Miniature tube socket non microphonic (1S5) |

ALAMO ELECTRONIC CORP.

MODEL PR-2



MODEL FR-2

# ALAMO ELECTRONIC CORP.

LINE OR BATTERY VOLTAGE: Designed to operate on 105-120 volts, 50-60 cycle alternating or direct current (AC/DC) or self contained batteries.

POWER CONSUMPTION: Approximately 20 watts.

BATTERIES USED:

3–1½ volt "A" - standard flashlight cells.

1–67½ volt "B" - Eveready 467, Burgess XX45 or equivalent.

TUNING RANGE: 540-1650 KCS.

TUBES USED AND FUNCTIONS:

1R5 Convertor

1T4 Amplifier

1S5 Detector AVC and Audio Amplifier

3Q4 Power Amplifier

See diagram for tube layout.

RECTIFIER: FEDERAL No. 403D2625.

CAUTION: When prolonged operation in electric position is contemplated, it is advisable to remove the "A" and "B" batteries and store them in a cool, dry place.

DO NOT LEAVE EXHAUSTED BATTERIES IN EITHER THE BATTERY TRAY OR RECEIVER PROPER AS THE CHEMICAL ACTION MAY EXPAND THE BATTERIES AND CAUSE LEAKAGE OF THE ELECTROLYTE.

BE SURE THAT BATTERY-ELECTRIC SWITCH IS IN OFF POSITION (CENTER) WHEN FINISHED WITH RECEPTION, OTHERWISE THE BATTERY WILL BE DISCHARGED AND REQUIRE REPLACEMENT IF LEFT ON FOR A CONSIDERABLE LENGTH OF TIME.

## SERVICE DATA

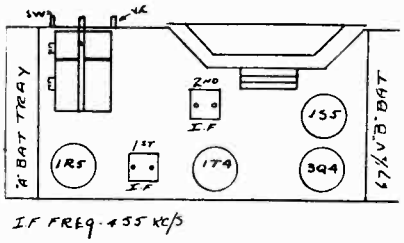
Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION, AS INDICATED ON THE PARTS DIAGRAM.

## ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 1400, 1700 KCS and an output meter to be connected across the primary or secondary of the output transformer. For more accuracy a vacuum tube voltmeter should be used. If possible all alignments should be made with the volume control on maximum and the test oscillator output as low as possible.

1. Couple signal generator to loop loosely using one or two turns of wire connected to signal generator output.
2. Set signal generator to 455 KC and adjust the 4 I.F. trimmers on top of I.F. cans. An output meter may be connected across voice coil but we suggest for more accurate alignment that a vacuum tube voltmeter be connected between A-lead and tie lug connecting return lead of loop. With no signal the voltage should be approximately +1½ volt and will become negative as signal increases, adjust to maximum negative voltage.
3. The oscillator trimmer should next be set so that a 1700 KC signal comes in at minimum setting of condenser. (Plates all out.)
4. The R.F. trimmer should be set at 1400 KC. It is suggested that it be adjusted with both batteries in case and chassis as near in the case as possible, and still adjust trimmer as the chassis affects inductance of loop.



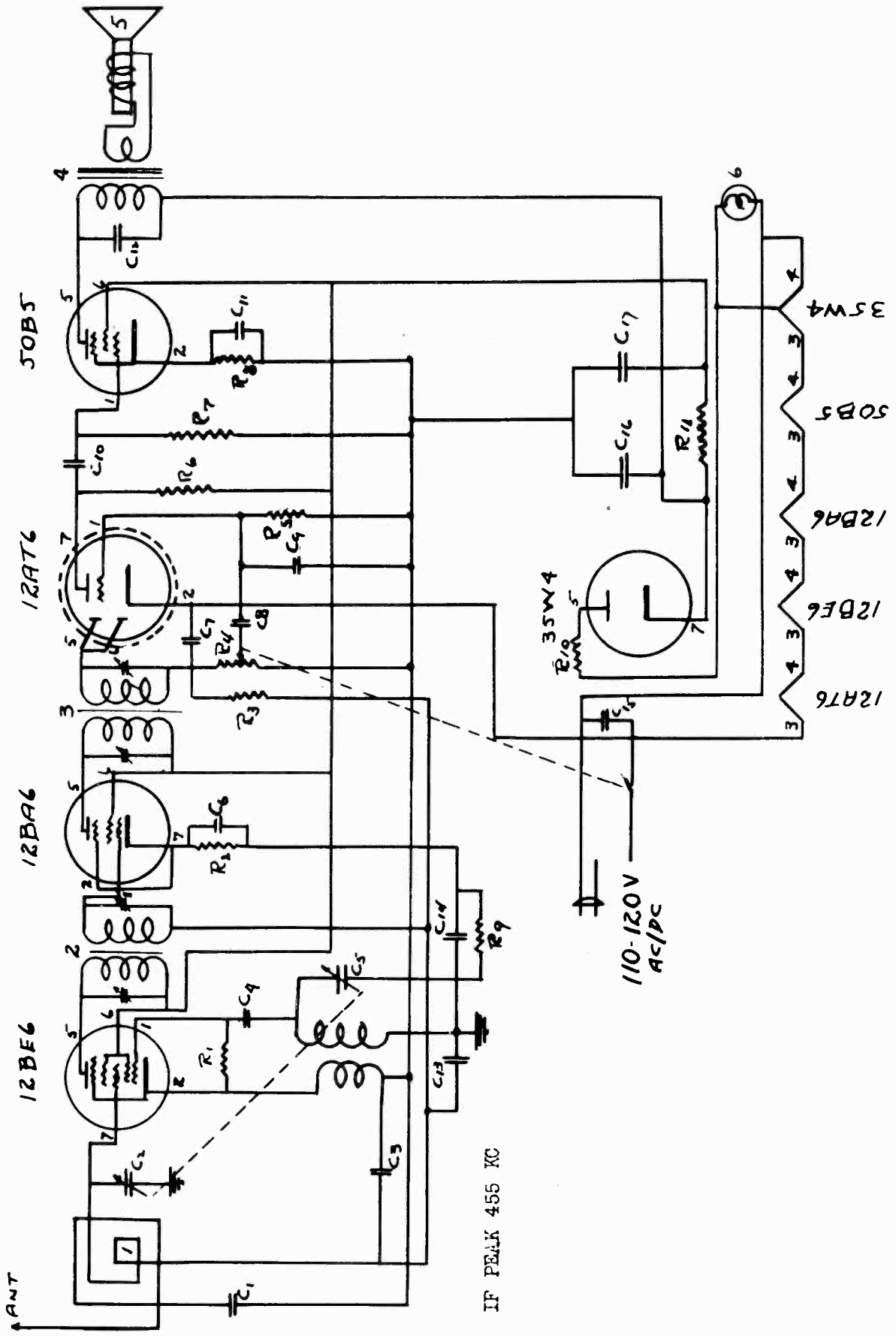
IF FREQ-455 KC/S

| Parts No. | |
|---|---|
| R1 | 1000,000 ohm |
| R2 | 5 meg |
| R3 | 5 meg |
| R4 | 2 meg |
| R5 | 1 meg V.C. |
| R6 | 8 meg |
| R7 | 4 meg |
| R8 | 1 meg |
| R9 | 5 meg |
| R10 | 500 ohm |
| R11 | 27 ohm |
| R12 | 18,000 ohm |
| R13 | 3300 ohm |
| R14-R15 | 1200 ohm 5 watt |
| R16-R17 | 1500 ohm 1 watt |
| C1-C2 | 2 gang condenser |
| C3-C4 C5-C6 | 02 Paper |
| C18-C11 C7 | .005 400 volt |
| C8 | .0003 Mica |
| C9 | .005 400 volt |
| C10 | 70 UUF Mica |
| C12-C13 | .05 Paper |
| C14-C15 | 40 MFD-150 volt |
| C16 | 20 MFD-150 volt |
| C17 | 100 MFD-25 volt |
| 1 | Loop-Part of Case |
| 2 | 1st I.F. Transformer |
| 3 | 2nd I.F. Transformer |
| 4 | Output Transformer |
| 5 | 4" P.M. Speaker |
| 6 | Selenium Rectifier No. Fed. 403D2625 |
| 7 | 4 pole 3 position switch |

ALL RESISTORS ½ WATT AND ALL CONDENSERS 200 VOLT UNLESS OTHERWISE MARKED.

# ALAMO ELECTRONIC CORP.

MODEL 50



SERVICE DATA

| PART NO. | | |
|---|---|---|
| R1 | 20,000 ohm ½ watt | |
| R2 | 820 | Lack of sensitivity and poor tone quality may be due to any one or a com- |
| R3 | 2 meg | bination of causes such as weak or defective tubes or speaker, open or |
| R4 | 45 meg | grounded bias resistor, bypass condenser, etc. Never attempt to realign |
| R5 | 5 meg | set until all other possible sources of trouble have been thoroughly in- |
| R6 | .5 meg | vestigated and definitely proved not to be the cause. |
| R7 | | |
| R8 | 150 ohm 1 watt | NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED OSCILLATOR |
| R9 | .5 meg optional | WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RE- |
| R10 | 40 ohm | CEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER |
| R11 | 1500 ohm 1 watt | WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE |
| | | TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS |
| C1 | .0008 mica | DIAGRAM. |
| C2 | 2 gang condenser | |
| C5 | | |
| C3-C6) | .02 paper condenser | |
| C13 ) | | GENERAL DATE. The alignment of this receiver requires the use of a test |
| C4 | 50 UUF mica | oscillator that will cover the frequencies of 455, 1400, 1600 KCS and an |
| C8 ) | .005 paper condenser | output transformer. For more accuracy a vacuum tube voltmeter should be |
| C10) | | used. If possible all alignments should be made with the volume control |
| C11 | 10MFD 25 volt | on maximum and the test oscillator output as low as possible. |
| C12 | .03 paper condenser | |
| C14,C15 | .05 paper condenser | 1. Couple signal generator to loop loosely with one or two turns of wire |
| C16-C17 | 40 MFD-150 volt | connected to signal generator output. |

1. Loop Antenna
2. 1st I.F.
3. 2nd I.F.
4. Output Transformers
5. 4" P.M. Speaker
6. Pilot light #51

2. Connect Output meter to voice coil or better connect vacuum tube voltmeter to B- (AC switch) and tie lug on top of chassis connecting to loop return.

3. Set signal generator to 455 KC and adjust 4 trimmers in top of I.F. cans.

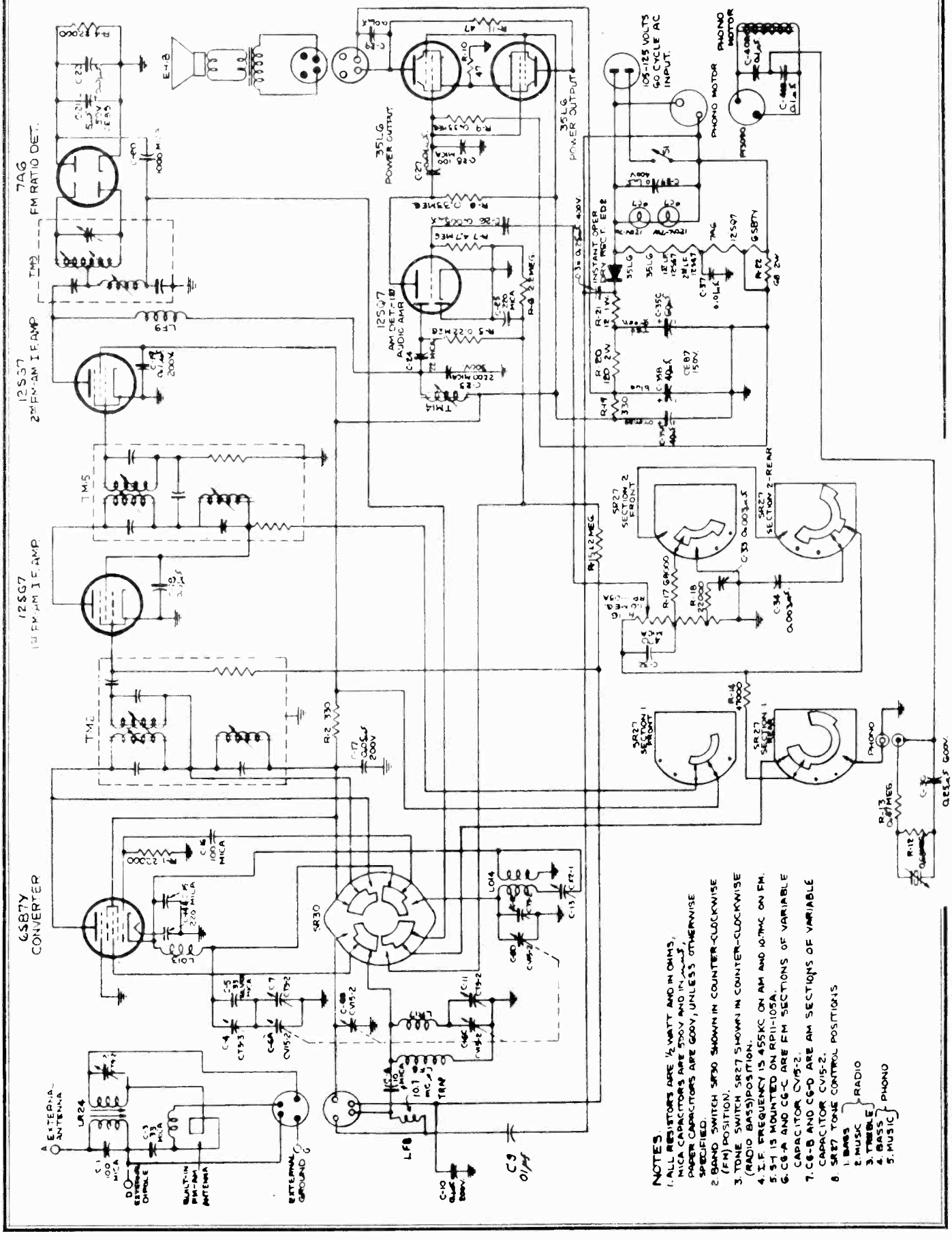
4. Set signal generator to 1600 KC - set tuning condenser to minimum capacity and adjust oscillator trimmer on condenser gang.

5. Set oscillator to 1400 KC tune in signal accurately and adjust R.F. trimmer on condenser gang.

ALL RESISTORS ½ WATT AND ALL CONDENSERS 400 VOLT UNLESS OTHERWISE MARKED

# ALDEN INC.

MODEL 1562



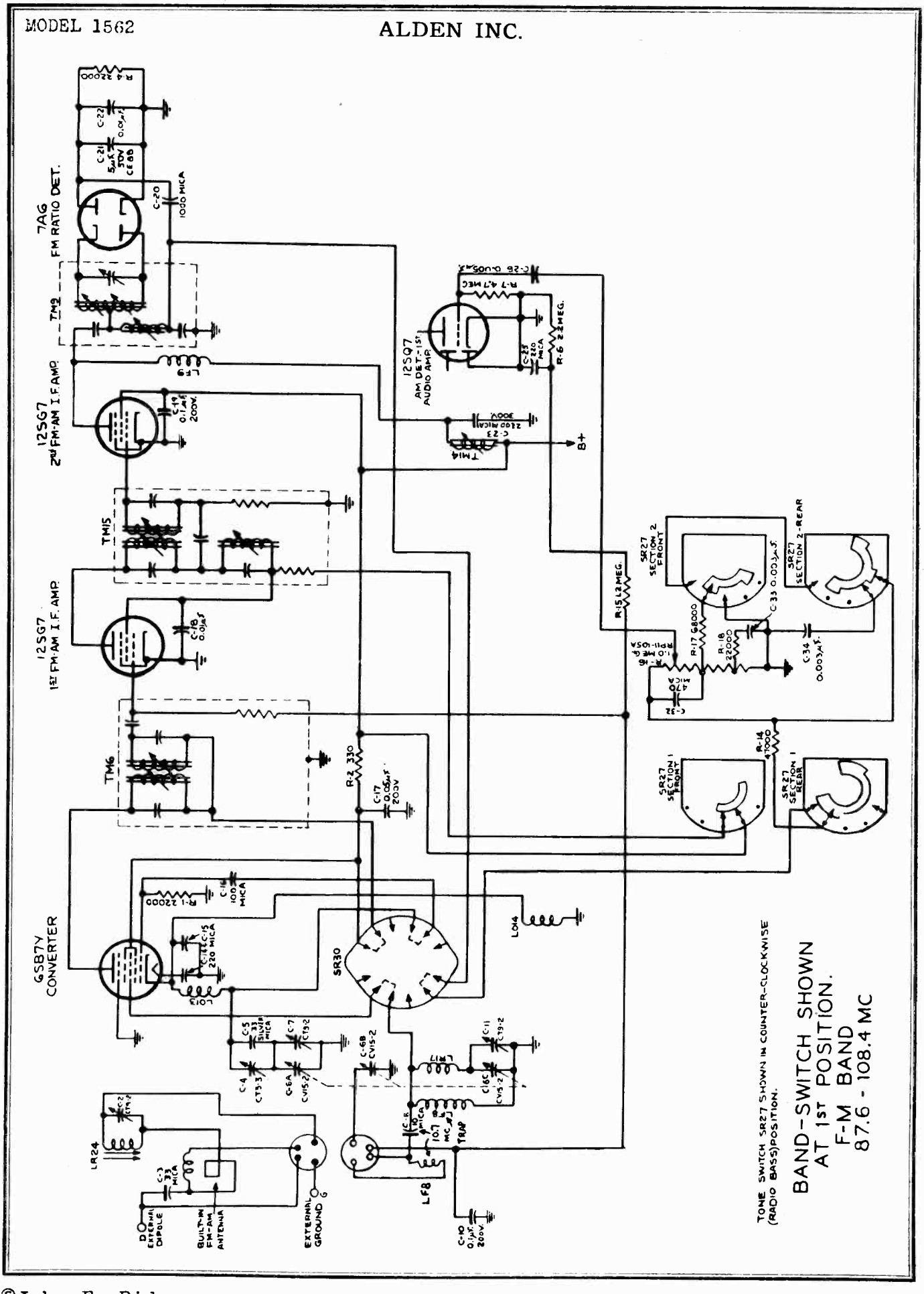

NOTES.

1. ALL RESISTORS ARE ½ WATT AND IN OHMS, MICA CAPACITORS ARE 500V AND IN μμF, PAPER CAPACITORS ARE 600V, UNLESS OTHERWISE SPECIFIED.
2. BAND SWITCH SR30 SHOWN IN COUNTER-CLOCKWISE (FM) POSITION.
3. TONE SWITCH SR27 SHOWN IN COUNTER-CLOCKWISE (RADIO BASS) POSITION.
4. I.F. FREQUENCY IS 455KC ON AM AND 10.7MC ON FM.
5. S-M IS MOUNTED ON RP11-105A.
6. C6-A AND C6-C ARE FM SECTIONS OF VARIABLE CAPACITOR CVS-2.
7. C6-B AND C6-D ARE AM SECTIONS OF VARIABLE CAPACITOR CVS-2.
8. SR27 TONE CONTROL POSITIONS
   1. BASS
   2. MUSIC
   3. TREBLE } RADIO
   4. BASS
   5. MUSIC } PHONO

"clarified schematics"

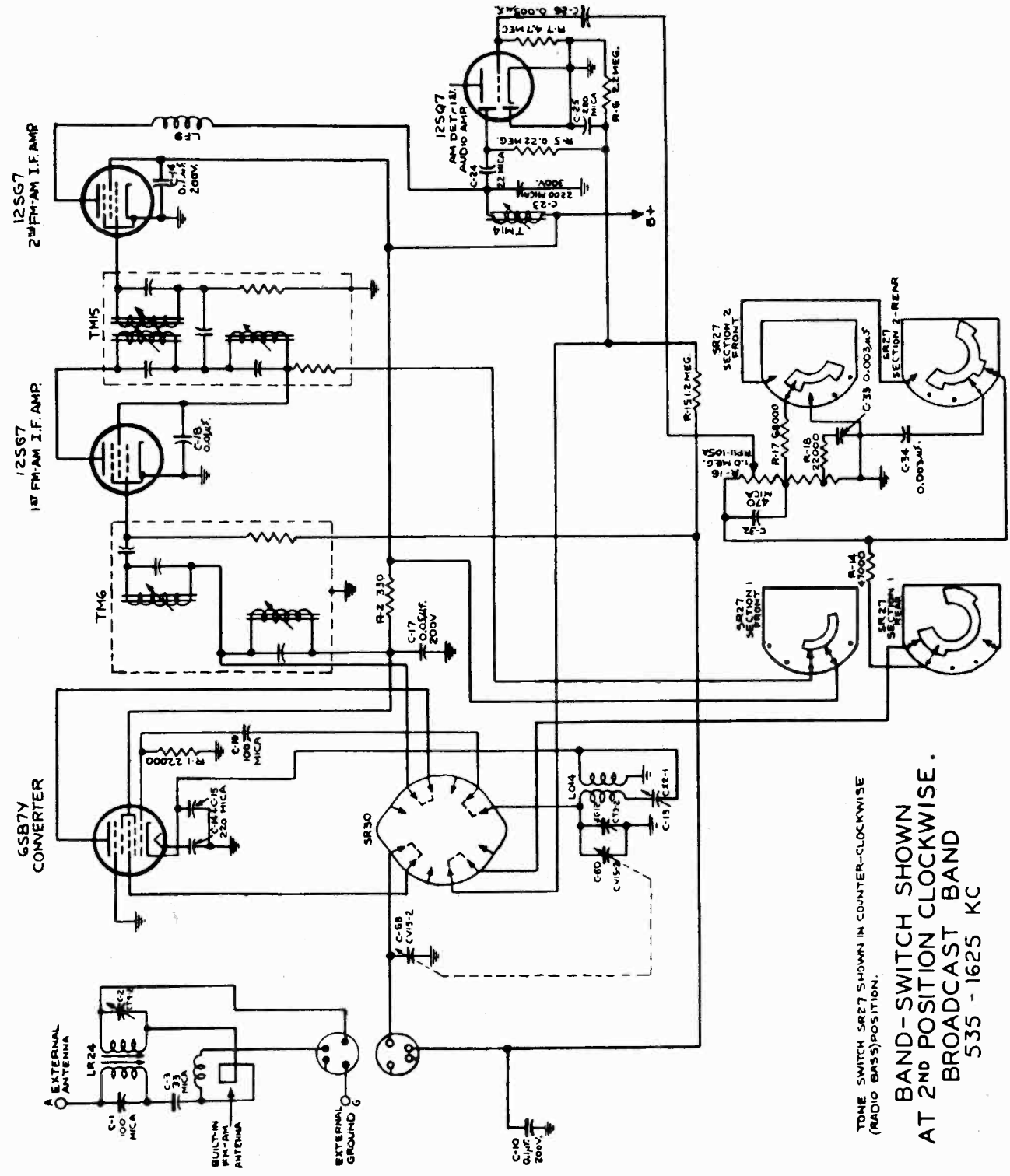
MODEL 1562

ALDEN INC.

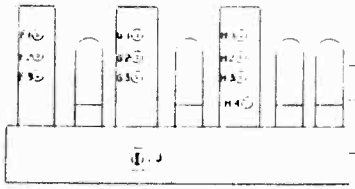


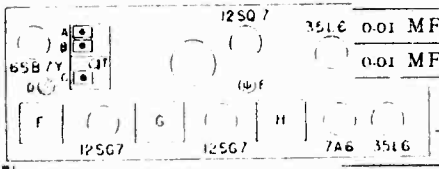
ALDEN INC.

MODEL 1562



## ALIGNMENT PROCEDURE:






| Dummy Antenna | Signal Generator Connection | Signal Generator Frequency | Band Switch Position | Radio Dial Setting | Adjust | Remarks |
|---|---|---|---|---|---|---|
| 0.01 MFD | Terminal T | 455 KC AM | Broadcast | 1025 KC | E<br>G-1<br>F-1 | Adjust for maximum output<br>Repeat for fine adjustment |
| 0.01 MFD | Pin 4 of 12SG7 2nd FM-AM IF with FM Signal Gen. | 10.7 MC FM | FM | 108 MC | H-2 | Adjust for maximum output (Broad adjustment) |
| 0.01 MFD | " | 10.7 MC FM | FM | 108 MC | H-4 | Adjust for maximum output |
| 0.01 MFD | " | 10.7 MC AM | FM | 108 MC | H-1 or H-3 | Adjust whichever is required for minimum output |
| | | | | | | Repeat last two steps for fine adjustment until settings for maximum FM output coincide with settings for minimum AM output. |
| 0.01 MFD | Pin 8 of 6SE7Y Converter | 10.7 MC FM | FM | 108 MC | G-3 — G-2 | Adjust for maximum output |
| 0.01 MFD | | " | FM | 108 MC | F-3 — F-2 | Adjust for maximum output |
| | | | | | | Repeat last two steps for fine adjustment |
| | | | Broadcast | 535 KC | Pointer | Adjust pointer to reference mark |
| 100 MMFD | "A" Post on Cabinet | 600 KC AM | " | 600 KC | J and Core on Ant. Coil in Cab. | Adjust for maximum output |
| " | " | 1550 KC AM | " | 1550 KC | B and trimmer on Ant. Coil | Adjust for maximum output |
| 300 OHM Resistor | " | 92 MC FM | FM | 92 MC | D | Adjust for maximum output |
| " | " | 106 MC FM | FM | 106 MC | A and C | Adjust for maximum output |

**Alignment:** No attempt should be made to realign this receiver until it has been determined that a poor tube or some local condition is not responsible for faulty reception. The following is a list of the minimum equipment necessary to realign this receiver.

In the following alignment procedure the high side of the signal generator is connected to the terminal indicated in the "Signal Generator Coupling" column below. The ground side of the signal generator is connected directly to the chassis. The output meter should be connected across the voice coil of the speaker for all measurements.

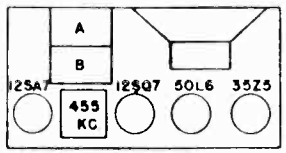
1—AM signal generator covering 455 KC, 600 KC, 1550 KC and 10.7 MC

2—FM signal generator covering 10.7 MC, 92 MC and 106 MC

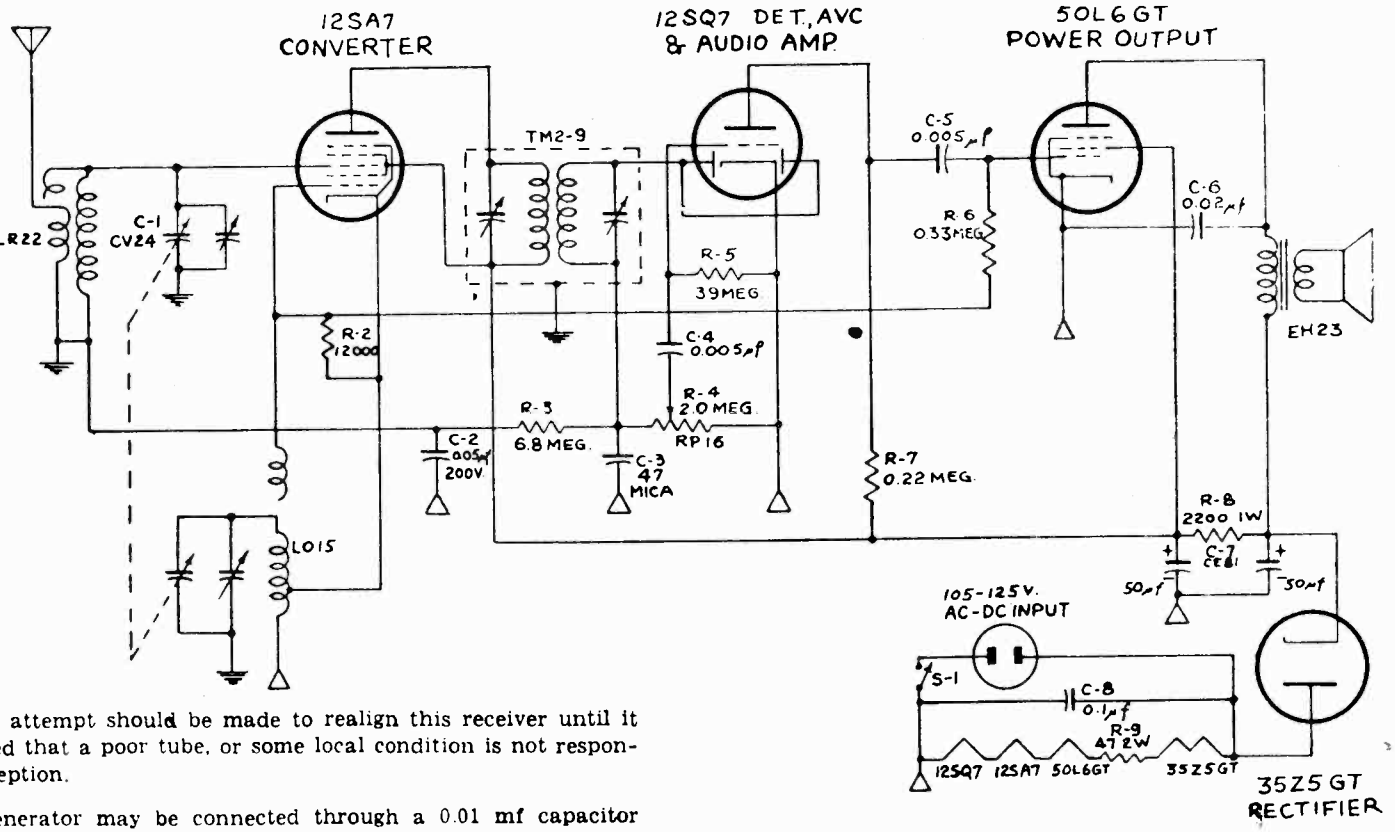
3—Output meter, rectifier type, approximately 0 to 2 volts RMS

4—Dummy antennas
300 Ohm Resistor
0.01 MFD Capacitor
100 MMFD Mica Capacitor

In adjusting the radio frequency trimmers and padders it is advisable to "rock" the variable capacitor gang slightly across the signal being delivered by the signal generator until that particular signal has been accurately peaked.




LOCATION OF TUBES




**Alignment:** No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception.

The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug of RF section of tuning capacitor. Connect ground clip of generator to a convenient B-minus point such as one of the switch terminals on the back of the volume control. An output meter may be clipped directly across the voice coil lugs. Align the IF trimmers to 455 kc using least possible input from signal generator to avoid developing A. V. C. voltage which would make the tuning adjustments very broad.

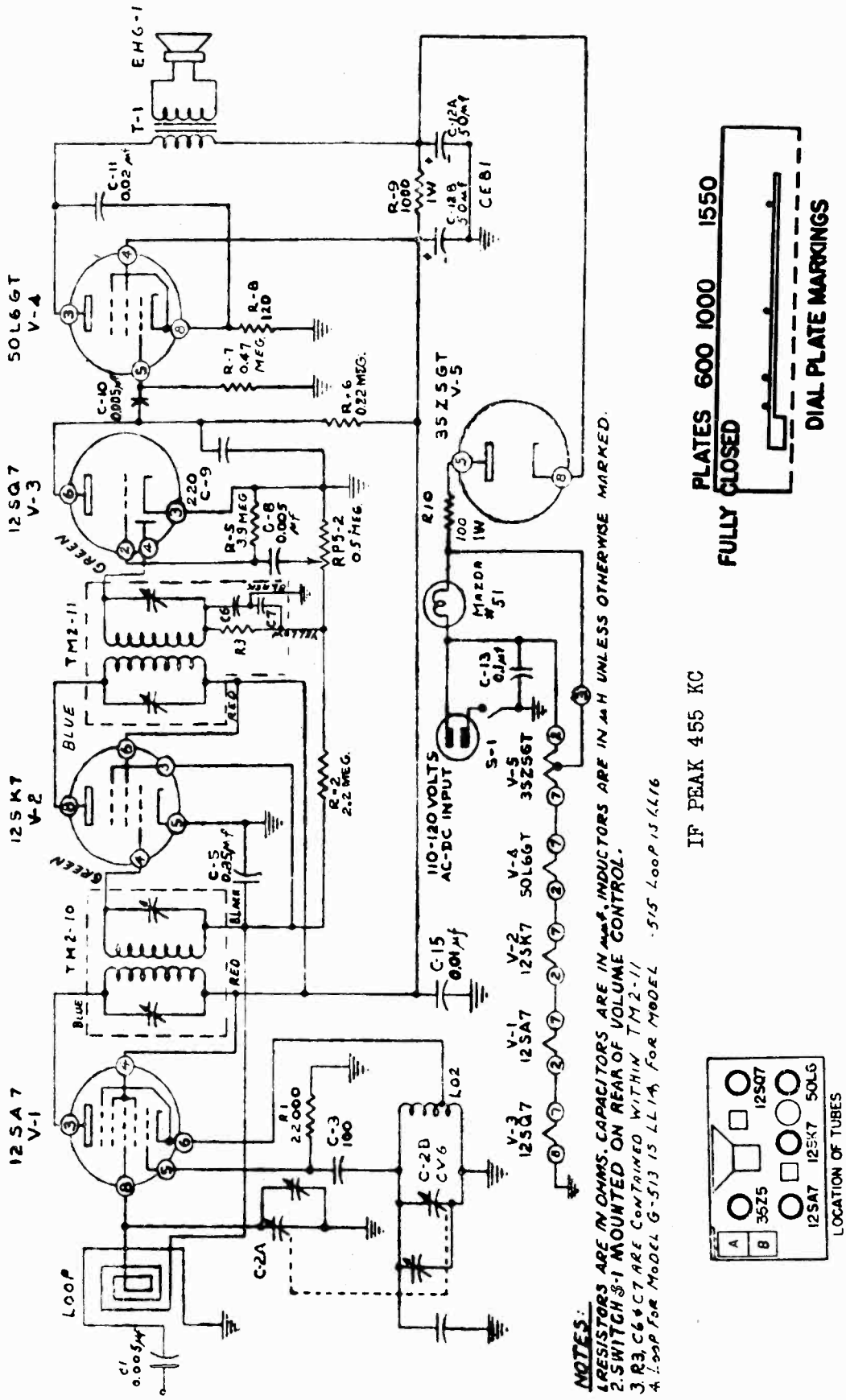
To align RF trimmer, remove the 0.01 mf capacitor and connect the signal generator hot lead to a 68 mmf mica condenser. Connect the dummy antenna thus formed to the antenna lug on the antenna coil (lug to which the antenna bank is soldered). Again, use the least possible input from the signal generator. With the tuning capacitor plates completely out of mesh, and pointed at extreme clockwise position, adjust the oscilator trimmer on front section of tuning capacitor to 1700 kc. Readjust both signal generator and tuning capacitor to 1550 kc and adjust the RF trimmer on rear section for maximum response.

NOTES:

1. RESISTORS ARE IN OHMS AND ARE ½ WATT; CAPACITORS ARE 400V AND IN μμf UNLESS OTHERWISE SPECIFIED.
2. SWITCH S-1 IS MOUNTED ON REAR OF VOLUME CONTROL.
3. SYMBOL Δ DENOTES B- AND SYMBOL ⏚ DENOTES CHASSIS.
4. I.F. FREQUENCY IS 455Kc.
5. TUNING RANGE IS 532Kc. TO 1700Kc.

MODELS 1602L, 1613L

# ALDEN INC.







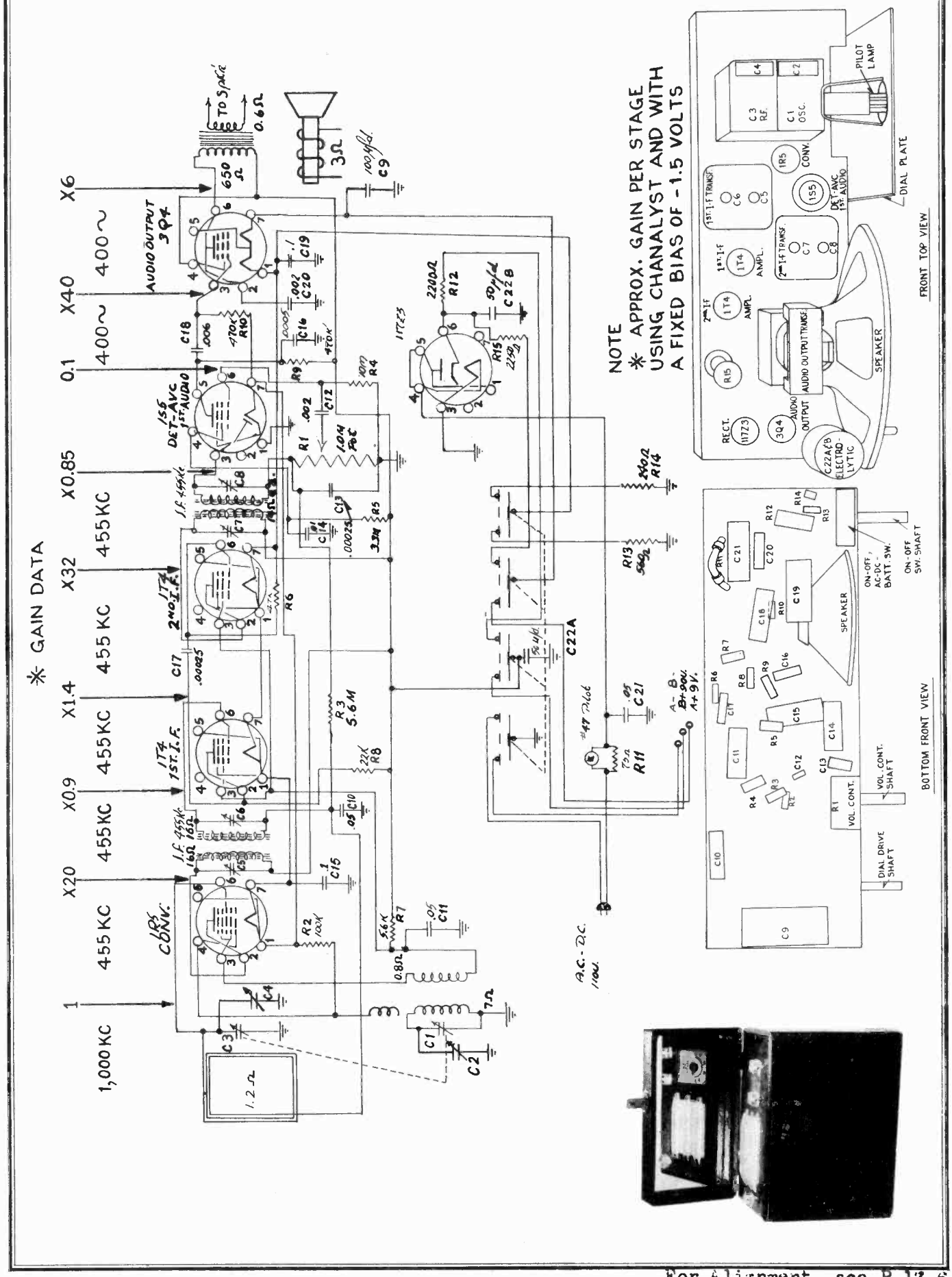
IF PEAK 455 KC




**NOTES:**
1. RESISTORS ARE IN OHMS. CAPACITORS ARE IN μμf, INDUCTORS ARE IN μH UNLESS OTHERWISE MARKED.
2. SWITCH S-1 MOUNTED ON REAR OF VOLUME CONTROL.
3. R3, C6 & C7 ARE CONTAINED WITHIN TM2-11
4. LOOP FOR MODEL G-513 IS LL14, FOR MODEL G-515 LOOP IS LL16

# ALGENE RADIO CORP.

MODEL AR6M




For Alignment, see P.17-5

MODEL AR6M

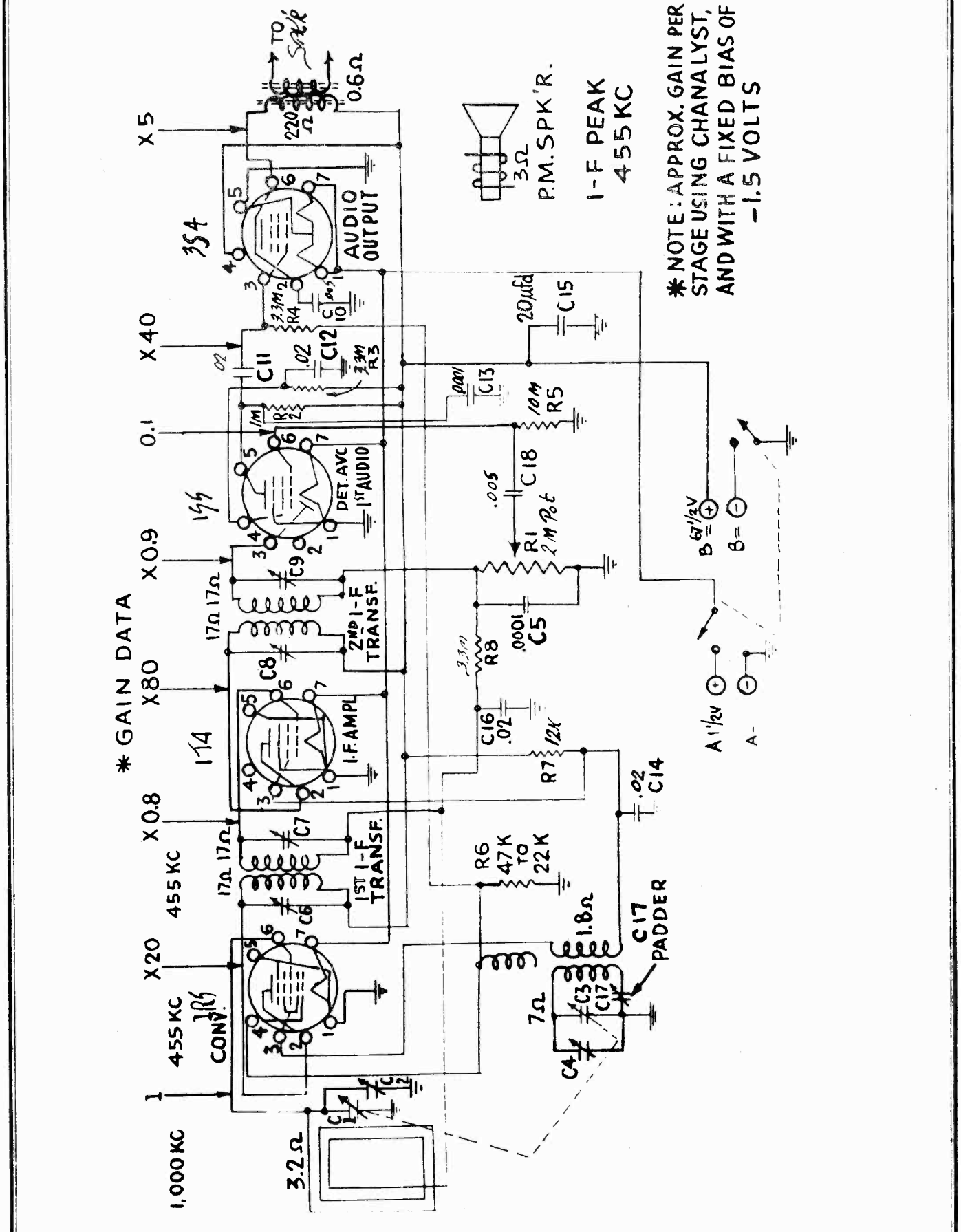
# ALGENE RADIO CORP.

## ALGENE MODEL AR6M

| TUBE | PIN | VTVM | 20,000 P.V. | 1,000 P.V. | RESISTANCE |
|---|---|---|---|---|---|
| 1R5 | 1 | +1.2 | +1.2 | +1.2 | 14 Ω |
| | 2 | + 70 | + 70 | + 70 | Over 500 K |
| | 3 | + 50 | + 50 | + 50 | Over 500 K |
| | 4 | -3 | -0.5 | 0 | 80 K |
| | 5 | +1.2 | +1.2 | +1.2 | 14 Ω |
| | 6 | -0.2 | 0 | 0 | 6 meg |
| | 7 | +2.3 | +2.3 | +2.3 | 24 Ω |
| 1T4 | 1 | +2.3 | +2.3 | +2.3 | 24 Ω |
| 1st I.F. | 2 | + 60 | + 60 | + 60 | Over 500 K |
| Ampl | 3 | + 50 | + 50 | + 50 | Over 500 K |
| | 4 | + 70 | + 70 | + 70 | Over 500 K |
| | 5 | +2.3 | +2.3 | +2.3 | 24 Ω |
| | 6 | -0.2 | 0 | 0 | 6 meg |
| | 7 | +3.4 | +3.4 | +3.4 | 32 Ω |
| 1T4 | 1 | +3.4 | +3.4 | +3.4 | 34 Ω |
| 2nd I.F. | 2 | + 70 | + 70 | + 70 | Over 500 K |
| Ampl | 3 | + 50 | + 50 | + 50 | Over 500 K |
| | 4 | + 70 | + 70 | + 70 | Over 500 K |
| | 5 | +3.4 | +3.4 | +3.4 | 34 Ω |
| | 6 | +4.4 | +4.4 | +4.4 | 45 K |
| | 7 | +4.5 | +4.5 | +4.5 | 44 Ω |
| 1S5 | 1 | 0 | 0 | 0 | 0 |
| Det. A.V.C | 2 | - | - | - | - |
| 1st Audio | 3 | -0.3 | 0 | 0 | 1 meg |
| | 4 | + 19 | + 16 | + 2 | Over 500 K |
| | 5 | + 28 | + 24 | + 7 | Over 500 K |
| | 6 | -0.1 | 0 | 0 | 10 meg |
| | 7 | +1.2 | +1.2 | +1.2 | 14 Ω |
| 3Q4 | 1 | +4.5 | +4.5 | +4.5 | 44 Ω |
| Audio | 2 | + 64 | + 64 | + 64 | Over 500 K |
| Output | 3 | +1.2 | +1.2 | +1.2 | 500 K |
| | 4 | + 70 | + 70 | + 70 | Over 500 K |
| | 5 | + 6 | + 6 | + 6 | 56 Ω |
| | 6 | + 64 | + 64 | + 64 | Over 500 K |
| | 7 | +7.2 | + 72 | + 72 | Over 500 K |
| 11Z3 | 1 | AC | AC | AC | 400 Ω |
| Rect | 2 | - | - | - | - |
| | 3 | 0 | 0 | 0 | - |
| | 4 | AC | AC | AC | 400 Ω |
| | 5 | AC | AC | AC | 400 Ω |
| | 6 | +112 | +112 | +112 | Over 500 K |
| | 7 | - | - | - | - |

NOTE: All voltage and resistance measurements made with respect to chassis ground and with a line voltage of 116 V.A.C.

ALGENE RADIO CORP. MODEL AR404 Jr.



MODEL AR404 Jr. ALGENE RADIO CORP.

## IF ALIGNMENT

Connect an output meter across the voice coil of the receiver.

Connect a signal generator to the standard Hazeltine loop model 1150 and compile it loosely to the receiver loop.

Set the signal generator to 455 KC and fully mesh the receiver tuning capacitor.

Keep the receiver volume at maximum and the output of the signal generator sufficient to give a readable deflection on the output meter. Adjust for maximum, I.F. trimmers C9, C8, C7, and C6.

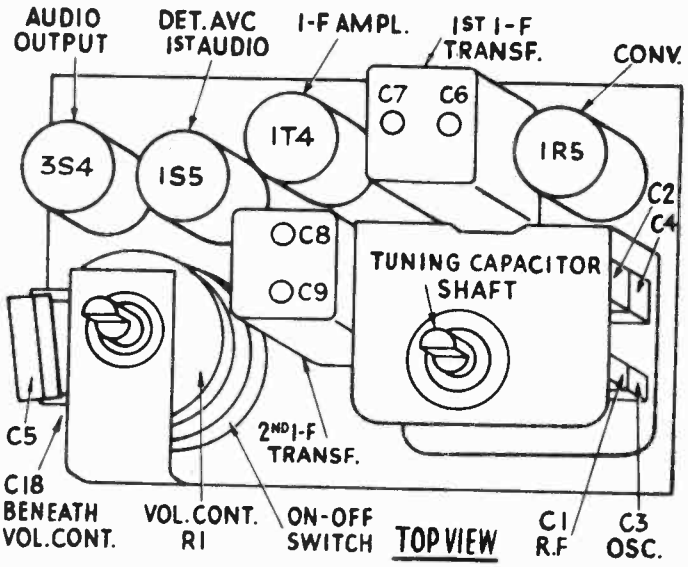
## RF - Osc. Adjustment

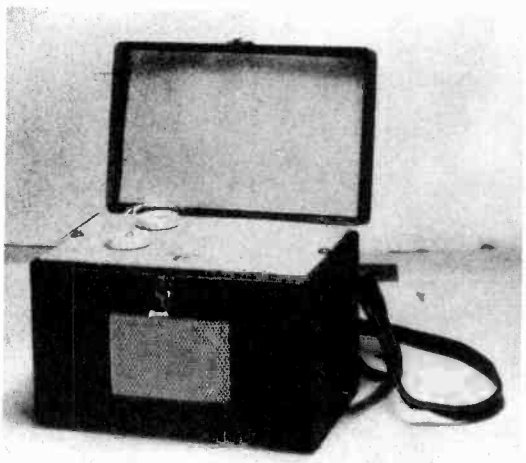
Keeping the same setup as used for I.F. alignment, set the signal generator and receiver to 1600 KC and adjust oscillator trimmer C4 for maximum output.

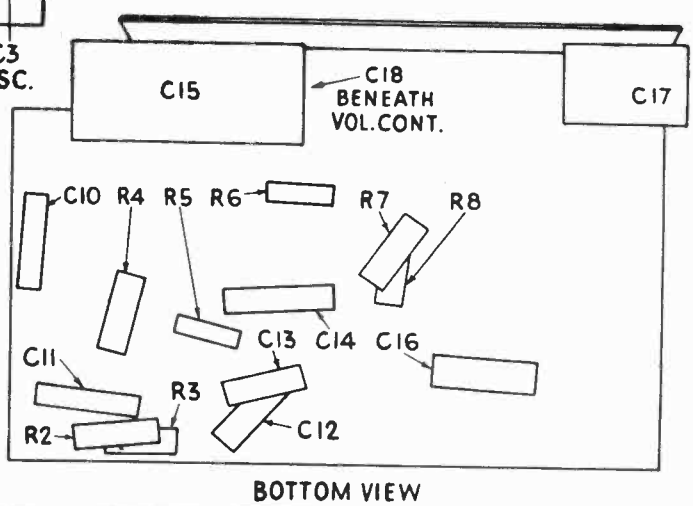
Next set the signal generator and receiver to 600 KC and adjust loop frequency padder C17 for maximum while rocking the main tuning capacitor.

Repeat the above proceedure for R.F. - Osc. adjustment.

Next tune the signal generator and receiver to 1400 KC. and adjust antennae trimmer C2 for maximum output.



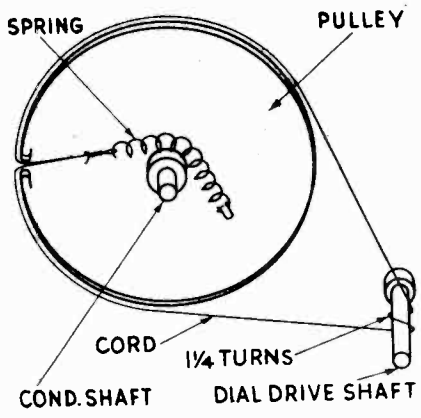


# ALGENE RADIO CORP.

MODEL AR404 Jr.

| TUBE | PIN | VTVM | 20,000 OHM P.V. | 1,000 OHM P.V. | RESISTANCE |
|---|---|---|---|---|---|
| 1R5 | 1 | 0 | 0 | 0 | 0 |
| CONV. | 2 | +65 | +65 | +62 | OVER 100K |
| | 3 | +36 | +36 | +34 | OVER 100 K |
| | 4 | -4.2 | -2.6 | -0.8 | 22K |
| | 5 | -- | -- | -- | -- |
| | 6 | -0.2 | 0 | 0 | 3.8 MEG. |
| | 7 | +1.4 | +1.4 | +1.4 | 2 OHM |
| 1T4 | 1 | 0 | 0 | 0 | 0 |
| IF AMPL | 2 | +65 | +65 | +62 | OVER 100K |
| | 3 | +36 | +36 | +34 | OVER 100K |
| | 4 | 0 | 0 | 0 | 3.8 MEG. |
| | 5 | -- | -- | -- | -- |
| | 6 | -0.2 | 0 | 0 | 3.8 MEG. |
| | 7 | +1.4 | +1.4 | +1.4 | 2 OHM |
| 1S5 | 1 | 0 | 0 | 0 | 0 |
| DET A.V.C. | 2 | -- | -- | -- | -- |
| 1ST AUDIO | 3 | -0.25 | 0 | 0 | 900K |
| | 4 | +20 | +18 | +2 | OVER 100K |
| | 5 | +15 | +12 | +4 | OVER 100K |
| | 6 | -0.2 | 0 | 0 | 10 MEG. |
| | 7 | +1.4 | +1.4 | +1.4 | 2 OHM |
| 3S4 | 1 | +1.4 | +1.4 | +1.4 | 2 OHM |
| AUDIO | 2 | +62 | +62 | +60 | OVER 100K |
| OUTPUT | 3 | -3.5 | -0.2 | 0 | 3.2 MEG |
| | 4 | +64 | +64 | +62 | OVER 100K |
| | 5 | 0 | 0 | 0 | 0 |
| | 6 | +62 | +62 | +60 | OVER 100K |
| | 7 | +1.4 | +1.4 | +1.4 | 2 OHM |

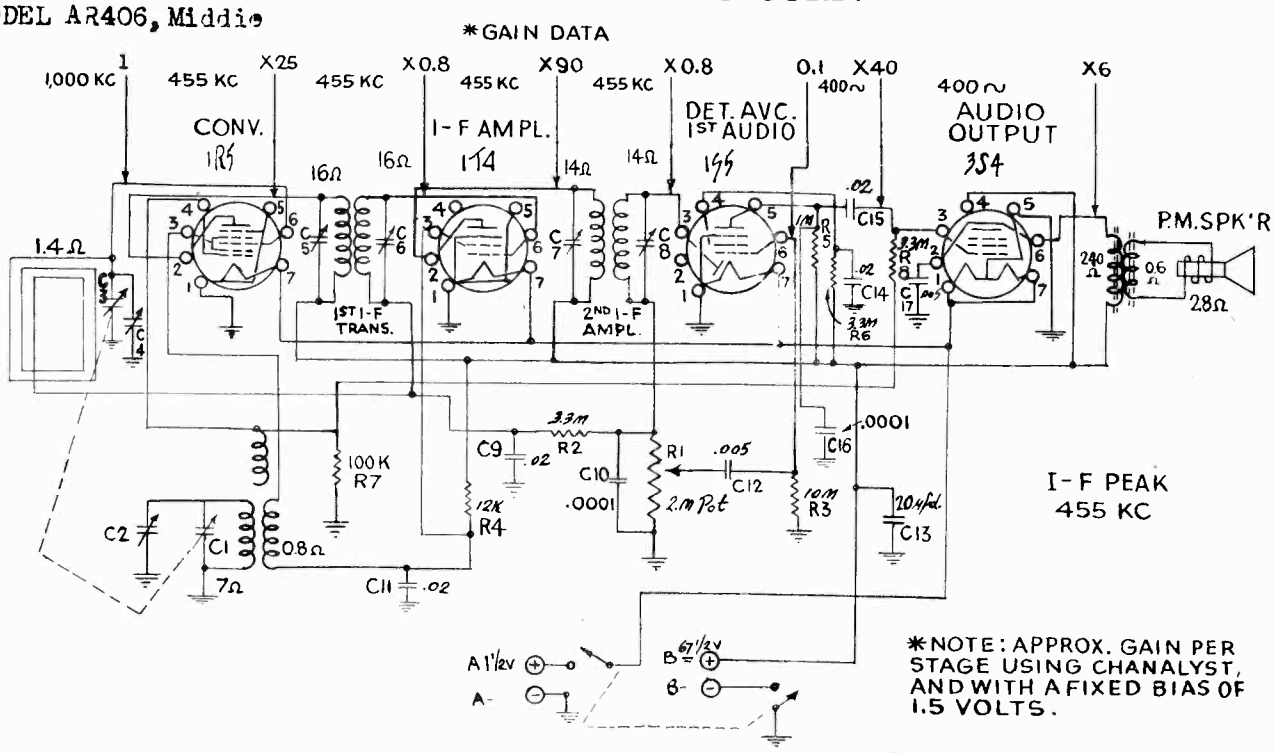
ALL VOLTAGES AND RESISTANCE MEASUREMENTS MADE WITH RESPECT TO CHASSIS GROUND AND WITH A SUPPLY VOLTAGE OF 65 V.D.C.

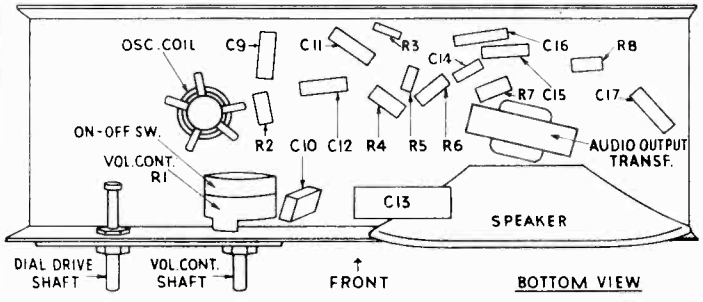


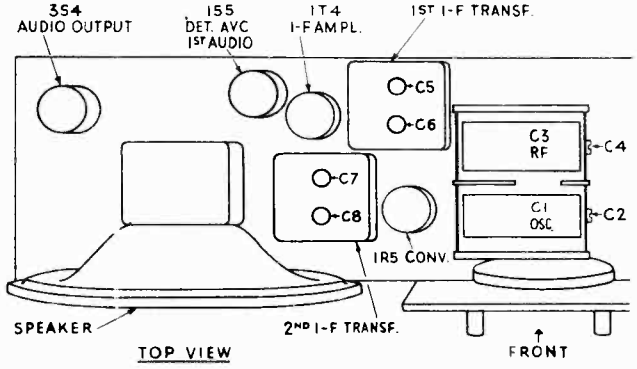

NOTE: TUNING CAPACITOR IN MAXIMUM CAPACITY POSITION.

MODEL AR6M
MODEL AR406, Midd...

# ALGENE RADIO CORP.




MODELS AR6M and AR406

## ALIGNMENT

REMOVE RECEIVER FROM THE CABINET AND CONNECT AN OUTPUT METER ACROSS THE VOICE COIL.

CONNECT THE SIGNAL GENERATOR TO THE STANDARD HAZELTINE LOOP, MODEL 1150, AND COUPLE IT LOOSELY TO THE RECEIVER LOOP.

SET THE SIGNAL GENERATOR TO 455 KC AND FULLY MESH THE RECEIVER TUNING CAPACITOR.

KEEP THE RECEIVER VOLUME AT MAXIMUM AND THE OUTPUT OF THE SIGNAL GENERATOR SUFFICIENT TO GIVE A READABLE DEFLECTION ON THE OUTPUT METER. ADJUST FOR MAXIMUM I.F. TRIMMERS C8, C7, C6 and C5.

## R.F. OSC. ADJUSTMENT

KEEP THE SAME SETUP AS USED FOR I.F. ALIGNMENT AND SET THE SIGNAL GENERATOR AND RECEIVER TO 1600 KC AND ADJUST OSCILLATOR TRIMMER C2 FOR MAXIMUM OUTPUT.

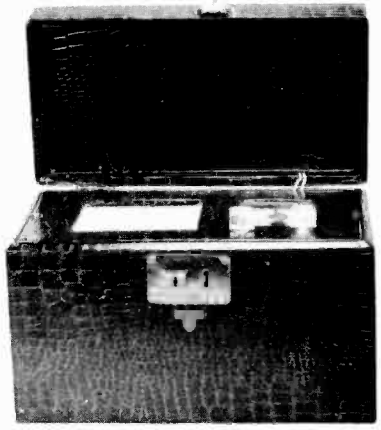
SET THE SIGNAL GENERATOR AND RECEIVER TO 1400 KC AND ADJUST R.F. TRIMMER C4 FOR MAXIMUM OUTPUT.

# ALGENE RADIO CORP.

MODEL AR406, Middie

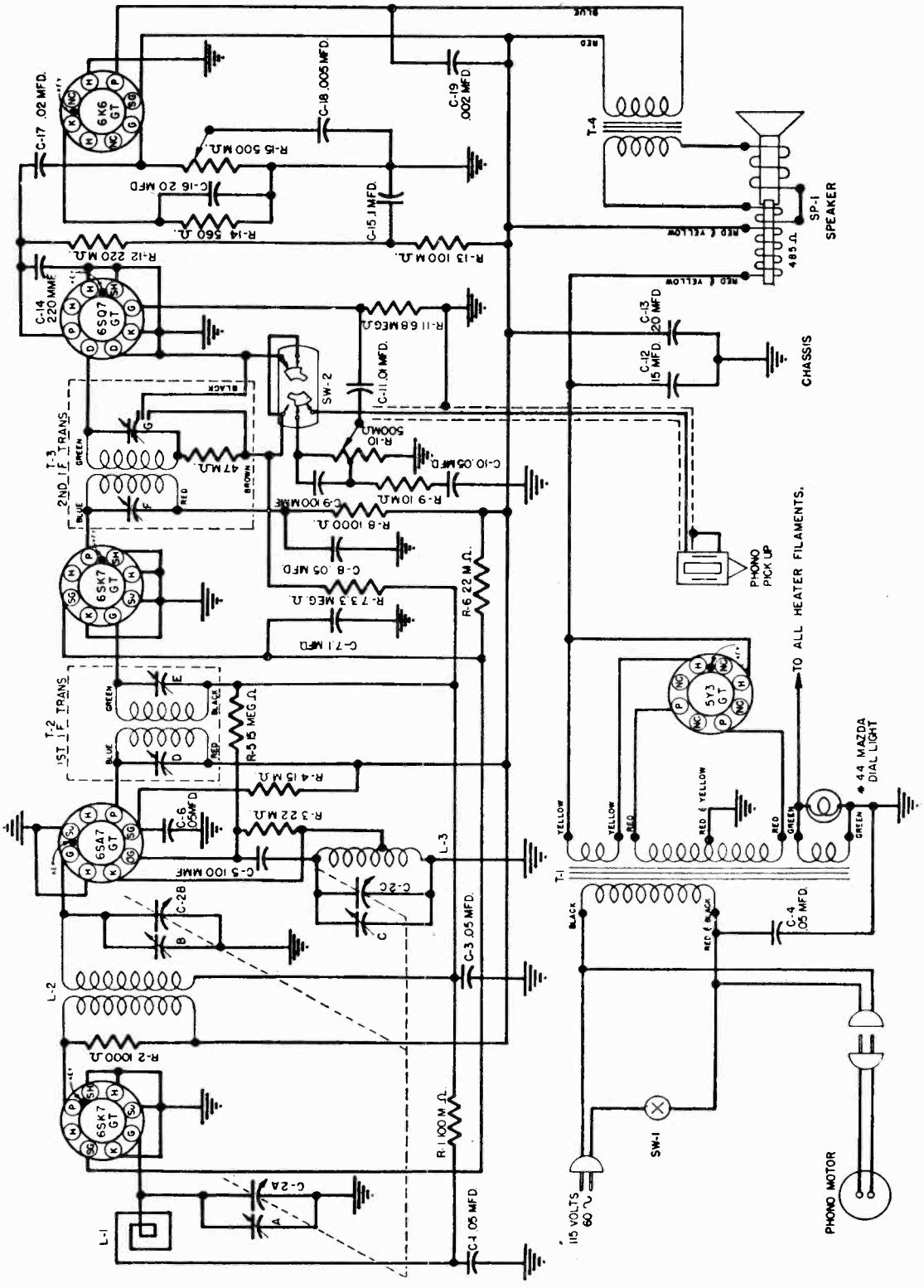
| TUBE | PIN | VTVM | 20,000 P.V. | 1,000 P.V. | RESISTANCE |
|---|---|---|---|---|---|
| 1R5 | 1 | 0 | 0 | 0 | 0 |
| Conv | 2 | + 65 | + 65 | + 62 | Over 100 K |
| | 3 | + 36 | + 36 | + 34 | Over 100 K |
| | 4 | -2.5 | -9.2 | 0 | 100 K |
| | 5 | - | - | - | - |
| | 6 | -0.2 | 0 | 0 | 4.5 meg |
| | 7 | +1.5 | +1.5 | +1.5 | 2 Ω |
| 1T4 | 1 | 0 | 0 | 0 | 0 |
| I.F. Ampl | 2 | + 65 | + 65 | + 62 | Over 100 K |
| | 3 | + 36 | + 36 | + 34 | Over 100 K |
| | 4 | - | - | - | - |
| | 5 | - | - | - | - |
| | 6 | -0.2 | 0 | 0 | 4.5 meg |
| | 7 | +1.5 | +1.5 | + 1.5 | 2 Ω |
| 1S5 | 1 | 0 | 0 | 0 | 0 |
| Det A.V.C. | 2 | - | - | - | - |
| 1st Audio | 3 | -0.2 | 0 | 0 | 0 |
| | 4 | + 17 | + 14 | + 2 | Over 100 K |
| | 5 | + 12 | + 10 | + 4 | Over 100 K |
| | 6 | -0.2 | 0 | 0 | 10 meg |
| | 7 | +1.5 | +1.5 | +1.5 | 2 Ω |
| 3S4 | 1 | +1.5 | +1.5 | +1.5 | 2 Ω |
| Audio | 2 | + 62 | + 62 | + 60 | Over 100 K |
| Output | 3 | -2 | -0.2 | 0 | 3.2 meg |
| | 4 | + 65 | + 65 | + 62 | Over 100 K |
| | 5 | 0 | 0 | 0 | 0 |
| | 6 | + 62 | + 62 | + 60 | Over 100 K |
| | 7 | +1.5 | +1.5 | +1.5 | 2 Ω |

NOTE: All voltage and resistance measurements made with respect to chassis ground and with a supply voltage of 65 V.



# ALLIED PURCHASING, INC.

MODEL 554




455 KC IF

ALL TUBE SOCKETS SHOWN FROM PIN END VIEW.

ALL SWITCHES SHOWN IN COUNTERCLOCKWISE POSITION, SHAFT END VIEW



RECORD CHANGER: Detrola Model 550, RCD.CH.15-1

MODEL 554

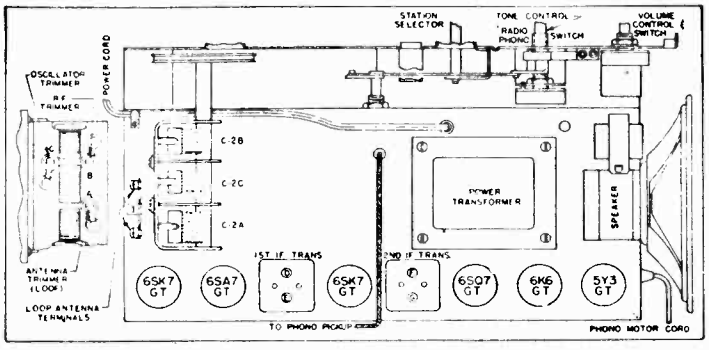
# ALLIED PURCHASING, INC.

## ALIGNMENT PROCEDURE

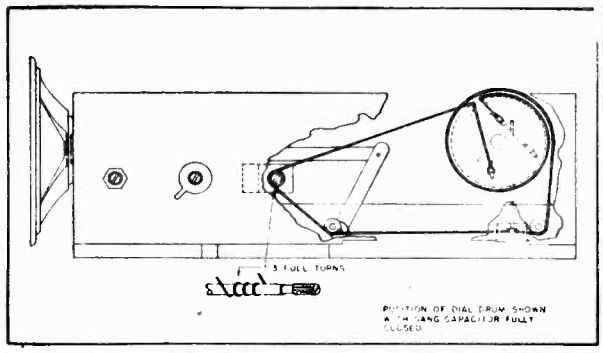
The following equipment is necessary to properly align this chassis:

1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd. — RMA loop.

| CONNECT GENERATOR TO | DUMMY ANTENNA | INPUT SIGNAL FREQUENCY | BAND | SET DIAL AT | TRIMMERS | PURPOSE |
|---|---|---|---|---|---|---|
| 6SA7GT grid | .1 mfd | 455 kc. | Broadcast | HF end | D E F G | Align IF |
| 6SK7GT RF grid | .1 mfd | 1620 kc. | Broadcast | HF end | C | Set limit of band |
| 6SK7GT RF grid | .1 mfd | 1400 kc. | Broadcast | 1400 kc. | B | Align RF |
| RMA loop | Through loop | 1400 kc. | Broadcast | 1400 kc. | A | Align antenna |




Tube Layout




Dial Mechanism

## TUBE COMPLEMENT

| | | | |
|---|---|---|---|
| 1—6SK7GT | RF Amplifier tube | 1—6SQ7GT | Detector—AVC—1st Audio tube |
| 1—6SA7GT | Converter tube | 1—6K6GT | Power Output tube |
| 1—6SK7GT | IF Amplifier tube | 1—5Y3GT | Rectifier tube |

**NOTE:** The above glass tubes are interchangeable with their metal equivalent.

## Electrical and Mechanical Specifications

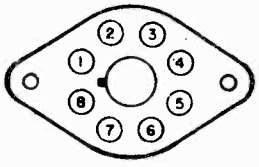
| | | | |
|---|---|---|---|
| Frequency Range | 540-1600 kc. | V.C. Impedance | 3.5 ohms at 400 cycles |
| Intermediate Frequency | 455 kc. | Power Output (Undistorted) | 1 watt |
| Power Supply | 105-125 volts, 60 cycle A.C. | Power Output (Maximum) | 4 watts |
| Loudspeaker | Electrodynamic | Tuning Drive Ratio | 4¾ to 1 |

# ALLIED PURCHASING, INC.

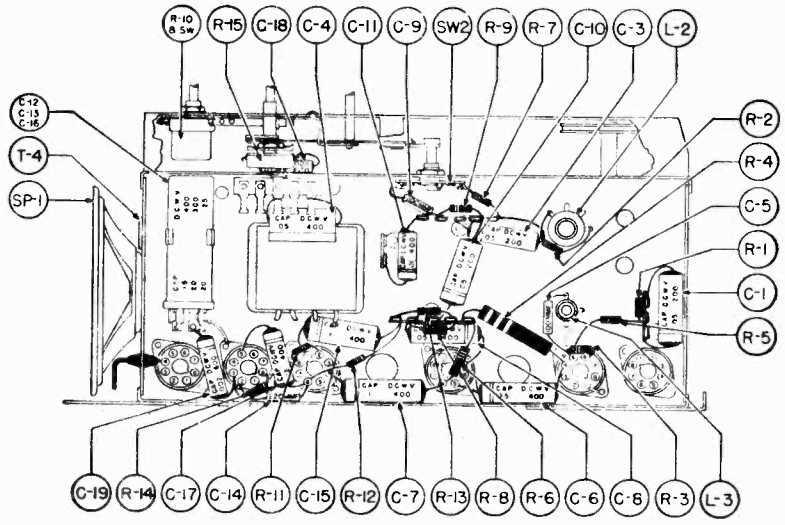
MODEL 554

## SOCKET VOLTAGES

| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 6SK7GT | RF Amplifier | 0 | 0 | 0 | 0 | 0 | 93 | 6.3 AC | 270 |
| 6SA7GT | Converter | 0 | 6.3 AC | 270 | 113 | -7.5 | 0 | 0 | 0 |
| 6SK7GT | IF Amplifier | 0 | 0 | 0 | 0 | 0 | 93 | 6.3 AC | 260 |
| 6SQ7GT | Detector—AVC—1st Audio | 0 | 0 | 0 | 0 | 0 | 88 | 6.3 AC | 0 |
| 6K6GT | Power Output | 0 | 0 | 250 | 270 | 0 | 175 | 6.3 AC | 19 |
| 5Y3GT | Rectifier | 0 | 310 | 0 | 290 AC | 0 | 290 AC | 0 | 310 |




**NOTE:** All voltages measured from chassis to socket contact indicated.
DC voltages measured with a 1000 ohm-per-volt meter.
All voltages are positive DC unless otherwise marked.
Volume control full on. No signal.
Tone Control in clockwise position.
Line Voltage 117 volts AC.




**Parts Layout**
**Chassis Model 554**

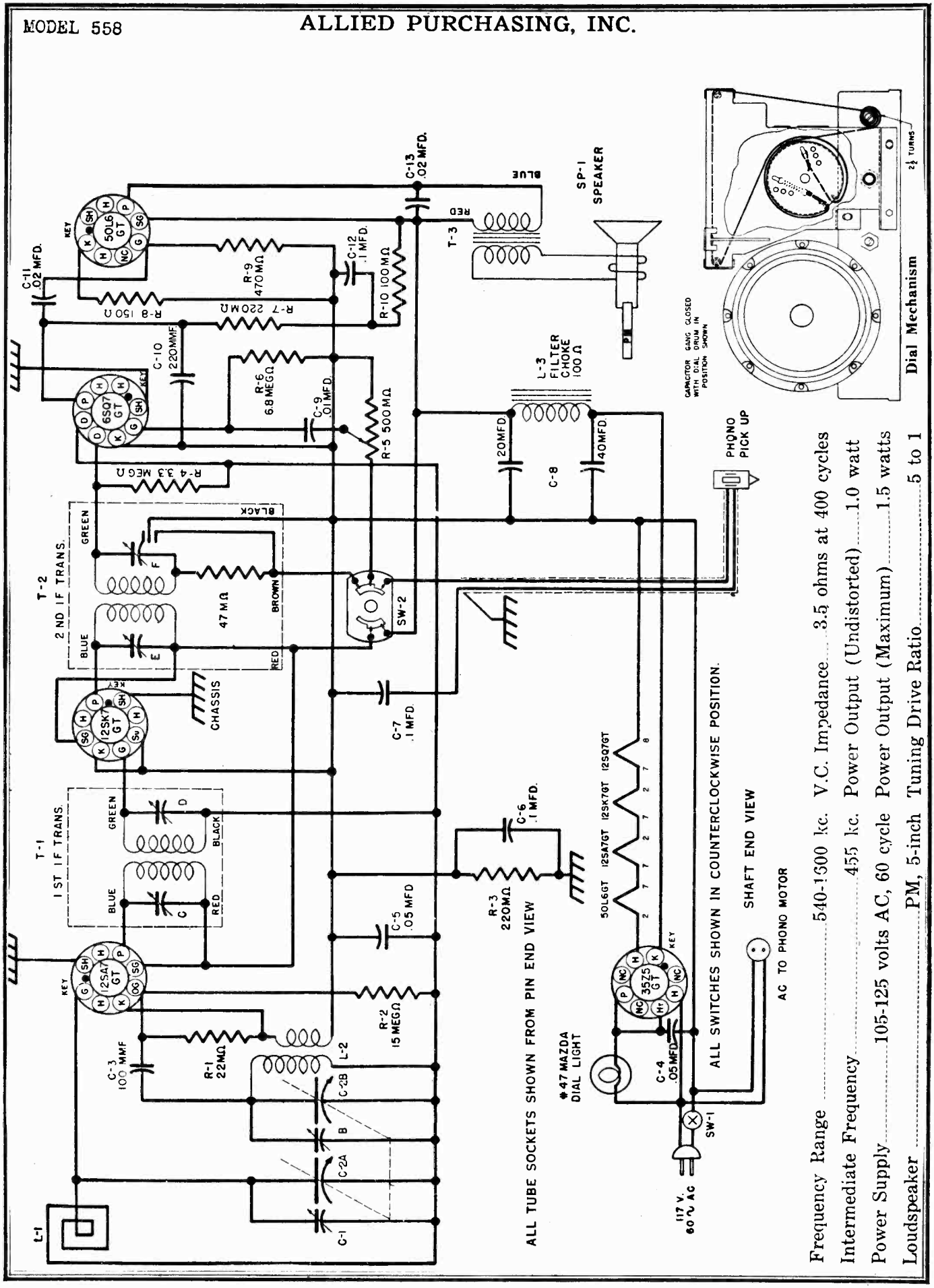
## SERVICE PARTS LIST

| Symbol | Part No. | Description |
|---|---|---|
| C-4 | BC31B503 | Cap., Molded, .05 mfd., 400 v. |
| C-1, 3, 10 | BD210503 | Cap., Paper, .05 mfd., 200 v. |
| C-11 | BD410103 | Cap., Paper, .01 mfd., 400 v. |
| C-7, 15 | BD410104 | Cap., Paper, .1 mfd., 400 v. |
| C-17 | BD410203 | Cap., Paper, .02 mfd., 400 v. |
| C-6, 8 | BD410503 | Cap., Paper, .05 mfd., 400 v. |
| C-19 | BD610202 | Cap., Paper, .002 mfd., 600 v. |
| C-18 | BD610502 | Cap., Paper, .005 mfd., 600 v. |
| C-5, 9 | BM78A101 | Cap., Mica, 100 mmf. |
| C-14 | BM78A221 | Cap., Mica, 220 mmf. |
| R-14 | BR16E561 | Resistor, 560 ohm, 1 w. |
| R-2, 8 | BR17B102 | Resistor, 1000 ohm, ⅓ w. |
| R-9 | BR17B103 | Resistor, 10M ohm, ⅓ w. |
| R-1, 13 | BR17B104 | Resistor, 100M ohm, ⅓ w. |
| R-5 | BR17B156 | Resistor, 15 meg., ⅓ w. |
| R-3 | BR17B223 | Resistor, 22M ohm, ⅓ w. |
| R-12 | BR17B224 | Resistor, 220M ohm, ⅓ w. |
| R-7 | BR17B335 | Resistor, 3.3 meg., ⅓ w. |
| R-11 | BR17B685 | Resistor, 6.8 meg., ⅓ w. |
| R-6 | BR17E223 | Resistor, 22M ohm, 1 w. |
| R-4 | BR17G153 | Resistor, 15M ohm, 2 w. |
| | A-2163 | Cable, Dial |
| | A-3123 | Clamp, Cable |
| | A-9285 | Lamp, Pilot, Mazda No. 44 |
| | A-51160-3 | Cord, Power, 6 ft. |
| | A-51163 | Clip, Spring |
| C-12, 13, 16 | A-51356 | Cap., Electro., 15-20-20 mfd. |
| C-2 | C-51501-1 | Capacitor, Variable, 3-section |
| T-1 | C-51502 | Transformer, Power |
| L-2 | B-51511 | Coil, Assembly, RF |
| SP-1 | C-51512 | Speaker, 5" Dynamic, 485 ohm |
| L-3 | B-51522 | Coil Assembly, Osc. |
| | A-51531 | Shaft, Drive |
| T-2 | B-51416-2 | Trans. Assembly, 1st IF |
| T-3 | B-51417-2 | Trans. Assembly, 2nd IF |
| | B-51591 | Spring, Dial Bracket |
| | A-51787 | Spring, Cable |
| | A-51801 | Rivet, Pronged, 3/32 x 1/8 |
| | B-55300-1 | Channel, Rubber |
| SW-2 | B-55500-1 | Switch (Radio-Phono) |
| R-15 | B-55550-1 | Potentiometer, 500M ohm |
| R-10 | B-55575-1 | Potentiometer & Switch, 500M ohm |

**Order parts not listed by specifying (1) Part Name and (2) Model Number (include number following dash).**

MODEL 558

# ALLIED PURCHASING, INC.




| | |
|---|---|
| Frequency Range | 540-1600 kc. |
| Intermediate Frequency | 455 kc. |
| Power Supply | 105-125 volts AC, 60 cycle |
| Loudspeaker | PM, 5-inch |
| V.C. Impedance | 3.5 ohms at 400 cycles |
| Power Output (Undistorted) | 1.0 watt |
| Power Output (Maximum) | 1.5 watts |
| Tuning Drive Ratio | 5 to 1 |

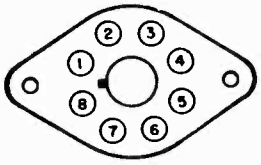


RECORD CHANGER: Detrola Model 550, RCD.CH.15-1

# ALLIED PURCHASING, INC.

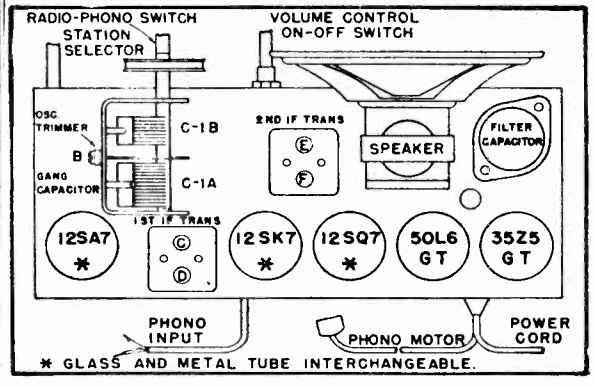
MODEL 558

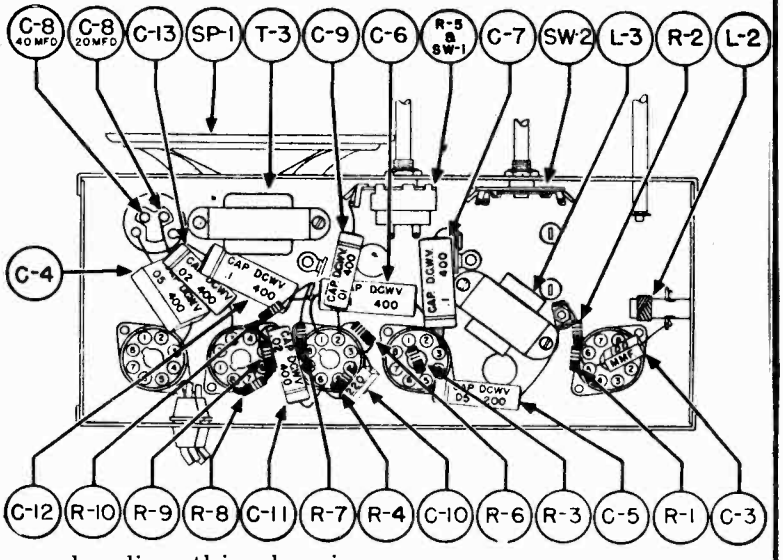
| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 12SA7GT | Converter | 0 | 36.3 AC | 108 | 108 | -5.6 | 0 | 23.8 AC | 0 |
| 12SK7GT | IF Amplifier | 0 | 11.4 AC | 0 | 0 | 0 | 108 | 23.8 AC | 108 |
| 12SQ7GT | Detector—1st Audio | 0 | 0 | 0 | 0 | 0 | 43 | 11.4 AC | 0 |
| 50L6GT | Power Output | 0 | 85 AC | 100 | 108 | 0 | 0 | 36:3 AC | 7.3 |
| 35Z5GT | Rectifier | 0 | 117 AC | 112 AC | 0 | 112 AC | 0 | 85 AC | 117 |




NOTE: All DC voltages measured with a 1000 ohm-per-volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated.
All voltages are positive DC unless otherwise marked.
Volume Control full on. No signal.
Line voltage 117 volts AC.

**Parts Layout**
**Chassis Model 558**




The following equipment is necessary to properly align this chassis:

A signal generator which will provide an accurately calibrated signal at the frequencies listed.
An output meter.
A non-metallic screwdriver.
Dummy antenna: — .1 mfd. — RMA loop.

NOTE: Intermediate Frequency and Oscillator adjustments may be made with the loop disconnected provided a resistor of 10,000 to 50,000 ohms is substituted to close the 12SA7GT grid circuit. The loop alignment must be done with the loop and chassis mounted in operating position in the cabinet. A single turn loosely coupled to loop may be substituted for RMA loop.

| GENERATOR | CONNECTION AT RADIO | DUMMY ANTENNA | DIAL | TO TUNE TRIMMERS | REMARKS |
|---|---|---|---|---|---|
| IF 455 kc. | 12SA7GT grid | .1 mfd. | HF end | IF trimmers C D E F | Tune to max. |
| 1620 kc. | 12SA7GT grid | RMA loop | HF end | Osc. trimmer B | Set limit of band |
| 1400 kc. | Through loop* | RMA loop | 1400 kc. | Ant. trimmer A | Tune to max. |

* Loop trimmer accessible through bottom of cabinet.

MODEL 558
MODEL 572
MODEL 579

# ALLIED PURCHASING, INC.

## Chassis Model 558

| Symbol | Part No. | Description |
|---|---|---|
| C-4 | BC31B503 | Cap., Molded, .05 mfd., 400 v. |
| C-5 | BD210503 | Cap., Paper, .05 mfd., 200 v. |
| C-9 | BD410103 | Cap., Paper, .01 mfd., 400 v. |
| C-6, 7, 12 | BD410104 | Cap., Paper, .1 mfd., 400 v. |
| C-11, 13 | BD410203 | Cap., Paper, .02 mfd., 400 v. |
| C-3 | BM78A101 | Cap., Mica, 100 mmf. |
| C-10 | BM78A221 | Cap., Mica, 220 mmf. |
| R-8 | BR16C151 | Resistor, 150 ohm, ½ w. |
| R-10 | BR17B104 | Resistor, 100,000 ohm, ⅛ w. |
| R-2 | BR17B156 | Resistor, 15 megohm, ⅛ w. |
| R-1 | BR17B223 | Resistor, 22,000 ohm, ⅛ w. |
| R-3, 7 | BR17B224 | Resistor, 220,000 ohm, ⅛ w. |
| R-4 | BR17B335 | Resistor, 3.3 megohm, ⅛ w. |
| R-9 | BR17B474 | Resistor, 470,000 ohm, ⅛ w. |
| R-6 | BR17B685 | Resistor, 6.8 megohm, ⅛ w. |
| | A-2163 | Cable, Drive |
| | A-6158 | Lamp, Pilot, No. 47 Mazda, 6.3 v. |

| Symbol | Part No. | Description |
|---|---|---|
| C-1 | B-8296-1 | Trimmer |
| C-8 | A-8948 | Capacitor, Electro., 40-20 mfd. |
| R-5 | B-9051-3 | Control, Pot.&Sw.(V.C.) 500M ohm. |
| T-1 | B-51010-1 | Transformer Assembly, 1st IF |
| T-2 | B-51011-1 | Transformer Assembly, 2nd IF |
| L-2 | B-51159 | Coil Assembly, Oscillator |
| | A-51160-1 | Cord, AC Power, 6 ft. |
| | A-51163 | Clip, Spring |
| C-2 | C-51573-1 | Cap., Variable |
| SW 2 | B-51576-1 | Switch, Radio-Phono |
| SP-1 | C-51577 | Speaker, 5-inch PM |
| T-3 | B-51578-1 | Transformer, Output |
| | B-51585-1 | Cord (AC to Phono.) |
| | B-51591 | Spring, Dial Bracket |
| L-1 | B-51599 | Coil, Loop |
| L-3 | A-51726-2 | Choke, Filter, 80 ma. |
| | A-51787 | Spring, Cable |

## Chassis Model 572

| Symbol | Part No. | Description |
|---|---|---|
| C-5 | BC31B503 | Cap., .05 mfd., 400 v. paper |
| C-2, 8, 21 | BD210503 | Cap., .05 mfd., 200 v. paper |
| C-22 | BD410103 | Cap., .01 mfd., 400 v. paper |
| C-7, 24 | BD410104 | Cap., .1 mfd , 400 v. paper |
| C-25 | BD410203 | Cap., .02 mfd., 400 v. paper |
| C-16, 28 | BD410503 | Cap., .05 mfd., 400 v. paper |
| C-1, 27 | BD610202 | Cap., .002 mfd., 600 v. paper |
| C-12 | BM58D512 | Cap., 5100 mmf., mica |
| C-11, 20 | BM78A101 | Cap., 100 mmf., mica |
| C-23 | BM78A221 | Cap., 220 mmf., mica |
| R-15 | BR16E561 | Resistor, 560 ohm, 1 w. |
| R-2, 9 | BR17B102 | Resistor, 1000 ohm, ⅛ w. |
| R-10 | BR17B103 | Resistor, 10M ohm, ⅛ w. |
| R-1, 14 | BR17B104 | Resistor, 100M ohm, ⅛ w. |
| R-4 | BR17B150 | Resistor, 15 ohm, ⅛ w. |
| R-5 | BR17B156 | Resistor, 15 meg., ⅛ w. |
| R-3 | BR17B223 | Resistor, 22M ohm, ⅛ w. |
| R-13 | BR17B224 | Resistor, 220M ohm, ⅛ w. |
| R-8 | BR17B335 | Resistor, 3.3 meg., ⅛ w. |
| R-16 | BR17B474 | Resistor, 470M ohm, ⅛ w. |
| R-12 | BR17B685 | Resistor, 6.8 meg., ⅛ w. |
| R-7 | BR17E223 | Resistor, 22M ohm, 1 w. |
| R-6 | BR17G153 | Resistor, 15M ohm. 2 w. |
| | A-2163 | Cable, drive |

| Symbol | Part No | Description |
|---|---|---|
| | A-9285 | Lamp, pilot, Mazda No. 44 |
| | A-51160-1 | Cord, power, 6 ft. |
| | B-51162-3 | Shaft, drive |
| | A-51163 | Clip, spring |
| | A-51260 | Shield, tube |
| C-18,19,26 | A-51356 | Cap., electro., 15-20-20 mfd. |
| C-6 | C-51401-1 | Capacitor, variable |
| SP-1 | C-51413 | Speaker assembly, 5-inch |
| T-2 | B-51416-1 | Trans. assembly, 1st IF |
| T-3 | B-51417-1 | Trans. assembly, 2nd IF |
| C-17 | A-51419 | Cap., electro., 10 mfd., 250 v. |
| L-5 | B-51420 | Coil assembly, oscillator |
| T-1 | C-51421 | Transformer, power |
| L-3 | B-51422 | Coil assembly, antenna loading |
| L-4 | B-51425 | Coil assembly, RF |
| C-13 | B-51428-5 | Capacitor, padder |
| L-2 | B-51430 | Coil assembly, SW antenna |
| SW-2 | B-51435-1 | Switch assembly, 2-band |
| R-11 | B-51445-1 | Control, Pot. & switch 500,000 ohm. |
| C-9, 10, 14, 15 | A-51656 | Cap. assembly, trimmer (4) |
| C-3 | A-51657 | Cap. assembly, trimmer (spec.) |
| | A-51787 | Spring, cable |
| C-4 | B-51859-1 | Cap. assembly, Ant.—BC |

## Chassis Model 579

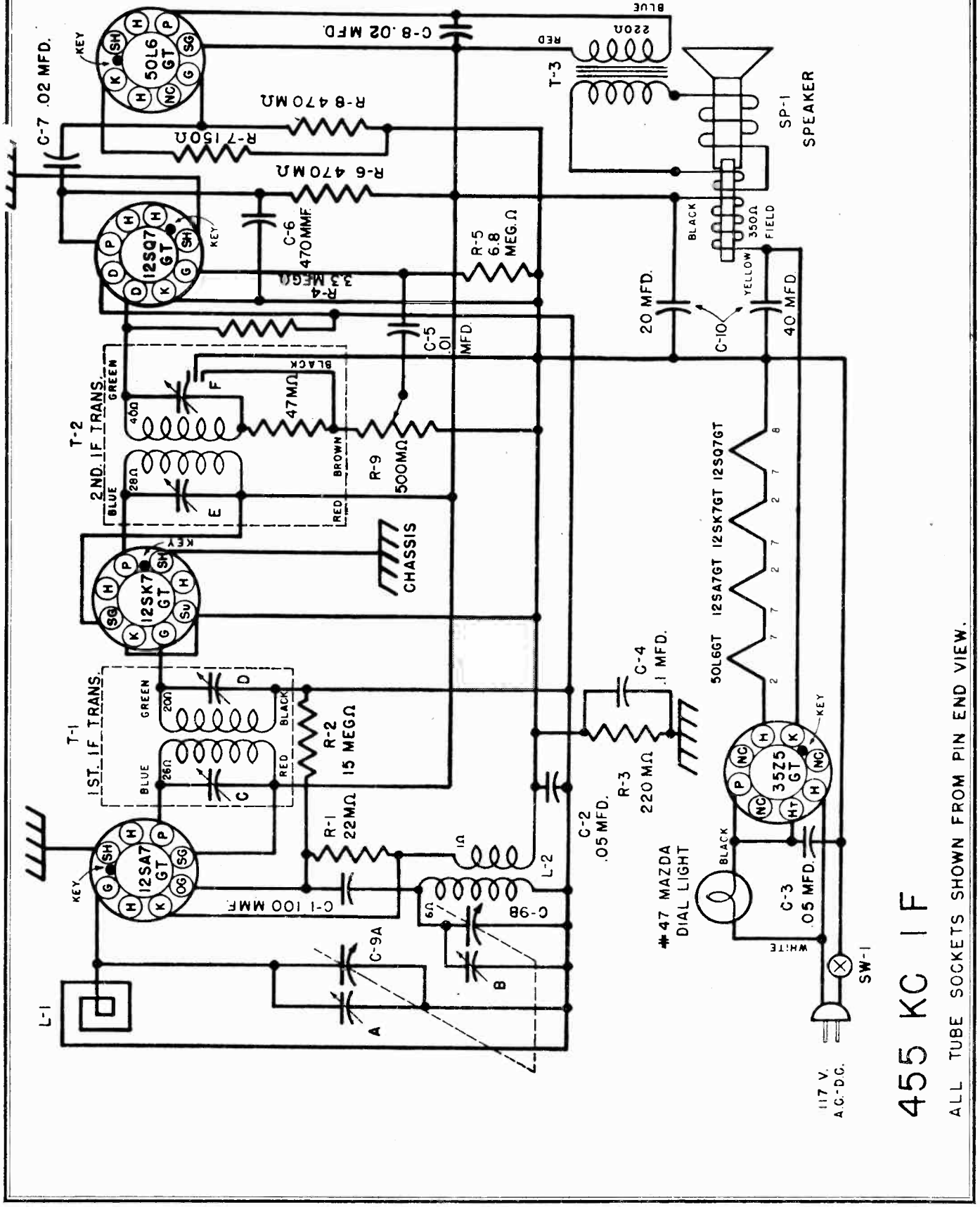
| Symbol | Part No. | Description |
|---|---|---|
| C-4 | BC31B503 | Cap., paper, .05 mfd., 400 v. |
| C-2 | BD210503 | Cap., paper, .05 mfd., 200 v. |
| C-8 | BD410103 | Cap., paper, .01 mfd., 400 v. |
| C-6 | BD410104 | Cap., paper, .01 mfd., 400 v. |
| C-10, 11 | BD410203 | Cap., paper, .02 mfd., 400 v. |
| C-3 | BM78A151 | Cap., mica, 150 mmf. |
| C-9 | BM78A221 | Cap., mica, 220 mmf. |
| C-5 | BM78A470 | Cap , mica, 47 mmf. |
| R-9 | BR16C151 | Resistor, 150 ohm, ½ w. |
| R-3 | BR17B156 | Resistor, 15 megohm, ⅛ w. |
| R-1 | BR17B223 | Resistor, 22M ohm, ⅛ w. |
| R-2 | BR17B224 | Resistor, 220M ohm, ⅛ w. |
| R-5 | BR17B335 | Resistor, 3.3 megohm, ⅛ w. |
| R-7, 8 | BR17B474 | Resistor, 470M ohm, ⅛ w. |
| R-6 | BR17B685 | Resistor, 6.8 megohm, ⅛ w. |
| | A-2163 | Cable, drive |
| | A-6158 | Lamp, pilot, No. 47 Mazda 6.3 v. |

| Symbol | Part No. | Description |
|---|---|---|
| C-7 | A-8948 | Cap., electro., 40-20 mfd. |
| R-4 | A-9051-2 | Potentiometer and switch |
| T-1 | B-51010-1 | Transformer assembly, 1st IF |
| T-2 | B-51011-1 | Transformer assembly, 2nd IF |
| SP-1 | C-51058 | Speaker, 5-inch |
| | A-51160-1 | Cord, AC line, 6 ft. |
| | B-51162-2 | Shaft, drive |
| | A-51163 | Clip, spring |
| C-1 | C-51251 | Capacitor, variable |
| L-3 | B-51256 | Coil, oscillator assembly |
| L-2 | B-51257 | Coil, RF assembly |
| | A-51260 | Shield, tube |
| | A-51787 | Spring, cable, music wire |
| | C-51921 | Dial assembly, welded |
| | A-51936 | Clip, indicator |

**Order parts not listed by specifying (1) Part Name and (2) Model Number (Including number following dash).**

# ALLIED PURCHASING, INC.

MODELS 571A, 571B



MODEL 571A, 571B

# ALLIED PURCHASING, INC.

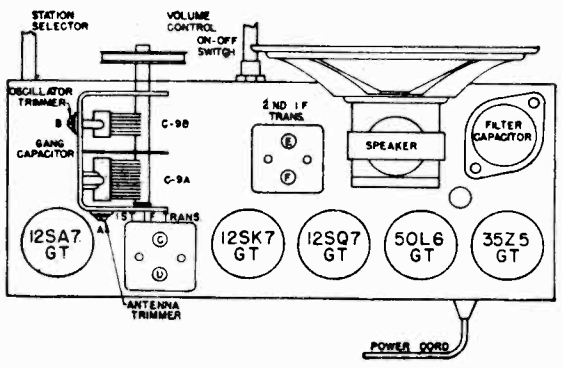
## ALIGNMENT PROCEDURE

The following equipment is necessary to properly align this chassis:

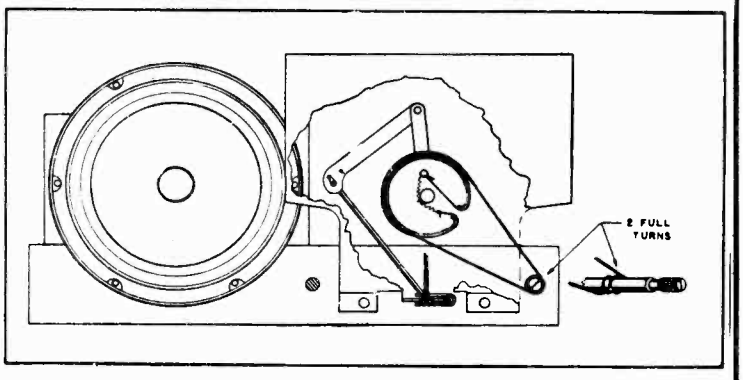
1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd., — RMA loop.

**NOTE:** Intermediate Frequency and Oscillator adjustments may be made with the loop disconnected provided a resistor of 10,000 to 50,000 ohms is substituted to close the 12SA7GT grid circuit. The loop alignment must be done with the loop and chassis mounted in operating position in the cabinet. A single turn loosely coupled to loop may be substituted for RMA loop.

| GENERATOR | CONNECTION AT RADIO | DUMMY ANTENNA | DIAL | TO TUNE TRIMMERS | REMARKS |
|---|---|---|---|---|---|
| 1F 455 kc. | 12SA7GT grid | .1 mfd. | HF end | 1F trimmers C D E F | Tune to max. |
| 1620 kc. | Through loop | RMA loop | HF end | Osc. trimmer B | Set limit of band |
| 1400 kc. | Through loop | RMA loop | 1400 kc. | Ant. trimmer A | Tune to max. |




Tube Layout




Dial Mechanism

## TUBE COMPLEMENT

1—12SA7GT Oscillator and Mixer tube
1—12SK7GT IF Amplifier tube
1—50L6GT Power Output tube
1—35Z5GT Rectifier tube
1—12SQ7GT Second Detector and First Audio tube

**NOTE:** The above glass tubes are interchangeable with their metal equivalent.

## Electrical and Mechanical Specifications

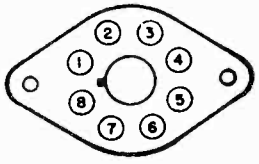
| | |
|---|---|
| Frequency Range | 540-1600 kc. |
| Intermediate Frequency | 455 kc. |
| Power Supply | 105-125 volts AC-DC |
| Loudspeaker | Dynamic |
| V.C. Impedence | 3.5 ohms at 400 cycles |
| Power Output (Undistorted) | .75 watts |
| Power Output (Maximum) | 1.5 watts |
| Tuning Drive Ratio | 3 to 1 |

# ALLIED PURCHASING, INC.

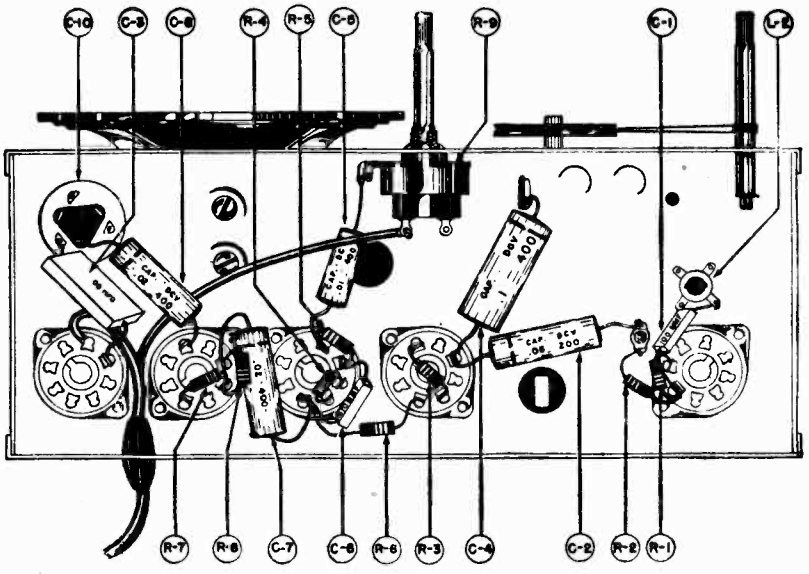
MODELS 571A, 571B

## SOCKET VOLTAGES

| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 12SA7GT | Osc. and Mixer | 0 | 37.5 AC | 99 | 99 | 4.2 | 0 | 24.5 AC | 0 |
| 12SK7GT | IF Amplifier | 0 | 24.5 AC | 0 | 0 | 0 | 99 | 12.5 AC | 99 |
| 12SQ7GT | 2nd Det.—1st Audio | 0 | 0 | 0 | 0 | 0 | 16 | 12.5 AC | 0 |
| 50L6GT | Power Output | 0 | 85 AC | 91.5 | 99 | 0 | 0 | 37.5 AC | 5.9 |
| 35Z5GT | Rectifier | 0 | 117 AC | 112 AC | 0 | 112 AC | 0 | 85 AC | 112 |




**NOTE:** All DC voltages measured with a 1000 ohm per volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measur from ON-OFF switch (—B) to socket contact indicated.
All voltages are positive DC unless otherwise marked.
Volume control full on.
Line voltage 117 volts AC.



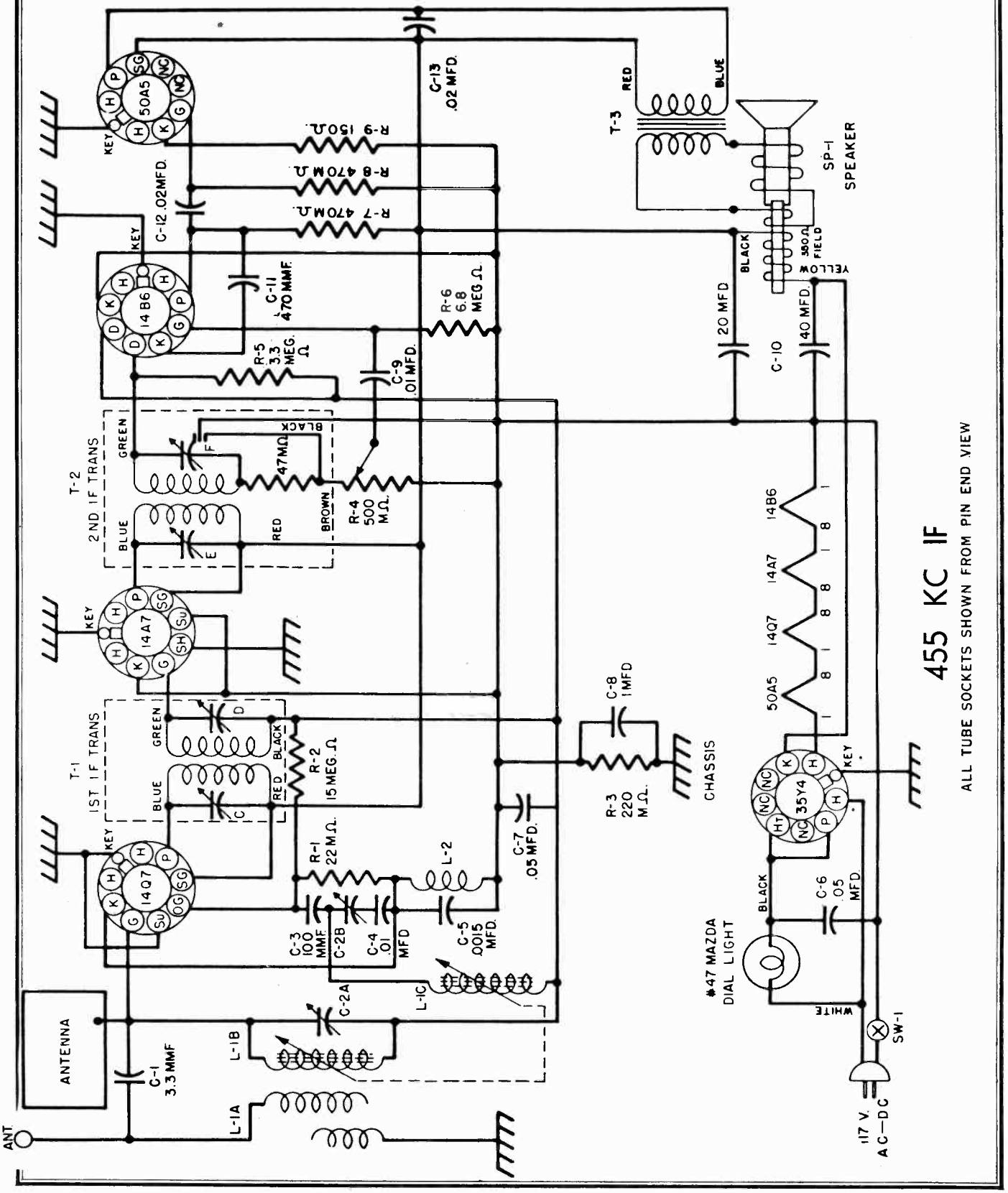

Parts Layout
Chassis Models 571A
and 571B

## SERVICE PARTS LIST

| Symbol | Part No. | Description |
|---|---|---|
| C-1 | BM78A101 | Cap., Mica, 100 mmf. |
| C-2 | BD210503 | Cap., Paper, .05 mfd., 200 v. |
| C-3 | BC31B503 | Cap., Mold., Paper, .05 mfd. |
| C-4 | BD410104 | Cap., Paper, .1 mfd., 400 v. |
| C-5 | BD410103 | Cap., Paper, .01 mfd., 400 v. |
| C-6 | BM78A471 | Cap., Mica, 470 mmf. |
| C-7, 8 | BD410203 | Cap., Paper, .02 mfd., 400 v. |
| C-9 | C-51155-1 | Cap., Variable, 2 Section |
| C-10 | A-8948 | Cap., Electro., 40-20 mfd., 150 v. |
| L-1 | B-51243 | Loop, Antenna |
| L-2 | B-51159 | Coil, Osc. Assembly |
| R-1 | BR17B223 | Resistor, 22M ohm 1/3 w. |
| R-2 | BR17B156 | Resistor, 15 meg. 1/3 w. |
| R-3 | BR17B224 | Resistor, 220M ohm 1/3 w. |
| R-4 | BR17B335 | Resistor, 3.3 meg. 1/3 w. |
| R-5 | BR17B685 | Resistor, 6.8 meg. 1/3 w. |
| R-6, 8 | BR17B474 | Resistor, 470M ohm 1/3 w. |
| R-7 | BR16C151 | Resistor, 150 ohm. 1/2 w. |
| R-9 | B-9051-1 | Control, Vol. & Sw. 500M ohm. |
| T-1 | B-51010 | Trans., Assembly, 1st IF |
| T-2 | B-51011 | Trans., Assembly, 2nd IF |
| SP-1 | C-51014 | Speaker, 5" Dynamic, 350 ohm. |
| | A-2163 | Cable, Drive |
| | A-6158 | Lamp, Pilot No. 47 Mazda 6.3 v. |
| | A-51160-1 | Cord, AC-DC Line, 6 ft. |
| | B-51162-1 | Shaft, Drive |
| | A-51163 | Clip, Spring |
| | B-51177 | Bracket Assembly, Dial |
| | A-51202 | Link, Insulating |
| | B-51204-1 | Pointer |
| | A-51206 | Arm, Dial Drive |
| | A-51237-1 | Paper Back, Dial |
| | D-51240-1 | Cabinet (571-1) |
| | A-51241-2 | Knob |
| | C-51242-1 | Dial, Glass Indicator |
| | C-51247 | Back, Cabinet |
| | A-51249 | Strip, Sponge Rubber |
| | A-51331 | Spring, Dial Bracket |
| | A-51787 | Spring, Cable |
| | B-54000 | Carton Assembly |

MODEL 571X

# ALLIED PURCHASING, INC.



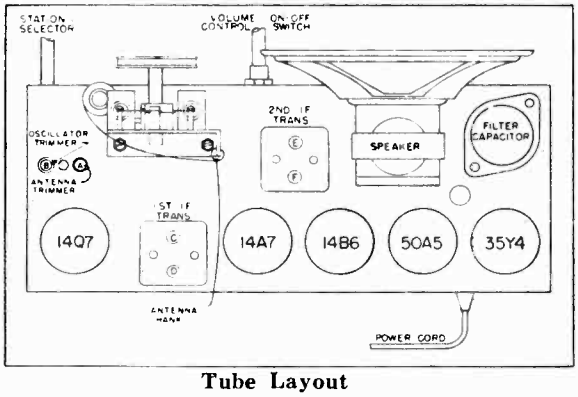
# ALLIED PURCHASING, INC. MODEL 571X

## ALIGNMENT PROCEDURE

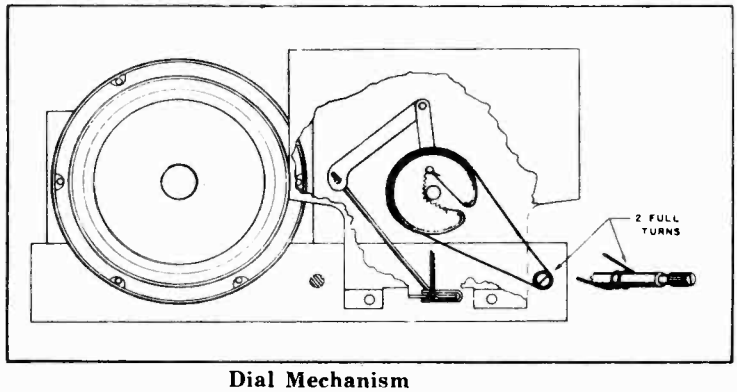
The following equipment is necessary to properly align this chassis:

1. A signal generator which will provide an accurately calibrated signal at the frequencies listed.
2. An output meter.
3. A non-metallic screwdriver.
4. Dummy antenna: — .1 mfd., — 10 mmf.

| GENERATOR | CONNECTION AT RADIO | DUMMY ANTENNA | DIAL | TO TUNE TRIMMERS | REMARKS |
|---|---|---|---|---|---|
| IF 455 kc. | 14Q7 grid | .1 mfd. | HF end | IF trimmers C D E F | Tune to max. |
| 535 kc. | 14Q7 grid | 10 mmf. | LF end | Osc. trimmer B | Set limit of band |
| 1400 kc. | 14Q7 grid | 10 mmf. | 1400 kc. | Ant. trimmer A | Tune to max. |




Tube Layout




Dial Mechanism

## TUBE COMPLEMENT

1—14Q7 Oscillator and Mixer tube
1—14A7 IF Amplifier tube
1—50A5 Power Output tube
1—35Y4 Rectifier tube
1—14B6 Second Detector and First Audio tube

## Electrical and Mechanical Specifications

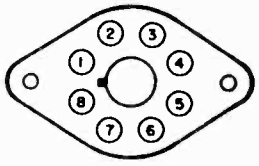
| | | | |
|---|---|---|---|
| Frequency Range | 540-1700 kc. | Power Output (Undistorted) | .75 watts |
| Intermediate Frequency | 455 kc. | Power Output (Maximum) | 1.5 watts |
| Power Supply | 105-125 volts AC-DC | Tuning Drive Ratio | 3 to 1 |
| Loudspeaker | 5-inch Dynamic | | |
| V.C. Impedance | 3.5 ohms at 400 cycles | Rated Power Input | 32 watts |

MODEL 571X

# ALLIED PURCHASING, INC.

## SOCKET VOLTAGES

| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 14Q7 | Osc. and Mixer | 37.5 AC | 99 | 99 | –4.2 | 0 | 0 | 0 | 24.5 AC |
| 14A7 | IF Amplifier | 12.5 AC | 99 | 99 | 0 | 0 | 0 | 0 | 24.5 AC |
| 14B6 | 2nd Det.—1st Audio | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 12.5 AC |
| 50A5 | Power Output | 85 AC | 91.5 | 99 | 0 | 0 | 0 | 5.9 | 37.5 AC |
| 35Y4 | Rectifier | 117 AC | 112 AC | 0 | 112 AC | 0 | 0 | 112 | 85 AC |

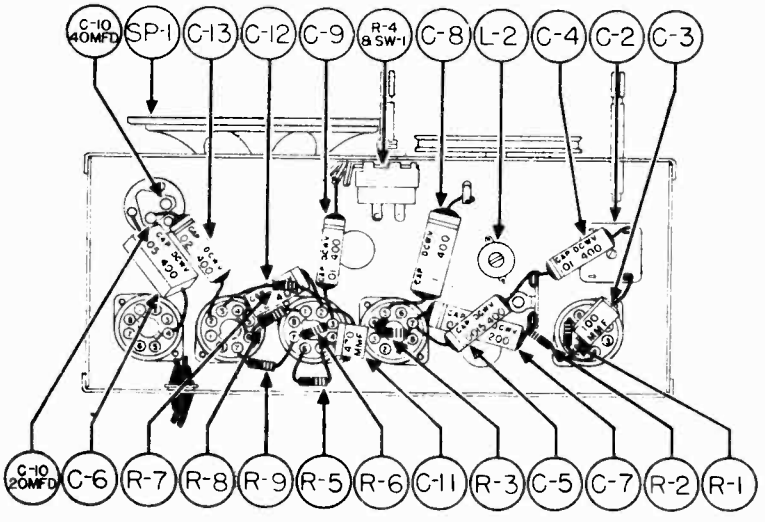



NOTE: All DC voltages measured with a 1000 ohm-per-volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated.

All voltages are positive DC unless otherwise marked.

Volume control full on.

Line voltage 117 volts AC.




Parts Layout
Chassis Model 571X with
Loctal Tubes

## SERVICE PARTS LIST

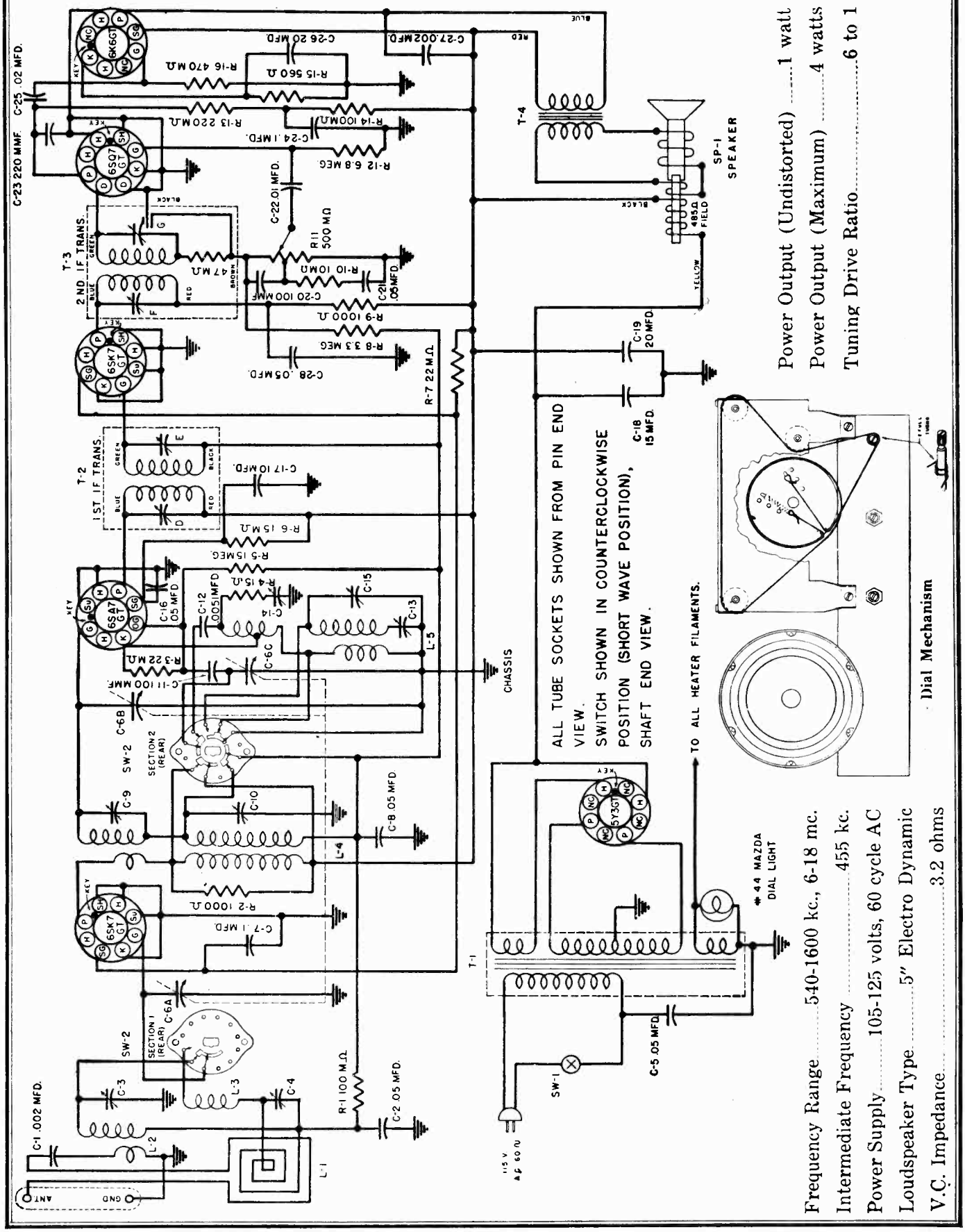
| Symbol | Part No. | Description |
|---|---|---|
| C-6 | BC31B503 | Cap., Mold. Paper, .05 mfd., 400 v. |
| C-7 | BD210503 | Cap., Paper, .05 mfd., 200 v. |
| C-4, 9 | BD410103 | Cap., Paper, .01 mfd., 400 v. |
| C-8 | BD410104 | Cap., Paper, .1 mfd., 400 v. |
| C-12, 13 | BD410203 | Cap., Paper, .02 mfd., 400 v. |
| C-3 | BM78A101 | Cap., Mica, 100 mmf. |
| C-11 | BM78A471 | Cap., Mica, 470 mmf. |
| R-9 | BR16C151 | Resistor, 150 ohm, 1/2 w. |
| R-2 | BR17B156 | Resistor, 15 megohm, 1/3 w. |
| R-1 | BR17B223 | Resistor, 22,000 ohm, 1/3 w. |
| R-3 | BR17B224 | Resistor, 220,000 ohm, 1/3 w. |
| R-5 | BR17B335 | Resistor, 3.3 megohm, 1/3 w. |
| R-7, 8 | BR17B474 | Resistor, 470,000 ohm, 1/3 w. |
| R-6 | BR17B685 | Resistor, 6.8 megohm, 1/3 w. |
| | A-2163 | Cable, Dial Drive |
| | A-6158 | Lamp, Pilot, No. 47 Mazda, 6.3 v. |
| C-10 | A-8948 | Cap., Elec., 40-20 mfd., 150 v. |
| R-4 | B-9051-1 | Control, Vol. & Sw., 500,000 ohm. |
| C-5 | A-9672 | Cap., Paper, .0015 mfd., 400 v. |

| Symbol | Part No. | Description |
|---|---|---|
| T-1 | B-51010-1 | Transformer Assy., 1st IF |
| T-2 | B-51011-1 | Transformer Assy., 2nd IF |
| SP-1 | C-51014 | Speaker, 5-inch Dynamic, 350 ohm |
| | A-51160-1 | Cord, Power, 6 ft. |
| | B-51162-1 | Shaft, Dial Drive |
| | A-51163 | Spring Clip for Dial Drive Shaft |
| | A-51202 | Link, Dial Drive |
| | B-51330-1 | Rubber Channel |
| | A-51331 | Spring, Dial Bracket |
| | A-51778 | Service Sheet |
| | A-51787 | Spring, Cable |
| | A-51869 | Antenna Reel Assembly |
| L-1A, L-1B, L-1C | D-54902 | Permeability Tuner Assembly |
| L-2 | B-54903 | Coil Assembly, Cathode |
| C-2A, C-2B | B-54904-1 | Capacitor, Trimmer |
| | B-55120-1 | Stud, for Dial Drive Link |

Order parts not listed by specifying (1) Part Name, (2) Model Number (include number following dash), (3) Run Number

# ALLIED PURCHASING, INC.

MODEL 572




Power Output (Undistorted) ..... 1 watt
Power Output (Maximum) ..... 4 watts
Tuning Drive Ratio ..... 6 to 1

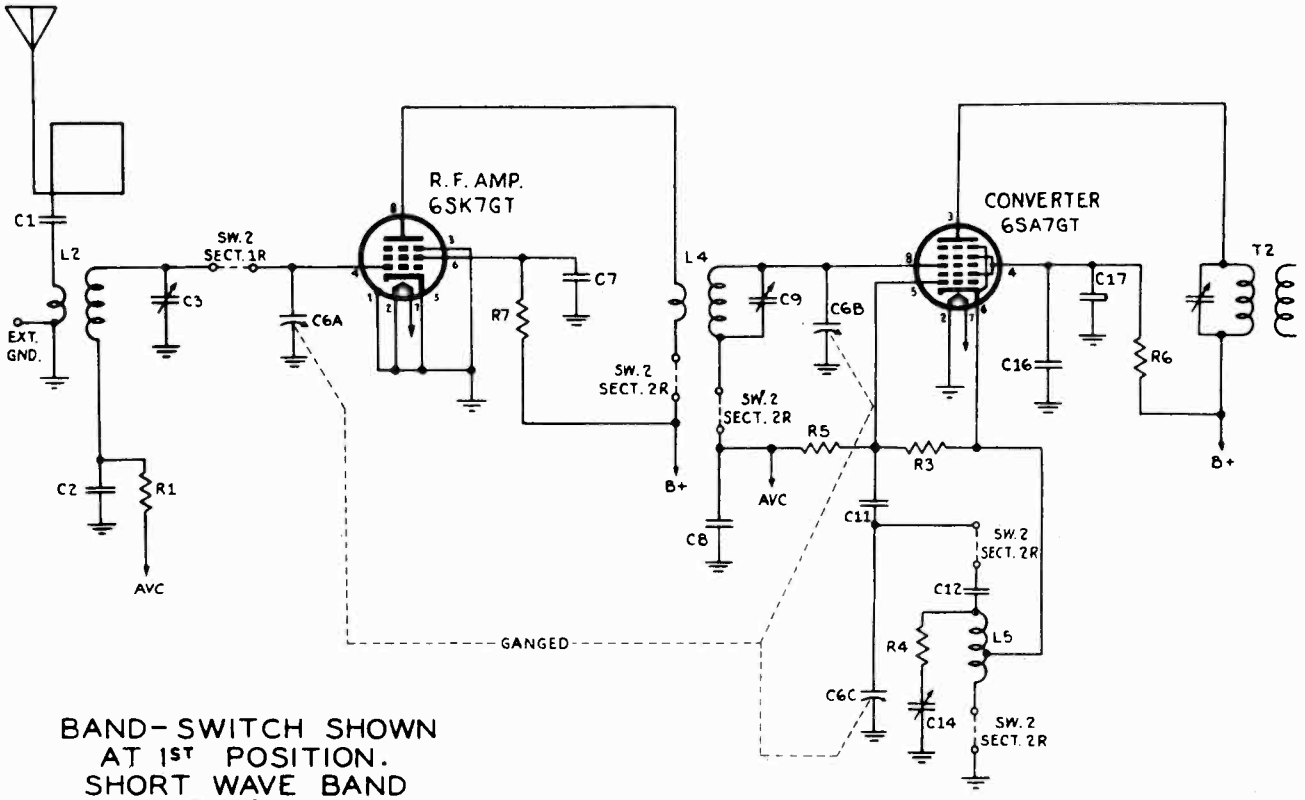
Frequency Range ..... 540-1600 kc., 6-18 mc.
Intermediate Frequency ..... 455 kc.
Power Supply ..... 105-125 volts, 60 cycle AC
Loudspeaker Type ..... 5" Electro Dynamic
V.C. Impedance ..... 3.2 ohms



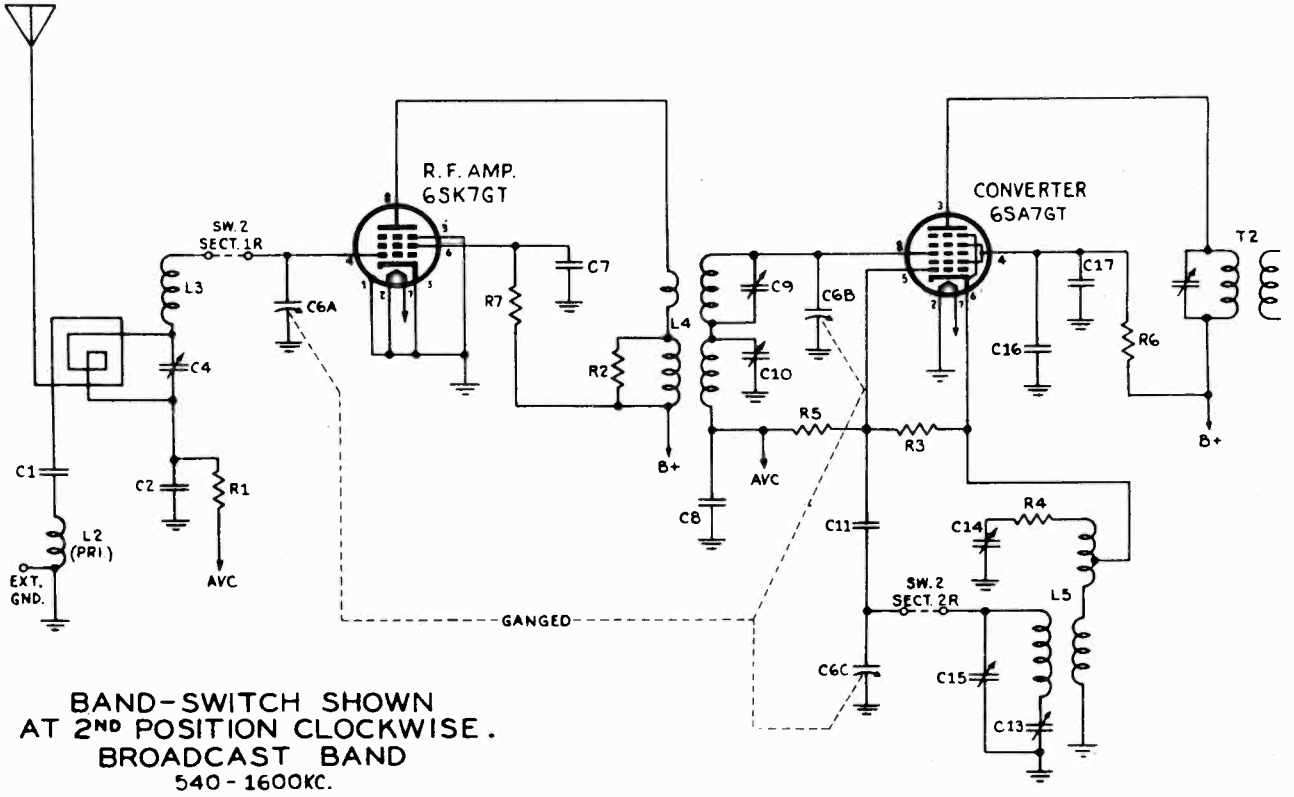
For Parts list, see P.17-6

MODEL 572

# ALLIED PURCHASING, INC.




BAND-SWITCH SHOWN
AT 1ST POSITION.
SHORT WAVE BAND
6 - 18 MC.

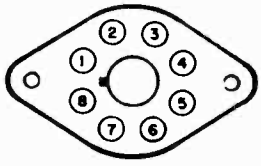



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
BROADCAST BAND
540 - 1600KC.

# ALLIED PURCHASING, INC.

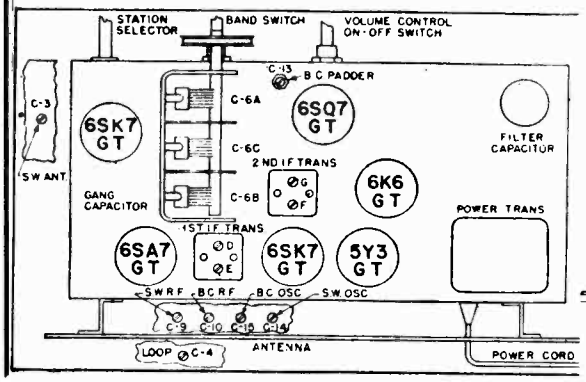
MODEL 572

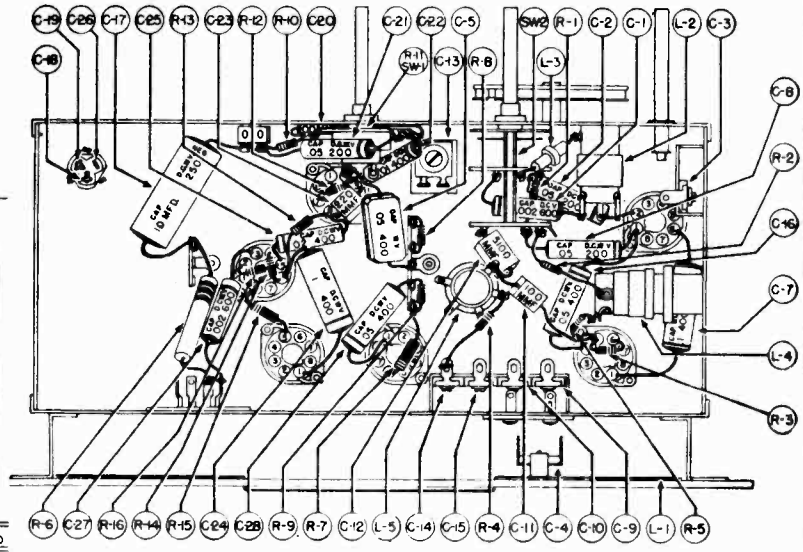
| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 6SK7GT | RF Amplifier | 0 | 0 | 0 | 0 | 0 | 107 | 6 AC | 255 |
| 6SA7GT | Converter | 0 | 6 AC | 250 | 103 | 0 | 0 | 0 | 0 |
| 6SK7GT | IF Amplifier | 0 | 0 | 0 | 0 | 0 | 105 | 6 AC | 237 |
| 6SQ7GT | Det.—AVC—Audio | 0 | 0 | 0 | 0 | 0 | 34 | 6 AC | 0 |
| 6K6GT | Power Output | 0 | 0 | 230 | 240 | 0 | 0 | 6 AC | 18 |
| 5Y3GT | Rectifier | 0 | 310 | 0 | 300 AC | 0 | 300 AC | 0 | 310 |




NOTE: All voltages measured from chassis to socket contact indicated. DC voltages measured with a 1000 ohm-per-volt meter.
All voltages are positive DC unless otherwise marked.
Volume control full on. Receiver not tuned to station.
Line voltage 117 volts AC.

**Parts Layout**
**Model 572**



The following equipment is necessary to properly align this chassis:

A signal generator which will provide an accurately calibrated signal at the frequencies listed.

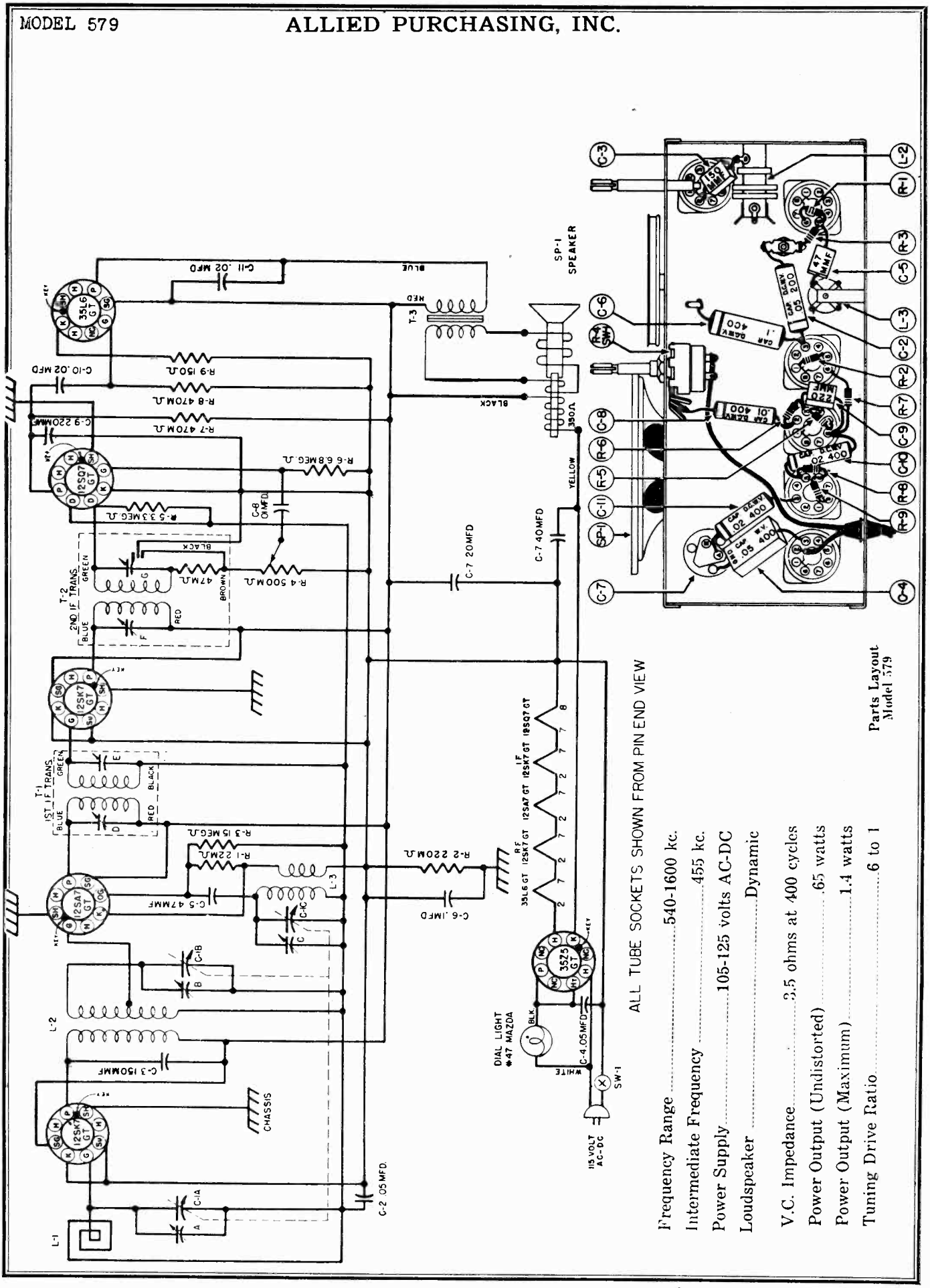
An output meter.

3. A non-metallic screwdriver.
4. Dummy antenna: .1 mfd. — 400 ohm resistor-RMA loop.

| CONNECT TEST OSCILLATOR TO | DUMMY ANTENNA | INPUT SIGNAL FREQUENCY | BAND | SET DIAL AT | TRIMMERS | PURPOSE |
|---|---|---|---|---|---|---|
| 6SA7GT grid | .1 mfd. | 455 kc. | Broadcast | HF end | D E F G | Align IF |
| 6SK7GT RF grid | .1 mfd. | 18.3 mc. | Short wave | HF end | C-14 | Set limit of band |
| 6SK7GT RF grid | .1 mfd. | 16 mc. | Short wave | 16 mc. | C-9 | Align RF |
| Antenna post | 400 ohms | 16 mc. | Short wave | 16 mc. | C-3 | Align antenna |
| 6SK7GT RF grid | .1 mfd. | 1620 kc. | Broadcast | HF end | C-15 | Set limit of band |
| 6SK7GT RF grid | .1 mfd. | 1400 kc. | Broadcast | 1400 kc. | C-10 | Align RF |
| 6SK7GT RF grid | .1 mfd. | 600 kc. | Broadcast | 600 kc. | C-13 | Rock gang and adjust to max. |
| RMA loop | Through loop | 1400 kc. | Broadcast | 1400 kc. | C-4 | Align antenna |

MODEL 579

# ALLIED PURCHASING, INC.




Frequency Range ..... 540-1600 kc.
Intermediate Frequency ..... 455 kc.
Power Supply ..... 105-125 volts AC-DC
Loudspeaker ..... Dynamic
V.C. Impedance ..... 3.5 ohms at 400 cycles
Power Output (Undistorted) ..... .65 watts
Power Output (Maximum) ..... 1.4 watts
Tuning Drive Ratio ..... 6 to 1

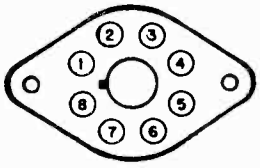


For Parts list, see P.17-6

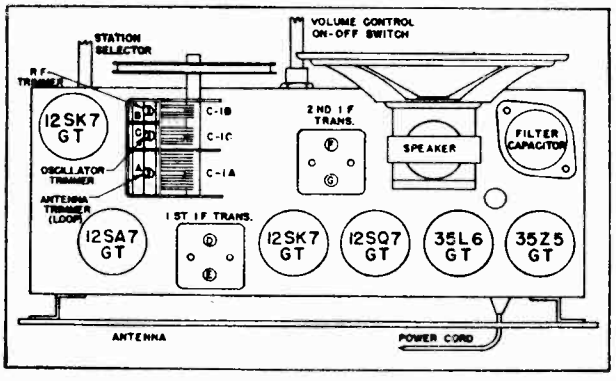
# ALLIED PURCHASING, INC.

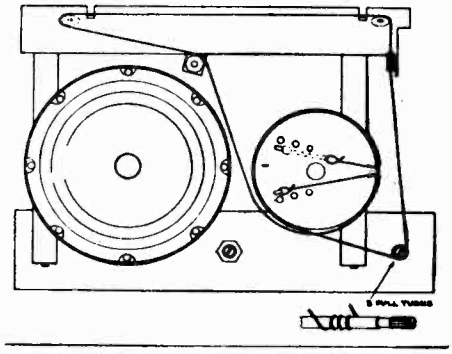
MODEL 579

| TUBE | POSITION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 12SK7GT | RF Amplifier | 0 | 50 AC | 0 | 0 | 0 | 97 | 38 AC | 97 |
| 12SA7GT | Converter | 0 | 25 AC | 97 | 97 | -6 | 0 | 38 AC | 0 |
| 12SK7GT | IF Amplifier | 0 | 25 AC | 0 | 0 | 0 | 97 | 12 AC | 97 |
| 12SQ7GT | Detector, 1st Audio | 0 | 0 | 0 | 0 | 0 | 30 | 12 AC | 0 |
| 35L6GT | Output | 0 | 85 AC | 92 | 97 | 0 | 0 | 50 AC | 5.7 |
| 35Z5GT | Rectifier | 0 | 117 AC | 112 AC | 0 | 112 AC | 0 | 86 AC | 125 |




NOTE: All DC voltages measured with a 1000 ohm-per-volt meter from ON-OFF switch (—B) to socket contact indicated. All AC voltages are measured from ON-OFF switch (—B) to socket contact indicated.
All voltages are positive DC unless otherwise marked.
Volume Control full on. No signal.
Line voltage 117 volts AC.



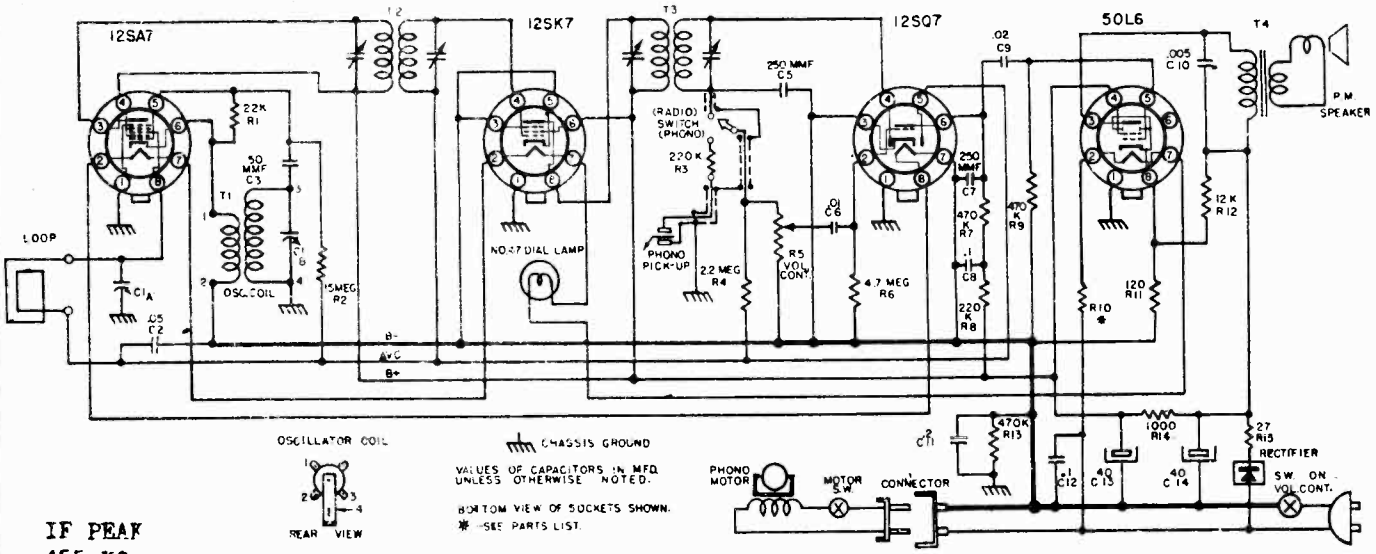
**Dial Mechanism**

The following equipment is necessary to properly align this chassis:

A signal generator which will provide an accurately calibrated signal at the frequencies listed.
An output meter.
A non-metallic screwdriver.
Dummy antenna: .1 mfd. — RMA loop.

Intermediate Frequency and Oscillator adjustments may be made with the loop disconnected provided a resistor of 10,000 to 50,000 ohms is substituted to close the 12SK7GT grid circuit. The loop alignment must be done with the loop and chassis mounted in operating position in the cabinet. A single turn loosely coupled to loop may be substituted for RMA loop.

| CONNECT TEST OSCILLATOR TO | DUMMY ANTENNA | INPUT SIGNAL FREQUENCY | SET DIAL AT | TRIMMERS | PURPOSE |
|---|---|---|---|---|---|
| 12SA7GT grid | .1 mfd. | 455 kc. | HF end | D E F G | Align IF |
| 12SK7GT RF grid | .1 mfd. | 1620 kc. | HF end | C | Set limit of band |
| 12SK7GT RF grid | .1 mfd. | 1400 kc. | 1400 kc. | B | Align RF |
| RMA loop | Through loop | 1400 kc. | 1400 kc. | A | Align antenna |




IF PEAK
455 KC

* COMPENSATION CIRCUIT — PAT. APPLIED FOR

| Code | Part No. | DESCRIPTION |
|---|---|---|
| C1A, C1B | B19-189 | Variable Condenser |
| C2 | A16-152 | .05 MFD. 200 volt Condenser |
| C3 | A15-175 | 50 MMFD. Mica Condenser |
| C9 | A16-150 | .02 MFD. 400 volt Condenser |
| C5, C7 | A15-176 | 250 MMFD. Mica Condenser |
| C6 | A16-156 | .01 MFD. 400 volt Condenser |
| C8 | A16-157 | .1 MFD. 200 volt Condenser |
| C10 | A16-153 | .005 MFD. 600 volt Condenser |
| C11 | A16-154 | .2 MFD. 400 volt Condenser |
| C12 | A16-160 | .1 MFD. 400 volt Condenser |
| C13, C14 | A18-280 | 40 MFD. 150 volt Electrolytic Condenser |
| R1 | A60-659 | 22K Ohm ½ watt 20% Resistor |
| R2 | A60-664 | 15 Megohm ½ watt 20% Resistor |
| R3, R8 | A60-667 | 220K Ohm ½ watt 20% Resistor |
| R4 | A60-684 | 2.2 Megohm ½ watt 20% Resistor |
| R5 | A24-164 | 500K Ohm Volume Control with Switch |
| R6 | A60-669 | 4.7 Megohm ½ watt 20% Resistor |
| R7, R9, R13 | A60-662 | 470K Ohm ½ watt 20% Resistor |
| R10 | A60-719 | Special Compensating Resistor, order only from the manufacturer |
| R11 | A60-702 | 120 Ohm ½ watt 10% Resistor |
| R12 | A60-720 | 12K Ohm 2 watt 10% Resistor |
| R14 | A60-699 | 1000 Ohm 2 watt 10% Resistor |
| R15 | A60-721 | 27 Ohm 1 watt 10% Resistor |
| T1 | B10-411 | Oscillator Coil |
| T2 | A10-468 | 1st I. F. Transformer |
| T3 | B10-464 | 2nd I. F. Transformer |
| T4 | B80-230 | Output Transformer |
| | A52-199 | Knob, Volume |
| | A52-200 | Knob, Tuning |
| | A52-201 | Knob, Phono-Radio |
| | A69-172 | Switch, Phono-Radio |
| | A38-279 | Drum for Variable Condenser |
| | 378-252 | 5" P. M. Speaker |
| | A71-22 | Cover for Volume Control |
| | A85-301 | Selenium Rectifier |
| | A75-58 | Tuning Shaft |
| | A03-308 | Connector |
| | D42-407 | Cabinet, Wood |
| | C71-27 | Cover for Dial Plate |
| | 367-498 | Dial Scale |
| | A58-53 | Dial Pointer |
| | 383-408 | Dial Scale Retainer |
| | C83-410 | Cabinet Back |
| | C82-43 | Loop Antenna |
| | A83-273 | Dial Diffusing Plate |

## ALIGNMENT PROCEDURE.

The following alignment procedure is for use only by competent servicemen having the proper equipment.

The alignment should be made with volume control fully on, and the output from the signal generator as low as possible, to prevent A.V.C. action from interfering with correct alignment.

With the output meter connected across the voice coil of the speaker, the output meter reading for 50 milliwatts is .4 volts using a signal which is modulated 400 c.p.s.

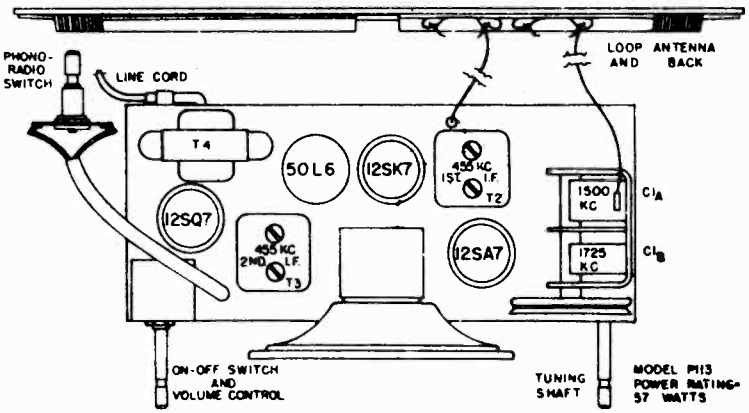
Adjust all trimmers for maximum output. Repeat alignment procedure given below as a final check.

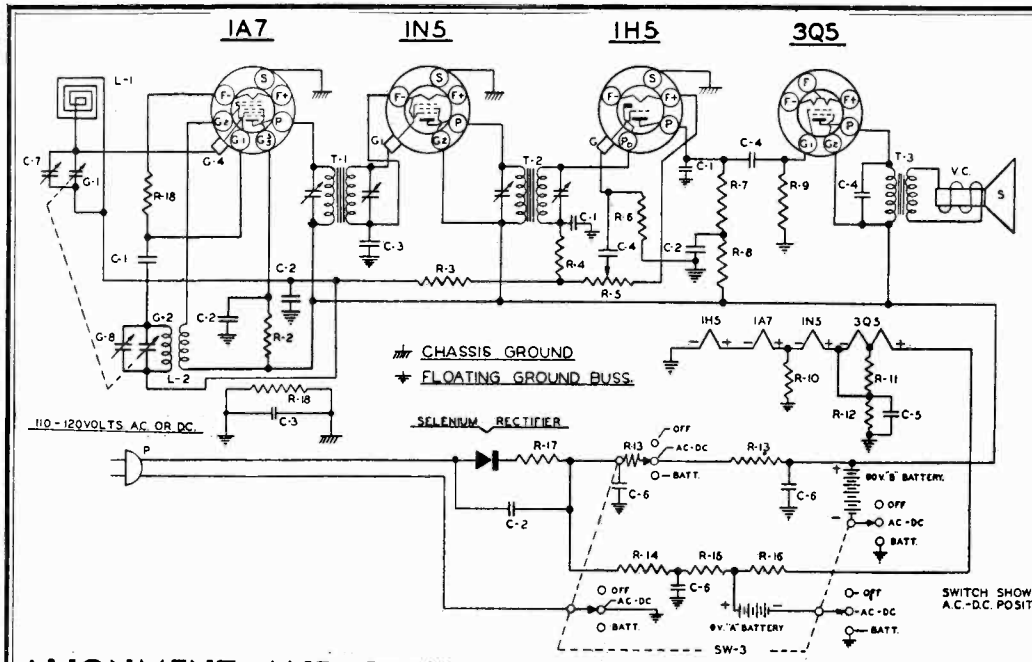
CAUTION: This is an A.C.-D.C. receiver and when aligning the set it is necessary to isolate the Signal Generator or the Receiver from the line by use of a transformer, or place a .2 MFD. condenser in both test leads of the Signal Generator.

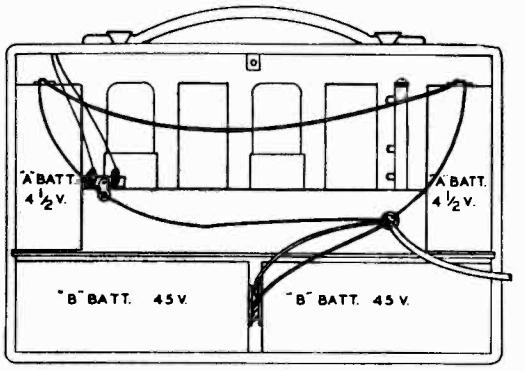
| Position of Variable | Generator Frequency | Dummy Ant. Mid. | Generator Connections | Trimmer Adjustment | Trimmer Function |
|---|---|---|---|---|---|
| Fully open | 455 KC | .1 | * 12SA7 Grid (Stator of C1A) | T2 | Input I.F. |
| Fully open | 455 KC | .1 | * 12SA7 Grid (Stator of C1A) | T3 | Output I.F. |
| Fully open | 1725 KC | .00025 | * 12SA7 Grid (Stator of C1A) | C1B | Oscillator |
| Tune in signal from generator | 1500 KC | .00025 | **Loosely Coupled to Loop | C1A | Antenna |

*Connect ground lead of signal generator to Common "B."

**Do not connect ground lead of signal generator.

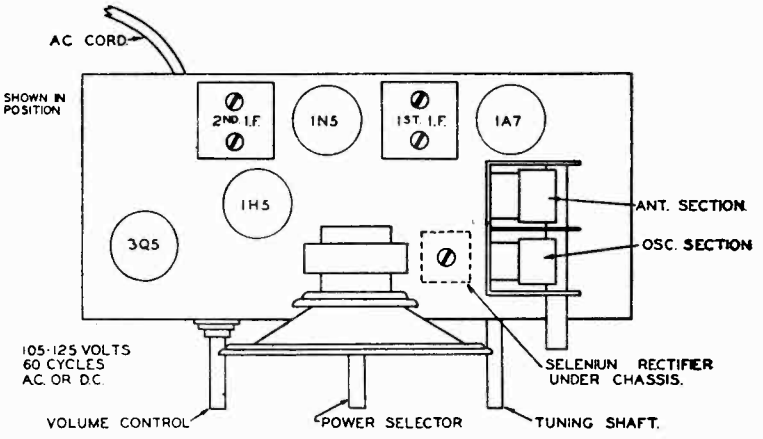





BATTERY LOCATION

SWITCH SHOWN IN A.C.-D.C. POSITION




TL-50

FIGURE-1

# ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the first and second I. F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

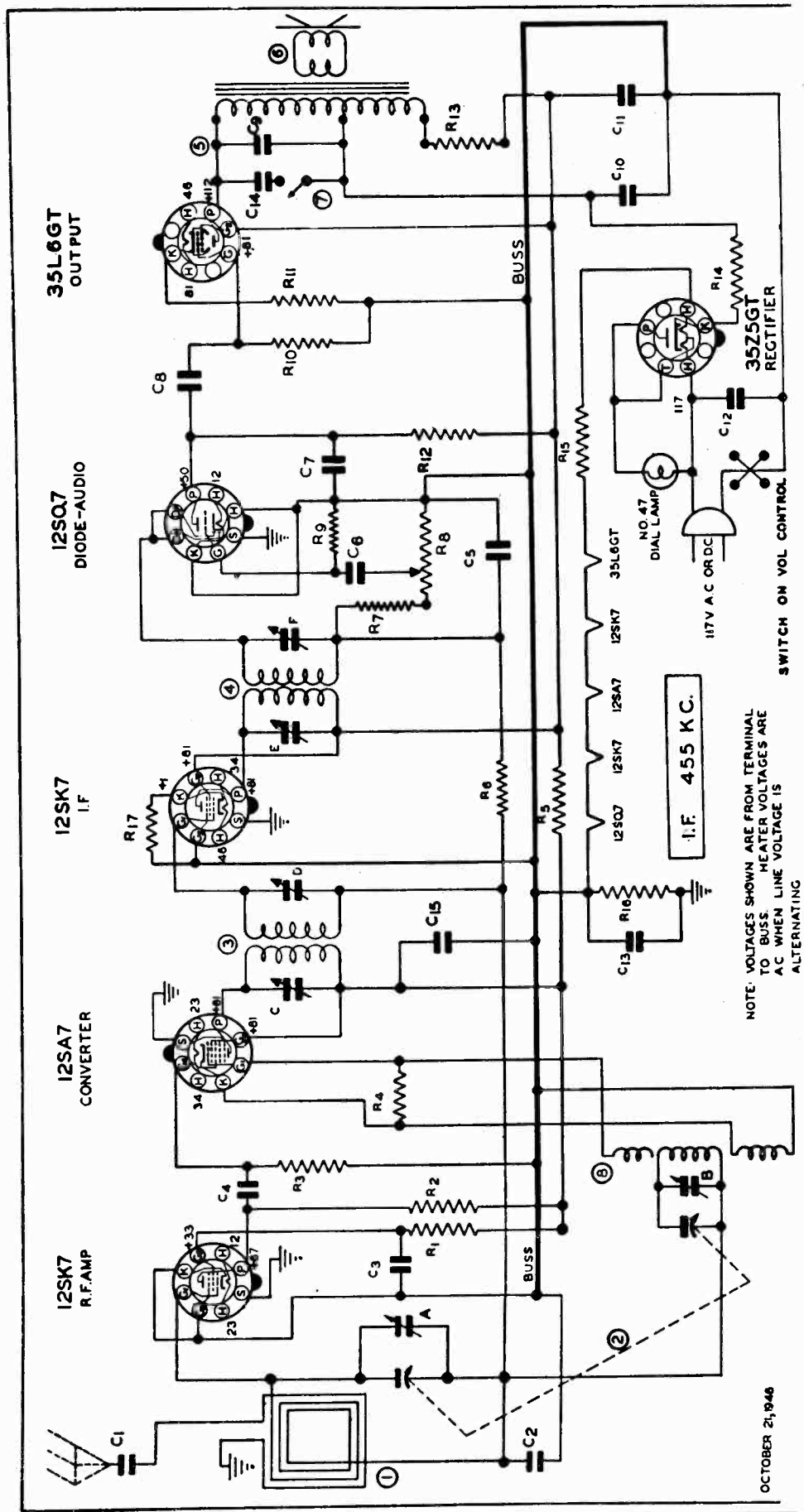
THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the top of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the top of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

| PART NO. | | DESCRIPTION |
|---|---|---|
| IR-10 | R-2 | 47 M Ω RESISTOR 1/2 W. 20% |
| IR-23 | R-3 | 33 MEG. RESISTOR 1/2 W. 20% |
| IR-31 | R-4 | 82 M Ω RESISTOR 1/2 W. 10% |
| VC-2 | R-5 | 1 MEG. VOLUME CONTROL |
| IR-3 | R-6 | 10 MEG. RESISTOR 1/2 W. 20% |
| IR-12 | R-7 | 1 MEG. RESISTOR 1/2 W 20% |
| IR-11 | R-8 | 470 M Ω RESISTOR 1/2 W. 20% |
| IR-13 | R-9 | 2.2 MEG RESISTOR 1/2 W. 20% |
| IR-32 | R-10 | 680 Ω RESISTOR 1/2 W 10% |
| IR-33 | R-11 | 270 Ω RESISTOR 1/2 W 10% |
| IR-21 | R-12 | 330 Ω RESISTOR 1/2 W 10% |
| IR-39 | R-13 | 620 Ω RESISTOR 1/2 W. 5% |
| WR-3A | R-14 | 1050 Ω |
| | R-15 | 1050 Ω — CANDOHM RESISTOR |
| | R-16 | 40 Ω |
| IR-35 | R-17 | 82 Ω WIREWOUND RESISTOR. 2W 10% |
| IR-20 | R-18 | 220 M Ω RESISTOR 1/2 W. 20% |
| MC-2 | C-1 | 100 MMFD CONDENSER [MICA] |
| PC-5 | C-2 | .05 MFD. CONDENSER 400 V. |
| PC-8 | C-3 | .1 MFD. CONDENSER 400 V. |
| PC-6 | C-4 | .005 MFD. CONDENSER 600 V. |

| PART NO. | | DESCRIPTION |
|---|---|---|
| EC-6 | C-5 | 70 MFD. 10 V. ELECTROLYTIC |
| EC-4 | C-6 | 40-40-40-150 V. ELECTROLYTIC |
| TC-7 | C-7 | ANTENNA TRIMMER |
| | C-8 | OSC. TRIMMER. |
| GC-4 | G-1 | GANG CONDENSER |
| | G-2 | |
| LL-10 | L-1 | LOOP ANNTENNA |
| LO-8 | L-2 | OSC. COIL |
| LI-3 | T-1 | INPUT I.F. TRANSFORMER |
| LI-4 | T-2 | OUTPUT I.F. TRANSFORMER |
| CO-1 | P | LINE CORD |
| | T-3 | OUTPUT SPEAKER TRANSFORMER |
| SPK-5 | VC | VOICE COIL |
| | S | P.M. SPEAKER |
| SW-5 | SW-3 | 4 POLE 3 POSITION |
| SR-1 | —— | SELENIUN RECTIFIER |
| TU-11 | —— | 1A7 - 1N5 - 1H5 - 3Q5 |
| "A" BATTERY | | 9 VOLTS |
| "B" BATTERY | | 90 VOLTS. |

# ALLIED RADIO CORP.

MODELS 6C-225, 6C-226



MODELS 6C-225, 6C-226 ALLIED RADIO CORP.

# SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

**NOTE:** IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

# ALIGNMENT PROCEDURE

**GENERAL DATA.** The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

**CORRECT ALIGNMENT PROCEDURE.** The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

**I.F. ALIGNMENT.** Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all four I.F. trimmers to peak or maximum reading on the output meter.

**BROADCAST BAND ALIGNMENT.** Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condsenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

**GROUND.** No ground connection should be used when operaitng this receiver. The receiver gets its ground connection through the power line and any external connection to the chassis may cause a short circuit and consequent damage.

# TUNING RANGE

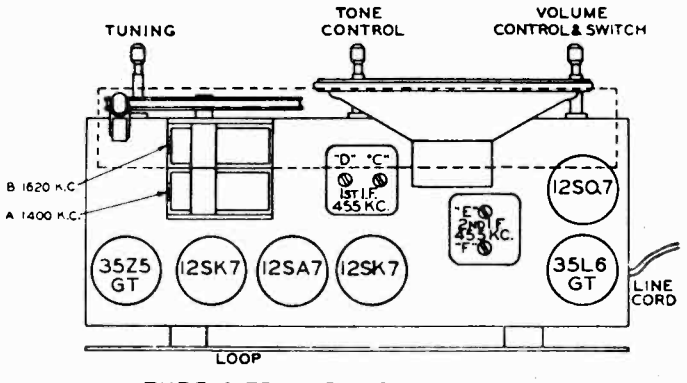
This receiver is designed to operate over the standard broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters).

**DIAL CALIBRATION.** The scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

**POWER SUPPLY.** This receiver is designed to operate on any alternating current supply (AC) ranging from 110 to 120 volts, 50 to 60 cycles; or on any direct current supply (DC) ranging from 110 to 120 volts.

| DIAG. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| C1 | N-1344 | .01 MFD 400 V 20% |
| C2 | N-1345 | .05 MFD 200 V 20% |
| C3 | N-1345 | .05 MFD 200 V 20% |
| C4 | N-2383 | 150 MMFD MICA 20% |
| C5 | N-1374 | 100 MMFD MICA 20% |
| C6 | N-4894 | .005 MFD 600 V -15+40% |
| C7 | N-4890 | .0005 MFD 600 V -25+60% |
| C8 | N-1344 | .01 MFD 400 V 20% |
| C9 | N-1344 | .01 MFD 400 V 20% |
| C10 | N-3658 | 40 MFD 150 W V ELECTRO |
| C11 | | 40 MFD 150 W V LYTIC |
| C12 | N-1346 | .05 MFD 400 V 20% |
| C13 | N-5160 | .2 MFD 200 V -10+10% |
| C14 | N-1346 | .05 MFD 400 V 20% |
| C15 | N-1351 | .1 MFD 200 V -10+20% |
| R1 | N-4063 | 47,000 OHM .5W 20% |
| R2 | N-4896 | 2,200 OHM .5W 10% |
| R3 | N-4087 | 47,000 OHM .5W INS 20% |
| R4 | N-5351 | 22,000 OHM .5W INS 20% |
| R5 | N-4066 | 470 OHM .5W 10% |
| R6 | N-1262 | 1 MEGOHM .5W 20% |
| R7 | N-4063 | 47,000 OHM .5W 20% |
| R8 | N-5026 | .05 MEGOHM VOL CONT. |
| R9 | N-4081 | .47 MEGOHM .5W 20% |
| R10 | N-4027 | 470,000 OHM .5W 20% |
| R11 | N-4087 | 180 OHM .5W 10% |
| R12 | N-4988 | 220,000 OHM .5W INS. 20% |
| R13 | N-4900 | 1200 OHM 1W 10% |
| R14 | N-4022 | 33 OHM .5W 20% |
| R15 | N-4628 | 33 OHM 1W 10% |
| R16 | N-4026 | 220,000 OHM .5W 20% |
| R17 | N-5857 | 82 OHM .5W 10% |

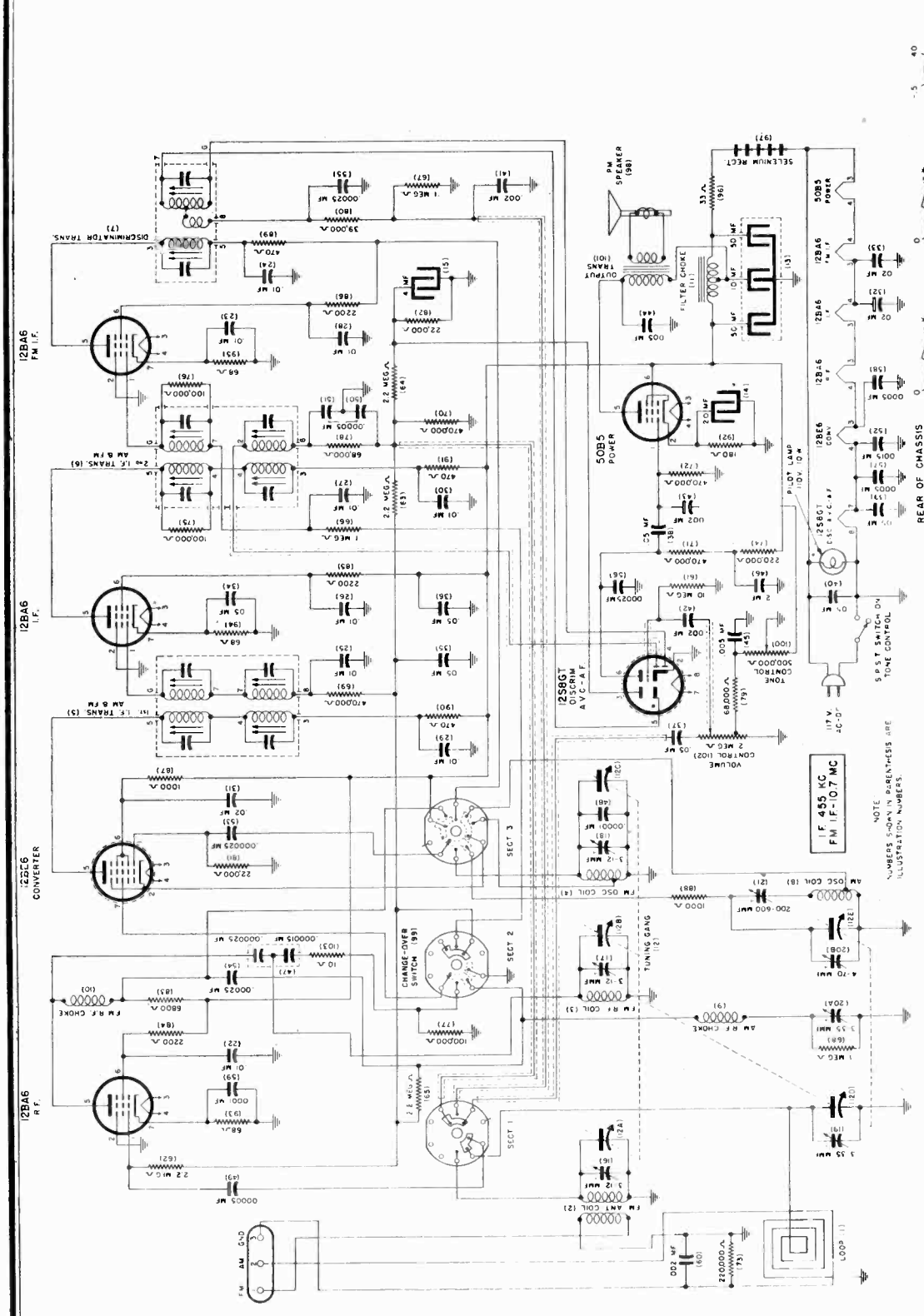
| DIAG. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | N-5937 | LOOP COIL |
| 2 | N-5286 OR | 2 GANG CONDENSER |
| 1 | N-5765 | LOOP COIL |
| 2 | N-5936 | 2 GANG CONDENSER |
| 3 | N-4872 | 1ST I.F. TRANSFORMER |
| 4 | N-5571 | 2ND I.F. TRANSFORMER |
| 5 | N-4875 | OUTPUT TRANSFORMER |
| 6 | N-4868 | 5" SPEAKER |
| 7 | N-4942 | TONE SWITCH |
| 8 | N-4810 | OSCILLATOR COIL |




TUBE & TRIMMER LOCATIONS

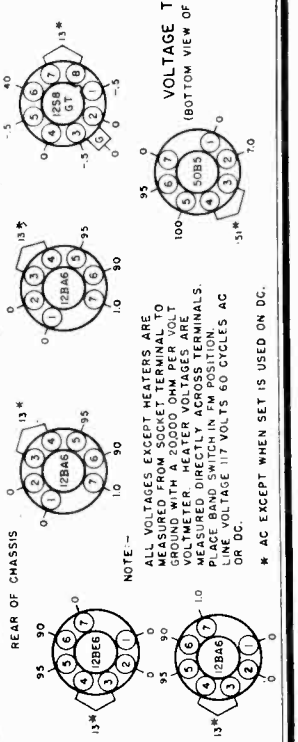
# ALLIED RADIO CORP.

MODELS 7B-220, 7C-220




## VOLTAGE TABLE

(BOTTOM VIEW OF CHASSIS)




NOTE:—
ALL VOLTAGES EXCEPT HEATERS ARE MEASURED FROM SOCKET TERMINAL TO GROUND WITH A 20,000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES ARE MEASURED DIRECTLY ACROSS TERMINALS. PLACE BAND SWITCH IN FM POSITION. LINE VOLTAGE 117 VOLTS 60 CYCLES AC OR DC.

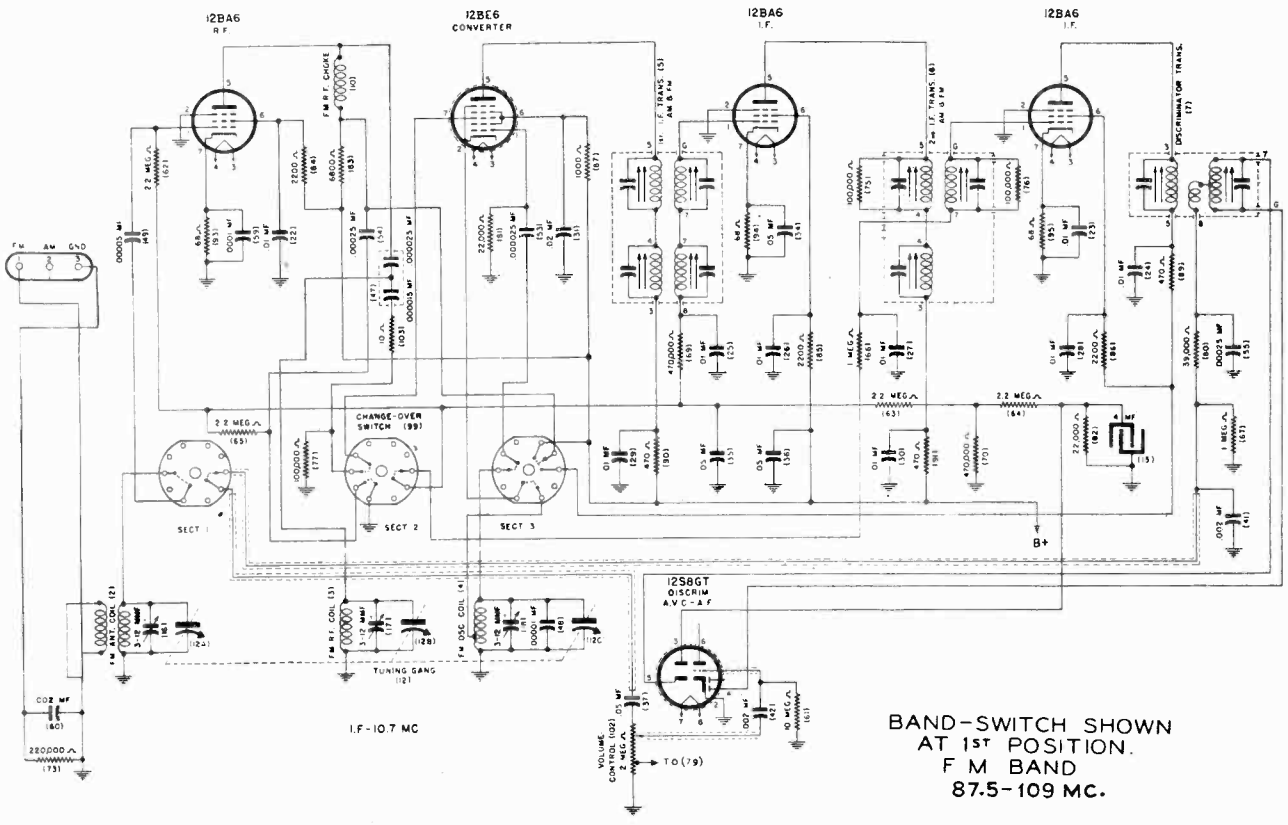
* AC EXCEPT WHEN SET IS USED ON DC.

## VOLTAGE RATING

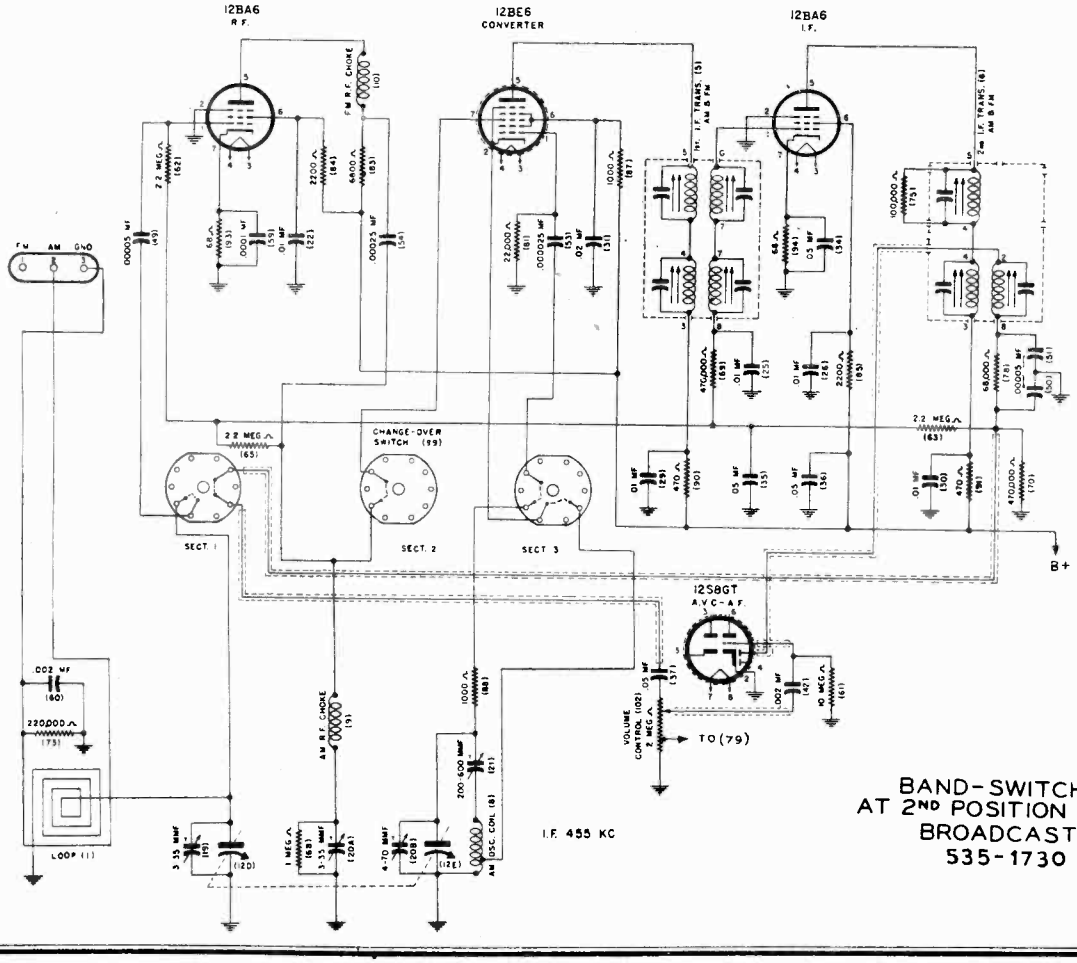
THIS RADIO IS DESIGNED FOR USE ON EITHER:
110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC)
OR
110-120 VOLTS DIRECT CURRENT (DC)

WARNING — DO NOT CONNECT A GROUND TO ANY METAL PART OF THE CHASSIS BECAUSE THIS WILL CAUSE A SHORT AND POSSIBLE DAMAGE.

MODELS 7B-220, 7C-220 ALLIED RADIO CORP.




BAND-SWITCH SHOWN AT 1ST POSITION. F M BAND 87.5-109 MC.




BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE BROADCAST BAND 535-1730 KC.

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. Make the adjustment marked (1) first, (2) next.

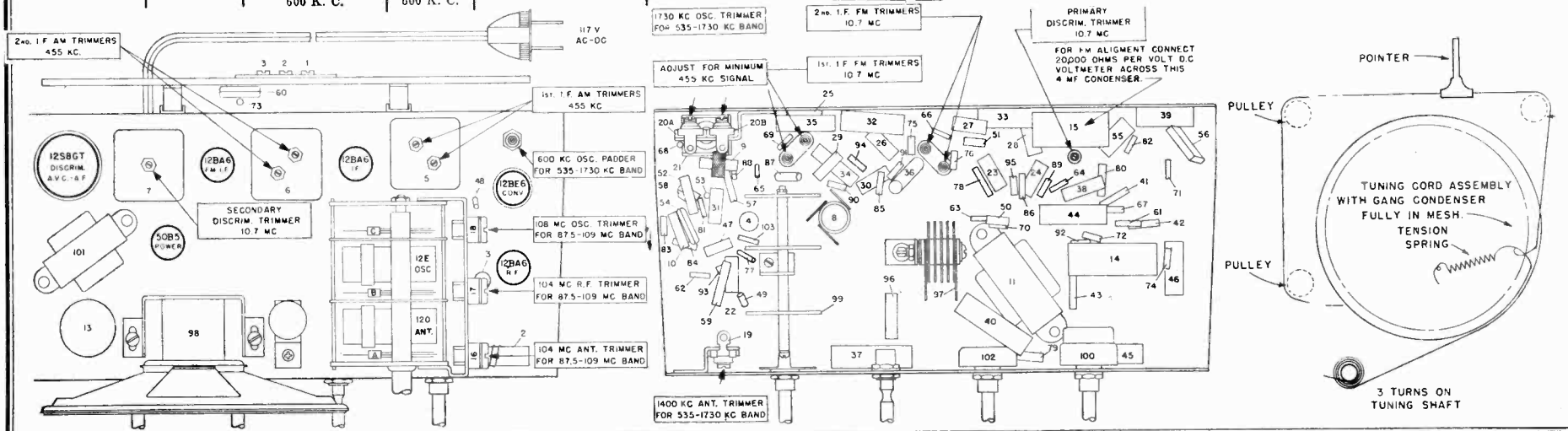
Before starting alignment:

(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the AM dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Place loop antenna in the same position it will be in when set is in the cabinet.

| Steps | Place band switch for operation on: | Set receiver dial to: | TEST OSCILLATOR: Adjust test oscillator frequency to: | TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of: | TEST OSCILLATOR: Attach output of test oscillator to: | Refer to parts layout diagram for location of trimmers mentioned below: |
|---|---|---|---|---|---|---|
| 1 | AM Band position | Any point where no interfering signal is received | Exactly 455 K. C. | 0.2 Mfd. Condenser | High side to AM-Osc. stator plates of tuning condenser (12E). Low side to frame of condenser through .01 Mfd. condenser. | Adjust each of the 2nd 455 K. C. AM I. F. transformer trimmers for maximum output, then adjust each of the 1st 455 K. C. I. F. transformer trimmers for maximum output. |
| 2 | AM Band position | Rotate gang condenser to maximum capacity | Exactly 455 K. C. | .00025 Condenser | High side to AM "ANT" terminal on loop back. Low side to "GND" terminal on loop back through a .01 Mfd. condenser. | Adjust 455 K. C. trimmer for **MINIMUM** 455 K. C. Signal. |
| | | Exactly 1730 K. C. | Exactly 1730 K. C. | | | Adjust 1730 K. C. oscillator trimmer for maximum output. |
| | | Approx. 1400 K. C. | Approx. 1400 K. C. | | | Adjust 1400 K. C. AM Ant. trimmer for maximum output. |
| | | Approx. 600 K. C. | Approx. 600 K. C. | | | While rocking gang condenser, adjust 600 K. C. oscillator padder for maximum output. |



## PARTS LIST

| Illus. No. | Part No. | Part Name | Description | List Price |
|---|---|---|---|---|
| 1 | 20E242 | Antenna | AM Loop with terminal strip | |
| 2 | 2E53 | Coil | FM Antenna | |
| 3 | 2E54 | Coil | FM R. F. | |
| 4 | 2E51 | Coil | FM Oscillator | |
| 5 | 20E214 | Coil | 1st AM & FM I. F. Transformer | |
| 6 | 20E215 | Coil | 2nd AM & FM I. F. Transformer | |
| 7 | 20E213 | Coil | Discriminator Transformer | |
| 8 | 20E238 | Coil | AM Oscillator | |
| 9 | 2E19 | Coil | AM R. F. Choke | |
| 10 | 2E47 | Coil | FM R. F. Choke | |
| 11 | 22E21 | Condenser | Filter Choke | |
| 12 | 24E30 | Condenser | Tuning, 2 Gang | |
| 13 | 25E22 | Condenser | Dry Elect. 50-10-50 Mfd. 150 V. | |
| 14 | 25E3 | Condenser | Dry Elect. 20 Mfd. 25 V. | |
| 15 | 25E23 | Condenser | Dry Elect. 4 Mfd. 50 V. | |
| 16 | 24E28 | Condenser | Trimmer, 3-12 MMF | |
| 17 | 24E28 | Condenser | Trimmer, 3-12 MMF | |
| 18 | 24E28 | Condenser | Trimmer, 3-12 MMF | |
| 19 | 24E3 | Condenser | Trimmer, 3-35 MMF | |
| 20 | 24E29 | Condenser | Trimmer, 3-35 MMF (A Section), 4-70 MMF (B Section) | |
| 21 | 24E16 | Condenser | Padder, 200-600 MMF | |
| 22 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 23 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 24 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 25 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 26 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 27 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 28 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 29 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 30 | 23E2014-6 | Condenser | Tubular, .01 Mfd. 200 V. | |
| 31 | 23E2014-7 | Condenser | Tubular, .02 Mfd. 200 V. | |
| 32 | 23E213 | Condenser | Tubular, .02 Mfd. 200 V. | |
| 33 | 23E213 | Condenser | Tubular, .02 Mfd. 200 V. | |
| 34 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 35 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 36 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 37 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 38 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 39 | 23E2014-8 | Condenser | Tubular, .05 Mfd. 200 V. | |
| 40 | 23E416 | Condenser | Tubular, .05 Mfd. 400 V. | |
| 41 | 23E2014-12 | Condenser | Tubular, .002 Mfd. 400 V. | |
| 42 | 23E2014-12 | Condenser | Tubular, .002 Mfd. 400 V. | |
| 43 | 23E2014-12 | Condenser | Tubular, .002 Mfd. 400 V. | |
| 44 | 23E408 | Condenser | Tubular, .005 Mfd. 400 V. | |
| 45 | 23E2014-3 | Condenser | Tubular, .005 Mfd. 200 V. | |
| 46 | 23E2014-10 | Condenser | Tubular, .1 Mfd. 200 V. | |
| 47 | 23E2019 | Condenser | Dual Ceramic, .000025 (A), .000015 (B) Mfd. 500 V. | |
| 48 | 23E15 | Condenser | Ceramic, .00001 Mfd. 500 V. | |
| 49 | 23E2009-5 | Condenser | Ceramic, .00005 Mfd. 500 V. | |
| 50 | 23E2009-5 | Condenser | Ceramic, .00005 Mfd. 500 V. | |
| 51 | 23E2009-5 | Condenser | Ceramic, .00005 Mfd. 500 V. | |
| 52 | 23E2012-2 | Condenser | Ceramic, .0015 Mfd. 500 V. | |
| 53 | 23E16 | Condenser | Ceramic, .000025 Mfd. 500 V. | |
| 54 | 23E42 | Condenser | Mica, .00025 Mfd. 500 V. | |
| 55 | 23E42 | Condenser | Mica, .00025 Mfd. 500 V. | |
| 56 | 23E42 | Condenser | Mica, .00025 Mfd. 500 V. | |
| 57 | 23E45 | Condenser | Mica, .0005 Mfd. 500 V. | |
| 58 | 23E45 | Condenser | Mica, .0005 Mfd. 500 V. | |
| 59 | 23E11 | Condenser | Mica, .0001 Mfd. 500 V. | |
| 60 | 23E52 | Condenser | Mica, .002 Mfd. 500 V. | |
| 61 | 27E105 | Resistor | Carbon, 1.0 Megohm, 1/3 W. | |
| 62 | 27E225 | Resistor | Carbon, 2.2 Megohm, 1/3 W. | |
| 63 | 27E225 | Resistor | Carbon, 2.2 Megohm, 1/3 W. | |
| 64 | 27E225 | Resistor | Carbon, 2.2 Megohm, 1/3 W. | |
| 65 | 27E225 | Resistor | Carbon, 2.2 Megohm, 1/3 W. | |
| 66 | 27E105 | Resistor | Carbon, 1 Megohm, 1/3 W. | |
| 67 | 27E105 | Resistor | Carbon, 1 Megohm, 1/3 W. | |
| 68 | 27E105 | Resistor | Carbon, 1 Megohm, 1/3 W. | |
| 69 | 27E474 | Resistor | Carbon, 470,000 Ohm, 1/3 W. | |
| 70 | 27E474 | Resistor | Carbon, 470,000 Ohm, 1/3 W. | |
| 71 | 27E474 | Resistor | Carbon, 470,000 Ohm, 1/3 W. | |
| 72 | 27E474 | Resistor | Carbon, 470,000 Ohm, 1/3 W. | |
| 73 | 27E224 | Resistor | Carbon, 220,000 Ohm, 1/3 W. | |
| 74 | 27E224 | Resistor | Carbon, 220,000 Ohm, 1/3 W. | |
| 75 | 27E104 | Resistor | Carbon, 100,000 Ohm, 1/3 W. | |
| 76 | 27E104 | Resistor | Carbon, 100,000 Ohm, 1/3 W. | |
| 77 | 27E104 | Resistor | Carbon, 100,000 Ohm, 1/3 W. | |
| 78 | 27E683 | Resistor | Carbon, 68,000 Ohm, 1/3 W. | |
| 79 | 27E683 | Resistor | Carbon, 68,000 Ohm, 1/3 W. | |
| 80 | 27E393 | Resistor | Carbon, 39,000 Ohm, 1/3 W. | |
| 81 | 27E223 | Resistor | Carbon, 22,000 Ohm, 1/3 W. | |
| 82 | 27E223 | Resistor | Carbon, 22,000 Ohm, 1/3 W. | |
| 83 | 27E682 | Resistor | Carbon, 6,800 Ohm, 1/3 W. | |
| 84 | 27E222 | Resistor | Carbon, 2,200 Ohm, 1/3 W. | |
| 85 | 27E222 | Resistor | Carbon, 2,200 Ohm, 1/3 W. | |
| 86 | 27E222 | Resistor | Carbon, 2,200 Ohm, 1/3 W. | |
| 87 | 27E102 | Resistor | Carbon, 1,000 Ohm, 1/3 W. | |
| 88 | 27E102 | Resistor | Carbon, 1,000 Ohm, 1/3 W. | |
| 89 | 27E471 | Resistor | Carbon, 470 Ohm, 1/3 W. | |
| 90 | 27E471 | Resistor | Carbon, 470 Ohm, 1/3 W. | |
| 91 | 27E471 | Resistor | Carbon, 470 Ohm, 1/3 W. | |
| 92 | 27E181-2 | Resistor | Carbon 180 Ohm, 1/2 W. | |
| 93 | 27E680 | Resistor | Carbon, 68 Ohm, 1/3 W. | |
| 94 | 27E680 | Resistor | Carbon, 68 Ohm, 1/3 W. | |
| 95 | 27E680 | Resistor | Carbon, 68 Ohm, 1/3 W. | |
| 96 | 27E330-3 | Resistor | Carbon, 33 Ohm, 1 W. | |
| 97 | 57E1 | Rectifier | Selenium | |
| 98 | 1E25 | Speaker | P. M. Elliptical | |
| 99 | 29E15 | Switch | "AM-FM" Changeover | |
| 100 | 28E22 | Tone Control | 500,000 Ohm | |
| 101 | 22E20 | Transformer | Output | |
| 102 | 28E23 | Volume Control | 2 Megohm | |
| 103 | 27E100 | Resistor | Carbon, 10 Ohm, 1/3 W. | |

## FM ALIGNMENT

Instructions for Alignment of the Frequency Modulation I. F. Transformers, Discriminator, Oscillator, R. F. and Antenna Circuits, with equipment generally available to the service man.

The equipment necessary for this procedure consists of the following:

A sensitive DC Voltmeter having 20,000 Ohms (or better) per volt, or a Vacuum Tube Voltmeter.

An AM Signal Generator that will supply:

(A) A 10.7 M. C. Signal for I. F. alignment.

(B) A 104 M. C. and 108 M. C. Signal—a Signal Generator that only goes up to 30 M. C. but which has sufficient fourth harmonic present in the carrier could be used for this purpose.

THE GENERATOR USED NEED NOT BE FREQUENCY MODULATED.

IT IS ALWAYS DESIRABLE TO ALIGN THE AM I. F. TRANSFORMERS BEFORE MAKING ANY OF THE FM I. F. ADJUSTMENTS, and to RECHECK AM I. F. TRIMMERS AFTER COMPLETING FM I. F. ADJUSTMENTS.

BE SURE TO MAKE THE FM ADJUSTMENTS IN THE ORDER GIVEN BELOW.

**(1) PROCEDURE FOR ALIGNMENT OF FM DISCRIMINATOR TRANSFORMER.**

(A) Connect the Voltmeter across the 4 Mfd. condenser (Illus. No. 15 in Parts Drawing).

(B) With a .002 Mfd. Isolation Condenser in series with each Signal Generator lead, connect generator from the grid (Pin #1) of the 12BA6 FM-I. F. Amplifier Tube to chassis.

(C) Set Signal Generator to EXACTLY 10.7 M. C.

(D) Adjust 10.7 M. C. Discriminator Primary Trimmer, mounted on underside of chassis, for MAXIMUM reading on Voltmeter.

(E) Leave Signal Generator set at 10.7 M. C. and modulate with a 400 cycle note.

(F) Adjust 10.7 M. C. Secondary Discriminator Trimmer, located on top of Discriminator Shield Can, for MINIMUM 400 CYCLE RESPONSE IN THE SPEAKER. IMPORTANT—the reading on the Voltmeter will change only slightly with this adjustment. MINIMUM AUDIO RESPONSE WILL BE RATHER CRITICAL IN ADJUSTMENT and will be correct only if a high audio response is found when tuning on each side of minimum setting.

**(2) PROCEDURE FOR ALIGNMENT OF FM I. F. TRANSFORMERS.**

(A) Leave the Voltmeter connected across the 4 Mfd. Condenser (Illus. No. 15).

(B) Connect Signal Generator to Input Grid (Pin #7) of 12BE6 Converter tube.

(C) Set Signal Generator to EXACTLY 10.7 M. C.—if possible, mark the position where this occurs right on the Generator's calibrated dial because this becomes a reference point in checking for proper FM I. F. alignment.

(D) Adjust each of the 1st and 2nd FM I. F. Transformers' 10.7 M. C. trimmers for MAXIMUM reading on Voltmeter. KEEP OUTPUT OF SIGNAL GENERATOR SO THAT A READING OF APPROXIMATELY 2 TO 4 VOLTS IS OBTAINED ON THE VOLTMETER.

(E) After all the above FM I. F. Transformer Trimmer adjustments have been correctly completed, MAKE A NOTE OF THE READING ON THE VOLTMETER.

(F) Next, detune the signal generator to a slightly HIGHER frequency (higher than the 10.7 reference frequency), until the Voltmeter reads ONE-HALF of the figure noted in (E) above, and MAKE A NOTE OF THE GENERATOR FREQUENCY AT WHICH THIS OCCURS.

(G) Now, detune the signal generator to a LOWER frequency (lower than the 10.7 reference frequency), until the Voltmeter again reads ONE-HALF the original figure noted in (E), and AGAIN NOTE THE GENERATOR FREQUENCY AT WHICH THIS OCCURS.

The difference between the two above frequencies obtained in (F) and (G), the one lower than 10.7 M. C. reference point and the one higher, is the "Half-amplitude" Band width of the FM-I. F. system. These two frequencies (F) and (G), should be somewhat uniformly spaced on either side of the 10.7 M. C. (C) reference frequency. A SLIGHT DIFFERENCE IS NOT SERIOUS. Only when one is more than twice as far as the other from the 10.7 M. C. reference frequency, or when there is a double peak, is the discrepancy serious. Assuming the FM I. F. Transformers have been properly adjusted, a double peak, or extremely one-sided "half-amplitude" band width, is usually caused by regeneration or a defective FM I. F. Transformer.

**(3) PROCEDURE FOR THE ALIGNMENT OF THE FM ANTENNA, R. F. AND OSCILLATOR CIRCUITS.**

(A) Leave Voltmeter connected across the 4 Mfd. condenser (Illus. No. 15).

(B) Connect the Signal Generator to the "FM" and "GROUND" posts that are attached to the receiver loop back, through a 5 foot or more length of 300 Ohm transmission line.

(C) Set Signal Generator so that it will deliver an unmodulated 108 M. C. signal. If the generator available is not designed to deliver a 108 M. C. signal, use a generator covering at least to 30 M. C. and set this generator frequency to 27 M. C.—the fourth harmonic of which will be 108 M. C.

(D) Set Receiver Dial Pointer to EXACTLY 108 M. C.

(E) Adjust 108 M. C. Oscillator Trimmer for MAXIMUM reading on Voltmeter.

(F) Next, tune the receiver to 104 M. C.

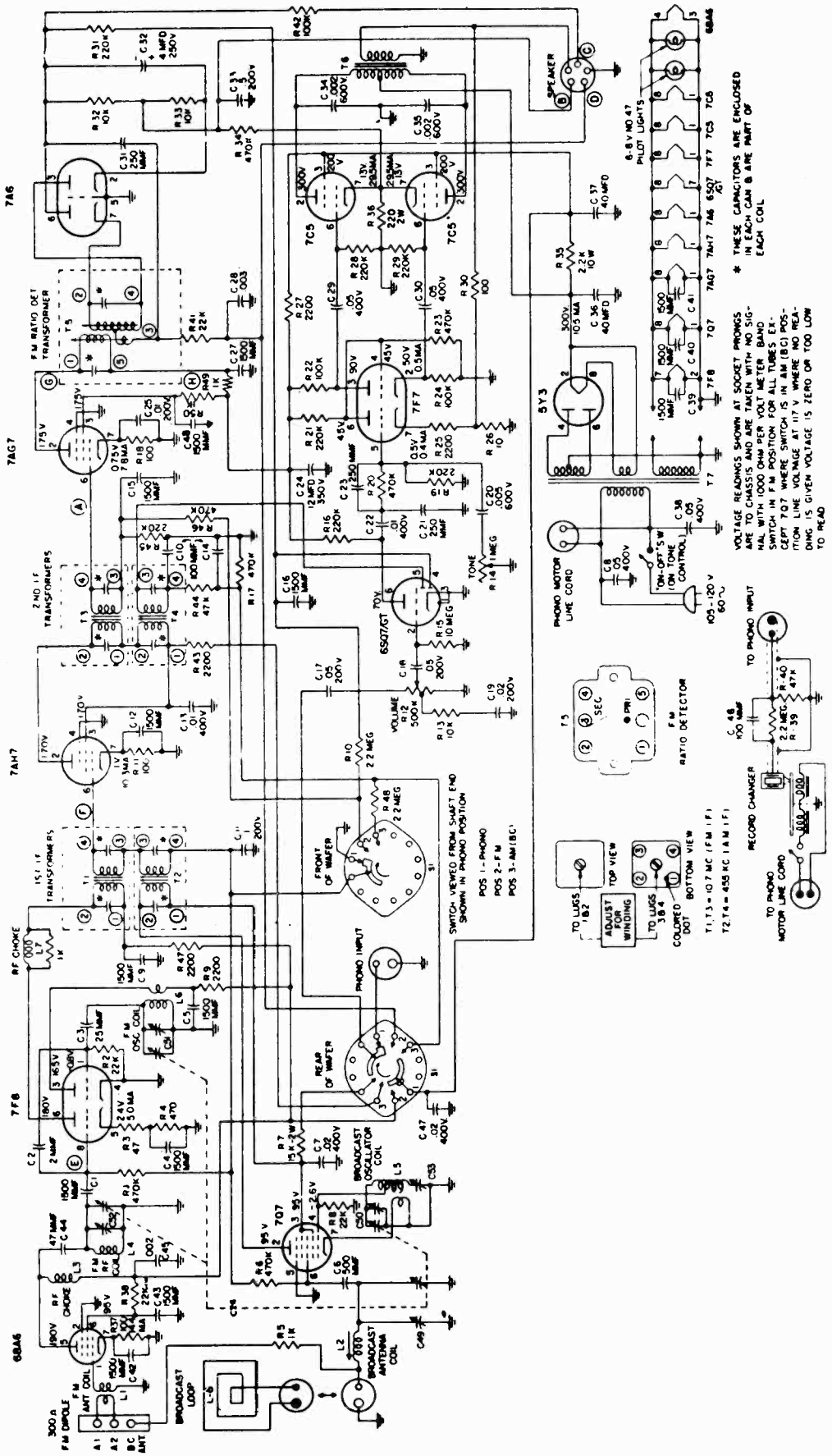
(G) Set Signal Generator to deliver a 104 M. C. unmodulated signal.

(H) Adjust 104 M. C. Antenna and R. F. Trimmers for MAXIMUM reading on Voltmeter.

It is somewhat helpful to hear the signal, so, if preferred, an AM modulation on the 108 M. C. and 104 M. C. signal frequencies may be used for alignment of the FM Oscillator, R. F. and Antenna circuits. With modulated or unmodulated signal, ALWAYS ADJUST FOR MAXIMUM READING ON VOLTMETER.

A FREQUENCY MODULATED SIGNAL GENERATOR may be used instead of an AM signal generator. When a Frequency Modulated Signal Generator is used, it is recommended that an unmodulated carrier be used for all of the above adjustments EXCEPT alignment of the Discriminator Secondary Trimmer. Use a frequency modulated signal (22.5 K. C. deviation) and align Discriminator Secondary for MAXIMUM AUDIO RESPONSE heard in speaker.

# ALLIED RADIO CORP. MODEL 11B-278, 11C-300






RECORD CHANGER: Seeburg Model K, RCD.CH.P.15-2

MODELS 11B-278, 11C-300 **ALLIED RADIO CORP.**

## ALIGNMENT PROCEDURE FOR A.M.:

Equipment Required:

a) Broadcast Band Signal Generator.
b) Output Meter.

1. Set band switch to AM. Advance volume control to full volume setting.
2. Connect output meter across voice coil.
3. Connect the Signal Generator across the broadcast band antenna section of the variable condenser. The "high" side of the Generator should connect to the stator section and the "ground" side to the frame or chassis. Adjust the Signal Generator to 455 kc and with the receiver switched on, adjust the first and second I.F. transformers for peak output as shown on the output meter. The signal injected into the receiver should be as small in magnitude as possible, consistent with a useful deflection on the output meter.
4. Connect the "high" side of the Generator to the antenna terminal with a 200 mmf condenser inserted in series. Connect the "ground" side of the Generator to the chassis. Tune receiver to 60 on the dial, adjust Signal Generator to 600 kc. Adjust the BC padder and the BC antenna coil for maximum deflection on the output meter. Use a weak signal.
5. Tune receiver to 160 on the dial. Adjust Signal Generator to 1600 kc. Adjust BC oscillator and BC antenna trimmers for maximum output.
6. Repeat operations 4 and 5

## ALIGNMENT PROCEDURE FOR F.M.:

*Note: Points A. B. C. D. E. F. G. and H are noted on circuit diagram.*

*Points B, C, and D have been brought out to the unused contacts of the speaker socket at the rear of the chassis.*

Equipment Required:

a) High frequency Signal Generator with 88-108 Mc tuning range.
b) Signal Generator capable of delivering .1 V at 10.7 mc.
c) Audio output meter.
d) D.C. vacuum tube voltmeter with zero center scale.

### a. Ratio Detector Alignment:

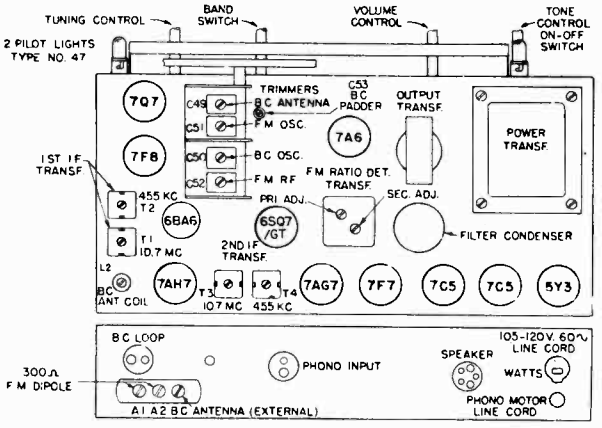
1. Connect V.T.V.M. across points "B" and "C" (A.V.C. Voltage).
2. Feed 10.7 mc unmodulated R.F. signal into 7AG7 grid (point A) through .01 µfd. condenser. This signal should be .1 volt.
3. Adjust primary of Ratio Detector (T-5) for maximum voltage indication on V.T.V.M.
4. Connect zero centered V.T.V.M. across points "B" and "D".
5. Adjust secondary of Ratio Detector (T-5) for zero indication.
6. Tune 10.7 mc Signal Generator higher in frequency (about 200 kc) until maximum voltage reading is obtained on V.T.V.M.; note this voltage, then tune signal generator lower in frequency until maximum voltage of the opposite polarity is obtained. Note this voltage, then if necessary re-adjust primary of the Det. (T-5) until the detector voltages are about equal on either the high or low side of 10.7 mc.

### b. 10.7 I.F. Alignment:

1. Shunt a 1,000-ohm carbon resistor across the primary of the detector (T-5) (Points G and H).
2. Connect output meter across speaker voice coil.
3. Volume and tone controls at maximum clockwise position.
4. Connect 10.7 mc (modulated 30% signal generator through .01 µfd. condenser across point "F" and ground.
5. Adjust secondary, then primary of (T-3) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
6. Connect 10.7 mc 30% modulated signal generator across point "E" and ground.
7. Adjust secondary, then primary of (T-1) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
8. Remove 1000-ohm shunting resistor from across primary of (T-5).

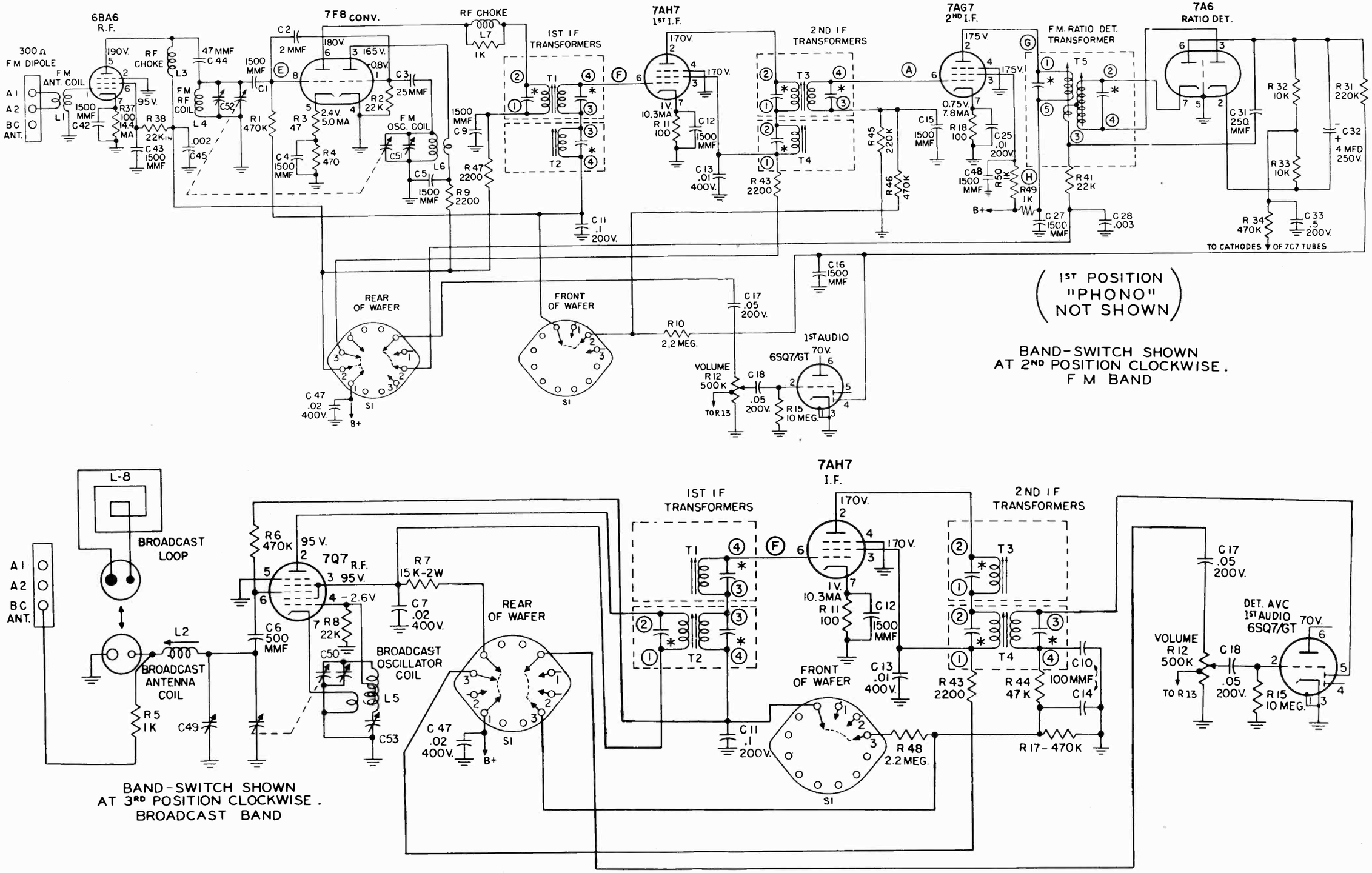
### c. Oscillator and R.F. Alignment:

1. Connect V.T.V.M. across "B" and "C" (A.V.C. voltage).
2. Connect 108 mc signal generator to FM antenna terminals. If generator impedance is low, put one 150-ohm carbon resistor in series with each of the generator leads. Tune receiver dial to 108 mc.
3. Adjust FM oscillator trimmer (C-51) for maximum V.T.V.M. reading.
4. Adjust FM R.F. trimmer (C-52) for maximum V.T.V.M. reading. During alignment reduce input signal to maintain A.V.C. voltage at 2 V.
5. Repeat steps 3 and 4.
6. Feed a 90 mc signal into antenna terminals (as in C-2), tune receiver dial to signal.
7. Adjust spacing of FM R.F. coil (L-4) for maximum V.T.V.M. reading at 90 mc. During alignment reduce input signal to maintain A.V.C voltage at 2 V.
8. Repeat steps 2 and 4 if necessary.



ALLIED RADIO CORP.

MODELS 11B-278, 11C-300



# ALLIED RADIO CORP. MODELS 11B-278, 11C-300

## PARTS LIST:

C 1—1,500 mmfd., ± 300 mmfd.
C 2—2 mmfd., 20%
C 3—25 mmfd., 10%
C 4—1,500 mmfd., ±300 mmfd.
C 5—1,500 mmfd., ±300 mmfd.
C 6—500 mmfd., 20%
C 7—.02 mfd., 400 V.
C 8—.05 mfd., 400 V.
C 9—1,500 mmfd., ±300 mmfd.
C10—100 mmfd., 20%
C11—.1 mfd., 200 V.
C12—1,500 mmfd., ±300 mmfd.
C13—.01 mfd., 400 V.
C14—100 mmfd., 20%
C15—1,500 mmfd., ±300 mmfd.
C16—1,500 mmfd., ±300 mmfd.
C17—.05 mfd., 200 V.
C18—.05 mfd., 200 V.
C19—.02 mfd., 200 V.
C20—.005 mfd., 600 V.
C21—250 mmfd., 20%
C22—.01 mfd., 400 V.
C23—250 mmfd., 20%
C24—12 mfd., 350 V.
C25—.01 mfd., 200 V.
C26—Var. cond. (AM-FM) *C-6.012
C27—1,500 mmfd., ±300 mmfd.
C28—.003 mfd., 20%
C29—.05 mfd., 400 V.
C30—.05 mfd., 400 V.
C31—250 mmfd., 20%
C32—4 mfd., 250 V.
C33—.5 mfd., 200 V.
C34—.002 mfd., 600 V.
C35—.002 mfd., 600 V.
C36 & C37—40 mfd. x 40 mfd., electrolytic, 400 V.
C38—.05 mfd., 400 V.
C39—1,500 mmfd., ±300 mmfd.
C40—1,500 mmfd., ±300 mmfd.
C41—1,500 mmfd., ±300 mmfd.
C42—1,500 mmfd., ±300 mmfd.
C43—1,500 mmfd., ±300 mmfd.
C44—47 mmfd., 10%
C45—.002 mfd., 400 V.
C46—100 mmfd., 20%
C47—.02 mfd., 400 V.
C48—1,500 mmfd., ±300 mmfd.
C49—Trimmer, compression, 3-35 mmfd.
C50—Trimmer, compression, 3-35 mmfd.
C51—Trimmer, ceramic, 1.5-7 mmfd.
C52—Trimmer, compression, 1.6-18 mmfd.
C53—Padder condenser, 275-1,000 mmfd.
R 1—470KΩ, ¼W., 20%
R 2—22KΩ, ¼W., 20%
R 3—47Ω, ¼W., 20%
R 4—470Ω, ¼W., 20%
R 5—1KΩ, ¼W., 20%
R 6—470KΩ, ¼W., 20%
R 7—15KΩ, 2W., 20%
R 8—22KΩ, ¼W., 20%
R 9—2,200Ω, ¼W., 20%
R10—2.2 Meg.Ω, ¼W., 20%
R11—100Ω, ¼W., 20%
R12—.5 Meg.Ω Volume Control (Audio Taper) tapped at 50KΩ *RA-9.069
R13—10KΩ, ¼W., 20%
R14—1 Meg.Ω Tone Control, with power switch *RA-9.070
R15—10 Meg.Ω, ¼W., 20%
R16—220KΩ, ¼W., 20%
R17—470KΩ, ¼W., 20%
R18—100Ω, ¼W., 20%
R19—220KΩ, ¼W., 20%
R20—470KΩ, ¼W., 20%
R21—220KΩ, ¼W., 20%
R22—100KΩ, ¼W., 20%
R23—470KΩ, ¼W., 20%
R24—100KΩ, ¼W., 20%
R25—2,200Ω, ¼W., 20%
R26—10Ω, ¼W., 20%
R27—2,200Ω, ¼W., 20%
R28—220KΩ, ¼W., 20%
R29—220KΩ, ¼W., 20%
R30—100Ω, ¼W., 20%
R31—220KΩ, ¼W., 20%
R32—10KΩ, ¼W., 20%
R33—10KΩ, ¼W., 20%
R34—470KΩ, ¼W., 20%
R35—2,200Ω, 10W., wirewound, 10%
R36—220Ω, 2W., 20%
R37—100Ω, ¼W., 20%
R38—22KΩ, 1W., 20%
R39—2.2 Meg.Ω, ¼W., 20%
R40—47KΩ, ¼W., 20%
R41—22KΩ, ¼W., 20%
R42—100KΩ, ¼W., 20%
R43—2,200Ω, ¼W., 20%
R44—47KΩ, ¼W., 20%
R45—220KΩ, ¼W., 20%
R46—470KΩ, ¼W., 20%
R47—2,200Ω, ¼W., 20%
R48—2.2 Meg.Ω, ¼W., 20%
R49—1KΩ, ¼W., 20%
R50—1KΩ, ¼W., 20%
T 1—FM I.F. Trans., 10.7 Mc. *ZB-2.276
T 2—AM I.F. Trans., 455 Kc. *ZB-2.275
T 3—FM I.F. Trans., 10.7 Mc. *ZB-2.276
T 4—AM I.F. Trans., 455 Kc. *ZB-2.275
T 5—FM Ratio Detector Transformer, 10.7 Mc. *ZC-2.278
T 6—Output Trans. *ZB-15.019
T 7—Power Trans. *TA-18.053
S 1—Band Switch *SA-12.060
L 1—FM Antenna Coil *LA-2.241
L 2—Antenna Coil, Broadcast *LA-2.273
L 3—R.F. Plate Choke *LA-2.279
L 4—R.F. Coil, FM *LA-2.243
L 5—Oscillator Coil, Broadcast *LA-2.221
L 6—Oscillator Coil, FM *LA-2.222
L 7—R.F. Choke, Conv. Plate *LA-2.242
L 8—Loop, Broadcast *LC-5.018
Antenna, FM, Folded Dipole (300Ω) *LA-5.010
Pilot Lamp, No. 47, 6-8 V

Part No. NG-500

* Mfg. Part. No.

### FAILURE OF THE RECEIVER TO OPERATE MAY BE DUE TO:

1. No current at power socket.
2. Tubes not firmly in sockets.
3. Defective tube.
4. Band switch in wrong position.
5. Low signal strength in the particular location. Change position (rotate) of loop or "folded dipole" antenna, or use an outside antenna.

### Tube Complement:

1 Type 6BA6—FM RF Amplifier.
1 Type 7F8—FM Mixer, oscillator.
1 Type 7AH7—1st IF Amplifier.
1 Type 7AG7—FM Detector Driver.
1 Type 7A6—FM Detector.
1 Type 6SQ7/GT—AM Det., A.V.C. and 1st Audio Ampplifier.
1 Type 7F7—2nd Audio, Phase Inverter.
2 Type 7C5—Push-pull Power Amplifiers.
1 Type 5Y3—Rectifier.
1 Type 7Q7—AM Mixer Oscillator.

### Power:

This receiver operates on 105-125 volts, 60 cycle, AC. Do not plug this radio receiver into a direct current socket. Power consumption is 80 watts.

### DESCRIPTION:

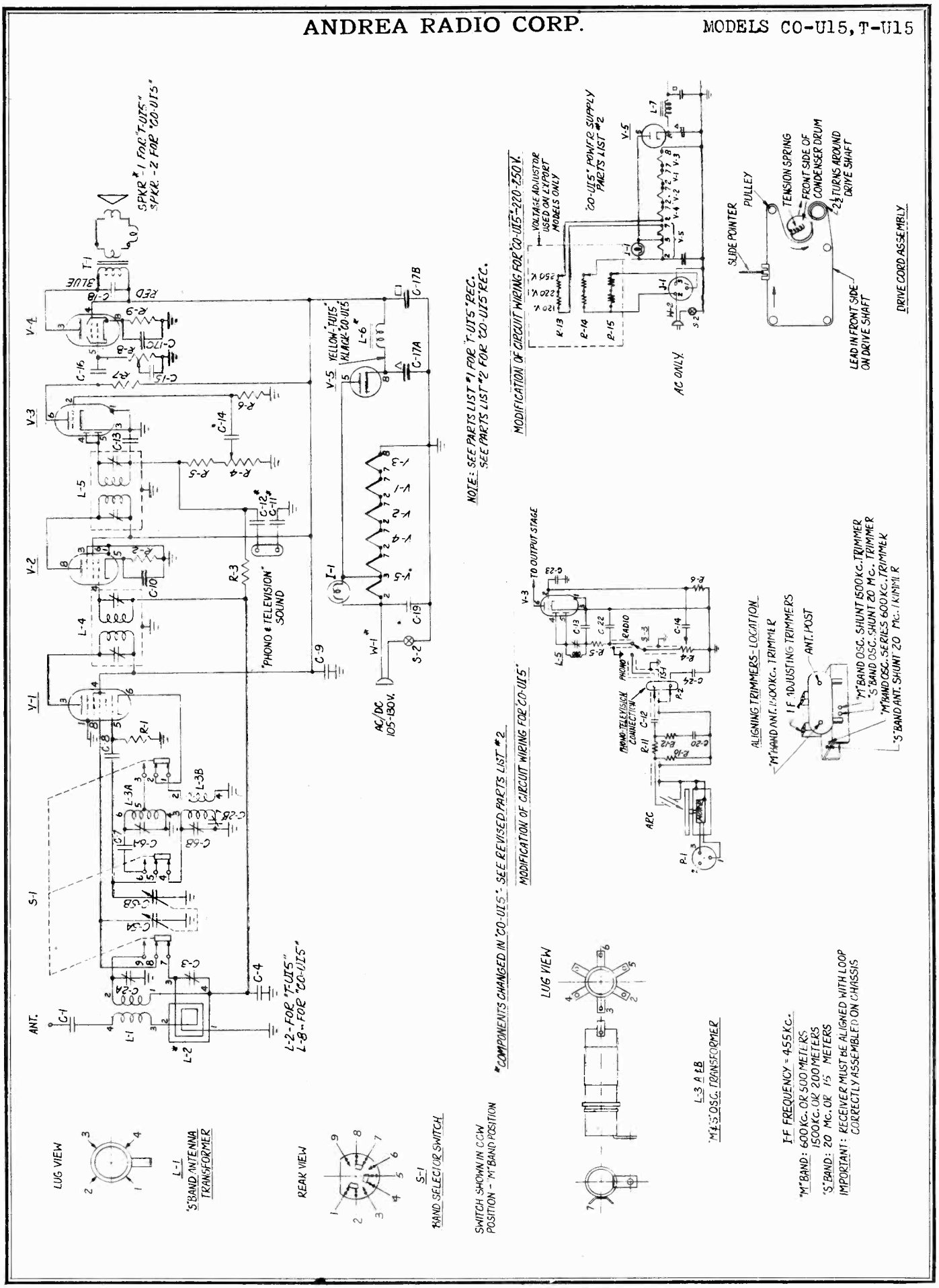
This receiver features the latest in post-war engineering design. It employs 10 tubes plus a rectifier in an AM-FM superheterodyne circuit. Four of the tubes are the dual-purpose type giving the set 15-tube performance. The tuning ranges are:

A.M. — 540 Kc. to 1700 Kc.
F. M. — 88 Mc. to 108 Mc.

The receiver has two built in antennas; a loop antenna for the AM broadcast band and a folded dipole for the FM broadcast band. Provisions are made for external antenna connections. The easy-to-read "slide-rule" type dial is illuminated when the set is on; a dial pointer of red plastic reflects illumination from the two pilot lights. A high ratio drive on the tuning condenser provides smooth tuning. High Fidelity reproduction on FM and AM is the result of well-engineered circuits and the use of high quality parts.

# ANDREA RADIO CORP.

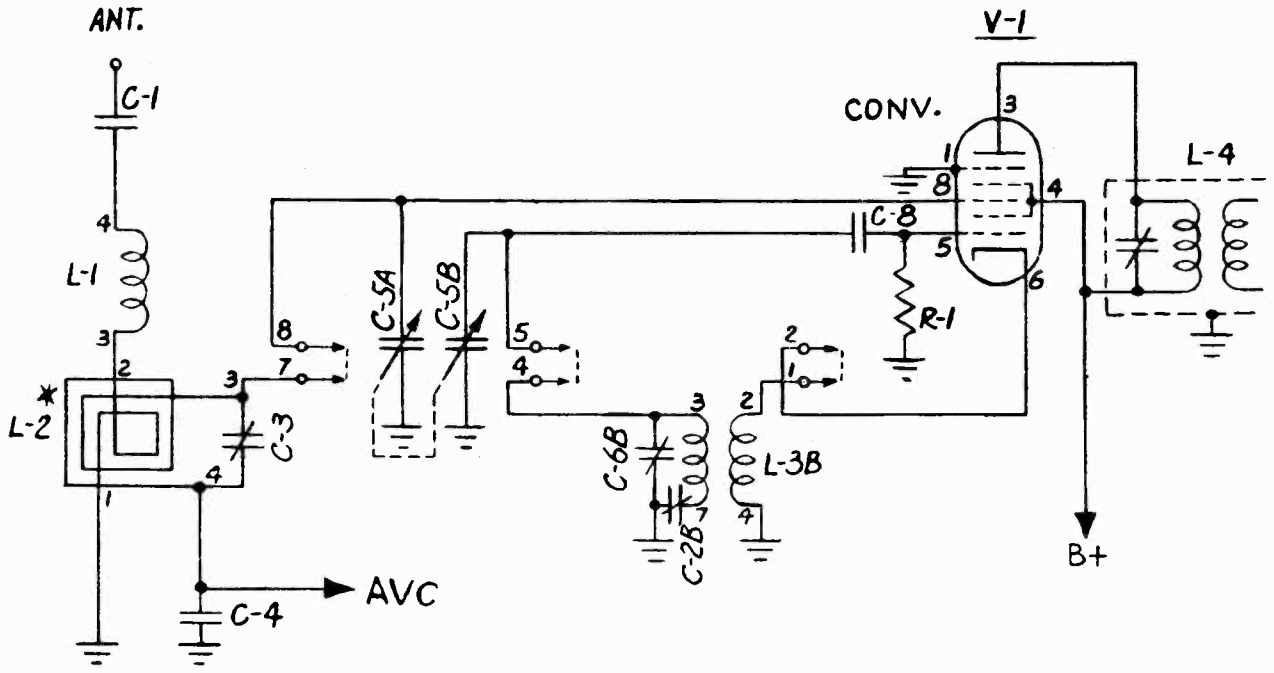
MODELS CO-U15, T-U15





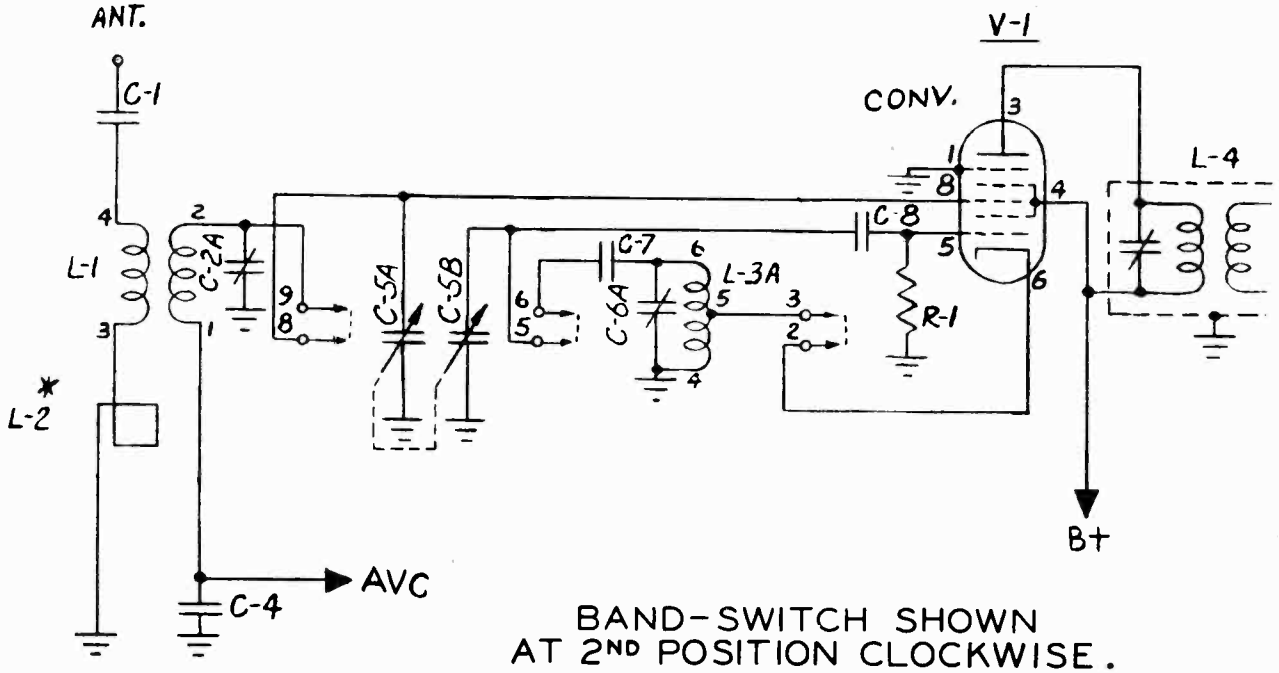

RECORD CHANGER: Oak Model 6666, RCD. CH. 15-1

MODELS CO-U15, T-U15 ANDREA RADIO CORP.




L-2 - FOR "T-U15"
L-8 - FOR "CO-U15"

BAND-SWITCH SHOWN AT 1ST POSITION. M BAND




L-2 - FOR "T-U15"
L-8 - FOR "CO-U15"

BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. S BAND

ANDREA RADIO CORP. MODELS CO-U15,T-U15

MODEL T-UI5
FOR OPERATION ON AC OR DC
105-130 VOLTS 40/60 CYCLES
FOR 220 VOLTS USE ADAPTOR PART NO. EM-729
FOR 250 VOLTS USE ADAPTOR PART NO. EM-730

MODEL CO-UI5
FOR OPERATION ON AC ONLY
DOMESTIC MODEL: 105-130 VOLTS 60 CYCLES
EXPORT MODEL: 105-130, 210-240, 240-260 VOLTS 60 CYCLES

## SERVICE INSTRUCTIONS

WARNING: Always remove the line plug from the electric outlet before removing the chassis from the cabinet. Also, connect the speaker to the receiver speaker cable before switching on the power. Otherwise, damage will result.

I.F. REALIGNMENT GENERALLY SUFFICIENT: As a rule, it is not necessary to readjust the short wave oscillator and antenna shunt trimmers unless they have been tampered with, or require replacing. Consequently, careful realignment of the I.F. system is all that requires attention, ordinarily. Before making any adjustments, tune in one particular station and note the quality of reception so that you can check the improvement after the I.F. system has been realigned.

USE SIGNAL GENERATOR AND OUTPUT VOLTMETER: For realigning, use a signal generator to supply a modulated carrier of 455, 600, 1,500, and 20,000 Kilocycles, plus an output voltmeter. Alignment by any other means is not recommended. Your service test generator should be checked frequently for changes in calibration by obtaining a zero beat between the generator and broadcast stations of known frequency.

SPECIAL NOTES: Before proceeding to align the antenna and oscillator circuits bear in mind that these circuits control the accuracy of the main tuning dial calibration, particularly the oscillator trimmers. As the main dial is a part of the cabinet, servicing of the chassis can be made without the use of this dial by using the reference alignment scale 0 to 100 divisions attached permanently to the gang condenser drive drum. The table below indicates the reference dial for the required alignment frequencies. You will note that the chassis contains a self-tapping screw located just below the gang condenser drum, the purpose of which, is to enable you to wrap a piece of bare wire and thereby form a pointer to the reference scale. Set the pointer at the 100 marking on the reference scale with the gang condenser plates fully meshed (all capacity in) after which rotate the drum to the correct reference setting for proper circuit alignment and proceed in accordance with the Band Alignment instruction. Remove reference pointer from chassis before installing in cabinet.

| ALIGNMENT FREQ. KC. | REFERENCE DIAL SETTING | BAND | |
|---|---|---|---|
| 1,500 | 12.5 | Medium Wave | Broadcast |
| 600 | 83.5 | Medium Wave | Broadcast |
| 20,000 | 10 | | Short Wave |

NOTES ON REALIGNING THE BANDS: During the aligning measurements, the output of the signal generator must be kept low so that it will not cause the AVC circuit in the set to function In other words, when the volume control on the set is turned to maximum, the output should not show more than .5 volts across the voice coil, or 50 milliwatts in the plate circuit of the output tube.

Generally, at frequencies above 7,000 Kilocycles, the signal generator frequency will change with each adjustment of the generator output attenuator control. Hence, retune the receiver each time the attenuator is adjusted.

Some generators cause trouble by direct radiation to the set at frequencies above 8 mc. Experience indicates that more accurate alignment is possible when the generator is separated by several feet from the receiver under test.

MODELS CO-U15,T-U15 ANDREA RADIO CORP

**CAUTION:** The Loop for Model CO-UI5 is attached to the cabinet rear. When other than I.F. alignment is required, both the Loop and chassis must be removed from the cabinet. Bear in mind that alignment must be carried out with the Loop placed the same distance away from the chassis as when installed in the cabinet, also that the Loop is not in the field of metal parts or shielding which will upset alignment conditions.

## ALIGNMENT INSTRUCTIONS

### 455 Kilocycles I.F. Alignment

Connect the high potential lead of the signal generator in series with a .1 mfd. capacitor to the modulator grid of the 12SA7 Pin #8 or to the stator of the mixer section on the gang condenser (rear section). Connect the low side of the signal generator in series with a .1 mfd. 400 volt condenser to the chassis. Set the signal generator to 455 Kilocycles, adjust output until a small deflection is noted on the output meter, adjust dual trimmer condensers (see circuit diagram for location) on top of lst and 2nd I.F. transformers for maximum deflection on the output meter. The I.F. system is now aligned, disconnect the generator from the receiver.

## SHORT WAVE BAND ALIGNMENT

Connect the high potential lead from the generator in series with a 400 ohm resistor to the antenna terminal on the loop, and the low side of the generator in series with a .1 mfd. 400 volt condenser to the receiver chassis. WARNING: If the condenser is not used damage may result, turn the wave band switch to the short wave position, set the generator to 20,000 KC. and the receiver reference scale to 10 (equal to 20,000 KC. alignment). Vary the short wave band oscillator shunt trimmer slowly from maximum to minimum. You will hear the signal at two settings of the trimmer, one nearer the minimum capacity (plates open) and one near the maximum (plates closed). The setting near the minimum capacity is correct as the other setting near maximum capacity is the image frequency. Proceed to adjust the antenna shunt trimmer. Be sure to rock the gang condenser back and forth slowly each time you make an adjustment to the antenna shunt trimmer. As you continue this, you will reach a point where further turning of the trimmer while rocking the gang condenser will not increase the signal response. This is the correct adjustment.

A simple method of determining if the receiver and generator are tuned for correct alignment is as follows: Set the signal generator at 20,000 Kilocycles and tune the receiver slowly from 19,000 to 20,000 KC. Two signals should be heard 910 KC. apart. One will be lower in frequency than 20,000 KC. and the other on 20,000 KC. The higher frequency as indicated on the dial is the correct aligning frequency and the lower one is the image. As a further check, leave the receiver tuned to the higher frequency. Very slowly increase the generator frequency from 20,000 KC. to about 22,000 KC. A signal will be heard about 21,000 KC., if this band is correctly aligned. If there is no signal, the original settings were on the image frequency. In that case, you must start again from the beginning, in order to be sure of accurate results.

After you have found the correct settings, the image or lower frequency response on the receiver will always sound weaker than the true signal.

## BROADCAST BAND ALIGNMENT

Replace the 400 ohm resistor in the generator lead with a .00025 mfd. condenser (250 mmfd. Set the generator at 1,500 KC. Turn the wave band switch left to the Broadcast position, and set the reference dial at 12.5 (1,500 KC.). Adjust the Broadcast Band oscillator shunt trimmer and the Broadcast Band antenna trimmer for maximum response.

This band must be aligned at 600 KC. also. Set signal generator to 600 KC. and tune the receiver to 600 KC., (approximately 83.5 on the reference scale). Adjust the broadcast band oscillator series trimmer for maximum response. During this adjustment, be sure to rock the gang condenser for each small change of capacity of the series trimmer. When this adjustment has been completed, recheck the adjustments at 1,500 KC. This completes the adjustment of the Broadcast Band.

ANDREA RADIO CORP MODELS CO-U15,T-U15

After installing the chassis in the cabinet, turn the tuning knob until the gang condenser plates are completely meshed. Then slide pointer along cord (without opening gang) until the center of the pointer is over the last diamond marking on the left side of the short wave scale. When the above is followed correctly along with the method of alignment, the pointer will match the correct scale calibration throughout.

| | | |
|---|---|---|
| TUBES: | 12SA7 | Converter |
| | 12SK7 | I.F. Amplifier |
| | 12SQ7 | 2nd Detector, AVC and 1st Audio Amplifier |
| | 50L6GT | Beam Power Output |
| | 35Z5GT | Rectifier |

IMPORTANT: If you find it necessary to replace any part in this receiver, bear this in mind. In order to maintain the high performance standards of Andrea Radio receivers, the component parts on all Andrea models are held to exceedingly close tolerance limits. Furthermore, Andrea components are given the exclusive "Climate Sealed" treatment which protects them from all weather and temperature conditions. Consequently, standard Andrea Radio replacement parts must be used for all service work, for the substitution of ordinary stock items will result in inferior performance.

Voltage readings at 120 Volts AC input using 1,000 ohms per volt meter:

| TUBE | PIN 1 | PIN 2 | PIN 3 | PIN 4 | PIN 5 | PIN 6 | PIN 7 | PIN 8 |
|---|---|---|---|---|---|---|---|---|
| 12SA7 | | 12 AC | ∠ 95 | ∠ 95 | - 3.2 | | 24.8 AC | |
| 12SK7 | | 38 AC | | | ∠ 1.6 | ∠ 95 | 24.8 AC | ∠ 95 |
| 12SQ7 | | - .2 | | | | ∠ 44 | 12 AC | |
| 50L6GT | | 88 AC | ∠ 90 | ∠ 95 | | | 38 AC | ∠ 6.2 |
| 35Z5GT | | 120 AC | 113 AC | | 113 AC | ∠ 95 | 88 AC | ∠ 120 |

GENERAL EXPORT NOTES

LINE VOLTAGE ADJUSTER: Andrea Model CO-UI5 Export Combination Radio-Phonograph leaves the factory connected for 240-260 volts, 60 cycles. To change to lower voltages, the voltage adjustor connection must be changed as shown on rear of cabinet. Remove power line cord from electric outlet. Remove four (4) screws fastening metal Screen to cabinet rear. Adjustor may then be changed as required. Be certain all screw connectors are tight. Refasten Screen to cabinet back. When in use for several days retighten.

50 CYCLE OPERATION: As the Phono motor is of the synchronous type, the record turntable speed must be readjusted for 50 cycle power lines. In such cases, an Andrea 50 cycle pulley and set screw, Part No. FM-5068-69, is supplied. To change from 60 cycle, remove turntable from spindle by pulling upward on both sides of turntable. This will expose turntable drive motor. With a small screw driver, loosen pulley set screw sufficiently to pull off 60 cycle drive pulley and replace with 50 cycle pulley. Be certain to tighten pulley set screw securely. Replace turntable over spindle and press in large turntable drive wheel of motor to engage inside of turntable rim.

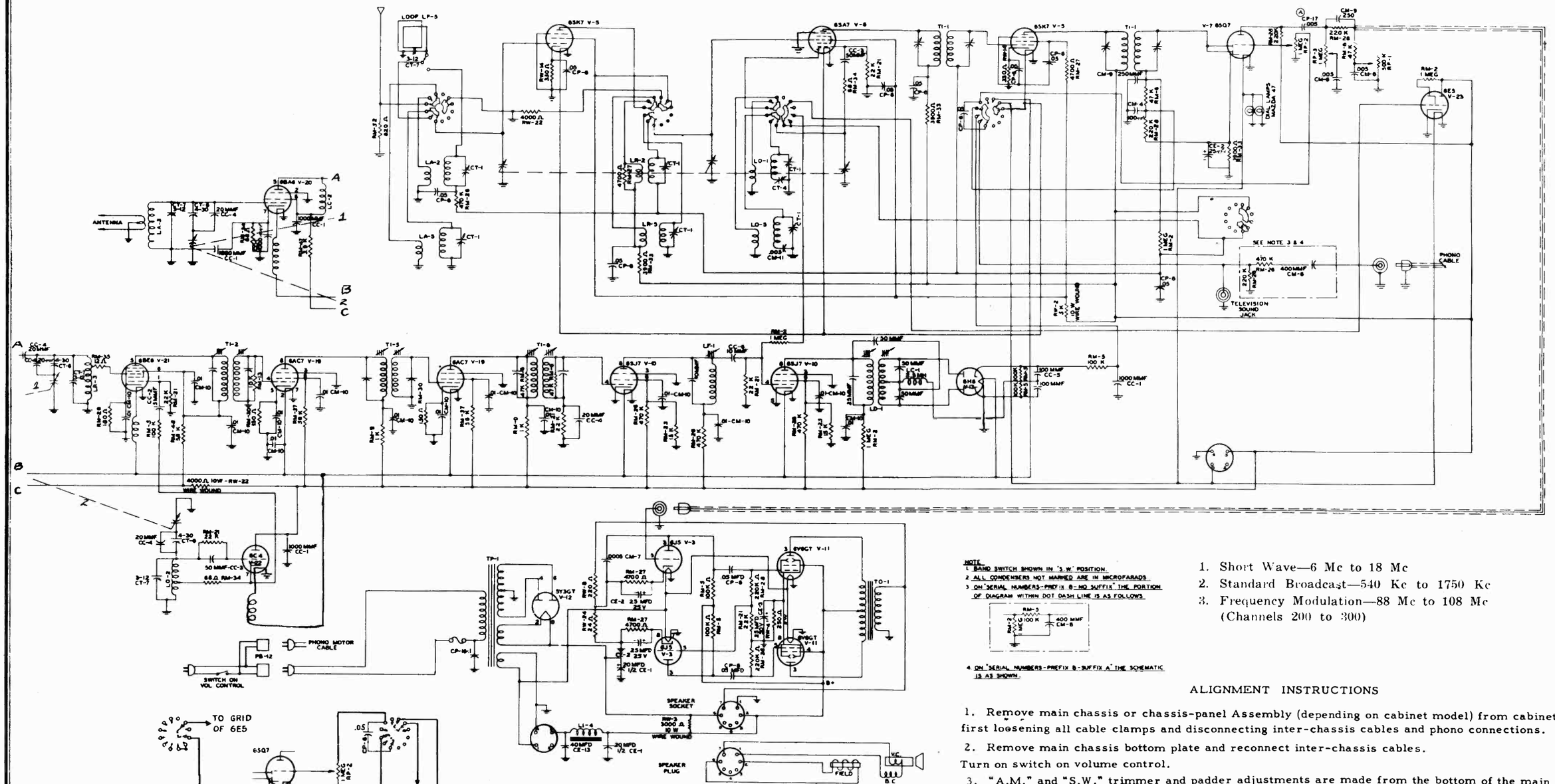
| REF. | DESCRIPTION | PART NO. |
|---|---|---|
| C-1 | 0.01mmf 20%-400V.TUB.CAP.-MTD.ON L-2 | HC-32 |
| C-2A | TRIMMER SECTION1 OPER. 21mmf | FM-918 |
| C-2B | TRIMMER SECTION2 OPER. 585mmf | FM-918 |
| C-3 | SEE L-2 | |
| C-4 | 0.05mf 20%-200V.-TUB.CAP. | EC-6 |
| C-5A | TUNING CAP ANT.SECT.12.6mf-530mmf | FM-897 |
| C-5B | TUNING CAP OSC.SECT.12.6mmf-530mmf | FM-897 |
| C-6A | TRIMMER SECT.1 OPER. 21mmf | HC-738 |
| C-6B | TRIMMER SECT.2 OPER. 21mmf | HC-738 |
| C-7 | 3500mmf 3%-500V.-MOLD.MICA CAP. | HC-105 |
| C-8 | 100mmf 20%-500V. " " " | HC-93 |
| C-9 | 0.25mf 20%-200V.-TUB.CAP. | HC-19 |
| C-10 | 0.01mf 20%-200V.- " " | HC-9 |
| C-11 | 0.05mf 20% " " " | HC-6 |
| C-12 | 0.01mf 20% " " " | HC-9 |
| C-13 | 170mmf 10%-500V.-MOID.MICA CAP. | HC-95 |
| C-14 | 0.003mf 20%-200V.-TUB.CAP. | HC-20 |
| C-15 | " " " " " | HC-20 |
| C-16 | 0.05mf 20%-200V.- " " | HC-6 |
| C-17A | 40mf -150V.) | |
| C-17B | 60mf -150V.) ELECTROLYTIC-DRY | HC-198 |
| C-17C | 20mf -25V ) | |
| C-18 | 0.025mf 20%-600V.-TUB.CAP. | HC-192 |
| C-19 | 0.1mf 20%-400V.- " " | HC-4 |
| L-1 | "S"BAND ANT. TRANSFORMER | SA-257 |
| L-2 | "M"BAND LOOP ANT. TRANSFORMER | SA-276 |
| L-3A | "S"BAND OSC. TRANSFORMER | SA-274 |
| L-3B | "M" " " " | SA-274 |
| L-4 | MODULATOR I-F TRANSFORMER | SA-204A |
| L-5 | DIODE " " | SA-205D |
| L-6 | 4000HM SPEAKER FIELD CHOKE | FM-915 |
| R-1 | 20K OHM 10%-$\frac{1}{4}$W-CARBON | GR-28 |
| R-2 | 150 OHM 10%-$\frac{1}{2}$W-CARBON | GR-112 |
| R-3 | 2M OHM 20%-$\frac{1}{4}$W-CARBON | GR-23 |
| R-4 | 1M OHM POTENTIOMETER, VOL. CONTROL WITH S-2 | GRV-804 |

| REF. | DESCRIPTION | PART NO. |
|---|---|---|
| R-5 | 100K OHM 20%-$\frac{1}{4}$W-CARBON | GR-7 |
| R-6 | 5M OHM 20%-$\frac{1}{4}$W-CARBON | GR-111 |
| R-7 | 240K OHM 20%-$\frac{1}{4}$W-CARBON | GR-46 |
| R-8 | $\frac{1}{2}$M OHM POTENTIOMETER, TONE CONTROL | GRY-805 |
| R-9 | 150 OHM 10%-$\frac{1}{2}$W-CARBON | GR-112 |
| S-1 | BAND SELECTOR SWITCH-3POLE-2POSITION | FM-5044 |
| S-2 | ON-OFF SWITCH ON REAR OF R-4 | GRV-804 |
| T-1 | OUTPUT TRANSFORMER-MTED. ON SPEAKER | FM-915 |
| V-1 | 12SA7-CONVERTER | 12SA7 |
| V-2 | 12SK7-I-F AMP. | 12SK7 |
| V-3 | 12SQ7-2nd.DET., A.V.C., 1st AUDIO | 12SQ7 |
| V-4 | 50L6GT-OUTPUT | 50L6GT |
| V-5 | 35Z5GT-RECTIFIER | 35Z5GT |
| W-1 | LINE CORD | FM-502 |
| I-1 | PILOT LIGHT | FM-696 |
| SPKR.-1 | 5" DYNAMIC SPEAKER MODEL CO-U15 | FM-918 |
| C-12 | SAME. RELOCATED ON EQUALIZER | |
| C-20 | 2000mmf 20%-500V.-MOLD. MICA CAP. | HCM-1606 |
| C-22 | 170mmf 10%-500V.-MOID. MICA CAP. | HC-95 |
| C-23 | 100mmf 20%-500V.-MOLD. MICA CAP. | HC-93 |
| C-24 | 0.25mf 20%-200V.-TUB.CAP. | HC-19 |
| L-7 | FILTER CHOKE | ST-3003 |
| L-8 | LOOP ANTENNA | SA-277 |
| R-10 | 240K OHM 20%-$\frac{1}{4}$W.-CARBON | GR-46 |
| R-11 | 300K OHM 20%-$\frac{1}{4}$W.-CARBON | GRC-244 |
| R-12 | 100K OHM 20%-$\frac{1}{4}$W.-CARBON | GR-7 |
| R-13 | 185 OHM 10%-TAP AT 150 OHM 10%-WIRE-20W. | GRW-507 |
| R-14 | 390 OHM 10%-TAP AT 290 OHM 10%-WIRE-50W. | GRW-505 |
| R-15 | 615 OHM 10%-TAP AT 460 OHM 10%-WIRE-50W. | GRW-506 |
| S-3 | RADIO-PHONO SWITCH | FM-5046 |
| T-1 | OUTPUT TRANSFORMER-MTD. ON SPEAKER | SL-4002 |
| W-2 | LINE CORD | FM-502-8 |
| P-1 | PHONO POWER PLUG | FM-5055 |
| P-2 | PHONO TIP PLUG | FM-5051 |
| SPKR-2 | 5" PM SPEAKER HUM BUCKING COIL SHOWN ON DIAGRAM OMITTED | SL-4002 |
| J-1 | PHONO POWER SOCKET | FM-642 |
| TS-1 | PHONO-TELEVISION TERMINAL STRIP | FM-708 |
| ARC | AUTOMATIC RECORD CHANGER | FM-5050 |

R11 WAS 1.5M OHM
CZ1 REMOVED

# ANSLEY RADIO CORP.

MODEL 53




NOTE
1. BAND SWITCH SHOWN IN "3 W" POSITION.
2. ALL CONDENSERS NOT MARKED ARE IN MICROFARADS
3. ON "SERIAL NUMBERS-PREFIX B-NO SUFFIX" THE PORTION OF DIAGRAM WITHIN DOT DASH LINE IS AS FOLLOWS



4. ON "SERIAL NUMBERS-PREFIX B-SUFFIX A" THE SCHEMATIC IS AS SHOWN.

1. Short Wave—6 Mc to 18 Mc
2. Standard Broadcast—540 Kc to 1750 Kc
3. Frequency Modulation—88 Mc to 108 Mc (Channels 200 to 300)

## ALIGNMENT INSTRUCTIONS

1. Remove main chassis or chassis-panel Assembly (depending on cabinet model) from cabinet, first loosening all cable clamps and disconnecting inter-chassis cables and phono connections.

2. Remove main chassis bottom plate and reconnect inter-chassis cables. Turn on switch on volume control.

3. "A.M." and "S.W." trimmer and padder adjustments are made from the bottom of the main chassis. All trimmers for "A.M." and "S.W." bands are mounted on top of the coil forms (six in number) with the exception of the "A.M." loop trimmer which is mounted directly on the loop itself. When adjusting the loop trimmer, the "ANT.-LOOP" switch must be in "LOOP" position. F.M. trimmers and padders are reached through the holes in the top of the small chassis which is attached to the tuning condenser. All I.F. adjustments are made from the top of the main chassis.

4. Align according to the table below. Make sure the dial pointer is set at the absolute left end of the scale when the tuning condenser is fully closed. Use insulated screwdriver for all padder and F.M. discriminator adjustments.

5. Make sure that the heavy braid connected between the two chassis is tightly fastened when the set is reinstalled. Failure to do this will result in excessive hum.

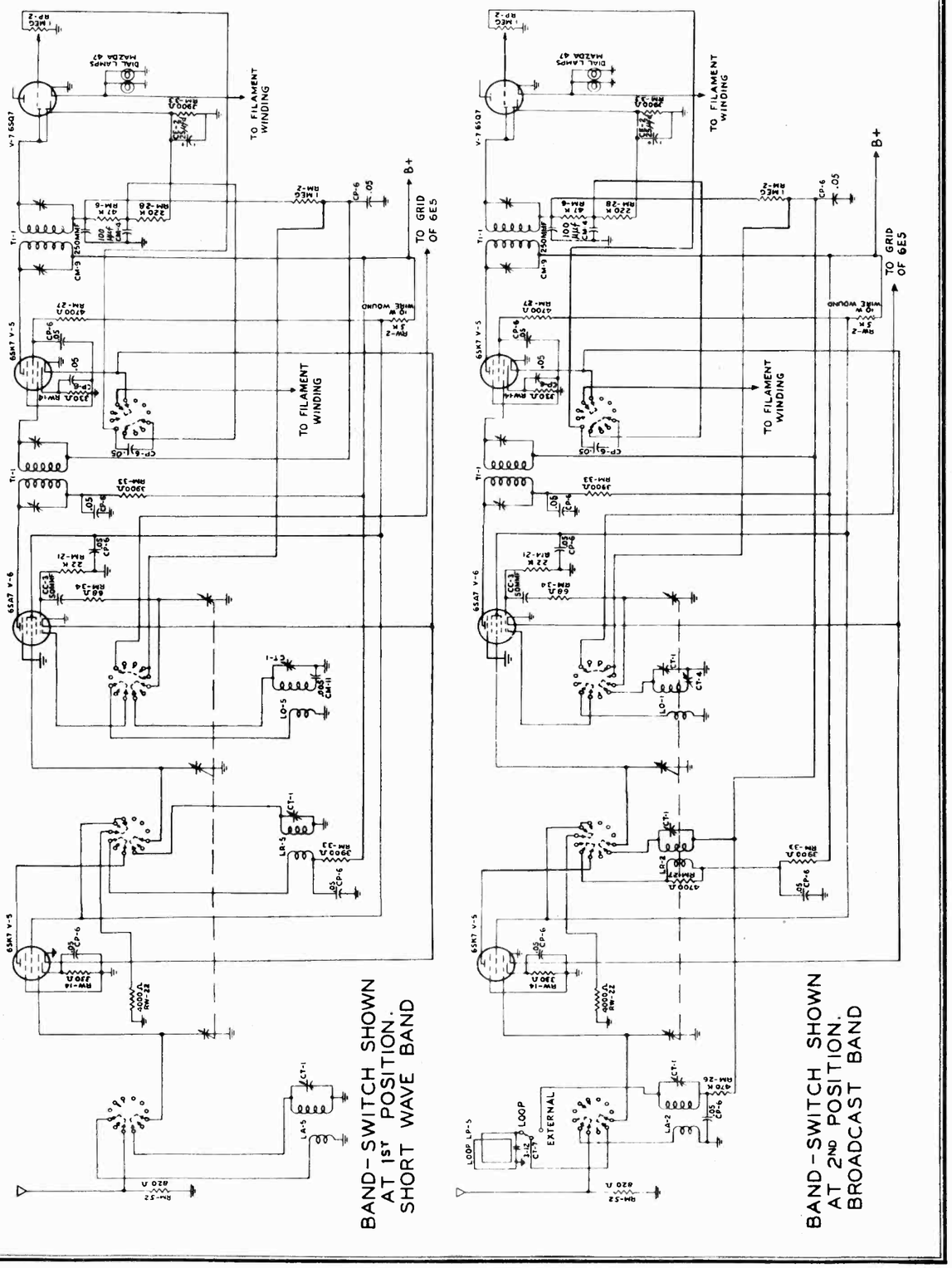
6. If there is still appreciable hum when the volume control is turned up, reverse the power cable plug (audio chassis to main chassis).

7. Before aligning the F.M. circuits, allow the set to warm up for at least twenty minutes with the band switch on "F.M." position.

8. When replacing the type 6SQ7 tube, use a metal envelope type tube to insure low hum output.

## ANSLEY RADIO CORP.

MODEL 53





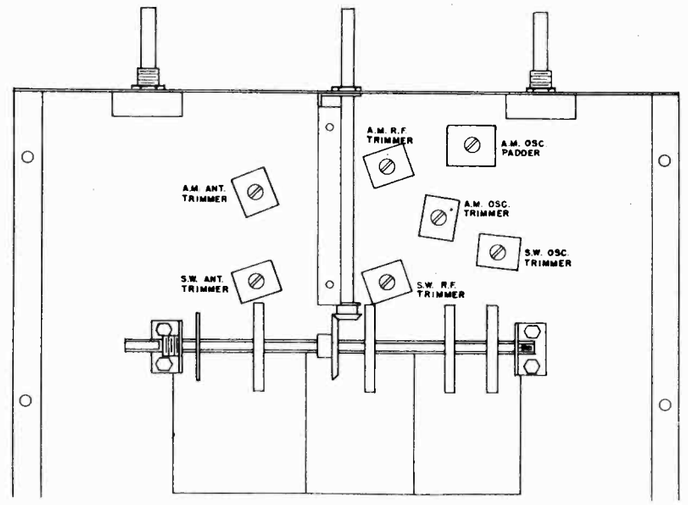



MODEL 53

## ANSLEY RADIO CORP.

| DUMMY ANT. | SIG. GEN. CONNECTION | SIG. GEN. FREQ. | BAND SWITCH POSITION | TUNING POINT | OUTPUT METER | OUTPUT METER CONNECTION | REMARKS |
|---|---|---|---|---|---|---|---|
| .05 mf. | 6SK7 I.F. Grid | 455 KC (Mod. 400 Cy.) | "A.M." | 2nd I.F.T. A.M. | A.C. | Spk'r. Voice Coil | Set volume, bass, and treble controls fully clockwise. Set signal generator output no higher than necessary for output reading. Adjust for maximum output. |
| " | 6SA7 Grid No. 3 | " | " | 1st I.F.T. A.M. | " | " | " |
| " | 6SK7 R.F. Grid | 1600 KC. Mod. | " | A.M. Osc. Trimmer | " | " | Set dial pointer to 1600 Kc. |
| " | " | " | " | A.M. R.F. Trimmer | " | " | " |
| R.M.A. St'd. | A.M. Ant. Term. | " | " | A.M. ANT. Trimmer | " | " | " |
| " | " | 600 KC. Mod. | " | A.M. Osc. Padder | " | " | Set dial pointer to 600 Kc. Adjust for maximum output. Recheck A.M. Osc. trimmer at 1600 KC. |
| .05 mf. | 6SK7 R.F. Grid | 12 MC. Mod. | "S.W." | S.W. Osc. Trimmer | " | " | Set dial pointer at 12.0 Mc. Adjust for maximum output. |
| .05 mf. | " | " | " | S.W. R.F. Trimmer | " | " | " |
| 400 ohm. | A.M. Ant. Term. | " | " | S.W. Ant. Trim. | " | " | " |
| — | Loop | 1600 KC. Mod. | "A.M." | Loop Trimmer | " | " | Couple sig. gen. to loop with 2 turns of wire - adjust for maximum output. (Dial pointer at 1600 Kc.) |
| Direct | 6AC7 (2nd F.M. I.F.) Grid | 10.7 MC. No. Mod. | "F.M." | 3rd I.F.T. F.M. | High Res. D.C. V.T.V.M. | Connect Thru 1 meg. Res. to 1st lim. Grid Resistor | Shunt both sides of 3rd I.F. Trans. with 22000 OHMS. Use only enough sig. gen. input for adequate meter indication. Leave 22000 ohm shunts on after aligning. Adjust for max. output. |
| " | 6AC7 (1st F.M. I.F.) Grid | " | " | 2nd I.F.T. F.M. | " | " | Shunt 2nd I.F. trans. same as in previous step. Use only enough input for usable meter indication. |
| " | " | " | " | 1st Lim. Plate peaking coil | " | Connect to 1 megohm resistor from 2nd lim. grid | Adjust for max. output. Use only enough input for usable meter indication. |

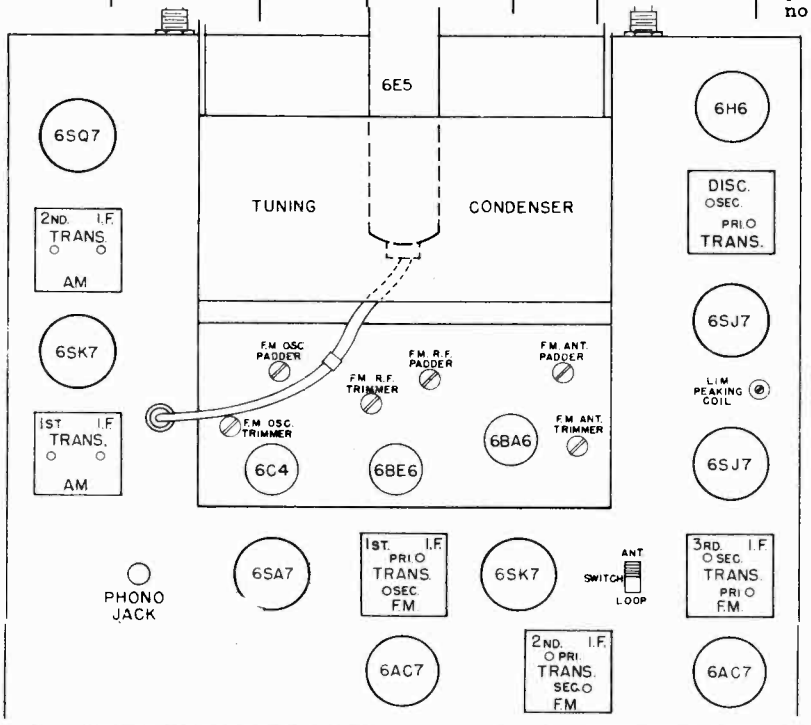
BOTTOM VIEW OF MAIN CHASSIS



# ANSLEY RADIO CORP.

MODEL 53

| DUMMY ANT. | SIG. GEN. CONNECTION | SIG. GEN. FREQ. | BAND SWITCH POS. | TUNING POINT | OUT-PUT METER | OUTPUT METER CONNECTION | REMARKS |
|---|---|---|---|---|---|---|---|
| " | " | " | " | Disc. Primary | " | Connect to mid-point of 6H6 100,000 ohm Cathode resistors | Adjust for max. output with min. input from signal gen. |
| " | " | " | " | Disc. Second-ary | " | Connect to 100,000 ohm re-sistor and 1000 mmf. cond. from 6H6 Cathode | Adjust for zero output. Set sig.gen. 75 kc. higher (10.775 Mc.) and 75 kc. lower (10.625 Mc.) and record + and - voltage readings. If not equal, repeat the above 2 steps until they are. (Use enough sig. gen. output to saturate limiters well. |
| " | 6BE6 Grid #3 | " | " | 1st I.F.T. F.M. | " | 1 meg. res. to 1st lim. grid res. | Shunt primary of this transformer with 22000 ohm. resistor. Adjust for max. output with min. sig. gen. input. |
| High side of generator thru 100 ohms to left F.M. ant. strip terminal (looking at chassis from rear) low side of gen. to right term. thru 100 ohms | | 107.9 Mc. No Mod. | " | F.M. Osc. Trimmer | " | " | Adjust for max. output (keep below 3 volts on D.C. V.T.V.M.) with min. sig. gen. input. (remove all I.F. shunts before doing this) Check for image. Set dial pointer to F.M. channel #300. for this step. Image should be at approx. 86.5 Mc. generator freq. |
| " | | 107.9 Mc No Mod. | " | F.M. R.F. Trimmer | " | " | Adjust for max. output with min. gen. input. |
| " | | 107.9 Mc No. Mod. | " | F.M. Ant. Trimmer | " | " | " |
| " | | 87.9 Mc No Mod. | " | F.M. Osc. padder | " | " | Set dial pointer to F.M. channel #200. Adjust for max. output with min. gen. input. |
| " | | 87.9 Mc No Mod. | " | F.M. R.F. Padder | " | " | " |
| " | | " | " | F.M. Ant. Padder | " | " | Repeat F.M. trimmer and padder adjustments until no further need exists. |



## INSTRUCTIONS FOR TUNING THE DYNATONE

1. The cabinet has been designed to permit tuning the piano without removing any of the assembly. The top is hinged and back checks are provided. Tuning is best done with the volume fairly high.

2. Should it be desired to service the keys or remove the action, the fall board carrying the pre-amplifier and controls must be removed. This can be done as follows:
   a. Disconnect the coaxial cable at the right hand side of the piano.
   b. Remove two cable plugs on the right hand side of the fall board and one from the fall board to the key bed on the left hand side.
   c. Lift up the swell pedal link connecting the two levers at the left hand side of the cabinet.
   d. Remove the screws holding the fall board in place on the cabinet walls.

## INSTRUCTIONS FOR CHANGING TUBES

1. Remove knobs on radio panel. (Do not remove dial plate from panel.)
2. Remove four (4) outer screws holding panel to case.
3. Remove panel by slipping it forward.

Tubes and dial lights are now accessible for replacement by reaching in over the top of the chassis. The tube layout attached to the inside of the radio compartment shows the location of each type of tube.

## INSTRUCTIONS FOR REMOVING CHASSIS FOR SERVICE

NOTE—Service on any of the electronic units in the DynaTone should be attempted only by a qualified radio technician who has access to the necessary schematic diagrams and alignment instructions, which will be supplied without charge by the factory on request.

1. After proceeding as above, remove four mounting screws underneath the chassis mounting shelf.
2. Open door on the back of DynaTone behind the radio chassis.
3. Pull out connecting plugs attached to back of chassis and disconnect the antenna wires.

The chassis can now be removed for access to all the interior wiring and balancing adjustments.

### Controls

All controls for operation of the radio and record player are located to the sides and beneath the "Floating Pointer" dial. These controls are marked plainly and no trouble should be encountered in using them.

There are five controls as follows:

1. Volume Control—left side of dial.
2. Tuning Control—right side of dial.
3. Bass Tone Control—lower left.
4. Band Switch Control—lower center.
5. Treble Tone Control—lower right.

The band switch control has four positions marked:—"S.W.", "A.M.", "F.M.", and "Phono". The "A.M." position is the standard broadcast band. When switching from any position to the "F.M." position, it is necessary to wait a few seconds for the heaters of the F.M. tubes to warm up. Likewise, when switching from "F.M." position to "A.M." or "S.W.", a short time is required for these tubes to warm up. This is to give you maximum tube life since the only tubes lighted at any given time are those actually in use.

The "Bass" and "Treble" controls are designed to give a separate adjustment for each end of the audio range without affecting the opposite end. Clockwise rotation of either control increases the response at that end of the audio range.

In using the tuning control, it will be found necessary to exercise a little more than the usual amount of precision while tuning on the F.M. band. In order to make F.M. tuning easier and simpler, the tuning eye in the model 53 chassis has been adapted to F.M. tuning indication as well as A.M. In using this indicator on either F.M. or A.M., the tuning control should be adjusted until the tuning eye has a minimum shadow angle.

### Push Button Adjustment

The tuning condenser push buttons should be adjusted as follows:

1. Turn the receiver on and allow to warm up for at least five minutes.
2. Unscrew the button to be adjusted approximately two turns.
3. Tune in the station desired.
4. Push the button in and turn until tight.
5. Select the proper station call letters from the sheet furnished and press into the top of the button with one of the celluloid discs on top of it.

If rattles are heard on certain notes at high volume, look the room over carefully while someone strikes the offending note continuously. You will often find such a rattle to be caused by a loose window pane, lamp shade or some other object in the room. When you find it, the remedy is usually easy.

Lamp cords running across the back of the DynaTone may cause hum. Try moving them around until you find a place that causes no trouble.

Tubes used in the DynaTone, model 105 are as follows:

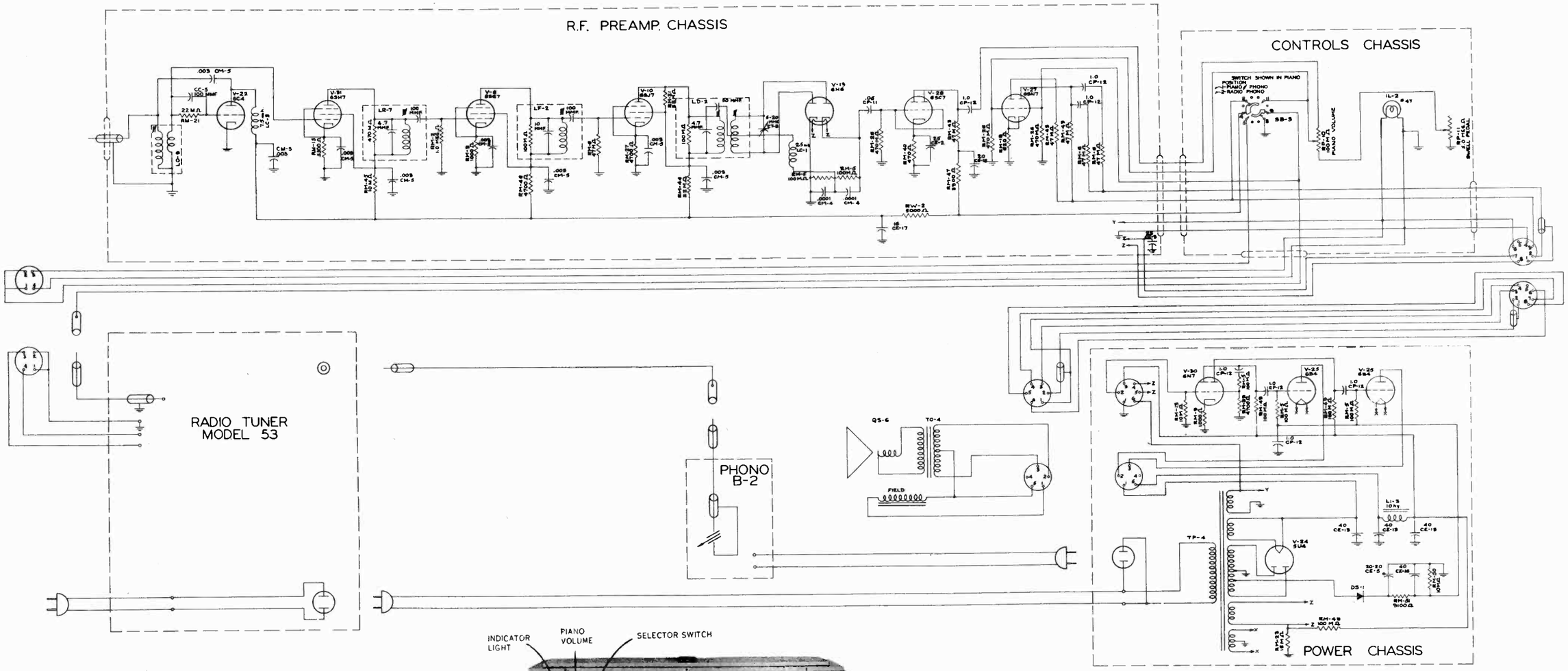
Piano Preamplifier Chassis
- 6C4 Oscillator
- 6SH7 Harmonic Generator
- 6SG7 R.F. Amplifier
- 6SJ7 Limiter
- 6H6 Discriminator
- 6SC7 Piano 1st Audio Amplifier
- 6SN7 Mixer

Power Chassis
- 6N7 Phase Inverter
- 6B4G, 6B4G } Power Amplifier
- 5U4G Rectifier

Radio Tuner
- 6C4 Oscillator, F.M.
- 6BA6 R.F. Amplifier, F.M.
- 6BE6 Converter, F.M.
- 6AC7 I.F. Amplifier, F.M.
- 6AC7 I.F. Amplifier, F.M.
- 6SJ7 Limiter, F.M.
- 6SJ7 Limiter, F.M.
- 6H6 Discriminator, F.M.
- 6SK7 R.F. Amplifier, A.M.
- 6SA7 Converter, A.M.
- 6SK7 I.F. Amplifier, A.M.
- 6SQ7 Detector and 1st Audio, A.M.
- 6E5 Tuning Indicator

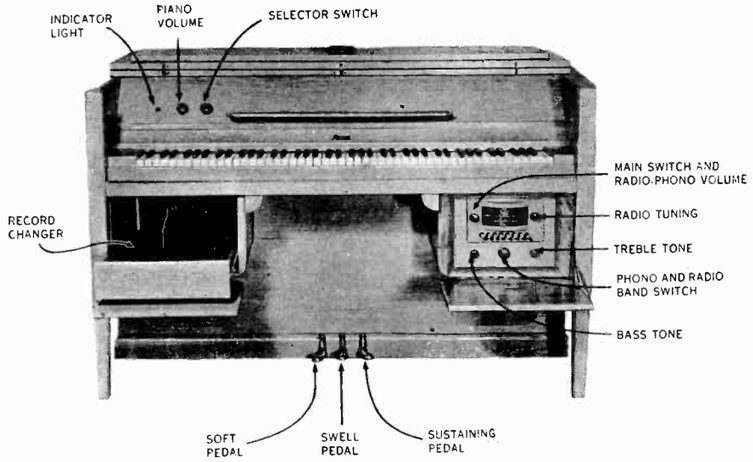
# ANSLEY RADIO CORP.






NOTE -
ALL CAPACITORS IN MICROFARADS
EXCEPT AS OTHERWISE NOTED.

**ALL CP-12 CAPACITORS ARE 0.1 MICROFARADS INSTEAD OF 1.0 AS SHOWN.**




| | |
|---|---|
| TITLE- SCHEMATIC DIAGRAM - DYNATONE 105 | |
| MATERIAL- | |
| FINISH- | JUNE 9, 1947 |
| ANSLEY RADIO CORP. | |
| DWG. # ZS-5 | |



RECORD CHANGER: Webster Model 56, RCD.CH. 15-10

## ANSLEY RADIO CORP. MODEL 105, DYNATONE

I. Locations of components:

A. The Power Chassis is located to the left on the floor of the cabinet. It is accessible by removing the front baffle of the cabinet below the keyboard. Four bolts hold the chassis in place.

B. The Preamplifier Chassis is located on the back of the fall board above the keyboard. It is accessible by lifting the top of the cabinet. In servicing this chassis, it is best to remove the entire fall board. The chassis can be worked on without disconnecting from the fall board since the bottom plate can be removed while the chassis is in place. Remove the fall board as follows:

1. Disconnect coaxial cable at right hand side. Disconnect the plugs from the fall board on the right hand side.

2. Disconnect plug at left hand side of the fall board.

3. Lift up on swell pedal link connecting the two levers on the left hand side of the cabinet

4. Remove screws holding fall board in cabinet.

II. Adjustment of the Oscillator.

A. The oscillator located on the Preamplifier Chassis (right hand side) may require adjustment occasionally If the piano output is low or distorted, this should be done.

B. This adjustment can be made without removing the fall board as follows:

1. Connect a D.C. VTVM between the pin jack (on top of the Preamplifier Chassis) and the chassis.

2. Adjust the permeability screw on the top of the oscillator coil can (the can farthest to the right of the chassis) until the meter reads 0 volts between a positive and negative peak.

III. Alignment Procedure for Piano Preamplifier.

A. Remove the oscillator tube, 6C4.

B. Set signal generator to 26.5 mc (no modulation). Connect signal generator output lead to the first grid of the 6SH7 harmonic generator and ground lead to chassis.

C. Connect D.C. VTVM to the center of the two cathode resistors of the 6H6 discriminator.

D. Adjust permeability screws on the transformers of the harmonic generator 6SH7 and R F. amplifier 6SG7 Tune for maximum output at 26.5 mc

E. Adjust permeability screw on the top of the discriminator transformer can (primary) for maximum output.

F. Connect D.C. VTVM to the jack on top of the R.F. Preamplifier Chassis. Adjust permeability screw on bottom of discriminator transformer can (secondary) until voltage is zero between a positive and negative peak. Remove signal generator leads.

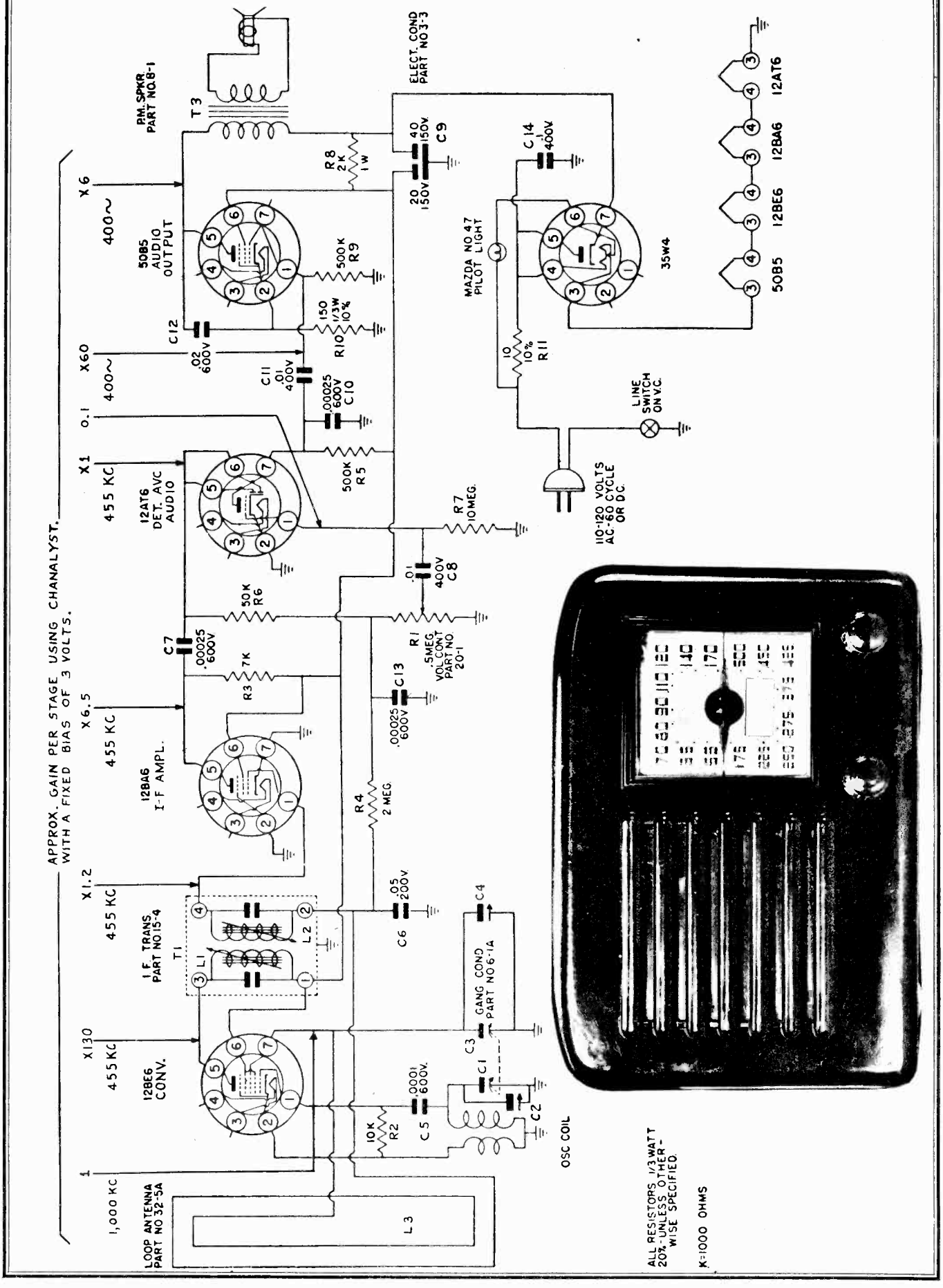
G. Replace the oscillator tube. Adjust permeability screw on the top of the oscillator coil can until the voltage is zero between a positive and negative peak.

IV. Adjustment of pick-up buttons.

The pick-up buttons have been adjusted at the factory for optimum results. If, however, a certain note exhibits noise in the output, it is probable that the string hits the button associated with it. To correct this condition, loosen nut, and back off button slightly, then tighten nut. Noise can also be caused by the lock nut not being tight.

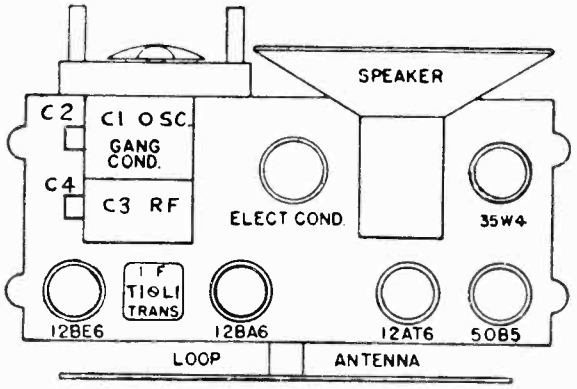
# APEX RADIO & TELEV. CORP.

MODEL 25

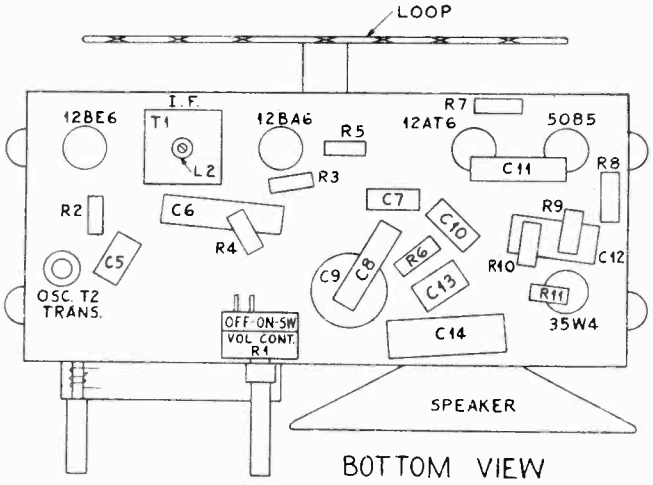


MODEL 25

# APEX RADIO & TELEV. CORP.

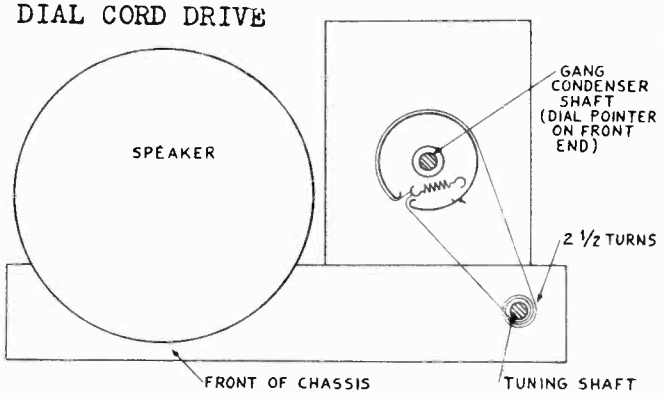



TUBE LAYOUT




BOTTOM VIEW

DIAL CORD DRIVE




Model 485

| SOCKET | PIN | VTVM | 20,000Ω/P.V. | 1,000Ω/P.V. | RESISTANCE |
|---|---|---|---|---|---|
| 12BE6 CONV. | 1 | -6 | -6 | -6 ON 100V SCALE<br>-3.5 ON 10V SCALE | 10K |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | AC | AC | AC | 45Ω |
| | 4 | AC | AC | AC | 30Ω |
| | 5 | +82 | +82 | +82 | OVER 5 MEGS |
| | 6 | +82 | +82 | +82 | OVER 5 MEGS |
| | 7 | -1.0 | -0.5 | -0.2 | 3 MEGS |
| 12BA6 I.F. AMPL. | 1 | -1.0 | -0.5 | -0.2 | 3 MEGS |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | AC | AC | AC | 25Ω |
| | 4 | AC | AC | AC | 15Ω |
| | 5 | +25 | +24 | +22 | OVER 5 MEGS |
| | 6 | +82 | +82 | +82 | OVER 5 MEGS |
| | 7 | 0 | 0 | 0 | 0 |
| 12AT6 DET. AVC AUDIO | 1 | -0.5 | -0.2 | 0 | 10 MEGS |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | AC | AC | AC | 15Ω |
| | 5 | -0.5 | -0.2 | 0 | 500K |
| | 6 | -0.5 | -0.2 | 0 | 500K |
| | 7 | +40 | +38 | +15 | OVER 5 MEGS |
| 50B5 AUDIO OUTPUT | 1 | 0 | 0 | 0 | 500K |
| | 2 | +5 | +5 | +5 | 150Ω |
| | 3 | AC | AC | AC | 85Ω |
| | 4 | AC | AC | AC | 35Ω |
| | 5 | +120 | +120 | +120 | OVER 5 MEGS |
| | 6 | +82 | +82 | +82 | OVER 5 MEGS |
| | 7 | -- | -- | -- | -- |
| 35W4 RECT | 1 | AC | AC | AC | 110Ω |
| | 2 | -- | -- | -- | -- |
| | 3 | AC | AC | AC | 85Ω |
| | 4 | AC | AC | AC | 115Ω |
| | 5 | AC | AC | AC | 115Ω |
| | 6 | AC | AC | AC | 110Ω |
| | 7 | +125 | +125 | +125 | OVER 5 MEGS |

ALL VOLTAGE AND RESISTANCE MEASUREMENT MADE WITH RESPECT TO CHASSIS GROUND AND WITH A LINE VOLTAGE OF 116 V. A. C.

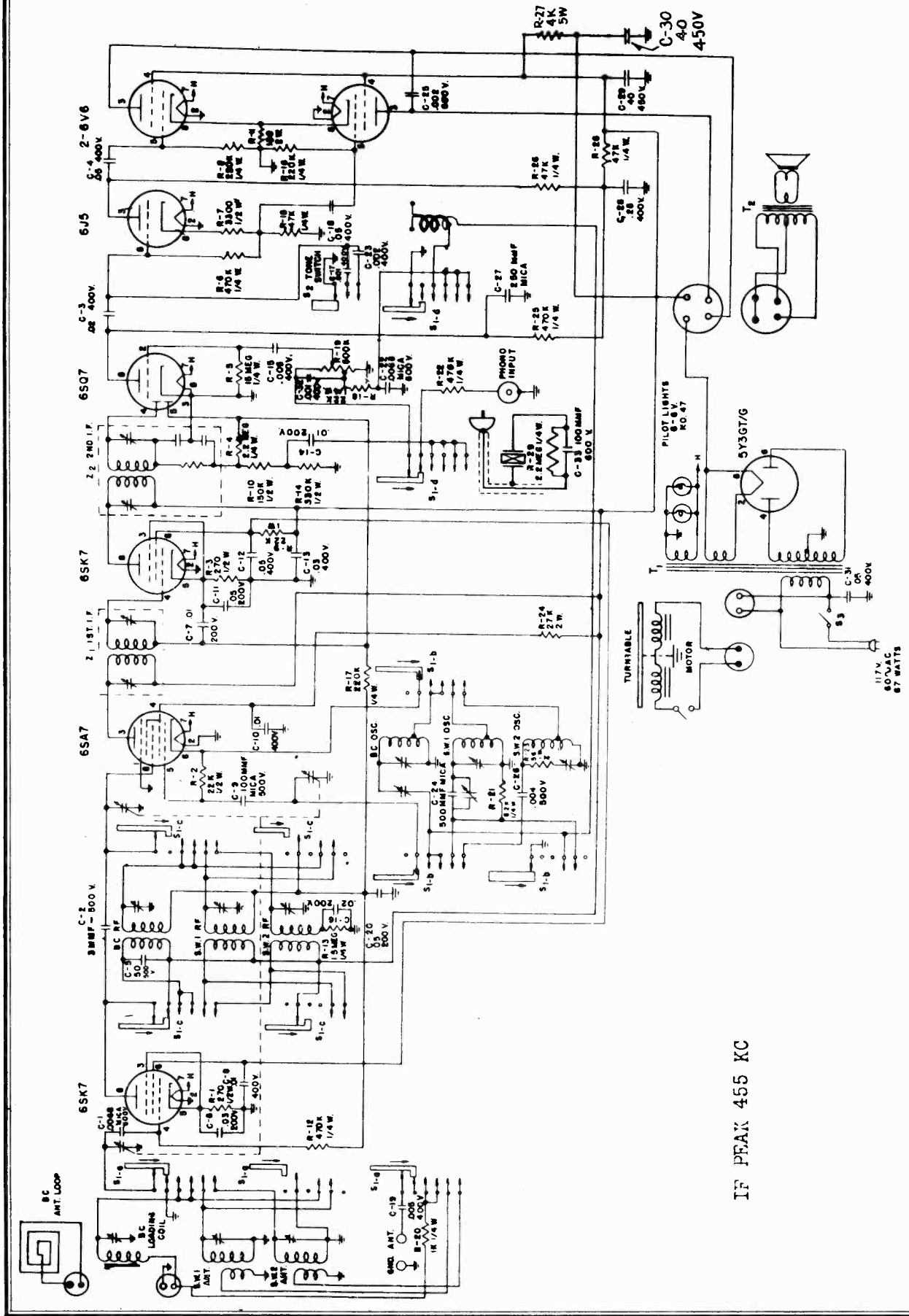
## A L I G N M E N T

THE CHASSIS MUST BE REMOVED FROM THE CABINET IN ORDER TO ALIGN THE RECEIVER. CONNECT THE OUTPUT METER ACROSS THE VOICE COIL. CONNECT THE SIGNAL GENERATOR TO THE STANDARD HAZELTINE MODEL 1150 LOOP, AND COUPLE LOOSELY TO THE RECEIVER LOOP. SET THE RECEIVER VOLUME CONTROL AT MAXIMUM.

THE TUNING CONDENSER PLATES SHOULD BE FULLY MESHED WHEN THE DIAL POINTER IS AT THE INDEX MARK AT THE LOW FREQUENCY END OF THE DIAL. THE SIGNAL GENERATOR OUTPUT SHOULD BE SUFFICIENT TO GIVE HALF SCALE DEFLECTION ON THE LOWEST SCALE OF THE OUTPUT METER. SET THE SIGNAL GENERATOR TO 455 KC. ADJUST THE I.F. TUNING SLUGS FOR MAXIMUM METER DEFLECTION IN THE FOLLOWING SEQUENCE: L2, L1. SET THE GENERATOR AND RECEIVER TO 700 KC AND ADJUST OSCILLATOR TRIMMER C2 FOR MAXIMUM OUTPUT. SET THE GENERATOR AND RECEIVER TO 1400 KC AND ADJUST LOOP TRIMMER C4 FOR MAXIMUM OUTPUT

# APEX RADIO & TELEV. CORP.

MODELS 8146,8347



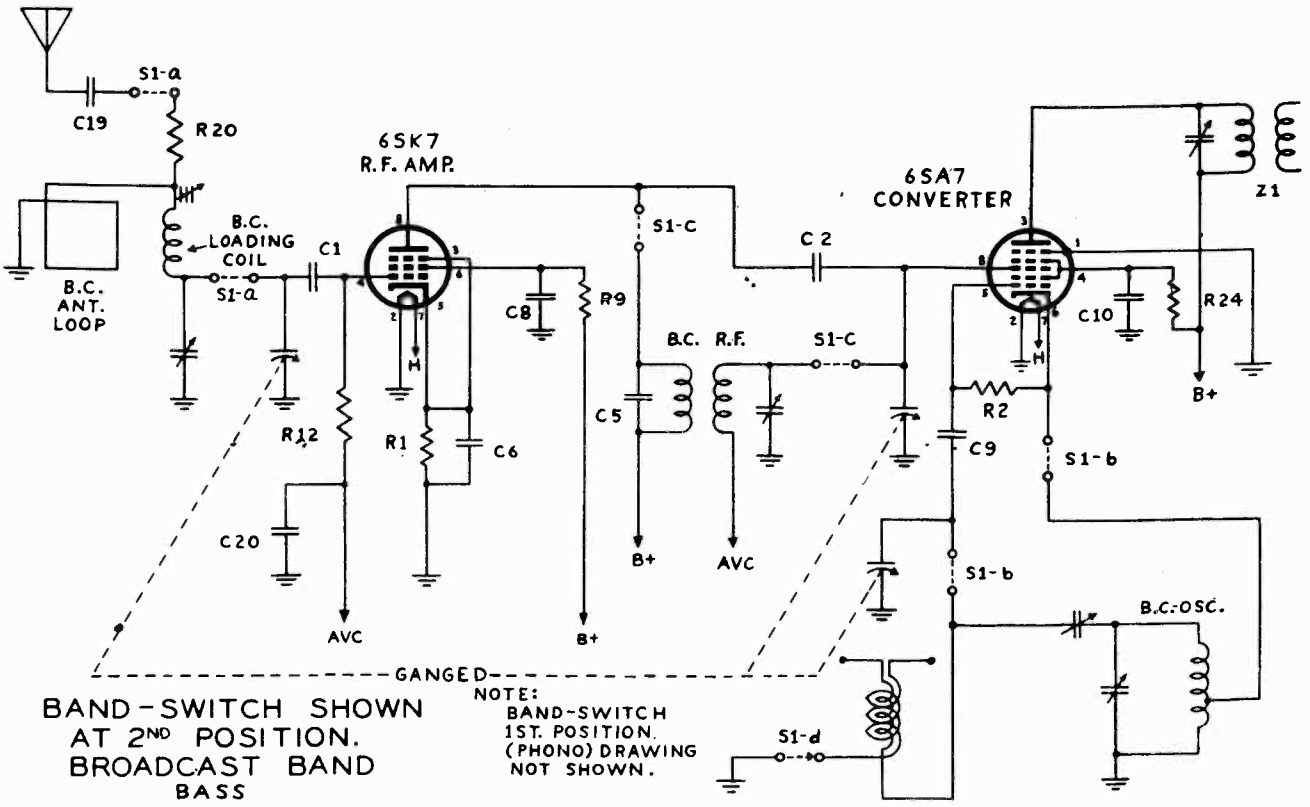


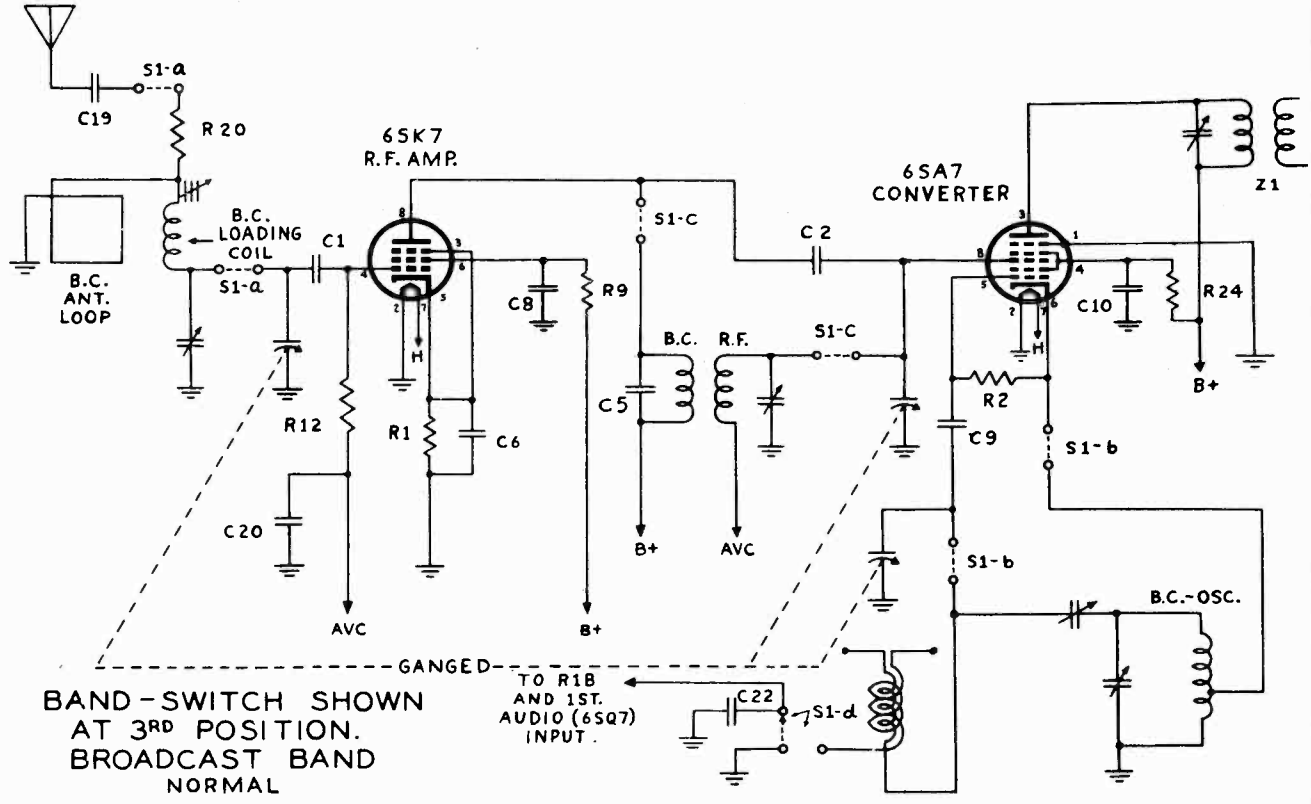

Record Changer: Seeburg Model K

"clarified schematics"

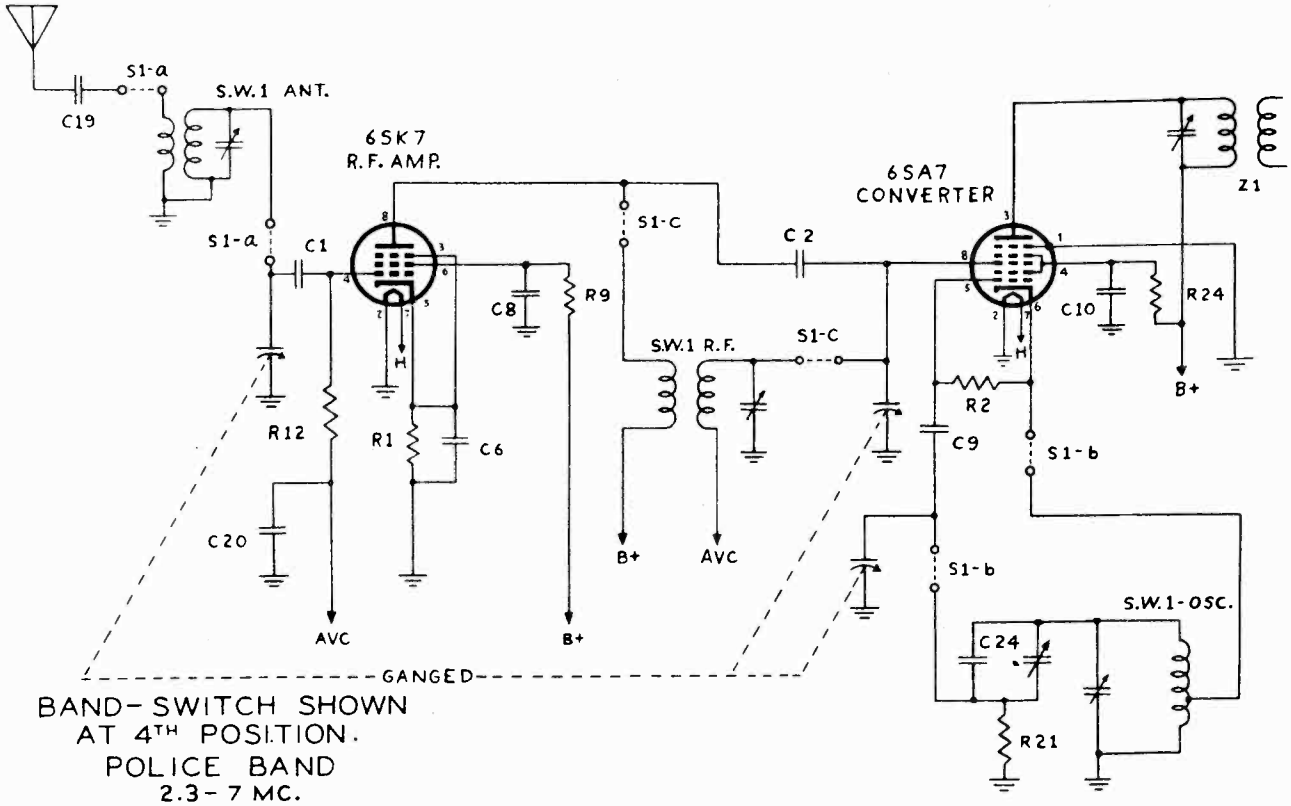
MODELS 8146,8347

# APEX RADIO & TELEV. CORP.

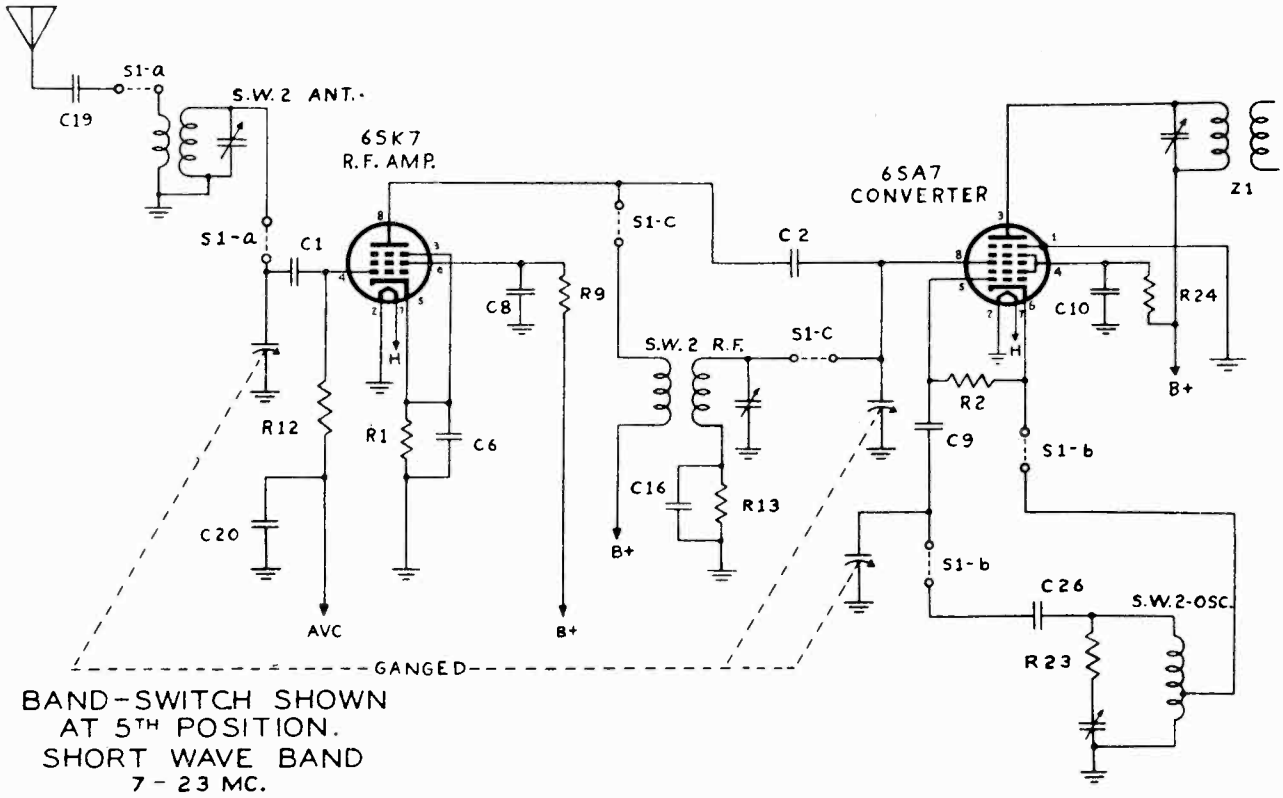


APEX RADIO & TELEV. CORP. MODELS 8146,8347



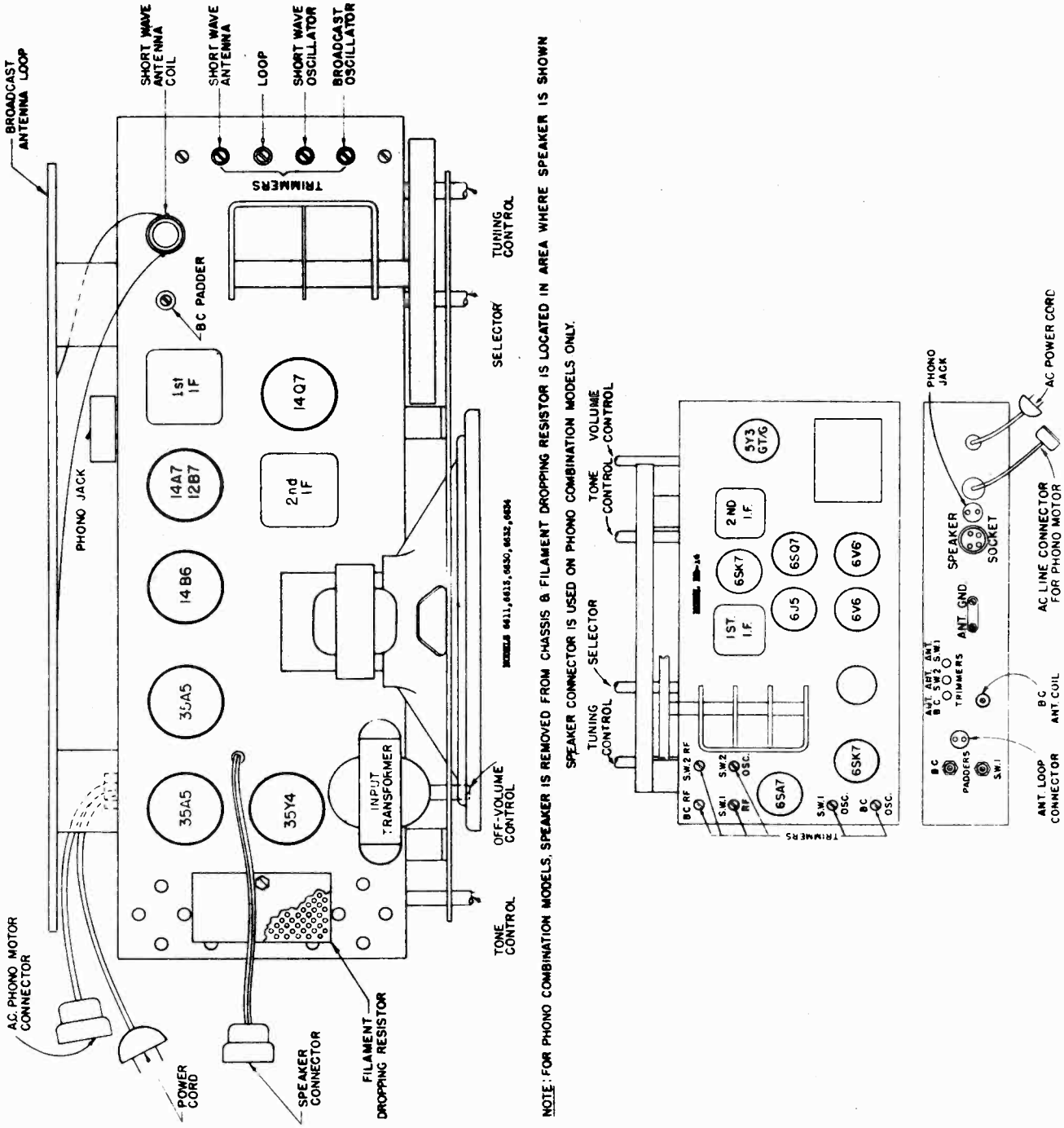

BAND-SWITCH SHOWN AT 4TH POSITION.
POLICE BAND
2.3-7 MC.




BAND-SWITCH SHOWN AT 5TH POSITION.
SHORT WAVE BAND
7-23 MC.

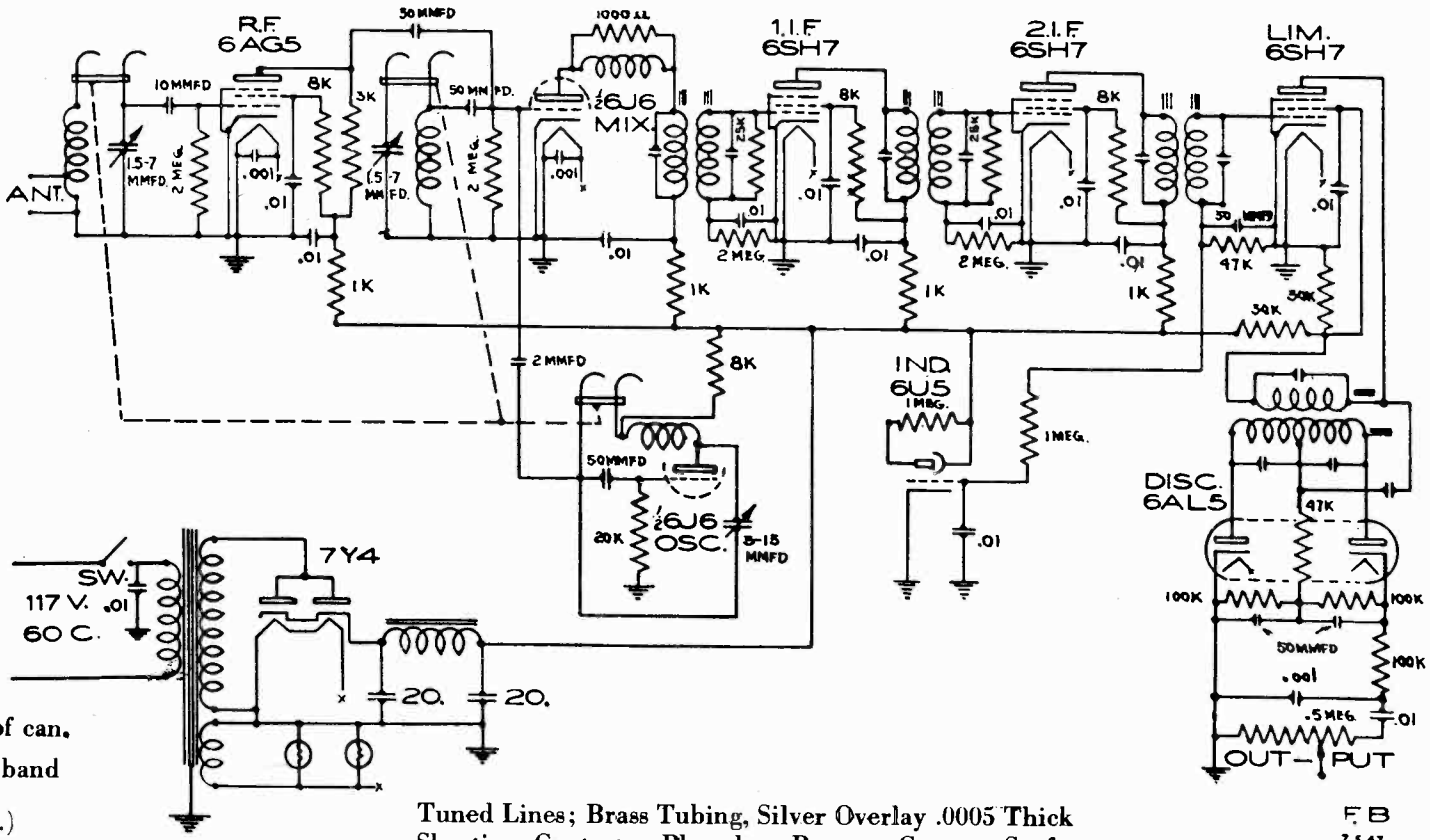
MODELS 8146,8347

# APEX RADIO & TELEV. CORP.




NOTE: FOR PHONO COMBINATION MODELS, SPEAKER IS REMOVED FROM CHASSIS & FILAMENT DROPPING RESISTOR IS LOCATED IN AREA WHERE SPEAKER IS SHOWN

SPEAKER CONNECTOR IS USED ON PHONO COMBINATION MODELS ONLY.




## Discriminator

| | | | |
|---|---|---|---|
| L prim | 4.03 | uh. Q — | 95 |
| L sec. | 5.5 | uh. Q — | 100 |
| L o | 9.1 | uh. | |
| L a | 9.2 | uh. | |
| ΔL | 1. | uh. | |
| M | .025 | uh. | |
| K | .005 | | |

(All measurements made out of can. Iron all out at R.F. Overall band width at 95% Max. response.)

Tuned Lines; Brass Tubing, Silver Overlay .0005 Thick
Shorting Contacts; Phosphor Bronze, Contact Surface Silver Overlay .0005

F B
7-5-47

## I. F. Transformers

| | | | |
|---|---|---|---|
| L prim | 5.5 | uh. at 10.7 mc | Q — 110 |
| L sec | 4.03 | uh. at 10.7 mc | Q — 100 |
| L o | 9. | uh. | |
| L a | 9.15 | uh. | |
| ΔL | .15 | uh. | |
| M | .037 | uh. | |
| K | .0079 | | |

Tubes;

| | |
|---|---|
| 1-6AG5 | R. F. Amplifier |
| 1-6J6 | Oscillator-Mixer |
| 2-6SH7 | IF Amplifiers |
| 1-6SH7 | Limiter |
| 1-6AL5 | Discriminator |
| 1-6U5 | Tuning Indicator |
| 1-7Y4 | Rectifier |

Power Supply (Built in) : 117 V. 60 cycles.
Current Consumption; 35 Watts
Circuit; Superheterodyne
Tuning Range; 88-108 mc.
IF Frequency; 10.7 mc.
Sensitivity; 10uv/m
Bandwidth; 150kc.
Freq. Drift; Negligible after 5 Min.
Output Impedance; 500,000 Ohms
Output Volts; 2 Volts RMS. Average
Humlevel; — 70 db Below Average Output

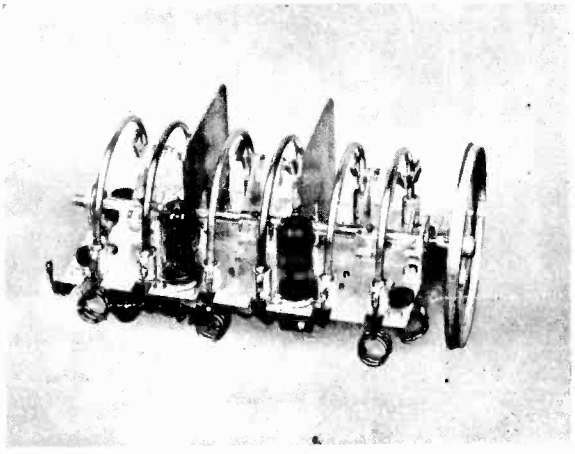
A tuning indicator (6u5) has been incorporated and should be used as a rough station indicator. However when tuning for an FM station the final setting should be for minimum background noise regardless of the shadow angle indication of the 6U5.

MODEL FM Tuner APPROVED ELECTRONIC INSTR. CORP.

## R. F. Section

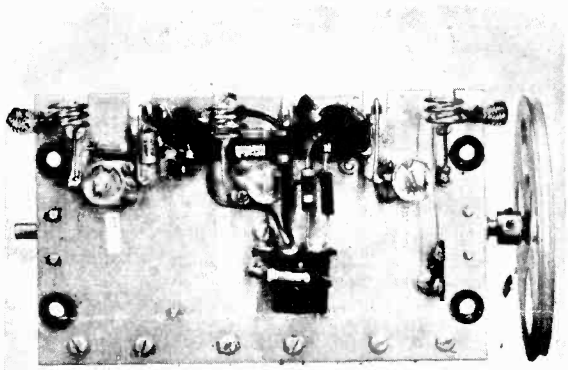
The superheterodyne circuit employed in this tuner follows the Armstrong method of reception. However the R.F. section comprising the R.F. stage, mixer and oscillator, deviate from the common type variable capacitor/inductance combinations by the complete absence of a variable condenser. Instead a new and novel form of R.F. front end has been developed.

The R.F. section of the tuner consists of three Hi-Q arcually shaped resonant lines terminating in small end inductances for a frequency coverage from 88-108 mc. with 180° rotation. Semifixed silver ceramics, temperature compensated, capacitors in circuit with the resonant lines and end inductances constitute the tuners total L/C.



TOP VIEW OF RF FRONTEND.

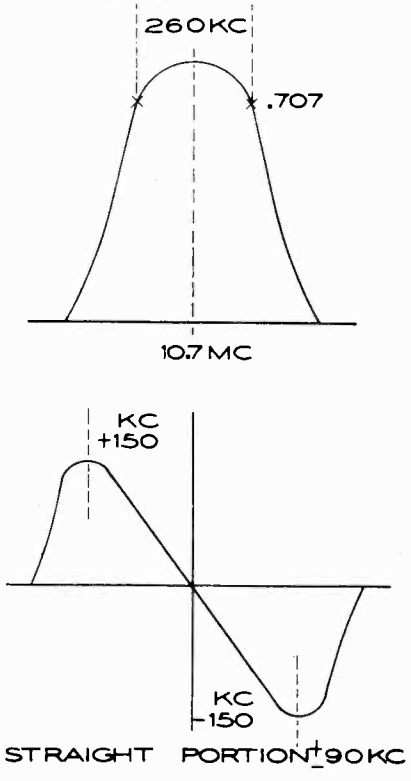
This combination allows for an exceptional Hi-Q circuit design with excellent frequency stability and sensitivity. The mechanical construction of the tuners R.F. section is such as to give complete freedom from microphonics often encountered with variable capacitors when used at high frequencies. The lines are constructed from 5/32 Od. brass tubing with a heavy silver overlay .0005 thick. The shorting contacts are formed from .007 thick flat stock phosphor bronze with a contact surface silver overlay of .0005 thickness. Silver overlay, although much more expensive than silver plating, was chosen for reasons of wearing qualities and contact surface. The shorting contacts are mounted upon lucite bars which are fastened to a common shaft to form a single control unit with the lucite bars centered between respective resonant lines and rotable over 180°. With the 4" drive drum attached to the tuning shaft, a tuning ratio of 16:1 is obtained with a pointer travel of 6" resulting in a large full view easy to read dial calibration. The whole front end is of unit design and rubber floated. Full use of the new miniature tubes is made by using a 6AG5 as an R.F. amplifier with a 6J6 dual triode serving as combination mixer-oscillator. The oscillator operates at a frequency 10.7 mc. lower than signal frequency.



BOTTOM VIEW OF RF FRONTEND.

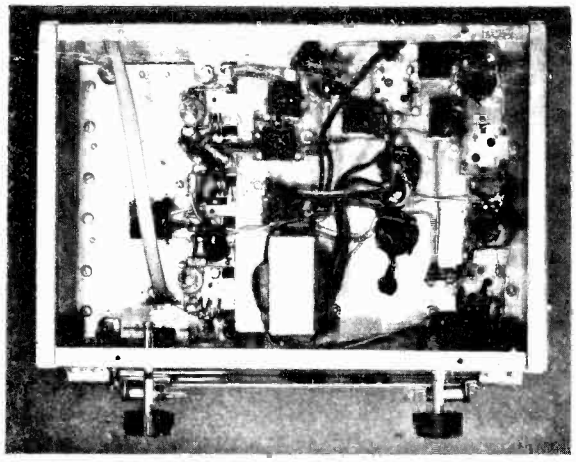
## I. F. Section

Following the mixer are two I.F. stages operating at a center frequency of 10.7 mc. into a single limiter stage which in turn feeds a standard discriminator. All I.F. transformers are constructed of high frequency ceramic throughout. Special iron cores are used that reach their peak "Q" value at 10.7 mc. The fixed ceramic capacitors are of the compensatory type. Wave shape tests have shown these transformers to possess excellent symmetry and stability. The discriminator transformer has been designed to provide extreme uniformity of wave shape with equal positive and negative peaks resulting in high voltage output with very good discrimination. A band width of 200kc. is the nominal value of all I.F.-Discriminator transformers.



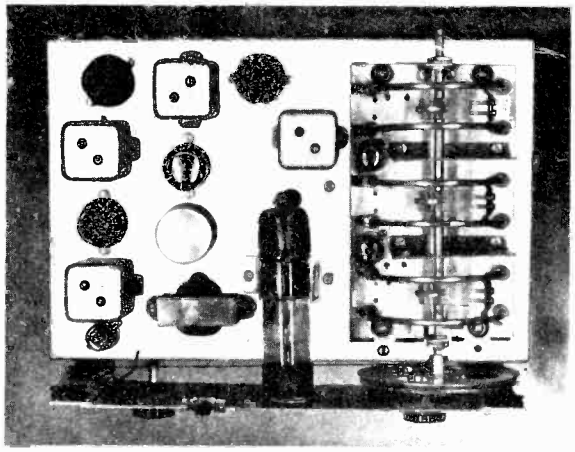

Carefully chosen L/C ratios with high "Q" maintained during production of these transformers result in high adjacent channel attenuation.

## R. F. Frontend Alignment



Bottom View Of Tuner.

To align the R.F. section of the Approved Tuner the following equipment is required. A signal generator with a frequency coverage of 88-108 mc. and preferably on fundamentals, a D.C. vacuum tube voltmeter with a low scale reading of about 3 volts or a D.C. meter having at least 20,000 ohms per volt impedance. The meter should be connected across the grid return resistor of the limiter stage. The output of the generator is then applied to the input of the tuner with the frequency set to 108 mc. and the tuner dial indicator set to read likewise 108 mc. The next step is to adjust the oscillators semifixed capacitor until the meter indicates maximum voltage. If the meter tends to read off scale, reduce the R.F. input voltage and hold the meter reading to about 2 volts average. The oscillator has been designed to operate at 10.7 mc. lower then signal frequency and proper setting of the oscillator frequency can be readily checked with a small absorption type wavemeter. At resonance, a large dip or increase in voltage reading will be noticed. The next adjustment consists of tuning the antenna and mixer stages for maximum response. Like the oscillator, both stages are tuned by means of semifixed, silver ceramic capacitors.



Top View Of Tuner.

The generator should now be set to 90 mc. and the dial indicator to the same frequency, and with nonconducting rod adjust the oscillator inductance until the meter again reads maximum voltage. A small adjustment of the oscillator inductance at 90 mc. may show up as a large frequency deviation at 108 mc. due to the inter-relationship of L to C. It may be necessary to repeat the alignment procedure several times before good tracking is finally obtained. With a perfectly aligned tuner, tracking error should never be more than 3 db.

## High Frequency Attenuator

High frequency pre-emphasis deliberately introduced at the transmitter must be compensated for at the receiver if a linear audio response is to be expected. This de-emphasis network is connected across the discriminator output and has a time constant of 100 u/sec. The voltage output of a discriminator does not depend upon the strength of a carrier but on the frequency swing caused by modulation and on the voltage/deviation characteristic of the discriminator transformer. Under average modulation conditions an R.M.S. voltage of approx. 2 volts can be expected. Any audio amplifier of sufficient gain may be connected to the Approved FM Tuner.

## Antenna

The input of the Approved Tuner has been designed to accommodate an FM antenna with a 300 ohm downlead impedance. It must be remembered that the higher the antenna above ground the greater its effectiveness. A simple folded di-pole antenna may be constructed from the new type 300 ohm line. For construction information see Fig. 5.

## Audio Amplifier

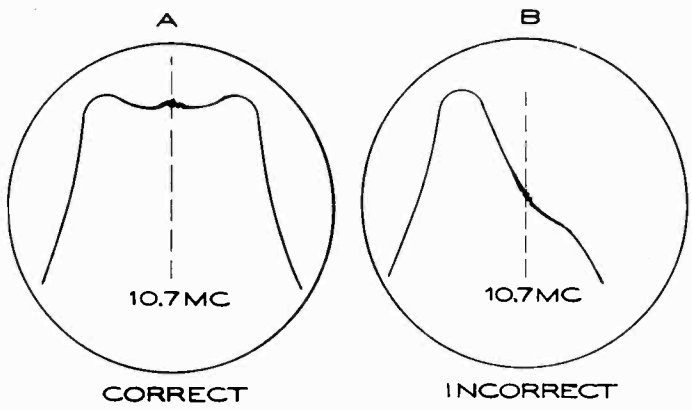
For full enjoyment of high quality reception possible, an amplifier having a flat response of 50-15,000 c.p.s. within 2 db. should be used with a correspondingly good speaker.

No power connection need be made from the amplifier to the tuner. The only requirements are that a good ground connection be provided and a shielded lead from the tuner output to the amplifier input in order to avoid hum pickup. Hum level measured across the output of the tuner is — 70 db. below average rms. output.

## I. F. Alignment

The center frequency of the IF amplifier is 10.7 mc. Due to overcoupling of the IF transformers a bandwidth of about 150 kc. can be expected and is of the double humped variety. While it is possible to align the IF amplifier with an ordinary AM signal generator and meter, for maximum response, it does not follow that this method produces the correct alignment for proper bandpass characteristic. A much more efficient and time saving procedure of I.F. amplifier alignment is the visual method requiring a frequency modulated signal generator, an oscilloscope and for double check purposes a deviation meter to be connected across the discriminator output. The meter is a D.C. V.T.V.M. zero center and calibrated —3.—0— +3 volts. The frequency modulated signal generator must be capable of sweeping through a range of about 10.5 to 10.9 mc. in sawtooth fashion with a possible adjustment for contraction or expansion of the total sweep width and a simultaneously generated sweep voltage is necessary for horizontal deflection of the oscilloscope. A good AM signal generator with a wide spread around 10.7 mc. completes the total test instruments necessary for proper IF amplifier alignment. Using the visual method of IF alignment, the sweep voltage output of the frequency modulated signal generator must be connected to the horizontal deflection input of the oscilloscope. The controls of the scope should be adjusted that the trace covers almost the full width of the screen. Connect the vertical deflection input of the oscilloscope across the grid return resistor of the limiter stage and with the output of the frequency modulated signal generator applied to the grid of the second IF stage, adjust the generator to sweep from about 10.5 to 10.9 mc. Due to grid rectification action of the limiter stage, a signal corresponding to the amplitude response of the preceding circuits is then available, and by careful adjustment of the oscilloscope controls a picture of the response curve will be visible on the screen. Never apply more generator voltage than required to produce a good image on the screen.

In order to insure correct center frequency setting, it is now necessary to apply a marker frequency, conveniently obtained from the standard AM signal generator, unmodulated and applied in parallel with the sweep frequency generator. The output of the AM generator should be isolated by means of a small mica condenser and have sufficient R.F. voltage output to produce a small marker pip superimposed upon the response curve trace. With the AM generator set to exactly 10.7 mc. observe the position of the marker pip and if the pip falls in the center of the response curve, the alignment to follow consist of equalizing the peaks on either side of the marker pip by means of the iron core adjustment screws protruding from the top of the IF transformers. If the AM generator possesses a good frequency spread around 10.7 mc., the marker pip can be used to measure actual band width by slowly moving the AM generators frequency to either side of center frequency, noting where the pip begins to slide off the center of either hump, and adding both frequency differences from center frequency. This equals the total bandwidth.



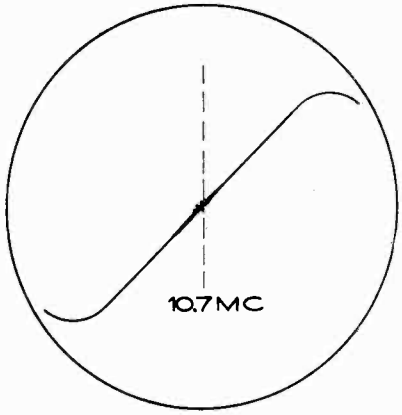

Greater amplitude of patterns indicate higher gain and therefor all adjustments made must be based not only upon symmetry but gain as well.

The generators, both AM and FM are now shifted to the grid of the preceding stage and the whole procedure as outlined repeated. It will be necessary to reduce the output of the generators due to the gain of the added stage. When this stage has been properly aligned, the signal generators are then shifted to the grid of the mixer tube (6J6), where the oscillator voltage is injected. The 6J6 tube is a dual triode and half of the tube is used as a mixer with the other half employed as an oscillator. During the alignment of the first IF transformer, the oscillator should be made inoperative by disconnecting the oscillators B + lead. The next step is to align the first IF transformers prim. and sec. The pattern appearing on the screen is then a picture of the overall response of the complete IF amplifier and should be symmetrical with the highest possible amplitude for maximum gain.

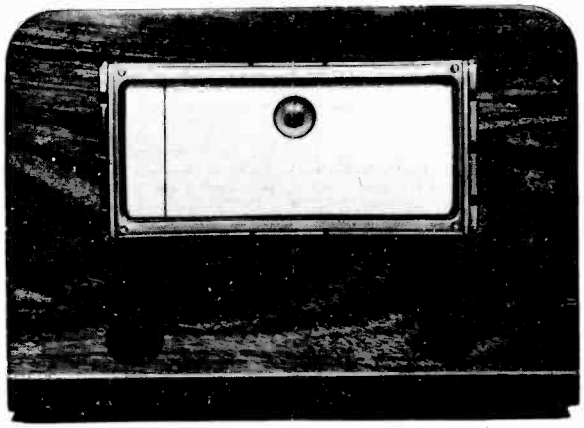
## Discriminator Alignment

The alignment of the discriminator is comparatively easy. The output of the frequency modulated signal generator is applied to the grid of the limiter tube and the output of the AM generator is fed to the same point at 10.7 mc. The vertical input of the oscilloscope must be connected across the discriminator output with the ground side of the scope to the grounded side of the discriminator. The controls of the scope should be adjusted for the best image possible with a minimum of signal generator voltage applied to the grid of the limiter. Symmetry must be obtained around the 10.7 mc. marker pip with linearity above and below the marker pip point.

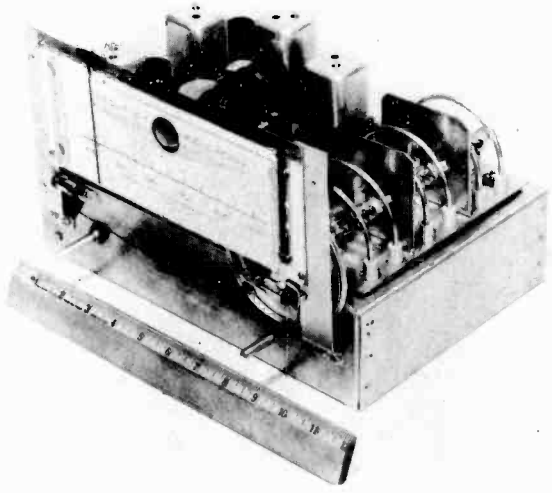
The adjustment of the primary of the discriminator transformer controls the linearity of the discriminator curve. If meter alignment is preferred, or no oscilloscope available, a simple D.C. vacuum tube voltmeter preferably one having a zero center scale and reading plus and minus 3 volts is connected across the discriminator output. A frequency of 10.7 mc. from an AM signal generator is fed to the grid of the limiter stage. The meter will probably read off center. The

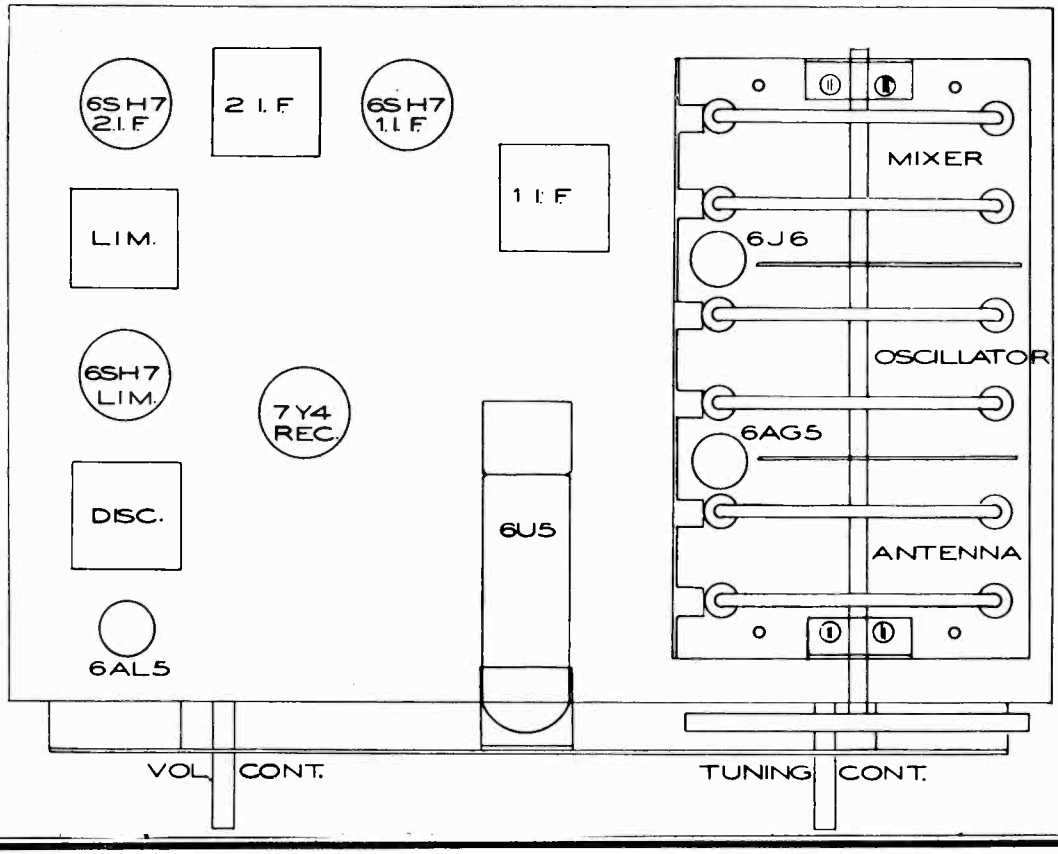



CORRECT DISCRIMINATOR ALIGNMENT PATTERN WITH 10.7 MC MARKER PIP



secondary of the discriminator must now be adjusted until the meter reads zero volts. Now change the generators frequency in equal steps above and below 10.7 mc. and note the voltage read on the meter. Readings should increase linearly on either side of the 10.7 mc. center frequency.





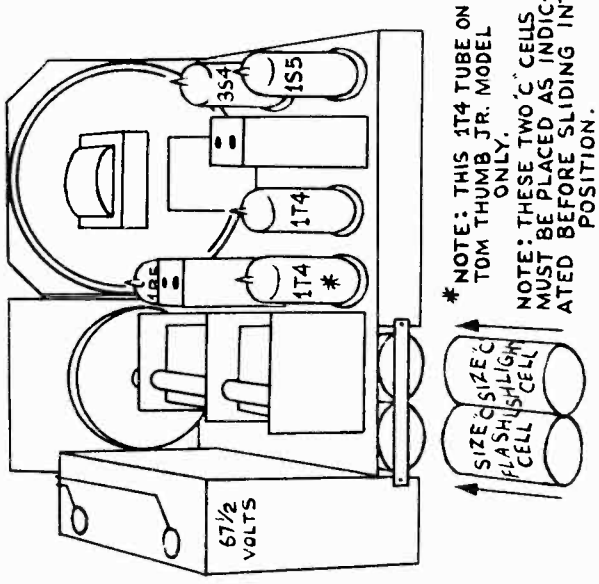
# AUTOMATIC RADIO MFG. CO., INC.

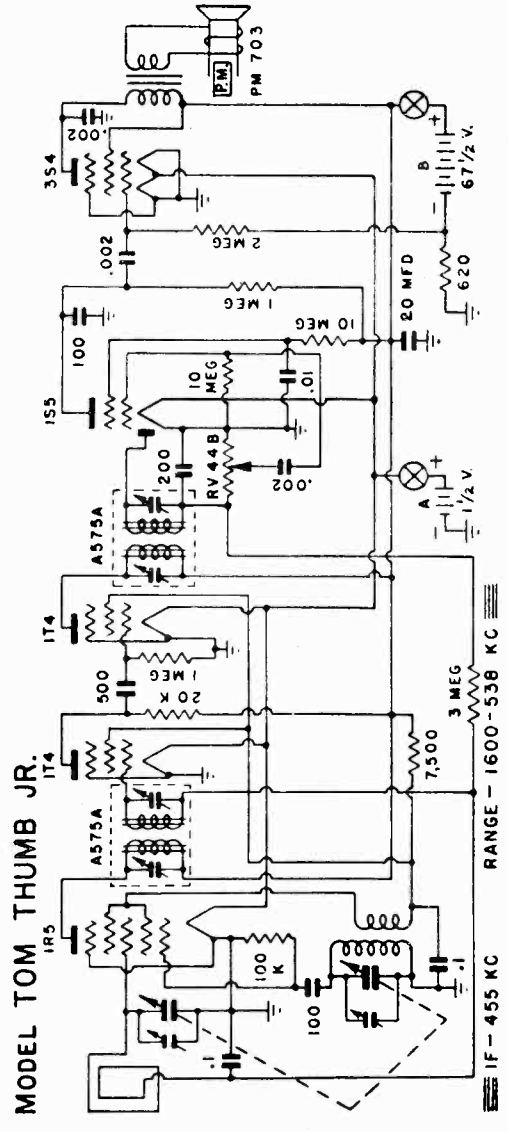
MODEL Tom Boy
MODEL Tom Thumb Jr.

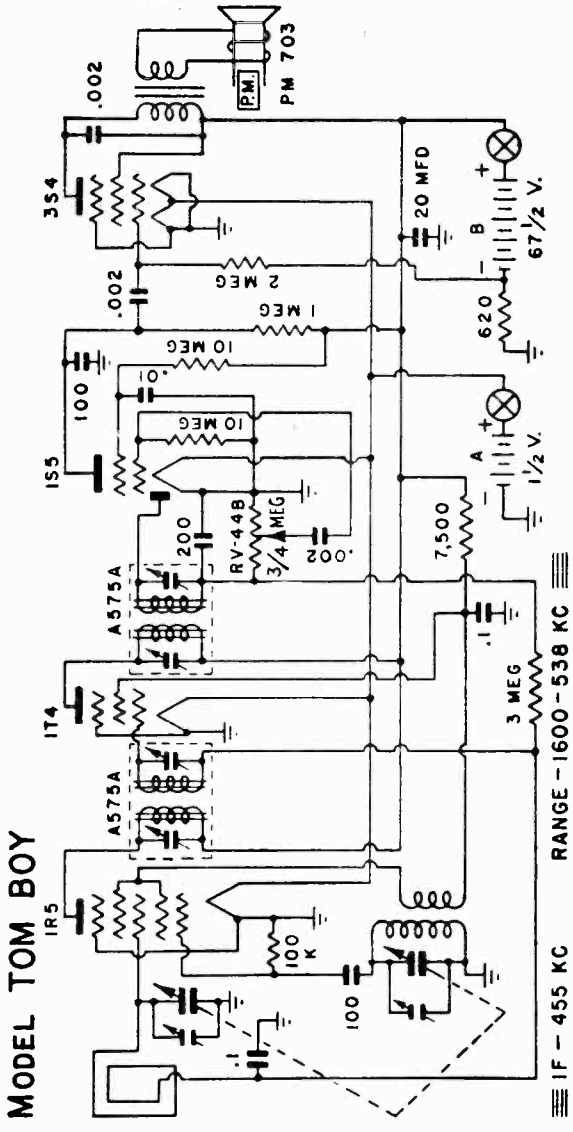
**BATTERY INSTALLATION**

"B" Battery

1. Remove screw on upper center of back
2. Swing top of back away from cabinet by placing index finger in hole below screw and remove back by lifting in an upward direction.
3. Remove thumb nuts that secure battery contact strip located on the back left side of chassis.
4. Remove contact strip from threaded screws.
5. Snap socket connector on red battery lead over battery connection marked "+" (plus).
6. Insert stud connector on black battery lead into battery connection marked "—" (minus).
7. Slide "B" battery into cabinet in position shown in figure 1.

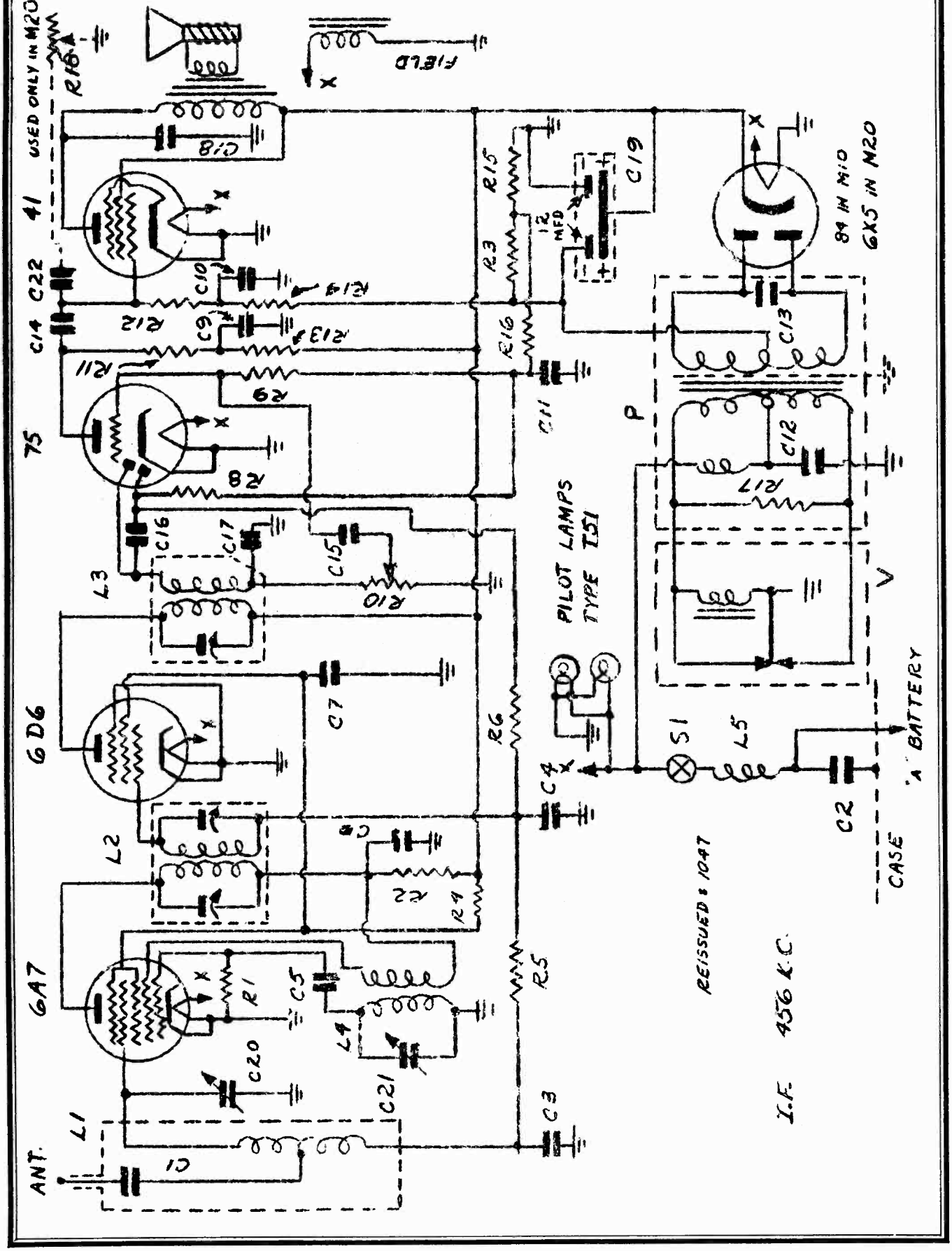


MODELS M10, M20

# AUTOMATIC RADIO MFG. CO., INC.

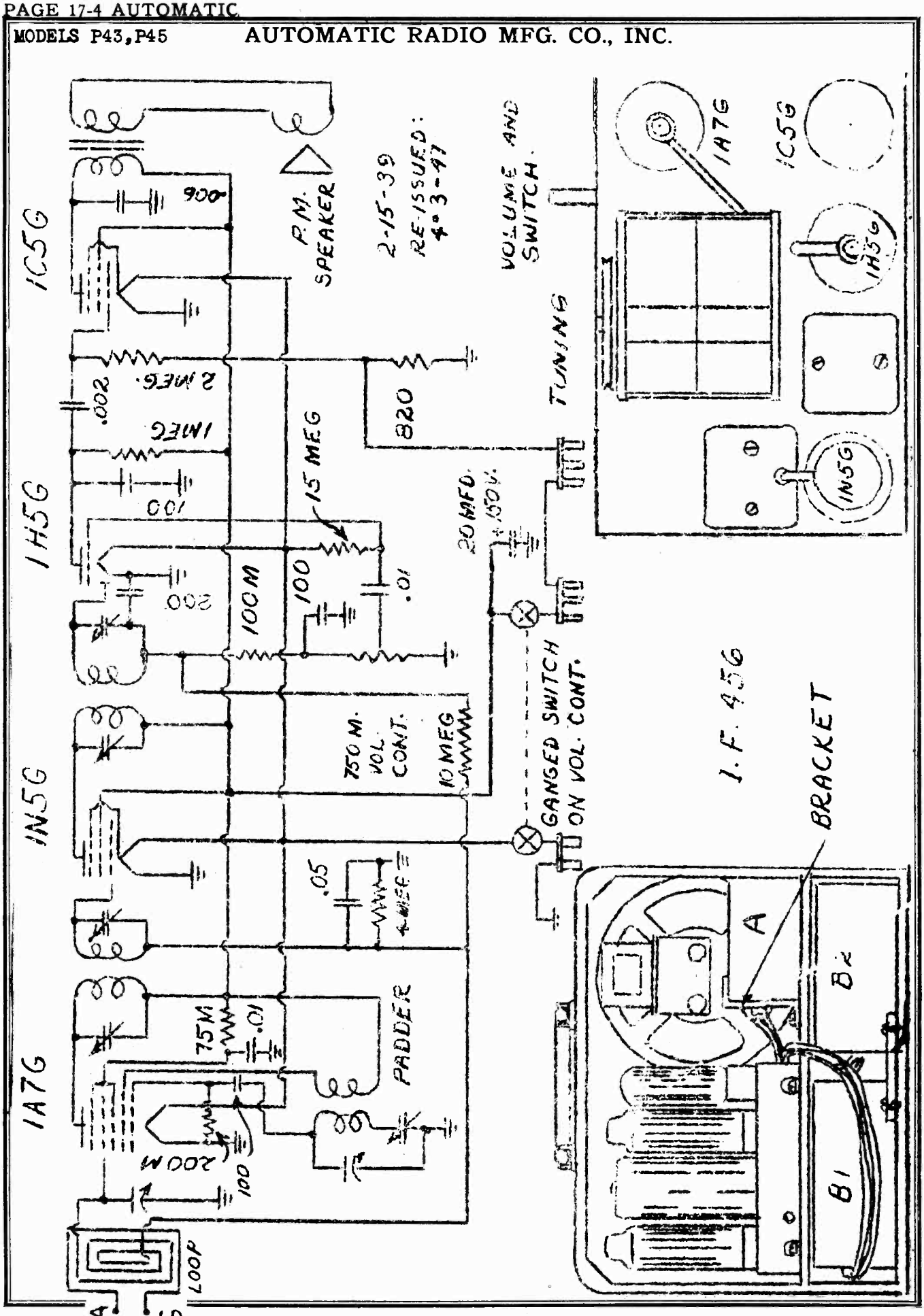


# AUTOMATIC RADIO MFG. CO., INC.

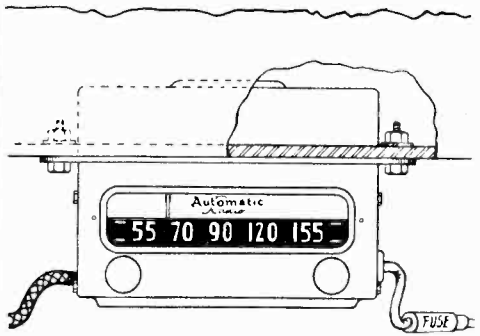
MODELS M10,M20

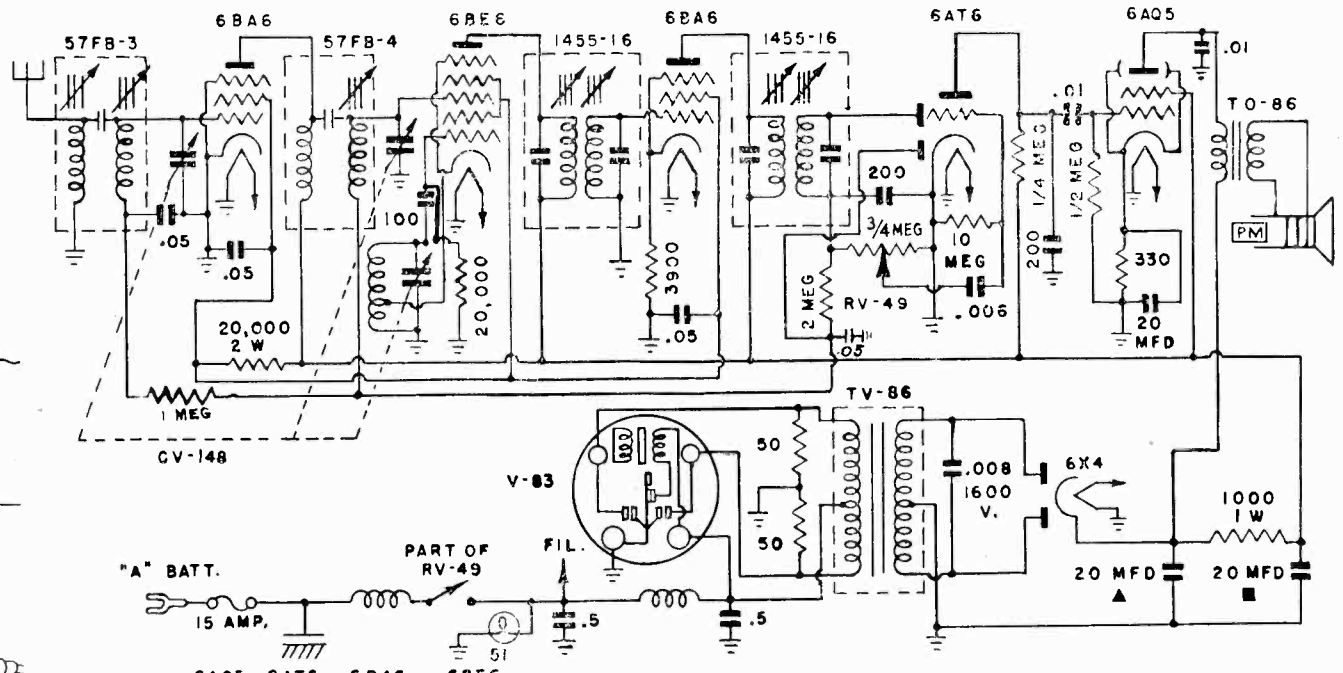
| SCHEMATIC LOCATION | DESCRIPTION | PART NO. |
|---|---|---|
| L1 | Antenna Coil | BA300 |
| L2, L4 | Composite I.F. Trans. and Osc. | LC200 |
| L3 | 2nd I.F. Transformer | L300 |
| L5 | "A" R.F. Choke | RF100 |
| ---- | Speaker | SD16 |
| P | Power Transformer | P300 |
| V | Vibrator | V200 |
| S1 | Line Switch (On Vol. Control) | ---- |
| C1, C2 | Mica Condenser .0005mfd | ---- |
| C3, C4 | Fixed " .05mfd--200v | ---- |
| C5, C16 | Mica " 100mmfd | ---- |
| C6, C7, C9, C10, C11 | Fixed " .1mfd--200v | ---- |
| C12 | Fixed " .5mfd--200v | ---- |
| C13 | Fixed " .007mfd--1200v | ---- |
| C14,C15 | Fixed " .01mfd--400v | ---- |
| C17 | Mica " 200mmfd | ---- |
| C18 | Fixed " .005mfd--600v | ---- |
| C19 | Electrolytic Condenser Block | CE30 |
| C20,C21 | Two Sect. Tuning Condenser | CV30 |
| C22 | Fixed Condenser .002mfd--600v | ---- |
| R1 | Resistor 50,000 ohms--1/4 Watt | ---- |
| R2 | " 250 ohms--1/4 Watt | ---- |
| R3 | " 250 ohms--1/2 Watt | ---- |
| R4 | " 25,000 ohms--1/4 Watt | ---- |
| R5 | " 250,000 ohms--1/4 Watt | ---- |
| R6, R8, R9 | " 1 megohm--1/4 Watt | ---- |
| R10 | Volume Control--1/2 megohm | RV19 |
| R11, R12 | Resistor 1/2 megohm--1/4 Watt | ---- |
| R13, R14 | " 1/4 megohm--1/4 Watt | ---- |
| R15 | " 30 ohms--1/4 Watt | ---- |
| R16 | " 100,000 ohms--1/4 Watt | ---- |
| R17 | " 150 ohms--1/4 Watt | ---- |
| R18 | Tone Control--1/2 megohm | RV30 |

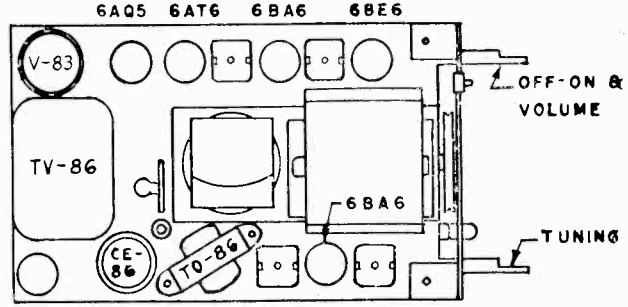
MODELS P43, P45 AUTOMATIC RADIO MFG. CO., INC.



RECEIVER MOUNTING DIAGRAM



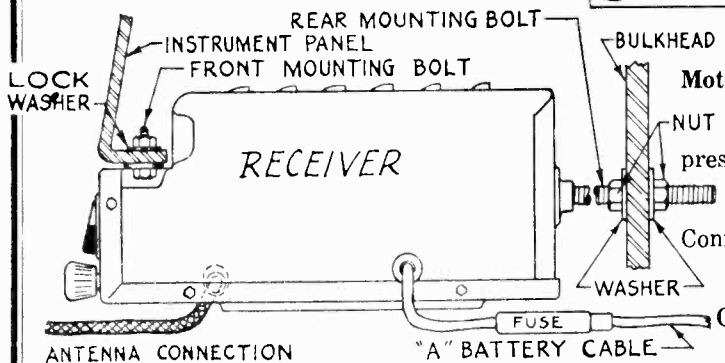




ELECTROLYTIC CONDENSER CE-86
■ 20 MFD 350 VDC
▲ 20 MFD 350 VDC
20 MFD 25 VDC

I.F. 455 KC
RANGE 540 TO 1560 KC

ISSUE 1047

**Automatic Radio MODEL No. M-86**




**Motor Noise Elimination**

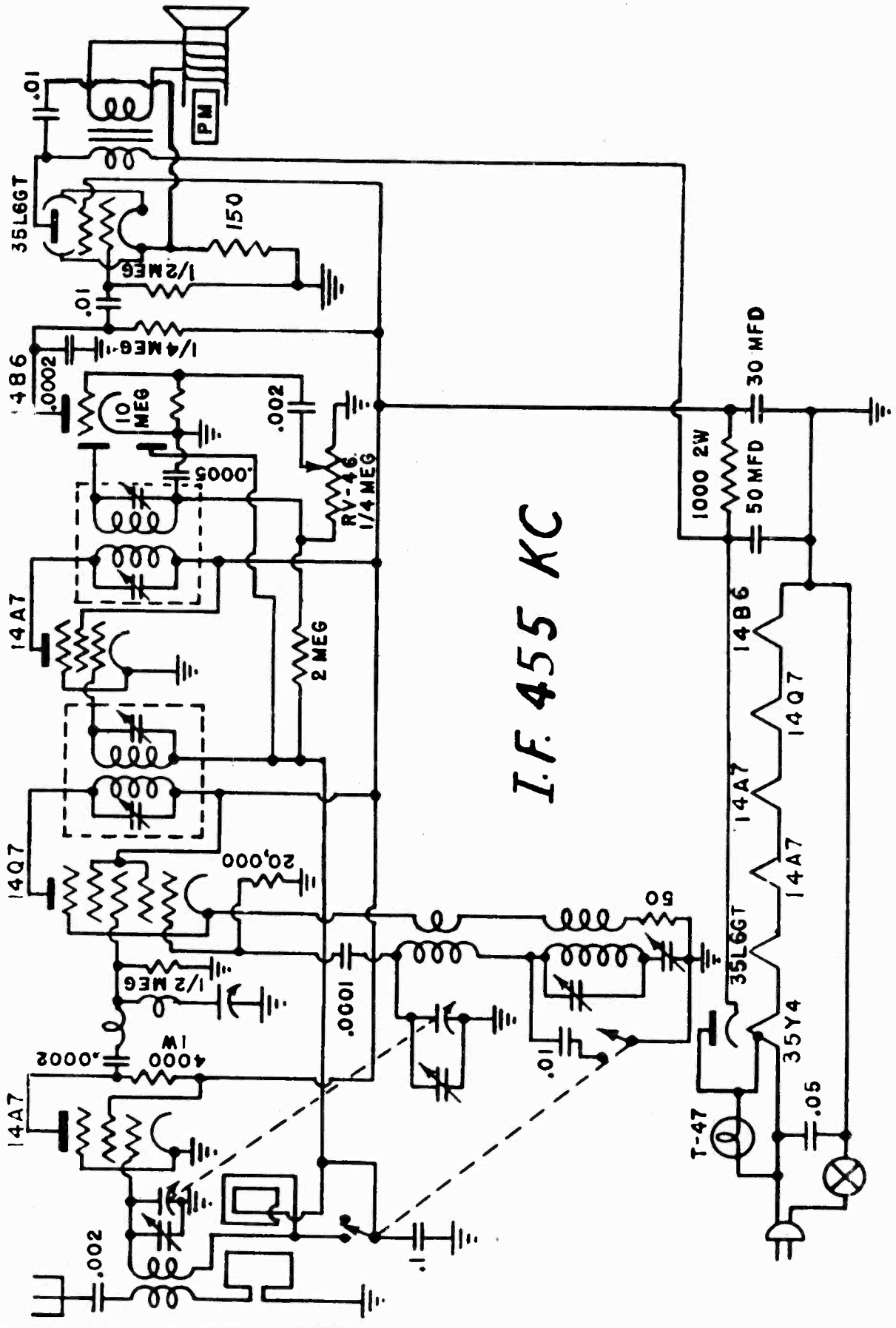
1. Disconnect the center lead in the distributor head of the motor and insert a "distributor suppressor" in the cavity and then place the lead in the top receptacle of the suppressor.

2. Clamp a "generator condenser" under the screw which mounts the cut-out on the generator. Connect the flexible terminal of the condenser to the lead on the cut-out.

**Caution:** Do not screw stud in case beyond point necessary to insure support, otherwise, it may penetrate rear wall of case and cause damage to the instrument.

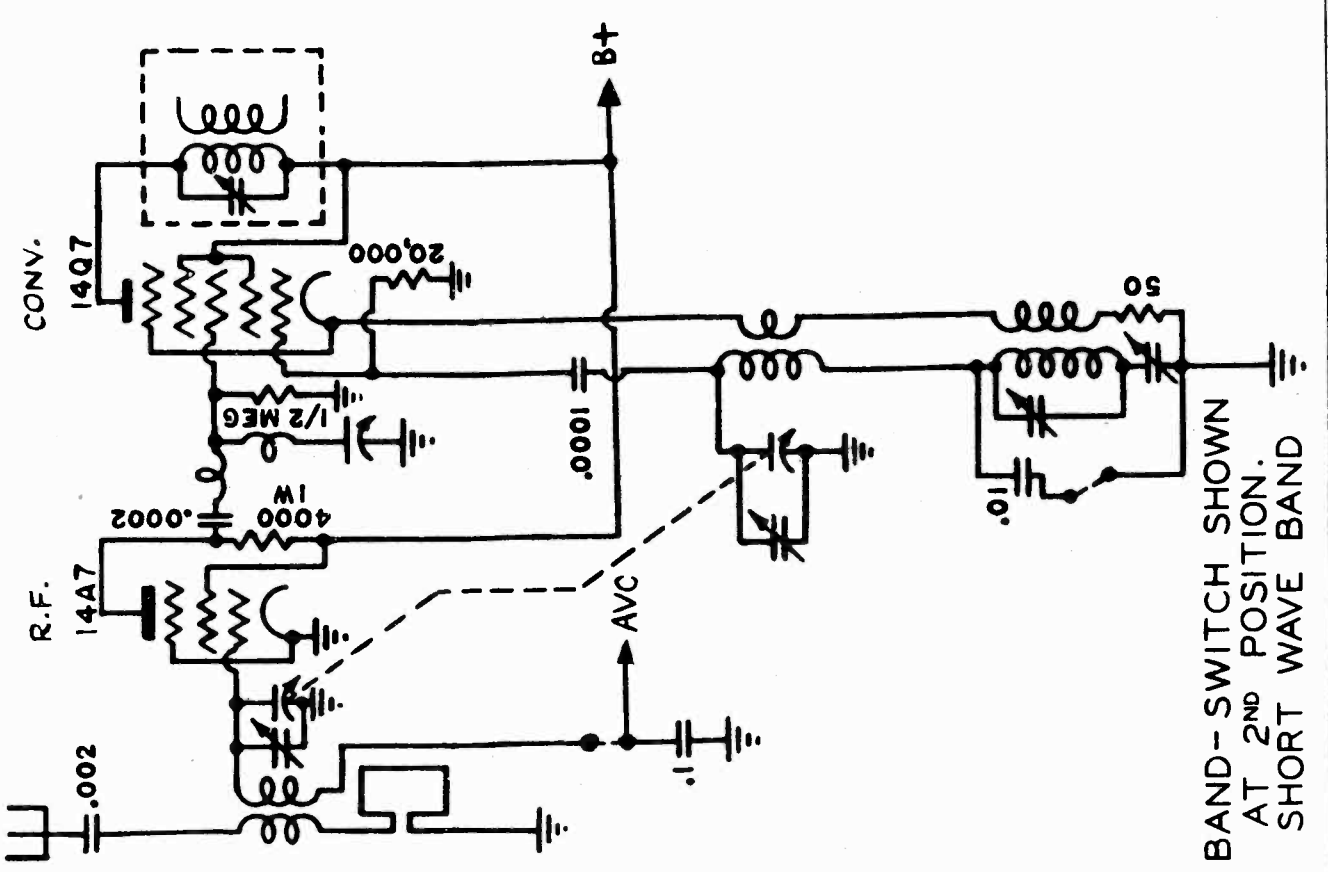
MODELS 660,662,666
Series C

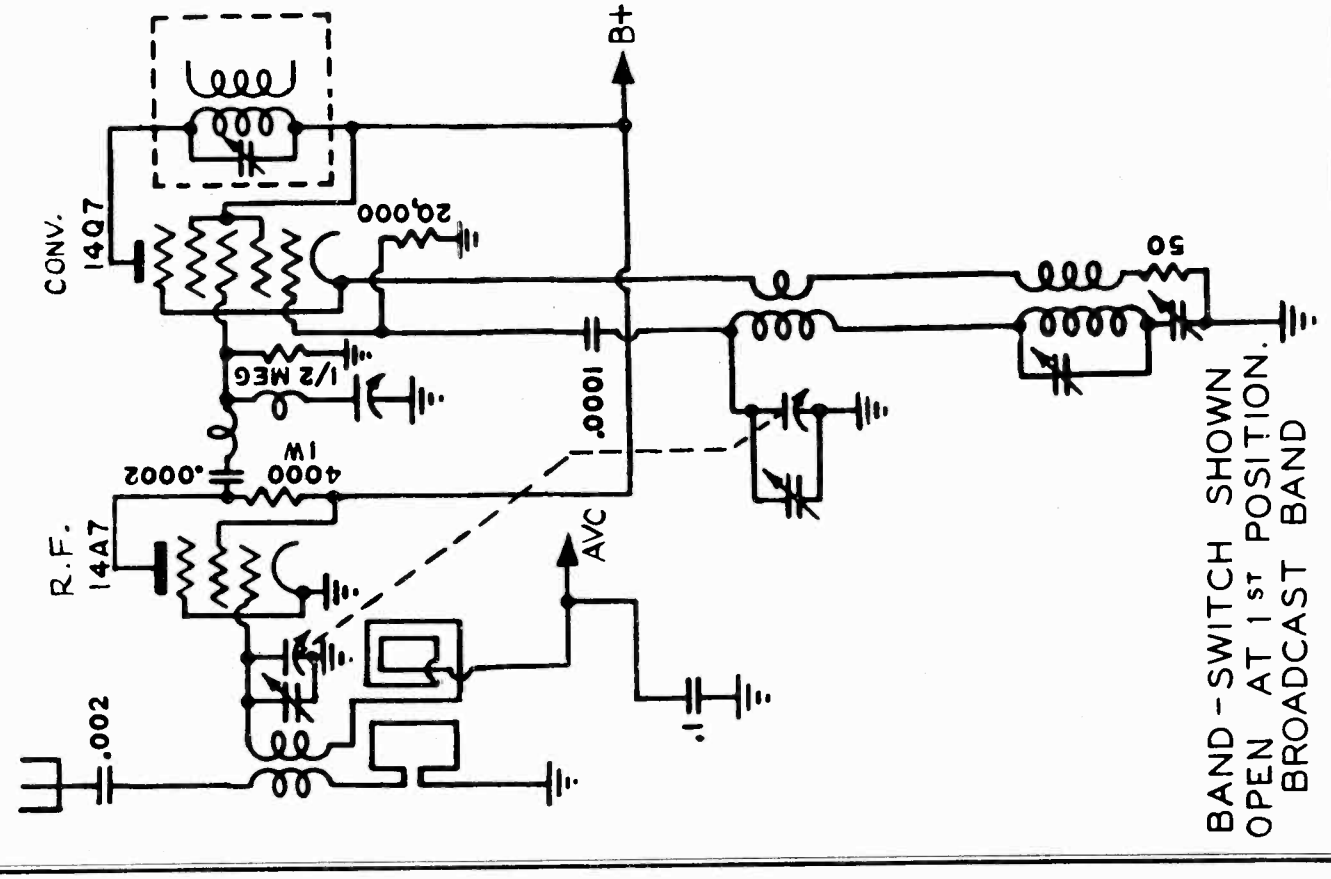
AUTOMATIC RADIO MFG. CO., INC.



AUTOMATIC RADIO MFG. CO., INC.

MODELS 660,662, 666, Series C



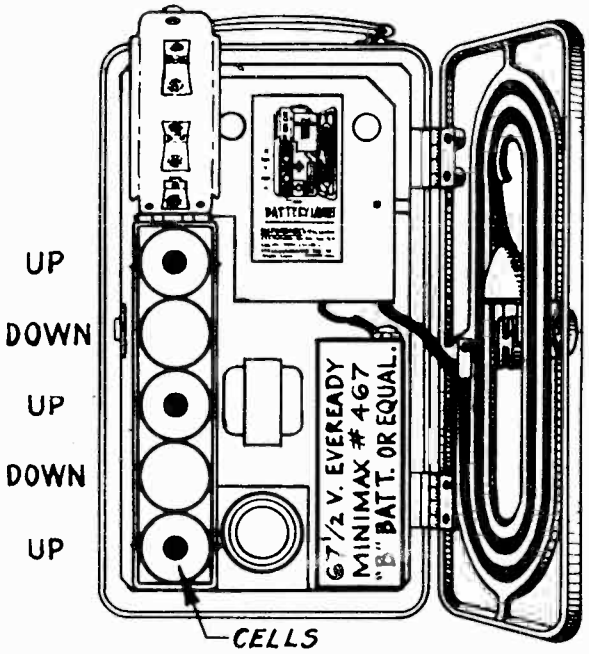
MODELS 660,662,666
Series C

# AUTOMATIC RADIO MFG. CO., INC.

### Alignment Procedure

Connect "jumper" connections from contact pin leads on chassis to contact connections on inside of case. Connect output meter across speaker voice coil. Set volume control at maximum position. Keep output of signal generator at a low value to prevent AVC of receiver from affecting accurate alignment. Connect .1 MFD condenser in series with high side of signal generator. Make all adjustments for maximum output meter indication.

| SIGNAL GENERATOR FREQUENCY | SIGNAL GENERATOR CONNECTION | POSITION OF VARIABLE | ORDER OF ADJUSTMENT |
|---|---|---|---|
| 455 KC | GRID OF IR5 | FULLY OPEN | A1, A2, A3, A4 |
| 1600 KC | GRID OF IR5 | FULLY OPEN | A5 |
| 1400 KC | RADIATE SIGNAL INTO CASE LOOP WITH 2 TURN CONNECTION. | ROTATE UNTIL SIGNAL FROM GENERATOR IS PICKED UP. | A6 |




## BATTERY LAYOUT

### Battery Installation Instructions

Place hand on back of radio with thumb in notch on left of back and swing back door open.

### Flashlight Cell Installation

1. Turn latch, located on lower part of flashlight cell case, to the left until latch is disengaged from battery case.
2. Swing up top of battery case by lifting end containing latch.
3. Insert flashlight cells in order indicated in Figure 4.

### "B" Battery Installation

1. Snap socket connector on red battery lead over connection on battery marked "+" (plus).
2. Insert stud connector on black battery lead into battery connection marked "—" (minus).
3. Slide battery into cabinet in position indicated in Figure 4.

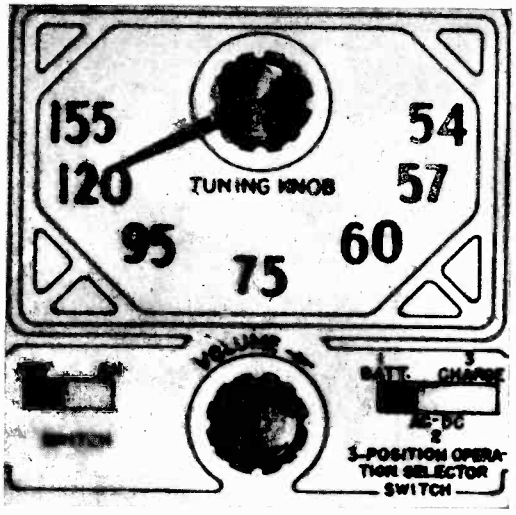
**IMPORTANT: 5 FLASHLIGHT CELLS SIZE "C". MUST BE INSERTED IN BATT. CASE AS SHOWN.**

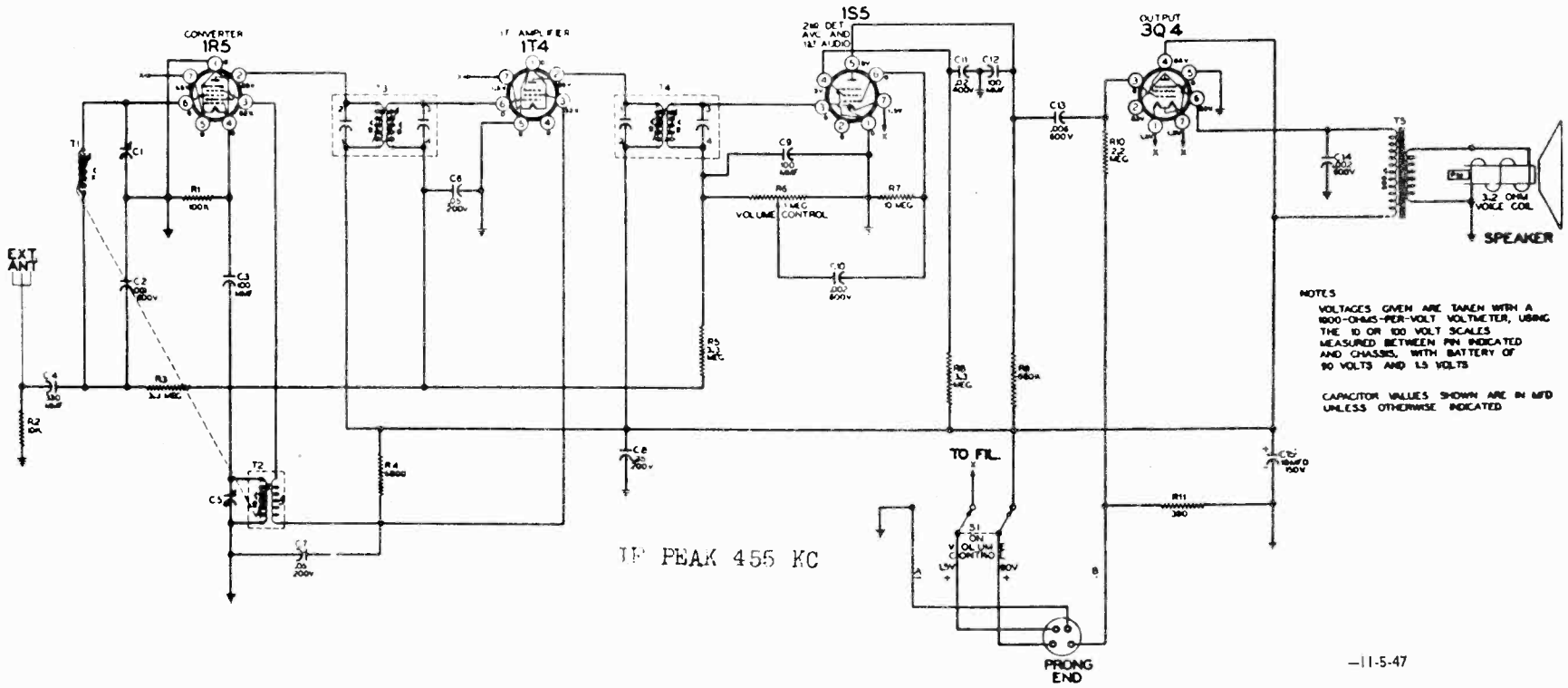
### Battery Charging

The following procedure should be followed when a battery charge is required. (Refer to figure 3 for switch detail.)

1. Plug power line cord into AC or DC 115 Volt power line.
2. Slide "Off-On" switch to "On" position.
3. Slide 3-position Operation Selector Switch to AC-DC position. If radio operates, power outlet is working satisfactorily.
4. Slide 3-position Operation Selector Switch to charge position.

The batteries are now on charge.






## ELECTRICAL SPECIFICATIONS

**Power Supply**..... "A" battery—1.5 volts, 250 ma.
"B" Battery—90 volts, 14 ma.

**Frequency Range**..... 535 to 1625 kc.

**Intermediate Freq.**..... 455 kc.

**Tuning**..... Two permeability-tuned circuits.

**Antenna**..... External only. Also external ground.

**Speaker**..... 4-inch; P.M., voice coil impedance 3.2 ohms.

**Power Output**..... 155 milliwatts undistorted. 300 milliwatts maximum.

**Sensitivity**..... 28 microvolts average for 50-milliwatts output.

**Selectivity**..... 45 kc broad at 1000 times signal at 1000 kc.

**Tube Complement**..... 1R5, converter.
1T4, I. F. amplifier.
1S5, 2nd detector, 1st audio, AVC.
3Q4, power output.

MODEL 4B115
Series A

BELMONT RADIO CORP.

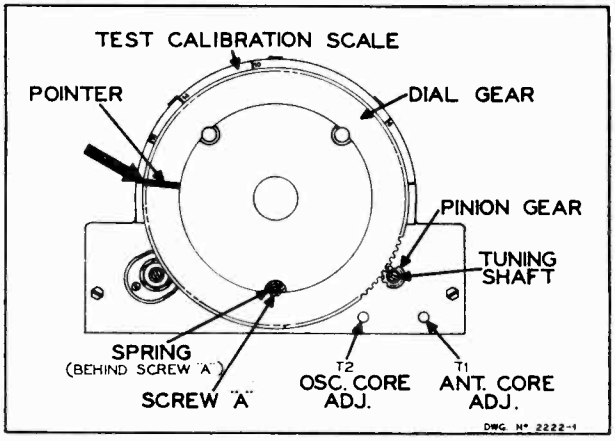
## ALIGNMENT PROCEDURE AND RECEIVER STAGE SENSITIVITIES

The signal source must be an accurately calibrated signal generator capable of supplying R.F. signals modulated 30% with a 400-cycle audio signal. A 400-cycle source is necessary for the audio measurement.

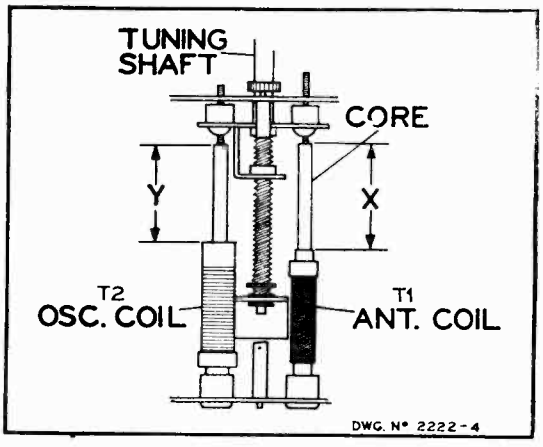
The table below lists the sensitivity at various points. All measurements are based on an output of 50-milliwatts. This may be measured by disconnecting the speaker voice coil and substituting a 3.2-ohm, 5 watt resistor across the secondary winding of the output transformer. A reading of .04 volts across this resistor will be equivalent to a 50-milliwatt output with the speaker connected. Variations of plus or minus 25% are usually permissable. Volume control at maximum for all adjustments.

| SIGNAL GENERATOR | | | | *TUNER SETTING* | *ADJUST FOR MAXIMUM OUTPUT* | *INPUT FOR 50 MILLIWATTS OUTPUT* |
|---|---|---|---|---|---|---|
| *Frequency* | *Coupling Capacitor* | *Connection to Radio* | *Ground Connection* | | | |
| 455 kc | .1 mf. | 1R5, Pin 7 | Chassis | Iron cores all the way out | Cores in output and input I.F. cans | 126 microvolts |
| 1625 kc. | .1 mf. | 1R5, Pin 7 | Chassis | Iron cores all the way out | Oscillator trimmer C5 | ———— |
| 1625 kc. | 200 mmf. | External antenna lead | Chassis | 1625 kc. | Antenna trimmer C1* | 28 microvolts |
| 1400 kc. | 200 mmf. | External antenna lead | Chassis | 1400 kc. | Adjust position of ant. core (see coil illustration view) | 28 microvolts |
| 400 cycles | .1 mf. | 1S5, Pin 6 | Chassis | Volume control clockwise | ———— | .025 volts |

*After the antenna coil has been tracked at 1400 kc, it is necessary to check the antenna trimmer C1 again at 1625 kc. If no appreciable change in trimmer adjustment is necessary, the coil is in track. If the trimmer requires considerable change, the position of the antenna core at 1400 kc must be readjusted. These two adjustments should be made several times, until no trimmer adjustment is required at 1625 kc.

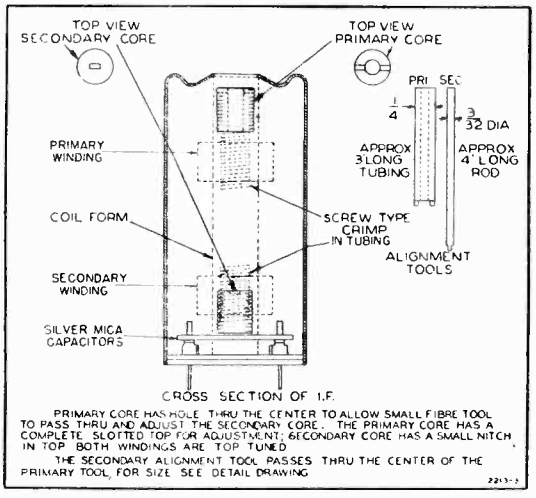



To adjust pointer travel or gear meshing, loosen screw "A". Dial ring can then be moved to disengage teeth.




With tuner tuned to 1625 kc., dimension "Y" should be approximately 1-9/32" and "X" 1-11/32".

**CAUTION**—The I.F. transformer construction is such that two resonance peaks occur for each winding, one peak when the slug is above its coil and another peak when the slug is below its coil. Be sure the upper cores are above the top coils and the lower cores are below the bottom coils (see coil drawing). →



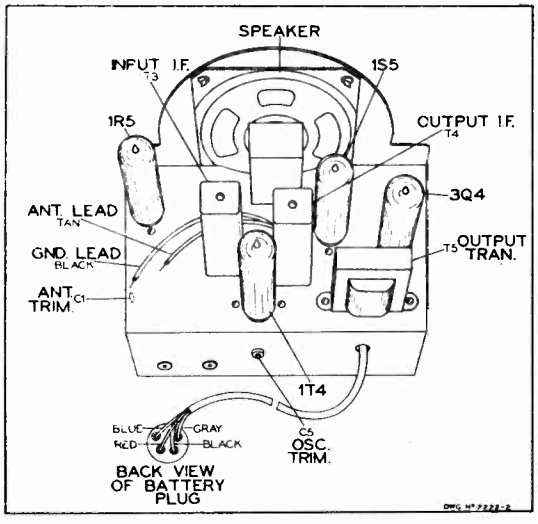
BELMONT RADIO CORP.

MODEL 4B115
SeriesA

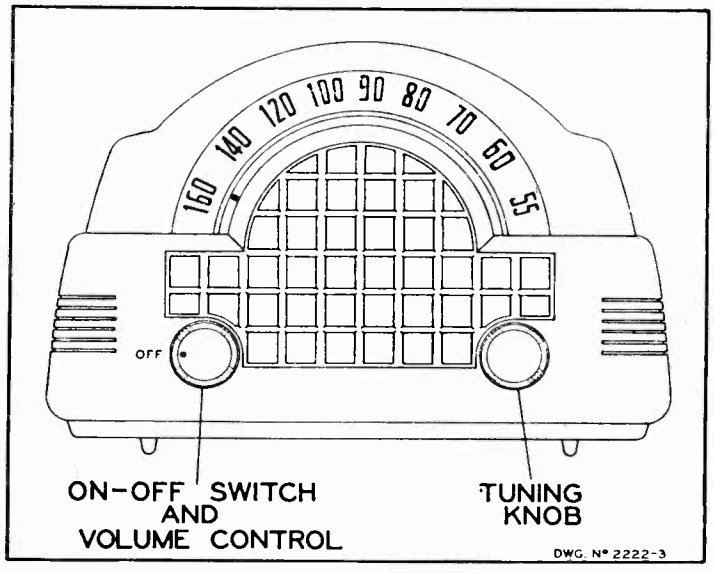
# REPLACEMENT PARTS LIST

**When ordering parts, specify part number, model number, and series**

| Ref. No. | Part No. | Description | Qty. Used In Set | Selling Price Each |
|---|---|---|---|---|
| | | **CONDENSERS** | | |
| C10, C14 | C-8D-10778 | .002 mf x 600 volts | 2 | .25 |
| C11 | C-8D-10774 | .02 mf x 400 volts | 1 | .25 |
| C6, C7 | C-8D-10770 | .05 mf x 200 volts | 2 | .25 |
| C2 | C-8D-10787 | .001 mf x 600 volts | 1 | .25 |
| C8 | C-8D-10775 | .25 mf x 200 volts | 1 | .25 |
| C13 | C-8D-10785 | .006 mf x 600 volts | 1 | .25 |
| C15 | A-8C-11495 | 10 mf x 150 volts, electrolytic | 1 | 1.40 |
| C3, C9, C12 | C-8F3-8 | 100 mmf, mica | 3 | .25 |
| C4 | C-8F3-119 | 330 mmf, mica | 1 | .25 |
| C1, C5 | A-2M-12618 | Trimmer plate | 2 | .15 |
| | A-6M-12616 | Insulator for trimmer | 1 | .10 |
| | 36M-12616-S-3 | Insulator, silvered | 1 | .15 |
| | A-3C-12617 | Spacer | 2 | — |
| | | **RESISTORS** | | |
| R6, S1 | A-10A-13640 | Volume control (1 megohm) and switch | 1 | 1.50 |
| R11 | C-9B1-57 | 390 ohms, ½ watt, 10% | 1 | .25 |
| R10 | C-9B1-33 | 2.2 megohms, ½ watt, 20% | 1 | .25 |
| R9 | C-9B1-30 | 680K ohms, ½ watt, 20% | 1 | .25 |
| R7 | C-9B1-37 | 10 megohms, ½ watt, 20% | 1 | .25 |
| R3, R5, R8 | C-9B1-34 | 3.3 megohms, ½ watt, 20% | 3 | .25 |
| R4 | C-9B1-72 | 6800 ohms, ½ watt, 10% | 1 | .25 |
| R1 | C-9B1-25 | 100K ohms, ½ watt, 20% | 1 | .25 |
| R2 | C-9B1-74 | 10K ohms, ½ watt, 10% | 1 | .25 |
| | | **COILS** | | |
| T2 | A-13D-13647 | Oscillator coil | 1 | 1.00 |
| T1 | A-13E-13648 | Antenna coil | 1 | 1.00 |
| | A-51A-12443 | Iron core for osc. coil | 1 | .50 |
| | A-51A-12655 | Iron core for ant. coil | 1 | .50 |
| | A-25A-13019 | Core mounting grommet | 2 | .05 |
| | A-3M-13020 | Grommet insert | 2 | .05 |
| | A-25A-13005 | Grommet for osc. coil mounting | 1 | .03 |
| | A-25A-13789 | Grommet for ant. coil mounting | 1 | .03 |
| T3, T4 | B-13B-13643 | I.F. transformer, 455 k.c. | 2 | 1.80 |
| | | **DIAL AND TUNING PARTS** | | |
| | A-23G-13753 | Dial scale, decalcomania | 1 | .50 |
| | B-5B-13654-37 | Knob, walnut | 1 | .20 |
| | B-5B-13806-37 | Knob, walnut, with dot | 1 | .20 |
| | A-3A-13478 | Drive shaft | 1 | 1.00 |
| | A-3L-12388 | Drive pinion | 1 | .50 |
| | A-2C-12412 | Dial ring gear | 1 | — |
| | A-2J-13522 | Tension spring for dial | 1 | .10 |
| | | **SPEAKER** | | |
| | B-18A-13652 | P.M. speaker, 4-inch, less output transformer | 1 | 4.00 |
| T5 | B-12C-13641 | Output transformer for speaker | 1 | 1.50 |
| | | **MISCELLANEOUS** | | |
| | 5C-11973-B-36 | Cabinet, walnut | 1 | 3.00 |
| | A-15C-13174 | 7 prong, tube socket | 4 | .25 |
| | B-14A-13653 | Battery cable assembly | 1 | 1.00 |

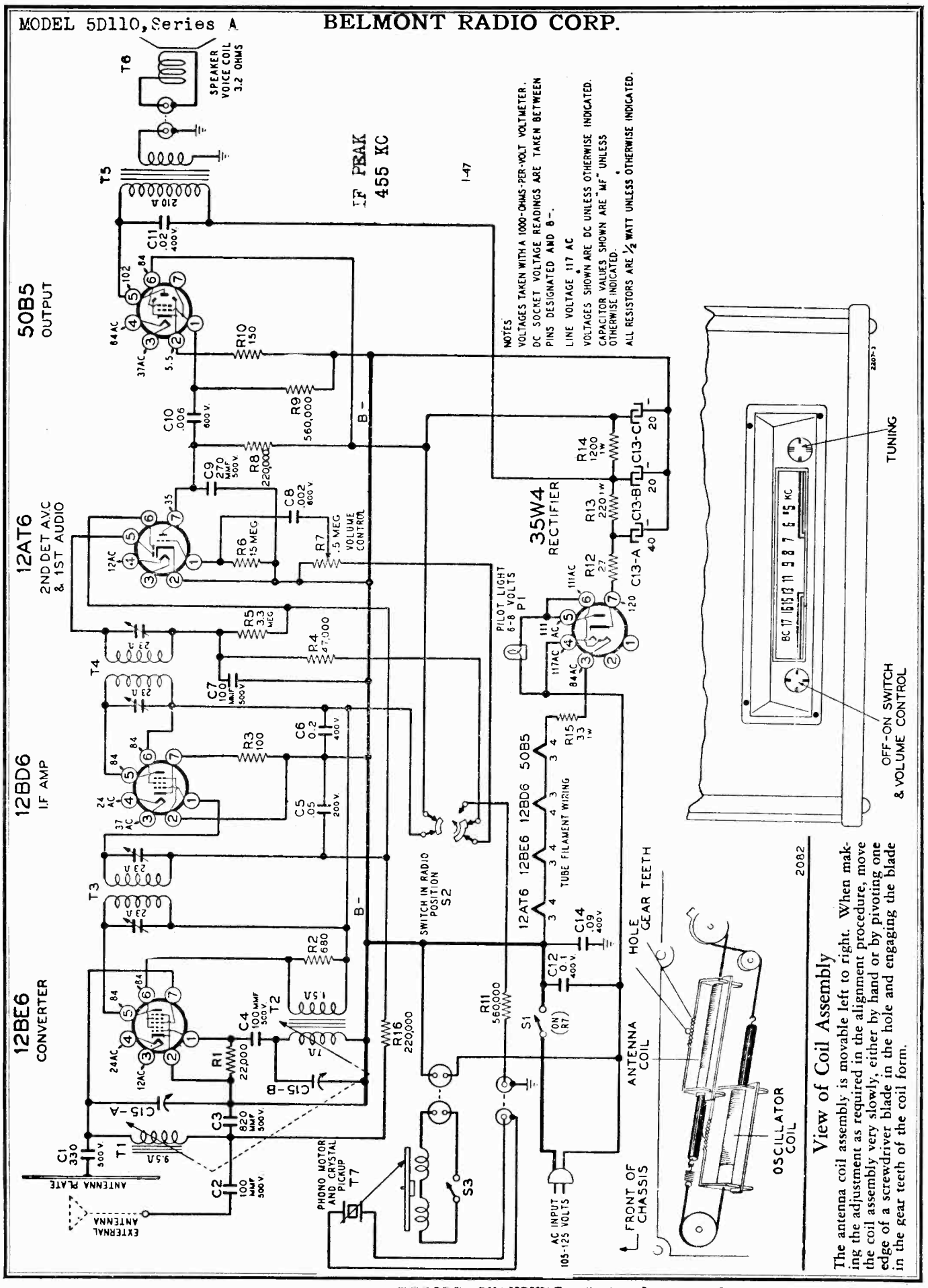



**Chassis View**



MODEL 5D110, Series A

# BELMONT RADIO CORP.




## View of Coil Assembly

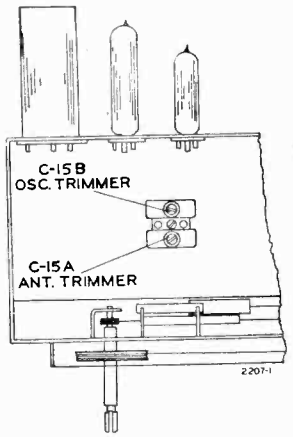
The antenna coil assembly is movable left to right. When making the adjustment as required in the alignment procedure, move the coil assembly very slowly, either by hand or by pivoting one edge of a screwdriver blade in the hole and engaging the blade in the gear teeth of the coil form.



RECORD CHANGERS: Detrola Model 650, RCD.CG.17-1; Russel Model C9, RCD.CH.17-1

| Ref. No. | Part No. | Description |
|---|---|---|
| | | **CAPACITORS** |
| C15-A, C15-B, C15-C | A-8C-10077 | Electrolytic, 40x20x20, 150 volts |
| C15-A, C15-B | A-8E-10723 | Trimmer condenser, dual, antenna and oscillator |
| C14 | C-8D-11251 | .09 mf x 300 volts 10% tubular |
| C6 | C-8D-10942 | .2 mf x 400 volts 10% tubular |
| C5 | C-8D-10770 | .05 mf x 200 volts 20% tubular |
| C10 | C-8D-10785 | .006 mf x 600 volts 20% tubular |
| C8 | C-8D-10789 | .002 mf x 600 volts 20% tubular |
| C11 | C-8D-10774 | .02 mf x 400 volts 20% tubular |
| C12 | C-8D-10760 | .1 mf x 400 volts 10% tubular |
| C1 | C-8E4-119 | 330 mmf x 500 volts 10% mica |
| C3 | C-8E4-247 | 820 mmf x 500 volts 5% mica |
| C9 | C-8E4-118 | 270 mmf x 500 volts 10% mica |
| C2,C4 C7 | C-8E4-113 | 100 mmf x 500 volts 10% mica |
| | | **RESISTORS** |
| R7 S1 | A-10A-10720 | Volume control (500M ohms) and switch |
| R15 | C-9B2-44 | 33 ohms, 1 watt, 10% |
| R8 | C-9B1-90 | 220k ohms, ½ watt, 10% |
| R13 | C-9B2-54 | 220 ohms, 1 watt, 10% |
| R14 | C-9B2-63 | 1200 ohms, 1 watt, 10% |
| R12 | C-9B1-43 | 27 ohms, ½ watt, 10% |
| R4 | C-9B1-82 | 47k ohms, ½ watt, 10% |
| R3 | C-9B1-50 | 100 ohms, ½ watt, 10% |
| R5 | C-9B1-34 | 3.3 megohms, ½ watt, 20% |
| R9 R11 | C-9B1-95 | 560k ohms, ½ watt, 10% |
| R10 | C-9B1-52 | 150 ohms, ½ watt, 10% |
| R6 | C-9B1-302 | 15 megohms, ½ watt, 10% |
| R2 | C-9B1-60 | 680 ohms, ½ watt, 10% |
| R1 | C-9B1-78 | 22k ohms, ½ watt, 10% |
| | | **COILS AND TRANSFORMERS** |
| T1 T2 | C-211-10171 | Tuner unit, permeability tuned, Ant. and Osc. coils |
| T3 | B-13A-10728 | Input I.F. transformer |
| T4 | B-13B-10729 | Output I.F. transformer |
| T5 | B-12C-10074-1 | Output speaker transformer |
| | | **DIAL AND TUNING PARTS** |
| | A-6D-10163 | Dial scale |
| | C-5C-10009-48 | Escutcheon for dial |
| | A-5B-10170-1 | Knobs for radio |
| | B-200-10980 | Dial and bracket assembly |
| | A-55A-10093 | Pilot light and bracket |
| P1 | A-46A-10793 | Pilot light bulb, 6-8 volt type |
| | | **MISCELLANEOUS** |
| T6 | B-18A-11089 | 4x6 oval P.M. speaker |
| | A-15C-10717 | Tube socket |
| | A-2H-10718 | Shield base |
| | A-2H-10974 | Tube shield |
| | B-15B-10076 | Mounting base for electrolytic |
| S2 | A-20A-10722 | Radio-phono switch |
| | A-19B-10727 | Phono motor socket |
| | A-55A-7386-1 | Phono input socket |
| | A-19B-11044 | Speaker socket |
| | A-23A-10344 | Line cord lock |
| | B-14M-11085 | A.C. line cord and plug |
| | A-2E-12192 | Needle cup |
| | B-2E-11038 | Antenna plate |
| | A-5B-11239-1 | Knob for radio-phono switch |
| | A-3A-12263 | Extension shaft for radio-phono switch |
| | A-2M-11074 | Spring clamp for shaft |
| | A-2C-10972 | Indicator plate |
| | | **RECORD CHANGER** |
| S3 T7 | C-201-12545 | Detrola record changer, 105-125 volts, AC, 60 cycles or |
| S3 T7 | B-201-12262-1 | Russel record changer, 105-125 volts AC, 60 cycles |

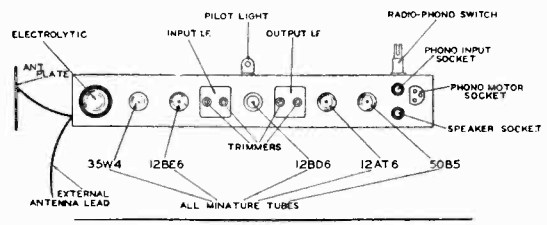
Note: When ordering record changer parts, specify kind of changer. The Detrola changer has a belt drive and the Russell changer has a gear drive




TRIMMER VIEW


DIAL STRINGING VIEW

**DIAL LIGHT**—If the dial lamp burns out the set should not be operated until a new lamp has been installed. Failure to heed this caution may result in a burned-out 35W4 tube. Use only a type T-47 lamp for replacement.




CHASSIS VIEW

## ALIGNMENT PROCEDURE

**(Refer to Chassis and Coil Views on Page 2)**

- Output meter across 3.2-ohm output load.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.
- Volume control at maximum for all adjustments.
- Connect ground post of signal generator to B− of radio.

| *SIGNAL GENERATOR* | | | *TUNER SETTING* | *ADJUST FOR MAXIMUM OUTPUT (in order shown)* |
|---|---|---|---|---|
| *Frequency* | *Dummy Antenna* | *Connection to Radio* | | |
| 455 kc | .1 mf | Grid (pin 7) of 12BE6 | Iron cores all the way out | Trimmers on output and input I.F. cans |
| 1720 kc | .1 mf | Grid (pin 7) of 12BE6 | Iron cores all the way out | Oscillator trimmer C-15B |
| 1720 kc | 200 mmf | Antenna lead | Iron cores all the way out | Antenna trimmer C-15A |
| 1400 kc | 200 mmf | Antenna lead | Turn dial to 1400 kc | Adjust position of antenna coil (see coil view)* |

This adjustment and the previous adjustment are interlocking; therefore repeat the two adjustments alternately for best results.

## ELECTRICAL SPECIFICATIONS

**Power Supply**.....105-125 volts, 60 cycle AC, 55 watts.

**Frequency Range**.....535-1720 kc.

**Intermediate Freq**.....455 kc.

**Antenna**.....Built-in plate; provisions also for external antenna connection.

**Tuning**.....Permeability.

**Speaker**.....4 x 6-inch, P.M., voice coil impedance 3.2 ohms.

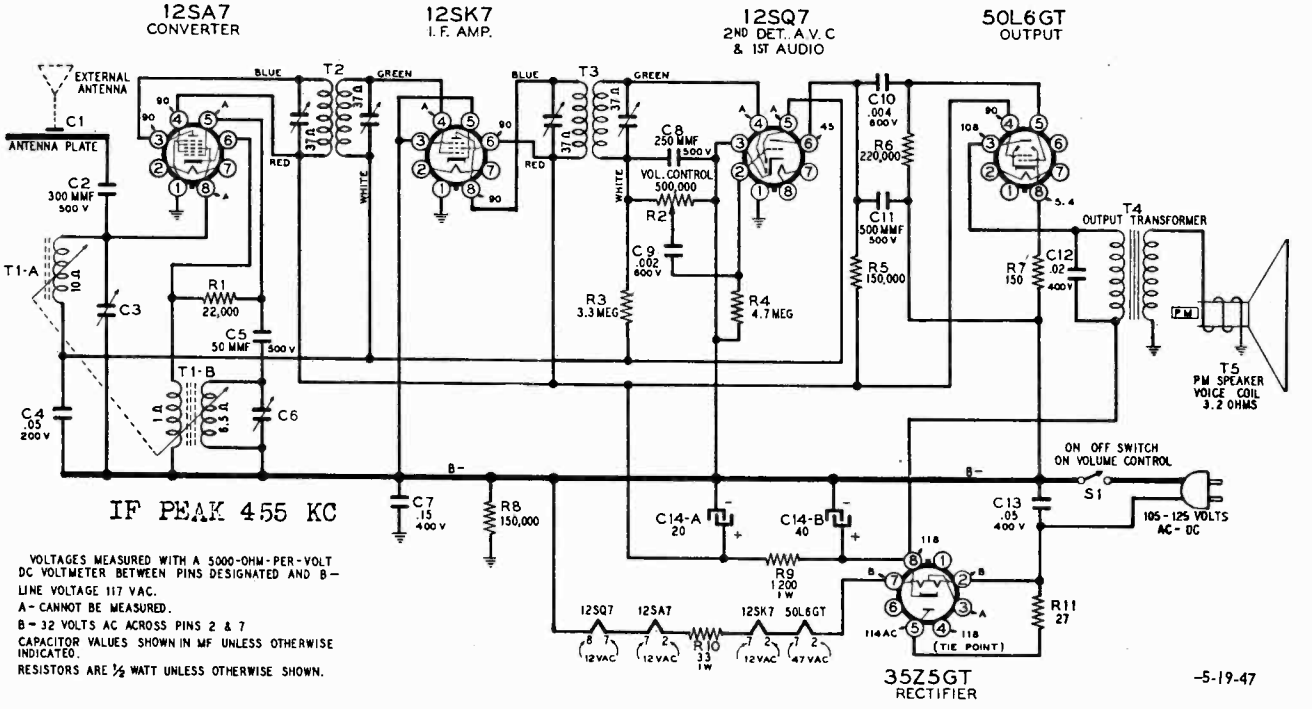
**Power Output**.....0.75 watt undistorted. 1.1 watts maximum.

**Sensitivity**.....34 microvolts average for 50-milliwatt output.

**Selectivity**.....55 kc broad at 1000 times signal at 1000 kc.

MODEL 5D118
Series A

# BELMONT RADIO CORP.




VOLTAGES MEASURED WITH A 5000-OHM-PER-VOLT DC VOLTMETER BETWEEN PINS DESIGNATED AND B-
LINE VOLTAGE 117 VAC.
A- CANNOT BE MEASURED.
B- 32 VOLTS AC ACROSS PINS 2 & 7
CAPACITOR VALUES SHOWN IN MF UNLESS OTHERWISE INDICATED.
RESISTORS ARE ½ WATT UNLESS OTHERWISE SHOWN.

-5-19-47

| Ref. No. | Part No. | Description | Qty. used in Set | Selling Price Each |
|---|---|---|---|---|
| C4 | 100-9 | Capacitor, .05 mf, 200 volts, 25% | 1 | .25 |
| C10 | 100-71 | Capacitor, .004 mf, 600 volts, 25% | 1 | .25 |
| C13 | 100-13 | Capacitor, .05 mf, 400 volts, 25% | 1 | .25 |
| C9 | 100-25 | Capacitor, .002 mf, 600 volts, 25% | 1 | .25 |
| C12 | 100-26 | Capacitor, .02 mf, 400 volts, 25% | 1 | .25 |
| C7 | 100-91 | Capacitor, .15 mf, 400 volts, 25% | 1 | .25 |
| R2 S1 | 101-272 | Volume Control (500,000 ohms) & on-off switch | 1 | 1.00 |
| T4 | 105-139 or C-12C-11763-3 | Output Transformer | 1 | 1.50 |
| | 107-98E | Line Cord & Plug | 1 | .50 |
| T2 | 108-157-H | Input I.F. coil complete in can. Range of trimmers: 39-73 mmf. each | 1 | 1.25 |
| T3 | 108-157-O | Output I.F. coil complete in can. Range of trimmers: 39-73 mmf. each | 1 | 1.25 |
| | 112-1006 | Dial Pointer | 1 | .15 |
| | 112-1008 | Crystal for dial | 1 | .15 |
| | 112-1010C | Dial Scale | 1 | .65 |
| T5 | 114-268 | Speaker, 4" P.M. | 1 | 3.00 |
| C1 | 115-779 | Antenna Plate, walnut color | 1 | .15 |
| C14A C14B | 119-92 | Electrolytic capacitor; 40 mf x 150 volts; 20mf x 150 volts; for 60 cycles | 1 | 1.50 |
| | 120-9 | Cord for dial pointer drive | | .15yd. |
| | 120-184 | Spring for dial pointer drive cord | 1 | .05 |
| | 121-171 | Tube socket, octal, laminated | 5 | .15 |
| | 121-216 | Socket for electrolytic capacitor | 1 | .10 |
| C3—C6 | 124-137 | Dual trimmer; 74-136 mmf (antenna) 95-175 mmf (oscillator) | 1 | .45 |
| | 128-523-17 | Knob, walnut | 2 | .10 |
| | 128-657-9 | Cabinet, bakelite, ivory | 1 | 3.00 |
| | 128-736B | Grille cloth for ivory cabinet | 1 | .10 |
| C11 | 129-2 | Capacitor, 500 mmf, 20%, mica | 1 | .25 |
| C8 | 129-12 | Capacitor, 250 mmf, 20%, mica | 1 | .25 |
| C5 | 129-39 | Capacitor, 50 mmf, 20%, mica | 1 | .25 |
| C2 | 129-114 | Capacitor, 300 mmf, 20%, mica | 1 | .25 |
| | 131-43 | Snap-in rivets for fastening crystal | 2 | .01 |
| | 131-193 | Snap-in rivets for fastening antenna plate | 2 | .01 |
| | 131-356 | Tee-pins for fastening antenna plate | 2 | .01 |
| T1-A,T1-B | 136-18 | Permeability tuning unit complete, including antenna and oscillator coils | 1 | 4.25 |
| | A-2H-10715 | Tube shield, for metal-base 12SA7GT | 1 | .15 |
| | A-2H-11271 | Tube shield, for bakelite-base 12SA7GT | 1 | .15 |
| R5 R8 | C-9B1-26 | Resistor, 150,000 ohms, ½ watt, 20% | 2 | .25 |
| R6 | C-9B1-27 | Resistor, 220,000 ohms, ½ watt, 20% | 1 | .25 |
| R3 | C-9B1-34 | Resistor, 3.3 megohms, ½ watt, 20% | 1 | .25 |
| R4 | C-9B1-35 | Resistor, 4.7 megohms, ½ watt, 20% | 1 | .25 |
| R11 | C-9B1-43 | Resistor, 27 ohms, ½ watt, 10% | 1 | .25 |
| R7 | C-9B1-52 | Resistor, 150 ohms, ½ watt, 10% | 1 | .25 |
| R1 | C-9B1-78 | Resistor, 22,000 ohms, ½ watt, 10% | 1 | .25 |
| R10 | C-9B2-4 | Resistor, 33 ohms, 1 watt, 10% | 1 | .25 |
| R9 | C-9B2-63 | Resistor, 1200 ohms, 1 watt, 10% | 1 | .25 |

BELMONT RADIO CORP.

MODEL 5D118
Series A

## ALIGNMENT PROCEDURE

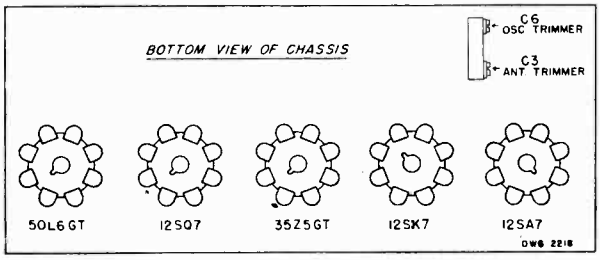
Volume control—Maximum all adjustments.

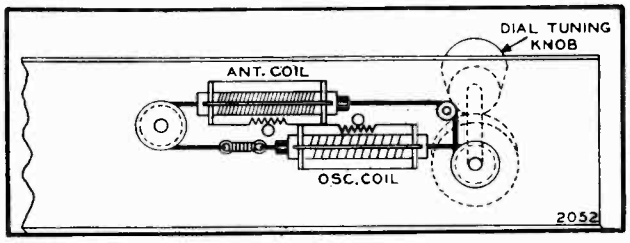
Connect B—of radio chassis (12SQ7-Pin 3) to ground post of signal generator through .1 Mfd. condenser.

| *SIGNAL GENERATOR* | | | *POSITION OF IRON CORES (Dial Setting)* | *ADJUST TRIMMERS TO MAXIMUM (in order shown)* |
|---|---|---|---|---|
| *Frequency Setting* | *Dummy Antenna* | *Connection to Radio* | | |
| 455 Kc. | .1 MFD. | Connect to Metal Antenna Backplate | Iron Cores All the way out | Trimmers on output and input I. F. cans |
| 1720 Kc. | .1 MFD. | Connect to Metal Antenna Backplate | Iron Cores All the way out | Osc. Trimmer (C6) (See voltage chart) |
| 1720 Kc. | 200 MMF. | Connect to Outside Antenna Clip | Iron Cores All the way out | Ant. Trimmer (C3) (See voltage chart) |
| 1400 Kc. | 200 MMF. | Connect to Outside Antenna Clip | Turn Dial to 1400 Kc. | Adjust position of antenna coil (See coil assembly view) |
| 1720 Kc. | 200 MMF. | Connect to Outside Antenna Clip | Turn Dial to 1720 Kc. | Adjust trimmer (C3) (See voltage chart) |

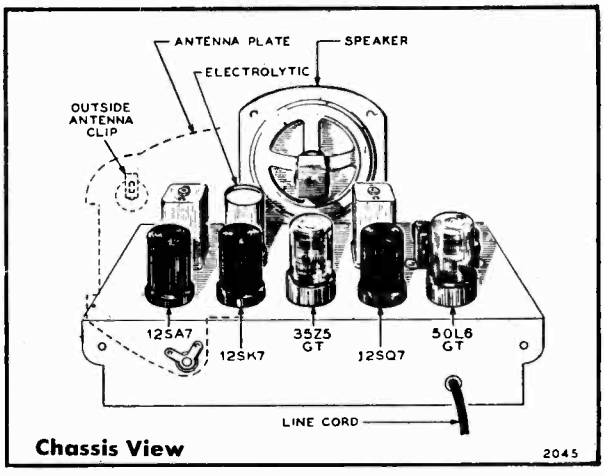
NOTE "A"—The antenna coil assembly is made so that it is movable. When making the adjustment as given in the alignment procedure move the coil assembly very slowly. It can be moved by hand or by pivoting one edge of the blade of a screwdriver in the hole and engaging the blade in the gear teeth of the coil form.

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1720 Kc. If no appreciable change in trimmer adjustment is made the coil is in track. If the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at 1720 Kc.

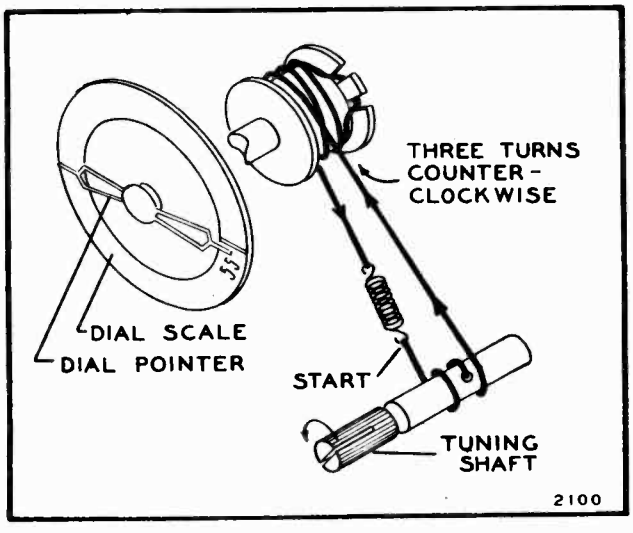


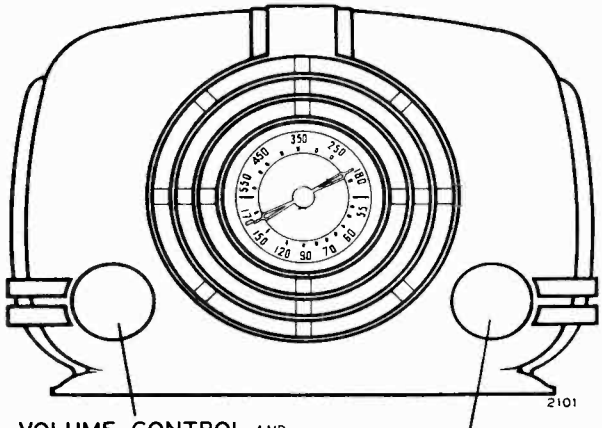

**Coil Assembly View**




**Chassis View**




**Dial Stringing View**

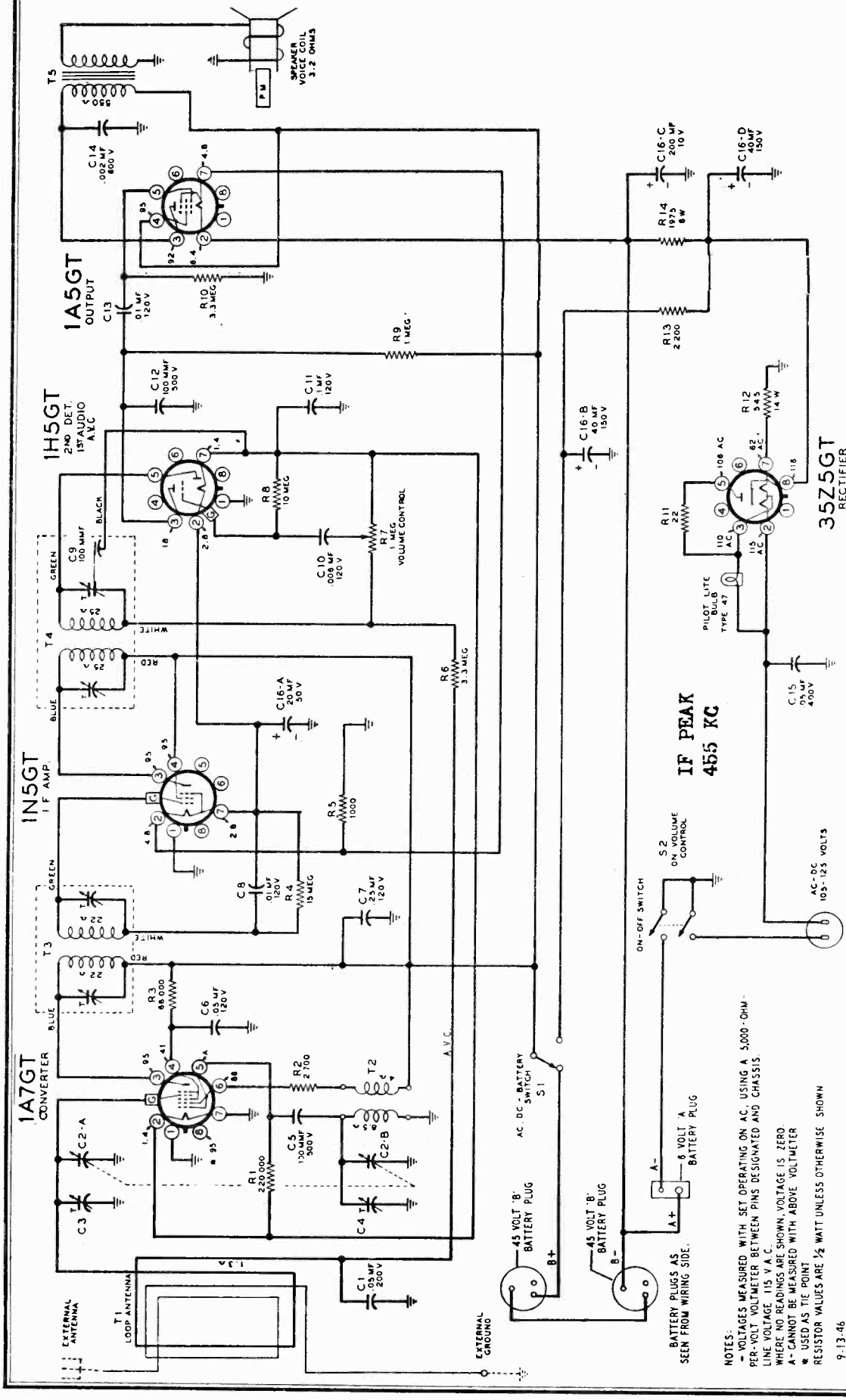



**IMPORTANT NOTE ON TUBE REPLACEMENT**

**Replace a defective metal 12SK7 tube with another metal tube. Replace a glass 12SK7 tube with a metal tube or with an exact duplicate of the tube now in the set.**

MODEL 5P19, Series A

# BELMONT RADIO CORP.




NOTES:
- VOLTAGES MEASURED WITH SET OPERATING ON AC, USING A 5,000-OHM-PER-VOLT VOLTMETER BETWEEN PINS DESIGNATED AND CHASSIS. LINE VOLTAGE 115 V A.C.
WHERE NO READINGS ARE SHOWN, VOLTAGE IS ZERO
A- CANNOT BE MEASURED WITH ABOVE VOLTMETER
* USED AS TIE POINT
RESISTOR VALUES ARE ½ WATT UNLESS OTHERWISE SHOWN

9-13-46

**PILOT LIGHT** – If the pilot lamp burns out, the set should not be operated on AC or DC power until a new lamp has been installed. Failure to heed this caution may result in a burned-out 35Z5GT tube.

| | |
|---|---|
| **Power Supply** | 105 to 125 volts, DC or 50-60 cycle AC, 30 watts. Battery: A—6 volts, 58 ma. B—90 volts, 9 ma. |
| **Frequency Range** | 530 to 1650 kc. |
| **Intermediate Freq.** | 455 kc. |
| **Tuning** | Two-gang capacitor. |
| **Antenna** | Built-in loop. Provisions also for external antenna and ground. |
| **Speaker** | 5-inch; P.M.; voice coil impedance 3.2 ohms. |
| **Power Output** | 80 milliwatts undistorted. 180 milliwatts maximum. |
| **Sensitivity** | 30 microvolts average for 50-milliwatt output. |
| **Selectivity** | 43 kc broad at 1000 times signal at 1000 kc. |

# BELMONT RADIO CORP.

MODEL 5P19, Series A

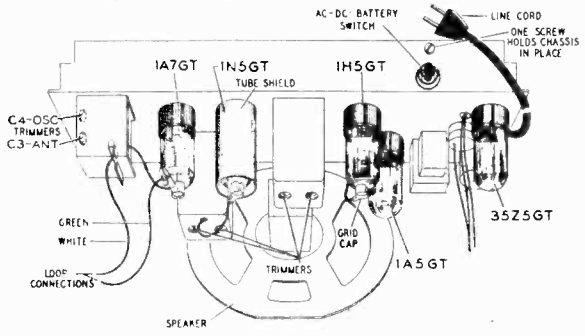
## ALIGNMENT PROCEDURE

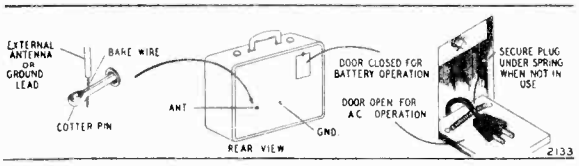
- Output meter across 3.2-ohm output load.
- Volume control at maximum for all adjustments.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.

| SIGNAL GENERATOR | | | | TUNER SETTING | ADJUST TRIMMERS TO MAXIMUM OUTPUT (in order shown) |
|---|---|---|---|---|---|
| Frequency | Coupling Capacitor | Connection to Radio | Ground Connection | | |
| 455 kc | .1 mf | 1A7GT grid cap* | Chassis | Rotor full open (plates out of mesh) | Input and output trimmers on IF cans |
| 1650 kc | .1 mf | 1A7GT grid cap* | Chassis | Rotor full open (plates out of mesh) | Oscillator trimmer C4 |
| 1400 kc† | 200 mmf | External antenna clip | External ground clip | 1400 kc | Antenna trimmer C3 |

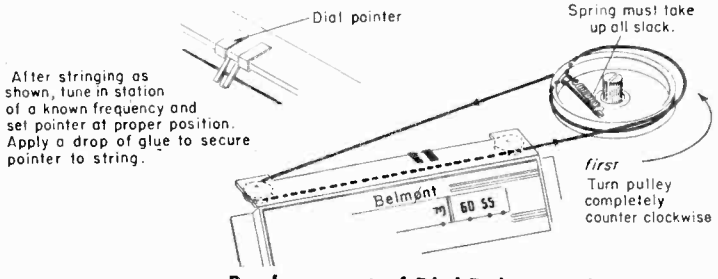
* If loop is not connected when making this adjustment, substitute a 1-megohm resistor across the loop leads.

† For this adjustment chassis should be remounted in cabinet and loop connected. Antenna trimmer can be reached through a hole in the side of the cabinet.

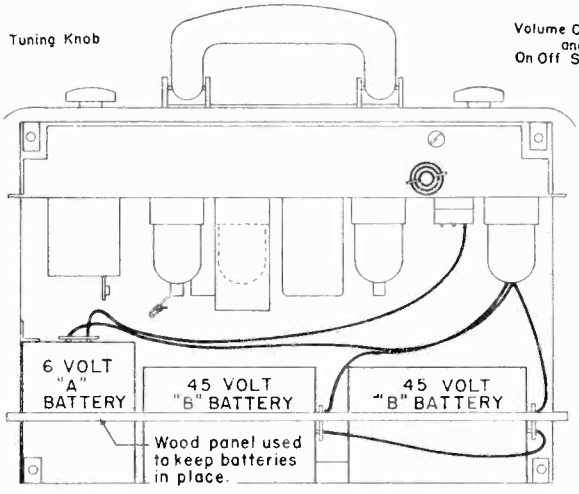



**Chassis View, Showing Tube Location**




**Replacement of Dial Pointer Drive Cord**




### CAPACITORS

| | | |
|---|---|---|
| C1 | 1009 | .05 mf, 200 volts, 25% |
| C2-A,C2-B, C3, C4 | B-8A-10246 | Two-gang, including antenna and oscillator trimmers. Range of gang: 14-452 mmf (ant) and 10-198 (osc). |
| C5, C12 | 1295 | 100 mmf, 20%, mica |
| C6 | 100128 | .05 mf, 120 volts, 25% |
| C7 | 100135 | .25 mf, 120 volts, 25% |
| C8, C13 | 100127 | .01 mf, 120 volts, 25% |
| C9 | | Approx. 100 mmf. Part of I.F. can |
| C10 | 100134 | .006 mf, 120 volts, 25% |
| C11 | 100133 | .1 mf, 120 volts, 25% |
| C14 | 10025 | .002 mf, 600 volts, 25% |
| C15 | 10013 | .05 mf, 400 volts, 25% |
| C16-A, -B -C, -D | 119123 | Electrolytic; 20 mf x 50 volts, 40 mf x 150 volts, 200 mf x 10 volts, 40 mf x 150 volts |

### RESISTORS*

| | | |
|---|---|---|
| R1 | C-9B1-27 | 220,000 ohms, ½ watt, 20% |
| R2 | C-9B1-67 | 2,700 ohms, ½ watt, 10% |
| R3 | C-9B1-84 | 68,000 ohms, ½ watt, 10% |
| R4 | C-9B1-302 | 15 megohms, ½ watt, 20% |
| R5 | C-9B1-62 | 1,000 ohms, ½ watt, 10% |
| R6, R10 | C-9B1-34 | 3.3 megohms, ½ watt, 20% |
| R7, S2 | 101252 | Volume contol (1 megohm) and on-off switch |
| R8 | C-9B1-37 | 10 megohms, ½ watt, 20% |
| R9 | C-9B1-31 | 1 megohm, ½ watt, 20% |
| R11 | C-9B1-42 | 22 ohms, ½ watt, 10% |
| R12 | 130343 | 545 ohms, 14 watts, 5% |
| R13 | C-9B1-66 | 2,200 ohms, ½ watt, 10% |
| R14 | 130344 | 1,975 ohms, 6 watts, 5% |

### COILS AND TRANSFORMERS

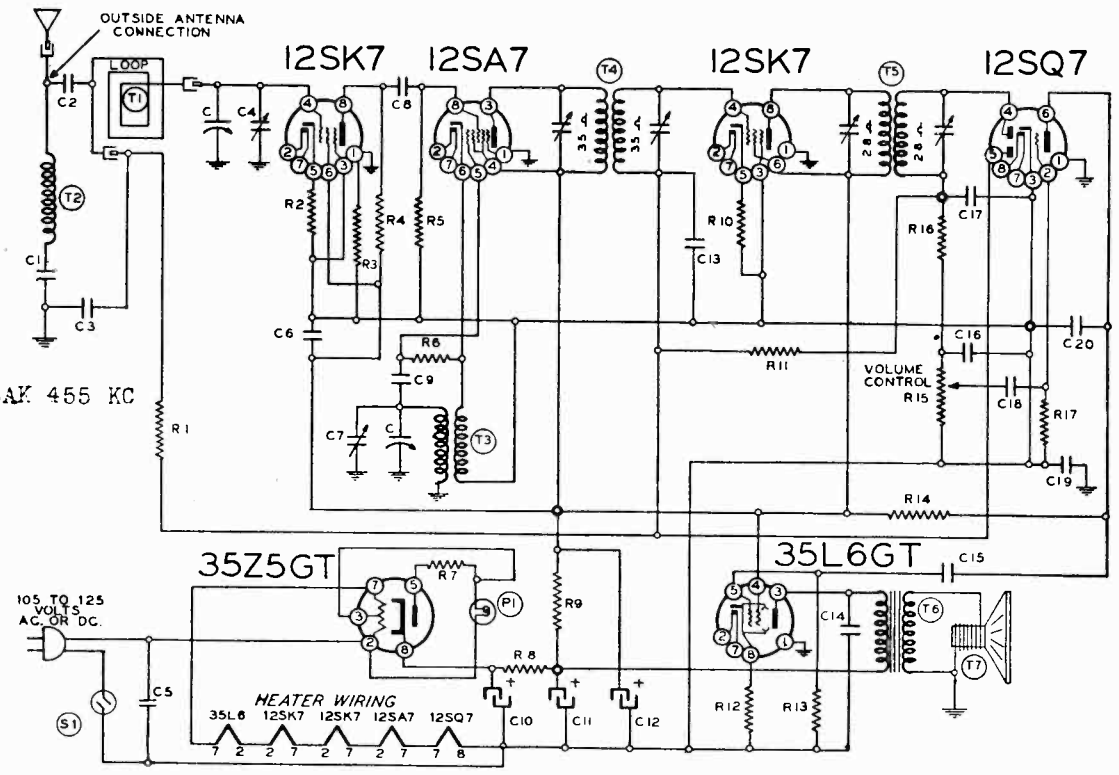
| | | |
|---|---|---|
| T1 | B-13E-10250 | Loop antenna assembly |
| T2 | A-13D-10239 | Oscillator coil |
| T3 | 108201 | Input I.F. transformer. Range of trimmers: 53-97 mmf each. |
| T4, C9 | 108200 | Output I.F. transformer. Range of trimmers: 39-71 mmf each. |
| T5 | 105127 | Output transformer |

### MISCELLANEOUS

| | | |
|---|---|---|
| | 114240B | Speaker, 5-inch, P.M. |
| | 120406 | "B"-battery cable assembly |
| | 120407 | "A"-battery cable assembly |
| | 121171 | Tube socket |
| S1 | 125153 | Line-battery switch |
| | 120417 | Spring for line-battery switch |
| | B-14M-10088 | Line cord and plug |
| | 115396B | Tube shield |
| | B-6D-10249 | Dial scale |
| | 112925 | Diffuser |
| | A-2M-7758 | Snap-in rivets for diffuser |
| | B-2M-10383 | Snap-in rivets for dial scale |
| | 112922 | Dial pointer |
| | B-53A-11340 | Drive cord for dial pointer (20") |
| | 120197 | Spring for drive cord |

MODEL 6D110
Series A

# BELMONT RADIO CORP.




| Schematic Diagram Symbol | Part No. | Description |
|---|---|---|
| | | **CONDENSERS** |
| C1 | 10011 | 0.01 mfd., ±25%, 400 volts, tubular |
| C2 | 129132 | 0.000125 mfd., ±5%, mica |
| C3, C14 | 10026 | 0.02 mfd., ±25%, 400 volts, tubular |
| C5 | 1001 | 0.1 mfd., +50%-10%., 400 volts, tubular |
| C6 | 1006 | 0.25 mfd., ±20%, 200 volts, tubular |
| C8, C9, C17, C20 | 1295 | 0.0001 mfd., ±20%, mica |
| C10, C11, C12 | 11994 | 40 mfd., 20 mfd., 20 mfd., electrolytic (for 60 cycles) |
| | or | |
| C10, C11, C12 | 11995 | 60 mfd., 40 mfd., 40 mfd., electrolytic (for 25 cycles) |
| C13 | 1009 | 0.05 mfd., ±25%, 200 volts, tubular |
| C15 | 100106 | 0.004 mfd., ±10%, 600 volts, tubular |
| C16 | 12939 | 0.00005 mfd., ±20%, mica |
| C18 | 10025 | 0.002 mfd., ±25%, 600 volts, tubular |
| C19 | 100110 | 0.2 mfd., +30%-10%, 400 volts |
| | | **RESISTORS*** |
| R1, R3 | A-9B1-26 | 150,000 ohms, ±20%, ½ watt |
| R2 | A-9B1-50 | 100 ohms, ±10%, ½ watt |
| R4 | A-9B1-70 | 4700 ohms, ±10%, ½ watt |
| R5 | A-9B1-25 | 100,000 ohms, ±20%, ½ watt |
| R6 | A-9B1-82 | 47,000 ohms, ±10%, ½ watt |
| R7 | A-9B1-42 | 22 ohms, ±10%, ½ watt |
| R8 | A-9B2-54 | 220 ohms, ±10%, 1 watt |
| R9 | A-9B2-63 | 1200 ohms, ±10%, 1 watt |
| R10, R12 | A-9B1-52 | 150 ohms, ±10%, ½ watt |
| R11 | A-9B1-34 | 3.3 megohms, ±20%, ½ watt |
| R13 | A-9B1-29 | 470,000 ohms, ±20%, ½ watt |
| R14 | A-9B1-27 | 220,000 ohms, ±20%, ½ watt |
| R16 | A-9B1-23 | 47,000 ohms, ±20%, ½ watt |
| R17 | A-9B1-35 | 4.7 megohms, ±20%, ½ watt |
| | | **COILS** |
| T1, T2 | B-13E-10213 | Loop antenna, complete with back and loading coil. |
| T3 | A-13D-10215 | Oscillator coil assembly, complete |
| T4 | 108140G | Input I.F. coil assembly, complete in can |
| T5 | 108145C | Output I.F. coil assembly, complete in can |
| | | **SPEAKER** |
| T7 | 114191 | 5-inch P.M. speaker, with bracket |
| T6 | 10595B | Output transformer for speaker |

**NOTE:**

128449B should be 128449B-1 or -2
128527-9 should be B-5B-10994-9
117424 should be A-3F-10995
B-6D-10214 should be B-6D-10214-1

| Schematic Diagram Symbol | Part No. | Description |
|---|---|---|
| | | **DIAL AND TUNING PARTS** |
| P1 | 107249 | Pilot light bulb, 6-8 volts, type T-47 |
| | 107311 | Socket assembly for pilot light |
| | 112784 | Station call letters, set of two sheets |
| | 115448B | End plate for tuner assembly (end of chassis) |
| | 115448D | End plate for tuner assembly (next to gang) |
| | 115146 | Cams (6 used on cam shaft) |
| | 115143 | Key washers (13 used on cam shaft) |
| | 117528 | Brass spacer (1 used on cam shaft) |
| | 117602 | Brass spacer (4 used on cam shaft) |
| | 131181 | Compression spring for locking collar |
| | 117604 | Locking collar |
| | 117470 | Brass spacer |
| | 112746 | Drive pulley |
| | 117600 | Lever shaft |
| | 115361 | Lever, assembled with cam roller |
| | 120283 | Return spring for lever |
| | 117612 | Stop rod for lever |
| | 115543 | Dial bracket with three pulleys |
| | 112745 | Pointer |
| | B-6D-10214 | Dial scale, calibrated |
| | or | |
| | 112-740B | Dial scale |
| | 112744 | Crystal, clear, to cover dial scale |
| | 120285 | Coil tension spring (inside of cam shaft string drum) |
| | 117424 | Locking screw, in center of tuning knob. |
| | | **MISCELLANEOUS** |
| | 121171 | Tube sockets, 8-prong octal |
| R15, S1 | 101211 | Volume control and on-off switch |
| C, C4, C7 | B-8A-10212 | Variable condenser, 2-gang |
| | 10798D | Line cord and plug |
| | 117225 | Bracket for filter condenser |
| | 128527-9 | Knob (tuning), bakelite |
| | 120388 | Locking spring, for tuning knob |
| | 128154-8 | Knob (volume), tenite |
| | 128444-9 | Cabinet, bakelite |
| | 128452 | Baffle, cardboard |
| | 131193 | Cinch buttons, to fasten baffle and back of cabinet |
| | 13141 | Cinch button, for base of cabinet |
| | 128451 | Grill cloth, crinoline |
| | 128292-8 | Pushbuttons, ivory |
| | 131102 | Washer, brass, for chassis mounting screws |
| | 132108 | Screws, No. 6 x ½" hex head, for mounting chassis |
| | 134101 | Rubber bumper for bottom of cabinet |
| | 128449B | Back for cabinet, less loop antenna assembly |

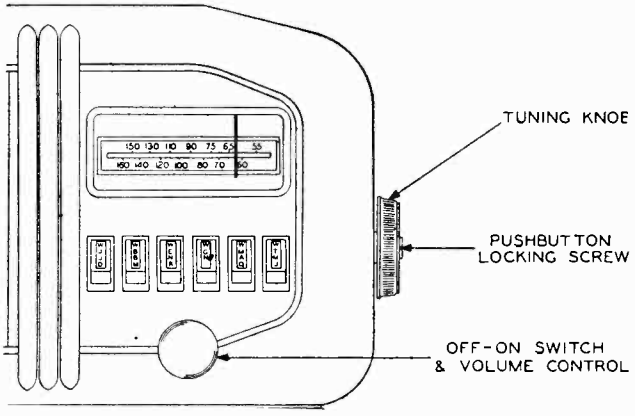
BELMONT RADIO CORP. MODEL 6D110
Series A

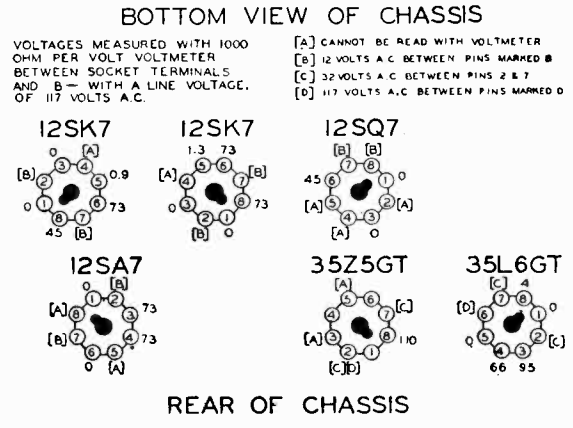
## ALIGNMENT PROCEDURE

- No aligning adjustments should be attempted until all other possible causes of trouble have been checked.
- Chassis must be removed from cabinet for proper alignment. Slight adjustments of the oscillator and antenna circuits can be made, without removing the chassis, through two holes provided on the bottom of the cabinet. The two adjustment screws can be reached with a long insulated screwdriver.
- It is important that during alignment the loop antenna be maintained at the same distance from the chassis as when the chassis is installed in the cabinet.
- Turn volume control to maximum for all adjustments.
- Connect ground post of signal generator to B— of radio through a 0.1 mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.

| Band | Signal Generator Frequency Setting | Dummy Antenna | Connection to Radio | Tuning Condenser Setting | Adjust for maximum output (see chassis view) |
|---|---|---|---|---|---|
| I.F. | 455 Kc. | .1 mfd. | Grid of 12SA7 | Rotor full open (plates out of mesh) | 4 trimmers on input and output I.F. transformers |
| Broadcast | 1650 Kc. | .1 mfd. | Grid of 12SA7 | Rotor full open (plates out of mesh) | Oscillator trimmer C7 on bottom of radio |
| | 1400 Kc. | None | See note below | Set dial at 1400 Kc. | Antenna trimmer C2 on bottom of radio |

Note: Lay output lead of generator in back of loop antenna. Turn up generator output. Loop antenna will pick up energy.

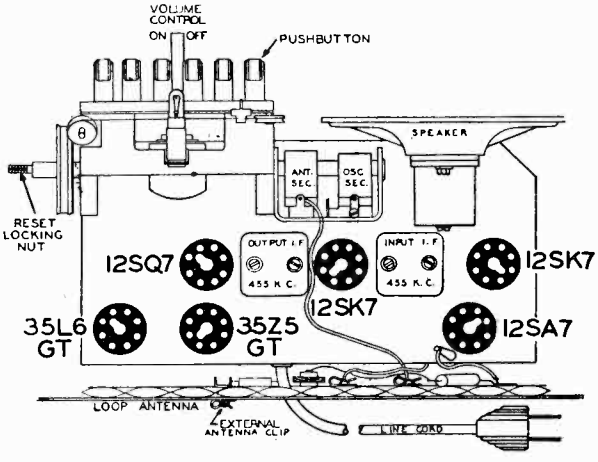



### SETTING THE PUSHBUTTONS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations which you select. They can be set up in any order.

1. Turn on the radio. Allow it to warm up for at least one minute.
2. Push out the call letters of the six stations from the call-letter sheets.
3. Insert one call-letter tab in the rectangular opening in each of the pushbuttons, in any sequence. Press an acetate tab (supplied in small envelope) into each of the pushbuttons.
4. Check to see that the locking screw in the center of the tuning knob (see illustration) is loose. If it is not, turn it several turns to the left (counterclockwise). A coin may be used for this purpose.
5. Press the first pushbutton down **all the way**. With one hand hold the button down **firmly** and with the other carefully tune in the desired station. Release the pushbutton.
6. Follow this procedure for each of the five other buttons, adjusting each one for a different station.
7. Rotate the tuning knob on the side of the cabinet as far to the right as it will go. Tighten the locking screw in the center of the knob. IT IS IMPORTANT THAT THIS SCREW BE TIGHTENED VERY FIRMLY.

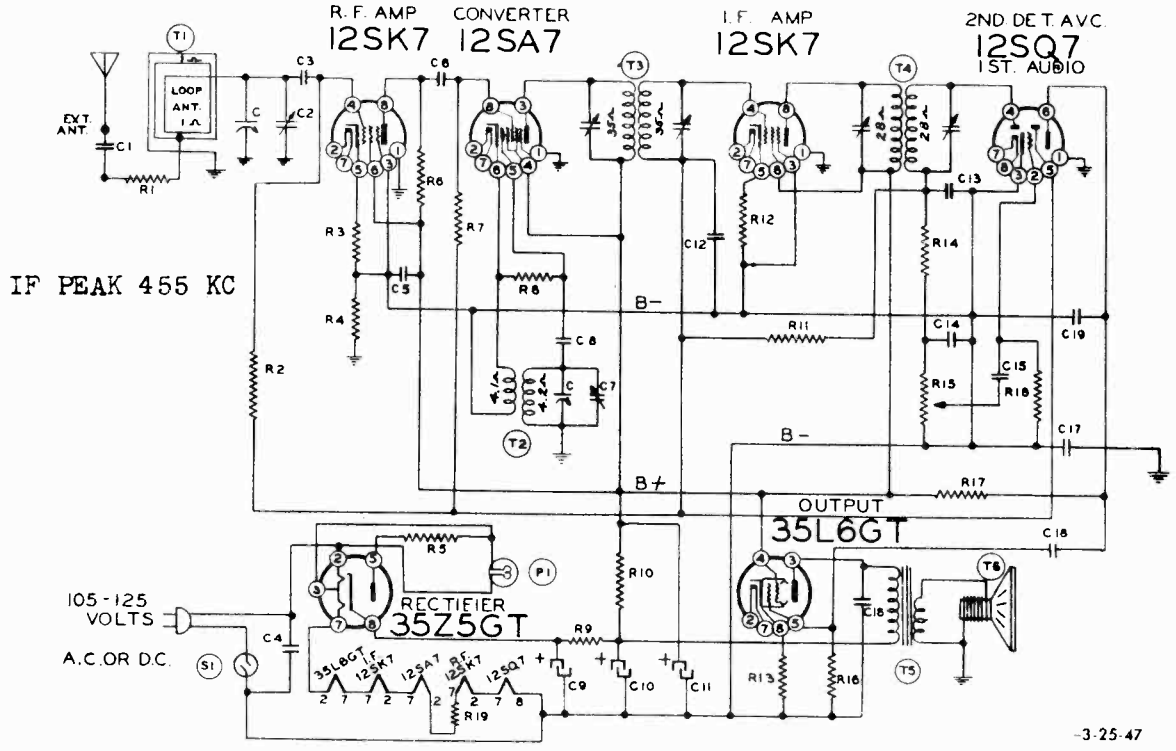



### Technical Data

| | |
|---|---|
| Tuning range | 535 to 1650 Kc. |
| Intermediate frequency | 455 Kc. |
| Power consumption | 35 watts |
| Selectivity | 55 Kc. broad at 1000 times signal at 1000 Kc. |
| Sensitivity (0.05 watt output) | 10 microvolts ave. |
| Power output (in voice coil) | |
| Undistorted | 1 watt |
| Maximum | 1.7 watts |
| Voice coil impedance | 3.2 ohms |

MODEL 6D121
Series A

# BELMONT RADIO CORP.




## CONDENSERS

| Part No. | Schematic Symbol | Description |
|---|---|---|
| C-8D-10953 | C17 | .15 MFD x 400 volts. |
| C-8D-10778 | C1, C15 | .002 x 600 volts, +40%, —15% |
| C-8F3-12 | C3 | .470 mmfd., mica, ±20% |
| C-8D-10760 | C4 | .1 x 400 volts, +20% |
| C-8D-10775 | C5 | .25 x 200 volts, ±20% |
| C-8F3-8 | C6, C8, C19 | .001, mica, ±20% |
| 11994 or A-8C-10077 | C9, C10, C11 | Electrolytic (for 50-60-cycle sets), 40 mfd. x 150 volts, 20 mfd. x 150 volts, 20 mfd. x 150 volts. |
| C-8D-10770 | C12 | .05 x 200 volts, ±20% |
| 129161 | C13, C14 | Dual .0001, mica, ±10% |
| C-8D-10774 | C16 | .02 x 400 volts, ±20% |
| C-8D-10778 | C18 | .004 x 600 volts, ±20% |

## RESISTORS

| | | |
|---|---|---|
| C-9B1-13 | R1 | 1000 ohms, ½ watt, ±20% |
| C-9B1-31 | R2 | 1 megohm, ½ watt, ±20% |
| C-9B1-50 | R3 | 100 ohms, ½ watt, ±10% |
| C-9B1-26 | R4 | 150,000 ohms, ½ watt, ±20% |
| C-9B1-42 | R5 | 22 ohms, ½ watt, ±10% |
| C-9B1-70 | R6 | 4700 ohms, ½ watt, ±10% |
| C-9B1-25 | R7 | 100,000 ohms, ½ watt, ±20% |
| C-9B1-23 | R8, R14 | 47,000 ohms, ½ watt, ±20% |
| C-9B2-53 | R9 | 180 ohms, 1 watt, ±10% |
| C-9B2-63 | R10 | 1200 ohms, 1 watt, ±10% |
| C-9B1-34 | R11 | 3.3 merohms, ½ watt, ±20% |
| C-9B1-52 | R12, R13 | 150 ohms, ½ watt, ±10% |
| C-9B1-29 | R16 | 470,000 ohms, ½ watt, ±20% |
| C-9B1-27 | R17 | 220,000 ohms, ½ watt, ±20% |
| C-9B1-35 | R18 | 4.7 megohms, ½ watt, ±20% |
| C-9B2-44 | R19 | 33 ohms, 1 watt, ±10% |

## COILS

| | | |
|---|---|---|
| C-212-11565 | T1 | Loop antenna assembly, complete on back |
| A-13D-10215 | T2 | Oscillator coil |
| 108140H or B-13A-12023 | T3 | Input I.F. coil in can, 455 Kc. |
| 108145 or B-13B-12022 | T4 | Output I.F. coil in can, 455 Kc. |

(See note on page 3)

## SOCKETS

| | |
|---|---|
| 121210 | 8-prong octal tube sockets, molded |
| 121171 | 8-prong socket for 12SK7, laminated |
| 121216 | Socket base, bakelite |
| 107271 or A-47A-11470 | Pilot light socket assembly |

## SPEAKER

| | | |
|---|---|---|
| 114197 | T6 | 5-inch P.M. speaker |
| 105104 | T5 | Output transformer for speaker |

## DIAL PARTS

| | |
|---|---|
| 115448 | End plate (right hand bracket) |
| 115448C | End plate (left hand bracket) |
| 115146 | Cams |
| 115143 | Key washer (13 used on cam shaft) |
| 117528 | Brass spacer (one used on cam shaft) |
| 117602 | Brass spacer (four used on cam shaft) |
| 121181 | Spring washers, for locking collar |
| 117604 | Locking collar |
| 117600 | Level shaft |
| 115361 | Lever with roller |
| 120283 | Return spring for levers |
| 115449B | Dial bracket assembly |
| 112785 | Pointer |
| A-53A-10989 | Drive cord, 6 inches used |
| A-49A-11087 | Spring on tuning shaft, for cord |
| A-3N-11086 | Spacer under above spring |
| 120143 | Take-up spring for drive cord |
| B-6D-10241 | Dial scale |
| 112-659-1 | Crystal, clear, for dial scale |
| A-2M-7758 | Cinch buttons for fastening scale to bracket |
| 117833 | Brass spacer (for spacing pointer from dial) |

## MISCELLANEOUS

| | | |
|---|---|---|
| 10798 | | Line cord and plug |
| 101218 or A-10A-10626 | R15, S1 | Volume control and switch, 1 megohm |
| B-8A-10211 | C, C2, C7 | 2-gang variable condenser |
| 107249 | P1 | Pilot light bulb, type T-47 |
| 134123 | | Rubber bumper (bottom of cabinet) |
| B-23J-11464 | | Cardboard back (specify color) |
| A-2M-10096 | | Cinch buttons, for fastening back to cabinet (4 used) |
| 13141 | | Cinch buttons, to cover trimmer holes in cabinet |
| B-5B-11463-8 | | Pushbuttons (6 used) |
| A-23L-11900 | | Station call letters, set |
| A-6C-11899 | | Acetate tabs for call letters |
| 5C-11228-9 | | Cabinet, bakelite, ivory color |
| 128-686-8 | | Knob, volume, ivory color |
| A-5B-10994-9 | | Knob, tuning, ivory color |
| A-3F-10995 | | Locking screw for tuning knob. |
| 120388 | | Locking spring for tuning knob |
| A-2H-10996 | | Reset key |

**NOTE:** On some sets slug tuned I.-F.s are used instead of trimmer tuned I.-F.s. 108-140H and 108-145 are trimmer tuned. B-13A-12023 and B-13B-12022 are slug tuned. The slug tuned 1-F.s are tuned from the top and bottom (secondary on top, primary on bottom).

Slug tuned I.-F.s cannot be used to substitute trimmer tuned I.-F.s but trimmer tuned I.-F.s can be used to substitute slug tuned I.-F.s.

## REPLACING DIAL POINTER DRIVE CORD

Six inches of cord are required in the set. Use a piece slightly longer so that knots may be tied at each end. Numbers below correspond to circled numbers in diagram.

1. Rotate tuning knob to extreme clockwise position. This closes tuning condenser. Knob should remain in this position until installation is completed.

2. Tie cord to loop in spring as shown. Wind cord one turn around shaft in direction shown.

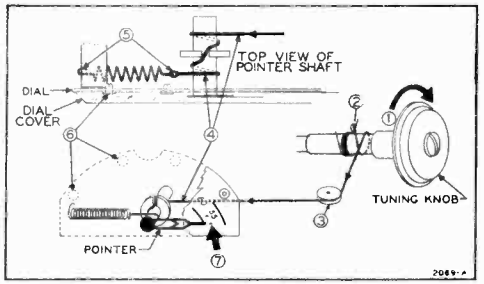
3. Pass cord over idler pulley.

4. Pass cord over pointer shaft; wind it one turn around shaft; pass it through key washer; wind it one more turn around shaft.

5. Hook spring over end of dial support. Tie cord to spring. IMPORTANT: Before tying knot stretch spring enough so that full contraction of spring will rotate pointer shaft at least one-half turn.

6. Remove dial crystal by removing Cinch buttons.

7. Make sure tuning knob is in extreme clockwise position. Then rotate pointer clockwise, against friction of shaft, until it is in horizontal position, as shown.

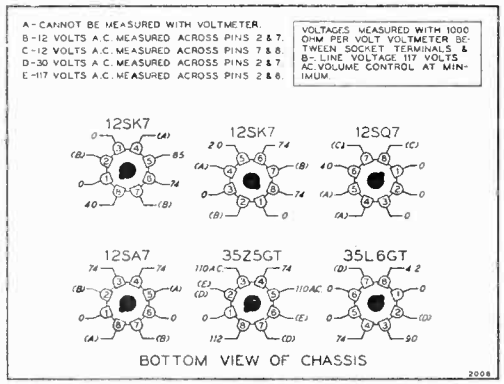



## ALIGNMENT PROCEDURE

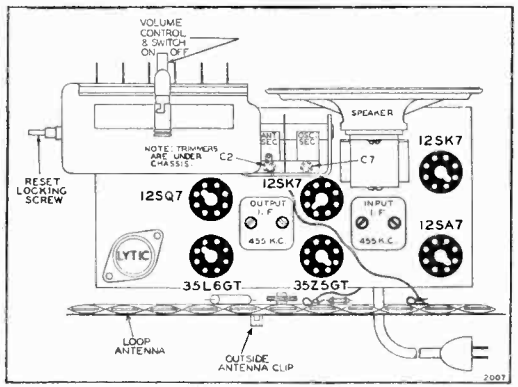
- No aligning adjustments should be attempted until all other possible causes of trouble have been checked.
- Chassis must be removed from cabinet for proper alignment. Slight adjustments of the oscillator and antenna circuits can be made, without removing the chassis, through two holes provided on the bottom of the cabinet. The two adjustment screws can be reached with a long insulated screwdriver.
- It is important that during alignment the loop antenna be maintained at the same distance from the chassis as when the chassis is installed in the cabinet.
- Turn volume control to maximum for all adjustments.
- Connect ground post of signal generator to B— of radio through a 0.1 mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.

| Band | Signal Generator Frequency Setting | Dummy Antenna | Connection to Radio | Tuning Condenser Setting | Adjust for Maximum Output (see chassis view) |
|---|---|---|---|---|---|
| I.F. | 455 Kc. | 0.1 mfd. | Grid of 12SA7 | Rotor full open (plates out of mesh) | 4 trimmers on input and output I.F. transformers (See note on page 3) |
| Broadcast | 1650 Kc. | 0.1 mfd. | Grid of 12SA7 | Rotor full open (plates out of mesh) | Oscillator trimmer C7 on bottom of radio |
| | 1400 Kc. | None | See note A | Set dial at 1400 Kc. | Antenna trimmer C2 on bottom of radio |

Note A: Lay output lead of generator in back of loop antenna. Turn up generator output. Loop antenna will pick up energy.




VOLTAGES AT TUBE SOCKET TERMINALS




CHASSIS VIEW, SHOWING TUBE LOCATIONS

### NOTE ON TUBE REPLACEMENT

**Replace a defective metal 12SK7 tube with another metal tube. Replace a glass 12SK7 tube with either a metal tube or with an exact duplicate of the tube now in the set.**

## SETTING THE PUSHBUTTONS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations which you select. They can be set up in any order.

1. Turn on the radio. Allow it to warm up for at least one minute.

2. Push out the call letters of the six stations from the call-letter sheets supplied with this manual.

3. Insert one call-letter tab in the rectangular opening in each of the pushbuttons, in any sequence. Press an acetate tab (supplied in small envelope) into each of the pushbuttons.

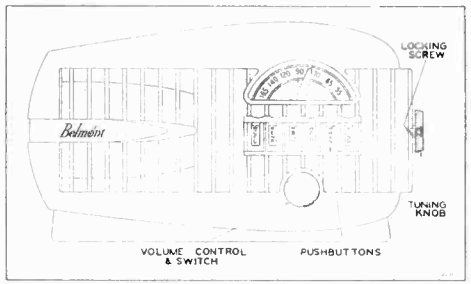
4. With the screwdriver supplied, check to see that the locking screw in the center of the tuning knob (see illustration) is loose. If it is not, turn it several turns to the left (counterclockwise).

5. Press the first pushbutton down **all the way.** With one hand hold the button down **firmly** and with the other carefully tune in the desired station. Release the pushbutton.

6. Follow this procedure for each of the five other buttons, adjusting each one for a different station.

7. Rotate the tuning knob on the side of the cabinet as far to the right as it will go. Tighten the locking screw in the center of the knob. IT IS IMPORTANT THAT THIS SCREW BE TIGHTENED VERY FIRMLY.

8. The pushbuttons are now properly set for automatic tuning. Any of the six stations may now be tuned in simply by pressing the proper button down as far as it will go. If it is desired to reset any of the buttons for a new station, loosen the locking screw in the center of the tuning knob, set the pushbutton as described above, and re-tighten the locking screw.

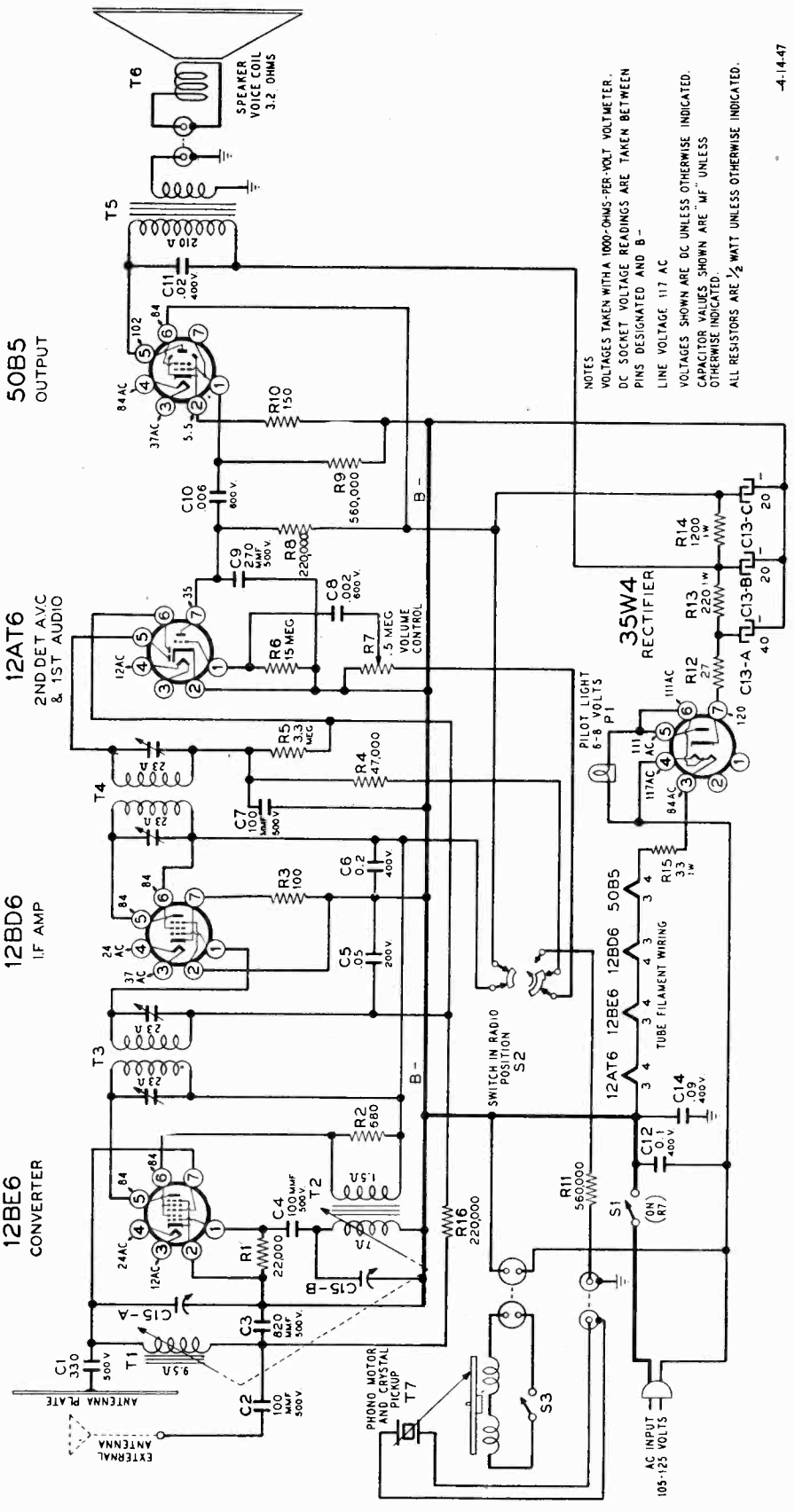



## TECHNICAL DATA

| | |
|---|---|
| Tuning range | 530 to 1650 Kc. |
| Intermediate frequency | 455 Kc. |
| Power consumption | 35 Watts |
| Sensitivity (for 0.05 watt output) | 13 microvolts average |
| Selectivity | 55 Kc. broad at 1000 x signal at 1000 Kc. |
| Power output (in voice coil) | |
| Undistorted | 0.8 watt |
| Maximum | 1.0 watt |
| Voice coil impedance | 3.2 ohms |

MODEL 5240, Series A

# BELMONT RADIO CORP.

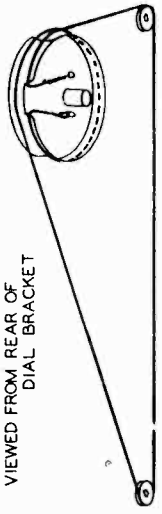



NOTES
VOLTAGES TAKEN WITH A 1000-OHMS-PER-VOLT VOLTMETER.
DC SOCKET VOLTAGE READINGS ARE TAKEN BETWEEN PINS DESIGNATED AND B-
LINE VOLTAGE 117 AC
VOLTAGES SHOWN ARE DC UNLESS OTHERWISE INDICATED.
CAPACITOR VALUES SHOWN ARE "MF" UNLESS OTHERWISE INDICATED.
ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE INDICATED.

4-14-47

## ELECTRICAL SPECIFICATIONS

**Power Supply**.....105-125 volts, 60 cycle AC, 55 watts.
**Frequency Range**.....535-1720 kc.
**Intermediate Freq**.....455 kc.
**Antenna**.....Built-in plate; provisions also for external antenna connection.
**Tuning**.....Permeability.
**Speaker**.....4 x 6-inch, P.M., voice coil impedance 3.2 ohms.
**Power Output**.....0.75 watt undistorted. 1.1 watts maximum.
**Sensitivity**.....34 microvolts average for 50-milliwatt output.
**Selectivity**.....55 kc broad at 1000 times signal at 1000 kc.




## DIAL STRINGING VIEW



RECORD CHANGER: Russel Model C9, RCD.CH.17-1

BELMONT RADIO CORP. MODEL 5240, Series A

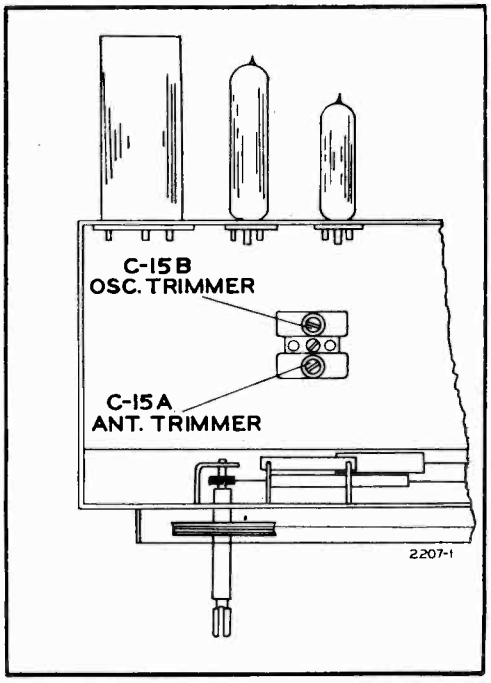
# ALIGNMENT PROCEDURE

**(Refer to Chassis and Coil Views on Page 2)**

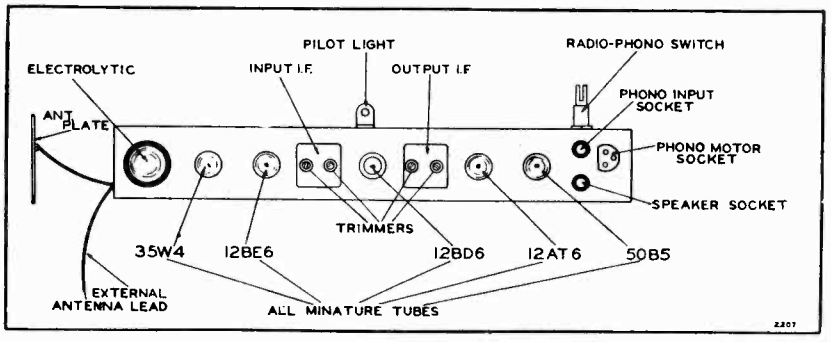
- Output meter across 3.2-ohm output load.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.
- Volume control at maximum for all adjustments.
- Connect ground post of signal generator to B− of radio.

| *SIGNAL GENERATOR* | | | *TUNER SETTING* | *ADJUST FOR MAXIMUM OUTPUT (in order shown)* |
|---|---|---|---|---|
| *Frequency* | *Dummy Antenna* | *Connection to Radio* | | |
| 455 kc | .1 mf | Grid (pin 7) of 12BE6 | Iron cores all the way out | Trimmers on output and input I.F. cans |
| 1720 kc | .1 mf | Grid (pin 7) of 12BE6 | Iron cores all the way out | Oscillator trimmer C-15B |
| 1720 kc | 200 mmf | Antenna lead | Iron cores all the way out | Antenna trimmer C-15A |
| 1400 kc | 200 mmf | Antenna lead | Turn dial to 1400 kc | Adjust position of antenna coil (see coil view)* |

*This adjustment and the previous adjustment are interlocking; therefore repeat the two adjustments alternately for best results.

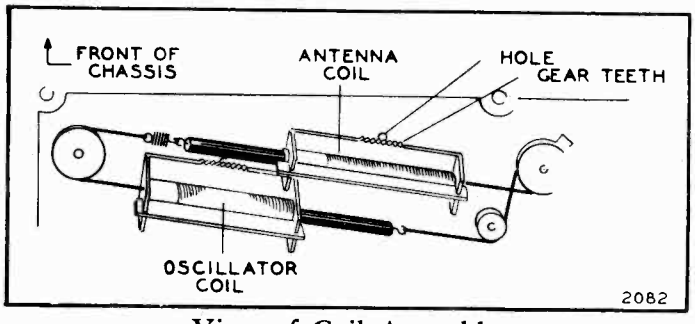



TRIMMER VIEW




CHASSIS VIEW

**DIAL LIGHT**—If the dial lamp burns out the set should not be operated until a new lamp has been installed. Failure to heed this caution may result in a burned-out 35W4 tube. Use only a type T-47 lamp for replacement.




View of Coil Assembly

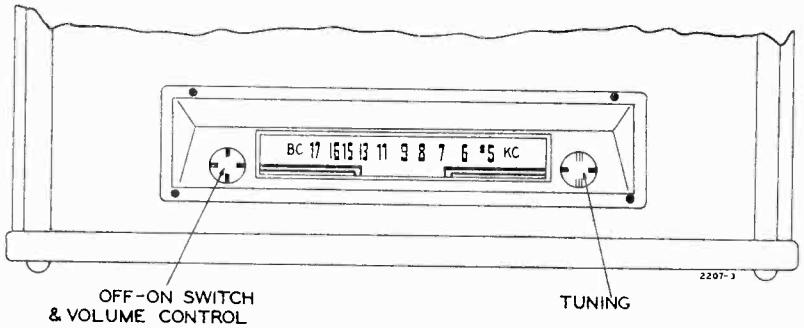
The antenna coil assembly is movable left to right. When making the adjustment as required in the alignment procedure, move the coil assembly very slowly, either by hand or by pivoting one edge of a screwdriver blade in the hole and engaging the blade in the gear teeth of the coil form.

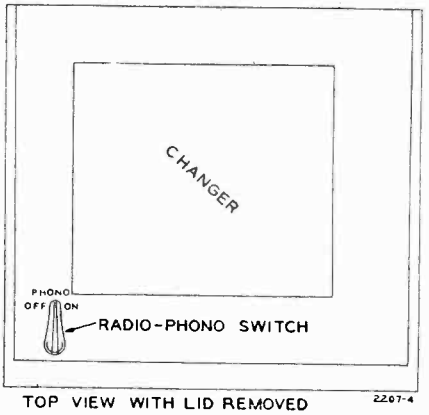
MODEL 5240, Series A BELMONT RADIO CORP.

# REPLACEMENT PARTS LIST

**When ordering parts, specify part number, model number, and series**

| *Ref. No.* | *Part No.* | *Description* |
|---|---|---|
| | | **CAPACITORS** |
| C13-A, C13-B, C13-C | A-8C-10077 | Electrolytic, 40x20x20, 150 volts |
| C15-A, C15-B | A-8E-10723 | Trimmer contlenser, dual, antenna and oscillator |
| C14 | C-8D-11251 | .09 mf x 400 volts 10% tubular |
| C6 | C-8D-10942 | .2 mf x 400 volts 10% tubular |
| C5 | C-8D-10770 | .05 mf x 200 volts 20% tubular |
| C10 | C-8D-10785 | .006 mf x 600 volts 20% tubular |
| C8 | C-8D-10789 | .002 mf x 600 volts 20% tubular |
| C11 | C-8D-10774 | .02 mf x 400 volts 20% tubular |
| C12 | C-8D-10760 | .1 mf x 400 volts 10% tubular |
| C1 | C-8F3-119 | 330 mmf x 500 volts 10% mica |
| C3 | C-8F3-247 | 820 mmf x 500 volts 5% mica |
| C9 | C-8F3-118 | 270 mmf x 500 volts 10% mica |
| C2, C4 C7 | C-8F3-113 | 100 mmf x 500 volts 10% mica |
| | | **RESISTORS** |
| R7 S1 | A-10A-10720 | Volume control (500M ohms) and switch |
| R15 | C-9B2-44 | 33 ohms, 1 watt, 10% |
| R8, R16 | C-9B1-90 | 220k ohms, ½ watt, 10% |
| R13 | C-9B2-54 | 220 ohms, 1 watt, 10% |
| R14 | C-9B2-63 | 1200 ohms, 1 watt, 10% |
| R12 | C-9B1-43 | 27 ohms, ½ watt, 10% |
| R4 | C-9B1-82 | 47k ohms, ½ watt, 10% |
| R3 | C-9B1-50 | 100 ohms, ½ watt, 10% |
| R5 | C-9B1-34 | 3.3 megohms, ½ watt, 20% |
| R9 R11 | C-9B1-95 | 560k ohms, ½ watt, 10% |
| R10 | C-9B1-52 | 150 ohms, ½ watt, 10% |
| R6 | C-9B1-302 | 15 megohms, ½ watt, 10% |
| R2 | C-9B1-60 | 680 ohms, ½ watt, 10% |
| R1 | C-9B1-78 | 22k ohms, ½ watt, 10% |
| | | **COILS AND TRANSFORMERS** |
| T1 T2 | C-211-10171 | Tuner unit, permeability tuned, Ant. and Osc. coils |
| T3 | B-13A-10728 | Input I.F. transformer |
| T4 | B-13B-10729 | Output I.F. transformer |
| T5 | B-12C-10074-1 | Output speaker transformer |
| | | **DIAL AND TUNING PARTS** |
| | B-6D-10968 | Dial Scale |
| | A-6D-10163 | Dial Crystal |
| | C-5C-10009-48 | Escutcheon for dial |
| | A-5B-10170-1 | Knobs for radio |
| | B-200-10980 | Dial and bracket assembly |
| | A-55A-10093 | Pilot light and bracket |
| P1 | A-46A-10793 | Pilot light bulb, 6-8 volt type |
| | | **MISCELLANEOUS** |
| T6 | B-18A-11089 | 4x6 oval P.M. speaker |
| | A-15C-10717 | Tube socket |
| | A-2H-10718 | Shield base |
| | A-2H-10974 | Tube shield |
| | B-15B-10076 | Mounting base for electrolytic |
| S2 | A-20A-10722 | Radio-phono switch |
| | A-19B-10727 | Phono motor socket |
| | A-55A-7386-1 | Phono input socket |
| | A-19B-11044 | Speaker socket |
| | A-23A-10344 | Line cord lock |
| | B-14M-11085 | A.C. line cord and plug |
| | A-2E-12192 | Needle cup |
| | B-2E-11038 | Antenna plate |
| | A-5B-11239-1 | Knob for radio-phono switch |
| | A-3A-12263 | Extension shaft for radio-phono switch |
| | A-2M-11074 | Spring clamp for shaft |
| | A-2C-10972 | Indicator plate |
| | | **RECORD CHANGER** |
| S3 T7 | B-201-12262-1 | Russel record changer, 105-125 volts AC, 60 cycles |



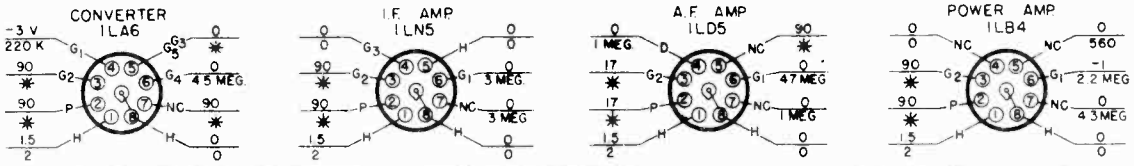

TOP VIEW WITH LID REMOVED

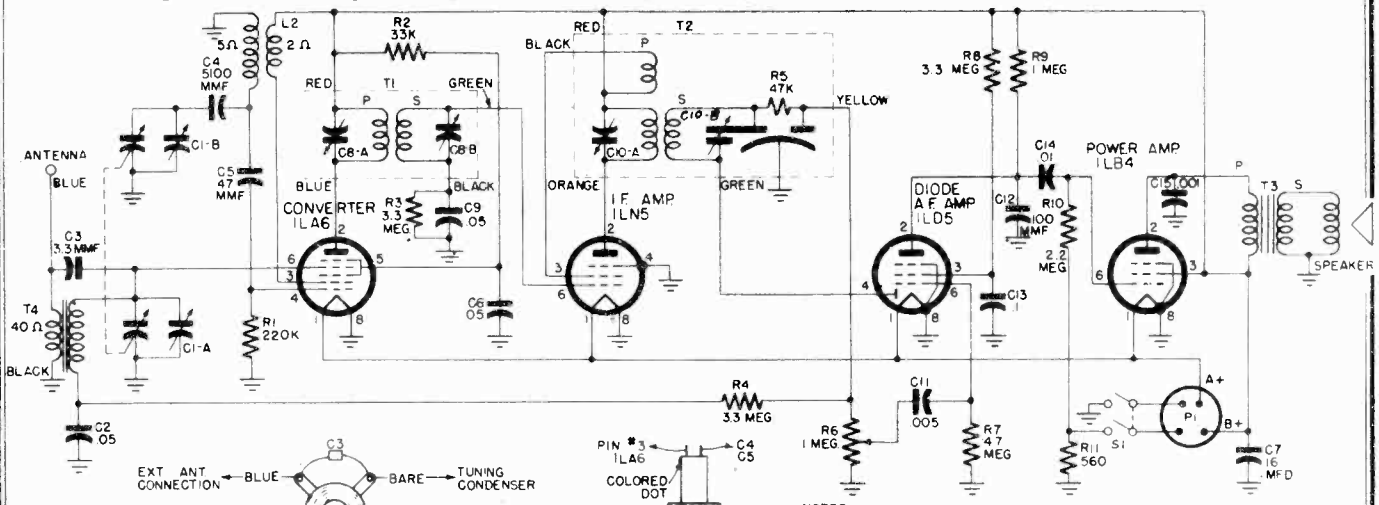
# BENDIX RADIO DIV.

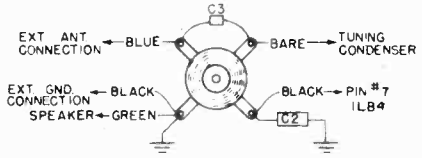
MODEL 416A

CONDITIONS OF MEASUREMENTS

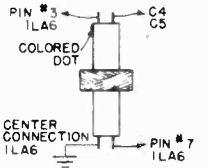
ZERO SIGNAL INPUT VOL. CONT. MIN. SOCKET VOLTAGE / RESISTANCE TO COMMON GROUND ⏚ D.C. AT 20,000 Ω/V.




L1- ANTENNA COIL




L2- OSCILLATOR COIL

NOTES:

ALL CAPACITANCE IN WHOLE NUMBERS IN MMF
THOSE IN DECIMINAL NUMBERS IN MF

ALL RESISTANCE IN OHMS UNLESS OTHERWISE NOTED

✱ IS RESISTANCE MEASURED ACROSS FILTER CONDENSER C7

K = 1000 Ω

⏚ CHASSIS GROUND

RANGE - 540 TO 1620 KCS

| TRANSFORMER RESISTANCE IN OHMS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ANT | OSC | 1ST I.F. | | | | 2ND I.F. | | | OUTPUT | | |
| SYMBOL | L1 | L2 | T1 | | | | T2 | | | T3 | | |
| CODE | 238 | 125 | 125 | 198 | 305 | 420 | 238 | 306 | 420 | 125 | 350 | 394 |
| PRIMARY | 40 | 15 | 16 | 16 | 22 | 24 | 25 | 20 | 20 | 1000 | 1000 | 2000 |
| SECONDARY | 15 | 5 | 16 | 16 | 22 | 24 | 25 | 20 | 20 | | | |

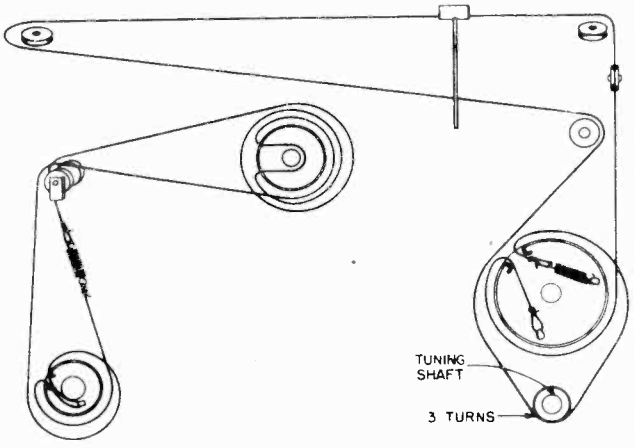
RESISTANCE LESS THAN 1 OHM NOT SHOWN.

## ALIGNMENT PROCEDURE

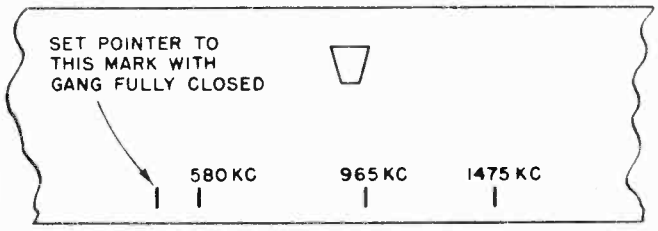
Before making any adjustments check battery voltage: the "B" supply should not be below 85 volts and the "A" supply below 1.3 volts. Connect output meter across voice coil and RF signal generator, 30% amplitude modulated, to antenna lead through a .05 mfd. capacitor for IF alignment and through 200 mfd. for oscilletor and RF alignment. All adjustments made for maximum output meter reading with volume control full on. Keep output of signal generator as low as possible at all times. Rotate tuning gang to fully closed position and set dial pointer to reference mark on dial back plate before proceeding with alignment as outlined in chart below.

| Input Freq. | Dial Pointer Position | Adjust |
|---|---|---|
| 455KC | Max. to right | C10B, C10A |
| 1475KC | 1475KC | C1B, C1A |
| 965KC | 965KC | *Check Calib. |
| 580KC | 580KC | *Check Calib. |

If calibration is off more than 10KC the rotor plates of the gang may be bent to correct calibration.




DIAL STRINGING DIAGRAM



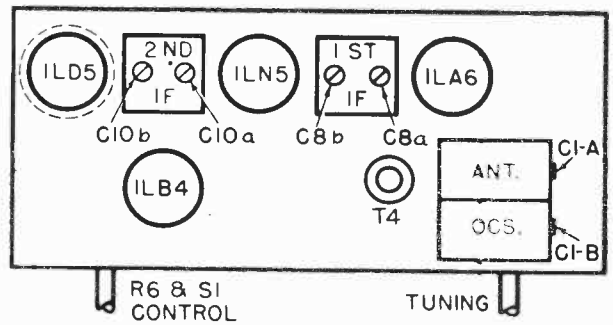

DIAL REFERANCE POINTS

## REPLACEMENT PARTS LIST

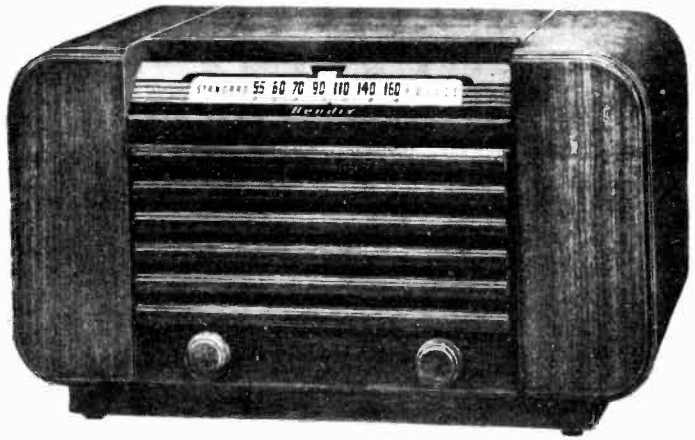
| Stock Number | | Description |
|---|---|---|
| | | **ELECTRICAL COMPONENTS** |
| CC9A16 | + | CAPACITOR, Ceramic 3.3 Mmf (C3) |
| CE1E00 | | CAPACITOR, Electrolytic 16 Mfd (C7) |
| CM5A14 | + | CAPACITOR, Mica 47 Mmf (C5) |
| CM5A22 | + | CAPACITOR, Mica 100 Mmf, 500V (C12) |
| CM3E15 | | CAPACITOR, Mica 5100 Mmf (C4) |
| CP2T10 | | CAPACITOR, Paper .001 Mfd, 200V (C15) |
| CP2T18 | + | CAPACITOR, Paper .005 Mfd, 200V (C15) |
| CP2T31 | + | CAPACITOR, Paper .01 Mfd, 200V (C14) |
| CP2T40 | + | CAPACITOR, Paper .05 Mfd, 200V (C2, C8, C9) |
| CP2T51 | + | CAPACITOR, Paper .1 Mfd, 200V (C13) |
| CV0B02 | | CAPACITOR, Variable (C1) |
| LO4B00 | | COIL, Oscillator (L2) |
| RC1G21 | + | RESISTOR, Comp. 560 Ohms, 1/4W (R11) |
| RC1H42 | + | RESISTOR, Comp. 33,000 Ohms, 1/4W (R2) |
| RC1H54 | + | RESISTOR, Comp. 220,000 Ohms, 1/4W (R1) |
| RC1H62 | + | RESISTOR, Comp. 1 Meg., 1/4W (R9 |
| RC1H66 | + | RESISTOR, Comp. 2.2 Meg., 1/4W (R10) |
| RC1H68 | + | RESISTOR, Comp., 3.3 Meg., 1/4W (R3, R4, R8) |
| RC1H70 | + | RESISTOR, Comp., 4.7 Meg., 1/4W (R7) |
| RV4S06 | | POTENTIOMETER, 1 Meg (with Switch) (R6) |
| TA0006 | | TRANSFORMER, Output (T3) |
| TI0C05 | | TRANSFORMER, I.F. Input (T1) |
| TI0D06 | | TRANSFORMER, I.F. Output (T2) |
| TR4B00 | | COIL, Assembly Antenna (L1) |
| | | **MECHANICAL COMPONENTS** |
| AD0A00 | | BACK PLATE ASSEMBLY |
| BT1S02 | + | STRIP, Terminal (1 Terminal & 1 Mtg. Lug) |
| BT2S00 | + | STRIP, Terminal (2 Terminal & 1 Lug) |
| CD0C12 | | CABLE, Dial |
| GR0S00 | + | GROMMET, Capacitor Shockmount |
| HC0C00 | + | CLIP, Coil Mounting |
| HC0C03 | + | CLAMP, Cable |
| HC0C05 | + | CLAMP, Cable |
| HC0D02 | + | CLIP, Dial Retainer |
| HC0S00 | + | CLIP, Spring (Tuning Shaft) |
| HC0T00 | + | RING, Tube Shield |
| HR0P00 | + | RIVET, Tubular |
| HR0P01 | + | RIVET, Tubular |
| HR0S02 | + | RIVET, Shoulder |
| HS0C00 | + | SPRING, Dial Cable |
| HS6F00 | + | SLEEVE, Spacer |
| ID0M09 | | INDICATOR, Dial Pointer |
| IX0M00 | | INDICATOR, On-Off |
| JP4000 | | PLUG, 4 Contact |
| MB0B00 | + | BEARING, Tuning Shaft |
| MP0I00 | | PULLEY, Idler |
| MS0T07 | | SHAFT, Tuning |
| PI0P00 | + | PLATE, Line Cord |
| SM0C03 | + | SHIELD, Metal |
| SM0T00 | + | SHIELD, Tube |
| SO8L01 | + | SOCKET, Tube |
| XS0C00 | | PROTECTOR, Dial Cord |
| MP0D04 | | PULLEY, Drive Assembly |
| | | **CABINET AND SPEAKER COMPONENTS** |
| BZ0R02 | + | FEET, Rubber |
| *SP5R01 | | SPEAKER, 5" P.M. |
| DS0A10 | | DIAL |
| KC0B06 | | KNOB, Control |
| HC0D02 | + | RETAINER, Dial |
| DZ0F08 | | DECAL, Nameplate |
| GZ0C05 | | GRILLE, Cloth Assembly |
| HK0R00 | + | RING, Retainer Spring |
| *ZW4A00 | | CABINET, Wood |
| | | **GENERAL HARDWARE** |
| | + | PALNUT, Type INI, #6-32 |
| | + | NUT, 8-32, Hex |
| | + | PALNUT, 3/8-32 |
| | + | LOCKWASHER, #8, Int. Teeth |
| | + | SCREW, #6x1/2 Self Tapping |
| | + | SCREW, #8x1/4 Self Tapping |
| | + | WASHER, Flat |
| | + | WASHER, Lockwasher, External Teeth |
| | + | SCREW, Rd.Hd. 6-32 x 1/2" |
| | + | SCREW, Rd.Hd. Wood, #4 x 3/8" |
| | + | SCREW, #8 x 1", Self Tapping |
| | + | WASHER, Flat |
| | + | WASHER, Flat, Brass |
| | + | SCREWS, Speaker, 8-32 x 7/8" |

# SPECIFICATION
## Model 416A

| | |
|---|---|
| POWER | |
| 1½ V, 90 V Dry Pack | Bendix # AB200 |
| TUNING RANGE | |
| Broadcast - KCs | 540-1626 |
| POWER OUTPUT - WATTS | |
| Maximum | .285 |
| At 10% Distortion | .120 |
| INTERMEDIATE FREQUENCY - KCs | 455 |
| TUNING RATIO | 15:1 |
| POINTER TRAVEL - Inches | 4 |
| LOUDSPEAKER - PM | |
| Cone Diameter - Inches | 5 |
| Voice Coil Impedance (Ohms at 400 Cycles) | 3.2 |
| CABINET DIMENSIONS | H 10⅜" D 11" W 17⅛" |
| SHIPPING WEIGHT (Less Battery) - Lbs | 14 |



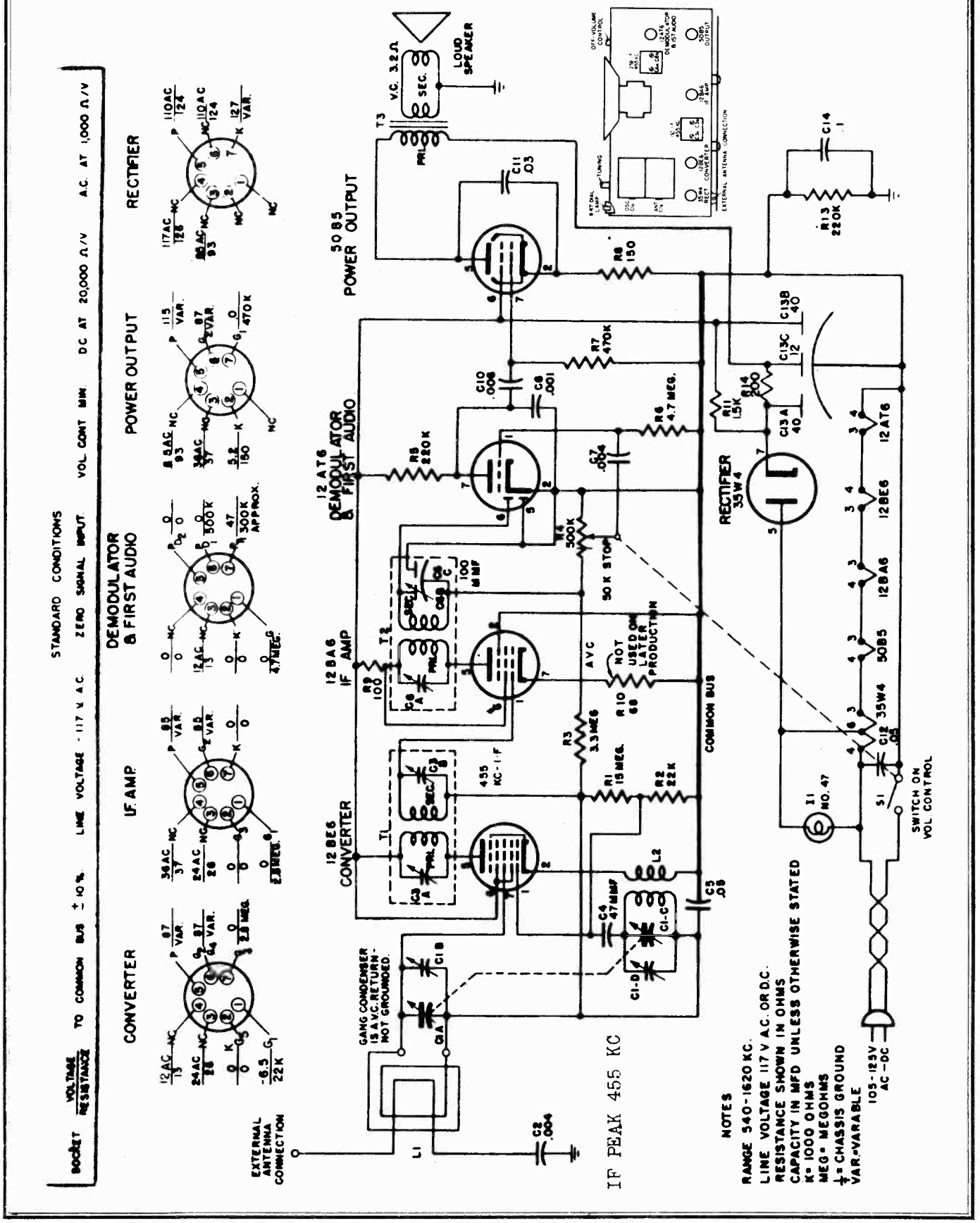

TRIMMER LOCATION DIAGRAM



MODEL 416A

# BENDIX RADIO DIV.

MODEL R526M



MODEL R526M

# BENDIX RADIO DIV.

## REPLACEMENT PARTS LIST

| Stock Number | Description | Stock Number | Description |
|---|---|---|---|
| | ELECTRICAL COMPONENTS | | MECHANICAL COMPONENTS |
| *AL0C04 + | LOOP Antenna Assy. (L1)..... | AD0B01 + | DIAL-Back Plate Assembly..... |
| CC6A30 + | CAPACITOR-Ceramic (C4) 47 mmf. 500V..... | CD0C01 + | CABLE-Dial 39 5/16"..... |
| | | CL2A06 + | CORD-A.C., Ivory..... |
| CE3E01 + | CAPACITOR-Electrolytic 40-40-12 mfd. 150V (C13)..... | CL2A07 + | CORD-A.C., Brown..... |
| | | HC0S00 + | CLIP-Tuning Shaft Spring..... |
| CM5A46 + | CAPACITOR-Mica (C8) 1000 mmf. 500V..... | HC0S21 + | CLIP-Electrolytic Mounting..... |
| | | HS0C00 + | SPRING-Dial Cable Tension..... |
| CP4T20 + | CAPACITOR-Paper (C10) .006 mfd. 400V..... | MP0I00 + | PULLEY-Idler, Tuning..... |
| | | MS0T00 + | SHAFT-Tuning..... |
| CP4T36 + | CAPACITOR-Paper (C11) .03 mfd. 400V..... | PI0P02 + | PLATE-Line Cord Insulator..... |
| | | SM0T02 | SHIELD-Tube, Metal..... |
| CP4T40 + | CAPACITOR-Paper (C5) .05 mfd. 400V..... | S00D00 + | SOCKET-Dial Light..... |
| | | S07M04 | SOCKET-Miniature Tube..... |
| CP4T51 + | CAPACITOR-Paper (C14) .1 mfd. 400V..... | | CABINET COMPONENTS-526MC |
| | | BZ0B04 + | BACK-Cabinet (Tekwood)..... |
| CP6T16 + | CAPACITOR-Paper (C2) (C7) .004 mfd. 600V..... | BZ0R03 + | FOOT-Cabinet Rubber..... |
| | | D80A13 + | DIAL-Glass..... |
| CP6T40 + | CAPACITOR-Paper (C12) .05 mfd. 600V..... | HC0S08 + | CLIP-Control Knob..... |
| | | HZ0S01 | STUD-Trimount Back Mtg..... |
| CV0B03 + | CAPACITOR-Variable, (C1)..... | ID0M01 + | POINTER-Metal Dial..... |
| L05B02 + | COIL-Oscillator (L2)..... | KC0Q00 + | KNOB-Control Green Plastic..... |
| RC1H10 + | RESISTOR-1/4W Comp (R10) 68 ohms..... | ZC0B01 + | RETAINER-Block R.H. Green Plastic..... |
| RC1H12 + | RESISTOR-Comp (R9) 1/4W 100 ohms..... | ZC0B02 + | RETAINER-Block L.H. Green Plastic..... |
| RC1H40 + | RESISTOR-Comp 1/4W (R2) 22,000 ohm..... | ZC0R03 + | CABINET, Bottom Section-Black Plastic..... |
| RC1H54 + | RESISTOR-Comp 1/4W (R5) (R13) 220,000 ohms..... | ZC0Q00 + | CABINET-Top Section-Green Plastic..... |
| RC1H58 + | RESISTOR-1/4W (R7) 470,000 ohms. | *ZC0T00 + | CABINET-Catalin, Green & Black... |
| RC1H68 + | RESISTOR-Comp 1/4W (R3) 3.3 meg. | | CABINET COMPONENTS-526MA |
| RC1H70 + | RESISTOR-Comp 1/4W (R6) 4.7 meg. | DS0A11 + | DIAL-Plastic Scale..... |
| RC1H76 + | RESISTOR-Comp 1/4W (R1) 15 meg ohms..... | KC0B01 + | KNOB-Brown Plastic..... |
| | | *ZP0B01 + | CABINET-Brown Plastic..... |
| RC4G26 + | RESISTOR-Comp 2W (R11) 1500 Ohms | | CABINET COMPONENTS COMMON TO 526MA-MB |
| RV0B00 + | POTENTIOMETER, 500,000 ohm, (R4) with switch..... | BZ0D00 + | BAFFLE-Speaker..... |
| | | BZ0R00 + | FOOT-Rubber Black..... |
| RW1B28 + | RESISTOR-Wirewound 1W (R8) 150 ohms..... | HC0S01 + | CLIP-Baffle Retainer Spring.... |
| | | HK0R00 + | RING-Knob Retainer Spring..... |
| RW1B31 + | RESISTOR-Wirewound 1W (R14) 200 ohms..... | HP0B00 + | PLATE-Metal Base Mtg..... |
| | | HZ0S00 + | STUD-Trimount, Dial Mtg..... |
| *SP4R00 + | SPEAKER 4" P.M. Less Transformer | ID0M00 + | POINTER-Dial Metal..... |
| TA0000 | TRANSFORMER-Output (T3)..... | PI0B01 + | BASE PLATE-Insulator..... |
| TI0C00 | TRANSFORMER-1st I.F. (T1) converter..... | | CABINET COMPONENTS-526MB |
| | | DS0A12 + | DIAL-Plastic Scale..... |
| TI0D07 | TRANSFORMER-2nd I.F. Output (T2) | KC0R00 + | KNOB-Control (Red) Plastic..... |
| #47 + | LAMP-Dial, Bayonet base..... | *ZP0I01 + | CABINET-Ivory..... |

# SERVICE INFORMATION

### Alignment Procedure

Set volume control at maximum. Use low range on output meter and keep signal generator input as low as practical. Make adjustments as shown in table for maximum output - with output meter connected across voice coil.

### Precautions

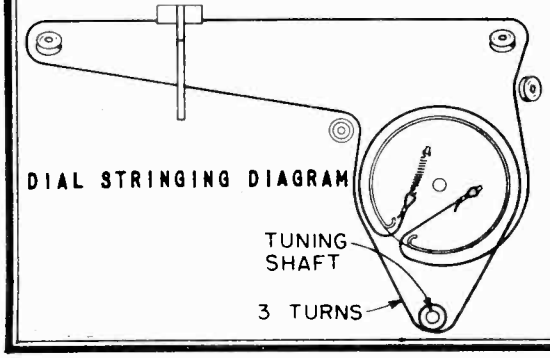
An isolating transformer should be used between the power supply and the receiver for protection of test equipment.

ALIGNMENT CHART

Before alignment begins, set middle of pointer over "Reference" line - with Gang Condenser completely closed -

| CIRCUITS ALIGNED | DIAL POINTER | INPUT FREQUENCY | APPLY THROUGH | TO | ADJUST |
|---|---|---|---|---|---|
| I.F. | Max. to Right | 455 K.C. | .01 Mfd | Input Grid 12BE6 | C3a, C3b, C6a, C6b. |
| Broadcast | 1475 Ref. Mark | 1475 K.C. | 50 Mmf | External Antenna Terminal | C1d C1b |
| Broadcast | 965 Ref. Mark | 965 K.C. | 50 Mmf | " | Check Calibration* |
| Broadcast | 580 Ref. Mark | 580 K.C. | 50 Mmf | " | Check Calibration* |

* If calibration does not check within one pointer's width of the frequency mark, both oscillator and antenna sections of the gang condenser must be "knifed" properly.




DIAL STRINGING DIAGRAM

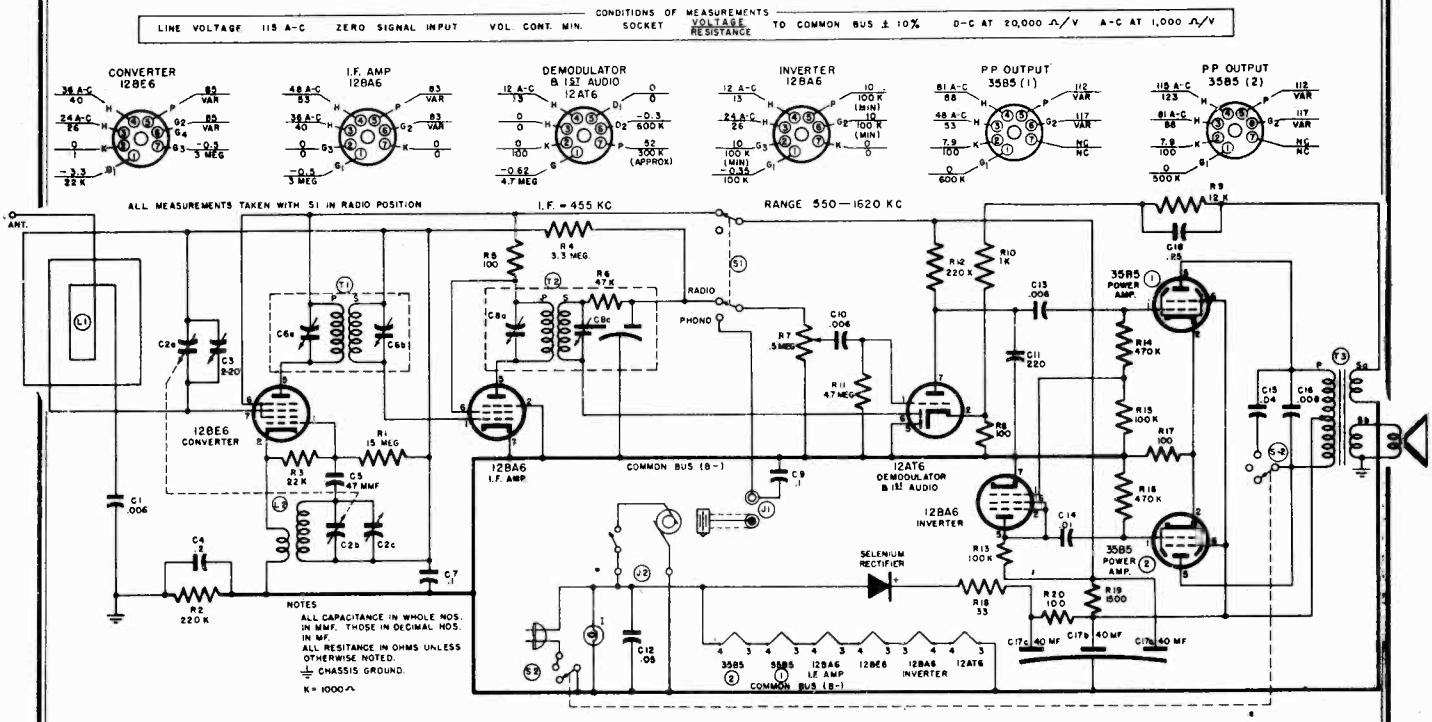
# SPECIFICATIONS

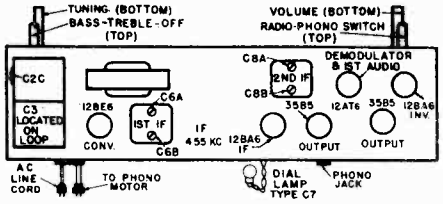
Power

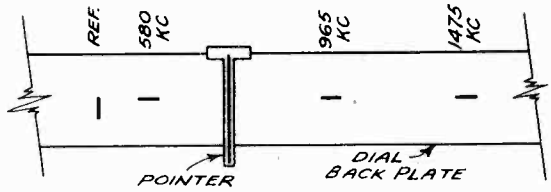
Voltage.....105-125 V. A.C. or D.C.
Frequency.....50-60 Cycles per Second
Power Consumption.....30 Watts
I.F. Frequency.....455 K.C.
Tuning Range.....540-1620 K.C.
Max. Power Output.....1.5 Watts
Loud Speaker.....P.M.
Cone Diameter.....4 Inches
Voice Coil Impedance..400 Cycles, 3.2 Ohms

# BENDIX RADIO DIV.

MODEL 697A




DIAL BACK PLATE REFERENCE MARKS

**Alignment Procedure:**

**PRELIMINARY:**

Close gang completely and set pointer directly over reference mark on back plate, Fig. 1. Connect output meter across voice coil on low scale. Rotate volume control full on, maximum clockwise. Rotate radio-phono switch to radio - full C.C.W.

**PRECAUTION:**

An isolating transformer should be used between the power supply and the receiver if the test equipment is AC operated.

| GENERAL FREQ. | POINTER POSITION | APPLY THROUGH | TO | ADJUST FOR MAX. OUTPUT |
|---|---|---|---|---|
| 455 KC | Max. to right | .01 Mfd | Input Grid 12BE6 | C6A, C6B, C8A, C8B |
| 1475 KC | Center of 1475 Ref. Mark | 50 Mmfd or less | External Ant. Conn. | C2C, C3 |
| 965 KC | Approx. 965 Ref. Mark | " | " | * Check Calibration |
| 580 KC | Approx. 580 Ref. Mark | " | " | " |

* If calibration is not within limits inscribed on back plate, oscillator and antenna gang rotor sections must be bent.

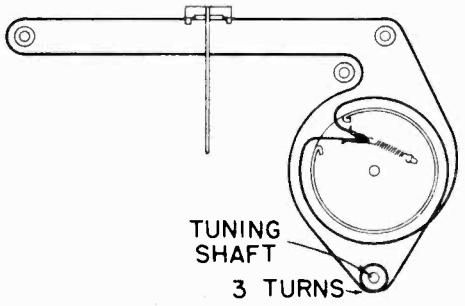
MODEL 697A

# BENDIX RADIO DIV.

## SPECIFICATIONS: Model 697A

6 Tube AC-DC and Selenium Rectifier

POWER
Voltage (Chassis only) ..... 105-125V AC or DC
Consumption (Including Changer) ..... 72 Watts, 60 Cycle AC
TUNING RANGE ..... 540 - 1620 K.C.
INTERMEDIATE FREQUENCY ..... 455 K.C.
TUBES
12BE6 Converter
12BA6 IF Amp.
12AT6 Demodulator & 1st Audio
12BA6 Inverter
35B5 (2) Push Pull
Beam Power Output
POWER OUTPUT (Max.) ..... 3.5 Watts
PICKUP ..... High Impedance Crystal
LOUDSPEAKER --- PM
Cone Diameter ..... 8 Inches
V.C. Impedance - 400 Cycles ..... 3.2 Ohms
CABINET
28-5/8" high, 16-7/8" wide, 27-1/4" deep
Shipping Weight ..... 56 Pounds

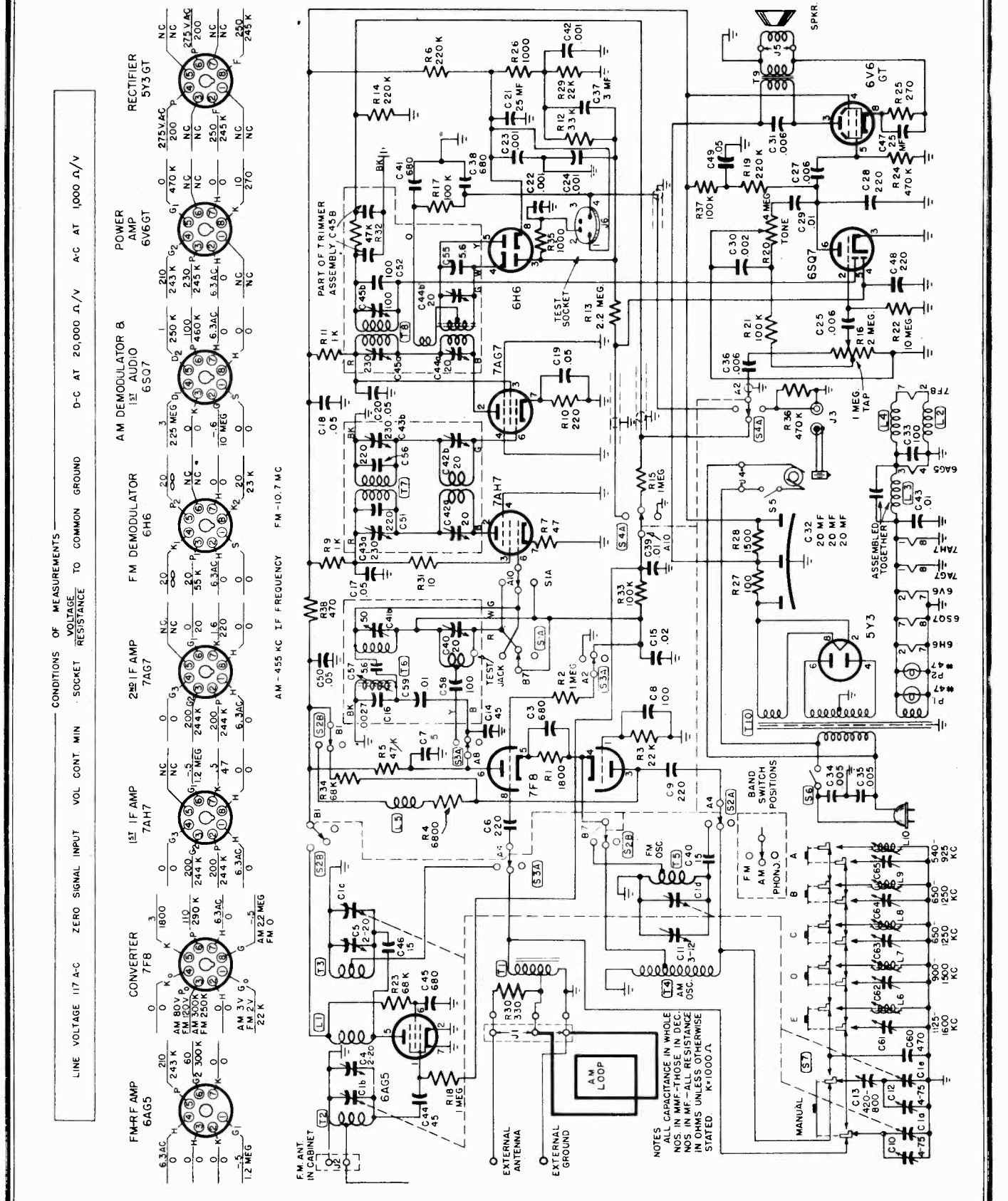



DIAL STRINGING DIAGRAM

| Stock Number | | Description |
|---|---|---|
| | | **ELECTRICAL COMPONENTS** |
| *AL0Z09 | | LOOP, Antenna Assembly..... |
| CE3F00 | | CAPACITOR, Electrolytic, 40x 40x40 Mfd +100%-10% 150V.... |
| CL2A08 | + | CORD, A.C..... |
| CM5A14 | + | CAPACITOR, Mica, 47 Mmf (C5).. |
| CM5A30 | + | CAPACITOR, Mica, 220 Mmf (C11). |
| CP2T60 | + | CAPACITOR, Paper, .25 Mfd 200V (C18)..... |
| CP4T20 | + | CAPACITOR, .006 Mfd, 400V (C10, C13, C16)..... |
| CP4T31 | + | CAPACITOR, Paper, .01 Mfd, 400V (C14)..... |
| CP4T38 | + | CAPACITOR, Paper, .04 Mfd, 400V (C15)..... |
| CP4T40 | + | CAPACITOR, Paper, .05 Mfd, 400V (C12)..... |
| CP4T51 | + | CAPACITOR, Paper, 0.1 Mfd, 400V (C7, C9)..... |
| CP4T56 | + | CAPACITOR, Paper Tubular, .2 Mfd 400V (C4)..... |
| CT1A16 | + | CAPACITOR, Trimmer 1.8-18 Mmf (Loop Antenna)..... |
| CV0B04 | + | CAPACITOR, Variable (C2)..... |
| L05B01 | | COIL, Oscillator Assy. (L2)... |
| QR0S00 | | RECTIFIER, Selenium..... |
| RC1G12 | + | RESISTOR, Comp.110 Ohms 1/4W (R8) |
| RC1G37 | + | RESISTOR, Comp.12,000 Ohms, 1/4W |
| RC1G51 | + | RESISTOR, Comp. 100,000 Ohms, 1/4W (R13, R15)..... |
| RC1G58 | + | RESISTOR, Comp. 470,000 Ohms, 1/4W (R14, R16)..... |
| RC1H12 | + | RESISTOR, Comp.100 Ohms, 1/4W (R5) |
| RC1H24 | + | RESISTOR, Comp. 1,000 Ohms 1/4W (R10)..... |
| RC1H40 | + | RESISTOR, Comp. 22,000 Ohms, 1/4W (R3)..... |
| RC1H54 | + | RESISTOR, Comp. .22 Meg, 1/4W (R2, R12)..... |
| RC1H58 | + | RESISTOR, Comp. .47 Meg. 1/4W.. |
| RC1H68 | + | RESISTOR, Comp.3.3 Meg.1/4W (R4) |
| RC1H70 | + | RESISTOR, Comp. 4.7 Meg. 1/4W (R11)..... |
| RC1H78 | + | RESISTOR, Comp. 15 Meg. 1/4W (R1)..... |
| RC4G26 | + | RESISTOR, Comp.1500 Ohms, 2W (R19) |
| RC4H12 | + | RESISTOR, Comp.100 Ohms, 2W, (R20) |
| RV0C01 | + | POTENTIOMETER, 0.5 Meg. (R7)... |
| RW1B06 | + | RESISTOR, Wirewound, 33 Ohms, 1 W (R18)..... |
| RW1B12 | + | RESISTOR, Wirewound, 100 Ohms 1 W (R17)..... |
| TA0008 | | TRANSFORMER, Output..... |
| TI0C08 | | TRANSFORMER, I.F. Input (T1).. |
| TI0D11 | | TRANSFORMER, I.F. Output (T2). |
| *C7 | + | LAMP, Type C 110 Volt..... |
| | | **MECHANICAL COMPONENTS** |
| BT2S00 | + | STRIP, Terminal (2 Terminal, 1 Mtg Lug.)..... |
| BT2S01 | + | STRIP, Terminal (2 Terminal, 1 Mtg Lug.)..... |
| BT3S01 | + | STRIP, Terminal (3 Terminal, 1 Mtg Lug.)..... |
| BT4S01 | + | STRIP, Terminal (4 Terminal).. |
| CD0C11 | | CORD, Dial (Tuning & Pointer). |
| GR0S00 | + | GROMMET, Shockmount..... |
| HB0M44 | | BRACKET, Trimmer Mtg..... |
| HC0C03 | + | CLAMP, Cable..... |
| HC0S00 | + | CLIP, Spring..... |
| HC0S59 | | CLIP, External Cotter..... |
| HR0S08 | + | RIVET, Shoulder..... |
| HS0C00 | + | SPRING, Coil..... |
| HS0C80 | | SPRING, Dial Cable..... |
| HS6F01 | + | SLEEVE, Spacer..... |
| ID0M12 | | INDICATOR..... |
| IW0F00 | | WASHER, Insulating..... |
| JR1S00 | + | RECEPTACLE, Phono..... |
| MA0L00 | | LEVER, Arm Assembly..... |
| MB0B00 | | BEARING, Bushing..... |
| ML0M05 | | LINK, Lever Arm..... |
| ML0M06 | | LINK Connecting..... |
| MP0I00 | | PULLEY, Idler..... |
| MS0C02 | | SHAFT, Lever Arm Control..... |
| MS0T10 | | SHAFT, Tuning..... |
| PA0S01 | + | PLATE, Adapter..... |
| PB0D03 | | PLATE, Dial Back Plate..... |
| PI0P01 | + | PLATE, Line Cord..... |
| SR2B01 | | SWITCH, Phono Radio (S1)..... |
| SR3M00 | | SWITCH, Tone A.C. Single pole. 3 Position (S2)..... |
| WE0Z04 | | WASHER, Felt, Control Knob Cushion..... |
| | | **CABINET & SPEAKER COMPONENTS-697A** |
| BZ0A02 | | BASE, Cover..... |
| BZ0D11 | | BOARD, Baffle..... |
| DS0A21 | | DECAL, Assembly (Glass) 55-160KC |
| HK0R00 | + | RING, Retainer..... |
| HZ0G00 | + | GLIDES, Metal Furniture..... |
| KY0M00 | + | KNOB, Control..... |
| KY0M02 | + | KNOB, Lower Panel..... |
| NP0M01 | + | NEEDLE, Reproducing..... |
| PR0F00 | + | PAD, Flat Rubber..... |
| *SP8R00 | | SPEAKER, 8" PM, (Less Transformer) |
| ZF0W00 | | DECAL, Assembly, Wood (Lower Panel)..... |
| ZL6G03 | | LID, Sliding Wood..... |
| *ZW8S00 | | CABINET, Assembly (BW81C)..... |
| | | **GENERAL HARDWARE** |
| | | LOCKWASHER, #8..... |
| | | SCREW, #8, Wood..... |
| | | SCREW, #5 Round Head..... |
| | | SCREW, Speaker..... |
| | | TEENUT, Motorboard 10-24..... |
| | | NUT, Square, 6-32..... |
| | | PALNUT, 6-32..... |
| | | SCREW, #6, Self Tapping..... |
| | | SCREW, #8, Self Tapping..... |
| | | SCREW, #6-32 x 1/2" Rd. Hd.... |
| | | SCREW, #6-32 x 5/16" R. Hd.... |
| | | SCREW, #8-32 x 1/4" Bd. Hd.... |
| | | SCREW, #6-32 x 7/8" Bd. Hd.... |
| | | NUT, 6-32 Hex..... |
| | | SCREW, Rd. Head..... |
| | | NUT, 3/8-32 Palnut..... |
| | | NUT, 8-32 Hex..... |
| | | WASHER, Flat..... |
| | | WASHER, Flat..... |
| | | WASHER, Flat..... |
| | | WASHER, Spring..... |

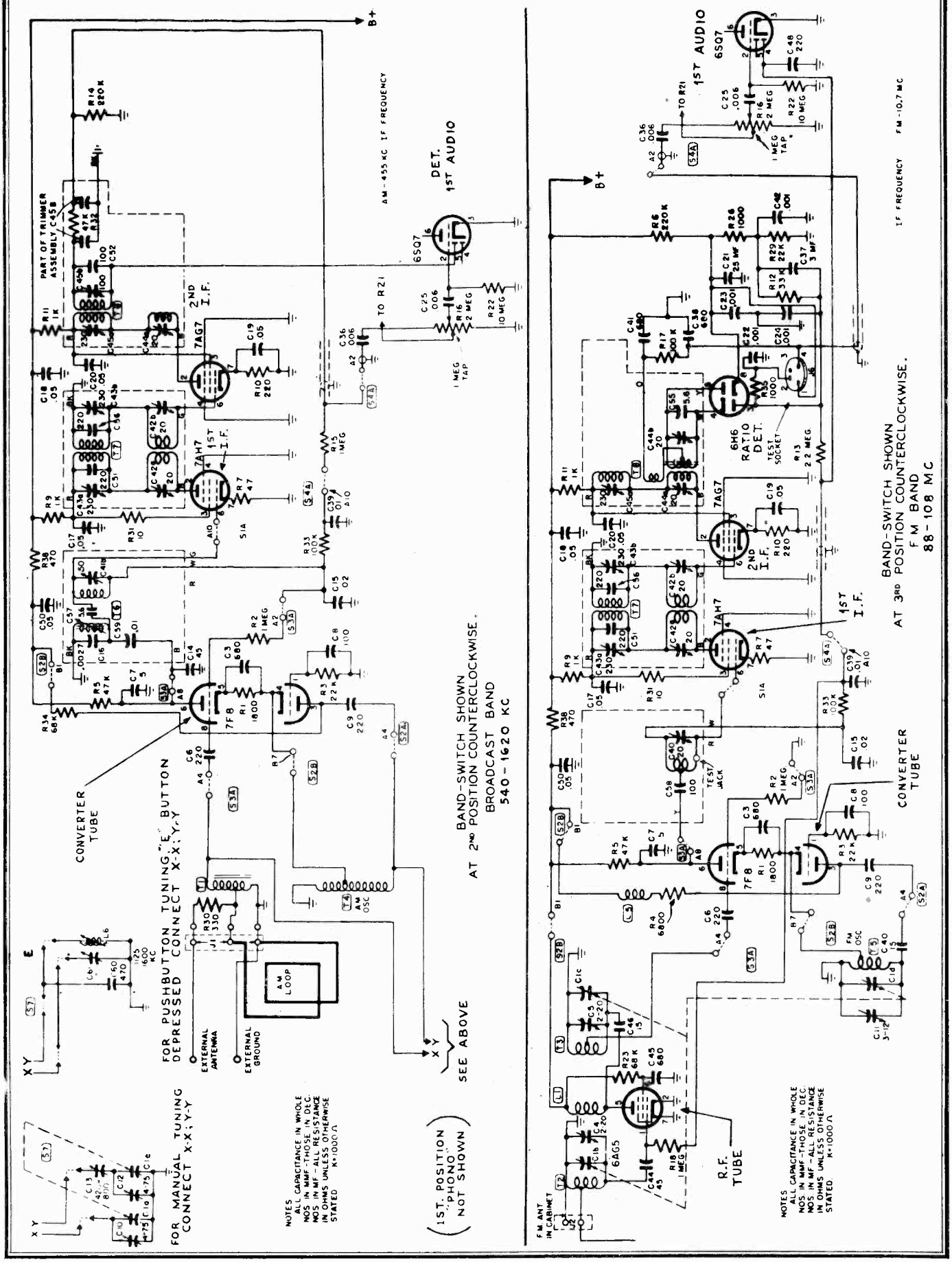
# BENDIX RADIO DIV.

MODEL 847B



MODEL 847B

# BENDIX RADIO DIV.



## FM ALIGNMENT

For reference marks see Fig. 3
Rotate gang condenser fully closed and set pointer to reference mark
Trimming screwdriver must be 100% insulated

A - CW METER METHOD

Generator output - pure RF or amplitude modulated
VTVM must not be AC-DC, or with GND. connected to AC line or through resistor

| Gen. Freq. | Dummy Ant. | Gen. To | Band Sw. Position | Pointer Setting | Special Conditions | VTVM Connections | Adjust | Remarks |
|---|---|---|---|---|---|---|---|---|
| 10.7 mc. | .01 mfd | Term. #3 on gang & chassis | FM-Full counter-clock-wise | ------- | Short FM osc. term. #5 to chassis | Test socket pins #1 (+) & #2 (-) Low Scale | 1st IF-C40<br>2nd IF-C42A C42B<br>3rd IF-C44A for max. output on VTVM | Realign several times to assure max. output Signal may be fed into "Test Jack" in 1st IF can for prel. align. of C44A, C42A & C42B. |
| 10.7 mc. | " | " | " | ------ | " | *Center of jumper resistors & test sock. Pin #4 - Fig. #2. | 3rd. IF-C44B<br>To zero reading on VTVM | **Alternate step #1 (C44A for max. output) & step #2 (C44B for zero) several times to assure correct alignment |
| 106 mc. | Std. FM Fig. #4 | FM ant input term's. | " | 106 mc. refer. mark | Remove short from osc. term. #5 | Test socket pins #1 (+) & #2 (-) Low scale | ***Osc.-C11<br>RF -C5<br>Ant -C4<br>for max. output on VTVM | "Rock" tuning control during alignment |
| 97 mc. | " | " | " | Approx. 97 mc ref. mark | --------- | " | ---------- | ****Check Calibration |
| 90 mc. | " | " | " | Approx. 90 mc. refer. mark | --------- | " | ---------- | ****Check Calibration |

* See Fig. #2 "Test Circuit for FM Alignment".

** A VTVM with a zero center scale is very convenient for use in this alignment step. A50 microammeter may be used in place of the VTVM, but is not as accurate.

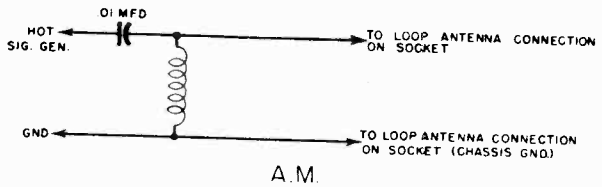
*** The oscillator circuit has been designed to operate on the high freq. side of the incoming signal. It is possible to adjust the trimmer (C11) at 106 MC such that the osc. is operating on the "image" or low freq. side of the signal. To check the osc. (C11) adjustment, set sig. gen. to 84.6 MC, freq. modulated, dial pointer at 106 MC. If signal is NOT heard, adjustment of C11 is correct, but if signal IS heard, osc. trimmer C11 has been incorrectly adjusted on the "image" frequency. Readjust C11 to other setting at 106 MC and recheck with gen. freq. at 84.6 MC. Signal MUST NOT be heard with pointer at 106 MC and sig. gen., freq. modulated, set at 84.6 MC.

**** If calibration is not within reasonable tolerance at these points, the osc. coil inductance must be adjusted. If dial pointer reading is on low freq. side, inductance is too low, and turns must be compressed slightly. If pointer reading is on high freq. side, osc. coil is too high and coil turns must be spread slightly.

To check and adjust inductance of ant. and RF coils, tune receiver to 90 MC signal and observe AVC reading. Insert iron core end of "tuning wand" into RF coil, at same time rocking tuning control to max. AVC. If reading increases as wand is inserted, RF coil inductance is too low and turns must be compressed slightly. If reading decreases, reverse wand and insert metal end into coil, again rocking tuning control to max. AVC. If reading decreases, (after iron core check), inductance is properly adjusted. If reading increases, inductance is too high and turns must be spread slightly.

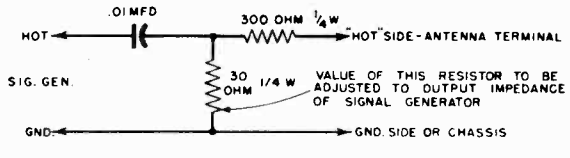
Ant coil is checked and adjusted exactly like RF coil.

NOTE: THE LATTER OPERATIONS ARE VERY DELICATE AND DIFFICULT PROCEDURE AND MUST BE ATTEMPTED ONLY BY TECHNICIANS WITH CONSIDERABLE HIGH FREQUENCY EXPERIENCE.




A.M.

COIL FOR 847B IS 3.7 MICRO-HENRY




F.M. DUMMY ANTENNA

FIG. 4 - DUMMY ANTENNA FOR 847-B

MODEL 847B

# BENDIX RADIO DIV.

## FM ALIGNMENT

B - Visual Method.

| Gen. Freq. | Gen. Mod. | Dummy Ant. | Generator to | Band SW. Position | Special Conditions | Dial Setting | VTVM Conn | Oscillo-scope | Adjust | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 10.7 MC | Pure RF or Amplitude | .05 mfd | High side to Term. #3 Gang Cond. Low side to chassis | FM-Max. CCW. | Short Osc. Stator-Term. #5 to Chassis Gnd. | ------- | Test Socket Pins #1 (+) & #2 (-) Low Scale | No conn. | 1st IF C40 2nd IF C42A, C42B 3rd IF C44A | Adjust for max-imum output on low range of VTVM - Realign each Cond. several times to assure max. out-put. Signal may be fed into "test jack" in 1st IF can for Prelim. Alignment of C44A, C42A & C42B. |
| Approx. 10.7 MC Adjust until Ratio Detector curve is cen-tered on Horiz Scope Sweep Line | Freq. Mod. 60 Cy-Sweep width max. possible (should be 200 KC Min) | " | " | " | " | ------- | No con-nection | Connect vert. in-put to Test Socket Pins #4 & Chassis Gnd. | 3rd IF C44B | *Adjust for max. symmetrical "S" curve similar to Fig. 5. Alternate adjs. of C44A & C44B to obtain Max desired curve. |
| 106 MC | " | Std. FM Fig. 4 | FM Ant. Terms's thru dummy | " | Remove short from Term #5. | 106 MC ref. mark | No con-nection | " | FM Osc. C11 | **Adjust until "S" curve is centered on Horiz. Sweep scope line. |
| 106 MC | " | " | " | " | ---------- | " | " | " | FM RF Trimmer C5. FM Ant. Trimmer C-4. | Adj. for Max. height of "S" pattern-"rock" tuning control at same time to keep "S" curve centered on Scope. |
| 97 MC | " | " | " | " | --------- | Approx. 97 MC ref. mark | " | " | ------ | ***Check Cal-ibration |
| 90 MC | " | " | " | " | --------- | Approx. 90 MC ref. mark | " | " | ------ | ***Check Cal-ibration |

* Some phase shift between the Signal Generator and the scope horizontal sweep may be encountered, resulting in a double trace pattern, shown in Fig. 6. In some Oscilloscopes, provision is made for connecting this phase shift directly in the oscilloscope circuit. If so, rotate the "phase shift" control until the curves coincide as in Fig. 5. If no provision is made in the scope, the connection might be accomplished by inserting a condenser of suitable value in series with the signal generator "Synchronized Sweep Voltage" output. The condenser value will depend upon the amount of phase shift and the horizontal input impedance of the scope - approximate condenser range .01 to .1 mfd. See Fig. 7 for instrument connection diagram.

** See *** Page 5.

*** If calibration is not within tolerance at these points, the inductance of local FM oscillator coil, RF and antenna coils must be adjusted. See **** Page 5.

NOTE: The latter operation is a very delicate and difficult procedure, and must be attempted only by technicians of considerable high frequency experience.

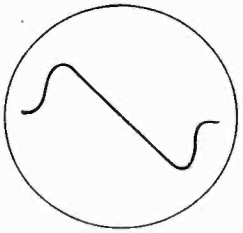


Fig. 5

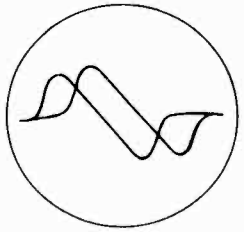


Fig. 6

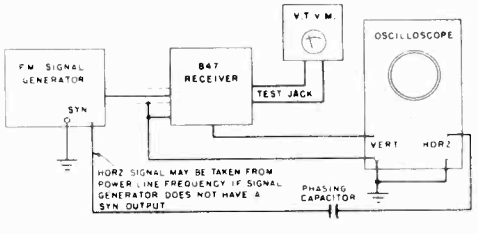
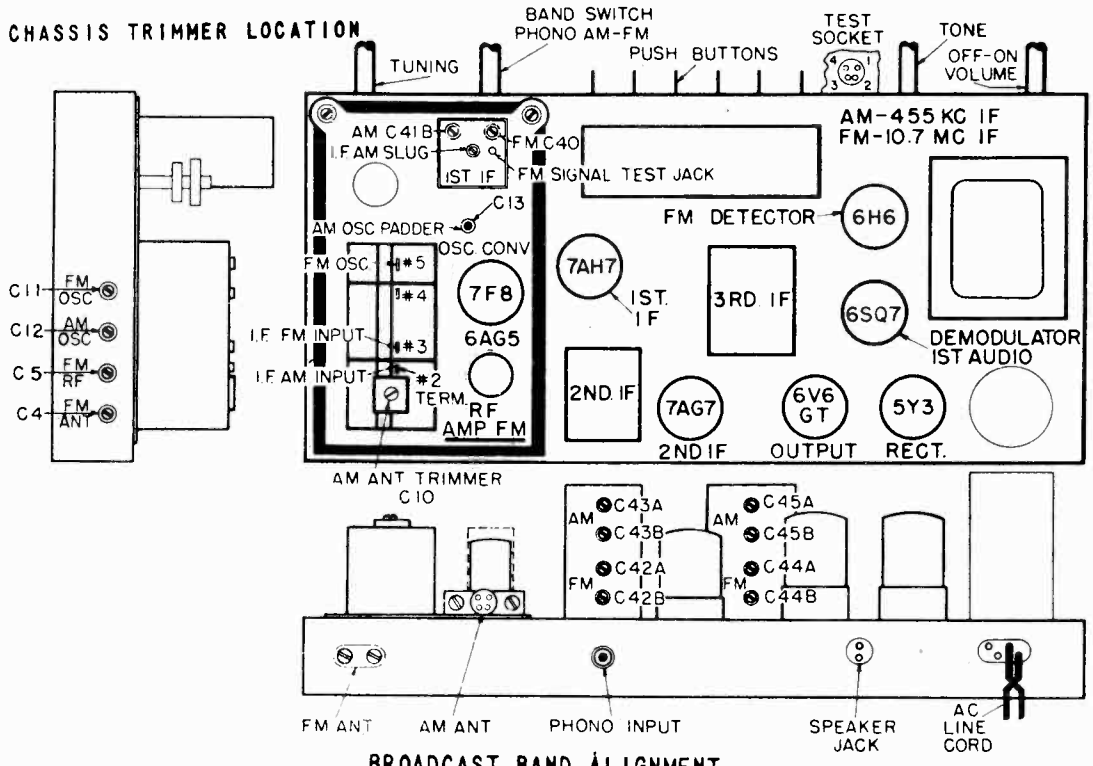



Fig. 7

FIG. 1 - CHASSIS TRIMMER LOCATION




## BROADCAST BAND ALIGNMENT

See Fig. 1 for trimmer locations.
Rotate gang condenser until full closed. Set pointer to reference mark. See Fig. 3.
Connect output meter across voice coil on lowest scale.
Signal Generator amplitude modulated.
Rotate volume control full ON. Keep generator output low as practical.

| Apply | Thru | To | Band Switch Position | Dial Setting | Adjust |
|---|---|---|---|---|---|
| 455 KC | .05 mfd. | Term. #2 gang cond. & chassis | AM-mid-position | Gang cond. full open | IF slug, C41B, C43A, C43B, C45A, C45B for max output |
| 580 KC | Bendix dummy loop AD0L00 | Dummy loop plugged in AM ant. socket on rear of chassis | " | 580 KC ref. mark | C13 for max. output |
| 1475 KC | " | " | " | 1475 KC ref. mark | *C12, C10 for max. output |
| 580 KC | " | " | " | Approx. 580 KC ref. mark | C13 for max. output "Rock" gang during adjustment |
| 965 KC | " | " | " | Approx. 965 KC ref. mark | **Check Calibration |
| 580 KC | " | " | " | Approx. 580 KC ref. mark | **Check Calibration |

* Repeat 1475 KC and following 580 KC adjustment in rotation several times until receiver is properly aligned.

** If calibration does not check within 10 KC, "knife" oscillator and antenna gang sections. The latter operation must be attempted by experienced technicians only.

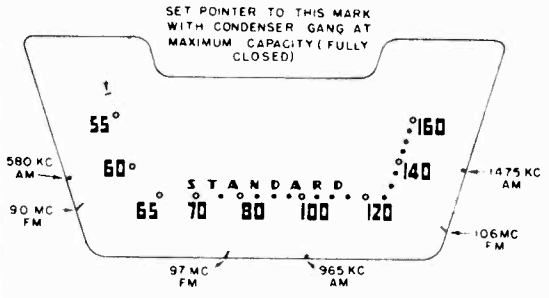



FIG. 3 - ALIGNMENT REFERENCE POINTS

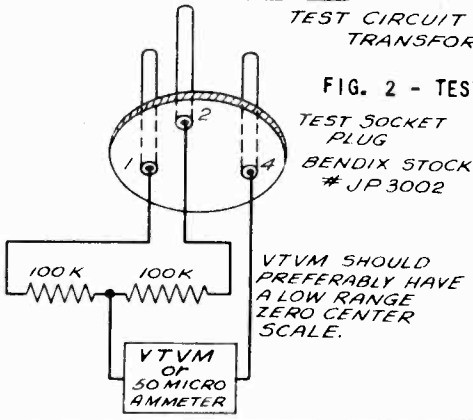
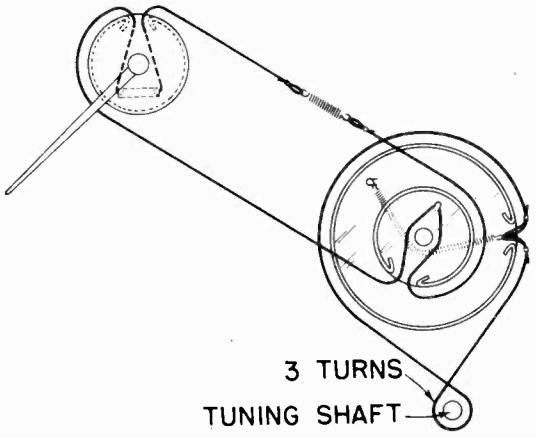
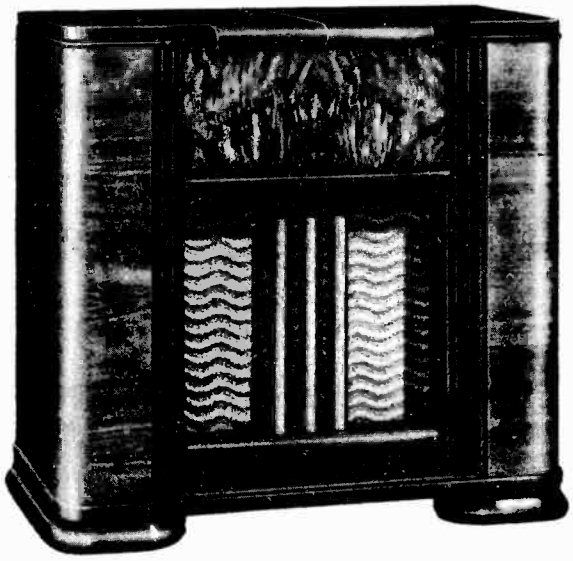


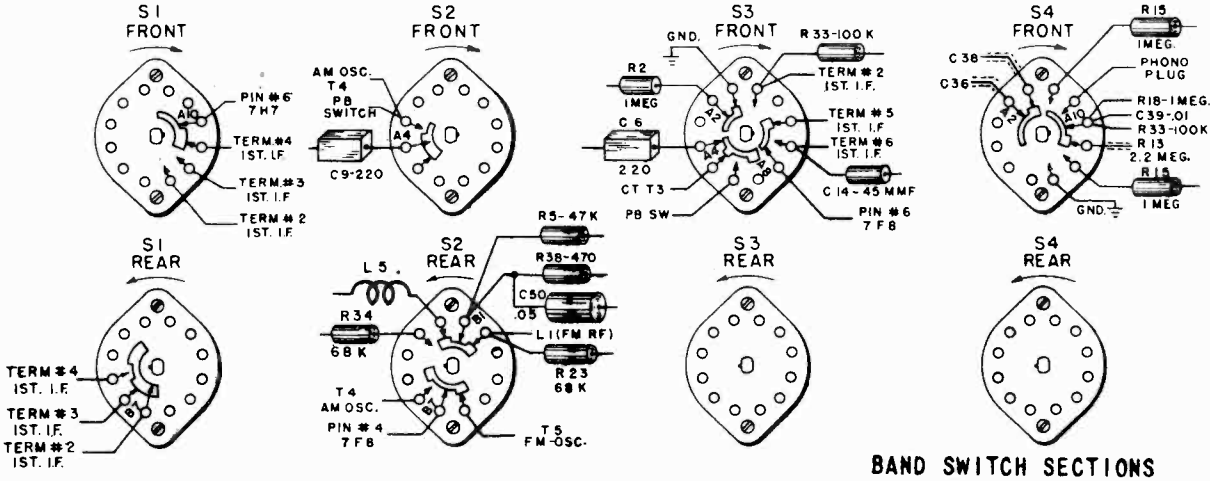

FIG. 2 - TEST CIRCUIT FOR FM ALIGNMENT

MODEL 847B

# BENDIX RADIO DIV.






BAND SWITCH SECTIONS

## SPECIFICATIONS

**POWER**
Voltage.....105-125 VAC
Frequency.....60 Cycles
Consumption.....100 Watts

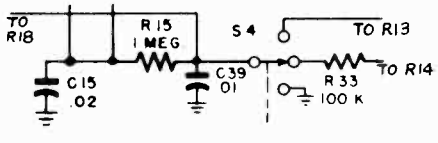
**TUNING RANGE**
AM.....540-1620 KC
FM.....88-108 MC

**INTERMEDIATE FREQUENCY**
AM.....455 KC
FM.....10.7 MC

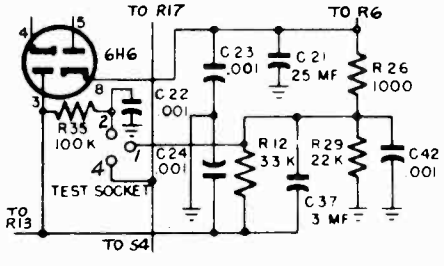
**POWER OUTPUT**
Maximum.....4.2 Watts

**LOUDSPEAKER - PM.**
Cone diameter.....10 inches
VC impedance at 400 cycle.....3.2 ohms

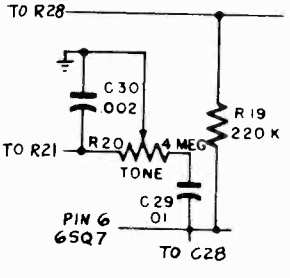
**CABINET**
33" high, 34-1/2" wide, 18-3/16" deep
Shipping Weight.....95 pounds




Values of R15 & R33 Changed




Test Socket Connection Changed




R37 Not Used

CIRCUITS USED ON EARLY MODELS

BENDIX RADIO DIV. MODEL 847B

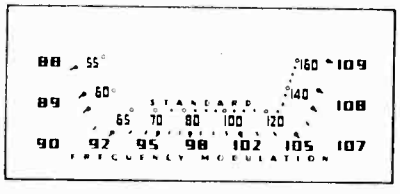
# REPLACEMENT PARTS LIST

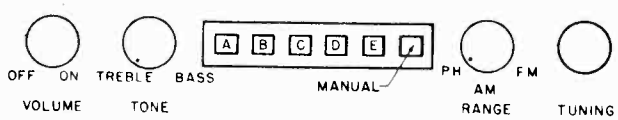
| Stock Number | Description |
|---|---|
| AL0Z08* | Assy. Antenna FM Loop..... |
| AR0B00 | Assy. R.F. Osc. Chassis Assy..... |
| CC8A24 | Capacitor, Ceramic 15 mmf 500V (C46)..... |
| CC8A30 | Capacitor, Ceramic 45 mmf 500V (C14, C44)..... |
| CC0F18 | Capacitor, Ceramic 4.7 mmf 500V (C7)..... |
| CC0F19 | Capacitor, Ceramic 5.6 mmf 500V (C55, C57)..... |
| CE3A01 + | Capacitor, Electrolytic 3 x 20 mfd 450V (C32)..... |
| CE1T00 | Capacitor, Electrolytic 25 mmf 25 V.D.C. (C21, C47)..... |
| CE1T01 | Capacitor, Electrolytic 3 mfd 50V (C37)..... |
| CL2A02 + | Cord, A C Line Brown..... |
| CM4A42 | Capacitor, Mica 680 mmf 300V (C38, C41, C45)..... |
| CM5A22 + | Capacitor, Mica 100 mmf 500V (C33)..... |
| CM5A30 + | Capacitor, Mica 220 mmf 500 V.D.C. (C28, C48)..... |
| CM6A22 | Capacitor, Mica 100 mmf 500V (C52)..... |
| CM7A30 | Capacitor, Mica 220 mmf 500V (C51, C56)..... |
| CM4L42 | Capacitor, Mica (Low Loss) 680 mmf 300V (C3)..... |
| CM5L03 | Capacitor, Mica (Low Loss) 15 mmf 500V (C40)..... |
| CM5L22 | Capacitor, Mica (Low Loss) 100 mmf 500V (C8)..... |
| CM5L30 | Capacitor, Mica (Low Loss) 220 mmf 500V (C6, C9)..... |
| CM8S50 + | Capacitor, Mica 470 mmf 500V. D.C. (C60)..... |
| CP2M10 | Capacitor, Paper .001 mfd. 200V (C22, C23, C24, C42)..... |
| CP4M34 | Capacitor, Paper .02 mfd 400V (C15)..... |
| CP4M51 | Capacitor, Paper .1 mfd 400V (C59)..... |
| CP4T31 + | Capacitor, Tubular Paper .01 mfd 400V 10% (C29)..... |
| CP4T40 + | Capacitor, Tubular Paper .05 mfd 400V (C17, 18, 19,20, 49, 50).. |
| CP6T12 + | Capacitor, Tubular Paper .002 mfd 600V (C30)..... |
| CP6T18 + | Capacitor, Paper .005 mfd 600V D.C. (C34, C35)..... |
| CP6T20 + | Capacitor, Paper .006 mfd 600V (C25, 27, 31, 36)..... |
| CP6T31 + | Capacitor, Paper .01 mfd 600V (C39, 43)..... |
| CT1A03 + | Capacitor, Trimmer 12 - 160 mmf (C61, 62)..... |
| CT1A04 + | Capacitor, Trimmer 45 - 370 mmf (C63, 64)..... |
| CT1A05 + | Capacitor, Trimmer 120 - 580 mmf (C65)..... |
| CT1A09 | Capacitor, Trimmer 3 - 13 mmf (C11)..... |
| CT1A10 | Capacitor, Trimmer 4 - 75 mmf (C10)..... |
| CT1A11 | Capacitor, Trimmer 475-1000 mmf (C13)..... |
| CT1C00 | Capacitor, Trimmer 2 - 20 mmf (Ceramic Insulator) (C4, 5).... |
| CT1C01 | Capacitor, Trimmer 4 - 75 mmf (Ceramic Insulator) (C12)..... |
| CV0D00 | Capacitor, Variable (2 Section AM - 3 Section FM) (C1)..... |
| LF0A00 | Coil RF Choke (T11, T12)..... |
| LF0A01 | Coil, Choke R.F. (L1, L5)..... |
| LF0C00 | Coil, Filament Choke Assy (L3)... |
| LO8B00 | Coil, Oscillator A.M. (T-4)..... |
| LO8F00 | Coil, Oscillator F.M. (T-5)..... |
| LT0A03 | Coil, Pushbutton Osc. Assy. Color Code Yellow (L-10)..... |
| LT0A04 | Coil, Pushbutton, Osc. Assy. Color Code Green (L8, L9)..... |
| LT0805 | Coil, Pushbutton Osc. Assy. Color Code Black (L6, L7)..... |
| RC4D26 | Resistor. Comp. 1500 Ohm, 2W (R-28)..... |
| RC2G16 | Resistor, Comp. 220 Ohms 1/2W.... |
| RC2G27 | Resistor, Comp. 1800 Ohms 1/2W (R1)..... |
| RC1H18 | Resistor, Comp. 330 Ohms 1/4W (R30)..... |
| RC1H20 + | Resistor, Comp. 470 Ohms 1/4W (R38)..... |
| RC1H24 + | Resistor, Comp. 1000 Ohms 1/4W (R35)..... |
| RC1H40 + | Resistor, Comp. 22,000 Ohms 1/4W (R3, R29)..... |
| RC1H42 + | Resistor, Comp. 33,000 Ohms 1/4W (R12)..... |
| RC1H44 | Resistor, Comp. 47,000 Ohms 1/4W (R32)..... |
| RC1H51 + | Resistor, Comp. 100,000 Ohms 1/4W (R17, 21, 33, 37)..... |
| RC1H54 + | Resistor, Comp. 220,000 Ohms 1/4W (R6, 14, 19)..... |
| RC1H58 + | Resistor, Comp. 470,000 Ohms 1/4W (R24, 36)..... |
| RC1H62 + | Resistor, Comp. 1 Meg 1/4W (R2, 15, 18)..... |
| RC1H66 + | Resistor, Comp. 2.2 Meg. 1/4W (R13)..... |
| RC1H74 + | Resistor, Comp. 10 Meg. 1/4W (R22)..... |
| RC2H00 | Resistor, Comp. 10 Ohms 1/2W (R31)..... |
| RC2H08 | Resistor, Comp.47 Ohms 1/2W (R7). |
| RC2H16 | Resistor,Comp. 220 Ohms 1/2W (R10)..... |
| RC2H24 | Resistor, Comp. 1,000 Ohms 1/2W (R9, 11, 26)..... |
| RC2H34 | Resistor, Comp. 6,800 Ohms 1/2W (R4)..... |
| RC2H44 | Resistor, Comp. 47,000 Ohms 1/2W (R5)..... |
| RC2H46 | Resistor, Comp. 68,000 Ohms 1/2W (R23, 34)..... |
| RV4C00 | Potentiometer, Tone 4 Meg. (R20).. |
| RV4S10 | Potentiometer, 2 Meg. (R16)..... |
| RW2A12 | Resistor, Wirewound 100 Ohms 2W (R27)..... |
| RW1B34 | Resistor, Wirewound 270 Ohms 1W (R25)..... |
| SP0R00* | Speaker, PM 10" Round..... |
| ST0100 | Core, Iron..... |
| TA0007 | Transformer, Audio Output (T9).... |
| TI0C06 | Transformer, I.F. 1st T6..... |
| TI0D08 | Transformer, I.F. 3rd T8..... |
| TI0100 | Transformer, I.F. 2nd T7..... |
| TP0J00 | Transformer, Power T10..... |
| TR8B00 | Transformer, Ant. Coil T1..... |
| TR8F00 | Transformer, Ant. R.F. (FM)..... |
| TR8P00 | Transformer Interstage FM Mixer Coil T3..... |
| #44 + | Lamp, Pilot..... |
| | **MECHANICAL COMPONENTS** |
| AB0C01 | Assy. Pushbutton Switch..... |
| AD0E00 | Assy. Dial Back Plate..... |
| AS0P00 | Assy. Shaft & Pulley..... |
| BP0B00 | Pushbutton..... |
| BT1S00 + | Strip Terminal (1 Terminal)..... |
| BT1S01 + | Strip Terminal..... |
| BT1S03 | Strip Terminal (1) Mtg. 1 Lug..... |
| BT2S00 + | Strip Terminal..... |
| BT3S00 + | Strip Terminal..... |
| BZ0D08 | Baffle & Cloth Assy..... |
| CD0C09 | Dial, Cord (Indicator)..... |
| CD0C10 | Dial, Cord (Tuning)..... |
| DS0A19 | Dial, Scale (88-109 MC) Paper..... |
| DS0A20 | Dial, Standard Broadcast..... |
| DZ0F08 | Decal, Nameplate..... |
| DZ0F09 | Decal, Volume..... |
| DZ0F10 | Decal, Tone..... |
| DZ0F11 | Decal, Range..... |
| DZ0F12 | Decal, Tuning..... |
| EB0M02 | Escutcheon 6 Pushbutton..... |
| ED0M01 | Escutcheon, Dial..... |
| GR0100 | Grommet, Rubber Insulating..... |
| GR0101 | Grommet, (Color Code Black)..... |
| GR0S09 | Grommet, Shockmount..... |
| GR0S10 | Grommet, Rubber Shockmount..... |
| HB0M15 | Bracket, Pointer Bearing Mtg..... |
| HB0M16 | Bracket, Pushbutton Mtg..... |

MODEL 847B BENDIX RADIO DIV.

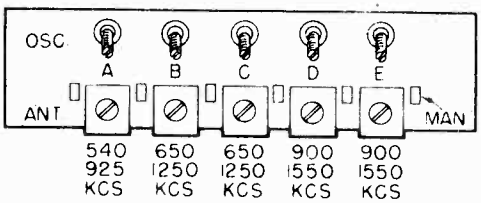
# REPLACEMENT PARTS LIST—*cont.*

| Stock Number | | Description |
|---|---|---|
| HBOM17 | | Bracket, Tuning Shaft Bearing.... |
| HBOM18 | | Bracket, Antenna Plug Mtg..... |
| HBOM19 | | Bracket, Shockmount..... |
| HBOM20 | | Bracket, Terminal..... |
| HBOM21 | | Bracket, Bearing Pointer Support. |
| HBOM22 | | Bracket, Variable Condenser..... |
| HCOC00 | + | Clip, Retainer..... |
| HCOC03 | + | Clamp, Dial Cable..... |
| HCOC06 | + | Clip, Coil..... |
| HCOS06 | + | Clip, Binding Post Spring..... |
| HCOS09 | + | Clip, Retainer, Ring Knob..... |
| HCOS28 | | Clip, Washer "C" Blued Finish.... |
| HKOR00 | + | Clip, Retainer, Ring..... |
| HP8T01 | | Pin, Threaded 8-32..... |
| HSOC00 | + | Spring..... |
| HSOP16 | | Sleeve, Spacer..... |
| HSOP17 | | Spacer 3/8" OD 1/4" ID 1/2" Lg Steel..... |
| HSOS05 | | Spacer, Thread Shoulder..... |
| HZOG01 | + | Glides, Metal..... |
| HZOH00 | + | Hinges, Statuary Brze (2 Lids)... |
| HZOS06 | | Lid Support L.H. Stat. Brze..... |
| HZOS07 | | Lid Support, RH Stat. Brze..... |
| IDOM10 | | Indicator, Dial..... |
| JP1002 | + | Plug 1 Contact, Male..... |
| JP2004 | | Plug 2 Contact..... |
| JP3000 | | Cable, Assy., AM Loop..... |
| JP3002 | | Plug, 3 Contact..... |
| JR2006 | | Receptacle 2 Contact..... |
| JR3000 | | Receptacle 3 Contact..... |
| KB0R01 | + | Knob, Control Indexed Push On:... |
| KC0R06 | + | Knob, Control, Brown..... |
| MA0T00 | | Adapter, Slug Adj. Screw 4-40.... |
| MB0R02 | | Bushing, Tuning Shaft..... |
| MS0T08 | | Shaft, Tuning..... |
| NP0M01 | + | Needle, Reproducing..... |
| PF0B00 | + | Pads, Felt Bumper..... |
| SM0R00 | | Shield Base Min. Tube..... |
| SM0T03 | | Shield Miniature Tube..... |
| SO0D04 | + | Socket, Dial Light..... |
| SO0D05 | + | Socket, Dial Light..... |
| SO7M05 | | Socket, Miniature Tube Zip in Type |
| SO8L01 | + | Socket, Moulded Locktal..... |
| SO8S01 | | Socket, Octal..... |
| SR3G00 | | Switch, Rotary 3 Position 4 Wafer.. |
| SS6P00 | | Switch, 6 Pushbutton SW-2..... |
| TB0P00 | | Call Letter Tabs..... |
| WP0B00 | + | Windows, Pushbutton..... |
| WP0D00 | | Window, Dial..... |
| XS0C01 | | Strip, Copper .004 x 5/16 x 1-3/16. |
| XS0C02 | | Strip, Copper .004 x 5/16 x 1-5/8.. |
| XS0Z01 | + | Strip, Fishpaper..... |
| XS0Z02 | + | Strip, Fishpaper..... |
| XS0Z09 | | Strip, Fishpaper..... |
| ZL8G00 | | Lid, Console AM, FM..... |
| ZW8G00 | * | Cabinet, Platt 0026 (Walnut)..... |
| | | STANDARD HARDWARE |
| | + | Palnut (6-32)..... |
| | + | Nut, Hexagon 4-40..... |
| | + | Nut, Hexagon 8-32 Steel..... |
| | + | Nut #8-32 N.P..... |
| | + | Nut 10-32 Hex (C.P.)..... |
| | + | Lockwasher, #8..... |
| | + | Screw, Self-Tapping #8 x 1/4" Lg.. |
| | + | Screw #8 (1/2" Self Tapping)..... |
| | + | Screw, 5/16 #6-32..... |
| | + | Screw, 1/2" #8-32..... |
| | + | Screw 1/2" #1/4-20..... |
| | + | Screw, 3/4" #4-40..... |
| | + | Screw, 1" - 1/4-20..... |
| | + | Screw Binder Head 6-32 x 1/4..... |
| HR0P01 | + | Rivet, Tubular .121 Dia. x 1/8" Lg |
| HR0P00 | + | Rivet, Tubular .121 Dia. x 13/64"Lg |
| HR0P06 | + | Rivet, Tubular .121 Dia. x14/64"Lg |
| | + | Washer, Flat..... |
| WF0F14 | + | Washer, Insulating..... |
| | + | Washer, Flat..... |
| HL8S04 | + | Lug, Soldering..... |
| | + | Screw, #6 5/8" Lg Statuary Brze.. |
| | + | Screw, #5 Rd. Hd. Steel Bright Finish |
| | + | Lockwasher #4..... |
| | + | Lockwasher #6..... |
| | + | Washer, Lock..... |
| | + | Washer, Lock..... |
| | + | Palnut 3/8 x 32..... |
| | + | Screws, Speaker..... |
| | + | Teenuts, Chassis Board..... |
| | + | Teenuts, Motor Board..... |
| | + | Lockwasher..... |



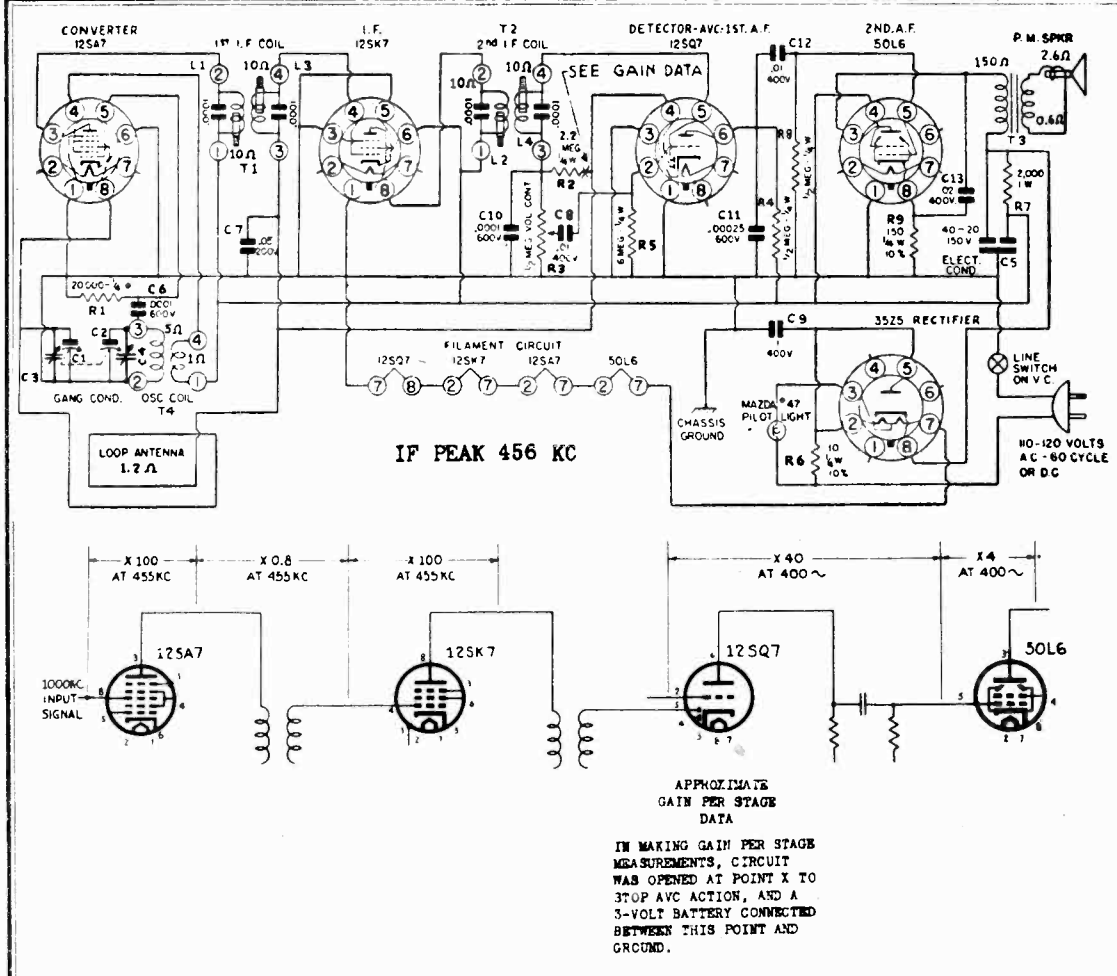




Controls--The various controls are shown in the above drawing. Controls as arranged from left to right are: Volume control, Tone control, Pushbuttons, Range control, and Tuning control. Tone Control rotates to the Bass position in a clockwise direction, to the Treble position in the counterclockwise direction. The range switch is in F.M. position at maximum CCW, broadcast position is mid-position, and phono position is maximum clockwise.




Pushbuttons--The adjustment position of the pushbutton assembly is shown below. Pushbutton operation is provided by rotating the band switch to the center position and depressing the desired Pushbutton. The extreme right hand pushbutton is depressed when MANUAL tuning operation is desired.

Access to the adjustment screws is obtained by pulling the Pushbuttons off the shaft vertically. The osc. and antenna adjustment screws, with the Pushbutton frequency ranges, is shown in the above diagram.

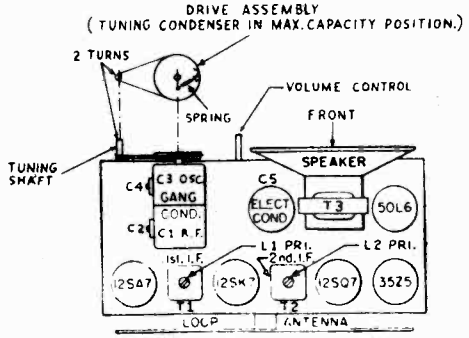



APPROXIMATE GAIN PER STAGE DATA

IN MAKING GAIN PER STAGE MEASUREMENTS, CIRCUIT WAS OPENED AT POINT X TO STOP AVC ACTION, AND A 3-VOLT BATTERY CONNECTED BETWEEN THIS POINT AND GROUND.

| TUBE | PIN | VTVM | D-C VOLTAGE 20,000 OHMS PER VOLT | D-C VOLTAGE 1000 OHMS PER VOLT | RESISTANCE |
|---|---|---|---|---|---|
| 12SA7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 26 |
| | 3 | +80 | +80 | +80 | 5,000,000 |
| | 4 | +80 | +80 | +80 | 5,000,000 |
| | 5 | -6 | -5.6 | -2.6 | 19,000 |
| | 6 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 40 |
| | 8 | -1 | -0.4 | -0.4 | 5,000,000 |
| 12SK7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 16 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | -1 | -0.4 | -0.4 | 5,000,000 |
| | 5 | 0 | 0 | 0 | 0 |
| | 6 | +80 | +80 | +78 | 5,000,000 |
| | 7 | 0 | 0 | 0 | 26 |
| | 8 | +80 | +80 | +78 | 5,000,000 |
| 12SQ7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | -1.2 | -0.8 | -0.5 | 10,000,000 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | -1 | -0.45 | -0.4 | 5,000,000 |
| | 5 | -0.7 | -0.5 | -0.2 | 500,000 |
| | 6 | +54 | +48 | +42 | 5,000,000 |
| | 7 | 0 | 0 | 0 | 15 |
| | 8 | 0 | 0 | 0 | 0 |
| 50L6 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 40 |
| | 3 | +125 | +120 | +120 | 5,000,000 |
| | 4 | +80 | +80 | +80 | 5,000,000 |
| | 5 | 0 | 0 | 0 | 450,000 |
| | 6 | 0 | 0 | 0 | INFINITE |
| | 7 | 0 | 0 | 0 | 90 |
| | 8 | +5.2 | +5 | +5 | 140 |
| 3525 | 1 | 0 | 0 | 0 | INFINITE |
| | 2 | 0 | 0 | 0 | 120 |
| | 3 | 0 | 0 | 0 | 120 |
| | 4 | 0 | 0 | 0 | INFINITE |
| | 5 | 0 | 0 | 0 | 120 |
| | 6 | 0 | 0 | 0 | 120 |
| | 7 | 0 | 0 | 0 | 90 |
| | 8 | 130 | 125 | 125 | 5,000,000 |

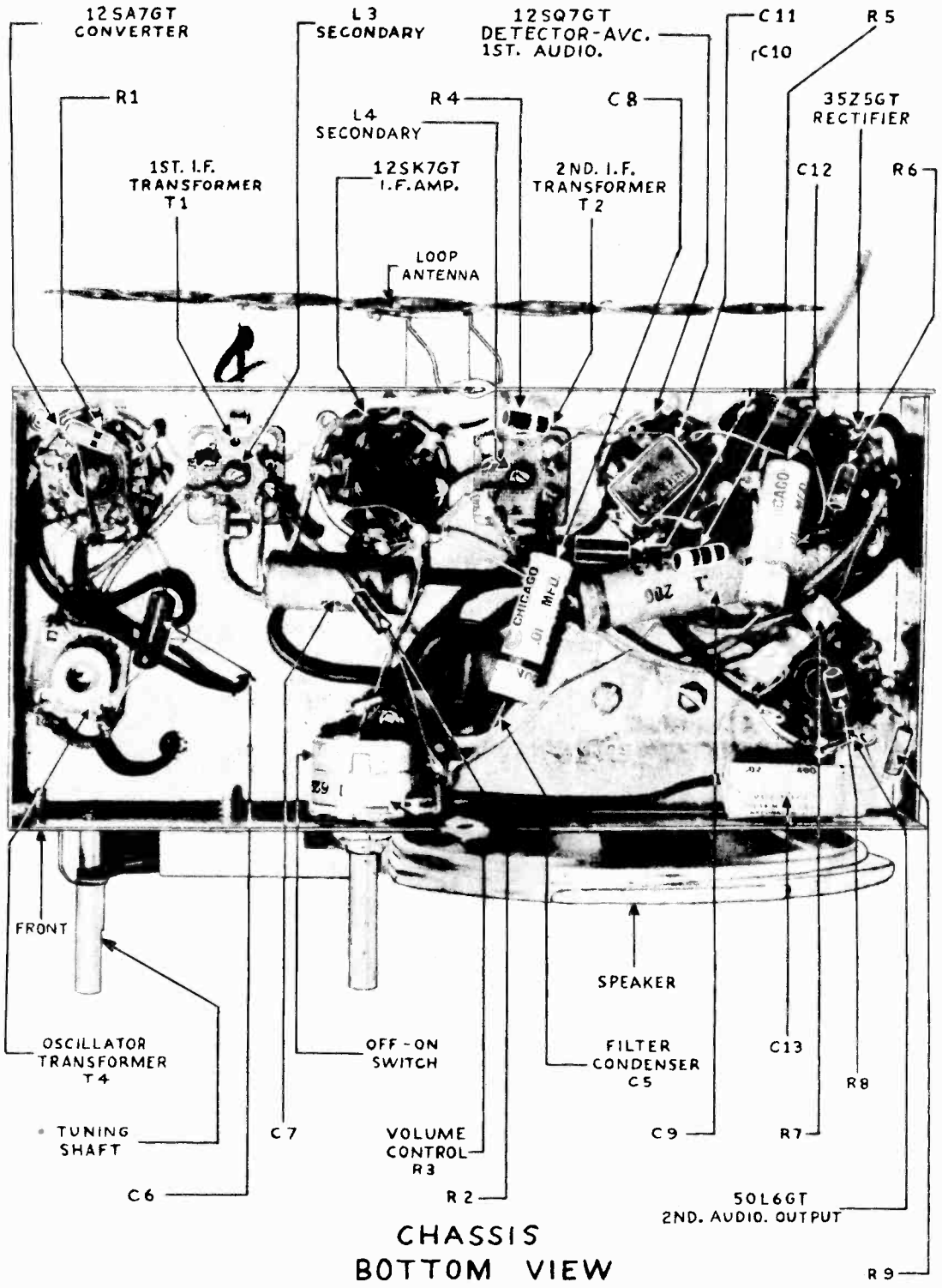
The chassis must be removed from the cabinet in order to align this receiver. Connect the output meter across the voice coil. Connect the signal generator to the Standard Hazeltine Model 1150 loop, and couple loosely to the receiver loop. Set the receiver volume control at maximum. The tuning condenser plates should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The signal generator output should at all times be just sufficient to obtain a minimum deflection on the output meter. Set the signal generator to 456 Kc. Adjust the i-f trimmers for maximum meter deflection in the following sequence: L4, L2, L3, L1. Set the generator and receiver to 1600 Kc and adjust oscillator trimmer C4 for maximum output. Set the generator and receiver to 1400 Kc and adjust loop trimmer C3 for maximum output.




TUBE LAYOUT

MODEL 1A5

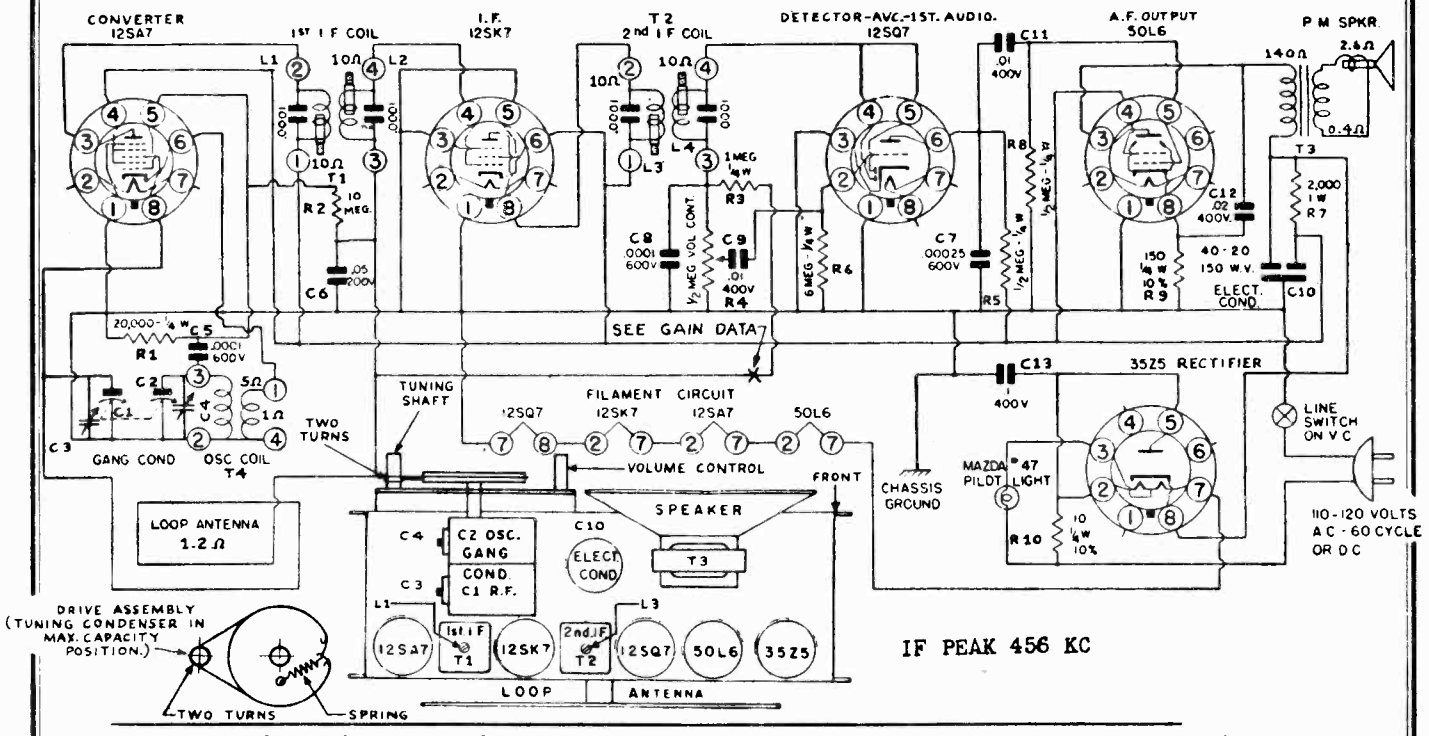
# CITIES SERVICE OIL CO.



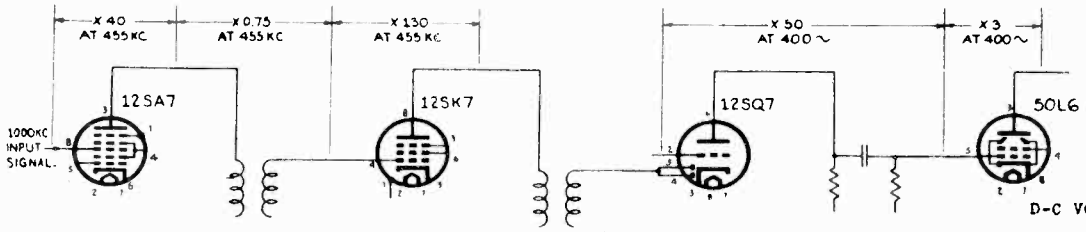

CHASSIS
BOTTOM VIEW

# CITIES SERVICE OIL CO.

MODEL 9A5



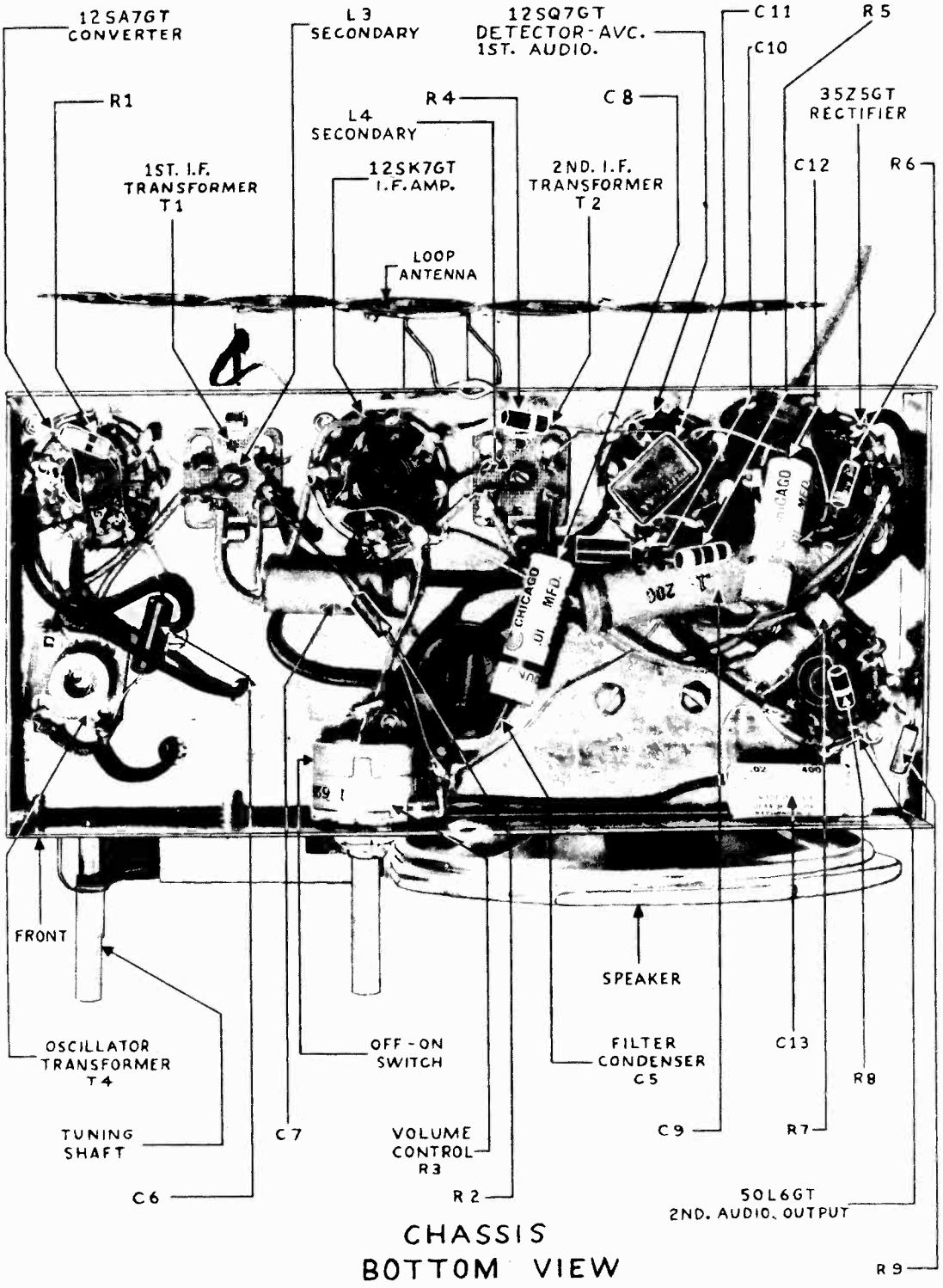

The chassis must be removed from the cabinet in order to align this receiver. Connect the output meter across the voice ccil. Connect the signal generator to the standard Hazeltine Loop Model 1150, and couple loosely to the receiver loop. Set the receiver volume control at maximum. The tuning condenser plates should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The signal generator output should at all times be just sufficient to obtain a minimum deflection on the output meter. Set the signal generator to 456 Kc and adjust the i-f trimmers for maximum meter deflection in the following sequence: L4, L3, L2, L1. Set the generator and receiver to 1600 Kc and adjust the oscillator trimmer C4 for maximum output. Set the generator and receiver to 1400 Kc and adjust the loop trimmer C3 for maximum output.




| TUBE | PIN | D-C VOLTAGE VTVM | D-C VOLTAGE 20,000 OHMS PER VOLT | D-C VOLTAGE 1000 OHMS PER VOLT | RESISTANCE |
|---|---|---|---|---|---|
| 12SA7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 24 |
| | 3 | +80 | +80 | +78 | INFINITE |
| | 4 | +80 | +80 | +78 | INFINITE |
| | 5 | -9.5 | -9.5 | -4.8 | 20,000 |
| | 6 | 0 | 0 | 0 | 1 |
| | 7 | 0 | 0 | 0 | 40 |
| | 8 | -1.5 | -0.8 | -0.2 | 1,200,000 |
| 12SK7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 12 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | -1.5 | -0.6 | -0.2 | 1,200,000 |
| | 5 | 0 | 0 | 0 | 0 |
| | 6 | +80 | +80 | +78 | INFINITE |
| | 7 | 0 | 0 | 0 | 26 |
| | 8 | +80 | +80 | +78 | INFINITE |
| 12SQ7 | 1 | 0 | 0 | 0 | 0 |
| | 2 | -0.5 | -0.4 | -0.2 | 6,000,000 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | -0.5 | -0.4 | -0.2 | 400,000 |
| | 5 | -0.5 | -0.4 | -0.2 | 400,000 |
| | 6 | +46 | +42 | +40 | INFINITE |
| | 7 | 0 | 0 | 0 | 14 |
| | 8 | 0 | 0 | 0 | 0 |
| 50L6 | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 40 |
| | 3 | +120 | +120 | +120 | INFINITE |
| | 4 | +80 | +80 | +78 | INFINITE |
| | 5 | 0 | 0 | 0 | 460,000 |
| | 6 | 0 | 0 | 0 | INFINITE |
| | 7 | 0 | 0 | 0 | 90 |
| | 8 | +4.5 | +4.5 | +4.5 | 150 |
| 35Z5 | 1 | 0 | 0 | 0 | INFINITE |
| | 2 | 0 | 0 | 0 | 120 |
| | 3 | 0 | 0 | 0 | 120 |
| | 4 | 0 | 0 | 0 | INFINITE |
| | 5 | 0 | 0 | 0 | 120 |
| | 6 | 0 | 0 | 0 | 120 |
| | 7 | 0 | 0 | 0 | 90 |
| | 8 | +120 | +120 | +120 | INFINITE |

MODEL 9A5

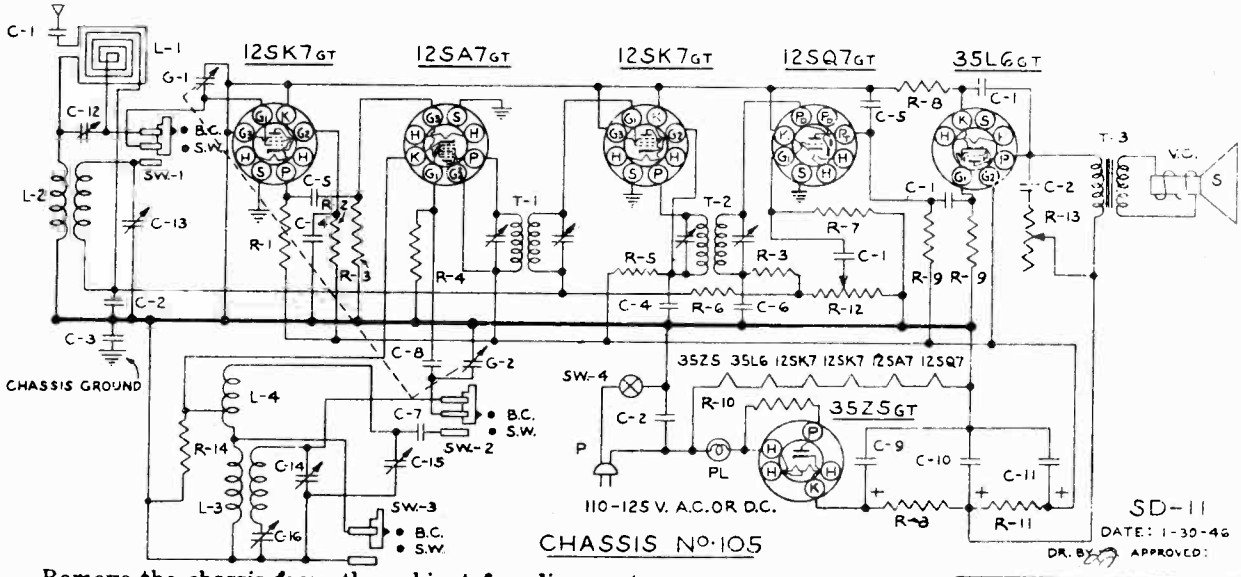
# CITIES SERVICE OIL CO.




CHASSIS
BOTTOM VIEW

# CONCORD RADIO CORP.

MODEL 6F26W
Chassis 105




**Remove the chassis from the cabinet for alignment.**

**A signal generator is required, having the following frequencies: 455 KC, 1400 KC, 1730 KC. 6 MC, 16 MC, and 18.3 MC. An output meter should be connected across the speaker.**

**I. F. ALIGNMENT: — Connect the generator lead through a .1 MFD Condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the gang frame. Set the generator at 455 KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (See Fig. 1) until a maximum reading is noted on the output meter.**

The receiver volume control should be turned to maximum during the I. F. and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

**BC. OR BROADCAST ALIGNMENT: — With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1730 KC. Adjust the BC. oscillator trimmer until the signal is tuned in. Next remove the hot lead of the generator from the "Ant" section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Set the generator to 1400 KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC. antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600 KC and turn the tuning control until the signal is tuned in. Rock the tuning control back and forth slowly and at the same time adjust the 600 KC pad, slowly to the right or left until a maximum reading is noted on the output meter. It is advisable to return to the 1730 KC adjustment and re-check that setting to make sure it has not changed while padding at 600 KC.**

**S. W. OR SHORT WAVE ALIGNMENT: — Set the generator at 18.3 MC. Turn the receiver band switch to short band position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead wire that projects from the back of the loop antenna through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3 MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is turned in. Turn up the generator output and tune the receiver to approximately 17.3 MC. At this point the 18.3 MC signal will be heard again but much weaker. This is the image frequency. If the image is not heard, then turn the tuning condenser back to complete minimum and readjust the S. W. oscillator trimmer. Remember, the image must always be heard (at 2 times the I. F. frequency in KC) lower the frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16 MC and rotate the tuning control until the signal is tuned in. Adjust the S.W. antenna trimmer until a maximum reading is noted on the output meter. It is advisable to rock the gang slowly while adjusting the antenna trimmer. Set the generator to 6 MC and tune the signal in on the receiver. Check the alignment at this frequency. No adjustment should be necessary as the coils have been carefully checked before leaving the factory. A fixed oscillator padding condenser is used at 6 MC.**

| PART NO. | | DESCRIPTION |
|---|---|---|
| IR-22 | R-1 | 3900Ω RESISTOR 1/2 W. 10% |
| IR-6 | R-2 | 22,000Ω RESISTOR 1/2 W. 10% |
| IR-10 | R-3 | 47000Ω RESISTOR 1/2 W. 20% |
| IR-9 | R-4 | 22,000Ω RESISTOR 1/2 W. 20% |
| IR-24 | R-5 | 1000Ω RESISTOR 1/2 W. 20% |
| IR-23 | R-6 | 3.9 MEG. RESISTOR 1/2 W. 20% |
| IR-13 | R-7 | 2 MEG. RESISTOR 1/2 W. 20% |
| IR-5 | R-8 | 220Ω RESISTOR 1/2 W. 10% |
| IR-11 | R-9 | 470000Ω RESISTOR 1/2 W. 20% |
| IR-17 | R-10 | 39Ω RESISTOR 1/2 W. 20% |
| IR-21 | R-11 | 330Ω RESISTOR 1/2 W. 10% |
| VC-3 | R-12 | 1 MEG. VOLUME CONTROL |
| VC-1 | R-13 | 25MΩ TONE CONTROL & SW. |
| IR-6 | R-14 | 470Ω RESISTOR 1/2 W. 10% |
| PC-7 | C-1 | .01 MFD. CONDENSER 400 V. |
| PC-5 | C-2 | .05 MFD. CONDENSER 400 V. |
| PC-9 | C-3 | .25 MFD. CONDENSER 400 V |
| PC-8 | C-4 | .1 MFD. CONDENSER 400 V |
| MC-3 | C-5 | .00022 MFD. MICA COND. 500 V. |
| MC-2 | C-6 | .0001 MFD. MICA COND. 500 V. |
| MC-1 | C-7 | .00475 MFD. MICA COND. 3% |
| MC-4 | C-8 | .00005 MFD. MICA COND. 500 V. |
| EC-4 | C-9 | 40 MFD. |
| | C-10 | 40 MFD. 150 V. ELECTROLYTIC |
| | C-11 | 40 MFD. |
| TC-7 | C-12 | LOOP ANTENNA TRIMMER |
| TC-8 | C-13 | S.W. ANTENNA TRIMMER |
| TC-1 | C-14 | B.C. OSC. TRIMMER |
| | C-15 | S.W. OSC. TRIMMER |
| GC-1 | C-16 | B.C. OSC PADDING COND. |
| | G-1 G-2 | GANG CONDENSER |
| SW-1 | SW-1 SW-2 SW-3 | BAND SWITCH |
| | SW-4 | A.C. SW. ON TONE CONTROL |
| LI-1 | T-1 | INPUT I.F. TRANSFORMER |
| LI-2 | T-2 | OUTPUT I.F. TRANSFORMER |
| SPK-4 | T-3 | OUTPUT SPK. TRANSFORMER |
| | V.C. | VOICE COIL |
| PB-1 | S | P.M. SPEAKER |
| CO-1 | PL | PILOT BULB #47 |
| LL-2 | P | LINE CORD |
| LA-2 | L-1 | LOOP ANTENNA |
| LO-3 | L-2 | S.W. ANTENNA COIL |
| LO-4 | L-3 | B.C. OSC. COIL |
| TU-4 | L-4 | S.W. OSC. COIL |
| | | 12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT |

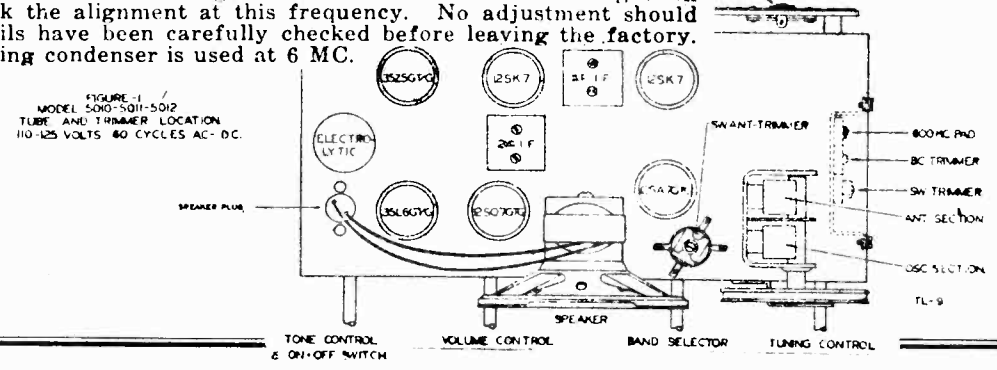
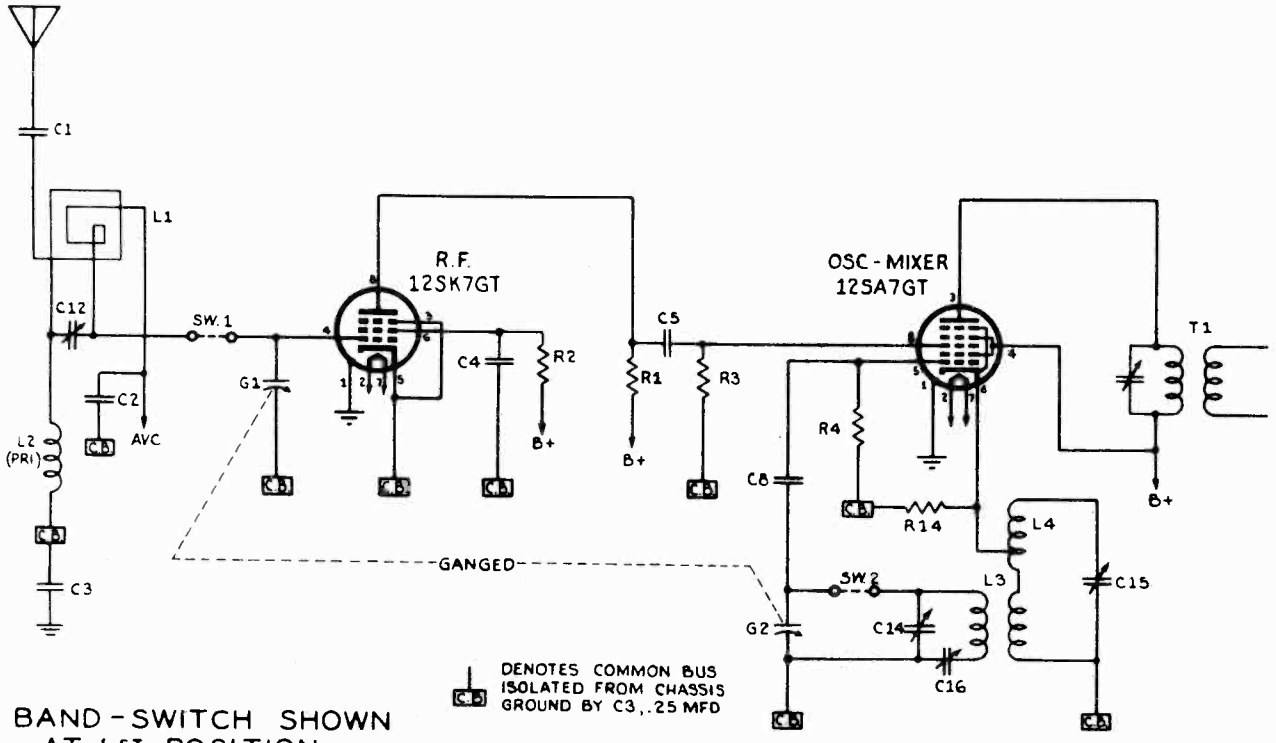
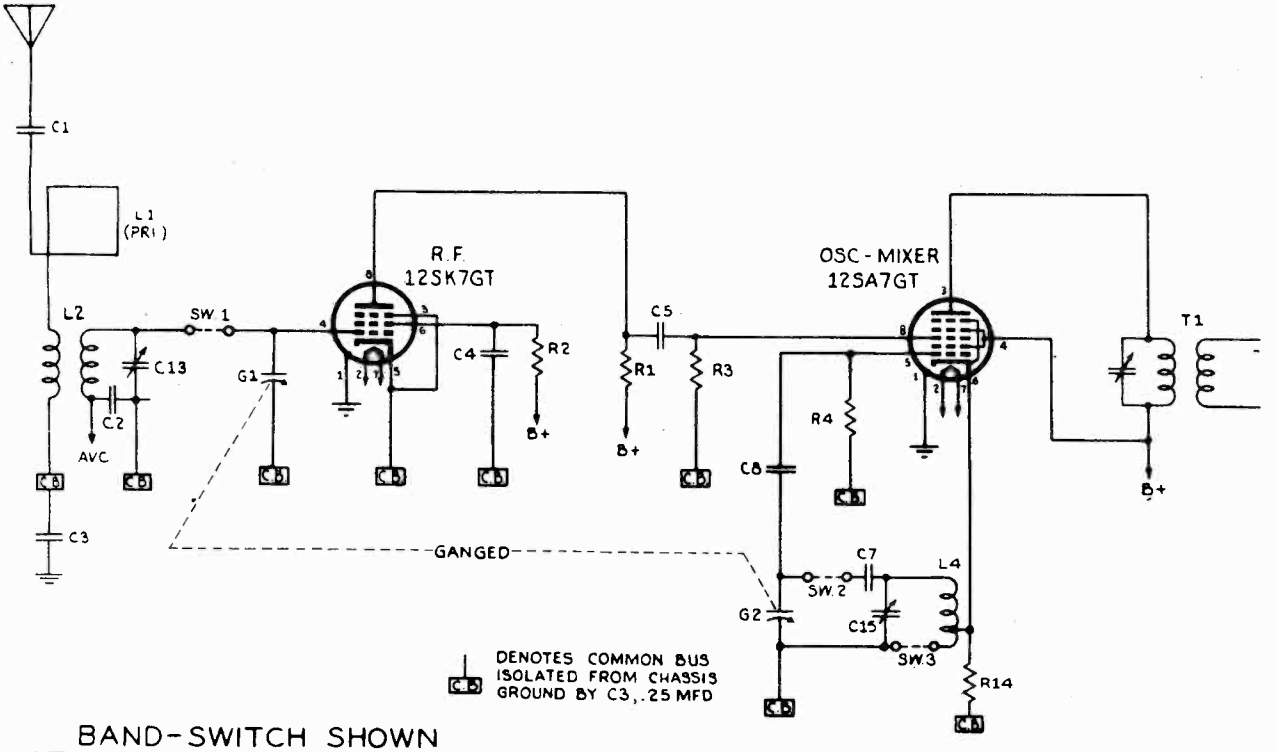



FIGURE 1
MODEL 5010-5011-5012
TUBE AND TRIMMER LOCATION
110-125 VOLTS 60 CYCLES AC-DC.

# CONCORD RADIO CORP.



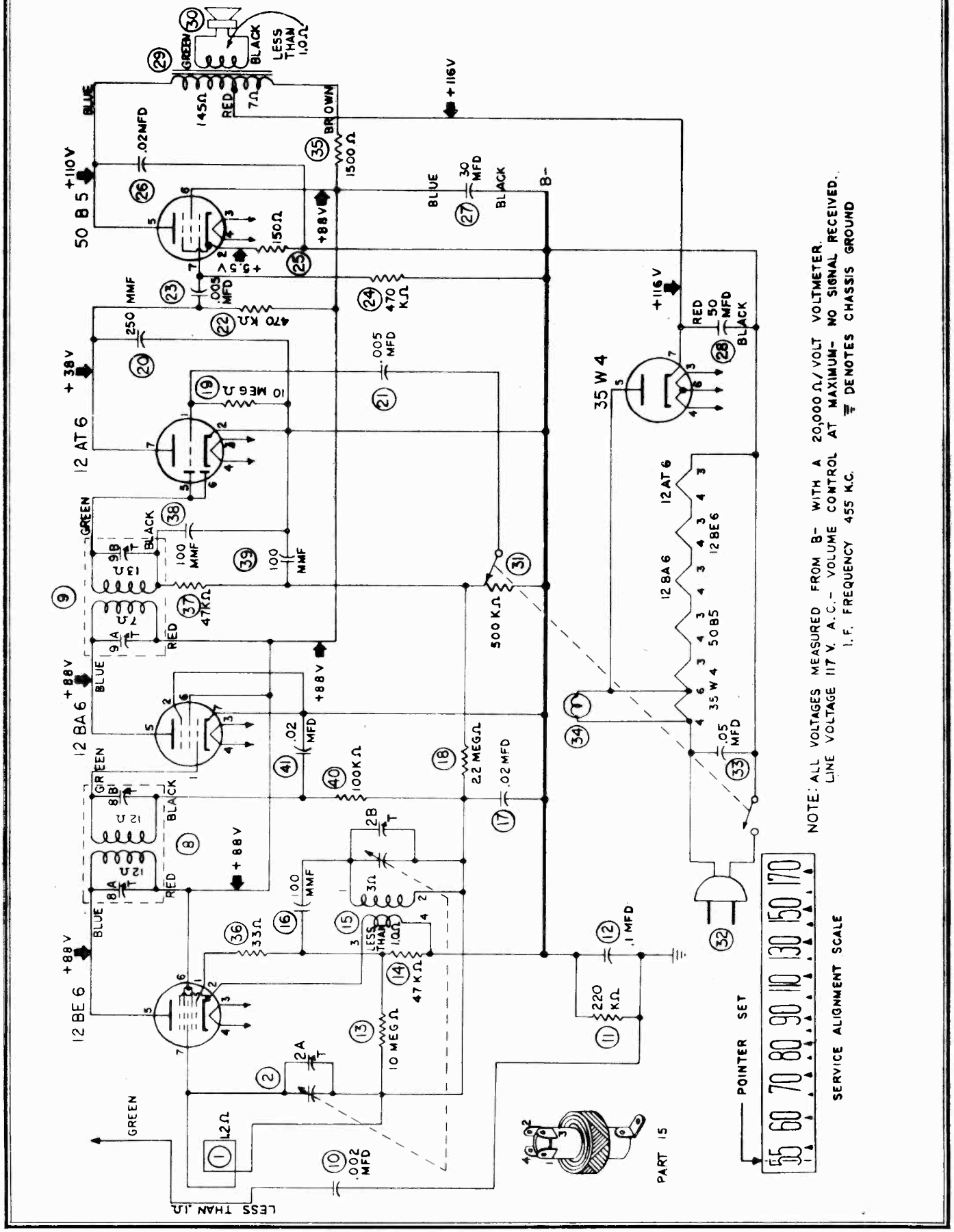

BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND




BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. SHORT WAVE BAND

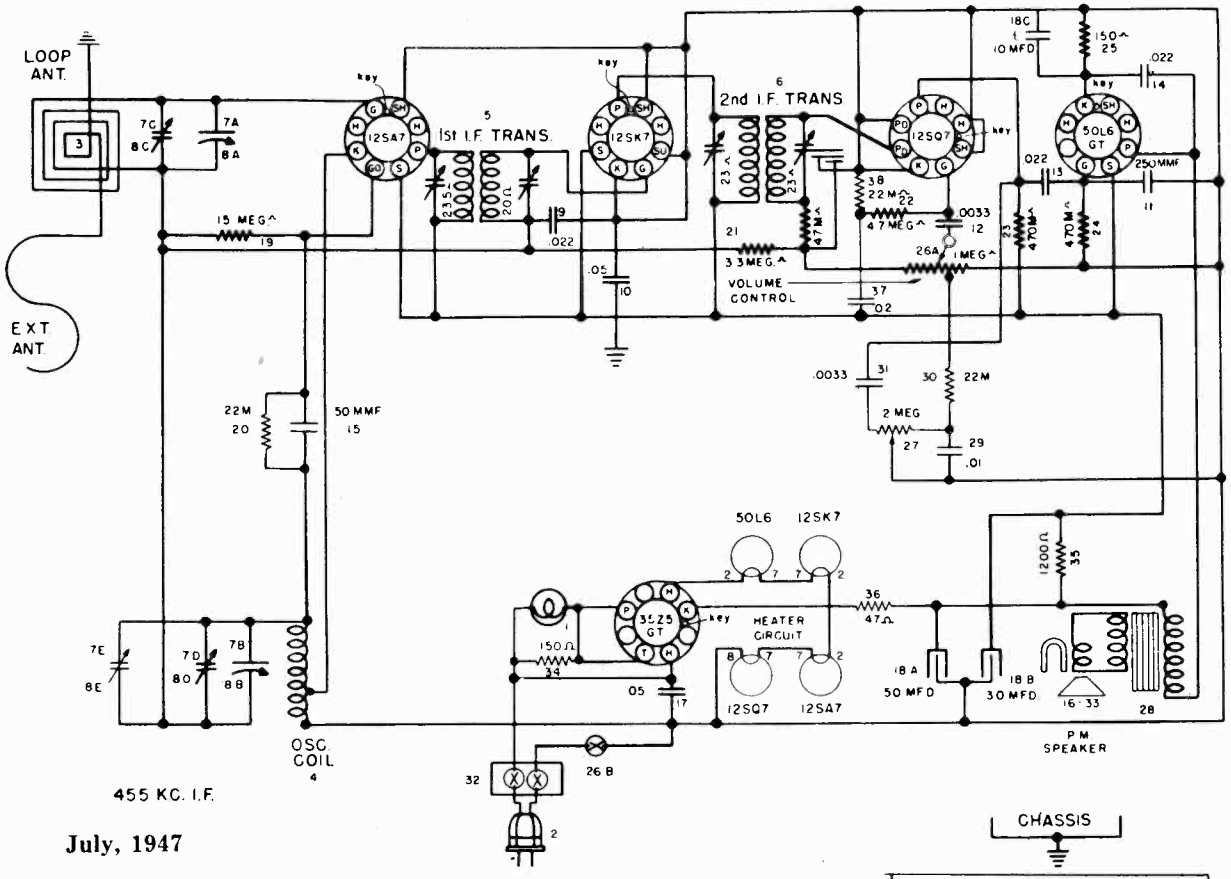
# CONCORD RADIO CORP.

MODEL 7E51W



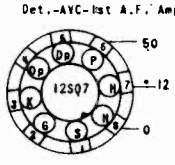
# CROSLEY DIVISION
# AVCO MFG. CORP.

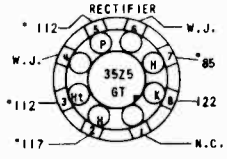
MODEL 56TD-W

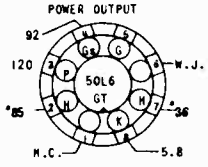


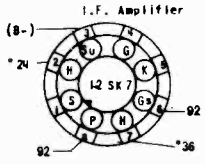

July, 1947

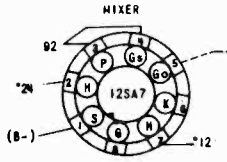
CHASSIS



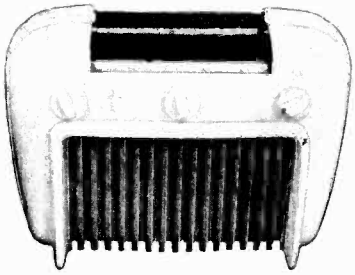



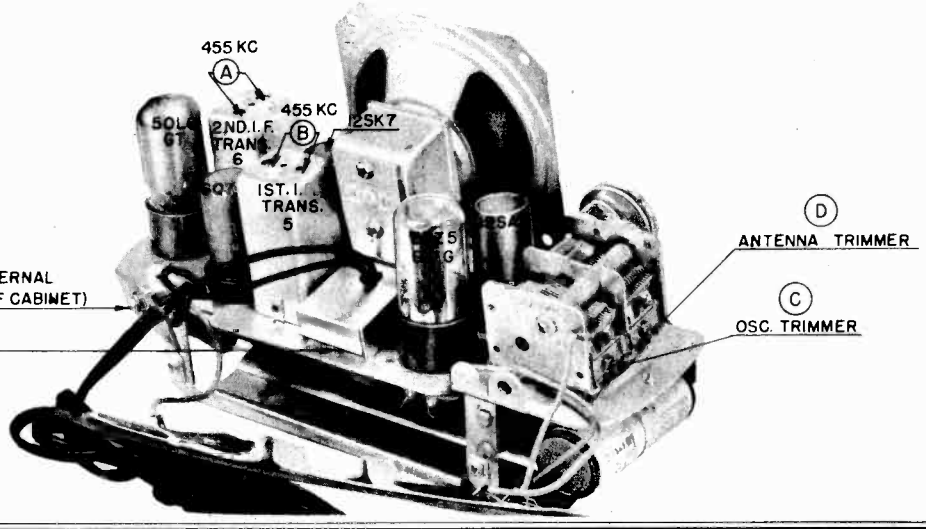




NOTES:
1. Bottom view of tube sockets.
2. Measure voltages from socket lug to (B-) (Pin 3 on the 12SK7).
3. Voltages are measured with an Electronic Voltmeter.
4. W.J. - Wiring Junction.
5. N.C.- No Connection.
6. * - A.C. Voltages
7. Voltage Tolerance, 10%
8. Line Voltage 117 V, 60 A.C.

| OSCILLATOR GRID VOLTS | |
|---|---|
| FREQUENCY | VOLTS |
| 540 KC | -7 |





**TYPE:** Five-tube superheterodyne.

**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

**POWER SUPPLY:** a. c.—d. c.

**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 30 watts.

**POWER OUTPUT:** 2 watts maximum.

**TUBE COMPLEMENT:**

| Type | Function |
|---|---|
| 12SA7 | Mixer |
| 12SK7 | I.F. Amplifier |
| 12SQ7 | Detector. AVC, 1st A.F. Amplifier |
| 50L6GT | A.F. Power Output |
| 35Z5GT | Rectifier |

**DIAL BULB:** Type 47, 6.3 volts, .15 amp.

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce power hum. *Under no circumstances should a ground be connected to this receiver.*

When checking or replacing tubes or aligning this receiver, the back of the cabinet must be removed. This is accomplished by removing the two screws located near the top of the cabinet back in the louvre recess. Remove the back carefully and do not exert too much pressure. When the back is removed it disengages the interlock safety switch (item 32 on schematic) and cuts off the power to the receiver. To turn on the radio when the back of the cabinet is removed, it is necessary to hold in the lever on the interlock switch and caution should be exercised not to come in contact with exposed wires on the chassis.

## ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r. f. signal input from the signal generator should be connected to the external antenna terminal screw, as indicated in the alignment chart. Connect the signal generator ground through a 0.1 mfd. condenser to—B (pin 3 on 12SK7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

| Alignment Sequence | Signal Generator Output | | | Position of Tuning Dial KC | Adjust for Maximum Outout |
|---|---|---|---|---|---|
| | Frequency in KC | In Series with | To | | |
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |

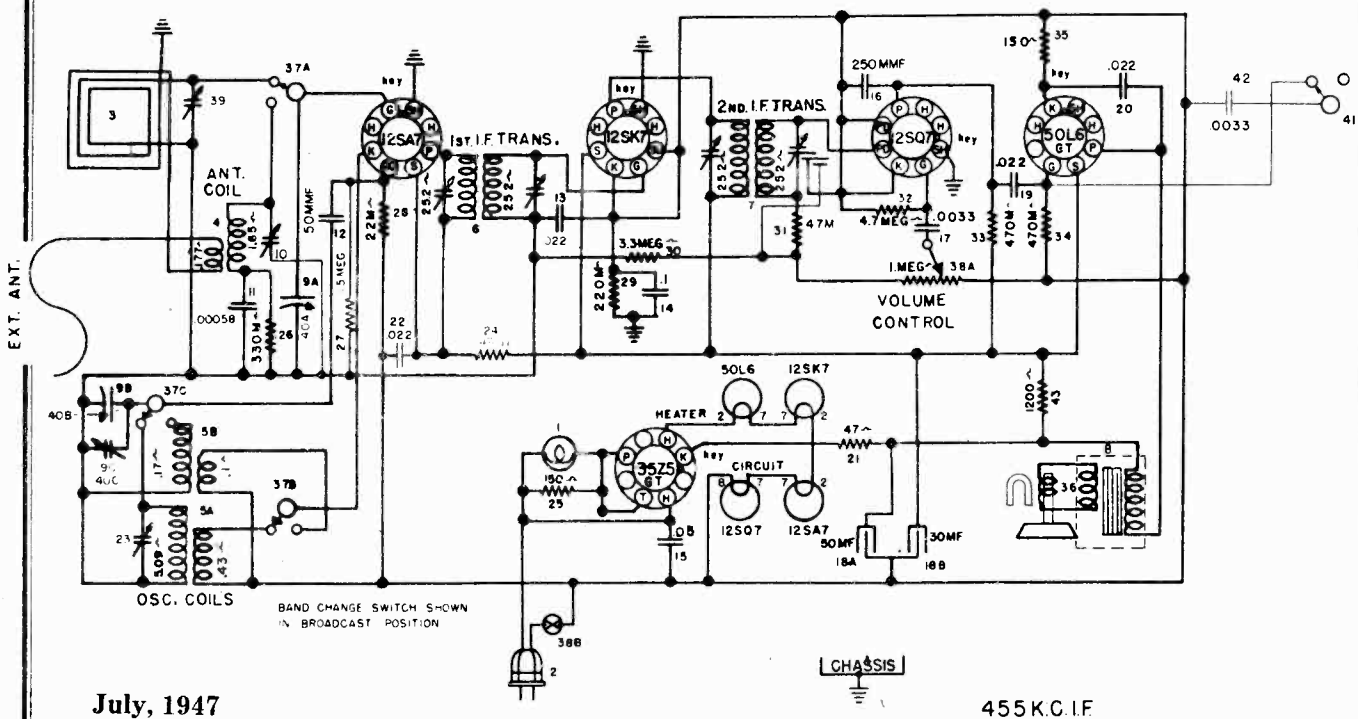
| Item No. | Part No. | Description |
|---|---|---|
| 1 | W-48858 | Bulb (Dial), Type 47, 6.3 v., .15 amp. |
| 2 | C-132300-1 | Cable and Plug (Power) |
| 3 | AC-136091 | Antenna Loop & Back Assy. |
| 4 | AW-136058 | Coil Assy. (Oscillator) |
| 5 | AW-137656 | Transformer (1st I. F.) |
| 6 | AW-137657 | Transformer (2nd I. F.) |
| 7 A | B-136810 | Condenser, Variable (Two |
| 7 B | | Condenser, Variable \ Section |
| 7 C | Part of Item 7A | Condenser, Trimmer |
| 7 D | Part of Item 7B | Condenser, Trimmer |
| 7 E | Part of Item 7B | Condenser, Trimmer |
| 9 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 10 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 11 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 12 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 13 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 14 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 15 | B-226638-53 | Condenser, 50 mmf., 500 v., ceramic |
| 16 | B-136767 | Speaker |
| 17 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 18 A | B-136771 | Condenser, 50 mfd., 150 w. v. (Three |
| 18 B | | Condenser, 30 mfd., 150 w. v. \ Sec. Elec. |
| 18 C | | Condenser, 10 mfd., 25 w. v. / Filter |
| 19 | 39294-38 | Resistor, 15 megohm, ½ w. |
| 20 | 39294-21 | Resistor, 22,000 ohm, ½ w. |
| 21 | 39294-34 | Resistor, 3.3 megohm, ½ w. |
| 22 | 39294-35 | Resistor, 4.7 megohm, ½ w. |
| 23 | 39294-29 | Resistor, 470,000 ohm, ½ w. |
| 24 | 39294-29 | Resistor, 470,000 ohm, ½ w. |
| 25 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 26 A | B-135383 | Control, Volume (1 megohm) } Assy. |
| 26 B | | Switch (Power) } Assy. |

*These parts will replace the original equipment parts.

| Item No. | Part No. | Description |
|---|---|---|
| * | 39368-18 | Control (Volume) |
| * | 39370-2 | Shaft (Plug-in) |
| * | 39369-1 | Switch (Power) |
| 27 | B-135892 | Control, (2 megohm) |
| * | 39368-11 | Control (Tone) |
| 28 | B-135388 | Transformer (Output) |
| 29 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 30 | 39294-21 | Resistor, 22,000 ohm, ½ w. |
| 31 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 32 | W-135355 | Switch (Interlock) |
| 34 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 35 | 39015-26 | Resistor, 1200 ohm, 1 w. |
| 36 | W-137367 | Resistor, 47 ohm, 1 w. |
| | G-39204 | Socket, Tube |
| | 39017-4 | Socket, Dial Light |
| | AW-136809 | Pulley and Pinion Drive Assy. (Var. Cond.) |
| | C-136827 | Background, Dial |
| | D-136828 | Face, Dial |
| | W-134681 | Roller, Drive Cord |
| | W-51752 | Spring, Drive Cord |
| | B-134657 | Pointer, Dial |
| | W-135915 | Shaft, Drive |
| | W-134916 | Washer, Spring (Drive Shaft) |
| | W-51071 | Ring, Retaining (Drive Shaft) |
| | W-134055 | Grommet |
| | AC-138163-4 | Cabinet Assy. |
| | W-139863 | Knob |
| | B-135275 | Lens, Dial |
| | W-136630 | Stud, Trimount |
| 37 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 38 | 39294-21 | Resistor, 22,000 ohm, ½ w. |

# CROSLEY DIVISION
# AVCO MFG. CORP.

MODEL 56TN



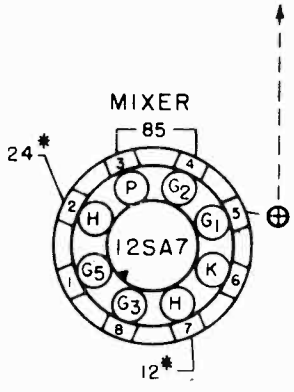

**July, 1947**

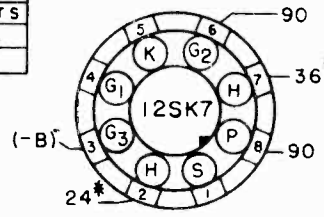
**455 K.C. I.F.**

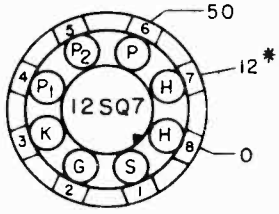
## SOCKET VOLTAGE CHART

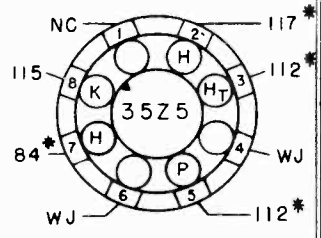
⊕ OSCILLATOR GRID VOLTAGES

| BAND | FREQUENCY | VOLTS |
|---|---|---|
| AMERICAN | 550 KC | -5.5 |
| OVERSEAS | 5.7 MC | -4 |

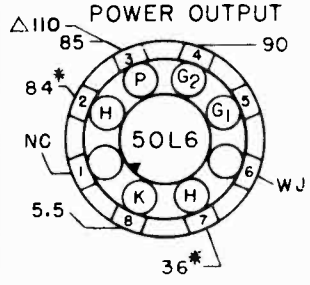


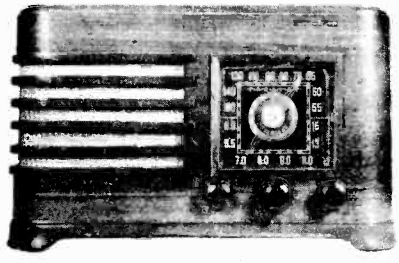




NOTES:
1. These are bottom views of sockets.
2. Measure voltages from socket lugs to -B (Pin 3 on the 12SK7)
3. These voltages measured using an electronic voltmeter.
4. W.J.- Wiring Junction
5. N.C.-No Connection
6. * - 60 Cycle AC voltage
7. Socket voltage tolerance, 10 %
8. All voltages are the same for receivers using E.M. or P.M. speakers, except where marked with △;. This voltage is for P.M. Speaker only.

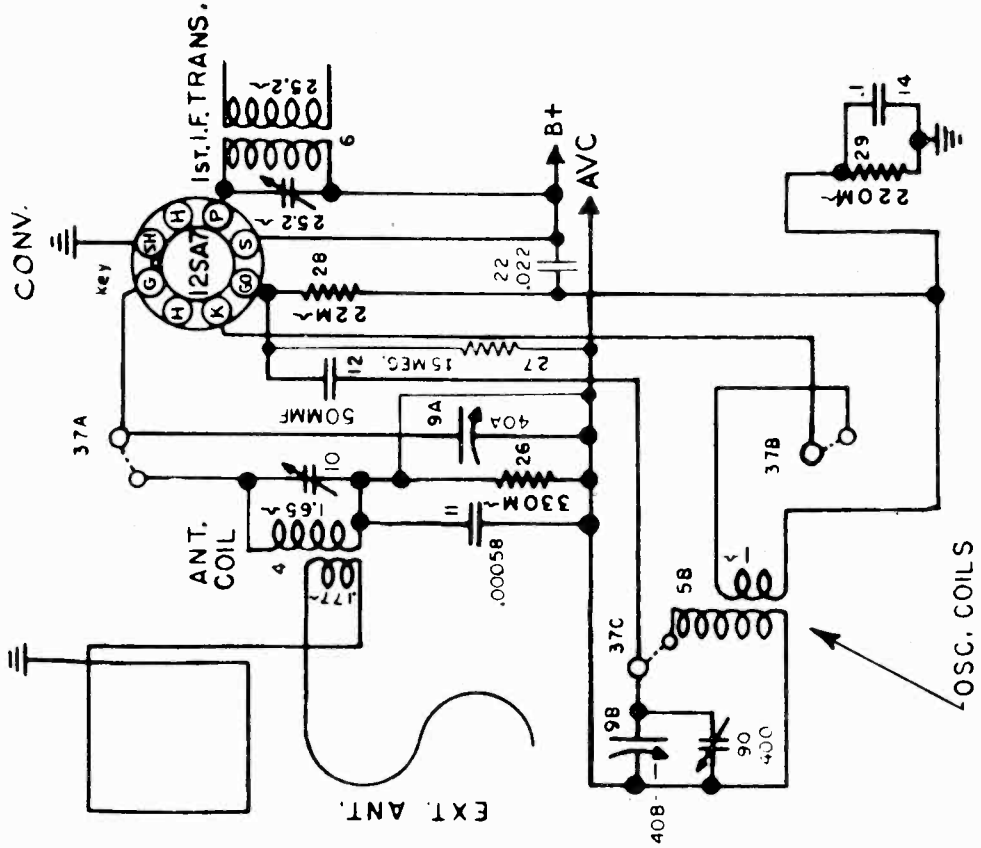


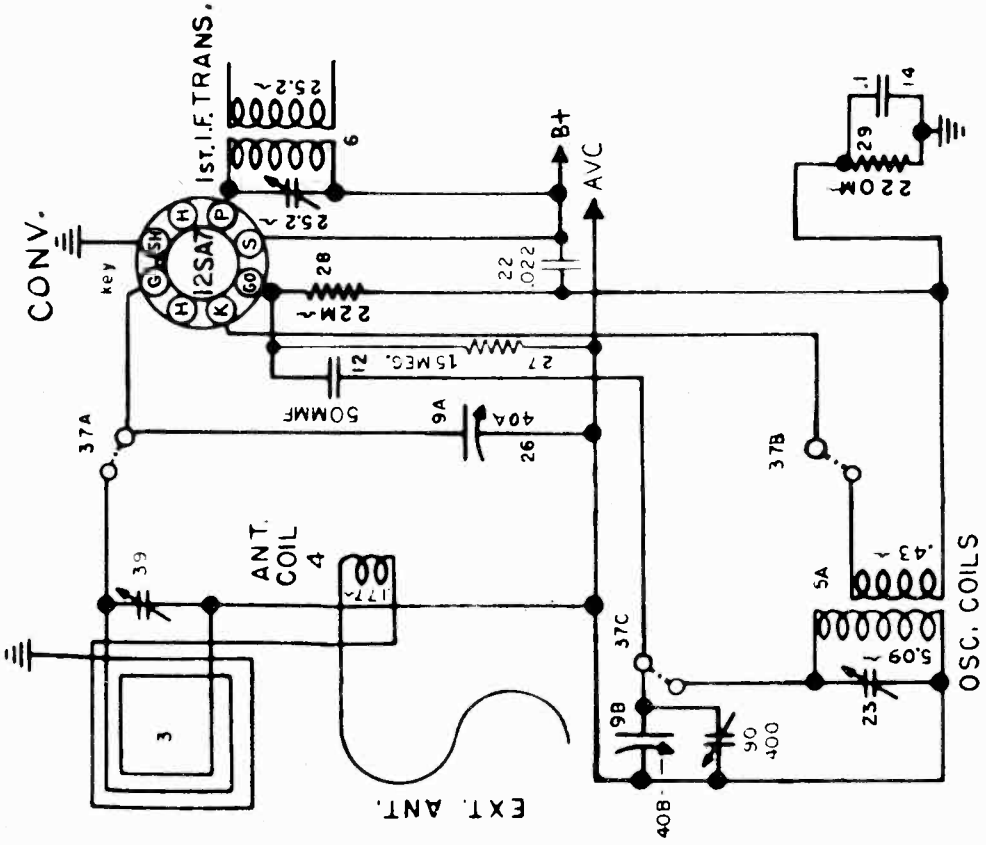



"clarified schematics"

MODEL 56TN

# CROSLEY DIVISION
# AVCO MFG. CORP.



CROSLEY DIVISION
AVCO MFG. CORP.

MODEL 56TN

## DESCRIPTION

**TYPE:** Five-tube, two-band, superheterodyne.

**FREQUENCY RANGE:** American Broadcast Band, 540 to 1600 kc. (Selector Switch, Counter-clockwise or Left.)

Overseas Short-wave Band: 5.8 to 15 mc. (Selector Switch, Clockwise or Right.)

**INTERMEDIATE FREQUENCY:** 455 kc.

**POWER SUPPLY:** a.c—d.c.

**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 35 watts nominal.

**POWER OUTPUT:** 1 watt minimum.

**TUBE COMPLEMENT:**

| Type | Function |
|---|---|
| 12SA7 (or GT G) | Mixer |
| 12SK7 (or GT G) | I.F. Amplifier |
| 12SQ7 (or GT G) | Detector, AVC, 1st A.F. Amplifier |
| 50L6GT | A.F. Power Output |
| 35Z5GT G | Rectifier |

**DIAL BULB:** Type 47, 6.3 volts, .15 amp.

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce power hum.

*Under no circumstances should a ground be connected to this receiver.*

## ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna lead. Connect the signal generator ground through a 0.1 mfd. condenser to —B (pin 3 on 12SK7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

## ALIGNMENT CHART

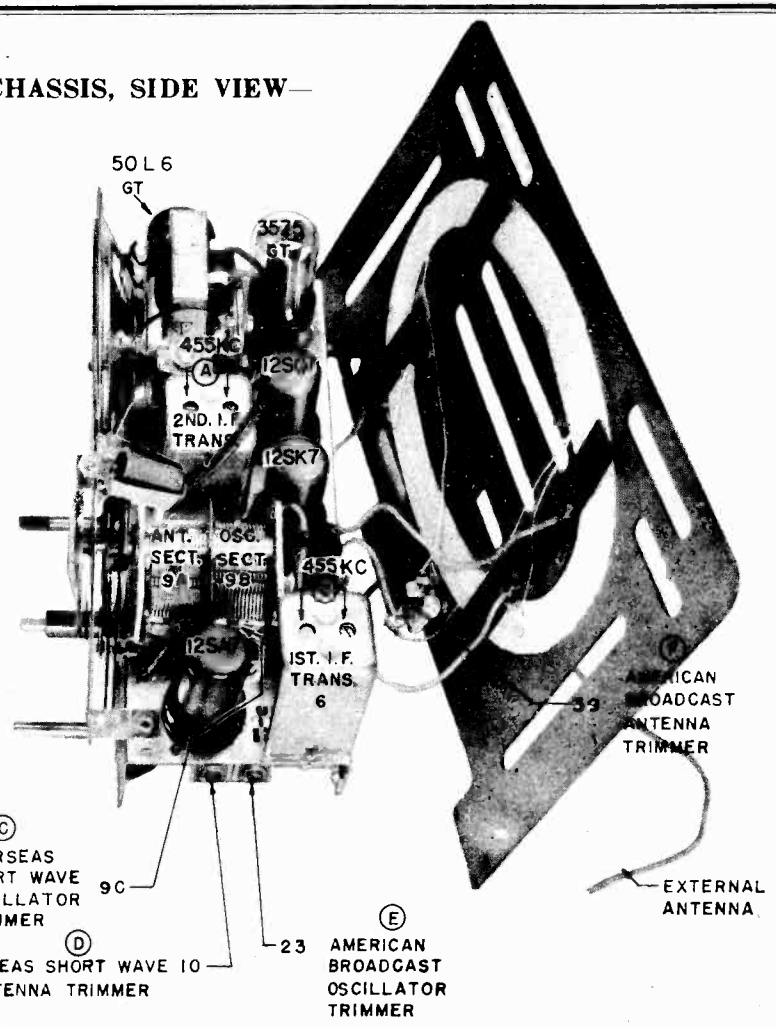
Alignment adjustment locations are shown on page 2, Chassis, Side View—Model 56TN

| Alignment Sequence | Signal Generator Output | | | Position of | | Adjust for Maximum Output |
|---|---|---|---|---|---|---|
| | Frequency in kc. | In Series with | To | Band Switch | Tuning Dial | |
| 1 | 455 | 200 mmf. | Ant. | Left | 1,620 | A & B |
| 2 | 15,300 | 400 ohms | Ant. | Right | 15,300 | C |
| 3 | 15,000 | 400 ohms | Ant. | Right | 15,000 | D |
| 4 | 1,400 | 200 mmf. | Ant. | Left | 1,400 | E & F |

**NOTE:** When aligning the short-wave oscillator trimmer (C), be sure that the circuit is aligned at the correct frequency and not at the image frequency which is 910 kilocycles lower as indicated by the receiver dial. To check: Tune in the generator frequency, then increase the generator output and tune in the image frequency. The image frequency should be weaker than the fundamental and audible 910 kilocycles lower on the receiver dial. If the image cannot be tuned in, the oscillator trimmer is adjusted to the wrong peak; i.e., the oscillator trimmer may be adjusted to the image or one of the harmonics instead of the fundamental frequency. The correct peak is the second one heard as the trimmer adjustment screw is opened from the completely closed position.

| Item No. | Part No. | Description |
|---|---|---|
| 1 | W-48858 | Bulb (Dial Light), Type 47, 6.3v., .15 amp. |
| 2 | C-132300-1 | Cable and Plug (power) |
| 3 | AC-134288 | Antenna Loop and Back Assembly |
| 4 | AW-134994 | Coil (H.F. Antenna) |
| 5A | AW-134993 | Coil (B.C. Oscillator) ( Two |
| 5B | | Coil (H.F. Oscillator) \ Section |
| 6 | AW-134065 | Transformer (1st I.F.) |
| 7 | AW-134158 | Transformer (2nd I.F.) |
| 8 | B-138069 | Transformer, Output |
| 9A | B-134995 | Condenser (Variable) ( Two |
| 9B | | Condenser (Variable) \ Section |
| 9C | Part of Item #9B | Condenser, Trimmer (H.F. Oscillator) |
| 10 | AB-135088 | Condenser Trimmer (H.F. Antenna) |
| 11 | GC-210685-143 | Condenser, 580 mmf., 300 v., Mica |
| 12 | B-226638-53 | Condenser, 50 mmf., 500 v., Mica |
| 13 | 39001-80 | Condenser, .02 mfd., 600 v., Paper |
| 14 | 39001-19 | Condenser, .1 mfd., 600 v., Paper |
| 15 | 39001-17 | Condenser, .05 mfd., 600 v., Paper |
| 16 | 39001-73 | Condenser, 250mmf., 600 v., Paper |
| 17 | 39001-76 | Condenser, .003 mfd., 600 v., Paper |
| 18A | B-138072 | Condenser, 50 mfd., 140 v. } Two Section |
| 18B | | Condenser, 30 mfd., 120 v. } Elect. Filter |
| 19 | 39001-80 | Condenser, .02 mfd., 600 v., Paper |
| 20 | 39001-80 | Condenser, .02 mfd., 600 v., Paper |
| 21 | W-137367 | Resistor, 47 ohm, 1 w. |
| 22 | 39001-80 | Condenser, .02 mfd., 600 v., Paper |
| 23 | Part of Item #10 | Condenser, Trimmer (B.C. Oscillator) |
| 24 | 39373-26 | Resistor, 470 Ohm, ½ w. |
| 25 | 39373-47 | Resistor, 4700 Ohm, ½ w. |
| 26 | 39373-84 | Resistor, 330,000 Ohm, ½ w. |
| 27 | 39373-109 | Resistor, 15 Megohm, ½ w. |
| 28 | 39373-60 | Resistor, 22,000 Ohm, ½ w. |
| 29 | 39373-80 | Resistor, 220,000 ohm, ½ w. |
| 30 | 39373-100 | Resistor, 3.3 megohm, ½ w. |
| 31 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 32 | 39373-102 | Resistor, 4.7 megohm, ½ w. |
| 33 | 39373-87 | Resistor, 470,000 Ohm, ½ w. |
| 34 | 39373-87 | Resistor, 470,000 Ohm, ½ w. |
| 35 | 39373-16 | Resistor, 150 Ohm, ½ w. |
| 36 | AD-138073 | Speaker & Transformer Assy. |
| 37A | B-137026 | Switch (Band Change) } Three Section |
| 37B | | Switch (Band Change) } Three Section |
| 37C | | Switch (Band Change) } Three Section |
| 38A | C-46846-6 | Control, Volume (1 Megohm) ( Assy. |
| 38B | | Switch (Power) ( Assy. |
| * | 39368-8 | Control, Volume |
| * | 39369-1 | Switch, Power |
| 39 | Part of Item #3 | B. C. Ant. Trimmer |
| 41 | W-134939 | Switch (Tone) |
| 42 | 39001-76 | Condenser, .003 mfd., 600 v., Paper |
| 43 | 39373-144 | Resistor, 1,200 ohm, 1 w. |
| | G-39204 | Socket (Tube) |
| | 39017-4 | Socket Assembly (Dial Light) |

**CHASSIS, SIDE VIEW—**

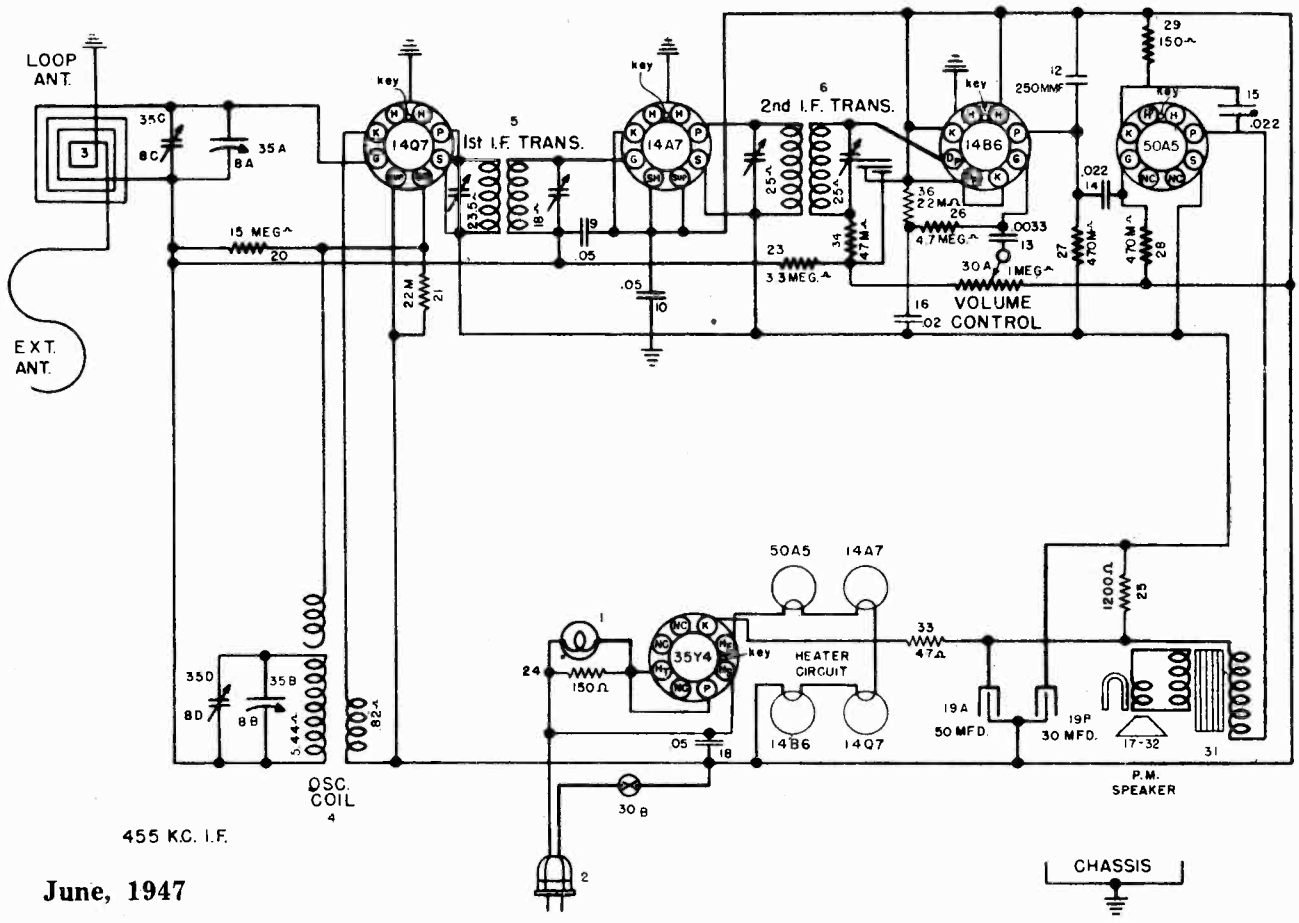



| | |
|---|---|
| C-135175 | Face (Dial) |
| B-134570 | Pointer (Dial) |
| W-134667 | Clip (Dial Pointer) |
| W-134917 | Shaft (Drive) |
| W-51071 | Ring (Retaining) |
| W-134916 | Washer (Spring) |
| W-51752 | Spring (Dial Cord) |
| AB-134697 | Toggle Arm and Link Assembly |
| W-49829 | Spring (Lock) |
| W-136630 | Stud (Trimount) |
| D-137113 | Cabinet |
| B-134610 | Lens (Dial) |
| W-134882 | Knob (Small) |
| W-134742 | Knob (Large) |

* These parts will replace the original equipment parts

# CROSLEY DIVISION
# AVCO MFG. CORP.

MODEL 56TU




June, 1947

## REPLACEMENT PARTS LIST

Figures in first column correspond to figures in Schematic Diagram

| ITEM No. | PART No. | DESCRIPTION |
|---|---|---|
| 1 | W-48858 | Bulb (dial), Type 47, 6.3 v., .15 amp. |
| 2 | C-132300-1 | Cable and Plug (power) |
| 3 | AC-135506 | Ant. Loop and Back Assy. |
| 4 | AW-135195 | Oscillator Coil Assembly |
| 5 | AW-137665 | Transformer (1st I.F.) |
| 6 | AW-137667 | Transformer (2nd I.F.) |
| 7A | B-135202 | Condenser (variable) } Two |
| 7B | | Condenser (variable) } Section |
| 7C | Part of Item #7A | Condenser (trimmer) |
| 7D | Part of Item #7B | Condenser (trimmer) |
| 9 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 10 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 12 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 13 | 39001-10 | Condenser, 3300 mmf., 600 v., paper |
| 14 | 39001-63 | Condenser, .022 mfd., 200 v., paper |
| 15 | 39001-63 | Condenser, .022 mfd., 200 v., paper |
| 17 | B-136768 | Speaker |
| 18 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 19A | B-136770 | Condenser, 50 mfd., 150 v. } Two Section |
| 19B | | Condenser, 30 mfd., 150 v. } Elect. Filter |
| 20 | 39294-38 | Resistor, 15 megohm, ½ w. |
| 21 | 39294-21 | Resistor, 22,000 ohm, ½ w. |
| 23 | 39294-34 | Resistor, 3.3 megohm, ½ w. |
| 24 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 25 | 39015-26 | Resistor, 1200 ohm, 1 w. |
| 26 | 39294-35 | Resistor, 4.7 megohm, ½ w. |
| 27 | 39294-29 | Resistor, 470,000 ohm, ½ w. |

| ITEM No. | PART No. | DESCRIPTION |
|---|---|---|
| 28 | 39294-29 | Resistor, 470,000 ohm, ½ w. |
| 29 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 30A | C-135127 | Control, Volume (1 megohm) } Assy. |
| 30B | | Switch (power) } |
| 31 | B-137723 | Transformer (output) |
| 33 | W-137367 | Resistor, 47 ohm, 1 w. |
| 34 | Part of Item #6 | Resistor, 47,000 ohm, ½ w. |
| | W-135371 | Socket (tube) |
| | 39017-5 | Socket (dial light) |
| | AB-135135 | Plate Assembly (dial) |
| | W-135074 | Pulley (idler) |
| | B-135094 | Pointer (dial) |
| | B-135075 | Shaft (drive) |
| | W-134916 | Washer (spring) |
| | W-51071 | Ring (retaining) |
| | W-131154-1 | Cotter (external) |
| | W-51752 | Spring (drive cord) |
| | W-134055 | Grommet |
| | W-135164 | Bumper |
| | W-136630 | Trimount Stud |
| | R-135146 | Cabinet & Handle Assy. |
| | R-135444 | Cabinet, Only |
| | B-135403 | Handle, Only |
| | W-137511 | Spring, Handle |
| | W-50325 | Clip |
| | B-135713 | Dial Glass |
| | W-135454 | Knob |
| | 136571 | Support, Dial |

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity. Reversing the position of the power plug when alternating current is used may reduce power hum. UNDER NO CIRCUMSTANCES SHOULD A GROUND BE CONNECTED TO THIS RECEIVER.

MODEL 56TU

# CROSLEY DIVISION
# AVCO MFG. CORP.

## DESCRIPTION

TYPE: Five-tube, single-band, superheterodyne.

FREQUENCY RANGE: 540 to 1600 kc.

INTERMEDIATE FREQUENCY: 455 kc.

POWER SUPPLY: a.c.—d.c.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 35 watts nominal.

POWER OUTPUT: 1 watt minimum.

TUBE COMPLEMENT:

| Type | Function |
|---|---|
| 14Q7 | Mixer |
| 14A7 | I.F. Amplifier |
| 14B6 | Detector, AVC, 1st A.F. Amplifier |
| 50A5 | A.F. Power Output |
| 35Y4 | Rectifier |

DIAL BULB: Type 47, 6.3 volts, .15 amp.

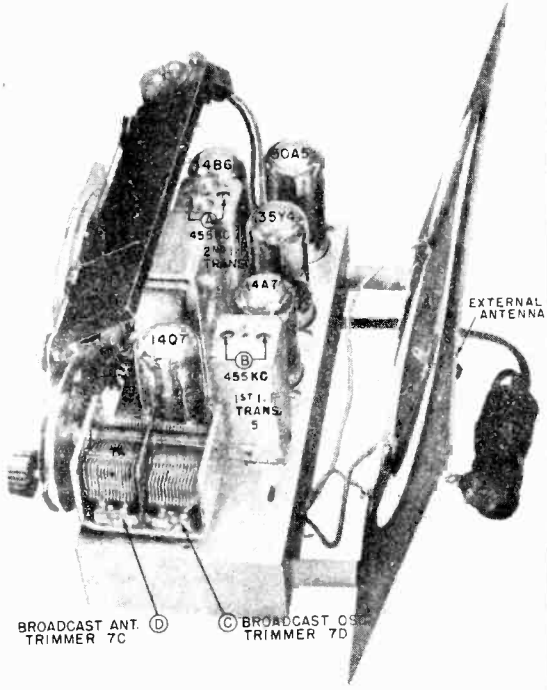
## ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna lead. Connect the signal generator ground through a 0.1 mfd. condensor to —B (pin 4 on 14A7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

### ALIGNMENT CHART

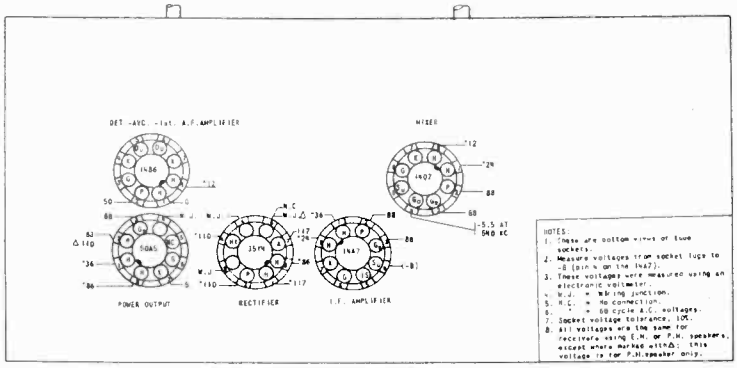
Alignment adjustment locations are shown in Chassis, Side View at the right.

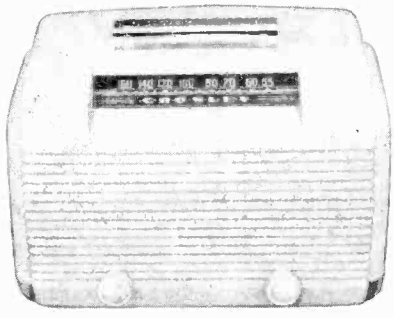
| Alignment sequence | Signal Gen. Output: Frequency in KC | Signal Gen. Output: In Series with | Signal Gen. Output: To | Position of Tuning Dial | Adjust for max. output |
|---|---|---|---|---|---|
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |




CHASSIS, SIDE VIEW

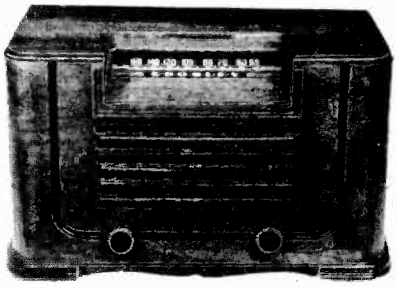
## SOCKET VOLTAGE CHART



# CROSLEY DIVISION
# AVCO MFG. CORP.

MODEL 56TY

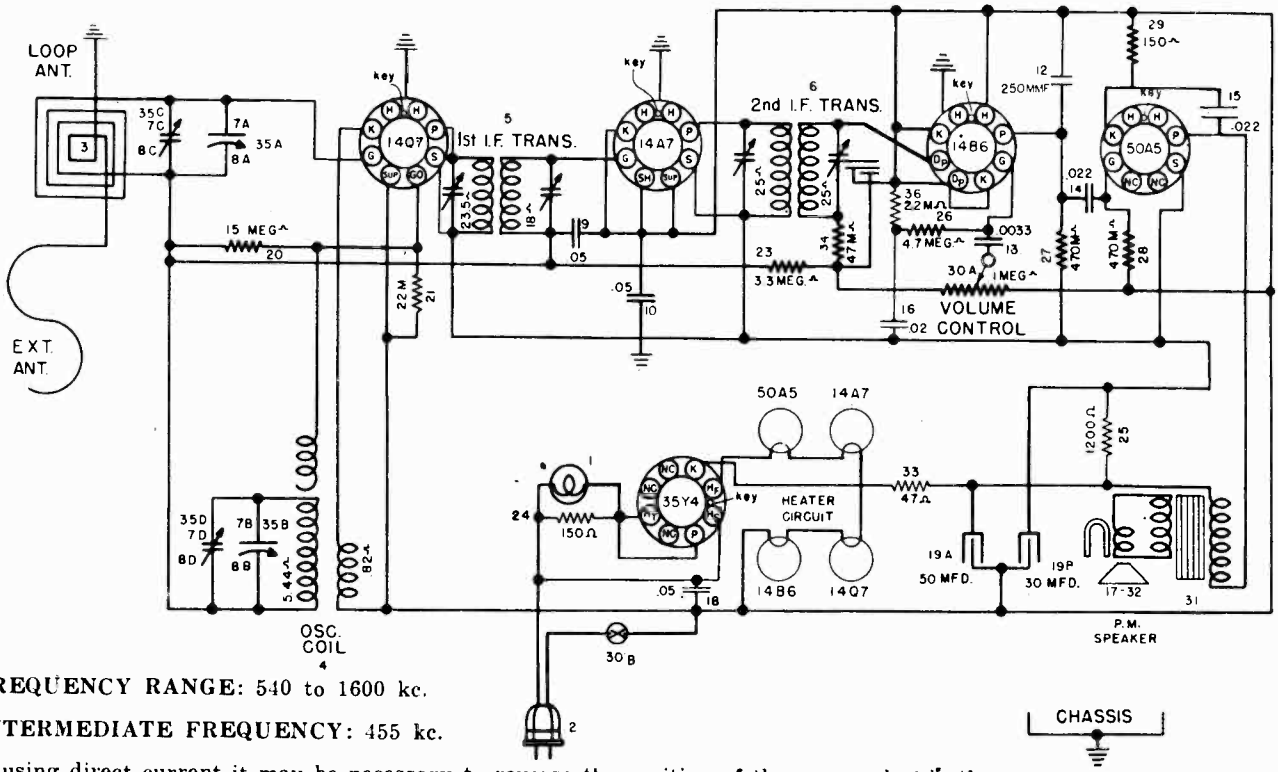


**POWER SUPPLY:** a.c.—d.c.

**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 35 watts nominal.

**POWER OUTPUT:** 1 watt minimum.




**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity. Reversing the position of the power plug when alternating current is used may reduce power hum. UNDER NO CIRCUMSTANCES SHOULD A GROUND BE CONNECTED TO THIS RECEIVER.

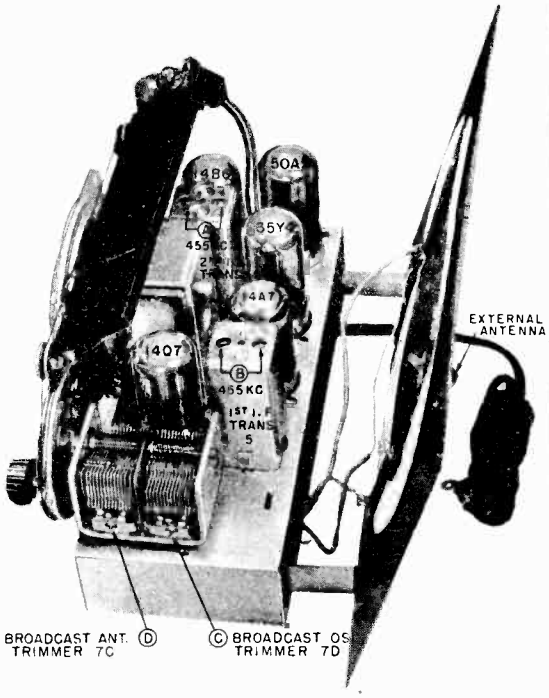
| ITEM No. | PART No. | DESCRIPTION |
|---|---|---|
| 1 | W-48858 | Bulb (dial), Type 47, 6.3 v., .15 amp. |
| 2 | C-132300-1 | Cable and Plug (power) |
| 3 | AC-135253 | Ant. Loop and Back Assy. |
| 4 | AW-135195 | Oscillator Coil Assembly |
| 5 | AW-137665 | Transformer (1st I.F.) |
| 6 | AW-137667 | Transformer (2nd I.F.) |
| 7A | B-135202 | Condenser (variable) } Two |
| 7B | | Condenser (variable) } Section |
| 7C | Part of Item #7A | Condenser (trimmer) |
| 7D | Part of Item #7B | Condenser (trimmer) |
| 9 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 10 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 12 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 13 | 39001-10 | Condenser, 3300 mmf., 600 v., paper |
| 14 | 39001-63 | Condenser, .022 mfd., 200 v., paper |
| 15 | 39001-63 | Condenser, .022 mfd., 200 v., paper |
| 17 | B-136768 | Speaker |
| 18 | 39001-65 | Condenser, .05 mfd., 200 v., paper |
| 19A | B-136770 | Condenser, 50 mfd., 150 v. } Two Section |
| 19B | | Condenser, 30 mfd., 150 v. } Elect. Filter |
| 20 | 39294-38 | Resistor, 15 megohm, ½ w. |
| 21 | 39294-21 | Resistor, 22,000 ohm, ½ w. |
| 23 | 39294-34 | Resistor, 3.3 megohm, ½ w. |
| 24 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 25 | 39015-26 | Resistor, 1200 ohm, 1 w. |
| 26 | 39294-35 | Resistor, 4.7 megohm, ½ w. |
| 27 | 39294-29 | Resistor, 470,000 ohm, ½ w. |
| 28 | 39294-29 | Resistor, 470,000 ohm, ½ w. |
| 29 | 39294-8 | Resistor, 150 ohm, ½ w. |
| 30A | C-135127 | Control, Volume (1 megohm) } Assy. |
| 30B | | Switch (power) } |
| 31 | B-137723 | Transformer (output) |
| 33 | W-137367 | Resistor, 47 ohm, 1 w. |
| 34 | Part of Item #6 | Resistor, 47,000 ohm, ½ w. |
| | W-135371 | Socket (tube) |
| | 39017-5 | Socket (dial light) |
| | AB-135135 | Plate Assembly (dial) |
| | W-135074 | Pulley (idler) |
| | B-135094 | Pointer (dial) |
| | B-135075 | Shaft (drive) |
| | W-134916 | Washer (spring) |
| | W-51071 | Ring (retaining) |
| | W-131154-1 | Cotter (external) |
| | W-51752 | Spring (drive cord) |
| | W-134055 | Grommet |
| | W-135164 | Bumper |
| | W-136630 | Trimount Stud |
| | D-135235 | Cabinet |
| | B-135713 | Dial Glass |
| | W-135391 | Knob |

March, 1947

MODEL 56TY

# CROSLEY DIVISION
# AVCO MFG. CORP.

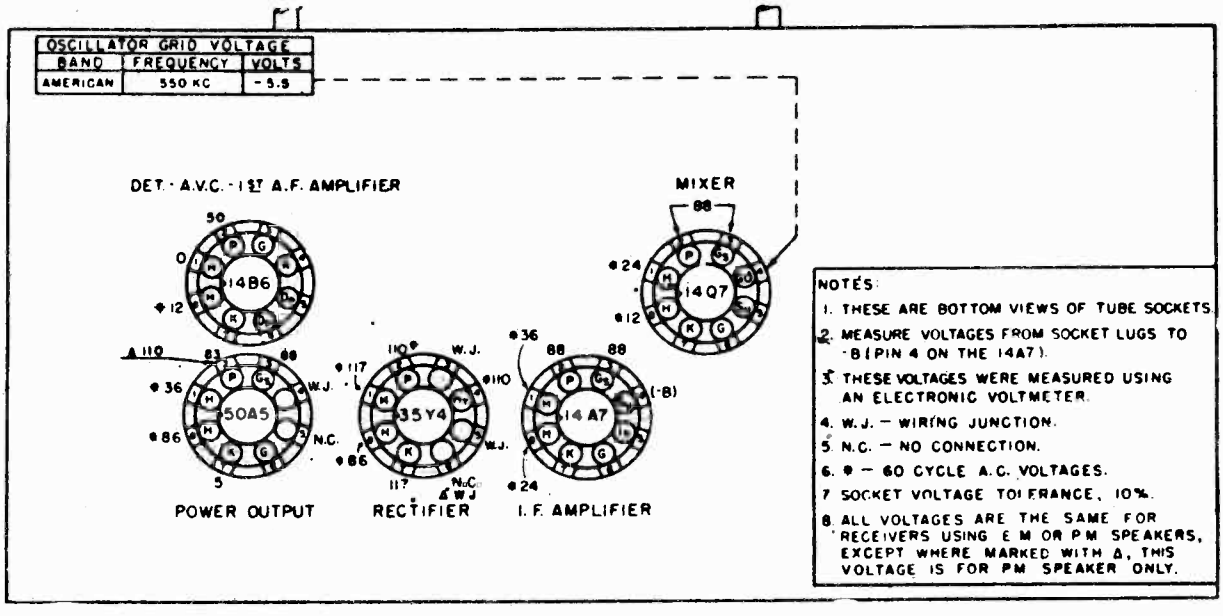
1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r.f. signal input from the signal generator should be connected to the external antenna lead. Connect the signal generator ground through a 0.1 mfd. condenser to —B (pin 4 on 14A7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.




## ALIGNMENT CHART

Alignment adjustment locations are shown in Chassis, Side View at the right.

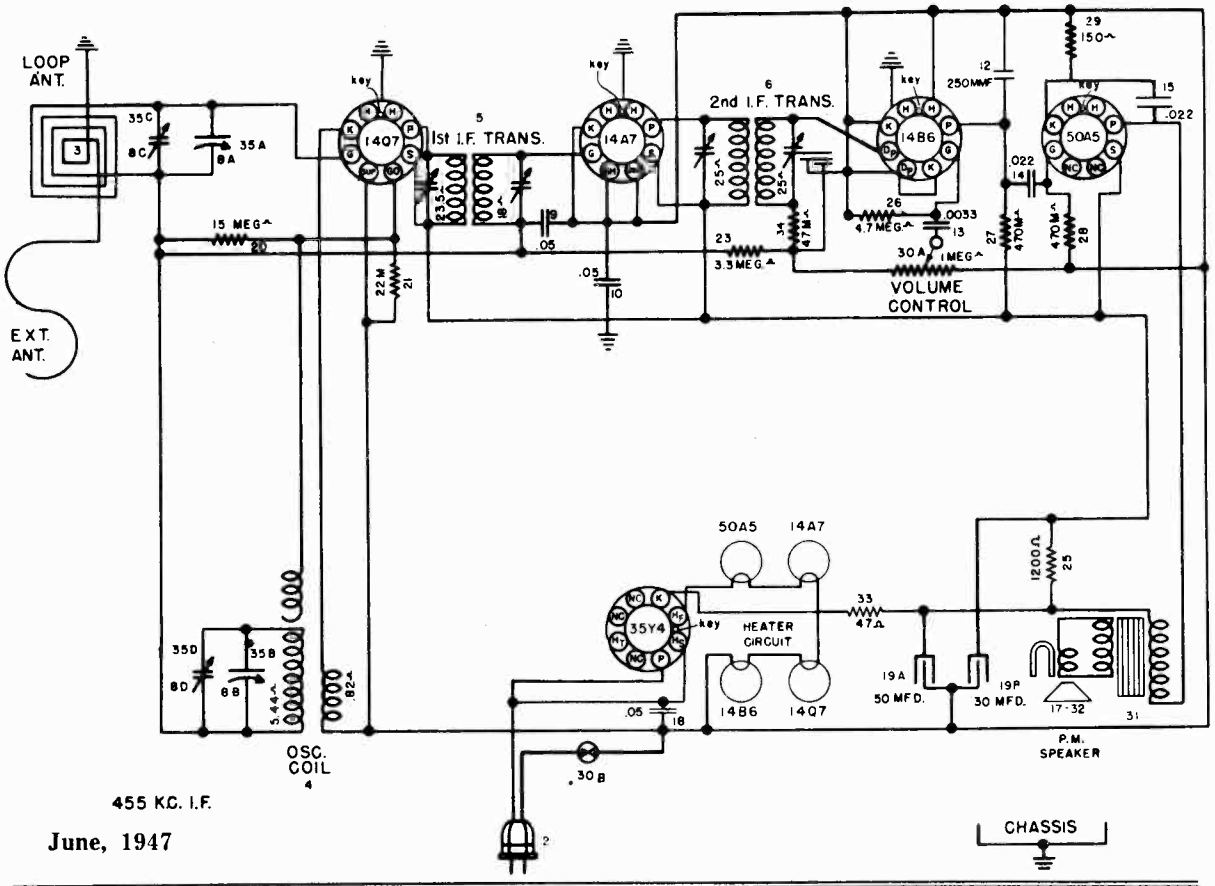
| Alignment sequence | Signal Gen. Output | | | Position of Tuning Dial | Adjust for max. output |
|---|---|---|---|---|---|
| | Frequency in KC | In Series with | To | | |
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |




## SOCKET VOLTAGE CHART

# CROSLEY DIVISION
# AVCO MFG. CORP.

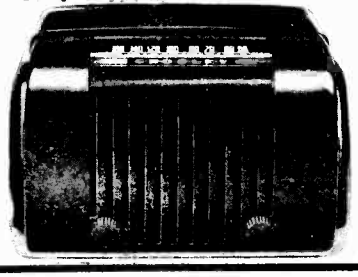
MODELS 57TK, 57TL



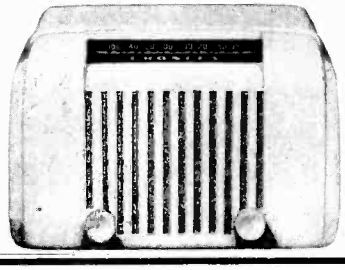

June, 1947

| Item No. | Part No. | Description | Item No. | Part No. | Description |
|---|---|---|---|---|---|
| 2 | C-132300-1 | Cable and Plug Assy., Power | 30 A | C-135127 | Control, Volume (1 megohm) } Assy. |
| 3 | AC-135209 | Loop and Back Assy., Antenna | 30 B | | Switch, Power } |
| 4 | AW-135195 | Coil Assy., Oscillator | * | 39368-14 | Control, Volume |
| 5 | AW-137665 | Transformer, 1st I. F. | * | 39369-1 | Switch, Power |
| 6 | AW-137667 | Transformer, 2nd I. F. | 31 | B-137723 | Transformer, Ouput |
| 8 A | B-135056 | Condenser, Variable } Two | 33 | W-137367 | Resistor, 47 ohm, 1 w. |
| 8 B | | Condenser, Variable } Section | 34 | Part of Item #6 | Resistor, 47,000 ohm, ½ w. |
| 8 C | Part of Item #8A | Condenser, Trimmer | | W-135164 | Bumper, Rubber |
| 8 D | Part of Item #8B | Condenser, Trimmer | | R-135162 | Cabinet, (57TK) |
| 9 | 39001-17 | Condenser, .05 mfd., 600 v., paper | | AW-135246 | Cabinet, (57TL) |
| 10 | 39001-17 | Condenser, .05 mfd., 600 v., paper | | W-131154-1 | Cotter, External |
| 12 | 39001-73 | Condenser, 250 mmf., 600 v., paper | | B-135713 | Dial Glass |
| 13 | 39001-73 | Condenser, .003 mfd., 600 v., paper | | W-134055 | Grommet, Var. Cond. Mtg |
| 14 | 39001-80 | Condenser, .02 mfd., 600 v., paper | | W-135391 | Knob (57TK) |
| 15 | 39001-80 | Condenser, .02 mfd., 600 v., paper | | W-135390 | Knob (57TL) |
| 17 | B-136768 | Speaker | | AB-135135 | Plate Assy., Dial |
| 18 | 39001-17 | Condenser, .05 mfd., 600 v., paper | | B-135094 | Pointer, Dial |
| 19 A | B-136770 | Cond'ser, 50 mfd., 150 v. } Two Sect. | | W-135074 | Pulley, Idler (Dial Drive) |
| 19 B | | Cond'ser, 30 mfd., 150 v. } Elec. Filter | | W-51071 | Ring, Retaining |
| 20 | 39373-109 | Resistor, 15 megohm, ½ w. | | 39220-28 | Screw, Chassis Mtg. |
| 21 | 39373-60 | Resistor, 22,000 ohm, ½ w. | | B-135075 | Shaft, Dial Drive |
| 23 | 39373-100 | Resistor, 3.3 megohm, ½ w. | | 39441 | Socket, Tube |
| 25 | 39373-144 | Resistor, 1200 ohm, 1 w. | | W-51752 | Spring, Dial Drive Cord |
| 26 | 39373-102 | Resistor, 4.7 megohm, ½ w. | | W-49770 | Stud, Trimount (Chassis Bottom) |
| 27 | 39373-87 | Resistor, 470,000 ohm, ½ w. | | W-132124 | Stud, Trimount (Cabinet Back) |
| 28 | 39373-87 | Resistor, 470,000 ohm, ½ w. | | W-136571 | Support, Dial |
| 29 | 39373-16 | Resistor, 150 ohm, ½ w. | | W-134916 | Washer, Spring |

*These parts will replace the original equipment parts.

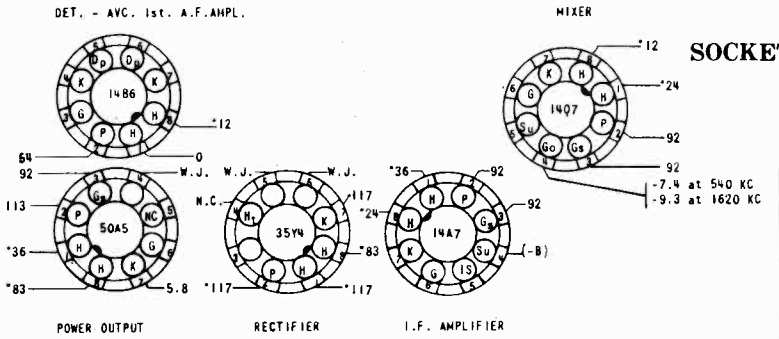


57TK



57TL

## SOCKET VOLTAGE CHART




NOTES:
1. These are bottom views of tube sockets.
2. Measure voltages from socket lugs to -B (pin 4 on the 14A7).
3. These voltages were measured using an electronic voltmeter. Line voltage 117.
4. W.J. = Wiring junction
5. N.C. = No connection
6. * = 60 cycle A.C. voltages.
7. Socket voltage tolerance 10%.

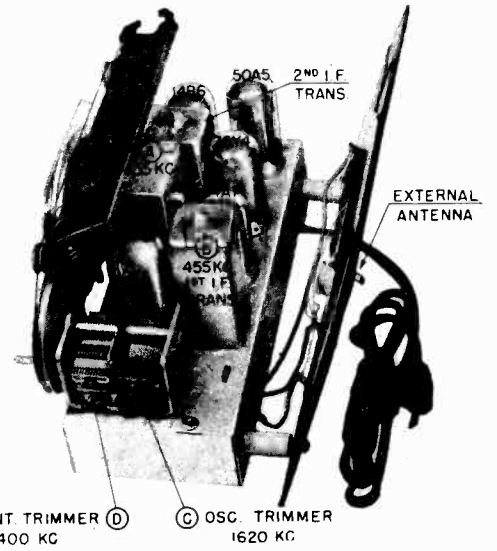
When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce power hum. *Under no circumstances should a ground be connected to this receiver.*

### ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r. f. signal input from the signal generator should be connected to the external antenna clip. Connect the signal generator ground through a 0.1 mfd. condenser to—B (pin 4 on 14A7 tube socket.
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

| Alignment Sequence | Signal Generator Output | | | Position of Tuning Dial KC | Adjust for Maximum Output |
|---|---|---|---|---|---|
| | Frequency in KC | In Series with | To | | |
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |




CHASSIS, SIDE VIEW—

**TUBE COMPLEMENT:**

| Type | Function |
|---|---|
| 14Q7 | Mixer |
| 14A7 | I.F. Amplifier |
| 14B6 | Detector. AVC, 1st A.F. Amplifier |
| 50A5 | A.F. Power Output |
| 35Y4 | Rectifier |

**TYPE:** Five-tube, single band, superheterodyne.

**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

**POWER SUPPLY:** a. c.—d. c.

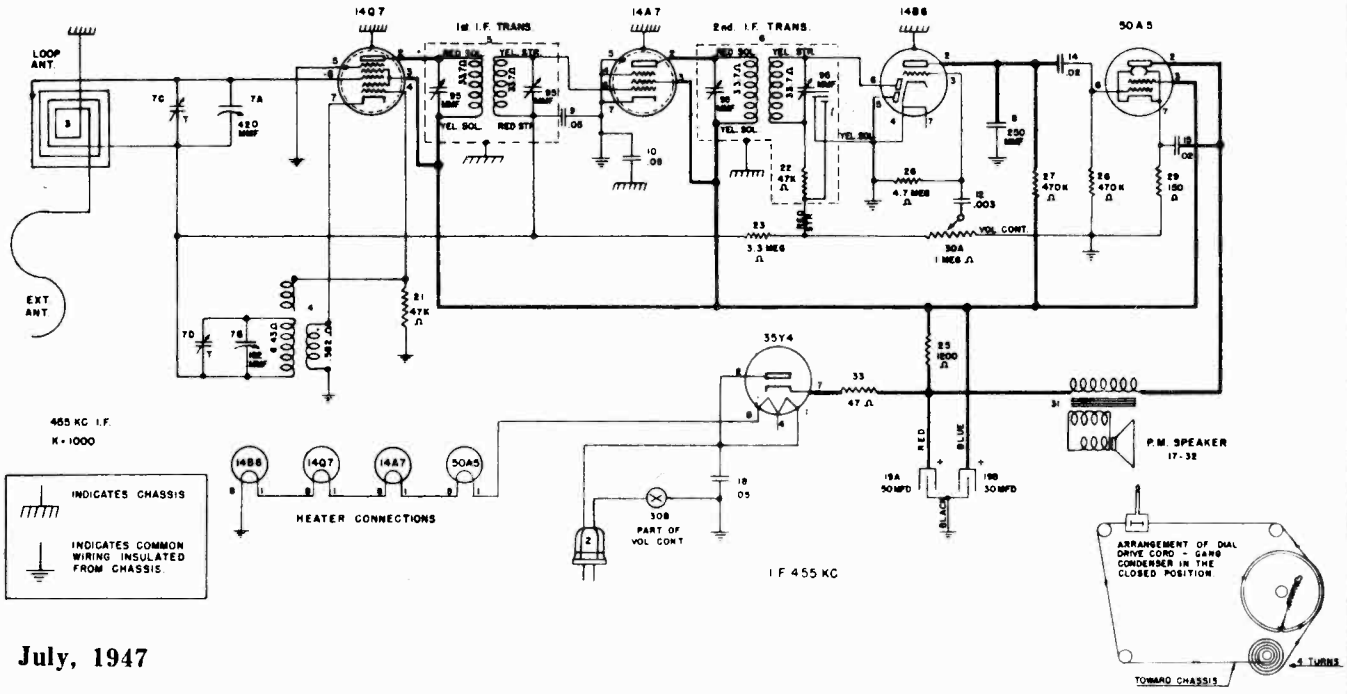
**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 35 watts nominal.

**POWER OUTPUT:** 1.75 watts minimum.

# CROSLEY DIVISION
# AVCO MFG. CORP.

**MODELS 58TA, 58TL**




**July, 1947**

| Item No. | Part No. | Description |
|---|---|---|
| 2 | C-132300-1 | Cable and Plug Assy., Power |
| 3 | AC-139795 | Antenna Loop and Back Assy. |
| 4 | AW-139584 | Coil Assy., Oscillator |
| 5 | AC-139571 | Transformer, 1st I. F. |
| 6 | AC-139572 | Transformer, 2nd I. F. |
| 7A | AC-137073-15 | Condenser, Variable (Two |
| 7B | | Condenser, Variable Section) |
| 7C | Part of Item 7A | Condenser, Trimmer |
| 7D | Part of Item 7B | Condenser, Trimmer |
| 8 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 9 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 10 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 12 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 14 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 15 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 18 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 19A | B-136770 | Condenser, 50 mfd., 150 v. (Two Section |
| 19B | | Condenser, 30 mfd., 150 v. Elect. Filter) |
| 21 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 22 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 23 | 39373-100 | Resistor, 3.3 megohm, ½ w. |
| 25 | 39373-144 | Resistor, 1200 ohm, 1 w. |
| 26 | 39373-102 | Resistor, 4.7 megohm, ½ w. |
| 27 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 28 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 29 | 39373-16 | Resistor, 150 ohm, ½ w. |
| 30A | B-135127 | Control, Volume (1 megohm) Assy. |
| 30B | | Switch Power |
| * | 39368-14 | Control, Volume |
| * | 39369-1 | Switch, Power |
| 31 | B-137723 | Transformer, Output |
| 32 | AD-138459 | Speaker |
| 33 | W-137367 | Resistor, 47 ohm, 1 w. |

| Item No. | Part No. | Description |
|---|---|---|
| | R-139526-2 | Cabinet (58TA) |
| | AW-139600 | Cabinet (58TL) |
| | B-139605 | Dial Glass |
| | B-138540-1 | Knob (58TA) |
| | B-138540-2 | Knob (58TL) |
| | W-139532 | Pointer, Dial |
| | W-51071 | Ring, Retaining |
| | B-135075-2 | Shaft, Drive |
| | 39441 | Socket, Tube |
| | W-51752 | Spring, Dial Drive Cord |
| | W-139060 | Stud, Trimount (Chassis Bottom) |
| | W-132124 | Stud, Trimount (Cabinet Back) |
| | W-134916 | Washer, Spring |

*These parts will replace the original equipment parts.

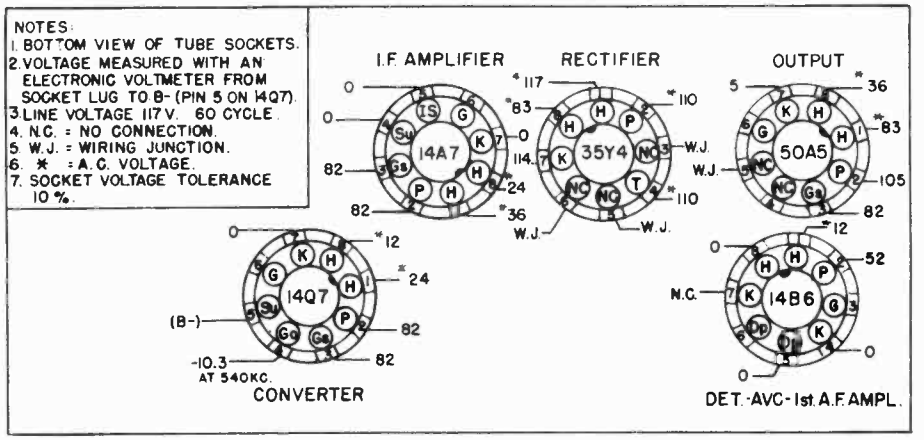
## TUBE COMPLEMENT:

| Type | Function |
|---|---|
| 14Q7 | Mixer |
| 14A7 | I. F. Amplifier |
| 14B6 | Detector, AVC, 1st A. F. Amplifier |
| 50A5 | A. F. Power Output |
| 35Y4 | Rectifier |

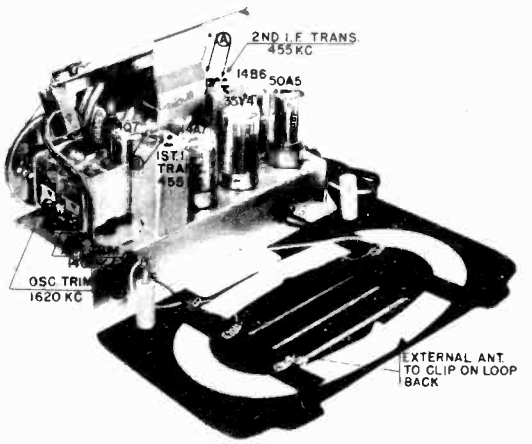
When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce power hum.

*Under no circumstances should a ground be connected to this receiver.*




SOCKET VOLTAGE CHART




CHASSIS REAR VIEW

## ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r. f. signal input from the signal generator should be connected to the external antenna clip. Connect the signal generator ground through a 0.1 mfd. condenser to B—(pin 5 on 14Q7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

## ALIGNMENT CHART

Alignment adjustment locations are shown on page 1, "CHASSIS REAR VIEW."

| Alignment Sequence | Signal Generator Output | | | Position of Dial Pointer | Adjust for Maximum Output |
|---|---|---|---|---|---|
| | Frequency in kc. | In Series with | To | | |
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |

## DESCRIPTION

**TYPE:** Five-tube, single band, Superheterodyne.

**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

**POWER SUPPLY:** a.c.—d.c.

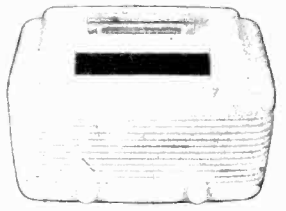
**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 35 watts.

**POWER OUTPUT:** 1.5 watts maximum.

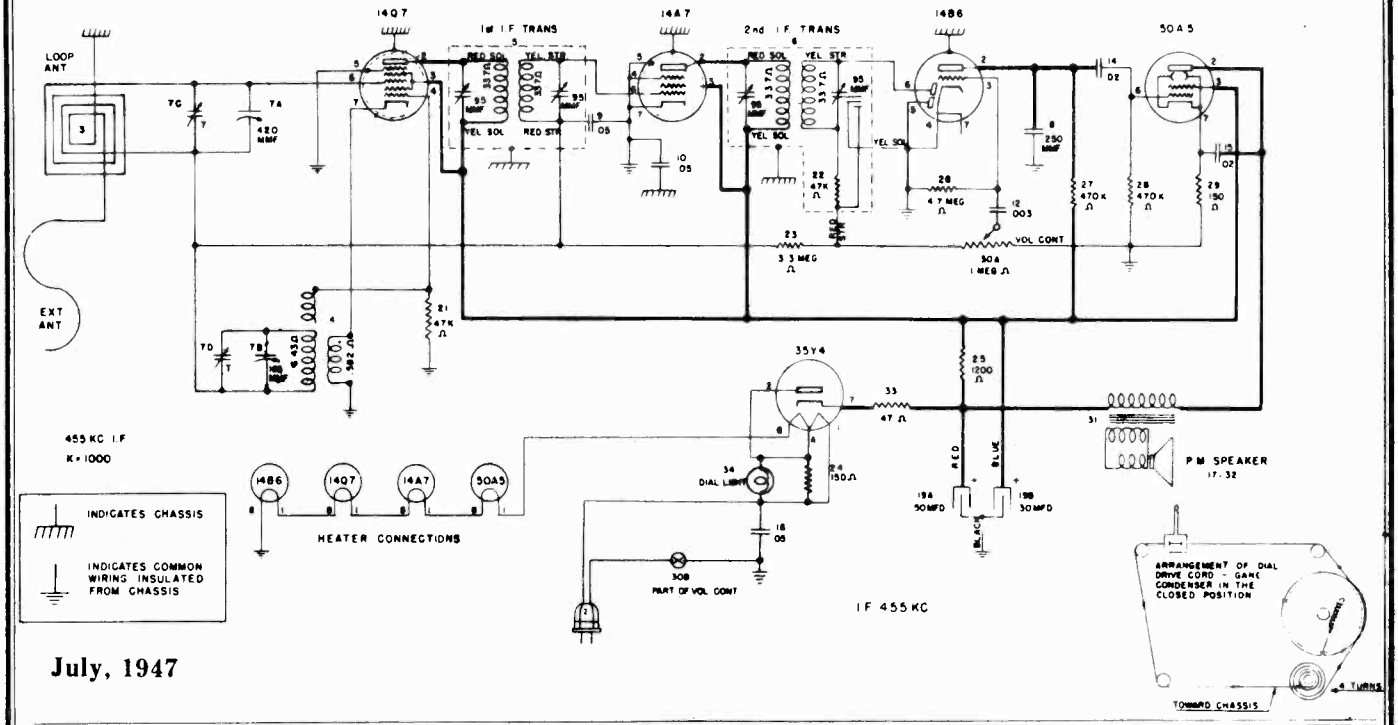
58TC

58TW



# CROSLEY DIVISION
# AVCO MFG. CORP.

MODELS 58TC, 58TW




**July, 1947**

| Item No. | Part No. | Description |
|---|---|---|
| 2 | C-132300-1 | Cable and Plug Assy., Power |
| 3 | AC-139808 | Antenna Loop and Back Assy. |
| 4 | AW-139584 | Coil Assy., Oscillator |
| 5 | AC-139571 | Transformer, 1st I. F. |
| 6 | AC-139572 | Transformer, 2nd I. F. |
| 7A | AC-137073-15 | Condenser, Variable\ Two |
| 7B | | Condenser, Variable/Section |
| 7C | Part of Item 7A | Condenser, Trimmer |
| 7 D | Part of Item 7B | Condenser, Trimmer |
| 8 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 9 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 10 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 12 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 14 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 15 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 18 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 19A | B-136770 | Condenser, 50 mfd., 150 v.\ Two Section |
| 19B | | Condenser, 30 mfd., 150 v. Elect. Filter |
| 21 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 22 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 23 | 39373-100 | Resistor, 3.3 megohm, ½ w. |
| 24 | 39373-16 | Resistor, 150 ohm, ½ w. |
| 25 | 39373-144 | Resistor, 1200 ohm, 1 w. |
| 26 | 39373-102 | Resistor, 4.7 megohm, ½ w. |
| 27 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 28 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 29 | 39373-16 | Resistor, 150 ohm, ½ w. |
| 30A | B-135127 | Control, Volume (1 megohm) } Assy. |
| 30B | | Switch, Power } |
| * | 39368-14 | Control, Volume |
| * | 39369-1 | Switch, Power |
| 31 | B-137723 | Transformer, Output |
| 32 | AD-138459 | Speaker |
| 33 | W-137367 | Resistor, 47 ohm, 1 w. |
| 34 | W-48858 | Bulb (Dial), Type 47, 6.3 v., .15 amp. |

| Item No. | Part No. | Description |
|---|---|---|
| | R-139269 | Cabinet (58TC) |
| | AW-139594 | Cabinet (58TW) |
| | W-50325CP | Clip, Cabinet Handle (58TW) |
| | B-139605 | Dial Glass |
| | B-135403 | Handle, Cabinet (58TW) |
| | B-138540-3 | Knob (58TC) |
| | B-138540-2 | Knob (58TW) |
| | W-139532 | Pointer, Dial |
| | W-51071 | Ring, Retaining |
| | B-135075-2 | Shaft, Drive |
| | D-136565-4 | Socket, Dial Light |
| | 39441 | Socket, Tube |
| | W-137511 | Spring, Cabinet Handle |
| | W-51752 | Spring, Dial Drive Cord |
| | W-139060 | Stud, Trimount (Chassis Bottom) |
| | W-134916 | Washer, Spring |

*These parts will replace the original equipment parts.

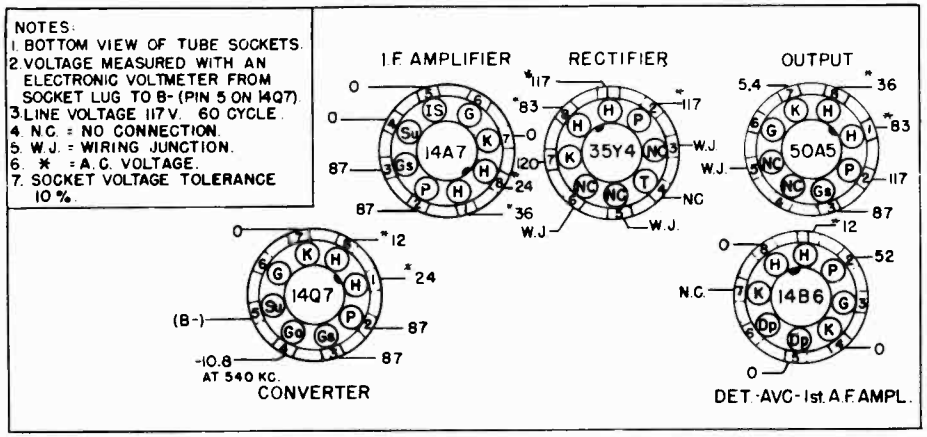
**TUBE COMPLEMENT:**

| Type | Function |
|---|---|
| 14Q7 | Mixer |
| 14A7 | I. F. Amplifier |
| 14B6 | Detector, AVC, 1st A. F. Amplifier |
| 50A5 | A. F. Power Output |
| 35Y4 | Rectifier |

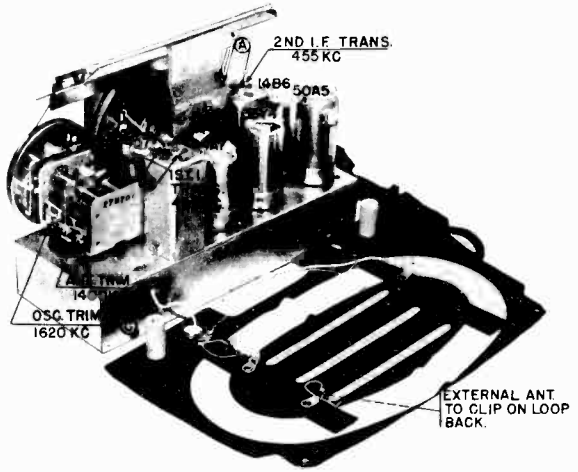
**DIAL BULB:** Type 47, 6.3 volts, .15 amp.

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce power hum. *Under no circumstances should a ground be connected to this receiver.*




SOCKET VOLTAGE CHART




CHASSIS REAR VIEW

## ALIGNMENT PROCEDURE

1. Turn the tuning condenser to the completely closed position against the stop and set the dial pointer to the reference line at the end of the dial scale.
2. Connect the output meter across the speaker voice coil.
3. The r. f. signal input from the signal generator should be connected to the external antenna clip. Connect the signal generator ground through a 0.1 mfd. condenser to B— (pin 5 on 14Q7 tube socket).
4. Turn the volume control on full and adjust the signal generator output to produce approximately mid-scale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

## ALIGNMENT CHART

Alignment adjustment locations are shown on page 1, "CHASSIS REAR VIEW".

| Alignment Sequence | Signal Generator Output | | | Position of Dial Pointer | Adjust for Maximum Output |
|---|---|---|---|---|---|
| | Frequency in kc. | In Series with | To | | |
| 1 | 455 | 200 mmf. | Ant. | 1620 | A & B |
| 2 | 1620 | 200 mmf. | Ant. | 1620 | C |
| 3 | 1400 | 200 mmf. | Ant. | 1400 | D |

## DESCRIPTION

**TYPE:** Five-tube, single band, Superheterodyne.

**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

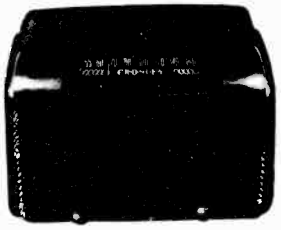
**POWER SUPPLY:** a.c.—d.c.

**VOLTAGE RATING:** 105-125 volts.

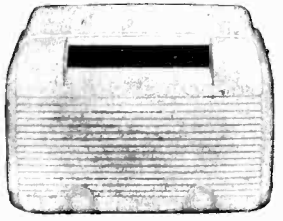
**POWER CONSUMPTION:** 35 watts.

**POWER OUTPUT:** 1.5 watts maximum.

58TA

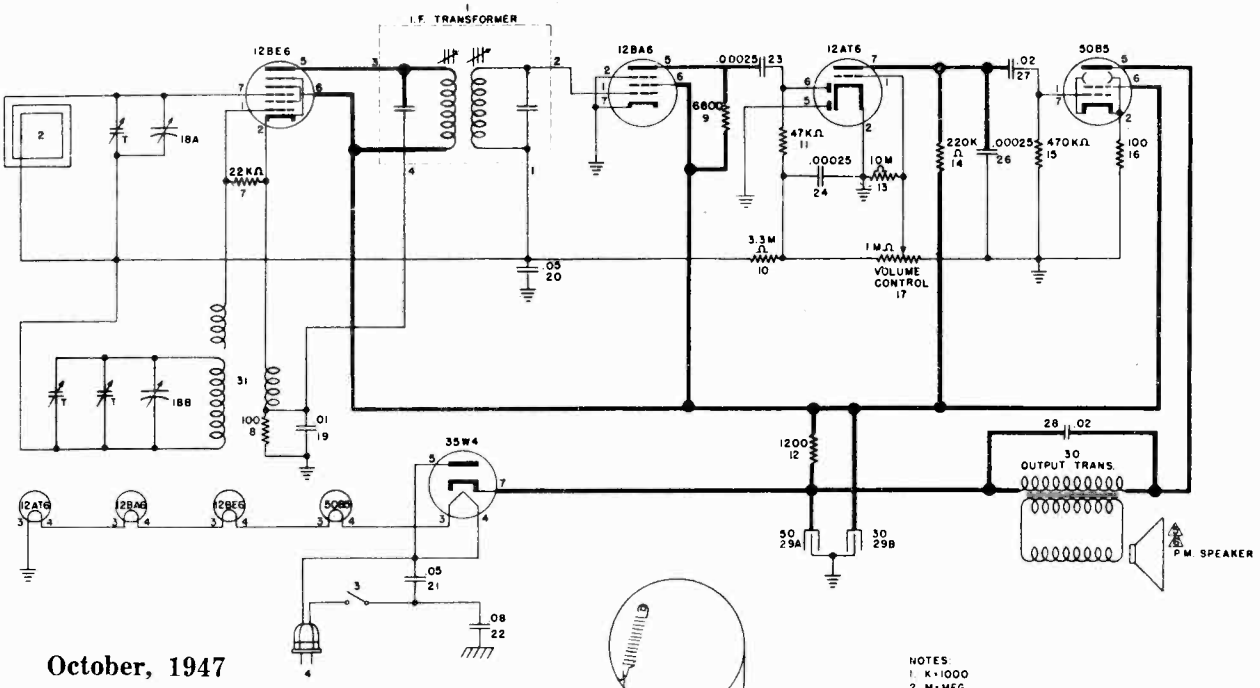


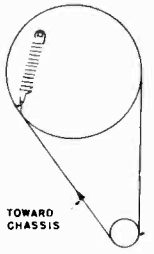
58TL



# CROSLEY DIVISION
# AVCO MFG. CORP.

MODEL 58TK




NOTES:
1. K = 1000
2. M = MEG.
3. ALL RESISTANCE VALUES IN OHMS, & CAPACITANCE VALUES IN MFD. UNLESS OTHERWISE NOTED.
4. ////// DENOTES CHASSIS GROUND.
5. ⏚ DENOTES COMMON WIRING OMITTED FROM DRAWING FOR SAKE OF CLARITY.

**October, 1947**

**POWER SUPPLY:** a.c.-d.c.

**VOLTAGE RATING:** 105-125 volts.

**POWER CONSUMPTION:** 30 watts.

**POWER OUTPUT:** 1.5 watts maximum.

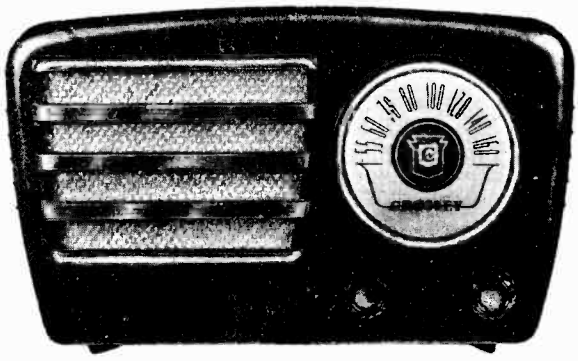
**TYPE:** Five-tube, single band, Superheterodyne.

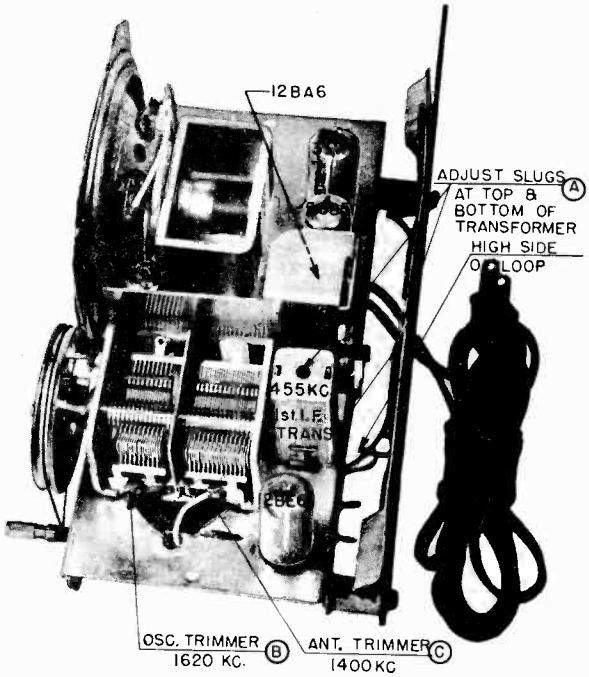
**FREQUENCY RANGE:** 540 to 1600 kc.

**INTERMEDIATE FREQUENCY:** 455 kc.

**TUBE COMPLEMENT**

| Type | Function |
|---|---|
| 12BE6 | Converter |
| 12BA6 | I. F. Amplifier |
| 12AT6 | Detector, AVC, 1st A.F. Amplifier |
| 50B5 | A.F. Power Output |
| 35W4 | Rectifier |



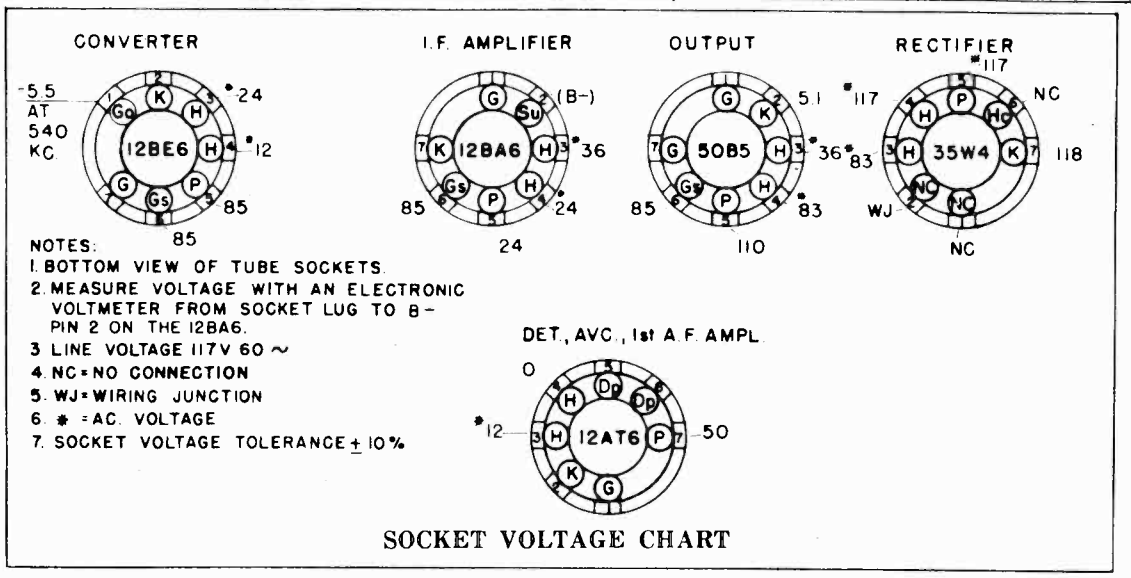



**CHASSIS, TOP VIEW**

## REPLACEMENT PARTS LIST

| Item No. | Part No. | Description |
|---|---|---|
| 1 | C-139919 | Transformer, I.F. |
| 2 | AC-139873 | Antenna Loop and Back Assy. |
| 3 | Part of Item 17 | Switch, Power |
| 4 | C-132300-2 | Cable and Plug Assy., Power |
| 5 | AD-138459 | Speaker (Less Transformer) |
| 7 | 39373-60 | Resistor, 22,000 ohm, ½ w. |
| 8 | 39373-14 | Resistor, 100 ohm, ½ w. |
| 9 | 39373-161 | Resistor, 6,800 ohm, 1 w. |
| 10 | 39373-100 | Resistor, 3.3 megohm, ½ w. |
| 11 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 12 | 39373-144 | Resistor, 1,200 ohm, 1 w. |
| 13 | 39373-107 | Resistor, 10 megohm, ½ w. |
| 14 | 39373-80 | Resistor, 220,000 ohm, ½ w. |
| 15 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 16 | 39373-14 | Resistor, 100 ohm, ½ w. |
| 17 | B-139635 | Control, Volume (1 megohm) and Switch Assy. |
| * | 39368-14 | Control, Volume |
| * | 39369-1 | Switch, Power |
| 18A | B-137073-17 | Condenser, Variable } Two |
| 18B | | Condenser, Variable } Section |
| 19 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 20 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 21 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 22 | 39001-19 | Condenser, .1 mfd., 600 v., paper |
| 23 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 24 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 25 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 26 | 39001-73 | Condenser, 250 mmf., 600 v., paper |
| 27 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 28 | 39001-80 | Condenser, .02 mfd., 600 v., paper |
| 29A | B-136770 | Condenser, 50 mfd., 150 v. } Two Sect. |
| 29B | | Condenser, 30 mfd., 150 v. } Elec. Filt. |
| 30 | B-137723 | Transformer, Output |
| 31 | AW-142640 | Coil Assy., Oscillator |
| | D-139763 | Cabinet |
| | B-139898 | Dial |
| | W-139947 | Grill Cloth |
| | W-139925 | Knob |
| | W-139899 | Pointer Disc, Dial |
| | W-51071 | Ring, Retaining |
| | B-135075-4 | Shaft, Drive |
| | 39462-1 | Socket, Tube |
| | W-51752 | Spring, Dial Drive Cord |
| | W-132124 | Stud, Trimount |
| | W-134916 | Washer, Spring |

* These parts will replace the original equipment parts.




SOCKET VOLTAGE CHART

When using direct current it may be necessary to reverse the position of the power plug in the electric outlet for correct polarity.

Reversing the position of the power plug when alternating current is used may reduce hum.

*Under no circumstances should a ground be connected to this receiver.*

## ALIGNMENT PROCEDURE

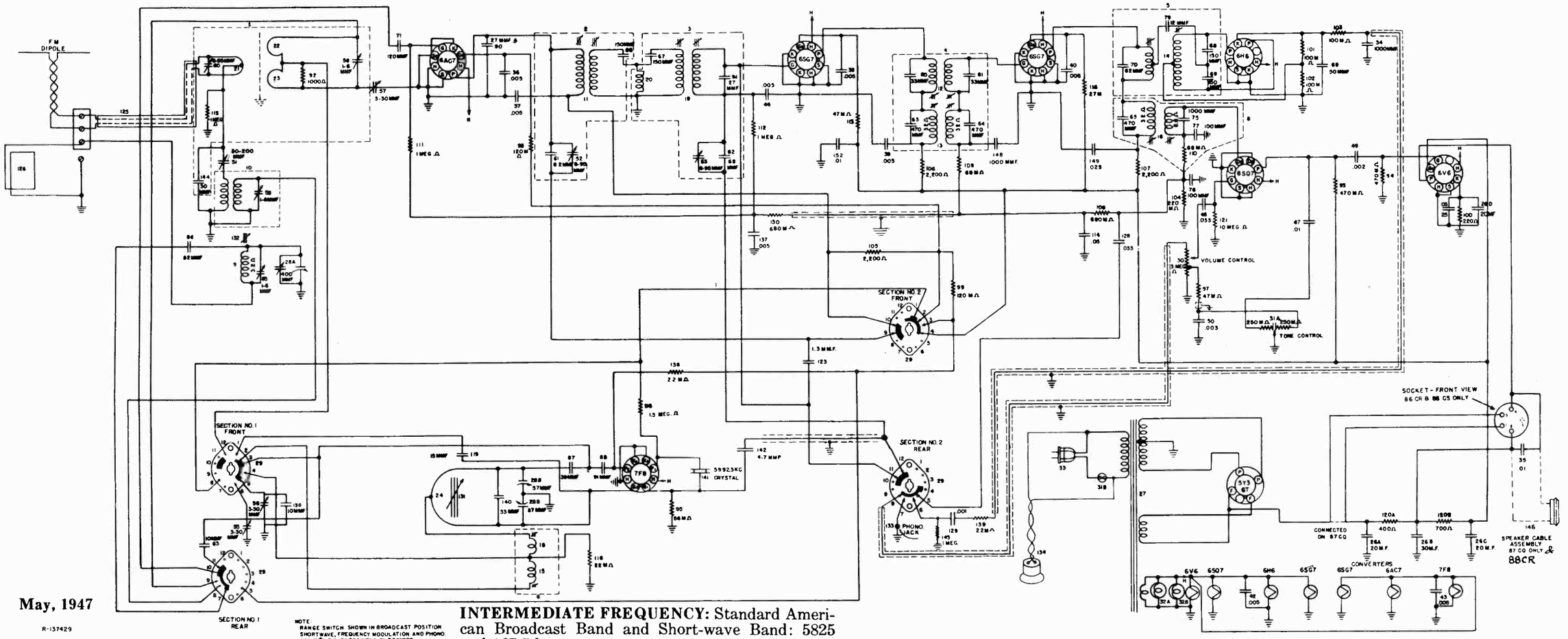
1. Connect an output meter across the speaker voice coil.
2. The r.f. signal input from the signal generator should be connected to the high side of loop antenna. Connect the signal generator ground through a 0.1 mfd. condenser to B— (pin 2 on 12BA6 tube socket).
3. Turn the volume control on full and adjust the signal generator output to produce approximately midscale deflection of the output meter, but maintain signal generator output as low as possible to prevent AVC action in the receiver.

| Alignment Sequence | Signal Generator Output | | | Position of Dial Pointer | Adjust for Maximum Output |
|---|---|---|---|---|---|
| | Frequency in kc. | In Series with | To | | |
| 1 | 455 | 200 mmf. | High Side of Loop | 1620 | A |
| 2 | 1620 | *Radiated to Loop | | 1620 | B |
| 3 | 1400 | *Radiated to Loop | | 1400 | C |

* Place signal generator output lead near the loop antenna.

# CROSLEY DIVISION
# AVCO MFG. CORP.

MODELS 86CR Revised, 86CS Revised, 87CQ, 88CR




May, 1947

R-137429

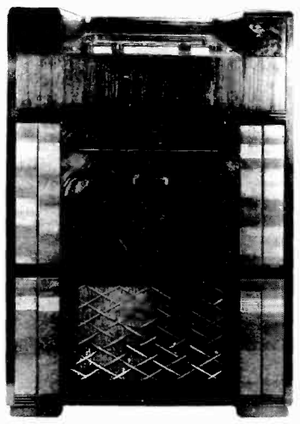
**INTERMEDIATE FREQUENCY:** Standard American Broadcast Band and Short-wave Band: 5825 and 167.5 kc.
Frequency Modulation Band: 10.7 mc.

## TUBE COMPLEMENT

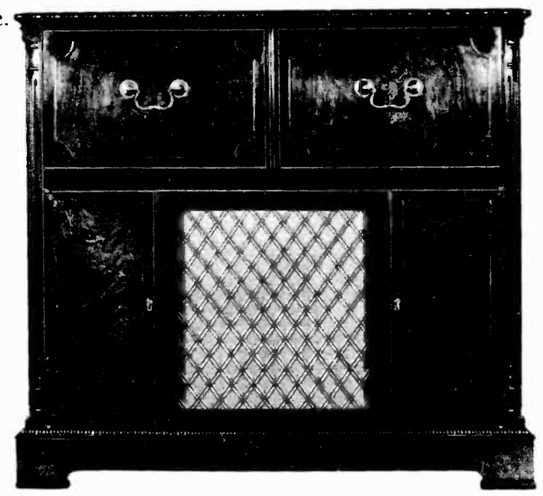
| Type | Function |
|---|---|
| 6AC7 | 1st A. M. Mixer—F. M. Mixer |
| 7F8 | 1st & 2nd A. M. Osc.—F. M. Osc. |
| 6SG7 | 2nd A. M. Mixer—1st I. F. Ampl. F. M. |
| 6SG7 | I. F. Ampl. A. M.—2nd I. F. Ampl. F. M. |
| 6H6 | F. M. Det. (Discriminator) |
| 6SQ7 | A. M. Det. AVC, 1st A. F. Ampl. |
| 6V6 GT/G | Output |
| 5Y3 GT/G | Rectifier |

DIAL BULB: Type 47, 6.3 v., .15 amp.

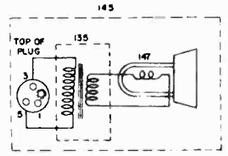
Model 87CQ

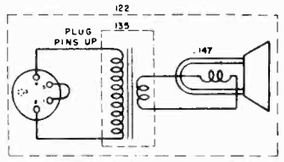


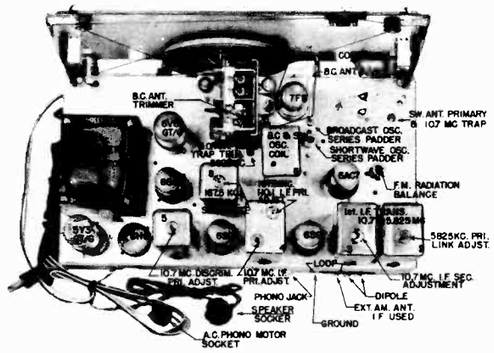
Model 86CR—Walnut Cabinet and Albums.
Model 86CS—Mahogany Cabinet with doors. No albums.



—MODEL 88CR






RECORD CHANGERS: For 86CR, 86CS, 87CQ, Seeburg Model K RCD.CH. 15-2
For 88CR, V-M Model 400 RCD.CH. 15-1

MODELS 86CR Revised, 86CS
Revised, 87CQ, 88CR

CROSLEY DIVISION
AVCO MFG. CORP.

BAND-SWITCH SHOWN AT 1 ST POSITION. BROADCAST BAND 540 - 1600 KC

BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. SHORT WAVE BAND 9.45 - 11.9 MC

BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE F-M BAND 88.1 - 107.9 MC

# CROSLEY DIVISION
# AVCO MFG. CORP.

MODELS 86CR Revised, 86CS Revised, 87CQ, 88CR

**TYPE:** Eight-tube, three-band, Superheterodyne.

**FREQUENCY RANGE:** Standard American Broadcast Band: 540 to 1600 kc. (Selector Switch to AM position).

Short-wave Band: 9.45 to 11.9 mc. (Selector switch at SW position).

Frequency Modulated Band: 88.1 to 107.9 mc., Channel 201 to 300 (Selector Switch at FM position).

**INTERMEDIATE FREQUENCY:** Standard American Broadcast Band and Short-wave Band: 5825 and 167.5 kc.

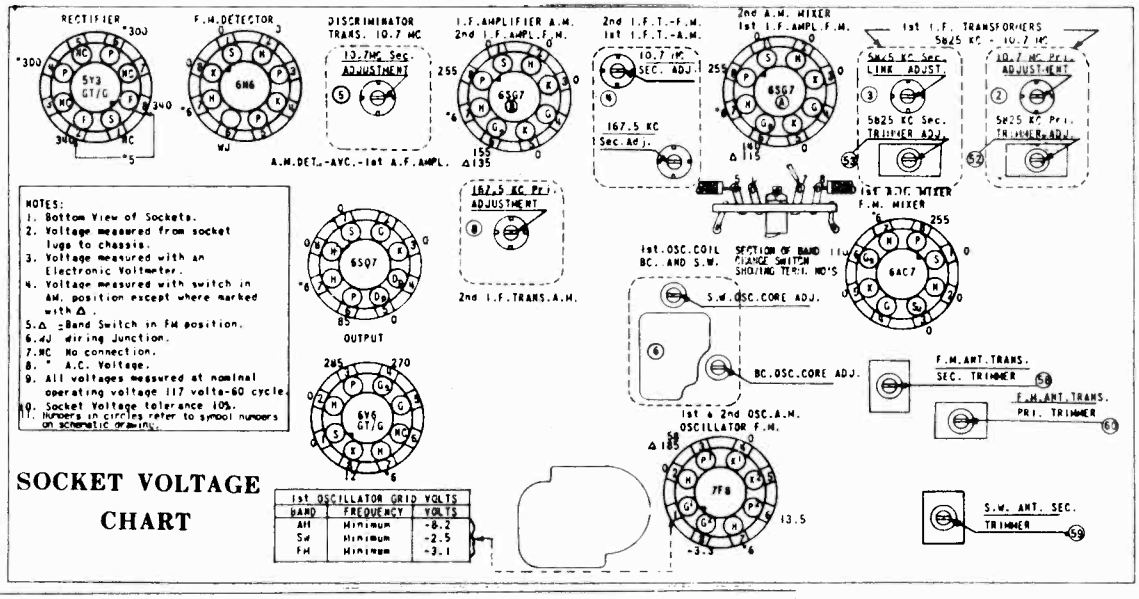
Frequency Modulation Band: 10.7 mc.

**POWER SUPPLY:** 60 cycle a.c. only.

**VOLTAGE RATING:** 105-125 volts.

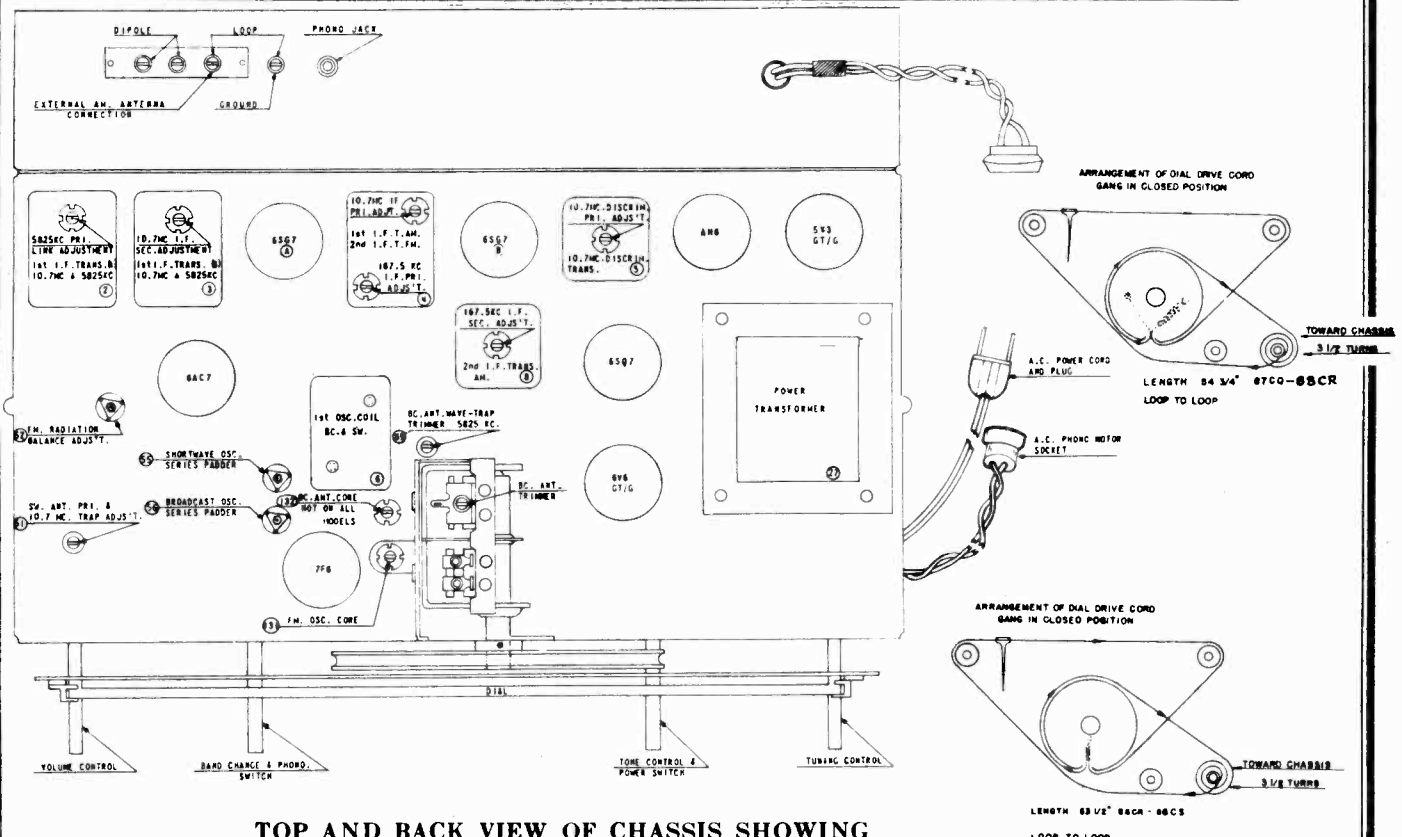
**POWER CONSUMPTION:** 85 watts maximum at normal power supply voltage (117 volts), 20 watts additional for record changer.

**POWER OUTPUT:** 8 watts maximum at 3.2 ohm load.




## SOCKET VOLTAGE CHART

| 1st OSCILLATOR GRID VOLTS | | |
|---|---|---|
| BAND | FREQUENCY | VOLTS |
| AM | Minimum | -8.2 |
| SW | Minimum | -2.5 |
| FM | Minimum | -3.1 |




**TOP AND BACK VIEW OF CHASSIS SHOWING TUBE LOCATIONS AND TOP ALIGNMENT ADJUSTMENTS**

## ALIGNMENT EQUIPMENT

The following equipment is used as indicated in the alignment charts and alignment notes:

**Signal Generators:**

1. Amplitude Modulated Signal Generator with 400 cycle modulated signal to cover 167.5 kc. to 108 mc.
2. Frequency Modulated Signal Generator to cover 87 to 108 mc., with sweep to cover 10 to 30 kc. on narrow band and 450 kc. on wide band (Scope alignment only).

**Cathode Ray Oscillograph** (Scope alignment only).

**Meters:**

1. Suitable Output Meter.
2. Field Strength Meter (Fig. 1). This meter may consist of a D.C. 100 microampere (full scale) meter, shunted by a 1000 mmf. mica by-pass condenser; a crystal rectifier connected in series with the meter and a five foot, 75 ohm twisted, pair of leads. The open ends of the leads are connected to the dipole antenna terminals. *Connect condenser directly across meter terminals, and crystal directly to one terminal of meter. Keep connecting leads as short as possible.*

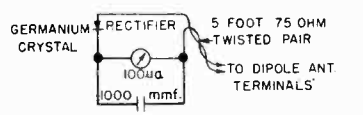


Fig. 1

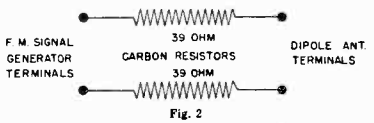


Fig. 2

**Dummy Antennas:**

1. 78 ohm Dummy Antenna (Fig. 2).
2. Dummy Loop Antenna (Fig. 3) is used to replace "Signal Web" antenna, when chassis is removed from cabinet.

**Condensers:**

1. 0.1 mfd. Condenser.
2. 30 mmf. Condenser.

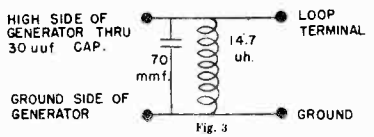


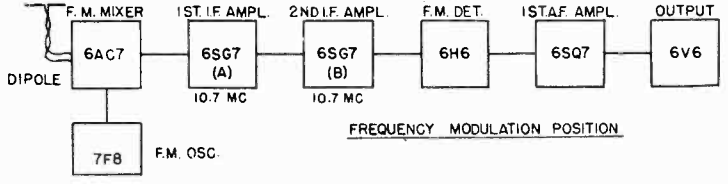
Fig. 3

**Shunts:**

1. 5000 ohm carbon Resistor in series with a 0.1 mfd. Condenser.
2. Hairpin Shorting Shunt composed of two inches of No. 14 bare tinned copper wire.

### ALIGNMENT PROCEDURE (Output Meter and Scope Method)

1. This receiver has been aligned at the factory for best performance, and no attempt should be made to realign it unless the proper test equipment is available.
2. Turn the tuning condenser to full mesh, against stop, and set the dial pointer to the reference point which is to the left of Channel 200 on the dial.
3. Set tone control knob to the treble position, (extreme right).
4. When output meter is used, connect across voice coil: (3.2 ohms).
5. Feed an R. F. signal modulated 30% at 400 cycles to the receiver as indicated on the alignment chart (page 4). Connect signal generator ground terminal to the chassis of the receiver, except where noted.
6. When F. M. signal generator is used, a 30% modulated signal is equal to 22.5 kilocycles deviation.
7. Turn volume control knob to maximum clockwise position and adjust signal generator output to produce a noticeable output meter reading, (approx. 500 mw.) Keep signal generator output as low as possible to prevent excessive AVC action in the receiver.
8. The low impedance "Signal Web" antenna should remain connected, or, if the chassis is removed from cabinet, a dummy antenna should be connected in its place (See Fig. 3 on this page).

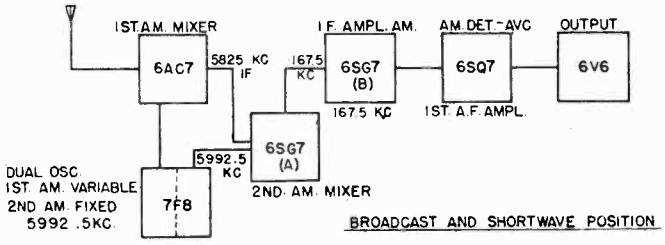


FREQUENCY MODULATION POSITION

## ALIGNMENT CHART (Output Meter Method)

| Alignment Sequence | A. M. Signal Generator Output: Frequency | In Series with | To | Position of: Range Switch | Dial Pointer or Var. Cond. | Adjust | Osc. Frequency | Remarks (Alignment notes begin on page 5) |
|---|---|---|---|---|---|---|---|---|
| 1 | 167.5 kc. | 0.1 mfd. | 2nd I. F. Grid 6SG7 (B) | SW | Open | 2nd I. F. Trans. (8) | | See Note 1 |
| 2 | 167.5 kc. | 0.1 mfd. | 1st I. F. Grid 6SG7 (A) | SW | Open | 1st I. F. Trans. (4) | | See Note 2 |
| 3 | 10.7 mc. | 30 mmf. | 2nd I. F. Grid 6SG7 (B) | FM | Open | Discriminator Trans. (5) | | See Note 3 |
| 4 | 10.7 mc. | 30 mmf. | 1st I. F. Grid 6SG7 (A) | FM | Open | 2nd I. F. 10.7 mc. Trans. (4) | | See Note 4 |
| 5 | 10.7 mc. | 30 mmf. | See Note 5 | FM | Open | 1st I. F. 10.7 mc. Trans. (2) & (3) | | See Note 5 |
| 6 | 5825 kc. | 30 mmf. | *Link Coupling on 10.7 mc. I. F. No. 2 | SW | Open | 5825 kc. I. F. Trans. (3) | 167.5 kc. Above | See Note 6—*The short lead between Transformers No. 2 & 3 |
| 7 | 5825 kc. | 30 mmf. | 6AC7 Grid | SW | Open | 5825 kc. I. F. Trans. (2) | 167.5 kc. Above | See Note 7 |
| 8 | 100 mc. | *78 ohm Dummy | F. M. Dipole Terminals | FM | Channel 260.5 | F. M. Osc. Core F. M. Ant. Trims. Sec. & Prim. | 10.7 mc. Above | See Note 8—*See "Dummy Antennas (1)," page 3 |
| 9 | 97.9 mc. | *78 ohm Dummy | F. M. Dipole Terminals | FM | Channel 250 | F. M. Osc. Core | 10.7 mc. Above | See Note 9—*See "Dummy Antennas (1)," page 3 |
| 10 | Disconnect Generator *Connect Field Strength Meter | | | FM | Channel 215 | Radiation Bal. Trimmer | | *See Note 10—*See "Field Strength Meter" page 3 |
| 11 | *9.6 mc. | 30 mmf. | One F. M. Ant. Term. | SW | 9.6 mc. | S. W. Oscillator Series Padder | 5825 kc. Above | *Disconnect Field Strength Meter Connect Signal Generator. See Note 11 |
| 12 | 11.8 mc. | 30 mmf. | One F. M. Ant. Term. | SW | 11.8 mc. | S. W. Osc. Core | 5825 kc. Above | See Note 12 |
| 13 | 10.7 mc. | 30 mmf. | One F. M. Ant. Term. | SW | 10.7 mc. | S. W. Ant. Prim. & Sec. Padder | | See Note 13 |
| 14 | 10.7 mc. | 30 mmf. | One F. M. Ant. Term. | FM | 10.7 mc. | S. W. Primary (10.7 mc. Trap) | | See Note 14 |
| 15 | 535 kc. | 30 mmf. | *HI. Side of Dummy Loop Ant. | AM | Closed | B. C. Oscillator Series Padder | 5825 kc. Above | *See Note 15—See "Dummy Antennas (2)," page 3 |
| 16 | 1620 kc. | 30 mmf. | HI. Side of Dummy Loop Ant. | AM | Open | B. C. Osc. Core | 5825 kc. Above | See Note 16 |
| 17 | 1400 kc. | 30 mmf. | HI. Side of Dummy Loop Ant. | AM | 1400 kc. | B. C. Antenna Trimmer | | See Note 17 |
| 18 | 600 kc. | 30 mmf. | HI. Side of Dummy Loop Ant. | AM | 600 kc. | B. C. Antenna Core | | See Note 18 |
| 19 | 5825 kc. | 30 mmf. | HI. Side of Dummy Loop Ant. | AM | 1400 kc. | B. C. Wave Trap Trim. | | See Note 19 |
| 20 | 600 kc. | See Note 20 | | | | | | |

*Refer to remarks (with corresponding asterisk) in last column.



BROADCAST AND SHORTWAVE POSITION

## ALIGNMENT NOTES (Output Meter Method)

Use the following notes in conjunction with ALIGNMENT CHART (page 4), TOP AND BACK VIEW (page 2), SOCKET VOLTAGE CHART (page 2), and SCHEMATIC DIAGRAM. Reference numbers of parts correspond to item numbers in Parts List.

1. (a) Place Shunt from link, between transformers (5) and (8), to ground (See "Shunts (1)", page 3). Adjust secondary (top) for maximum output.
   (b) Connect the Shunt from diode plate (pin No. 4) of 6SQ7 tube socket to the shielded lead junction on transformer (8). Adjust primary (bottom) for maximum output. Remove Shunt.
2. (a) Place Shunt from plate of the 6SG7 tube socket (A) to the transformer side of 2200 ohm resistor (106), See "Shunts (1)", page 3. Adjust secondary (bottom) for maximum output.
   (b) Connect the Shunt from grid of the 6SG7 tube socket (B) to Transformer side of 68,000 ohm resistor (109). Adjust primary (top) for maximum output. Remove Shunt.
3. (a) Adjust secondary (bottom) core for null point.
   (b) Tune Signal Generator for maximum Output Meter reading, approximately 75 to 100 kc. off the null point obtained in 3 (a), and note reading.
   (c) Tune Signal Generator to the opposite side of the null point for maximum reading on the Output Meter. Note this reading. If the two readings are not equal, adjust primary (top) core until equal readings are obtained.
4. (a) Set Signal Generator to peak on high side of 10.7 mc. and adjust primary (top) and secondary (bottom) for maximum output. Note meter reading.
   (b) Set Signal Generator to peak on low side of 10.7 mc. and note reading. If necessary, readjust primary (top) and secondary (bottom), slightly, until Output Meter readings and frequency spacing are equal on both sides of the 10.7 mc. null point.
5. (a) Connect Signal Generator output in series with a 30 mmf. condenser to either lug of the F. M. antenna transformer primary Trimmer (60). Connect Signal Generator ground to the receiver chassis at a point close to the trimmer. Keep lead lengths to a minimum and do not drape shielded cable, from Signal Generator output, near under side of chassis.
   (b) Set Signal Generator to peak on high side of 10.7 mc. and adjust 10.7 mc. primary (bottom) of transformer (2). Adjust 10.7 mc. secondary (top) of transformer (3). These two adjustments should be adjusted for maximum output. Note reading on Output Meter.
   (c) Set Signal Generator to peak on low side of 10.7 mc. and note Output Meter reading. If meter readings obtained on the peaks on both sides of 10.7 mc. are not equal, readjust the 10.7 mc. primary of transformer (2), and the 10.7 mc. secondary of transformer (3). The peaks should appear approximately 80 kc. on each side of 10.7 mc.
6. (a) Set Signal Generator frequency control for maximum output. Adjust 5825 kc. secondary Trimmer and secondary link adjustment, on bottom of transformer (3), for maximum output.
7. (a) Adjust 5825 kc. primary trimmer (bottom) and 5825 kc. primary link adjustment (top) of transformer (2) for maximum output.
8. (a) Adjust F. M. oscillator core (131), on top of chassis, to midway position.
   (b) Preset F. M. radiation balance adjustment (57), on top of chassis, to approximately two turns from the closed position.
   (c) Short circuit F. M. antenna primary trimmer (60), located on bottom of chassis, with Hairpin Shorting Shunt (See "Shunts (2)", page 3).
   (d) Adjust F. M. antenna secondary trimmer (58), on bottom of chassis, for maximum output.
   (e) Transfer Shorting Shunt to F. M. antenna secondary Trimmer (58) and adjust F. M. antenna primary Trimmer (60) for maximum output.
   (f) Remove Shorting Shunt.
9. (a) Adjust F. M. oscillator core (131), slowly, until 97.9 mc. signal is tuned in. Receiver should tune thru 87.9 and 107.9 mc. signal (channel 200 and 300).
10. (a) Connect Field Strength Meter to dipole antenna terminals, on back of chassis.
    (b) Adjust F. M. radiation balance trimmer (57), on top of chassis, to null point. If it is necessary to move this trimmer more than a quarter turn, repeat steps 8 and 10.

Alternate Method:—Connect a D.C. Vacumn Tube Voltmeter to No. 1 lug of 7F8 tube socket and adjust F. M. radiation balance trimmer for maximum grid volt reading.

11. (a) Set Signal Generator to 9.6 mc. modulated 30% at 400 cycles.
    (b) Turn volume control to maximum.
    (c) Adjust short-wave series padder (55), on top of chassis, for maximum output.
12. (a) Adjust short-wave oscillator core, on bottom of chassis, for maximum output. Repeat steps 11 and 12 until dial tracks at 9.6 and 11.8 mc.
13. (a) Shunt short-wave antenna primary padder (51), (lug connected to coil) to chassis with a Shorting Clip.
    (b) Increase Signal Generator output if necessary.
    (c) Adjust short-wave antenna secondary trimmer (59), for maximum output, while rocking variable condenser.
    (d) Transfer the Shorting Clip to across the short-wave antenna secondary trimmer (59)
    (e) Adjust short-wave antenna primary padder (51), for maximum output, while rocking variable condenser.
    (f) Remove Shorting Clip.
14. (a) Connect Field Strength Meter from Signal Generator side of 30 mmf. condenser to chassis.
    (b) Increase or decrease Signal Generator output until Field Strength Meter reads between 10 and 15 microamperes.
    (c) Adjust short-wave antenna primary padder (51), for lowest reading on Field Strength Meter. Make this adjustment slowly, otherwise the dip may be passed unnoticed when a highly damped meter is used.
    (d) Disconnect Field Strength Meter.

Alternate Method:—After the receiver is installed in cabinet, turn band switch to F. M. position and tune in an F. M. station. If a 10.7 kc. signal (indicated by a whistle or code) is heard in the speaker, adjust the short-wave antenna primary (51) until the interferring signal disappears or is minimized. Make this adjustment slowly.

15. (a) Connect Dummy Loop Antenna to Signal Web Antenna terminal and to ground terminal (See "Dummy Antennas (2)," page 3).
    (b) Preset broadcast antenna wave trap (85), on top of chassis, to approximately two turns from the closed position.
    (c) Adjust broadcast oscillator series padder (56), on top of chassis, for maximum output.
16. (a) Adjust broadcast oscillator core, on bottom of chassis, for maximum output.
    (b) Repeat steps 15 to 16 until frequency shift stops.
17. (a) Adjust broadcast antenna trimmer, on top of variable condenser, for maximum output.
18. (a) Adjust broadcast antenna core (132), on top of chassis, for maximum output while rocking variable condenser.
19. (a) Set dial pointer to approximately 1400 kc. and retune Signal Generator to maximum output.
    (b) Adjust Signal Generator output to approximately midscale reading on the Output Meter.
    (c) Adjust broadcast antenna wave trap trimmer (85), for lowest reading on Output Meter.
    (e) All Air Trimmers should be locked in position by applying a drop of household cement on the screw threads.
20. (a) After the receiver is placed in cabinet and all connections are made for normal operation, readjust the broadcast antenna core for maximum output at 600 kc.

## ALIGNMENT CHART (Scope Method)

**Before using this chart, see ALIGNMENT PROCEDURE on page 3. To locate adjustments, refer to page 2.**

| Alignment Sequence | Type Generator | Signal Generator Output: Frequency | Signal Generator Output: In Series with | Signal Generator Output: To | Position of: Range Switch | Position of: Dial Pointer or Var. Cond. | Adjust | Type of Selectivity Curve | Osc. Frequency | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F. M. | 167.5 kc. | 0.1 mfd. | 2nd I. F. Grid 6SG7 (B) | SW | Open | 2nd I. F. Trans. (8), Top & Bottom | Flat or Double Peak | | See Notes 1(a) & 2(a) |
| 2 | F. M. | 167.5 kc. | 0.1 mfd. | 1st I. F. Grid 6SG7 (A) | SW | Open | 1st I. F. Trans. (4), Bottom & Top | 10% Double Peak | | See Notes 1(a) & 2(a) |
| 3 | * A. M. | 10.7 mc. | 30 mmf. | 1st I. F. Grid 6SG7 (A) | FM | Open | Discriminator Trans. (5), Bottom | Adjust for null point | | *Disconnect F. M. Signal Generator and Scope See Note 5. |
| 4 | * F. M. | 10.7 mc. | 30 mmf. | 1st I. F. Grid 6SG7 (A) | FM | Open | Discriminator Trans. (5), Top |  | | *Disconnect A. M. Signal Generator and Output Meter See Notes 1(b), 2(b), & 3 |
| 5 | F. M. | 10.7 mc. | 30 mmf. | 1st I. F. Grid 6SG7 (A) | FM | Open | 2nd I. F., 10.7 mc., Trans. (4), Top & Bottom |  | | See Notes 1(b), 2(b), & 4 Readjust, slightly, discriminator primary (Top). |
| 6 | F. M. | 10.7 mc. | 30 mmf. | Grid of 6AC7 | FM | Open | 1st I. F., 10.7 mc., Trans. (2) & (3) |  | | See Notes 1(b), 2(b), & 4 Adjust Trans. (2) bottom. Adjust Trans. (3) Top |
| 7 | A. M. | Use Alignment Chart on page 4. Begin with sequence No. 6 and continue thru to sequence No. 19, inclusive. | | | | | | | | |

*Refer to Remarks (with corresponding asterisk) in last column.

## ALIGNMENT NOTES (Scope Method)

1. (a) Sweep align (Use approximately 20 to 30 kc. to sweep).
   (b) Sweep align (Use approximately 450 kc. to sweep).
2. (a) For 167.5 kc.; connect Scope to terminal No. 8 on the rear plate section of band change switch.
   (b) For 10.7 mc.; connect Scope, thru a 100,000 ohm resistor, to lug No. 6 of 6H6 tube socket.
3. Sweep Generator output 100,000 to 200,000 microvolts.
4. Scope Adjustment remains. Reduce Sweep input.
5. Connect Output Meter across voice coil. Feed an R. F. signal, calibrated at 10.7 mc. and modulated 30% at 400 cycles, to the receiver as indicated.

## PARTS LIST—MODEL 87CQ, AND REVISED MODELS 86CR, 86CS 88CR

**Figures in first column correspond to figures in Schematic Diagram**

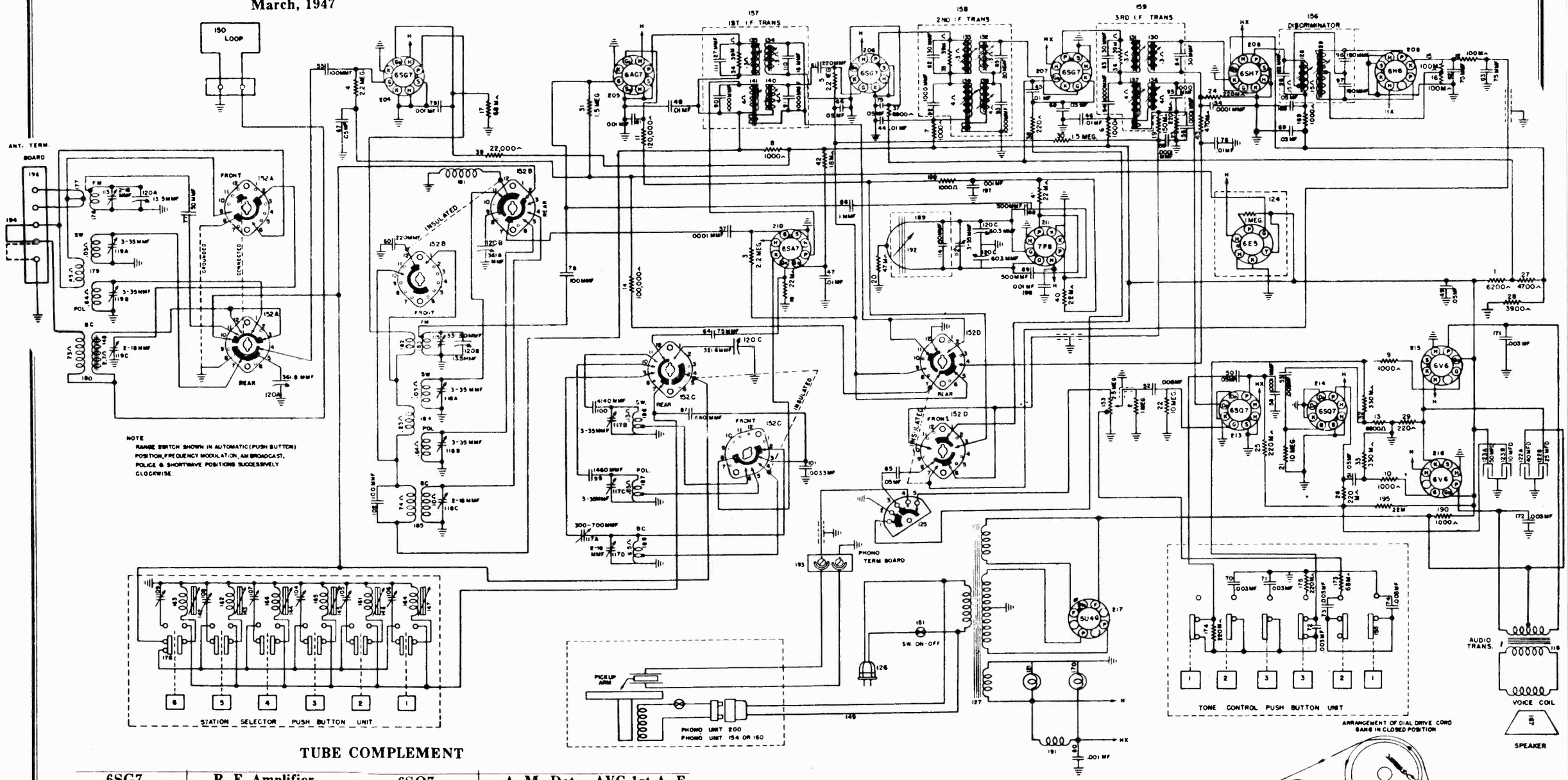
| Item No. | Part No. | Description |
|---|---|---|
| 1 | AC-136171 | Transformer Assy. (F. M. Antenna) |
| 2 | AC-136264 | Transformer, 10.7 mc. and 5.825 mc. I. F. (A) |
| 3 | AC-136081 | Transformer, 10.7 mc. and 5.825 mc. I. F. (B) |
| 4 | AC-136276 | Transformer, 10.7 mc. and 167.5 kc. I. F. |
| 5 | AC-136280 | Transformer, 10.7 mc. Discriminator |
| 6 | AC-136509 | Coil Assy., 1st Oscillator (B. C. & S. W.) |
| 8 | AC-136261 | Transformer, 167.5 kc., Diode |
| 9 | AW-136511 | Coil, Antenna (B. C.) |
| 10 | AB-136444 | Coil Assy., Antenna (S. W.) |
| 11 | Part of Item #2 | Coil Assy. |
| 12 | Part of Item #4 | Coil Assy. |
| 13 | Part of Item #4 | Coil Assy. |
| 14 | Part of Item #5 | Coil Assy. |
| 15 | Part of Item #6 | Coil Assy. |
| 16 | Part of Item #6 | Coil Assy. |
| 18 | Part of Item #8 | Coil Assy. |
| 19 | Part of Item #3 | Coil Assy. |
| 20 | Part of Item #3 | Coil Assy. |
| 21 | Part of Item #1 | Coil Assy. |
| 22 | Part of Item #1 | Coil Assy. |
| 23 | Part of Item #1 | Coil Assy. |
| 24 | W-136179 | Coil, F. M. Oscillator |
| 25 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 26A | B-137028 | Condenser, 20 mfd., 400 v. \| Four |
| 26B | | Condenser, 30 mfd., 350 v. \| Section |
| 26C | | Condenser, 20 mfd., 300 v. \| Elect. |
| 26D | | Condenser, 20 mfd., 25 v. \| Filter |
| 27 | B-135336 | Transformer, Power |
| 28A | C-135946 | Condenser, Variable \| Two |
| 28B | | Condenser, Variable \| Section |
| 29 | C-136161 | Switch, Band Change |
| 30 | B-135783 | Control, Volume (3 megohm, Tap 720,000 ohm) |
| * | 39368-22 | Control (Volume) |
| | 39370-2 | Shaft (Knurled Plug-in) |
| 31A | B-135784 | Control, Tone \| Assembly |
| 31B | | Switch, Power \| |
| 32A | W-48858 | Bulb (Dial), Type 47, 6.3 v., .15 amp. |
| 32B | W-48858 | Bulb (Dial), Type 47, 6.3 v., .15 amp. |
| 33 | C-132300-2 | Cable and Plug Assy., Power |
| 34 | 39001-7 | Condenser, .001 mfd., 600 v., paper |
| 35 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 36 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 37 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 38 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 39 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 40 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 41 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 42 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 43 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 44 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 45 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 46 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 47 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 48 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 49 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 50 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 51 | C-137219-1 | Condenser, Trimmer (S. W. Ant. Prim.) |
| 52 | Part of Item #2 | Condenser, Trimmer (5.825 mc. Prim.) |
| 53 | Part of Item #3 | Condenser, Trimmer (5.825 mc. Sec.) |
| 55 | W-136964 | Condenser, Air Trimmer (S. W. Osc. Series Padder) |
| 56 | W-136964 | Condenser, Air Trimmer (B. C. Osc. Series Padder) |
| 57 | W-136964 | Condenser, Air Trimmer (F. M. Radiation Balance) |
| 58 | Part of Item #1 | Condenser, Trimmer (F. M. Ant. Sec.) |
| 59 | Part of Item #10 | Condenser, Trimmer (S. W. Ant. Sec.) |
| 60 | Part of Item #1 | Condenser, Trimmer (F. M. Ant. Prim.) |
| 61 | Part of Item #2 | Condenser, 82 mmf., 300 v., ceramic |
| 62 | Part of Item #3 | Condenser, 68 mmf., 300 v., ceramic |
| 63 | Part of Item #4 | Condenser, 470 mmf., 300 v., silver mica |
| 64 | Part of Item #4 | Condenser, 470 mmf., 300 v., silver mica |
| 65 | Part of Item #8 | Condenser, 470 mmf., 300 v., silver mica |
| 66 | Part of Item #2 | Condenser, 150 mmf., 500 v., silver mica |
| 67 | Part of Item #3 | Condenser, 150 mmf., 500 v., silver mica |
| 68 | Part of Item #5 | Condenser, 150 mmf., 500 v., silver mica |
| 69 | Part of Item #5 | Condenser, 150 mmf., 500 v., silver mica |
| 70 | Part of Item #5 | Condenser, 62 mmf., 500 v., ceramic |
| 71 | B-226638-39 | Condenser, 120 mmf., 300 v., ceramic |
| 75 | Part of Item #8 | Condenser, 1000 mmf., 500 v., silver mica |
| 76 | GC-210685-182 | Condenser, 100 mmf., 500 v., mica |
| 77 | Part of Item #8 | Condenser, 100 mmf., 500 v., mica |
| 79 | Part of Item #5 | Condenser, 12 mmf., 300 v., ceramic |
| 80 | Part of Item #4 | Condenser, 33 mmf., 500 v., ceramic |
| 81 | Part of Item #4 | Condenser, 33 mmf., 500 v., ceramic |
| 83 | B-226638-49 | Condenser, 10 mmf., 300 v., ceramic |
| 85 | C-137219-3 | Condenser, Trimmer (B. C. Ant. Wave Trap) |
| 86 | B-226638-27 | Condenser, 82 mmf., 500 v., ceramic |
| 87 | B-226638-51 | Condenser, 39 mmf., 300 v., ceramic |
| 88 | B-226638-52 | Condenser, 91 mmf., 300 v., ceramic |
| 89 | GC-210685-183 | Condenser, 50 mmf., 500 v., mica |
| 90 | B-226638-35 | Condenser, 27 mmf., 500 v., ceramic |
| 91 | Part of Item #3 | Condenser, 27 mmf., 500 v., ceramic |
| 92 | Part of Item #1 | Resistor, 1000 ohm, ½ w. |
| 93 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 94 | 39373-87 | Resistor, 470,000 ohm, ½ w. |
| 95 | 39373-69 | Resistor, 56,000 ohm, ½ w. |
| 96 | 39373-94 | Resistor, 1.5 megohm, ½ w. |
| 97 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 98 | 39373-75 | Resistor, 120,000 ohm, ½ w. |
| 99 | 39373-75 | Resistor, 120,000 ohm, ½ w. |
| 100 | 39373-129 | Resistor, 220 ohm, 1 w. |
| 101 | 39373-74 | Resistor, 100,000 ohm, ½ w. |
| 102 | 39373-74 | Resistor, 100,000 ohm, ½ w. |
| 103 | 39373-74 | Resistor, 100,000 ohm, ½ w. |
| 104 | 39373-80 | Resistor, 220,000 ohm, ½ w. |
| 105 | 39373-40 | Resistor, 2,200 ohm, ½ w. |
| 106 | 39373-40 | Resistor, 2,200 ohm, ½ w. |
| 107 | 39373-40 | Resistor, 2,200 ohm, ½ w. |
| 108 | 39373-90 | Resistor, 680,000 ohm, ½ w. |
| 109 | 39373-71 | Resistor, 68,000 ohm, ½ w. |
| 110 | Part of Item #8 | Resistor, 68,000 ohm, ½ w. |
| 111 | 39373-92 | Resistor, 1 megohm, ½ w. |
| 112 | 39373-92 | Resistor, 1 megohm, ½ w. |
| 113 | Part of Item #1 | Resistor, 1 megohm, ½ w. |
| 114 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 115 | 39373-67 | Resistor, 47,000 ohm, ½ w. |
| 116 | 39373-62 | Resistor, 27,000 ohm, ½ w. |
| 118 | 39373-60 | Resistor, 22,000 ohm, ½ w. |
| 119 | B-226638-59 | Condenser, 15 mmf., 500 v., ceramic |
| 120A | W-137021 | Resistor (Wire-wound), 400 ohm, 4 w. \| Two |
| 120B | | Resistor (Wire-wound), 700 ohm, 4 w. \| Section |
| 121 | 39373-107 | Resistor, 10 megohm, ½ w. |
| 122 | C-135974 | Speaker & Transformer Assy. (86CR, 86CS) |
| 123 | AW-136911 | Condenser, 1.3 mmf. (Transmission Line) |
| 124 | 39019-3 | Terminal Board |
| 125 | W-137143 | Transmission Line (75 ohm) |
| 126 | W-137143 | Loop Antenna (Transmission Line) |
| 128 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 129 | 39001-7 | Condenser, .001 mfd., 600 v., paper |
| 130 | B-226638-49 | Condenser, 10 mmf., 300 v., ceramic |
| 131 | 39012-59 | Iron Core (F. M. Osc.) |
| 132 | 39012-60 | Iron Core (B. C. Ant.) |
| 133 | W-136998 | Connector, Phono Pickup |
| 134 | W-137213 | Cable & Plug Assy., Phono Motor |
| 135 | B-138131-2 | Transformer, Output |
| 137 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 138 | 39373-170 | Resistor, 22,000 ohm, 1 w. |
| 139 | 39373-60 | Resistor, 22,000 ohm, ½ w. |
| 140 | W-138531 | Condenser, 53 mmf., 500 v., ceramic |
| 141 | B-138774 | Crystal, 5992.5 kc. |
| 142 | W-137398-6 | Condenser, 4.7 mmf., 500v. |
| 143 | 39373-92 | Resistor, 1 megohm, ½ w. |
| 144 | Part of Item #1 | Condenser, 30 mmf., 500 v., mica |
| 145 | C-138777 | Speaker & Transformer Assy. (87CQ) (88CR) |
| 146 | AB-138935 | Cable & Plug Assy., Speaker (87CQ) (88CR) |
| 147 | C-138762-5 | Speaker (only) |
| 148 | C-137727-8 | Condenser .001 mfd., 300 v., ceramic |
| 149 | 39001-81 | Condenser, .025 mfd., 600 v., paper |
| 150 | 39373-90 | Resistor 680,000 ohm, ½ w. |
| 152 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 153 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 155 | 39001-11 | Condenser, .005 mfd., 600 v., paper |
| 156 | 39001-13 | Condenser, .01 mfd., 600 v., paper |
| 157 | 39373-84 | Resistor, 300,000 ohm, ½ w. |
| | W-131154-1 | Cotter, External |
| | W-136853 | Cushion (Rubber), Dial Glass |
| | D-138574 | Dial Glass (87CQ) |
| | D-136252 | Dial Glass (86CR, 86CS) |
| | D-138372 | Escutcheon (87CQ) |
| | W-134055 | Grommet, Variable Condenser Mtg. |
| | AW-137266 | Hinge Assy., Door (86CS) |
| | W-137022 | Knob, Band Switch; or Tone Control (86CR) |
| | W-137350 | Knob, Band Switch; or Tone Control (86CS) |
| | W-135309 | Knob, Dial Tuning; or Volume Control (86CR) |
| | W-137349 | Knob, Dial Tuning; or Volume Control (86CS) |
| | B-138576-1 | Knob (87CQ) |
| | W-136111 | Mounting Rubber, Chassis (Front; 86CR, 86CS) |
| | W-33055 | Mounting Rubber, Chassis (Front; 87CQ) |
| | W-45580 | Mounting Rubber, Chassis (Rear; 86CR, 86CS) |
| | W-45056 | Mounting Rubber, Chassis (Rear; 87CQ) |
| | W-45580 | Mounting Rubber, Speaker (87CQ) |
| | AB-134935 | Needle, Floating Jewel Assy. |
| | W-132366-2 | Nut, Locking (Iron Core) |
| | W-134966 | Nut, Spring Lock (Record Changer Mtg.) |
| | W-134956 | Nut, Tee (Record Changer Mtg.) |
| | W-137199 | Nut, Tee (Chassis Mtg.) |
| | W-136176 | Pointer, Dial (86CR, 86CS) |
| | W-136176-2 | Pointer, Dial (87CQ) |
| | B-137286 | Pull, Door (86CS) |
| | B-137288 | Pull, Drawer (86CS) |
| | W-137201 | Pull, Drawer (86CR) |
| | W-137201-2 | Pull, Drawer (87CQ) |
| | AB-136243 | Pulley & Hub Assy., Variable Condenser (86CR, 86CS) |
| | AB-138726 | Pulley & Hub Assy., Variable Condenser (87CQ) |
| | W-135074 | Pulley, Idler (Small Stud) |
| | W-136979 | Pulley, Idler (Large Stud) |
| | D-134945-1 | Record Changer (Model "K") |
| | W-211101 | Ring, Retaining (7F8 Socket) |
| | W-51071 | Ring, Retaining (Drive Shaft) |
| | 39172-200 | Screw, Chassis Mtg. (Front) |
| | AW-137232 | Screw & Washer Assy. (Record Changer Mtg.) |
| | W-136178 | Shaft, Drive |
| | AW-137338 | Shielded Wire & Plug Assy. (Phono) |
| | W-134968-1 | Socket, Speaker (86CR, 86CS) |
| | 39232-5 | Socket, Tube (6AC7, 6SG7) |
| | W-136470 | Socket, Tube (7F8) |
| | 39232-7 | Socket, Tube (6H6) |
| | 39232-9 | Socket, Tube (6SQ7) |
| | 39232-3 | Socket, Tube (6V6GT/G) |
| | 39232-1 | Socket, Tube (5Y3GT/G) |
| | D-136565-3 | Socket Assy., Dial light |
| | D-136565-12 | Socket Assy., Dial light (Shielded) |
| | 39019-3 | Terminal Board |
| | W-134916 | Washer, Spring |

*These parts will replace the original equipment parts.

# CROSLEY DIVISION
# AVCO MFG. CORP.



**March, 1947**




## TUBE COMPLEMENT

| | | | |
|---|---|---|---|
| 6SG7 | R. F. Amplifier | 6SQ7 | A. M. Det.—AVC 1st A. F. Amplifier |
| 6SA7 | A. M. Converter | 6SQ7 | Phase Inverter |
| 6AC7 | F. M. Mixer | 6V6 GT G | Output |
| 7F8 | F. M. Oscillator | 6V6 GT G | Output |
| 6SG7 | 1st I. F. Amplifier | 5U4G | Rectifier |
| 6SG7 | 2nd I. F. Amplifier | 6E5 | Tuning Indicator |
| 6SH7 | 3rd I. F. Amplifier | | |
| 6H6 | Discriminator | | |

DIAL BULB: Type 51, 7.5 v., 0.2 amp.

IF PEAKS: AM 455 KC FM 10.7 MC

NOTE: Model 146CS uses Model SL (Part No. D-134946-1) record changer.

Model 146CS (V) uses model 400-12 (Part No. D-138927) Record Changer



RECORD CHANGERS: 146CS, Seeburg Model L, RCD.CH. 15-18
146CS(V), V-M Model 400, RCD.CH.15-1

CROSLEY DIVISION
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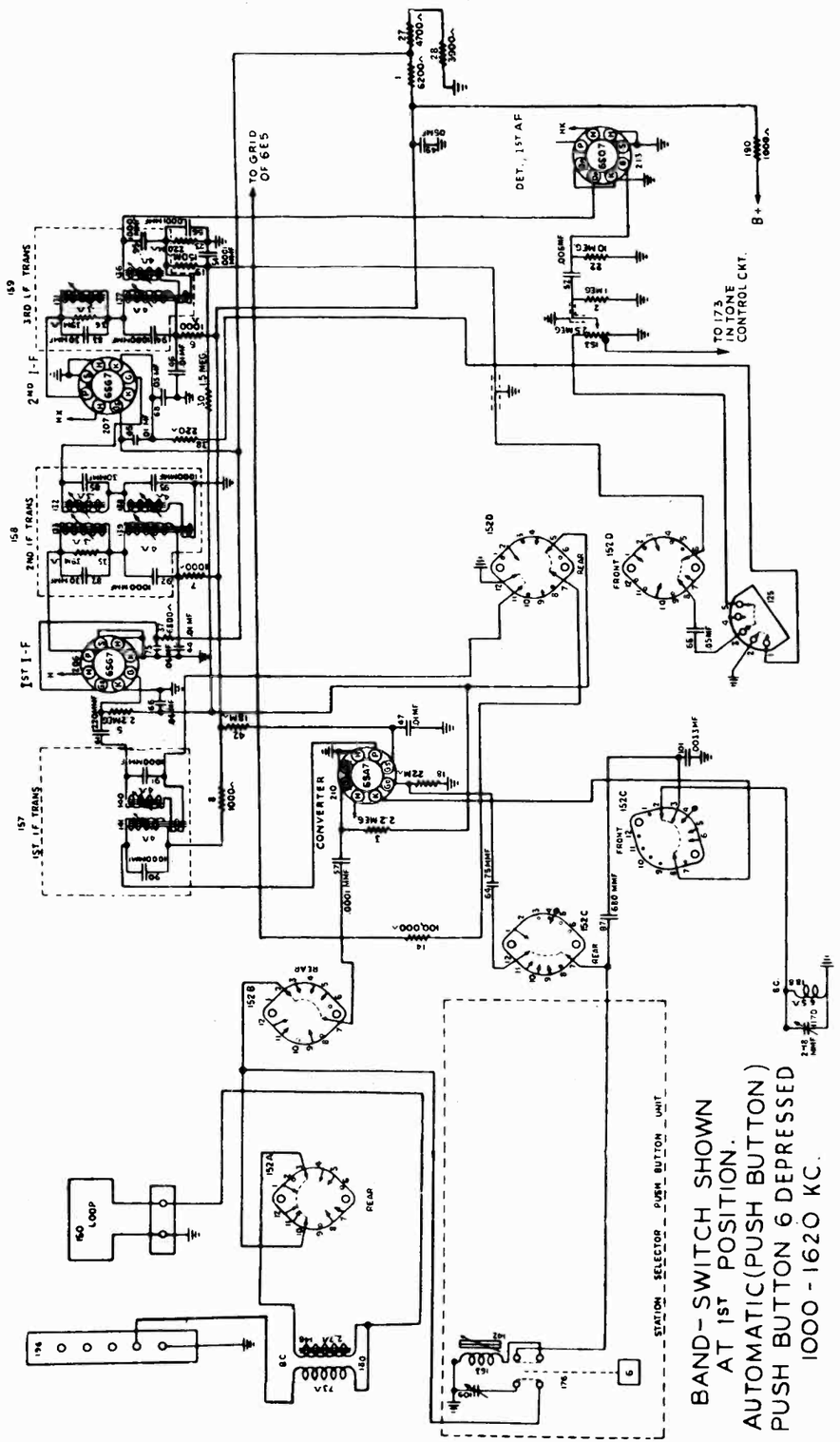
MODELS 146CS,146CS(V)








MODELS 146CS,146CS(V)

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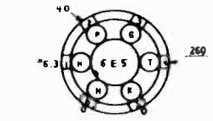
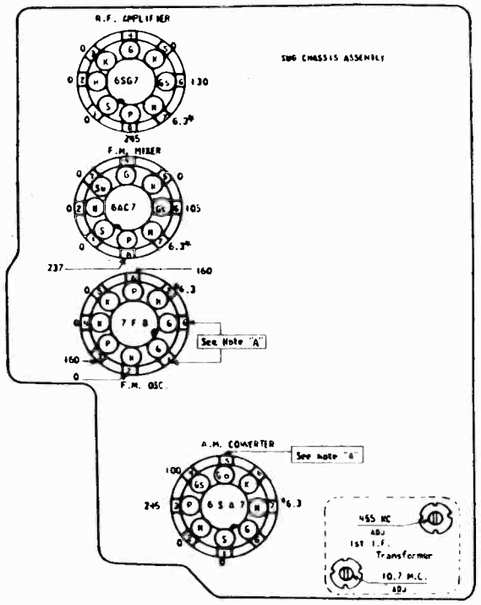
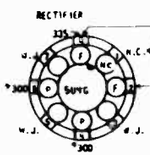
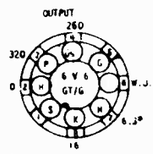
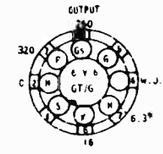
TUNING INDICATOR AT FRONT OF CHASSIS



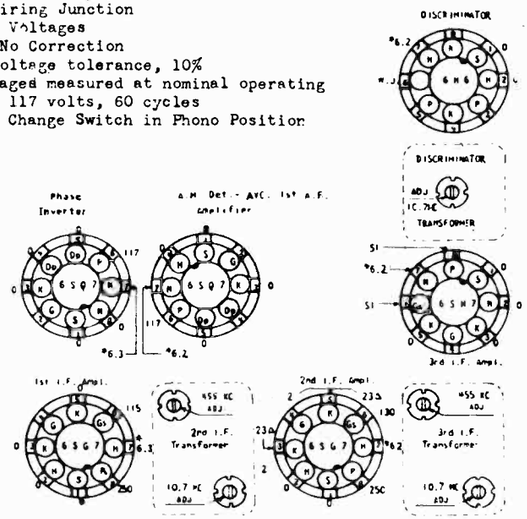




NOTE "A" OSCILLATOR GRID VOLTAGES

| Band | Tube | Frequency | Volts |
|---|---|---|---|
| A.M. | 6SA7 | 535 KC | -7.0 |
| Police | 6SA7 | 2.25 MC | -7.0 |
| S.W. | 6SA7 | 6.70 MC | -4.4 |
| F.M. | 7F8 | 88.1 MC | -3.6 |

NOTES:

1. These are bottom view of sockets
2. Measure voltages from socket lugs to chassis
3. These voltages were measured with an Electronic Voltmeter
4. Voltages on 7F8 and 6AC7 taken with bandswitch in F.M. position. All other voltages taken with bandswitch in A.M. position.
5. W.J. = Wiring Junction
6. * = A.C. Voltages
7. N .C. = No Correction
8. Socket voltage tolerance, 10%
9. All voltages measured at nominal operating voltage, 117 volts, 60 cycles
10. Δ = Band Change Switch in Phono Position




## ALIGNMENT PROCEDURE NOTES

Sweep alignment (use approximately 500 kc. to sweep).

Sweep Generator Output .1 to 1 Volt RMS.

Scope connected to center terminal on phono switch.

Align for maximum peak amplitude. Peak separation should be 150 to 200 kc.

Scope connected to center terminal of 3rd I.F. through 200,000 ohms.

Repeat operations 8 and 9 until no change can be noted in sensitivity.

Rock gang.

Repeat operations 12, 13 and 14 for maximum sensitivity.

C=Channel number.

When aligning the shortwave oscillator trimmer, make certain the circuit is aligned at the correct frequency and not at the image frequency which is 910 kilocycles lower in frequency as indicated on the receiver dial. To check, tune in signal generator frequency, then increase the generator output and tune in the image frequency which should be audible, but weaker than the fundamental frequency. If the image can not be tuned in, the oscillator trimmer is adjusted to the wrong peak. The correct peak is the second peak of the trimmer from the closed position.

## CIRCUIT

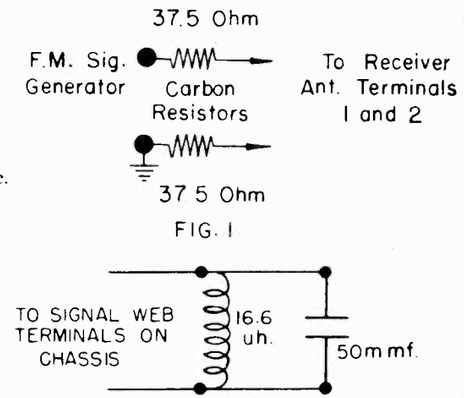



FIG. 1

CROSLEY DIVISION
AVCO MFG. CORP.

MODELS 146CS,146CS(V)

## ALIGNMENT PROCEDURE CHART

| Alignment Sequence | Signal Generator Output | | | Position of | | Adjust for Maximum Output | Remarks |
|---|---|---|---|---|---|---|---|
| | Frequency | In Series with | To | Band Switch | Tuning Dial | | |
| 1 | 455 kc. | .1 mfd. | 2nd I.F. Grid | AM | Hi. Freq. stop | 3rd I.F. | |
| 2 | 455 kc. | .1 mfd. | 1st I.F. Grid | AM | Hi. Freq. stop | 2nd I.F. | |
| 3 | 455 kc. | .1 mfd. | 19 plate section of center gang | AM | Hi. Freq. stop | 1st I.F. | Retouch 3rd, 2nd, 1st. |
| 4 | 10.7 mc. | .1 mfd. | 3rd I.F. Grid | FM | Hi. Freq. stop | Discriminator | Notes 1, 2, 3, 4 |
| 5 | 10.7 mc. | .1 mfd. | 2nd I.F. Grid | FM | Hi. Freq. stop | 3rd I.F. | Notes 1 and 5 |
| 6 | 10.7 mc. | .1 mfd. | 1st I.F. Grid | FM | Hi. Freq. stop | 2nd I.F. | Retouch 3rd I.F. |
| 7 | 10.7 mc. | .1 mfd. | 3 plate section of center gang | FM | Hi. Freq. stop | 1st I.F. | Retouch 3rd, 2nd, 1st |
| 8 | 1400 kc. | 200 mmf. | Ant. 1 | AM | 1400 kc. | BC.-Osc.-RF. & Ant. Trim | |
| 9 | 600 kc. | 200 mmf. | Ant. 1 | AM | 600 kc. | Broadcast Osc. Padder | Notes 6 and 7 |
| 10 | 6.0 mc. | 400 ohm | Ant. 1 | Police | 6.0 mc. | Police Osc., R.F. & Ant. Trimmers | |
| 11 | 18 mc. | 400 ohm | Ant. 1 | SW | 18 mc. | Sw. Osc., R.F., & Ant. Trimmers | Note 10 |
| 12 | 108.1 mc. | See Circuit Diag. Fig. 1 | Ant. 1 & 2 | FM | Hi. Freq. stop | FM-Osc. Trimmer | |
| 13 | 87.9 mc. | See Circuit Diag. Fig. 1 | Ant. 1 & 2 | FM | Low Freq. stop | FM-Osc. Core | |
| 14 | 105.9 mc. | See Circuit Diag. Fig. 1 | Ant. 1 & 2 | FM | *C-290 | FM. R.F. & Ant. Trimmer | Notes 7, 8 and 9* |

MODELS 146CS,146CS(V)

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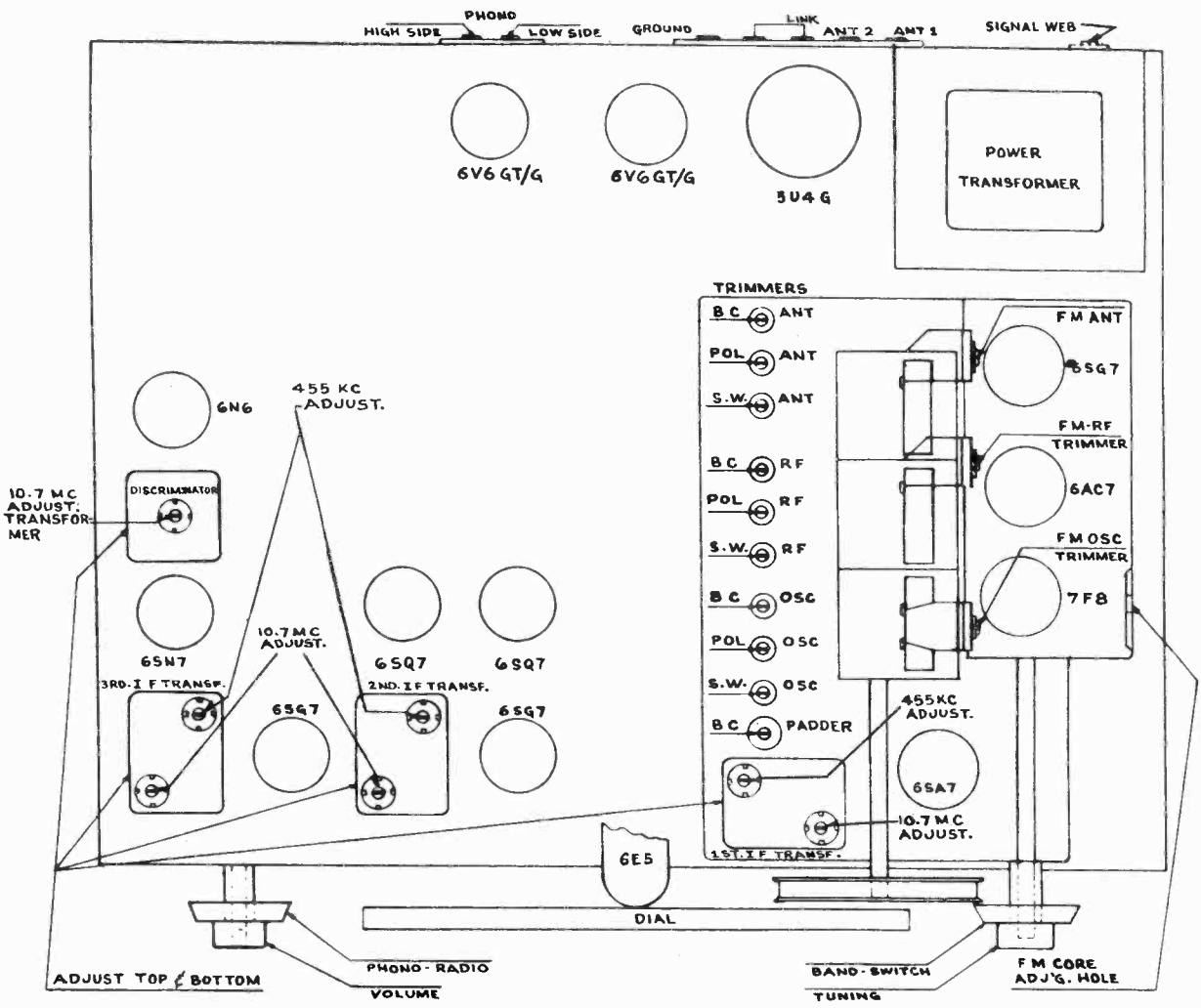



TOP VIEW OF CHASSIS SHOWING TRIMMERS AND TUBES

**TYPE:** Fourteen tube, four-band superheterodyne.

**FREQUENCY RANGE:** American Broadcast Band: 535 to 1620 kc. (Selector switch at AM position).

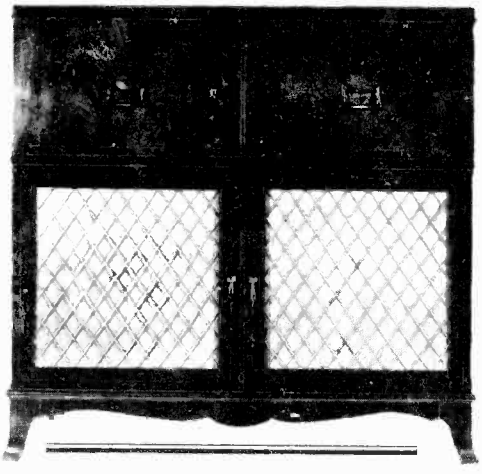
Police Band: 2.25 to 6.7 mc. (Selector switch at POLICE position).

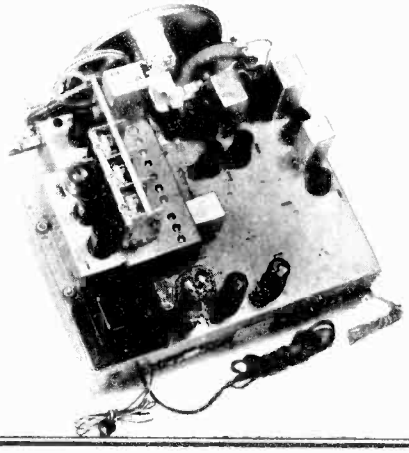
Short-wave Band: 6.7 to 18.5 mc. (Selector switch at SW position).

Frequency Modulation Band: 88.1 to 107.9 mc. (Selector switch at FM position).

**INTERMEDIATE FREQUENCY:** AM, Police and SW Bands: 455 kc. FM Band: 10.7 mc.

**POWER SUPPLY:** 60 cycle a.c. only.
**VOLTAGE RATING:** 105-125 volts.
**POWER CONSUMPTION:** 120 watts.
**POWER OUTPUT:** 18 watts maximum.





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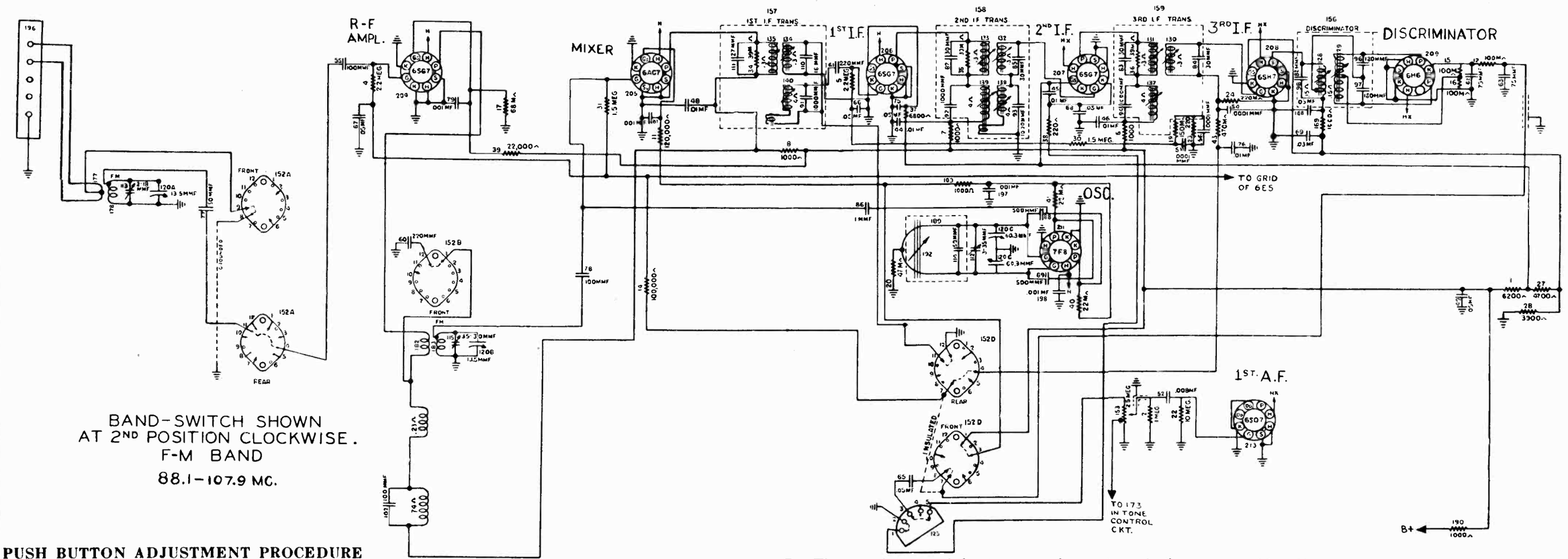
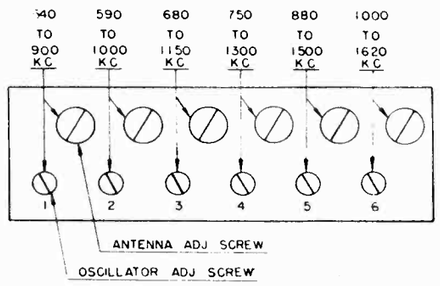
AVCO MFG. CORP.

MODELS 146CS, 146CS(V)




## PUSH BUTTON ADJUSTMENT PROCEDURE

Each of the six push buttons, for automatic tuning, has two adjusting screws by which it may be set to any nearby American broadcast station whose frequency in kilocycles is within the kilocycle range covered by that button. To gain access to these screws, carefully pull off the push button. To set No. 1 push button to a desired position, proceed as follows:




1. Turn the ANTENNA ADJ. SCREW clockwise until moderately tight, then turn the OSCILLATOR ADJ. SCREW counter-clockwise until the threaded portion extends approximately ¾ inch. **Use a small screw-driver and do not exert pressure.**
2. Turn the band selector switch to the "AM" position and manually tune in the station to which the push button is to be set. The frequency of the station selected must be between 540 and 900 kilocycles. Carefully adjust the tuning control to the point of clearest reception.
3. Turn the band selector switch to the "AUTO" position and slowly turn the OSCILLATOR ADJ. SCREW clockwise until the same station is heard. Adjust the screw for maximum volume.
4. Adjust the ANTENNA ADJ. SCREW for maximum volume.
5. Turn the band selector switch from "AUTO" to "AM" and back again to check if the adjustment has been correctly made. There should be no change in tone quality when switched from one to the other.
6. Place the tab with the call letters of the station, to which the push button has been set, in a celluloid "V" and slide it into the button from the side.
7. The remaining push buttons may be set in a similar manner. No adjustment of master tone control push buttons is required.

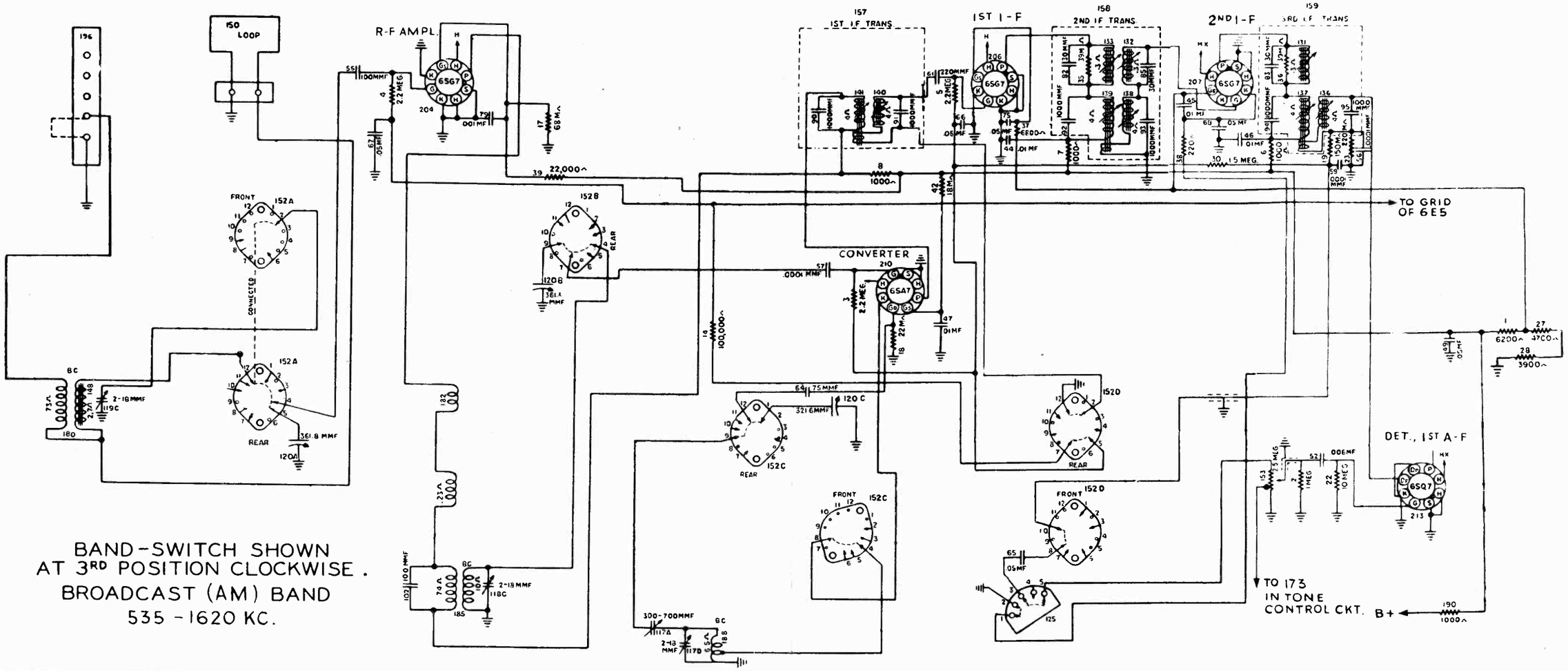
## ALIGNMENT PROCEDURE

1. This receiver has been aligned at the factory for best performance, and no attempt should be made to re-align it unless the proper test equipment is available.
2. Turn the tuning condenser to full mesh, against stop, and set the dial pointer to the reference line at the end of the dial scale.
3. Release all tone control buttons to the out position.
4. Connect the output meter across the speaker voice coil (3.2 ohms).
5. Feed an R. F. signal modulated 30% at 400 cycle to the receiver as indicated in the alignment procedure chart. Connect signal generator ground terminal to the chassis of the receiver. When F. M. generator is used, a 30% modulated signal is equal to a deviation of 22.5 kc.
6. Turn the volume control knob to maximum clockwise position and adjust the signal generator output to produce a noticeable output meter reading. Keep signal generator output as low as possible to prevent excessive AVC action in the receiver.
7. The low impedence "Signal Web" antenna should remain connected at all times. If the chassis is removed from cabinet, use a dummy antenna consisting of a 16.6 u.h. coil in parallel with a 50 mmf. capacitor (See Circuit, Fig. 2, page 5.)
8. The link must be connected in external antenna position.
9. For complete receiver alignment see Alignment Procedure Chart.

"clarified schematics"

MODELS 146CS, 146CS(V)

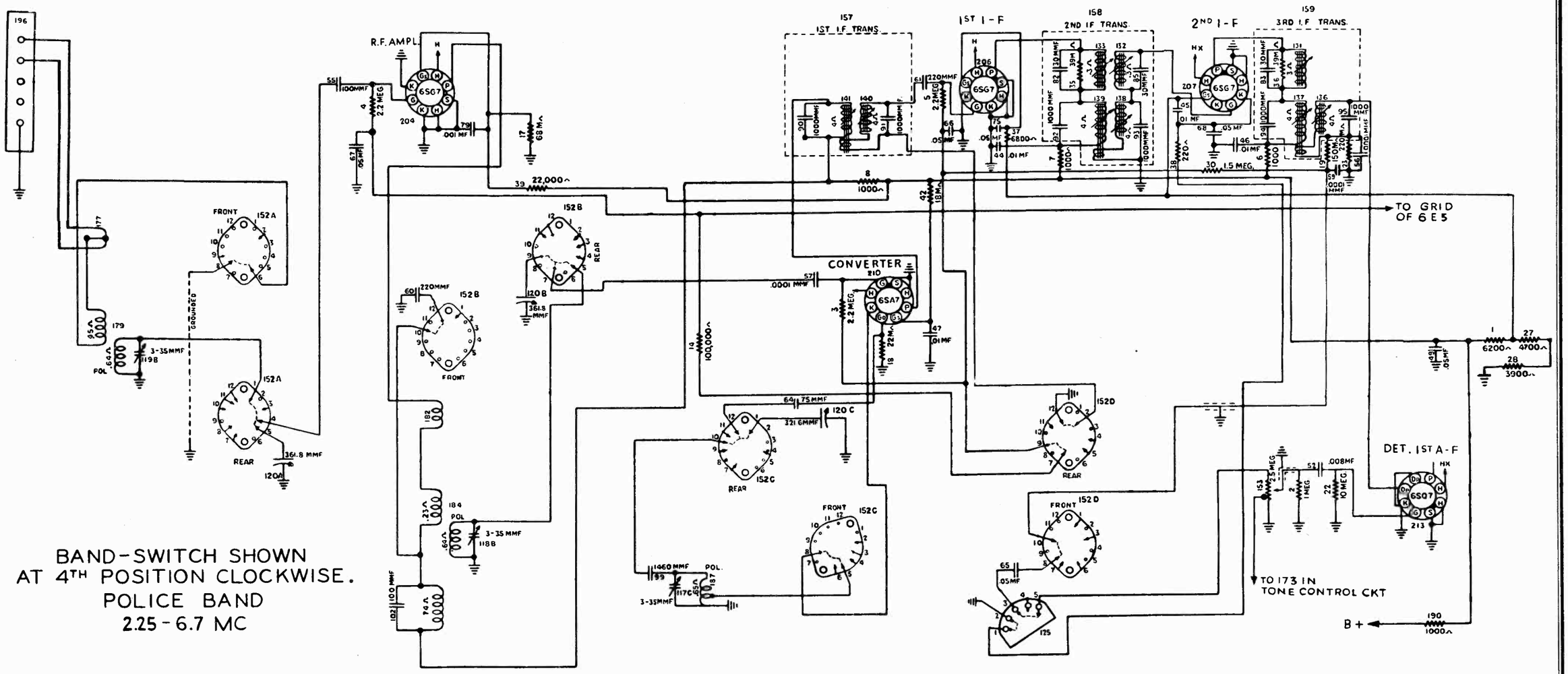
CROSLEY DIVISION
AVCO MFG. CORP.




| Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39372-10 | Resistor, 6200 ohm, 10 w. | 27 | 39373-157 | Resistor, 4,700 ohm, 1 w. | 53 | 39001-78 | Condenser, .006 mfd., 600 v., paper | 79 | B-226638-31 | Condenser, .001 mfd., 300 v., ceramic |
| 2 | 39373-92 | Resistor, 1.0 megohm, ½ w. | 28 | 39373-155 | Resistor, 3,900 ohm, 1 w. | 54 | 39001-1 | Condenser, .0001 mfd., 600 v., paper | 80 | B-226638-31 | Condenser, .001 mfd., 300 v., ceramic |
| 3 | 39373-97 | Resistor, 2.2 megohm, ½ w. | 29 | 39373-239 | Resistor, 220 ohm, 2 w. | 55 | B-226638-2 | Condenser, 100 mmf., 300 v., ceramic | 81 | B-226638-31 | Condenser, .001 mfd., 300 v., ceramic |
| 4 | 39373-97 | Resistor, 2.2 megohm, ½ w. | 30 | 39373-94 | Resistor, 1.5 megohm, ½ w. | 56 | 39001-1 | Condenser, .0001 mfd., 600 v., paper | 82 | Part of Item 158 | Condenser, 30 mmf., 500 v., ceramic |
| 5 | 39373-97 | Resistor, 2.2 megohm, ½ w. | 31 | 39373-94 | Resistor, 1.5 megohm, ½ w. | 57 | 39001-1 | Condenser, .0001 mfd., 600 v., paper | 83 | Part of Item 159 | Condenser, 30 mmf., 500 v., ceramic |
| 6 | 39373-33 | Resistor, 1,000 ohm, ½ w. | 32 | 39373-84 | Resistor, 330,000 ohm, ½ w. | 58 | 39001-1 | Condenser, .0001 mfd., 600 v., paper | 84 | Part of Item 159 | Condenser, 30 mmf., 500 v., ceramic |
| 7 | 39373-33 | Resistor, 1,000 ohm, ½ w. | 33 | 39373-84 | Resistor, 330,000 ohm, ½ w. | 59 | 39001-1 | Condenser, .0001 mfd., 600 v., paper | 85 | Part of Item 158 | Condenser, 30 mmf., 500 v., ceramic |
| 8 | 39373-33 | Resistor, 1,000 ohm, ½ w. | 34 | Part of Item 157 | Resistor, 39,000 ohm, ½ w. | 60 | 39004-9 | Condenser, 220 mmf., 500 v., mica | 86 | W-137398-2 | Condenser, 1 mmf., 500 v., silver mica |
| 9 | 39373-33 | Resistor, 1,000 ohm, ½ w. | 35 | Part of Item 158 | Resistor, 39,000 ohm, ½ w. | 61 | 39004-9 | Condenser, 220 mmf., 500 v., mica | 87 | G-131502-20 | Condenser, 680 mmf., 400 v., silver mica |
| 10 | 39373-33 | Resistor, 1,000 ohm, ½ w. | 36 | Part of Item 159 | Resistor, 39,000 ohm, ½ w. | 62 | B-226638-54 | Condenser, 75 mmf., 500 v., ceramic | 88 | G-131502-5 | Condenser, 500 mmf., 400 v., silver mica |
| 11 | 39373-75 | Resistor, 120,000 ohm, ½ w. | 37 | 39373-51 | Resistor, 6,800 ohm, ½ w. | 63 | B-226638-54 | Condenser, 75 mmf., 500 v., ceramic | 89 | G-131502-5 | Condenser, 500 mmf., 400 v., silver mica |
| 12 | 39373-74 | Resistor, 100,000 ohm, ½ w. | 38 | 39373-19 | Resistor, 220 ohm, ½ w. | 64 | B-226638-54 | Condenser, 75 mmf., 500 v., ceramic | 90 | Part of Item 157 | Condenser, 1,000 mmf., 500 v., mica |
| 13 | 39373-51 | Resistor, 6,800 ohm, ½ w. | 39 | 39373-170 | Resistor, 22,000 ohm, 1 w. | 65 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 91 | Part of Item 157 | Condenser, 1,000 mmf., 500 v., mica |
| 14 | 39373-74 | Resistor, 100,000 ohm, ½ w. | 40 | 39373-170 | Resistor, 22,000 ohm, 1 w. | 66 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 92 | Part of Item 158 | Condenser, 1,000 mmf., 500 v., mica |
| 15 | 39373-74 | Resistor, 100,000 ohm, ½ w. | 41 | 39373-170 | Resistor, 22,000 ohm, 1 w. | 67 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 93 | Part of Item 158 | Condenser, 1,000 mmf., 500 v., mica |
| 16 | 39373-74 | Resistor, 100,000 ohm, ½ w. | 42 | 39373-278 | Resistor, 18,000 ohm, 2 w. | 68 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 94 | Part of Item 159 | Condenser, 1,000 mmf., 500 v., mica |
| 17 | 39373-71 | Resistor, 68,000 ohm, ½ w. | 43 | 39373-87 | Resistor, 470,000 ohm, ½ w. | 69 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 95 | Part of Item 159 | Condenser, 1,000 mmf., 500 v., mica |
| 18 | 39373-60 | Resistor, 22,000 ohm, ½ w. | 44 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 70 | 39001-76 | Condenser, .003 mfd., 600 v., paper | 96 | Part of Item 156 | Condenser, 180 mmf., 500 v., mica |
| 19 | 39373-77 | Resistor, 150,000 ohm, ½ w. | 45 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 71 | 39001-76 | Condenser, .003 mfd., 600 v., paper | 97 | Part of Item 156 | Condenser, 180 mmf., 500 v., mica |
| 20 | 39373-67 | Resistor, 47,000 ohm, ½ w. | 46 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 72 | 39001-76 | Condenser, .003 mfd., 600 v., paper | 98 | Part of Item 156 | Condenser, 82 mmf., 500 v., silver mica |
| 21 | 39373-107 | Resistor, 10 megohm, ½ w. | 47 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 73 | 39001-11 | Condenser, .005 mfd., 600 v., paper | 99 | GC-210685-179 | Condenser, 1,460 mmf., 500 v., mica |
| 22 | 39373-107 | Resistor, 10 megohm, ½ w. | 48 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 74 | 39001-11 | Condenser, .005 mfd., 600 v., paper | 100 | GC-210685-178 | Condenser, 4,140 mmf., 500 v., mica |
| 23 | 39373-80 | Resistor, 220,000 ohm, ½ w. | 49 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 75 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 101 | GC-210685-168 | Condenser, 3,300 mmf., 500 v., mica |
| 24 | 39373-80 | Resistor, 220,000 ohm, ½ w. | 50 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 76 | 39001-13 | Condenser, .01 mfd., 600 v., paper | 102 | 39004-7 | Condenser, 100 mmf., 500 v., mica |
| 25 | 39373-80 | Resistor, 220,000 ohm, ½ w. | 51 | 39001-17 | Condenser, .05 mfd., 600 v., paper | 77 | B-226638-53 | Condenser, 50 mmf., 500 v., ceramic | 104 | B-136327-12 | Condenser, Trimmer |
| 26 | 39373-80 | Resistor, 220,000 ohm, ½ w. | 52 | 39001-78 | Condenser, .006 mfd., 600 v., paper | 78 | 39004-7 | Condenser, 100 mmf., 500 v., mica | 105 | B-136327-24 | Condenser, Trimmer |

# CROSLEY DIVISION
# AVCO MFG. CORP.

MODELS 146CS, 146CS(V)

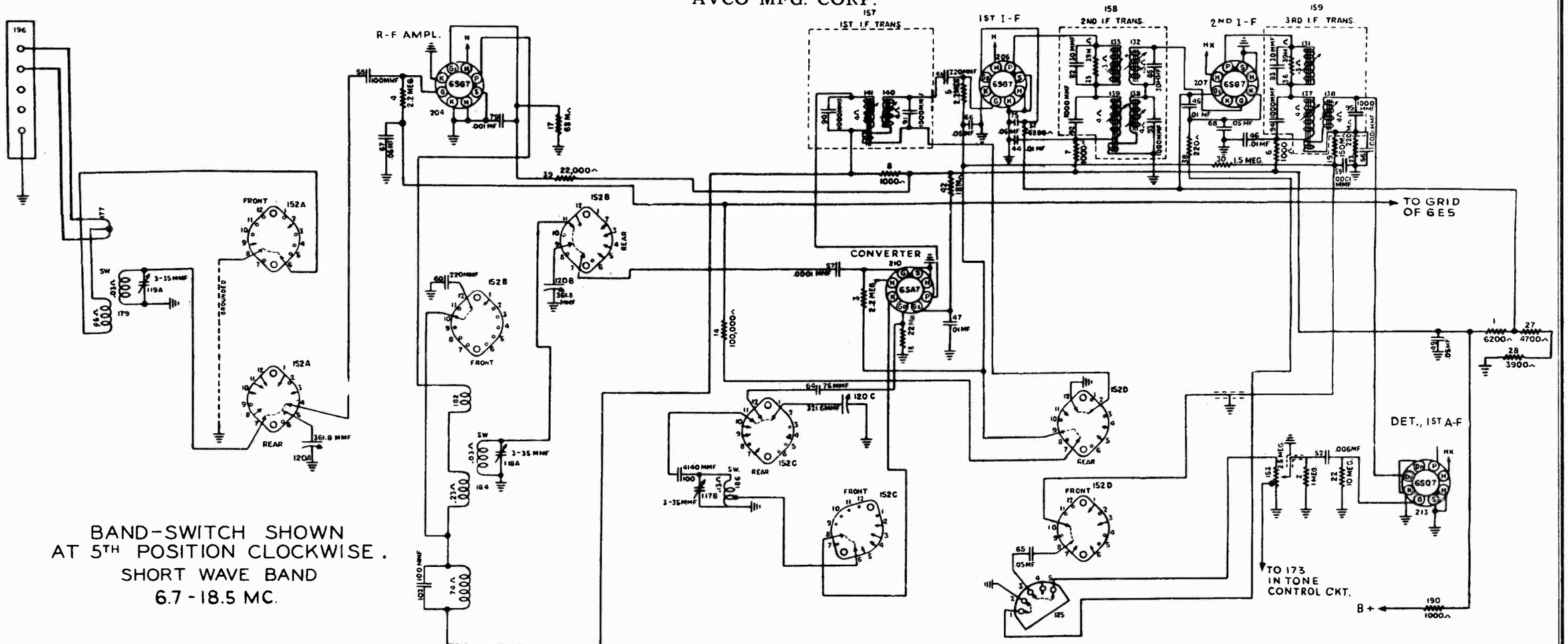



| Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 106 | B-136327-24 | Condenser, Trimmer | 121 | W-43567 | Bulb (Dial), Type 51, 7.5. v., 0.2 amp. | 142 | G-39012-7 | Iron Core (P. B. #6) | 159 | AC-136112 | Transformer, 3rd I.F. |
| 107 | B-136327-25 | Condenser, Trimmer | 122 A | B-137003 | Condenser, 40 mfd., 400 w.v. Two Section | 143 | G-39012-7 | Iron Core (P. B. #5) | 160 | D-137057 | Record Changer ("OD" Model 146CS) |
| 108 | B-136327-26 | Condenser, Trimmer | 122 B | | Condenser, 20 mfd., 25 w.v. Elec. Filter | 144 | G-39012-7 | Iron Core (P. B. #4) | 161 | AW-134089 | Coil, P.B. Oscillator, No. 2 |
| 109 | B-136327-27 | Condenser, Trimmer | 123 A | B-137002 | Condenser, 50 mfd., 400 w.v. Two Section | 145 | G-39012-7 | Iron Core (P. B. #3) | 162 | AW-134090 | Coil, P.B. Oscillator, No. 5 |
| 110 | Part of Item 157 | Condenser, 16 mmf., 500 v., ceramic | 123 B | | Condenser, 10 mfd., 300 w.v. Elec. Filter | 146 | G-39012-7 | Iron Core (P. B. #2) | 163 | AW-134091 | Coil, P.B. Oscillator, No. 6 |
| 111 | Part of Item 157 | Condenser, 27 mmf., 500 v., ceramic | 124 | W-135695 | Socket, Tube (6E5) | 147 | G-39012-7 | Iron Core (P. B. #1) | 164 | AW-134092 | Coil, P.B. Oscillator, No. 1 |
| 112 | B-136327-28 | Condenser, Trimmer | 125 | B-135870 | Switch, Phono | 148 | Part of Item 180 | Iron Core | 165 | AW-134230 | Coil, P.B. Oscillator, No. 3 |
| 113 | B-136327-29 | Condenser, Trimmer | 126 | C-132300-2 | Cable and Plug, Power | 149 | W-136778 | Cable and Plug, Power (Phono) | 166 | AW-134231 | Coil, P.B. Oscillator, No. 4 |
| 114 | Part of Item 189 | Condenser, 50 mmf., ceramic | 127 | B-135600 | Transformer, Power | 150 | W-137143 | Loop Assy., Transmission Line | 167 | C-137058 | Speaker (Less Transformer) |
| 115 | B-136327-22 | Condenser, Trimmer | 128 | Part of Item 156 | Iron Core | 151 | W-135421 | Switch, Power | 168 | 39001-17 | Condenser, .05 mfd., 600 v., paper |
| 116 | B-137001 | Transformer, Output | 129 | Part of Item 156 | Iron Core | 152 A | C-135976 | Switch, Band Change | 169 | 39373-33 | Resistor, 1,000 ohm, ½ w. |
| 117 A | W-135818 | Condenser, Trimmer Four | 130 | Part of Item 159 | Iron Core | 152 B | | Switch, Band Change Four | 170 | W-43567 | Bulb (Dial), Type 51, 7.5 v., 0.2 amp. |
| 117 B | | Condenser, Trimmer Section | 131 | Part of Item 159 | Iron Core | 152 C | | Switch, Band Change Section | | 138437-4 | Bulb (Dial), Type 51, 7.5 v., 0.2 amp. (Carton of Ten Bulbs) |
| 117 C | | Condenser, Trimmer Assy. | 132 | Part of Item 158 | Iron Core | 152 D | | Switch, Band Change | | | |
| 117 D | | Condenser, Trimmer | 133 | Part of Item 158 | Iron Core | 153 | B-135828 | Control, Volume (2.5 meg., Tap 750,000 ohm) | 171 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 118 A | W-135821 | Condenser, Trimmer Three | 134 | Part of Item 157 | Iron Core | | | | 172 | 39001-76 | Condenser, .003 mfd., 600 v., paper |
| 118 B | | Condenser, Trimmer Section | 135 | Part of Item 157 | Iron Core | * | 39368-19 | Control, Volume | 173 | 39373-71 | Resistor, 68,000 ohm, ½ w. |
| 118 C | | Condenser, Trimmer Assy. | 136 | Part of Item 159 | Iron Core | | 39370-1 | Shaft, Volume (Plug-in) | 174 | 39373-80 | Resistor, 220,000 ohm, ½ w. |
| 119 A | W-135821 | Condenser, Trimmer Three | 137 | Part of Item 159 | Iron Core | 154 | D-134946-1 | Record Changer ("SL", Model 146CS) | 175 | 39373-80 | Resistor, 220,000 ohm, ½ w. |
| 119 B | | Condenser, Trimmer Section | 138 | Part of Item 158 | Iron Core | 155 | W-135741 | Switch Assy., P. B. (Tone) | 176 | W-135742 | Switch, P.B. Tuning |
| 119 C | | Condenser, Trimmer Assy. | 139 | Part of Item 158 | Iron Core | 156 | AC-136090 | Transformer, Discriminator | 177 | AB-137433 | Coupling, F.M. Antenna |
| 120 A | C-134895 | Condenser, Variable Three | 140 | Part of Item 157 | Iron Core | 157 | AC-136073 | Transformer, 1st I.F. | 178 | AW-136737 | Coil, Antenna, Secondary |
| 120 B | | Condenser, Variable Section | 141 | Part of Item 157 | Iron Core | 158 | AC-136059 | Transformer, 2nd I.F. | 179 | AW-136411 | Coil. Antenna |
| 120 C | | Condenser, Variable Assy. | | | | | | | | | |

"clarified schematics"

MODELS 146CS, 146CS(V)

CROSLEY DIVISION
AVCO MFG. CORP.




| Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description | Item No. | Part No. | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 180 | AW-136396 | Coil, Antenna Loading | 209 | 39232-1 | Socket, Tube (6H6) | | R-138928 | Cabinet (146CS(V) using 400-12 Changer | | W-135499 | Ring (Snap), Pointer Bearing |
| 181 | AW-136726 | Choke, R.F. | 210 | 39232-1 | Socket, Tube (6SA7) | | W-135690 | Clip, Escutcheon | | W-211101 | Ring (Retaining), Socket |
| 182 | AW-136732 | Choke, R.F. Primary | 211 | W-136470 | Socket, Tube (7F8) | | W-230529 | Clip, Tube | | 39311-60 | Screw (#8-32x3/16 C. P. Headless Set) |
| 183 | AW-138245 | Coil, R.F. Secondary | 213 | 39232-1 | Socket, Tube (6SQ7) | | W-134595 | Cord, Dial Drive | | W-135752 | Screw, Escutcheon |
| 184 | AW-136406 | Coil, R.F. (S. W. & Pol.) | 214 | 39232-1 | Socket, Tube (6SQ7) | | D-136142 | Dial Glass | | W-136102 | Screw (#12-24 Hex. Hd. Ptd. Pilot Mach.) |
| 185 | AW-136362 | Coil, R. F. (B. C.) | 215 | 39204 | Socket, Tube (6V6) | | B-135970 | Disc, Indicator | | W-135350 | Shaft, Drive |
| 186 | AW-136392 | Coil, Oscillator (S. W.) | 216 | 39204 | Socket, Tube (6V6) | | D-135711 | Escutcheon | | D-136565-7 | Socket, Dial Light |
| 187 | AW-136393 | Coil, Oscillator (Pol.) | 217 | 39232-1 | Socket, Tube (5U4G) | | AW-138590 | Flywheel & Pinion Gear Assy. | | W-132322 | Spring, Chassis Mtg. |
| 188 | AW-136364 | Coil, Oscillator (B. C.) | | AC-136187 | Background Assy., Dial | | W-136656 | Gasket, Dial Glass | | W-136425 | Spring (Compression), Gear & Hub Assy |
| 189 | AW-136682 | Coil and Mtg. (H. F.) | | AW-135502 | Brackets & Bushing Assy., Pointer Pulley | | W-135581 | Gasket, Dial Lens | | W-51752 | Spring, Dial Drive Cord |
| 190 | 39371-5 | Resistor, 1,000 ohm, 10 w. | | W-41405-1 | Bushing (Headed), Chassis Mtg. or Switch Mtg. | | AW-136203 | Gear & Hub Assy. | | W-49829 | Spring (Lock) Switch Shafts |
| 191 | AW-136720 | Choke, R.F., Heater | | | | | W-45580 | Grommet (Rubber) | | W-136113 | Spring (Loop), Pointer |
| 192 | Part of Item 189 | Iron Core, F.M. Osc. | | W-41405-9 | Bushing (Headed), R.F. Unit Mtg. | | AW-137266 | Hinge Assy., Cabinet | | C-135038-4 | Strip, Terminal (2 Lug) |
| 193 | 39019-2 | Terminal Board, Phono | | B-135719 | Button (On-Off) | | B-135981 | Knob (Large) | | C-135038-23 | Strip, Terminal (7 Lug) |
| 194 | W-136316 | Tie Bar | | B-135717 | Button (Station) | | W-135989 | Knob (Small) | | C-135038-24 | Strip, Terminal (5 Lug) |
| 195 | 39373-60 | Resistor, 22,000 ohm, ½ w. | | B-135688 | Button (Tone), Treble 1 | | C-134880 | Lens, Dial | | C-135038-31 | Strip, Terminal |
| 196 | 39019-5 | Terminal Board, Antenna | | B-135714 | Button (Tone), Treble 2 | | AB-136215 | Link Assy., Toggle | | W-136760 | Spring, Grounding |
| 197 | B-226638-31 | Condenser, .001 mfd., 300 v., ceramic | | B-135715 | Button (Tone), Treble 3 | | AB-134935 | Needle, Floating Jewel Assy. | | W-137430 | Spring, Static |
| 198 | B-226638-31 | Condenser, .001 mfd., 300 v., ceramic | | B-135694 | Button (Tone), Bass 1 | | W-132366-2 | Nut (Locking), Iron Core | | C-135693 | Support, Dial Lens |
| 199 | 39373-33 | Resistor, 1,000 ohm, ½ w. | | B-135699 | Button (Tone), Bass 2 | | W-135580 | Nut (Special), Escutcheon | | AB-136283 | Switch Assy. (Complete), Push Button |
| 200 | 138927 | Record Changer (400-12, Model 146CS(V) | | B-135716 | Button (Tone), Bass 3 | | B-135857 | Pointer, Dial | | AB-136233 | Toggle Assy., Double |
| 204 | 39232-5 | Socket, Tube (6SG7) | | W-136168 | Call Letter Sheet | | B-137288 | Pull (Handle), Cabinet | | W-134916 | Washer (Spring), Indicator Disc |
| 205 | 39232-5 | Socket, Tube (6AC7) | | W-136144 | Call Letter Covers | | B-137286 | Pull (Knob), Cabinet | | | |
| 206 | 39232-5 | Socket, Tube (6SG7) | | R-137056-1 | Cabinet (146 CS using "SL" Changer) | | AW-136310 | Pulley & Sleeve Assy. | | | |
| 207 | 39232-1 | Socket, Tube (6SG7) | | R-137056-2 | Cabinet (146CS using "OD" Changer) | | W-51071 | Ring (Retaining), Indicator Disc | | | |
| 208 | 39232-5 | Socket, Tube (6SH7) | | | | | | | | | |

*These parts will replace the original equipment parts.