



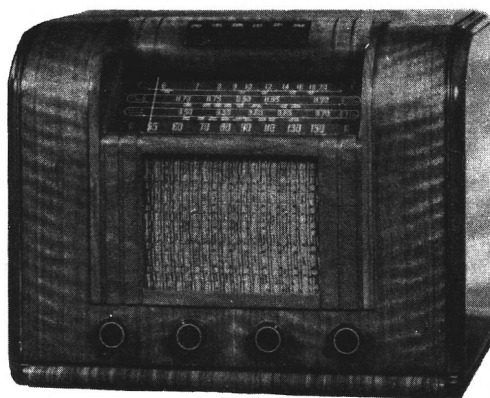
# RCA Victor

## MODEL A24

Six-Tube, Four-Band, A-C, Superheterodyne Receiver

### TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



#### Electrical and Mechanical Specifications

##### FREQUENCY RANGES

Standard Broadcast "A" ..... 540-1570 k.c.  
 Short Wave "C" ..... 5700-20,000 k.c.  
 31 Meter Spread Band ..... 9,450-9,700 k.c.  
 25 Meter Spread Band ..... 11,680-11,920 k.c.  
 Intermediate Frequency ..... 455 k.c.

##### TUBE COMPLEMENT

(1) TYPE-6SK7 ..... R.F. Amplifier  
 (2) TYPE-6SA7 ..... First Detector—Oscillator  
 (3) TYPE-6SK7 ..... Intermediate Amplifier  
 (4) TYPE-6SQ7 ..... Second-Detector, A.V.C., and A-F Amplifier  
 (5) TYPE-6F6G ..... Power Output  
 (6) TYPE-5Y4-G ..... Full-Wave Rectifier  
 Pilot Lamp (2) ..... Mazda 51, 6.3 volts, 0.2 amp.

##### POWER OUTPUT RATING

Undistorted ..... 2 watts  
 Maximum ..... 4.5 watts

##### LOUDSPEAKER

Type CRL-526-1 ..... 6-inch Electrodynamic  
 Voice-Coil Impedance ..... 3.8 ohms at 400 cycles

##### POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 75 watts  
 Rating B ..... 105-125 volts, 25-60 cycles, 75 watts

##### CABINET DIMENSIONS

Height ..... 12 13/16 inches  
 Width ..... 16 1/2 inches  
 Depth ..... 9 1/16 inches

Tuning Drive cord length 49" ..... Ratio 12 to 1

#### General Description

Model A-24 is a six tube, four band, table type superheterodyne receiver with six push buttons designed to cover the standard broadcast range, and three short wave bands. Features of design include:— built in loop antenna for broadcast reception; removable capacity

type short wave antenna; magnetite-core I.F. transformers and oscillator coils; automatic volume control; three position tone control; edge lighted straight line dial; phono input socket and a 6 inch dust-proof Electrodynamic loudspeaker.

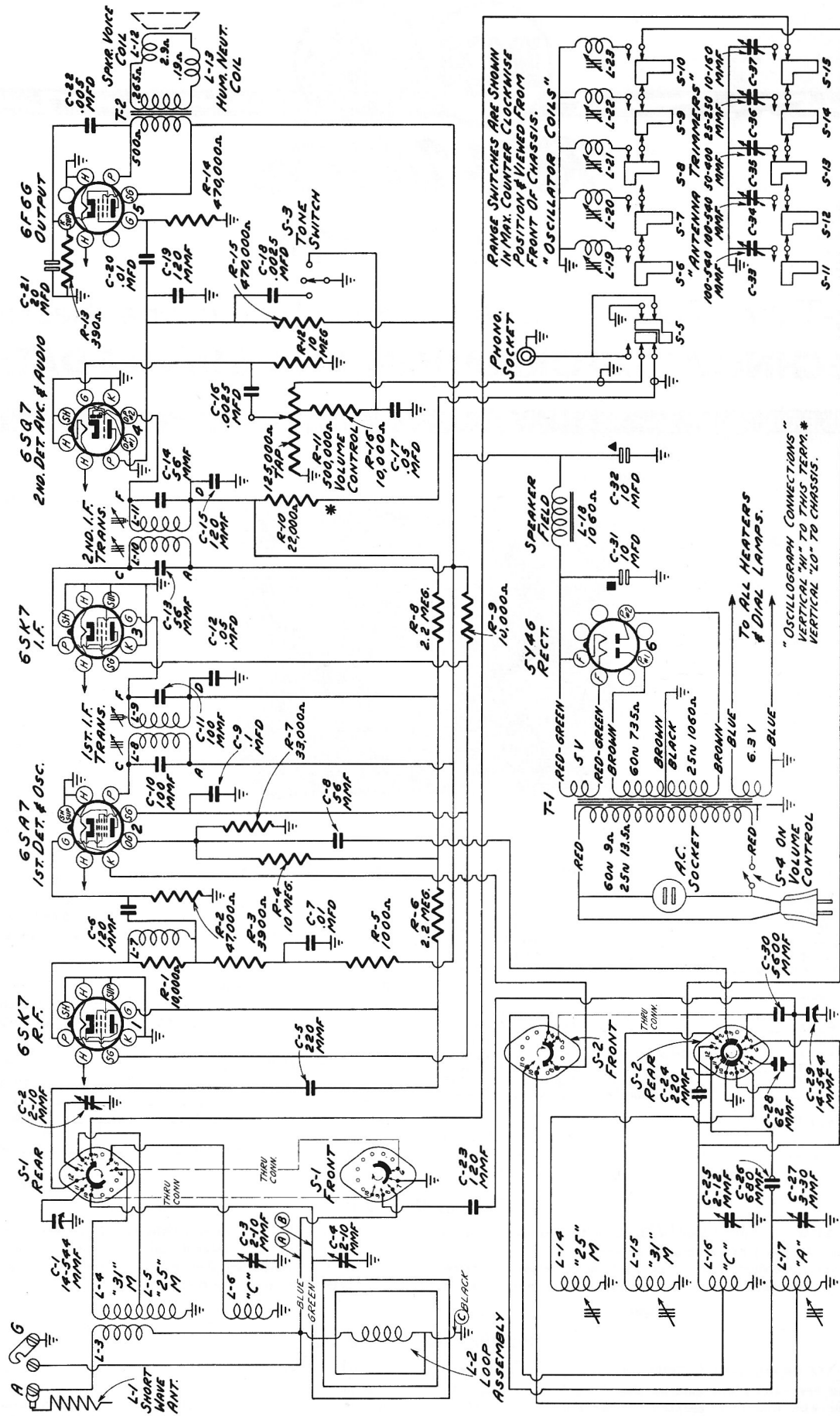
#### Miscellaneous Service Data

##### CAPACITY TYPE SHORT-WAVE ANTENNA:—

To obtain best results this antenna should be removed from the cabinet, the wire unwound, dropped to the floor and the form replaced in its receptacle.

##### RECORD PLAYER ATTACHMENT:—

A jack is provided on the rear of the push button switch for connection of a Record Player attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.



**Figure 1.—Schematic Circuit Diagram.**

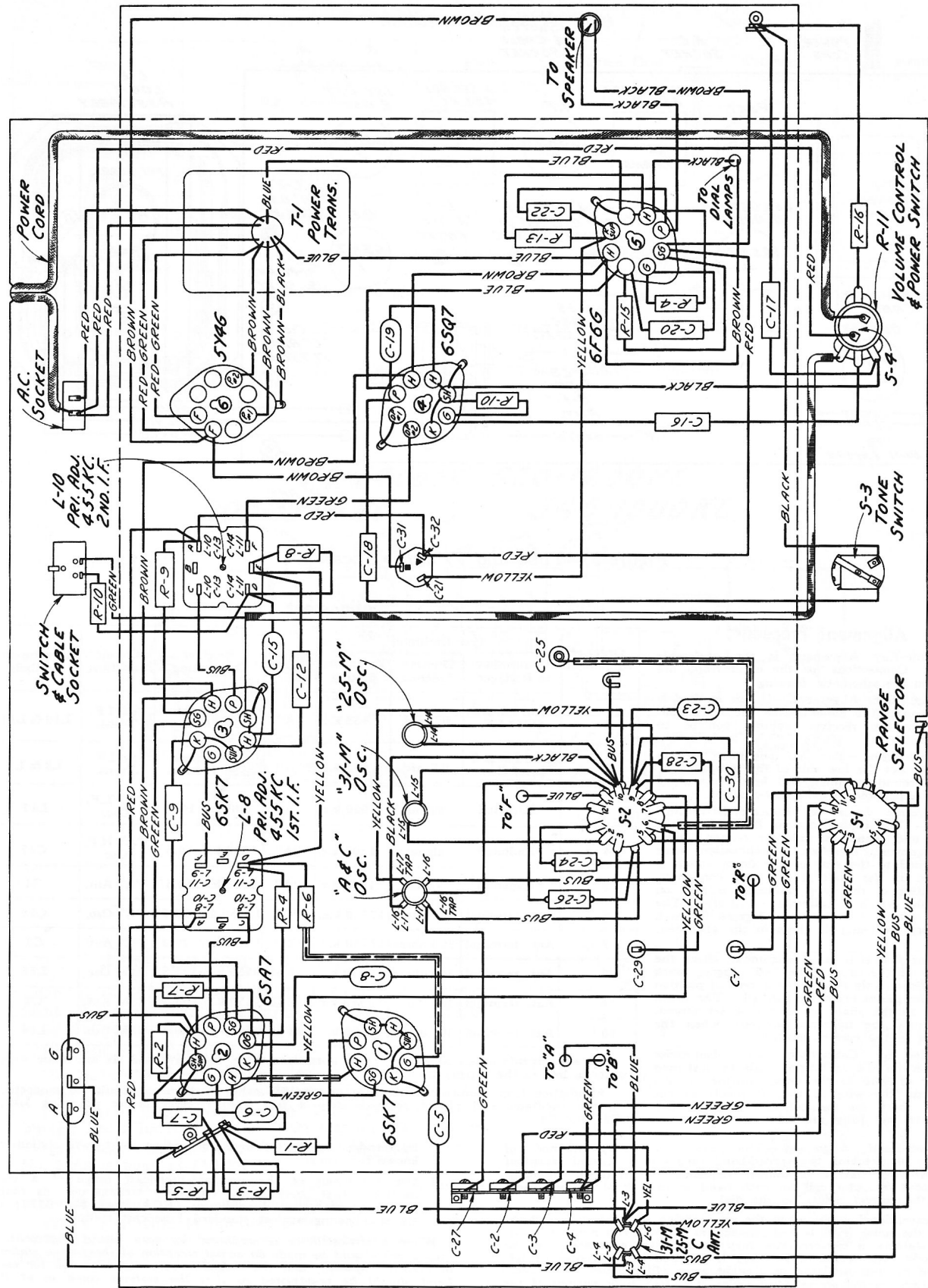


Figure 2.—Chassis Wiring Diagram.

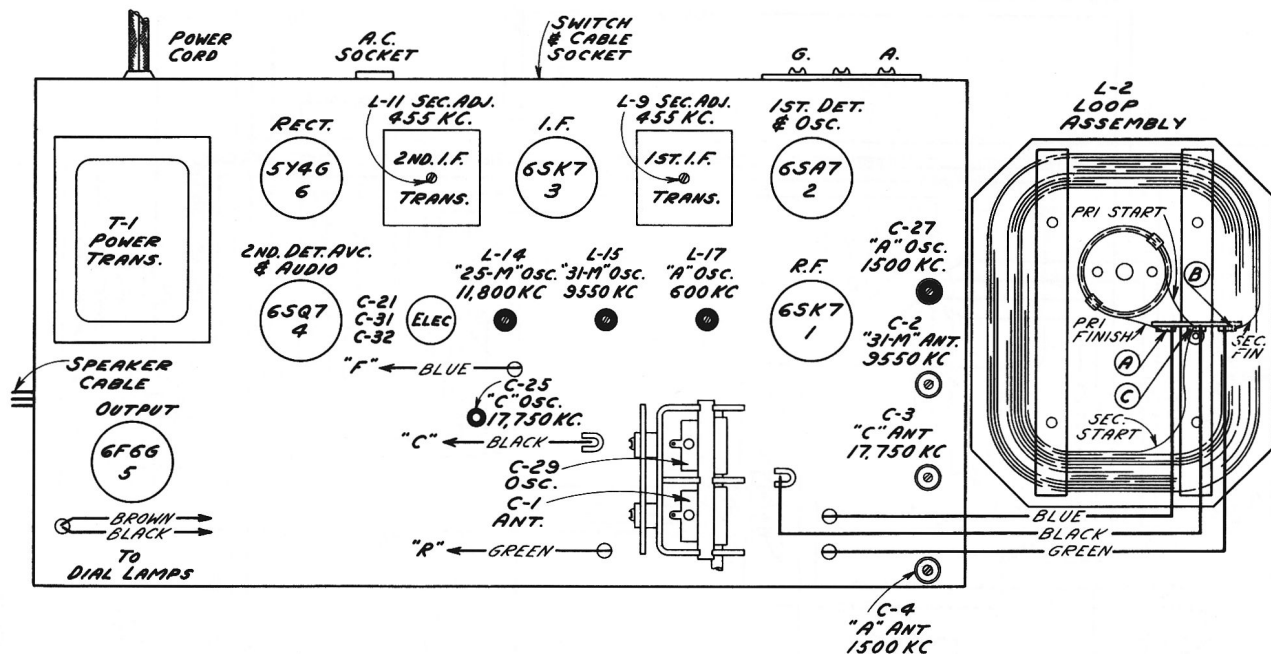


Figure 3.—Tube and Trimmer Locations.

### Alignment Chart

#### Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° degree mark on the drum scale must be in a vertical position when the plates are fully meshed. The drum is held to the shaft by means of set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band scales. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies)

| Order of Alignment | Test Oscillator          |               |                   | Range Selector | Receiver Dial Setting     | Circuit to Adjust | Adjustment Symbols |
|--------------------|--------------------------|---------------|-------------------|----------------|---------------------------|-------------------|--------------------|
|                    | Connection to Receiver   | Dummy Antenna | Frequency Setting |                |                           |                   |                    |
| 1                  | Grid Pin #4<br>6SK7 I.F. | .01 mfd.      | 455 k.c.          | "A"            | No Signal<br>550-750 k.c. | 2nd I.F. Trans.   | L10 & L11          |
| 2                  | Grid Pin #8<br>6SA7 Con. | .01 mfd.      | 455 k.c.          | "A"            | No Signal<br>550-750 k.c. | 1st I.F. Trans.   | L8 & L9            |
| 3                  | *Radiated                | signal        | 600 k.c.          | "A"            | 600 k.c. 147°             | "A" L.F. Osc.     | L17                |
| 4                  | *Radiated                | signal        | 1500 k.c.         | "A"            | 1500 k.c. 19.5°           | "A" H.F. Osc.     | C27                |
| 5                  | *Radiated                | signal        | 1500 k.c.         | "A"            | 1500 k.c. 19.5°           | "A" Ant.          | C4                 |
| 6                  | Ant. terminal            | 300 ohms      | 17750 k.c.        | "C"            | 17750 k.c. 28.5°          | "C" Osc.          | C25                |
| 7                  | Ant. terminal            | 300 ohms      | 17750 k.c.        | "C"            | 17750 k.c. 28.5°          | "C" Ant.          | C3                 |
| 8                  | Ant. terminal            | 300 ohms      | 9550 k.c.         | 31 M           | 9550 k.c. 103.5°          | 31M Osc.          | L15                |
| 9                  | Ant. terminal            | 300 ohms      | 9550 k.c.         | 31 M           | 9550 k.c. 103.5°          | 31M Ant.          | C2                 |
| 10                 | Ant. terminal            | 300 ohms      | 11800 k.c.        | 25 M           | 11800 k.c. 89.5°          | 25M Osc.          | L14                |

All adjustments indicated above except operations three, four, five and six are made with antenna link in the (open) position.

\*Radiation loop comprising two turns of wire 18 inches in diameter should be connected to test oscillator and placed approximately 4 feet from receiver before adjusting L17, C27 and C4.

by zero-bearing the test-oscillator against short-wave stations of known frequency.

2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572) or by zero-beating against standard broadcast stations.

When a test-oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

**NOTE:**—All final spread band adjustments should be made with the chassis fastened in the cabinet and the pointer accurately aligned to the dial.

## Radiotron Socket Voltages

| Type | Function                     | Plate | Screen Grid | Cathode | Heater |
|------|------------------------------|-------|-------------|---------|--------|
| 6SK7 | R.F. Amplifier               | 200 V | 100 V       | —       | 6.3    |
| 6SA7 | Converter                    | 250 V | 100 V       | —       | 6.3    |
| 6SK7 | I.F. Amplifier               | 250 V | 100 V       | —       | 6.3    |
| 6SQ7 | 2nd Det. A.V.C. Audio        | 65 V  | —           | —       | 6.3    |
| 6F6G | Power Output                 | 232 V | 250 V       | 14      | 6.3    |
| 5Y4G | A.C. Voltage per plate 310 V |       |             |         | 5.0    |

Above values hold within plus or minus 20% when measured with a 1000 ohm per volt meter on a line voltage of 115 volts.

\* Actual measured voltage may be lower, depending on the voltmeter loading.

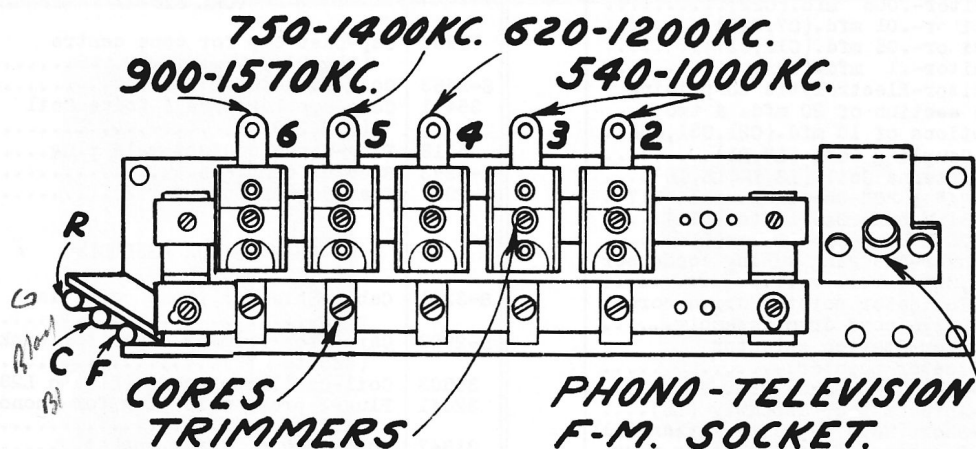


Fig. 4

## Push Button Adjustment

The push buttons may be adjusted for any five stations on the "A" band. The preferable arrangement is to adjust for stations in order of frequency.

Proceed as follows:—

(1) Turn "Range selector" to "A" position and manually tune in the first station, say 560 k.c.

(2) Turn "Range selector" to "P.B." position, press button No. 2 located second from left on front panel.

(3) Referring to Figure 4, adjust core and trimmer No. 2 for a peak at 560 k.c.

(4) Proceed to adjust the other four stations in order of frequency, as outlined above.

When a station is inaudible due to reception conditions a test oscillator should be substituted for the station signal.

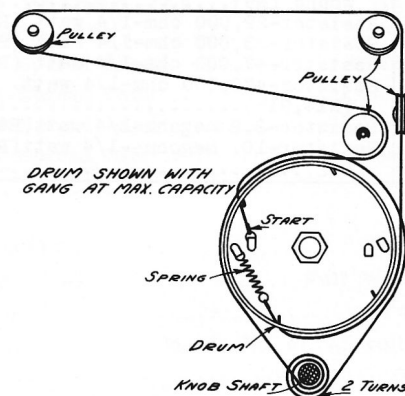


Figure 5.—Dial Drive Cord.



# REPLACEMENT PARTS FOR MODEL A-24

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK NO.                  | DESCRIPTION                                                                                          | STOCK NO.                                | DESCRIPTION                                             |
|----------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------|
| <b>RECEIVER ASSEMBLIES</b> |                                                                                                      |                                          |                                                         |
| 34025                      | Board-Ant.and Ground Terminal Board                                                                  | S-3155                                   | Shaft-Station selector drive shaft                      |
| S-3119                     | Capacitor-Adjustable trimmer bank comprising one of 3-30 mmfd. and three of 2-10 mmfd.(C2,C3,C4,C27) | S-2824                                   | Socket-A.C. Socket.....                                 |
| 12714                      | Capacitor-Adj.Trimmer 2-12 mmfd.(C25).....                                                           | 31364                                    | Socket-Dial lamp socket.....                            |
| 12723                      | Capacitor- 56 mmfd.(C8).....                                                                         | 36422                                    | Socket-Push button cable socket...                      |
| S-3123                     | Capacitor- 62 mmfd.(Temp.Comp.) (C28).....                                                           | 31319                                    | Socket-Tube socket.....                                 |
| 12724                      | Capacitor- 120 mmfd.(C6,C15,C19,C23).....                                                            | 30585                                    | Spring-Dial cord spring (Pkg.2)...                      |
| 12694                      | Capacitor- 220 mmfd.(C5).....                                                                        | S-3286                                   | Switch-Range switch (S1,S2).....                        |
| S-2895                     | Capacitor- 220 mmfd.(Close Tol.) (C24).....                                                          | S-3285                                   | Switch-Tone switch (S3).....                            |
| S-2988                     | Capacitor- 680 mmfd.(Close Tol.) (C26).....                                                          | 35636                                    | Transformer-1st I.F. Transformer (L8,L9,C10,C11).....   |
| 13895                      | Capacitor-5600 mmfd.(C30).....                                                                       | 35628                                    | Transformer-2nd I.F. Transformer (L10,L11,C13,C14)..... |
| 34459                      | Capacitor-.0025 mfd.(C16,C18).....                                                                   | S-2548                                   | Transformer-Power 110/125 volt, 50/60 cycle (T1).....   |
| 33584                      | Capacitor-.005 mfd.(C22).....                                                                        | 33618                                    | Transformer-Power 110/125 volt, 25/60 cycle (T1).....   |
| 4937                       | Capacitor-.01 mfd.(C7,C20).....                                                                      | S-3295                                   | Volume Control & Power switch (R11,S4).....             |
| 32787                      | Capacitor-.05 mfd.(C12,C17).....                                                                     | <b>SPEAKER ASSEMBLIES</b><br>(CRL 526-1) |                                                         |
| 4839                       | Capacitor-.1 mfd.(C9).....                                                                           | 32907                                    | Cap-Dust cap for cone centre (Pkg.5).....               |
| 32240                      | Capacitor-Electrolytic comprising one section of 20 mfd. & two sections of 10 mfd.(C21,C31,C32).     | S-2463                                   | Coil-Field coil (L18).....                              |
| 35876                      | Coil-Coupling Coil (L7,R1).....                                                                      | 35441                                    | Cone-Speaker Cone & Voice Coil (L12,L13).....           |
| S-3289                     | Coil-Antenna Coil (L3,L4,L5,L6)....                                                                  | 5118                                     | Plug-Three contact male plug.....                       |
| S-3290                     | Coil-"A" & "C" Oscillator(L16,L17).                                                                  | S-3293                                   | Speaker complete.....                                   |
| S-3291                     | Coil-31 M band Oscillator(L15).....                                                                  | S-2377                                   | Transformer Output (T2).....                            |
| S-3292                     | Coil-25 M band Oscillator(L14).....                                                                  | <b>PUSH BUTTON ASSEMBLY</b>              |                                                         |
| S-3149                     | Condenser-Two gang tuning condenser (C1,C29).....                                                    | S-3241                                   | Cable-Shielded phono cable less plug.....               |
| S-3383                     | Cord-Indicator pointer drive cord..                                                                  | S-2908                                   | Capacitor-Trimmer capacitor bank (C33 to C37).....      |
| 35627                      | Drum-Drive cord drum assembly.....                                                                   | 35803                                    | Coil-Oscillator coil (L19 to L23).                      |
| 35648                      | Indicator-Station selector indicator pointer.....                                                    | 32641                                    | Plug-3 prong male plug for Phono cable.....             |
| 11765                      | Lamp-Dial lamp Mazda #51.....                                                                        | 31347                                    | Socket-Phono input socket.....                          |
| S-3288                     | Loop-Antenna Loop assembly (L2)....                                                                  | S-2911                                   | Switch-Push Button Switch Assembly (S5 to S10).....     |
| S-3105                     | Loop-Short Wave capacity antenna(L1)                                                                 | <b>MISCELLANEOUS ASSEMBLIES</b>          |                                                         |
| 5119                       | Plug-3 contact female speaker plug.                                                                  | 35883                                    | Button-Station selector push button                     |
| 35641                      | Pulley-Dial cord pulley.....                                                                         | S-3284                                   | Dial-Station selector dial scale..                      |
| 33726                      | Retainer-Drive shaft "C" Washer (Pkg.5).....                                                         | S-3101                                   | Knob-Volume or tuning control.....                      |
| 34373                      | Retainer-Pulley "C" Washer (Pkg.5).                                                                  | S-3287                                   | Knob-Tone or range switch.....                          |
| 31388                      | Resistor-390 ohm-1 watt (R13).....                                                                   | S-3053                                   | Marker-Push button call letter marker (1 set).....      |
| 14720                      | Resistor-1000 ohm-1/4 watt(R5).....                                                                  | 30900                                    | Spring-Knob retaining spring(Pkg.5)                     |
| 30694                      | Resistor-3900 ohm-1/2 watt(R3).....                                                                  | 34053                                    | Spring-Push button retaining spring (Pkg.5).....        |
| 14559                      | Resistor-10,000 ohm-1/4 watt(R16)..                                                                  | S-2542                                   | Tool-Push button tuning set-up tool                     |
| S-2587                     | Resistor-10,000 ohm-4 watt wire-wound (R9).....                                                      |                                          |                                                         |
| 13998                      | Resistor-22,000 ohm-1/4 watt (R10).                                                                  |                                          |                                                         |
| 12454                      | Resistor-33,000 ohm-1/4 watt (R7)..                                                                  |                                          |                                                         |
| 12412                      | Resistor-47,000 ohm-1/4 watt (R2)..                                                                  |                                          |                                                         |
| 12285                      | Resistor-470,000 ohm-1/4 watt (R14,R15).....                                                         |                                          |                                                         |
| 12679                      | Resistor-2.2 megohm-1/4 watt(R6,R8)                                                                  |                                          |                                                         |
| 13601                      | Resistor-10. megohm--1/4 watt(R4,R12).....                                                           |                                          |                                                         |