

## Hallicrafters, Inc.

**Model:** 414

**Chassis:**

**Year:** Pre 1950

**Power:**

**Circuit:**

**IF:**

**Tubes:**

**Bands:**

### Resources

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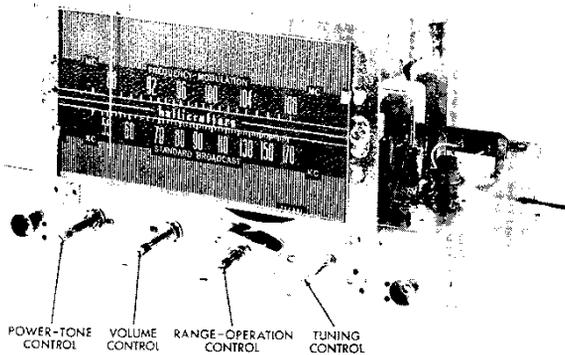
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MODEL 414

**GENERAL**

- Tubes . . . . . Ten plus rectifier
- Speaker . . . . . 12 inch PM
- Voice Coil Impedance . . . 6 ohms
- Antenna . . . . . Built in loop, "BC"  
Built in dipole, "FM"  
Provisions for external antennas
- Tuning . . . . . Manual
- Tuning Range . . . . . Broadcast 540 kc - 1750 kc  
Frequency Modulation 88 mc - 108 mc
- Intermediate Frequency . . 455 kc/21.75 mc.
- Power Supply . . . . . 105-125 V. 50/60 cycles AC
- Power Consumption . . . . 90 Watts (110 watts with changer)

When making the alignment adjustments set the tone control at NORMAL and the volume control at maximum volume. Use just enough signal generator output to obtain the results indicated on the chart.



92X421

**RESTRINGING DIAL CORD**

Restring the dial drive with 30 lb test dial cord. Tie one end to the tension spring and follow the sequence outlined in Fig. 1. Stretch the tension spring and tie the end of the cord securely to the spring as shown.

Set the tuning condenser at maximum capacity (closed), attach the pointer to the string and line it up with the left hand index mark on the dial scale.

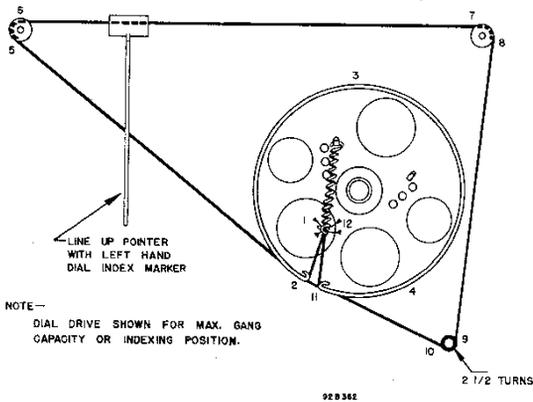


Fig. 1. Dial cable stringing procedure.

**ALIGNMENT PROCEDURE**

The receiver is equipped with AUTOMATIC FREQUENCY CONTROL on the FM band to compensate for oscillator drift and improve the tuning function on the FM band. The correction factor is approximately 5 times: AFC takes hold 250 kc before the station frequency is reached and releases before tuning 500 kc beyond the station frequency when receiving a 1000 micro-volt signal.

The standard RMA dummy specified in the alignment chart consist of a 200 mmf condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

**REPLACING LAMPS**

Refer to Fig. 7 for the location of two dial lamps used in the receiver. To gain access to defective lamps, reach in through the rear of the cabinet and unclip the dial lamp socket by compressing the side springs. The socket may then be brought out into the open to change the defective lamp. The lamp in the record changer compartment may be reached directly through the compartment door. Replace all lamps with 6-8 V. Mazda #44 (Blue bead) lamps or equivalent.

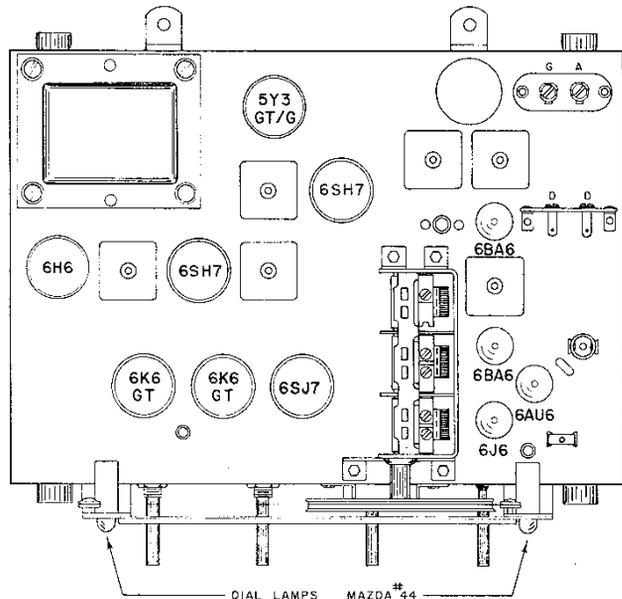


Fig. 7. Top view, location of tubes and dial lamps.

**ALIGNMENT CHART**

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Pos.	Radio Dial Setting	Adjust	Remarks
1	0.01 mfd. cap.	To high cap. stator of center section.	455 kc	"BC"	1000 kc	A,B,C, D,E	Adjust for max. output.
2	0.01 mfd. cap. in series with a 4700 ohm carbon resistor.	To low cap. stator of center section.	21.75 mc	"FM"	90 mc	F,G,H, I,J,K	Adjust for max. voltage as measured between pin #3 of 6H6 and ground with an electronic volt meter.
3	0.01 mfd. cap.	See step 2.	21.75 mc	"FM"	90 mc	L	Adjust for zero voltage as measured between the junction of R27 and R28 and ground with an electronic volt meter.
4	Std RMA dummy	To terminals "A" and "G" on terminal strip TS-2.	1500 kc	"BC"	1500 kc	*M,N,O	Adjust for max. output
5	Two 150 ohm carbon resistors	To terminals "D-D" on terminal strip TS-1.	105 mc	"FM"	105 mc	*P,Q	Adjust for max. voltage as measured across R24 with an electronic volt meter.

\*Note - Calibration adjustments.

\*\*Note - The intermediate frequency for the FM channel in this receiver is 21.75 megacycles. This is a value which has been standardized by the Radio Manufacturers Association for the television sound channel. A "TLV" position on the band switch and a suitable connector (on the chassis, near the tuning condenser) have been provided so that this receiver can be used with a relatively inexpensive video unit for high-quality television reception.

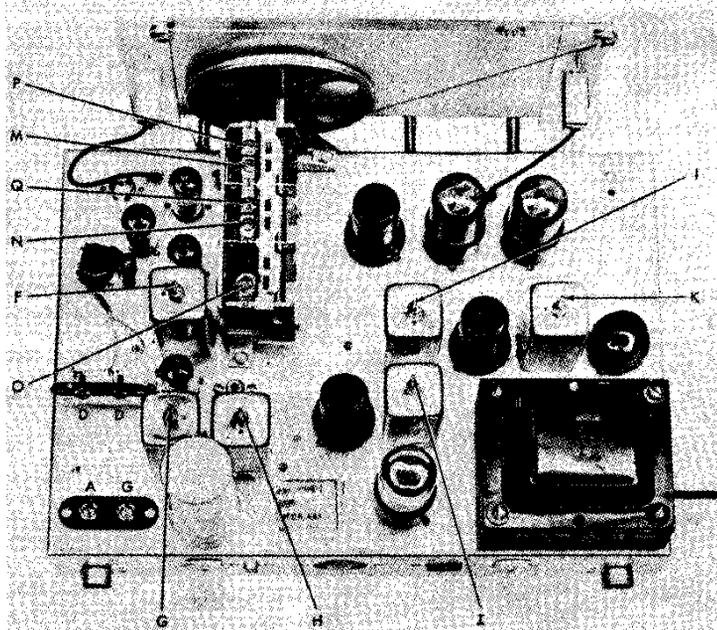


Fig. 2. Alignment adjustments, top view.

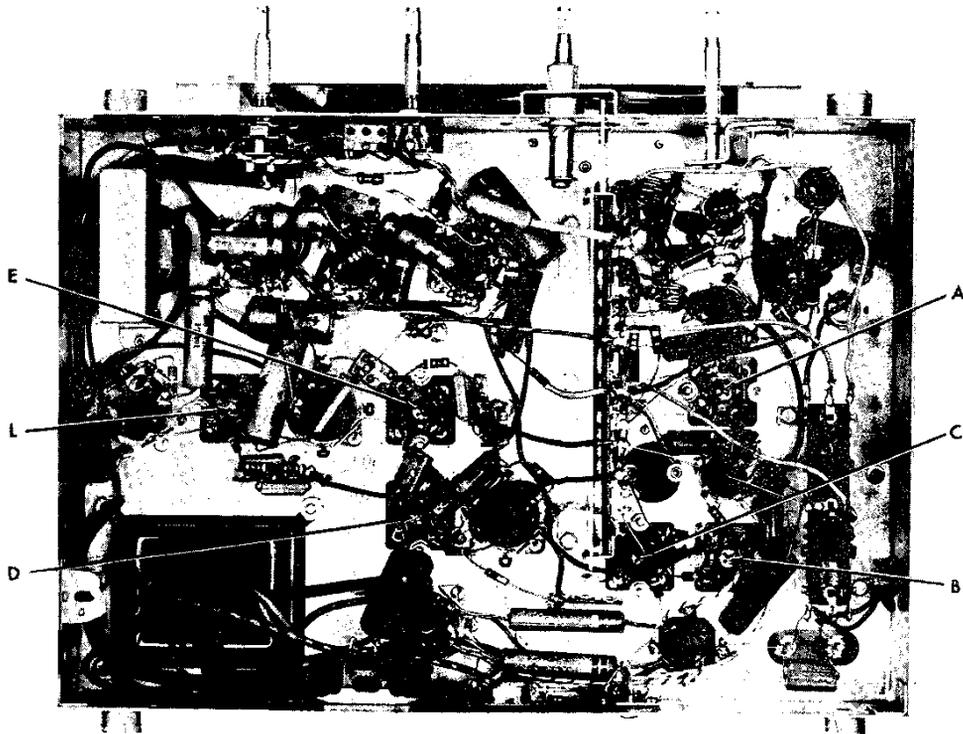


Fig. 3. Alignment adjustments, bottom view. (92X410)

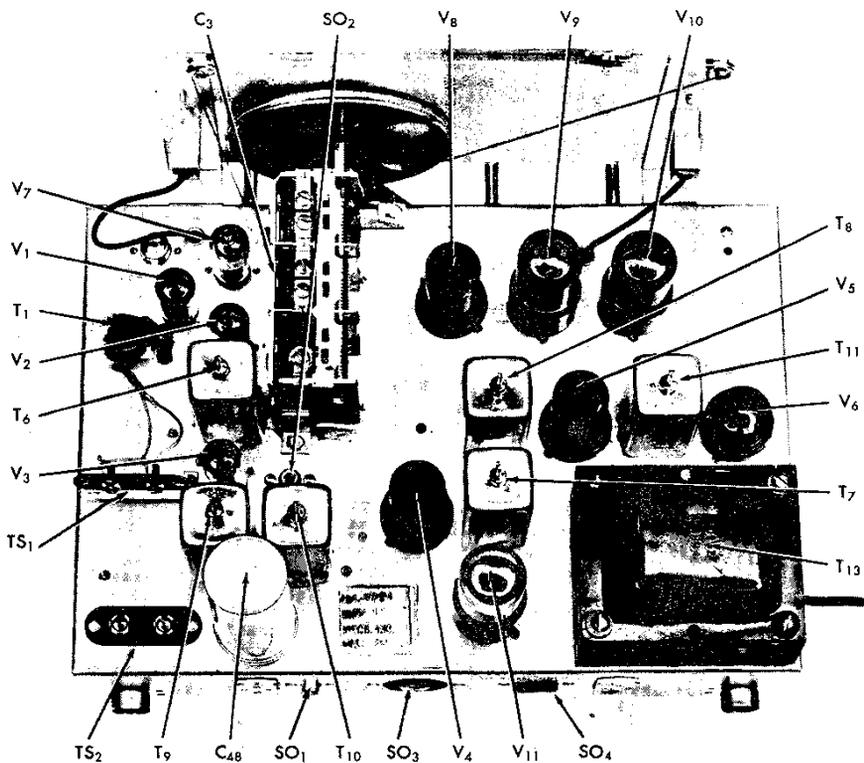
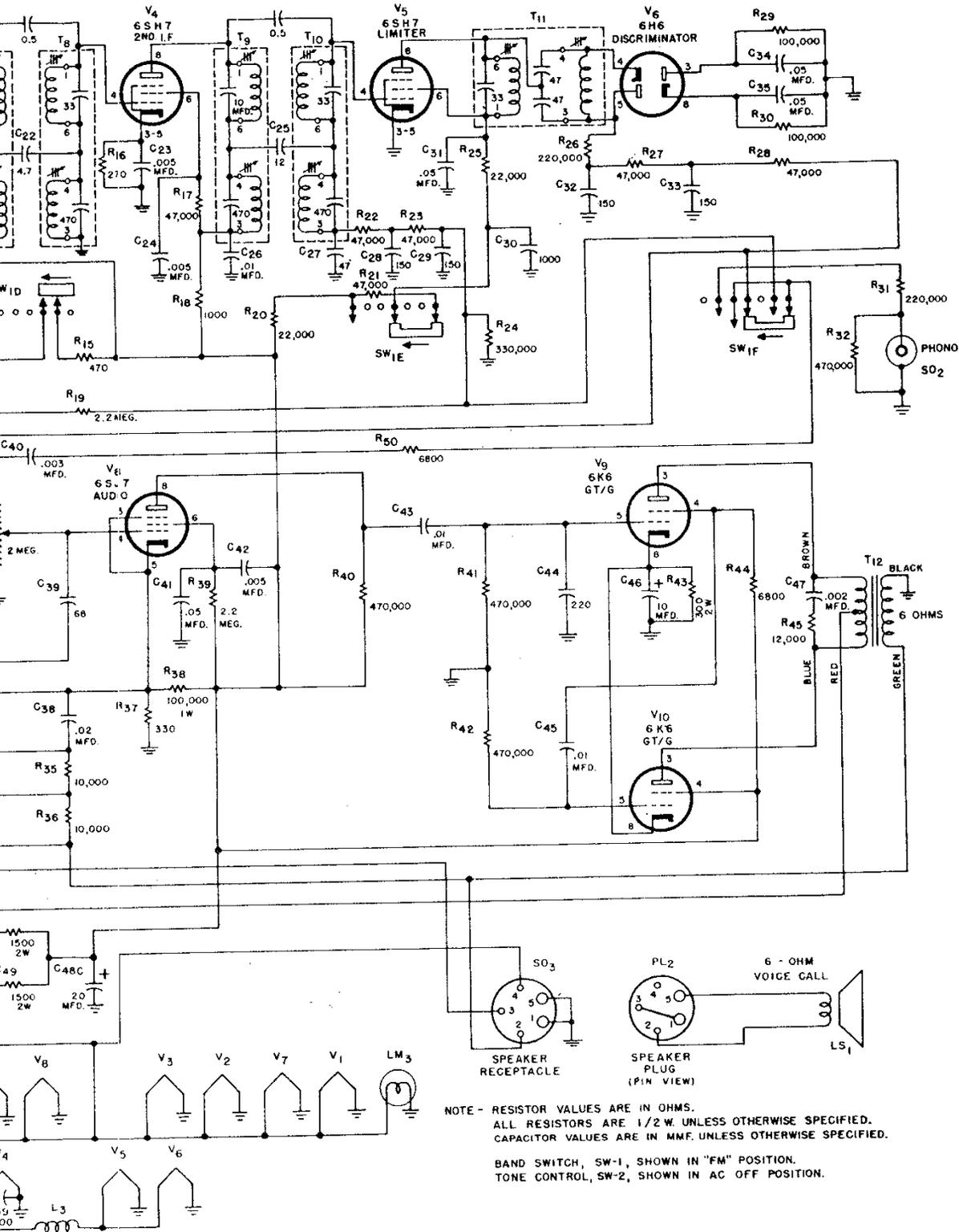


Fig. 4. Component location, top view.









NOTE - RESISTOR VALUES ARE IN OHMS.  
 ALL RESISTORS ARE 1/2 W. UNLESS OTHERWISE SPECIFIED.  
 CAPACITOR VALUES ARE IN MMF. UNLESS OTHERWISE SPECIFIED.

BAND SWITCH, SW-1, SHOWN IN "FM" POSITION.  
 TONE CONTROL, SW-2, SHOWN IN AC OFF POSITION.

## THE HALLICRAFTERS CO.

MODEL 414

## SERVICE PARTS LIST

Ref. No.	Description	Hallcrafters Part Number
<b>CONDENSERS</b>		
C-1,7,15,19	100 mmf. 500 V., ceramic	47B20101M5
C-2	100 mmf. 500 V., mica	CM20A101M
C-3	Tuning condenser, 5 sections	48C198
C-4,5,14,17, 18,20,23,24	.005 mfd. 450 V., ceramic	47A168
C-6	33 mmf. 500 V., ceramic	CC20UK330K
C-8	3.3 mmf. 500 V., bakelite	47A160-5
C-9,34,35	.05 mfd. 200 V., tubular paper	46AU503J
C-10,12	47 mmf. 500 V., ceramic	CC20UK470M
C-11	7 mmf. 500 V., ceramic	CC20UJ070K
C-13,21,26, 36,43,45	.01 mfd. 600 V., tubular paper	46AZ103F
C-16,38	.02 mfd. 200 V., tubular paper	46AU203J
C-22	4.7 mmf. 500 V., bakelite	47A160-6
C-25	12 mmf. 500 V., mica	CM20A120K
C-28,29,32, 33	150 mmf. 500 V., mica	CM20A151M
C-30,37,49	1000 mmf. 500 V., ceramic	47B20102M5
C-31,41	.05 mfd. 600 V., tubular paper	46AY503J
C-39	68 mmf. 500 V., mica	CM20A680M
C-40	.003 mfd. 600 V., tubular paper	46AZ302J
C-42	.005 mfd. 600 V., tubular paper	46AZ502J
C-44	220 mmf. 500 V., mica	CM20A221M
C-46	10 mfd. 25 V., electrolytic	45A121
C-47	.002 mfd. 600 V., tubular paper	46AZ202J
C-48	60-20-20 mfd. 450 V., electrolytic	45B113
C-50	.01 mfd. 600 V., molded paper	46AG103J
<b>RESISTORS</b>		
R-1,13	1 megohm $\frac{1}{2}$ watt, carbon	RC20AE105M
R-2,14,17,21, 22,23,27,28	47,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE473M
R-3,5,26,31	220,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE224M
R-4,15	470 ohms $\frac{1}{2}$ watt, carbon	RC20AE471M
R-6	4700 ohms 2 watts, carbon	RC40AE472M
R-7	10 ohms $\frac{1}{2}$ watt, carbon	RC20AE100M
R-8,20,25	22,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE223M
R-9	150 ohms $\frac{1}{2}$ watt, carbon	RC20AE151M
R-10	220 ohms $\frac{1}{2}$ watt, carbon	RC20AE221M
R-11,33	100,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE104M
R-12,32,40, 41,42	470,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE474M
R-16	270 ohms $\frac{1}{2}$ watt, carbon	RC20AE271K
R-18	1000 ohms $\frac{1}{2}$ watt, carbon	RC20AF102M
R-19,39	2.2 megohms $\frac{1}{2}$ watt, carbon	RC20AF225M
R-24	330,000 ohms $\frac{1}{2}$ watt, carbon	RC20AF334M
R-29,30	100,000 ohms $\frac{1}{2}$ watt, carbon	RC20AF104K
R-34	Volume control, 2 megohms (tapped)	25B623
R-35,36	10,000 ohms $\frac{1}{2}$ watt, carbon	RC20AF103M
R-37	330 ohms $\frac{1}{2}$ watt, carbon	RC20AE331K
R-38	100,000 ohms 1 watt, carbon	RC30AE104K
R-43	300 ohms 2 watt, carbon	RC40AE301J
R-44,50	6800 ohms $\frac{1}{2}$ watt, carbon	RC20AE682M
R-45	12,000 ohms $\frac{1}{2}$ watt, carbon	RC20AE123K
R-46,47	1200 ohms 2 watt, carbon	RC40AE122K
R-48,49	1500 ohms 2 watt, carbon	RC40AE152K
<b>TRANSFORMERS AND COILS</b>		
T-1	Transformer, FM, antenna stage	51B1021
T-2	Transformer, BC, mixer stage	51B1019
T-3	Transformer, FM, mixer stage	51B1023
T-4	Transformer, FM, osc. stage	51B1023
T-5	Transformer, BC, osc. stage	51B1020
T-6	Transformer, 1st I.F.	50B367
T-7,9	Transformer, 2nd I.F. and AM Detector & FM limiter	50B370

## SERVICE PARTS LIST (Cont.)

Ref. No.	Description	Hallcrafters Part Number
<b>TRANSFORMERS AND COILS (Cont.)</b>		
T-8,10	Transformer, 2nd I.F. and AM Detector & FM limiter	50B366
T-11	Transformer, FM, detector stage	50B368
T-12	Transformer, audio output	55B105-1
T-13	Transformer, power	52C152
L-1	Loop antenna	57C118
L-2	Plate choke for tube V1	53B124
L-3	Filament choke for tubes V5 & V6	53B123
<b>SWITCHES:</b>		
SW-1	Band switch assembly	60B318
SW-2	Switch, tone control	60B319
<b>PLUGS AND SOCKETS:</b>		
PL-1	Line cord and plug	87A078
SO-1,2	Receptacle, television, phono	36A029
SO-3	Receptacle, speaker	6A277
SO-4	Receptacle, phono motor	10A015
	Socket, octal (tube)	6A298
	Socket, miniature (tube)	6A297
	Socket & bracket, dial light	86A062
	Socket, pilot light	86B065
<b>TUBES RECTIFIERS AND LAMPS</b>		
V-1	6AU6 antenna	90X6AU6
V-2,3	6BA6 mixer, 1st I.F.	90X6BA6
V-4,5	6SH7 2nd I.F., limiter	90X6SH7
V-6	6H6 discriminator	90X6H6
V-7	6J6 osc. & AFC	90X6J6
V-8	6SJ7 audio amp.	90X6SJ7
V-9,10	6K6GT power amp.	90X6K6GT
V-11	5Y3GT rectifier	90X5Y3GT/C
LM-1,2,3	Lamp, 6-8 V., 250 Ma., Mazda #44	39A003
<b>MISCELLANEOUS</b>		
	Shaft, tuning	74A247
	Pulley, idler	28A052-6
	Switch, cam	77A261
	Drive pin	74A246
	Coilair	77A287
	Bushing	77A286
	Bracket, dial plate mtg.	67A793
	Dial plate	63B332
	Dial background (paper)	32B433
	Dial glass (calibrated)	22C201
	Clip (for dial glass 22C201)	76A390
	Rubber spacer, for dial clip	16A126
	Pointer	82A147
	Dial cord	38A019
	Spring, dial cord	75A012
	Dial glass (clear)	22B205
	Clip (for dial glass 22B205)	76A331
	Escutcheon	7D067
	Knob, tone and range controls	15B077-3
	Knob, tuning and volume controls	15B068-3
LS-1	Speaker assembly	85C072
TS-1	Terminal strip, antenna (Marked D-D)	87A379
FS-2	Terminal strip, antenna (Marked A-G)	88A327
	Dipole assembly	57C108-1
	Line cord lock	76A299
	Grommet, chassis mtg.	16A124
	Shield, pilot light	86A037
	Record changer	115C019