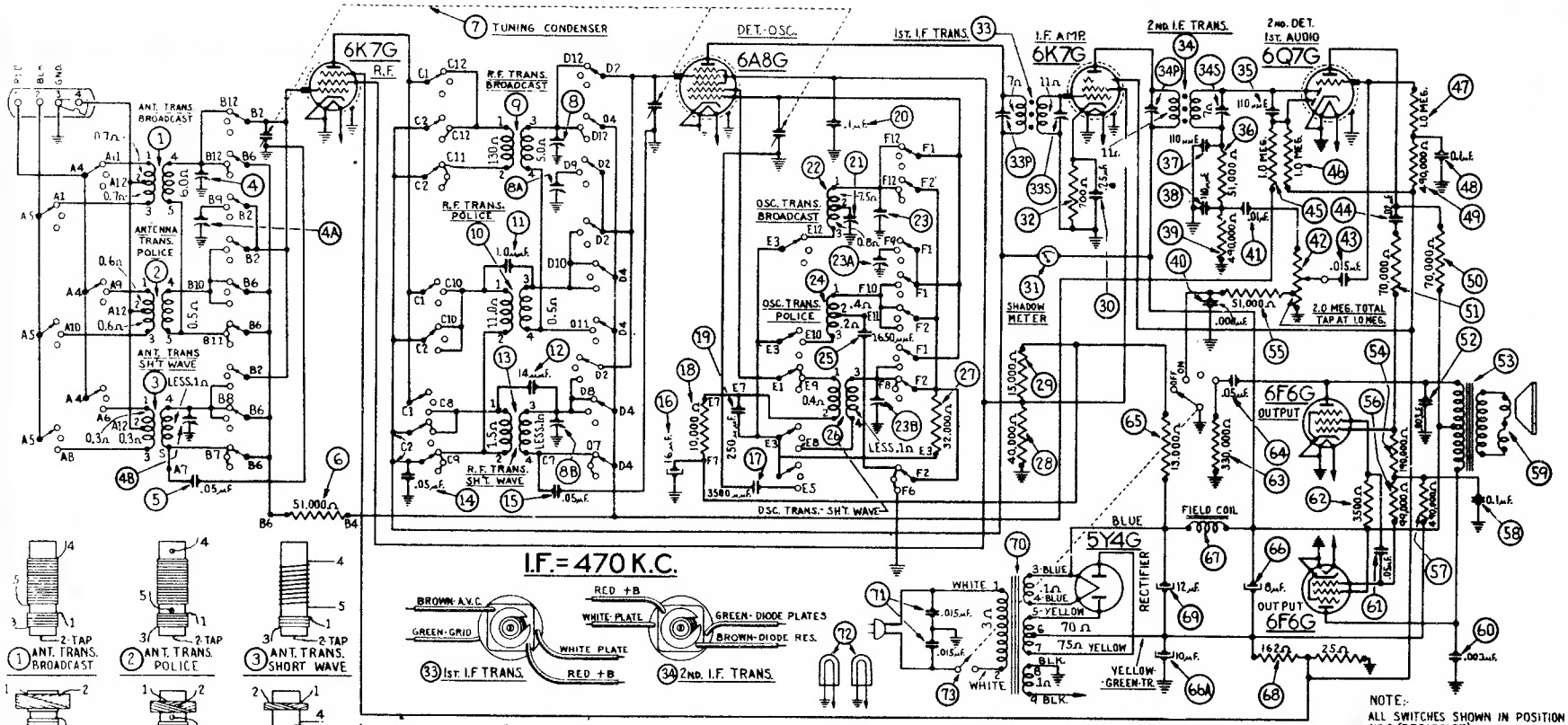
Philco Radio & Television Corp.

	Model: 37-640	**Chassis:**	**Year:** Pre October 1936
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Beitmans 1926-38 153
Riders 7 (VII) PHILCO 7-61
Riders 7 (VII) PHILCO 7-62
Riders 7 (VII) PHILCO 7-63
Riders 7 (VII) PHILCO 7-64



NOTE:-
ALL SWITCHES SHOWN IN POSITION NO.1 (BROADCAST).
SOLID AREA INDICATES REAR OF SWITCH WAFER.
SHADED AREA INDICATES FRONT OF SWITCH WAFER.
LETTERS INDICATE POSITION OF SWITCH WAFERS FROM REAR OF CHASSIS.

Model 37-640

PHILCO

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS **153**

PHILCO RADIO & TELEV. CORP.

MODEL 376
MODEL 37-640
Schematic
Coil Data

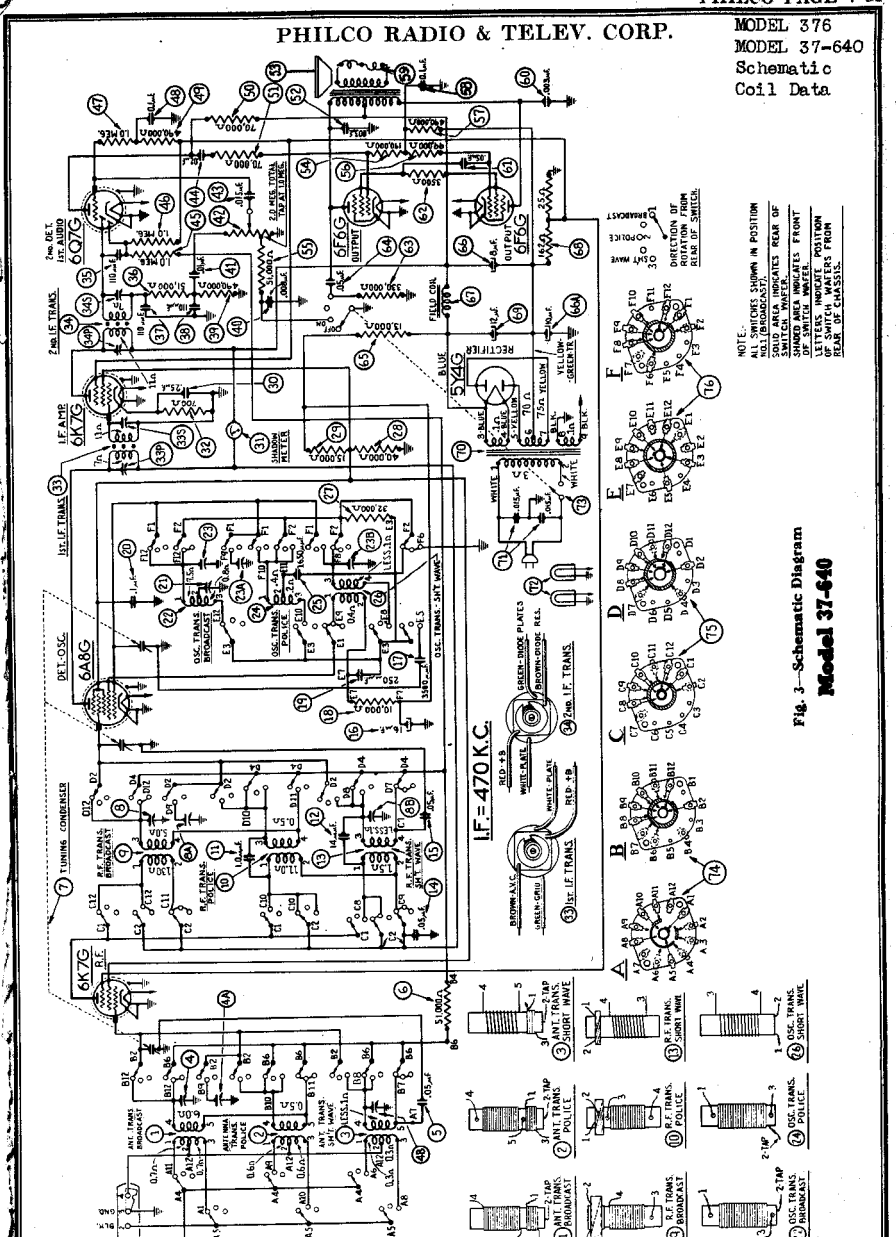


Fig. 3—Schematic Diagram

Model 37-640

MODEL 37-640

Trimmers
Alignment

PHILCO RADIO & TELEV. CORP.

Alignment of Compensators

The accurate adjustment of the various compensating condensers is vital to the proper functioning of this receiver. There are four compensating condensers in the I. F. Circuit, four in the Oscillator Circuit, three in the R. F. Amplifier Circuit and three in the Antenna Circuit. Incorrect adjustment will cause loss of sensitivity, unsatisfactory tone, and poor selectivity.

To accurately adjust this receiver, precision test equipment is necessary. A signal generator such as the PHILCO MODEL 088 SIGNAL GENERATOR, covering from 110 to 20,000 K. C. is recommended for adjusting the compensators at the various frequencies specified. A visual indication of the receiver output is also necessary to obtain correct adjustment of the compensators. PHILCO MODEL 025 CIRCUIT TESTER contains a sensitive output meter and is recommended for these adjustments.

Philco Fibre Handle Screw-driver No. 27-7059 completes the necessary equipment for these adjustments. The locations of the various compensators are shown in Figs. 6 and 7.

The following procedure must be observed in adjusting the compensators:

DIAL CALIBRATION—In order to adjust this receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, rotate the tuning condenser control to the extreme counter-clockwise position (maximum capacity). Loosen the screw of dial hub, then turn dial until the glowing indicator is centered on the first index line of dial scale (see Fig. 5). Now tighten the dial hub set screw in this position.

SHADOW METER ADJUSTMENT—Remove aerial and allow tubes to warm up. Then adjust shadow meter as follows:

1—Move the Shadow meter coil backwards and forwards, until the shadow is within one-eighth of an inch of each side of the screen.

2—Remove the Rectifier tube from its socket, and rotate the shadow meter coil for minimum shadow width.

3—Replace the Rectifier tube. The shadow should then return to maximum width or within one-eighth of an inch of each side of the screen. If the shadow does not return to maximum width, operations 1 and 2 should be continued until it does.

OUTPUT METER—The 025 Output Meter is connected to the plate and cathode terminals of one (6F6G) tube. Adjust the meter to use the (0-30) Volt Scale.

During the I. F. and R. F. adjustments, the signal generator output should be maintained at the lowest possible level that will give an indication on the output meter.

INTERMEDIATE FREQUENCY CIRCUIT

Frequency 470 K. C.

1—Connect the 088 Signal Generator output lead, through a .1 mfd. condenser, to the control grid of the 6A8G tube; and the ground connection of the output lead to the chassis.

2—Set the range switch in position No. 1 (Broadcast), then rotate the tuning condenser of the receiver to the maximum capacity position (counter-clockwise), and adjust the signal generator for 470 K. C.

3—Adjust compensators ㉞s 2nd I. F. Sec., ㉞p 2nd I. F. Pri., ㉝s 1st I. F. Sec., and ㉝p 1st I. F. Pri. for maximum reading on output meter.

RADIO FREQUENCY CIRCUIT

Tuning Range—7.3 to 22.0 M. C.

1—Remove the signal generator output lead from the grid of 6A8G tube, and connect it through the .1 mfd. condenser to terminal No. 1 on aerial input panel, and the generator ground lead to terminal No. 3, rear of chassis. (a) Terminals 2 and 4 of aerial input panel must be connected with connector link provided on the panel, during these adjustments.

2—Set the tuning range switch in position No. 3 (Short Wave). Turn the signal generator and receiver dials to 18 M. C. and adjust compensators ㉘b Osc., ㉗b R. F. and ㉖b Ant. for maximum output (see note (a) below).
(a) The adjustment of the Radio Frequency compensator in the high frequency range causes a slight detuning of the oscillator circuit. In order to overcome this detuning effect, connect a variable condenser of approximately 350 mmfd., having a good vernier drive, across the oscillator section of the tuning condenser. Leaving the signal generator and receiver dials at 18 M. C., tune the added condenser so that the second harmonic of the receiver oscillator will beat against the signal from the 088 signal generator bringing in the signal. The antenna and R. F. compensator ㉖b and ㉗b should then be adjusted to give maximum output. Now remove the external condenser and turn compensator ㉘b to maximum capacity (clockwise) then without moving signal generator or receiver tuning condenser, back off compensator ㉘b (counter-clockwise) until a second peak is reached on the output meter. The first peak is caused by tuning to the image frequency signal and must not be used.

Tuning Range—2.3 to 7.4 M. C.

1—Turn the range switch to position No. 2 (police). Rotate the signal generator and receiver dials to 7.0 M. C. Then adjust compensator ㉘a for maximum output. Now turn the signal generator and receiver dials to 6.0 M. C. and adjust compensators ㉖a R. F. and ㉗a Ant. for maximum reading on the output meter.

Tuning Range—530 to 1720 K. C.

1—Set the range switch in position No. 1 (Broadcast). Set the 088 Signal Generator indicator at 800 K. C. and the receiver dial at 1600 K. C.
(a) In adjusting the receiver at 1600 K. C. the second harmonic of 800 K. C., to which the signal generator is tuned, is used. The second harmonic of 800 K. C. is 1600 K. C. Now adjust compensators ㉙ Osc., ㉗ R. F. and ㉖ Ant. for maximum reading on output meter.

2—The low frequency end of the range is now tuned by turning the signal generator and receiver dials to 600 K. C. and adjusting compensator ㉘ Osc. series (see Note (a) below) for maximum reading on output meter.
(a) While compensator ㉘ is being adjusted, the tuning condenser must be rolled for maximum output. This is accomplished as follows: First tune compensator ㉘ for maximum output. Then vary the tuning condenser for maximum output at 600 K. C. Now retune compensator ㉘ and again vary the tuning condenser back and forth at 600 K. C. for maximum output. This operation of first turning the compensator then the tuning condenser is continued until maximum output is obtained at the 600 K. C. frequency.

3—After the low frequency (600 K. C.) end of the range is adjusted, the 1600 K. C. end is readjusted, as given in Paragraph (1) above, to correct any variation that the low frequency series compensator may have caused in the alignment of the high frequency end.

4—Now turn the signal generator and receiver dials to 1500 K. C. and readjust compensators ㉖ Ant., and ㉗ R. F., for maximum output.

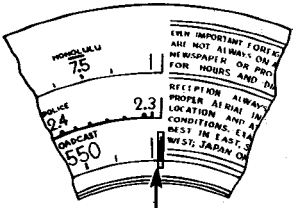


Fig. 5—Dial Calibration

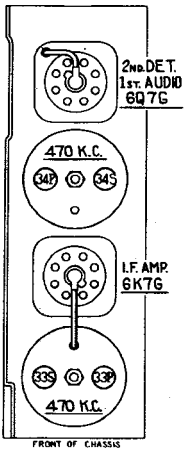


Fig. 6—Location of I. F. Compensators

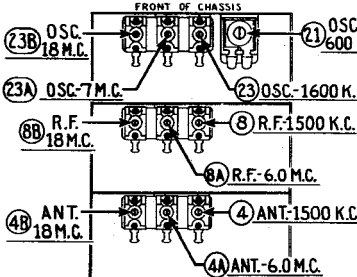


Fig. 7—Locations of R. F. Compensators

PHILCO RADIO & TELEV. CORP.

MODEL 37-640
Voltage, Socket
Transformer Data
Notes

Model 37-640 is a 7 tube superheterodyne receiver for operation on alternating current, having three tuning ranges, covering standard broadcast and short-wave frequencies. The chassis is constructed in three basic assembly units, concentrating the R. F., I. F. and Audio Output circuits in individual units.

The circuit consists of the **"PHILCO FOREIGN TUNING SYSTEM"**—controlled by the range switch—providing maximum sensitivity and noise reduction, when used with the **PHILCO HIGH EFFICIENCY AERIAL.** One stage of radio frequency amplification which increases the signal to noise ratio, Automatic Bass Compensation in the volume control circuit, Shadow Tuning, a separate diode circuit for the Automatic Volume Control and a push-pull pentode audio output circuit are also incorporated in this receiver.

Aerial Connections

The Philco High Efficiency Aerial is recommended, for use with this receiver, to obtain maximum performance. A terminal panel is provided at the rear of the chassis for connecting the aerial. This panel contains four screw terminals and a connecting link.

When using the PHILCO HIGH EFFICIENCY AERIAL connect the red and black leads of the Aerial transmission line (lead-in) to terminals 1 and 2 respectively and the ground lead to terminal 3. The connector link should be across terminals 3 and 4.

If a temporary aerial and ground is used shift the connecting link to rest across terminals 2 and 3 and connect the aerial and ground to terminals 1 and 3 respectively.

REMOVING SWITCH AND COIL ASSEMBLIES FROM R. F. UNIT

Remove the center mounting screw on the rear of the R. F. unit. Then lift the rear of the unit and push forward until the rubber mounting grommet, on each side of the unit, clear the mounting slots. The unit is then lifted far enough from the chassis for removal of the two screws holding the selector switch indexing plate and shaft (front of the unit) then pull shaft straight out. Removal of the volume control shaft is also necessary.

IMPORTANT—When selector switch shaft is replaced, care should be taken to have all wafer rotors in the same position so that index projection on the end of shaft will slide freely into notched hole in wafer rotors. **Never** force shaft into rotors.

AERIAL SWITCH AND COIL ASSEMBLY. FIRST SECTION FROM REAR OF UNIT

a. Remove screw holding shield plate to unit base. This screw is located in the right hand corner of shield plate, facing rear underside of chassis.

b. Unsolder the leads connecting the range switch to the aerial panel and I. F. terminal panel; tubular condenser ⑤ to the tuning condenser stator plate and ground lead from assembly shield to unit frame—lift assembly straight out of unit.

R. F. AMPLIFIER ASSEMBLY, CENTER SECTION

a. Remove screw holding shield plate to unit base.

b. Unsolder the leads connecting the range switch to I. F. terminal panel and 6K7G plate socket contact, tubular condenser ⑱ to the tuning condenser housing, selector switch contact (D2) to the tuning condenser stator plates, tubular condenser ⑭ to shield ground lug and shield to R. F. unit base. The amplifier assembly may then be removed.

OSCILLATOR SWITCH AND COIL ASSEMBLY. THIRD SECTION FROM REAR OF UNIT

a. The oscillator assembly may now be removed by unscrewing the four screws holding shield to R. F. base. These screws are located on each side of the R. F. base.

b. Unsolder the leads connecting range switch to the 6K7G socket contacts and terminal panel in the I. F. unit, condenser ⑰ lead from tuning condenser housing and lead connecting selector switch to the tuning condenser stator plates. Then unsolder wires connecting selector switch to electrolytic condenser ⑯ and 6A8G socket contacts.

Parts are replaced by following the above procedure in the reverse order.

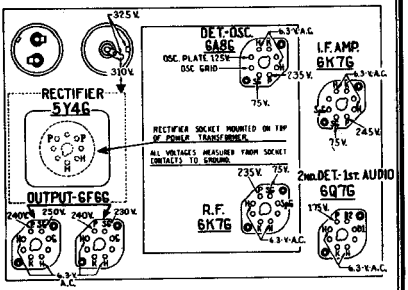


Fig. 1—Socket Voltages Measured from Underside of Chassis

The voltages indicated by arrows were measured with a **Philco 025 Circuit Tester** which contains a voltmeter having a resistance of 1000 ohms per volt. Volume Control at minimum, range switch in broadcast position, line voltage 115 A. C.

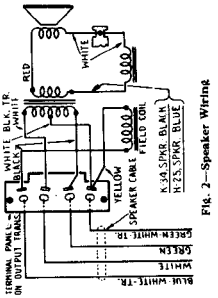


Fig. 2—Speaker Wiring

POWER TRANSFORMER DATA

Schematic Lead Number	A.C. Volts	Current	Circuit	Color	Resistance
1-2	120	...	Pri.	White	3 ohms
3-4	5.0	2.0A	Fil. Rect.	Blue	1 ohms
5-7	670	100 MA	High Voltage Sec.	Yellow	70 ohms 78 ohms
6	...	...	Center Top of 5-7	...	Yellow Green
8-9	6.7	3.0A	Fil. Tubes	Black	.1 ohm

Electrical Specifications

Voltage Rating: 115 A. C.
Frequency Rating: 50 to 60 cycle.
For 25 to 40 cycle operation use
Power Transformer marked with
asterisk in parts list.
Power Consumption: 80 watts.
Undistorted Output: 5 watts.
Intermediate Frequency: 470 K. C.
Tuning Ranges: Three. Range 1—530 to 1720 K. C. Range 2—2.3 to 7.4 M. C. Range 3—7.35 to 22 M. C.
Speakers: K-34 B Cabinet.
H-25 X-MX Cabinet.

MODEL 37-640
Chassis
Parts List

PHILCO RADIO & TELEV. CORP.

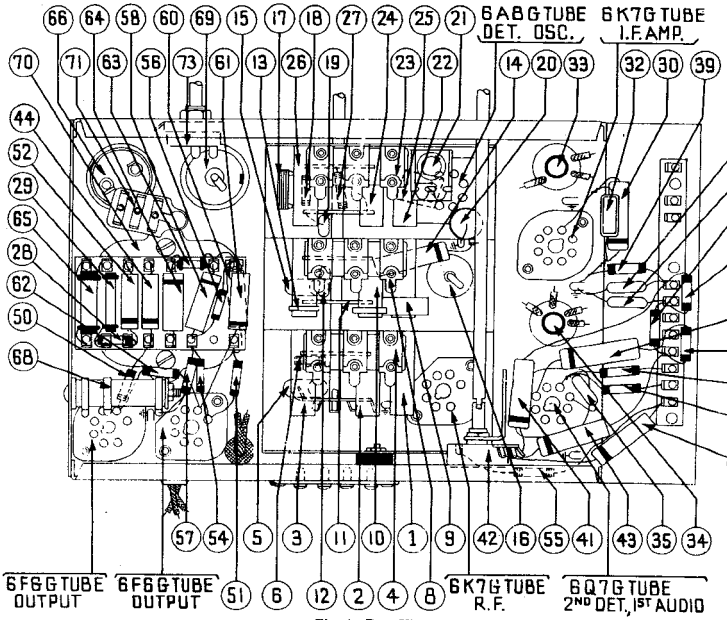


Fig. 4—Base View

Replacement Parts—Model 37-640

Schem. No.	Description	Part No.	List Price
1	Antenna Transformer (Broadcast)	32-2108	$0.80
2	Antenna Transformer (Police)	32-2119	.55
3	Antenna Transformer (S. W.)	32-2109	.75
4	Compensating Condensers Ant.	31-6092	.60
5	Condenser (.05 mfd. tubular)	30-4020	.20
6	Resistor (51000 ohms ½ watt)	33-351339	.20
7	Tuning Condenser	31-1820	5.00
8	Compensating Condensers R. F.	31-6092	.60
9	R. F. Transformer (Broadcast)	32-2105	.75
10	R. F. Transformer (Police)	32-2106	.65
11	Condenser		
12	Condenser (14 mmfd. mica)	30-1073	.20
13	R. F. Transformer (S. W.)	32-2126	.55
14	Condenser (.05 mfd. tubular)	30-4120	.20
15	Condenser (.05 mfd. tubular)	30-4020	.20
16	Electrolytic Condenser (16 mfd.)	30-2118	1.65
17	Condenser (3500 mmfd. semi-fixed)	31-6097	.50
18	Resistor (10000 ohms ½ watt)	33-310339	.20
19	Condenser (250 mmfd. mica)	30-1032	.25
20	Condenser (.1 mfd. tubular)	30-4170	.25
21	Compensator (Osc. Series Broadcast)	31-6096	.55
22	Osc. Transformer (Broadcast)	32-2120	.55
23	Compensating Condensers Osc.	31-6092	.60
24	Osc. Transformer (Police)	32-2121	.60
25	Condenser (1650 mmfd. semi-fixed)	31-6096	.40
26	Osc. Transformer (S. W.)	32-2110	.75
27	Resistor (32000 ohms ½ watt)	33-332339	.20
28	Resistor (40000 ohms ½ watt)	33-340339	.20
29	Resistor (15000 ohms 1 watt)	33-315439	.20
30	Condenser (.25 mfd. tubular)	30-4446	.20
31	Shadow meter	45-2189	2.50
32	Resistor, 700 ohms, Violet, Black, Brown	33-1229	.20
33	1st I. F. Transformer	32-2100	1.50
34	2nd I. F. Transformer	32-2102	1.50
35	Condenser (130 mmfd. mica)	30-1031	.20
36	Resistor (51000 ohms, ½ watt)	33-351339	.20
37	Condenser (110 mmfd. mica)	30-1031	.20
38	Condenser (110 mmfd. mica)	30-1031	.20
39	Resistor (490000 ohms ½ watt)	33-449339	.20
40	Condenser (.008 mfd. tubular)	30-4112	.70
41	Condenser (.01 mfd. tubular)	30-4124	.25
42	Volume Control	33-5139	1.00
43	Condenser (.015 mfd. tubular)	30-4358	.20
44	Condenser (.02 mfd. tubular)	30-4113	.20
45	Resistor (1 megohm ½ watt)	33-510339	.20
46	Resistor (1 megohm ½ watt)	33-510339	.20
47	Resistor (1 megohm ½ watt)	33-510339	.20
48	Condenser (.1 mfd. tubular)	30-4122	.20
49	Resistor (490000 ohms ½ watt)	33-449339	$0.20
50	Resistor (70000 ohms ½ watt)	33-370339	.20
51	Resistor (70000 ohms ½ watt)	33-370339	.20
52	Condenser (.003 mfd. tubular)	30-4042	.20
53	Output Transformer B. X. MX	32-7634	1.50
54	Resistor (190000 ohms ½ watt)	33-419339	.20
55	Resistor (51000 ohms ½ watt)	33-351339	.20
56	Resistor (99000 ohms ½ watt)	33-399339	.20
57	Resistor (490000 ohms ½ watt)	33-449339	.20
58	Condenser (.1 mfd. tubular)	30-4122	.20
59	Cone & Voice Coil K-34 Speaker	36-3174	.80
	Cone & Voice Coil H-25 Speaker	32525	1.20
60	Condenser (.003 mfd. tubular)	30-4042	.20
61	Condenser (.05 mfd. tubular)	30-4123	.20
62	Resistor (3300 ohms ½ watt)	33-233539	.20
63	Resistor (330000 ohms ½ watt)	33-433339	.20
64	Condenser (.05 mfd. tubular)	30-4454	.25
65	Resistor (13000 ohms 2 watt)	33-313539	
66	Electrolytic Condenser	30-2045	1.80
67	Field Coil Assembly K-34 Speaker	36-3239	3.75
	Field Coil Assembly H-25 Speaker	36-3218	3.60
68	Bias Resistor	33-3276	.20
69	Electrolytic Condenser (12 mfd.)	30-2117	1.20
70	Power Transformer 115 V., 50-60 cycles	32-7597	5.25
	Power Transformer 115 V., 25-40 cycles	32-7598	
71	Condenser (.015-.015 mfd. double)	3793-DG	.40
72	Pilot Lamp	44-2039	.15
73	Tone Control & A. C. Switch	42-1182	.75
74	Ant. Switch	42-1170	1.10
75	R. F. Range Switch	42-1171	1.00
76	Osc. Range Switch	42-1172	1.10
	Selector Switch Indexing Plate & Shaft	42-1173	.50
	Pilot Lamp Assembly	38-7706	.35
	Dial	27-5214	.40
	Dial Hub	28-7187	.12
	Dial Clamp	28-2837	.10
	Set Screw	W-1641	.02
	Dial Guard	27-8324	.02
	Dial Gear	28-7185	.10
	Thrust Spring	28-8611	.01
	C Washer	28-3904	.01
	Thrust Washer	28-3976 Per C	.20
	Drive Gear	31-1884	.25
	Vernier Drive	31-1871	.75
	Mask	27-5198	.30
	Mask Arm Assembly	31-1866	.35
	Mask Guide Lamp Bracket Support	38-7844	.16
	Mask Washer	27-8318 Per C	.50
	Indicator Bracket & Lens Assem.	38-7912	$0.30
	Spring	26-8624 Per C	.50
	Lens	27-8310	.02
	Volume Control Shaft	28-6499	.10
	Volume Control Shaft Spring	28-4117 Per C	.40
	Retaining Clips	28-8610	.03
	Washer	28-4186 Per C	.75
	Washer	4456 Per C	1.50
	Socket Power Trans.	27-6052	
	Socket 8 prong	27-6058	.11
	Socket 7 prong	27-6057	.11
	Tube Shield	28-2726	.10
	Tube Shield Base	28-3898	.03
	I. F. Shield	38-7763	.20
	Terminal Panel I. F. Unit	38-7703	.25
	Spacer	28-4001 Per C	.25
	Grommet Mtg. Tuning Condenser	27-4325	.02
	Grommet R. F. Unit	27-4317	.04
	Sleeve Mtg. R. F. Unit	28-2257	.01
	Spacer Mtg. R. F. Unit	27-7807 Per C	.50
	Screw Mtg. R. F. Unit	W-729 Per C	.45
	Washer Mtg. R. F. Unit	28-3927	.01
	Insulator Mtg. Electrolytic Condenser	27-7194	.01
	Bracket Mtg. Electrolytic Condenser	6440	.05
	Nut Mtg. Volume & Tone Control	W-684	1.25
	Antenna Panel	38-7714	.15
	Speaker Cable	41-3201	
	A. C. Cord	L-2183	.40
	Knob Tuning	27-4330	.10
	Knobs Tuning Vernier	27-4331	.10
	Knob Wave Switch	27-4326	.10
	Knob Tone & Volume	27-4332	.10
	Shadow Meter Mtg. Spring	28-8623 Per C	.70
	Speaker K-34, B Cabinet	36-1229	7.25
	Speaker H-25	36-1236	8.25
	Model B Cabinet		
	Bezel Frame & Plate Assembly	40-5927	.30
	Glass	27-8298	.05
	Bezel Ring	28-3907	.35
	Gasket	27-8311	.01
	Model X & MX Cabinets		
	Bottom Shield Plate	28-3895	
	Bezel Frame & Plate Assembly	40-5945	.70
	Gasket	27-8312	.01
	Screws	W-1644 Per C	.50
	Glass	27-8299	.06
	Ring	28-3987	.40

Figures in black type indicate circled figures in Base View.

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