

FOR MEMBERS OF RADIO MANUFACTURERS SERVICE

SERVICE BULLETIN No. 253

SERVICE DATA

Model 37-3640 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

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

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

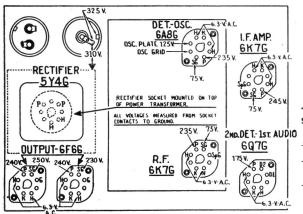


Fig. 1—Socket Voltages

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.

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 (15) 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.

Electrical Specifications

Voltage Rating: 115 A.C.

Frequency Rating: 25-40 or 50-60 cycle.

For 25 to 40 cycle operation use Power Transformer marked with asterisk in parts list.

Power Consumption: 80 watts.

Type and Number of Tubes: 2 type 6K7G—R.F. and I.F. Amplifier; 1 type 6A8G—Det. Oscillator; 1 type 6Q7G—2nd Det., 1st Audio, A. V. C.; 2 type 6F6G—Push-pull Output; 1 type 5Y4G—Rectifier.

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 Cabinet.

POWER TRANSFORMER DATA

Schematic Lead Number	A.C. Volts	Current	Circuit	Color	Resist- ance
1-2	120		Pri.	White	3 ohms
3-4	5 0	2 0A	Fil Rect	Blue	1 ohms
5-7	670	100 M A	High Voltage Sec.	Yellow	70 ohms 75 ohms
6			Center Top of 5-7		Yellow Green
8-9	6 7	3 0A	Fil. Tubes	Black	1 ohm

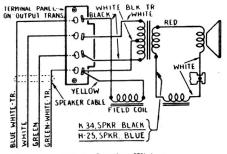
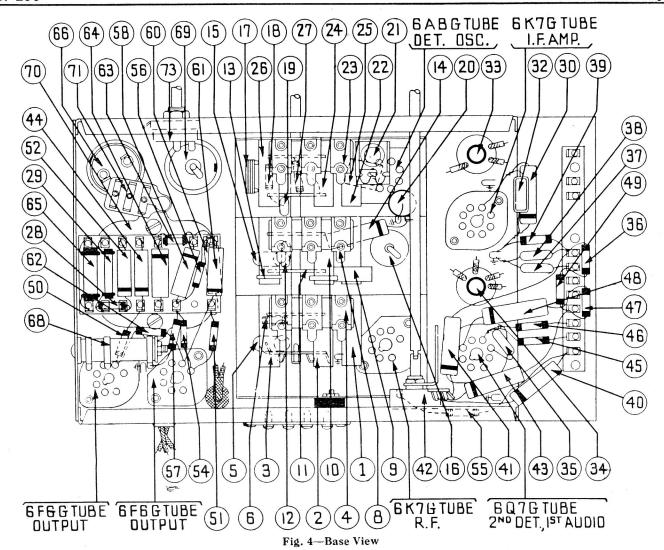


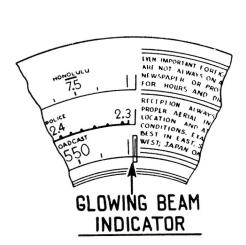
Fig. 2-Speaker Wiring

No. 253



Replacement Parts-Model 37-3640

No. Description No. Description No. No. Description	Schem.		Part	Schem.		Part	Schem.		Part
2 Antenna Trans. (Police)	No.	Description	No.	No.	Description	No.	No.	Description	No.
2 Antenna Trans, (Police) 32-2119	1 Antenna	Trans. (Broadcast)	32-2108	47 Resistor	(1 megohm ½ watt)	33-510334	Mask		27-5198
3 Antenna Trans. (S.W.)							Mask An	rm Assembly	31-1866
4 Compensating Condensers Ant. 31-6092							Mask Gu	ide Lamp Brack, Support	38-7844
5 Condenser (.05 mfd, tubular) 30-4020 6 Resistor (151000 ohms ½ watt) 33-370334 7 Tuning Condenser 31-1820 5 Condenser (.05 mfd, tubular) 30-4042 7 Tuning Condenser R.F 31-6922 7 Resistor (15000 ohms ½ watt) 33-340334 9 R.F. Transformer (Broadcast) 32-2105 1 R.F. Transformer (Broadcast) 32-2105 1 R.F. Transformer (Broadcast) 32-2105 1 R.F. Transformer (Broadcast) 32-2106 1 R.F. Transformer (R.W.) 32-2106 1 Condenser (14 mmfd, mica) 30-1073 1 R.F. Transformer (R.W.) 32-2126 1 Condenser (.05 mfd, tubular) 30-4123 1 Condenser (.05 mfd, tubular) 30-4024 1 Condenser (.05 mfd, tubular) 30-4024 1 Condenser (.05 mfd, mica) 30-1032 1 Condenser (.10000 ohms ½ watt) 33-310334 1 Condenser (.25 mmfd, mica) 30-1032 2 Condenser (.25 mmfd, mica) 30-1032 2 Compensating Condensers (.25 mmfd, mid.) 30-4107 2 Compensating Condenser (.25 mmfd, mid.) 30-4107 2 Resistor (10000 ohms ½ watt) 33-340334 2 Resistor (10000 ohms ½ watt) 33-340334 2 Resistor (10000 ohms ½ watt) 33-340334 3 Condenser (.10 mmfd, mica) 30-4107 3 R.F. Transformer (.25 mmfd, mid.) 30-4128 4 Resistor (10000 ohms ½ watt) 33-340334 5 R.F. Transformer (.25 mmfd, mid.) 30-4128 5 Resistor (10000 ohms ½ watt) 33-340334 5 R.F. Transformer (.25 mmfd, mid.) 30-4128 5 Resistor (15000 ohms ½ watt) 33-340334 5 R.F. Transformer (.25 mmfd, mid.) 30-4128 5 Resistor (15000 ohms ½ watt) 33-340334 5 R.F. Transformer (.25 mmfd, mid.) 30-4128 5 Resistor (15000 ohms ½ watt) 33-340334 5 R.F. Transformer (.25 mmfd, mid.) 30-4128 5 Resistor									
6 Resistor (51000 ohms ½ watt) .33-351334 52 Condenser (.003 mfd, tubular) .30-4042 Spring .28-8624 7 Tuning Condensers R.F31-6902 53 Output Transformer B. X32-7659									
7 Tuning Condenser 31-1820 8 Compensating Condensers R.F. 31-6992 9 R.F. Transformer (Broadcast) .32-2105 10 R.F. Transformer (Ploice) 32-2105 11 Condenser (14 mmfd, mica) 32-2105 12 Condenser (14 mmfd, mica) 30-1073 13 R.F. Transformer (FOlice) 32-2106 14 Condenser (14 mmfd, mica) 30-1073 15 Condenser (14 mmfd, mica) 30-1073 16 Condenser (15 mfd, tubular) 30-4020 16 Condenser (0.5 mfd, tubular) 30-4020 16 Condenser (0.5 mfd, tubular) 30-4020 17 Cond. (3500 mmfd, semi-fixed) 31-6095 18 Resistor (10000 ohms ½ watt) 33-30334 18 Condenser (15 mfd, 30-2118 19 Condenser (25 mmfd, mica) 30-1032 10 Condenser (25 mfd, tubular) 30-4134 10 Condenser (35 mmfd, mica) 30-1032 11 Condenser (35 mmfd, mica) 30-1032 12 Condenser (10 mmfd, mica) 30-1031 12 Condenser (35 mmfd, mica) 30-1031 13 Resistor (15000 ohms ½ watt) 33-34034 14 Resistor (15000 ohms ½ watt) 33-34034 15 Resistor (15000 ohms ½ watt) 33-34034 15 Resistor (15000 ohms ½ watt) 33-34034 15 Resistor (15000 ohms ½ watt) 33-4034 15							Spring .		28-8624
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9 R.F. Transformer (Prolace) 32-2105 10 R.F. Transformer (Police) 32-2105 11 Condenser 32-2106 11 Condenser (14 mmfd, mica) 30-1073 12 Condenser (14 mmfd, mica) 30-1073 13 R.F. Transformer (S.W.) 32-2126 14 Condenser (.05 mfd, tubular) 30-4123 15 Condenser (.05 mfd, tubular) 30-4123 16 Electrolytic Condenser (18 mfd, 30-2118 16 Electrolytic Condenser (16 mfd, 30-2118 17 Cond. (3500 mmfd, semi-fixed) 31-6097 18 Resistor (19000 ohms ½ wath) 33-326534 19 Condenser (250 mmfd, mica) 30-1072 20 Condenser (.1 mfd, tubular) 30-4123 21 Condenser (.250 mmfd, mica) 30-1072 22 Condenser (.1 mfd, tubular) 30-4124 22 Condenser (.1 mfd, tubular) 30-4125 23 Condenser (.1 mfd, tubular) 30-4126 24 Condenser (.250 mmfd, mica) 30-1082 25 Condenser (.1 mfd, tubular) 30-4126 26 Condenser (.250 mmfd, mica) 30-1082 27 Condenser (.250 mmfd, mica) 30-1082 28 Resistor (19000 ohms ½ wath) 33-348334 29 Condenser (.250 mmfd, mica) 30-1082 20 Condenser (.250 mmfd, semi-fixed) 31-6092 21 Condenser (.250 mmfd, semi-fixed) 31-6092 22 Condenser (.250 mmfd, semi-fixed) 31-6092 23 Condenser (.250 mfd, tubular) 30-4107 24 Resistor (19000 ohms ½ wath) 33-31034 25 Resistor (32000 ohms ½ wath) 33-31034 26 Resistor (32000 ohms ½ wath) 33-31034 27 Resistor (32000 ohms ½ wath) 33-31034 28 Resistor (19000 ohms ½ wath) 33-31034 29 Resistor (19000 ohms ½ wath) 33-31034 20 Resistor (19000 ohms ½ wath) 33-31034 20 Resistor (19000 ohms ½ wath) 33-31034 21 Resistor (19000 ohms ½ wath) 33-31034 21 Resistor (19000 ohms ½ wath) 33-31034 21 Resistor (19000 ohms ½ wath) 33-31034 22 Condenser (.250 mfd, wath) 33-31034 23 Resistor (19000 ohms ½ wath) 33-31034 24 Resistor (19000 ohms ½ wath) 33-31034 25 Resistor (19000 ohms ½ wath) 33-31034 26 Resistor (19000 ohms ½ wath) 33-31034 27 Resistor (19000 ohms ½ wath) 33-3104 28 Resistor (19000 ohms ½ wath) 33-3104 29 Resistor (19000 ohms ½ wath) 33-3104 20 Resistor (19000 ohms ½ wath) 33	8 Compens	ating Condensers R.F.	31-6092	54 Resistor	(190000 ohms ½ watt)	33-419334	Volume	Control Shaft	28-6499
10 R.F. Transformer (Police)				55 Resistor	(51000 ohms ½ watt)	33-351334	Volume	Control Shaft Spring	28-4117
12 Condenser (14 mmfd, mica)	10 R.F. Tra	nsformer (Police)	32-2106				Retaining	g Clips	28-8610
13 R.F. Transformer (S.W.)	11 Condense	r	*****						
14 Condenser (0.05 mfd, tubular)	12 Condense	r (14 mmfd. mica)	30-1073						
15 Condenser (0.05 mfd, tubular)	13 R.F. Tra	nsformer (S.W.)	32-2126	59 Cone & V	Voice Coil K-34 Speaker	36-3174	Socket F	Power Trans	27-6052
16 Electrolytic Condenser (16 mfd.) 30-2118	14 Condense	r (.05 mfd. tubular)	30-4123	Cone & V	Voice Coil H-25 Speaker	02625	Socket 8	prong	27-6058
17 Cond. (3500 mmfd, semi-fixed)									
18 Resistor (10000 ohms ½ watt)33-310334									
19 Condenser (250 mmfd, mica) 30-1032 64 Condenser (300 ohms 2 watt) 33-313534	17 Cond. (3	500 mmfd, semi-fixed).	31-6097				Tube Shi	ield Base	28-3898
20 Condenser (.1 mfd, tubular) .30 -4170 65 Resistor (13000 ohms 2 watt) .33 -313534 Spacer .28 -4001 21 Compensator (Osc. Series Broad.) 31 -6056 66 Electrolytic Condenser .30 -2163 Grommet Mr.F. Unit .27 -4317 22 Osc. Transformer (Broadcast) .32 -2120 67 Field Coil Assembly H-25 Speaker 36-3239 Grommet R.F. Unit .27 -4317 23 Compensating Condensers Osc. .31 -6092 51 Electrolytic Cond. .32 -2121 68 Bias Resistor .33 -3276 Spacer Mrg. R.F. Unit .27 -4317 25 Cond. (1650 mmfd. semi-fixed) .31 -6096 69 Electrolytic Cond. (12 mfd.) .33 -3276 Spacer Mrg. R.F. Unit .27 -7807 26 Osc. Transformer (S.W.) .32 -2110 70 Power Trans. 115 V., 50-60 cycles 32 -7597 Washer Mtg. R.F. Unit .27 -7807 27 Resistor (32000 ohms ½ watt) .33 -3340334 71 Cond. (.015 -0.015 mfd. double) .3793-DG Bracket Mtg. R.F. Unit .27 -7194 28 Resistor (15000 ohms 1 watt) .33 -15434 71 Cond. (.015 -0.015 mfd. double) .3793-DG Bracket Mtg. R.F. Unit .27 -1794 31 Shadow meter .45 -2189 73 Tone Control + A.C. Switch .42 -1231									
21 Compensator (Osc. Series Broad.) 31-6056 22 Osc. Transformer (Broadcast). 32-2120 23 Compensating Condensers Osc. 31-6092 24 Osc. Transformer (Police). 32-2121 25 Cond. (1650 mmfd. semi-fixed). 31-6096 26 Osc. Transformer (S.W.). 32-2110 26 Osc. Transformer (S.W.). 32-2110 27 Resistor (32000 ohms ½ watt). 33-332310 28 Resistor (32000 ohms ½ watt). 33-332334 29 Resistor (40000 ohms ½ watt). 33-332344 20 Condenser (.25 mfd. tubular). 30-4446 21 St. I.F. Transformer. 32-2102 21 St. I.F. Transformer. 32-2102 22 Resistor (110 mmfd. mica). 30-1031 23 Condenser (110 mmfd. mica). 30-1031 24 Condenser (.01 mfd. tubular). 30-4124 24 Condenser (.01 mfd. tubular). 30-4124 25 Condenser (.02 mfd. tubular). 30-4134 26 Condenser (.02 mfd. tubular). 30-4134 27 Condenser (.02 mfd. tubular). 30-4134 28 Condenser (.01 mfd. tubular). 30-4134 29 Condenser (.01 mfd. tubular). 30-4134 31 St. Left on the series of tubular). 30-4134 31 Condenser (.01 mfd. tubular). 30-4134 32 Condenser (.02 mfd. tubular). 30-4134 33 Condenser (.01 mfd. tubular). 30-4134 34 Condenser (.01 mfd. tubular). 30-4134 35 Condenser (.01 mfd. tubular). 30-4134 36 Condenser (.01 mfd. tubular). 30-4134 37 Condenser (.01 mfd. tubular). 30-4134 38 Condenser (.01 mfd. tubular). 30-4134 39 Resistor (490000 ohms ½ watt). 33-49334 40 Condenser (.01 mfd. tubular). 30-4134 41 Condenser (.01 mfd. tubular). 30-4154 42 Condenser (.01 mfd. tubular). 30-4154 43 Condenser (.02 mfd. tubular). 30-4154 44 Condenser (.02 mfd. tubular). 30-4154 45 Resistor (1 mergon m ½ watt). 33-49334 46 Resistor (1 mergon m ½ watt). 33-49334 47 Condenser (.02 mfd. tubular). 30-4154 48 Condenser (.02 mfd. tubular). 30-4154 49 Condenser (.03 mfd. tubular). 30-4154 40									
22 Osc. Transformer (Broadcast) 32-2120									
23 Compensating Condensers Osc. 31-6092 4 Osc. Transformer (Police). 32-2121 5 Cond. (1650 mmfd, semi-fixed). 31-6096 5 Cosc. Transformer (S.W.). 32-2110 6 Osc. Transformer (S.W.). 32-2110 7 Resistor (32000 ohms ½ watt). 33-332334 28 Resistor (32000 ohms ½ watt). 33-332334 29 Resistor (16000 ohms ½ watt). 33-340334 71 Cond. (.015015 mfd. double). 3793-DG 29 Resistor (15000 ohms ½ watt). 33-340334 20 Condenser (.25 mfd, tubular). 30-4446 21 Resistor (3200 ohms ½ watt). 33-340334 21 Resistor (16000 ohms ½ watt). 33-340334 21 Resistor (32000 ohms ½ watt). 33-351334 21 Resistor (32000 ohms ½ watt). 33-351334 21 Resistor (32000 ohms ½ watt). 33-351334 21 Resistor (15000 ohms ½ watt). 33-351334 21 Resistor (3200 ohms ½ watt). 33-351334 22 Resistor (3200 ohms ½ watt). 33-351334 23 Resistor (3200 ohms ½ watt). 33-351334 24 Condenser (110 mmfd, mica). 30-1031 25 Resistor (51000 ohms ½ watt). 33-351334 26 Resistor (51000 ohms ½ watt). 33-351334 27 Resistor (490000 ohms ½ watt). 33-351334 28 Condenser (110 mmfd, mica). 30-1031 29 Resistor (490000 ohms ½ watt). 33-351334 20 Condenser (.01 mfd. tubular). 30-4124 21 Condenser (.01 mfd. tubular). 30-4124 22 Volume Control 33-5158 23 Condenser (.01 mfd. tubular). 30-4124 24 Condenser (.02 mfd. tubular). 30-4358 25 Condenser (.02 mfd. tubular). 30-4358 26 Cwasher 28-8904 26 Bias Resistor (3200 ohms ½ watt). 33-35134 27 Power Trans. 115 V., 50-60 cycles 32-7598 28 Resistor (40000 ohms ½ watt). 33-84384 27 Power Trans. 115 V., 50-60 cycles 32-7598									
24 Osc. Transformer (Police)									
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26 Osc. Transformer (S.W.) 32-2110 70 Power Trans, 115 V., 50-60 cycles 32-7597 Washer Mtg. R.F. Unit. 28-3927 27 Resistor (32000 ohms ½ watt) .33-332334 *Power Trans, 115 V., 25-40 cycles 32-7598 Ins. Mtg. Electrolytic Cond. .27-7194 28 Resistor (15000 ohms ½ watt) .33-340334 71 Cond. (015-015 mfd. double) .3793-DG Bracket Mtg. Electrolytic Cond. .6440 29 Resistor (15000 ohms 1 watt) .33-34034 72 Pilot Lamp .34-2039 Nut Mtg. Volume & Tone Con. .W-684 30 Condenser (15000 ohms, Violet, Black .45-2189 .74 Ant. Switch .42-1170 Speaker Cable .41-3208 31 st I.F. Transformer .32-2100 .32-2100 .76 Osc. Range Switch .42-1172 Speaker Cable .41-1149A 35 Condenser (110 mmfd. mica) .30-1031 Pilot Lamp Assembly .38-7706 Knob Tuning .27-4332 36 Resistor (51000 ohms, ½ watt) .33-34934 Pilot Lamp Assembly .38-7706 Knob Tuning Vernier .27-4326 Acondenser (110 mmfd. mica) .30-1031 Pilot Lamp Assembly .38-7706 Knob Tuning Vernier .27-4326 Acondenser (100 mmfd. mica) .30-1031 Dial Guard .27-5214 <t< td=""><td></td><td></td><td></td><td>68 Bias Resi</td><td>stor</td><td>33-3276</td><td></td><td></td><td></td></t<>				68 Bias Resi	stor	33-3276			
27 Resistor (32000 ohms ½ watt)33-332334				69 Electrolyt	ic Cond. (12 mfd.)	30-2024	Screw M	tg. R.F. Unit	W-729
28 Resistor (40000 ohms ½ watt)33-340334 71 Cond. (.015015 mfd. double)3793-DG	26 Osc. Tra	nsformer (S.W.)	32-2110	70 Power Tr	ans. 115 V., 50-60 cycles	s 32-7597	Washer	Mtg. R.F. Unit	28-3927
29 Resistor (15000 ohms 1 watt) .33-315434 72 Pilot Lamp .34-2039 Nut Mtg. Volume & Tone Con W-684 31 Condenser (.25 mfd, tubular) .30-4446 73 Tone Control + A.C. Switch .42-1231 Antenna Panel .38-7714 31 Shadow meter .45-2189 74 Ant. Switch .42-1170 Speaker Cable .41-3208 32 Resistor, 700 ohms, Violet, Black 75 R.F. Range Switch .42-1172 Speaker Cable .41-3208 33 1st I.F. Transformer .32-2100 76 Osc. Range Switch .42-1173 Knob Tuning Vernier .27-4331 35 Condenser (110 mmfd, mica) .30-1031 Shaft .42-1173 Knob Wave Switch .27-4332 36 Resistor (51000 ohms, ½ watt) .33-351334 Dial .27-5214 Shadow Meter Mtg. Spring .28-8623 37 Condenser (110 mmfd, mica) .30-1031 Dial Llamp .28-2837 Speaker K-34, B Cabinet .36-1230 38 Condenser (100 mmfd, tubular) .30-44934 Set Screw W-1641 .36-1230 39 Resistor (40000 ohms ½ watt) .30-4124 Dial Guard .27-8324 .28-841 .28-2847 41 Condenser (.01 mfd, tubular) .30-4358 C Washer .28-3	27 Resistor	$(32000 \text{ ohms } \frac{1}{2} \text{ watt})$	33-332334						
30 Condenser (25 mfd, tubular) 30-4446 73 Tone Control + A.C. Switch. 42-1231 Antenna Panel 38-7714 31 Shadow meter 45-2189 74 Ant. Switch 42-1170 Speaker Cable 41-3208 32 Resistor, 700 ohms, Violet, Black 75 R.F. Range Switch 42-1126 A.C. Cord L-1149A 3 1st I.F. Transformer 32-2100 Selector Switch Indexing Plate & Shaft Knob Tuning Vernier 27-4331 35 Condenser (110 mmfd, mica) 30-1031 Pilot Lamp Assembly 38-7706 Knob Wave Switch 27-4332 36 Resistor (51000 ohms, ½ watt) 33-351334 Dial 27-5214 Shadow Meter Mig. Spring 28-8623 39 Resistor (490000 ohms ½ watt) 33-449334 Set Screw W-1641 Speaker K-34, B Cabinet 36-1237 40 Condenser (.01 mfd, tubular) 30-4124 Dial Gard 28-7185 Bottom Shield Plate 28-4340 42 Volume Control 42 Volume Control 42 Nobers 28-3904 Gasket 27-8312 40 Condenser (.02 mfd, tubular) 30-4358 C Washer 28-3904 Gasket 27-8312 <									
Table Tabl				72 Pilot Lar	np	34-2039	Nut Mtg	Volume & Tone Con	W-684
32 Resistor, 700 ohms, Violet, Black 75 R.F. Range Switch. 42-1226 A.C. Cord L-1149A Brown .33-1220 76 Osc. Range Switch. .42-1172 Knob Tuning .27-4330 31 st I.F. Transformer .32-2100 Selector Switch Indexing Plate & Selector Switch Indexing Plate & Shaft Knob Tuning Vernier .27-4331 35 Condenser (110 mmfd, mica) .30-1031 Pilot Lamp Assembly .38-7706 Knob Wave Switch .27-4332 36 Resistor (51000 ohms, ½ watt) .33-351334 Dial .27-5214 Shadow Meter Mtg. Spring .28-8623 37 Condenser (110 mmfd, mica) .30-1031 Dial Clamp .28-2187 Speaker K-34, B Cabinet .36-1230 38 Condenser (100 mmfd, mica) .30-4031 Dial Gear .27-8312 Speaker K-34, B Cabinet .36-1230 40 Condenser (.01 mfd, tubular) .30-4112 Dial Gear .28-7185 Bettom Shield Plate .28-8611 42 Volume Control .33-5158 Thrust Spring .28-8611 Bezel Frame & Plate Assembly .40-5945 43 Condenser (.02 mfd, tubular) .30-4858 C Washer .28-3904 Gasket .27-8312 45 Resistor (1 megolm ½, watt) .33									
Brown 33-1220 76 Osc. Range Switch 42-1172 Knob Tuning 27-4330							Speaker	Cable	41-3208
Selector Switch Indexing Plate & Knobs Tuning Vernier 27-4331									
54 2nd I.F. Transformer .32-2102 Shaft 42-1173 Knob Wave Switch .27-4326 35 Condenser (110 mmfd, mica) .30-1031 Pilot Lamp Assembly .38-7706 Knob Tone & Volume .27-4326 36 Resistor (51000 ohms, ½ watt) .33-351334 Dial .27-5214 Shadow Meter Mtg. Spring .28-8623 37 Condenser (110 mmfd, mica) .30-1031 Dial Hub .28-7187 Speaker K-34, B Cabinet .36-1230 38 Resistor (490000 ohms ½ watt) .33-4412 Dial Guard .27-8324 .28-2837 Speaker H-25 .36-1237 40 Condenser (.01 mfd, tubular) .30-4112 Dial Guard .27-8324 .28-2818 .28-2818 .28-2818 .28-2818 .28-2818 .28-2818 .28-2818 .28-2819									
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36 Resistor (51000 ohms, ½ watt) 33-351334 Dial 27-5214 Shadow Meter Mtg. Spring 28-8623 37 Condenser (110 mmfd. mica) 30-1031 Dial Hub 28-7187 Speaker K-34, B Cabinet 36-1230 38 Condenser (110 mmfd. mica) 30-1031 Dial Clamp 28-2837 Speaker K-34, B Cabinet 36-1230 39 Resistor (490000 ohms ½ watt) 30-4112 Set Screw W-1641 40 Condenser (.008 mfd. tubular) 30-4112 Dial Gear 28-7185 Bottom Shield Plate 28-3440 42 Volume Control 33-5158 Thrust Spring 28-8611 Bezel Frame & Plate Assembly 40-5945 43 Condenser (.015 mfd. tubular) 30-4358 C Washer 28-3904 Gasket 27-8312 44 Condenser (.02 mfd. tubular) 30-4113 Thrust Washer 28-3904 Gasket 27-8312 45 Resistor (1 megolm ½ watt) 33-51034 Drive Gear 31-1884 Glass 27-8299							Knob Wa	ave Switch	27-4326
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Speaker 110 mmrd, mrda							Snadow	Meter Mtg. Spring	28-8623
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45 Resistor (1 megohm ½ watt)33-510334 Drive Gear									
	46 Resistor	(1 megohm 1/2 watt)	33-510334						
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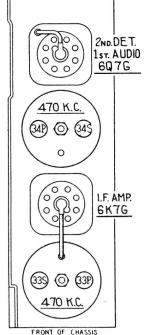


Fig. 6 -Location of I. F. Compensators

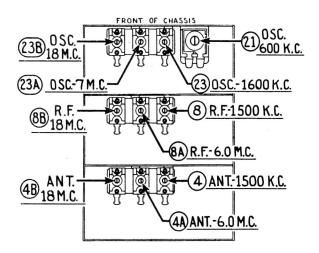


Fig. 7-Locations of R. F. Compensators

Alignment of Compensators

The accurate adjustment of the various compensating concensers 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 selections.

Justment 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. Personnel 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.

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 (34)s 2nd I.F. Sec., (34)p 2nd I.F. Pri., (33)s 1st I.F. Sec., and (33)p 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. chassis.

- (a) Terminals 2 and 3 of aerial input panel must be connected with connector link provided on the panel, during these adjustments.
- -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 (23)b Osc., (8)b R.F. and (4)b Ant. for maximum output (see note below).
- (a) below).

 (a) The adjustment of the Radio Frequency compensator on 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 (4)b and (8)b should then be adjusted to give maximum output. Now remove the external condenser and turn compensator (23)b to maximum capacity (clockwise) then without moving signal generator or receiver tuning condenser, back off compensator (23)b 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 receive dials to 7.0 M.C. Then adjust compensator (23)a for maximum output. Now turn the signal generator and receiver dials to 6.0 M.C. and adjust compensators (8)a R.F. and (4)a Ant. for maximum reading on the output meter.

Tuning Range-530 to 1720 K.C.

- 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 (23) Osc., (8) R.F., and (4) Ant. for maximum reading on output meter.
- (8) R.F. and (4) Ant. for maximum reading on output meter.

 —The low frequency end of the range is now tuned by turning the signal generator and receiver dials to 600 K.C. and adjusting ocmpensator (21) Osc. series (see Note (a) below) for maximum reading on output meter, (a) While compensator (21) is being adjusted, the tuning condenser must be rolled for maximum output. This is accomplished as follows: First tune compensator (21) for maximum output. Then vary the tuning condenser for maximum output at 600 K.C. Now retune compensator (21) 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.

 —After the low frequency (600 K.C.) and of the range is adjusted the
- 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.
- -Now turn the signal generator and receiver dials to 1500 K.C. and readjust compensators (4) Ant., and (8) R.F., for maximum output.

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