



PHILCO



Radio Service Bulletin No. 74

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TYPE CIRCUIT: Nine-valve Superheterodyne Unit-Constructed Receiver with pre-selector H.F. stage, Permeability-tuned I.F. coils, Magnetic Tuning, Full A.V.C. and Push-pull Pentode Output (7 watts), for operation on Long, Medium, and Short wave-bands, Built-in connections for di-pole or Philco All-wave Noise Reducing Aerial, automatic bridge balanced aerial selector and alternative link connections—“C” for di-pole aerial and “B” for Philco All-wave Noise Reducing Aerial. Provision is made for connecting a gramophone pick-up which may be left permanently connected to the receiver if desired, as the gramophone operation is controlled by the extreme clockwise rotation of the combined Magnetic Tuning and Radiogram switch. Provision is also made for connecting extension speakers of the permanent magnet moving-coil type each having an impedance of 2-3 ohms. When one extension speaker is used, it must be connected directly across the sockets marked “SS.” If more than one are used, the series-parallel method of connection must be used.

POWER SUPPLY: Alternating current mains of 200-229 or 230 250 volts, 50-60 cycles when the voltage adjusting plug is fully screwed into the correct socket on the mains transformer.

WAVEBANDS: COVERAGE: Three: (a) Long, 2,050-910 metres (146.3-329.6 kilocycles); (b) Medium, 560-185 metres (535.7-1,620.5 kilocycles); (c) Short, 5.5-18 megacycles (54.5-16.6 metres).

TUNING DIAL: Philco Automatic Dial Tuning Mechanism. Glowing beam waveband and station indicator and new spread band 340 degrees scale. Two-speed manual drive—ratios 8-1 and 40-1.

TONE CONTROL: Six positions controlling bass and treble alternately. The “On-Off” switch is combined with this control, thus allowing a particular setting of the separate volume control to be maintained.

LOUD SPEAKER: Two fully energised elliptical speakers are used which in conjunction with the Philco system of Audio Degeneration, do full justice to the superb quality and power of which the receiver is capable, besides giving better angular distribution of high notes.

INTERMEDIATE FREQUENCY: 470 kilocycles.

POWER CONSUMPTION: Approx. 130 watts.

Model A-938 Concert Grand

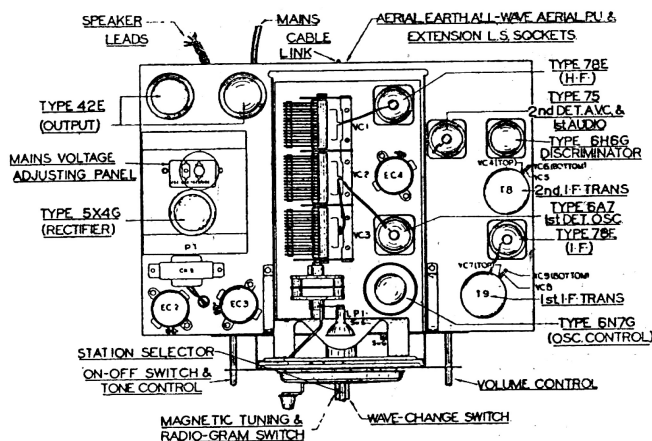


TABLE 1 — VOLTAGES

Valve socket readings to chassis taken with an 065 or 077 Philco Set Tester, using the 500, 250 and 10 volts ranges. Volume control at minimum, tone control fully brilliant, wave-change switch in M.W. position and no aerial connected. A.C. line, 230 v. 50 cycles.

Position	Valve	Anode	Screen.	Bias.
H.F. Amplifier, S.4	78E	Pin 3. 260 v.	Pin 4. 90 v.	Pin 5.—2.25 v.
1st Detector and Oscillator, S.5	6A7	Pin 3. 260 v. Pin 5. 130 v.*	Pin 4. 90 v.	Pin 7. 1 v.
Oscillator Control, S.6	6N7G	Pin 3. 180 v. Pin 6. 180 v.	—	Pin 8. 3.5 v.
I.F. Amplifier, S.9	78E	Pin 3. 265 v.	Pin 4. 90 v.	Pin 5.—1.28 v.
Discriminator, S.8	6H6G	—	—	—
2nd Detector, A.V.C. and 1st L.F. Amplifier, S.7	75	Pin 3. 150 v.	—	—
Pentode Output, S.2... ..	42E	Pin 3. 255 v.	Pin 4. 265 v.	—18 v.†
Pentode Output, S.3... ..	42E	Pin 3. 255 v.	Pin 4. 245 v.	—18 v.†
Full Wave Rectifier, S.1	5X4G	Pin 3. 320 v. A.C. Pin 5. 320 v. A.C.	—	—

* Oscillator Anode Volts. † Bias measured between TB1/1 and chassis.
Total D.C. 335 volts, measured between EC.2 tag and TB1/1. V.1 Filament, 5 volts A.C., measured between pins 7 and 8; V.2, 3, 4, 5, 6, 7, 8, 9, and L.P.1 filaments each 6.3 volts A.C., measured between Pins 1 and 2 (Pins 2 and 7 on V.6 and V.8) on each socket.

TABLE 2—RESISTANCES OF COILS.

(Link on TB4 to be in socket "B.")

Ref. No.	Test Prod. 1	Test Prod. 2	Resistance (Ohms)	Ref. No.	Test Prod. 1	Test Prod. 2	Resistance (Ohms)
T.1 Primary	TB.4 Socket "A"	Chassis	SW.3 S.W. Less than 0.1	T.8 Primary	V.9/3	TB.10/2	6
T.1 Primary Tapping	TB.4 Socket "C"	Chassis	SW.3 S.W. Less than 0.1	T.8 Primary Tapping	V.9/3	C.37 Tag (Inside can)	3
T.1 Secondary	V.4 Cap	TB.5 Tag	SW.3 S.W. 0.1	T.8 Secondary No. 1	TB.10/1	C.39 Tag (Inside can)	6
T.2 Primary ...	TB.4 Socket "BLK"	Chassis	SW.3 L.W. 60 SW.3 M.W. 60	T.8 Secondary No. 1 Tapping	TB.10/1	V.7/5	3.5
T.2 Secondary	V.4 Cap	TB.5 Tag	SW.3 L.W. 40 SW.3 M.W. 2.5	T.8 Secondary No. 2	V.8/3	V.8/5	7
T.3 Primary ...	V.4/3	TB.10/6	SW.3 S.W.2	T.8 Secondary No. 2 Tapping	V.8/3	TB.11 Tag	3.5
T.3 Secondary	V.5 Cap	TB.8/1	SW.3 S.W. 0.1	T.10 Primary	V.2/3	V.3/3	480 approx.
T.4 Primary ...	V.4/3	TB.10/6	SW.3 L.W. 60 SW.3 M.W. 60	T.10 Primary Tapping	V.2/3	EC.3/2	240 approx.
T.4 Secondary	V.5 Cap	SW.3/1 Tag 12	SW.3 L.W. 150 approx. (R.14 in series) SW.3 M.W. 2.5	T.10 Secondary	Output Transformer	Output Transformer	0.2*
T.9 Primary ...	V.5/3	TB.10/6	7	LS.1 ...	Lead 1	Lead 2	2*
T.9 Secondary	V.9 Cap	C.35/2	7	CK.4 ...	EC.3/2	Chassis	8,600
T.9 Tertiary ...	C.42 Tag Inside Can	C.35/2	7	LS.2 ...	Lead 1	Lead 2	2*
T.5 Primary ...	V.5/5	SW.3/4 Tag 9	0.1	CK.3 ...	EC.3/1 (Red)	EC.3/2	325
T.5 Secondary	V.5/6	SW.3/4 Tag 5	SW.3 S.W. 0.1	CK.5 ...	EC.2 Tag	EC.3/1 (Red)	75
T.6 Primary ...	V.6/3	V.6/6	S.W.3 M.W. 3	P.T. Primary	C.5/3	200-229 v. Tap	8
T.6 Primary Tapping	V.6/3	EC.4/1 (Green)	SW.3 M.W. 1.5	P.T. Primary	C.5/3	230-250 v. Tap	10
T.6 Secondary	V.5/6	SW.3/4 Tag 5	SW.3 M.W. 5	H.T. Secondary	V.1/3	R.1/1	60
T.6 Secondary Tapping	V.5/6	VC.19 Tag 2	SW.3 M.W. 2.5	H.T. Secondary	V.1/5	R.1/1	60
T.7 Primary ...	V.6/3	V.6/6	SW.3 L.W. 4	Rectifier L.T. Secondary	V.1/7	V.1/8	0.1†
T.7 Primary Tapping	V.6/3	EC.4/1 (Green)	SW.3 L.W. 2	Heater L.T. Secondary	V.2/1	V.2/2	0.2†
T.7 Secondary	V.5/6	SW.3/4 Tag. 5	SW.3 L.W. 12.5	CK.1 ...	C.5/2	TB.1A/2	2.5
				CK.2 ...	C.5/3	TB.1A/3	2.5
				CK.1A ...	V.3/6	Chassis	10

* Resistance of T.10 Secondary alone, L.S.1, alone and L.S.2 alone (taken when disconnected)

† Resistance of L.T. windings taken with all valves removed.

NOTE.—Reference numbers for valves should be read in conjunction with the socket numbers, e.g., V.1—S.1.

ALIGNMENT PROCEDURE.

Before leaving the factory, all Philco Receivers are accurately aligned, but if misalignment is suspected through damage, no alteration should be made without instruction in the correct adjustment of the trimming and padding condensers. It should only be carried out with the aid of an accurately calibrated Signal Generator, and for this purpose the PHILCO ALL-PURPOSE SET TESTER MODEL 077 is recommended.

Connect the Output Meter across the Primary of the Output Transformer, i.e. green and white leads. With gang condenser fully closed, check that Indicator reads on the last line of scale at highest wavelength (low frequency) end.

Set wave-change switch in second position clockwise (M.W.), turn volume control fully clockwise, tone control as far counter-clockwise as possible without switching off and Magnetic Tuning switch to middle position ("Manual").

NOTE.—The link on TB4 must be placed in the socket marked "B."

INTERMEDIATE FREQUENCY.—The I.F. trimmers must first be carefully adjusted by feeding in a 470 Kc. signal from the Signal Generator through a Standard dummy to the grid cap of the 6A7 valve (with grid lead connected) and the Signal Generator earthed to the chassis or receiver earth socket. Set the Signal Generator Attenuator to give a half scale reading on the Output Meter and adjust VC's. 4, 5, 7, 8 and 9 for *maximum* output. Then adjust VC6 for *minimum* output.

Transfer Signal Generator lead via the Standard Dummy to the Aerial Socket.

LONG WAVES.—Turn wave-change switch to L.W. position (fully counter-clockwise rotation) and set dial at 290 Kc. (dot between "1000" and "Tiflis"). Feed in a 290 Kc. signal and trim VC's 18, 15 and 12 underneath chassis in that order for maximum output.

Feed in and tune a 160 Kc. signal (dot under "Hilversum"). Rock gang and pad VC19 (nut) for maximum output. Readjust VC18 at 290 Kc. Repeat the above operation until no further improvement is obtainable.

MEDIUM WAVES.—Turn wave-change switch to second position clockwise (M.W.) and set dial at 1,400 Kc. (dot under "R. Lyons"). Feed in a signal of 1,400 Kc. and trim VC's. 17, 14, and 11 underneath chassis in that order for maximum output.

Feed in and tune a signal of 600 Kc. ("500" on dial). Rock gang and pad VC19 (screw) for maximum output. Readjust VC17 at 1,400 Kc. Repeat the above operation until no further improvement results.

SHORT WAVES.—Turn wave-change switch to S.W. position (fully clockwise rotation). Substitute a 400 ohms resistor for the Standard Dummy and feed in an 18 Mc. signal. Set dial at 18 Mc. and adjust VC16 underneath chassis for the second signal heard from tight (care is necessary as the two peaks are narrowly spaced).

NOTE.—Due to the very small difference between the pre-selector and oscillator frequencies the adjustment of VC's 13 and 10 will have a tendency to "pull" or change the frequency of the oscillator. By shunting a 21-plate variable condenser (approx. .00035 mfd.) across the oscillator section of the gang and tuning it so that the second harmonic instead of the fundamental beats with the incoming signal, this "pull" can be minimised.

Connect the shunt condenser between VC16 tag and chassis and tune it (about half open) for signal at 18 Mc. Trim VC's 13 and 10 underneath chassis in that order for maximum output. Disconnect shunt condenser and retrim VC16.

Check that the 18 Mc. image is obtained at approximately 17.1 Mc.

Feed in and tune a signal of 6 Mc. and check for correct reading on scale. It should not be necessary to adjust the semi-fixed tracker (C20), but if sensitivity is found to be low at 6 Mc., very slight adjustment only may be made while rocking the gang. Finally re-trim VC16 at 18 Mc.

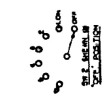
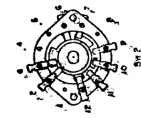
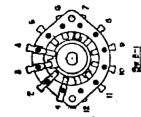
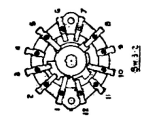
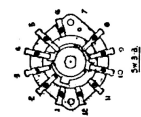
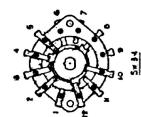
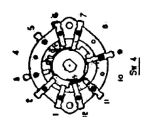
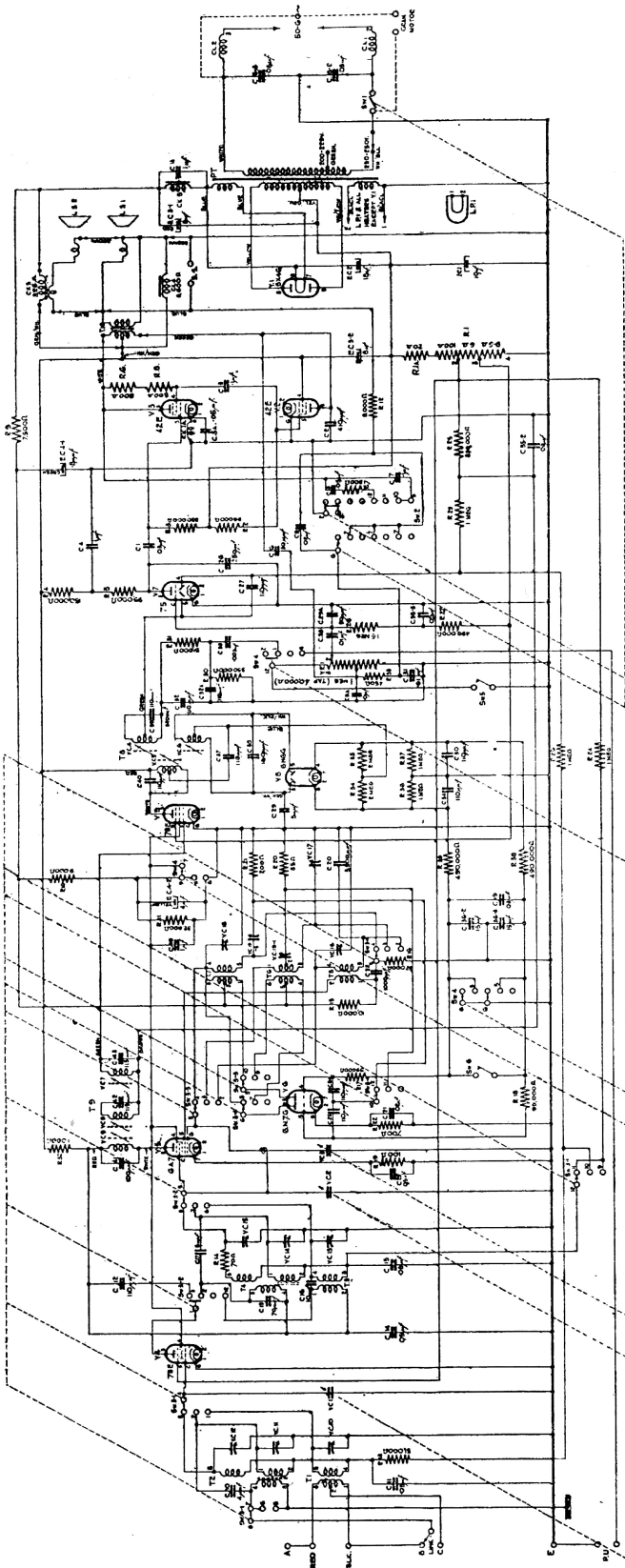
Check calibration.

MAGNETIC TUNING.—Check the operation of Magnetic Tuning at 290 KC. on Long waves and 1,400 Kc. on Medium waves as follows:—

Increase signal input by means of the Signal Generator Attenuator to approximately ten times that normally required for half scale reading, at the same time retarding the volume control so that the Output Meter just shows full scale deflection. Then de-tune the receiver until the *sideband* gives a low output reading on the meter and turn the Magnetic Tuning switch to the "Auto" position (fully counter-clockwise rotation), when the reading should increase, indicating that the signal has been pulled into correct tune.

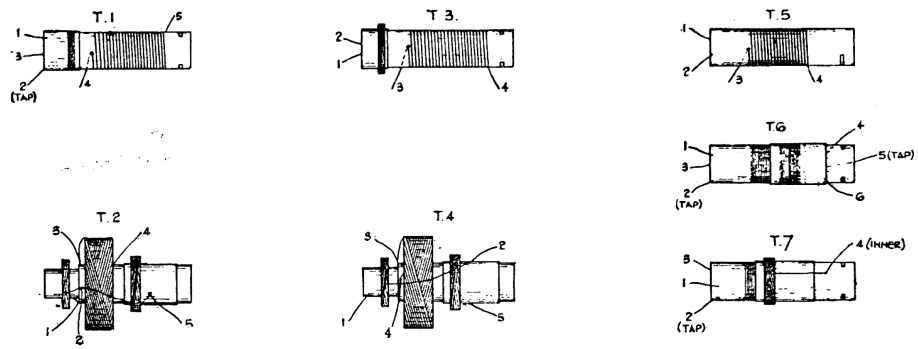
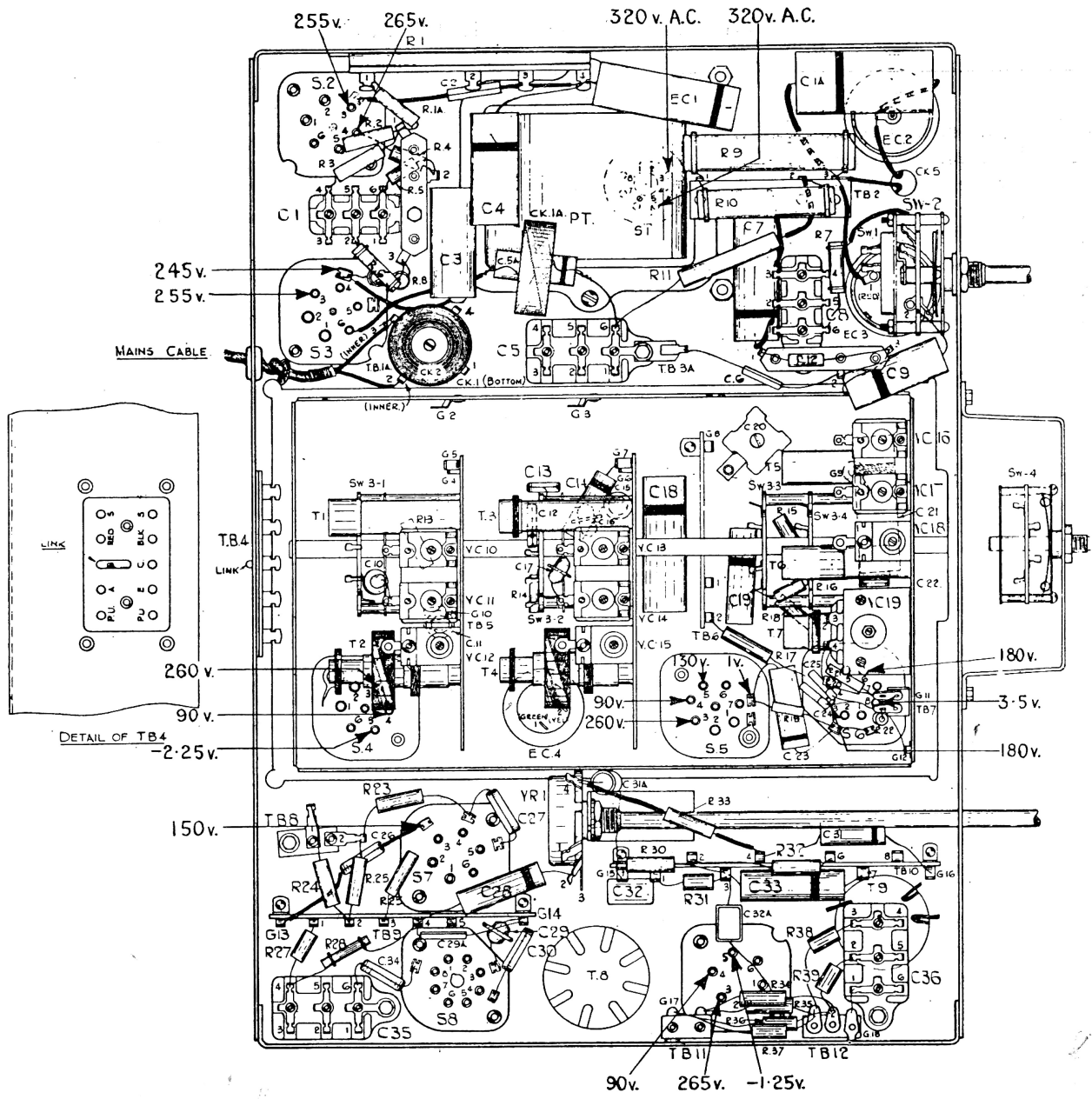
Turn the Magnetic Tuning switch to the "Manual" (middle) position, and repeat the above operation for the other sideband by de-tuning in the opposite direction.

NOTE.—The Magnetic Tuning device is inoperative on Short waves.



VIEWS OF SWITCHES FROM BALL
 CASES READ UPWARD
 NOTE POSITION OF SPARE CONTACTS

Schematic Diagram—Model A 938 C.G.



DETAILS OF COILS

Under Chassis Diagram—Model A 938 C.G.

PARTS AND PRICE LIST — MODEL A.938 C.G.

Ref. No.	Description.	Part No.	List Price s. d.	Ref. No.	Description.	Part No.	List Price s. d.
T.1	S.W. Aerial Transformer	320-1215	—	EC.4	Electrolytic Condenser, 8+4 mfd.	30-2129	6 0
T.2	M. & L.W. Aerial Transformer	320-1214	—		Insulator for EC.2 and EC.3	27-7194	—
Sw.3-1	Wave-change Switch (Aerial section)	420-1028	—		Lug for EC.1 and EC.3	28-1022	—
T.3	S.W. H.F. Transformer	320-1217	—	C1A	Tubular Condenser, 1.0 mfd.	300-4006	1 11
T.4	M. & L.W. H.F. Transformer	320-1216	—	C.1	Moulded Condenser, .03 mfd.	8318-SU.	2 6
Sw.3-2	Wave-change Switch (H.F. Section)	420-1027	—	C.2	Mica Condenser, 410 mmfd.	300-1011	9
T.5	S.W. Oscillator Transformer	320-1218	—	C.3	Tubular Condenser, .1 mfd.	30-4455	1 3
T.6	M.W. Oscillator Transformer	32-2844	—	C.4	Tubular Condenser, .1 mfd.	30-4455	1 3
T.7	L.W. Oscillator Transformer	32-2845	—	C.5	Moulded Condenser, .05 + .05 mfd.	3615-D.G.	1 9
Sw.3-3 } Sw.3-4 }	Wave-change Switch (Oscillator section)	420-1028	—	C.6	Mica Condenser, 30 mmfd.	300-1064	9
	Wave-change Switch Shaft and Plate Assembly	42-1287	—	C.7	Tubular Condenser, .1 mfd.	30-4455	1 3
T.8 C.37 C.38 C.39 C.40 VC.4 VC.5 VC.6	2nd I.F. Transformer Assembly Mica Condenser 110 mmfd. Trimmer Condenser 160 mmfd. ± 4.8 mmfd. Trimmer Condenser 110 mmfd. ± 3 mmfd. Trimmer Condenser 110 mmfd. ± 3 mmfd. Variable Iron Core Variable Iron Core Variable Iron Core	32-2742	—	C.8	Moulded Condenser, .03 mfd.	8318-SU.	2 6
T.9 C.41 C.42 C.43 VC.7 VC.8 VC.9	1st I.F. Transformer Assembly Trimmer Condenser 100 mmfd. ± 3 mmfd. Trimmer Condenser 115 mmfd. ± 3.5 mmfd. Trimmer Condenser 115 mmfd. ± 3.5 mmfd. Variable Iron Core Variable Iron Core Variable Iron Core	32-2741	—	C.9	Tubular Condenser, .02 mfd.	30-4113	1 0
T.10 L.S.1 CK.4	Output Transformer Part No. 320-8048 Speech Coil and Cone, Part No. 360-4017 Field Coil, 8,600 ohms.	Complete Speaker 360-1121†	—	C.10	Ceramic Condenser, 4 mmfd.	300-1075	9
and				C.11	Tubular Condenser, .05 mfd.	30-4020	9
L.S.2	Speech Coil and Cone, Part No. 360-4020	Complete Speaker 360-1125†	—	C.12	Mica Condenser, 110 mmfd.	30-1031 or 300-1040	10 10
CK.3	Field Coil, 350 ohms.			C.13	Mica Condenser, 70 mmfd.	30-1068 or 300-1049	1 0 1 0
or				or	Mica Condenser, 75 mmfd.	300-1025	9
T.10 L.S.1 CK.4	Output Transformer, Part No. 320-8065 Speech Coil and Cone, Part No. 360-4020 Field Coil, 8,600 ohms.	Complete Speaker 360-1126†	—	C.14	Tubular Condenser, .05 mfd.	30-4020	9
and				C.15	Tubular Condenser, .05 mfd.	30-4020	9
L.S.2	Speech Coil and Cone, Part No. 360-4017	Complete Speaker 360-1120†	—	C.16	Ceramic Condenser, 10 mmfd.	300-1068	1 0
CK.3	Field Coil, 350 ohms.			C.17	Ceramic Condenser, 5 mmfd.	300-1074 or 300-1044	9 1 0
CK.2 CK.1	Mains Filter Choke Assembly	320-1254	—	C.18	Tubular Condenser, .1 mfd.	30-4170	1 0
CK.1A C.5A	Whistle Filter Coil, Part No. 320-1265 Tubular Condenser, .05 mfd. Part No. 30-4444	Complete Assembly 320-1264	—	C.19	Tubular Condenser, .03 mfd.	30-4025	9
CK.5	Smoothing Choke	320-8060	—	C.20	Mica Condenser, 3,500 mmfd.	31-6097	2 6
VC.1 VC.2 VC.3	Three-gang Condenser	31-2147	—	C.21	Tubular Condenser, .02 mfd.	30-4113	1 0
VC.10 VC.11	Double Padder, 15+30 mmfd.	31-6140	1 6	C.22	Mica Condenser, 1,000 mmfd.	30-1007 or 300-1004 or 300-1016	9 9 1 2
VC.12	Single Padder, 60—110 mmfd.	31-6176	10	C.23	Tubular Condenser, .05 mfd.	30-4020	9
VC.13 VC.14	Double Padder, 15+30 mmfd.	31-6140	1 6	C.24	Mica Condenser, 110 mmfd.	30-1031 or 300-1040	10 10
VC.15	Single Padder, 60—110 mmfd.	31-6176	10	C.25	Mica Condenser, 110 mmfd.	30-1031 or 300-1040	10 10
VC.16 VC.17	Double Padder, 15+30 mmfd.	31-6140	1 6	C.26	Mica Condenser, 250 mmfd.	30-1056 or 300-1041	1 0 1 0
VC.18	Single Padder, 60—110 mmfd.	31-6176	10	C.27	Mica Condenser, 110 mmfd.	30-1031 or 300-1040	10 10
VC.19	Double Padder, 125+375 mmfd.	310-6028	2 8	C.28	Tubular Condenser, .01 mfd.	30-4124	9
EC.1	Electrolytic Condenser, 10 mfd.	300-4031	1 6	C.29	Ceramic Condenser, 5 mmfd.	300-1074 or 300-1044	9 1 0
EC.2	Electrolytic Condenser, 18 mfd.	30-2200	4 8	C.29A	Mica Condenser, 50 mmfd.	300-1045	9
EC.3	Electrolytic Condenser, 8+8 mfd.	300-2014	—	C.30	Mica Condenser, 110 mmfd.	30-1031 or 300-1040	10 10
				C.31	Tubular Condenser, .01 mfd.	30-4479	9
				C31A	Tubular Condenser, .01 mfd.	30-4479	9

PARTS AND PRICE LIST — MODEL A.938 C.G.—continued.

Ref. No.	Description.	Part No.	List Price s. d.	Ref. No.	Description.	Part No.	List Price s. d.
C.32	Mica Condenser, 110 mmfd. . . .	30-1031 or	10	R.37	½ watt Insulated Resistor, 1 megohm . .	330-2018	9
		300-1040	10	R.38	½ watt Insulated Resistor, 490,000 ohms .	330-2001	9
C.32A	Mica Condenser, 110 mmfd. . . .	30-1031 or	10	R.39	½ watt Insulated Resistor, 490,000 ohms .	330-2001	9
		300-1040	10	VR.1	Volume Control, 1 megohm (tapped at 40,000 ohms)	33-5242	3 0
C.33	Tubular Condenser, .003 mfd. . . .	30-4042	9	Sw.1	On-off Switch	} 420-1025	—
C.34	Mica Condenser, 110 mmfd. . . .	30-1031 or	10	Sw.2	Tone Control Switch		—
		300-1040	10	Sw.4	Magnetic Tuning and Radiogram Switch . .	420-1029	—
C.35	Moulded Condenser, .09+.09 mfd. . .	4989-D.G.	2 0		Dial and Tuning Assembly	} 31-2189	—
C.36	Moulded Condenser, .15+.15 mfd. . .	6287-D.U.	2 9	Sw.5	Muting Switch		—
				Sw.6	Magnetic Tuning Cut-out Switch		—
R.1A	½ watt Insulated Resistor, 20 ohms . .	330-2046	9	P.T.	Power Transformer 50-60 cycles, Part No. 320-8041	} Complete Assembly 320-8039	—
R.1	Candohm Wirewound Resistor, 100+6+9.5 ohms.	33-3342	1 6		Housing Assembly in- cluding Rectifier Socket and Voltage Adjusting Panel		—
R.2	½ watt Insulated Resistor, 99,000 ohms . .	330-2012	9	or	Power Transformer, 25-100 cycles, Part No. 320-8042	} Complete Assembly 320-8043	—
R.3	½ watt Insulated Resistor, 33,000 ohms . .	330-2017	9		Housing Assembly, Part No. 380-5505 . .		—
R.4	½ watt Insulated Resistor, 150,000 ohms	330-2058	9		Voltage Adjusting Plug	380-5340	6
R.5	½ watt Insulated Resistor, 99,000 ohms . .	330-2012	9		6-prong Valve Holder	27-6036	9
R.6	½ watt Carbon Resistor, 800 ohms . . .	330-1009	9		7-prong Valve Holder	27-6037	9
R.7	½ watt Carbon Resistor, 800 ohms . . .	330-1009	9		8-prong Valve Holder (Octal Base)	27-6058	9
R.8	½ watt Carbon Resistor, 800 ohms. . . .	330-1009	9	LP.1	Pilot Bulb	34-2141	—
R.9	3 watt Carbon Resistor, 7,500 ohms. . .	330-1039	1 6		Grid Clip	28-2214	—
R.10	2 watt Carbon Resistor, 9,000 ohms . . .	33-1215	9		Valve Shield	28-2726	9
R.11	1 watt Insulated Resistor, 32,000 ohms . .	330-2040	9		Valve Shield (6N7G)	6005	—
R.12	½ watt Insulated Resistor, 8,000 ohms . .	330-2059	9		Mains Cable	LO-1009	1 9
R.13	½ watt Insulated Resistor, 51,000 ohms . .	330-2015	9		Speaker Cable	LO-1072	3 0
R.14	½ watt Insulated Resistor, 70 ohms . . .	330-2036	9		Speaker Cable (connecting Speakers)	LO-1073	—
R.15	½ watt Insulated Resistor, 10,000 ohms . .	330-2014	9		Dial Scale	270-5096	—
R.16	½ watt Insulated Resistor, 32,000 ohms . .	330-2025	9		Mask and Link Assembly	45-2401	3 0
R.17	½ watt Insulated Resistor, 99,000 ohms	330-2012	9		Screen Holder and Scale Guide Assembly	380-5580	—
R.18	½ watt Insulated Resistor, 99,000 ohms . .	330-2012	9		Bezel Assembly	40-5980	5 0
R.19	½ watt Insulated Resistor, 100 ohms . . .	330-2060	9		Gasket	27-8517	9
R.20	½ watt Insulated Resistor, 85 ohms . . .	330-2062	9		Red Wander Plug	380-5087	—
R.21	½ watt Insulated Resistor, 200 ohms . . .	330-2061	9		Black Wander Plug	380-5015	—
R.22	½ watt Insulated Resistor, 700 ohms . . .	330-2057	9		Large Tuning Knob and Spring	270-4035	9
R.23	½ watt Insulated Resistor, 1 megohm . . .	330-2018	9		Small Knob and Spring	270-4036	—
R.24	½ watt Insulated Resistor, 1 megohm . . .	330-2018	9		Wave-change Knob and Spring	270-4098	—
R.25	½ watt Insulated Resistor, 330,000 ohms .	330-2017	9	V.1	Type 5X4G. Full Wave Rectifier Valve	34-2122	—
R.26	½ watt Insulated Resistor, 1 megohm . . .	330-2018	9	V.2	Type 42E Pentode Output Valve	6447E	—
R.27	½ watt Insulated Resistor, 490,000 ohms .	330-2001	9	V.3	Type 42E Pentode Output Valve	6447E	—
R.28	½ watt Carbon Resistor, 1.5 megohms . . .	33-1188	9	V.4	Type 78E Variable-mu H.F. Pentode Valve	8315E	—
R.30	½ watt Insulated Resistor, 330,000 ohms .	330-2017	9	V.5	Type 6A7 Variable-mu Heptode Valve . .	34-2002	—
R.31	½ watt Insulated Resistor, 51,000 ohms . .	330-2004	9	V.6	Type 6N7G. Double Triode Valve . . .	34-2140	—
R.32	½ watt Insulated Resistor, 1,000 ohms . . .	330-2019	9	V.7	Type 75 Double Diode Triode Valve . . .	8002	—
R.33	½ watt Insulated Resistor, 450 ohms . . .	330-2042	9	V.8	6H6G Double Diode Valve	34-2124	—
or	½ watt Carbon Resistor, 500 ohms	330-1002	9	V.9	Type 78E Variable-mu H.F. Pentode Valve	8315-E	—
R.34	½ watt Insulated Resistor, 2 megohms . . .	330-2000	9		Station Name Tabs Kit	400-8035	—
R.35	½ watt Insulated Resistor, 2 megohms . . .	330-2000	9				
R.36	½ watt Insulated Resistor, 1 megohm . . .	330-2018	9				

† When ordering Speaker parts, the letter which will be found in the part number of the Speaker must also be given.