



PHILCO

Radio Service Bulletin No. 62

Published by the Philco Radio & Television Corporation of Great Britain, Ltd., Perivale, Greenford, Middlesex

TYPE CIRCUIT: Five-valve Superheterodyne Unit-constructed Receiver with full delayed A.V.C. and Pentode Output (3 watts) for operation on Short, Medium and Long Wave-bands. Built-in connections for Philco All-Wave Noise-Reducing Aerial, automatic bridge balanced aerial selector and alternative link connections—"B" for ordinary aerial and "C" for Philco All-Wave Noise-Reducing Aerial. Provision is made for connecting a 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 wave-change switch. Provision is also made for connecting an external speaker of the permanent-magnet moving-coil type having an impedance of 2-3 ohms.

POWER SUPPLY: Alternating current mains of 200-230 volts or 231-260 volts, 50-100 cycles, when the voltage adjusting plug is fully screwed into the correct socket on the rear-of-cabinet panel.

WAVEBANDS : COVERAGE: Three: (a) Long, 320-150 Kc. (937.5-2,000 metres); (b) Medium, 1,700-550 Kc. (176.4-545.4 metres); (c) Short, 18-5.7 Mc. (16.6-52.6 metres).

TUNING DRIVE: Slow-motion drive, ratio 6-1, with integral vernier device, ratio 36-1, which enables fine tuning to be obtained.

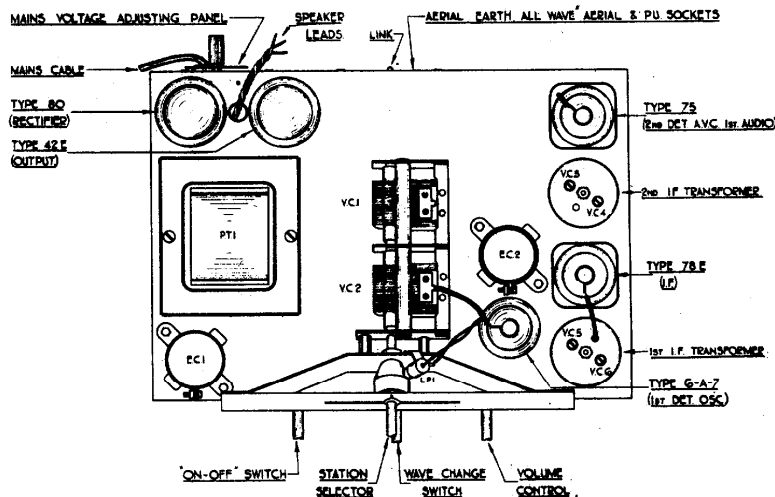
ON/OFF SWITCH: This is separately mounted and allows any particular setting of the volume control to be maintained.

LOUDSPEAKER: A 6-inch diameter fully energised moving-coil speaker is used, which gives the highest efficiency audio output, and greater bass response is obtained due to the large baffle.

INTERMEDIATE FREQUENCY: 451 Kc.

POWER CONSUMPTION: 60 watts approx.

Model B-537



TOP CHASSIS DIAGRAM.

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, wave - change switch in M.W. position, and no aerial connected. A.C. line 230 volts, 50 cycles.

POSITION.	VALVE.	ANODE.	SCREEN.	BIAS.
1st Detector and Oscillator, S.3 ..	6A7	Pin 3. 175 v. Pin 5. 130 v.*	Pin 4. 100 v.	—
I.F. Amplifier, S.5	78E	Pin 3. 255 v.	Pin 4. 100 v.	Pin 5. -2 v.
2nd Detector, A.V.C. and 1st L.F. Amplifier, S.4	75	Pin 3. 75 v.	—	—
Pentode Output, S.2	42E	Pin 3. 250 v.	Pin 4. 255 v.	-15 v. †
Full Wave Rectifier, S.1	80	Pin 3. 320 v. A.C. Pin 4. 320 v. A.C.	—	—

* Oscillator Anode Volts. † Bias measured between R.1/1 and chassis.

Total D.C. 335 volts measured between S.1/1 and R.1/1. V.1 filament, 5 volts A.C.; V.2, 3, 4, 5 and L.P.1 filaments, each 6.3 volts A.C., measured between Pins 1 and 2 on each socket.

TABLE 2 — RESISTANCES OF COILS.

(Link on TB.3 to be in Socket "B.")

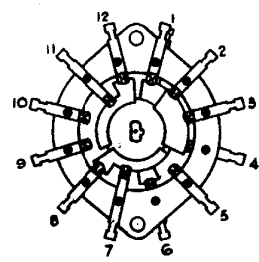
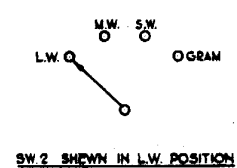
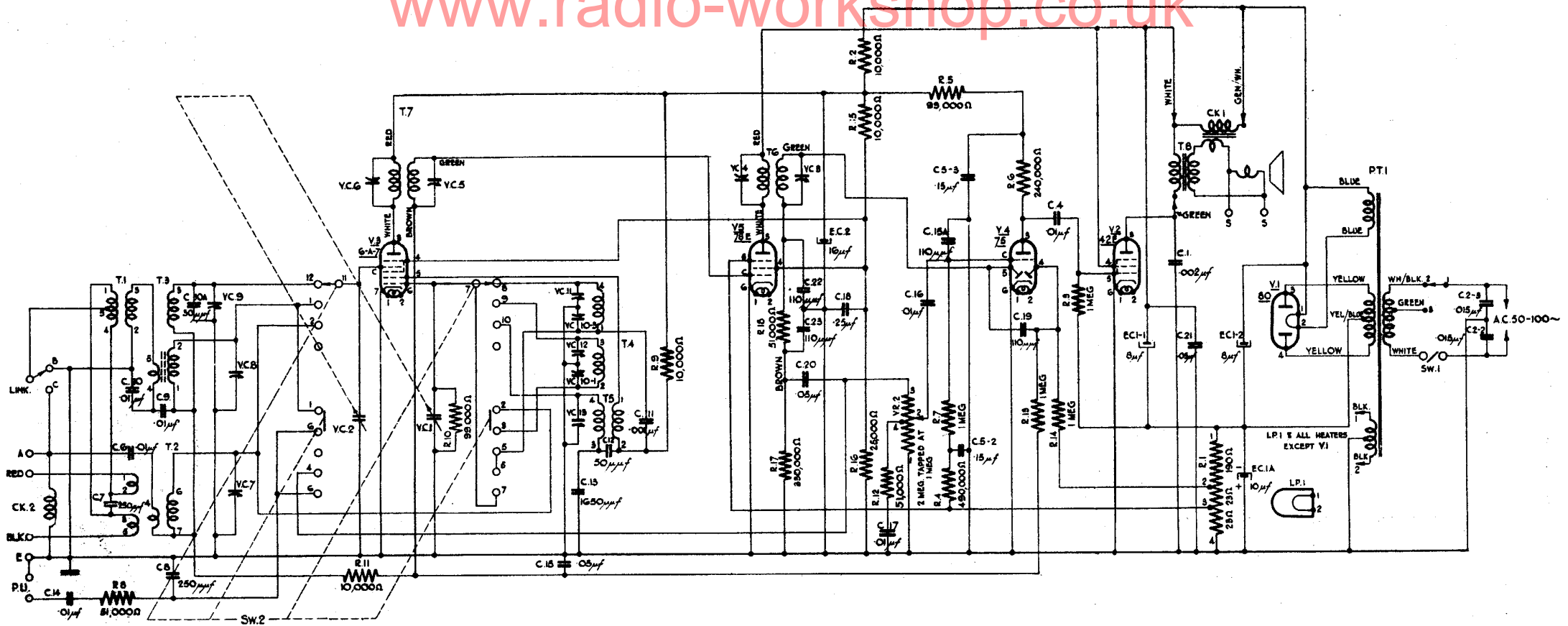
REF. NO.	TEST PROD 1.	TEST PROD 2.	RESISTANCE (OHMS)	REF. NO.	TEST PROD 1.	TEST PROD 2.	RESISTANCE (OHMS)
CK.2	TB.3 Socket "A"	Chassis	75 or 17.5**	T.5	V.3/6	Joint of C.12 and C.13	SW.2 S.W. 0.1 ,, Gram. Infinity
T.1 Primary	T.1/1	T.1/4	5	T.5 Reaction	V.3/5	TB.9	Less than 0.1
T.1 Primary tapping	T.1/1	Chassis	2.5	T.6 Primary	V.5/3	TB.12/1	12
T.1 Secondary	T.1/3	Chassis	16.5	T.6 Secondary	V.4/5	TB.11/1	51,000 approx.
T.2 Primary No. 1 (with T.1 Primary in series)	TB.3 Socket "Red"	TB.3 Socket "Blk"	5.5	T.8 Primary	V.2/3	V.2/4	240
T.2 Primary No. 2 ..	TB.4/2	TB.6	Less than 0.1	T.8 Secondary	Output Transformer	Output Transformer	0.2*
T.2 Secondary	V.3 Cap	TB.6	SW.2. S.W. 0.1 ,, Gram. Infinity	Speech Coil	Lead 1	Lead 2	2*
T.3 Primary	TB.8/1	TB.8/2	0.5	CK.1	EC.1/1	EC.1/2	1,140
T.3 Secondary	V.3 Cap	TB.6	SW.2. L.W. 25 ,, M.W. 2.5	P.T.1 Primary	C.2/2	200-230v. tap	SW.1. ON 17.5 SW.1. ON 20 SW.1. Off Infinity
T.7 Primary	V.3/3	TB.2/1	8	"	C.2/2	231-260v. tap	
T.7 Secondary	V.5 Cap	C.15/3	12	H.T. Secondary	V.1/3	R.1/1	240
T.4	V.3/6	SW.2/5	SW.2. L.W. 16.5 ,, M.W. 2.5	"	V.1/4	R.1/1	240
				Rectifier L.T. Secondary	V.1/1	V.1/2	0.1†
				Heater L.T. Secondary	V.2/1	V.2/2	0.2†

* Resistance of T.8 Secondary alone and Speech Coil 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.

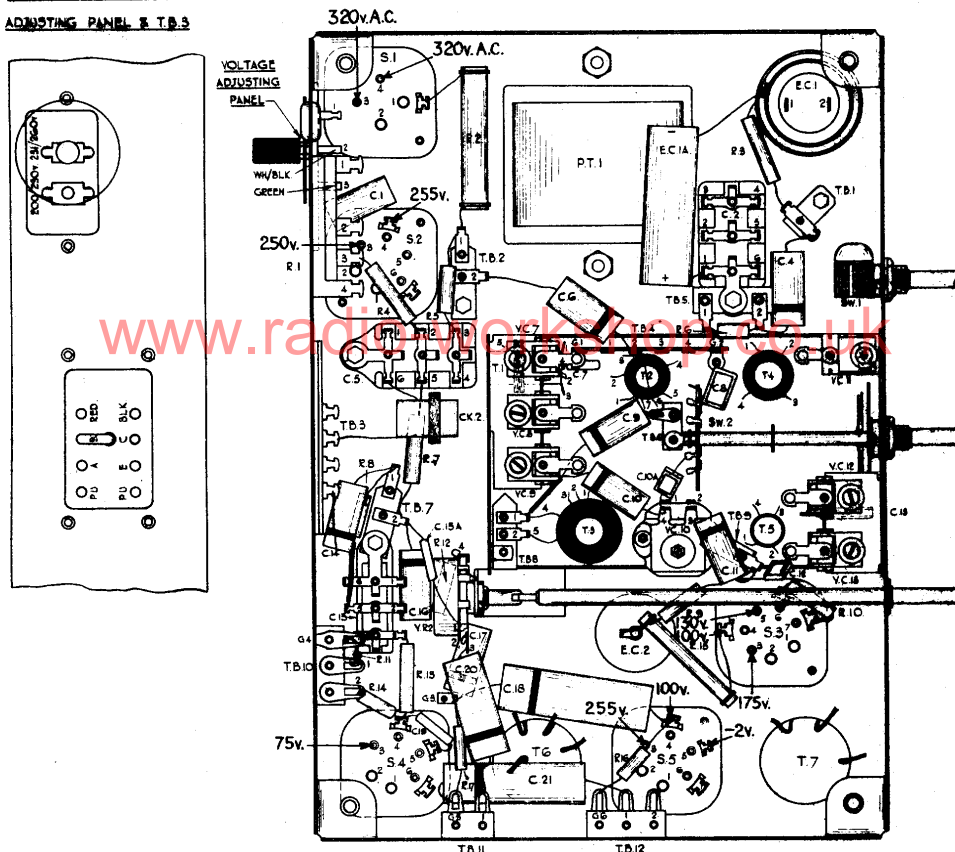
** See foot of page 4.



VIEW OF SW.2 FROM FRONT
 CHASSIS BEING UPSIDE DOWN
 NOTE:- SPINDLE LOCATING NOTCH ON RIGHT

SCHMATIC DIAGRAM - MODEL B-537.

DETAILS OF VOLTAGE
ADJUSTING PANEL & T.B.3



UNDER CHASSIS DIAGRAM - MODEL B-537.

ALIGNMENT PROCEDURE.

Before leaving the Factory, all Philco Receivers are accurately aligned, but if mis-alignment is suspected through damage, it should not be attempted 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 open, check that indicator reads on index line (beyond 1,700 Kc.). Set wave-change switch in second position from left (M.W.) and turn volume control fully clockwise.

NOTE.—The link on TB3 must be placed in socket "B."

INTERMEDIATE FREQUENCY.—The I.F. trimmers (VC's 3, 4, 5 and 6) should first be carefully adjusted by feeding in a 451 Kc. signal from the Signal Generator to the grid cap of the 6A7 valve (with grid lead connected) and the Signal Generator earthed to the receiver chassis. Adjust the Signal Generator Attenuator to give a half-scale reading on the Output Meter. The I.F. trimmers must then be adjusted for maximum output.

Transfer signal generator lead via a Standard Dummy to the aerial socket.

NOTE.—It is important that the following order of alignment be followed.

LONG WAVES.—Turn wave-change switch to L.W. position (fully counter-clockwise rotation) and set gang at 290 Kc. Feed in a 290 Kc. signal and trim VC's 11 and 9 underneath chassis in that order for maximum output.

Feed in and tune a 160 Kc. signal. Rock gang and pad VC.10 (nut) for maximum output. Readjust VC.11 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 gang at 1,400 Kc. Feed in a signal of 1,400 Kc. and trim VC's 12 and 8 underneath chassis in that order for maximum output.

Feed in and tune a signal of 600 Kc. Rock gang and pad VC.10 (screw) for maximum output. Readjust VC.12 at 1,400 Kc. Repeat the above operation until no further improvement results.

SHORT WAVES.—Turn wave-change switch to third position clockwise (S.W.). Substitute a 400 ohms resistor for the Standard Dummy and feed in an 18 Mc. signal. Set gang at 18 Mc. and adjust VC.13 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.7 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" will be minimised.

Connect the shunt condenser between VC.13 tag and chassis and tune it (about half open) for signal at 18 Mc. Trim VC.7 underneath chassis for maximum output. Disconnect shunt condenser and retrim VC.13.

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 (C13) but if sensitivity is found to be low at 6 Mc., very slight adjustment only may be made while rocking the gang. Finally retrim VC.13 at 18 Mc.

Check calibration.

PARTS AND PRICE LIST — MODEL B-537.

REF. No.	DESCRIPTION.	PART No.	LIST PRICE s. d.	REF. No.	DESCRIPTION.	PART No.	LIST PRICE s. d.
CK.2	Aerial Choke	320-1190†	6	R.7	½ watt Insulated Resistor,		
T.1	Aerial Coupler Coil	32-2490 or	1 3		1 megohm	330-2018	9
		320-1145	1 3	R.8	½ watt Insulated Resistor,		
T.2	S.W. Aerial Transformer	32-2485 or	3 6		51,000 ohms	330-2015	9
		320-1146	3 6	R.9	½ watt Insulated Resistor,		
T.3	M. and L.W. Aerial Transformer..	32-2504 or	4 9		10,000 ohms	330-2014	9
		320-1142	4 9	R.10	½ watt Insulated Resistor,		
T.4	M. and L.W. Oscillator Coil .. .	32-2513 or	2 6		99,000 ohms	330-2012	9
		320-1136	2 6	R.11	½ watt Insulated Resistor,		
T.5	S.W. Oscillator Coil	32-2509 or	2 3		10,000 ohms	330-2014	9
		320-1133	2 3	R.12	½ watt Insulated Resistor,		
T.6	2nd I.F. Transformer and Trimmers Assembly	32-2503 or	7 6	R.13	½ watt Insulated Resistor,		
VC.3					1 megohm	330-2018	9
VC.4							
C.22	Mica Condenser, 110 mmfd. . .	320-1126 or	7 6	R.14	½ watt Insulated Resistor,		
C.23	Mica Condenser, 110 mmfd. . .	320-1155	7 6		1 megohm	330-2018	9
R.18	½ watt Insulated Resistor,			R.15	1 watt Carbon Resistor,		
	51,000 ohms				10,000 ohms	3524	9
T.7	1st I.F. Transformer and Trimmers Assembly	32-2101 or	7 6	R.16	½ watt Insulated Resistor,		
VC.5					25,000 ohms	330-2007	9
VC.6							
VC.1	Two-gang Condenser	320-1186	7 6	R.17	½ watt Insulated Resistor,		
VC.2					330,000 ohms	330-2017	9
VC.7	Triple Padder, 35+35+35 mmfd. . .	310-1027	13 0	SW.1	Rotary On/Off Switch	420-1015	1 9
VC.8				SW.2	Wave-change Switch	42-1302	4 0
VC.9				VR.2	Volume Control, 2 megohms (tapped at 1 megohm)	33-5158	2 6
VC.10	Double Padder, 125+375 mmfd. . .	310-6028	1 6	S.1	4-prong Valve Holder	27-6044	4
VC.11	Single Padder, 60—110 mmfd. . .	31-6176	8	S.2	6-prong Valve Holder	27-6036	5
VC.12	Double Padder, 35+35 mmfd. . .	310-6018	1 0	S.3	7-prong Valve Holder	27-6037	5
VC.13				S.4	6-prong Valve Holder	27-6036	5
EC.1A	Electrolytic Condenser, 10 mfd. . .	300-4031	1 2	S.5	6-prong Valve Holder	27-6036	5
EC.1	Electrolytic Condenser, 8+8 mfd. . .	30-2079	13 9	P.T.1	Power Transformer, 50-100 cycles	320-7029	16 3
	Insulator for EC.1	27-7194	1		Power Transformer,		
	Lug for EC.1	28-1022	doz. 3		40-100 cycles (special)	320-7007	17 0
EC.2	Electrolytic Condenser, 16 mfd. . .	30-2126 or	4 3		Power Transformer, 25 cycles ..	320-7040	24 0
		30-2128	4 3		Output Transformer,		
C.1	Tubular Condenser, .002 mfd. . .	30-4177	7	T.8	Part No. 320-7026	360-1106†	
C.2	Moulded Condenser,				Speech Coil and Cone,	Complete	15 9
	.015+.015 mfd.	3793-D.G.	1 0		Part No. 360-4008	Speaker	
C.4	Tubular Condenser, .01 mfd. . .	30-4169 or	6	CK.1	Field Coil		
		30-4124	6	L.P.1	Pilot Bulb	34-2064 or	1 4
C.5	Moulded Condenser, .15+.15 mfd.	6287-D.G.	1 7			34-2141	1 4
C.6	Tubular Condenser, .01 mfd. . .	30-4124	6		Valve Shield	28-2726	2
C.7	Mica Condenser, 250 mmfd. . .	300-1057	8		Grid Clip	28-2214	doz. 5
C.8	Mica Condenser, 250 mmfd. . .	300-1057	8		Rubber Bush	270-7264	1
C.9	Tubular Condenser, .01 mfd. . .	30-4124	6		Mains Cable	LO-1009	1 7
C.10	Tubular Condenser, .01 mfd. . .	30-4124	6		Speaker Cable	LO-1004	10
C.10A	Mica Condenser, 30 mmfd. . .	300-1064	6		Mains Voltage Adjusting Panel ..	380-5342	1 6
C.11	Tubular Condenser, .001 mfd. . .	30-4201	6		Mains Voltage Adjusting Plug ..	380-5340	1 0
C.12	Mica Condenser, 50 mmfd. . .	300-1058	8		Dial Scale	270-5070*	1 8
C.13	Mica Condenser, 1,650 mmfd. . .	31-6178	2 0		Pointer	280-1353	6
C.14	Tubular Condenser, .01 mfd. . .	30-4124	6		Reduction Drive Assembly	420-5039	3 3
C.15	Moulded Condenser, .05 mfd. . .	3615-S.G.	9		Scale Tension Spring	280-1226	1
C.15A	Mica Condenser, 110 mmfd. . .	300-1040	6		Dial Screen	270-5046	1 3
C.16	Tubular Condenser, .01 mfd. . .	30-4124	6		Chassis Mounting Rubbers	5189	1
C.17	Tubular Condenser, .01 mfd. . .	30-4124	6		Chassis Mounting Washers	29-2089	doz. 2
C.18	Tubular Condenser, .25 mfd. . .	30-4446	10		Chassis Mounting Bolts	W-1345A	1
C.19	Mica Condenser, 110 mmfd. . .	300-1040	6		Tuning Knob and Spring	270-4054	9
C.20	Tubular Condenser, .05 mfd. . .	30-4020	7		Knob (Volume) and Spring	270-4101	5
C.21	Tubular Condenser, .05 mfd. . .	30-4123	9		Knob (Wave-change) and Spring	270-4087 or	5
R.1	Candohm Wire-wound Resistor,				270-4089	5	
	23+23+190 ohms	33-3312.	1 4		Knob (On/Off Switch) and Spring	270-4091 or	3
R.2	2 watt Carbon Resistor,				270-4057	3	
	10,000 ohms	33-1024	1 6		Knob Spring	280-5262	doz. 2
R.3	½ watt Insulated Resistor,			V.1	Red Wander Plug	380-5087	2
	1 megohm	330-2018	9	V.2	Black Wander Plug	380-5015	2
R.4	½ watt Insulated Resistor,			V.3	Type 80 Full Wave Rectifier Valve	3149	8 0
	490,000 ohms	330-2013	9		Type 42E Pentode Output Valve..	6447-E	13 6
R.5	½ watt Insulated Resistor,			V.4	Type 6A7 Variable-mu Heptode		
	99,000 ohms	330-2012	9		Valve	34-2002	15 0
R.6	½ watt Insulated Resistor,			V.5	Type 75 Double Diode Triode Valve	8002	12 6
	240,000 ohms	330-2002	9		Type 78E Variable-mu		
					H.F. Pentode Valve	8315-E	12 6

† When ordering Speaker parts, the letter which will be found in the part number of the Speaker must also be given.
* In later models, CK2 is Part No. 320-1189 and the Dial Scale is Part No. 270-5070A. These parts are not interchangeable.



PHILCO



Radio Service Bulletin No. 62a

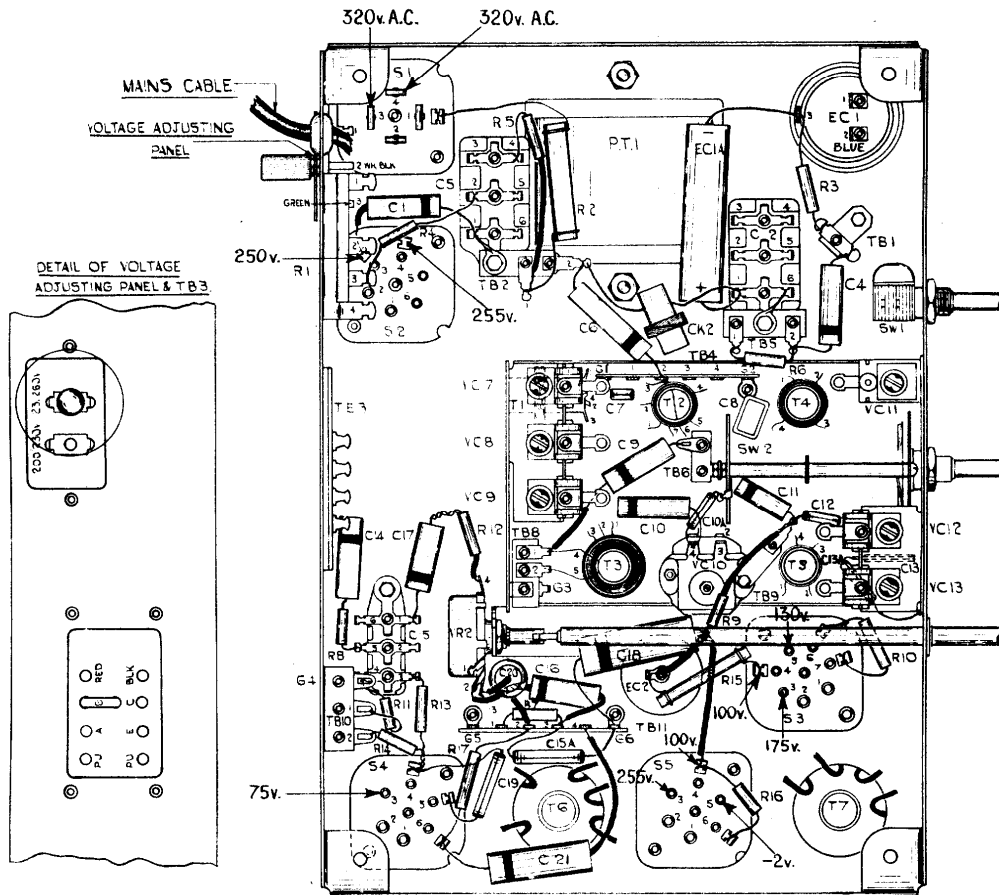
Published by the Philco Radio & Television Corporation of Great Britain, Ltd., Perivale, Greenford, Middlesex

Model B-537. Run 6.

www.radio-workshop.co.uk

Runs 2, 3, 4 and 5 of Model B-537 have incorporated minor changes of layout.

Run 6 is electrically similar to the previous Runs, but the Under Chassis Layout has been further modified. A diagram incorporating the new layout is shown below. The Short Wave Oscillator Coil in these models is Part No. 320-1219, List Price 2/3d., and the Dial Scale for use with this Coil is Part No. 270-5070 (Rev. C), List Price 1/8d. A Mica Condenser (C13A), 250 mmfd., Part No. 300-1057, List Price 8d., is joined across C13 (Part No. 31-6178 or 310-6052).



UNDER CHASSIS DIAGRAM.