



# PHILCO



## Radio Service Bulletin No. 39

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NOTE.—This Bulletin supersedes No. 30.

### MODEL 255

**TYPE OF CIRCUIT:** Four valve Superheterodyne with Quiescent Pentode output (1 watt). Provision is made for connecting a separate speaker and pick-up if desired. The pick-up may be left permanently connected to the receiver, as the gramophone operation is controlled by the extreme clockwise rotation of the Wave-change Switch.

**POWER SUPPLY:** Low tension, accumulator 2 volts; high tension, Philco-Pertrix 135 volts combined H.T. and Grid Bias battery, Type P.295.

**VALVES USED:** 1 type I.C.6, 1st Detector and Oscillator; 1 type I.A.4.E., I.F.; 1 type 2102, 2nd Detector, A.V.C. and 1st I.F.; 1 type 2103, Quiescent Pentode output.

**WAVE-BANDS: COVERAGE:** TWO; (A) medium, 530-1,500 Kc. (566-200 metres); (B) long, 150-320 Kc. (2,000-937.5 metres).

**TUNING DRIVE:** Geared 6 to 1 ratio for smooth and accurate tuning.

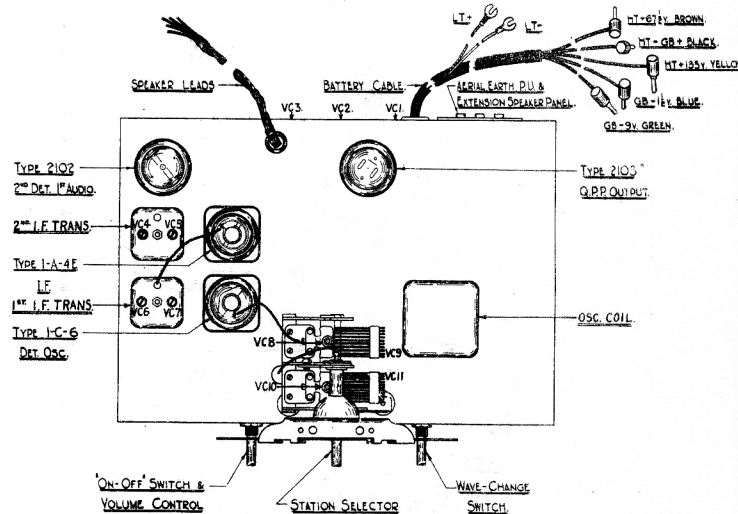
**INTERMEDIATE FREQUENCY:** 451 Kc.

**POWER CONSUMPTION:** L.T. current 0.65 amp.; H. T. current 8-12 milliamps.

#### TABLE I. VOLTAGES.

Low tension accumulator 2 volts. High tension Philco-Pertrix 135 volts combined H.T. and Grid Bias battery, type P.295.

Valve socket readings to chassis taken with an 025 or 099 Philco Set Tester on the 300 and 10 volts ranges. Volume Control at minimum, Wave-change Switch at M.W. position, and no aerial connected.



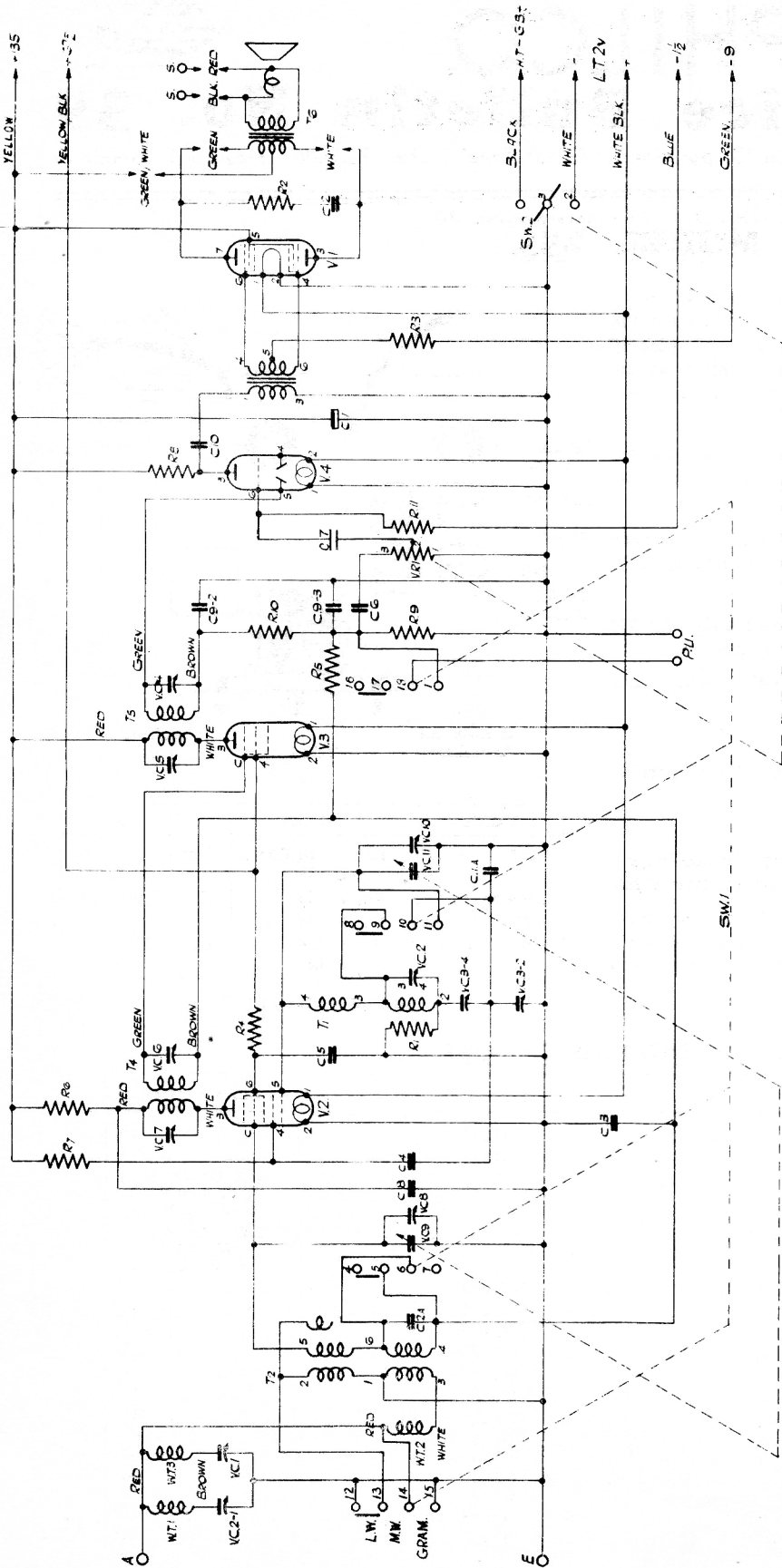
VALVE	ANODE	SCREEN
I.C.6 (S.2)	Pin 3. 110 Volts Pin 4. 55* "	Pin 6. 35 Volts
I.A.4.E. (S.3)	Pin 3. 132 "	Pin 4. 65 "
2102 (S.4)	Pin 3. 78 "	
2103 (S.1)	Pin 3. 129 " Pin 7. 129 "	Pin 5. 133 "

\* Oscillator Anode volts.

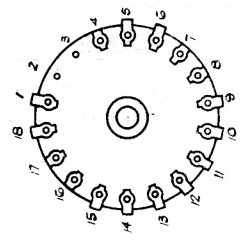
#### TABLE 2. RESISTANCES OF COILS.

Ref. No.	Prod. 1	Prod. 2	Resistance (Ohms)
W.T.1 ... ..	A. ... ..	V.C.2/1 ... ..	15
W.T.3 ... ..	A. ... ..	V.C.1/1 ... ..	8
W.T.2 ... ..	A. ... ..	E. ... ..	S.W.1 Gram. Zero
T.2 Prim. ... ..			S.W.1 M.W. 24
			S.W.1 L.W. 180
T.2 Sec. ... ..	V.2 Cap. ... ..	C.3/3 ... ..	S.W.1 Gram 20
			S.W.1 M.W. 4
			S.W.1 L.W. 20
T.1 M.W. ... ..	V.2/5 ... ..	V.C.2/3 ... ..	3
L.W. ... ..	V.2/5 ... ..	V.C.2/4 ... ..	18
T.4 Prim. ... ..	V.2/3 ... ..	T.B.4/2 ... ..	8
Sec. ... ..	V.3 Cap. ... ..	C.3/3 ... ..	12
T.5 Prim. ... ..	V.3/3 ... ..	C.1/1 ... ..	8
Sec. ... ..	V.4/5 ... ..	C.9/2 ... ..	12
T.3 Prim. ... ..	C.10/6 ... ..	Chassis ... ..	650
Sec. ... ..	V.1/4 ... ..	T.3/5 ... ..	3,000
	V.1/6 ... ..	T.3/5 ... ..	3,000
T.6 Prim. ... ..	C.1/2 ... ..	V.1/3 ... ..	250
	C.1/2 ... ..	V.1/7 ... ..	250
Sec. ... ..	Output Transformer ... ..	Output Transformer ... ..	0.2*
Speech Coil ... ..	Lead 1 ... ..	Lead 2 ... ..	2*

\* Resistance of T.6 Secondary alone and Speech coil alone (taken when disconnected).



SCHEMATIC DIAGRAM—MODEL 255.



FRONT VIEW OF SW1 CHASSIS BEZEL  
LIP SIDE DOWN

## ALIGNMENT PROCEDURE-MODEL 255.

Before leaving the factory all Philco receivers are accurately aligned, but if 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 099 is recommended.

Connect the Output Meter across the Primary of the Output Transformer, i.e., green and white leads. Set Wave Change Switch to M.W. (centre position), open gang fully and check that indicator reads on index line (above 1,500 Kc.). Turn Volume control to maximum.

The I.F. Padders (V.C.'s 4, 5, 6 and 7) should first be adjusted by feeding in a 451 kc. signal from the Signal Generator to the Grid Cap of the I.C.6 valve (with grid lead disconnected). 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. Feed in a 460 kc. signal and adjust V.C.2 (screw) for minimum signal.

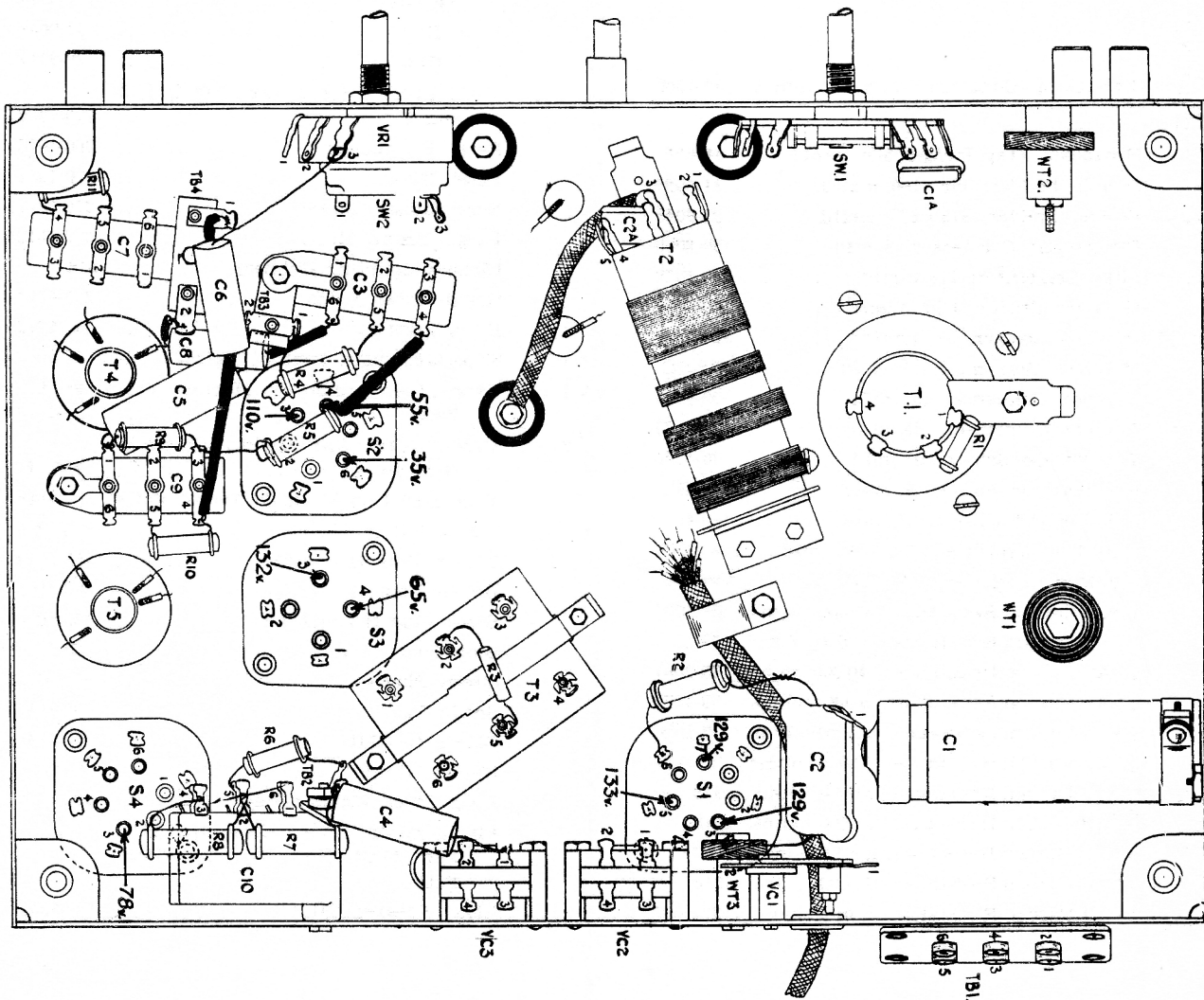
Set tuning scale to 1,400 kc. and feed in a 1,400 kc. signal; slacken off V.C.1 and trim V.C.10 and V.C.8 in that order for maximum response. Feed in and tune a 600 kc. signal. Rock gang and pad V.C.3 (screw) for maximum response. Readjust trimming at 1,400 kc. and padding at 600 kc. until no further improvement is obtainable.

Turn Wave Change Switch to L.W. position (left hand rotation). Feed in and tune a 290 kc. signal, rock gang and trim V.C.2 (nut) for maximum signal.

Feed in and tune a 160 kc. signal, rock gang and pad V.C.3 (nut) for maximum signal. Readjust V.C.2 (nut) and V.C.3 (nut) at appropriate frequencies until no further improvement results.

Turn Wave Change Switch to M.W. position and tune in the Local Station; adjust V.C.1 for Minimum response. If there are two Locals, adjust to the one which causes undesirable whistles elsewhere on the Wave-band.

Check Sensitivity and Calibration.



UNDER CHASSIS DIAGRAM—MODEL 255.

TABLE 3. PARTS LIST FOR MODEL 255.

Ref. No.	Description.	Part No.	Ref. No.	Description.	Part No.		
W.T.1	I.F. Trap Coil .. .. .	38-6851	V.R.1	Volume Control, 1 megohm .. .. .	33-5112		
W.T.2	Image Rejector Coil .. .. .	32-1740	S.W.2	On-off Switch .. .. .	} 42-1116		
W.T.3	Broadcast Trap Coil .. .. .	320-1006	S.W.1	Wave Change Switch .. .. .			
T.1	Oscillator Coil Assembly .. .. .	32-1739	T.6	Output Transformer, complete with speech coil and permanent magnet	360-1005		
T.2	Aerial Coil Assembly .. .. .	32-1738	S.1	7-Prong Valve Holder .. .. .	27-6037		
T.3	Intervalve Transformer .. .. .	320-7009	S.2	6-Prong Valve Holder .. .. .	27-6036		
T.4	} 1st I.F. Coil Assembly .. .. .	32-1705	S.3	4-Prong Valve Holder .. .. .	27-6034		
V.C.6			} 2nd I.F. Coil Assembly .. .. .	32-1706	S.4	6-Prong Valve Holder .. .. .	27-6036
V.C.7					Valve Shield .. .. .	28-2726	
T.5	} Two Gang Condenser and Trimmers	31-1566		Tuning Dial .. .. .	270-5013		
V.C.4			Pilot Bulb .. .. .	34-2065			
V.C.5			Grid Clip .. .. .	28-2214			
V.C.8			3-BA. Erinoid Screw (Mtg. W.T. 1, 2 and 3) .. .. .	270-7022			
V.C.9			Bezel Escutcheon .. .. .	290-1018			
V.C.10	Broadcast Trap Padder 5-30 mmfd. ..	04000E.		Bezel Glass .. .. .	270-7035		
V.C.11	Double Padder, 190+190 mmfd. ..	31-6022		Bezel Glass Gasket .. .. .	270-7023		
V.C.1	Double Padder, 375+375 mmfd. ..	31-6049		Large Brown Knob .. .. .	270-4012		
V.C.2	Electrolytic Condenser, 8 mfd. ..	30-2000		Chassis Mounting Rubbers .. .. .	5189		
V.C.3	Mica Condenser, 175 mmfd. .. ..	300-1010		Small Brown Knob .. .. .	270-4010		
C.1	Mica Condenser, 1,000 mmfd. .. ..	300-1004	V.1	Type 2103 Quasi Pentode Valve .. ..	34-2067		
C.1A.	Mica Condenser, 35 mmfd. .. .. .	300-1009	V.2	Type I.C.6 Variable-mu Heptode Valve	34-2023		
C.2	Moulded Condenser, .05 mfd. .. ..	3615-SG.		Valve .. .. .	34-2023		
C.3	Tubular Condenser, .01 mfd. .. ..	30-4124	V.3	Type I.A.4E. Variable-mu Screened Grid Valve .. .. .	7302-E.		
C.4	Tubular Condenser, .05 mfd. .. ..	30-4123	V.4	Type 2102 Double Diode Triode Valve	34-2066		
C.5	Tubular Condenser, .01 mfd. .. ..	30-4124		7-Way Battery Cable .. .. .	L-1316		
C.6	Moulded Condenser, .01 mfd. .. ..	3793-SU.		Yellow Plug H.T.+135v. .. .. .	380-5004		
C.7	Tubular Condenser, .01 mfd. .. ..	30-4124		Brown Plug H.T.+67½v. .. .. .	380-5005		
C.8	Moulded Condenser, 110+110 mfd. .	8035-DG.		Black Plug H.T.—G.B.+ .. .. .	380-5006		
C.9	Moulded Condenser, .09 mfd. .. ..	4989-SU.		Blue Plug —1½v. .. .. .	380-5020		
C.10	¼ watt Carbon Resistance, 51,000 ohms	33-1034		Green Plug —9v. .. .. .	380-5021		
R.1	½ watt Carbon Resistance, 35,000 ohms	33-1147		Spade Tag .. .. .	280-1012		
R.2	¼ watt Carbon Resistance, 240,000 ohms	33-1097		Clamp for Cable .. .. .	29-1644		
R.3	¼ watt Carbon Resistance, 20,000 ohms	33-1178		Rubber Bush .. .. .	4126		
R.4	¼ watt Carbon Resistance, 2 megohms	33-1025		Plain Black Wander Plug .. .. .	380-5015		
R.5	¼ watt Carbon Resistance, 10,000 ohms	33-1000		Philco-Pertrix 135v. combined H.T. and Grid Bias Battery, Type P.295 .. .. .			
R.6	½ watt Carbon Resistance, 51,000 ohms	4518		5-Way Speaker Cable .. .. .	LO.1001		
R.7	½ watt Carbon Resistance, 51,000 ohms	4518					
R.8	¼ watt Carbon Resistance, 490,000 ohms	6097					
R.9	½ watt Carbon Resistance, 51,000 ohms	4518					
R.10	¼ watt Carbon Resistance, 1 megohm ..	33-1096					