



PHILCO

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TYPE CIRCUIT: Four-valve Superheterodyne Receiver with highly selective iron dust-core coils, delayed A.V.C. and Pentode Output (3 watts) for operation on Medium and Long Wave-bands. Provision is made by means of sockets on the speaker panel, for connecting an external speaker of the permanent magnet moving coil type, having an impedance of 2-3 ohms.

POWER SUPPLY: The circuit is so arranged that connection may be made to either A.C. or D.C. mains from 190-260 volts without discrimination or adjustment, and on A.C. mains the circuit is independent of periodicity between the limits of 40-100 cycles. A type 35RE rectifying valve is employed in the receiver and is used as a half-wave rectifier on A.C., and as a resistance on D.C.

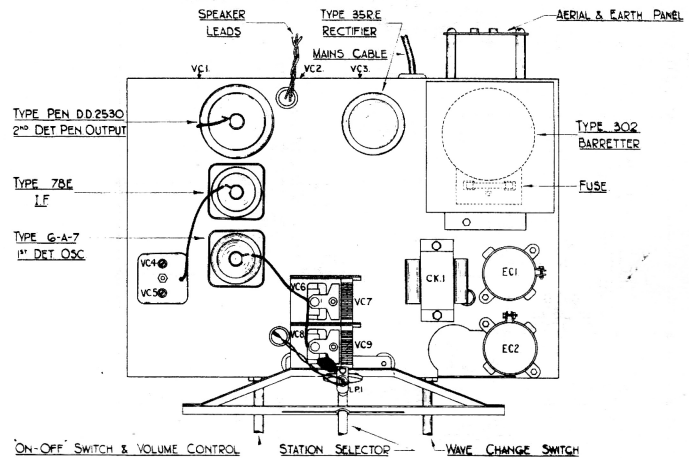
WAVE-BANDS: COVERAGE: Two—(a) Medium, 550-1500 Kc. (545-200 metres); (b) Long, 150-300 Kc. (2000-1000 metres).

TUNING DRIVE: G geared 6-1 ratio for smooth and accurate tuning.

INTERMEDIATE FREQUENCY: 451 Kc.

POWER CONSUMPTION: 85 watts approx.

Model U-427 — Run 1



TOP CHASSIS DIAGRAM

TABLE 1—VOLTAGES

Valve socket readings to chassis taken with an 065 or 077 Philco Set Tester, using the 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, S3	6A7	Pin 3. 220 v. ,, 5. 170 v.*	Pin 4. 100 v.	Pin 7. 3.5 v.
I.F. Amplifier S2	78E	Pin 3. 220 v.	Pin 4. 100 v.	Pins 5 & 6. 3.5v.
2nd Detector, A.V.C. and Pentode Output S1 ...	Pen DD. 2530	Pin 6. 215 v.	Pin 4. 180 v.	Pin 3. 10 v.
Half-wave Rectifier S4	35RE	Pins 3 & 6. 230v.A.C. ,, 4 & 5. 240v.D.C.	—	—
Barretter B1	302	Pin 1. 230 v. A.C. Pin 2. 80 v. A.C.	—	—

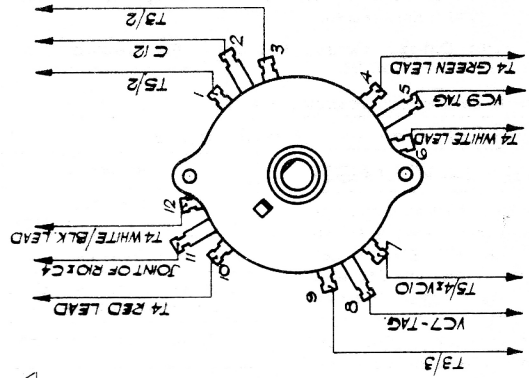
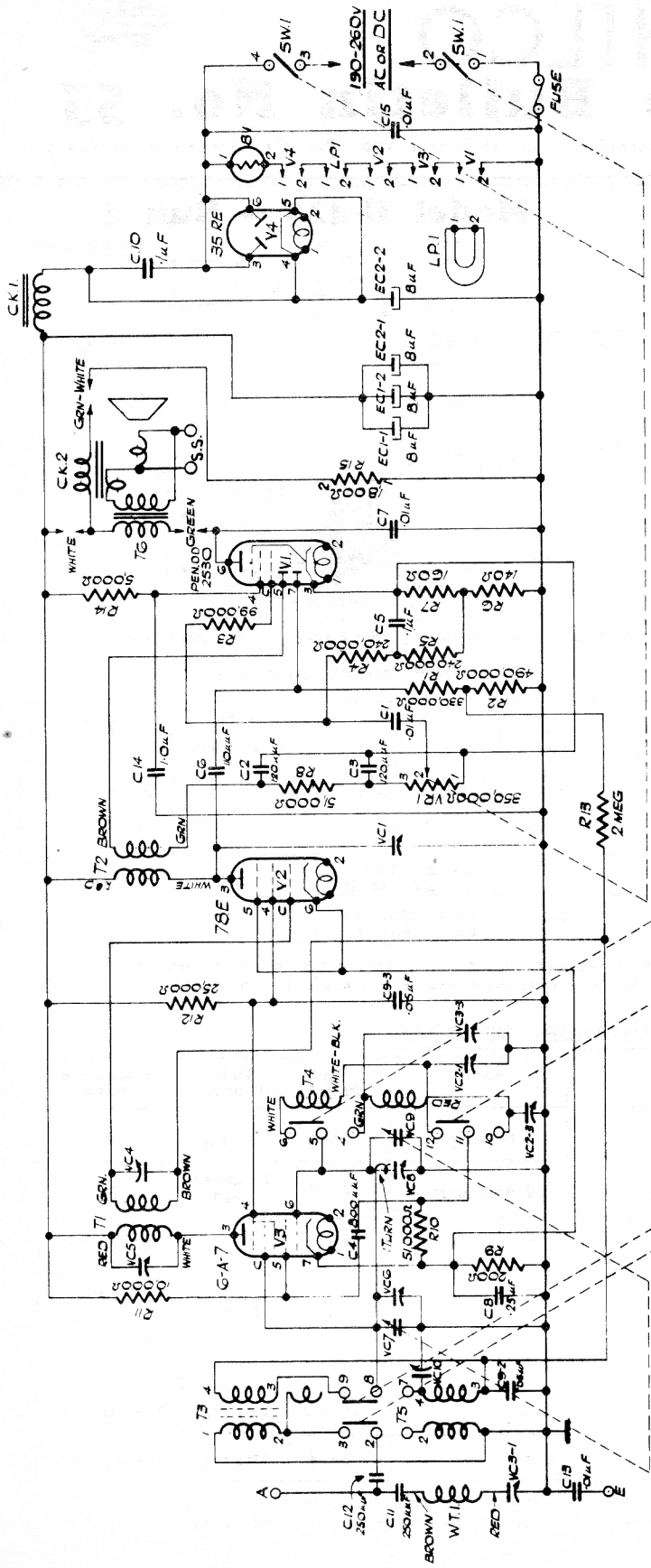
* Oscillator Anode Volts. V1 Filament, 25v. A.C.; V2, V3 and L.P.1 filaments, each 6.3v. A.C.; V4 filament, 35v. A.C., measured between Pins 1 and 2 on each socket.

TABLE 2—RESISTANCES OF COILS.

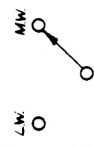
REF. No.	TEST PROD 1.	TEST PROD 2.	RESISTANCE (Ohms).	REF. No.	TEST PROD 1.	TEST PROD 2.	RESISTANCE (Ohms).
W.T.1	TB.4/1	VC.3/1	20	T.2 Primary	V.2/3	TB.2 tag	30
T.3 Primary	TB.4/2	Chassis	Sw.2. M.W. 25	T.2 Secondary	V.1/5	T.2 Green Lead	80
T.5 Primary	TB.4/2	Chassis	Sw.2. L.W. 120	T.6 Primary	V.1/6	TB.2 tag	230 approx.
T.3 Secondary	V.3 Cap	C.9/2	,, M.W. 2.5	T.6 Secondary	Output Trans.	Output Trans.	0.2*
T.5 Secondary	V.3 Cap	C.9/2	,, L.W. 40	Speech Coil	Lead 1	Lead 2	2*
T.1 Primary	V.3/3	TB.1/12	8	C.K.2	R.15/2	TB.2 tag	3300 approx.
T.1 Secondary	V.2 Cap	C.9/2	12	C.K.1	V.4/4	TB.2 tag	150 approx.
T.4	V.3/6	SW.2/11	,, M.W. 2.5 ,, L.W. 17				

* Resistance of T6 Secondary and speech coil alone (taken when disconnected).

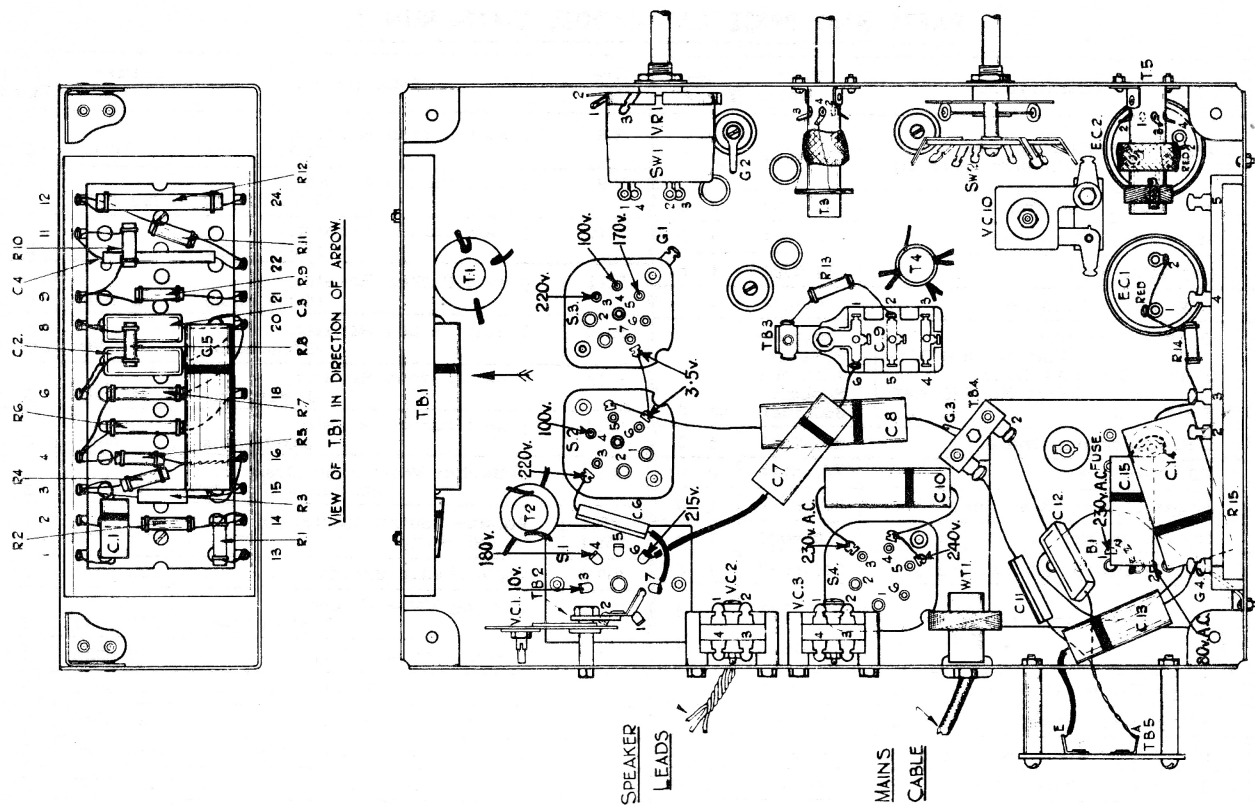
Note.—Reference numbers for valves should be read in conjunction with the socket numbers, e.g., V1-S1.



SCHEMATIC DIAGRAM



SW.2 SHOWN IN MW POSITION



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 pointer reads on index line. Set wave-change switch to M.W. (clockwise rotation) and volume control to maximum.

INTERMEDIATE FREQUENCY.—The I.F. trimmers (V.C's 1, 4 and 5) 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 earth socket. 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.

NOTE.—It is necessary to carry out this operation several times, taking particular care with V.C.1; unless this is done the I.F. will peak at the wrong place.

WAVE-TRAP.—Transfer Signal Generator lead via a Standard Dummy to the Aerial socket. Feed in a 451 Kc. signal and adjust V.C.3 (screw) for *minimum* output.

MEDIUM WAVES.—Set gang condenser at 1400 Kc. Feed in a signal of 1400 Kc. and trim V.C's 8 and 6 in that order for maximum output.

Feed in and tune a 600 Kc. signal. Rock gang and pad V.C.2 (screw) for maximum output. Readjust trimming at 1400 Kc. and padding at 600 Kc. until no further improvement results.

LONG WAVES.—Turn wave-change switch to L.W. (counter clockwise rotation). Set gang condenser at 290 Kc. Feed in a signal of 290 Kc. and trim V.C.3 (nut) and V.C.10 in that order for maximum output.

Feed in and tune a 160 Kc. signal. Rock gang and pad V.C.2 (nut) for maximum output.

Readjust trimming at 290 Kc. and padding at 160 Kc. until no further gain can be obtained.

Check calibration.

PARTS AND PRICE LIST—MODEL U-427—RUN I.

REF. No.	DESCRIPTION.	PART No.	LIST. PRICE.	REF. No.	DESCRIPTION.	PART No.	LIST. PRICE.
T.1 VC.4 VC.5	1st I.F. Transformer and Trimmers Assembly	320-1047	5 6	R.8	¼ watt Carbon Resistor, 51,000 ohms	6098	0 9
T.2		32-2130	5 6	R.9	¼ watt Carbon Resistor, 200 ohms ± 5%	330-1030	0 9
T.3	M.W. Aerial Transformer ...	320-1044	3 0	R.10	¼ watt Carbon Resistor, 51,000 ohms	6098	0 9
T.4	Oscillator Coil ...	32-2094	4 6	R.11	¼ watt Carbon Resistor, 10,000 ohms	33-1000	0 9
T.5	L.W. Aerial Transformer ...	320-1045	4 0	R.12	1 watt Carbon Resistor, 25,000 ohms	3656	0 9
T.6	Output Transformer, Part No. 320-7045 Speech Coil and Cone, Part No. 360-3002	Complete Speaker with S.S. Sockets 360-1051	22 6	R.13	¼ watt Carbon Resistor, 2 megohms	33-1025	0 9
CK.2				Field Coil ...	360-1051	22 6	R.14
CK.1	L.F. Smoothing Choke ...	320-7030	5 3	R.15	Candohm Wirewound Resistor, 1,800 ohms (Sec. 1-2)	33-3210	2 3
WT.1	I.F. Trap Coil ...	380-5291	0 9	VR.1 SW.1	Volume Control 350,000 ohms ... On-off Switch ...	330-5015	4 3
VC.1	Single Padder 15-80 mmfd. ...	310-6013	1 0	SW.2			
VC.2	Double Padder 125+375 mmfd. ...	310-6028	1 6	S.1	7-Prong Valve Holder (English type)	270-6007	0 5
VC.3	Double Padder 50+125 mmfd....	310-6027	1 0	S.2	6-Prong Valve Holder ...	27-6036	0 5
VC.6 VC.7 VC.8 VC.9	Two-gang Condenser and Trimmers	31-1566 or 310-1014	11 6 11 6	S.3	7 Prong Valve Holder ...	27-6037	0 5
VC.10		Single Padder 15-80 mmfd. ...	310-6013	1 0	S.4	6-Prong Valve Holder ...	27-6036
EC.1	Electrolytic Condenser 8+8 mfd. ...	30-2028	6 0	B.1	Barretter Socket Assembly ...	380-5199	1 0
EC.2	Electrolytic Condenser 8+8 mfd. ...	30-2028	6 0		Barretter Heat Screen ...	280-1302	0 5
C.1	Tubular Condenser .01 mfd. ...	30-4124	0 6		Fuse Panel Assembly ...	380-5185	0 4
C.2	Mica Condenser 120 mmfd. ...	300-1065	0 4		Fuse (1 amp) ...	380-5003	0 3
C.3	Mica Condenser 120 mmfd. ...	300-1065	0 4	LP.1	Pilot Bulb ...	34-2141	1 4
C.4	Mica Condenser 800 mmfd. ...	300-1005	0 8		Erinoid Screw for W.T.1 ...	270-7022	0 5
C.5	Tubular Condenser .1 mfd. ...	30-4122	0 6		Valve Shield ...	28-2726	0 2
C.6	Mica Condenser 110 mmfd. ...	300-1012	0 5		Dial Scale ...	270-5061	1 9
C.7	Tubular Condenser .01 mfd. ...	30-4145	0 7		Pointer and Hub Assembly ...	380-5125	0 9
C.8	Tubular Condenser .25 mfd. ...	30-4146	0 10		Dial Screen ...	270-5062	1 6
C.9	Moulded Condenser .05+.05 mfd. ...	3615-DG	1 2		Grid Clip ...	28-2214	doz. 5
C.10	Tubular Condenser .1 mfd. ...	30-4122	0 6		Mains Lead and Plug ...	LO-1009	1 7
C.11	Mica Condenser 250 mmfd. ...	300-1014	0 6		Speaker Cable ...	LO-1057	1 0
C.12	Mica Condenser 250 mmfd. ...	300-1014	0 6		Knob, Tuning + Spring ...	270-4067	0 5
C.13	Tubular Condenser .01 mfd. ...	30-4051	0 6		Knob, Volume ...	270-4068	0 5
C.14	Tubular Condenser 1.0 mfd. ...	300-4006	1 9		Knob, Wave-change ...	270-4070	0 5
C.15	Tubular Condenser .01 mfd. ...	30-4145	0 7		Knob, Spring ...	280-5262	doz. 2
R.1	¼ watt Carbon Resistor, 330,000 ohms	33-1200	0 9		Knob, Grubscrew (Cup point)...	WB-324	doz. 4
R.2	¼ watt Carbon Resistor, 490,000 ohms	6097	0 9		Wander Plug, Red ...	380-5087	0 2
R.3	¼ watt Insulated Resistor, 99,000 ohms	330-2003	0 9		Wander Plug, Black ...	380-5015	doz. 1 6
R.4	¼ watt Carbon Resistor, 240,000 ohms	33-1097	0 9	V.1	Type Pen. DD2530 Double Diode Pentode Valve ...	340-2004	16 0
R.5	¼ watt Carbon Resistor, 240,000 ohms	33-1097	0 9	V.2	Type 78E Variable-mu H.F. Pentode Valve ...	8315E	12 6
R.6	½ watt Wirewound Resistor, 140 ohms ± 5%	330-3003	0 9	V.3	Type 6A7 Variable-mu Heptode Valve ...	34-2002	15 0
R.7	½ watt Wirewound Resistor, 160 ohms ± 5%	330-3014	0 9	V.4	Type 35RE Rectifier Valve ...	34-2160	14 0
				B.1	Type 302 Barretter Valve ...	340-9002	12 6