



PHILCO

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"THE PEOPLE'S SET" Model 333

TYPE CIRCUIT: Three valve battery T.R.F. receiver with Pentode output (0.4 watt) Run 1, (0.5 watt) Run 2. Band pass circuit using highly selective iron dust-core coils which give selectivity comparable with that of a normal superhet.

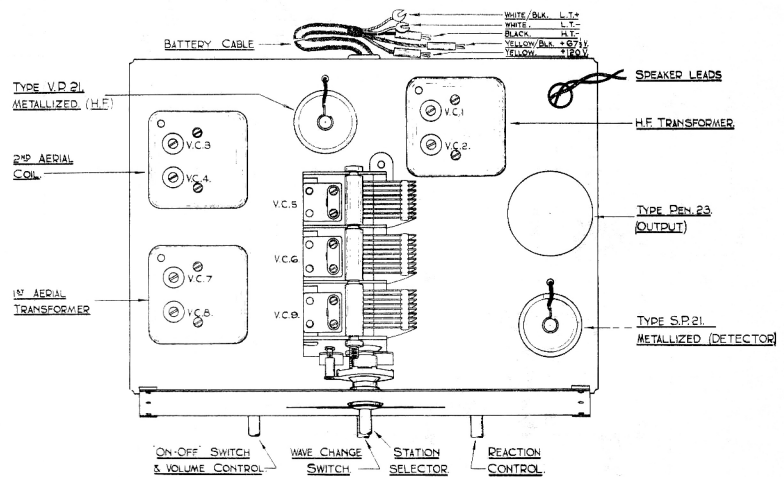
POWER SUPPLY: Low tension accumulator, 2 volts; high tension battery, 120 volts, with tapping at 67.5 volts. Suitable types are Exide OCG.3 Accumulator and type H.1131 H.T. battery. No bias battery is needed, as the circuit employs an automatic bias arrangement.

WAVE-BANDS: COVERAGE: Two—(a) Medium, 550-1,750 Kc. (545.5-171.4 metres); (b) long, 150-320 Kc. (2,000-937.5 metres).

TUNING DRIVE: Slow motion drive geared 5 to 1 ratio, enabling fine tuning to be obtained.

LOUDSPEAKER: A permanent magnet speaker employing the latest nickel-aluminium alloy, gives the highest efficiency audio output, and greater bass response is obtained due to the large baffle.

POWER CONSUMPTION: L.T. current 0.45 amp., H.T. current 6 milliamps (Run 1), 8.5 milliamps (Run 2).



TOP CHASSIS DIAGRAM.

TABLE I — VOLTAGES.

Valve socket readings to chassis taken with an 065 or 077 Philco Set Tester on the 10 and 250 volts ranges. Volume and reaction controls at minimum, wave-change switch in M.W. position, and no aerial connected.

| POSITION | VALVE | ANODE | SCREEN | CONTROL GRID |
|---------------------------|--------|------------------|-------------------|-------------------|
| H.F. Amplifier (S.1) .. . | VP.21 | Cap. 120 volts | Pin 7. 67.5 volts | Pin 2. —2.5 volts |
| Detector (S.3) | SP.21 | Cap. 12.5 volts | Pin 7. 40 volts | — |
| Pentode Output (S.2) .. | Pen.23 | Pin 1. 120 volts | Pin 5. 120 volts | —6.5 volts† |

† Bias measured between C.2 tag 2 and chassis.

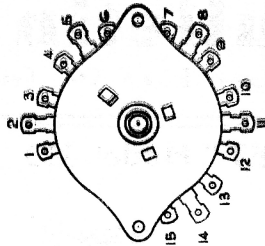
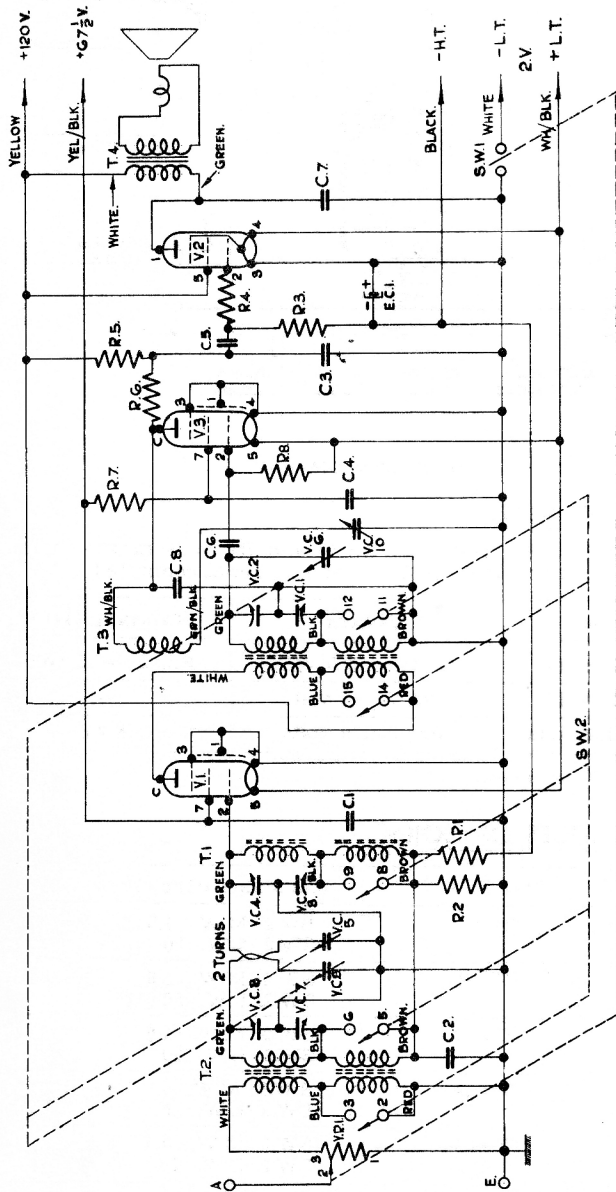
TABLE 2. — RESISTANCES OF COILS.

| REF. NO. | TEST PROD 1 | TEST PROD 2 | RESISTANCE (Ohms) |
|-----------------------|--------------------|--------------------|---------------------------------|
| T.2 Primary | VR.1/3 | Chassis | SW.2. M.W. 1.5 SW.2. L.W. 20 |
| T.2 Secondary.. . . . | VC.9 Stator | C.2/4 | SW.2. M.W. 1.5 SW.2. L.W. 20 |
| T.1 | V.1/2 | C.2/4 | SW.2. M.W. 1.5 SW.2. L.W. 20 |
| T.3 Primary | V.1 Cap | TB.1A | S.W.2. M.W. 5 SW.2. L.W. 25 |
| T.3 Secondary.. . . . | TB.2/1 | Chassis | SW.2. M.W. 1.5 SW.2. L.W. 20 |
| T.3 Reaction | VC.10 Stator | V.3/6 | 15 |
| T.4 Primary | V.2/1 | TB.1A | 850 |
| T.4 Secondary.. . . . | Output Transformer | Output Transformer | 0.2* |
| Speech Coil | Lead 1 | Lead 2 | 2* |

* Resistance of T.4 secondary alone and speech coil alone (taken when disconnected).

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

L.W. TRIMMER
 SW2 SHOWN
 IN 'L.W.' POSITION.

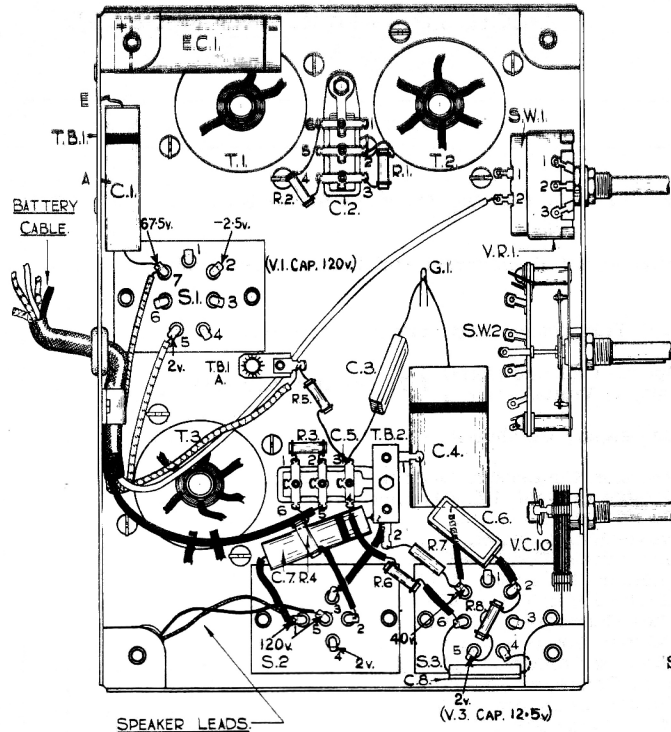


FRONT VIEW OF SW2
 CHASSIS BEING UPSIDE DOWN

| REF. NO. | DESCRIPTION | PART NO. | REF. NO. | DESCRIPTION | PART NO. |
|----------|--|----------|--|--|-----------|
| T.1 | 2 ND AERIAL COIL | | C.1 | TUBULAR CONDENSER .01 MFD. | 80-4122 |
| VC.3 | L.W. TRIMMER | 350-1065 | C.2 | MOLDED .05 MFD. | 3415 S.G. |
| VC.4 | M.W. TRIMMER | | C.3 | MICA .10 M MFD. | 900-1020 |
| T.2 | 1 ST AERIAL TRANSFORMER | | C.4 | TUBULAR .10 MFD. | 900-1009G |
| VC.7 | L.W. TRIMMER | 350-1064 | C.5 | MOLDED .01 MFD. | 9503 S.U. |
| VC.8 | M.W. TRIMMER | | C.6 | MICA .50 M MFD. | 300-1045 |
| T.3 | H.F. TRANSFORMER | | C.7 | TUBULAR .005 MFD. | 90-4042 |
| VC.1 | L.W. TRIMMER | 320-1066 | C.8 | MICA .250 M MFD. | 900-1014 |
| VC.2 | M.W. TRIMMER | | R.1 | 1/4 WATT WIRE-WOUND RESISTOR. 800 OHMS ± 2 1/2 % | 350-3007 |
| T.4 | OUTPUT TRANSF. SPEECH COIL & CONE. <small>PH. SENSITIVE COMPLETE</small> | 360-1026 | R.2 | 1/4 " " " " 200 OHMS ± 2 1/2 % | 350-3008 |
| VC.7 | 1 ST AERIAL SECTION | | R.1 | 1/4 WATT WIRE-WOUND RESISTOR. 180 OHMS ± 2 1/2 % | 330-1025 |
| VC.8 | H.F. SECTION | | R.2 | 1/4 " " " " 120 OHMS ± 2 1/2 % | 330-1026 |
| VC.9 | 2 ND AERIAL SECTION | | R.3 | 1/4 " " CARBON " 490,000 OHMS. | 6057 |
| VC.10 | REACTION CONDENSER .0025 MFD. MAX. | 810-1017 | R.4 | 1/4 " " " 490,000 OHMS. | 6097 |
| V.1 | VOLUME CONTROL. 100,000 OHMS. | 350-5006 | R.5 | 1/4 " " " 180,000 OHMS. | 85181 |
| SW.1 | ON-OFF SWITCH | | R.6 | 1/4 " " " 51,000 OHMS | 6098 |
| SW.2 | WAVE-CHANGE SWITCH. | 450-104 | R.7 | 1/4 " " " 100,000 OHMS | 88-1035 |
| EC.1 | ELECTROLYTIC CONDENSER. 35 MFD. | 300-4082 | R.8 | 1/4 " " " 2 MEGOHMS | 93-1025 |
| | | V.1 | TYPE VP.21 (NET) VAP-MU H.F. PENTODE VALVE | | 340-2002 |
| | | V.2 | TYPE DEN.23 PENTODE VALVE | | 340-2003 |
| | | V.3 | TYPE S.P.21 (NET) H.F. PENTODE VALVE | | 340-2001 |

RUN 1
 RUN 2

SCHEMATIC DIAGRAM — MODEL 333.



SEE NEW DIAGRAM,
BULLETIN 46A.

UNDER CHASSIS DIAGRAM.

ALIGNMENT PROCEDURE FOR MODEL 333.

Before leaving the Factory all Philco receivers are accurately aligned, but if misalignment is suspected through damage, it should not be attempted without instruction in the correct adjustment of the trimming 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 or on letter "T" in word "Metres." Set wave-change switch to M.W. position (clockwise rotation), turn volume control (left-hand bottom knob) fully clockwise and reaction control (right-hand bottom knob) fully counter-clockwise.

MEDIUM WAVES: Set pointer at 1,400 Kc. and feed in a 1,400 Kc. signal from the Signal Generator through a Standard Dummy to the Aerial and Earth sockets of the receiver. Adjust the Signal Generator attenuator to give a half-scale reading on the Output Meter. Then adjust VC.'s 8, 4 and 2 in that order for maximum output. This trimming operation must be carried out *at least three times* to obtain accurate band-pass alignment.

Increase reaction control setting and re-trim VC.2, repeating the operation with increasing reaction until oscillation is about to commence. This setting is very critical.

NOTE: VC.s 8 and 4 must *not* be re-trimmed after VC.2 has been adjusted.
Check calibration and sensitivity at 600 Kc.

LONG WAVES: Turn wave-change switch to L.W. position (counter-clockwise) and reaction control fully counter-clockwise. Set pointer at 290 Kc. and inject a signal of 290 Kc. from the Signal Generator. Keep input signal as low as possible by means of the attenuator and adjust VC.'s 7, 3 and 1 in that order for maximum output. As in the case of medium waves, this operation must be repeated for accurate alignment.

Increase reaction control setting and re-trim VC.1, repeating the operation with increasing reaction until oscillation is about to commence. This setting is very critical.

NOTE: VC.'s 7 and 3 must not be re-trimmed after VC.1 has been adjusted.
Check calibration and sensitivity at 160 Kc.

MODEL 333 — PARTS AND PRICE LIST.

| REF. NO. | DESCRIPTION | PART NO. | LIST PRICE | | |
|----------------------|--|----------|------------|----------|----------|
| T.1 VC.3 VC.4 | Second Aerial Coil and Trimmers Assembly | 320-1065 | 3 9 | | |
| T.2 VC.7 VC.8 | | | | 320-1064 | 6 3 |
| T.3 VC.1 VC.2 | | | | | |
| T.4 | 360-1026 | 24 0 | | | |
| VC.5 VC.6 VC.9 | | | 310-1019 | 13 6 | |
| VC.10 | 310-1017 | 2 0 | | | |
| VR.1 | | | | | 330-5006 |
| SW.1 | 420-1014 | 3 0 | | | |
| SW.2 | | | 300-4022 | 1 3 | |
| EC.1 | 30-4122 | 6 | | | |
| C.1 | | | 3615 SG. | 9 | |
| C.2 | 300-1020 | 8 | | | |
| C.3 | | | 300-4006 | 1 9 | |
| C.4 | 3903 SU. | 7 | | | |
| C.5 | | | 300-1043 | 6 | |
| C.6 | 30-4042 | 7 | | | |
| C.7 | | | 300-1014 | 6 | |
| C.8 | 330-3007 | 9 | | | |
| R.1 | | | 330-3008 | 9 | |
| R.2 | 330-1025 | 9 | | | |
| R.3 | | | 330-1026 | 9 | |
| R.4 | 6097 | 9 | | | |
| R.5 | | | 6097 | 9 | |
| R.6 | 33-1183 | 9 | | | |
| R.7 | | | 5331 | 9 | |
| R.8 | 6098 | 9 | | | |
| S.1 | | | 33-1035 | 9 | |
| S.2 | 33-1025 | 9 | | | |
| S.3 | | | 270-6007 | 5 | |
| | 270-6005 | 3 | | | |
| | | | 270-6007 | 5 | |
| | 4126 | 1 | | | |
| | | | 270-5048 | 1 6 | |
| | 280-1218 | 2 | | | |
| | | | 28-2345 | doz. 5 | |
| | 380-5228 | 3 | | | |
| | | | WB.316 | doz. 4 | |
| | Complete Assembly | 3 0 | | | |
| | | | 410-3006 | 7 | |
| | LO.1041 | doz. 5 | | | |
| | | | 28-2214 | 1 1 | |
| | 270-5042 | 9 | | | |
| | | | 270-4054 | 5 | |
| | 270-4055 | 5 | | | |
| | | | 270-4056 | 5 | |
| | 270-4057 | 3 | | | |
| | | | 280-5262 | doz. 2 | |
| V.1 | 340-2002 | 11 0 | | | |
| V.2 | | | 340-2003 | 16 6 | |
| V.3 | 340-2001 | 11 0 | | | |
| | | | 380-5015 | doz. 1 6 | |
| | 380-5087 | 2 | | | |