

PHILCO A637 THREE BAND SUPER



knobs on the front of the receiver are of the spring-fixing type, and are removed by a slight pull.

Then turn the cabinet on its side and remove the four fixing bolts and washers that serve to secure the chassis to the cabinet.

The chassis is then free to the extent of the speaker leads, and is accessible for the usual service requirements.

The speaker (held by four bolts on the periphery) can be removed if desired, or the leads may be unsoldered. Connections are: the white lead is soldered to the lowest tag, the green lead to the middle, and the white to the top tag. The red lead is connected to the top tag of the external speaker sockets.

Circuit Alignment

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer—i.e., the green and white leads. Connect a service oscillator between the top grid cap of V2 and chassis, with grid lead still connected. Switch to the medium waveband and fully engage the vanes of the gang condenser. Set the volume control to the maximum volume position and the tone control as far counter-clockwise as possible.

Tune the oscillator to 451 kc. and adjust the trimmers of I.F.T.1 and I.F.T.2—i.e., T1, T2, T3 and T4, in that order—for maximum response, reducing the input

CIRCUIT.—The aerial input is designed to be fed either by a double or an ordinary single wire aerial. The aerial input is coupled to the grid of V1, a pentode H.F. amplifier.

Output of V1 passes to V2, a heptode frequency changer, where the signal is converted to the I.F., then passing to the I.F. amplifier V3, another H.F. pentode, via an I.F. transformer.

A further I.F. transformer couples V3 to the demodulating diode of V4, a double-diode-triode. The other diode of V4 provides a D.C. potential that operates the A.V.C. network. Coupling arrangements to the grid of the triode section of V4 include a manual volume control that is supplemented by a condenser and resistance in series providing a tone modification.

V4 is resistance-capacity coupled to V5, an output pentode, in the grid circuit of which is connected a variable resistance and condenser tone-control. A pentode compensator condenser is connected between the anode of the same valve and chassis.

The output of V5 passes to the loud speaker via a matching transformer.

Mains equipment consists of a mains transformer with the usual voltage tapplings, a full wave rectifier, V6, 80, electrolytic smoothing condensers and smoothing choke (speaker field energising coil). A mains suppressor centre tapped condenser is connected across the primary of the mains transformer.

Special Notes.—The mains adjustment device is located at the rear of the chassis and takes the form of a screw with an insulated former that fits into one of two

sockets giving voltage tapplings of 200-230 and 231-260 volts at 50-100 cycles.

A pair of sockets at the rear of the chassis enable a pick-up to be connected. This should be of the high impedance type; the makers recommend a Philco type 350-2,000 and state that a 5,000 ohms resistance should be connected in shunt with the pick-up leads.

A similar pair of sockets at the rear of the chassis provides for the connection of an external speaker. This should be of the permanent magnet type with a speech coil impedance of some two or three ohms, the speech coil of the external loud speaker being connected to the L.S. sockets. The field coil has a resistance of 1,140 ohms, and the speaker a resistance of 7,000 ohms.

The single dial light is mounted in a holder clamped to a bracket on the wave-length dial assembly. The bulb is of the bayonet base type, and for replacement purposes the Philco part number is 34-2064 or 34-2141.

C27, C28 and R21 are located inside the second I.F. transformer coil can. C19 is .001 mfd. in the console and radiogram versions.

Chassis Removal.—The removal of six wood screws will enable the back of the cabinet to be taken off. The four control

VALVE READINGS

No signal. Volume maximum. 200 volts A.C. mains. 1000 ohms volt meter.

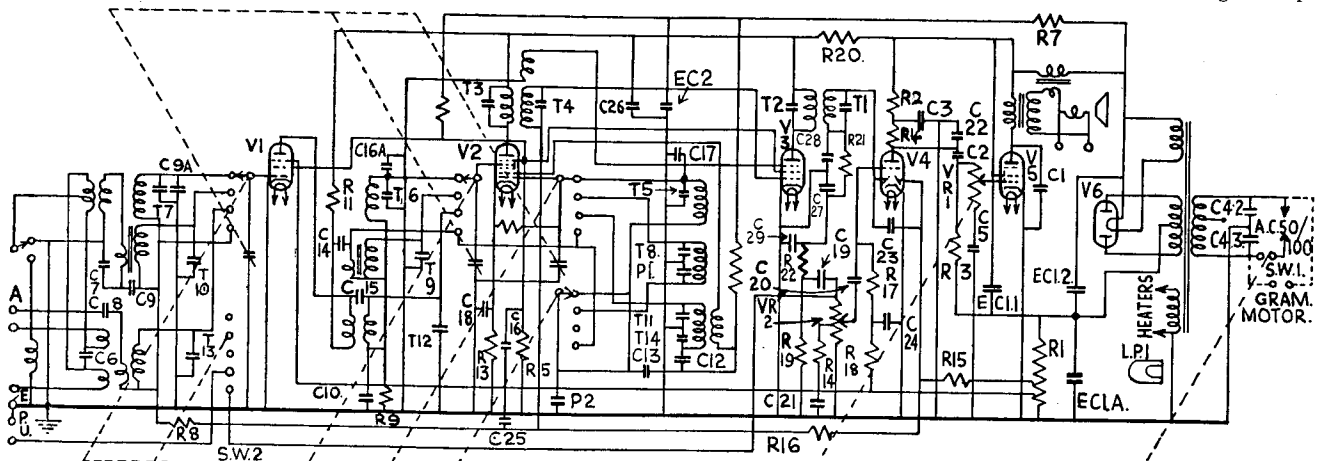
V.	Type.	Electrode.	Volts.	Ma.
1	All Philco. 78E (6)	Anode ..	170	*
		Screen ..	60	V1 and V2-2.6
2	6A7 (7)	Anode ..	220	1.2
		Screen ..	60	V1 and V2-2.6
3	78E (6)	Osc. anode	145	*
		Anode ..	220	3.8
		Screen ..	60	.8
4	75 (6)	Anode ..	110	.5
5	42E (6)	Anode ..	273	37
		Screen ..	282	*
6	80 (4)	Filaments	342	—

* Inaccessible

QUICK TESTS

Quick tests are available on this receiver, and volts measured between the leads of the speaker transformer and chassis should be:

- White lead—282 volts smoothed H.T.
- Green lead—273 volts smoothed H.T.
- Green and white lead—342 volts unsmoothed H.T.



Theoretical circuit of the Philco A637, with condensers and resistances numbered to agree with the tables of values on the opposite page. Switch numbers agree with those on the diagram opposite.

For more information remember

from the service oscillator as the circuits come into line so as to render the A.V.C. inoperative.

Signal Circuits.—Leave the output meter connected as before but feed the service oscillator *via* a dummy aerial or fixed condenser to the aerial and earth terminals of the receiver, making sure that the connecting link at the rear of the chassis is in the socket marked B. Feed only sufficient input from the service oscillator to obtain definite peaks in the output meter, so as to keep the A.V.C. inoperative. Align the receiver in the following order of wavebands:—

Long Waves.—Tune set and oscillator to 1,054 metres (290 kc.) and adjust T5 and then T6 and T7 for maximum response.

Tune set and oscillator to 1,875 metres (160 kc.) and adjust P1 (the nut of the padding condenser) for maximum response, simultaneously rocking the gaug to ensure optimum results.

Repeat both operations until no further improvement is noticed.

Medium Waves. Tune set and oscillator to 214 metres (1,400 kc.) and adjust T8, T9 and T10 in that order for maximum response.

Tune set and oscillator to 500 metres (600 kc.) and adjust P2 (the screw of the padding con-

denser) for maximum response, simultaneously rocking the gaug to ensure optimum results.

Repeat both the operations until no further improvement is noticed.

Short Waves.—Feed the service oscillator through a 400-ohm resistance in place of the dummy aerial or fixed condenser.

Tune the set and oscillator to 16.7 metres (18 mc.). Screw T11 right up and then unscrew until the second peak is heard.

(Some models may have a tendency to pull and change the frequency of the oscillator. By shunting a .00035-mfd. variable condenser 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 the tag of T11 and tune it (about half-open) for the signal at 18 mc. Then trim T12 and T13 for maximum response. Then disconnect the shunt condenser and retrim T11 for maximum response. Check that the 18-mc. image is obtained at approximately 17.1 mc.

Feed and tune in on the receiver a signal of 50 metres (6 mc.) and check for correct reading on the wave-length scale. If sensitivity is very low at 50 metres, then adjust T14 very slightly to compensate and then retrim T11.

Philco A637 on Test

MODEL A637.—For A.C. mains operation, 200-260 volts, 50-100 cycles. Price, 13 gns.

DESCRIPTION.—Three-waveband, 6-valve (including rectifier) superhet, table model.

FEATURES.—Small full-vision scale, normal type of controls with concentric slow-motion on tuning. Master switch combined with tone control. Pick-up and extra L.S. sockets.

LOADING.—70 watts.

Selectivity and Sensitivity

SHORT WAVES (16.6-52.6 metres).—Very good gain and selectivity. No appreciable drift.

MEDIUM WAVES (176.4-545.4 metres).—Excellent gain and selectivity. Local station spread small and good background. Whistles slight. Gain well maintained over entire band.

LONG WAVES (937.5-2,000 metres).—Good gain and excellent selectivity. Clear separation between 5XX and Radio-Paris. Background low.

Acoustic Output

Ample volume for a large room without overloading. Speech reproduction very natural. Good balance on all types of musical reproduction. Tone control not too vigorous in action.

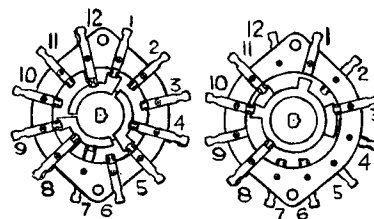
CONDENSERS

C.	Purpose.	Mkts.
1	Pentode compensator ..	.002
2	L.F. coupling ..	.015
3	V4 anode decoupling ..	.1
4	Mains suppressor ..	.015 and .015
5	Tone control ..	.00041
6	Doublet coupling condenser ..	.00025
7	Aerial coupling ..	.01
8	Aerial coupling ..	.01
9	M.W. aerial transformer coupling ..	.008
9a	L.W. aerial fixed trimmer ..	.00003
10	L.W. impedance coupling ..	.004
11	S.W. osc. fixed trimmer ..	.00165
12	S.W. osc. fixed padder ..	.00003
13	S.W. osc. fixed padder ..	.00025
14	M.W. H.F. coupling ..	.00025
15	S.W. H.F. coupling ..	.000014
16	V1, V2 and V3 screen decoupling ..	.25
16a	L.W. H.F. fixed trimmer ..	.00003
17	L.W. osc. fixed trimmer ..	.00005
18	V2 cathode shunt ..	.05
19	L.F. coupling ..	.01
20	L.F. coupling ..	.01
21	Volume control tone modifier ..	.01
22	H.F. bypass ..	.00011
23	Diode coupling ..	.00011
24	V4 bias decoupling ..	.1
25	V3 A.V.C. decoupling ..	.05
26	H.T. line H.F. bypass ..	.05
EC1a	Bias pot. shunt ..	10
EC1	H.T. smoothing ..	8 & 8
EC2	H.T. smoothing ..	16
27	H.F. bypass ..	.00011
28	H.F. bypass ..	.00011
29	H.F. bypass ..	.12

EXACT replacements for condensers in the Philco A637 are made by A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. For EC1a is type 2985, price 1s. 4d.; for EC1 is type 3741 (7s.); and for EC2 is type 3806 (6s.).

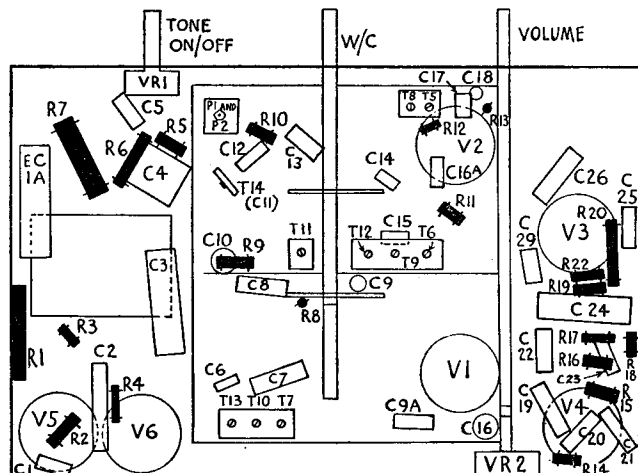
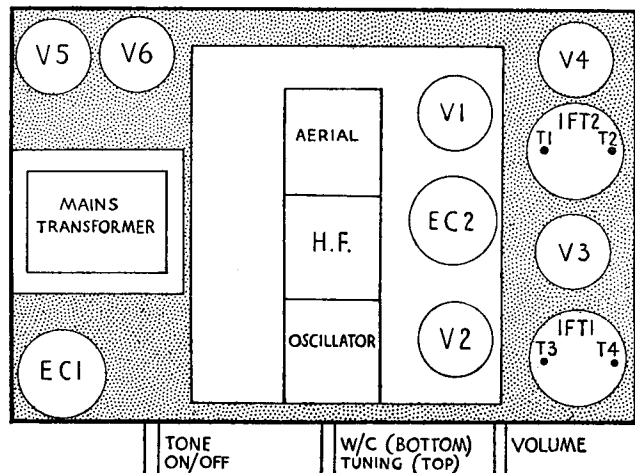
RESISTANCES

R.	Purpose.	Ohms.
1	Bias potentiometer ..	30+8+245
2	V4 anode decoupling ..	99,000
3	V5 grid leak ..	240,000
4	V4 anode load ..	99,000
5	V1, V2 and V3 screen pot. (part) ..	25,000
6	V1 and V2 screen pot. (part) ..	20,000
7	V1 and V2 H.T. feed (parts) ..	15,000
8	V1 A.V.C. decoupling ..	10,000
9	L.W. D.C. connection ..	10,000
10	Osc. anode feed ..	10,000
11	V1 anode feed ..	10,000
12	Osc. grid leak ..	99,000
13	V2 cathode bias ..	400
14	Tone control ..	51,000
15	A.V.C. diode load ..	1 megohm.
16	V3 A.V.C. decoupling ..	1 megohm.
17	V4 grid leak ..	1 megohm.
18	V4 bias decoupling ..	490,000
19	Demodulating diode load (part) ..	330,000
20	V1, V2 and V3 anode feed ..	6,000
21	H.F. filter ..	51,000
22	Demodulating diode load (part) ..	25,000
VR1	Tone control ..	500,000
VR2	Tone compensated volume control ..	2 megohms.
CK1	Field coil ..	660



(Above) Switches of the A637 from the front, with the chassis upside down. Locating notches are on the right.

(Below) Chassis diagrams. The "tinted" one, left, is the top view.



COSSOR 584 ALL-WAVE SUPERHET FIVE

CIRCUIT.—The aerial input circuit provides connections for either an ordinary single wire aerial or an aerial of the doublet type.

The aerial is coupled to the grid of V1, a triode-hexode frequency-changer, via a set of band-pass coils on the medium and long wave bands. On the short wave band the coupling is afforded by a single stage of preselection.

The signal, converted to the IF frequency (465 kc.), then passes to the IF amplifying valve V2, an HF pentode, via an iron-cored IF transformer. This is of the variable-coupling type, thereby allowing the band-width to be altered at will, so that a control of selectivity is obtained.

Another IF iron-cored transformer with fixed coupling provides the connection to the demodulating diode of V3, a double-diode-triode. An iron-cored transformer in the anode circuit of V3 is used to operate a bulb that constitutes a visual tuning device. When a signal is tuned in, the A.V.C. operates, thereby reducing the anode current of the valve, whereby the inductance of the transformer increases and the current of the lamp is reduced, thus indicating the resonance point of the signal.

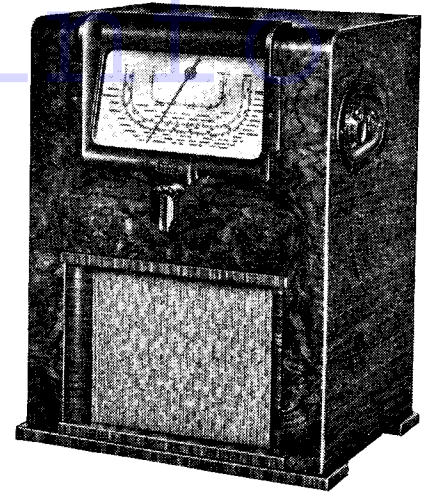
The other diode of V3 provides a D.C. potential that is utilised by being fed back to the preceding stages for A.V.C.

Coupling arrangements to the grid of the triode section of V3 include a manual volume control that operates so as to vary the input to the grid.

V3 is resistance capacity coupled to V4, an output tetrode, in the anode circuit of which is connected the matching transformer feeding the speaker. Across the primary of the transformer a condenser and resistance are connected in series to effect a modification of the tone. A pentode compensator condenser connected between the anode of the valve and chassis supplements these two components, as also does a variable resistance and condenser connected between the anode of V3 and chassis.

Mains equipment consists of a mains transformer with suitable voltage tapings, a full-wave rectifying valve V5, electrolytic smoothing condensers and smoothing choke (speaker field energising coil).

Chassis Removal.—Remove the back of the cabinet (secured by six bolts) and the three control knobs from the front of the



cabinet. These are of the grub-screw fixing type. The tuning control knob on the side of the cabinet is removed by unscrewing the two grub screws on the control shaft accessible from the rear of the cabinet. The control knob is then rotated until the two projecting screws coincide with two slots in the side of the cabinet. The mains switch, also at the side of the cabinet, is removed by unscrewing the two wood screws holding the small sub-panel, pulling the switch through the side of the cabinet and unscrewing the switch from the panel.

Now remove the four bolts and washers from the underside of the shelf of the cabinet and also the metal bar on the top inside, and unclasp the loudspeaker cable.

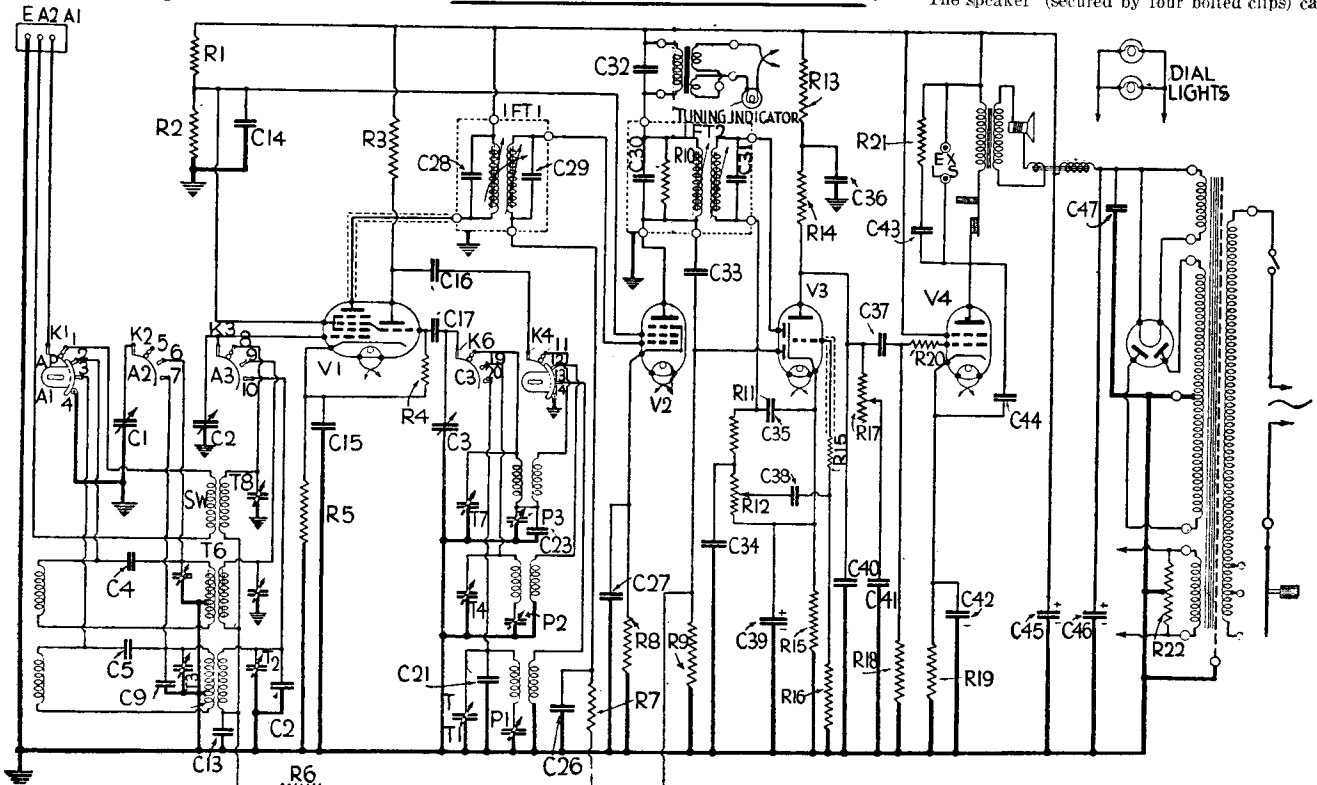
The chassis can then be removed from the cabinet, with the cabinet on its side.

The speaker (secured by four bolted clips) can

VALVE READINGS

No signal. Volume maximum. M.W. band.
200 v. A.C. 1,000 ohms/volt meter.

V.	Type. (All Cossor).	Electrode.	Volts.	Ma.
1	41STH (7) met.	Anode ..	268	2
		Screen ..	100	2.3
2	MVS/PEN (7) met.	Osc. anode ..	100	6.7
		Anode ..	270	5.4
3	DDT (7 met.)	Screen ..	90	2.1
		Anode ..	92	1.2
4	42 O.T. (or 42 MP/Pen) (7)	Anode ..	240	33
		Screen ..	270	7.3
5	442BU ..	Filament	375	—



Single-wire and doublet aerial connections are available on the Cossor 584. Input to the mixer is band-pass on medium and long waves and by a single preselector stage on short waves.