

# PILOT U385 SEVEN VALVE ALL-WAVE

**CIRCUIT.**—The aerial input can be either a doublet or single-wire aerial. The coupling to the 6A8G frequency changer is a set of H.F. transformer aerial coils.

Coupling to the 6U7G valve, the I.F. amplifier is an I.F. transformer tuned to 456 kcs. and thence to the strapped diodes of V3, a 6Q7G double diode triode. The coupling arrangements to the grid of the triode section of V3 include a jack for a pick-up and a manual volume control.

V4 is a 6H6G double diode valve with split cathode. One complete section of V4 is used for A.V.C., and the other to operate the 6G5 visual tuning indicator.

Reverting to V3, it will be noticed that the valve has a split load (with reference to the triode section). The coupling to the two 6F6G valves is in phase opposition and taken from the split load in the anode and cathode circuits of V3.

The two 6F6G valves are operating in a push-pull arrangement. Tone control is obtained by a variable resistance and condenser connected in series across the anodes of the valves. Pentode compensator condensers are connected between each of the anodes and chassis.

Mains equipment consists of a 5Z4G full-wave rectifier, a mains transformer, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker field.

## QUICK TESTS

Quick tests are available on this receiver at the leads to the speaker panel. The plug should be pulled out slightly to enable readings to be obtained. Voltages measured between the leads and chassis should be:—

- Black lead, 330 volts, unsmoothed H.T.
- Green lead, 225 volts, smoothed H.T.
- Blue lead, 235 volts, smoothed H.T.
- Red lead, 235 volts, smoothed H.T.
- Brown lead, 225 volts, smoothed H.T.

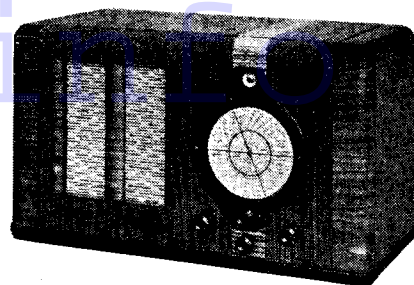
**Chassis Removal.**—The back of the cabinet is secured by five bolts. Remove the back and also the four control knobs from the front of the cabinet. The tuning control knob is of the grub-screw fixing type, and the others are removed by a slight pull.

After the four chassis securing bolts and washers on the base of the cabinet have been removed the chassis can be withdrawn from the cabinet. The leads to the visual tuning indicator and also to the speaker panel terminate in six and five pin plugs respectively.

**Special Notes.**—Sockets at the rear of the chassis enable an external speaker to be operated. This should have a matching transformer with 10,000 ohms impedance.

A jack at the rear of the chassis is for connecting a pick-up. This should be of the high impedance type.

The aerial input terminals are designed for use with either a doublet or a single-wire aerial. If the latter is used, then the shorting strip should make contact with



An American-type receiver using Brimar octal valves, the Pilot U385 is a three-band model with cathode-ray tuning indicator.

the aerial terminal marked "D" and the earth terminal.

There are four dial lights rated at 6.3 volts, .2 amp.

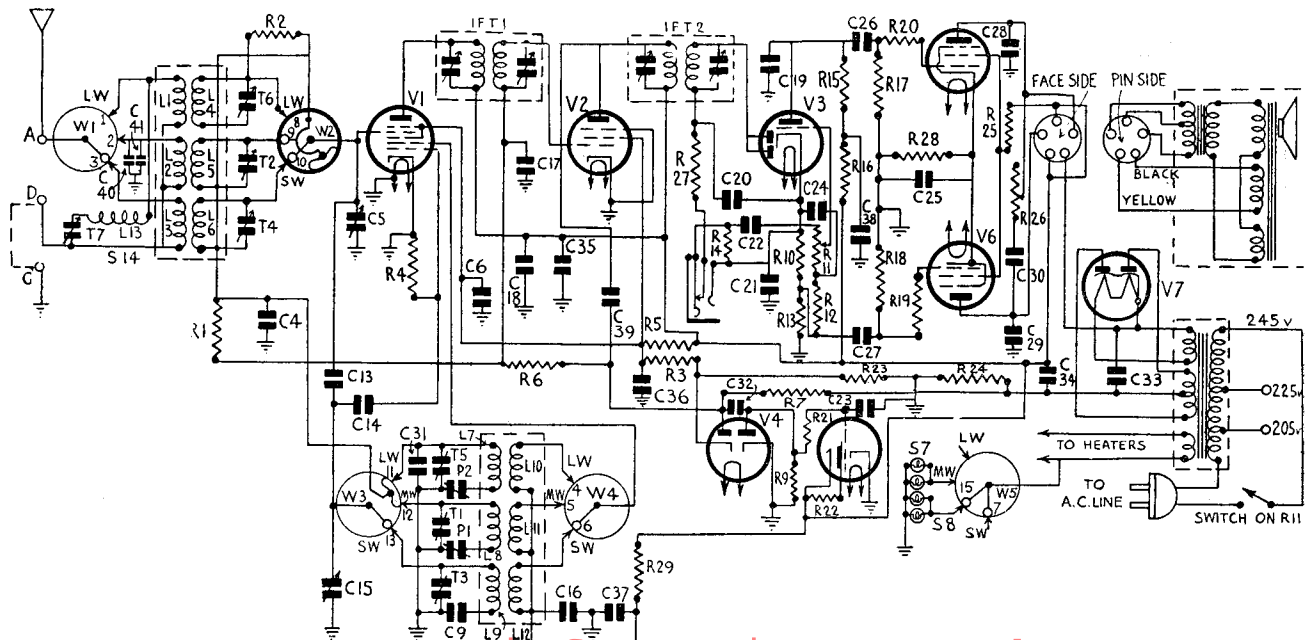
## VALVE READINGS

No signal. Volume maximum. Bottom M.W. band. 200 volts. A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
(All Brimar Octal bases)				
1	6A8G ..	Anode ..	250	6.5
		Screen ..	112	3.6
		Osc. anode ..	200	8.8
2	6U7G ..	Anode ..	238	11.6
		Screen ..	112	2.7
3	6Q7G ..	Anode ..	100	.6
4	6H6G ..	Diodes ..	—	—
		only.		
5	6F6G ..	Anode ..	225	29
		Screen ..	225	5.5
6	6F6G ..	Anode ..	225	30
		Screen ..	225	5.7
7	5Z4G ..	Filament	330	—

## RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling ..	100,000
2	L.W. aerial coil shunt ..	500,000
3	V4 cathode bias ptr. (part) ..	15,000
4	Oscillator grid leak ..	50,000
5	V1, V2 screen decoupling ..	10,000
6	V2 A.V.C. decoupling ..	2 meg.
7	A.V.C. diode load ..	2 meg.
9	T.I. feed load ..	1 meg.
10	V3 cathode bias ..	2,500
11	Volume control ..	750,000
12	V3 grid decoupling ..	250,000
13	V3 cathode load ..	100,000
14	Demodulating diode load (part) ..	250,000
15	V3 anode load ..	100,000
16	V3 anode decoupling ..	20,000
17	V5 grid leak ..	500,000
18	V6 grid leak ..	500,000
19	V6 grid stopper ..	400
20	V5 grid stopper ..	400
21	T.I. grid decoupling ..	1 meg.
22	T.I. anode feed ..	1 meg.
23	V4 cathode bias ptr. (part) ..	250
24	V4 series bias ..	23
25	V5 and V6 screen feed ..	1,000
26	Tone control ..	100,000
27	H.F. stopper ..	30,000
28	V5, V6 cathode bias ..	200
29	Oscillator anode decoupling ..	6,000



Push-pull output valves are fed by a split load of V3, the demodulator and first L.F. amplifier. V4 is used for A.V.C. and for the visual indicator.

## Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer and a modulated oscillator between the top grid cap of V1 and chassis. Switch set to the medium waves, turn the gang to maximum capacity, volume control to maximum and tone to "high" position.

Tune the oscillator to 456 kc. and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the oscillator as the circuits come into line so as to render the A.V.C. inoperative.

**Signal Circuits.**—Connect the service oscillator to the aerial and earth sockets, preferably by a dummy aerial or fixed condenser. Only feed sufficient input from

the oscillator to obtain definite peaks in the output meter.

**Medium Waves.**—Tune set and oscillator to 200 metres (1,500 kc.), and adjust T1 and then T2 for maximum.

Tune set and oscillator to 500 metres (600 kc) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement is noticed.

**Short Waves.**—Tune set and oscillator to 16.6 metres (18 mc.) and adjust first T3 and then T4 for maximum.

The short wave padding is fixed.

**Long Waves.**—Tune the set and oscillator to 800 metres (375 kc.), and adjust T5 and then T6 for maximum.

Tune set and oscillator to 2,000 metres (150 kc.), and adjust P2 for maximum, simultaneously rocking the gang to ensure optimum results.

Repeat both operations.

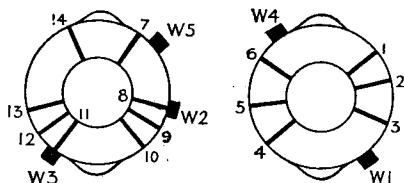
**Whistle Filter.**—A filter is incorporated in the receiver. This is for eliminating a whistle sometimes experienced when receiving Luxembourg. The trimmer T7 should be adjusted, when the receiver is actually receiving the station, to reduce or eliminate the whistle.

## CONDENSERS

C.	Purpose.	Mfds.
4	V1 A.V.C. decoupling	.02
6	V1, V2 screen decoupling (part)	.05
9	S.W. oscillator fixed padder	.006
13	Osc. grid-control grid coupling	Very low
14	Oscillator grid	.00005
16	Oscillator anode decoupling (part)	.05
17	V1 A.V.C. decoupling	.02
18	V1, V2 anodes decoupling (part)	.1
19	H.F. by-pass	.0001
20	H.F. by-pass	.0001
21	H.F. by-pass	.0001
22	L.F. coupling	.05
23	T.I. grid decoupling	.05
24	V3 grid decoupling	.10
25	V5, V6 cathode bias shunt	.10
26	L.F. coupling	.02
27	L.F. coupling	.02
28	Pentode compensator	.005
29	Pentode compensator	.005
30	Tone control	.02
31	L.W. osc. fixed trimmer	.000025
32	Diode coupling	.000025
33	H.T. smoothing	.16
34	H.T. smoothing	.8
35	V1, V2 anode decoupling (part)	.8
36	V1, V2 screen decoupling (part)	.8
37	Oscillator anode decoupling (part)	.4
38	V3 anode decoupling	.4
39	A.V.C. diode coupling	.000025
40	M.W. aerial coil shunt (part)	.00005
41	M.W. aerial coil shunt (part)	.0001

## WINDINGS

Winding.	Ohms.	Winding.	Ohms.
L1	80	L10	5.5
L2	21.5	L11	1.9
L3	1	L12	.1
L4	3	L13	1.8
L5	20	I.F.'s (each)	7
L6	.1	Mains trans. prim.	11
L7	14	H.T. sec. (total)	210
L8	6.4	Field coil	900



The two switch banks. The one on the left is nearer the centre of the receiver.

## Pilot U385 on Test

**MODEL U385.**—Standard model for operation on A.C. mains, 200-250 volts, 50-60 cycles. Price, 15 gns.

**DESCRIPTION.**—Three-band, seven valve, including rectifier, superhet table model.

**FEATURES.**—Full-vision scale of airplane type, marked in metres and station names. Sections of scale illuminated with reference to waveband. Controls for wave selection, combined volume and master switch, tone, and slow and fast tuning. Visual tuning indicator. Sockets for extension speaker and jack for pick-up. Provision for doublet aerial.

**LOADING.**—95 watts.

### Sensitivity and Selectivity

**SHORT WAVES (16-53 metres).**—Excellent gain and selectivity with ease of handling. Performance excellent for the valve combination employed.

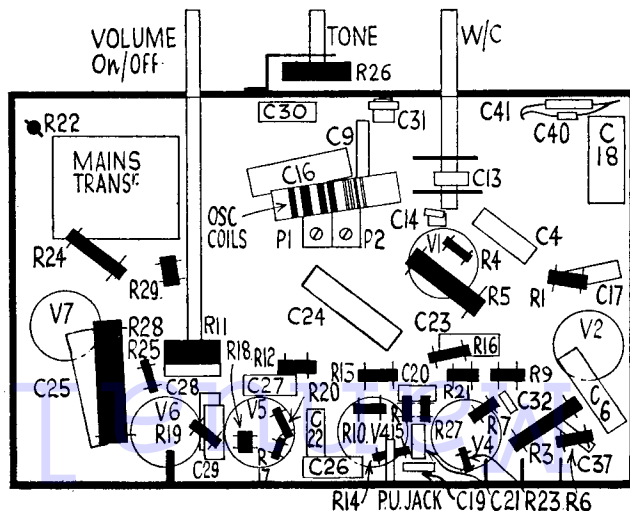
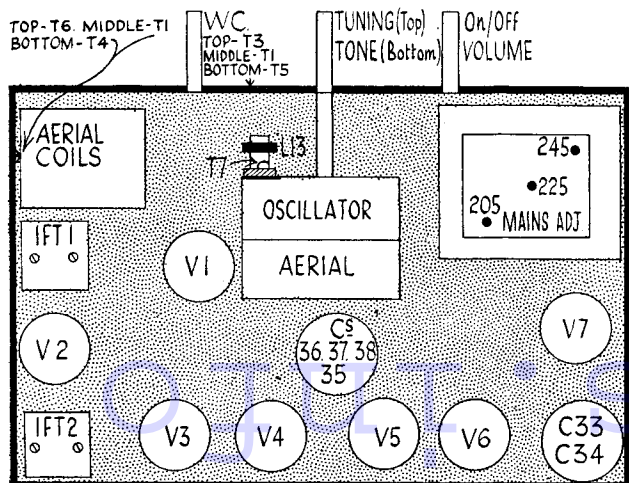
**MEDIUM WAVES (185-560 metres).**—Representative gain and selectivity with small local stations spread. Gain well maintained. Background good.

**LONG WAVES (800-2,150 metres).**—All the main stations easily received with good background and well maintained sensitivity.

### Acoustic Output

Ample volume due to push-pull output. Suitable for a large room without overloading. Tone on the mellow and full side, but at the same time there is a good amount of top response and generally pleasing overall balance.

**EXACT** replacement condensers for the U385 are available from A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. For the block containing C33 and C34 there is unit 2923 at 9s. 6d.; C's 35, 36, 37 and 38 are in unit 3883 at 10s. 6d.; for either C24 or C25 there is 2985 at 1s. 4d.



The construction of the Pilot U385 is straightforward and quite simple, considering the number of valves. The top "deck" view is tinted.