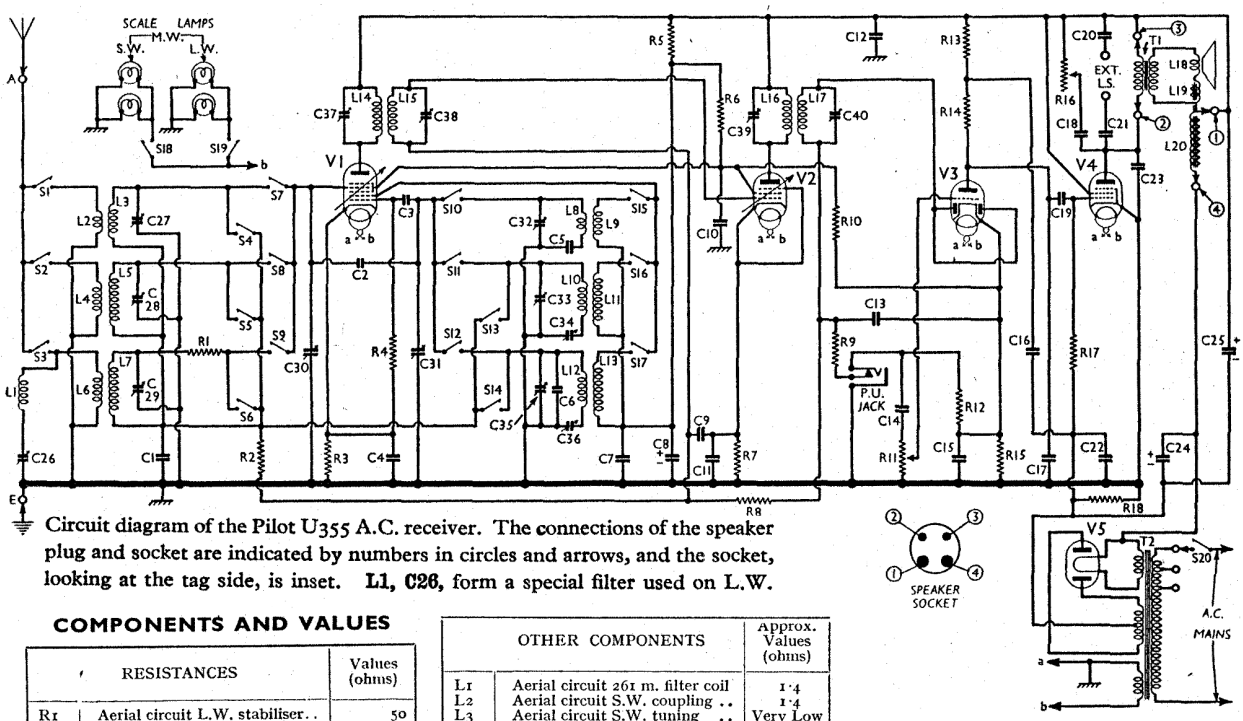
PILOT - U355 & CU355 & RU355



Circuit diagram of the Pilot U355 A.C. receiver. The connections of the speaker plug and socket are indicated by numbers in circles and arrows, and the socket, looking at the tag side, is inset. **L1, C26,** form a special filter used on L.W.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	Aerial circuit L.W. stabiliser	50
R2	V1 C.G. decoupling	1,000,000
R3	V1 fixed G.B. resistance	400
R4	V1 osc. C.G. resistance	50,000
R5	V1 osc. anode decoupling	3,000
R6	V1, V2 S.G. decoupling	15,000
R7	V2 fixed G.B. resistance	400
R8	A.V.C line decoupling	1,000,000
R9	I.F. stopper	50,000
R10	Part of V1, V2 S.G. feed and V3 G.B. pot.	30,000
R11	Manual vol. control	750,000
R12	V3 diode load resistance	300,000
R13	V3 anode decoupling	50,000
R14	V3 anode load	250,000
R15	Part of V3 G.B. potentiometer	420
R16	Manual tone control	1,000,000
R17	V4 C.G. resistance	500,000
R18	V4 G.B. resistance	250

	CONDENSERS	Values (μF)
C1	V1 C.G. decoupling	0·05
C2	Small coupling	Very low
C3	V1 osc. C.G. condenser	0·00005
C4	V1 cathode by-pass	0·1
C5	Osc. S.W. fixed tracker	0·006
C6	Osc. L.W. fixed trimmer	0·000025
C7	V1 osc. anode decoupling	0·05
C8*		10·0
C9	V2 C.G. decoupling	0·05
C10	V1, V2 S.G. decoupling	0·05
C11	V2 cathode by-pass	0·1
C12	H.T. line by-pass	0·1
C13	I.F. by-pass	0·00025
C14	Coupling to V3 triode	0·01
C15	V3 cathode by-pass	0·25
C16	V3 triode anode decoupling	0·1
C17	V3 triode anode tone corrector	0·00025
C18	Part of tone control filter	0·05
C19	V4 C.G. coupling	0·01
C20	Ext. L.S. coupling	0·05
C21		0·05
C22	V4 C.G. decoupling	0·5
C23	V4 anode tone corrector	0·005
C24*	H.T. smoothing	8·0
C25*		8·0
C26‡	Aerial 261 m. filter tuning	—
C27‡	Aerial circuit S.W. trimmer	—
C28‡	Aerial circuit M.W. trimmer	—
C29‡	Aerial circuit L.W. trimmer	—
C30†	Aerial circuit tuning condenser	0·000405
C31†	Osc. circuit tuning condenser	0·000405
C32‡	Osc. circuit S.W. trimmer	—
C33‡	Osc. circuit M.W. trimmer	—
C34‡	Osc. circuit M.W. tracker	0·0006
C35‡	Osc. circuit L.W. trimmer	—
C36‡	Osc. circuit L.W. tracker	0·00015
C37‡	1st I.F. trans. pri. tuning	—
C38‡	1st I.F. trans. sec. tuning	—
C39‡	2nd I.F. trans. pri. tuning	—
C40‡	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial circuit 261 m. filter coil	1·4
L2	Aerial circuit S.W. coupling	1·4
L3	Aerial circuit S.W. tuning	Very Low
L4	Aerial circuit M.W. coupling	25·0
L5	Aerial circuit M.W. tuning	3·4
L6	Aerial circuit L.W. coupling	120·0
L7	Aerial circuit L.W. tuning	70·0
L8	Osc. circuit S.W. tuning	0·5
L9	Osc. circuit S.W. reaction	0·55
L10	Osc. circuit M.W. tuning	6·0
L11	Osc. circuit M.W. reaction	2·0
L12	Osc. circuit L.W. tuning	14·5
L13	Osc. circuit L.W. reaction	5·5
L14	1st I.F. trans. Pri.	6·75
L15	1st I.F. trans. Sec.	6·75
L16	2nd I.F. trans. Pri.	11·0
L17	2nd I.F. trans. Sec.	11·0
L18	Speaker speech coil	1·6
L19	Hum neutralising coil	0·2
L20	Speaker field coil	1,300·0
T1	Speaker input trans. Pri.	700·0
	Speaker input trans. Sec.	0·2
T2	Mains transformer Pri. total	36·0
	Mains transformer Heat. sec.	0·1
	Mains transformer Rect. fil. sec.	0·05
	Mains transformer H.T. sec. total	450·0
S1-17	Waveband switches	—
S18-19	Scale lamp switches	—
S20	Mains switch, ganged R11	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 230 V, using the 220 V tapping on the mains transformer. The set was tuned to the lowest wavelength on the medium band and the volume control was at maximum. There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

If **V2** should become unstable when measurements are being made of its anode or screen current, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from the control grid (top cap) to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6A7*	255	1·8	90	3·1
V2 6D6	255	6·5	90	1·5
V3 75	90	0·4	—	—
V4 42	230	34·0	255	5·6
V5 80-S	310†	—	—	—

* Oscillator anode (G2) 200 V, 7.5 mA.
† Each anode, A.C.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W., and turn gang to maximum. Connect signal generator to control grid (top cap) of **V2** through a 0·1 μF condenser, and to chassis. Feed in a 456 KC/S signal, and adjust **C39** and **C40** for maximum output. Transfer signal generator to top cap of **V1,** and similarly adjust **C37** and **C38.** Repeat the adjustment of all trimmers with the signal generator connected to **V1** top cap.

R.F. and Oscillator Stages.—Connect signal generator to **A** and **E** through a 0·0002 μF condenser. Switch set to M.W., and tune to 200 m. on scale. Feed in a 200 m. signal, and adjust **C33,** then **C28,** for maximum output. Feed in a 500 m. signal, tune it in on receiver, then adjust **C34** (nut) for maximum output, rocking the gang for optimum results. Repeat the 200 m. adjustments.

Switch set to S.W., tune to 16·6 m. on scale, feed in a 16.6 m. (18 MC/S) signal and adjust **C32** and **C27** for maximum output. Fixed tracking is used on this band, so there is no adjustment at the top of the band.

Switch set to L.W., tune to 800 m. on scale, feed in an 800 m. signal, and adjust **C35** and **C29** for maximum output. Feed in an 1,875 m. signal, tune it in, and adjust **C36** (screw) for maximum output, rocking the gang for optimum results. Repeat the 800 m. adjustments.

261 m. Filter.—This is used to eliminate a whistle on Luxembourg, due to London National, which is sometimes encountered. It is best to adjust **C26** when listening to the actual whistle, if this is present.

GENERAL NOTES

Switches.—**S1-S17** and **S18, S19** are the waveband and scale lamp switches, in two rotary units beneath the chassis. They are indicated in our under-chassis view, and shown in detail in the diagrams on page VIII, where they are seen looking from the front of the underside of the chassis.

The table (p. VIII) gives the switch positions for the three control settings, starting from fully anti-clockwise. O indicates open, and C, closed.

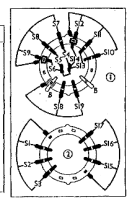
S20 is the Q.M.B. mains switch, ganged with the volume control, **R11**. There is also a pick-up jack switch at the rear of the chassis, and shown in the circuit in diagrammatic form. When a pick-up is inserted, the bottom of **R9** is disconnected from the top of **C14,** thus muting radio.

Coils.—**L1** is mounted on a bracket attached to the gang condenser, with **C26. L2-L7, L14, L15** and **L16, L17** are in three screened units on the chassis deck. The oscillator unit, **L8-L13,** is unscreened, and is on a tubular former beneath the chassis.

Scale Lamps.—These are four miniature bayonet cap types, rated at 6-8 V. They are switched in or out of circuit by **S18** and **S19** in the main switch assembly.

SWITCH TABLE AND DIAGRAM

Switch	L.W.	M.W.	S.W.
S1	O	C	C
S2	O	C	C
S3	C	C	C
S4	O	C	C
S5	O	C	C
S6	O	C	C
S7	O	C	C
S8	O	C	C
S9	O	C	C
S10	C	O	C
S11	C	O	C
S12	C	O	C
S13	C	O	C
S14	C	O	C
S15	C	O	C
S16	C	O	C
S17	C	O	C
S18	C	C	O
S19	C	C	O



The two switch units, as seen from the front of the underside of the chassis.