

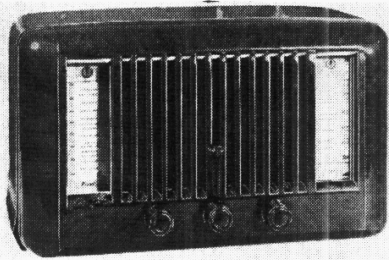
"TRADER" SERVICE SHEET

912

PILOT LITTLE MAESTRO MODEL 10 A.C.

Two Waveband Table Superhet

COMPONENTS AND VALUES



THERE are two Pilot Model 10 "Little Maestro" receivers: an A.C. version and an A.C./D.C. version. This *Service Sheet* covers only the A.C. version; the A.C./D.C. version is covered separately in *Service Sheet* 913.

The receiver is a 4-valve (plus rectifier) 2-band superhet designed for A.C. mains of 200-250 V without voltage adjustment. The mains transformer supplies heater current only, the rectifier anodes being connected directly to the mains, and the chassis is "live" to the mains.

Release date and original price: April 1949; £10 13s. 6d. plus purchase tax. Coloured finishes 4s. 7d. extra.

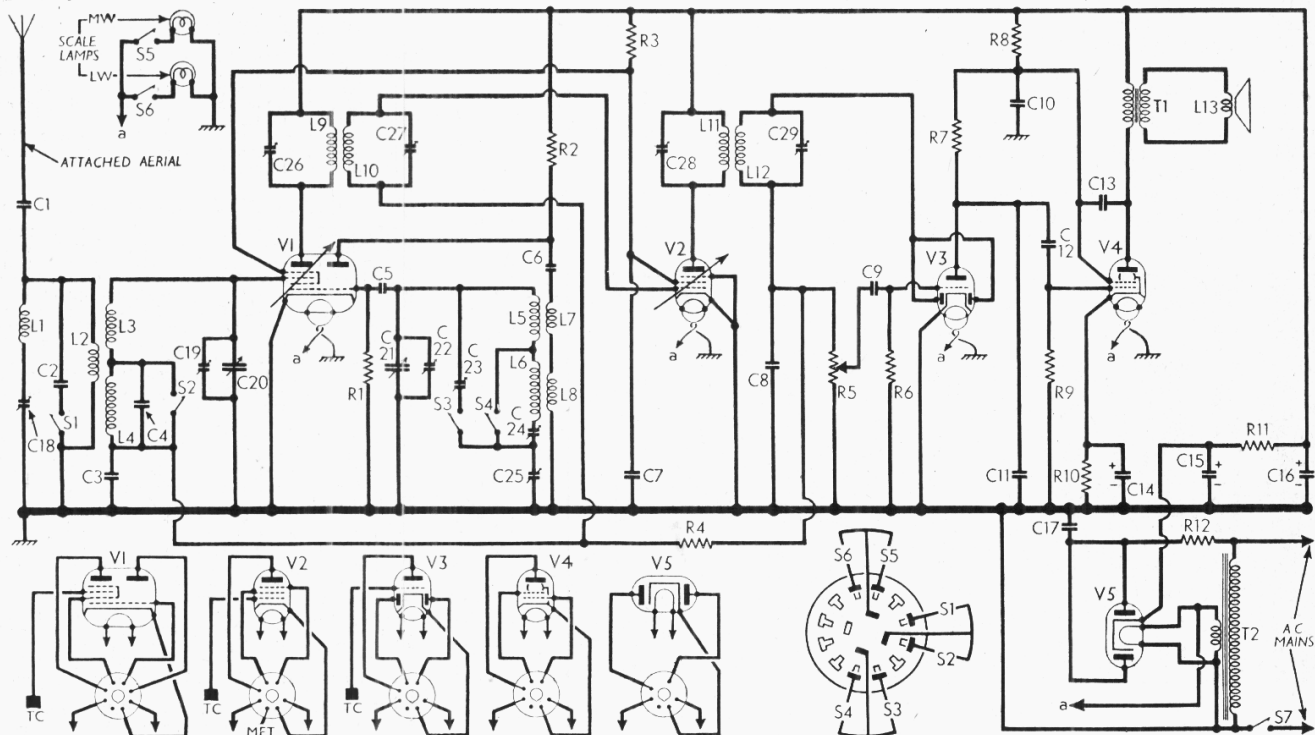
CAPACITORS		Values (μF)	Locations
C1	Aerial series	0-0003	A1
C2	Aerial L.W. shunt	0-0003	J3
C3	A.G.C. decoup.	0-1	H4
C4	Aerial L.W. trim	0-0001	A1
C5	V1 osc. C.G.	0-00006	A2
C6	Osc. anode coup.	0-00006	A2
C7	S.G.'s decoupling	0-1	J4
C8	I.F. by-pass	0-0003	G3
C9	A.F. coupling	0-002	F4
C10	H.T. feed decoup.	0-25	G5
C11	I.F. by-pass	0-0003	F4
C12	A.F. coupling	0-01	F4
C13	Tone corrector	0-01	F5
C14*	V4 cath. by-pass	25-0	F4
C15*	H.T. smoothing	16-0	E4
C16*		16-0	E3
C17	Mains R.F. by-pass	0-05	E4
C18†	I.F. filter tune	0-00025	A1
C19†	Aerial M.W. trim	0-00003	A1
C20†	Aerial tuning	0-000483	A1
C21†	Oscillator tuning	0-000483	A2
C22†	Osc. M.W. trim	0-00003	A2
C23†	Osc. L.W. trim	0-0001	A2
C24†	Osc. L.W. tracker	0-0003	H5
C25†	Osc. M.W. tracker	0-0007	H5
C26†	1st I.F. transformer	—	B2
C27†		tuning	—
C28†	2nd I.F. transformer	—	G4
C29†		tuning	—

RESISTORS		Values (ohms)	Locations
R1	V1 osc. C.G.	33,000	J5
R2	Osc. anode load	22,000	J5
R3	S.G.'s H.T. feed	22,000	G5
R4	A.G.C. decoup.	1,000,000	H4
R5	Volume control	250,000	F3
R6	V3 C.G. resistor	10,000,000	F4
R7	V3 triode load	270,000	F4
R8	H.T. feed decoup.	22,000	F5
R9	V4 C.G. resistor	1,000,000	F4
R10	V4 G.B. resistor	270	F5
R11	H.T. smoothing	1,000	E5
R12	V5 surge limiter	100	E5

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	I.F. filter coil	22-0	A1
L2	Aerial coup. coil	14-0	A1
L3	Aerial tuning coils	2-5	A1
L4		16-5	A1
L5	Oscillator tuning coils	3-0	A2
L6		6-5	A2
L7	Oscillator reaction coils (total)	—	—
L8		3-0	A2
L9	1st I.F. trans. { Pri.	10-0	B2
L10	{ Sec.	10-0	B2
L11	2nd I.F. trans. { Pri.	34-0	G4
L12		{ Sec.	34-0
L13	Speech coil	2-5	—

(Continued col.1 overleaf)

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Pilot Little Maestro Model 10 A.C. superhet, the chassis of which is "live" to the mains. A diagram of the waveband switch unit, as seen from the rear of an inverted chassis, is inset below the circuit diagram.

OTHER COMPONENTS (continued)		Approx. Values (ohms)	Loca- tions
T1	Speaker trans.	{ Pri. 480-0 Sec. 0-6	C1
T2	Heater trans.	{ Pri. 128-0 Sec. Very low	D1
S1-6	W/band switches ...	—	H3
S7	Mains sw., g'd R5...	—	F3

CIRCUIT DESCRIPTION

Input from attached aerial, via series capacitor **C1**, is inductively coupled by **L2** to single-tuned circuits **L3**, **C20** (M.W.) and **L3**, **L4**, **C20** (L.W.) which precede a triode hexode valve (**V1**, **Brimar 6K8GT**) operating as frequency changer with electron coupling. A filter circuit **L1**, **C18** removes interfering signals at the intermediate frequency, and a fixed capacitor **C2** is shunted across **L2** on L.W. to prevent M.W. break-through.

Triode oscillator grid coils **L5** (M.W.), **L5**, **L6** (L.W.) are tuned by **C21**, with parallel trimming by **C22** (M.W.), **C23** (L.W.), and series tracking by **C25** (M.W.), **C24**, **C25** (L.W.). Inductive reaction coupling from anode, via **C6**, by coils **L7** (M.W.) and **L8** (L.W.).

Second valve (**V2**, **Brimar 6K7GT**) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-transformer couplings **C26**, **L9**, **L10**, **C27** and **C28**, **L11**, **L12**, **C29**.

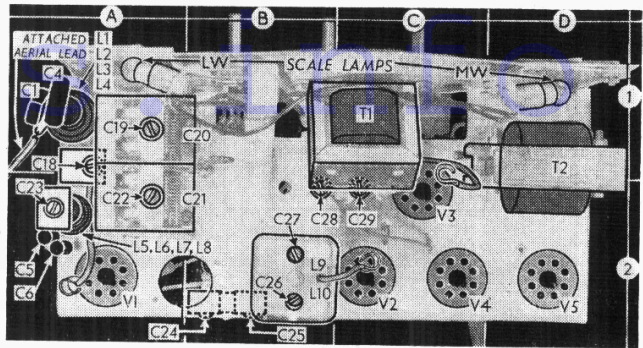
Intermediate frequency 451 kc/s.

Diode second detector is part of double diode triode valve (**V3**, **Brimar 6Q7GT**), the diode sections of which are wired in parallel. Audio frequency component in rectified output is developed across volume control **R5**, which is also the load resistor, and passed, via A.F. coupling capacitor **C9** and C.G. resistor **R6**, to grid of triode section, which operates as A.F. amplifier. I.F. filtering by **C8** and **C11** in diode and triode anode circuits respectively.

The D.C. component developed across load resistor **R5** is tapped off and fed back through a decoupling circuit **R4**, **C3** as G.B. to F.C. and I.F. valves, giving automatic gain control.

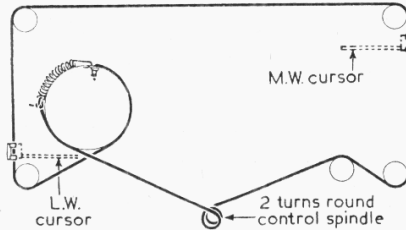
Resistance-capacitance coupling by **R7**, **C12**, **R9** between **V3** triode and beam tetrode output valve (**V4**, **Brimar**

Plan view of the chassis. All the adjustments involved in circuit alignment are indicated here, as also is the attached aerial connecting tag.



6V6GT), and fixed tone correction in tetrode anode circuit by **C13**.

H.T. current is supplied by I.H.C. full-wave rectifying valve (**V5**, **Brimar 6X5GT**), which operates as a half-wave rectifier directly from the supply mains, with its anodes wired in parallel. Smoothing by resistor **R11** and electrolytic capacitors **C15**, **C16**, and mains R.F. filtering by **C17**. The heaters of all valves, and the scale lamps, are connected in parallel and fed from the secondary winding of the mains transformer **T2**.



The tuning drive system, seen from the rear of the chassis with the gang at maximum capacitance.

GENERAL NOTES

Switches.—The waveband switch unit **S1-S6** is indicated in our under-chassis illustration by an arrow which shows the direction in which it is viewed in the diagram inset beneath the circuit diagram overleaf, where it is shown in detail, **S2**, **S4**, **S5** close on M.W. (control knob anticlockwise); **S1**, **S3**, **S6** close on L.W.

Scale Lamps.—These are two Osram M.E.S. types rated at 6.5 V, 0.3 A. They have small clear spherical bulbs.

Drive Cord Replacement.—Forty inches of Nylon braided glass yarn is required for the tuning drive cord, which is run as shown in the sketch in col. 2, where it is drawn as seen from the rear, neglecting obstructions, when the gang is at maximum capacitance.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from 225 V mains. The receiver was tuned to the lowest wavelength on the M.W. band, and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Avometer, except where otherwise indicated, chassis being the negative connection.

Valve	Anode		Screen		Cath.
	(V)	(mA)	(V)	(mA)	
V1 6K8GT	180	1-6	75	2-6	—
	Oscillator	3-8			
V2 6K7GT	180	8-1	75	1-9	—
	45	0-4			
V3 6Q7GT	175	24-0	140	1-5	6-7§
V4 6V6GT	218†	—			
V5 6X5GT	—	—	—	—	223

† A.C. § 10 V meter range.

DISMANTLING THE SET

Removing Chassis.—Pull off the three control knobs, withdraw the four 4BA cheese-head chassis retaining screws from the base of the cabinet, and slide out the chassis and speaker as a single unit.

When replacing, do not omit to cover the heads of the chassis retaining screws with a suitable insulating compound.

CIRCUIT ALIGNMENT

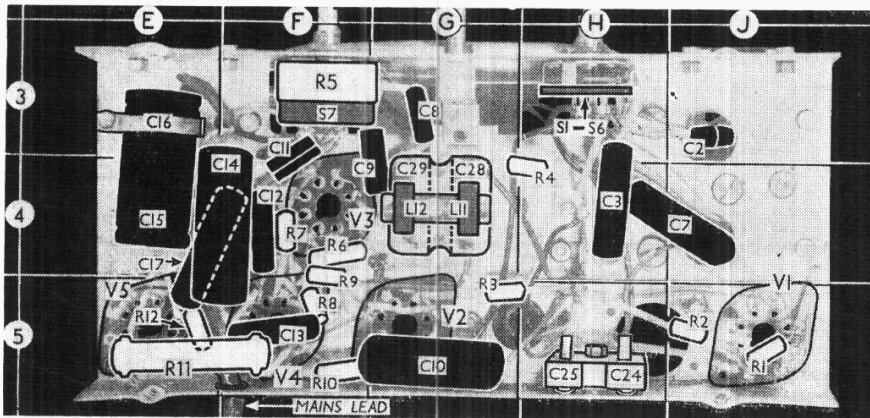
I.F. Stages.—Switch set to M.W., turn gang and volume control to maximum, connect signal generator (via an 0.1 μF isolating capacitor in each lead) to control grid (top cap) of **V1** and chassis, feed in a 451 kc/s (665.1m) signal, and adjust **C29**, **C28**, **C27**, **C26** (C2, B2) for maximum output, progressively attenuating the signal generator output as the circuits are aligned, to avoid A.G.C. action.

R.F. and Oscillator Stages.—With the gang at maximum capacitance the cursors should coincide with the two black lines on the edges of each scale, at the high wavelength ends. They may be adjusted in position by sliding the cursor carriages along the drive cord. Transfer "live" signal generator lead, with series capacitor, to attached aerial connecting tag on **L1-L4** (A1).

M.W.—With set still switched to M.W., tune to 214.3m on scale, feed in a 214.3m (1,400 kc/s) signal, and adjust **C22** (A2) and **C19** (A1) for maximum output. Tune to 500m on scale, feed in a 500m (600 kc/s) signal, and adjust **C25** (B2) for maximum output.

L.W.—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,000 m (300 kcs) signal, and adjust **C23** (A2) for maximum output. Tune to 1,596 m on scale, feed in a 1,596 m (188 kc/s) signal, and adjust **C24** (B2) for maximum output.

I.F. Filter.—Switch set to M.W., tune to 500 m on scale, feed in a strong 451 kc/s signal, and adjust **C18** (A1) for minimum output.



Under-chassis view. A diagram of the **S1-S6** waveband switch unit indicated here is inset beneath the circuit diagram overleaf.