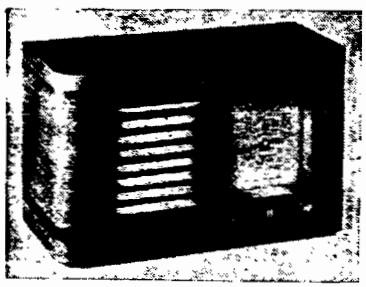
"TRADER" SERVICE SHEET

444

PILOT LITTLE MAESTRO

AC/DC SUPERHET



One of the three alternative cabinet versions of the Pilot Little Maestro.

THE Pilot Little Maestro is a 4-valve (plus valve rectifier) AC/DC 2-band superhet. It is fitted into several alternative small table cabinets, of which the walnut type is illustrated. An aerial lead is permanently attached, and no earth is used. The receiver is for 200-240 V, AC or DC mains.

Release date: February, 1939.

CIRCUIT DESCRIPTION

Aerial input via isolating condenser **C1** to coupling coil **L2** and single tuned circuits **L3, C18** (MW) and **L4, C18** (LW). On LW, **S1** closes to connect **C2** across **L2** to remove a possible resonance in the band.

L1, C16 across aerial circuit form an IF filter.

First valve **(V1, Brimar 6A8G)** is a heptode operating as frequency changer. Oscillator grid coils **L5** (MW) and **L6** (LW) are tuned by **C20**; parallel trimming by **C21** (MW); series tracking by **C22** (LW) and specially shaped **C20** plates. Reaction by **L7** (MW) and direct coupling via **C22** (LW).

Second valve **(V2, Brimar 6K7G)** is a variable-mu RF pentode operating as IF amplifier with tuned-primary, tuned-secondary transformer couplings **C23, L8, L9, C24** and **C25, L10, L11, C26.**

Intermediate frequency 451 KC/S.

Diode second detector is part of double diode triode valve **(V3, Brimar 6Q7G).** Audio frequency component in rectified output is developed across manual volume control **R4,** which also operates as load resistance, and passed via **C8** to CG of triode section.

DC potential across **R4** is fed back through decoupling circuit **R6, C4** as GB to FC and IF valves, to give AVC. Under no signal conditions, a very small current will flow from the second diode of **V3** via **R6, R4** and provide a minimum GB potential for the controlled valves.

Resistance-capacity coupling by **R7, C10** and **R8** between **V3** triode and pentode output valve **(V4, Brimar 25A6G).** Fixed tone correction in anode circuit by **C12.**

On AC mains, HT is supplied by IHC rectifying valve **(V5, Brimar 25Z6G).** Smoothing by speaker field **L14** and electrolytic condensers **C13, C14.**

Valve heaters are connected in series, together with tapped line cord ballast resistance **R10,** across mains input. The pilot lamp is across part of **R10.**

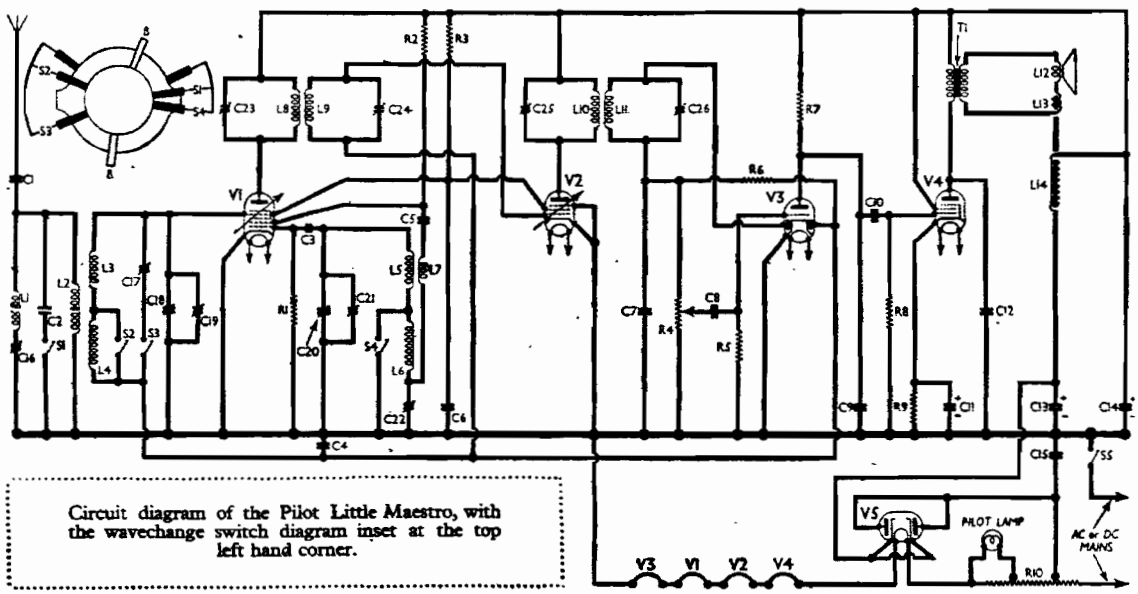
COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 osc. CG resistance ...	39,000
R2	V1 osc. anode HT feed ...	22,000
R3	V1, V2 SG's HT feed ...	22,000
R4	Manual volume control; V3 signal diode load... ...	250,000
R5	V3 triode CG resistance ...	2,500,000
R6	AVC line decoupling ...	1,000,000
R7	V3 triode anode load ...	270,000
R8	V4 CG resistance	270,000
R9	V4 GB resistance	470
R10	Heater circuit ballast ...	500†

† Tapped at 15 Ω and 370 Ω from V5 heater.

	CONDENSERS	Values (μF)
C1	Aerial isolating condenser ...	0·001
C2	Anti-resonance condenser ...	0·00015
C3	V1 osc. CG condenser ...	0·00006
C4	AVC line decoupling... ...	0·05
C5	V1 anode coupling	0·002
C6	V1, V2 SG's decoupling ...	0·05
C7	IF by-pass	0·0004
C8	AF coupling to V3 triode ...	0·005
C9	IF by-pass	0·0003
C10	V3 triode to V4 AF coupling	0·025
C11*	V4 cathode by-pass	10·0
C12	Fixed tone corrector	0·02
C13*	HT smoothing condenser ...	20·0
C14*		20·0
C15	V5 anodes RF by-pass ...	0·02
C16‡	Aerial IF filter tuning ...	0·00014
C17‡	Aerial circuit LW trimmer...	0·00005
C18†	Aerial circuit tuning	—
C19‡	Aerial circuit MW trimmer ..	0·00003
C20†	Oscillator circuit tuning ...	—
C21‡	Osc. circuit MW trimmer ...	0·00003
C22‡	Osc. circuit LW tracker ...	0·00045
C23‡	1st IF trans. pri. tuning ...	—
C24‡	1st IF trans. sec. tuning ...	—
C25‡	2nd IF trans. pri. tuning ...	0·00013
C26‡	2nd IF trans. sec. tuning ...	0·00013

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Pilot Little Maestro, with the wavechange switch diagram inset at the top left hand corner.

PILOT—*Continued*

	OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial IF filter coil	...	36·0
L2	Aerial coupling coil	...	13·5
L3	Aerial circuit tuning coils		3·4
L4			16·5
L5	Oscillator circuit tuning coils		3·3
L6			7·5
L7	Oscillator MW reaction	...	105·0
L8	1st IF trans. Pri.	... ...	8·5
L9	Sec.	... ...	8·5
L10	2nd IF trans. Pri.	... ...	35·0
L11	Sec.	... ...	35·0
L12	Speaker speech coil	...	3·0
L13	Hum neutralising coil	...	0·15
L14	Speaker field coil	... ...	650·0
T1	Speaker input trans. Pri.	...	270·0
	Sec.	...	0·3
S1–S4	Waveband switches	...	—
S5	Mains switch, ganged R4		—

DISMANTLING THE SET

Removing Chassis.—Remove the three control knobs (pull-off), prise out the staple holding the aerial wire to the bottom of the cabinet, and remove the three self-tapping screws (with washers) holding the chassis to the bottom of the cabinet, when the complete receiver can be withdrawn as a single unit.

VALVE ANALYSIS

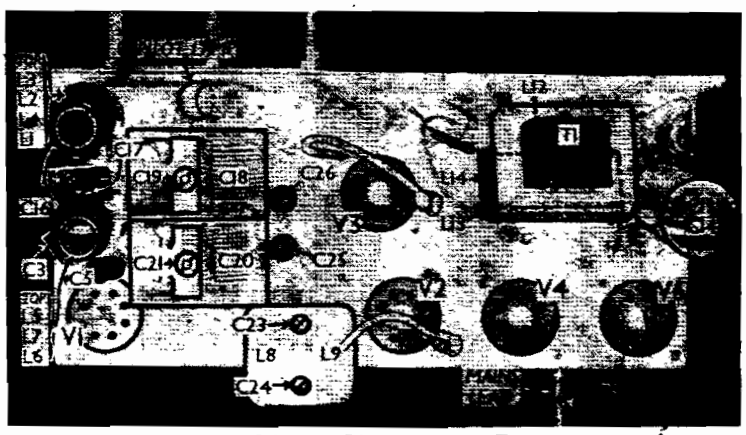
Valve voltages and currents given in the table below are those measured in our receiver when it was operating on

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6A8G	160	3·8	66	2·7
	Oscillator			
	106	2·2		
V2 6K7G	160	5·6	66	1·4
V3 6Q7G	47	0·4	—	—
V4 25A6G	152	35·0	160	6·0
V5 25Z6G	—	—	—	—

* Cathode to chassis, 202 V, D.C.

AC mains of 236 V. The receiver was tuned to the lowest wavelength on the MW 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 Universal Avometer, chassis being negative.



Plan view of the chassis of the Pilot Little Maestro. The adjustments of most of the trimmers in the set (including **C16** and **C17**) can be seen. **L12-L14** are parts of the speaker, which is mounted on the chassis.

GENERAL NOTES

Switches.—S1-S4 are the waveband switches, in a single rotary unit beneath the chassis. They are shown inset in the circuit diagram, where they are drawn as seen looking from the rear of the underside of the chassis. On MW (knob anti-clockwise), **S2** and **S4** are closed; on LW (knob clockwise), **S1** and **S3** are closed.

S5 is the QMB mains switch, ganged with the volume control, **R4.**

Coils.—L1-L4 and **L5-L7** are in two unscreened tubular units on the chassis deck. **L8, L9** are in a screened unit on the chassis deck. **L10, L11** are in an unscreened unit beneath the chassis.

Pilot Lamp.—This is an Ever Ready type, with a miniature bayonet cap, and is rated at 7.3 V, 0.25 A.

Condensers C13, C14.—These are two 20μF electrolytics in a single metal can, the can being the common negative connection. The tag at the top end is the positive of **C14**, and the tag beneath the chassis the positive of **C13.**

Resistance R10.—This is incorporated in the mains lead, and is asbestos insulated. At the chassis end of the cable, the asbestos-covered lead is the end of **R10** connected to **V5**; the white lead is the first tapping; the red lead is the second tapping (anodes of **V5**); and the black lead is one of the mains connections, the other being the far end of **R10.**

Chassis Divergencies.—C9 is not in the makers' diagram. The makers show **R8** as 470,000 Ω; **C7** as 0.00025μF; **C12** as 0.025μF and **C15** as 0.025μF

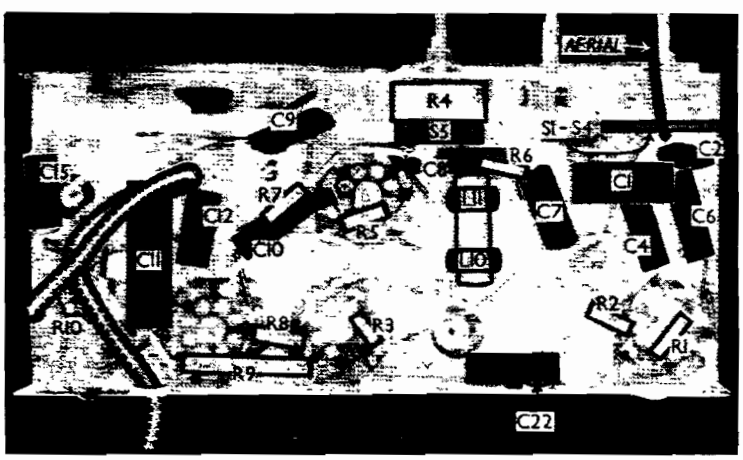
CIRCUIT ALIGNMENT

IF Stages.—Switch set to MW, turn gang to maximum and connect "live" signal generator lead via a 0.1μF condenser to top cap of **V2**, and earthed lead (via a 0.1μF condenser) to chassis. Feed in a 451 KC/S signal, and adjust **C26** and **C25** (through chassis deck) for maximum output. Transfer "live" generator lead and its condenser to top cap of **V1**, and adjust **C24** and **C23** for maximum output. Transfer signal generator to aerial lead, via a 0.00005μF condenser, and adjust **C16** for *minimum* output.

RF and Oscillator Stages.—With gang at maximum, pointer should be horizontal. Connect signal generator to aerial lead, via a suitable dummy aerial, and to chassis, via a 0.1μF condenser.

MW.—Switch set to MW, tune to 200 m on scale, feed in a 200 m (1,500 KC/S) signal, and adjust **C21**, then **C19**, for maximum output.

LW.—Switch set to LW, tune to 2,000 m on scale, feed in a 2,000 m (150 KC/S) signal, and adjust **C22** for maximum output. Feed in a 1,000 m (300 KC/S) signal, tune it in, and adjust **C17** for maximum output, rocking the gang slightly, if necessary.



Underneath view of the chassis of the Pilot Little Maestro. **R10** is included in the mains lead, and is tapped (see General Notes). A diagram of the **S1-S4** unit is inset in the circuit diagram.

Printed in Great Britain by The Cornwall Press Ltd., Paris Garden, London, S.E.1