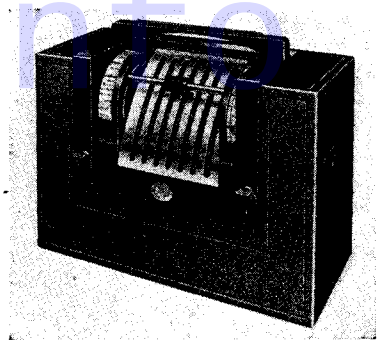
McMICHAEL BIJOU 387 PORTABLE



Rotabar tuning is a unique feature of the McMichael 387 Bijou four-valve straight portable.

CIRCUIT.—The frame aerials are connected in the grid circuit of the H.F. amplifier V1, an H.F. pentode connected as a tetrode. The sensitivity of the valve is modified by the volume control R1. This varies the voltage on the screen of the valve. C1 is included to couple an external aerial when required.

V1 is tuned anode coupled to V2, a triode acting as the demodulator and operating on the leak and condenser system. A set of reaction windings is included on the anode coils. Reaction is obtained from the anode of the valve and is controlled by a variable condenser in the usual manner.

V2 is resistance-capacity coupled to V3, another triode, operating as an L.F. amplifier. An H.F. filter is included in the intervalve coupling arrangements.

Coupling to the pentode output valve V4 is via an L.F. coupling condenser and parallel-fed L.F. transformer. A pentode compensator condenser effects a fixed tone modification.

Bias for V3 and also V4 is obtained from a potentiometer connected between H.T. negative and L.T. negative.

Battery equipment consists of a Drydex type H1146 90-volt H.T. battery and a two-volt accumulator.

Chassis Removal.—Remove back of cabinet and the two grub-screw fixed control knobs. Unscrew the two nuts from the roof (inside) securing the carrying bar and remove this complete with escutcheon.

Removal of the escutcheon will reveal four bolts. Unscrew these and remove metal securing bars held by the screws and also the dial light and holder from the front of the cabinet (inside).

The chassis, speaker and frame aerial structure can then be removed as a complete unit.

To obtain access to the underside of the chassis the six nuts and bolts securing the screen should be removed.

To obtain further access it is necessary to remove another two nuts and bolts from the side and to unsolder four leads from the frame aerial panel on the side of the frame aerial structure. The aerial frame can then be removed and complete access to the chassis obtained.

When replacing the leads, looking from the back of the set, the green lead from the gang is connected to the first tag, the

VALVE READINGS

No signal. Volume maximum. M.W. min. capacity. New batteries.

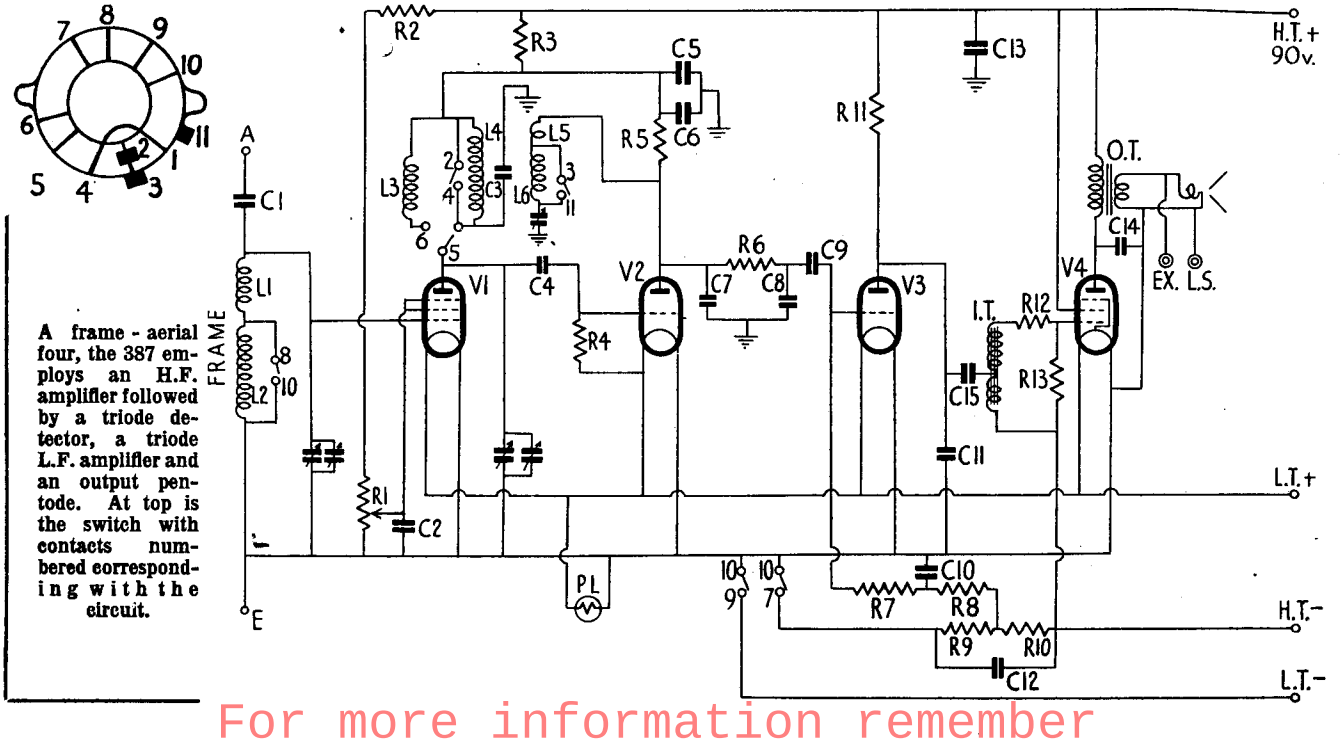
V.	Type.	Electrode.	Volts.	Ma.
	(Mazda octals).			
1	VP22	Anode	82	1.1
		Screen	22	.1
2	HLZZ	Anode	40	.4
3	HLZZ	Anode	50	.5
4	Pen. Z4	Anode	82	4.2
		Screen	82	.1

RESISTANCES

R.	Purpose.	Ohms.
1	Volume control	500,000
2	V1 screen decoupling	150,000
3	V1 and V2 anodes decoupling	5,000
4	V2 grid leak	2 meg.
5	V2 anode load	80,000
6	H.F. stopper	50,000
7	V3 grid leak	1 meg.
8	V3 grid decoupling	1 meg.
9	Bias potentiometer (part)	100
10	Bias potentiometer (part)	250
11	V3 anode load	50,000
12	V4 grid stopper	200,000
13	V4 grid leak	500,000

CONDENSERS

C.	Purpose.	Mfds.
1	External aerial coupling	.00001
2	V1 screen decoupling	.1
3	L.W. anode fixed trimmer	.0001
4	V2 grid coupling	.00005
5	V1 and V2 anodes decoupling (part)	8
6	V1 and V2 anodes decoupling (part)	.1
7	H.F. filter	.0003
8	H.F. filter	.0003
9	L.F. coupling	.01
10	V3 grid decoupling	.1
11	V3 anode shunt	.0003
12	Bias potentiometer shunt	50
13	H.T. line by-pass	.1
14	Pentode compensator	.01
15	L.F. coupling	.1



A frame-aerial four, the 387 employs an H.F. amplifier followed by a triode detector, a triode L.F. amplifier and an output pentode. At top is the switch with contacts numbered corresponding with the circuit.

black from a grommet in the chassis to the second tag, and the earthing lead from the chassis and the lead to the external earth socket to the third tag.

Special Notes.—A pair of sockets on the side of the cabinet enables an external aerial and earth system to be connected for use in screened localities.

C14, the pentode compensator condenser, is connected on the primary of the speaker transformer.

The single pilot light is mounted in a screw-in holder. It is rated at 2 volts .1 amp., and has an M.E.S. base.

A pair of sockets on the side of the cabinet enables an extension speaker to be connected or headphones to be used. The speaker should be of the low impedance (2 to 4 ohms) type.

The chassis is in the form of two sections, held together by the speaker baffle structure. One carries the "radio" components and the other the output part.

A screen is fitted underneath the chassis to insure against feed-back effects.

The cabinet is fitted with a turntable for easy use of the directional properties of the frame.

Circuit Alignment Notes

Connect an output meter across the primary of the output transformer in usual manner. Turn volume control to maximum and adjust the reaction control so that the receiver is nearly but not quite oscillating.

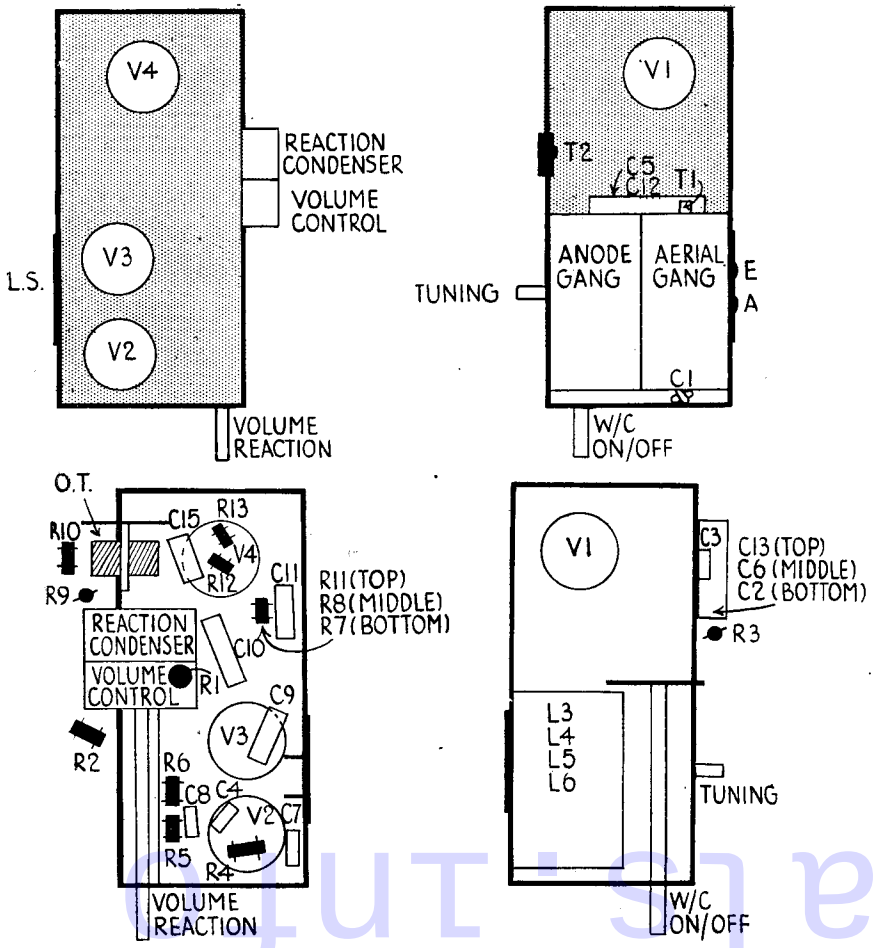
Tune the receiver to 214 metres (1,400 kc.) and bring a service oscillator tuned to the same frequency near to the receiver. Only feed sufficient input from the oscillator to obtain reliable peaks in the output meter.

Adjust T1 and then T2 maximum with the reaction control set so that the receiver is not quite in the oscillating condition. The lowest input possible from the service oscillator should be used for optimum results.

There are no separate adjustments for the long-wave band.

WINDINGS (D.C. Resistances)

L.	Ohms.	Range.	Where m easured.
1. . ..	1.5	M.W.	Tags or top grid V1 and chassis.
2. . ..	21	L.W.	Tags or top grip V1 and chassis.
3. . ..	2.3	M.W.	Anode V1 and V3.
4. . ..	21	L.W.	Anode V1 and V3.
5. . ..	4	M.W.	Anode V2 and reaction condenser.
6. . ..	13.5	L.W.	Anode V2 and reaction condenser.
I.T. ..	2900+1300	Any	Tags.



There are two sections to the Bijou chassis, one for the radio side and one for the output. Here the top "deck" views are shown tinted with the corresponding underside layouts below.

McMichael Bijou on Test

MODEL 387.—"Bijou." For battery operation, requiring a Drydex type H.1146 90-volt H.T. battery and an Oldham type J.T.MV5 2-volt accumulator. PRICE.—8 gns.

DESCRIPTION.—Four-valve straight portable with reaction.

FEATURES.—Receiver and frame aerials in leatherette-covered case with carrying bar. Turntable on base. Unique slow and fast tuning control constituted by a metal bar in front of speaker grille. Edgewise tuning scales on each side of speaker grille calibrated in metres and station names. Other controls for combined reaction and volume and combined wave selection and master switch. Sockets on side of cabinet for low impedance speaker and external aerial and earth.

LOADING.—H.T., 6.4 ma.; L.T., .7 amp.

Sensitivity and Selectivity

MEDIUM WAVES (200-550 metres).—Very well maintained gain and sensitivity with ample volume on the main stations even in daylight. Adequate selectivity and easy handling, with complete freedom from reaction overlap.

LONG WAVES (1,000-1,900 metres).—Similar performance to medium waves with good volume from all the usual stations and excellent selectivity with the directional properties of the frame aerial.

Acoustic Output

Very well balanced tone for a small portable, with no undue cutting of the top notes, and pleasing reproduction on speech and music.

Philco D531

(Continued from page 51)

(160 kc.) and adjust P2 (the nut of the double padding condenser) for maximum, simultaneously rocking the gang. 1,875 metres is marked by a dot on the scale.

Repeat both operations until no further improvement results.

Short Waves.—Tune set and oscillator to 18 mc., screw T5 right up and then unscrew until the second peak is heard. Then adjust T6 for maximum sensitivity.

On some receivers pulling will be experienced when T6 is adjusted. By shunting a .00035-mfd. condenser (variable) 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.

Therefore, connect the variable condenser between the tag of T5 and chassis and tune it (about half open) for signal at 18 mc. Then trim T6 for maximum, disconnect the shunt condenser, screw T5 right up and then unscrew until the second peak is heard.

Check that the 18-mc. image is obtained at approximately 17.1 mc.

Automatic Buttons

Press the button and rotate the dial (either way) until the button engages with the slot behind the dial. Then rotate the special tool one turn counter-clockwise—sufficient to loosen the button—but not beyond this.

Still keeping the button depressed, take out the tool and insert the blade into the centre of the button. Turn the screw until the desired station is again tuned in.

Then, keeping the blade of the tool pressed in and held steady with one hand, tighten the button by clockwise rotation with finger and thumb of the other hand. To complete operations insert the appropriate name tag.