

MARCONIPHONE 224-236 UNIVERSAL CHASSIS

Circuit.—The combined first detector oscillator valve, X 30 met (V1), is preceded by a single tuned H.F. circuit which includes a special morse filter (L1, TC6) to prevent break through on the oscillator frequency.

Bias is by A.V.C. and cathode resistance, and coupling to the next valve is by band-pass I.F. transformer (frequency 456 kc.).

The second valve, WD 30 met. (V2), is a double-diode-H.F. pentode, which is used as I.F. amplifier, second detector and L.F. amplifier. Only one diode anode is used for L.F. and A.V.C.

In the anode couplings the I.F. transformer acts on I.F., and the I.F. decoupling resistance R9 acts as L.F. coupling with C12 as by-pass condenser.

The switch S2 in the low potential side of the grid circuit connects the return lead to chassis, thus making R11 and C9 act as grid leak and condenser for V2, which becomes a leaky grid detector for local station reception. The switch is operated by a collar on the sleeve on the tuning spindle.

The output valve, N30 Caikin (V3), has the volume control as a grid leak, and is tone compensated by a condenser between anode and chassis.

Mains equipment consists of H.F. filter, voltage adjustment resistance for the heater supply, full-wave U30, rectifier used as half-wave, and a choke in the H.T.+ lead for smoothing with electrolytic condensers.

The 5,000 ohm field coil is connected across the unsmoothed H.T. The order of the heater connections from the resistance is Rectifier, V3, V1, V2.

Special Notes.—The pilot lamp is a 6.2 volt type (Osram). To remove the bracket, slacken the long milled edged screw on top of the ganged condensers.

Quick Tests. taken on 230 volts A.C. mains on 216-235 v. tapping, between the following terminals on the speaker transformer and the chassis (note that the chassis may be "live" to earth):—

Red, H.T. smoothed, 195 v.

Yellow, H.T. unsmoothed, 215 v.

Red and yellow, V3 anode, 180 v.

Removing Chassis.—Remove the knobs (sealed grub screws). Remove two wood insulating blocks from underneath the cabinet, and remove the four bolts.

Release the speaker cable from the cleat and lift the chassis out.

General Notes.—Removing the mains unit. This unit is held by four wood screws and a hollow bush on the switch screw. The removal of the bush is facilitated by first removing the wood screws from the metal shield. To remove the switch and fuse unit from the shield, undo the four holding screws from behind the latter.

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and C19 10 mm. below. Inject on 800 and 1,900 m. (375 k.c. and 158 k.c.).

Short Waves: Adjust as above by C54, C55 and C56, with the following settings: C54, tube 7 mm. below insulator; C55, 7 mm. below; and C56 3 mm. below.

Inject on 18 m. Connect auxiliary receiver and short circuit C31 as above.

Tune to 18 m. and trim C54 and C55 for max.

Remove the auxiliary receiver and the short circuit and adjust C56 for max.

Replacing Chassis.—Replace screening cover and slide the chassis into the cabinet. Clip the pointer fork on to the driving band at the stud.

Resolder the meter leads and connect the selectivity control cable. Replace the holding screws and knobs.

Inside this unit are, in order from the switch end: C21, C20 and C29.

The filter choke CK3 is underneath C21, while CK2 is underneath C20 and C29.

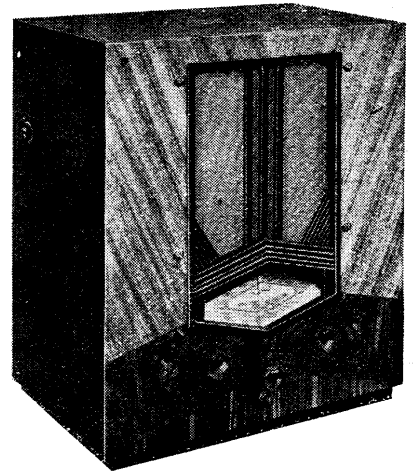
The following wiring colour code is used in this set:—

H.T.+ , red;

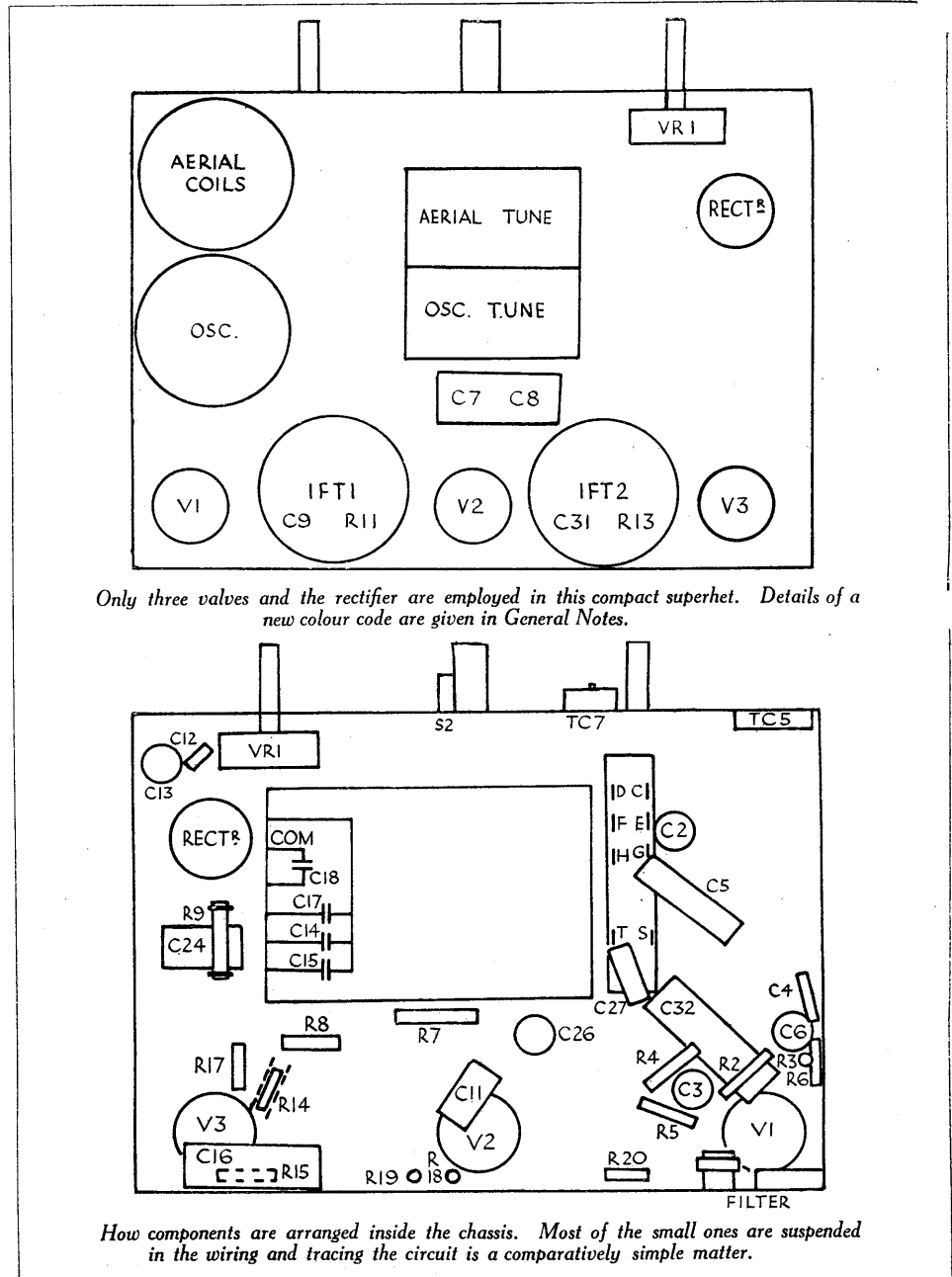
Anodes, when not direct to H.T.+ , red/yellow; screening grids, when not direct to H.T.+ , red/black; grids, green; mains, orange; heaters, filaments and cathodes, brown; other connections, yellow.

To remove the speaker, take out the four round headed screws from the flanges.

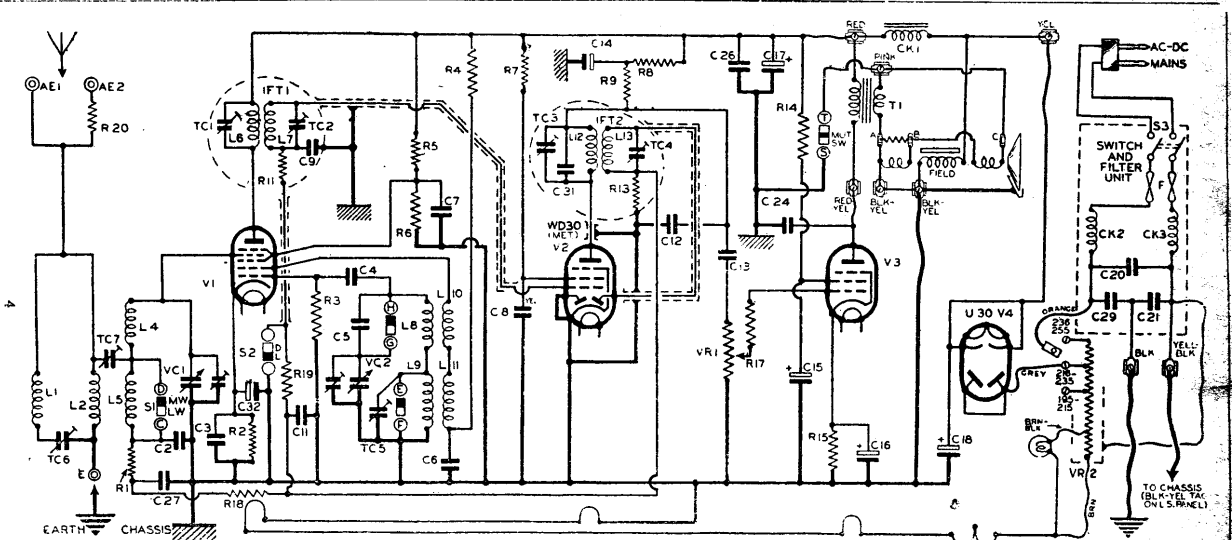
Alignment of Circuits.—The intermediate frequency is 456 kc., and the trimmers of the I.F. transformers are tuned by concentric screws and nuts on the tops of the coil assemblies. The screws adjust the primaries, and the nuts the secondaries. Ordinary procedure should be adopted, but the alignment (Continued on opposite page.)



The Marconiphone model 224 and 236 receivers (the 224 is illustrated) employ a novel reflex superhet circuit for A.C.-D.C. operation.



The second valve in the model 224 acts as I.F. amplifier and second detector. It also provides A.V.C. A feature of this universal circuit is that for local station reception the I.F. stage is omitted and leaky-grid detection is employed.



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The I.F. transformers should be staggered by adjusting to +2 or 3 kc. in the secondaries, and - 2 or 3 kc. in the primaries.
Replacing Chassis.—Lay the chassis inside the cabinet, clip the speaker lead, replace the holding screws and the wooden covers and replace the knobs, sealing the grub screws with insulating compound.

VALVE READINGS					
Valve.	Type.	Electrode.	Volts.	Ma.	
1	X 30 met. (7)	anode ..	195	1.8	
		screen ..	65	2.7	
		osc. anode ..	70	1.3	
2	W.D. 30 met. (7)	anode ..	60	4	
		aux. grid ..	67	1.9	
3	N 30 (7)	anode ..	180	22	
		aux. grid ..	145	4.6	

Readings may vary by + or - 20 per cent., according to supply. These were taken on 230v. A.C. mains, 216-235 tapping.

RESISTANCES		
R.	Purpose.	Ohms.
1	Decoupling V1 grid	100,000
2	V1 cathode bias	230
3	V1 osc. grid leak	50,000
4	V1 osc. anode decoupling	100,000
5	Top part of V1 screen ptr.	35,000
6	Lower part of V1 screen ptr.	50,000
7	V2 aux. grid feed	75,000
8	V2 anode decoupling	5,000
9	R9, see "circuit" in context	35,000
VR1	Volume control	200,000
11	V2 grid leak (on local)	100,000
VR2	Heater resistance 80 + 80 + 440 + 40.	640
13	Diode load .. .. .	.5 meg
14	V3 aux. grid feed	10,000
15	V3 cathode bias	230
17	V3 grid stabiliser	50,000
18	Decoupling A.V.C. to V1 .. .. .	.35 meg.
19	V2 grid decoupling from A.V.C.	23,000
20	Series with A2 socket	10,000
	Field coil	5,000

CONDENSERS		
C.	Purpose. †	Mfd.
2	Decoupling V1 grid .. .. .	.1
3	V1 cathode by-pass .. .. .	.1
4	V1 osc. grid reservoir .. .. .	.0001
5	Osc. tracking on L.W. .. .. .	.0005
6	V1 osc. anode decoupling .. .. .	.1
7	V1 screen by-pass .. .. .	.5
8	V2 aux. grid by-pass .. .. .	.5
9	V2 grid decoupling on I.F. .. .. .	.0005
11	V2 grid decoupling for A.V.C. .. .. .	.002
12	H.F. by-pass from diode .. .. .	.0005
13	L.F. coupling .. .. .	.1
14	V2 anode decoupling (L.F.)	el.
15	V3 cathode by-pass	el.
16	V3 aux. grid by-pass	50
17	H.T. smoothing	12
18	H.T. smoothing	12
20	H.F. filter in mains .. .. .	.01
21	H.F. filter in mains .. .. .	.005
24	Tone compensating V3 .. .. .	.002
26	H.F. by-pass across C17. .. .. .	.1
27	A.V.C. decoupling .. .. .	.01
29	H.F. filter in mains .. .. .	.005
31	Tuning IFT2 primary .. .. .	.0001
32	V1 cathode by-pass	el.