

TRIX TYPE T240 P.A. AMPLIFIER (Cont.)

A and C, and the mains leads connected to the links.

On 200-, 230- and 250-volts mains, C and B should be joined and the mains taken to A and the correct tapping—D for 200 v., E, 220; F, 230; and G for 250 volts.

The fuse is a 12-volt 3-watt lamp (car type is suitable), and during operation this will glow and flicker with the A.C. output. Excessive flickering usually shows that a wrong output ratio has been chosen.

Revealing Chassis.—Remove four screws from the front of the instrument and lift off the plate.

General Notes.—In handling this

VALVE READINGS				
Valve.	Type.	Electrode.	Volts.	ma.
1	AC/HL	anode	200	5-6
2	PM24D	anode	450-490	40-55
3	PM24D	aux.grid as V2	180-210	180-210

Note that the PM24D is a directly heated pentode and has the aux. grid attached to the centre pin.

apparatus, remember that the voltages across the condensers are dangerous and, in the event of defective output valves the condensers should be discharged after switching off.

The resistances R13 in the layout diagram form a safety load, and may be found connected across output transformer primary.

Never switch on the amplifier without a

load on the output, as damage may be done to the output valves, the choke and the condensers.

All the controls and sockets are properly labelled, and the correct transformer ratios for speakers of various impedances are:—

- 16/1 for 16-ohm speech coils.
- 25/1 for 8-ohm speech coils.
- 45/1 for 2-ohm speech coils.

The various combinations for series and parallel speakers can be computed from these.

The baseboard is of hard wood, and all the components are screwed to it except the mains transformer, which is bolted.

The output choke is model O.C.130, rated at 30 h. at 130 ma.

The smoothing choke is model C.150, rated at 30 h. at 150 ma.

MARCONIPHONE 257 BATTERY SET

Circuit.—The combined first detector oscillator, X21 (V1), is preceded by a single-tuned aerial coupling with special morse filter and image suppressor circuits.

Coupling to the next valve is by band-pass I.F. transformer (frequency 456 kc.), and bias is obtained from the A.V.C. line.

The I.F. valve, VS24 (V2), is also biased by A.V.C. and is followed by a second band-pass I.F. transformer. Reaction is applied to I.F.T.1 from the secondary. The second detector valve, HD21 (V3), is used in the conventional manner for A.V.C. and L.F., the volume control forming the L.F. diode load. The following coupling is a parallel-fed tapped secondary driver transformer.

The output valve, QP21 (V4), is a double pentode, and is operated with bias.

Special Notes.—Battery voltages (2 x 84 volt). H.T.: red lead, 159 v.; mauve, 72 v. G.B.: grey, 9 v.; blue, 1.5 v.

The pink lead should be inserted into the voltage corresponding to the lettering on the

bulb, as follows: W, 138 v.; X, 144 v.; Y, 151.5 v.; Z, 157.5 v.

The valves are graded so that the overall emissions are the same.

In the filter circuits, TC1 adjusts the suppression of morse interference at the top of the M.W. waveband, and TC2 the second channel.

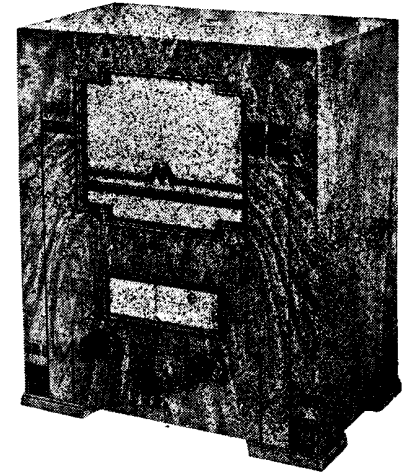
Quick Tests.—Total H.T. current should be 9 to 9.5 ma., measured in H.T. — lead.

Removing Chassis.—Remove the knobs (self-threading grub screws), unscrew the small escutcheon round the local distance switch.

Remove two octagonal screws from underneath, release L.S. leads from the cleat and lift chassis out.

General Notes.—The L.F. trimmers are a new type, consisting of a nut and a central screw. The nut adjusts the primary trimmer, and the screw the secondary. The screening

(Continued on opposite page.)



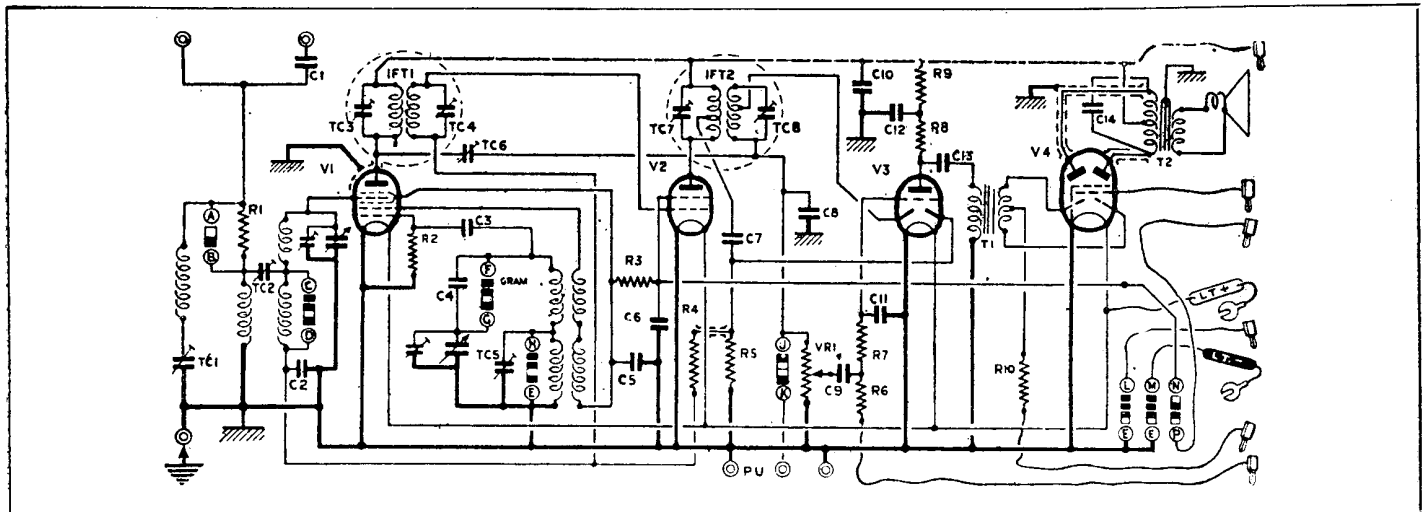
The Marconiphone 257 is a four-valve battery superhet with class B output.

RESISTANCES		
R.	Purpose.	Ohms.
1	For local distance switching	75,000
2	V.1 osc. grid-leak	50,000
3	Decoupling osc. anode	23,000
4	Decoupling A.V.C. line	.5 meg.
5	A.V.C. diode load	.5 meg.
6	V.3 grid-leak	1 meg.
7	H.F. stopper	23,000
8	V.3 anode L.F. coupling	50,000
9	V.3 anode decoupling	7,500
10	V.4 grids stabiliser	.23 meg.
V.R.1	Volume control, diode load	.5 meg.

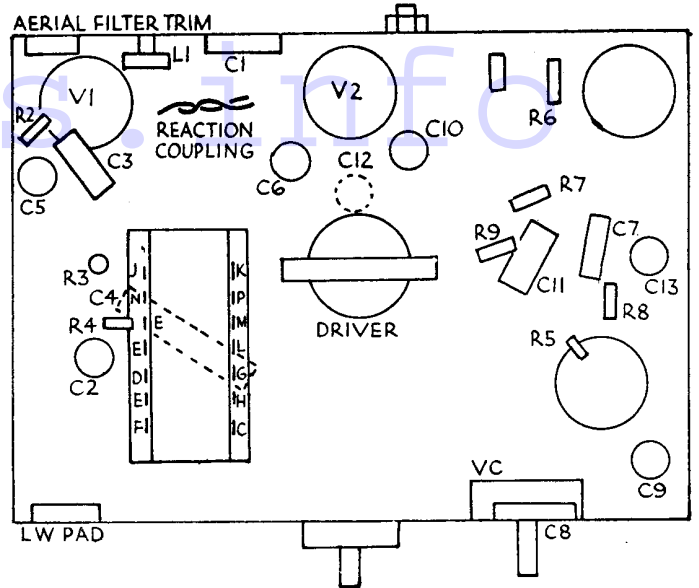
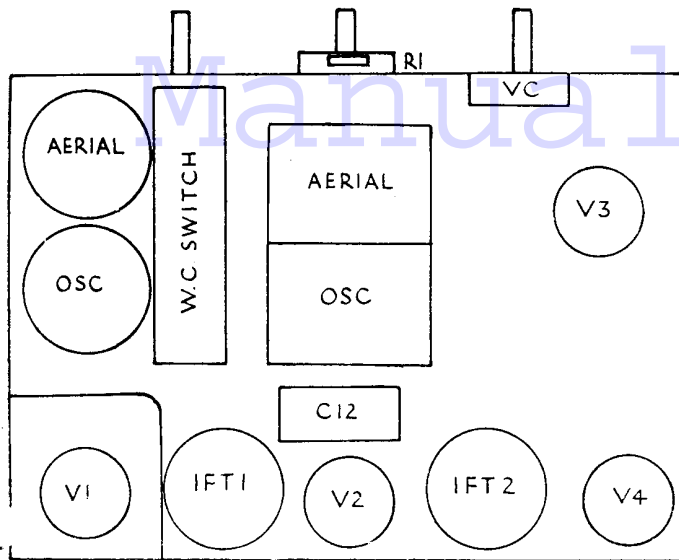
CONDENSERS		
C.	Purpose.	Mfd.
1	Series with A.2 lead	.0005
2	Decoupling V.1 grid	.1
3	Osc. grid	.00023
4	Osc. tracking	.0005
5	Decoupling osc. anode	.1
6	V.2 screen by-pass	.1
7	I.F. feed to A.V.C. diode	.00023
8	H.F. by-pass from diode	.00023
9	L.F. coupling to triode grid	.1
10	Across H.T.	.1
11	H.F. by-pass from V.3 grid	.0001
12	V.3 anode decoupling	2
13	Filter coupling to driver trans.	.1
14	Tone compensating V.4 anodes	.001

VALVE READINGS				
Valve.	Type.	Electrode.	Volts.	M.A.
1	X.21 (7)	anode	159	.35
		screen	30**	
		osc. anode	30**	
2	V.S.24 (5)	anode	159	3.5
		screen	72	
		anode	70/100**	
3	H.D.21 (5)	anode	159	1
		eachanode screen	159	
4	Q.P.21	eachanode screen	159	1.8-2.8

* According to tapping.
** High values of resistance in circuit.



There are a number of refinements in the Marconiphone 257 including a local-distance switch and a reaction sensitivity control.



The switch contacts are accessible from above the Marconiphone chassis. When working on the underside care should be taken not to disturb the twisted wire reaction coupling.

ans are fixed by two nuts underneath and by press springs which project at the side.

To remove the can, twist the ends projecting underneath the chassis so that they clear the slots, remove the nuts and lift off while pressing the springs inwards.

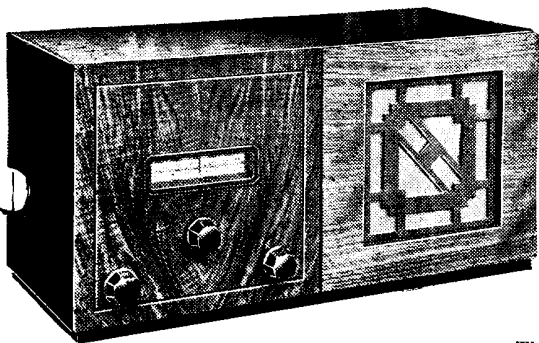
Reaction is applied between I.F.T.2

secondary and I.F.T.1 primary. The adjustable condenser TC6 is mounted on the back of the chassis, and the coupling condenser consists of twisted wire, as shown in the lay-out diagram. This should not be disturbed.

The switch is also a new type, and the con-

tacts are easily accessible from above the chassis.

Replacing Chassis.—Lay chassis inside the cabinet, replace holding screws, clip the L.S. leads and replace the knobs—making sure that the W.C. and battery knob corresponds to the small "on-off" plate above the dial.



The four-valve receiver made by Halcyon Radio Ltd.

HALCYON BATTERY 4

Circuit.—The H.F. valve, VS24, met. (V1), is preceded by a band-pass aerial circuit, and is followed by tuned anode coupling to the next valve. Volume is controlled by variable bias potentiometer across the G.B. battery.

The detector valve, HL2 (V2), operates as a leaky grid detector, with reaction. Coupling to the next valve is by straight transformer. The driver valve L21 (V3) has an H.F. stopping resistance in its grid circuit.

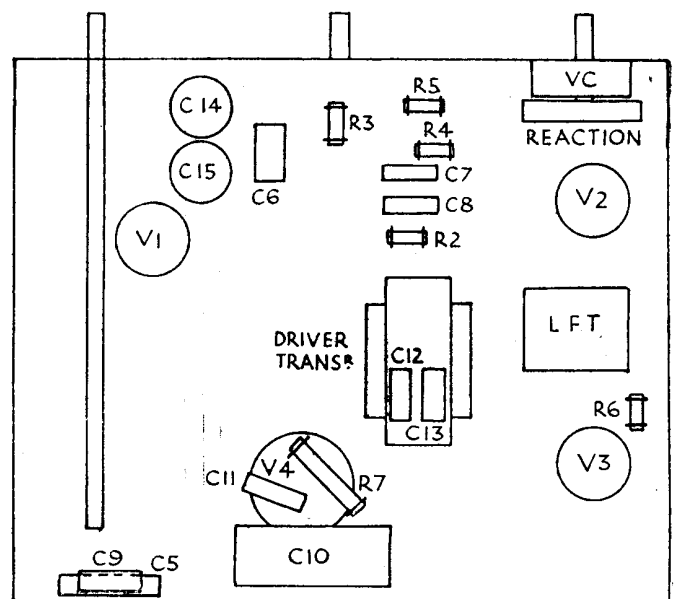
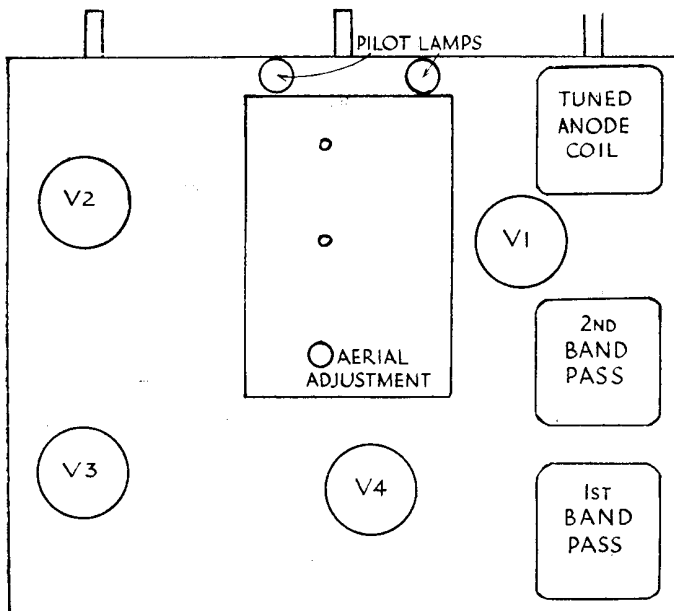
The Class B output valve, B21 (V4), has initial bias applied to the grids, and is stabilised by condensers between each anode and

H.T.+ and one between the anodes. The L.S. is a permanent magnet moving-coil type.

Special Notes.—Battery voltages are:—H.T.+ (yellow), 144 volts; H.T.+ (white), 75 volts; G.B.—1 (blue and red), 1.5 volts; G.B.—2 (pale grey), 4.5 volts; G.B.—3 (blue-grey), 6 volts.

Quick Tests.—In this receiver quick tests are best performed while taking the valve readings.

Removing Chassis.—Remove knobs (grub screw). Remove four holding screws from underneath and lift chassis out. The L.S. leads may be unsoldered and reconnected in the speaker side of the strut or the speaker
(Continued on next page.)



How the parts are disposed on the Halcyon chassis.

SERVICE ENGINEER

MARCONIPHONE 257 BATTERY SUPERHET FOUR

CIRCUIT.—The first detector oscillator, V1, is preceded by a single tuned aerial coupling with special morse filter and image suppressor circuits.

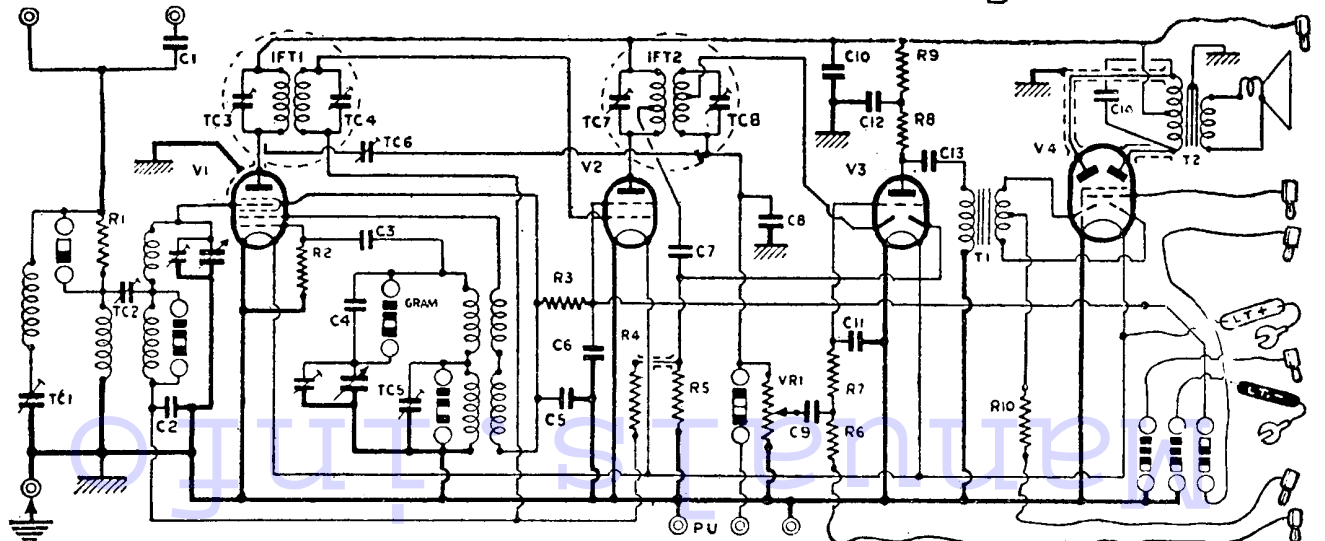
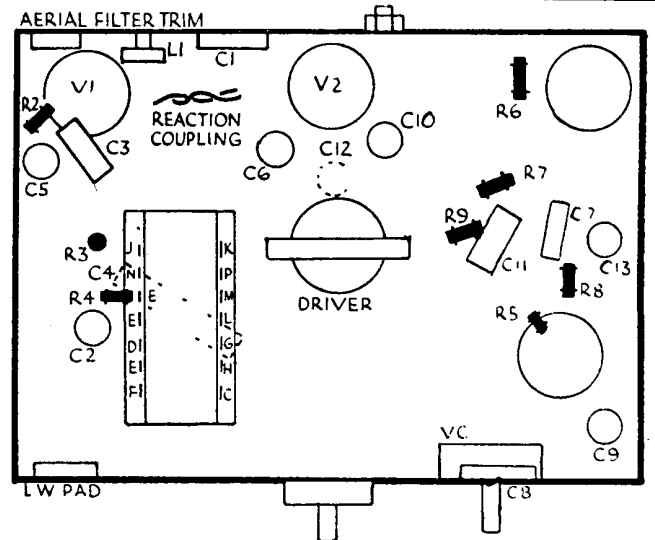
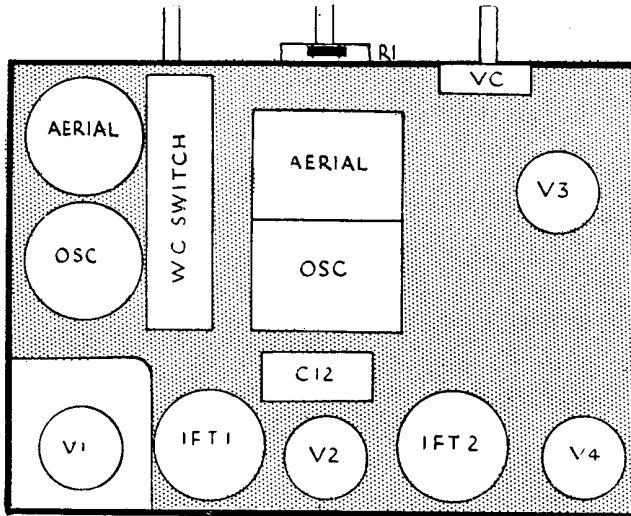
Coupling to the next valve is by band-pass I.F. transformer, and bias is obtained from the A.V.C. line.

The I.F. valve, V2, is also biased by A.V.C., and is followed by a second band-pass I.F. transformer. Reaction is applied to I.F.T.1 from the secondary of I.F.T.2. The second detector valve, V3, is used in

(Continued on page 36)

RESISTANCES		
R.	Purpose.	Ohms.
1	For local distance switching ..	75,000
2	V1 osc. grid-leak ..	50,000
3	Decoupling osc. anode ..	23,000
4	Decoupling A.V.C. line ..	.5 meg.
5	A.V.C. diode load ..	.5 meg.
6	V3 grid-leak ..	1 meg.
7	H.F. stopper ..	23,000
8	V3 anode L.F. coupling ..	50,000
9	V3 anode decoupling ..	7,500
10	V4 grids stabiliser ..	.23 meg.
V.R.1	Volume control diode load ..	.5 meg.

CONDENSERS		
C.	Purpose.	Mfd.
1	Series with A2 lead ..	.0005
2	Decoupling V1 grid ..	.1
3	Osc. grid ..	.00023
4	Osc. tracking ..	.0005
5	Decoupling osc. anode ..	.1
6	V2 screen by-pass ..	.1
7	I.F. feed to A.V.C. diode ..	.00023
8	H.F. by-pass from diode ..	.00023
9	L.F. coupling to triode grid ..	.1
10	Across H.T. ..	.1
11	H.F. by-pass from V3 grid ..	.0001
12	V3 anode decoupling ..	.2
13	Filter coupling to driver trans. ..	.1
14	Tone compensating V4 anodes ..	.001



There are a number of refinements in the 257 circuit. One is a local-distance switch and another is a pre-set reaction control. The switch contacts, it will be seen, are accessible from the top of the chassis.

MARCONIPHONE MODEL 257 BATTERY SUPERHET (Continued)

the conventional manner for A.V.C. and L.F., the volume control forming the L.F. diode load. The following coupling is a parallel-fed tapped secondary driver transformer.

The output valve, V4, is a double pentode, and is operated with bias.

Special Notes.—Battery voltages (2 × 84 volt). H.T.: red lead, 159 v.; mauve, 72 v. G.B.: grey, 9 v.; blue, 1.5 v.

The pink lead should be inserted into the voltage corresponding to the lettering on the bulb, as follows: W, 138 v.; X, 144 v.; Y, 151.5 v.; Z, 157.5 v.

The valves are graded so that the overall emissions are the same.

In the filter circuits, TC1 adjusts the suppression of morse interference at the top of the M.W. waveband, and TC2 the second channel.

Quick Tests.—Total H.T. current should be 9 to 9.5 m.a., measured in H.T. — lead.

Removing Chassis.—Remove the knobs (self-threading grub screws), unscrew the small escutcheon round the local distance switch.

Remove two octagonal screws from underneath, release L.S. leads from the cleat and lift chassis out.

General Notes.—The trimmers on the I.F. transformers consist of a nut and a central screw. The nut adjusts the primary trimmer, and the screw the secondary. The screening cans are fixed by two nuts underneath and by press springs which project at the side.

To remove the can, twist the ends projecting underneath the chassis so that they

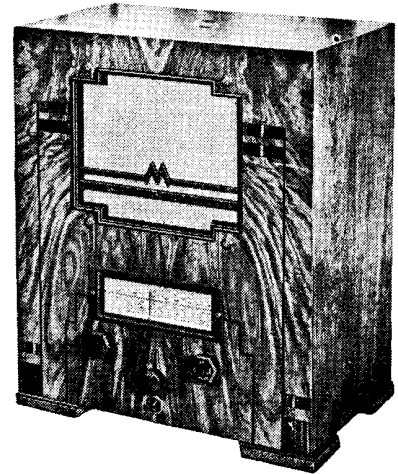
The chassis lay-out diagrams in SERVICE ENGINEER reviews are designed for easy reference. The plan of the top of the chassis is instantly recognisable by the "tint." Resistances are shown in solid black, and condensers in outline. This halves the time required to find a component.

clear the slots, remove the nuts, and lift off while pressing the springs inwards.

Reaction is applied between I.F.T.2 secondary and I.F.T.1 primary. The adjustable condenser TC6 is mounted on the back of the chassis, and the coupling condenser consists of twisted wire, as shown in the lay-out diagram. This should not be disturbed.

The switch is also a new type, and the contacts are easily accessible from above the chassis.

Replacing Chassis.—Lay chassis inside the cabinet, replace holding screws, clip the L.S. leads and replace the knobs—making sure that the W.C. and battery knob corresponds to the small "on-off" plate above the dial.



The 257 is a battery superhet with an 8-stage circuit which includes a double-pentode output valve. Pre-set I.F. reaction is an unusual feature.

CIRCUIT ALIGNMENT NOTES

I.F. Circuits.—Connect modulated oscillator tuned to 456 kc. between grid of V1 (top of valve) and chassis and 0.3 A.C. voltmeter across secondary of output transformer. Switch receiver to M.W. and turn tuning condenser to minimum.

Adjust trimmers on I.F.T.1. and I.F.T.2 for maximum. Finally, check trimmers on I.F.T.1.

Medium-wave Band.—It is important that an aerial and earth should be connected during alignment to obtain normal operating conditions. Loosely couple the oscillator to the aerial lead.

Check position of scale and pointer when tuning condenser is at minimum capacity. The pointer should then register 185 metres. The pointer should be a quarter of an inch below the 200-metre line of the scale.

Switch set to M.W. and tune set and

oscillator to 200 metres. Adjust trimmer of oscillator section of condenser for maximum.

Set oscillator to 230 metres, tune in signal and adjust trimmer on aerial section of tuning condenser for maximum. Check on 550 metres.

Finally, tune in London Regional and, if necessary, adjust the scale.

Long-wave Band.—Tune receiver and oscillator to 1,500 metres and adjust long-wave padding condenser for maximum.

Image Suppression.—(1) Adjust oscillator to frequency of any strong transmission that occurs between 250 and 285 metres. Switch receiver to L.W., tune in signal and adjust TC2 for minimum.

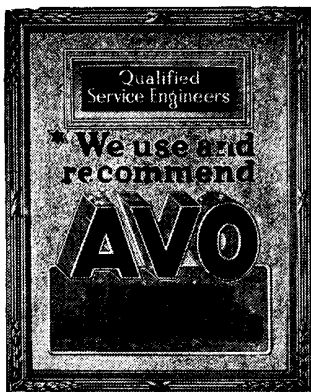
(2) Adjust oscillator to 456 kc. and couple output to aerial terminal of receiver. Adjust TC1 for minimum.

VALVE READINGS

Valve	Type.	Electrode.	Volts.	M.a.
1	X.21 (7)	anode ..	159	.35
		screen ..	30**	
2	V.S.24 (5)	osc.anode ..	30**	3.5
		anode ..	159	
3	H.D.21(5)	anode ..	70/100**	1
4	Q.P.21	each anode ..	159	1.8-2.8
		screen ..	*	

* According to tapping.

** High values of resistance in circuit.



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