

Above is the top plan of the McMichael Twin-speaker Superhet chassis. In early models the medium- and long-wave tracking condensers, were accessible only from underneath (see Special Notes).

The complete assembly can be removed from the cabinet and the underside of the set chassis can be revealed by pivoting it on two rear screws. Left, is the view of the "opened" assembly.

(Continued from previous page.)

the upper chassis on the aerial filter side of the switch) special insulated 12 in. box spanners are obtainable from the makers to allow this adjustment to be made without removing the chassis.

Later models have tracking condensers as shown in the diagrams. These are adjustable from above.

**Quick Tests.** — Voltages between the following points and chassis:—

Positive plate of rectifier, 370 volts (H.T. unsmoothed).

Left-hand speaker looking from the back and counting tags from the left: (1) and

(2) 250 volts; (3) 248 volts, H.T. smoothed; (4) 240 volts, V5 anode; (5) 370 volts, H.T. unsmoothed.

Left-hand tag on right-hand speaker, 200 volts.

**Removing Chassis.** — Remove control knobs (grub screw) and wave-change switch lever by undoing central screw.

Remove four holding screws from underneath and slide chassis out.

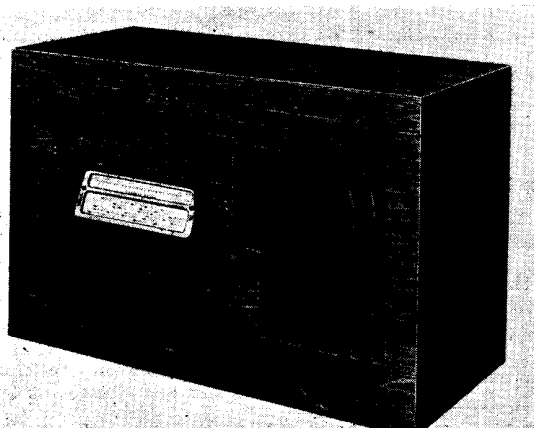
To reveal the complete chassis, remove two screws from underneath flange in front between the two chassis and remove the two front of the three screws at each side. Pivoting the top chassis on the two rear screws, turn it over till the chassis is

revealed as in the diagram. There are stops to hold it in this position.

**General Notes.**—The receiver can conveniently be tested and the components examined without removing the chassis but if any alteration or replacement has to be made it is advisable to remove the chassis completely.

**Replacing Chassis.**—Return the upper chassis to its original position, replace the six sliding screws and slide the chassis carefully into position, taking care that the wave-change switch spindle does not foul the escutcheon.

Replace the four holding screws and the knobs.



## ATLAS TYPE B345 BATTERY SET

The tilting-dial is a distinguishing feature of the Atlas B345 receiver produced by H. Clarke & Co. (Manchester), Ltd.

**Circuit.**—The H.F. valve, VP2 met. (V1), is preceded by a tuned secondary H.F. transformer with a medium-wave choke in series with the primary to prevent break through on the long waves.

Volume is controlled by a potentiometer across the G.B. battery. Coupling to the next valve is by another tuned secondary transformer.

The second valve, SP2 met. (V2), operates

as a leaky-grid detector with reaction, and is coupled to the output valve by an L.F. choke, damped by the resistance R3, and condenser and grid leak filter.

The output valve, PM22A (V3), is tone compensated by a condenser across the primary of the output transformer.

**Special Notes.**—Battery voltages are:— H.T.+ (red), 120 v.; H.T.+ (yellow),

80 v.; G.B.+ (grey); G.B.— 4½ (yellow); G.B.— 9 (white).

The volume control resistance acts as a bleeder for the G.B. battery.

**Quick Tests.**—These are best performed by noting the clicks during valve tests.

**Removing Chassis.**—Turn dial to horizontal position, remove knobs (grub screw), three screws underneath and undo speaker leads from transformer. Lift the chassis clear of the back stops.

**General Notes.**—In some models the L.F. choke was omitted, C10 was .05 mfd., and the switch was in the L.T.— lead.

There is no trimmer for the aerial coil on the gang condenser—instead there is a variable type mounted on the front of the chassis.

There are three terminals on the V2 coupling choke, of which the one nearest the end is used only as an anchorage.

**The Cord Drive.**—To reach the cord inside the dial, remove the two screws at the ends of the chromium-plated frame, taking care not to lose the distance pieces inside.

### ATLAS B345 BATTERY SET (Cont.)

Ease the removable station dial from its pins and adjust the clip on pointer.

The cord is connected to one end of the spring on the disc drive, and passes round the small peg, over the drum and round two pulleys to the pointer from which it continues over the pulleys at the other side, once round the drum, in the reverse direction, to the other end of the spring.

In replacing the dial frame place the screws through the holes and fix the distance pieces round them. Then replace the frame.

**Replacing Chassis.**—Turn the dial to a horizontal position, and lift the chassis inside the cabinet.

Replace the holding screws with the cut washer at the back, connect the speaker leads and the knobs.

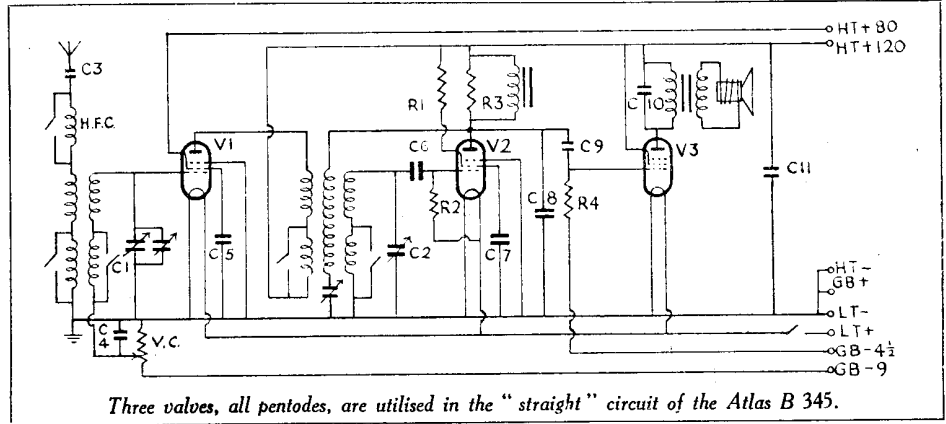
VALVE READINGS				
No reaction and no signal.				
Valve.	Type.	Electrode.	Volts.	M.A.
1	VP2 met. (7)	anode	120	1.3
		aux. grid	80	
		anode	116	.4
2	SP2 met. (7)	anode	*	
		aux. grid		
		anode	120	4.1
3	PM22A (5)	anode	120	.9
		aux. grid	120	.9

\* High value of resistance gives entirely erroneous reading.

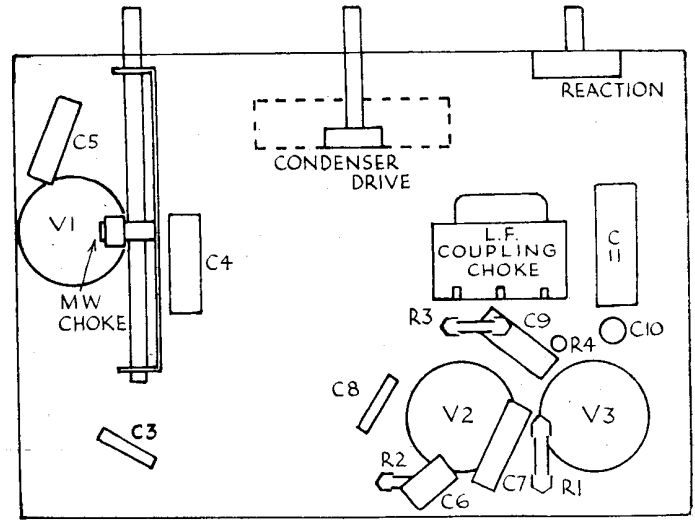
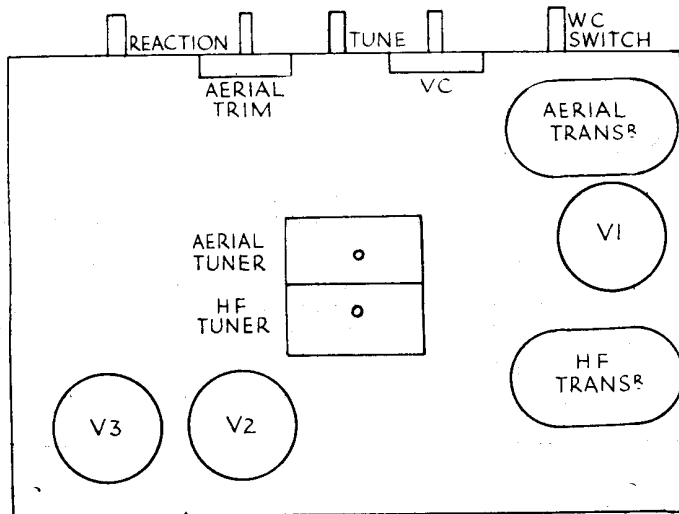
CONDENSERS		
C.	Purpose.	Mfd.
3	Series aerial	.0005
4	Decoupling V1 grid	.1
5	V1 aux. grid by-pass	.1
6	V2 grid reservoir	.0001
7	V2 aux. grid by-pass	.1
8	H.F. by-pass	.0002
9	L.F. coupling	.1
10	Tone compensation, V3 anode	.01
11	Across H.T.	2

Except the mica condensers, all others are 250 v. working.

RESISTANCES		
R.	Purpose.	Ohms.
1	Voltage dropping to V2 aux. grid.	.5 meg.
2	V2 grid leak	2 meg.
3	Across L.F. coupling choke	.1 meg.
4	V3 grid leak	2 meg.
	Volume control (log)	50,000



Three valves, all pentodes, are utilised in the "straight" circuit of the Atlas B 345.



The top (left) and underneath (right) layouts of the Atlas battery set. An L.F. coupling choke, shunted by a resistance R3, is a novel point.

## COSSOR 369 SUPER FERRODYNE

**Circuit.**—The H.F. valve, 13VPA (V1), is preceded by a tuned secondary aerial transformer, and the variable-mu characteristic is used for controlling volume. Coupling to the next valve is by another tuned secondary transformer with a reaction winding.

The detector valve, 13SPA (V2), is an H.F. pentode used as a semi-power-grid detector. The coupling to the next valve is by parallelled auto-transformer, and, in the anode circuit, R9 is an H.F. stopper, R8 the L.F. coupling, and R7 the H.T. decoupling resistance.

The output valve, 402P (V3), a triode, has an additional stabilising grid resistance.

Mains equipment consists of two H.F. chokes in the mains leads, half-wave (40SUA) indirectly heated rectifier for A.C. (acting as low resistance on D.C.), and tapped voltage adjustment resistance for the heater supply.

The order of the heater wiring from the resistance is: Rectifier, V3, V1, V2. The pilot lamp is connected across a 100 ohms

resistance between V3 and V1. This resistance is actually wound on the same former as R14.

Smoothing is by L.F. choke in the positive H.T. lead with two electrolytic condensers.

**Special Notes.**—In all three valves the grid terminal is at the top.

When the set is connected to the mains the

VALVE READINGS				
V.C. max. 240 volts D.C. mains.*				
Valve.	Type.	Electrode.	Volts.	M.A.
1	13VPA met (7)	anode	150	3.8
		screen	55	
2	13SPA met (7)	anode**	—	.9
		screen**	—	.1
3	402P (7)	anode	146	28

\* Approximately 20 per cent. higher readings on A.C.  
\*\* Very high resistances in circuit giving totally misleading voltage readings.

chassis may be "live" in relation to earth, and care should be taken that both the chassis and the engineer are insulated from earth connections.

The heater voltages and currents are:—13VPA (V1) and 13SPA (V2), 13 v. at .2 amp.; 402P (V3) and 40SUA, 40 v. at .2 amp.

**Quick Tests.**—Between terminals on speaker transformer and chassis (on 240 D.C. mains):—

Right (blue), V3 anode, 146 v.

Middle (red), E. of L.S.

Left (blue), H.T. smoothed, 156 v.

Resistance test across mains lead, 750 ohms, approx.

**Removing Chassis.**—Remove the knobs (grub screws) and remove four screws from underneath. Slacken cleat holding mains cable and lift the chassis out.

**General Notes.**—The resistances R14 and R14A are mounted on the black former at the back of the chassis.

(Continued on opposite page.)