

# Cossor 32 Three-band Battery Four

Four valve, three waveband, battery operated table model super-het, price (without batteries) 8 gns. Similar chassis in Model 31.

## CIRCUIT OUTLINE

**T**HE first valve is a triode-hexode which derives its input from coupled aerial circuits through the usual type of selector switch. On the medium and long bands AVC is provided.

Use is made of a conventional oscillator system, but the oscillator anode voltage is increased on the short waves by means of an extra wipe on the switch wafer.

Coupling between V1 and V2 is by a permeability tuned IF transformer, V2 being an HF pentode provided with AVC.

A similar transformer couples this valve to the signal diode of V3, a double diode triode. The second diode is used in the normal manner for AVC. The volume control for the triode section forms the actual diode load, the slider being coupled through a condenser and leak to the grid circuit.

Resistance capacity coupling is used between V3 and V4, the output pentode. Tone is variable controlled on the grid side and there is a fixed-tone compensating circuit on the anode.

All bias is obtained from a common potentiometer in the negative HT lead. A tapping on this potentiometer provides the delay voltage for the AVC.

For protection purposes a lamp bulb is included in the HT circuit and acts as a fuse should a short circuit occur.

## CONSTRUCTIONAL FEATURES

**I**N the chassis examined, the lay-out of the components was found to follow the manufacturer's data fairly closely. All the components are readily accessible and no difficulty should be experienced in locating them.

In this receiver the usual type of combined volume control and master switch is not used, and it will be observed that

a special on-off type is employed, mounted on the side of the cabinet. It should be observed that the padding is fixed on the MW band, and the LW padder is simply an ordinary trimmer, mounted in line with the oscillator trimmers. The only components not visible are the IF tuning condensers, which are fixed inside the screening cans.

If an external speaker is used with the set the primary winding of the transformer should have an impedance of about 25,000 ohms.

## Wavechange Switches

Switching is carried out by three wipes

## VALVE READINGS

Valve.	Type.	Anode.	Screen.	Osc. anode.
1	.. 220 TH	117 .. 56 ..	29 (LW & MW)	49 (SW)
2	.. 210VPA	117 .. 53 ..	—	—
3	.. 210DDT	66 .. — ..	—	—
4	.. 2200T	111 .. 117 ..	—	—

Fuse bulb, M.E.S., 3.5 volt, .15 amp.



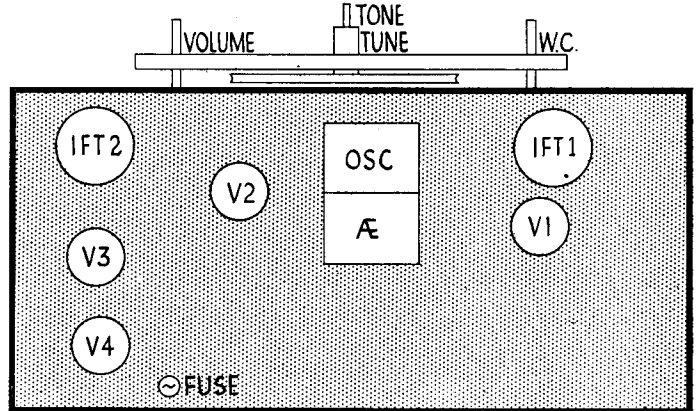
on each of two wafers. The first wafer nearest to the click plate carries wipes W4, W5 and W6. These control the oscillator circuit, all three active points, that is the grid, anode and HT line, being switched.

The second wafer is on the aerial circuit, wipes W1 and W3 controlling the aerial and grid windings, while the remaining wipe is used for shorting purposes.

## Chassis Removal

The method used to hold the chassis is according to the usual Cossor plan of

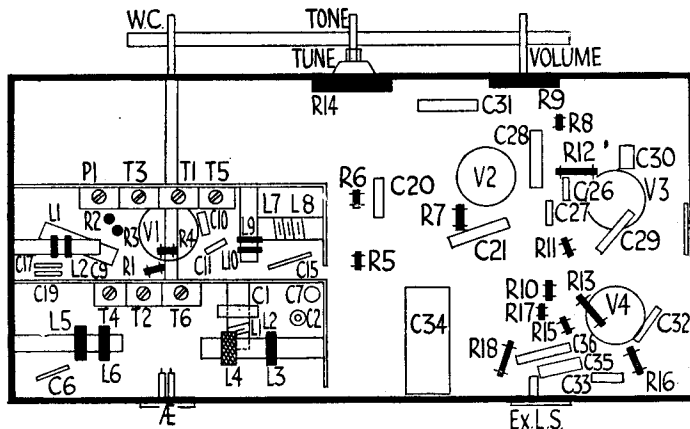
As this top-of-chassis layout diagram shows, the model 32 is a straightforward design making a fairly simple service job.



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utilising a rubber-cushioned supporting bar held at the back of the cabinet by two screws. Before these are removed, how-  
(Continued on page 23.)



Under the chassis (diagram on left) the parts are well placed and there is little difficulty in identifying them.

## WINDINGS (D.C. Resistances)

L.	Ohms.	Range.	Where measured.
1	.. .5	.. SW ..	C1 and chassis.
2	.. V. low	.. SW ..	V1 grid and chassis.
3	.. 25	.. MW ..	C1 and chassis.
4	.. 2.2	.. MW ..	C7 and V1 grid.
5	.. 140	.. LW ..	C1 and chassis.
6	.. 15.5	.. LW ..	C7 and V1 grid.
7	.. V. low	.. SW ..	Osc. gang and chassis.
8	.. .2	.. SW ..	C10 and chassis.
9	.. 6	.. MW ..	Osc. gang and C15.
10	.. 2.2	.. MW ..	C10 and C15.
11	.. 13.5	.. LW ..	Osc. gang and C19.
12	.. 5.5	.. LW ..	C10 and chassis.
13	.. 7.5	.. — ..	V1 anode and HT positive
14	.. 7.5	.. — ..	V2 grid and C20.
15	.. 18	.. — ..	V2 anode HT positive.
16	.. 18	.. — ..	Signal diode and C27.
17	.. 1,190	.. — ..	On plug.

# 10 MINUTE FAULT-FINDER

# COSSOR 32

### Power Test

Total HT feed (measure in negative HT lead), 9.8 ma.  
Total LT feed (measure in LT lead), 0.6 amp.

### Output Stage, V4

Inject 2 volts AF at V4 grid. If defective, check :-

Volts: Anode, 111; screen, 117; bias, 3.9.

Resistances: Anode-HT, 1,190 ohms; grid-chassis, 1 megohm.

### AF Stage, V3

Inject 0.5 volt V3 grid. If defective, check :-

Volts: Anode, 66; bias, 2 volts.

Resistances: Anode-HT 100,000 ohms; grid-chassis, 2 megohms.

### Demodulation, V3

Inject modulated 465 kcs. signal V2 anode. If defective, check :-

Resistances: Diode-chassis, 550,000; L15, 7.5; L16, 18 ohms.

### IF Stage, V2

Inject modulated 465 kcs. signal at V2 grid. If defective, check :-

Volts: Anode, 117; screen, 53.  
Resistances: Screen-HT 100,000 ohms; grid-chassis, 5 megohms.

### Mixer Stage, V1

Inject modulated 465 kcs. signal at V1 grid. If defective, check :-

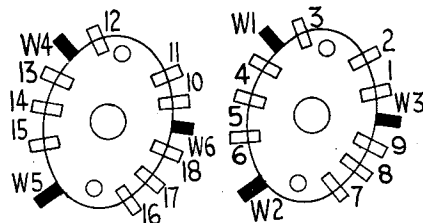
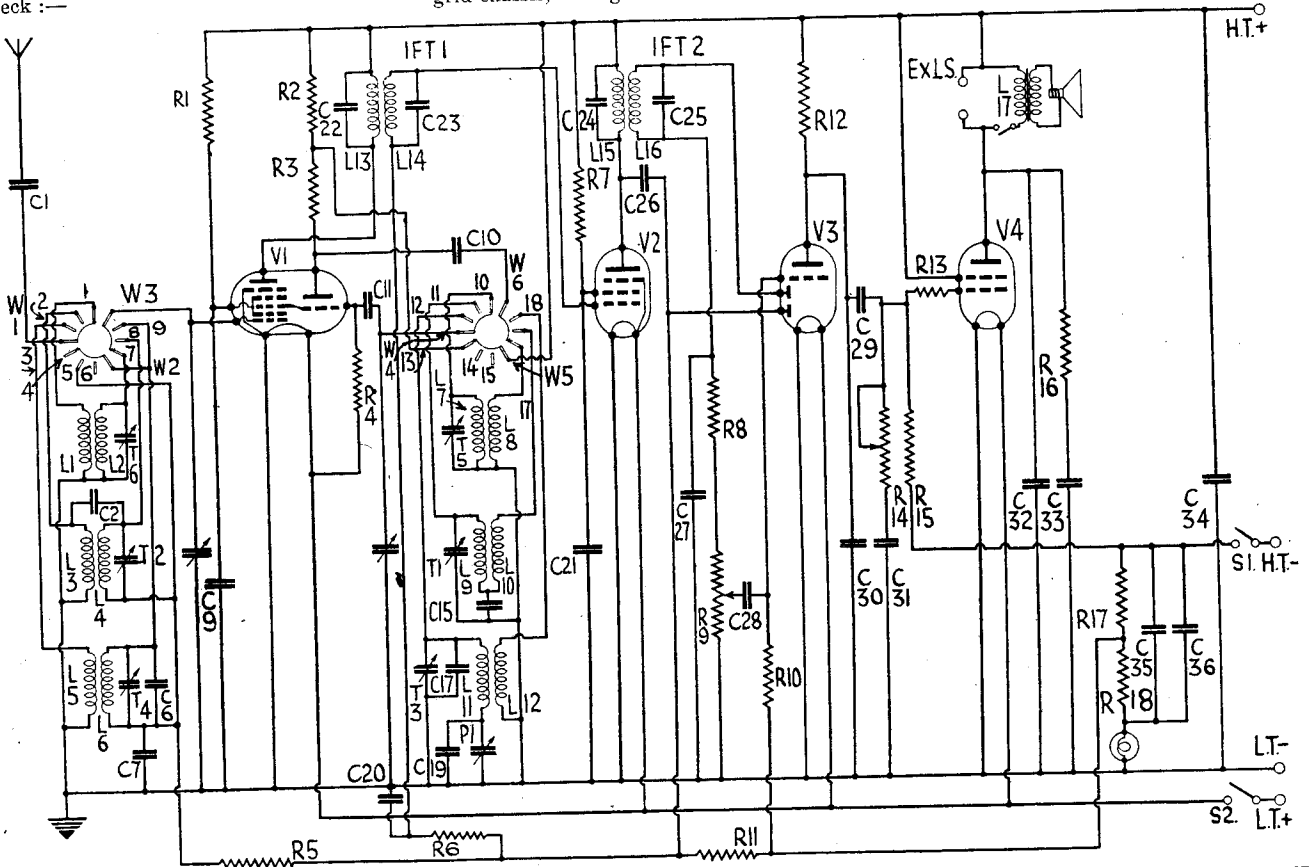
Volts: Anode, 117; screen, 56.  
Resistances: L13, 7.5; L14, 18; screen-HT, 70,000 ohms.

### Oscillator Section, V1

Tune to local station and inject at osc. grid that frequency plus 465 kcs. If defective, check :-

Voltage: Osc. anode, 29.  
Resistances: Osc. anode-HT, 70,000; osc. grid-chassis, 40,000 ohms.

If still no signals, check pre-selector and oscillator coils and switching.



Resistances (continued)	
10	V3 grid leak .. .. . 2 meg.
11	AVC diode load .. .. . 2 meg.
12	V3 anode load .. .. . 100,000
13	V4 grid stopper .. .. . 100,000
14	Tone control .. .. . .25 meg.
15	V4 grid leak .. .. . 1 meg.
16	V4 compensator .. .. . 25,000
17	Bias pot. (part) .. .. . 250
18	Bias pot. (part) .. .. . 150

Condensers (continued)	
20	V2 AVC decouple .. .. . .05
21	V2 screen decouple .. .. . .1
22	IFT1 primary tune .. .. . .000053
23	IFT1 secondary tune .. .. . .000058
24	IFT2 primary tune .. .. . .000053
25	IFT2 secondary tune .. .. . .00007
26	AVC couple .. .. . .00005
27	HF filter .. .. . .00005
28	LF couple .. .. . .05
29	LF couple .. .. . .01
30	V3 anode shunt .. .. . .0002
31	Tone control .. .. . .01
32	V4 anode shunt .. .. . .001
33	V4 tone compensator .. .. . .002
34	HT shunt .. .. . .2
35	Bias decouple .. .. . .20
36	Bias bypass .. .. . .1

RESISTANCES	
	Ohms.
1	V1 screen feed .. .. . 70,000
2	Osc. anode load (part) .. .. . 50,000
3	Osc. anode load (part) .. .. . 20,000
4	Osc. grid leak .. .. . 40,000
5	V1 AVC decouple .. .. . 3 meg.
6	V2 AVC decouple .. .. . 3 meg.
7	V2 screen feed .. .. . 100,000
8	HF filter .. .. . 50,000
9	Volume control .. .. . .5 meg.

CONDENSERS	
	Mfds.
1	Aerial series .. .. . .0005
2	MW top coupling .. .. . .000009
3	LW input fixed trimmer .. .. . .00003
4	V1 AVC decouple .. .. . .05
5	V1 screen decouple .. .. . .1
6	Osc. anode couple .. .. . .0005
7	Osc. grid couple .. .. . .00005
8	LW osc. fixed trimmer .. .. . .00005
9	LW fixed padder .. .. . .0001405

**Replacement Condenser.**—An exact replacement of the electrolytic condenser C.35 is available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18, who make the original unit in the set. List number 4,105, the retail price is ls. 6d.