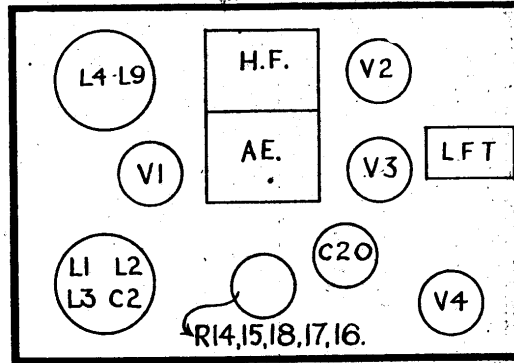# COSSOR 50

Three-valve, plus rectifier, two-waveband tuned radio-frequency receiver for use on 200-250-v. A.C. or D.C. supplies. Made by A. C. Cossor, Ltd., Highbury Grove, London, N.5.

Circuit.—A simple transformer couples the aerial to V1, a pentode radio-frequency amplifier. This valve has a tuned anode circuit with coupled windings in the grid circuit of V2, another pentode, used as a reactive grid-leak detector.

Left, the top-of-chassis layout diagram for the Cossor model 50. The set is an A.C.-D.C. "straight" model, and the chassis is arranged on logical and accessible lines.

A parallel-fed auto-transformer couples up V3, an output triode. H.T. is obtained from the usual half-wave A.C.-D.C. circuit and all the heaters are series run.

Volume is controlled by the bias on V1 and by reaction. R6 and R8 are reaction stabilisers.

R14 is a bleeder to drain off excess output of the rectifier, and R15 protects the pilot lamps from surges. R14 may be on the mains resistance or may be a separate unit underneath.

Connections are provided for a high-impedance (2,000 ohm) extension speaker. The consumption on A.C. is 55 watts approximately. The valve readings are taken on 200 v. A.C. at maximum volume setting.

GANGING.

T1 is carefully set at the factory for correct calibration and should not be readjusted if avoidable.

If realignment is necessary, first check
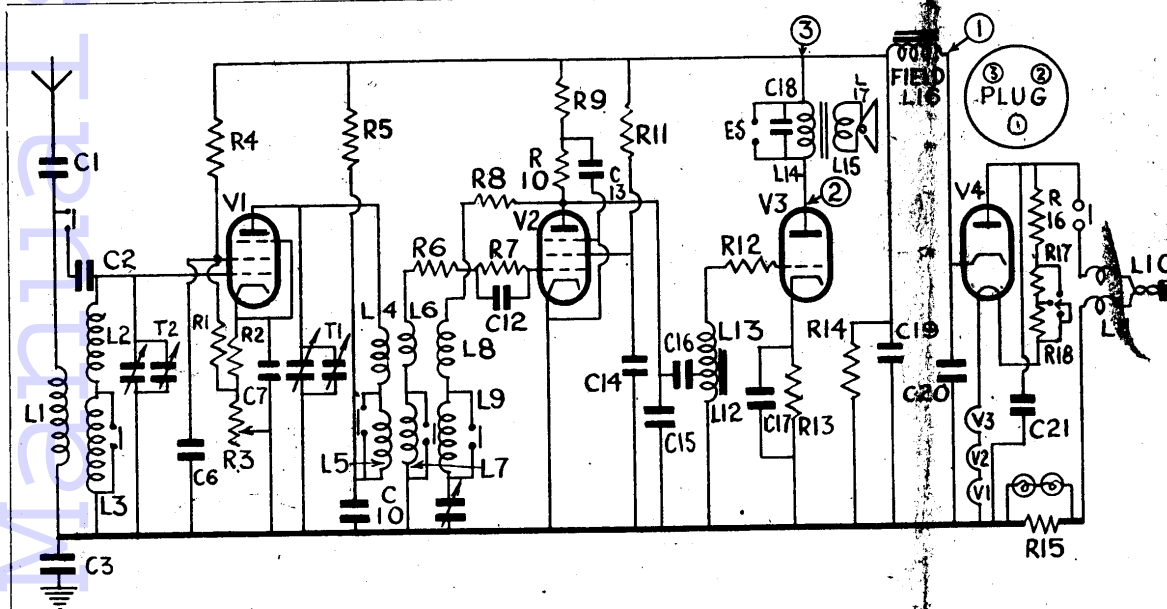
A pentode is used as a grid-leak detector with manually controlled reaction. An auto-connected L.F. transformer feeds an output triode. The mains section comprises the usual A.C.-D.C. half-wave rectifier.

American Midgets—Continued

an average value or a value chosen to suit the particular voltage in use. The resistance is ascertained as follows :—

$$\frac{\text{Mains voltage—set voltage}}{\text{Valve current.}}$$

For example, on 230-volt mains, the extra line cord should be :—

$$\frac{230-117.5}{.3} = 380 \text{ ohms, approx.}$$

Cords for 200 and 250 volts are usually rated at 280 and 450 ohms respectively.

For details of a five-valve .3 amp. set using a ballast tube plus line cord, see Belmont 650 in October SERVICE ENGINEER.

GANGING

With a T.R.F. set of this type, the trimmers should be set for accurate calibration at about 250 metres. A compromise adjustment for best average results over the whole band may be necessary.

CIRCUIT B.

AS in the previous circuit, the aerial is coupled by a simple transformer to the first valve, in this case a 12K7 variable-mu R.F. amplifier. Volume is controlled by R1 which regulates the bias and the aerial shunt load.

Tuned grid coupling follows to a 12SA7 used as a leaky-grid detector (the diodes are not employed). The grid leak is of high value—5 megohms. Resistance-capacity coupling leads to a 50L6 output tetrode.

H.T. from a half-wave 35Z4 is fed to the output valve with a 20-mfd. section of C8 for smoothing and decoupling. H.T. for the rest of the set is reduced by R6 and decoupled by 20 mfd.

The valves are .15-amp. types, the voltages being 12.6, 12.6, 50 and 35 in the order given above. Although the circuit of this set was marked 235 v., the 275-ohm ballast tube and 475-ohm line cord are actually suitable for an "average" mains input of 225v. approximately.

Suitable line cords for accurate adjustment to other voltages would be : 200 v. 325 ohms, 230 v. 525 ohms, and 250 v. 650 ohms.

This particular model has no ganging adjustments ; but where these are provided it is advisable to arrive at a compromise setting giving best average calibration and sensitivity.

Continued from previous column

that pointer is vertical with condenser fully anti-clockwise.

Inject 240 m. (1,250 kc.) to aerial and earth, set pointer to this wavelength and adjust T1 and T2 for maximum.

There are no separate adjustments for long waves.

VALVE READINGS

V	Type	Electrode	Volts	Ma.
1	13VPA	Anode	128	2
		Screen	48	.5
		Cathode	2	
2	13SPA	Anode	30	.8
		Screen	22	.2
		Cathode	—	
3	402P	Anode	157	19
		Cathode	12	
4	SUA	Cathode	197	82

Dial lamps, 8 v., 1.6 w., M.E.S.

RESISTANCES

R	Ohms	R	Ohms
1	25,000	4	50,000
2	750	5	10,000
3	12,000	6	200

RESISTANCES—Continued

R	Ohms	R	Ohms
7	1 meg.	13	600
8	300	14	3,000
9	50,000	15	70
10	.1 meg.	16	440
11	.5 meg.	17	90
12	.25 meg.	18	90

CONDENSERS

C	Mfds.	C	Mfds.
1	.0005	13	.25
2	.15 mmfds.	14	.1
3	.1	15	.0001
6	.1	16	.1
7	.1	17	50
10	.1	18	.005
11	.0005	19	8
12	.0001	20	8
		21	.1

WINDINGS

L	Ohms	L	Ohms
1	9.5	10	7.5
2	1.5	11	7.5
3	13.5	12	1,600
4	1.5	13	2,250
5	12.5	14	175
6	1.2	15	.19
7	13.3	16	400
8	.6	17	2
9	3.4		