COSSOR 484-438 SUPERHET FOUR

The 484, above, is the table A.C. model in the new Cossor 48 range. A similar chassis is used with a 10-inch speaker in the 438 console.

CIRCUIT.—The aerial is capacitively and inductively coupled, through iron-core coils, to the grid of V1, a triode hexode frequency changer, in the cathode circuit of which is connected the volume control of the receiver. This varies the bias on the valve.

The output of V1 passes to the iron-core I.F. transformer, which on long and medium waves has a frequency of 465 kc., and on the short waves has a frequency of 1,363 kc. The change is operated by the wave switch. The transformer does not use capacity trimmers.

The signal then passes to V2, an H.F. pentode acting as the demodulating valve. Regeneration is applied to this valve by means of a small winding on the secondary of the I.F. transformer. Reaction is controlled by a small variable condenser which is ganged to the spindle of the variable resistance volume control in the cathode circuit of V1.

Reaction does not come into operation until the volume control is at the maximum position. As regeneration is applied to the I.F. transformer and not to the signal frequency, the usual interdependence of regeneration and tuning is avoided.

V2 is resistance capacity coupled to V3, a new type of tetrode output valve, in the anode circuit of which is connected the speaker matching transformer. Across the primary of the speaker transformer is a fixed tone compensator condenser.

Mains equipment consists of full-wave rectifying valve, electrolytic condensers, smoothing choke (speaker field), and mains transformer.

Chassis Removal.—First remove the back of the cabinet, which is held by six screws. A false bottom held by four wood screws will be observed under the chassis support. With this removed the underside of the chassis is to a certain extent accessible for minor replacement and voltage tests.

If it be desired to remove the chassis, the following procedure may be adopted. The on-off switch on the side of the cabinet must be removed. The tuning knob and combined volume and reaction control knobs are removed by unscrewing the screws that secure the metal extension rods to the control shafts. The two knobs, together with their associated extension rods, can be detached, the extension rods passing through holes provided for the purpose, one each side of the cabinet.

The wave change switch on the front of the cabinet is of the grub screw fixing

VALVE READINGS

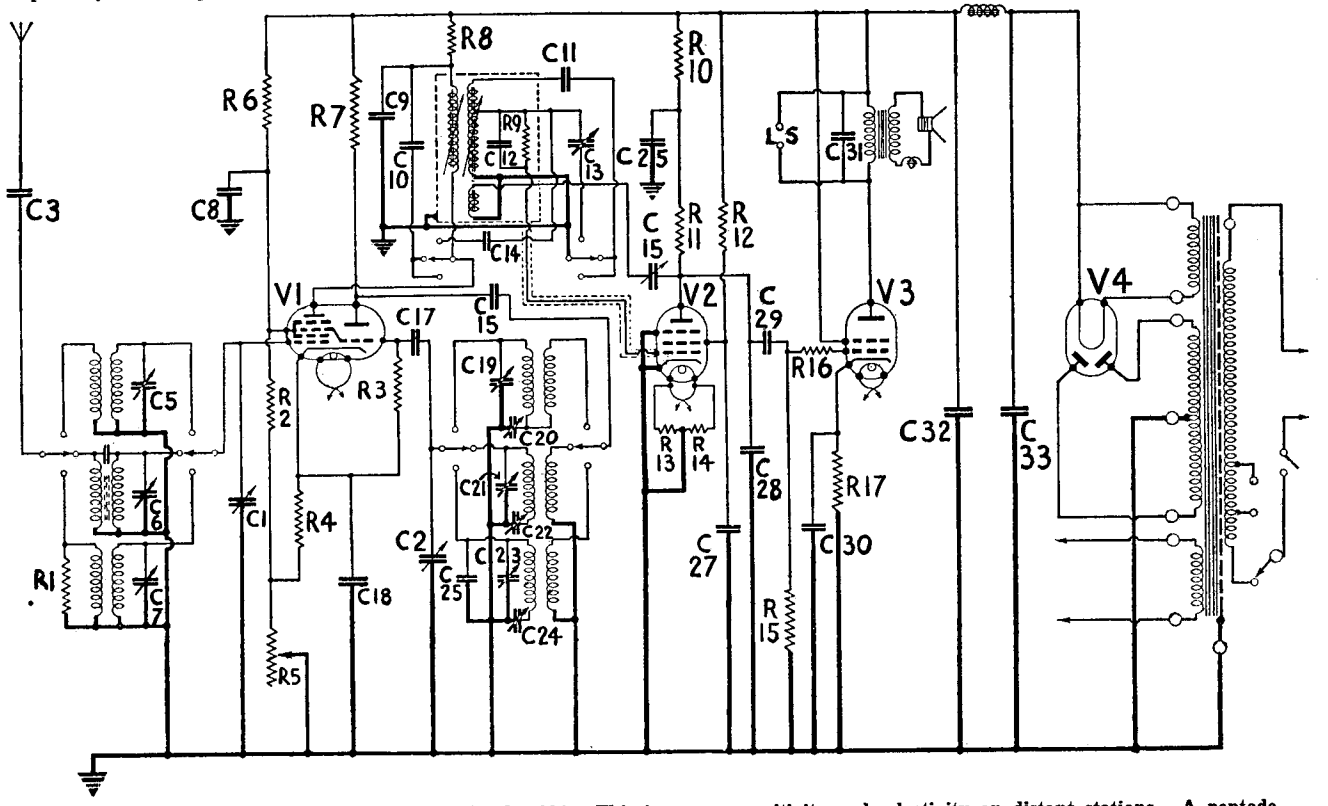
No signal. Volume maximum. 200 volt A.C. mains. No reaction.

V.	Type.	Electrode.	Volts.	Ma.
1	(All Cossor) 41STH, met (7)	Anode ...	215	2.5
		Osc.anode	220	5.9
		Screen ...	85	4.2
2	MSPenB,met.(7)	Anode ...	35	1
		Screen ...	15	.4
3	420T (7) ...	Anode ...	210	29.5
		Screen ...	238	6.2
4	442BU (4) ...	Filament	360	—

QUICK TESTS

Quick tests are available on this receiver between the speaker transformer and chassis. Volts measured should read :—

Blue lead, 360 volts, unsmoothed H.T.
Red lead, 215 volts, smoothed H.T.
Yellow lead, 240 volts, smoothed H.T.



Reaction is applied to the I.F. transformer in the 484. This increases sensitivity and selectivity on distant stations. A pentode is employed for demodulation and there is no A.V.C.

type, the grub screw being located in the body of the knob and not visible.

Take out the metal bar on the top (inside) of the cabinet. If the screw (nearest the back) holding the bar is removed, the bar can be detached by simply sliding it until the screw holding the other end coincides with the larger hole.

The chassis is secured by four bolts and washers. Turn the cabinet up on end and pull away the speaker cable support from the side of the cabinet. In this position the chassis can be taken out of the cabinet.

Connections to the speaker are easily removed as they are not soldered. The blue lead is connected to the top terminal, red to the centre, and yellow to the bottom.

Special Notes.—There are two dial lights and these are rated at 6.5 volts .3 amp. They are located one each side of the wavelength dial assembly and are fixed in screw-in holders in heavily rubber insulated supporting bodies that fit into holes in the reflecting screen.

A pair of sockets at the back of the chassis enable an external speaker to be used. This should be of the permanent magnet moving-coil type, with its own matching transformer. This should have an impedance of some 6,000 to 8,000 ohms. A 4 mfd. condenser in series with each lead will be of advantage.

Fixed condenser C12 and resistance R9 are to be found inside the I.F. transformer can.

RESISTANCES

R.	Purpose.	Ohms.
1	L.W. aerial shunt	50,000
2	V1 screen potr. (part) ...	30,000
3	Oscillator grid leak	50,000
4	V1 cathode bias fixed ...	250
5	V1 cathode bias variable ...	10,000
6	V1 screen potr. (part) ...	20,000
7	Osc. anode load	25,000
8	V1 anode decoupling ...	5,000
9	V2 grid leak	3 meg.
10	V2 anode decoupling ...	100,000
11	V2 anode load	100,000
12	V2 screen decoupling ...	1 meg.
13	V2 filament centre tap ...	15
14	V2 filament centre tap ...	15
15	V3 grid leak	500,000
16	V3 grid stopper	100,000
17	V3 cathode bias	140

Circuit Alignment Notes

I.F. Circuits.—Stop the frequency changer from oscillating by shorting the oscillator gang condenser to chassis. Connect a service oscillator tuned to 465 kc. between the top grid cap of V1 and the chassis, and an output meter across the speaker transformer primary. Turn the wavelength switch to medium or long waves and adjust the reaction and volume control until the receiver is sensitive but not oscillating.

Adjust the cores of the I.F. transformer with a non-metallic screw driver until maximum response in the output meter is obtained.

After the 465 kc. frequency has been adjusted the short-wave frequency must be brought into line. This is done by injecting 1,363 kc. and, with the wave change switch in the short wave position, adjusting IFT1 for maximum response.

Signal Circuits.—Remove the short circuit from the oscillator gang condenser and connect the service oscillator between the aerial and earth terminals.

Short Waves.—Tune the set and oscillator to 16.6 metres (18 mc.) and adjust T1 and T2 for maximum.

Tune the set and oscillator to 42.9 metres (7 mc.) and adjust the padding condenser P1 for maximum.

Medium Waves.—Tune the set and oscillator to 214 metres (1,400 kc.) and adjust T3 and T4 for maximum.

Tune the set and oscillator to 522 metres (575 kc.) and adjust the medium wave padding condenser P2 for maximum, simultaneously rocking the gang.

Long Waves.—Tune the set and oscillator to 1,000 metres (300 kc.) and adjust T5 and T6 for maximum.

Tune the set to 1,875 metres (160 kc.) and adjust the long wave padding condenser P3 for maximum simultaneously rocking the gang.

CONDENSERS

C.	Purpose.	Mfds.
3	Series aerial	.0005
4	M.W. aerial coupling ...	.0001
8	V1 screen decoupling ...	.1
9	V1 anode decoupling ...	.1
10	I.F. primary fixed trimmer	.000155
11	I.F. secondary fixed trimmer	.000165
12	V2 grid	.0001
14	I.F. coupling	.0002
16	Osc. anode coupling	.0003
17	Oscillator grid	.0002
18	V1 cathode shunt	.1
25	L.W. osc. grid fixed trimmer	.00005
26	V2 anode decoupling ...	.25
27	V2 screen decoupling ...	.1
28	H.F. by-pass	.0002
29	L.F. coupling	.01
30	V3 cathode shunt	50
31	Tone compensator	.01
32	H.T. smoothing	8
33	H.T. smoothing	8

Cossor 484 on Test

MODEL 484.—Standard model for A.C. mains operation, 200-250 volts, 40 to 100 cycles. Price 9 gns.

DESCRIPTION.—Three waveband, four valves including rectifier, table A.C. superhet.

FEATURES.—Pentode used as demodulator, with adjustable reaction on I.F. Sockets for external speaker. Controls for tuning, combined volume and reaction, range selection and separate mains control. The set operates with a high I.F. (1,363 kc.) on short waves

LOADING.—65 watts.

Sensitivity and Selectivity.

SHORT WAVES (16 to 53 metres).—Ability to produce oscillation with reaction control adds to the short wave capabilities. Selectivity and sensitivity very good for the valve combination employed. Complete ease in handling and adjustment.

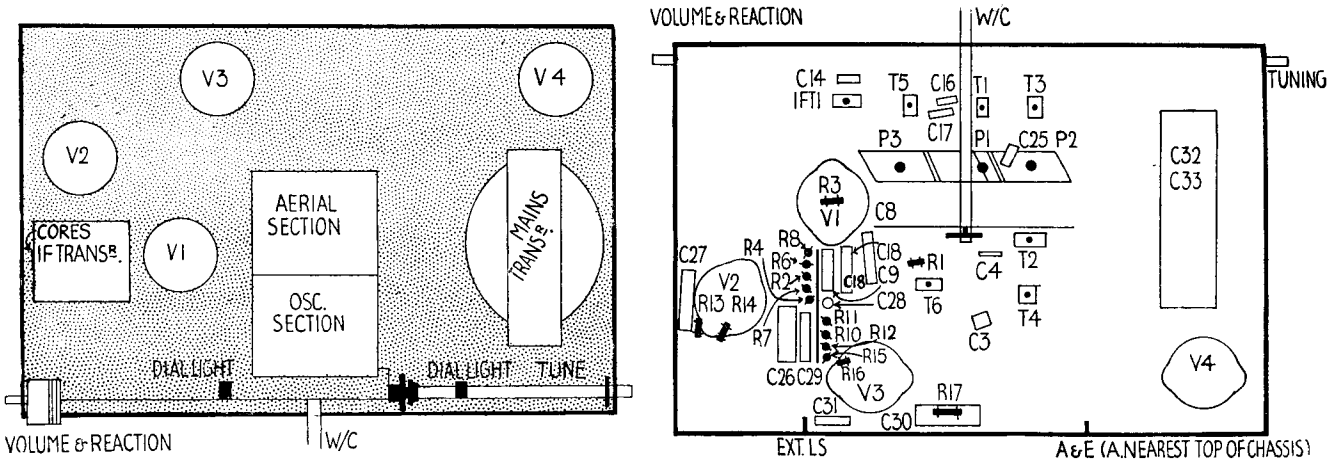
MEDIUM WAVES (190-590 metres).—Sensitivity very good and selectivity adequate for all normal requirements. Owing to the absence of A.V.C. adjustment of the volume control is necessary when turning from one station to another. Gain well maintained over waveband and handling very satisfactory.

LONG WAVES (800-2,300 metres).—Selectivity excellent, side splash only on Deutschlandsender. Well maintained gain and adequate sensitivity.

Acoustic Output.

Representative for mains pentode with average characteristic and only slight colouration.

Exact replacement condensers available from A. H. Hunt, Ltd., of Garratt-lane, Wandsworth, London, S.W.18, are: Unit containing Cs 32 and 33, list 3693, 6s. 9d.; C30, list 2915, 1s. 9d.



How parts are arranged on the 484 chassis. Rubber suspension, low-loss trimmers, iron-core coils and self-cleaning switch contacts are features.