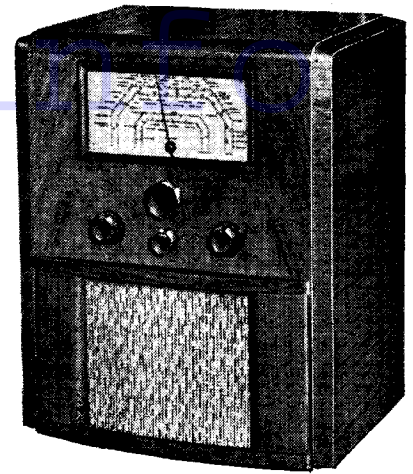


COSSOR 6864 FOUR-BAND SIX



The Coszor 6864 four-band superhet.

CIRCUIT.—The aerial input circuit provides connections for either a single wire aerial or one of the doublet type to a set of H.F. transformer aerial coils. V1 is an H.F. pentode operating as a radio frequency amplifier. Transformer coils also couple V1 to V2, a triode hexode frequency changer. The output passes by an I.F. transformer tuned to 465 kc. to V3, another H.F. pentode. A further I.F. transformer leads to the demodulating diode of V4, a double diode triode.

Coupling arrangements to the grid of the triode section of V3 include a manual volume control and connections for a pick-up. A variable tone control, consisting of a variable resistance and fixed condenser, is connected in series between the anode of V4 and chassis.

The other diode of V3, fed by the coupling condenser C31, provides a D.C. potential utilised for A.V.C.

V4 is resistance capacity coupled to V5, which may be either an output tetrode or a pentode. Across the primary of the output transformer is a tone modifier circuit, and a further condenser is included between the anode of the output valve and chassis.

Mains equipment consists of a mains transformer, a full-wave rectifying valve V6, electrolytic smoothing condensers and a smoothing choke (the speaker field coil).

Chassis Removal.—Remove the four control knobs from the front of the cabinet and take off the back. Take out the four chassis-securing bolts from the underside of the shelf in the cabinet. Either

remove the speaker or detach the leads to the speaker panel.

With the speaker transformer to the right of the speaker (looking from the rear) the colours of the three leads from top to bottom are blue, red and yellow.

Remove the mains switch from the side of the cabinet. If removal of the switch proves troublesome, remove the two wood screws securing the switch indicating panel, when the switch may be pulled through the side of the cabinet and easily removed from the panel.

Special Notes.—A pair of sockets at the rear of the chassis enable a pick-up to be connected. An adjacent pair of sockets enable an extension speaker to be operated. This should be of the permanent-magnet type and have an impedance of 8,000 ohms.

The two-pin plug supplied with the re-

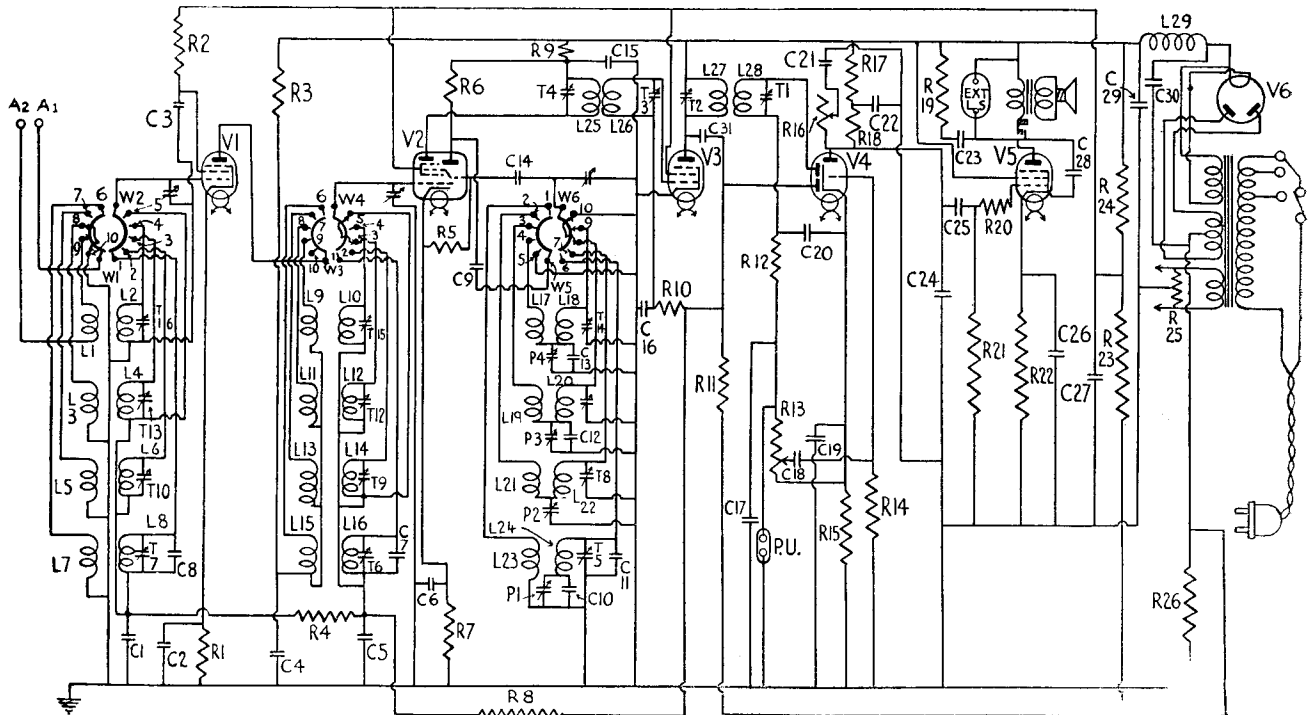
VALVE READINGS

No signal. Volume maximum. M.W. min. cap 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Coszor MVS Pen. (7)	Anode ..	232	2.1
		Screen ..	75	.8
		Anode ..	220	1.3
2	41STH (7)	Screen ..	80	4.3
		Osc.anode ..	75	5
		Anode ..	248	4.5
3	MVS Pen. (7)	Screen ..	78	1
		Anode ..	88	1.2
		Anode ..	234	30
4	DDT (7)	Screen ..	250	6.5
		Filament	345	—

WINDINGS (D.C. Resistances)

Winding.	Ohms.	Winding.	Ohms.
L105	L1805
L205	L1905
L31	L201
L4075	L211
L528	L221
L64.5	L238.5
L7140	L243
L819.5	L252.5
L91	L262.5
L10Very low	L272.5
L112	L282.5
L1202	L291,500
L132	Inter valve trans. prim.	650
L142.75	Output trans. prim...	20
L157.5	prim...	20
L1619	H.T. sec.	350
L17Very low		



A radio-frequency amplifier precedes the frequency changer, and transformer coils are used on all bands for R.F. tuning.

For more information remember
www.savoy-hill.co.uk

ceiver enables the extension speaker to be used either in conjunction with or separate from the internal speaker, according to whether the plug is inserted half-way or pushed right home.

Three sockets at the rear of the chassis enable either a single-wire aerial or one of the doublet type to be used. When a single-wire aerial is used, the metal connecting bar must always connect A2 to the earth terminal, otherwise signal strength will be decreased. When a doublet aerial

is used the metal connecting bar must be removed.

The mains voltage adjustment device located on the top of the mains transformer consists of three sockets marked with voltage values, together with a common socket and a bridging bar.

There are two M.E.S. base dial lights, rated at 6.5 volts .3 amp. When replacing make sure that the spaghetti sleeving fully covers the metal body of the bulb.

Alignment Notes

Connect an output meter across the primary of the speaker transformer and

CONDENSERS

C.	Purpose.	Mfds.
1	V1 A.V.C. decoupling	.05
2	V1 cathode bias shunt	.1
3	V1 screen decoupling	.1
4	V1 anode decoupling	.25
5	V2 A.V.C. decoupling	.05
6	V2 cathode bias shunt	.1
7	L.W. H.F. fixed trimmer	.00005
8	L.W. aerial fixed trimmer	.00004
9	Oscillator anode couplings	.002
10	L.W. oscillator fixed padder	.00008
11	L.W. oscillator fixed trimmer	.00008
12	S.W.2 oscillator fixed padder	.0014
13	S.W.1 oscillator fixed padder	.0032
14	Oscillator grid	.0001
15	V2 anode decoupling	.1
16	V3 A.V.C. decoupling	.05
17	H.F. bypass	.00005
18	L.F. coupling	.01
19	V4 cathode bias shunt	.25
20	H.F. bypass	.00005
21	Tone control	.03
22	V4 anode decoupling	.2
23	Tone modifier	.01
24	V4 anode shunt	.001
25	L.F. coupling	.01
26	V5 cathode bias shunt	.25
27	H.F. bypass	.1
28	V5 anode shunt	.0005
29	H.T. smoothing	8
30	H.T. smoothing	8
31	A.V.C. diode coupling	.00005

RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias	750
2	V1 screen decoupling	4,000
3	V1 anode decoupling	4,000
4	V1 A.V.C. decoupling	1 meg.
5	Oscillator grid leak	25,000
6	Oscillator anode load	30,000
7	V2 cathode bias	300
8	V2 A.V.C. decoupling	1 meg.
9	V1 anode decoupling	4,000
10	V3 A.V.C. decoupling	2 meg.
11	A.V.C. diode load	1 meg.
12	H.F. stopper	50,000
13	Volume control	500,000
14	V4 grid leak	1 meg.
15	V4 cathode bias	2,000
16	Tone control	20,000
17	V4 anode decoupling	50,000
18	V4 anode load	50,000
19	Tone modifier	10,000
20	V5 grid stopper	100,000
21	V5 grid leak	250,000
22	V5 cathode bias	150
23	V1, V2, V3 screen potr. (part)	8,000
24	V1, V2, V3 screen potr. (part)	10,000
25	Heater centre tap	.25
26	A.V.C. delay volts	30

Cossor 6864 on Test

MODEL 6864.—Standard model for A.C. mains operation, 200-250 volts, 40-100 cycles. Price, 16 gns.

DESCRIPTION.—Five-valve, plus rectifier, four-band table superhet.

FEATURES.—Full-vision scale calibrated in station names and metres and on the short wave bands in metres and megacycles. Controls for tuning, tone, wave selection and volume with separate master switch on side of cabinet. Sockets for single wire and doublet aeriels, pick-up and extension speaker.

LOADING.—85 watts.

Selectivity and Sensitivity

SHORT WAVES (13-40 and 38-100 metres).—Very good gain and selectivity. Very easy handling and no drift. Lower end sensitivity particularly good.

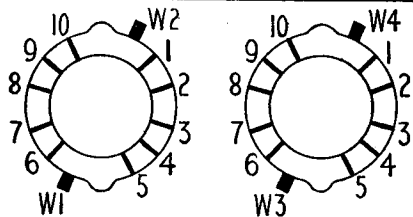
MEDIUM WAVES (195-550 metres).—Excellent gain and selectivity, with very small local station spread. Well-maintained gain.

Few noticeable whistles.

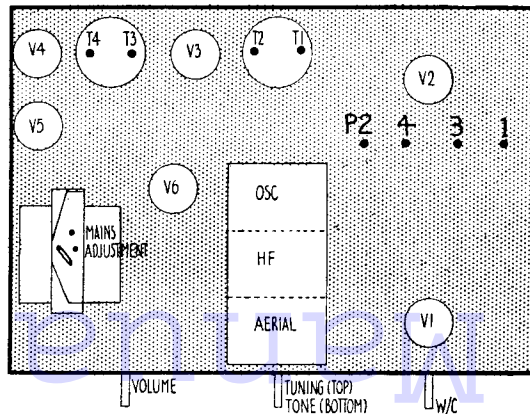
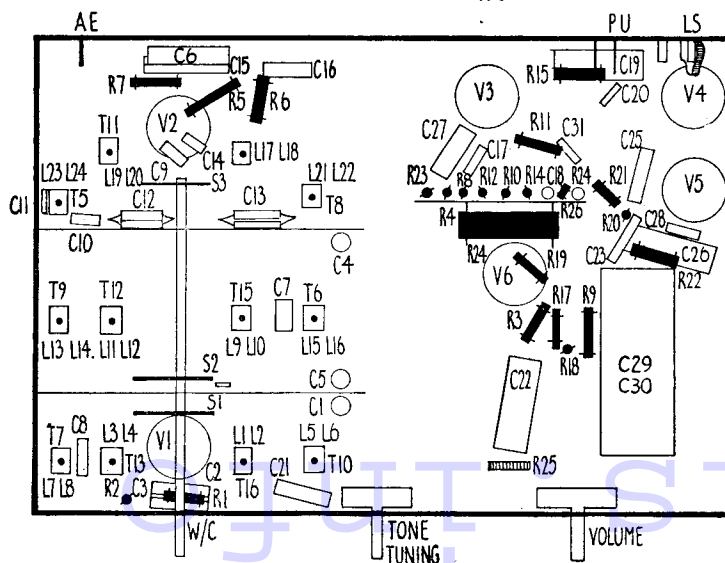
LONG WAVES (1,000-2,000 metres).—Adequate gain and selectivity, all main stations easily received, slight overlap on Deutschland-sender.

Acoustic Output

Ample volume for a large room without overloading. Deep tone, but at the same time appreciable attack. General balance pleasing.



Left, the switch banks of the Cossor model 6864, numbers one to three. Their positions are shown in the chassis layout, and the connections in the circuit.



Left, the under-chassis layout diagram of the 6864, and, right, the top-deck view. Trimmers, both below and on top of the chassis, are clearly indicated.

a service oscillator between the top grid cap of V2 and chassis. Set receiver to medium waves, gang to maximum, tone control to "high," and volume control to maximum.

Tune service oscillator to 465 kc. and adjust T1, T2, T3 and T4 in that order for maximum response, reducing the input from the oscillator as the circuits come into line to render the A.V.C. inoperative.

Signal Circuits.—Connect the service oscillator to the aerial and earth sockets, preferably via a dummy aerial, making sure the link connects A2 and E sockets. Only feed sufficient input from the oscil-

(Continued on page 41).

the external aerial coupling condenser, is inside the frame aerial structure near the A. and E. panel.

Alignment Notes

Connect an output meter across the primary of the speaker transformer—i.e., the two blue leads on the speaker panel. Connect the output of an oscillator to a coil of a few turns and bring the coil near enough to the frame aeriels to obtain a sufficiently reliable signal. Failing this, connect the service oscillator to the external A. and E. sockets via a dummy aerial. All alignment operations must be carried out with the chassis in the cabinet.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kc.) and adjust T1 and T2 for maximum response. T2 will be found near the external A. and E. sockets and is accessible from the outside of the cabinet.

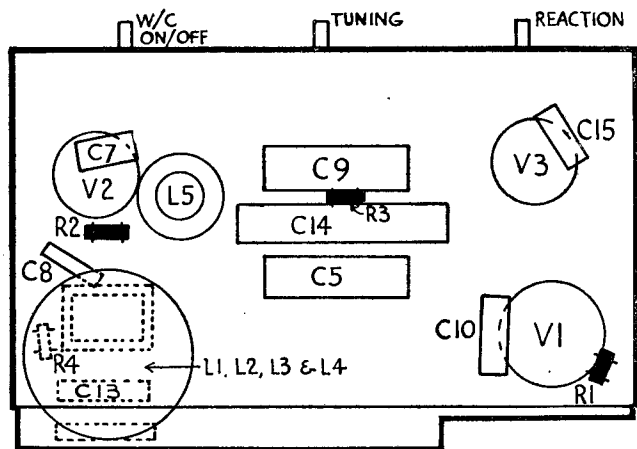
Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T3 for maximum.

This completes alignment operations for this receiver on the bench, but if it is desired to use the receiver exclusively in conjunction with an external aerial and earth, T2 may be adjusted for maximum response with the aerial and earth system connected.

VALVE READINGS

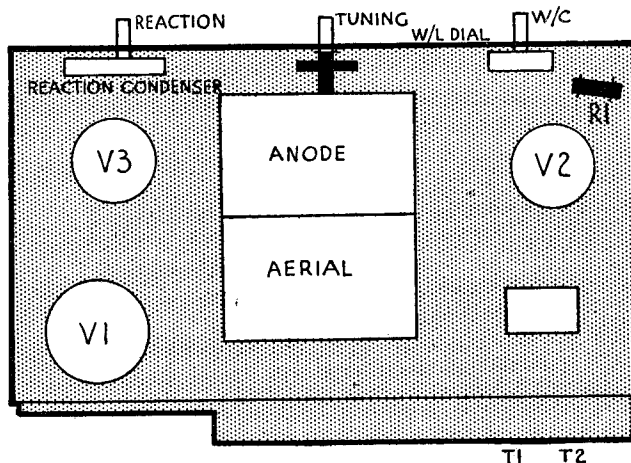
No signal. Volume maximum. M.W. min. cap. New batteries.

V.	Type.	Electrode.	Volts.	Ma
1	All Mullard. SP2 (7)	Anode ..	90	1.8
		Screen ..	90	.7
2	PM2 HL (4)	Anode ..	50	1
		Screen ..	102	4.4
3	PM22A (5)	Anode ..	102	1
		Screen ..	102	1



Practical details of the simple 296 chassis are given by this drawing. T2 and T1 are at the back of the chassis, T2 being on the left looking from the rear. For C9, A.H. Hunt provide a replacement, unit 2918, 1s. 9d.

Right, the top "deck" chassis diagram of the Aerodyne model 296 reveals the simple, orderly lines on which the set is built.



REMEMBER THESE HUM HINTS

WHEN hum becomes objectionable in a receiver, first discover whether it is tuneable—that is, comes in on station carriers. If so it is due to radio frequencies in the mains section, and a condenser to chassis from one side of the mains to earth should be tried. If there is already a condenser in this position, test it for O.C. If the hum is not the modulation type,

measure the resistance of the field or smoothing choke—in case turns are shorting—and connect a good electrolytic across those in the set.

Other causes may be: Long grid wire near mains wire, L.F. transformer core needing earthing, humdinger across heater out of adjustment or cathode-to-heater leak in a valve.

Aerodyne 296 on Test

MODEL 296.—Standard model for battery operation, requiring a Drydex 108-volt H.T. battery, type H1049, and a Three Star 2-volt accumulator, type UJ3, of the jelly-acid type. Price, £5 19s. 6d.

DESCRIPTION.—Three-valve, two-band, battery-operated portable.

FEATURES.—Leatherette covered, midget portable receiver with carrying strap. Full-vision scale calibrated in metres and station names. Combined wave selection and master switch with separate controls for reaction and tuning. Self-contained frame aeriels with sockets on side of cabinet for connecting an external aerial and earth.

LOADING.—H.T., 8.9 ma.; L.T., .44 amp.

Selectivity and Sensitivity

MEDIUM WAVES (200-550 metres).—Good gain for the valve combination used, giving a useful number of stations in daylight and many more at night. Directional properties enable very good selectivity to be obtained with easy separation.

LONG WAVES (800-2,000 metres).—Performance similar to medium waves with the main stations easily received and adequate selectivity.

Acoustic Output

Fairly well balanced tone with reasonable volume sufficient for a small room. There is a certain amount of crispness and the general tone is pleasing, with no undue colouration on speech.

COSSOR MODEL 6864

(Continued from page 39.)

later to obtain definite peaks in the output meter.

Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T5, T6 and T7 in that order for maximum response.

Tune set and oscillator to 522 metres (160 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kc.) and adjust T8, T9 and T10 in that order for maximum.

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

Repeat both operations until no further improvement results.

S.W. Band 2.—Tune set and oscillator to 43 metres (7 mc.), and adjust T11, T12 and T13 in that order for maximum.

Tune set and oscillator to 100 metres (3 mc.) and adjust P3 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

S.W. Band 1.—Tune set and oscillator to 15 metres (20 mc.), and adjust T14, T15 and T16 in that order for maximum response.

Tune set and oscillator to 33 metres (9 mc.) and adjust P4 for maximum. If the calibration at 33 metres is very much out, then the wrong peak of T14 is being used.

Repeat until no further improvement results

Replacement Condensers

Exact replacement condensers for the 6864 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. These are: For the block containing C29 and C30, unit 3693, 6s. 9d.; for C22, unit 3642, 2s.; and for either C19 or C26, 2918, 1s. 9d.