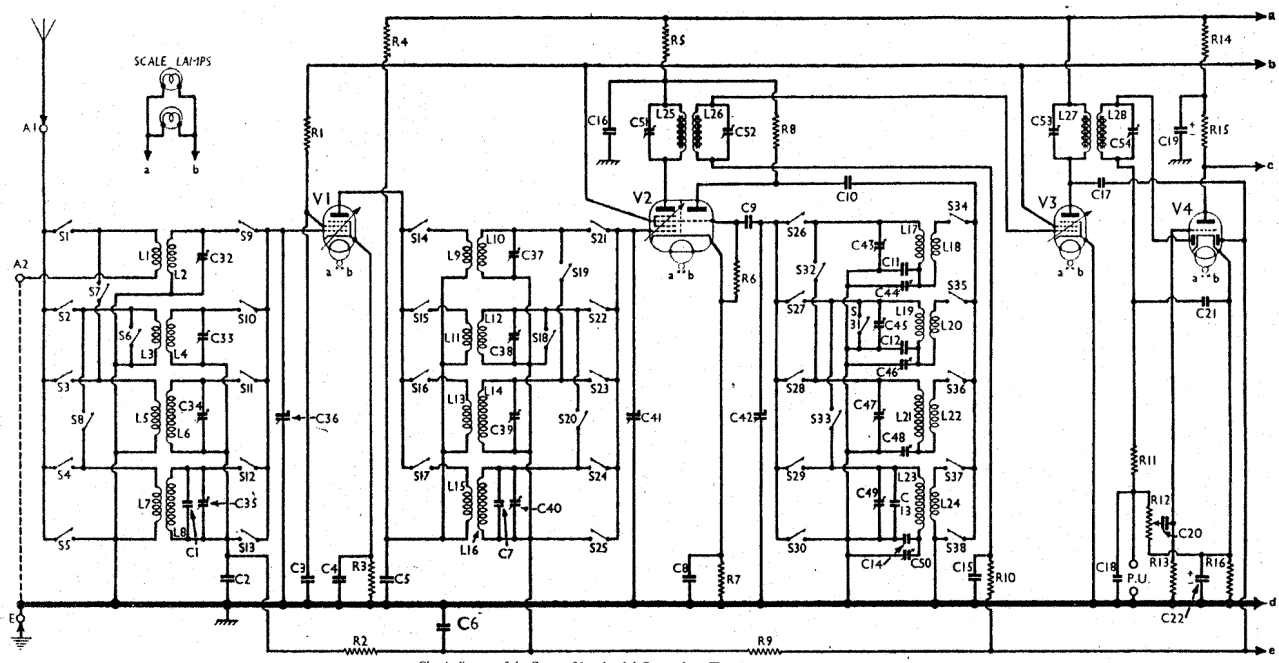
COSSOR - 3764 & 3864



Circuit diagram of the Cossor 3864 4-band A.C. superhet. The output stage and power supply arrangements are in col. 1 opposite. Model 3764 has a similar circuit, except for the volume control and pick-up connections.

COMPONENTS AND VALUES

	RESISTANCES	Values (Ohms)
R1	V1 S.G. feed	4,000
R2	V1 C.G. decoupling	1,000,000
R3	V1 fixed G.B. resistance	750
R4	V1 anode decoupling	4,000
R5	V2 anode decoupling	4,000
R6	V2 osc. C.G. resistance	25,000
R7	V2 fixed G.B. resistance	300
R8	V2 osc. anode H.T. feed	30,000
R9	V1, V2 A.V.C. line decoupling	1,000,000
R10	V3 C.G. decoupling	2,000,000
R11	Part of I.F. filter	50,000
R12	Manual vol. cont. and V4 sig. diode load	500,000
R13	V4 triode C.G. resistance	1,000,000
R14	V4 triode anode decoupling	50,000
R15	V4 triode anode coupling	50,000
R16	V4 fixed G.B. resistance	2,000
R17	Part of variable tone control circuit	20,000
R18	Part of fixed tone compensator	10,000
R19	V5 C.G. resistance	250,000
R20	V5 C.G. R.F. stopper	100,000
R21	V5 G.B. resistance	150
R22	V1, V2, V3 S.G. H.T. potential divider	10,000
R23		8,000
R24	A.V.C. delay voltage resistance	30
R25	V4 A.V.C. diode load resistance	1,000,000
R26	Hum neut. pot.*	25

* Centre-tapped.

	OTHER COMPONENTS	Approx. Values (Ohms)
L1	Aerial S.W.1 coupling	0·05
L2	Aerial S.W.1 tuning	0·05
L3	Aerial S.W.2 coupling	0·1
L4	Aerial S.W.2 tuning	0·075
L5	Aerial M.W. coupling	28·0
L6	Aerial M.W. tuning	4·5
L7	Aerial L.W. coupling	140·0
L8	Aerial L.W. tuning	19·5
L9	R.F. trans. S.W.1 pri.	0·1
L10	R.F. trans. S.W.1 sec.	Very low
L11	R.F. trans. S.W.2 pri.	0·2
L12	R.F. trans. S.W.2 sec.	0·05
L13	R.F. trans. M.W. pri.	2·0
L14	R.F. trans. M.W. sec.	2·75
L15	R.F. trans. L.W. pri.	7·5
L16	R.F. trans. L.W. sec.	19·0
L17	Osc. S.W.1 tuning	Very low
L18	Osc. S.W.1 reaction	0·05
L19	Osc. S.W.2 tuning	0·05
L20	Osc. S.W.2 reaction	0·1
L21	Osc. M.W. tuning	1·0
L22	Osc. M.W. reaction	0·4
L23	Osc. L.W. tuning	8·5
L24	Osc. L.W. reaction	3·0
L25	1st I.F. trans. Pri.	2·5
L26	1st I.F. trans. Sec.	2·5
L27	2nd I.F. trans. Pri.	2·5
L28	2nd I.F. trans. Sec.	2·5
L29	Speaker speech coil	2·0
L30	Hum neutralising coil	0·05
L31	Speaker field coil	1500·0
T1	Speaker input trans. Pri.	650·0
	Speaker input trans. Sec.	0·4
T2	Mains trans. Prl. (total)	20·0
	Mains trans. Heater sec.	0·1
	Mains trans. Rect. heat. sec.	0·2
	Mains trans. H.T. sec. (total)	350·0
S1-38	Wavechange switches	—
S39	Internal speaker switch	—
S40	Mains switch	—

	CONDENSERS	Values (μF)
C1	Aerial circ. sec. fixed trimmer (L.W.)	0·00004
C2	V1 C.G. decoupling	0·05
C3	V1 S.G. by-pass	0·1
C4	V1 cathode by-pass	0·1
C5	V1 anode R.F. by-pass	0·25
C6	V1, V2 A.V.C. line decoupling	0·05
C7	R.F. trans. sec. L.W. fixed trimmer	0·00005
C8	V2 cathode by-pass	0·1
C9	V2 osc. C.G. condenser	0·0001
C10	V2 osc. anode coupling	0·002
C11	Osc. circ. S.W.1 fixed tracker	0·0032
C12	Osc. circ. S.W.2 fixed tracker	0·001475
C13	Osc. circ. L.W. fixed trimmer	0·00008
C14	Osc. circ. L.W. fixed tracker	0·00008
C15	V3 C.G. decoupling	0·05
C16	V2 anodes decoupling	0·1
C17	Coupling to V4 A.V.C. diode	0·00005
C18	I.F. by-pass	0·00005
C19*	V4 anode decoupling	2·0
C20	A.F. coupling to V4 triode	0·01
C21	I.F. by-pass	0·00005
C22*	V4 cathode by-pass	25·0
C23	Part of variable T.C. circuit	0·03
C24	V4 triode anode by-pass	0·001
C25	A.F. coupling to V5	0·01
C26	Part of tone compensator	0·01
C27*	V5 cathode by-pass	25·0
C28	V5 anode by-pass	0·0005
C29	V1, V2, V3 S.G. decoupling	0·1
C30*	H.T. smoothing	8·0
C31*	H.T. smoothing	8·0
C32‡	Aerial circuit S.W.1 trimmer	—
C33‡	Aerial circuit S.W.2 trimmer	—
C34‡	Aerial circuit M.W. trimmer	—
C35‡	Aerial circuit L.W. trimmer	—
C36†	Aerial circuit tuning	—
C37‡	R.F. trans. S.W.1 trimmer	—
C38‡	R.F. trans. S.W.2 trimmer	—
C39‡	R.F. trans. M.W. trimmer	—
C40‡	R.F. trans. L.W. trimmer	—
C41†	R.F. transformer tuning	—
C42†	Osc. circuit tuning	—
C43‡	Osc. circuit S.W.1 trimmer	—
C44‡	Osc. circuit S.W.1 tracker	—
C45‡	Osc. circuit S.W.2 trimmer	—
C46‡	Osc. circuit S.W.2 tracker	—
C47‡	Osc. circuit M.W. trimmer	—
C48‡	Osc. circuit M.W. tracker	—
C49‡	Osc. circuit L.W. trimmer	—
C50‡	Osc. circuit L.W. tracker	—
C51‡	1st I.F. trans. pri. tuning	—
C52‡	1st I.F. trans. sec. tuning	—
C53‡	2nd I.F. trans. pri. tuning	—
C54‡	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡Pre-set.

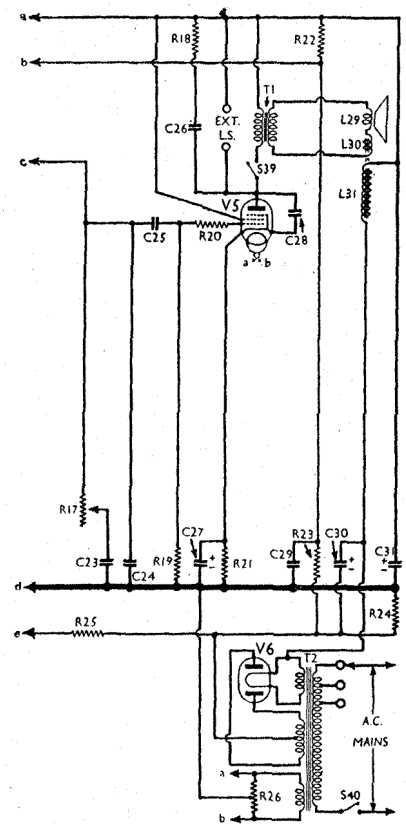
VALVE ANALYSIS

Valve voltages and currents given in the table (p.VIII) are those measured in our receiver when it was operating on mains of 230 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 MVS/Pen	260	1·5	90	0·7
V2 41STH*	240	1·5	100	3·2
V3 MVS/Pen	270	4·6	100	1·0
V4 DDT	120	1·4	—	—
V5 42MP/Pen	250	35·0	270	6·5
V6 442BU	310†	—	—	—

* Oscillator anode 80V, 5·7 mA.
† Each anode, A.C.



GENERAL NOTES

Switches.—**S1-S38** are the waveband switches, in three ganged rotary units beneath the chassis. They are indicated in our under-chassis view, and shown in detail in the diagrams on this page. The table (col. 3) gives the switch positions for the five control settings, starting from the fully anti-clockwise position. O indicates open, and C closed.

S39 is the internal speaker switch, of the jack type, which opens when an external speaker is plugged fully into the sockets provided at the rear of the chassis.

S40 is the Q.M.B. mains switch, which is mounted at the left-hand side of the cabinet.

Coils.—All the R.F. and oscillator coils are in pairs on tubular formers in screened compartments beneath the chassis, with their parallel pre-set trimmers mounted above them. There is one trimmer to each pair of coils. The coils are all indicated in the under-chassis view. In the case of the S.W.1 and S.W.2 bands, the two coils on each former are inter-wound, but in all cases the tuned coil is of thick bare copper wire.

The I.F. transformers, **L25, L26** and **L27, L28** are in two screened units on the chassis deck, with their associated trimmers.

Scale Lamps.—These are two Osram M.E.S. types, rated at 6·2 V, 0·3 A. They are sprayed white in our chassis.

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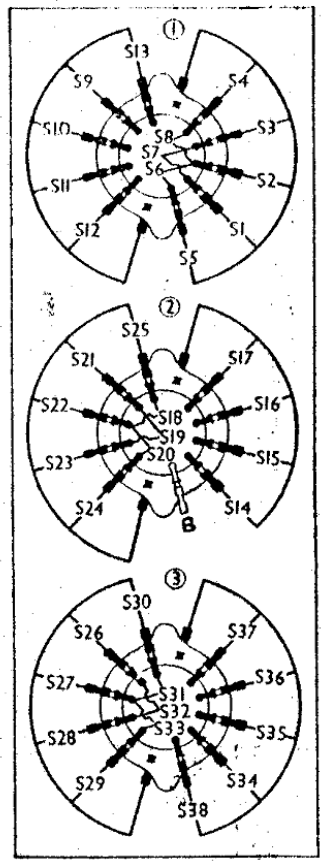
DIAGRAM AND TABLE OF SWITCH UNIT

Switch diagrams as seen from the rear of the underside of the chassis. The switches marked at the centre of each unit are formed by flat contacts on the rotors which short certain of the fixed contacts.



Switch	Gram.	S.W.1	S.W.2	M.W.	L.W.
S1	O	C	O	O	O
S2	O	O	C	O	O
S3	O	O	O	C	O
S4	O	O	O	O	C
S5	C	O	O	O	O
S6	O	C	O	O	O
S7	O	O	C	O	O
S8	O	O	O	C	O
S9	O	C	O	O	O
S10	O	O	C	O	O
S11	O	O	O	C	O
S12	O	O	O	O	C
S13	C	O	O	O	O
S14	O	C	O	O	O
S15	O	O	C	O	O
S16	O	O	O	C	O
S17	O	O	O	O	C
S18	O	C	O	O	O
S19	O	O	C	O	O
S20	O	O	O	C	O
S21	O	C	O	O	O
S22	O	O	C	O	O
S23	O	O	O	C	O
S24	O	O	O	O	C
S25	C	O	O	O	O
S26	O	C	O	O	O
S27	O	O	C	O	O
S28	O	O	O	C	O
S29	O	O	O	O	C
S30	C	O	O	O	O
S31	O	C	O	O	O
S32	O	O	C	O	O
S33	O	O	O	C	O
S34	O	C	O	O	O
S35	O	O	C	O	O
S36	O	O	O	C	O
S37	O	O	O	O	C
S38	C	O	O	O	O

of two condensers in parallel to make up the required capacity.

Condensers C30, C31.—These are two 8 μF dry electrolytics in a single carton beneath the chassis, but they do not use a common connection. **C30** has a black negative and red positive lead and **C31** a blue negative and yellow positive lead.

Resistance R20.—This may not occur in early chassis.

Model 3764.—In the alternative model (3764) the chassis is almost identical, with the exception of the pick-up circuit. Instead of the arrangement shown in our circuit, **R12** is replaced by a centre-tapped fader potentiometer (0·5 MO+0·5 MO). The bottom of **R11** goes to the top of this control, the top of **R16** goes to the centre tap and to one side of pick-up, while the other side of pick-up goes to the bottom of the control. The slider goes to **C20**, as in our circuit.

Aerial Arrangements.—Socket **A1** is for use with a normal aerial, and in this case **A2** *must* be connected to **E**. A metal strap is provided for this purpose.

A2 is only in use when a doublet aerial is employed, the connections from this going to **A1** and **A2**, and the metal strap being removed. The dotted connection in our circuit diagram represents the metal strap when in use.

CIRCUIT ALIGNMENT

I.F. Stages.—Connect signal generator to hexode control grid (top cap) of **V2** and chassis, feed in a 465 KC/S signal and adjust **C54, C53, C52** and **C51** for maximum output in each case, reducing input, if necessary, to avoid A.V.C. action.

R.F. and Osc. Stages.—First see that scale pointer is horizontal when gang is at maximum or minimum.

Connect signal generator to **A1** and **E** sockets (**A2** being connected to **E**).

S.W.1.—Feed in a 20 MC/S (15 m.) signal, tune to 20 MC/S on scale, and adjust **C43, C37** and **C32** for maximum output. Feed in a 9 MC/S (33 m.) signal, tune to 9 MC/S on scale, and adjust **C44** for maximum output, rocking the gang slightly if necess for optimum output.

S.W.2.—Proceed as above, but adjust **C45, C38** and **C33** at 7 MC/S (43 m.), and **C46** at 3 MC/S (100 m.).

M.W.—Proceed as above, but adjust **C47, C39** and **C34** at 1,400 KC/S (214 m.), and **C48** at 575 KC/S (522 m.).

L.W.—Proceed as above, but adjust **C49, C40** and **C35** at 300 KC/S (1,000 m.), and **C50** at 160 KC/S (1,875 m.).