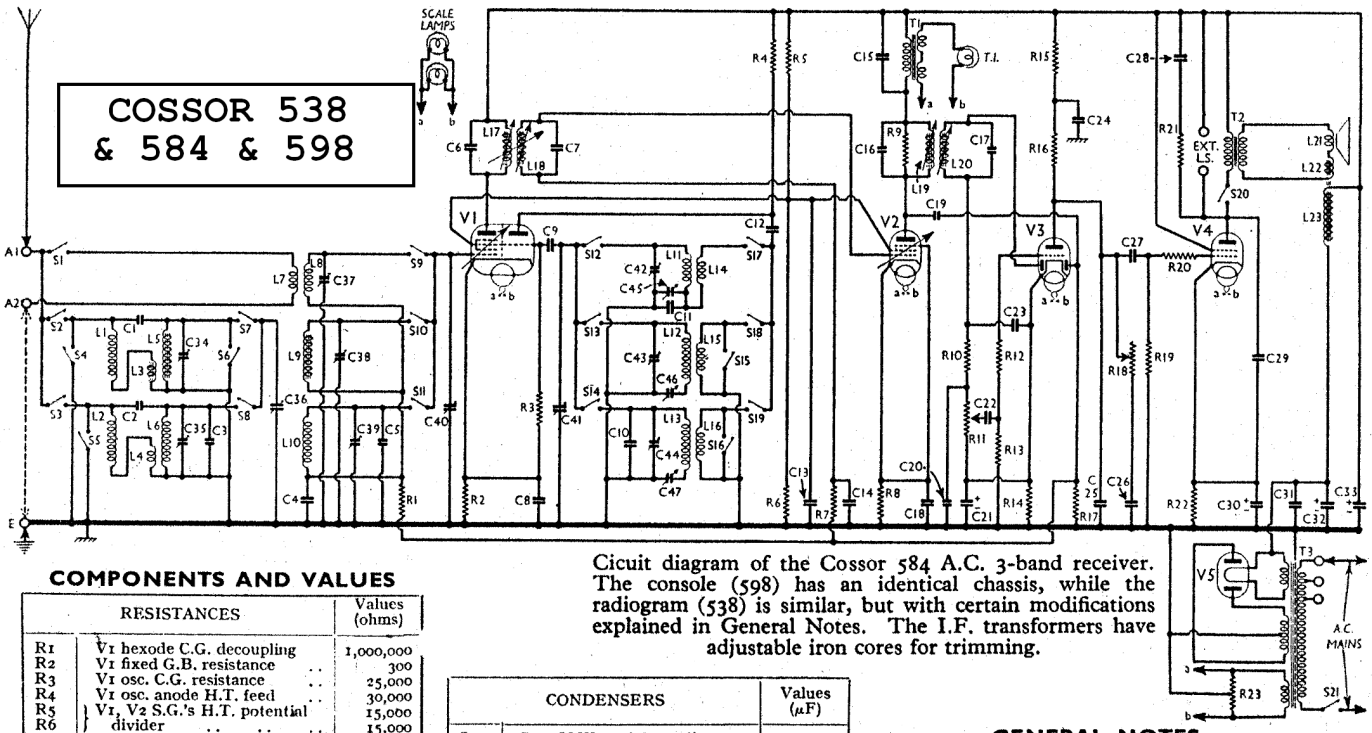
COSSOR 538 & 584 & 598



Cicuit diagram of the Cossor 584 A.C. 3-band receiver. The console (598) has an identical chassis, while the radiogram (538) is similar, but with certain modifications explained in General Notes. The I.F. transformers have adjustable iron cores for trimming.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 hexode C.G. decoupling	1,000,000
R2	V1 fixed G.B. resistance ..	300
R3	V1 osc. C.G. resistance ..	25,000
R4	V1 osc. anode H.T. feed ..	30,000
R5	V1, V2 S.G.'s H.T. potential divider	15,000
R6		15,000
R7	V2 C.G. decoupling	2,000,000
R8	V2 fixed G.B. resistance ..	300
R9	1st I.F. trans. pri. damping	250,000
R10	I.F. stopper	50,000
R11	V3 signal diode load and manual volume control ..	500,000
R12	I.F. stopper	100,000
R13	V3 triode C.G. resistance ..	2,000,000
R14	V3 triode G.B and A.V.C. delay resistance	2,000
R15	V3 triode anode decoupling ..	50,000
R16	V3 triode anode load	50,000
R17	V3 A.V.C diode load	1,000,000
R18	Variable tone control ..	20,000
R19	V4 C.G. resistance	500,000
R20	V4 grid stopper	50,000
R21	Part fixed tone corrector ..	10,000
R22	V4 G.B. resistance	150
R23	Heater circuit potentiometer, total	25*

* Centre tapped.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	High impedance aerial coils	9·0
L2		84·0
L3	Band-pass primary aerial coupling coils ..	0·4
L4		8·0
L5	Band-pass primary coils	2·1
L6		24·0
L7	Aerial S.W. coupling coil ..	0·25
L8	Aerial S.W. tuning coil ..	Very low
L9	Band-pass secondary coils	1·5
L10		18·0
L11	Osc. circuit S.W. tuning coil	Very low
L12	Osc. circuit M.W. tuning coil	1·0
L13	Osc. circuit L.W. tuning coil..	9·0
L14	Oscillator S.W. reaction ..	0·1
L15	Oscillator M.W. reaction ..	0·2
L16	Oscillator L.W. reaction ..	4·0
L17	1st I.F. trans. Pri. ..	3·0
L18	1st I.F. trans. Sec. ..	4·0
L19	2nd I.F. trans. Pri. ..	6·5
L20	2nd I.F. trans. Sec. ..	6·5
L21	Speaker speech coil	1·8
L22	Hum neutralising coil.. ..	0·1
L23	Speaker field coil	1,500·0
T1	Tuning indicator trans. Pri. ..	750·0
	Tuning indicator trans. Secs., total	1·5
T2	Speaker input trans. Pri. ..	850·0
	Speaker input trans. Sec. ..	0·2
T3	Mains trans. Pri., total ..	22·0
	Mains trans. Heater sec. ..	0·1
	Mains trans. Rect. heat. sec.	0·2
	Mains trans. H.T. sec., total	370·0
S1-S19	Waveband switches	—
S20	Internal speaker switch ..	—
S21	Mains switch	—

	CONDENSERS	Values (μF)
C1	Part M.W. aerial coupling ..	0·00001
C2	Part L.W. aerial coupling ..	0·00001
C3	Band-pass pri. L.W. fixed trimmer	0·00008
C4	Band-pass bottom coupling ..	0·05
C5	Band-pass sec. L.W. fixed trimmer	0·00008
C6	1st I.F. trans. pri. trimmer ..	0·00025
C7	1st I.F. trans. sec. trimmer ..	0·00025
C8	V1 cathode by-pass	0·1
C9	V1 osc. C.G. condenser ..	0·0001
C10	Osc. circuit L.W. fixed trimmer	0·0001
C11	Osc. circuit S.W. fixed tracker	0·002
C12	V1 osc. anode coupling ..	0·002
C13	V1, V2 S.G.'s decoupling ..	0·1
C14	V2 C.G. decoupling	0·05
C15	T.I. trans. pri. shunt	0·5
C16	2nd I.F. trans. pri. trimmer ..	0·00006
C17	2nd I.F. trans. sec. trimmer ..	0·00008
C18	V2 cathode by-pass	0·1
C19	Coupling to V3 A.V.C. diode	0·00005
C20	I.F. by-pass	0·00005
C21*	V3 cathode by-pass	50·0
C22	A.F. coupling to V3 triode ..	0·01
C23	I.F. by-pass	0·00005
C24	V3 triode anode decoupling ..	0·25
C25	I.F. by-pass	0·0002
C26	Part of tone control circuit	0·03
C27	V3 triode to V4 A.F. coupling	0·01
C28	Parts fixed tone corrector circuit	0·01
C29		0·0005
C30*	V4 cathode by-pass	50·0
C31	Rectifier filament R.F. by-pass	0·0002
C32*	H.T. smoothing ..	8·0
C33*		8·0
C34‡	Band-pass pri. M.W. trimmer	—
C35‡	Band-pass pri. L.W. trimmer	—
C36†	Band-pass pri. tuning ..	—
C37‡	Aerial circuit S.W. trimmer	—
C38‡	Band-pass sec. M.W. trimmer	—
C39‡	Band-pass sec. L.W. trimmer	—
C40†	Aerial S.W. and band-pass sec. tuning	—
C41†	Oscillator circuit tuning ..	—
C42‡	Osc. circuit S.W. trimmer ..	—
C43‡	Osc. circuit M.W. trimmer ..	—
C44‡	Osc. circuit L.W. trimmer ..	—
C45‡	Osc. circuit S.W. tracker ..	—
C46‡	Osc. circuit M.W. tracker ..	—
C47‡	Osc. circuit L.W. tracker ..	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 223 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 400 V scale of a model 7 Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 41STH	265	2·2	100	3·9
	Oscillator 82	6·0		
V2 MVS/Pen	258	4·3	100	0·9
V3 DDT	102	1·2	—	—
V4 42DT	233	37·0	265	8·0
V5 442BU	342†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—**S1-S19** are the waveband switches, in two rotary units beneath the chassis. They are indicated in our under-chassis view, and are shown in detail in the diagrams on page VIII, where they are as seen looking from the front of the underside of the chassis.

The table (p. VIII) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and **C** closed.

S20 is the internal speaker jack switch, incorporated in one of the external speaker sockets, which opens when the external speaker plug is pushed fully home, and so mutes the internal speaker.

S21 is the Q.M.B. mains switch, which is fitted on a sunk escutcheon at the left-hand side of the cabinet.

Coils.—**L1-L10** are in six unscreened units beneath the R.F. sub-chassis, between the rear main chassis member and a vertical screening plate. **L11-L16** are in three further units between the screening plate and the front main chassis member.

The I.F. transformers **L17, L18** and **L19, L20** are in two screened units on the chassis deck. The cans also contain the fixed trimmers, while the **L19, L20** unit also contains **R9.** Variable trimming is accomplished by adjusting the iron cores. Their ends are slotted, and are reached through holes in the sides of the cans.

In the case of the **L17, L18** unit, **L18** is mounted on a spring hinge device, linked up with the tone control **R18,** and on adjusting this, the coupling between **L17** and **L18** is altered, thus giving variable selectivity.

Trimmers and Trackers.—There are eleven of these, and all are mounted beneath the R.F. sub-chassis, the chassis forming one of the electrodes in each case. The adjusting screws are beneath the chassis.

Scale Lamps.—These are two Osram M.E.S. types, rated at 6·5 V, 0·3 A. They have small bulbs, sprayed yellow.

CIRCUIT ALIGNMENT

I.F. Stages.—The I.F. transformers are of the variable permeability type. The windings are partially tuned by fixed condensers, final trimming being by screwing the iron cores in or out. They are reached through holes in the sides of the I.F. cans.

The cores are sealed with wax, and this must be softened before making adjustments. The best way to do this is to heat a small stout screwdriver with a soldering iron, push through the wax, find the slot in the core and then screw in and out for several turns. Actual alignment should be carried out with a non-metallic screwdriver.

Set the variable selectivity control for maximum selectivity (i.e., coils furthest apart). Swamp the oscillator circuit by shorting **C41.** Connect signal generator to top cap of **V1** and chassis, and feed in a 465 KC/S signal. Adjust **L17, L18, L19** and **L20** in turn for maximum output, keeping the input low.

R.F. and Oscillator Stages.—Connect signal generator to **A** and **E** sockets, and adjust the following condensers, in the order given, and at the frequencies specified.

L.W.—300 KC/S (1,000 m.), **C44, C39, C35**; 160 KC/S (1,875 m.), **C47.**

M.W.—1,400 KC/S (214 m.), **C43, C38, C34**; 575 KC/S (522 m.), **C46.**

S.W.—18 MC/S (16·7 m.), **C42, C3,** 6 MC/S (50 m.), **C45.**

When adjusting at the high frequency (low wavelength) end of each scale, tune receiver to wavelength of the test signal as marked on the scale. At the low frequency (high wavelength) end, tune in the signal, irrespective of exact scale setting, and rock the gang slightly when adjusting the trackers, for optimum results.