

NUMBER FIFTY-NINE

**'TRADER' SERVICE SHEETS**

# COSSOR MODEL 363

## 3-VALVE BATTERY RECEIVER

**M**ODEL 363 in the Cossor range of receivers is a 3-valve battery-operated set with a variable-mu pentode H.F. amplifier, a screened pentode detector and a pentode output valve. Iron-cored M.W. coils are employed, and reaction is included. The aerial trimmer can be adjusted by means of a small knob mounted concentrically with the main tuning knob.

Provision is made for connecting a gramophone pick-up and an extension speaker.

### CIRCUIT DESCRIPTION

Aerial input via fixed series condenser **C1** to L.W. coupling coil **L1** and M.W. coupling condenser **C2**, which is switched in by **S1**. Single tuned input circuit **L2, L3, C12** precedes variable-mu pentode H.F. amplifier (**V1**, **Cossor metallised 210VPT**). Gain control by variable potentiometer **R2** which varies G.B. applied.

Tuned-secondary transformer coupling by **L4, L5, L6, L7, C14** to pentode detector (**V2**, **Cossor 210SPT**) operating on grid leak system with **C6** and **R6**. Reaction is applied from anode by coils **L8, L9** and controlled by variable condenser **C16**. Provision for connection of gramophone pick-up in low-potential end of grid circuit. G.B. is obtained from tapping on potential divider **R7, R8**.

Parallel-fed auto-transformer coupling by **R9, C9** and **T1** to output pentode (**V3**, **Cossor 220HPT**). Tone compensation

in anode circuit by impedance-limiting filter **R11, C11**. Provision for connection of high-resistance external speaker across primary of internal speaker transformer **T2**.

### COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	V1 cont. grid decoupling	2,000,000
R2	V1 gain control pot.	50,000
R3	V1 anode decoupling	10,000
R4	Reaction circuit stabiliser	200
R5	V2 grid circuit stabiliser	200
R6	V2 grid leak	2,000,000
R7	G.B. pot. divider for P.U.	500,000
R8		100,000
R9		50,000
R10	V2 anode H.F. by-pass	500,000
R11	Part of tone comp. filter	30,000
R12	V3 grid H.F. stopper	100,000

Condensers		Values (µF)
C1	Aerial series condenser	0.0005
C2	Aerial coupling (M.W.)	0.000015
C3	V1 cont. grid decoupling	0.1
C4	V1 S.G. by-pass	0.1
C5	V1 anode decoupling	0.1
C6†	V2 grid condenser	0.0001
C7	V2 S.G. by-pass	0.1
C8	V2 anode H.F. by-pass	0.0001
C9	L.F. coupling to T1	0.1
C10	H.T. reservoir	2.0
C11	Part of tone comp. filter	0.005
C12	Aerial circuit tuning	0.0005
C13	Aerial circuit trimmer	—
C14	H.F. transformer tuning	0.0005
C15‡	H.F. transformer trimmer	—
C16	Reaction control	0.0005

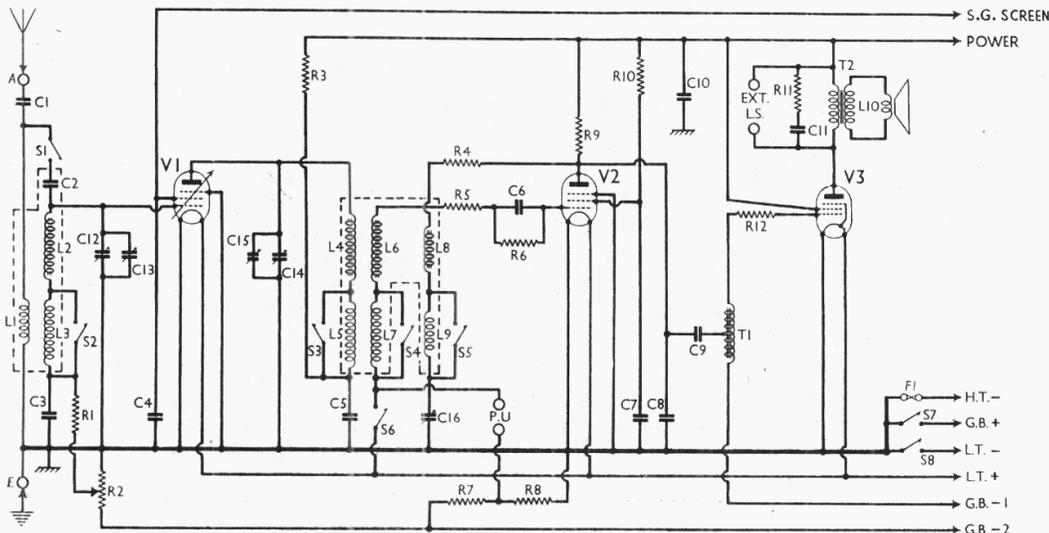
† Embodies R6. ‡ Pre-set condenser.

Other Components		Values (ohms)
L1	Aerial coupling coil	9.0
L2	Aerial tuning coils	1.5
L3		13.0
L4		1.5
L5	H.F. transformer primary	12.5
L6		1.5
L7	H.F. transformer secondary	13.0
L8		0.8
L9	Reaction coils	5.5
L10	Speaker speech coil	2.0
T1	Intervalve auto-transformer, total	3,000.0
T2	Speaker input trans.	Pri. 800.0
		Sec. 0.2
S1-S5	Waveband switches	—
S6	Radio-gram. switch	—
S7	G.B. switch	—
S8	L.T. switch	—
F1	H.T. circuit fuse	—

### DISMANTLING THE SET

**Removing Chassis.**—Remove back and pull out battery platform and partition. Remove the five control knobs, four of which are secured by recessed grub screws. That on the trimmer is held by an axial screw. Remove the four bolts (each with a large washer and lock washer) holding chassis, heads underneath cabinet. Chassis can now be withdrawn and there is sufficient slack on the speaker leads to allow of normal repairs to be carried out without disconnecting the speaker.

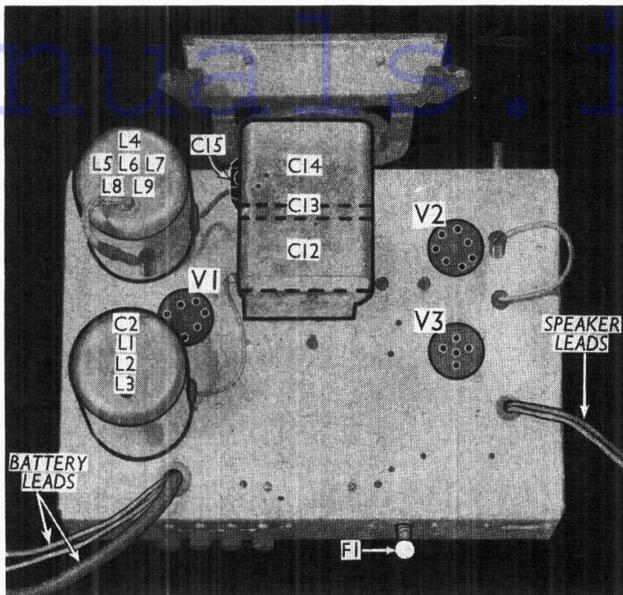
**Removing Speaker.**—To remove speaker, disconnect leads from screw terminals on speaker transformer and withdraw the six roundhead wood screws holding sub-baffle. Speaker and sub-baffle can now be withdrawn. If speaker is fixed to sub-baffle by rivets (as in our receiver), these must be removed and replaced by nuts and bolts when replacing speaker or fitting new one. If speaker is returned to factory, Cossor advise that sub-baffle be left in place.



Circuit diagram of the Cossor Model 363 battery receiver. The M.W. coils are iron-cored. The circuit is quite straightforward, volume being controlled by varying the bias of V1.

# Manuals

Plan view of the chassis. The first coil unit contains, in addition to L1-L3, a small fixed condenser C2. C13 is an air dielectric trimmer, between C12 and C14, and is operated by a knob concentric with the main tuning knob. C15 is the sealed trimmer of C14.



**Removing Speaker Fret.**—If it should be necessary to remove speaker fret, this can be done by withdrawing four cheese-head screws (with washers), heads of three of which are accessible through holes cut in sub-baffle.

If speaker and fret are removed at same time, rubber blocks will be found between each corner of the board backing fret and cabinet. When replacing, take care to put blocks in position.

### VALVE ANALYSIS

Valve voltages and currents given below are those taken by Cosmor, with the volume control at maximum. Voltages were measured with a meter having a resistance of 1,000 O per V, chassis being negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 210VPT	95	1.6	45	0.5
V2 210SPT	70	0.6	20	0.2
V3 220HPT	117	4.0	120	0.8

### GENERAL NOTES

**Switches.**—All the switches are in one unit, which stretches completely across the chassis. It is seen in our under-chassis view, and the individual switches are indicated. The table below gives the switch positions for the various settings, O indicating open, and C closed.

Switch	M.W.	L.W.	Gram
S1	C	O	C
S2	C	O	C
S3	C	O	C
S4	C	O	C
S5	C	O	C
S6	C	C	O
S7	C	C	C
S8	C	C	C

To clean the switches, the easiest method is to remove the switch and

spindle and moving contacts. Behind the front of the chassis will be found a flat spring holding the spindle in place, the front of the chassis being slotted. The spring is held under two lugs, and by depressing its ends, it can be slid out, allowing the switch spindle to be lifted out and the various contacts to be easily cleaned. When replacing the spring, note that it has a hole at one end, into which fits a small projection under one lug.

**Coils.**—All the coils are in two screened units on the chassis deck. It is a little difficult to remove the screens without removing the coils as well. Coils L2, L4,

L6 and L8 are of the iron-cored type, while for the remainder ordinary air-cored types are used.

**Fuse F1.**—For this an Osram M.E.S. flash lamp bulb is used. The rating is 3.5 V, 0.15 A. The bulb is screwed into the holder at the rear of the chassis.

**External Speaker.**—This should be of the high resistance type (about 15,000-20,000 O), and should be plugged into the sockets at the rear of the chassis.

**Battery Leads and Voltages.**—The two L.T. leads are of similar colour, but are fitted with red and black coded tags. The H.T. and G.B. leads are in a cable. The colour coding is: Black, H.T. -; Yellow, S.G. screen, +45 V; Green, H.T. power, +120 V; Red, G.B. +; Blue, G.B. -1, -4.5 V; Red and Mauve G.B. -2, -9 V.

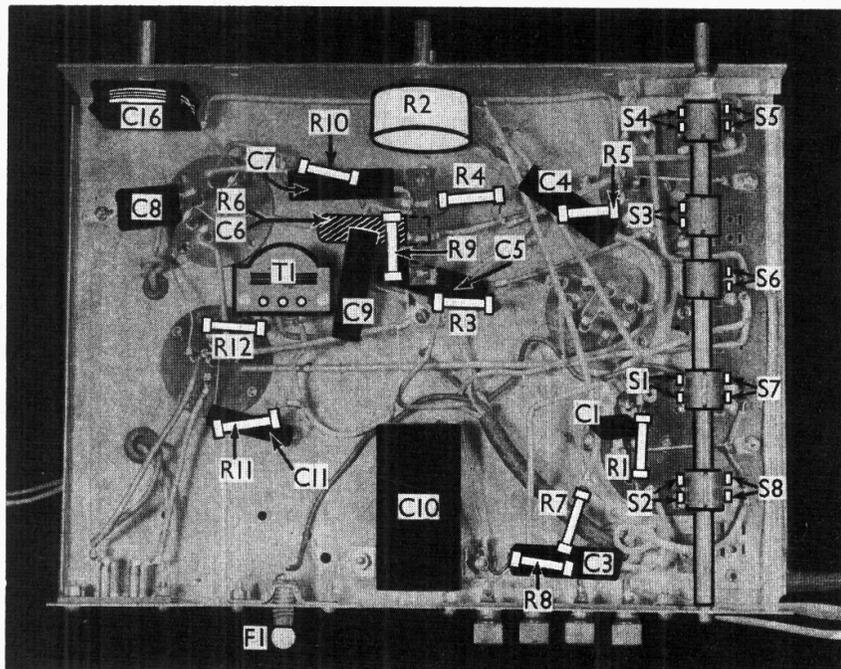
**Components C6, R6.**—These are in a single tubular unit, beneath the chassis. The condenser and resistance are in parallel, and therefore only two connections emerge.

**Transformer T1.**—This is an auto-transformer, with only three connections. The centre tag is the tapping point to which the coupling condenser is connected.

**Condenser C2.**—This is a special low value type (15 μF), and is included inside the screened coil unit housing L1, L2 and L3.

**Condenser C13.**—This is an air dielectric trimmer, operated by a spindle concentric with the main tuning spindle. The condenser is between C12 and C14.

**Condenser C15.**—This trimmer is mounted on the side of the casing of C14, and is normally sealed with red wax.



Under-chassis view. All the switches are clearly shown. C6 and R6 are in a single tubular unit, shown shaded. Only two leads emerge from this, since the components are in parallel.