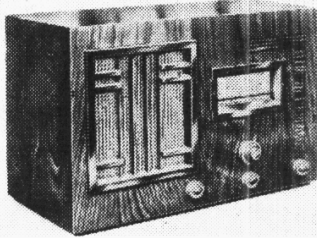


"TRADER" SERVICE SHEET
555

COSSOR 368

BATTERY RECEIVER



THE Cossor 368 is a 3-valve (plus rectifier) 2-band TRF receiver, designed for use with AC mains of 200-250 V, 40-100 C/S.

Provision is made for a gramophone pick-up, which may be left permanently connected, and an external speaker.

Release date : 1935.

CIRCUIT DESCRIPTION

Aerial input via series condenser **C1** and coupling coil **L1** (MW and LW) and **S1, C2** (MW) to single tuned circuit **L2** (MW) and **L3** (LW), tuned by **C16**. Final manual trimming by **C17**.

First valve (**V1, Cossor metallised MVS/Pen**) is a variable- μ pentode operating as RF amplifier. Gain control by variable resistance **R3** at negative end of screen potential divider **R1, R2**. Fixed minimum GB is obtained from drop along cathode resistance **R4**.

Tuned-primary RF transformer coupling by **L4, L5, C18** and **L8, L9** between **V1**

and a second RF pentode valve (**V2, Cossor metallised MS/Pen**), which operates as detector on grid leak system with **C6** and **R8**. Provision for connection of gramophone pick-up in earthy end of grid circuit by sockets which are short-circuited by **S6** on radio. Cathode resistance **R10**, which provides GB for gramophone operation, is also short-circuited on radio by **S7**.

Reaction is applied from anode via coils **L6, L7**, and controlled by **C20**.

Resistance-capacity coupling by **R11, C10** and **R12** between **V2** and triode output valve (**V3, Cossor 41MP**). RF filtering by **C9, R13, C11**. Provision for connection of high impedance external speaker in anode circuit. Fixed tone correction by **C12**, also in anode circuit.

HT current is supplied by full-wave rectifying valve (**V4, Cossor 442BU**). Smoothing by speaker field **L12** and dry electrolytic condensers **C14, C15**.

COMPONENTS AND VALUES

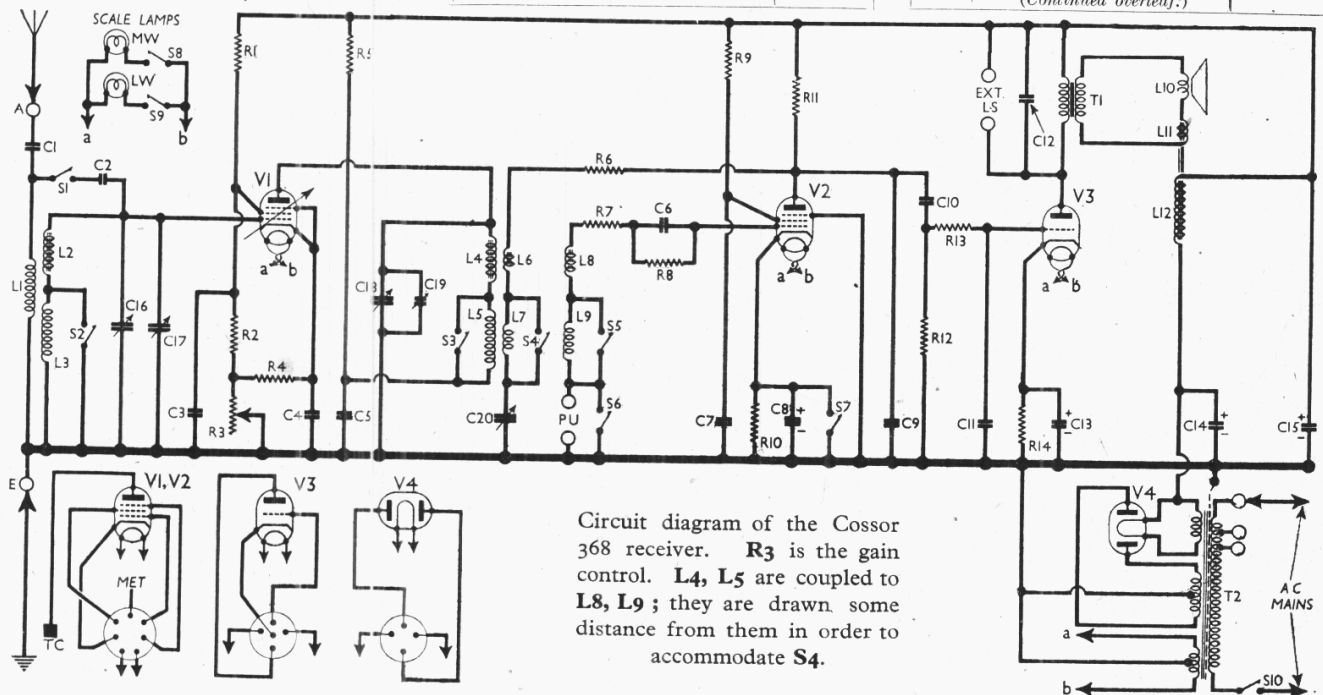
RESISTANCES		Values (ohms)
R1	V1 SG HT potential divider resistances	30,000
R2	V1 gain control	40,000
R3	V1 gain control	12,000
R4	V1 fixed GB	1,500
R5	V1 anode HT feed	10,000
R6	V2 reaction circuit stabilising resistances	300
R7	V2 grid leak	200
R8	V2 SG HT feed	1,000,000
R9	V2 gram GB resistance	500,000
R10	V2 anode load	1,000
R11	V2 anode load	100,000
R12	V3 CG resistance	500,000
R13	V3 CG RF stopper	100,000
R14	V3 GB resistance	300

CONDENSERS		Values (μ F)
C1	Aerial series condenser	0.0005
C2	Aerial MW coupling	0.000015
C3	V1 SG decoupling	0.1
C4	V1 cathode by-pass	0.1
C5	V1 anode decoupling	0.1
C6	V2 CG condenser	0.0001
C7	V2 SG decoupling	0.1
C8*	V2 cathode by-pass	50.0
C9	V2 anode RF by-pass	0.0002
C10	V2 to V3 AF coupling	0.01
C11	V3 CG RF by-pass	0.0002
C12	Fixed tone corrector	0.005
C13*	V3 cathode by-pass	50.0
C14*	HT smoothing	6.0
C15*		4.0
C16†	Aerial circuit tuning	—
C17†	Aerial manual trimmer	—
C18†	V1 anode circuit tuning	—
C19†	V1 anode MW trimmer	—
C20†	Reaction control	—

* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil	10.0
L2	Aerial MW tuning coil	1.5
L3	Aerial LW tuning coil	11.0
L4	RF trans. pri. MW tuning	1.5
L5	RF trans. pri. LW tuning	11.0
L6	MW reaction coil	0.5
L7	LW reaction coil	3.5
L8	RF trans. MW sec. coil	1.5
L9	RF trans. LW sec. coil	11.0
L10	Speaker speech coil	2.0
L11	Hum neutralising coil	0.1
L12	Speaker field coil	2,500.0
T1	Speaker input (Pri. trans. Sec.)	275.0 0.15
T2	Mains trans. (Pri. total Heater sec. Rect. heat. sec. HT sec., total)	70.0 0.15 0.2 1,500.0

(Continued overleaf.)



Circuit diagram of the Cossor 368 receiver. **R3** is the gain control. **L4, L5** are coupled to **L8, L9**; they are drawn some distance from them in order to accommodate **S4**.

OTHER COMPONENTS (Continued.)		Approx. Values (ohms)
S1-S5	Waveband switches	---
S6, S7	Gram and pick-up switches	---
S8, S9	Scale lamp switches	---
S10	Mains switch	---

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted in the makers' manual. The measurements were made with the set connected to mains of 240 V; there was no signal input, and the volume control was at maximum.

Voltages were measured on the 600 V scale of a 1,000 ohms-per-volt meter, whose negative lead was connected to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 MVS/Pen.	215	2.0	120	1.0
V2 MS/Pen.	55	1.8	35	0.4
V3 41MP	230	30.0	---	---
V4 442BU	350†	---	---	---

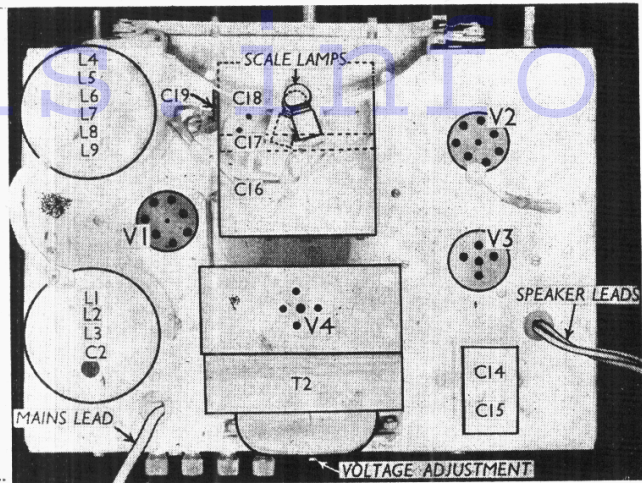
† Approximate voltage at each anode, AC.

DISMANTLING THE SET

The cabinet is fitted with a detachable bottom, upon removal of which access may be gained to most of the components beneath the chassis.

Removing Chassis.—Remove the control knobs (recessed screws); withdraw the sliding partition inside the cabinet; remove two wood screws holding the scale assembly to the front of the cabinet; unsolder from the speaker transformer the three leads connecting it to chassis; remove the four bolts (with washers) holding the chassis to the bottom of the

Plan view of the chassis. **C17** is a small variable condenser sandwiched between **C16** and **C18**. **V4** is mounted on top of the mains transformer **T2**.



cabinet. If the chassis is now tilted slightly, it can be withdrawn. When replacing, connect the speaker leads as follows, numbering the tags from left to right: 1, blue; 2, red; 3 and 4 (joined together), yellow.

Removing Speaker.—Unsolder the three connecting leads and, since the speaker is riveted to the sub-baffle, remove the screws holding this to the front of the cabinet.

When replacing, the transformer should be at the top, and the leads should be connected as indicated above.

GENERAL NOTES

Switches.—**S1-S5** are the waveband switches, **S6, S7** the radio gram switches, **S8, S9** the scale lamp switches and **S10** the mains switch, in a rotary barrel type switch assembly. The individual switches

are indicated in our under-chassis view. The table below gives the switch positions for the four control settings, starting from the "off" setting, and proceeding clockwise. A dash indicates open, and **C**, closed.

Switch Table

Switch	Off	MW	LW	Gram.
S1	C	C	---	---
S2	C	C	---	---
S3	---	C	---	C
S4	---	C	---	C
S5	---	C	---	C
S6	---	C	C	---
S7	---	C	C	---
S8	---	C	---	---
S9	---	C	C	---
S10	---	C	C	C

Coils.—**L1-L3** and **L4-L9** are in two screened units on the chassis deck. The former unit also contains **C2**.

Trimmers.—The only trimmers are associated with the gang condenser. **C19**, sealed with red wax, is mounted on the side of the **C18** unit, while **C17**, operated by a spindle concentric with the main tuning spindle, is of the air-dielectric type, situated between **C16** and **C18**.

Scale Lamps.—These are two Osram MES types, rated at 6.5 V, 0.3 A.

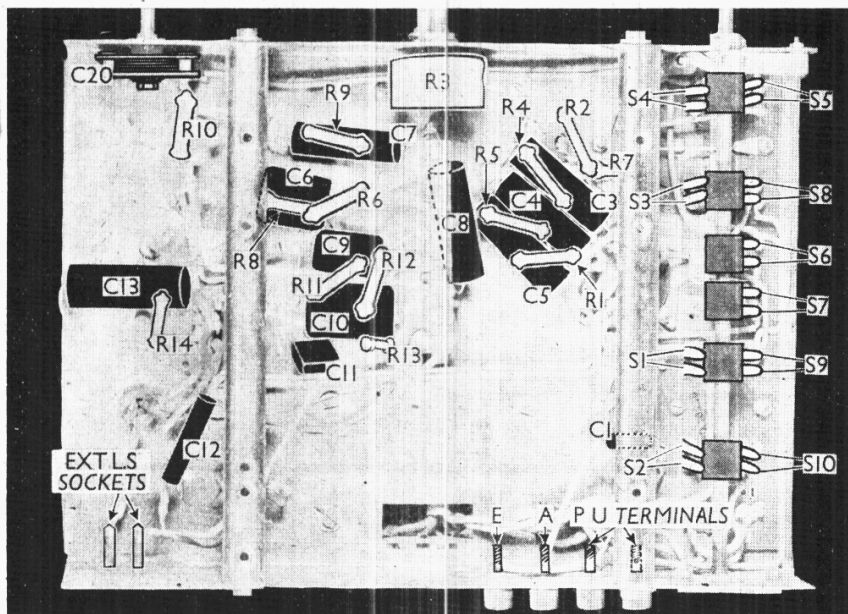
External Speaker.—Two sockets are provided at the rear of the chassis for a high impedance (3,000 Ω) external speaker.

Condensers C14, C15.—These are two dry electrolytics in a single container, mounted on the chassis deck. They have a common negative (black) lead. The red lead is the positive of **C14** (6 μF) and the yellow lead is the positive of **C15** (4 μF).

CIRCUIT ALIGNMENT

Strictly speaking, there are no actual alignment operations applicable to this receiver. **C19** is adjusted and sealed at the works, while **C17** is adjusted by the user.

The makers' instructions are to tune in a station on the MW band below 250 m, and manipulate **C17** and the reaction condenser **C20** to obtain optimum results. After this, the knob of **C17** should not need touching unless critical reaction is being used on a weak station.



Under-chassis view. The switches are indicated individually.