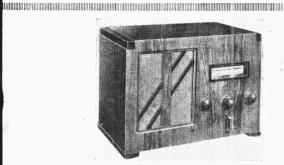
Supplement to The Wireless & Electrical Trader, March 27, 1943

"TRADER" SERVICE SHEET

OSSOR 435

RECEIVER



HE Cossor 435 is a 3-valve (plus rectifier) 2-band TRF receiver, suitable for AC mains of 200-250 V, 40-100 C/S.

There is provision for the connection of a gramophone pick-up and an external speaker. A switch on the pick-up jack causes both scale lamps to light when the plug is inserted in its socket.

Release date and original price: 1934; £9 15s.

CIRCUIT. DESCRIPTION

On MW, switches S1 and S2 are closed; aerial input is then via series condenser

C1 to a tapping formed by the junction
of L2 and L3, the MW tuning coil, by S1,
S2. On LW, input is via C1 and series choke L1 to tapping on LW tuning coil L4, L5; S1, S2 being open. The circuit is tuned by C14, with manual trimming by C15.

First valve (V1, Cossor metallised

MVSG) is a variable-mu RF tetrode operating as signal frequency amplifier with gain control by potentiometer R3, which forms part of potential divider with R1, R2. R4 limits the minimum GB that may be applied to V1. L12 is an anti-parasitic choke in the screen lead.

Tuned-anode coupling by L8, L9 (MW) and L10, L11 (LW) with C17, the coils being tapped like the aerial coils, between V1 and an RF pentode valve (V2, Cossor metallised MS/Pen) which operates as grid leak detector with C5 and R6. Reaction is applied from anode via coupling coils L6 (MW) and L7 (LW) and controlled by C16. RF filtering by C8 in anode circuit. Provision by means of a switched jack for connection of gramophone pick-up in control grid circuit, and when it is in circuit, GB is obtained from drop along R8 in cathode circuit.

Resistance-capacity coupling by R7, C9 and R9, via grid stopper R10, between V2 and pentode output valve (V3, Cossor MP/Pen). Fixed tone correction by R11, C10 in anode circuit. Provision for connection of high-impedance speaker, also in anode circuit.

HT current is supplied by full-wave rectifying valve (V4, Cossor 442BU), Smoothing by speaker field L14 and electrolytic condensers C12, C13. Scale lamps are controlled by switches \$5, \$6 according to waveband in use, but a switch, S7, associated with the pick-up jack, closes when a pick-up is connected, so that both lamps light on gram.

COMPONENTS AND VALUES

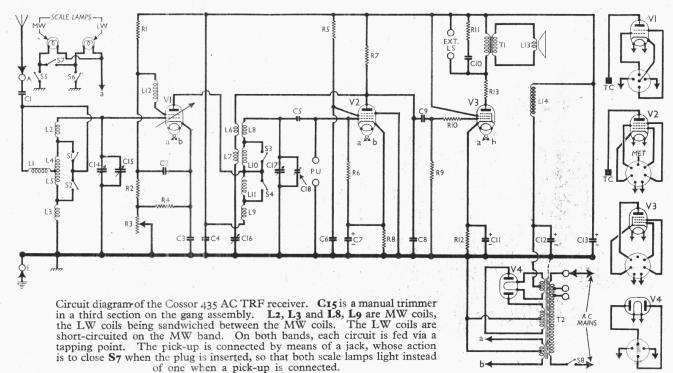
	RESISTANCES	Values (ohms)
R1	V1 SG HT potential divid- f	40,000
R2	f er	25,000
R3	V1 gain control	12,000
R4	V1 fixed GB resistance	100
R5	V2 SG HT feed	500,000
R6	V2 grid leak	500,000
R7	V2 anode load	100,000
R.8	V2 PU GB resistance	1,000
R.9	V3 CG resistance	500,000
R10	V3 grid stopper	100,000
R11	Part fixed tone corrector	10,000
R12	V3 GB resistance	350
R13	V3 anode stopper	100

	CONDENSERS	$_{(\mu F)}^{ m Values}$
C1	Aerial series condenser	0.0001
C2	V1 SG decoupling	0.1
C3	V1 cathode by-pass	0.1
C4	HT circuit RF by-pass	2.0
C5	V2 CG condenser	0.000025
C6	V2 SG decoupling	0.1
C7*	V2 PU cathode by-pass	50.0
Č8	RF by-pass	0.0002
C9	V2 to V3 AF coupling	0.01
. C10	Part fixed tone corrector	0.01
C11*	V3 cathode by-pass	50.0
C12*	HT smoothing conden-	6.0
C13*	sers	2.0
C14†	Aerial tuning condenser	2.0
C15†	Aerial manual trimmer	
		0.0005
C16†	Reaction control	0.0005
C17†	V1 anode tuning	-
C18‡	V1 anode MW trimmer	-

* Electrolytic.

† Variable.

‡ Pre-set.



	OTHER COMPONENTS	Approx. Values (ohms)
L1 L2 L3 L4 L5	Aerial LW series choke Aerial MW tuning coil { Aerial LW tuning coil {	$\begin{array}{c} 30.0 \\ 1.5 \\ 0.75 \\ 12.0 \\ 6.0 \end{array}$
L6 L7 L8 L9 L10	Reaction coils { V1 anode circuit MW tun- ing coil V1 anode circuit LW tun-	1·5 1·7 1·2 1·0
L10 L11 L12 L13 L14	Y1 anode circuit LW tun- j ing coil \ V1 SG stabilising choke Speaker speech coil Speaker field coil	8.5 8.5 Very low 5.5 2,400.0
T1 T2	Speaker input { Pri. Sec. Pri., total Mains Heater sec. Pri. P	950·0 0·4 80·0 0·1
S1-S4 S5-S7 S8	trans. Rect. heat sec. HT sec., total Waveband switches Scale lamp switches Mains switch, ganged R3	1,650.0

VALVE ANALYSIS

Valve voltages and currents given in the table below are those quoted in the makers' manual. Voltages were measured with a 1,000 ohms-pervolt meter, chassis being the negative connection. The volume control was at maximum.

v	alve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
	MVSG MS/Pen	190 85	4·0 2·5	60 30	0.75
V3 I	MP/Pen 142BU	190 300†	24.0	206	0·75 4·5

† Cathode to chassis, DC.

DISMANTLING THE SET

Removing Chassis.—Remove the four rotary control knobs (recessed screws), and the wave-change lever knob;

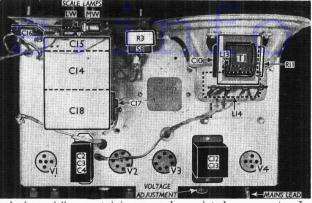
remove the three cheese head bolts (with

move the three cheese-head bolts (with washers) holding chassis to bottom of cabinet. The chassis and speaker can now be withdrawn as a single unit.

Removing Speaker.—Remove the chassis as described above; unsolder the three leads from the panel on the

speaker transformer; remove the two bolts and nuts (with lock-washers), holding the speaker rim to the brackets attached to front of chassis deck, and the large nut (with lock-washer) holding the magnet to the bracket on the mains transformer general.

Plan view of the chassis. The scale lamps are mounted in swivelled holders, which can be pulled rearwards to give access to the lamps. The narrow section in front of the gang is the manual trimmer Its control C15. knob is concentric with the tuning knob.



When replacing, connect the leads as follows (according to the makers' instructions), numbering the tags on the transformer from left to right when viewed from the rear: 1, pink; 2, green; 3, yellow. Our connections were: yellow, red and white/red respectively. Tag 4 was joined to tag 3. Our speaker was type No. 825 4 was jo No. 825.

GENERAL NOTES

Switches. - S1-S4 are the waveband switches in two leaf-type assemblies, each in its respective coil unit, operated by a cam roller on the front chassis member. The operating lever, which projects through the front of the cabinet, is raised for MW, when **\$1-\$4** close, and lowered for LW, when the switches open. The switch leaves are indicated in our under-chassis view, protruding from their

\$5, \$6 are the scale lamp switches in a separate unit, mounted behind the \$1-\$4 switch lever and controlled by it. Each lamp lights on one waveband only, except when a pick-up is in circuit, when \$7, which forms part of the pick-up jack, closes so that the two lamps are connected in parallel and both light. The connecting tags of \$7, the only tags visible in our under-chassis view, showing the jack, are indicated there.

S8 is the QMB mains switch, ganged with the gain control R3.

Coils.—The aerial and RF tuning coils L2-L5 and L8-L11 are in two screened units beneath the chassis, each unit con-

taining several associated components. In our under-chassis view, the rectangular screens are indicated, and their contents have been sketched in as they appear when the cans are removed. The coils are each tapped near the centre, four coil sections being connected in series, as shown in the circuit diagram overleaf, in each unit. The tapped LW coil is between the two sections of the MW coil in each case, so that when the LW sections are short-circuited by the switches, the latter act as the tapping point for the MW coils.

In the L2-L5 former, the LW choke L1 is wound on a small bobbin mounted at the LW end. On the L8-11 former are wound also the reaction coils L6, L7.

wound also the reaction coils **L6**, **L7**. The screens can be removed if the leads emerging from the rear ends are freed from their external connections, after first coding them, and the three easily accessible nuts (for each unit) on the chassis deck are removed; the units can then be tilted, so that the two nuts at the rear end of each unit can be reached easily and removed, after which they, and the main body of the casing, can be withdrawn, leaving the coil unit exposed and still attached to the front end-plate. Before lifting the **L6-L9** unit, one lead must be freed from its terminal on the gang. on the gang.

Scale Lamps.—The original types were specified in the makers' information as 2.5 V, 0.2 A, but any MES type lamp with a clear bulb, rated between 2.5 and 5 V, could be used. The lamps are connected across one section of the tapped heater secondary winding on T2 only.

Gramophone Pick-up.—A switched jack is provided at the rear of the chassis for the connection of a gramophone pick-up. An external volume control is required. When the plug is inserted, S7, the switch on the jack, closes, and both scale lamps light.

External Speaker.—Two terminals are provided at the rear of the chassis for a high impedance (about 8,000 O) speaker.

Condesses C3 C4 —These are three paper.

(about 8,000 O) speaker.

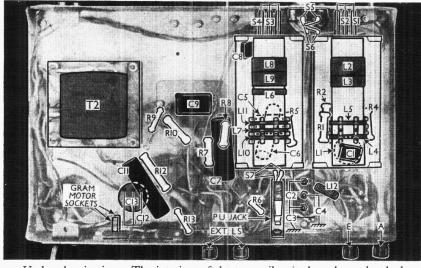
Condensers C2, C3, C4.—These are three paper insulated condensers in a single unit mounted on the chassis deck. Three terminals project from its underside into the under-chassis compartment, and their internal connections are indicated in our under-chassis view.

cated in our under-chassis view.

Condensers C12, C13.—These are two dry electrolytics, in a single TCC metal cased unit mounted on the chassis deck, rated at 320 V DC working, 450 V peak. The rubber-covered leads emerge from below, and are indicated in our under-chassis view. The black lead is the common negative, and the two red leads the positives. The capacity associated with each red lead is stamped on the base of the unit near the lead-out holes. the lead-out holes.

CIRCUIT ALIGNMENT

Since there is only a single pre-set trimmer, C18, located on the gang assembly, alignment is simply a matter of a single adjustment, pre-ferably near the low wavelength end of the MW band, while the manual trimmer C15 is set about half-way in and reaction is adjusted to be just short of oscillation. The calibration should be checked at several points on each band, and the pointer suitably adjusted if necessary. Calibration will be satisfactory if adjustment of C15 corrects any apparent error. C15 corrects any apparent error.



Under-chassis view. The interiors of the two coil units have been sketched into the photograph, as seen when the screens are removed.