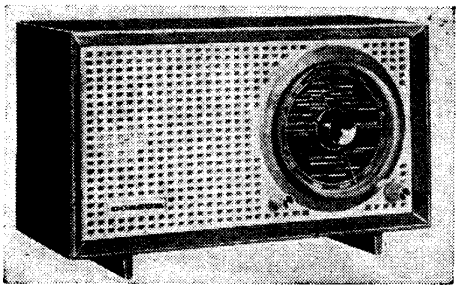
"TRADER" SERVICE SHEET

1523

COSSOR CR1201U

CR1201U February 1961, £9 18*s* 8*d*. *Purchase tax extra.*



Appearance of the Cossor CR1201U.

A CONVENTIONAL two-band A.M. superhet made on a printed circuit panel is the basis of the Cossor CR1201U radio receiver. Employing the "live" chassis technique, it is designed to operate on mains supplies of 200-250V D.C. or A.C., 50c/s in the case of A.C. Waveband ranges are 185-580 m (M.W.) and 1,150-2,000 m (L.W.). Three front knobs provide control of volume, tuning and waveband changing. The receiver is fitted in a moulded plastics cabinet.

Model CR1200U is another Cossor receiver which while being different in appearance, incorporates the same chassis with minor changes in some component values. Its cabinet is made of wood. Taking into account the circuit differences described under "Model CR1200U" overleaf, this *Service Sheet* covers both models.

Release dates and original prices: CR1200U August 1959, £10 6*s* 8*d*,

VALVE ANALYSIS

Valve voltages given in the table below, are derived from manufacturers' information. They were measured on a 20,000Ω/V meter with the negative terminal connected to chassis in every case. The receiver was connected to a 240V supply and the mains adjustment was in the 220-250V position.

Valve Table

Valve			Anode (V)	Screen (V)	Cathode (V)
V1	UCH81	a	145	—	—
		b	215	150	3·2
V2	UBF89		160	83	—
V3	UCL82	a	100	—	—
		b	205	215	19·5
V4	UY85		—	—	255·0

CIRCUIT DESCRIPTION

On M.W., **L1** and **L2** operate in parallel and are tuned by **C3** and **C4**. On L.W., **L1** is switched out of circuit and **R1** and **C1** are added in parallel with **L2**. Both coils are wound on a ferrite rod and comprise the internal aerial. The signal from the internal aerial is applied directly to the control grid of the mixer section of **V1** which operates as frequency changer.

The local heterodyne signal is generated by the triode section **V1a** which is coupled to the mixer via the injector grid. **V1a** is tuned by a parallel fed tuned anode oscillator circuit formed by **L6, R6, C11, C12, C13** and **C14**. **L6, C11, C13** and **C14** are common to both wavebands with **C12** shunted across **L6** on L.W. **R6** damps the circuit on M.W. to limit oscillator amplitude. Inductive regenerative coupling is provided by **L5**. **V1** cathode current through **R3**, decoupled by **C8**, establishes automatic standing bias for **V1b**. Oscillator grid leak resistor **R4** is returned to the cathode to avoid biasing of the oscillator grid.

Mixing of the signal and oscillator volt-

(*Continued col.* 1 *overleaf*)

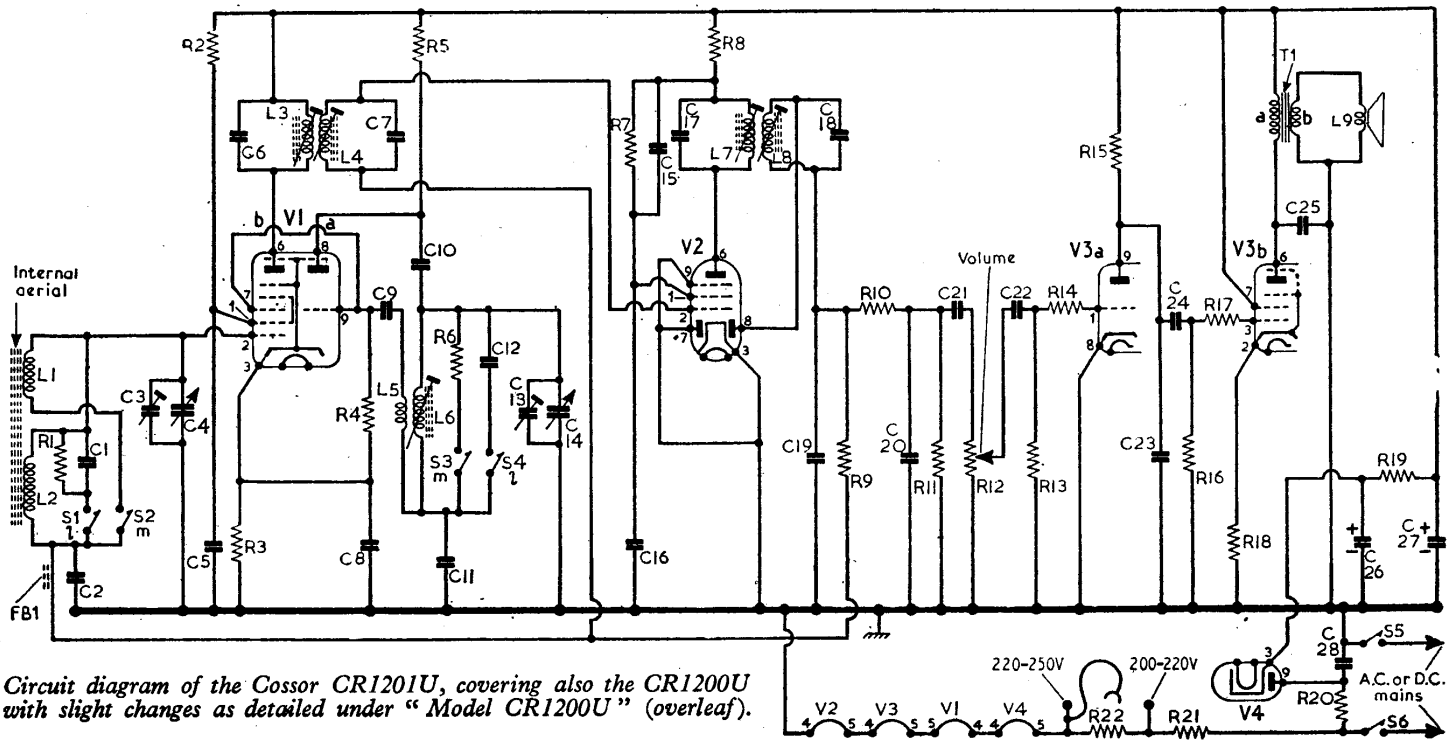
Resistors		
R1	390kΩ	A2
R2	10kΩ	B1
R3	220Ω	A2
R4	47kΩ	A1
R5	15kΩ	A1
R6	10kΩ	A1
R7	33kΩ	B1
R8	3·3kΩ	B2
R9	2·2MΩ	B1
R10	47kΩ	B1
R11	150kΩ	B1
R12	1MΩ	B2
R13	10MΩ	B1
R14	1kΩ	B1
R15	100kΩ	C2
R16	680kΩ	C2
R17	1kΩ	B2
R18	390Ω	B1
R19	600Ω	C2
R20	100Ω	C2
R21	850Ω	C2
R22	250Ω	C2

Capacitors		
C1	146pF	A2
C2	0·047μF	B2
C3	30pF	A1
C4	523pF	A1
C5	0·022μF	A1
C6	110pF	A2
C7	195pF	A2
C8	0·1μF	A1
C9	56pF	A1
C10	470pF	A1
C11	516pF	A1
C12	488pF	A1
C13	30pF	A1
C14	523pF	A1
C15	0·01μF	B1
C16	3,900pF	B1
C17	110pF	B2
C18	195pF	B2
C19	100pF	B1
C20	100pF	B1
C21	0·01μF	B1
C22	4,700pF	B2
C23	390pF	C1
C24	0·01μF	C1
C25	0·01μF	C2
C26	50μF	A2
C27	50μF	A2
C28	0·01μF	C1

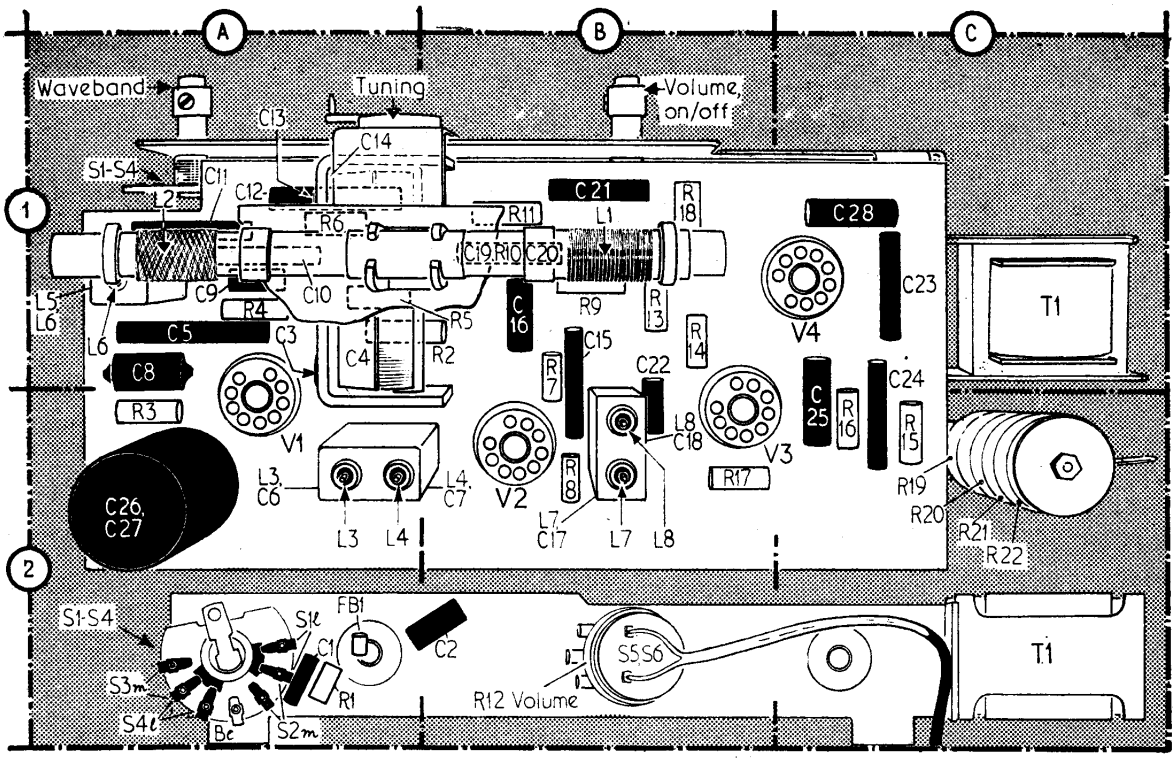
Coils*		
L1	1·0	B1
L2	4·0	A1
L3	—	A2
L4	—	A2
L5	—	A1
L6	—	A1
L7	—	B2
L8	—	B2
L9	3·0	—

Miscellaneous*		
T1	a 41·0, b —	C1
FB1	ferrite bead	A2

*Approximate D.C. resistance in ohms.



Circuit diagram of the Cossor CR1201U, covering also the CR1200U with slight changes as detailed under "Model CR1200U" (overleaf).



Plan view of the chassis and a view of the lower section of the control panel as seen from the rear of the chassis. The waveband switch unit is shewn in the L.W. position. The ferrite rod screening shield has been drawn partly cut away to illustrate the components located beneath

Circuit Description—*continued*

ages in **V1b** produces an intermediate frequency at 470kc/s which is developed across tuned transformer primary winding **L3** and is coupled via the secondary winding **L4** to the control grid of I.F. amplifier **V2.** The signal is amplified at intermediate frequency by the pentode section of **V2** and is applied via tuned transformer **L7, L8** to the detector diode in **V2.** The rectified audio output passes through the R.F. filter **R10, C20** and appears across the diode load resistor **R11,** and via **C21** across the volume control **R12.**

From the slider of **R12** the audio passes via coupling capacitor **C22** and stopper resistor **R14** to the grid of the audio amplifier **V3a.** Following amplification at audio frequency, the signal is developed across load resistor **R15** and applied via **C24** to the control grid of output pentode section **V3b.** The loudspeaker speech coil **L9** receives the output from **V3b** via step-down transformer **T1** connected in its anode circuit. The negative D.C. potential which is present at the junction of **R9, R10** due to diode carrier current through **R10** and **R11** is filtered by **R9** and **C2** and fed back to **V1** and **V2** as A.G.C. bias. H.T. current is supplied by half-wave rectifier **V4** and is smoothed by **C26, R19** and **C27.**

Valve heaters are wired in a single chain in series with dropping resistors **R21** and **R22** directly across the mains supply. **R22** is short-circuited on the lower voltage range.

CIRCUIT ALIGNMENT

Where a mains isolating transformer is not used to connect the receiver to the mains, do not connect test equipment before ensuring that the chassis is not "live."

Equipment Required.—An A.M. signal generator; an output indicator (a high impedance A.C. voltmeter connected across the speech coil would be suitable); a 0.05μF capacitor and a screwdriver-type trimming tool.

1.—Switch to M.W., turn the tuning gang to minimum capacitance and the volume control to maximum. Connect the signal generator between **V1** control grid (pin 2) and chassis, with the 0.05μF capacitor in the lead to **V1** control grid.

2.—Feed in a 470kc/s signal and adjust **L8, L7** (location reference B2), **L4** and **L3** (A2) for maximum output.

3.—Set the tuning gang to maximum capacitance. Feed in a 510kc/s signal and adjust **L6** (A1) for maximum output.

4.—Set the tuning gang to minimum capacitance.

Note: The electrical minimum of the tuning gang is not the same as the mechanical minimum. To find the electrical minimum position of the gang first set it to the mechanical minimum (fully anti-clockwise). Feed in a 1,630kc/s signal and adjust **C13** (A1) for maximum. Turn the tuning gang through approximately 10 deg. when it will be found that there is a second position at which 1,630kc/s will tune in. The true electrical minimum is in the centre of these two positions and is found by gradually increasing the signal generator frequency and rocking the gang to keep in step until the two points meet. Leave the tuning gang in this position, feed in 1,630kc/s signal and readjust **C13** for maximum output.

5.—Feed in 580kc/s signal and rotate the tuning gang for maximum output. Disconnect the signal generator from **V1** control grid and loosely couple it to the R.F. circuits by clipping its output lead on the sleeving of the connecting wire between **L1** and **L2** on the ferrite rod. Adjust **L1** for maximum output.

6.—Re-connect the signal generator to **V1** (pin 2). Feed in a 1,500kc/s signal and rotate the tuning gang for maximum output. Disconnect the signal generator from **V1** and loosely couple it to the R.F. circuits. Adjust **C3** (A1) for maximum output.

7.—Repeat operations 5 and 6 until no further improvement can be obtained.

8.—Switch to L.W. Connect the signal generator to **V1** (pin 2), feed in a 190kc/s signal and rotate the tuning gang for maximum output. Loosely couple the signal generator to the R.F. circuits and adjust **L2** (A1) for maximum output.

9.—Switch to M.W. and re-check the adjustments in operations 5 and 6.

GENERAL NOTES

Dismantling (CR1200U).—Remove the volume and waveband control knobs by removing the insulation plugs and slackening the grub screws.

Pull off the tuning control knob.

Remove the scale escutcheon and cover by taking out the three securing screws.

Pull off the pointer.

Take out the three screws securing the chassis front plate to the cabinet and withdraw the chassis.

Dismantling (CR1201U).—Pull off the volume and waveband control knobs.

Note: do not attempt to remove the tuning knob which remains on the cabinet with the scale when the chassis is withdrawn.

Remove three screws securing the chassis front plate to the cabinet and two rear mounting screws and withdraw chassis.

Mains Voltage Adjustment.—There are two mains voltage tappings on the dropping resistor **R21, R22** shown in location reference C2. The first tag (farthest from the chassis) is the 220-250V position and the second tag is the 200-220V position. The flying lead should be attached to the appropriate one of the two positions.

Switches.—S1-S4 are the waveband switches which comprise a two-pole double-throw rotary unit shown in location reference A2. This is the position in which the unit appears when viewed from the rear of an upright chassis. Suffix letter *m* or *l* included with the switch number indicates the switch closes on M.W. or L.W. **S5** and **S6** are mains on/off switches, ganged with the volume control.

MODEL CR1200U

The CR1200U employs the same type chassis as the CR1201U with one or two minor changes as follows: **C2** is 0.022μF not 0.047μF, **R8** is 4.7kΩ not 3.3kΩ and **C8** is located on the front panel beneath the printed panel and not in the position shown in our plan view of the chassis.

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