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"TRADER" SERVICE SHEET

1024

COSSOR

"MELODY MAKER"

Models 501U & 494U



AN addition to the "Melody Maker" range
of models, the Cossor 501U is a 4-valve
(plus rectifier) 3-band superhet designed to
operate from A.C. or D.C. mains of 190-250 V.
40-100 c/s in the case of A.C. The waveband
ranges are 15.8-51.3 m, 187-575 m and 940-2,050 m.
For use in areas of good signal strength, the
frame aerial is wound on the back cover.

The 494U was a forerunner of the 501U, and
used a chassis very much like it, but there were
small differences which are explained overleaf.
The appearance of both models is identical.

Release dates and original prices: 501U, Novem-
ber 1950, £13 8s 2d; 494U, March 1950, £13 8s 2d.
Purchase tax extra.

CIRCUIT DESCRIPTION

Aerial input is inductively coupled on 8.W.
by L1 and capacitatively "bottom" coupled on
M.W. and L.W. by C2 to single tuned circuits
L2, C31 (S.W.), L3, C31 (M.W.) and L4, C31
(L.W.) which precede triode hexode valve (V1,
Cossor OM10) operating as frequency changer
with internal coupling.

Triode oscillator grid coils are tuned by C32.
Parallel trimming by C33 (S.W.), C34 (M.W.)
and C11, C34 (L.W.); series tracking by C10
(M.W.) and C10, C12, C35 (L.W.). Inductive
reaction coupling from anode by L8 (S.W.) and
L9 (M.W. and L.W.).

Second valve (V2, Cossor OM6) is a variable
mu R.F. pentode operating as intermediate fre-
quency amplifier with tuned transformer coupling.
C6, L10, L11, C7 and C15, L12, L13, C16.

Intermediate frequency 470 kc/s.
Diode signal detector is part of double diode
triode valve (V3, Cossor OM4) in which the diode
sections are connected in parallel. Audio fre-
quency component in rectified output is developed
across manual volume control R9, which operates
as diode load, and passed via C19 to grid of
triode section, which operates as A.F. amplifier.

D.C. potential developed across R9 is fed back
as bias, via decoupling circuit R8 and C9, to
F.C. and I.F. stages, giving automatic gain
control.

Resistance-capacitance coupling by R11, C20
and R12 between V3 triode and control grid of
(Continued in col. 3)

COMPONENTS AND VALUES

CAPACITORS	Values	Loca- tions
C1	Aerial isolator	0.01µF G4
C2	Aerial coupling	0.005µF A2
C3	Chassis isolator	0.01µF G4
C4	L.W. aerial trim.	75pF F3
C5	V1 C.G.	500pF A1
C6	1st. I.F. trans.	100pF A2
C7	V1 tuning	100pF A2
C8	V1 osc. C.G.	100pF F3
C9	A.G.C. decoupling	0.1µF G4
C10	M.W. tracker	440pF F3
C11	L.W. osc. trimmer	133pF F3
C12	L.W. tracker	500pF F3
C13	Osc. anode coup.	100pF G3
C14	V1, V2 S.G. decoupl.	0.1µF F3
C15	2nd. I.F. trans.	100pF B2
C16	tuning	100pF B2
C17	I.F. by-passes	100pF F4
C18	A.F. coupling	0.005µF F4
C19	Part tone control	0.01µF B4
C20	I.F. by-pass	100pF B4
C21	H.T. smoothing	32µF B2
C22	Tone corrector	16µF B2
C23	V4 cath. by-pass	0.005µF B4
C24	V4 cath. by-pass	25µF B4
C25	Chassis isolator	0.01µF B4
C26	R.F. mains filter	0.01µF B4
C27	S.W. aerial trim.	0.01µF D3
C28	M.W. aerial trim.	G3
C29	Aerial tuning	G3
C30	Aerial tuning	A1
C31	Oscillator tuning	A2
C32	S.W. osc. trimmer	G3
C33	M.W. osc. trimmer	G3
C34	L.W. tracker	F3
C35	L.W. tracker	F3

Circuit Description—continued.

pentode output valve (V4, Cossor 332 Pen). Vari-
able tone control in V4 grid circuit by R13, C21
and C22. Fixed tone correction by C25 and by
the negative feedback between winding c of T1
and V3 cathode.

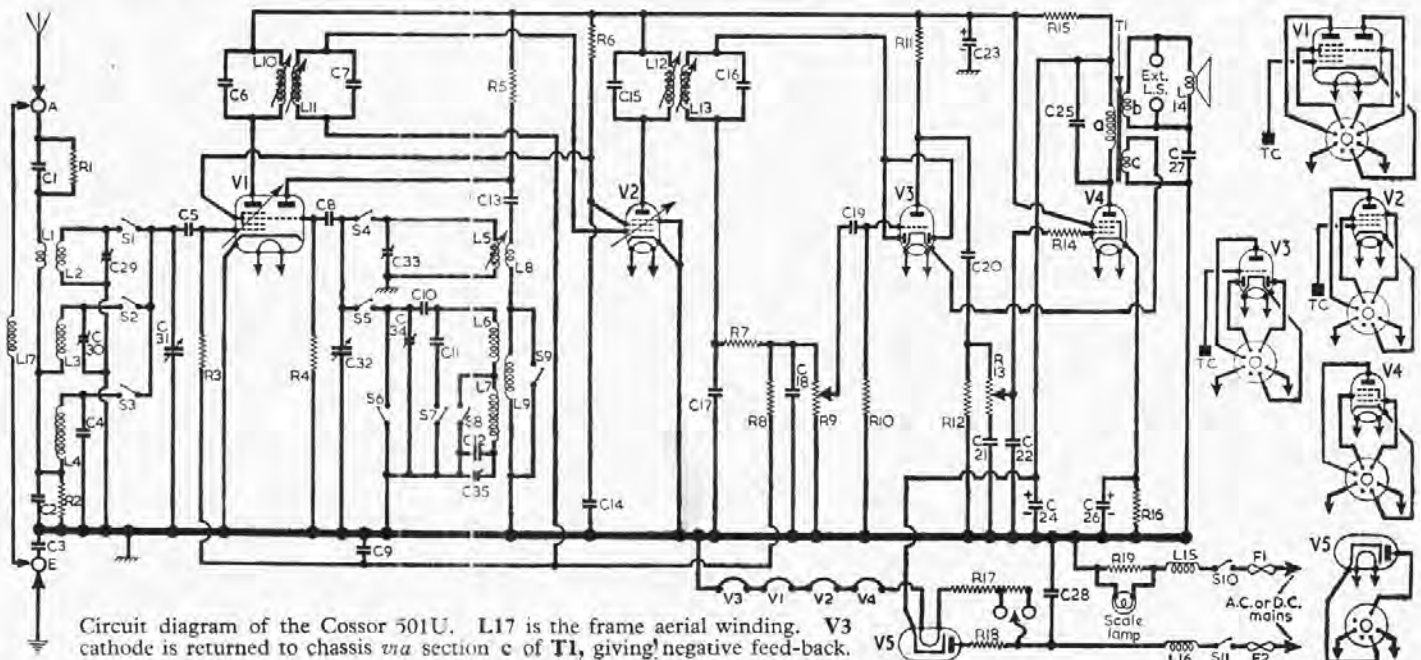
H.T. current is supplied by I.H.C. half-wave
rectifying valve (V5, Cossor OM1). Smoothing
by R15 and electrolytic capacitors C23 and C24.
R18 protects V5 and R19 protects the scale lamp
from current surges. Valve heaters, together
with ballast resistor R17, scale lamp and R.F.
chokes L15, L16 are connected in series across
the mains input. R.F. filtering by C28 together
with L15 and L16.

RESISTORS

RESISTORS	Values	Loca- tions
R1	Static by-pass	470kΩ G4
R2	Aerial shunt	1kΩ A2
R3	V1 C.G.	330kΩ A1
R4	V1 osc. C.G.	18kΩ G4
R5	Osc. anode feed	18kΩ G4
R6	V1, V2 S.G. feed	18kΩ G4
R7	L.F. stopper	47kΩ F4
R8	A.G.C. decoupling	2.2MΩ F4
R9	Volume control	500kΩ D3
R10	V3 C.G.	4.7MΩ F4
R11	V3 anode load	100kΩ F3
R12	V4 C.G.	270kΩ E3
R13	Tone control	500kΩ E3
R14	V4 C.G. stopper	47kΩ E4
R15	H.T. smoothing	6.8kΩ F3
R16	V4 G.B.	180Ω E4
R17	Heater ballast	*722Ω C2
R18	Surge limiter	47Ω D3
R19	Scale lamp shunt	50Ω D4

* Electrolytic. † Variable. ‡ Pre-set.

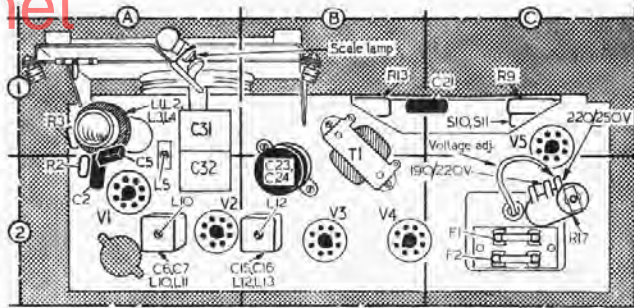
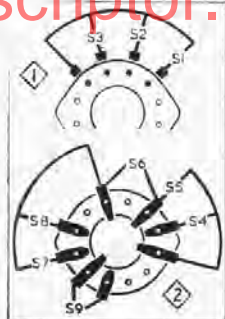
* Tapped at 600Ω + 122Ω from V5 heater.



Circuit diagram of the Cossor 501U. L17 is the frame aerial winding. V3
cathode is returned to chassis via section c of T1, giving negative feed-back.

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OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	S.W. aerial coup.	—	A1
L2		—	A1
L3	Aerial tuning coils	3-5	A1
L4		13-5	A1
L5	Oscillator tuning coils	5-5	F3
L7		7-5	F3
L8	Oscillator reaction coils	29-5	G3
L9		2-8	F3
L10	1st I.F. trans.	9-0	A2
L11	2nd I.F. trans.	9-0	A2
L12	1st I.F. trans.	9-0	B2
L13	2nd I.F. trans.	9-0	B2
L14	Speech coil	2-6	—
L15	Mains R.F.	7-0	D4
L16	Filter chokes	7-0	D4
L17	Frame aerial	—	—
T1	O.P. trans.	310-0	H1
S1-S9	Waveband switches	—	F3
S10		—	—
S11	Mains sw.	—	D4
F1, F2	500mA fuses	—	C2



Left: Waveband switch units. Right: Plan view of the chassis.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturers' information, whose receiver was tuned to 500 m and was operating under "no signal" conditions from 200 V A.C. mains. Voltages were measured with a 1,000 ohms-per-volt meter, chassis being the negative connection.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 OM10	140	1-6	50	3-25	—
V2 OM6	60	1-8	50	1-15	—
	140	3-4			
V3 OM4	20	—	—	—	—
V4 332Pen	220	30-0	140	2-3	0
V5 OM1	210†	—	—	—	280

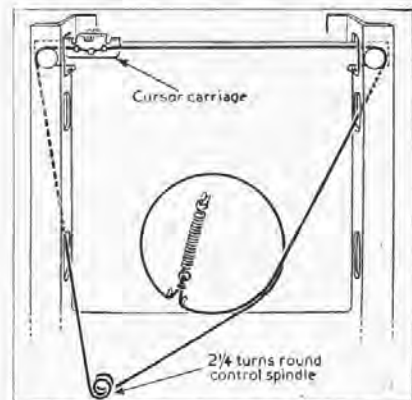
*Very low reading. †A.C. voltage.

DISMANTLING THE SET

Removing Chassis.—Remove five self-tapping screws (with washers), withdraw frame aerial plugs, and remove back and base cover; Remove the four control knobs (recessed screws), withdraw speaker plugs, remove chassis guard strip insulating rear member (two self-tapping screws), remove two screws thus revealed holding ends of chassis to moulded ribs on cabinet, and remove one further screw from top of scale assembly.
When replacing, note that two smaller knobs go on the centre spindles (that with a white spot on the right), and see that the heat deflector is in position over the ballast resistor. It is a shaped piece of cardboard which slides along a moulded rib on the roof of the cabinet.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W., turn gang to minimum and volume and tone controls fully clockwise. Connect output of signal generator, via an 0.1 μF capacitor, to control grid (top cap) of V1 and chassis. Feed in a 470 kc/s (638.3 m) signal and adjust the cores of L13 (location reference F4), L12 (B2), L11 (G4) and L10 (A2) for maximum output. Repeat these adjustments.
R.F. and Oscillator Stages.—Turn gang to minimum and check that the cursor coincides



Tuning drive, viewed from rear.

with the line marked "MIN" at top left of tuning scale. This can be adjusted if necessary by slackening the two grub screws securing the drive drum to the gang spindle and rotating the drum. Transfer signal generator leads, via a dummy aerial, to A and E sockets.
M.W.—Switch set to M.W., tune to vertical line marked "M" at top of scale, feed in a 93.6 m (1,550 kc/s) signal and adjust C34 (G3) and C30 (G3) for maximum output.

L.W.—Switch set to L.W., tune to vertical line "L" at top of scale, feed in a 1,875 m (160 kc/s) signal and adjust C35 (F3) for maximum output.
S.W.—Switch set to S.W., tune to vertical line "S" at top left of scale, feed in a 16.67 m (18 Mc/s) signal and adjust C33 (G3) and C29 (G3) for maximum output. C33 being set to the lower capacitance peak of the two possible maximum output positions. Tune set to vertical line "S" at top right of scale, inject a 50 m (6 Mc/s) signal and adjust the core of L5 (A1) for maximum output. Repeat the above adjustments to C33 and L5 until calibration is correct at both ends of band. Tune set to vertical line "S" at top left of scale and re-adjust C29 while "rocking" the gang to obtain optimum results.

GENERAL NOTES

Switches.—S1-S9 are the waveband switches, ganged in two rotary units beneath the chassis. These are indicated in our underside view of the chassis by the numbers 1 and 2 in diamond surrounds, and shown in detail in the diagrams inset beside the plan view drawing, where they are drawn as seen when viewed from the rear of an inverted chassis. The table below gives the switch positions for the three control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and G, closed.

Switch	S.W.	M.W.	L.W.
S1	○	—	—
S2	—	○	—
S3	—	—	○
S4	○	—	—
S5	—	○	—
S6	—	—	○
S7	—	—	○
S8	—	○	—
S9	○	—	—

S10, S11 are the Q.M.B. mains switches, ganged with the volume control R9.

External Speaker.—Two pairs of sockets are provided at the rear of the chassis for the connection of the internal speaker and a low impedance (about 3 Ω) external speaker. A third pair of sockets is unused in this A.C./D.C. receiver, except as bearers for internal connections.

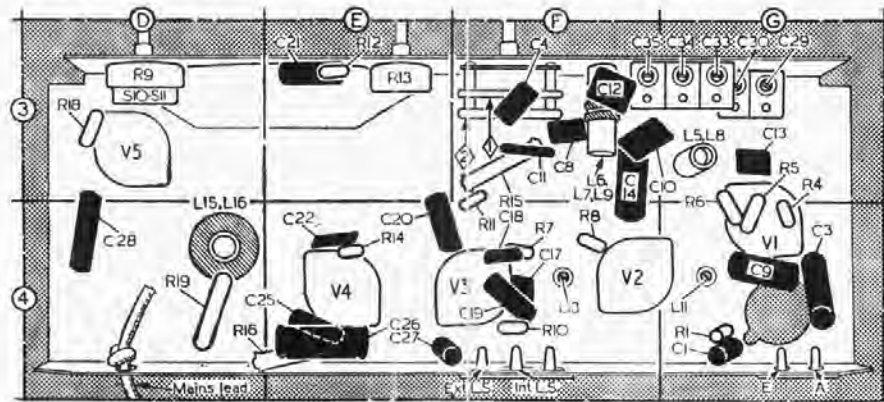
Scale Lamp.—This has a large clear spherical bulb and an M.E.S. base, and is rated at 8 V, 0.2 A. Our specimen was marked 8 V, 1.6 W.

Drive Cord Replacement.—Forty inches of high grade flax fishing line, plaited and waxed, is required for a new drive cord. It should be run as shown in the sketch (col. 2), where it is drawn as seen from the rear when the gang is at maximum capacitance.

Model 494U

The circuit of the 494U is basically similar to that of the 501U, but there are two main differences. First, the oscillator H.T. feed circuit is different; and second, the tone control is different. The difference in the oscillator circuit is that the reaction coils are series fed. The bottom of L9 goes to the screen grids of V1 and V2 instead of to chassis, and R5, C13 are omitted. C14 was 0.01 μF, but otherwise component values were unchanged.

The tone control circuit R13, C21 was connected between V3 anode and cathode, and C21 was 0.01 μF. R14 went to the top of R12, which was 470 kΩ. C22 was connected in parallel with R12. R11 was 680 kΩ.



Under-chassis view. The waveband switch units are indicated by numbers 1 and 2 in diamonds.