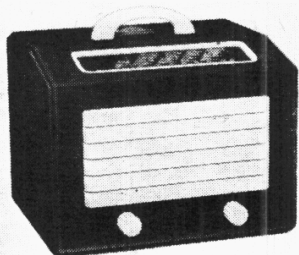


"TRADER" SERVICE SHEET

MARCONIPHONE T11DA

834

"COMPANION" A.C./D.C. SUPERHET



A SINGLE waveband of 180-575 m is covered in the Marconiphone T11DA "Companion" receiver, a 4-valve (plus rectifier) superhet of compact size designed to operate from A.C. or D.C. mains of 200-250 V, 40-100 c/s in the case of A.C.

The RG11A employs a slightly modified T11DA chassis, but it is suitable for operation on A.C. mains only, of 200-250 V, 50 c/s. The principal differences are described overleaf.

Release dates and original prices: T11DA, April, 1946, £9 9s plus £2 1s p.t., increased October, 1946, to £10 10s plus £2 5s 6d p.t., and February, 1947, to £12 12s plus £2 14s 8d p.t. RG11A, October, 1946, £24 3s plus £5 4s 8d p.t., increased February, 1947, to £29 8s plus £6 7s 5d p.t.

CIRCUIT DESCRIPTION

Tuned frame aerial input L1, C25 precedes triode-hexode valve (V1, Marconi metallized X76M) operating as frequency changer with internal coupling. Provision for connection of an external aerial via the potential divider network C1, C2, R1.

Triode oscillator grid coil L2 is tuned by C26. Parallel trimming by C27 and series tracking by C9. Reaction coupling from anode by coil L3 and the common impedance of C9.

Second valve (V2, Marconi W76) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-primary, tuned-secondary transformer couplings.

Intermediate frequency 465 kc/s.

Diode second detector is part of double diode triode valve (V3, Marconi DH76), one diode of which is unused and strapped to cathode. Audio frequency component in rectified output is developed across the manual volume control R10, which is also the diode load resistor, and passed via A.F. coupling capacitor C15 and C.G. resistor R11 to grid of triode section, which operates as A.F. amplifier. I.F. filtering by C13, R9 and C14 in diode circuit, and C16 in triode anode circuit.

D.C. potential developed across R10 is tapped off and fed back, via a decoupling circuit, as G.B. to F.C. and I.F. valves, giving automatic volume control.

Resistance-capacitance coupling by R12, C17 and R13, via grid stopper R14 between V3 triode and beam tetrode output valve (V4, Marconi K771). Fixed tone correction in tetrode anode circuit by C18.

When the receiver is operated from A.C. mains, H.T. current is supplied by half-wave I.H.C. rectifying valve (V5, Marconi U76) which, with D.C. mains, behaves as a low resistance. Smoothing by speaker field L10 and electrolytic capacitors C22, C23.

COMPONENTS AND VALUES

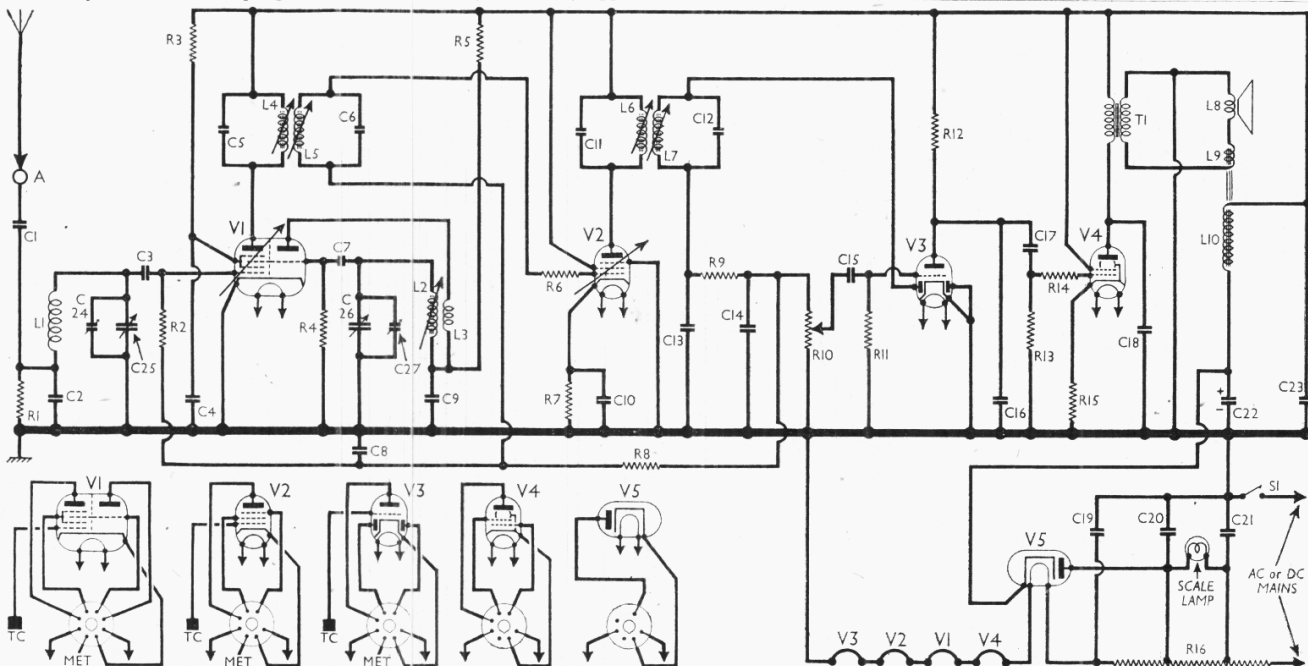
RESISTORS		Values (ohms)	Location
R1	Aerial coupling ...	22,000	B4
R2	V1 hex. C.G. ...	470,000	D4
R3	V1 S.G. feed ...	10,000	L7
R4	V1 osc. C.G. ...	100,000	L8
R5	Osc. H.T. feed ...	10,000	M6
R6	Grid stopper ...	10,000	C3
R7	V2 fixed G.B. ...	100	J8
R8	A.V.C. decoupling ...	1,500,000	K7
R9	I.F. stopper ...	47,000	K7
R10	Volume control ...	500,000	H5
R11	V3 triode C.G. ...	10,000,000	I7
R12	V3 anode load ...	100,000	H7
R13	V4 C.G. ...	470,000	H8
R14	Grid stopper ...	10,000	H8
R15	V4 G.B. ...	120	H8
R16	Heater ballast† ...	445	G6

† Line cord, tapped 190Ω + 35Ω from V5 heater.

CAPACITORS		Values (μF)	Location
C1	Aerial series ...	0.0035	C4
C2	Aerial coupling ...	0.0035	B4
C3	V1 hex. C.G. ...	0.0001	A4
C4	V1 S.G. decoup. ...	0.1	L8
C5	1st I.F. trans. {	0.00008	B3
C6	tuning ... {	0.00008	B3
C7	V1 osc. C.G. ...	0.000075	M7
C8	A.V.C. decoup. ...	0.047	K7
C9	M.W. tracker ...	0.00035	L6
C10	Cath. by-pass ...	0.047	I7
C11	2nd I.F. trans. {	0.00008	C2
C12	tuning ... {	0.00008	C2
C13	I.F. by-pass ...	0.0001	K7
C14	I.F. by-pass ...	0.0001	J8
C15	A.F. coupling ...	0.0023	I6
C16	I.F. by-pass ...	0.00023	I7
C17	A.F. coupling ...	0.05	H8
C18	Tone corrector ...	0.02	G7
C19	Mains R.F. by-pass {	0.0023	H7
C20	capacitors ... {	0.0023	H6
C21	capacitors ... {	0.0023	H7
C22*	H.T. smoothing ...	32.0	K6
C23*	H.T. smoothing ...	24.0	K6
C24†	Aerial M.W. trim. ...	—	B2
C25†	Aerial tuning ...	—	B2
C26†	Osc. tuning ...	—	B1
C27†	Osc. M.W. trim. ...	—	B1

* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS		Approx. Values (ohms)	Location
L1	Frame aerial ...	1.25	A4
L2	Osc. tuning coil ...	3.5	M7
L3	Osc. reaction ...	3.0	M7
L4	1st I.F. trans. { Pri.	6.5	B3
L5	Sec. ... {	6.5	B3
L6	2nd I.F. trans. { Pri.	6.5	C2
L7	Sec. ... {	6.5	C2
L8	Speech coil ...	4.5	D1
L9	Hum neut. coil ...	0.4	D1
L10	Field coil ...	450.0	D1
T1	Speaker { Pri.	170.0	D1
	trans. { Sec.	0.5	D1
S1	Mains switch, ganged R10 ...	—	H6



Circuit diagram of the Marconiphone T11DA superhet. The differences in the RG11A are explained overleaf.

VALVE ANALYSIS

Valve voltages and currents given below are those quoted by the manufacturers. With the receiver operating on A.C. mains of 220v, they give the total H.T. current as 71 mA. Voltages were measured with a meter having an internal resistance of 500 ohms per volt.

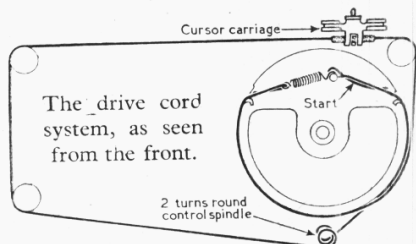
Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X76M	115	2.0	75	3.9
	Oscillator 85			
	2.25			
V2 W76	115	11.0	115	3.6
V3 DH76	65	0.5	—	—
V4 KT71	105	41.0	115	7.6
V5 U76†	—	—	—	—

† Cathode to chassis, 135 v, D.C.

GENERAL NOTES

Scale Lamp.—This is a "Vitality" E385 lamp, with a large clear spherical bulb and an M.E.S. base, rated at 5V, 0.15A. The maker's part number for it is 35420 C.

Capacitors, C22, C23.—These are two electrolytics in a single tubular metal container with a common negative tag at one end. At the other end, the red tag is the positive of C22 (32µF) and the yellow one is that of C23 (24µF). The unit is rated at 150V D.C. working, 175V peak.

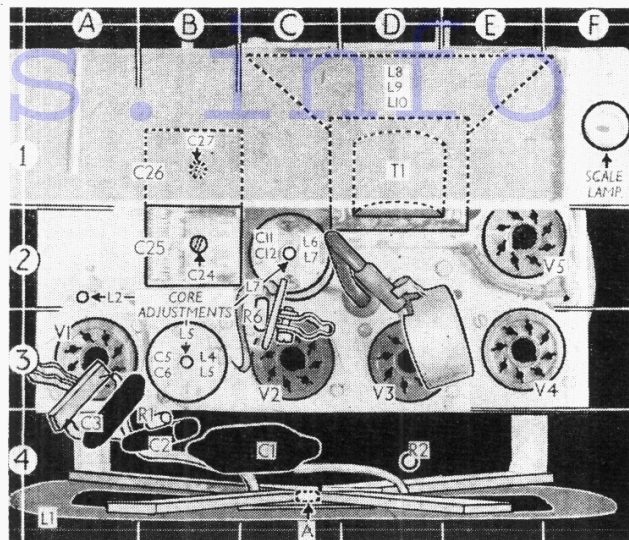


Chassis Divergencies.—In early samples, R1 and C10 were not fitted, but the makers recommend that they should be added when V2 is replaced.

In some cases the D.C. resistance of some inductive windings may be found to differ from that given in our tables, as the wire used varies according to availability. The I.F. transformer windings may be 4.0Ω each instead of 6.5Ω, and T1 primary may be 280Ω instead of 170Ω. The frame L1 may be 1.25Ω (solid copper) or 3.0Ω (Litzendraht).

Drive Cord Replacement.—The sketch above shows the drive cord system as seen from the front of the chassis when the gang is at maxi-

Plan view of the chassis. Letter and figure references here, and in the illustration below, identify the areas into which they are divided by the mesh lines whose ends are seen at the edges. These location references are quoted in the component tables.



imum, and is practically self-explanatory. The correct high grade flax fishing line only should be used, and this may be obtained from E.M.I. Sales and Service, Ltd., Sheraton Works, Hayes, Middlesex. The length required is a yard.

In the radiogram, there are only two small pulleys instead of three, the lower left-hand one being omitted, but otherwise the sketch applies also to that model.

DISMANTLING THE SET

Removing Chassis.—Remove the two control knobs (pull off); from the underside of the cabinet remove the four cheese-head screws (with lock washers) securing the plastic chassis bolt covers; remove the four 2BA cheese-head screws (with metal and lock-washers) which are now exposed, and withdraw the chassis and speaker as a complete unit.

RADIOGRAM MODIFICATIONS

Although in the main the chassis employed in the RG11A table radiogram is like that in the TIIDA there are several quite marked differences, apart from the addition of pick-up switching.

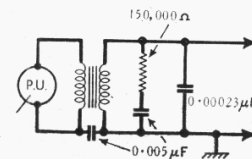
The change-over switching is accomplished by a rotary unit mounted on the motor board. It carries a simple single-pole two-way switch connecting the top of the volume control R10 either to the pick-up circuit or to R9, C14; it also interposes a switch in the H.T. positive line to cut off the H.T. supply to V1 and V2 on

gram. The pick-up circuit and its component values are shown in the small diagram below.

A tone control device consisting of a 50,000Ω variable resistor and a 0.05µF capacitor, mounted on the motor board, are connected in series across the primary of the output transformer T1 which is itself mounted on the base of the cabinet. The speaker, which is a 6in model with a permanent magnet and a speech coil resistance of 2.7Ω (impedance 4Ω at 1,900 c/s), is mounted on the front of the cabinet. The field coil L10 is replaced by an iron-cored choke of the same resistance, 450Ω, mounted on the chassis in the space vacated by the speaker.

The line-cord is replaced by a wire-wound tubular unit of the same resistance values,

Diagram of the pick-up input circuit in the RG11A.



mounted on the base of the cabinet. A connecting strip containing eleven tags provides the junction between the chassis and the various components mounted on the cabinet and motor-board.

CIRCUIT ALIGNMENT

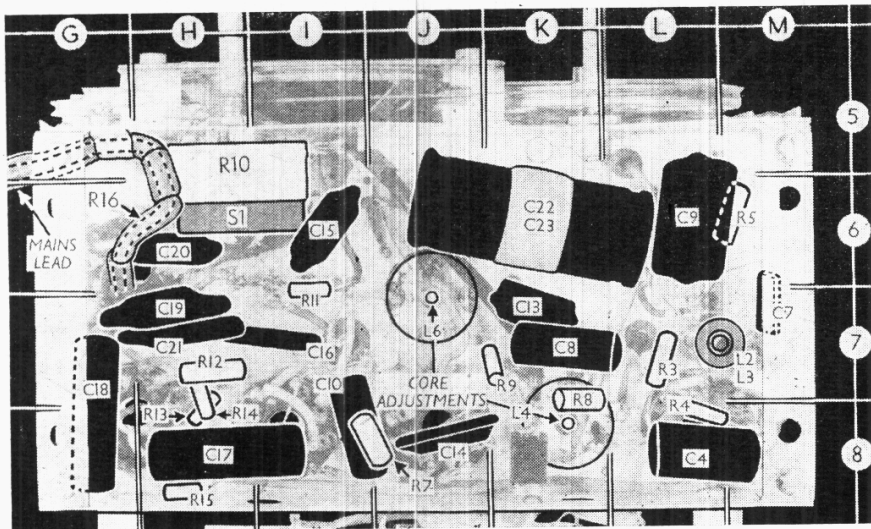
I.F. Stages.—Connect signal generator via an 0.005 µF capacitor in each lead, to control grid (top cap) of V1 and chassis, leaving existing connector in position. Turn gang to minimum capacitance and volume control to maximum. Feed in a 465 kc/s (645.16 m) signal, and adjust the cores of L7, L6, L5 and L4, in that order, for maximum output. Repeat these adjustments.

R.F. and Oscillator Stages.—Since the calibrated glass scale is mounted on the carrying case, and the alignment adjustments are carried out with the chassis on the bench, a substitute scale is provided along the rear edge of the scale backing plate. This is divided into inches and sixteenths of an inch, and linear measurements on this scale correspond to frequencies given in the alignment instructions, which are read against the tip of the pointer.

With the gang at maximum capacitance, the pointer should indicate 5½in from the left-hand end of the scale. If any adjustment is necessary, slacken the drive drum fixing screws and rotate slightly on the gang spindle.

Connect signal generator leads, via a suitable dummy aerial, to A socket, and via an 0.005 µF series capacitor, to chassis.

M.W.—Adjust the core of L2 to the midway position of its total travel and tune to 1½in mark on scale. Feed in a 210 m (1,429 kc/s) signal and adjust C27, then C24, for maximum output. Feed in a 510 m (588.1 kc/s) signal, tune it in and adjust L2 core for maximum output, whilst rocking the gang. Finally, repeat these adjustments.



Under-chassis view. R16 is a tapped line cord, incorporated in the mains lead.

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