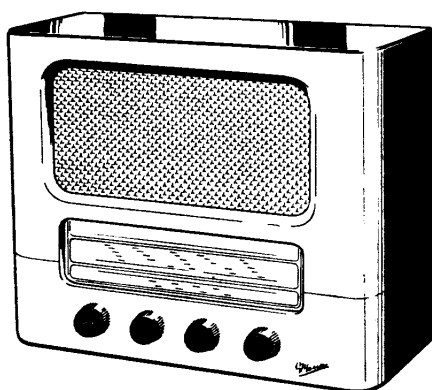


MARCONI PHONE

SERVICE MANUAL

G. Marconi

THE GREATEST
NAME IN RADIO



MODEL
T29A
FOR
A.C. MAINS

5 VALVE TABLE RECEIVER WITH THREE PRE-SELECTED STATIONS

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MODEL T29A

SPECIFICATION

Physical.

Height	15 inches	} Overall.
Width	18 inches	
Depth	..	..	..	9 inches
Weight	..	..	..	22 lb.

Pre-Selected Stations.

"1"	..	..	..	1,250-2,000 metres.
"2"	..	..	..	330-560 metres.
"3"	..	..	..	194-350 metres.

Mains Supply and Consumption.

195-255 volts, 50-100 cycles, A.C. only.
Consumption—50 watts.

Intermediate Frequency.

470 kc/s.

Valves.

V1	X148	Frequency Changer.
V2	W148	I.F. Amplifier.
	or W149	
V3	DH149	Detector, A.G.C. Rectifier and A.F. Amplifier.
V4	N148	Output.
V5	U149	H.T. Rectifier.

Loudspeaker.

8-inch diameter permanent magnet, moving coil type. The speech coil has a D.C. resistance of 2.5 ohms and impedance of 3.5 ohms at 1,000 cycles.

Scale Lamps.

Two—6.5 volts, 0.3 amp.

External Loudspeaker.

An additional loudspeaker may be connected to the "EXT. L.S." sockets provided at the rear of the instrument, the loudspeaker used should have an impedance of approximately 5 ohms.

Rated Output.

4 watts maximum.

Connection of Pick-Up.

A high resistance pick-up or record player may be connected to the sockets provided. Radio is automatically silenced when a plug is inserted in the left hand "earthy" socket. The Volume and Tone Controls are operative on gramophone.

Wave Ranges.

"L"	..	..	..	900-2,000 metres.
"M"	..	..	..	187-557 metres.
"S"	..	..	..	16.5-52 metres.

INSTALLING

The Aerial and Earth.

A sheet of foil positioned inside the cabinet acts as an internal plate aerial on the medium and long wavebands, and is intended principally for the reception of local stations.

To receive a short wave station or when in difficult reception circumstances, i.e., in areas of strong electrical interference or in a steel framed or heavily screened building, and whenever it is desired to obtain maximum sensitivity from the receiver, an external aerial must be fitted.

It is essential that an efficient earth is provided. Never

use a telephone cable, a hot water pipe or a gas pipe as an earth.

The aerial and earth leads should be fitted with suitable plugs.

Mains Supply.

This instrument may be adjusted to operate on A.C. mains supplies of 195 to 255 volts, 50-100 cycles A.C. only. Before connecting this instrument to the mains supply insert the voltage adjustment plug into the socket marked with the voltage range including that of the supply.

IMPORTANT.—The mains supply to which the instrument is connected must be fused for not more than 2 amps. If the mains point is normally fused at a higher rating than this, a 2 amp. fuse plug may satisfactorily be employed.

Final Connections.

Insert the aerial and earth plugs into their appropriate sockets. Connect a suitable plug to the mains lead and insert it in the supply socket.

Pre-Selected Stations.

This receiver incorporates simplified tuning of three stations in addition to the normal manual tuning.

When the receiver leaves the factory it is adjusted to receive the following pre-selected stations :—

- “1” Light Programme 1,500 metres (200 kc/s).
- “2” London Regional 330 metres (909 kc/s).
- “3” Light Programme 247 metres (1,215 kc/s).

The procedure for changing a pre-selected station is given on page 7.

Valves.

When removing or refitting a valve always use a vertical movement and on no account use force. As these valves have glass bases any excessive sideways movement or rough handling may fracture the glass surrounding the pins and the valve will fail.

DISMANTLING

The underside of the chassis is accessible once the service hatch beneath the cabinet is removed (four screws).

Removal of Chassis.

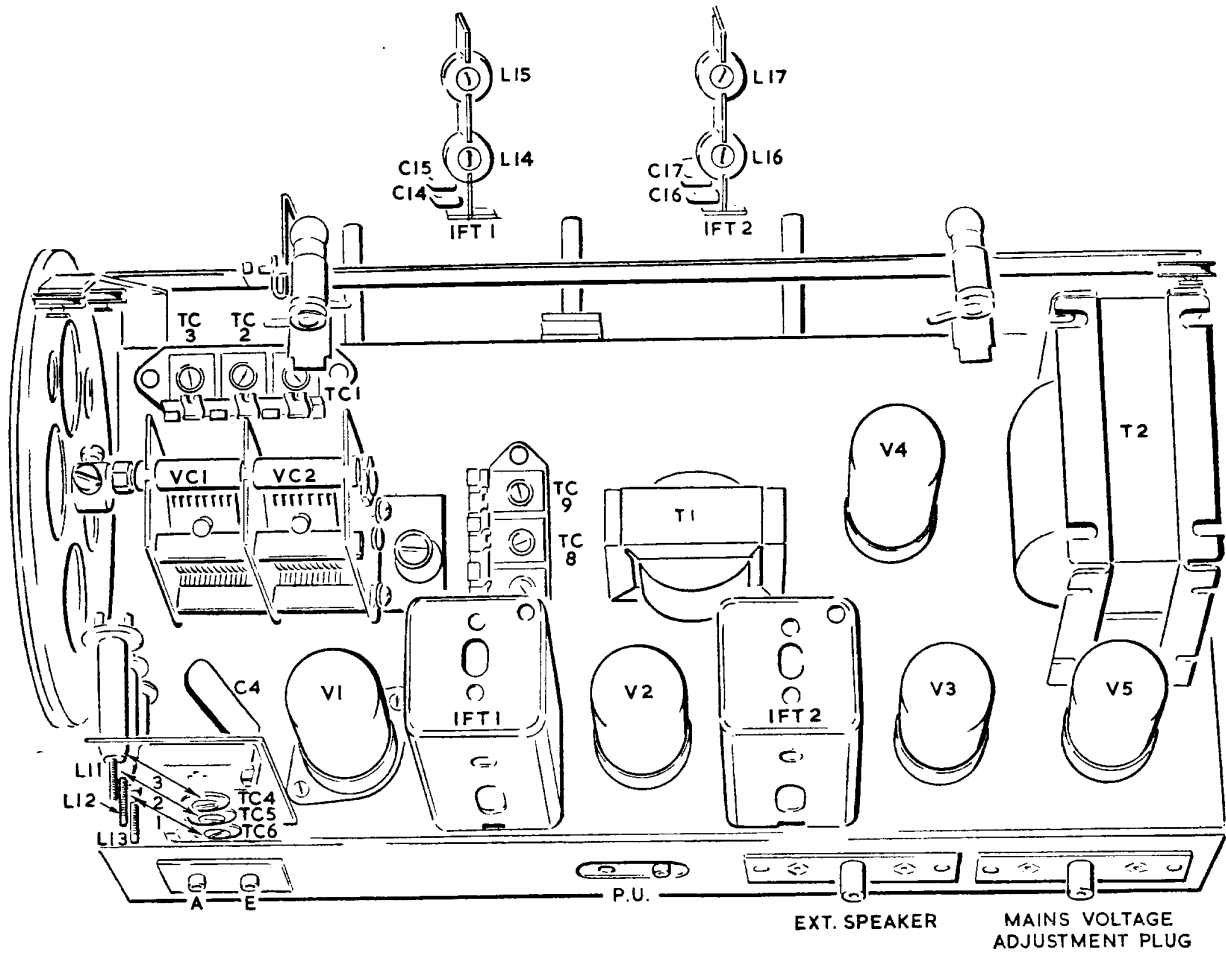
1. Disconnect the instrument entirely from the mains supply and remove the aerial, earth and external loudspeaker plugs from their sockets.
2. Pull off the four control knobs (spring fixing) and remove felt washers from spindles.
3. Remove the back panel.

4. Remove the four chassis securing screws from the underside of the cabinet and withdraw the chassis.

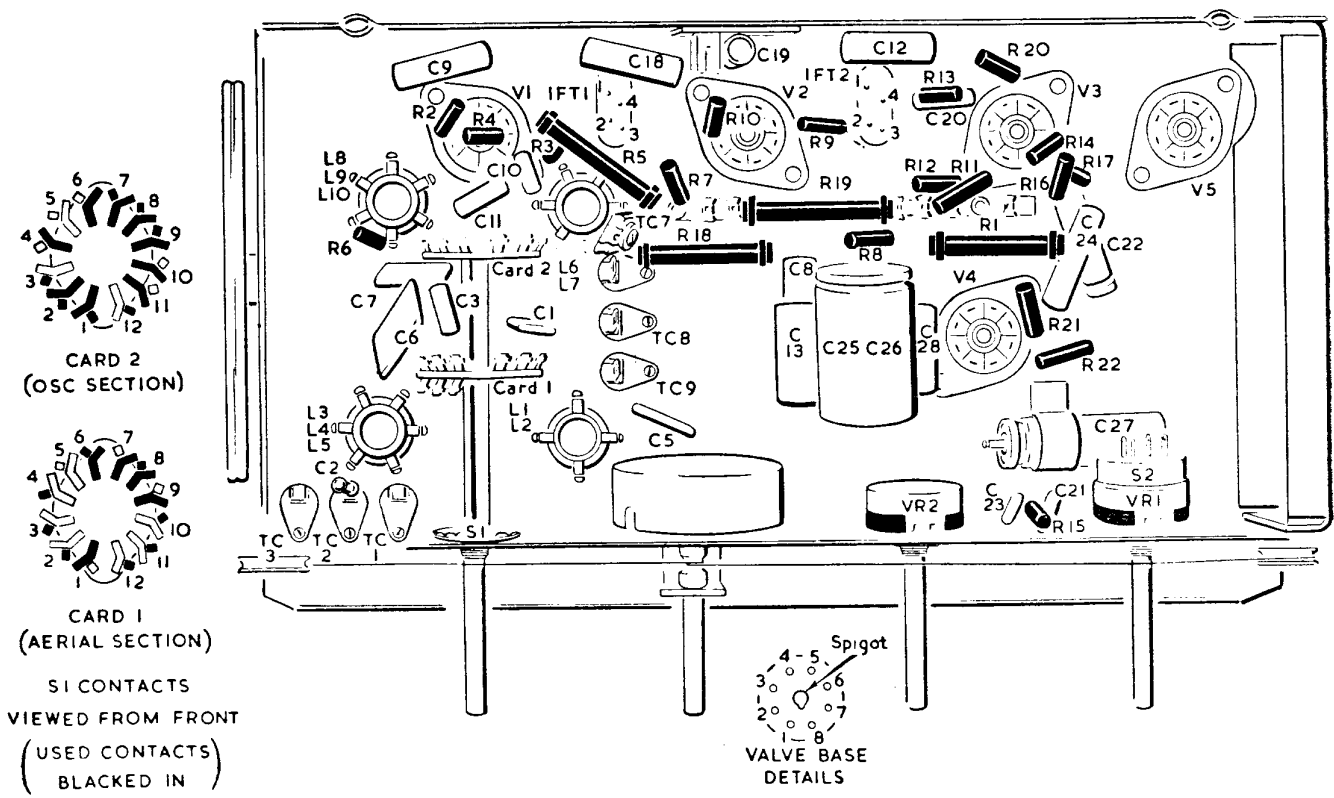
NOTE.—The Loudspeaker is fitted to the cabinet, but sufficient lead is provided for the chassis to be serviced outside the cabinet.

If necessary, release the internal plate aerial lead from the screw on the side of the cabinet.

The wavescale is assembled to the cabinet, but a calibration scale is provided on the condenser drum for alignment purposes.



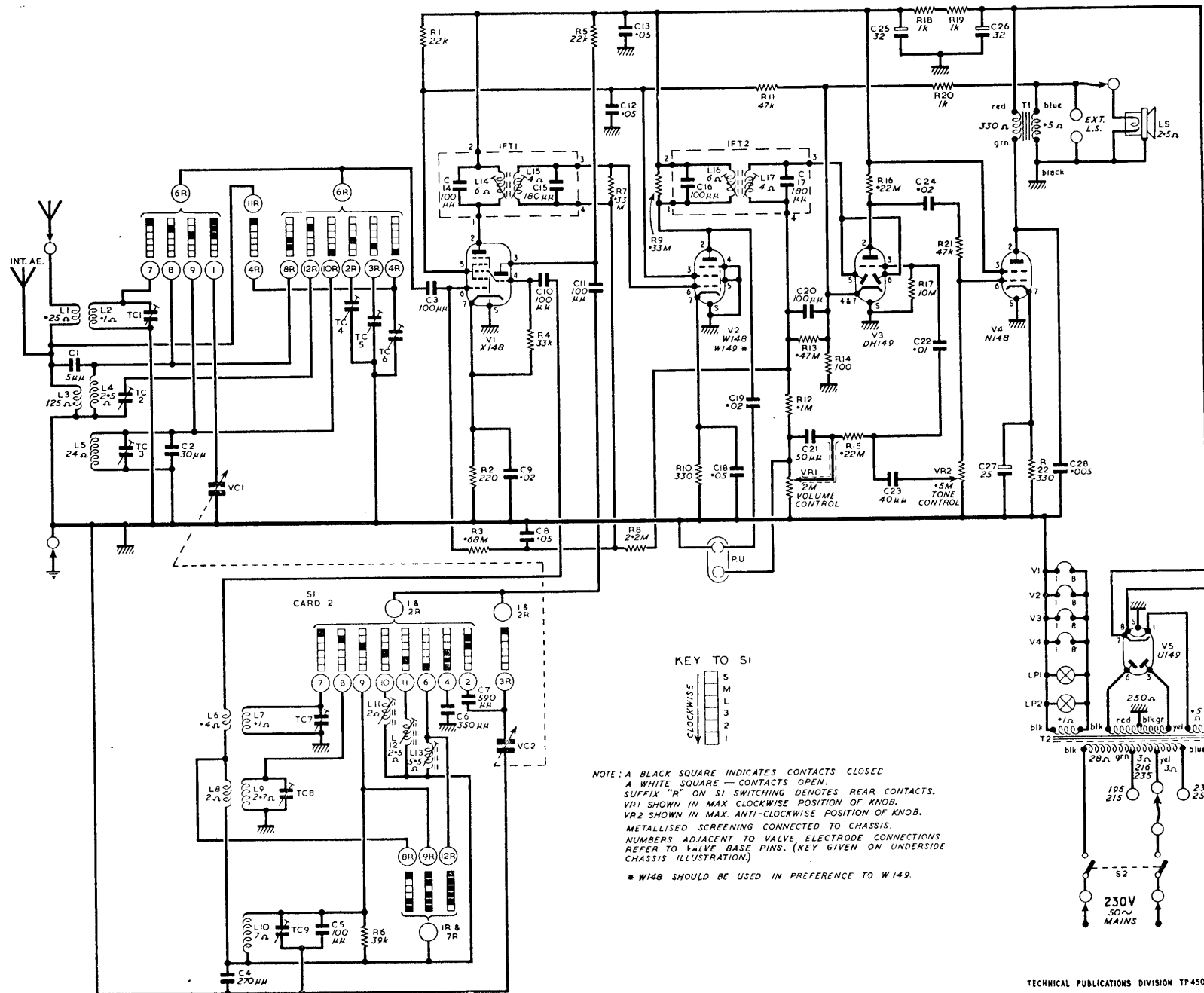
TOP-SIDE CHASSIS VIEW



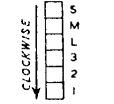
UNDER-SIDE CHASSIS VIEW

C	1	2	4	5	3	14,6	7	9,8,15,10	11	12,13	16	18,19	17,20,21	25	23	22,24	27	26	28	C	
R					6	1	5,2	4	5	7	8	9	10	11	12,13	14,15	16	17,18,20,21,19	22		R
MISC	L1 TO L5	TC1,2,3	L6 TO L10, VC1	TC7,8,9	TC4, TC5	TC6	L11, I2, I3	L14, V1, IFT1, VC2, L15					L16, IFT2, V2, L17	VRI	V3	VR2	V4	T1, L1, P1, Z1, Z2			V5 MISC

S



KEY TO S1



NOTE: A BLACK SQUARE INDICATES CONTACTS CLOSED
 A WHITE SQUARE — CONTACTS OPEN.
 SUFFIX "R" ON S1 SWITCHING DENOTES REAR CONTACTS.
 VR1 SHOWN IN MAX CLOCKWISE POSITION OF KNOB.
 VR2 SHOWN IN MAX ANTI-CLOCKWISE POSITION OF KNOB.
 METALLISED SCREENING CONNECTED TO CHASSIS.
 NUMBERS ADJACENT TO VALVE ELECTRODE CONNECTIONS
 REFER TO VALVE BASE PINS. (KEY GIVEN ON UNDERSIDE
 CHASSIS ILLUSTRATION)

* W148 SHOULD BE USED IN PREFERENCE TO W149.

CIRCUIT FOR MODEL T29A

I.F. AND R.F. ALIGNMENT

General

For I.F. and R.F. alignment the chassis should be removed from the cabinet. If the I.F. circuits have been disturbed, complete I.F. and R.F. alignment must follow. Either S.W., M.W. or L.W. bands can be reganged without affecting the other bands. The oscillator tracks at a higher frequency than the signal on all wavebands.

While ganging, the input to the receiver must be progressively reduced as the circuits are brought into line, so that the output does not exceed 500 mW. (1.32 volt across speech coil).

An A.C. voltmeter (rectifier type) connected across the loudspeaker speech coil may be used as an output meter.

Intermediate Frequency.

Set Waveband Switch to "M", the Volume Control fully clockwise, Tone Control fully anti-clockwise, and the gang condenser to minimum capacity.

Short Waves.

Set Volume Control fully clockwise, Tone Control anti-clockwise and Waveband Switch to "S". Inject test signal into aerial and earth sockets via S.W. dummy aerial.

1. Inject a modulated signal at 470 kc/s via a 0.1 mfd. condenser into the grid of V2 (pin 6) and chassis.
2. Adjust cores, L17, L16 in that order for maximum output.
3. Inject a modulated signal at 470 kc/s. via a 0.1 mfd. condenser into the grid (pin 6) of V1 and chassis.
4. Adjust cores L15, L14 in that order for maximum output.
5. Repeat operations 1 to 4.

Radio Frequency—Setting the Calibration Pointer.

For R.F. alignment, the calibration scale printed on the condenser drum should be used. With the gang condenser at maximum capacity, the calibration pointer should coincide with the datum mark at the low frequency end of the calibration scale. If adjustment is necessary bend pointer to correct position.

Drum Pointer Setting	Tune Test Oscillator to	Operation
18.0 Mc/s	18.0 Mc/s (16.67 metres)	Tune TC7, TC1 in that order for maximum output. Repeat operation.

Medium Waves.

Controls as before, but with Waveband Switch set to "M". M.W. dummy aerial to be used.

Drum Pointer Setting	Tune Test Oscillator to	Operation
1,300 kc/s	1,300 kc/s (230.8 metres)	Tune TC8, TC2 in that order for maximum output. Repeat operation.

Long Waves.

Controls as before, but with Waveband Switch set to "L". L.W. dummy aerial to be used.

Drum Pointer Setting	Tune Test Oscillator to	Operation
300 kc/s	300 kc/s (1,000 metres)	Tune TC9, TC3 in that order for maximum output. Repeat operation.

CALIBRATION

Replace chassis in cabinet and check calibration at about the middle of the tuning scale on a M.W.

station of known wavelength. Adjust pointer to give best compromise on all wavebands, if necessary.

PRE-SELECTED STATIONS

The coils and trimmers for the pre-selected stations are accessible through an aperture in the back panel.

1. When changing a pre-selected station, first tune in the newly selected station by hand (this is unnecessary if only checking the adjustment).

2. Check that the wavelength of the station chosen lies within the range of the circuit to be altered. Turn the waveband switch to the required pre-selector position.

3. Using the trimming tool provided, adjust the core of the appropriate inductance. If the required station is of higher wavelength than the one in use, turn anti-clockwise, and vice versa, until the desired programme is heard. The programme can be checked by returning to the manual waveband position.

4. Adjust the appropriate trimmer for maximum output. Check the setting very carefully by repeating the entire operation.

Circuit	Range		Inductance	Trimmer
	Metres	kc/s		
1	1,250-2,000	240-150	L13	TC6
2	330-560	909-535.6	L12	TC5
3	194-350	1,546-857	L11	TC4

CONDENSER AND POINTER DRIVE

Use only high grade fishing line (6301 x 0335). Approximately 64 inches of cord is used.

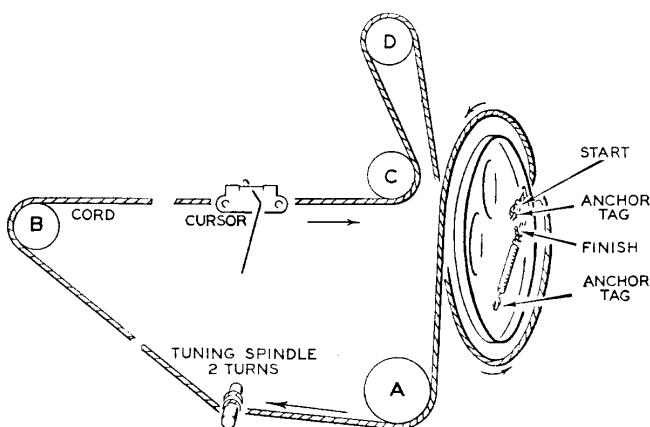
1. Form a loop with an opening of about $\frac{1}{8}$ inch in diameter at one end of the cord. Apply shellac to knot.

2. Pass looped end of cord through hole in periphery of drum and assemble on anchor tag as shown in diagram.

3. Wind cord half a turn round drum and round under pulley "A". Arrows show direction.

4. Wind two turns round tuning spindle. Take cord round pulley "B".

5. Take cord round pulleys "C" and "D", half a turn round drum and in through hole in periphery of drum. Assemble tension spring as shown. Tie a knot and shellac end of cord.



VALVE TABLE

The following table indicates the approximate voltage reading obtained on each valve when the receiver is connected to a 230 volts 50 cycles supply, and operating with Volume Control at maximum at a point of no reception on the M.W. band. Variations of ± 15 per cent. may be anticipated between models.

Higher or lower mains voltage will naturally produce a corresponding variation in meter readings in approximate proportion to the change in mains supply.

A high resistance voltmeter should be used to measure voltages. Values stated below were obtained using a meter with a resistance of 500 ohms per volt.

VALVE	ANODE Volts to Chassis		SCREEN Volts to Chassis	CATHODE Volts to Chassis
V1 X148	Mx. 248	Osc. 115	100	2.2
V2 W148	248		100	1.9
V3 DH149	100		—	0.25
V4 N148	280		248	14
V5 U149	257 A.C.		—	296

Total A.C. current 205 mA.

Total H.T. current 61 mA.

SPARE PARTS LIST

A comprehensive spare parts list will be issued at a later date and will be obtainable from E.M.I. Sales and Service Ltd., Technical Information Division, Sheraton Works, Wadsworth Road, Greenford, Middlesex, England.

The Company reserves the right to make any modification without notice.