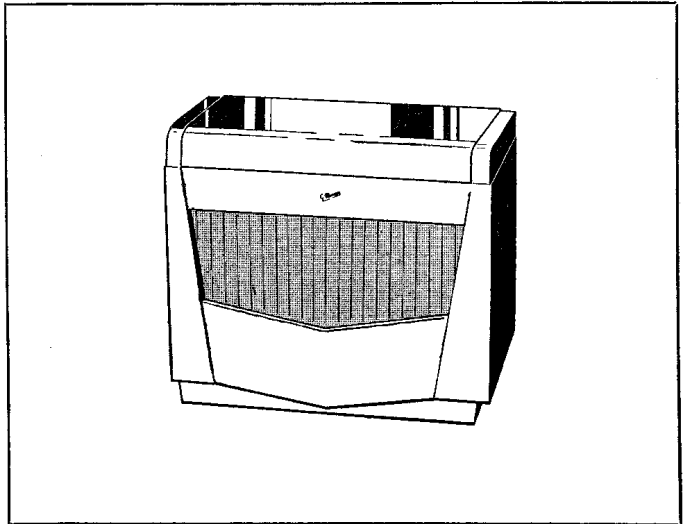


MARCONI PHONE SERVICE MANUAL

5-VALVE CONSOLE
3-SPEED AUTO-RADIOGRAM
FOR A.C. MAINS
*
MODEL ARG33A



THE GREATEST

Marconi

NAME IN RADIO

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MODEL ARG33A

SPECIFICATION

Physical

Height	30 inches	} Approx. Overall
Width	34 inches	
Depth	..	..	..	..	17 inches
Weight	..	..	..	..	67 lb.

Mains Supply and Consumption

195-255 volts, 50 cycles, A.C. only.
Consumption—50 watts on Radio.
65 watts on Gram.

Valves

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

Scale Lamps

Two—6.5 volts, 0.3 amp.

Rated Output

5 watts maximum.

Wave Ranges

L.W.	..	900—2,000 metres (333—150 kc/s).
M.W.	..	187—557 metres (1,604—538.5 kc/s).
S.W.	..	16.5—52 metres (18.19—5.77 Mc/s).

Intermediate Frequency

470 kc/s.

Loudspeaker

10-inch permanent magnet moving coil type. The speech coil has a D.C. resistance of 3 ohms and an impedance of 3.5 ohms at 1,000 cycles.

External Loudspeaker

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

Auto-Mechanism

Type 48700A. For full information, see Service Data for 3-speed Auto-Mechanism basic type 48700.

Pick-Up

High impedance crystal type employing replaceable stylus. Separate plug-in heads for 78 and 33/45 r.p.m. records.

Stylus

Columbia Multiplay 78 stylus for 78 r.p.m. pick-up head.
Columbia Multiplay 33/45 stylus for 33/45 r.p.m. pick-up head.

Motor

Shaded pole induction type.

INSTALLATION

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 primarily 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 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. Do not use a telephone earth, hot water pipe or a gas pipe, as an earth. The aerial and earth leads should be terminated with suitable plugs.

Transit Packing

Before operating the instrument remove all transit packing. Unscrew to their fullest extent the four nuts securing the mechanism to the motor board. The nuts are prevented from being completely unscrewed by circlips at the end of each screw. The nuts are situated beneath the mechanism and access to them is gained from inside the cabinet.

Mains Supply

The instrument may be adjusted to operate on A.C. mains supplies of 195 to 255 volts, 50 cycles only.

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.

Before connecting the instrument to the mains supply, first remove the back panel and insert the Voltage Adjustment Plug into the socket marked with the voltage range including that of the supply.

Check that the Marconi valves are inserted in their correct positions and that the two scale lamps are secure in their holders.

Final Connections

Insert the aerial and earth plugs into their appropriate sockets and connect a suitable plug to the mains lead.

Valves

When removing or re-fitting 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

Removal of Chassis

1. Disconnect the instrument entirely from the mains supply.
2. Pull off the five control knobs and remove the felt washers from the spindles.
3. Remove the aerial, earth and external loudspeaker plugs from their sockets.
4. Remove the back panel.
5. Unscrew the internal aerial lead from the right-hand side of the cabinet.
6. Using a box spanner, slacken off the nut securing the volume control, and remove this nut and the washer from the spindle.
7. Slacken the three screws securing the aerial/earth panel; then move the panel upwards and slip free.
8. Unsolder the pick-up leads from the pick-up matching switch on the underside of the auto-mechanism plate.
9. Unsolder the motor leads from the motor.

10. Unsolder the loudspeaker leads from the loudspeaker tag panel.
11. Unscrew the cleats securing the pick-up leads and mains lead to the cabinet.
12. Remove the four screws securing the chassis mounting board to the front of the cabinet.
13. Remove the volume control clear of the cabinet and withdraw the chassis.

Removal of Auto-Mechanism

1. Disconnect the instrument completely from the mains supply.
2. Secure the record retaining arm to the pick-up arm.
3. Remove the back panel.
4. Unsolder the mains lead from the motor.
5. Unsolder the pick-up leads from the pick-up matching switch on the underside of the auto-mechanism plate.
6. Remove the four screws from the corners of the motor board and lift out the mechanism complete with the motor board.

I.F. AND R.F. ALIGNMENT

General

For I.F. and R.F. alignment the chassis must 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 the higher frequency than the signal on all wavebands.

Whilst 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 (*i.e.*, 1.4 volts across the speech coil).

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

Intermediate Frequency

Set the waveband switch to "M", the volume control fully clockwise, tone control fully anti-clockwise and the gang capacitor to minimum capacity.

Short Waves

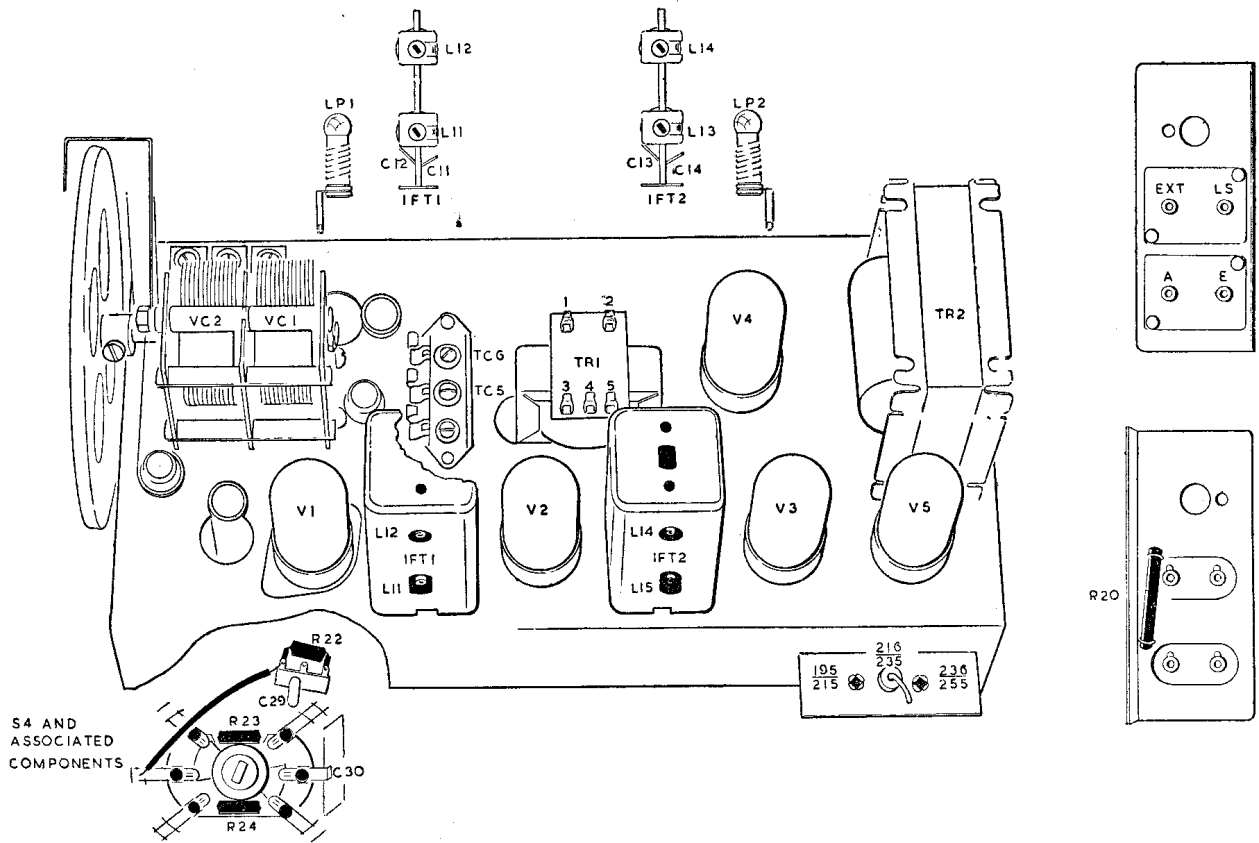
Set volume control fully clockwise, tone control fully anti-clockwise and the waveband switch to "S". Inject test signal into aerial and earth sockets via a S.W. dummy aerial.

1. Inject a modulated signal at 470 kc/s, via a 0.1 μ F capacitor into the grid of V2 (pin 6) and chassis.
2. Adjust cores L14, L13 in that order for maximum output.
3. Inject a modulated signal at 470 kc/s, via a 0.1 μ F capacitor into the grid of V1 (pin 6) and chassis.
4. Adjust cores L12, L11 in that order for maximum output.
5. Repeat operations 1 to 4.

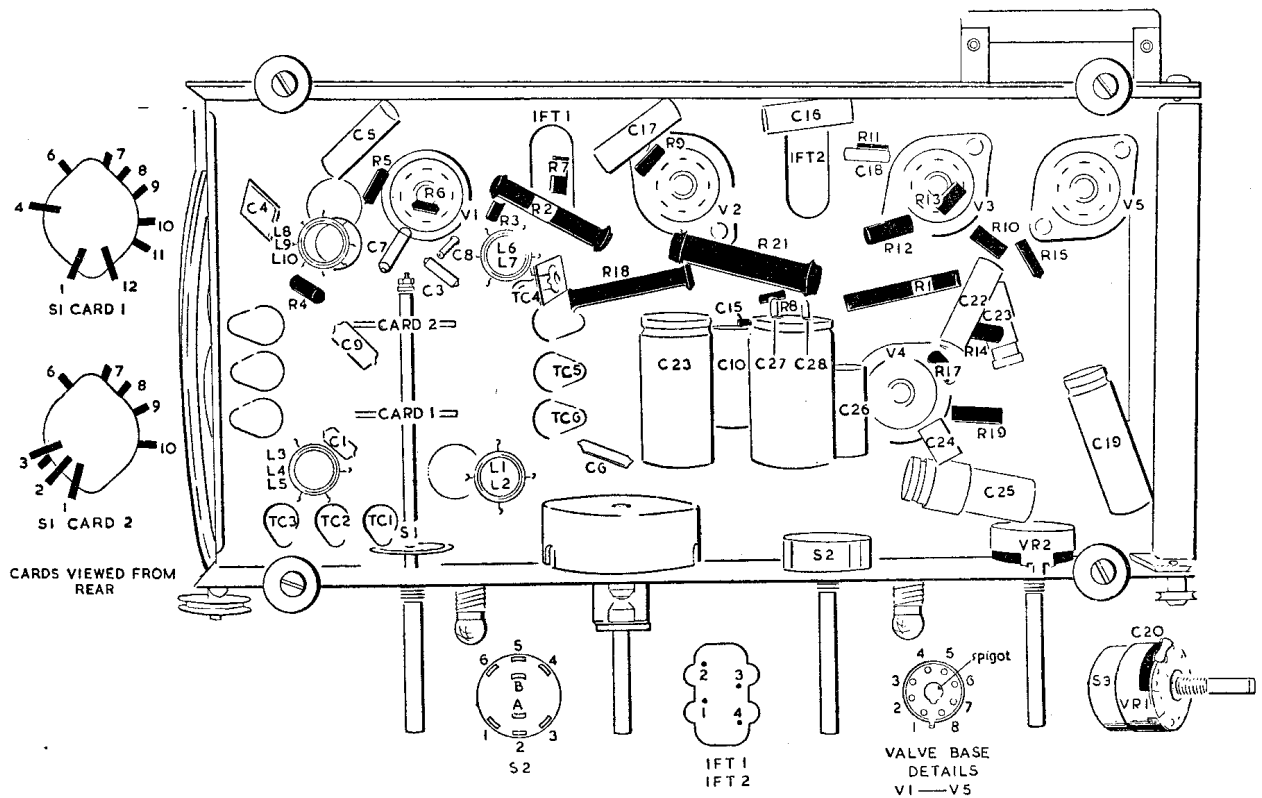
Radio Frequency—Setting the Calibration Pointer

For R.F. alignment the calibration scale printed on the gang capacitor drum should be used. With the gang capacitor 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 TC4, TC1 in that order for maximum output. Repeat operation.

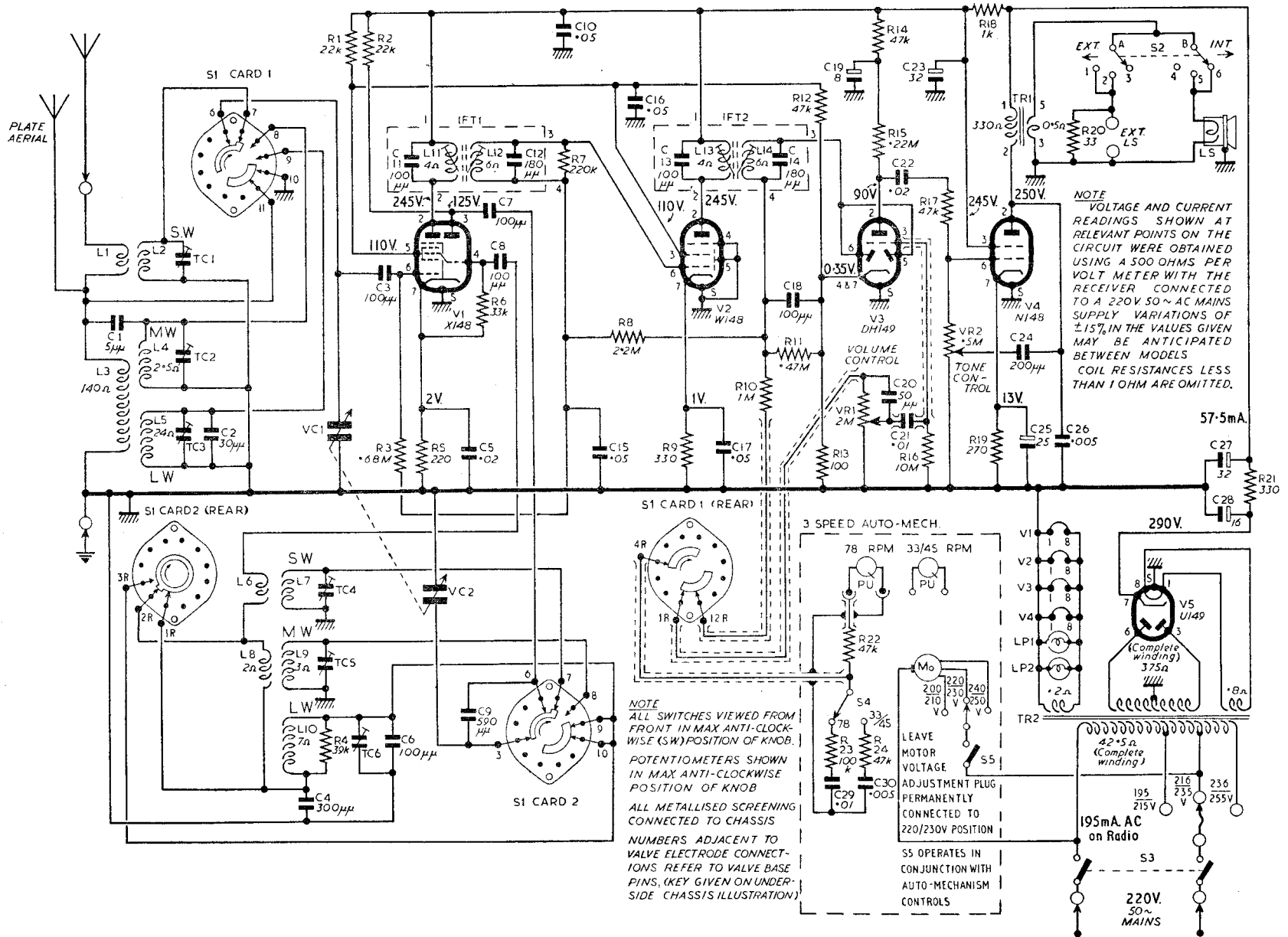


TOP-SIDE CHASSIS



UNDER-SIDE CHASSIS

C	1	2	4	3,11,6	9,5,7,8	12	10	15	16,13	17	14,18	19,20	30	22,20,21,23	24	25	26	27,28	C
R	1,3	2,4,5	6,8	7,9,10	1,4	2,3	5	6	7	8	9	10	11,12	13,23,22,24,14,15,16	17	19,18	20	21	R
L	MISC.	S1 CARD 2(REAR),TC1-3,S1 CARD1	VC1	TC4-6	VI,VC2,IFT1	S1 CARD2	S1 CARD1(REAR),V2,IFT2	VR1,PU,S4V3	PU,Mo	VR2,S5,TR1&2,V4,LP1,LP2	S3,S2	V5	LS	MISC.					L



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 TC5, 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 TC6, 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

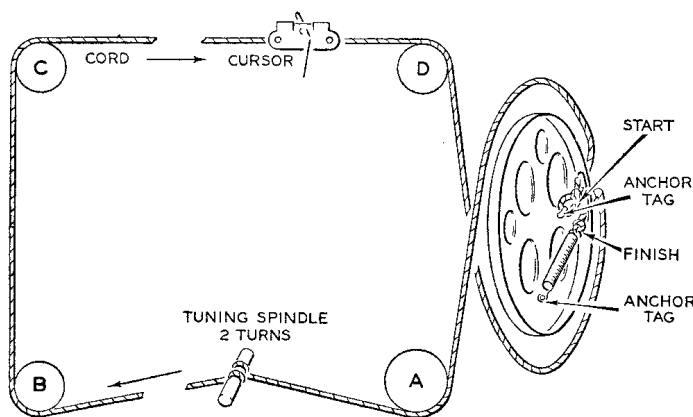
wavelength. Adjust pointer to give best compromise on all wavebands, if necessary.

TUNING CAPACITOR CORD DRIVE

Use only the specified cord 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.
2. Pass looped end of cord through the hole in the periphery of the drum and assemble on anchor tag as shown in the diagram.
3. Wind cord round the pulleys in the direction shown by the arrows in the diagram.
4. Pass cord through the hole in the periphery of the drum and secure to the tension spring as shown.

NOTE.—The knots, to prevent slipping, should be tied as reef knots and secured with shellac.



SPARE PARTS LIST

Part No.	Description	No. per Inst.	Part No.	Description	No. per Inst.
INSTRUCTIONS					
49484	Instruction Card	1	CP98613/4	Lid Hinge	1
P98924	Cabinet Label	1	8640	Woodscrews—securing Hinge	30
CABINET PARTS AND FITTINGS					
CP100441	Cabinet complete	1	CP100441/5	Lid Stay	1
CP100441/2	Lid only	1	8602	Woodscrews—securing Stay to Lid	2
			2418	Woodscrews—securing Stay to Cabinet	2
			CP100441/3	Baffle Board	1

Part No.	Description	No. per Inst.
9525	Woodscrews — securing Baffle Board	10
CP100872	Metal Grille	1
CP100441/4	Chassis Mounting Board	1
P86627/8/13	Screw } securing S.P. Washer } Chassis Washer } Mounting Board	4
201802		4
P91952		4
44969	Trade Mark Transfer	1
9359	Domes of Silence	4
P98926	Cabinet Back	1
2418	Screws } securing Cabinet Washers } Back	8
201306		8
41404	Emblem "G. Marconi"	1
40015	Brads securing Emblem	2
P99330	Plate Aerial	1
P98925	Tuning Scale	1
P100165	Spring Clip } securing Washer } Tuning Scale Woodscrew }	4
38/2723/4		4
8602		4
P97434	Panel for Volume Control	1
8697	Screws—securing Panel	2
CP99154	Bracket Assy. with Aerial and Earth and Ext. L/S Panels (less Switch)	1
8602	Woodscrews—securing Bracket Assy.	3

CONTROLS

P94173	Knob—"Volume"	1
P94174	Knob—"Tone"	1
P94175	Knob—"Tune"	1
P101433	Knob—"Wavechange"	1
P100134	Knob—"Int. and Ext. L/S"	1
P93431	Spring Clip for Knobs	5
P18780	Felt Washer for Knobs	5

LOUDSPEAKER

P86591	Loudspeaker	1
18830	Screws } securing S.P. Washer } Loudspeaker	4
201802		4

RADIO UNIT

CP104603	Radio Unit complete	1
200020P	Screw } securing R/U Washer } to Chassis Spring } Mtg. Board Washer }	4
P91952		4
201402		4
P98894		Chassis End Plate .. .. .	1
P86614/26	P.K. Screw—securing End Plate ..	2

Part No.	Description	No. per Inst.
VALVES		
V1	X148—Frequency Changer	
V2	W148—I.F. Amplifier	
V3	DH149—Detector A.G.C. Rect. and A.F. Amplifier	
V4	N148—Output	
V5	U149—H.T. Rectifier	

INDUCTORS

CP71672	L1 } S.W. Aerial Coil	1
	L2 }	
CP71674	L3 } M.W. Aerial Coil	1
	L4 }	
	L5—L.W. Aerial Coil	
CP71673	L6 } S.W. Oscillator Coil	1
	L7 }	
CP71675/1	L8 } M.W. Oscillator Coil	1
	L9 }	
	L10—L.W. Oscillator Coil	
See	L11—Primary Coil	
I.F. Tx.1	L12—Secondary Coil	
See	L13—Primary Coil	
I.F. Tx.2	L14—Secondary Coil	
CP71670/1	I.F.T.1—1st I.F. Transformer complete with L11, L12 and C11, C12	1
CP71670/1	I.F.T.2—2nd I.F. Transformer complete with L13, L14 and C13, C14	1
CE30025	Iron Dust Cores for I.F.T.'s	4
200404	Nut } securing I.F.T.1 S.P. Washer } and I.F.T.2	4
201804		4
CP70128/61	T1—Output Transformer	1
P86612/1/26	P.K. Screw—securing T1	2
CP73360	T2—Mains Transformer	1
P86614/1/26	Phillips Screw (short) } securing T2	2
P86614/3/26	Phillips Screw (long) }	2
201302	Washers }	4

RESISTORS

33373BW	R1—22,000 $\Omega \pm 10\%$, 1 w.	1
33373BW	R2—22,000 $\Omega \pm 10\%$, 1 w.	1
33360EF	R3—680,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1
33360QC	R4—39,000 $\Omega \pm 10\%$, $\frac{1}{4}$ w.	1
33360BJ	R5—220 $\Omega \pm 10\%$, $\frac{1}{4}$ w.	1
33360BX	R6—33,000 $\Omega \pm 10\%$, $\frac{1}{4}$ w.	1
33360EE	R7—470,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1
33360EJ	R8—2.2 M $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1
33360BK	R9—330 $\Omega \pm 10\%$, $\frac{1}{4}$ w.	1
33360EA	R10—100,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1
33360EE	R11—470,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1
33363BY	R12—47,000 $\Omega \pm 10\%$, $\frac{1}{2}$ w.	1
33360DG	R13—100 $\Omega \pm 20\%$, $\frac{1}{4}$ w.	1

Part No.	Description	No. per Inst.
33360DY	R14—47,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w. ..	1
33360EC	R15—220,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w. ..	1
33363CN	R16—10 M $\Omega \pm 10\%$, $\frac{1}{2}$ w. ..	1
33360DY	R17—47,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w. ..	1
33373BN	R18—1,000 $\Omega \pm 10\%$, 1 w. ..	1
33363JX	R19—270 $\Omega \pm 10\%$, $\frac{1}{2}$ w. ..	1
33373DD	R20—33 $\Omega \pm 20\%$, 1 w. ..	1
33377BK	R21—330 $\Omega \pm 10\%$, 2 w. ..	1
33360BY	R22—47,000 $\Omega \pm 10\%$, $\frac{1}{4}$ w. ..	1
33360EA	R23—100,000 $\Omega \pm 20\%$, $\frac{1}{4}$ w. ..	1
33360BY	R24—47,000 $\Omega \pm 10\%$, $\frac{1}{4}$ w. ..	1
CP69567/140	VR1 & S3—2 M Ω Volume Control and Switch ..	1
CP69537/3	VR2—0.5 M Ω Tone Control ..	1

CAPACITORS

P78803/14	C1—5 $\mu\mu\text{F} \pm 20\%$..	1		
P86559/1	C2—30 $\mu\mu\text{F} \pm 10\%$..	1		
P86559/4	C3—100 $\mu\mu\text{F} \pm 10\%$..	1		
P88806/45	C4—300 $\mu\mu\text{F} \pm 1\%$..	1		
38214G	C5—0.02 $\mu\text{F} \pm 20\%$, 750 v. ..	1		
P78803/24	C6—100 $\mu\mu\text{F} \pm 5\%$..	1		
P86559/4	C7—100 $\mu\mu\text{F} \pm 10\%$..	1		
P86559/4	C8—100 $\mu\mu\text{F} \pm 10\%$..	1		
P86514/1	C9—590 $\mu\mu\text{F} \pm 1\%$..	1		
36355F	C10—0.05 $\mu\text{F} \pm 20\%$, 500 v. ..	1		
See I.F.T.1	{ C11—100 $\mu\mu\text{F} \pm 2\%$ C12—180 $\mu\mu\text{F} \pm 2\%$ C13—100 $\mu\mu\text{F} \pm 2\%$ C14—180 $\mu\mu\text{F} \pm 2\%$	1		
See I.F.T.2				
38217DY			C15—0.05 $\mu\text{F} \pm 20\%$, 350 v. ..	1
38217DY			C16—0.05 $\mu\text{F} \pm 20\%$, 350 v. ..	1
38217DY	C17—0.05 $\mu\text{F} \pm 20\%$, 350 v. ..	1		
P86559/4	C18—100 $\mu\mu\text{F} \pm 10\%$..	1		
CE502	C19—8 μF Elect., 350 v. ..	1		
P86559/2	C20—50 $\mu\mu\text{F} \pm 10\%$..	1		
38202DU	C21—0.01 μF , 1,000 v. ..	1		
38214G	C22—0.02 $\mu\text{F} \pm 20\%$, 750 v. ..	1		
CE513	C23—32 μF Elect., 350 v. ..	1		
P78824/25	C24—200 $\mu\mu\text{F} \pm 20\%$, 750 v. ..	1		
38151E	C25—25 μF Elect., 25 v. ..	1		
CE535	{ C27—32 μF Elect., 350 v. C28—16 μF Elect., 350 v.	1		
P86715/2			C29—0.01 $\mu\text{F} \pm 10\%$..	1
P86548/4	C30—0.005 $\mu\text{F} \pm 5\%$..	1		
P96043	Capacitor clip for C25 ..	1		
200048F	Screw ..	1		
201804	S.P. Washer } securing Clip	1		
P70674/3A	{ TC1—Three TC2—Bank TC3—Trimmer Assy. ..	1		
P79885/3			Rivet—securing TC1, 2, 3 ..	2
P70674/3A			{ TC4—Three TC5—Bank TC6—Trimmer Assy. ..	1
P79885/3	Rivet—securing TC4, 5, 6 ..	2		
DRG9372L/161	{ VC1—Twin Gang VC2—capacitator	1		
P96623			Special Screw ..	3
P94083/1	Rubber Grommet } securing VC1 and VC2	3		
201804	S.P. Washer ..	3		
200404	Nut ..	3		

Part No.	Description	No. per Inst.
CAPACITOR DRIVE AND TUNING DETAILS		
CP99301	Tuning Drum Assy. ..	1
200020F	Screw—securing Tuning Drum to Gang Capacitor ..	2
P96662	Calibration Pointer ..	1
201802	S.P. Washer } securing Pointer	1
200402	Nut } to G/Capacitor	
P94093	Tuning Drive Spindle ..	1
P94509/1	Shim Washer for Spindle ..	1
P94094	Bracket for Tuning Spindle ..	1
P86613/1/26	Phillips Screw—securing Bracket ..	2
P94095	Flywheel ..	1
202020F	Grub Screw—securing Flywheel to Drive Spindle ..	2
P94535	Pulley (large) ..	1
P95063	Pulley (small) ..	3
P94967	Spring Clip—securing Pulley ..	4
6301 x 0335	Drive Cord ..	66 ins.
P91951	Spring for Drive Cord ..	1
P98925	Tuning Scale ..	1
P100165	Spring Clip } securing Scale	4
8602	Woodscrew }	
CP99051	Scale Backing Plate Assy. ..	1
P86614/1/26	Screw (short) securing Backing Plate Assy. ..	2
P86614/3/26	Screw (long) securing Backing Plate Assy. ..	2
P86662	Pointer and Cursor Assy. ..	1
35420D	Scale Lamp 6.5 v., 3 amp. ..	2
CP17934	Scale Lamp Holder ..	2

SWITCHES

CP53765	S1—Wavechange Switch ..	1
CP72324/47	S2—Ext. Loudspeaker Switch ..	1
See VR1	S3—Mains ON/OFF Switch ..	1
See Auto Mech. Man.	{ S4 { P.U. Matching Motor S5 { ON/OFF	1

VALVEHOLDERS, PANELS, ETC.

P86660	Valveholder ..	5
200060K	Screw ..	2
P20636	Rubber Grommet } securing valve holder for V1	2
P51447/9	Spacer ..	
201306	Washer ..	2
2855	Washer ..	2
P79886/5	Rivet—securing Valveholders for V2, V3, V4 and V5 ..	8
P86491	Mains Adjustment Panel ..	1
P99053	Mains Adjustment Plug ..	1
P85537/5	Rivet—securing Mains Adjustment Panel ..	2
P86495	Tag Panel 3-way ..	1
P86613/1/26	P.K. Screw—securing Tag Panel ..	1
P86490	Tag Panel—12-way ..	1
P86613/1/26	P.K. Screw—securing Tag Panel ..	2
4801 x 1601	Screened Lead—P.U. ..	3 ft.
P92117	Fibre Cleat ..	1

Part No.	Description	No. per Inst.	Part No.	Description	No. per Inst.
200068G	Screw	} 1	P101983	Sub Motor Board	1
200406	Nut		48697	P.U. Head Storage Cradle ..	1
201306	Washer		9559	Screw—securing Cradle ..	1
201806	S.P. Washer		P101992	Spigot } 45 r.p.m. Spindle	} 1
P92118	Fibre Cleats	P101993	Spring } Adaptor Storage	1	
8602	Screw	} 3	8711	Screw — securing 45 r.p.m. Adaptor	1
201306	Washer		P101991	Spindle Adaptor, 45 r.p.m. ..	1
P79692/11	Grommet	1	46687B	P.U. Cartridge 33/45	1
4201 x 2301	Mains Lead (bulk) ..	9 ft.	46687C	P.U. Cartridge 78	1
	AUTO-MECHANISM		CP101085	P.U. Head, 78 r.p.m. Complete	1
48700A	3-speed Auto-Mechanism ..	1	CP101086	P.U. Head, 33/45 r.p.m. complete	1

In order to expedite delivery of spare part orders, please quote:—

1. Model and serial numbers (on plate beneath foot).
2. Spare part number and description.
3. Quantity required.

Unless full particulars are quoted, delay in execution of orders must inevitably result.

Order Spare Parts from:—

E.M.I. SALES & SERVICE LIMITED,
SPARE PARTS DIVISION,
SHERATON WORKS,
WADSWORTH ROAD,
GREENFORD, MIDDLESEX.

Telephone: PERivale 6666.

Telegraphic Address: Emiservice, Greenford, Middlesex.

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