

E·M·I SERVICE LTD.

**"HIS MASTER'S VOICE" 1400
MARCONIPHONE 872**

MANUAL SERVICE

5-valve Mechanical Push-Button Battery Superhet

C O N T E N T S

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SPECIFICATION

PHYSICAL.

MODEL 1400.

Height $14\frac{1}{4}$ inches.
Width $23\frac{1}{4}$ " "
Depth 11 " "

Net weight (both models), 29 lb.
Gross weight (both models), 39 lb.
Weight of batteries (both models), 16 lb.

MODEL 872.

Height $14\frac{1}{8}$ inches.
Width $23\frac{1}{8}$ " "
Depth $10\frac{3}{4}$ " "

WAVELENGTH RANGE.

Short Waves 16 to 50 metres.
Medium Waves 195 to 580 " "
Long Waves 950 to 2,000 " "

SPEECH OUTPUT.

Approximately 0.8 watt maximum.

BATTERIES.

L.T.—Exide type CZG4-C 2v.40AH.
H.T.—Marconiphone Cat. No. B498, 120 volt.

CONSUMPTION.

L.T.—1.05 amp.
H.T.—9.0 millamps
6.0 " (Economy) } average.

VALVES.

Marconi X23 or X24 ... Frequency changer.
" Z21 I.F. amplifier.
" HD23 Second detector, A.V.C. and L.F. amplifier.
" KT2 } Push pull output valves.
" KT2 }
Pilot Lamp 2.0 v. 0.1A. Part No. 22704B.

LOUDSPEAKER.

No. 24760D
This sensitive moving coil loudspeaker is fitted with a new type high flux permanent magnet.
D.C. resistance of speech coil, 4 ohms.
Impedance at 800 cycles, 5 ohms.

EXTRA LOUDSPEAKER.

Sockets are provided for the connexion of an extra loudspeaker. To disconnect the internal loudspeaker the yellow plug should be removed from the right-hand socket on the extra loudspeaker panel. Adjust extra speaker for an impedance of 5 ohms.

CIRCUIT DESCRIPTION

AERIAL COUPLING.

Two aerial sockets are supplied, one for use when a powerful station is in the near vicinity of the receiver. These sockets feed through image rejectors to inductive coupling coils (L4, L5) for medium and long waves. On short waves direct capacity coupling (C4) is employed. A single high magnification preselector circuit in which both the medium and long wave coils are iron cored is employed across the grid of the frequency changer, V1.

FREQUENCY CHANGER.

The triode-hexode frequency changer ensures consistent performance at all wavelengths. The hexode portion is A.V.C. controlled, whilst the triode portion generates oscillation in conjunction with the tapped coils L8, L11, L9 and L10 in which capacitive and inductive coupling is employed.

I.F. AMPLIFIER.

An iron cored I.F. transformer feeds the Z21, I.F. amplifier (465 kc.) and a second I.F. transformer feeds the second detector.

SECOND DETECTOR AND A.V.C.

The A.V.C. diode of the HD23 (V3) is fed from the anode of V2 via C28, and has a tapped load resistance R21, R29. Delay voltage and initial bias for V1 and V2 is obtained via R27 from a tapping on the bias potentiometer R23, R24. The signal diode has a load resistance R18, across which the volume control (VRI) is connected. The components C24, R19, C25, C32 constitute a filter network. The grid of the L.F. amplifier section of the valve is connected to the slider of the volume control.

OUTPUT STAGE.

A resistance capacity coupled transformer T1 with centre tapped secondary feeds the push pull output valves.

In series with the main H.T. feed is a resistance, R28, with the economy switch connected across it. The effect of this resistance is to reduce the effective H.T. voltage, and bring about a marked economy in battery consumption without seriously reducing performance.

PUSH-BUTTON MECHANISM

The instructions for changing push-button stations given in the Instruction Card are reprinted below.

1. Decide what stations you wish to alter. A perforated sheet of station names is supplied with the instrument for special requirements.
2. Any newly selected station must take the place of an existing station. You must decide, therefore, which station you no longer require to be tuned automatically.
3. Manually tune the receiver exactly to the station required, and decide which button is to be used.
4. Unscrew, by one or two turns, the button to be changed.
5. With the cap unscrewed, press in fully the button, and keeping the button pressed in, tighten the button sufficiently for it to hold. Allow the button to return to its normal position and finally tighten.
6. Check the setting of the button, by comparing the reception on automatic and manual tuning.

The essential points for successful adjustment are that the knobs shall be very tight, and that pressure to one side or other of the knobs is avoided.

Lubricate all frictional points (except the edge of the friction drive disc) with a good lubricant such as Mobil-grease No. 2. This applies especially to the front bearing of the tuning spindle.

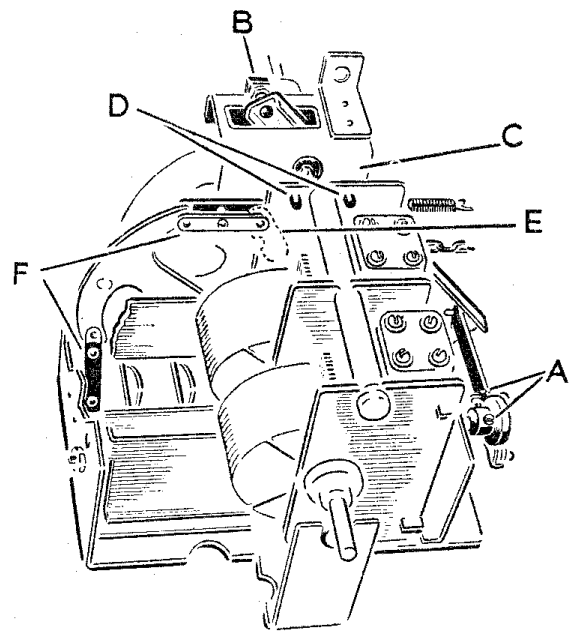
In the event of the mechanism jamming it may be due to failure of the bar to release the friction drive. This effect can be caused by grub screws (A) being loose or adjustment (B) incorrectly set.

Alternatively, the friction disc may not be located between the driving surfaces of the spindle. Re-position bracket (C) secured by screws (D).

If a button knob will not lock it may be due to a stripped thread. Replace the knob and thread.

If tuning (by button) is erratic it may be due to single grub screw securing lever arm (E) to gang condenser spindle being loose.

If spring links (F) become detached it is useless to replace the same links. New links must be fitted or the entire mechanism replaced.



PRELIMINARY TESTS

1. Battery Voltage.—The accumulator must read at least 1.9 volts on load, and the H.T. battery should be replaced if its total voltage on load is less than 60 volts. Examine all battery leads and if necessary clean or replace plugs or tags to ensure good contact. This applies especially to L.T. connexions, as bad contact at the accumulator terminals may cause unsatisfactory short wave performance. Apply vaseline to the accumulator tags and terminals to prevent corrosion.

2. L.F. Test.—Switch on, turn volume control fully up and remove the metal cap from the HD23 valve. Touch the top terminal of the valve with a wetted finger. This should produce a definite sound from the loudspeaker. If no sound is heard try replacing

V3 (HD23) or V4 or V5 (KT2) or examine loudspeaker leads or speech coil for discontinuity; see Continuity Checks page 8.

3. H.F. Test.—Contact aerial lead on to fixed vanes of VCI. Medium wave results (but with whistles and lack of selectivity) should be obtained. The test eliminates the aerial coupling and image rejector circuits.

4. Oscillator Test.—Connect a milliammeter in the H.T. + lead and note readings with L8, L11, L9, L10, first in circuit, and then shorted out.

This test shows whether the oscillator is functioning correctly. When the coils are shorted the current should rise, due to the increased oscillator anode current.

H.F. TESTS AND ADJUSTMENTS.

Do not attempt to make any adjustment to the circuits of this receiver unless you have adequate equipment as outlined below. All necessary oscillators, trimming, tools etc., essential for the correct adjustment of H.F. and I.F. circuits can be obtained from:—

E.M.I Service Limited.

The use of a tuning unit (comprising all R.F. coils, trimmers and wavechange switch) and the provision of fully adjustable inductances considerably simplifies ganging work on this receiver. For instance, in the event of a seriously faulty wave-change switch or coil, the entire unit can be replaced very easily (see below) and if the M.W. and L.W. inductance trimming has already been done on a standard chassis, only a slight touch up will be needed to the trimmer condensers to bring the receiver perfectly into alignment.

In general, the iron cored inductances are very stable, and unless repair work or replacement has been carried out on the coil itself it is rarely necessary to re-adjust these inductances when ganging. The usual symptom of mismatched inductances is low sensitivity at the

high end of the wave-scale. In the event of it being thought necessary to adjust inductances it is important first to remove the shield covering the R.F. unit, and scrape or melt the wax away from the thread on the L.W. coil, and from the sides of the M.W. coil. Replace the shield before ganging.

REMOVAL OF COIL UNIT.

1. Remove cover shield.
2. Unsolder eight leads connecting the unit to the rest of the receiver.
3. Slacken switch fixing nut, and remove two screws securing switch bracket. The unit may now be lifted out.

GANGING

Always follow any adjustment to the I.F. trimmers with complete R.F. alignment (M.W., L.W., S.W.) but where work has been done or sensitivity is low on a specific band, it is necessary only to regang this band. For this the following are required. A screened oscillator 50 to 2,000 metres (6 megacycles to 150 kilocycles) with an attenuator, an output meter or 0-2 A.C. voltmeter, a trimming screwdriver with a minimum of metal in the blade, and if the inductance trimming on M.W. requires to be done a special tool for this purpose. (Stock No. Q2527).

In carrying out ganging operations the input to the receiver from the oscillator must be kept low and progressively reduced as the circuits are brought into line so that the output meter reading does not exceed 50 mW or 0.5 volt with the receiver volume control at maximum. The E.M.I. Service output meter should be connected between the anodes of V4 and V5 (KT2) and chassis, but if the A.C. voltmeter is used it must be connected across the L.S. speech coil.

I.F. GANGING.

Switch receiver to L.W., battery economiser to maximum H.T., set gang condenser to maximum capacity, volume control to maximum. Tune oscillator to 465 kc. (645.2 metres) and connect output leads to fixed vane tag VCI (via a 0.1 mfd. condenser) and to chassis, leaving grid lead connected to VI.

1. Switch on oscillator.
2. Adjust TC11, TC12, TC13 and TC14 in that order for maximum output.
3. Check adjustment in the same order.

MEDIUM WAVES.

Set receiver to M.W. and volume to maximum. Connect oscillator to normal aerial and earth sockets.

Important Note.—It is essential that before ganging, the position of the pointer in relation to the wavescale is checked. The pointer must be adjusted to be horizontal when the gang condenser is at maximum. All ganging is now done to settings on the scale itself, and the gang condenser must not be rocked, or the position of the pointer altered in any way. The use of this method produces very good accuracy of calibration.

WARNING—Owing to the flexible nature of the condenser mounting the indication of wavelength is affected if the chassis is turned on its side. For this reason it is important that the chassis should be horizontal during ganging. Some arrangement must be made to support it above the bench so that the trimmers on the underside are accessible.

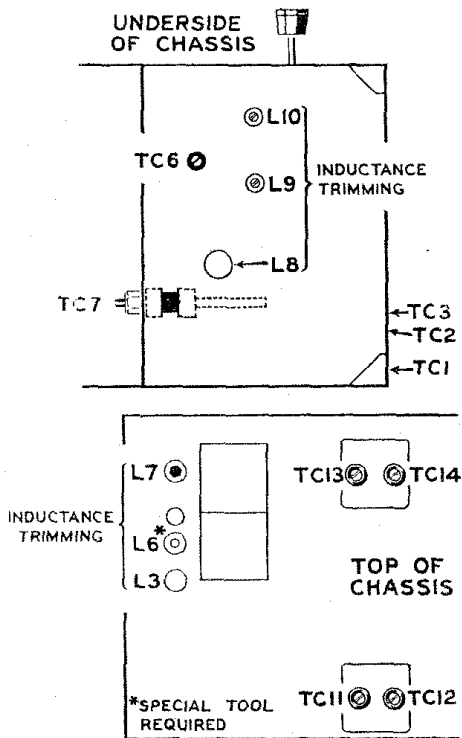
1. Set receiver (by spot on scale) and oscillator to 225 metres (1333.3 kc.).

2. Adjust TC7 and TC2 for maximum output.

3. Set receiver (by spot on scale) and oscillator to 530 metres (566 kc.).

4. Adjust inductance trimmers of L9 and L6 (if necessary) for maximum output.

The adjustment of L6 is done by rotating the upper core by means of the special tool (obtainable from E.M.I. Service, Stock No. Q 2527), which consists of a pointed rod of insulating material with a rubber bush. It should be inserted through the hole in the chassis, the point located in the hole in the paxolin coil mounting strip, and the rubber bush bearing on the core. The core may now be rotated by turning the tool.



5. Repeat operations 1 to 4.

6. Repeat operations 1 and 2.

LONG WAVES.

Switch receiver to L.W., volume control as for M.W.

1. Set receiver (by scale) and oscillator to 1,100 metres (272.7 kc.).

2. Adjust TC6 and TC1 for maximum output.

3. Set receiver (by scale) and oscillator to 1,900 metres (158 kc.).

4. Adjust inductance trimmers of L10 and L7 (if necessary) for maximum output.

5. Repeat operations 1 to 4.

6. Set oscillator and receiver (by scale) to 1,400 metres (214.3 kc.).

7. Readjust TC1 for maximum output.

SHORT WAVES.

Switch receiver to S.W.

Important.—For short wave ganging the oscillator output should preferably be terminated with a 100 ohm non-inductive resistance in parallel, and a 400 ohm non-inductive resistance in series with the "hot" lead.

1. Set receiver (by scale) and oscillator to 50 metres (6 megacycles).

2. Adjust loop in L8 to receive signal, and loop in L3 for maximum output. These loops are adjusted through a hole in the shield. A strip of insulating material with a slot in it should be used to move the wire up or down.

3. Set receiver (by scale) and oscillator to 18 metres (16.6 Mc.) and adjust TC3 for maximum output.

Do not alter the position of the pointer after ganging.

VALVE TABLE

Values ± 20 per cent.

(Voltage, Current and Resistance Tests.)

Voltage and current readings taken with an H.T. battery reading 115 volts on load (between H.T. + and chassis) economy switch in max. H.T. position, aerial disconnected, receiver switched to MW and tuned to point of no reception. Resistance readings (in ohms) taken with batteries disconnected and valves and pilot lamp removed.

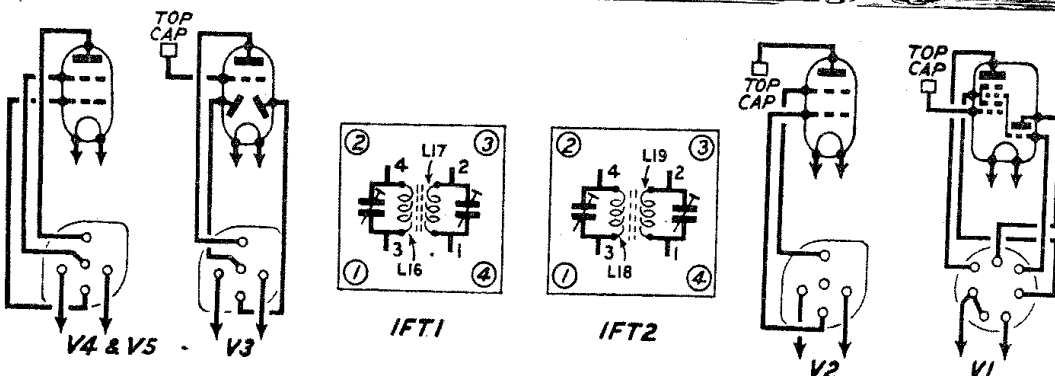
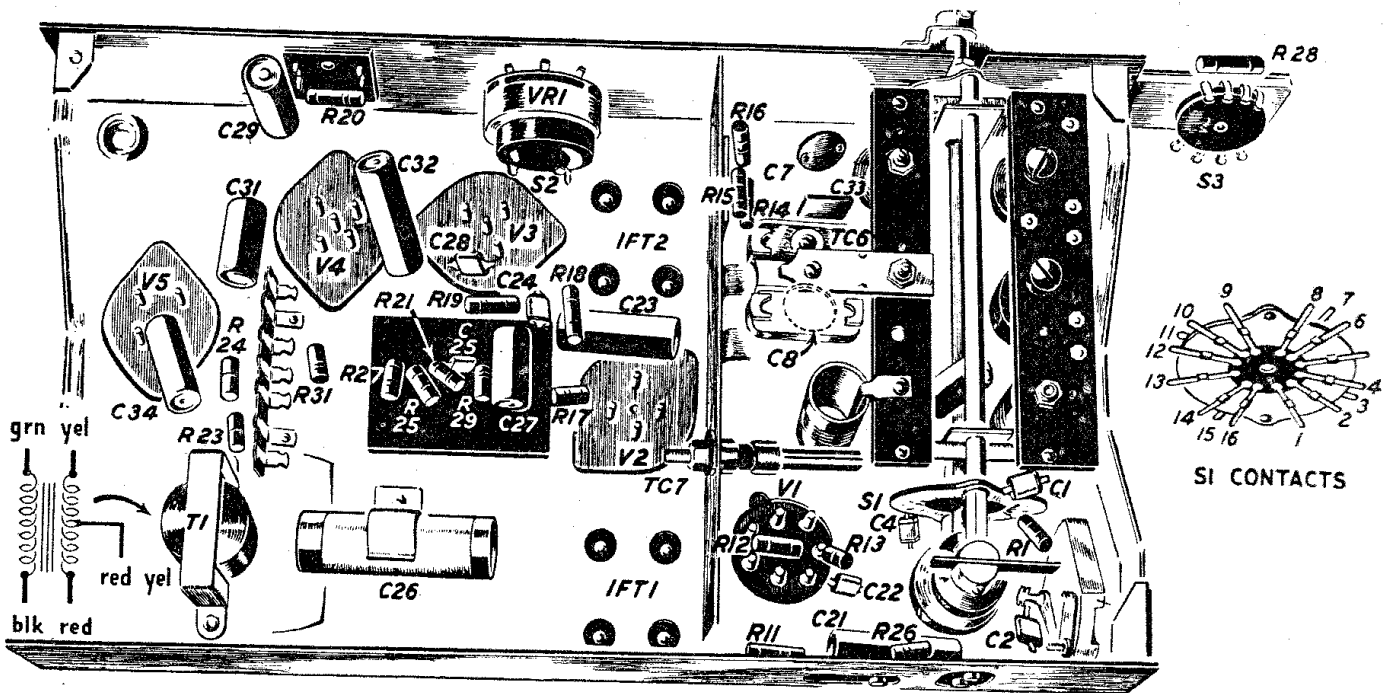
S = short circuit. ∞ = open circuit. Socket numbers are given in brackets.

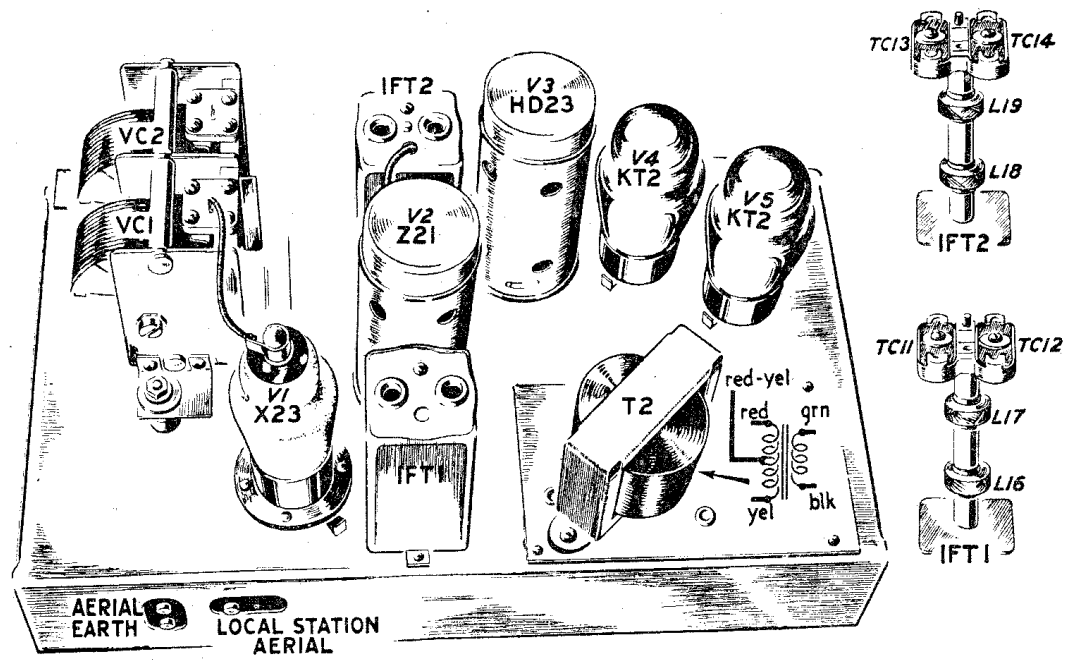
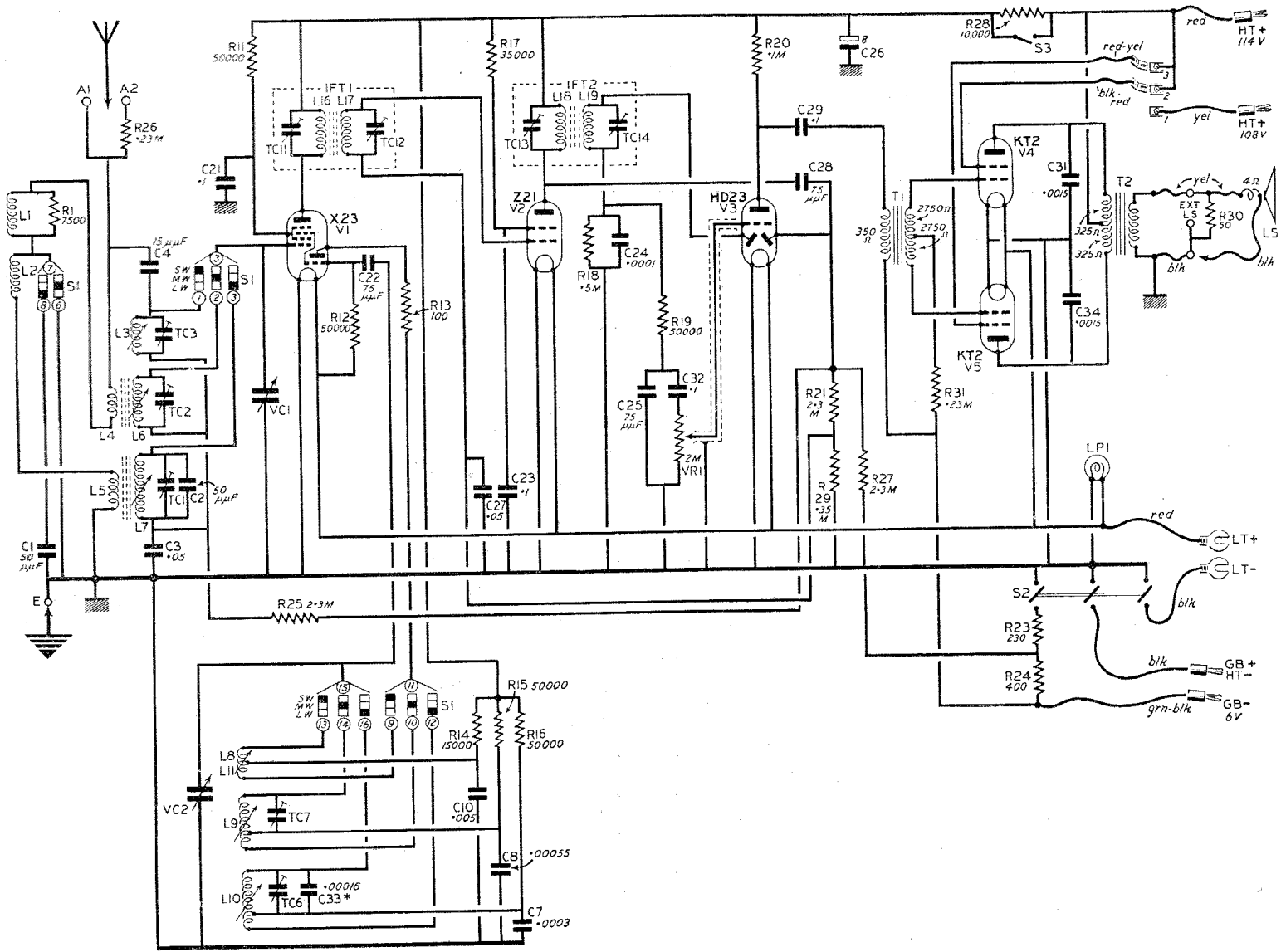
Valves.	V1 (X23)		V2 (Z21)	V3 (HD23)	V4 (KT2)	V5 (KT2)
Anode—	Mxr.	Osc.				
Volts to chassis	114	50	114	55	114	114
Current (mA)	0.7	1.3	1.0	0.6	0.9	0.9
Resistance to chassis	(7) ∞	(1) ∞	(Cap) ∞	(1) ∞	(1) ∞	(1) ∞
Screen—						
Volts to chassis	58	90	—	—	Depends on	valve letter.
Current (mA)	1.2	0.7	—	—	0.25	0.25
Resistance to chassis	(3) ∞	(1) ∞	—	—	(5) ∞	(5) ∞
Bias—						
Voltage	2.0*	0.2*	—	—	6.0	6.0
Control grid—Resistance to chassis ...	(Cap) 3-6 megohms	(2) 0.35 megohm	(2) 25 ohms to 2 megohms (VRI)	(2) 233,000 ohms	(2) 233,000 ohms	(2) 233,000 ohms
Filament—						
Volts	2	2	2	2	2	2
Current (amps)	0.3	0.1	0.15	0.2	0.2	0.2
Resistance to chassis	S (4) ∞	S ∞	S ∞	S ∞	S ∞	S ∞

H.T. consumption at H.T. + (red) lead 7.3 mA } Total H.T. consumption 7.8 mA approx.
 " " Yellow lead 0.5 mA } Note.—This value cannot be read at either the black (HT—) or green-black (GB—) lead.

L.T. consumption, 1.05A.

* Owing to the high resistances in circuit these values cannot satisfactorily be measured with a meter.

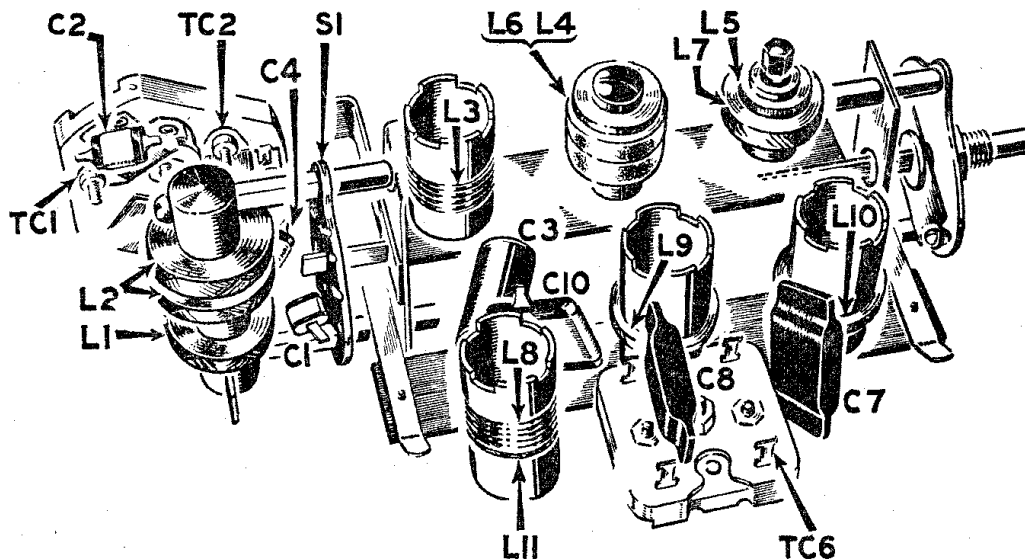




CONTINUITY CHECKS

Resistance values ± 20 per cent. Remove valves and pilot lamp, and switch economy switch to max. H.T.

Component.	Measured.	Switch.	Resistance.
L1, L2, L4, L5, R1	Al and earth sockets	MW SW	(L1 and L4) 10 ohms. (L1, L2, L4, L5) 44 ohms. L1, 9.5 ohms. L2, 33 ohms. L4, 0.4 ohms. L5, 1.6 ohms.
L3, L6, L7	Fixed vanes VCI and C3	SW MW LW	0.1 ohm (L3). 2.0 ohms (L6). 10.0 ohms (L7).
L8, L11	Contacts I5 and I1, S1	SW	1.0 ohm (L11 0.9 ohm).
L9	Contacts I5 and I1, S1	MW	2.8 ohms.
L10	Contacts I5 and I1, S1	LW	3.6 ohms.
L16	Anode V1 (X23) and red H.T. + lead	—	4.0 ohms.
L17, R29	Grid V2 (Z21) and chassis... ..	—	0.35 megohm. (L17, 4.0 ohms).
L18	Anode V2 and red H.T. + lead	—	4.0 ohms.
L19, R18	Diode V3 (HD23) and chassis	—	0.5 megohm. (L15, 4.0 ohms).
R12	Oscillator grid V1 and L.T. + lead	—	50,000 ohms.
VR1	Control grid V3 and chassis	—	10 ohms to 2 megohms.
L3, R25	Grid V1 and AVC diode V3	SW	2.3 megohms.
R21, R29, R27, R23	AVC diode V3 and chassis	ON	1.24 megohms.
For T1, T2, L.S. Speech coil...	See circuit diagram... ..	—	—

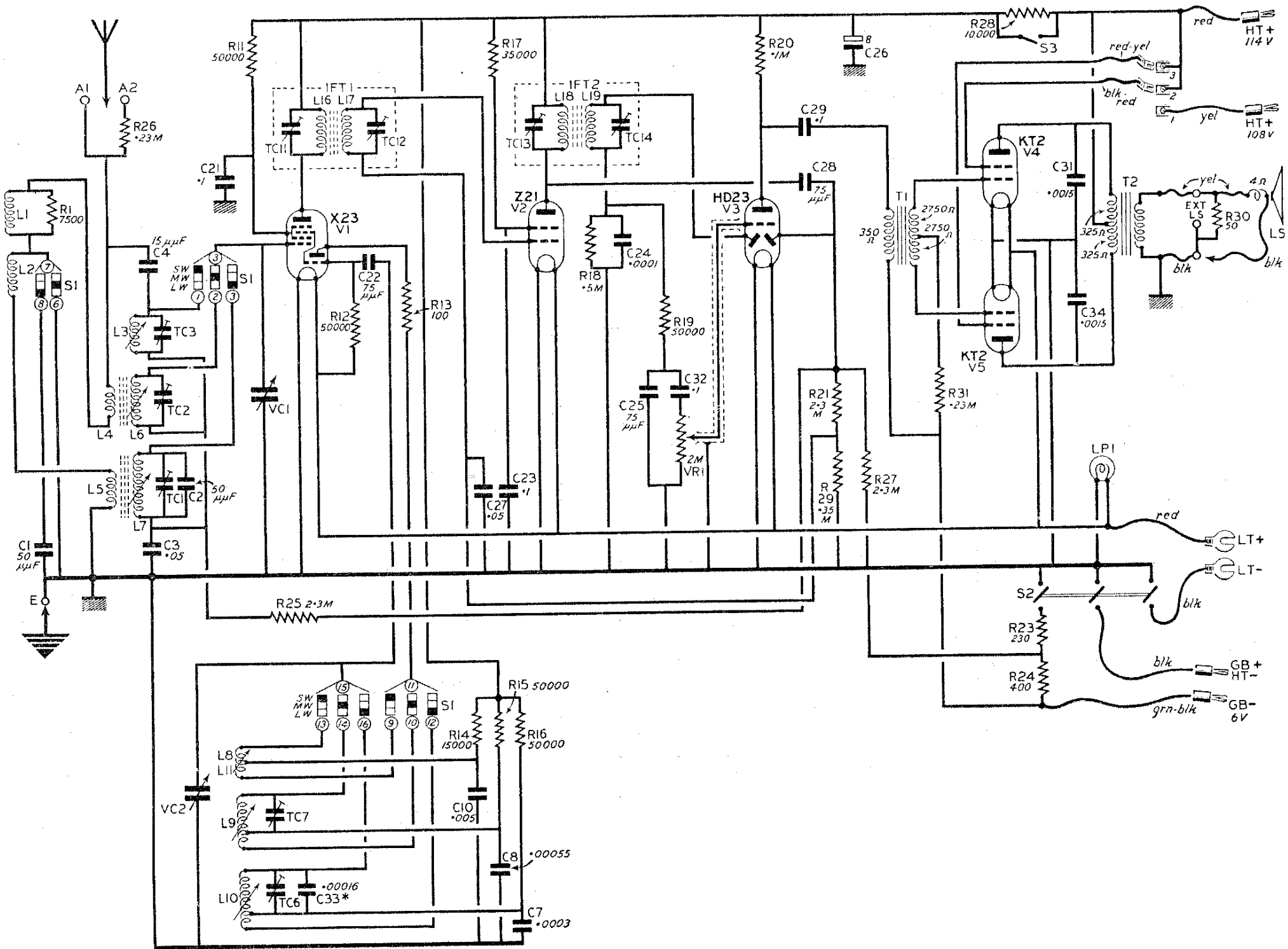


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SHERATON WORKS,
HAYES, MIDDLESEX.

Telephone : Southall 2468.

Telegraphic Address : Service, Hayes, Middlesex.

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S P A R E P A R T S L I S T .

5 Valve Battery Superhet.

RADIO UNIT PARTS

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
(For complete radio unit, see pages 6 and 7.)					
20650M	H.F. Unit	1	—	£ 1 17 6	Each.
20670A	L1 and L2 aerial coils	1	—	0 1 9	"
27085A	Panel with four tags	1	—	0 0 2	"
10400	Tag	4	—	0 0 1	Doz.
10710	Screw	2	—	0 0 2	"
3166	Washer, SP } securing L1, L2 and tag panel to switch	2	—	0 0 2	"
20660G	Grid coils panel assembly	1	—	0 8 6	Each.
20657H	L3—S.W. grid coil	1	—	0 1 0	"
20652	Clip	1	—	0 0 6	Doz.
20653	Bush } securing L3 to panel	1	—	0 0 7	"
20654	Nut	1	—	0 0 3	"
20666D	L4 and L6—M.W. coupling and grid coils	1	—	0 1 0	Each.
20662	Coil stem	1	—	0 0 7	"
20664	Screw securing coil stem to panel	1	—	0 0 7	Doz.
20672	Core	2	—	0 0 6	Each.
20667	Insulating washer (between the two cores)	1	—	0 0 2	Doz.
20659	Felt washer	1	—	0 0 4½	"
20668	Insulating washer } securing coils and cores to stem	1	—	0 0 1	"
20669	Screw	1	—	0 0 1	Each.
20661C	L5 and L7—L.W. coupling and grid coils	1	—	0 1 9	"
20729	Coil stem	1	—	0 0 2	"
20727	Spacer } securing L5 and L7	1	—	0 0 1	"
20728	Screw	1	—	0 0 1	"
20542	Core screw, for L5 and L7	1	—	0 0 6	"
20660A	Panel (for grid coils) with six tags	1	—	0 0 3	"
10400	Tag	6	—	0 0 1	Doz.
20650L	Oscillator coils panel assembly	1	—	0 5 8	Each.
20657T	L8 and L11—S.W. oscillator and reaction coil, with mounting bracket	1	—	0 1 6	"
11228	Screw	1	—	0 0 4	Doz.
3165	Washer, SP } securing L8 and L11 to panel	1	—	0 0 2	"
20657C	L9—M.W. oscillator coil	1	—	0 1 0	Each.
20673	Bracket for TC6	1	—	0 0 1	"
20652	Clip	1	—	0 0 6	Doz.
20653	Bush } securing L9 and bracket to panel	1	—	0 0 7	"
20654	Nut	1	—	0 0 3	"
20655B	Adjusting screw and disc for L9	1	—	0 0 1	Each.
20657B	L10—L.W. oscillator coil	1	—	0 1 0	"
20652	Clip	1	—	0 0 6	Doz.
20653	Bush } securing L10 to panel	1	—	0 0 6	"
20654	Nut	1	—	0 0 3	"
20655B	Adjusting screw and disc for L10	1	—	0 0 1	Each.
20650A	Panel (for oscillator coils)	1	—	0 0 4½	"
8777	Screw, PK, securing panel to switch	2	—	0 0 6	Doz.
20288A	S1—Wave range switch, with nut	1	—	0 4 8	Each.
23922D	TC1, TC2 and TC3—Triple pre-set condenser	1	—	0 2 0	"
24027	Adjusting screw	3	—	0 0 3	Doz.

SPARE PARTS LIST—continued.

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
19050	Screw	}	WN	£ 0 0 4	Doz.
3166	Washer, SP } securing TC1 and TC2 to bracket on switch ...				
26350BG	TC6—Pre-set condenser	}	—	0 0 2	"
25067	Adjusting screw ...				
1485	Washer	}	—	0 0 7	Doz.
10710	Screw				
3166	Washer SP, } securing TC6 to bracket on panel	}	WN	0 0 2	"
11628	Nut				
24150S	R1—7,500 ohms	}	WN	0 0 4	"
22164J	C1—50 mmfd.				
22164J	C2—50 mmfd.	}	—	0 0 9	Each.
24900W	C3—0.05 mfd.				
22164D	C4—15 mmfd.	}	—	0 1 3	"
29945A	C7—300 mmfd.				
29945B	C85—50 mmfd.	}	—	0 1 0	"
22005A	C10—0.005 mfd.				
28444G	C33—160 mmfd.	}	—	0 1 8	"
27092	Insulation ...				
15159	Tag	}	—	0 0 1	Doz.
8777	Screw, PK, securing H.F. unit				
1061	Washer	}	WN	0 0 6	"
5673	Washer, SP } for waveband switch ...				
20305A	Screen for H.F. unit	}	CdP	0 1 0	Each.
8777	Screw, PK, securing screen				
TRANSFORMERS.					
26330AW	1st I.F. transformer, with LI6, LI7, TC11 and TC12	1	—	0 6 6	Each.
26330AX	2nd I.F. transformer, with LI8, LI9, TC13, TC14 and lead and valve top clip ...	1	—	0 6 9	"
12619	Screw, PK, securing I.F. transformers	4	—	0 0 6	Doz.
18792E	T1—Intervalve transformer	1	—	0 9 6	Each.
8777	Screw, PK, securing T1	2	—	0 0 6	Doz.
22624AB	T2—Output transformer	1	—	0 6 6	Each.
10606	Screw, PK, securing T2	2	—	0 0 6	Doz.
RESISTANCES.					
	R1—See H.F. Unit				
24150J	R11—50,000 ohms	}	—	0 0 6	Doz.
24150J	R12—50,000 ohms				
24150AA	R13 100 ohms	}	—	0 0 6	"
24150AH	R14—15,000 ohms				
24150J	R15—50,000 ohms	}	—	0 0 6	"
24150J	R16—50,000 ohms				
24150H	R17 35,000 ohms	}	—	0 0 6	"
24150N	R18—500,000 ohms				
24150J	R19—50,000 ohms	}	—	0 0 6	"
24150L	R20—100,000 ohms				
24150AM	R21—2.3 megohms	}	—	0 0 6	"
30020BW	R23—230 ohms, Special Limit				
30020CR	R24—400 ohms, Special Limit	}	—	0 1 3	"
24150AM	R25—2.3 megohms				
24150M	R26—230,000 ohms	}	—	0 0 6	"
24150AM	R27—2.3 megohms				
17140B	R28—10,000 ohms	}	—	0 0 6	"
24150AK	R29—0.35 megohm				
19104AA	R30—50 ohms	}	—	0 1 0	"
24150M	R31—230,000 ohms				
27655EA	VRI and S2—Volume control (2 megohms) and On/Off switch with nut	1	—	0 5 0	"
5673	Washer, SP	}	WN	0 0 3	"
1061	Washer				
CONDENSERS.					
	C1—C4, C7, C8, C10—see H.F. unit				
24900AA	C21—0.1 mfd.	}	—	0 1 0	Each.
22164K	C22 75 mmf.				
24900AA	C23—0.1 mfd.	}	—	0 0 9	"

SPARE PARTS LIST—continued.

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.			Per
				£	s.	d.	
22164L	C24—100 mmf. ...	1	—	0	0	9	Each
22164K	C25—75 mmf. ...	1	—	0	0	9	"
17250K	C26—8 mfd. ...	1	—	0	2	0	"
19810	Clip	1	WN	0	0	1	"
8777	Screw, PK } securing C26 ...		—	—	0	0	6
24900W	C27—0.05 mfd....	1	—	0	1	3	Each.
22164K	C28—75 mmf. ...	1	—	0	0	9	"
24900AA	C29—0.1 mfd. ...	1	—	0	1	0	"
24900C	C31—0.0015 mfd. ...	1	—	0	1	0	"
24900AA	C32—0.1 mfd. ...	1	—	0	1	0	"
24900C	C34—0.0015 mfd. ...	1	—	0	1	0	"
	C33—see H.F. unit. TC1, TC2, TC3 and TC6—see H.F. unit.						
20250C	TC7—Tubular trimmer condensers ...	1	—	0	1	9	"
20257	Nut	1	WN	0	0	1	"
20258	Nut, thin } securing TC7 to insulating panel ...		—	—	0	0	1
2994	Insulating panel ...	1	—	0	0	6	Doz.
12619	Screw, PK, securing panel ...	4	—	0	0	6	"
	TC11 and TC12—in IFT1 TC13 and TC14—in IFT2						
20280F	VC1 and VC2—Complete with push button unit ...	1	—	2	0	0	Each.
20280E	VC and VC2, less push button unit ...	1	—	0	11	0	"
29904B	Push button unit, complete with knobs and four screws for securing to base plate ...	1	—	0	16	9	"
29905A	Base plate, with one stud ...	1	AISp	0	0	9	"
29906A	Wing plate assembly, with bearings ...	1	AISp	0	0	4	"
29940	Bearing plate ...	2	AISp	0	0	4	Doz.
10606	Screw, P.K, securing bearing plate ...	2	—	0	0	6	"
29909	Bush ...	1	WN	0	0	6	Each.
13387	Screw, securing bush to L.H. end bearing ...	2	WN	0	0	3	Doz.
29910A	Adjusting link and pin ...	1	AISp	0	0	2	Each.
11227	Screw	1	WN	0	0	6	Doz.
2165	Washer, SP } securing adjusting link to bush ...		—	—	0	0	2
10606	Screw, PK	2	—	0	0	6	"
20752	Screw	2	WN	0	0	6	"
3166	Washer, SP } securing two-gang condenser to push button unit ...	2	—	0	0	2	"
29911	Spacer	2	WN	0	0	6	"
29912A	Condenser operating arm ...	1	AISp	0	0	3	Each.
28325	Screw, securing operating arm to condenser spindle ...	1	WN	0	0	3	Doz.
29913A	Link assembly, connecting operating arm to quadrant of P.B. unit ...	1	WN	0	0	2	Each.
29914	Guide pin, for disengaging lever ...	1	WN	0	0	6	Doz.
3165	Washer, SP } securing guide pin to front plate of condenser ...	1	—	0	0	2	"
11629	Nut	1	WN	0	0	3	"
29915B	Bracket assembly, with bush ...	1	AISp	0	0	9	Each.
10606	Screw, PK, securing bracket assembly to top of condenser front plate ...	2	—	0	0	6	Doz.
29917	Tuning spindle ...	1	—	0	0	3	Each.
29918	Friction bush ...	1	—	0	0	1½	"
29919	Spring ...	1	—	0	0	1	"
1048	Washer ...	1	—	0	0	2	Doz.
11629	Nut ...	1	WN	0	0	3	"
29920	Spring wire, securing tuning spindle ...	1	—	0	0	6	"
14987	Washer	1	WN	0	0	1	"
8777	Screw, PK } securing spring wire ...		—	—	0	0	6
29941	Adjusting screw (at top of bracket) ...	1	WN	0	0	1	Each.
15938	Locking nut ...	1	WN	0	0	6	Doz.
29921A	Disengaging lever for friction drive, with ball ...	1	AISp	0	0	3	Each.
29922	Link ...	1	AISp	0	0	1	"
20936	Felt washer	1	—	0	0	1	Doz.
23108	Washer } securing link to pin on adjusting link (29910A) ...		—	—	0	0	1
21233B	Split pin	1	WN	0	0	1	"
29924A	Condenser drive disc and bush, with chain pulley ...	1	—	0	1	3	Each.
23048	Screw, securing bush to condenser spindle ...	2	WN	0	0	6	Doz.
29968A	Lead anchor plate and tag ...	1	—	0	0	1	Each.
16755	Rubber bush ...	1	—	0	0	6	Doz.

SPARE PARTS LIST—continued.

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
				£ s. d.	
21236A	Rubber bush	}	—	0 0 1	Each.
6305	Washer			0 0 1	Doz.
3167	Washer, SP			0 0 2	"
11627	Nut			0 0 3	"
28399	Felt disc, for push buttons	6	—	0 0 2	"
TUNING DETAILS.					
—	Tuning scale—see pages 6 and 7.				
6276	Washer	}	WN	0 0 6	Doz.
3166	Washer, SP		—	0 0 2	"
11220	Screw		—	0 0 2	"
29929A	Pointer	1	MGS _p	0 0 4½	Each.
20810B	Chain pulley	1	—	0 0 7	"
1021	Washer	2	—	0 0 4	Doz.
20938	Screw, securing pulley to pointer	2	—	0 0 4	"
20844F	Chain	1	—	0 0 9	Each.
9076	Spring, for chain	1	—	0 0 1	"
29928A	Lampholder assembly	1	—	0 0 6	"
29931	Screw	}	WN	0 0 1	"
28876	Rubber washer (oil proof)		—	0 0 6	Doz.
29936	Washer		WN	0 0 2	"
3165	Washer, SP		—	0 0 2	"
11629	Nut	1	WN	0 0 3	"
28735A	Insulating washer and eyelet	}	—	0 0 6	"
27734	Spring		—	0 0 1	Each.
22704B	Lamp	1	—	0 0 9	"
24337D	Lever and bush, with pin	1	WN	0 0 6	"
13387	Screw, securing bush to spindle of SI	1	WN	0 0 3	Doz.
29932	Link	1	WN	0 0 1½	Each.
20936	Felt washer	}	—	0 0 1	Doz.
23108	Washer		WN	0 0 1	"
21233B	Split pin		2	—	0 0 1
SWITCHES.					
SI—Wave range switch—see H.F. unit.					
S2—On/Off switch—see VR1.					
29901A	S3—Battery economiser switch, complete with extension spindle and mounting bracket	1	—	0 2 9	Each.
8777	Screw, PK, securing bracket to chassis	3	—	0 0 6	Doz.
VALVE HOLDERS, SCREENS, PANELS, ETC.					
28830A	Valve holder, 7-pin	1	—	0 1 2	Each.
18299	Rivet, securing valveholder	2	—	0 0 3	Doz.
26000B	Valve holder, 5-pin	4	—	0 0 4½	Each.
24981	Valve screen base	2	CdP	0 0 3	"
16353	Rivet, securing valve holder and screen bases	8	—	0 0 1	Doz.
24982B	Valve screen	2	—	0 0 8	Each.
26112	Valve screen top	2	—	0 0 2	"
28834A	A and E panel with three sockets and four tags	1	—	0 0 6	"
16352	Rivet, securing panel	4	—	0 0 1	Doz.
17274A	Valve matching panel, with three terminal screws and tags	1	—	0 0 6	Each.
14512	Tag	3	—	0 0 6	Doz.
14511	Nut	3	WN	0 0 4	"
11228	Terminal screw	3	WN	0 0 2	"
16352	Rivet, securing panel	2	—	0 0 1	"
22677D	Condenser and Resistance panel, with eight tags	4	—	0 0 6	Each.
26139	Backing panel	1	—	0 0 6	Doz.
8777	Screw, PK, securing panels	2	—	0 0 6	"
25494	Small panel	1	—	0 0 1	Each.
25495	Small backing panel	1	—	0 0 1	"
10400	Tag	8	—	0 0 1	Doz.
8777	Screw, PK, securing panels	4	—	0 0 6	"
25174B	Tag panel, with seven tags	1	—	0 0 2	Each.
12619	Screw, PK, securing tag panel	2	—	0 0 6	Doz.
20334A	Insulated tag bracket	1	—	0 0 2	Each.

SPARE PARTS LIST—continued

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
				£ s. d.	
16755	Insulating bush	4	—	0 0 6	Doz.
16757	Insulating bush, (larger)	2	—	0 0 6	"
29969A	Battery lead, with four plugs and two tags	1	—	0 5 3	Each.
3475G	Plug, yellow	4	—	0 0 1½	"
8519	Tag	2	—	0 0 2	Doz.
28853B	Lamp lead	1	—	0 0 2	Each.
19897	Clip, for valve top	2	—	0 0 1	"
16576	Long tag	1	—	0 0 3	Doz.
12619	Screw, PK, securing tags	1	—	0 0 6	"
25406	Large cleat, for leads	1	—	0 0 3	"
10606	Screw, PK, securing cleat to front of chassis	1	—	0 0 6	"

LOUDSPEAKER.

24760D	Loudspeaker	1	—	1 2 0	Each.
24760C	Cone chassis, with 4 brackets and two studs	1	CdP	0 2 9	"
24763F	Magnet	1	—	0 15 6	"
24765	Stud } securing magnet to cone chassis	4	AcD	0 0 1	"
19687	Nut }	4	AcD	0 0 4	Doz.
16401D	Speech coil and cone	1	—	0 3 6	Each.
16010	Cone mounting ring, inner	1	—	0 0 3	"
16011	Cone mounting ring, outer	1	—	0 0 2	"
16012	Felt	1	—	0 0 2	"
11636	Nut } securing spider of cone to studs on cone chassis	2	WN	0 0 6	Doz.
6314	Washer }	2	WN	0 0 1	"
16007	Card washer }	2	—	0 0 1	"
12568A	Terminal panel, with 2 tags	1	—	0 0 4	Each.
1806	Tag	2	—	0 0 6	Doz.
211	Screw, PK, securing terminal panel	2	—	0 0 6	"
23280	Dust bag	1	—	0 0 6	Each.
11311	Screw } securing loudspeaker	4	ParB	0 0 2	Doz.
3167	Washer, SP }	4	—	0 0 2	"
14120	Washer }	4	WN	0 0 2	"

CABINET FITTINGS, PLUGS, ETC.

29935A	Cabinet back	1	—	0 1 6	Each.
19896	Screw } securing cabinet back to bracket	3	ParB	0 0 1	"
19895	Washer }	3	ParB	0 0 6	Doz.
28882	Strap, for accumulator	1	BzSp	0 0 3	Each.
28881	Pivot pin } securing strap to cabinet back	1	BzP	0 0 9	Doz.
3165	Washer, SP }	1	—	0 0 2	"
11629	Nut }	1	WN	0 0 3	"
29939	Tuning escutcheon	1	—	0 1 2	Each.
9545	Screw, securing escutcheon	4	BzP	0 0 2	Doz.
27893	Rubber strip	4	—	0 0 6	"
29934	Window	1	—	0 0 6	Each.
26107	Clamp } securing window to escutcheon... ..	4	ParB	0 0 6	Doz.
14791	Screw }	4	ParB	0 0 4	"
29937	Push button escutcheon	1	—	0 1 0	Each.
9932	Screw, securing escutcheon	4	BzP	0 0 2	Doz.
29933	Backing strip, for station strip	1	—	0 0 1	Each.
29217	Station strip—Radio Normandie, Midland Regional, London Regional, North Regional, Luxembourg (LW) and Droitwich (LW)	1	—	0 0 6	Doz.
29218	Station sheet	1	—	0 0 1	Each.
16787B	Ex. L.S. bracket and panel with three sockets	1	—	0 0 6	"
11531G	Panel with three sockets	1	—	0 0 3	"
16353	Rivet, securing panel	2	—	0 0 1	Doz.
8697	Screw, securing panel to cabinet	2	WN	0 0 2	"
19104AA	Resistance 50 ohms (R30)	1	—	0 1 0	Each.
3475G	Plug, yellow	1	—	0 0 1½	"
28839B	Ex. L.S. lead	1	—	0 0 4½	"
16289J	Aerial plug, yellow	1	—	0 0 2	"
16289B	Earth plug, black	1	—	0 0 2	"
16578	Cleat, for L.S. lead	1	WN	0 0 6	Doz.
8692	Screw, securing cleat	1	WN	0 0 2	"

SPARE PARTS LIST—continued.

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
MODEL 872.					
Instructions.				£ s. d.	
27081	Warning and valve position	1	—	0 0 1	Each.
29216	Instruction card	1	—	0 0 6	"
27093	Transit label	1	—	0 0 6	Doz.
CABINET.					
86329B	Cabinet	1	Pol	3 5 0	Each.
8195	Rubber foot	4	—	0 0 8	Doz.
—	Baffle board, with insert nuts	1	Std	0 2 6	Each.
14922	Insert nut	4	CB	0 1 4	Doz.
9547	Screw, securing baffle	5	—	0 0 2	"
29946	Wire mesh	1	AnBr	0 2 6	Each.
19273	Pin, securing mesh to baffle	4	—	0 0 1	Doz.
—	Felt for wire mesh, $\frac{1}{8}$ in., S1428, 225/82316	—	—	0 0 9	Sq. ft.
—	Felt for wire mesh, $\frac{1}{4}$ in., S1459, 225/84316	—	—	0 0 9	"
24873	Bracket, for cabinet back	3	CpP	0 0 1	Each.
9545	Screw, securing brackets...	6	—	0 0 2	Doz.
CONTROLS.					
20967J	Knob—"Tuner"	1	ChF	0 0 9	Each.
11773	Grub screw, securing tuner knob	1	WN	0 0 2	Doz.
27804AT	Knob—"Volume"	1	ChF	0 0 6	Each.
27804AW	Knob—"Wave band"	1	ChF	0 0 6	"
27804AU	Knob—"Battery Economiser"	1	ChF	0 0 6	"
11805	Screw, PK, securing knobs	3	—	0 0 6	Doz.
RADIO UNIT.					
29900B	Radio unit	1	—	9 0 0	Each.
29926C	Tuning scale	1	—	0 3 9	"
29026	Screw, 1 in.	1	WN	0 0 1	"
29942	Screw, $2\frac{1}{4}$ in.	3	WN	0 0 1 $\frac{1}{2}$	"
28769	Washer	4	WN	0 0 6	Doz.
10173C	Spring washer	4	—	0 0 2	"
8651	Screw, securing tuning scale to cabinet	1	WN	0 0 2	"
8651	Transit screw	1	RedHd	0 0 6	"
MODEL 1400.					
Instructions.					
27080	Warning and valve position label	1	—	0 0 1	Each.
29215	Instruction card	1	—	0 0 6	"
27093	Transit label	1	—	0 0 6	Doz.
CABINET.					
86347B	Cabinet	1	Pol	3 5 0	Each.
8195	Rubber foot	4	—	0 0 8	Doz.
—	Baffle board, with insert nuts	1	Std	0 2 6	Each.
14922	Insert nut	4	CB	0 0 1	"
9547	Screw, securing baffle	5	—	0 0 2	Doz.
29947	Wire mesh	1	AnBz	0 2 6	Each.
19273	Pin, securing wire-mesh to baffle	4	—	0 0 1	Doz.
—	Felt for wire mesh, $\frac{1}{8}$ in., S1429, 225/82316	—	—	0 0 9	Sq. ft.
—	Felt for wire mesh, $\frac{1}{4}$ in., S1459, 225/84316	—	—	0 1 3	"
24873	Bracket, for cabinet back	3	CdP	0 0 1	Each.
9545	Screw, securing brackets...	6	—	0 0 2	Doz.

SPARE PARTS LIST—continued.

Part No.	Description.	Parts per Inst.	Finish.	Retail List Price.	Per
				£ s. d.	
CONTROLS.					
20967B	Knob—"Tuner"	1	ChF	0 0 9	Each.
11773	Grub screw, securing tuner knob	1	WN	0 0 6	Doz.
27804	Knob—"Volume"	1	ChF	0 0 6	Each.
27804R	Knob—"Wave Band"	1	—	0 0 6	"
27804AV	Knob—"Battery Economiser"	1	ChF	0 0 6	"
11805	Screw, PK, securing knobs	3	—	0 0 6	Doz.
RADIO UNIT.					
29900C	Radio Unit	1	—	9 0 0	Each.
29926E	Tuning scale	1	—	0 3 9	"
29026	Screw, 1 in.	2	WN	0 0 1	"
29942	Screw, 2¼ in. } securing radio unit	2	WN	0 0 1½	"
28769	Washer }	4	WN	0 0 6	Doz.
10173C	Spring washer }	4	—	0 0 2	"
865I	Screw, securing tuning scale to cabinet	1	WN	0 0 2	"
865I	Transit screw	1	RedHd	0 0 6	"

"FINISH" CODE.

AcD	Acid Dip.	MGSp	Matt Gold Spray.
AlSp	Aluminium Spray.	ChF	Chrome Filled.
AnBr	Antique Brass.	ParB	Parkerised Black.
AnBz	Antique Bronze.	Pol	Polished.
BzP	Bronze Polish.	RedHd	Red Headed.
BzSp	Bronze Spray.	Std	Standard.
CB	Camera Black.	WN	White Nickel.
CdP	Cadmium Plated.		

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

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