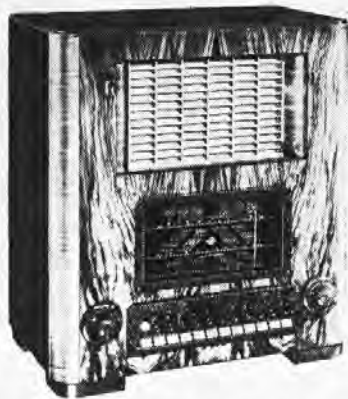


"TRADER" SERVICE SHEET

422

# MARCONIPHONE 879 AND H.M.V. 1350



The Marconiphone model 879.

**T**HE Marconiphone 879 table receiver is a 4-valve (plus rectifier) AC/DC 3-band superhet, with press-button tuning for eight stations, and press-button wavechange and "off" switching.

The receiver is suitable for mains of

200-255 V. (25-00 C/S in the case of AC). The SW range is 13.8-50 m, and there is provision for using an external loud-speaker.

A similar chassis is fitted in the H.M.V. 1350 receiver.

Release date : July, 1939.

### CIRCUIT DESCRIPTION

All the switches in the press-button unit, with the exception of **S23**, have been numbered and lettered in such a manner as to indicate their functions : all switches bearing the same number are operated by the same button ; a suffix letter **a**, **b** or **c** indicates that the switch to which it is attached closes, while an **x**, **y** or **z** indicates that its switch opens, when its button is pressed ; when the button is released, by pressing another button, the **a**, **b** and **c** switches open, and **x**, **y** and **z** switches close. **S23** closes during the movement of any button to mute the receiver during the operation.

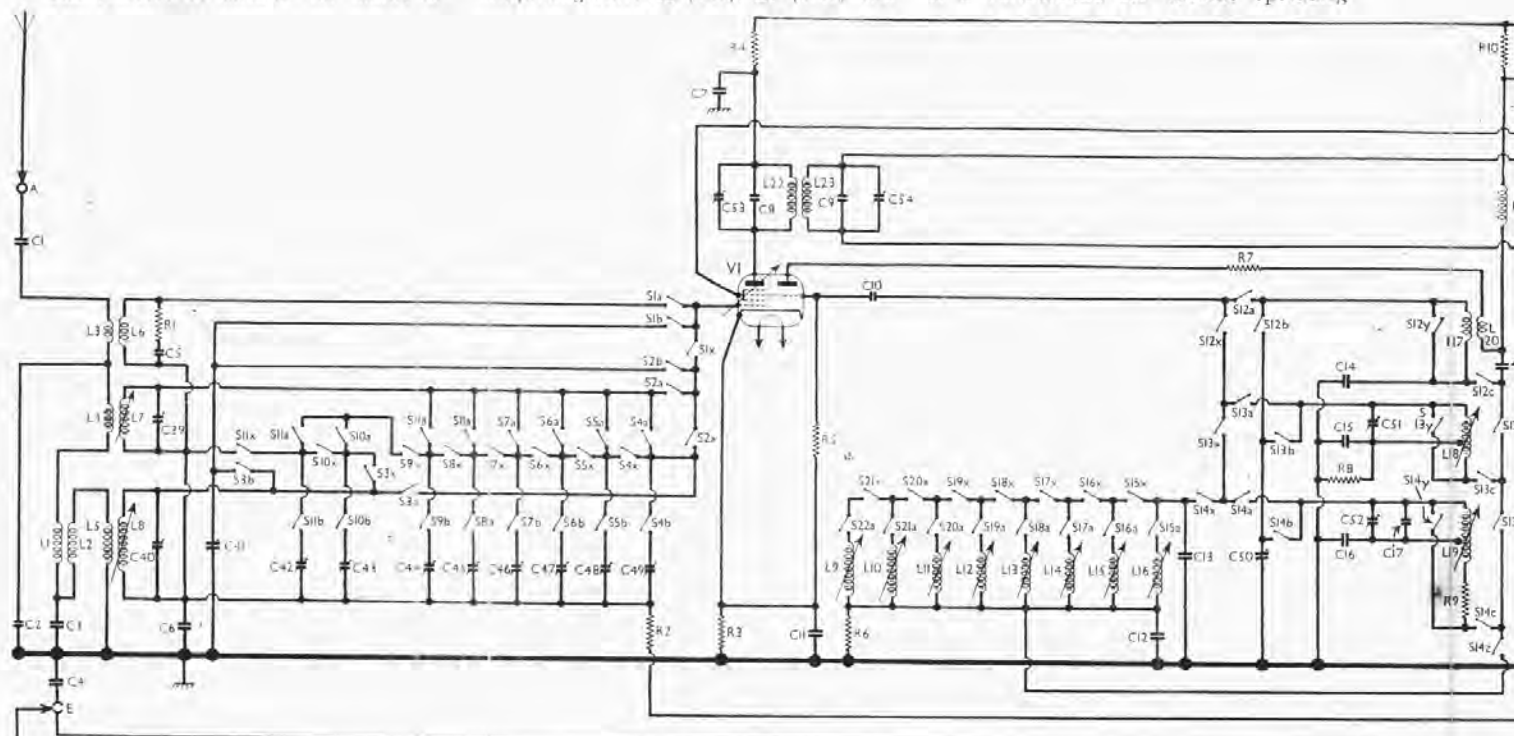
Aerial input is via coupling coils **L3**, **L4** and (via image rejector circuit **L1**, **L2**, **C3**) **L5** to single-tuned circuits comprising coils **L6** (SW), **L7** (MW) and

**L8** (LW) tuned manually by **C41** or automatically (MW and LW only) by preset trimmer condensers **C42** to **C49** via switches **S4a**, **S4b** to **S11a**, **S11b** according to which button is depressed.

First valve (**V1**, Marconi **X65**) is a triode hexode operating as frequency changer with internal coupling. For manual operation, triode grid coils **L17** (SW), **L18** (MW) and **L19** (LW) are tuned by **C50** ; parallel trimming by **C51** (MW) and **C17**, **C52** (LW) ; series tracking by **C14** (SW), **C15** (MW) and **C16** (LW). Reaction by direct coupling between anode and tuning coils via **C18** and switches **S12c** (SW), **S12z**, **S13c** (MW) and **S13z**, **S14c** (LW). On SW, additional coupling is obtained via **L20**.

For automatic operation, independent tuned circuits are employed comprising coils **L9** to **L16** tuned by fixed condenser **C13**. They are connected between the control grid (via **x** switches) and the anode (via **z** switches). The coil is selected by one of the switches **S15a** to **S22a**, according to which button is pressed.

Second valve (**V2**, Marconi **KTW63**) is a variable-mu RF tetrode operating



Circuit diagram of the Marconiphone model 879 and H.M.V. 1350 AC/DC press-button superhets. In the press-button section condensers are used for the aerial circuit and permeability-tuned coils for the oscillator circuit. Certain of the manual tuning coils are also of the adjustable iron-cored type. Note that the earth socket is split. The numbers 1 to 8 in circles indicate the sockets of the octal holder into which the ballast resistance is plugged. See also General Notes under "Ballast Resistance".



as intermediate frequency amplifier with iron-cored transformer couplings C53, L22, L23, C54 and C55, L24, L25, C56.

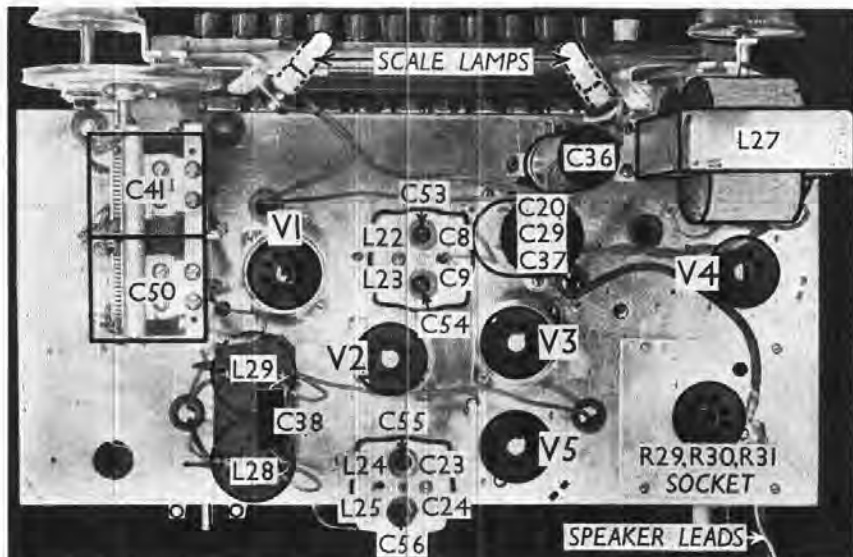
**Intermediate frequency 465KC/S.**

Diode second detector is part of double diode triode valve (V3, Marconi DH63). Audio frequency component in rectified output is developed across load resistances R14, R15 and that across R15 is passed via AF coupling condenser C26 and manual volume control R16 to CG of triode section, which operates as AF amplifier.

Second diode of V3, fed from L25 via C27, provides DC potential which is developed across load resistance R20 and fed back through decoupling circuits as GB to FC and IF valves, giving automatic volume control. Delay voltage, together with GB for triode section, is obtained from drop along R17.

Resistance-capacity coupling by R19, C31 and R24, via stopper resistances R22, R23, between V3 triode and tetrode output valve (V4, Marconi KT33C). Variable tone control by R21, C32 between grid and anode. Fixed tone correction by C34 between anode and chassis. Provision for connection of low impedance external speaker across secondary of output transformer T1, while internal speaker may be muted by withdrawal of speaker plug.

When the receiver is used with AC mains, HT current is supplied by IIC half-wave rectifying valve (V5, Marconi U31) which, on DC mains behaves as a low resistance. Smoothing is effected by choke L27 and condensers C36 and C37.



Plan view of the chassis. The IF trimmers are indicated.

Valve heaters, together with scale lamps and ballast resistances R30, R31, are connected in series across the mains input. R28 and R29 shunt the scale lamps. Filter circuit comprising chokes L28, L29 and condenser C38 suppresses mains-borne interference.

**DISMANTLING THE SET**

The cabinet is fitted with a detachable

bottom, upon removal of which access may be gained to most of the components.

**Removing Chassis.**—If it is desired to remove the chassis from the cabinet, first remove the three control knobs (recessed grub screws) from the front of the cabinet and the bakelite escutcheon surrounding the press buttons. Next withdraw the two round-head wood screws holding the top corners of the scale assembly to the front of the cabinet and free the speaker leads from the cleat on the side of the cabinet. Now remove the four protective wooden panels (two countersunk-head wood screws each) beneath the cabinet and the four bolts (with lock-washers and claw-washers) holding the chassis to the bottom of the cabinet. The chassis can now be withdrawn to the extent of the speaker leads. To free the chassis entirely, unsolder the two leads connected to the paxolin strip on the speaker.

**When replacing,** connect the yellow lead to the tag marked "—" on the speaker and the black lead, together with a black lead from the speaker frame, to the tag marked "—"

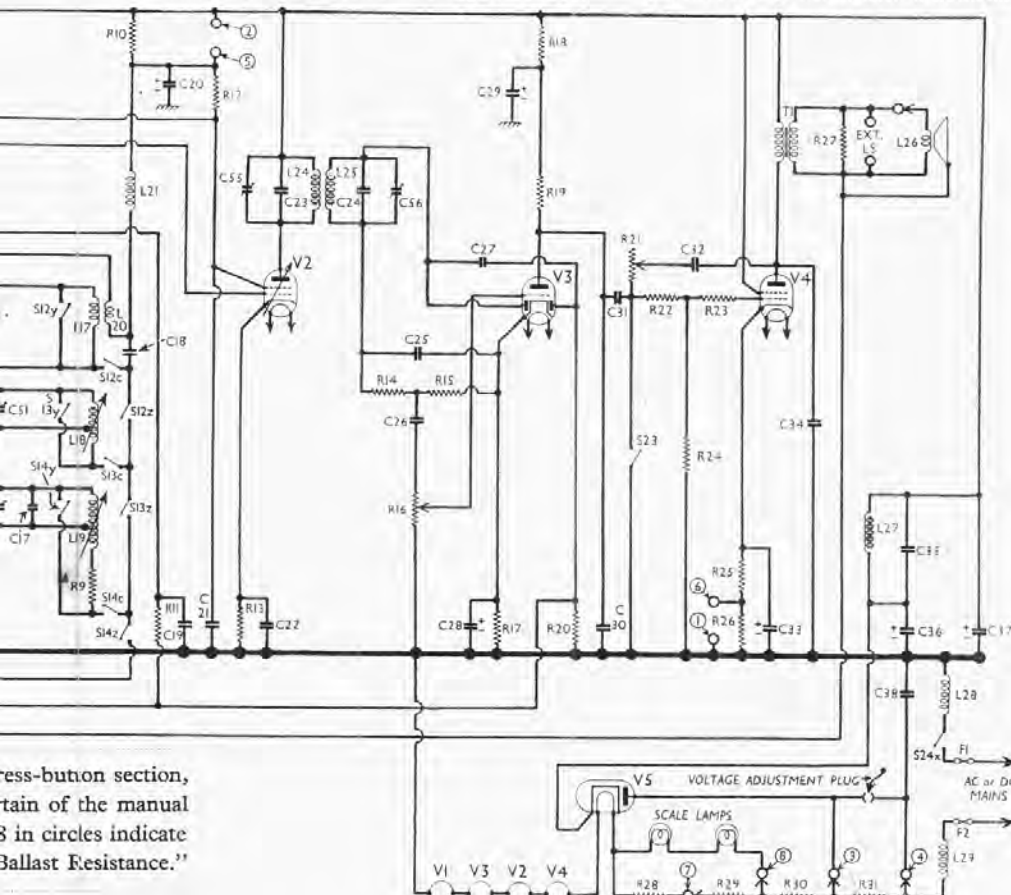
**Removing Speaker.**—The speaker may be removed by unsoldering the leads and removing the nuts and washers from the three bolts holding it to the sub-baffle. **When replacing,** see that the paxolin strip is at the right of the speaker, connect the leads as indicated above and do not forget to replace the earthing leads.

**VALVE ANALYSIS**

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on AC mains of 237 V, using the 228-255 V tapping on the mains resistance. The

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 N65 ..	187	1.45	78	3.9
	(Oscil. 197)	(4.45)		
V2 KTW63	190	5.5	78	5.3
V3 DH63	62.5	0.6	—	—
V4 KT33C	172.5	0.5	190	11
V5 U31† ..	—	—	—	—

† Cathode to chassis, 202 V, DC.



press-button section, obtain of the manual 3 in circles indicate Ballast Resistance."



receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

**COMPONENTS AND VALUES**

RESISTANCES		Values (ohms)
R1	Aerial circuit SW damping ..	23
R2	V1 hexode CG decoupling ..	1,500,000
R3	V1 fixed GB resistance ..	350
R4	V1 hex. anode HT feed ..	1,500
R5	V1 osc. CG resistance ..	50,000
R6	Auto osc. circuit damping ..	5,000
R7	V1 osc. anode stabiliser ..	150
R8	Osc. circuit MW damping ..	2,300
R9	Osc. LW reaction damping ..	1,000
R10	V1 osc. anode and V1, V2 SG's decoupling ..	10,000
R11	V2 CG decoupling ..	1,500,000
R12	V1, V2 SG's HT feed ..	5,000
R13	V2 fixed GB resistance ..	350
R14	V3 signal diode load resistances ..	100,000
R15	Manual volume control ..	500,000
R16	Mantual volume control ..	2,000,000
R17	V3 triode GB and AVC delay ..	2,500
R18	V3 triode anode decoupling ..	10,000
R19	V3 triode anode load ..	150,000
R20	V3 AVC diode load ..	2,300,000
R21	Variable tone control ..	2,000,000
R22	V4 grid stoppers ..	230,000
R23	V4 CG resistance ..	50,000
R24	V4 GB resistance ..	230,000
R25	V4 GB resistances ..	100
R26	Tr sec. artificial loading ..	50
R27	Scale lamps shunt resistances ..	11.5*
R28	Heater circuit ballast resistances ..	30
R29	Heater circuit ballast resistances ..	370
R30	Heater circuit ballast resistances ..	50
R31	Heater circuit ballast resistances ..	50

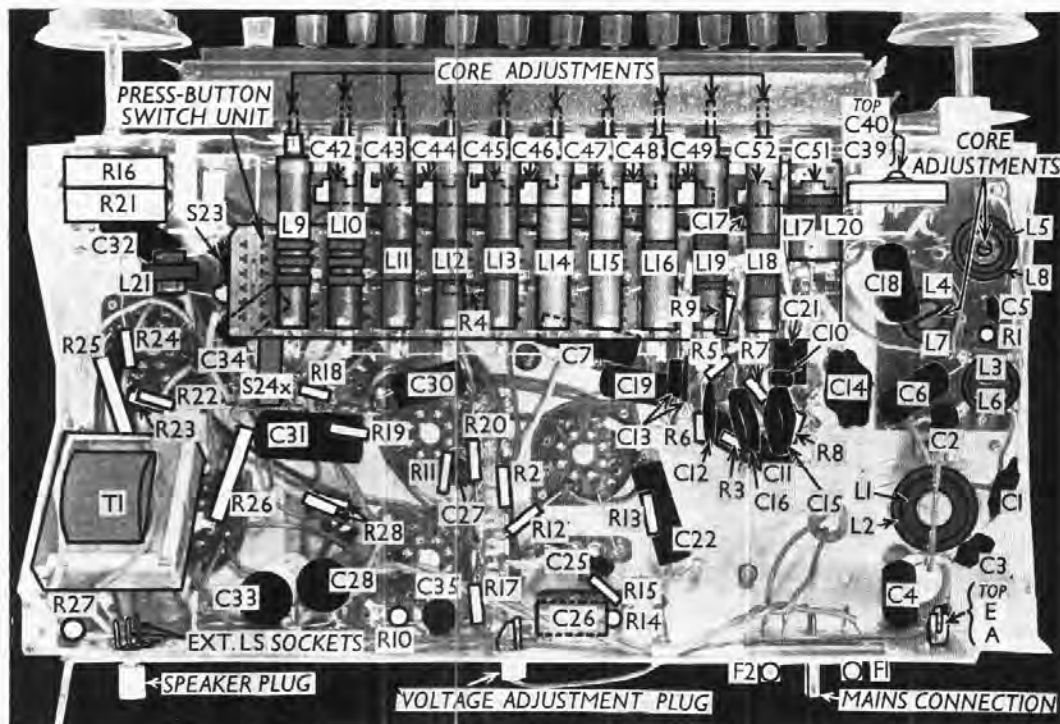
\* Two 23 Ω resistances in parallel.

CONDENSERS		Values (μF)
C1	Aerial isolating condenser ..	0.001
C2	Part aerial SW coupling ..	0.000015
C3	Part LW image rejector ..	0.00035
C4	Earth isolating condenser ..	0.01
C5	Aerial circuit SW trimmer ..	0.0000075
C6	V1 hexode CG decoupling ..	0.05

CONDENSERS (Continued)		Values (μF)
C7	V1 hexode anode decoupling ..	0.1
C8	1st IF transformer fixed trimmers ..	0.00005
C9	V1 osc. CG condenser ..	0.00005
C10	V1 osc. CG condenser ..	0.00005
C11	V1 cathode by-pass ..	0.1
C12	V1 osc. anode coupling (auto) ..	0.0005
C13	Osc. auto circuit fixed tuning condenser ..	0.000158
C14	Osc. circuit SW tracker ..	0.005
C15	Osc. circuit MW tracker ..	0.005
C16	Osc. circuit LW tracker ..	0.00055
C17	Osc. circuit LW fixed trimmer ..	0.00023
C18	V1 osc. anode coupling ..	0.005
C19	V2 CG decoupling ..	0.05
C20*	V1 osc. anode and V1, V2 SG's decoupling ..	1.0
C21	V1, V2 SG's RF by-pass ..	0.1
C22	V2 cathode by-pass ..	0.1
C23	2nd IF transformer fixed trimmers ..	0.00013
C24	IF by-pass ..	0.00013
C25	IF by-pass ..	0.0001
C26	AF coupling to V3 triode ..	0.0023
C27	Coupling to V3 AVC diode ..	0.000075
C28*	V3 cathode by-pass ..	50.0
C29*	V3 triode anode decoupling ..	4.0
C30	IF by-pass ..	0.001
C31	V4 triode to V4 AF coupling ..	0.1
C32	Part of variable tone control ..	0.001
C33*	V4 cathode by-pass ..	25.0
C34	Fixed tone corrector ..	0.0035
C35	HT smoothing choke shunt ..	0.05
C36*	HT smoothing condensers ..	16.0
C37*	HT smoothing condensers ..	32.0
C38	Mains RF by-pass ..	0.01
C39†	Aerial circuit MW trimmer ..	—
C40†	Aerial circuit LW trimmer ..	—
C41†	Aerial circ. manual tuning ..	—
C42†	Aerial circuit LW auto tuning trimmers ..	—
C43†	Aerial circuit LW auto tuning trimmers ..	—
C44†	Aerial circuit MW auto tuning trimmers ..	—
C45†	Aerial circuit MW auto tuning trimmers ..	—
C46†	Aerial circuit MW auto tuning trimmers ..	—
C47†	Aerial circuit MW auto tuning trimmers ..	—
C48†	Aerial circuit MW auto tuning trimmers ..	—
C49†	Aerial circuit MW auto tuning trimmers ..	—
C50†	Osc. circ. manual tuning ..	—
C51†	Osc. circuit MW trimmer ..	—
C52†	Osc. circuit LW trimmer ..	—
C53†	1st IF trans. pri. tuning ..	—
C54†	1st IF trans. sec. tuning ..	—
C55†	2nd IF trans. pri. tuning ..	—
C56†	2nd IF trans. sec. tuning ..	—

\* Electrolytic. † Variable. ‡ Pre-set.  
§ Two 0.000075 μF in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial LW image rejector coils ..	18.0
L2	Aerial SW coupling coil ..	10.0
L3	Aerial MW coupling coil ..	5.5
L4	Aerial MW coupling coil ..	0.6
L5	Aerial LW coupling coil ..	4.0
L6	Aerial SW tuning coil ..	0.1
L7	Aerial MW tuning coil ..	2.0
L8	Aerial LW tuning coil ..	9.5
L9	Oscillator circuit LW auto tuning coils ..	10.5
L10	Oscillator circuit LW auto tuning coils ..	10.5
L11	Oscillator circuit MW auto tuning coils ..	5.0
L12	Oscillator circuit MW auto tuning coils ..	5.0
L13	Oscillator circuit MW auto tuning coils ..	5.0
L14	V2 CG decoupling ..	4.0
L15	V2 CG decoupling ..	4.0
L16	V2 CG decoupling ..	4.0
L17	Osc. circuit SW tuning coil ..	4.0
L18	Osc. manual MW coil, total ..	0.5
L19	Osc. manual LW coil, total ..	11.0
L20	Oscillator SW reaction ..	0.6
L21	V1 osc. anode coupling choke ..	77.0
L22	1st IF trans. { Pri. ..	6.0
L23	1st IF trans. { Sec. ..	6.0
L24	2nd IF trans. { Pri. ..	4.0
L25	2nd IF trans. { Sec. ..	4.0
L26	Speaker speech coil ..	3.0
L27	HT smoothing choke ..	130.0
L28	Mains filter chokes ..	3.0
L29	Mains filter chokes ..	3.0
Tr	Output trans. { Pri. ..	250.0
Tr	Output trans. { Sec. ..	0.6
Fr, F2	Mains circuit fuses (1.25A) ..	—
Sta, b, x to Sta, b, x	Aerial circuit waveband switches (manual tuning) ..	—
Sta, b, x to Sta, b, x	Aerial circuit auto tuning selector switches ..	—
St1a, b, c and St2x, y, z to St1a, b, c and St2x, y, z	Oscillator circuit waveband switches (manual tuning) ..	—
St1a, b, c and St2x, y, z to St1a, b, c and St2x, y, z	Osc. circuit auto tuning selector switches ..	—
S22a	Receiver muting switch ..	—
S23	Receiver muting switch ..	—
S24x	Mains switch ..	—



Under-chassis view. The core and trimmer adjustments are indicated. Diagrams of the press-button switch unit are in columns 5 and 6. C13 consists of two condensers in parallel, and R28 of two resistors in parallel. F1 and F2 at the rear of the chassis are the mains circuit fuses.



**GENERAL NOTES**

**Switches.**—All the switches are associated with the press-button unit. **S1a, b, x** to **S22a** are of the normal press-button type, those with **a, b** or **c** suffixes closing when their button is pressed, and those with **x, y** or **z** suffixes opening when their button is pressed.

All these switches are indicated in the diagrams of each side of the press-button unit in cols. 5 and 6.

**S23** is the muting switch (shown at the ends of the two diagrams) which is normally open, but closes whilst any one of the press buttons is being operated.

**S24x** is the QMB mains switch operated by the press button numbered 1 ("Off"). It opens when the button is pressed, and switches the set off. Operation of any other button causes this switch to close, and switch the set on.

**Coils.**—**L1, L2 ; L3, L6 ; L4, L7** and **L5, L8** are in four units beneath the chassis, to the right of our under-chassis view. **L9-L16** are the eight permeability-tuned oscillator auto coils, in a row above the press-button unit. **L17, L20 ; L18** and **L19**, which are the oscillator manual coils, are in the same row, at the right-hand end in the under-chassis view. **L9-L16** and **L18, L19** all have adjustable iron cores.

The IF transformers **L22, L23** and **L24, L25** are in two screened units on the chassis deck, with their associated trimmers.

**L28** and **L29** are the mains filter chokes, mounted in a unit with **C38** on the chassis deck.

**Scale Lamps.**—These are two Bulgin MES types, rated at 0.5 V, 0.15 A. They have tubular bulbs.

**External Speaker.**—Two sockets are provided at the rear of the chassis for a low impedance (50) external speaker. There is also another socket, into which a plug on a flying lead fits. On removal of this plug the internal speaker is muted.

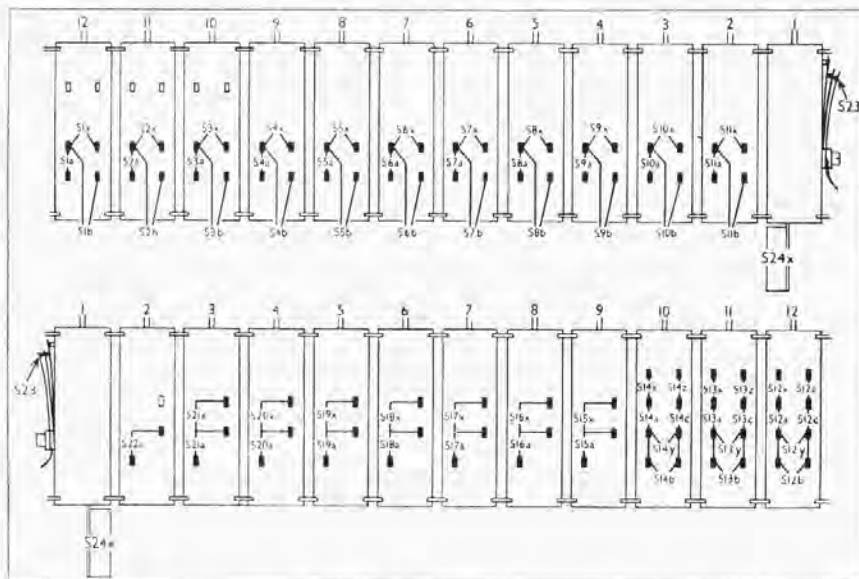
**Condensers C20, C29, C36, C37.**—These are four dry electrolytics (350 V working) in two tubular metal cases on the chassis deck. The cases form the negative connection to chassis. **C36** (10  $\mu$ F) is in the can nearer the front of the chassis. **C20** (4  $\mu$ F), **C29** (4  $\mu$ F) and **C37** (32  $\mu$ F) are in the second case; the positive tags of **C20** and **C29** are painted yellow; that of **C37**, red.

**Pre-Set Condensers.**—The eight aerial auto trimmers **C42-C49** are in four dual units in a row, adjustable from the front of the chassis. **C39, C40** and **C51, C52** are in two further dual units, also adjustable from the front of the chassis. The remaining trimmer condensers are in the IF units on the chassis deck.

**Condenser C13.**—This consists of two 75  $\mu$ F condensers, one flat and one tubular, in parallel.

**Ballast Resistance.**—This is a plug-in unit containing **R29, R30** and **R31** in a perforated tubular metal case fitted with an octal valve base. The connections from the element, which we have shown in the diagram as three separate resistances, are indicated there by numbers in circles. The numbers indicate normal octal pin positions.

Four pins only are required to connect the ballast resistance, but the remaining



Diagrams of the press-button unit. The lower one is drawn as seen from beneath the chassis, while the upper one shows the switches on the reverse side of the unit.

four pins (numbers 1, 2, 5 and 6) are also wired to the receiver. This is done to enable a low-voltage ballast tube to be used for mains whose pressure is in the neighbourhood of 100 V. Before the receiver can be operated on low-voltage mains, however, certain modifications to the receiver, including the substitution of another output transformer, are necessary.

The unused pins are indicated in the diagram: pins 2 and 5 are connected across **R10**; pins 1 and 6 across **R26**.

Voltage adjustment is effected by means of a shorting plug, tied to the chassis by a piece of non-conducting tape. When the plug is inserted in the 200-227 V socket, which is split, **R31** is short-circuited. The 228-255 V socket is isolated.

**Press-Button Ranges**

The wavelength ranges of the eight station buttons are given in the table below, the buttons being numbered in accordance with the moulded numbers on the escutcheon.

Button Nos.	Wavelength Ranges
2, 3	1,200—2,100 m
4, 5, 6	310—600 m
7, 8, 9	195—340 m

The setting of each button involves two tuning adjustments, one (above, and slightly to the right of the appropriate press-button plunger) for the aerial circuit trimmer, and the other (directly below) for the oscillator coil core.

**CIRCUIT ALIGNMENT**

**IF Stages.**—Press LW button, turn tone control fully anti-clockwise, and turn gang condenser and volume control to maximum. Short-circuit **C50**, and connect signal generator, via a 0.1  $\mu$ F condenser, to control grid (top cap) of **V1** and chassis, leaving existing top cap connection in place.

Feed in a 465 KC/S signal, and adjust **C53, C54, C55** and **C56** in turn for maximum output. Check these settings.

**RF and Oscillator Stages.**—Turn gang to maximum and see that the pointer registers accurately on the small mark below the LW calibration line at the bottom right-hand corner of the scale. If adjustment is necessary, slacken the two grub screws securing the drive disc to the condenser spindle. Connect signal generator to **A** and **E** sockets via a suitable dummy aerial, set tone control fully anti-clockwise, and volume control to maximum.

**SW.**—Press the SW button, feed in a 50 m (6MC/S) signal, tune to 50 m on scale, and adjust loop of wire inside **L17** for maximum output. Feed in a 30 m (11 MC/S) signal, tune to 30 m on scale, and adjust loop of wire inside **L6** for maximum output. Repeat these adjustments.

**MW.**—Press the MW button, and tune to 225 m on scale. Feed in a 225 m (1,333.3 KC/S) signal, and adjust **C51**, then **C39** for maximum output. Tune to 530 m on scale, feed in a 530 m (566 KC/S) signal, and adjust the cores of **L18** and **L7** for maximum output. Unless these coils have been changed, little adjustment should be necessary. Repeat the MW adjustments.

**LW.**—Press the LW button, tune to 850 m on scale, and feed in an 850 m (352.9 KC/S) signal. Adjust **C52**, then **C40**, for maximum output. Tune to 1,900 m on scale, feed in a 1,900 m (157.9 KC/S) signal, and adjust cores of **L19** and **L8** for maximum output if necessary. Repeat the LW adjustments.

**Press-buttons.**—Adjustments to the press-button trimmers should always be made after IF alignment and after any adjustments to the MW and LW aerial coils. Final press-button adjustments must be made on the aerial on which the set is to work.