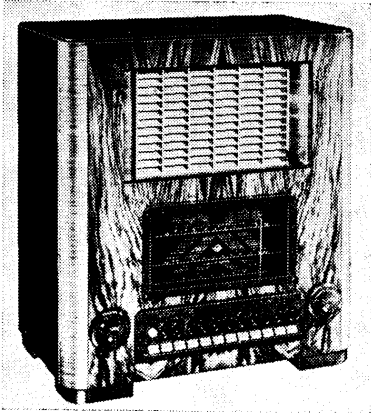


"TRADER" SERVICE SHEET
422

MARCONIPHONE 879 AND H.M.V. 1350



The Marconiphone model 879.

THE 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. (25-60 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.

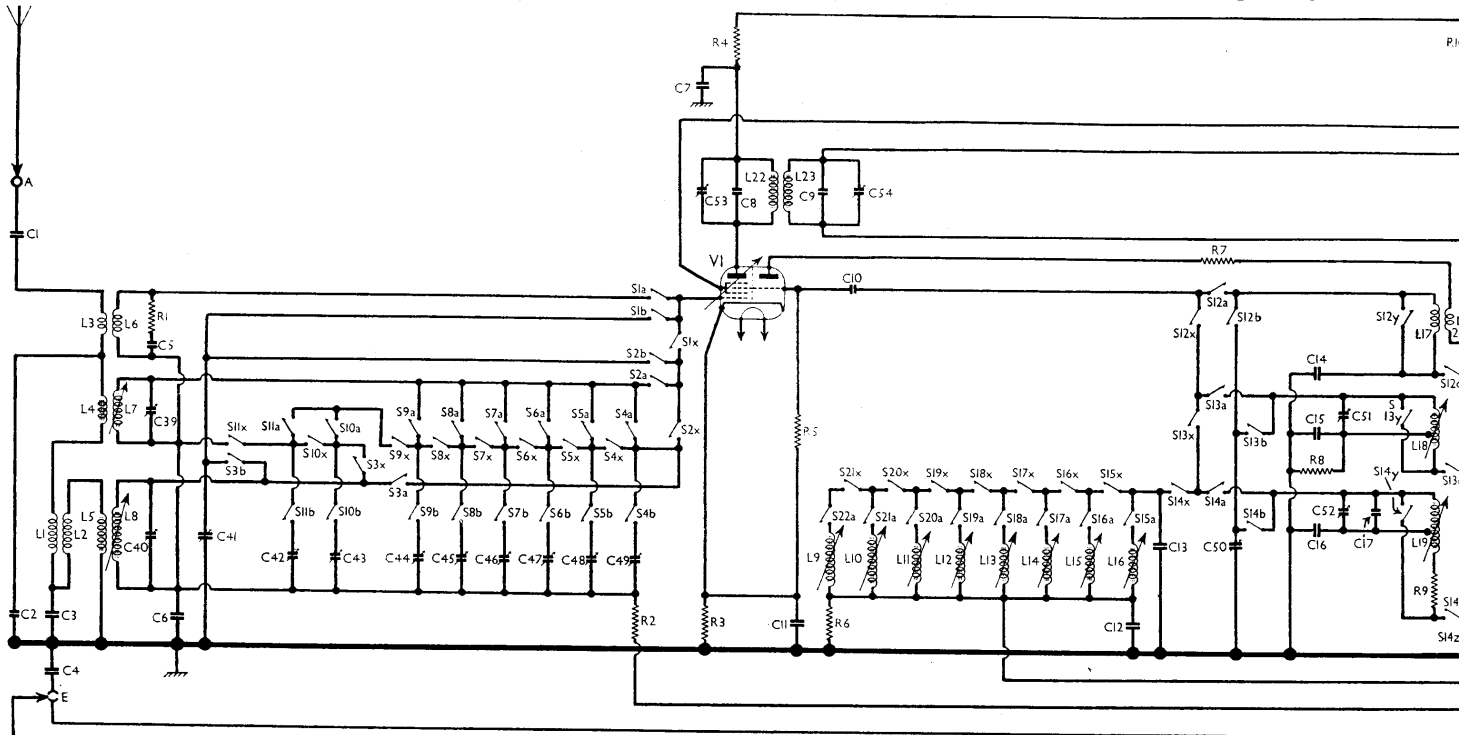
Aerial input is via coupling coils **L3**, **L4** and (via image rejector circuit **L1**, **L2**, **C3**) **L5** to single-tuned circuits comprising coils **L6** (SW), **L7** (MW) and

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 : condenser trimmers are used for the aerial circuit and permeability-tuned coils for the oscillator circuit. Certain of the tuning coils are also of the adjustable iron-cored type. Note that the earth socket is split. The numbers 1 to 8 in circles in the sockets of the octal holder into which the ballast resistance is plugged. See also General Notes under "Ballast Resis

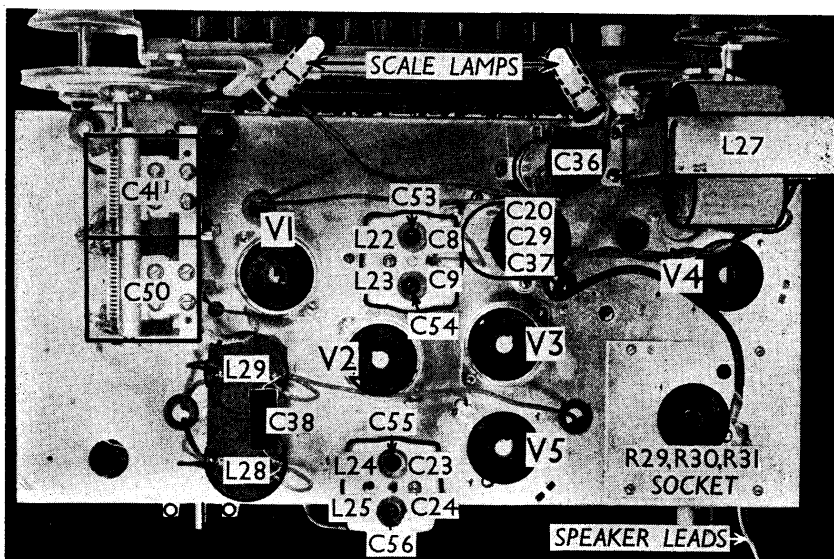
as intermediate frequency amplifier with iron-cored transformer couplings C53, L22, L23, C54 and C55, L24, L25, C56.

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 IHC 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 “—”.

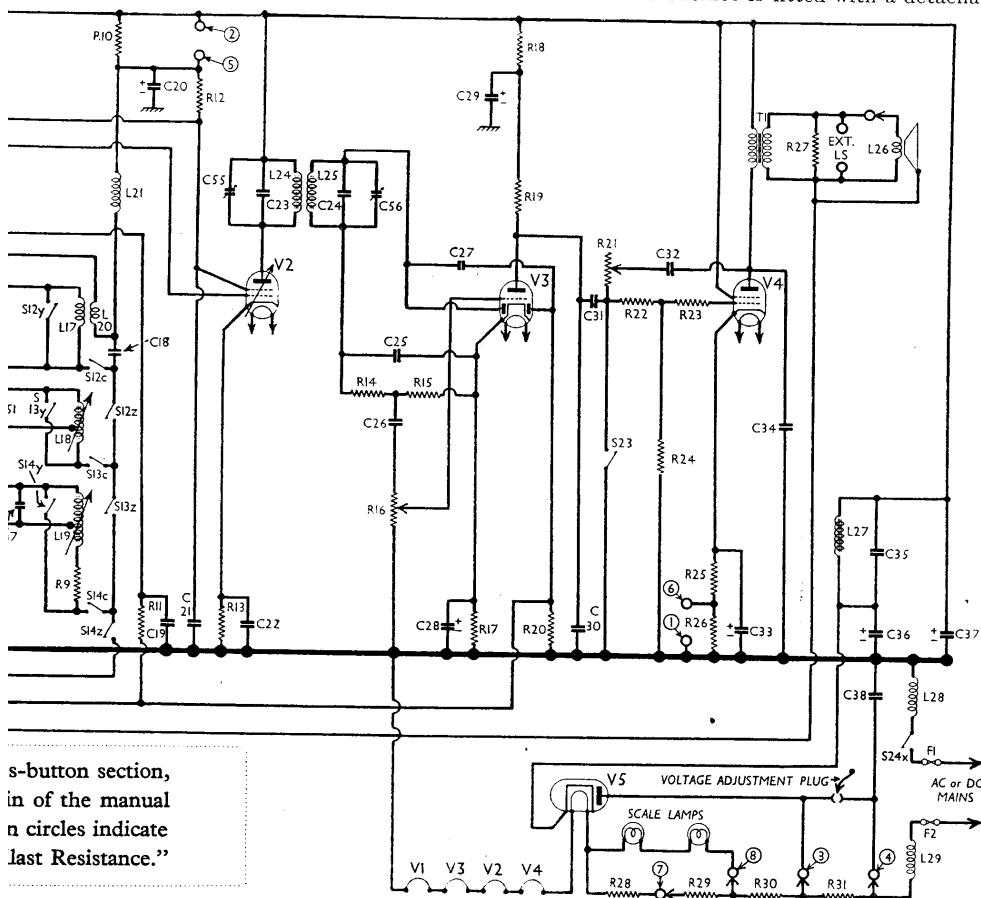
Removing Speaker.—The speaker may be removed by unsoldering the leads and removing the nuts and washers from the three bolts holding it to the sub-baffle. **When replacing,** see that the paxolin strip is at the right of the speaker, connect the leads as indicated above and do not forget to replace the 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 X65 .. | { 187 Oscillator 97 | { 1.45 4.45 | 78 | 3.9 |
| V2 KTW63 | 190 | 5.3 | 78 | 5.3 |
| V3 DH63 | 62.5 | 0.6 | — | — |
| V4 KT33C | 172.5 | 65 | 190 | 11 |
| V5 U31† .. | — | — | — | — |

† Cathode to chassis, 202 V, DC.



s-button section, in of the manual n circles indicate last 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 .. | 2,000,000 |
| R17 | V3 triode GB and AVC delay .. | 2,300 |
| 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 .. | 230,000 |
| R24 | V4 GB resistances .. | 100 |
| R25 | V4 GB resistances .. | 50 |
| R26 | T1 sec. artificial loading .. | 50 |
| R27 | Scale lamps shunt resistances .. | 11.5* |
| R28 | Heater circuit ballast resistances .. | 370 |
| R29 | | 30 |
| R30 | | 370 |
| R31 | | 50 |

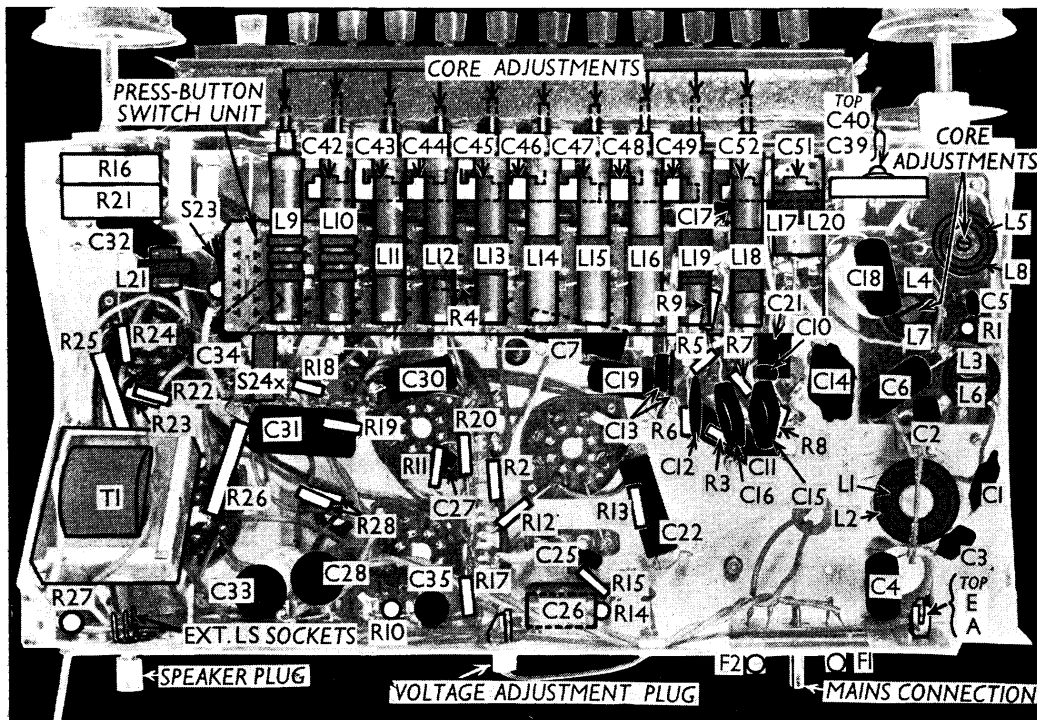
* Two 23 Ω resistances in parallel.

| 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. anode coupling (auto) .. | 0.1 |
| C11 | Osc. auto circuit fixed tuning condenser .. | 0.00015‡ |
| C12 | Osc. circuit SW tracker .. | 0.005 |
| C13 | Osc. circuit MW tracker .. | 0.00055 |
| C14 | Osc. circuit LW tracker .. | 0.00023 |
| C15 | Osc. circuit LW fixed trimmer .. | 0.000075 |
| C16 | V1 osc. anode coupling .. | 0.005 |
| C17 | V2 CG decoupling .. | 0.05 |
| C18 | V1 osc. anode and V1, V2 SG's decoupling .. | 4.0 |
| C19 | V1, V2 SG's RF by-pass .. | 0.1 |
| C20* | V2 cathode by-pass .. | 0.1 |
| C21 | 2nd IF transformer fixed trimmers .. | 0.00013 |
| C22 | AF coupling to V3 triode .. | 0.00013 |
| C23 | IF by-pass .. | 0.0001 |
| C24 | AF coupling to V3 triode .. | 0.0023 |
| C25 | Coupling to V3 AVC diode .. | 0.000075 |
| C26 | V3 cathode by-pass .. | 50.0 |
| C27 | V3 triode anode decoupling .. | 4.0 |
| C28* | IF by-pass .. | 0.001 |
| C29* | V3 triode to V4 AF coupling .. | 0.1 |
| C30 | Part of variable tone control .. | 0.001 |
| C31 | V4 cathode by-pass .. | 25.0 |
| C32 | Fixed tone corrector .. | 0.0035 |
| C33* | HT smoothing choke shunt .. | 0.05 |
| C34 | HT smoothing condensers .. | 16.0 |
| C35 | | 32.0 |
| C36* | Mains RF by-pass .. | 0.01 |
| C37* | Aerial circuit MW trimmer .. | — |
| C38 | Aerial circuit LW trimmer .. | — |
| C39† | Aerial circ. manual tuning .. | — |
| C40† | Aerial circuit LW auto tuning trimmers .. | — |
| C41† | | — |
| C42† | | — |
| C43† | | — |
| C44† | | — |
| C45† | | — |
| C46† | | — |
| C47† | | — |
| C48† | | — |
| C49† | | — |
| 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 LW coupling coil .. | 0.6 |
| L5 | Aerial SW tuning coil .. | 4.0 |
| L6 | Aerial MW tuning coil .. | 0.1 |
| L7 | Aerial LW tuning coil .. | 2.0 |
| L8 | Oscillator circuit LW auto tuning coils .. | 9.5 |
| L9 | | 10.5 |
| L10 | | 10.5 |
| L11 | | 5.0 |
| L12 | | 5.0 |
| L13 | Oscillator circuit MW auto tuning coils .. | 5.0 |
| L14 | | 4.0 |
| L15 | | 4.0 |
| L16 | | 4.0 |
| L17 | Osc. circuit SW tuning coil .. | 0.1 |
| L18 | Osc. manual MW coil, total .. | 4.5 |
| 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 | { Sec. .. | 6.0 |
| L24 | 2nd IF trans. { Pri. .. | 4.0 |
| L25 | { Sec. .. | 4.0 |
| L26 | Speaker speech coil .. | 3.0 |
| L27 | HT smoothing choke .. | 130.0 |
| L28 | Mains filter chokes .. | 3.0 |
| L29 | | 3.0 |
| T1 | Output trans. { Pri. .. | 250.0 |
| | { Sec. .. | 0.6 |
| F1, F2 | Mains circuit fuses (1.25A) .. | — |
| S1a, b, x | Aerial circuit waveband switches (manual tuning) .. | — |
| S3a, b, x | | — |
| S4a, b, x | | — |
| S11a, b, x | Aerial circuit auto tuning selector switches .. | — |
| S12a, b, c | | — |
| S12x, y, z | Oscillator circuit waveband switches (manual tuning) .. | — |
| S14a, b, c | | — |
| S14x, y, z | | — |
| S15a, x to S22a | Osc. circuit auto tuning selector switches .. | — |
| S23 | Receiver tuning switch .. | — |
| S24x | Mains switching .. | — |



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 6.5 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.

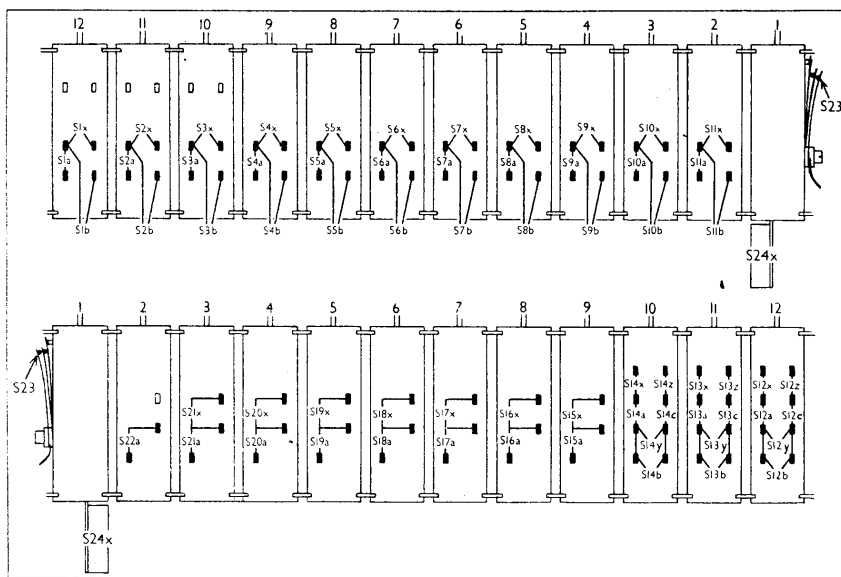
Condensers C20, C29, C36, C37.—These are four dry electrolytics (350 V working) in two tubular metal cases on the chassis deck. The cases form the negative connection to chassis. **C36** (16 μ F) is in the can nearer the front of the chassis; **C20** (4 μ F), **C29** (4 μ F) and **C37** (32 μ F) are 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 μ 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 μ 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.