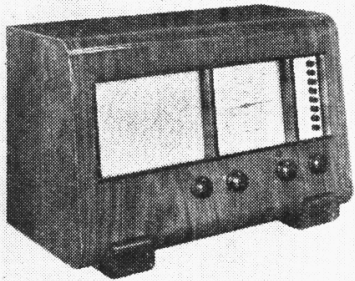


“TRADER” SERVICE SHEET

# 369

# EVER READY 5101 AND 5118



The Ever Ready 5101. The 5118 (without press-buttons) has a vertical cabinet, with the speaker above the tuning scale.

**P**RESS-BUTTON tuning of the trimmer type is included in the Ever Ready 5101 and caters for five medium and two long-wave stations, a feature of the design being that the buttons also switch the set on by releasing the eighth button, which controls the on-off switches.

The receiver is a 4-valve battery 3-band superhet with alternative aerial sockets and provision for both a gramophone pick-up and an extension speaker.

The chassis of the 5118 is very similar,

but does not include press-button tuning, and the differences are explained under “Model 5118 Modifications.” This *Service Sheet* was prepared on a 5101.

Release date for both models: August, 1938.

### CIRCUIT DESCRIPTION

Separate tuning circuits are used in this receiver for manual and automatic tuning, and two aerial input sockets, **A1, A2**, are provided, these being common to manual and automatic circuits.

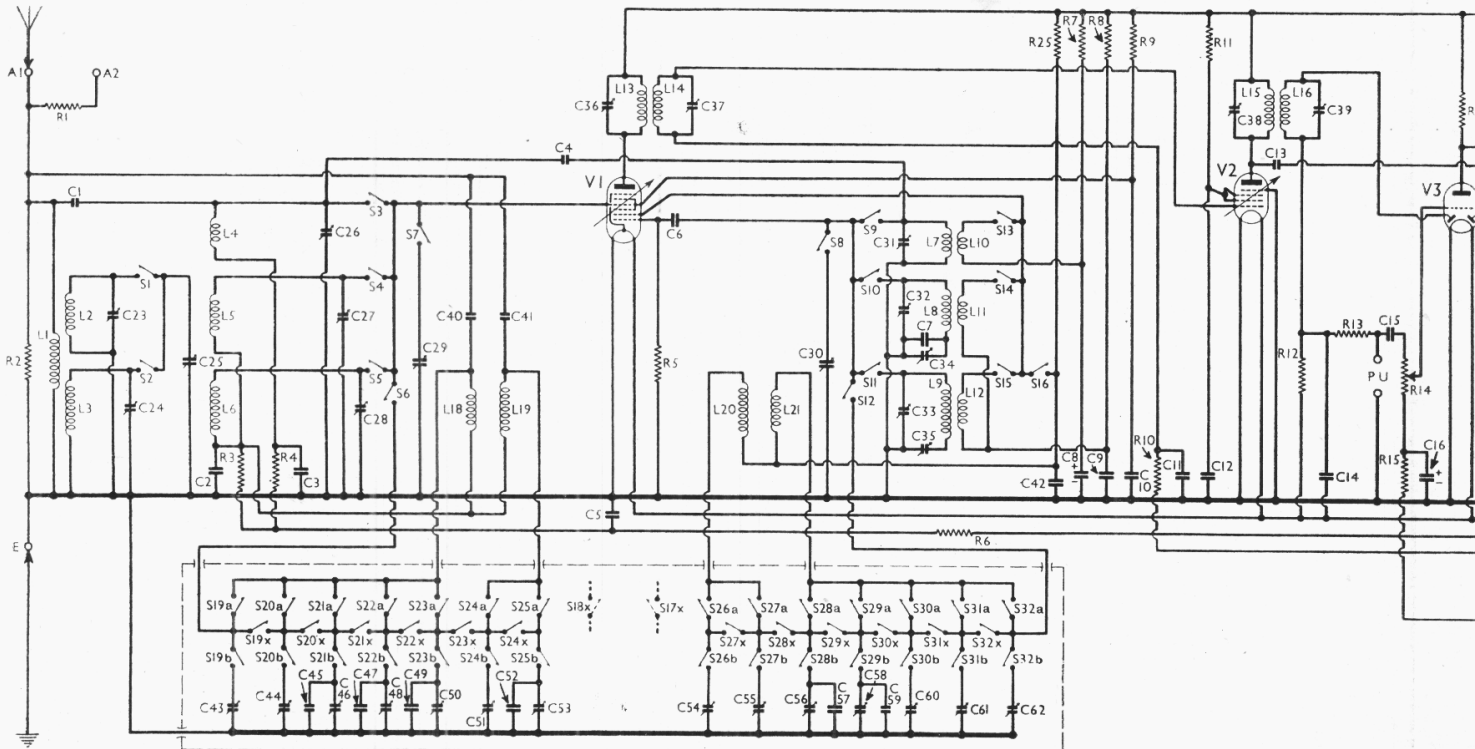
Input from **A1** on MW and LW (manual) is via coupling coil **L1** to inductively coupled band-pass filter. Primary coils **L2, L3** are tuned by **C25**; secondaries **L5, L6** by **C29**. On SW, input from **A1** is via coupling condenser **C1** to single-tuned circuit **L4, C29**. When the aerial is connected to socket **A2**, input is via potential divider **R1, R2**, for the reception of local transmissions.

For automatic operation, input from **A1** is via coupling condensers **C40** (MW) and **C41** (LW) to automatic circuit tuning coils **L18** (MW) and **L19** (LW). **S7** opens, disconnecting **C29** from **V1** pentode CG line, while **S6** closes and connects the CG line to the automatic switch unit and thus, via switches **S19a** to **S25a**,

to one of the tuning coils and, via switches **S19b** to **S25b**, to one of the trimmer units **C43** to **C53**. All the automatic switches, which are operated by press-buttons, are numbered with a lettered suffix to indicate their functions; the letters “a” or “b” indicate that the switch to which they are attached closes when its button is depressed, while “x” indicates that its switch opens when its button is depressed; the converse is the case when the button is released. Switches bearing the same number are attached to the same button.

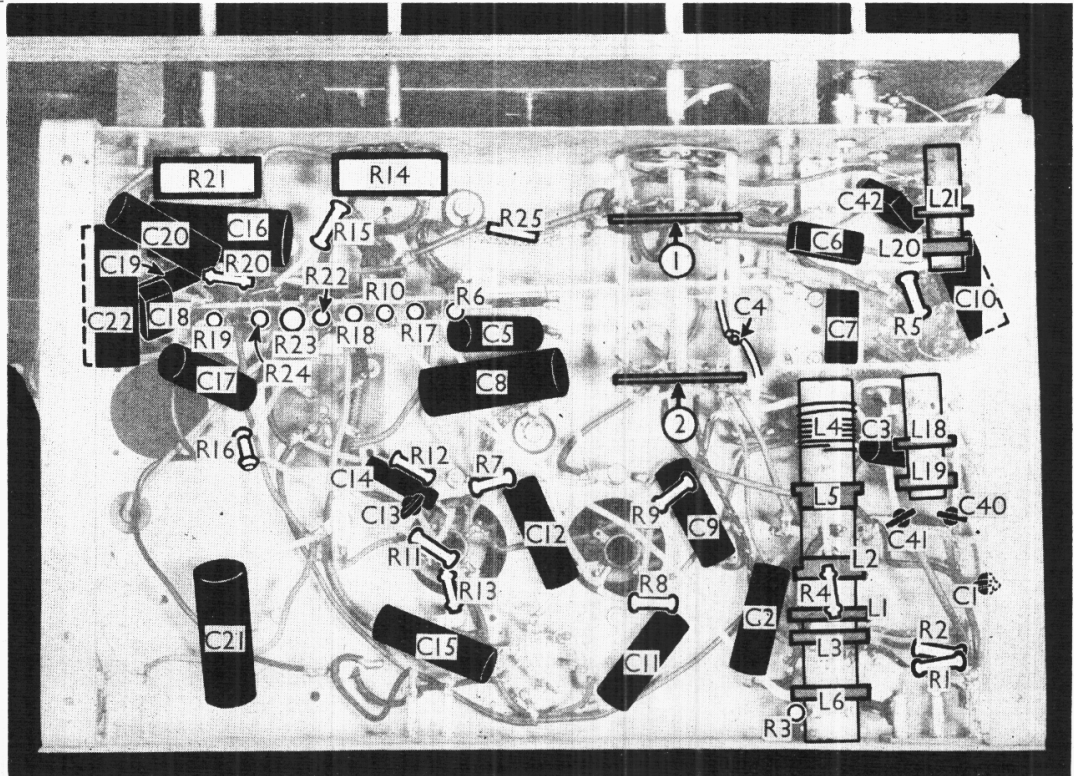
First valve (**V1, Ever Ready metallised K80B**) is an octode operating as frequency changer with electron coupling. For manual operation, oscillator grid coils **L7** (SW), **L8** (MW) and **L9** (LW) are tuned by **C30**; parallel trimming by **C31** (SW), **C32** (MW) and **C33** (LW); series tracking by **C7, C34** (MW) and **C35** (LW). Reaction by coils **L10** (SW), **L11** (MW) and **L12** (LW).

For automatic operation, arrangements similar to those in the aerial circuit are used: **S8** opens, and **S12** closes bringing into circuit the automatic tuning coils **L21** (MW) and **L20** (LW) via switches **S26a** to **S32a**, and automatic tuning trimmers **C54** to **C62** via switches **S26b** to **S32b**. The coils are connected directly



Circuit diagram of the Ever Ready 5101. The switches **S17x** and **S18x** are shown dotted in line with the other press-button types, to indicate their position in the circuit diagram (in the HT+ and LT+ leads) on the right. Circuit modifications of the 5118 are over

Under - chassis view. L18, L19 and L20, L21 are the auto-tuning coils, and are not included in model 5118. R25 and C40, C41, C42 are also omitted in that model. C4 is a small coupling of twisted wires. The end turn of L4 is used for adjustment of inductance when aligning the SW band.



between the grid and anode of the oscillator section of V1 via S16. Second valve (V2, Ever Ready metallised K50N) is a variable-mu RF hexode with second and third grids strapped to operate as pentode intermediate frequency amplifier with

tuned-primary tuned-secondary transformer couplings C36, L13, L14, C37 and C38, L15, L16, C39.

**Intermediate frequency 452 KC S.**  
Diode second detector is part of double diode triode valve (V3, Ever Ready metallised K23B). Audio frequency component in rectified output is developed across load resistance R12 and passed via IF stopper R13, AF coupling condenser C15 and manual volume control R14 to CG of triode section, which operates as AF amplifier. Provision for connection of gramophone pick-up across R14.

Second diode of V3, fed from V2 anode via C13, provides DC potentials which are developed across load resistances R17, R18 and fed back through decoupling circuits as GB to FC and IF valves, giving automatic volume control.

Resistance-capacity coupling by R16, C17, R19, via IF filter C18, R20, between V3 triode and pentode output valve (V4, Ever Ready K70B). Further IF filtering by by-pass condenser C19 in anode circuit. Variable tone control by C20, R21 also in anode circuit. Provision for connection of high impedance external speaker between anode and HT line.

Fixed GB for V1 and V2, GB for V3 triode and V4 and AVC delay potential are automatically obtained from drop along resistances R22, R23, R24, which form a potential divider in negative HT lead to chassis.

**DISMANTLING THE SET**

The chassis and speaker can be removed from the cabinet as a complete assembly so that tests can be carried out under operating conditions.

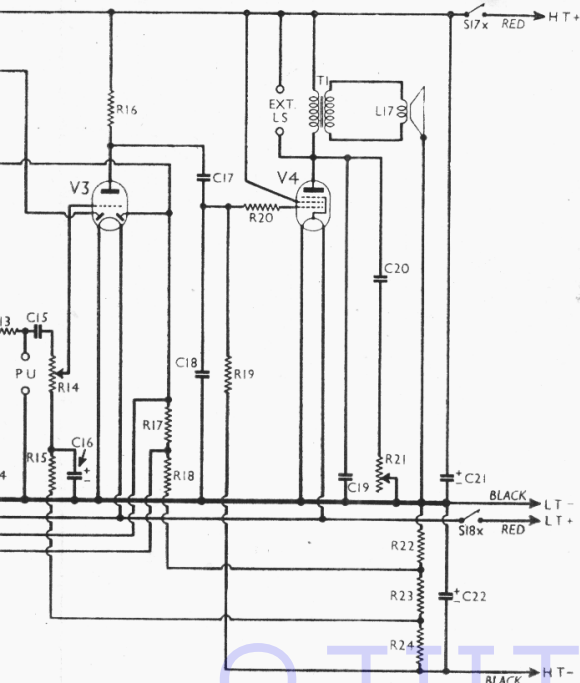
**Removing the Assembly.**—First remove the four control knobs (pull off) and the

four bolts (with washers) holding the chassis to the bottom of the cabinet, then free the brackets holding the sub-baffle to the front of the cabinet (four round-head wood screws). By tilting the back upwards the assembly can now be withdrawn.

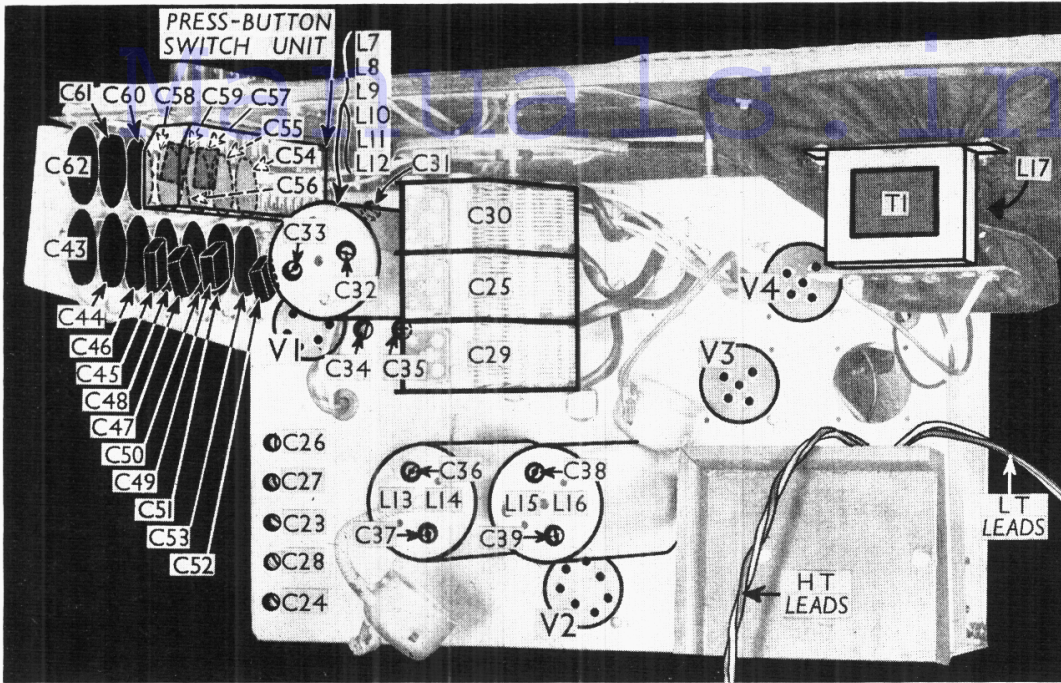
**Removing Speaker.**—The speaker can be removed from the cabinet by unsoldering the leads and removing the nuts and washers from the four screws holding it to the sub-baffle. When replacing, see that the transformer is at the top and do not forget to replace the black earthing lead on the bottom left-hand screw.

**COMPONENTS AND VALUES**

RESISTANCES		Values (ohms)
R1	A2 aerial input potential	110,000
R2	divider resistances	11,000
R3	V1 pent. MW and LW CG decoupling	110,000
R4	V1 pent. SW CG decoupling	110,000
R5	V1 osc. CG resistance	26,000
R6	AVC line decoupling	510,000
R7	V1 osc. anode SW HT feed	11,000
R8	V1 osc. anode MW and LW HT feed	110,000
R9	V1 SG HT feed	51,000
R10	V2 CG decoupling	110,000
R11	V2 SG HT feed	510,000
R12	V3 signal diode load	510,000
R13	IF stopper	500,000
R14	Manual volume control	500,000
R15	V3 triode CG decoupling	51,000
R16	V3 triode anode load	510,000
R17	V3 AVC diode load resistances	260,000
R18	V4 CG resistance	510,000
R19	IF stopper	110,000
R20	Variable tone control	50,000
R21	Automatic GB potential divider resistances	50
R22		50
R23		350
R24		
R25	V1 osc. anode automatic tuning HT feed	40,000



indicate their position in the unit, but they are also included in model 5118 are overleaf.



Plan view of the 5101 chassis. A diagram of both sides of the press-button switch unit is in column 6. This unit, and the automatic tuning trimmers, are omitted in model 5118. Note the various manual tuning trimmers adjustable through holes in the chassis deck.

CONDENSERS	Values (μF)
C1	Aerial SW coupling . . . . . 0.00001
C2	V1 pent. MW and LW decoupling . . . . . 0.1
C3	Aerial circuit SW tracker . . . . . 0.01
C4	Small coupling . . . . . Very low
C5	AVC line decoupling . . . . . 0.1
C6	V1 osc. CG condenser . . . . . 0.0001
C7	Osc. circuit MW fixed tracker . . . . . 0.0005
C8*	V1 osc. anode SW decoupling . . . . . 2.0
C9	V1 osc. anode MW and LW decoupling . . . . . 0.1
C10	V1 SG decoupling . . . . . 0.1
C11	V2 CG decoupling . . . . . 0.1
C12	V2 SG decoupling . . . . . 0.1
C13	Coupling to V3 AVC diode . . . . . 0.00001
C14	IF by-pass condenser . . . . . 0.0001
C15	AF coupling to V3 triode . . . . . 0.05
C16*	V3 triode CG decoupling . . . . . 50.0
C17	V3 triode to V4 AF coupling . . . . . 0.05
C18	IF by-pass condensers . . . . . 0.0001
C19	IF by-pass condensers . . . . . 0.0005
C20	Part of variable tone control . . . . . 0.05
C21*	HT reservoir condenser . . . . . 2.0
C22*	Auto GB by-pass . . . . . 50.0
C23†	Band-pass pri. MW trimmer . . . . . 0.00004
C24†	Band-pass pri. LW trimmer . . . . . 0.00009
C25†	Band-pass primary tuning . . . . . 0.00004
C26†	Aerial circuit SW trimmer . . . . . 0.00004
C27†	Band-pass sec. MW trimmer . . . . . 0.00004
C28†	Band-pass sec. LW trimmer . . . . . 0.00009
C29†	Aerial SW and band-pass secondary tuning . . . . . 0.00001
C30†	Oscillator circuit manual tuning . . . . . 0.00002
C31†	Osc. circuit SW trimmer . . . . . 0.0001
C32†	Osc. circuit MW trimmer . . . . . 0.0001
C33†	Osc. circuit LW trimmer . . . . . 0.00025
C34†	Osc. circuit MW tracker . . . . . 0.00025
C35†	Osc. circuit LW tracker . . . . . 0.0003
C36†	1st IF trans. pri. tuning . . . . . 0.0003
C37†	1st IF trans. sec. tuning . . . . . 0.0003
C38†	2nd IF trans. pri. tuning . . . . . 0.0003
C39†	2nd IF trans. sec. tuning . . . . . 0.0003
C40	Aerial auto tuning MW coupling . . . . . 0.00001
C41	Aerial auto tuning LW coupling . . . . . 0.00001
C42	V1 osc. anode auto coupling . . . . . 0.0002
C43†	— . . . . . 0.0001
C44†	— . . . . . 0.0001
C45†	— . . . . . 0.00005
C46†	— . . . . . 0.0003
C47†	— . . . . . 0.0001
C48†	Aerial circuit automatic tuning trimmers . . . . . 0.0003
C49	— . . . . . 0.0002
C50†	— . . . . . 0.0003
C51†	— . . . . . 0.0003
C52	— . . . . . 0.0002
C53†	— . . . . . 0.0003

Continued in next column

CONDENSERS (Continued)	Values (μF)
C54‡	0.0001
C55‡	0.0001
C56‡	0.0003
C57	0.0003
C58‡	0.0003
C59	0.00005
C60‡	0.0003
C61‡	0.0001
C62‡	0.0001

Oscillator circuit automatic tuning trimmers . . . . .

\* Electrolytic. † Variable. ‡ Pre-set.

OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial MW and LW coupling . . . . . 12.0
L2	Band-pass primary coils . . . . . 2.5
L3	— . . . . . 11.0
L4	Aerial SW tuning coil . . . . . Very low
L5	Band-pass secondary coils . . . . . 2.5
L6	— . . . . . 11.0
L7	Osc. circuit SW tuning coil . . . . . Very low
L8	Osc. circuit MW tuning coil . . . . . 1.8
L9	Osc. circuit LW tuning coil . . . . . 5.5
L10	Oscillator SW reaction coil . . . . . 0.4
L11	Oscillator MW reaction coil . . . . . 7.25
L12	Oscillator LW reaction coil . . . . . 18.0
L13	1st IF trans. { Pri. . . . . 7.0
L14	Sec. . . . . 7.0
L15	2nd IF trans. { Pri. . . . . 7.0
L16	Sec. . . . . 7.0
L17	Speaker speech coil . . . . . 3.0
L18	Aerial auto tuning MW coil . . . . . 2.5
L19	Aerial auto tuning LW coil . . . . . 11.0
L20	Osc. circuit auto tuning LW coil . . . . . 7.5
L21	Osc. circuit auto tuning MW coil . . . . . 2.5
T1	Speaker input { Pri. . . . . 600.0
	trans. { Sec. . . . . 0.3
S1-16	Waveband and manual/auto change switches . . . . . —
S17x	HT circuit switch . . . . . —
S18x	LT circuit switch . . . . . —
S19a, b, x, to S25a, b	Aerial circuit auto tuning trimmer selector switches . . . . . —
S26a, b to S32a, b, x	Oscillator circuit auto tuning trimmer selector switches . . . . . —

### VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating with a new HT battery reading 148 V on load. The 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.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 K80B	142	0.6	42	1.7
V2 K50N	35	1.0	—	—
V3 K23B	142	0.9	35	0.3
V4 K70B	85	0.8	142	0.7

### GENERAL NOTES

**Switches.**—S1-S16 are the waveband and manual/auto switches, in two rotary units beneath the chassis. These are indicated in our under-chassis view, and shown in detail in the diagrams in column 4, where they are drawn as seen looking from the rear of the underside of the chassis.

The table (col. 4) gives the switch positions for the four control settings, starting from fully anti-clockwise. A dash indicates *open*, and **C**, *closed*.

S17x, S18x are the battery circuit switches, S19a, b, x to S25a, b and S26a, b to S32a, b, x the aerial and oscillator circuits auto-tuning switches, contained in a double-sided press-button unit mounted vertically at the front of the chassis. This is indicated in our plan chassis view, and shown in detail in the diagrams in column 6. The diagrams are drawn looking from the rear of the chassis, with the chassis standing normally on a bench. The left-hand diagram shows the left-hand side of the unit (nearest the bank

of auto trimmers) while the right-hand diagram shows the right-hand side of the unit (nearest the gang condenser).

In all cases but one, each button controls six switches. Thus the top button controls **S19a, b, x** and **S32a, b, x**, the second from the top controls **S20a, b, x** and **S31a, b, x** and so on. The bottom button controls **S25a, b** and **S26a, b**. Although there are tags for switches which would be **S25x** and **S26x**, and these switches are wired up, they play no part in the circuit and are not shown in our circuit diagram. The tags are marked as bearers (**Be**) in the switch diagrams.

The **a** and **b** switches close when their appropriate buttons are pressed, and the **x** switches open, and vice versa.

Note that by pushing the bottom button, **S17x** and **S18x** open, and switch the set off. To switch it on, any other button is pressed, thus releasing the "off" button, closing **S17x** and **S18x**, and switching the set on.

**Coils.**—**L1-L6** are in a tubular unscreened unit beneath the chassis. **L7-L12**, and the IF transformers **L13, L14** and **L15, L16** are in three screened units on the chassis deck, with their associated trimmers.

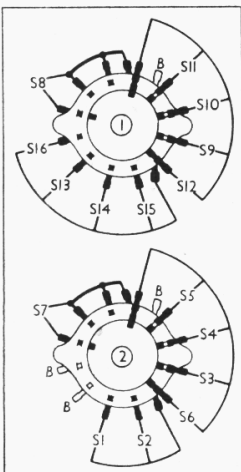
The auto-tuning coils **L18, L19** and **L20, L21** are in pairs in two unscreened units beneath the chassis.

**External Speaker.**—Two sockets are provided at the rear of the chassis for a high impedance (16,000 Ω) external speaker.

**Pre-Set Condensers.**—All the auto-tuning trimmers are adjustable through holes in the wooden panel at the side of the chassis. Of the remaining trimmers eight are reached through holes in the

**SWITCH TABLE AND DIAGRAM**

Switch	Auto	SW	MW	LW
S1	—	—	c	—
S2	—	—	—	c
S3	—	c	—	—
S4	—	—	c	—
S5	—	—	—	c
S6	c	—	—	—
S7	—	c	c	c
S8	—	c	c	c
S9	—	—	c	—
S10	—	—	—	c
S11	—	—	—	c
S12	c	—	—	—
S13	—	c	—	—
S14	—	—	c	—
S15	—	—	—	c
S16	c	—	—	—



Wavechange and manual/auto switches as seen from the rear of the underside of the chassis. These units are modified in model 5118, by the omission of **S6, S7, S8, S12** and **S16**.

chassis deck, while six are at the top of three coil units on the chassis deck.

**Condenser C4.**—This is a small coupling, formed by two twisted insulated wires, situated close to switch unit 2.

**Pillar Bearers.**—At six points beneath the chassis ebonite pillars are provided to act as bearers.

**Batteries.**—LT, Ever Ready 2 V 24 AH glass cased accumulator cell, type GZ; HT, Ever Ready 144 V dry battery, type Winner 144. GB is automatic.

**Battery Leads and Voltages.**—Black lead, spade tag, LT negative; red lead, spade tag, LT positive 2 V; black lead and plug, HT negative; red lead and plug, HT positive 144 V.

**PRESS-BUTTON ADJUSTMENT**

The tuning of each of the seven station press-buttons is adjustable within certain limits, by means of the pairs of trimmers which may be reached by removing the small panel from the right-hand side of the receiver. The adjustment range of each button, as shown on the trimmer board, is as follows, numbering the buttons from top to bottom:—1, 200 to 300 m; 2, 200 to 300 m; 3, 290 to 445 m; 4, 350 to 480 m; 5, 470 to 535 m; 6, 850 to 1,460 m; 7, 1,300 to 1,665 m. The eighth button switches the set off.

To receive a certain wavelength on a press-button, apply that signal to the **A** and **E** sockets of the receiver. With the appropriate button pressed, adjust the corresponding oscillator trimmer, which is on the left of the panel, to receive this signal. Then adjust the aerial circuit trimmer (on the right) for maximum output. Check each circuit by going over the trimmers in the same order again.

**MODEL 5118 MODIFICATIONS**

Model 5118 has a similar chassis, but the press-button feature is omitted, the set being arranged for manual tuning only. There are thus only three positions on the wave-change switch, the "auto" position being eliminated, and with it **S6, S7, S8, S12** and **S16**.

Coils **L18, L19, L20** and **L21** are removed, together with **R25, C40, C41** and **C42**, and their associated wiring.

The press-button switch unit is omitted, but **S17x** and **S18x** become normal QMB battery circuit switches, ganged with the volume control **R14**.

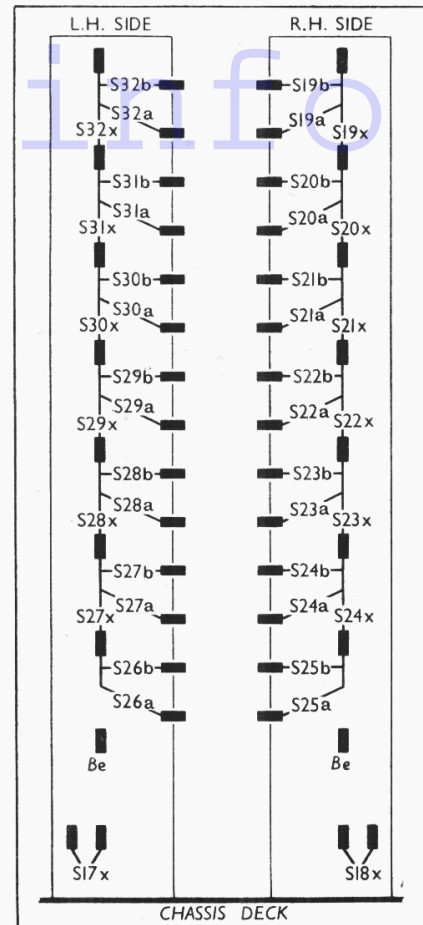
**C43** to **C62** are omitted.

**CIRCUIT ALIGNMENT**

**IF Stages.**—Switch set to MW, and short circuit **C30**. Connect signal generator to control grid (top cap) of **V1**, via a 0.1 μF condenser, and chassis. Feed in a 452 KC/S signal, and adjust **C39, C38, C37** and **C36**, in that order, for maximum output. Re-check these settings, then remove the short circuit from **C30**.

**RF and Oscillator Stages.**—With gang at maximum, pointer should register with the horizontal line across the centre of the scale. Connect signal generator to **A1** and **E** sockets.

**LW.**—Switch set to LW, and adjust tracker **C35** to be at approximately three-quarters of its full capacity. Tune to 1,200 m on scale, feed in a 1,200 m (250 KC/S) signal, and adjust **C33**, then **C28** and **C24**, for maximum output. Tune to 1,700 m on scale, feed in a 1,700 m (176.5 KC/S) signal, and adjust **C35**



Diagrams of both sides of the press-button switch unit. They are as seen looking from the rear of the chassis, when it is standing normally on a bench. The left-hand side is that nearest the banks of trimmers.

for maximum output. Now repeat the 1,200 m adjustments, and return to 1,700 m. See that the pointer is at the 1,700 m mark when receiving the 1,700 m signal. If not, make a slight re-adjustment to **C35**.

**MW.**—Switch set to MW, and adjust tracker **C34** to be at approximately three-quarters of its full capacity. Tune to 214 m on scale, and feed in a 214 m (1,400 KC/S) signal, and adjust **C32**, then **C27** and **C23**, for maximum output. Tune to 500 m on scale, feed in a 500 m (600 KC/S) signal, and adjust **C34** for maximum output. Now repeat the 214 m adjustments, and return to 500 m. See that the pointer is at the 500 m mark when receiving the 500 m signal. If not, make a slight re-adjustment to **C34**.

**SW.**—Switch set to SW, and screw up **C31** fully. Tune to 15 MC/S on scale, and feed in a 15 MC/S (20 m) signal. Now unscrew **C31** slowly, and adjust accurately for maximum output on the first peak reached from the fully screwed up position. Next adjust **C26** for maximum output. Feed in a 7.5 MC/S (40 m) signal, and tune it in. Adjust the end turn of **L4** (nearest the end of the coil former beneath the chassis) for maximum output, while rocking the gang for optimum results. Repeat the 15 MC/S adjustments.