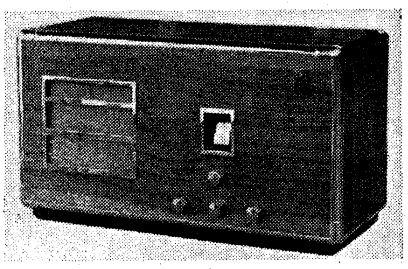
"TRADER" SERVICE SHEET

568

REVISED ISSUE OF SERVICE SHEET No. 13

K-B666, K-B666A, B, C

AND STANDARD S60



The appearance of the K-B666B and K-B666C De Luxe models, with chromium fittings. The standard types have black fittings and a diamond shaped aperture.

PROVISION is made for using the "Rejectostat" aerial system, and for the K-B357 Short Wave Converter unit, in the K-B666 receiver. The set is a 5-valve (plus rectifier) 2-band superhet, designed to operate from AC mains of 200-250 V, 40-100 C/S. It is housed in a two-tone cabinet, with black knobs and a diamond-shaped speaker aperture.

The frequency changer is preceded by an RF amplifier, and sockets are provided for the connection of a gramophone pick-up and an external speaker. A mains circuit fuse is fitted in the mains voltage adjustment plug.

Model K-B666A is similar in every respect except that its mains transformer primary is wound for mains of 100-130 V. Model K-B666B employs a similar chassis to that in the K-B666, but it is fitted in a De Luxe cabinet, with chromium fittings, as shown in the illustration above, while K-B666C employs the K-B666A chassis, but is fitted with the De Luxe cabinet. Special models have also been produced for 25-40 C/S mains, and are suitably marked.

The Standard S60 employs a similar chassis to that in the K-B666, but has a different cabinet.

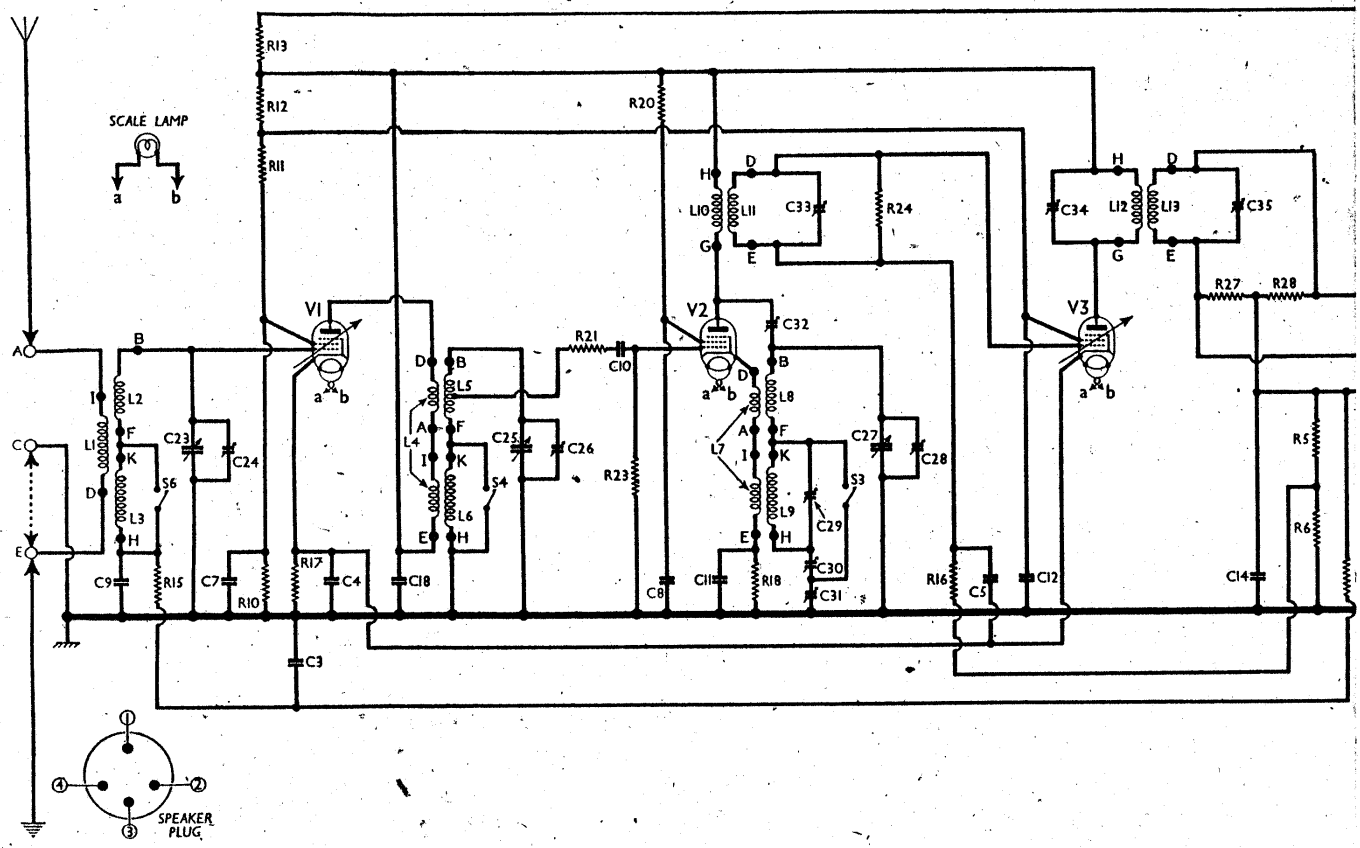
Release date, all models: 1934.

CIRCUIT DESCRIPTION

Aerial input via coupling coil **L1** to single tuned circuits **L2, C23** (MW) and **L3, C23** (LW), which precede first valve **(V1, Micromesh 9A1),** a variable-mu RF pentode operating as signal frequency amplifier.

With an ordinary aerial system, the aerial is connected to socket **A,** and the earth to both **E** and **C** sockets. The receiver is designed for use with the K-B Rejectostat aerial system, however, and when so used sockets **E** and **C** are not connected together. The aerial input is applied to sockets **A** and **E** and the earth to **C.** This is all effected automatically when installing the Rejectostat system.

Tuned-secondary RF transformer coupling by **L4, L5, L6** and **C25** between **V1** and a second RF pentode valve **(V2, Micromesh metallised 8A1)** which operates as frequency changer with oscillator



Circuit diagram of the Kolster-Brandes model K-B666 receiver. The diagram applies equally to models K-B666A, B and C. The arrows left-hand bottom corner of the circuit appears a diagram of the speaker plug, viewed from the free ends of its pins. The letters at the en they correspond with the letters in the coded base diagram shown in column 3 overleaf. The short wave converter socket shown b

reaction coupling between anode and cathode circuits.

Anode circuit coils, coupled via first IF transformer tuning condenser **C32,** are tuned by **C27.** Parallel trimming by **C28** (MW) and **C29** (LW); series tracking by **C31** (MW) and **C30** (LW). Reaction coupling by coils **L7** in cathode circuit.

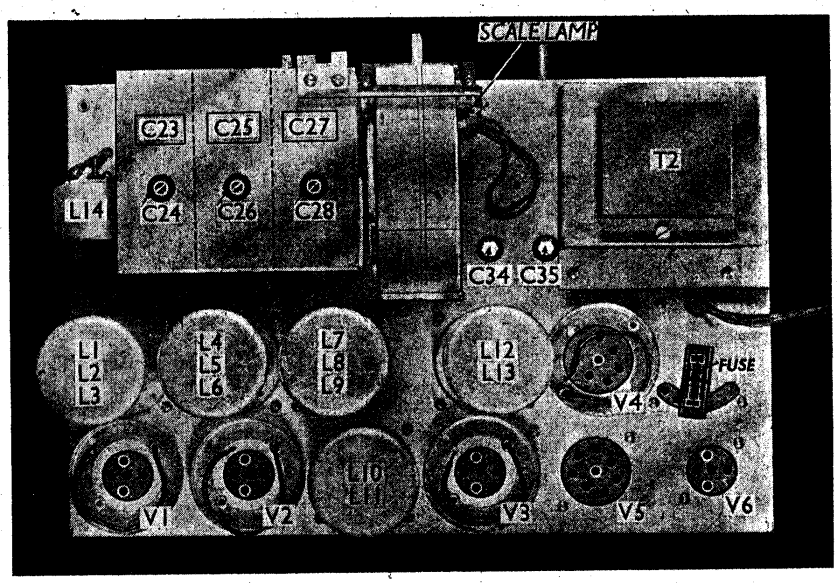
Third valve **(V3, Micromesh 9A1)** is another variable-mu RF pentode, operating this time as intermediate frequency amplifier with tuned-primary, tuned-secondary transformer couplings **C32, L10, L11, C33** and **C34, L12, L13, C35.**

Intermediate frequency 130 KC/S.

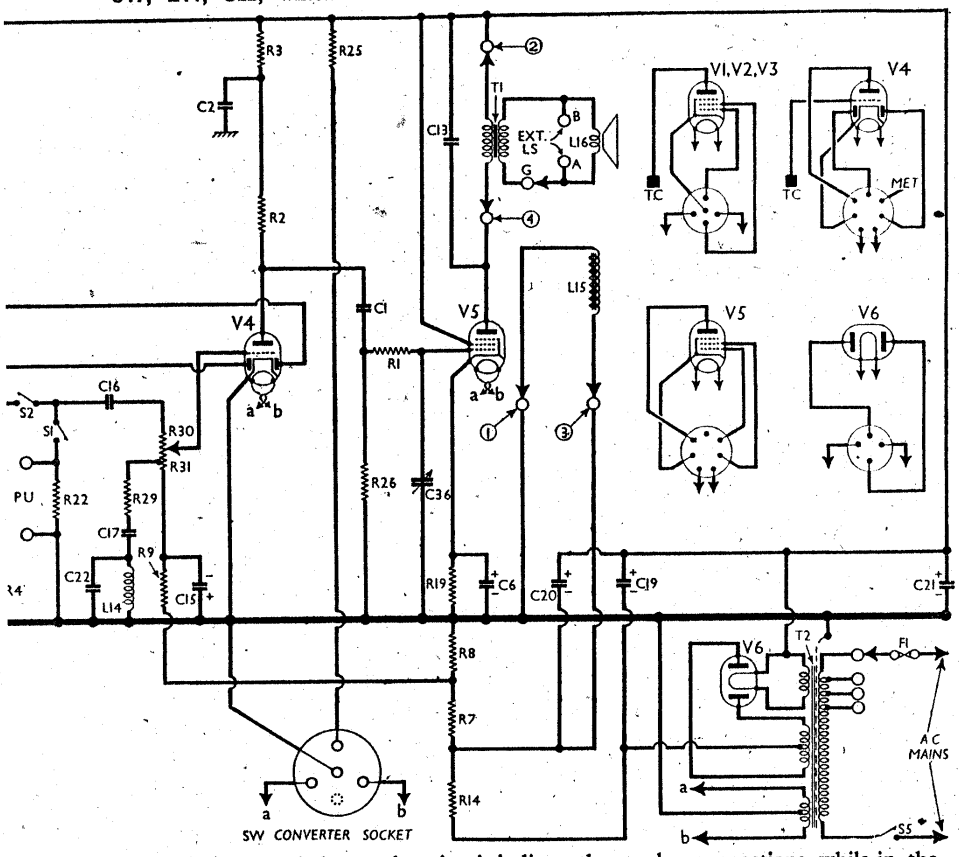
Fixed grid bias potential for **V1** and **V3** is obtained from a common bias circuit **R17, C4,** through which both cathodes are returned to chassis.

Diode second detector is part of double diode triode valve **(V4, Micromesh 11A2).** Both diodes are employed to provide full-wave signal rectification. Audio frequency component in rectified output is developed across load resistances **R27, R28, R5** and **R6,** that across **R5, R6** being passed via switch **S2,** AF coupling condenser **C16** and manual volume control **R30, R31** to CG of triode section, which operates as AF amplifier.

Tone compensation, to attenuate medium audio frequencies at low volume levels, by damped resonant circuit **R29, C17, L14, C22,** which is connected between junction of **R30** and **R31** and chassis. Provision for connection of gramophone pick-up via **S1** and **C16** across **R30, R31,** while pick-up sockets are shunted by **R22. S1, S2** are the radio/gramophone change-over switches, **S2** opening when **S1** closes to mute radio. As the pick-up circuit is switched, the pick-up may be left permanently connected, and no external volume control will be required with it.



Plan view of the chassis. The fuse **F1** is housed in the mains voltage adjustment plug. Access to the fuse is obtained by pulling apart the two halves of the plug.



Total DC potential developed across **R5, R6** is fed back via decoupling circuit to signal frequency amplifier, and that across **R6** only to intermediate frequency amplifier, as GB, giving automatic volume control. No delay voltage is employed.

Resistance-capacity coupling by **R2, C1** and **R26,** via a grid stopper **R1,** between **V4** triode and pentode output valve **(V5, Micromesh 7A2).** Variable tone control by **C36** in control grid circuit. Fixed tone correction by **C13** in anode circuit. Provision for connection of low-impedance external speaker across secondary of internal speaker input transformer **T1,** while a plug and socket arrangement permits the internal speech coil circuit to be broken, muting the internal speaker. The method by which this is done is explained under "General Notes" overleaf.

HT current is supplied by full-wave rectifying valve **(V6, Micromesh R2).** Smoothing by resistance **R14** and speaker field **L15** in negative HT lead to chassis, and electrolytic condensers **C19, C20** and **C21,** which have a common positive connection.

Negative grid bias potential for **V4** triode is obtained from a potential divider consisting of resistances **R7, R8,** which are connected in parallel with the speaker field **L15.**

A socket is provided for the power supply to a K-B357 Short Wave Converter, and the HT feed to the socket is fed via resistance **R25** from the main HT supply of the receiver.

and numbers in circles round the speaker circuit indicate the speaker connections, while in the ds of all the tuning coils indicate the tags in the coil unit at which the coils are terminated, and eneath the circuit diagram is provided for the power supply to the K-B357 SW Converter.

COMPONENTS AND VALUES

	CONDENSERS	Values (μF)
C1	V4 triode to V5 coupling	0·006
C2	V4 triode anode decoupling	0·1
C3	AVC line decoupling ...	0·0005
C4	V1, V3 cathodes by-pass	0·5
C5	V3 CG decoupling ...	0.1
C6*	V5 cathode by-pass ...	25·0
C7	V1 SG decoupling ...	0·1
C8	V2 SG decoupling ...	0·1
C9	V1 CG decoupling ...	0·1
C10	V2 CG condenser ...	0·0001
C11	V2 cathode by-pass ...	0·01
C12	V3 SG decoupling ...	0·5
C13	Fixed tone corrector ...	0·001
C14	IF by-pass	0·0002
C15*	V4 triode CG decoupling	25·0
C16	AF coupling to V4 triode	0·02
C17	Part tone compensator...	0·05
C18	V1, V2, V3 anodes decoupling	1·0
C19*	HT smoothing condensers...	6·0
C20*		6·0
C21*		6·0
C22	Part tone compensator...	0·01
C23†	Aerial circuit tuning ...	—
C24‡	Aerial circuit MW trimmer	—
C25†	RF trans. sec. tuning ...	—
C26‡	RF trans. MW trimmer...	—
C27†	Oscillator circuit tuning	—
C28‡	Osc. circ. MW trimmer...	—
C29‡	Osc. circ. LW trimmer...	—
C30‡	Osc. circ. LW tracker ...	—
C31‡	Osc. circ. MW tracker ...	—
C32‡	1st IF trans. pri. tuning	—
C33‡	1st IF trans. sec. tuning	—
C34‡	2nd IF trans. pri. tuning	—
C35‡	2nd IF trans. sec. tuning	—
C36†	Variable tone control ...	0·0025

* Electrolytic. † Variable. ‡ Pre-set.

	RESISTANCES	Values (ohms)
R1	V5 grid stopper	100,000
R2	V4 triode anode load ...	70,000
R3	V4 triode anode decoupling	70,000
R4	AVC line decoupling ...	250,000
R5	Parts of V4 diode load circuit	250,000
R6		100,000
R7	L15 shunt resistances; V4 triode GB pot. ...	250,000
R8		10,000
R9	V4 triode CG decoupling ...	30,000
R10	V1, V2, V3 HT feed potential divider resistances...	15,000
R11		10,000
R12		25,000
R13		3,000
R14	HT smoothing resistance	600
R15	V1 CG decoupling ...	250,000
R16	V3 CG decoupling ...	250,000
R17	V1, V3 fixed GB resistance	300
R18	V2 GB resistance... ...	3,000
R19	V5 GB resistance... ...	400
R20	V2 SG HT feed	500,000
R21	V2 grid circuit stabiliser...	500
R22	PU shunt	250,000
R23	V2 CG resistance... ...	2,000,000
R24	1st IF trans. sec. damping	500,000
R25	SW converter HT feed ...	5,000
R26	V5 CG resistance... ...	250,000
R27	Parts of V4 diode load circuit	250,000
R28		250,000
R29	Part tone compensator ...	5,000
R30	Tapped manual volume control	425,000
R31		75,000

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil ...	19·5
L2	Aerial MW tuning coil ...	4·6
L3	Aerial LW tuning coil ...	20·0
L4	RF transformer primary	10·8
L5	RF trans. MW secondary, total	4·6
L6	RF trans. LW secondary	20·0
L7	Oscillator reaction coil ...	3·7
L8	Osc. circ. MW tuning coil	3·7
L9	Osc. circ. LW tuning coil	13·5
L10	1st IF trans. Pri. ...	62·0
L11	1st IF trans. Sec. ...	62·0
L12	2nd IF trans. Pri. ...	62·0
L13	2nd IF trans. Sec. ...	62·0
L14	Tone compensator choke	1,150·0
L15	Speaker field coil ...	1,500·0
L16	Speaker speech coil ...	1·0
T1	Speaker input trans. Pri. ...	420·0
	Speaker input trans. Sec. ...	0·2
T2	Mains trans. Pri., total ...	21.5
	Mains trans. Heater sec. ...	0·08
	Mains trans. Rect. heat. sec.	0·12
	Mains trans. HT sec., total	550·0
S1, S2	Radiogram change switches	—
S3, S4 S6	Waveband switches ...	—
S5	Mains switch, ganged R30, R31	—
F1	Mains fuse	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those to be expected in an average receiver when it is operating with the mains voltage properly set, with the volume control at maximum, but with no signal input.

Voltages should be measured with a high resistance voltmeter, whose negative lead is connected to chassis. Screen and anode currents of **V1, V2** and **V3** should be measured with the milliammeter in the low potential end of their circuits to prevent instability. Otherwise, the set can be stabilised by connecting a condenser of about 0.1 μF between the top cap of the valve under test and chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 9A1	200	0·8	44	0·4
V2 8A1	200	0·8	30	0·3
V3 9A1	200	4·0	80	1·5
V4 11A2	100	1·0	—	—
V5 7A2	220	30·0	230	4
V6 R2	300†	—	—	—

† Each anode, AC.

DISMANTLING THE SET

Removing Chassis.—Remove the control knobs (pull-off) from the front of the cabinet;

withdraw the speaker plug from its socket at the rear of the chassis;

remove the four screws holding the chassis to the base of the cabinet.

When replacing, do not omit to replace the sheet metal screen between the chassis and the cabinet.

Removing Speaker.—Remove the two bolts holding the vertical wooden speaker support to the fillets at the top and bottom of the cabinet, when the speaker and support can be withdrawn together.

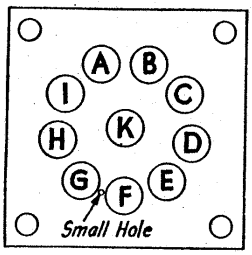
GENERAL NOTES

Switches.—**S1, S2** are the radio/gram change-over switches, and **S3, S4, S6** the waveband switches, in a ganged leaf-type unit beneath the chassis. A sixth pair of contacts, located between **S4** and **S6** on the unit, are not used, but are connected to chassis. The individual switches are indicated in our under-chassis illustration. The table (col. 3) gives the switch positions for the three control settings, starting from the fully anti-clockwise position of the control, when viewed from the front of the receiver. A dash indicates open, and **C**, closed.

S5 is the QMB mains switch, ganged with the manual volume control **R30, R31.**

Coils.—The aerial, RF and oscillator coils **L1-L3; L4-L6;** and **L7-L9** are in three screened units on the chassis deck. On the bases of these units are connecting panels, the tags of which project into the under-chassis compartments. On each panel are marked coloured dots, to indicate the position in the circuit: one coloured dot indicates an aerial coil unit; two dots, the RF transformer; and three dots, the oscillator unit. The light blue stripe on the edge of the panel indicates that the unit is for the KB666.

Diagram of the coil bases described below. The letters indicate the tag positions.



The diagram above shows the layout of the panel, as seen from below. On each panel there are ten tags, lettered A to K (J is omitted), and these markings correspond with those in the circuit diagram, where they indicate the ends of each coil. In each panel a small hole is drilled as a key to an otherwise symmetrical layout; this hole is always between tags F and G.

The IF transformers **L10, L11** and **L12, L13** are in two further screened units on the chassis deck, and their bases are coded also, as indicated in the circuit diagram. Their associated tuning condensers, however, are not in the cans, but are mounted on the chassis pressing. **C32, C33** are reached through the rear member, and **C34, C35** through the chassis deck.

L14 is the tone compensator coil, in a screened container beside the gang on the chassis deck.

Scale Lamp.—This is an MES type bulb, originally rated at 5.5 V, 0.3 A. A suitable replacement type would be the normal 6.5 V, 0.3 A lamp.

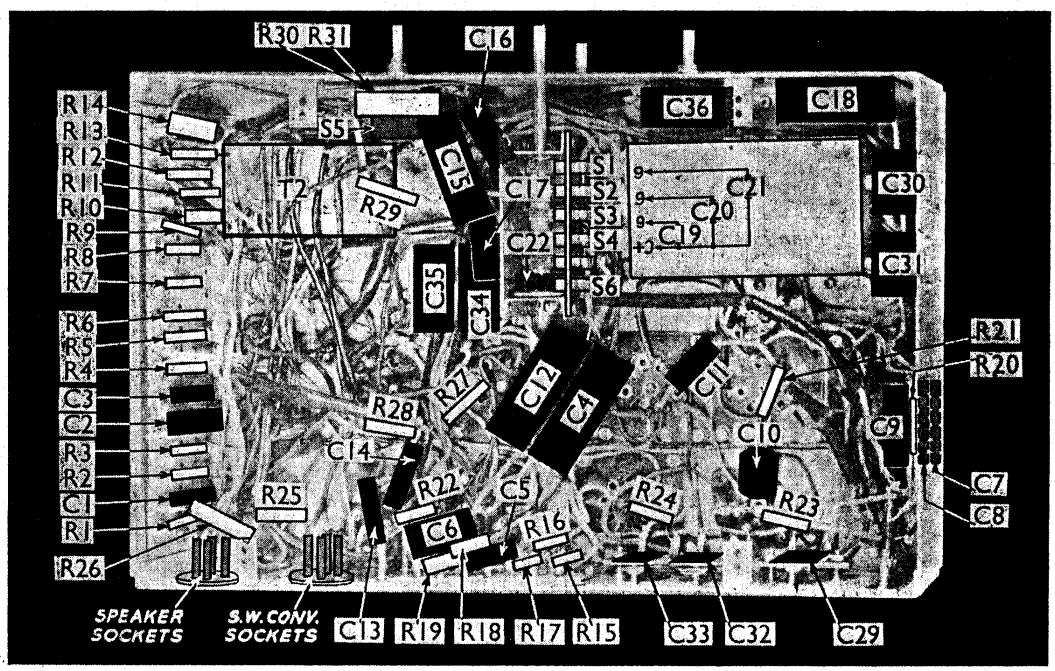
Gramophone Pick-up.—Two sockets are provided at the rear of the chassis for the connection of a pick-up. The existing volume control and tone control operate on gram, and as the pick-up circuit is switched, the pick-up may be left connected permanently.

Switch Table

Switch	Gram	LW	MW
S1	C	—	—
S2	—	C	C
S3	—	—	C
S4	—	—	C
S6	—	—	C

External Speaker.—Two sockets marked **A** and **B** are provided on the speaker connecting panel for the connection of a low impedance (about 1 O) external speaker. A plug on a flying lead attached to socket **A** is normally plugged into a third socket marked **G.**

The arrangement is shown in the circuit diagram, where the three sockets are marked with the appropriate lettering. Transformer **T1** secondary is connected to sockets **B** and **G,** and the speech coil to



Under - chassis view. Many of the resistances and condensers are drawn horizontally for clarity, although actually only end - on views are seen. The switch unit is indicated, and the individual switches are identified here. The tags of the switch between **S4** and **S6** are connected to chassis, and the switch is not used. The connections of the electrolytic condenser block **C19, C20, C21** are indicated.

sockets **B** and **A**. If it is desired to use the external speaker alone, the plug is removed from socket **G** and inserted in socket **A**, muting the internal speaker, and the external speaker is connected to sockets **B** and **G**.

In later chassis the plug is dispensed with, and the flying lead is soldered at both ends. Further, if the receiver is fitted with a Rola speaker, no provision is made for connecting an external speaker.

Speaker Plug.—A valve-base type of plug and socket provides the connection between the speaker unit and chassis. A diagram of the plug is given beneath the circuit diagram overleaf, and the pins are numbered to correspond with connecting points in the circuit, which are indicated by numbers in circles and arrows.

SW Converter Socket.—The receiver is designed to operate with the KB357 Short Wave Converter unit, and a five-pin valve-base type socket is fitted on the rear member of the chassis to supply the SW converter with its power supply. A diagram of the socket appears beneath the circuit diagram overleaf, its HT feed leg being fed via **R25**. The "Grid" socket is not used. A full description of the SW converter, with its circuit diagram, was included in our *Service Sheet* 535.

Condensers C19, C20, C21.—These are three dry electrolytics in a single rectangular container beneath the chassis. The unit is seen in our under-chassis view, where the connections are indicated. The condensers are all rated at 6 μF, 450 V. The unit is provided with four outlet connections, and it should be noted that one of them is the common positive connection.

Condensers C6, C15.—These are two small electrolytics, rated at 25 μF, 25 V. It should be noted that in the case of **C15** the positive end is connected to chassis.

Fuse F1.—This is contained in a two-pin plug, which forms the mains voltage adjustment plug. The fuse is of the cartridge type, and is rated at 1,200 mA. To replace the fuse, the two halves of the plug can be separated by pulling them apart.

Condenser Drive.—If slip should develop in the drive, the tension of the cord can be increased by removing the helical spring and shifting it to another of the three anchoring pegs on the spoke inside the drum. When the third peg is reached the cord can be shortened and the spring hooked again on to the first peg.

Alternative Valves.—The valve types quoted throughout this *Service Sheet* are Brimar "Micromesh" types, but the makers quote alternative valves in every case. The table below gives the alternatives, which are all direct replacement types.

Valve Equivalents Table

Position	Brimar type	Mazda	Mullard	Osram	Cossor
V1	9A1	—	VP4	VMP4	MVS/ Pen
V2	8A1	AC/S2 Pen	SP4	—	MS/ Pen
V3	9A1	—	VP4	VMP4	MVS/ Pen
V4	11A2	—	TDD4	MHD4	DDT
V5	7A2	AC/ Pen	Pen 4VA	MPT4	MP/ Pen
V6	R2	UU120 / 350	DW3	U12	442BU

CIRCUIT ALIGNMENT

It is necessary to remove the chassis from the cabinet to reach some of the adjustments, and the seals bearing the initials "K-B" must be removed from the rear of the chassis. All the operations must be carried out in the order indicated and, unless it is otherwise stated, it is detrimental to go back to an early adjustment after subsequent ones have been completed.

IF Stages.—Switch set to LW, turn the volume control to maximum, the tone control to maximum, and the gang to maximum capacity. Connect the signal generator leads via a 0.1 μF condenser to the junction of **R21** and **C10**, and to the centre socket **C** on the aerial panel marked **A, C, E**, and short-circuit coil **L7** by joining tags **D** and **E** on the coil base to stop oscillator from working.

Unscrew all four IF tuning condensers **C32-C35** to minimum capacity, and feed in a strong 130 KC/S (2,307.7 m) signal. Now adjust **C35, C34, C33** and **C32**, in that order, for maximum output in each case, reducing the signal generator output as the circuits come into line. Remove the short-circuit from **L7**.

RF and Oscillator Stages.—With the gang at maximum, the pointer should coincide with the datum line on the scale. Transfer signal generator leads via a suitable dummy aerial to **A** and **E** sockets.

MW.—Switch set to MW, fully unscrew **C28**, and screw up fully **C24** and **C26**. Tune to position on scale marked "SW Converter", feed in a 1,400 KC/S (214 m) signal, and adjust **C28** for maximum output. Two peaks should be found, and that involving the lesser trimmer capacity should be used. Then adjust **C24** and **C26** for maximum output, and return to **C28** to see if any improvement can be obtained.

Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C31** for maximum output, while rocking the gang for optimum results. Finally, adjust the pointer to read 500 m on scale, if it does not already do so, and repeat all the MW adjustments in the same order as before.

LW.—Switch set to LW, tune to 1,000 m on scale, feed in a 1,000 m (300 KC/S) signal, and adjust **C29** for maximum output. Feed in a 175 KC/S (1,710 m) signal, and adjust **C30** for maximum output, while rocking the gang for optimum results. Adjust the pointer if necessary, and repeat the 1,000 m adjustment to see if any improvement can be obtained.

Printed in Great Britain by The Cornwall Press Ltd., Paris Garden, S.E.1.

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