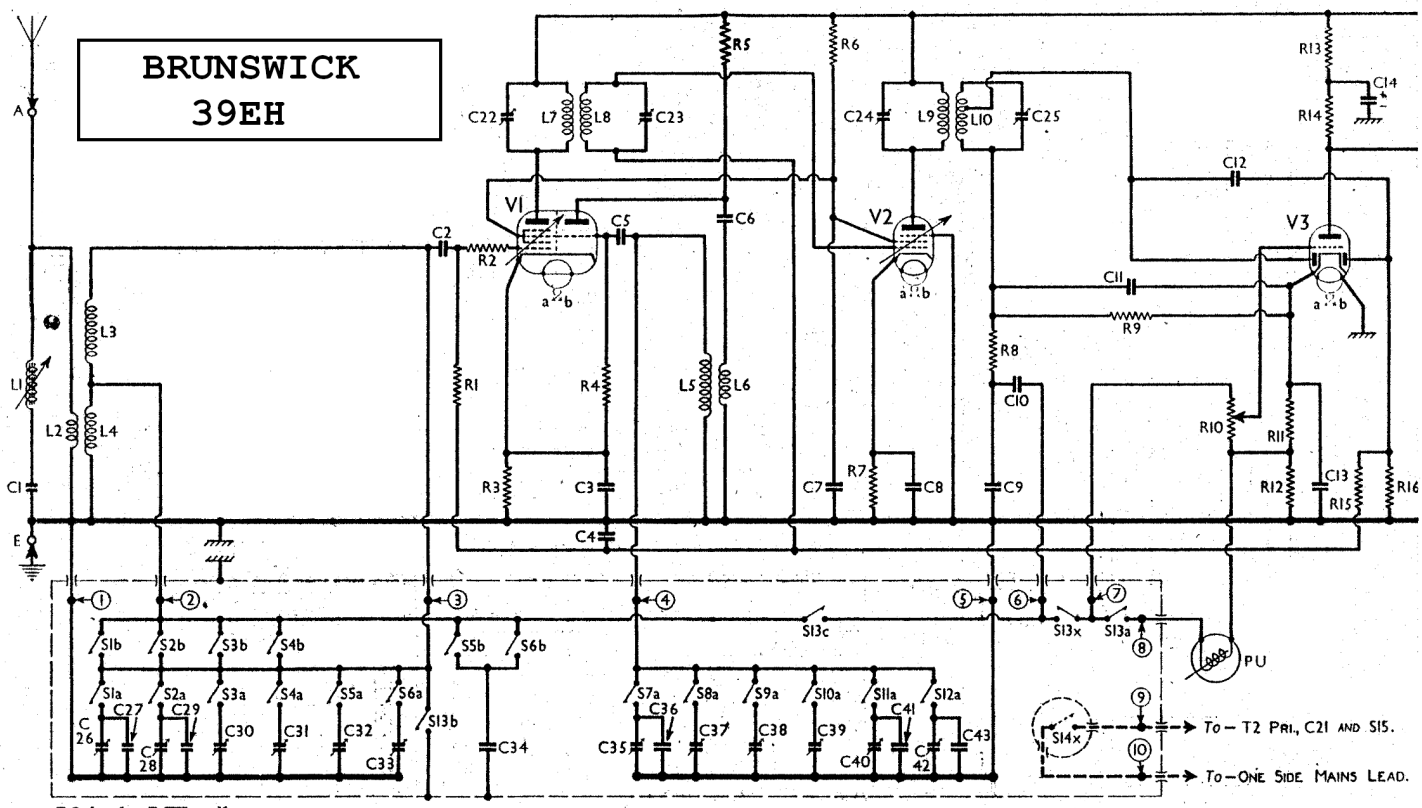
BRUNSWICK 39EH



L3 is the LW coil.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 hexode CG resistance ..	500,000
R2	V1 hexode grid stopper ..	40
R3	V1 fixed GB resistance ..	300
R4	V1 osc. CG resistance ..	50,000
R5	V1 osc. anode load	50,000
R6	V1, V2 SG's HT feed ..	35,000
R7	V2 fixed GB resistance ..	200
R8	IF stopper	70,000
R9	V3 signal diode load	300,000
R10	Manual volume control ..	500,000
R11, R12	V3 triode GB and AVC delay resistances	3,000 / 5,000
R13	V3 triode anode decoupling ..	25,000
R14	V3 triode anode load ..	100,000
R15	AVC line decoupling ..	500,000
R16	V3 AVC diode load	500,000
R17	V4 CG resistance	250,000
R18	V4 GB resistance	250
R19	V4 anode RF stopper ..	100
R20	Variable tone control ..	50,000

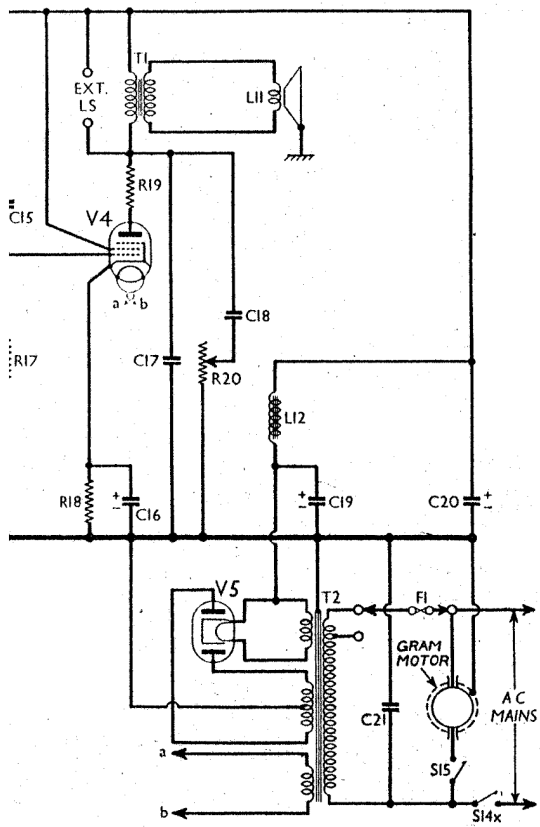
	CONDENSERS	Values (μF)
C1	Aerial IF filter tuning ..	0·00006
C2	V1 hexode CG condenser ..	0·0001
C3	V1 cathode by-pass	0·1
C4	AVC line decoupling	0·1
C5	V1 osc. CG condenser ..	0·0001
C6	V1 osc. anode coupling ..	0·002
C7	V1, V2 SG's decoupling ..	0·1
C8	V2 cathode by-pass	0·1
C9	IF by-pass	0·0001
C10	AF coupling to V3 triode ..	0·02
C11	IF by-pass	0·0001
C12	Coupling to V3 AVC diode ..	0·0001
C13	V3 cathode by-pass	0·25
C14*	V3 triode anode decoupling ..	4·0
C15	V3 triode to V4 AF coupling	0·01
C16*	V4 cathode by-pass	50·0
C17	Fixed tone corrector ..	0·006
C18	Part of variable tone control	0·05
C19*, C20*	HT smoothing condensers ..	8·0 / 8·0
C21	Mains RF by-pass	0·006
C22‡	1st IF trans. pri. tuning ..	—
C23‡	1st IF trans. sec. tuning ..	—
C24‡	2nd IF trans. pri. tuning ..	—
C25‡	2nd IF trans. sec. tuning ..	—
C26‡		—
C27		0·00003
C28‡		—
C29	Aerial circuit tuning condensers	—
C30‡		0·00006
C31‡		—
C32‡		—
C33‡		—
C34	Part aerial LW coupling ..	0·00125

* Electrolytic ‡ Pre-Set

	CONDENSERS (*Continued*)	Values (μF)
C35‡		—
C36		0·00003
C37‡		—
C38‡		—
C39‡	Oscillator circuit tuning condensers	—
C40‡		—
C41		0·00036
C42‡		—
C43		0·00036

* Electrolytic. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial IF filter coil	8·5
L2	Aerial coupling coil	14·0
L3	Aerial LW tuning coil ..	42·0
L4	Aerial MW tuning coil ..	2·7
L5	Osc. circuit tuning coil ..	2·2
L6	Oscillator reaction coil ..	0·6
L7	1st IF trans. Pri. ..	6·0
L8	1st IF trans. Sec. ..	6·0
L9	2nd IF trans. Pri. ..	6·0
L10	2nd IF trans. Sec., total	6·0
L11	Speaker speech coil	2·8
L12	HT smoothing choke ..	360·0
T1	Speaker input trans. Pri. ..	280·0
	Speaker input trans. Sec. ..	0·25
T2	Mains trans. Pri., total ..	28·0
	Mains trans. Heater sec. ..	0·3
	Mains trans. Rect. heat. sec. ..	0·15
	Mains trans. HT sec., total ..	275·0
PU	Gramophone pick-up ..	5,000·0
Gram. Motor	Collaro AC37, total	800·0*
S1a-4a	Aerial MW selector switches	—
S5a, 6a	Aerial LW selector switches	—
S1b-6b	Waveband switches	—
S7a-10a	Oscillator MW selector switches	—
S11a, S12a	Oscillator LW selector switches	—
S13a, b, c, x	Radio/gram change switches	—
S14x	Mains switch	—
S15	Gram. motor switch ..	—
F1	Mains circuit fuse	—



VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 228 V, using the 240 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band (Radio Normandie button) and the volume control was at maximum, but there was no signal input as the aerial and earth leads were shorted.

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

If, as in our case, **V2** should become unstable when its screen current is being measured, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from grid (top cap) to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6P8G ..	235 (Oscillator)	2·2	74	2·6
	90	2·9		
V2 6U7G ..	235	6·0	74	1·8
V3 6R7G ..	75	1·3	—	—
V4 6V6G ..	217	40·0	235	2·7
V5 5Z4G ..	237†	—	—	—

† Each anode, AC.

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GENERAL NOTES

Switches.—**S1a,b** to **S6a,b** and **S7a** to **S12a** are the waveband and station selector switches, and **S13a,b,c,x** the radio/gram change switches, all incorporated in the press-button switch unit. The contacts of the various switches are indicated in our view of the press-button assembly.

As will be seen from this illustration, each of the first six press-buttons, counting from right to left, control two groups of switches. Thus the first button controls **S1a,b** and **S7a,** the second, **S2a,b** and **S8a,** and so on. The seventh button (gram) controls **S13a,b,c,x,** while the eighth (off) controls **S14x,** which is of the QMB type, mounted in a small flat cylindrical unit. This is shown in our circuit diagram in its correct position, at the bottom right-hand corner, and also (with dotted lines) in the press-button unit enclosure beneath the main diagram.

Note that all **a, b** and **c** switches close when their associated button is depressed ; **x** switches open.

S15 is the QMB motor switch, mounted on the motor board.

Coils.—**L1-L6** are all beneath the chassis, and are indicated in our view of the underside of the chassis with the press-button unit removed. **L1** is in one unit, with a variable iron core. **L2, L4, L3,** and **L5, L6** are in three further units.

The IF transformers **L7, L8** and **L9, L10** are in two screened units on the chassis deck, with their associated trimmers. **L12** is the iron-cored smoothing choke on the chassis deck.

Pre-Set Condensers.—There are six aerial pre-set trimmers for station selection, of the mica dielectric compression type, two of them having fixed trimmers in parallel. The six oscillator pre-set trimmers are of the Tempa silver type, and three of these have additional fixed trimmers in parallel. All the trimmers are indicated in our view of the press-button unit.

Press-Button Unit Connections.—In case the press-button unit has to be removed for any reason, our circuit diagram shows its connections with the main chassis, and the chassis illustrations show the various inter-connecting wires numbered to agree with the circuit diagram. In all there are ten inter-connections. Note that three leads from the main chassis go to point 9 on the press-button unit.

BRUNSWICK 39/EH MODIFICATIONS

Early models of the chassis employed an intermediate frequency of 125 KC/S (not 465 KC/S), in which case **L7-L10** each had a resistance of about 60 O. **L10** was not tapped, and was untuned, **C25** being omitted.

There were also several other small modifications, notably that the aerial circuit IF filter was different, consisting of an air-cored coil (about 72O) and variable condenser in series. The aerial coil unit was also different, and had the IF filter trimmer mounted on it. A 20 $\mu\mu$F coupling condenser was wired between the aerial connection to the top of the filter coil, and the top of the aerial coil.

STATION SELECTION ADJUSTMENT

The press-button trimmers can be reached by removing the wooden panel beneath the base of the cabinet. To select a station, first press the appropriate button and adjust the oscillator trimmer associated with it, then adjust the appropriate aerial trimmer.

A signal generator can be used to provide a signal of the necessary wavelength, but final adjustments should be carried out on the actual station.

CIRCUIT ALIGNMENT

The only alignment adjustments are for the IF stages. Connect signal generator to control grid (top cap) of **V2** and chassis. Feed in a 465 KC/S signal, and adjust **C25,** then **C24,** for maximum output.

Transfer signal generator to control grid (top cap) of **V1** and adjust **C23** and **C22** for maximum output.

Connect signal generator to **A** and **E** sockets, feed in a 465 KC/S signal, and adjust the core of **L1** for *minimum* output.

In 125 KC/S models, use a 125 KC/S input. There will be only three IF trimmers to be adjusted (**C25** being omitted), while the IF filter is adjusted by the trimmer on top of the aerial coil unit, which takes the place of the variable core of **L1.**

External Speaker.—Two sockets are provided on a small panel at the rear of the cabinet for a high impedance (8,000O) external speaker.

Fuse F1.—This is combined with the 2-pin voltage adjustment plug at the rear of the chassis. The actual fuse is a short length of 2A fuse wire connected inside the insulating portion of the plug between the two pins.

Condensers C19, C20.—These are two 8μF dry electrolytics in a single carton beneath the chassis, having a common negative (black) lead. The yellow lead is the positive of **C19,** and the red the positive of **C20.**