

The resistor between L22 and L23 is R27.

RESISTANCES		Values (ohms)
R 1	LW aerial shunt ...	10,000
R 2	MW aerial shunt ...	10,000
R 3	Part aerial coupling...	10,000
R 4	V1 hexode anode decoupling	1,000
R 5	V1 osc. CG resistance ...	50,000
R 6	V1 osc. anode HT feed ...	30,000
R 7	V1 osc. anode SW HT feed	100,000
R 8	V2 CG decoupling ...	1,100,000
R 9	V1, V2 SG's HT feed ...	20,000
R10	V3 signal diode load resistances	110,000
R11	V3 signal diode load resistances	260,000
R12	Part of tone compensator...	50,000
R13*	Manual volume control...	1,000,000
R14	V3 triode GB; AVC delay...	1,000
R15	Negative feed-back coupling	25
R16	V3 triode anode decoupling	15,000
R17	V3 triode anode load ...	30,000
R18	AVC line decoupling ...	1,100,000
R19	V3 AVC diode load resistances	510,000
R20	V4 CG resistance ...	510,000
R21	V4 grid stopper ...	25,000
R22	Part of tone control...	3,000
R23	Part neg. feed-back feed ...	200
R24	V1, V2 fixed GB, and V4	25
R25	GB resistances ...	50
R26	V1 osc. anode shunt...	80,000

*Tapped at 250,000 Ω from chassis end.

CONDENSERS		Values (μF)
C 1	Aerial circuit LW coupling condensers	0.0025
C 2	Aerial circuit MW coupling condenser	0.0025
C 3	V1 hexode anode decoupling	0.00007
C 4	1st IF transformer fixed tuning condensers	0.1
C 5	V1 osc. CG condenser	Very low
C 6	Oscillator reaction coupling	0.00013
C 7	Bandspread fixed capacity	0.00014
C 8	V1 hex. CG decoupling ...	0.0001
C 9	Osc. circuit MW tracker ...	0.0005
C10	Osc. circuit LW tracker ...	0.0003
C11	Osc. circuit MW trimmer ...	0.0025
C12	Osc. circuit LW trimmer ...	0.00052
C13	Osc. circuit MW trimmer ...	0.0001
C14	Osc. circ. LW fixed trimmer	0.00007
C15	Osc. circuit preset fixed tuning capacity	0.0005
C16	Preset reaction coupling ...	0.002
C17	V2 CG decoupling ...	0.025
C18	V1, V2 SG's decoupling ...	0.1
C19	2nd IF transformer fixed tuning condensers	0.00013
C20	Part of tone compensator	0.00014
C21	AF coupling to V3 triode ...	0.01
C22	Coupling to V3 AVC diode	0.0005
C23	IF by-pass condensers ...	0.0001
C24	V3 cathode by-pass ...	0.0001
C25	V3 triode anode decoupling	20.0
C26	Fixed tone corrector	2.0
C27	V3 triode to V4 AF coupling	0.003
C28	Parts of tone control filter	0.01
C29	Part negative feed-back feed	0.05
C30	HT smoothing condensers	0.01
C31	Auto GB by-pass ...	4.0
C32	Aerial MW manual trimmer	8.0
C33	Aerial LW manual trimmer	16.0
C34	Aerial circuit LW auto tuning trimmers	20.0
C35	Aerial circuit MW auto tuning trimmers	—
C36	Aerial circ. manual tuning	—
C37	49m aerial circ. trimmer	—
C38	49m image neut. trimmer	—
C39	49m aerial circ. trimmer	—
C40	31m aerial coupling ...	—
C41	31m image neut. trimmer	—
C42	31m aerial circ. trimmer	—
C43	25m aerial coupling	—
C44	25m image neut. trimmer	—
C45	25m aerial circ. trimmer	—
C46	19m aerial coupling ...	—
C47	19m image neut. trimmer	—
C48	19m aerial circ. trimmer	—

CONDENSERS (Continued)		Value (μF)
C60	16m aerial coupling ...	—
C61	16m image neut. trimmer ...	—
C62	16m aerial circ. trimmer ...	—
C63	13m aerial coupling ...	—
C64	13m aerial circ. trimmer ...	—
C65	Bandspread tuning condenser	—
C66	Osc. circuit MW tracker ...	—
C67	Osc. circuit LW tracker ...	—
C68	Osc. circuit MW trimmer ...	—
C69	Osc. circuit LW trimmer ...	—
C70	Oscillator manual tuning	—
C71	Aerial IF filter tuning	—

* Electrolytic, † Variable, ‡ Pre-set, § 0.0001 μF and 0.0002 μF in parallel, ¶ T.C.C. type F.W. reversible electrolytic.

OTHER COMPONENTS		Approx. values (ohms)
L1	Aerial IF filter coil ...	15.0
L2	Aerial MW coupling coil	35.0
L3	Aerial MW manual tuning ...	2.0
L4	Aerial LW manual tuning ...	13.5
L5	49m aerial coils ...	2.4
L6	49m aerial coils ...	Very low
L7	31m aerial coils ...	2.5
L8	31m aerial coils ...	Very low
L9	25m aerial coils ...	1.0
L10	25m aerial coils ...	Very low
L11	19m aerial coils ...	1.0
L12	19m aerial coils ...	Very low
L13	16m aerial coils ...	1.0
L14	16m aerial coils ...	Very low
L15	13m aerial coils ...	0.5
L16	13m aerial coils ...	Very low
L17	13m oscillator coils...	Very low
L18	16m oscillator coils...	Very low
L19	19m oscillator coil ...	Very low
L20	25m oscillator coil ...	Very low
L21	49m oscillator coil ...	Very low
L22	Osc. MW manual re-action ...	1.9
L23	Osc. LW manual re-action ...	4.1
L24	Osc. MW manual tuning ...	1.8
L25	Osc. LW manual tuning	5.9
L26	Osc. circuit MW pre-set coils ...	0.5
L27	Osc. circuit LW pre-set coils ...	2.0
L28	Osc. circuit LW pre-set coils ...	5.65
L29	Osc. circuit LW pre-set coils ...	5.65
L30	1st IF trans. (Pa. Sec.)	7.5
L31	2nd IF trans. (Pri. Sec.)	7.5
L32	2nd IF trans. (Sec. total)	7.5

L37	Speaker speech coil ...	2.0
L38	Hum neutralising coil	0.1
L39	Speaker field coil ...	800.0

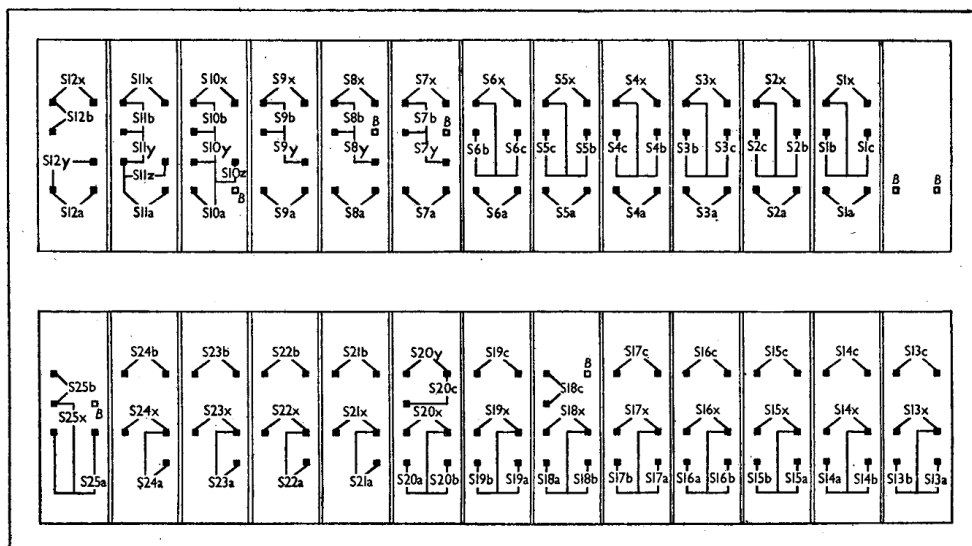
VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 233 V using the 216-235 V tapping on the mains transformer. The receiver was tuned to the lowest wave-length on the MW 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 ECH3	235	4.5	114	8.7
V3 EF9	241	11	114	2.8
V3 EB3	117	2.5	—	—
V4 EL6	222	6.7	241	8.0
V5 AZ2	364†	—	—	—

† Each anode, A.C.



Two diagrams of the press-button switch unit. Above, as seen from above the chassis, and below, as seen from beneath the chassis.

COIL TABLE

Button	Wavelength range	Frequency range
1	Gram	—
2	1,150-2,000 m	—
3	1,150-2,000 m	—
4	260-560 m	—
5	195-395 m	—
6	LW manual	—
7	MW manual	—
8	48-0-50-0 m	6.25-6.0 MC/S
9	30-6-31-9 m	9.8-9.4 MC/S
10	24-8-25-8 m	12.1-11.6 MC/S
11	19-3-20-1 m	15.5-14.9 MC/S
12	16-5-17-1 m	18.2-17.5 MC/S
13	13-7-14-2 m	21.9-21.2 MC/S

CIRCUIT ALIGNMENT

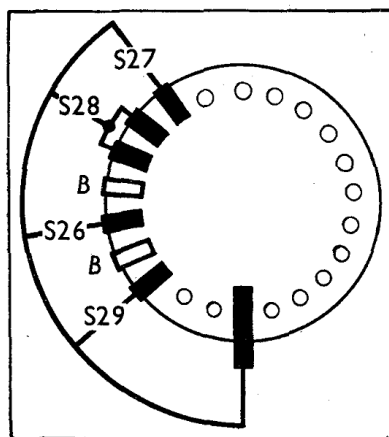
IF Stages.—Press the LW manual button. Connect signal generator via a 0.01 μ F condenser between control grid (top cap) of V1, leaving existing connection in place, and chassis. Connect a 500,000 Ω resistance directly across the generator output. Feed in a 462 KC/S signal, and adjust the cores of L33, L34 and L35, L36.

Disconnect resistance and condenser, and transfer signal generator to A and E sockets via a suitable dummy aerial. Feed in a 462 KC/S signal, and adjust C67 for minimum output.

RF and Oscillator Stages.—With the gang at maximum, the line on the pointer should coincide with the marks at the tops of the two end scales. See that the scale panel fits squarely on its clamps. Connect signal generator via a suitable dummy aerial to A and E sockets, turn volume control to maximum, and tone control fully anti-clockwise.

MW.—Press MW button, tune to 200 m. on scale, feed in a 200 m. (150 KC/S) signal, and adjust C64, then C37, for maximum output. Feed in a 520 m. (576 KC/S) signal, tune it in, and adjust C62 for maximum output, while rocking the gang for optimum results.

LW.—Press LW button, tune to 1,000 m. on scale, feed in a 1,000 m. (300 KC/S) signal, and adjust C65, then C38, for maximum output. Feed in a 1,800 m. (167 KC/S) signal, tune it in, and adjust C63 for maximum output, while rocking the gang for optimum results.



The tone-control switch unit, seen from the rear of the underside of the chassis.

Bandsread Circuits.—Press the appropriate SW button, tune in the strongest transmission near the middle of the band covered, then move pointer to where that station is marked on the scale, noting whether this requires an increase or a decrease of tuning capacity: if an increase is required, turn the appropriate oscillator coil core adjustment screw in (clockwise); if a decrease is required, screw the core out (anti-clockwise). If a large movement of the core is necessary, select the peak with the screw farthest in (highest frequency).

If a new aerial coil unit has been fitted, the following procedure should be followed in conjunction with the table below:

TRIMMING TABLE

Band (metr's)	Osc. coil	Trimmers			Test frequency MC/S
		Aerial	Grid	Image	
13	L18	C59	C60	—	21.56
16	L20	C56	C58	C57	17.8
19	L21	C53	C55	C54	15.2
25	L22	C50	C52	C51	11.8
31	L23	C47	C49	C48	9.6
49	L24	C44	C46	C45	6.07

OTHER COMPONENTS (Continued)

		Approx. values (ohms)
L40	HT smoothing choke	92-0
T1	Output / Pri. trans. (Sec.)	260-0
	Pri. total	0.2
T2	Mains trans. (Heater sec. Rect. heat. sec. HT sec., total)	17-8
		0.1
		0.1
		310-0
S1a, b, c	Aerial circuit wave band and manual/ auto change switches	—
S7a, b, x	Aerial circuit SW band selector	—
S13a, b, c, x	Oscillator circuit SW band selector	—
S18a, b, c, x	Oscillator circuit wave-band and manual/ auto change switches	—
S19a, b, c, x	Oscillator circuit wave-band and manual/ auto change switches	—
S20a, b, c, x, y	Oscillator circuit auto tuning selector	—
S21a, b, x to S24a, b, x	Radio/gram change switches	—
S25a, b, x	Tone control switches	—
S26-S29	Mains switch ganged	—
S30	R13	—

Set aerial trimmer $\frac{1}{2}$ turn from maximum; set grid circuit trimmer $\frac{1}{2}$ turn from maximum; set image trimmer to minimum. Then adjust as follows, in the same order:

Tune to test frequency on scale, feed in that frequency to A and E sockets, and adjust aerial and grid trimmers for maximum output, while rocking the gang for optimum results.

Increase generator frequency by 924 KC/S, and increase output as necessary, adjusting frequency to peak with set.

Adjust image trimmer for minimum output, while rocking the gang for optimum results. If this operation requires more than a small movement of the trimmer screw, repeat the whole process until this adjustment requires a negligible movement.

STATION SETTING

To adjust the pre-set station circuits, press the appropriate button and adjust the corresponding oscillator coil core (L29-L32), then the aerial trimmer (C39-C42) for maximum output, using the signal from the required station or from the signal generator. If the generator is used, final adjustment should always be made on the actual transmission.

Subsequent adjustment of C37 or C38 may necessitate readjustment of trimmers C39-C42.

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906