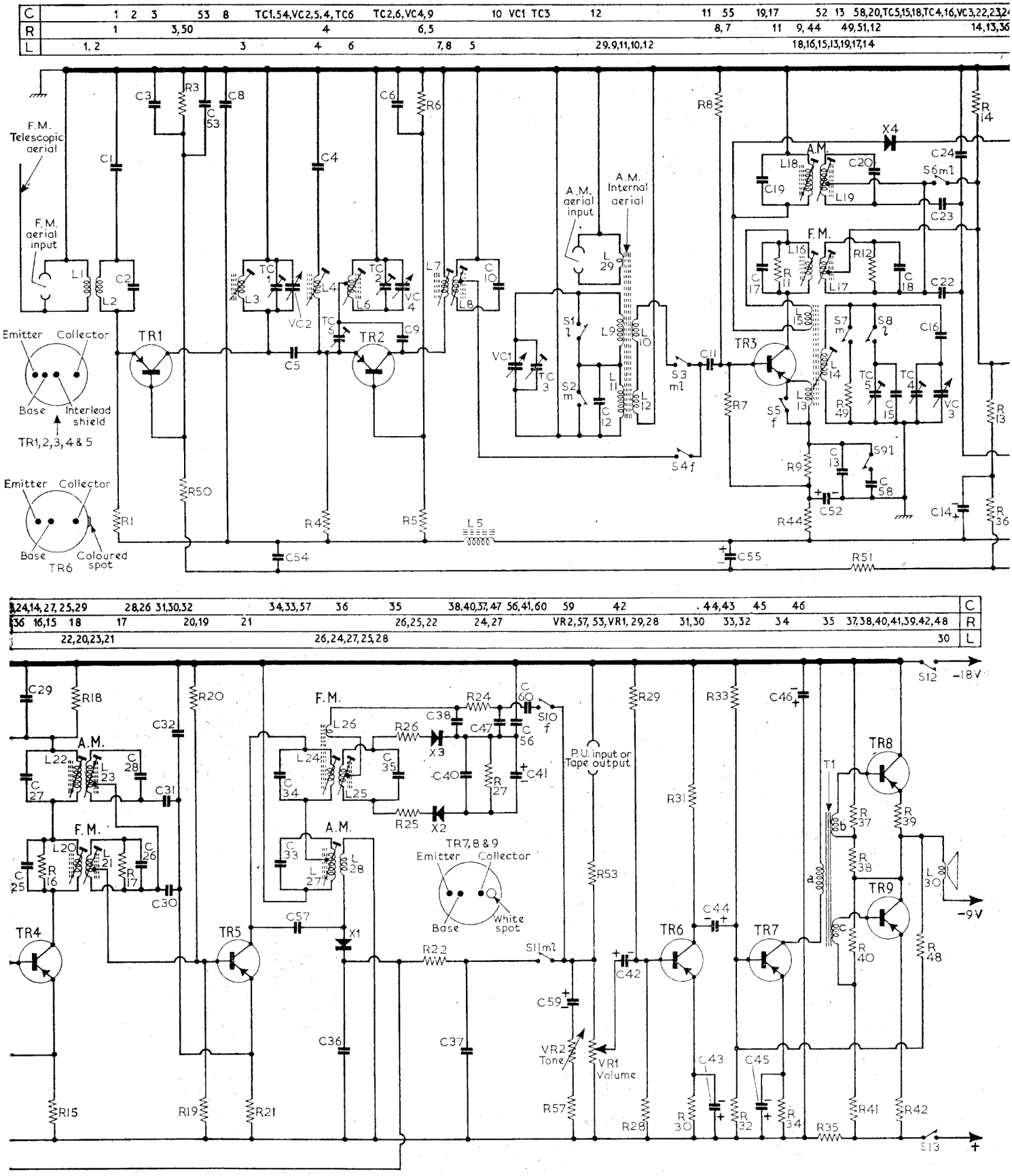


Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 OC171	6·1	5·8	—
TR2 OC171	5·9	5·6	—
TR3 OC170	6·6*	5·1	—
TR4 OC170	6·0	5·6	1·1
TR5 OC170	5·7	5·5	—
TR6 OC71	5·3	5·2	4·0
TR7 OC81D	5·6	5·5	—
TR8 OC81	9·0	8·8	—
TR9 OC81	18·0	17·8	9·0

*Measured at the junction of R9 and R44.

CIRCUIT ALIGNMENT

Equipment Required.—An A.M. signal generator with the required frequency range; an audio output meter; a 0.1μF capacitor; a short length of insulated wire for use as a shorting link; a coupling coil made up by winding 14 turns of enamelled copper 18 S.W.G. to a length of 1⅛in on a ⅞in dia. former; a hexagonal trimming tool.

F.M. Alignment

During alignment the signal generator should be adjusted to maintain the output below 100mW. Where two tuning peaks are encountered the one with the core nearer the end of the former is correct.

1.—Switch receiver to F.M. Turn the volume control to maximum and the tone control to maximum top cut. Disconnect one end of **C41**.

ULTRA - TR81

Resistors

R1	560Ω	D2
R2	—	†
R3	82kΩ	D2
R4	560Ω	C2
R5	1·5kΩ	C2
R6	6·8kΩ	C2
R7	2·7kΩ	H4
R8	10kΩ	H4
R9	1kΩ	H4
R10	—	†
R11	15kΩ	G4
R12	15kΩ	G4
R13	15kΩ	B2
R14	150kΩ	G4
R15	1kΩ	G4
R16	15kΩ	G4
R17	15kΩ	G4
R18	1·2kΩ	G4
R19	2·7kΩ	F4
R20	10kΩ	G4
R21	1kΩ	F4
R22	1kΩ	F4
R23	—	†
R24	1kΩ	F4
R25	270Ω	F4
R26	270Ω	A2
R27	3·3kΩ	F4
R28	4·7kΩ	D3
R29	18kΩ	D3
R30	1kΩ	E3
R31	3·3kΩ	D3
R32	12kΩ	E2
R33	47kΩ	E2
R34	680Ω	E3
R35	1kΩ	E3
R36	15kΩ	F4
R37	1·8kΩ	E3
R38	39Ω	E3
R39	3·3Ω	E3
R40	1·8kΩ	E3
R41	39Ω	E3
R42	3·3Ω	E3
R43	—	†
R44	100Ω	H4
R45-R47	—	†
R48	120kΩ	E3
R49	150kΩ	J4
R50	560Ω	A2
R51	12kΩ	F4
R52	—	†
R53	8·2kΩ	H4
R54-R56	—	†
R57	100Ω	D3
VR1	3kΩ	D3
VR2	3kΩ	D3

Capacitors

C1	220pF	D2
C2	39pF	D2
C3	0·01μF	D2
C4	330pF	D2
C5	5·6pF	C2
C6	2,000pF	C2
C7	—	†
C8	0·01μF	D3
C9	200pF	C2
C10	200pF	C2
C11	0·01μF	H4
C12	82pF	B1
C13	0·02μF	H4
C14	10μF	F4
C15	390pF	H4
C16	450pF	H4
C17	200pF	G4
C18	200pF	G4
C19	1,500pF	G4
C20	1,500pF	G4
C21	—	†
C22	0·01μF	G4
C23	0·05μF	G4
C24	0·01μF	B2
C25	200pF	G4
C26	200pF	G4
C27	1,500pF	G4
C28	1,500pF	G4
C29	0·05μF	G4
C30	0·01μF	F4
C31	0·05μF	F4
C32	0·01μF	B2
C33	120pF	F4
C34	200pF	F4
C35	56pF	F4
C36	0·02μF	A2
C37	0·05μF	A2
C38	330pF	F4
C39	—	†
C40	0·01μF	F4
C41	2μF	A2
C42	10μF	D2
C43	50μF	E3
C44	10μF	E3
C45	50μF	E3
C46	100μF	D3
C47	0·01μF	F4
C48-C51	—	†
C52	100μF	H4
C53	0·01μF	A2
C54	0·01μF	F4
C55	10μF	A2
C56	0·01μF	A2
C57	5·6pF	F4
C58	0·05μF	J4
C59	2μF	D3
C60	0·1μF	F4
TC1	60pF	D2
TC2	30pF	C2
TC3	—	C2
TC4	—	C2
TC5	80pF	H4
TC6	8pF	C3
VC1	—	C2
VC2	—	C2
VC3	—	C2
VC4	—	C2

Coils*

L1	—	D2
L2	—	D2
L3	—	D2
L4	—	D2
L5	0·5	D2
L6	—	C2
L7	—	C2
L8	—	C2
L9	1·0	D1
L10	0·4	E1
L11	8·0	B1
L12	0·5	E1
L13	0·4	H4
L14	3·0	G4
L15	0·4	H4
L16	—	B2
L17	—	G4
L18	2·0	B2
L19	—	G4
L20	—	B2
L21	—	G4
L22	2·0	B2
L23	—	G4
L24	—	A2
L25	—	F4
L26	—	F4
L27	2·0	A2
L28	1·0	F4
L29	0·4	C1
L30	35·0	—

Transformers*

T1	a	105·0	E3
	b	25·0	
	c	25·0	

Miscellaneous

X1	OA70	F4
X2	OA79	A2
X3	OA79	A2
X4	OA79	G4
S1-S11	—	J4
S12, S13	—	D3

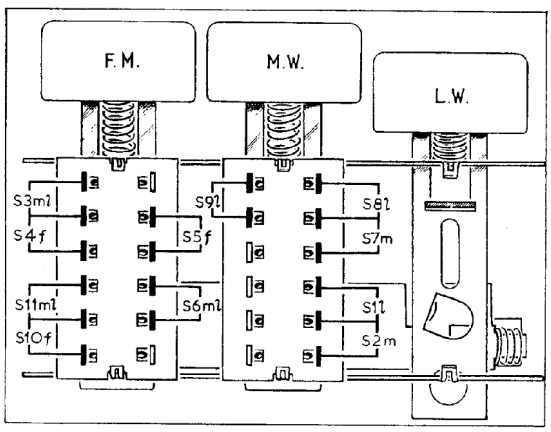
**Approximate D.C. resistance in ohms.*
†No component.

2.—Connect the signal generator via the 0.1μF capacitor between the base of **TR5** and chassis. Connect the output meter across the loudspeaker terminals. Connect the shorting link between the collector of **TR4** and chassis.
3.—Feed in a 10.7Mc/s signal and adjust **L25** (F4), **L24** (A2) and **L21** (G4) for maximum output. (Input approx. 7mV.)
4.—Transfer the shorting link to **TR3** collector. Transfer the signal generator via the 0.1μF capacitor to the base of **TR4.** Feed in a 10.7Mc/s signal and adjust **L21** (G4), **L20** (B2) and **L17** (G4) for maximum output. (Input approximately 700μV.)
5.—Remove the shorting link and transfer the signal generator via the 0.1μF capacitor to the base of **TR3.** Feed in a 10.7Mc/s signal and adjust **L17** (G4), **L16** (B2) and **L8** (C2) for maximum output.
6.—Transfer the signal generator to the emitter of **TR2.** Feed in a 10.7Mc/s signal, adjust **L7** and **L8** (C2) for maximum output and **L4** (D2) for minimum output. (Input approximately 500μV.)
7.—Fully mesh the tuning gang and check that the cursor is in line with the datum mark on the scale backing plate, then rotate the tuning knob to set the cursor on calibration dot number 6. Transfer the signal generator to the F.M. aerial socket.
8.—Feed in a 98.5Mc/s signal and adjust **TC6** (C3) for 150mV or the maximum voltage obtainable between the emitter of **TR2** and chassis as measured on an R.F. valve voltmeter. Adjust **TC2** (C2) and **TC1** (D2) for maximum output.
9.—Set the cursor to calibration dot number 1. Feed in a 89.5Mc/s signal and adjust **L6** (C2) and **L3** (D2) for maximum output.
10.—Reset the cursor to calibration dot number 6. Feed in a 98.5Mc/s signal and adjust **TC2** and **TC1** for maximum output.
11.—Repeat operations 9 and 10 until no further improvement can be made. Reconnect **C41.**

A.M. Alignment

Alignment should be carried out with the chassis in the cabinet. During alignment the signal generator should be adjusted to maintain the output below 100mW.
1.—Switch to M.W., set the volume control at maximum and the tone control at maximum top cut. Connect the signal generator via the 0.1μF capacitor between **TR5** base and chassis. Connect the shorting link between **TR4** collector and chassis.
2.—Feed in a 471kc/s 30 per cent modulated signal and adjust **L27** (A2) and **L23** (G4) for maximum output.
3.—Transfer the signal generator to **TR4** base and transfer the shorting link to **TR3** collector. Adjust **L23** (G4), **L22** (B2) and **L19** (G4) for maximum output.
4.—Remove the shorting link and transfer the signal generator to **TR3** base. Adjust **L19** (G4) and **L18** (B2) for maximum output. Remove the signal generator.
5.—Connect the coupling coil across the signal generator output terminals and place the coil about 6in from the receiver, coaxial with ferrite rod. Tune the receiver to 500m. Feed in a 600kc/s signal and adjust **L14** (G4) and **L9** (D1) for maximum output.
6.—Tune receiver to 200m. Feed in a 1,500kc/s signal and adjust **TC4** (C2) and **TC3** (C2) for maximum output.
7.—Repeat operations 5 and 6 until no further improvement can be made.
8.—Switch to L.W. and tune receiver to 1,600m. Feed in a 187.5kc/s signal and adjust **TC5** (H4) and **L11** (B1) for maximum output.
9.—Switch to M.W. and tune receiver to 500m. Feed in a 600kc/s signal and adjust **L14** (G4) and **L9** (D1) for maximum output.

SCALE DRIVE ASSEMBLY



Waveband switch contacts as they appear on the press-button unit when observed from the rear in the same direction as the arrow in location reference J4 (above)