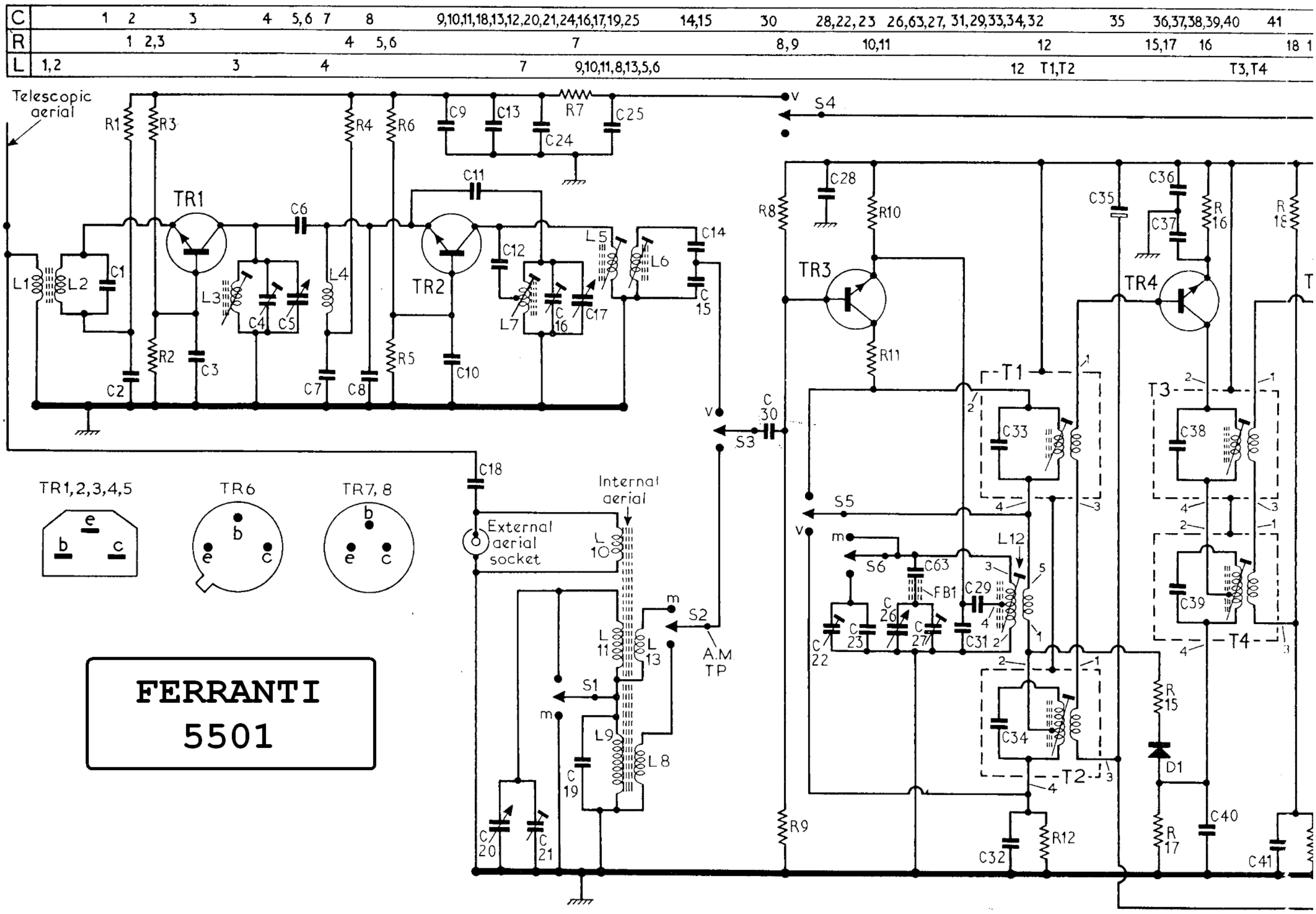

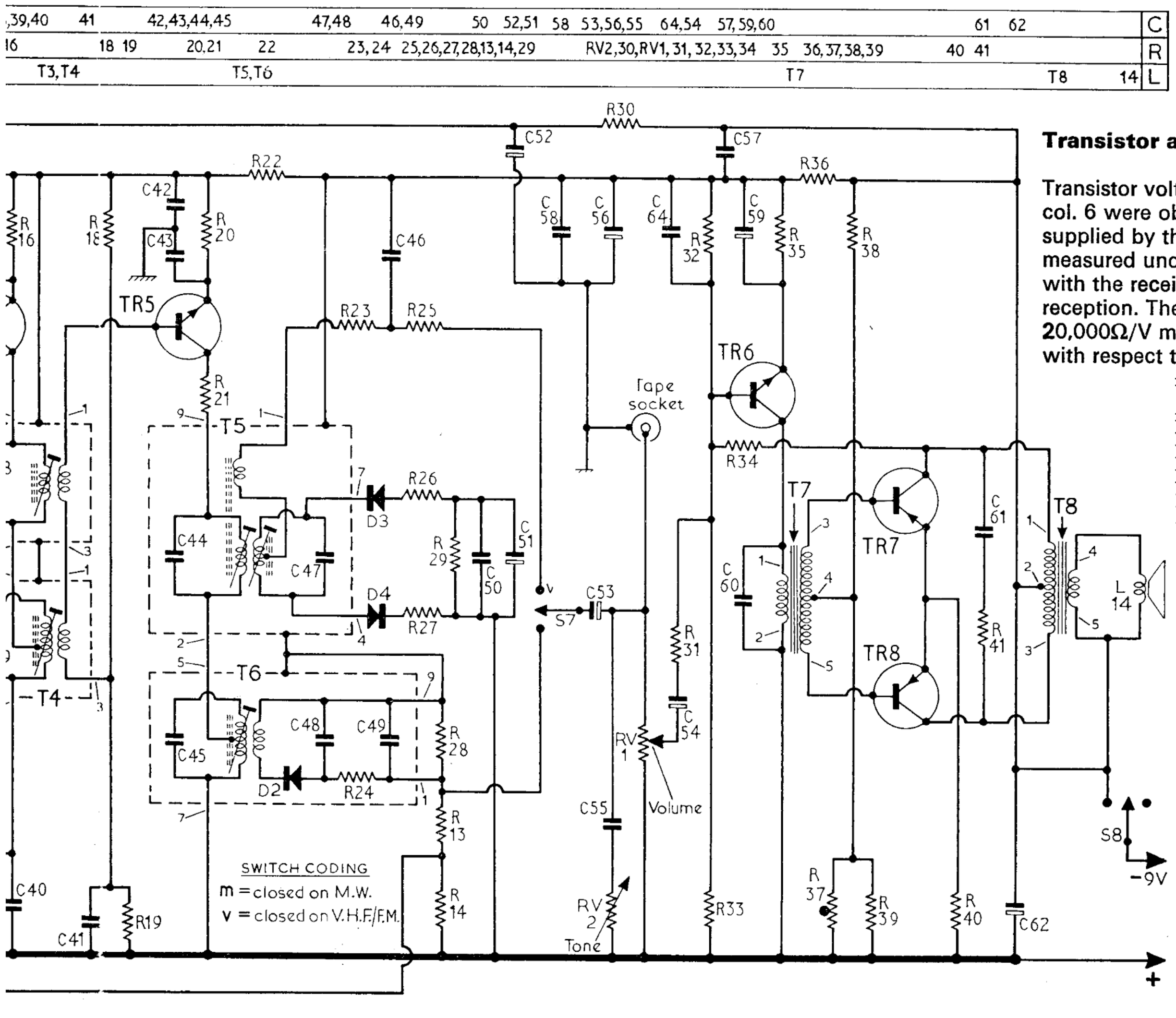

Transistor analysis

Transistor voltages given in the table in col. 6 were obtained from information supplied by the manufacturers, they were measured under quiescent conditions with the receiver switched for v.h.f./f.m. reception. They were measured on a 20,000Ω/V meter and are all negative with respect to the positive rail.

Transistor		Emitter (V)	Base (V)	Collector (V)
TR1	BF194	5·5	4·6	—
TR2	BF195	6·4	5·7	—
TR3	BF195	5·6	4·8	0·3
TR4	BF194	6·5	5·4	1·5
TR5	BF194	5·0	4·2	0·2
TR6	BC108	5·4	4·4	0·1
TR7	AC128	0·03	0·15	9·0
TR8	AC128	0·03	0·15	9·0

Quiescent current: A.M. 18mA; F.M. 22mA.

Coils and transformers

L1	—	D3
L2	—	D3
L3	—	D3
L4	—	D3
L5	—	D3
L6	—	D3
L7	—	D3
L8	—	C2
L9	—	C2
L10	—	C2
L11	—	B2
L12	—	B1
L13	—	B2
L14	3Ω	B2
T1	—	B1
T2	—	B1
T3	—	B1
T4	—	B2
T5	—	B1
T6	—	B1
T7	—	B1
T8	—	B1

Resistors

R1	2·7kΩ	D3
R2	12kΩ	D3
R3	6·8kΩ	D3
R4	1kΩ	D3
R5	6·8kΩ	D3
R6	2·2kΩ	D3
R7	220Ω	A1
R8	6·8kΩ	B1
R9	18kΩ	A1
R10	2·2kΩ	B1
R11	180Ω	B1
R12	560Ω	B1
R13	12kΩ	A2
R14	82kΩ	A2
R15	820Ω	B1
R16	270Ω	B1
R17	2·2kΩ	B2
R18	6·8kΩ	B1
R19	12kΩ	B1
R20	1kΩ	B1
R21	100Ω	B1
R22	39Ω	B1
R23	100Ω	B1
R24[7]	470Ω	B2
R25	470Ω	B1
R26	1kΩ	C2
R27	1kΩ	B1
R28	18kΩ	B1
R29	27kΩ	B2
R30	270Ω	C1
R31	1kΩ	C2
R32	18kΩ	C1
R33	39kΩ	C2
R34	1MΩ	C1
R35	1kΩ	C1
R36	470Ω	B1
R37[1]	VA1040	B1
R38	2·7kΩ	B1
R39	100Ω	C1
R40	2·2Ω	C1
R41	100Ω	C1
RV1	20kΩ	A1
RV2	10kΩ	A1

Capacitors

C1	15pF	D3
C2	2,000pF	D3
C3	1,000pF	D3
C4	20pF	A2
C5	15pF	A2
C6	4·7pF	D3
C7	320pF	D3
C8	33pF	D3
C9	0·02μF	D3
C10	1,000pF	D3
C11	5·6pF	D3
C12	68pF	D3
C13	0·02μF	D3
C14	220pF	D3
C15	1,000pF	D3
C16	20pF	A2
C17	15pF	A2
C18	15pF	A2
C19	39pF	B2
C20	208pF	A2
C21	20pF	A2
C22	20pF	B1
C23	190pF	B1
C24	0·1μF	A1
C25	0·1μF	A1
C26	208pF	A2
C27	20pF	A2
C28	0·25μF	A1
C29	0·01μF	B1
C30	0·02μF	B1
C31	0·01μF	A1
C32	0·04μF	A1
C33[2]	260pF	B1
C34[3]	360pF	A1
C35	6·4μF	B2
C36	0·1μF	B1
C37	0·04μF	B2
C38[4]	260pF	B1
C39[5]	360pF	B2
C40	0·04μF	B2
C41	·04μF	B2
C42	0·01μF	B1
C43	0·04μF	B1
C44[6]	220pF	B1
C45[7]	360pF	B2
C46	360pF	B1
C47[6]	68pF	B1
C48[7]	0·01μF	B2
C49[7]	0·01μF	B2
C50	2,000pF	B2
C51	2·5μF	C2
C52	200μF	C1
C53	4μF	A1
C54	2·5μF	C2
C55	0·1μF	A1
C56	200μF	B2
C57	0·04μF	B1
C58	0·04μF	B1
C59	64μF	C2
C60	2,000pF	C1
C61	0·1μF	C1
C62	200μF	C1
C63	215pF	B1
C64	0·02μF	C2

Miscellaneous

FB1	—	B1
D1	AA119	B2
D2[7]	AA119	B2
D3	AA119	B2
D4	AA119	B1
S1–S8	—	B1

[1] *Thermistor*
[2] *Part of T1 assembly*
[3] *Part of T2 assembly*
[4] *Part of T3 assembly*
[5] *Part of T4 assembly*
[6] *Part of T5 assembly*
[7] *Part of T6 assembly*

FERRANTI
5501

Circuit alignment

Equipment required. – An r.f. signal generator capable of being amplitude modulated 30 per cent and frequency modulated at ±22·5kc/s deviation, and a dummy aerial.

Switch on signal generator and allow about 15 minutes to warm up. Pre-set volume and tone controls to maximum and check that with the tuning gang at maximum capacitance the cursor is coincident with the datum marks at the low frequency end of the tuning scale. During the alignment procedure progressively attenuate the input signal as the sensitivity of the receiver increases, so that a signal is maintained that is just adequate for noticeable adjustments to be made.

1. – Switch receiver to m.w., rotate tuning gang to maximum capacitance and feed in via the dummy aerial to A.M. T.P. a 470kc/s a.m. signal. Adjust **T2, T4** and **T6** in that order for maximum output.

2. – Transfer dummy aerial to external aerial socket; tune receiver to 500m and feed in a 600kc/s a.m. signal. Adjust **L12** and **L11** (slide along ferrite rod) for maximum output.

3. – Tune receiver to 200m and feed in a 1,500kc/s a.m. signal. Adjust **C27** and **C21** for maximum output.

4. – Repeat operations **2** and 3 until calibration and tracking is correct.

5. – Switch receiver to l.w., tune to 1,400m and feed in a 214kc/s a.m. signal. Adjust **C22** and **L9** (slide along ferrite rod) for maximum output.

6. – Re-seal **L9, L11** on ferrite rod also **C21** and **C27,** remove dummy aerial.

7. – Terminate signal generator into 75Ω and connect to external aerial socket. Switch receiver to v.h.f./f.m. and tune to approximately 92Mc/s. Feed in a 10·7Mc/s ±22·5kc/s signal and adjust **T1, T3, T5, L5** and **L6** in that order for maximum output. Repeat these adjustments in the same order until no further improvement can be obtained.

8. – Feed in a 10·7Mc/s *a.m. signal* and adjust **T5** secondary for minimum output.

9. – Feed in a 10·7Mc/s ±22·5kc/s deviation signal and adjust **T1, T3** and **T5** primary for maximum output.

10. – Feed in a 92Mc/s ±22·5kc/s deviation signal and adjust **L3** and **L7** for maximum output.

11. – Tune receiver to 102Mc/s and feed in a 102Mc/s ±22·5kc/s deviation signal. Adjust **C4** and **C16** for maximum output.

12. – Repeat operations 10 and 11 until calibration and tracking is correct.