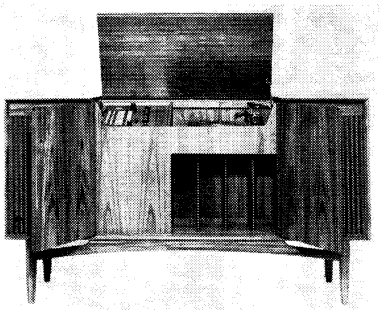
E R T

SERVICE CHART 1678



In teak cabinet, the fs Stereogram features a sloping control panel, rotating MW and LW aerials and 'direction control' of the treble units to match room characteristics

DECCA fs

STEREO RADIOGRAM

Additional copies of this chart 1*s.* 6*d., including postage. Payment with order please to E R T,* 33-39 *Bowling Green Lane, London EC*1.

FOUR waveband radio tunes LW, MW, SW and VHF/FM bands and has socket for stereo decoder. Stereo transcription head plays through three speakers per channel, housed in lined reflex enclosures and delivering 5W per channel output.

Mains. 200–250V AC.

Consumption. 245mA.

Transistors. TR1 FM RF amplifier AF178, TR2 FM mixer/oscillator AF115, TR3 FM IF amplifier/AM mixer AF115, TR4 common IF amplifier AF116, TR5 common IF amplifier AF116, TR6A/TR6B gram equaliser and pre-amplifier LH/RH channel SFT237, TR7A/TR7B AF amplifier LH/RH channel SFT353, TR8A/TR8B AF amplifier LH/RH channel OC44, TR9A/TR9B AF driver LH/RH channel OC81, TR10A/TR10B AF output LH/RH channel AD140.

Diodes. D1 FM clamp diode OA90, D2 FM/AM clamp diode OA79, D3 FM AGC diode OA91, D4 and D5 FM discriminator diodes OA79, D6 AM detector diode OA90.

Wavebands. SW 51-17m (5.85-18.3mc/s), MW 576-182m (520-1620kc/s), LW 2069-1112m (145-270kc/s), VHF/FM 88-100.5mc/s.

IFs. AM 472kc/s, FM 10.7mc/s.

Aerials. Internal aerials for MW, LW and VHF/FM. Aerial directional control for MW and LW.

Pilot lamps. Speaker and dial lamps, four 6.5V, 0.3A, MES type.

Inputs. Sockets for stereo decoder and tape recorder stereo playback. External AM aerial socket.

CAPACITOR	
C1	1
C2	1
C3	3
C4	1
C5	1
C6	1
C7	2
C8	4.
C9	5.
C10	3
C11	1
C12	2
C13	8.
C14	6
C15	8.
C16	4.
C17	1
C18	1
C19	6
C20	3-
C21	3-
C22	39
C23	3-
C24	ga
C25	ga
C26	ga
C27	6K
C28	30
C29	3K
C30	10
C31	10
C32	10
C33	—
C34	—
C35	3-
C36	3K
C37	ga

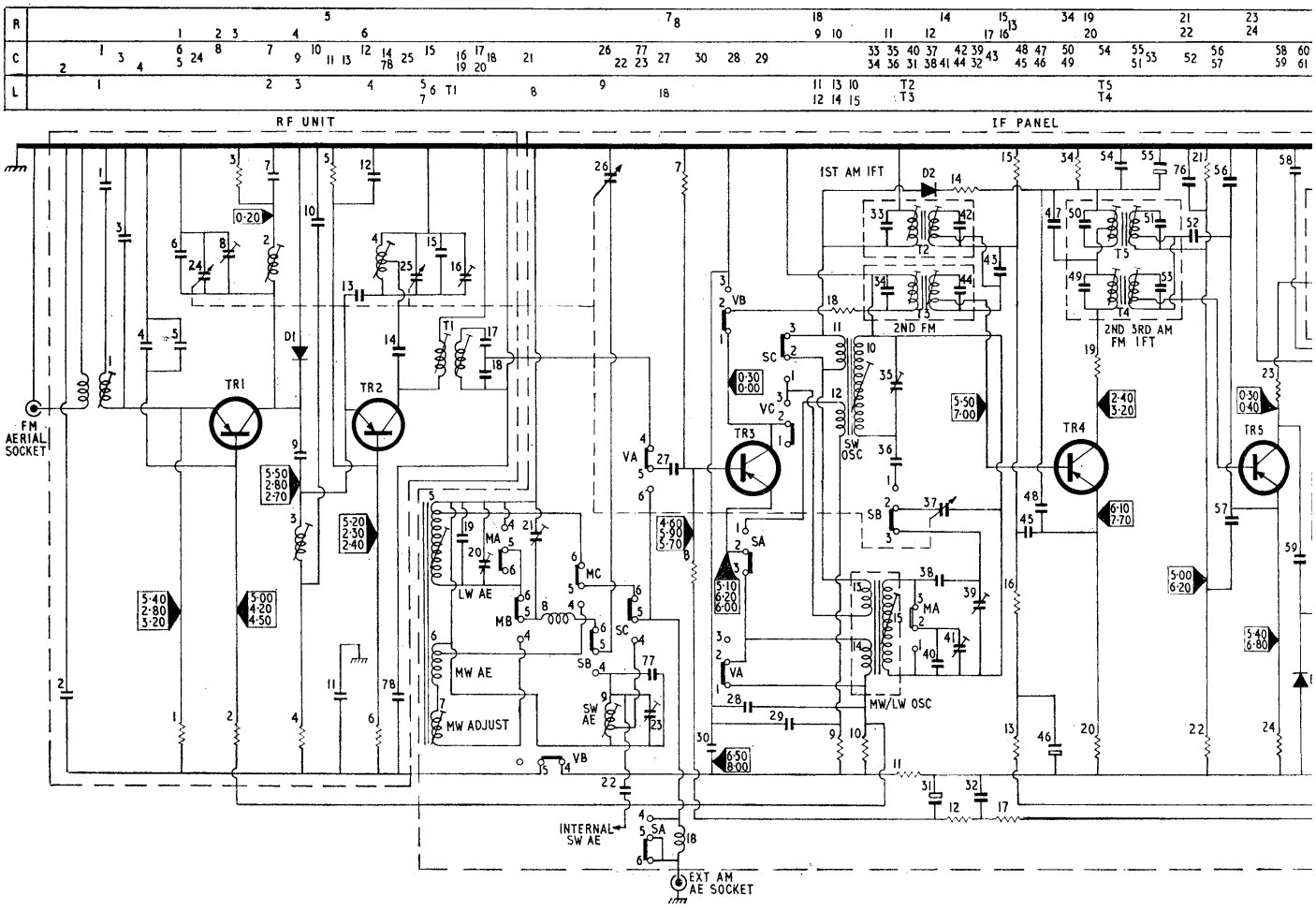
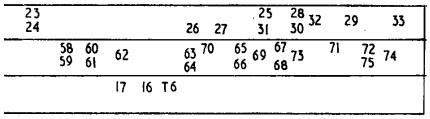
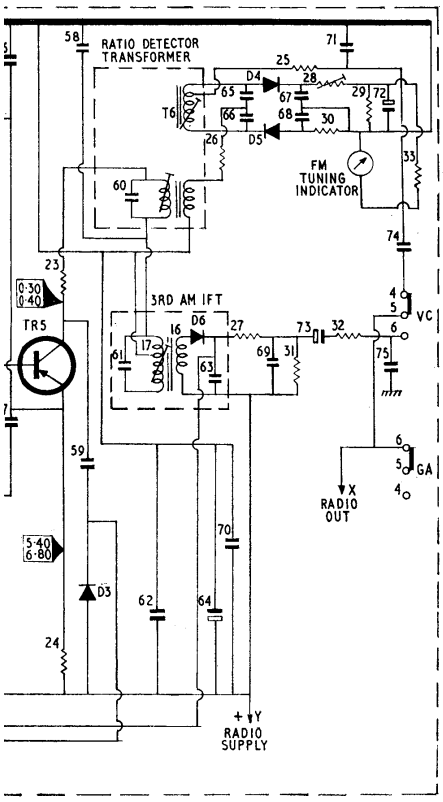


Diagram of RF and IF circuits. Voltages positive with respect to chassis, first figure on VHF, second figure on LW and MW, third fi different to LW and MW. Readings taken with 20,000ohm/volt meter under no signal conditions

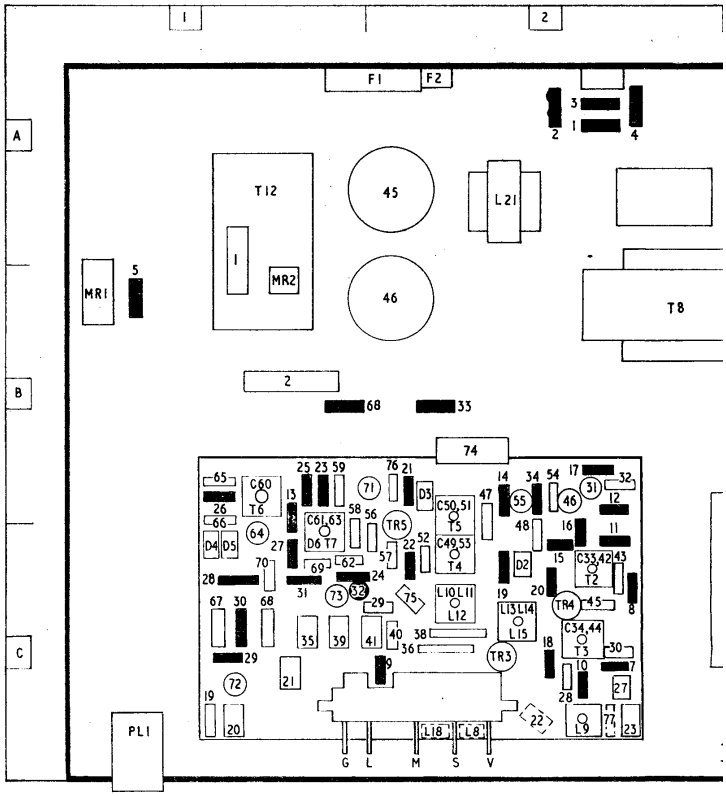
APACITORS								
1	15pF	E2	C38	425pF	C2	C77	12pF	C2
2	10KpF	E2	C39	3-30pF	C1	C78	10KpF	E1
3	35pF	E2	C40	362pF	C2			
4	1KpF	E2	C41	3-30pF	C1			
5	10KpF	E2	C42	—	C2	**RESISTORS**		
6	15pF	E2	C43	3KpF	—	R1	330	E2
7	2KpF	E2	C44	—	C2	R2	1K	E2
8	4.5-20pF	E2	C45	500KpF	C2	R3	82	E2
9	5.6pF	E1	C46	10mF	B2	R4	560	E2
10	390pF	E1	C47	2KpF	C2	R5	6K8	E2
11	10KpF	E1	C48	100KpF	C2	R6	1K5	E2
12	2KpF	E1	C49	—	C2	R7	27K	C2
13	8.2pF	E1	C50	—	B2	R8	3K9	C2
14	68pF	E1	C51	—	B2	R9	1K	C2
15	8.2pF	E1	C52	3KpF	C2	R10	1K	C2
16	4.5-20pF	E1	C53	—	C2	R11	47	C2
17	180pF	E1	C54	1KpF	B2	R12	1K	B2
18	1KpF	E1	C55	2mF	C1	R13	3K9	B1
19	68pF	C1	C57	500mF	C2	R14	680	B2
20	3-30pF	C1	C58	1KpF	C1	R15	56K	C2
21	3-30pF	C1	C59	8pF	B1	R16	3K9	C2
22	39pF	C2	C60	—	B1	R17	4K7	B2
23	3-30pF	C2	C61	—	C1	R18	220	C2
24	gang	C3	C62	100mF	C1	R19	220	C2
25	gang	C3	C63	—	C1	R20	470	C2
26	gang	C3	C64	500mF	C1	R21	18K	B2
27	6K8pF	C2	C65	100pF	B1	R22	5K6	C2
28	30KpF	C2	C66	100pF	C1	R23	100	B1
29	3K9pF	C2	C67	800pF	C1	R24	470	C1
30	100KpF	C2	C68	1K5pF	C1	R25	3K3	B1
31	10mF	B2	C69	20KpF	C1	R26	330	B1
32	10KpF	B2	C70	10KpF	C1	R27	390	C1
33	—	C2	C71	15mF	B1	R29	39K	C1
34	—	C2	C72	2mF	C1	R30	1K2	C1
35	3-30pF	C2	C73	1mF	C1	R31	4K7	C1
36	3K6pF	C2	C74	500KpF	B2	R32	4K7	C1
37	gang	C3	C75	1KpF	C2	R33	47K	B2
			C76	100KpF	B2	R34	1K5	B2

Outlets. Provision for external speakers of 15ohm impedance. Five-pin tape recorder socket for stereo recording and playback.





N, third figure on SW where



Above, component layout on IF board and power chassis; above rig

Fuses. F1, F2 2A.
Output. 5W per channel.
Speakers. Each channel has 10×6in. high flux bass unit of 15ohm impedance in lined reflex enclosure and two 4in. round treble units of 8ohm impedance. Crossover networks have crossover point 1kc/s.
Record unit. Garrard AT6 Mk. II four-speed autochanger with provision for manual control.
Pickup. Deram Stereo Transcription head fitted with high compliance stylus suitable for mono and stereo records.
Stylus. Deram Diamond/S, coding Blue.
Stylus force. 4-5 grammes.
Manufacturer. Decca Radio and Television.
Service Department. Ingate Place, Queenstown Road, London SW8. Tel: 01-622 6677.

SERVICE NOTES

Tuner. TR1 and TR2 are both connected in grounded base configuration and located in separate FM tuner unit. TR1 is RF amplifier with AGC, TR2 is self-oscillating mixer.

If base-emitter short occurs in either, then the base or emitter potential with respect to earth will equal full supply voltage. A base-emitter open circuit in either stage will cause emitter potential to equal supply voltage.

If either TR1 or TR2 is replaced, slight RF adjustment may be needed. If for any other reason the FM tuner unit is thought to be faulty, remove complete gang condenser and tuner unit assembly and return to Decca service department.

ALIGNMENT

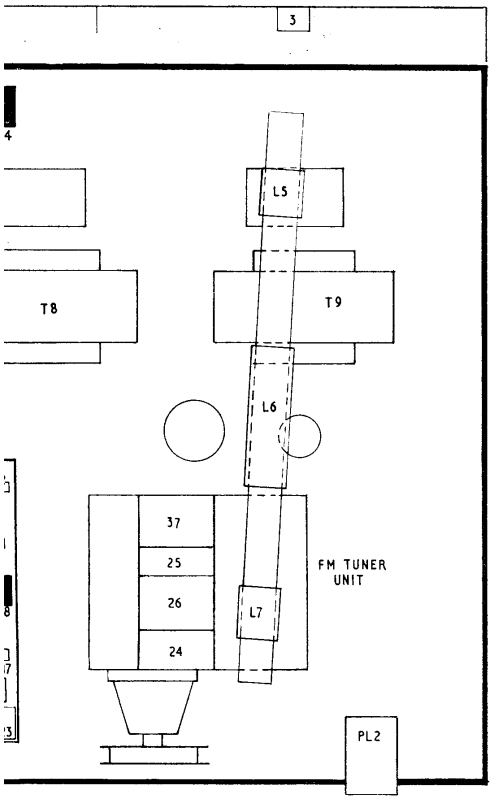
Equipment required. AM/FM signal generator covering 10kc/s to 100mc/s, output meter, dummy aerial, 10KpF capacitor, trimming tools, polystyrene cement.

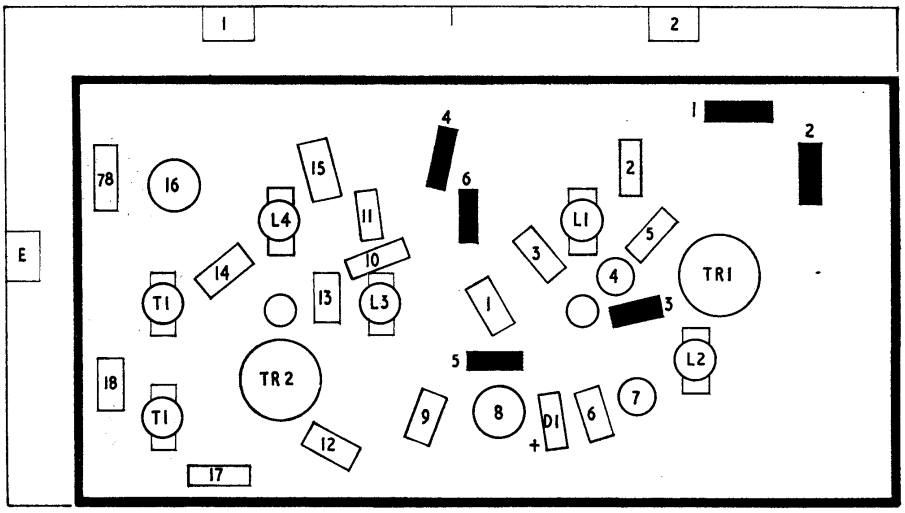
General. Connect output meter across secondary terminals of one output transformer. With ganged capacitors fully closed and FM tuning drum turned fully clockwise, check that tuning pointer is located under datum line at low frequence end of tuning scale. Turn volume and tone controls to maximum and adjust signal generator to maintain approximately 500mW output throughout alignment.

AM IF. Switch to MW and fully mesh gang. Disconnect lead to MW aerial coil tap and connect signal generator via 10KpF capacitor between free end of lead and fixing screw for gang condenser to which IF board earth is connected. Inject 472kc/s signal modulated 30 per cent to 400c/s. Adjust input level to give not more than 500mW output. Adjust cores of T7, T5 and T2, in this sequence, to obtain maximum output. Check centre frequency and symmetry, readjust if needed. Reconnect aerial lead.

FM IF. Switch to FM and fully mesh gang. Connect signal generator via 10KpF capacitor to emitter of TR3 and chassis earth as above. Inject 10.7mc/s at 25kc/s deviation, adjusting input level to give not more than 500mW output. Adjust in turn cores of T6, T4 and T3 to get maximum output. Check centre frequency and symmetry and readjust if necessary. Switch generator to AM position and adjust R28 for minimum output.

FM RF. Tune receiver to 88mc/s. Inject 88mc/s signal at 25kc/s deviation to FM aerial and earth socket, adjusting





s; above right, layout on FM tuner unit

input level to maintain output of less than 500mW. Adjust core of L4 for calibration and adjust T1 for maximum output. Tune set to 98mc/s and inject 98mc/s signal. Adjust trimmer C16 for calibration.

Inject 90mc/s, tune in signal and adjust L1 and L2 for maximum output. Inject 95mc/s, tune receiver to signal and adjust C8 and L3 for maximum output. Repeat FM RF adjustments in the order given, until no further improvement can be made.

AM RF. Inject signals 30 per cent modulated at 400c/s via standard dummy aerial to aerial and earth sockets, adjusting level to give output of not more than 500mW. Switch receiver to MW, tune to 500m. Inject 600kc/s signal and adjust L15 core for calibration and position of L7 on ferrite rod for maximum output.

Tune set to 200m and inject 1500kc/s signal. Adjust trimmer C39 for calibration and trimmer C21 for maximum output. Repeat adjustments at 600kc/s and 1500kc/s until calibration and tracking are correct. Reseal L7 in position on ferrite rod.

Switch set to LW and tune to 2000m. Inject 150kc/s signal and adjust trimmer C41 for calibration, and position of L5 on ferrite rod for maximum output. Tune set to 1200m and inject 250kc/s signal. Adjust trimmer C20 for maximum output. Repeat adjustments at 150kc/s and 250kc/s until tracking and calibration correct. Reseal position of L5 on rod.

Switch set to SW and tune to 6.5mc/s. Inject 6.5mc/s signal and adjust L10 for calibration and L9 core for maximum output. Tune set to 14mc/s and inject 14mc/s signal. Adjust trimmer C35 for calibration and trimmer C23 for maximum output. Repeat adjustments at 6.5mc/s

and 14mc/s until tracking and calibration are correct.

Sensitivity checks. Measurements made with receiver operating on 245V 50c/s mains supply to 240/250V tap. Volume and tone controls at maximum and balance set to equalise channel gains. Audio measurements taken with receiver switched to 'Gram' and 'Mono'.

Tape socket. Receiver switched to 'Gram'. Input of 1kc/s at 50mV into Gram socket gives 40mV output from tape socket. Input of 1.7V to tape socket gives 5W audio output.

AM IF Sensitivity. Input 472kc/s, 30 per cent modulation at 400c/s via 10KpF capacitor to give 500mW output, or 2.5mV at volume control. Voltage at TR3 base, 6microvolts; TR4 base, 35microvolts; TR5 base, 1.2mV.

AM IF Selectivity. With input as above, bandwidth for 6dB loss is 7kc/s, for 20dB loss is 11kc/s, for 40dB loss is 20kc/s.

FM IF Sensitivity. Input 10.7mc/s at 25kc/s deviation via 10KpF capacitor to give 500mW output, or 3.5mV at volume control. Voltage at TR3 base, 160microvolts, TR4 base, 1.5mV; TR5 base, 12.0mV.

FM IF Selectivity. With input as above, bandwidth for 6dB loss is 150kc/s, for 20dB loss is 350kc/s, for 40dB loss is 700kc/s.

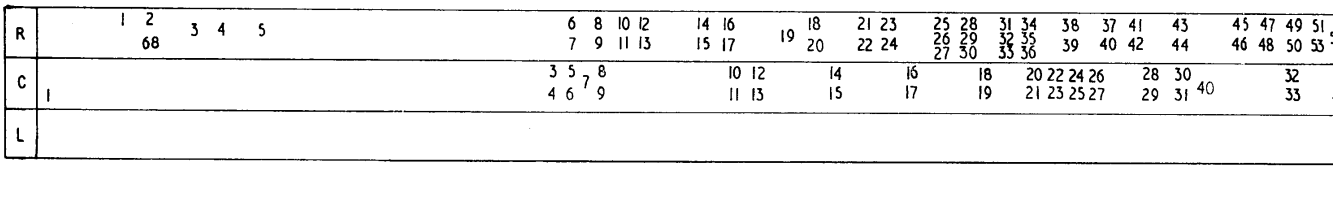
AM RF Sensitivity. Input via standard dummy aerial to receiver A and E sockets. Signal modulated 30 per cent at 400c/s, level adjusted to maintain 500mW into 15ohms.

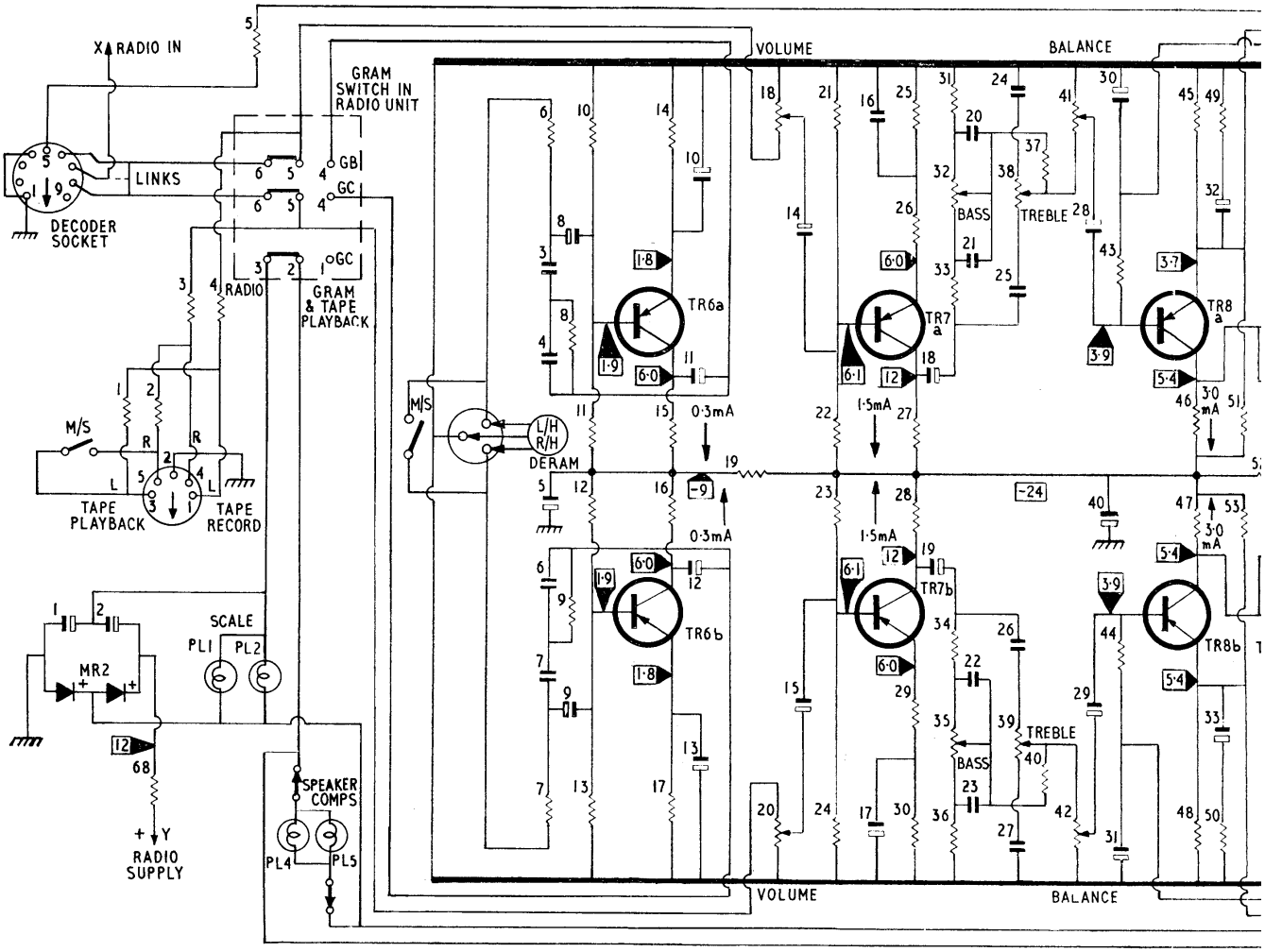
Waveband	*Frequency*	*Sensitivity (microvolts)*
MW	1500kc/s	20
	1200kc/s	15
	1000kc/s	20
	857kc/s	20
	600kc/s	15
LW	250kc/s	20
	214kc/s	20
	166kc/s	20
	150kc/s	20
SW	18mc/s	12
	16mc/s	12
	12mc/s	10
	9mc/s	10
	6.5mc/s	6

FM RF Sensitivity. Input via 75ohm pad to FM aerial socket. Signal 25kc/s deviation at 1kc/s modulation, level to maintain 500mW output into 15ohms.

Frequency (mc/s)	*Sensitivity (microvolts)*
88	12
92	12
95	12
100	12

Below, circuit of audio amplifier and power supplies; below right, component layout on audio board; top right, tuning drive lacing diagram





CAPACITORS

C1	650mF	A1/2
C2	650mF	B1
C3	15KpF	G1
C4	3KpF	G1
C5	100mF	F1
C6	3KpF	F1
C7	15KpF	F1
C8	10mF	G1
C9	10mF	F1
C10	100mF	G1
C11	25mF	G1
C12	25mF	F1
C13	100mF	F1
C14	10mF	G1
C15	10mF	F1
C16	100mF	G1
C17	100mF	F1
C18	10mF	G1
C19	10mF	F1
C20	47KpF	G1
C21	47KpF	G1
C22	47KpF	F1
C23	47KpF	F1
C24	100KpF	G2
C25	10KpF	G1
C26	10KpF	F1
C27	100KpF	G2
C28	10mF	G2
C29	10mF	F2
C30	200mF	G2
C31	200mF	F2
C32	200mF	G2
C33	200mF	F2
C34	1KpF	G2
C35	1KpF	F2
C36	2000mF	G2
C37	2000mF	F2
C38	2K2pF	F2
C39	2K2pF	G2
C40	500mF	F1
C41	8mF	—
C42	8mF	—
C43	8mF	—
C44	8mF	—
C45	3000mF	A2
C46	3000mF	B2

RESISTORS

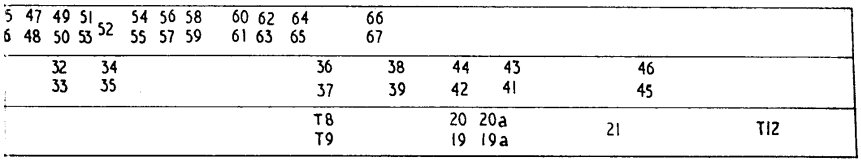
R1	27K	A2
R2	27K	A2
R3	27K	A2
R4	27K	A2
R5	5K6	B1
R6	100K	G1
R7	100K	F1
R8	22K	G1
R9	22K	F1
R10	12K	G1
R11	47K	G1
R12	47K	F1
R13	12K	F1
R14	5K6	G1
R15	10K	G1
R16	10K	F1
R17	5K6	F1
R19	15K	G1
R21	22K	G1
R22	68K	G1
R23	68K	F1
R24	22K	F1
R25	3K9	G1
R26	22	G1
R27	8K2	G1
R28	8K2	F1
R29	22	F1
R30	3K9	F1
R31	560	G1
R33	2K7	G1
R34	2K7	F1
R36	560	G1
R37	1K	G1
R40	1K	F1
R43	4K3	G2
R44	4K7	F2
R45	330	G2
R46	6K8	G2
R47	6K8	F1
R48	330	F2
R49	22	G2
R50	22	F2
R51	2K2	G2
R52	220	G1
R53	2K2	F2
R54	470	G2
R55	470	G2
R56	470	F2
R57	470	F2
R58	560	G1
R59	560	F2
R60	8K2	G2
R61	2K2	G2
R62	2K2	F2
R63	8K2	F2
R64	12	G2
R65	12	F2
R66	3K9	F2
R67	3K9	G2
R68	470	B1

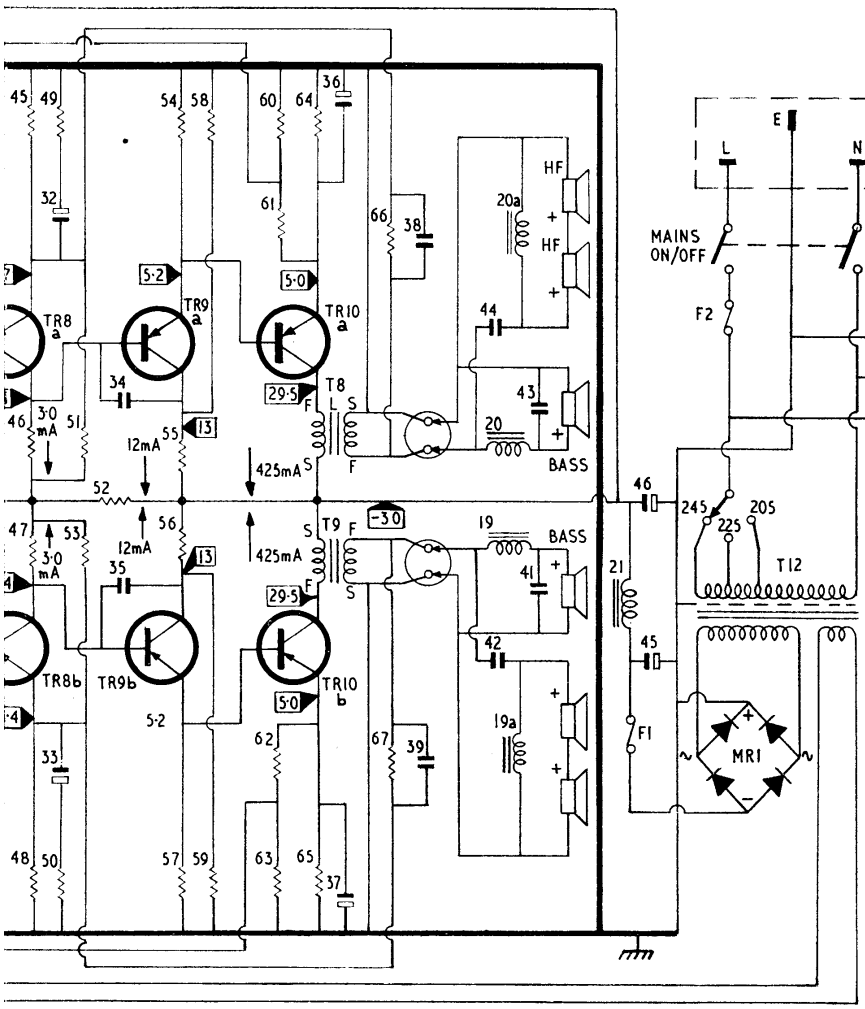
POTENTIOMETERS

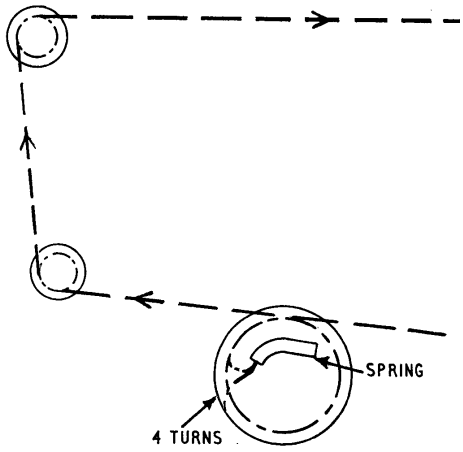
R28	10K Lin	C1
R18	10K Log	G1
R20	10K Log	G1
R32	10K Log	G1
R35	10K Log	G1
R38	10K Lin	G2
R39	10K Lin	G2
R41	10K Log	G2
R42	10K A-Log	G2

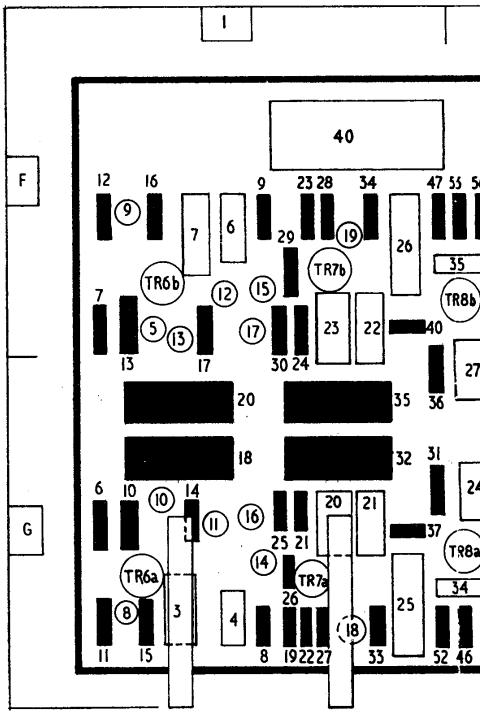
TRANSISTOR VOLTAGES

No.	Type	Function	E	B	C
TR1	AF178	FM RF amplifier	5.4	5.0	0.2
TR2	AF115	FM osc/mixer	5.5	5.2	0
TR3	AF115	FM IF amplifier	5.1	4.6	0.3
		AM osc/mixer	6.2	5.9	0
TR4	AF116	FM IF amplifier	6.1	5.5	2.4
		AM IF amplifier	7.7	7.0	3.2
TR5	AF116	FM IF amplifier	5.4	5.0	0.3
		AM IF amplifier	6.8	6.2	0.4
Above voltages taken with AVO 8 on 10V DC range, negative earth.					
Following voltages taken on 10V, 25V or 100V range, positive earth.					
TR6A/B	SFT237	Gram equalizer/amp	1.8	1.9	6.0
TR7A/B	SFT353	AF amplifier	6.0	6.1	12.0
TR8A/B	OC44	AF amplifier	3.7	3.9	5.4
TR9A/B	OC81	driver	5.2	5.4	13
TR10A/B	AD140	output	5.0	5.2	29.5









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