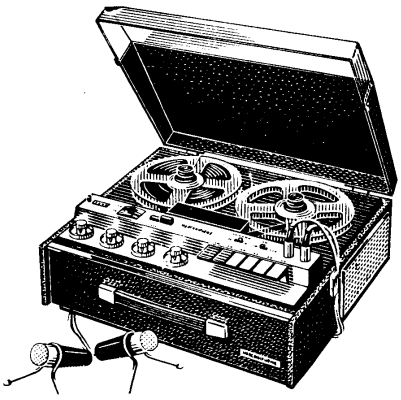
E R T

SERVICE CHART 1712



MARCONIPHONE 4218

STEREO TAPE RECORDER

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.

VERSATILE four-track three-speed stereo tape recorder with facilities for monitoring, track transfer and mixing, remote pause, automatic stop and use as straight-through amplifier.

Mains. 230-250V 50c/s AC.

Consumption. 45W.

Transistors. TR1/11 AF preamplifier BC114; TR2/12 AF amplifier BC114; TR3/13 AF amplifier U3540/2; TR4/14 recording level DC amplifier U3540/2; TR5/15 AF amplifier U3540/2; TR6/16 driver U3845/2; TR7/17 output AD161; TR8/18 output AD162; TR9/10 bias oscillator BC119.

Diodes. D1/2 bias stabilising 4160; D3, D4 click suppression; D5 supply rectifier.

Inputs. Radio 0.25mV into 4K7 (LH pin 1, RH pin 4); Pickup 50mV into 1M (LH pins 3 & 4, RH pins 1 & 5); Gram 100mV into 100K (LH pins 3 and 4, RH pins 1 and 5). Pin 5 and plug shield are used for remote pause switching.

Outlets. Extension speakers, two 8ohm at 5W, sockets switched to disconnect internal speakers. Radio output, 500mV at 10K (LH pin 3, RH pin 5).

Output. 5W per channel, speech and music, on 240V mains.

Speakers. Two, 8ohm impedance.

Frequency range. 40–18000c/s at 7½in. per second, 40–14000c/s at 3¾in. per second, 40–7000c/s at 1⅞in. per second.

Signal/noise ratio. 45dB unweighted.

Wow and flutter. Better than 0.15 per cent rms at 7½in. per second, 0.2 per cent at 3¾in. per second and 0.25 per cent at 1⅞in. per second.

Tape deck. Thorn type DC432.

Tracks. Four tracks can be paired on playback.

Tape speeds. 7½, 3¾ and 1⅞in. per second (19, 9.5 and 4.75cm per second).

Maximum spool diameter. 7in.

Playing time. 2×60 minutes stereo reproduction using standard tape.

Fast wind time. 1800 feet in 3 minutes 20 seconds.

Record level indicator. Two moving coil meters.

Tape position indicator. 4-digit counter with button reset.

Crosstalk. 50dB (stereo channels).

Monitoring. Input signals through internal or extension speakers in stereo or parallel.

Track transfer. Playback of one track mixed with new recording on second track (mono only). Both channels can be monitored.

Straight-through amplifiers. With record, pause and play keys depressed.

Automatic stop. Solenoid operated by metal foils at ends of tape, which function on play, record, rewind and forward.

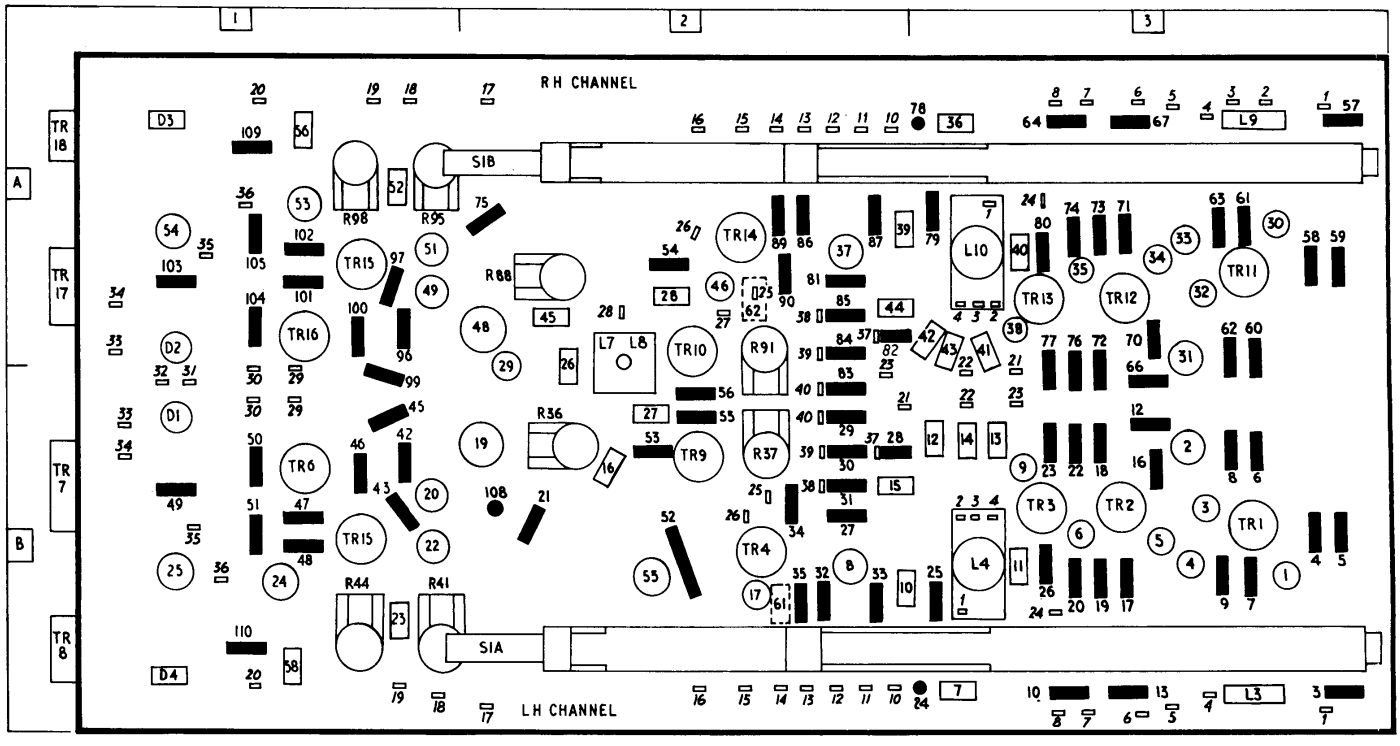
Remote pause. Solenoid operated temporary stop during record or play by separate switch, or with foot- or hand-operated accessory.

Interlocks. Self-latching pause key inoperative during spooling; play keys cannot be depressed when spooling in either direction; both record buttons are interlocked to prevent accidental erasure; record buttons are released when any other tape motion key, except pause, is depressed.

Dimensions. 16×15×7in.

Manufacturer. British Radio Corporation Ltd.

Service departments. London: PO Box No 121, Eley's Estate, Angel Road, Edmonton, N18. Tel: 01-807 3060,



Layout diagram showing resistors in solid black, capacitors in outline only

Ansafone spares 01-807 6332. Birmingham: 24 Sheepcote Street, 15. Tel: 021-643 9988. Glasgow: 160/162 Battlefield Road, S2. Tel: Langside 9251/4.

DISMANTLING

Tape deck top cover. Pull off amplifier control knobs and speed change knob. Take out screw securing head cover and then six screws holding top cover to deck (4 cross-headed, 2 slotted). Top cover can now be tilted at the rear edge and eased forward to lift clear.

Removing deck. Take out four screws around edge of deck top plate. Deck and amplifiers can now be lifted out of cabinet to extent of speaker leads. Pull off tag connections after noting colour coding carefully, to free unit completely.

Access to printed board. Meter checks and component replacement can generally be carried out with printed board in position. For complete access, place chassis on its rear edge, remove four screws holding printed board metal cover and take off cover. Detach circlips and PTFE washers from studs on two "record" switch links.

Release screws and washers from RH corners of printed board and also three screws holding heat sink bracket to main chassis. Board can then be hinged out to expose component side.

Board removal. When handling chassis take care to avoid breaking counter reset button. Hinge out printed board as described in previous paragraph. It is necessary to unsolder leads from printed board connecting tags. These tags are duplicated for LH and RH channels with the exception of tags 27, 28, 31, 32 and 41.

Colour coding of leads is tabulated here:

LH	RH	Lead description	Tags
white	mauve	microphone	1 & 2
blue	red	r/p heads	3 & 4
yellow	white	mic-rad control	5
brown	orange	gram control	6 & 8
green	blue	mic-rad control	7 & 8
orange	white	S3B & S4A	10 & 12
red	brown	S3A & S4B	11 & 12
yellow	mauve	S3A & S4B	13 & 14
red	orange	S3B & S4A	15
red	orange	erase head	16
mauve	red	tone control	18 & 19
white	orange	stop & pause solenoids	20
blue & red	blue & yellow	meter	25 & 26
green	orange	speaker sockets	34

Release also: blue S3B lead from tag 28; grey & black leads from tag 31; brown lead from tag 32; red C60 lead from tag 41; speed compensation switch wafer from deck.

ADJUSTMENTS

Head adjustments. Adjustment of heads for azimuth and height is effected by turning two adjusting screws. Height is adjusted by turning both screws in same direction, and azimuth by rotating them in opposite directions.

Special Thorn test tape type 6 is available for this purpose which has a 1.25kc/s tone across the full width of the tape apart from track 3, on which is recorded a 7.5kc/s tone. Azimuth is correct when 7.5kc/s tone is at a maximum, and height when 1.25kc/s tone is at a minimum.

Speaker can be used to determine minimum for the 1.25kc/s tone, but meter should be used to determine peaks of 7.5kc/s tone since these are difficult to recognise aurally.

Erase head. Erase head is accurately located by two rails and a pip moulded into erase head mount. No adjustment is provided.

Record equalisation. Production preset adjustment, will normally only require readjustment if C14/C43 is replaced. Hold down record buttons, set speed to 3¾in. per second. Inject 15kc/s signal from audio oscillator into any input socket and adjust core of L4/L10 for maximum output as shown on level meters.

Meter calibration. Production preset adjustment, will normally only need readjustment if transistor TR4/14 or record level meter M1/M2 is replaced. Insert close tolerance 100ohm resistor in series with and directly connected to "earthy" tag of record head. Connect a valve-millivoltmeter across resistor.

Inject 1kc/s signal from audio oscillator into an input socket. Hold down appropriate record button and adjust signal input level to obtain head current of 90microamps, ie, reading of 9mV across 100ohm resistor. This represents peak recording level and preset resistor R37 or R91 should be adjusted so that appropriate level meter registers at junction of red and black sections of scale.

Bias level. Production preset adjustment, will normally only need readjustment if C16/C45 or record/play head is replaced (R36/R88), or C26/C29 or erase head is replaced (L7/L8). Insert a close tolerance 100ohm resistor in series with and directly connected to earthy tag of record head and connect valve millivoltmeter in parallel.

Set R36/R88 initially to give bias current of 550microamps, ie, 55mV across 100ohm resistor. At a level 20dB below peak recording level, make a frequency response recording at 3¾in. per second.

Switch to playback and check that frequency response at 14kc/s is within ±3dB with reference to the level at 1kc/s. If this is not so, R36/R88 must be readjusted. If response is too high, readjust to increase bias; if too low, readjust to reduce bias.

continued

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* Ranges: 6.4 to 500 µfd
* Working voltages: 3 to 150V.

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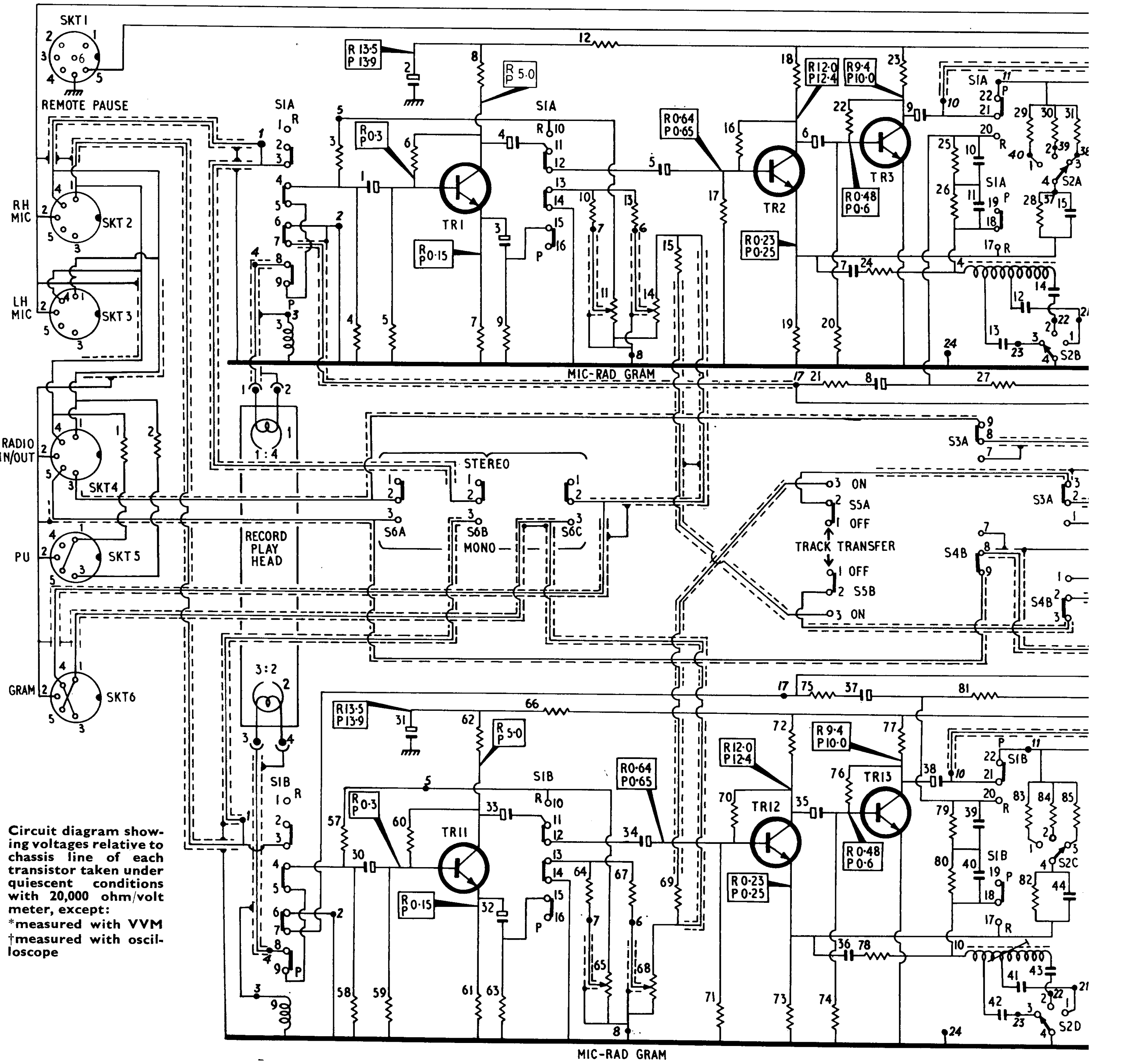
If it is found necessary to adjust bias current to value outside limits 450–650microamps, ie, 45–65mV across 100ohm resistor, then either record/play head is faulty or normal frequency response of record amplifier is affected by fault such as misalignment of L4/L10. Fault must be corrected before attempting to readjust R36/R88.

CAPACITORS

C1/30	1mF	B3/A3	C12/41	220KpF	B3/A3	C24/53	250mF	B1/A1	C61	470pF			
C2/31	400mF	B3/A3	C13/42	47KpF	B3/A3	C25/54	750mF	B1/A1	C62	470pF			
C3/32	100mF	B3/A3	C14/43	47KpF	B3/A3	C26	47KpF	A2					
C4/33	1mF	B3/A3	C15/44	15KpF	B2/A2	C27	47KpF	B2					
C5/34	1mF	B3/A3	C16/45	470pF	B2/A2	C28	47KpF	A2	**RESISTORS**				
C6/35	4mF	B3/A3	C17/46	20mF	B2/A2	C29	10KpF	A2	R1	1M			
C7/36	47KpF	B3/A3	C18/47	4mF	—	C55	400mF/100mF	B2	R2	1M			
C8/37	4mF	B2/A2	C19/48	400mF	B2/A2	C56	100KpF	B2	R3/57	1M	B		
C9/38	4mF	B3/A3	C20/49	25mF	B1/A1	C57	900MF	—	R4/58	100K	B		
C10/39	220pF	B2/A2	C21/50	47KpF	—	C58	100KpF	B1	R5/59	560K	B		
C11/40	22KpF	B3/A3	C22/51	4mF	B1/A1	C59	900mF	—	R6/60	2M2	B		
			C23/52	1KpF	B1/A1	C60	4500mF	—	R7/61	1K	B		

R	1 2 3 4 5 6 8 7 9 12 10 11 13 14 15 17 16 18 19 21 20 22 24 23 25 26 27 29 28 30
	57 58 59 60 62 61 63 66 64 65 67 68 69 71 70 72 73 75 74 76 78 77 79 80 81 83 82 84
C	1 2 3 4 5 6 7 8 9 10 11 13 12 14 1
	30 31 32 33 34 35 36 37 38 39 40 42 41 43 4
L	1 3 4
	2 9 10



Circuit diagram showing chassis voltages relative to chassis line of each transistor taken under quiescent conditions with 20,000 ohm/volt meter, except:
*measured with VVM
†measured with oscilloscope

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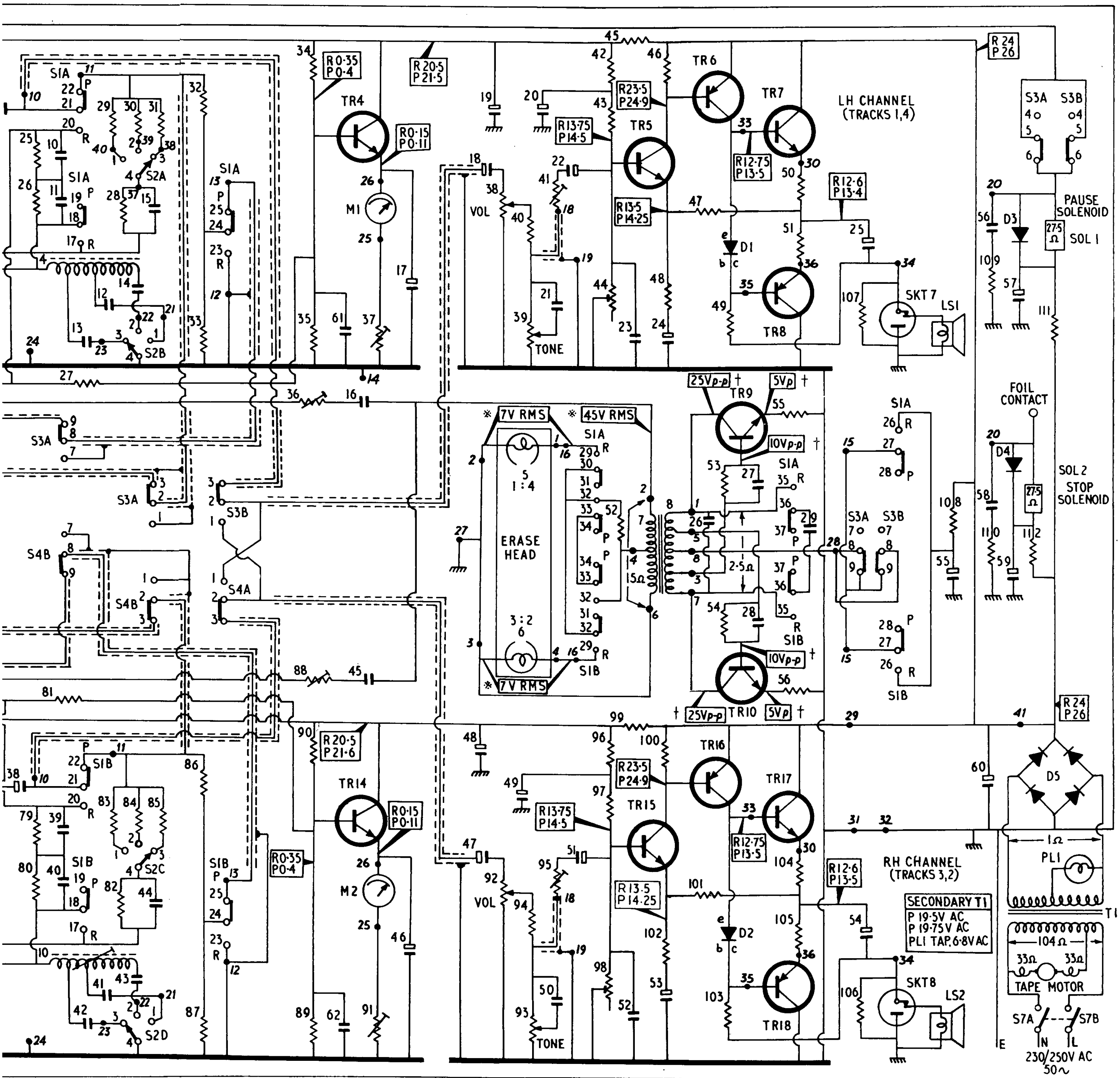
A1	C61	470pF	B2	R8/62	68K	B3/A3	R20/74	100K	B3/A3	R32/86	22K	B2/A2	R44/98	100K Lin	B1/A1	R56	22	B2
A1	C62	470pF	A2	R9/63	390	B3/A3	R21/75	12K	B2/A2	R33/87	22K	B2/A2	R45/99	1K	B1	R106	100	—
A2				R10/64	68K	B3/A3	R22/76	560K	B3/A3	R34/90	1M	B2/A2	R46/100	1K2	B1/A1	R107	100	—
B2				R11/65	100K Log	—	R23/77	4K7	B3/A3	R35/89	27K	B2/A2	R47/101	1K	B1/A1	R108	22	B2
A2	**RESISTORS**			R12/66	39K	B3/A3	R24/78	390	B3/A3	R36/88	50K Lin	B2/A2	R48/102	22K	B1/A1	R109	10	A1
A2	R1	1M	—	R13/67	220K	B2/A3	R25/79	47K	B3/A3	R37/91	15K Lin	B2/A2	R49/103	390	B1/A1	R110	10	B1
B2	R2	1M	—	R14/68	250K Log	—	R26/80	150K	B3/A3	R38/92	20K Log	—	R50/104	1	B1/A1	R111	39	—
B2	R3/57	1M	B3/A3	R15/69	560K	—	R27/81	22K	B2/A1	R39/93	20K Rev log	—	R51/105	1	B1/A1	R112	680	—
—	R4/58	100K	B3/A3	R16/70	560K	B3/A3	R28/82	220K	B2/A2	R40/94	15K	—	R52	27	B2			
B1	R5/59	560K	B3/A3	R17/71	47K	B3/A3	R29/83	10K	B2/A2	R41/95	25K Lin	B1/A1	R53	33K	B2			
—	R6/60	2M2	B3/A3	R18/72	15K	B3/A3	R30/84	10K	B2/A2	R42/96	5K6	B1/A1	R54	33K	A2			
—	R7/61	1K	B3/A3	R19/73	470	B3/A3	R31/85	3K9	B2/A2	R43/97	10K	B1/A1	R55	22	B2			

3 25 26 27 29 28 30 31 32 33 34 35 36 37 38 40 39 41 42 43 44 52 45 46 48 47 53 49 55 50 51 107 108 109 111
7 79 80 81 83 82 84 85 86 87 90 89 88 91 92 94 93 95 96 97 98 100 99 108 102 101 54 103 56 104 105 106 110 112
10 11 13 12 14 15 61 16 17 18 19 20 21 22 23 24 26 27 29 25 55 60 56 57
8 39 40 42 41 43 44 62 45 46 47 48 49 50 51 52 53 28 54 58 59
4 5 7 LS1 T1 SOL 1
10 6 8 LS2 SOL 2



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