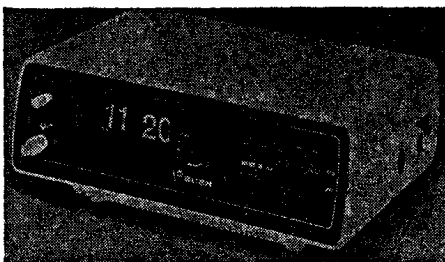


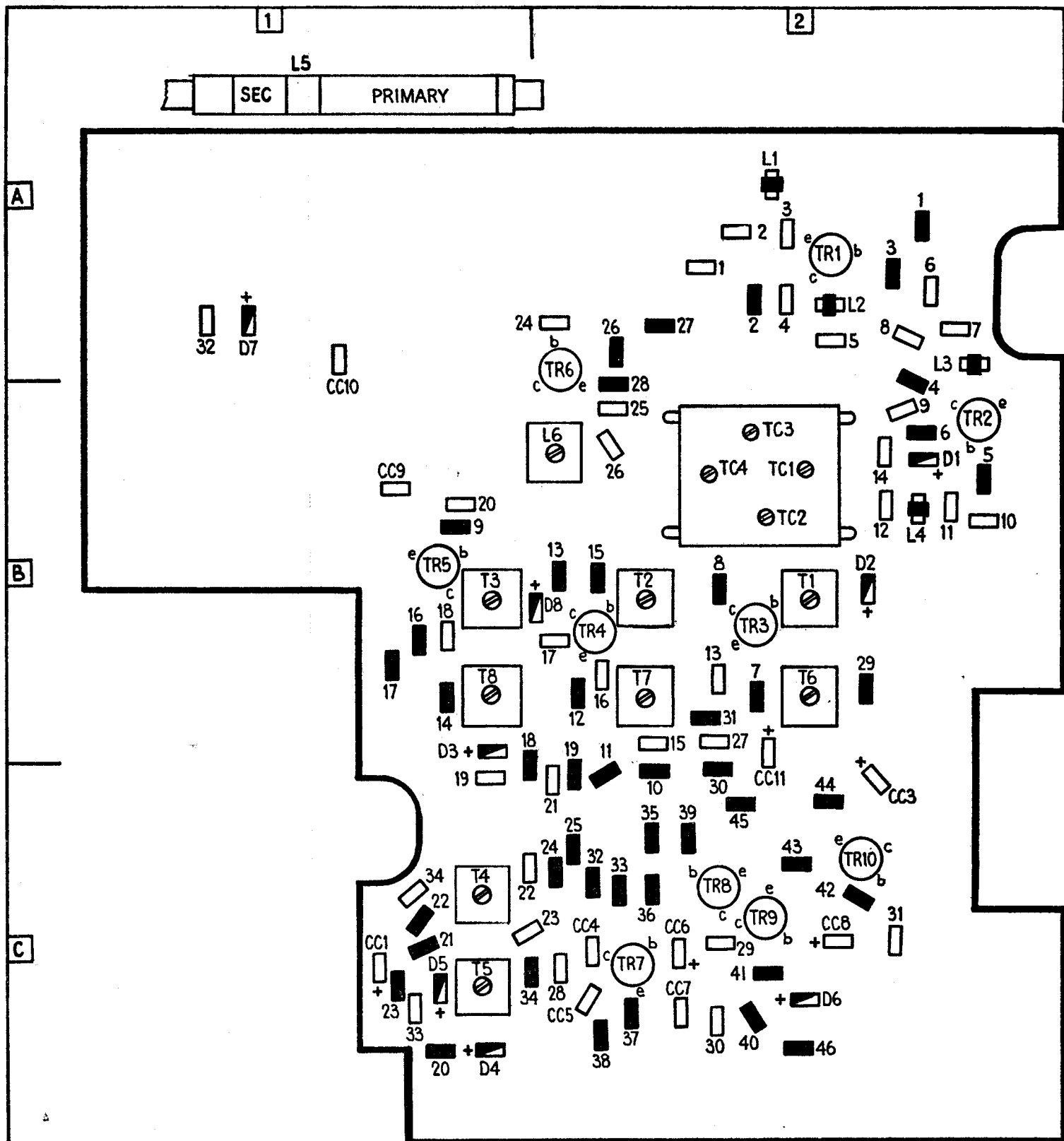
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SERVICE CHART



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2100



BUSH BV5613

Clock radio

THE Bush BV5613 is a digital clock/radio, the illuminated clock having the facility of switching on the radio or providing an alarm tone at any predetermined time. The ten-transistor radio has a directly coupled output stage and covers the MW and VHF/FM bands.

Mains supply
240V 50Hz AC

Power consumption
5 Watts

Tuning ranges
MW 520-1640kHz
VHF 87.5-108MHz

Aerials
MW Ferrite rod
VHF Throw out wire

Power output
180mW sinewave (1kHz) at 10 per cent THD.

Loudspeaker
70mm frame size. 32ohm impedance.

Transistors
TR1 2SC394Y
TR2 2SC394O
TR3 2SC380O
TR4 2SC380O
TR5 2SC380O
TR6 2SC372O
TR7 2SA495O
TR8 2SC735O
TR9 2SA562Y
TR10 2SC735Y

Diodes
D1 TD25D
D2 1N60
D3 1N60
D4 1N60
D5 1N60
D6 TD20E
D7 1S1941
D8 1N60

Manufacturer
Rank Radio International Ltd, PO Box 596, Power Road, London W4 5PW. Tel: 01-994 6491.

Service Department
Watton Road, Ware, Herts SG12 0AE. Tel: 0920 3966.

Alignment

Equipment required

- (1) AM signal generator covering 470kHz to 1650kHz.
- (2) FM signal generator covering 87.5MHz to 109MHz.
- (3) Sweep generator 10.7MHz, with marker.
- (4) Coupling loop.
- (5) Oscilloscope.
- (6) AC voltmeter (0-2.5V).

AM alignment

Couple signal generator to standard transmitting loop of 10in. diameter, placed about 2ft. from ferrite rod aerial and coaxial with it. Connect the AC voltmeter across the speaker speech coil. Switch radio to AM, turn volume control to maximum and tune to a clear channel at the low frequency end of the band. Inject into loop, a signal of 470kHz 30 per cent

400Hz AM. Adjust the cores of T8 (black), T7 (white) and T6 (yellow) for maximum output, keeping test signal level as low as possible.

With test equipment and controls set as previously, tune radio to extreme low frequency end of the band, inject a signal of 520kHz (30 per cent 400Hz AM) and adjust core of L6 for maximum output. Retune receiver to extreme high frequency end of band, inject signal of 1650kHz and adjust trimmer TC4 for maximum output.

Tune radio to 500m scale mark, inject signal of 600kHz and adjust L5 on ferrite rod for maximum output. Retune radio to 210m scale mark, inject signal of 1400kHz and adjust trimmer TC3 for maximum output.

Repeat L6/TC4 steps for correct calibration and L5/TC3 steps for correct tracking.

FM alignment

Connect sweep generator across VCI. Connect scope across volume control. Switch radio to FM and tune to a clear channel near 94MHz. Inject a signal with a marker at 10.7MHz.

Detune T5 (blue). Adjust the cores of IF transformers T4 (pink), T3 (green), T2 (green) and T1 (orange) for a maximum symmetrical response centred on the 10.7MHz marker. Then adjust the core of T5 for a linear and symmetrical S-curve centred on the 10.7MHz marker.

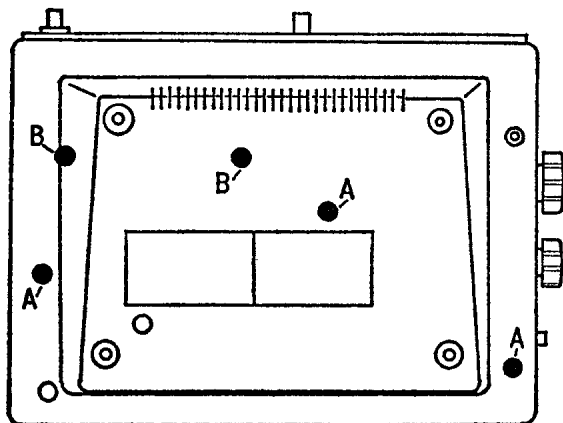
Disconnect sweep generator and scope. Connect FM signal generator to VHF aerial input tag and ground. Connect AC voltmeter across the speaker speech coil. With radio volume control at maximum carry out the following RF alignment steps.

Tune radio to extreme LF end of band, inject a signal of 87.5MHz ± 22.5 kHz deviation and adjust L4 for maximum output. Retune radio to extreme HF end of band, inject 109MHz and adjust trimmer TC2 for maximum output.

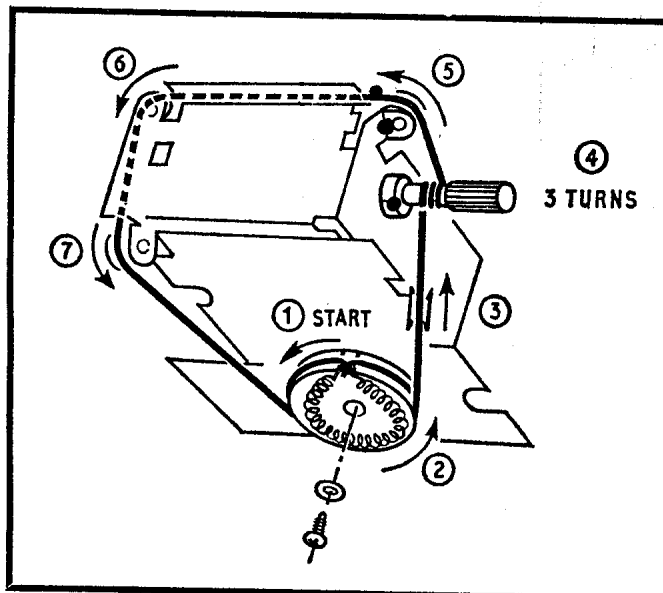
Tune signal generator and receiver to 90MHz and adjust L2 for maximum output. Tune signal generator and receiver to 106MHz and adjust trimmer TC1 for maximum output.

Repeat the L4/TC2 steps for correct calibration and the L2/TC1 steps for correct tracking.

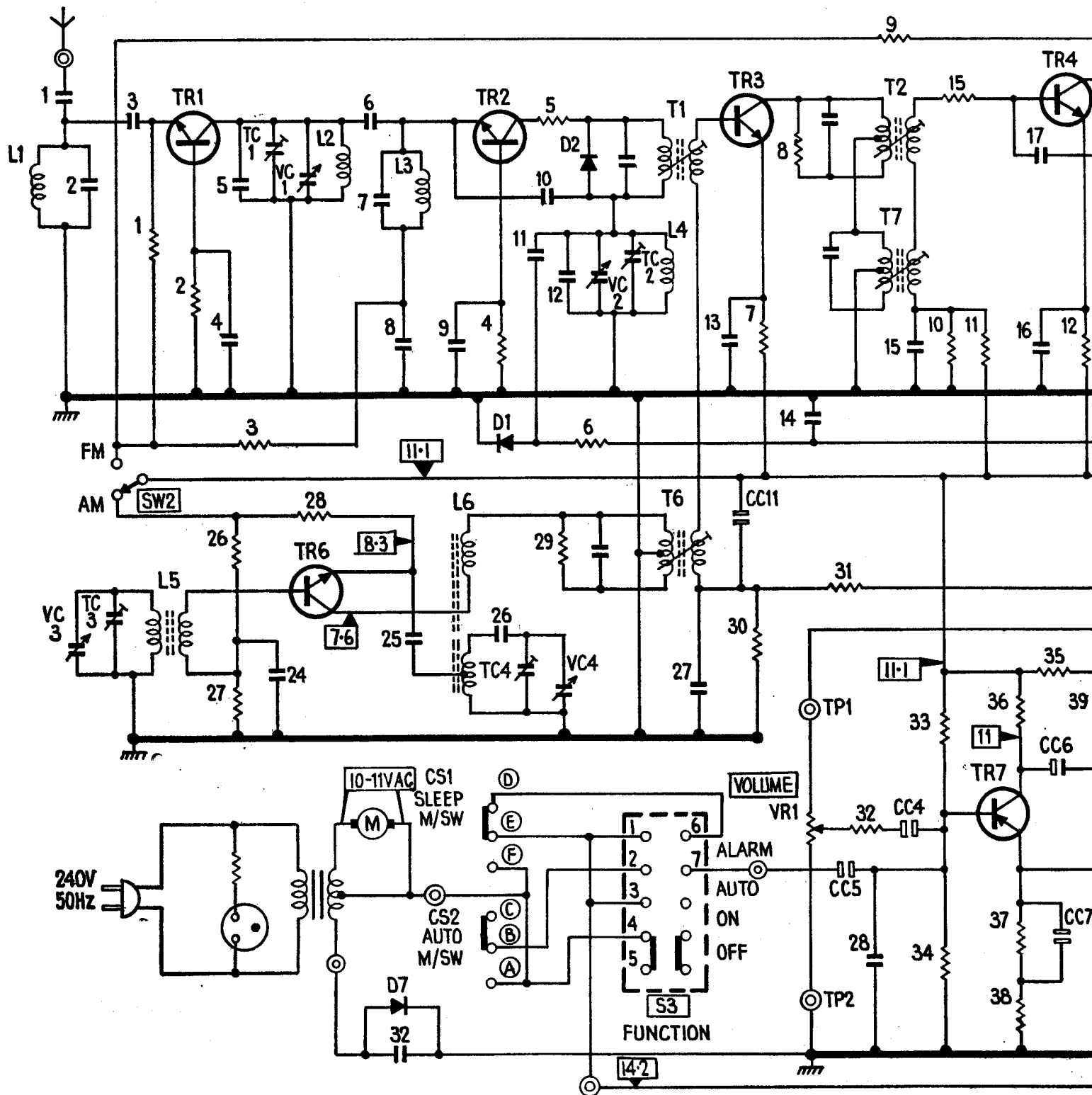
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Above—fixing screw location
Right—drive cord system



R		1	2	3		4	5	6		7	8	9	10	15	11	12	
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
L	1	5				2	3	6									



Dismantling

Access to PCB
 Pull off the volume control and tuning knobs. Remove the three screws A from the cabinet base and lift off the cabinet top. This will provide access to the component side of the board.

If access to the copper side of the board is required, remove the two screws from the back corner of the circuit board and two from the metal bracket attached to

the front of the board. Carefully peel off the VHF MW designation trim and then unscrew the wavechange slide switch.

The board can then be lifted at the volume control side, providing access to the copper side without further disconnection.

Removal of clock unit

Remove the two screws -B from the cabinet base. Lift the clock/timer assembly,

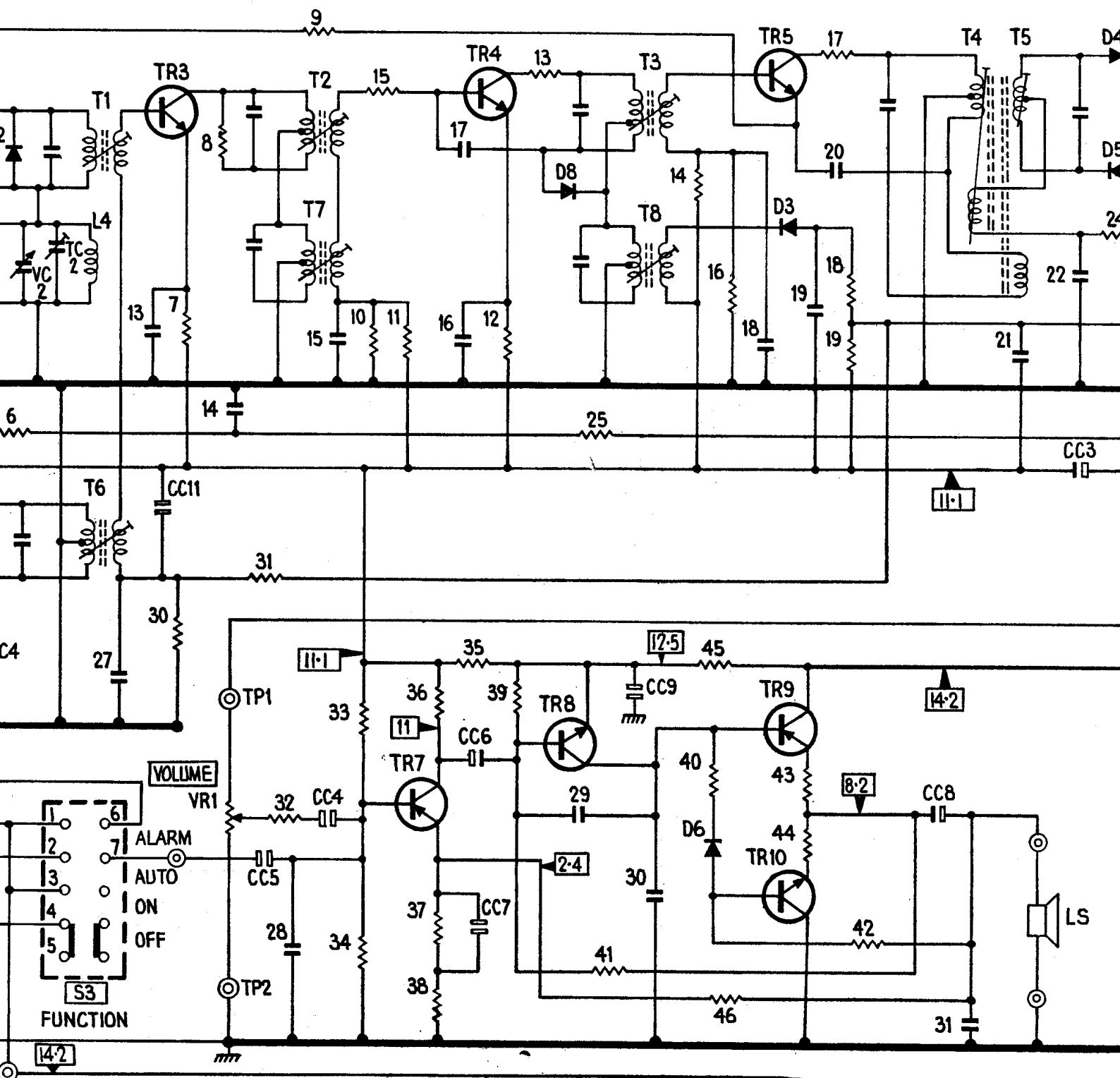
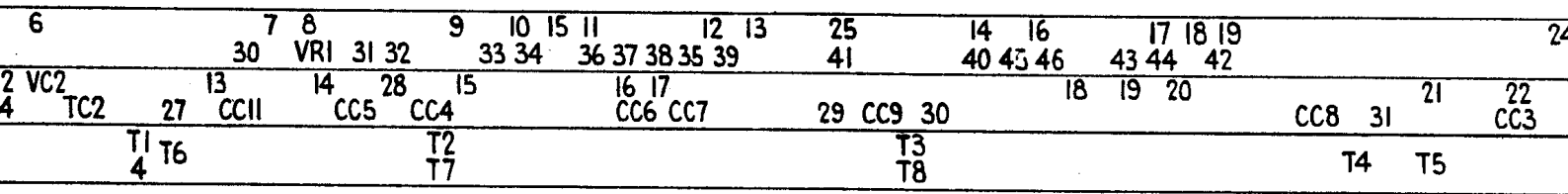
with the front panel attached, sufficiently to enable the removal of the four screws which secure the clock to the panel.

Unsolder the leads from the microswitches and unsolder the lead from the clock motor to the mains transformer. Also unsolder the neon leads from the AC terminal block

Note: The clock/timer is usually replaced on an exchange basis as a complete unit with motor, microswitches and neon lamp.

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with the front panel attached, sufficiently to enable the removal of the four screws which secure the clock to the panel.
 Unsolder the leads from the microswitches and unsolder the lead from the clock motor to the mains transformer. Also unsolder the neon leads from the AC terminal block
Note: The clock/timer is usually replaced on an exchange basis as a complete unit with motor, microswitches and neon lamp.

The part number of this complete assembly (without knobs) is AP92025. If required, however, the motor and neon lamp are available separately, part numbers AP98203 and AP98201 respectively.

Mains Transformer

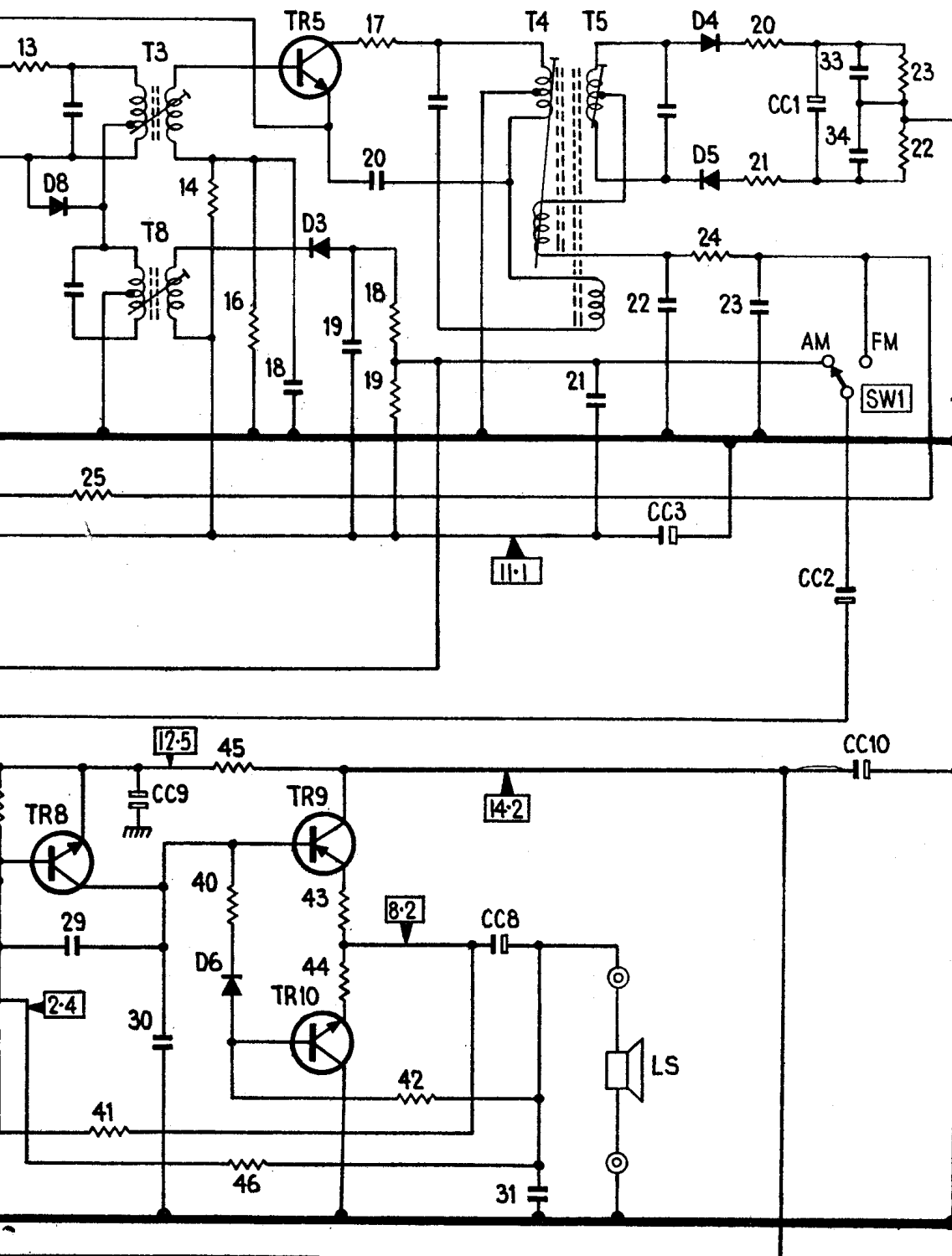
The mains transformer is fitted with a non-resettable thermal cut out link designed to protect the receiver should a fault condition cause excessive current

to be drawn. The transformer must therefore only be replaced by the approved component (Part No. AP97974) available from the RRI Service Department.

Drive Cord

Length of replacement cord required is 250mm, excluding knot. The ends of the cord are tied to the ends of the spring which are hooked together. The diagram shows the routing of the cord.

13	25	14	16	17	18	19	24	20	21	22	23
9	41	40	43	46	43	44	42				
29	CC9	30	18	19	20	21	22	23	CC1	33	34
	T3		CC8	31	CC3	CC2	CC10				
	T8		T4	T5							



RESISTORS

R1	2K2	A2
R2	560K	A2
R3	3K3	A2
R4	330K	A2
R5	15*	B2
R6	330K	B2
R7	330	B2
R8	8K2*	B2
R9	1K5	B1
R10	33K	C2
R11	5K6*	C2
R12	220	B2
R13	330	B2
R14	8K2	B1
R15	47	B2
R16	15K	B1
R17	560	B1
R18	1K	B2
R19	2K2	C2
R20	1K	C1
R21	1K	C1
R22	47K	C1
R23	4K7	C1
R24	680	C2
R25	56K	C2
R26	10K	A2
R27	22K	A2
R28	6K8	A2
R29	100K	B2
R30	100K	B2
R31	15K	B2
R32	1K	C2
R33	100K	C2
R34	33K	C2
R35	220	C2
R36	6K8	C2
R37	2K2	C2
R38	5	C2
R39	10K	C2
R40	180	C2
R41	56K	C2
R42	1K2	C2
R43	1	C2
R44	1	C2
R45	220	C2
R46	3K3	C2

CAPACITORS

C1	30p	A2
C2	30p	A2
C3	30p	A2
C4	10n	A2
C5	18p	A2
C6	3p	A2
C7	38p	A2
C8	8p	A2
C9	10n	B1
C10	8p	B2
C11	3p	A2
C12	12p	A2
C13	20n	B2
C14	20n	B2
C15	20n	B2
C16	20n	B2
C17	2p	B2
C18	20n	B1
C19	20n	C1
C20	20n	B1
C21	20n	C2
C22	2n	C2
C23	5n	C1
C24	20n	A2
C25	5n	B2
C26	40p	B2
C27	20n	B2
C28	10n	C2
C29	1n	C2
C30	5n	C2
C31	20n	C2
C32	40n	A1
C33	5n	C1
C34	5n	C1
CC1	4µ7 10V	C1
CC2	4µ7 10V	C1
CC3	220µ 10V	C2
CC4	470n	C2
CC5	10µ 10V	C2
CC6	1µ 10V	C2
CC7	47µ 10V	C2
CC8	47µ 10V	C2
CC9	470µ 16V	B1
CC10	1000µ 16V	A1
CC11	10µ 10V	B2

* On some models, R5 is 10, R8 is 15K, R11 is 3K9.

Part number of this complete assembly (including knobs) is AP92025. If required, the motor and neon lamp are available separately, part numbers AP98203 and AP98201 respectively.

Transformer
The mains transformer is fitted with a replaceable thermal cut out link designed to protect the receiver should a fault condition cause excessive current

to be drawn. The transformer must therefore only be replaced by the approved component (Part No. AP97974) available from the RRI Service Department.

Drive Cord

Length of replacement cord required is 250mm, excluding knot. The ends of the cord are tied to the ends of the spring, which are hooked together. The diagram shows the routing of the cord.

Additional copies of this chart 50p, including postage. Payment with order please to Room 11, Dorset House, Stamford Street, London SE1 9LU. Because of increasing storage costs, back numbers will also cost 50p including postage from now on.