

DECCA



Service Manual
for
RNIB/TVS11
U.H.F. Television
Sound Receiver

INTRODUCTION

Primarily intended to enable blind persons to hear television sound on u.h.f., the Decca RNIB/TVS11 receiver can be tuned to any one of four pre-selected Band IV or V television channels. Simplicity of operation is ensured by the placing of all user controls on the cabinet top. These consist of four channel pushbuttons, rotary volume and a push-on/push-off mains switch. The receiver is suitable only for a.c. mains operation.

At the rear of the receiver is a panel incorporating a 5-pin socket for feeding the receiver output to an external amplifier or tape recorder, an earphone socket, and two preset controls allowing an output level and tone threshold setting. There is also a coaxial socket allowing the receiver to be used from an external TV aerial, instead of from the receiver telescopic aerial, the lead from which is normally plugged into the coaxial socket.

Essentially the TVS11 comprises a standard u.h.f. varicap-tuner, with a separate station selector unit, which feeds a specially-designed I.F. unit in which the sound intercarrier is extracted from the selected TV station carrier frequency. Audio output from the sound FM discriminator is passed to a power output stage, which is on the same p.c. board as the I.F. stage. Four integrated circuits are used.

A separate p.c. board contains the receiver stabilised power supply unit. The complete TVS11 is housed in a vinide-covered wood cabinet, fitted with a carrying handle.

SPECIFICATION

Power supply	230V 50Hz a.c. mains only
Frequency range	470 to 859MHz (U.H.F. bands IV and V, TV channels 21 to 68)
Intermediate frequencies	TV sound 33.5MHz; sub-carrier 6MHz.
Transistors	BC109, Z00185
Integrated circuits	MC1330, MC1352, TBA611B, TBA750, SN7650-2
Diodes	1N4003, 1N542B, 1N4004, 1N4148
Audio input	Nominal 1 watt (sinewave)
Input	Aerial, 80 ohm unbalanced (via coaxial socket)
Outputs	150mV a.f. into load not greater than 5kilohms (via 5-pin DIN socket) Earphone (via 3.5mm jack socket)
Loudspeaker	5in (127mm) round, impedance 12 ohms.
Dimensions	Height Width Depth 7 $\frac{5}{8}$ in 11 $\frac{7}{8}$ in 3 $\frac{7}{8}$ in (194mm) (301mm) (98mm)
Weight	8 $\frac{1}{2}$ lb (3.8kg)

DISMANTLING

(see internal view diagrams, Figure 1)

1. Disconnect receiver from mains supply. Unplug aerial lead from coaxial socket at rear.

2. Remove four screws A from cabinet back; open back.

(This gives access to most components. The tuner and I.F. board is mounted on the cabinet back together with the input/output socket panel. In the cabinet itself are the power supply unit, the telescopic aerial, the loudspeaker and a control panel on which is mounted the push button tuning unit on/off switch and volume control.

3. To part the cabinet back assembly from the cabinet:

(a) Withdraw socket housings SK C.F.G., and H (note colours for ease of refitting), and single socket connectors SK E and J from I.F. board.

(b) Disconnect loudspeaker leads at speaker end.

4. To remove I.F. board from cabinet back—release four nuts B from board corners.

5. To remove input/output panel—release two nuts C.

6. To remove power supply board from cabinet—

(a) Remove single connector K.

(b) Withdraw socket housing SK C and connector SK J from I.F. board.

(c) Withdraw socket housing SK D and B from power supply board.

(d) Disconnect 2-way flying plug and socket housing A.

(e) Release two nuts E retaining mains transformer and remove, release remaining nut F and remove power board.

7. To remove tuner control unit:

(a) Pull off on/off switch and volume control knobs.

(b) Release two nuts D to free panel carrying control unit. If complete removal from receiver is necessary, withdraw socket housing SK H and connector E from I.F. board, and socket housing SK D and connector K from power board.

8. Removal of all other main components should be self-evident once the main assembly to which they are secured has been removed.

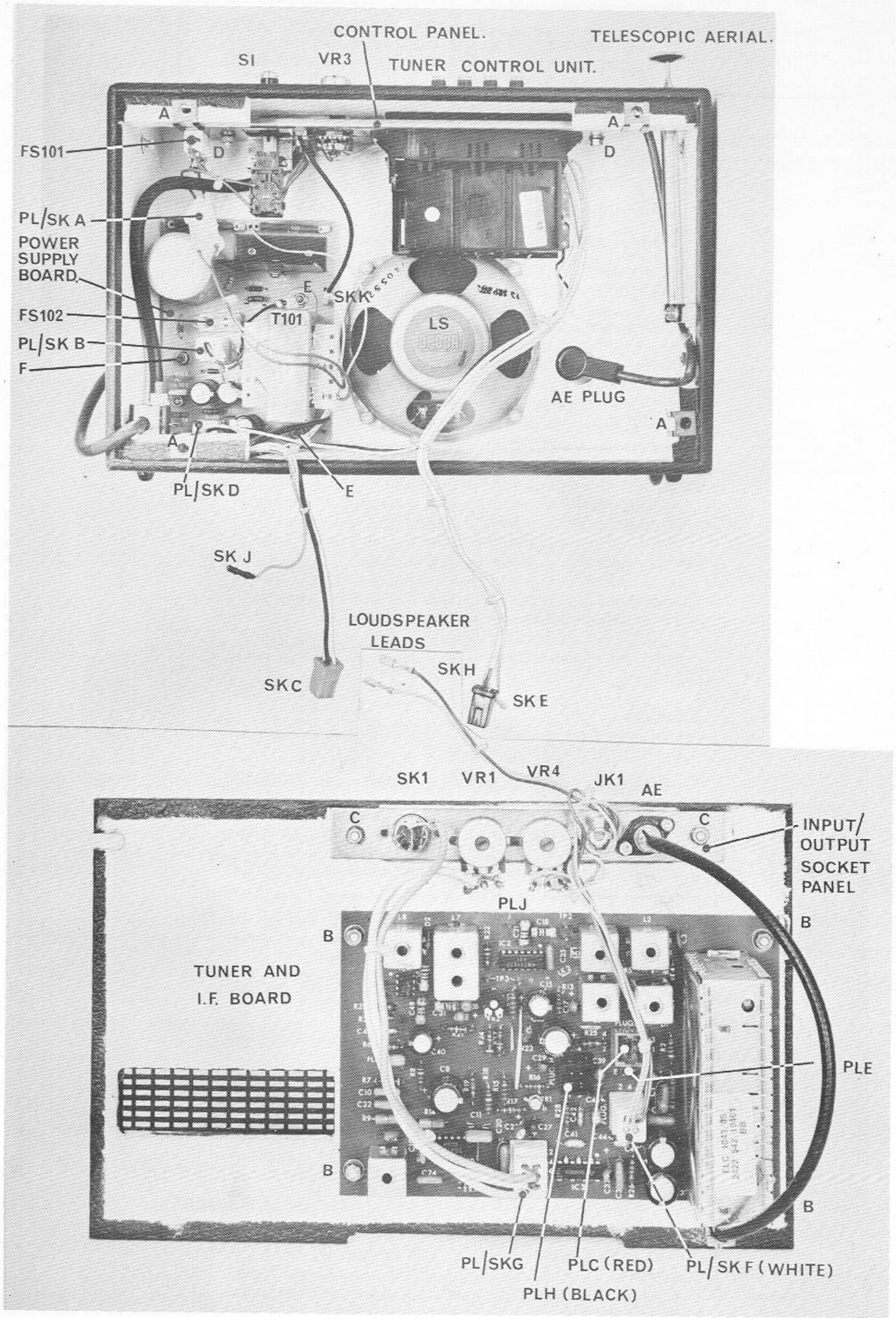


Fig. 1 Internal views

ALIGNMENT

NOTE—procedure is similar to that for a monochrome TV receiver, in order to obtain best quality sound output.

Equipment required

1. Sweep marker generator, covering 30 to 42MHz, with markers at 31.5, 33.5, 35.0, 39.5 and 41.5MHz.
2. Oscilloscope.
3. Variable attenuator.
4. Input matching components as detailed.
5. 20V d.c. and 12V d.c. sources.
(See alignment diagrams, Figures 2, 3 and 4)

Preliminaries

- (a) I.F. board must be removed from cabinet back assembly in order to gain access to both sides of board, and must be supported vertically during alignment.
- (b) Connect plugs socket housing SK C, G and H to I.F. board, and check that connections are made to loud - speaker.
- (c) Damp reference coil L8 by connecting a 150 ohm resistor across test points TP4. Unsolder link LK1.
- (d) Connect I.F. manual bias control potentiometer (see diagram 3b) between test point TP3 and chassis.
- (e) Connect oscilloscope input to pin 4 of IC4 via a matching circuit as shown in diagram 3c)
- (f) Connect sweep generator output via variable attenuator connected between test point TP2 and chassis, with 82 ohm resistor across output. (See diagram 3a).
- (g) Adjust attenuator to give approximately 10mV input; adjust oscilloscope to give suitable amplitude display.

Procedure

1. Switch on receiver, and adjust I.F. manual bias to give suitable display amplitude.
2. Adjust coils L6 and L7 to obtain curve shown in diagram 4a.
3. Transfer attenuated sweep generator output from TP2 to test point TP1 (on u.h.f. tuner accessible from underside), connect via a 2pF or less capacitor. Resolder link LK1.
4. Increase sweep generator output to 30mV, and adjust manual bias control until input filter attenuation effect is visible on oscilloscope display (see diagram 4b).
5. Adjust coil L1 to 41.5MHz, L2 to 31.5MHz, and L4 33.5MHz to give response shown in diagram 4b.
6. Reset levels to align bandpass, adjust manual bias control.
7. Adjust u.h.f. tuner output (top of tuner) and I.F. input coil L3 to give response curve shown in diagram 4c.
8. Remove 150 ohm damping resistor from reference coil L8 (test point TP4), and adjust L8 to give maximum amplitude on response curve at 39.5MHz as shown in diagram 4d.
9. Disconnect all test equipment.
10. Adjust sound quadrature coil L5, using a local off-air signal, for maximum audio output (check with output meter or VTVM). Check with oscilloscope that audio signal is present at pin 1 of audio output plug G.
11. Using local off-air signal containing I.T.S., connect oscilloscope to detector output pin 4 IC4 and adjust pulse and bar amplitude to 4V p-p on display.

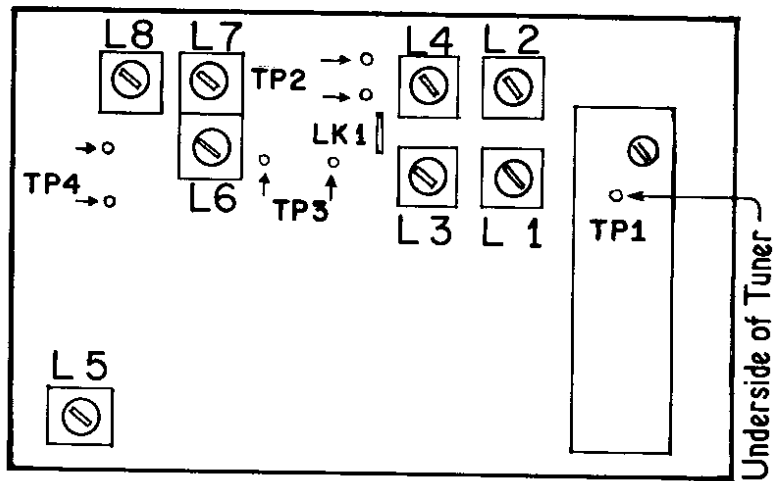


Fig. 2 Alignment diagram

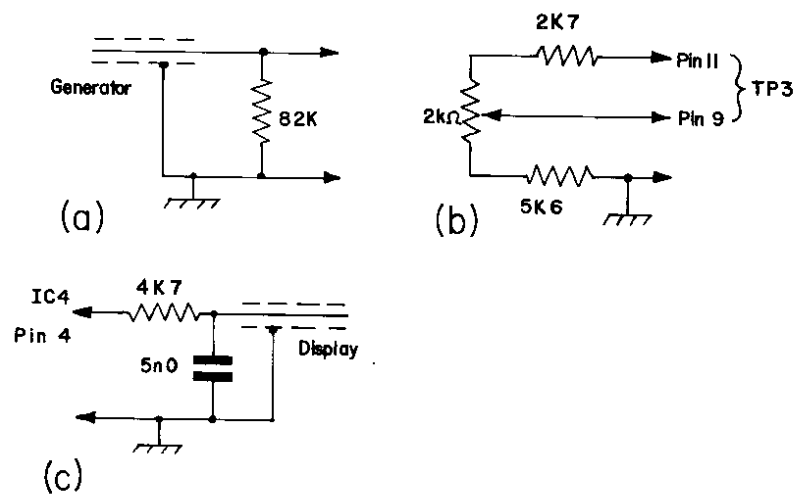


Fig. 3 Alignment diagram

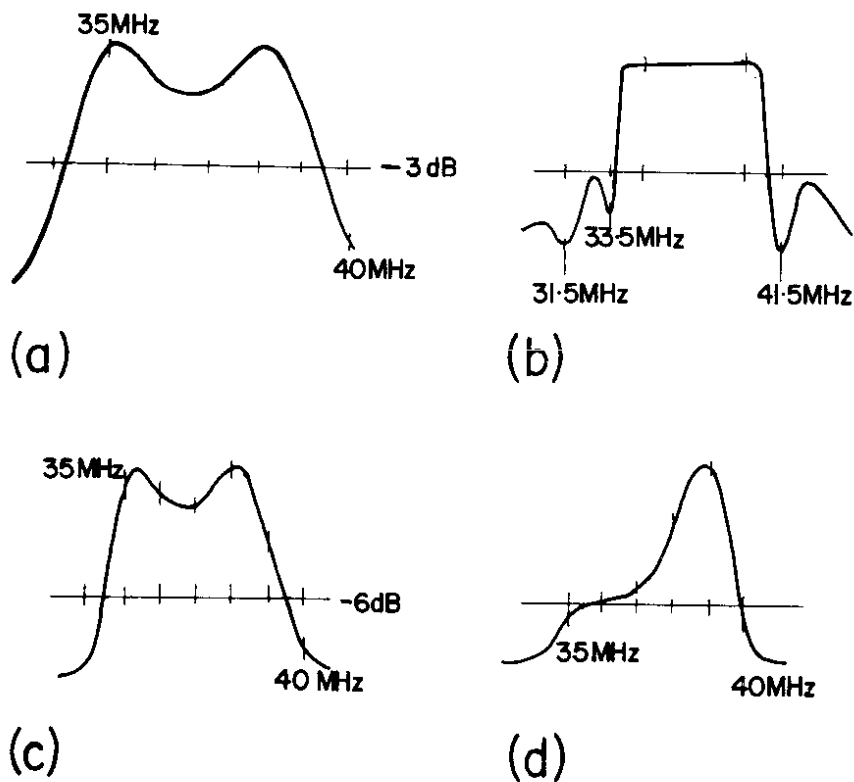


Fig. 4 Response curve diagrams

COMPONENTS LIST

(Co-ordinates refer to printed-circuit board diagrams)

(Figures 5 and 6)

Resistors $\frac{1}{2}$ W 5% unless otherwise stated

R1	2k.2	B2
R2	8k.2	B1
R3	33k	B2
R4	39 R	B1 $\frac{1}{2}$ W
R5	15 R	B1 $\frac{1}{2}$ W
R6	390 R	A1
R7	470 R	A2
R8	330 R	A2
R9	3k.3	A2
R10	12k	A2
R11	39k	A2
R12	2k.2	A2 $\frac{1}{2}$ W
R13	6k.8	A1
R14	3k.3	A2
R15	2k.2	A2
R16	1M.5	A2
R17	15k	A2
R18	22k	A2
R19	5k.6	A2
R20	2k.2	A1
R21	220k	A1
R22	3k.3	A1
R23	180 R	A1 1W
R24	470 R	A1
R25	22 R	B1
R26	560 R	B2
R27	68R	A1
R28	150R	B2
R29	4k.7	A1
R30	3k.3	A1
R101	10k	C2 2W
R102	1k	C2
R103	8k.2	C2 1W
R104	33 R	C1 3W
R105	56 R	C1
R106	1k O	C2
R107	56 R	C1 3W

Potentiometers

VR1	2k	Output level
VR2	2k.2	A1
VR3	47k	Volume
VR4	220k	Tone

Transistors

Tr1	BC109	A2
Tr1 101	Z00185	C1

Integrated circuits

IC1	TBA750	A2
IC2	MC1352	A1
IC3	TAA611B	B2
IC4	MC1330	A1
IC101	SN7650-2	C2

Diodes

D1	1N5242B	B1
D2	1N4148	A1
D101	1N4004	C2
D102	1N4004	C2
D103	1N4003	C1
D104	1N5242B	C1

Ceramic filter

FL1	SFC 6.0MA	A2
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Capacitors

C1	100n	B2
C2	33p	B1
C3	33p	B1
C4	10p	B1
C5	4p.7	B1
C6	4p.7	B1
C7	25p	B1
C8	470u	A2
C9	18p	B1
C10	22n	A2
C11	22n	A2
C12	22p	A2
C13	4p.7	B1
C14	47p	B1
C15	220u	A1
C16	1nO	A2
C17	10u	B1
C18	1nO	A1
C19	22p	A2
C20	100n	A2
C21	5n	A1
C22	22n	A2
C23	6u.8	A2
C24	10nI	A2
C25	100n	A1
C26	20u	A1
C27	20u	A2
C28	4u.7	A1
C29	10u	A2
C30	470u	B2
C31	5nO	A1
C32	10p	A1
C33	100n	B2
C34	3p.9	A1
C35	220u	A1
C36	15p	A1
C37	10u	B2
C38	1nO	A1
C39	20u	B2
C40	100u	A1
C41	1nO	B2
C42	82p	B2
C43	15p	A1
C44	600p	B2
C45	3nO	B2
C46	56p	A1
C47	470u	B2
C48	5nO	A1
C49	100n	B2
C101	10u	C2
C102	10u	C2
C103	470u	C2
C104A	2000u	C1
C104B	2000u	C1
C105	47n	C2
C106	4u.7	C2

MAIN ASSEMBLIES

Description	Part No.
I.F. Panel, complete	551424
U.H.F. tuner (Mullard ELC1043/05)	860172
Power supply panel, complete	551468
Mains transformer	525467
Push button unit Tuner control panel	860173
Rear socket panel	500968
Earphone jack	840197
Aerial socket	840211
5-pin DIN socket	550407
Output level preset	535496
Tone preset	535484
On/Off switch	835053
Fuse holder	551470
Telescopic aerial	551531
Switch knob	850040
Volume control knob	850038
Loudspeaker	740552
Cabinet, complete	

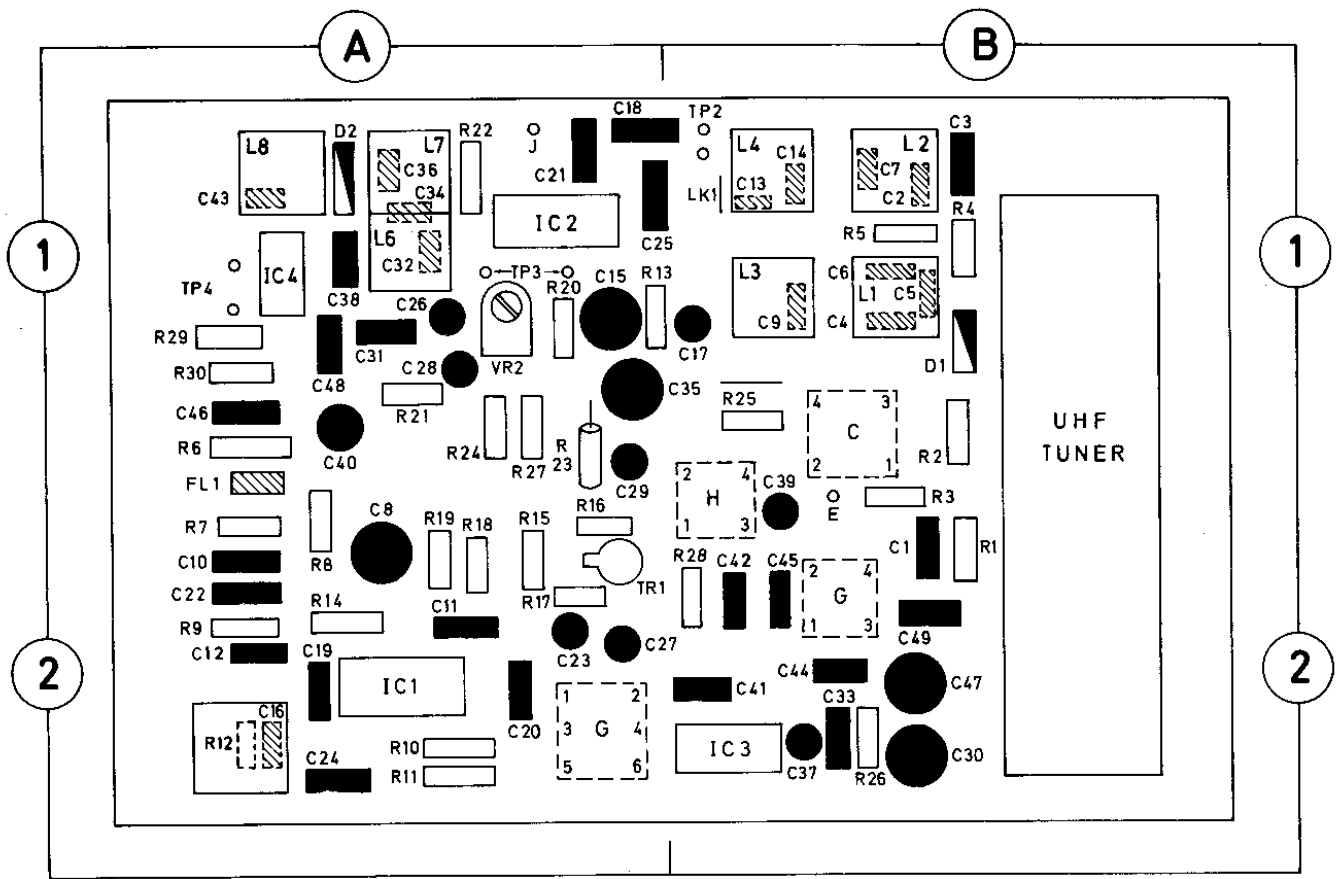


Fig. 6 IF board

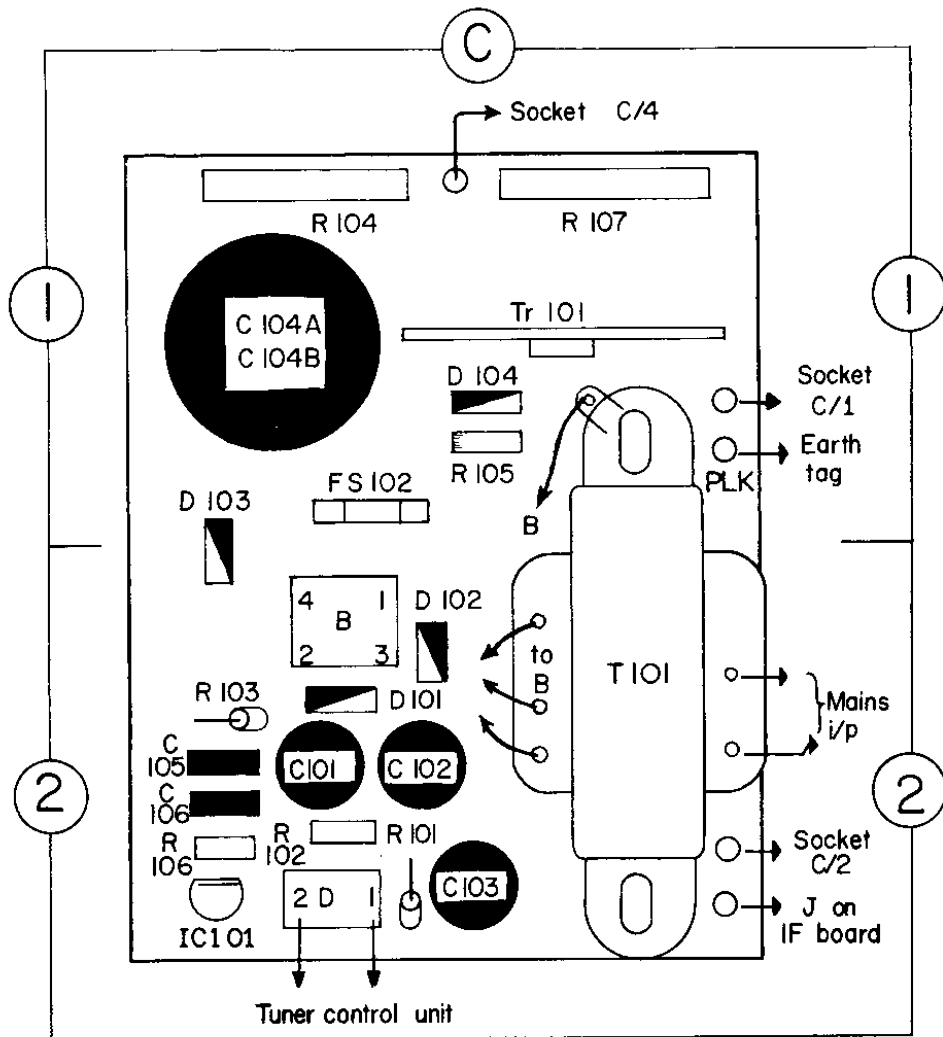


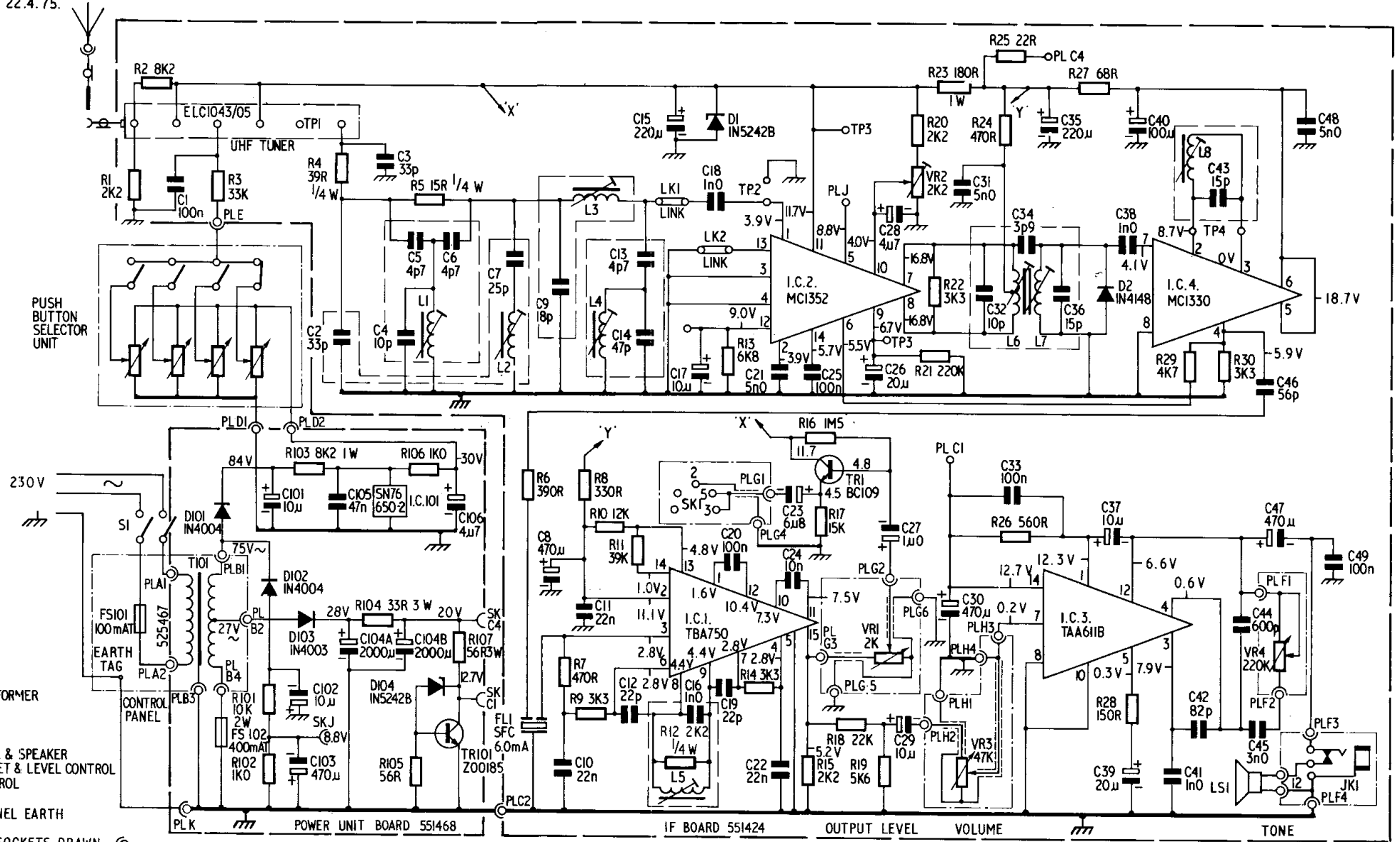
Fig. 7 Power supply board

DECCA

TVS II

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C	1,	2,	3, 4, 5, 6,	7,	9, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 25, 23, 24, 26, 28, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49,
	101, 102, 103, 105, 104A, 104B, 106.				
R	1, 2,	3,	4,	5,	6, 7, 9, 8, 10, 11, 12,
	101, 102, 103,		104, 105, 106, 107,		13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30,
					VR 1, VR 2, VR 3,
					VR 4,



- PLUGS**
- PLA MAINS INPUT
 - PLB MAINS TRANSFORMER
 - PLC POWER SUPPLY
 - PLD 30V SUPPLY
 - PLE TUNING VOLTS
 - PLF TONE CONTROL & SPEAKER
 - PLG OUTPUT SOCKET & LEVEL CONTROL
 - PLH VOLUME CONTROL
 - PLJ NEG. VOLTS.
 - PLK CONTROL PANEL EARTH

NOTE. PLUGS & SOCKETS DRAWN HAVE NOT BEEN INDICATED WITH SK No^s

ALL RESISTORS 1/3 W 5% UNLESS OTHERWISE STATED

Fig. 5 Circuit