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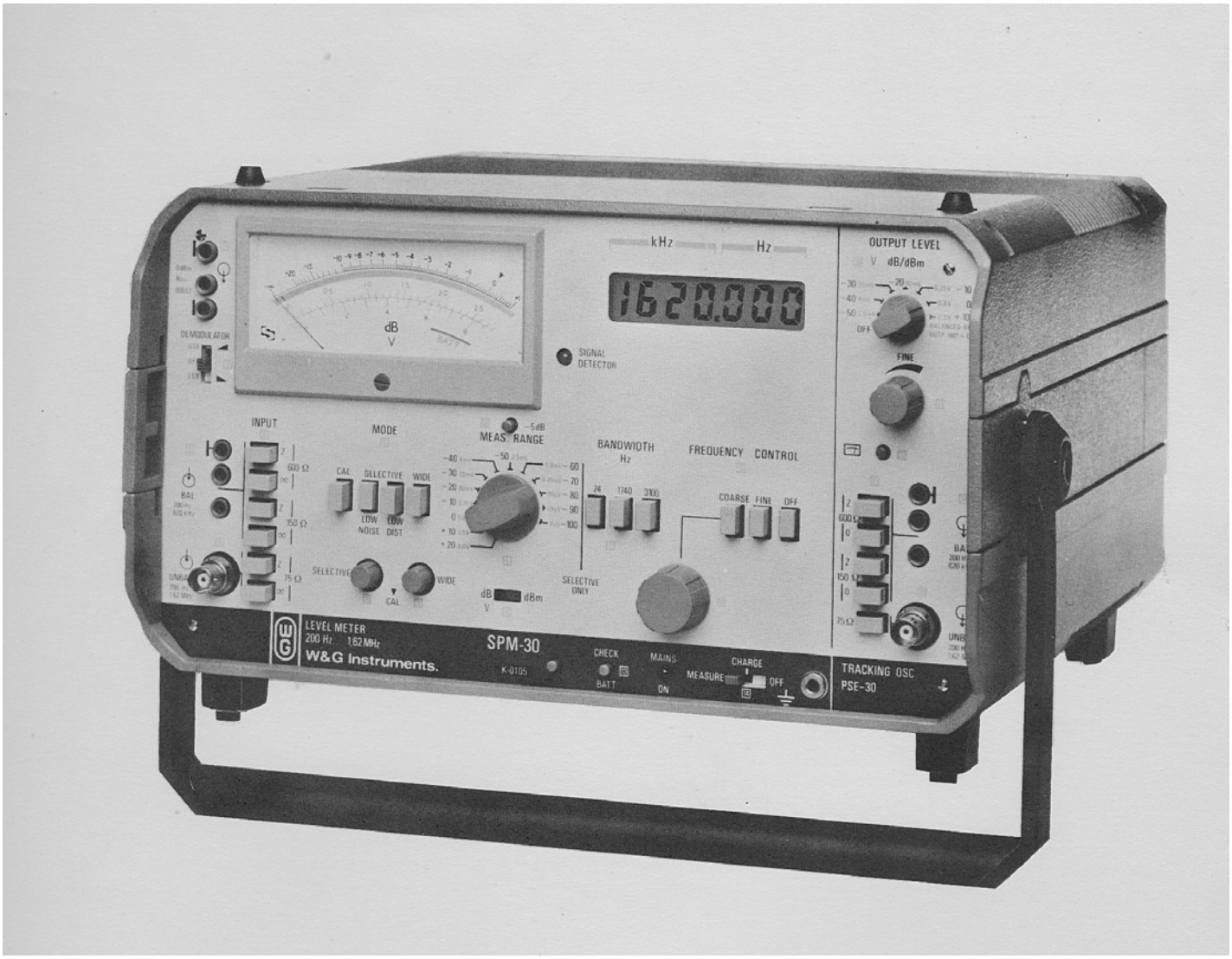
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SPM30 Schematics

This file was scanned from the Wandel and Goltermann layout and schematic "appendix" for the SPM30. All the pages that include schematics or drawings are included – those omitted (in the interests of having a reasonable size download file) only contain parts lists, with very limited component information, mostly already included on the schematics. There is no fault-finding or alignment information; this is presumably included in another section of the manual that I do not have.

Most of the schematics in the original are A3-sized fold-out sheets. These have been scanned as two A4 sized images with overlap in the middle, so that they can be printed on a normal A3 sized printer, and joined together later if required.

The PSE30 tracking generator board is an option, and when not fitted the right-hand side of the front panel is different to that shown above, with no output controls or sockets.

Good luck,
Jim, M0BMU

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Spares and Accessories

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Fig. 19 Component Layout, Meter and Demodulator, (83)

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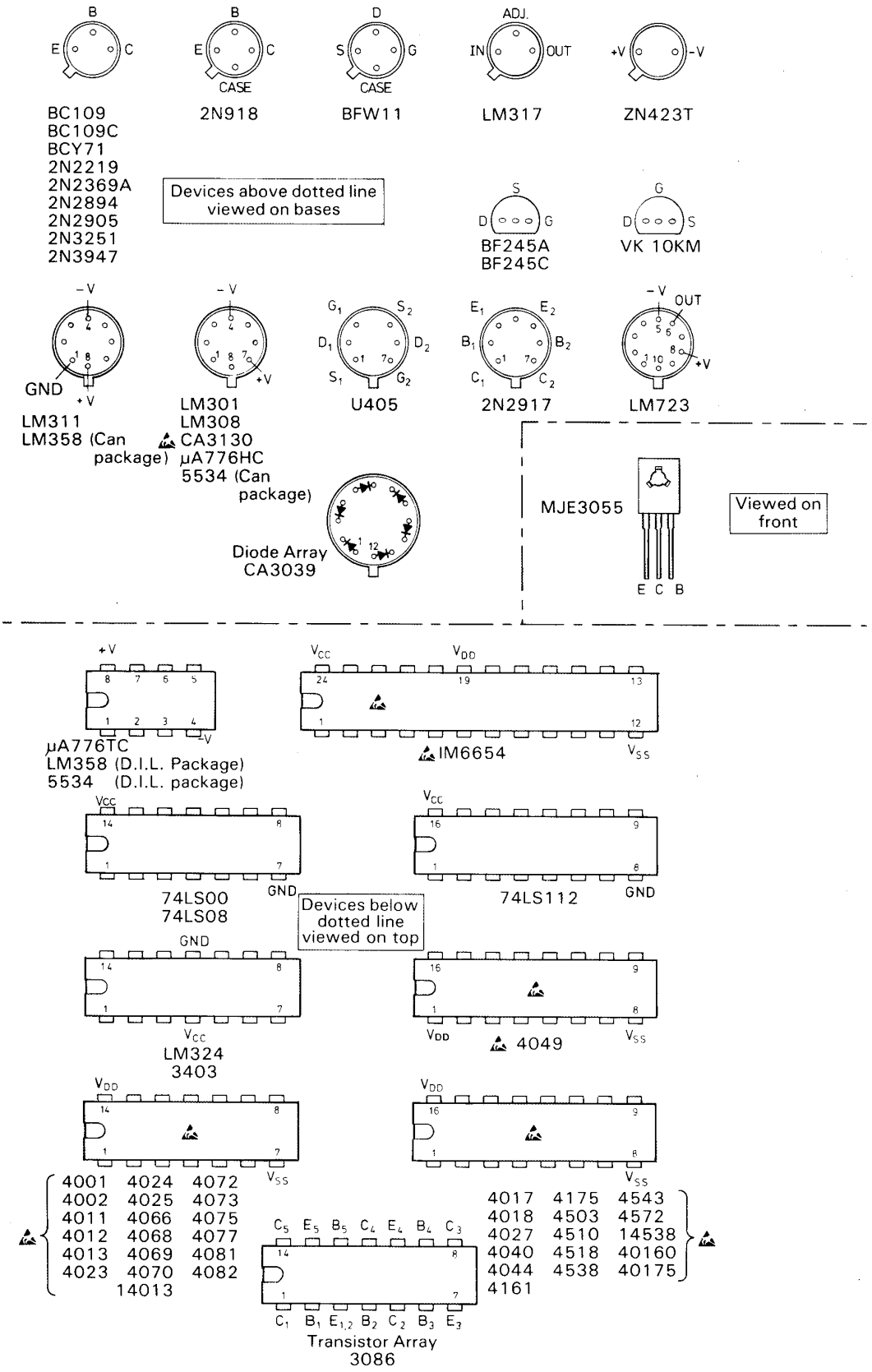
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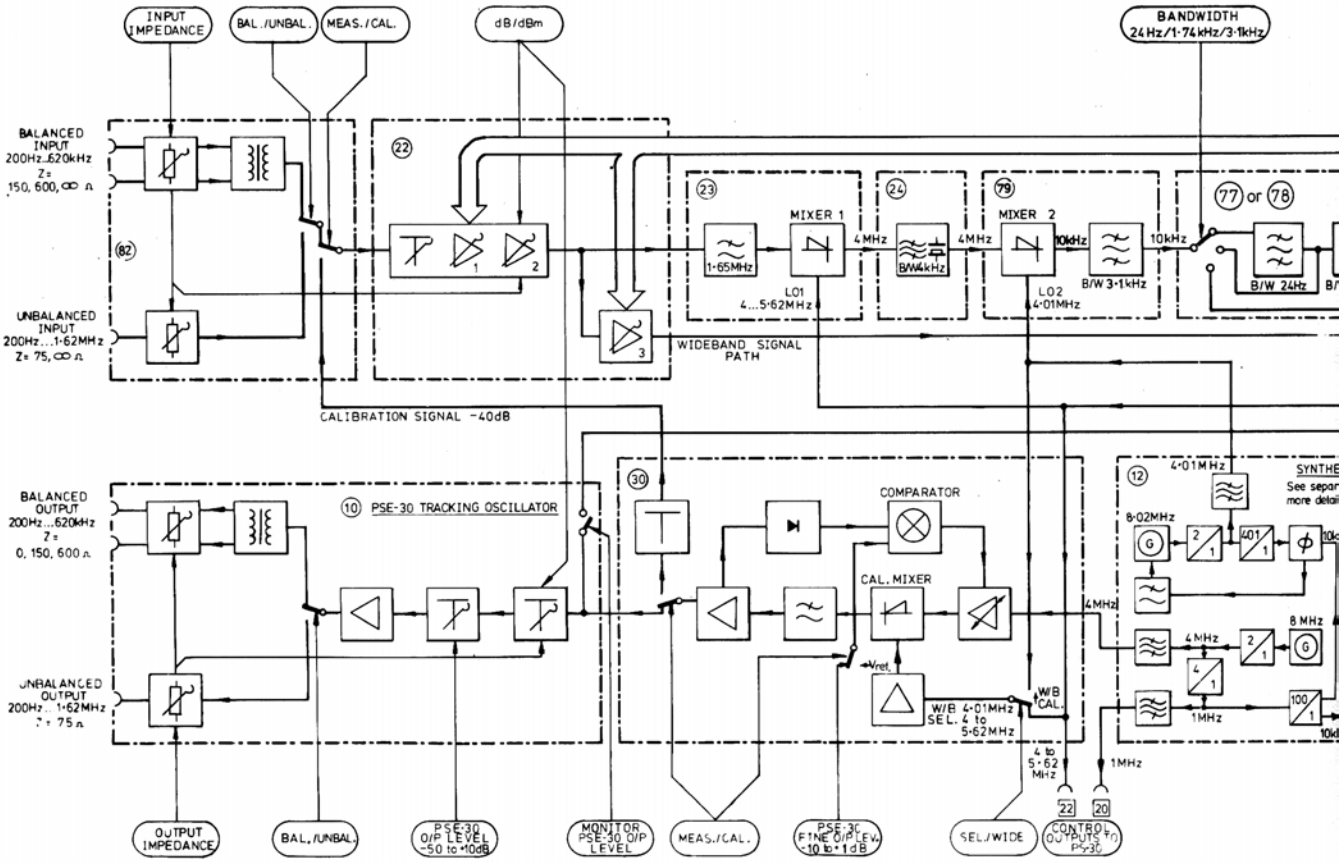
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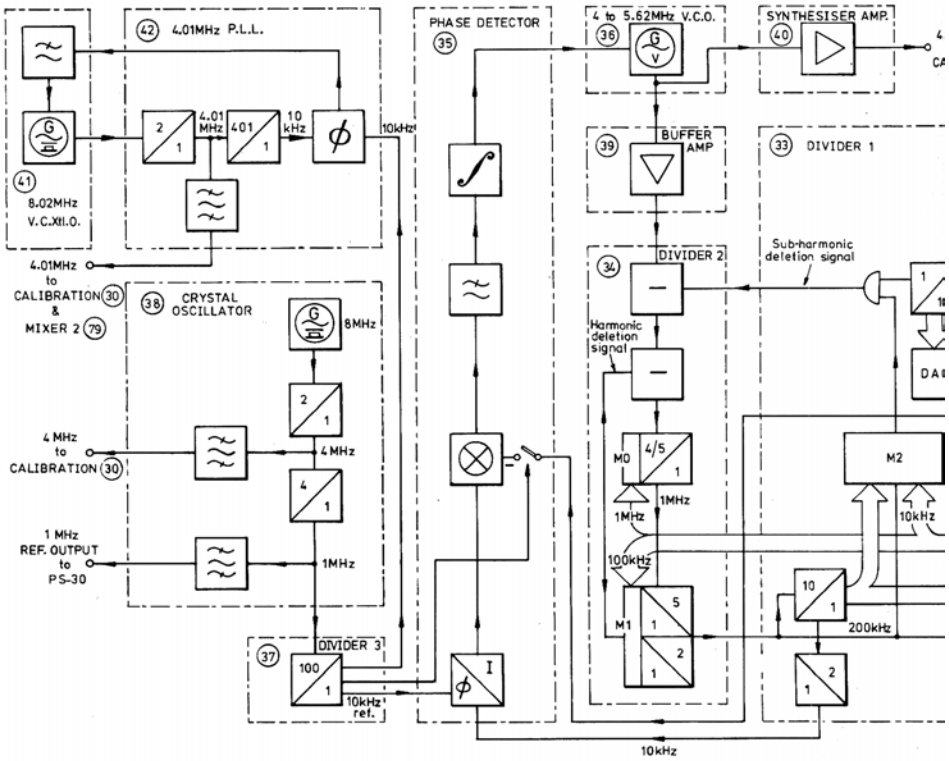
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Pin arrangements of Semi-conductor Devices used in SPM-30/PSE-30

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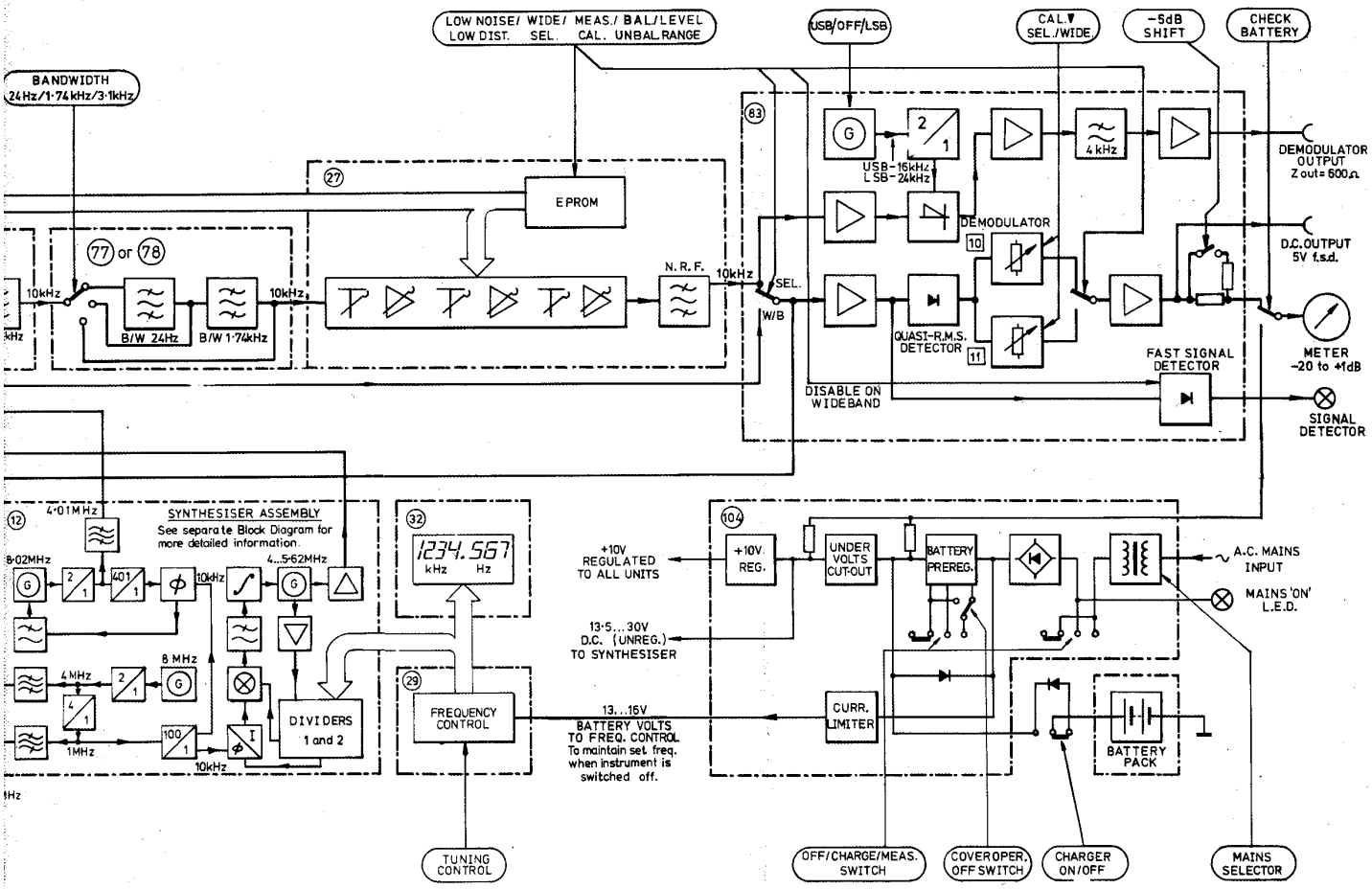


Fig. 1 Block Diagram of Complete Instrument, SPM-30/PSE-30

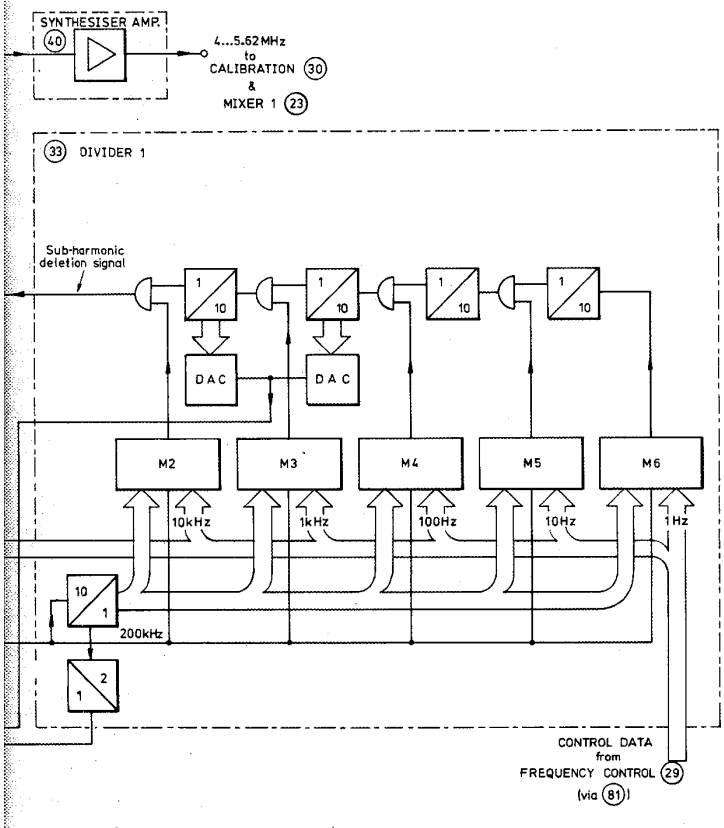


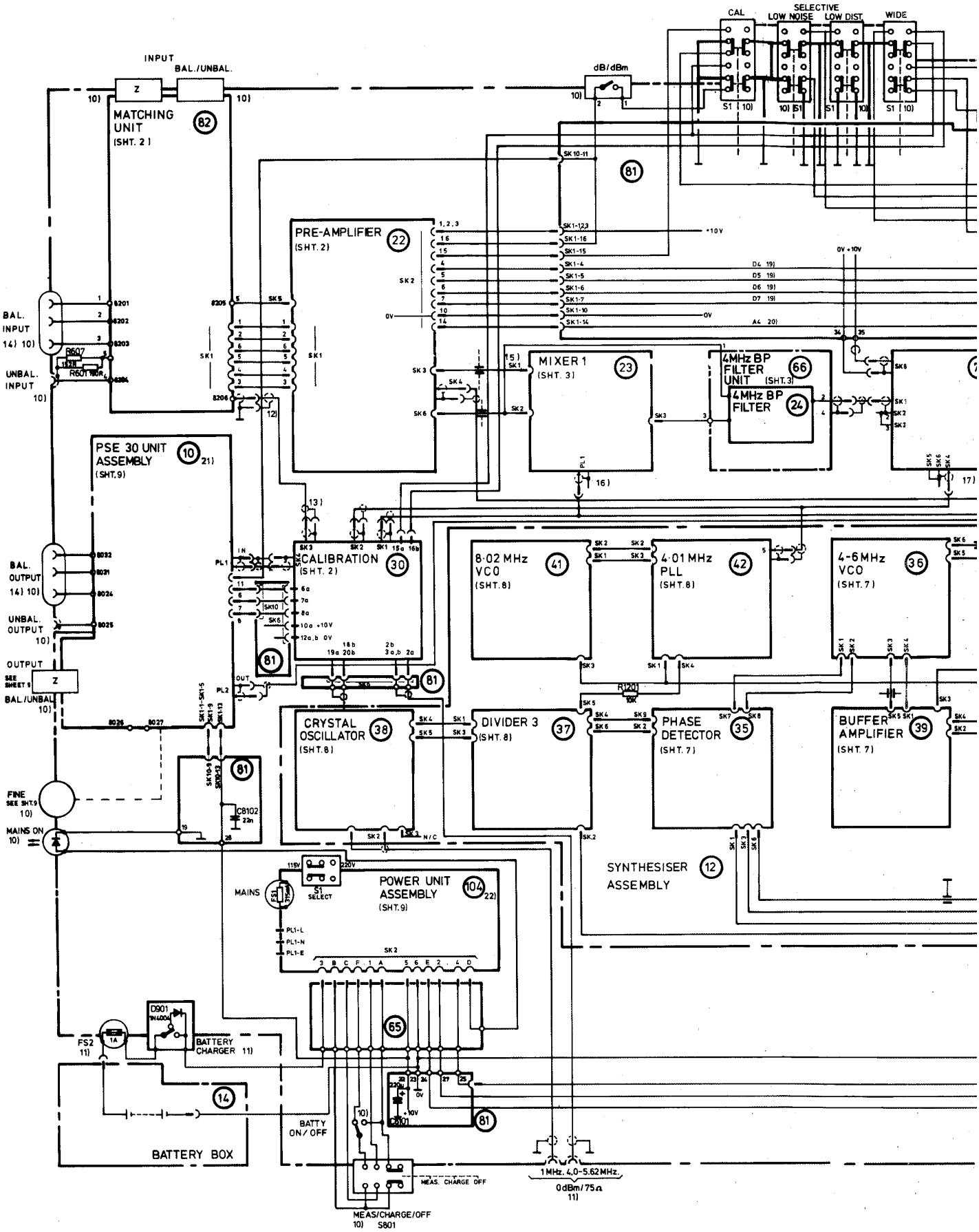
Fig. 2 Block Diagram of Synthesiser Assembly, (12)

(Used on the Parts Lists throughout this Appendix)

MF	Metal Film
Tant.	Tantalum
Cer.	Ceramic
PE	Polyester
PF	Polystyrene Film
CF	Carbon Film
W/W	Wirewound
Elec.	Electrolytic
Var.	Variable
Al. Ox.	Aluminium Oxide

Key to Component Type Abbreviations

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10) ON FRONT PANEL
11) ON REAR PANEL
12) -40dB
13) SEL: 200Hz-1.64MHz. WIDE BAND: 10KHz.
14) 200Hz - 1·64 MHz
15) - 20dB
16) 4 - 5·64 MHz
17) 4·01 MHz
18) 200Hz - 1·64 MHz
19) DATA LINES D4 - D7.
20) ADDRESS LINES A0 - A7.
21) INCORPORATING ASSEMBLY A80
22) INCORPORATING ASSEMBLY A84.
23) SK9 REPRESENTED BY PLATED THRO' HOLES ONLY.

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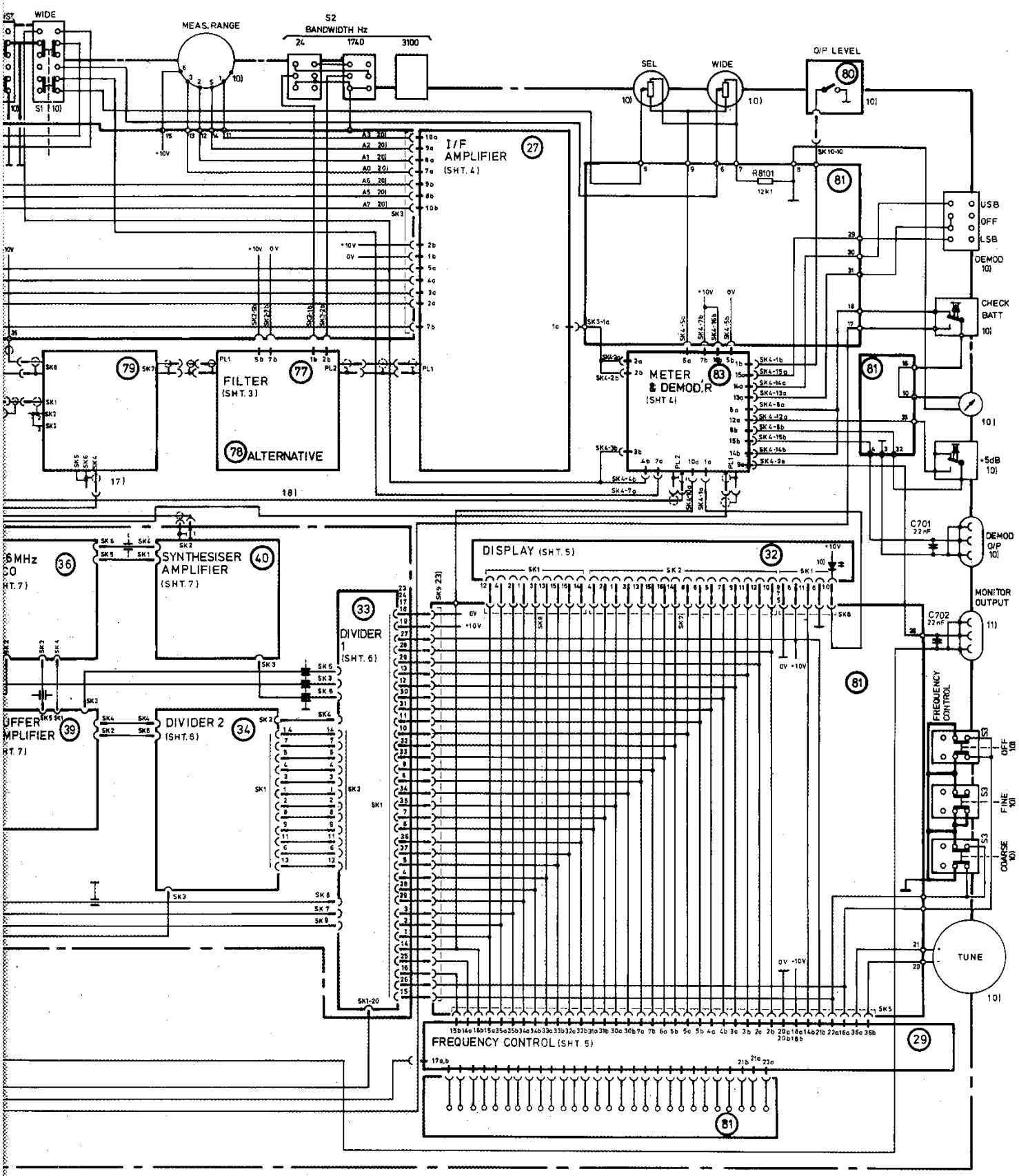


Fig. 3 Interconnections Diagram

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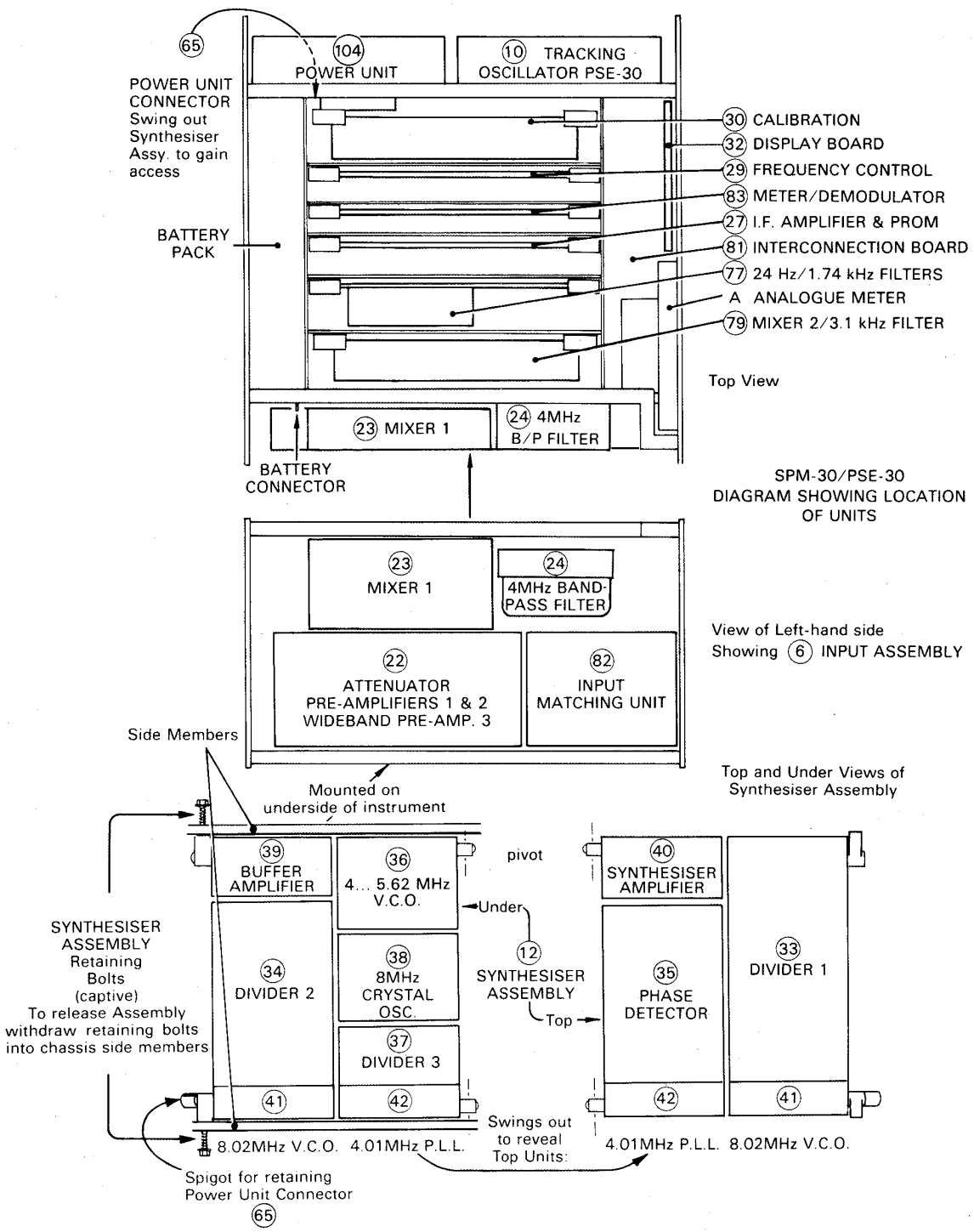
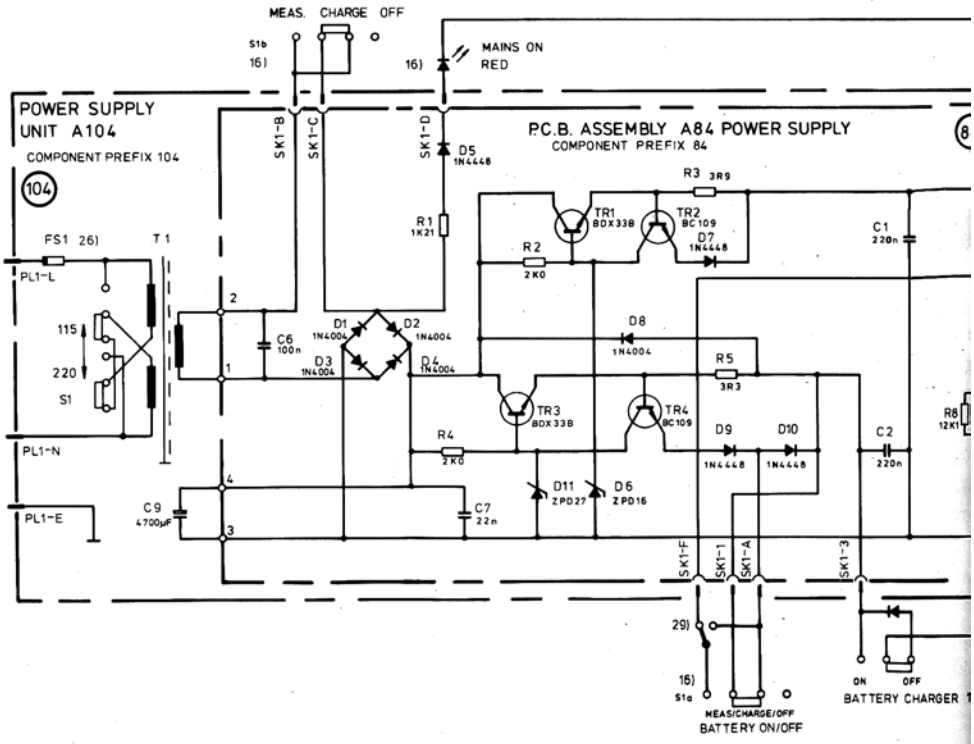


Fig. 4 Location of units within Instrument

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Fig. 5 Circuit Diagram, Power Supply (104)



15) OUTPUT LEVEL MONITOR FACILITY
16) ON FRONT PANEL MAINS ON
17) ON BACK PANEL
18) BATTERY BOX
19) FROM METER BOARD VIA INTERCONNECTION BOARD.
20) TO INTERCONNECTION BOARD PIN 23
26) 220V - 315mA 115V - 630mA
27) FINE LEVEL CONTROL
28) RESISTORS NOT FITTED ON STD SERIES
29) COVER OPERATED OFF SWITCH

ASSEMBLY A104 POWER SUPPLY

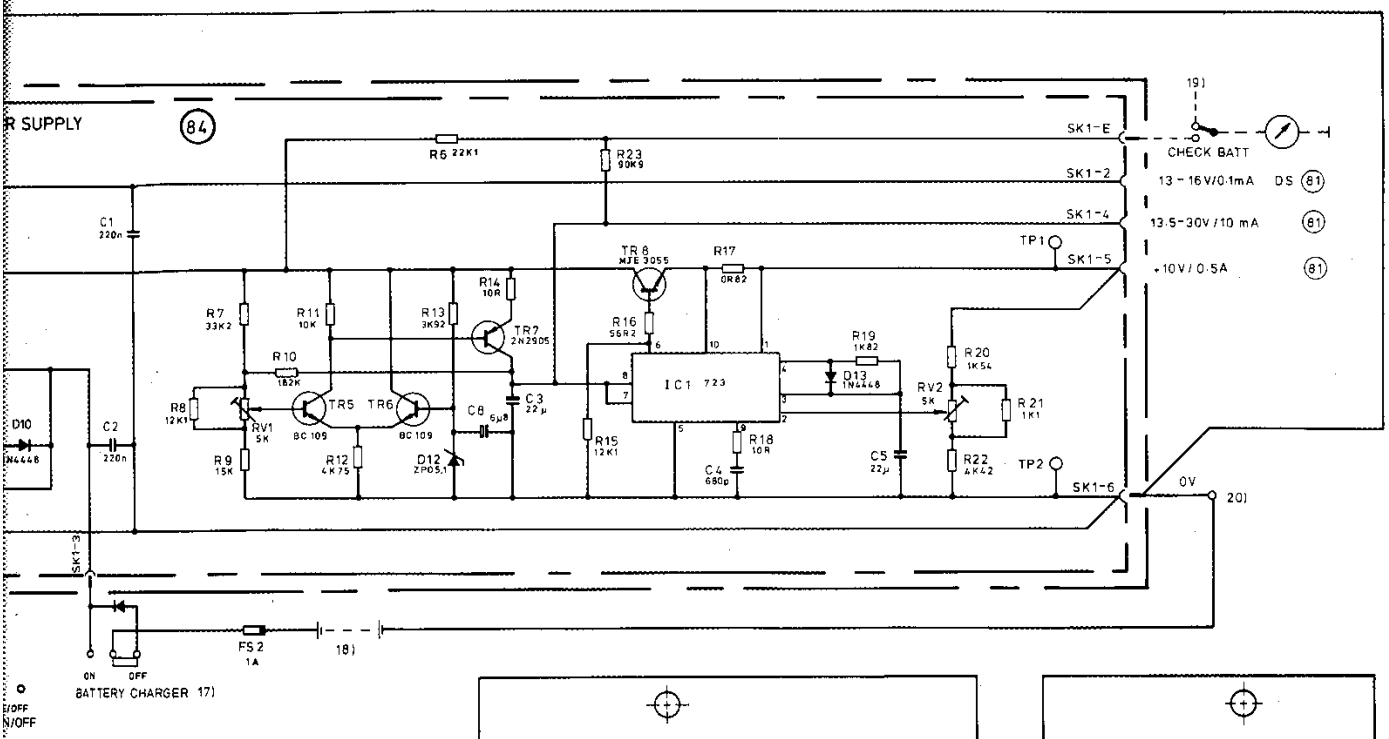
REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C9	4700μ		40V		0000-7602.799/-
S1				SELECTOR SWITCH	
				115V/220V	0000-7598.706/-
T1				MAINS TRANSFORMER	4502-1308.005/4
PL1				PLUG, MAINS INPUT	0001-0033.245/-
FS1			250V	FUSELINK, T 315mA	0001-0020.601/-
			115V	FUSELINK, T 630mA	
FS2			Batt.	FUSELINK, T 1A	0001-0020.711/-
A84				P.C.B. POWER SUPPLY	
				UNIT	4502-1084.002/3

ASSEMBLY P.C.B. A84, used on A104 POWER SUPPLY

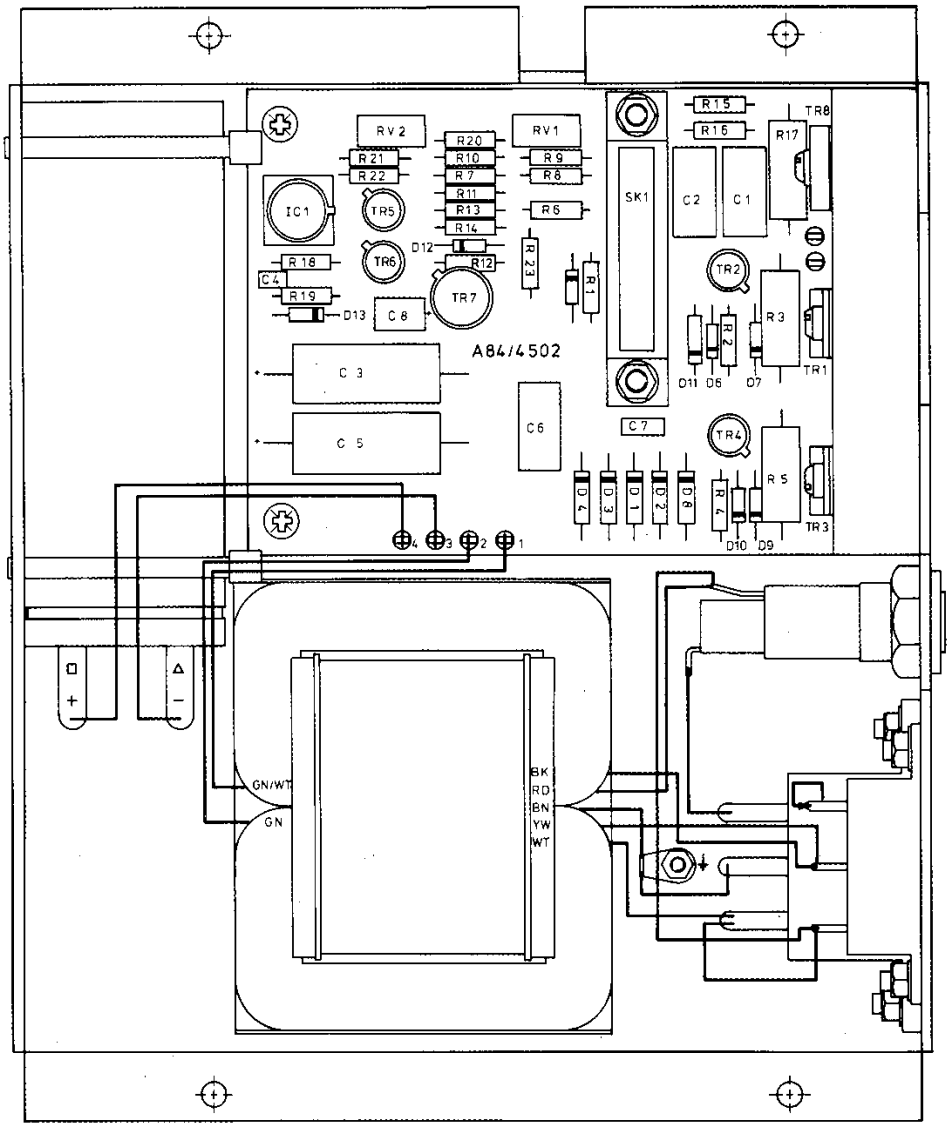
REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	1k21	1	0W35	MF	0001-0001.277/-
R2	2k	1	0W35	MF	0001-0001.455/-
R3	3R9	5	1W6	W/W	0000-7601.583/-
R4	2k	1	0W35	MF	0001-0001.455/-
R5	3R3	5	1W6	W/W	0000-7601.570/-
R6	22k1	1	0W35	MF	0001-0002.441/-
R7	33k2	1	0W35	MF	0001-0002.603/-
R8	12k1	1	0W35	MF	0001-0002.218/-
R9	15k	1	0W35	MF	0001-0002.289/-
R10	182k	1	0W35	MF	0001-0003.165/-
R11	10k	1	0W35	MF	0001-0002.137/-
R12	4k75	1	0W35	MF	0001-0001.824/-
R13	3k92	1	0W35	MF	0001-0001.730/-
R14	10R	1	0W35	MF	0001-0000.074/-
R15	12k1	1	0W35	MF	0001-0002.218/-
R16	56R2	1	0W35	MF	0001-0000.346/-
R17	0R82	5	2W	W/W	0000-7601.596/-
R18	10R	1	0W35	MF	0001-0000.074/-
R19	1k82	1	0W35	MF	0001-0001.413/-
R20	1k54	1	0W35	MF	0001-0001.361/-
R21	1k1	1	0W35	MF	0001-0001.235/-
R22	4k42	1	0W35	MF	0001-0001.785/-
R23	90k9	1	0W35	MF	0001-0002.975/-

REF.	VALUE	TOL. ± %	RATING	TYPE
RV1	5k	20	0W5 Lin.	Variable
C1	220n		100V	
C2	220n		100V	
C3	22μ		40V	Elec.
C4	680p	10	63V	Cer.
C5	22μ		40V	Elec.
C6	100n	10	100V	
C7	22n	10	40V	
C8	6μ8		35V	Elec.
TR1				BDX 33B
TR2				BC109
TR3				BDX 33B
TR4				BC109
TR5				BC109
TR6				BC109
TR7				2N2905
TR8				MJE 3055
D1				1N4004
D2				1N4004
D3				1N4004
D4				1N4004
D5				1N4448
D6				BZY88/C16
D7				1N4448
D8				1N4004
D9				1N4448
D10				1N4448
D11				BZY88/C27
D12				ZPD 5.1
D13				1N4448
IC1				μA 723
SK1				EDGE CONNECTOR, 1
A84				P.C.B. POWER SUPP
				UNIT (less compo

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NG	TYPE	PART NO.
Lin.	Variable	0000-7574.283/-
		0001-0010.404/-
		0001-0010.404/-
	Elec.	0001-0041.716/-
	Cer.	0001-0004.685/-
	Elec.	0001-0041.716/-
		0001-0010.365/-
		0001-0006.418/-
	Elec.	0001-0040.856/-
	BDX 33B	0000-7591.059/-
	BC109	0000-7602.029/-
	BDX 33B	0000-7591.059/-
	BC109	0000-7602.029/-
	BC109	0000-7602.029/-
	BC109	0000-7602.029/-
	2N2905	0001-0017.287/-
	MJE 3055	0001-0017.148/-
	1N4004	0000-7605.026/-
	1N4004	0000-7605.026/-
	1N4004	0000-7605.026/-
	1N4004	0000-7605.026/-
	1N4448	0001-0018.493/-
	BZY88/C16	0001-0019.159/-
	1N4448	0001-0018.493/-
	1N4004	0000-7605.026/-
	1N4448	0001-0018.493/-
	1N4448	0001-0018.493/-
	BZY88/C27	0000-7594.687/-
	ZPD 5.1	0001-0018.833/-
	1N4448	0001-0018.493/-
	µA 723	0001-0015.852/-
EDGE CONNECTOR, 12-WAY		0000-7606.054/-
P.C.B. POWER SUPPLY		
UNIT (less components)		4502-0284.007/3



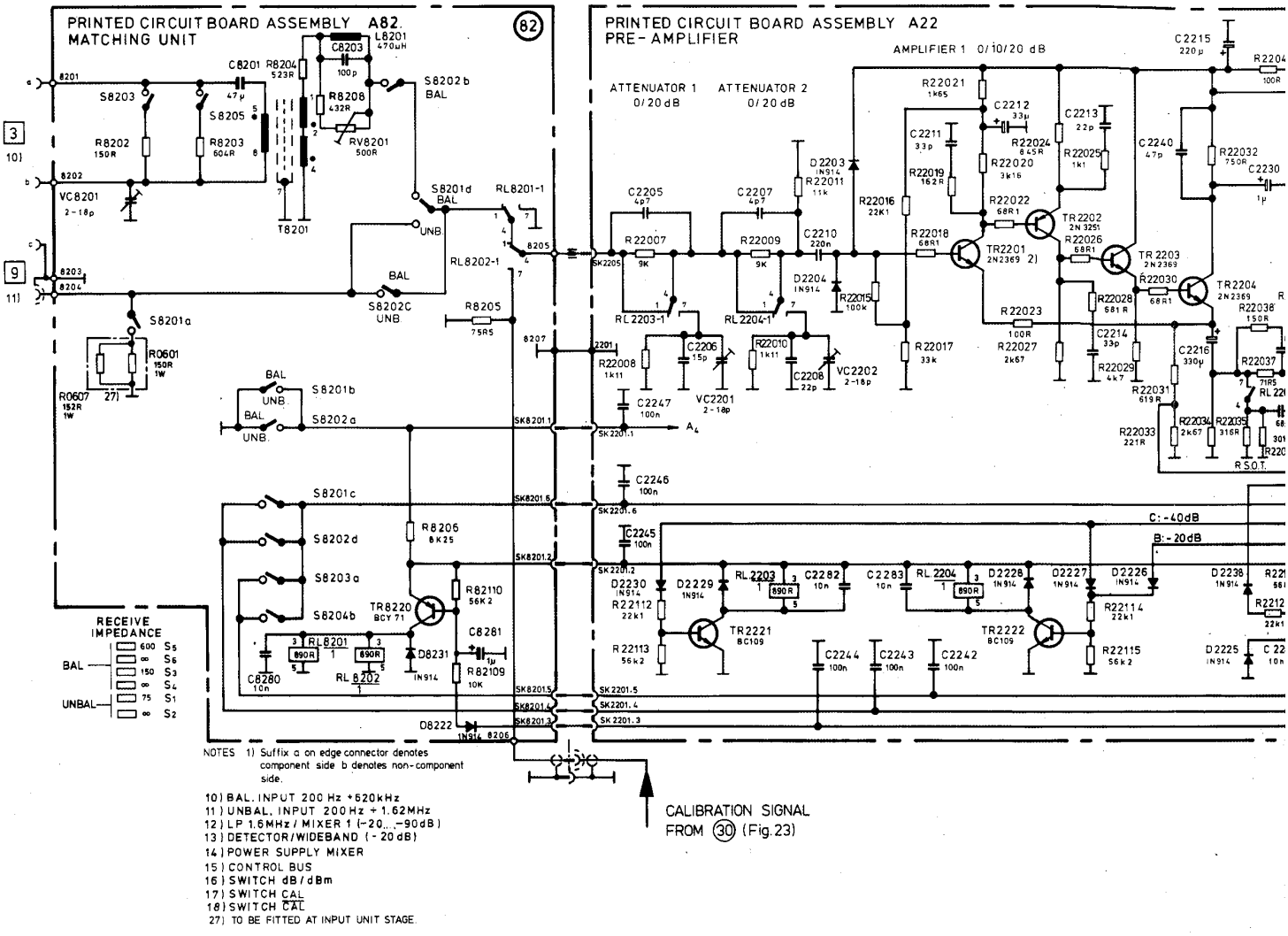
CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER e.g.

IC1 BECOMES IC8401

T1 — " — T10401

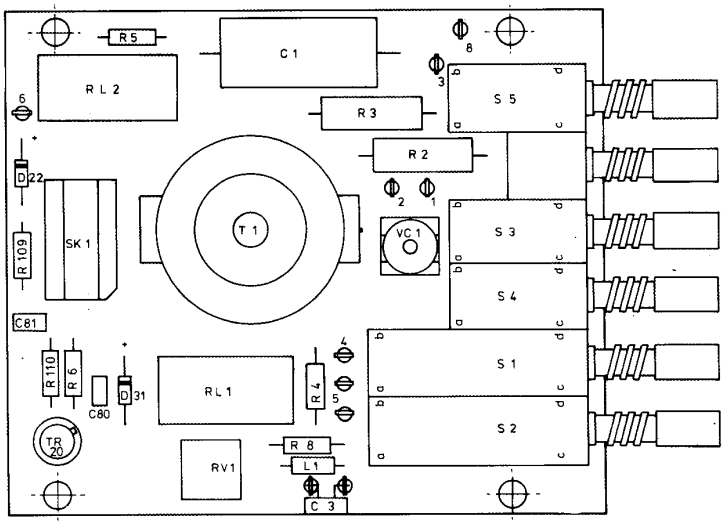
Fig. 6 Component Layout, Power Supply (104)

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NOTES 1) Suffix a on edge connector denotes component side b denotes non-component side.

10) BAL. INPUT 200 Hz ÷620kHz
11) UNBAL. INPUT 200 Hz ÷ 1.62MHz
12) LP 1.6MHz / MIXER 1 (-20...-90dB)
13) DETECTOR/WIDEBAND (-20dB)
14) POWER SUPPLY MIXER
15) CONTROL BUS
16) SWITCH dB/dBm
17) SWITCH CAL
18) SWITCH $\overline{CAL}$
27) TO BE FITTED AT INPUT UNIT STAGE.



CIRCUIT REFERENCES TO BE PRECEDED BY ASSEMBLY NUMBER
eg. S1 BECOMES S8201
C81 BECOMES C8281

Fig. 8 Component Layout, Input Matching unit, (82)

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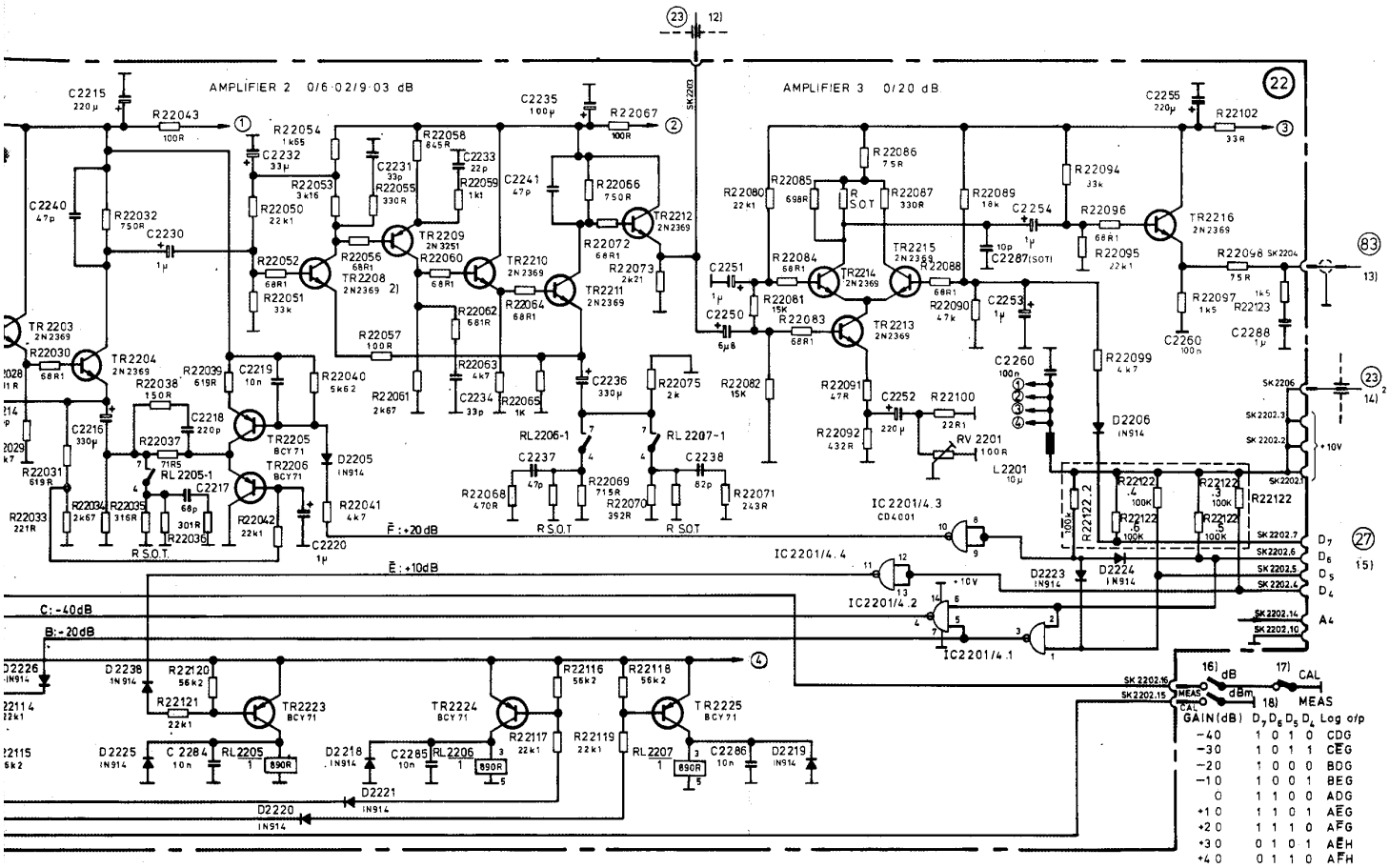
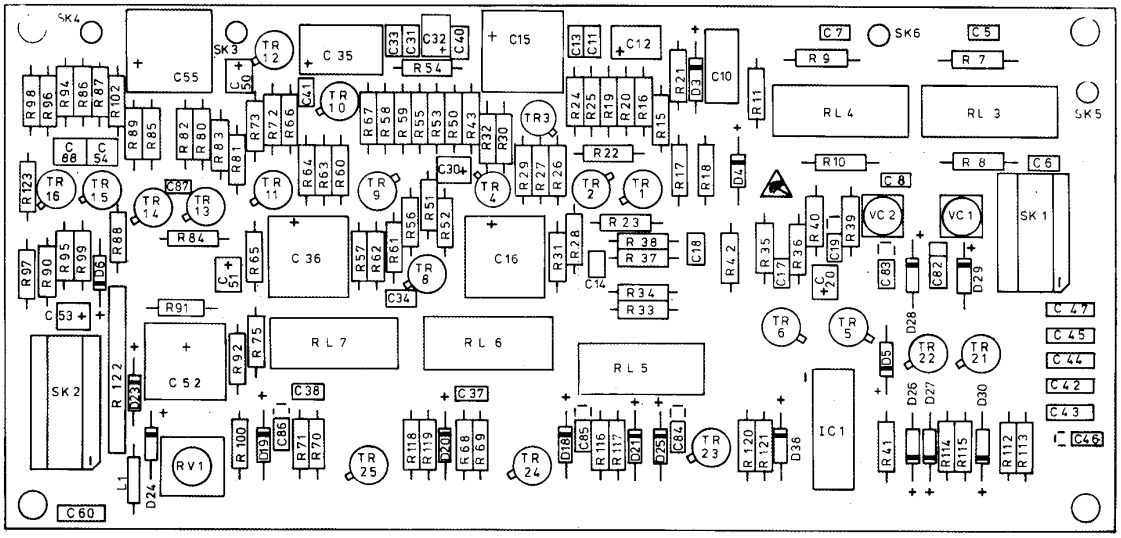


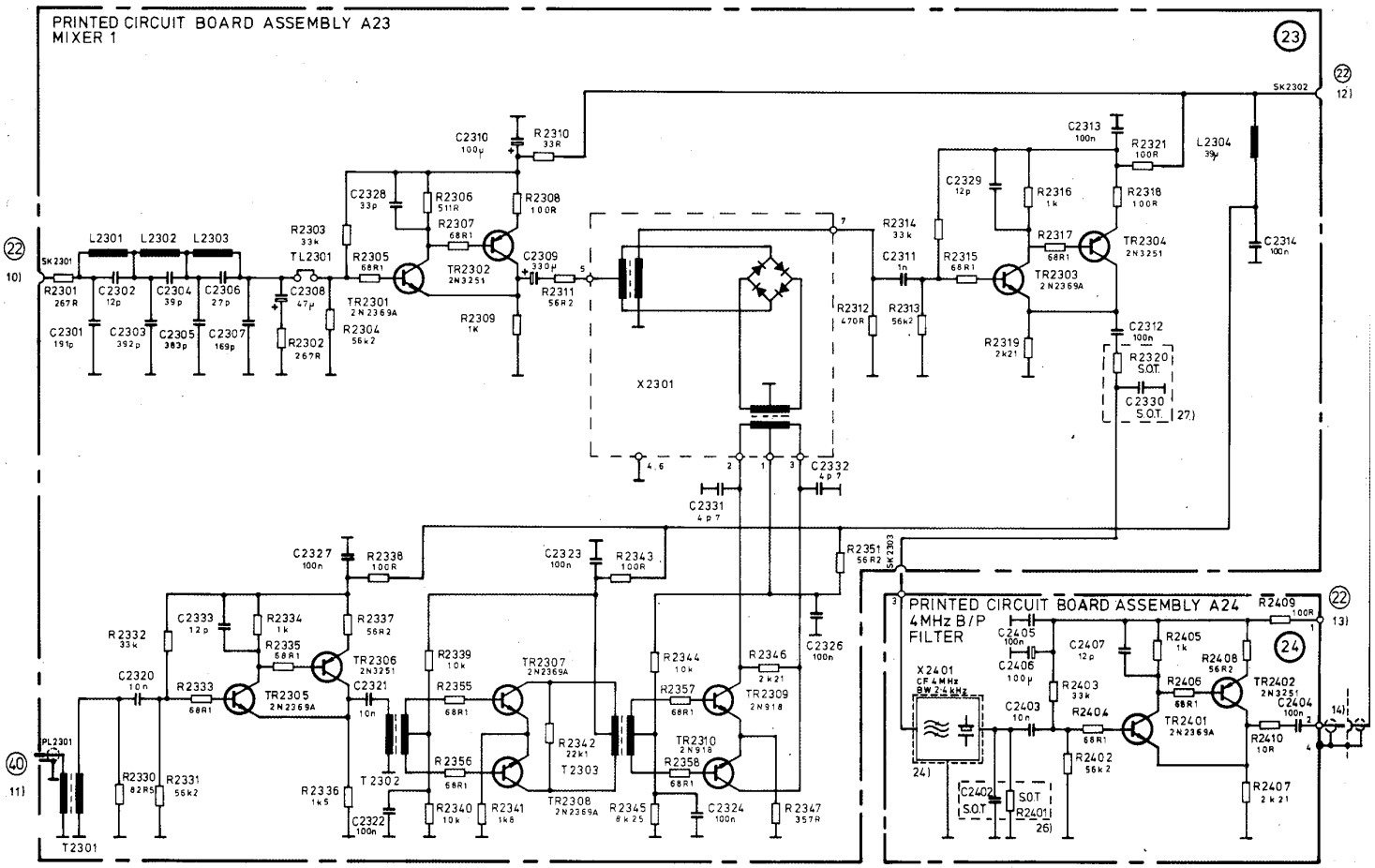
Fig. 7 Circuit Diagram, Input Matching unit, (82) and Pre-amplifier/ Attenuator (22)



CIRCUIT REFERENCES TO BE PRECEDED BY
BOARD ASSEMBLY NUMBER
e.g. C60 BECOMES C2260
TR4 BECOMES TR2204

Fig. 9 Component Layout, Pre-amplifier/Attenuator, (22)

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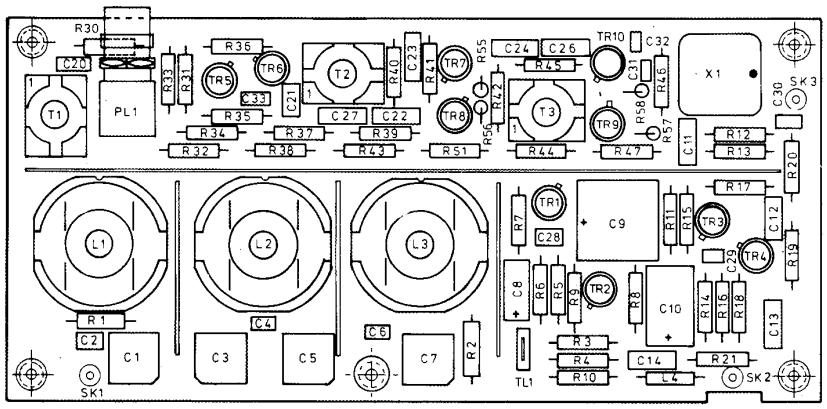


NOTES 1) Suffix a on edge connector denotes component side b denotes non-component side.

10) SIG i/p 200Hz - 1·6MHz (-40dB)
11) L.O. i/p 4 - 5·62 MHz
12) +10V from pre-amp
13) +10V
14) o/p 1st IF 4MHz (-57dB)
15) INPUT L.O. 4·01MHz
16) OUTPUT 2nd IF (-40dB)
17) +10V
18) BW 24Hz
19) BW 1·74kHz

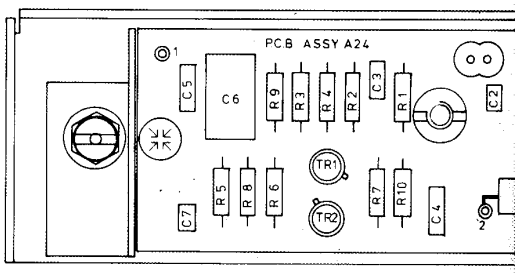
23) TR7906 & TR7907 TO BE MATCHED PAIR
24) X 2401 FITTED TO A66 FILTER UNIT ASSEMBLY.
25) FILTER FITTED TO A77 MAY HAVE AN ALTERNATIVE AND WILL THEREFORE BE FITTED TO PC B ASS'Y KNOWN AS A78
26) R2401 AND C2401 FITTED TO A66 FILTER AY.
R 2401 WHEN SEI FILTER FITTED 100R
C 2402 " " " " 22p
R 2401 WHEN ITT FILTER FITTED 150R
C 2402 " " " " 15p

27) C2330 AND R2320 FITTED TO A6 INPUT AY.
R2320 WHEN SEI FILTER FITTED 100R
C2330 " " " " 22p
R2320 WHEN ITT FILTER FITTED 150R
C2330 " " " " 15p



CIRCUIT REFERENCES TO BE PRECEDED BY
BOARD ASSEMBLY NUMBER
e.g R31 BECOMES R2331
C28 BECOMES C2328

Fig. 11 Component Layout, Mixer 1, (23)



CIRCUIT REFERENCES TO BE PRECEDED BY
BY BOARD ASSEMBLY NUMBER eg C6 BECOMES C2406
COMPONENT X1 BECOMES X6601
AND SK1 BECOMES SK6601

Fig. 12 Component Layout, 4MHz B/P Filter, (24)

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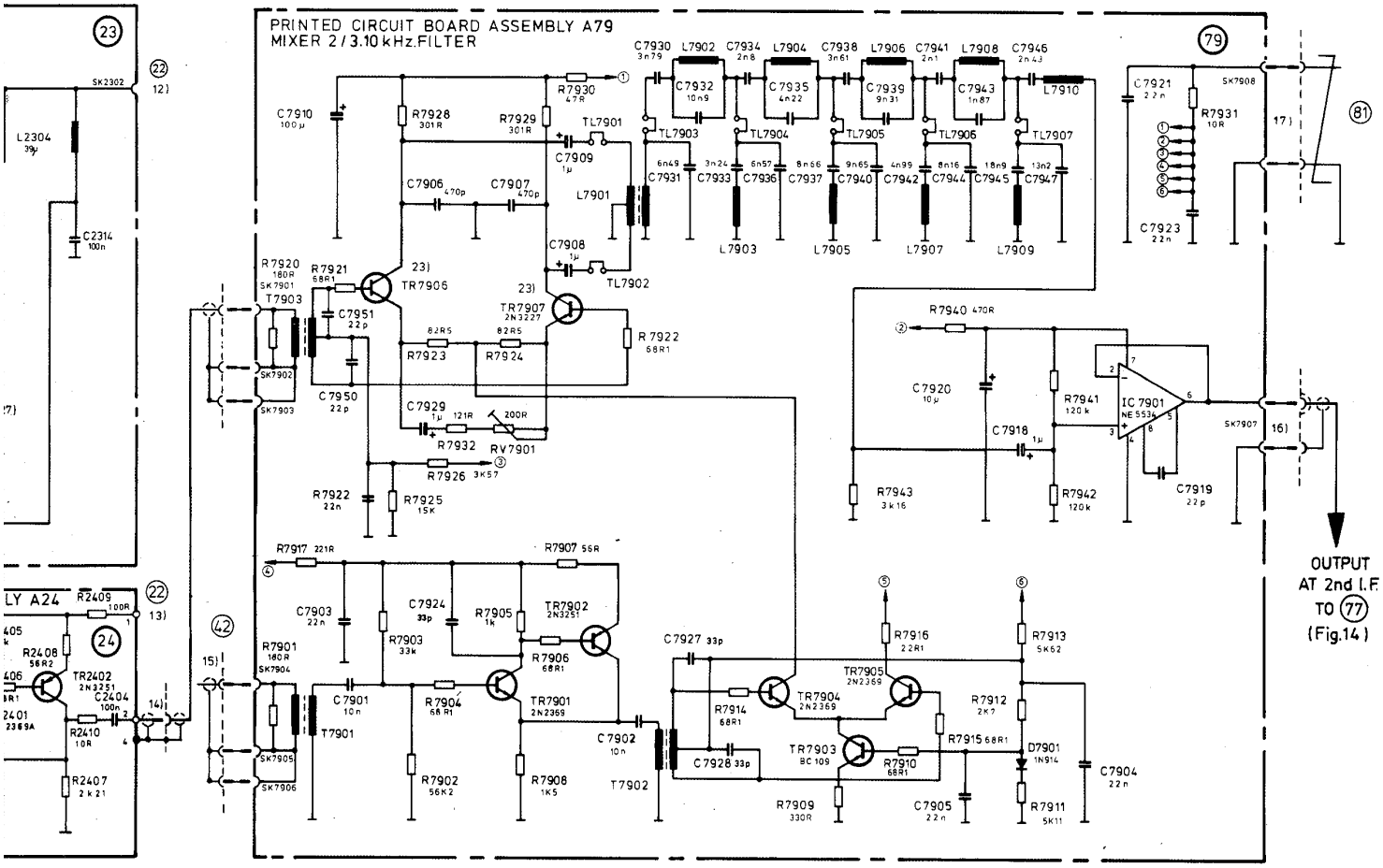
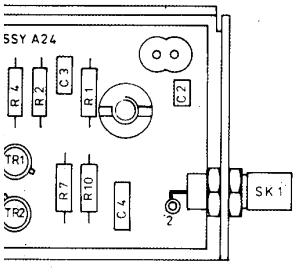
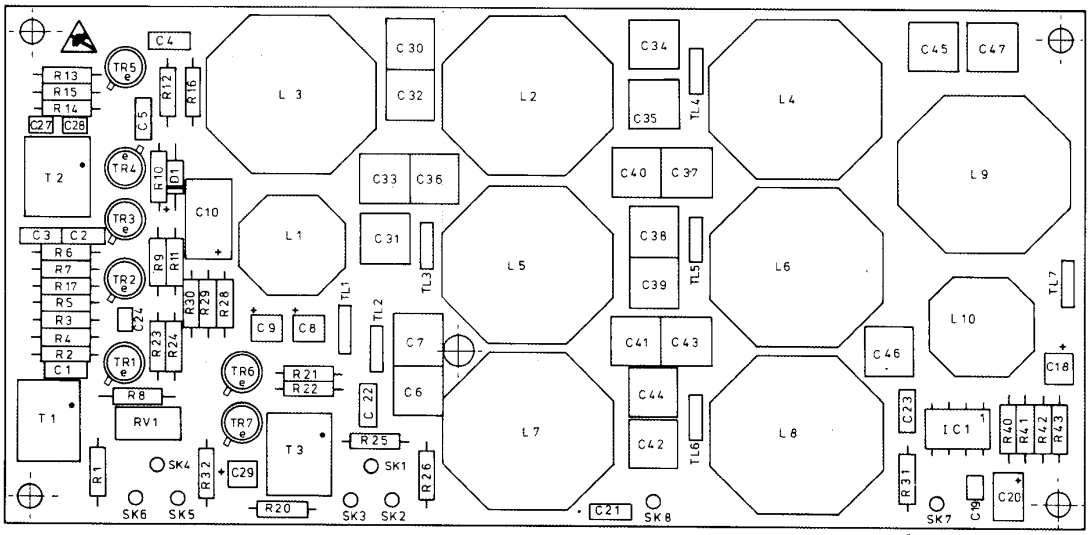


Fig. 10 Circuit Diagram, Mixer 1, (23) ; 4MHz B/P Filter, (24) and Mixer 2/3.1kHz Filter, (79)



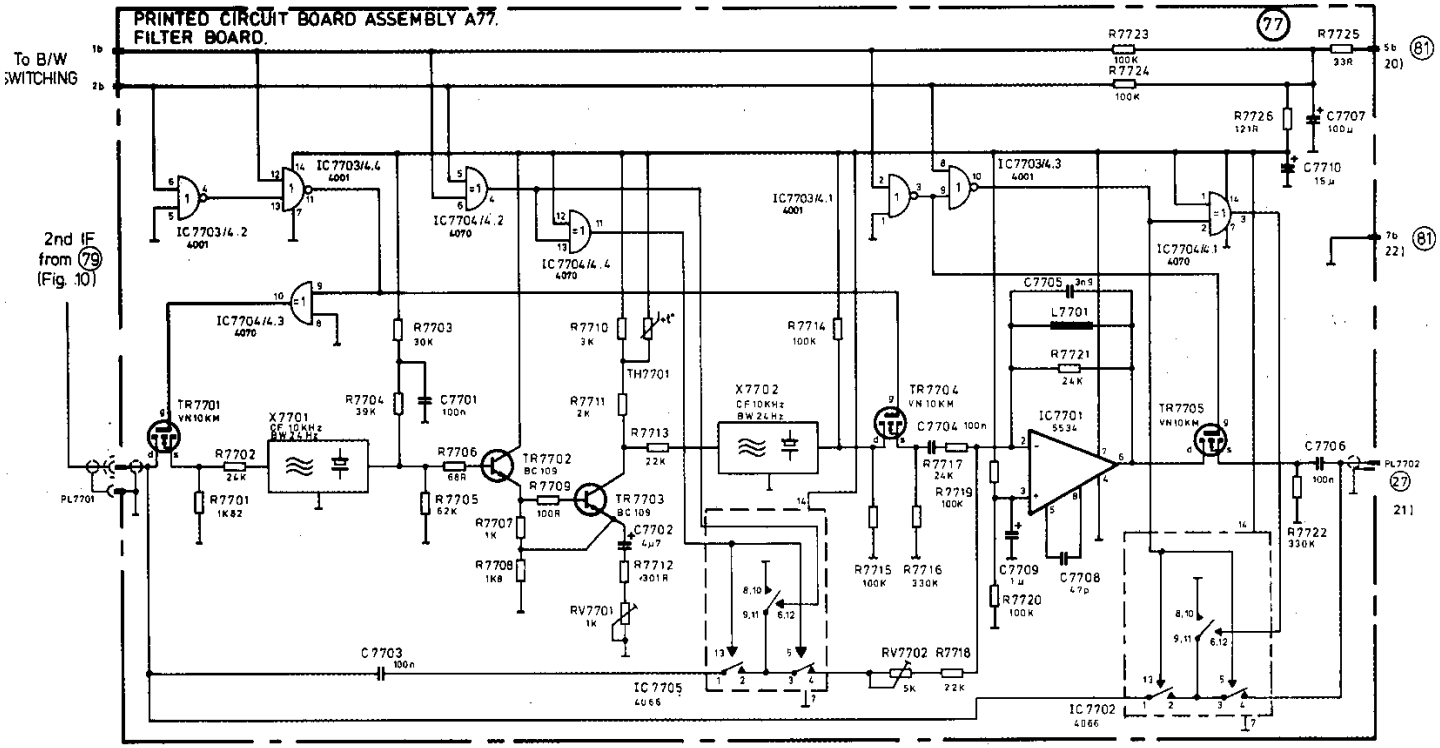
EDED BY
C6 BECOMES C2406



CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSY NUMBER.
e.g. C3 BECOMES C7903
R25 BECOMES R7925

Fig. 13 Component Layout, Mixer 2/3.1kHz Filter, (79)

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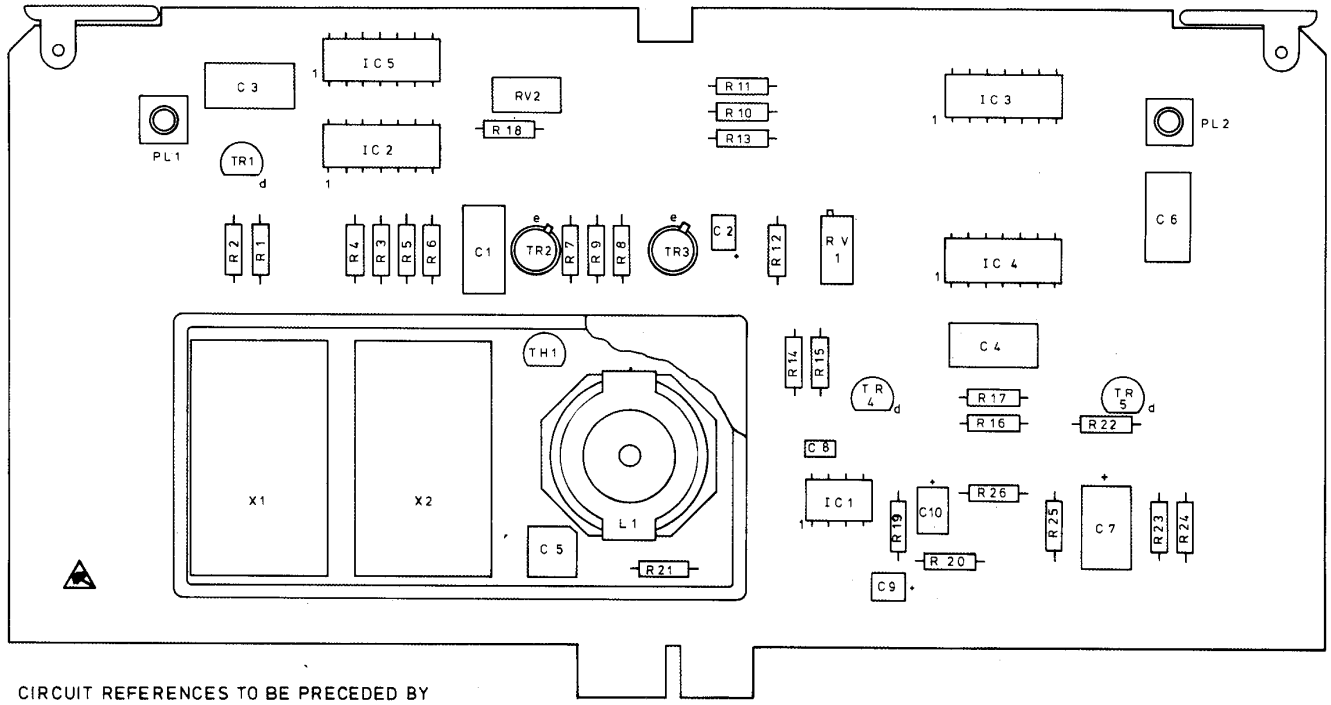
NOTES 1) Suffix a on edge connector denotes component side. b denotes non-component side.
20) +10V
21) OUTPUT (to IFAMP)
22) 0V

Fig. 14 Circuit Diagram, 24Hz and 1.74kHz Filters, (77)

ASSEMBLY P.C.B. A77 24Hz and 1.74kHz FILTERS

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	1k82	1	0W35	MF	0001-0001.413/-
R2	24k	2	0W25	MF	0000-7601.334/-
R3	30k1	1	0W35	MF	0001-0002.564/-
R4	39k2	1	0W35	MF	0001-0002.658/-
R5	61k9	1	0W35	MF	0001-0002.836/-
R6	68R1	1	0W35	MF	0001-0000.427/-
R7	1k	1	0W35	MF	0001-0001.219/-
R8	1k8	2	0W25	MF	0001-0014.510/-
R9	100R	1	0W35	MF	0001-0000.537/-
R10	3k01	1	0W35	MF	0001-0001.620/-
R11	2k	1	0W35	MF	0001-0001.455/-
R12	301R	1	0W35	MF	0001-0000.799/-
R13	22k1	1	0W35	MF	0001-0002.441/-
R14	100k	1	0W35	MF	0001-0002.991/-
R15	100k	1	0W35	MF	0001-0002.991/-
R16	330k	1	0W35	MF	0000-7601.350/-
R17	24k	2	0W25	MF	0000-7601.334/-
R18	22k1	1	0W35	MF	0001-0002.441/-
R19	100k	1	0W35	MF	0001-0002.991/-
R20	100k	1	0W35	MF	0001-0002.991/-
R21	24k	2	0W25	MF	0000-7601.334/-
R22	330k	2	0W25	MF	0000-7601.350/-
R23	100k	1	0W35	MF	0001-0002.991/-
R24	100k	1	0W35	MF	0001-0002.991/-
R25	33R	2	0W25	MF	0000-7601.347/-
R26	121R	1	0W35	MF	0001-0000.566/-
C1	100n	10	100	PE	0001-0010.365/-
C2	4µ7	20	10	Tant.	0001-0040.801/-

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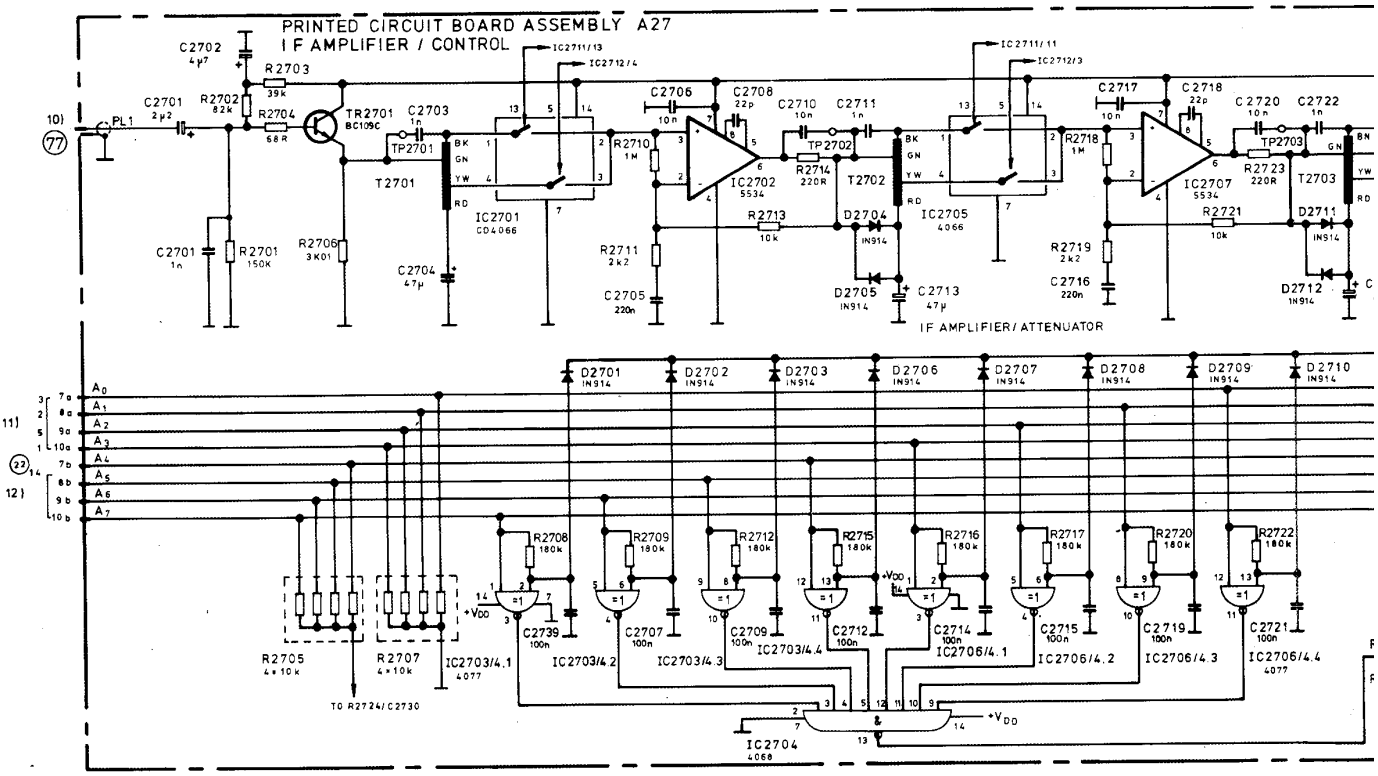


CIRCUIT REFERENCES TO BE PRECEDED BY
BOARD ASSY NUMBER
eg X1 BECOMES X7701
R21 BECOMES R7721

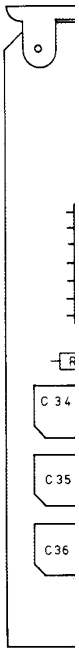
Fig. 15 Component Layout, 24Hz and 1.74kHz Filters, (77)

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C3	100n	10	100	PE	0001-0010.365/-
C4	100n	10	100	PE	0001-0010.365/-
C5	3n9	2	63	PF	0000-7598.447/-
C6	100n	10	100	PE	0001-0010.365/-
C7	100µ	20	10	Tant.	0001-0041.156/-
C8	47p	2	63	Cer.	0001-0004.397/-
C9	1µ	20	35	Tant.	0001-0040.704/-
C10	15µ	20	16	Tant.	0001-0040.924/-
TR1				VN 10KM	0000-7591.224/-
TR2				BC109	0000-7602.029/-
TR3				BC109	0000-7602.029/-
TR4				VN 10KM	0000-7591.224/-
TR5				VN 10KM	0000-7591.224/-
RV1	1k	10	0W5	Var.	0000-7601.761/-
RV2	5k	20	0W5	Var.	0000-7574.283/-
IC1				5534	0000-7513.257/-
IC2				4066	0001-0067.554/-
IC3				4001	0001-0015.962/-
IC4				4070	0001-0071.029/-
IC5				4066	0001-0067.554/-
L1	164mH			INDUCTOR	4502-1449.003/4
X1				V42312-B22-A2-1	0829-9303.002/4
X2				V42312-B22-A2-1	0829-9303.002/4
TH1	1000Ω	5		TSP 102 J	0000-7605.013/-
PL1				PLUG COAX.	0000-2682.002/5
PL2				PLUG COAX.	0000-2682.002/5
A77				P.C.B. 24Hz and 1.74kHz FILTERS	4502-0246.003/2

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NOTES 1) Suffix a on edge connector denotes component side b denotes non-component side.
10) INPUT 10kHz (-90 ... -20dB)
11) FROM LEVEL RANGE SW VIA INTERCONNECTION BOARD
12) FROM FRONT PANEL SWITCHES
13) POWER SUPPLY
14) TO INPUT UNIT ASSEMBLY



CIRCUIT REF
BY BOARD A
eg C4 BEC
R25 BEC

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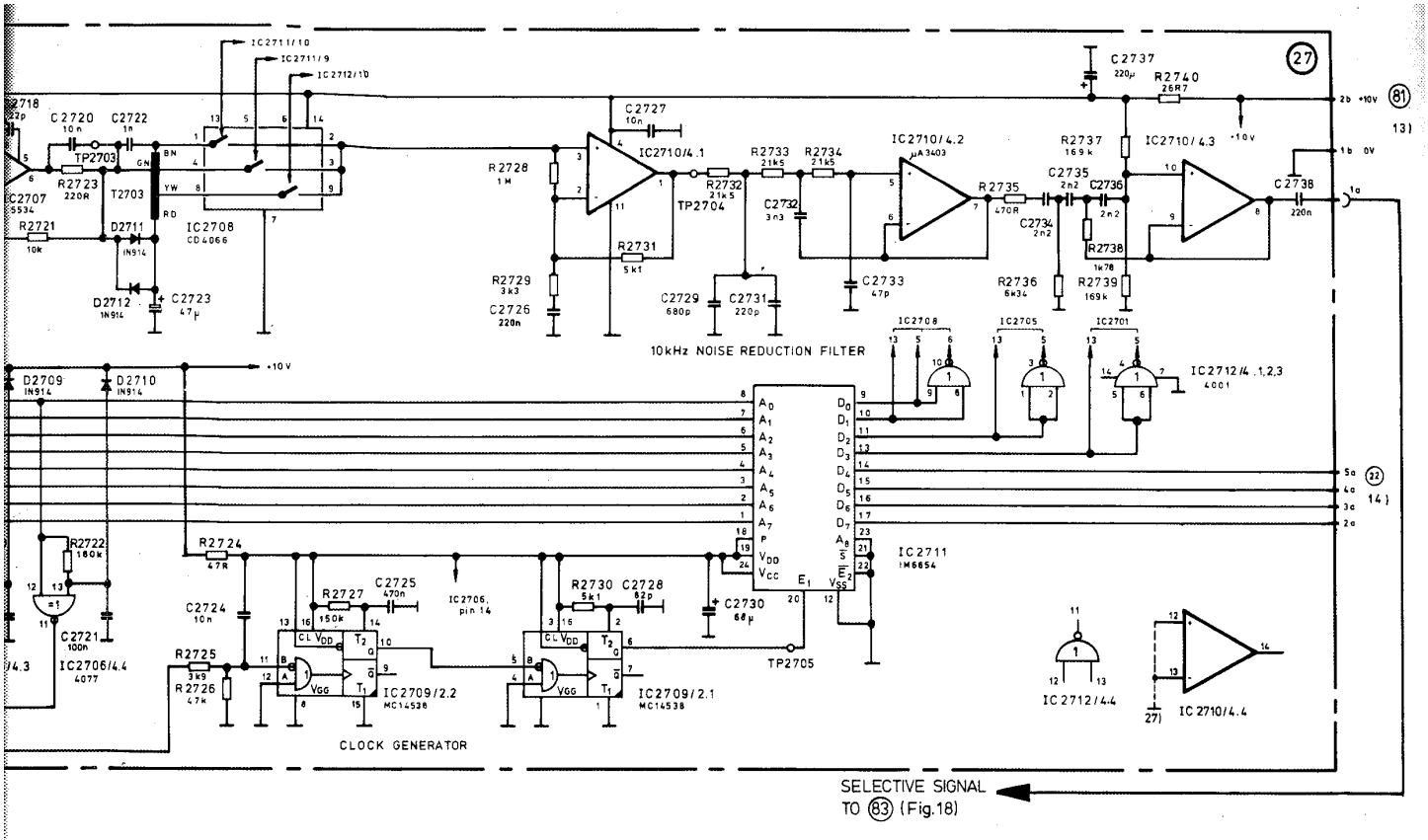


Fig. 16 Circuit Diagram,
I.F. Amplifier/EPROM, (27)

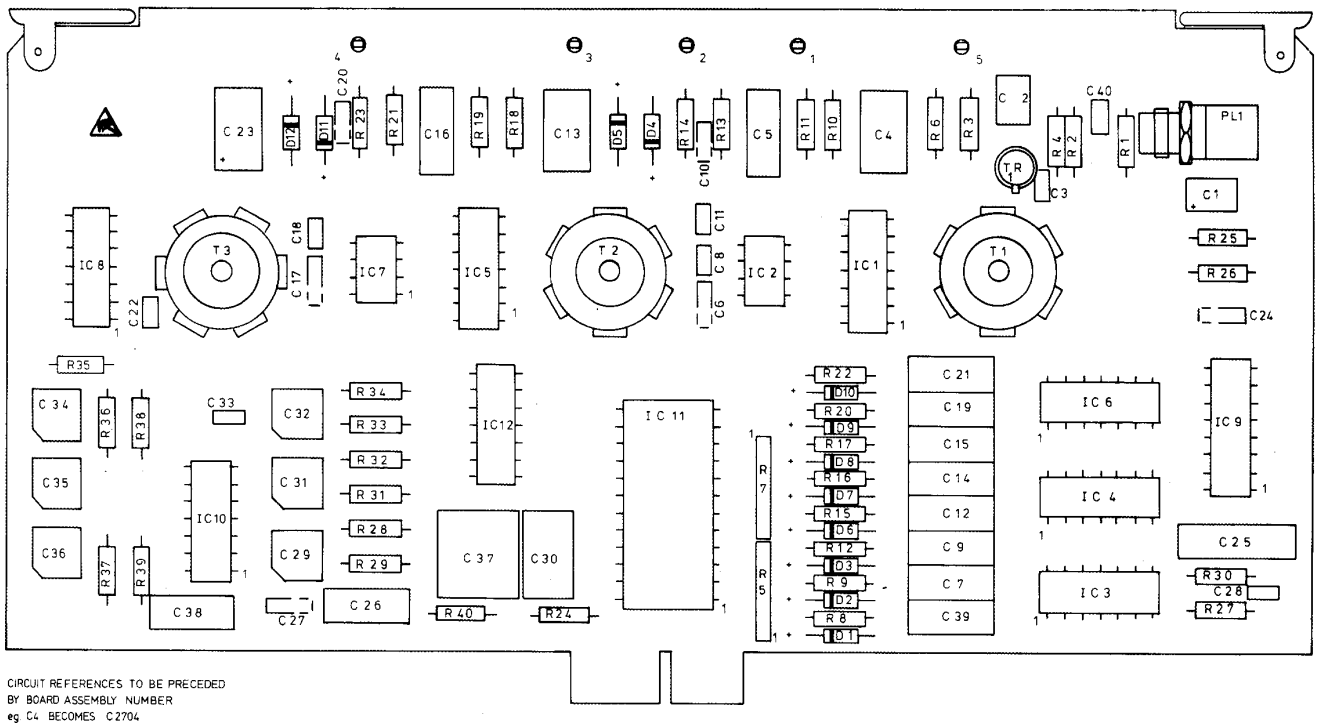
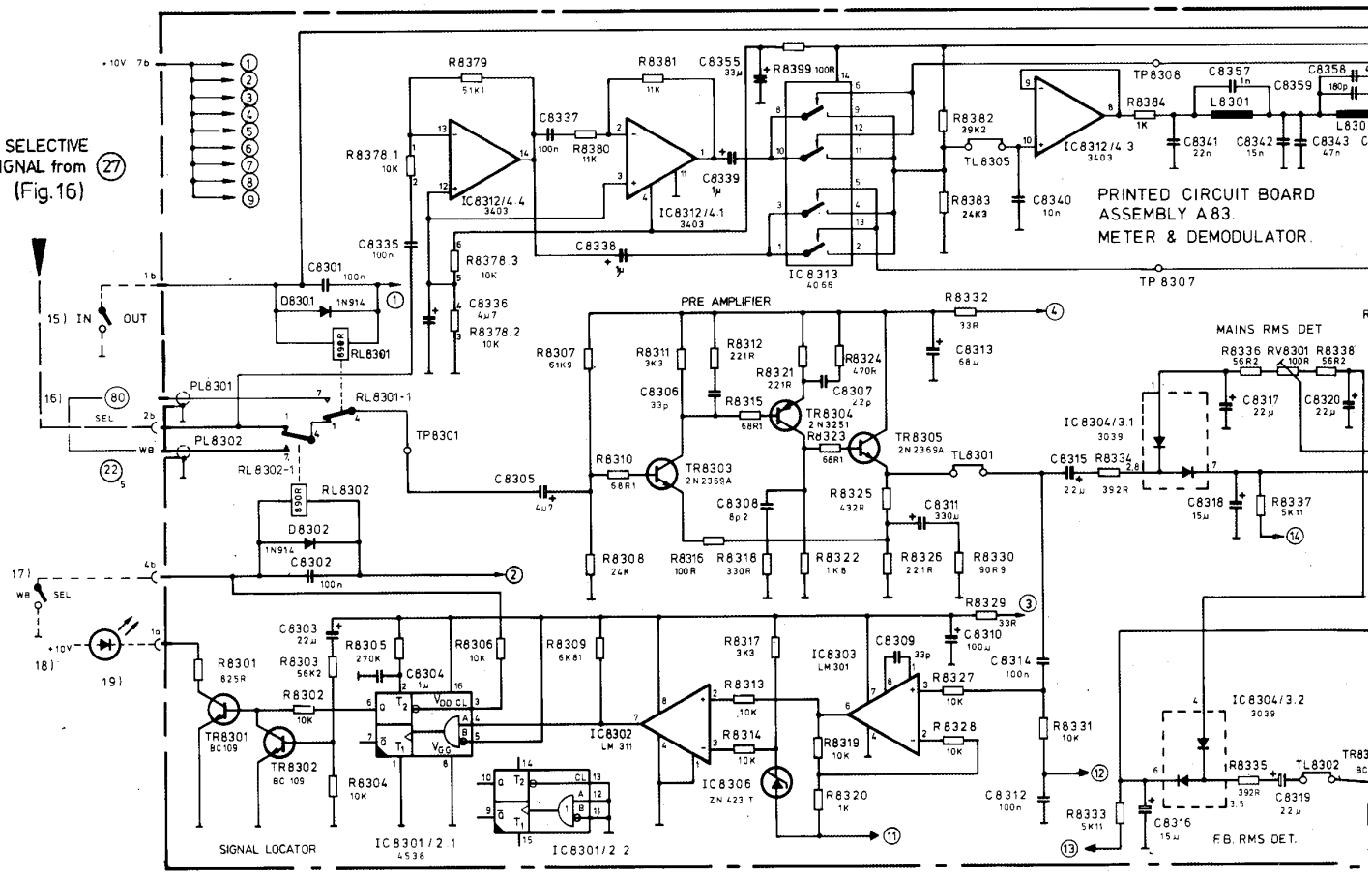


Fig. 17 Component Layout,
I.F. Amplifier/EPROM, (27)

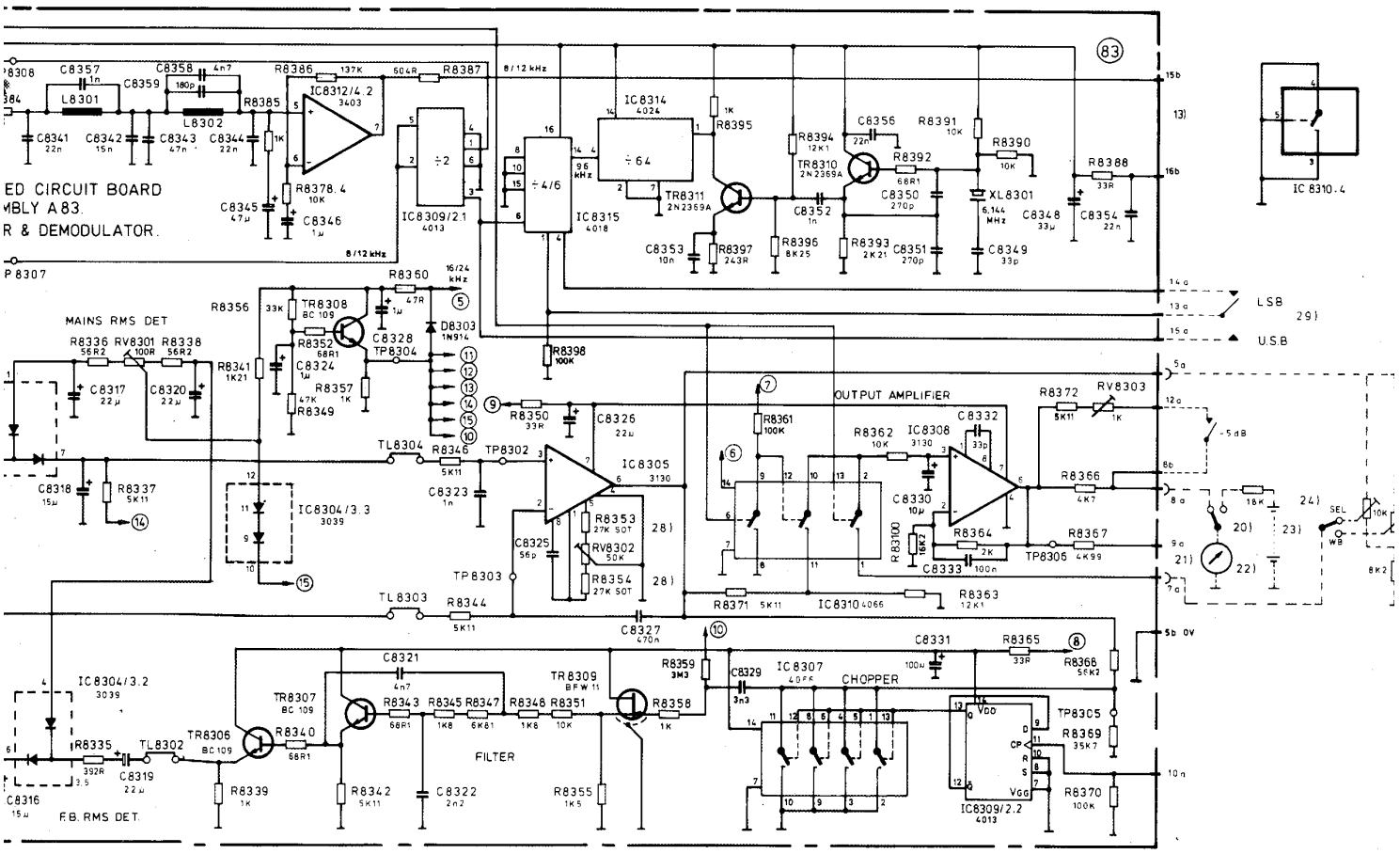
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NOTES 1) Suffix a on edge connector denotes component side b denotes non-component side.

13) POWER SUPPLY
15) SWITCH ON PSE (IF FITTED).
16) SIGNAL
17) FRONT PANEL SW
18) ON DISPLAY BOARD
19) LED(GN) ON DISPLAY BOARD
20) BATTERY CH SW FRONT PANEL
21) D.C. O/P TO REAR PANEL SOCKET.
22) SIFAM DS48 METER ON FRONT PANEL
23) BATTERY
24) WB/SEL SW ON FRONT PANEL
25) CAL POT ON FRONT PANEL
26) ON INTERCONNECTION BOARD
27) PINS 12 & 13 TO BE EARTHED ONLY FROM 'C' SERIES ONWARDS.
28) R53 & R54,S EACH BE APP IS CHANGED NOT EXCEED
29) USB/LSB SW

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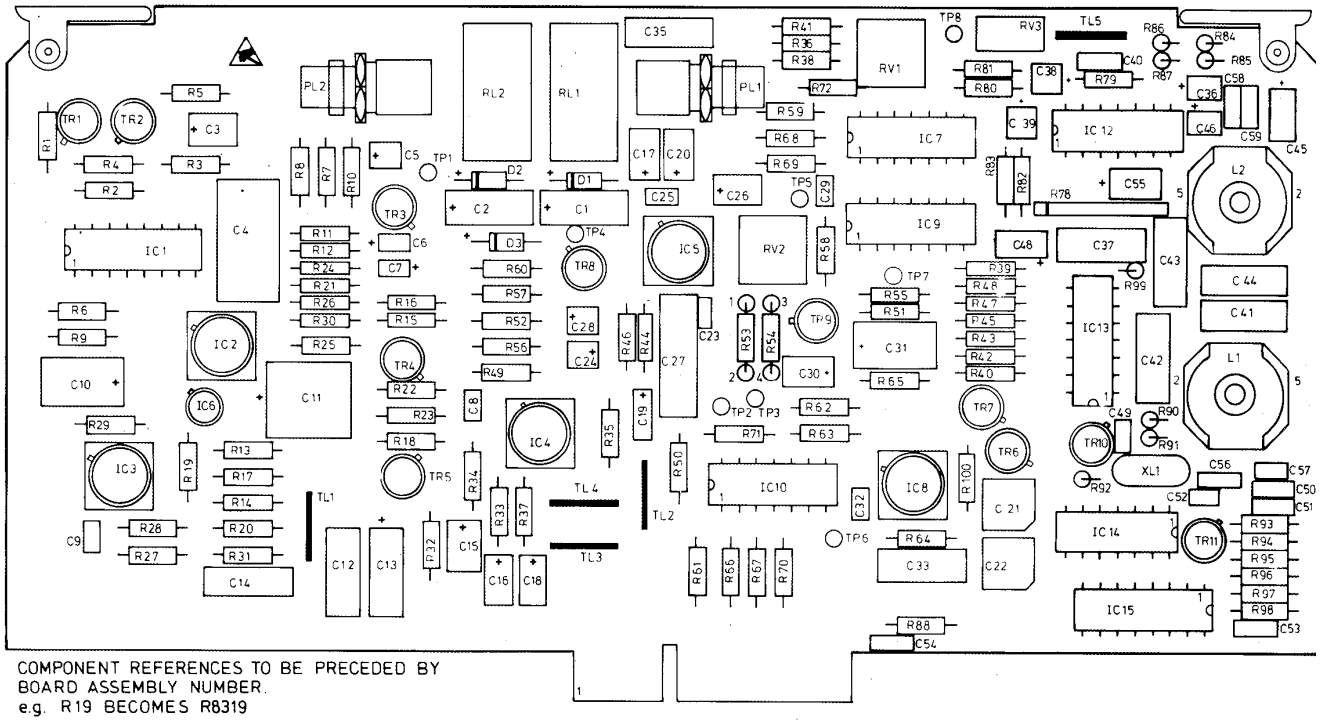


28) R53 & R54, S.O.T. RESISTORS WILL EACH BE APPROX. 27K. IF EITHER IS CHANGED THEIR SUM TOTAL MUST NOT EXCEED 54K

29) USB/LSB SW. ON FRONT PANEL

RIES ONWARDS.

Fig. 18 Circuit Diagram, Meter and Demodulator, (83)



COMPONENT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER.
e.g. R19 BECOMES R8319
C9 BECOMES C8309

Fig. 19. Component Layout, Meter and Demodulator, (83)

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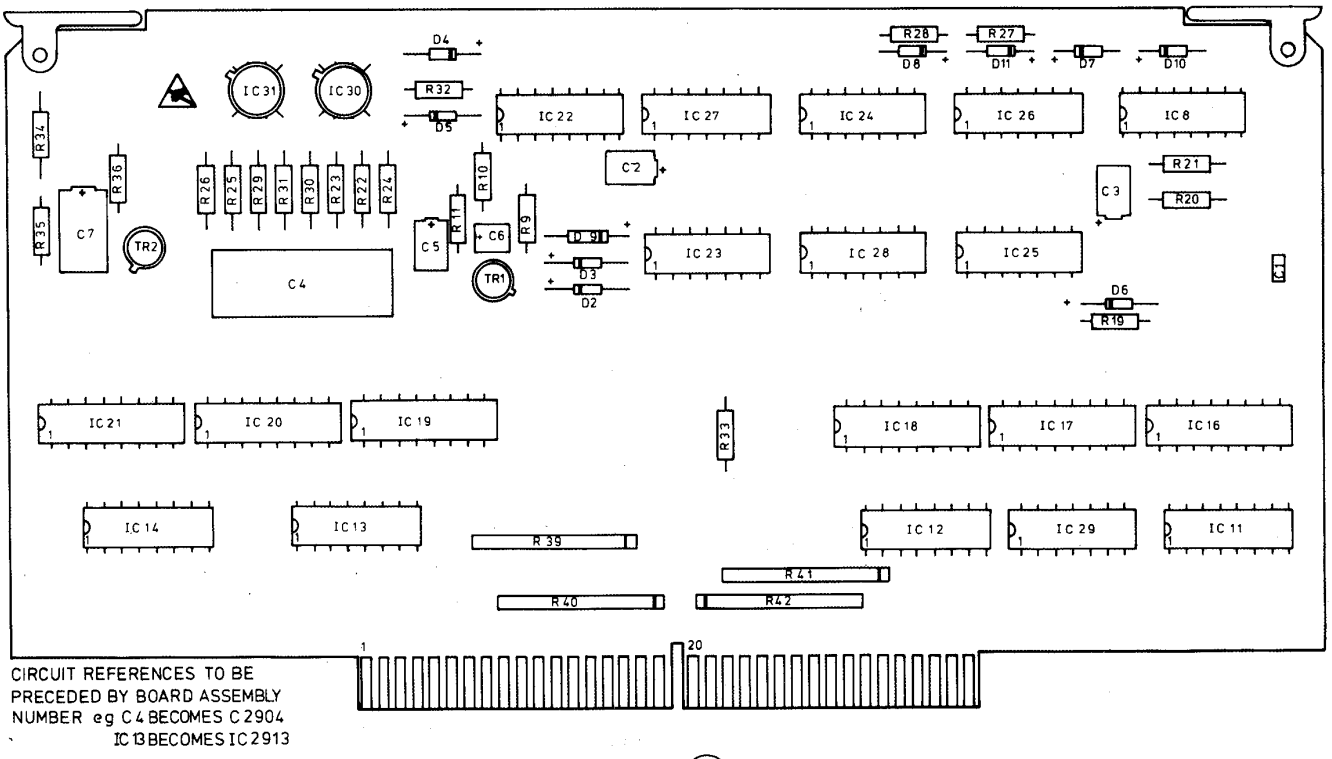


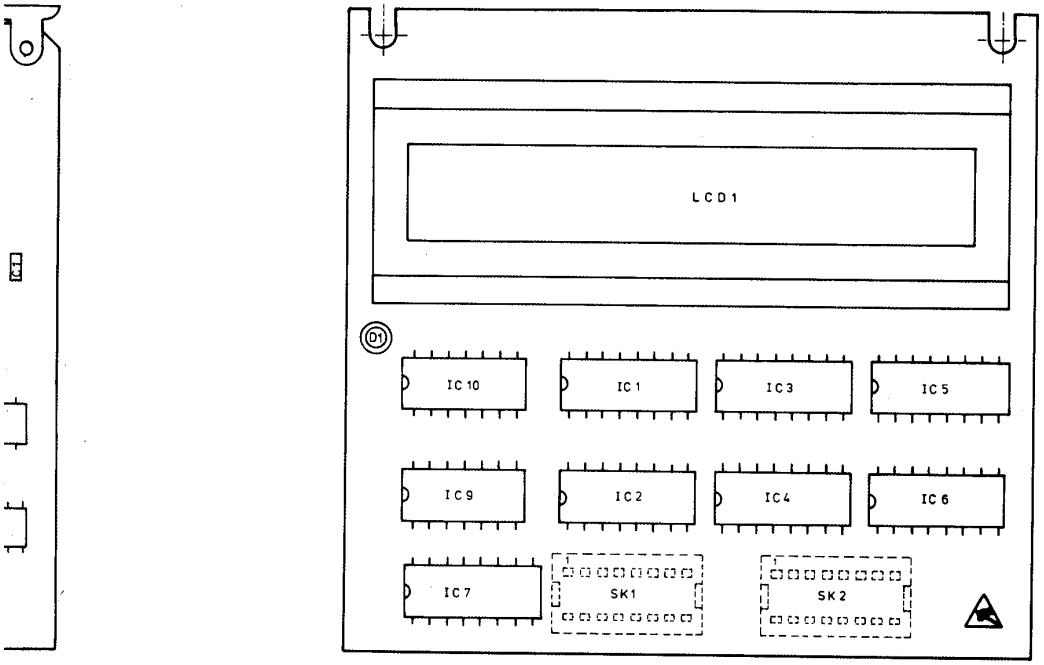
Fig. 20 Component Layout, Frequency Control, (29)

ASSEMBLY P.C.B. A29 FREQUENCY CONTROL

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R9	39R2	1	OW35	MF	0001-0003.547/-
R10	221k	1	OW35	MF	0001-0003.217/-
R11	56k2	1	OW35	MF	0001-0002.797/-
R19	56k2	1	OW35	MF	0001-0002.797/-
R20	100R	1	OW35	MF	0001-0000.537/-
R21	562k	1	OW35	CF	0001-0003.408/-
R22	27k	2	OW25	MF	0000-7558.377/-
R23	100k	1	OW35	MF	0001-0002.991/-
R24	82R5	1	OW35	MF	0001-0000.472/-
R25	1M2	5	OW35	CF	0001-0007.297/-
R26	1M2	5	OW35	CF	0001-0007.297/-
R27	301k	1	OW35	MF	0001-0062.025/-
R28	33k	2	OW25	MF	4980-0000.009/-
R29	82R5	1	OW35	MF	0001-0000.472/-
R30	221k	1	OW35	MF	0001-0003.217/-
R31	27k	2	OW25	MF	0000-7558.377/-
R32	7k5	1	OW35	MF	0001-0002.014/-
R33	825R	1	OW35	MF	0001-0001.154/-
R34	562k	1	OW35	CF	0001-0003.408/-
R35	56k2	1	OW35	MF	0001-0002.797/-
R36	301k	1	OW35	MF	0001-0062.025/-
R38					
R39	10 x 100k	2	OW2	RESISTOR PACK	0000-7604.441/-
R40	10 x 100k	2	OW2	RESISTOR PACK	0000-7604.441/-
R41	10 x 100k	2	OW2	RESISTOR PACK	0000-7604.441/-
R42	10 x 100k	2	OW2	RESISTOR PACK	0000-7604.441/-
C1	1n	20	100	Cer.	0000-7602.809/-
C2	33µ	20	10	Tant.	0001-0040.995/-
C3	33µ	20	10	Tant.	0001-0040.995/-

REF.	VALUE	TOL. ± %	RATING	
C4	3µ3	10	63	
C5	33µ	20	10	
C6	4µ7	20	10	
C7	100µ	20	10	
TR1				BC
TR2				BC
D2				1N
D3				1N
D4				1N
D5				1N
D6				1N
D7				1N
D8				1N
D9				BZ
D10				1N
D11				1N
IC8				40
IC11				45
IC12				45
IC13				45
IC14				45
IC15				45
IC16				45
IC17				45
IC18				45
IC19				45
IC20				45
IC21				45
IC22				41

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CIRCUIT REFERENCES TO BE
PRECEDED BY BOARD ASSEMBLY
NUMBER eg IC2 BECOMES IC3202.

Fig. 21 Component Layout, Frequency Display, (32)

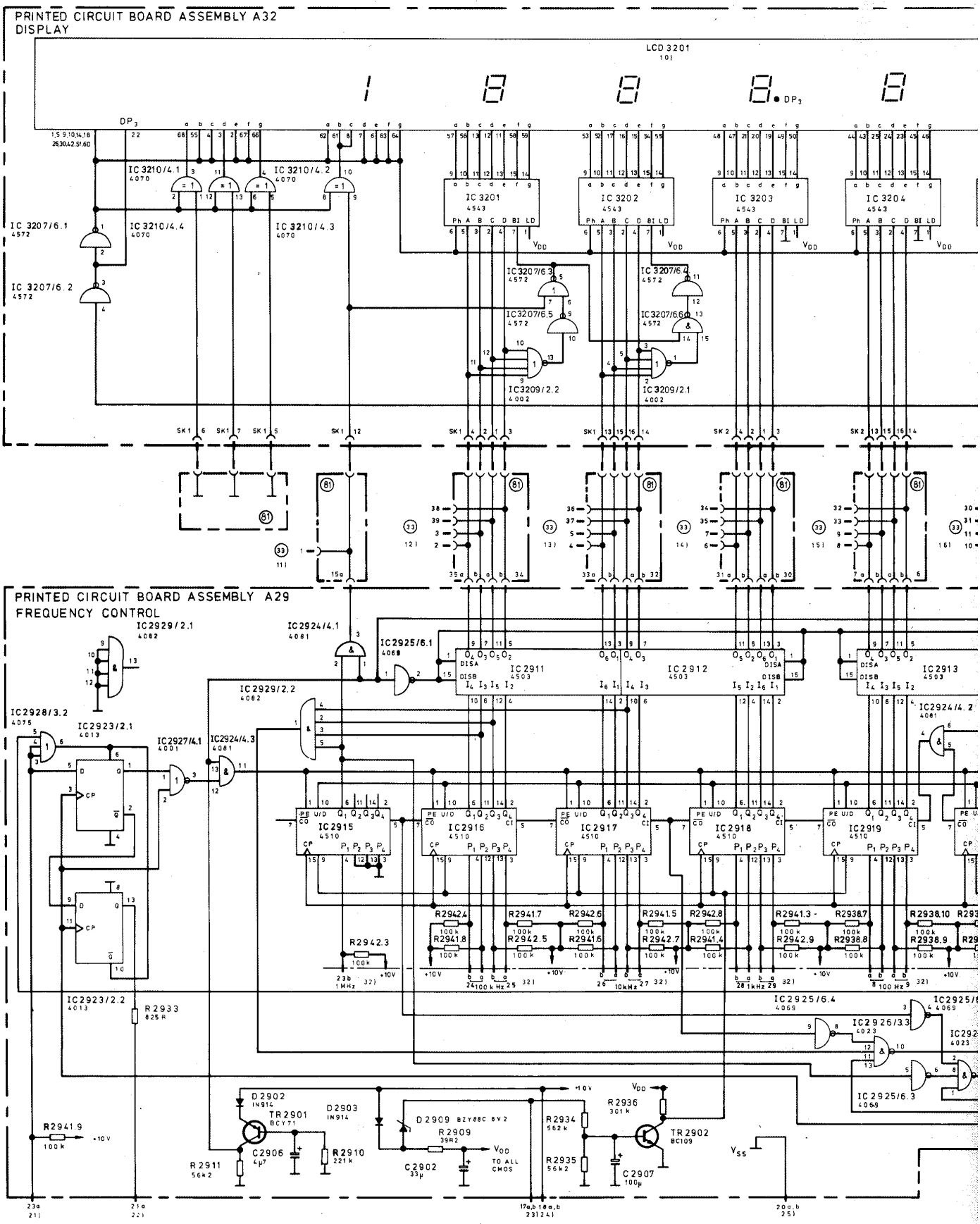
	TYPE	PART NO.
	Tant.	0000-7601.606/-
	Tant.	0001-0040.995/-
	Tant.	0001-0040.801/-
	Tant.	0001-0041.156/-
BCY71		0001-0016.534/-
BC109		0000-7602.029/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
BZY88C8V2		0001-0019.036/-
1N914 or 1N4448		0001-0018.493/-
1N914 or 1N4448		0001-0018.493/-
4040		0001-0065.462/-
4503		0000-7548.853/-
4503		0000-7548.853/-
4503		0000-7548.853/-
4503		0000-7548.853/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4510		0001-7548.650/-
4175		0000-7529.416/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
IC23				4013	0001-0015.991/-
IC24				4081	0001-0070.884/-
IC25				4069	0001-0070.978/-
IC26				4023	0001-0016.026/-
IC27				4001	0001-0015.962/-
IC28				4075	0001-0071.016/-
IC29				4082	0001-0070.868/-
IC30				µA 776 TC	0000-7604.425/-
IC31				µA 776 TC	0000-7604.425/-
A29				P.C.B. FREQUENCY CONTROL	4502-0129.007/2

ASSEMBLY P.C.B. A32 DISPLAY BOARD

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
D1				LED 5082 - 4955	0000-7599.925/-
IC1				4543	0001-0068.618/-
IC2				4543	0001-0068.618/-
IC3				4543	0001-0068.618/-
IC4				4543	0001-0068.618/-
IC5				4543	0001-0068.618/-
IC6				4543	0001-0068.618/-
IC7				4572	0001-0068.540/-
IC9				4002	0001-0067.570/-
IC10				4070	0001-0071.029/-
SK1				SOCKET D.I.L. 16-WAY	0000-7518.391/-
SK2				SOCKET D.I.L. 16-WAY	0000-7518.391/-
LCD1				LCD 3922.315.09.0	0000-7603.727/-
A32				P.C.B. DISPLAY BOARD	4502-0132.007/2

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NOTES 1) Suffix a on edge connector denotes component side. b denotes non-component side

10) LIQUID CRYSTAL DISPLAY
11) DIVI 1 MHz
12) .. 100 kHz
13) .. 10 kHz
14) .. 1 kHz
15) .. 100 Hz
16) .. 10 Hz
17) .. 1 Hz
18) To motor M+

19) Not connected
20) To motor M-
21) DAV
22) DAC
23) $U_{BATT.}$
24) +10 V
25) GND
26) To DIVI UP

27) To DIVI DN
28) To DIVI DAW
29) To SW LOCK
30) To SW REM
31) To SW COR/FINE
32) To back panel connector, not fitt

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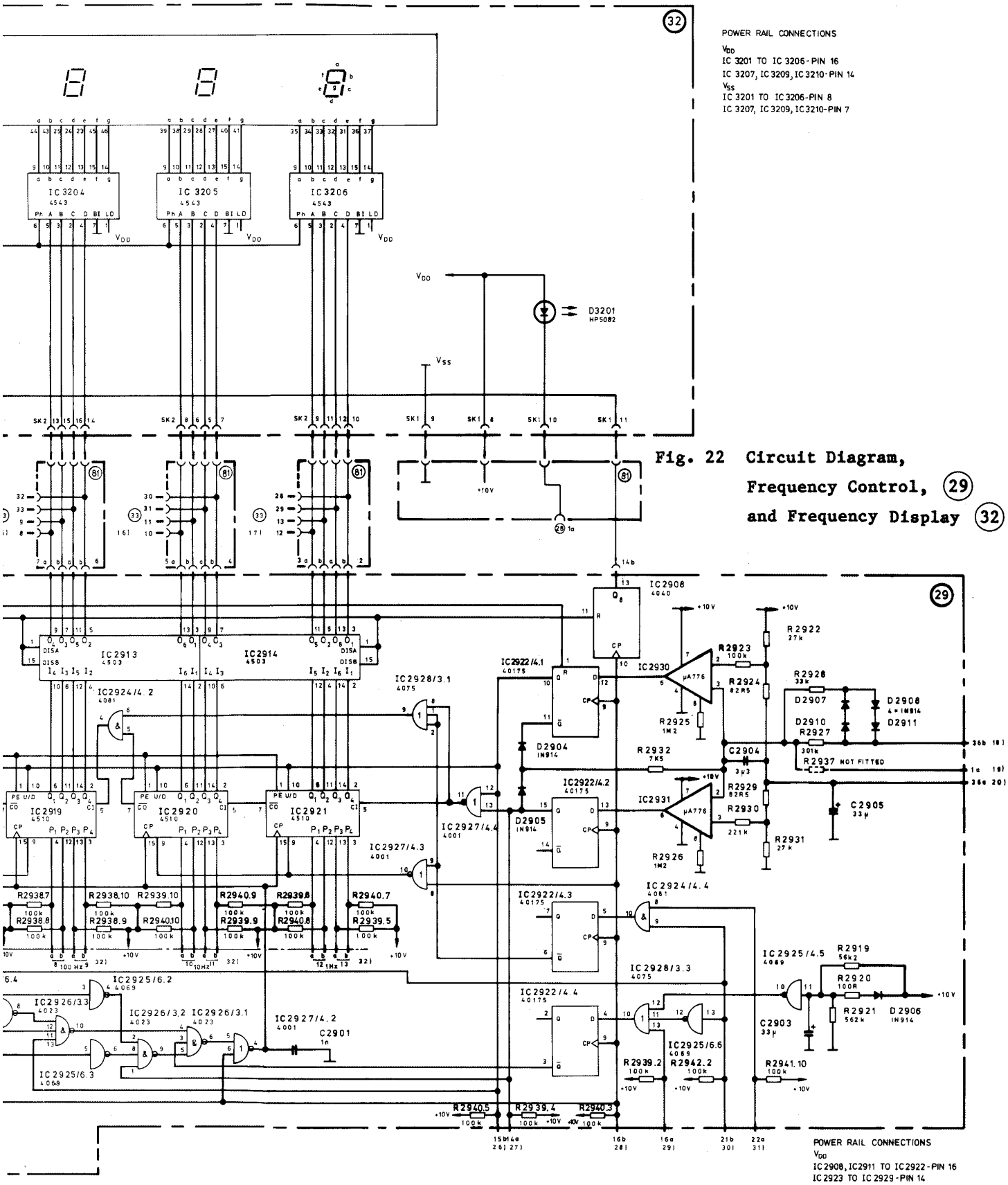
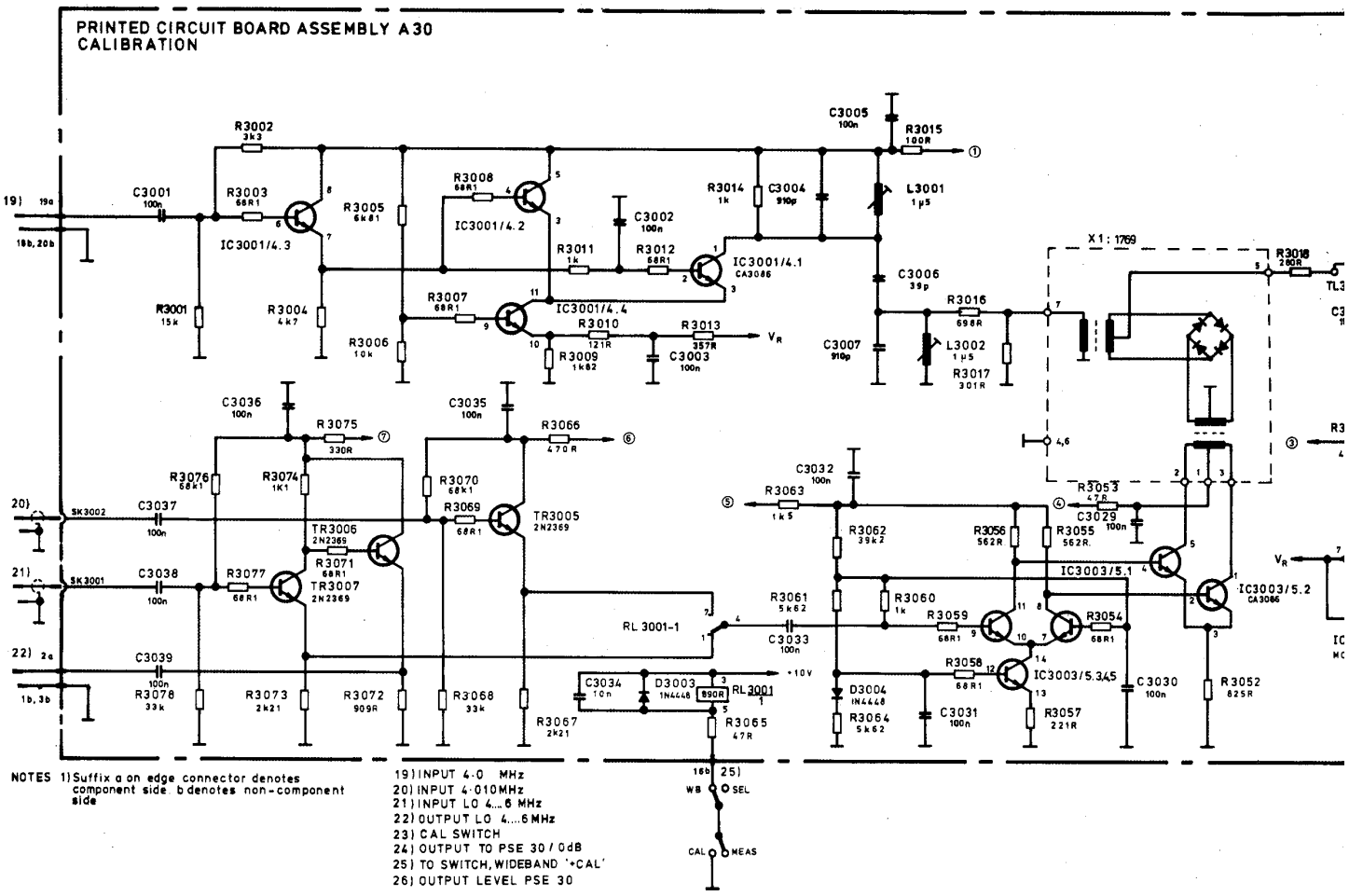


Fig. 22 Circuit Diagram, Frequency Control, (29) and Frequency Display (32)

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NOTES 1) Suffix a on edge connector denotes component side. b denotes non-component side

19) INPUT 4-0 MHz
20) INPUT 4-010MHz
21) INPUT LO 4...6 MHz
22) OUTPUT LO 4....6MHz
23) CAL SWITCH
24) OUTPUT TO PSE 30 / 0dB
25) TO SWITCH, WIDEBAND '+CAL'
26) OUTPUT LEVEL PSE 30

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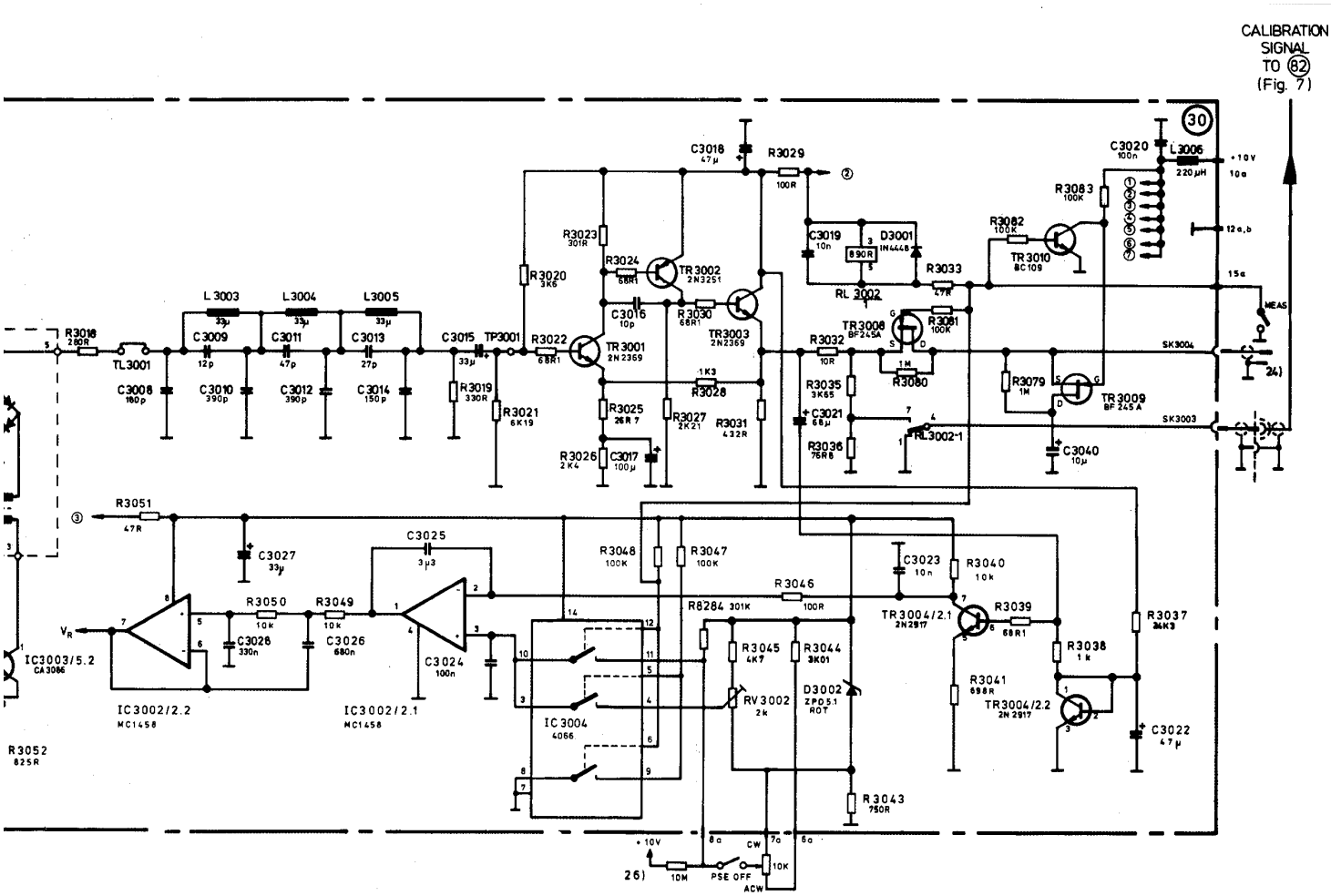
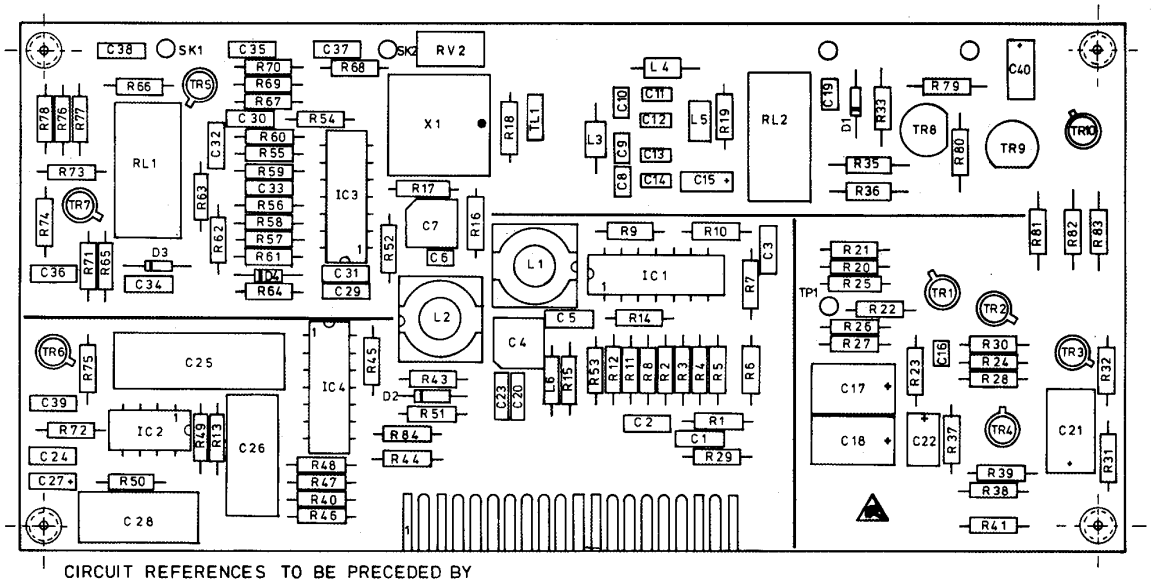


Fig. 23 Circuit Diagram, Calibration unit, (30)

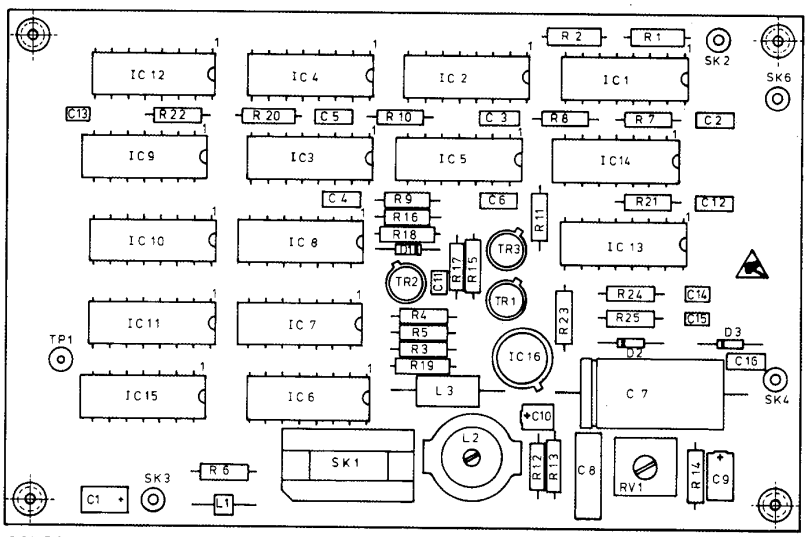


CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER.
e.g. R41 BECOMES R3041
C7 BECOMES C3007.

Fig. 24 Component Layout, Calibration unit, (30)

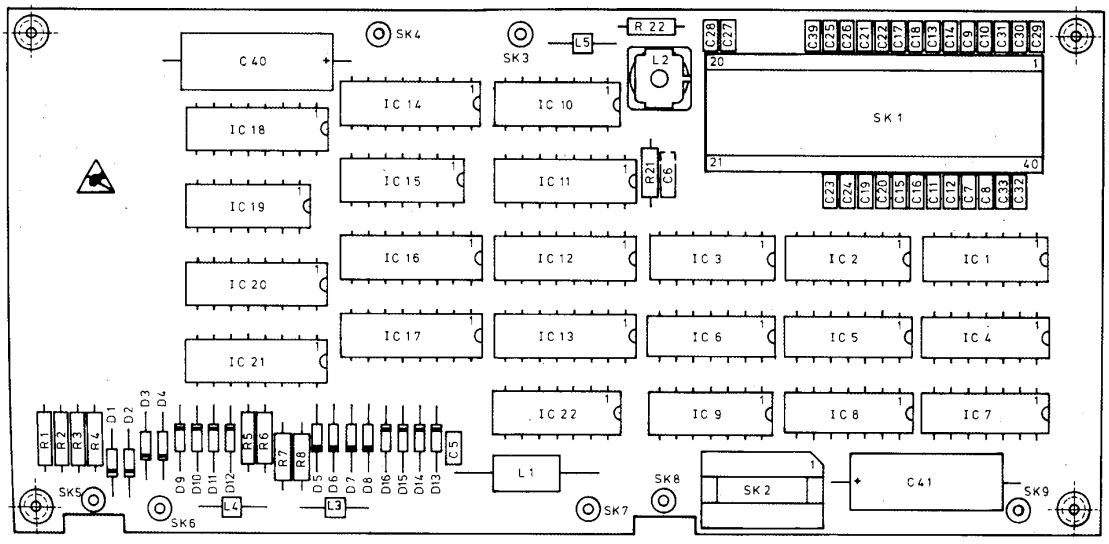
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TYPE	PART NO.
}	0001-0018.493/-
}	0001-0018.493/-
	0001-0015.988/-
	0001-0015.988/-
	0001-0015.988/-
	0001-0016.026/-
	0001-0016.026/-
	0001-0016.026/-
	0001-0070.868/-
	0001-0070.868/-
	0001-0065.475/-
	0001-0070.871/-
	0001-0016.042/-
	0000-7529.351/-
	0001-0068.197/-
	0001-0016.042/-
	0001-0015.988/-
	0000-7529.351/-
	0000-7529.351/-
	0001-0016.042/-
	0001-0015.988/-
	0000-7529.351/-
	0000-7529.351/-
	0001-0016.026/-
TOR	0001-0042.757/-
TOR	4502-1423.003/4
TE BEAD	0000-7567.737/-
TE BEAD	0000-7567.737/-
TE BEAD	0000-7567.737/-
T D.I.L. 40-WAY	
8040	0000-7541.711/-
T D.I.L. 14-WAY	0000-7518.388/-
. DIVIDER 1	4502-0133.006/2



COMPONENT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBER eg R21 BECOMES R3421
C4 BECOMES C3404

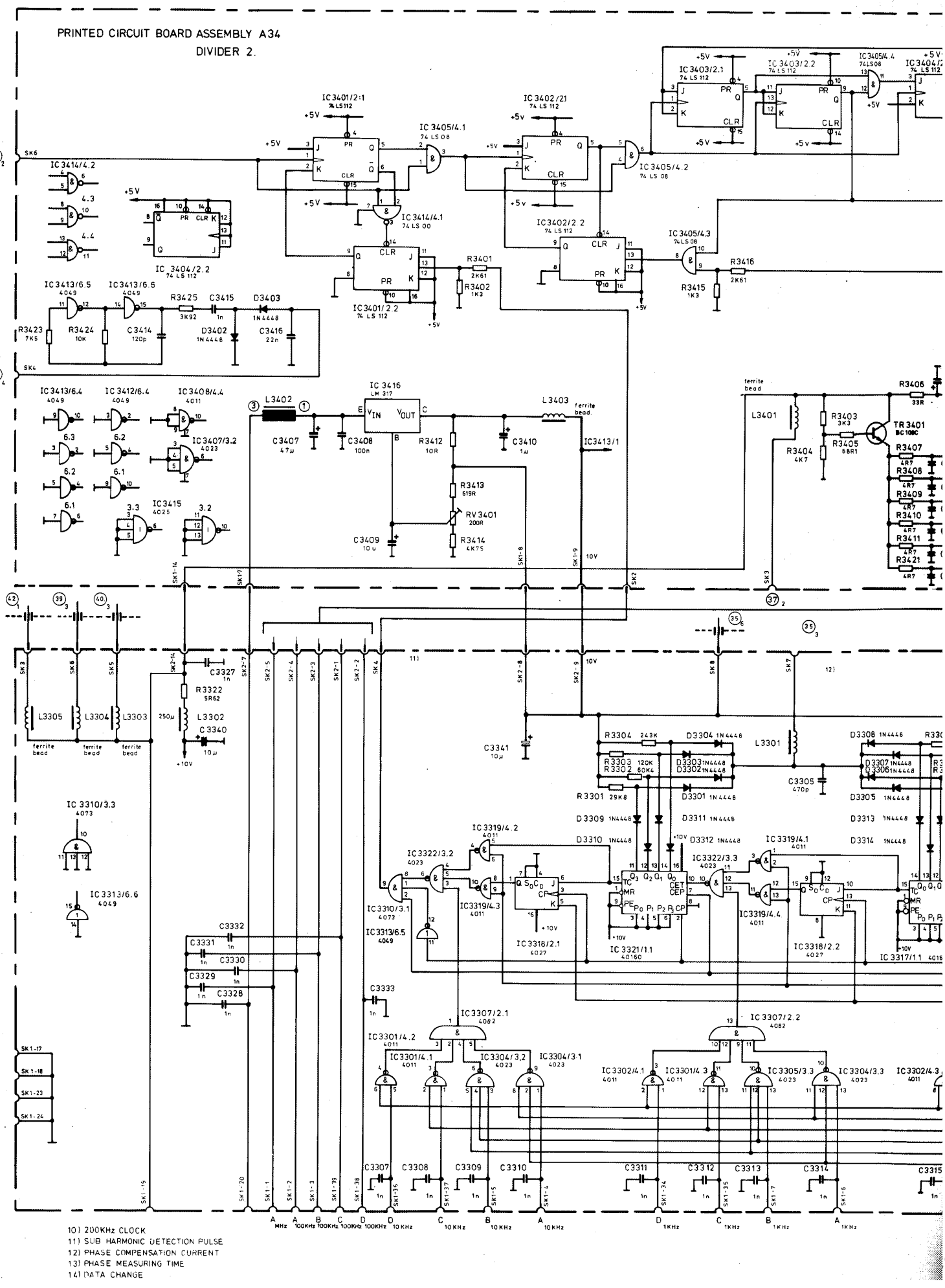
Fig. 25 Component Layout, Divider 2, (34)



CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBER
e.g. R7 BECOMES R3307
C30 BECOMES C3330

Fig. 26 Component Layout, Divider 1, (33)

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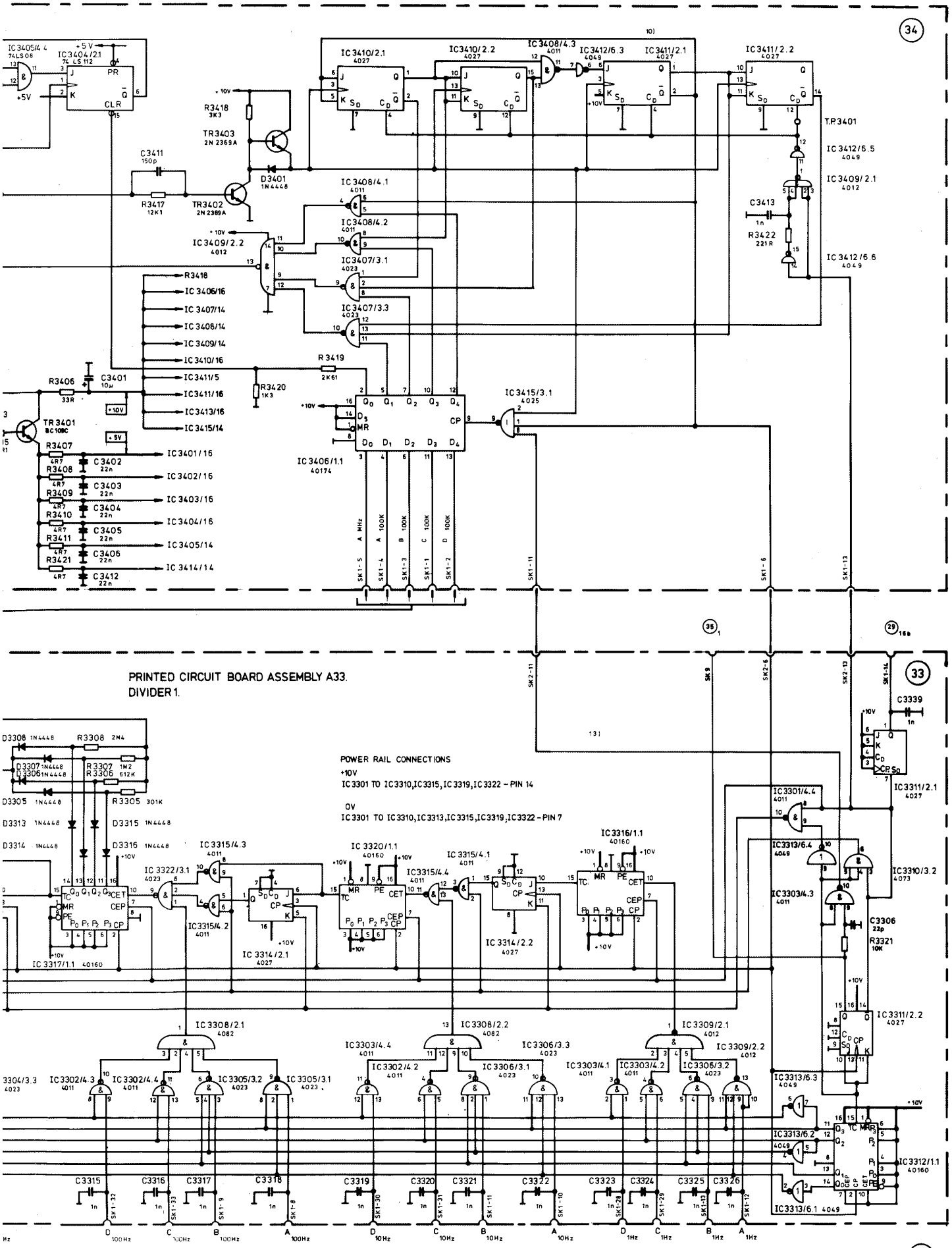
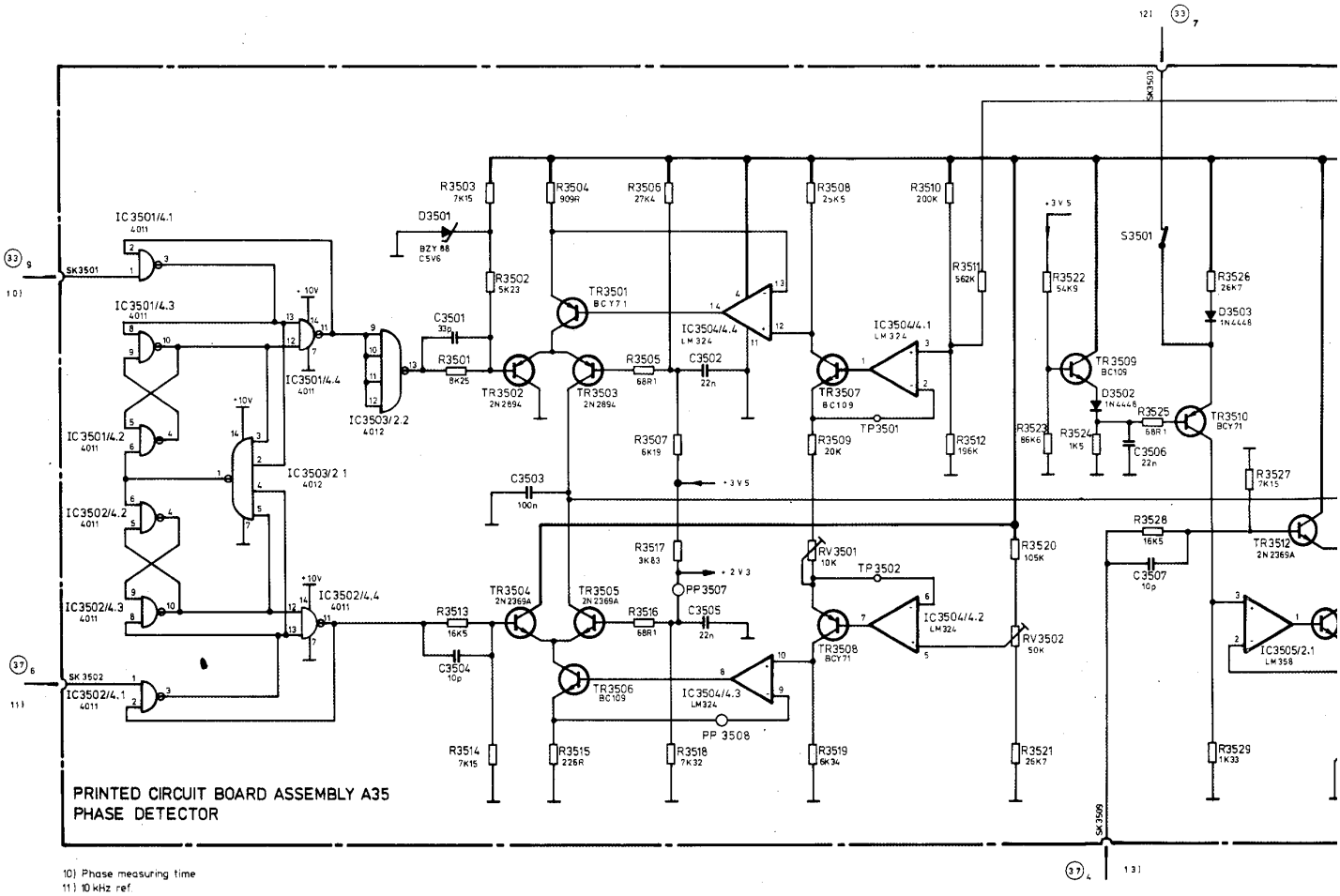


Fig. 27 Circuit Diagram, Divider 1, (33) and Divider 2, (34)

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10) Phase measuring time
11) 10 kHz ref.
12) Compensation current
13) Phase compensation time

Fig.

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C24	10n	10	100	PE	0001-0010.213/-
C25	22n	20	100	PE	0001-0010.255/-
TR1				BCY71	0001-0016.534/-
TR2				2N2894	0001-0016.929/-
TR3				2N2894	0001-0016.929/-
TR4				2N2369A	0000-7542.066/-
TR5				2N2369A	0000-7542.066/-
TR6				BC109	0000-7602.029/-
TR7				BC109	0000-7602.029/-
TR8				BCY71	0001-0016.534/-
TR9				BC109	0000-7602.029/-
TR10				BCY71	0001-0016.534/-
TR11				BCY71	0001-0016.534/-
TR12				2N2369A	0000-7542.066/-
TR13				2N2369A	0000-7542.066/-
TR14				BC109	0000-7602.029/-
TR16				U405	0000-7567.863/-
TR17				BC109	0000-7602.029/-
TR18				BCY71	0001-0016.534/-
TR19				BC109	0000-7602.029/-
TR20				BCY71	0001-0016.534/-
TR21				BC109	0000-7602.029/-

REF.	VALUE	TOL. ± %	RATING	TYP
D1				BZY 88C5V6
D2				1N4448
D3				1N4448
D6				FDH 300
D7				FDH 300
RV1	10k	10 LIN	0W2	V.
RV2	50k	20 LIN	0W2	V.
RV3	1k	20 LIN	0W2	V.
RV4	200R	10 LIN	0W2	V.
IC1				4011
IC2				4011
IC3				4012
IC4				LM 324
IC5				LM 358
IC6				LM 308 A
IC7				µA 776 HC
S1				09100003
S2				09100003
A35				P.C.B. PH DETECTOR

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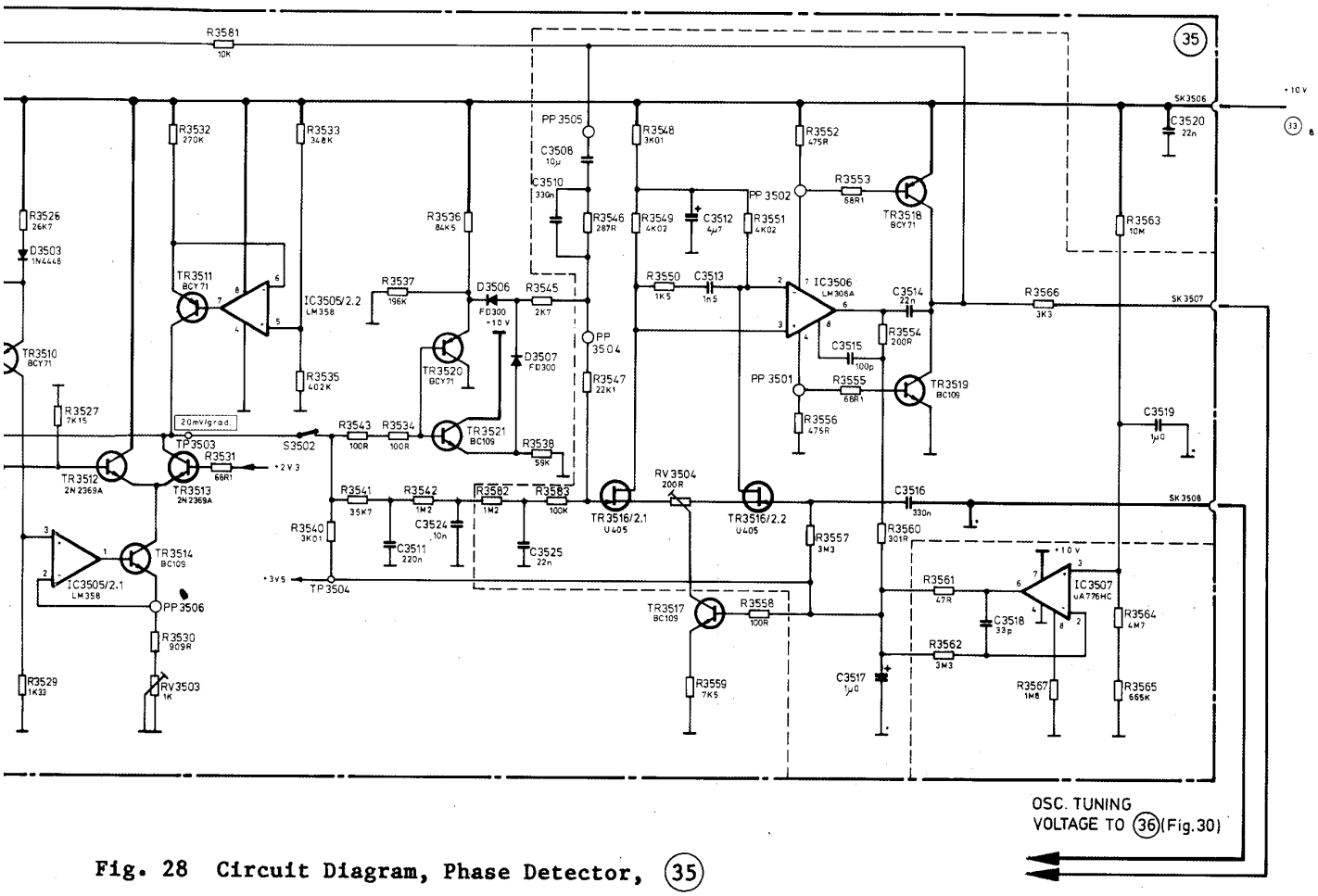
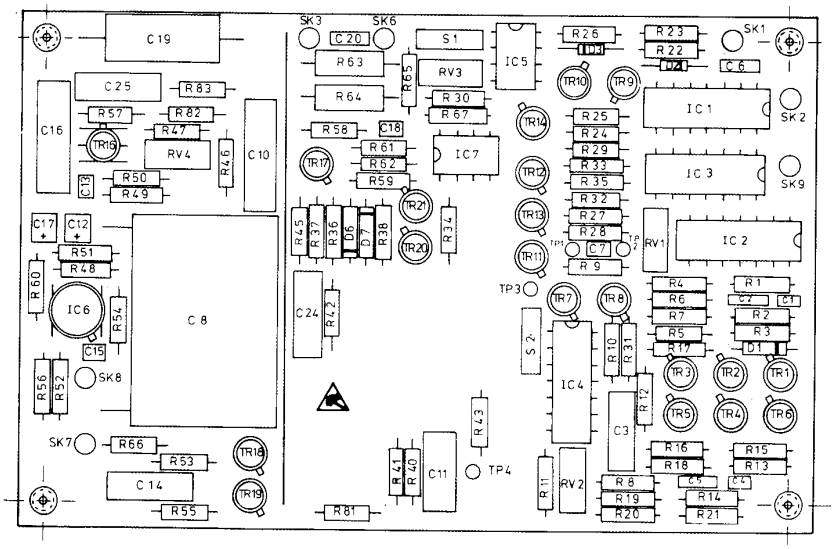


Fig. 28 Circuit Diagram, Phase Detector, (35)

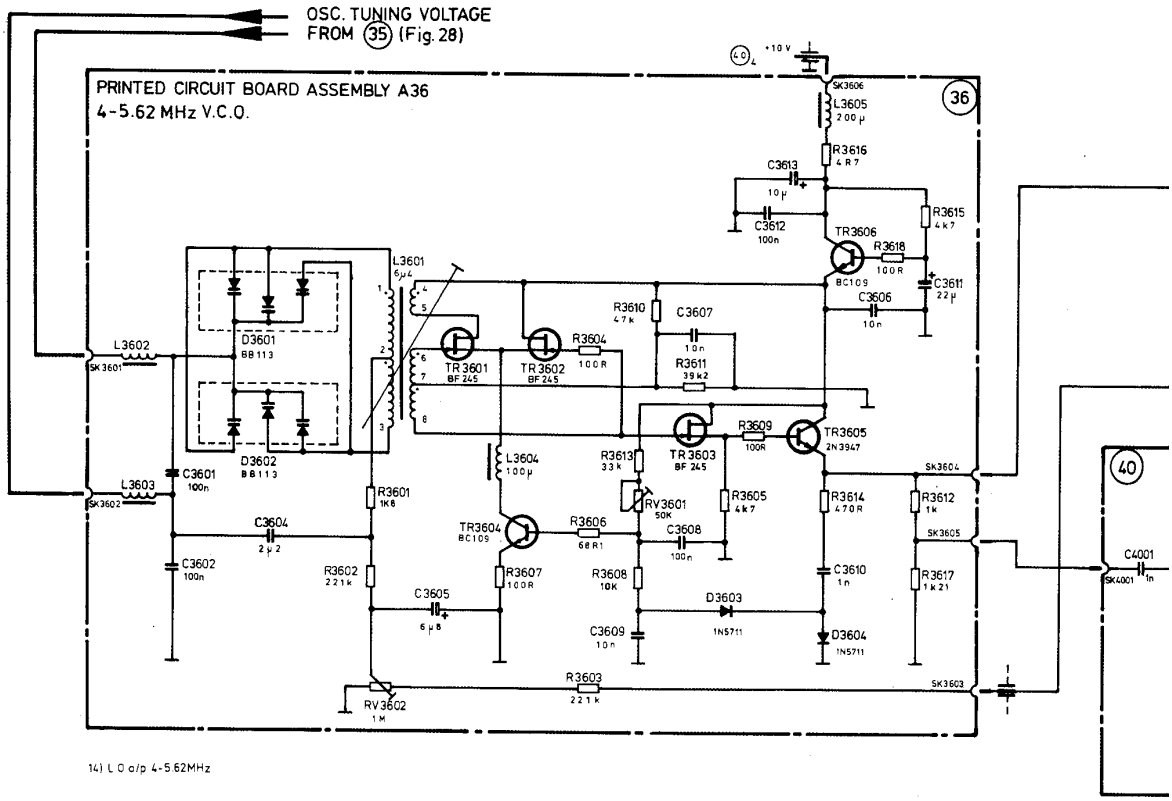
NG	TYPE	PART NO.
	BZY 88C5V6	0001-0018.859/-
	1N4448	0001-0018.493/-
	1N4448	0001-0018.493/-
	FDH 300	0001-0018.192/-
	FDH 300	0001-0018.192/-
	Var.	0000-7537.929/-
	Var.	0000-7571.752/-
	Var.	0000-7571.723/-
	Var.	0000-7571.710/-
	4011	0001-0015.988/-
	4011	0001-0015.988/-
	4012	0001-0065.475/-
	LM 324	0000-7578.085/-
	LM 358	0000-7581.140/-
	LM 308 A	0000-7537.071/-
	µA 776 HC	0000-7604.425/-
	09100003	0000-7569.999/-
	09100003	0000-7569.999/-
	P.C.B. PHASE DETECTOR	4502-0135.004/2

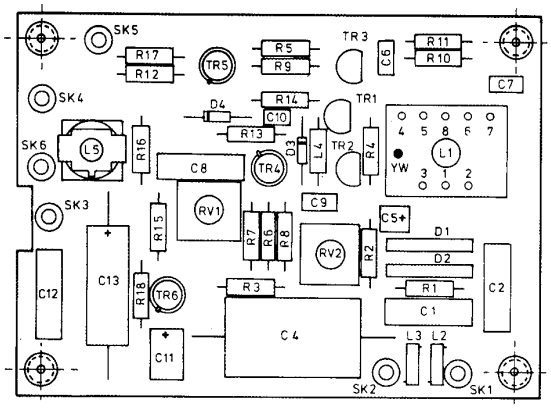


COMPONENT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBER eg TR14 BECOMES TR3514
D7 BECOMES D3507

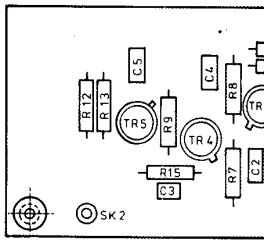
Fig. 29 Component Layout, Phase Detector, (35)

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CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBERS
e.g R15 BECOMES R3615
C9 BECOMES C3609.



CIRCUIT REFERENCES TO BE
BY BOARD ASSEMBLY NUMBE
e.g R11 BECOMES R3911
C1 BECOMES C3901.

Fig. 31 Component Layout, 4...5.62MHz V.C.O., (36)

Fig. 32 Component

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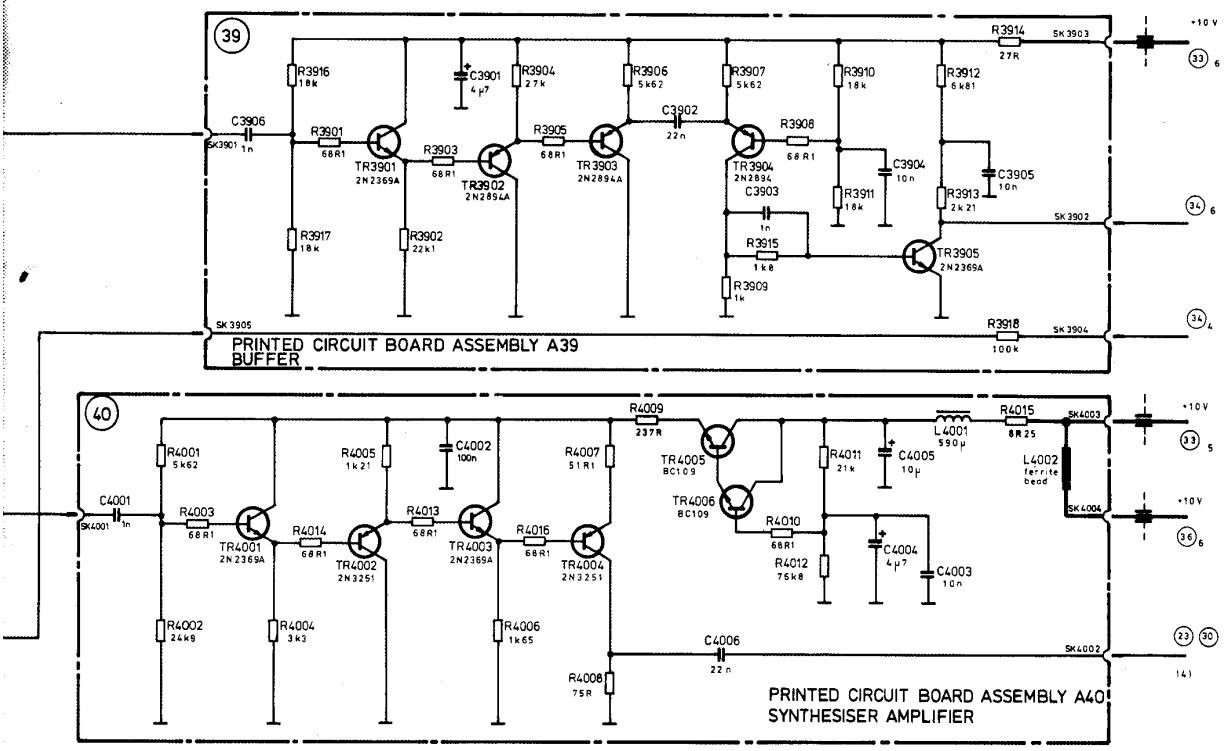
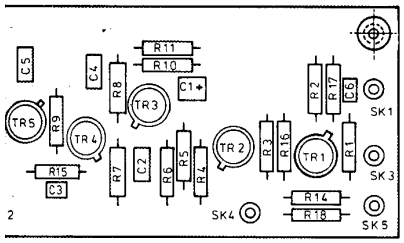
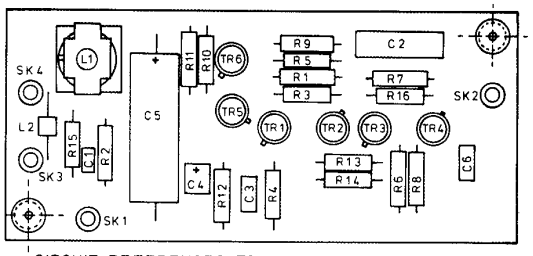


Fig. 30 Circuit Diagram, 4...5.62MHz V.C.O., (36) ; Buffer, (39) and Synthesiser Amplifier, (40)



EFERENCES TO BE PRECEDED
ASSEMBLY NUMBERS.
ECOMES R3911
ECOMES C3901.

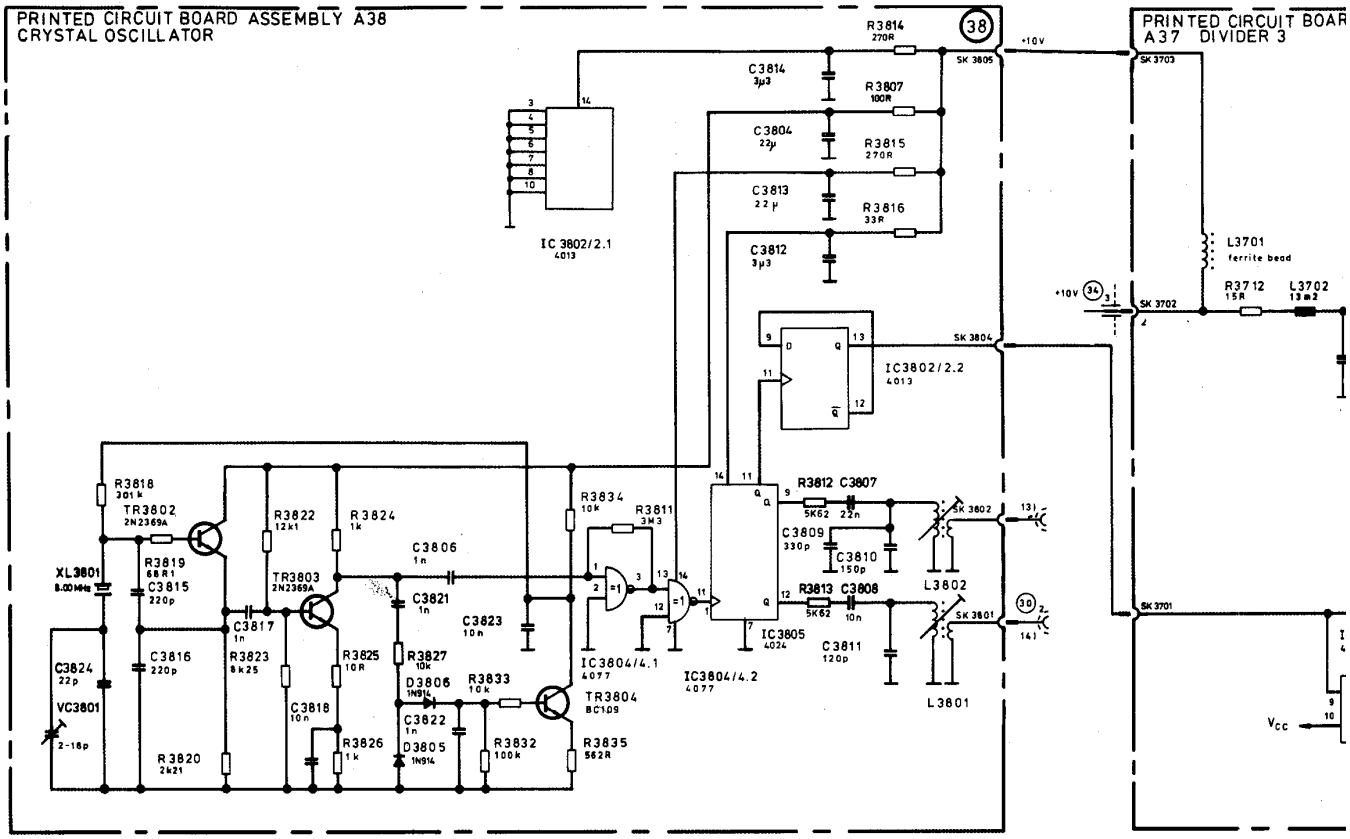
Component Layout, Buffer Amp., (39)



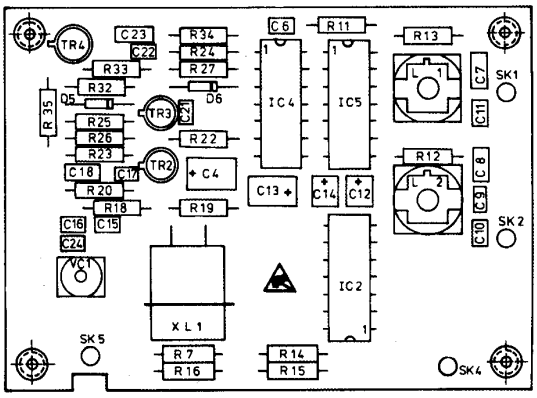
CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBERS.
e.g. R15 BECOMES R4015
C5 BECOMES C4005

Fig. 33 Component Layout, Synthesiser Amplifier, (40)

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10) 1MHz Sync. Not connected
13) 1MHz 75Ω to back panel
14) 4MHz 75Ω
15) Compensation time pulse
16) 10 kHz to phase detector
17) 10 kHz to 4·01 MHz PLL



CIRCUIT REFERENCES TO BE
PRECEDED BY BOARD ASSEMBLY
NUMBER eg XL1 BECOMES XL3801
C16 BECOMES C3816

Fig. 35 Component Layout, 8MHz Crystal Oscillator, (38)

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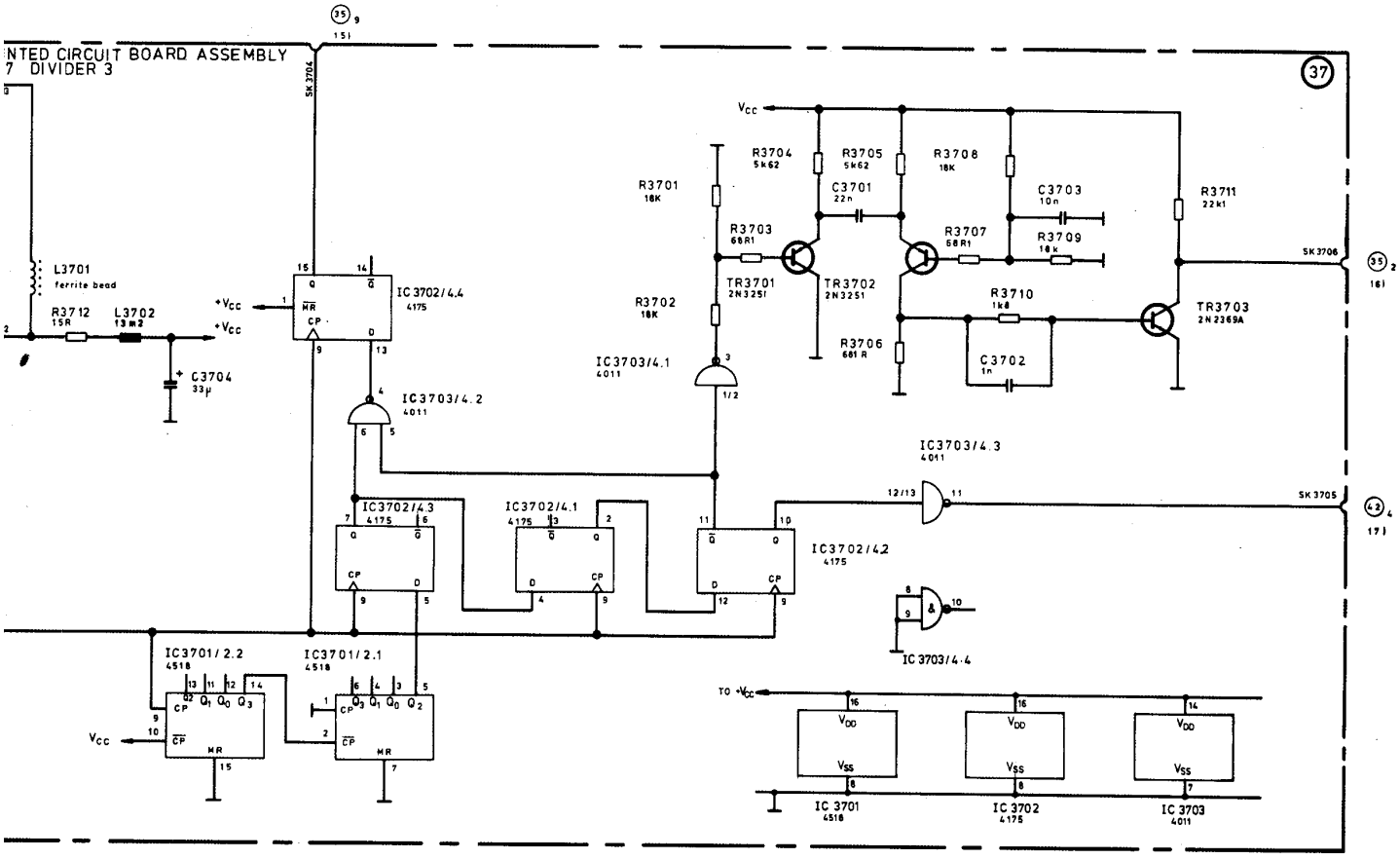
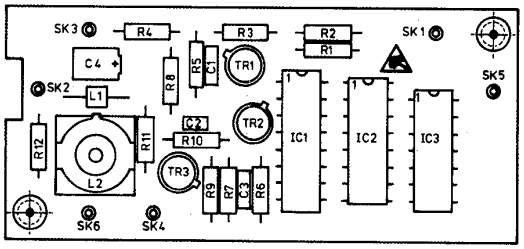


Fig. 34 Circuit Diagram, 8MHz Crystal Oscillator, (38) and Divider 3, (37)



CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER eg IC1 BECOMES IC3701 R10 BECOMES R3710.

Fig. 36 Component Layout, Divider 3, (37)

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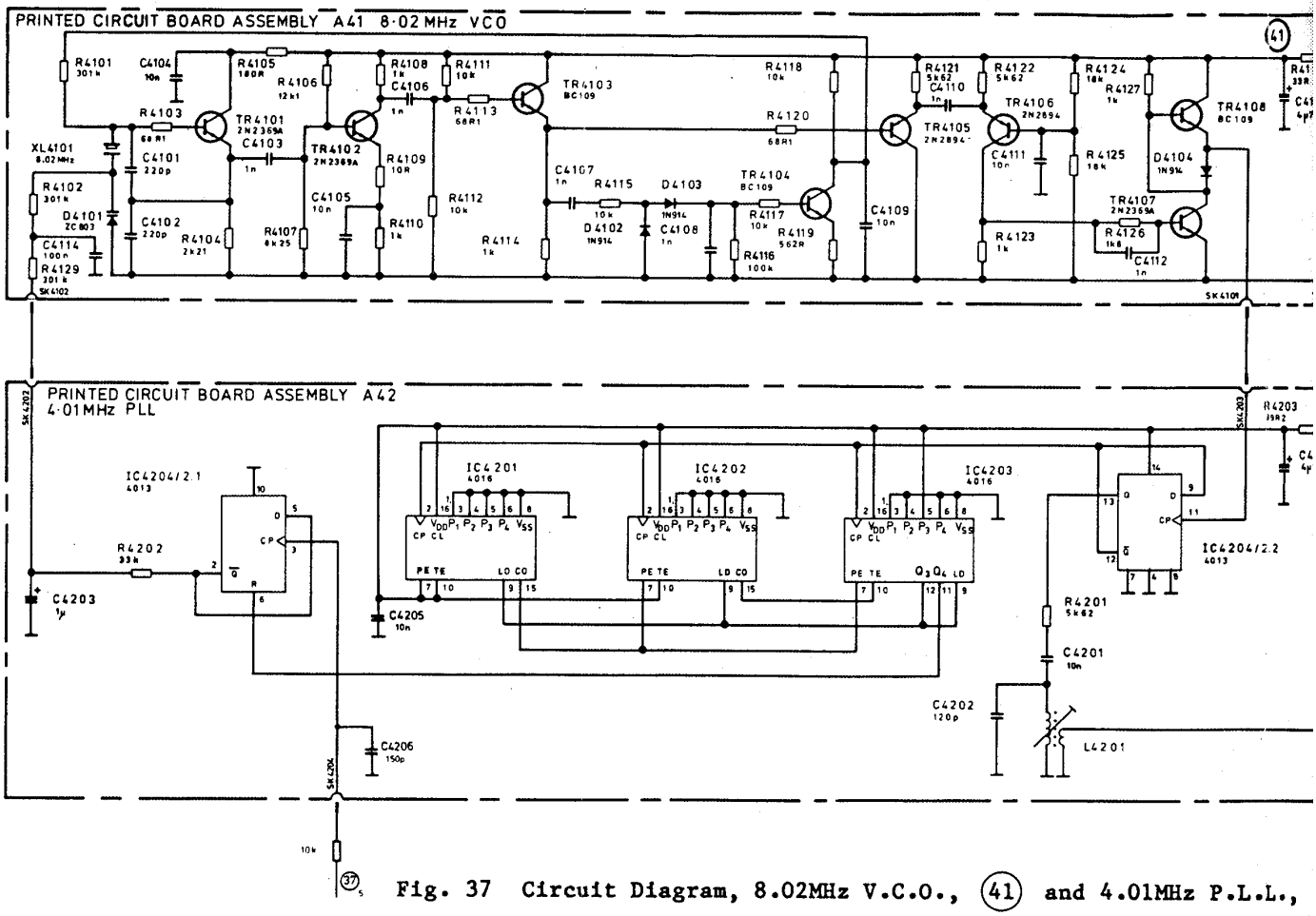


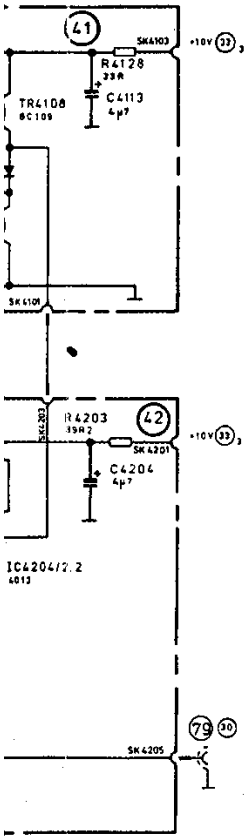
Fig. 37 Circuit Diagram, 8.02MHz V.C.O., (41) and 4.01MHz P.L.L.,

ASSEMBLY P.C.B. A41 8.02MHz V.C.O.

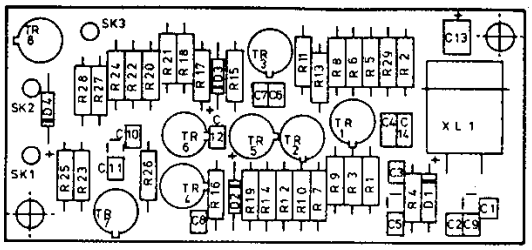
REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	301k	1	0W35	MF	0001-0062.025/-
R2	301k	1	0W35	MF	0001-0062.025/-
R3	68R1	1	0W35	MF	0001-0000.427/-
R4	2k21	1	0W35	MF	0001-0001.497/-
R5	180R	2	0W25	MF	0000-7558.403/-
R6	12k1	1	0W35	MF	0001-0002.218/-
R7	8k25	1	0W35	MF	0001-0002.056/-
R8	1k	1	0W35	MF	0001-0001.219/-
R9	10R	1	0W35	MF	0001-0000.074/-
R10	1k	1	0W35	MF	0001-0001.219/-
R11	10k	1	0W35	MF	0001-0002.137/-
R12	10k	1	0W35	MF	0001-0002.137/-
R13	68R1	1	0W35	MF	0001-0000.427/-
R14	1k	1	0W35	MF	0001-0001.219/-
R15	10k	1	0W35	MF	0001-0002.137/-
R16	100k	1	0W35	MF	0001-0002.991/-
R17	10k	1	0W35	MF	0001-0002.137/-
R18	10k	1	0W35	MF	0001-0002.137/-
R19	562R	1	0W35	MF	0001-0001.015/-
R20	68R1	1	0W35	MF	0001-0000.427/-
R21	5k62	1	0W35	MF	0001-0001.895/-
R22	5k62	1	0W35	MF	0001-0001.895/-
R23	1k	1	0W35	MF	0001-0001.219/-
R24	18k	2	0W25	MF	0001-0027.484/-
R25	18k	2	0W25	MF	0001-0027.484/-

REF.	VALUE	TOL. ± %	RATING	TYPE
R26	1k8	2	0W25	MF
R27	1k	1	0W35	MF
R28	33R	2	0W25	MF
R29	301k	1	0W35	MF
C1	220p	2	63	Cer
C2	220p	2	63	Cer
C3	1n	10	63	Cer
C4	10n	20	40	Cer
C5	10n	20	40	Cer
C6	1n	10	63	Cer
C7	1n	10	63	Cer
C8	1n	10	63	Cer
C9	10n	20	40	Cer
C10	1n	10	63	Cer
C11	10n	20	40	Cer
C12	1n	10	63	Cer
C13	4µ7	20	10	Tant
C14	100n	20	100	Cer
TR1				2N2369A
TR2				2N2369A
TR3				BC109
TR4				BC109
TR5				2N2894
TR6				2N2894
TR7				2N2369A

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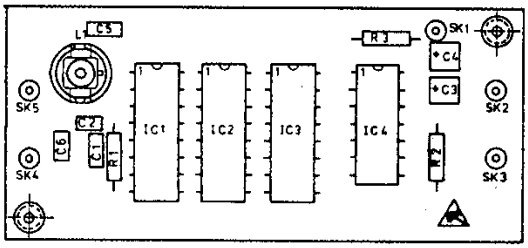


P.L.L., (42)



COMPONENT REFERENCES TO BE
PRECEDED BY BOARD ASSEMBLY
NUMBERS
e.g. R25 BECOMES R4125.
C8 BECOMES C4108.

Fig. 38 Component Layout, 8.02MHz V.C.O., (41)



CIRCUIT REFERENCES TOBE
PRECEDED BY BOARD ASSEMBLY
NUMBER eg IC2 BECOMES IC4202

Fig. 39 Component Layout, 4.01MHz P.L.L., (42)

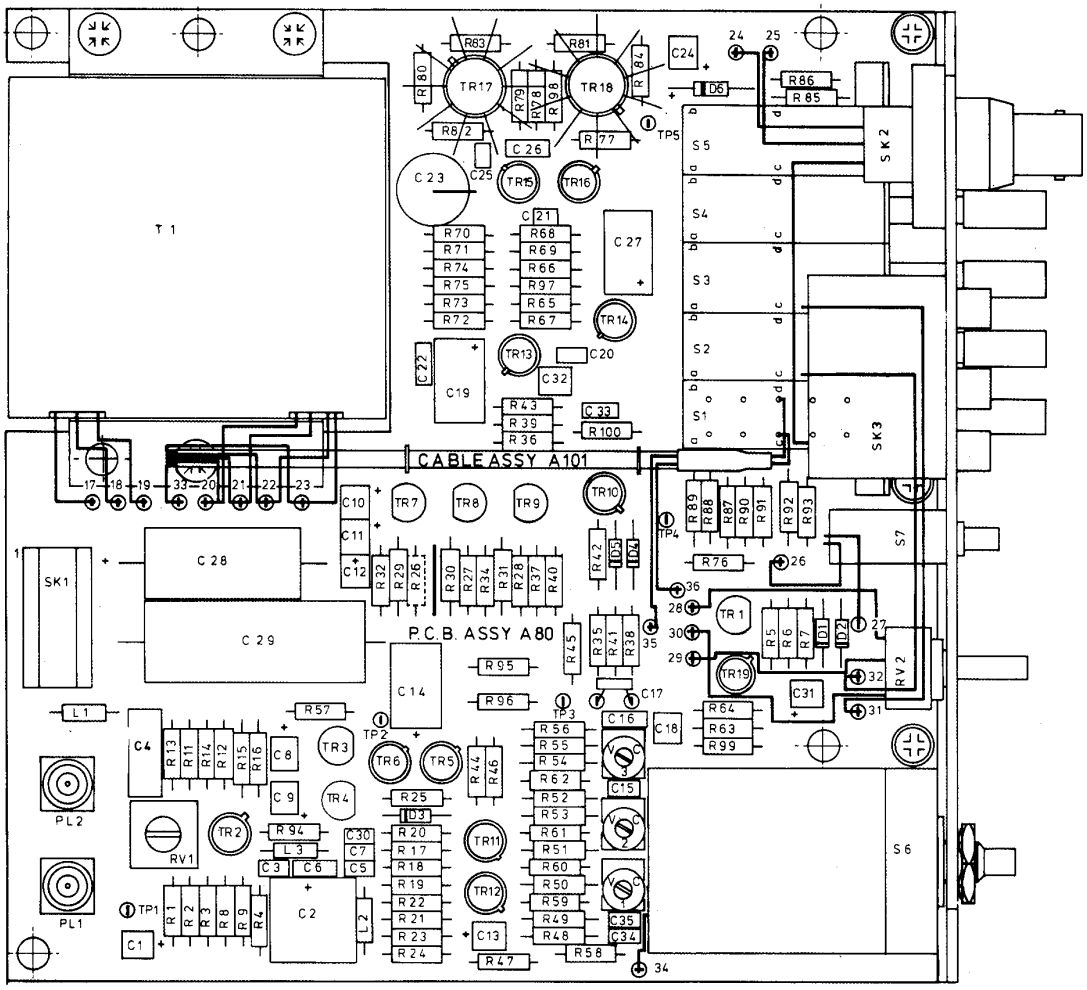
TYPE	PART NO.
MF	0001-0014.510/-
MF	0001-0001.219/-
MF	0000-7601.347/-
MF	0001-0062.025/-
Cer.	0001-0004.601/-
Cer.	0001-0004.601/-
Cer.	0001-0004.698/-
Cer.	0001-0004.818/-
Cer.	0001-0004.818/-
Cer.	0001-0004.698/-
Cer.	0001-0004.698/-
Cer.	0001-0004.698/-
Cer.	0001-0004.818/-
Cer.	0001-0004.698/-
Cer.	0001-0004.818/-
Tant.	0001-0040.810/-
Cer.	0000-7598.450/-
2N2369A	0000-7542.066/-
2N2369A	0000-7542.066/-
BC109	0000-7602.029/-
BC109	0000-7602.029/-
2N2894	0001-0016.929/-
2N2894	0001-0016.929/-
2N2369A	0000-7542.066/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
TR8				BC109	0000-7602.029/-
D1				ZC803	0000-7601.936/-
D2				1N914 or 1N4448	0001-0018.493/-
D3				1N914 or 1N4448	0001-0018.493/-
D4				1N914 or 1N4448	0001-0018.493/-
XL1	8.02MHz				4502-9701.002/4
A41				P.C.B. 8.02MHz V.C.O.	4502-0141.001/3

ASSEMBLY P.C.B. A42 4.01MHz P.L.L.

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	5k62	1	0W35	MF	0001-0001.895/-
R2	33k	2	0W25	MF	4980-0000.009/-
R3	39R2	1	0W35	MF	0001-0003.547/-
C1	10n	20	100	Cer.	0001-0004.818/-
C2	120p	2	63	Cer.	0001-0004.562/-
C3	1µ	20	35	Tant.	0001-0040.704/-
C4	4µ7	20	10	Tant.	0001-0040.801/-
C5	10n	20	40	Cer.	0001-0004.818/-
C6	150p	2	63	Cer.	0001-0004.575/-
IC1				40160	0000-7529.351/-
IC2				40160	0000-7529.351/-
IC3				40160	0000-7529.351/-
IC4				4013	0000-7565.315/-
L1	12.7µH			INDUCTOR	4502-1431.008/4
A42				P.C.B.4.01MHz P.L.L.	4502-0142.000/3

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CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBER
e.g. R87 BECOMES R80087
C3 BECOMES C80003

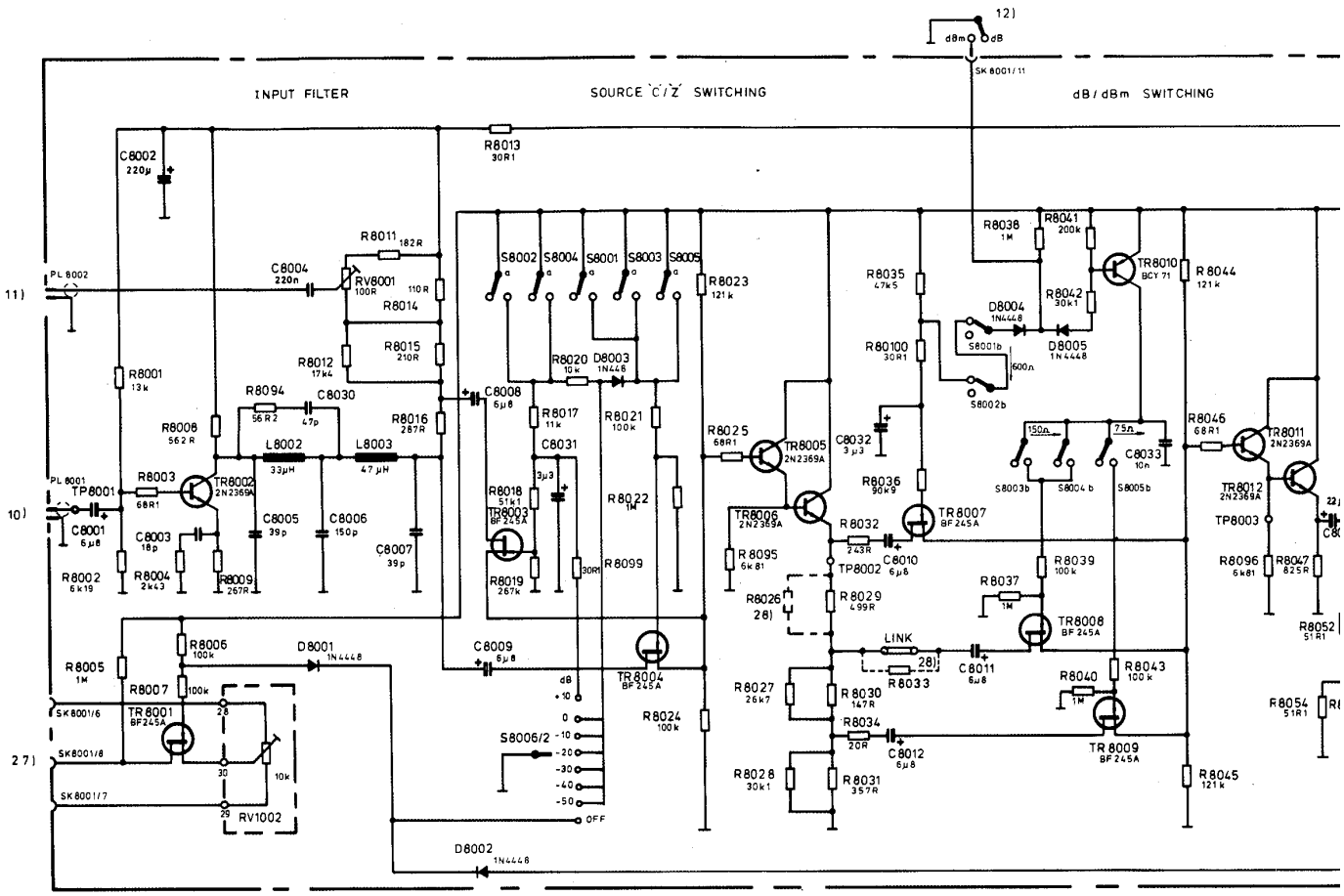
COMPONENTS SK2, SK3, S7, RV2, T1,
PRECEDED BY 10 e.g. SK1002

Fig. 40 Component Layout, PSE-30 Tracking Oscillator, (10)

ASSEMBLY A10 PSE-30 TRACKING OSCILLATOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
RV2	10k	20	1W	Var.	0000-7545.270/-
S7				SWITCH MICRO	0001-0034.176/-
				SWITCH BUTTON	0000-3705.425/5
T1				TRANSFORMER	4502-1309.004/4
SK2				VERSACON BODY	0000-1681.004/5
				VERSACON LOCKING RING	0000-1672.055/5
				VERSACON ADAPTOR	0000-1674.008/5
SK3				C.F. SOCKET 3-POLE	0000-3713.006/4
A80				P.C.B. PSE-30 Complete	4502-1080.006/2

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10) CALIBRATION 0dB 0.2 - 1620 kHz
11) METER -20dB
12) ON FRONT PANEL dB/dBm SWITCH
13) UNBAL OUTPUT 0.2 - 1620 kHz
14) BAL OUTPUT 0.2 - 620 kHz
15) OUTPUT LEVEL MONITOR FACILITY
27) FINE LEVEL CONTROL
28) RESISTOR NOT FITTED ON 'E' SERIES, REPLACED BY LINK.

ASSEMBLY P.C.B. A80 used on PSE-30 TRACKING GENERATOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING
R1	13k	1	0W35	MF	0001-0003.631/-	R30	147R	0.25	0W35
R2	6k19	1	0W35	MF	0001-0001.934/-	R31	357R	0.25	0W35
R3	68R1	1	0W35	MF	0001-0000.427/-	R32	243R	1	0W35
R4	2k43	1	0W35	MF	0001-0001.536/-	R34	20R	1	0W35
R5	1M	1	0W35	MF	0001-0027.507/-	R35	47k5	1	0W35
R6	100k	1	0W35	MF	0001-0002.991/-	R36	90k9	1	0W35
R7	100k	1	0W35	MF	0001-0002.991/-	R37	1M	5	0W35
R8	562R	1	0W35	MF	0001-0001.015/-	R38	1M	5	0W35
R9	267R	1	0W35	MF	0001-0003.576/-	R39	100k	1	0W35
R11	182R	1	0W35	MF	0001-0000.663/-	R40	1M	5	0W35
R12	17k4	1	0W35	MF	0001-0002.344/-	R41	200k	1	0W35
R13	30R1	1	0W35	MF	0001-0000.236/-	R42	30k1	1	0W35
R14	110R	1	0W35	MF	0001-0000.553/-	R43	100k	1	0W35
R15	210R	0.25	0W35	MF	0000-7520.538/-	R44	121k	1	0W35
R16	287R	0.25	0W35	MF	0000-7561.241/-	R45	121k	1	0W35
R17	11k	1	0W35	MF	0001-0002.179/-	R46	68R1	1	0W35
R18	51k1	1	0W35	MF	0001-0002.768/-	R47	825R	1	0W35
R19	267k	1	0W35	MF	0001-0067.444/-	R48	3k7	0.25	0W35
R20	10k	1	0W35	MF	0001-0002.137/-	R49	1k17	0.25	0W35
R21	100k	1	0W35	MF	0001-0002.991/-	R50	370R	0.25	0W35
R22	1M	5	0W25	MF	0001-0027.507/-	R51	117R	0.25	0W25
R23	121k	1	0W35	MF	0001-0003.042/-	R52	51R1	0.25	0W35
R24	100k	1	0W35	MF	0001-0002.991/-	R53	133R	0.25	0W35
R25	68R1	1	0W35	MF	0001-0000.427/-	R54	51R1	0.25	0W35
R27	26k7	1	0W35	ME	0001-0002.519/-	R55	51R1	0.25	0W35
R28	30k1	1	0W35	MF	0001-0002.564/-	R56	51R7	0.25	0W35
R29	499R	0.25	0W35	MF	0000-7511.673/-	R57	26R7	1	0W35

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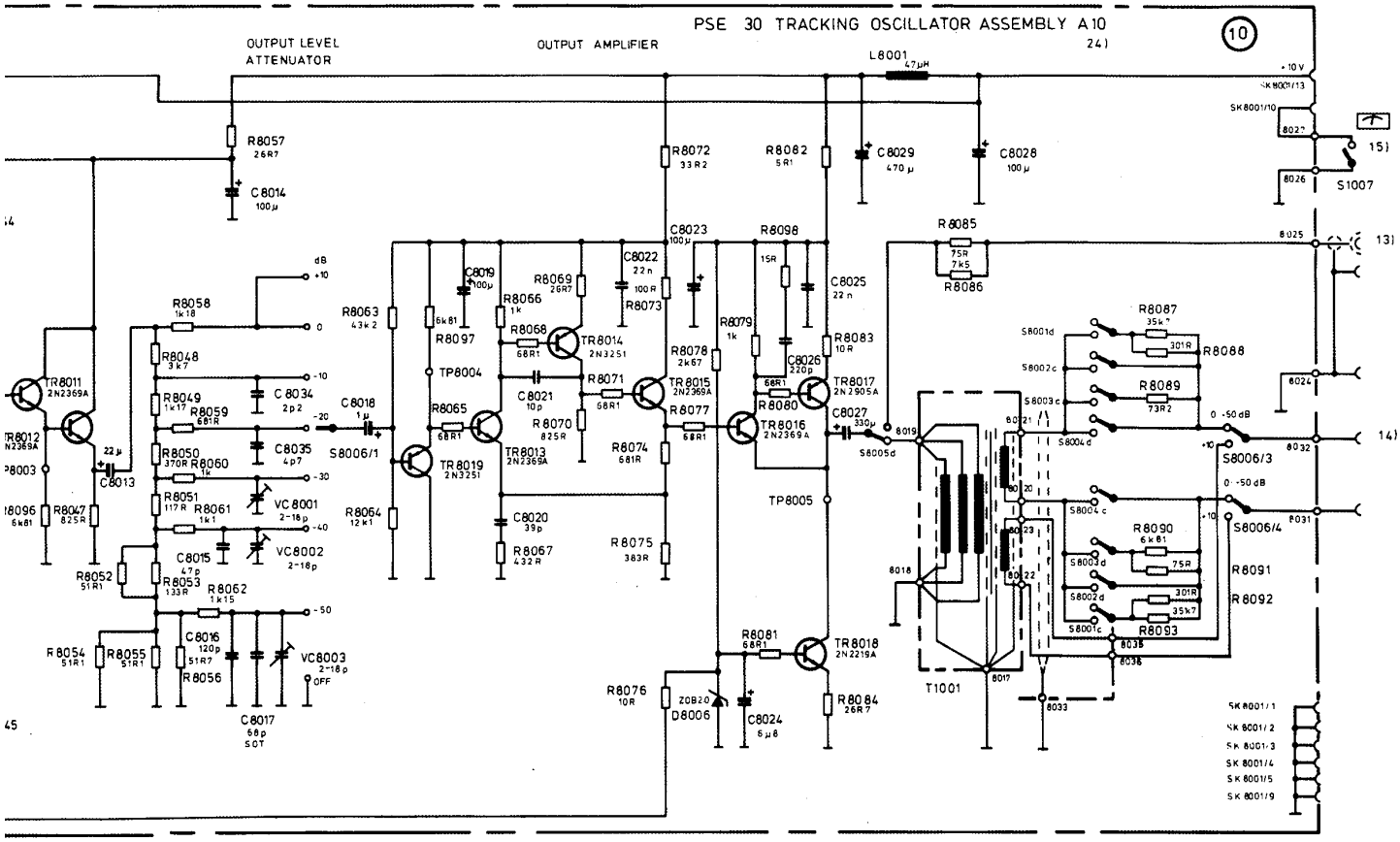


Fig. 41 Circuit Diagram,

PSE-30 Tracking Oscillator, (10)

%	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
	0W35	MF	0000-7598.311/-	R58	1k18	1	0W35	MF	0001-0001.264/-
	0W35	MF	0000-7598.324/-	R59	681R	1	0W35	MF	0001-0001.086/-
	0W35	MF	0001-0000.731/-	R60	1k	1	0W35	MF	0001-0001.219/-
	0W35	MF	0001-0065.158/-	R61	1k1	1	0W35	MF	0001-0001.235/-
	0W35	MF	0001-0002.739/-	R62	1k15	1	0W35	MF	0001-0001.251/-
	0W35	MF	0001-0002.975/-	R63	43k2	1	0W35	MF	0001-0002.690/-
	0W35	MF	0001-0027.507/-	R64	12k1	1	0W35	MF	0001-0002.218/-
	0W35	MF	0001-0027.507/-	R65	68R1	1	0W35	MF	0001-0000.427/-
	0W35	MF	0001-0002.991/-	R66	1k	1	0W35	MF	0001-0001.219/-
	0W35	MF	0001-0027.507/-	R67	432R	1	0W35	MF	0001-0000.935/-
	0W35	MF	0001-0003.181/-	R68	68R1	1	0W35	MF	0001-0000.427/-
	0W35	MF	0001-0002.564/-	R69	26R7	1	0W35	MF	0001-0000.207/-
	0W35	MF	0001-0002.991/-	R70	825R	1	0W35	MF	0001-0001.154/-
	0W35	MF	0001-0003.042/-	R71	68R1	1	0W35	MF	0001-0000.427/-
	0W35	MF	0001-0003.042/-	R72	33R2	1	0W35	MF	0001-0000.265/-
	0W35	MF	0001-0000.427/-	R73	100R	1	0W35	MF	0001-0000.537/-
	0W35	MF	0001-0001.154/-	R74	681R	1	0W35	MF	0001-0001.086/-
)	0W35	MF	0000-7598.337/-	R75	383R	1	0W35	MF	0001-0000.888/-
)	0W35	MF	0000-7598.340/-	R76	10R	1	0W35	MF	0001-0000.074/-
)	0W35	MF	0000-7598.353/-	R77	68R1	1	0W35	MF	0001-0000.427/-
)	0W25	MF	0000-7598.366/-	R78	2k67	1	0W35	MF	0001-0001.578/-
)	0W35	MF	0000-7513.710/-	R79	1k	1	0W35	MF	0001-0001.219/-
)	0W35	MF	0000-7598.379/-	R80	68R1	1	0W35	MF	0001-0000.427/-
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