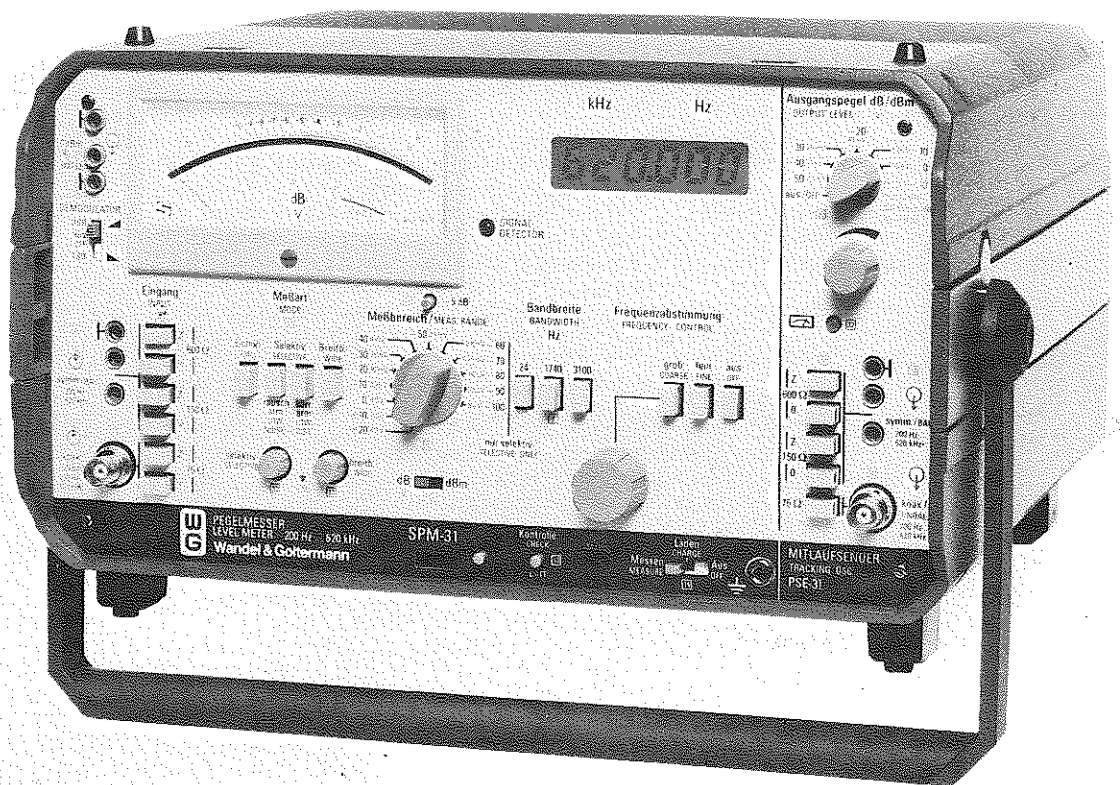


Appendix



~~E&R DOCUMENTS
 EQUIP. NO. *W&G SLM*
 SECTION: *APPENDIX*
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 OBSOLETE []~~

Selective Level Meter
 with Tracking Oscillator PSE-31

SPM-31

with wideband section
 Frequency range 200Hz to 620kHz

s/n AX-0082



SELECTIVE LEVEL METER SPM-31
with TRACKING OSCILLATOR PSE-31

Appendix BN 4505, Series AH...

Order No. BN 4505/00.87
Edition 3403 (replaces 3272)
1.4.82 RV/ALK
0.25.9.86

Subject to change without notice
Printed in the United Kingdom

Wandel & Goltermann
Electronic Measurement Technology

Series Status of the Diagrams forming the
Appendix to the Service Manual for the
SPM-31/PSE-31

All circuit and component layout diagrams
are applicable to instruments of Series AH...

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Cable Assemblies

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Spares and Accessories

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INTRODUCTION TO APPENDIX

This Appendix has been produced as a separate publication to provide the service technician with essential information on the construction and circuitry of the instrument. Further servicing and permitted adjustment information is available in the Service Manual which may be obtained from your local W & G agent.

When used with the Service Manual, this Appendix may be conveniently opened at the page required and a circuit or other diagram may be referred to in conjunction with the text of the Service Manual.

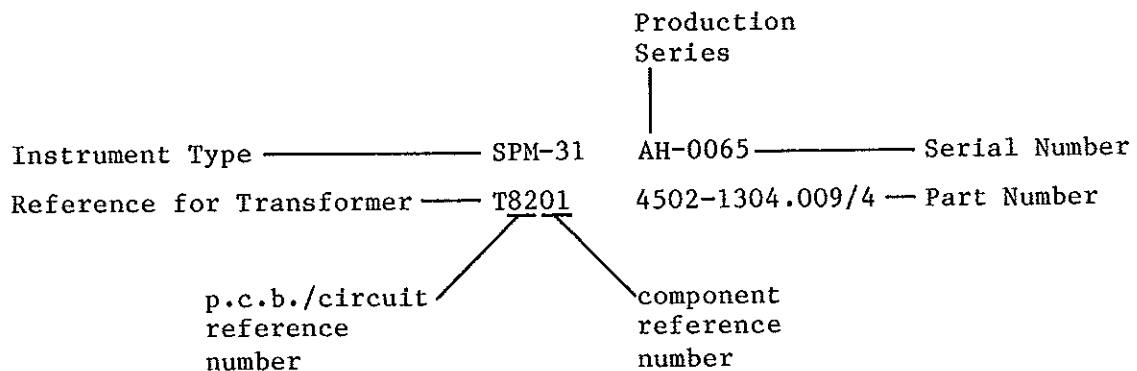
On the following pages will be found full circuit information for the SPM/PSE-31 Level Measuring Set, together with component layout diagrams and parts lists for all the units and sub-assemblies incorporated in a complete instrument.

Component Identification


Users of this Appendix are reminded of the information regarding the identification of components which may be found in Section 6.2.1 of the Service Manual.

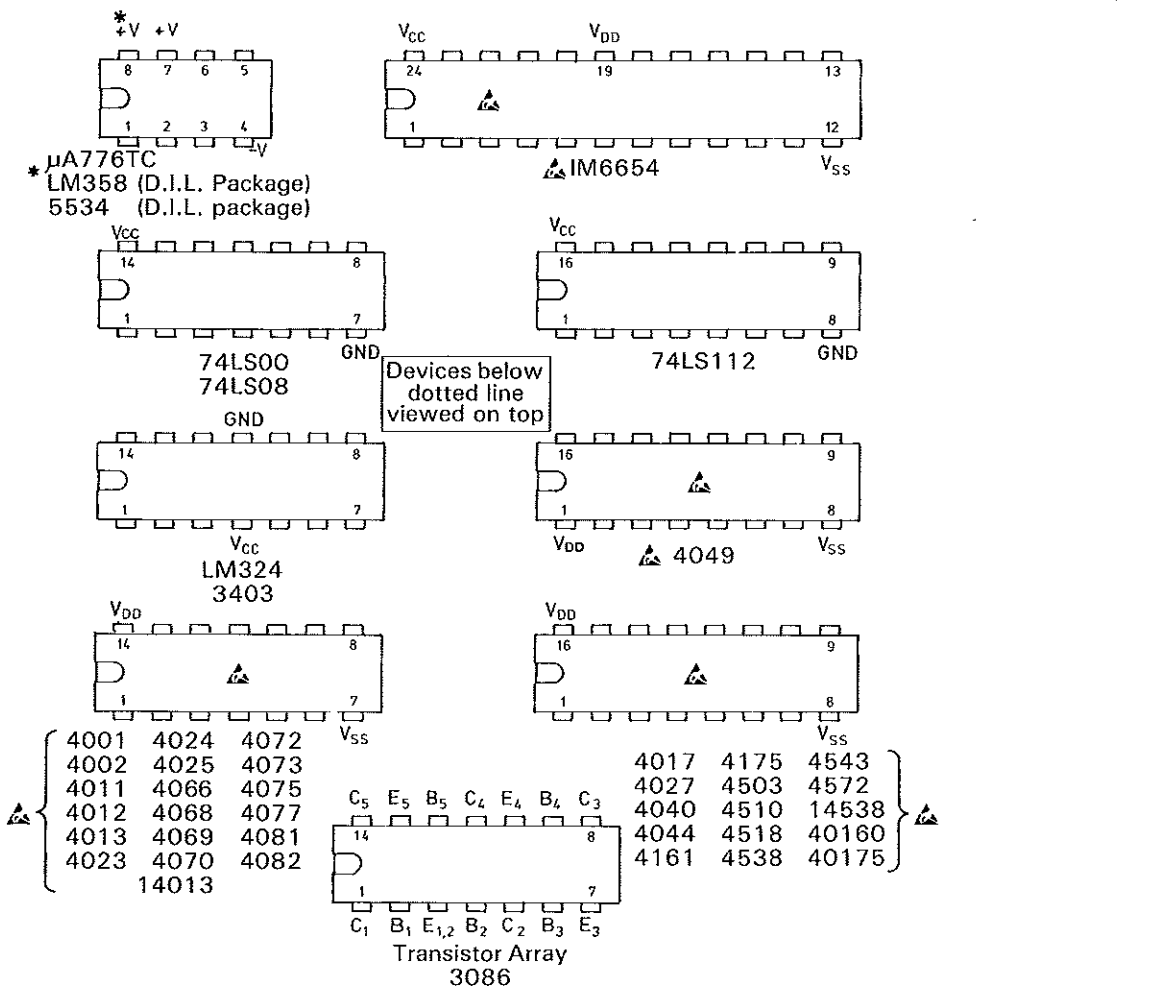
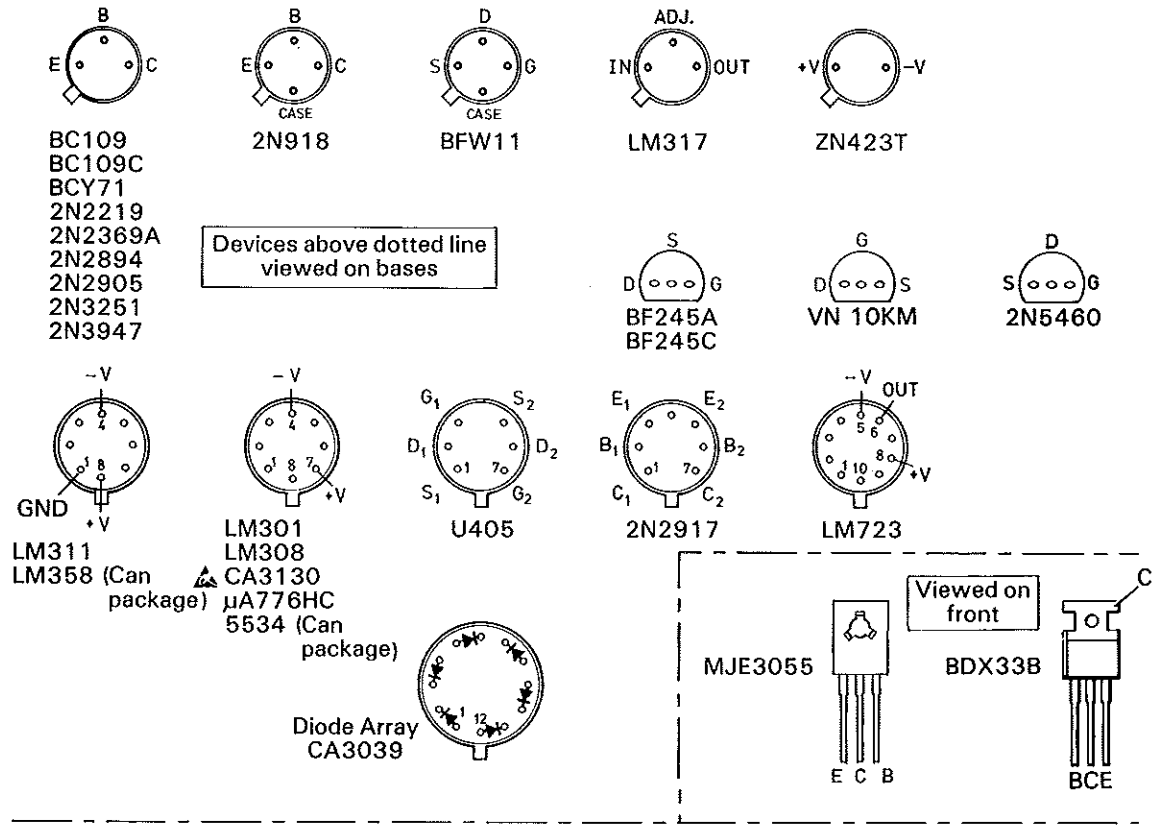
Ordering Information

When ordering spare parts it is essential to quote the type of instrument and production series, together with the serial number as well as the circuit reference and part number of the particular component required, for example:



Electrostatic Sensitive Devices

Certain semiconductor devices used within this instrument use CMOS technology and are therefore sensitive to pulses derived from discharges of static electricity. Units incorporating CMOS devices are marked with the symbol:  thus indicating that care should be taken when servicing these units. In the diagram showing the pin arrangements of the semiconductors this symbol has been added to the particular devices for which this warning applies. See Section 6.1.5 in the Service Manual for information regarding the handling of these devices.



Pin arrangements of Semi-conductor Devices used in SPM-31/PSE-31

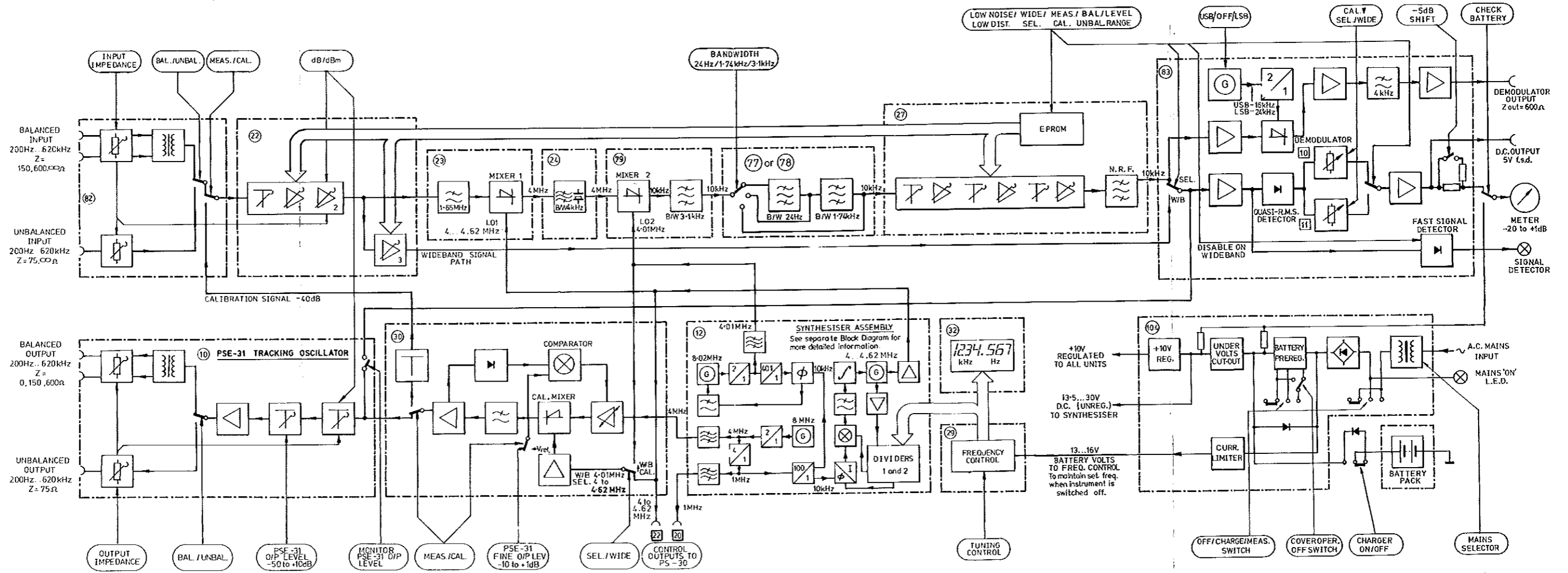


Fig. 1 Block Diagram of Complete Instrument, SPM-31/PSE-31

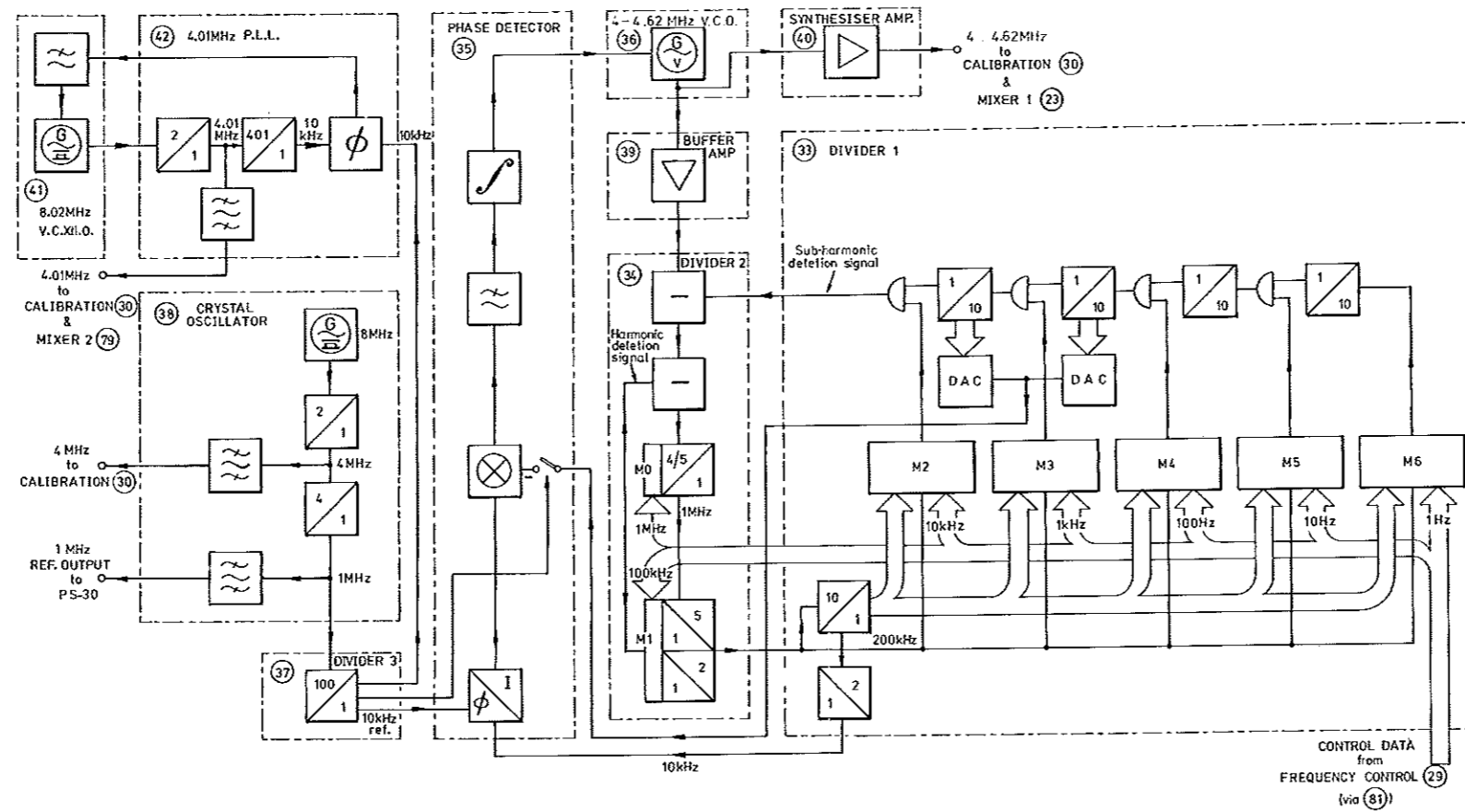


Fig. 2 Block Diagram of Synthesiser Assembly, (12)

(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

PARTS MOUNTED ON OR FORMING PART OF FRONT PANEL

TYPE	PART NO.
METER, DS 48 SIFAM (with VOLTAGE SCALE)	4502-8103.009/4
C.F. SOCKET, 3-pole (BALANCED INPUTS)	0000-3713.006/4
SWITCH, SLIDE D.P.S.T. (dB/dBm SWITCH)	0001-7604.409/-
VERSACON BODY	0000-1681.004/5
VERSACON LOCKING RING (UNBALANCED INPUT)	0000-1672.055/5
RESISTOR, VARIABLE (CAL. ▽/WIDE) 10k, 1W	0000-7545.270/-
RESISTOR, VARIABLE (CAL. ▽/SELECTIVE) 10k, 1W	0000-7545.270/-
SWITCH, ROTARY (MEAS. RANGE)	0000-7602.469/4
SOCKET, EARTHING	0000-3004.045/4
SWITCH BUTTON (CHECK BATT. and <input checked="" type="checkbox"/>)	
PSE-31 O/P LEVEL	0000-3705.425/5
SWITCH, MICRO (CHECK BATT. and <input checked="" type="checkbox"/>)	
PSE-31 O/P LEVEL	0001-0034.176/-
L.E.D., RED (MAINS ON)	0001-0064.036/-
TACHO. GENERATOR (TUNING CONTROL)	0829-7036.821/5
SWITCH, SLIDE D.P.D.T. (MEAS./CHARGE/OFF)	0001-0069.439/-
VERSACON BNC ADAPTOR	0000-1674.008/5
KNOB (O/P LEVEL)	0000-7500.383/-
CAP, KNOB (O/P LEVEL)	0000-7500.396/-
KNOB (FINE)	0001-0063.396/-
CAP, KNOB (FINE)	0001-0063.707/-
KNOB (FREQUENCY CONTROL)	0001-0063.422/-
CAP, KNOB (FREQUENCY CONTROL)	0001-0063.710/-
KNOB (MEAS. RANGE)	0001-0063.493/-
CAP, KNOB (MEAS. RANGE)	0001-0063.749/-
KNOB (CAL. ▽ WIDE and SELECTIVE)	0001-0063.354/-
CAP, KNOB (CAL. ▽ WIDE and SELECTIVE)	0001-0063.684/-
SWITCH, SLIDE, D.P.D.T.(USB/OFF/LSB)	0001-0069.439/-

REAR PANEL

VALUE	RATING	TYPE	PART NO.
		SWITCH, (BATT CHARGER ON/OFF)	0001-7604.409/-
		SOCKET, BNC	0000-7598.696/-
T315mA	250V	FUSELINK, BELLING-LEE 2080A/0.315A	0001-0020.601/-
		OR	
T630mA	115V	FUSELINK, BELLING-LEE 2080A/0.63A	
		FUSEHOLDER, BELLING-LEE L2006A (20m x 5mm)	0000-7602.236/-
		BATTERIES, BEREC NCC400 SIZE D (12 used)	0000-7594.849/-
T1A	BATT.	FUSELINK, ANTI-SURGE	0001-0020.711/-

COMPLETE CHASSIS ASSEMBLY

REF.	TYPE	PART NO.
A10	ASSEMBLY, TRACKING OSCILLATOR PSE-31 Includes ASSEMBLY, P.C.B. A80, PSE-31	4502-1110.002/2 4502-1080.006/2
A104	ASSEMBLY, POWER UNIT Includes ASSEMBLY, P.C.B. A84, POWER SUPPLY	4502-1189.004/2 4502-1084.002/3
A22	ASSEMBLY, PRE-AMPLIFIER	4502-1122.006/3
A23	ASSEMBLY, MIXER 1	4505-1023.004/3
A27	ASSEMBLY, I.F. AMPLIFIER & PROM	4502-1027.001/3
A29	ASSEMBLY, FREQUENCY CONTROL	4505-1029.008/3
A30	ASSEMBLY, CALIBRATION	4502-1030.001/3
A32	ASSEMBLY, DISPLAY	4502-1032.009/3
A33	ASSEMBLY, DIVIDER 1	4502-1033.008/3
A34	ASSEMBLY, DIVIDER 2	4502-1034.007/3
A35	ASSEMBLY, PHASE DETECTOR	4502-1035.006/3
A36	ASSEMBLY, 4...4.62MHz V.C.O.	4502-1036.005/3
A37	ASSEMBLY, DIVIDER 3	4502-1037.004/3
A38	ASSEMBLY, 8MHz CRYSTAL OSC	4502-1038.003/3
A39	ASSEMBLY, BUFFER AMP.	4502-1039.002/3
A40	ASSEMBLY, SYNTHESISER AMPLIFIER	4502-1040.004/3
A41	ASSEMBLY, 8.02MHz V.C.O.	4502-1041.003/3
A42	ASSEMBLY, 4.01MHz P.L.L.	4502-1042.002/3
A66	ASSEMBLY, 4MHz B/P FILTER UNIT Includes ASSEMBLY, P.C.B. A24	4502-1166.000/3 4502-1024.004/3
A77	ASSEMBLY, 24Hz FILTER	4502-1077.006/3
A79	ASSEMBLY, MIXER 2	4502-1079.004/3
A81	ASSEMBLY, INTERCONNECTION	4502-1081.005/3
A82	ASSEMBLY, MATCHING UNIT	4502-1082.004/3
A83	ASSEMBLY, METER AND DEMODULATOR	4502-1083.003/3

A81 INTERCONNECTION BOARD

REF.	VALUE	TOL.±%	RATING	TYPE	PART NO.
SK1				SOCKET, DIL 16-WAY	0000-7518.391/-
SK2				SOCKET, EDGE	
				CONNECTOR 10-WAY	0000-7602.317/-
SK3				SOCKET, EDGE CONNECTOR	
				10 + 10-WAY	0000-7602.304/-
SK4				SOCKET, EDGE CONNECTOR	
				36-WAY	0000-7602.333/-
SK5				SOCKET, EDGE CONNECTOR	
				36-WAY	0000-7602-294/-
SK6				SOCKET, EDGE CONNECTOR	
				20-WAY	0000-7602.320/-
SK7				SOCKET, DIL 16-WAY	0000-7518.391/-
SK8				SOCKET, DIL 16-WAY	0000-7518.391/-
SK10				SOCKET, DIL 16-WAY	0000-7518.391/-
S1				SWITCH, 4-PUSHBUTTON (MODE)	4502-1074.009/4
S2				SWITCH, 3-PUSHBUTTON (BANDWIDTH)	4502-1075.008/4
S3				SWITCH, 3-PUSHBUTTON (FREQUENCY CONTROL)	4502-1076.007/4
				CAPS FOR SWITCHES ABOVE	0000-7602.744/-
A81				P.C.B., INTERCONNECTION	4502-1081.005/3
R1	12k1	1	0W35	MF	0001-0002.218/-
C1	220µ		10V		0001-0041.842/-
C2	22n		10V		0001-0006.416/-

CABLE ASSEMBLIES

TYPE	PART NO.
CABLE ASSEMBLY, INTERCONNECTION TO DISPLAY 75mm Long	4502-1060.013/4
CABLE ASSEMBLY, INTERCONNECTION TO DISPLAY 90mm Long	4502-1060.026/4
CABLE ASSEMBLY, PRE-AMPLIFIER TO INTERCONNECTION	4502-1062.008/4
CABLE ASSEMBLY, PSE-31 TO INTERCONNECTION	4502-1063.007/4
CABLE ASSEMBLY, PART OF INTERCONNECTION, 40-way	4502-1064.006/4
CABLE ASSEMBLY, DIVIDER 1 TO DIVIDER 2, 14-way	4502-1067.016/4
CABLE ASSEMBLY, MATCHING UNIT TO PRE-AMPLIFIER, 14-way	4502-1067.029/4
CABLE ASSEMBLY, CONNECTING CALIBRATION TO MIXER 1 and SYN. AMP., and CALIBRATION TO MIXER 2 and 4.01MHz P.L.L., COAXIAL	4502-1069.001/3
CABLE ASSEMBLY, from SOCKET <input type="checkbox"/> 22 on REAR PANEL TO INTERCONNECTION, COAXIAL	4502-1071.001/4
CABLE ASSEMBLY, from SOCKET <input type="checkbox"/> 20 on REAR PANEL TO CRYSTAL OSCILLATOR, COAXIAL	4502-1072.001/4
CABLE ASSEMBLY, 24Hz FILTER TO I/F AMPLIFIER, COAXIAL	4502-1051.019/4
CABLE ASSEMBLY, PSE-31 TO METER, COAXIAL	4502-1051.022/4
CABLE ASSEMBLY, CALIBRATION TO MATCHING UNIT, COAXIAL with Fe BEADS	4502-1053.004/4
CABLE ASSEMBLY, 24Hz FILTER TO MIXER 2, COAXIAL	4502-1054.016/4
CABLE ASSEMBLY, MIXER 1 TO MIXER 2, COAXIAL	4502-1054.029/4
CABLE ASSEMBLY, PSE-31 TO CALIBRATION, COAXIAL with Fe BEADS	4502-1056.001/4
CABLE ASSEMBLY, METER TO PRE-AMPLIFIER, COAXIAL	4502-1057.000/4
CABLE ASSEMBLY, 4MHz FILTER TO INTERCONNECTION, COAXIAL	4502-1058.009/4
CABLE ASSEMBLY, POWER SUPPLY TO MIXER 2 (+10V)	4502-1073.000/4
CABLE ASSEMBLY, POWER SUPPLY TO REST OF INSTRUMENT includes P.C.B. A46	4502-1065.005/1 4502-0146.006/3

SPARES

VALUE	RATING	TYPE	PART NO.
TO.315A	250V	FUSELINK, BELLING-LEE 2080A/0.315A ANTI-SURGE	0001-0020.601/-
T1A	BATT.	FUSE LINK, ANTI-SURGE	0001-0020.711/-
		BATTERIES, BEREC NCC400 SIZE D (12 used)	0000-7594.849/-

ACCESSORIES

CABLE ASSEMBLY, MAINS
2 metres long, 3-core
L1949 BELLING-LEE

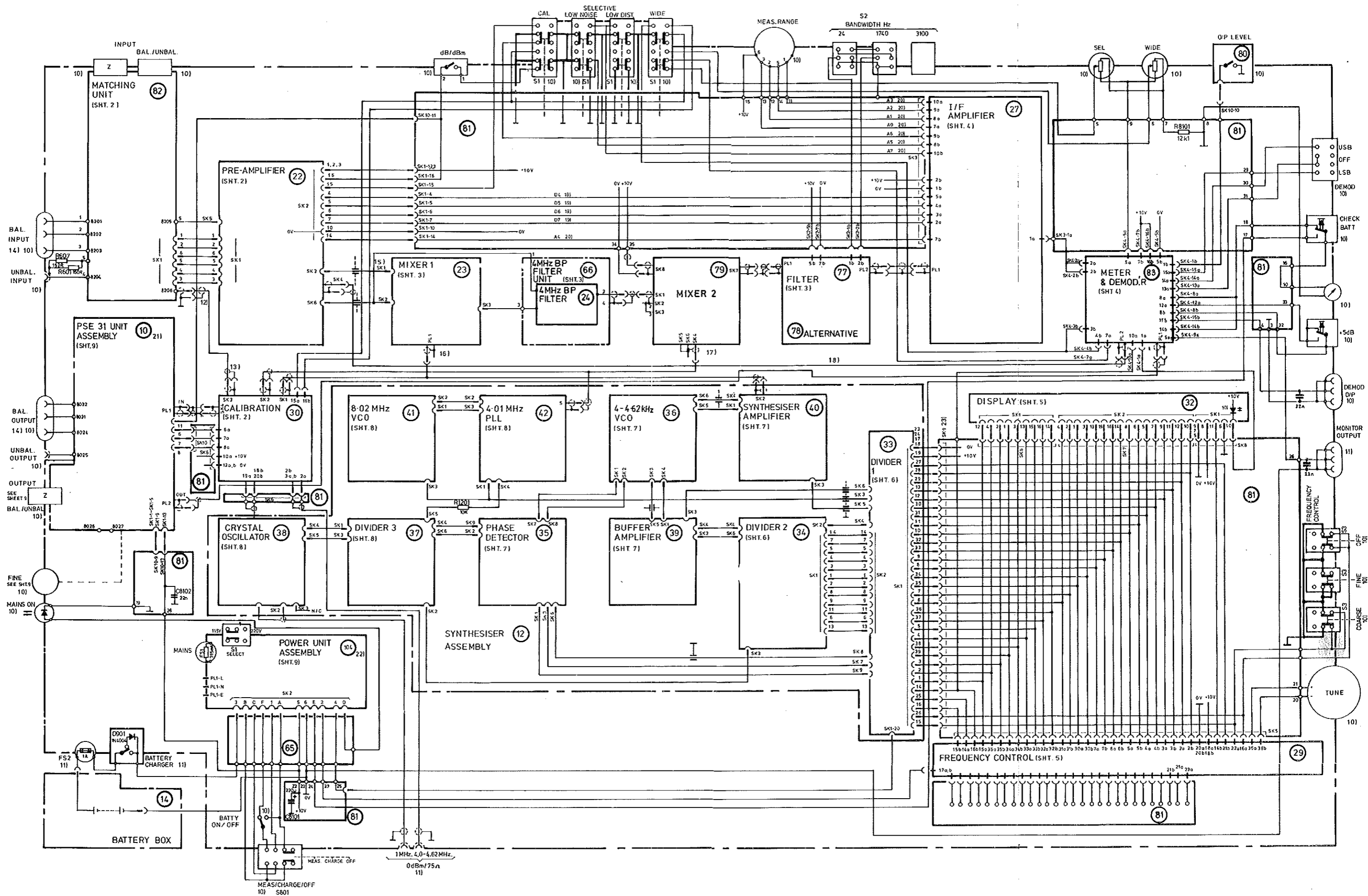


Fig. 3 Interconnections Diagram

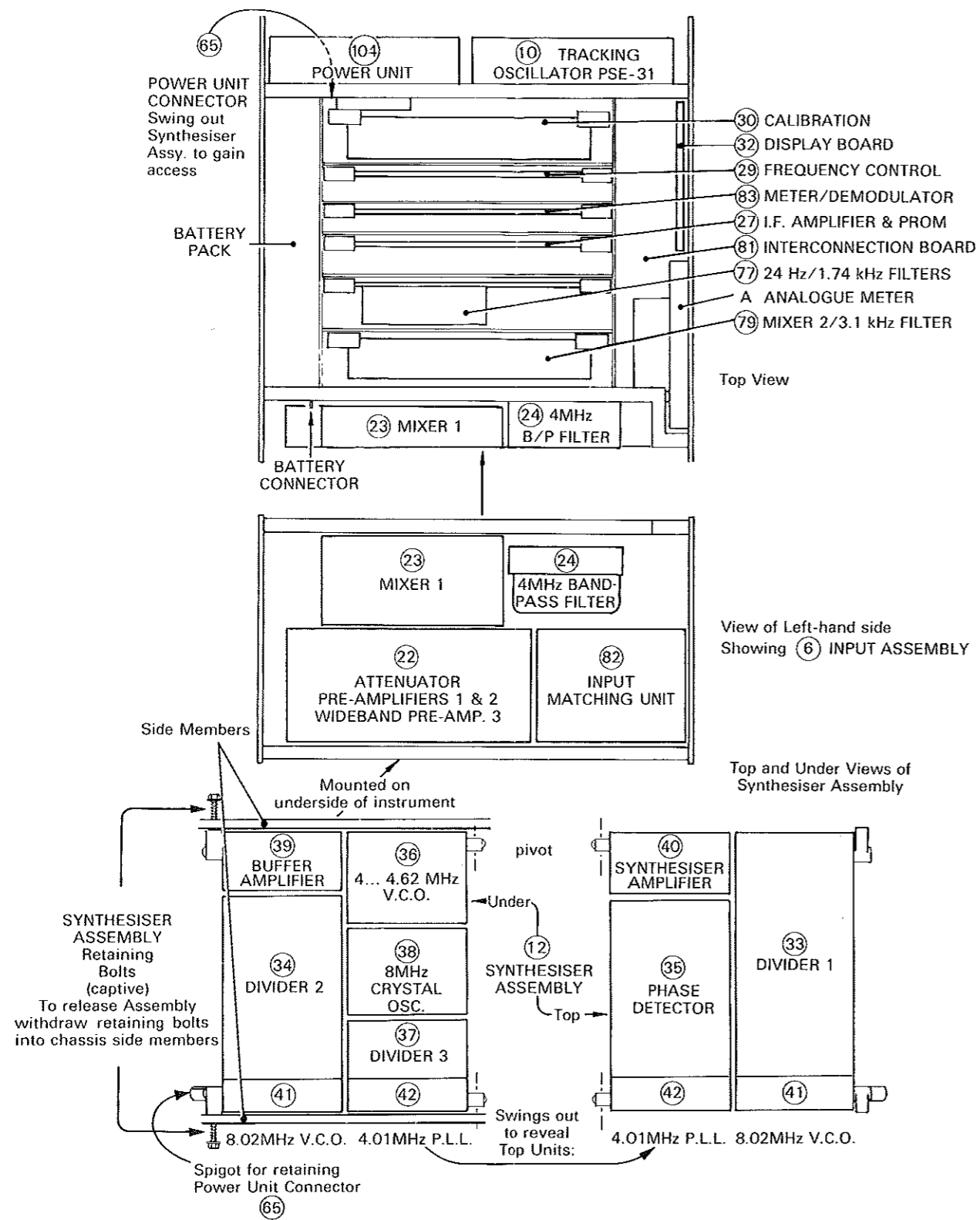
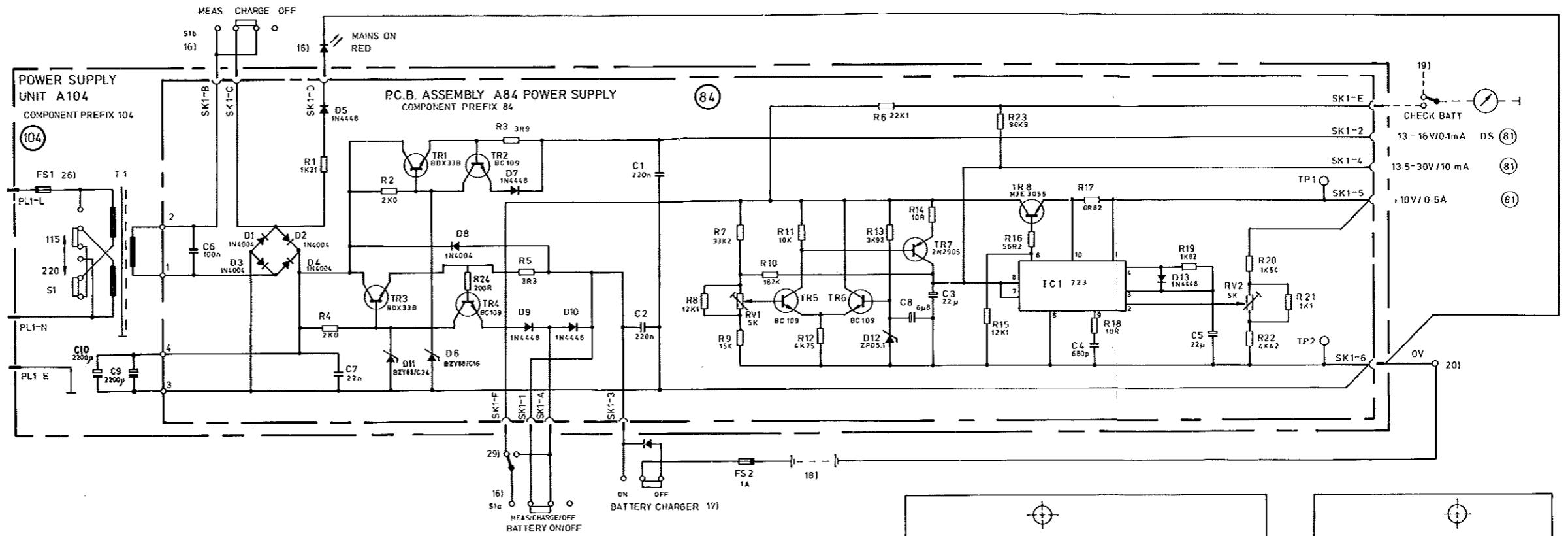


Fig. 4 Location of units within Instrument

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

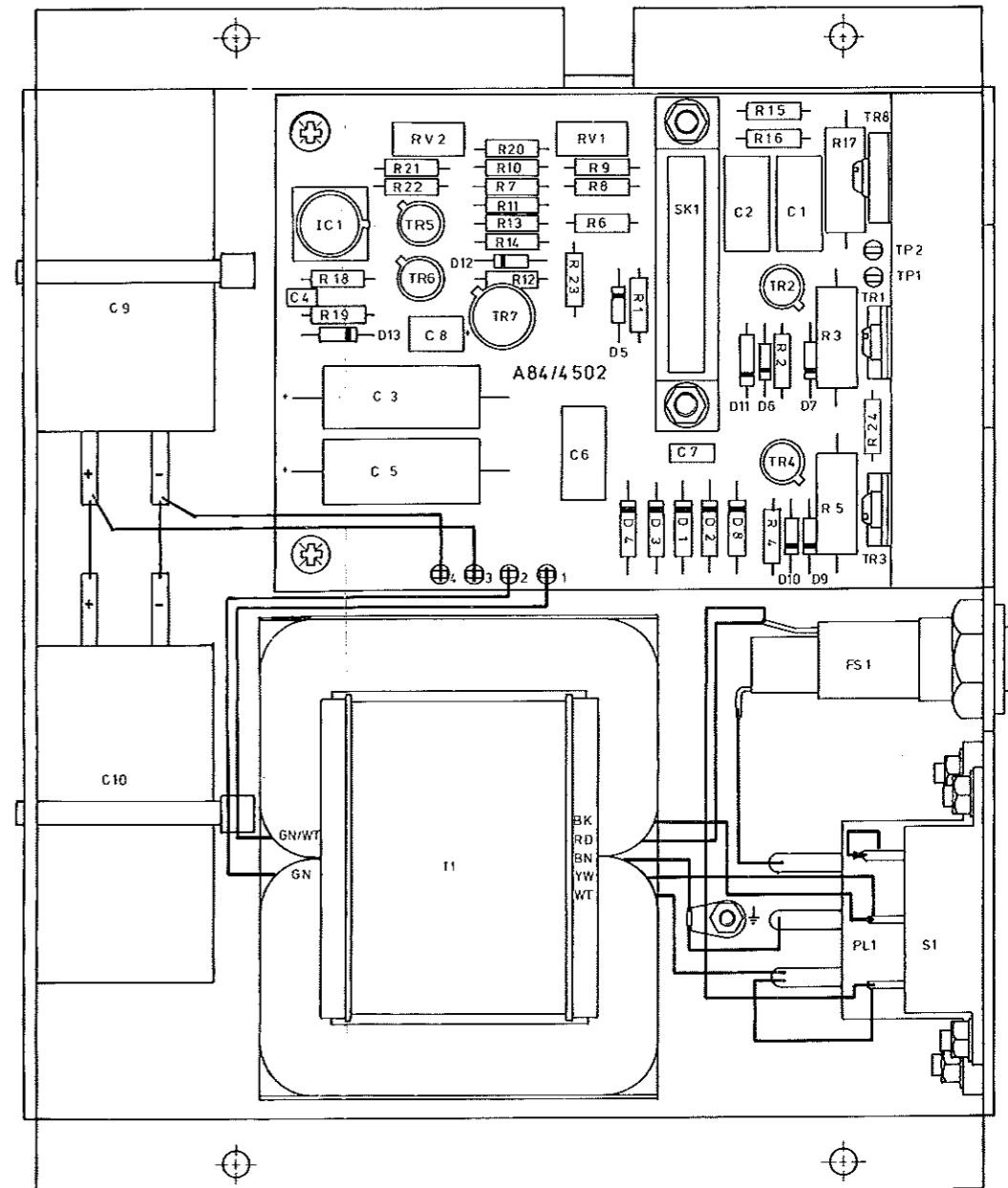
ASSEMBLY A104 POWER SUPPLY

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C9	2200µ		40V	ELEC.	0000-7646.289/-
C10	2200µ		40V	ELEC.	0000-7646.289/-
S1				SELECTOR SWITCH	
			115V/220V		0000-7598.706/-
T1				MAINS TRANSFORMER	4502-1308.005/4
PL1				PLUG, MAINS INPUT	0001-0033.261/-
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/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R23	90k9	1	0W35	MF	0001-0002.975/-
R24	200R	1	0W35	MF	0001-0000.676/-
RV1	5k	20	0W5 Lin.	Variable	0000-7574.283/-
RV2	5k	20	0W5 Lin.	Variable	0000-7574.283/-
C1	220n		100V		0001-0010.404/-
C2	220n		100V		0001-0010.404/-
C3	22µ		40V	Elec.	0001-0041.716/-
C4	680p	10	63V	Cer.	0001-0004.685/-
C5	22µ		40V	Elec.	0001-0041.716/-
C6	100n	10	100V		0001-0010.365/-
C7	22n	10	40V		0001-0006.418/-
C8	6µ8		35V	Elec.	0001-0040.856/-
TR1				BDX 33B	0000-7591.059/-
TR2				BC109	0000-7602.029/-
TR3				BDX 33B	0000-7591.059/-
TR4				BC109	0000-7602.029/-
TR5				BC109	0000-7602.029/-
TR6				BC109	0000-7602.029/-
TR7				2N2905	0001-0017.287/-
TR8				MJE 3055	0001-0017.148/-
D1				1N4004	0000-7605.026/-
D2				1N4004	0000-7605.026/-
D3				1N4004	0000-7605.026/-
D4				1N4004	0000-7605.026/-
D5				1N4448	0001-0018.493/-
D6				BZY88/C16	0001-0019.159/-
D7				1N4448	0001-0018.493/-
D8				1N4004	0000-7605.026/-
D9				1N4448	0001-0018.493/-
D10				1N4448	0001-0018.493/-
D11				BZY88/C24	0001-0019.201/-
D12				ZPD 5.1	0001-0018.833/-
D13				1N4448	0001-0018.493/-
IC1				µA 723	0001-0015.852/-
SK1				EDGE CONNECTOR, 12-WAY	0000-7606.054/-
A84				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

ASSEMBLY FOR P.C.B. A82 MATCHING UNIT

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.	
R1*	150R	0.25	1W	MF	0000-7549.603/-	R35	324R	1	0W35	MF	0001-0000.825/-	R114	22k1	1	0W35	MF	0001-0002.441/-	
R2	150R	0.25	1W	MF	0000-7549.603/-	R36	301R	1	0W35	MF	0001-0000.799/-	R115	56k2	1	0W35	MF	0001-0002.797/-	
R3	604R	0.25	1W	MF	0000-7511.262/-	R37	71R5	1	0W35	MF	0001-0000.443/-	R116	56k2	1	0W35	MF	0001-0002.797/-	
R4	523R	1	0W35	MF	0001-0000.993/-	R38	150R	1	0W35	MF	0001-0000.618/-	R117	22k1	1	0W35	MF	0001-0002.441/-	
R5	75R5	0.1	0W125	MF	0000-7601.567/-	R39	619R	1	0W35	MF	0001-0001.044/-	R118	56k2	1	0W35	MF	0001-0002.797/-	
R6	8k25	2	0W35	MF	0001-0002.056/-	R40	5k62	1	0W35	MF	0001-0001.895/-	R119	22k1	1	0W35	MF	0001-0002.441/-	
R7*	152R	0.25	1W	MF	0000-7549.616/-	R41	4k7	2	0W25	MF	0001-0001.811/-	R120	56k2	1	0W35	MF	0001-0002.797/-	
R8	432R	1	0W35	MF	0001-0000.935/-	R42	22k1	1	0W35	MF	0001-0002.441/-	R121	22k1	1	0W35	MF	0001-0002.441/-	
R109	10k	1	0W35	MF	0001-0002.137/-	R43	100R	1	0W35	MF	0001-0000.537/-	R122	9 x 100k	2	0W2	RESISTOR PACK	0000-7604.441/-	
R110	56k2	2	0W35	MF	0001-0002.797/-	R50	22k1	1	0W35	MF	0001-0002.441/-	R123	1k5	1	0W35	MF	0001-0001.358/-	
RV1	500R	20	0W5	Var.	0000-7601.651/-	R51	33k	2	0W25	MF	4980-0000.009/-	C5	4p7	0p25	63	Cer.	0001-0004.083/-	
C1	47u	+50-10%		B42190-C8476-T	0001-7520.460/-	R52	68R1	1	0W35	MF	0001-0000.427/-	C6	15p	2	63	Cer.	0001-0004.229/-	
C3	100p	2			0001-0004.517/-	R53	3k16	1	0W35	MF	0001-0001.646/-	C7	4p7	0p25	63	Cer.	0001-0004.083/-	
C80	10n	10	40V	Cer.	0001-0004.818/-	R54	1k65	1	0W35	MF	0001-0059.232/-	C8	22p	2	63	Cer.	0001-0004.290/-	
C81	1u	20	35V	Tant.	0001-0040.704/-	R55	330R	2	0W25	MF	0000-7601.389/-	C10	220n	10	100	PE	0001-0010.404/-	
TR20				BCY71	0001-0016.534/-	R56	68R1	1	0W35	MF	0001-0000.427/-	C11	33p	2	63	Cer.	0001-0004.342/-	
D22				1N914 or 1N4448	0001-0018.493/-	R57	100R	1	0W35	MF	0001-0000.537/-	C12	33u	20	10	Tant.	0001-0040.995/-	
D31				1N914 or 1N4448	0001-0018.493/-	R58	845R	1	0W35	MF	0001-0018.587/-	C13	22p	2	63	Cer.	0001-0004.290/-	
VC1	2 - 18p			809-05003	0000-7598.463/-	R59	1k1	1	0W35	MF	0001-0001.235/-	C14	33p	2	63	Cer.	0001-0004.342/-	
S1 to S6				INPUT IMPEDANCE		R60	68R1	1	0W35	MF	0001-0000.427/-	C15	220u	20	10	Tant.	0001-0041.208/-	
				SWITCHING	4502-1089-007/4	R61	2k67	1	0W35	MF	0001-0001.578/-	C16	330u	20	6.3	Tant.	0001-0041.211/-	
L1	470uH			INDUCTOR	0000-7598.683/-	R62	681R	1	0W35	MF	0001-0001.086/-	C17	68p	2	63	Cer.	0001-0004.452/-	
T1				TRANSFORMER	4502-1304.009/4	R63	4k7	2	0W25	MF	0001-0001.811/-	C18	220p	2	63	Cer.	0001-0004.601/-	
SK1				SOCKET, D.I.L. 14-WAY	0000-7518.388/-	R64	68R1	1	0W35	MF	0001-0000.427/-	C19	10n	20	100	Cer.	0001-0004.818/-	
RL1				RSD - 12V	0001-0069.620/-	R65	1k0	1	0W35	MF	0001-0001.219/-	C20	1u	20	35	Tant.	0001-0040.704/-	
RL2				RSD - 12V	0001-0069.620/-	R66	750R	1	0W35	MF	0001-0001.125/-	C30	1u	20	35	Tant.	0001-0040.704/-	
A82				P.C.B., MATCHING UNIT	4502-0260.005/3	R67	100R	1	0W35	MF	0001-0000.537/-	C31	33p	2	63	Cer.	0001-0004.342/-	
						R68	470R	2	0W25	MF	0000-7560.608/-	C32	33u	20	10	Tant.	0001-0040.995/-	
						R69	732R	1	0W35	MF	0001-0001.112/-	C33	22p	2	63	Cer.	0001-0004.290/-	
						R70	402R	1	0W35	MF	0001-0000.906/-	C34	33p	2	63	Cer.	0001-0004.342/-	
						R71	243R	2	0W25	MF	0001-0000.731/-	C35	100u	20	10	Tant.	0001-0041.156/-	
						R72	68R1	1	0W35	MF	0001-0000.427/-	C36	330u	20	6.3	Tant.	0001-0041.211/-	
						R73	2k21	1	0W35	MF	0001-0001.497/-	C37	47p	2	63	Cer.	0001-0004.397/-	
						R75	2k0	1	0W35	MF	0001-0001.455/-	C38	82p	2	63	Cer.	0001-0004.481/-	
						R80	22k1	1	0W35	MF	0001-0002.441/-	C40	47p	2	63	Cer.	0001-0004.397/-	
						R81	15k	1	0W35	MF	0001-0002.289/-	C41	47p	2	63	Cer.	0001-0004.397/-	
						R82	15k	1	0W35	MF	0001-0002.289/-	C42	100n	20	100	Cer.	0000-7598.450/-	
						R83	68R1	1	0W35	MF	0001-0000.427/-	C43	100n	20	100	Cer.	0000-7598.450/-	
						R84	68R1	1	0W35	MF	0001-0000.427/-	C44	100n	20	100	Cer.	0000-7598.450/-	
						R85	698R	1	0W35	MF	0001-0001.099/-	C45	100n	20	100	Cer.	0000-7598.450/-	
						R86	75R	1	0W35	MF	0001-0000.456/-	C46	100n	20	100	Cer.	0000-7598.450/-	
						R87	330R	2	0W25	MF	0000-7601.389/-	C47	100n	20	100	Cer.	0000-7598.450/-	
						R88	68R1	1	0W35	MF	0001-0000.427/-	C50	6u8	20	6.3	Tant.	0001-0040.830/-	
						R89	18k	2	0W25	MF	0001-0027.484/-	C51	1u	20	35	Tant.	0001-0040.704/-	
						R90	47k	2	0W25	MF	0000-7558.393/-	C52	220u	20	10	Tant.	0001-0041.208/-	
						R91	47R	2	0W25	MF	0000-7601.321/-	C53	1u	20	35	Tant.	0001-0040.704/-	
						R92	432R	1	0W35	MF	0001-0000.935/-	C54	1u	20	35	Tant.	0001-0040.704/-	
						R94	33k	2	0W25	MF	4980-0000.009/-	C55	220u	20	10	Tant.	0001-0041.208/-	
						R95	22k1	1	0W35	MF	0001-0002.441/-	C60	100n	20	100	Cer.	0000-7598.450/-	
						R96	68R1	1	0W35	MF	0001-0000.427/-	C82	10n	20	100	Cer.	0001-0004.818/-	
						R97	1k5	1	0W35	MF	0001-0001.358/-	C83	10n	20	100	Cer.	0001-0004.818/-	
						R98	75R	1	0W35	MF	0001-0000.456/-	C84	10n	20	100	Cer.	0001-0004.818/-	
						R99	4k7	2	0W25	MF	0001-0001.811/-	C85	10n	20	100	Cer.	0001-0004.818/-	
						R100	22R1	1	0W35	MF	0001-0000.184/-	C86	10n	20	100	Cer.	0001-0004.818/-	
						R102	33R	2	0W25	MF	0000-7601.347/-	C87	10p	2	63	Cer.	0001-0004.177/-	
						R112	22k1	1	0W35	MF	0001-0002.441/-	C88	1u	20	35	Tant.	0001-0040.704/-	
						R113	56k2	1	0W35	MF	0001-0002.797/-	TR1					2N2369A	4975-0000.007/-

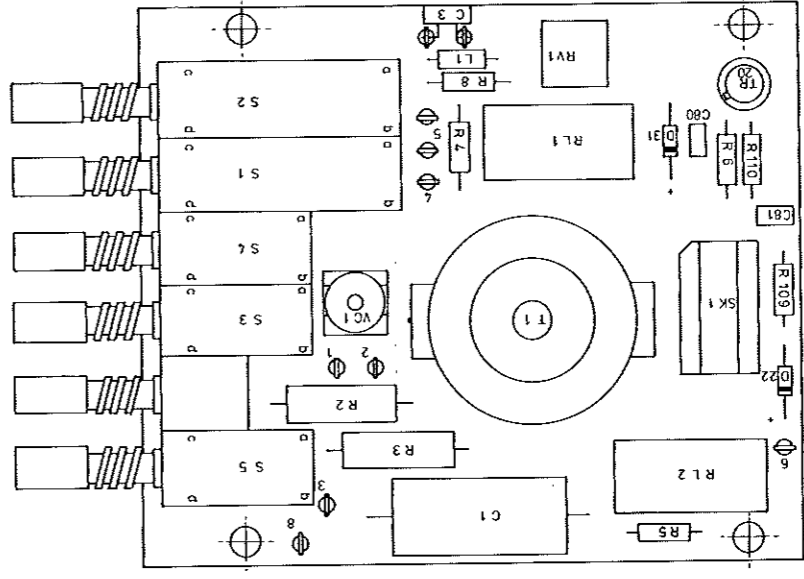
* Shown as R0601 and R0607 respectively on the circuit diagram.

ASSEMBLY P.C.B. A22 PRE-AMPLIFIER & ATTENUATOR

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.
R7	9k	0.1	0W125	MF	0000-7601.512/-
R8	1k11	0.1	0W125	MF	0000-7601.402/-
R9	9k	0.1	0W125	MF	0000-7601.512/-
R10	1k11	0.1	0W125	MF	0000-7601.402/-
R11	11k	0.1	0W125	MF	0000-7598.277/-
R15	100k	1	0W35	MF	0001-0002.991/-
R16	22k1	1	0W35	MF	0001-0002.441/-
R17	33k	2	0W25	MF	4980-0000.009/-
R18	68R1	1	0W35	MF	0001-0000.427/-
R19	162R	1	0W35	MF	0001-0003.958/-
R20	3k16	1	0W35	MF	0001-0001.646/-
R21	1k65	1	0W35	MF	0001-0059.232/-
R22	68R1	1	0W35	MF	0001-0000.427/-
R23	100R	1	0W35	MF	0001-0000.537/-
R24	845R	1	0W35	MF	0001-0017.587/-
R25	1k1	1	0W35	MF	0001-0001.235/-
R26	68R1	1	0W35	MF	0001-0000.427/-
R27	2k67	1	0W35	MF	0001-0001.578/-
R28	681R	1	0W35	MF	0001-0001.086/-
R29	4k7	2	0W25	MF	0001-0000.811/-
R30	68R1	1	0W35	MF	0001-0000.427/-
R31	619R	1	0W35	MF	0001-0001.044/-
R32	750R	1	0W35	MF	0001-0001.125/-
R33	221R	1	0W35	MF	0001-0000.715/-
R34	2k67	1	0W35	MF	0001-0001.578/-

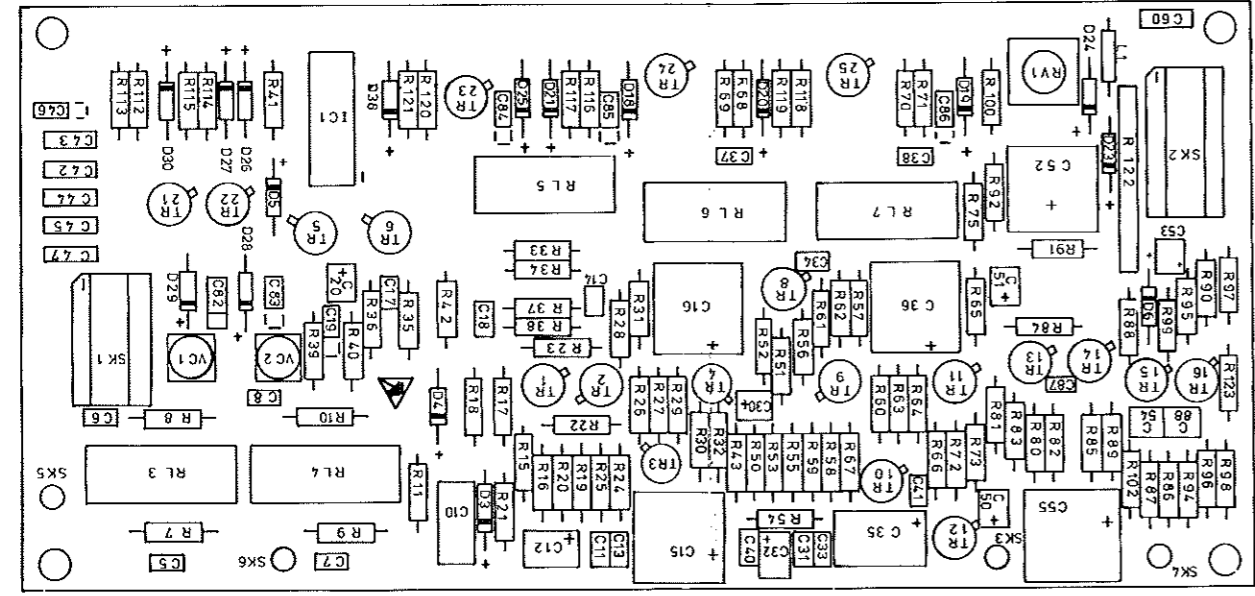
REF.	VALUE	TOL. %	RATING	TYPE	PART NO.
TR2	2N3251				0001-0017.342/-
TR3	2N2369A				0000-7542.066/-
TR4	2N2369A				0000-7542.066/-
TR5	BCY71				0001-0016.534/-
TR6	BCY71				0001-0016.534/-
TR8	2N2369A (LOW NOISE)				0000-0075-0000.007/-
TR9	2N3251				0001-0017.342/-
TR10	2N2369A				0000-7542.066/-
TR11	2N2369A				0000-7542.066/-
TR12	2N2369A				0000-7542.066/-
TR13	2N2369A				0000-7542.066/-
TR14	2N2369A				0000-7542.066/-
TR15	2N2369A				0000-7542.066/-
TR16	2N2369A				0000-7542.066/-
TR21	BC109				0000-7602.029/-
TR22	BC109				0000-7602.029/-
TR23	BCY71				0001-0016.534/-
TR24	BCY71				0001-0016.534/-
TR25	BCY71				0001-0016.534/-
D3	1N914 or 1N4448				0001-0018.493/-
D4	1N914 or 1N4448				0001-0018.493/-
D5	1N914 or 1N4448				0001-0018.493/-
D6	1N914 or 1N4448				0001-0018.493/-
D18	1N914 or 1N4448				0001-0018.493/-
D19	1N914 or 1N4448				0001-0018.493/-
D20	1N914 or 1N4448				0001-0018.493/-
D21	1N914 or 1N4448				0001-0018.493/-
D23	1N914 or 1N4448				0001-0018.493/-
D24	1N914 or 1N4448				0001-0018.493/-
D25	1N914 or 1N4448				0001-0018.493/-
D26	1N914 or 1N4448				0001-0018.493/-
D27	1N914 or 1N4448				0001-0018.493/-
D28	1N914 or 1N4448				0001-0018.493/-
D29	1N914 or 1N4448				0001-0018.493/-
D30	1N914 or 1N4448				0001-0018.493/-
D38	1N914 or 1N4448				0001-0018.493/-
L1	10µH				0000-7556.175/-
RV1	100K				0000-7601.648/-
VC1	2 - 18p				0000-7598.463/-
VC2	2 - 18p				0000-7598.463/-
IC1	4001				0001-0015.962/-
SK1	SOCKET D.1.L. 14-MAY				0000-7518.388/-
SK2	SOCKET D.1.L. 16-MAY				0000-8518.391/-
RL3	RSD - 12V				0001-0069.620/-
RL4	RSD - 12V				0001-0069.620/-
RL5	RSD - 12V				0001-0069.620/-
RL6	RSD - 12V				0001-0069.620/-
RL7	RSD - 12V				0001-0069.620/-
AZ2	P.C.B.				4502-0122.004/2
	PRE-AMPLIFIER				

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



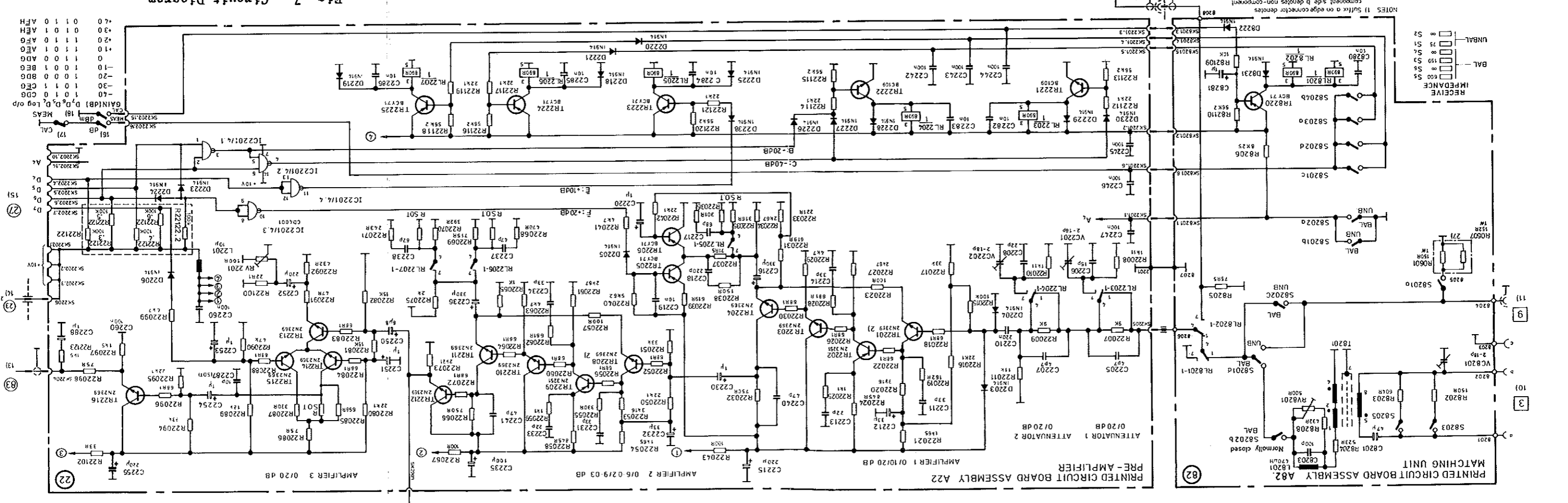
CIRCUIT REFERENCES TO BE PRECEDED BY ASSEMBLY NUMBER eg S1 BECOMES S8201 C81 BECOMES C8281

Pre-amplifier/Attenuator, (22)



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

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



Component	Value
C2255	220p
C2256	220p
C2257	100p
C2258	100p
C2259	100p
C2260	100p
C2261	100p
C2262	100p
C2263	100p
C2264	100p
C2265	100p
C2266	100p
C2267	100p
C2268	100p
C2269	100p
C2270	100p
C2271	100p
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C2278	100p
C2279	100p
C2280	100p
C2281	100p
C2282	100p
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C2287	100p
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C2289	100p
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C2309	100p
C2310	100p
C2311	100p
C2312	100p
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C2490	100p
C2491	100p
C2492	100p
C2493	100p
C2494	100p
C2495	100p
C2496	100p
C2497	100p
C2498	100p
C2499	100p
C2500	100p

NOTES: 1) Suffix on edge connector denotes component side b denotes non-component side.
 10) BAL. INPUT
 11) UNBAL. INPUT
 12) DETECTOR/MIXER (-20, -90dB)
 13) DETECTOR/WIDEBAND (-20dB)
 14) POWER SUPPLY MIXER
 15) CONTROL BUS
 16) SWITCH dB/dB
 17) SWITCH CAL
 18) SWITCH CAL
 21) TO BE FITTED AT INPUT UNIT STAGE

ASSEMBLY FOR P.C.B. A23 MIXER 1

REF. VALU E TOL. ± % RATING TYPE PART NO.

REF.	VALU E	TOL. ± %	RATING	TYPE	PART NO.
R1	301R	1	OM35	MF	0001-0000,799/-
R2	301R	1	OM35	MF	0001-0000,799/-
R3	33K	2	OM25	MF	4980-0000,009/-
R4	56K2	1	OM35	MF	0001-0002,797/-
R5	68R1	1	OM35	MF	0001-0000,427/-
R6	51R	1	OM35	MF	0001-0003,770/-
R7	68R1	1	OM35	MF	0001-0000,427/-
R8	100R	1	OM35	MF	0001-0000,537/-
R9	1K	1	OM35	MF	0001-0001,219/-
R10	100R	1	OM35	MF	0001-0000,537/-
R11	56R2	1	OM35	MF	0001-0000,346/-
R12	470R	2	OM25	MF	0000-7560,608/-
R13	56K2	1	OM35	MF	0001-0002,797/-
R14	33K	2	OM25	MF	4980-0000,009/-
R15	68R1	1	OM35	MF	0001-0000,427/-
R16	1K	1	OM35	MF	0001-0001,219/-
R17	68R1	1	OM35	MF	0001-0000,427/-
R18	100R	1	OM35	MF	0001-0000,537/-
R19	2K21	1	OM35	MF	0001-0001,497/-
R20	150R(A66/1)1	1	OM35	MF	0001-0000,618/-
R21	100R	1	OM35	MF	0001-0000,537/-
R22	2N2369A	1	OM35	MF	0000-7542,066/-
R23	2N918	1	OM35	MF	0001-0016,738/-
R24	2N918	1	OM35	MF	0001-0016,738/-
R25	2N2369A	1	OM35	MF	0000-7542,066/-
R26	2N2369A	1	OM35	MF	0001-0017,342/-
R27	2N2369A	1	OM35	MF	0001-0017,342/-
R28	2N2369A	1	OM35	MF	0000-7542,066/-
R29	2N2369A	1	OM35	MF	0001-0017,342/-
R30	2N2369A	1	OM35	MF	0000-7542,066/-
R31	2N918	1	OM35	MF	0001-0016,738/-
R32	33K	2	OM25	MF	4980-0000,009/-
R33	68R1	1	OM35	MF	0001-0001,219/-
R34	1K	1	OM35	MF	0001-0001,219/-
R35	68R1	1	OM35	MF	0001-0000,427/-
R36	1K5	1	OM35	MF	0001-0001,358/-
R37	56R2	1	OM35	MF	0001-0000,346/-
R38	100R	1	OM35	MF	0001-0000,537/-
R39	10K	1	OM35	MF	0001-0002,137/-
R40	10K	1	OM35	MF	0001-0002,137/-
R41	1K8	2	OM25	MF	0001-0014,510/-
R42	22K1	1	OM35	MF	0001-0002,441/-
R43	100R	2	OM35	MF	0001-0000,537/-
R44	10K	2	OM35	MF	0001-0002,137/-
R45	8K25	1	OM35	MF	0001-0002,056/-
R46	2K21	1	OM35	MF	0001-0001,497/-
R47	357R	1	OM35	MF	0001-0000,867/-
R48	56R2	1	OM35	MF	0001-0000,346/-
R49	1K	1	OM35	MF	0001-0001,219/-
R50	68R1	1	OM35	MF	0001-0000,427/-
R51	56R2	1	OM35	MF	0001-0000,346/-
R52	68R1	1	OM35	MF	0001-0000,427/-
R53	68R1	1	OM35	MF	0001-0000,427/-
R54	68R1	1	OM35	MF	0001-0000,427/-
R55	68R1	1	OM35	MF	0001-0000,427/-
R56	68R1	1	OM35	MF	0001-0000,427/-
R57	68R1	1	OM35	MF	0001-0000,427/-
R58	68R1	1	OM35	MF	0001-0000,427/-
R59	68R1	1	OM35	MF	0001-0001,895/-
R60	68R1	1	OM35	MF	0001-0000,427/-
R61	5K62	1	OM35	MF	0001-0001,895/-
R62	5K62	1	OM35	MF	0001-0001,895/-
R63	5K11	1	OM35	MF	0001-0001,853/-
R64	2K7	2	OM25	MF	0000-7558,380/-
R65	2K7	2	OM25	MF	0000-7558,380/-
R66	221R	1	OM35	MF	0001-0000,715/-
R67	180R	2	OM25	MF	0000-7558,403/-
R68	68R1	1	OM35	MF	0001-0000,427/-
R69	68R1	1	OM35	MF	0001-0000,427/-
R70	68R1	1	OM35	MF	0001-0000,427/-
R71	68R1	1	OM35	MF	0001-0000,427/-
R72	1K	1	OM35	MF	0001-0001,219/-
R73	1K	1	OM35	MF	0001-0001,219/-
R74	68R1	1	OM35	MF	0001-0000,427/-
R75	68R1	1	OM35	MF	0001-0000,427/-
R76	68R1	1	OM35	MF	0001-0000,427/-
R77	68R1	1	OM35	MF	0001-0000,427/-
R78	68R1	1	OM35	MF	0001-0000,427/-
R79	2N918	1	OM35	MF	0001-0016,738/-
R80	2N918	1	OM35	MF	0001-0016,738/-
R81	180R	2	OM25	MF	0000-7558,405/-
R82	56K2	1	OM35	MF	0001-0002,792/-
R83	33K	2	OM25	MF	4980-0000,009/-
R84	33K	2	OM25	MF	4980-0000,009/-
R85	68R1	1	OM35	MF	0001-0000,427/-
R86	68R1	1	OM35	MF	0001-0001,219/-
R87	68R1	1	OM35	MF	0001-0000,427/-
R88	68R1	1	OM35	MF	0001-0000,427/-
R89	68R1	1	OM35	MF	0001-0000,427/-
R90	68R1	1	OM35	MF	0001-0000,427/-
R91	68R1	1	OM35	MF	0001-0000,427/-
R92	68R1	1	OM35	MF	0001-0000,427/-
R93	68R1	1	OM35	MF	0001-0000,427/-
R94	68R1	1	OM35	MF	0001-0000,427/-
R95	68R1	1	OM35	MF	0001-0000,427/-
R96	68R1	1	OM35	MF	0001-0000,427/-
R97	68R1	1	OM35	MF	0001-0000,427/-
R98	68R1	1	OM35	MF	0001-0000,427/-
R99	68R1	1	OM35	MF	0001-0000,427/-
R100	68R1	1	OM35	MF	0001-0000,427/-
R101	68R1	1	OM35	MF	0001-0000,427/-
R102	68R1	1	OM35	MF	0001-0000,427/-
R103	68R1	1	OM35	MF	0001-0000,427/-
R104	68R1	1	OM35	MF	0001-0000,427/-
R105	68R1	1	OM35	MF	0001-0000,427/-
R106	68R1	1	OM35	MF	0001-0000,427/-
R107	68R1	1	OM35	MF	0001-0000,427/-
R108	68R1	1	OM35	MF	0001-0000,427/-
R109	68R1	1	OM35	MF	0001-0000,427/-
R110	68R1	1	OM35	MF	0001-0000,427/-
R111	68R1	1	OM35	MF	0001-0000,427/-
R112	68R1	1	OM35	MF	0001-0000,427/-
R113	68R1	1	OM35	MF	0001-0000,427/-
R114	68R1	1	OM35	MF	0001-0000,427/-
R115	68R1	1	OM35	MF	0001-0000,427/-
R116	68R1	1	OM35	MF	0001-0000,427/-
R117	68R1	1	OM35	MF	0001-0000,427/-
R118	68R1	1	OM35	MF	0001-0000,427/-
R119	68R1	1	OM35	MF	0001-0000,427/-
R120	68R1	1	OM35	MF	0001-0000,427/-
R121	68R1	1	OM35	MF	0001-0000,427/-
R122	68R1	1	OM35	MF	0001-0000,427/-
R123	68R1	1	OM35	MF	0001-0000,427/-
R124	68R1	1	OM35	MF	0001-0000,427/-
R125	68R1	1	OM35	MF	0001-0000,427/-
R126	68R1	1	OM35	MF	0001-0000,427/-
R127	68R1	1	OM35	MF	0001-0000,427/-
R128	68R1	1	OM35	MF	0001-0000,427/-
R129	68R1	1	OM35	MF	0001-0000,427/-
R130	68R1	1	OM35	MF	0001-0000,427/-
R131	68R1	1	OM35	MF	0001-0000,427/-
R132	68R1	1	OM35	MF	0001-0000,427/-
R133	68R1	1	OM35	MF	0001-0000,427/-
R134	68R1	1	OM35	MF	0001-0000,427/-
R135	68R1	1	OM35	MF	0001-0000,427/-
R136	68R1	1	OM35	MF	0001-0000,427/-
R137	68R1	1	OM35	MF	0001-0000,427/-
R138	68R1	1	OM35	MF	0001-0000,427/-
R139	68R1	1	OM35	MF	0001-0000,427/-
R140	68R1	1	OM35	MF	0001-0000,427/-
R141	68R1	1	OM35	MF	0001-0000,427/-
R142	68R1	1	OM35	MF	0001-0000,427/-
R143	68R1	1	OM35	MF	0001-0000,427/-
R144	68R1	1	OM35	MF	0001-0000,427/-
R145	68R1	1	OM35	MF	0001-0000,427/-
R146	68R1	1	OM35	MF	0001-0000,427/-
R147	68R1	1	OM35	MF	0001-0000,427/-
R148	68R1	1	OM35	MF	0001-0000,427/-
R149	68R1	1	OM35	MF	0001-0000,427/-
R150	68R1	1	OM35	MF	0001-0000,427/-
R151	68R1	1	OM35	MF	0001-0000,427/-
R152	68R1	1	OM35	MF	0001-0000,427/-
R153	68R1	1	OM35	MF	0001-0000,427/-
R154	68R1	1	OM35	MF	0001-0000,427/-
R155	68R1	1	OM35	MF	0001-0000,427/-
R156	68R1	1	OM35	MF	0001-0000,427/-
R157	68R1	1	OM35	MF	0001-0000,427/-
R158	68R1	1	OM35	MF	0001-0000,427/-
R159	68R1	1	OM35	MF	0001-0000,427/-
R160	68R1	1	OM35	MF	0001-0000,427/-
R161	68R1	1	OM35	MF	0001-0000,427/-
R162	68R1	1	OM35	MF	0001-0000,427/-
R163	68R1	1	OM35	MF	0001-0000,427/-
R164	68R1	1	OM35	MF	0001-0000,427/-
R165	68R1	1	OM35	MF	0001-0000,427/-
R166	68R1	1	OM35	MF	0001-0000,427/-
R167	68R1	1	OM35	MF	0001-0000,427/-
R168	68R1	1	OM35	MF	0001-0000,427/-
R169	68R1	1	OM35	MF	0001-0000,427/-
R170	68R1	1	OM35	MF	0001-0000,427/-
R171	68R1	1	OM35	MF	0001-0000,427/-
R172	68R1	1	OM35	MF	0001-0000,427/-
R173	68R1	1	OM35	MF	0001-0000,427/-
R174	68R1	1	OM35	MF	0001-0000,427/-
R175	68R1	1	OM35	MF	0001-0000,427/-
R176	68R1	1	OM35	MF	0001-0000,427/-
R177	68R1	1	OM35	MF	0001-0000,427/-
R178	68R1	1	OM35	MF	0001-0000,427/-
R179	68R1	1	OM35	MF	0001-0000,427/-
R180	68R1	1	OM35	MF	0001-0000,427/-
R181	68R1	1	OM35	MF	0001-0000,427/-
R182	68R1	1	OM35	MF	0001-0000,427/-
R183	68R1	1	OM35	MF	0001-0000,427/-
R184	68R1	1	OM35	MF	0001-0000,427/-
R185	68R1	1	OM35	MF	0001-0000,427/-
R186	68R1	1	OM35	MF	0001-0000,427/-
R187	68R1	1	OM35	MF	0001-0000,427/-
R188	68R1	1	OM35	MF	0001-0000,427/-
R189	68R1	1	OM35	MF	0001-0000,427/-
R190	68R1	1	OM35	MF	0001-0000,427/-
R191	68R1	1	OM35	MF	0001-0000,427/-
R192	68R1	1	OM35	MF	0001-0000,427/-
R193	68R1	1	OM35	MF	0001-0000,427/-
R194	68R1	1	OM35	MF	0001-0000,427/-
R195	68R1	1	OM35	MF	0001-0000,427/-
R196	68R1	1	OM35	MF	0001-0000,427/-
R197	68R1	1	OM35	MF	0001-0000,427/-
R198	68R1	1	OM35	MF	0001-0000,427/-
R199	68R1	1	OM35	MF	0001-0000,427/-
R200	68R1	1	OM35	MF	0001-0000,427/-
R201	68R1	1	OM35	MF	0001-0000,427/-
R202	68R1				

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C6	470p	2	63	PF	0000-7598.421/-
C7	470p	2	63	PF	0000-7598.421/-
C8	1u	20	35	Tant.	0001-0040.704/-
C9	1u	20	35	Tant.	0001-0040.704/-
C10	100u	20	10	Tant.	0001-0041.156/-
C18	1u	20	6.3	Tant.	0001-0040.704/-
C19	22p	2	63	Cer.	0001-0004.290/-
C20	10u	20	6.3	Tant.	0001-0040.885/-
C21	22n	20	40	Cer.	0001-0006.418/-
C22	22n	20	40	Cer.	0001-0006.418/-
C23	22n	20	40	Cer.	0001-0006.418/-
C24	33p	2	63	Cer.	0001-0004.342/-
C27	39p	2	63	Cer.	0001-0004.371/-
C28	39p	2	63	Cer.	0001-0004.371/-
C29	1u	20	35	Tant.	0001-0040.704/-
C30	3n79	1	63	PF	0000-7598.434/-
C31	6n49	1	63	PF	0000-7598.502/-
C32	10n9	1	63	PF	0000-7598.515/-
C33	3n24	1	63	PF	0000-7598.492/-
C34	2n8	1	63	PF	0000-7598.489/-
C35	4n22	1	63	PF	0000-7598.573/-
C36	6n57	1	63	PF	0000-7598.586/-
C37	8n66	1	63	PF	0000-7557.682/-
C38	3n61	1	63	PF	0000-7598.609/-
C39	9n31	1	63	PF	0000-7586.080/-
C40	9n65	1	63	PF	0000-7598.612/-
C41	2n1	1	63	PF	0000-7598.625/-
C42	4n99	1	63	PF	0000-7598.638/-
C43	1n87	1	63	PF	0000-7598.641/-
C44	8n16	1	63	PF	0000-7598.654/-
C45	18n9	1	63	PF	0000-7598.667/-
C46	2n43	1	63	PF	0000-7598.599/-
C47	13n2	1	63	PF	0000-7598.670/-
C50	22p	2	63	Cer.	0001-0004.290/-
C51	22p	2	63	Cer.	0001-0004.290/-
TR1	2N2369A				0000-7542.066/-
TR2	2N2251				0001-0017.342/-
TR3	BC 109				0000-7602.029/-
TR4	2N2369A				0000-7542.066/-
TR5	2N2369A				0000-7542.066/-
TR6	2N2369A				0000-7542.066/-
TR7	2N2369A				0001-0019.493/-
D1	IN914 or IN4448				0001-0019.493/-
RV1	200R	20	OM	Var.	0000-7579.013/-
TC1	5534				0000-7513.257/-
TR1	FRANSFORMER				4502-1301.002/4
TR2	FRANSFORMER				4502-1302.001/4
TR3	FRANSFORMER				4502-1303.000/4
L1	INDUCTOR				4502-1438.001/4
L2	INDUCTOR				4502-1439.004/4
L3	INDUCTOR				4502-1440.002/4
L4	INDUCTOR				4502-1441.001/4
L5	INDUCTOR				4502-1442.000/4
L6	INDUCTOR				4502-1443.009/4
L7	INDUCTOR				4502-1444.008/4
L8	INDUCTOR				4502-1445.007/4
L9	INDUCTOR				4502-1446.006/4
L10	INDUCTOR				4502-1447.005/4
A79					P.C.B. MIXER 2 4502-0248.001/2

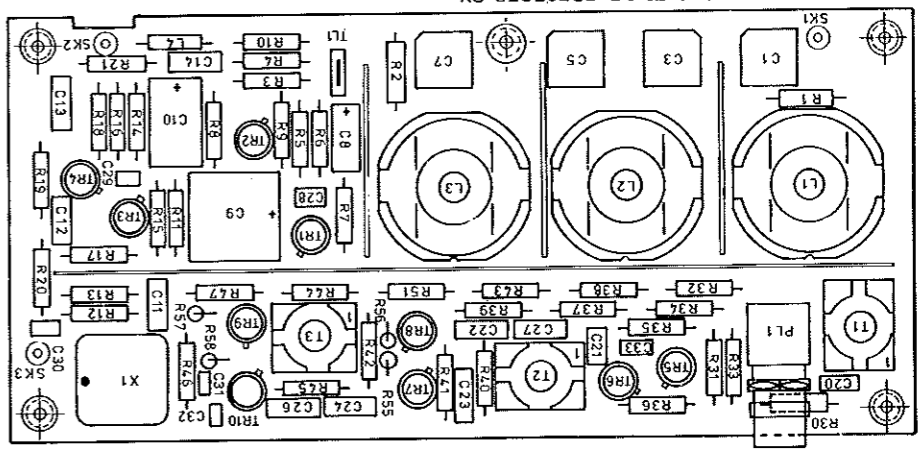


Fig. 11 Component Layout, Mixer 1, (23)

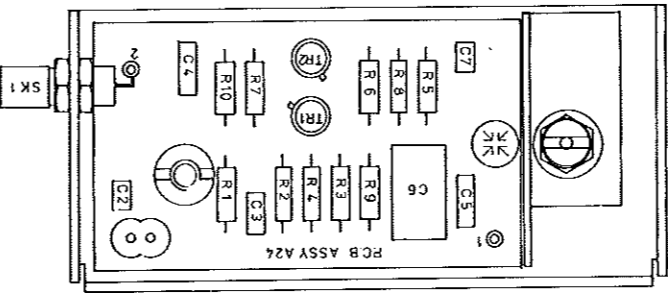


Fig. 12 Component Layout, 4MHz B/P Filter, (24)

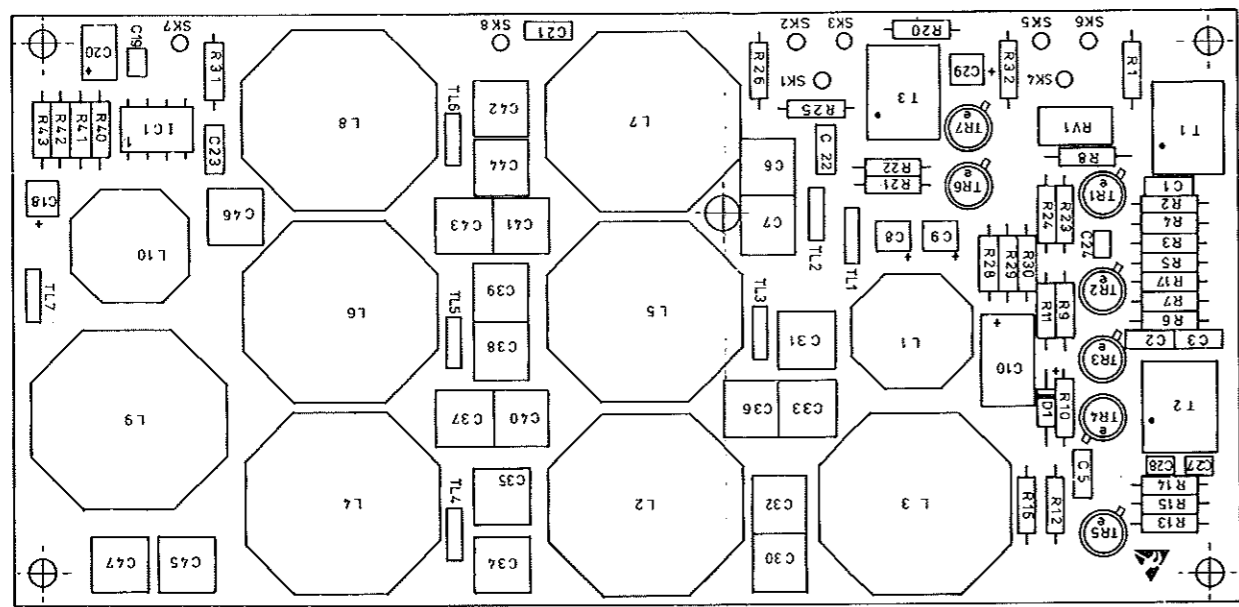


Fig. 13

Component Layout, Mixer 2/3, 1kHz Filter, (79)

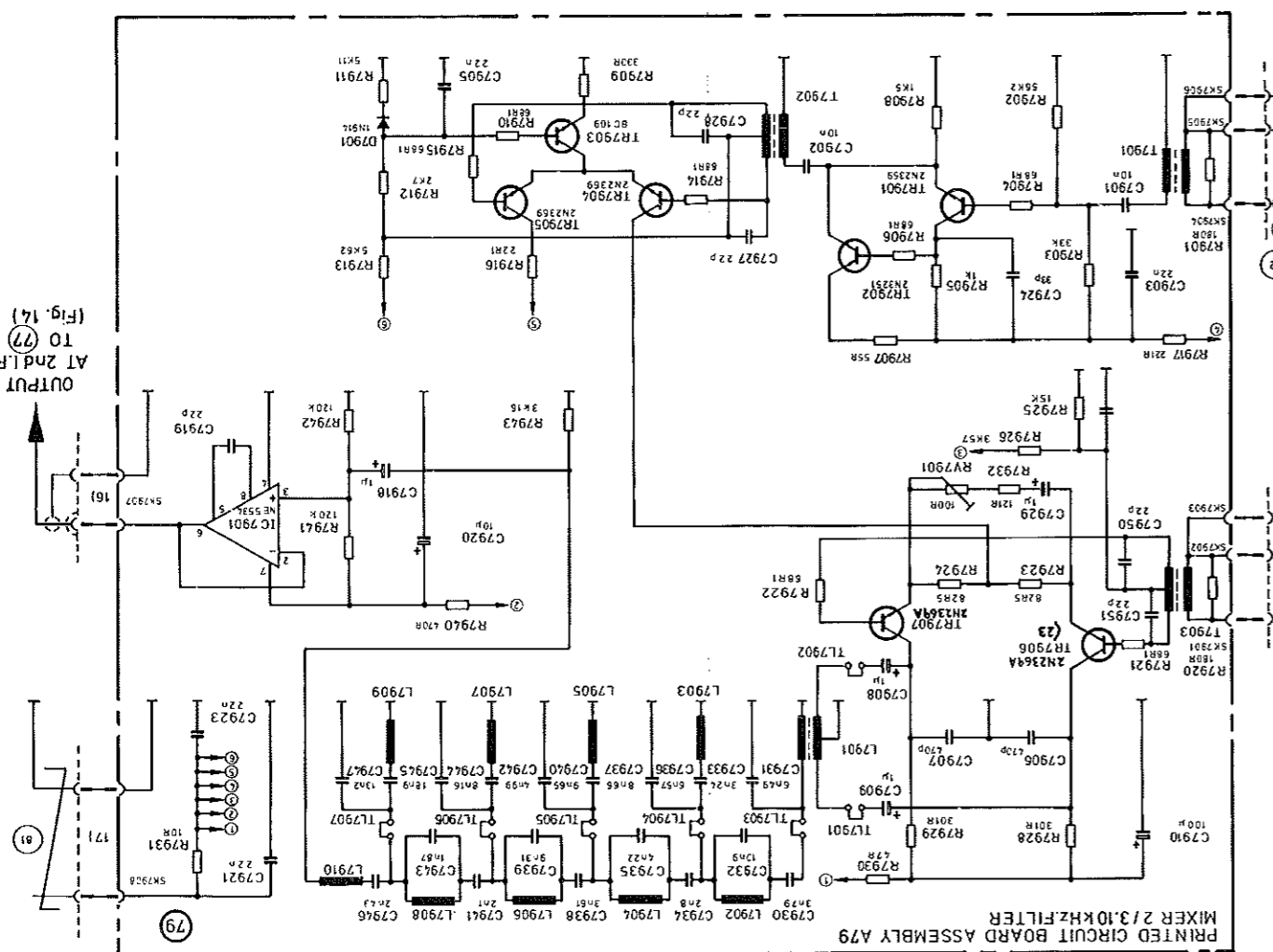
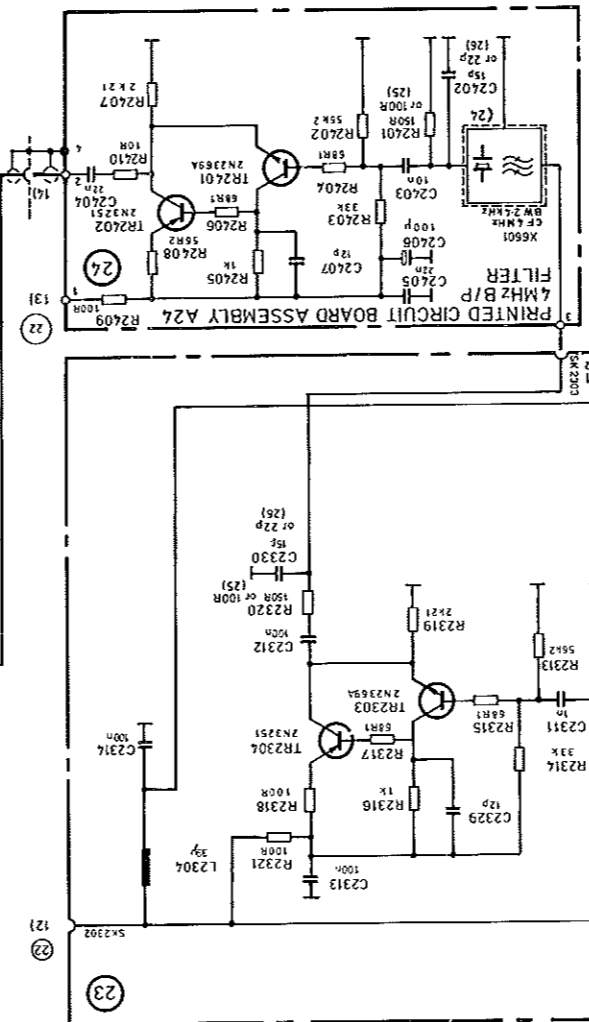
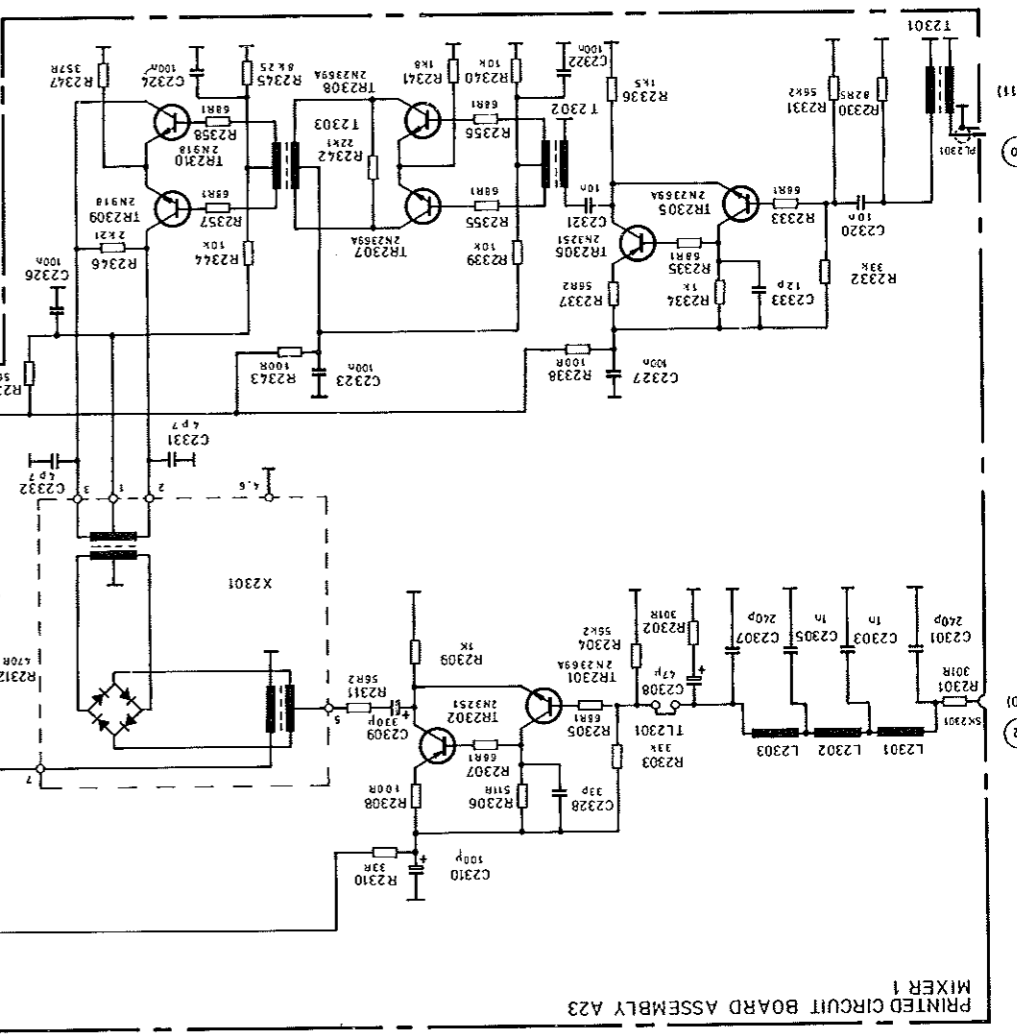


Fig. 10 Circuit Diagram, Mixer 1, (23) ; 4MHz B/P Filter, (24) and Mixer 2/3, 1kHz Filter, (79)

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

- 101S1G 1µF 200Hz - 620KHz (-40dB)
- 111 L.O. 1µF 4 - 4.62 MHz
- 121 10V from pre-amp
- 131 10V
- 141 0.1µF 1st IF 4MHz (-57dB)
- 151 INPUT L.O. 4.01MHz
- 161 OUTPUT 2nd IF (-40dB)
- 171 10V
- 21) TR7906 & TR7907 TO BE MATCHED PAIR
- 22) TR7906 & TR7907 TO A66 FILTER UNIT ASSEMBLY.
- 24) X2401 FITTED TO A66 FILTER UNIT ASSEMBLY.

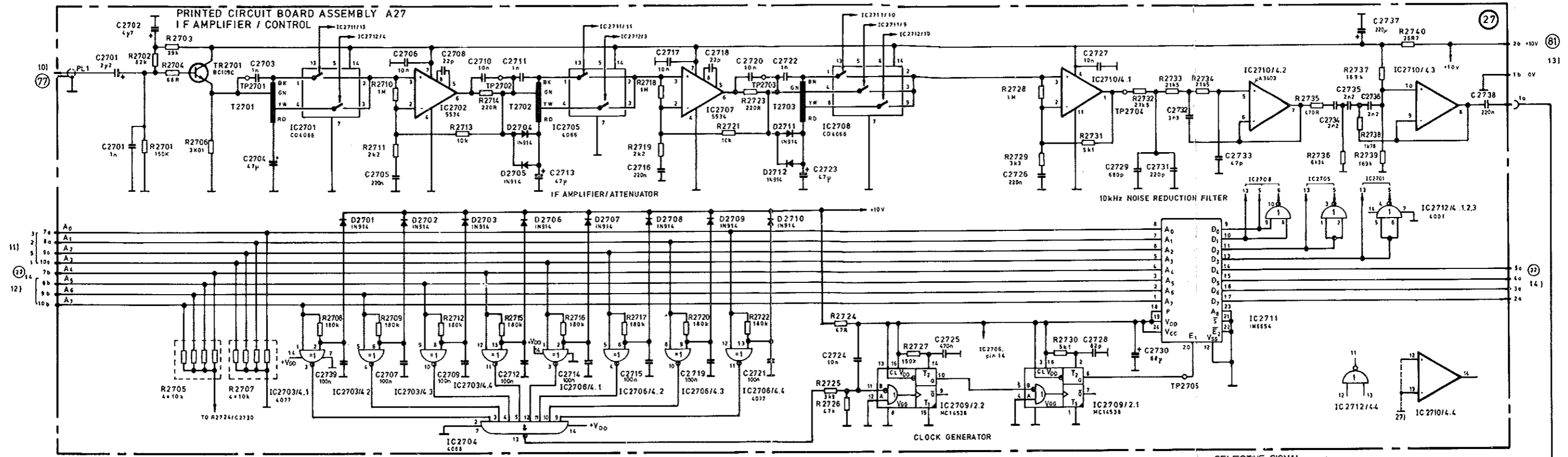
CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER eg C6 BECOMES C2406 AND SK1 BECOMES SK6601

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



ASSEMBLY P.C.B. A27 I.F. AMPLIFIER

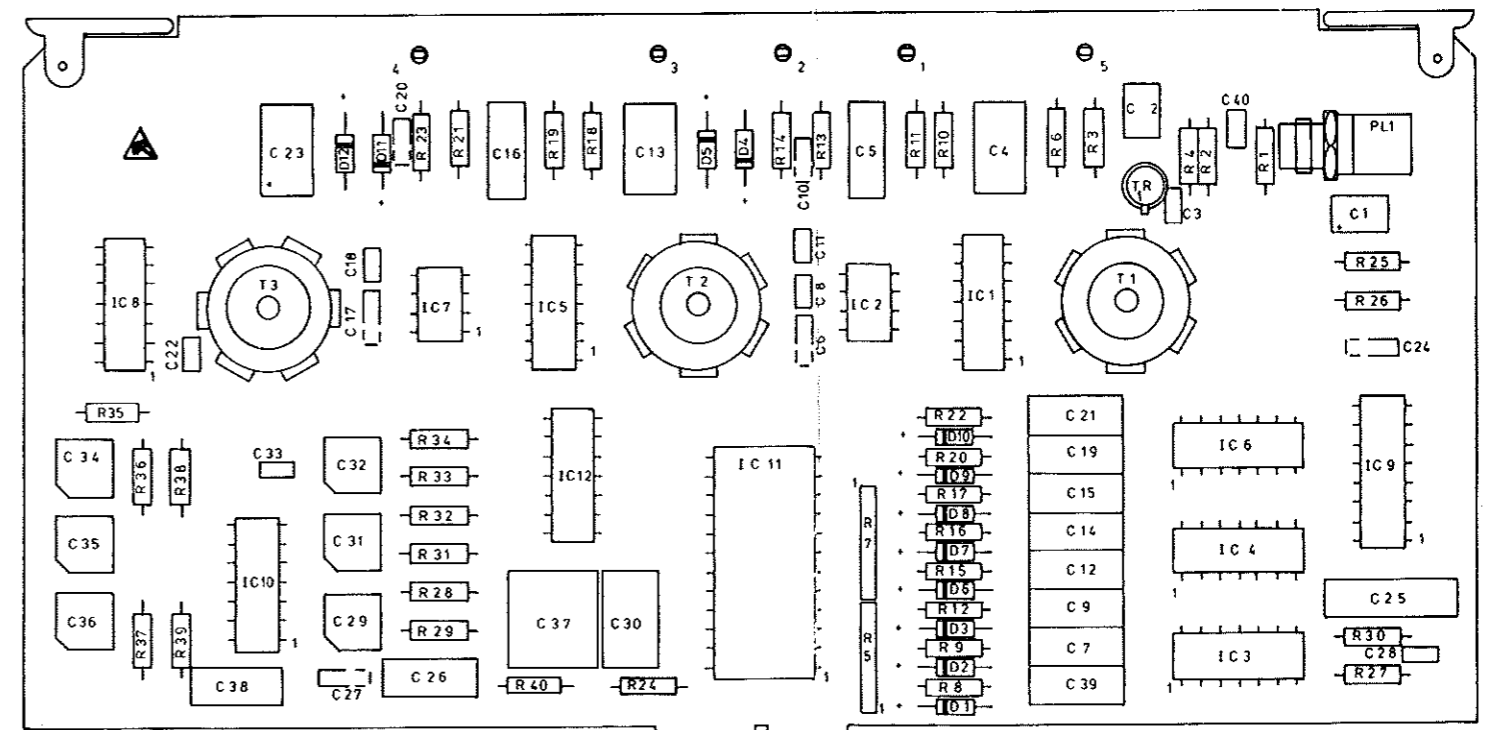
REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	150K	1	0W35	MF	0001-0003,110/-
R2	82K5	1	0W35	MF	0001-0002,933/-
R3	39K2	1	0W35	MF	0001-0002,658/-
R4	68R1	1	0W35	MF	0001-0000,427/-
R5	4 × 10K	2	0W25	RESISTOR PACK S.I.L.	0000-7604,535/-
R6	3K01	1	0W35	MF	0001-0001,620/-
R7	4 × 10K	2	0W25	RESISTOR PACK S.I.L.	0000-7604,535/-
R8	180K	2	0W25	MF	0000-7601,392/-
R9	180K	2	0W25	MF	0000-7601,392/-
R10	1M	1	0W35	MF	0000-0027,507/-
R11	2K21	1	0W35	MF	0001-0001,497/-
R12	180K	2	0W25	MF	0000-7601,392/-
R13	10K	1	0W35	MF	0001-0002,137/-
R14	221R	1	0W35	MF	0001-0000,715/-
R15	180K	2	0W25	MF	0000-7601,392/-
R16	180K	2	0W25	MF	0000-7601,392/-
R17	180K	2	0W25	MF	0000-7601,392/-
R18	1M	1	0W35	MF	0000-0027,507/-
R19	2K21	1	0W35	MF	0001-0001,407/-
R20	180K	2	0W25	MF	0000-7601,392/-
R21	10K	1	0W35	MF	0001-0002,137/-
R22	180K	2	0W25	MF	0000-7601,392/-
R23	221R	1	0W35	MF	0001-0000,715/-
R24	47R	2	0W25	MF	0000-7601,321/-
R25	3K92	1	0W35	MF	0001-0001,730/-
R26	47K	2	0W25	MF	0000-7558,393/-
R27	150K	1	0W35	MF	0001-0003,110/-
R28	1M	1	0W35	MF	0000-0027,507/-
R29	3K3	2	0W25	MF	4980-0000,012/-
R30	5K11	1	0W35	MF	0001-0001,853/-
R31	5K11	1	0W35	MF	0001-0001,853/-
R32	21K5	1	0W35	MF	0001-0002,438/-
R33	21K5	1	0W35	MF	0001-0002,438/-
R34	21K5	1	0W35	MF	0001-0002,438/-
R35	470R	2	0W25	MF	0000-7560,608/-
R36	6K34	1	0W35	MF	0001-0001,947/-
R37	169K	1	0W35	MF	0001-0003,136/-
R38	1K78	1	0W35	MF	0001-0003,796/-
R39	169K	1	0W35	MF	0001-0003,136/-
R40	26R7	2	0W25	MF	0001-0000,207/-
C1	2µ2	20	35	Tant.	0001-0040,762/-
C2	4µ7	20	10	Tant.	0001-0040,801/-
C3	1n	10	63	Cer.	0001-0004,698/-
C4	47µ	20	16	Tant.	0001-0041,062/-
C5	220n	10	100	PE	0001-0010,404/-
C6	10n	20	100	Cer.	0001-0004,818/-
C7	100n	20	100	PE	0001-0010,365/-
C8	22p	2	63	Cer.	0001-0004,290/-
C9	100n	20	100	PE	0001-0010,365/-
C10	10n	20	100	Cer.	0001-0004,818/-
C11	1n	10	63	Cer.	0001-0004,698/-
C12	100n	10	100	PE	0001-0010,365/-
C13	47µ	20	6.3	PE	0001-0041,062/-
C14	100n	10	100	PE	0001-0010,365/-
C15	100n	10	100	PE	0001-0010,365/-
C16	220n	10	100	PE	0001-0010,404/-
C17	10n	20	100	Cer.	0001-0004,818/-
C18	22p	2	63	Cer.	0001-0004,290/-
C19	100n	10	100	PE	0001-0010,365/-
C20	10n	20	100	Cer.	0001-0004,818/-
C21	100n	10	100	PE	0001-0010,365/-
C22	1n	10	63	Cer.	0001-0004,698/-
C23	47µ	20	6.3	Tant.	0001-0041,062/-
C24	10n	20	100	Cer.	0001-0004,818/-
C25	470n	10	100	PE	0001-0010,446/-
C26	220n	10	100	PE	0001-0010,404/-
C27	10n	20	100	Cer.	0001-0004,818/-
C28	82p	2	63	Cer.	0001-0004,481/-
C29	680p	2	63	PE	0000-7598,531/-
C30	68n	20	16	Tant.	0001-0041,114/-
C31	220p	2	63	PE	0000-7598,544/-
C32	3n3	2	63	PE	0000-7598,560/-
C33	47p	2	63	Cer.	0001-0004,397/-
C34	2n2	2	63	PE	0000-7573,695/-
C35	2n2	2	63	PE	0000-7573,695/-
C36	2n2	2	63	PE	0000-7573,695/-
C37	220µ	20	10	Tant.	0001-0041,208/-
C38	220n	10	100	PE	0001-0010,404/-
C39	100n	10	100	PE	0001-0010,365/-
C40	1n	10	63	Cer.	0001-0004,698/-
TR1				BC109 C	0000-7602,126/-
D1	1N914 or 1N4448				0001-0018,493/-
D2	1N914 or 1N4448				0001-0018,493/-
D3	1N914 or 1N4448				0001-0018,493/-
D4	1N914 or 1N4448				0001-0018,493/-
D5	1N914 or 1N4448				0001-0018,493/-
D6	1N914 or 1N4448				0001-0018,493/-
D7	1N914 or 1N4448				0001-0018,493/-
D8	1N914 or 1N4448				0001-0018,493/-
D9	1N914 or 1N4448				0001-0018,493/-
D10	1N914 or 1N4448				0001-0018,493/-
D11	1N914 or 1N4448				0001-0018,493/-
D12	1N914 or 1N4448				0001-0018,493/-
IC1					0001-0067,554/-
IC2					0000-7513,257/-
IC3					0001-0070,897/-
IC4					0001-0070,907/-
IC5					0001-0067,554/-
IC6					0001-0070,897/-
IC7					0000-7513,257/-
IC8					0001-0067,554/-
IC9					0001-0070,761/-
IC10					0000-7513,309/-
IC11					0000-7601,965/-
IC12					0001-0015,962/-
4001					0001-0015,962/-
TRANSFORMER					4502-1310,006/4
TRANSFORMER					4502-1310,006/4
TRANSFORMER					4502-1311,005/4
HOUSING WMI19/8/3					0000-2687,065/6
PLUG BULKHEAD					0000-2686,008/5
WMI19/8/3					0000-2687,078/5
RING					0000-2687,078/5
SCREW					0000-1637,058/5
P.C.B. I.F. AMPLIFIER					4502-0127,009/2



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

SELECTIVE SIGNAL TO (3) (Fig. 18)

Fig. 16 Circuit Diagram, I.F. Amplifier/E PROM, 27



CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER eg C4 BECOMES C2704 R25 BECOMES R2725

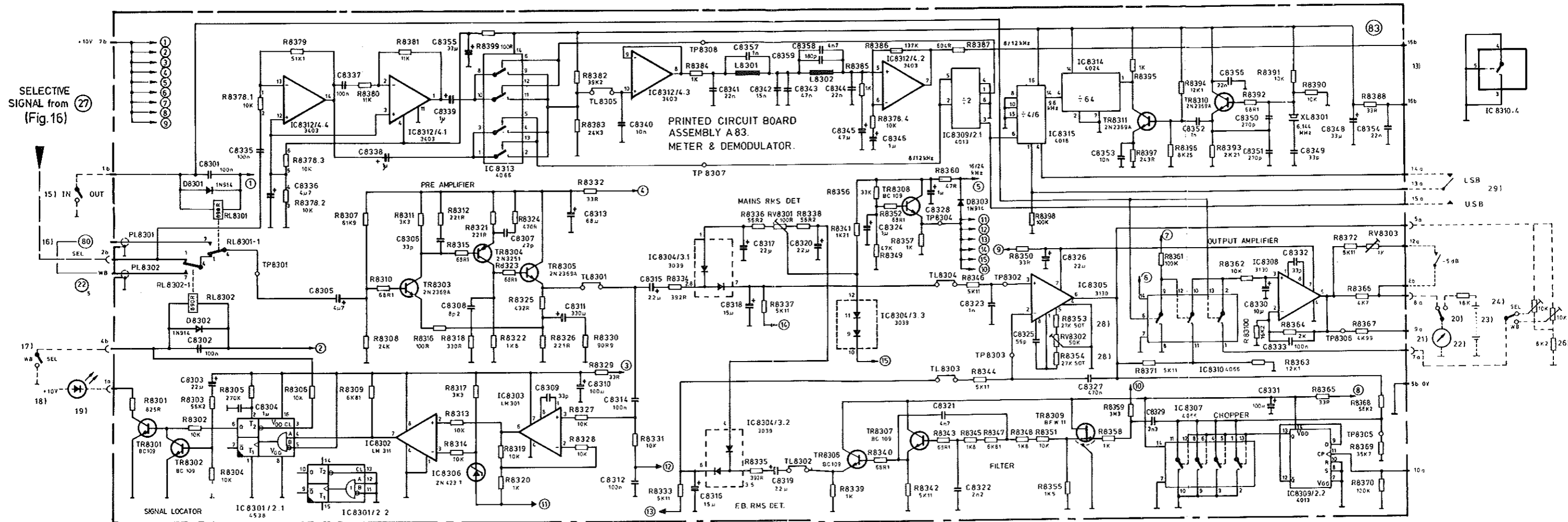
Fig. 17 Component Layout, I.F. Amplifier/E PROM, 27

ASSEMBLY P.C.B. A83 METER and DEMODULATOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	825R	1	0W35	MF	0001-0001.154/-	R58	1k	1	0W35	MF	0001-0001.219/-	C21	4n7	2	63	PF	0000-7598.528/-
R2	10k	1	0W35	MF	0001-0002.137/-	R59	3M3	5	0W25	MF	0001-0007.336/-	C22	2n2	2	63	Tant.	0000-7573.695/-
R3	56k2	1	0W35	MF	0001-0002.797/-	R60	47R	2	0W25	MF	0000-7601.321/-	C23	1n	10	63	Cer.	0001-0004.698/-
R4	10k	1	0W35	MF	0001-0002.137/-	R61	100k	1	0W35	MF	0001-0002.991/-	C24	1μ	20	35	Tant.	0001-0040.704/-
R5	270k	2	0W25	MF	0000-7601.363/-	R62	10k	1	0W35	MF	0001-0002.137/-	C25	56p	2	63	Cer.	0001-0004.423/-
R6	10k	1	0W35	MF	0001-0002.137/-	R63	12k1	1	0W35	MF	0001-0002.218/-	C26	22μ	20	16	Tant.	0001-0040.966/-
R7	61k9	1	0W35	MF	0001-0002.836/-	R64	2k	1	0W35	MF	0001-0001.455/-	C27	470n	10	100	PE	0001-0010.446/-
R8	24k	1	0W35	MF	0000-7601.334/-	R65	33R	2	0W25	MF	0000-7601.347/-	C28	1μ	20	35	Tant.	0001-0040.704/-
R9	6k81	1	0W35	MF	0001-0001.976/-	R66	4k7	2	0W25	MF	0001-0001.811/-	C29	3n3	10	63	Cer.	0001-0004.779/-
R10	68R1	1	0W35	MF	0001-0000.427/-	R67	4k99	0.1	0W125	MF	0000-7512.724/-	C30	10μ	20	25	Tant.	0001-0040.885/-
R11	3k3	2	0W25	MF	4980-0000.012/-	R68	56k2	1	0W35	MF	0001-0002.797/-	C31	100μ	20	10	Tant.	0001-0041.156/-
R12	221R	1	0W35	MF	0001-0000.715/-	R69	35k7	1	0W35	MF	0001-0002.616/-	C32	33p	2	100	Cer.	0001-0004.342/-
R13	10k	1	0W35	MF	0001-0002.137/-	R70	100k	1	0W35	MF	0001-0002.991/-	C33	100n	10	100	PE	0001-0010.365/-
R14	10k	1	0W35	MF	0001-0002.137/-	R71	5k11	1	0W35	MF	0001-0001.853/-	C35	100n	10	100	PE	0001-0010.365/-
R15	68R1	1	0W35	MF	0001-0000.427/-	R72	5k11	1	0W35	MF	0001-0001.853/-	C36	4μ7	20	10	Tant.	0001-0040.801/-
R16	100R	1	0W35	MF	0001-0000.537/-	R78	10k	2	0W125	RESISTOR NETWORK	0000-7602.760/-	C37	100n	10	100	PE	0001-0010.365/-
R17	3k3	2	0W25	MF	4980-0000.012/-	R79	51k1	1	0W35	MF	0001-0002.768/-	C38	1μ	20	35	Tant.	0001-0040.704/-
R18	330R	2	0W25	MF	0000-7601.389/-	R80	11k	1	0W35	MF	0001-0002.179/-	C39	1μ	20	35	Tant.	0001-0040.704/-
R19	10k	1	0W35	MF	0001-0002.137/-	R81	11k	1	0W35	MF	0001-0002.179/-	C40	10n	20	40	Cer.	0001-0004.818/-
R20	1k	1	0W35	MF	0001-0001.219/-	R82	39k2	1	0W35	MF	0001-0002.658/-	C41	22n	10	100	PF	0001-0010.255/-
R21	221R	1	0W35	MF	0001-0000.715/-	R83	24k3	1	0W35	MF	0001-0002.470/-	C42	15n	10	100	PF	0001-0010.239/-
R22	1k8	2	0W25	MF	0001-0014.510/-	R84	1k	1	0W35	MF	0001-0001.219/-	C43	47n	10	100	PF	0001-0010.310/-
R23	68R1	1	0W35	MF	0001-0000.427/-	R85	1k	1	0W35	MF	0001-0001.219/-	C44	22n	10	100	PF	0001-0010.255/-
R24	470R	2	0W25	MF	0000-7560.608/-	R86	137k	1	0W35	MF	0001-0003.084/-	C45	47μ	20	6.3	Tant.	0001-0041.059/-
R25	432R	1	0W35	MF	0001-0000.935/-	R87	604R	1	0W35	MF	0001-0001.031/-	C46	1μ	20	35	Tant.	0001-0040.704/-
R26	221R	1	0W35	MF	0001-0000.715/-	R88	33R	2	0W25	MF	0000-7601.347/-	C48	33μ	20	10	Tant.	0001-0040.995/-
R27	10k	1	0W35	MF	0001-0002.137/-	R90	10k	1	0W35	MF	0001-0002.137/-	C49	33p	2	100	Cer.	0001-0004.342/-
R28	10k	1	0W35	MF	0001-0002.137/-	R91	10k	1	0W35	MF	0001-0002.137/-	C50	270p	2	63	Cer.	0001-0004.627/-
R29	33R	2	0W25	MF	0000-7601.347/-	R92	68R1	1	0W35	MF	0001-0000.427/-	C51	270p	2	63	Cer.	0001-0004.627/-
R30	90R9	1	0W35	MF	0001-0000.511/-	R93	2k2	1	0W35	MF	0001-0001.497/-	C52	1n	10	63	Cer.	0001-0004.698/-
R31	10k	1	0W35	MF	0001-0002.137/-	R94	12k1	1	0W35	MF	0001-0002.218/-	C53	10n	20	40	Cer.	0001-0004.818/-
R32	33R	2	0W25	MF	0000-7601.347/-	R95	1k	1	0W35	MF	0001-0001.219/-	C54	22n	20	40	Cer.	0001-0006.418/-
R33	5k11	1	0W35	MF	0001-0001.853/-	R96	8k25	1	0W35	MF	0001-0002.056/-	C55	33μ	1	40	Tant.	0001-0040.995/-
R34	392R	1	0W35	MF	0001-0000.896/-	R97	243R	1	0W35	MF	0001-0000.731/-	C56	22n	20	40	Cer.	0001-0006.418/-
R35	392R	1	0W35	MF	0001-0000.896/-	R98	100k	1	0W35	MF	0001-0002.991/-	C57	1n	20	100	Cer.	0001-0004.698/-
R36	56R2	1	0W35	MF	0001-0000.346/-	R99	100R	1	0W35	MF	0001-0000.537/-	C58	4n7	10	63	Cer.	0001-0004.795/-
R37	5k11	1	0W35	MF	0001-0001.853/-	R100	16k2	1	0W35	MF	0001-0002.315/-	C59	180p	2	63	Cer.	0001-0004.591/-
R38	56R2	1	0W35	MF	0001-0000.346/-	C1	100n	10	100	PE	0001-0010.365/-	TR1				BC109	0000-7602.029/-
R39	1k	1	0W35	MF	0001-0001.219/-	C2	100n	10	100	PE	0001-0010.365/-	TR2				BC109	0000-7602.029/-
R40	68R1	1	0W35	MF	0001-0000.427/-	C3	22μ	20	16	Tant.	0001-0040.966/-	TR3				2N2369A	0000-7542.066/-
R41	1k21	1	0W35	MF	0001-0001.277/-	C4	1μ	10	100	PE	0001-0010.501/-	TR4				2N3251	0001-0017.342/-
R42	5k11	1	0W35	MF	0001-0001.853/-	C5	4μ7	20	10	Tant.	0001-0040.801/-	TR5				2N2369A	0000-7542.066/-
R43	68R1	1	0W35	MF	0001-0000.427/-	C6	33p	2	63	Cer.	0001-0004.342/-	TR6				BC 109	0000-7602.029/-
R44	5k11	1	0W35	MF	0001-0001.853/-	C7	22p	2	63	Cer.	0001-0004.290/-	TR7				BC 109	0000-7602.029/-
R45	1k8	2	0W25	MF	0000-0014.510/-	C8	8p2	0.25	63	Cer.	0001-0004.148/-	TR8				BC 109	0000-7602.029/-
R46	5k11	1	0W35	MF	0001-0001.853/-	C9	33p	2	100	Cer.	0001-0004.342/-	TR9				BFW 11	0000-7602.003/-
R47	6k81	1	0W35	MF	0001-0001.976/-	C10	100μ	20	10	Tant.	0001-0041.156/-	TR10				2N2369A	0000-7542.066/-
R48	1k8	2	0W25	MF	0001-0014.510/-	C11	330μ	20	6.3	Tant.	0001-0041.211/-	TR11				2N2369A	0000-7542.066/-
R49	47k	2	0W25	MF	0000-7558.393/-	C12	100n	10	100	PE	0001-0010.365/-	D1				1N914 or 1N4448	0001-0018.493/-
R50	33R	2	0W25	MF	0000-7601.347/-	C13	68μ	20	16	Tant.	0001-0041.114/-	D2				1N914 or 1N4448	0001-0018.493/-
R51	10k	1	0W35	MF	0001-0002.137/-	C14	100n	10	100	PE	0001-0010.365/-	D3				1N914 or 1N4448	0001-0018.493/-
R52	68R1	1	0W35	MF	0001-0000.427/-	C15	22μ	20	16	Tant.	0001-0040.966/-	RV1	100R	20	0.5	Var.	0000-7601.648/-
R53	27k	2	0W25	MF	0000-7558.377/-	C16	15μ	20	16	Tant.	0001-0040.924/-	RV2	50k	20	0.5	Var.	0000-7601.635/-
R54	27k	2	0W25	MF	0000-7558.377/-	C17	22μ	20	16	Tant.	0001-0040.966/-	RV3	1k	20	0.5	Var.	0000-7573.679/-
R55	1k5	1	0W35	MF	0001-0001.358/-	C18	15μ	20	16	Tant.	0001-0040.924/-	IC1				4538	0000-0070.761/-
R56	33k	2	0W25	MF	4980-0000.009/-	C19	22μ	20	16	Tant.	0001-0040.966/-	IC2				311	0000-7601.004/-
R57	1k	1	0W35	MF	0001-0001.219/-	C20	22μ	20	16	Tant.	0001-0040.966/-	IC3				301	0000-7601.978/-

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.
IC4				3039	0001-0016.314/-
IC5				3130	0001-0069.918/-
IC6				ZN 423 T	0000-7601.923/-
IC7				4066	0001-0067.554/-
IC8				3130	0001-0069.918/-
IC9				4013	0001-0015.991/-
IC10				4066	0001-0067.554/-
IC12				3403	0000-7513.309/-
IC13				4066	0001-0067.554/-
IC14				4024	0001-0016.039/-
IC15				4018	0001-0068.760/-
XL1	6.144MHz			CRYSTAL	0000-7602.715/-
RL1				RSD - 12V	0001-0069.620/-
RL2				RSD - 12V	0001-0069.620/-
L1	51.5mH			INDUCTOR	4502-1436.003/4
L2	51.5mH			INDUCTOR	4502-1436.003/4
PL1				CONNECTOR ELBOW PC	0000-2687.065/6
PL2				HOUSING COAX. SKT.	
				BULKHEAD	0000-2686.008/5
				MOUNTING SPACER RING	0000-2687.078/5
				SCREW	0000-1637.058/5
A83				P.C.B. METER and DEMOMULATOR	4502-0283.008/2





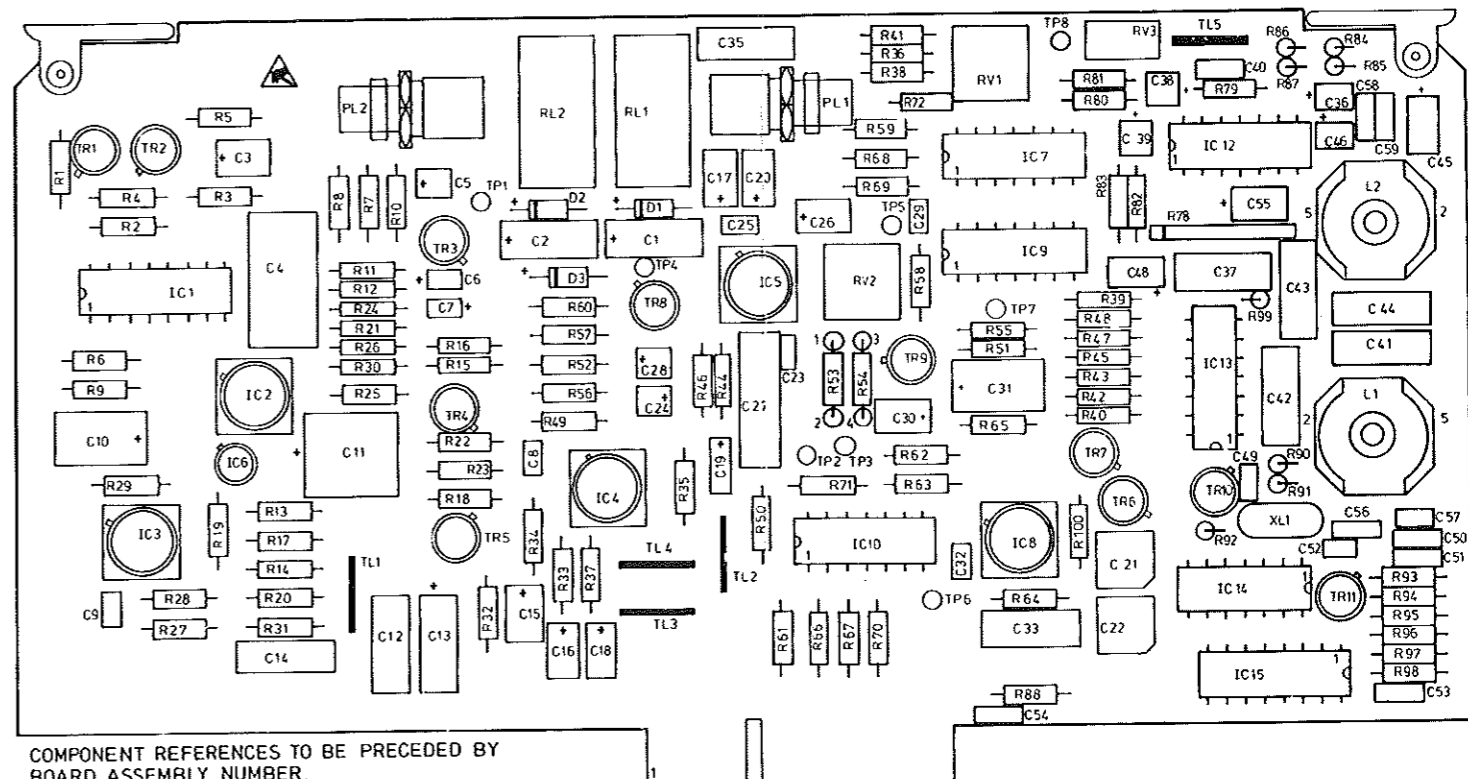
NOTES 1) Suffix a on edge connector denotes component side b denotes non-component side.

13) POWER SUPPLY
15) SWITCH ON PSE (IF FITTED).
16) SIGNAL
17) FRONT PANEL SW
18) ON DISPLAY BOARD
19) LED(IGN) ON DISPLAY BOARD

20) BATTERY CH SW FRONT PANEL
21) D.C O/P TO REAR PANEL SOCKET.
22) SIFAM DS 48 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.

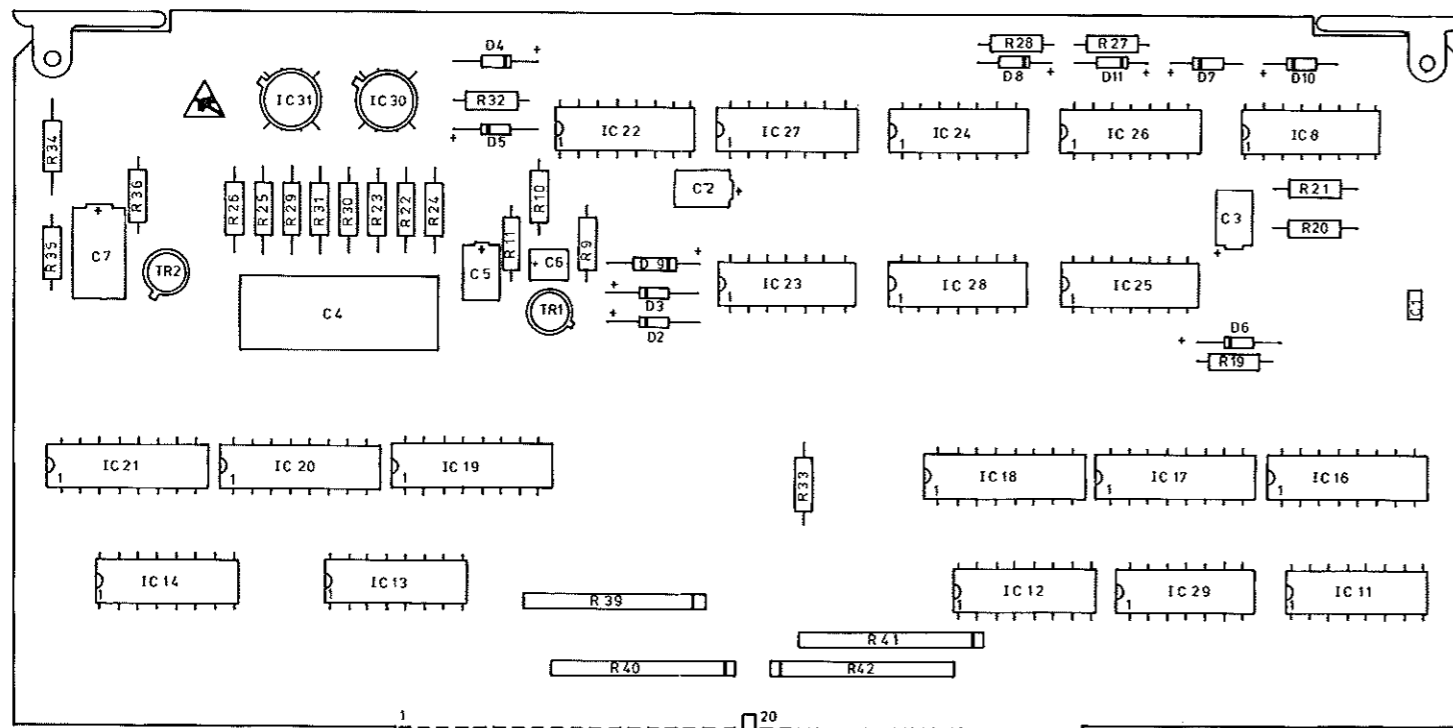
28) R53 & R54.50T RESISTORS WILL EACH BE APPROX 27K. IF EITHER IS CHANGED THEIR SUM TOTAL MUST NOT EXCEED 54K
29) USB/LSB SW ON FRONT PANEL

**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)**

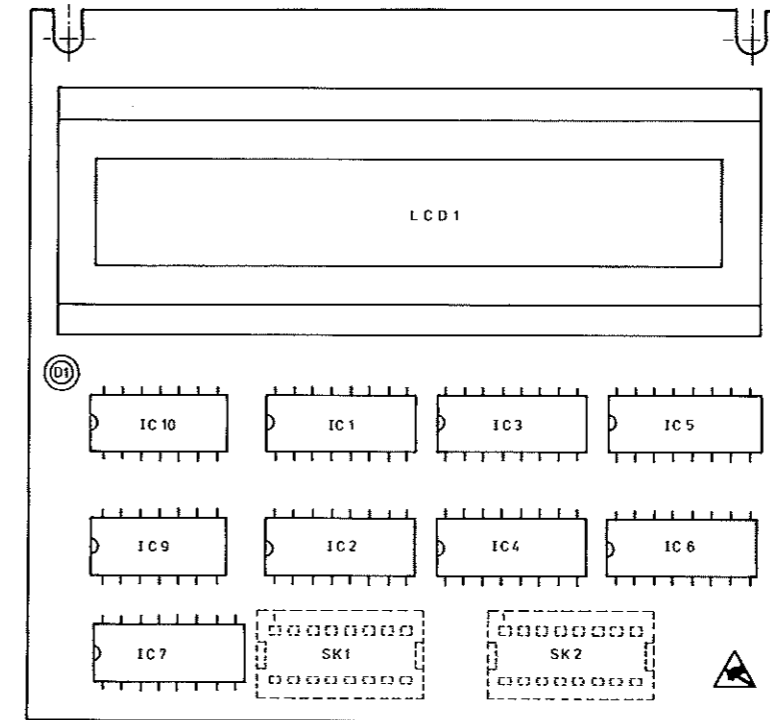


CIRCUIT REFERENCES TO BE
PRECEDED BY BOARD ASSEMBLY
NUMBER eg C4 BECOMES C2904
IC13 BECOMES IC2913

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

ASSEMBLY P.C.B. A29 FREQUENCY CONTROL

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.
R9	39R2	1	0W35	MF	0001-0003.547/-
R10	221k	1	0W35	MF	0001-0003.217/-
R11	56k2	1	0W35	MF	0001-0002.797/-
R19	56k2	1	0W35	MF	0001-0002.797/-
R20	100R	1	0W35	MF	0001-0000.537/-
R21	562k	1	0W35	CF	0001-0003.408/-
R22	27k	2	0W25	MF	0000-7558.377/-
R23	100k	1	0W35	MF	0001-0002.991/-
R24	82R5	1	0W35	MF	0001-0000.472/-
R25	1M2	5	0W35	CF	0001-0007.297/-
R26	1M2	5	0W35	CF	0001-0007.297/-
R27	301k	1	0W35	MF	0001-0062.025/-
R28	33k	2	0W25	MF	4980-0000.009/-
R29	82R5	1	0W35	MF	0001-0000.472/-
R30	221k	1	0W35	MF	0001-0003.217/-
R31	27k	2	0W25	MF	0000-7558.377/-
R32	7k5	1	0W35	MF	0001-0002.014/-
R33	825R	1	0W35	MF	0001-0001.154/-
R34	562k	1	0W35	CF	0001-0003.408/-
R35	56k2	1	0W35	MF	0001-0002.797/-
R36	301k	1	0W35	MF	0001-0062.025/-
R38					
R39	10 x 100k	2	0W2	RESISTOR PACK	0000-7604.441/-
R40	10 x 100k	2	0W2	RESISTOR PACK	0000-7604.441/-
R41	10 x 100k	2	0W2	RESISTOR PACK	0000-7604.441/-
R42	10 x 100k	2	0W2	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/-



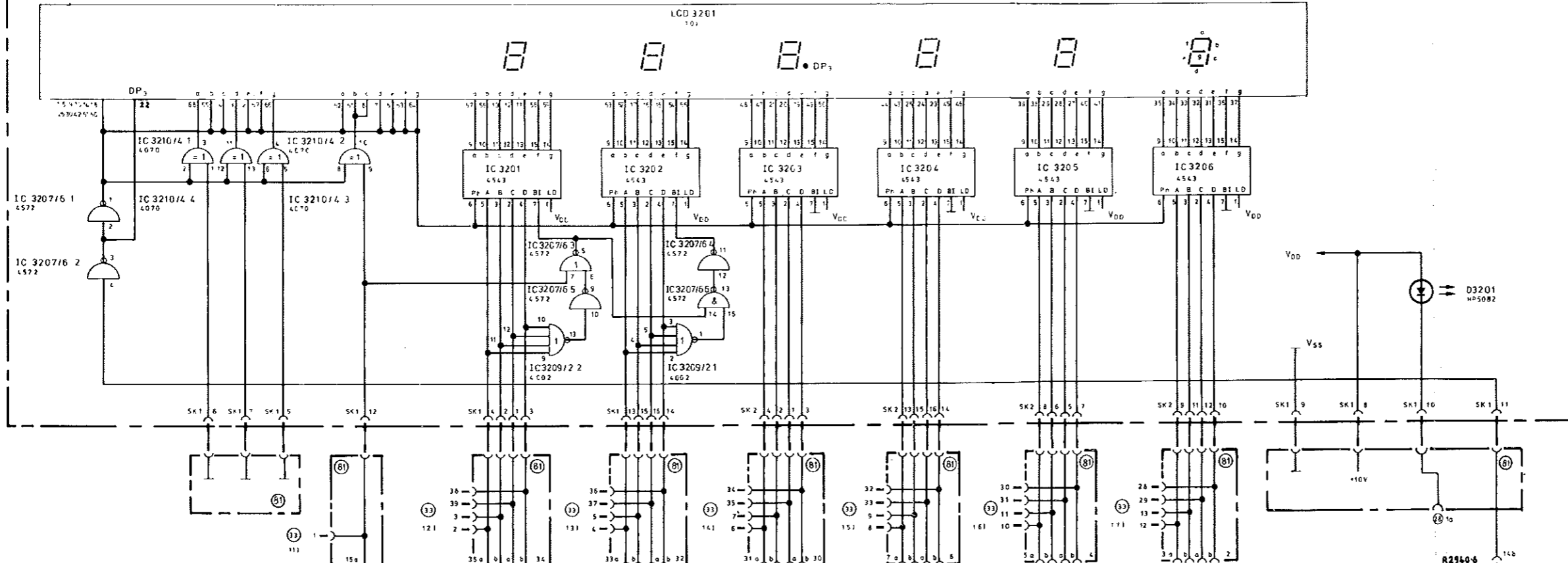
CIRCUIT REFERENCES TO BE
PRECEDED BY BOARD ASSEMBLY
NUMBER eg IC2 BECOMES IC3202.

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

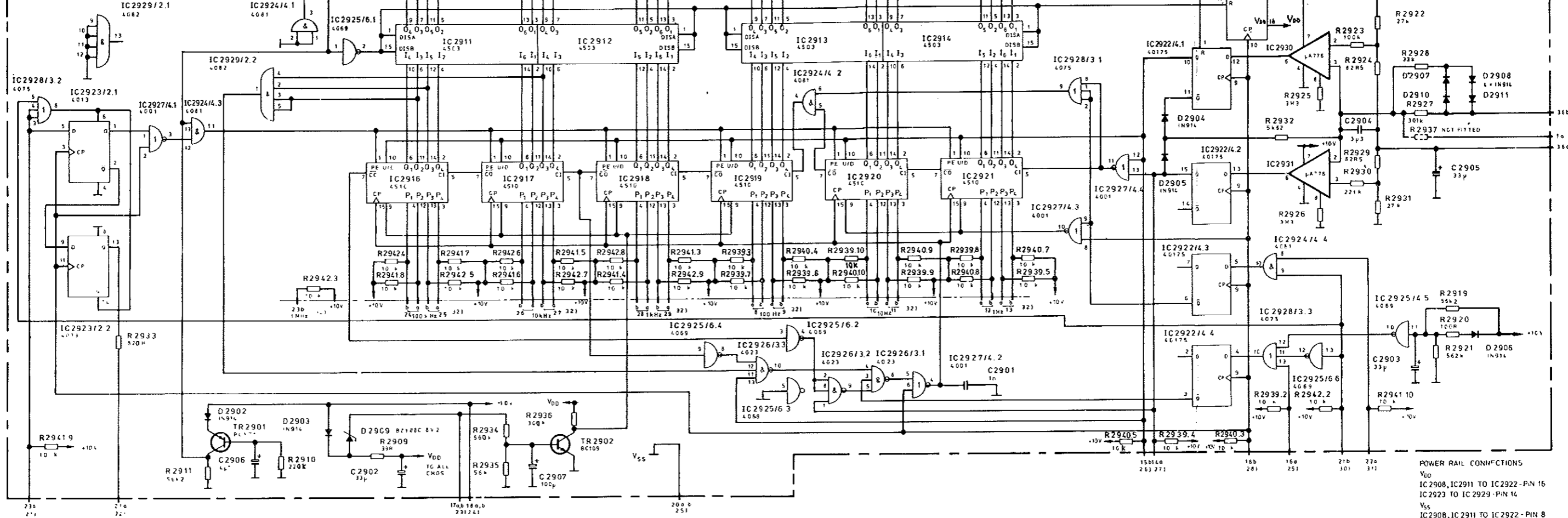
ASSEMBLY P.C.B. A32 DISPLAY BOARD

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 930-080-S-RF-P2H	0000-7591.114/-
A32				P.C.B. DISPLAY BOARD	4502-0132.007/2

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.
C4	3µ3	10	63	Tant.	0000-7601.606/-
C5	33µ	20	10	Tant.	0001-0040.995/-
C6	4µ7	20	10	Tant.	0001-0040.801/-
C7	100µ	20	10	Tant.	0001-0041.156/-
TR1				BCY71	0001-0016.534/-
TR2				BC109	0000-7602.029/-
D2				1N914 or 1N4448	0001-0018.493/-
D3				1N914 or 1N4448	0001-0018.493/-
D4				1N914 or 1N4448	0001-0018.493/-
D5				1N914 or 1N4448	0001-0018.493/-
D6				1N914 or 1N4448	0001-0018.493/-
D7				1N914 or 1N4448	0001-0018.493/-
D8				1N914 or 1N4448	0001-0018.493/-
D9				BZY88C8V2	0001-0019.036/-
D10				1N914 or 1N4448	0001-0018.493/-
D11				1N914 or 1N4448	0001-0018.493/-
IC8				4040	0001-0065.462/-
IC11				4503	0000-7548.853/-
IC12				4503	0000-7548.853/-
IC13				4503	0000-7548.853/-
IC14				4503	0000-7548.853/-
IC15					
IC16				4510	0001-7548.650/-
IC17				4510	0001-7548.650/-
IC18				4510	0001-7548.650/-
IC19				4510	0001-7548.650/-
IC20				4510	0001-7548.650/-
IC21				4510	0001-7548.650/-
IC22				4175	0000-7529.416/-



POWER RAIL CONNECTIONS
 VDD
 IC 3201 TO IC 3206 PIN 16
 IC 3207, IC 3209, IC 3210 PIN 16
 VSS
 IC 3201 TO IC 3206 PIN 8
 IC 3207, IC 3209, IC 3210 PIN 7



POWER RAIL CONNECTIONS
 VDD
 IC 2908, IC 2911 TO IC 2922 - PIN 16
 IC 2923 TO IC 2929 - PIN 16
 VSS
 IC 2908, IC 2911 TO IC 2922 - PIN 8
 IC 2923 TO IC 2929 - PIN 7

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

- 10) LIQUID CRYSTAL DISPLAY
 11) DIV1 1MHz
 12) To motor M-
 13) .. 10kHz
 14) .. 1kHz
 15) .. 100Hz
 16) .. 10Hz
 17) .. 1Hz
 18) To motor M+

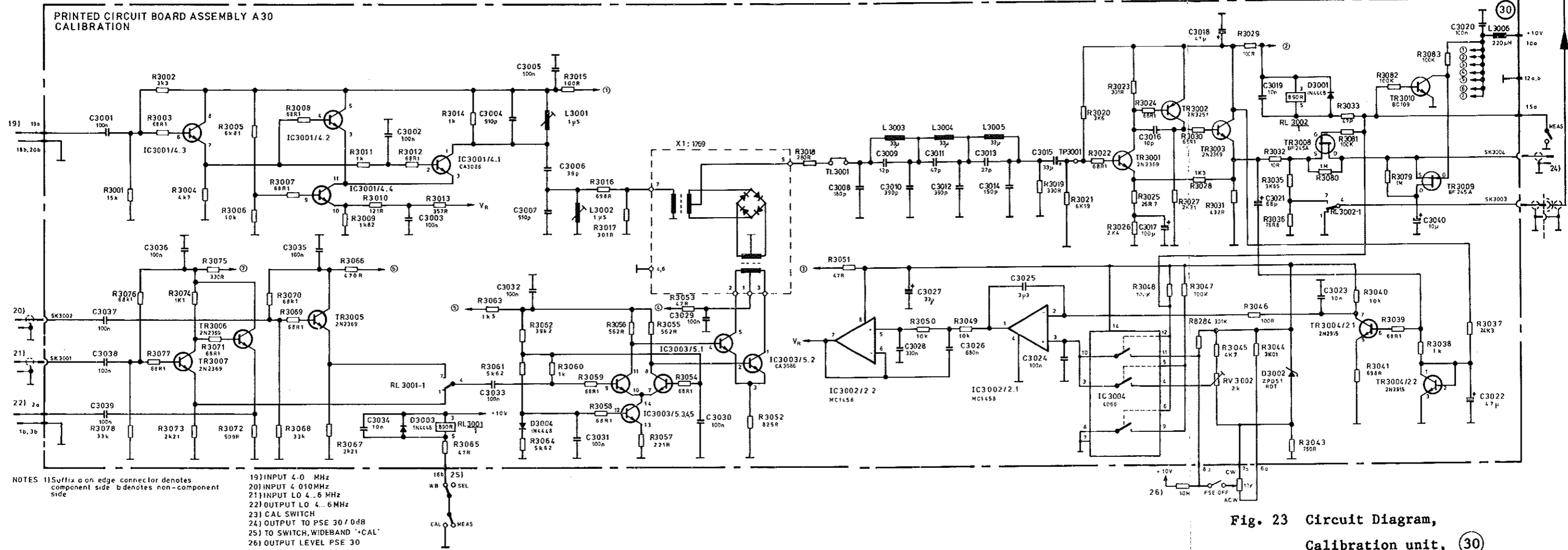
- 19) Not connected
 20) To motor M-
 21) DAV
 22) DAC
 23) UBATT
 24) +10V
 25) GND
 26) To DIV1 UP

- 27) To DIV1 DN
 28) To DIV1 DAW
 29) To SW LOCK
 30) To SW REM
 31) To SA COR/FINE
 32) To back panel connector, not fitted

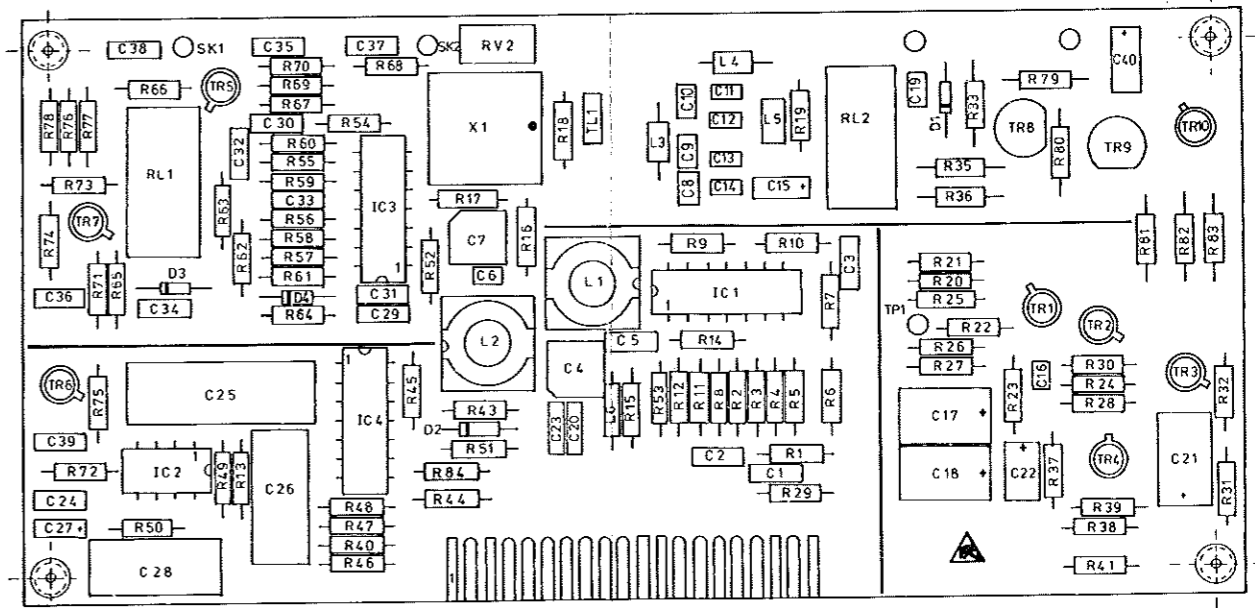
Fig. 22
 Circuit Diagram, Frequency Control, and Frequency Display 29 32

ASSEMBLY P.C.B. A30 CALIBRATION

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	
R1	15k	1	0W35	MF	0001-0002.289/-	R60	1k	1	0W35	MF	0001-0001.219/-	C33	100n	20	100	Cer.	0000-7598.450/-	
R2	3k3	2	0W25	MF	4980-0000.012/-	R61	5k62	1	0W35	MF	0001-0001.895/-	C34	10n	20	40	Cer.	0001-0004.818/-	
R3	68R1	1	0W35	MF	0001-0000.427/-	R62	39k2	1	0W35	MF	0001-0002.658/-	C35	100n	20	100	Cer.	0000-7598.450/-	
R4	4k7	2	0W25	MF	0001-0001.811/-	R63	1k5	1	0W35	MF	0001-0001.358/-	C36	100n	20	100	Cer.	0000-7598.450/-	
R5	6k81	1	0W35	MF	0001-0001.976/-	R64	5k62	1	0W35	MF	0001-0001.895/-	C37	100n	20	100	Cer.	0000-7598.450/-	
R6	10k	1	0W35	MF	0001-0002.137/-	R65	47R	2	0W25	MF	0001-7601.321/-	C38	100n	20	100	Cer.	0000-7598.450/-	
R7	68R1	1	0W35	MF	0001-0000.427/-	R66	470R	2	0W25	MF	0000-7560.608/-	C39	100n	20	100	Cer.	0000-7598.450/-	
R8	68R1	1	0W35	MF	0001-0000.427/-	R67	2k21	1	0W35	MF	0001-0001.497/-	C40	10µ	20	25	Tant.	0000-0040.885/-	
R9	1k82	1	0W35	MF	0001-0001.413/-	R68	33k	2	0W25	MF	4980-0000.009/-	TR1				2N2369A	0000-7542.066/-	
R10	121R	1	0W35	MF	0001-0000.566/-	R69	68R1	1	0W35	MF	0001-0000.427/-	TR2				2N3251	0001-0017.342/-	
R11	1k	1	0W35	MF	0001-0001.219/-	R70	68k1	1	0W35	MF	0001-0002.878/-	TR3				2N2369A	0000-7542.066/-	
R12	68R1	1	0W35	MF	0001-0000.427/-	R71	68R1	1	0W35	MF	0001-0000.427/-	TR4				2N2915	0001-0072.442/-	
R13	357R	1	0W35	MF	0001-0000.867/-	R72	909R	2	0W25	MF	0001-0001.183/-	TR5				2N2369A	0000-7542.066/-	
R14	1k	1	0W35	MF	0001-0001.219/-	R73	2k21	2	0W25	MF	0001-0001.497/-	TR6				2N2369A	0000-7542.066/-	
R15	100R	1	0W35	MF	0001-0000.537/-	R74	1k1	1	0W35	MF	0001-0001.235/-	TR7				2N2369A	0000-7542.066/-	
R16	698R	1	0W35	MF	0001-0001.099/-	R75	330	2	0W25	MF	0000-7601.389/-	TR8				FET BF245A	0001-0016.628/-	
R17	301R	1	0W35	MF	0001-0000.799/-	R76	68k1	1	0W35	MF	0001-0002.878/-	TR9				FET BF245A	0001-0016.628/-	
R18	280R	1	0W35	MF	0001-0000.773/-	R77	68R1	1	0W35	MF	0001-0000.427/-	TR10				BC109	0000-7602.029/-	
R19	330R	2	0W25	MF	0000-7601.389/-	R78	33k	2	0W25	MF	4980-0000.009/-	D1				1N4448	0001-0018.493/-	
R20	3k57	1	0W35	MF	0001-0001.691/-	R79	1M	1	0W35	MF	0001-0027.507/-	D2				ZPD 5V1	0001-0018.846/-	
R21	6k19	1	0W35	MF	0001-0001.934/-	R80	1M	1	0W35	MF	0001-0027.507/-	D3				1N4448	0001-0018.493/-	
R22	68R1	1	0W35	MF	0001-0000.427/-	R81	100k	1	0W35	MF	0001-0002.991/-	D4				1N4448	0001-0018.493/-	
R23	301R	1	0W35	MF	0001-0000.799/-	R82	100k	1	0W35	MF	0001-0002.991/-	RV2	2k0	20	0W5	Var.	0000-7579.039/-	
R24	68R1	1	0W35	MF	0001-0000.427/-	R83	100k	1	0W35	MF	0001-0002.991/-	IC1				CA 3086	0000-7601.952/-	
R25	26R7	1	0W35	MF	0001-0000.207/-	R84	301k	2	0W25	MF	0001-0062.025/-	IC2				MC1458	0001-0014.989/-	
R26	2k4	2	0W25	MF	0000-7601.415/-	C1	100n	20	100	Cer.	0000-7598.450/-	IC3				CA 3086	0000-7601.952/-	
R27	2k21	1	0W35	MF	0001-0001.497/-	C2	100n	20	100	Cer.	0000-7598.450/-	IC4				CD 4066	0001-0067.554/-	
R28	1k3	2	0W25	MF	0000-0001.303/-	C3	100n	20	100	Cer.	0000-7598.450/-	L1	1.5µH			INDUCTOR	4502-1412.001/4	
R29	100R	1	0W35	MF	0001-0000.537/-	C4	910p	2	63	PF	0000-7598.557/-	L2	1.5µH			INDUCTOR	4502-1412.001/4	
R30	68R1	1	0W35	MF	0001-0000.427/-	C5	100n	20	100	Cer.	0000-7598.450/-	L3	33µH			INDUCTOR	0000-7556.230/-	
R31	432R	1	0W35	MF	0001-0000.935/-	C6	39p	2	63	Cer.	0000-0004.371/-	L4	33µH			INDUCTOR	0000-7556.230/-	
R32	10R	1	0W35	MF	0001-0000.074/-	C7	910p	2	63	PF	0000-7598.557/-	L5	33µH			INDUCTOR	0000-7556.230/-	
R33	47R	2	0W25	MF	0000-7601.321/-	C8	180p	2	63	Cer.	0001-0004.591/-	L6	220µH			INDUCTOR	0000-7556.337/-	
R35	3k65	1	0W35	MF	0001-0001.701/-	C9	12p	2	63	Cer.	0001-0004.203/-	RL1				RSD - 12V	0001-0069.620/-	
R36	76R8	1	0W35	MF	0001-0065.307/-	C10	390p	2	63	Cer.	0001-0004.656/-	RL2				RSD - 12V	0001-0069.620/-	
R37	24k3	1	0W35	MF	0001-0002.470/-	C11	47p	2	63	Cer.	0001-0004.397/-	X1				MIXER A/1769/B	1769-1000.004/2	
R38	1k	1	0W35	MF	0001-0001.219/-	C12	390p	2	63	Cer.	0001-0004.656/-	A30				P.C.B. CALIBRATION	4502-0130.009/2	
R39	68R1	1	0W35	MF	0001-0000.427/-	C13	27p	2	63	Cer.	0001-0004.326/-							
R40	10k	1	0W35	MF	0001-0002.137/-	C14	150p	2	63	Cer.	0001-0004.575/-							
R41	698R	1	0W35	MF	0001-0001.099/-	C15	33µ	20	10	Tant.	0001-0040.995/-							
R43	750R	2	0W25	MF	0001-0001.125/-	C16	10p	2	63	Cer.	0001-0004.177/-							
R44	3k01	1	0W35	MF	0001-0001.620/-	C17	100µ	20	10	Tant.	0001-0041.156/-							
R45	4k7	2	0W25	MF	0001-0001.811/-	C18	47µ	20	16	Tant.	0001-0041.062/-							
R46	100R	1	0W35	MF	0001-0000.537/-	C19	10n	20	40	Cer.	0001-0004.818/-							
R47	100k	1	0W35	MF	0001-0002.991/-	C20	100n	20	100	Cer.	0000-7598.450/-							
R48	100k	1	0W35	MF	0001-0002.991/-	C21	68µ	20	16	Tant.	0000-0041.114/-							
R49	10k	1	0W35	MF	0001-0002.137/-	C22	47µ	20	6.3	Tant.	0001-0041.059/-							
R50	10k	1	0W35	MF	0001-0002.137/-	C23	10n	20	40	Cer.	0001-0004.818/-							
R51	47R	2	0W25	MF	0000-7601.321/-	C24	100n	20	100	Cer.	0000-7598.450/-							
R52	825R	1	0W35	MF	0001-0001.154/-	C25	3µ3	10	63	PE	0000-7601.606/-							
R53	47R	2	0W25	MF	0001-7601.321/-	C26	680n	10	100	PE	0001-0010.462/-							
R54	68R1	1	0W35	MF	0001-0000.427/-	C27	33µ	20	10	Tant.	0001-0040.995/-							
R55	562R	1	0W35	MF	0001-0001.015/-	C28	330n	10	100	PE	0001-0010.420/-							
R56	562R	1	0W35	MF	0001-0001.015/-	C29	100n	20	100	Cer.	0000-7598.450/-							
R57	221R	1	0W35	MF	0001-0000.715/-	C30	100n	20	100	Cer.	0000-7598.450/-							
R58	68R1	1	0W35	MF	0001-0000.427/-	C31	100n	20	100	Cer.	0000-7598.450/-							
R59	68R1	1	0W35	MF	0001-0000.427/-	C32	100n	20	100	Cer.	0000-7598.450/-							



**Fig. 23 Circuit Diagram,
Calibration unit, ③0**



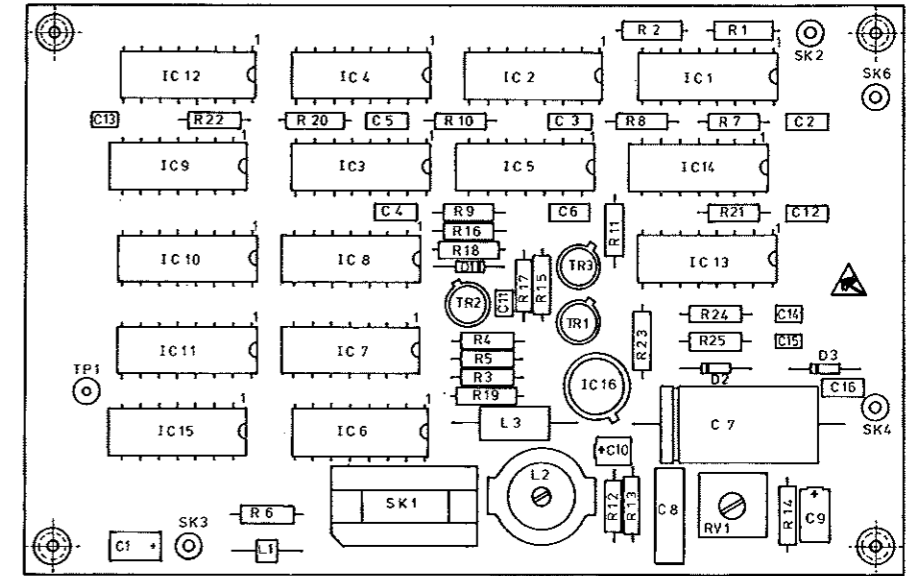
CIRCUIT REFERENCES TO BE PRECEDED BY
BOARD ASSEMBLY NUMBER.
e.g. R41 BECOMES R3041
C7 BECOMES C3007.

**Fig. 24 Component Layout,
Calibration unit, ③0**

ASSEMBLY P.C.B. A33 DIVIDER 1

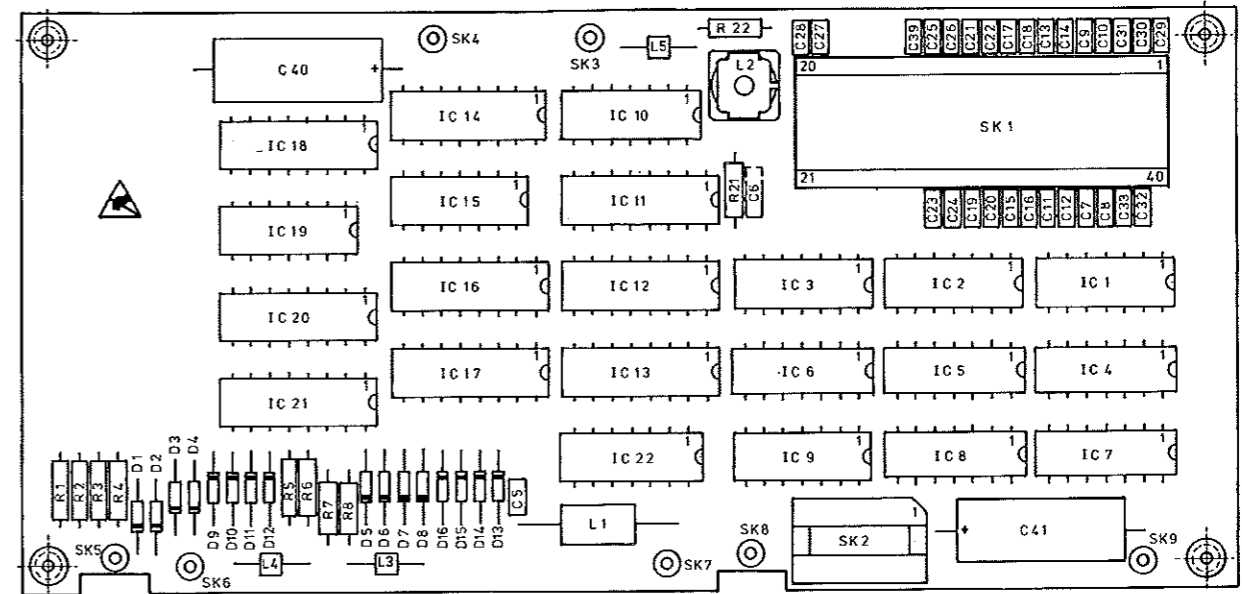
REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	29k8	0.5	0W125	MF	0000-7599.174/-
R2	60k4	0.5	0W125	MF	0000-7598.243/-
R3	120k	0.5	0W125	MF	0000-7598.256/-
R4	243k	0.5	0W125	MF	0000-7598.269/-
R5	301k	0.5	0W125	MF	0000-7598.272/-
R6	612k	0.5	0W125	MF	0000-7600.474/-
R7	1M2	5	0W35	CF	0001-0007.297/-
R8	2M4	5	0W35	CF	0000-7601.376/-
R21	10k	1	0W35	MF	0001-0002.137/-
R22	5R62	1	0W35	MF	0001-0003.945/-
C5	470p	10	63	Cer.	0001-0004.669/-
C6	22p	2	63	Cer.	0001-0004.290/-
C7	1n	10	63	Cer.	0001-0004.698/-
C8	1n	10	63	Cer.	0001-0004.698/-
C9	1n	10	63	Cer.	0001-0004.698/-
C10	1n	10	63	Cer.	0001-0004.698/-
C11	1n	10	63	Cer.	0001-0004.698/-
C12	1n	10	63	Cer.	0001-0004.698/-
C13	1n	10	63	Cer.	0001-0004.698/-
C14	1n	10	63	Cer.	0001-0004.698/-
C15	1n	10	63	Cer.	0001-0004.698/-
C16	1n	10	63	Cer.	0001-0004.698/-
C17	1n	10	63	Cer.	0001-0004.698/-
C18	1n	10	63	Cer.	0001-0004.698/-
C19	1n	10	63	Cer.	0001-0004.698/-
C20	1n	10	63	Cer.	0001-0004.698/-
C21	1n	10	63	Cer.	0001-0004.698/-
C22	1n	10	63	Cer.	0001-0004.698/-
C23	1n	10	63	Cer.	0001-0004.698/-
C24	1n	10	63	Cer.	0001-0004.698/-
C25	1n	10	63	Cer.	0001-0004.698/-
C26	1n	10	63	Cer.	0001-0004.698/-
C27	1n	10	63	Cer.	0001-0004.698/-
C28	1n	10	63	Cer.	0001-0004.698/-
C29	1n	10	63	Cer.	0001-0004.698/-
C30	1n	10	63	Cer.	0001-0004.698/-
C31	1n	10	63	Cer.	0001-0004.698/-
C32	1n	10	63	Cer.	0001-0004.698/-
C33	1n	10	63	Cer.	0001-0004.698/-
C39	1n	10	63	Cer.	0001-0004.698/-
C40	100µ	+50-10	25	Elec.	0000-7568.202/-
C41	10µ	+50-10	63	Elec.	0001-0041.693/-
D1				1N4448	0001-0018.493/-
D2				1N4448	0001-0018.493/-
D3				1N4448	0001-0018.493/-
D4				1N4448	0001-0018.493/-
D5				1N4448	0001-0018.493/-
D6				1N4448	0001-0018.493/-
D7				1N4448	0001-0018.493/-
D8				1N4448	0001-0018.493/-
D9				1N4448	0001-0018.493/-
D10				1N4448	0001-0018.493/-
D11				1N4448	0001-0018.493/-
D12				1N4448	0001-0018.493/-
D13				1N4448	0001-0018.493/-
D14				1N4448	0001-0018.493/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
D15				1N4448	0001-0018.493/-
D16				1N4448	0001-0018.493/-
IC1				4011	0001-0015.988/-
IC2				4011	0001-0015.988/-
IC3				4011	0001-0015.988/-
IC4				14023	0001-0016.026/-
IC5				14023	0001-0016.026/-
IC6				14023	0001-0016.026/-
IC7				14082	0001-0070.868/-
IC8				14082	0001-0070.868/-
IC9				4012	0001-0065.475/-
IC10				4073	0001-0070.871/-
IC11				4027	0001-0016.042/-
IC12				4160	0000-7660.032/-
IC13				4049	0001-0068.197/-
IC14				4027	0001-0016.042/-
IC15				4011	0001-0015.988/-
IC16				4160	0000-7660.032/-
IC17				4160	0000-7660.032/-
IC18				4027	0001-0016.042/-
IC19				4011	0001-0015.988/-
IC20				4160	0000-7660.032/-
IC21				4160	0000-7660.032/-
IC22				14023	0001-0016.026/-
L1				INDUCTOR	0001-0042.757/-
L2				INDUCTOR	4502-1423.003/4
L3				FERRITE BEAD	0000-7567.737/-
L4				FERRITE BEAD	0000-7567.737/-
L5				FERRITE BEAD	0000-7567.737/-
SK1				SOCKET D.I.L. 40-WAY	
J23				-8040	0000-7541.711/-
SK2				SOCKET D.I.L. 14-WAY	0000-7518.388/-
A33				P.C.B. DIVIDER 1	4502-0133.006/2



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

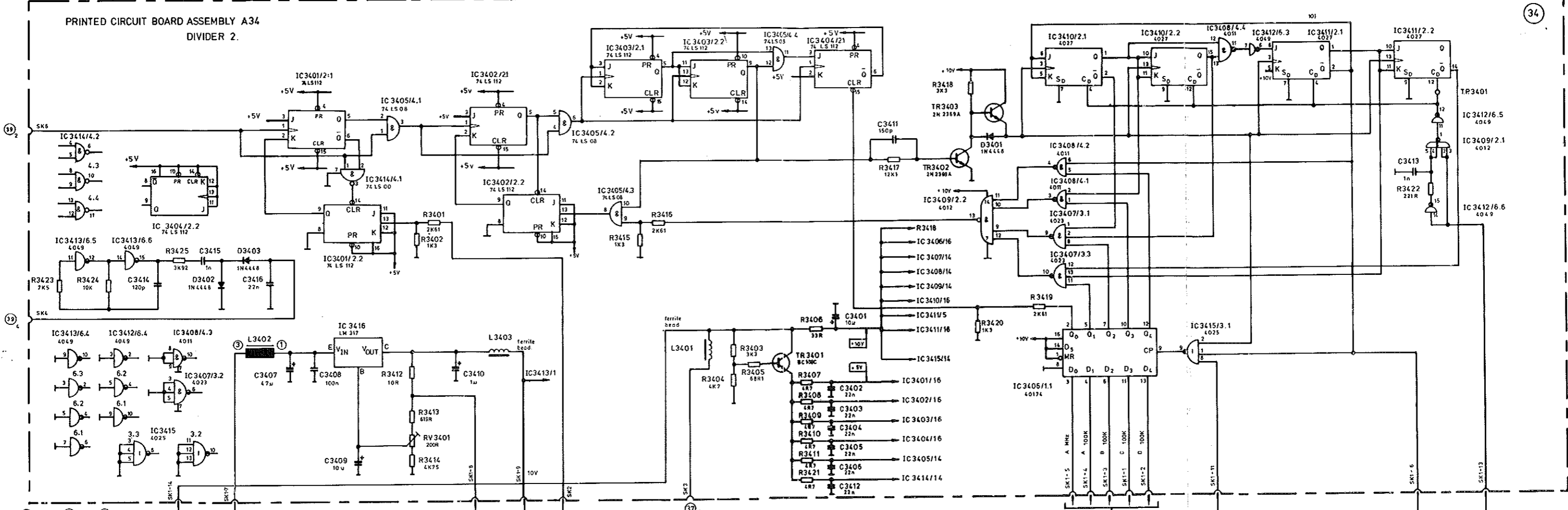
Fig. 25 Component Layout, Divider 2, (34)



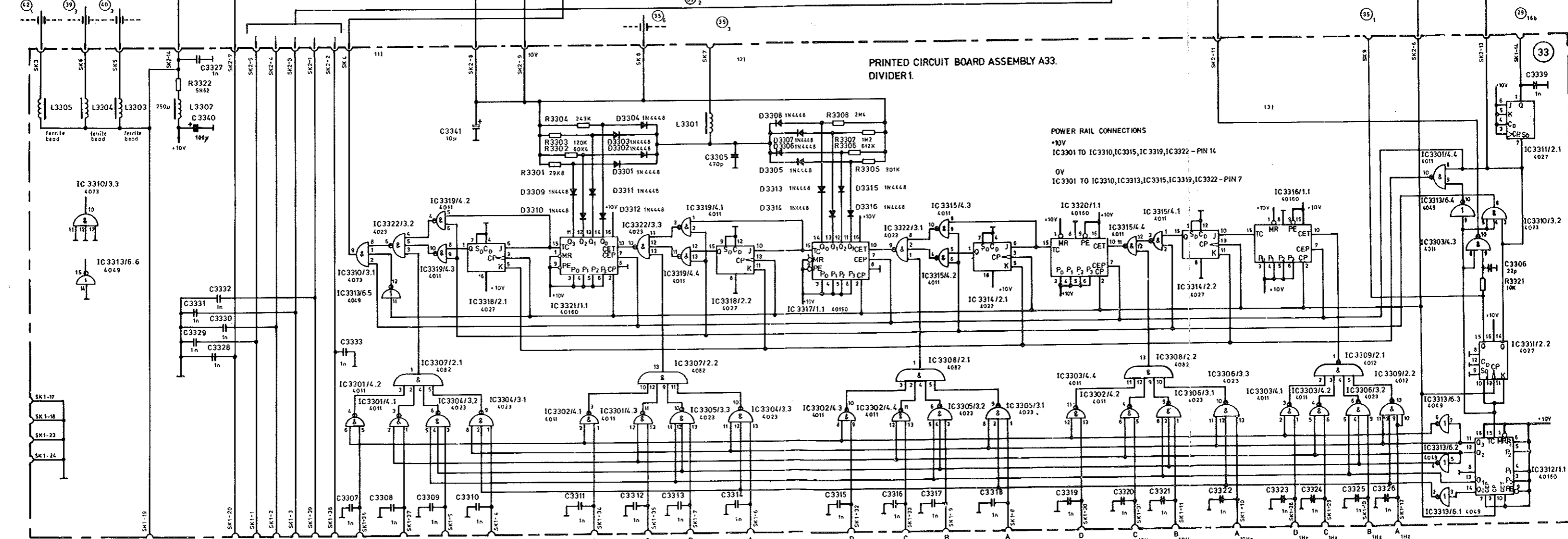
CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBER
e.g. R7 BECOMES R3307
C30 BECOMES C3330

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

PRINTED CIRCUIT BOARD ASSEMBLY A34
DIVIDER 2.



PRINTED CIRCUIT BOARD ASSEMBLY A33
DIVIDER 1.



- 10) 200KHz CLOCK
- 11) SUB HARMONIC DETECTION PULSE
- 12) PHASE COMPENSATION CURRENT
- 13) PHASE MEASURING TIME
- 14) DATA CHANGE

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

ASSEMBLY P.C.B. A34 DIVIDER 2

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	2k61	1	0W35	MF	0001-0001.565/-
R2	1k3	1	0W35	MF	0001-0001.303/-
R3	3k3	2	0W25	MF	4980-0000.012/-
R4	4k7	2	0W25	MF	0001-0001.811/-
R5	68R1	2	0W25	MF	0001-0000.427/-
R6	33R	2	0W25	MF	0000-7601.347/-
R7	4R7	5	0W25	MF	0001-0006.609/-
R8	4R7	5	0W25	MF	0001-0006.609/-
R9	4R7	5	0W25	MF	0001-0006.609/-
R10	4R7	5	0W25	MF	0001-0006.609/-
R11	4R7	5	0W25	MF	0001-0006.609/-
R12	10R	1	0W35	MF	0001-0000.074/-
R13	619R	0.5	0W125	MF	0000-7512.245/-
R14	4k75	0.5	0W125	MF	0000-7535.251/-
R15	1k3	1	0W35	MF	0001-0001.303/-
R16	2k61	1	0W35	MF	0001-0001.565/-
R17	12k1	1	0W35	MF	0001-0002.218/-
R18	3k3	2	0W25	MF	4980-0000.012/-
R19	2k61	1	0W35	MF	0001-0001.565/-
R20	1k3	1	0W35	MF	0001-0001.303/-
R21	4R7	5	0W25	MF	0001-0006.609/-
R22	221R	1	0W35	MF	0001-0000.715/-
R23	7k5	1	0W35	MF	0001-0002.014/-
R24	10k	1	0W35	MF	0001-0002.137/-
R25	3k92	1	0W35	MF	0001-0001.730/-
C1	10μ	20	25	Tant.	0001-0040.885/-
C2	22n	20	100	Cer.	0001-0006.418/-
C3	22n	20	100	Cer.	0001-0006.418/-
C4	22n	20	100	Cer.	0001-0006.418/-
C5	22n	20	100	Cer.	0001-0006.418/-
C6	22n	20	100	Cer.	0001-0006.418/-
C7	47μ	+50-10%	40	Tant.	0001-0041.758/-
C8	100n	10	100	PE	0001-0010.365/-
C9	10μ	20	25	Tant.	0001-0040.885/-
C10	1μ	20	35	Tant.	0001-0040.704/-
C11	150p	2	63	Cer.	0001-0004.575/-
C12	22n	20	100		0001-0006.418/-
C13	1n	20	100		0001-0004.698/-
C14	120p	2	63	Cer.	0001-0004.562/-
C15	1n	20	100		0001-0004.698/-
C16	22n	20	100	Cer.	0001-0006.418/-
TR1				BC109 C	0000-7602.126/-
TR2				2N2369A	0000-7542.066/-
TR3				2N2369A	0000-7542.066/-
D1				1N4448	0001-0018.493/-
D2				1N4448	0001-0018.493/-
D3				1N4448	0001-0018.493/-
RV1	200R	20	0W5	Var.	0000-7601.622/-
IC1				74 LS 112	0001-0071.427/-
IC2				74 LS 112	0001-0071.427/-
IC3				74 LS 112	0001-0071.427/-
IC4				74 LS 112	0001-0071.427/-
IC5				74 LS 08	0001-0067.169/-
IC6				40174	0000-7565.399/-
IC7				4023	0001-0016.026/-
IC8				4011	0001-0015.988/-
IC9				4012	0001-0065.475/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
IC10				4027	0001-0016.042/-
IC11				4027	0001-0016.042/-
IC12				4049	0001-0068.197/-
IC13				4049	0001-0068.197/-
IC14				74 LS 00	0001-0065.695/-
IC15				4023	0001-0065.488/-
IC16				LM 317	0000-7596.724/-
L1				B62110	0000-7567.737/-
L2				INDUCTOR	4502-1429.007/4
L3				B82114	0001-0042.757/-
SK1				SOCKET D.I.L. 14-WAY	
				J23 - 2028Z	0000-7518.388/-
A34				P.C.B. DIVIDER 2	4502-0134.005/2

ASSEMBLY P.C.B. A35 PHASE DETECTOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	8k25	1	0W35	MF	0001-0002.056/-
R2	5k23	1	0W35	MF	0001-0001.866/-
R3	7k15	1	0W35	MF	0001-0001.992/-
R4	909R	0.5	0W125	MF	0000-7509.685/-
R5	68R1	1	0W35	MF	0001-0000.427/-
R6	27k4	1	0W35	MF	0001-0002.522/-
R7	6k19	1	0W35	MF	0001-0001.934/-
R8	25k5	0.5	0W125	MF	0000-7599.682/-
R9	20k	1	0W35	MF	0001-0002.409/-
R10	200K	0.5	0W125	MF	0000-7591.428/-
R11	562k	0.5	0W125	MF	0000-7598.298/-
R12	196k	0.5	0W125	MF	0000-7598.308/-
R13	16k5	1	0W35	MF	0001-0002.328/-
R14	7k15	1	0W35	MF	0001-0001.992/-
R15	226R	0.5	0W125	MF	0000-7515.174/-
R16	68R1	1	0W35	MF	0001-0000.427/-
R17	3k83	1	0W35	MF	0001-0001.727/-
R18	7k32	1	0W35	MF	0001-0002.001/-
R19	6k34	0.5	0W125	MF	0000-7512.339/-
R20	105k	0.5	0W125	MF	0000-7598.285/-
R21	26k7	0.5	0W125	MF	0000-7528.747/-
R22	54k9	1	0W35	MF	0001-0002.784/-
R23	86k6	1	0W35	MF	0001-0002.959/-
R24	1k5	1	0W35	MF	0001-0001.358/-
R25	68R1	1	0W35	MF	0001-0000.427/-
R26	26k7	1	0W35	MF	0001-0002.519/-
R27	7k15	1	0W35	MF	0001-0001.992/-
R28	16k5	1	0W35	MF	0001-0002.328/-
R29	1k33	1	0W35	MF	0001-0001.316/-
R30	909R	1	0W35	MF	0001-0001.183/-
R31	68R1	1	0W35	MF	0001-0000.427/-
R32	270k	2	0W25	MF	0000-7601.363/-
R33	348k	1	0W35	MF	0001-0003.314/-
R34	100R	1	0W35	MF	0001-0000.537/-
R35	402k	1	0W35	MF	0001-0063.121/-
R36	84k5	1	0W35	MF	0001-0002.946/-
R37	196k	1	0W35	MF	0001-0065.394/-
R38	59k	1	0W35	MF	0001-0002.810/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R40	3k01	1	0W35	MF	0001-0001.620/-
R41	35k7	1	0W35	MF	0001-0002.616/-
R42	1M2	5	0W25	CF	0001-0007.297/-
R43	100R	1	0W35	MF	0001-0000.537/-
R45	2k7	2	0W25	MF	0000-7558.380/-
R46	287R	1	0W35	MF	0001-0000.786/-
R47	22k1	1	0W35	MF	0001-0002.441/-
R48	3k01	1	0W35	MF	0001-0001.620/-
R49	4k02	1	0W35	MF	0001-0001.743/-
R50	1k5	1	0W35	MF	0001-0001.358/-
R51	4k02	1	0W35	MF	0001-0001.743/-
R52	475R	1	0W35	MF	0001-0000.964/-
R53	68R1	1	0W35	MF	0001-0000.427/-
R54	200R	1	0W35	MF	0001-0000.676/-
R55	68R1	1	0W35	MF	0001-0000.427/-
R56	475R	1	0W35	MF	0001-0000.964/-
R57	3M3	5	0W25	CF	0001-0007.336/-
R58	100R	1	0W35	MF	0001-0000.537/-
R59	7k5	1	0W35	MF	0001-0002.014/-
R60	301R	1	0W35	MF	0001-0000.799/-
R61	47R	2	0W25	MF	0000-7601.321/-
R62	3M3	5	0W25	CF	0001-0007.336/-
R63	10M	5	0W33	CF	0001-0005.707/-
R64	4M7	5	0W33	CF	0001-0005.671/-
R65	665k	1	0W35	MF	0000-7518.948/-
R66	3k3	2	0W25	MF	4980-0000.012/-
R67	1M8	5	0W25	CF	0001-0007.310/-
R81	10k	1	0W35	MF	0001-0002.137/-
R82	1M2	5	0W25	CF	0001-0007.297/-
R83	100k	1	0W35	MF	0001-0002.991/-
C1	33p	2	63	Cer.	0001-0004.342/-
C2	22n	20	100	Cer.	0001-0006.418/-
C3	100n	10	100	PE	0001-0010.365/-
C4	10p	2	63	Cer.	0001-0004.177/-
C5	22n	20	100	Cer.	0001-0006.418/-
C6	22n	20	100	Cer.	0001-0006.418/-
C7	10p	2	63	Cer.	0001-0004.177/-
C8	10μ	2	40		0000-7603.418/-
C10	330n	10	100	PE	0001-0010.420/-
C11	220n	10	100	PE	0001-0010.404/-
C12	4μ7	20	6.3	Tant.	0001-0040.801/-
C13	1n5	10	63	Cer.	0001-0004.711/-
C14	22n	10	100	PE	0001-0010.255/-
C15	100p	2	63	Cer.	0001-0004.517/-
C16	330n	10	100	PE	0001-0010.420/-
C17	1μ0	20	35	Tant.	0001-0040.704/-
C18	33p	2	63	Cer.	0001-0004.342/-
C19	1μ0	10	100		0001-0010.093/-
C20	22n	20	100	Cer.	0001-0006.418/-

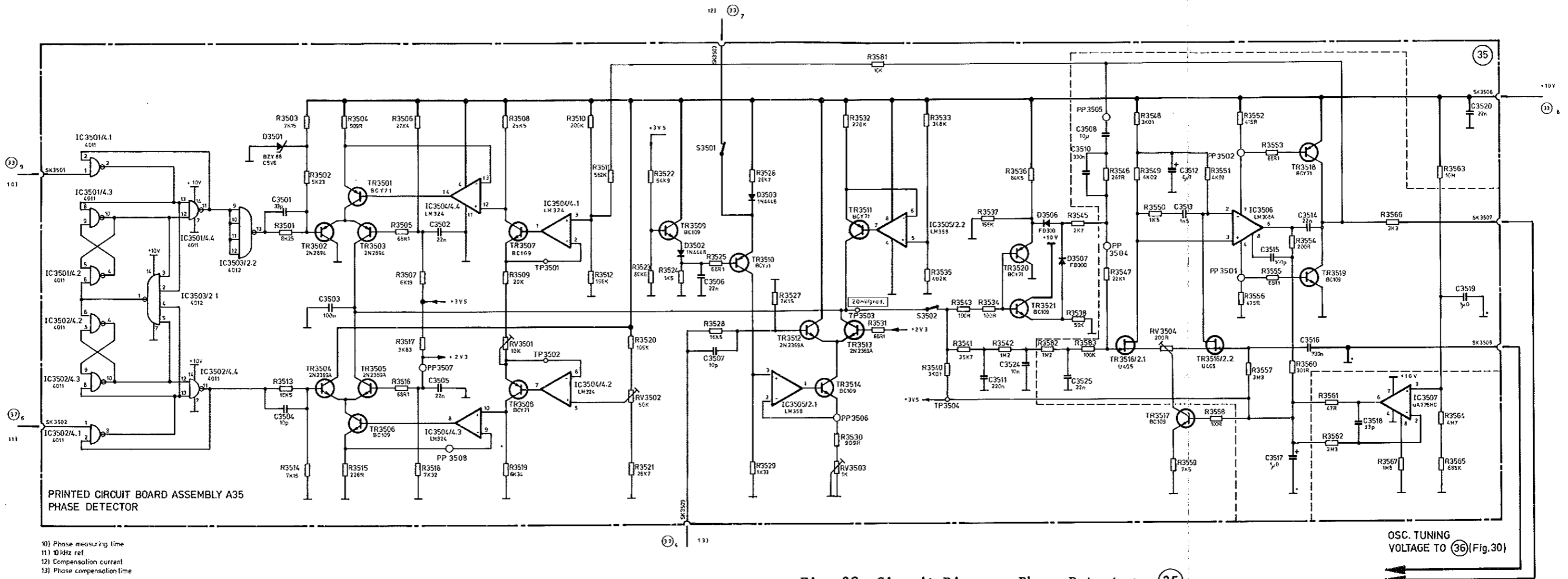
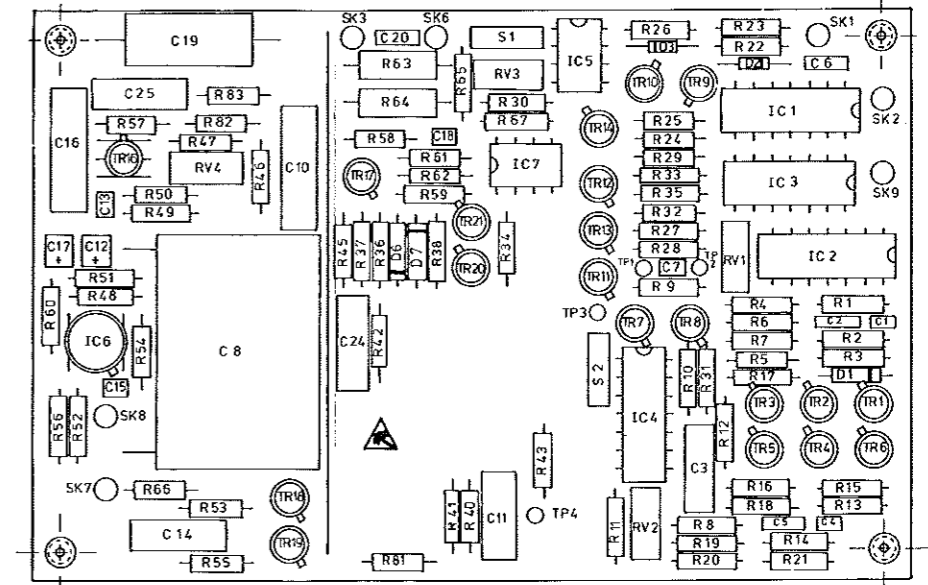


Fig. 28 Circuit Diagram, Phase Detector, 35

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

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
C24	10n	10	100	PE	0001-0010.213/-	D1				BZY 88C5V6	0001-0018.859/-
C25	22n	20	100	PE	0001-0010.255/-	D2				1N4448	0001-0018.493/-
TR1				BCY71	0001-0016.534/-	D3				1N4448	0001-0018.493/-
TR2				2N2894	0001-0016.929/-	D6				FDH 300	0001-0018.192/-
TR3				2N2894	0001-0016.929/-	D7				FDH 300	0001-0018.192/-
TR4				2N2369A	0000-7542.066/-	RV1	10k	10 LIN	0W2	Var.	0000-7537.929/-
TR5				2N2369A	0000-7542.066/-	RV2	50k	20 LIN	0W2	Var.	0000-7571.752/-
TR6				BC109	0000-7602.029/-	RV3	1k	20 LIN	0W2	Var.	0000-7571.723/-
TR7				BC109	0000-7602.029/-	RV4	200R	10 LIN	0W2	Var.	0000-7571.710/-
TR8				BCY71	0001-0016.534/-	IC1				4011	0001-0015.988/-
TR9				BC109	0000-7602.029/-	IC2				4011	0001-0015.988/-
TR10				BCY71	0001-0016.534/-	IC3				4012	0001-0065.475/-
TR11				BCY71	0001-0016.534/-	IC4				LM 324	0000-7578.085/-
TR12				2N2369A	0000-7542.066/-	IC5				LM 358	0000-7581.140/-
TR13				2N2369A	0000-7542.066/-	IC6				LM 308 A	0000-7537.071/-
TR14				BC109	0000-7602.029/-	IC7				µA 776 HC	0000-7604.425/-
TR16				U405	0000-7567.863/-	S1				09100003	0000-7567.999/-
TR17				BC109	0000-7602.029/-	S2				09100003	0000-7567.999/-
TR18				BCY71	0001-0016.534/-	A35				P.C.B. PHASE DETECTOR	4502-0135.004/2
TR19				BC109	0000-7602.029/-						
TR20				BCY71	0001-0016.534/-						
TR21				BC109	0000-7602.029/-						



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

Fig. 29 Component Layout, Phase Detector, 35

ASSEMBLY P.C.B. A36 4 - 4.62Mhz V.C.O.

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	1k8	2	0W25	MF	0001-0015.510/-
R2	221k	1	0W35	MF	0001-0003.217/-
R3	221k	1	0W35	MF	0001-0003.217/-
R4	100R	1	0W35	MF	0001-0000.537/-
R5	4k7	2	0W25	MF	0001-0001.811/-
R6	68k1	1	0W35	MF	0001-0000.427/-
R7	100R	1	0W35	MF	0001-0000.537/-
R8	10k	1	0W35	MF	0001-0002.137/-
R9	100R	1	0W35	MF	0001-0000.537/-
R10	47k	2	0W25	MF	0000-7558.393/-
R11	39k2	1	0W35	MF	0001-0002.658/-
R12	1k	1	0W35	MF	0001-0001.219/-
R13	33k	2	0W25	MF	4980-0000.009/-
R14	470R	2	0W25	MF	0000-7560.608/-
R15	4k7	2	0W25	MF	0001-0001.811/-
R16	4R7	5	0W25	MF	0001-0006.609/-
R17	1k21	1	0W35	MF	0001-0001.277/-
R18	100R	1	0W35	MF	0001-0000.537/-
C1	100n	10	100	PE	0001-0010.365/-
C2	100n	10	100	PE	0001-0010.365/-
C4	2p2	5	63		0000-7605.699/-
C5	6p8	20	6.3	Tant.	0001-0040.830/-
C6	10n	20	40	Cer.	0001-0004.818/-
C7	10n	20	40	Cer.	0001-0004.818/-
C8	100n	10	100	PE	0001-0010.365/-
C9	10n	20	40	Cer.	0001-0004.818/-
C10	1n	20	63	Cer.	0001-0004.698/-
C11	22μ	20	16	Tant.	0001-0040.966/-
C12	100n	10	100	PE	0001-0010.365/-
C13	10μ	20	16	Al.Ox.	0000-7602.773/-
C14	100p	2	63	PS	0000-7629.523/-
C15	100p	2	63	PS	0000-7629.523/-
TR1				BF 245 A	0001-0016.628/-
TR2				BF 245 A	0001-0016.628/-
TR3				BF 245 A	0001-0016.628/-
TR4				BC109	0000-7602.029/-
TR5				2N2369A	0000-7542.066/-
TR6				BC109	0000-7602.029/-
D1				KV1225	0000-7630.583/-
D3				1N5711	0001-0018.228/-
D4				1N5711	0001-0018.228/-
RV1	50k	20	0W5		0000-7601.635/-
RV2	1M	20	0W5		0000-7601.619/-
L1	6μH			L24/4502/D	4502-1424.002/4
L2				L26/L27/4502/D	4502-1426.000/4
L3				L26/L27/4502/D	4502-1426.000/4
L4	100μH			210/16471	0000-7556.298/-
L5	200μH			L25/4502/D	4502-1425.001/4
A36				P.C.B. 4-4.62MHz V.C.O	4502-0136.003/3

ASSEMBLY P.C.B. A39 BUFFER

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	68R1	1	0W35	MF	0001-0000.427/-
R2	22k1	1	0W35	MF	0001-0002.441/-
R3	68R1	1	0W35	MF	0001-0000.427/-
R4	27k	2	0W25	MF	0000-7558.377/-
R5	68R1	1	0W35	MF	0001-0000.427/-
R6	5k62	1	0W35	MF	0001-0001.895/-
R7	5k62	1	0W35	MF	0001-0001.895/-
R8	68R1	1	0W35	MF	0001-0000.427/-
R9	1k	1	0W35	MF	0001-0001.219/-
R10	18k	2	0W25	MF	0001-0027.484/-
R11	18k	2	0W25	MF	0001-0027.484/-
R12	6k81	1	0W35	MF	0001-0001.976/-
R13	2k21	1	0W35	MF	0001-0001.497/-
R14	27R	2	0W25	MF	0001-0065.200/-
R15	1k8	2	0W25	MF	0001-0014.510/-
R16	18k	2	0W25	MF	0001-0027.484/-
R17	18k	2	0W25	MF	0001-0027.484/-
R18	100k	2	0W25	MF	0001-0002.991/-
C1	4μ7	20	10	Tant.	0001-0040.801/-
C2	22n	20	40	Cer.	0001-0006.418/-
C3	1n	20	100	Cer.	0001-0004.698/-
C4	10n	20	100	Cer.	0001-0004.818/-
C5	10n	20	100	Cer.	0001-0004.818/-
C6	1n	20	100	Cer.	0001-0004.698/-
TR1				2N2369A MF	0000-7542.066/-
TR2				2N2894	0001-0016.929/-
TR3				2N2894	0001-0016.929/-
TR4				2N2894	0001-0016.929/-
TR5				2N2369A	0000-7542.066/-
A39				P.C.B. BUFFER	4502-0139.003/3

ASSEMBLY P.C.B. A40 SYNTHESISER AMPLIFIER

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	5k62	1	0W35	MF	0001-0001.895/-
R2	24k9	1	0W35	MF	0001-0002.483/-
R3	68R1	1	0W35	MF	0001-0000.427/-
R4	3k3	2	0W25	MF	4980-0000.012/-
R5	1k21	1	0W35	MF	0001-0001.277/-
R6	1k65	1	0W35	MF	0001-0059.232/-
R7	51R1	1	0W35	MF	0001-0065.284/-
R8	75R	1	0W35	MF	0001-0000.456/-
R9	237R	1	0W35	MF	0001-0003.754/-
R10	68R1	1	0W35	MF	0001-0000.427/-
R11	21k	1	0W35	MF	0001-0002.425/-
R12	76k8	1	0W35	MF	0001-0002.917/-
R13	68R1	1	0W35	MF	0001-0000.427/-
R14	68R1	1	0W35	MF	0001-0000.427/-
R15	8R25	1	0W35	CF	0000-7518.854/-
R16	68R1	1	0W35	MF	0001-0000.427/-
C1	1n	20	100	Cer.	0001-0004.698/-
C2	100n	10	100	PE	0001-0010.365/-
C3	10n	2	100	Cer.	0001-0004.818/-
C4	4μ7	20	10	Tant.	0001-0040.801/-
C5	10μ	+50-10	63	Elect.	0001-0041.693/-
C6	22n	20	40	Cer.	0001-0006.418/-
TR1				2N2369A	0000-7542.066/-
TR2				2N3251	0001-0017.342/-
TR3				2N2369A	0000-7542.066/-
TR4				2N3251	0001-0017.342/-
TR5				BC109	0000-7602.029/-
TR6				BC109	0000-7602.029/-
L1	590μH			L28/4502/D	4502-1428.008/4
A40				P.C.B. SYNTHESISER AMPLIFIER	4502-0140.002/3

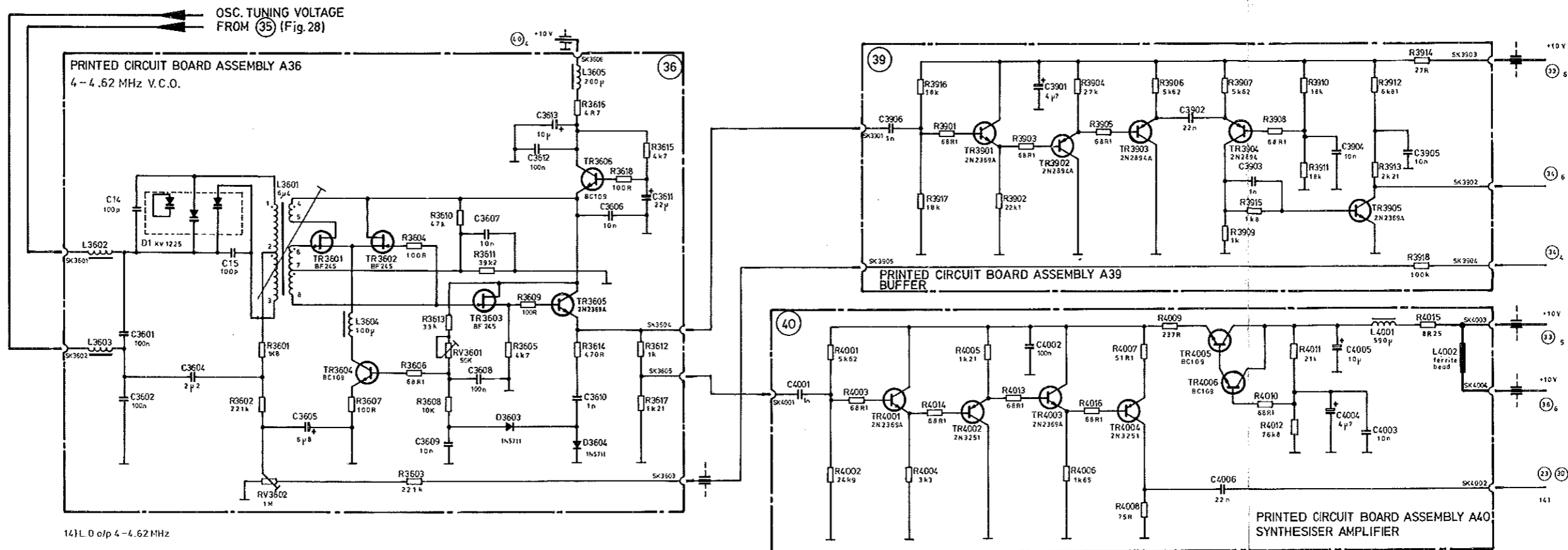
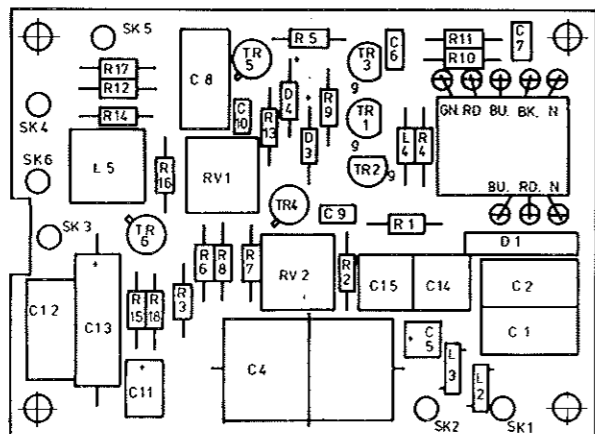
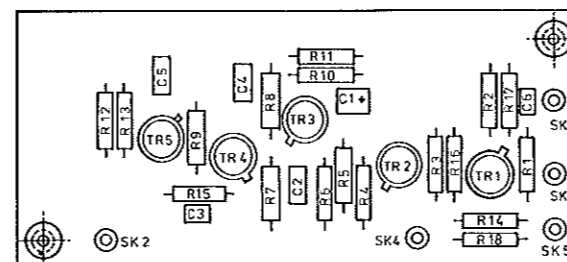


Fig. 30 Circuit Diagram,
4...4.62MHz V.C.O., (36) ;
Buffer, (39) and
Synthesiser Amplifier, (40)



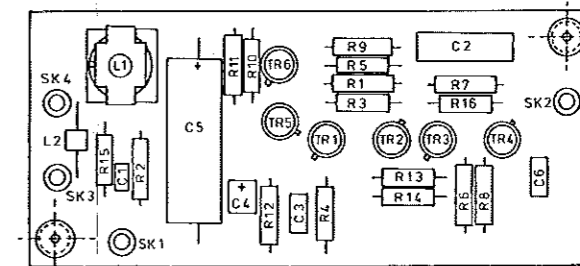
CIRCUIT REFERENCES TO BE PRECEDED
BY BOARD ASSEMBLY NUMBERS
e.g R15 BECOMES R3615
C9 BECOMES C3609.

Fig. 31 Component Layout, 4...4.62MHz V.C.O., (36)



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

Fig. 32 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)

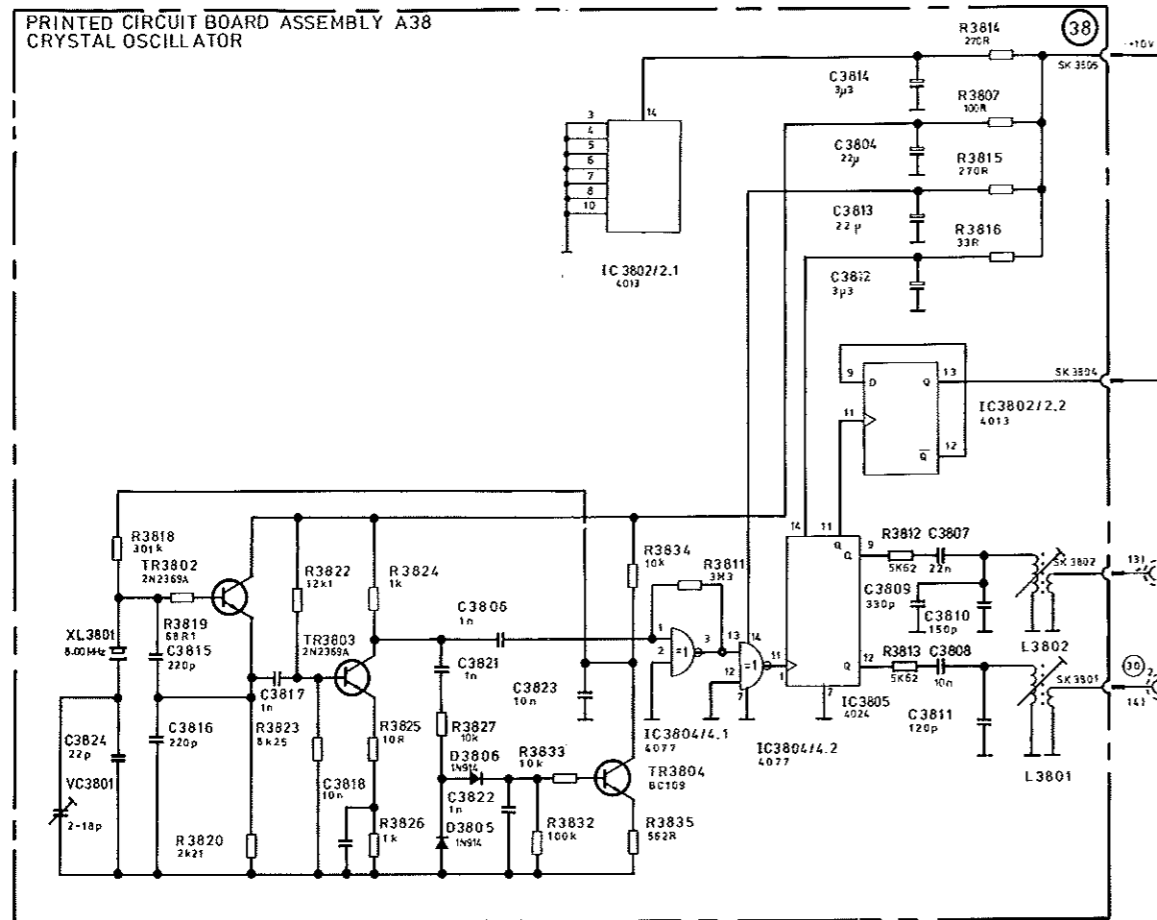
ASSEMBLY P.C.B. A38 CRYSTAL OSCILLATOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R7	100R	1	0W35	MF	0001-0000.537/-
R11	3M3	5	0W25	CF	0001-0007.336/-
R12	5k62	1	0W35	MF	0001-0001.895/-
R13	5k62	1	0W35	MF	0001-0001.895/-
R14	270R	2	0W25	MF	0000-7559.499/-
R15	270R	2	0W25	MF	0000-7559.499/-
R16	33R	2	0W25	MF	0000-7601.347/-
R18	301k	1	0W35	MF	0001-0062.025/-
R19	68R1	1	0W35	MF	0001-0000.427/-
R20	2k21	1	0W35	MF	0001-0001.497/-
R22	12k1	1	0W35	MF	0001-0002.218/-
R23	8k25	1	0W35	MF	0001-0002.056/-
R24	1k	1	0W35	MF	0001-0001.219/-
R25	10R	1	0W35	MF	0001-0000.074/-
R26	1k	1	0W35	MF	0001-0001.219/-
R27	10k	1	0W35	MF	0001-0002.137/-
R32	100k	1	0W35	MF	0001-0002.991/-
R33	10k	1	0W35	MF	0001-0002.137/-
R34	10k	1	0W35	MF	0001-0002.137/-
R35	562R	1	0W35	MF	0001-0001.015/-
C4	22μ	20	16	Tant.	0001-0040.966/-
C6	1n	10	63	Cer.	0001-0004.698/-
C7	22n	20	40	Cer.	0001-0006.418/-
C8	10n	20	40	Cer.	0001-0004.818/-
C9	330p	2	63	Cer.	0001-0004.630/-
C10	150p	2	63	Cer.	0001-0004.575/-
C11	120p	2	63	Cer.	0001-0004.562/-
C12	3μ3	20	16	Tant.	0001-0040.775/-
C13	22μ	20	16	Tant.	0001-0040.966/-
C14	3μ3	20	16	Tant.	0001-0040.775/-
C15	220p	2	63	Cer.	0001-0004.601/-
C16	220p	2	63	Cer.	0001-0004.601/-
C17	1n	10	63	Cer.	0001-0004.698/-
C18	10n	20	40	Cer.	0001-0004.818/-
C21	1n	10	63	Cer.	0001-0004.698/-
C22	1n	10	63	Cer.	0001-0004.698/-
C23	10n	20	40	Cer.	0001-0004.818/-
C24	22p	2	63	Cer.	0001-0004.290/-
TR2				2N2369A	0000-7542.066/-
TR3				2N2369A	0000-7542.066/-
TR4				BC109	0000-7602.029/-
D5				1N914 or 1N4448	0001-0018.493/-
D6				1N914 or 1N4448	0001-0018.493/-
IC2				4013	0001-0015.991/-
IC4				4077	0000-7565.218/-
IC5				4024	0001-0016.039/-
VCI	2 - 18p		300	809 - 05003	0000-7598.463/-
L1	12.7μH			INDUCTOR	4502-1431.008/4
L2	52.7μH			INDUCTOR	4502-1432.007/4
XL1	8MHz			FILTER	4502-9702.001/4
A38				P.C.B. CRYSTAL OSCILLATOR	4502-0138.001/3

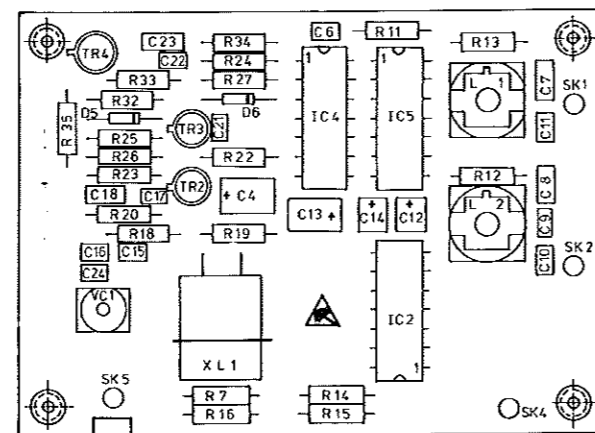
ASSEMBLY P.C.B. A37 DIVIDER 3

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	18k	2	0W25	MF	0001-0027.484/-
R2	18k	2	0W25	MF	0001-0027.484/-
R3	68R1	1	0W35	MF	0001-0000.427/-
R4	5k62	1	0W35	MF	0001-0001.895/-
R5	5k62	1	0W35	MF	0001-0001.895/-
R6	681R	1	0W35	MF	0001-0001.086/-
R7	68R1	1	0W35	MF	0001-0000.427/-
R8	18k	2	0W25	MF	0001-0027.484/-
R9	18k	2	0W25	MF	0001-0027.484/-
R10	1k8	2	0W25	MF	0001-0014.510/-
R11	22k1	1	0W35	MF	0001-0002.441/-
R12	15R	1	0W35	MF	0001-0014.879/-
C1	100n	20	40	PE	0000-7639.144/-
C2	1n	10	63	Cer.	0001-0004.698/-
C3	10n	20	40	Cer.	0001-0004.818/-
C4	33μ	20	6.3	Tant.	0001-0040.995/-
TR1				2N3251	0001-0017.342/-
TR2				2N3251	0001-0017.342/-
TR3				2N2369A	0000-7542.066/-
IC1				4518	0001-0016.178/-
IC2				40175	0000-7529.416/-
IC3				4011	0001-0015.988/-
L1				INDUCTOR	0000-7567.737/-
L2				INDUCTOR	4502-1430.009/4
A37				P.C.B. DIVIDER 3	4502-0137.002/3

PRINTED CIRCUIT BOARD ASSEMBLY A38
CRYSTAL OSCILLATOR



- 10) 1MHz Sync Not connected
- 13) 1MHz 75 μ to back panel
- 14) 4MHz 75 μ
- 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)

PRINTED CIRCUIT BOARD ASSEMBLY
A37 DIVIDER 3

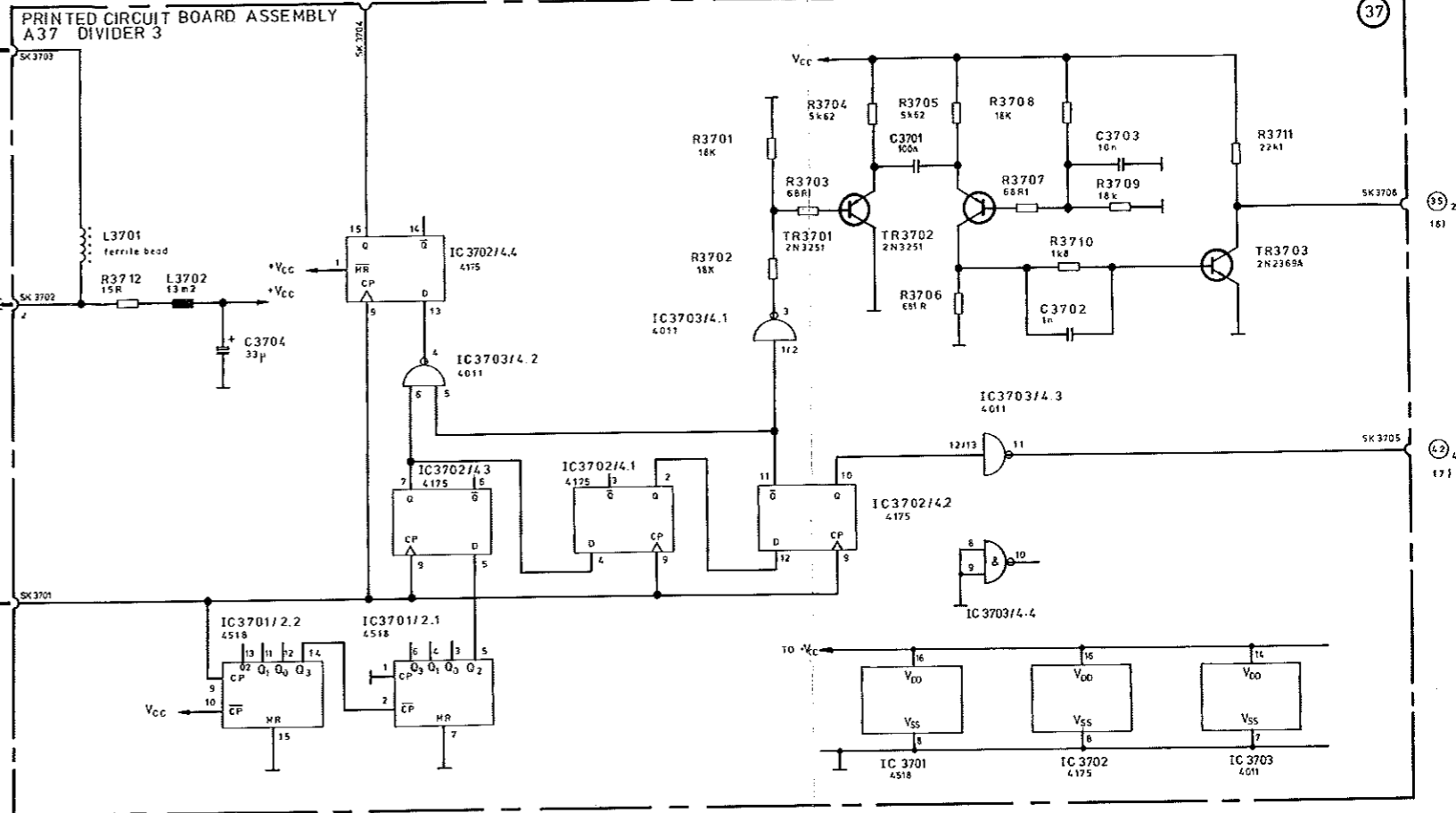
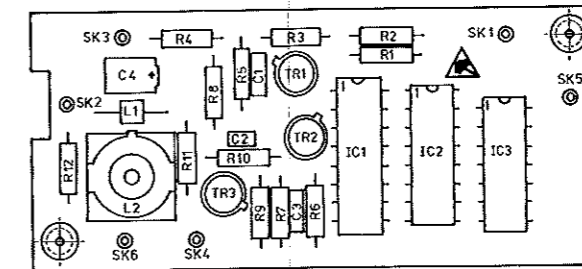


Fig. 34 Circuit Diagram,
8MHz Crystal Oscillator, (38)
and Divider 3, (37)



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

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

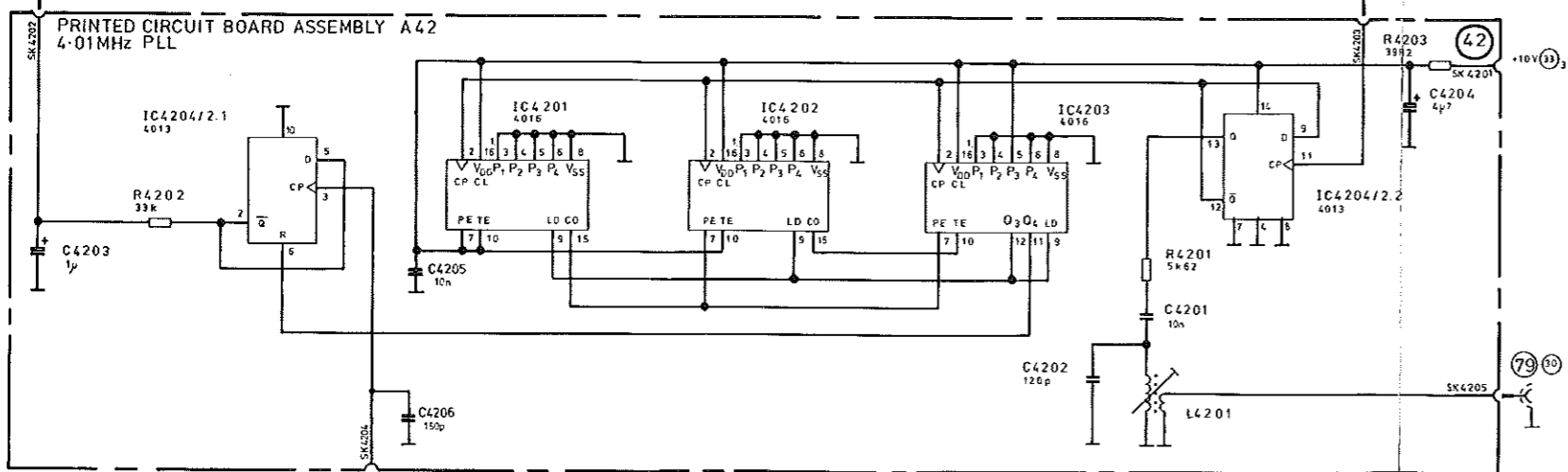
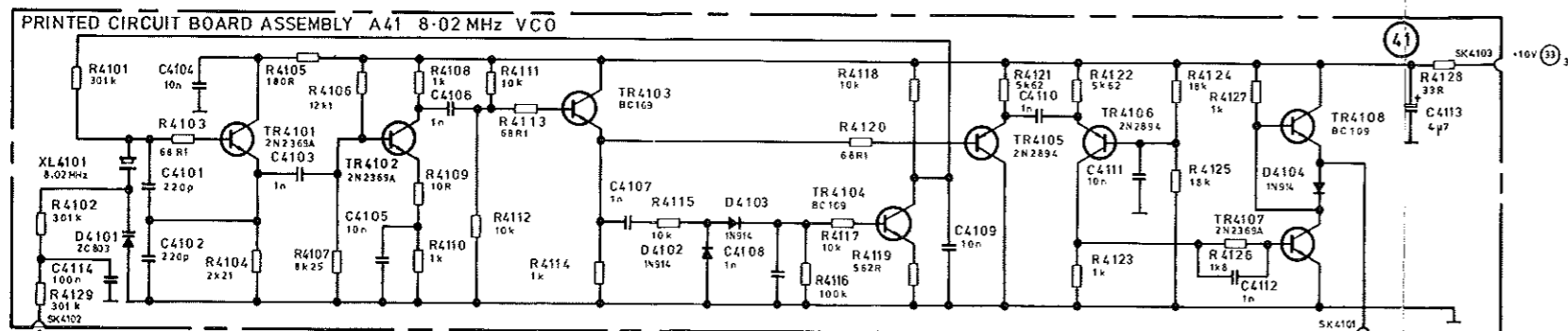
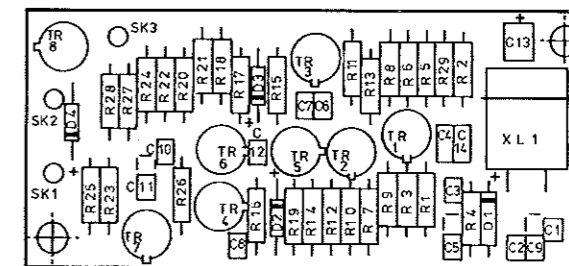
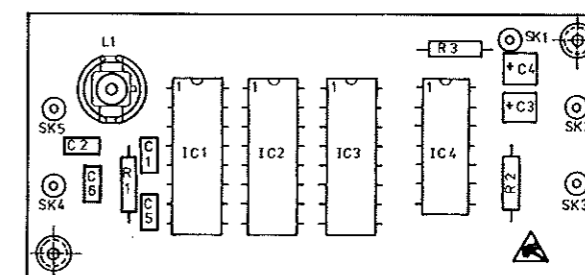


Fig. 37 Circuit Diagram, 8.02MHz V.C.O., (41) and 4.01MHz P.L.L., (42)



COMPONENT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBERS
e.g. R 25 BECOMES R4125.
C 8 BECOMES C4108.

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

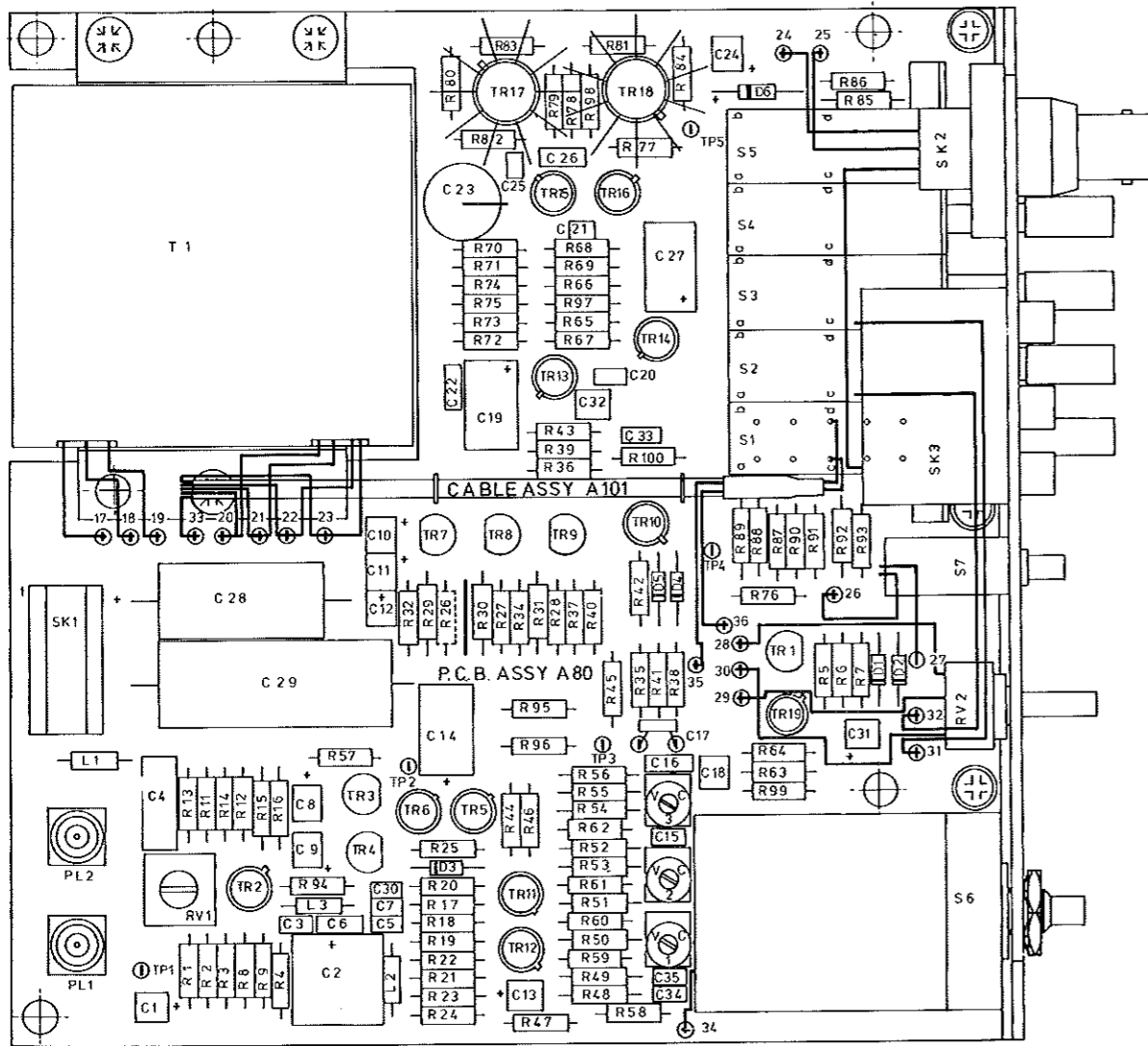


CIRCUIT REFERENCES TO BE PRECEDED BY BOARD ASSEMBLY NUMBER eg IC 2 BECOMES IC4202

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

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

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	301k	1	0W35	MF	0001-0062.025/-	R26	1k8	2	0W25	MF	0001-0014.510/-	TR8				BC109	0000-7602.029/-
R2	301k	1	0W35	MF	0001-0062.025/-	R27	1k	1	0W35	MF	0001-0001.219/-	D1				ZC803	0000-7601.936/-
R3	68R1	1	0W35	MF	0001-0000.427/-	R28	33R	2	0W25	MF	0000-7601.347/-	D2				1N914 or 1N4448	0001-0018.493/-
R4	2k21	1	0W35	MF	0001-0001.497/-	R29	301k	1	0W35	MF	0001-0062.025/-	D3				1N914 or 1N4448	0001-0018.493/-
R5	180R	2	0W25	MF	0000-7558.403/-	C1	220p	2	63	Cer.	0001-0004.601/-	D4				1N914 or 1N4448	0001-0018.493/-
R6	12k1	1	0W35	MF	0001-0002.218/-	C2	220p	2	63	Cer.	0001-0004.601/-	XL1	8.02MHz				4502-9701.002/4
R7	8k25	1	0W35	MF	0001-0002.056/-	C3	1n	10	63	Cer.	0001-0004.698/-	A41				P.C.B. 8.02MHz V.C.O.	4502-0141.001/3
R8	1k	1	0W35	MF	0001-0001.219/-	C4	10n	20	40	Cer.	0001-0004.818/-	ASSEMBLY P.C.B. A42 4.01MHz P.L.L.					
R9	10R	1	0W35	MF	0001-0000.074/-	C5	10n	20	40	Cer.	0001-0004.818/-	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R10	1k	1	0W35	MF	0001-0001.219/-	C6	1n	10	63	Cer.	0001-0004.698/-	R1	5k62	1	0W35	MF	0001-0001.895/-
R11	10k	1	0W35	MF	0001-0002.137/-	C7	1n	10	63	Cer.	0001-0004.698/-	R2	33k	2	0W25	MF	4980-0000.009/-
R12	10k	1	0W35	MF	0001-0002.137/-	C8	1n	10	63	Cer.	0001-0004.698/-	R3	39R2	1	0W35	MF	0001-0003.547/-
R13	68R1	1	0W35	MF	0001-0000.427/-	C9	10n	20	40	Cer.	0001-0004.818/-	C1	10n	20	100	Cer.	0001-0004.818/-
R14	1k	1	0W35	MF	0001-0001.219/-	C10	1n	10	63	Cer.	0001-0004.818/-	C2	120p	2	63	Cer.	0001-0004.562/-
R15	10k	1	0W35	MF	0001-0002.137/-	C11	10n	20	40	Cer.	0001-0004.818/-	C3	1μ	20	35	Tant.	0001-0040.704/-
R16	100k	1	0W35	MF	0001-0002.991/-	C12	1n	10	63	Cer.	0001-0004.698/-	C4	4μ7	20	10	Tant.	0001-0040.801/-
R17	10k	1	0W35	MF	0001-0002.137/-	C13	4μ7	20	10	Tant.	0001-0040.810/-	C5	10n	20	40	Cer.	0001-0004.818/-
R18	10k	1	0W35	MF	0001-0002.137/-	C14	100n	20	100	Cer.	0000-7598.450/-	C6	150p	2	63	Cer.	0001-0004.575/-
R19	562R	1	0W35	MF	0001-0001.015/-	TR1				2N2369A	0000-7542.066/-	IC1				40160	0000-7660.032/-
R20	68R1	1	0W35	MF	0001-0000.427/-	TR2				2N2369A	0000-7542.066/-	IC2				40160	0000-7660.032/-
R21	5k62	1	0W35	MF	0001-0001.895/-	TR3				BC109	0000-7602.029/-	IC3				40160	0000-7660.032/-
R22	5k62	1	0W35	MF	0001-0001.895/-	TR4				BC109	0000-7602.029/-	IC4				4013	0000-7565.315/-
R23	1k	1	0W35	MF	0001-0001.219/-	TR5				2N2894	0001-0016.929/-	L1	12.7μH			INDUCTOR	4502-1431.008/4
R24	18k	2	0W25	MF	0001-0027.484/-	TR6				2N2894	0001-0016.929/-	A42				P.C.B. 4.01MHz P.L.L.	4502-0142.000/3
R25	18k	2	0W25	MF	0001-0027.484/-	TR7				2N2369A	0000-7542.066/-						



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

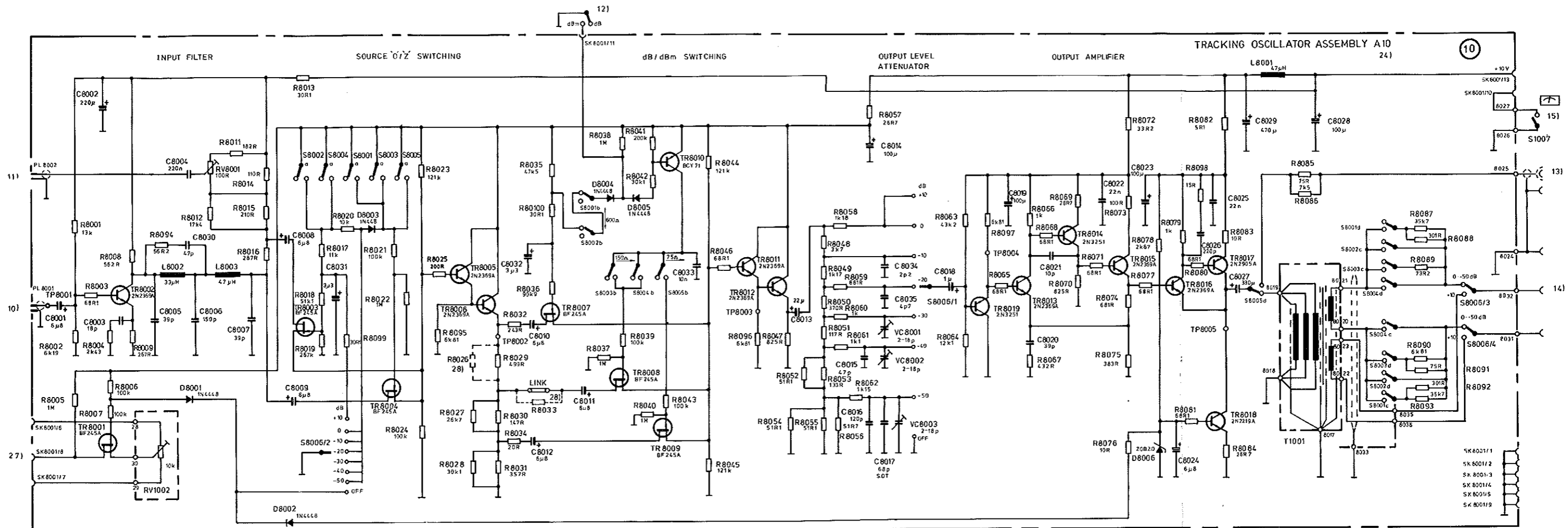
COMPONENTS SK2, SK3, S7, RV2, T1,
 PRECEDED BY 10 e.g. SK1002

Fig. 40 Component Layout, PSE-31 Tracking Oscillator, (10)

ASSEMBLY A10 PSE-31 TRACKING OSCILLATOR

REF.	VALUE	TOL. ±%	RATING	TYPE	PART NO.
RV2	10k	20	1W	Var.	0000-7545.270/-
S7				SWITCH MICRO <input checked="" type="checkbox"/>	0001-0034.176/-
				SWITCH BUTTON <input checked="" type="checkbox"/>	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-31	
				Complete	4502-1080.006/2

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

Fig. 41 Circuit Diagram, PSE-31 Tracking Oscillator, 10

ASSEMBLY P.C.B. A80 used on PSE-31 TRACKING GENERATOR

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R1	13k	1	0W35	MF	0001-0003.631/-	R30	147R	0.25	0W35	MF	0000-7598.311/-	R58	1k18	1	0W35	MF	0001-0001.264/-
R2	6k19	1	0W35	MF	0001-0001.934/-	R31	357R	0.25	0W35	MF	0000-7598.324/-	R59	681R	1	0W35	MF	0001-0001.086/-
R3	68R1	1	0W35	MF	0001-0000.427/-	R32	243R	1	0W35	MF	0001-0000.731/-	R60	1k	1	0W35	MF	0001-0001.219/-
R4	2k43	1	0W35	MF	0001-0001.536/-	R34	20R	1	0W35	MF	0001-0065.158/-	R61	1k1	1	0W35	MF	0001-0001.235/-
R5	1M	1	0W35	MF	0001-0027.507/-	R35	47k5	1	0W35	MF	0001-0002.739/-	R62	1k15	1	0W35	MF	0001-0001.251/-
R6	100k	1	0W35	MF	0001-0002.991/-	R36	90k9	1	0W35	MF	0001-0002.975/-	R63	43k2	1	0W35	MF	0001-0002.690/-
R7	100k	1	0W35	MF	0001-0002.991/-	R37	1M	5	0W35	MF	0001-0027.507/-	R64	12k1	1	0W35	MF	0001-0002.218/-
R8	562R	1	0W35	MF	0001-0001.015/-	R38	1M	5	0W35	MF	0001-0027.507/-	R65	68R1	1	0W35	MF	0001-0000.427/-
R9	267R	1	0W35	MF	0001-0003.576/-	R39	100k	1	0W35	MF	0001-0002.991/-	R66	1k	1	0W35	MF	0001-0001.219/-
R11	182R	1	0W35	MF	0001-0000.663/-	R40	1M	5	0W35	MF	0001-0027.507/-	R67	432R	1	0W35	MF	0001-0000.935/-
R12	17k4	1	0W35	MF	0001-0002.344/-	R41	200k	1	0W35	MF	0001-0003.181/-	R68	68R1	1	0W35	MF	0001-0000.427/-
R13	30R1	1	0W35	MF	0001-0000.236/-	R42	30k1	1	0W35	MF	0001-0002.564/-	R69	267R	1	0W35	MF	0001-0000.207/-
R14	110R	1	0W35	MF	0001-0000.553/-	R43	100k	1	0W35	MF	0001-0002.991/-	R70	825R	1	0W35	MF	0001-0001.154/-
R15	210R	0.25	0W35	MF	0000-7520.538/-	R44	121k	1	0W35	MF	0001-0003.042/-	R71	68R1	1	0W35	MF	0001-0000.427/-
R16	287R	0.25	0W35	MF	0000-7561.241/-	R45	121k	1	0W35	MF	0001-0003.042/-	R72	33R2	1	0W35	MF	0001-0000.265/-
R17	11k	1	0W35	MF	0001-0002.179/-	R46	68R1	1	0W35	MF	0001-0000.427/-	R73	100R	1	0W35	MF	0001-0000.537/-
R18	51k1	1	0W35	MF	0001-0002.768/-	R47	825R	1	0W35	MF	0001-0001.154/-	R74	681R	1	0W35	MF	0001-0001.086/-
R19	267k	1	0W35	MF	0001-0067.444/-	R48	3k7	0.25	0W35	MF	0000-7598.337/-	R75	383R	1	0W35	MF	0001-0000.888/-
R20	10k	1	0W35	MF	0001-0002.137/-	R49	1k17	0.25	0W35	MF	0000-7598.340/-	R76	10R	1	0W35	MF	0001-0000.074/-
R21	100k	1	0W35	MF	0001-0002.991/-	R50	370R	0.25	0W35	MF	0000-7598.353/-	R77	68R1	1	0W35	MF	0001-0000.427/-
R22	1M	5	0W25	MF	0001-0027.507/-	R51	117R	0.25	0W25	MF	0000-7598.366/-	R78	2k67	1	0W35	MF	0001-0001.578/-
R23	121k	1	0W35	MF	0001-0003.042/-	R52	51R1	0.25	0W35	MF	0000-7513.710/-	R79	1k	1	0W35	MF	0001-0001.219/-
R24	100k	1	0W35	MF	0001-0002.991/-	R53	133R	0.25	0W35	MF	0000-7598.379/-	R80	68R1	1	0W35	MF	0001-0000.427/-
R25	200R	1	0W35	MF	0001-0000.676/-	R54	51R1	0.25	0W35	MF	0000-7513.710/-	R81	68R1	1	0W35	MF	0001-0000.427/-
R27	26k7	1	0W35	MF	0001-0002.519/-	R55	51R1	0.25	0W35	MF	0000-7513.710/-	R82	5R1	1	0W35	MF	0001-0016.783/-
R28	30k1	1	0W35	MF	0001-0002.564/-	R56	51R7	0.25	0W35	MF	0000-7584.008/-	R83	10R	1	0W35	MF	0001-0000.074/-
R29	499R	0.25	0W35	MF	0000-7511.673/-	R57	267R	1	0W35	MF	0001-0000.207/-	R84	267R	1	0W35	MF	0001-0000.207/-

REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.	REF.	VALUE	TOL. ± %	RATING	TYPE	PART NO.
R85	75R	0.25	0W35	MF	0001-7562.538/-	TR1				BF245A	0001-0016.628/-
R86	7k5	1	0W35	MF	0001-0002.014/-	TR2				2N2369A	0000-7542.066/-
R87	35k7	1	0W35	MF	0001-0002.616/-	TR3				BF245A	0001-0016.628/-
R88	301R	0.25	0W35	MF	0000-7594.315/-	TR4				BF245A	0001-0016.628/-
R89	73R2	0.25	0W35	MF	0000-7576.867/-	TR5				2N2369A	0000-7542.066/-
R90	6k81	1	0W35	MF	0001-0001.976/-	TR6				2N2369A	0000-7542.066/-
R91	75R	0.25	0W35	MF	0001-7562.538/-	TR7				BF245A	0001-0016.628/-
R92	301R	0.25	0W35	MF	0000-7594.315/-	TR8				BF245A	0001-0016.628/-
R93	35k7	1	0W35	MF	0001-0002.616/-	TR9				BF245A	0001-0016.628/-
R94	56R2	1	0W35	MF	0001-0000.346/-	TR10				BCY71	0001-0016.534/-
R95	6k81	1	0W35	MF	0001-0001.976/-	TR11				2N2369A	0000-7542.066/-
R96	6k81	1	0W35	MF	0001-0001.976/-	TR12				2N2369A	0000-7542.066/-
R97	6k81	1	0W35	MF	0001-0001.976/-	TR13				2N2369A	0000-7542.066/-
R98	15R	1	0W35	MF	0001-0014.879/-	TR14				2N3251	0001-0017.342/-
R99	30R1	1	0W35	MF	0001-0000.236/-	TR15				2N2369A	0000-7542.066/-
R100	30R1	1	0W35	MF	0001-0000.236/-	TR16				2N2369A	0000-7542.066/-
C1	6μ8	20	6.3	Tant.	0001-0040.830/-	TR17				2N2905A	0001-0017.287/-
C2	220μ	20	10	Tant.	0001-0041.208/-	TR18				2N2219A	0000-7601.486/-
C3	18p	2	63	Cer.	0001-0004.258/-	TR19				2N3251	0001-0017.342/-
C4	220n	20	100	PE	0001-0010.404/-	D1				1N4448	0001-0018.493/-
C5	39p	2	63	Cer.	0001-0004.371/-	D2				1N4448	0001-0018.493/-
C6	150p	2	63	Cer.	0001-0004.575/-	D3				1N4448	0001-0018.493/-
C7	39p	2	63	Cer.	0001-0004.371/-	D4				1N4448	0001-0018.493/-
C8	6μ8	20	6.3	Tant.	0001-0040.830/-	D5				1N4448	0001-0018.493/-
C9	6μ8	20	6.3	Tant.	0001-0040.830/-	D6				ZOB 2.0	0001-0064.104/-
C10	6μ8	20	6.3	Tant.	0001-0040.830/-	RV1	100R	20	0.5		0000-7601.648/-
C11	6μ8	20	6.3	Tant.	0001-0040.830/-	VC1	2 - 18p		300	809 - 05003	0000-7598.463/-
C12	6μ8	20	6.3	Tant.	0001-0040.830/-	VC2	2 - 18p		300	809 - 05003	0000-7598.463/-
C13	22μ	20	16	Tant.	0001-0040.966/-	VC3	2 - 18p		300	809 - 05003	0000-7598.463/-
C14	100μ	20	10	Tant.	0001-0041.156/-	S1					
C15	47p	2	63	Cer.	0001-0004.397/-	S2				SWITCH PUSH BUTTON	
C16	120p	2	63	Cer.	0001-0004.562/-	S3				-(OUTPUT IMPEDANCE)	4502-1088.008/4
C17	68p	2	63	Cer.	0001-0004.452/-	S4					
C18	1μ	20	35	Tant.	0001-0040.704/-	S5					
C19	100μ	20	6.3	Tant.	0001-0041.156/-	S6				SWITCH, ROTARY	
C20	39p	2	63	Cer.	0001-0004.371/-					(OUTPUT LEVEL)	0000-7602.472/4
C21	10p	2	63	Cer.	0001-0004.177/-	T1				PSE-31 TRANSFORMER	4502-1309.004/4
C22	22n	20	40	Cer.	0001-0006.418/-	L1	47μH	10		INDUCTOR	0000-7556.256/-
C23	100μ	10	25	Elect.	0000-7568.202/-	L2	33μH	10		INDUCTOR	0000-7556.230/-
C24	6μ8	20	6.3	Tant.	0001-0040.830/-	L3	47μH	10		INDUCTOR	0000-7556.256/-
C25	22n	20	40	Cer.	0001-0006.418/-	SK1				SOCKET, D.I.L. 16-WAY	
C26	220p	2	63	Cer.	0001-0004.601/-					S83529 - 1	0000-7518.391/-
C27	330μ	20	6.3	Tant.	0001-0041.211/-	PL1				PLUG SUBMINAX	0000-2682.002/5
C28	100μ	10	25	Elect.	0000-7568.202/-	PL2				PLUG SUBMINAX	0000-2682.002/5
C29	470μ	10	16	Elect.	0001-0041.910/-	A80				P.C.B. PSE-31	
C30	47p	2	63	Cer.	0001-0004.397/-					TRACKING GENERATOR	4502-0249.000/2
C31	3μ3	20	16	Tant.	0001-0040.775/-						
C32	3μ3	20	16	Tant.	0001-0040.775/-						
C33	10n	20	40	Cer.	0001-0004.818/-						
C34	2p2	0.25p	63	Cer.	0001-0004.009/-						
C35	4p7	0.25p	63	Cer.	0001-0004.083/-						