

# Service information

## Synthesis S-400

### Power Amplifier

Schematic diagram

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S-400 Bill of Material			10/8/96			
				F. Federman		
Part #	Descr.	#/amp	Q.O.H.	Notes		
	<b>LED pc assy</b>	1	0			
	LED pc board	1	0			
	Zener 1N748N, 3.9v	1	0			
	LED, 3mm, red	1	0			
	LED, 3mm, yellow	2	0			
	499 ohm 1/4w 1% MF	2	0			
	100 ohm 1/4w 5% CF	2	0			
	1K8 1/4w 5% CF	1	0			
	6k2 1/4w 5% CF	2	0			
	<b>Case assembly</b>					
	Wangine amplifier module					
	Power switch; JPW-1101-2.5t	1	30	60 total available		
	Fuse; 10a/250v, slo-blow, 5x20mm	1	0			
	Front panel cap	2				
	Front panel, left	1	40/22	(40 OK, 22 cosmetic def)		
	Front panel, center	1	32/3			
	Front panel, right	1	35/54			
	Sub panel	1	100			
	Front panel backing plate	2	138			
	Foot 16.5/55 x 16h, silver	4				
	Foot extender, 2" d x .705h	4	396			
	Spacer, #10x1/2", alum., rnd.	6	0	extrusion to chassis		
	Washer, int. tooth, #4, black	2	0	RCA connectors		
	Washer, nylon, #4, 0.050" thk	6		LED pc to center front panel		
	MS, 4-40x1/4", phil pan hd	8		LED pc to center front panel		
	MS, 4-40x1/4", phil pan hd - tap 23?	6		Bottom/rear panel		
	Screw, 6-20x1/4", phil pan hd, blk, type A	8		?/extrusion		
	Screw, 8x3/8", phil pan hd, type B	8				
	Screw, 4x25mm, phil pan hd, Natrl,	4				
	Screw, #4x1/4", phil pan, TCS, 25Zn, Blk	5	13000	Bottom plate		
	Nut, keps, 10-32, zinc oxide	6	>>>>	Sub-panel/extrusions	1600wh/2800blk	
	MS, 8-32x1/2", Torx FI, ES, FRM, Blk	10	400	End caps/extrusion		
	Screw, M3.5x6, phil pan hd, blk	2	1500	Pwr sw/extrusion		
	MS, 10-32x1/2", phil pan hd, TCS,F,Zinc	4	1400	L&R extr./sub-panel		
	Label, S/N, 1x4	1		Date code Domxxx		
	Label, 120VAC, 60 Hz, 375w	1				
	Label, barcode, 120v, S-400	1				
	Label, Caution, 1 5/8"x1 1/8"	1				
	Label, Caution, 1 1/4"x1/2"	1				
	Label, Fuse, 250V, 2A	1				
	Label, ULabel #5860 JBLLabel	1				
	Label, CSA	1				

Flange, plastic	1	600	Escutcheon for pwr switch		
Cable, Har-004	1		Amp bd. to LED bd.		
Knob	1	800	Power switch		
<b>Packing</b>					
Gift box	1				
Bag, poly, recycled 0.003"x36"x54"	1				
Foam	1				
Foam	1				
CE Declaration	1				
Owner's manual	1				

TO: MR. FRANK FEDERMAN  
FM: WANGINE

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S400 PARTS LIST

REF.NO.	DESCRIPTION	P/N	QTY
1. UPPER COVER	C-1407	78C1407**B	1
2. BOTTOM PLATE	C-1406	78C1406**0	1
3. REAR PANEL	C-1920	78C1920**B	1
4. RIGHT CHASSIS	C-1404	78C1404**0	1
5. LEFT CHASSIS	C-1405	78C1405**0	1
6. BRACKET DOWN	C-1864	78C1864**0	1
7. RIGHT AUX HOLDER	C-1408	78C1408**0	1
8. LEFT AUX HOLDER	C-1409	78C1409**0	1
9. BRACKET PCB	C-1959	78C1959**0	2
10. TRANSFORMER CHASSIS	C-745B	78C745B**0	1
11. TRANSFORMER WASHER	C-1874	78C1874**0	1
12. TRANSFORMER	R5705743S221	70RS3S400*	1
13. HEAT SINK (RIGHT FRONT)	C-746	78C746***0	1
14. HEAT SINK (LEFT FRONT)	C-1863	78C1863**0	1
15. HEAT SINK (RIGHT REAR)	C-748	78C748***0	1
16. HEAT SINK (LEFT REAR)	C-749	78C749***0	1
17. AC CORD	SPT-2	6522**1P20	1
18. AC SWITCH	SPUN12A019	20SN12A019	1
19. FUSE (REAR PANEL) 5 $\phi$ x20x 10A T		595G00520T	1
20. FUSE HOLDER	MF-527	67MF527***	1
21. SPEAKER, TERMINAL	AD-460	54AD460***	1
22. FOOT, CUSTION	50 $\phi$ D-061	81R5014**G	4
23. BUSHING	SB4F-1	96SF41****	1
24. TERMINAL	VB1.25		
25. CONNECTOR	ED-642G 2P	66HD64202F	1
26. CONNECTOR	ED-643G 4P	66HD64304F	1
27. STYROFOAM	PF-048	90048HCA12	2
28. STYROFOAM	PF-037	90037HCA12	2
29. STYROFOAM	PF-037L	9037LHCA12	1
30. STYROFOAM	PF-037R	9037RHCA12	1
31. OUTER CARTON	S400	91C01S400**	1
32. INSIDE CARTON	S400	91I**S400	1
34. CARBON RESISTORS T-TYPE +/- 5% 1/4W 1K		30001KC4TJ	1
35. CAPACITORS MYLAR 0.001J/50V		41102U50RJ	1
36. GROUND 3 $\phi$		643 $\phi$ *****	1
37. NUT 3 $\phi$		883 $\phi$ *****	1
38. SPONGE	50x45x13t		2
39. TUBE SLEEVE UL 80MM			1
40. PLASTIC CLAMPS SR-4S			4

## P.C. BOARD B-1780 ASS'Y

EF.NO.	DESCRIPTION	P/N	Q'TY
<p>———— CARBON RESISTORS T-TYPE RESISTORS ————</p> <p>RATED ARE +/- 5% TOLERANCE AND 1/6W</p>			
R011.W007	100	OHM	300100C6TJ 2
R101	150	OHM	300150C6TJ 1
R104.106	470	OHM	300470C6TJ 2
R102.105.107	10K	OHM	30010KC6TJ 3
<p>———— CARBON RESISTORS T-TYPE RESISTORS ————</p> <p>RATED ARE +/- 5% TOLERANCE AND 1/4W</p>			
W010	56	OHM	300056C4TJ 1
R115.113	1K	OHM	30001KC4TJ 2
R110.116	4K7	OHM	3004K7C4TJ 2
R103.108	10K	OHM	30010KC4TJ 2
R114	15K	OHM	30015KC4TJ 1
R111	47K	OHM	30047KC4TJ 1
<p>———— CARBON RESISTORS T-TYPE RESISTORS ————</p> <p>RATED ARE +/- 5% TOLERANCE AND 2W</p>			
R112	10	OHM	32001002RJ 1
<p>———— CAPACITORS ————</p>			
C110	0.01/500V CERAMIC	42010P50RJ	1
C106.W001	0.02J/50V MYLAR	41203U50RJ	1
C101.102	0.47U/50V ELEC	40P47U50R6	2
C103-105.108	100U/16V ELEC	40100U16R6	4
C107	1000U/25V ELEC	4001KU25R6	1
C109	0.0047/125V VDE	49472U12VK	1
<p>———— DIODE ————</p>			
Z101	3.9V/0.5W	13Z3P9P5*T	1
D101-106	1N4002	131N4002*T	6
<p>———— TRANSISTOR ————</p>			
Q101.103.105	2SA965	122SA965**	3
Q102.104.106.107	2SC1815BL	122SC1815*	4
Q108	2SC2235	122SC2235*	1

———— IC ————

IC101	7805A	117805A***	1
	TRANSFORMER 482012UV	482012UV****	1
SW101.102	SLIDE SWITCH SS004-P022BY-PF8		2
RY101	RELAY VS-12MB DC12V		1
R117.118	SURGE PROTECTOR UEI005	49UEI005**	2
AC IN	PIN 5P Pith 8MM		1
P8.P9	PIN 1x1x19	66P1x1x19*	2
P1-P7	PIN CROSS		7
DIN1.DIN2	DIN JACK LN-0502 5P		2
L IN.R IN	RCA JACK 05001015BSG	551015*BG1	2
J201A	CONNECTOR ED-646G 3P	66HD64603F	1
J301A	CONNECTOR ED-647G 3P	66HD64703F	1
J101A	WAFER 5045-2P	66W504502F	1
J102A	WAFER 5045-4P	66W504504F	1
	P.C.B B-1780	60B1780***	1

## P.C. BOARD B-1781(L)(R) ASS'Y

REF.NO.	DESCRIPTION	P/N	QTY
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———— CARBON RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 1/4W

R352.353.252.253	22	OHM	300022C4TJ	4
R315.322.358.215.222.258	68	OHM	300068C4TJ	6
R326.357.226.257	10	OHM	30000104TJ	4
R307.207	150	OHM	300150C4TJ	2
R317.320.217.220	220	OHM	300220C4TJ	4
R314.323.214.223	330	OHM	300330C4TJ	4
R311.312.316.327.362.363	470	OHM	300470C4TJ	6
R211.212.216.227.262.263	470	OHM	300470C4TJ	6
R354.254	1K	OHM	30001KC4TJ	2
R319.219.359.259	1K5	OHM	3001K5C4TJ	4
R309.310.318.209.210.218	3K9	OHM	3003K9C4TJ	6
R301.308.201.208.239.339	4K7	OHM	3004K7C4TJ	5
R313.213	10K	OHM	30010KC4TJ	2
R225	15K	OHM	30015KC4TJ	1
R325	18K	OHM	30018KC4TJ	1
R302.305.306.351.202.	22K	OHM	30022KC4TJ	5
R205.206.251	22K	OHM	30022KC4TJ	3
R324.224	33K	OHM	30033KC4TJ	2
R303.203	82K	OHM	30082KC4TJ	2
R204.221.242.261	100K	OHM	30100KC4TJ	4
R304.321.342.361	100K	OHM	30100KC4TJ	4

----- FILM RESISTORS T-TYPE RESISTORS -----  
 RATED ARE +/- 5% TOLERANCE AND 1/4W

R330-333.343.344.347.348	10	OHM	330010C4TF	8
R230-233.243.244.247.248	10	OHM	330010C4TF	8

———— METAL RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 1% TOLERANCE AND 1/4W

R355.255	1K18	OHM	321K18C4TF	2
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———— CARBON RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 1/2W

R328.329.228.229	100	OHM	300100C2TJ	4
R334.234	10K	OHM	30010KC2TJ	2

———— METAL RESISTORS T-TYPE RESISTORS ————  
RATED ARE +/- 5% TOLERANCE AND 3W

R335-338.345.346.349.350	0.33	OHM	320P3303RJ	8
R235-238.245.246.249.250	0.33	OHM	320P3303RJ	8

———— CAPACITORS ————

C303.309.203.209	10P/500V	CERAMIC	42010P5ARJ	4
C306.206	300P/500V	CERAMIC	42300P5ARJ	2
C321.322.221.222	0.1U/50V	MYLAR	41104U50RJ	4
C311.313.325.211.213.225	10U/50V	ELEC	40010U50R6	6
C304.314.204.214	47U/50V	ELEC	40047U50R6	4
C315.317.319.326	47U/100V	ELEC	40047U52R6	4
C215.217.219.226	47U/100V	ELEC	40047U52R6	4
C312.212	4.7U/50V	ELEC	404P7U50R3	2
C307.207	220U/16V	NP ELEC	40220U16R3	2
C305.205	METAL OXIDIZE	CAPACITOR 180P		2
C316.320.323.216.220.223	0.1K/160V	PMT T-TYPE	45104U53TW	6
C318.324.218.224	0.1K/250V	PS T-TYPE	47103U52TK	4
C310.210	0.01K/100V	PS C-TYPE	47103U52CK	2

———— DIODE ————

Z301.201	30V/0.5W		13Z030P5*T	2
D301-304.306-308	1N4148		131N4148*T	7
D201-204.206-208	1N4148		131N4148*T	7

———— TRANSISTOR ————

Q305.306.205.206	2SA1370		122SA1370*	4
Q310.210	2SA1298		122SA1298*	2
Q209.309	2SC3263		122SC3263*	2
Q303.304.311.312.321.322	2SC2240		122SC2240*	6
Q203.204.211.212.221.222	2SC2240		122SC2240*	6
Q308.208	2SC3421		122SC3421*	2
Q307.207	2SC3467		122SC3467*	2
Q309.313.315.317.319	2SC3519		122SC3519*	5
Q209.213.215.217.219	2SC3519		122SC3519*	5
Q301.302.201.202	2SK170/2SK240	FET	122SK170**	4
Q314.316.318.320	MJL21193		12MJL21193	4
Q214.216.218.220	MJL21193		12MJL21193	4
Q313.315.317.319	MJL21194		12MJL21194	4
Q213.215.217.219	MJL21194		12MJL21194	4

———— TVR ————

TVR301.201	300 OHM 6 $\phi$	H-TYPE	31300063HP	2
TVR302.202	100 OHM 6 $\phi$	H-TYPE	31100063HP	2



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P1-P3.P7-P9	TERMINAL K-13	55K013****	6
F301.302.201.202	FUSE CLIP 5 $\phi$	67FH301***	8
F301.302.201.202	FUSE 5 $\phi$ x20x5A/250V F	595G00521F	4
J010A.006A.003A.008A	WAFER 5045-2P	66W504502F	4
J301A.201A	WAFER 5045-3P	66W504503F	2
	TEMPERATURE SWITCH T-95AR1U1	28AR1U0095	2
	TEMPERATTRE HOLDER C-1307	78C1307**0	2
	HEAT SINK H-339 L	76339HCA12	1
	HEAT SINK H-343 R	76343HCA12	1
	SCREW CRTS 3x12 B	88TS0312RB	30
	SPRING WASHER 3 $\phi$		30
	P.C.B B-1781(L)(R)	60B1781LR*	2

## P.C. BOARD B-1782 ASS'Y

REF.NO.	DESCRIPTION	P/N	Q'TY
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———— CARBON RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 1/4W

R161.261	100	OHM	300100C4TJ	2
R011.012	1K	OHM	30001KC4TJ	2
R004.008.009	10K	OHM	30010KC4TJ	3
R003	22K	OHM	30022KC4TJ	1
R005	47K	OHM	30047KC4TJ	1
R006.007	220K	OHM	30220KC4TJ	2
R002	470K	OHM	30470KC4TJ	1

———— METAL RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 1W

R001	1K	OHM	32001K01RJ	1
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———— METAL RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 2W

R013.014	5K6	OHM	3205K602RJ	1
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———— METAL RESISTORS T-TYPE RESISTORS ————  
 RATED ARE +/- 5% TOLERANCE AND 3W

R160.260	4.7	OHM	3204P703RJ	2
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## CAPACITORS

C019	0.01/500V	CERAMIC	42103U5ARJ	1
C012	10U/50V	ELEC	40010U50R6	1
C015.016	47U/50V	ELEC	40047U50R6	2
C013	100U/25V	ELEC	40100U25R6	1
C014	220U/16V NP	ELEC	40220U16R3	1
C011	470U/35V	ELEC	40470U35R6	1
C104.204	0.1K/250V	PMD D-TYPE	44104U55DK	1
C004.009	0.05/400V	PS C-TYPE	47503U58CK	2
C005.010	0.01/250V	MPP T-TYPE	47104U55TK	2
C001.002.006.007	15000U/80V	ELEC	4015KU80P6	4

## DIODE

Z001.005.006	4.7V/0.5W		13Z4P7P5*T	3
D003.006.105.205	1N4002		131N4002*T	4
D002	PB202M		13PB202M**	1

## TRANSISTOR

Q003	2SA965	122SA965**	1
Q005.007	2SC2235	122SC2235*	2
Q001.002.004.006.008	2SC1815	122SC1815*	5
RY101.201	RELAY G4F-11123T-US DC24V	74G4111524	2
F001	FUSE CLIP 5 φ	67*****	2
F001	FUSE 1A/250V F	595G00121F	1
J006	CONNECTOR ED-324G 2P	66HD32402F	1
J008A	CONNECTOR ED-644G 2P	66HD64402F	1
J010A	CONNECTOR ED-645G 2P	66HD64502F	1
J003	CONNECTOR ED-640G 2P	66HD64002F	1
P2A.P8A	CONNECTOR ED-639G 1P	66HD63901F	2
	CONNECTOR ED-636G 1P	66HD63601F	1
	CONNECTOR ED-635G 1P	66HD63501F	1
	CONNECTOR ED-638G 1P	66HD63801F	2
	HEAT SINK H-421	76421S400*	1
	P.C.B B1782	60B1782***	1

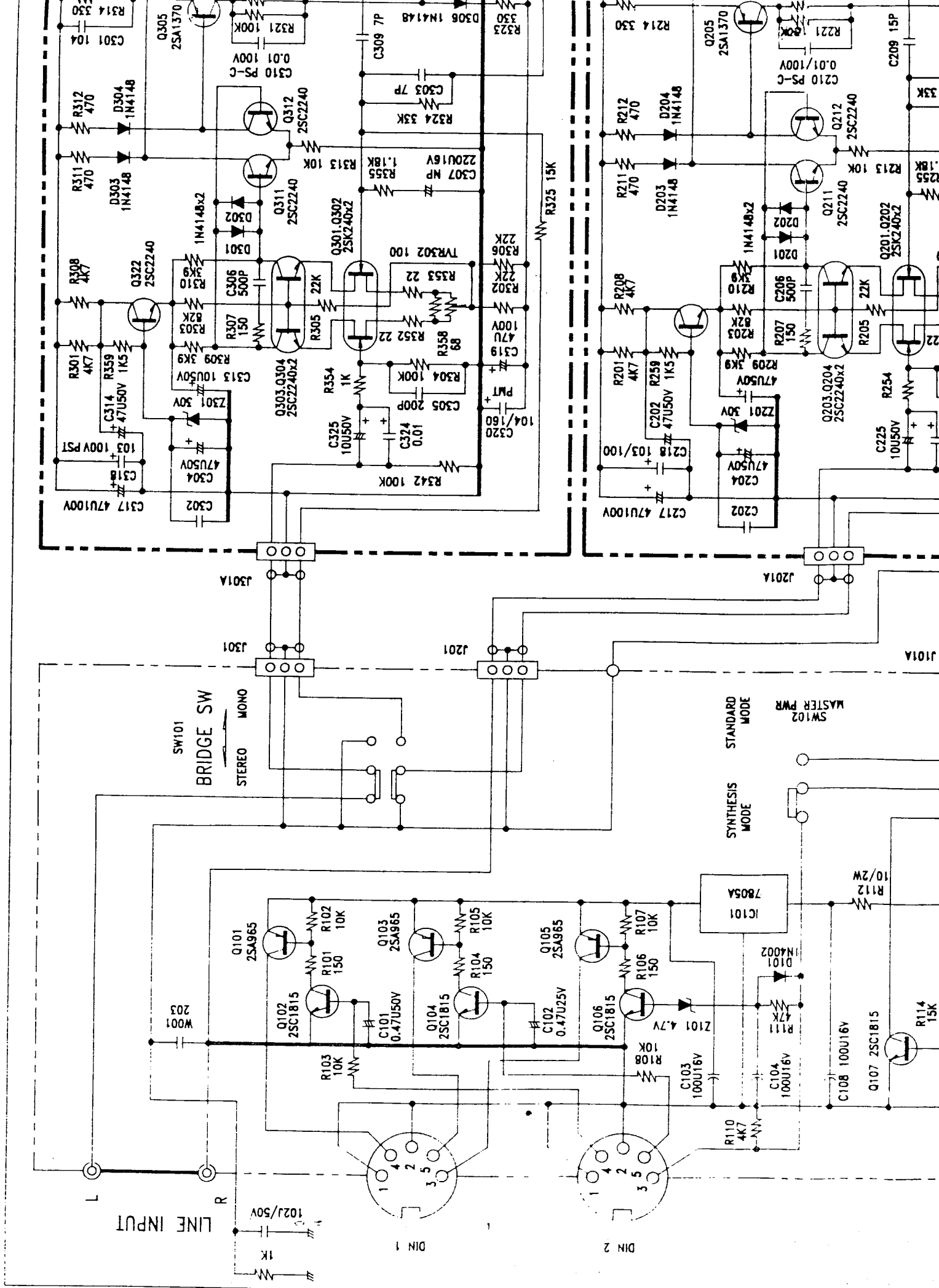
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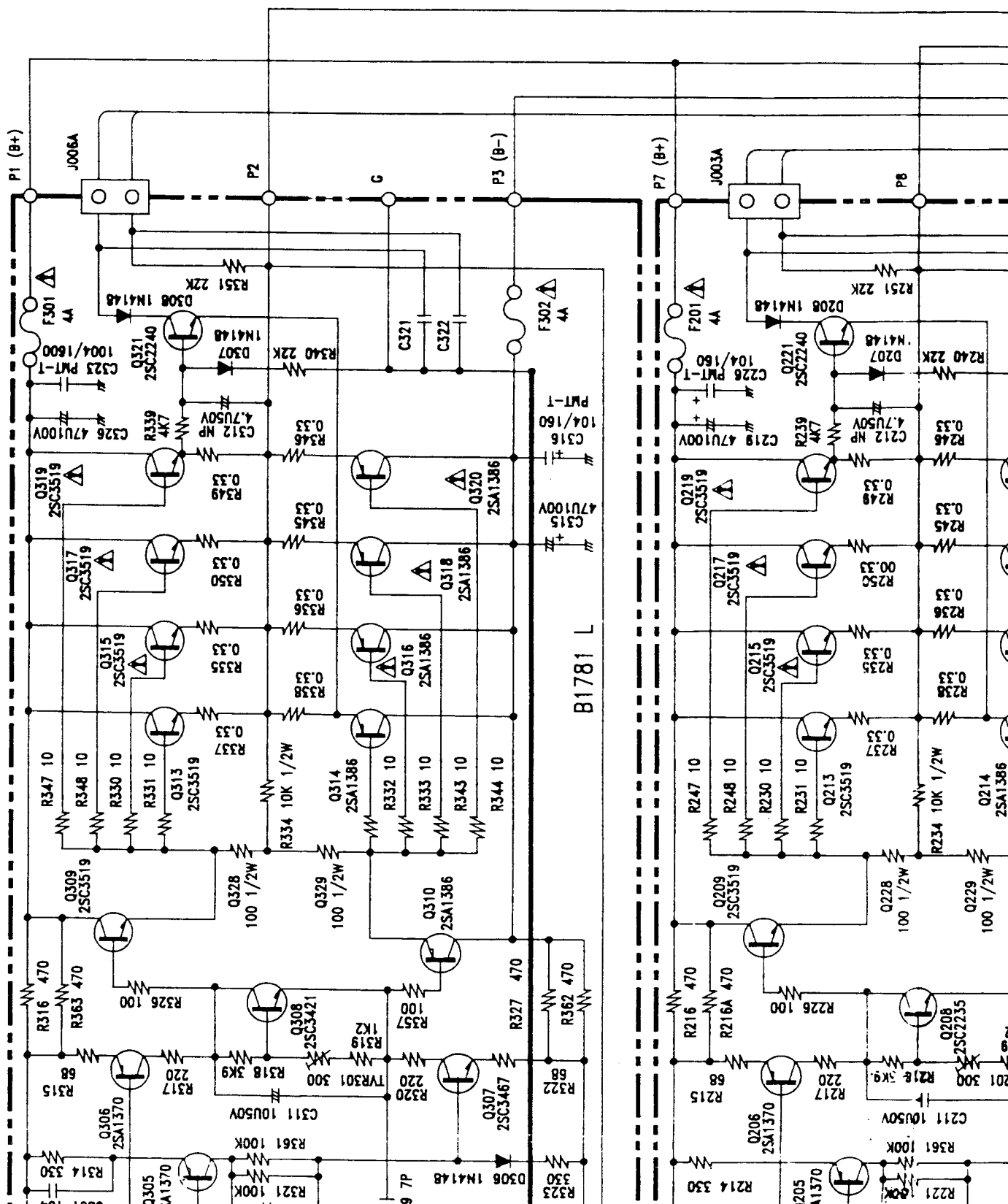
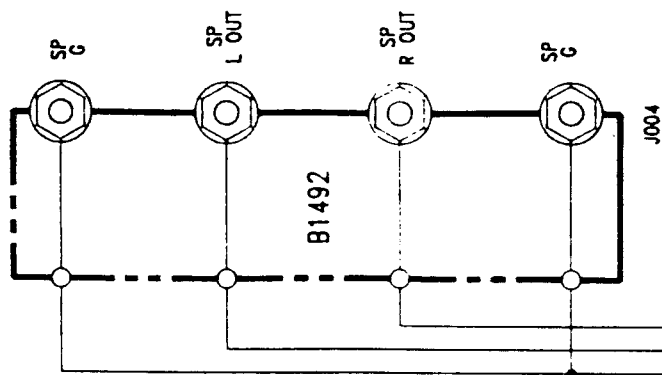
PEF.NO.	DESCRIPTION	P/N	Q/TY
C003.008.017.018	0.01/500V CERAMIC	42103U5ARJ	4
D001	DIODE MB354	13MB354***	1
	P.C.B B1782-RET	60B1782***	1

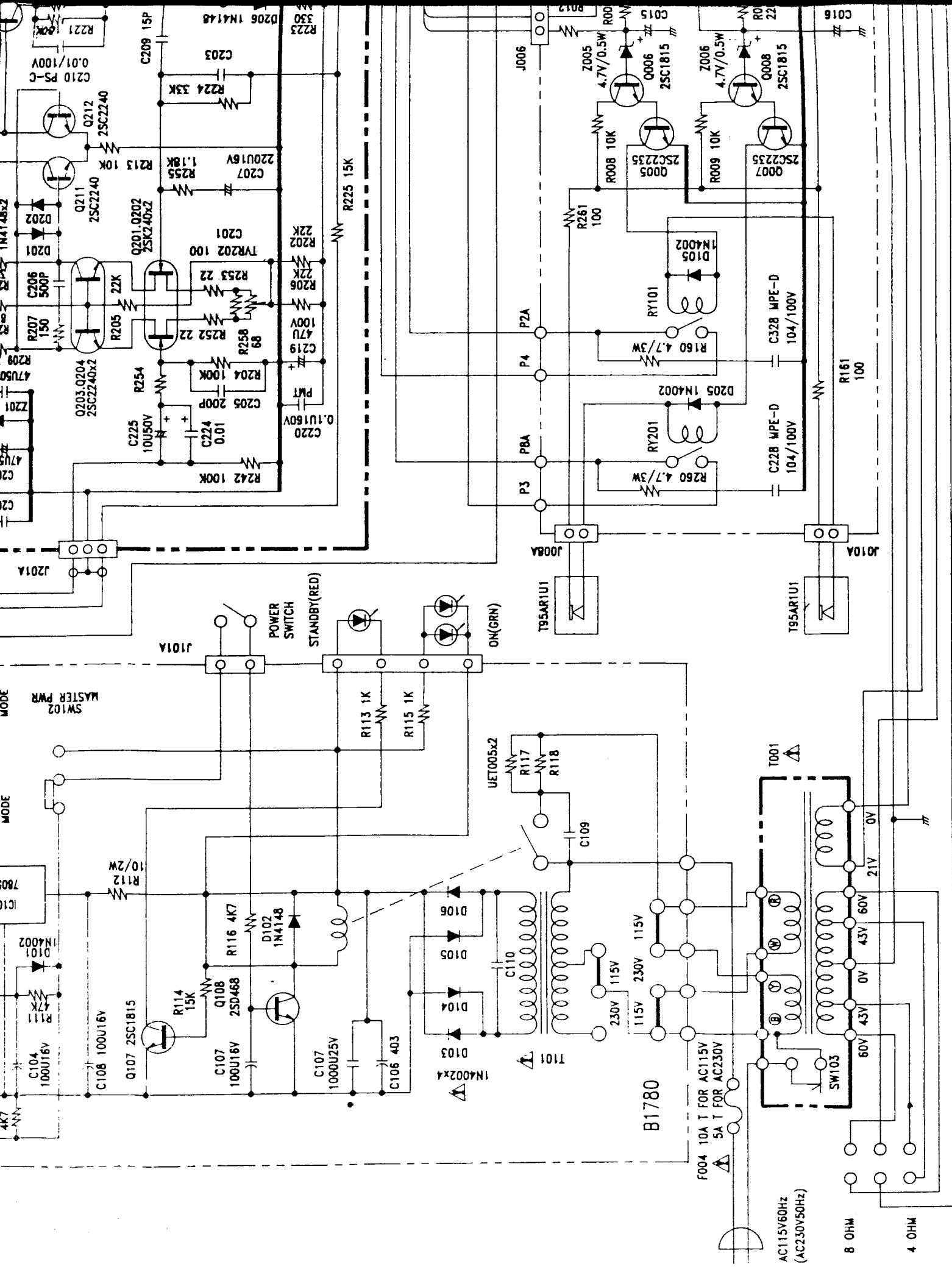
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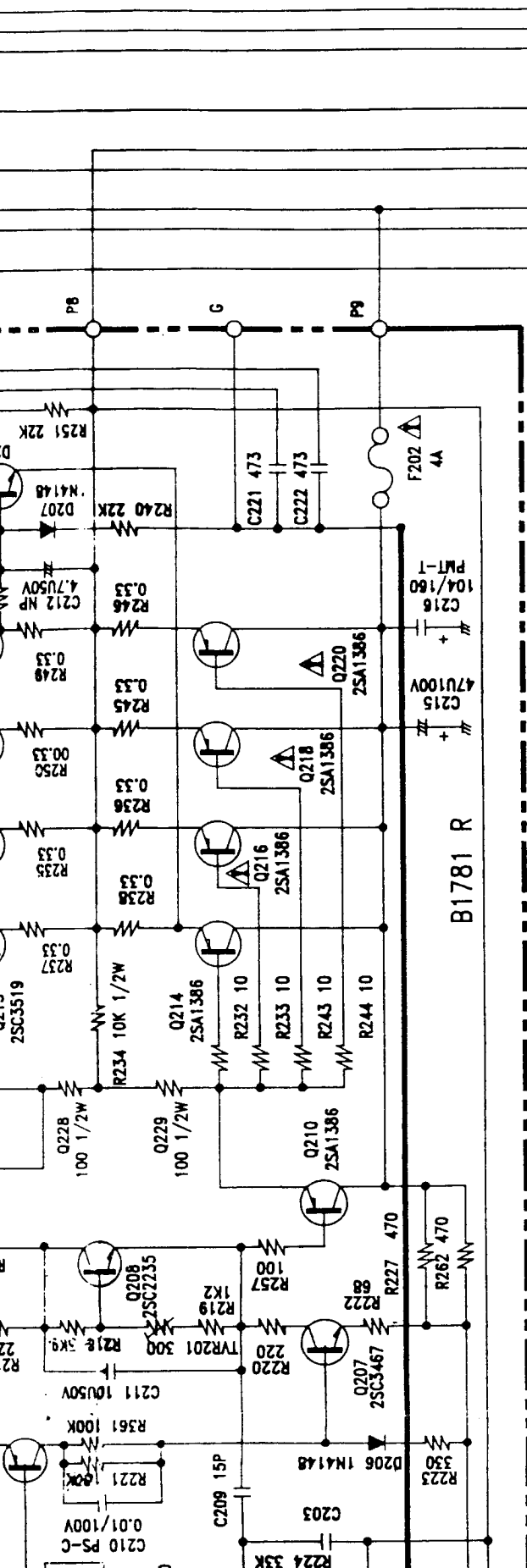
P.C. BOARD B1782-SW ASSY

NO.	DESCRIPTION	P/N	Q/TY
SW103	SLIDE SWITCH SL14-22MA		1
	B1782-SW	60B1782SW*	1

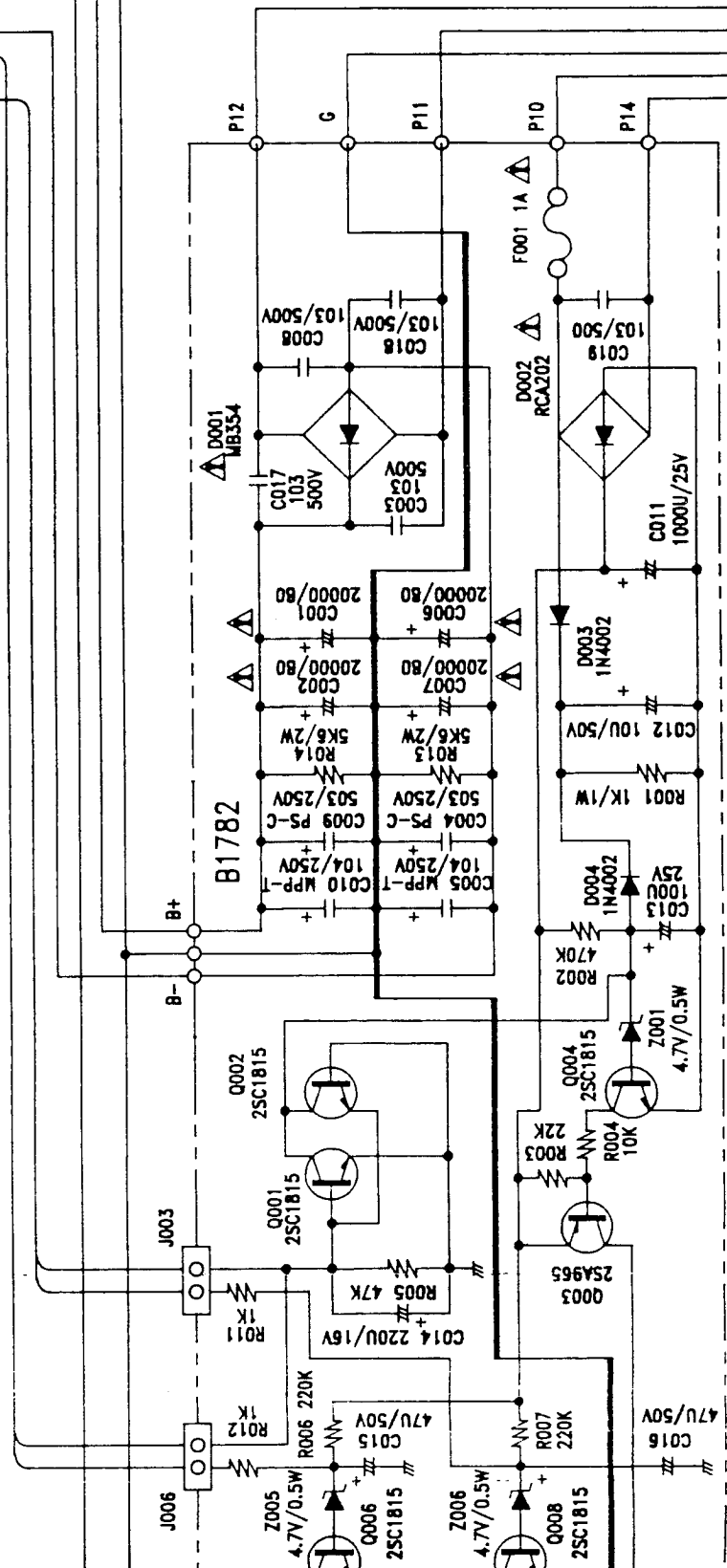








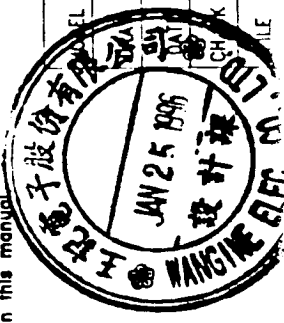


B1781 R



PRODUCT SAFETY NOTICE:

All safety precautions in this manual be followed during servicing. Components identified with the IEC symbol  in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing component identified with , use only the replacement parts designated or parts with the same rating of resistance, wattage or parts with the same rating of resistance, wattage or voltage that are designated in the parts list in this manual.



FILE	S400
DESIGNER	B.F. HUANG.
DATE	JAN.19.1996
CHECKER	M. CHANG.
FILE	C. S400.DWG