

ONKYO® SERVICE MANUAL

SUPER SERVO STEREO POWER AMPLIFIER MODEL M-5090

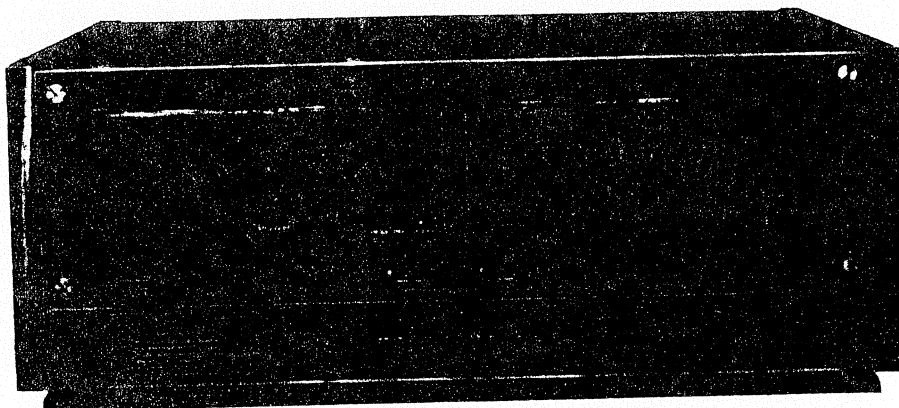
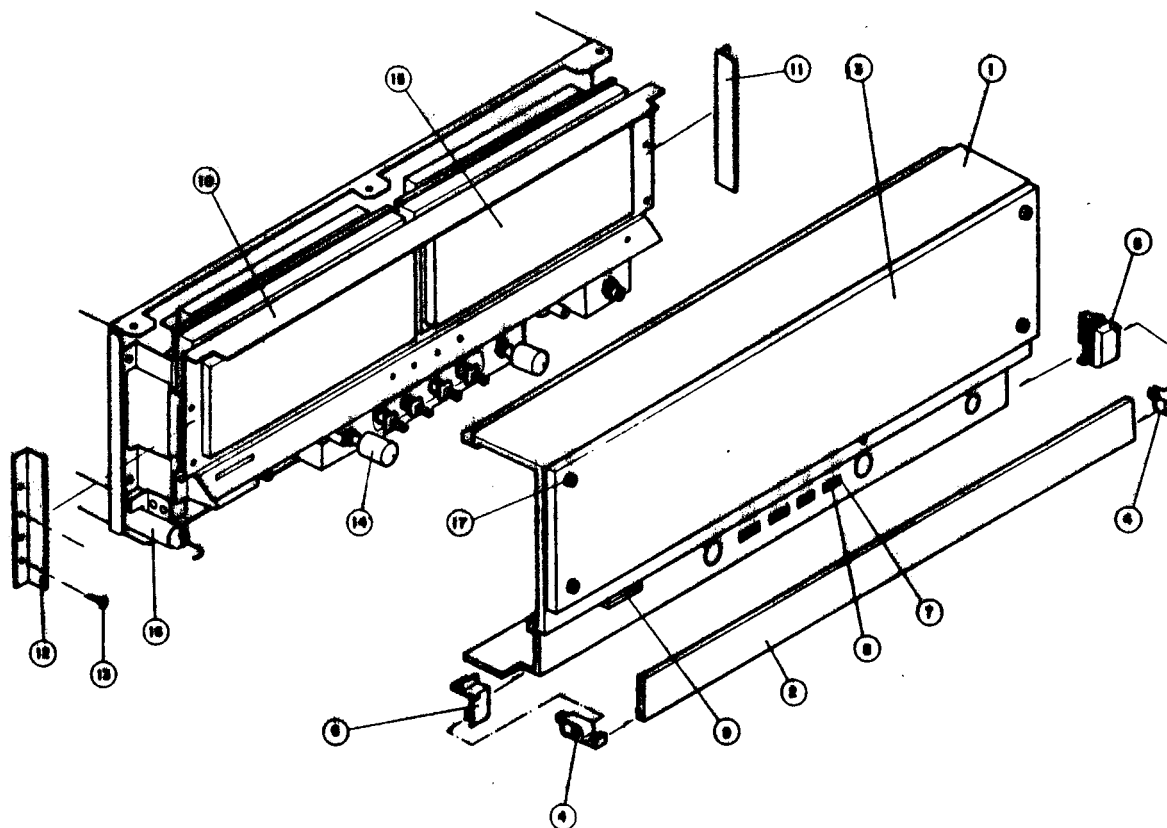


TABLE OF CONTENTS

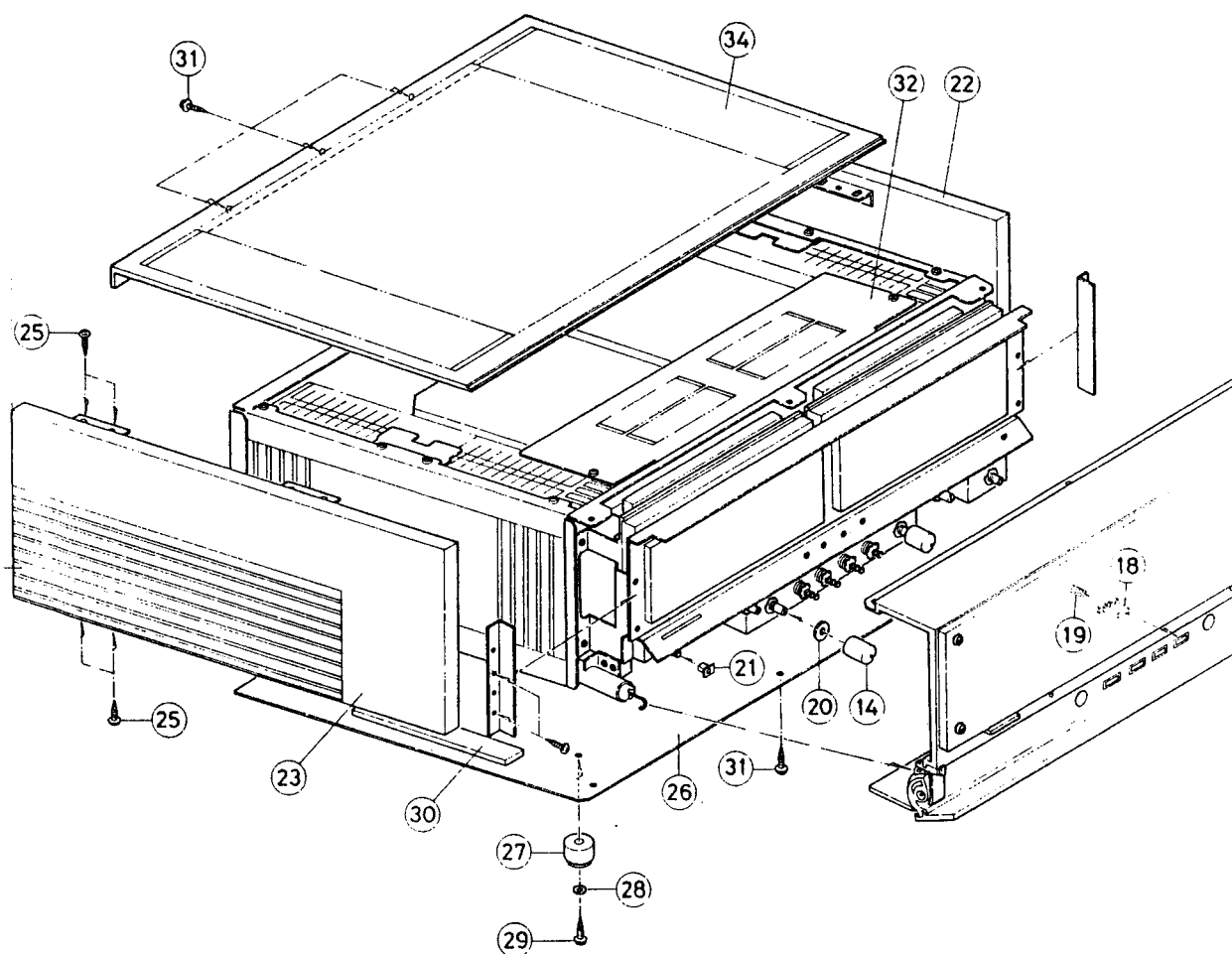
ITEM	PAGE
Exploded view	2
Adjustment procedures	4
Schematic diagram	5
Parts list	10
Printed circuit board-parts list	12

ONKYO.
AUDIO COMPONENTS

EXPLODED VIEW



REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
1	12478121	Front panel ass'y	10	12731139	Back plate ass'y
	(Include 2, 4 to 7 and 9)		11	27190092A	Holder
2	27210267B	Front panel S	14	28320481	Knob, level
3	28191067	Clear plate	15	243134	Output meter
4	27300400A	Bearing L	16	24610440	Damper ass'y
5	28125083	End cap R	17	27300348	Special screw
6	28125082	End cap L		27270017A	Spacer
7	27267083	Guide, push		863140	N-4F-N, Nut
8	28320479	Knob, push		870052	Washer
	27180049	Spring G		870054A	Washer
9	27267084	Guide, power			
	28320480A	Knob, power			
	27180033	Spring B			



REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
14	28320481	Knob, level	26	27170092	Bottom board
18	28320479	Knob, push	27	27175020	Leg
19	27180049	Spring G	28	87613008	W3*8F, Washer
20	28140219	Cushion	29	834130202	3STS+20BQ, Tapping screw
21	27190091	Holder, push	30	28140323	Cushion
22	28185124-1	Side panel R ass'y	31	831430082	3STW+8BQ(BC), Tapping screw
23	28185123-1	Side panel L ass'y	32	28184102	Cover F
24	27300345A	Plate, radiator	34	28184098	Cover
25	834430062	3STS+6BQ(BC), Tapping screw			

ADJUSTMENT PROCEDURES

* PREPARATIONS

- 1). Place the unit on a level surface, right side up, leaving at least 15mm of space at the ventilation openings.
- 2). There should be no load or signal and the level should be at minimum.
- 3). The air should be calm, as moving air can upset the stability of the gauges.

1. Meter Zero Point Adjustment

With the power off, align each needle with the "0" mark using the adjustment screw underneath each meter.

Caution: Do not perform this adjustment immediately after turning the power off.

Perform after the meter circuit section has discharged.

2. Idling Current Adjustment

Remove the top cover and, five minutes after the power has been turned on, adjust the semi-fixed resistor R126(R226) so that the voltage between VCT-IID on printed circuit board NADA-983 is 14mV.

3. Meter Offset Adjustment

About five minutes after turning power on and with no signal present, adjust the semi-fixed resistor R639(R640) on the pc board NAME-986 to align each meter needle with "0".

4. Meter Level Adjustment

Apply a 1kHz signal to the left channel input terminal and set the M-5090 meter range selector to *0.1. Adjust the input so that the speaker output terminal voltage (no load) is 12.65V(22dBV). Then adjust the semi-fixed resistor R611 of pc board NAMA-986 so that the meter needle is aligned with 0dB. Adjust the right channel in the same manner with the R612. (Do not feed a signal to both the left and right channels at the same time.)

PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
A1	27110119	Front bracket F	A602	27175020	Leg
A2	27140436	Bracket, power	A603	28140323	3*150*20, Cushion
A3	27140435	Bracket, volume	A604	834130208	3STS+20BQ, Tapping s
A4	27140437	Bracket, headphone	A605	831430088	3TTW+8B(BC), Tapping screw
A5	27140438	Bracket, lamp A	A606	87613008	W3*8F, Washer
A6	27140439	Bracket, lamp B	A801	28320480B	Knob, power
A7	27190009	Holder	A802	28320481	Knob, level
A8	27300396	Insulating plate B	A803	28320479	Knob, push
A13	27110120	Front bracket B	A804	893030	E-3, Circlip
A18	27100035B	Chassis	A805	28140219	Cushion
A19	27130146	Bracket, power transformer	A395	28185123-1	Side panel L ass'y
A20	27130232	Bracket, pcb	A400	28185124-1	Side panel R ass'y
A21	27300163	Band	C001	3500065A	0.01uF, AC400V/125V, Capacitor IS
A22	27140257	Bracket, pcb	C002-C005	3504151	30,000uF, 90V, Capacitor, elect.
A23	27270030	Spacer	C006, C007	38000003	Capacitor DTG
A24	27300358	Bus	D001-D004	223841	GP-30G, Silicon diode
A25	27300395	Insulating plate A	F601, F602	252052	7A(ST-6), Fuse (D)
A37	27190029	Holder		252077	4A-SE-EAK, Fuse (G)
A41	27260061	Shaft D	M001, M002	243134	NIND-2000S134, Meter
A42	27160080	Radiator	P001, P002	25045054	NPJ-1PRBL28, Input terminal
A43	27130144A	Bracket, headphone	P003	25045062	M1654A, Stereo headphone jack
A44	27130231A	Bracket C	P004	253100	AS-UC-4, Power supply cable (D)
A45	27140440	Bracket HE		253092	AS-CEE-2, Power supply cable (G)
A46	27140376B	Holding bracket, transistor	P005	25050046	NSCT-2P15, AC outlet
A52	27260043	Shaft ass'y	P006	27300168	Speaker terminal
A62	27120352A	Back panel (D)	P007, P008	25060039	NTM-4PDMN10, Terminal
	27120353A	Back panel (G)	R001, R002	5104112	N27D100KB25M, Output level variable resistor
A63	270280	SR-4K-4, Strain relief	R327, R427	4000045	PTHBB471TS, Posistor
A70	27300380	Damper ass'y	S001	25035290	NPS-111-L256P, Power switch (D)
A76	27260042	Shaft A		25035289	NPS-111-L255P, Power switch (G)
A77	27140462	Bracket DA	T001, T002	230599	NPT-722D, Power transformer (D)
A79	27140487	Bracket, door		230600	NPT-722G, Power transformer (G)
A351	12478121	Front panel ass'y	U1	12731583	NADA-983, Driver ampli pcb ass'y
A352	27210267B	Front panel S ass'y	U2	12731584	NAMP-984, Power ampli. pcb ass'y
A353	28191067	Clear plate	U3	12731585	NAPC-985, Protector circuit pcb ass'y
A354	27300400A	Bearing L	U4	12731586	NAME-986, Peak meter driver pcb ass'y (D)
A355	28125082	End cap L		12487586A	NAME-986A, Peak meter driver pcb ass'y (G)
A356	28125083	End cap R	U5	12731587A	NAPL-987A, Meter indi
A357	28140314	2*5*7, Cushion			lamp pcb ass'y
A358	28140296	0.5*30*7, Cushion			
A359	28140324	1.5*20*10, Cushion			
A360	27267084	Guide, power			
A361	27267083	Guide, push			
A362	27180033	Spring B			
A363	27180049	Spring G			
A364	28140318	3*150*10, Cushion			
A365	27300399A	Bearing R			
A366	28133036A	Back plate			
A367	27190092A	Holder			
A378	27190091	Holder, push			
A384	28184102	Cover F			
A385	28184098A	Cover			
A386	28140020	4*10*40, Cushion			
A388	28140260	Cushion			
A601	27170092	Bottom board			

REF. NO.	PARTS NO.	DESCRIPTION
U6	12731587B	NAPL-987B, Meter indicator lamp pcb ass'y
U7	12731582	NASW-982, Switch pcb ass'y
U8	12731508	NAPL-1008, Power indicator lamp pcb ass'y
Q301-Q303	2201223 or	2SC2773(O) or
Q401-Q403	2201224	2SC2773(Y), Transistor
Q304-Q306	2201233 or	2SA1169(O) or
Q404-Q406	2201234	2SA1169(Y), Transistor
Q309, Q409	2211255	2SC1815(GR), Transistor
	2000166	NSAS-3PD62, Socket
	2000162	NSAS-16PD45, Socket
	2000163	NSAS-10PD46, Socket
	223018	AC316A, Accessory, transistor

Note: (D); Only 120V model
 (G); Only 220V model

PACKING MATERIALS-PARTS LIST

PARTS NO.	DESCRIPTION
29050507	Master carton box
29090564-1	Pad L
29090581-1	Pad R
290093	500*1,200mm, Protection sheet
29100038A	720*950mm, Poly-vinyl bag
29090587	Pad, bottom
29090588	Pad, top
2010069	Connection cable
29340564	Instruction manual
29100005	Poly-vinyl bag for accessory
29050505	Master carton box G
29090589	Pad
29112010	Band
29090429	Pad, corner
29365006-2	Warranty card (D)
29365005-3	Warranty card (G)
29358002	Service station list (D)

Note: (D); Only U.S.A. model
 (G); Only West Germany model

PC BOARD PARTS LIST

DRIVE AMPLIFIER (NADA-983)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors		
Q01	2211916 or	2SK240(BL) or
	2211917	2SK240(V), F.E.T
Q02-Q04	2211732 or	2SC1845(F) or
	2211733	2SC1845(E)
Q5-Q7	2211792 or	2SA992(F) or
	2211793	2SA992(E)
Q8	2211140	2SA798(O-001)
Q9, Q10	2212041,	2SA916(K),
	2212042 or	2SA916(L) or
	2212043	2SA916(M)
Q11	2211255	2SC1815(GR)
Q12, Q14	2212031,	2SC1941(K),
	2212032 or	2SC1941(L) or
	2212033	2SC1941(M)
Q13	2211445 or	2SC2291(F) or
	2211446	2SC2291(G)
Q15	2212041,	2SA916(K),
	2212042 or	2SA916(L) or
	2212043	2SA916(M)
Q16	2200863 or	2SC2238(O) or
	2200864	2SC2238(Y)
Q17	2200873 or	2SA968(O) or
	2200874	2SA968(Y)
Q18	2211792 or	2SA992(F) or
	2211793	2SA992(E)
Q19	2211732 or	2SC1845(F) or
	2211733	2SC1845(E)
Q20	2200394	2SC1625(Y)
Q21	2200404	2SA815(Y)
Q23, Q24	2211255	2SC1815(GR)
IC		
Q22	222502	NJML558DX
Photo diode/transistor		
Q25	226007	TLP531
Diodes		
D01, D02	223133	DSL42X
D03-D06	4000068	VD1222
D7	223133	DSL42X
D08, D09	4000068	VD1222
D10, D11	224124	GZA-22U
D12-D19	223133	DSL42X
D20, D21	224112	GZA-12U
D22-D24	223133	DSL42X
Capacitors		
C01	372122214	2,200pF±5%, 50V, St
C06, C15	352741009	10μF, 16V, Elect.
C30, C31	352752209	22μF, 25V, Elect.
C32, C33	352751009	10μF, 25V, Elect.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C34, C35	352751019	100μF, 25V, Elect.

Metal oxide film resistors

R01	441621024	1kΩ, 1W
R02	441621044	100kΩ, 1W
R03	441626824F	6.8kΩ, 1W
R11	441522724KF	2.7kΩ, 1/2W
R20	441723334F	33kΩ, 2W
R21	441621634F	16kΩ, 1W
R31, R32	441524714KF	470Ω, 1/2W
R33, R34	441524704KF	47Ω, 1/2W
R35, R37	441622734	27kΩ, 1W
R41, R42	441621024F	1kΩ, 1W
R48, R49	441521214KF	120Ω, 1/2W
R60	441521514KF	150Ω, 1/2W
R61	441622724F	2.7kΩ, 1W
R63	441722204	22Ω, 2W
Semi-fixed resistor		
R26	5225072	N10HR4.7KBIM
Plugs		
	25065070	NPLQ-8P15
	25065055	NPLQ-5P11
Cases		
	27300342	A
	27300343	B

POWER AMPLIFIER (NAMP-984)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors		
Q7	2211792 or	2SA992(F) or
	2211793	2SA992(E)
Q8	2211732 or	2SC1845(F) or
	2211733	2SC1845(E)
Q301-Q303	2201223 or	2SC2773(O) or
Q401-Q403	2201224	2SC2773(Y)
Q304-Q306	2201233 or	2SA1169(O) or
Q404-Q406	2201234	2SA1169(Y)
Q309, Q409	2211255	2SC1815(GR)
Resistors		
R01-R06	441520274	2.7Ω, 1/2W, Metal oxide film
R07-R09	4000075	0.47Ω, 2W, Metal plate
R10-R12	441720104	1Ω, 2W, Metal oxide film
R13-R16	4000077	0.27Ω, 5W, Metal plate
R23-R25	441523314	330Ω, 1/2W, Metal oxide film
Plugs		
	25065070	NPLQ-8P15
	25065055	NPLQ-5P11

POWER INDICATOR (NAPL-1008)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL701	210092	PL14V150mA, Lamp

PROTECTOR CIRCUIT (NAPC-985)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors		
Q501-Q504	2211255	2SC1815(OR)
Q505	2211455	2SA1015(OR)
Q506	2211255	2SC1815(OR)
Q507	2211884 or 2211883	2SC2655(Y) or 2SC2655(O)
Diodes		
D501-D504	223133	DS442X
D507	224043, 224098 or 224167	05Z6.2U, 02A6.2U or 05Z6.2Z
D508	223133	DS442X
Coils		
L501,L502	231015	S-0.8C
Capacitor		
C503-C506	352780109	1 μ F, 50V, Elect.
C507,C508	352741019	100 μ F, 16V, Elect.
C509	352742219	220 μ F, 16V, Elect.
C510	352744719	470 μ F, 16V, Elect.
C512,C513	352780479	4.7 μ F, 50V, Elect.
C514,C515	352780479	4.7 μ F, 50V, Elect.
Metal oxide film resistors		
R501,R502	441720474F	4.7 Ω , 2W
R503-R508	441721504F	15 Ω , 2W
R509,R510	441823344F	330 Ω , 3W
R511,R512	441521014KF	100 Ω , 1/2W
R513-R516	441520334KF	3.3 Ω , 1/2W
R523	441525614KF	560 Ω , 1/2W
R524	441526804KF	68 Ω , 1/2W
Relaies		
RL501	25065139	NRL-2P0.3ADC12-05
RL502,RL503	25065140	NRL-2P5A-DC12-06
RL504,RL505	25065141	NRL-2P5A-DC12-07
Plug		
	25065070	NPLQ-8P15

PEAK METER DRIVE AMPLIFIER (NAME-986)-PARTS LIST

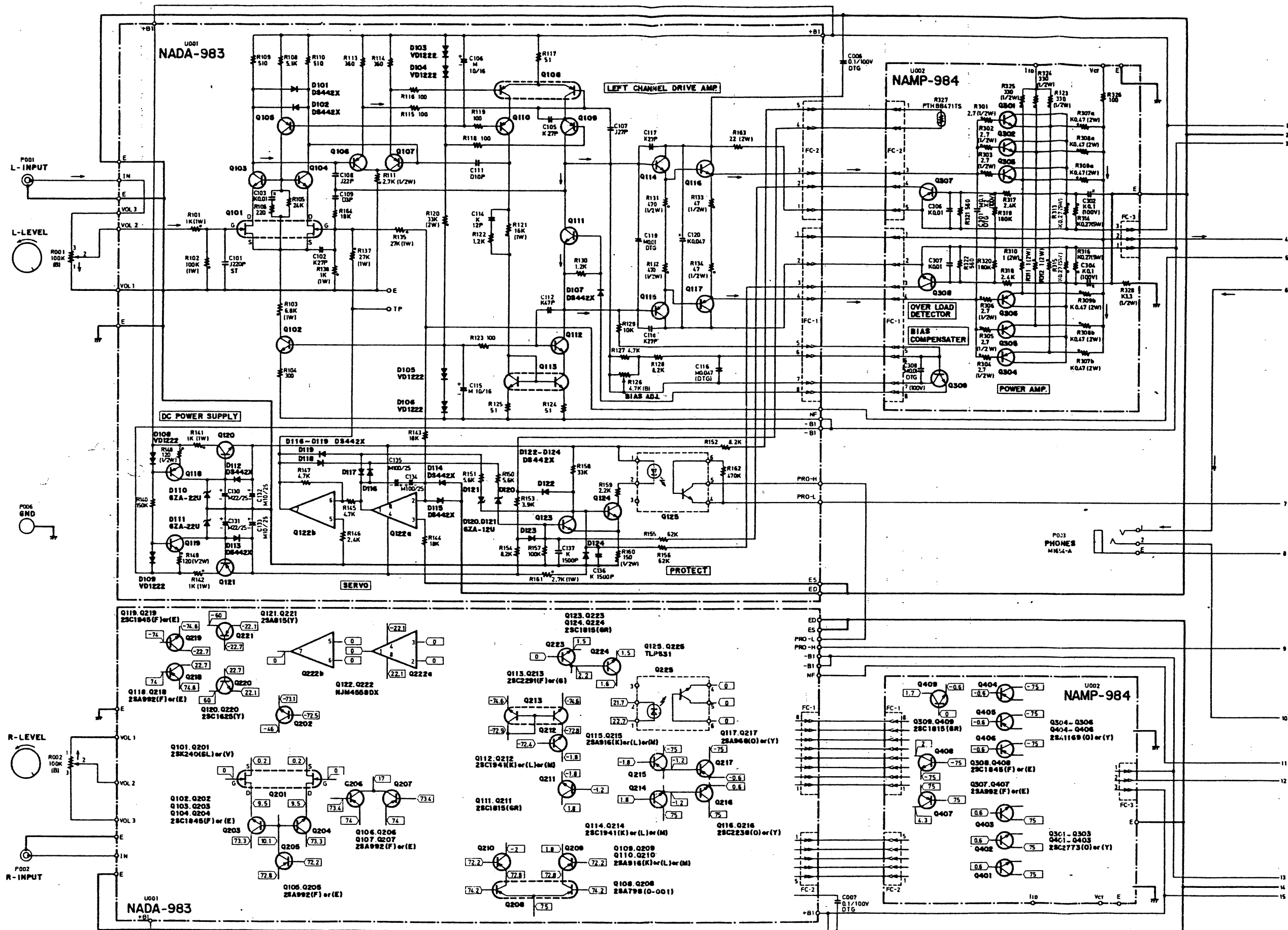
CIRCUIT NO.	PARTS NO.	DESCRIPTION
ICs		
Q603	222531	TA7318P(Y)
Q606,Q607	222502	NJM4558DX
Transistors		
Q601,Q602	2211945	2SK246(OR), F.E.T
Q604,Q605	2211255	2SC1815(OR)
Q608	2211792 or 2211793	2SA992(F) or 2SA992(E)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q609	2211732 or 2211733	2SC1845(F) or 2SC1845(E)
Q610	2200394	2SC1625(Y)
Q611	2200404	2SA815(Y)
Q612	2211643 or 2211644	2SA965(O) or 2SA965(Y)
Diodes		
D601,D602	223133	DS442X
D603,D604	224115	GZA-15L
D605	223133	DS442X
D606,D607	4000068	VD1222
D608	224115	GZA-15L
D609,D610	224124	GZA-22U
D611	223133	DS442X
D612,D613	223862	WLO1
D614-D629	223841	GP300
D630,D631	223133	DS442X
Capacitors		
C601,C602	352784799P	0.47 μ F, 50V, Elect.
C605,C606	352780339P	3.3 μ F, 50V, Elect.
C607	352780109T	1 μ F, 50V, Elect.
C610,C611	352780339	3.3 μ F, 50V, Elect.
C612,C613	352754709	47 μ F, 25V, Elect.
C614,C615	352751019	100 μ F, 25V, Elect.
C618,C619	352751019	100 μ F, 25V, Elect.
C620	352753329	3,300 μ F, 25V, Elect.
Resistors		
R611,R612	5225067	N10HR470BDM, Semi-fixed
R639,R640	5225067	N10HR470BDM
R644,R645	441521214KF	120 Ω , 1/2W, Metal oxide film
R646,R647	441625614KF	560 Ω , 1W, Metal oxide film
R648	441523904KF	39 Ω , 1/2W, Metal oxide film
R649	441621824F	1.8k Ω , 1W, Metal oxide film
R652-R656	4000076	0.22 Ω , 5W, Metal plate
Relaies		
RL601	25065048	FRL-644-d1212AS
RL602	25065140	NRL-2P5A-DC12-06
Plugs		
	25065055	NPLG-5P11
	25065068	NPLG-4P13
Fuse holder		
	250113	SN5051

METER ILLUMINATION LAMP (NAPL-987A/B)-PARTS LIST

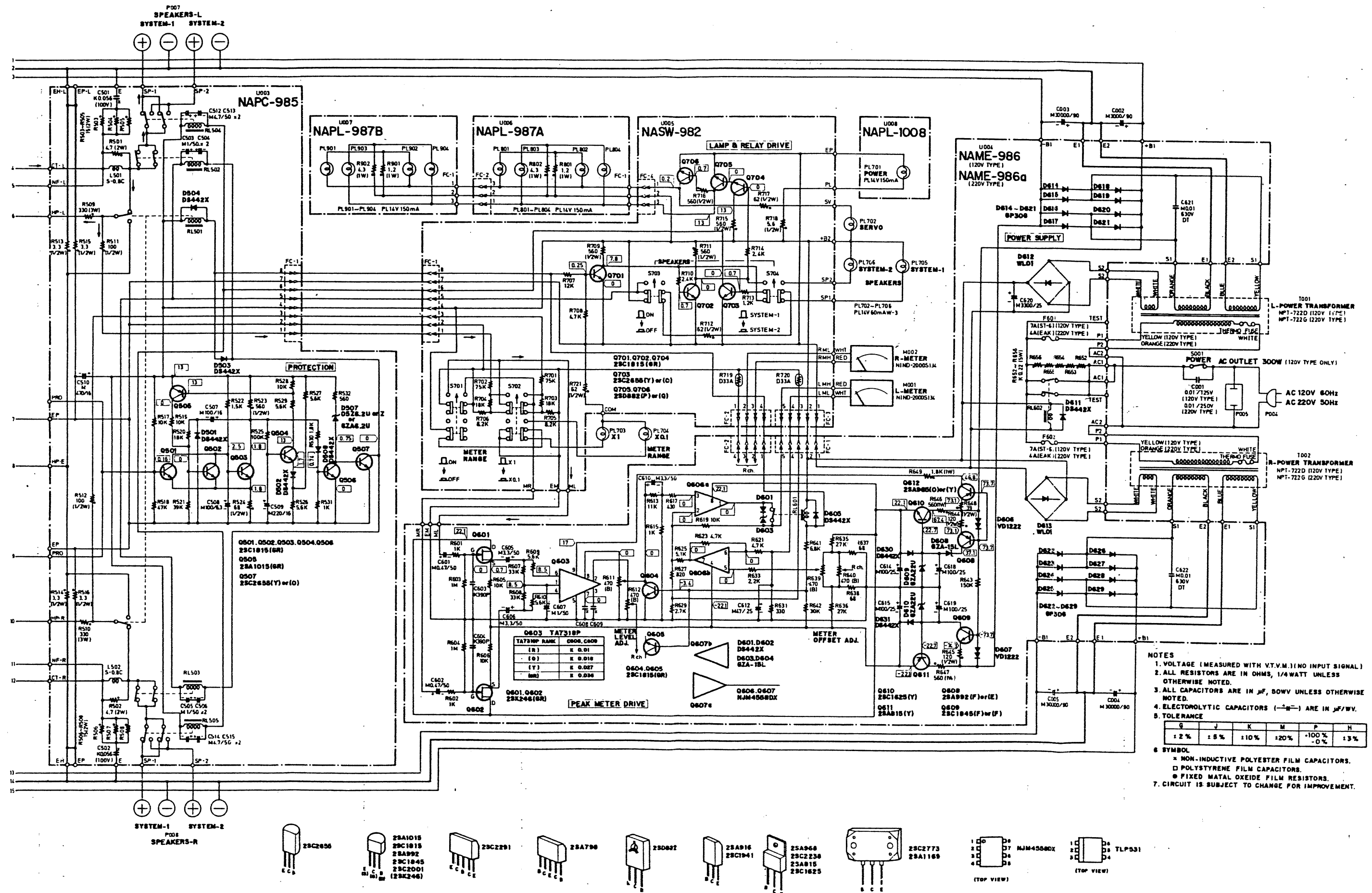
CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL801,PL802	210092	PL14V150mA, Lamp
PL901,PL902		
PL803,PL804	210089	PL14V150mA, Lamp
PL903,PL904		
R801,R901	441620124	1.2 Ω , 1W, Metal oxide film resistor
R802,R902	441620434	4.3 Ω , 1W, Metal oxide film resistor
	27250021	Lamp case
	25055039	NPLG-3P30, Plug
	2000151	NSAS-3P028, Socket

SCHEMATIC DIAGRAM



ONKYO CORPORATION

SCHEMATIC DIAGRAM



ONKYO CORPORATION