

ONKYO® SERVICE MANUAL

SUPER SERVO STEREO PREAMPLIFIER MODEL P-3090

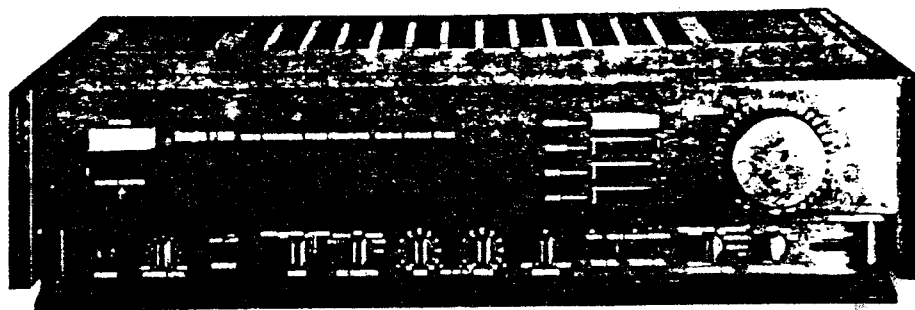
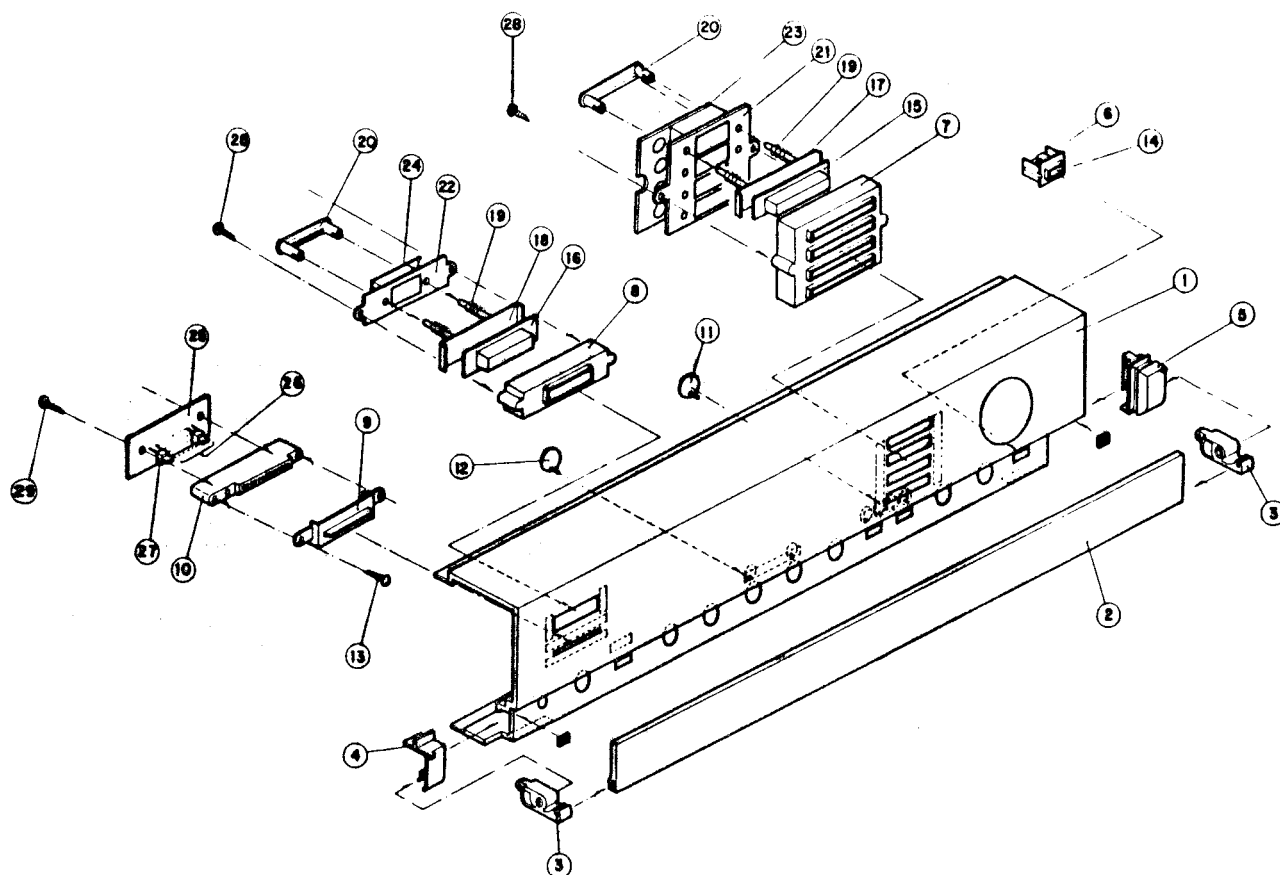


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AUDIO COMPONENTS

EXPLODED VIEW

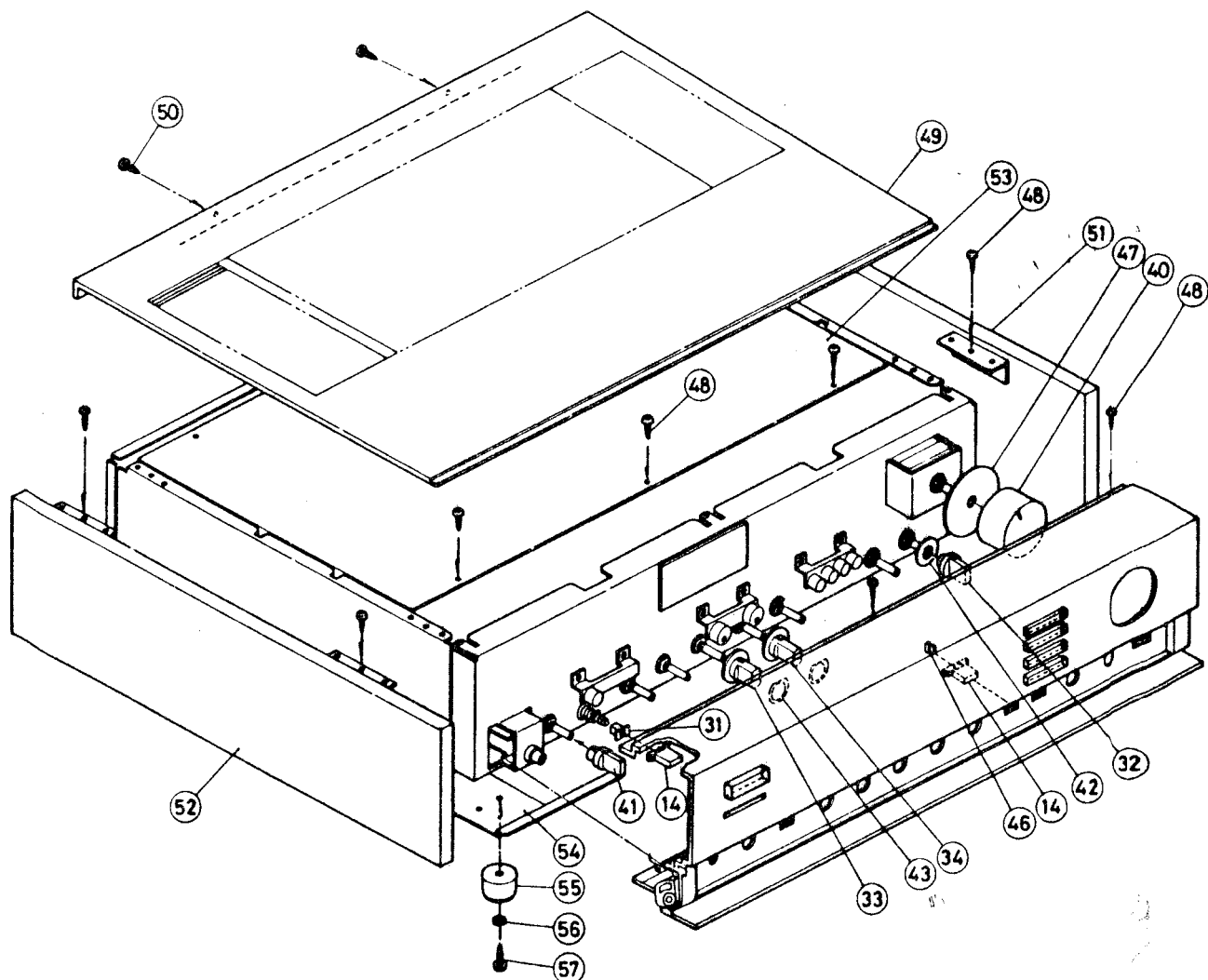


REF. NO. PARTS NO. DESCRIPTION

1	12488121	Front panel ass'y
	(Include 2 to 12, 21, 22 and 26)	
2	27210332	Front panel S
3	27300400A	Bearing L
3	27300399A	Bearing R
4	28125082	End cap L
5	28125083	End cap R
6	27267083	Guide, push
7	27267081	Guide, selector
8	27267080	Guide, power
9	27190090	Holder, LED
10	27267082	Guide, LED
11	28198546	Facet A
12	28198537	Facet B
13, 28	834130102	3STS+10BQ, Tapping screw
14	28320479	Knob, push

REF. NO. PARTS NO. DESCRIPTION

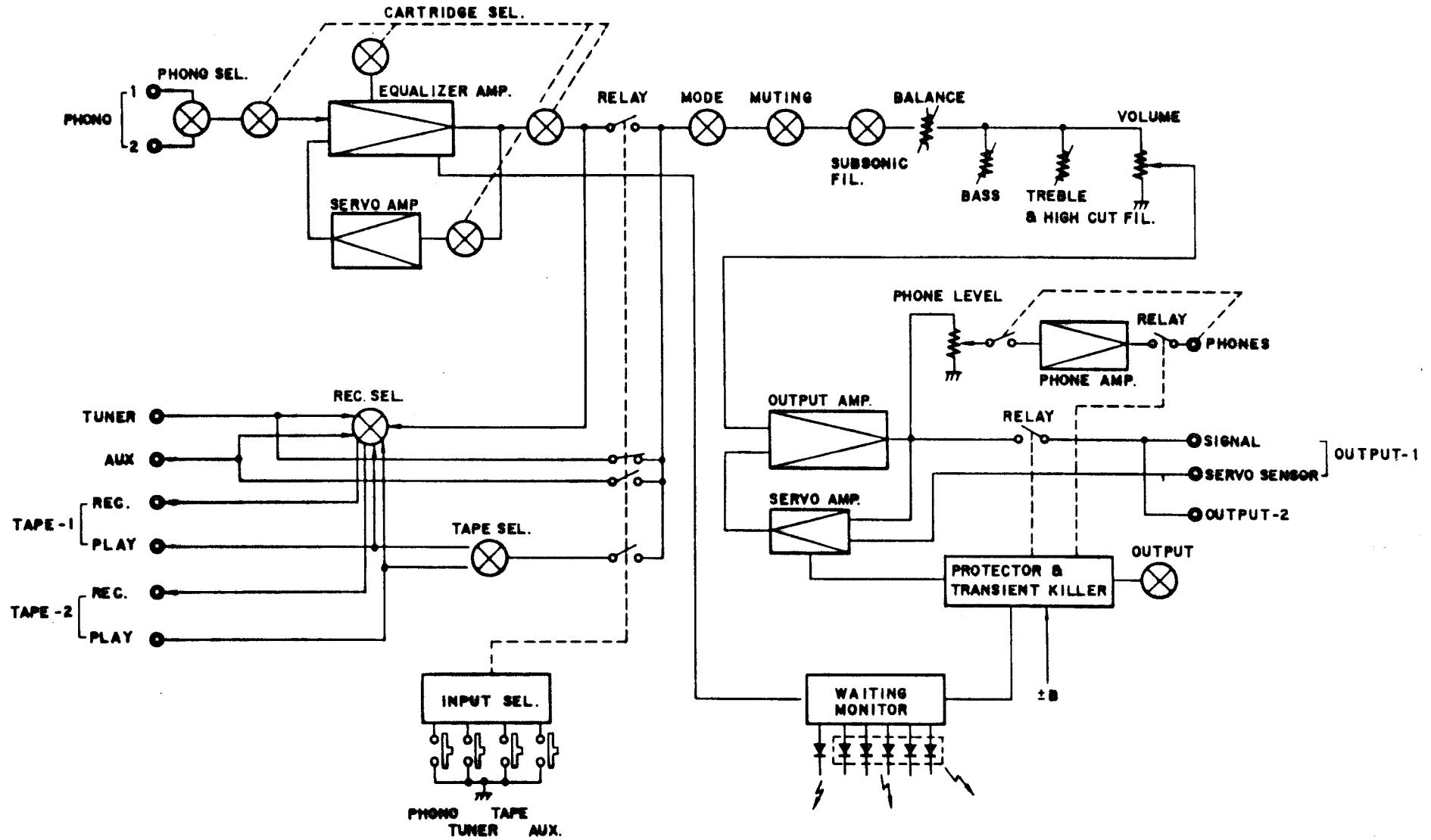
15	28320474	Knob, selector
16	28320473	Knob, power
17	27220015A	Slider, selector
18	27220014A	Slider, power
19	27180049	Spring G
20	27220016	Slider B
21	27190089	Holder, selector
22	27190088	Holder, power
23	12791578	NAPL-978, Lamp pc board ass'y
24	12791580	NAPL-980, Lamp pc board ass'y
25	12791579	NADIS-979, Display pc board ass'y
26	225063	LED
29	831130082	3STS+ 8BQ, Tapping screw



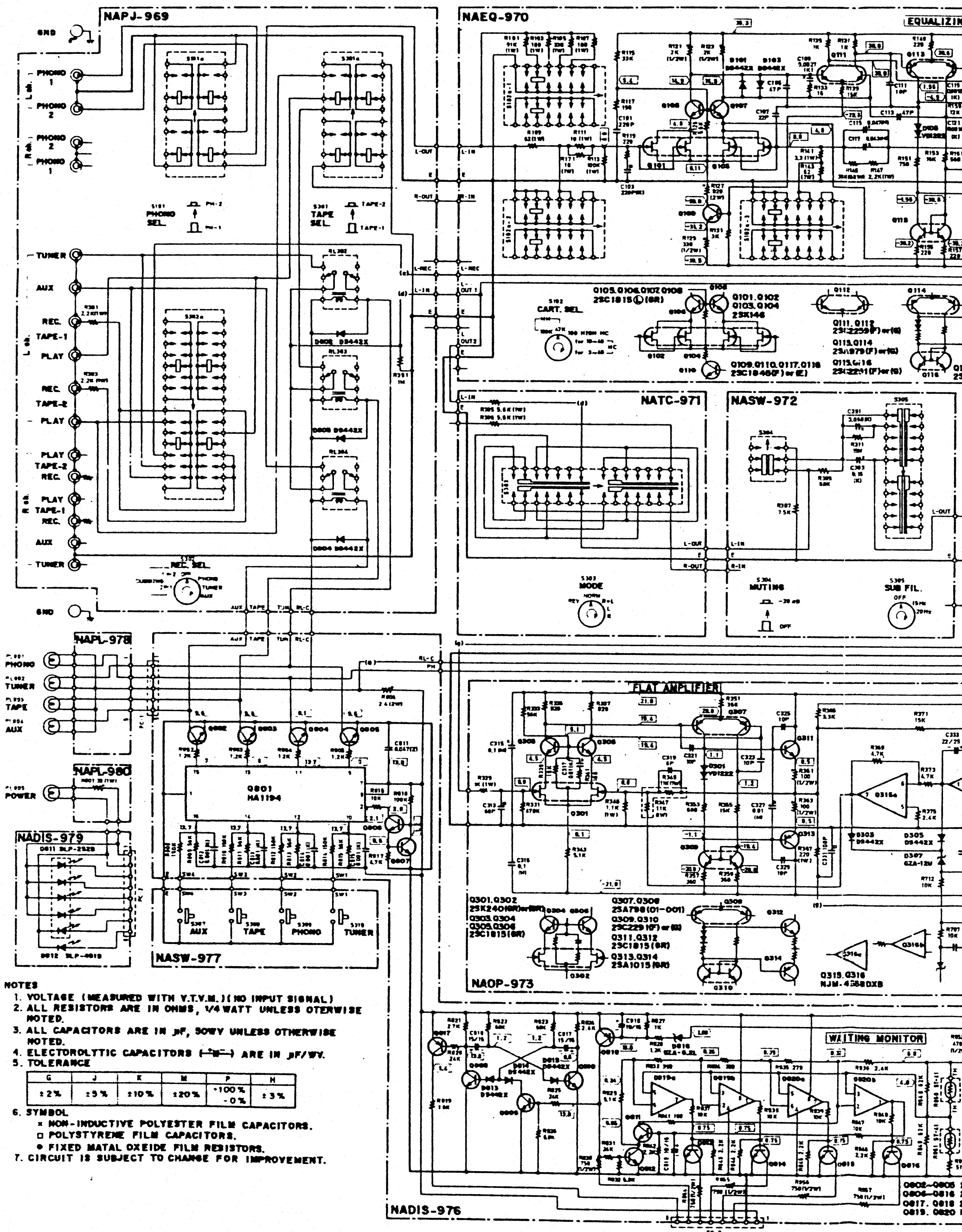
REF. NO.	PARTS NO.	DESCRIPTION
14	28320479	Knob, push
31	27190091	Holder, push
32	28320475	Knob, balance
33	28320475	Knob, bass
34	28320478	Knob, treble
40	28320505	Knob, volume
41	28320476	Knob, headphone
42	28140312	Cushion
43	28140206	Cushion
46	27180049	Spring G
47	28140316	Cushion

REF. NO.	PARTS NO.	DESCRIPTION
48	834430062	3STS+6BQ(BC), Tapping screw
49	28184097	Top cover
50	831430082	3STW+8BQ(BC), Tapping screw
51	12488902	Side panel R
52	12488901	Side panel L
53	27150124	Shielded plate
54	27170091	Bottom board
55	27175020	Leg
56	87613008	W3*8F, Spring washer
57	834130202	3STS+20BQ, Tapping screw

BLOCK DIAGRAM



SCHEMATIC DIAGRAM



NOTES

1. VOLTAGE (MEASURED WITH V.T.V.M.) (NO INPUT SIGNAL)
2. ALL RESISTORS ARE IN OHMS, 1/4 WATT UNLESS OTHERWISE NOTED.
3. ALL CAPACITORS ARE IN μ F, 50V UNLESS OTHERWISE NOTED.
4. ELECTROLYTIC CAPACITORS (E) ARE IN μ F/WV.
5. TOLERANCE

G	J	K	M	P	H
$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 100\%$	$\pm 5\%$

6. SYMBOL

- × NON-INDUCTIVE POLYESTER FILM CAPACITORS.
- POLYSTYRENE FILM CAPACITORS.
- FIXED METAL OXIDE FILM RESISTORS.

7. CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
A1	27110118	Front bracket	A803	28320474	Knob, selector
A2	27190063	Holder	A804	28320475	Knob, balance
A3	27140426	Bracket, headphone	A805	28320476	Knob, headphone
A4	27140428	Bracket, volume	A806	28320477	Knob, bass
A5	27140429A	Bracket, lamp A	A807	28320478	Knob, treble
A6	27140430A	Bracket, lamp B	A808	28320479	Knob, push
A7	28330037	Cap	C001, C002	35000065A	0.01uF, AC400V/125V, Capacitor IS
A13	27115076	Side panel L		27300080	Cover, capacitor
A14	27115077	Side panel R	F001	252044	2A(ST-6), Fuse (D)
A15	27130227	Bracket		250100A	Fuseholder (D)
A16	27130228	Bracket	F001	252070	1A-SE-EAK, Fuse (G)
A17	27130229	Bracket		25065096	Fuseholder (G)
A18	27130230	Bracket	R001	5104111	N40DG100KT30M, Variable resistor
A19	27140431	Bracket L, pcb	S001	25035290	NPS-111-L256P, Power switch (D)
A20	27140432	Bracket R, pcb		25035289	NPS-111-L255P, Power switch (G)
A27	28140315	Cushion		25035227	NPS-122-L191, Remote switch, operation section
A28	27150124	Shielded plate	S101c	25065112	Remote switch, wire section
A31	27300347	Damper	S301c	25030177	NRSM-105-20ZV, Remote switch, operation section
A37	27260041	Shaft	S101b	25065143	Remote switch, wire section
A41	27120354A	Back panel (D)	S301b	25030178	NRSM-106-25ZV, Remote switch, operation section
	27120355	Back panel (G)	S102c	25065144	Remote switch, wire section
A42	27190063	Holder	S302b	25035108	NPS-122-L73, Push switch
A47	270280	SR-4K-4, Strainrelief	T001	230557	NPT-721D, Power transformer (D)
A51	27300168	Terminal, speaker		230558	NPT-721G, Power transformer (G)
A351	12488121	Front panel ass'y	U1	12791569	NAPJ-969, Source input and rec. output terminal pcb ass'y
A352	27210332	Front panel S	U2	12791570	NAEQ-970, Equalizer ampli. pcb ass'y
A353	27300399A	Bearing R	U3	12791571	NATC-971, Tone control circuit pcb ass'y
A354	27300400A	Bearing L	U4	12791572	NASW-972, Muting/subsonic filter switch pcb ass'y
A355	28125082	End cap L	U5	12791573	NAOP-973, Flat amplifier pcb ass'y
A356	28125083	End cap R	U6	12791574	NAPJ-974, Output terminal pcb ass'y
A357	28140206	Cushion	U7	12791575	NAHP-975, Headphone amplifier pcb ass'y
A358	28140312	Cushion	U8	12791576	NADIS-976, Waiting monitor pcb ass'y
A359	27267080	Guide, power	U9	12791577	NASW-977, Input selector pcb ass'y
A360	27267081	Guide, selector			
A361	27267083	Guide, push			
A362	27190090	Holder, LED			
A363	27190091	Holder, push			
A364	27220014A	Slider, power			
A365	27220015A	Slider, selector			
A366	27220016	Slider B			
A367	28198537	Facet B			
A368	27180049	Spring G			
A369	28140314	Cushion			
A370	28140296	Cushion			
A371	28198546	Facet A			
A373	28140316	Cushion			
A376	27180037	Spring			
A381	28184097A	Top cover			
A382	27270059	Spacer			
A383	28140204	Cushion			
A601	27170091A	Bottom board			
A602	27175020	Leg			
A801	28320505	Knob, volume			
A802	28320473	Knob, power			

REF. NO.	PARTS NO.	DESCRIPTION
U10	12791578	NAPL-978, Source selector pcb ass'y
U11	12791579	NADIS-979, Waiting lamp pcb ass'y
U12	12791580	NAPL-980, Power lamp pcb ass'y
U13	12791581	NAWT-981, Indicator lamp terminal pcb ass'y
	25050073	NSCT-4P21, AC outlet (D)
	253100	AS-UC-4, Power supply cable (D)
	253083	AS-CEE, Power supply cable (G)
	250153	P0107, Shorted plug
	2000156	NSAS-5P039, Socket
	2000157	NSAS-8P040, Socket
	25108005	Terminal (G)

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

PACKING MATERIALS-PARTS LIST

PARTS NO.	DESCRIPTION
29050506	Master carton box
29090648	Pad
29095016-1	1,000*670mm, Protection sheet
29100038	950*720mm, Poly-vinyl bag
29095165	Sheet F
29090591	Pad F
29340565	Instruction manual
29100006	250*350mm, Poly-vinyl bag
2010068	Connection cable
29365006-3	Warranty card (D)
293600363	Caution label C (D)
29380079	Cabinet composite tag (D)
29358002	Service station list (D)
282969	Caution label A (D)
29365005-3	Warranty card (G)

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

PC BOARD PARTS LIST

SOURCE INPUT AND RECORDING OUTPUT TERMINAL(NAPJ-969)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Diodes	
D802-D804	223133	DS442X
	Resistors	
R301-R304	441622224	2.2k Ω , 1W, Metal oxide film
	Switches	
S101a, S301a	25065111	NSS-4257, Phono/Tape
S302a	25065079	NSS-4643, Rec.
	Relaies	
RL302-RL304	25065145	NRL-2FO.3ADC9-01
	Terminals	
	25045065	NPJ-4PNBL32

EQUALIZER AMPLIFIER (NABQ-970)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Transistors	
Q101-Q104	2211530	2SK146, F.E.T
Q105-Q108	2211895	2SC1815(L)(GR)
Q109, Q110	2211732 or 2211733	2SC1845(F) or 2SC1845(E)
Q111, Q112	2211371 or 2211372	2SC2259(O-001) or 2SC2259(O-002)
Q113, Q114	2211585 or 2211586	2SA979(F) or 2SA979(G)
Q115, Q116	2211445 or 2211446	2SC2291(F) or 2SC2291(G)
Q117, Q118	2211732 or 2211733	2SC1845(F) or 2SC1845(E)
Q119, Q120	2211792 or 2211793	2SA992(F) or 2SA992(E)
Q121, Q122	2200744	2SD526(Y)
Q123, Q124	2200413	2SB596(Y)
Q201, Q202	2211515 or 2211516	2SA995(F) or 2SA995(G)
Q203-Q206	2211895	2SC1815(L)(GR)
Q901, Q902	2211254 or 2211255	2SC1815(Y) or 2SC1815(GR)
Q903, Q904	2211454 or 2211455	2SA1015(Y) or 2SA1015(GR)
Q905	2201073 or 2201074	2SD880(O) or 2SD880(Y)
Q906	2201243 or 2201244	2SB834(O) or 2SB834(Y)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Transistors	
Q907, Q909	2211732 or 2211733	2SC1845(F) or 2SC1845(E)
Q908, Q910	2211792 or 2211793	2SA992(F) or 2SA992(E)
Q911, Q912	2211945	2SK246(OR), F.E.T.
	ICs	
Q207, Q208	222502	NJM-4558DX
	Diodes	
D101-D104	223133	DS442X
D105, D106	4000068	VD1222
D201-D204	223133	DS442X
D801	223133	DS442X
D901-D904	224123	GZA22-L
D905, D906	223848	GPO8B
D907, D908	224097	GZA6.2-L
	Capacitors	
C205, C206	352752219	220pF, 25V, Elect.
C207, C208	352752219	220pF, 25V, Elect.
C901-C904	352780109	1 μ F, 50V, Elect.
C905-C908	352751019	100pF, 25V, Elect.
C909, C910	391083317	330pF, 50V, LL
C911, C912	352780229	2.2 μ F, 50V, Elect.
C913, C914	352741019	100pF, 16V, Elect.
	Metal oxide film resistors	
R101, R102	441629134	91k Ω , 1W
R103, R104	441621014	100 Ω , 1W
R105, R106	441623314	330 Ω , 1W
R107, R108	441621014	100 Ω , 1W
R111, R112	441621004	10 Ω , 1W
R113, R114	441621044	100k Ω , 1W
R121-R124	441522024KF	2k Ω , 1/2W
R217, R128	441728214KF	820 Ω , 2W
R129, R130	441523314	330 Ω , 1/2W
R141, R142	441620334	3.3k Ω , 1W
R145, R146	441623333	33k Ω , 1W
R147, R148	441622224	2.2k Ω , 1W
R165, R166	441623924	3.9k Ω , 1W
R167-R170	441520334KF	3.3 Ω , 1/2W
R171, R172	441621004	10 Ω , 1W
R207-R210	441523924	3.9k Ω , 1/2W
R213, R124	441622013	200 Ω , 1W
R215, R216	441621004	10 Ω , 1W
R237, R238	441521824	1.8k Ω , 1/2W
R901-R904	441521024KF	1k Ω , 1/2W

CIRCUIT NO.	PARTS NO.	DESCRIPTION	CIRCUIT NO.	PARTS NO.	DESCRIPTION
Metal oxide film resistors			ICs		
R905-R908	441523624KF	3.6k Ω , 1/2W	Q315, Q316	222585	NJM-4558DXB
Resistors			Diodes		
R231, R232	5225070	N10HR2.2KBDM, Semi-fixed	D301, D302	4000068	VD1222
R850	4000074	5T-4(ONK), Thermistor	D303-D306	223133	DS442X
Switch			D307, D308	224112	GZA12-U
S102a	25065101	NSS-10652, Cartridge	D701, D703	223133	DS442X
Relay			D705, D706	223133	DS442X
RL301	25065145	NRL-2PO.3ADC9-01	D913, D914	224123	GZA22-L
Case			D915	223867	WLO2
27300152			D916	223862	WLO1
Film			D917	223867	WLO1
223018			Capacitors		
223019			C333-C336	352752209	22 μ F, 25V, Elect.
AC316, Transistor			C701	352744709	47 μ F, 16V, Elect.
AC229, Transistor			C702	352734709	47 μ F, 6.3V, Elect.
TONE CONTROL CIRCUIT (NATC-971)-PARTS LIST			C923-C926	352751019	100 μ F, 25V, Elect.
CIRCUIT NO.	PARTS NO.	DESCRIPTION	C927, C928	3504150	3,300 μ F, 63V, Elect.
Resistors			C929, C930	352764719	470 μ F, 35V, Elect.
R305, R306	441625624	5.6k Ω , 1W, Metal oxide film	C931, C932	352742229	2,200 μ F, 16V, Elect.
R313	5104110	N27DGLC250KRM25M, Balance	C933-C935	384171037	0.01 μ F, 630V, DT
R315	5104108	N27DQL11C110K180K25M	Metal oxide film resistors		
Bass control			R329, R330	441621024	1k Ω , 1W
R319	5104109	N27DGL11C219K25M, Treble control	R345, R346	441621124	1.1k Ω , 1W
Switch			R347-R350	441621134	11k Ω , 1W
S303	25030175	NRSM-145-25ZV, Mode	R361-R364	441521014KF	100 Ω , 1/2W,
MUTING/SUBSONIC FILTER CIRCUIT (NATC-972)-PARTS LIST			R367, R368	441622214	220 Ω , 1W
CIRCUIT NO.	PARTS NO.	DESCRIPTION	R711	441521204KF	12 Ω , 1/2W
Switches			R923, R924	441523304KF	33 Ω , 1/2W
S304	25035092	NPS-122-L57, Muting	Relay		
S305	25030176	NRSM-143-25ZV, Subsonic	RL701	25065139	NRL-2PO.3ADC12-05
FLAT AMPLIFIER CIRCUIT (NAOP-973)-PARTS LIST			Cases		
Transistors			27300342		
Q301, Q302	2211915 or	2SK240(GR) or	27300343		
2211916			27300152		
2SK240(BL), F.E.T			OUTPUT TERMINAL (NAPJ-974)-PARTS LIST		
Q303-Q306	2211255	2SC1815(GR)	CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q307, Q308	2211140	2SA798(O-001)	25045065		
Q309, Q310	2211445 or	2SC2291(F) or	25045080		
2211446			HEADPHONE AMPLIFIER (NAHP-975)-PARTS LIST		
2SC2291(G)			CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q311, Q312	2211255	2SC1815(GR)	Q401	222543	LA4170, IC
Q313, Q314	2211455	2SA1015(GR)	D401	223848	GP08B, Diode
Q701	2211455	2SA1015(GR)	D402	223133	DS442X, Diode
Q702, Q703	2211255	2SC1815(GR)	C401, C402	352731009T	10 μ F, 10V, Elect. capacitor
Q704	2211771 or	2SC2001(K) or	C403, C404	391050477T	4.7 μ F, 25V, LL capacitor
2211772			C407, C408	391031017T	100 μ F, 10V, LL capacitor
2SC2001(L)			C411	3504156	1,000 μ F, 16V, Elect. capacitor
Q913	2211414	2SC1627(Y)	R401	5148055	N16RQM100KB25M, Head phone level variable resistor
Q914	2211424	2SA817(Y)			
Q915, Q916	2211945	2SK246(GR)			

CIRCUIT NO.	PARTS NO.	DESCRIPTION
R405, R406	441523904	39Ω, 1/2W, Metal oxide film resistor
R407	441521004KF	10Ω, 1/2W, Metal oxide film resistor
RL401	25065139	NRL-2PO.3ADC12-05, Relay
	25045079	M-1658-MA, Stereo headphone jack

WAITING MONITOR INDICATOR CIRCUIT (NADIS-976)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	ICs	
Q801	222567	HA1194
Q819, Q820	222465	NJM-4558D
	Transistors	
Q802-Q805	2211771 or	2SC2001(X) or
	2211772	2SC2001(L)
Q806-Q816	2211255	2SC1815(GR)
Q817, Q818	2211455	2SA1015(GR)
	Diodes	
D813-D815	223133	DS442X
D816, D817	224097	GZA6.2-L
	Capacitors	
C816, C817	352741509	15μF, 16V, Elect.
C818, C819	352741009	10μF, 16V, Elect.
R806	441722404KF	24Ω, 2W, Metal oxide film
R830	441527514KF	750Ω, 1/2W, Metal oxide film
R851	4000074	5T-41(ONK), Thermistor
R852	441524714KF	470Ω, 1/2W, Metal oxide film
R854-R857	441527514KF	750Ω, 1/2W, Metal oxide film
	Plugs	
	25065055	NPLG-5P11
	25065070	NPLG-8P15

INPUT SELECTOR (NASW-997)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
S307-S310	25035156	NPS-111-S120, Aux/Tape/phono/Tuner selector switch

SOURCE SELECTOR LAMP (NAPL-978)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL801-PL804	210065B	PL12V150mA, Lamp
	2000156	NSAS-5PO39, Socket
	27190089	Holder, selector

WAITING MONITOR LAMP (NAPL-979)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D811	225063	SLP-252B, L.E.D.
D812	225064	SLP-451B, L.E.D.
	2000157	NSAS-8PO40, Socket
	27267082	Guide

POWER LAMP (NAPL-980)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL805	210065B	PL12V, 150mA, Lamp
R801	441623304	33Ω, 1W, Metal oxide film
	27190088	Holder, power

INDICATOR LAMP TERMINAL (NAWT-981)-PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Lamps	
PL806-PL808	210086	PL14V60mA-0.9
PL809-PL812	2110085	PL14V60mA-2.6
	Resistors	
R858	441521014KF	100Ω, 1/2W, Metal oxide film
R859, R860	441526804KF	68Ω, 1/2W, Metal oxide film
R861, R862	441528204KF	82Ω, 1/2W, Metal oxide film

ADJUSTMENT PROCEDURES

*Preparations

Place the unit on a level surface and leave the power on for ten minutes or more, making sure the ventilation openings are not blocked. Then perform the following adjustment.

*Center voltage of equalizer amplifier
Connect a high sensitivity DC voltmeter to the TAPE-REC terminals.
(The REC SELECTOR should be in PHONO position.)

Adjust the semi-fixed resistor R241 (R232) so that the voltmeter reading is 0±200μV.