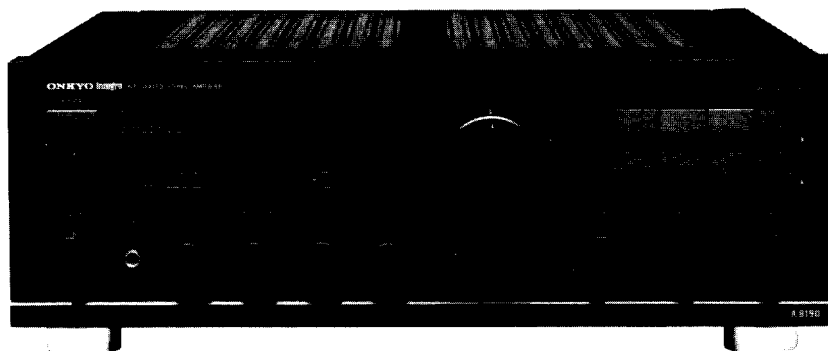




For more Hi-Fi manuals and set-up information  
please visit [www.hifiengine.com](http://www.hifiengine.com)


# ONKYO® SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-8190



UD	120V AC, 60Hz
UG	220V AC, 50Hz
UQ	240V AC, 50Hz
UW, UWX	120V/220V AC, 50Hz/60Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### TABLE OF CONTENTS

Specifications	2
Block diagram	3
Adjustment procedures	4
Precautions	4
IC block diagram	5
Chassis exploded view	6
Exploded view parts list	7
Front panel facilities	8
Printed circuit board parts list	9
Packing procedures	12
Printed circuit board view	14
Schematic diagram (120V model)	15
Schematic diagram (120V/220V model)	19
Schematic diagram (220V, 240V model)	23
System connections	25

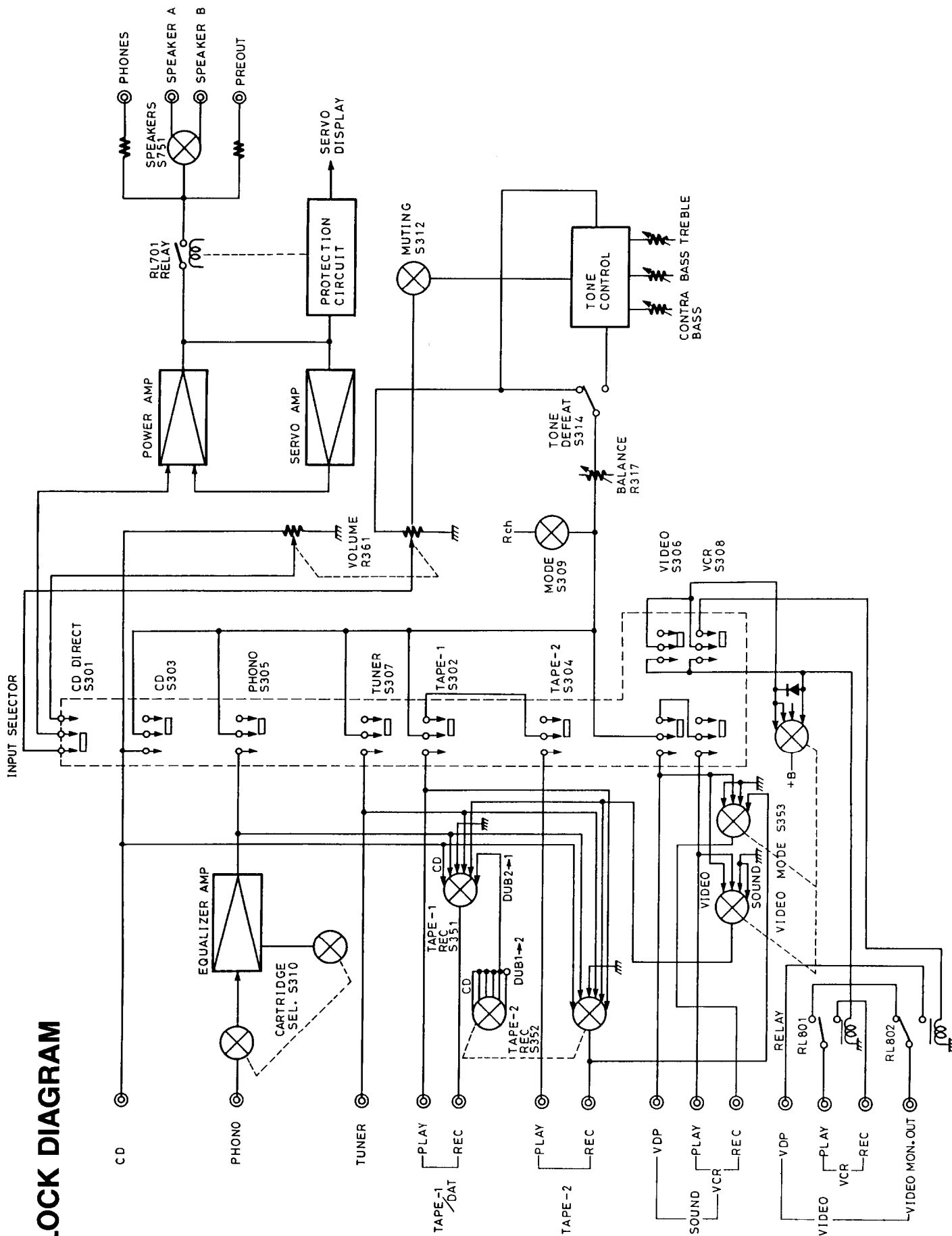
**ONKYO**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

Power Output:	100 watts per channel, min RMS. at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.
Dynamic Power:	303 watts 2 ohms, 235 watts 4 ohms
Total Harmonic Distortion	0.008% at rated power 0.008% at 1 watt output
Intermodulation Distortion:	0.005% at rated power
Damping Factor:	50 at 8 ohms
Input Sensitivity/ Impedance:	Phono (MM): 2.5 mV/50 kohms Phono (MC): 160 $\mu$ V/220 ohms CD DIRECT: 150 mV/50 kohms TUNER: 150 mV/50 kohms Tape Play: 150 mV/50 kohms VCR Play: 150 mV/50 kohms VDP Play: 150 mV/50 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.5 kohms (Phono) Pre Out: 1 V/600 ohms
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control (Vol -20 dB):	CONTRABASS: +10/+20 dB (Muting: OFF/ON) at 20 Hz BASS: $\pm$ 10 dB at 70 Hz TREBLE: $\pm$ 8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)
Frequency Response:	CD, Tuner: 2 Hz-50 kHz (+0, -1 dB)
RIAA Deviation:	Phono (MM): $\pm$ 0.3 dB, 20 Hz-20 kHz
Signal to Noise Ratio (IHF-A):	Phono (MM): 94 dB (5 mV input) Phono (MC): 75 dB (0.5 mV input) CD DIRECT: 107 dB
Muting (Vol -20 dB):	-15 dB
Power Supply:	USA & Canadian models: AC120V, 60 Hz European models: AC220V, 50 Hz U.K & Australia models: AC240V, 50 Hz Worldwide models: AC120V 60Hz and AC220V 50Hz switchable
Dimensions:	435(W) x 157(H) x 396(D) mm 17-1/8" x 6-3/16" x 15-9/16"
With side panels:	465(W) x 158(H) x 396(D) mm 18-5/16" x 6-2/8" x 15-9/16"
Weight:	13.2 kg, 29.1 lbs.
With side panels:	14.6 kg, 32.2 lbs.

Only PX. models are equipped with wood grain side panels.

# BLOCK DIAGRAM



## ADJUSTMENT PROCEDURES

### 1. Preparations

- 1) Leave the machine in a normal condition parallel to the work bench, maintaining a clearance of 15mm from the bottom for air circulation.
- 2) Set the level to minimum with no load and no signal.
- 3) When making the adjustment, there must be no breeze blowing from the outside.

### 2. Adjustment of idling current

- 1) Turn ON the power switch, and leave the unit as is for about 5 minutes.
- 2) Adjust the semi-fixed resistor R531 (R532) so that the voltage between the terminals  $V_{CT}$  and  $I_{ID}$  of the printed circuit board NAAF-2969 is 7.5mV.

### 3. Operating check of protection circuit

- 1) When the power switch is turned ON.
  - After about 6 second, relay RL701 of the NAAF-2969 printed circuit board go ON.
  - Operation indicator lights.
- 2) When the power is turned OFF.
  - Immediately a relay go OFF.
- 3) With no load, when  $\pm 200\text{mV}$  DC is CD input, the speaker relay go OFF.

Caution: During this test, there should be absolutely no load connected and the load terminals must not be shorted.

## PRECAUTIONS

### 1. Replacing the fuses

For continued protection against risk fire, replace only with same type and same rating fuse.

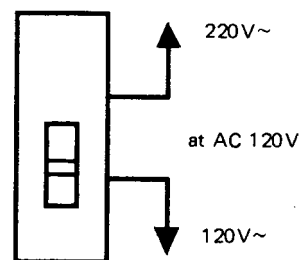
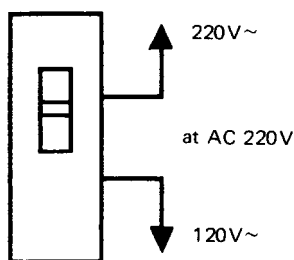
CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252052	7 A(ST-6), Primary fuse (120V model)
F902	252077 or 252077CC	4 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model) 4 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)

### 2. Insulation resistance measurement (Only U.S.A. model)

Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel. Specifications; More than 10 M $\Omega$  at 500V.

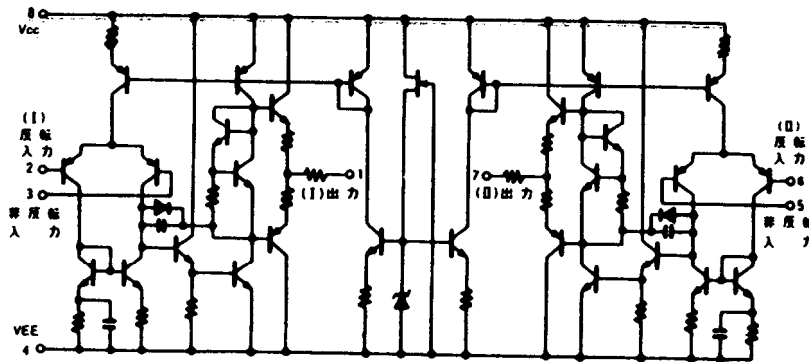
### 3. Voltage selector (rear panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver or similar instrument to up or down position. Confirm that the switch has been moved all the way to up or down before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.

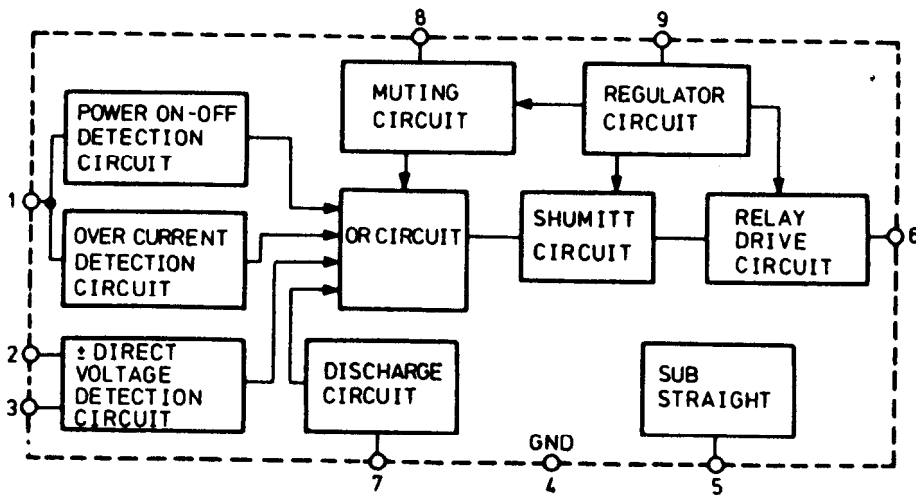


# IC BLOCK DIAGRAM

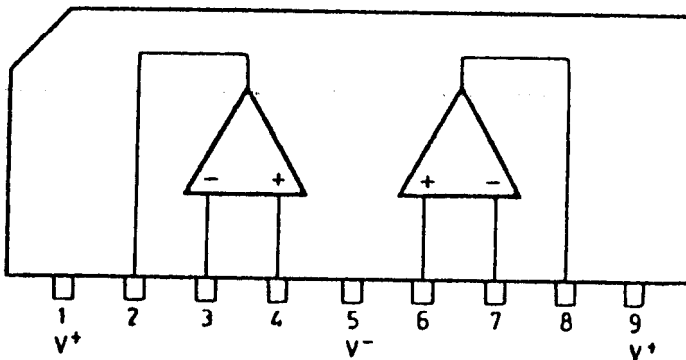
NJM-4560DX(OP Amp)



TA7317P(Protection Circuit)

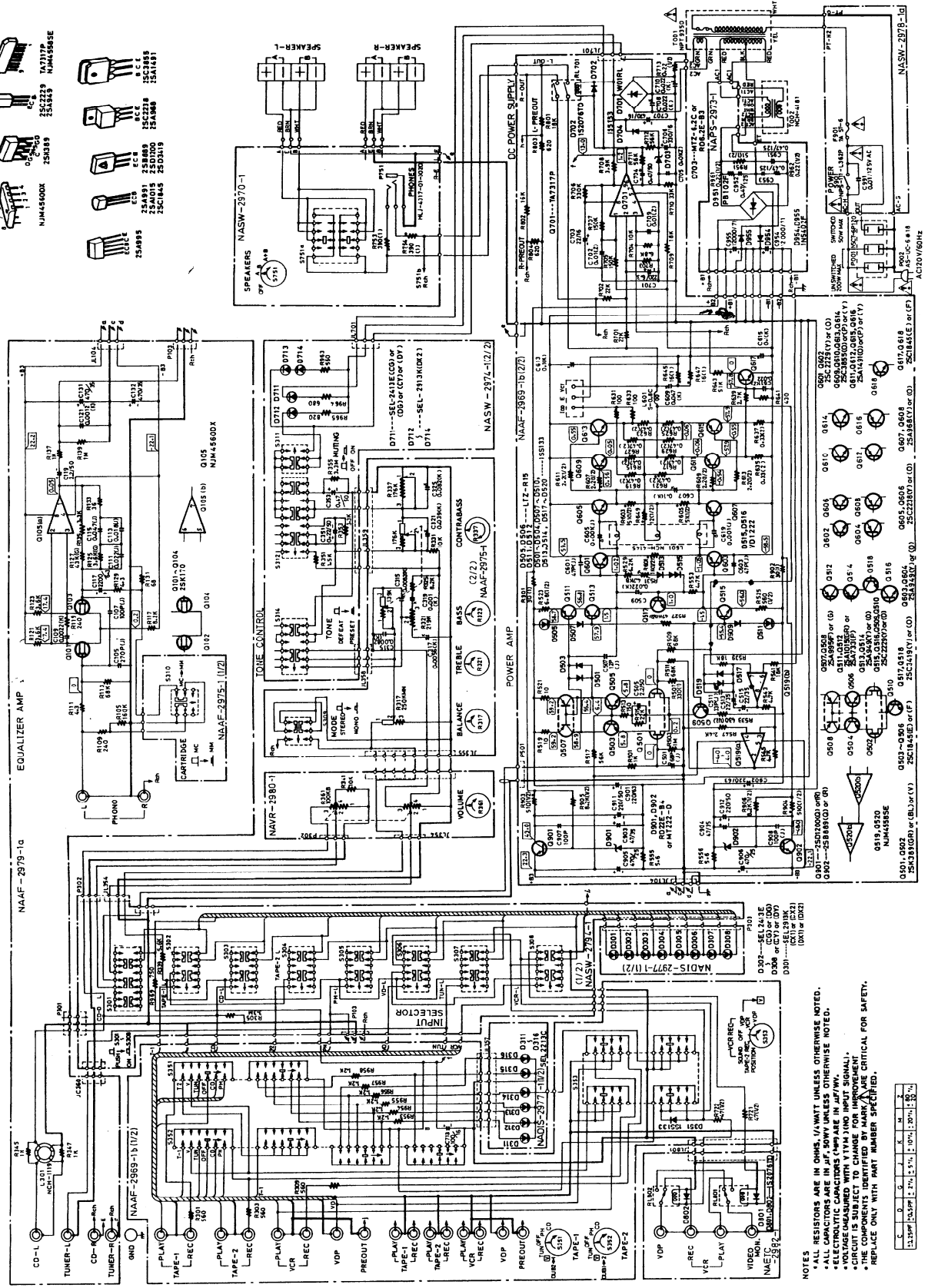


NJM-4558SE (OP Amp)



A B C D E F G

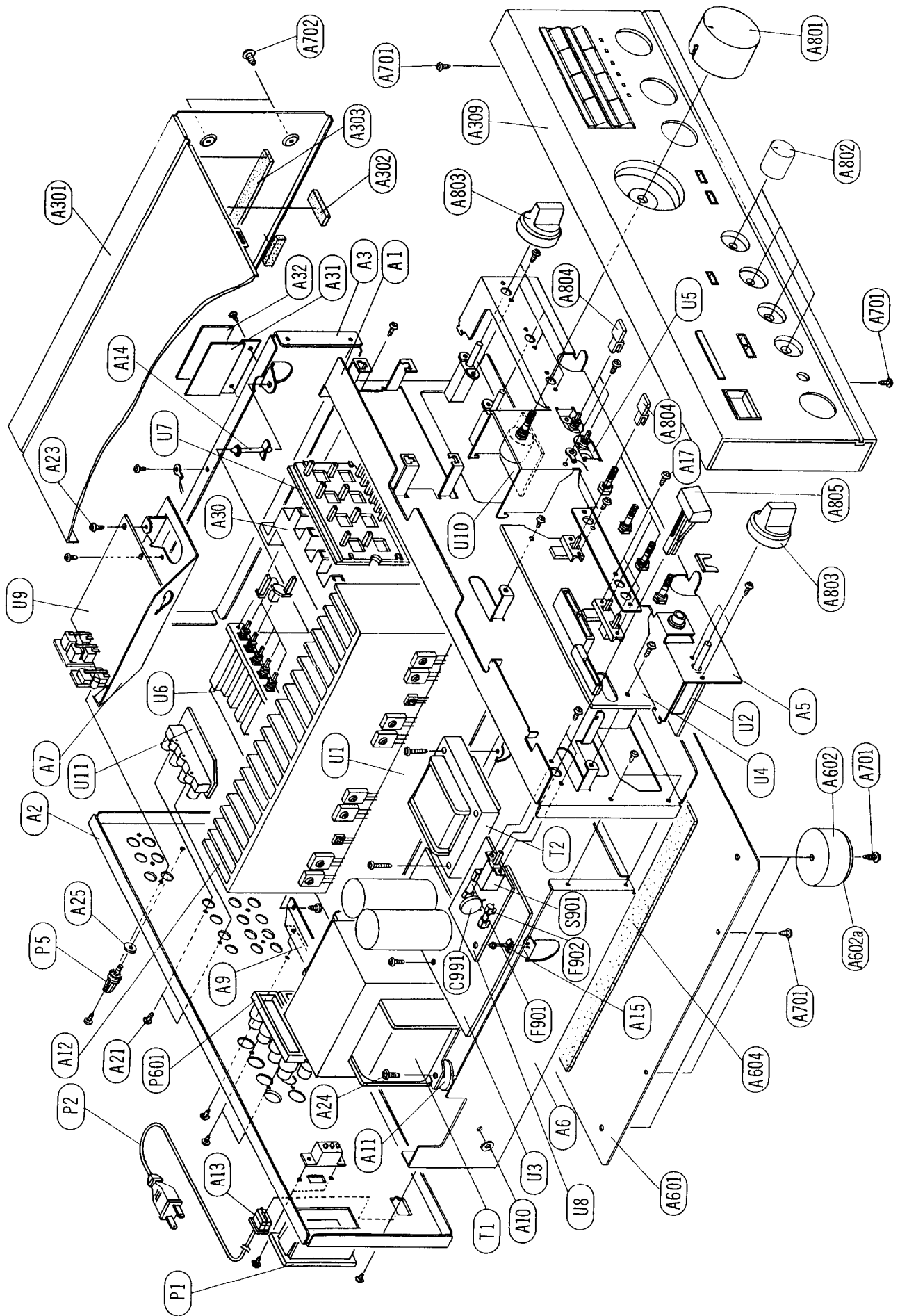
# SCHEMATIC DIAGRAM (120V Model)



NOTES:  
 \* ALL RESISTORS ARE IN OHMS, UNLESS OTHERWISE NOTED.  
 \* ELECTROLYTIC CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE NOTED.  
 \* VOLTAGE MEASURED WITH VTM (VIDEO INPUT SIGNAL).  
 \* CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.  
 \* COMPONENTS IDENTIFIED BY PART NUMBER ARE CRITICAL FOR SAFETY.  
 \* REPLACE ONLY WITH PART NUMBER SPECIFIED.

1	2	3	4	5
1	2	3	4	5

**CHASSIS-EXPLODED VIEW**





# CHASSIS-EXPLODED VIEW-PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27110305C	FRONT BRACKET	A805	28322702	KNOB (POW)	U1	2201696 or 2201694	2SA1491 P or 2SA1491 Y
A2	27120998	BACK PANEL	△T1	2300227A	POWER TRANSFORMER, NPT-935D	U2	1A030569-1	NAAF-2969-1, REC-SELECTOR AND POWER AMPLIFIER CIRCUIT PC BOARD ASS'Y
A2	27120999	BACK PANEL [G]	△T1	2300228A	POWER TRANSFORMER, NPT-935G [G]	U3	1A030570-1	NASW-2970-1, SPEAKER SWITCH PC BOARD ASS'Y
A2	27121001	BACK PANEL [W]	△T1	2300229	POWER TRANSFORMER, NPT-935DG [W][X]	U4	1A030573-1	NAPS-2973-1, POWER SUPPLY PC BOARD ASS'Y
A2	27121002	BACK PANEL [X]	△T1	2300240A	POWER TRANSFORMER, NPT-935G [A][B]	U5	1A030574-1	NASW-2974-1, TONE AND MUTING SWITCH PC BOARD ASS'Y
A2	27121003	BACK PANEL [A][B]	△T1	231125	CHOKO COIL	U6	1A030575-1	NAAF-2975-1, TONE CONTROL CIRCUIT PC BOARD ASS'Y
A3	27115224	SIDE BRACKET	△T2	25065123	SLIDE SWITCH, NSS-1258P [W][X]	U7	1A030576-1	NASW-2976-1, INPUT SELECTOR SWITCH PC BOARD ASS'Y
A5	27130448A	BRACKET (F)	△S1	25035398	POWER SWITCH, NPS-111-L362P	U8	1A030577-1	NADIS-2977-1, DISPLAY LED PC BOARD ASS'Y
A6	27130449A	BRACKET (L)	△S901	25050293	AC SOCKET, NSCT-6P120 [D][X]	U8	1A030578-1	NASW-2978-1, POWER SWITCH PC BOARD ASS'Y
A7	27130450	BRACKET (EQ)	△P1	253123 or 253136 or 253140	AC CORD, AS-UC-6#18 or [D][X]	U8	1A030578-1A	NASW-2978-1A, POWER SWITCH PC BOARD ASS'Y
A8	28140730	CUSHION	△P2	253130A or 253128B	AC CORD, AS-CEE or [G]	U8	[G][A][B]	NASW-2978-1A, POWER SWITCH PC BOARD ASS'Y
A9	27141084A	BRACKET (H)	△P2	253092-1A	AC CORD, AS-CEE-2 [W]	U8	1A029578-1B	NASW-2978-1B, POWER SWITCH PC BOARD ASS'Y [X]
A10	27270212	SPACER	△P2	253118	AC CORD, AS-SAA [A]	U9	1A030579-1	NAAF-2979-1, EQUALIZER CIRCUIT PC BOARD ASS'Y
A11	27270213	SPACER (PT)	△P2	728320 or 728328	AC CORD, 2-0.75BS16 BLK/GRY [B]	U10	1A030580-1	NAAF-2980-1, VOLUME CONTROL PC BOARD ASS'Y
A12	27160206	HEATSINK	△P5	25060044	TERMINAL	U11	1A030582-1	NAETC-2982-1, VIDEO TERMINAL PC BOARD ASS'Y
A13	27300750	BUSHING (CORD)	P601, P602	25060108	TERMINAL, NTM-4PRMN42			
A14	27190164	HOLDER LCBS-14NS	△F901	252052	FUSE, 7A ST-6			
A15	27190062	HOLDER LCBS-12N	F901a	250113	FUSE HOLDER, S-NS051			
A17	82143006	PAN HEAD SCREW, 3P+6FNB	△F902	252077 or 252077CC	FUSE, 4A-SE-EAK or [G][W][X][A][B]			
A21	834430108	TAP-TIGHT SCREW, 3TTS+10BBC	△F902	25050065	FUSE, 4A-SE-EAK			
A23	831130088	TAP-TIGHT SCREW, 3TTW+8B		3500065A	FUSE, 4A-SE-EAK			
A24	830440109	TAP-TIGHT SCREW, 4TTC+10CBC		2212864 or 2212863	FUSE, 4A-SE-EAK			
A25	87613010	WASHER, W3X10F		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A30	27273059A	JOINT AS		2201693 or 2201694	FUSE, 4A-SE-EAK			
A31	27150236	SHIELD PLATE		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A32	28175140	INSULATING PLATE		2201693 or 2201694	FUSE, 4A-SE-EAK			
A301	28184333A	TOP COVER		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A302	28140020	CUSHION		2201693 or 2201694	FUSE, 4A-SE-EAK			
A303	28140695	CUSHION		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A309	1A029121	FRONT PANEL [D][G][W][A][B]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A309	1A029121UWX	FRONT PANEL [X]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A310	28185286	SIDE BOARD LEFT [X]		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A311	28185287	SIDE BOARD RIGHT [X]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A601	27170234B	BOTTOM BOARD		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A602	27175153	LEG ASSY		2201693 or 2201694	FUSE, 4A-SE-EAK			
(A602a)	28140747	CUSHION		2201703 or 2201706 or 2201704	FUSE, 4A-SE-EAK			
A604	28140961	CUSHION, 25X140mm		2201693 or 2201694	FUSE, 4A-SE-EAK			
A701	834430088	TAP-TIGHT SCREW, 3TTS+8BBC		2201693 or 2201694	FUSE, 4A-SE-EAK			
A702	83844089	TAP-TIGHT SCREW, 4TTB+8CBC [D][G][W][A][B]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A702	836440303	TAPPING SCREW		2201693 or 2201694	FUSE, 4A-SE-EAK			
A703	870086	4STV+30CQB [X]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A703	870086	SPECIAL WASHER 4X12BSBC [X]		2201693 or 2201694	FUSE, 4A-SE-EAK			
A801	28323027	KNOB (VOL)		2201693 or 2201694	FUSE, 4A-SE-EAK			
A802	28323029	KNOB (TONE)		2201693 or 2201694	FUSE, 4A-SE-EAK			
A803	28322700	KNOB (SP)		2201693 or 2201694	FUSE, 4A-SE-EAK			
A804	28322701	KNOB (PUSH)		2201693 or 2201694	FUSE, 4A-SE-EAK			

NOTE [D] : ONLY 120V MODEL  
 [G] : ONLY 220V MODEL  
 [W] : ONLY 120V/220V MODEL  
 [X] : ONLY MILITARY MARKET MODEL  
 [A] : ONLY AUSTRALIAN MODEL  
 [B] : ONLY BRITISH MODEL

NOTE: THE COMPONENTS IDENTIFIED BY MARK **△** ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

# PRINTED CIRCUIT BOARD PARTS LIST

## REC.SELECTOR AND POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-2969-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>ICs</b>			<b>Resistors</b>	
Q519, Q520	222942	NJM4558SE	R507, R508	441623314NF	330 $\Omega$ , 1W, Metal oxide film
Q701	222584	TA7317P	R523, R524	442520684F	6.8 $\Omega$ , 1/2W, Metal oxide film
	<b>Transistors</b>		R525, R526	442525614F	560 $\Omega$ , 1/2W, Metal oxide film
Q501, Q502	2212805 or	2SK389 GR or	R527, R528	442524734F	47k $\Omega$ , 1/2W, Metal oxide film
	2212806 or	2SK389 BL or	R531, R532	5210062	N06HR4.7KBD, Semi-fixed
	2212807	2SK389 V	R533, R534	442524314F	430 $\Omega$ , 1/2W, Metal oxide film
Q503~Q506, Q617	2211733 or	2SC1845 E or	R601, R602	442521024F	1k $\Omega$ , 1/2W Metal oxide film
Q618	2211732	2SC1845 F	R603~R606	442525104F	51 $\Omega$ , 1/2W, Metal oxide film
Q507, Q508,	2211515 or	2SA995 F or	R607~R614	442520224F	2.2 $\Omega$ , 1/2W, Metal oxide film
	2211516	2SA995 G	R615~R630	4000063	0.47 $\Omega$ , 2W, Metal plate
Q509, Q510, Q515	2211634 or	2SC2229 Y or	R635~R638	4000061	0.33 $\Omega$ , 2W, Metal plate
Q516, Q601, Q602	2211633	2SC2229 O	R645~R648	441621604NF	16 $\Omega$ , 1W, Metal oxide film
Q511, Q512	2211455 or	2SA1015 GR or	R649, R650	442521204F	12 $\Omega$ , 1/2W, Metal oxide film
	2210803	2SA733 P	R717	441522294F	0.22 $\Omega$ , 1/2W, Metal oxide film
Q513, Q514, Q603	2211354 or	2SA949 Y or	R901, R902	441623004NF	30 $\Omega$ , 1W, Metal oxide film
Q604	2211353	2SA949 O	R903, R904	442525114F	510 $\Omega$ , 1/2W, Metal oxide film
Q605, Q606	2200864 or	2SC2238 Y or	R905, R906	442528224F	8.2k $\Omega$ , 1/2W, Metal oxide film
	2200863	2SC2238 O		<b>Relay</b>	
Q607, Q608	2200874 or	2SA968 Y or	RL701	25065316	NRL-2P7A-DC12-43
	2200873	2SA968 O		<b>Switches</b>	
Q901	2201512 or	2SD1200 Q or	S351	25030261	NRSM-146-15SS
	2201513	2SD1200 R	S352	25030260	NRSM-166-15SS
Q902	2201502 or	2SB889 Q or	S353	25030259	NRSM-164-15SS
	2201503	2SB889 R		<b>Terminals</b>	
	<b>Diodes</b>		P391, P392, P393	25045165	NPJ-4PDBL-59
D351~D504, D513	223163	1SS133	P394		
D507~D510, D514				<b>Sockets</b>	
D517~D520, D704			P501	2000551	NSAS-6P507
D505, D506, D511	225232	LTZ R15, LED		<b>Plate</b>	
D512				27300879	Bus
D515, D516	4000068	VD1222			
D701	223890	W01RL			
D702	223145	1S2076TD			
D703	2239493 or	RD6.2E B3 or			
	2243163	MTZ6.2-C			
D901, D902	2239754 or	RD22E B4 or			
	2243294	MTZ22-D			
	<b>Coils</b>				
L501, L502	231098A	NCH-4145			
L601, L602	231134S	S-0.8E			
	<b>Capacitors</b>				
C501, C502	372126804	68pF, 50V, Styrene			
C505, C506	354780229	2.2 $\mu$ F, 50V, Elect.			
C509, C510	379122235	0.022 $\mu$ F, 50V, Film (DEW)			
C511, C512	372123304	33pF, 50V, Styrene			
C513~C516	391252207	22 $\mu$ F, 25V, Elect.(MUSE)			
C605, C606	372121024	1200pF, 50V, Styrene			
C607, C608	379121045	0.1 $\mu$ F, 50V Film (DEW)			
C613~C616					
C609, C610	379124735	0.047 $\mu$ F, 50V, Film (DEW)			
C619, C620	372121024	1000pF, 50V Styrene			
C701	354722219	220 $\mu$ F, 6.3V, Elect.			
C703	354742209	22 $\mu$ F, 16V, Elect.			
C704	354784799	0.47 $\mu$ F, 50V, Elect.			
C706	354743319	330 $\mu$ F, 16V, Elect.			
C707	354744719	470 $\mu$ F, 16V, Elect.			
C708, C710	379122235	0.022 $\mu$ F, 50V Film (DEW)			
C712	354741019	100 $\mu$ F, 16V, Elect.			
C901, C902	354772219	220 $\mu$ F, 63V, Elect.			
C903, C904	354764709	47 $\mu$ F, 35V, Elect.			
C905, C906	354754719	470 $\mu$ F, 25V, Elect.			
C911, C912	354782219	220 $\mu$ F, 50V Elect.			

## SPEAKER SWITCH PC BOARD (NASW-2970-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Resistors</b>	
R753, R754	441623914F	390 $\Omega$ , 1W, Metal oxide film
	<b>Switch</b>	
S751	25030275	NRSM-144-15SS
	<b>Socket ass'y</b>	
P752, P753	2000671	NSAS-3P-627
	<b>Stereo jack</b>	
P751	25045164	HLJ-4317-01-3020

## POWER SUPPLY PC BOARD (NAPS-2973-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Diodes</b>	
D951	22380014F	PB102F
D952, D953	22380003F	1N5402F
	<b>Capacitors</b>	
C951~C953	375104745	0.47 $\mu$ F, 125V, Film (ME)
C954, C955	3504208	12000 $\mu$ F, 71V, Elect.
	<b>Resistors</b>	
R951	442525104F	51 $\Omega$ , 1/2W, Metal oxide film
R961, R962	442522294F	0.22 $\mu$ F, 1/2W, Metal oxide film

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Plate</b> 27300732	Bus

#### TONE AND MUTING SWITCH PC BOARD (NASW-2974-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Diodes</b>	
D711	225137CG or 225137CY or 225137DG or 225137DY	SEL2413E CG, LED SEL2413E CY, LED SEL2413E DG, LED SEL2413E DY, LED
D712, D713, D714	225142DX2	SEL2913K DX2, LED
	<b>Capacitors</b>	
C351, C352	354782299	0.22 $\mu$ F, 50V, Elect.
C353, C354	354784799	0.47 $\mu$ F, 50V, Elect.
	<b>Switches</b>	
S311, S312	25035540	NPS-162-122-L502
S314	25035541	NPS-142-L503
	<b>Socket</b>	
JL701	25050267	NSCT-3P95
	<b>Holder</b>	
	27190493-1	(LED-3)

#### TONE CONTROL CIRCUIT PC BOARD (NAAF-2975-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Capacitors</b>	
C315, C316	379128225	8200pF, 50V, Film (DEW)
C317, C318	379125625	5600pF, 50V, Film (DEW)
C319, C320	379121025	1000pF, 50V, Film (DEW)
C321, C322	379123935	0.039 $\mu$ F, 50V, Film (DEW)
C325, C326	379128235	0.082 $\mu$ F, 50V, Film (DEW)
	<b>Resistors</b>	
R317	5148107	N16RGMC250KMN25, Variable
R321	5148108	N16RGM11C219K25, Variable
R323	5144001	N16RQM11C139K176K25, Variable
R337	5148113A	N16RGM11C176K25, Variable
	<b>Switches</b>	
S309, (S310)	25035539	NPS-142-122-L501
	<b>Sockets</b>	
P101, P102	2000676	NSAS-6P632

#### INPUT SELECTOR SWITCH PC BOARD (NASW-2976-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Switches</b>	
S301~S308	25035538	NPS-742-162-L500

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Sockets</b>	
P103	2000551	NSAS-6P507
P301	2000564	NSAS-6P520
P303	2000607	NSAS-18P563
JL103	25050267	NSCT-3P95
P351, P354	25050272	NSCT-8P100
P352, P353, P356	25050267	NSCT-3P95
P355	25050273	NSCT-9P101
	<b>Plugs</b>	
P302	25055137	NPLG-7P121
P501	25055133	NPLG-3P117
	<b>Holder</b>	
	27190494A	(LED-4)

#### DISPLAY LED PC BOARD (NADIS-2977-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Diodes</b>	
D302~D308	225137DG or 225137DY or 225137CG or 225137CY	SEL2413E DG, LED or SEL2413E DY, LED or SEL2413E CG, LED or SEL2413E CY, LED
D311~D316, D301	225142CX1 or 225142CX2 or 225142DX1 or 225142DX2	SEL2913K CX1, LED or SEL2913K CX2, LED or SEL2913K DX1, LED or SEL2913K DX2, LED
	<b>Plug</b>	
P303	25055190	NPLG-9P174
	<b>Socket</b>	
JL357	25050272	NSCT-8P100

#### POWER SWITCH PC BOARD (NASW-2978-1, NASW-2978-1A, NASW-2978-1C)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Switch</b>	
S901	25035398	NPS-111-L362P
	<b>Capacitor</b>	
C991	3500065A	0.01 $\mu$ F, AC400V/125V (IS)
	<b>Fuse holder</b>	
F901a	250113	S-N5051 [D][W][X]
F902a	25050065	YSH403T [G][W][X][A][B]

#### EQUALIZER CIRCUIT PC BOARD (NAAF-2979-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>ICs</b>	
Q105	222570	NJM4560DX
	<b>Transistors</b>	
Q101~Q104	2212185 or 2212186	2SK170 GR or 2SK170 BL
	<b>Coils</b>	
L301, L302	231069A	NCH-1119

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Capacitors</b>		
C105, C106	372122714	270pF, 50V, Styrene
C107, C108	372121014	100pF, 50V, Styrene
C109, C110	379122225	2200pF, 50V, Film (DEW)
C111, C112	379122234	0.022 $\mu$ F, 50V, Film (DEW)
C113, C114	379121834	0.018 $\mu$ F, 50V, Film (DEW)
C115, C116	379124734	0.047 $\mu$ F, 50V, Film (DEW)
C117, C118	391222227	2200 $\mu$ F, 6.3V, Elect.(MUSE)
C119, C120	391280227	2.2 $\mu$ F, 50V, Elect.(MUSE)
C121, C122	379121225	1200pF, 50V, Film (DEW)
C131, C132	354754719	470 $\mu$ F, 25V, Elect.
<b>Terminals</b>		
P191	25045171	NPJ-4PDBL-65
P395	25045190	NPJ-2PDBL-74
<b>Plugs</b>		
P101~P103, P301	25055133	NPLG-3P117
<b>Socket</b>		
JL104, JL360	25050267	NSCT-3P95

#### VOLUME CONTROL PC BOARD (NAAF-2980-1)-PARTS LIST

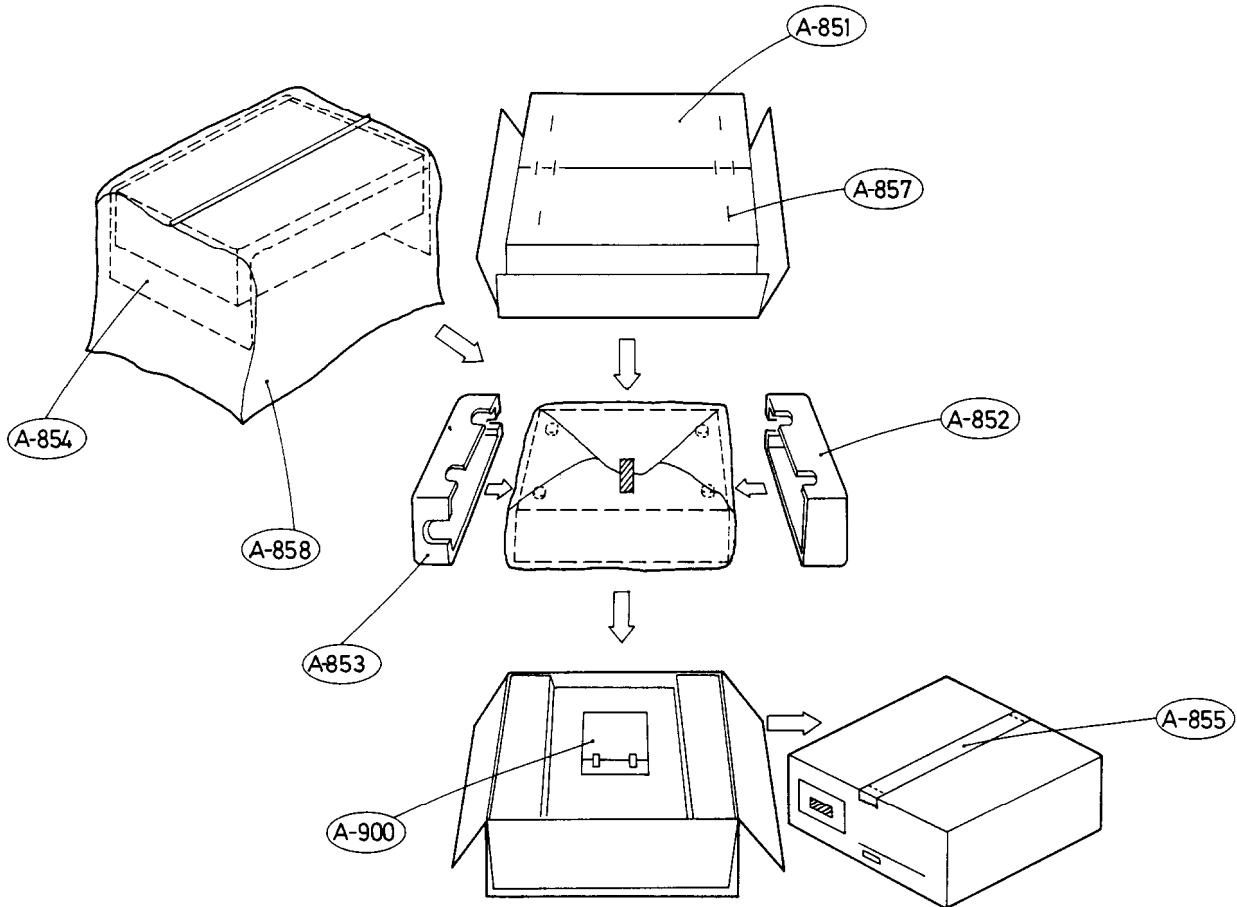
CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Resistors</b>		
R361	5144004	N16RQM100KBT100KBT25, Variable
<b>Socket</b>		
P302	2000622A	NSAS-14P578

#### VIDEO TERMINAL PC BOARD (NAETC-2982-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Diodes</b>		
D801, D802	223145	1S2076TD
<b>Relays</b>		
RL801, RL802	25065298	NRL-1P1A-DC12-40
<b>Socket</b>		
JL801	25050268	NSCT-4P96
<b>Terminal</b>		
	25045207	NPJ-4PDBL87

[D]: Only 220V model  
 [G]: Only 240V model  
 [W]: Only 120V/220V model  
 [X]: Only Military market model  
 [A]: Only Australian model  
 [B]: Only British model

# PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051534	MASTER CARTON BOX
A852	29091125-1 A	PAD ASS'Y. LEFT
A853	29091126-1 A	PAD ASS'Y. RIGHT
A854	29095012-1	SHEET 800X500
A855	260012	DAMPLON TAPE W50 BROWN
A857	282301	STAPLE 16H
A858	29100038A	POLY BAG 720X950
	29360778	LABEL (FLASH) [N]
A900		ACCESSARYBAG
	29341154	INSTRUCTION MANUAL [D][N]
	29341155	INSTRUCTION MANUAL [G][W][A][B]
	29341160	INSTRUCTION MANUAL (I) [G][W]
	29365019	WARRANTY CARD [N]
	29358002E	SERVICE STATION LIST [N]
	25055018	CONVERSION PLUG CV-K-1 [W]
	29100006A	POLY BAG 350X250

NOTE [D]: ONLY 120V MODEL  
 [G]: ONLY 220V MODEL  
 [W]: ONLY 120V/220V MODEL  
 [N]: ONLY U.S.A. MODEL  
 [A]: ONLY AUSTRALIAN MODEL  
 [B]: ONLY BRITISH MODEL