


# ONKYO® SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-8170

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.

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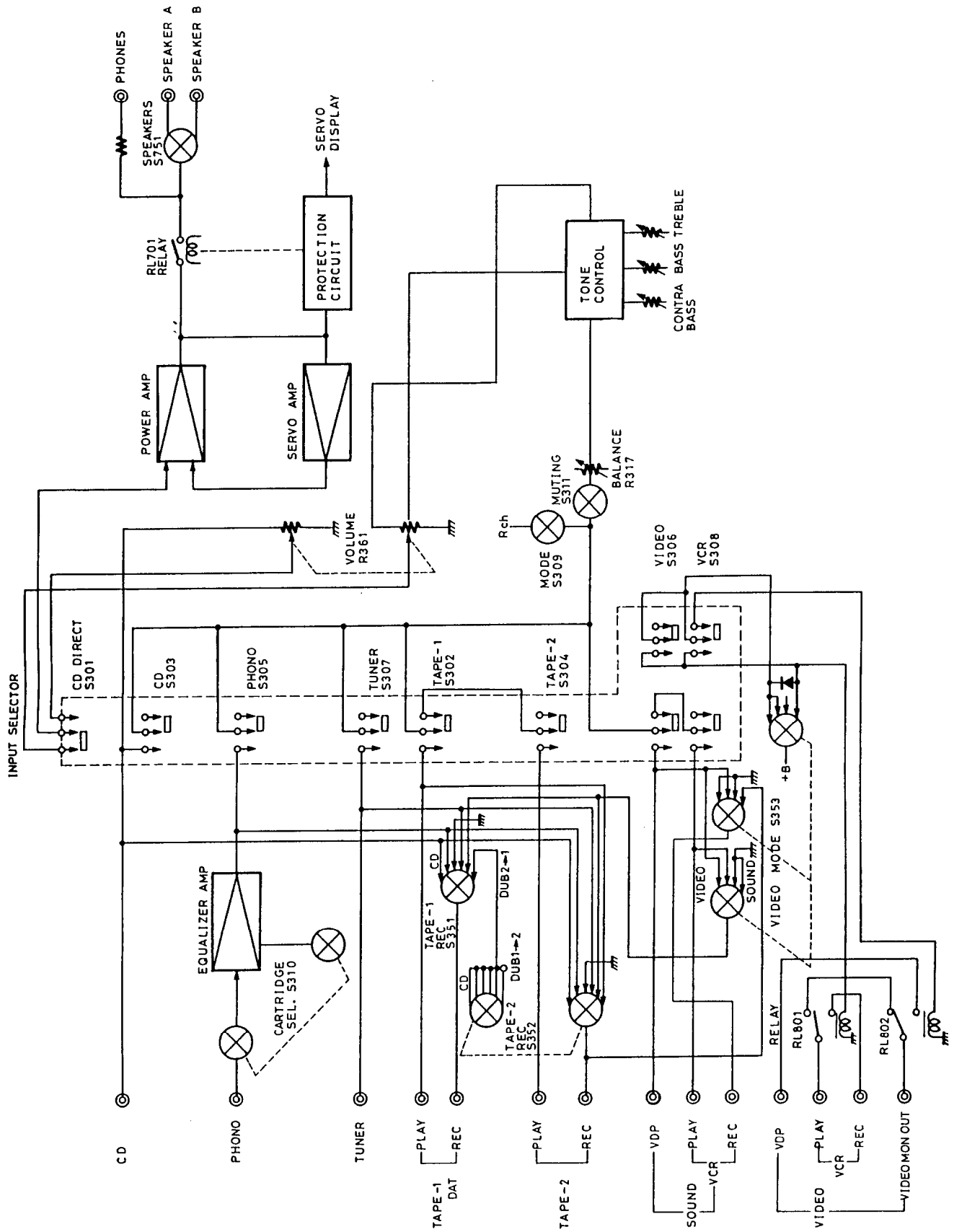
**ONKYO**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

Power Output:	80 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:	224 watts 2 ohms, 170 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 Tape Rec: 150 mV/1.5 kohms (Phono)
Output Level/Impedance:	
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control (Vol -20 dB):	CONTRABASS: +10 dB 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): 93 dB (5 mV input) Phono (MC): 74 dB (0.5 mV input) CD DIRECT: 107 dB
Muting:	-20 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 147(H) x 388(D) mm 17-1/8" x 5-13/16" x 15-5/16"
Weight:	11.2 kg, 24.7 lbs.

Specifications and features are subject to change without notice.

# 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-2983 is 7.5mV.

### 3. Operating check of protection circuit

- 1) When the power switch is turned ON.
  - After about 5 second, relay RL701 of the NAAF-2983 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.

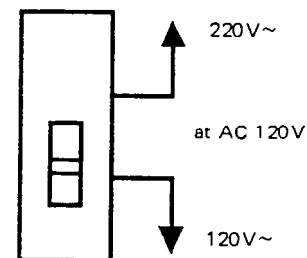
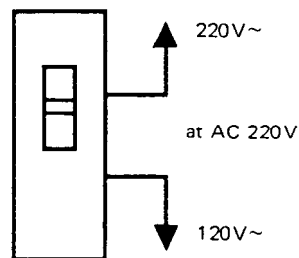
CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252050	6 A(ST-6), Primary fuse (120V model)
F902	252076 or	3.15 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)
	252076CC	3.15 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)

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

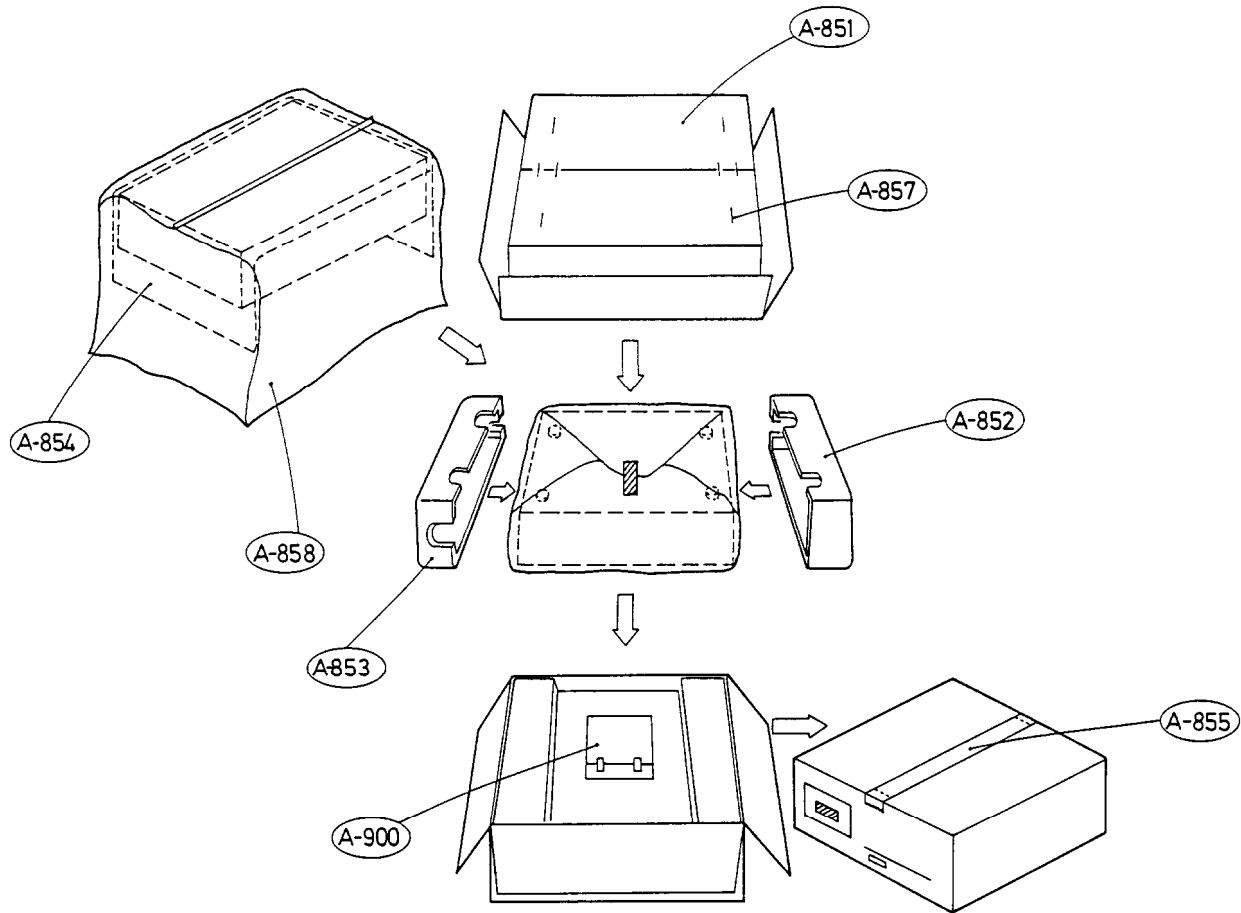
Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel. Specifications; More than 10 M $\Omega$  at 500V.

### 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.

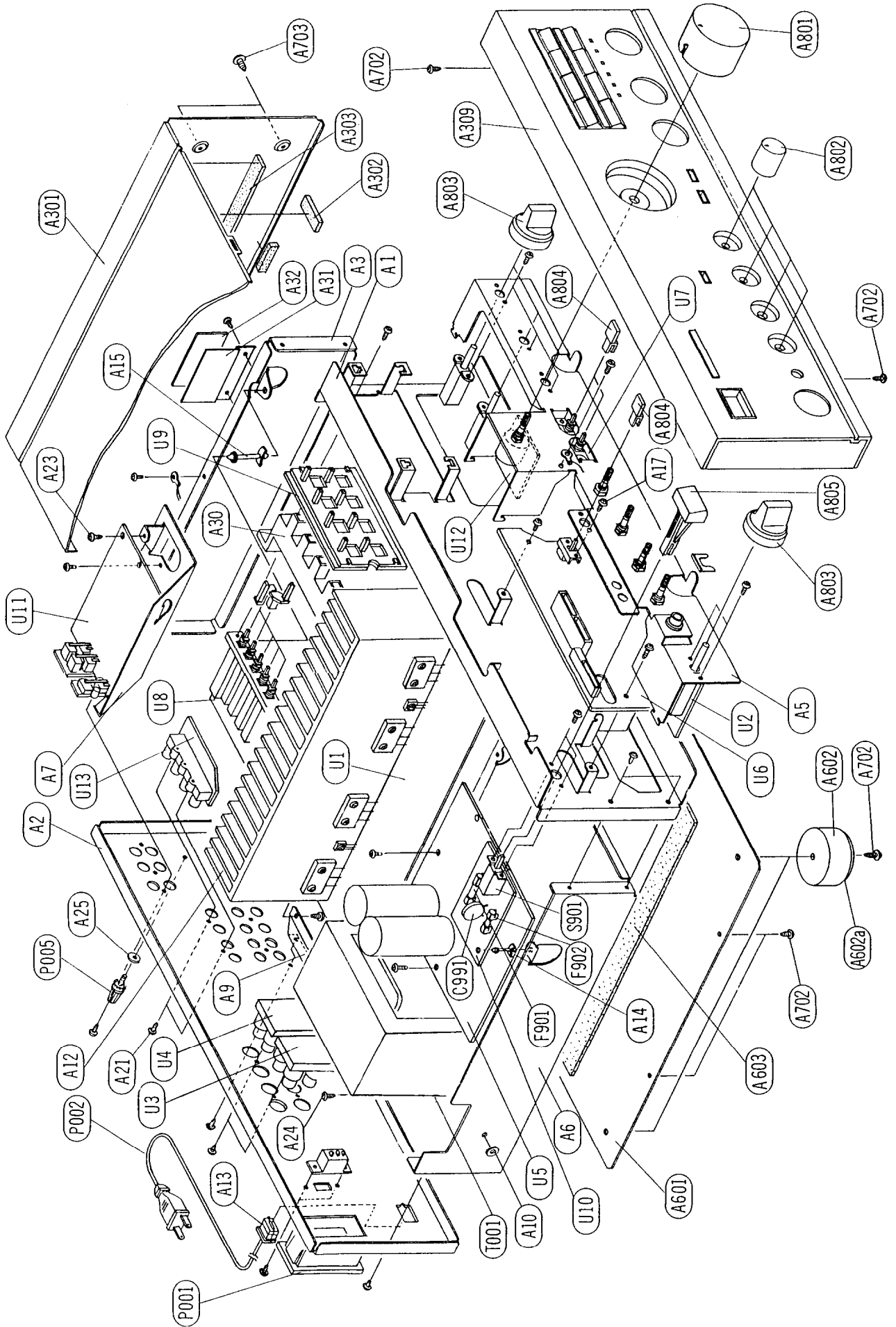


# PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A851	29051538	MASTER CARTON BOX		29365019	WARRANTY CARD [N]
A851	29051559	MASTER CARTON BOX [X]		29365021	WARRANTY CARD [X]
A852	29091159	PAD LEFT		29358002E	SERVICE STATION LIST [N][X]
A853	29091160	PAD RIGHT		25055018	CONVERSION PLUG CV-K-1 [W]
A854	29095012-1	SHEET 800×500		25055251	CONVERSION PLUG CV-CP [X]
A855	260012	DAMPLON TAPE W50 BROWN		29100006A	POLY BAG 350×250
A857	282301	STAPLE 16H			
A858	29100038A	POLY BAG 720×950			
	29360778	LABEL (FLASH) [N]			
	29360815	LABEL (120) [X]			
	29380084	CAUTION (120) [X]			
	29360816	LABEL (220) [X]			
	29380085	LABEL (220) [X]			
	28330072	CAP (AC OUTLET) [X]			
A900		ACCESSARYBAG	NOTE		[D] : ONLY 120V MODEL
	29341154	INSTRUCTION MANUAL			[G] : ONLY 220V MODEL
		[D][N][X]			[W] : ONLY 120V/220V MODEL
	29341155	INSTRUCTION MANUAL			[N] : ONLY U.S.A. MODEL
		[G][W][A][B]			[X] ONLY MILITARY MARKET MODEL
	29341160	INSTRUCTION MANUAL (I)			[A] : ONLY AUSTRALIAN MODEL
		[G][W]			[B] : ONLY BRITISH MODEL

**CHASSIS-EXPLODED VIEW**



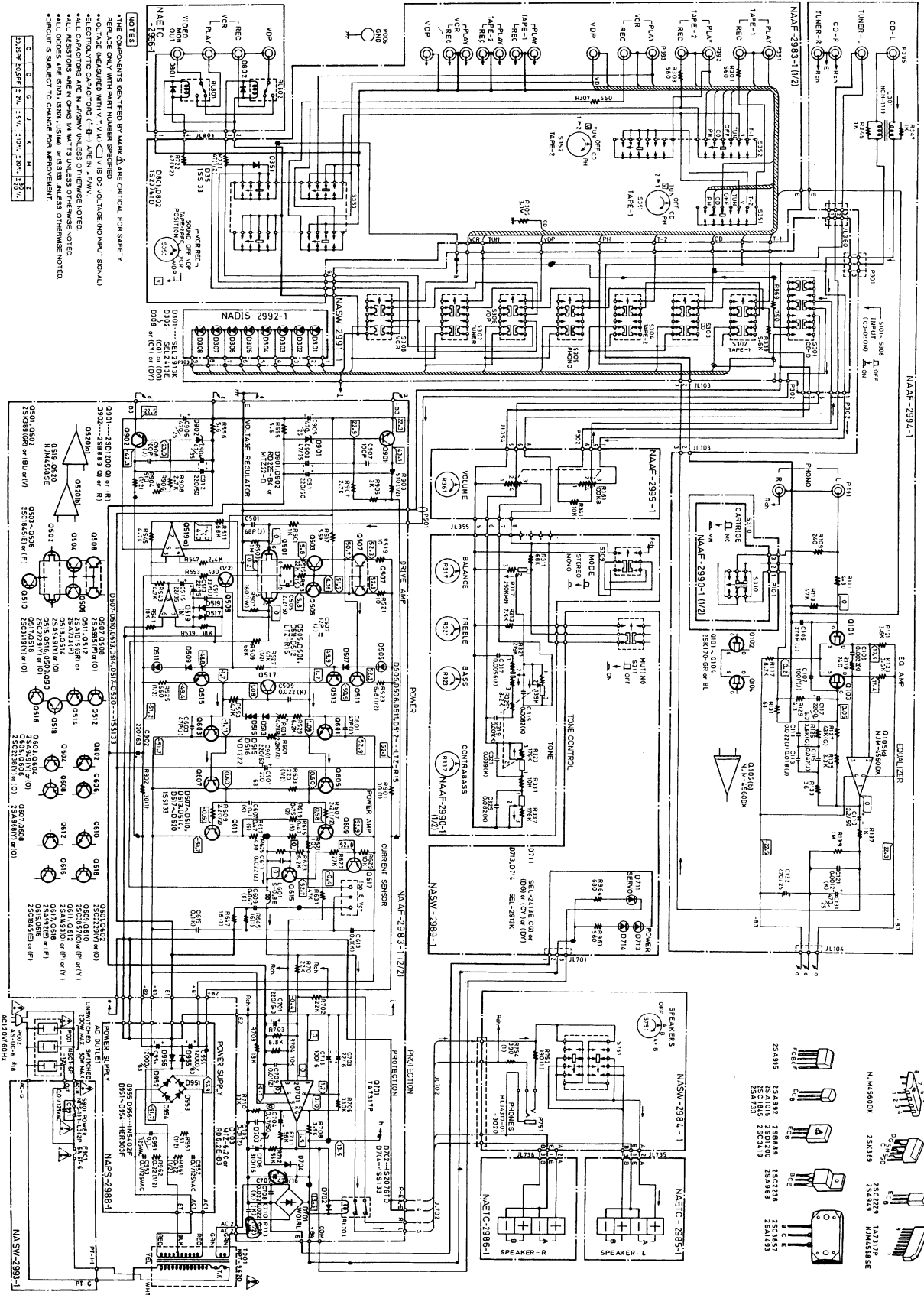
# CHASSIS-EXPLODED VIEW-PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27110361	FRONT BRACKET	△S001	25065123	SLIDE SWITCH, NSS-1258P [W][X]	U7	1A026590-1	NAAF-2990-1, TONE CONTROL CIRCUIT PC BOARD ASS'Y
A2	27121004	BACK PANEL	△S901	25035398	POWER SWITCH, NPS-111-L362P	U8	1A026591-1	NASW-2991-1, INPUT SELECTOR SWITCH PC BOARD ASS'Y
A2	27121005	BACK PANEL [G]	△P001	25050293	AC SOCKET, NSCT-6P120[D][X]	U9	1A026592-1	NADIS-2992-1, DISPLAY LED PC BOARD ASS'Y
A2	27121007	BACK PANEL [W]	△P002	253123 or 253136 or 253140	AC CORD, AS-UC-6#18 or [D][X]	U10	1A026593-1	NASW-2993-1, POWER SWITCH PC BOARD ASS'Y
A2	27121008	BACK PANEL [X]	△P002	253130A or 253128B	AC CORD, AS-CEE or [G]	U10	1A026593-1A	NASW-2993-1A, POWER SWITCH PC BOARD ASS'Y [G][A][B]
A2	27121009	BACK PANEL [A][B]	△P002	253092-1A	AC CORD, AS-CEE-2 [W]	U10	1A025593-1B	NASW-2993-1B, POWER SWITCH PC BOARD ASS'Y [W]
A3	27115224	SIDE BRACKET	△P002	253118	AC CORD, AS-SAA [A]	U10	1A025593-1C	NASW-2993-1C, POWER SWITCH PC BOARD ASS'Y [X]
A5	27130473	BRACKET (F)	△P002	728320 or 728328	AC CORD, 2-0.75BS16 BLK/GRY [B]	U11	1A026594-1	NAAF-2994-1, EQUALIZER CIRCUIT PC BOARD ASS'Y
A6	27130474	BRACKET (L)	△P002	25060044	TERMINAL	U11	1A026594-1B	NAAF-2994-1B, EQUALIZER CIRCUIT PC BOARD ASS'Y [G][W][X]
A7	27130450	BRACKET (EQ)	△P002	252051	FUSE, 6A ST-6	U12	1A026595-1	NAAF-2995-1, VOLUME CONTROL PC BOARD ASS'Y
A8	28140730	CUSHION	△P002	250113	FUSE HOLDER, S-N5051	U13	1A026596-1	NAETC-2996-1, VIDEO TERMINAL PC BOARD ASS'Y
A9	27141084A	BRACKET (H)	△P002	252076 or 252076CC	FUSE, 3.15A-SE-EAK [G][W][X][A][B]	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
A10	27270212	SPACER	△F902a	25050065	FUSE, 3.15A-SE-EAK [G][W][X][A][B]			
A11	27270213	SPACER (PT)	△C991	3500065A	FUSE HOLDER, YSH403T			
A12	27160203	HEATSINK			[G][W][X][A][B]			
A13	27300750	BUSHING (CORD)	P005	25060044	FUSE HOLDER, YSH403T			
A14	27190011	HOLDER LCBS-6NS	△F901	252051	0.01µF, AC 400V/125V, CAPACITOR (IS)			
A15	27190532	HOLDER KGLS-7S	△F901a	250113	2SC3419 Y or 2SC3419 O			
A17	82143006	PAN HEAD SCREW, 3P+6FNBC	△F902	252076 or 252076CC	2SC3857 O or 2SC3857 P or 2SC3857 Y			
A21	834430108	TAP-TIGHT SCREW, 3TTS+10BBC	△F902a	25050065	2SA1493 P or 2SA1493 Y			
A23	831130088	TAP-TIGHT SCREW, 3TTW+8B			NAAF-2983-1, REC.SELECTOR AND POWER AMPLIFIER			
A24	830440109	TAP-TIGHT SCREW, 4TTC+10CBC			CIRCUIT PC BOARD ASS'Y			
A25	87613010	WASHER, W3X10F			NASW-2984-1, SPEAKER SWITCH PC BOARD ASS'Y			
A30	27273059A	JOINT ASS'Y	△F902a	25050065	NAETC-2985-1, SPEAKER TERMINAL PC BOARD ASS'Y			
A31	27150236	SHIELD PLATE	△C991	3500065A	TERMINAL PC BOARD ASS'Y			
A32	28175140	INSULATING PLATE			NAETC-2986-1, SPEAKER TERMINAL PC BOARD ASS'Y			
A301	28184365	TOP COVER	Q517, Q518	2212864 or 2212863	NAPS-2988-1, POWER SUPPLY PC BOARD ASS'Y			
A302	28140020	CUSHION	Q609, Q610	2201803 or 2201806 or 2201804	NASW-2989-1, MUTING SWITCH PC BOARD ASS'Y			
A303	28140695	CUSHION	Q611, Q612	2201793 or 2201796 or 2201794	SWITCH PC BOARD ASS'Y			
A309	1A025121	FRONT PANEL	U1	1A026583-1	NAAF-2983-1, REC.SELECTOR AND POWER AMPLIFIER			
A601	27170234B	BOTTOM BOARD	U2	1A026584-1	CIRCUIT PC BOARD ASS'Y			
A602	27175153	LEG ASS'Y	U3	1A026585-1	NASW-2984-1, SPEAKER SWITCH PC BOARD ASS'Y			
(A602a)	28140747	CUSHION	U4	1A026586-1	NAETC-2985-1, SPEAKER TERMINAL PC BOARD ASS'Y			
A701	834430088	TAP-TIGHT SCREW, 3TTS+8BBC	U5	1A026588-1	NAETC-2986-1, SPEAKER TERMINAL PC BOARD ASS'Y			
A702	838440089	TAP-TIGHT SCREW, 4TTB+8CBC	U6	1A026589-1	NASW-2989-1, MUTING SWITCH PC BOARD ASS'Y			
A801	28323027	KNOB (VOL)						
A802	28323029	KNOB (TONE)						
A803	28322700	KNOB (SP)						
A804	28322701	KNOB (PUSH)						
A805	28322702A	KNOB (POW)						
△T001	2300230	POWER TRANSFORMER, NPT-962D						
△T001	2300231	POWER TRANSFORMER, NPT-962G [G]						
△T001	2300232	POWER TRANSFORMER, NPT-962DG [W][X]						
△T001	2300233	POWER TRANSFORMER, NPT-962Q [A][B]						

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

# SCHEMATIC DIAGRAM

(120V Model)



**NOTES**

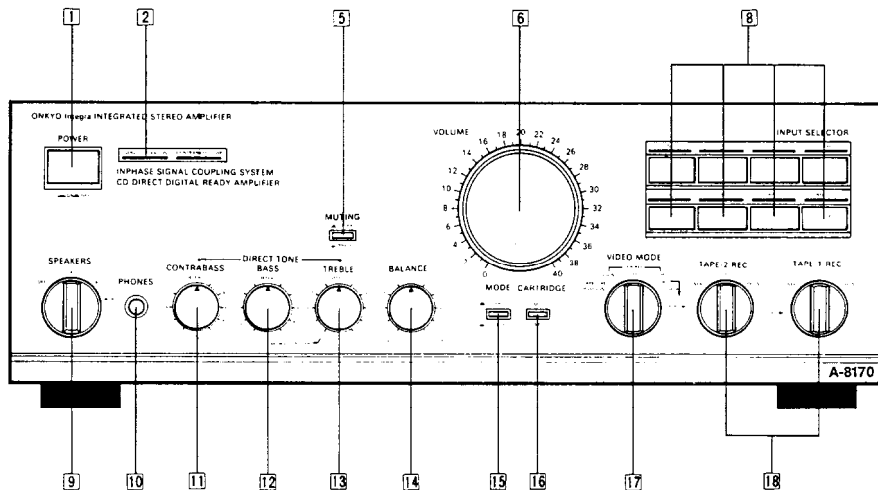
- \*THE COMPONENTS IDENTIFIED BY A Δ ARE CRITICAL FOR SAFE V.
- REPLACE ONLY WITH PART NUMBER SPECIFIED.
- \*\*VOLTAGE MEASURED WITH V.T.V.M. Δ V IS DC VOLTAGE (NO INPUT SIGNAL).
- †RESISTOR VALUES IN OHMS, 100'S, 1K'S, 10K'S, 100K'S, 1M'S UNLESS NOTED.
- \*\*\*ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED.
- \*\*\*\*ALL DIODES ARE 1N4148 UNLESS OTHERWISE NOTED.
- \*\*\*\*\*COURT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

Ω	1	10	100	1K	10K	100K	1M
10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>

ONTRYO CORPORATION

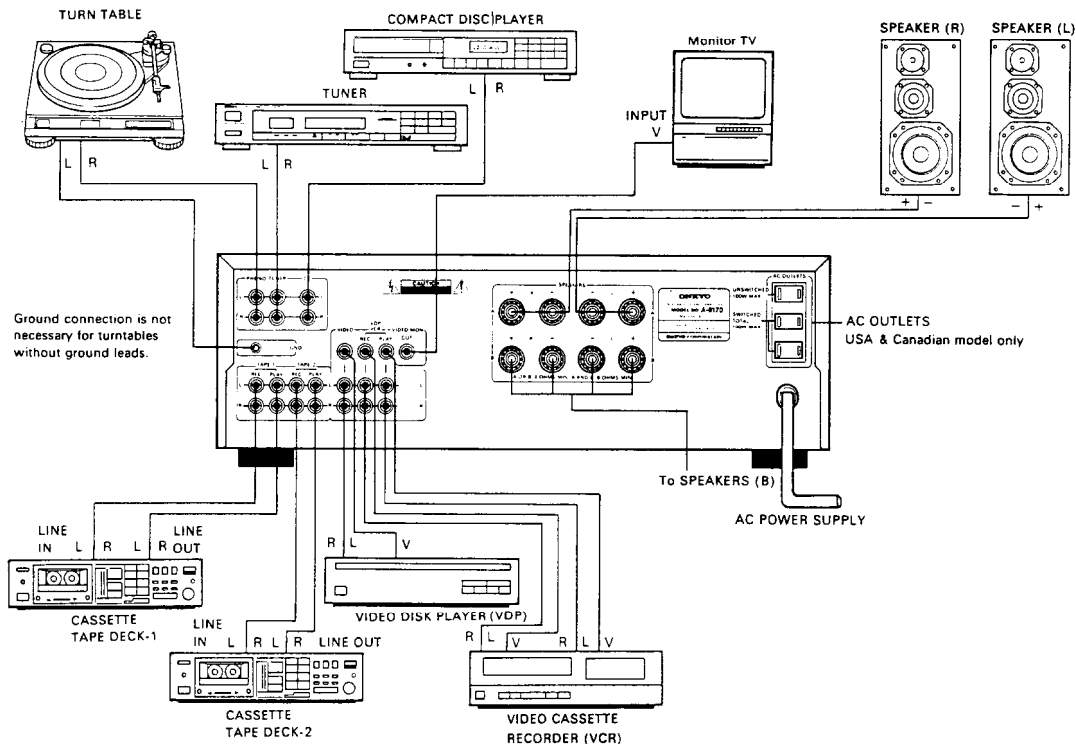


# FRONT PANEL FACILITIES



- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Power switch (POWER)</li> <li>2. Servo operation indicator (SERVO OPERATION)</li> <li>5. Muting switch (MUTING)</li> <li>6. Volume control (VOLUME)</li> <li>8. Input selector switches and indicator (INPUT SELECTOR)<br/>CD DIRECT, CD, PHONO, TUNER, TAPE-1/DAT, TAPE-2, VDP, VCR</li> <li>9. Speaker selector (SPEAKERS)<br/>OFF, A, B, A+B</li> <li>10. Headphone jack (PHONES)</li> <li>11. Contra bass (CONTRA BASS)</li> <li>12. Bass control (BASS)</li> <li>13. Treble control (TREBLE)</li> </ol> | <ol style="list-style-type: none"> <li>14. Balance control (BALANCE)</li> <li>15. Mode selector (MODE)<br/>STEREO, MONO</li> <li>16. Cartridge selector (CARTRIDGE)<br/>MC, MM</li> <li>17. Video mode switch (VIDEO MODE)<br/>SOUND, OFF, VDP-VCR, VDP</li> <li>18. Recording source selectors (TAPE-1 REC, TAPE-2 REC)<br/>TAPE-1 DVB 2 ▶ 1, <input type="checkbox"/>,<br/>TUNER, OFF, PHONO, CD<br/>TAPE-2 DVB 1 ▶ 2, <input type="checkbox"/>,<br/>TUNER, OFF, PHONO, CD</li> </ol> |
|--|---|

# SYSTEM CONNECTIONS



# PRINTED CIRCUIT BOARD PARTS LIST

## REC.SELECTOR AND POWER AMPLIFIER CIRCUIT PC BOARD (NAAF-2983-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>ICs</b>		
Q519, Q520	222942	NJM4558SE
Q701	222584	TA7317P
<b>Transistors</b>		
Q501, Q502	2212805 or 2212806 or 2212807	2SK389 GR or 2SK389 BL or 2SK389 V
Q503~Q506, Q615 Q616	2211733 or 2211732	2SC1845 E or 2SC1845 F
Q507, Q508	2211515 or 2211516	2SA995 F or 2SA995 G
Q509, Q510, Q515 Q516, Q601, Q602 Q511, Q512	2211634 or 2211633 2211455 or 2210803	2SC2229 Y or 2SC2229 O 2SA1015 GR or 2SA733 P
Q513, Q514, Q603 Q604	2211354 or 2211353	2SA949 Y or 2SA949 O
Q605, Q606	2200864 or 2200863	2SC2238 Y or 2SC2238 O
Q607, Q608	2200874 or 2200873	2SA968 Y or 2SA968 O
Q617, Q618	2211793 or 2211792	2SA992 E or 2SA992 F
Q901	2201512 or 2201513	2SD1200 Q or 2SD1200 R
Q902	2201502 or 2201503	2SB889 Q or 2SB889 R
<b>Diodes</b>		
D507~D510, D351 D513, D514, D704 D517~D520	223163	1SS133
D505, D506, D511 D512	225232	LTZ-R15, LED
D515, D516 D701	4000068 223890	VD1222 W01RL
D702	223145	1S2076TD
D703	2239493 or 2243163	RD6.2E B3 or MTZ6.2-C
D901, D902	2239754 or 2243294	RD22E-B4 or MTZ22-D
<b>Coils</b>		
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	354762209	22 $\mu$ F, 35V, Elect.
C607, C608 C613~D616	379121045	0.1 $\mu$ F, 50V, Film (DEW)
C609, C610	379124735	0.047 $\mu$ F, 50V, Film (DEW)
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)
C713	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.

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Resistors</b>		
R507, R508	441623614NF	360 $\Omega$ , 1W, Metal oxide film
R523, R524	442520684F	6.8 $\Omega$ , 1/2W, Metal oxide film
R525, R526	442525614F	560 $\Omega$ , 1/2W, Metal oxide film
R527, R528	442524734F	47 k $\Omega$ , 1/2W, Metal oxide film
R531, R532	5210062	N06HR4.7KBD, Semi-fixed
R533, R534	442524314F	430 $\Omega$ , 1/2W, Metal oxide film
R601, R602	442522224F	2.2k $\Omega$ , 1/2W, Metal oxide film
R603, R604	442522214F	220 $\Omega$ , 1/2W, Metal oxide film
R607~R610	442520224F	2.2 $\Omega$ , 1/2W, Metal oxide film
R615~R618	4000080	0.47 $\Omega$ , 5W, Metal plate
R619, R620	441727594NF	0.75 $\Omega$ , 2W, Metal oxide film
R645~R648	441621604NF	16 $\Omega$ , 1W, Metal oxide film
R713	442522294F	0.22 $\Omega$ , 1/2W, Metal oxide film
R721, R722	442524704F	47 $\Omega$ , 1/2W, Metal oxide film
R901, R902	441623004NF	30 $\Omega$ , 1W, Metal oxide film
R903, R904	442525114F	510 $\Omega$ , 1/2W, Metal oxide film
<b>Relay</b>		
RL701	25065316	NRL-2P7 A-DC12-43
<b>Switches</b>		
S351, S352	25030261	NRSM-146-15SS
S353	25030259	NRSM-164-15SS
<b>Terminals</b>		
P391, P392	25045165	NPJ-4PDBL-59
P393	25045166	NPJ-6PDBL-60
<b>Socket</b>		
P501	2000551	NSAS-6P507
<b>Plate</b>		
	27300877	Bus

## SPEAKER SWITCH PC BOARD (NASW-2984-1)-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>Stereo jack</b>		
P751	25045164	HLJ-4317-01-3020

## SPEAKER TERMINAL PC BOARD (NAETC-2985-1) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Terminal</b>		
P751	25060110	NTM-4PDMN44

## SPEAKER TERMINAL PC BOARD (NAETC-2986-1) PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Terminal</b>		
P752	25060110	NTM-4PDMN44

## POWER SUPPLY PC BOARD (NAPS-2988-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Diodes</b>		
D951~D954	22380012	HER303F
D955, D956	22380003F	1N5402F
<b>Capacitors</b>		
C951~C953	375101045	0.01 $\mu$ F, 125V, Film (ME)
C954, C955	3504209	12000 $\mu$ F, 63V, Elect.
<b>Resistors</b>		
R951	442525104F	51 $\Omega$ , 1/2W, Metal oxide film
R961, R962	442522294F	0.22 $\Omega$ , 1/2W, Metal oxide film
<b>Plate</b>		
	27300732	Bus

## MUTING SWITCH PC BOARD (NASW-2989-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Diodes</b>		
D711	225137CG or	SEL2413E CG, LED
	225137CY or	SEL2413E CY, LED
	225137DG or	SEL2413E DG, LED
	225137DY	SEL2413E DY, LED
D713, D714	225142DX2	SEL2913K DX2, LED
<b>Switches</b>		
S311, S312	25035563	NPS-122-L525
<b>Socket</b>		
JL701	25050267	NSCT-3P95
<b>Holder</b>		
	27190493-1	(LED-3)

## TONE CONTROL CIRCUIT PC BOARD (NAAF-2990-1) 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	5148109	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-2991-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Switches</b>		
S301~S308	25035538	NPS-742-162-L500
<b>Sockets</b>		
P301	2000564	NSAS-6P520
P303	2000607	NSAS-18P563
P351, P354	25050272	NSCT-8P100
P352	25050271	NSCT-7P99
P353, P356	25050267	NSCT-3P95
P355	25050273	NSCT-9P101
JL352-1	25050267	NSCT-3P95
<b>Plugs</b>		
P302	25055137	NPLG-7P121
P501	25055133	NPLG-3P117

## DISPLAY LED PC BOARD (NADIS-2992-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Diodes</b>		
D301	225142	SEL2913K, LED
D302~D308	225137DG or	SEL2413E DG, LED or
	225137DY or	SEL2413E DY, LED or
	225137CG or	SEL2413E CG, LED or
	225137CY	SEL2413E CY, LED
<b>Plug</b>		
P303	25055190	NPLG-9P174
<b>Holder</b>		
	27190531	(LED-8)

## POWER SWITCH PC BOARD (NASW-2993-1, NASW-2993-1A, NASW-2993-1B, NASW-2993-1C)-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 holders</b>		
F901a	250113	S-N5051 [D][W][X]
F902a	25050065	YSH403T [G][W][X][A][B]

**EQUALIZER CIRCUIT PC BOARD (NAAF-2994-1,  
NAAF-2994-1B)-PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>IC</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
	<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	39280227	2.2 $\mu$ F, 50V, Elect.(MUSE)
C121, C122	379121225	1200 pF, 50V, Film (DEW)
C131, C132	354754719	470 $\mu$ F, 25V, Elect.
	<b>Terminals</b>	
P191	25045171	NPJ-4PDBL-65
P395	25045180	NPJ-2PDBL70
	<b>Plugs</b>	
P101, P102, P301	25055133	NPLG-3P117
	<b>Socket</b>	
JL104, JL360	25050267	NSCT-3P95

**VOLUME CONTROL PC BOARD (NAAF-2995-1)-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-2996-1)-PARTS LIST**

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

**NOTE**

[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