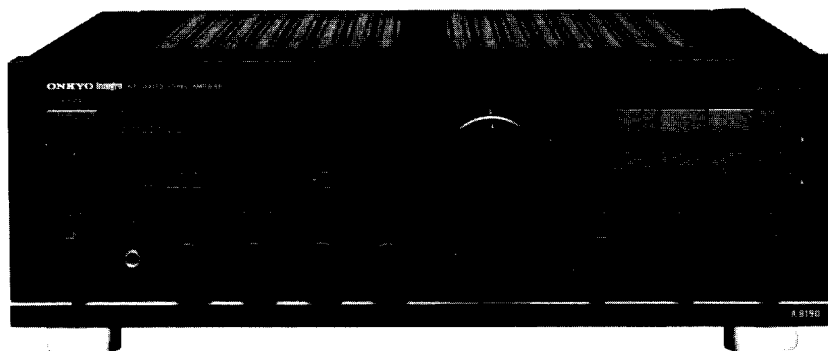


ONKYO® SERVICE MANUAL

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.

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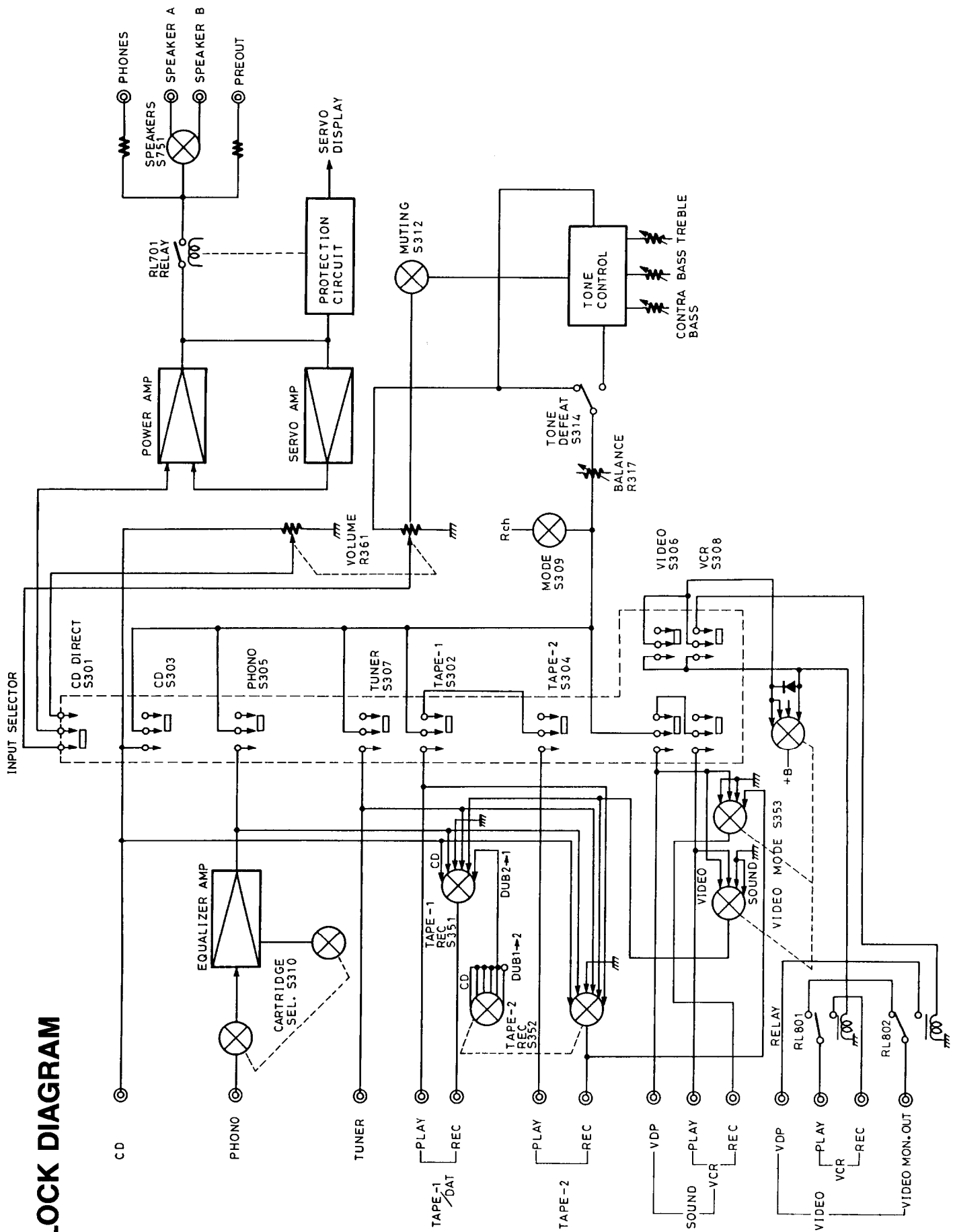
ONKYO
AUDIO COMPONENTS

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 μ 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: ± 10 dB at 70 Hz TREBLE: ± 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): ± 0.3 dB, 20 Hz-20 kHz
Signal to Noise	Phono (MM): 94 dB (5 mV input)
Ratio (IHF-A):	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.

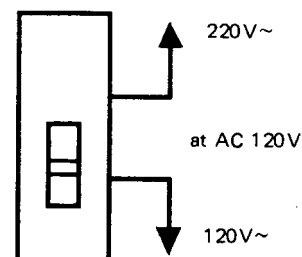
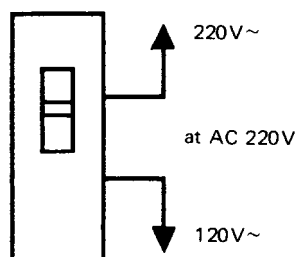
CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252052	7 A(ST-6), Primary fuse (120V model)
F902	252077 or	4 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)
	252077CC	4 A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)

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 Ω at 500V.

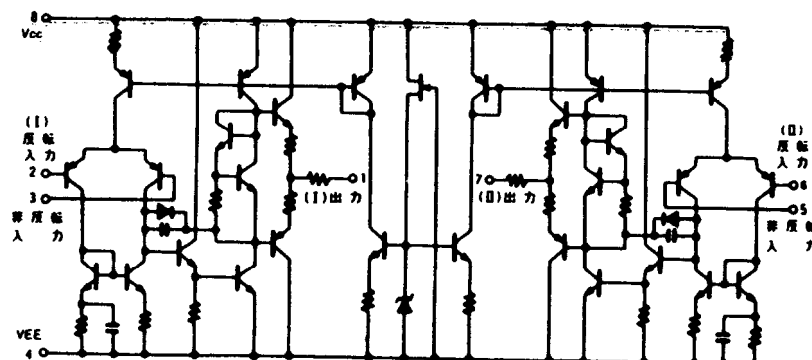
3. Voltage selector (rear panel)

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.

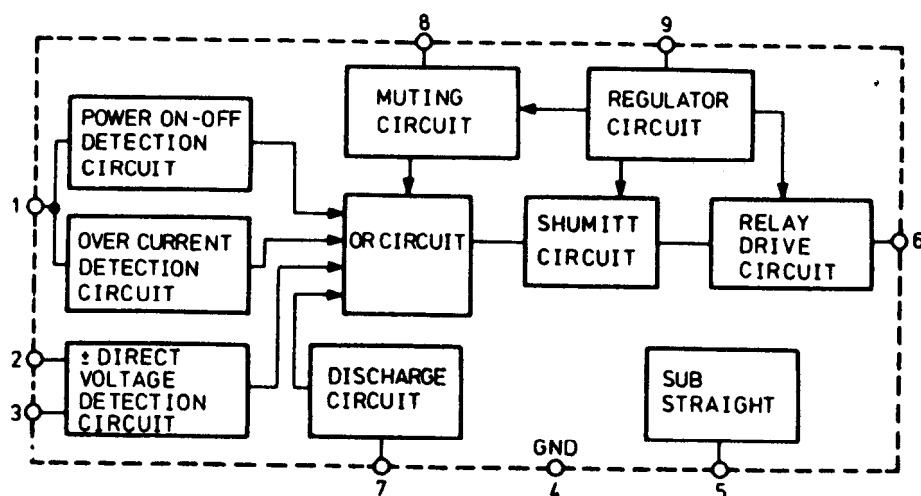


IC BLOCK DIAGRAM

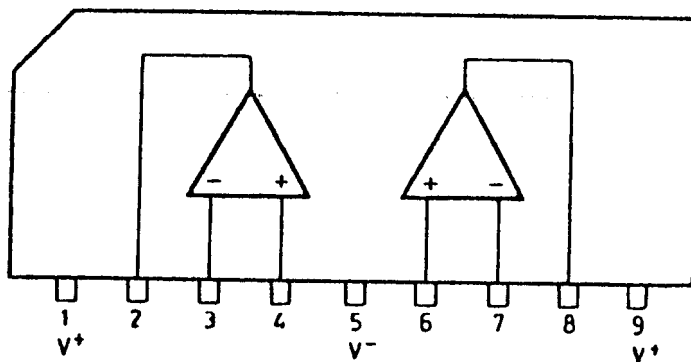
NJM-4560DX(OP Amp)



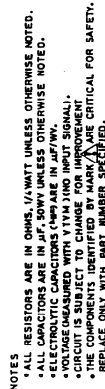
TA7317P(Protection Circuit)



NJM-4558SE (OP Amp)

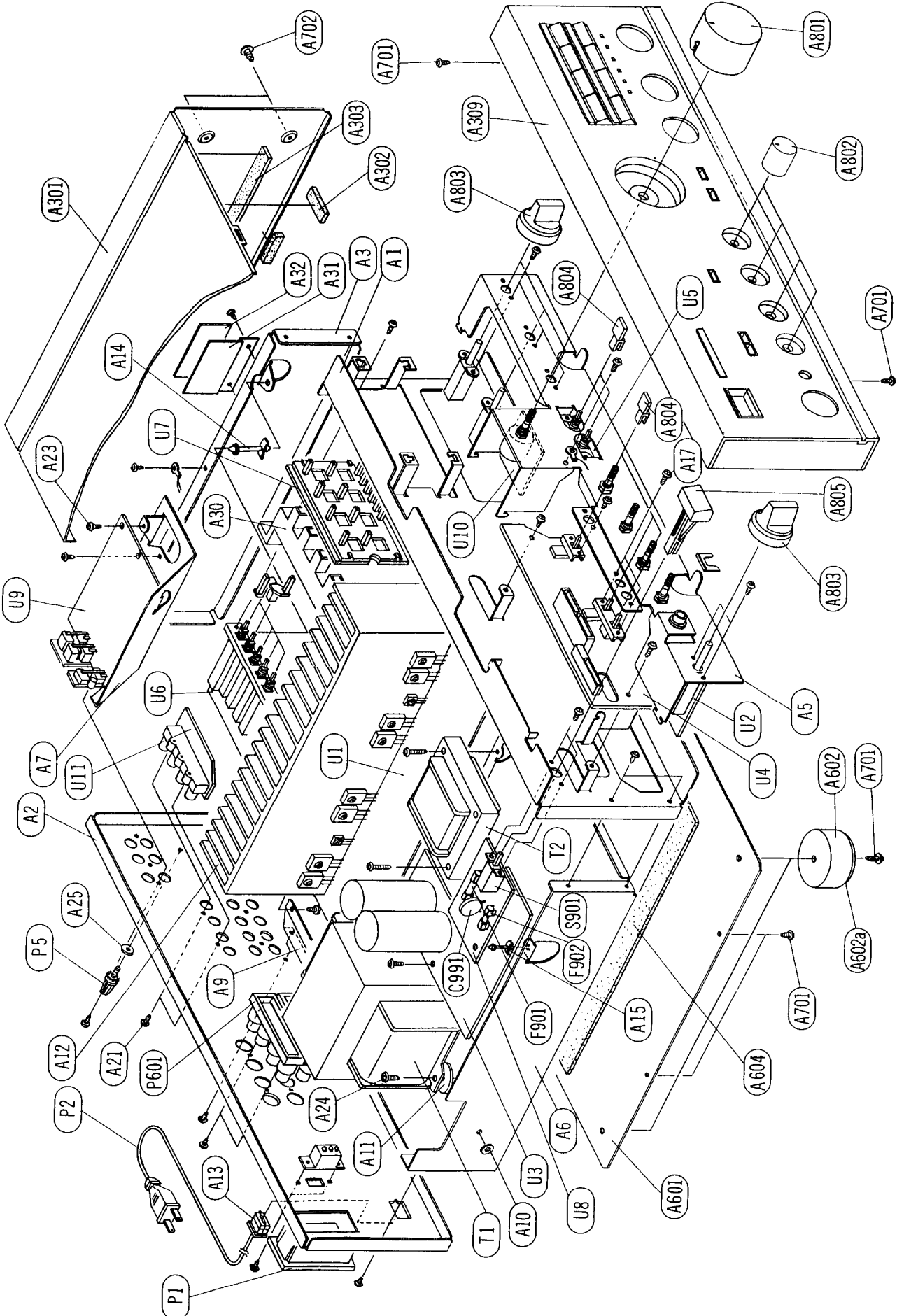


(120V Model)



C	D	G	J	K	M	Z
2.25PF	±0.5PF	±2%	±5%	±10%	±20%	±80%

CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW-PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27110305C	FRONT BRACKET	A805	28322702	KNOB (POW)
A2	27120998	BACK PANEL	ΔT1	2300227A	POWER TRANSFORMER,
A2	27120999	BACK PANEL [G]			NPT-935D
A2	27121001	BACK PANEL [W]	ΔT1	2300228A	POWER TRANSFORMER,
A2	27121002	BACK PANEL [X]			NPT-935G [G]
A2	27121003	BACK PANEL [A][B]	ΔT1	2300229	POWER TRANSFORMER,
A3	27115224	SIDE BRACKET			NPT-935DG [W][X]
A5	27130448A	BRACKET (F)	ΔT1	2300240A	POWER TRANSFORMER,
A6	27130449A	BRACKET (L)			NPT-935Q [A][B]
A7	27130450	BRACKET (EQ)	ΔT2	231125	CHOKO COIL
A8	28140730	CUSHION	ΔS1	25065123	SLIDE SWITCH, NSS-1258P
A9	27141084A	BRACKET (H)			[W][X]
A10	27270212	SPACER	ΔS901	25035398	POWER SWITCH,
A11	27270213	SPACER (PT)			NPS-111-L362P
A12	27160206	HEATSINK	ΔP1	25050293	AC SOCKET, NSCT-6P120
A13	27300750	BUSHING (CORD)			[D][X]
A14	27190164	HOLDER LCBS-14NS	ΔP2	253123 or	AC CORD, AS-UC-6#18 or
A15	27190062	HOLDER LCBS-12N			[D][X]
A17	82143006	PAN HEAD SCREW, 3P+6FNB			AC CORD, AS-UC-6#18 or
A21	834430108	TAP-TIGHT SCREW,			[D][X]
		3TTS+10BBC			AC CORD, AS-UC-6#18 [D][X]
A23	831130088	TAP-TIGHT SCREW, 3TTW+8B	ΔP2	253140	AC CORD, AS-UC-6#18 [D][X]
A24	830440109	TAP-TIGHT SCREW,			AC CORD, AS-CEE or [G]
		4TTC+10CBC	ΔP2	253128B	AC CORD, AS-CEE [G]
A25	87613010	WASHER, W3X10F	ΔP2	253092-1A	AC CORD, AS-CEE-2 [W]
A30	27273059A	JOINT AS	ΔP2	253118	AC CORD, AS-SAA [A]
A31	27150236	SHIELD PLATE	ΔP2	728320 or	AC CORD, 2-0.75BS16
A32	28175140	INSULATING PLATE			BLK/GRY [B]
A301	28184333A	TOP COVER			AC CORD, 2-0.75BS16
A302	28140020	CUSHION	P5	25060044	BLK/GRY [B]
A303	28140695	CUSHION	P601, P602	728328	AC CORD, 2-0.75BS16
A309	1A029121	FRONT PANEL [D][G][W][A]	ΔF901		BLK/GRY [B]
		[B]	F901a		TERMINAL
A309	1A029121UWX	FRONT PANEL [X]	ΔF902	25060044	TERMINAL, NTM-4PRMN42
A310	28185286	SIDE BOARD LEFT [X]		252052	FUSE, 7A ST-6
A311	28185287	SIDE BOARD RIGHT [X]		250113	FUSE HOLDER, S-NS051
A601	27170234B	BOTTOM BOARD		252077 or	FUSE, 4A-SE-EAK or
A602	27175153	LEG ASSY			[G][W][X][A][B]
(A602a)	28140747	CUSHION	F902a	252077CC	FUSE, 4A-SE-EAK
A604	28140961	CUSHION, 25X140mm			[G][W][X][A][B]
A701	834430088	TAP-TIGHT SCREW,	ΔC991	25050065	FUSE HOLDER, YSH403T
		3TTS+8BBC			[G][W][X][A][B]
A702	83844089	TAP-TIGHT SCREW,			[G][W][X][A][B]
		4TTB+8CBC [D][G][W][A][B]			[G][W][X][A][B]
A702	836440303	TAPPING SCREW			0.01μF, AC 400V/125V,
A703	870086	4STV+30CQBC [X]			CAPACITOR (IS)
		SPECIAL WASHER 4X12BSBC			2SC3419 Y or
		[X]			2SC3419 O
A801	28323027	KNOB (VOL)	Q517, Q518	2212864 or	2SC3855 O or
A802	28323029	KNOB (TONE)	Q609, Q610	2212863	2SC3855 P or
A803	28322700	KNOB (SP)			2SC3855 Y
A804	28322701	KNOB (PUSH)	Q611, Q612	2201693 or	2SA1491 O or
					2SA1491 P or
					2SA1491 Y
			Q613, Q614	2201703 or	2SC3855 O or
					2SC3855 P or
			Q615, Q616	2201704	2SC3855 Y
					2SA1491 O or

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 Δ 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
-------------	----------	-------------

Q519, Q520 Q701	ICs	
	222942	NJM4558SE
	222584	TA7317P

Q501, Q502	Transistors	
	2212805 or	2SK389 GR or
	2212806 or	2SK389 BL or
	2212807	2SK389 V
Q503~Q506, Q617 Q618	2211733 or	2SC1845 E or
	2211732	2SC1845 F
Q507, Q508,	2211515 or	2SA995 F or
	2211516	2SA995 G
Q509, Q510, Q515 Q516, Q601, Q602	2211634 or	2SC2229 Y or
	2211633	2SC2229 O
Q511, Q512	2211455 or	2SA1015 GR or
	2210803	2SA733 P
Q513, Q514, Q603 Q604	2211354 or	2SA949 Y or
	2211353	2SA949 O
Q605, Q606	2200864 or	2SC2238 Y or
	2200863	2SC2238 O
Q607, Q608	2200874 or	2SA968 Y or
	2200873	2SA968 O
Q901	2201512 or	2SD1200 Q or
	2201513	2SD1200 R
Q902	2201502 or	2SB889 Q or
	2201503	2SB889 R

D351~D504, D513 D507~D510, D514 D517~D520, D704 D505, D506, D511 D512	Diodes	
	223163	1SS133
	225232	LTZ R15, LED
D515, D516 D701 D702 D703	4000068	VD1222
	223890	W01RL
	223145	1S2076TD
	2239493 or	RD6.2E B3 or
D901, D902	2243163	MTZ6.2-C
	2239754 or	RD22E B4 or
	2243294	MTZ22-D

L501, L502 L601, L602	Coils	
	231098A	NCH-4145
	231134S	S-0.8E

C501, C502 C505, C506 C509, C510 C511, C512 C513~C516 C605, C606 C607, C608 C613~C616 C609, C610 C619, C620 C701 C703 C704 C706 C707 C708, C710 C712 C901, C902 C903, C904 C905, C906 C911, C912	Capacitors	
	372126804	68pF, 50V, Styrene
	354780229	2.2μF, 50V, Elect.
	379122235	0.022μF, 50V, Film (DEW)
	372123304	33pF, 50V, Styrene
	391252207	22μF, 25V, Elect.(MUSE)
	372121024	1200pF, 50V, Styrene
	379121045	0.1μF, 50V Film (DEW)
	379124735	0.047μF, 50V, Film (DEW)
	372121024	1000pF, 50V Styrene
	354722219	220μF, 6.3V, Elect.
	354742209	22μF, 16V, Elect.
	354784799	0.47μF, 50V, Elect.
	354743319	330μF, 16V, Elect.
	354744719	470μF, 16V, Elect.
	379122235	0.022μF, 50V Film (DEW)
	354741019	100μF, 16V, Elect.
	354772219	220μF, 63V, Elect.
	354764709	47μF, 35V, Elect.
	354754719	470μF, 25V, Elect.
	354782219	220μF, 50V Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
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R507, R508 R523, R524 R525, R526 R527, R528 R531, R532 R533, R534 R601, R602 R603~R606 R607~R614 R615~R630 R635~R638 R645~R648 R649, R650 R717 R901, R902 R903, R904 R905, R906	Resistors	
	441623314NF	330Ω, 1W, Metal oxide film
	442520684F	6.8Ω, 1/2W, Metal oxide film
	442525614F	560Ω, 1/2W, Metal oxide film
	442524734F	47kΩ, 1/2W, Metal oxide film
	5210062	N06HR4.7KBD, Semi-fixed
	442524314F	430Ω, 1/2W, Metal oxide film
	442521024F	1kΩ, 1/2W Metal oxide film
	442525104F	51Ω, 1/2W, Metal oxide film
	442520224F	2.2Ω, 1/2W, Metal oxide film
	4000063	0.47Ω, 2W, Metal plate
	4000061	0.33Ω, 2W, Metal plate
	441621604NF	16Ω, 1W, Metal oxide film
	442521204F	12Ω, 1/2W, Metal oxide film
	441522294F	0.22Ω, 1/2W, Metal oxide film
	441623004NF	30Ω, 1W, Metal oxide film
	442525114F	510Ω, 1/2W, Metal oxide film
	442528224F	8.2kΩ, 1/2W, Metal oxide film

RL701	Relay	
	25065316	NRL-2P7A-DC12-43

S351 S352 S353	Switches	
	25030261	NRSM-146-15SS
	25030260	NRSM-166-15SS
	25030259	NRSM-164-15SS

P391, P392, P393 P394	Terminals	
	25045165	NPJ-4PDBL-59

P501	Sockets	
	2000551	NSAS-6P507

27300879	Plate	
		Bus

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

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
-------------	----------	-------------

D951 D952, D953	Diodes	
	22380014F	PB102F
	22380003F	1N5402F
C951~C953 C954, C955	Capacitors	
	375104745	0.47μF, 125V, Film (ME)
	3504208	12000μF, 71V, Elect.
R951 R961, R962	Resistors	
	442525104F	51Ω, 1/2W, Metal oxide film
	442522294F	0.22μF, 1/2W, Metal oxide film

CIRCUIT NO.	PART NO.	DESCRIPTION
	Plate	
	27300732	Bus

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
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
	Capacitors	
C351, C352	354782299	0.22 μ F, 50V, Elect.
C353, C354	354784799	0.47 μ F, 50V, Elect.
	Switches	
S311, S312	25035540	NPS-162-122-L502
S314	25035541	NPS-142-L503
	Socket	
JL701	25050267	NSCT-3P95
	Holder	
	27190493-1	(LED-3)

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
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 μ F, 50V, Film (DEW)
C325, C326	379128235	0.082 μ F, 50V, Film (DEW)
	Resistors	
R317	5148107	N16RGM C250KMN25, Variable
R321	5148108	N16RGM11C219K25, Variable
R323	5144001	N16RQM11C139K176K25, Variable
R337	5148113A	N16RGM11C176K25, Variable
	Switches	
S309, (S310)	25035539	NPS-142-122-L501
	Sockets	
P101, P102	2000676	NSAS-6P632

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switches	
S301~S308	25035538	NPS-742-162-L500

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
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
	Plugs	
P302	25055137	NPLG-7P121
P501	25055133	NPLG-3P117
	Holder	
	27190494A	(LED-4)

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
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
	Plug	
P303	25055190	NPLG-9P174
	Socket	
JL357	25050272	NSCT-8P100

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S901	25035398	NPS-111-L362P
	Capacitor	
C991	3500065A	0.01 μ F, AC400V/125V (IS)
	Fuse holder	
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
	ICs	
Q105	222570	NJM4560DX
	Transistors	
Q101~Q104	2212185 or 2212186	2SK170 GR or 2SK170 BL
	Coils	
L301, L302	231069A	NCH-1119

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C105, C106	372122714	270pF, 50V, Styrene
C107, C108	372121014	100pF, 50V, Styrene
C109, C110	379122225	2200pF, 50V, Film (DEW)
C111, C112	379122234	0.022 μ F, 50V, Film (DEW)
C113, C114	379121834	0.018 μ F, 50V, Film (DEW)
C115, C116	379124734	0.047 μ F, 50V, Film (DEW)
C117, C118	391222227	2200 μ F, 6.3V, Elect.(MUSE)
C119, C120	391280227	2.2 μ F, 50V, Elect.(MUSE)
C121, C122	379121225	1200pF, 50V, Film (DEW)
C131, C132	354754719	470 μ F, 25V, Elect.
Terminals		
P191	25045171	NPJ-4PDBL-65
P395	25045190	NPJ-2PDBL74
Plugs		
P101~P103, P301	25055133	NPLG-3P117
Socket		
JL104, JL360	25050267	NSCT-3P95

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

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

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

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

[D]: Only 220V model

[G]: Only 240V model

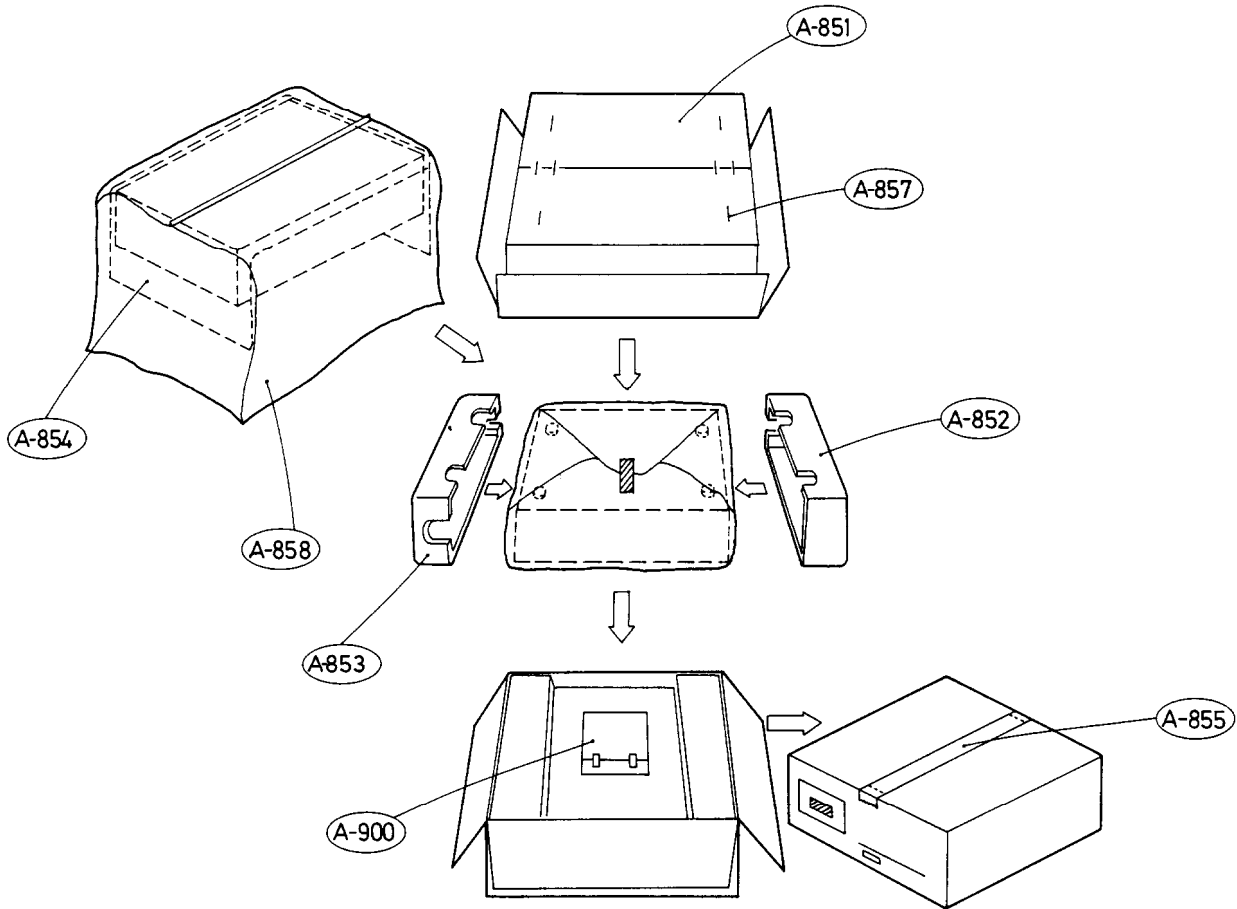
[W]: Only 120V/220V model

[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	29091125-1A	PAD ASS'Y. LEFT
A853	29091126-1A	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