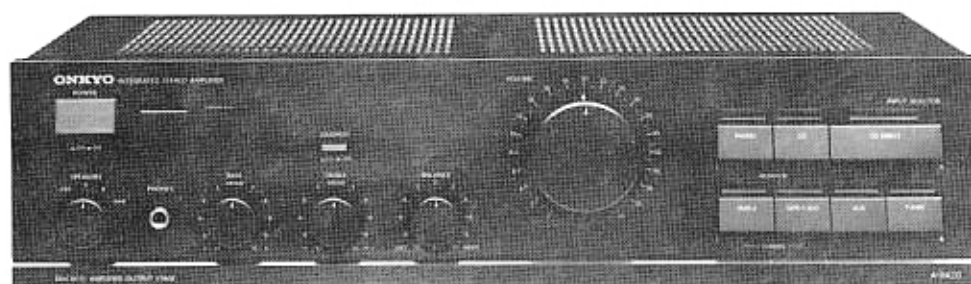


# ONKYO® SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-8420    A-8130



UG

220V AC, 50Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\triangle$  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.

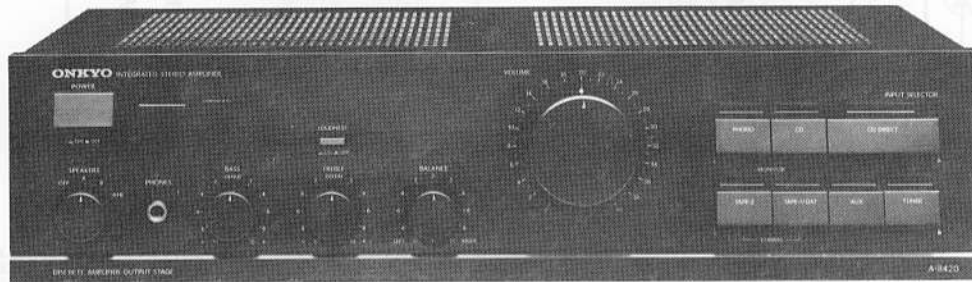
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**ONKYO**  
**AUDIO COMPONENTS**

# ONKYO® SERVICE MANUAL

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# ONKYO

## AUDIO COMPONENTS

# SPECIFICATIONS

Power Output:	40 watts per channel, min RMS, at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.08% THD.
Total Harmonic Distortion	0.08% at 40 watts
IM Distortion	0.08% at 40 watts
Damping Factor:	40 at 8 ohms
Frequency and Response.	15-30,000 Hz $\pm$ 1 dB
Sensitivity and Impedance	Phono: 2.5 mV/50 kohms
	Tuner/CD/AUX: 150 mV/50 kohms
	Tape/Play: 150 mV/50 kohms
	Tape/Rec: 150 mV/4.5 kohms (phono)
Phono Overload:	150 mV RMS at 1 kHz, 0.08% THD
Bass Control:	$\pm$ 10 dB at 100 Hz
Treble Control:	$\pm$ 10 dB at 10,000 Hz
Signal to Noise Ratio:	Phono: 80 dB (IHF A), 5 mV input
	CD & Tape: 95 dB (IHF A)
Loudness Control:	+7 dB at 70 Hz/+5 dB at 10 kHz
<b>General</b>	
Power Supply:	AC220V, 50Hz
Dimensions (W x H x D):	435 x 110 x 272 mm
	17-1/8" x 4-5/16" x 10-11/16"
Weight:	6.2 kg, 13.7 lbs.

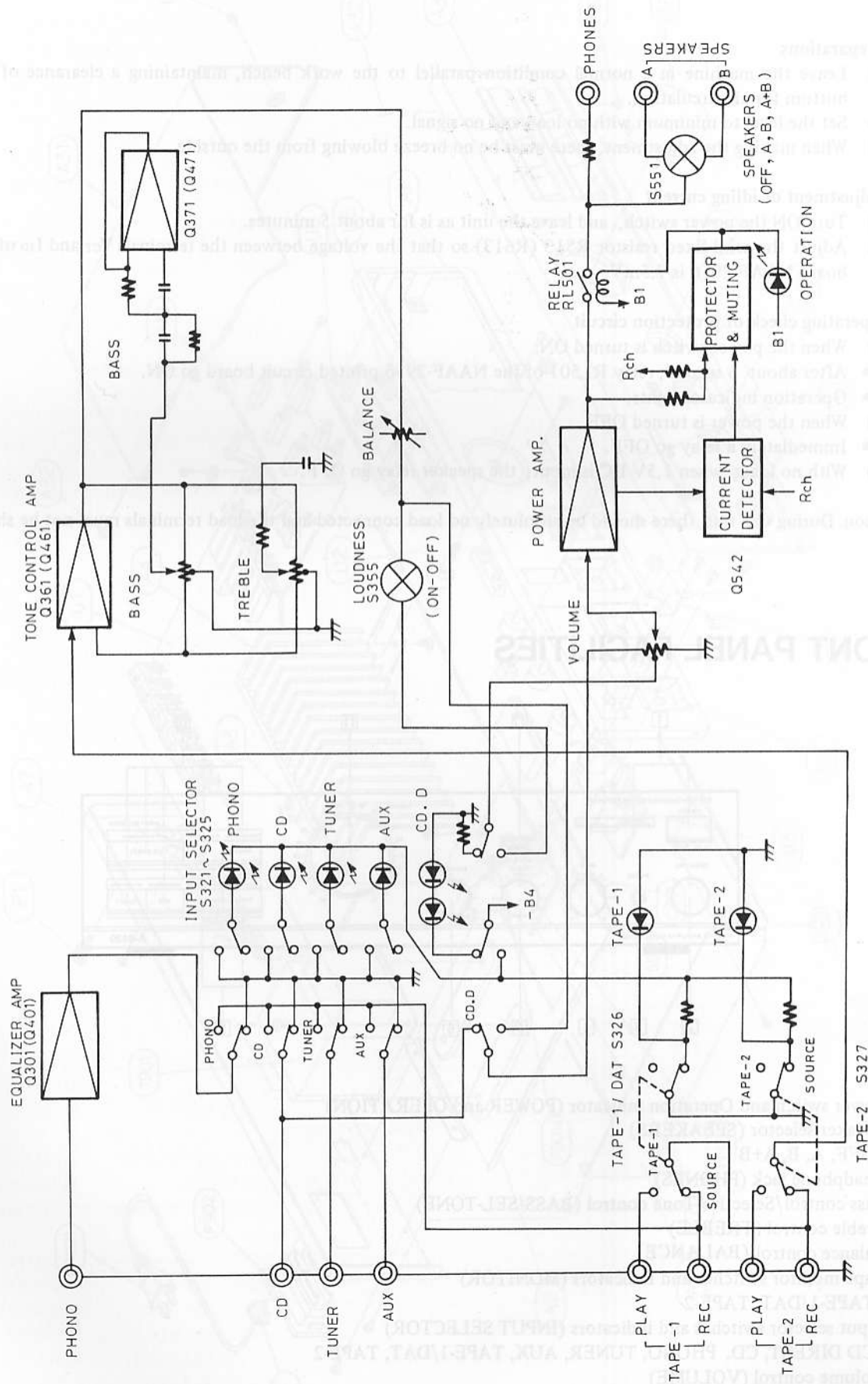
# PRECAUTIONS

## 1. Replacing the fuses

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

CIRCUIT NO.	PART NO.	DESCRIPTION
F902	252074 or 252074CC	2 A-SE-EAK Primary fuse
F911, F912	252078 or 252078CC	5A-SE-EAK, Secondary fuse

# 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

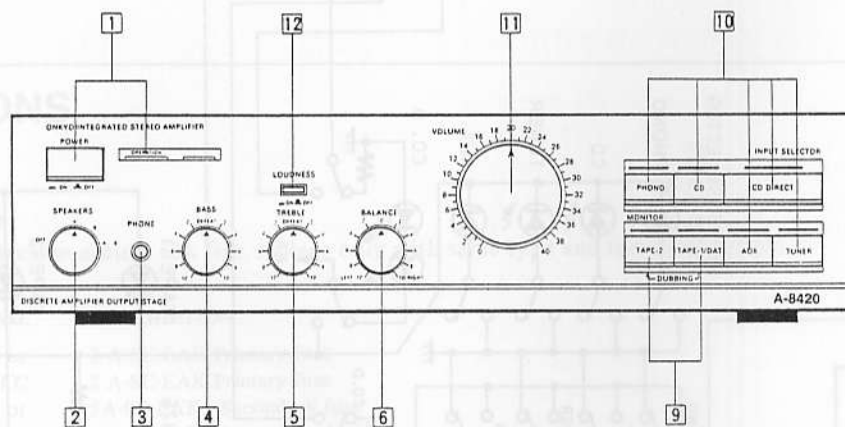
- 1) Turn ON the power switch, and leave the unit as is for about 5 minutes.
- 2) Adjust the semi-fixed resistor R513 (R613) so that the voltage between the terminals  $V_{cr}$  and  $I_{10}$  of the printed circuit board NAAF-2956 is 7.5mV.

### 3. Operating check of protection circuit

- 1) When the power switch is turned ON.
  - After about 6 second, relay RL501 of the NAAF-2956 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 1.5V DC is input, the speaker relay go OFF.

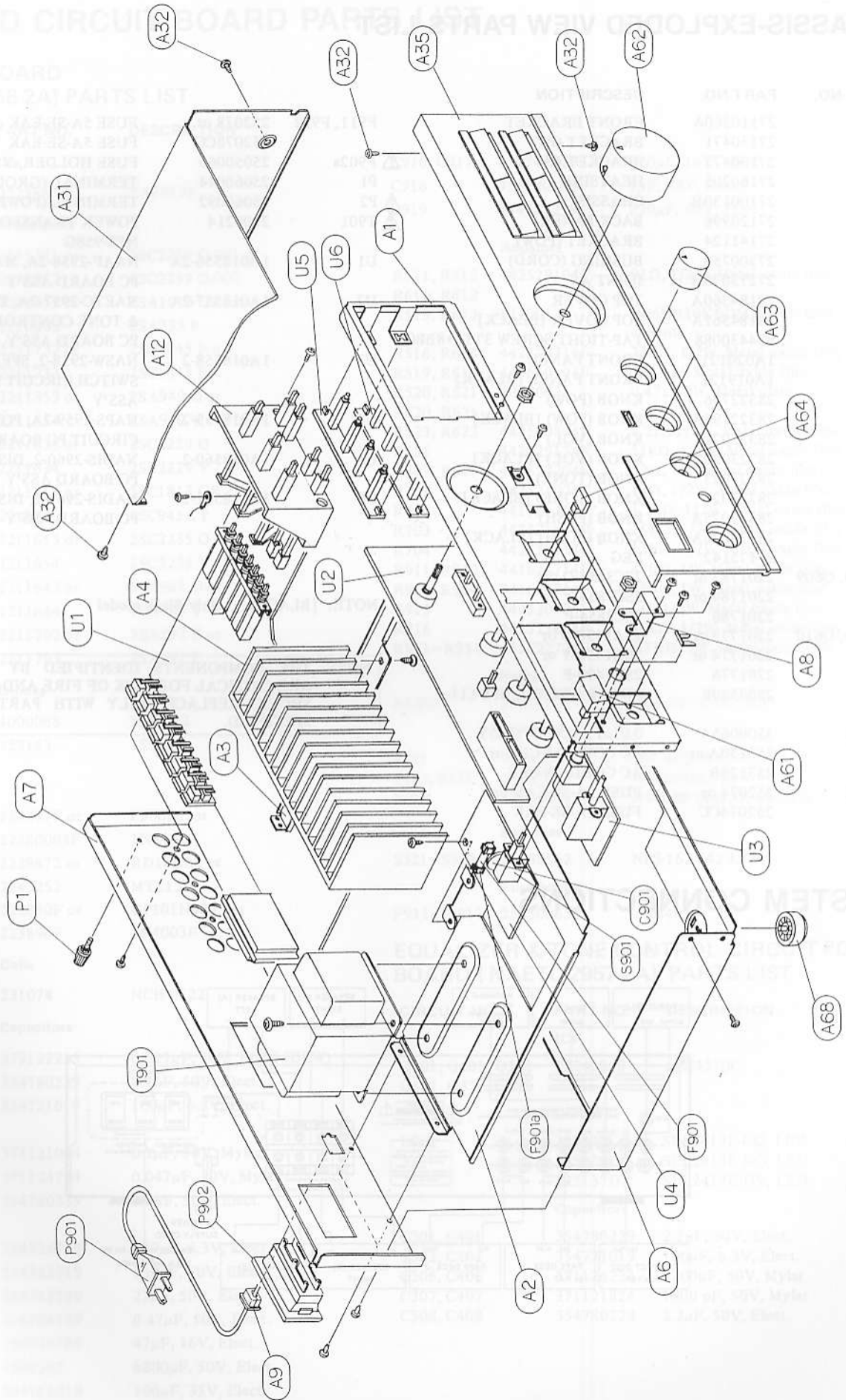
Caution: During this test, there should be absolutely no load connected and the load terminals must not be shorted.

## FRONT PANEL FACILITIES



1. Power switch and Operation indicator (POWER and OPERATION)
2. Speaker selector (SPEAKERS)  
OFF, A, B, A+B
3. Headphone jack (PHONES)
4. Bass control/Selective Tone control (BASS/SEL-TONE)
5. Treble control (TREBLE)
6. Balance control (BALANCE)
9. Tape monitor switches and indicators (MONITOR)  
TAPE-1/DAT, TAPE-2
10. Input selector switches and indicators (INPUT SELECTOR)  
CD DIRECT, CD, PHONO, TUNER, AUX, TAPE-1/DAT, TAPE-2
11. Volume control (VOLUME)
12. Loudness control (LOUDNESS)  
ON/OFF

**CHASSIS-EXPLODED VIEW**



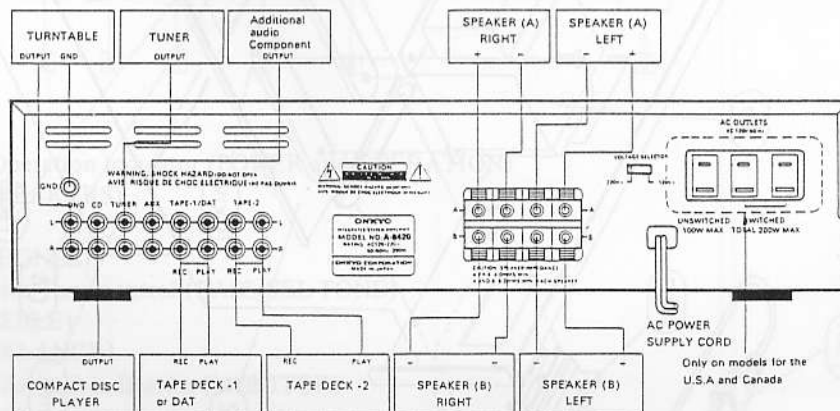
# CHASSIS-EXPLODED VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
A1	27110360A	FRONT BRACKET	F911, F912	252078 or	FUSE 5A-SE-EAK or
A2	27130471	BRACKET (PT)		252078CC	FUSE 5A-SE-EAK
A3	27130472	BRACKET (H)	△ F902a	25050065	FUSE HOLDER, YSH403T
A4	27160205	HEATSINK	P1	25060044	TERMINAL (GROUND)
A6	27100130B	CHASSIS	△ P2	25060092	TERMINAL (POWER SUPPLY)
A7	27120996	BACK PANEL	△ T901	2300214	POWER TRANSFORMER, NPT-958G
A8	27141124	BRACKET (POW)			
A9	27300750	BUSHING (CORD)	U1	1A018556-2A	NAAF-2956-2A, MAIN CIRCUIT PC BOARD ASS'Y
A12	27273070B	JOINT AS			
A31	28184360A	TOP COVER	U2	1A018557-2A	NAETC-2957-2A, EQUALIZER & TONE CONTROL CIRCUIT PC BOARD ASS'Y
A31	28184361A	TOP COVER [BLACK]			
A32	834430088	TAP-TIGHT SCREW 3TTS+8BBC			
A35	1A020121	FRONT PANEL	U3	1A018558-2	NASW-2958-2, SPEAKER SWITCH CIRCUIT PC BOARD ASS'Y
A35	1A019121	FRONT PANEL [BLACK]			
A61	28322796	KNOB (POW)			
A61	28322795A	KNOB (POW) [BLACK]	U4	1A018559-2A	NAPS-2959-2A, POWER SWITCH CIRCUIT PC BOARD ASS'Y
A62	28323021	KNOB (VOL)			
A62	28323022	KNOB (VOL) [BLACK]	U5	1A018560-2	NADIS-2960-2, DISPLAY LED PC BOARD ASS'Y
A63	28323023	KNOB (TONE)			
A63	28323024	KNOB (TONE) [BLACK]	U6	1A018561-2	NADIS-2961-2, DISPLAY LED PC BOARD ASS'Y
A64	28323025A	KNOB (PUSH)			
A64	28323026A	KNOB (PUSH) [BLACK]			
A68	27175142	LEG			
Q509, Q609	2201783 or 2201784 or 2201786	2SC3854-O or 2SC3854-Y or 2SC3854-P			
Q510, Q610	2201773 or 2201774 or 2201776	2SA1490-O or 2SA1490-Y or 2SA1490-P			
△ S901	25035398	POWER SWITCH, NPS-111- L362P			
△ C901	3500065A	0.01μF, AC400V/125V			
△ P901	253130A or 253128B	AC CORD AS-CEE or AC CORD AS-CEE			
△ F902	252074 or 252074CC	FUSE 2A-SE-EAK or FUSE 2A-SE-EAK			

NOTE: [BLACK]: Only Black model

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

## SYSTEM CONNECTIONS



CHASSIS-EXPLODED VIEW

# PRINTED CIRCUIT BOARD PARTS LIST

## MAIN PC BOARD ( NAAF-2956-2A) PARTS LIST

CIRCUIT NO. PART NO. DESCRIPTION

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>ICs</b>		
Q701	222584	TA7317P
<b>Transistors</b>		
Q501, Q601	2211371 or 2211372	2SC2259 O-001 or 2SC2259 O-002
Q502, Q602	2211455 or 2210803	2SA1015 GR or 2SA733 P
Q503, Q541	2211732 or	2SC1845 F or
Q603, Q641	2211733	2SC1845 E
Q504, Q604	2211353 or 2211354	2SA949 O or 2SA949 Y
Q505, Q605	2211633 or 2211634	2SC2229 O 2SC2229 Y
Q506, Q606	2211255 or 2210746	2SC1815 GR 2SC945A P
Q507, Q607	2211653 or 2211654	2SC2235 O or 2SC2235 Y
Q508, Q608	2211643 or 2211644	2SA965 O or 2SA965 Y
Q542	2211792 or 2211793	2SA992 F or 2SA992 E
<b>Diodes</b>		
D501, D601	4000068	VD1222
D502, D503 D701	223163	1SS133
D911~D916	223897F or 22380003F	P300DL or 1N5402F
D917, D918	2239672 or 2243252	RD15EB2 or MTZ15B
D919~D921	223880F or 223896F	GP101N4003 or 1N4003F
<b>Coils</b>		
L321, L421	231074	NCH-0122
<b>Capacitors</b>		
C331	379122235	0.022 $\mu$ F, 50V, FILM (DEW)
C501, C601	354780229	2.2 $\mu$ F, 50V, Elect.
C502, C509 C602, C609	354721019	100 $\mu$ F, 6.3V, Elect.
C514, C614	371121044	0.1 $\mu$ F, 50V, Mylar
C515, C615	371124734	0.047 $\mu$ F, 50V, Mylar
C523, C524 C623, C624	354780339	3.3 $\mu$ F, 50V, Elect.
C527	354724719	470 $\mu$ F, 6.3V, Elect.
C547, C647	354783319	330 $\mu$ F, 50V, Elect.
C701	354782209	22 $\mu$ F, 50V, Elect.
C702	354784799	0.47 $\mu$ F, 50V, Elect.
C704	354744709	47 $\mu$ F, 16V, Elect.
C912, C913	3504207	6800 $\mu$ F, 50V, Elect.
C914, C915	354761019	100 $\mu$ F, 35V, Elect.

C916, C917	354742219	220 $\mu$ F, 16V, Elect.
C918	354780109	1 $\mu$ F, 50V, Elect.
C919	354782219	220 $\mu$ F, 50V, Elect.

### Resistors

R511, R512 R611, R612 R513, R613	442529104F 5210013	91 $\Omega$ , 1/2W, Metal oxide film N06HR10KBDM, Semi-fixed variable
R516, R616 R519, R619 R520, R521 R620, R621	442522714F 441620104F 4000063	270 $\Omega$ , 1/2W, Metal oxide film 1 $\Omega$ , 1W, Metal oxide film 0.47 $\Omega$ , 2W, Metal plate
R523, R623 R531 R547, R647 R701 R702 R703 R704	442520824F 442525134F 441622204F 442521024F 441521224F 442521634F 442521534F	8.2 $\Omega$ , 1/2W, Metal oxide film 51k $\Omega$ , 1/2W, Metal oxide film 22 $\Omega$ , 1W, Metal oxide film 1k $\Omega$ , 1/2W, Metal oxide film 1.2k $\Omega$ , 1/2W, Metal oxide film 16k $\Omega$ , 1/2W, Metal oxide film 15k $\Omega$ , 1/2W, Metal oxide film
R911, R912 R913, R914 R915 R916 R951~R954	441624714F 441624314F 442520104F 442525634F 441622724F	470 $\Omega$ , 1W, Metal oxide film 430 $\Omega$ , 1W, Metal oxide film 1 $\Omega$ , 1/2W, Metal oxide film 56k $\Omega$ , 1/2W, Metal oxide film 2.7k $\Omega$ , 1W, Metal oxide film

### Relay

RL501	25065134	NRL-2P5A-DC24-07
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### Terminals

P321	25045171	NPJ-4PDBL-65
P322, P323	25045213	NPJ-6PDBL-92
P501	25060094	NTM-8P-DML35, Speaker

### Switches

S321~S327	25035562	NPS-162-642-L524
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### Fuse holder

F911a, F912a	25050065	YSH403T
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## EQUALIZER & TONE CONTROL CIRCUIT PC BOARD ( NAETC-2957-2A) PARTS LIST

CIRCUIT NO. PART NO. DESCRIPTION

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>ICs</b>		
Q301, Q401, Q361 Q461, Q371, Q471	22240050	$\mu$ PC4570C
<b>Diodes</b>		
D961	225137CG or 225137DG or 225137DY	SEL2413E-CG, LED SEL2413E-DG, LED SEL2413E-DY, LED
<b>Capacitors</b>		
C301, C401	354780229	2.2 $\mu$ F, 50V, Elect.
C302, C402	354721019	100 $\mu$ F, 6.3V, Elect.
C306, C406	371126224	6200pF, 50V, Mylar
C307, C407	371121824	1800 pF, 50V, Mylar
C308, C408	354780229	2.2 $\mu$ F, 50V, Elect.



C309, C310	391242217	220 $\mu$ F, 16V, Elect.(MUSE)
C356, C456	371123934	0.039 $\mu$ F, 50V, Mylar
C361, C362, C461 C462	354780479	4.7 $\mu$ F, 50V, Elect.
C365, C366, C378	354780339	3.3 $\mu$ F, 50V, Elect.
C379, C372, C472	354780109	1 $\mu$ F, 50V, Elect.
C373, C473	371123934	0.039 $\mu$ F, 50V, Mylar
C381, C481	371121834	0.018 $\mu$ F, 50V, Mylar

**Resistors**

R381, (R481)	5104174	N16RGH100KBT20, Variable
R382	5104192	N16RHC250KW25Z, Variable
R383, (R483)	5104196	N16RGHC100KWT25Z, Variable

**Switch**

S352, S355	25035537	NPS-122-L499
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**Sockets**

P301, P304	2000557	NSAS-6P513
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**Holder**

	27190529	(LED-2)
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**SPEAKER SWITCH CIRCUIT PC BOARD  
(NASW-2958-2) PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
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**Coils**

L551, L651	231001S	S-1.3B
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**Resistors**

R551, R651	441620684F	6.8 $\Omega$ , 1W, Metal oxide film
R552, R652	441622714F	270 $\Omega$ , 1W, Metal oxide film

**Switch**

S551	25030290	NRSF-144-25SS
------	----------	---------------

**Terminal**

P551	25045164	HLJ-4317-01-3020, Phones
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**POWER SWITCH PC BOARD  
(NAPS-2959-2A) PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
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**Capacitor**

C901	3500065A	0.01 $\mu$ F, AC400V/125V
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**Terminal**

P2	25060092	NTM-1S33
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**Switch**

S901	25035398	NPS-111-L362P
------	----------	---------------

**Fuse holder**

F902a	25050065	YSH403T
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**Label**

	29360626-1	(Fuse)
	29360364	T2A/250V (Fuse)

**DISPLAY LED PC BOARD (NADIS-2960-2)  
PARTS LIST**

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

**Diodes**

D951, D952	225137CG or 225137DG or 225137DY	SEL2413ECG or SEL2413EDG or SEL2413EDY
------------	--	--

D953, D954	225142	SEL2913K
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**Holder**

	27190530	(LED-4)
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**DISPLAY LED PC BOARD (NADIS-2961-2)  
PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
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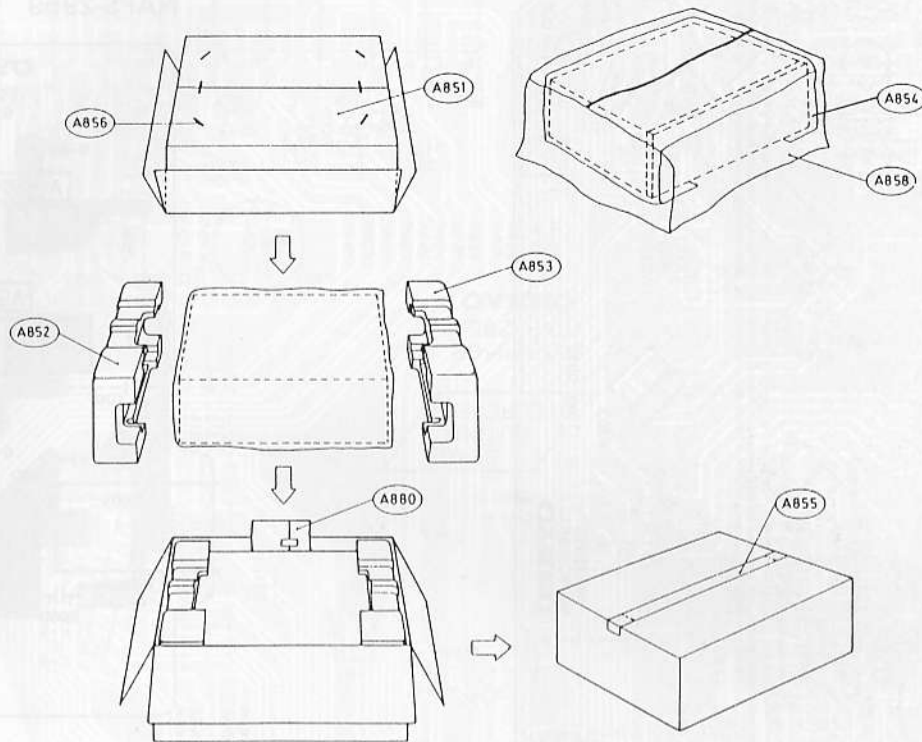
**Diodes**

D955~D958	225137CG or 225137DG or 225137DY	SEL2413ECG or SEL2413EDG or SEL2413EDY
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**Holder**

	27190530	(LED-4)
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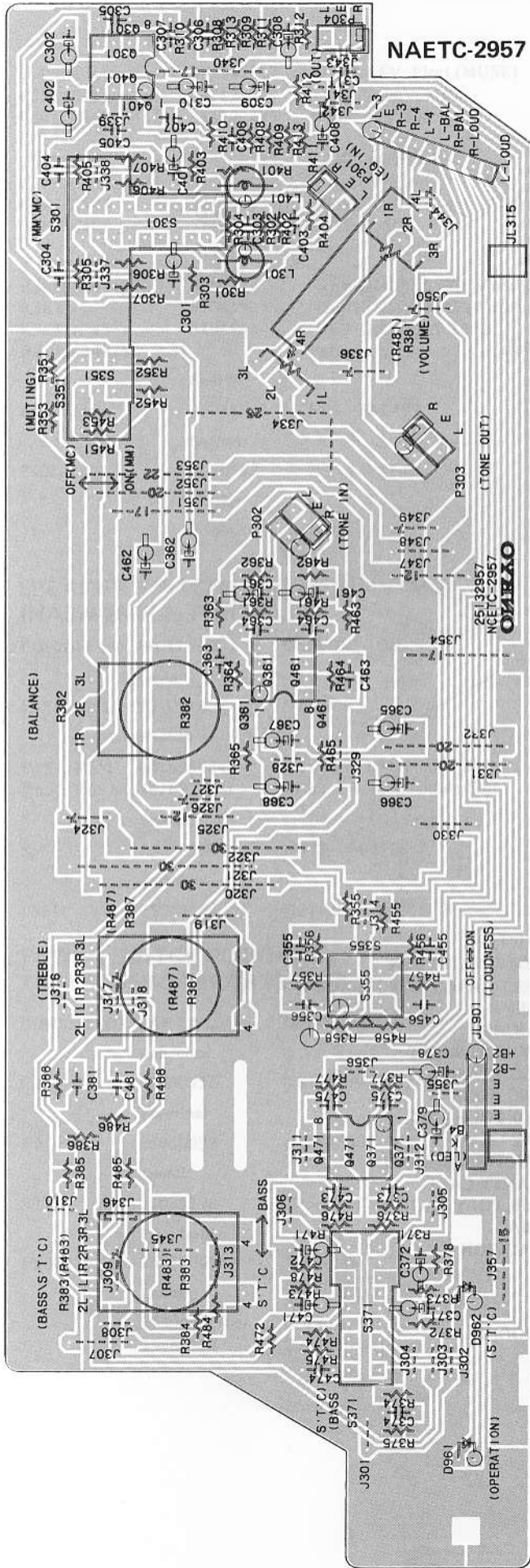
# PACKING PROCEDURES



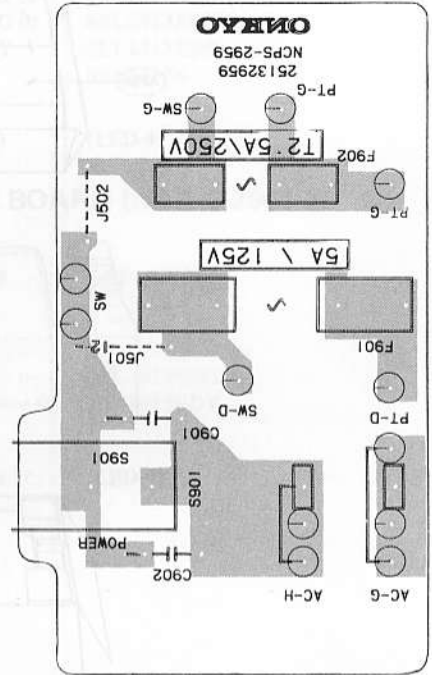
REF. NO.	PART NO.	DESCRIPTION
A851	29051532	MASTER CARTON BOX
A851	29051533	MASTER CARTON BOX [ BLACK ]
A852	29090987	PAD, LEFT
A853	29090988	PAD, RIGHT
A854	29095012-1	PROTECTION SHEET
A855	260012	DAMPLON TAPE
A856	282301	SEALING HOOK
A858	29100063	750X580, POLY BAG
A880	ACCESSARY BAG ASS'Y	
	29341150	INSTRUCTION MANUAL
	29365020	WARRANTY CARD
	29100006A	350X250, POLY BAG
	29100094	POLY BAG
	29355128	DBP CAUTION

NOTE [BLACK]: ONLY BLACK MODEL

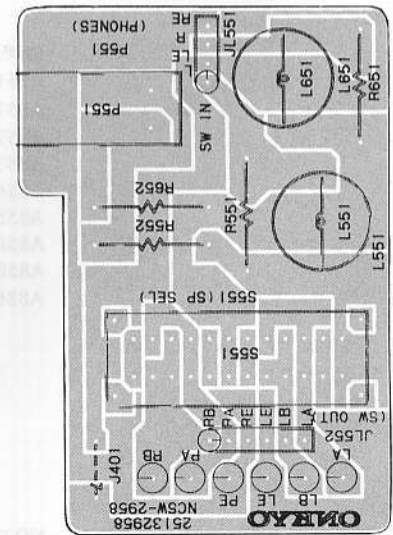
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



NAPS-2959



NASW-2958



A

B

C

D

# SCHEMATIC DIAGRAM

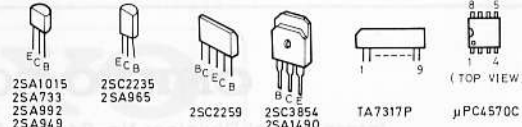
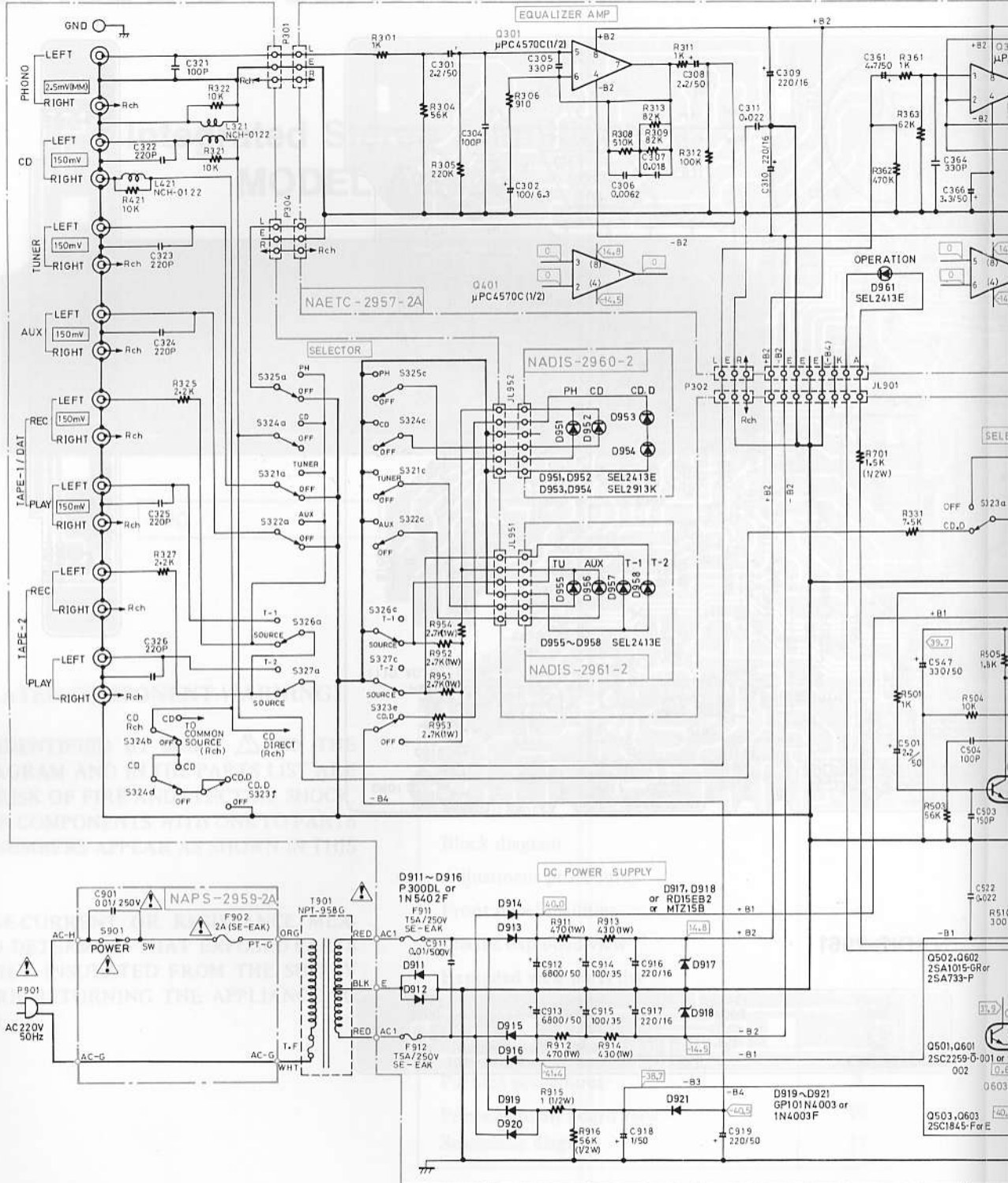
1

2

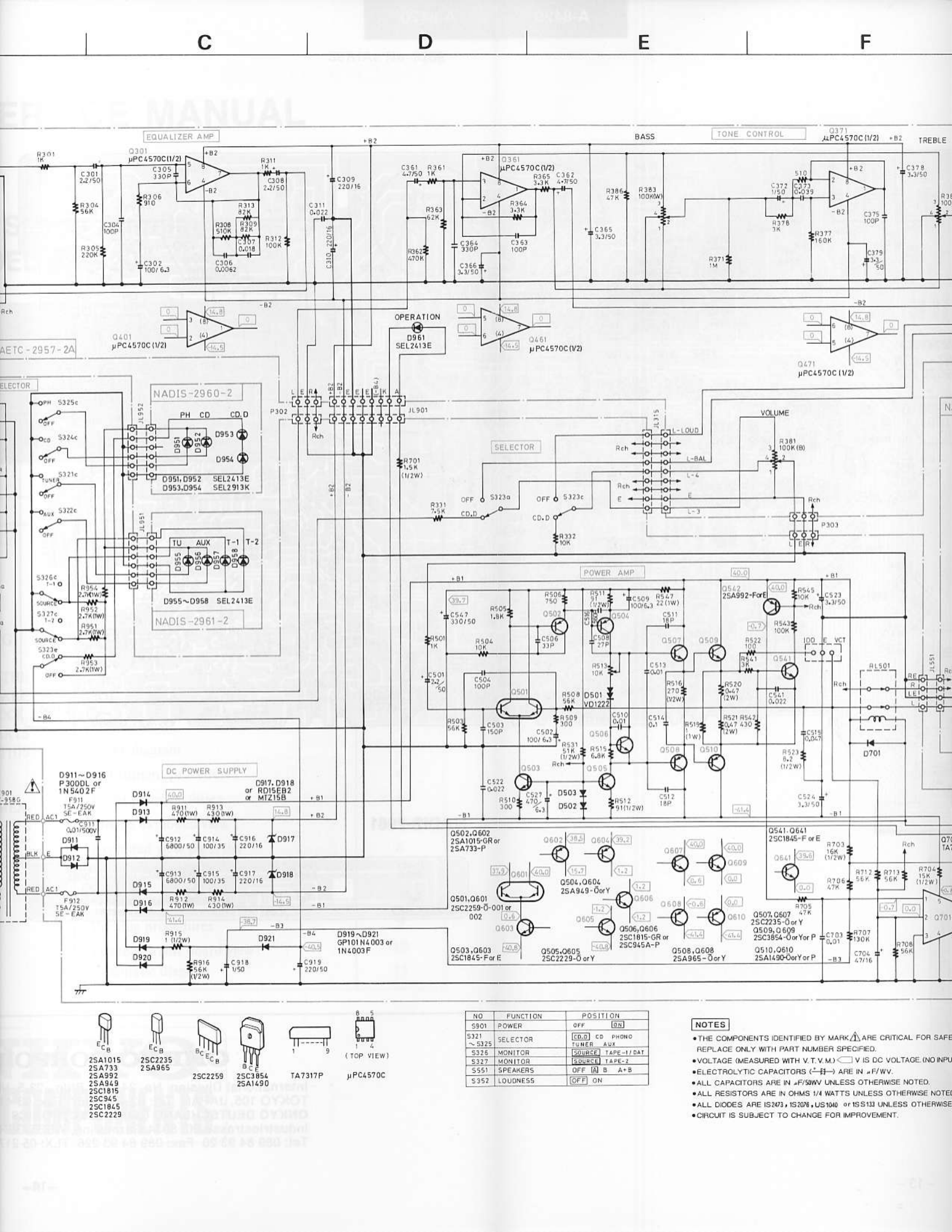
3

4

5



NO	FL
5901	POWER
5321	~ 5325
5326	MONI
5327	MONI
5551	SPEA
5352	LOUD



C

D

E

F

EQUALIZER AMP

BASS

TONE CONTROL

Q371 μPC4570C (1/2) +B2 TREBLE

NADIS-2960-2

NADIS-2961-2

DC POWER SUPPLY

OPERATION

SELECTOR

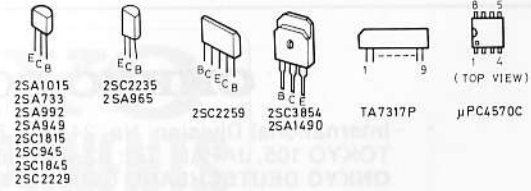
POWER AMP

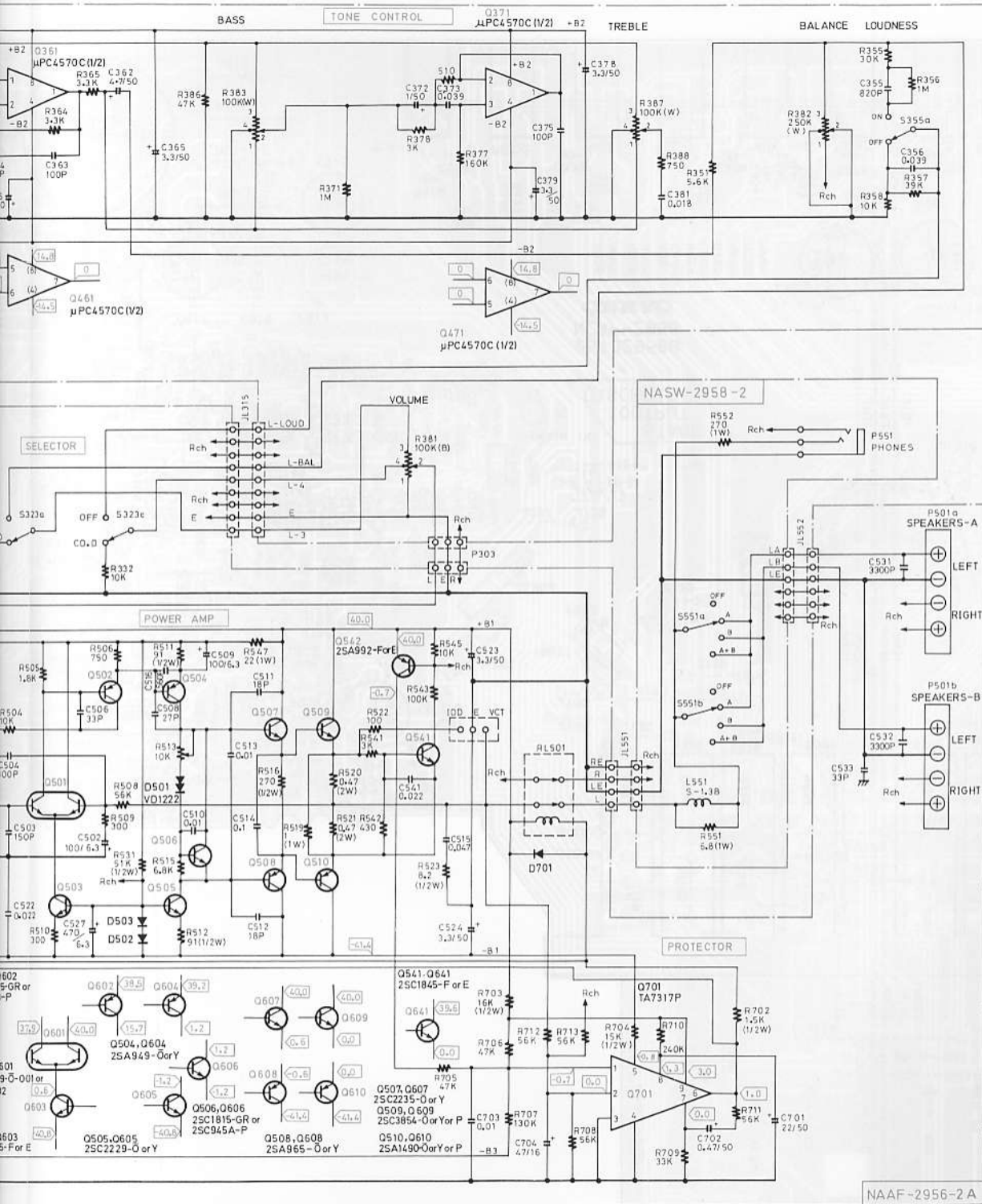
VOLUME

NO	FUNCTION	POSITION
S901	POWER	OFF [ON]
S321	SELECTOR	[B.B] CD PHONO TUNER AUX
S325	MONITOR	[SOURCE] TAPE-1/DAT
S327	MONITOR	[SOURCE] TAPE-2
S551	SPEAKERS	OFF [A] B A+B
S952	LOUDNESS	OFF [ON]

NOTES

- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFE REPLACEMENT. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH V.T.V.M.)  $\square$  V IS DC VOLTAGE. (NO INPUT SIGNAL)
- ELECTROLYTIC CAPACITORS  $\square$  ARE IN  $\mu$ F/WV. UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN  $\mu$ F/50WV UNLESS OTHERWISE NOTED.
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- ALL DIODES ARE 1S243, 1S206, 1S1000 or 1S133 UNLESS OTHERWISE NOTED.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



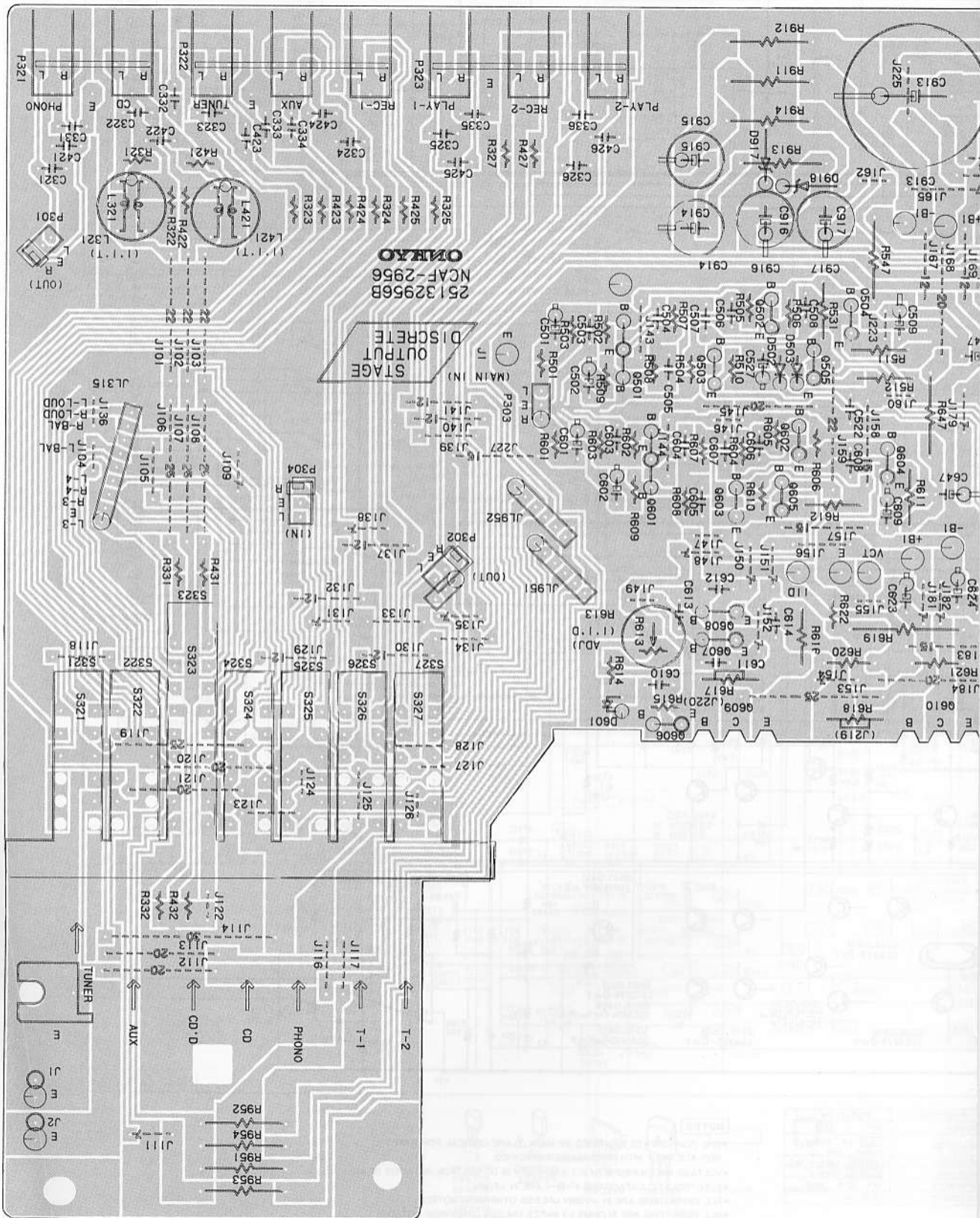


Q	FUNCTION	POSITION
001	POWER	OFF [ON]
001	SELECTOR	[CD, D] CD PHONO [TUNER, AUX]
002	MONITOR	[SOURCE] TAPE-1/DAT
002	MONITOR	[SOURCE] TAPE-2
005	SPEAKERS	OFF [A] B A+B
005	LOUDNESS	[OFF] ON

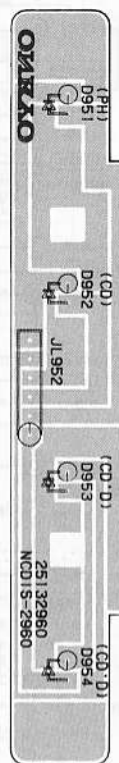
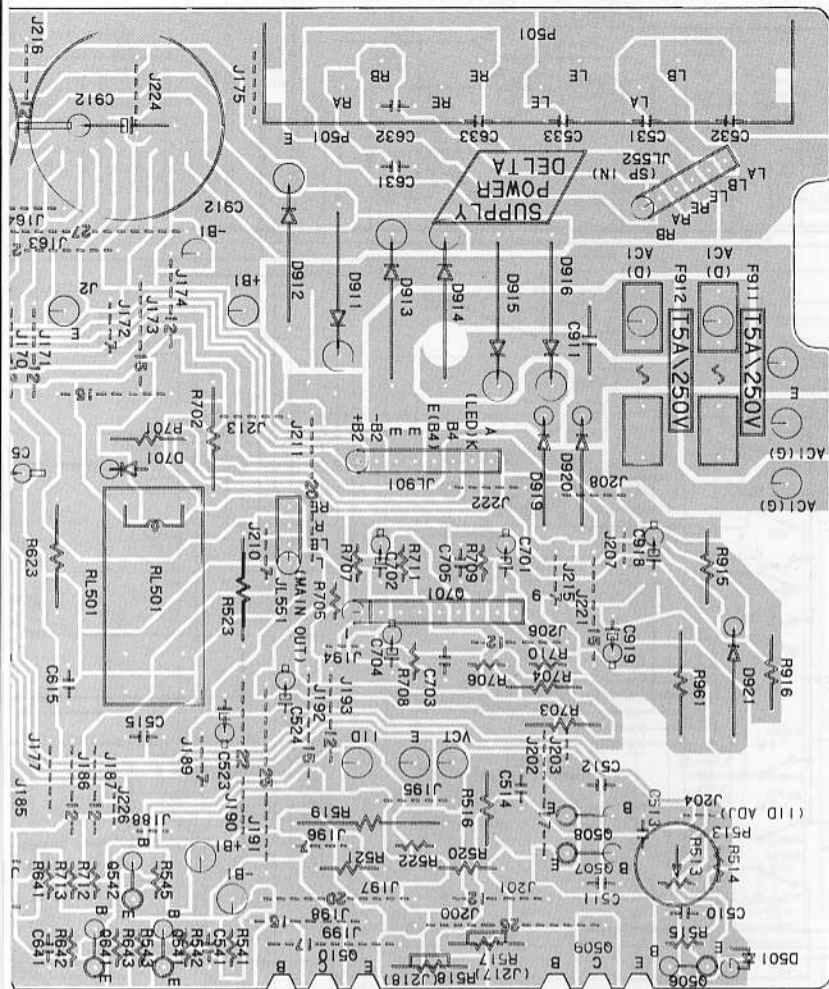
NOTES

- THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE (MEASURED WITH V. T. V. M.)  $\square$  V IS DC VOLTAGE. (NO INPUT SIGNAL)
- ELECTROLYTIC CAPACITORS ( $\leftarrow$ ) ARE IN  $\mu$ F/WV.
- ALL CAPACITORS ARE IN nF/50WV UNLESS OTHERWISE NOTED.
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- ALL DIODES ARE IS243, IS207, US184 or IS133 UNLESS OTHERWISE NOTED.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

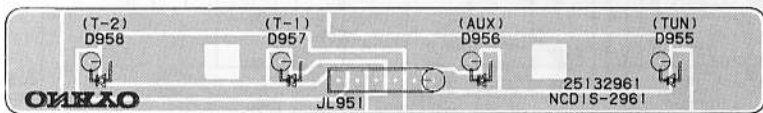
SCHEMATIC DIAGRAM  
NAAF-2956



NADIS-2960



NADIS-2961



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