

ONKYO® SERVICE MANUAL

A-8870

Integrated Stereo Amplifier MODEL A-8870



Black and silver models

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK Δ 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 PART 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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A-8870

SPECIFICATIONS

Power Output:	105 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 at 2 ohms, 235 watts at 4 ohms 155 watts at 8 ohms
Total Harmonic Distortion	0.008% at rated power 0.008% at 1 watt output
Intermodulation Distortion:	0.005% at rated power
Damping Factor:	150 at 8 ohms (1 kHz)
Input Sensitivity/Impedance:	Phono (MM): 2.5 mV/50 kohms Phono (MC): 160 µV/130 ohms CD: 150 mV/30 kohms TUNER: 150 mV/30 kohms Tape Play: 150 mV/30 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.0 kohms (Phono)
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.012% THD.
Tone Control (Vol -20 dB):	BASS: ±8 dB at 100 Hz TREBLE: ±8 dB at 10 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
Subsonic Filter:	20Hz (-3dB, 6dB/Oct)
Signal to Noise Ratio (IHF-A):	Phono (MM): 94 dB (5.0 mV input) Phono (MC): 75 dB (0.5 mV input) CD (DIRECT): 107 dB
Attenuator:	-20 dB
Muting:	- ∞
Power Supply:	European models: AC230V, 50 Hz
Dimensions (W x H x D):	455 x 170 x 420 mm 17-15/16" x 6-11/16" x 16-9/16"
Weight:	16.7 kg

Specifications and features are subject to change without notice.

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	252075	2.5A-SE-EAK, Primary fuse
F902	252077	4A-SE-EAK, Primary fuse

ADJUSTMENT PROCEDURES

Adjustments and Checking the Protection Circuitry

1. Preparations

- 1) Place the unit on the workbench. (There should be about 15 mm of space between the base plate of the unit and the work surface.)
- 2) Set up the unit as follows.
 - (1) No load
 - (2) No signal
 - (3) Volume turned all the way down
 - (4) Speaker switch OFF
 - (5) Power switch OFF

Note) Check the following points before making adjustments

- (1) The power switch should be OFF.
- (2) The interior of the unit should not be warm.

2. Idling current adjustment

- 1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.
 - (1) Adjust R535 (R536) so that the voltage at test point VCT-IID on the NAAF-4209 circuit board is $15\text{mV} \pm 5\text{mV}$.

Note) Semi-fixed resistors enclosed in parentheses () are for the right channel.

3. Check of operation of protection circuitry

- 1) Check of operation of protection relay
 - (1) Confirm that the relay turns ON approximately 5 seconds after the power switch is turned ON.
 - (2) The SERVO indicator LED should light at the same time.
 - (3) The relay should turn OFF approximately 0.5 seconds after the power switch is turned OFF.
- 2) Check of DC detection and servo circuitry operation
 - (1) Turn the power on with no load.
 - (2) After the speaker relay turns ON, apply DC+200mV to the CD input terminals. Confirm that the relay turns OFF.
 - (3) Confirm that operation is the same as (2) above when an input of DC-200mV is applied.

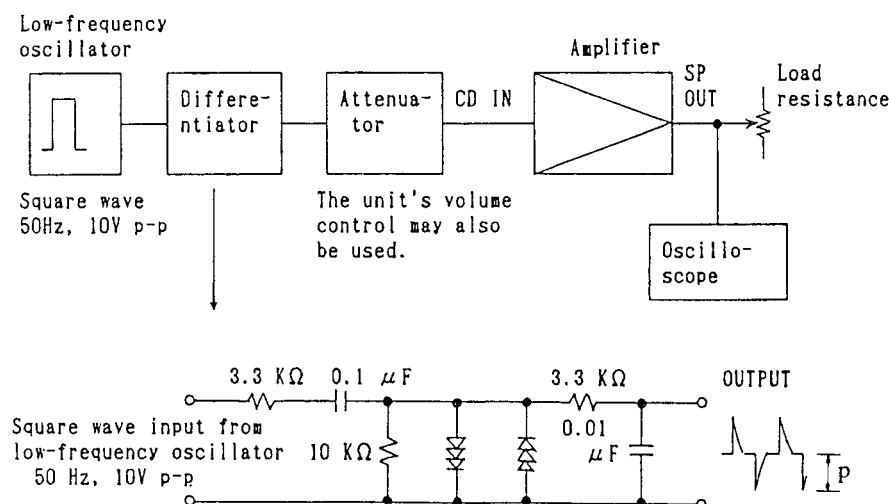
Note) Under no circumstances connect a load or short the speaker terminals when performing the above test.

3) Signal input from the circuit illustrated below with no load.

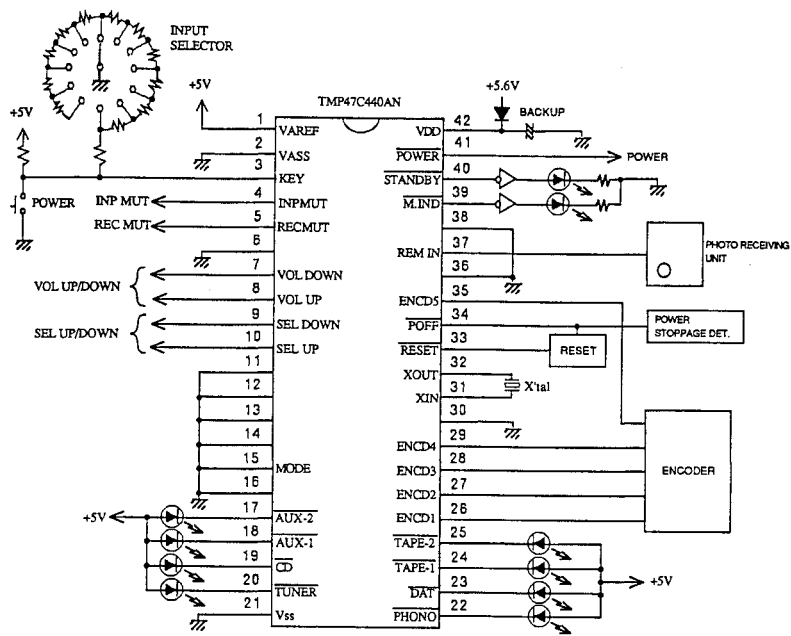
- (1) Confirm that the speaker relay does not turn OFF even when a 2 ohm load is connected when a peak value of 30Vp is output.
- (2) Next, confirm that when a 1 ohm load is connected the speaker relay switches OFF and ON a couple of times and then stays OFF.

Note) The period before that relay stays OFF should not last for more than 1 minute.

Relay OFF status can be canceled by switching the power OFF.



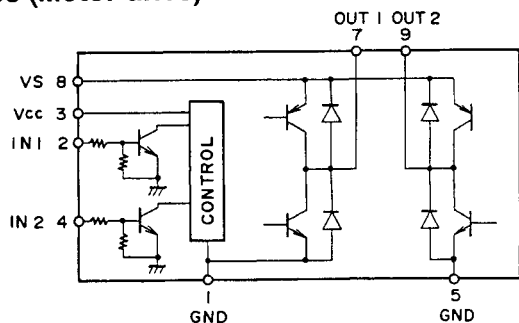
IC BLOCK DIAGRAM
TMP47C440AN (Microprocessor)



Pin No.	Symbol	Description																								
1	VAREF	Analog reference voltage for A/D conversion																								
2	VASS	Analog reference GND for A/D conversion																								
3	KEY	Input Selector, Power key input terminal. To read Input Selector and Power key by means of A/D conversion																								
4	INPUT	Muting output terminal for Main amplifier input. Active "H"																								
5	RECMUT	Muting output terminal for Rec. output. Active "H" To be output when switching Input Selector. To be output continuously in case of Input Selector TAPE-1, TAPE-2, DAT, and DIGITAL-4.																								
6	PLAYER	Control output terminal for PLAYER. "L" will be output for 200ms if input K64 code for remote control and set Input Selector for PHONO.																								
7	VOL DOWN	UP/DOWN output terminal for volume. Active "H"																								
8	VOL UP	In case of UP (DOWN), VOL UP output will be "H" ("L"), while VOL DOWN output will be "L" ("H"). When not moving, both outputs shall be "H" (Brake).																								
9	SEL DOWN	UP/DOWN output terminal for Input Selector. Active "H" In case of UP (DOWN), SEL UP output will be "H" ("L"), While SEL DOWN output will be "L" ("H"). When not moving, both outputs shall be "H" (Brake).																								
10	SEL UP																									
11	S1	Output terminal for switching digital signal. Switch as follows through the position of Input Selector. <table border="1"><thead><tr><th>Input selector</th><th>Output S3</th><th>Output S2</th><th>Output S1</th></tr></thead><tbody><tr><td>DIGITAL-1</td><td>L</td><td>L</td><td>L</td></tr><tr><td>DIGITAL-2</td><td>L</td><td>L</td><td>H</td></tr><tr><td>DIGITAL-3</td><td>L</td><td>H</td><td>L</td></tr><tr><td>DIGITAL-4</td><td>L</td><td>H</td><td>H</td></tr><tr><td>Others (Analog)</td><td>H</td><td>H</td><td>H</td></tr></tbody></table>	Input selector	Output S3	Output S2	Output S1	DIGITAL-1	L	L	L	DIGITAL-2	L	L	H	DIGITAL-3	L	H	L	DIGITAL-4	L	H	H	Others (Analog)	H	H	H
Input selector	Output S3		Output S2	Output S1																						
DIGITAL-1	L		L	L																						
DIGITAL-2	L	L	H																							
DIGITAL-3	L	H	L																							
DIGITAL-4	L	H	H																							
Others (Analog)	H	H	H																							
12	S2																									
13	S3																									
14	EXP/JPN	Input terminal for remote control initialization when energizing.																								

Pin No.	Symbol	Description									
15	DIG-4/MODE	Output terminal for Input Selector display. Output of the position currently selected will be “L” (lighted). DIG-4/MODE output will be input terminal MODE for initialization of operation switch when energizing. Output DIG-1/AUX-1, DIG-2/AUX-2 will be switched by initializing MODE into; <table border="1"><tr><td>MODE</td><td>DIG-1/AUX-1</td><td>DIG-2/AUX-2</td></tr><tr><td>L (0)</td><td>AUX-1</td><td>AUX-2</td></tr><tr><td>H (1)</td><td>DIG-1</td><td>DIG-2</td></tr></table>	MODE	DIG-1/AUX-1	DIG-2/AUX-2	L (0)	AUX-1	AUX-2	H (1)	DIG-1	DIG-2
MODE	DIG-1/AUX-1		DIG-2/AUX-2								
L (0)	AUX-1		AUX-2								
H (1)	DIG-1		DIG-2								
16	DIG-3										
17	DIG-2/AUX-2										
18	DIG-1/AUX-1										
19	CD										
20	TUNER										
21	VSS	GND terminal									
22	PHONO	Output terminal for Input Selector display. The output of the positon currently selected will be “L (lighted).									
23	DAT										
24	TAPE-1										
25	TAPE-2										
26	ENCD1	Input terminal for detecting position of rotary sw of input Selector. To be connected with Encoder output for position detecting of Rotary sw.									
27	ENCD2										
28	ENCD3										
29	ENCD4										
30	TEST	To be connected with GND.									
31	XIN	Terminal for connecting with ceramic oscillator (4 MHz)									
32	XOUT										
33	RESET	Input terminal for reset signal. Active “L”									
34	POFF	Input terminal for detecting power suspension. Take a countermeasure as soon as possible against power failure when turned into “L”. Set at HOLD mode.									
35	ENCD5	Input terminal for detecting Rotary sw position of Input Selector. To be connected with Encoder output for position detecting of Rotary sw.									
36	SYS OUT/SYS EN	Ouptut terminal for System code. Active “L” to be turned into SYS EN for initialization input when energizing.									
37	REM IN	Input terminal for remote control signal. Active “L” To be connected with output of photoreceivin unit.									
38	SYS IN	Input terminal for System code. Active “H”.									
39	M. IND	Output terminal for Muting display. Lighted in case of “L” To be set “L” when Muting of remote control is ON.									
40	STANBY	Output terminal for Standby display. Lighted incase of “L” To be turned into “L” when Power is OFF. Except the case of power sususpension, the level inverted of Power output is always output.									
41	POWER	Output terminal for Power control. “L” When Power is ON									
42	VDD	Power (+5V) Connctecting terminal.									

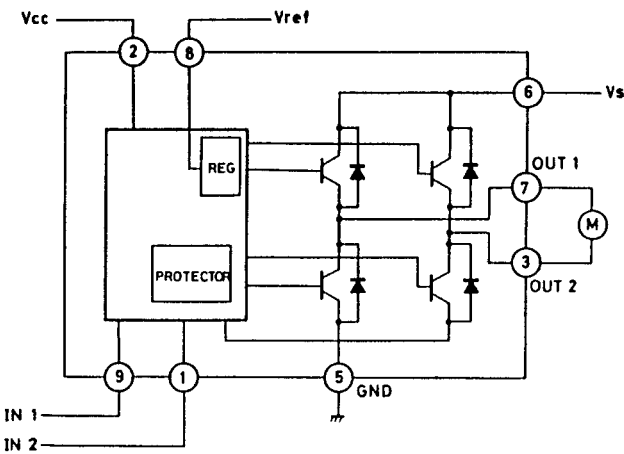
LB1638 (Motor drive)



Tauth Table

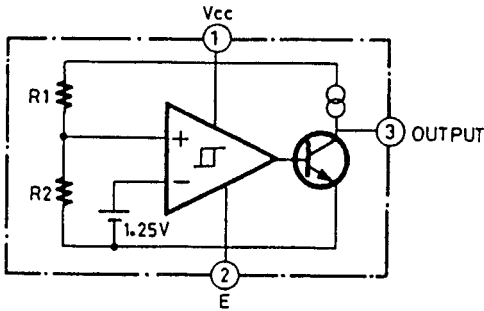
IN 1	IN 2	OUT 1	OUT 2	モード
H	L	H	L	NORMAL
L	H	L	H	REVERSE
H	H	L	L	BRAKE
L	L	OFF	OFF	WAIT

TA7291S (Motor drive)

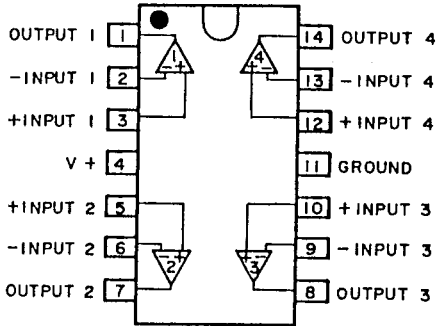


INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

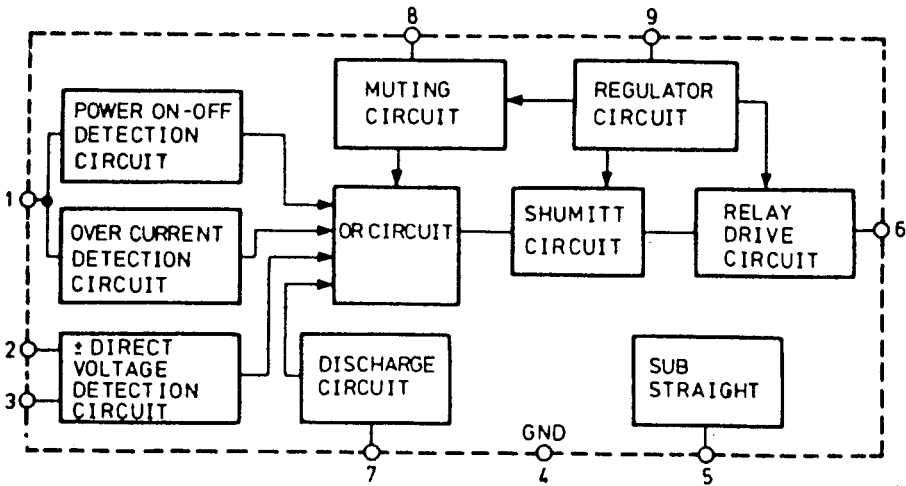
M51943BSL (System reset)



NJM2902N (OP Amp)



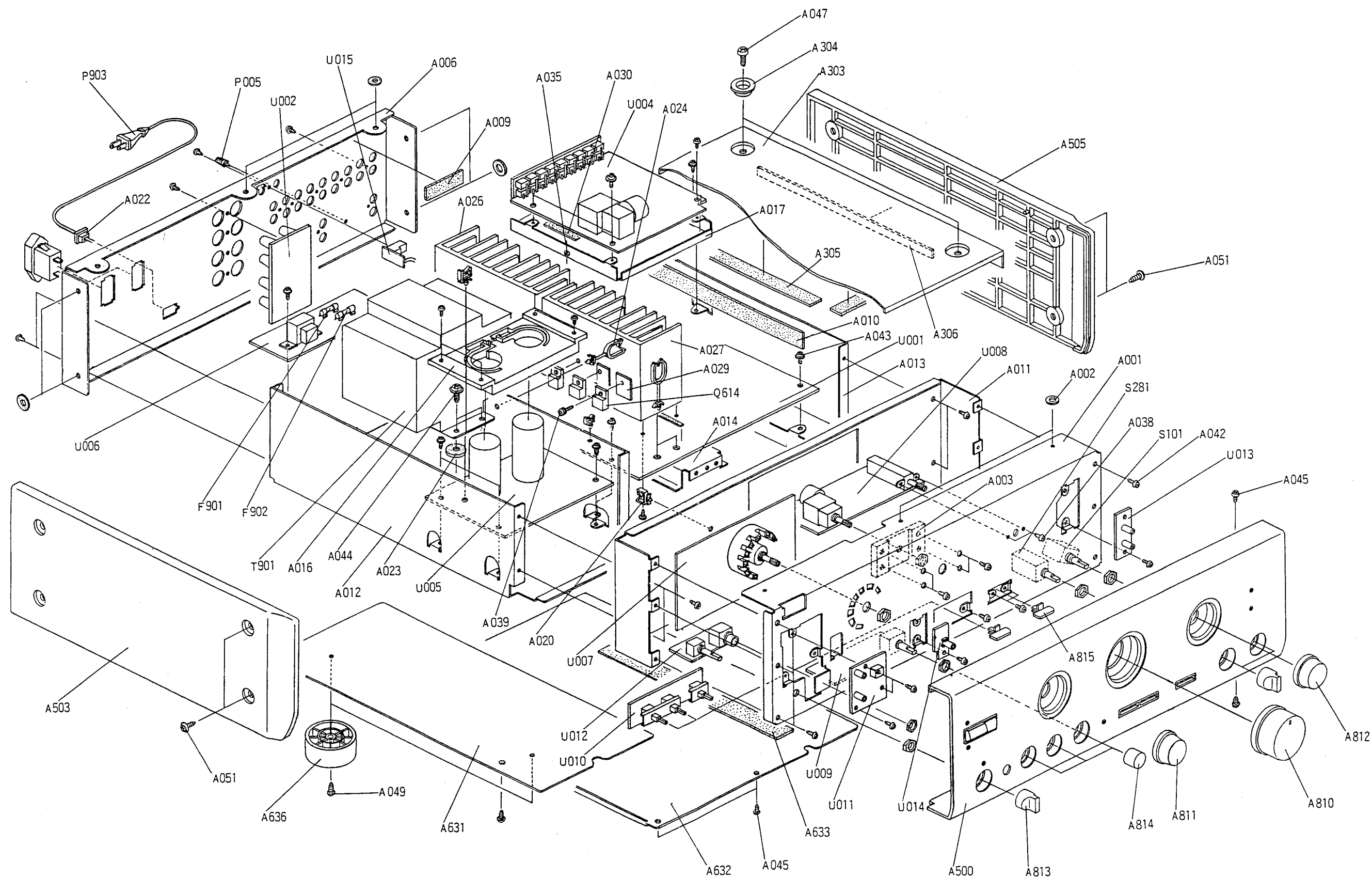
TA7317P (Protective circuit)



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CHASSIS-EXPLODED VIEW



CHASSIS EXPLODED VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A001	27110588-1C	FRONT BRACKET	A632	27170272A	BOTTOM BOARD (R)
A002	27270212	SPACER	A633	28141024	20×240×2.5T, CUSHION
A003	27270326A	SPACER (VOL)	A634	27270212	SPACER
A006	27121479A	BACK PANEL	A636	27175251	LEG ASS'Y
A009	28140859	60×20×1.5T, CUSHION	A810	28324083A	KNOB (VOL) [BLK]
A010	28140695	25×240×1.5T, CUSHION	A810	28324413A	KNOB (VOL) [SIL]
A011	27130622A	BRACKET (SHIELD)	A811	28324084A	KNOB (SEL) [BLK]
A012	27130623	BRACKET (L)	A811	28324084-2	KNOB (SEL) [SIL]
A013	27130624	BRACKET (R)	A812	28324085B	KNOB (D) [BLK]
A014	27130656A	BRACKET (C)	A812	28324085-2	KNOB (D) [SIL]
A015	28170025	BUSHING	A813	28324086	KNOB (SP) [BLK]
A016	27190846	HOLDER (CAPACITOR)	A813	28324416	KNOB (SP) [SIL]
A017	27130627	BRACKET (EQ)	A814	28324411	KNOB (TONE) [BLK]
A020	27300833	WS-2NS, CRAMP	A814	28324412	KNOB (TONE) [SIL]
A022	27300750	#2271, BUSHING (AC CORD)	A815	28324088A	KNOB (PUSH) [BLK]
A023	27270213	SPACER (PT)	A815	28324417	KNOB (PUSH) [SIL]
A024	27301394	HL-18-0, CRAMP	Q609, Q613	2201703	2SC3855-O OR
A026	27160282	RADIATION	Q614, Q610	2201706	2SC3855-P OR
A027	27160283	RADIATION		2201704	2SC3855-Y, TRANSISTOR
A029	27301328	BFG-20, RADIATION SHEET	Q611, Q615	2201693	2SA1491-O OR
A030	28140808	50×50×3T, CUSHION	Q616, Q612	2201696	2SA1491-P OR
A035	800529	BUSHING (PC)		2201694	2SA1491-Y, TRANSISTOR
A038	82143006	3P+6FN(BC), PAN-HEAD SCREW	▲ T901	2300707	NPT-1116P, POWER
A039	801433	3SMS8WSW+14B(BC), SPECIAL			TRANSFORMER [P]
		TAP-TIGHT SCREW	S101	25030348	NRSF-102-20BU, SWITCH
A042	834430088	3TTS+8B(BC), TAP-TIGHT SCREW			OPERATION SECTION
A043	831130088	3TTW+8B, TAP-TIGHT SCREW	S281	25030349	NRSF-104-20BU, SWITCH
A044	830440109	4TTC+10C(BC), TAP-TIGHT			OPERATION SECTION
		SCREW	P005	25060044	TERMINAL (GROUND)
A045	801230	3STS+8BQ(BC), TAP-TIGHT	▲ P901, P902	25050337	NSCT-2P164, AC SOCKET
		SCREW	▲ P903	253148 OR	AS-CEE OR
A047	838440089	4TTB+8C(BC), TAP-TIGHT SCREW		253150	AS-CEE, POWER SUPPLY CABLE
A049	831430088	3TTW+8B(BC), TAP-TIGHT SCREW	▲ F901	252075	2.5A-SE-EAK, FUSE
A051	837440169	4TTT+16C(BC), TAP-TIGHT	▲ F902	252077	4A-SE-EAK, FUSE
		SCREW	U001	1A295509-1A	NAAF-4209-1A, MAIN CIRCUIT PC
A303	28184464	TOP COVER			BOARD ASS'Y
A304	27265155A	COSMETIC RING (COVER)	U002	1A295510-1A	NAETC-4210-1A, SPEAKER
A305	28140695	25×240×1.5T, CUSHION			TERMINAL PC BOARD ASS'Y
A306	28140693	10×185×1.5T, CUSHION	U004	1A295512-1A	NASW-4212-1A, INPUT CIRCUIT PC
A307	28141009	125×195×1.5T, CUSHION			BOARD ASS'Y
A500	1A295121	FRONT PANEL ASS'Y [BLK]	U005	1A293513-1	NAPS-4213-1, POWER SUPPLY
(A511)	27265219	COSMETIC RING (L) [BLK]			CIRCUIT (1) PC BOARD ASS'Y
(A512)	27265224A	COSMETIC RING ASS'Y (SEL)	U006	1A295514-1D	NAETC-4214-1D, POWER SUPPLY
		[BLK]			CIRCUIT (2) PC BOARD ASS'Y
(A516)	28198742	FACET	U007	1A293515-1A	NADG-4215-1A, MICROPROCESSOR
(A518)	27265223	COSMETIC RING (D) [BLK]			CIRCUIT PC BOARD ASS'Y
(A519)	27265220C	COSMETIC RING (R) [BLK]	U008	1A293516-1	NAAF-4216-1, VOLUME & DIRECT
(A520)	28198742	FACET			SWITCH CIRCUIT PC BOARD
(A523)	27265221A	COSMETIC RING (VOL) [BLK]			ASS'Y
(A524)	28135199	NAME PLATE	U009	1A293518-1	NAAF-4218-1, MUTING SUBSONIC
(A801)	28324082A	KNOB ASS'Y (POW) [BLK]			SWITCH PC BOARD ASS'Y
(A805)	28191568	CLEAR PLATE (RE)	U010	1A293519-1	NASW-4219-1, TONE CONTROL
(A806)	28198753	FACET			CIRCUIT PC BOARD ASS'Y
(A807)	28198742	FACET	U011	1A293520-1	NADIS-4220-1, PHOTO RECEIVING
A808	28199190	FILM			CIRCUIT PC BOARD ASS'Y
A500	1A296121	FRONT PANEL ASS'Y [SIL]	U012	1A293521-1	NASW-4221-1, SPEAKER SWITCH
(A511)	27265219-2	COSMETIC RING (L) [SIL]			CIRCUIT PC BOARD ASS'Y
(A512)	27265224-3A	COSMETIC RING ASS'Y (SEL)	U013	1A293522-1	NADIS-4222-1, LED PC BOARD
		[SIL]			ASS'Y
(A518)	27265223-3	COSMETIC RING (D) [SIL]	U014	1A293523-1	NADIS-4223-1, LED PC BOARD
(A519)	27265220-2A	COSMETIC RING (R) [SIL]			ASS'Y
(A523)	27265221-1	COSMETIC RING (VOL) [SIL]			
(A801)	28324414	KNOB ASS'Y (POW) [SIL]			
A503	28185359	SIDE BOARD (L)			
A505	28185360	SIDE BOARD (R)			
A631	27170271	BOTTOM BOARD (L)			

REF.NO.	PART NO.	DESCRIPTION
U015	1A293524-1A	NAETC-4224-1A, REMOTE CONTROL TERMINAL PC BOARD ASS'Y
U016	1A295525-1A	NAETC-4225-1A, TUNER TERMINAL PC BOARD ASS'Y

NOTE: [BLK]: ONLY BLACK MODEL
[SIL]: ONLY SILVER MODEL

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

PRINTED CIRCUIT BOARD PARTS LIST

MAIN CIRCUIT PC BOARD (NAAF-4209-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
Q105, Q106 Q109 Q110 Q519, Q520 Q585 Q586 Q851	ICs		Q901	2201512 OR 2201513	2SD1200-Q OR 2SD1200-R
	222902	NJM5532D-D	Q902	2201502 OR 2201503	2SB889-Q OR 2SB889-R
	222780205MIT	M5F78M20L	Q903, Q904	2211945	2SK246-GR
	222790205MIT	M5F79M20L	Q905	2211255	2SC1815-GR
	222570	NJM4560D-X	Q906	2211455	2SA1015-GR
	22240040	NJM2902N	Diodes		
	226007	TLP-531	D101~D104	225251	TLR112, LED
	222584	TA7317P	D505, Q506		
	Transistors		D511~D516	223163	1SS133
	2211535 OR	2SK146-GR OR	D517~D520	225251	TLR112, LED
Q101, Q102	2211536 OR	2SK146-BL OR	D851, D852	223163	1SS133
	2211537	2SK146-V	D853	224450623	MTZ6.2C, Zener
Q107, Q108	2211255	2SC1815-GR	D854	223163	1SS133
Q501, Q502	2212805 OR	2SK389-GR OR	D901~D903	224450562	MTZ5.6B, Zener
	2212806 OR	2SK389-BL OR	Coils		
	2212807	2SK389-V	L101, L102	231133	NCH1188
Q503~Q506	2211733 OR	2SC1845-E OR	L601, L602	231134	S-0.8E
	2211732	2SC1845-F	L201~L203	230905	BL02RN1-R62
Q507, Q508	2213666 OR	2SA1240-F OR	Capacitors		
	2213667	2SA1240-G	C103, C104	373631024	1000 pF, 100V, Film (KP)
Q511, Q512	2211455 OR	2SA1015-GR OR	C105, C106	373631514	150 pF, 100V, Film (KP)
	2211454	2SA1015-Y	C107, C108	372121014	100 pF, 50V, Styrene
Q513, Q514	2211354 OR	2SA949-Y OR	C109, C110	391222217	220 μ F, 6.3V, Elect.(MUSE)
	2211353	2SA949-O	C111, C112	372122024	2000 pF, 50V, Styrene
Q517, Q518	2211255 OR	2SC1815-GR OR	C113~C116	379122434	0.024 μ F, 50V, Film (D5W)
	2211256	2SC1815-BL	C117, C118	374724334	0.043 μ F, 50V, Film (Tb)
Q581~Q584	2211634 OR	2SC2229-Y OR	C119~C122	391651017	100 μ F, 25V, Elect.(FS)
Q589, Q601	2211633	2SC2229-O	C123, C124	373632224	2200 pF, 100V, Film (KP)
Q602			C147, C148	354764719	470 μ F, 35V, Elect.
Q603, Q604	2211354 OR	2SA949-Y OR	C149, C150	354741019	100 μ F, 16V, Elect.
	2211353	2SA949-O	C151, C152	354761019	100 μ F, 35V, Elect.
Q605, Q606	2202034 OR	2SD1763A-D OR	C153, C154	391254717	470 μ F, 25V, Elect.(MUSE)
	2202035	2SD1763A-E	C155, C156		
Q607, Q608	2202024 OR	2SB1186A-D OR	C157, C158	354761019	100 μ F, 35V, Elect.
	2202025	2SB1186A-E	C159, C160	373732234	0.022 μ F, 100V, Film (1KT)
Q617, Q618	2211634 OR	2SC2229-Y OR	C501, C502	373631014	100pF, 100V, Film (Kb)
	2211633	2SC2229-O	C509, C510		
Q619, Q620	2211793 OR	2SA992-E OR			
	2211792	2SA992-F			
Q852	2212600	DTA124ES			
Q853	2211504	2SA950-Y			

CIRCUIT NO.	PART NO.	DESCRIPTION
C511, C512	372123304	33 pF, 50V, Styrene
C513-C516	391252207	22 μ F, 25V, Elect.(MUSE)
C517, C518	372123304	33 pF, 50V, Styrene
C519, C520	354722219	220 μ F, 6.3V, Elect.
C521, C522	374791044	0.1 μ F, 63V, Film (TF)
C523, C524	391242217	220 μ F, 16V, Elect.(MUSE)
C525-C526	373732234	0.022 μ F, 100V, Film (MKT)
C527, C528	373734734	0.047 μ F, 100V, Film (MKT)
C529, C530	354790479	4.7 μ F, 100V, Elect.
C581	391221027	1000 μ F, 6.3V, Elect.(MUSE)
C582	354721019	100 μ F, 6.3V, Elect.
C583	354764709	47 μ F, 35V, Elect.
C605, C606	391241017	100 μ F, 16V, Elect.(MUSE)
C607, C608	373791044	0.1 μ F, 63V, Film (MKT)
C609, C610	374794734	0.047 μ F, 63V, Film (TF)
C611, C612	374722235	0.022 μ F, 50V, Film (TF)
C613, C614	379121035	0.01 μ F, 50V, Film (DEW)
C615-C622	373791044	0.1 μ F, 63V, Film (MKT)
C851	354722219	220 μ F, 6.3V, Elect.
C852	354742209	22 μ F, 16V, Elect.
C853	354784799	0.47 μ F, 50V, Elect.
C855	354743319	330 μ F, 16V, Elect.
C858, C859	374721044	0.1 μ F, 50V, Film (TF)
C901-C903	354774719	470 μ F, 63V, Elect.
C905, C906		
C909, C910	354761009	10 μ F, 35V, Elect.
C911, C912	354724719	470 μ F, 6.3V, Elect.
C913, C914	354751029	1000 μ F, 25V, Elect.
C915, C916	354754719	470 μ F, 25V, Elect.
C917	391221027	1000 μ F, 6.3V, Elect.(MUSE)
C918	374724734	0.047 μ F, 50V, Film (TF)
Resistors		
R151, R152	442523304	33 Ω , 1/2W, Metal oxide film
R527, R528	441622734	27 k Ω , 1W, Metal oxide film
R535, R536	5210062	N06HR4.7KBD, Semi-fixed
R601, R602	442522224	2.2 k Ω , 1/2W, Metal oxide film
R603, R604	442522214	220 Ω , 1/2W, Metal oxide film
R607-R614	442520224	2.2 Ω , 1/2W, Metal oxide film
R615-R618	4000078	0.33 Ω , 5W, Metal plate
R623-R626		
R633, R634	442820824	8.2 Ω , 3W, Metal oxide film
R862	442525114	510 Ω , 1/2W, Metal oxide film
R875, R876	441623914	390 Ω , 1W, Metal oxide film
R901-R903	441620684	6.8 Ω , 1W, Metal oxide film
R905, R906	442524314	430 Ω , 1/2W, Metal oxide film
Switch		
S101	25065439	NSS-62159, Slide switch
Relaies		
RL851, RL852	25065316	NRL-2P7A-DC12-043
Plug		
P104	25055100	NPLG-3P84
P256	25055133	NPLG-3P117
P321	25055137	NPLG-7P121
P852	25055139	NPLG-9P123
Terminal		
P101	25045341	NPJ-2PDBL-192
Socket ass'y		
P103	2009990200	NSAS-06P0282
P752	2009990003	NSAS-06P0007
P753	2009990004	NSAS-06P0008
Jumper sockets		
JL211, JL213	25050268	NSCT-4P96
JL212, JL951	25050267	NSCT-3P95
Bracket		
	27141059	(Ground)
	27301427	(Bus)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Cushion	
	28140963	
	Holder clamp	
	27301186	MSA-1606
	27301271	MSA-1609

SPEAKER TERMINAL PC BOARD (NAETC-4210-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P751, P752	25060162	NTM-4PDMN088

INPUT CIRCUIT PC BOARD (NASW-4212-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diode	
D201	223163	1SS133
	Capacitor	
C201	374721034	0.01 μ F, 50V, Film (TF)
	Switches	
S201	25030330	NRS-2211-BA, Rotary
S281	25065438	NSS-84158, Slide
	Relay	
RL201	25065397	NRL-2P1A-DC5-068
	Input terminals	
P201-P204	25045305	NPJ-4PDBL164
P207	25045304	NPJ-2PDBL163
	Plugs	
P205, P206	25055133	NPLG-3P117
P103A		
P211	25055139	NPLG-9P123
	Socket ass'y	
P256	2009990090	NSAS-6P0128
	Jumper socket	
JL201	25050267	NSCT-3P95

POWER SUPPLY CIRCUIT (1) PC BOARD (NAPS-4213-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D921	22380040	RBV-602L
D922, D923	22380012	HER303F
D931	22380039	1D4B42
D932	22380032	1SR139-100
D941	22380039	1D4B42
	Coils	
L921, L922	230906	BL02RN2-R62
	Capacitors	
C921, C922	3504246	18000 μ F, 63V, Elect.
C923-C925	374503345	0.33 μ F, 125V, Film (ME)
C931, C932	374722235	0.022 μ F, 50V, Film (TF)
C933	354741029	1000 μ F, 16V, Elect.
C934	354744719	470 μ F, 16V, Elect.
C941, C942	354761029	1000 μ F, 35V, Elect.
C943, C944	374722235	0.022 μ F, 50V, Film (TF)
C945	374501045	0.1 μ F, 125V, Film (ME)

CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors		
R931	442520104	1 Ω , 1/2W, Metal oxide film
R932	441623314	330 Ω , 1W, Metal oxide film
R941, R942	442522294	0.22 Ω , 1/2W, Metal oxide film
Jumper socket		
JL941	25050267	NSCT-3P95
Socket ass'y		
P104	2009990069	NSAS-6P0106
Plug		
P951a	25055133	NPLG-3P117
Bracket		
	27301367	(Bus)
Radiator		
D921a	27160265	RAD-82

**POWER SUPPLY CIRCUIT (2) PC BOARD
(NAETC-4214-1D)**

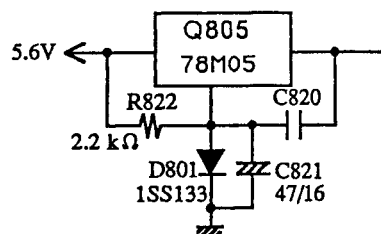
CIRCUIT NO.	PART NO.	DESCRIPTION
Transistor		
Q951	2213650	DTD113ZS
Diodes		
D951	223163	1SS133
D952	22380039	1D4B42
Transformer		
 T902	2300711	NPT-1117P
Capacitors		
C951-C955	374721034	0.01 μ F, 50V, Film (TF)
C956	354752229	2200 μ F, 25V, Elect.
 C971	3500065A	0.01 μ F, AC400V/125V, Film (IS)
 C972	3500065A	0.01 μ F, AC400V/125V, Film (IS)
Condensor cover		
 C972a, C973a	27301216	SB1925A
Resistors		
R951	442520104	1 Ω , 1/2W, Metal oxide film
R952	441628214	820 Ω , 1W, Metal oxide film
Relay		
 RL901	25065248	NRL-1P15A-DC12-29
Terminals		
	25060092	NTM-1S33
Socket ass'y		
P951	2009990180	NSAS-6P0250
Fuse holder		
 F901a, F902a	25050065	YSH403T

CIRCUIT NO.	PART NO.	DESCRIPTION
Fuse label		
 F902b	29360374	T4A/250V

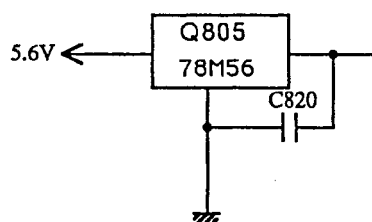
**MICROPROCESSOR CIRCUIT PC BOARD
(NADG-4215-1A)**

CIRCUIT NO	PART NO.	DESCRIPTION
ICs		
Q801	22240377	TMP47C440AN-1997
Q802	22240358	LB1638
Q803	22240239	TA7291S
Q804	222951	M51943BSL
Q805	222780055	78M05HF
* (Q805)	222780565	78M56)
Transistors		
Q806	2213160	DTC124ES
Q807-Q809	2213510	DTA114ES
Q810	2211255	2SC1815-GR
Q811	2213090	DTA114YS
Q812	2213650	DTD113ZS
Q813	2211164	2SC2120-Y
Q814	2213090	DTA114YS
Q815	2211504	2SA950-Y
Diodes		
D801, D816	223163	1SS133
D803-D807		
D802	224450562	MTZ5.6B, Zener
D808-D815	225142DX2	SEL2913K-DX2, LED
D817	224450562	MTZ5.6B, Zener
Coils		
L801	233409K220	NCH-1284
L802-L807	230906	BL02RN2-R62
Osc, element		
X801	3010150	CST4.00M3W
Capacitors		
C803, C807	354744709	47 μ F, 16V, Elect.
C808	375524744	0.47 μ F, 50V, Film (MMT)
C810	3000051	0.047 F, 5.5V, Super
C816	374721044	0.1 μ F, 50V, Film (TF)
C819	354724719	470 μ F, 6.3V, Elect.
C821	354744709	47 μ F, 16V, Elect.
C822	354761009	10 μ F, 35V, Elect.
C824	354744709	47 μ F, 16V, Elect.
C827	353741009	10 μ F, 16V, Elect.
C829, C830	374721035	0.01 μ F, 50V, Film (TF)
Resistors		
R817, R818	49163103405	RM1/101J10K $\times$ 5, Resistor network
R830	441620564	5.6 Ω , 1W, Metal oxide film
Socket ass'y		
P211	2009990110	NSAS-18P0167
P801	2000871	NSAS-6P827

NOTE: *



OR



CIRCUIT NO	PART NO.	DESCRIPTION
Q805a	Radiator	
	27160145	RAD-51
S853	Switch	
	25030334	NRS-112-25RSM
	Holder	
	27190786	(LED-8)

VOLUME & DIRECT SWITCH CIRCUIT PC BOARD (NAAF-4216-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
R321	Resistor	
	5104294	N27DGL50KT30, Variable
S351	Switch	
	25030336A	NRS-184-25SS, Rotary
	Socket ass'y	
	2000809	NSAS-6P765
P205	2000630	NSAS-6P586
P321	2009990179	NSAS-14P0249
JL401A	Jumper socket	
	25050267	NSCT-3P95

MUTING/SUBSONIC SWITCH PC BOARD (NAAF-4218-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C301-C304	Capacitors	
	374721635	0.016 μ F, 50V, Film (TF)
	374721825	1800 pF, 50V, Film (TF)
	374728234	0.082 μ F, 50V, Film (TF)
R301	Resistors	
	5148107A	N16RGM C250KMN25, Variable
	5142002	N16RGM11C100K25, Variable
	5144011	N16RGM11C70K88K25, Variable

TONE CONTROL CIRCUIT PC BOARD (NASW-4219-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
C331, C332	Capacitors	
	374724744	0.47 μ F, 50V, Film (TF)
S331 (S332)	Switches	
	25035601	NPS-222-L565
S333	25035584	NPS-122-L546

PHOTO RECEIVING CIRCUIT PC BOARD (NADIS-4220-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
U015	Photo receiving unit	
	24130003	GPIU50XS
D831-D833	Diodes	
	223163	1SS133
D834-D836		
	225142DX2	SEL2913K-DX2, LED
C831	Capacitor	
	354744709	47 μ F, 16V, Elect.
S852	Switch	
	25035548	NRS-111-S510
	Holder	
	27190787	(LED-1)

SPEAKER SWITCH CIRCUIT PC BOARD (NASW-4221-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
D855	Diode	
	223163	1SS133
S851	Switch	
	25030335	NRSF-124-20BU, Rotary
P851	Stereo jack	
	25045337	HLJ4317-01-3120
RL853	Relay	
	25065174	NRL-2P1A-DC12-09
P852	Socket ass'y	
	2009990185	NSAS-18P0255
	Shield plate	
	27150208	

LED PC BOARD (NADIS-4222-1)

CIRCUIT NO	PART NO.	DESCRIPTION
D203, D204	Diodes	
	225142DX2	SEL2913K-DX2, LED
JL210	Jumper socket	
	25050267	NSCT-3P95
	Holder	
	27190787	(LED-1)

LED PC BOARD (NADIS-4223-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
D821	Diode	
	225142DX2	SEL2913K-DX2
	Holder	
	27190787	(LED-1)

REMOTE CONTROL TERMINAL PC BOARD (NAETC-4224-1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
P251	Mini jack	
	25045172	HSJ1003-01-020
P801a	Plug	
	25055133	NPLG-3P117

TUNER TERMINAL PC BOARD (NAETC-4225-1A)

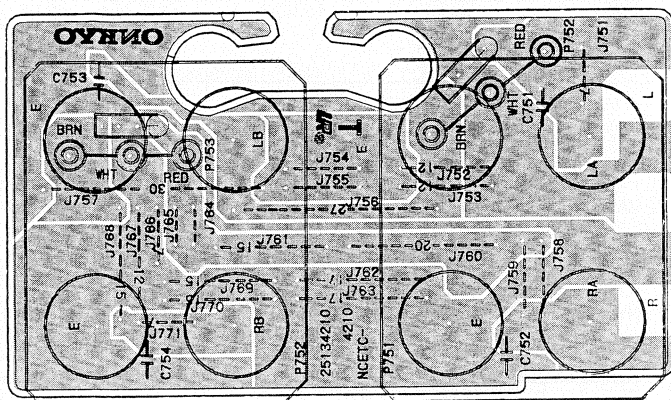
CIRCUIT NO.	PART NO.	DESCRIPTION
P221	Terminal	
	25045307	NPI-2PDBL166

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

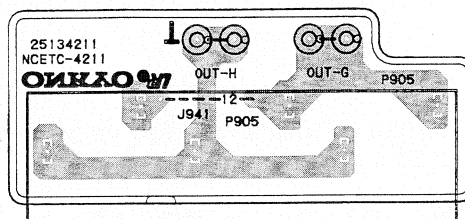
-8870

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

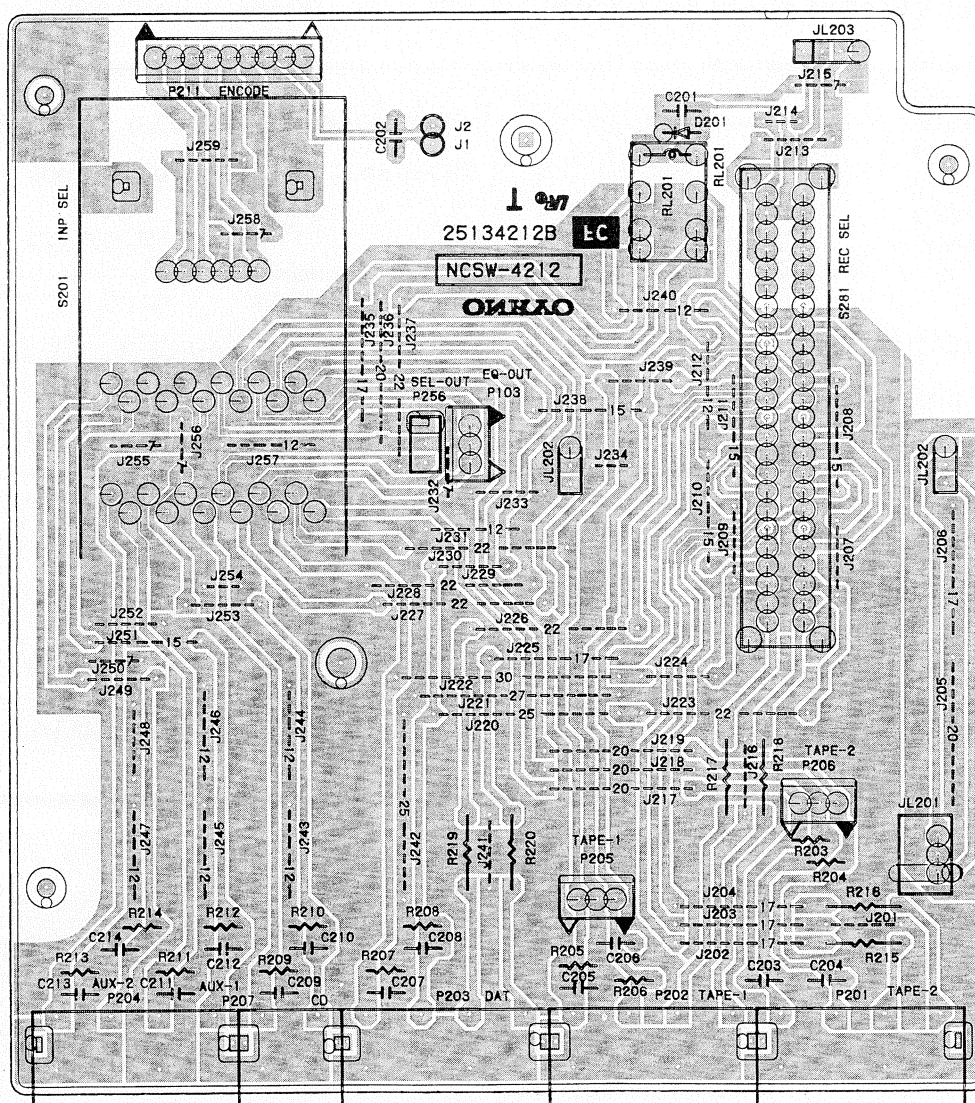
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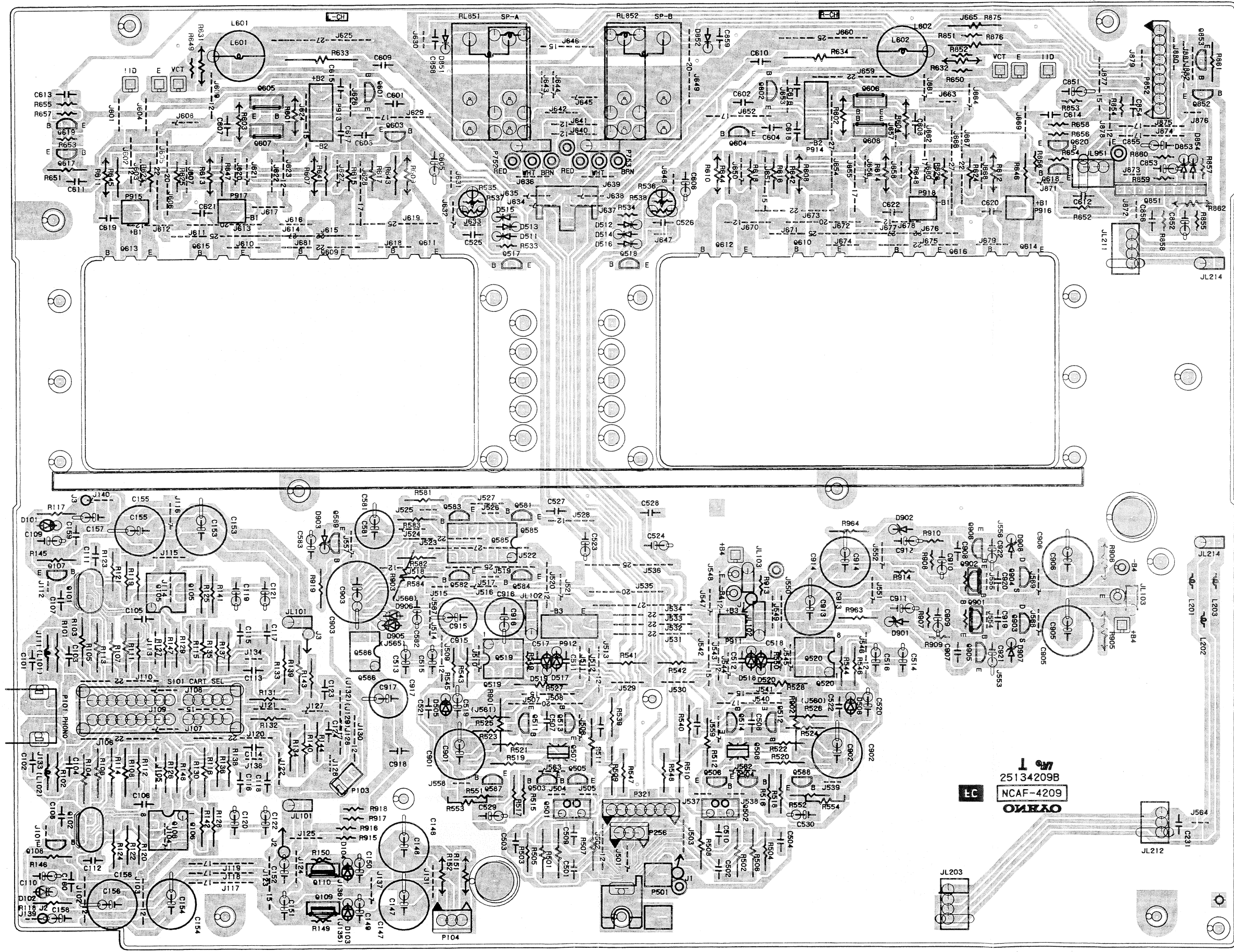
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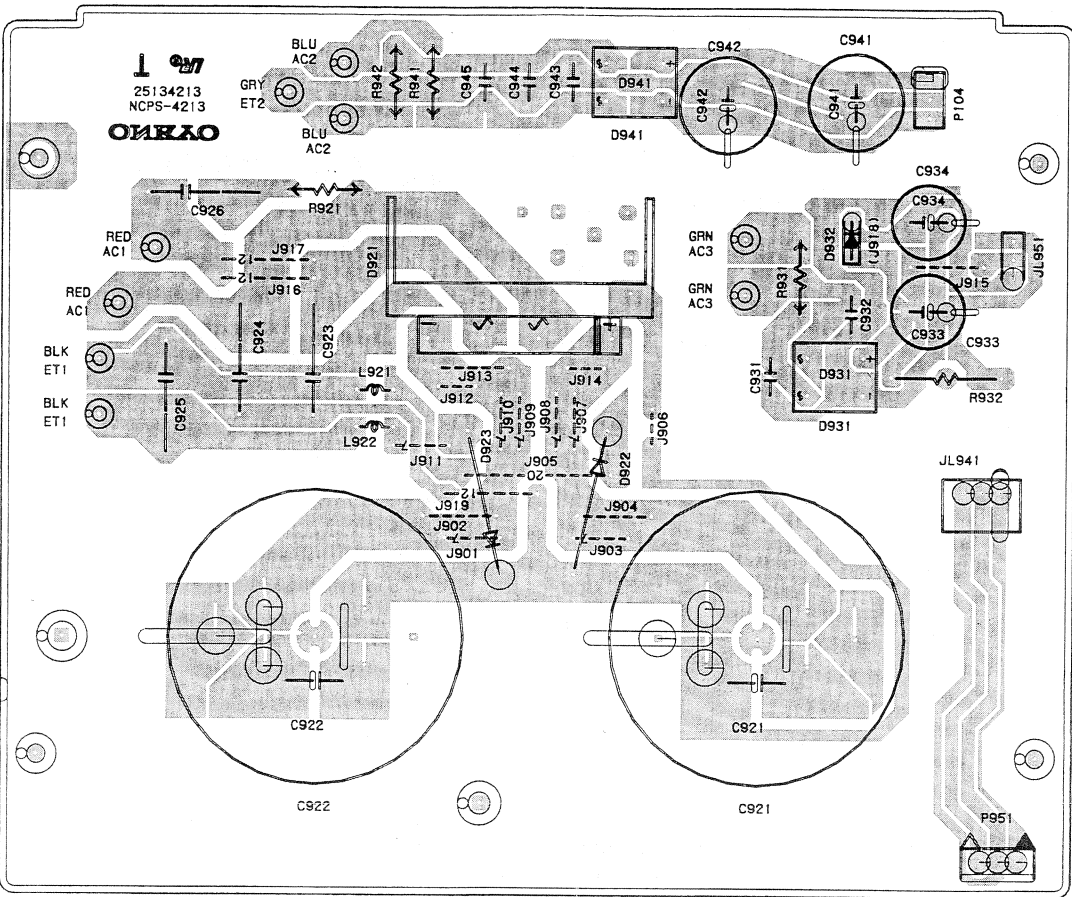
NASW-4212



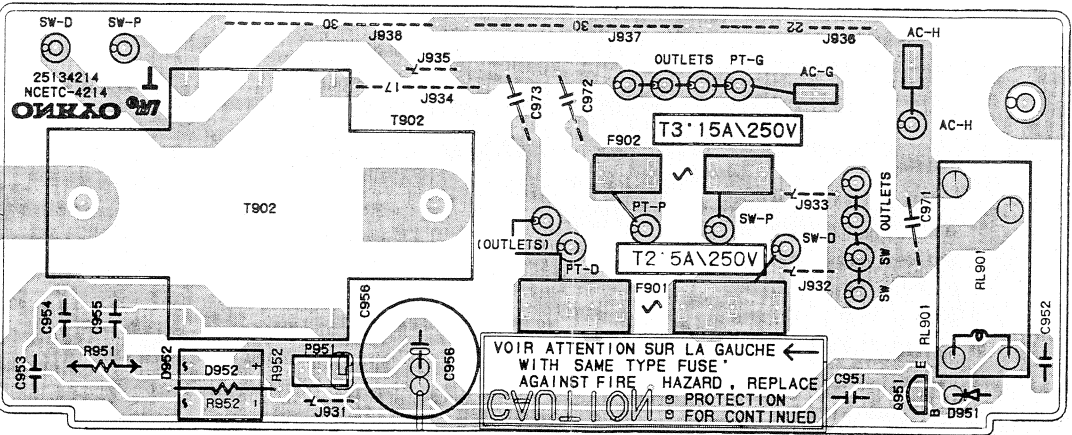
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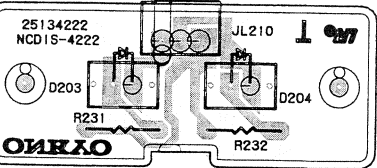
NAPS-4213



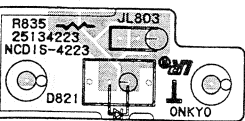
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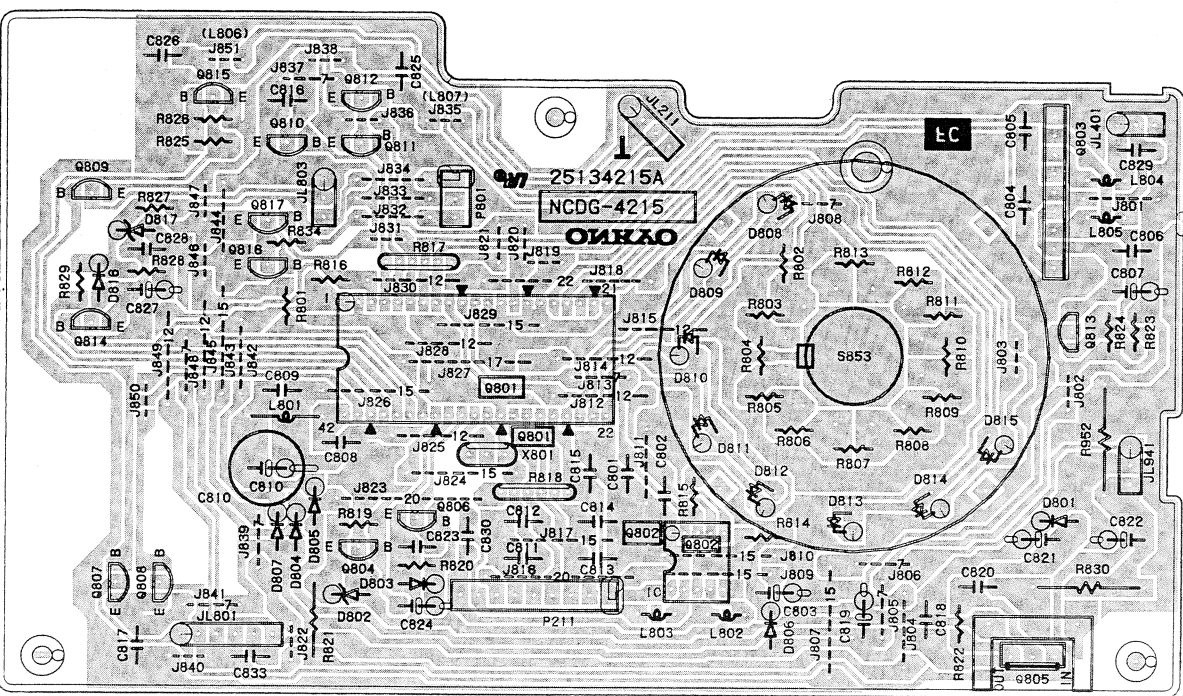
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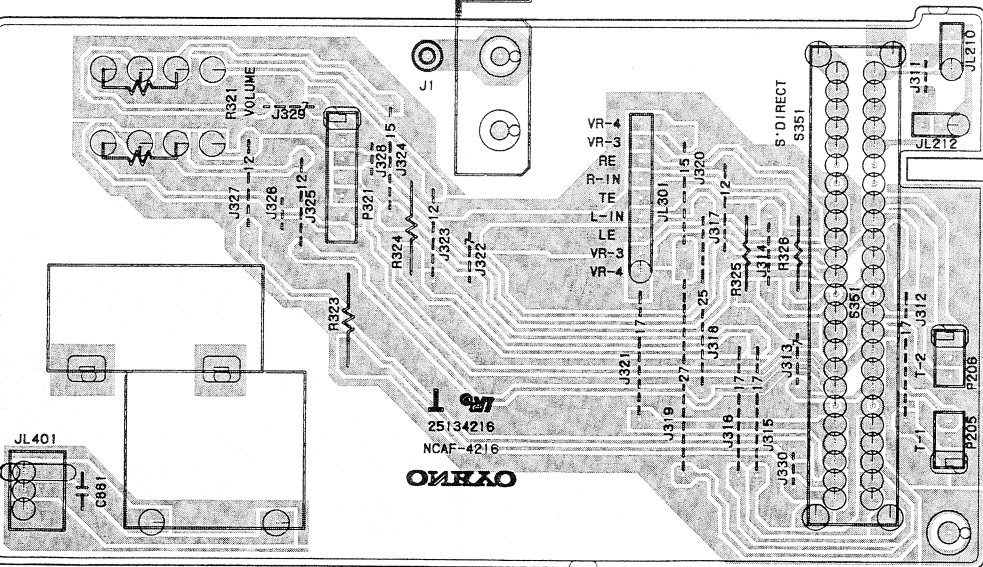
NADIS-4223



NADG-4215

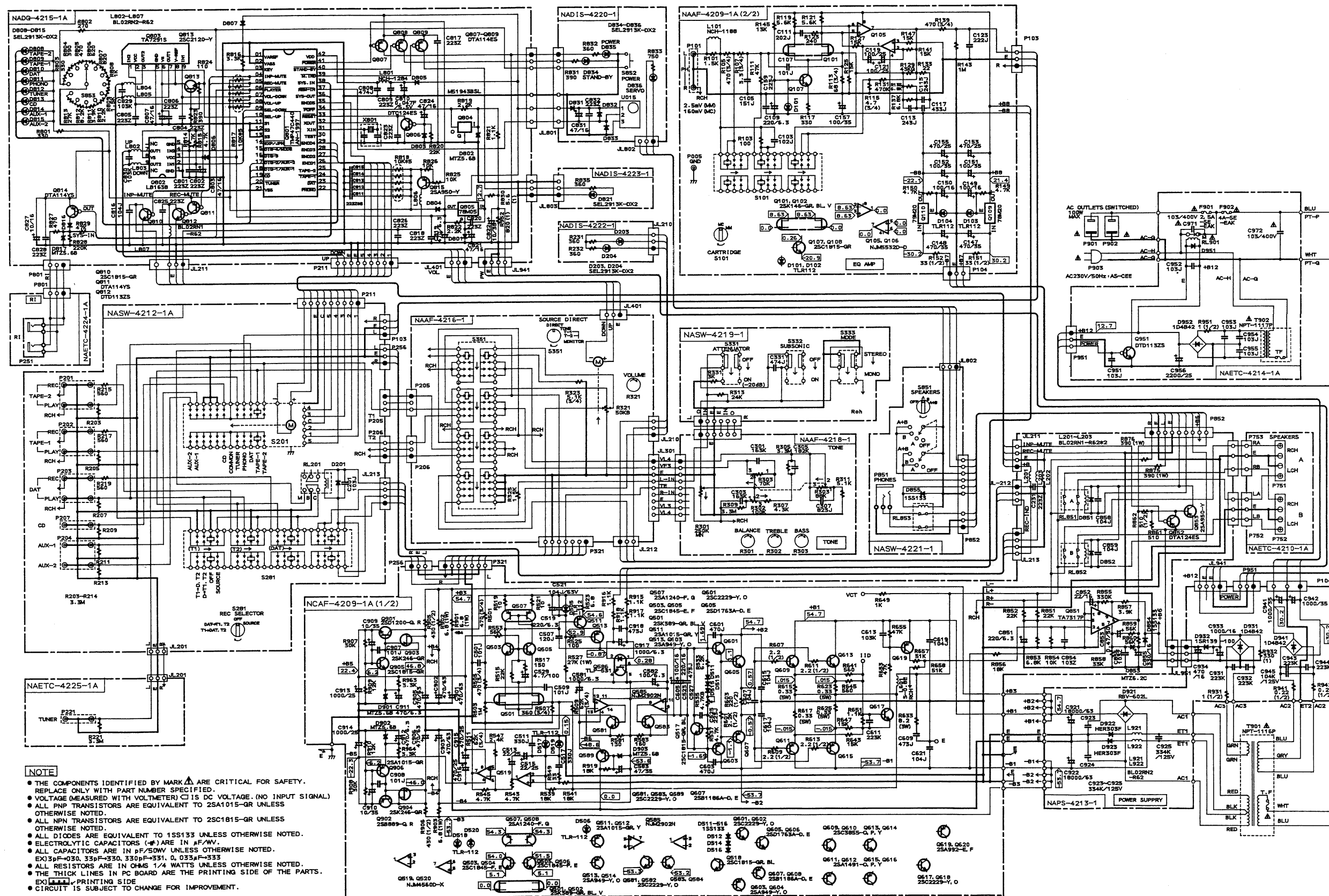


NAAF-4216



SCHEMATIC DIAGRAM

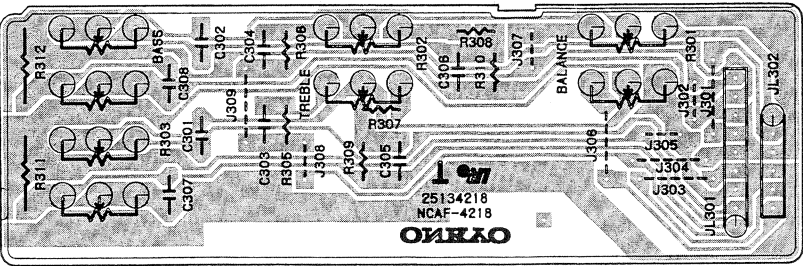
MODEL A-8870



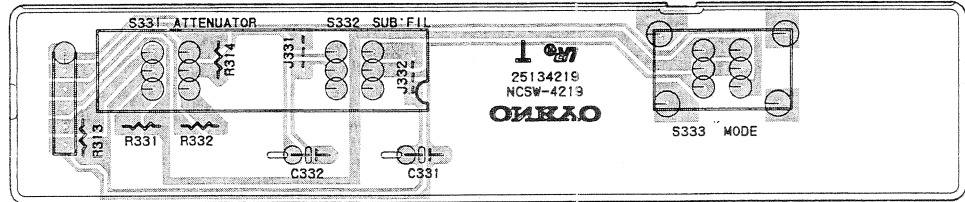
ONKYO CORPORATION

PARTS LIST OF PACKING

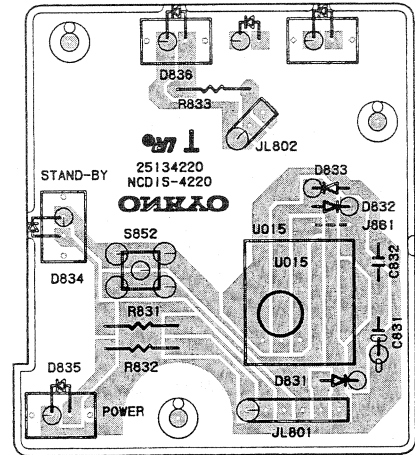
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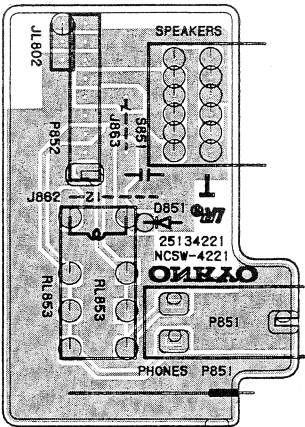
NASW-4219



NADIS-4220



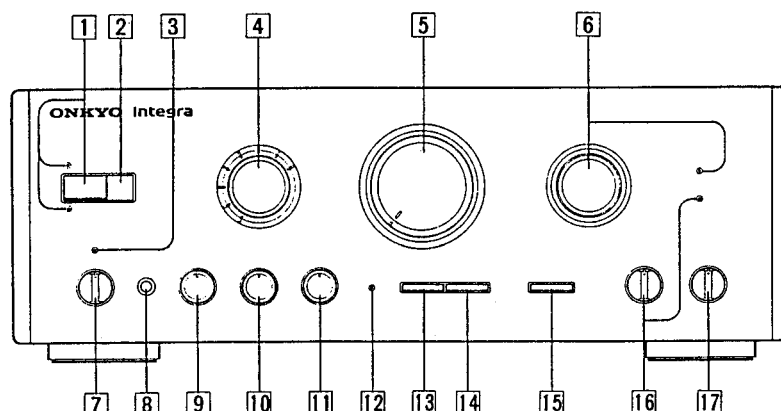
NASW-4221



REF. NO.	PART NO.	DESCRIPTION
A851	29052259	MASTER CARTON BOX [BLK]
A851	29052261	MASTER CARTON BOX [SIL]
A852	29091425A	PAD, LEFT
A853	29091426A	PAD, RIGHT
A854	261504	PAPER TAPE
A855	29100035A	1020x720, POLY-VINYL BAG
A857	282320	SEALING HOOK
A858	29110071	DAMPLON TAPE (W=50)
	29355133A	DBP CAUTION LABEL
ACCESSORY BAG		
A901	29341650	INSTRUCTION MANUAL
	29365020C	WARRANTYCARD
A903	24140207	RC-207S, REMOTE CONTROL
		TRANSMITTER
A904	3010054	UM-3, BATTERY
A905	2010200	3.5 mm, MINI PLUG ASS'Y
A906	29100097	350 x 250, POLY-VINYL BAG

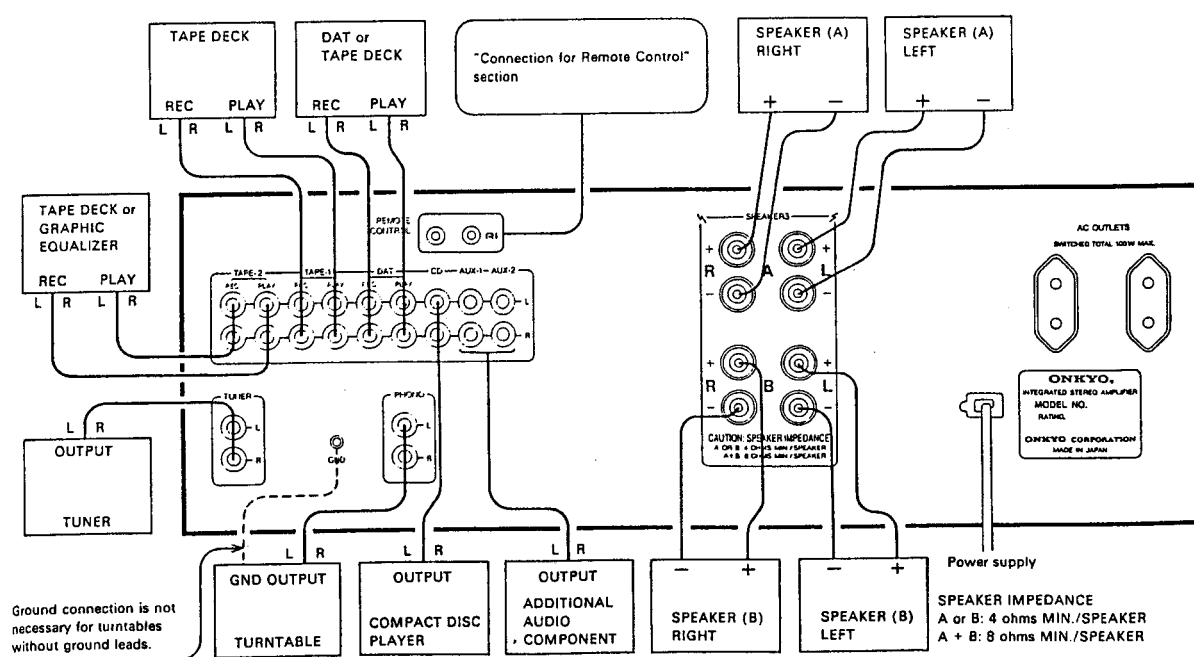
NOTE [BLK]: ONLY BLACK MODEL
[SIL]: ONLY SILVER MODEL

FRONT PANEL FACILITIES



- | | |
|--|---|
| 1. Power switch (POWER) | 10. Treble control (TREBLE) |
| 2. Remote control sensor | 11. Balance control (BALANCE) |
| 3. Servo operation indicator (SERVO OPERATION) | 12. Muting indicator |
| 4. Input selector switch (INPUT SELECTOR) | 13. Attenuator switch (ATTENUATOR) |
| TAPE-2, TAPE-1, DAT, PHONO, CD, AUX-1, AUX-2 | 14. Subsonic filter switch (SUBSONIC) |
| 5. Volume control (VOLUME) | 15. Mode selector switch (MODE) |
| 6. Source direct switch (SOURCE DIRECT) | STEREO, MONO |
| DIRECT, TONE, MONITOR TAPE-1/TAPE-2 | 16. Recording source selector switch (REC SELECTOR) |
| 7. Speaker selector switch (SPEAKERS) | TAPE-1 → DAT & TAPE-2, DAT → TAPE-1 & 2 |
| OFF, A, B, A+B | OFF |
| 8. Headphone jack (PHONES) | SOURCE |
| 9. Bass control (BASS) | 17. Cartridge selector switch (CARTRIDGE) |
| | MC, MM |

SYSTEM CONNECTIONS



A-8870

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