SERVICE MANUAL

NAD

SERVICE SAFETY PRECAUTIONS (UL)

1. Use exact replacement parts for critical locations marked "⚠"
2. Return lead dress to original position and re-install protective covers.
3. Before returning to customer, test for shock hazard; use either mothod A or B:

A. Leakage test "cold":
   1. Unplug the AC cord; turn power switch ON.
   2. Connect one lead of High Voltage Insulation Tester to both prongs of the AC plug.
   3. Touch other lead to all exposed metal parts.
   4. Impedance measurement must be 0.3-5.0 Megohms.

B. Leakage test, "live" :
   1. Plug unit directly into the AC outlet; do not use isolation transformer.
   2. Connect one lead of the Leakage Current Tester to earth ground.
   3. Touch other lead to all exposed metal parts.
   4. Leakage measurement must be less than 0.5 milliamps.

AV316 AMPLIFIER

AV316
AMPLIFIER

SERVICE SAFETY PRECAUTIONS

1. Use exact replacement part for critical locations, marked "⚠" on parts list.
2. Return lead dress to original position, and re-install protective covers.
3. Before returning to customer, test for shock hazard; use either method A or B:

A. Leakage test, "cold":

1. Unplug AC cord, turn power switch ON.
2. Connect one lead of High Voltage Insulation Tester to both prongs of AC plug.
3. Touch other lead to all exposed metal parts.
4. Impedance measurement must be 0.3 - 5.0 Megohms.

B. Leakage test, "live":

1. Plug unit directly into AC outlet; do not use isolation transformer.
2. Connect one lead of Leakage Current Tester to earth ground.
3. Touch other lead to all exposed metal parts.
4. Leakage measurement must be less than 0.5 milliamps.

4. Replacing the fuses

This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utlise est a rapide.
Pour une protection permanents, n'utiliser que des fusibles de meme type.
Ce darnier est indique la qu le present symbol est appose.
For continued protection against fire hazard, replace with same type fuse.
For fuse rating refer to the mrarking adjacent to the symbol.

Circuit No.	Part No.	Description
F901	252164Y	5A-UL/T-237, Primary <AH>
F902	252076	3.15A-SE-EAK, Primary <C>
F903	252075	2.5A-SE-EAK, Primary <C>
F921	252156Y	1A-UL/T-237, Secondary <AH>
	252070	1A-SE-EAK, Secondary <C>
F922	252156Y	1A-UL/T-237, Secondary <AH>
	252070	1A-SE-EAK, Secondary <C>

5. To Initialize the unit

This device employs a microprocessor to perform various functions and operations.
If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.
To perform a reset, please follow the procedure below.

1. Press and hold down the CD button, then press the POWER button.
2. Take the power supply cord from the socket while "TEST-" is displayed.
3. After "clear" is displayed, the preset memory and each mode stored in then memory, such as surround, are initialized and will return to the factory settings.

6. Safety-check out

(Only U.S.A. model)
After correcting the original service problem, perform the following safety check before releasing the set to the customer.
Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.
Specifications : 3.3Mohm ± 10% at 500V.

TABLE OF CONTENTS

SPECIFICATIONS

AMPLIFIER SECTION
STEREO MODE:

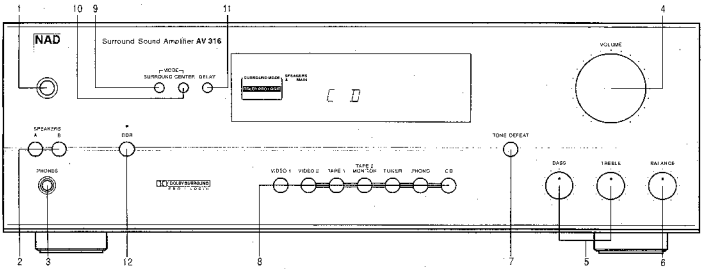
Continuous Power		into 8 Ω 75W
		into 4 Ω 75W
Dynamic Power:		into 8 Ω 100W
		into 4 Ω 170W
		(Min. RMS power per channel, 20Hz-20kHz, both channels driven, with no more than rated distortion)
Front L/R and Center Channels		50W into 8 Ω
Rear Channels		15W per channel into 8Ω, 1kHz: 0.3% THD
THD 20Hz-20kHz		0.08% (Front) (stereo mode)
IM distortion		0.08% (Front) (stereo mode)
Damping factor		60 at 8Ω (Front)
Input sensitivity and Impedance:		
	Phono:	2.5mV, 47k ohms
	Line:	150mV, 18k ohms
	Video:	1Vp-p, 75 ohms
Output level and Impedance		
	Tape 1,2 Line Out:	150mV, 2.2k ohms
	Video 2 Line Out:	150mV, 2.2k ohms
	Pre Out:	1V, 2.2k ohms (Subwoofer)
	Video:	1Vp-p, 75 ohms (Video 2, Monitor)
Phono Oveload 1kHz, 0.5% THD		120mV RMS
Frequency response 5Hz to 50kHz		±0.8dB
RIAA Deviation 20Hz-20kHz		±0.8dB
Tone control	Bass:	±8dB at 100Hz
	Treble:	±8dB at 10kHz
Signal/Noise ratio	Phono	80dB (IHF A, 5mV input)
	CD/Tape:	100dB (IHF A)
Muting:		-40dB

Remote Control
Power, Master Volume Up/Down, Mute, Sleep, Surround Mode, Delay Time, Test Tone, Center Volume Up/Down, Rear Volume, Up/Down, Input Selector (CD, Phono, Tuner, Tape 1, Tape 2, Video 1, Video 2)
Deck A/B, (Play, Reverse Play, Stop, Record/Pause, Fast Forward, Rewind)
CD: (Play, Pause, Stop, Disc, Skip Forward/Back)
Tuner: (Bank, Preset Up/Down)

Physical Specification	
Dimensions in mm (WxHxD)	435 x 145 x 330
Net weight	9.6kg
Shipping weight	10.7kg

WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

FRONT PANEL CONTROLS

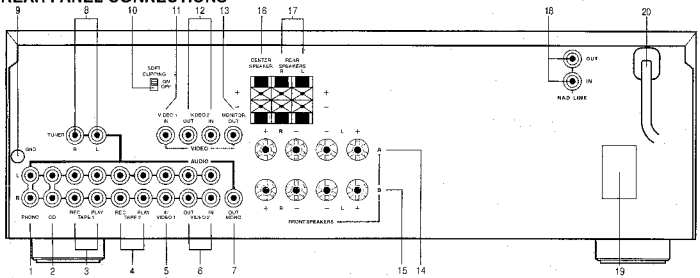


1. POWER
2. SPEAKERS A B
3. HEADPHONE SOCKET
4. VOLUME
5. BASS & TREBLE CONTROLS
6. BALANCE
7. TONE DEFEAT
8. VIDEO 1, VIDEO 2, TAPE 1, TAPE 2 MONITOR, TUNER, CD
9. SURROUND
10. CENTER
11. DELAY
12. CDR

The lightning flash with arrowhead, within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.

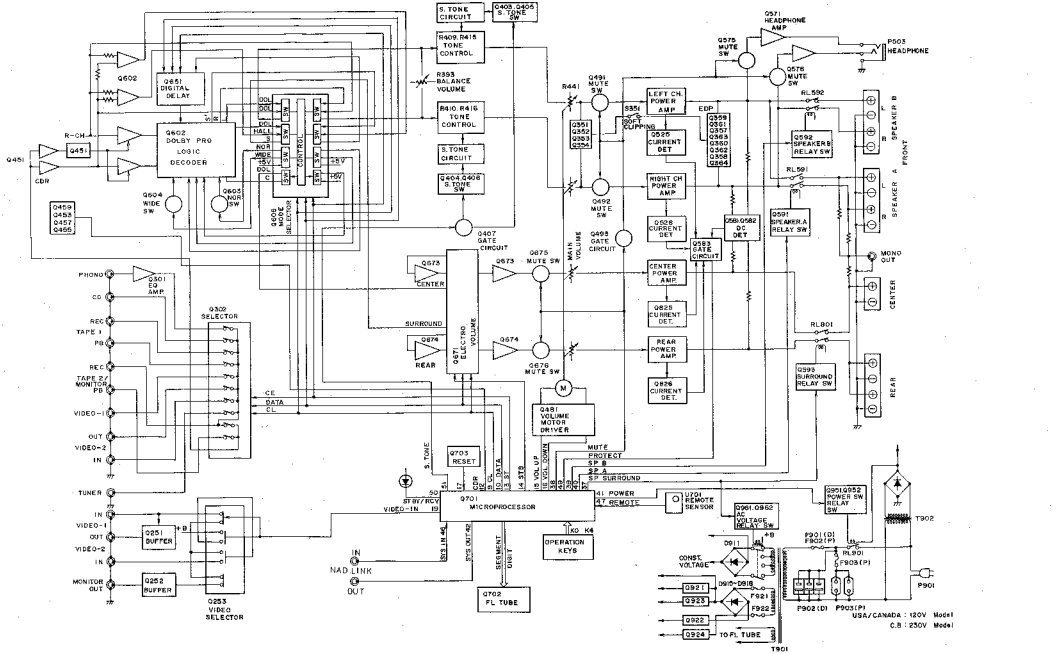
The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

REAR PANEL CONNECTIONS

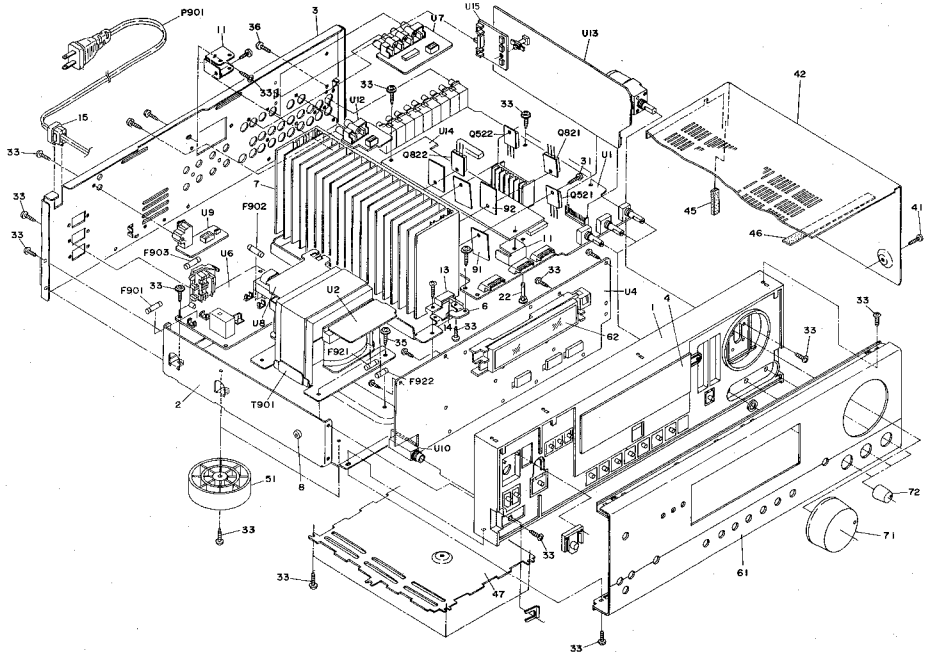


1. PHONO INPUT
2. CD INPUT
3. TAPE 1
4. TAPE 2
5. VIDEO 1
6. VIDEO 2
7. MONO OUT
8. TUNER
9. GROUND TERMINAL
10. SOFT CLIPPING
11. VIDEO 1
12. VIDEO 2
13. MONITOR VIDEO OUTPUT
14. FRONT SPEAKERS A
15. FRONT SPEAKERS B
16. CENTER SPEAKER
17. REAR SPEAKERS
18. NAD-LINK IN OUT
19. AC OUTLETS (EUROPEAN AND US VERSIONS ONLY)
20. AC POWER CORD CONNECTOR

BLOCK DIAGRAM



EXPLODED VIEW



PARTS LIST

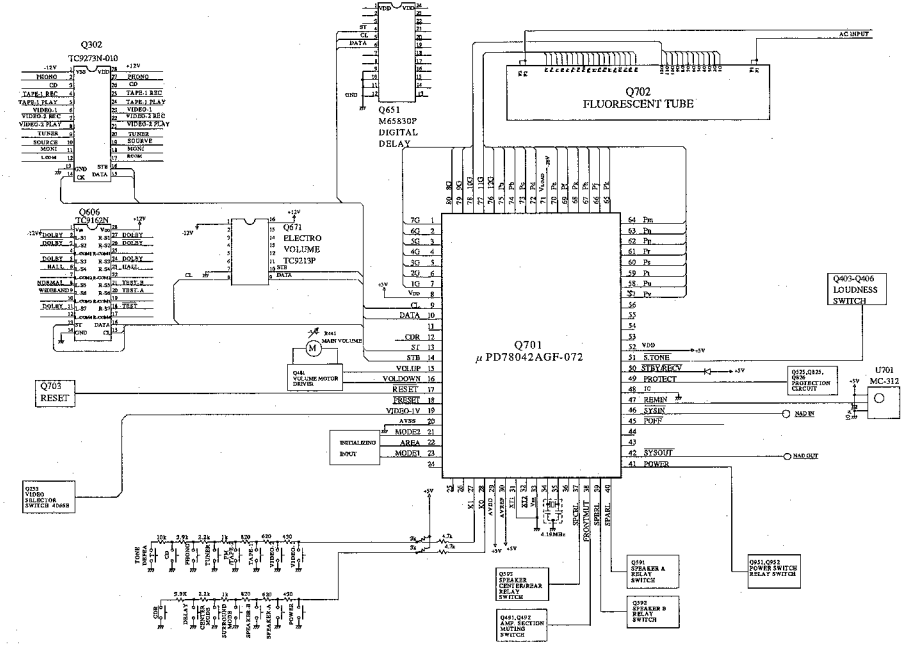
REF.NO.	PART NO.		DESCRIPTION	REF.NO.	PART NO.		DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
1	27110872Y		Front bracket	P304	25960064		NANIWA 3*14	U2	1A600597-4Y	NAETC-5397-4, Power secondary supply
2	27100298AY		Chassis	P901	253192HIT or	⚠	AS-UC-6#18 or			circuit pc board ass'y <AH>
3	27122096AY		Rear panel <AH>		253194MARY	⚠	AS-UC-6#18, Power supply cord <AH>		1A600597-4AY	NAETC-5397-4A, Power secondary supply
	27122097AY		Rear panel <C>		253092-1A	⚠	AS-CEE-2, Power supply cord <C>			circuit pc board ass'y <C>
	27122106AY		Rear panel <B><B1>		253198HIT	⚠	AS-BS, Power supply cord <B>	U4	1A600567-1Y	NADIS-5467-1, Display circuit pc board ass'y <AH>
6	27130727Y		Bracket H		253197HIT	⚠	AS-SAA, Power supply cord <B1>		1A600567-1AY	NADIS-5467-1A, Display circuit pc board ass'y <C>
7	27160330CY		Radiator <AH>	F901	252164Y	⚠	5A-UL/T-237, Primary fuse <AH>	U6	1A600569-1Y	NAPS-5469-1, Power primary supply
	27160353BY		Radiator <C>	F902	252076	⚠	3.15A-SE-EAK, Primary fuse <C>			circuit pc board ass'y <AH>
11	2714623Y		Retainer H	F903	252075	⚠	2.5A-SE-EAK, Primary fuse <C>		1A600569-1AY	NAPS-5469-1A, Power primary supply
12	27141530AY		Retainer H, H-2	F921	252156Y	⚠	1A-UL/T-237, Secondary fuse <AH>			circuit pc board ass'y <C>
13	27141654Y		Retainer		252070	⚠	1A-SE-EAK, Secondary fuse <C>		1A600569-1BY	NAPS-5469-1B, Power primary supply
15	27300750	⚠	Cord bushing, #2271	F922	252156Y	⚠	1A-UL/T-237, Secondary fuse <AH>			circuit pc board ass'y <B><B1>
16	880009		Plastic rivet <C>		252070Y	⚠	1A-SE-EAK, Secondary fuse <C>	U7	1A600570-1Y	NAETC-5470-1, Video circuit pc board ass'y
22	27190524		HGLS-14RF, Holder	Q521,522	2202823 or	*	2SC3200-O or	U8	1A600571-1Y	NAETC-5471-1, Primary circuit pc board ass'y
23	27190062		Holder		2201483	*	2SC3281-O, Power amplifier transistor	U9	1A600572-1Y	NAETC-5472-1, NAP LINK terminal pc board ass'y
31	801433		3MS8W,SW+14B(BC), Semi screw	Q523,524	2202813 or	*	2SA1943-O or	U10	1A600573-1Y	NAETC-5473-1, Headphone terminal
33	838130088		3TTB+8B, Self-tapping screw		2201473	*	2SA1302-O, Power amplifier transistor			pc board ass'y <AH>
35	830440089		4TTC+8C(BC), Self-tapping screw	Q821,822	2203043 or	*	2SC5197-O or		1A600573-1AY	NAETC-5473-1A, Headphone terminal
41	838430088		3TTB+8B(BC), Self-tapping screw		2202253 or	*	2SC4467-O or			pc board ass'y <C>
42	28184588ZY		Top cover		2202503 or	*	2SC3181N-O or	U12	1A600575-1Y	NAETC-5475-1, Tuner terminal pc board ass'y <AH>
44	28141306Y		Cushion, t6x5x30		2202254 or	*	2SC4467-Y or		1A600575-1AY	NAETC-5475-1A, Tuner terminal pc board ass'y <C>
45	28141311Y		Cushion, t8x10x20		2202256	*	2SC4467-P, Power amplifier transistor	U13	1A600576-1Y	NAAF-5476-1, Surround circuit pc board ass'y
46	28140546Y		Cushion, t0.5x10x390	Q823,824	2203033 or	*	2SA1940-O or	U14	1A600577-1Y	NAAF-5477-1, Center and rear amplifier
47	27170304AY		Bottom board		2202243 or	*	2SA1694-O or			circuit pc board ass'y <AH>
51	27175305Y		Leg ass'y		2202493 or	*	2SA1264N-O or		1A600577-1AY	NAAF-5477-1A, Center and rear amplifier
61	1A600121Y		Front panel ass'y		2202244 or	*	2SA1694-Y or			circuit pc board ass'y <C>
62	28191718Y		Clear plate		2202246	*	2SA1694-P, Power amplifier transistor	U15	1A600578-1Y	NAETC-5478-1, EDP circuit pc board ass'y
71	28325155		Knob, volume	R597	4000144		PTH9M04BC222, Positor			
72	28325004AY		Knob, tone	T901	2301118Y	⚠	NPT-1245D, Power transformer <AH>			
73	28325141Y		Knob, power		2301119Y	⚠	NPT-1245P, Power transformer <C>			
91	223021		Isolation sheet, Q821-Q824	U1	1A600596-4Y		NAAR-5396-4, Main circuit pc board			
92	260208		Wire tie				ass'y <AH>			
93	223023		Isolation sheet, Q521-Q524		1A600596-4AY		NAAR-5396-4A, Main circuit pc board			
	28175221Y		Isolation plate <C>				ass'y <C>			

NOTE: <AH>: U.S.A., Canadian model only
<B>: U.K. model only
<B1>: Australian model only
<C>: European model only

CAUTION: Replacement for transistor of mark "*", if necessary, must be made from the same beta group (HFE) as the original type.

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

MICROPROCESSOR-CONNECTION DIAGRAM



MICROPROCESSOR TERMINAL DESCRIPTION

Q701: μ PD78042AGF-072

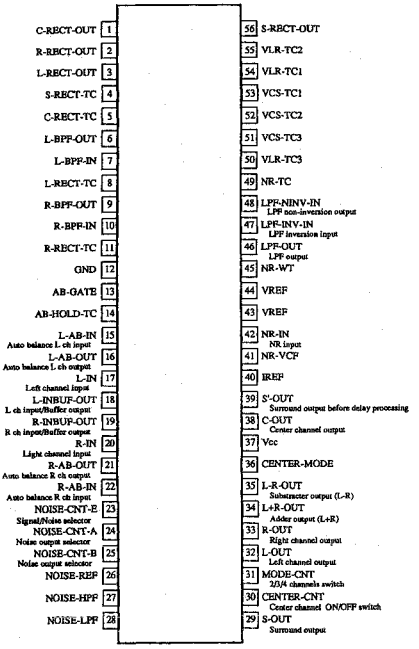
Pin No.	Function	I/O	Description
1~7	7G~1G	O	Grid control output pin. On at the high level.
8	VDD		Power supply pin (+5V)
9	CL	O	Clock output pin. Connect to the terminals CK of function switch Q302, surround mode switch Q606, electro volume Q671and digital delay Q651.
10	DATA	O	Data output pin. Connect to the terminals DATA of function switch Q302, surround mode switch Q606, electro volume Q671and digital delay Q651.
11	PLL		Not used.
12	CDR	O	Chip enable output pin for Q459.
13	ST	O	Chip enable output pin. Connect to the terminals ST of function switch Q302, surround mode switch Q606, electro volume Q671and digital delay Q651.
14	STB	O	Chip enable output pin for electro volume Q671.
15	VOLUP	O	Volume control output pin. Volume up
16	VOLDOWN	O	Volume control output pin. Volume down (Refer table 1.)
17	RESET	I	System reset input pin
18	PRESET		Not used.
19	VIDEO IN	O	Video input selector output pin.
20	AVSS		Ground pin of A/D converter
21	MODE 2	I	Initializing input of operation mode
22	ARBA	I	Initializing input of area region
23	MODE1	I	Initializing input of operation mode
24	K4	I	Not used.
25	K3	I	Not used
26	K2	I	Not used
27	K1	I	Operation key connection pin
28	K0	I	Operation key connection pin
29	AVDD		Analogue power supply of A/D converter
30	AVREF		Reference voltage input pin of A/D converter
31	XT1		Crystal connection pin for sub system clock resonator
32	XT2		Not used.
33	VSS		Ground pin
34	X1		Resonator connection terminal for main system clock
35	X2		Connect the ceramic resonator 4.19MHz.
36	TUMUT	O	Not used
37	SPCRL	O	Relay control pin for speaker.
38	FRONT MUT	O	Muting output pin for amplifier section
39	SPBRL	O	Relay control pin for speaker.
40	SPA RL	O	Relay control pin for speaker
41	PW	O	Power source control output pin
42	SYSOUT	O	System code output pin. (NAD OUT)
43	RDSDATA		Not used
44	RDSSCK		Not used
45	POFF	I	Power stoppage detector input pin
46	SYSIN	I	System code input pin (NAD IN)
47	REMIN	I	Remote control signal input pin
48	IC		Internal connection pin. Connect to the ground terminal.
49	PROTECT	I	Detector input pin of protection circuit. H:On
50	STBY/RECV	O	Stand-by and received indicator output pin
51	STONE/TONED	O	Tone defeat control output pin.
52	VDD		Power supply pin (+5V)
53	STEREO		Not used
54	SD		Not used
55	RDSSIG		Not used
56	RFIN		Not used
57~70	PV~PE	O	Segment output pins. On at the high level.
71	VLOAD	I	Pull-down resistor connection pin of controller and driver of FL.
72~75	PD~PA	O	Segment output pins. On at the high level.
76~80	12G~8G	O	Grid control output pin. On at the high level.

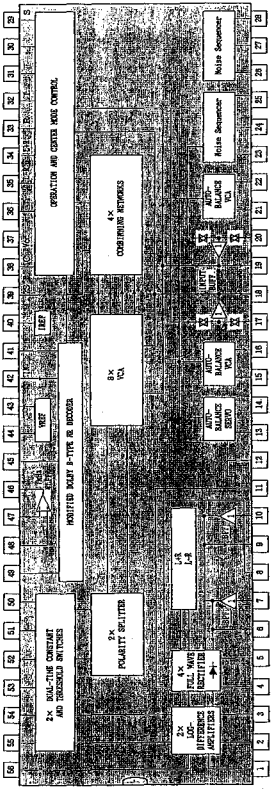
Operation	#15	#16
VOLUME UP	H	L
VOLUME DOWN	L	H
STOP	H	H

Table 1

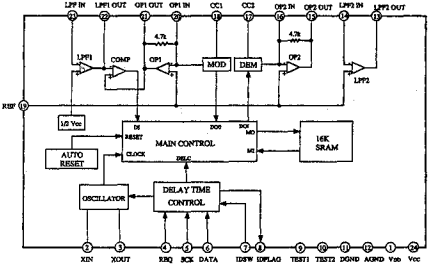
IC BLOCK DIAGRAM AND DESCRIPTIONS

Q602: NJM2177L / M69032P (Dolby Pro Logic)



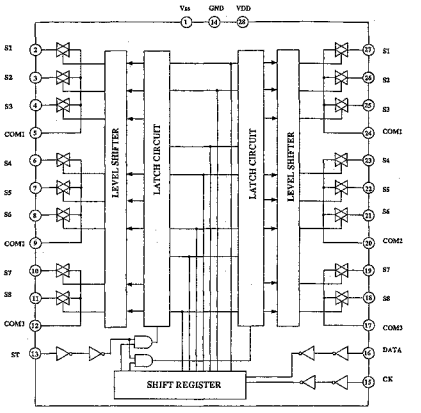


Q651: NJU9701D / M65830P (Digital Delay)

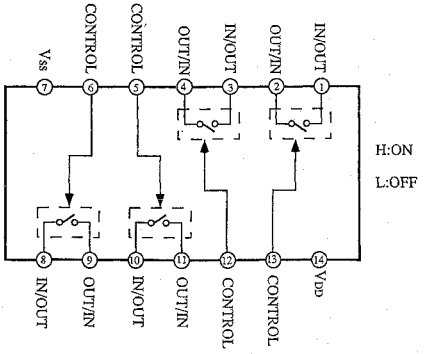


Pin No.	Mark	Function	I/O	Description
1	VDD	Digital power supply	-	
2	XIN	Resonator input	I	Connect the 2MHz ceramic resonator
3	XOUT	Resonator output	O	
4	REQ	Request	I	Data request input
5	SCK	Shift lock	I	Serial data shift clock input
6	DATA	Data	I	Serial data input
7	IDSW	ID switch	I	External input of 4th bit of ID code
8	IDFLAG	ID flag	O	Data input confirmation pulse and serial data output
9	TEST1	Test 1	-	Normal mode when low level
10	TEST2	Test 2	-	Normal mode when low level
11	D GND	Digital ground	-	
12	A GND	Analog ground	-	
13	LPF2 OUT	LPF filter 2 output	O	
14	LPF2 IN	LPF filter 2 input	I	
15	OP2 OUT	Operation amp. 2 output	O	
16	OP2 IN	Operation amp. 2 input	I	
17	CC2	Current control 2	-	Demodulation ADM control
18	CC1	Current control 1	-	Modulation ADM control
19	RBF	Reference	-	Analog reference voltage=1/2VCC
20	OP1 IN	Operation amp. 1 input	I	
21	OP1 OUT	Operation amp. 1 output	O	
22	LPF1 OUT	LPF filter 1 output	O	
23	LPF1 IN	LPF filter 1 input	I	
24	VCC	Analog power supply	-	

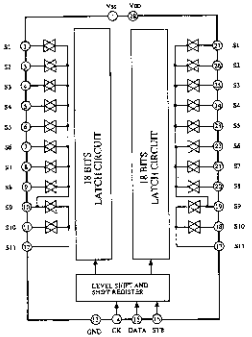
Q606: TC9162N / NJU7311L (Function Switch)



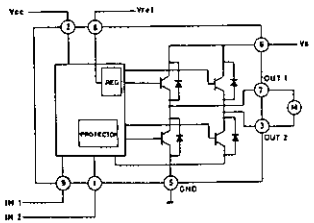
Q253: 4066B (Analog Switch)



Q302: TC9273N-010 (Function Switch)



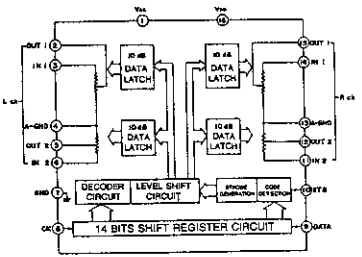
Q481: TA7291S (Volume driver)

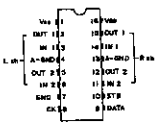


INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

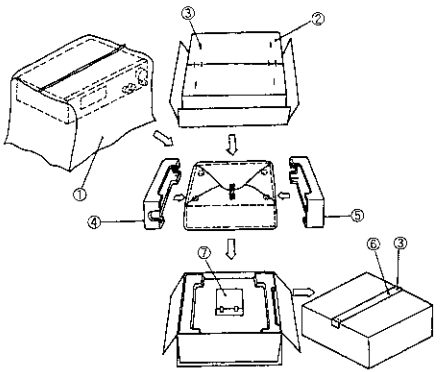
CCW: Counter clockwise direction
CW: Clockwise direction

Q671: TC9213P (Electro Volume)





PACKING VIEW

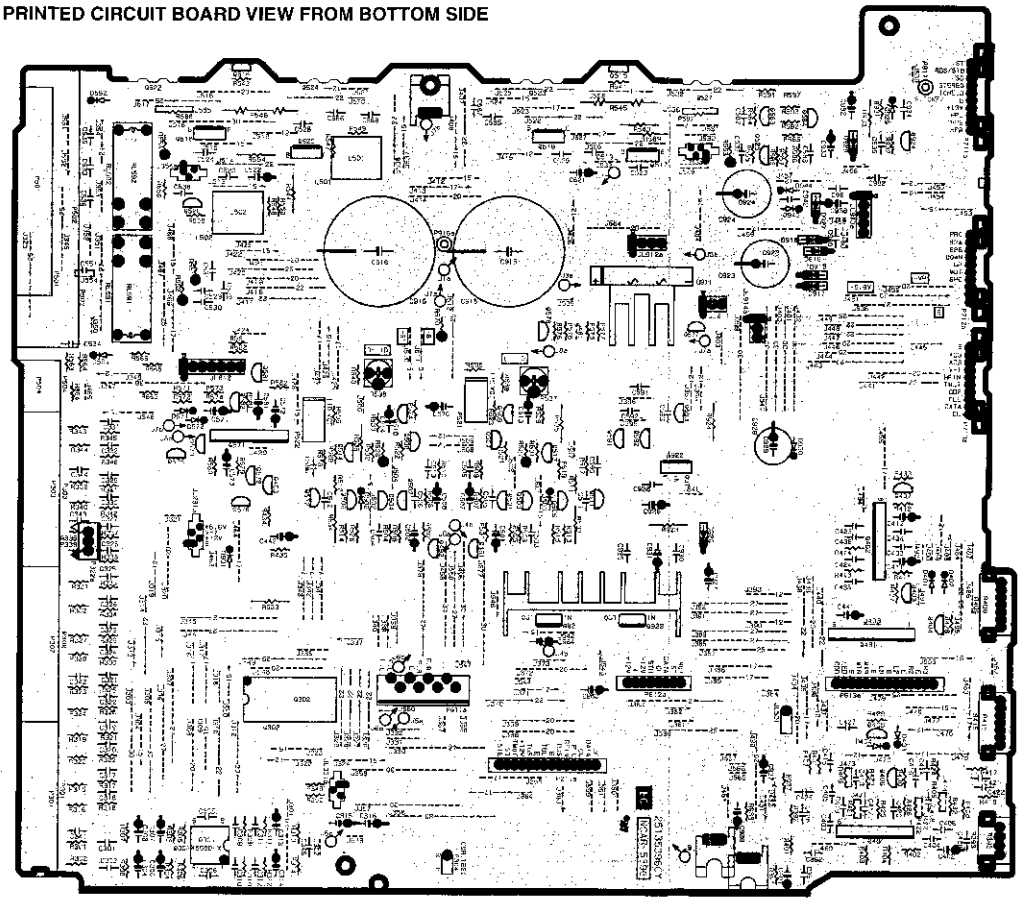


PACKING PARTS LIST

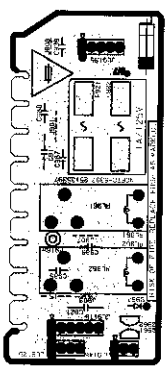
REF.NO.	PART NO.	DESCRIPTION
1	29100034-1Y	Styren bag, 850x650
2	29052900AY	Carton Box
3	282321 or	Staple
	282301	
4	29091694Y	Pad, L
5	29091695Y	Pad, R
6	29110071 or	PP tape, W=50
	29110098	
7	Accessary bag ass'y	
	29100697-1Y	Styren bag, 350x250
	24140300Y	RC-300S, Remote control transmitter
	3010194	UM-3, Two batteries
	29542165Y	Instruction manual, U6
	29100317Y	Remote control cable, NAD LINK
	29355233Y	Instruction sheet <AH>
	29365043Y	Warranty card <B1>
	29360778Y	Label, Flash <AH>
	29361573Y	Label,PE-LD <C>
	29361759Y	Label, UL/C-UL <AH>
	29361573Y	Label, PE-LD <C>

NOTE: <AH>: U.S.A., Canadian model only
<H>: U.K. model only
<B1>: Australian model only
<C>: European model only

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



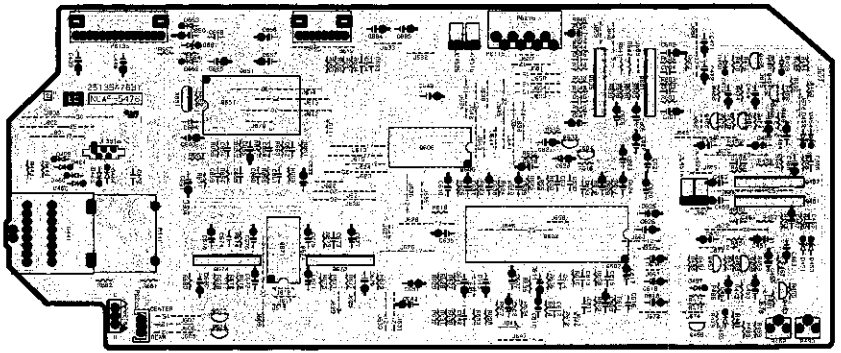
MAIN CIRCUIT PC BOARD (NAAR-5396)

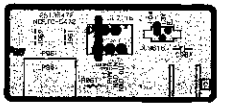


POWER SECONDARY SUPPLY CIRCUIT
PC BOARD (NAETC-5397)

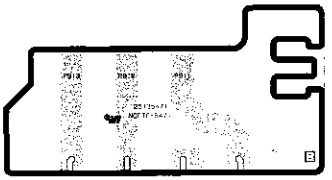
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

SURROUND CIRCUIT PC BOARD (NAAF-5476)

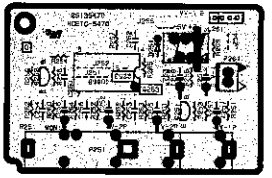




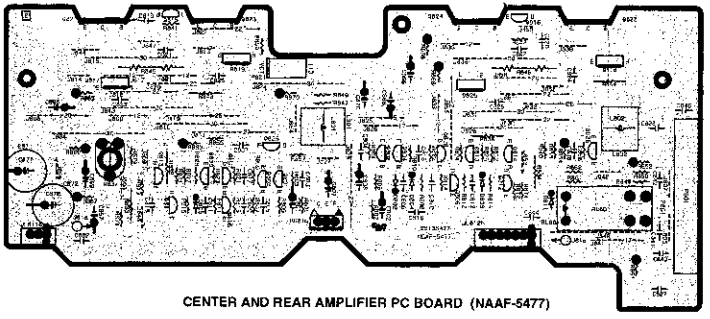
NADLINK TERMINAL PC BOARD
(NAETC-5472)



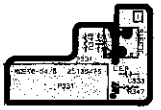
PRIMARY CIRCUIT PC BOARD
(NAETC-5471)



VIDEO CIRCUIT PC BOARD
(NAETC-5470)



CENTER AND REAR AMPLIFIER PC BOARD (NAAF-5477)

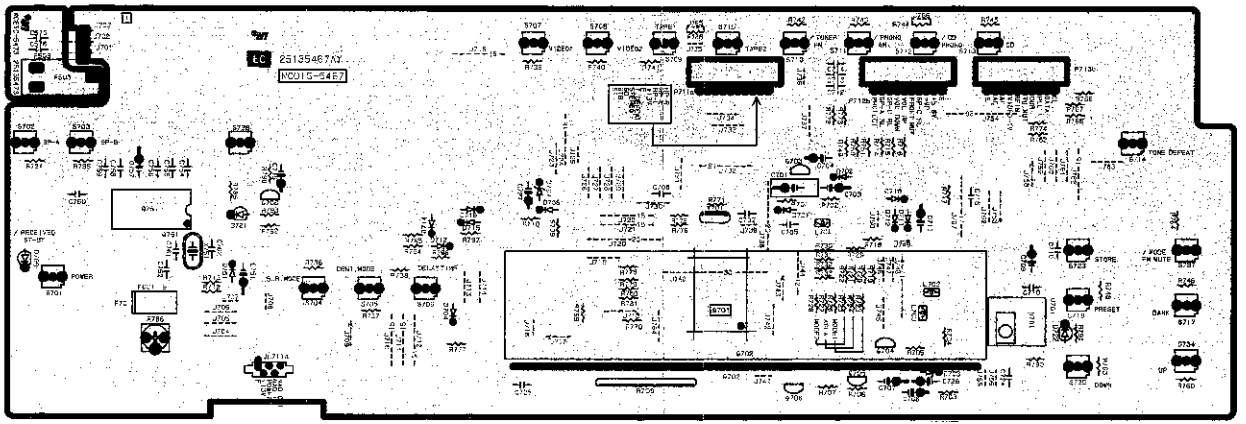


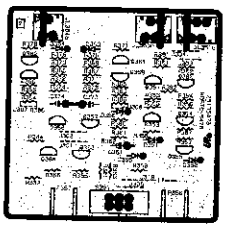
TUNER TERMINAL CIRCUIT PC BOARD
(NAETC-5475)

PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

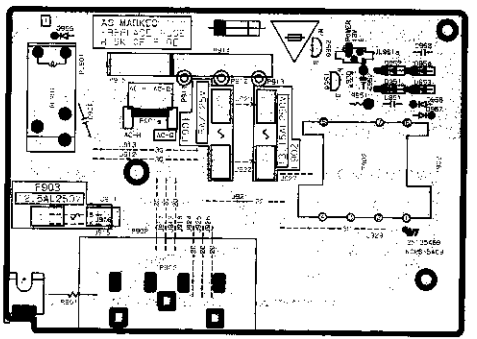
HEADPHONE TERMINAL PC BOARD
(NAETC-5473)

DISPLAY CIRCUIT PC BOARD (NADIS-5467)



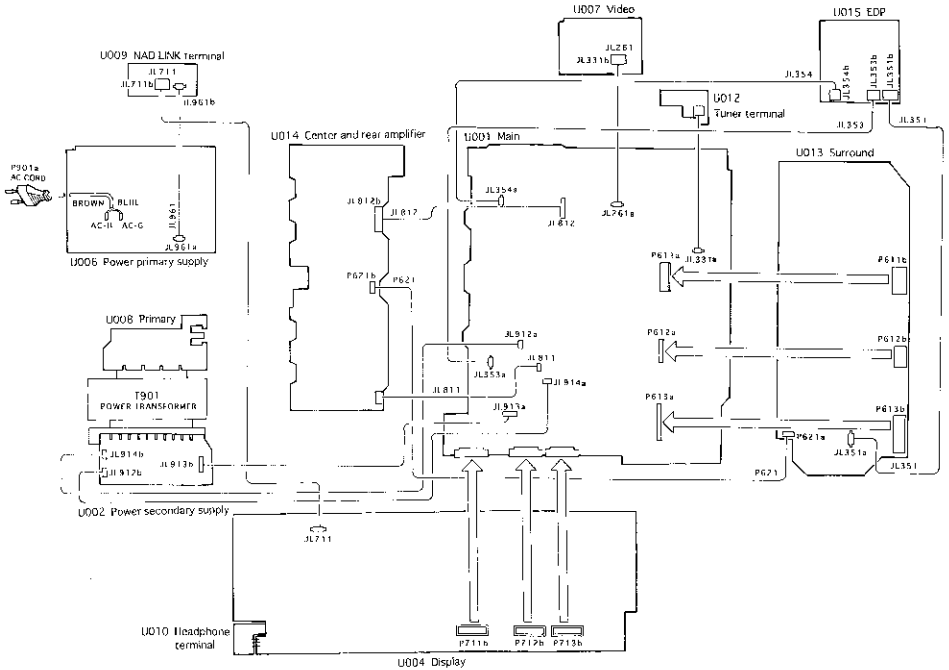


EDP CIRCUIT PC BOARD (NAETC-5478)



POWER PRIMARY SUPPLY CIRCUIT PC BOARD
(NAPS-5469)

WIRING DIAGRAM



PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-5396-4/4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q301	222502	NJM4558D-X
Q302	22240881	TC9273N-010
Q401,Q402	22240247 or	BA15218N or
	22240293	NJM4558L-D
Q481	22240239	TA7291S
Q571	22240752	NJM4556L
Q921	222780125NEC	MPC78M12AHF
Q922	222790125	79M12HF
Q923	222780565JRC	NJM78M56FA
	Transistors	
Q403-Q406	2211945	2SK246-GR
Q407	2213510	DTA114ES
Q491,Q492	2213631 or	RN1241-A or
	2213632	RN1241-B
Q493	2213540	DTA114ES
Q501-Q504	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q505,Q506	2213354	2SA933S-R
Q507,Q508	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q509,Q510	2213284	2SC1740S-R
Q511,Q512	2211353 or	2SA949-O or
	2211354	2SA949-Y
Q513,Q514	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
Q515,Q516	2213284	2SC1740S-R
Q517,Q518	2203810 or	2SC5171 or
	2202034	2SD1763A-D
Q519,Q520	2203000 or	2SA1930 or
	2202024	2SB1186A-D
Q525,Q526	2211633 or	2SC2229-O or
	2211634	2SC2229-Y
Q572	221282	DTC144ES
Q573	2211164	2SC2120-Y
Q575,Q576	2213631 or	RN1241-A or
	2213632	RN1241-B
Q581,Q582	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q583	2211791 or	2SA992-F or
	2211793	2SA992-E
Q584	2213284	2SC1740S-R
Q924	2211455	2SA1015-GR
Q591-Q593	2213640	DTC123JS
	Diodes	
D401-Q404	223163	1SS133
D505,D506	223163	1SS133
D571,D572	223163	1SS133
D591,D592	223163	1SS133
D911	22380038	RBV602
D915-D918	223800032	1SR139-100
D926-D928	223800032	1SR139-100
D929	224473304	MTZJ33D
D930,D931	223163	1SS133
	Coils	
L501,L502	2311765	S-I 3C
	Capacitors	
C303,C304	354741009	10 μ F,16V, Elect.
C307,C308	354721019	100 μ F, 6.3V, Elect.
C309,C310	374726224	6200pF, ±5%, 50V, Plastic
C311,C312	374721824	1800pF, ±5%, 50V, Plastic
C313-C316	354741009	10 μ F,16V, Elect.
C391,C392	374721015	100pF, ±10%, 50V, Plastic
C401,C402	354741009	10 μ F, 16V, Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
C411,C412	354741009	10 μ F, 16V, Elect.
C427,C428	374721534	0.015 μ F, ±5%, 50V, Plastic
C433,C434	374721534	0.015 μ F, ±5%, 50V, Plastic
C435,C436	374721015	100pF, ±10%, 50V, Plastic
C441	354721019	100 μ F, 6.3V, Elect.
C442	354780109	1 μ F, 50V, Elect.
C501,C502	354741009	10 μ F, 16V, Elect.
C503,C504	374721015	100pF, ± 10%, 50V, Plastic
C507,C508	354724719	470 μ F,6.3V,Elect.
C513,C514	354722219	220 μ F, 6.3V, Elect.
C521,C522	354772209	22 μ F, 63V, Elect.
C529-C532	374721044	0.01 μ F, ±5%, 50V, Plastic
C570	354791019	100 μ F, 100V,Elect.
C571-C573	354741009 or	10 μ F, 16V, Elect.
	355741009	10 μ F, 16V, Elect.
C581	354721019	100 μ F, 6.3V, Elect.
C915,C916	3504286	12000 μ F, 63V, Elect.
C923	354761029	1000 μ F, 35V, Elect.
C924	354763319	330 μ F, 35V, Elect.
C927,C928	354741009	10 μ F, 16V, Elect.
C931	354741009	10 μ F, 16V, Elect.
C932,C933	354781019	100 μ F, 50V, Elect.
C926,C937	354741009	10 μ F, 16V, Elect.
C938	354781009	10 μ F, 50V, Elect.
C983,C984	354741009	10 μ F, 16V, Elect.
	Resistors	
R393	5104288	N14RLC250KWT20Z, Balance
R409,R415	5104356	N14RLC100KWT20Z, Tone
R527,R528	443524734	47 kohm ± 5%, 1/2W, Metal oxide
R535,R536	4500095	100 ohm ± 5%, 1/4W, Metal
R537,R538	5210259	N06HR 2KBC, Trim
R543,R544	4500107	330 ohm ± 5%, 1/4W, Metal
R545,R546	4000132	RGC55 0.22 OHMK, Metal plate
R551,R552	453630824	8.2 ohm ± 5%, 1W, Metal
R553,R554	443523924	3.9 kohm ± 5%, 1/2W, Metal
R570	443522204	22 ohm ± 5%, 1/2W, Metal oxide
R587,R588	4500001	BPR2FK 0.10 ohm, Metal plate
R923	4500055	2.2 ohm ± 5%, 1/4W, Metal
R924	4500069	8.2 ohm ± 5%, 1/4W, Metal
R930	4500079	22 ohm ± 5%, 1/4W, Metal
R933	4500087	47 ohm ± 5%, 1/4W, Metal
	Relays	
RL591,RL592	25065339	NRL-2P5A-DC24-046
	Pin Jacks	
P301-P303	250454589Y or	NPJ-6PDBL279 or
	25045300Y	NPJ-6PDBL59
P504	250454599Y or	NPJ-10PDBL280 or
	25045302	NPJ-10PDBL161
	Plugs	
P904	25055405	NPLG-3P587
P611a	25055678	NPLG-8P634
P612a	25055649	NPLG-8P605
P613a	25055652	NPLG-14P608
	Sockets	
P711a-P713a	25051046	NSCT-10P833
	Wire holders	
JL251a	25051088	NSCT-4P875
JL331a	25051087	NSCT-3P874
JL353a	25051088	NSCT-4P875
JL354a	25051087	NSCT-3P874
JL811a	25051107	NSCT-3P894
JL812a	25051111	NSCT-7P898
JL912a	25051108	NSCT-4P895

CIRCUIT NO.	PART NO.	DESCRIPTION
JL915a	25051109	NSCT-5P896
JL914a	25051107	NSCT-3P894
		Terminals
P501	25060125 or 25060123	NTM-8PDMN058 or NTM-8PDMN058
P521,P522	25060062	2P-5, WW terminal
		Crimp ass'y
P916	20699915360ULY	
		Radiatores
D911a	27160227	RAD-076
Q921a	27160209	RAD-67
	838430107	3TTB+105(BC), Self-tapping screw
	27141059Y	Plate, GND

POWER SECONDARY SUPPLY CIRCUIT PC BOARD (NAETC-5307-4/4A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors
Q961	221282	DTC144ES
Q962	2213640	DTC123JS
		Diode
D961	223163	1SS133
		Capacitors
C987,C988	3747310#4	0.1 μ F,100V, Plastic
		Relays
RL961,RL962	25065503	NRL-1P10A-DC24-091
		Fuse holders
F921a,F922a	25050065	YSH403T
		Wire holders
JL912b	25051107	NSCT-4P895
JL913b	25051109	NSCT-5P896
JL914b	25051107	NSCT-3P894
A961	29360398	LABEL(FUSE) <C>

DISPLAY CIRCUIT PC BOARD (NADIS-5467-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		Remote sensor
U701	24130010	HC-312
		FL tube
Q702	212143	FIP13QM8
		ICs
Q701	22240950	MPD78042AGF-072
		Transistors
Q703	221282	DTC144ES
Q704-Q706	2213284	2SC1740S-R
Q708	221282	DTC144ES
		Diodes
D701,D702	223163	1SS133
D703	224470913	MTZJ9.1C
D704	223163	1SS133
D707	224470562	MTZJ5.6B
D708	223163	1SS133
D709	2252922D	SEL4310G-D
D710-D716	223163	1SS133
D721	225291D	SEL4910D-D

CIRCUIT NO.	PART NO.	DESCRIPTION
		Coils
L701-L703	233454K220	NCH-1452 220UK
		Ceramic lock
X701	3010163	CST4.19MGW
		Capacitors
C701	3000075	0.047F,5.5V, Super
C702	375524704	0.47 μ F±5%,50V, Plastic
C703	3557721019	100 μ F, 6.3V, Elect.
C704	3557801C9	1 μ F, 50V, Elect.
C706	3557801C9	1 μ F, 50V, Elect.
C707	3557801C9	1 μ F, 50V, Elect.
C709	3557721019	100 μ F, 6.3V, Elect.
C711	3557721019	100 μ F, 6.3V, Elect.
C726,C727	3557410C9	10 μ F, 16V, Elect.
		Switches
S701-S706	25035652	NPS-111-S604
S708-S712	25035652	NPS-111-S604
S714,S716	25035652	NPS-111-S604
S738	25035652	NPS-111-S604
		Plugs
P711b-P713b	25055659	NPLG-10P615
		Wire holder
JL711a	25051089	NSCT-5P876
		Holder
Q702a	27190937AY	FL

POWER PRIMARY SUPPLY PC BOARD (NAPS-5469-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors
Q951	221282	DTC144ES
Q952	2213650	DTD143ZS
		Diodes
D951-D954	223B0032	1SR139-100
D955	223163	1SS133
		Transformes
T902	2300670A	NPT-1111D <A#>
T902	2300671AY	NPT-1111P <C><B>
		Capacitor
C901	3500191	DE7150F-103M AC400V/125V
C952	354742219	220 μ F,16V, Elect
		Resistor
R951	4535308J4	8.2 ohm, 1/2W, Metal
		Plug
P901a	25055675	NPLG-2P631 <A#>
		Socket
P902	25051124	NSCT-6P911 <A#>
P902	25051125	NSCT-4P912 <C>
		Relay
RL901	25065483	NRL-1P5A DC12-084
		Fuse holders
F901a	25050065	YSH403T <A#>
F902a,F903a	25050065	YSH403T <C>
F902a	25050065	YSH403T <#>

CIRCUIT NO.	PART NO.	DESCRIPTION
	Wire holder	
JL961a	25051087	NSCT-3P874
	Cover	
	27301216	SB-3925A, Capacitor <C>
	Terminal	
	25060092	NTM-1533 <C>

VIDEO CIRCUIT PC BOARD (NAETC-5470-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q251,Q252	2213284 or	2SC1740S-R or
	2212115	2SC2458-GR
Q253	222840661	4066B
	Diode	
D251	223163	1SS133
	Capacitors	
C251,C252	354721019	100 μ F, 6.3V, Elect.
C255,C256	354724719	470 μ F, 6.3V, Elect.
C257,C259	354721019	100 μ F, 6.3V, Elect.
	Terminal	
P251	25045339Y	NPJ-4PDYE190
	Wire trap	
JL261	25055625	NPLG-4P587

NAD LINK TERMINAL PC BOARD (NAETC-5472-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Jack	
P961	25045395	NPJ-2PDYE221
	Wire trap	
JL711b	25055626	NPLG-5P588
	Wire holder	
JL961b	25051087	NSCT-3P874

HEADPHONE TERMINAL PC BOARD (NAETC-5473-1)

CIRCUIT NO	PART NO.	DESCRIPTION
	Jack	
P503	25045255	YKB21-5009

TUNER TERMINAL PC BOARD (NAETC-5475-1(A))

CIRCUIT NO.	PART NO.	DESCRIPTION
	Jacks	
P931	25045463 or	NPJ-2PDWE284 or
	25045360	NPJ-2PDWE206
	Wire trap	
JL831b	25055624	NPLG-3P586

SURROUND CIRCUIT PC BOARD (NAAF-5476-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q451,Q452	22240250	NJM2068L-D
Q601	22240247 or	BA15218N or
	22240293	NJM4558L-D
Q602	22240683 or	NJM2177L or
	22240692	M69032P
Q605	22240247 or	BA15218N or
	22240293	NJM4558L-D

CIRCUIT NO	PART NO.	DESCRIPTION
Q606	22240795 or	NJU7311L or
	22240398	TC9162N
Q651	22240687 or	NJU3701D or
	22240686	M65830P
Q671	22240266	TC9213P
Q673,Q674	22240247 or	BA15218N or
	22240293	NJM4558L-D
	Transistors	
Q453,Q454	2212524	2SK363-GR
Q455,Q456	2213284	2SC1740S-R
Q457,Q458	2213354	2SA933S-R
Q459,Q460	2213631	RN1241-A
Q603,Q604	2213631	RN1241-A
Q675,Q676	2213631	RN1241-A
	Diodes	
D451-D454	224470332	MTZJ3.3B
D455-D464	223163	1SS133
D651	224470562	MTZJ5.6B
D652,Q653	223163	1SS133
	Resonator	
X651	3010217	CST2.04MG040, Ceramic
	Capacitors	
C432,C440	354741009	10 μ F, 16V, Elect
C451,C452	354744709	47 μ F, 16V, Elect.
C453-C458	354741019	100 μ F, 16V, Elect.
C459,C460	354741009	10 μ F, 16V, Elect.
C461,C462	374721015	1000pF, ±10%, 50V, Plastic
C463,C464	354741019	100 μ F, 16V, Elect.
C465,C466	374721015	1000pF, ±10%, 50V, Plastic
C467,C468	354741009	10 μ F, 16V, Elect.
C469,C470	354780479	4.7 μ F, 50V, Elect.
C471,C472	354741009	10 μ F, 16V, Elect.
C601,C602	354780229	2.2 μ F, 50V, Elect.
C605,C606	354741009	10 μ F, 16V, Elect.
C607-C610	354781099	0.1 μ F, 50V, Elect.
C613,C614	374724734	0.047 μ F, ±5%, 50V, Plastic
C615,C616	374722234	0.022 μ F, ±5%, 50V, Plastic
C617-C620	354781059	0.1 μ F, 50V, Elect.
C621,C622	354780479	4.7 μ F, 50V, Elect.
C623-C627	354782299	0.22 μ F, 50V, Elect.
C628	354741009	10 μ F, 16V, Elect.
C629	354786899	0.68 μ F, 50V, Elect.
C630	374724734	0.047 μ F, ±5%, 50V, Plastic
C631	374725624	5600pF, ±5%, 50V, Plastic
C632,C634	354780229	2.2 μ F, 50V, Elect.
C635	354741019	100 μ F, 16V, Elect.
C636-C641	354741009	10 μ F, 16V, Elect.
C642	374724724	4700pF, ±5%, 50V, Plastic
C643	354741009	10 μ F, 16V, Elect.
C644	391141007	10 μ F, 16V, Elect.
C647 C650	354741009	10 μ F, 16V, Elect.
C651	354780229	2.2 μ F, 50V, Elect.
C653	374723924	3900pF, ±5%, 50V, Plastic
C655	374726834	0.068 μ F, ±5%, 50V, Plastic
C656	354744709	47 μ F, 16V, Elect
C657,C658	354781099	0.1 μ F, 50V, Elect.
C659	374726834	0.068 μ F, ±5%, 50V, Plastic
C660	374725624	5600pF, ±5%, 50V, Plastic
C661	374724724	4700pF, ±5%, 50V, Plastic
C663,C665	354721019	100 μ F, 6.3V, Elect.
C666	375524744	0.47 μ F, ±5%, 50V, Plastic
C671,C672	354780229	2.2 μ F, 50V, Elect.
C675,C676	354741009	10 μ F, 16V, Elect
C677,C678	354780229	2.2 μ F, 50V, Elect.
C679-C682	354741009	10 μ F, 16V, Elect.
C684,C685	354741009	10 μ F, 16V, Elect

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R441	5104347	N16RQL100KBT25F
R489,R490	5210292	N06HR 10KDJT, Trim
	Sockets	
P611b	25051127	NSCT-8P914
P612b	25050983Y	NSCT-8P770
P613b	25050986Y	NSCT-14P773
	Socket ass'y	
P621a	2000802AUL	NSAS-6P758
	Plug	
P622a	25055405	NPLG-3P387
	Wire holder	
JL351a	25051089	NSCT-5P876

CENTER AND REAR AMPLIFIER CIRCUIT PC BOARD (NAAF-5477-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q801-Q804	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q805,Q806	2213354	2SA933S-R
Q807,Q808	2211733 or	2SC1845-E or
	2211732	2SC1845-F
Q809,Q810	2213284	2SC1740S-R
Q811,Q812	2211353	2SA949-O
Q813,Q814	2211633	2SC2229-O
Q815,Q816	2213284	2SC1740S-R
Q817,Q818	2203010	2SC5171
Q819,Q820	2203000	2SA1930
Q825,Q826	2211733 or	2SC1845-E or
	2211732	2SC1845-F
	Diodes	
D805,D806	223163	1SS133
D811	223163	1SS133
	Coils	
L801,L802	231176S	S-13C
	Capacitors	
C801,C802	354741009	10 μ F, 16V, Elect.
C807	354742219	220 μ F, 16V, Elect.
C808	354744709	47 μ F, 16V, Elect.
C821,C822	374724734	0.047 μ F, ±5%, 50V, Plastic
C827,C828	374724734	0.047 μ F, ±5%, 50V, Plastic
C865-C870	354700109	1 μ F, 160V, Elect.
C871,C872	354774709	47 μ F, 63V, Elect.
	Resistors	
R826	443524734	47 k ohm, 1/2W, Metal oxide
R833,R834	4500081	27 ohm, 1/4W, Metal
R835,R836	4500095	100 ohm, 1/4W, Metal
R837	5215043	2KBC
R843,R844	4500107	330 ohm, 1/4W, Metal
R845	4000132	0.22 OHMK, Metal plate
R846	4000131	0.22 OHMK, Metal plate
R851,R852	453630824	8.2 ohm, 5W, Metal
R853,R854	443523924	3.9 kohm, 1/2W, Metal oxide
R865,R866	453530224	2.2 ohm, 1/2W, Metal
R867-R870	443522204	22 ohm, 1/2W, Metal oxide
	Plug	
P621b	25055234	NPLG-3P218
	Relay	
RE801	25065485	NRL-2P2A-DC24-086

CIRCUIT NO.	PART NO.	DESCRIPTION
	Wire trap	
JL811b	25050280	NSCT-3P108
JL812b	25050284	NSCT-7P112
	Terminal	
P801	25060234	NTM-6PDML156
P821	25060062	2P-5

EDP CIRCUIT PC BOARD (NAETC-5478-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Transistors	
Q351	2213284	2SC1740S-R
Q352	2213354	2SA933S-R
Q353	2213284	2SC1740S-R
Q354,Q355	2213354	2SA933S-R
Q357,Q358	2213284	2SC1740S-R
Q359-Q362	2213354	2SA933S-R
Q363,Q364	2213284	2SC1740S-R
	Diodes	
D351-D355	223163	1SS133
D356	2D4470512	MTZJ5.1B
	Capacitors	
C351	354741009	10 μ F, 16V, Elect.
C373,C374	354741019	100 μ F, 16V, Elect.
	Slide switch	
S351	25065286Y	NSS-22112
	Screw trim	
P356,P357	25065425	M3
	Wire trap	
JL351b	25055626	NPLG-5P588
JL353b	25055625	NPLG-4P587
JL354b	25055624	NPLG-3P586

CAUTION: Replacement for transistor of mark "*", if necessary, must be made from the same hfe group (HFE) as the original type.

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

ADJUSTMENT PROCEDURES

Preparation

1. Outputs
   Connect the non-inductive type resistors of 8 ohms to the speaker terminals A unless otherwise noted.

2. Standard Knob Positions

Master Volume Control	Maximum
Bass Control	Center
Treble Control	Center
Balance Control	Center
Input Selector	CD
Tape 2 Monitor	Off
Muting	Off
Tone Defeat	Off
Speaker A	On
Speaker B	Off
Center Mode	Wide Band
Delay Time	20 ms
Center Level	0 dB
Rear Level	0 dB
Surround Mode	Off
CDR	Off
Soft Clipping	Off

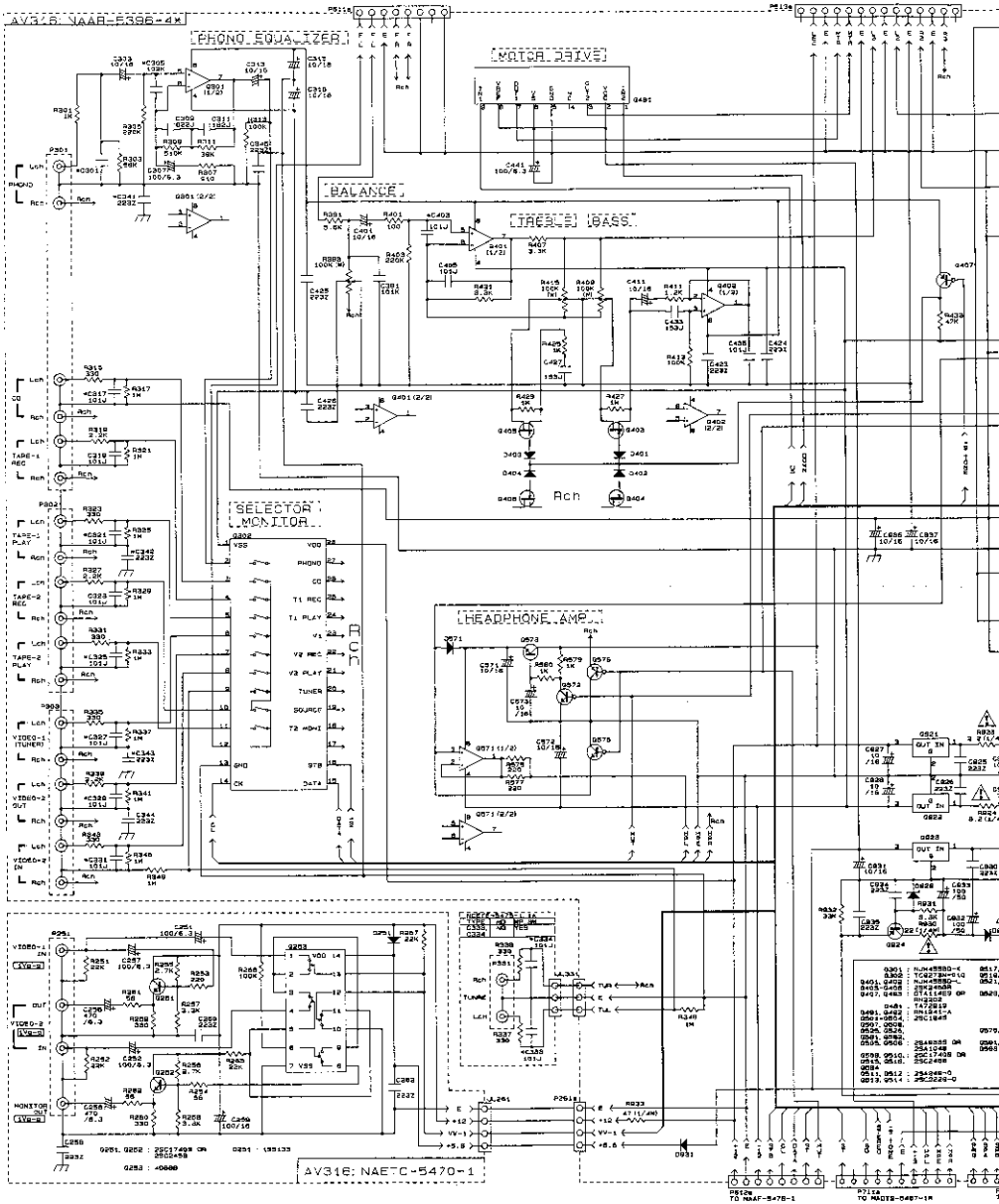
IDLING CURRENT ADJUSTMENT

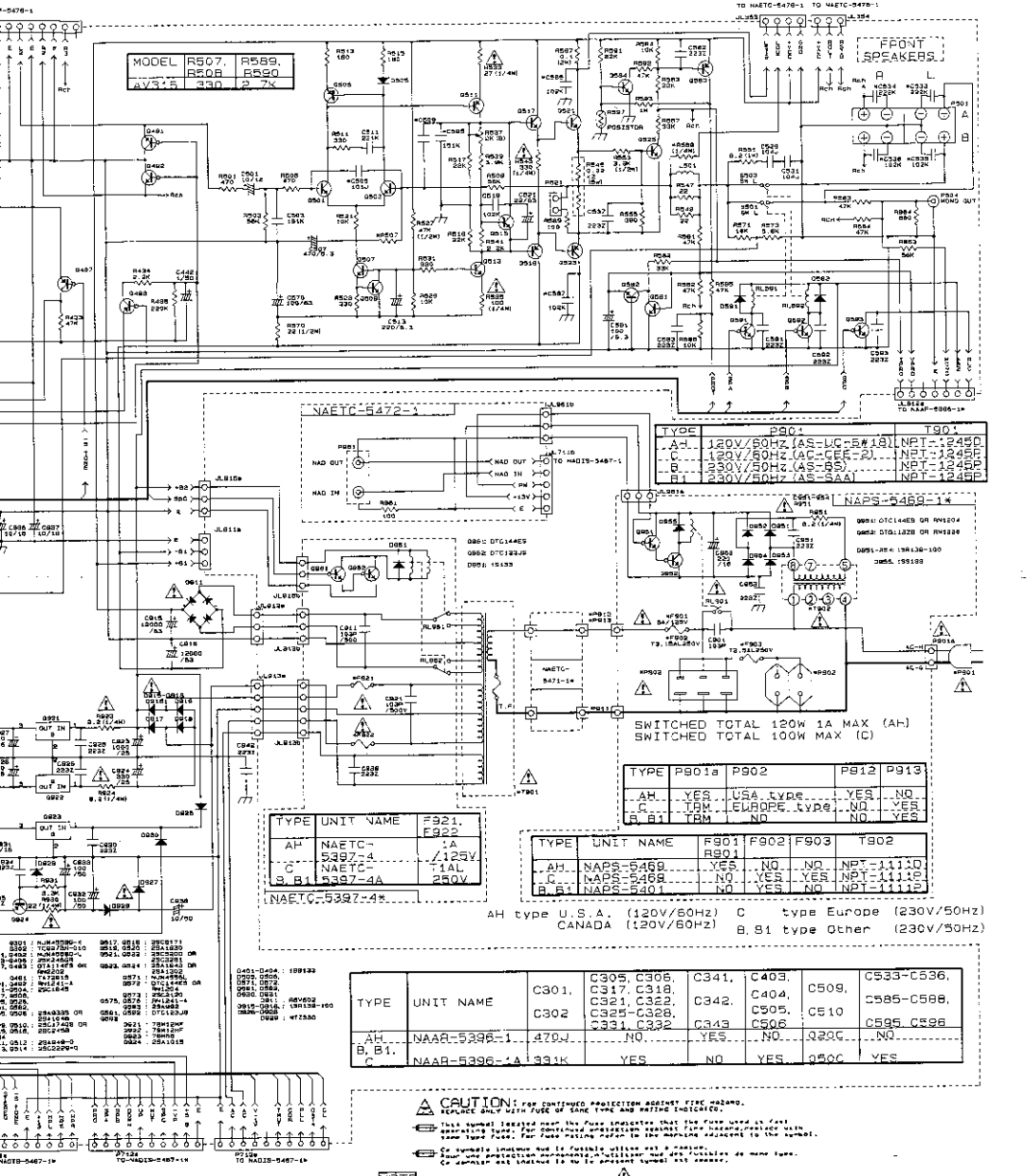
1. Connect the DC voltmeter to the terminals P521, P522 (VCT and IID) on the main circuit pc board, and P821 on the center and rear amp. pc board.
2. Adjust the trim resistors R537, R538 and R837 so that the indicator of voltmeter becomes 3.25mV±0.25mV.
   NOTE: Adjust after switching on for 5 minutes. Set Volume knob to the minimum position.

CDR ADJUSTMENT

1. Set the volume to minimum position.
2. Connect the Dual Channel Voltmeter to test point (P304) on main pc board.
3. Set the function to "CD" position. Input the signal (1kHz-15dBV).
4. Turn "CDR" on, adjust the output level at "L ch" with "R489 on surround pc board " until it reaches "-11dBV".
5. Adjust the output level (both channel) with "R490" to"-11dBV±1.0dBV" on test point (P304) slowly & Precisely.
   (The difference between "L ch" and "R ch" should be "0±0.5dB".)

SCHEMATIC DIAGRAM





TYPE	P901*	T901*
AH	120V/60Hz (AS-LC-5#1B)	NPT-1245D
C	120V/60Hz (AC-CEE-2)	NPT-1245E
B	230V/50Hz (AS-BS)	NPT-1245D
B1	230V/50Hz (AS-SAA)	NPT-1245D

TYPE	P901a	P902	P912	P913
AH	YES	USA type	YES	NO
C	TBM	EUROPE type	NO	YES
B, B1	TBM	NO	NO	YES

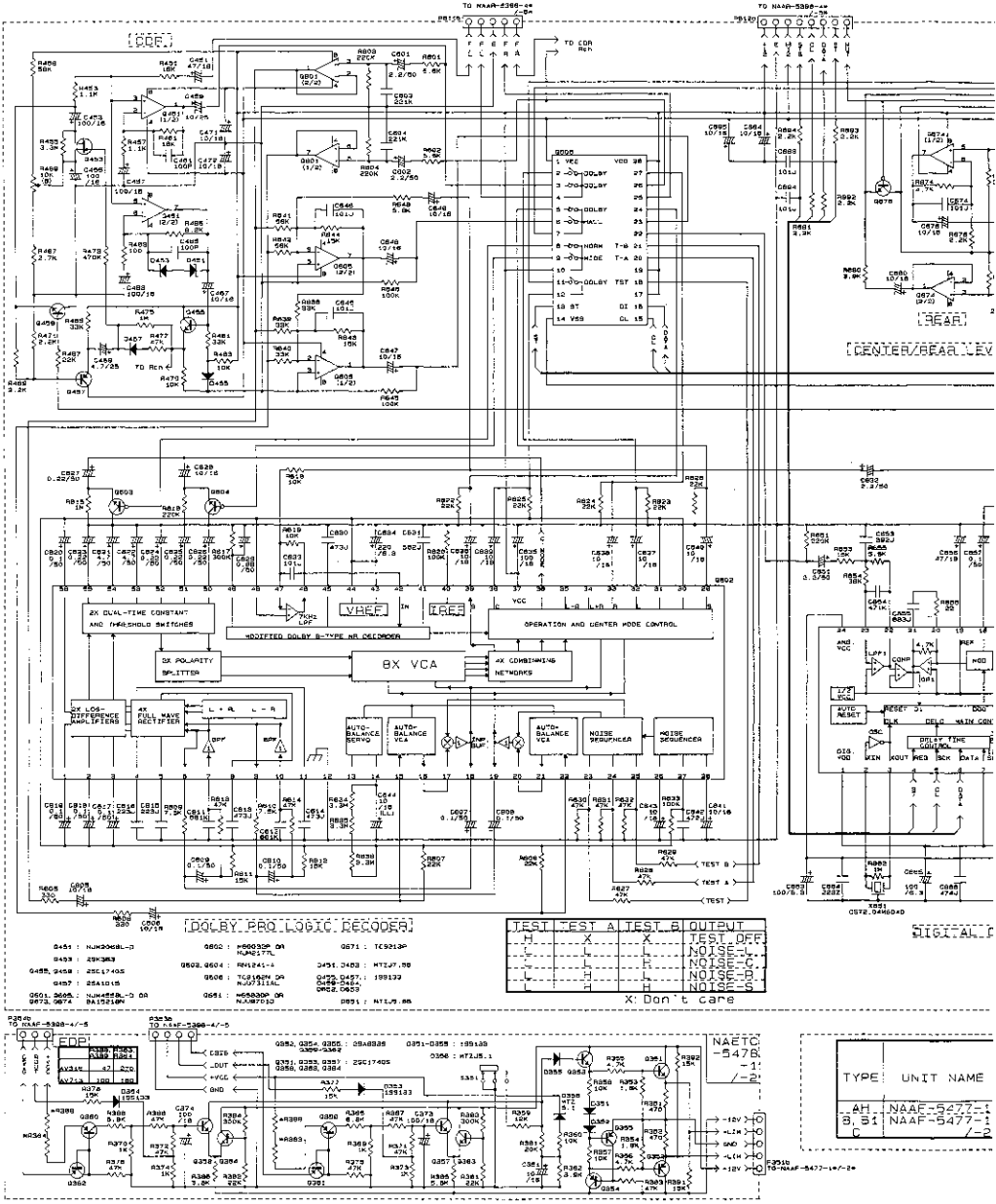
TYPE	UNIT NAME	F921, F922
AH	NAETC-5397-4	1A /125V
C, B, B1	NAETC-5397-4A	T1AL 250V

NAETC-5397-4*

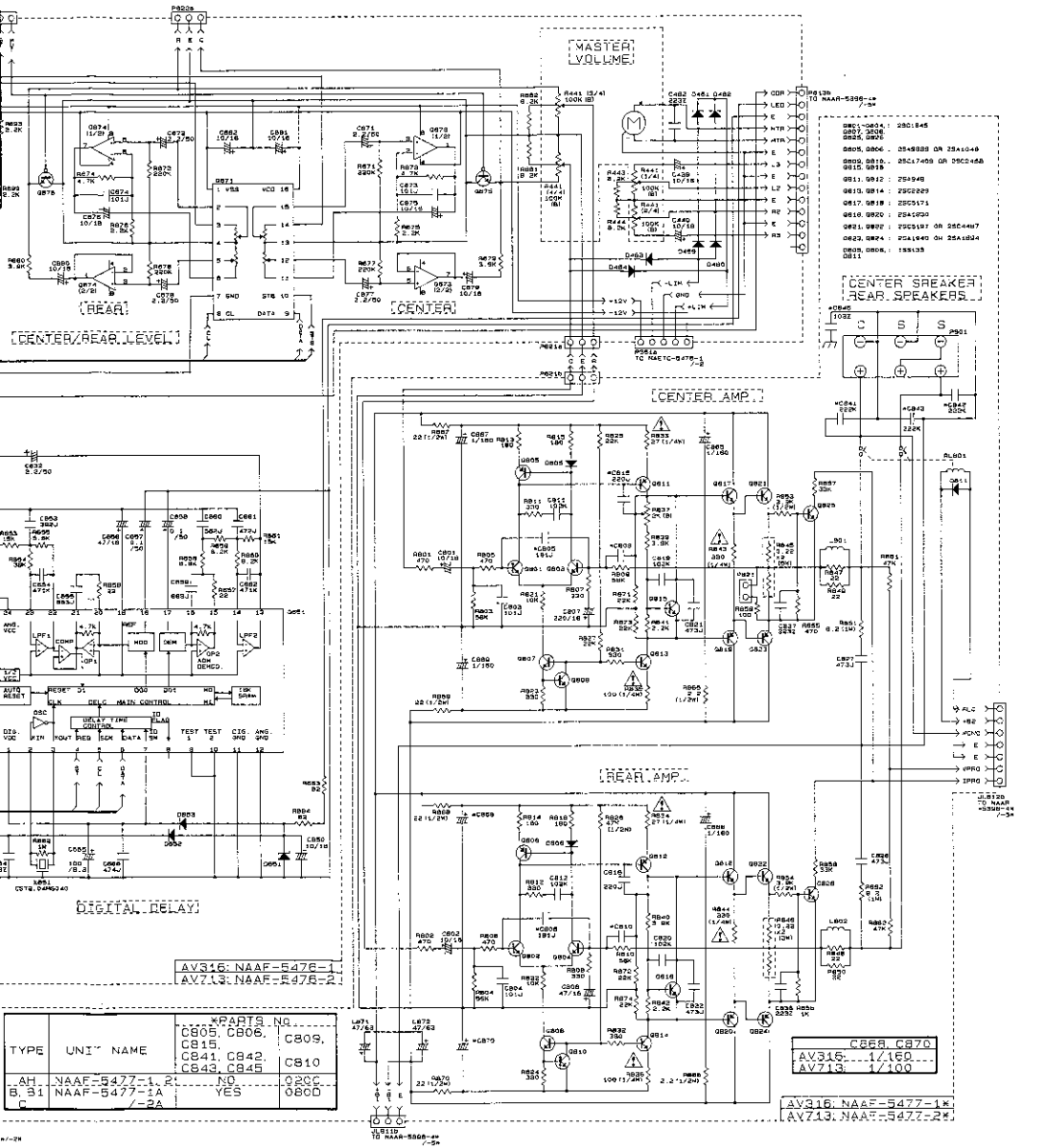
TYPE	UNIT NAME	F901 R901	F902	F903	T902
AH	NAPS-5469	YES	NO	NO	NPT-1111D
C	NAPS-5468	NO	YES	YES	NPT-1111P
B, B1	NAPS-5401	NO	YES	NO	NPT-1111P

TYPE	UNIT NAME	C301, C302	C305, C306, C317, C318, C321, C322, C325-C328, C331, C332	C341, C342, C343	C403, C404, C505, C506	C509, C510	C533-C536, C585-C588, C595, C598
AH, B, B1	NAAR-5396-1	470J	NO	YES	NO	Q20C	NO
C	NAAR-5396-1A	331K	YES	NO	YES	Q50C	YES

SCHEMATIC DIAGRAM



TYPE	UNIT NAME
AH	NAAF-5477-1
B,S1	NAAF-5477-1
C	/-2



TYPE	UNIT NAME	*PARTS NO.	
		C805, C806, C815, C841, C842, C843, C845	C809, C810
AH	NAAF-5477-1, 2	NO	02CC
B, B1	NAAF-5477-1A /-2A	YES	0800
C			

C868, C870	
AV316:	1/160
AV713:	1/100

SCHEMATIC DIAGRAM

VOLTAGE CHARTS (ALL VOLTS)

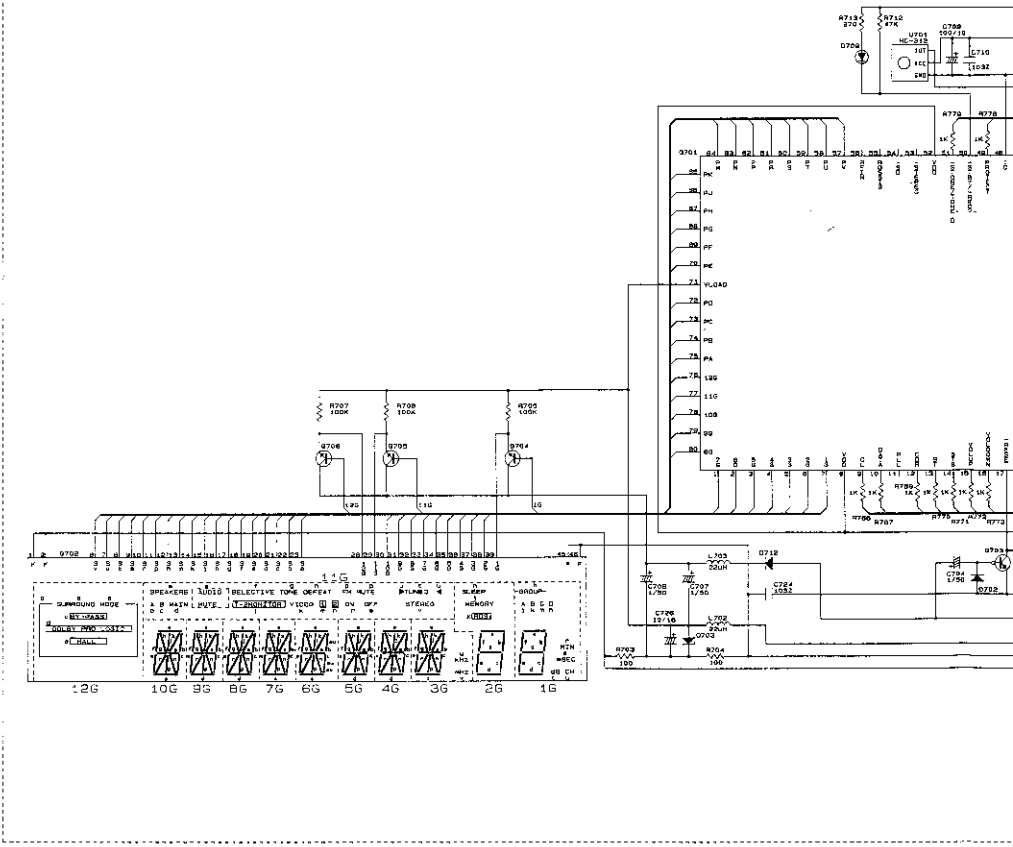
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q451	0.0	0.0	0.0	-11.8	0.0	0.0	0.0	11.8						
Q601	0.0	0.0	0.0	-11.8	0.0	0.0	0.0	11.8						
Q602	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	0.0	11.0	3.4
No.	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.4	0.7	0.7	4.1	4.2	2.7
No.	29	30	31	32	33	34	35	36	37	38	39	40	41	42
	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	11.8	4.4	4.1	1.4	4.1	4.1
No.	43	44	45	46	47	48	49	50	51	52	53	54	55	56
	4.1	4.1	4.1	4.1	4.1	4.1	0.0	4.1	4.1	4.1	4.1	4.1	4.1	4.1
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q605	0.0	0.0	0.0	-11.8	0.0	0.0	0.0	11.8						
Q606	-11.8	0.0	0.0	0.0	0.0	0.0	0.0	11.4	-0.9	11.8	0.0	0.0	0.0	0.0
No.	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	0.0	0.0	11.8	11.8	11.8	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	11.8
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q651	5.0	2.2	2.3	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	2.5	2.5
No.	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	2.5	2.5	0.7	0.7	2.5	2.5	2.5	2.5	2.5	5.0				
No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Q671	-11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No.	15	16												
	0.0	11.8												
No.	1	2	3	4	5	6	7	8						
Q673	0.0	0.0	0.0	-11.8	0.0	0.0	0.0	11.8						
Q674	0.0	0.0	0.0	-11.8	0.0	0.0	0.0	11.8						

VOLTAGE CHARTS (ALL VOLTS)

No.	1	2	3	4	5	6	7
Q253	5.5	5.5	5.5	1.1	0.0	10.1	0.0
Q301	0.0	0.0	0.0	-11.8	0.0	0.0	0.0
Q302	-11.8	0.0	0.0	0.0	0.0	0.0	0.0
No.	15	16	17	18	19	20	21
Q302	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No.	1	2	3	4	5	6	7
Q401	0.0	0.0	0.0	-11.8	0.0	0.0	0.0
Q402	0.0	0.0	0.0	-11.8	0.0	0.0	0.0
Q481	4.8	5.6	0.6	-	0.0	5.6	0.0
Q571	0.0	0.0	0.0	-11.8	0.0	0.0	0.0
Q921	26.2	0.0	11.8				
Q922	-27.8	0.0	-11.8				
Q923	25.9	0.0	5.6				

No.	E	C	B	No.	E	C	B
Q251	4.9	10.2	5.5	Q513	-43.9	-1.2	-43.3
Q252	4.9	10.2	5.5	Q515	-1.2	1.2	-0.6
Q407	11.8	-11.8	1.1	Q517	0.6	-44.8	1.2
Q491	0.0	0.0	-11.5	Q519	-0.6	-44.8	-1.2
Q492	0.0	0.0	-11.5	Q521	0.0	44.8	0.6
Q493	0.4	-11.5	0.0	Q523	0.0	-44.8	-0.6
Q501	-0.6	44.0	0.0	Q525	0.0	44.5	0.0
Q503	-0.6	44.0	0.0	Q572	0.0	11.7	0.6
Q505	44.6	-44.0	44.0	Q573	11.0	11.8	11.8
Q507	-43.9	-19.5	-43.3	Q575	0.0	0.0	-11.8
Q509	-44.5	-43.3	-43.9	Q576	0.0	0.0	-11.8
Q511	44.6	1.2	44.0	Q581	0.0	44.5	0.0

NAQIS-5467-**



(ALL VOLTS)

4	5	6	7	8	9	10	11	12	13	14
5	1.1	0.0	10.1	0.0	5.5	5.5	0.0	0.0	10.2	10.2	9.9
0	-11.8	0.0	0.0	0.0	11.8						
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	18	19	20	21	22	23	24	25	26	27	28
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8
	4	5	6	7	8	9	10	11	12	13	14
0	-11.8	0.0	0.0	0.0	11.8						
0	-11.8	0.0	0.0	0.0	11.8						
6	-	0.0	5.6	0.6	5.6	4.8					
0	-11.8	0.0	0.0	0.0	11.0						
8											
8											
6											

No.	E	C	B	No.	E	C	B	No.	E	C	B	No.	E	C	B
Q351	2.0	11.8	2.6	Q455	0.0	11.8	0.6	Q807	-43.9	-19.5	-43.3	Q820	-0.6	-44.8	-1.2
Q352	-2.0	-11.8	-2.6	Q457	0.6	-11.8	0.0	Q808	-43.9	-19.5	-43.3	Q821	0.0	44.8	0.6
Q353	9.6	11.8	10.2	Q459	0.0	0.0	1.0	Q809	-44.5	-43.3	-43.9	Q822	0.0	44.8	0.6
Q354	-9.6	-11.8	-10.2	Q603	0.0	0.0	11.4	Q810	-44.5	-43.3	-43.9	Q823	0.0	-44.8	-0.6
Q355	0.0	-10.2	-0.6	Q604	0.0	0.0	-0.9	Q811	44.4	1.2	43.8	Q824	0.0	-44.8	-0.6
Q357	0.0	10.6	0.0	Q675	0.0	0.0	-11.5	Q812	44.4	1.2	43.8	Q825	0.0	44.5	0.0
Q358	0.0	10.6	0.0	Q676	0.0	0.0	-11.5	Q813	-43.9	-1.2	-43.3	Q826	0.0	44.5	0.0
Q359	44.8	1.4	44.2	Q801	-0.6	43.8	0.0	Q814	-43.9	-1.2	-43.3				
Q360	44.8	1.4	44.2	Q802	-0.6	43.8	0.0	Q815	-1.2	1.2	-0.6	No.	B	S	G
Q361	44.8	44.2	44.2	Q803	-0.6	43.8	0.0	Q816	-1.2	1.2	-0.6	Q453	1.7	1.7	0.0
Q362	44.8	44.2	44.2	Q804	-0.6	43.8	0.0	Q817	0.6	44.8	1.2				
Q363	0.0	11.8	0.6	Q805	44.4	43.8	43.8	Q818	0.6	44.8	1.2				
Q364	0.0	11.8	0.6	Q806	44.4	43.8	43.8	Q819	-0.6	-44.8	-1.2				

No.	E	C	B	No.	E	C	B	No.	D	S	G
5	Q513	-42.9	-1.2	-43.3	Q582	0.0	44.5	0.0	Q403	0.0	0.0	-3.2
3	Q515	-1.2	1.2	-0.6	Q583	44.8	0.0	44.7	Q404	0.0	0.0	-3.2
1	Q517	0.6	44.8	1.2	Q584	0.0	44.2	0.0	Q405	0.0	0.0	-3.2
3	Q519	-0.6	-44.8	-1.2	Q591	0.0	0.0	3.6	Q406	0.0	0.0	-3.2
5	Q521	0.0	44.8	0.6	Q592	0.0	26.5	0.0				
0	Q523	0.0	-44.8	-0.6	Q595	0.0	0.0	3.6				
9	Q525	0.0	44.5	0.0	Q924	-32.2	-39.8	-32.8				
6	Q572	0.0	11.7	0.4	Q951	3.1	13.0	4.8				
9	Q573	11.0	11.8	13.6	Q952	0.0	0.0	3.1				
3	Q575	0.0	0.0	-11.5	Q961	0.1	27.1	0.4				
9	Q576	0.0	0.0	-11.5	Q962	0.0	27.1	0.1				
0	Q581	0.0	44.5	0.0								

VOLTAGE CHARTS (ALL VOLTS)

No.	E	C	B
Q703	0.0	4.8	0.0
Q704	-29.4	5.0	-29.3
Q705	-29.4	5.0	-29.3
Q706	-29.4	5.0	-29.3
Q708	0.0	5.2	0.0