


# ONKYO® SERVICE MANUAL

## Integrated Stereo Amplifier MODEL A-8800

UD	120V AC, 60Hz
UG	220V AC, 50Hz
UQ	240V AC, 50Hz
UW, UWX	120V/220V AC, 50Hz/60Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### TABLE OF CONTENTS

Item	Page
Specifications	2
Precautions	2
Adjustment procedures	3
Front panel facilities	5
IC block diagram	6
System connections	9
Packing procedures	10
Chassis exploded view	11
Exploded view parts list	13
Printed circuit board parts list	14
Printed circuit board view	19
Block diagram	23
Schematic diagram	27

**ONKYO**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

Power Output:	100 watts per channel, min RMS. at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.
Dynamic Power:	310 watts 2 ohms, 220 watts 4 ohms
Total Harmonic Distortion:	0.008% at rated power 0.008% at 1 watt output
Intermodulation Distortion:	0.005% at rated power
Damping Factor:	100 at 8 ohms
Input Sensitivity	Phono (MM): 2.5 mV/50 kohms
Impedance:	Phono (MC): 160 $\mu$ V/220 ohms CD DIRECT: 150 mV/50 kohms TUNER: 150 mV/50 kohms Tape Play: 150 mV/50 kohms VCR Play: 150 mV/50 kohms VDP Play: 150 mV/50 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.5 kohms (Phono) Pre Out: 1 V/600 ohms
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control: (Vol-20 dB)	CONTRABASS: +10/+20 dB (Muting: OFF/ON) at 20 Hz BASS: $\pm$ 10 dB at 70 Hz TREBLE: $\pm$ 8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)
Frequency Response:	CD, Tuner: 2-50,000 Hz (+0, -1 dB)

RIAA Deviation:	Phono (MM): $\pm$ 0.3 dB, 20 Hz - 20 kHz
Signal to Noise	Phono (MM): 94 dB (5.0 mV input)
Ratio (IHF-A):	Phono (MC): 75 dB (0.5 mV input)
	CD: 107 dB
Muting (Vol - 20 dB):	-15 dB

### D/A CONVERTER SECTION

Coaxial Input:	0.5 V <sub>p-p</sub> /75 $\Omega$
Output:	0.5 V <sub>p-p</sub> /75 $\Omega$
Optical Input:	Standard TOSLINK Tape
Digital Sampling Frequency:	32,44.1, 48 kHz
Frequency Response:	2-20,000 Hz $\pm$ 0.2 dB
Total Harmonic Distortion:	0.0015% at 1 kHz
Signal to Noise Ratio: (IHF-A):	110 dB
Dynamic Range (IHF-A):	103 dB
Max. Output Level:	2V r.m.s.

### GENERAL

Power Supply:	European models (except U.K.): AC220 V, 50 Hz USA & Canadian models: AC120 V, 60 Hz UK. & Australian models: AC240 V, 50 Hz Worldwide models: 120 and 220V switchable, 50/60 Hz
Dimensions:	435 (W) $\times$ 164 (H) $\times$ 392 (D) mm 17-1/8" $\times$ 6-7/16" $\times$ 15-7/16"
Weight:	14.5 kg, 32.0 lbs.

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
F921	252052	7A ST-6, Primary fuse (120V, 120V/220V model)
F922	252077 or 252077CC	4A-SE-EAK Primary fuse (220V, 240V, 120V/220V model)

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

Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel.

Specifications: More than 10 M $\Omega$  at 500V.

### 3. Voltage Selector (Rear Panel)

Worldwide models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left.

Confirm that the switch has been moved all the way to the right or left before turning the power switch on. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.



# 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.
- (3) The DAC circuit board should be mounted correctly.

### 2. Idling current adjustment

- 1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.
  - (1) Adjust R531 (R532) so that the voltage at test point VCT-IID on the NAAF-3114 circuit board is  $15\text{mV} \pm 5\text{mV}$ .

### 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 SOURCE DIRECT 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 LINE 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.

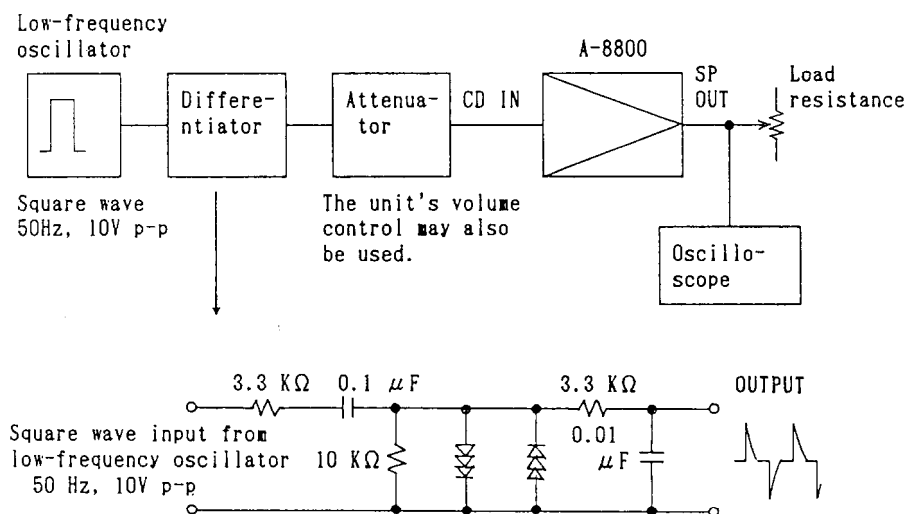
Note) Under no circumstances connect a load or short the speaker terminals when performing the above test.

### 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 35V p-p 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.

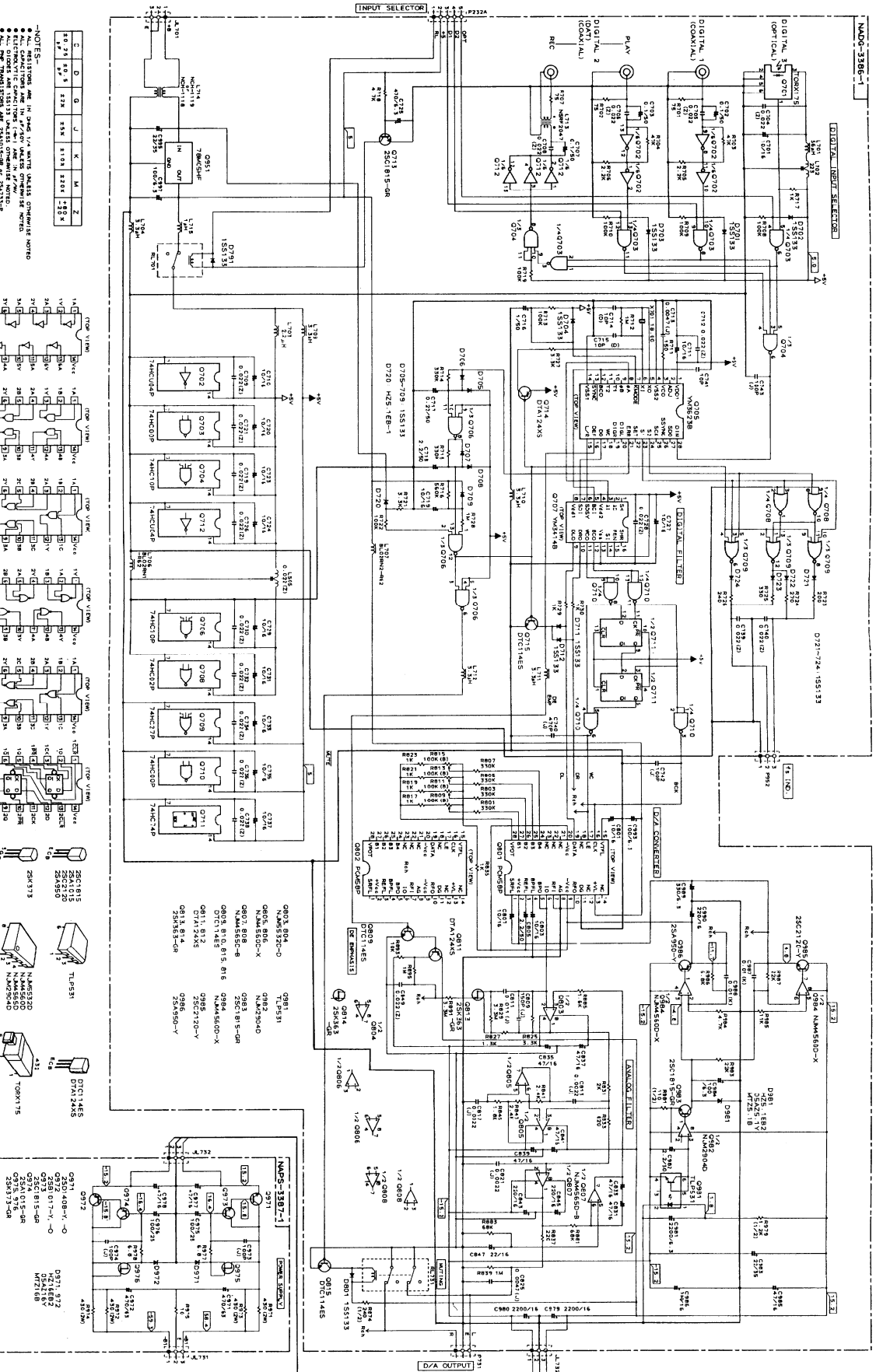


NOTE) Semi-fixed resistors enclosed in parentheses ( ) are for the right channel.

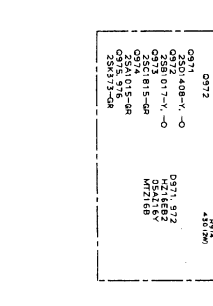
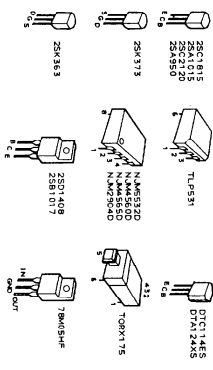
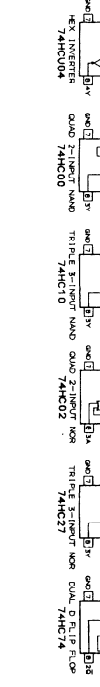


# SCHEMATIC DIAGRAM (2/2)

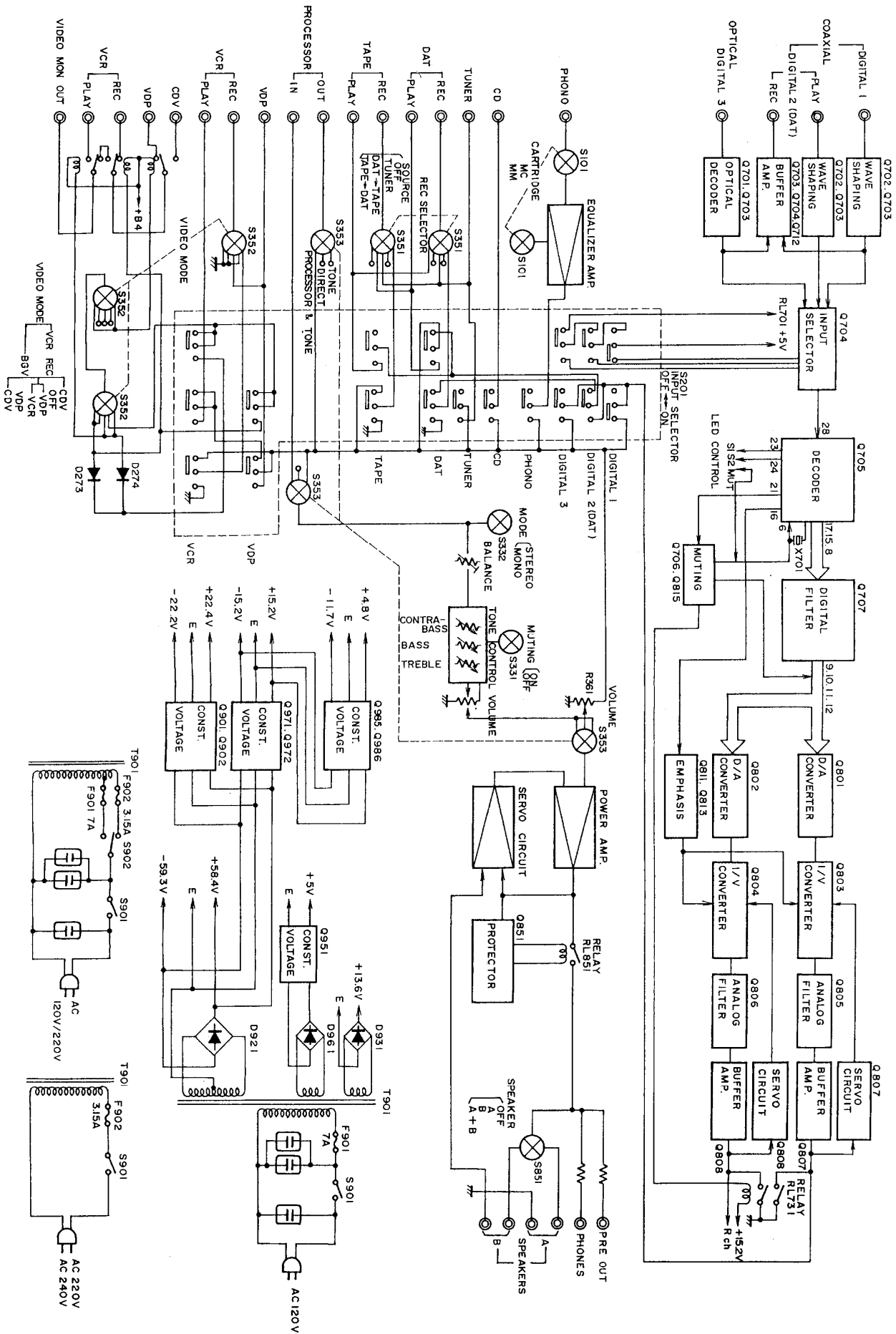
A B C D E F G



- NOTES:**
1. ALL CAPACITORS ARE IN OHMS UNLESS OTHERWISE NOTED.
  2. ALL DIODES ARE IN FORWARD UNLESS OTHERWISE NOTED.
  3. ALL DIODES ARE 1N4148 UNLESS OTHERWISE NOTED.
  4. UNLESS OTHERWISE NOTED, RESISTORS ARE 1/4WATT.
  5. UNLESS OTHERWISE NOTED, RESISTORS ARE 5% TOLERANCE.
  6. THE COMPONENT IDENTIFIED BY MARK A IS CRITICAL FOR SAFETY.
  7. VOLTAGE MEASURED WITH TV 7 V.M. IS AC UNLESS INDICATED OTHERWISE.
  8. SIGNAL IS SUBJECT TO CHANGE FOR IMPROVEMENT.



# BLOCK DIAGRAM





**4. DAC block adjustment**

1) Confirmation of fs display

- (1) Input a digital signal to one of the DIGITAL input terminals (1-3).
- (2) The indicator LED should light as follows according to the sampling frequency of the input signal.
 

32kHz .....	orange
44.1kHz .....	green
48kHz .....	red

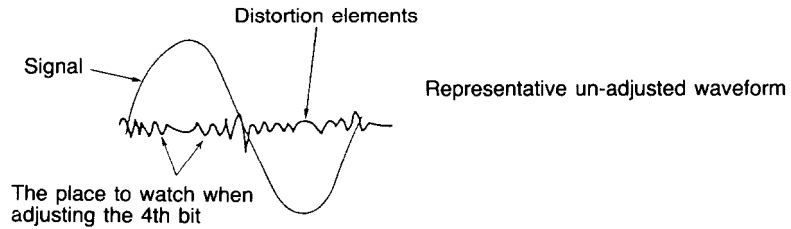
2) Distortion adjustment

(1) Preparations

- Connect the digital output terminal of a suitable equipped CD player to the DIGITAL 1 digital input terminal of the A-8800.
- Connect a distortion meter to the analog output of circuit board NADC-3386 or to the unit's analog REC OUT terminal.
- Input the distortion meter signal output and the distortion output to dual-phenomenon oscilloscope.

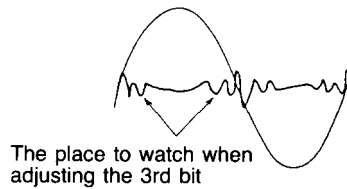
- (2) Turn power ON to the unit.
- (3) Play track 2 of the test disc (YEDS-18).
- (4) Adjusting the 4th bit.

Adjust semi-fixed resistor R815 (R-816) so that the non-continuous portion (difference in level) of the distortion elements shown at right is as small as possible.



(5) Adjusting the 3rd bit.

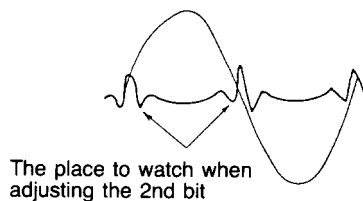
As with (3) above, adjust semi-fixed resistor R813 (R814) so that the non-continuous portion (difference in level) of the distortion elements is as small as possible.



(6) Adjusting the 2nd bit.

As above, adjust semi-fixed resistor R811 (R812) so that the non-continuous portion (difference in level) of the distortion elements is as small as possible.

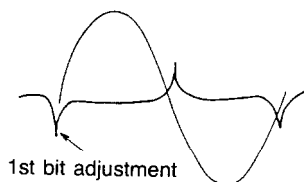
Note) It does not matter is up to this point the level of overall distortion is high.





(7) Adjusting the 2nd bit.

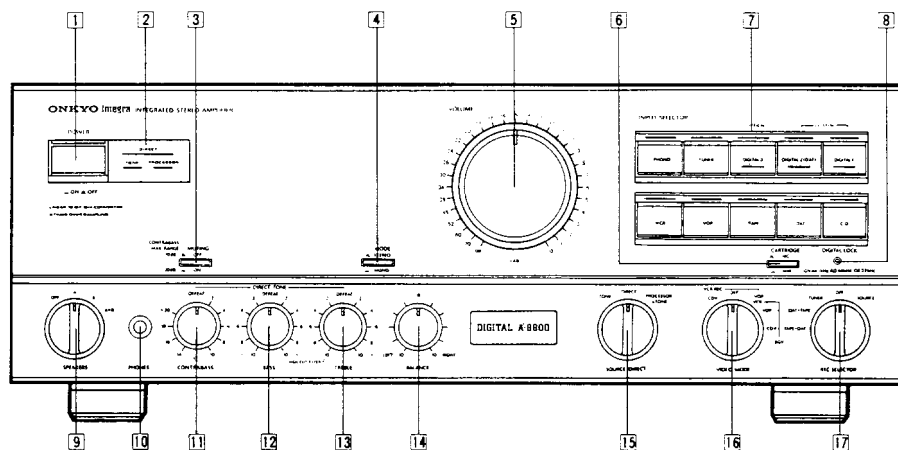
Adjust semi-fixed resistor R809 (R810) so that the non-continuous portion of the final remaining distortion waveform is as small as possible.



(8) Repeat steps (4) – (7) above to fine adjust to optimum settings.

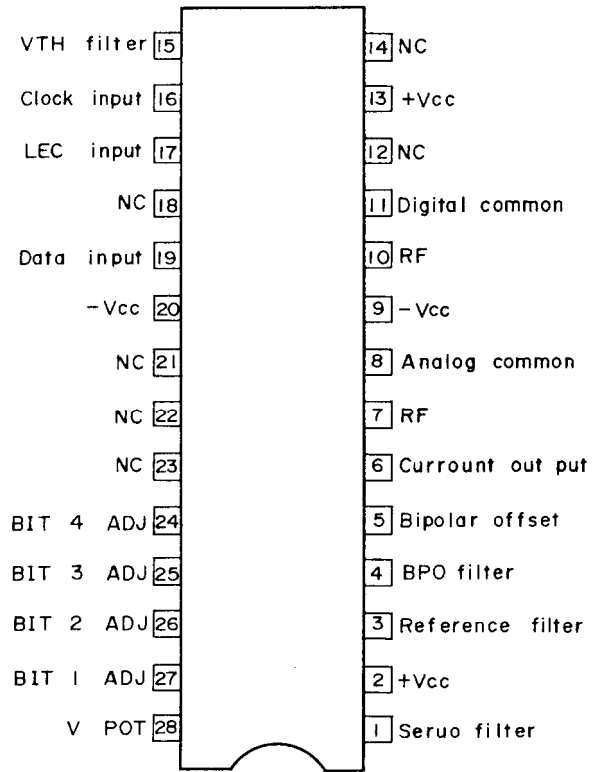
Note) The distortion meter must be accurate to 0.001% or better and possess a distortion output terminal.

## FRONT PANEL FACILITIES

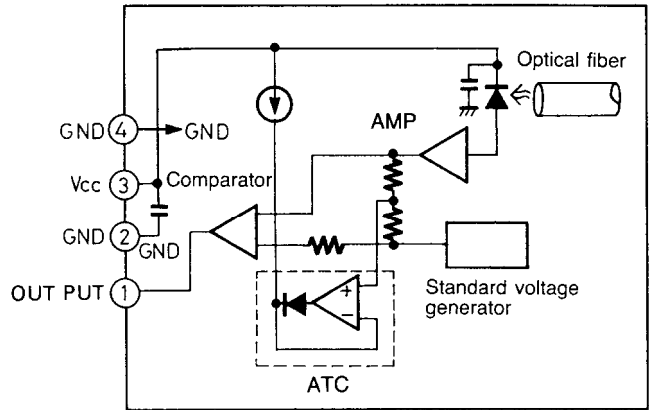


- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Power switch (POWER)</li> <li>2. Operation indicator (DIRECT/TONE/PROCESSOR)</li> <li>3. Muting switch (MUTING)</li> <li>4. Mode selector switch (MODE)<br/>STEREO, MONO</li> <li>5. Volume control (VOLUME)</li> <li>6. Cartridge selector switch (CARTRIDGE)<br/>MC, MM</li> <li>7. Input selector buttons and Indicators (INPUT SELECTOR)<br/>DIGITAL 1, DIGITAL 2 (DAT), DIGITAL 3<br/>PHONO, TUNER, VCR, VDP, TAPE, DAT, CD</li> <li>8. Digital lock indicator (DIGITAL LOCK)</li> <li>9. Speaker selector switch (SPEAKERS)<br/>OFF, A, B, A+B</li> </ol> | <ol style="list-style-type: none"> <li>10. Headphone jack (PHONES)</li> <li>11. Contrabass control (CONTRABASS)</li> <li>12. Bass control (BASS)</li> <li>13. Treble control (TREBLE)</li> <li>14. Balance control (BALANCE)</li> <li>15. Source direct switch (SOURCE DIRECT)<br/>TONE, DIRECT, PROCESSOR &amp; TONE</li> <li>16. Video mode switch (VIDEO MODE)<br/>VCR REC...CDV, OFF, VDP/VCR<br/>VDP/VCR, VDP, CDV...BGV</li> <li>17. Recording source selector switch (REC SELECTOR)<br/>TAPE ▶ DAT, DAT ▶ TAPE, TUNER, OFF,<br/>SOURCE</li> </ol> |
|---|--|

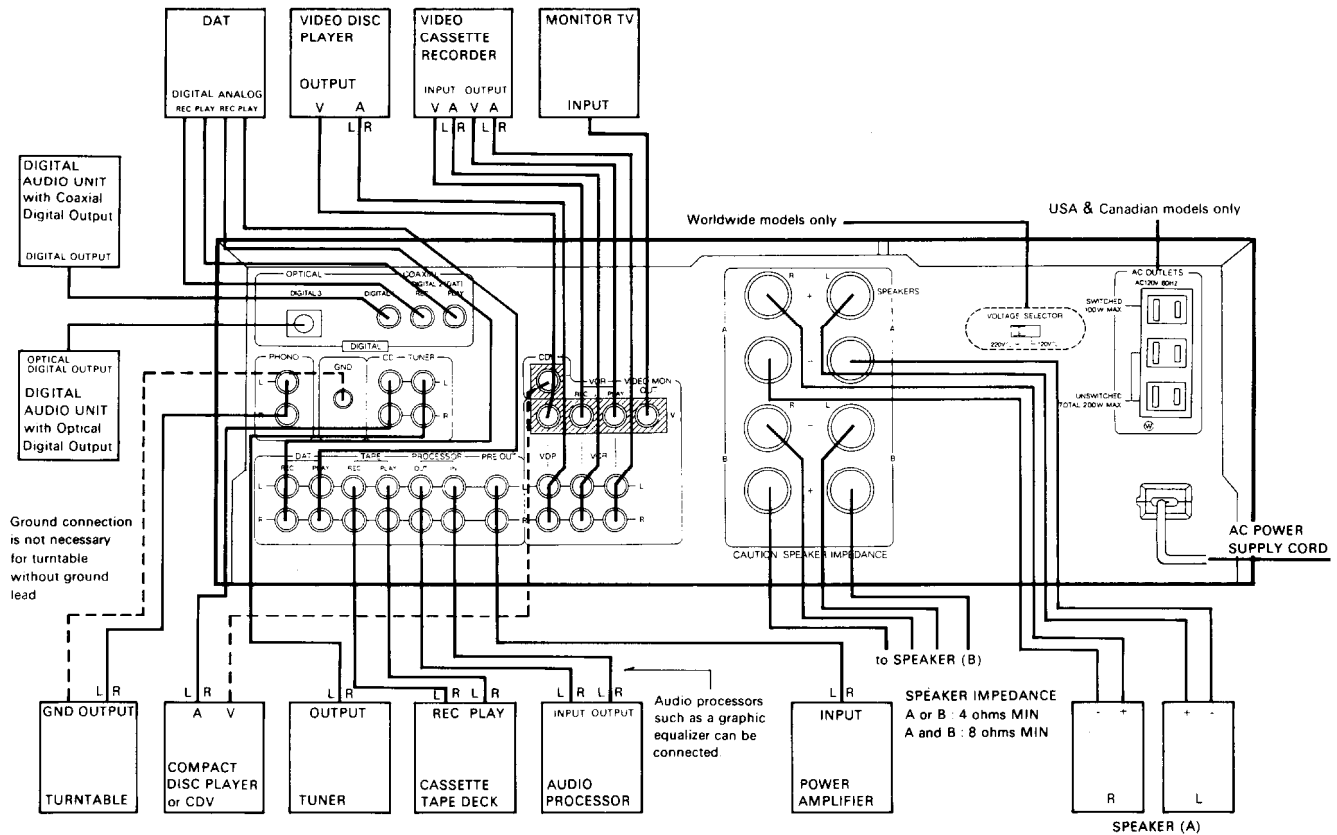
**PCM58P (D/A converter)**



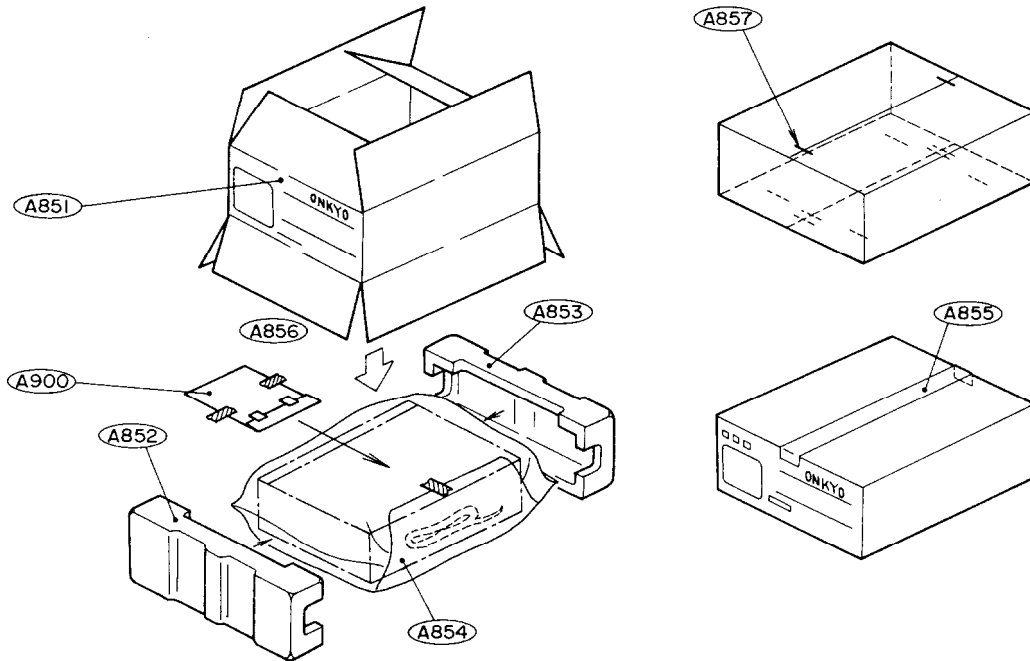
**TORX175 (Optical receiver)**



**SYSTEM CONNECTIONS**



# PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051788	MASTER CARTON BOX
A852	29091202	PAD, LEFT
A853	29091203	PAD, RIGHT
A854	29095108-1	SHEET, 1000×600
A855	260012	DAMPLON TAPE, W50
A856	261504	PAPER TAPE
A857	282301	SEALING HOOK
	29360778	LABEL (FLASH) [N]
	29360863	LABEL (CAUTION) [B]
A900		ACCESSORY BAG
	29341325	INSTRUCTION MANUAL [D] [N]
	29341326	INSTRUCTION MANUAL [G] [W] [A] [B]
	29365019	WARRANTYCARD [N]
	29365022	WARRANTYCARD [B]
	29358002F	SERVICE STATION LIST [N]
	25055018	CONVERSION PLUG CK-K-1 [W]
	29100006A	POLY BAG 350×250

NOTE [D]: ONLY 120V MODEL  
 [G]: ONLY 120V MODEL  
 [W]: ONLY 120V/220V MODEL  
 [N]: ONLY U.S.A. MODEL  
 [A]: ONLY AUSTRALIAN MODEL  
 [B]: ONLY BRITISH MODEL

## MILITARY MARKET MODEL


REF. NO.	PART NO.	DESCRIPTION
A851	29051796	MASTER CARTON BOX
A852	29091288	PAD, LEFT
A853	29091289	PAD, RIGHT
	29091290	PAD (2 Piece)
A854	29095108-1	SHEET, 1000×600
A855	260012	DAMPLON TAPE, W50
A856	261504	PAPER TAPE
A857	282301	SEALING HOOK
	28330072	CAP, AC SOCKET
	29360626-1	LABEL (FUSE)
	29360815	LABEL (120)
	29380084	CAUTION (120)
A900	—	ACCESSORY BAG
	29341325	INSTRUCTION MANUAL
	29365021	WARRANTY CARD
	29358002F	SERVICE STATION LIST
	29100006A	POLY BAG 350×250
	25055251	CONVERSION PLUG, CV-CP
	—	SIDE BOARD
	28185335	SIDE BOARD ASS'Y
	(28185333)	SIDE BOARD ASS'Y, LEFT
	(28185331)	SIDE BOARD, LEFT
	(28140864)	CUSHION
	(28185334)	SIDE BOARD ASS'Y, RIGHT
	(28185332)	SIDE BOARD, RIGHT
	(28140864)	CUSHION
	(29051798)	CARTON BOX
	(29095550)	PROTECTION SHEET (R)
	(29095551)	PROTECTION SHEET (S)
	(29095539)	PROTECTION SHEET, 580×400
	(29095408)	PROTECTION SHEET, 450×400
	(29100026)	POLY-VINYL BAG
	(29341018-1)	INSTRUCTION MANUAL (SIDE BOARD)
	(836440303)	TAP-TIGHT, 4×12BCBC
	(870086)	SPECIAL WASHER, 4×128BCBC
	(262005)	CELLOPHANE TAPE

## CHASSIS-EXPLODED VIEW-PARTS LIST

REF. NO.	PART NO.	DESCRIPTION				
A001	27110382	FRONT BRACKET	△ T901	2300364B	POWER TRANSFORMER, NPT-1008D [D]	
A002	27141199	BRACKET (HP)	△ T901	2300365B	POWER TRANSFORMER, NPT-1008G [G]	
A004	27115230C	SIDE BRACKET	△ T901	2300366A	POWER TRANSFORMER, NPT-1008DG [W] [X]	
A006	27121174A	BACK PANEL [D]	△ T901	2300377B	POWER TRANSFORMER, NPT-1008Q [A] [B]	
A006	27121175A	BACK PANEL [G]	△ T901	2300377B	POWER TRANSFORMER, NPT-1008Q [A] [B]	
A006	27121177A	BACK PANEL [W]	△ T901	2300377B	POWER TRANSFORMER, NPT-1008Q [A] [B]	
A006	27121190A	BACK PANEL [X]	△ T901	2300377B	POWER TRANSFORMER, NPT-1008Q [A] [B]	
A006	27121191A	BACK PANEL [A] [B]	△ C920	350065A	0.01μF, AC400V/125V, CAPACITOR (1S)	
A008	27300750	BUSHING (CORD)	△ C920a	27300601	COVER (CAPACITOR), SB-1925	
A012	27130548B	BRACKET (PT)	△ C920a	27300601	COVER (CAPACITOR), SB-1925	
A013	27130502C	BRACKET (H)	△ P901	25050293	AC SOCKET, NSCT-6P120 [D] [X]	
A014	27150259	SHIELD PLATE	△ P901	25050293	AC SOCKET, NSCT-6P120 [D] [X]	
A015	27270213	SPACKER (PT)	△ P902	253123 or	POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]	
A016	27190657	HOLDER	△ P902	253123 or	POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]	
A017	28140882	CUSHION (DUMPER)		253136 or	POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]	
A018	28400454	STABILIZER (DAC)		253140 or	POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]	
A019	27130549A	BRACKET (D)		253146 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A020	27225087C	SHIELD CASE (DL)		253148 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A021	27225088C	SHIELD CASE (DR)	△ P902	253148 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A022	27141282	BRACKET (O)	△ P902	253148 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A023	28140808	CUSHION	△ P902	253148 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A024	27141229A	BRACKET (O)	△ P902	253148 or	POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]	
A025	27262485	PLATE (D)		253150	POWER SUPPLY CABLE, AS-CEE or [G]	
A027	27260237C	SHAFT		253150	POWER SUPPLY CABLE, AS-CEE [G]	
A028	28320135	JOINT	△ P902	253092-1A	POWER SUPPLY CABLE, AS-CEE-2 [W]	
A030	29360626-1	LABEL (Fuse) (D)	△ P902	253118	POWER SUPPLY CABLE, AS-CEE-2 [W]	
A031	27273086E	JOINT ASS'Y	△ P902	253118	POWER SUPPLY CABLE, AS-SAA [A]	
A032	27141161A	BRACKET (HF)	△ P902	728320 or	POWER SUPPLY CABLE, 2-0.75BS16 BLK/GRY [B]	
A033	21160230	HEATSINK	△ P902	728328	POWER SUPPLY CABLE, 2-0.75BS16 BLK/GRY [B]	
A035	27141162A	BRACKET (HB)	△ P902	728328	POWER SUPPLY CABLE, 2-0.75BS16 BLK/GRY [B]	
A036	27130503D	BRACKET (PC)		25060044	GROUND TERMINAL 7A ST-6 [D]	
A038	27141163A	BRACKET (D)		△ F921	252052	4A-SE-EAK or [G] [W] [X] [A] [B]
A039	27141235	BRACKET (E)		△ F922	252077 or	4A-SE-EAK [G] [W] [X] [A] [B]
A043	82143006	PAN HEAD SCREW, 3P+6FNBC	P903	25060044	GROUND TERMINAL 7A ST-6 [D]	
A044	834480088	TAP-TIGHT SCREW, 3TTS+8BBC	△ F921	252052	4A-SE-EAK or [G] [W] [X] [A] [B]	
A049	838440089	TAP-TIGHT SCREW, 4TTB+8CBC	△ F922	252077 or	4A-SE-EAK [G] [W] [X] [A] [B]	
A053	87313006	TOOTHED WASHER, M-3B	△ F901	25035345A	POWER SWITCH, NPS-111-L308P	
A055	27270273	SPACER	△ F901	25035345A	POWER SWITCH, NPS-111-L308P	
A350	1A115121	FRONT PANEL	S851b	25030294	REMOTE SWITCH, OPERATION SECTION	
A365	28199174	FILM		25065123	SLIDE SWITCH, NSS-1258P [W] [X]	
A366	28323171	KNOB (VOL)	△ S902	25065123	SLIDE SWITCH, NSS-1258P [W] [X]	
A367	28323123	KNOB (TONE)		U001	1A115505-3	NASW-3105-3, INPUT SWITCH & EQUALIZER CIRCUIT PC BOARD ASS'Y
A368	28323173	KNOB (SP)		U002	1A115506-3	NASW-3106-3, MODE SWITCH CIRCUIT PC BOARD ASS'Y
A369	28323174	KNOB (PUSH)		U003	1A115507-3	NAAF-3107-3, TONE CONTROL CIRCUIT PC BOARD ASS'Y
A370	28323175	KNOB (POW)		U004	1A115508-3	NAAF-3108-3, VOLUME CONTROL CIRCUIT PC BOARD ASS'Y
A371	28323176	KNOB (CAP)		U005	1A115509-3	NAETC-3109-3, HEAD PHONE JACK PC BOARD ASS'Y
A372	28184409	TOP COVER (L)		U006	1A115510-3	NAPS-3110-3, POWER SUPPLY CIRCUIT PC BOARD ASS'Y
A373	28184410	TOP COVER (R)		U007	1A115511-3	NADIS-3111-3, INPUT LED CIRCUIT PC BOARD ASS'Y
A374	27273090	JOINT (COVER)		U008	1A115512-3	NADIS-3112-3, DISPLAY LED CIRCUIT PC BOARD ASS'Y
A375	27265155A	WASHER (COVER)		U009	1A115521-3	NASW-3121-3, MUTING SWITCH CIRCUIT PC BOARD ASS'Y
A376	28140020	CUSHION				
A377	28140695	CUSHION				
A378	28140761	CUSHION				
A379	27170251A	BOTTOM BOARD				
A380	27175153	LEG ASS'Y				
A381	28140810	CUSHION				
A382	28140807	CUSHION				
A385	27175011C	LEG				
→ Q609, Q610	2201873 or 2201876 or 2201874	TRANSISTOR, 2SC3858-O or TRANSISTOR, 2SC3858-P or TRANSISTOR, 25SC3858-Y				
Q611, Q612	2201863 or 2201866 or 2201864	TRANSISTOR, 2SA1494-O or TRANSISTOR, 2SA1494-P or TRANSISTOR, 2SA1494-Y				

U010	1A115585-3	NAETC-3385-3, FUSE CIRCUIT PC BOARD ASS'Y [D]
U010	1A115585-3A	NAETC-3385-3A, FUSE CIRCUIT PC BOARD ASS'Y [G] [A] [B]
U010	1A115585-3B	NAETC-3385-3B, FUSE CIRCUIT PC BOARD ASS'Y [W]
U010	1A115585-3C	NAETC-3385-3C, FUSE CIRCUIT PC BOARD ASS'Y [X]
U011	1A115513-3	NAAF-3113-3, POWER AMPLIFIER (I) PC BOARD ASS'Y
U012	1A115514-3	NAAF-3114-3, POWER AMPLIFIER (II) PC BOARD ASS'Y
U013	1A115516-3	NAETC-3116-3, VIDEO TERMINAL PC BOARD ASS'Y
U014	1A115517-3	NAETC-3117-3, SPEAKER & PROTECTOR CIRCUIT PC BOARD ASS'Y
U015	1A115586-1	NADG-3386-1, DIGITAL CIRCUIT PC BOARD ASS'Y
U016	1A115587-1	NAPS-3387-1, DIGITAL POWER SUPPLY CIRCUIT PC BOARD ASS'Y

NOTE [D]: ONLY 120V MODEL  
 [G]: ONLY 220V MODEL  
 [W]: ONLY 120V/220V MODEL  
 [X]: ONLY MILITARY MARKET MODEL  
 [A]: ONLY AUSTRALIAN MODEL  
 [B]: ONLY BRITISH MODEL

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

## PRINTED CIRCUIT BOARD PARTS LIST

### INPUT SWITCH & EQUALIZER CIRCUIT PC BOARD (NASW-3105-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q105	222570	NJM4560X
Q101~104	2212185 or 2212186	2SK170GR or 2SK170BL
	<b>Transistors</b>	
	2212185 or 2212186	2SK170GR or 2SK170BL
	<b>Capacitors</b>	
C105, C106	372122714	270 pF, 50V, Styrene
C107, C108	372121014	100 pF, 50V, Styrene
C109, C110	373302224	2200 pF, 12V, Film (PP)
C111, C112	379122234	0.022 μF, 50V, Film (DEW)
C113, C114	379121834	0.018 μF, 50V, Film (DEW)
C115, C116	379124734	0.047 μF, 50V, Film (DEW)
C117, C124	354741029	1000 μF, 16V, Elect.
C118, C123	391221227	1200 μF, 6.3V, Elect. (MUSE)
C119, C120	391280227	2.2 μF, 50V, Elect. (MUSE)
C121, C122	379121225	1200 pF, 50V, Film (DEW)
C131, C132	354754719	470 μF, 25V, Elect.
	<b>Switches</b>	
S101	25035583	NPS-142-L545
S201	25035572	NPS-742-362-L534
	<b>Sockets</b>	
P101	2000764	NSAS-6P720
P223	2000557	NSAS-6P513
P224	2000960	NSAS-8P912
P232	2000776	NSAS-10P732
P961	2000665	NSAS-8P621

P962	2000782	NSAS-14P782
	<b>Jumper socket</b>	
JL102	25050267	NSCT-3P95
JL255	25050272	NSCT-8P100
JL256	25050270	NSCT-6P98
JL227	25050271	NSCT-7P99
JL229	25050272	NSCT-8P100
JL231	25050270	NSCT-6P98
	<b>Terminals</b>	
P191, P202	25045182	NPJ-2PDBL72 (PH)
P201	25045233	NPJ-2PDBL107 (CD)
	<b>Plug</b>	
P211a	25055133	NPLG-3P117

### MODE SWITCH CIRCUIT PC BOARD (NASW-3106-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Switch</b>	
S332	25035584	NPS-122-L546

### TONE CONTROL CIRCUIT PC BOARD (NAAF-3107-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Capacitors</b>	
C301, C302	379128225	8200 pF, 50V, Film (DEW)
C303, C304	379125625	5600 pF, 50V, Film (DEW)
C305, C306	379121025	1000 pF, 50V, Film (DEW)
C307, C308	379123935	0.039 μF, 50V, Film (DEW)
C309, C310	379128235	0.082 μF, 50V, Film (DEW)

	<b>Resistors</b>	
R301	5148107	N16RGM C250KMN25, Variable
R302	5148108	N16RGM11C219K25, Variable
R303	5144001	N16RQM11C139K176K25, Variable
R304	5148113A	N16RGM11C176K25, Variable

#### VOLUME CONTROL CIRCUIT PC BOARD (NAAF-3108-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
R305	5104212	<b>Resistor</b> N27DQ100KT100KT25 Variable
P361a	25055137	<b>Plug</b> NPLG-7P121
JL361	25050272	<b>Jumper socket</b> NSCT-8P100

#### HEAD PHONE JACK PC BOARD (NAETC-3109-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
P853	25045229	<b>Stereo jack</b> HLJ4317-01-3120

#### POWER SUPPLY CIRCUIT PC BOARD (NAPS-3110-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D921	22380014	<b>Diodes</b> PB102F
D922, D923	22380003	1N5402F
C921, C922	3500101A	<b>Capacitors</b> 15000 $\mu$ F, 71V, Elect
C923, C925	375103345	0.33 $\mu$ F, 125V, Elect. (ME)
C924	375104745	0.47 $\mu$ F, 125V, Elect. (ME)
R921, R922	442522294	<b>Resistors</b> 0.22 $\Omega$ , 1/2W, Metal oxide film
R923	442525104	51 $\Omega$ , 1/2W, Metal oxide film
	27301035	<b>Plate</b> Bus line

#### INPUT LED CIRCUIT PC BOARD (NADIS-3111-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D201~D203	225142CX1 or 225142CX2 or 225142DX1 or 225142DX2	<b>Diodes</b> SEL2913K-CX1 or SEL2913K-CX2 or SEL2913K-DX1 or SEL2913K-DX2, LED
D204~D210	225137DG or 225137DY or 225137CG or 225137CY	SEL2413E-DG or SEL2413E-DY or SEL2413E-CG or SEL2413E-CY, LED
D211	225248	GL5ED5, LED
P951	2000918	<b>Sockets</b> NSAS-6P871

P961	25055185	<b>Plugs</b> NPLG-4P169
P962	25055188	NPLG-7P172
	27190573A	<b>Holder</b> (LED-11)

#### DISPLAY LED CIRCUIT PC BOARD (NADIS-3112-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
D911	225142DX2	<b>Diodes</b> SEL2913K-DX2
D912	225142DX2	SEL2913K-DX2
D301~D304	225137DG or 225137DY or 225137CG or 225137CY	SEL2413E-DG or SEL2413E-DY or SEL2413E-CG or SEL2413E-CY
	27190574	<b>Holder</b> (LED-4)

#### POWER AMPLIFIER (I) PC BOARD (NAAF-3113-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q519, Q520	222942	<b>ICs</b> NJM4558SE
Q501, Q502	2212805 or 2212806 or 2212807	<b>Transistors</b> 2SK389-GR or 2SK389-BL or 2SK389-V
Q503~Q506	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q507, Q508	2211515 or 2211516	2SA995-F or 2SA995-G
Q511, Q512	2211455 or 2210803	2SA1015-GR or 2SA733-P
Q513, Q514	2211354 or 2211353	2SA949-Y or 2SA949-O
Q901	2201444 or 2201443	2SD1408-Y or 2SD1408-O
Q902	2201502 or 2201503	2SB889-Q or 2SB889-R
Q903	2211733 or 2211732	2SC1845-E or 2SC1845-F
Q904, Q905	2213335	2SK373-GR
D505, D506 D517~D520 D273, D274 D902, D904	225232	<b>Diodes</b> LTZ-R15, LED
D903	223145 224652204 or 224152204 or 224452204 224650623 or 224150623 or 224450623	1S2076TD HZ22E-B4 or 05AZ22R or MTZ22-D, Zener HZ6.2E-B3 or 05AZ6.2Z or MTZ6.2-C, Zener
C501, C502 C505, C506 C511, C512 C513~C516 C521, C522 C523, C524 C861 C901, C902 C903, C904 C905, C906	372126804 354780479 372123304 391252207 372123304 354762209 354741019 354772219 354751019 354751029	<b>Capacitors</b> 68 pF, 50V, Styrene 4.7 $\mu$ F, 50V, Elect. 33 pF, 50V, Styrene 22 $\mu$ FF, 25V, Elect. (MUSE) 33 pF, 50V, Styrene 22 $\mu$ F, 35V, Elect. 100 $\mu$ F, 16V, Elect. 220 $\mu$ F, 63V, Elect. 100 $\mu$ F, 25V, Elect. 1000 $\mu$ F, 25V, Elect.

C911, C912	354774719	470 $\mu$ F, 63V, Elect.
C913	354721019	100 $\mu$ F, 6.3V, Elect.
C914	354722229	2200 $\mu$ F, 6.3V, Elect.
C917	354764709	47 $\mu$ F, 35V, Elect.

**Resistors**

R281~R283	442524704	47 $\Omega$ , 1/2W, Metal oxide film
R507, R508	441623314	330 $\Omega$ , 1W, Metal oxide film
R523, R524	442520684	6.8 $\Omega$ , 1/2W, Metal oxide film
R527, R528	442524734	47k $\Omega$ , 1/2W, Metal oxide film
R901, R902	441620434	4.3 $\Omega$ , 1W, Metal oxide film
R903	442523314	330 $\Omega$ , 1/2W, Metal oxide film
R904	442525114	510 $\Omega$ , 1/2W, Metal oxide film
R907	442521034	10k $\Omega$ , 1/2W, Metal oxide film

**Switches**

S351	25030219	NRSM-165-25SS, Rotary
S352	25030292	NRSM-145-25SS, Rotary
S353	25030302	NRSM-183-25SS, Rotary

**Terminals**

P291	25045165	NPJ-4PDBL59, (TAPE)
P292, P293	25045165	NPJ-4PDBL59, (DAT, PRC)
P294	25045182	NPJ-2PDBL72, (PREOUT)
P295	25045166	NPJ-6PDL60, (VIDEO)

**Socket ass'y**

P211	2000560	NSAS-6P516
P361	2000752	NSAS-14P708
P501	2000556	NSAS-6P512
P503	2000750	NSAS-20P706

**Jumper socket**

JL912, JL952	25050270	NSCT-6P98
JL953		

**POWER AMPLIFIER (II) PC BOARD (NAAF-3114-3) – PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Transistors</b>		
Q517, Q518	2211255 or 2210746	2SC1815-GR or 2SC945A-P
Q601, Q602	2211634 or 2211633	2SC2229-Y or 2SC2229-O
Q603, Q604	2211354 or 2211353	2SA949-Y or 2SA949-O
Q605, Q606	2201644 or 2201643	2SC3298-Y or 2SC3298-O
Q607, Q608	2201634 or 2201633	2SA1306-Y or 2SA1306-O
Q615, Q616	2212560	2SC3333
Q617, Q618	2211793 or 2211792	2SA992-E or 2SA992-F
<b>Diodes</b>		
D513, D514	223163	1SS133
D515, D516	4000120	KB-265, Varistor
<b>Coils</b>		
L601, L602	231134	S-0.8E
<b>Capacitors</b>		
C509, C510	379122235	0.022 $\mu$ F, 50V, Film (DEW)
C607, C608	379121045	0.1 $\mu$ F, 50V, Film (DEW)
C609, C610	379124735	0.047 $\mu$ F, 50V, Film (DEW)
C613~C616	379121045	0.1 $\mu$ F, 50V, Film (DEW)
<b>Resistors</b>		
R531, R532	5210062	N06HR4.7KBD, Semi-fixed
R601, R602	442522224	2.2K $\Omega$ , 1/2W, Metal oxide film
R603, R604	442522214	220 $\Omega$ , 1/2W, Metal oxide film
R607~R610	442520224	2.2 $\Omega$ , 1/2W, Metal oxide film

R615~R618	4000078	0.33 $\Omega$ , 5W, Metal plate
R619, R620	441720104	1 $\Omega$ , 2W, Metal oxide film
R645, R646	441720824	8.2 $\Omega$ , 2W, Metal oxide film

**Jumper socket**

JL906	25050268	NSCT-4P96
-------	----------	-----------

**Plate**

27300877	Bus line
----------	----------

**VIDEO TERMINAL PC BOARD (NAETC-3116-3) – PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Diodes</b>		
D281~D283	223163	1SS133
<b>Terminals</b>		
P281	25045225	NPJ-3PDBL101
P282	25045181	NPJ-2PDBL71
<b>Relays</b>		
RL281~RL283	25065298	NRL-1P1A-DC12-40

**SPEAKER & PROTECTOR CIRCUIT PC BOARD (NAETC-3117-3) – PARTS LIST**

CIRCUIT NO.	PARTS NO.	DESCRIPTION
<b>IC</b>		
Q851	222584	TA7317P
<b>Diodes</b>		
D852	223145	1S2076TD
D853	224650623 or 224150623 or 224450623	HZ6.2EB3 or 05AZ6.2Z or MTZ6.2C, Zener
D854	223163	1SS133
D931, D961	22380013	RDF02M
<b>Capacitors</b>		
C851	354722219	220 $\mu$ F, 6.3V, Elect.
C852	354742209	22 $\mu$ F, 16V, Elect.
C853	354784799	0.47 $\mu$ F, 50V, Elect.
C855	354743319	330 $\mu$ F, 16V, Elect.
C857	354744719	470 $\mu$ F, 16V, Elect.
C858, C859	379122235	0.022 $\mu$ F, 50V, Film (DEW)
C961	354741029	1000 $\mu$ F, 16V, Elect.
<b>Resistors</b>		
R861, R961	442522294	0.22 $\Omega$ , 1/2W, Metal oxide film
R875, R876	441623914	390 $\Omega$ , 1W, Metal oxide film
<b>Terminal</b>		
P851	25060124	NTM-8PDMN057
<b>Relay</b>		
RL851	25065316	NRL-2P7A-DC12-43
<b>Switch</b>		
S851a	25065361	NSS-44137
<b>Sockets</b>		
P853	2000794	NSAS-4P750
P854	2000795	NSAS-4P751
<b>Jumper socket</b>		
JL853	25050280	NSCT-3PI08
<b>MUTING SWITCH CIRCUIT PC BOARD (NASW-3121-3) – PARTS LIST</b>		
CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Capacitors</b>		
C331, C332	354782299	0.22 $\mu$ F, 50V, Elect.

C333, C334 354784799 0.47  $\mu$ F, 50V, Elect.  
**Switch**  
 S331 25035573 NPS-162-L535

**FUSE CIRCUIT PC BOARD (NAETC-3385-3,  
 NAETC-3385-3A, NAETC-3385-3B, NAETC-3385-3C)  
 – PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
		<b>Fuse holder</b>
F921a	250113	S-N5051 [D] [W] [X]
F922a	25050065	YSH403T [G] [A] [B] [W] [X]
		<b>Terminal</b>
	25060092	NTM-1S33 [G] [A] [B] [W]

**DIGITAL CIRCUIT PC BOARD (NADC-3386-1)  
 – PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
		<b>ICs</b>
Q701	24120017	TORX175
Q702, Q712	222755	TC74HCU04P
Q703, Q710	222740005	74HC00P
Q704, Q706	22240112	TC74HC10P
Q705	22240113	YM3623B
Q707	22240176	YM3414
Q708	222740025	74HC02P
C709	222740275	74HC27P
Q711	222740745	74HC74P
Q801, Q802	22240184	PCM58P
Q803, Q804	222902	NJM5532DD
Q805, Q806, Q984	222570	NJM4560D-X
Q807, Q808	22240201	NJM4565D-B
Q951	222780055	78M05HF
Q982	22240134	NJM2904D
		<b>Transistors</b>
Q713	2211255	2SC1815-GR
Q714, Q811	2213300	DTA124XS
Q715, Q809, Q815	2213290	DTC114ES
Q813, Q814	2212524	2SK363-GR
Q981	226007	TLP531, Photo coupler
Q983	2211256	2SC1815-BL
Q985	2211164 or 2211163	2SC2120-Y or 2SC2120-O
Q986	2211504 or 2211503	2SA950-Y or 2SA950-O
		<b>Diodes</b>
D701~D709 D712, D713 D721~D724 D791, D801 D720	223163	1SS133
D981	224650511 or 224150511 or 224450511 224650512 or 224150512 or 224450512	HZ5.1E-B1 or 05AZ5.1X MTZ5.1A, Zener HZ5.1E-B2 or 0.5AZ5.1Y MTZ5.1B, Zener
		<b>Coils</b>
L701	231029	NCH-1068
L702, L705	231054	NCH-5095, Filter
L703	233359	NCH-2163
L704	233360	NCH-2164
L709~L712		
L706	230905	BL02RN1-R62, FR core
L707	230906	BL02RN2-R62, FR core
L713	232143	NSRF2047, RF coil

L714	231069A or 231066 233357	NCH-1119 or NCH-1118 NCH-2161
L715		
		<b>Osc. element</b>
X701	3010144	CSA18.00MX040
		<b>Capacitors</b>
C701, C710, C711 C719, C720, C723 C724, C727, C729 C731, C733, C735 C737 C801~C804 C702, C703, C707 C713 C716 C717 C718 C805~C808 C725 C809, C810 C811, C812 C813, C814, C817 C818, C821, C822 C825, C826 C831~C834 C835~C842 C843~C846 C847, C848 C979, C980 C981 C982 C983, C995 C984 C985 C986 C987, C988 C989 C990, C993, C997 C991, C992 C993	354781099 379124724 354780109 354782299 354780229  354724719 372121514 379121134 379122224  4700 pF, 50V, Styrene 150 pF, 50V, Styrene 0.011 $\mu$ F, 50V, Film (DEW) 2200 pF, 50V, Film (DEW)  4700 pF, 50V, Styrene 47 $\mu$ F, 16V, Elect. (MUSE) 47 $\mu$ F, 16V, Elect. 220 $\mu$ F, 16V, Elect. 22 $\mu$ F, 16V, Elect. (MUSE) 2200 $\mu$ F, 16V, Elect. 2200 $\mu$ F, 6.3V, Elect. 2.2 $\mu$ F, 50V, Elect. 22 $\mu$ F, 35V, Elect. 100 $\mu$ F, 6.3V, Elect. 47 $\mu$ F, 16V, Elect. 330 $\mu$ F, 16V, Elect. 379121035 354723319 354721019 354742219  <b>Resistors</b> R809~R816 R894 R979  R981  <b>Relays</b> RL701 RL731  P711 P712  JL701  P731 P232a P952	
		0.1 $\mu$ F, 50V, Elect. 4700 pF, 50V, Film (DEW) 1 $\mu$ F, 50V, Elect. 0.22 $\mu$ F, 50V, Elect. 2.2 $\mu$ F, 50V, Elect.  470 $\mu$ F, 6.3V, Elect. 150 pF, 50V, Styrene 0.011 $\mu$ F, 50V, Film (DEW) 2200 pF, 50V, Film (DEW)  4700 pF, 50V, Styrene 47 $\mu$ F, 16V, Elect. (MUSE) 47 $\mu$ F, 16V, Elect. 220 $\mu$ F, 16V, Elect. 22 $\mu$ F, 16V, Elect. (MUSE) 2200 $\mu$ F, 16V, Elect. 2200 $\mu$ F, 6.3V, Elect. 2.2 $\mu$ F, 50V, Elect. 22 $\mu$ F, 35V, Elect. 100 $\mu$ F, 6.3V, Elect. 47 $\mu$ F, 16V, Elect. 330 $\mu$ F, 16V, Elect. 0.01 $\mu$ F, 50V, Film (DEW) 330 $\mu$ F, 6.3V, Elect. 100 $\mu$ F, 6.3V, Elect. 220 $\mu$ F, 16V, Elect.  <b>Resistors</b> 5210070 442522414 442521224  442521114  <b>Relays</b> 25065345 25065282  <b>Terminals</b> 25045224 25045251  <b>Jumper socket</b> 25050267  <b>Plugs</b> 25055133 25055186 25055184  <b>Plate</b> 27160215-1
		Bus line



**DIGITAL POWER SUPPLY CIRCUIT BOARD  
(NAPS-3387-1) – PARTS LIST**

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Transistors</b>		
Q971	2201444 or 2201443	2SD1408-Y or 2SD1408-O
Q972	2201434 or 2201433	2SB1017-Y or 2SB1017-O
Q973	2211255	2SC1815-GR
Q974	2211455	2SA1015-GR
Q975, Q976	2213335	2SK373-GR
<b>Diodes</b>		
D971, D972	224651602 or 224151602 or 224451602	HZ16E-B2 or 05AZ16Y or MTZ16B, Zener
<b>Capacitors</b>		
C971, C972	354774719	470 $\mu$ F, 63V, Elect.
C975, C976	354751019	100 $\mu$ F, 25V, Elect.
C977, C978	354744709	47 $\mu$ F, 16V, Elect.
<b>Resistors</b>		
R971~R974	441724314	430 $\Omega$ , 2W, Metal oxide film
<b>Jumper socket</b>		
JL731	25050280	NSCT-3P108

NOTE [D]: ONLY 120V MODEL  
 [G]: ONLY 220V MODEL  
 [W]: ONLY 120V/220V MODEL  
 [X]: ONLY MILITARY MARKET MODEL  
 [A]: ONLY AUSTRALIAN MODEL  
 [B]: ONLY BRITISH MODEL