

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.

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ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Power Output:	100 watts per channel, min RMS. at 8 ohms, both channels driven from 20 Hz to 20 kHz, with no more than 0.008% Total harmonic distortion.
Dynamic Power:	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 μ V/220 ohms CD DIRECT: 150 mV/50 kohms TUNER: 150 mV/50 kohms Tape Play: 150 mV/50 kohms VCR Play: 150 mV/50 kohms VDP Play: 150 mV/50 kohms
Output Level/Impedance:	Tape Rec: 150 mV/1.5 kohms (Phono) Pre Out: 1 V/600 ohms
Phono Overload:	Phono (MM): 200 mV RMS. at 1 kHz, 0.015% THD.
Tone Control: (Vol-20 dB)	CONTRABASS: +10/+20 dB (Muting: OFF/ON) at 20 Hz BASS: ± 10 dB at 70 Hz TREBLE: ± 8 dB at 20 kHz
High Cut:	6 kHz (6 dB/Octave) (TREBLE min.)
Frequency Response:	CD, Tuner: 2-50,000 Hz (+0, -1 dB)

RIAA Deviation:	Phono (MM): ± 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 _{p-p} /75 Ω
Output:	0.5 V _{p-p} /75 Ω
Optical Input:	Standard TOSLINK Tape
Digital Sampling Frequency:	32,44.1, 48 kHz
Frequency Response:	2–20,000 Hz ± 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)

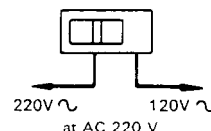
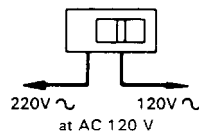
Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel.

Specifications: More than 10 M Ω at 500V.

3. Voltage Selector (Rear Panel)

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

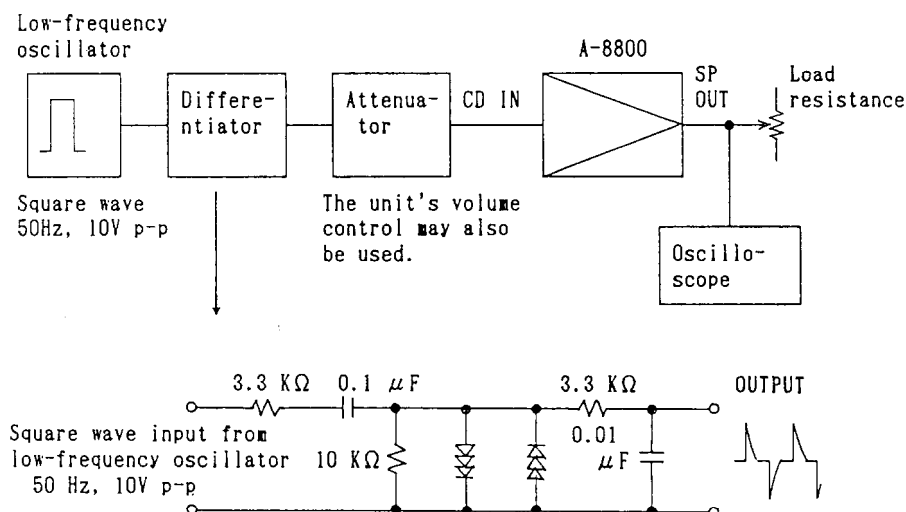
Note) Under no circumstances connect a load or short the speaker terminals when performing the above test.

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 switchse 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.

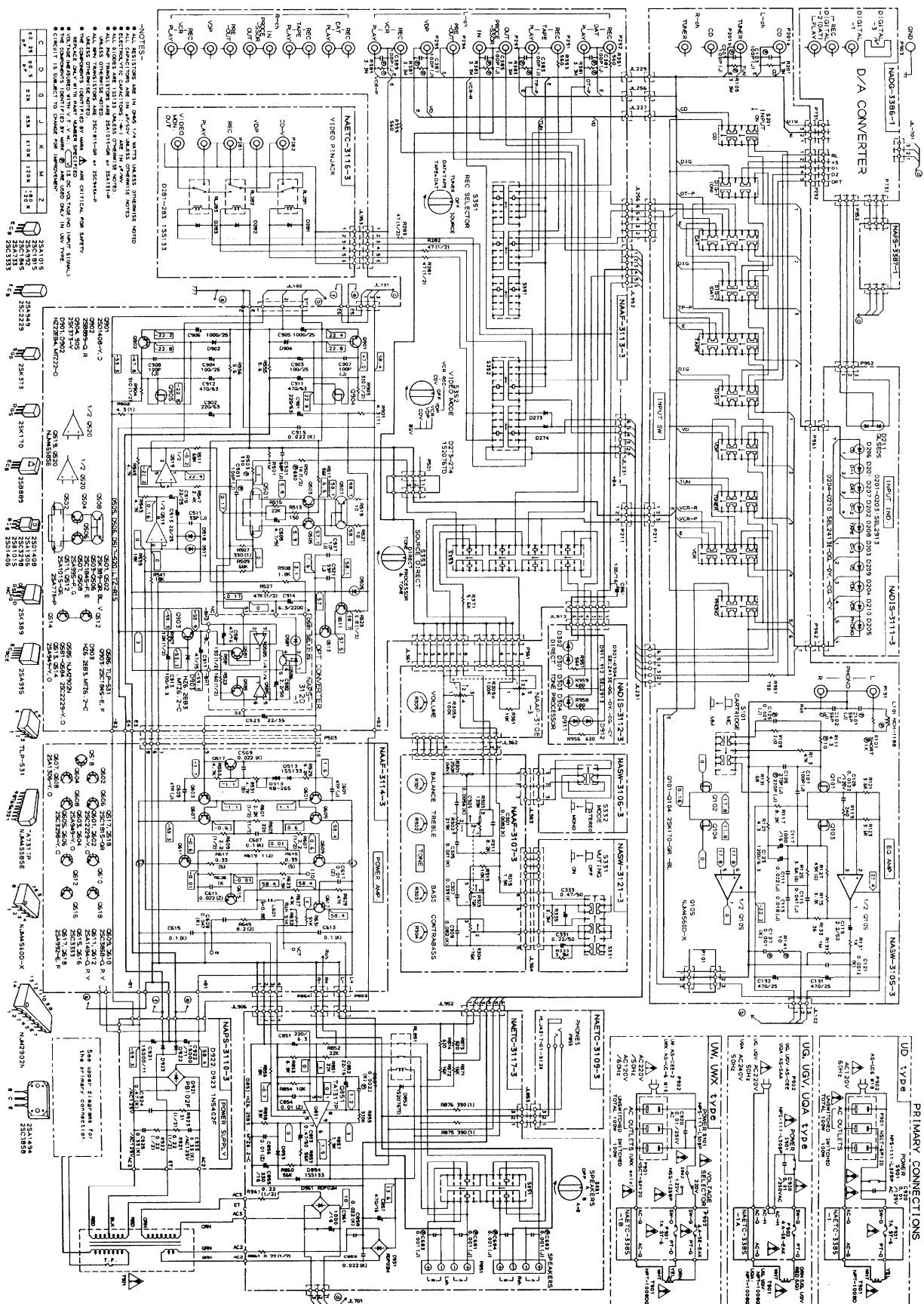
Relay OFF status can be canceled by switching the power OFF.



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

SCHEMATIC DIAGRAM (1/2)

A B C D E F G



NOTES:

- ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED
- RESISTOR VALUES IN PARENTHESES ARE IN OHMS
- RESISTOR VALUES IN SQUARE BRACKETS ARE IN OHMS
- RESISTOR VALUES IN CIRCLES ARE IN OHMS
- RESISTOR VALUES IN TRIANGLES ARE IN OHMS
- RESISTOR VALUES IN DIAMONDS ARE IN OHMS
- RESISTOR VALUES IN STARS ARE IN OHMS
- RESISTOR VALUES IN X'S ARE IN OHMS
- RESISTOR VALUES IN DOTS ARE IN OHMS
- RESISTOR VALUES IN COMMAS ARE IN OHMS
- RESISTOR VALUES IN SLASHES ARE IN OHMS
- RESISTOR VALUES IN UNDERSCORES ARE IN OHMS
- RESISTOR VALUES IN SUPERSCRIPTS ARE IN OHMS
- RESISTOR VALUES IN SUBSCRIPTS ARE IN OHMS
- RESISTOR VALUES IN PLUS SIGNS ARE IN OHMS
- RESISTOR VALUES IN MINUS SIGNS ARE IN OHMS
- RESISTOR VALUES IN EQUAL SIGNS ARE IN OHMS
- RESISTOR VALUES IN GREATER THAN SIGNS ARE IN OHMS
- RESISTOR VALUES IN LESS THAN SIGNS ARE IN OHMS
- RESISTOR VALUES IN NOT EQUAL SIGNS ARE IN OHMS
- RESISTOR VALUES IN ALL OTHER SIGNS ARE IN OHMS

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
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73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
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C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
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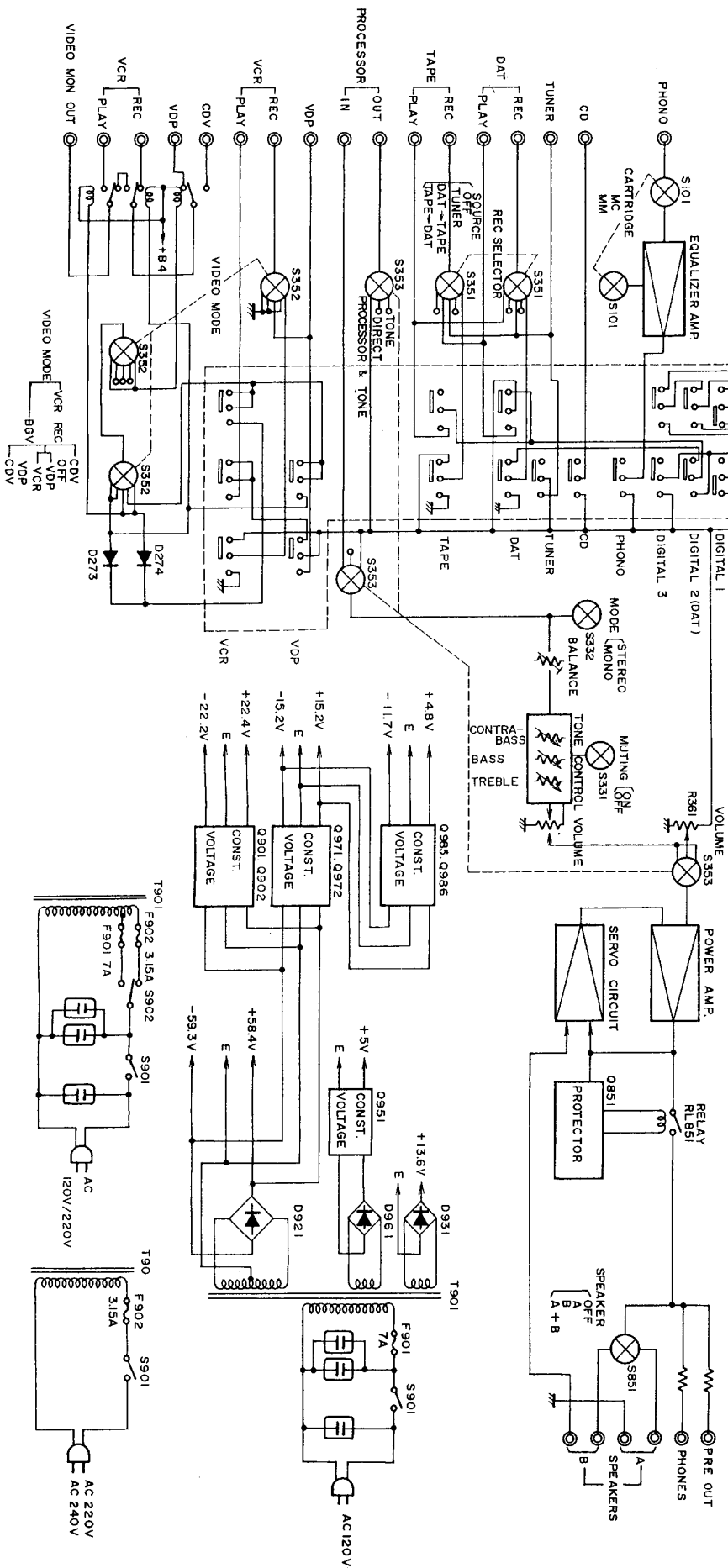
C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
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97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
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97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120

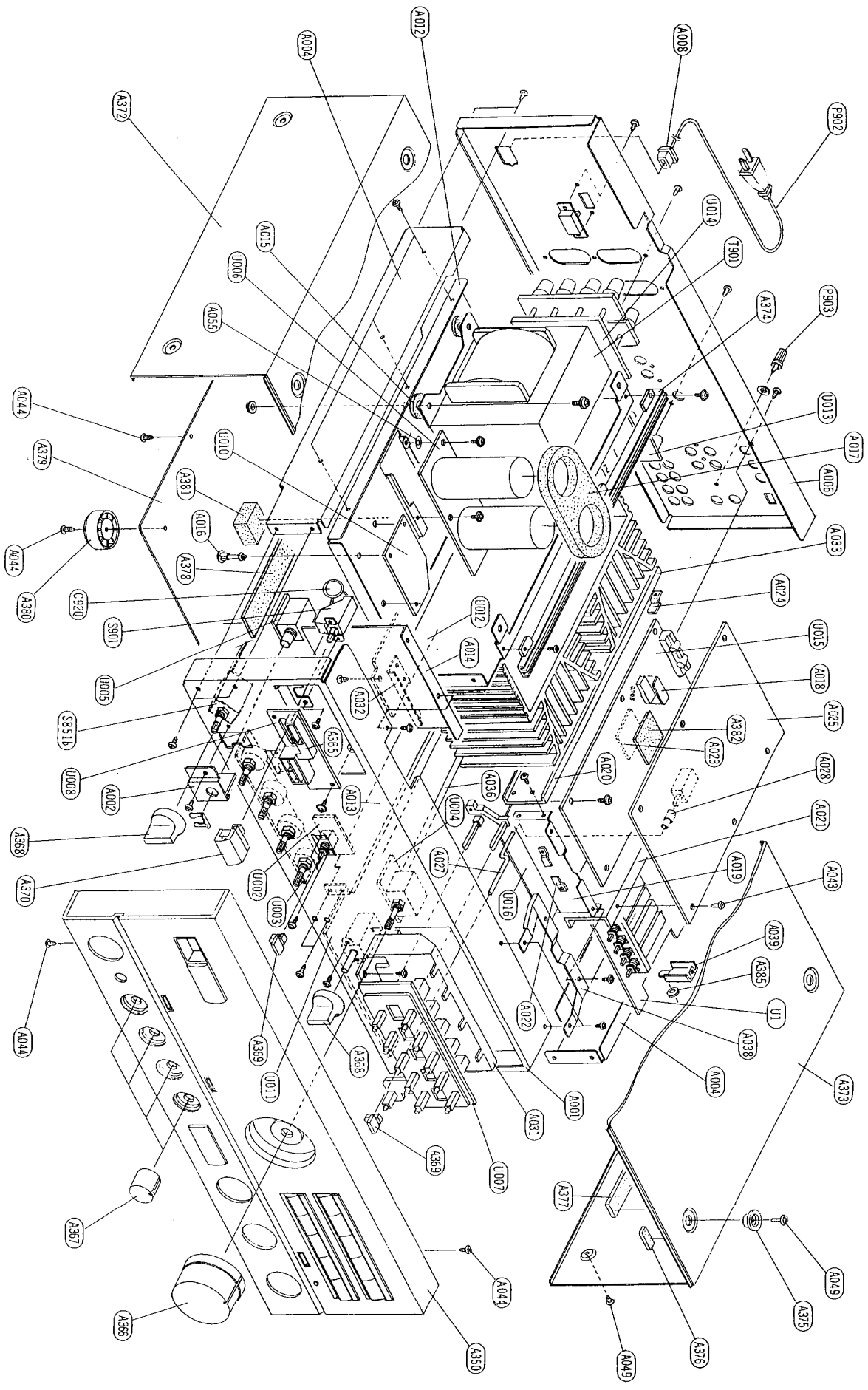
C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

The diagram illustrates the control system for a laser printer, showing the flow from digital inputs to the laser driver. The system is organized into several functional blocks:

- Inputs and Initial Processing:** Digital inputs (DIGITAL 1, DIGITAL 2, DIGITAL 3) and a COAXIAL input are processed by wave shaping (Q702, Q703), waveshaping (Q703, Q704, Q712), and buffering (Q701, Q703) stages. A REC (Record) input is also present.
- Selection and Decoding:** The processed signals are fed into an INPUT SELECTOR (Q704) and a DECODER (Q705). The DECODER outputs signals to a DIGITAL FILTER (Q707) and a D/A CONVERTER (Q801).
- Signal Conversion and Filtering:** The DIGITAL FILTER (Q707) outputs signals to a D/A CONVERTER (Q802) and a D/A CONVERTER (Q803). The D/A CONVERTER (Q803) outputs signals to an I/V CONVERTER (Q804) and an ANALOG FILTER (Q805).
- Output Stages:** The ANALOG FILTER (Q805) outputs signals to a BUFFER AMP. (Q807) and a SERVO CIRCUIT (Q808). The SERVO CIRCUIT (Q808) outputs signals to a RELAY (Q808) and a BUFFER AMP. (Q808).
- Control and Monitoring:** An LED CONTROL (Q706, Q815) is connected to the DIGITAL FILTER (Q707) and the D/A CONVERTER (Q802). A MUTING (Q706, Q815) block is also connected to the DIGITAL FILTER (Q707) and the D/A CONVERTER (Q802). An EMPHASIS (Q811, Q813) block is connected to the D/A CONVERTER (Q802) and the I/V CONVERTER (Q804).
- Power and Grounding:** The system is powered by a +5V supply and a +15V supply. Grounding is indicated by a GND symbol.



CHASSIS-EXPLODED VIEW



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

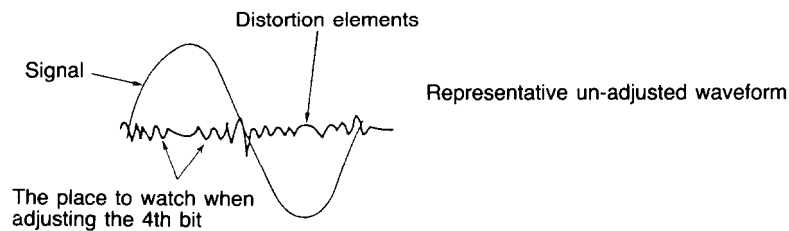
- Connect the digital output terminal of a suitable equipped CD player to the DIGITAL 1 digital input terminal of the A-8800.
- Connect a distortion meter to the analog output of circuit board NADC-3386 or to the unit's analog REC OUT terminal.
- Input the distortion meter signal output and the distortion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

(2) Turn power ON to the unit.

(3) Play track 2 of the test disc (YEDS-18).

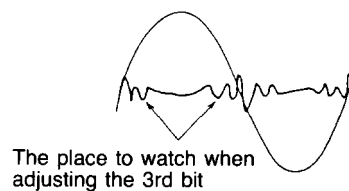
(4) Adjusting the 4th bit.

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.

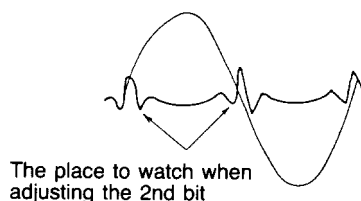
As with (3) above, adjust semi-fixed resistor R813 (R814) so that the non-continuous portion (difference in level) of the distortion elements is as small as possible.



(6) Adjusting the 2nd bit.

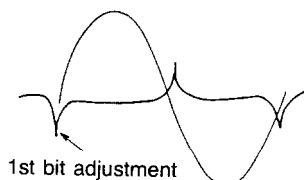
As above, adjust semi-fixed resistor R811 (R812) so that the non-continuous portion (difference in level) of the distortion elements is as small as possible.

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



(7) Adjusting the 2nd bit.

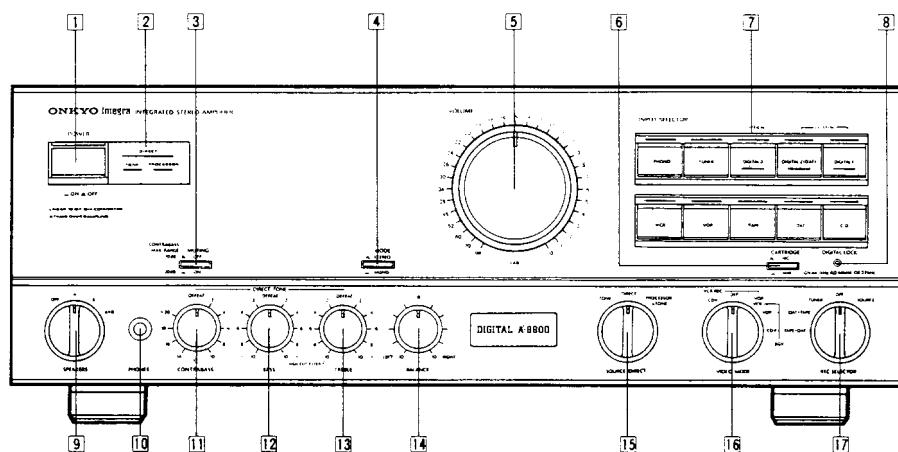
Adjust semi-fixed resistor R809 (R810) so that the non-continuous portion of the final remaining distortion waveform is as small as possible.



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

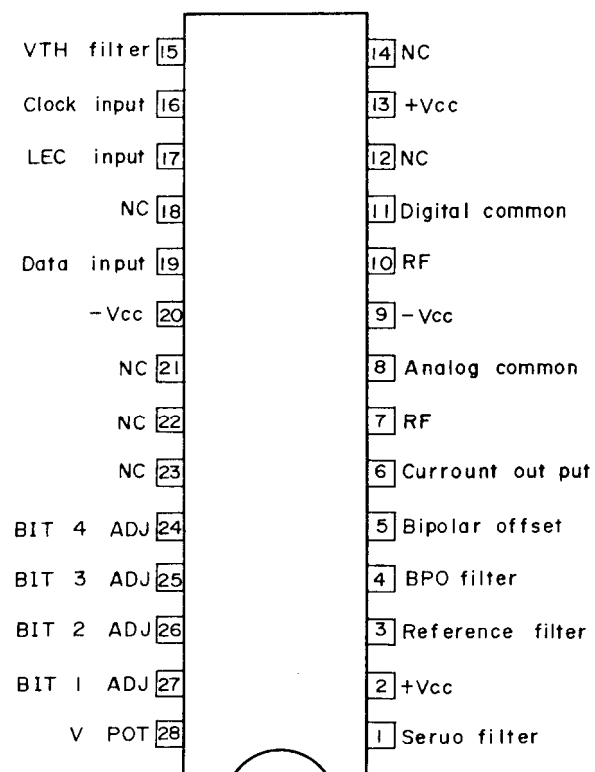
Note) The distortion meter must be accurate to 0.001% or better and possess a distortion output terminal.

FRONT PANEL FACILITIES

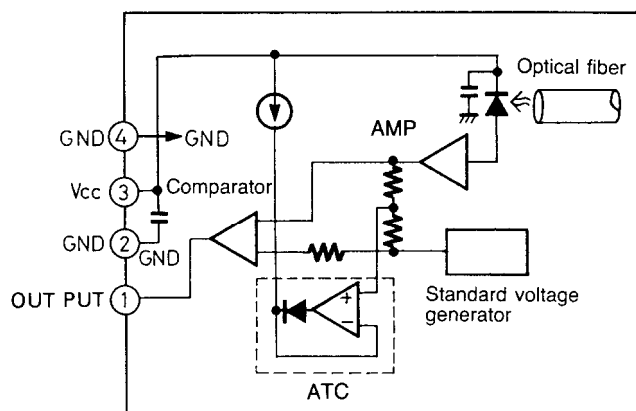


1. Power switch (POWER)
2. Operation indicator (DIRECT/TONE/PROCESSOR)
3. Muting switch (MUTING)
4. Mode selector switch (MODE)
STEREO, MONO
5. Volume control (VOLUME)
6. Cartridge selector switch (CARTRIDGE)
MC, MM
7. Input selector buttons and Indicators (INPUT SELECTOR)
DIGITAL 1, DIGITAL 2 (DAT), DIGITAL 3
PHONO, TUNER, VCR, VDP, TAPE, DAT, CD
8. Digital lock indicator (DIGITAL LOCK)
9. Speaker selector switch (SPEAKERS)
OFF, A, B, A+B
10. Headphone jack (PHONES)
11. Contrabass control (CONTRABASS)
12. Bass control (BASS)
13. Treble control (TREBLE)
14. Balance control (BALANCE)
15. Source direct switch (SOURCE DIRECT)
TONE, DIRECT, PROCESSOR & TONE
16. Video mode switch (VIDEO MODE)
VCR REC...CDV, OFF, VDP/VCR
VDP/VCR, VDP, CDV...BGV
17. Recording source selector switch (REC SELECTOR)
TAPE ► DAT, DAT ► TAPE, TUNER, OFF,
SOURCE

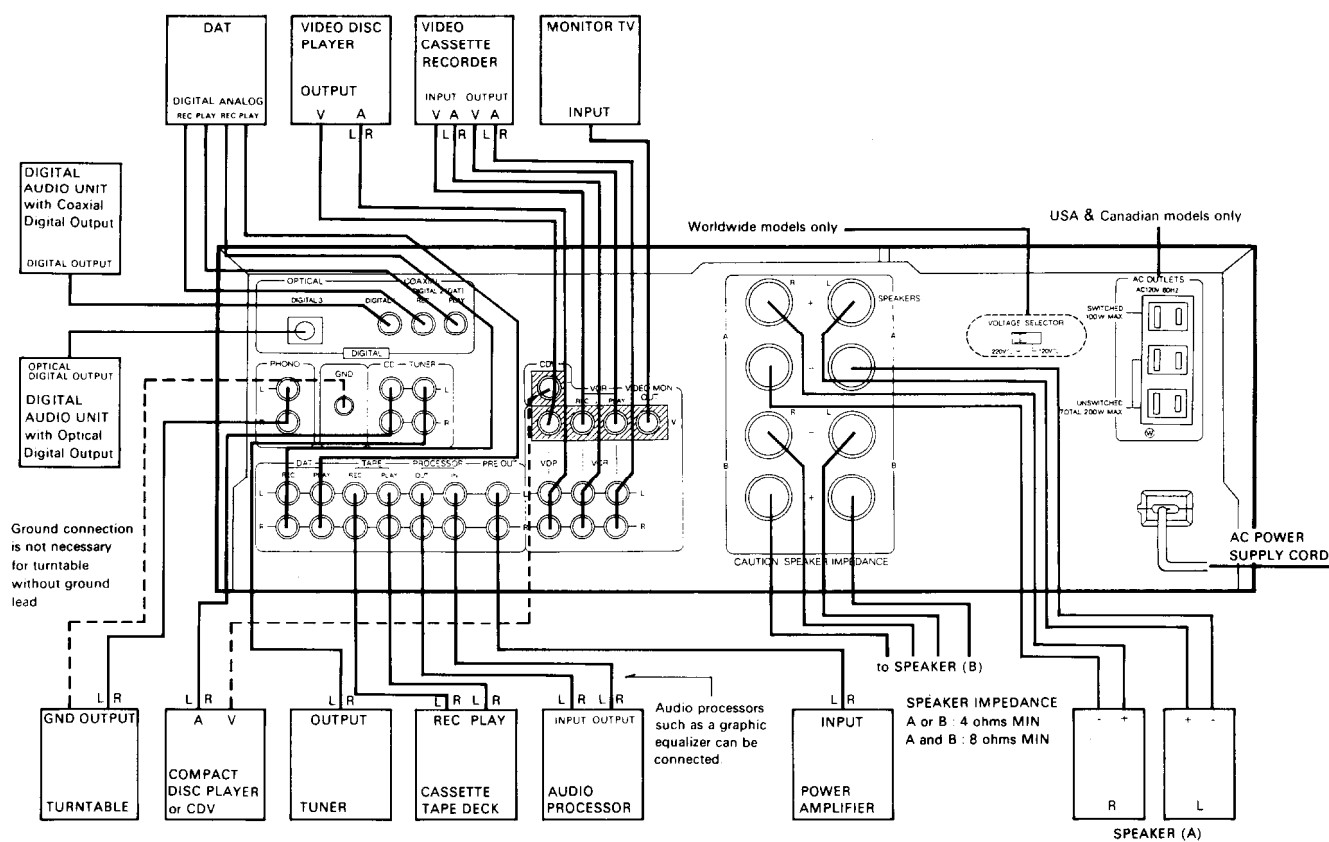
PCM58P (D/A converter)



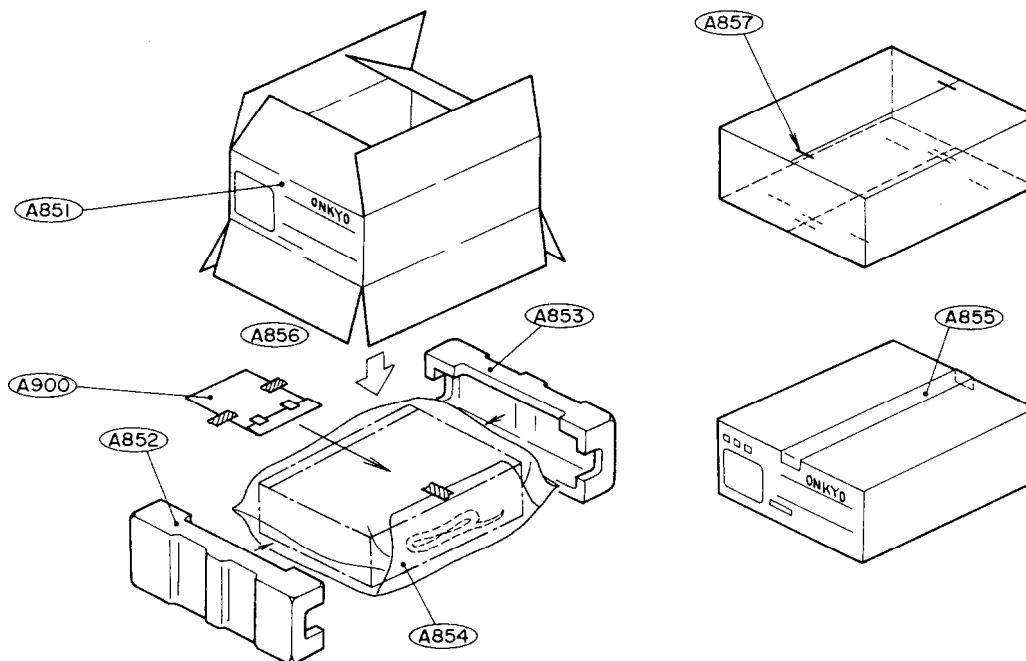
TORX175 (Optical receiver)



SYSTEM CONNECTIONS



PACKING PROCEDURES



MILITARY MARKET MODEL

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

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				POWER TRANSFORMER, NPT-1008DG [W] [X]
A006	27121174A	BACK PANEL [D]	△ T901	2300366A		POWER TRANSFORMER, NPT-1008Q [A] [B]
A006	27121175A	BACK PANEL [G]				0.01μF, AC400V/125V, CAPACITOR (1S)
A006	27121177A	BACK PANEL [W]	△ T901	2300377B		COVER (CAPACITOR), SB-1925
A006	27121190A	BACK PANEL [X]				AC SOCKET, NSCT-6P120 [D] [X]
A006	27121191A	BACK PANEL [A] [B]	△ C920	350065A		POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]
A008	27300750	BUSHING (CORD)				POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]
A012	27130548B	BRACKET (PT)	△ C920a	27300601		POWER SUPPLY CABLE, AS-UC-6 #18 or [D] [X]
A013	27130502C	BRACKET (H)				POWER SUPPLY CABLE, AS-UC-6 #18 [D] [X]
A014	27150259	SHIELD PLATE	△ P901	25050293		POWER SUPPLY CABLE, AS-CEE or [G]
A015	27270213	SPACKER (PT)				POWER SUPPLY CABLE, AS-CEE [G]
A016	27190657	HOLDER	△ P902	253123 or		POWER SUPPLY CABLE, AS-CEE-2 [W]
A017	28140882	CUSHION (DUMPER)				POWER SUPPLY CABLE, AS-SAA [A]
A018	28400454	STABILIZER (DAC)		253136 or		POWER SUPPLY CABLE, 2-0.75BS16 BLK/GRY [B]
A019	27130549A	BRACKET (D)				POWER SUPPLY CABLE, 2-0.75BS16 BLK/GRY [B]
A020	27225087C	SHIELD CASE (DL)		253140 or		GROUND TERMINAL
A021	27225088C	SHIELD CASE (DR)				7A ST-6 [D]
A022	27141282	BRACKET (O)		253146 or		4A-SE-EAK or [G] [W] [X] [A] [B]
A023	28140808	CUSHION				4A-SE-EAK [G] [W] [X] [A] [B]
A024	27141229A	BRACKET (O)	△ P902	253148 or		POWER SWITCH, NPS-111-L308P
A025	27262485	PLATE (D)				REMOTE SWITCH, OPERATION SECTION
A027	27260237C	SHAFT		253150		SLIDE SWITCH, NSS-1258P [W] [X]
A028	28320135	JOINT				NASW-3105-3, INPUT SWITCH & EQUALIZER CIRCUIT PC BOARD ASS'Y
A030	29360626-1	LABEL (Fuse) (D)	△ P902	253092-1A		NASW-3106-3, MODE SWITCH CIRCUIT PC BOARD ASS'Y
A031	27273086E	JOINT ASS'Y				NAAF-3107-3, TONE CONTROL CIRCUIT PC BOARD ASS'Y
A032	27141161A	BRACKET (HF)	△ P902	253118		NAAF-3108-3, VOLUME CONTROL CIRCUIT PC BOARD ASS'Y
A033	21160230	HEATSINK				NAETC-3109-3, HEAD PHONE JACK PC BOARD ASS'Y
A035	27141162A	BRACKET (HB)	△ P902	728320 or		NAPS-3110-3, POWER SUPPLY CIRCUIT PC BOARD ASS'Y
A036	27130503D	BRACKET (PC)				NADIS-3111-3, INPUT LED CIRCUIT PC BOARD ASS'Y
A038	27141163A	BRACKET (D)		728328		NADIS-3112-3, DISPLAY LED CIRCUIT PC BOARD ASS'Y
A039	27141235	BRACKET (E)				NASW-3121-3, MUTING SWITCH CIRCUIT PC BOARD ASS'Y
A043	82143006	PAN HEAD SCREW, 3P+6FNBC	P903	25060044		
A044	834480088	TAP-TIGHT SCREW, 3TTS+8BBC	△ F921	252052		
A049	838440089	TAP-TIGHT SCREW, 4TTB+8CBC	△ F922	252077 or		
A053	87313006	TOOTHED WASHER, M-3B		252077CC		
A055	27270273	SPACER	△ F901	25035345A		
A350	1A115121	FRONT PANEL	S851b	25030294		
A365	28199174	FILM				
A366	28323171	KNOB (VOL)	△ S902	25065123		
A367	28323123	KNOB (TONE)				
A368	28323173	KNOB (SP)	U001	1A115505-3		
A369	28323174	KNOB (PUSH)				
A370	28323175	KNOB (POW)				
A371	28323176	KNOB (CAP)	U002	1A115506-3		
A372	28184409	TOP COVER (L)				
A373	28184410	TOP COVER (R)	U003	1A115507-3		
A374	27273090	JOINT (COVER)				
A375	27265155A	WASHER (COVER)				
A376	28140020	CUSHION	U004	1A115508-3		
A377	28140695	CUSHION				
A378	28140761	CUSHION				
A379	27170251A	BOTTOM BOARD	U005	1A115509-3		
A380	27175153	LEG ASS'Y				
A381	28140810	CUSHION	U006	1A115510-3		
A382	28140807	CUSHION				
A385	27175011C	LEG	U007	1A115511-3		
Q609, Q610	2201873 or 2201876 or 2201874	TRANSISTOR, 2SC3858-O or TRANSISTOR, 2SC3858-P or TRANSISTOR, 2SC3858-Y	U008	1A115512-3		
Q611, Q612	2201863 or 2201866 or 2201864	TRANSISTOR, 2SA1494-O or TRANSISTOR, 2SA1494-P or TRANSISTOR, 2SA1494-Y	U009	1A115521-3		

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
	IC	
Q105	222570	NJM4560X
	Transistors	
Q101~104	2212185 or 2212186	2SK170GR or 2SK170BL
	Capacitors	
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 μ F, 50V, Film (DEW)
C113, C114	379121834	0.018 μ F, 50V, Film (DEW)
C115, C116	379124734	0.047 μ F, 50V, Film (DEW)
C117, C124	354741029	1000 μ F, 16V, Elect.
C118, C123	391221227	1200 μ F, 6.3V, Elect. (MUSE)
C119, C120	391280227	2.2 μ F, 50V, Elect. (MUSE)
C121, C122	379121225	1200 pF, 50V, Film (DEW)
C131, C132	354754719	470 μ F, 25V, Elect.
	Switches	
S101	25035583	NPS-142-L545
S201	25035572	NPS-742-362-L534
	Sockets	
P101	2000764	NSAS-6P720
P223	2000557	NSAS-6P513
P224	2000960	NSAS-8P912
P232	2000776	NSAS-10P732
P961	2000665	NSAS-8P621

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S332	25035584	NPS-122-L546

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
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 μ F, 50V, Film (DEW)
C309, C310	379128235	0.082 μ F, 50V, Film (DEW)

Resistors		
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
Resistor		
R305	5104212	N27DQ100KT100KT25 Variable
Plug		
P361a	25055137	NPLG-7P121
Jumper socket		
JL361	25050272	NSCT-8P100

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

CIRCUIT NO.	PART NO.	DESCRIPTION
Stereo jack		
P853	25045229	HLJ4317-01-3120

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

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
Diodes		
D201~D203	225142CX1 or 225142CX2 or 225142DX1 or 225142DX2	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
Sockets		
P951	2000918	NSAS-6P871

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

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

CIRCUIT NO.	PART NO.	DESCRIPTION
Diodes		
D911	225142DX2	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
Holder		
	27190574	(LED-4)

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

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q519, Q520	222942	NJM4558SE
Transistors		
Q501, Q502	2212805 or 2212806 or 2212807	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
Diodes		
D505, D506 D517~D520 D273, D274 D902, D904	225232	LTZ-R15, LED
D903	223145	1S2076TD
	224652204 or 224152204 or 224452204	HZ22E-B4 or 05AZ22R or MTZ22-D, Zener
	224650623 or 224150623 or 224450623	HZ6.2E-B3 or 05AZ6.2Z or MTZ6.2-C, Zener
	Capacitors	
	372126804 354780479 372123304 391252207 372123304 354762209 354741019 354772219 354751019 354751029	68 pF, 50V, Styrene 4.7 μ F, 50V, Elect. 33 pF, 50V, Styrene 22 μ FF, 25V, Elect. (MUSE) 33 pF, 50V, Styrene 22 μ F, 35V, Elect. 100 μ F, 16V, Elect. 220 μ F, 63V, Elect. 100 μ F, 25V, Elect. 1000 μ F, 25V, Elect.
C501, C502 C505, C506 C511, C512 C513~C516 C521, C522 C523, C524 C861 C901, C902 C903, C904 C905, C906		

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

Resistors

R281~R283	442524704	47 Ω , 1/2W, Metal oxide film
R507, R508	441623314	330 Ω , 1W, Metal oxide film
R523, R524	442520684	6.8 Ω , 1/2W, Metal oxide film
R527, R528	442524734	47k Ω , 1/2W, Metal oxide film
R901, R902	441620434	4.3 Ω , 1W, Metal oxide film
R903	442523314	330 Ω , 1/2W, Metal oxide film
R904	442525114	510 Ω , 1/2W, Metal oxide film
R907	442521034	10k Ω , 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
Transistors		
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
Diodes		
D513, D514	223163	1SS133
D515, D516	4000120	KB-265, Varistor
Coils		
L601, L602	231134	S-0.8E
Capacitors		
C509, C510	379122235	0.022 μ F, 50V, Film (DEW)
C607, C608	379121045	0.1 μ F, 50V, Film (DEW)
C609, C610	379124735	0.047 μ F, 50V, Film (DEW)
C613~C616	379121045	0.1 μ F, 50V, Film (DEW)
Resistors		
R531, R532	5210062	N06HR4.7KBD, Semi-fixed
R601, R602	442522224	2.2K Ω , 1/2W, Metal oxide film
R603, R604	442522214	220 Ω , 1/2W, Metal oxide film
R607~R610	442520224	2.2 Ω , 1/2W, Metal oxide film

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

Jumper socket

JL906	25050268	NSCT-4P96
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Plate

27300877	Bus line
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VIDEO TERMINAL PC BOARD (NAETC-3116-3) – PARTS LIST

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

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

CIRCUIT NO.	PARTS NO.	DESCRIPTION
IC		
Q851	222584	TA7317P
Diodes		
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
Capacitors		
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.
C857	354744719	470 μ F, 16V, Elect.
C858, C859	379122235	0.022 μ F, 50V, Film (DEW)
C961	354741029	1000 μ F, 16V, Elect.
Resistors		
R861, R961	442522294	0.22 Ω , 1/2W, Metal oxide film
R875, R876	441623914	390 Ω , 1W, Metal oxide film
Terminal		
P851	25060124	NTM-8PDMN057
Relay		
RL851	25065316	NRL-2P7A-DC12-43
Switch		
S851a	25065361	NSS-44137
Sockets		
P853	2000794	NSAS-4P750
P854	2000795	NSAS-4P751
Jumper socket		
JL853	25050280	NSCT-3P108

MUTING SWITCH CIRCUIT PC BOARD (NASW-3121-3) – PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitors		
C331, C332	354782299	0.22 μ F, 50V, Elect.

C333, C334 354784799 0.47 μ 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
	Fuse holder	
F921a	250113	S-N5051 [D] [W] [X]
F922a	25050065	YSH403T [G] [A] [B] [W] [X]
	Terminal	
	25060092	NTM-1S33 [G] [A] [B] [W]

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

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
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
	Transistors	
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
	Diodes	
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
	Coils	
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 NCH-1119 or
L715 231066 NCH-1118
233357 NCH-2161

Osc. element

X701 3010144 CSA18.00MX040

Capacitors

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 372124724 391244707 354744709 354742219 391242207 354742229 354722229 354780229 354762209 354721019 354744709 354723319 379121035 354723319 354721019 354742219	10 μ F, 16V, Elect. 0.1 μ F, 50V, Elect. 4700 pF, 50V, Film (DEW) 1 μ F, 50V, Elect. 0.22 μ F, 50V, Elect. 2.2 μ F, 50V, Elect. 470 μ F, 6.3V, Elect. 150 pF, 50V, Styrene 0.011 μ F, 50V, Film (DEW) 2200 pF, 50V, Film (DEW) 4700 pF, 50V, Styrene 47 μ F, 16V, Elect. (MUSE) 47 μ F, 16V, Elect. 220 μ F, 16V, Elect. 22 μ F, 16V, Elect. (MUSE) 2200 μ F, 16V, Elect. 2200 μ F, 6.3V, Elect. 2.2 μ F, 50V, Elect. 22 μ F, 35V, Elect. 100 μ F, 6.3V, Elect. 47 μ F, 16V, Elect. 330 μ F, 16V, Elect. 0.01 μ F, 50V, Film (DEW) 330 μ F, 6.3V, Elect. 100 μ F, 6.3V, Elect. 220 μ F, 16V, Elect.
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Resistors

R809~R816 R894 R979 R981	5210070 442522414 442521224 442521114	N06HR100KBD, Semi-fixed 240 Ω , 1/2W, Metal oxide film 1.2k Ω , 1/2W, Metal oxide film 110 Ω , 1/2, Metal oxide film
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Relays

RL701 RL731	25065345 25065282	NRL-1P1A-DC05-49 NRL-2P1.25A-DC12-39
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Terminals

P711 P712	25045224 25045251	NPJ-2PDOR100 NPJ-1PDOR123
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Jumper socket

JL701	25050267	NSCT-3P-95
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Plugs

P731 P232a P952	25055133 25055186 25055184	NPLG-3P-117 NPLG-5P-170 NPLG-3P-168
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Plate

27160215-1	Bus line
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**DIGITAL POWER SUPPLY CIRCUIT BOARD
(NAPS-3387-1) – PARTS LIST**

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