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ONKYO® SERVICE MANUAL

Stereo Power Amplifier MODEL M-501



UD	120V AC, 60Hz
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SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE 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: 150 watts per channel, min. RMS,
at 8 ohms, both channels driven, from
20Hz to 20kHz. with no more than
0.09% THD

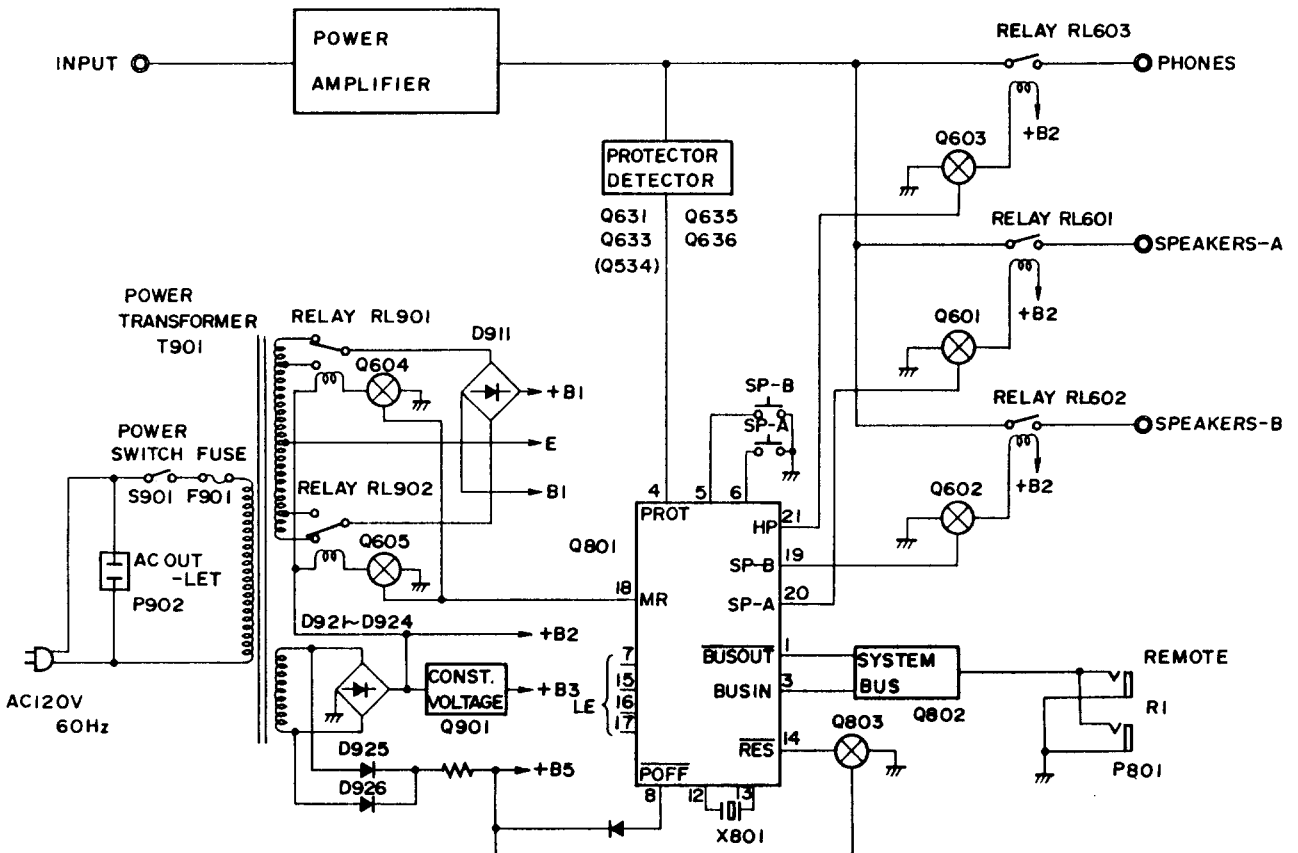
Total Harmonic Distortion: 0.09% at 150 watts
IM Distortion: 0.09% at 150 watts
Damping Factor: 60 at 8 ohms
Frequency Response: 5 - 100KHz ± 1 dB
Sensitivity and Impedance: 1V/50kohms
Signal to Noise Ratio: 100dB (IHFA-202 1 watt output)

General

Power Supply: AC120V, 60Hz
Dimensions (W x H x D): 455 x 150 x 350mm
17-15/16" x 5-7/8" x 13-3/4"
Weight: 10.5kg, 23.1 lbs.

Specifications and features are subject to change without notice.

BLOCK DIAGRAM



ADJUSTMENT PROCEDURES

Adjustments and Checking the Protection Circuitry

1. Preparations

- 1) Place the unit on the workbench. (There should be about 15 mm of space between the base plate of the unit and the work surface.)
 - 2) Set up the unit as follows.
 - (1) No load
 - (2) No signal
 - (3) Volume turned all the way down
 - (4) Speaker switch OFF
 - (5) Power switch OFF
- Note) Check the following points before making adjustments
- (1) The power switch should be OFF.
 - (2) The interior of the unit should not be warm.

2. Idling current adjustment

- 1) Turn the power switch ON and allow the unit to warm up for about 10 minutes.
 - (1) Adjust R533(R534) so that the voltage at test point VCT-IID on the NAAF-4123 circuit board is $20\text{mV} \pm 5\text{mV}$.
- Note) Semi-fixed resistors enclosed in parentheses () are for the right channel.

3. Check of operation of protection circuitry

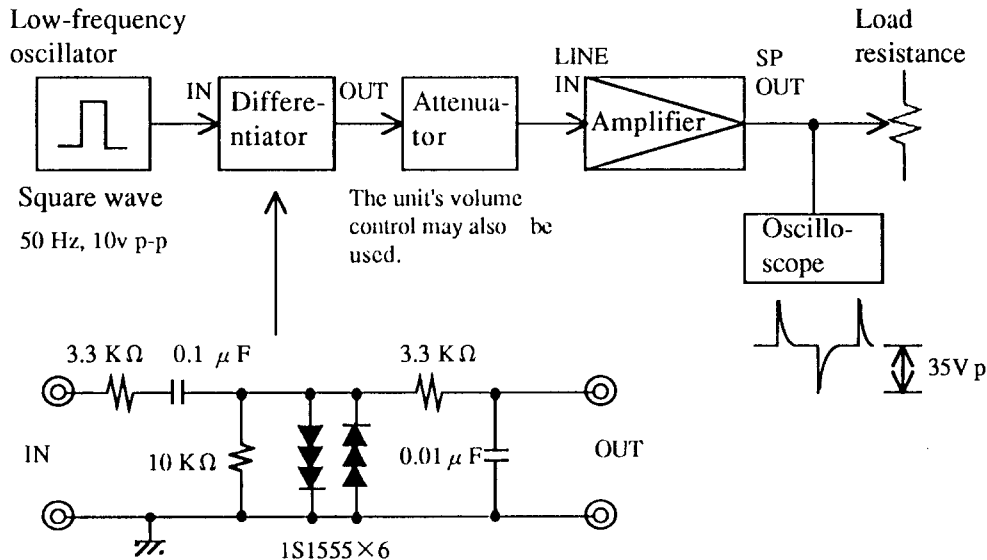
- 1) Check of operation of protection relay
 - (1) Confirm that the relay turns ON approximately 5 seconds after the power switch is turned ON.
 - (2) The relay should turn OFF approximately 0.5 seconds after the power switch is turned OFF.
- 2) Check of DC detection and servo circuitry operation
 - (1) Turn the power on with no load.
 - (2) After the speaker relay turns ON, apply DC+ 1.5 V to the CD input terminals. Confirm that the relay turns OFF.
 - (3) Confirm that operation is the same as (2) above when an input of DC- 1.5 V is applied.

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

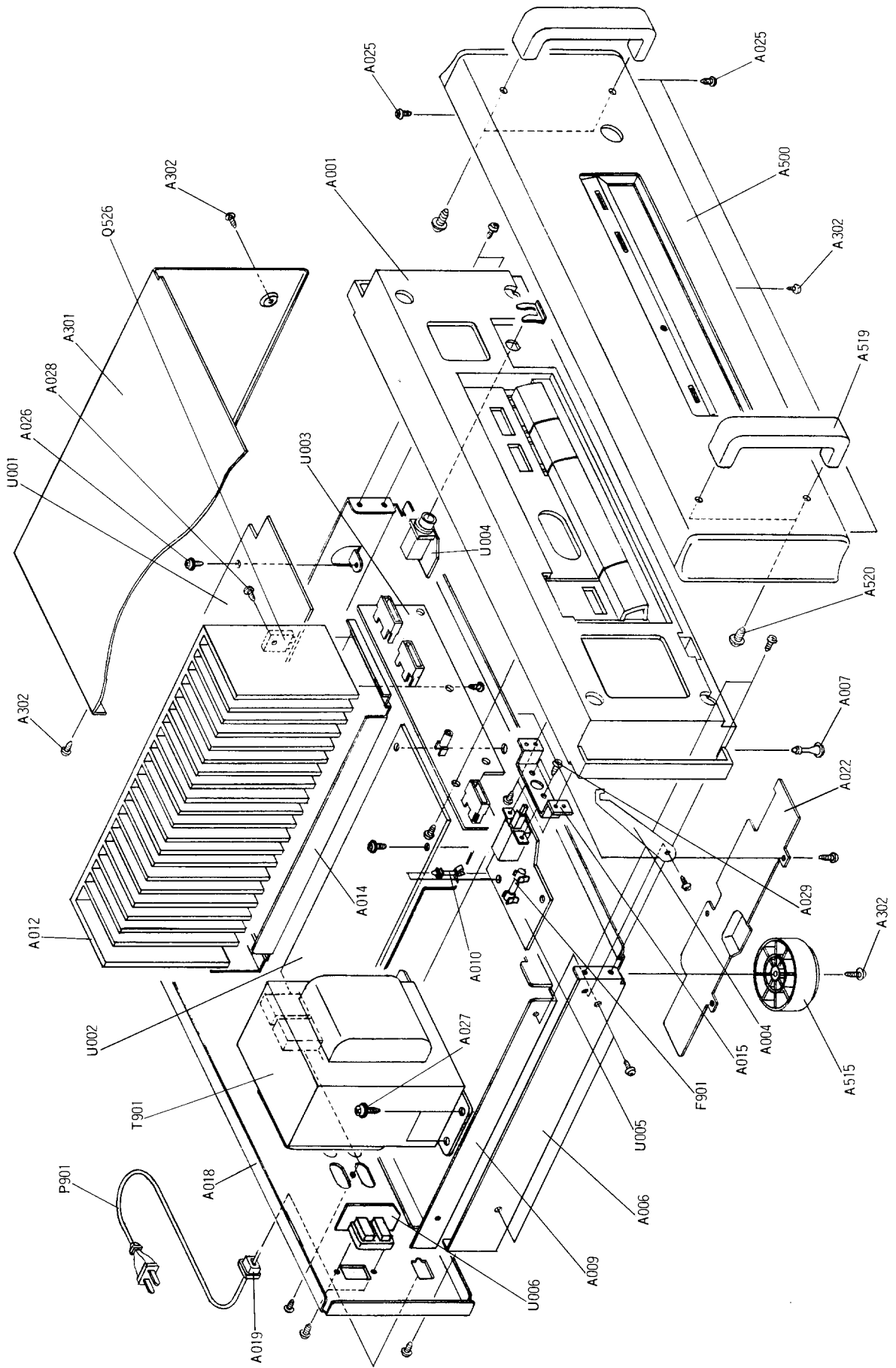
3) Confirmation of current detection operation.

- (1) In the no-load condition with connections made as shown in the diagram below, input a signal to the set.
- (2) Adjust the input so that the set output is 35V P.
- (3) When a load of 1 ohm is connected to the set, after the speaker relay goes ON-OFF several times, it must hold in the OFF condition.

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.



CHASSIS-EXPLODED VIEW



CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
A001	27110623	FRONT BRACKET ASS'Y
(A001b)	28324255	KNOB
A004	27141478	BRACKET (F)
A006	27100235A	CHASSIS
A007	27190511	KGLS-16RT, HOLDER
A009	27130648A	BRACKET (PT)
A010	27190607	KGLS-16S, HOLDER
A012	27160276A	HEATSINK
A014	27130650	BRACKET (HE)
A015	27141453	BRACKET (POW)
A018	27121414A	BACK PANEL
A019	27300750	BUSHING (CORD)
A022	27170278A	BOTTOM BOARD
A025	834430080	3TTP+8PBC, TAP-TIGHT SCREW
A026	831130088	3TTW+8B, TAP-TIGHT SCREW
A027	830440089	4TTC+8CBC, TAP-TIGHT SCREW
A028	801433	3SHS8WSW+14BBC, SPECIAL TAP-TIGHT SCREW
A029	82143006	3P+6FNBC, PAN HEAD SCREW
A301	28184476	TOP COVER
A302	834430088	3TTS+8BBC, TAP-TIGHT SCREW
A500	1A257121	FRONT PANEL
(A502)	28125234	END CAP (L)
(A503)	28125235	END CAP (R)
(A504)	28140837	CUSHION
(A506)	28324260A	KNOB ASS'Y (GUIDE)
A515	27175251	BOTTOM LEG ASS'Y
A519	28158036	HANDLE
A520	830440109	4TTC+10CBC, TAP-TIGHT SCREW
Q525, Q526	2202203 or	2SC3855A-O or
Q529, Q530	2202204 or	2SC3855A-Y or
	2202206	2SC3855A-P, TRANSISTOR
Q527, Q528	2202213 or	2SA1491A-O or
Q531, Q532	2202214 or	2SA1491A-Y or
	2202216	2SA1491A-P, TRANSISTOR
▲ T901	2300631	NPT-1099D, POERT TRANSFORMER
▲ P901	253123 or	AS-UC-6#18, POWER SUPPLY CABLE or
	253136 or	AS-UC-6#18, POWER SUPPLY CABLE or
	253140 or	AS-UC-6#18, POWER SUPPLY CABLE or
	253146	AS-UC-6#18, POWER SUPPLY CABLE
▲ F901	252052	7A(ST-6) FUSE
U001	1A257523-1	NAAF-4123-1, MAIN PC BOARD ASS'Y
U002	1A257524-1	NAPS-4124-1, POWER SUPPLY CIRCUIT PC BOARD ASS'Y
U003	1A257525-1	NADG-4125-1, MICROPROCESSOR CIRCUIT PC BOARD ASS'Y
U004	1A257526-1	NAETC-4126-1, PHONES TERMINAL PC BOARD ASS'Y
U005	1A257527-1	NASW-4127-1, FUSE PC BOARD ASS'Y
U006	1A257528-1	NAETC-4128-1, AC OUTLET PC BOARD ASS'Y

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

PACKING PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A851	29052166A	MASTER CARTON BOX
A852	29091448B	PAD, LEFT
A853	29091449B	PAD, RIGHT
A855	29100033A	750 × 500mm, POLY-VINYL BAG
A856	282301	SEALING HOOK
A857	29110071	DAMPLON TAPE
A871	261504	PAPER TAPE
A868	29360778	LABEL (FLASH) [N]
ACCESSORY BAG ASS'Y		
A874	29341597	INSTRUCTION MANUAL
A904	29365019A	WARRANTY CARD [N]
A905	29358002J	SERVICE STATION LIST [N]
A875	2010098A	CONNECTION CABLE
A876	2010200	3.5 MINI-PLUG ASS'Y
A870	29100006A	350 × 250mm, POLY-VINYL BAG

NOTE [N]: ONLY U.S.A. MODEL

PRECAUTIONS

1. Replacing the fuses

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

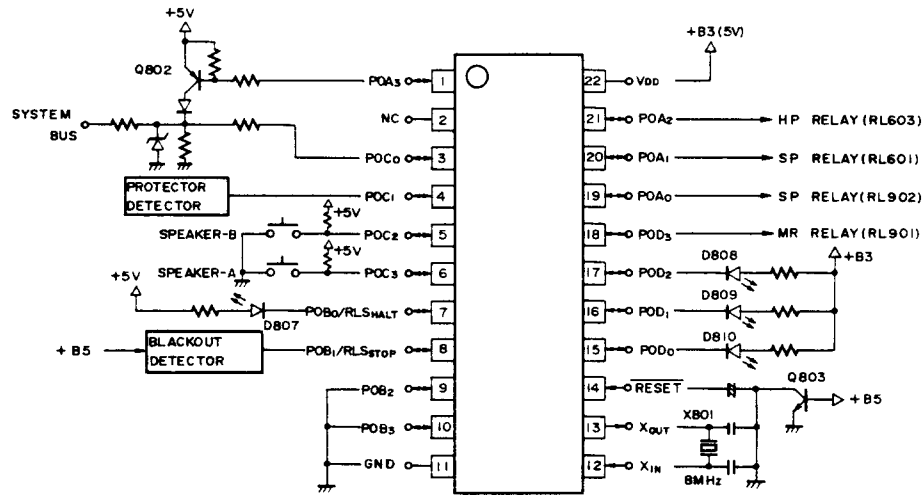
CIRCUIT NO.	PARTS NO.	DESCRIPTION
F901	252052	7A (ST-6), Primary fuse

2. Insulation resistance measurement

Connect the insulating-resistance tester between the plug of power supply cable and the terminal GND on the back panel. Specifications; More than 10MΩ at 500V.

IC BLOCK DIAGRAM AND DESCRIPTIONS

μ PD17104CS



Pin No.	Pin name	Symbol	Function
1	POA3	SYS OUT	Output terminal for System Code. Active "L"
2	NC	—	No connectin.
3	POCO	SYS IN	Input terminal for System Code. Active "H".
4	POC1	PROTECT	Input terminal for detecting Protect Operation. Active "H". However, "H" 100 μ s or under shall be ignored.
5	POC2	SPBKEY	Input terminal for SPEAKER-B Key. When pressed SPEAKER-B Key, turned into "L".
6	POC3	SPAKEY	Input terminal for SPEAKER-A Key. When pressed SPEAKER-A Key, turned into "L".
7	POBO/RLS	POWER	Output terminal for POWER display. "L" (POWER Display lighted) will be output at any time.
8	POB1/RLS	POFF	Input terminal for detecting power suspension. Active "L". However, "L" 100 μ s or under shall be ignored.
9	POB2	—	Not to be used. "L" will be output at any time.
10	POB3	—	Not to be used. "L" will be output at any time.
11	GND	GND	GND (Ground) Terminal.
12	XIN	XIN	Terminal for connecting with Ceramic Oscillator (8 MHz).
13	XOUT	XOUT	
14	RESET	RESET	System reset terminal. "Active "L".
15	PODO	SPB	Output terminal for displaying SPEAKER-B. When turned ON; "L" (lighted).
16	POD1	SPA	Output terminal for displaying SPEAKER-A. When turned ON; "L" (lighted).
17	POD2	PROIND	Output terminal for PROTECT INDICATOR. Usually, will be output just like HPRL output (lighted when HPRL output is "L").
18	POD3	MR	Output terminal for controlling MULTI ROOM. When turned ON; "H".
19	POAO	SPBRL	Output terminal for controlling SPEAKER-B Relay. When turned ON; "H".
20	POA1	SPARL	Output terminal for controlling SPEAKER-A Relay. When turned ON; "H".
21	POA2	HPRL	Output terminal for controlling HEAD PHONE Relay. When turned ON; "H".
22	VDD	VDD	Power source (+5V) terminal.

PRINTED CIRCUIT BOARD PARTS LIST

MAIN PC BOARD (NAAF-4123-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
					Diodes
			D601-D605	223163	1SS133
			D911	22380044	RBV-1506
			D921-D926	22380046	AM01Z
			D930	224450562	MTZ5.6B, Zener
					Coils
			L501, L502	231015	S-0.8C
					Capacitors
			C914, C915	3504236	10000 μ F 80V, Elect.
			C922	354762229	2200 μ F 35V, Elect.
			C923	354744709	47 μ F 16V, Elect.
			C932	354741009	10 μ F 16V, Elect.
					Resistors
			R581, R582	442520564	5.6 Ω , 1/2W, Metal oxide film
			R921	442520154	1.5 Ω , 1/2W, Metal oxide film
			R922	442521614	160 Ω , 1/2W, Metal oxide film
			R923	442521524	1.5k Ω , 1/2W, Metal oxide film
					Relays
			RL601, R602	25065339	NRL-2P5A-DC24-046
			RL603	25065342	NRL-1.25A-DC24-048
			RL901, RL902	25065435	NRL-1P10A-DC24-072
					SP terminal
			P501	25060159	NTM-8PDMN085
					Stereo jack
			P801	25045330	NPJ-2PDBL-184
					Radiator
				27160271	RAD-083
					MICROPROCESSOR CIRCUIT PC BOARD (NADG-4125-1)-PART LIST
					CIRCUIT NO. PART NO. DESCRIPTION
					ICs
			Q801	22240430	MPD17104CS-518
					Transistors
			Q802	2213510	DTA114ES
			Q803	2211183	2SC1740-R
					Diodes
			D801, D802	223163	1SS133
			D804-D806		
			D811		
			D803	224450562	MTZ5.6B, Zener
			D807-D810	225141	SEL2213C, LED
					Ceramic osc.
			X801	3010154	CST8.00MT
					Capacitors
			C801	3020027	0.047 F, 5V, Super
			C803	354741009	10 μ F 16V, Elect.
			C804	354780109	1 μ F 50V, Elect.
					Holders
				27190825	(LED)
				27190811	(LED)
					Switch
			S801, S802	25035548	NPS-111-S510

POWER SUPPLY CIRCUIT PC BOARD (NAPS-4124-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
		IC
Q901	222780565JRC	78M56
		Transistors
Q601-Q605	2211183	2SC1740R

PHONES TERMINAL PC BOARD (NAETC-4126-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R583, R584	441623914	390Ω, 1W, Metal oxide film
	Headphone terminal	
P502	25045255	YKB26-5009

FUSE PC BOARD (NASW-4127-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
△ C901	3500065A	0.01μF AC400V/125V, Film (IS)
	Switch	
△ S901	25035550	NPS-111-L512P
	Fuseholder	
△ F901a	250113	S-N5051

AC OUTLET PC BOARD (NAETC-4128-1)-PART LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
	AC outlet	
△ P902	25050535	NSCT-2P358T
	Terminal	
	25060092	NTM-1S33

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