

ONKYO® SERVICE MANUAL

SUPER SERVO STEREO

POWER AMPLIFIER

MODEL M-5030



UDN, UD	120V AC, 60Hz
UGV, UG	220V AC, 50Hz
UW	120V or 220V AC, 50/60Hz

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.

TABLE OF CONTENTS

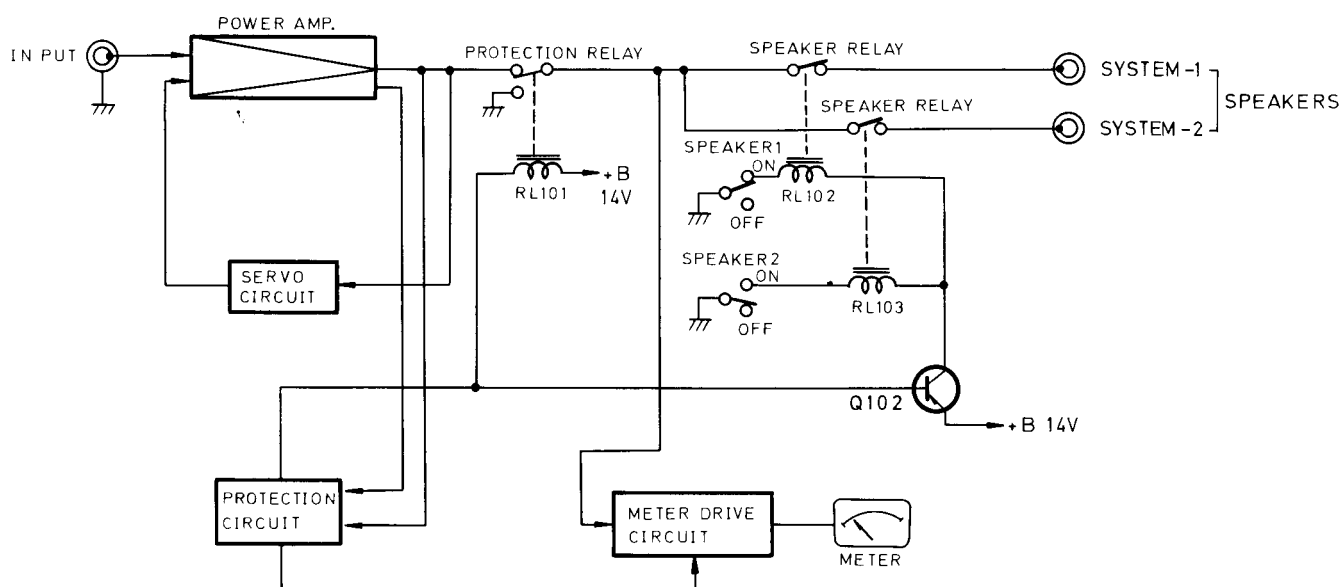
Item	Page
Specifications	2
Block diagram	2
Precautions	4
Front panel	4
Adjustment procedures	5
System connections	5
Exploded view	6
Parts list	7
Packing procedures	8
Printed circuit board parts list	9
Schematic diagram	11, 15, 19
Printed circuit board view	13, 17

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 0.005% total harmonic distortion.	Outputs:	SPEAKERS 1 & 2, AC OUTLET (U.S. & Canadian models only)
Total Harmonic: Distortion:	0.005% at Rated power 0.005% at 1 watt output	Inputs:	INPUT
Intermodulation Distortion:	0.005% at Rated power	Semiconductors:	8 FETs, 39 Transistors, 44 Diodes, 6 ICs
Frequency Response:	+0, -1.5 dB at 1 Hz ~ 100 kHz	Dimensions:	450(W) x 174(H) x 417(D) mm (17-3/4" x 6-7/8" x 16-5/8")
Input Sensitivity:	1 V	Weight:	17.2 kg (37.8 lbs.)
Input Impedance:	47 k Ω	Specifications and features are subject to change without notice.	
Damping Factor:	100 (8 Ω , 1 kHz)		
Signal to Noise Ratio:	94 dB (IHF A-202)		
Power Supply:	U.S. & Canadian model AC 120V, 60 Hz European model AC 220V, 50 Hz Universal model AC 120V/220V, 50/60 Hz		

BLOCK DIAGRAM



PRECAUTIONS

1. Precautions

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

CIRCUIT NO.	PARTS NO.	DESCRIPTION
F101, F102	252050	5A ST-6, Primary fuse (120V model)
F101, F102	252057	5A-TL, Primary fuse (120V/220V model)
F103, F104	252076	3.15A-SE-EAK, Primary fuse (220V and 120V/220V model)
F111-F114	252078	5A-SE-EAK, Secondary fuse (120V/220V model)
F121, F122	252045	1A ST-6, Secondary fuse (120V model)
	252070	1A-SE-EAK, Secondary fuse (220V model)
	252062	TLC-1A, Secondary fuse (120V/220V model)

2. Replacing the lamps

This unit used the lamps listed below.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL701	210085	PL14V60mA W-2.6, Protection lamp
PL702,	210086	PL14V60mA W-0.9,
PL703		Speaker lamps
PL801,	210092	PL14V150mA,
PL802		Meter lamps
PL901, PL902		

3. Insulation resistance measurement

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

Specifications; 500V more than 10M Ω

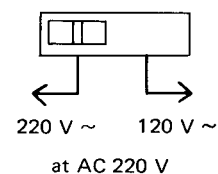
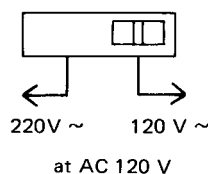
4. Voltage Selector (Rear Panel)

Some models are equipped with a voltage selector to conform with local power supplies.

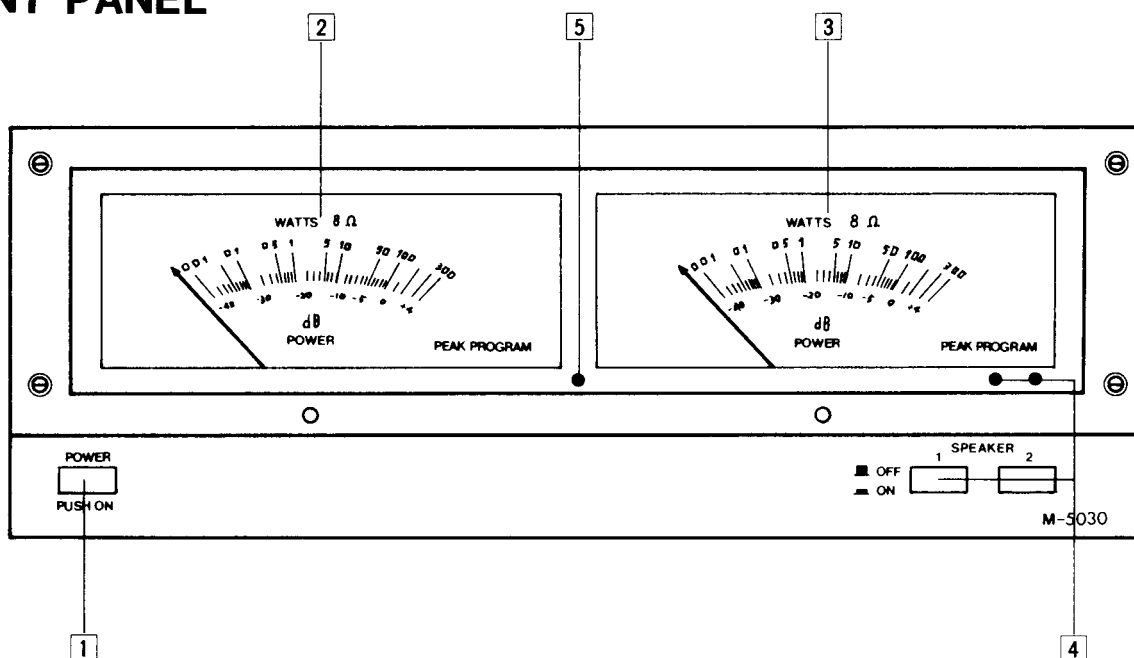
Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

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.

If there is no voltage selector switch on the unit you have purchased, it can only be used in areas where the power supply voltage is the same as that of the unit.



FRONT PANEL



1. Power switch
2. Left channel power meter
3. Right channel power meter

4. Speaker selector and indicators
5. Protection indicator

ADJUSTMENT PROCEDURES

1. Preparations

- Place the unit on a level surface, right side up, leaving at least 15 mm of space at the ventilation openings.
- There should be no load or signal and the level should be at minimum.
- The air should be calm, as moving air can upset the stability of the gauges.

2. Meter zero point

With the power off, align each needle with the 0 mark using the adjustment screw underneath each meter.

Caution: Do not perform this adjustment immediately after turning the power off. Perform after the meter circuit section has discharged.

3. Idling current

Remove the cover and, five minutes after the power has

been turned on, adjust the semi-fixed resistor R441 (R541) so that the voltage between V_{CT-IID} on printed circuit board NAMA-1780 is 14 mV.

4. Meter offset

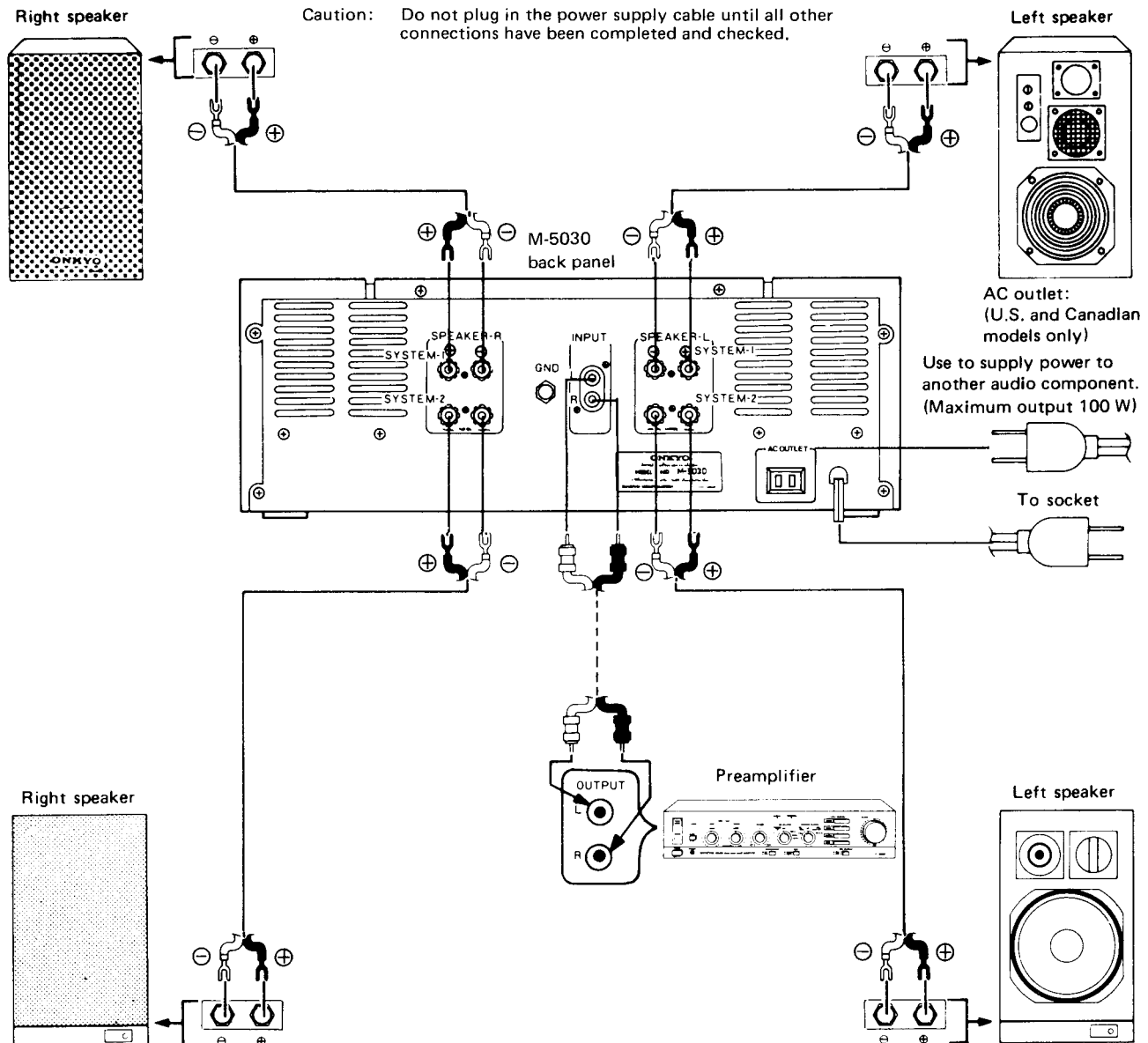
About five minutes after turning power on and with no signal present, adjust the semi-fixed resistor R639 (R640) on the printed circuit board NAME-1717 to align each meter needle with 0.

5. Meter level adjustment

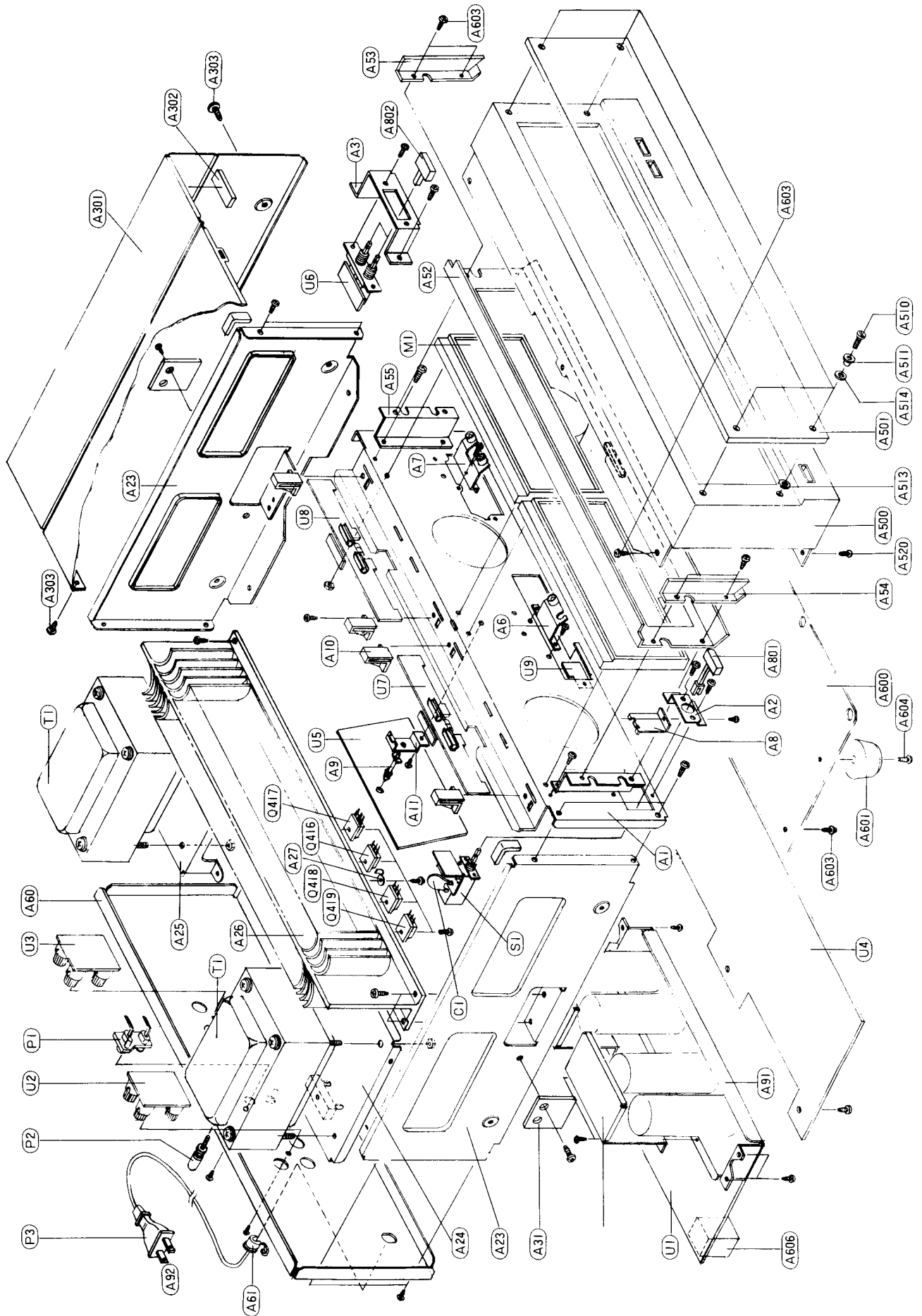
- Apply a 1 kHz input signal to the left (right) channel INPUT terminal.
- Adjust the input so that the voltage at the speaker output terminal (under no load) is 28.28V (29.03 dBV).
- Adjust R611 (R612) so that the meter reads 0dB.

Caution: Item in parentheses are for the right channel.

SYSTEM CONNECTIONS



EXPLODED VIEW



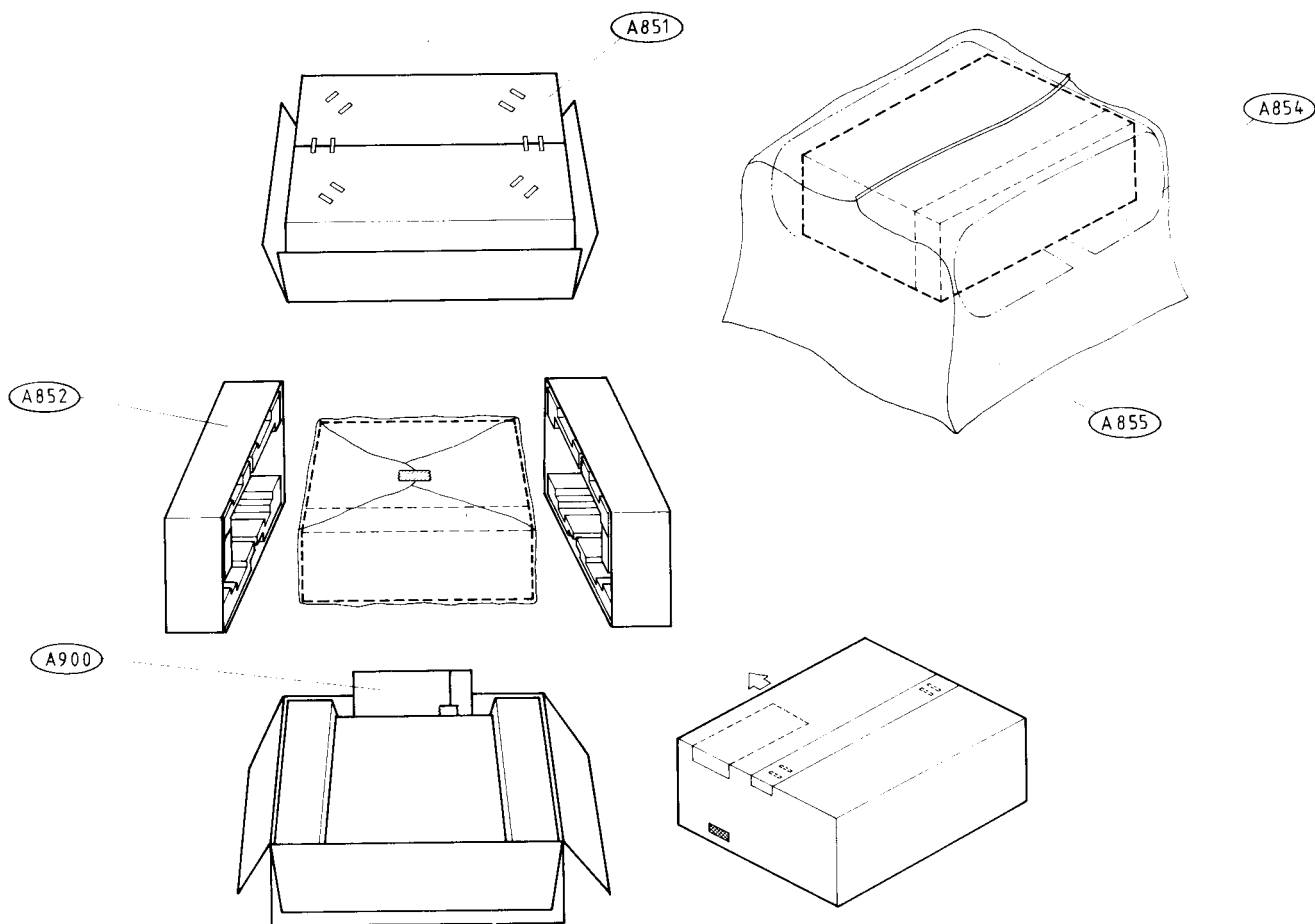
PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	Q416, Q417, Q516, Q517, Q418, Q419, Q518, Q519, D404, D405 △ T1, T2	2201164 or 2201163 2201163 2201154 or 2201153 4000068 230726 230727 230728 △ C1, C2, C3 3500065A △ C1a, C2a, C3a C5, C6 △ S1 △ S2 P1 P2 △ P3 △ P4 M1, M2 △ F101, F102 F103, F104 F111-F114 △ F121,	25C2581 (O), Transistors 25A1106 (Y) or 25A1106 (O), Transistors VD1222, Diodes NPT-814D, Power transformers (D) NPT-814G, Power transformers (G) NPT-814DG, Power transformers (W) 0.01μF, AC 400V, Capacitors IS SB-1925, Capacitor covers 33pF, 50V, Capacitor, polystyren NPS-121-L345P, Power switch (D) (W) NPS-111LA3, Power switch (G) NSS-225SP, Voltage selector switch (W) NPI-2PRBL22, Input terminal Ground terminal AS-UC-4, Power supply cable (D) AS-CEE-2, Power supply cable (G)(W) NSCT-2P15, AC outlet (D) LG-2C, Terminal (G)(W) NIND-2000S145, Power meter 5A ST-6, Primary fuse (D) 5A-TL, Primary fuse (W) 3.15A-SE-EAK, Primary fuse (G) (W) 5A-SE-EAK, Secondary fuse (G) 1A ST-6, Secondary	U1 <
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Note: (D): Only 120V model
(G): Only 220V model
(W): Only 120V/220V model

The components identified by mark △ are critical for risk of fire and electric shock. Replace only with parts number specified.

PACKING PROCEDURES



PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	
A851	29050780	Master carton box	29365010 Label, Bottom board (U)
A852	29090628A	Pad	29100006 350 x 250 mm, Poly bag
A854	290093-1	500 x 1200 mm, Protection sheet	2010069 Connection cord
A855	29100038A	720 x 950 mm, Poly bag	29355060 Caution sheet
A900	Accessory bag		29355093 Caution sheet (V)
	29340706	Instruction manual (D) (U)	25055018 CV-K-1, Conversion plug (W)
	29340707	Instruction manual (G) (W)	
	29365006-4	Warranty card (U)	
	29365005-3	Warranty card (V)	
	29358002	Service station list (U)	
	29360657	Label, Top cover (U)	

Note: (U): Only U.S.A. model
(V): Only West Germany model
(D): Only 120V model
(G): Only 220 model
(W): Only 120V/220V model

PRINTED CIRCUIT BOARD PARTS LIST

PROTECTOR/POWER SUPPLY PC BOARD (NAPS-1713/NAPS-1713a/NAPS-1713b) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	IC	
Q101	222584	TA7317P
	Transistor	
Q102	2211504	2SA950(Y)
	Diodes	
D101-D112	223841	GP30G
D113, D114	223862	WL01
D120	2240973	GZA6.2Z
D121, D122	223145	1S2076TD
D124, D125		
	Coils	
L101, L102	231016	S-0.8D
	Capacitors	
C101-C104	3504174	15000 μ F, 69V, Elect.
C107, C108	379134735	0.047 μ F, 100V, DEW
C109, C110	352722219	220 μ F, 6.3V, Elect.
C113	352784799	0.47 μ F, 50V, Elect.
C114	352744719	470 μ F, 16V, Elect.
C115	352742229	2200 μ F, 16V, Elect.
C117	352732209	22 μ F, 10V, Elect.
C119-C122	379131047	0.1 μ F, 100V, DEW
	Resistors	
R101, R102	441620474	4.7 Ω , 1W, Metal oxide film
R107, R108	441721004	10 Ω , 2W, Metal oxide film
R121-R124	441520334	3.3 Ω , 1/2W, Metal oxide film
	Relaies	
RL101	25065124	NRL-4P3A-DC12-04
RL102, RL103	25065036	NRL-4P3A-DC12-01
	Fuseholder	
F101a, F102a	250113	S-N5051 (NAPS-1713 and NAPS-1713b only)
F121a, F122a		
F103a, F104a	25050065	YSH403T (NAPS-1713 and NAPS-1713b only)
F111a-F114a	25050005	YSH403T (NAPS-1713a only)
F121a, F122a		
	Plug	
	25055114	NPLG-6P98
	Plates	
	27300605	
	Bracket	
A91	27130334	
A92	27130335	

SPEAKER TERMINAL PC BOARD (NAOP-1714, NAOP-1715) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	25060039	NTM-4PDMN10, Terminal

SPEAKER TERMINAL PC BOARD (NAOP-1714a, NAOP-1715a) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C201, C202	379131027	1000pF, 100V, Capacitors DEW
C301, C302		
	25060039	NTM-4PDMN10, Terminal

METER DRIVE CIRCUIT PC BOARD (NAME-1717) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	ICs	
Q603	222529	TA7318P (R)
Q606, Q607	222502	NJM4558DX
	Transistors	
Q601, Q602	2211945	2SK246 (GR)
Q604, Q605	2211255	2SC1815 (GR)
Q608	2200664	2SC1626 (Y)
Q609	2200674	2SA816 (Y)
Q610	2211164	2SC2120 (Y)
	Diodes	
D601, D602	223145	1S2076TD
D605, D609		
D610		
D603, D604	2241151	GZA15X
D606		
D607, D608	2241233	GZA22Z
	Lamp	
PL701	210085	PL14V 60mA W-2.6
	Capacitors	
C601, C602	352784799	0.47 μ F, 50V, Elect.
C605, C606	352780339	3.3 μ F, 50V, Elect.
C610, C611		
C607	352780109	1 μ F, 50V, Elect.
C608, C609	379121035	0.01 μ F, 50V, DEW
C612, C613	352754709	47 μ F, 25V, Elect.
C618, C619		
C614, C615	352752219	220 μ F, 25V, Elect.
	Resistors	
R611, R612	5221024	N10HR1KBEM, Semi-fixed
R639, R640	5221023	N10HR470BEM, Semi-fixed
R644	441522224	2.2k Ω , 1/2W, Metal oxide film
R645	441523924	3.9k Ω , 1/2W, Metal oxide film
R646, R647	441524714	470 Ω , 1/2W, Metal oxide film
R649	441622724	2.7k Ω , 1W, Metal oxide film
R659	441527504	75 Ω , 1/2W, Metal oxide film
R661	441720334	3.3 Ω , 2W, Metal oxide film
	Relay	
RL601	25065048	FRL-644D12/2AS
	Sockets	
	2000247	NSAS-6P185

SPEAKER SWITCH PC BOARD (NASW-1718) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL702, PL703	210086	PL14V 60mA W-0.9, Lamps
R711, R712	442527504	75 Ω , 1/2W, Metal oxide film
S702, S703	25035393	NPS-222-L357, Switches

METER LAMP PC BOARD (NAPL-1719) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL801, PL802	210092	PL14V 150mA, Lamps
	27140552	Bracket, lamp

METER LAMP PC BOARD (NAPL-1720) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL901, PL902	210092	PL14V 150mA, Lamps
	27140552	Bracket, lamp

TEMPERATURE CORRECTION PC BOARD

(NARB-1721) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
R730, R731	4000028	D33A, Thermistors

POWER AMPLIFIER PC BOARD

(NAMA-1780) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors		
Q401, Q501	2211916 or 2211917	2SK240 (BL) or 2SK240 (V)
Q402-Q404 Q502-Q504	2211255	2SC1815 (GR)
Q407, Q507		
Q405, Q505	2211140	2SA798 (0-001)
Q406, Q506	2211446 or 2211445	2SC2291 (G) or 2SC2291 (F)
Q408, Q508	2211455	2SA1015 (GR)
Q409, Q509	2211732 or 2211733	2SC1845 (F) or 2SC1845 (E)
Q410, Q510	2211792 or	2SA992 (F) or
Q420, Q520	2211793	2SA992 (E)
Q411, Q511	2211742 or 2211743	2SA915 (L) or 2SA915 (M)
Q412, Q512	2211762 or 2211763	2SC1940 (L) or 2SC1940 (M)
Q414, Q514	2200863 or 2200864	2SC2238 (O) or 2SC2238 (Y)
Q415, Q515	2200873 or 2200874	2SA968 (O) or 2SA968 (Y)
Q422, Q522	2211945 or	2SK246 (GR) or
Q423, Q523	2211315	2SK117 (GR)
Q424, Q524	2200664	2SC1626 (Y)
Q425, Q525	2200674	2SA816 (Y)
ICs		
Q421, Q521	222465	NJM4558D
Diodes		
D401-D403 D405, D406 D411, D412 D501-D503 D505, D506 D511, D512	223145	1S2076TD
D407-D410 D507-D510	2241191	GZA18X
Capacitors		
C402, C502	372124714	470pF, 50V, Polystyren
C403, C503	379122235	0.022 μ F, 50V, DEW
C411, C412 C511, C512	379121045	0.1 μ F, 50V, DEW
C413, C414 C426, C427 C513, C514 C526, C527	379132247	0.22 μ F, 100V, DEW
C419, C519	379221037	0.01 μ F, 50V, DEW
C422, C522	379122247	0.22 μ F, 50V, DEW
C423, C424 C523, C524	379131047	0.1 μ F, 100V, DEW
C435, C535	379121235	0.012 μ F, 50V, DEW
Resistors		
R431, R432 R531, R532	441526804	68 Ω , 1/2W, Metal oxide film
R436, R536 R441, R541	441622724 5225074	2.7k Ω , 1W, Metal oxide film N10HR10KBDM, Semi fixed

R445, R545	441521014	100 Ω , 1/2W, Metal oxide film
R446-R449	441520224	2.2 Ω , 1/2W, Metal oxide film
R546-R549		
R450-R453	4000078	0.33 Ω , 5W, Metal Plate
R550-R553		
R454-R457	4000080	0.47 Ω , 5W, Metal Plate
R554-R557		
R458, R459	441620104	1 Ω , 1W, Metal oxide film
R558, R559		
R460-R463	441520684	6.8 Ω , 1/2W, Metal oxide film
R560-R563		
R464, R465	441525124	5.1k Ω , 1/2W, Metal oxide film
R564, R565		
R469, R470	441522214	220 Ω , 1/2W, Metal oxide film
R569, R570		
R481, R482	441625614	560 Ω , 1W, Metal oxide film
R581, R582		

Radiators		
27160029		RAD-07

SUBSTITUTIVE PARTS LIST

NOTE:USE THE REGULAR PARTS WHEN REPLACEMENT

TYPE	CIRCUIT NO.	DESCRIPTION	REGULAR PARTS	SUBSTITUTIVE PARTS	APPLICATION
UG		TRANSISTORS	2SA1106	2SA1301(R)	1276-1475
UG		TRANSISTORS	2SC2581	2SC3280(R)	1276-1475
UG	D407-D410	DIODES	GZA18X	EQAD2-17A	1276-1470
UG	D507-D510	DIODES	GZA18X	EQAD2-17A	1276-1470
UG	Q606,Q607	IC	NJM4558DX	NJM4560DX	1276-1475
UD/G	D407,408,507,508	DIODES	GZA18X	GZA-18Z	1586-1885
UD/G	D409,410,509,510	DIODES	GZA18X	EDA02-17B	1586-1885

MODEL M-5030

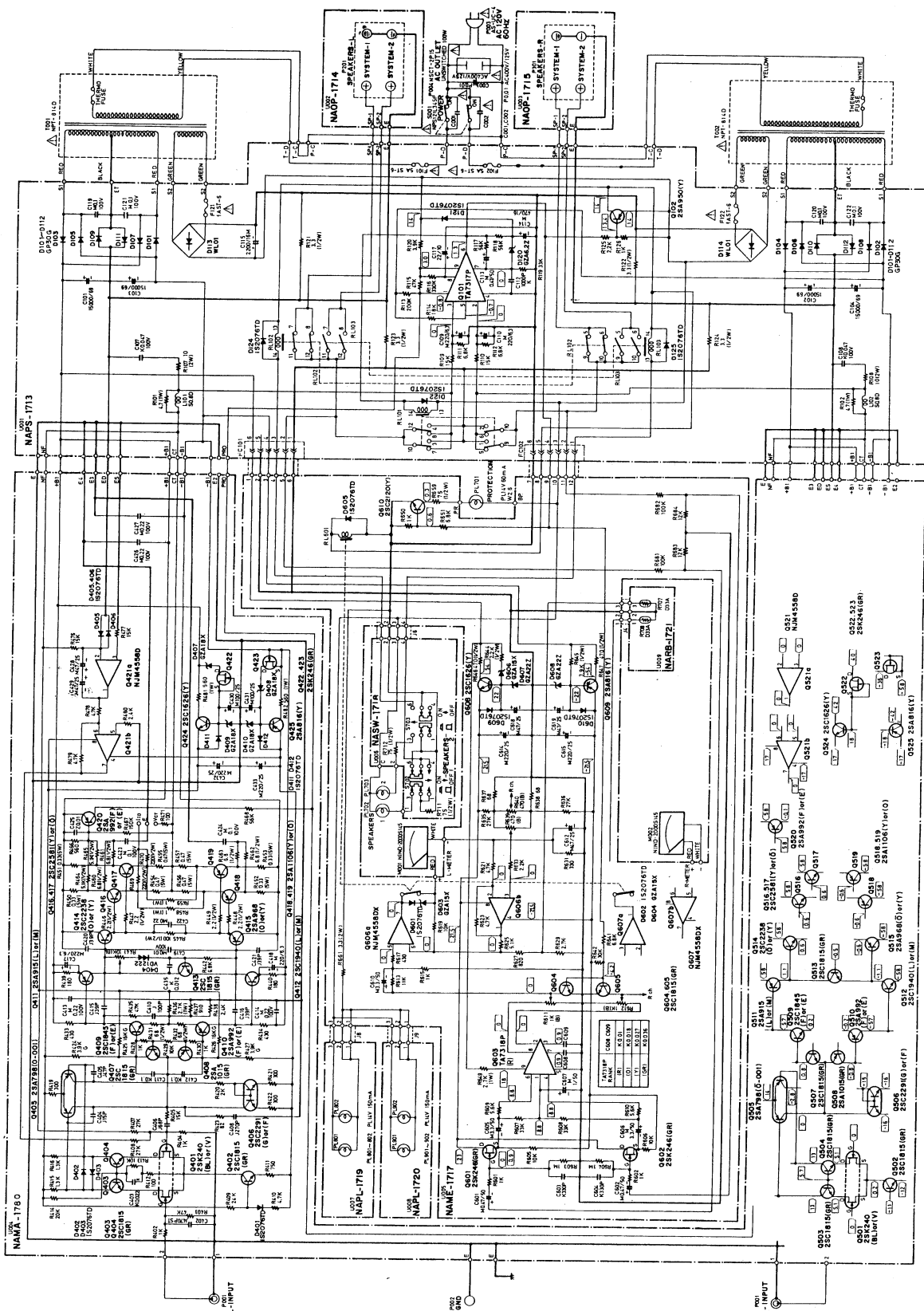
SUBSTITUTIVE PARTS LIST

NOTE:USE THE REGULAR PARTS WHEN REPLACEMENT

TYPE	CIRCUIT NO.	DESCRIPTION	REGULAR PARTS	SUBSTITUTIVE PARTS	APPLICATION
UG		TRANSISTORS	2SA1106	2SA1301(R)	1276-1475
UG		TRANSISTORS	2SC2581	2SC3280(R)	1276-1475
UG	D407-D410	DIODES	GZA18X	EQAD2-17A	1276-1470
UG	D507-D510	DIODES	GZA18X	EQAD2-17A	1276-1470
UG	Q606,Q607	IC	NJM4558DX	NJM4560DX	1276-1475
UD/G	D407,408,507,508	DIODES	GZA18X	GZA-18Z	1586-1885
UD/G	D409,410,509,510	DIODES	GZA18X	EDA02-17B	1586-1885
UD/G	Q606,Q607	IC	NJM4558DX	NJM4559D	1586-1855
UG	Q421,Q521	IC	NJM4558D	NJM4559D	1726-1925
UG	Q411,Q511	TRANSISTOR	2SA915(L)/(M)	2SA915(K)	1726-1925
UG	Q412,Q512	TRANSISTOR	2SC1940(L)/(M)	2SA1940(K)	1726-1925
UG	Q421,Q521	IC	NJM4558D	M5218P	1926-2225
UG	Q421,Q521	IC	NJM4558D	M5218P	2226-2275
UD	Q421,Q521	IC	NJM4558D	M5218P	161-210

120V model

120V model



NOTES:

- ° ALL RESISTORS ARE IN OHMS, $\frac{1}{4}$ WATT UNLESS OTHERWISE NOTED.
- ° ALL CAPACITORS ARE IN μ F, 50V UNLESS OTHERWISE NOTED.
- ° ELECTROLYTIC CAPACITORS ($\frac{1}{2}$ W) ARE IN μ F/WV.
- ° VOLTAGE (MEASURED WITH V.T.V.M.) (NO INPUT SIGNAL).
- ° CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.
- ° THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY.
- ° REPLACE ONLY WITH PART NUMBER SPECIFIED.

[illegible]