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ONKYO SERVICE MANUAL

SUPER SERVO STEREO PREAMPLIFIER

MODEL P-3030



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

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle 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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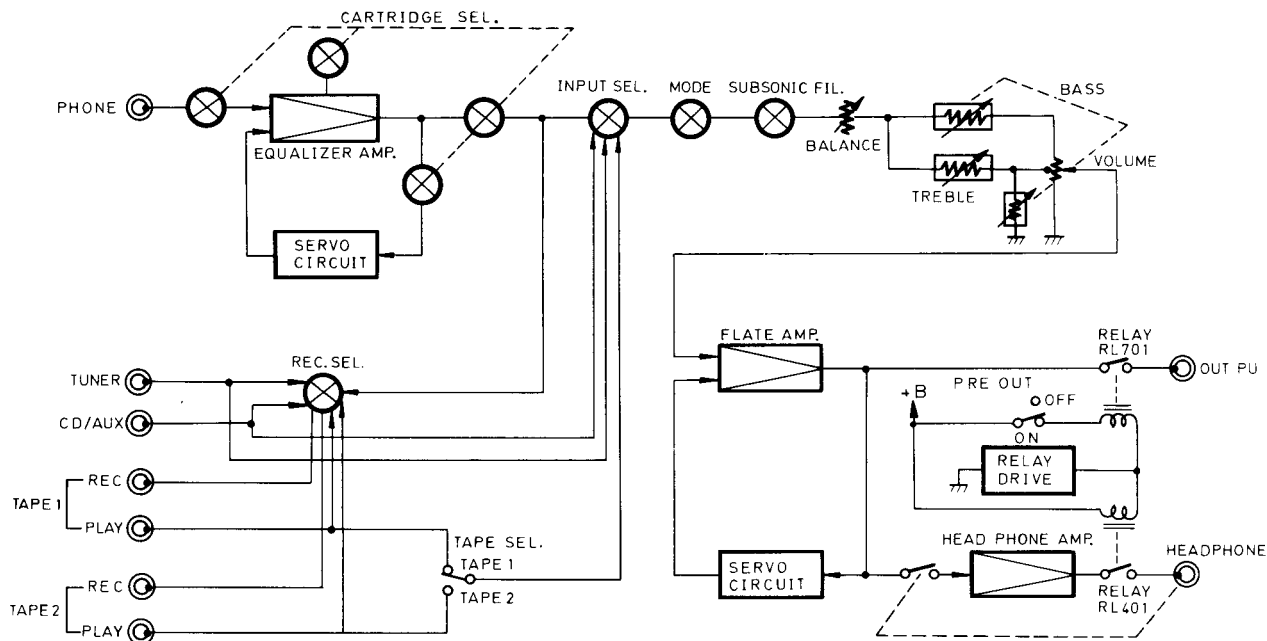
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ONKYO[®]
AUDIO COMPONENTS

SPECIFICATIONS

<p>Input Sensitivity and Impedance:</p> <p>PHONO MC: 150 μV/(100/220Ω) 78 EQ: 2.5 mV (47 kΩ)</p> <p>PHONO MM: 2.5 mV/(47 kΩ/100 kΩ)</p> <p>TUNER: 150 mV/47 kΩ</p> <p>TAPE PLAY: 150 mV/47 kΩ</p> <p>CD/AUX: 150 mV/47 kΩ</p> <p>Rated Output and Impedance:</p> <p>TAPE REC: 150 mV/2.2 kΩ (PHONO)</p> <p>OUTPUT: 1.0 V/220Ω Max. 13 V</p> <p>RIAA Deviation: \pm0.2 dB, 20 – 20,000 Hz</p> <p>Frequency Response (TUNER): +0, -3 dB, 0.8 Hz – 170 kHz</p> <p>Phono Overload:</p> <p>PHONO MM: 300 mV RMS at 1 kHz, THD. 0.01% 1400 mV RMS at 10 kHz, THD. 0.01%</p> <p>PHONO MC: 17 mV RMS at 1 kHz, THD. 0.01% 82 mV RMS at 10 kHz, THD. 0.01%</p> <p>Total Harmonic Distortion:</p> <p>0.004% at PHONO MM, 3 V output 0.006% at PHONO MC, 3 V output 0.006% at PHONO 78 EQ, 3 V output 0.003% at TUNER, CD/AUX, TAPE, 3 V output</p> <p>Intermodulation Distortion: 0.003% (70 Hz: 7 kHz = 4:1)</p> <p>Signal to Noise Ratio:</p> <p>PHONO MC: 76 dB (IHF A-202)</p> <p>PHONO MM: 82 dB (IHF A-202)</p> <p>TUNER: 93 dB (IHF A-202)</p>	<p>Tone Control:</p> <p>BASS: \pm8 dB at 70 Hz</p> <p>TREBLE: \pm8 dB at 20 kHz</p> <p>Filters:</p> <p>HIGH CUT: 6 dB/oct. 6 kHz (Vol. min.)</p> <p>SUBSONIC: 6 dB/oct. 15 Hz</p> <p>Rated Output Voltage: 1.0 V/220 Ω</p> <p>Power Supply: European model AC 220 V, 50 Hz U.S.A. & Canadian model AC 120 V, 60 Hz Universal model AC 120/220 V, 50/60 Hz</p> <p>Inputs:</p> <p>PHONO TUNER TAPEPLAY 1 & 2 CD/AUX</p> <p>Outputs:</p> <p>TAPE REC OUT 1 & 2 OUTPUT HEADPHONES AC OUTLET (SWITCHED x 2, UNSWITCHED x 1) (U.S. & Canadian models)</p> <p>Semiconductors: 46 Transistors, 35 Diodes, 6 FETs, 5 ICs</p> <p>Dimensions: 450(W) x 99(H) x 403(D) mm (17-3/4" x 3-15/16" x 15-3/4")</p> <p>Weight: 7.0 kg. (15.4 lbs.)</p> <p>Specifications and features are subject to change without notice.</p>
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BLOCK DIAGRAM



ADJUSTMENT PROCEDURES

1. Preparations

- a) Place the unit with the feet pointing downward so that it is parallel with the bench. The bottom ventilation openings should not be directly against the surface of the bench.
- b) The unit should not be under any load or signal.
- c) During adjustment, the unit and other instrument should not be exposed to any wind since this could cause readings to be unstable.
- d) Control knob positions
 - INPUT SEL AUX
 - CART SEL MM (47kΩ)
 - REC SEL PHONO
 - VOLUME MIN

2. Instrument

High sensitivity DC voltmeter.

3. Equalizer amp. center voltage adjustment

- a) Adjust R191(R192) so that the DC voltage of the REC terminal is $0 \pm 200\mu V$.
- b) Switch the CART SET to MC (10-40) and confirm that the DC voltage is $0 \pm 2mV$.

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
F1	252088	0.25A-SE-EAWK, Primary fuse, 120V/220V model
F901	252095	0.5A (ST-6), Primary fuse, 120V model
F901	252088	0.25A-SE-EAWK, Primary fuse, 220V model
F901	252023	0.5A-T, Primary fuse, 120V/220V model
F902-F905	252063	0.5A-SE-EAWK, Secondary fuse, 220V model

2. Replacing the lamps

This unit uses the lamps listed below.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL704, PL705	210156	PL14V0.06AW-1.5, Rec. selector indicator
PL706-PL709	210110	PL14V0.06AW-1, Input selector indicator
PL701	210084	PL14V0.06AW-1.5, Power indicator
PL702	210138	PL14V0.08AW-1.5, Servo indicator
PL703	210156	PL14V0.06AW-1.5, Preout indicator

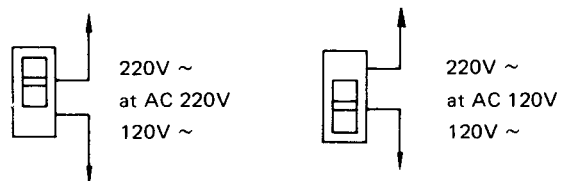
3. Insulation resistance measurement

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

Specification; 500V, more than 10mΩ

4. Voltage Selector (Back 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 or similar instrument to the up or down position. Confirm that the switch has been moved all the up or down before turning the power switch on. If there is no voltage selector switch on the unit you have purchased, it can 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.



PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
A1	27112021A	Front bracket	L1, L2	230904	B-20L-44, Coil (NAPJ-1730)	U4	12258525	NASW-1725, Mode/Subsonic switch PC board ass'y
A2	27140800	Bracket	△ C1	3500065A	0.01μF, AC400V, Capacitor IS	U5	12258526	NATC-1726, Tone control PC board ass'y
A3	27140801	Bracket	C1a	27300601	Cover, Capacitor	U6	12258527	NAOP-1727, Output amplifier PC board ass'y (D)
A4	27140302	Bracket	R1	5104103	N40DG100KT30M, Variable resistor	U7	12264527A	NAOP-1727a, Output amplifier PC board ass'y (G)
A5	27140803	Bracket	△ S1	25035345	NPS-111-L308p, Power switch (D)	U8	12258528	NASW-1728, Pre out switch PC board ass'y
A6	27140804	Bracket		25035015A	NPS-111-LA3, Power switch (G) (W)	U9	12264530	NAPJ-1730, Phono input terminal PC board ass'y (G)
A8	27260122A	Shaft		25030177	NRSM-105-25ZV, Remote switch operation section			
A9	28320135	Joint, Push	S101b	25065143	Remote switch wire section			
A10	27115144A	Side bracket		25065227	Remote switch wire section			
A11	27130336	Center bracket		25045026	NPJ-2PRBL04, Phono input terminal			
A12	27130337	Bracket (D)		25045063	NPJ-2PRBL30, Input terminal			
A13	27130338	Bracket (G) (W)	P2	TP160B	Ground terminal			
A17	27260093	Shaft, Power switch	S101C	25050046	NSCT-2P15, AC outlet (D)			
	27120514	Back panel (D)	S301C	25065123	NSS-1258P, Slide switch (W)			
	27120515	Back panel (G)	△ P1	253100	AS-UC-4, Power supply cable (D)			
	27120516	Back panel (W)		253083-1	AS-CEE, Power supply cable (G) (W)			
A18	270280	SR-4K-4, Strainrelief		25108010	LG-2C, Terminal, (G) (W)			
A351	28184124-1A	Top cover	△ P6	252088	0.25A-SE-EAWK, Primary fuse (W)			
A352	28140020	4 x 10 x 40mm, Cushion		252095	0.5A(ST-6), Primary fuse (D)			
A353	838440089	4TTB + 8C(BC), Tapping screw	△ F1	252088	0.25A-SE-EAWK, Primary fuse (G)			
A354	834430068	3TTS + 6B(BC), Tapping screw		252023	0.5A-T, Primary fuse (W)			
A500	12258121	Front panel ass'y	△ F902-F905	252063	0.5A-SE-EAWK, Secondary fuse (G)			
A519	28140126	Cushion	F1a	25065096	NPF-073, Fuse holder (W)			
A520	28140185	Cushion	U1	12258522	NAEQ-1722, Equalizer amplifier PC board ass'y			
A528	87313006	M3B, Toothed washer	U2	12258523	NASW-1723, Rec. lamp PC board ass'y			
A601	27170159	Bottom board	U3	12258524	NASW-1724, Input selector switch PC board ass'y			
A602	27175009A	Bottom, leg						
A603	831430088	3TTW + 8B(BC), Tapping screw						
A604	834430108	3TTS + 10B(BC), Tapping screw						
A801	28320649	Knob, Volume						
A802	28320652	Knob, Balance						
A803	28320646	Knob, Power						
A804	28320645A	Knob, Push						
A805b	28321204	Knob, Selector						
A805c	27180183	Spring						
T1	230662	NPT-7540, Power transformer (D)						
	230663	NPT-754G, Power transformer (G)						
	230699	NPT-754DG, Power transformer (W)						

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.

PRINTED CIRCUIT BOARD PARTS LIST

EQUALIZER AMPLIFIER PC BOARD (NAEQ-1722) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors & FETs		
Q101, Q102	2211530	2SK146, FET
Q103, Q104		
Q105, Q106	2211895	2SC1815 (L) GR
Q107, Q108		
Q123, Q124		
Q125, Q126		
Q109, Q110	2211516 or	2SA995(G) or
Q121, Q122	2211515	2SA995(F)
Q111, Q112	2211792 or	2SA992(F) or
Q113, Q114	2211793	2SA992(E)
Q115, Q116	2211732 or	2SC1845(F) or
	2211733	2SC1845(E)
Q117	2211654 or	2SC2235(Y) or
	2211653	2SC2235(O)
Q119, Q120	2211644 or	2SA965(Y) or
	2211643	2SA965(O)
Q907	2211255 or	2SC1815(GR) or
	2211254	2SC1815(Y)
Q908	2211455 or	2SA1015(GR) or
	2211454	2SA1015(Y)
ICs		
Q127, Q128	222502	NJM4558DX
Diodes		
D101-D116	223145	1S2076TD
D905, D906	2241232	GZA-22Y
Capacitors		
C101-C104	379121035	0.01 μ F, 50V, DEW
C135, C136		
C107, C108	372122214	220pF, 50V, ST
C111, C112	379124737	0.047 μ F, 50V, DEW
C115, C116	379122225	2200pF, 50V, DEW
C119, C120	379121134	0.011 μ F, 50V, DEW
C121, C122	379121234	0.012 μ F, 50V, DEW
C123-C126	379123334	0.033 μ F, 50V, DEW
C129, C130	35271019	100 μ F, 6.3V, Elect.
C137, C138	379121057	1 μ F, 50V, DEW
C139, C140	379121525	1500pF, 50V, DEW
C141-C144	352754709	47 μ F, 25V, Elect.
C145, C146	3500075	1.5 μ F, 50V, SH
C911, C912	352782209	22 μ F, 50V, Elect.
C913-C916	352780109	1 μ F, 50V, Elect.
C917	379134747	0.47 μ F, 100V, DEW
Resistors		
R127, R128	441721824	1.8k Ω , 2W, Metal oxide film
R153, R154	442523304	33 Ω , 1/2W, Metal oxide film
R919, R912	5225070	N10HR2. 2KBM, Semi fixed
Switches		
S101e	25065101	NSS-10652, CART. SEL.
S301a	25065079	NSS-4643, REC. SEL.
etc.		
	25060031B	P-2, Plate
	27300152	Case
	25045041	NPJ-6PDBL18, Terminal

REC. LAMP PC BOARD (NASW-1723) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL704, PL705	210156	PL14V0.06AW-1.5, Lamp
R713, R715	442527504	75 Ω , 1/2W, Metal oxide film
R714	442522514	250 Ω , 1/2W, Metal oxide film
S301b	25030235	NRSM-146-25ZV, Switch

INPUT SELECTOR SWITCH PC BOARD (NASW-1724) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL706-PL709	210110	PL14V0.06AW-1, Lamp
S302	25035392	NPS-442-L356, Input selector switch
S303	25035391	NPS-122-L355, Tape selector switch

MODE/SUBSONIC SWITCH PC BOARD (NASW-1725) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C301, C302	379122245	0.22 μ F, 50V, Capacitors, DEW
S304, S305	25035266	NPS-122-L230, Switches

TONE CONTROL PC BOARD (NATC-1726) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Capacitors		
C303, C304	379121235	0.012 μ F, 50V, DEW
C305, C306	379125625	5600pF, 50V, DEW
C307, C308	379121025	0.001 μ F, 50V, DEW
C309, C310	379123335	0.033 μ F, 50V, DEW
Resistors		
R307	5148090	N16RGMC250KMN25M, Volume control variable
R317	5148091	N16RGM11C219K25M, Treble control variable
R319	5148092	N16RGM11C110K180K25M, Bass control variable

OUTPUT AMPLIFIER PC BOARD (NAOP-1727) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Transistors & FETs		
Q501, Q502	221916 or	2SK240(BL) or
	2211915	2SK240(GR), FET
Q503-Q506	2211255	2SC1815(GR)
Q513, Q514		
Q701		
Q507, Q508	2211140	2SA798(0-001)
Q509, Q510	2211445 or	2SC2291(F) or
	2211446	2SC2291(G)
Q511, Q512	2211455	2SA1015(GR)
Q702	2211771 or	2SC2001(K) or
	2211772	2SC2001(L)
Q901	2200744	2SD526(Y)
Q902	2200413	2SB596(Y)
Q903, Q905	2211255 or	2SC1815(GR) or
	2211254	2SC1815(Y)
Q904, Q906	2211455 or	2SA1015(GR) or
	2211454	2SA1015(Y)
Q909	2211654 or	2SC2235(Y) or
	2211653	2SC2235(O)
Q910	2211644 or	2SA965(Y) or
	2211643	2SA965(O)
ICs		
Q515, Q516	222585	NJM4558DXB
Q401	222543	LA4170
Diodes		
D501-D504	223145	1S2076TD
D402, D703		
D401, D701	223848	GP-08B
D702		

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D901, D902	223804	SR1K-2
D903, D904	2240973	GZA6. 2Z
D907, D908	2241232	GZA22Y
D909, D910	223867	WL-02
	Lamps	
PL701	210084	PL14V0. 06AW-1.5
PL702	210138	PL14V0. 08AW-1.5
	Capacitors	
C501, C502	372126805	680pF, 50V, ST
C505, C506	379121035	0.01 μ F, 50V, DEW
C511, C512	379121037	0.01 μ F, 50V, DEW
C517, C518	372121014	100pF, 50V, ST
C519-C522	352752209	22 μ F, 25V, Elect.
C523, C524	379121047	0.1 μ F, 50V, DEW
C401, C402	352750479	4.7 μ F, 25V, Elect.
C403, C404	352741009	10 μ F, 16V, Elect.
C405	352743309	33 μ F, 16V, Elect.
C406	352741029	1000 μ F, 16V, Elect.
C407, C408	352731019	100 μ F, 10V, Elect.
C905, C906		
C409, C410	379124737	0.047 μ F, 50V, DEW
C922		
C701	352751029	1000 μ F, 25V, Elect.
C702, C704	352744719	470 μ F, 16V, Elect.
C703, C919	352751019	100 μ F, 25V, Elect.
C920		
C705	352744709	47 μ F, 16V, Elect.
C901, C902	3504182	2200 μ F, 50V, Elect.
C903, C904	352782219	220 μ F, 50V, Elect.
C909, C910	352781019	100 μ F, 50V, Elect.
C917, C918	352780109	1 μ F, 50V, Elect.
C921, C923	379122245	0.22 μ F, 50V, DEW
	Resistors	
R535-R538	442521014	100 Ω , 1/2W, Metal oxide film
R710		
R539, R540	441622214	220 Ω , 1W, Metal oxide film
R405, R406	441523904	39 Ω , 1/2W, Metal oxide film
R409, R711	441521004	10 Ω , 1/2W, Metal oxide film
R701	441624714	470 Ω , 1W, Metal oxide film
R913, R914	441521214	120 Ω , 1/2W, Metal oxide film
	Relays	
RL401, RL701	25065139	NRL-2P0. 3ADC12-05
	Fuseholders	
F901a	250113	S-N5051
	etc.	
	25060031B	Plate
	29360430	0.5A/125V, Label
	27160048A	RAD-05B, Radiator
	25050140	NJPS-3P-S, Socket
	27140804	Bracket, lamp

OUTPUT AMPLIFIER PC BOARD (NAOP-1727a) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	Transistors & FETs	
Q501, Q502	2211916 or 2211915	2SK240(BL) or 2SK240(GR)
Q503-Q506	2211255	2SC1815(GR)
Q513, Q514		
Q701		
Q507, Q508	2211140	2SA798(0-001)
Q509, Q510	2211445 or 2211446	2SC2291(F) or 2SC2291(G)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q511, Q512	2211455	2SA1015(GR)
Q702	2211771 or 2211772	2SC2001(K) or 2SC2001(L)
Q901	2200744	2SD526(Y)
Q902	2200413	2SB596(Y)
Q903, Q905	2211255 or 2211254	2SC1815(GR) or 2SC1815(Y)
Q904, Q906	2211455 or 2211454	2SA1015(GR) or 2SA1015(Y)
Q909	2211654 or 2211653	2SC2235(Y) or 2SC2235(O)
Q910	2211644 or 2211643	2SA965(Y) or 2SA965(O)
	ICs	
Q515, Q516	222585	NJM4558DXB
Q401	222543	LA4170
	Diodes	
D501-D504	223145	1S2076TD
D402, D703		
D401, D701	223848	GP-08B
D702		
D901, D902	223804	SR1K-2
D903, D904	2240973	GZA6. 2Z
D907, D908	2241232	GZA22Y
D909, D910	223867	WL-02
	Lamps	
PL701	210084	PL14V0. 06AW-1.5
PL702	210138	PL14V0. 08AW-1.5
	Capacitors	
C501, C502	372126805	680pF, 50V, ST
C505, C506	379121035	0.01 μ F, 50V, DEW
C511, C512	379121037	0.01 μ F, 50V, DEW
C517, C518	372121014	100pF, 50V, ST
C519-C522	352752209	22 μ F, 25V, Elect.
C523, C524	379121047	0.1 μ F, 50V, DEW
C401, C402	352750479	4.7 μ F, 25V, Elect.
C403, C404	352741009	10 μ F, 16V, Elect.
C405	352743309	33 μ F, 16V, Elect.
C406	352741029	1000 μ F, 16V, Elect.
C407, C408	352731019	100 μ F, 10V, Elect.
C905, C906		
C409, C410	379124737	0.047 μ F, 50V, DEW
C922		
C701	352751029	1000 μ F, 25V, Elect.
C702, C704	352744719	470 μ F, 16V, Elect.
C703, C919	352751019	100 μ F, 25V, Elect.
C920		
C705	352744709	47 μ F, 16V, Elect.
C901, C902	3504182	2200 μ F, 50V, Elect.
C903, C904	352782219	220 μ F, 50V, Elect.
C909, C910	352781019	100 μ F, 50V, Elect.
C917, C918	352780109	1 μ F, 50V, Elect.
C921, C923	379122245	0.22 μ F, 50V, DEW
	Resistors	
R535-R538	442521014	100 Ω , 1/2W, Metal oxide film
R710		
R539, R540	441622214	220 Ω , 1W, Metal oxide film
R405, R406	441523904	39 Ω , 1/2W, Metal oxide film
R409, R711	441521004	10 Ω , 1/2W, Metal oxide film
R701	441624714	470 Ω , 1W, Metal oxide film
R913, R914	441521214	120 Ω , 1/2W, Metal oxide film
	Relays	
RL401, RL701	25065139	NRL-2P0. 3ADC12-05
	Fuseholder	
F901a	25050065	YSH403T

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	etc.	
	25060031B	Plate
	29360430	0.5A/125V, Label
	27160048A	RAD-05B, Radiator
	25050140	NJPS-3P-S, Socket
	27140804	Bracket, lamp

PRE OUT SWITCH PC BOARD (NAOP-1728) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
PL703	210156	PL14V0. 06AW-1.5, Lamp
R712	441527504	75 Ω , 1/2W. Metal oxide film
S701	25035266	NPS-122-L230, Switch
	27140803	Bracket

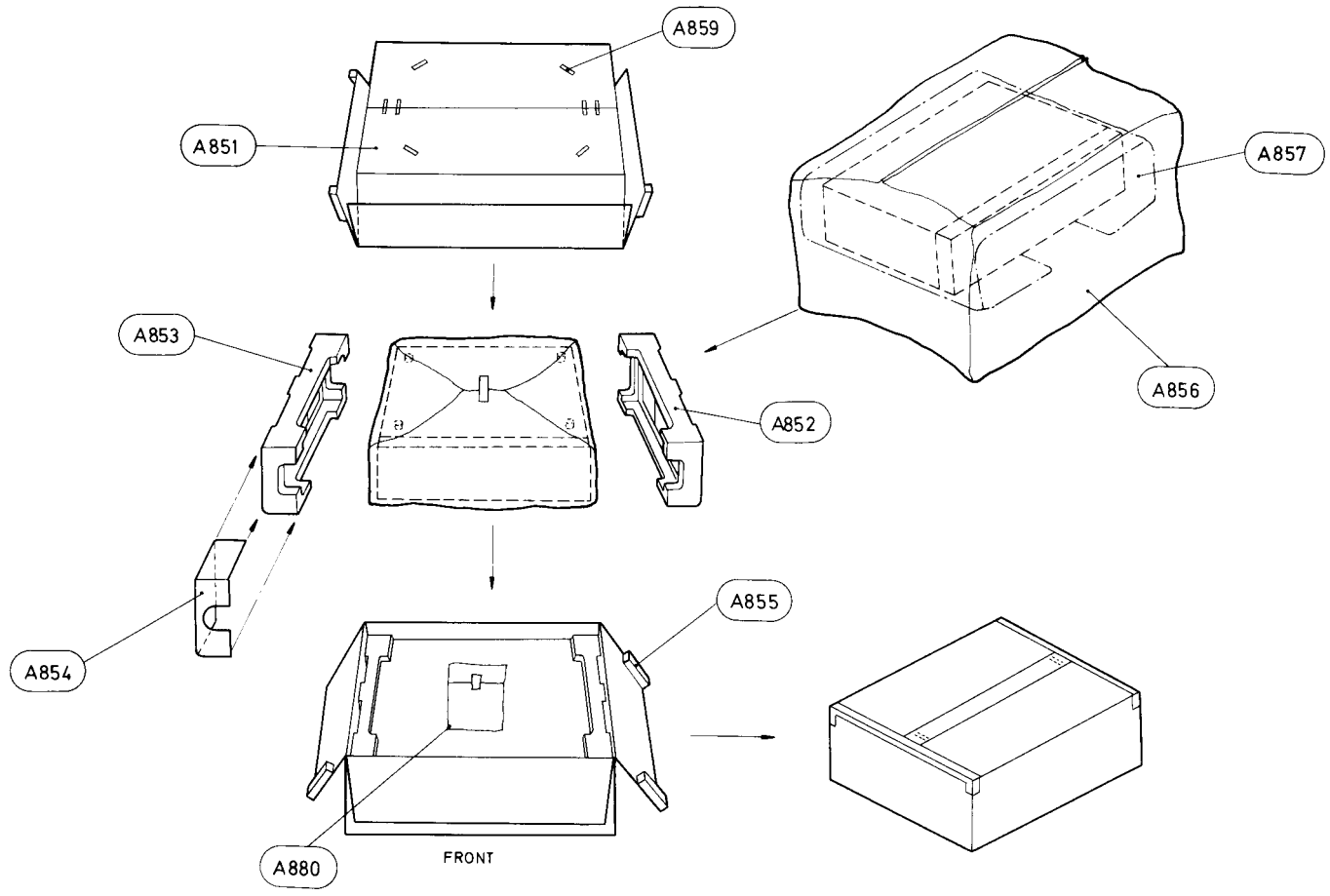
HEADPHONE JACK PC BOARD (NAHP-1729) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	25045130	HLJ4308-01-010, Stereo jack

PHONO INPUT TERMINAL PC BOARD (NAPJ-1730) PARTS LIST

CIRCUIT NO.	PARTS NO.	DESCRIPTION
L801, L802	231030	NCH-1070, Coil
	25045080	NPJ-2PDBL40, Terminal

PACKING PROCEDURES



REF. NO.	PARTS NO.	DESCRIPTION
A851	29050786	Master carton box
A852	29090452	Pad L
A853	29090453	Pad R
A854	29090663	Pad
A855	29090659	Pad
A856	29100038A	720 x 950 mm, Poly bag
A857	29095012-1	500 x 800 mm, Protection sheet
A859	282301	Sealing hook
Accessory bag ass'y		
	29340708	Instruction manual (D) (U)
	29340709	Instruction manual (G) (V) (W)
	29365006-5	Warranty card (U)
	29365005-3A	Warranty card (V)
	29358002	Service station list (U)
	29358004	Service station list (V)
	29360657	Caution label (U)
	29365010	Label (U)
	29355093	Caution sheet (V)
	29100006	350 x 250 mm, Poly bag
	25055040	CV-K-2, Conversion plug (W)

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