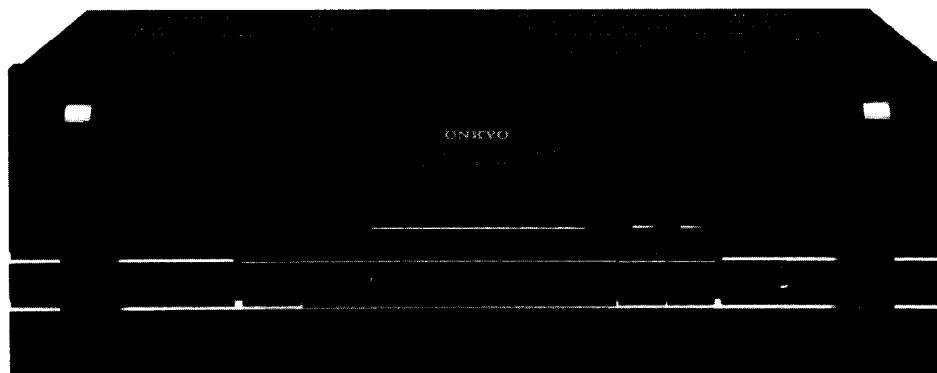


ONKYO® SERVICE MANUAL

Stereo Power Amplifier MODEL M-5160 · M-5160P



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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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: 40 at 8 ohms

Frequency Response: 5 - 100KHz \pm 1dB

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): 435 x 158 x 286mm
17-1/8" x 6-3/16" x 11-1/4"

Weight: 9.1kg, 20.1 lbs.

Remote Control Transmitter RC-117S

Transmitter: Infrared

Signal range: Approx. 5 meters, 16 ft

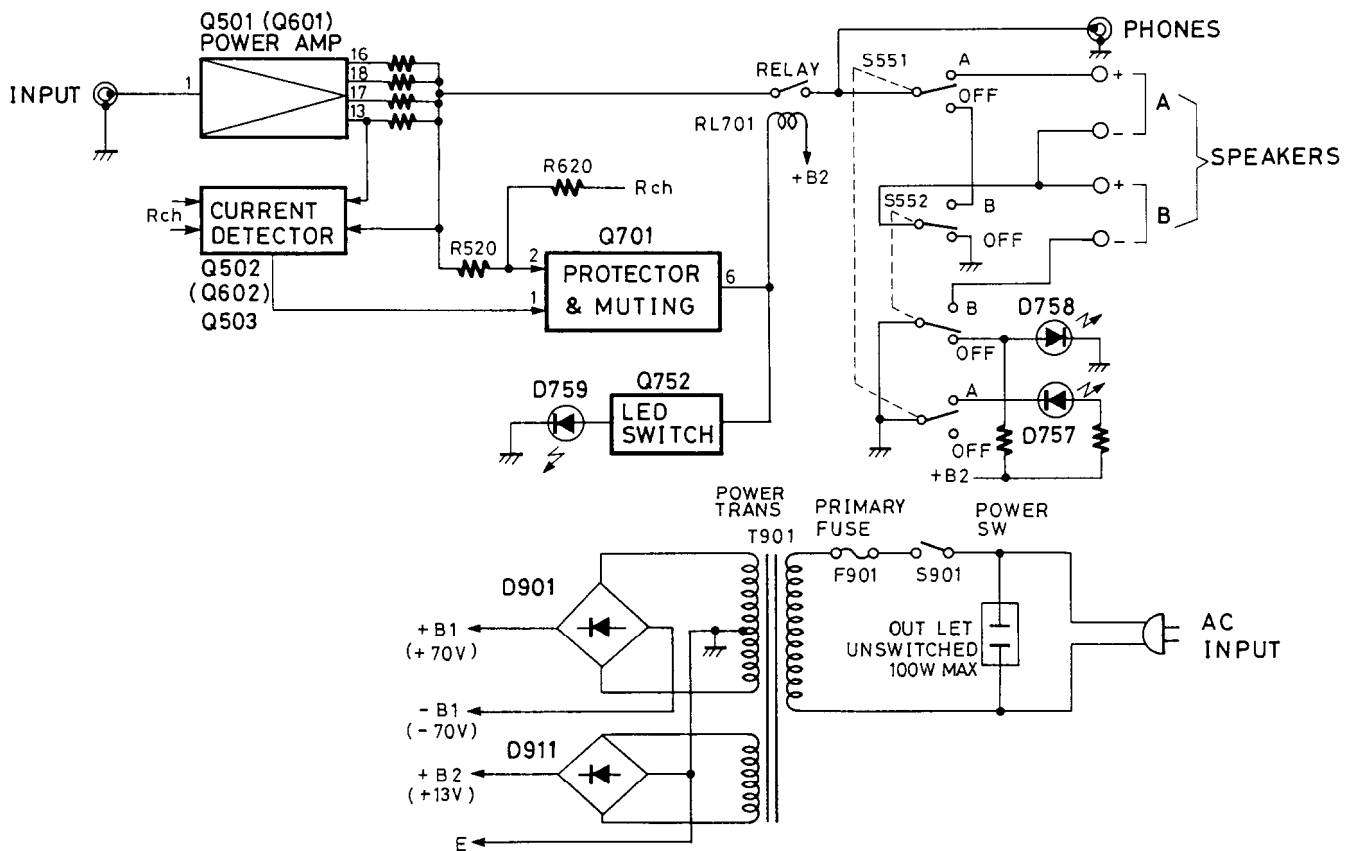
Power supply: Two "AA" batteries (1.5V x 2)

Dimensions (W x H x D): 64 x 18 x 149mm
2-1/2" x 11/16" x 5-7/8"

Weight: 110 grams, 3.9 oz. (including batteries)

Specifications and features are subject to change without notice.

BLOCK DIAGRAM



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.

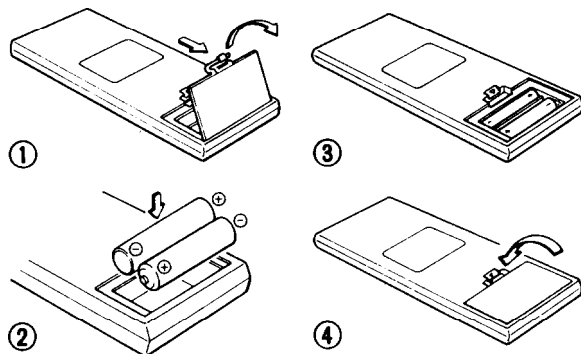
3. Remote Control Transmitter Batteries

The remote control transmitter is powered by two batteries. Before using this unit for the first time, insert the two batteries (included) as shown in the diagram. The remote control transmitter has no on/off switch for its own. Average battery life is one year. This period may be shorter depending on the frequency of use and environment (temperature and humidity) in which the remote control transmitter is used. If the remote control transmitter does not operate even though front panel controls function normally, the batteries should be replaced. Use only batteries listed in the following chart.

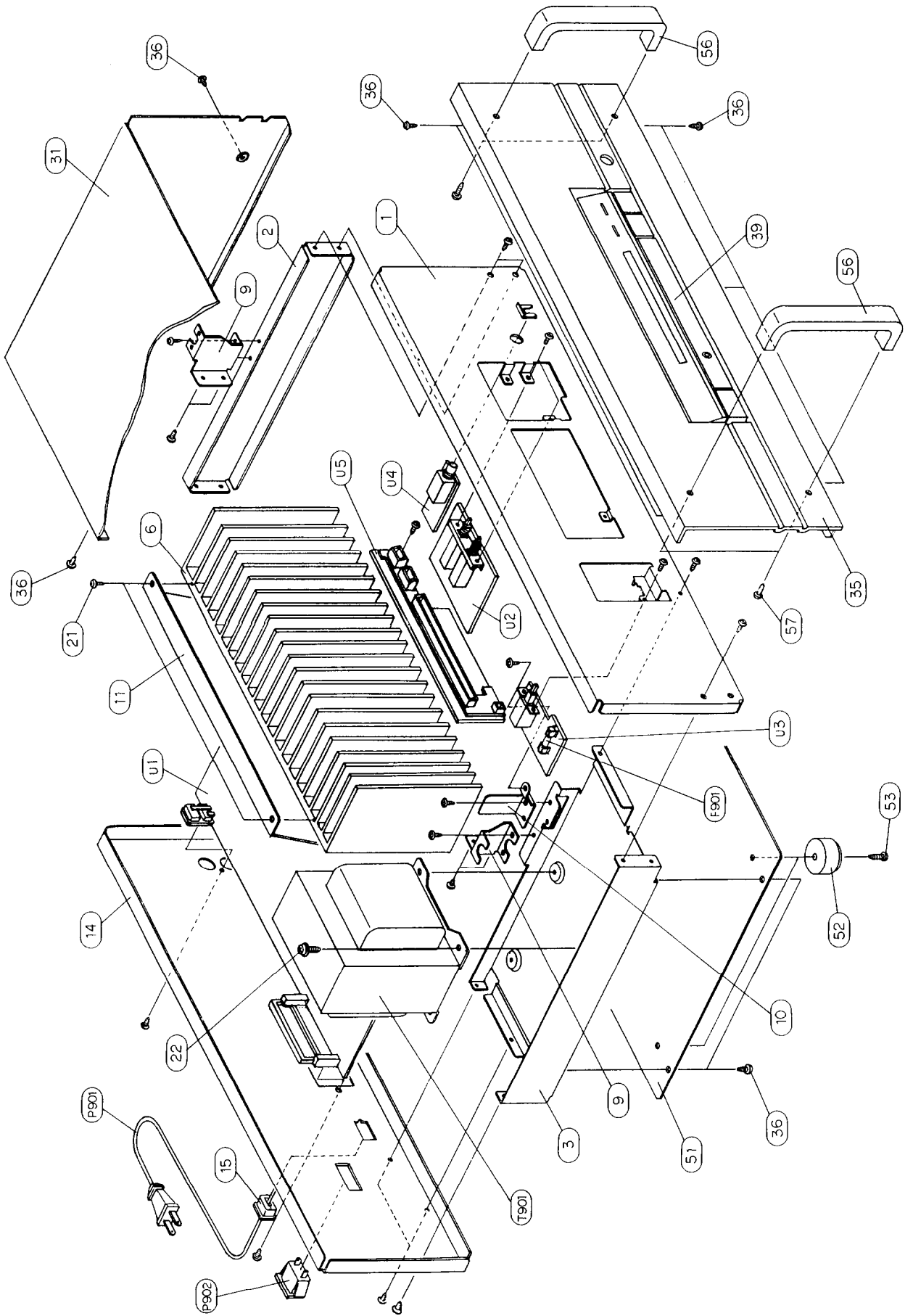
Type	Voltage	Size
Manganese	1.5V	AA, R6, UM-3

- Note**
1. The battery life is influenced by the way it is used, temperature, humidity and many other factors. On the average, they should last for one year.
 2. Do not leave an expired battery in the case as it may leak or damage the battery case.
 3. When inserting the batteries, be sure the (+) and (-) ends are properly aligned.
 4. Do not use nickel-cadmium (rechargeable) batteries.
 5. Do not use one specified (manganese) battery and one alkaline battery at the same time.
 6. Replace both batteries at once, do not use one old and one new battery together.

Transmitter Battery replacement (RC-117S)



CHASSIS-EXPLODED VIEW



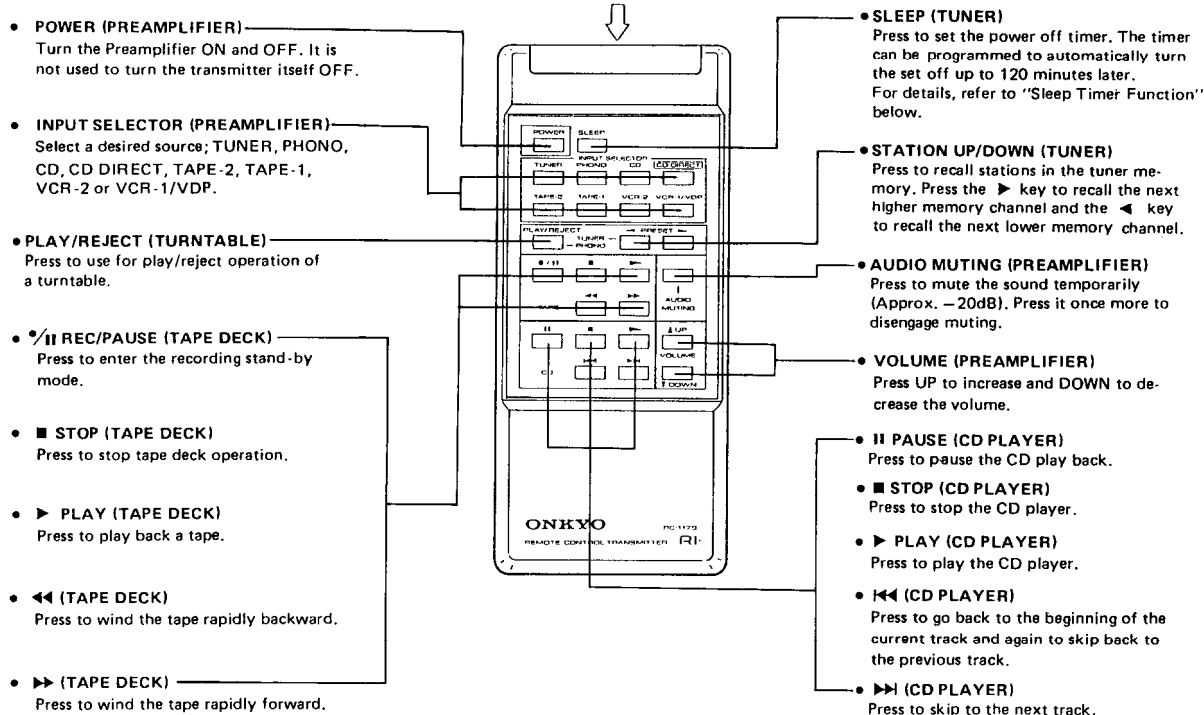
CHASSIS-EXPLODED VIEW PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	27110331A	FRONT BRACKET
2	27115221	SIDE BRACKET
3	27130404-2A	BRACKET (PT)
6	27160200A	HEATSINK
9	27141020C	BRACKET (HE)
10	27141114B	BRACKET (S)
11	27141115B	BRACKET (L)
14	27121063	BACK PANEL
15	27300750	BUSHING (CORD)
21	831130088	TAP-TIGHT SCREW 3TTW+8B
22	830440089	TAP-TIGHT SCREW 4TTC+8CBC
31	28184353A	TOP COVER
35	272107917	FRONT PANEL
36	834430088	TAP-TIGHT SCREW 3TTS+8BBC
39	28322896B	KNOB AS. GUID
51	27170238	BOTTOM BOARD
52	280889B	LEG
53	831430168	TAP-TIGHT SCREW 3TTW+16BBC
56	28158034	HANDLE
57	830440109	TAP-TIGHT SCREW 4TTC+10CBC
▲ T901	2300174A	POWER TRANSFORMER NPT-946D
▲ P901	253123 or 253136 or 253140 or 253146	POWER SUPPLY CABLE AS-UC-6#18
▲ P902	25050290	AC OUTLET NSCT-2P118T
▲ F901	252052	FUSE 7A (ST-6)
U1	1A044562-1	NAAF-2862-1, POWER AMP. PC BOARD ASS'Y
U2	1A044563-1	NASW-2863-1, SPEAKER SWITCH PC BOARD ASS'Y
U3	1A044564-1	NASW-2864-1, POWER SWITCH PC BOARD ASS'Y
U4	1A044565-1	NAAF-2865-1, PHONES PC BOARD ASS'Y
U5	1A044566-1	NADIS-2866-1, DISPLAY PC BOARD ASS'Y

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

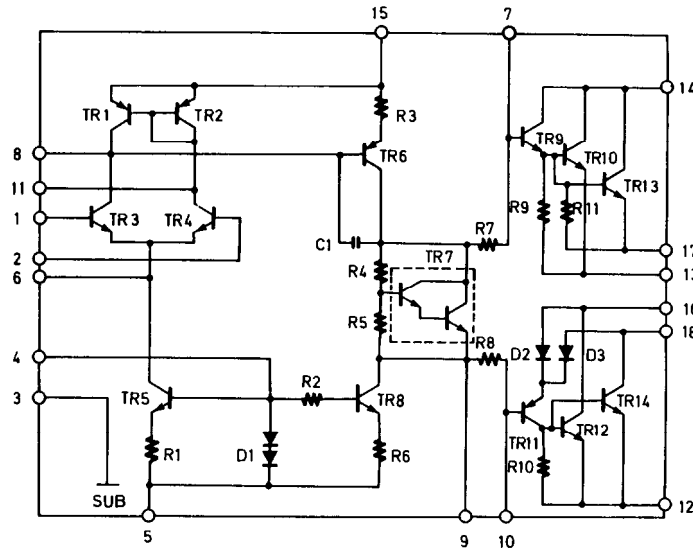
REMOTE CONTROL TRANSMITTER (RC-117S)

Remote Control Signal Transmission Window

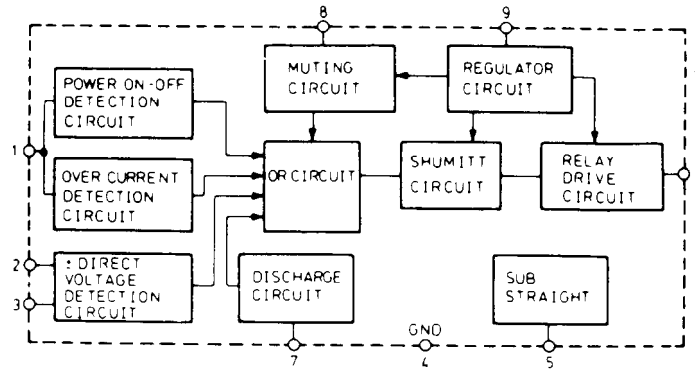


IC BLOCK DIAGRAM

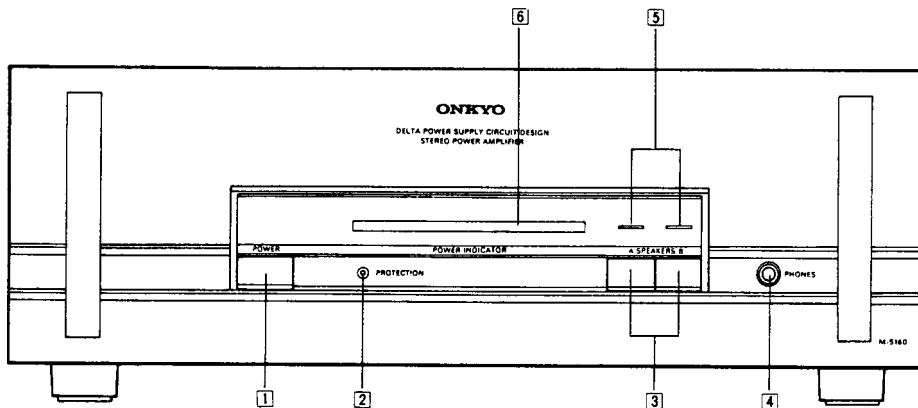
STK4048V (Power Amp.)



TA7317P (Protective Circuit)



FRONT PANEL FACILITIES



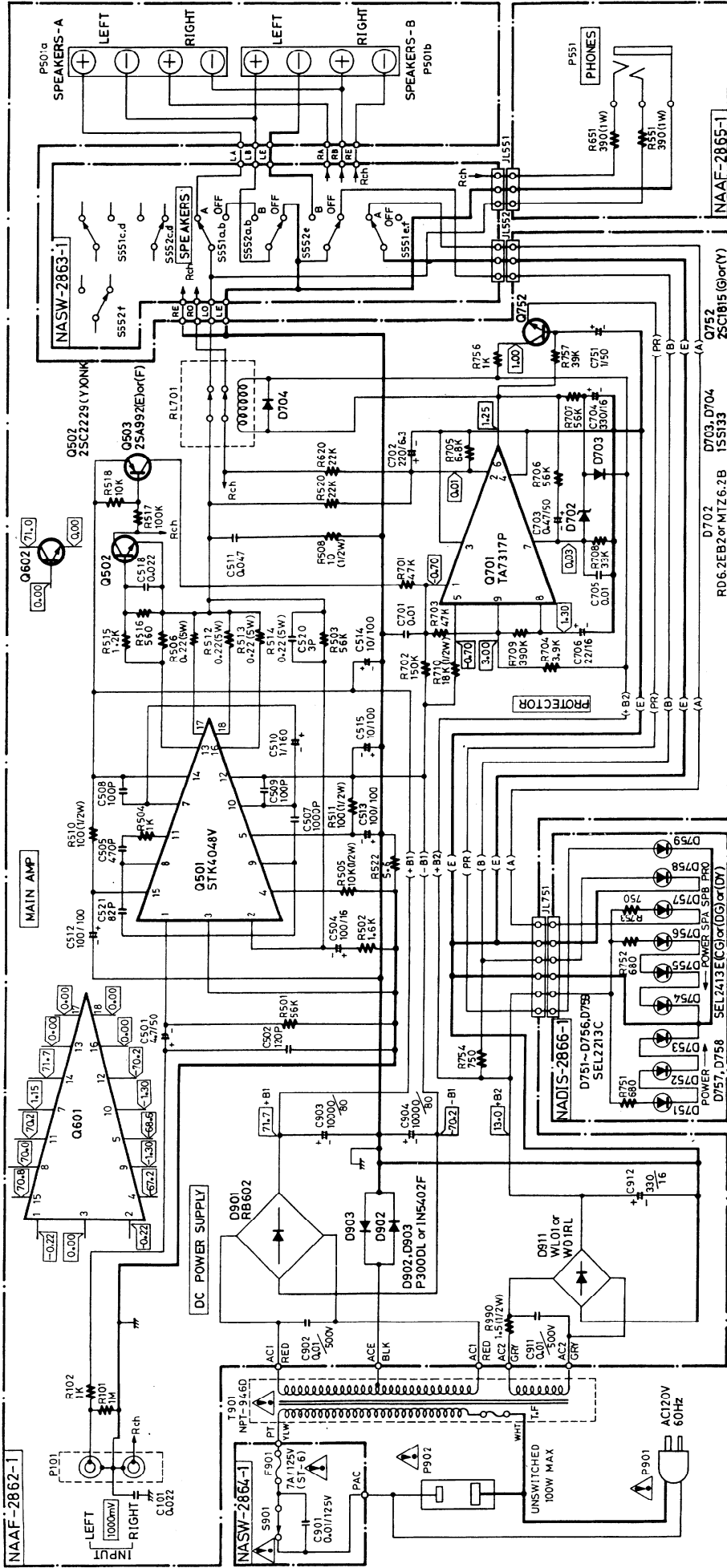
1. Power Switch (POWER)
2. Protection Indicator (PROTECTION)
3. Speaker Selector (SPEAKERS)

NOTE: In the "A+B" mode, the speakers are connected in series.

If only one pair of speakers is connected to the M-5160, no sound will be heard in this setting.

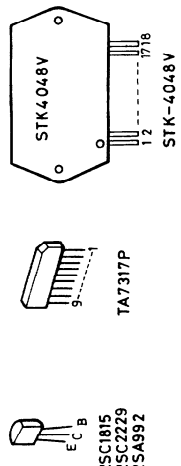
4. Headphone Jack (PHONES)
5. Speaker Indicator
6. Power Indicator (POWER INDICATOR)

SCHEMATIC DIAGRAM



NO	FUNCTION	POSITION
S901	POWER	OFF ON
S551	SPEAKERS A	OFF A
S552	SPEAKERS B	OFF B

- NOTES
- ALL RESISTORS ARE IN OHMS 1/4WATTS or 1/6WATTS UNLESS OTHERWISE NOTED.
 - ALL CAPACITORS ARE IN μ F/50WV UNLESS OTHERWISE NOTED.
 - ELECTROLYTIC CAPACITORS (E) ARE IN μ F/W.
 - ALL DIODES ARE 1SS133 UNLESS OTHERWISE NOTED.
 - VOLTAGE (MEASURED WITH V.T.V.-M) IS DC VOLTAGE, (NO INPUT SIGNAL).
 - THE COMPONENTS IDENTIFIED BY MARK Δ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
 - CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.



PRINTED CIRCUIT BOARD PARTS LIST

POWER AMP. CIRCUIT PC BOARD (NAAF-2862-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
ICs		
Q501, Q601	222059	STK4048V
Q701	222584	TA7317P
Transistors		
Q502, Q602	2211639	2SC2229Y (ONK)
Q503	2211792 or 2211793	2SA992E or 2SA992F
Q752	2211255 or 2211254	2SC1815GR or 2SC1815Y
Diodes		
D702	2239492 or 2243162	RD6.2EB2 or MTZ6.2B
D703, D704	223163	1SS133
D901	223898F	RB602
D902, D903	223897F or 2238003F	P300DL or 1N5402F
D911	223862 or 223890	WL01 or W01RL
Capacitors		
C501, C601	3500093	4.7 μ F, 50V, Elect.
C504, C604	354741019	100 μ F, 16V, Elect.
C510, C610	354700109	1 μ F, 160V, Elect.
C511, C611	371124734	0.047 μ F, 50V, Mylar
C512, C513	354791019	100 μ F, 100V, Elect.
C612, C613		
C514, C515	354791009	10 μ F, 100V, Elect.
C614, C615		
C702	354722219	220 μ F, 6.3V, Elect.
C703	354784799	0.47 μ F, 50V, Elect.
C704	354743319	330 μ F, 16V, Elect.
C706	354742209	22 μ F, 16V, Elect.
C751	354780109	1 μ F, 50V, Elect.
C903, C904	3504204	10000 μ F, 80V, Elect.
C912	354743319	330 μ F, 16V, Elect.
Resistors		
R505, R605	442521034F	10k Ω , 1/2W, Metal oxide film
R506, R507	4000076	0.22 Ω , 5W, Metal plate
R606, R607		
R508, R608	441521004F	10 Ω , 1/2W, Metal oxide film
R510, R511	442521014F	100 Ω , 1/2W, Metal oxide film
R610, R611		
R512~R514	4000076	0.22 Ω , 5W, Metal plate
R612~R614		
R710	442521834F	18k Ω , 1/2W, Metal oxide film
R990	442520154F	1.5 Ω , 1/2W, Metal oxide film
Relay		
RL701	25065275	NRL-2P5A-DC12-38
Terminals		
P101	25045211	NPJ-2PDBL91, Input
P501	25060093	NTM-8PDML34, Output
Bracket		
	27141059	Washer

SPEAKER SWITCH CIRCUIT PC BOARD (NASW-2863-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Switches		
S551, (S552)	25035549	NPS-262-L511

POWER SWITCH CIRCUIT PC BOARD (NASW-2864-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Capacitor		
C901	3500065A	0.01 μ F, AC400V/125V, IS
Switch		
S901	25035550	NPS-111-1512P
Fuse holders		
	250113	SN5051

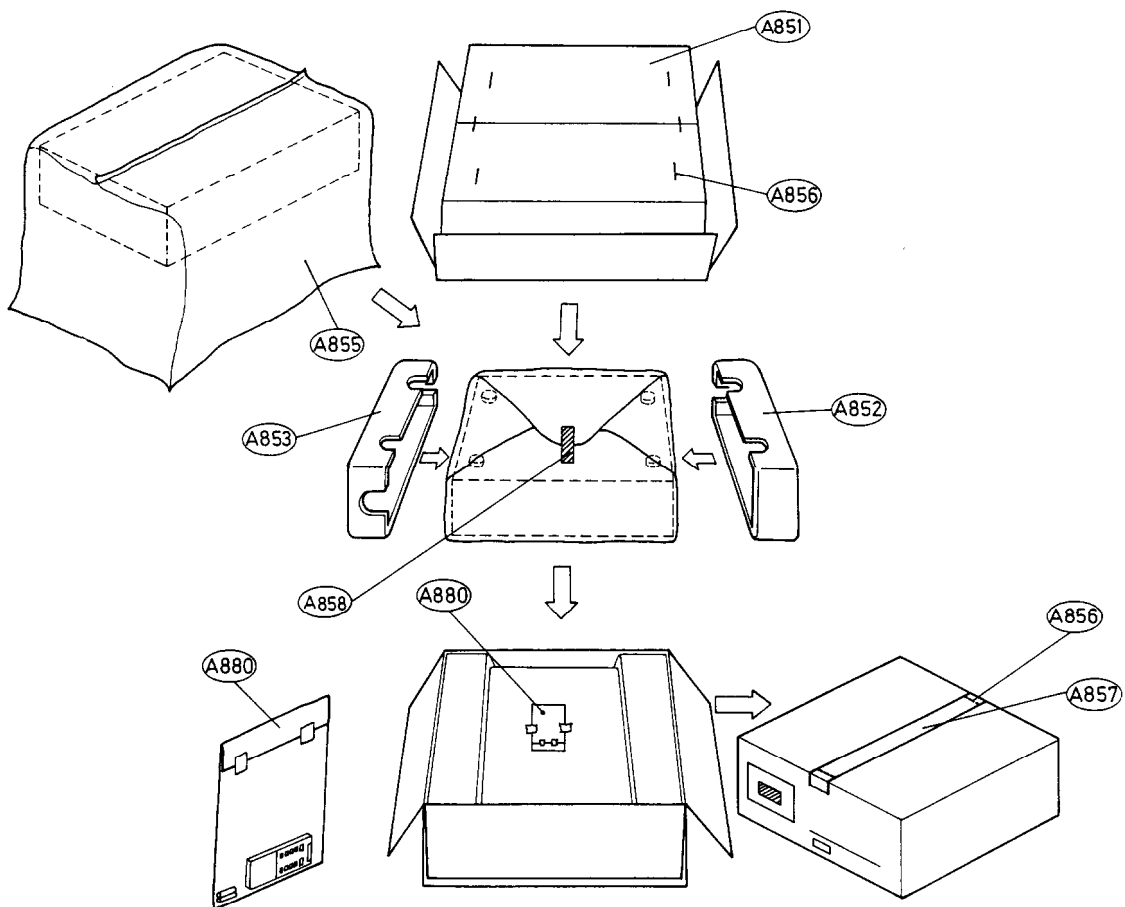
PHONES CIRCUIT PC BOARD (NAAF-2865-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Resistors		
R551, R651	441623914	390 Ω , 1W, Metal oxide film
Jack		
P551	25045187	HLJ-0541-01-010

DISPLAY CIRCUIT PC BOARD (NADIS-2866-1)-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Diodes		
D751~D756	225141	SEL2213C
D759		
D757, D758	225137CG or 225137DG or 225137DY	SEL2413ECG SEL2413EDG SEL2413EDY
Holder		
	27190510A	(LED)

PACKING PROCEDURES



REF. NO.	PART NO.	DESCRIPTION
A851	29051635	MASTER CARTON BOX [P]
	29051636	MASTER CARTON BOX [S]
A852	29091152A	PAD, L
A853	29091153A	PAD, R
A855	29100063A	750×500mm, POLY-VINYL BAG
A856	282301	SEALING HOOK
A857	260012	DAMPLON TAPE
A880		ACCESSORY BAG ASS'Y
	29341209	INSTRUCTION MANUAL
	29341210	INSTRUCTION MANUAL, REMOTE CONTROL [P]
	29365019	WARRANTY CARD [N]
	29358002E	SERVICE STATION LIST [N]
	2010098A	CONNECTION CABLE
	24140019	REMOTE CONTROL UNIT, RC-117S [P]
	3010054	TWO BATTERIES, UM-3 [P]
	29100097	250×350mm, POLY-VINYL BAG FOR ACCESSORY

NOTE

- [N]: Only U.S.A. models
- [P]: Only M-5160P models
- [S]: Only M-5160 models

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