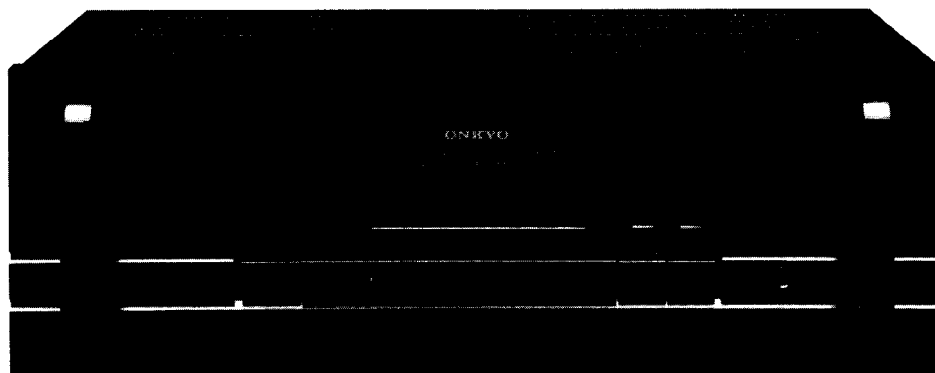


# ONKYO® SERVICE MANUAL

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



|    |               |
|----|---------------|
| UD | 120V AC, 60Hz |
|----|---------------|

**SAFETY-RELATED COMPONENT WARNING!!**  
COMPONENTS IDENTIFIED BY MARK  $\Delta$  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: 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

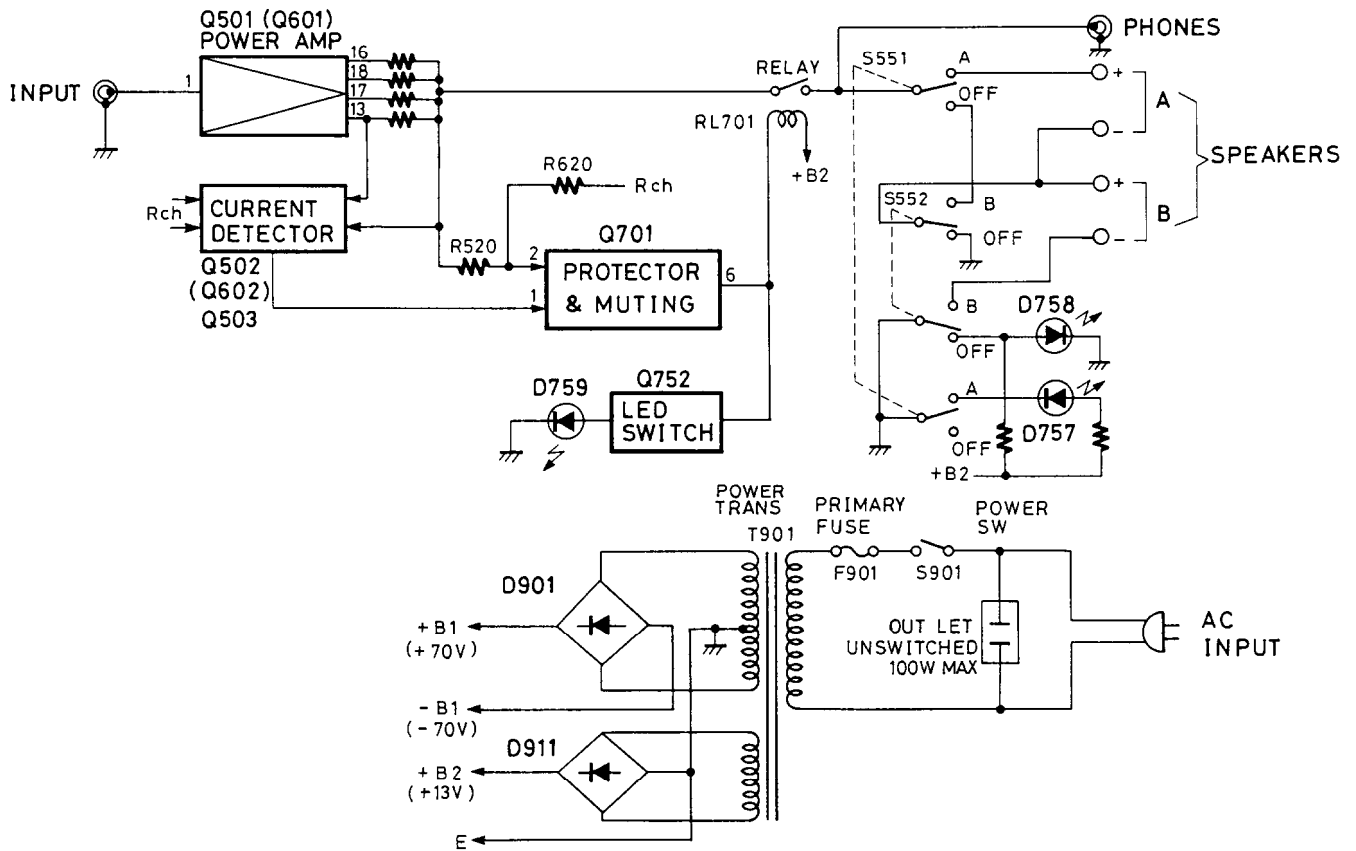
Power supply: Two "AA" batteries (1.5V x 2)

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 10M $\Omega$  at 500V.

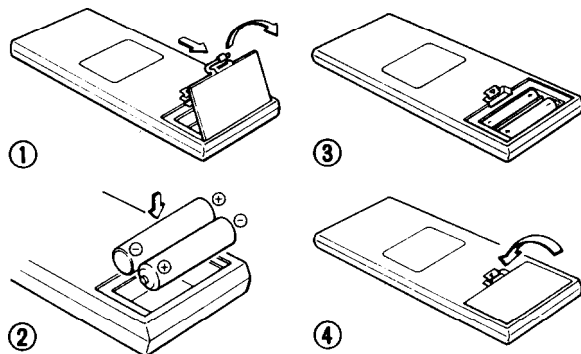
### 3. Remote Control Transmitter Batteries

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.

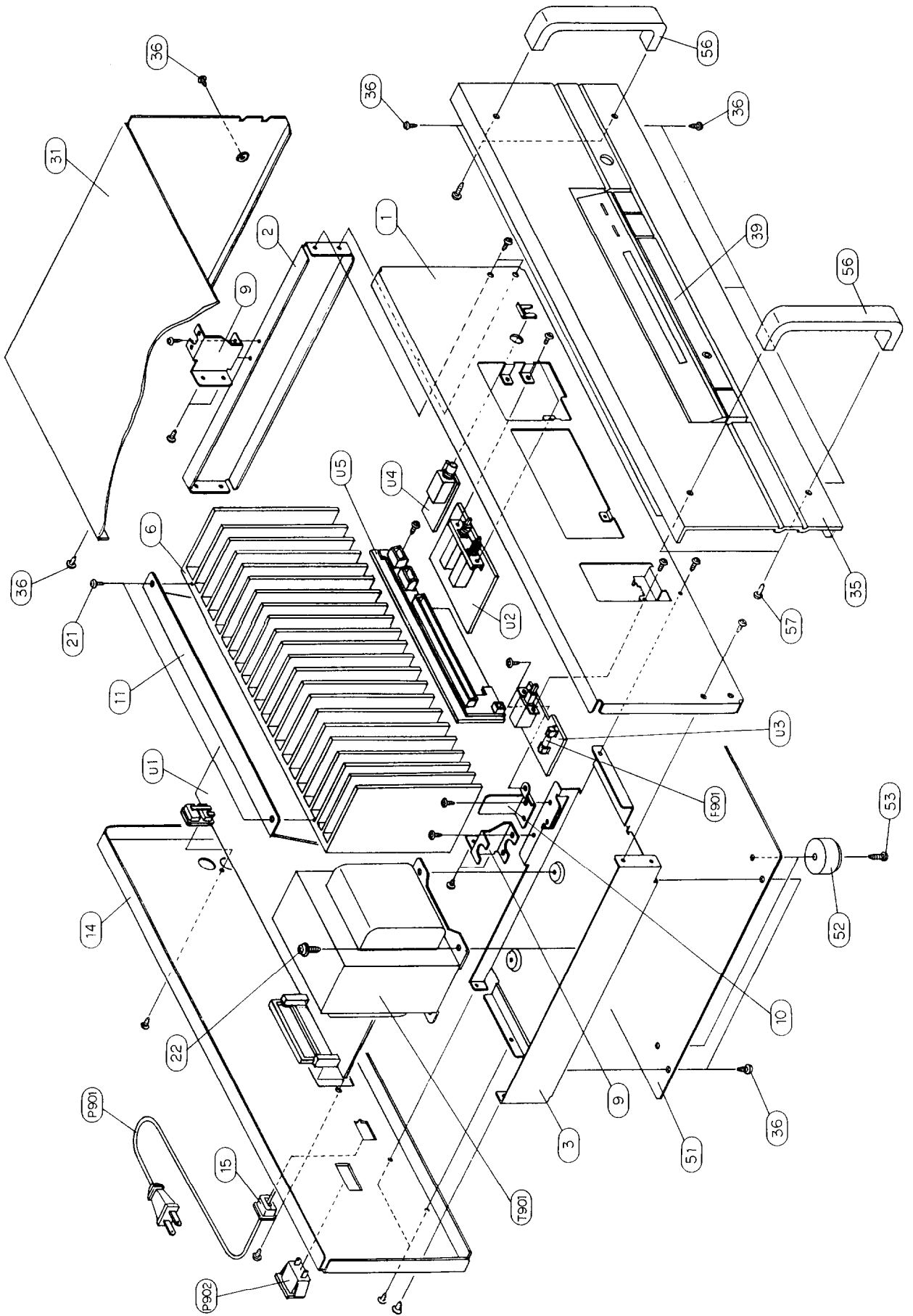
| Type      | Voltage | Size         |
|-----------|---------|--------------|
| Manganese | 1.5V    | AA, R6, UM-3 |

- 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**



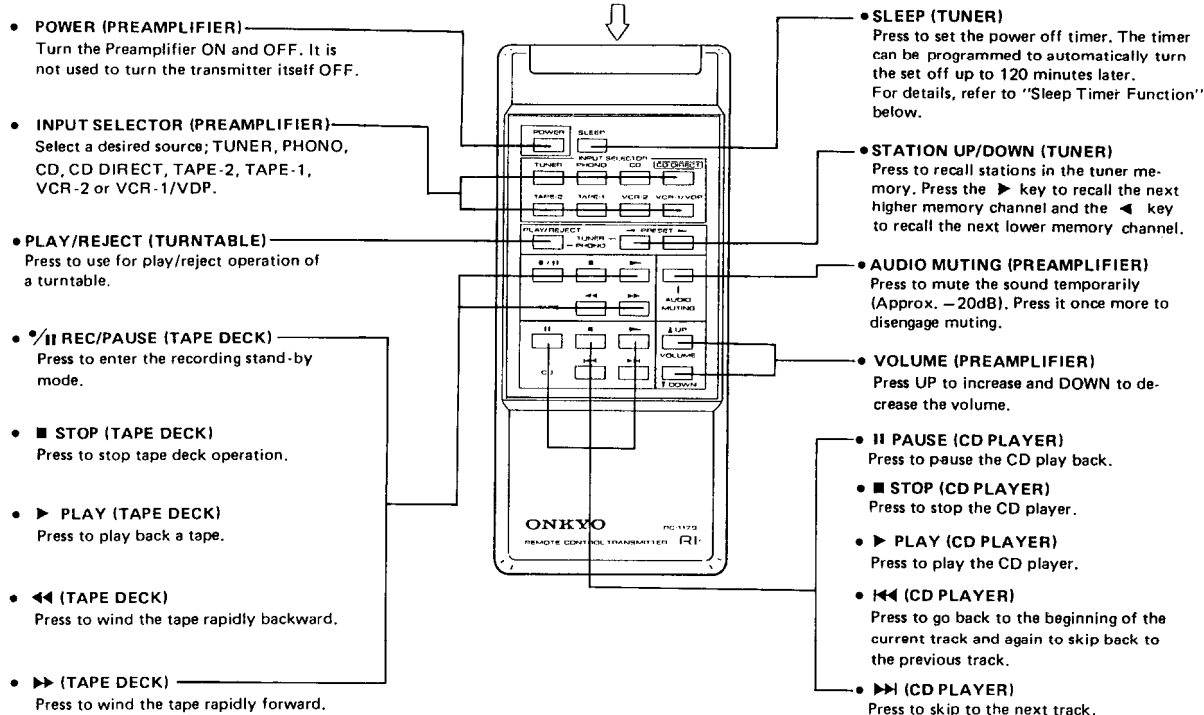
## CHASSIS-EXPLODED VIEW PARTS LIST

| 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<br>253136 or<br>253140 or<br>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.

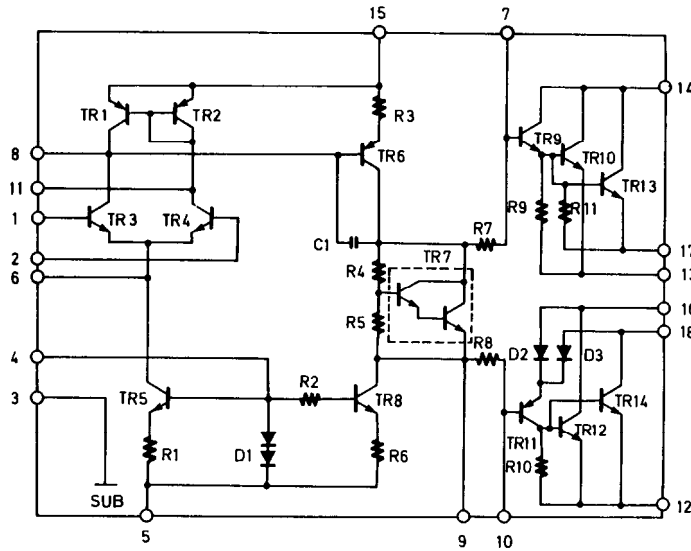
## REMOTE CONTROL TRANSMITTER (RC-117S)

Remote Control Signal Transmission Window

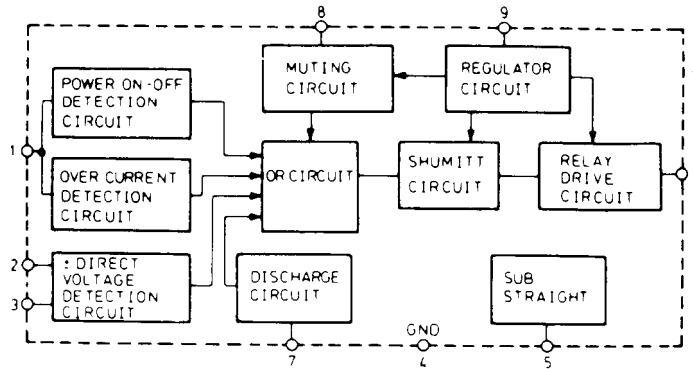


### IC BLOCK DIAGRAM

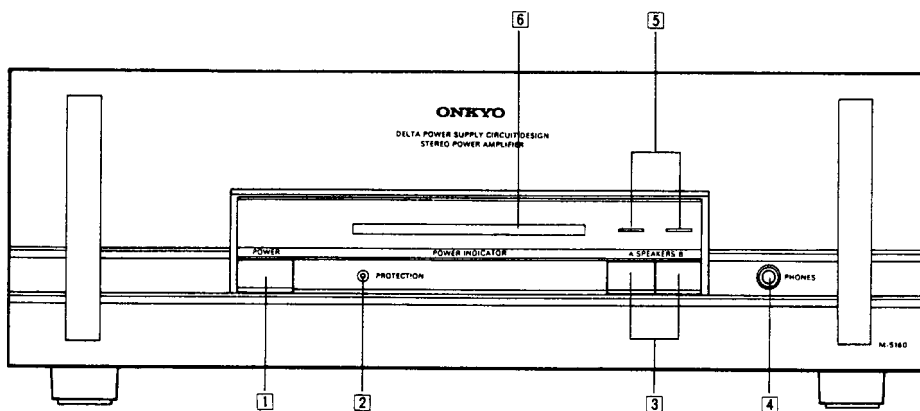
STK4048V (Power Amp.)



TA7317P (Protective Circuit)



### FRONT PANEL FACILITIES



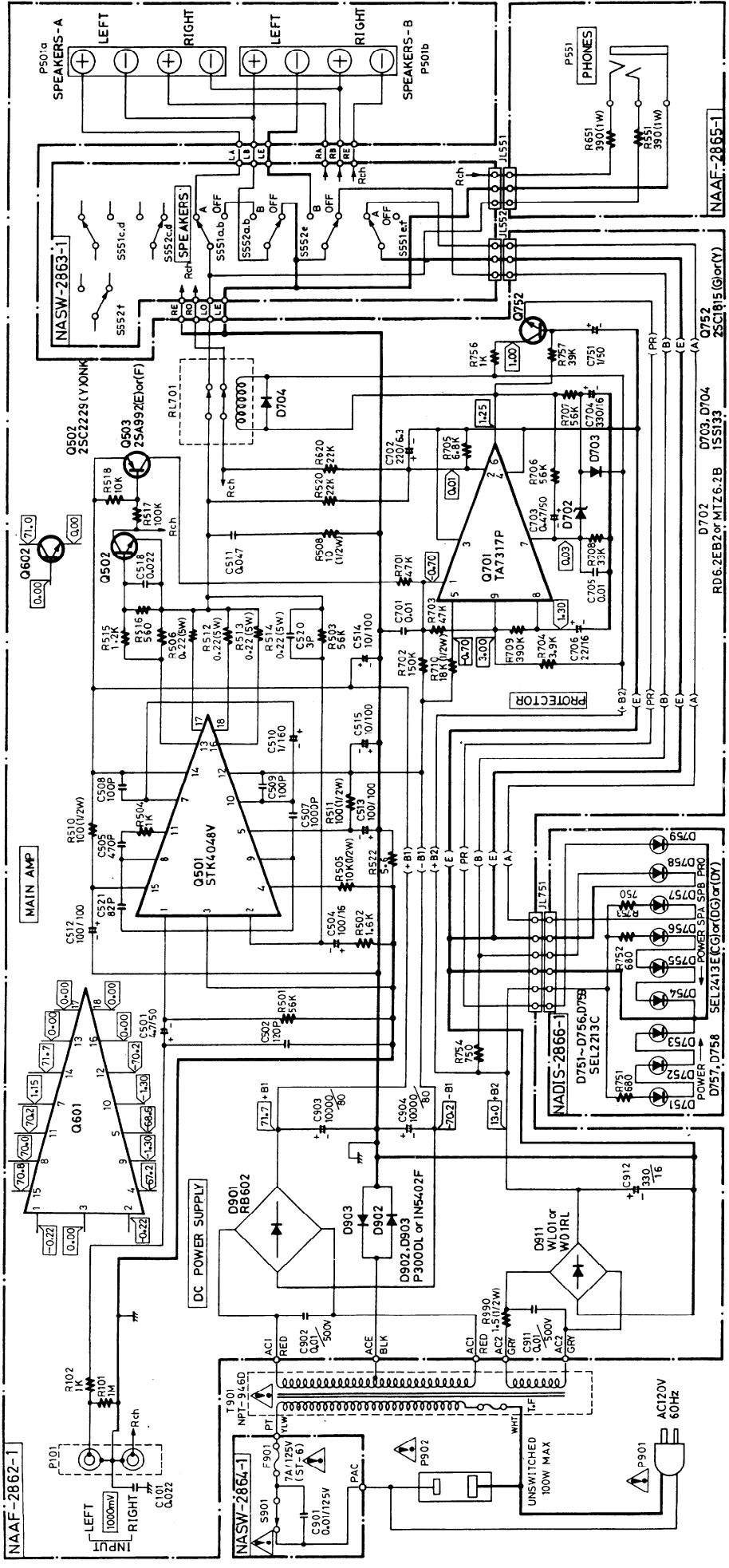
1. Power Switch (POWER)
2. Protection Indicator (PROTECTION)
3. Speaker Selector (SPEAKERS)

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    |

E C B  
 2SC1815  
 2SC2229  
 2SA992

TA7317P

STK4048V  
 STK-4048V

- NOTES**
- ALL RESISTORS ARE IN OHMS 1/4WATTS or 1/6WATTS UNLESS OTHERWISE NOTED.
  - ALL CAPACITORS ARE IN  $\mu$ F/50WV UNLESS OTHERWISE NOTED.
  - ELECTROLYTIC CAPACITORS (E) ARE IN  $\mu$ F/W.
  - ALL DIODES ARE 1SS133 UNLESS OTHERWISE NOTED.
  - VOLTAGE (MEASURED WITH V.T.V.-) IS DC VOLTAGE, (NO INPUT SIGNAL).
  - THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  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   |
|--|---|---|
| <b>ICs</b>   |   |   |
| Q501, Q601<br>Q701   | 222059<br>222584  | STK4048V<br>TA7317P   |
| <b>Transistors</b>   |   |   |
| Q502, Q602<br>Q503   | 2211639<br>2211792 or<br>2211793  | 2SC2229Y (ONK)<br>2SA992E or<br>2SA992F   |
| Q752   | 2211255 or<br>2211254   | 2SC1815GR or<br>2SC1815Y  |
| <b>Diodes</b>  |   |   |
| D702   | 2239492 or<br>2243162   | RD6.2EB2 or<br>MTZ6.2B  |
| D703, D704<br>D901   | 223163<br>223898F   | 1SS133<br>RB602   |
| D902, D903   | 223897F or<br>2238003F  | P300DL or<br>1N5402F  |
| D911   | 223862 or<br>223890   | WL01 or<br>W01RL  |
| <b>Capacitors</b>  |   |   |
| C501, C601<br>C504, C604<br>C510, C610<br>C511, C611<br>C512, C513<br>C612, C613<br>C514, C515<br>C614, C615 | 3500093<br>354741019<br>354700109<br>371124734<br>354791019                           | 4.7 $\mu$ F, 50V, Elect.<br>100 $\mu$ F, 16V, Elect.<br>1 $\mu$ F, 160V, Elect.<br>0.047 $\mu$ F, 50V, Mylar<br>100 $\mu$ F, 100V, Elect.   |
| C702<br>C703<br>C704<br>C706<br>C751<br>C903, C904<br>C912   | 354722219<br>354784799<br>354743319<br>354742209<br>354780109<br>3504204<br>354743319 | 220 $\mu$ F, 6.3V, Elect.<br>0.47 $\mu$ F, 50V, Elect.<br>330 $\mu$ F, 16V, Elect.<br>22 $\mu$ F, 16V, Elect.<br>1 $\mu$ F, 50V, Elect.<br>10000 $\mu$ F, 80V, Elect.<br>330 $\mu$ F, 16V, Elect. |
| <b>Resistors</b>   |   |   |
| R505, R605<br>R506, R507<br>R606, R607   | 442521034F<br>4000076   | 10k $\Omega$ , 1/2W, Metal oxide film<br>0.22 $\Omega$ , 5W, Metal plate  |
| R508, R608<br>R510, R511<br>R610, R611<br>R512~R514<br>R612~R614   | 441521004F<br>442521014F<br>4000076   | 10 $\Omega$ , 1/2W, Metal oxide film<br>100 $\Omega$ , 1/2W, Metal oxide film<br>0.22 $\Omega$ , 5W, Metal plate  |
| R710<br>R990   | 442521834 F<br>442520154F   | 18k $\Omega$ , 1/2W, Metal oxide film<br>1.5 $\Omega$ , 1/2W, Metal oxide film  |
| <b>Relay</b>   |   |   |
| RL701  | 25065275  | NRL-2P5A-DC12-38  |
| <b>Terminals</b>   |   |   |
| P101<br>P501   | 25045211<br>25060093  | NPJ-2PDBL91, Input<br>NTM-8PDML34, Output   |
| <b>Bracket</b>   |   |   |
|  | 27141059  | Washer  |

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

| CIRCUIT NO.     | PART NO. | DESCRIPTION  |
|-----------------|----------|--------------|
| <b>Switches</b> |          |              |
| S551, (S552)    | 25035549 | NPS-262-L511 |

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

| CIRCUIT NO.         | PART NO. | DESCRIPTION                   |
|---------------------|----------|-------------------------------|
| <b>Capacitor</b>    |          |                               |
| C901                | 3500065A | 0.01 $\mu$ F, AC400V/125V, IS |
| <b>Switch</b>       |          |                               |
| S901                | 25035550 | NPS-111-1512P                 |
| <b>Fuse holders</b> |          |                               |
|                     | 250113   | SN5051                        |

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

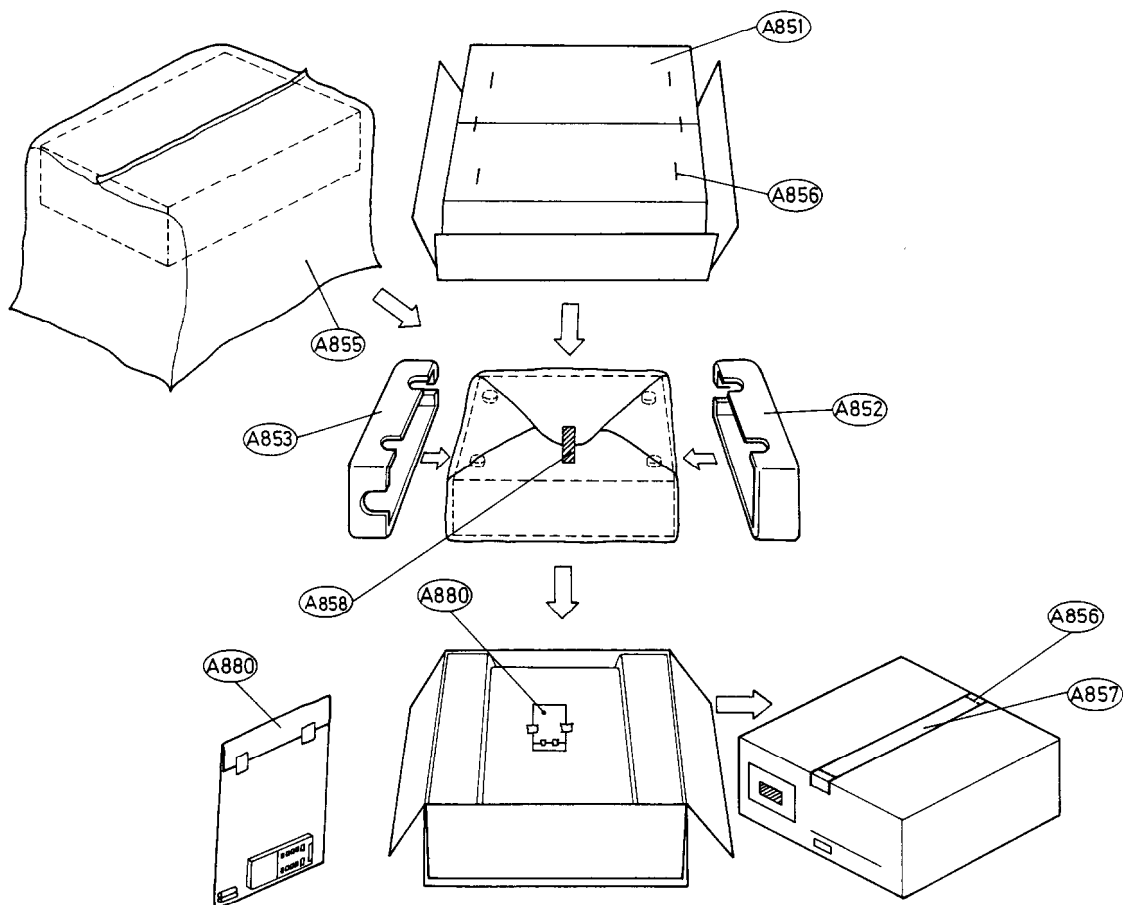
| CIRCUIT NO.      | PART NO.  | DESCRIPTION                         |
|------------------|-----------|-------------------------------------|
| <b>Resistors</b> |           |                                     |
| R551, R651       | 441623914 | 390 $\Omega$ , 1W, Metal oxide film |
| <b>Jack</b>      |           |                                     |
| P551             | 25045187  | HLJ-0541-01-010                     |

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

| CIRCUIT NO.                     | PART NO.   | DESCRIPTION  |
|---------------------------------|--|--|
| <b>Diodes</b>                   |  |  |
| D751~D756<br>D759<br>D757, D758 | 225141<br>225137CG or<br>225137DG or<br>225137DY | SEL2213C<br>SEL2413ECG<br>SEL2413EDG<br>SEL2413EDY |
| <b>Holder</b>                   |  |  |
|                                 | 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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