

# Service Manual



ORDER NO.  
ARP1529

STEREO AMPLIFIER

# A-223

## A-223-S

A-223 AND A-223-S HAVE FIVE VERSIONS :

| Type | Applicable model      |                       | Power requirement                         | Export destination                         |
|------|-----------------------|-----------------------|---|--|
|      | A-223                 | A-223-S               |   |  |
| HE   | <input type="radio"/> | —                     | AC220V, 240V (switchable) *               | European continent                         |
| HB   | <input type="radio"/> | —                     | AC220V, 240V (switchable) *               | United Kingdom                             |
| HEZ  | <input type="radio"/> | <input type="radio"/> | AC220V, 240V (switchable) *               | West Germany                               |
| SD   | <input type="radio"/> | —                     | AC110V, 120-127V, 220V, 240V (switchable) | Kingdom of Saudi Arabia and general market |
| YP   | <input type="radio"/> | —                     | AC240V only                               | Australia                                  |

\* Change the primary wiring of the power transformer.

- This manual is applicable to the A-223/HE, HB, HEZ and A-223-S/HEZ types.
- For the A-223/HB, HEZ and A-223-S/HEZ types, refer to page 18.
- A-223-S/HEZ type is a silver model of A-223/HEZ type.
- For the other types, refer to additional service manuals.

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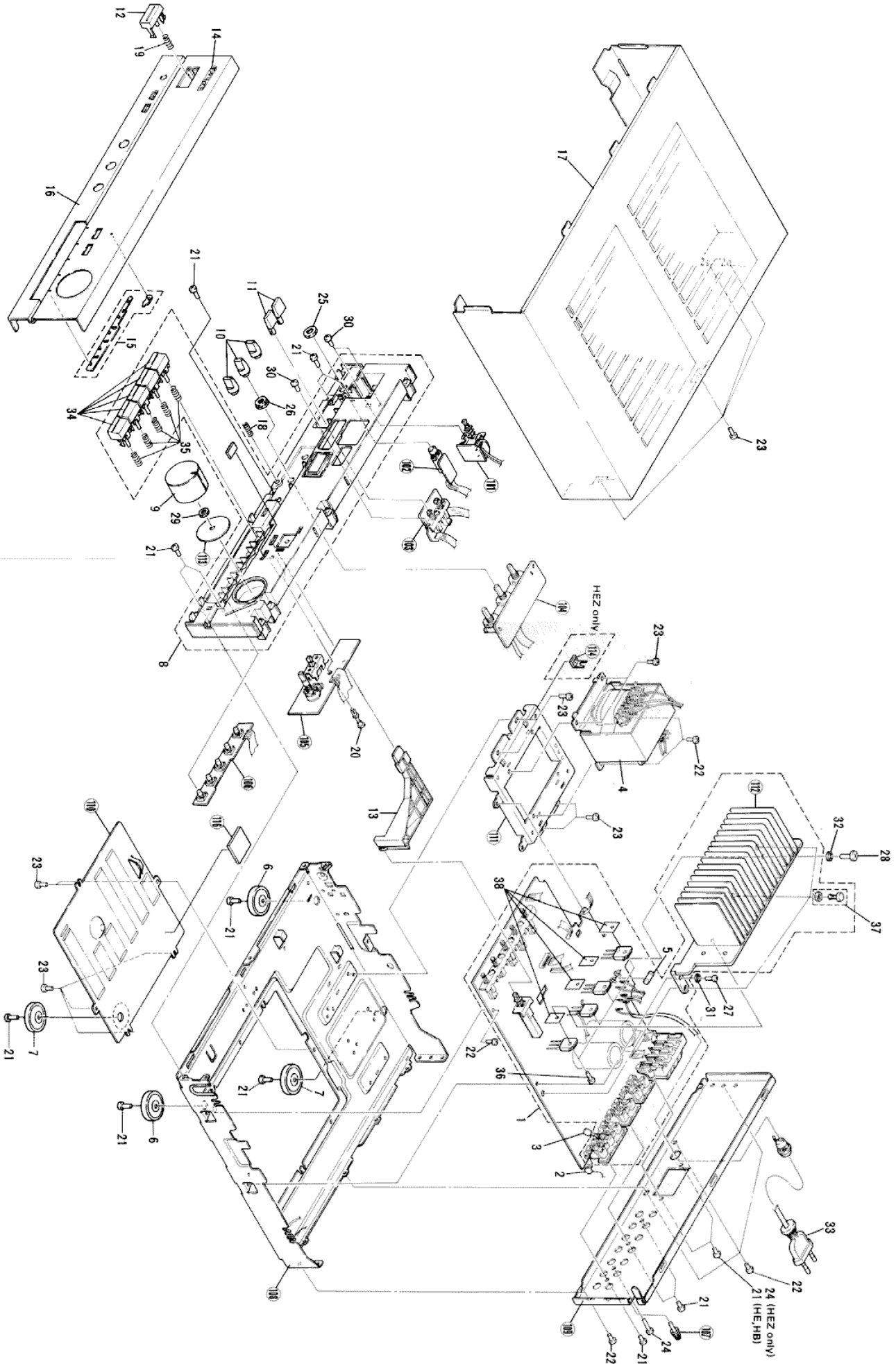
# 1. EXPLODED VIEW AND PARTS LIST

## NOTES :

- Parts without part number cannot be supplied.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks **★★** and **★**.  
**★★** GENERALLY MOVES FASTER THAN **★**.  
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "⊕" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

## Parts List of Exterior

| Mark        | No. | Part No.     | Description                                      | Mark | No. | Part No. | Description                     |
|-------------|-----|--------------|--|------|-----|----------|---------------------------------|
|             | 1   | AWZ1429      | AF assembly                                      |      | 101 |          | Power SW assembly               |
|             | 2   | CKDYF473Z50  | Capacitor (C1)                                   |      | 102 |          | Headphone assembly              |
|             | 3   | CQMA222K50   | Capacitor (C2)                                   |      | 103 |          | SP SW assembly                  |
| $\Delta$ ★  | 4   | ATS1050      | Power transformer<br>(220/240V, T1)              |      | 104 |          | Tone assembly                   |
| $\Delta$ ★★ | 5   | AEK-018      | Fuse(T1.25A/250V, FU1)                           |      | 105 |          | VR assembly                     |
|             | 6   | AMR1350      | Insulator assembly                               |      | 106 |          | LED assembly                    |
|             | 7   | AMR1353      | Insulator assembly                               |      | 107 |          | Terminal (GND)                  |
|             | 8   | AMB1319      | Panel base assembly                              |      | 108 |          | Chassis                         |
|             | 9   | AAB1061      | Knob (VOLUME)                                    |      | 109 |          | Rear panel                      |
|             | 10  | AAB1075      | Knob (BASS, TREBLE,<br>BALANCE)                  |      | 110 |          | Bottom plate                    |
|             | 11  | AAD1057      | Push knob A (SPEAKERS)                           |      | 111 |          | Transformer holder              |
|             | 12  | AAD1343      | Knob (POWER)                                     |      | 112 |          | Heat sink                       |
|             | 13  | AAD1345      | Push rod assembly                                |      | 113 |          | GND ring                        |
|             | 14  | AAM-030      | Friction plate                                   |      | 114 |          | Terminal 2P (GND)<br>(HEZ only) |
|             | 15  | AMR1330      | Indicator lens                                   |      | 115 |          | .....                           |
|             | 16  | ANB1173      | Front panel                                      |      | 116 |          | Barrier                         |
|             | 17  | ANE1053      | Bonnet case                                      |      |     |          |                                 |
|             | 18  | ABH1021      | Spring   |      |     |          |                                 |
|             | 19  | ABH-052      | Spring B   |      |     |          |                                 |
|             | 20  | AMR1066      | Plastic rivet                                    |      |     |          |                                 |
|             | 21  | ABA-298      | Screw  |      |     |          |                                 |
|             | 22  | ABA1009      | Screw  |      |     |          |                                 |
|             | 23  | ABA1011      | Screw  |      |     |          |                                 |
|             | 24  | ABA1047      | Screw (GND)                                      |      |     |          |                                 |
|             | 25  | ABN-065      | Nut  |      |     |          |                                 |
|             | 26  | ABN1006      | Flange nut (M9)                                  |      |     |          |                                 |
|             | 27  | BBZ30P100FZK | Screw  |      |     |          |                                 |
|             | 28  | BYC40P120FMC | Screw  |      |     |          |                                 |
|             | 29  | NK70FUC      | Nut  |      |     |          |                                 |
|             | 30  | VMZ30P060FMC | Screw  |      |     |          |                                 |
|             | 31  | WS30FMC      | Washer   |      |     |          |                                 |
|             | 32  | WS40FMC      | Washer   |      |     |          |                                 |
|             | 33  | ADG1021      | AC power cord                                    |      |     |          |                                 |
|             | 34  | AAD1056      | Knob<br>(CD, PHONO, TUNER,<br>TAPE1, ADPT/TAPE2) |      |     |          |                                 |
|             | 35  | ABH1017      | Spring   |      |     |          |                                 |
|             | 36  | ABA-297      | Screw  |      |     |          |                                 |
|             | 37  | AEC1035      | Plastic rivet                                    |      |     |          |                                 |
|             | 38  | AEC-818      | Mica sheet                                       |      |     |          |                                 |



1 | 2 | 3 | 4 | 5 | 6

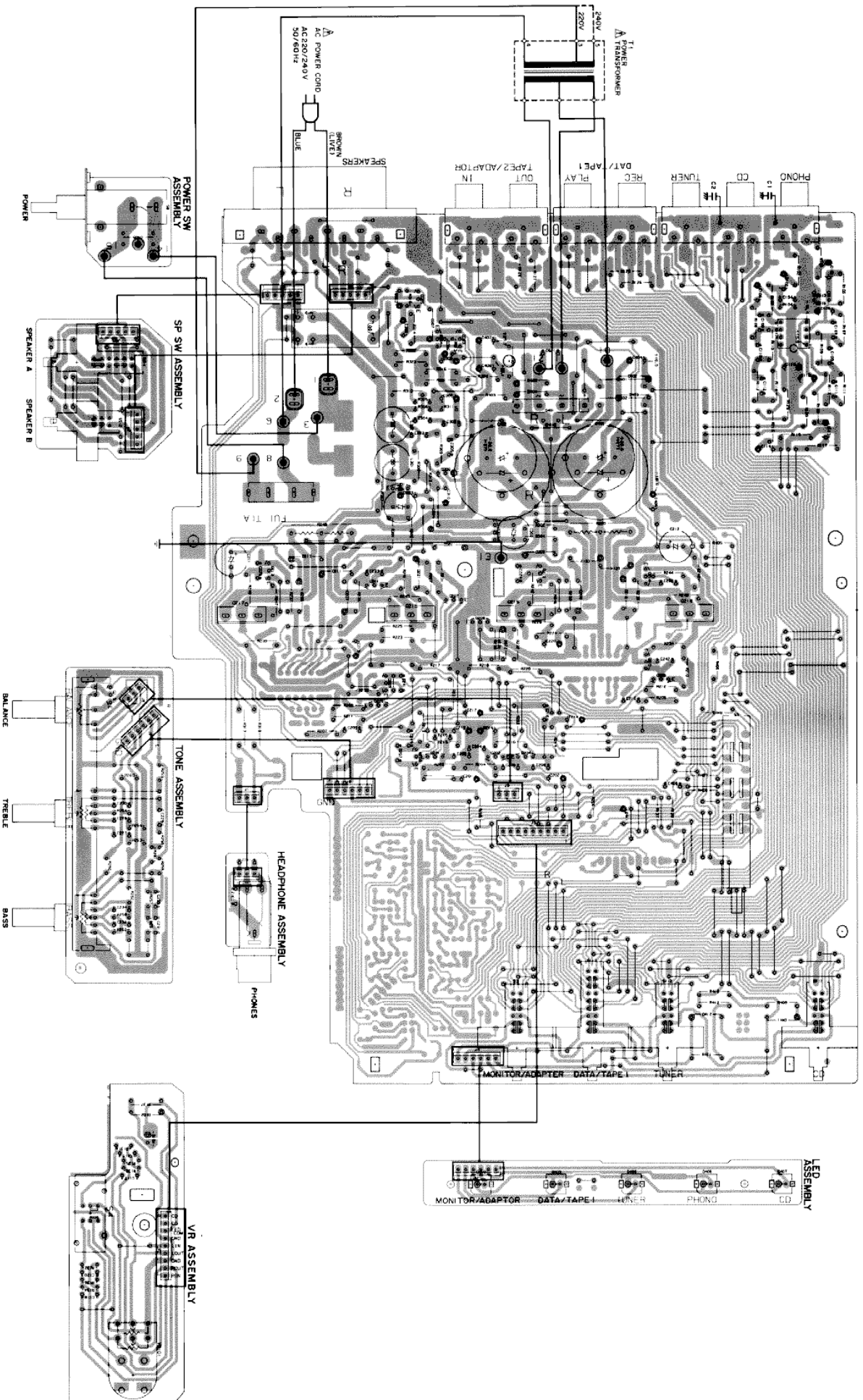
1 | 2 | 3 | 4 | 5 | 6



# 4. P.C. BOARDS CONNECTION DIAGRAM

• View from component side

AF ASSEMBLY AM21429  
 0305 0304 0303 0306 0301 0302 0214 0208 0211 0207 0215 0217 0210 0209 0205 0204 0202 0205


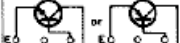

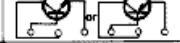










1 2 3 4 5 6

External Appearance of Transistors and ICs

NOTE

1. This P.C.B. connection diagram is viewed from the parts mounted side
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

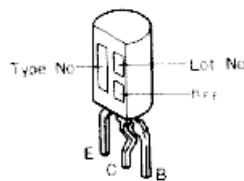
| P.C.B. pattern diagram indication  | Corresponding part symbol   | Part Name                |
|--|---|--------------------------|
|  |  | Transistor               |
|  |  | Radiator type transistor |
|  |  | Diode                    |
|  |  | Resistor                 |
|  |  | Capacitor (Polarity)     |
|  |  | Capacitor (Non-polarity) |

Others

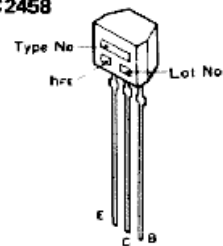
| P.C.B. pattern diagram indication | Part Name                                |
|-----------------------------------|--|
| IC                                | IC                                       |
| S                                 | Switch                                   |
| RY                                | Relay                                    |
| L                                 | Coil                                     |
| F                                 | Filter                                   |
| VR                                | Variable resistor or Semi-fixed resistor |

3. The capacitor terminal marked with ⊖ (double circles) shows negative terminal
4. The diode terminal marked with ⊕ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter

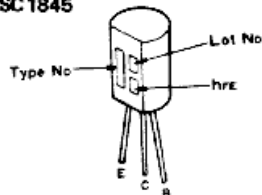
2SA965



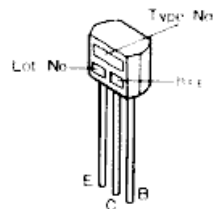
2SC2458



2SA992  
2SC1845



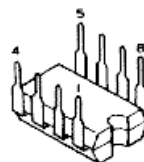
2SC2603



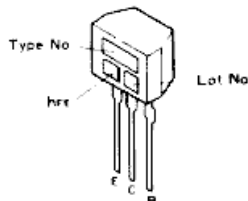
2SA1263N  
2SC3180N



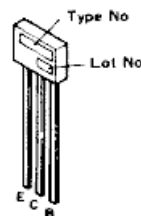
M5218P



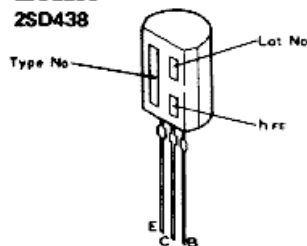
2SC1740S



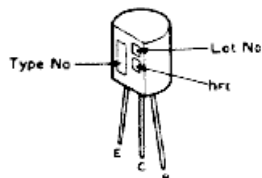
RN2201



2SC2235  
2SD438



2SC2240  
2SC2878



A

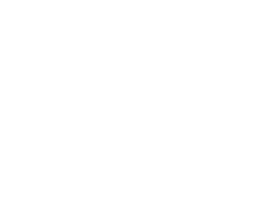
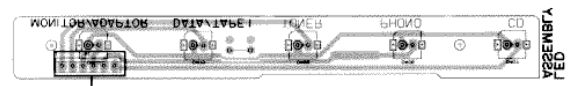
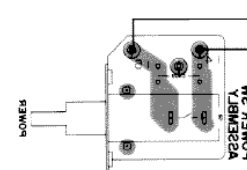
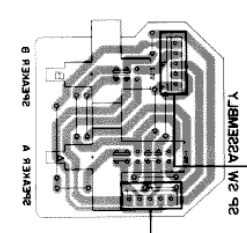
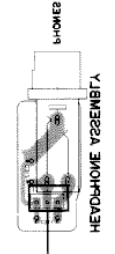
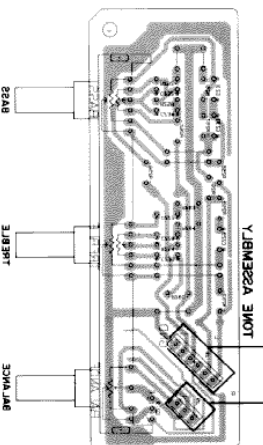
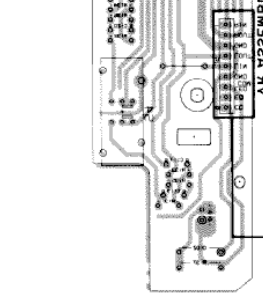
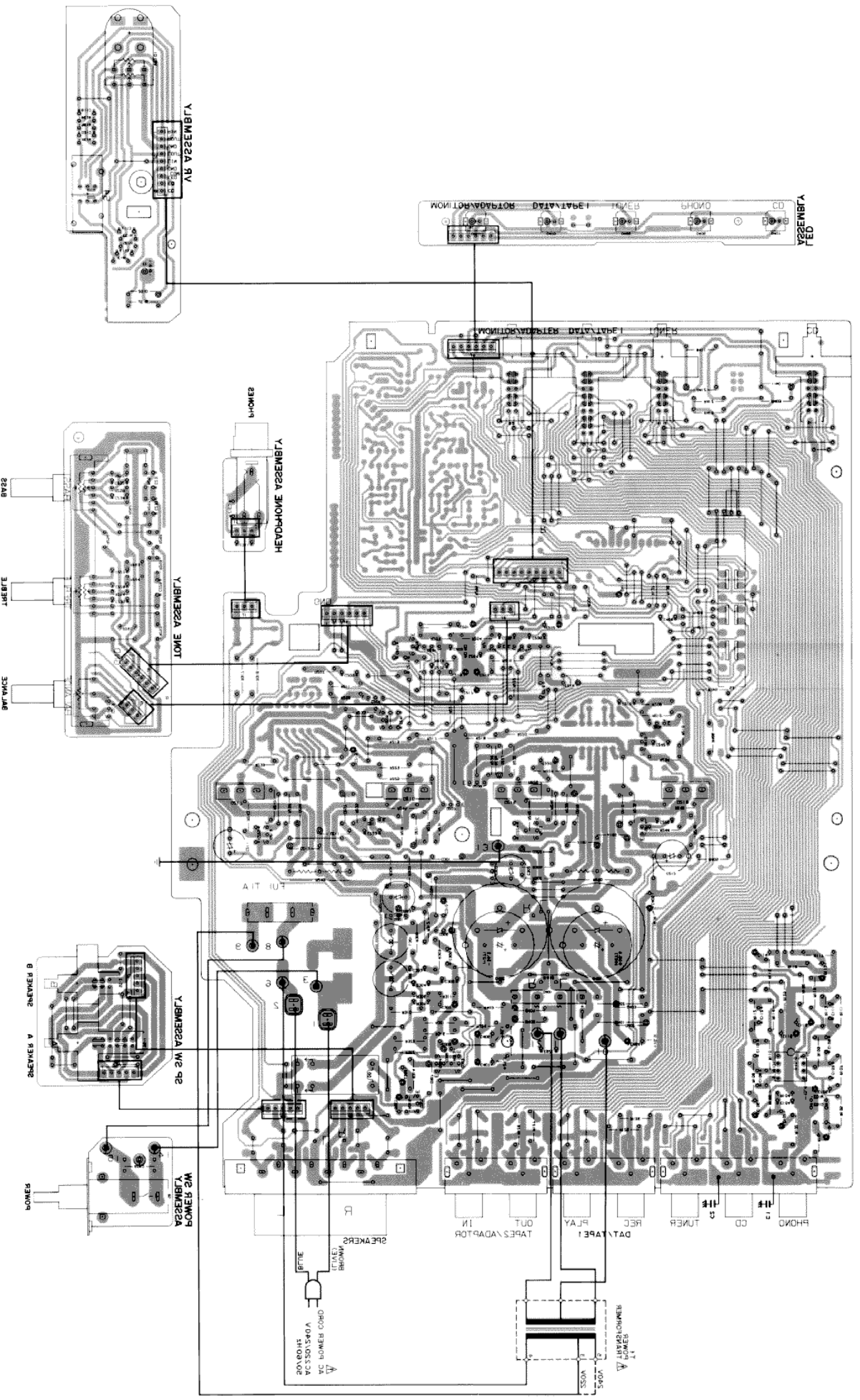
B

C

D

1 2 3 4 5 6 7 8 9

1 2 3 4 5 6 7 8 9



8320  
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 8990  
 8995  
 9000

A  
 B  
 C  
 D

## 5. ELECTRICAL PARTS LIST

### NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock, Their delivery time may be longer than usual or they may be unavailable.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part, Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks **★★** and **★**.

#### ★★ GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

|              |                  |     |         |      |
|--------------|------------------|-----|---------|------|
| 560 $\Omega$ | $56 \times 10^1$ | 561 | RD1/4PS | 561J |
| 47k $\Omega$ | $47 \times 10^3$ | 473 | RD1/4PS | 473J |
| 0,5 $\Omega$ | 0R5              |     | RN2H    | 0R5K |
| 1 $\Omega$   | 010              |     | RS1P    | 010K |

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

|                |                   |      |         |       |
|----------------|-------------------|------|---------|-------|
| 5,62k $\Omega$ | $562 \times 10^1$ | 5621 | RN1/4SR | 5621F |
|----------------|-------------------|------|---------|-------|

### Miscellaneous Parts

#### P. C. BOARD ASSEMBLY

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | AF assembly          | AWZ1429  |
|      | Tone assembly        |          |
|      | LED assembly         |          |
|      | VR assembly          |          |
|      | Headphone assembly   |          |
|      | SP SW assembly       |          |
|      | Power SW assembly    |          |

#### OTHERS

| Mark        | Symbol & Description            | Part No.    |
|-------------|---------------------------------|-------------|
| $\Delta$ ★★ | FU1 Fuse (T1.25A/250V)          | AEK-018     |
| $\Delta$    | AC power cord                   | ADG1021     |
| $\Delta$ ★  | T1 Power transformer (220/240V) | ATS1050     |
|             | C1                              | CKDYF473Z50 |
|             | C2                              | CQMA222K50  |

#### AF Assembly (AWZ1429)

#### SEMICONDUCTORS

| Mark        | Symbol & Description   | Part No.                     |
|-------------|------------------------|------------------------------|
| ★★          | IC101                  | M5218P                       |
| $\Delta$ ★★ | Q306                   | RN2201                       |
| ★★          | Q217, Q218             | 2SA1263N                     |
| ★★          | Q213, Q214             | 2SA965                       |
| ★★          | Q201-Q204              | 2SA992                       |
| ★★          | Q209, Q210             | 2SC1845                      |
| ★★          | Q211, Q212             | 2SC2235                      |
| ★★          | Q301, Q302             | 2SC2240                      |
| ★★          | Q205, Q206, Q303, Q304 | 2SC2603 (2SC1740S) (2SC2458) |
| ★★          | Q207, Q208             | 2SC2603                      |

| Mark       | Symbol & Description | Part No.          |
|------------|----------------------|-------------------|
| ★★         | Q215, Q216           | 2SC3180N          |
| ★★         | Q305                 | 2SD438            |
| $\Delta$ ★ | D221, D222           | AEL-437           |
| ★          | D401                 | RBV402            |
| ★          | D307                 | RD13EB (HZ13EB)   |
| ★          | D402, D403           | RD16EB (HZ16EB)   |
| ★          | D411, D412           | RD3.0EB (HZ3.0EB) |
| ★          | D209, D210           | RD4.7EB (HZ4.7EB) |
| ★          | D207, D208           | RD5.6EB (HZ5.6EB) |
| ★          | D404, D405           | 11E2 (S5566)      |
| ★          | D211-D214, D301-D306 | 1SS131            |

#### SWITCHES AND RELAY

| Mark | Symbol & Description       | Part No. |
|------|----------------------------|----------|
| ★★   | S1 Push switch (FUNCTION)  | ASG1015  |
| ★★   | S3 Push switch (CD DIRECT) | ASG1020  |
| ★★   | RY301 Relay                | ASR1005  |

#### COILS

| Mark | Symbol & Description     | Part No. |
|------|--------------------------|----------|
|      | L301, L302 AF Choke coil | ATH-133  |

#### CAPACITORS

| Mark | Symbol & Description          | Part No.                  |
|------|-------------------------------|---------------------------|
|      | C621 (0.01 $\mu$ F/AC150V)    | ACG1005                   |
|      | C401, C402 (6800 $\mu$ F/56V) | ACH1018                   |
|      | C215, C216                    | CCCSL030C50 (CCDSL030C50) |
|      | C203, C204                    | CCCSL101J50 (CCDSL101J50) |
|      | C223-C226                     | CCCSL101K500              |



| Mark   | Symbol & Description | Part No.   |
|--|----------------------|--|
| C241, C242<br>C207, C208   |                      | CCCSL150K50<br>CCCSL220J50<br>(CCDSL220J50)  |
| C206   |                      | CCCSL470J50<br>(CCDSL470J50)   |
| C205<br>C103, C104, C107, C108   |                      | CCDSL470J50<br>CCCSL221J50<br>(CCDSL221J50)  |
| C301, C302<br>C309, C310<br>C411<br>C308<br>C211, C212                                     |                      | CEANP2R2M50<br>CEAS010M50<br>CEAS101M10<br>CEAS101M16<br>CEAS101M50                  |
| C101, C102, C113, C114<br>C105, C106<br>C115, C116, C404, C405<br>C219, C220<br>C406, C407 |                      | CEAS2R2M50<br>CEAS470M10<br>CEAS470M25<br>CEAS470M35<br>CEAS470M50                   |
| C307<br>C201, C202, C217, C218<br>C213, C214<br>C121<br>C209, C210                         |                      | CEAS471M6<br>CEYA010M50<br>CEYA220M16<br>CKCYB103K50<br>CKCYB561K50<br>(CKDYB561K50) |
| C408   |                      | CKCYX473M25<br>(CKDYX473M25)   |
| C109, C110<br>C111, C112<br>C303-C306  |                      | CQMA222J50<br>CQMA822J50<br>CQMA823K50   |

## RESISTORS

| Mark  | Symbol & Description | Part No.  |
|---|----------------------|---|
| R249, R250 (0.47 $\Omega$ / 5W $\times$ 2)<br>R203, R204, R213-R220<br>R405, R406, R409, R410<br>R239, R240, R307-R310, R404<br>R245-R248 |                      | ACN-114<br>RDR $\frac{1}{4}$ PM□□□J<br>RD $\frac{1}{2}$ PM□□□J<br>RD $\frac{1}{4}$ PMFL□□□J<br>RD $\frac{1}{4}$ PMF151J |
| R103, R104, R107, R108,<br>R111-R114, R305, R306,<br>R311, R313, R315<br>R241-R244  |                      | RD $\frac{1}{8}$ JPM□□□J<br>RFA $\frac{1}{4}$ PS4R7J<br>RN $\frac{1}{4}$ PQ□□□□F<br>RS1LMF331J<br>RS2LMF□□□J            |
| R227, R228, R231, R232<br>R317, R318<br>R401, R402  |                      |   |
| Other resistors   |                      | RD $\frac{1}{4}$ PM□□□J   |

## OTHERS

| Mark | Symbol & Description                      | Part No. |
|------|---|----------|
|      | Pin jack 4P (DAT/TAPE1,<br>ADAPTOR/TAPE2) | AKB-115  |
|      | Pin jack 6P<br>(PHONO, CD, TUNER)         | AKB-117  |
|      | Terminal 8P (SPEAKERS)                    | AKE-111  |

## Tone Assembly

## SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★★   | Q219                 | 2SC2878  |

## CAPACITORS

| Mark | Symbol & Description                                 | Part No.   |
|------|--|--|
|      | C231, C232<br>C227, C228<br>C233, C234<br>C229, C230 | CQMA224K50<br>CQMA392K50<br>CQMA683K50<br>CQMA821K50 |

## RESISTORS

| Mark | Symbol & Description  | Part No.                           |
|------|---|------------------------------------|
| ★    | VR201 Variable resistor<br>(BASS, TREBLE, BALANCE)<br>Other resistors | ACT1014<br>RD $\frac{1}{8}$ PM□□□J |

## LED Assembly

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D406-D409            | AEL1015  |
| ★    | D410                 | AEL1056  |

## VR Assembly

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D101                 | AEL1032  |
| ★    | D102                 | RD2.2ESB |

## SWITCH

| Mark | Symbol & Description      | Part No. |
|------|---------------------------|----------|
| ★★   | S4 Push switch (LOUDNESS) | SPKV2S   |

**CAPACITORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u>              |
|-------------|---------------------------------|------------------------------|
|             | C119, C120                      | CCCSL560J50<br>(CCDSL560J50) |
|             | C117, C118                      | CKCYX473M25<br>(CKDYX473M25) |

**RESISTORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u>            | <u>Part No.</u>                                      |
|-------------|--|--|
| ★           | VR101 Variable resistor (250k)<br>(VOLUME) | ACT1024  |
|             | R137<br>Other resistors                    | RD $\frac{1}{4}$ PM271J<br>RD $\frac{1}{8}$ OPM □□□J |

**Headphone Assembly****CAPACITORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
|             | C311, C312                      | CKCYB472K50     |

**OTHERS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
|             | Jack (PHONES)                   | AKN1002         |

**SP SW Assembly****SWITCH**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
| ★★          | S5 Push switch (SPEAKERS)       | SUY8LYXS        |

**Power SW Assembly****SWITCH**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u>      |
|-------------|---------------------------------|----------------------|
| †★★         | S8 Push switch (POWER)          | ASG1007<br>(ASG1005) |

**CAPACITOR**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
| †           | C409 (0.01 $\mu$ F/400V)        | ACG1002         |

## 6. FOR A-223/HB, HEZ AND A-223-S/HEZ TYPES

### 6.1 CONTRAST OF MISCELLANEOUS PARTS

**NOTES :**

- Parts without part number cannot be supplied.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks **★★** and **★**.  
**★★ GENERALLY MOVES FASTER THAN ★.**  
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The **A-223/HB, HEZ** and **A-223-S/HEZ** types are the same as the **A-223/HE** type with the exception of the following sections.

| Mark        | Symbol & Description  | Part No.      |               |                         |                         | Remarks |
|-------------|---|---------------|---------------|-------------------------|-------------------------|---------|
|             |   | A-223 HE type | A-223 HB type | A-223 HEZ type          | A-223-S HEZ type        |         |
|             | AF assembly   | AWZ1429       | AWZ1429       | AWZ1430                 | AWZ1430                 |         |
| $\Delta$ ★★ | FU1 Fuse (T1.25A/250V)  | AEK-018       | .....         | AEK-018                 | AEK-081                 |         |
| $\Delta$ ★★ | FU1 Fuse (1.25A/250V)   | .....         | AEK-509       | .....                   | .....                   |         |
| $\Delta$    | AC power cord   | ADG1021       | ADG-063       | ADG1021                 | ADG1021                 |         |
|             | Bonnet case   | ANE1053       | ANE1053       | ANE1053                 | ANE1072                 |         |
|             | Front panel   | ANB1173       | ANB1173       | ANB1173                 | ANB1174                 |         |
|             | Panel base assembly   | AMB1319       | AMB1319       | AMB1319                 | AMB1320                 |         |
|             | Knob (VOLUME)   | AAB1061       | AAB1061       | AAB1061                 | AAB1062                 |         |
|             | Knob (BASS, TREBLE, BALANCE)  | AAB1075       | AAB1075       | AAB1075                 | AAB1077                 |         |
|             | Knob (POWER)  | AAD1343       | AAD1343       | AAD1343                 | AAD1344                 |         |
|             | Knob (CD, PHONO, TUNER, DAT/<br>TAPE1, ADPT/TAPE2)  | AAD1056       | AAD1056       | AAD1056                 | AAD1405                 |         |
|             | Terminal (GND)  | .....         | .....         | Non supply              | Non supply              |         |
|             | Push knob A (SPEAKERS)  | AAD1057       | AAD1057       | AAD1057                 | AAD1387                 |         |
|             | Push rod assembly   | AAD1345       | AAD1345       | AAD1345                 | AAD1346                 |         |
|             | Packing case  | AHD1379       | AHD1379       | AHD1379                 | AHD1380                 |         |
|             | Operating instructions<br>(English, German, French, Italian,<br>Dutch, Swedish, Spanish,<br>Portuguese) | ARE1076       | .....         | .....                   | .....                   |         |
|             | (English)   | .....         | ARB1118       | .....                   | .....                   |         |
|             | (German)  | .....         | .....         | ARC1079                 | ARC1079                 |         |
| R1          |   | .....         | .....         | RD $\frac{1}{2}$ PM100J | RD $\frac{1}{2}$ PM100J |         |
| C3          | (0.047 $\mu$ F/150V)  | .....         | .....         | ACG-009                 | ACG-009                 |         |
|             | Flange nut (M9)   | ANB1006       | ANB1006       | ABN1006                 | ABN-072                 |         |

## 6.2 FOR A-223/HEZ AND A-223-S/HEZ TYPES.

- As A-223-S/HEZ type is the silver model of A-223/HEZ type, the Electrical Parts List, Schematic Diagram and P.C. Board patterns are entirely the same as those of A-223/HEZ type.

### Electrical Parts List of A-223/HEZ and A-223-S/HEZ types

#### NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "⊕" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★ GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

|       |                      |     |              |                              |
|-------|----------------------|-----|--------------|------------------------------|
| 560 Ω | 56 × 10 <sup>1</sup> | 561 | .....RD1/4PS | <u>5</u> <u>6</u> <u>1</u> J |
| 47k Ω | 47 × 10 <sup>3</sup> | 473 | .....RD1/4PS | <u>4</u> <u>7</u> <u>3</u> J |
| 0.5 Ω | 0R5                  |     | .....RN2H    | <u>0</u> <u>R</u> <u>5</u> K |
| 1 Ω   | 010                  |     | .....RSIP    | <u>0</u> <u>1</u> <u>0</u> K |

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

|         |                       |      |              |                                       |
|---------|-----------------------|------|--------------|---------------------------------------|
| 5.62k Ω | 562 × 10 <sup>2</sup> | 5621 | .....RN1/4SR | <u>5</u> <u>6</u> <u>2</u> <u>1</u> F |
|---------|-----------------------|------|--------------|---------------------------------------|

#### Miscellaneous Parts

##### P. C. BOARD ASSEMBLY

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | AF assembly          | AWZ1430  |
|      | Tone assembly        |          |
|      | LED assembly         |          |
|      | VR assembly          |          |
|      | Headphone assembly   |          |
|      | SP SW assembly       |          |
|      | Power SW assembly    |          |

| Mark | Symbol & Description   | Part No.                           |
|------|------------------------|------------------------------------|
| ★★   | Q209, Q210             | 2SC1845                            |
| ★★   | Q211, Q212             | 2SC2235                            |
| ★★   | Q301, Q302             | 2SC2240                            |
| ★★   | Q205, Q206, Q303, Q304 | 2SC2603<br>(2SC1740S)<br>(2SC2458) |
| ★★   | Q207, Q208             | 2SC2603                            |
| ★★   | Q215, Q216             | 2SC3180N                           |
| ★★   | Q305                   | 2SD438                             |
| ⚠ ★  | D221, D222             | AEL-437                            |
| ★    | D401                   | RBV402                             |
| ★    | D307                   | RD13EB<br>(HZ13EB)                 |

#### OTHERS

| Mark | Symbol & Description               | Part No.    |
|------|------------------------------------|-------------|
| ⚠★★  | FU1 Fuse (T1.25A/250V)             | AEK-018     |
| ⚠★   | AC power cord                      | ADG1021     |
| ⚠★   | T1 Power transformer<br>(220/240V) | ATS1051     |
|      | C1                                 | CKDYF473Z50 |
|      | C2                                 | CQMA222K50  |
|      | C3 (0.047 μ F/150V)                | ACG-009     |
|      | R1                                 | RD¼PM100J   |

| Mark | Symbol & Description | Part No.             |
|------|----------------------|----------------------|
| ★    | D402, D403           | RD16EB<br>(HZ16EB)   |
| ★    | D411, D412           | RD3.0EB<br>(HZ3.0EB) |
| ★    | D209, D210           | RD4.7EB<br>(HZ4.7EB) |
| ★    | D207, D208           | RD5.6EB<br>(HZ5.6EB) |
| ★    | D404, D405           | 11E2<br>(S5566)      |
| ★    | D211-D214, D301-D306 | 1SS131               |

#### AF Assembly (AWZ1430)

#### SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★★   | IC101                | M5218P   |
| ⚠★★  | Q306                 | RN2201   |
| ★★   | Q217, Q218           | 2SA1263N |
| ★★   | Q213, Q214           | 2SA965   |
| ★★   | Q201-Q204            | 2SA992   |

#### SWITCHES AND RELAY

| Mark | Symbol & Description       | Part No. |
|------|----------------------------|----------|
| ★★   | S1 Push switch (FUNCTION)  | ASG1015  |
| ★★   | S3 Push switch (CD DIRECT) | ASG1020  |
| ★★   | RY301 Relay                | ASR1005  |

## COILS

| Mark | Symbol & Description                          | Part No. |
|------|---|----------|
|      | L301, L302, L601-L604<br>Inductor (1 $\mu$ H) | ATH-133  |

## CAPACITORS

| Mark | Symbol & Description   | Part No.   |
|------|--|--|
|      | C621 (0.01 $\mu$ F/AC150V)<br>C401, C402 (6800 $\mu$ F/56V)<br>C215, C216            | ACG1005<br>ACH1018<br>CCCSL030C50<br>(CCDSL030C50)<br>CCCSL101J50<br>(CCDSL101J50)<br>CCCSL101K500 |
|      | C203, C204   |  |
|      | C223-C226  |  |
|      | C241, C242<br>C206-C208  | CCCSL150K500<br>CCCSL470J50<br>(CCDSL470J50)   |
|      | C205<br>C301, C302<br>C309, C310   | CCDSL470J50<br>CEANP2R2M50<br>CEAS010M50   |
|      | C411<br>C308<br>C211, C212<br>C101, C102, C113, C114<br>C105, C106                   | CEAS101M10<br>CEAS101M16<br>CEAS101M50<br>CEAS2R2M50<br>CEAS470M10                                 |
|      | C115, C116, C404, C405<br>C219, C220<br>C406, C407<br>C307<br>C201, C202, C217, C218 | CEAS470M25<br>CEAS470M35<br>CEAS470M50<br>CEAS471M6<br>CEYA010M50                                  |
|      | C213, C214<br>C121<br>C103, C104<br>C107, C108, C601-C614<br>C209, C210              | CEYA220M16<br>CKCYB103K50<br>CKCYB331K50<br>CKCYB391K50<br>CKCYB561K50<br>(CKDYB561K50)            |
|      | C408   | CKCYX473M25<br>(CKDYX473M25)   |
|      | C109, C110<br>C615-C620<br>C111, C112<br>C303-C306                                   | CQMA222J50<br>CQMA472K50<br>CQMA822J50<br>CQMA823K50   |

## RESISTORS

| Mark        | Symbol & Description   | Part No.  |
|-------------|--|---|
|             | R249, R250 (0.47 $\Omega$ /5W $\times$ 2)<br>R203, R204, R213-R220<br>R405, R406, R409, R410<br>R239, R240, R307-R310, R404<br>R245-R248 | ACN-114<br>RDR $\frac{1}{4}$ PM $\square\square\square$ J<br>RD $\frac{1}{2}$ PM $\square\square\square$ J<br>RD $\frac{1}{4}$ PMFL $\square\square\square$ J<br>RD $\frac{1}{4}$ PMF151J |
| $\triangle$ | R103, R104, R107, R108,<br>R111-R114, R305, R306,<br>R311, R313, R315  | RD $\frac{1}{8}$ JPM $\square\square\square$ J  |
| $\triangle$ | R241-R244<br>R227, R228, R231, R232<br>R317, R318  | RFA $\frac{1}{4}$ PS4R7J<br>RN $\frac{1}{4}$ PQ $\square\square\square$ F<br>RS1LMF331J   |
| $\triangle$ | R401, R402<br>R412   | RS2LMF $\square\square\square$ J<br>RD $\frac{1}{4}$ PM332J   |
|             | Other resistors  | RD $\frac{1}{4}$ PM $\square\square\square$ J   |

## OTHERS

| Mark | Symbol & Description                      | Part No. |
|------|---|----------|
|      | Pin jack 4P (DAT/TAPE1,<br>ADAPTOR/TAPE2) | AKB-115  |
|      | Pin jack 6P<br>(PHONO, CD, TUNER)         | AKB-117  |
|      | Terminal 8P (SPEAKERS)                    | AKE-111  |

## Tone Assembly

## SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★★   | Q219                 | 2SC2878  |

## CAPACITORS

| Mark | Symbol & Description                                 | Part No.   |
|------|--|--|
|      | C231, C232<br>C227, C228<br>C233, C234<br>C229, C230 | CQMA224K50<br>CQMA392K50<br>CQMA683K50<br>CQMA821K50 |

## RESISTORS

| Mark | Symbol & Description  | Part No.   |
|------|---|--|
| ★    | VR201 Variable resistor<br>(BASS, TREBLE, BALANCE)<br>Other resistors | ACT1014<br>RD $\frac{1}{8}$ PM $\square\square\square$ J |

## LED Assembly

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D406-D409            | AEL1015  |
| ★    | D410                 | AEL1056  |

## VR Assembly

## SEMICONDUCTORS

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D101                 | AEL1032  |
| ★    | D102                 | RD2.2ESB |

## SWITCH

| Mark | Symbol & Description      | Part No. |
|------|---------------------------|----------|
| ★★   | S4 Push switch (LOUDNESS) | SPKV2S   |

**CAPACITORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u>              |
|-------------|---------------------------------|------------------------------|
|             | C119, C120                      | CCCSL560J50<br>(CCDSL560J50) |
|             | C117, C118                      | CKCYX473M25<br>(CKDYX473M25) |

**RESISTORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u>            | <u>Part No.</u>             |
|-------------|--|-----------------------------|
| ★           | VR101 Variable resistor (250k)<br>(VOLUME) | ACT1024                     |
|             | R137<br>Other resistors                    | RD¼PM271J<br>RD ¼ OPM □□□ J |

**Headphone Assembly****CAPACITORS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
|             | C311, C312                      | CKCYB472K50     |

**OTHERS**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
|             | Jack (PHONES)                   | AKN1002         |

**SP SW Assembly****SWITCH**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
| ★★          | S5 Push switch (SPEAKERS)       | SUY8LYXS        |

**Power SW Assembly****SWITCH**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u>      |
|-------------|---------------------------------|----------------------|
| ▲★★         | S8 Push switch (POWER)          | ASG1007<br>(ASG1005) |

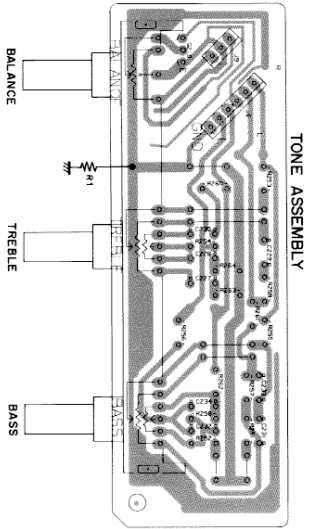
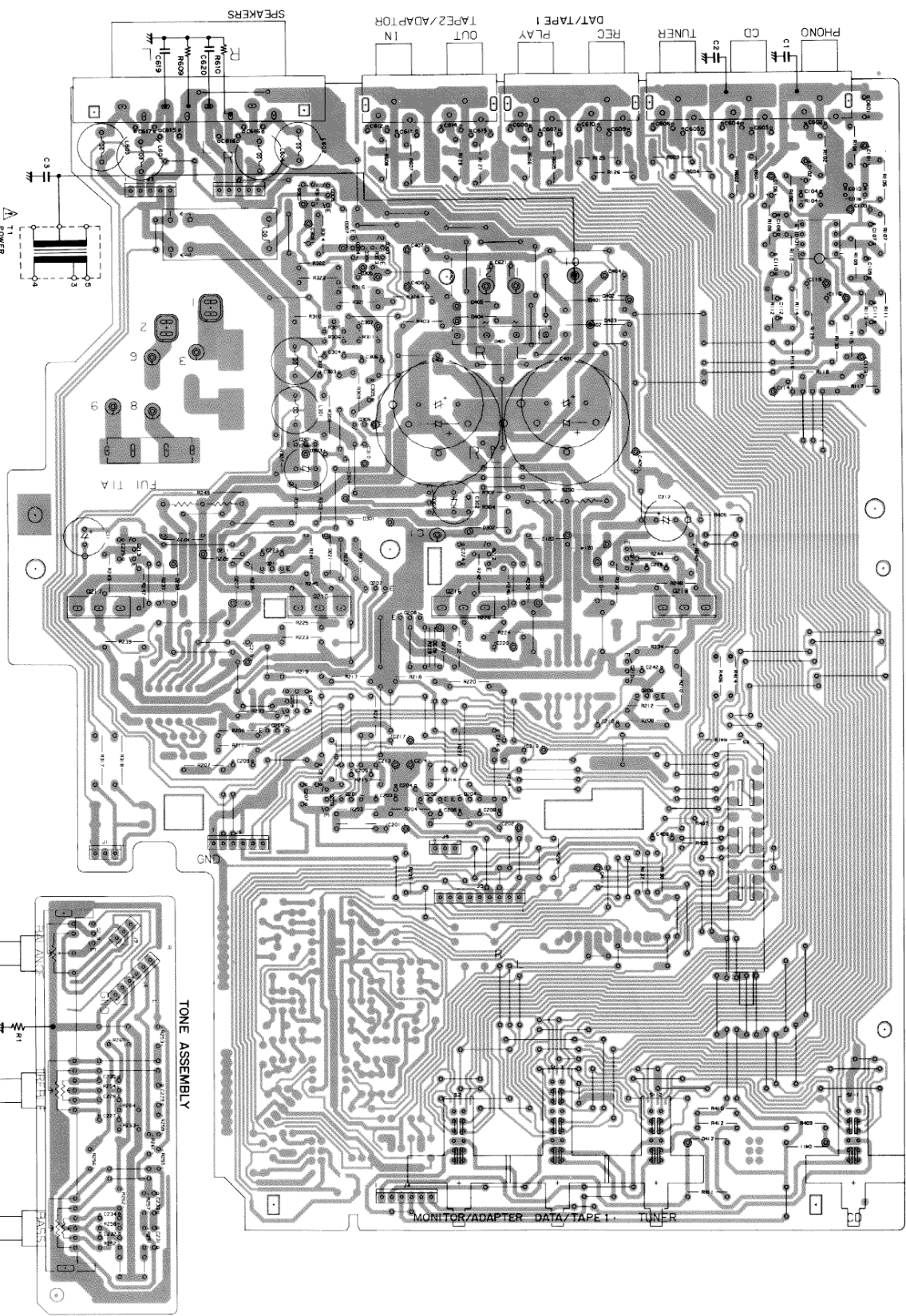
**CAPACITOR**

| <u>Mark</u> | <u>Symbol &amp; Description</u> | <u>Part No.</u> |
|-------------|---------------------------------|-----------------|
| ⊥           | C409 (0.01 μ F / 400V)          | ACG1002         |



6.4 P.C BOARD PATTERNS  
• View from component side

|                     |      |
|---------------------|------|
| AF ASSEMBLY AMZ1430 |      |
| 0303                | 0306 |
| 0304                | 0301 |
| 0302                | 0218 |
| 0214                | 0209 |
| 0212                | 0207 |
| 0213                | 0217 |
| 0210                | 0209 |
| 0205                | 0204 |
| 0202                | 0201 |
| 0203                | 0203 |



1 2 3 4 5

1 2 3 4 5 6

A B C D



• View from soldering side

6050  
5050  
1050  
6050

6050 6050

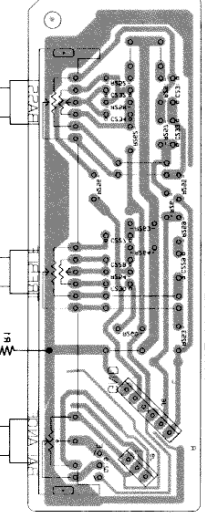
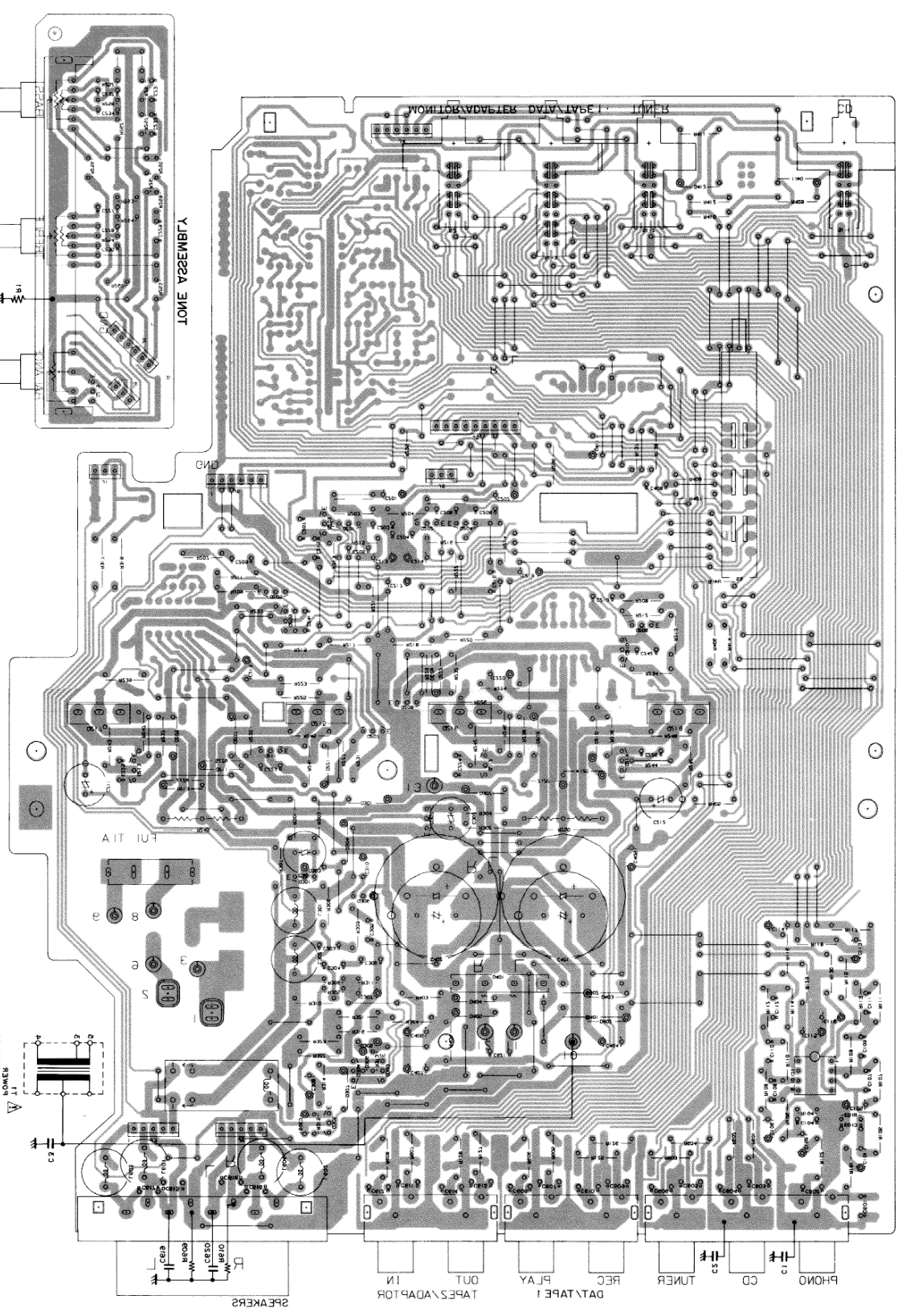
0150

6150  
7050  
7150  
7150  
7150  
7150

5050

6050  
1050

OFI12WA Y1BM322A 7A  
7050  
6050 6050



## 7. SPECIFICATIONS

### Amplifier Section

|   |                       |
|---|-----------------------|
| Continuous power output (both channels driven)                  |                       |
| 20 Hz to 20 kHz, T.H.D. 0.07%, 8 $\Omega$ .....                 | 30 W + 30 W           |
| DIN continuous power output (both channels driven)              |                       |
| 1 kHz, T.H.D. 1%, 8 $\Omega$ .....                              | 38 W + 38 W           |
| 1 kHz, T.H.D. 1%, 4 $\Omega$ .....                              | 45 W + 45 W           |
| IEC continuous power output (both channels driven)              |                       |
| 63 Hz to 12.5 kHz, T.H.D. 0.7%, 8 $\Omega$ .....                | 35 W + 35 W           |
| 63 Hz to 12.5 kHz, T.H.D. 0.7%, 4 $\Omega$ .....                | 40 W + 40 W           |
| Dynamic power output (on EIA dynamic test signal)               |                       |
| 8 $\Omega$ .....  | 50 W + 50 W           |
| 4 $\Omega$ .....  | 65 W + 65 W           |
| Total harmonic distortion (measured by Audio Spectrum Analyzer) |                       |
| 20 Hz to 20 kHz, 30 W, 8 $\Omega$ .....                         | 0.07%                 |
| Input sensitivity/impedance                                     |                       |
| PHONO.....  | 2.5 mV/50 k $\Omega$  |
| CD, TUNER, DAT/TAPE1 PLAY, ADAPTOR/TAPE2 (PLAY) IN              |                       |
| .....   | 150 mV/50 k $\Omega$  |
| PHONO overload level  |                       |
| 1 kHz, T.H.D. 0.1%.....   | 150 mV                |
| Output level/impedance  |                       |
| DAT/TAPE1 REC, ADAPTOR/TAPE2 (REC) OUT..                        | 150 mV/2.2 k $\Omega$ |
| Frequency response  |                       |
| PHONO 20 Hz to 20 kHz.....                                      | $\pm 0.5$ dB          |
| CD, TUNER, DAT/TAPE1, ADAPTOR/TAPE2 10 Hz to 70 kHz..           | $\pm \frac{1}{3}$ dB  |
| Tone control  |                       |
| BASS.....   | $\pm 8$ dB (100 Hz)   |
| TREBLE.....   | $\pm 8$ dB (10 kHz)   |

|   |                                 |
|---|---------------------------------|
| Loudness contour (volume control set at $-40$ dB position)..... |                                 |
|   | + 6 dB (100 Hz)/+ 3 dB (10 kHz) |
| Signal-to-Noise ratio (IHF short circuited, A network)          |                                 |
| PHONO (5 mV input).....   | 77 dB                           |
| CD (DIRECT).....  | 101 dB                          |
| CD, TUNER, DAT/TAPE1, ADAPTOR/TAPE2.....                        | 100 dB                          |
| Signal-to-Noise ratio (DIN, continuous power/50 mW)             |                                 |
| PHONO.....  | 67 dB/61 dB                     |
| CD, TUNER, DAT/TAPE1, ADAPTOR/TAPE2.....                        | 83 dB/63 dB                     |

### Power Supply/Miscellaneous

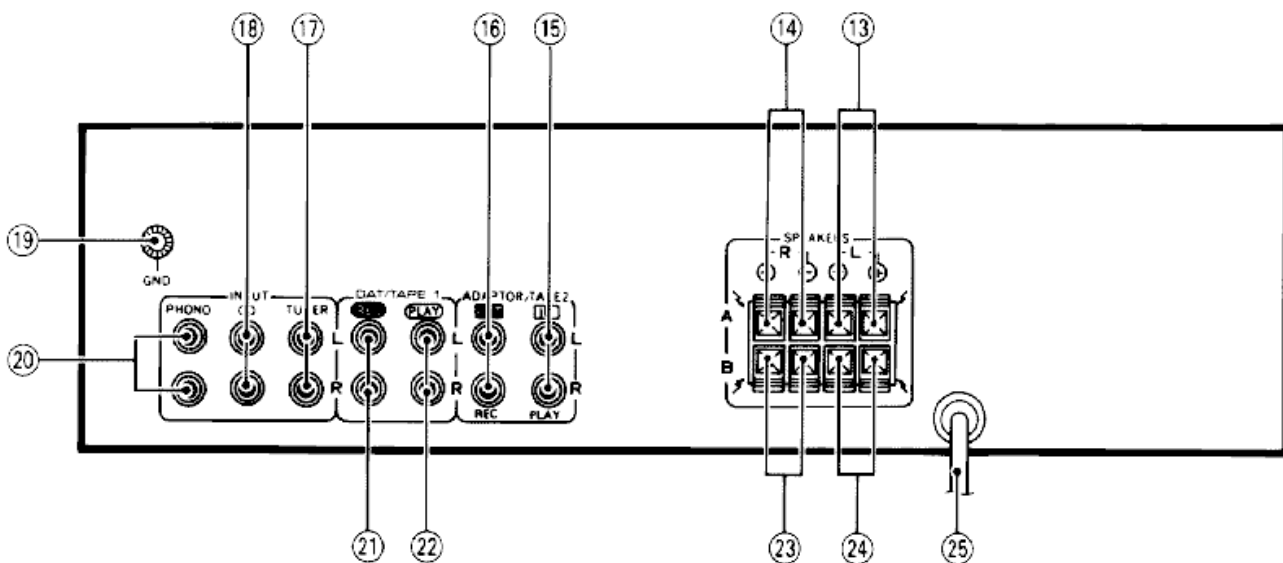
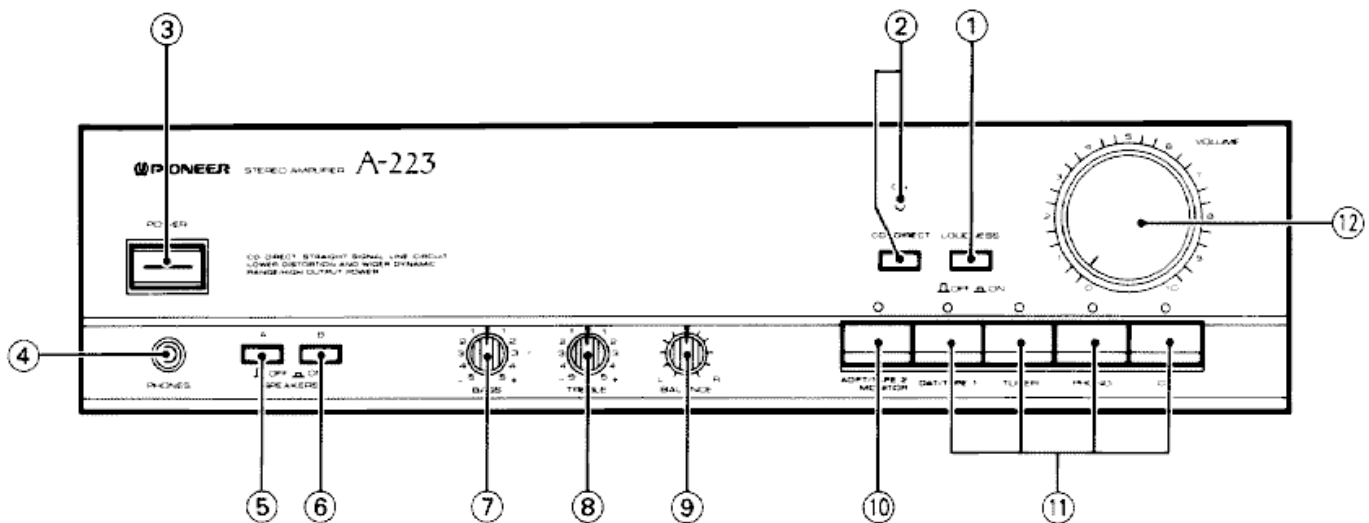
|                               |   |
|-------------------------------|---|
| Power requirements            |   |
| European model.....           | AC 220 V $\sim$ , 50/60 Hz  |
| U.K., Australian models.....  | AC 240 V $\sim$ , 50/60 Hz  |
| Other destination models..... | $\sim$ AC 110 V/120 $-$ 127V/<br>220 V/240 V (switchable), 50/60 Hz                                   |
| Power consumption             |   |
| European model.....           | 260 W   |
| U.K., Australian models.....  | 260 W   |
| Other destination models..... | 260 W   |
| Dimensions.....               | 420 (W) $\times$ 348 (D) $\times$ 110 (H) mm<br>16-1/2 (W) $\times$ 13-3/4 (D) $\times$ 4-5/16 (H) in |
| Weight.....                   | 5.9 kg (13 lb)  |

### Accessories

|                             |   |
|-----------------------------|---|
| Operating instructions..... | 1 |
|-----------------------------|---|

- *Specifications and design subject to possible modification without notice due to improvements.*

# 8. PANEL FACILITIES



## FRONT PANEL

### ① LOUDNESS switch

Use when listening at low-volume levels.

[OFF] — Released position: Should normally be left in this position.  
 [ON] — Depressed position: Boosts low and high frequencies to give added punch to play back even at low volume.

### ② CD DIRECT switch/indicator

Use this switch/indicator when you do not wish to pass the output from a piece of equipment connected to the CD terminals through the various frequency adjusting circuits (BASS, TREBLE, BALANCE).

The LOUDNESS circuit will continue to operate, however.

[ON] — When the switch is in this position, the indicator lights and the signals input from the CD terminals are reproduced without passing through the various frequency adjusting circuits.

This results in flat, pure sound which is a more faithful reproduction of the digital source.

[OFF] — When the switch is in this position, the indicator goes out, and the signal selected by the FUNCTION switches are reproduced.

#### NOTE:

*When this switch is ON, the signals from the source connected to the CD terminals are output from the speaker system, and also the signals from the source selected by the FUNCTION switch are output from the DAT/TAPE 1 REC terminal and the ADAPTOR/TAPE 2 OUT terminal. Consequently, if you wish to compensate the sound from the source connected to the CD terminals using recording equipment or an adaptor, press the CD function switch to select the source connected to the CD terminals.*

### ③ POWER switch

Press to turn power to the unit ON and OFF.

### ④ PHONES jack

When using headphones, insert headphone plug into this jack.

### ⑤ SPEAKERS A selector switch

Use this switch to listen to the speaker systems connected to the SPEAKERS A terminals.

[ON] — Depressed position: Sound is heard from the speaker systems.

[OFF] — Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

### ⑥ SPEAKERS B selector switch

Use this switch to listen to the speaker systems connected to the SPEAKERS B terminals.

[ON] — Depressed position: Sound is heard from the speaker systems.

[OFF] — Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

#### NOTE:

*When the speaker system is connected to only one speaker terminal (A or B) and both A and B selector switches are ON, there will be no sound. Turn ON only the selector to which the speaker system is connected.*

### ⑦ BASS tone control

Use to adjust the low-frequency tone. The center position is the flat (normal) position. When turned to the right, low-frequency tones are emphasized; when turned to the left, low-frequency tones are de-emphasized.

#### NOTE:

*This function does not operate when the CD DIRECT switch is in the ON position.*

### ⑧ TREBLE tone control

Use to adjust the high-frequency tone.

The center position is the flat (normal) position. When turned to the right, high-frequency tones are emphasized; when turned to the left, high-frequency tones are de-emphasized.

#### NOTE:

*This function does not operate when the CD DIRECT switch is in the ON position.*

### ⑨ BALANCE control

Should normally be left in the center position. Adjust balance if the sound is louder from one of the speakers. If the right side is louder, turn toward the L (left) position and if the left side is louder, turn toward the R (right) position.

#### NOTE:

*This function does not operate when the CD DIRECT switch is in the ON position.*

### ⑩ ADPT/TAPE 2 MONITOR switch/indicator

Use when there is an adaptor component (graphic equalizer, etc.) or tape deck connected to the ADAPTOR/TAPE 2 terminals.

[OFF] — Indicator goes out when not in use.

[ON] — Indicator lights when using the adaptor component or listening to the tape deck.

#### NOTE:

*When no connections are made to the ADAPTOR/TAPE 2 terminals, or when they are not in use, be sure to set this switch to the OFF position. (No sound will be heard if it is set to the ON position.)*

### ⑪ FUNCTION switches/indicators

Use to select playback source.

[CD] — Press when listening to a compact disc playback with a CD player.

[PHONO] — Press when listening to record playback on a turntable.

[TUNER] — Press when listening to AM or FM broadcasts with a tuner.

[DAT/TAPE 1] — Press when listening to tape playback with a tape deck or a DAT deck.

### ⑫ VOLUME control

Use to adjust volume level

Turn to the right side to increase volume.

Turn to the left side to decrease volume.

**REAR PANEL**

- ⑬ **SPEAKERS A terminals (left channel)**
- ⑭ **SPEAKERS A terminals (right channel)**
- ⑮ **ADAPTOR/TAPE 2 IN (PLAY) terminals**
- ⑯ **ADAPTOR/TAPE 2 OUT (REC) terminals**
- ⑰ **TUNER terminals**
- ⑱ **CD terminals**
- ⑲ **Turntable ground terminal (GND)**
- ⑳ **PHONO terminals**
- ㉑ **DAT/TAPE 1 REC terminals**
- ㉒ **DAT/TAPE 1 PLAY terminals**
- ㉓ **SPEAKERS B terminals (right channel)**
- ㉔ **SPEAKERS B terminals (left channel)**
- ㉕ **Power cord**  
Connect this cord to an AC wall socket, or the AC outlet of an audio timer.