

# Service Manual

ORDER NO.  
RRV1139

COMPACT DISC PLAYER

# PD-S603

## PD-S603-G

- Refer to the service manual ARP2765 for PD-S602/  
WEMXK.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Type  | Model   |           | Power Requirement | Remarks |
|-------|---------|-----------|-------------------|---------|
|       | PD-S603 | PD-S603-G |                   |         |
| WEMXK | ○       | ○         | AC220 - 240V      |         |

# 1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSÆTTELSE FOR STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER  
Picture 1  
Warning sign for  
laser radiation

IMPORTANT

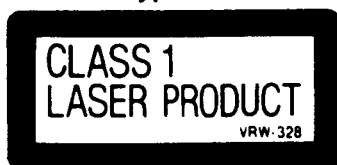
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm

## LABEL CHECK

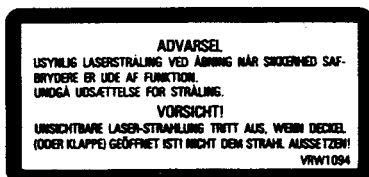
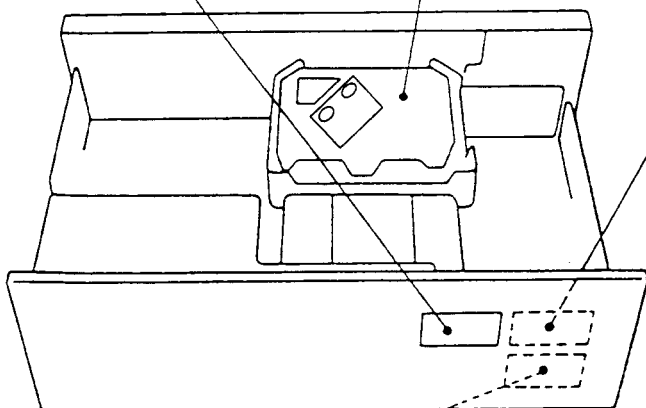
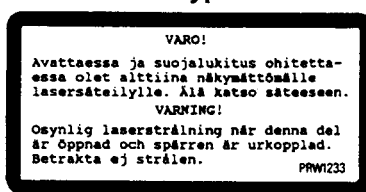
WEMXK type



WEMXK type



WEMXK type



WEMXK type

## Additional Laser Caution

### 1. Laser Interlock Mechanism

The position of the switch (S601) for detecting loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not on CLMP terminal side (CLMP signal is OFF or high level).

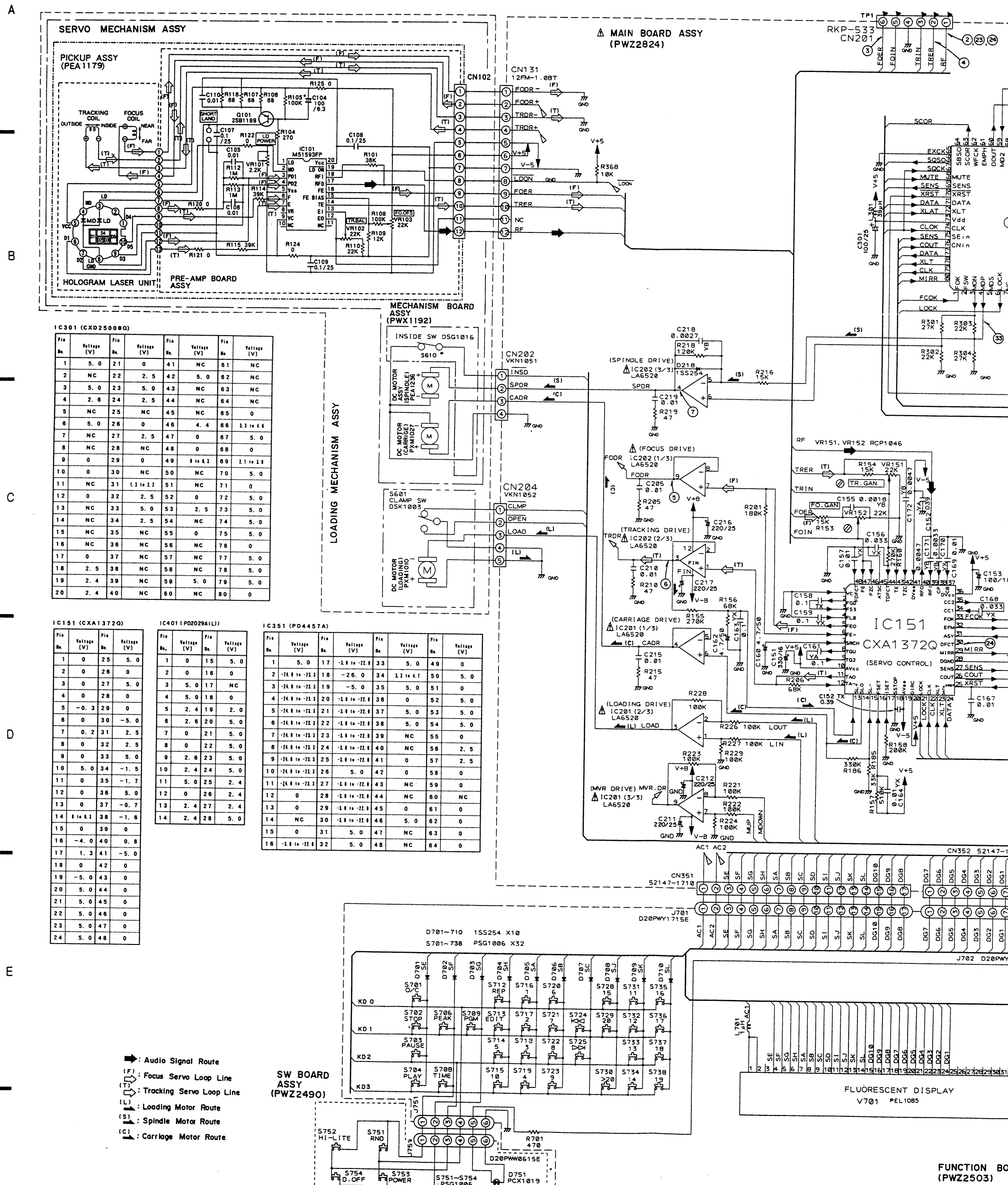
Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (low level). The interlock also does not function in the test mode \*. Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE AMP BOARD ASSY mounted on the pickup assembly is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

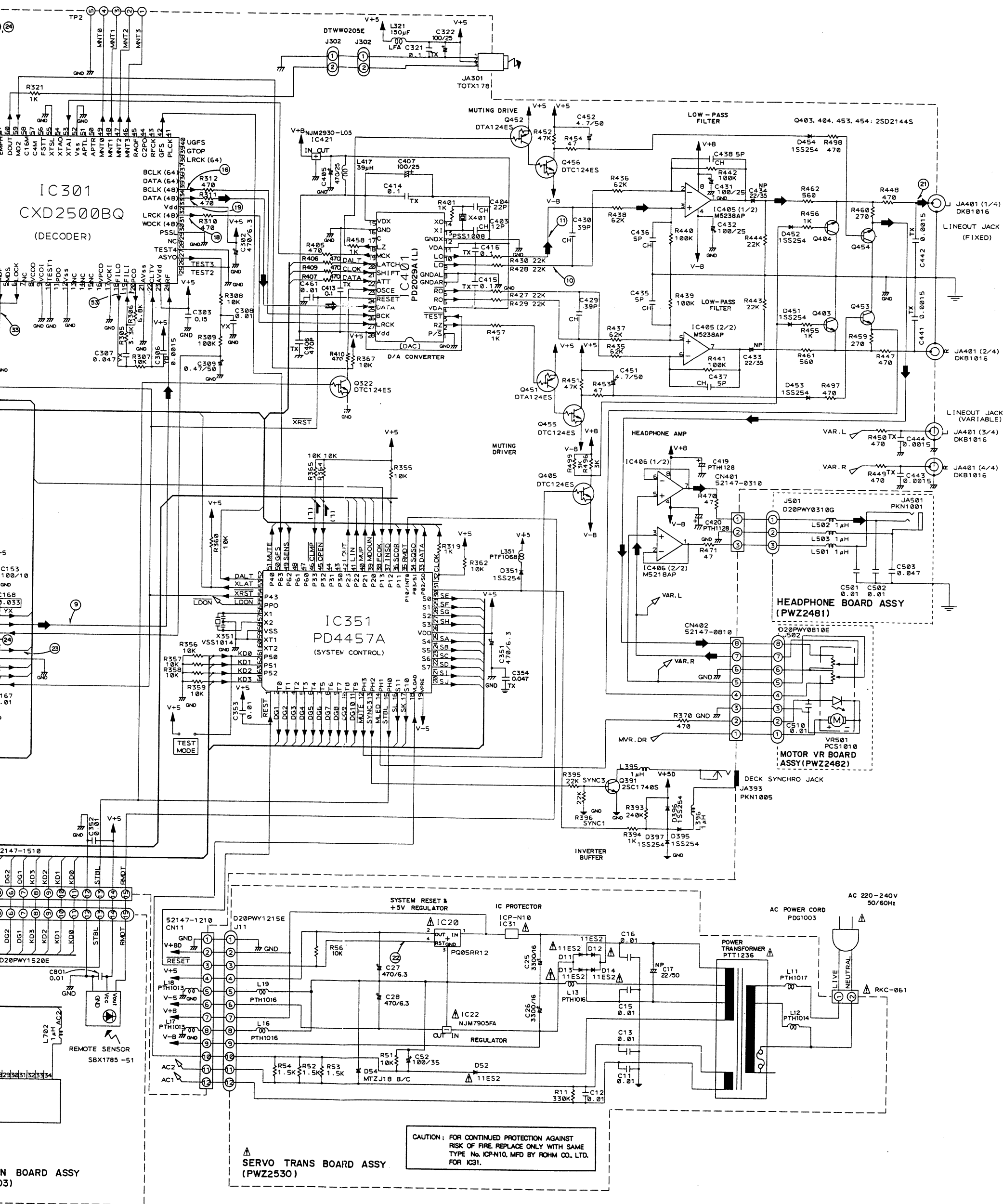
### 2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

92S1B

\* Refer to page 26 on the service manual ARP2765.

## 3. SCHEMATIC DIAGRAM





2. CONTRAST OF MISCELLANEOUS PARTS

- NOTES:
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
  - 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.
  - Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
  - 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 ..... RD1/8PM 

|   |   |   |
|---|---|---|
| 5 | 6 | 1 |
|---|---|---|

 J
- 47k Ω → 47 × 10<sup>3</sup> → 473 ..... RD1/4PS 

|   |   |   |
|---|---|---|
| 4 | 7 | 3 |
|---|---|---|

 J
- 0.5 Ω → 0R5 ..... RN2H 

|   |   |   |
|---|---|---|
| 0 | R | 5 |
|---|---|---|

 K
- 1 Ω → 010 ..... RS1P 

|   |   |   |
|---|---|---|
| 0 | 1 | 0 |
|---|---|---|

 K
- Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- 5.62k Ω → 562 × 10<sup>1</sup> → 5621 ..... RN1/4PC 

|   |   |   |   |
|---|---|---|---|
| 5 | 6 | 2 | 1 |
|---|---|---|---|

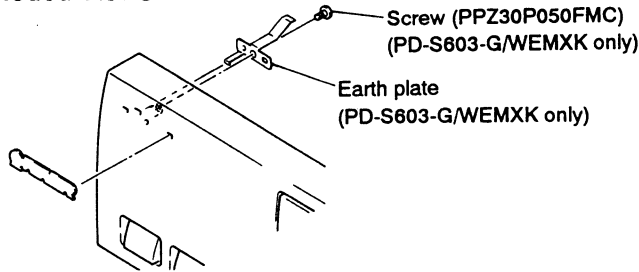
 F

■ CONTRAST OF PD-S603/WEMXK, PD-S603-G/WEMXK and PD-S602/WEMXK

PD-S603/WEMXK, PD-S603-G/WEMXK and PD-S602/WEMXK have the same construction except for the following:

| Mark                   | Symbol & Description                                                                           | Part No.          |                   |                     | Remarks      |
|------------------------|------------------------------------------------------------------------------------------------|-------------------|-------------------|---------------------|--------------|
|                        |                                                                                                | PD-S602/<br>WEMXK | PD-S603/<br>WEMXK | PD-S603-G/<br>WEMXK |              |
| ⚠<br>NSP<br>⚠<br>⚠ NSP | MAIN board assembly                                                                            | PWZ2480           | PWZ2824           | PWZ2824             |              |
|                        | FUNCTION board assembly                                                                        | PWZ2489           | Not used          | Not used            |              |
|                        | FUNCTION board assembly                                                                        | Not used          | PWZ2503           | PWZ2503             |              |
|                        | SERVO TRANS board assembly                                                                     | PWZ2492           | Not used          | Not used            |              |
|                        | SERVO TRANS board assembly                                                                     | Not used          | PWZ2530           | PWZ2530             |              |
| NSP                    | Function panel assembly                                                                        | PEA1262           | Not used          | Not used            | For Exterior |
|                        | Tray lens                                                                                      | PNW2242           | Not used          | Not used            |              |
|                        | Tray name plate                                                                                | PNW2244           | PNW2457           | PNW2458             |              |
|                        | Power button                                                                                   | PAC1712           | PAC1712           | PAC1779             |              |
|                        | 26 key                                                                                         | PAC1715           | PAC1715           | PAC1781             |              |
|                        | Function button                                                                                | PAC1713           | PAC1713           | PAC1780             | For knob C   |
|                        | PIONEER badge                                                                                  | PAM1608           | PAM1608           | RAN1011             |              |
|                        | Function panel                                                                                 | PNW2246           | PNW2463           | PNW2464             |              |
|                        | Rear base                                                                                      | PNA1925           | Not used          | Not used            |              |
|                        | Rear base                                                                                      | Not used          | PNA2129           | PNA2131             |              |
| NSP                    | Bonnet                                                                                         | PYY1162           | PYY1162           | PYY1177             | For knob C   |
|                        | Knob C                                                                                         | RAC1608           | RAC1608           | Not used            |              |
|                        | Headphone knob                                                                                 | Not used          | Not used          | PAC1680             |              |
|                        | Earth plate                                                                                    | Not used          | Not used          | PBK1132             |              |
|                        | Operating instructions<br>(English/French/German/Italian/Dutch/<br>Swedish/Spanish/Portuguese) | PRE1173           | PRE1204           | PRE1204             | For Packing  |
|                        | Remote control unit                                                                            | PWW1060           | PWW1060           | PWW1095             |              |
|                        | Battery lid                                                                                    | PZN1001           | PZN1001           | PZN1013             |              |
|                        | CD packing case                                                                                | PHG1873           | PHG2041           | PHG2043             |              |

● Exploded Views



FUNCTION BOARD ASSEMBLY

PWZ2503 and PWZ2489 have the same construction except for the following:

| Mark | Symbol & Description                            |
|------|-------------------------------------------------|
|      | C801<br>V701 FL INDICATOR TUBE<br>REMOTE SENSOR |

SERVO TRANS BOARD ASSEMBLY

PWZ2530 and PWZ2492 have the same construction except for the following:

| Mark | Symbol & Description                                                   |
|------|------------------------------------------------------------------------|
|      | IC22<br>L11<br>L12<br>L13, L16, L19<br>C17<br><br>C25, C26<br>C27, C28 |

■ PARTS LIST FOR PD-S603/WEMXK AND PD-S603-G/WEMXK

Mark No. Description Part No.

MAIN BOARD ASSEMBLY (PWZ2824)

SEMICONDUCTORS

|   |                        |            |
|---|------------------------|------------|
|   | IC151                  | CXA1372Q   |
|   | IC301                  | CXD2500BQ  |
| ⚠ | IC201, IC202           | LA6520     |
|   | IC406                  | M5218AP    |
|   | IC405                  | M5238AP    |
|   | IC421                  | NJM2930L05 |
|   | IC401                  | PD2029A(L) |
|   | IC351                  | PD4457A    |
|   | Q391                   | 2SC1740S   |
|   | Q403, Q404, Q453, Q454 | 2SD2144S   |
|   | Q451, Q452             | DTA124ES   |
|   | Q322, Q405, Q455, Q456 | DTC124ES   |
|   | D218, D351, D395-D397  | 1SS254     |
|   | D451-D454              | 1SS254     |

COILS AND FILTERS

|  |            |         |
|--|------------|---------|
|  | L395, L396 | LAU010K |
|  | L301, L417 | LAU390J |
|  | L321       | LFA151J |
|  | L17, L18   | PTH1013 |
|  | L351       | RTF1068 |

CAPACITORS

|  |            |            |
|--|------------|------------|
|  | C435-C438  | CCCCH050C5 |
|  | C403       | CCCCH120J5 |
|  | C404       | CCCCH220J5 |
|  | C429, C430 | CCCCH390J5 |
|  | C433, C434 | CEANP220M3 |

PD-S603, PD-S603-G

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
Unit: k:K $\Omega$ , M:M $\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$ , (M):  $\pm 20\%$  or  $\pm 5\%$  unless otherwise noted.

4. CAPACITORS:  
Unit: p:pF or  $\mu$ F unless otherwise noted.  
Ratings: capacitor ( $\mu$ F)/ voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
Unit: m:mH or  $\mu$ H unless otherwise noted.

6. VOLTAGE AND CURRENT:  
 or  $\sim$  V;  
DC voltage (V) in PLAY mode unless otherwise noted.  
 $\leftrightarrow$  mA or  $\sim$  mA;  
DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

7. OTHERS:  
 or :  
• The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.  
• SCH-□ ON THE SCHEMATIC DIAGRAM:  
• SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

|                         |      |                |
|-------------------------|------|----------------|
| FUNCTION BOARD ASSEMBLY | S701 | : OPEN/CLOSE   |
| SW BOARD ASSEMBLY       | S751 | : RANDOM       |
|                         | S752 | : HI-LITE SCAN |
|                         | S753 | : POWER        |
|                         | S754 | : DISPLAY OFF  |
|                         | S706 | : PEAK SEARCH  |
|                         | S708 | : TIME         |
|                         | S709 | : PGM          |
|                         | S712 | : REPEAT       |
|                         | S713 | : EDIT         |
|                         | S714 | : 5            |
|                         | S715 | : 10           |
|                         | S716 | : 1            |
|                         | S717 | : 2            |
|                         | S718 | : 3            |
|                         | S719 | : 4            |
|                         | S720 | : 6            |
|                         | S721 | : 7            |
|                         | S722 | : 8            |
|                         | S723 | : 9            |
|                         | S724 | : 10           |
|                         | S725 | : 11           |
|                         | S728 | : 15           |
|                         | S729 | : 20           |
|                         | S730 | : > 20         |
|                         | S731 | : 11           |
|                         | S732 | : 12           |
|                         | S733 | : 13           |
|                         | S734 | : 14           |
|                         | S735 | : 16           |
|                         | S736 | : 17           |
|                         | S737 | : 18           |
|                         | S738 | : 19           |

n except for the following:

|  | Part No.                            |                                        | Remarks |
|--|-------------------------------------|----------------------------------------|---------|
|  | PWZ2489                             | PWZ2503                                |         |
|  | Not used<br>PEL1073<br>SBX1610 - 51 | CKCYF103Z50<br>PEL1085<br>SBX1785 - 51 |         |

LY  
n except for the following:

|  | Part No.                                                                                   |                                                                                     | Remarks |
|--|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|
|  | PWZ2492                                                                                    | PWZ2530                                                                             |         |
|  | NJM79L05A<br>Not used<br>Not used<br>Not used<br>Not used<br><br>CEAS472M16<br>CEAS471M6R3 | NJM7905FA<br>PTH1017<br>PTH1014<br>PTH1016<br>CEANP220M50<br><br>PCH1120<br>PCH1123 |         |

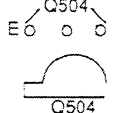
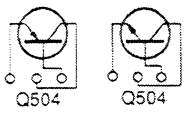
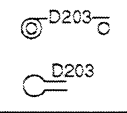
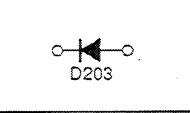
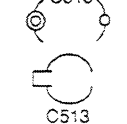
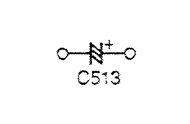
ND PD-S603-G/WEMXK

| Part No. | Mark | No.                             | Description | Part No. |
|----------|------|---------------------------------|-------------|----------|
| 824)     |      | C153                            | CEAS101M10  |          |
|          |      | C151                            | CEAS331M16  |          |
|          |      | C160, C162, C451, C452          | CEAS4R7M50  |          |
|          |      | C309                            | CEASR47M50  |          |
|          |      | C301, C322, C407, C431, C432    | CENA101M25  |          |
| 2Q       |      | C405                            | CENA471M25  |          |
| OBQ      |      | C158, C321, C413-C416           | CFTXA104J50 |          |
|          |      | C441-C444                       | CFTXA152J50 |          |
| P        |      | C152                            | CFTXA394J50 |          |
| P        |      | C406                            | CFTXA471J50 |          |
| OL05     |      | C161                            | CFTYA104J50 |          |
| A(L)     |      | C157, C164, C169, C308          | CGCYX103K25 |          |
| A.       |      | C159, C163                      | CGCYX104K25 |          |
| OS       |      | C156, C168                      | CGCYX333K25 |          |
| 4S       |      | C307, C354                      | CGCYX473K25 |          |
| ES       |      | C306                            | CKCYB152K50 |          |
| ES       |      | C155                            | CKCYB182K50 |          |
|          |      | C218                            | CKCYB272K50 |          |
|          |      | C170                            | CKCYB332K50 |          |
|          |      | C171, C172                      | CKCYB472K50 |          |
|          |      | C167, C205, C210, C215, C219    | CKCYF103Z50 |          |
|          |      | C352, C353, C461                | CKCYF103Z50 |          |
|          |      | C303                            | CQMA154J50  |          |
|          |      | C302, C351 (470/6.3)            | PCH1123     |          |
|          |      | C211, C212, C216, C217 (220/25) | PCH1128     |          |
| 50C50    |      | C419, C420 (220/25)             | PCH1128     |          |
| 20J50    |      |                                 |             |          |
| 20J50    |      |                                 |             |          |
| 90J50    |      |                                 |             |          |
| 20M35    |      |                                 |             |          |

4. PCB DIAGRAM

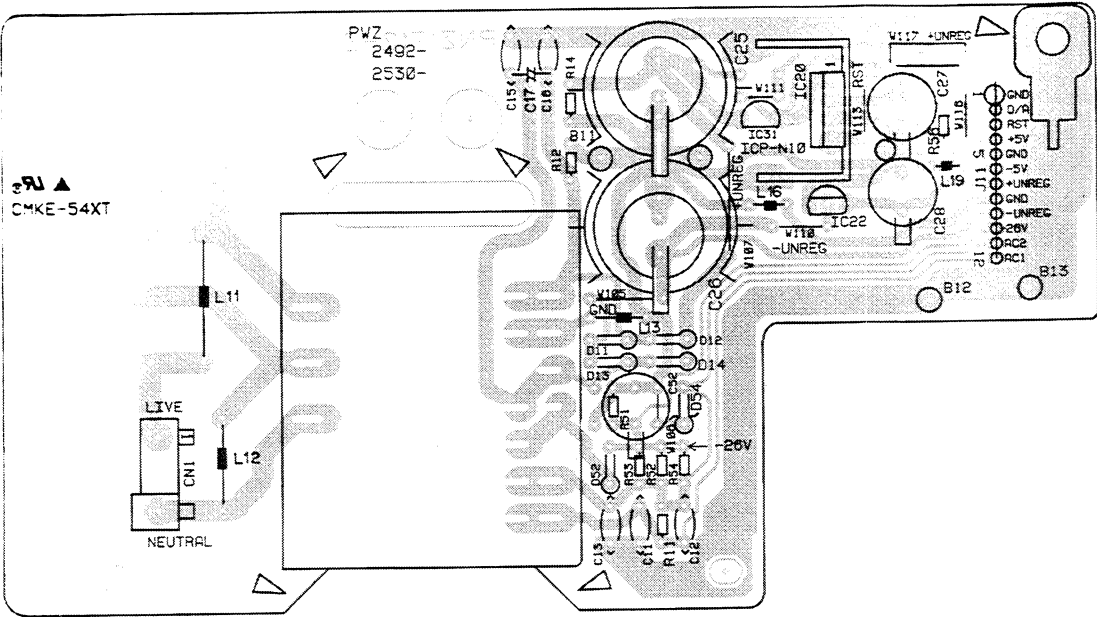
• This diagram is viewed from the mounted parts side.

NOTE FOR PCB DIAGRAMS:  
1. Part numbers in PCB diagrams match those in the schematic diagrams.  
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

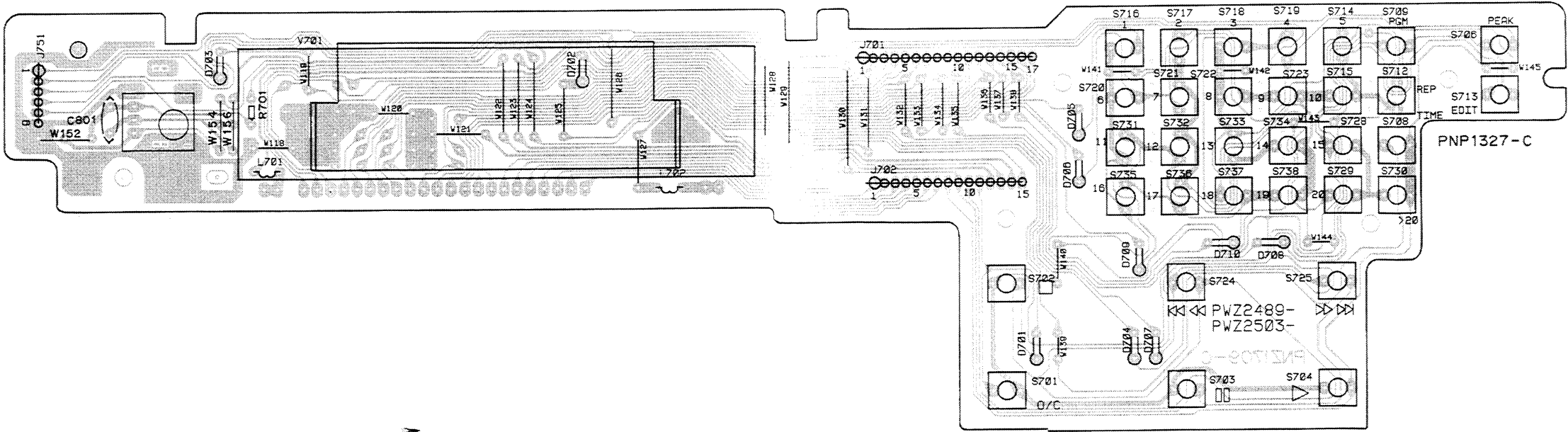
| Symbol in PCB Diagrams                                                                    | Symbol in Schematic Diagrams                                                              | Part Name                |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------|
| <br>Q504 | <br>Q504 | Transistor               |
| <br>D203 | <br>D203 | Diode                    |
| <br>C513 | <br>C513 | Capacitor<br>(Polarized) |

3. The transistor terminal marked with E or  shows the emitter.  
4. The diode terminal marked with  or  shows cathode side.  
5. The capacitor terminal marked with  or  shows negative terminal.

SERVO TRANS BOARD ASSY



FUNCTION BOARD ASSY



Q391

Q454  
Q404  
IC406

Q453  
Q403

Q456  
IC405  
Q405  
IC151  
IC421  
Q452  
Q455

Q451

IC202 IC401

VR152

Q322

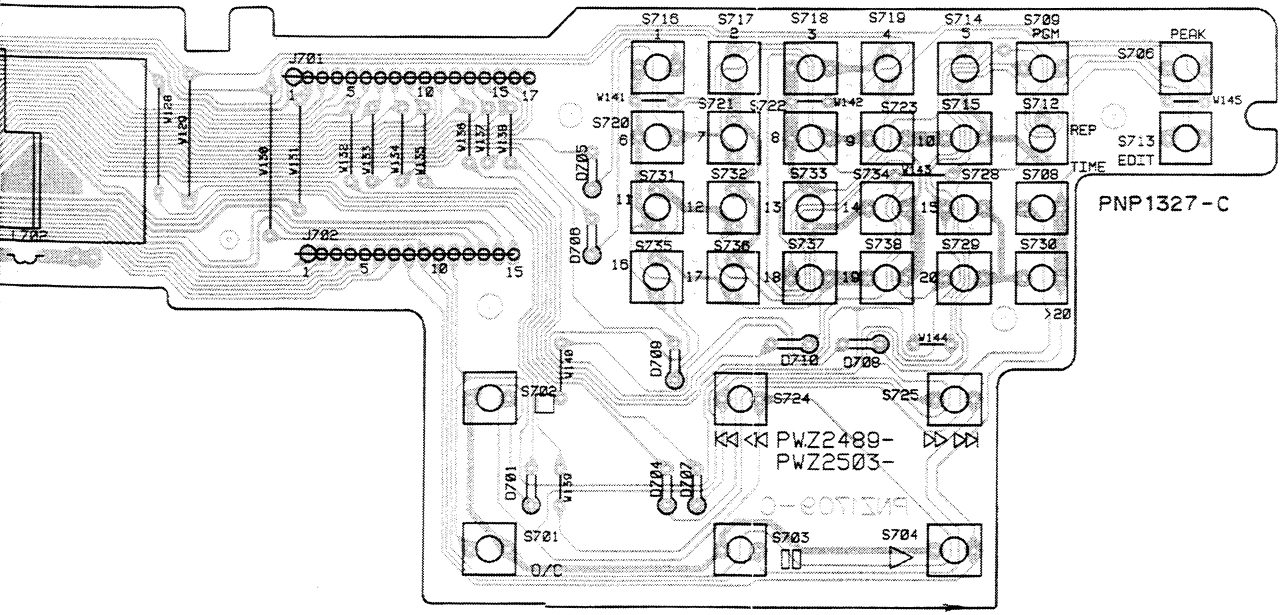
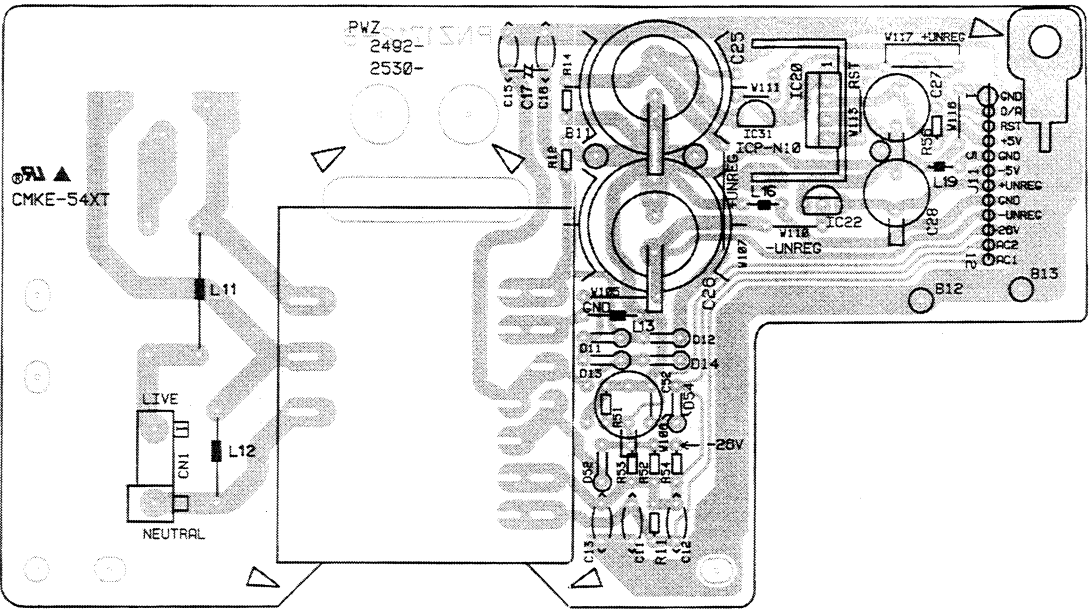
VR151

IC301

IC201

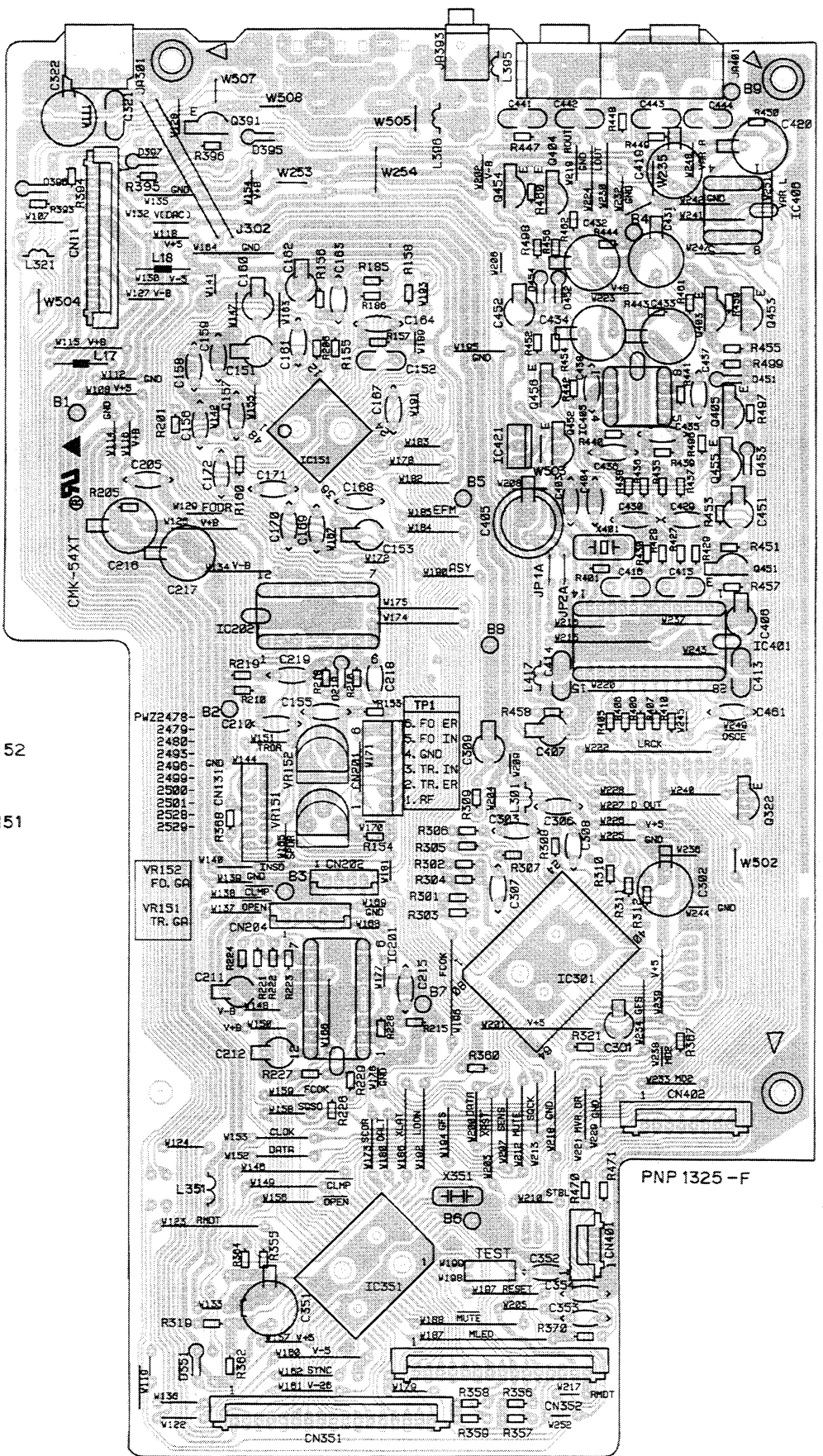
IC351

SERVO TRANS BOARD ASSY

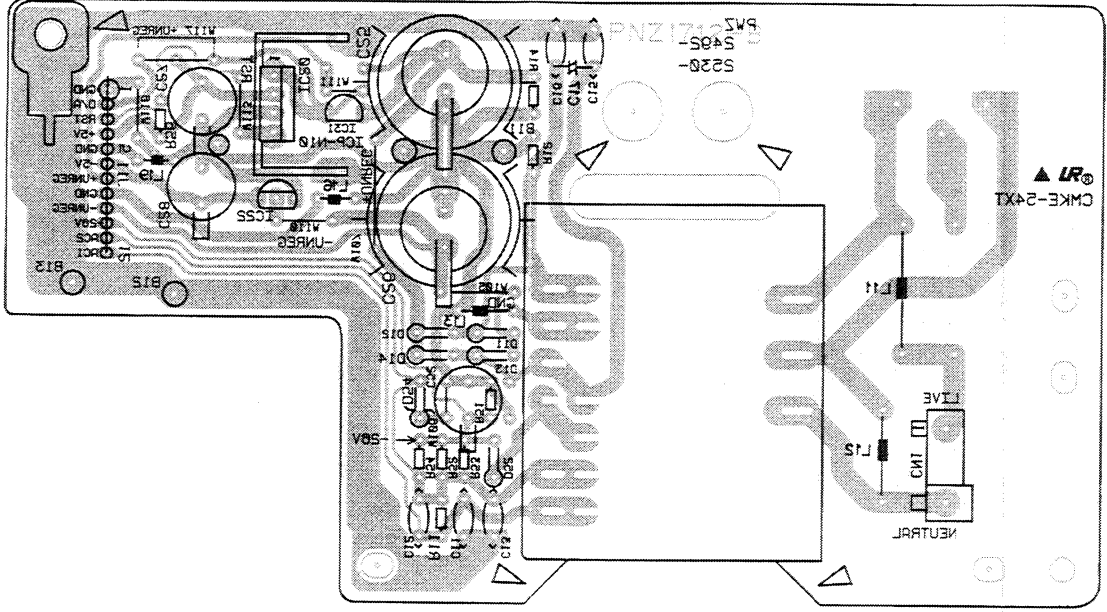


MAIN BOARD ASSY

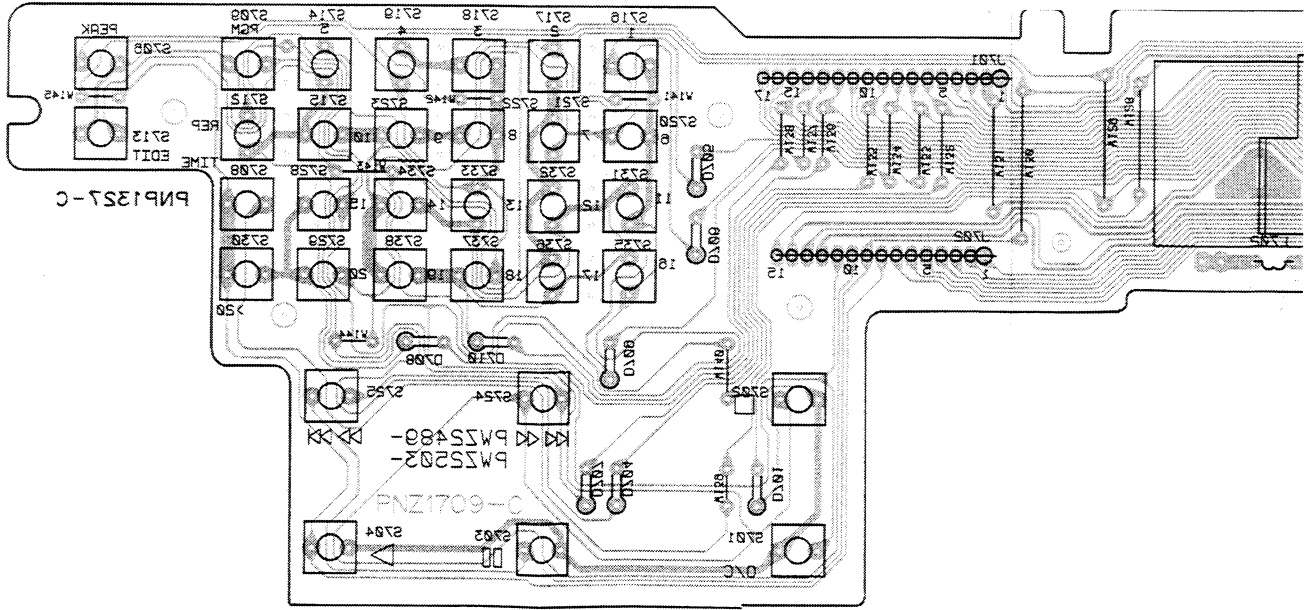
- Q391
- Q454
- Q404
- IC406
- Q453
- Q403
- Q456
- IC405
- Q405
- Q452
- Q455
- Q451
- IC202 IC401
- VR152
- Q322
- VR151
- IC301
- IC201
- IC351



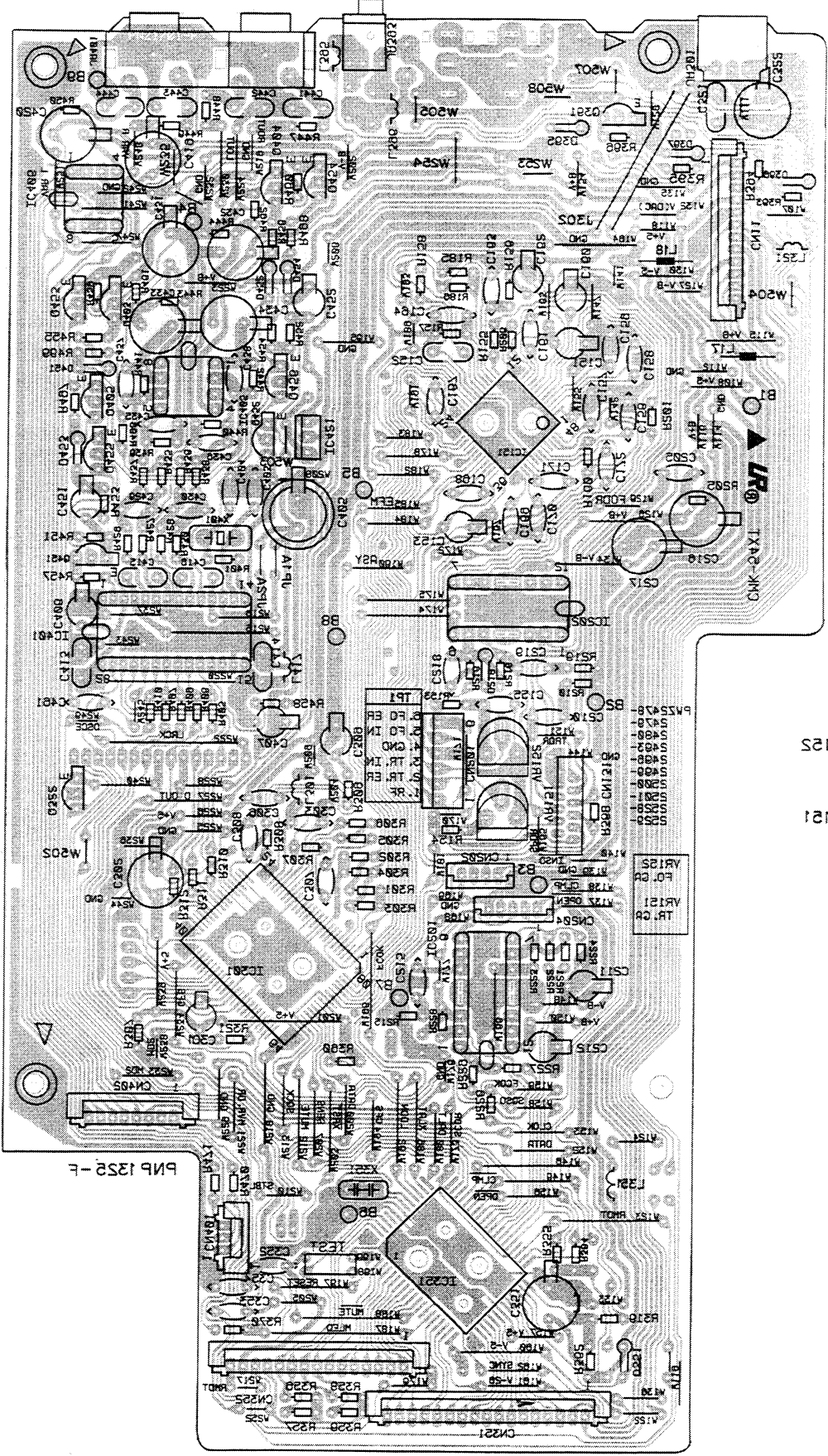
A  
B  
C  
D



SERVO TRANS BOARD ASSY



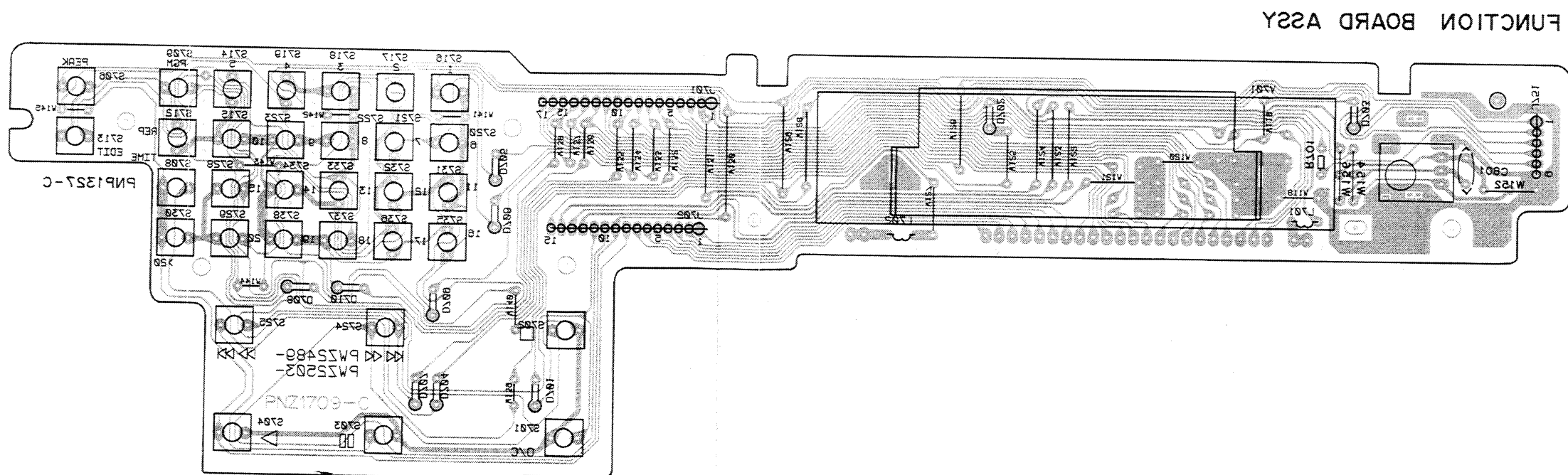
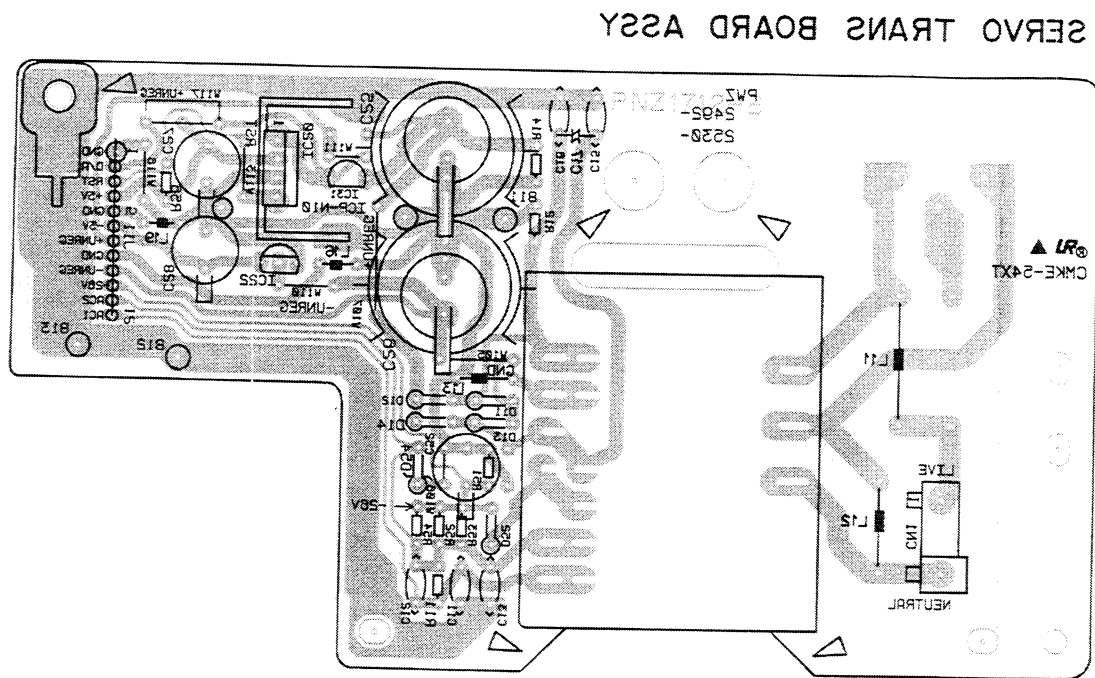
MAIN BOARD ASSY



- 0321
- 0424
- 0404
- IC408
- 0423
- 0403
- 0426
- IC402
- 0402
- 0425
- IC422
- 0421
- IC505
- IC401
- VR125
- VR121
- 0355
- IC301
- IC501
- IC321

# 4. PCB DIAGRAM

• This diagram is viewed from the foil side.



0391  
0424  
0404  
IC406  
0423  
0403  
0426  
IC402  
0402  
IC451  
0425  
0422  
0421  
IC505 IC401

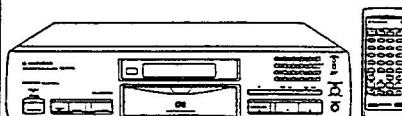
0355

IC301

IC321

# Service Manual

**PIONEER®**  
The Art of Entertainment



COMPACT DISC PLAYER

# PD-S602

PD-S602 HAS THE FOLLOWING:

| Type  | Power Requirement | Remarks |
|-------|-------------------|---------|
| WEMXK | AC220 – 240V      |         |
| WBXK  | AC220 – 240V      |         |

- This manual is applicable to PD-S602/WEMXK and WBXK.

## CONTENTS

|                                                   |    |
|---------------------------------------------------|----|
| 1. SAFETY INFORMATION .....                       | 2  |
| 2. EXPLODED VIEWS, PACKING AND PARTS LIST ..      | 4  |
| 3. PCB PARTS LIST .....                           | 11 |
| 4. SCHEMATIC AND PCB CONNECTION<br>DIAGRAMS ..... | 13 |
| 5. ADJUSTMENTS .....                              | 25 |
| 6. PANEL FACILITIES .....                         | 34 |
| 7. SPECIFICATIONS .....                           | 34 |

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# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

## WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

## NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

## REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

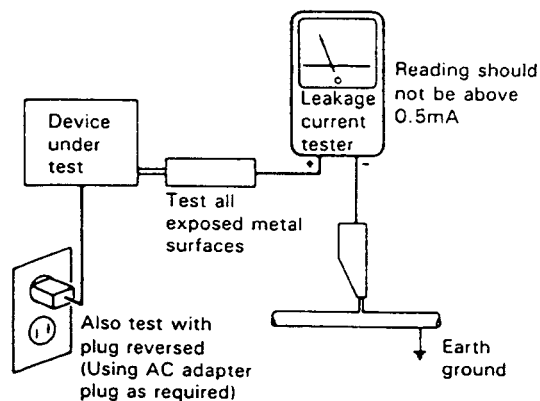
(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

**VARO!**  
AVATTAESSA JA SUOJALUKITUS  
OHITETTAESSA OLET ALTTIINA  
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.  
ÄLÄ KATSO SÄTEESEEN.

**ADVERSEL:**  
USYNLIG LASERSTRÅLING VED ÅBNING  
NÅR SIKKERHEDSAFBRYDERE ER UDE AF  
FUNKTION UNDGA UDSÆTTELSE FOR  
STRÅLING.

**VARNING!**  
OSYNLIG LASERSTRÅLNING NÅR DENNA  
DEL ÄR ÖPPNAD OCH SPÄRREN  
ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

**WARNING!**  
DEVICE INCLUDES LASER DIODE WHICH  
EMITS INVISIBLE INFRARED RADIATION  
WHICH IS DANGEROUS TO EYES. THERE IS  
A WARNING SIGN ACCORDING TO PICTURE  
1 INSIDE THE DEVICE CLOSE TO THE LASER  
DIODE.



LASER  
Picture 1  
Warning sign for  
laser radiation

**IMPORTANT**  
THIS PIONEER APPARATUS CONTAINS  
LASER OF CLASS 1.  
SERVICING OPERATION OF THE APPARATUS  
SHOULD BE DONE BY A SPECIALLY  
INSTRUCTED PERSON.

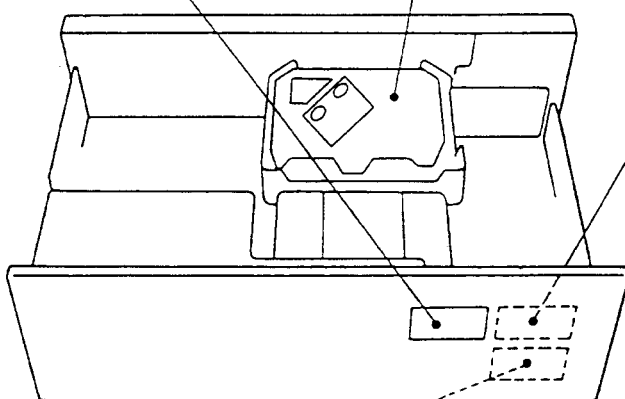
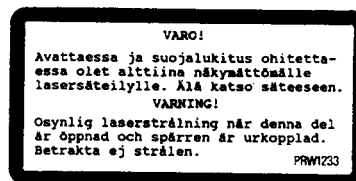
**LASER DIODE CHARACTERISTICS**  
MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm

LABEL CHECK

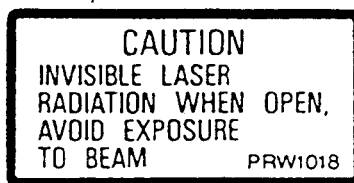
WBXK and WEMXK types



WEMXK type



WEMXK type



WBXK type

Additional Laser Caution

- Laser Interlock Mechanism**  
The position of the switch (S601) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S601) is not in CLMP terminal side (when the mechanism is not clamped and CLMP signal is high level). Thus, the interlock will no longer function if the switch (S601) is deliberately set to CLMP terminal side (if CLMP signal is low level).  
In the test mode\* the interlock mechanism will not function.  
Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the preamplifier board loaded on pickup assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).
- When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

\* Refer to page 26.

## 2. EXPLODED VIEWS, PACKING AND PARTS LIST

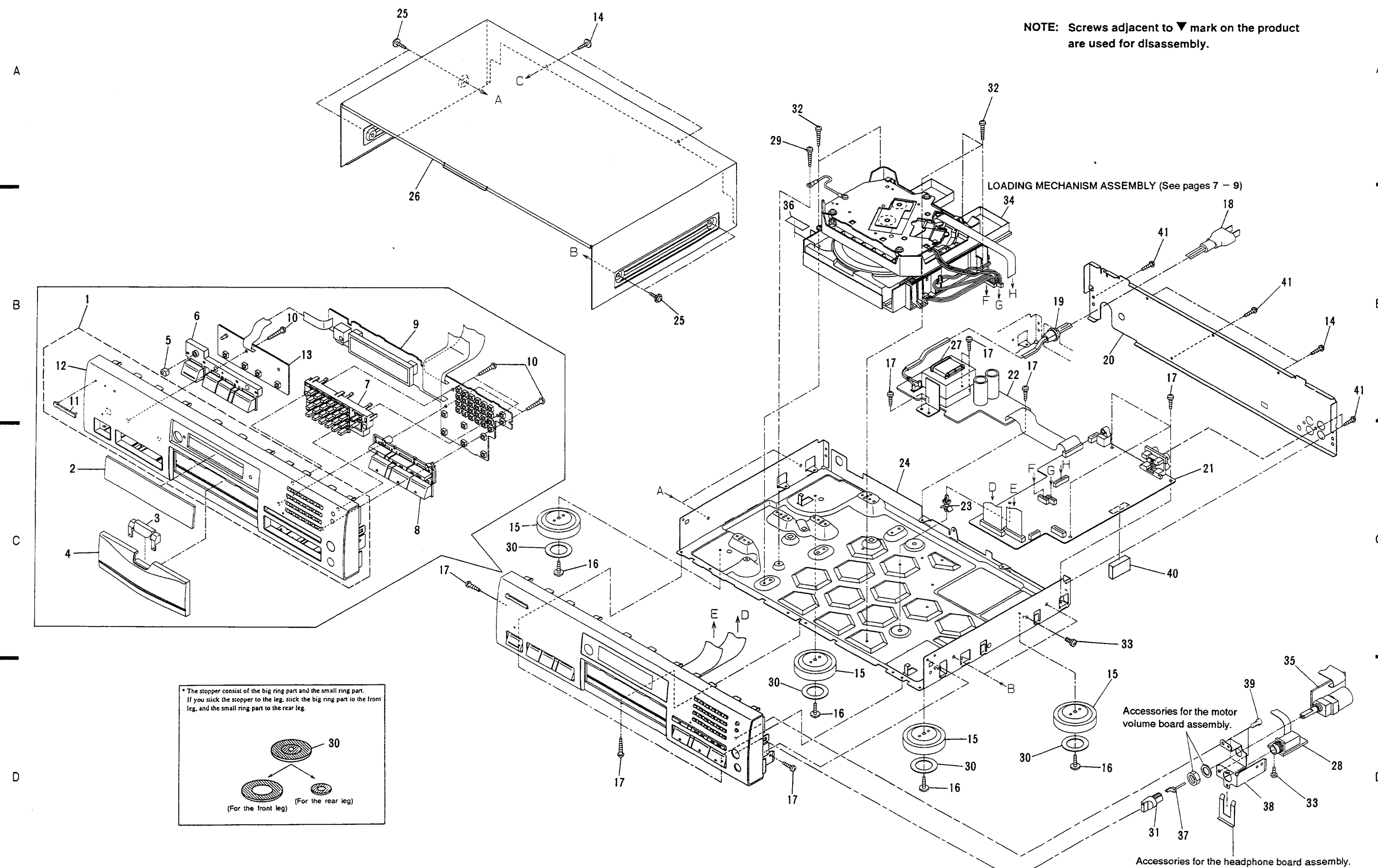
### 2.1 EXTERIOR

#### NOTES:

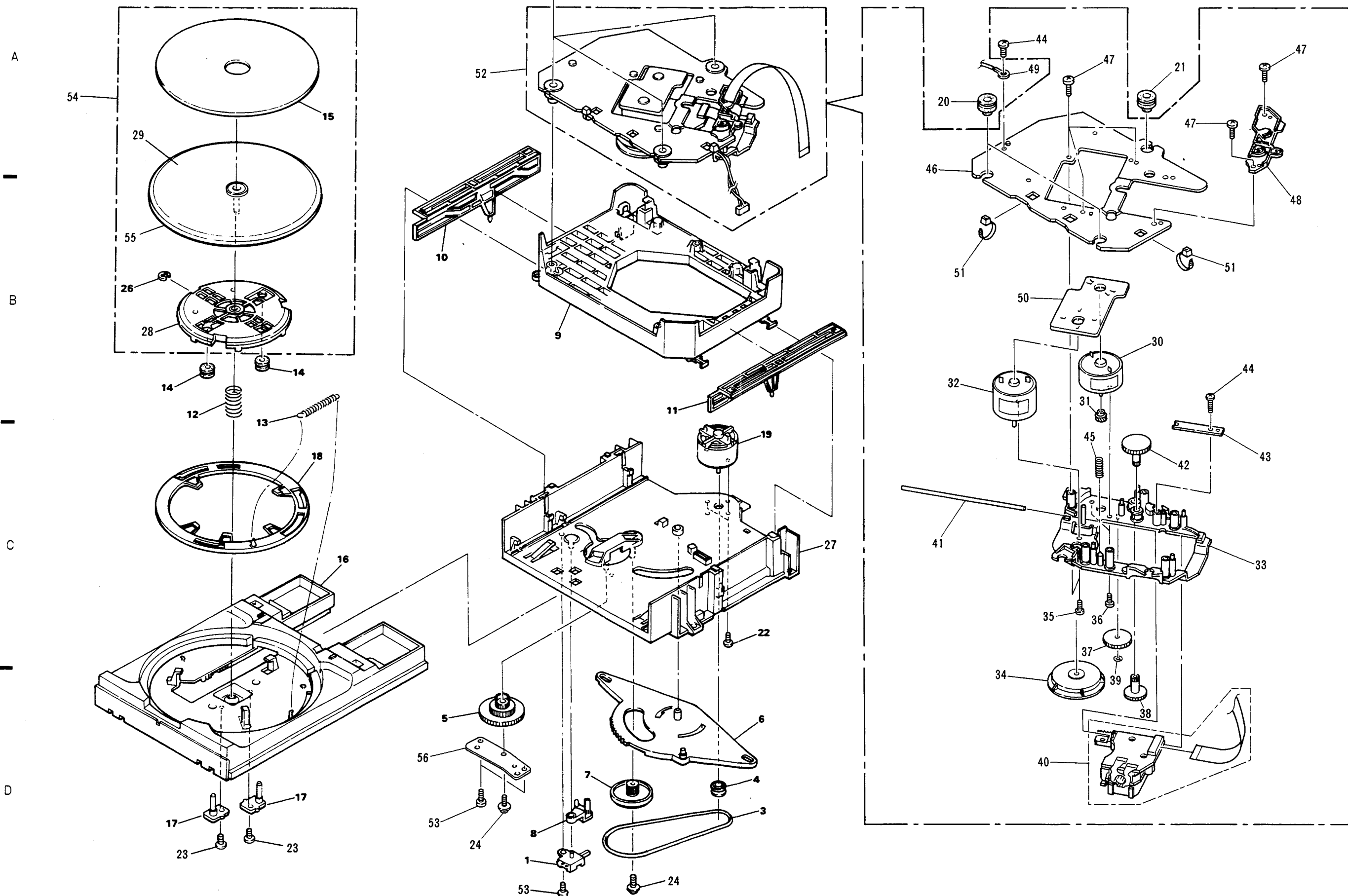
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The  $\triangle$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “ $\odot$ ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

#### Parts List

| Mark        | No. | Description                | Part No.     | Mark | No. | Description     | Part No.     |
|-------------|-----|----------------------------|--------------|------|-----|-----------------|--------------|
|             | 1   | Function panel assembly    | PEA1262      |      | 36  | Caution label   | PRW1244      |
|             | 2   | Display window             | PAM1625      |      | 37  | H. P. Lens      | PNW2157      |
|             | 3   | Tray lens                  | PNW2242      | NSP  | 38  | Headphone angle | PNB1434      |
|             | 4   | Tray name plate            | PNW2244      |      | 39  | Screw           | PPZ30P050FMC |
|             | 5   | LED lens                   | PNW2019      | NSP  | 40  | Spacer A        | PEB1228      |
|             | 6   | Power button               | PAC1712      |      | 41  | Screw           | BBT30P080FCC |
|             | 7   | 26key                      | PAC1715      |      |     |                 |              |
|             | 8   | Function button            | PAC1713      |      |     |                 |              |
|             | 9   | FUNCTION board assembly    | PWZ2489      |      |     |                 |              |
|             | 10  | Screw                      | PPZ30P150FMC |      |     |                 |              |
|             | 11  | PIONEER badge              | PAM1608      |      |     |                 |              |
|             | 12  | Function panel             | PNW2246      |      |     |                 |              |
| NSP         | 13  | SW board assembly          | PWZ2490      |      |     |                 |              |
|             | 14  | Screw                      | BBZ30P080FCC |      |     |                 |              |
|             | 15  | Insulator                  | PNW1263      |      |     |                 |              |
|             | 16  | Screw                      | IBZ30P100FCC |      |     |                 |              |
|             | 17  | Screw                      | BBZ30P060FCC |      |     |                 |              |
| $\triangle$ | 18  | AC power cord (WEMXK type) | PDG1003      |      |     |                 |              |
| $\triangle$ | 18  | AC power cord (WBXK type)  | VDG1051      |      |     |                 |              |
| $\triangle$ | 19  | Strain relief              | CM - 22B     |      |     |                 |              |
| NSP         | 20  | Rear base (WEMXK type)     | PNA1925      |      |     |                 |              |
| NSP         | 20  | Rear base (WBXK type)      | PNA1966      |      |     |                 |              |
| $\triangle$ | 21  | MAIN board assembly        | PWZ2480      |      |     |                 |              |
| $\triangle$ | 22  | SERVO TRANS board assembly | PWZ2492      |      |     |                 |              |
| NSP         | 23  | PCB holder                 | PNW2100      |      |     |                 |              |
| NSP         | 24  | Under base                 | PNA1912      |      |     |                 |              |
|             | 25  | Screw                      | FBT40P080FZK |      |     |                 |              |
|             | 26  | Bonnet                     | PYY1162      |      |     |                 |              |
| $\triangle$ | 27  | Power transformer          | PTT1236      |      |     |                 |              |
| NSP         | 28  | HEADPHONE board assembly   | PWZ2481      |      |     |                 |              |
|             | 29  | Screw                      | PDZ30P050FMC |      |     |                 |              |
|             | 30  | Stopper                    | PNM1070      |      |     |                 |              |
|             | 31  | Knob C                     | RAC1608      |      |     |                 |              |
|             | 32  | Screw                      | BSZ30P070FMC |      |     |                 |              |
|             | 33  | Screw                      | IBZ30P060FCC |      |     |                 |              |
| NSP         | 34  | Loading mechanism assembly | PXA1509      |      |     |                 |              |
| NSP         | 35  | Motor VR board assembly    | PWZ2482      |      |     |                 |              |



# 2.2 LOADING MECHANISM ASSEMBLY



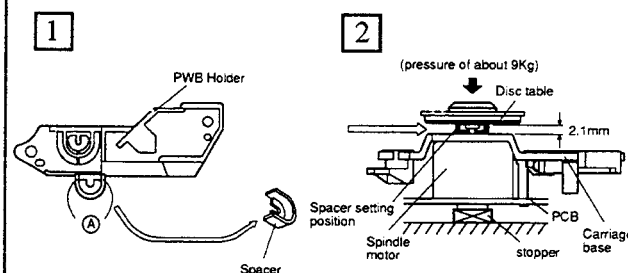
## Parts List

| Mark | No. | Description                            | Part No.     | Mark | No. | Description              | Part No.     |
|------|-----|----------------------------------------|--------------|------|-----|--------------------------|--------------|
|      | 1   | Lever switch (S601)                    | DSK1003      | NSP  | 51  | Cord clammer             | PEC - 107    |
|      | 2   | Screw (steel)                          | PBA1027      | NSP  | 52  | Servo mechanism assembly | PXA1479      |
|      | 3   | Rubber belt                            | PEB1186      |      | 53  | Screw                    | BPZ26P060FMC |
|      | 4   | Motror pulley                          | PNW1634      |      | 54  | Turn table assembly      | PEA1165      |
|      | 5   | Drive gear                             | PNW1996      | NSP  | 55  | Table base assembly      | PXA1382      |
|      | 6   | Synchro lever                          | PNW2168      |      | 56  | Shaft holder             | PNB1382      |
|      | 7   | Gear pulley                            | PNW1998      |      |     |                          |              |
|      | 8   | SW head                                | PNW1999      |      |     |                          |              |
|      | 9   | Float base                             | PNW2000      |      |     |                          |              |
|      | 10  | Left cam                               | PNW2001      |      |     |                          |              |
|      | 11  | Right cam                              | PNW2002      |      |     |                          |              |
|      | 12  | Compression spring                     | PBH1120      |      |     |                          |              |
|      | 13  | Tention spring                         | PBH1121      |      |     |                          |              |
|      | 14  | Float (rubber)                         | PEB1014      |      |     |                          |              |
|      | 15  | Table rubber sheet                     | PEB1181      |      |     |                          |              |
|      | 16  | Tray                                   | PNW2003      |      |     |                          |              |
|      | 17  | Table guide                            | PNW2004      |      |     |                          |              |
|      | 18  | Lock plate                             | PNW2005      |      |     |                          |              |
|      | 19  | DC motor (LOADING)                     | PXM1010      |      |     |                          |              |
|      | 20  | Rubber bush                            | PEB1031      |      |     |                          |              |
|      | 21  | Rubber bush                            | PEB1170      |      |     |                          |              |
|      | 22  | Screw                                  | BMZ26P040FMC |      |     |                          |              |
|      | 23  | Screw                                  | IPZ26P060FCU |      |     |                          |              |
|      | 24  | Screw                                  | IPZ20P080FMC |      |     |                          |              |
|      | 25  | .....                                  |              |      |     |                          |              |
| NSP  | 26  | Washer                                 | YE20S        |      |     |                          |              |
| NSP  | 27  | Loading base                           | PNW1995      |      |     |                          |              |
| NSP  | 28  | Table bearing assembly                 | PXA1383      |      |     |                          |              |
| NSP  | 29  | Turn table (AL)                        | PNR1035      |      |     |                          |              |
|      | 30  | DC motor (CARRIAGE)                    | PXM1027      |      |     |                          |              |
|      | 31  | Pinion gear                            | PNW2055      |      |     |                          |              |
|      | 32  | DC motor assembly (SPINDLE) (with oil) | PEA1236      |      |     |                          |              |
|      | 33  | Carriage base                          | PNW2058      |      |     |                          |              |
|      | 34  | Disc table                             | PNW1067      |      |     |                          |              |
|      | 35  | Screw                                  | JFZ20P030FNI |      |     |                          |              |
|      | 36  | Screw                                  | JFZ17P025FZK |      |     |                          |              |
|      | 37  | Gear 3                                 | PNW2054      |      |     |                          |              |
|      | 38  | Gear 2                                 | PNW2053      |      |     |                          |              |
|      | 39  | Washer                                 | WT12D032D025 |      |     |                          |              |
|      | 40  | Pickup assembly                        | PEA1179      |      |     |                          |              |
|      | 41  | Guide bar                              | PLA1094      |      |     |                          |              |
|      | 42  | Gear 1                                 | PNW2052      |      |     |                          |              |
| NSP  | 43  | Gear stopper                           | PNB1303      |      |     |                          |              |
|      | 44  | Screw                                  | BPZ20P060FMC |      |     |                          |              |
|      | 45  | Spring                                 | PBH1132      |      |     |                          |              |
| NSP  | 46  | Mechanism base                         | PNB1431      |      |     |                          |              |
|      | 47  | Screw                                  | BPZ20P100FMC |      |     |                          |              |
|      | 48  | PWB holder                             | PNW2057      |      |     |                          |              |
| NSP  | 49  | Earth lead unit                        | XDF - 503    |      |     |                          |              |
| NSP  | 50  | Mechanism board assembly               | PWX1192      |      |     |                          |              |

## •How to install the disc table

1 Use nipper or other tool to cut the two sections marked ① figure 1. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base and stick the disc table on top (takes about 9kg pressure). Take off the spacer.

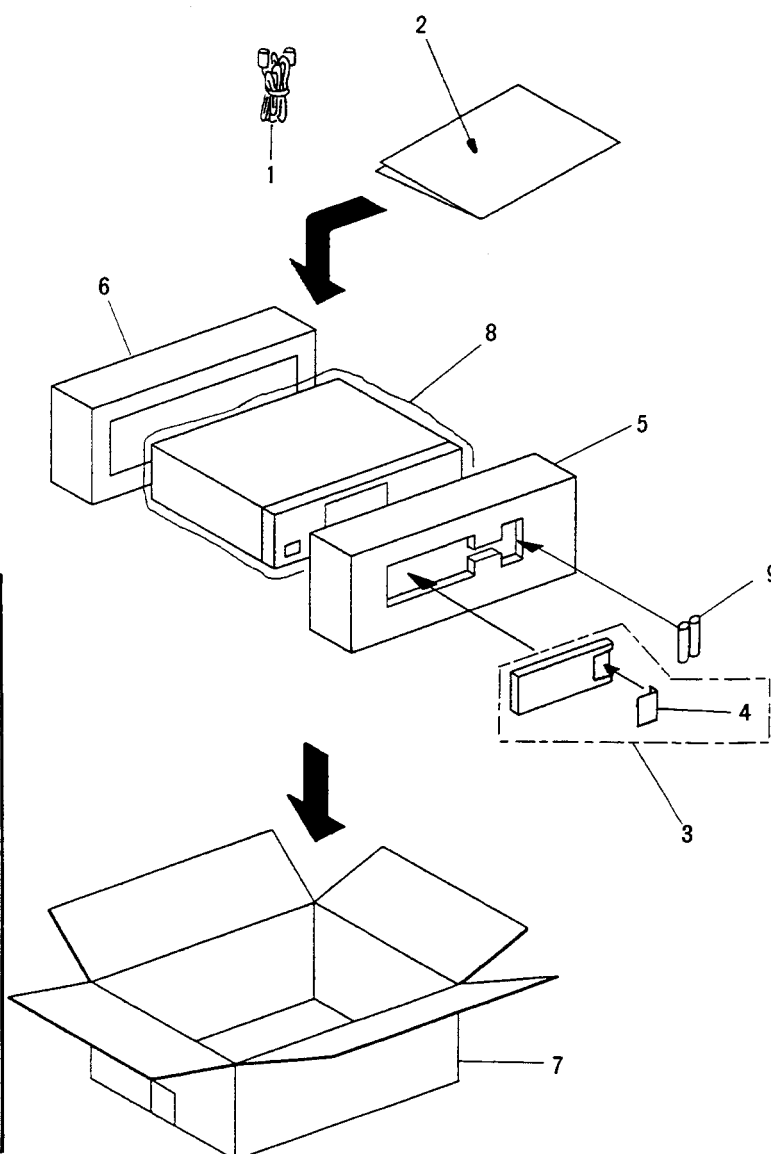


## 2.3 PACKING

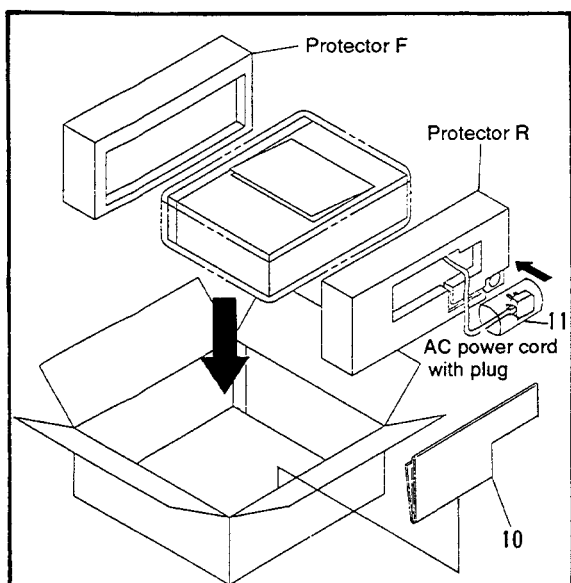
### Parts List

| Mark | No. | Description                                                                                                    | Part No.  |
|------|-----|----------------------------------------------------------------------------------------------------------------|-----------|
|      | 1   | Cord with pin plug                                                                                             | PDE1109   |
|      | 2   | Operating instructions<br>(WEMXK type)<br>(English/French/German/Italian<br>/Dutch/Swedish/Spanish/Portuguese) | PRE1173   |
|      | 2   | Operating instructions<br>(WBXK type) (English)                                                                | PRB1191   |
|      | 3   | Remote control unit                                                                                            | PWW1060   |
|      | 4   | Battery lid                                                                                                    | PZN1001   |
|      | 5   | Protector F                                                                                                    | PHA1237   |
|      | 6   | Protector R<br>(WEMXK type)                                                                                    | PHA1261   |
|      | 6   | Protector R<br>(WBXK type)                                                                                     | PHA1259   |
|      | 7   | CD packing case<br>(WEMXK type)                                                                                | PHG1873   |
|      | 7   | CD packing case<br>(WBXK type)                                                                                 | PHG1933   |
|      | 8   | Sheet                                                                                                          | Z23 - 007 |
| NSP  | 9   | Battery (R03, AAA)                                                                                             | VEM - 022 |
|      | 10  | Spacer (WBXK type only)                                                                                        | PHC1078   |
|      | 11  | Vinyl bag<br>(WBXK type only)                                                                                  | Z21 - 013 |

#### ● For WEMXK type



#### ● For WBXK type



### 3. PCB PARTS LIST

#### NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

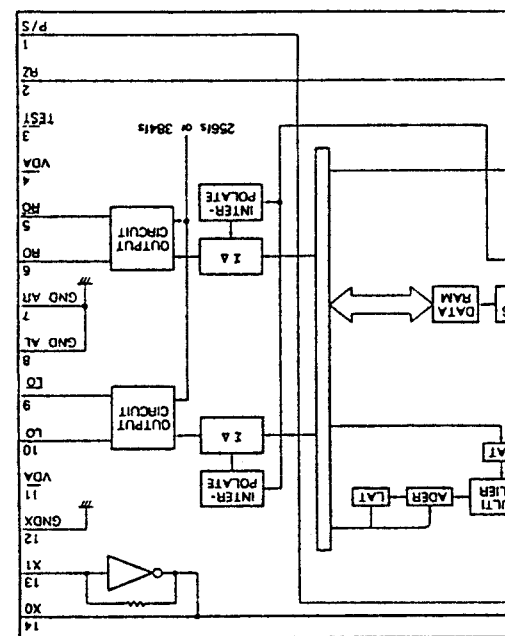
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560  $\Omega$   $\rightarrow$   $56 \times 10^1 \rightarrow 561$  ..... RD1/8PM  $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$  J  
47k  $\Omega$   $\rightarrow$   $47 \times 10^3 \rightarrow 473$  ..... RD1/4PS  $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$  J  
0.5  $\Omega$   $\rightarrow$  0R5 ..... RN2H  $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$  K  
1  $\Omega$   $\rightarrow$  010 ..... RS1P  $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$  K

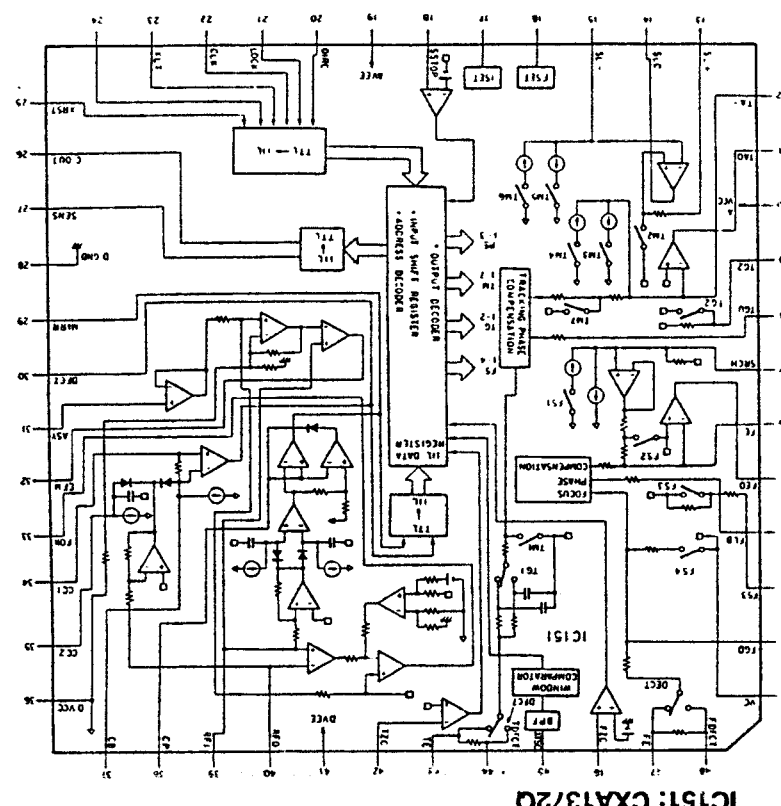
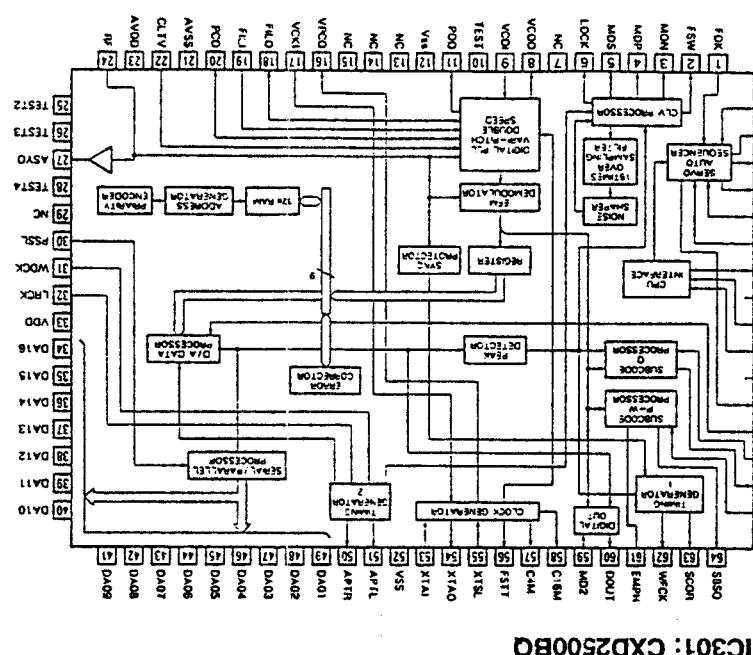
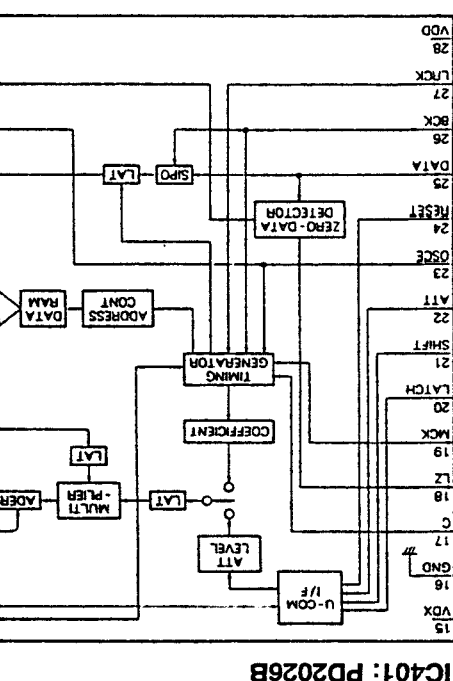
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k  $\Omega$   $\rightarrow$   $562 \times 10^1 \rightarrow 5621$  ..... RN1/4PC  $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$  F

| Mark                       | No.                               | Description  | Part No. | Mark                                                 | No. | Description                                                                     | Part No. |
|----------------------------|-----------------------------------|--------------|----------|------------------------------------------------------|-----|---------------------------------------------------------------------------------|----------|
| <b>LIST OF ASSEMBLIES</b>  |                                   |              |          | C211, C212, C216, C217                               |     | CEAS330M16                                                                      |          |
| NSP $\Delta$               | MOTHER BOARD ASSEMBLY             | PWM1761      |          | C433, C434                                           |     | CEAS470M50                                                                      |          |
| $\Delta$                   | MAIN BOARD ASSEMBLY               | PWZ2480      |          | C302, C322, C351                                     |     | CEAS471M6R3                                                                     |          |
| NSP                        | HEADPHONE BOARD ASSEMBLY          | PWZ2481      |          | C160, C162, C451, C452                               |     | CEAS4R7M50                                                                      |          |
| NSP                        | MOTOR VR BOARD ASSEMBLY           | PWZ2482      |          | C309                                                 |     | CEASR47M50                                                                      |          |
| NSP $\Delta$               | SUB BOARD ASSEMBLY                | PWX1275      |          | C413-C416                                            |     | CFTXA104J50                                                                     |          |
| $\Delta$                   | FUNCTION BOARD ASSEMBLY           | PWZ2489      |          | C441-C444                                            |     | CFTXA152J50                                                                     |          |
| NSP                        | SW BOARD ASSEMBLY                 | PWZ2490      |          | C406, C407                                           |     | CFTXA471J50                                                                     |          |
| $\Delta$                   | SERVO TRANS BOARD ASSEMBLY        | PWZ2492      |          | C152, C161, C321                                     |     | CFTYA104J50                                                                     |          |
| NSP                        | MECHANISM BOARD ASSEMBLY          | PWX1192      |          | C157, C164, C169, C308                               |     | CGCYX103K25                                                                     |          |
| <b>MAIN BOARD ASSEMBLY</b> |                                   |              |          | C158, C159, C163, C230, C301                         |     | CGCYX104K25                                                                     |          |
| <b>SEMICONDUCTORS</b>      |                                   |              |          | C156, C168                                           |     | CGCYX333K25                                                                     |          |
|                            | IC151                             | CXA1372Q     |          | C307, C354                                           |     | CGCYX473K25                                                                     |          |
|                            | IC301                             | CXD2500BQ    |          | C306                                                 |     | CKCYB152K50                                                                     |          |
| $\Delta$                   | IC201, IC202                      | LA6520       |          | C155                                                 |     | CKCYB182K50                                                                     |          |
|                            | IC421                             | LM2940CT-5.0 |          | C218                                                 |     | CKCYB272K50                                                                     |          |
|                            | IC406                             | M5218AP      |          | C170                                                 |     | CKCYB332K50                                                                     |          |
|                            | IC405                             | NJM5532DD    |          | C171, C172                                           |     | CKCYB472K50                                                                     |          |
|                            | IC401                             | PD2026B      |          | C167, C205, C210, C215, C219, C303, C352, C353, C461 |     | CKCYF103Z50                                                                     |          |
|                            | IC351                             | PD4457A      |          | <b>RESISTORS</b>                                     |     |                                                                                 |          |
|                            | Q391                              | 2SC1740S     |          | VR151, VR152 (22K)                                   |     | RCP1046                                                                         |          |
|                            | Q403, Q404, Q453, Q454            | 2SD2144S     |          | OTHER RESISTORS                                      |     | RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J |          |
|                            | Q451, Q452                        | DTA124ES     |          | <b>OTHERS</b>                                        |     |                                                                                 |          |
|                            | Q322, Q405, Q455, Q456            | DTC124ES     |          | CN131 CONNECTOR (12P)                                |     | 12FM-1.0BT                                                                      |          |
|                            | D218, D351, D395-D397, D451-D454  | 1SS254       |          | JA393 MINI JACK                                      |     | PKN1005                                                                         |          |
| <b>COILS</b>               |                                   |              |          | JA301 OPTICAL OUTPUT JACK                            |     | TOTX178                                                                         |          |
|                            | L301, L321, L395, L396, L415-L417 | LAU010K      |          | PIN JACK (4P)                                        |     | DKB1016                                                                         |          |
| <b>CAPACITORS</b>          |                                   |              |          | X401 CRYSTAL RESONATOR (16.9344MHz)                  |     | PSS1008                                                                         |          |
|                            | C435-C438                         | CCCCH050C50  |          | X351 CERAMIC RESONATOR (4.19MHz)                     |     | VSS1014                                                                         |          |
|                            | C403                              | CCCCH120J50  |          | <b>HEADPHONE BOARD ASSEMBLY</b>                      |     |                                                                                 |          |
|                            | C404                              | CCCCH220J50  |          | <b>COILS</b>                                         |     |                                                                                 |          |
|                            | C429, C430                        | CCCCH390J50  |          | L501-L503                                            |     | LAU010K                                                                         |          |
|                            | C151, C153                        | CEAS101M10   |          | <b>CAPACITORS</b>                                    |     |                                                                                 |          |
|                            | C431, C432                        | CEAS101M25   |          | C501, C502                                           |     | CKCYF103Z50                                                                     |          |
|                            | C405                              | CEAS102M16   |          |                                                      |     |                                                                                 |          |



| Mark                               | No.                                               | Description | Part No.                                                                        |
|------------------------------------|---------------------------------------------------|-------------|---------------------------------------------------------------------------------|
|                                    | C503                                              |             | CKCYF473Z50                                                                     |
| <b>OTHERS</b>                      |                                                   |             |                                                                                 |
|                                    | JA501 HEADPHONE JACK                              |             | PKN1001                                                                         |
| <b>MOTOR VOLUME BOARD ASSEMBLY</b> |                                                   |             |                                                                                 |
| <b>CAPACITORS</b>                  |                                                   |             |                                                                                 |
|                                    | C510                                              |             | CKPUYF103Z25                                                                    |
| <b>RESISTORS</b>                   |                                                   |             |                                                                                 |
|                                    | VR501 (20KB)                                      |             | PCS1010                                                                         |
| <b>FUNCTION BOARD ASSEMBLY</b>     |                                                   |             |                                                                                 |
| <b>SEMICONDUCTORS</b>              |                                                   |             |                                                                                 |
|                                    | D701-D710                                         |             | 1SS254                                                                          |
| <b>SWITCHES</b>                    |                                                   |             |                                                                                 |
|                                    | S701-S704, S706, S708, S709, S712-S725, S728-S738 |             | PSG1006                                                                         |
| <b>COILS</b>                       |                                                   |             |                                                                                 |
|                                    | L701, L702                                        |             | LAU010K                                                                         |
| <b>RESISTORS</b>                   |                                                   |             |                                                                                 |
|                                    | ALL RESISTORS                                     |             | RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J |
| <b>OTHERS</b>                      |                                                   |             |                                                                                 |
|                                    | V701 FL INDICATOR TUBE                            |             | PEL1073                                                                         |
|                                    | REMOTE SENSOR                                     |             | SBX1610                                                                         |
| <b>SW BOARD ASSEMBLY</b>           |                                                   |             |                                                                                 |
| <b>SEMICONDUCTORS</b>              |                                                   |             |                                                                                 |
|                                    | D751                                              |             | PCX1019                                                                         |
| <b>SWITCHES</b>                    |                                                   |             |                                                                                 |
|                                    | S751-S754                                         |             | PSG1006                                                                         |
| <b>SERVO TRANS BOARD ASSEMBLY</b>  |                                                   |             |                                                                                 |
| <b>SEMICONDUCTORS</b>              |                                                   |             |                                                                                 |
| $\Delta$                           | IC31                                              |             | ICP-N10                                                                         |
| $\Delta$                           | IC22                                              |             | NJM79L05A                                                                       |
| $\Delta$                           | IC20                                              |             | PQ05RR12                                                                        |
| $\Delta$                           | D11-D14, D52                                      |             | 11ES2                                                                           |
|                                    | D54                                               |             | MTZJ18B/C                                                                       |
| <b>CAPACITORS</b>                  |                                                   |             |                                                                                 |
|                                    | C52                                               |             | CEAS101M35                                                                      |
|                                    | C27, C28                                          |             | CEAS471M6R3                                                                     |
|                                    | C25, C26                                          |             | CEAS472M16                                                                      |
|                                    | C11-C13, C15, C16                                 |             | CKCYF103Z50                                                                     |
| <b>RESISTORS</b>                   |                                                   |             |                                                                                 |
|                                    | ALL RESISTORS                                     |             | RD1/6PM $\begin{bmatrix} \square & \square & \square & \square \end{bmatrix}$ J |
| <b>OTHERS</b>                      |                                                   |             |                                                                                 |
| $\Delta$                           | TERMINAL                                          |             | RKC-061                                                                         |
| <b>MECHANISM BOARD ASSEMBLY</b>    |                                                   |             |                                                                                 |
| <b>SWITCHES</b>                    |                                                   |             |                                                                                 |
|                                    | S610                                              |             | DSG1016                                                                         |



**PD-S602**

#### 4. SCHEMATIC AND PCB CONNECTION DIAGRAMS

**Note:**

Type 4

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
3. RESISTORS:  
Unit: k:  $k\Omega$ , M:  $M\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$ , (M):  $\pm 20\%$  or  $\pm 5\%$  unless otherwise noted.
4. CAPACITORS:  
Unit: p:pF or  $\mu F$  unless otherwise noted.  
Ratings: capacitor ( $\mu F$ ) / voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.
5. COILS:  
Unit: m:mH or  $\mu H$  unless otherwise noted.
6. VOLTAGE AND CURRENT:  
 : DC voltage (V) in PLAY mode unless otherwise noted.  
 $\oplus$  mA or  $-$  mA: DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.
7. OTHERS:
  - $\rightarrow$  : Signal route.
  - $\odot$  : Adjusting point.
  - $\nabla$  : Measurement point.
  - The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

- 8. SWITCHES** (Underline indicates switch position):

FUNCTION BOARD ASSEMBLY

```

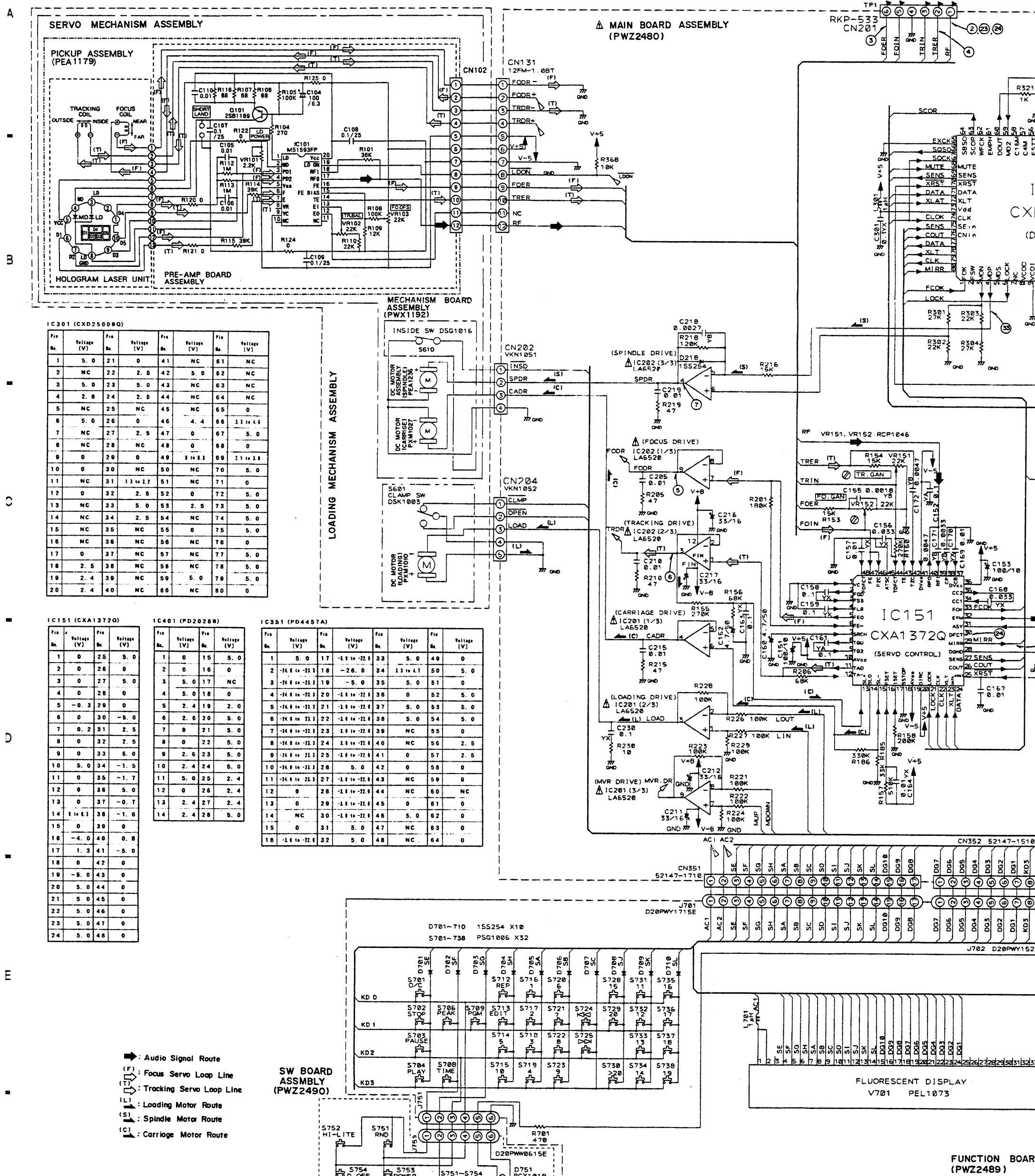
S701 : O/C
S702 : STOP
S703 : PAUSE
S704 : PLAY
S706 : PEAK
S708 : TIME
S709 : PGM
S712 : REP
S713 : EDIT
S714 : 5
S715 : 10
S716 : 1
S717 : 2
S718 : 3
S719 : 4
S720 : 6
S721 : 7
S722 : 8
S723 : 9
S724 : 
S725 : 
S728 : 15
S729 : 20
S730 : > 20
S731 : 11
S732 : 12
S733 : 13
S734 : 14
S735 : 16
S736 : 17
S737 : 18
S738 : 19

```

SW BOARD ASSEMBLY

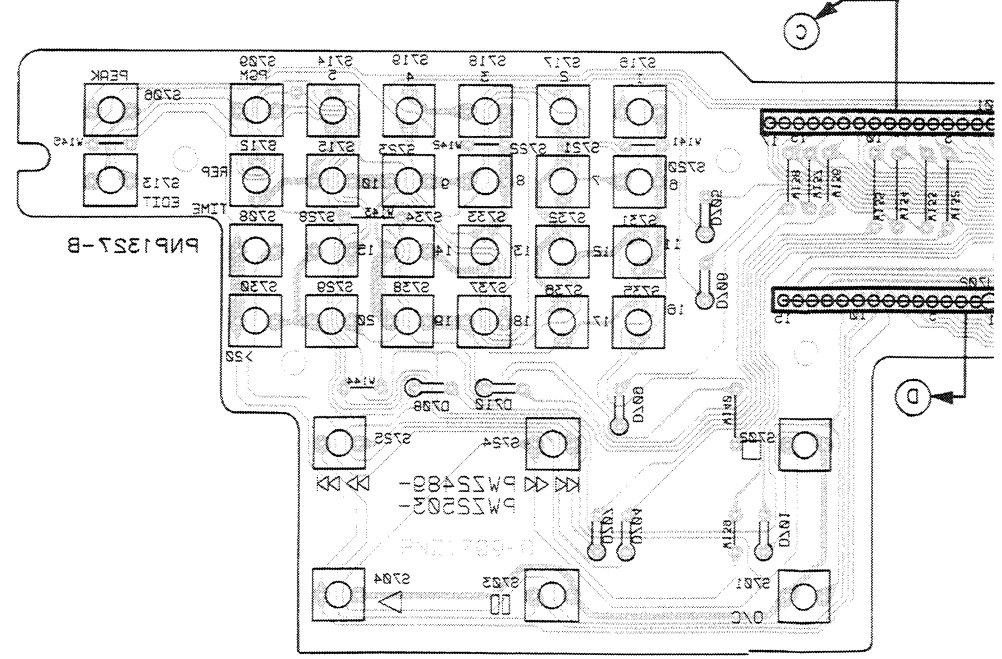
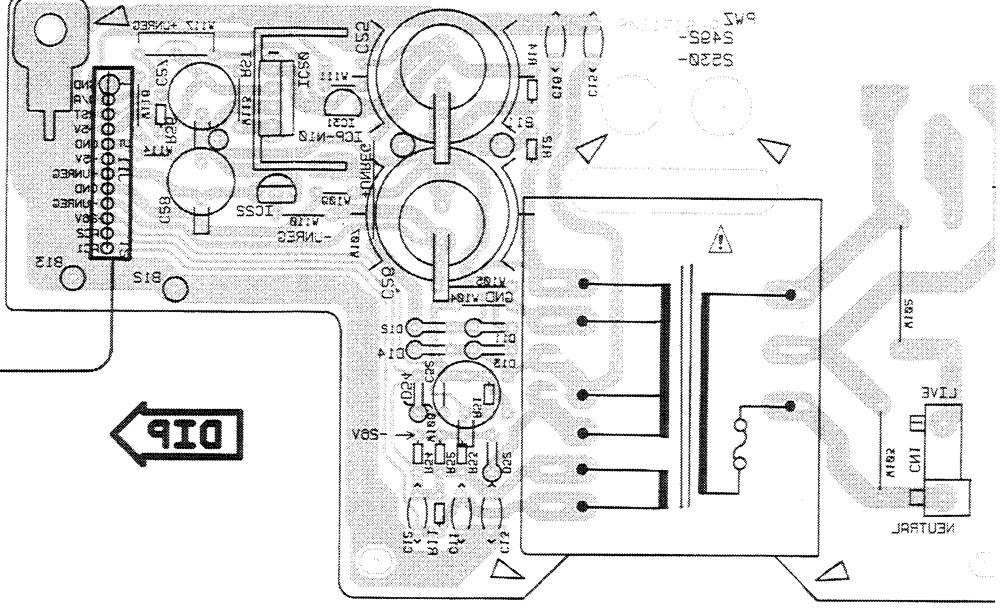
```
S751 : RND
S752 : HI - LITE
S753 : POWER
S754 : D. OFF
```

# 4.1 SCHEMATIC DIAGRAM

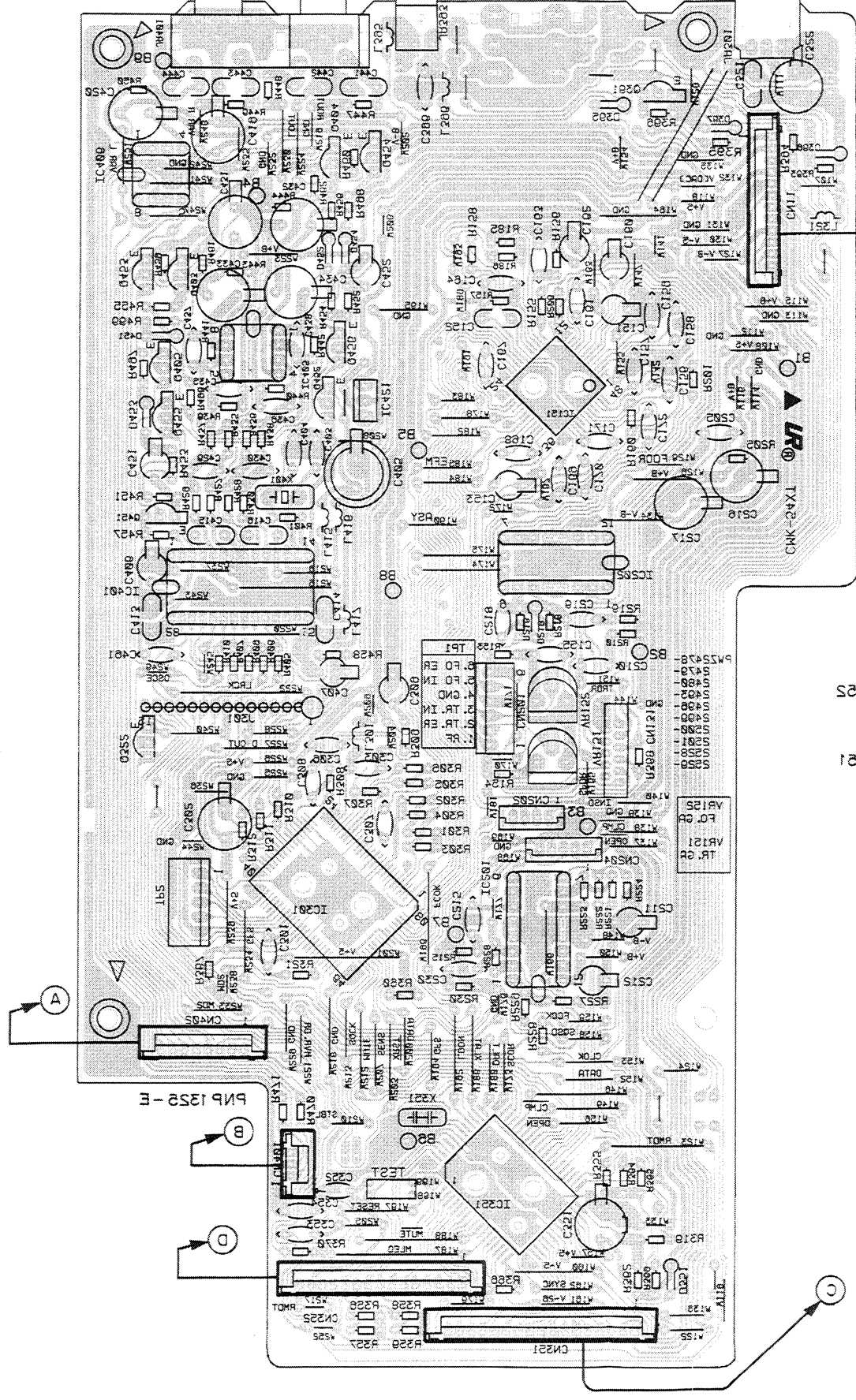




# TRANS BOARD ASSEMBLY

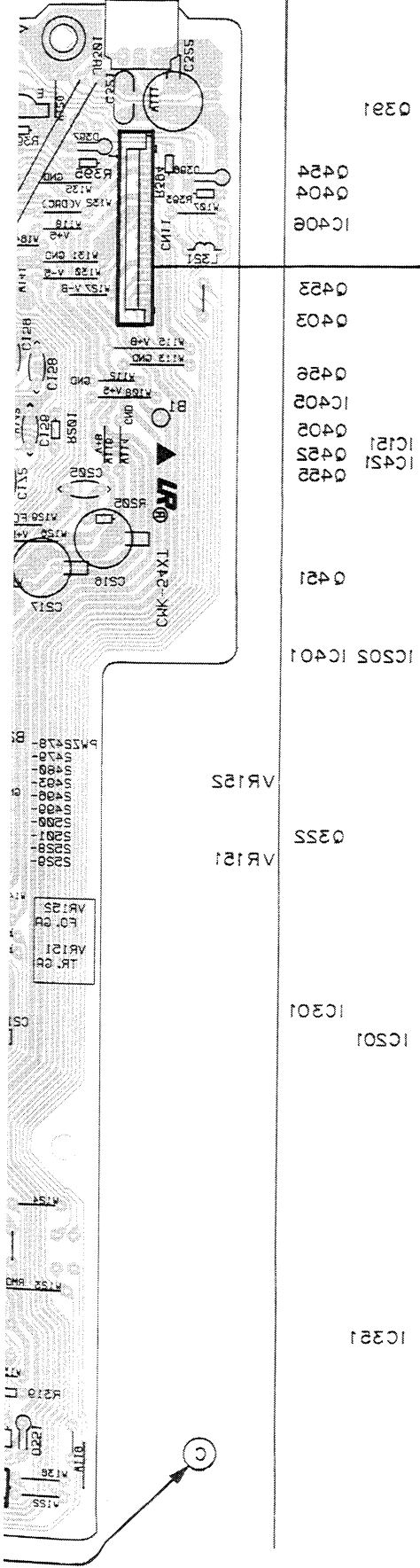
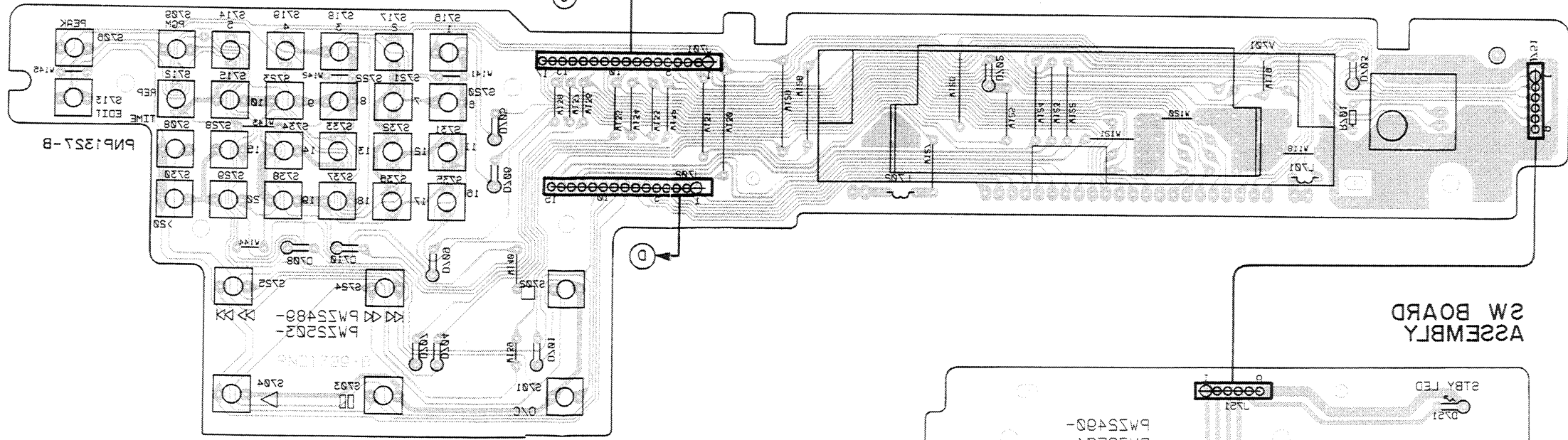
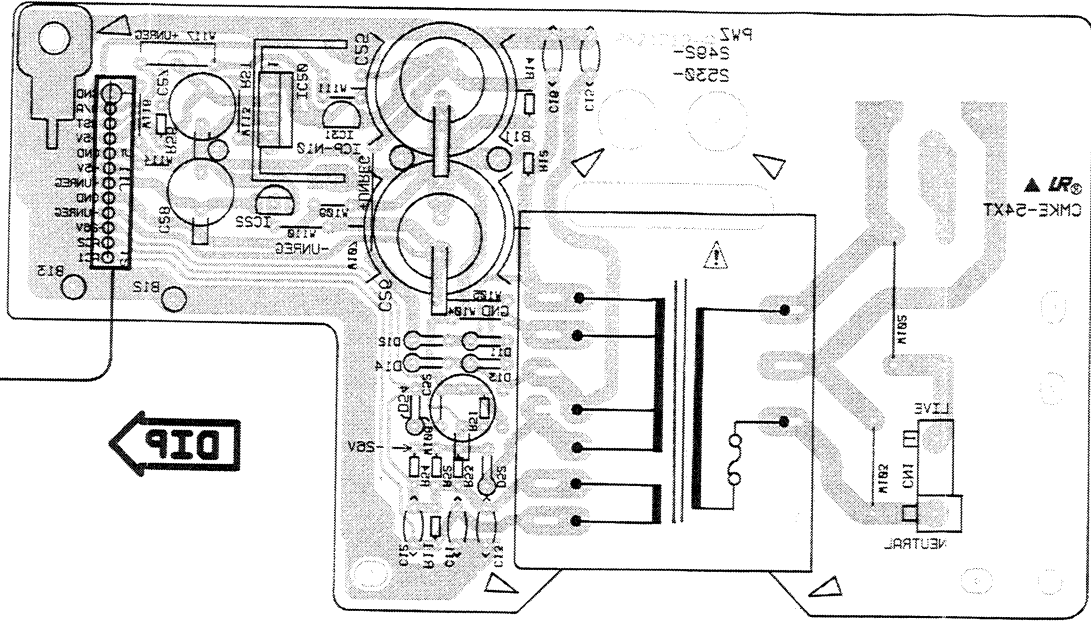
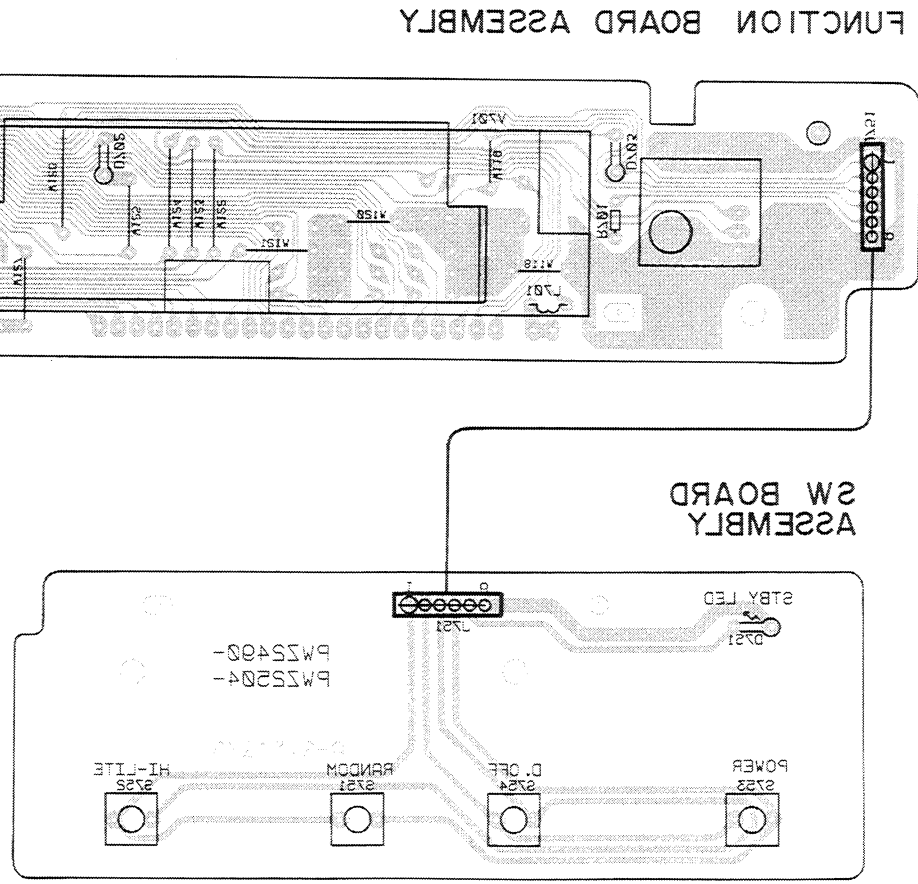
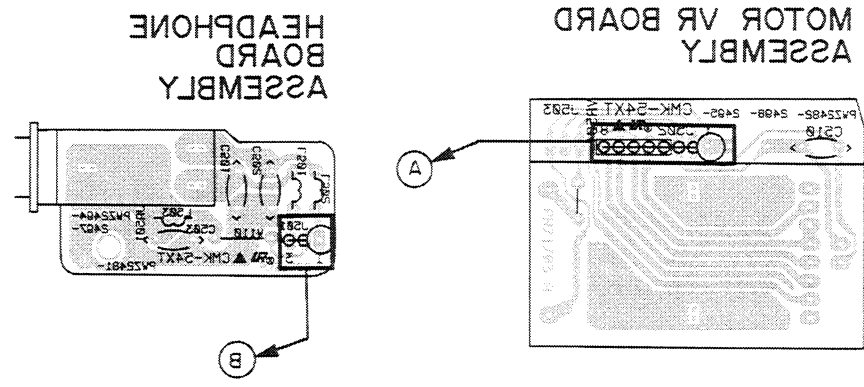


# MAIN BOARD ASSEMBLY



# 4.5 PCB CONNECTION DIAGRAM

• View from soldering side



## 1

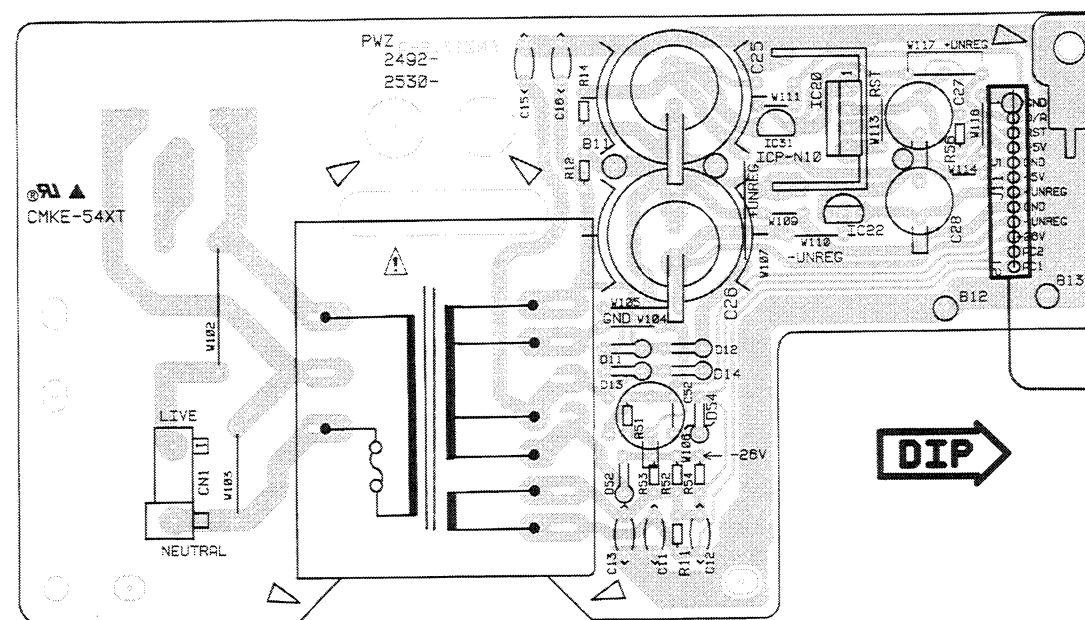
- 2



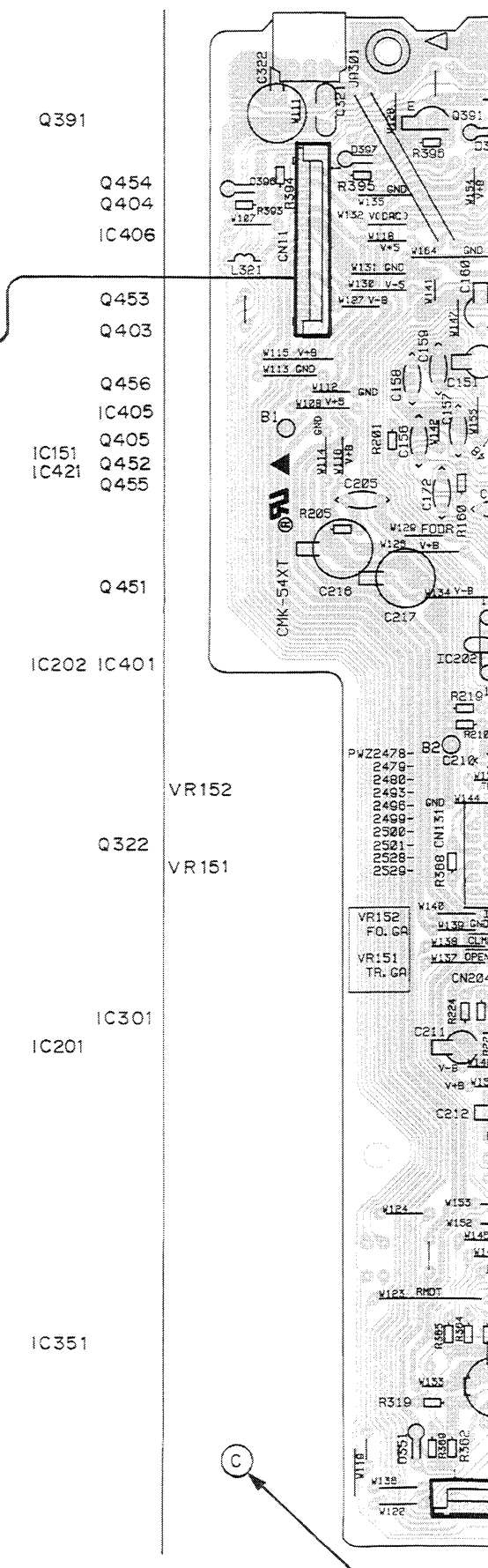
FUNCTION BOARD ASSEMBLY



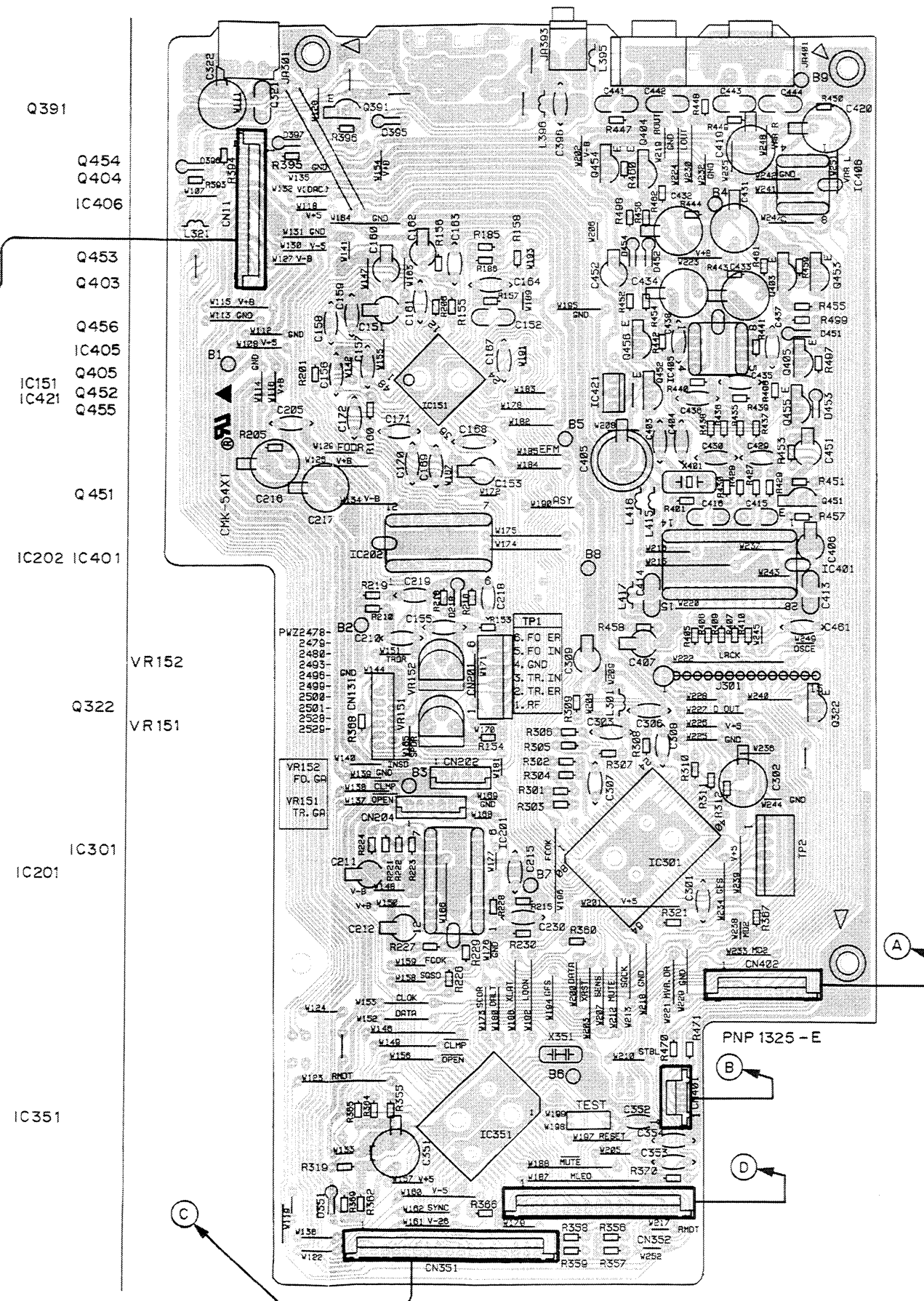
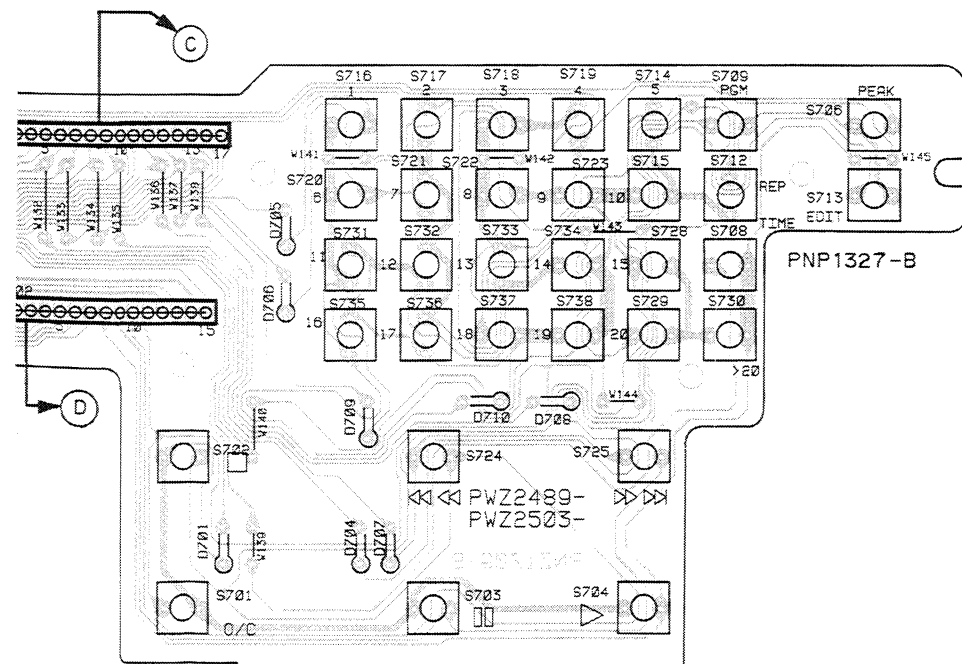
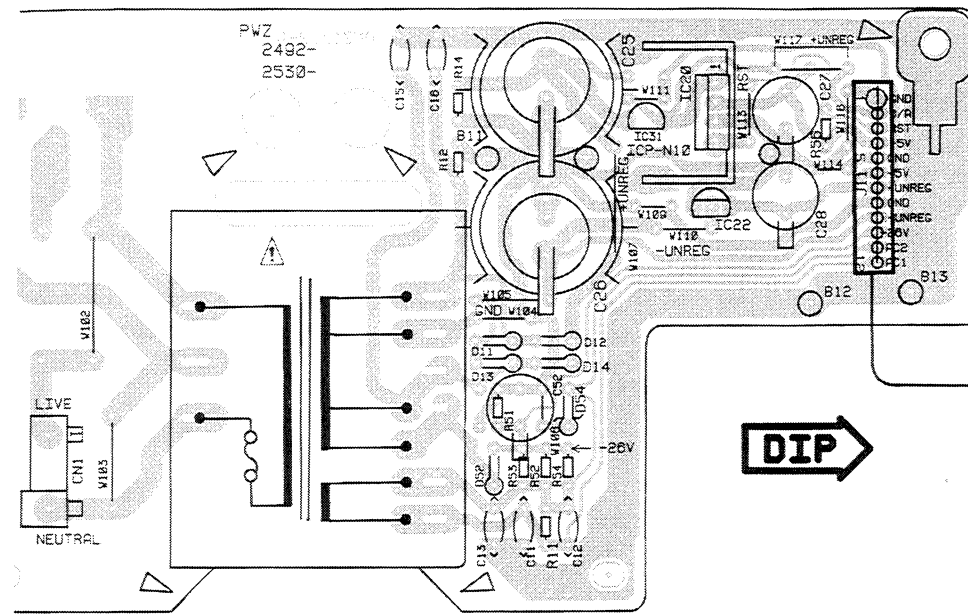
## 5



## 3



# MAIN BOARD ASSEMBLY



| P.C.B. pattern diagram indication | Corresponding part symbol | Part name                              |
|-----------------------------------|---------------------------|----------------------------------------|
|                                   |                           | Transistor                             |
|                                   |                           |                                        |
|                                   |                           | FET                                    |
|                                   |                           | Diode                                  |
|                                   |                           |                                        |
|                                   |                           |                                        |
|                                   |                           | Zener diode                            |
|                                   |                           |                                        |
|                                   |                           | LED                                    |
|                                   |                           | Varactor                               |
|                                   |                           | Tact switch                            |
|                                   |                           |                                        |
|                                   |                           | Inductor                               |
|                                   |                           |                                        |
|                                   |                           | Coil                                   |
|                                   |                           |                                        |
|                                   |                           | Transformer                            |
|                                   |                           | Filter                                 |
|                                   |                           | Ceramic capacitor                      |
|                                   |                           |                                        |
|                                   |                           |                                        |
|                                   |                           | Mylar capacitor                        |
|                                   |                           |                                        |
|                                   |                           | Styrol capacitor                       |
|                                   |                           | Electrolytic capacitor (Non polarized) |
|                                   |                           | Electrolytic capacitor (Polarized)     |
|                                   |                           | Electrolytic capacitor (Polarized)     |
|                                   |                           | Electrolytic capacitor (Polarized)     |
|                                   |                           | Power capacitor                        |
|                                   |                           | Semi-fixed resistor                    |
|                                   |                           |                                        |
|                                   |                           | Resistor array                         |
|                                   |                           | Resistor                               |
|                                   |                           |                                        |
|                                   |                           |                                        |
|                                   |                           | Resonator                              |
|                                   |                           | Thermistor                             |

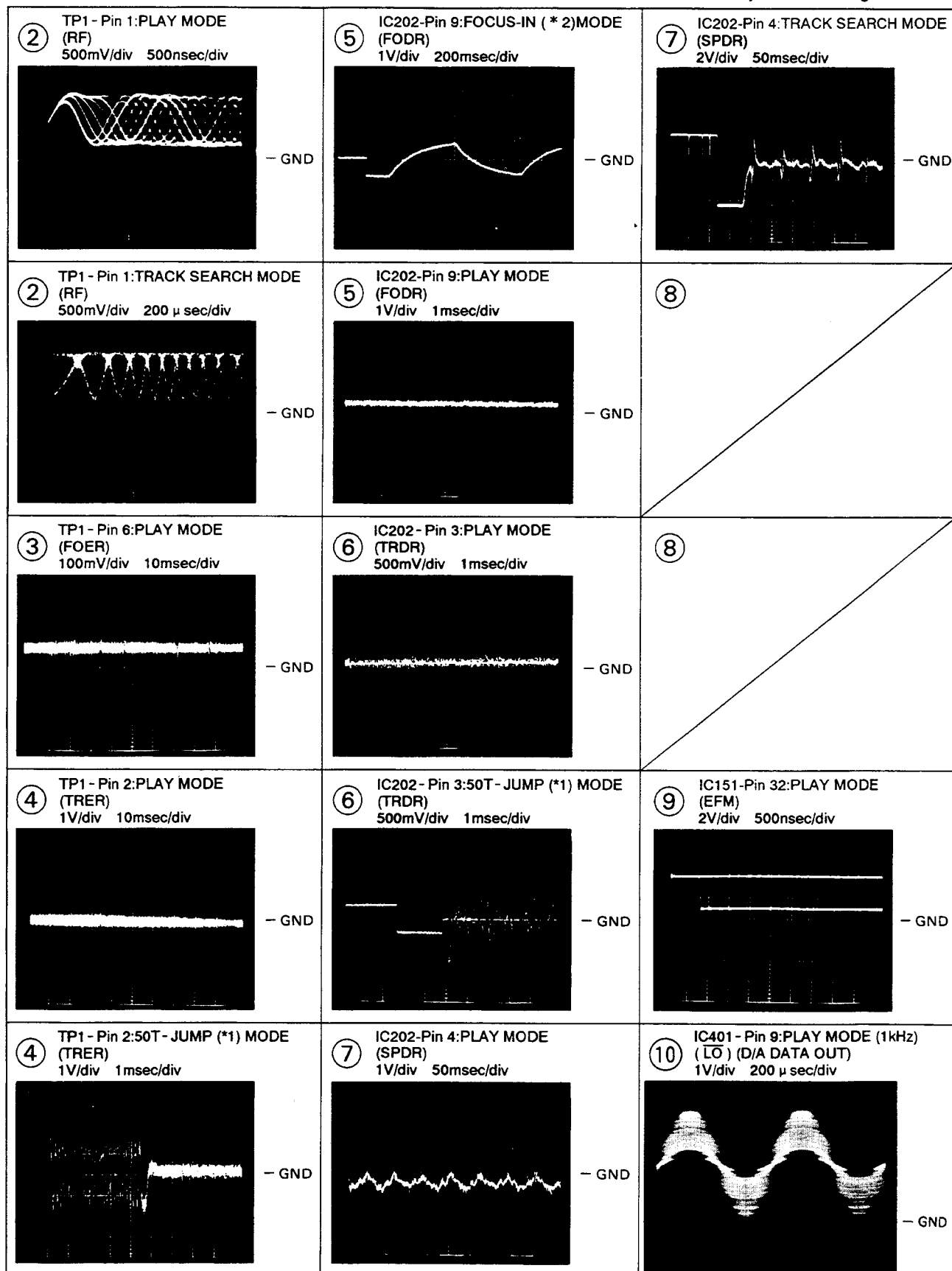
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with  shows negative terminal.
4. The diode marked with  shows cathode side.
5. The transistor terminal marked with  shows emitter.

# ● WAVEFORMS

Note: The encircled numbers denote measuring points in the schematic diagram.

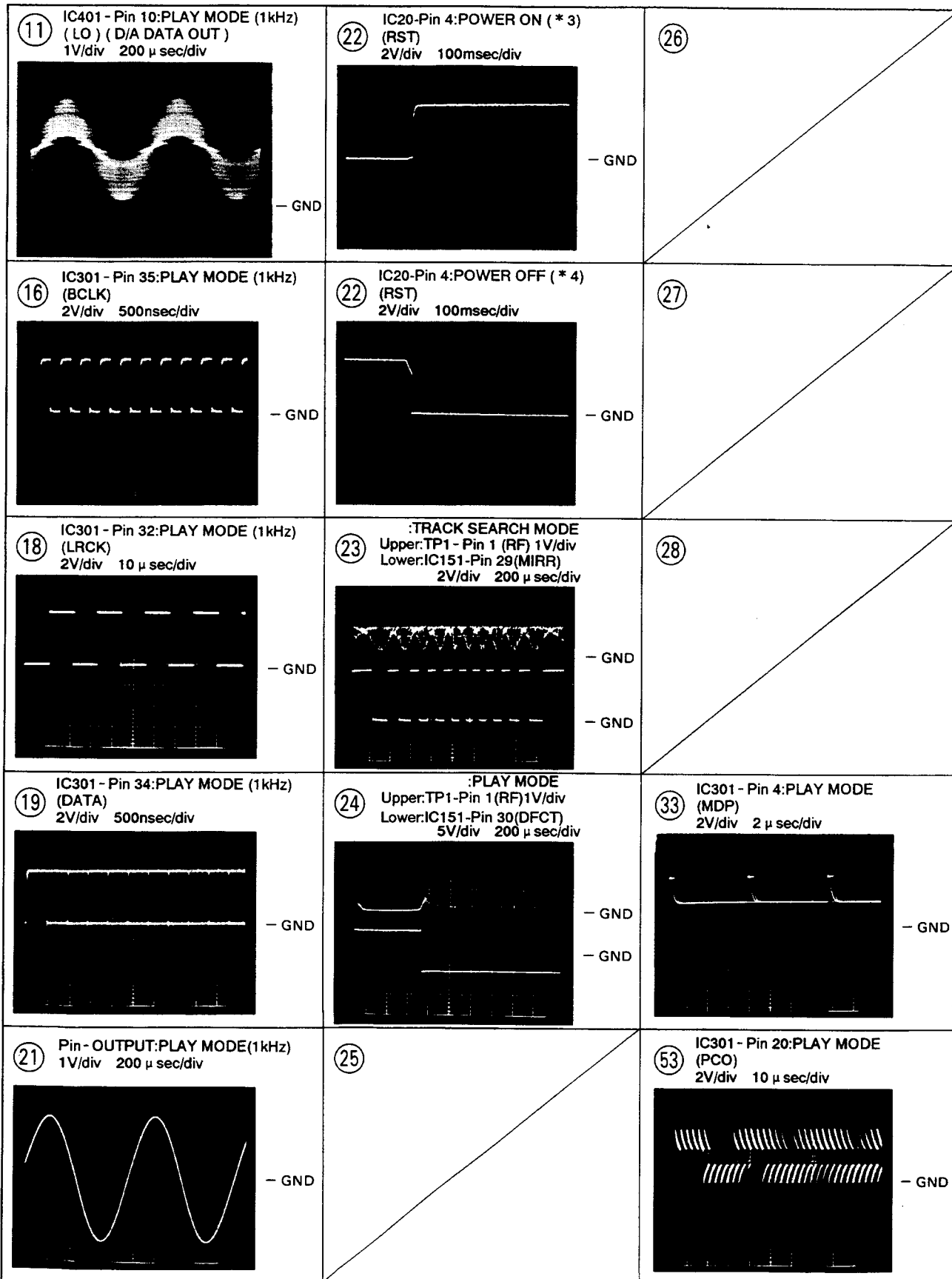
\*1 50T - JUMP: After switching to the pause mode, press the manual search key.

\*2 FOCUS - IN: Press the key without loading a disc.



\*3 POWER ON : Plug AC cord into AC wall socket.

\*4 POWER OFF: Unplug AC cord from AC wall socket.



## 5. ADJUSTMENTS

### 5.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

#### ● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

| Step | Item                                               | Test Point                                  | Adjustment Location                                               |
|------|----------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------|
| 1    | Focus offset verification                          | TP1, Pin 6(FCS. ERR)                        | None                                                              |
| 2    | Tracking error balance verification                | TP1, Pin 2(TRK. ERR)                        | None                                                              |
| 3    | Pickup radial/tangential direction tilt adjustment | TP1, Pin 1(RF)                              | Radial tilt adjustment screw,<br>Tangential tilt adjustment screw |
| 4    | RF level verification                              | TP1, Pin 1(RF)                              | None                                                              |
| 5    | Focus servo loop gain adjustment                   | TP1, Pin 5(FCS. IN)<br>TP1, Pin 6(FCS. ERR) | VR152(FCS. GAN)                                                   |
| 6    | Tracking servo loop gain adjustment                | TP1, Pin 3(TRK. IN)<br>TP1, Pin 2(TRK. ERR) | VR151 (TRK. GAN)                                                  |

#### ● Abbreviation table

|          |                 |
|----------|-----------------|
| FCS. ERR | :Focus Error    |
| TRK. ERR | :Tracking Error |
| FCS GAN  | :Focus Gain     |
| TRK GAN  | :Tracking Gain  |
| FCS. IN  | :Focus In       |
| TRK. IN  | :Tracking In    |

#### ● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS - 7)
4. Low pass filter (  $39\text{k}\Omega$   $+0.001\ \mu\text{F}$  )
5. Resistor (100  $\text{k}\Omega$  )
6. Standard tools

## ● Test Point and Adjustment Variable Resistor Positions

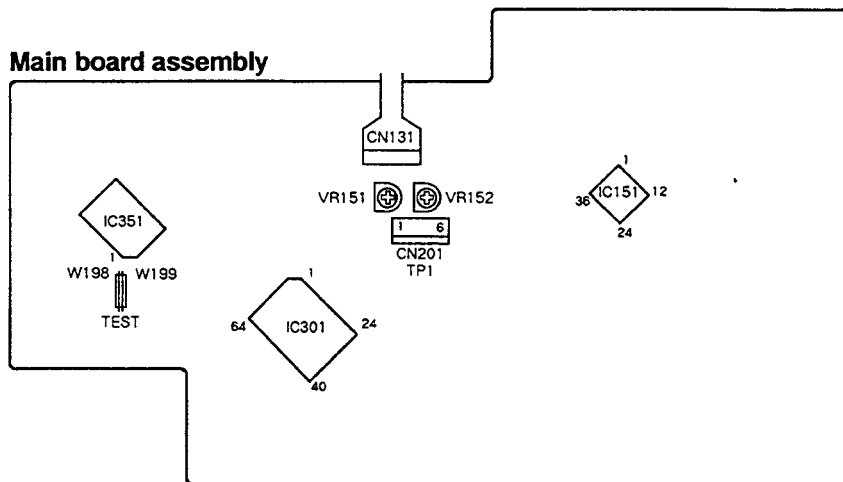


Figure 1. Adjustment Locations

## ● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

## ● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

### [Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC wall socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord into AC wall socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

**[Release from test mode]**

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC wall socket.

**[Operations of the keys in test mode]**

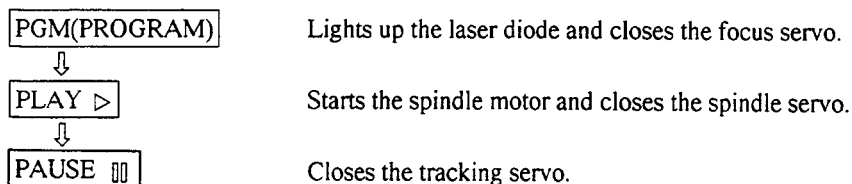
| Code | Key Name         | Function in Test Mode     | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------|------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | PGM<br>(PROGRAM) | Focus servo close         | <p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.</p>                                                                                                                |
| ▷    | PLAY             | Spindle servo ON          | <p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>                                                                                                                                                                                         |
| ⏸    | PAUSE            | Tracking servo close/open | <p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p> |

| Code                                                                                | Key Name                           | Function In Test Mode          | Explanation                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | TRACK /<br>MANUAL<br>SEARCH<br>REV | Carriage reverse<br>(inwards)  | Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
|    | TRACK /<br>MANUAL<br>SEARCH<br>FWD | Carriage forward<br>(outwards) | Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
|    | STOP                               | Stop                           | Initializes and the disc rotation stops.<br>The pickup and disc remain where they are when this key is pressed.                                                                                                                                                                                                    |
|  | OPEN/CLOSE                         | Disc tray open/close           | Open/close the disc tray. This key is a toggle key and open/close tray alternately.<br>Pressing this key when the disc is turning stops the disc, then opens the tray.<br>This key operation does not affect the position of the pickup.                                                                           |

#### [How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



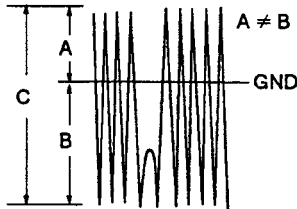
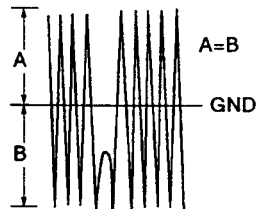
Wait at least 2-3 seconds between each of these operations.

## 1. Focus Offset Verification

|                                                                  |                                                         |                       |                                               |
|------------------------------------------------------------------|---------------------------------------------------------|-----------------------|-----------------------------------------------|
| ● Objective                                                      | Verify the DC offset for the focus error amp.           |                       |                                               |
| ● Symptom when out of adjustment                                 | The model does not focus in and the RF signal is dirty. |                       |                                               |
| ● Measurement instrument connections                             | Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)       | ● Player state        | Test mode, stopped (just the Power switch on) |
|                                                                  | [Settings] 5 mV/division<br>10 ms/division<br>DC mode   | ● Adjustment location | None                                          |
|                                                                  |                                                         | ● Disc                | None needed                                   |
| [Procedure]                                                      |                                                         |                       |                                               |
| Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is $0 \pm 50$ mV. |                                                         |                       |                                               |

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

## 2. Tracking Error Balance Verification

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  |                       |                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| ● Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | To verify that there is no variation in the sensitivity of the tracking photo diode.             |                       |                                                                    |
| ● Symptom when out of adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Play does not start or track search is impossible.                                               |                       |                                                                    |
| ● Measurement instrument connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. | ● Player state        | Test mode, focus and spindle servos closed and tracking servo open |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | [Settings] 50 mV/division<br>5 ms/division<br>DC mode                                            | ● Adjustment location | None                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                  | ● Disc                | YEDS-7                                                             |
| [Procedure]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                  |                       |                                                                    |
| <ol style="list-style-type: none"> <li>1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD <math>\triangleright\triangleright \cdot \triangleright\triangleright</math> or REV <math>\triangleleft\triangleleft \cdot \triangleleft\triangleleft</math> key.</li> <li>2. Press the PGM (PROGRAM) key, then the PLAY <math>\triangleright</math> key in that order to close the focus servo then the spindle servo.</li> <li>3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.</li> <li>4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.</li> </ol> |                                                                                                  |                       |                                                                    |
| <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>When <math>A \geq B</math>, <math>\frac{A-B}{C} \times \frac{1}{2} \leq 0.1</math></p> <p>When <math>A &lt; B</math>, <math>\frac{B-A}{C} \times \frac{1}{2} \leq 0.1</math></p> </div> <div style="text-align: center;">  <p>When there is a DC component</p> </div> <div style="text-align: center;">  <p>When there is no DC component</p> </div> </div>                                                                                                                           |                                                                                                  |                       |                                                                    |

### 3. Pickup Radial/Tangential Tilt Adjustment

|                                      |                                                                                                                                                               |                                                           |                                                                                                               |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| ● Objective                          | To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals. |                                                           |                                                                                                               |
| ● Symptom when out of adjustment     | Sound broken; some discs can be played but not others.                                                                                                        |                                                           |                                                                                                               |
| ● Measurement instrument connections | Connect the oscilloscope to TPI, Pin 1 (RF).<br><br>[Settings] 20 mV/division<br>200 ns/division<br>AC mode                                                   | ● Player state<br><br>● Adjustment location<br><br>● Disc | Test mode, play<br><br>Pickup radial tilt adjustment screw and tangential tilt adjustment screw<br><br>YEDS-7 |

#### [Procedure]

1. Press the TRACK / MANUAL SEARCH FWD  $\triangleright\triangleright$  •  $\triangleright\triangleright$  or REV  $\triangleleft\triangleleft$  •  $\triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35mm).  
Press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and PAUSE  $\square\square$  key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

**Note:**Radial and tangential mean the directions relative to the disc shown in Figure 2.

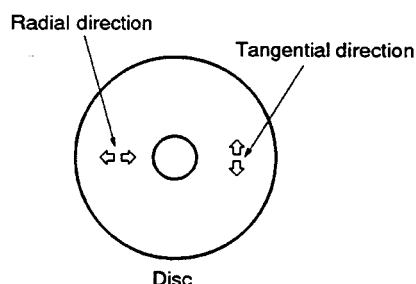
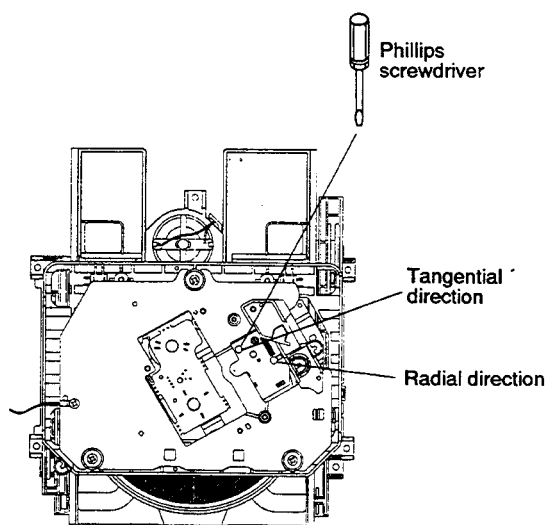
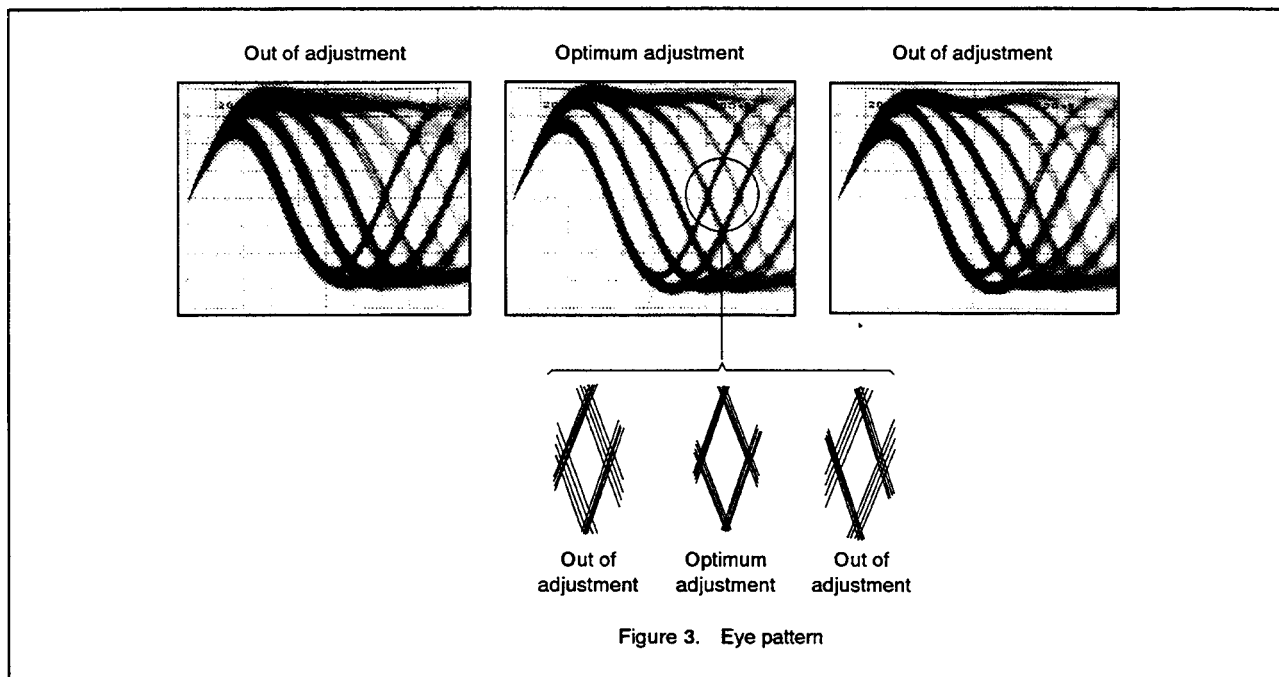


Figure 2



Adjustment locations



#### 4. RF Level Verification

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        |                       |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------|-----------------|
| ● Objective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | To verify the playback RF signal amplitude             |                       |                 |
| ● Symptom when out of adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | No play or no search                                   |                       |                 |
| ● Measurement instrument connections                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Connect the oscilloscope to TP1, Pin 1 (RF).           | ● Player state        | Test mode, play |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | [Settings] 50 mV/division<br>10 ms/division<br>AC mode | ● Adjustment location | None            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        | ● Disc                | YEDS-7          |
| <b>[Procedure]</b> <ol style="list-style-type: none"> <li>1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD <math>\triangleright\triangleright \cdot \triangleright\triangleright</math> or REV <math>\triangleleft\triangleleft \cdot \triangleleft\triangleleft</math> key, then press the PGM (PROGRAM) key, the PLAY <math>\triangleright</math> key and PAUSE <math>\square\square</math> key in that order to close the respective servos and put the player into play mode.</li> <li>2. Verify the RF signal amplitude is <math>1.2 V_{p-p} \pm 0.2 V</math>.</li> </ol> |                                                        |                       |                 |

5. Focus Servo Loop Gain Adjustment

|                                      |                                                                                                            |                       |                  |
|--------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------|------------------|
| ● Objective                          | To optimize the focus servo loop gain.                                                                     |                       |                  |
| ● Symptom when out of adjustment     | Playback does not start or focus actuator noisy.                                                           |                       |                  |
| ● Measurement instrument connections | See figure 4.<br>[Settings]<br>CH1                      CH2<br>20 mV/division    5 mV/division<br>X-Y mode | ● Player state        | Test mode, play  |
|                                      |                                                                                                            | ● Adjustment location | VR152 (FCS. GAN) |
|                                      |                                                                                                            | ● Disc                | YEDS-7           |

[Procedure]

- 1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
- 2. Press the TRACK/MANUAL SEARCH FWD  $\triangleright\triangleright \cdot \triangleright\triangleright$  or REV  $\triangleleft\triangleleft \cdot \triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and the PAUSE  $\square\square$  key in that order to close the corresponding servos and put the player into play mode.
- 3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

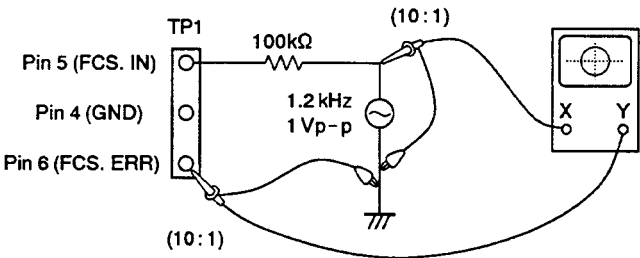
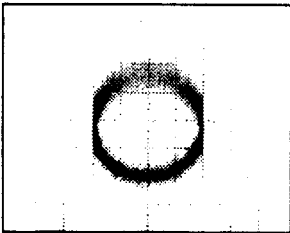


Figure 4

Focus Gain Adjustment



Higher gain



Optimum gain



Lower gain

6. Tracking Servo Loop Gain Adjustment

|                                      |                                                                                             |                       |                  |
|--------------------------------------|---------------------------------------------------------------------------------------------|-----------------------|------------------|
| ● Objective                          | To optimize the tracking servo loop gain.                                                   |                       |                  |
| ● Symptom when out of adjustment     | Playback does not start, during searches the actuator is noisy, or tracks are skipped.      |                       |                  |
| ● Measurement instrument connections | See Figure 5.                                                                               | ● Player state        | Test mode, play  |
|                                      | [Settings]<br>CH1                      CH2<br>50 mV/division   20 mV/division<br>X - Y mode | ● Adjustment location | VR151 (TRK. GAN) |
|                                      |                                                                                             | ● Disc                | YEDS-7           |

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD  $\triangleright\triangleright$  •  $\triangleright\triangleright$  or REV  $\triangleleft\triangleleft$  •  $\triangleleft\triangleleft$  key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY  $\triangleright$  key and the PAUSE  $\square\square$  key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

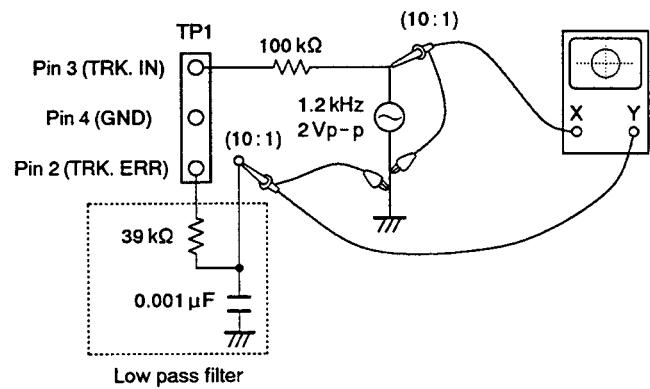
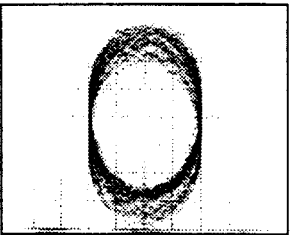


Figure 5

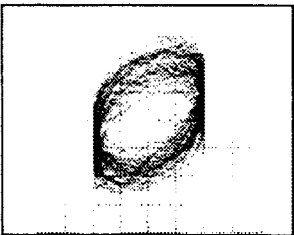
Tracking Gain Adjustment



Higher gain

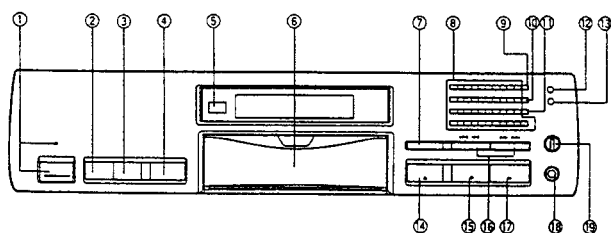


Optimum gain



Lower gain

## 6. PANEL FACILITIES



- ① POWER STANDBY/ON switch and STANDBY indicator
- ② DISPLAY OFF button
- ③ RANDOM button
- ④ HI-LITE SCAN button
- ⑤ Remote sensor  
Receives the signal from the remote control unit.
- ⑥ Disc tray
- ⑦ Stop button (■)
- ⑧ Digit buttons : (1 - 20, >20)
- ⑨ PGM (Program) button
- ⑩ REPEAT button
- ⑪ TIME button
- ⑫ PEAK SEARCH button
- ⑬ COMPU/AUTO EDIT button  
(•COMPU/••AUTO)
- ⑭ OPEN/CLOSE button (▲)
- ⑮ Pause button (II)
- ⑯ Track/Manual search buttons  
(◀◀ ◀▶▶ ▶▶▶)
- ⑰ Play button (▶)
- ⑱ Headphones jack (PHONES)
- ⑲ Headphones/line volume control (PHONES/  
LINE LEVEL)

## 7. SPECIFICATIONS

### 1. General

Type ..... Compact disc digital audio system  
 Power requirements ..... AC 220 - 240 V, 50/60 Hz  
 Power consumption ..... 15 W  
 Operating temperature ..... +5°C - +35°C  
 Weight ..... 3.9 kg

### 2. Audio section

Frequency response ..... 2 Hz - 20 kHz  
 S/N ratio ..... 108 dB or more (EIAJ)  
 Dynamic range ..... 96 dB or more (EIAJ)  
 Harmonic distortion ..... 0.0028% or less (EIAJ)  
 Output voltage ..... 2.0 V  
 Wow and flutter ..... Limit of measurement  
 (±0.001% W.PEAK) or less (EIAJ)  
 Channels ..... 2-channel (stereo)

### 3. Output terminal

Audio line output jacks (VARIABLE)  
 Audio line output jacks (FIXED)  
 Optical digital output jack  
 CD-DECK SYNCHRO jack  
 Headphone jack (with motor drive volume control)

### 4. Functions

Basic operation buttons  
 • PLAY, PAUSE, STOP

Search function

- Direct play
- Track search
- Manual search

Hi-Lite scan

Programming

- Maximum 24 steps
- Pause
- Program clear (single track or all tracks)

Repeat functions

- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat

Random play (repeat also available)

Switching display

Time consumed, remaining time (track/disc), and total time

Timer start

Peak search

Compu/Auto program editing

Selects the tracks within the specified time.

Display off

### 5. Accessories

- Remote control unit ..... 1
- Size AAA/R03/dry batteries ..... 2
- Output cable ..... 1
- Operating instructions ..... 1

### NOTE:

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