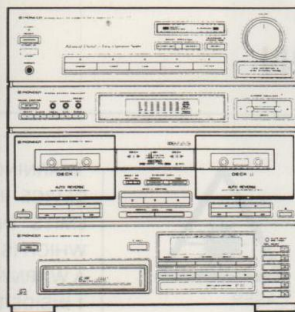


# Service Manual


 ORDER NO.  
**ARP2408**

## STEREO MULTI CD CASSETTE DECK AMPLIFIER

# XD-Z65M

XD - Z65M HAS THE FOLLOWING :

| Type   | Power Requirement                  | Remarks |
|--------|------------------------------------|---------|
| HE     | AC220V - 230V, 240V (Switchable) * |         |
| HB     | AC220V - 230V, 240V (Switchable) * |         |
| HEWZIW | AC220V - 230V, 240V (Switchable) * |         |

\* Change the jumper wires of assembly board.

- This manual is applicable to the HE, HB and HEWZIW types.
- As to the HB and HEWZIW types, refer to page 139.
- This product is a component of a system.
- As to the MECHANISM DESCRIPTION, refer to the PD-Z84M service guide (ARP2190).
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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DFG JAN. 1992 Printed in Japan



# 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 UDGÅ 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

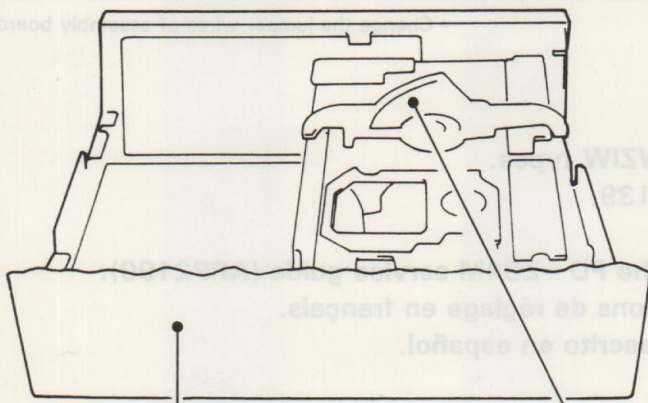
IMPORTANT

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 (MULTI MAGAZINE type)



HE, HEWZIW and HB types

## Additional Laser Caution

### 1. Laser Interlock Mechanism

The ON/OFF (ON : high level, OFF : low level) status of the LPS3 (S601) and LPS4 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS3 and LPS4 are not ON (high level) (clamped state).

Thus, interlock will no longer function if switches LPS3 (S601) and LPS4 (S602) are deliberately shorted.

Also, in the test mode\*, the interlock mechanism does not operate too.

Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

### 2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

\* Refer to page 85.

ADVARSEL

USYNLIG LASERSTRÅLING VED  
ÅBNING NÅR SIKKERHEDSAF-  
BRYDERE ER UDE AF FUNKTION  
UNDGÅ UDSÆTTELSE FOR  
STRÅLING.

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VORSICHT!

UNSICHTBARE LASER-STRÄHLUNG  
TRITTS AUS, WENN DECKELÖFFNER  
KLAPPEINGEFNET IST! NICHT  
DEM STRAHL AUSSETZEN!

VARNING!

Osynlig laserstrålning när denna del  
är öppen och spärren är urkopplad.  
Betrakta ej strålen.

ARW1030-A

CAUTION  
INVISIBLE LASER  
RADIATION WHEN OPEN,  
AVOID EXPOSURE  
TO BEAM

ARW1023

CLASS 1  
LASER PRODUCT

ARW1021

HE and HEWZIW types

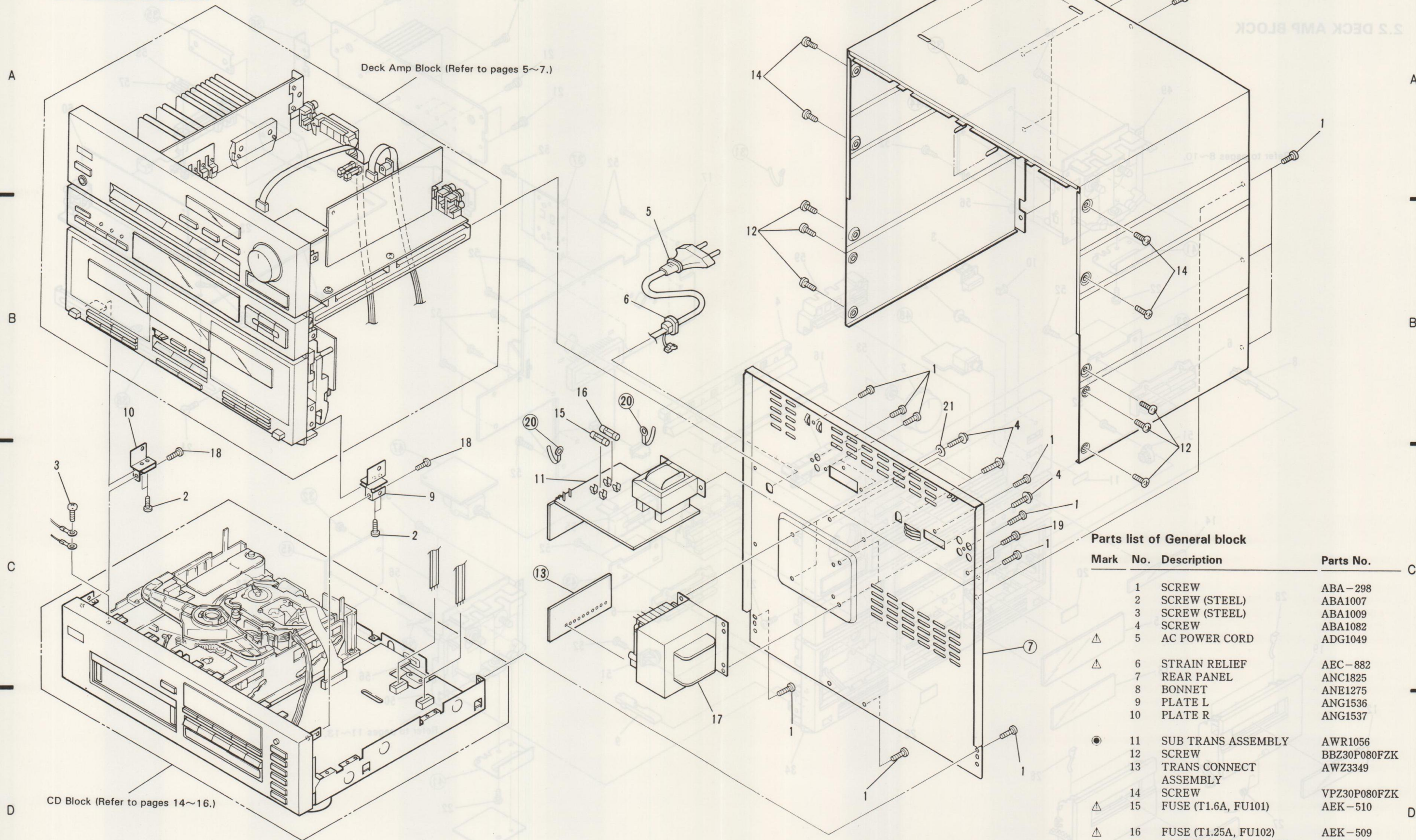
HB type

HE, HB and HEWZIW types



## 2. EXPLODED VIEWS, PACKING AND PARTS LIST

### 2.1 GENERAL BLOCK



#### Parts list of General block

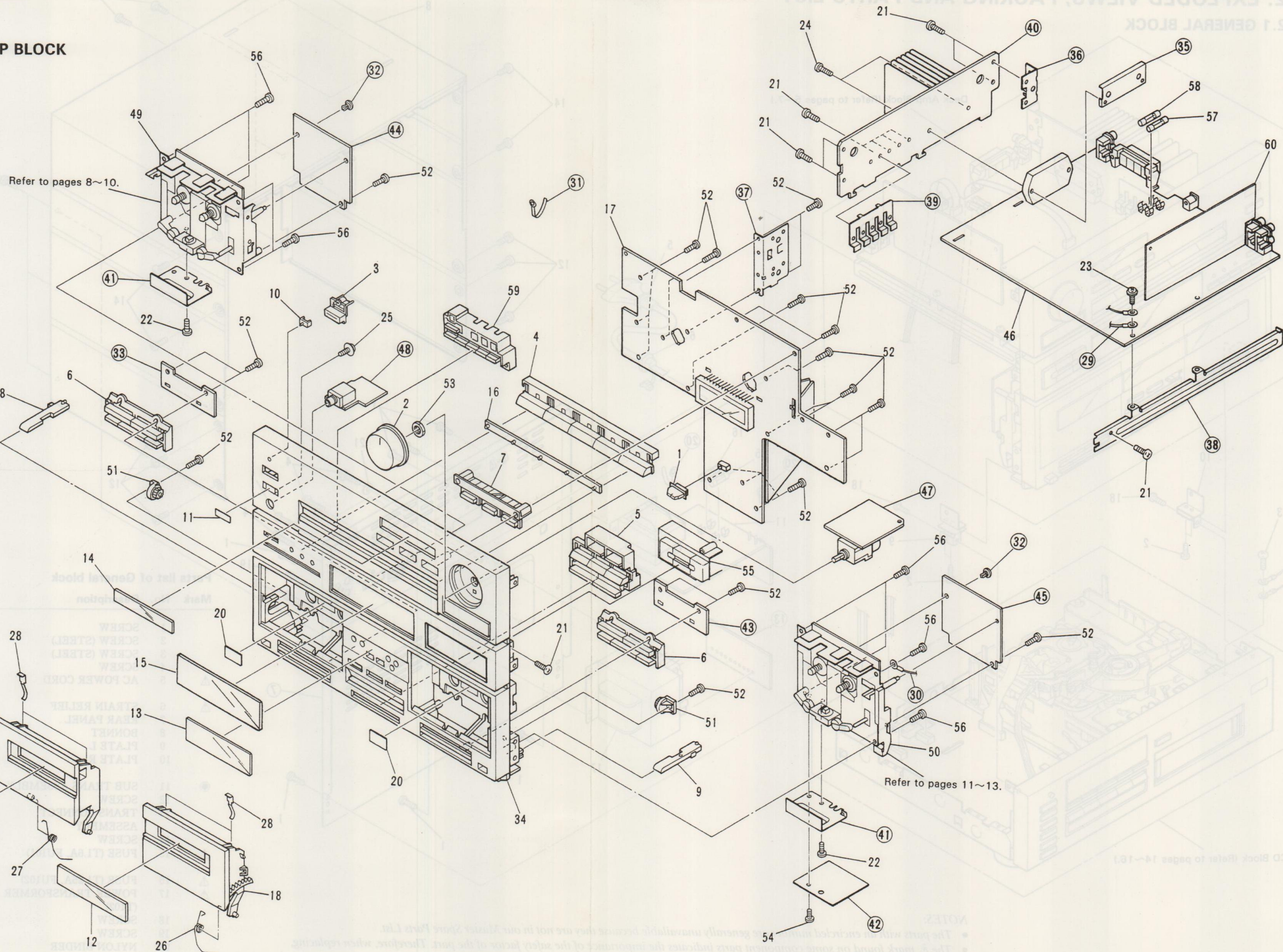
| Mark | No. | Description              | Parts No.    |
|------|-----|--------------------------|--------------|
|      | 1   | SCREW                    | ABA-298      |
|      | 2   | SCREW (STEEL)            | ABA1007      |
|      | 3   | SCREW (STEEL)            | ABA1009      |
|      | 4   | SCREW                    | ABA1082      |
|      | 5   | AC POWER CORD            | ADG1049      |
| △    | 6   | STRAIN RELIEF            | AEC-882      |
| △    | 7   | REAR PANEL               | ANC1825      |
|      | 8   | BONNET                   | ANE1275      |
|      | 9   | PLATE L                  | ANG1536      |
|      | 10  | PLATE R                  | ANG1537      |
| ●    | 11  | SUB TRANS ASSEMBLY       | AWR1056      |
|      | 12  | SCREW                    | BBZ30P080FZK |
|      | 13  | TRANS CONNECT ASSEMBLY   | AWZ3349      |
|      | 14  | SCREW                    | VPZ30P080FZK |
| △    | 15  | FUSE (T1.6A, FU101)      | AEK-510      |
| △    | 16  | FUSE (T1.25A, FU102)     | AEK-509      |
| △    | 17  | POWER TRANSFORMER (T102) | ATS1399      |
|      | 18  | SCREW                    | VPZ30P080FMC |
|      | 19  | SCREW                    | ABA-222      |
|      | 20  | NYLON BINDER             | AEC-093      |
|      | 21  | WASHER                   | ABE-052      |

#### NOTES:

- The parts with an encircled number 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.



## 2.2 DECK AMP BLOCK





## Parts list of Deck amp block

| Mark | No. | Description               | Parts No. |
|------|-----|---------------------------|-----------|
|      | 1   | SLIDE KNOB (DOLBY NR)     | AAE1157   |
|      | 2   | VOL KNOB (VOLUME)         | AAB1274   |
|      | 3   | POWER BUTTON              | AAD1595   |
|      | 4   | FUNCTION BUTTON           | AAD2197   |
|      | 5   | REC COPY BUTTON           | AAD2198   |
|      | 6   | DECK PLAY BUTTON (PLS)    | AAD2199   |
|      | 7   | AI BUTTON (PLS)           | AAD2200   |
|      | 8   | EJECT BUTTON L (PLS)      | AAD2201   |
|      | 9   | EJECT BUTTON R (PLS)      | AAD2202   |
|      | 10  | LENS (POWER IND)          | AAK1800   |
|      | 11  | FILTER (REMOTE SENSOR)    | AAK1812   |
|      | 12  | DECORATIVE PLATE (DOOR)   | AAK2065   |
|      | 13  | DECORATIVE PLATE A (DECK) | AAK2271   |
|      | 14  | AI DECORATIVE PLATE       | AAK2272   |
|      | 15  | DECORATIVE PLATE (GEQ)    | AAK2262   |
|      | 16  | INDICATOR LENS            | AAK2075   |
|      | 17  | DISPLAY ASSEMBLY          | AWZ3909   |
|      | 18  | CASSETTE DOOR (R)         | AAN1329   |
|      | 19  | CASSETTE DOOR (L)         | AAN1330   |
|      | 20  | SHEET (PAPER)             | AAX1301   |
|      | 21  | SCREW                     | ABA-298   |
|      | 22  | SCREW (STEEL)             | ABA1009   |
|      | 23  | SCREW (STEEL)             | ABA1011   |
|      | 24  | SCREW                     | ABA1018   |
|      | 25  | SCREW (STEEL)             | ABA1095   |
|      | 26  | DOOR SPRING L             | ABH1068   |
|      | 27  | DOOR SPRING R             | ABH1069   |
|      | 28  | KEEP PLATE                | ABK1016   |
|      | 29  | GROUND LEAD               | ADB1017   |
|      | 30  | GROUND LEAD               | ADB1002   |
|      | 31  | NYLON BINDER              | AEC-093   |
|      | 32  | NYLON RIVET               | AEC1160   |
|      | 33  | 1 MECHA SW ASSEMBLY       | AWZ3911   |
|      | 34  | FRONT PANEL               | AMB2002   |
|      | 35  | PACK HOLDER               | ANG1335   |
|      | 36  | HEAT SINK HOLDER B        | ANG1338   |
|      | 37  | HEAT SINK HOLDER A        | ANG1418   |
|      | 38  | PLATE                     | ANG1535   |
|      | 39  | PLATE                     | ANG1561   |
|      | 40  | HEAT SINK                 | ANH1313   |
|      | 41  | SHIELD PLATE (MECHA)      | ANK1157   |
|      | 42  | SHIELD PLATE              | ANK1159   |
|      | 43  | 2 MECHA SW ASSEMBLY       | AWZ3912   |
|      | 44  | 1 MECHA ASSEMBLY          | AWZ3324   |
|      | 45  | 2 MECHA ASSEMBLY          | AWZ3325   |

| Mark | No. | Description         | Parts No.    |
|------|-----|---------------------|--------------|
| ●    | 46  | AF ASSEMBLY         | AWZ4103      |
|      | 47  | VR ASSEMBLY         | AWZ3342      |
|      | 48  | HEADPHONE ASSEMBLY  | AWZ3549      |
| ●    | 49  | 1 MECHA UNIT (PB)   | EXK2025      |
| ●    | 50  | 2 MECHA UNIT (RP)   | EXK2017      |
|      | 51  | DAMPER ASSEMBLY     | AXA1008      |
|      | 52  | SCREW               | BPZ26P080FMC |
|      | 53  | NUT                 | NK90FUC      |
|      | 54  | SCREW               | PCZ30P040FMC |
|      | 55  | CURSOR BUTTON       | AAD2284      |
|      | 56  | SCREW               | VPZ30P080FMC |
| △    | 57  | FUSE (T1.6A, FU151) | AEK-510      |
| △    | 58  | FUSE (T1.6A, FU152) | AEK-510      |
|      | 59  | GEQ BUTTON          | AAD2286      |
|      | 60  | GEQ ASSEMBLY        | AWX1048      |



## 2.3 1 MECHA UNIT (EXK2025)

### Parts list of 1 Mecha unit

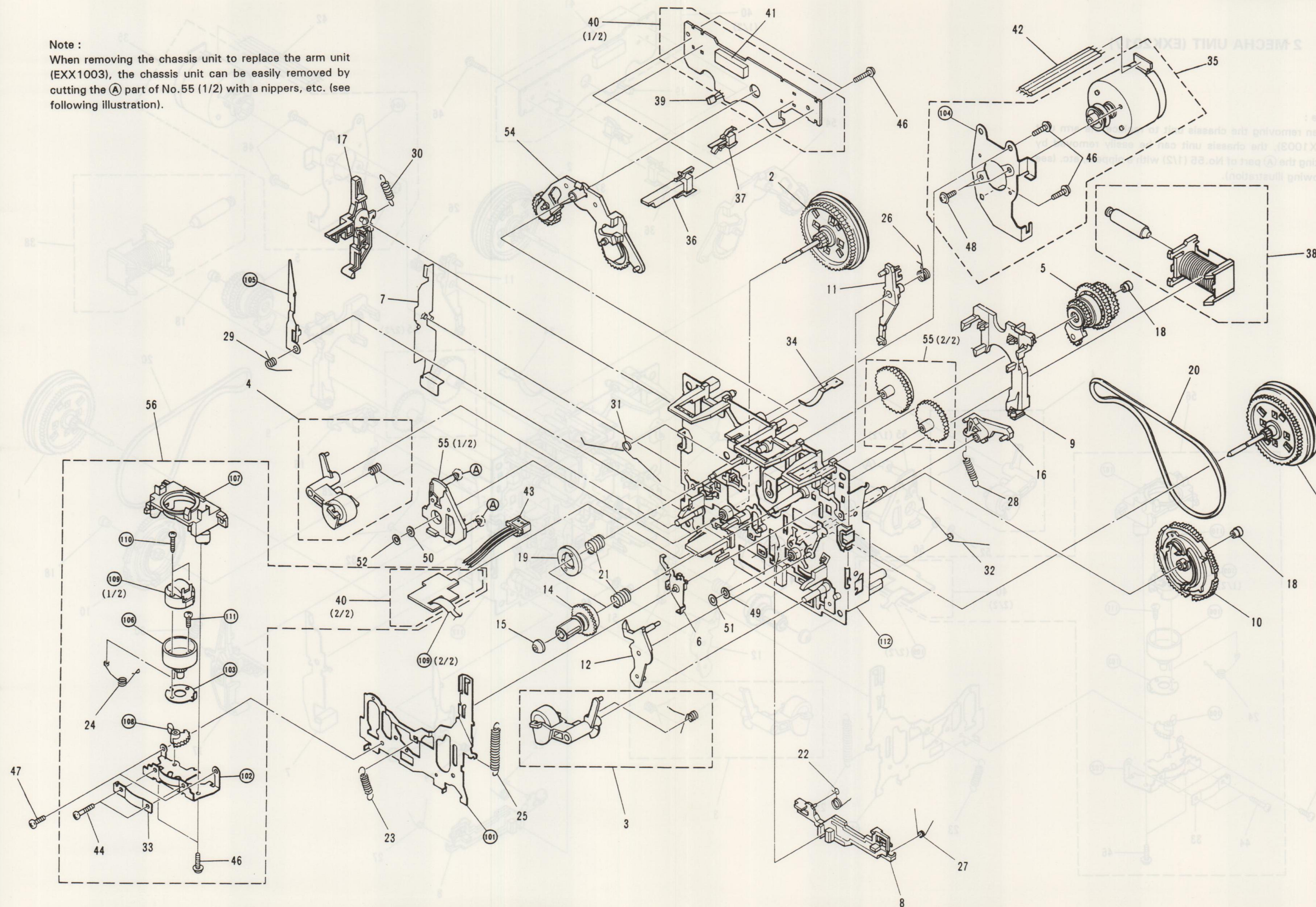
| Mark | No. | Description         | Parts No. |
|------|-----|---------------------|-----------|
|      | 1   | FLYWHEEL UNIT (FWD) | EXA1222   |
|      | 2   | FLYWHEEL UNIT (RVS) | EXA1223   |
|      | 3   | ROLLER UNIT (FWD)   | EXA1224   |
|      | 4   | ROLLER UNIT (RVS)   | EXA1225   |
|      | 5   | LIMITER UNIT        | EXA1226   |
|      | 6   | LEVER UNIT          | EXA1227   |
|      | 7   | EJECT LEVER L2      | AZN2063   |
|      | 8   | LEVER               | ENV1155   |
|      | 9   | BRAKE               | ENV1317   |
|      | 10  | CAM GEAR            | ENV1158   |
|      | 11  | LOCK ARM            | ENV1159   |
|      | 12  | NR ARM              | ENV1163   |
|      | 13  | .....               |           |
|      | 14  | REEL                | ENV1335   |
|      | 15  | REEL BUSH           | ENV1338   |
|      | 16  | ARM                 | ENV1330   |
|      | 17  | EJECT LEVER L1      | AZN2108   |
|      | 18  | BUSH                | ENV1184   |
|      | 19  | MAGNET              | ENV1336   |
|      | 20  | BELT                | ENT1023   |
|      | 21  | SPRING              | EBH1424   |
|      | 22  | SPRING              | EBH1401   |
|      | 23  | SPRING              | EBH1203   |
|      | 24  | SPRING              | EBH1402   |
|      | 25  | SPRING              | EBH1405   |
|      | 26  | SPRING              | EBH1406   |
|      | 27  | SPRING              | EBH1407   |
|      | 28  | SPRING              | EBH1408   |
|      | 29  | SPRING              | EBH1413   |
|      | 30  | SPRING              | EBH1409   |
|      | 31  | SPRING              | EBH1410   |
|      | 32  | SPRING              | EBH1256   |
|      | 33  | SPRING              | EBL1013   |
|      | 34  | SPRING              | EBL1014   |
|      | 35  | MOTOR UNIT          | EXA1241   |
|      | 36  | SWITCH (Detect)     | ESN1003   |
|      | 37  | SWITCH (Mode)       | ESN1004   |
|      | 38  | SOLENOID            | EXP1005   |
|      | 39  | HALL IC             | DN6847SE  |
|      | 40  | COMPLEX PCB         | ENX1007   |
|      | 41  | CONNECTOR (10P)     | EKS1013   |
|      | 42  | LEAD WIRE (4P)      | EDD1003   |
|      | 43  | CONNECTOR (3P)      | EDE1009   |
|      | 44  | SCREW (AZIMUTH)     | EBA1020   |
|      | 45  | .....               |           |

| Mark | No. | Description     | Parts No.    |
|------|-----|-----------------|--------------|
|      | 46  | SCREW (M2×8)    | ATZ20P080FMC |
|      | 47  | SCREW           | BSZ20P050FMC |
|      | 48  | SCREW           | PMS26P025FUC |
|      | 49  | WASHER          | EBF1008      |
|      | 50  | WASHER          | EBF1009      |
|      | 51  | WASHER          | EBF1010      |
|      | 52  | WASHER          | EBF1011      |
|      | 53  | .....           |              |
|      | 54  | ARM UNIT        | EXX1006      |
|      | 55  | ARM UNIT        | EXX1003      |
|      | 56  | P HEAD ASSEMBLY | EXX1008      |
|      | 101 | HEAD BASE       | ENC1281      |
|      | 102 | BRACKET         | ENC1194      |
|      | 103 | PLATE           | ENC1285      |
|      | 104 | BRACKET         | ENC1199      |
|      | 105 | ARM             | ENC1188      |
|      | 106 | HOLDER          | ENV1161      |
|      | 107 | HOLDER          | ENV1301      |
|      | 108 | GEAR            | ENV1177      |
|      | 109 | P HEAD UNIT     | EXA1110      |
|      | 110 | SCREW           | JGZ14P085FNI |
|      | 111 | SCREW           | JGZ14P040FNI |
|      | 112 | CHASSIS UNIT    |              |



## Note :

When removing the chassis unit to replace the arm unit (EXX1003), the chassis unit can be easily removed by cutting the (A) part of No.55 (1/2) with a nippers, etc. (see following illustration).





2.4 2 MECHA UNIT (EXK2017)

A

Note :  
When removing the chassis unit to replace the arm unit (EXX1003), the chassis unit can be easily removed by cutting the (A) part of No.55 (1/2) with a nippers, etc. (see following illustration).

B

C

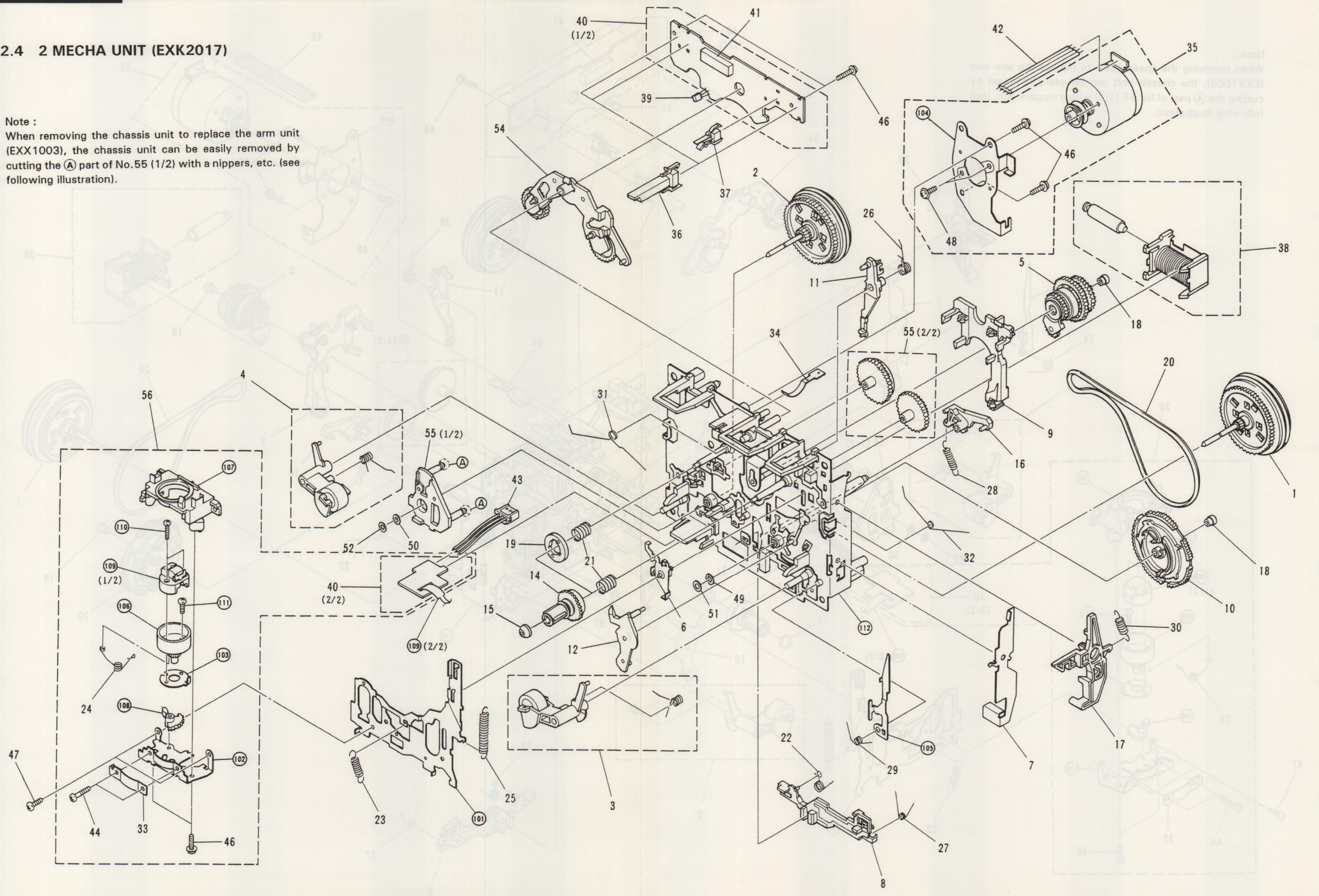
D

A

B

C

D





## Parts list of 2 Mecha unit

| Mark | No. | Description         | Parts No. |
|------|-----|---------------------|-----------|
|      | 1   | FLYWHEEL UNIT (FWD) | EXA1222   |
|      | 2   | FLYWHEEL UNIT (RVS) | EXA1223   |
|      | 3   | ROLLER UNIT (FWD)   | EXA1224   |
|      | 4   | ROLLER UNIT (RVS)   | EXA1225   |
|      | 5   | LIMITER UNIT        | EXA1226   |
|      | 6   | LEVER UNIT          | EXA1227   |
|      | 7   | EJECT LEVER R2      | AZN2064   |
|      | 8   | NR LEVER            | ENV1155   |
|      | 9   | BRAKE               | ENV1317   |
|      | 10  | CAM GEAR            | ENV1158   |
|      | 11  | LOCK ARM            | ENV1159   |
|      | 12  | NR ARM              | ENV1163   |
|      | 13  | .....               |           |
|      | 14  | REEL                | ENV1335   |
|      | 15  | REEL BUSH           | ENV1338   |
|      | 16  | ARM                 | ENV1330   |
|      | 17  | EJECT LEVER R1      | AZN2109   |
|      | 18  | BUSH                | ENV1184   |
|      | 19  | MAGNET              | ENV1336   |
|      | 20  | BELT                | ENT1023   |
|      | 21  | SPRING              | EBH1424   |
|      | 22  | SPRING              | EBH1401   |
|      | 23  | SPRING              | EBH1203   |
|      | 24  | SPRING              | EBH1402   |
|      | 25  | SPRING              | EBH1405   |
|      | 26  | SPRING              | EBH1406   |
|      | 27  | SPRING              | EBH1407   |
|      | 28  | SPRING              | EBH1408   |
|      | 29  | SPRING              | EBH1412   |
|      | 30  | SPRING              | EBH1409   |
|      | 31  | SPRING              | EBH1410   |
|      | 32  | SPRING              | EBH1256   |
|      | 33  | SPRING              | EBL1013   |
|      | 34  | SPRING              | EBL1014   |
|      | 35  | MOTOR UNIT          | EXA1241   |
|      | 36  | SWITCH (Detect)     | ESN1003   |
|      | 37  | SWITCH (Mode)       | ESN1004   |
|      | 38  | SOLENOID            | EXP1005   |
|      | 39  | HALL IC             | DN6847SE  |
|      | 40  | COMPLEX PCB         | ENX1012   |
|      | 41  | CONNECTOR (15P)     | EKS1012   |
|      | 42  | LEAD WIRE (4P)      | EDD1003   |
|      | 43  | CONNECTOR (5P)      | EDE1008   |
|      | 44  | SCREW (AZIMUTH)     | EBA1020   |
|      | 45  | .....               |           |

| Mark | No. | Description       | Parts No.    |
|------|-----|-------------------|--------------|
|      | 46  | SCREW (M2×8)      | ATZ20P080FMC |
|      | 47  | SCREW             | BSZ20P050FMC |
|      | 48  | SCREW             | PMS26P025FUC |
|      | 49  | WASHER            | EBF1008      |
|      | 50  | WASHER            | EBF1009      |
|      | 51  | WASHER            | EBF1010      |
|      | 52  | WASHER            | EBF1011      |
|      | 53  | .....             |              |
|      | 54  | ARM UNIT          | EXX1006      |
|      | 55  | ARM UNIT          | EXX1003      |
|      | 56  | R/P HEAD ASSEMBLY | EXX1013      |
|      | 101 | HEAD BASE         | ENC1281      |
|      | 102 | BRACKET           | ENC1194      |
|      | 103 | PLATE             | ENC1285      |
|      | 104 | BRACKET           | ENC1199      |
|      | 105 | ARM               | ENC1189      |
|      | 106 | HOLDER            | ENV1161      |
|      | 107 | HOLDER            | ENV1301      |
|      | 108 | GEAR              | ENV1177      |
|      | 109 | R/P HEAD UNIT     | EXA1234      |
|      | 110 | SCREW             | JGZ14P085FNI |
|      | 111 | SCREW             | JGZ14P040FNI |
|      | 112 | CHASSIS UNIT      |              |



## 2.5 CD BLOCK

### Parts list of CD block

| Mark | No. | Description              | Parts No.    |
|------|-----|--------------------------|--------------|
|      | 1   | FLEXIBLE CABLE (25P)     | PDD1067      |
|      | 2   | INSULATOR ASSEMBLY       | PXA1343      |
|      | 3   | LEG ASSEMBLY             | PXA1201      |
|      | 4   | SPACER                   | PEB1027      |
|      | 5   | .....                    | .....        |
|      | 6   | MULTI MECHANISM ASSEMBLY | PXA1358      |
|      | 7   | DISPLAY WINDOW           | PAM1565      |
|      | 8   | .....                    | .....        |
|      | 9   | DOOR SPRING              | PBH1022      |
|      | 10  | FUNCTION PANEL           | PNW2153      |
|      | 11  | DOOR GR                  | PNW2159      |
|      | 12  | EJECT BUTTON             | PAC1662      |
|      | 13  | FUNCTION BUTTON          | PAC1681      |
|      | 14  | DISC BUTTON              | PAC1664      |
| ●    | 15  | MOTHER PCB ASSEMBLY      | PWM1372      |
| ●    | 16  | SUB PCB ASSEMBLY         | PWX1148      |
|      | 17  | SCREW                    | BBZ30P060FMC |
|      | 18  | SCREW                    | BBZ30P080FZK |
|      | 19  | SCREW                    | IBZ30P100FCC |
|      | 20  | SCREW                    | IBZ30P135FMC |
|      | 21  | SCREW                    | IBZ30P150FCC |
|      | 22  | SCREW                    | PDZ30P050FMC |
|      | 23  | SCREW                    | PPZ30P100FMC |
|      | 24  | UNDER BASE               | PNA1533      |
|      | 25  | ANGLE                    | PNB1022      |
|      | 26  | MECHANISM BASE (A)       | PNW1942      |
|      | 27  | MECHANISM BASE (B)       | PNW1943      |
|      | 28  | PCB SPACER               | PNY-404      |
|      | 29  | GROUND LEAD              | XDF-502      |
|      | 30  | FLEXIBLE CABLE (6P)      | D20PYY0610E  |



A

B

C

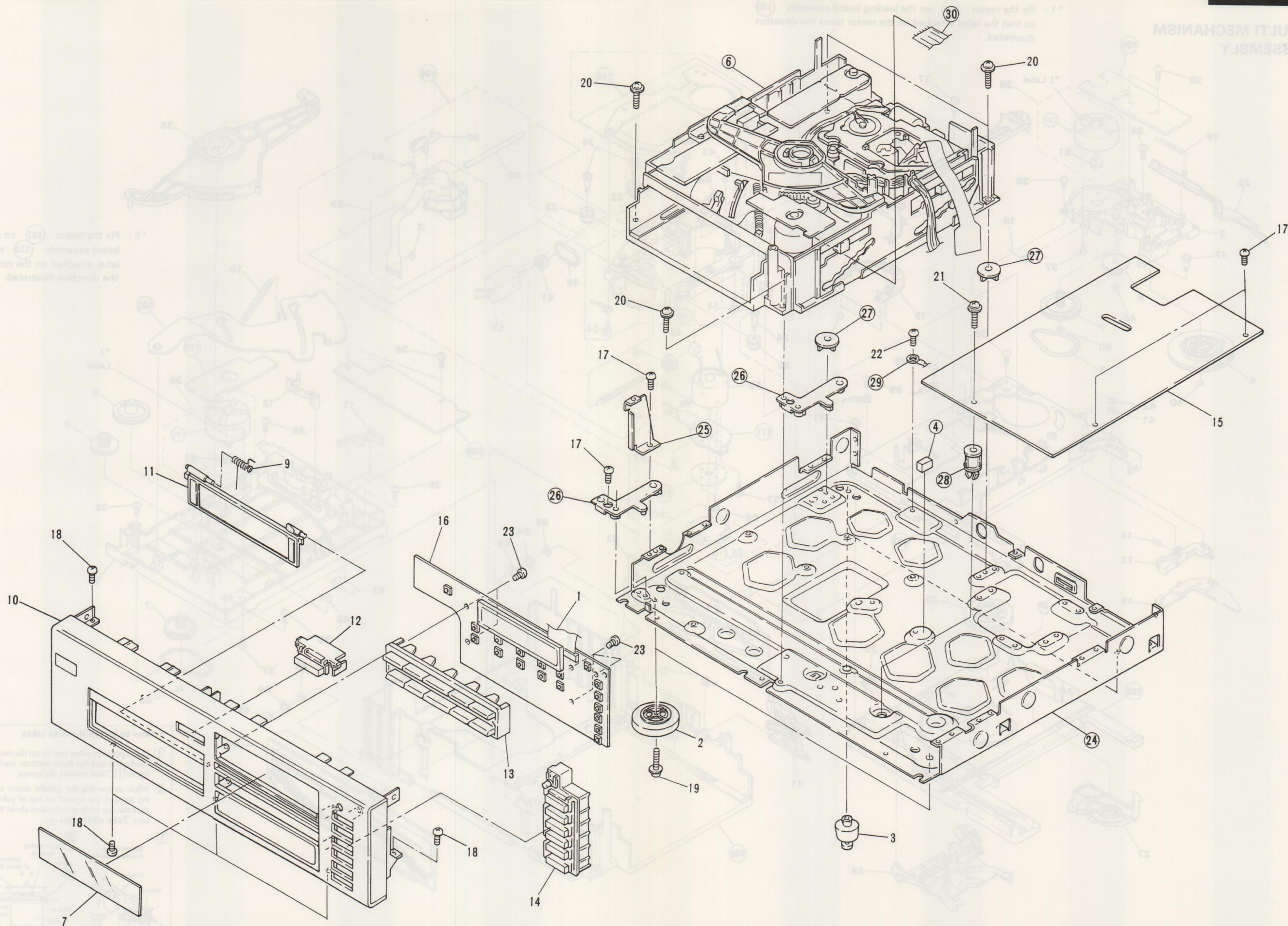
D

A

B

C

D

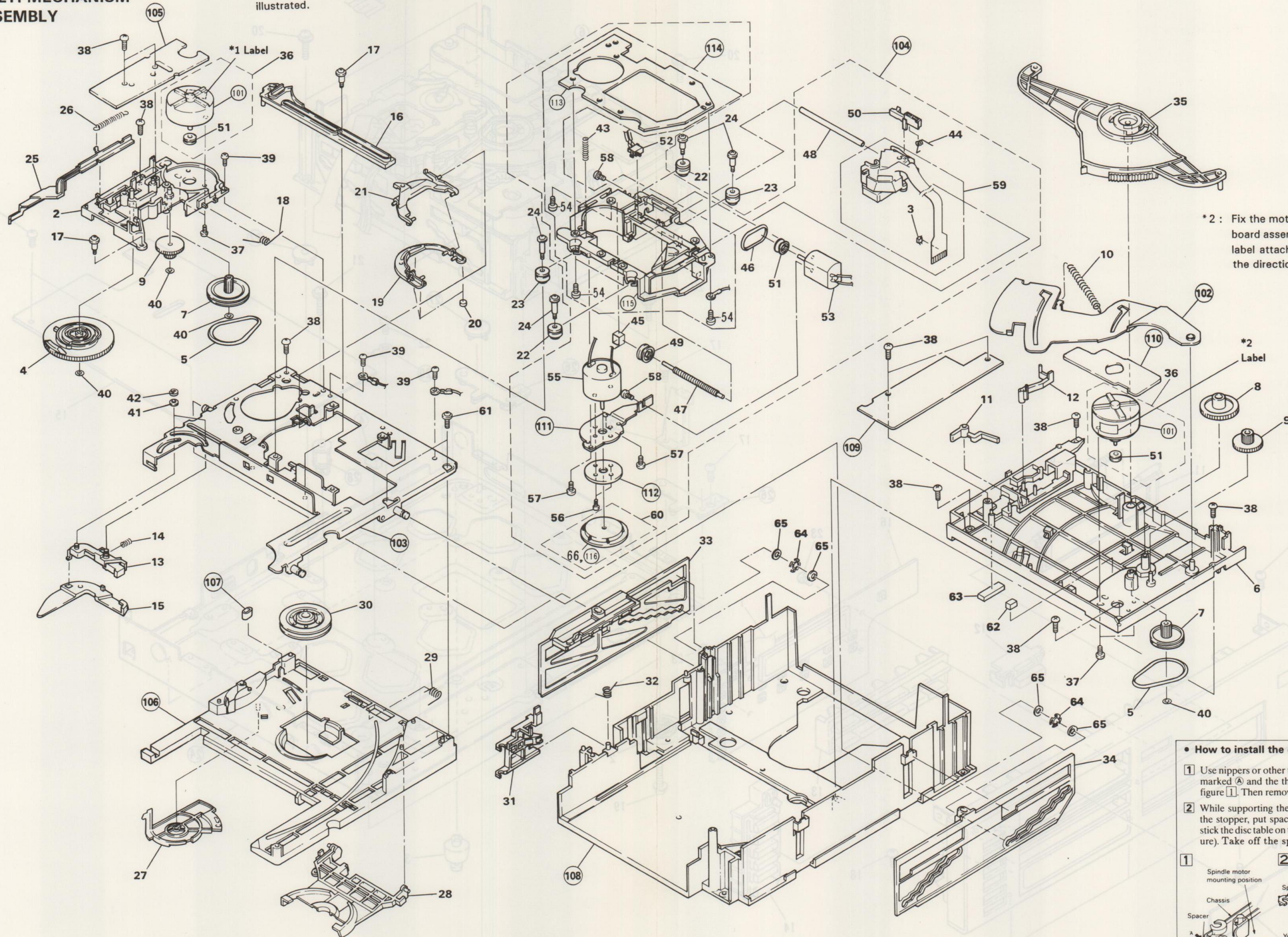




## 2.6 MULTI MECHANISM ASSEMBLY

\*1 : Fix the motor (101) on the loading board assembly (105) so that the label attached on the motor faces the direction illustrated.

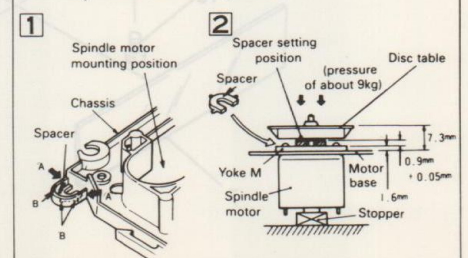
\*2 : Fix the motor (101) on the motor board assembly (110) so that the label attached on the motor faces the direction illustrated.



### • How to install the disc table

1 Use nippers or other tool to cut the two sections marked (A) and the three sections marked (B) in figure 1. Then remove the spacer.

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





## Parts list of Multi mechanism assembly

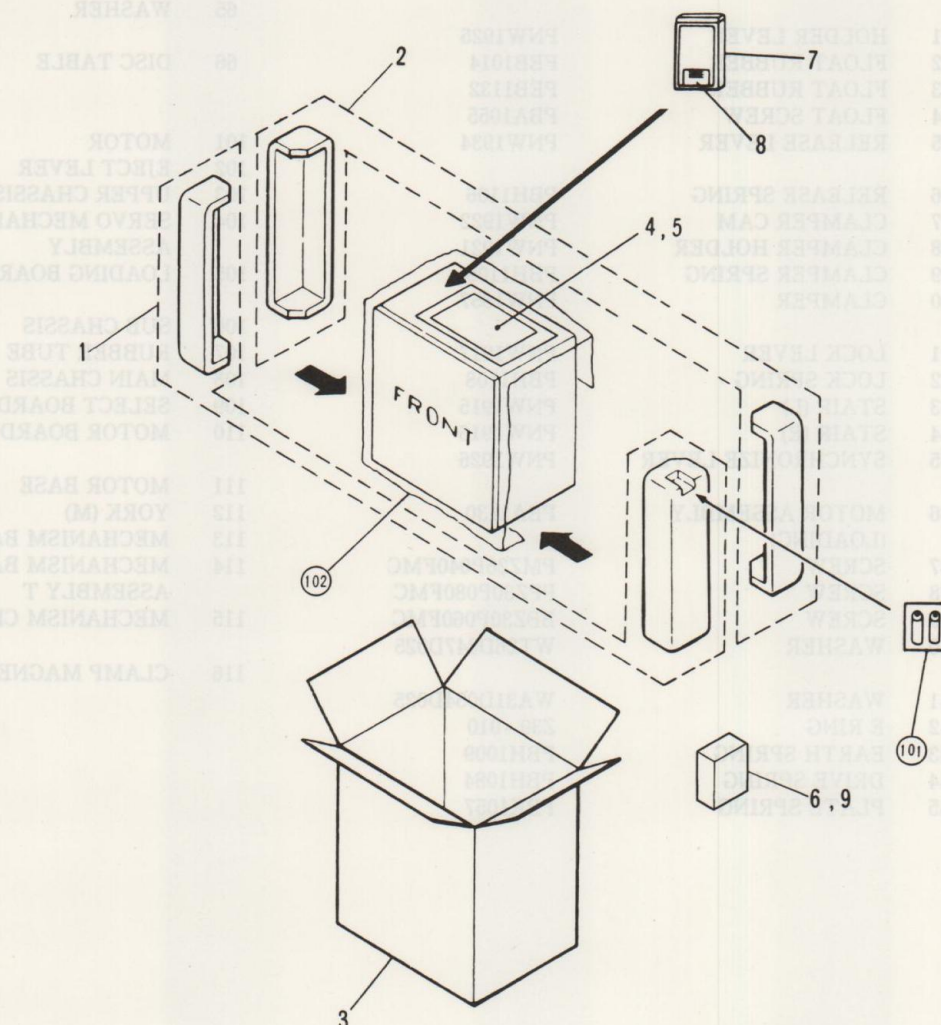
| Mark | No. | Description               | Parts No.    | Mark | No.                         | Description  | Parts No. |
|------|-----|---------------------------|--------------|------|-----------------------------|--------------|-----------|
|      | 1   | .....                     |              | 46   | BELT                        | PEB1072      |           |
|      | 2   | GEAR HOLDER               | PNW1929      | 47   | DRIVE SCREW                 | PLA1003      |           |
|      | 3   | SEMI-FIXED RESISTOR (VR1) | PCP1008      | 48   | GUIDE BAR                   | PLA1071      |           |
|      | 4   | CAM GEAR                  | PNW1923      | 49   | PULLEY                      | PNW1066      |           |
|      | 5   | BELT                      | PEB1138      | 50   | HALF NUT                    | PNW1605      |           |
|      | 6   | TOP GUIDE                 | PNW1914      | 51   | MOTOR PULLEY                | PNW1634      |           |
|      | 7   | GEAR PULLEY               | PNW1918      | 52   | PUSH SWITCH                 | PSH1014      |           |
|      | 8   | GEAR (S)                  | PNW1919      | 53   | DC MOTOR/1.7W (CARRIAGE)    | PXM1013      |           |
|      | 9   | GEAR (L)                  | PNW1920      | 54   | SCREW                       | PBZ30P080FMC |           |
|      | 10  | EJECT SPRING              | PBH1107      | 55   | DC MOTOR ASSEMBLY (SPINDLE) | PEA1028      |           |
|      | 11  | SWITCH LEVER              | PNW1927      | 56   | SCREW                       | JFZ20P040FMC |           |
|      | 12  | SEVEN BAR                 | PNW1931      | 57   | SCREW                       | PBZ20P080FZK |           |
|      | 13  | SUB ROTARY LEVER          | PNW1933      | 58   | SCREW                       | PMZ20P030FMC |           |
|      | 14  | SUB ROTARY LEVER SPRING   | PBH1111      | 59   | PICK UP ASSEMBLY            | PEA1030      |           |
|      | 15  | ROTARY LEVER              | PNW1932      | 60   | DISC TABLE ASSEMBLY         | PEA1035      |           |
|      | 16  | DRIVE PLATE               | PNW1930      | 61   | SCREW                       | IPZ30P080FMC |           |
|      | 17  | SCREW                     | PBA-112      | 62   | SPACER                      | PEB1178      |           |
|      | 18  | HOLDER LEVER SPRING       | PBH1110      | 63   | SPACER                      | PEB1179      |           |
|      | 19  | DISC HOLDER               | PNW1924      | 64   | PLATE SPRING                | PBK1093      |           |
|      | 20  | CUSHION (A)               | PED1001      | 65   | WASHER                      | WA62D130D025 |           |
|      | 21  | HOLDER LEVER              | PNW1925      | 66   | DISC TABLE                  | PNW1067      |           |
|      | 22  | FLOAT RUBBER              | PEB1014      | 101  | MOTOR                       | VXM1033      |           |
|      | 23  | FLOAT RUBBER              | PEB1132      | 102  | EJECT LEVER                 | PNB1306      |           |
|      | 24  | FLOAT SCREW               | PBA1055      | 103  | UPPER CHASSIS               | PNB1267      |           |
|      | 25  | RELEASE LEVER             | PNW1934      | 104  | SERVO MECHANISM ASSEMBLY    | PXA1364      |           |
|      | 26  | RELEASE SPRING            | PBH1106      | 105  | LOADING BOARD ASSEMBLY      | PWZ2038      |           |
|      | 27  | CLAMPER CAM               | PNW1922      | 106  | SUB CHASSIS                 | PNW2027      |           |
|      | 28  | CLAMPER HOLDER            | PNW1921      | 107  | RUBBER TUBE                 | PEB1171      |           |
|      | 29  | CLAMPER SPRING            | PBH1109      | 108  | MAIN CHASSIS                | PNW2026      |           |
|      | 30  | CLAMPER                   | PNW1857      | 109  | SELECT BOARD ASSEMBLY       | PWZ2039      |           |
|      | 31  | LOCK LEVER                | PNW1917      | 110  | MOTOR BOARD ASSEMBLY        | PWZ2040      |           |
|      | 32  | LOCK SPRING               | PBH1108      | 111  | MOTOR BASE                  | PNB1211      |           |
|      | 33  | STAIR (L)                 | PNW1915      | 112  | YORK (M)                    | PNB1227      |           |
|      | 34  | STAIR (R)                 | PNW1916      | 113  | MECHANISM BASE              | PNB1230      |           |
|      | 35  | SYNCHRONIZE LEVER         | PNW1926      | 114  | MECHANISM BASE ASSEMBLY T   | PXA1294      |           |
|      | 36  | MOTOR ASSEMBLY (LOADING)  | PEA1130      | 115  | MECHANISM CHASSIS           | PNW1604      |           |
|      | 37  | SCREW                     | PMZ26P040FMC | 116  | CLAMP MAGNET                | PMF1014      |           |
|      | 38  | SCREW                     | PPZ30P080FMC |      |                             |              |           |
|      | 39  | SCREW                     | BBZ30P060FMC |      |                             |              |           |
|      | 40  | WASHER                    | WT26D047D025 |      |                             |              |           |
|      | 41  | WASHER                    | WA31D054D025 |      |                             |              |           |
|      | 42  | E RING                    | Z39-010      |      |                             |              |           |
|      | 43  | EARTH SPRING              | PBH1009      |      |                             |              |           |
|      | 44  | DRIVE SPRING              | PBH1084      |      |                             |              |           |
|      | 45  | PLATE SPRING              | PBK1057      |      |                             |              |           |



## 2.7 PACKING

### Parts list of Packing

| Mark | No. | Description                           | Parts No. |
|------|-----|---------------------------------------|-----------|
|      | 1   | FRONT PAD L, R                        | AHA1479   |
|      | 2   | REAR PAD L, R                         | AHA1495   |
|      | 3   | PACKING CASE                          | AHD2217   |
|      | 4   | OPERATING INSTRUCTIONS                | ARE1238   |
|      |     | (Dutch, Swedish, Spanish, Portuguese) |           |
|      | 5   | OPERATING INSTRUCTIONS                | ARE1237   |
|      |     | (English, French, German, Italian)    |           |
|      | 6   | MAGAZINE ASSEMBLY                     | PXA1317   |
|      | 7   | REMOTE CONTROL UNIT                   | AXD1184   |
|      |     | (CU-DC021)                            |           |
|      | 8   | BATTERY COVER                         | AZA1297   |
|      | 9   | PP CASE                               | PYY1141   |
|      | 101 | DRY CELL BATTERY                      | AEX-021   |
|      |     | (R03, AAA)                            |           |
|      | 102 | SHEET                                 | AHG1151   |



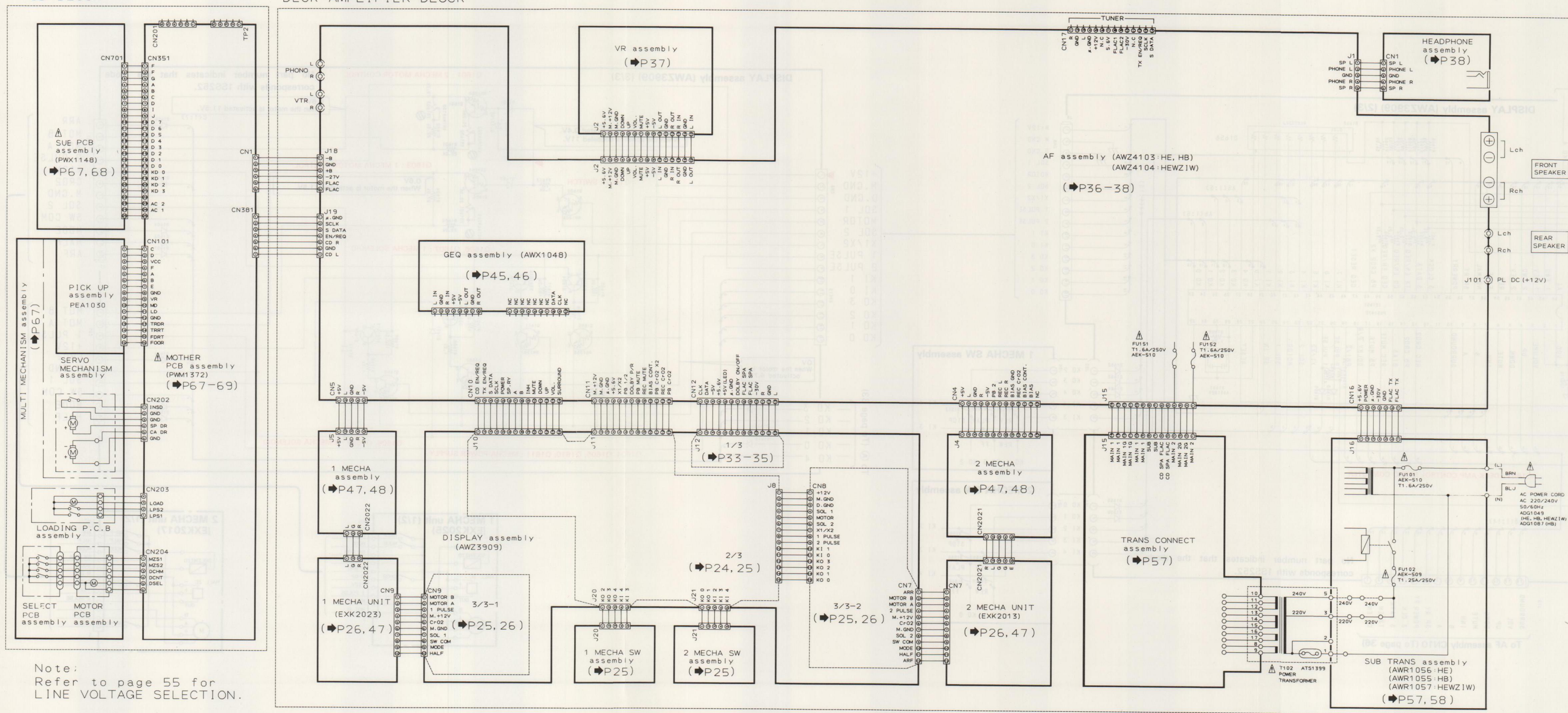


### 3. SCHEMATIC DIAGRAMS AND PCB CONNECTION DIAGRAMS

#### 3.1 OVER ALL SCHEMATIC DIAGRAM

##### CD BLOCK

##### DECK AMPLIFIER BLOCK



1. RESISTORS:  
Indicated in Ω, kΩ, MΩ, %W, ±5% tolerance unless otherwise noted k:k12,  
M:M12, (F): ±1%, (G): ±2%, (K): ±10% (M): ±20% tolerance

2. CAPACITORS:  
Indicated in capacity (μF)/voltage (V) unless otherwise noted p:pF  
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:  
Signal voltage at (33 W + 33 W - 80) output (1 kHz)  
DC voltage (V) at no input signal  
Value in ( ) is DC voltage at rated power.  
mA: DC current at no input signal

4. OTHERS:  
Signal route  
Adjusting point  
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.  
marked capacitors and resistors have parts numbers.  
(RED): TEST POINT  
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES (The underline indicates the switch position)

| DISPLAY assembly      | 1 MECHA SW assembly |
|-----------------------|---------------------|
| S1504 POWER           | S1551 1 REV         |
| S1505 VIDEO           | S1552 1 PLAY        |
| S1507 FINE            | S1553 1 STOP        |
| S1510 AI MEMO         | S1554 1 REW         |
| S1511 AI BGM          | S1555 1 FF          |
| S1512 PHONO           |                     |
| S1513 2 REC MUTE      | 2 MECHA SW assembly |
| S1514 NORMAL          | S1556 2 STOP        |
| S1516 SURR.           | S1557 2 REV         |
| S1517 TAPE            | S1558 2 PLAY        |
| S1518 2 REC           | S1559 2 REW         |
| S1519 × 2 COPY        | S1560 2 FF          |
| S1522 CD              |                     |
| S1523 TX              |                     |
| S1524 2 PAUSE         |                     |
| S1525 × 1 COPY        |                     |
| S1526 DOLBY NR ON/OFF |                     |
| S1532 FLAT            |                     |
| S1533 D (CARI)        |                     |
| S1534 B (CLEAR)       |                     |
| S1535 MEMORY          |                     |
| S1537 EQ ON/OFF       |                     |
| S1538 LEVEL UP (▶)    |                     |
| S1539 F DOWN          |                     |
| S1542 E PHONES        |                     |
| S1543 C (VOCAL)       |                     |
| S1544 A (HEAVY)       |                     |
| S1546 PGM PRESET      |                     |
| S1547 F UP            |                     |
| S1548 LEVEL DOWN (◀)  |                     |







NOTE

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

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

Others

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

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

Q1503-Q1507 ICI502 Q1514 Q1513 Q1512 Q1511  
ICI652 ICI651

Q1508 Q1509 ICI505 ICI501

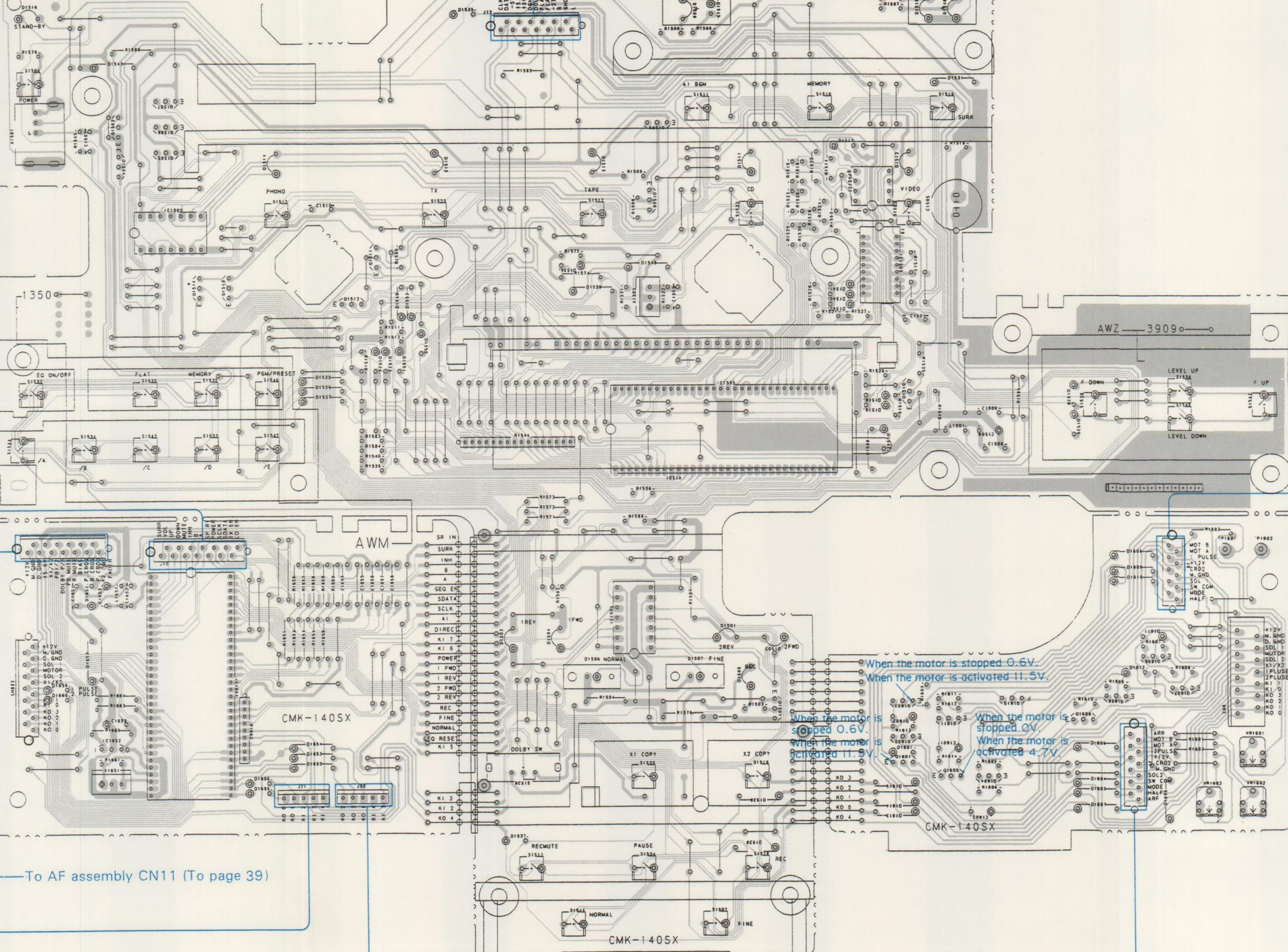
ICI504 ICI503 Q1510 Q1601-Q1605 Q1611 Q1610

Q1606-Q1609

VR1601-VR1603

## DISPLAY assembly (AWZ3909)

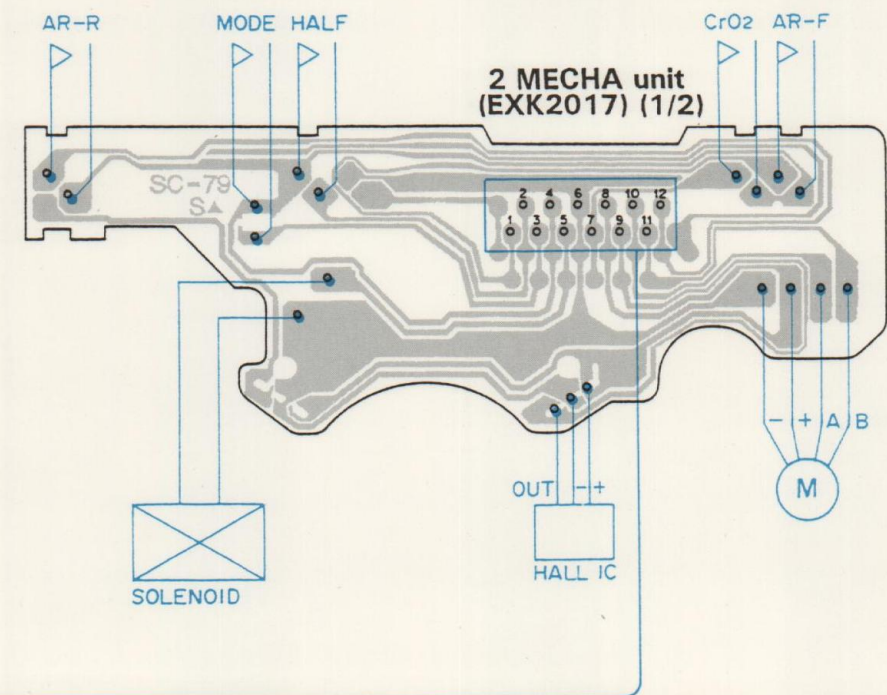
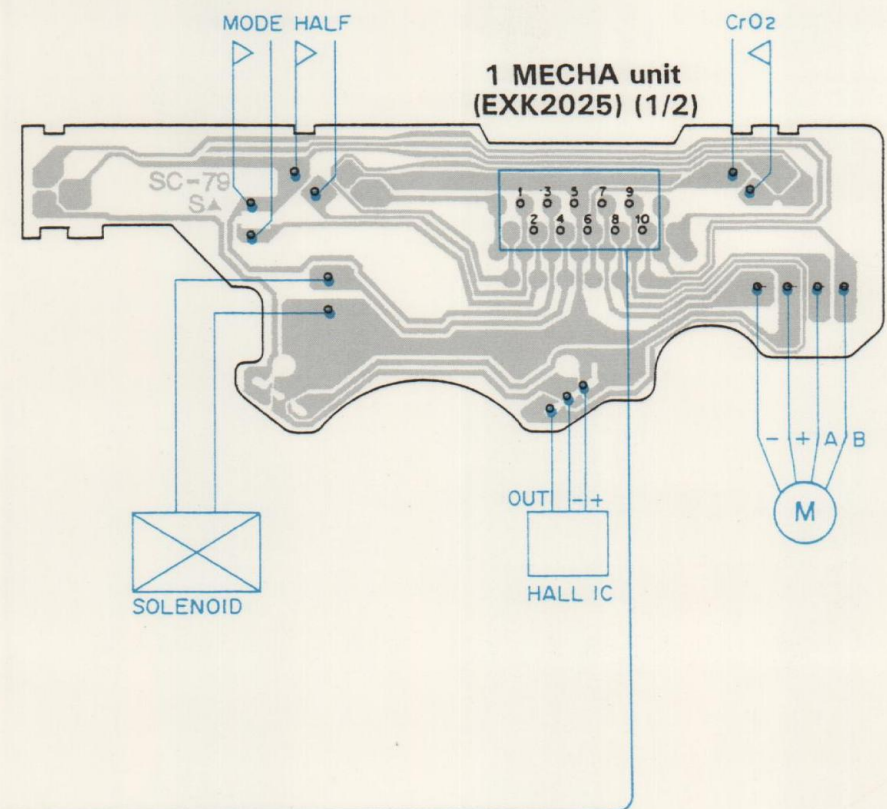
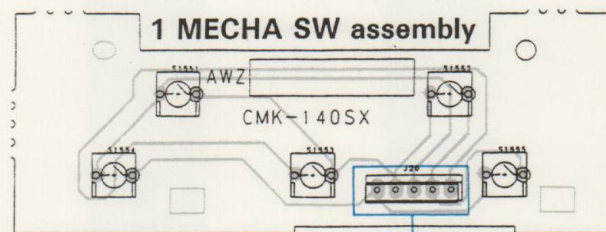
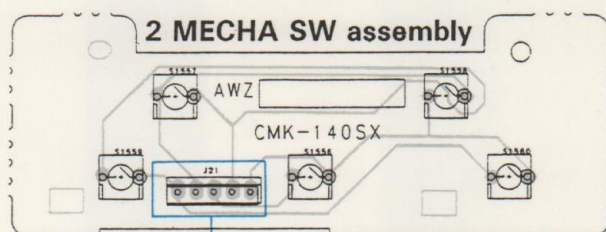
ANP1551-B



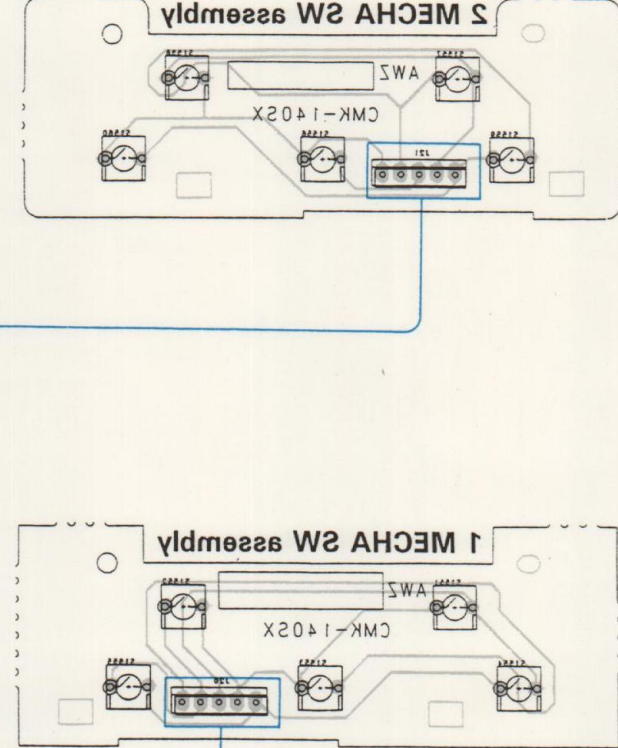
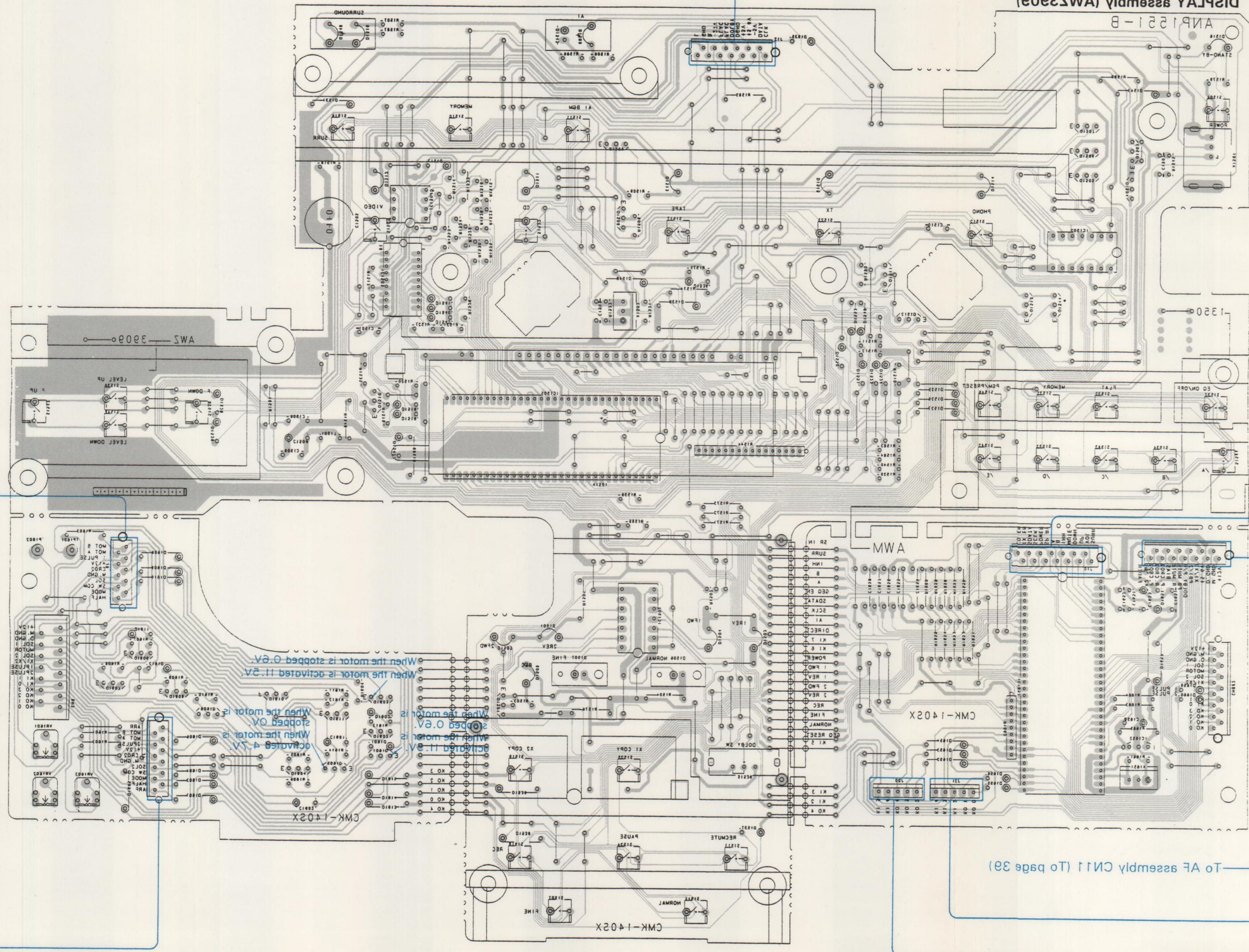
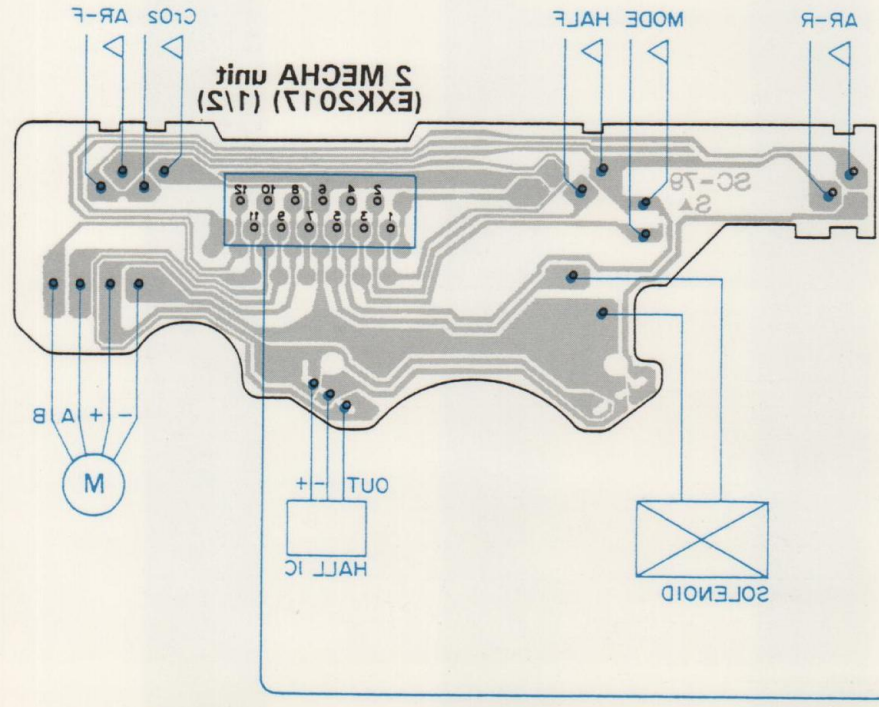
To AF assembly CN10 (To page 40)

To AF assembly CN11 (To page 39)

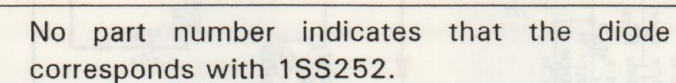
To AF assembly CN12 (To page 39)









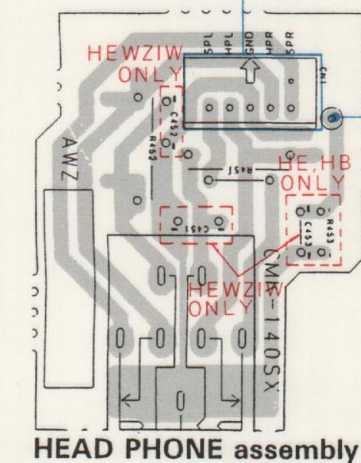
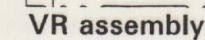
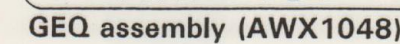


Q1511 – Q1514 : FL DRIVE LOGIC



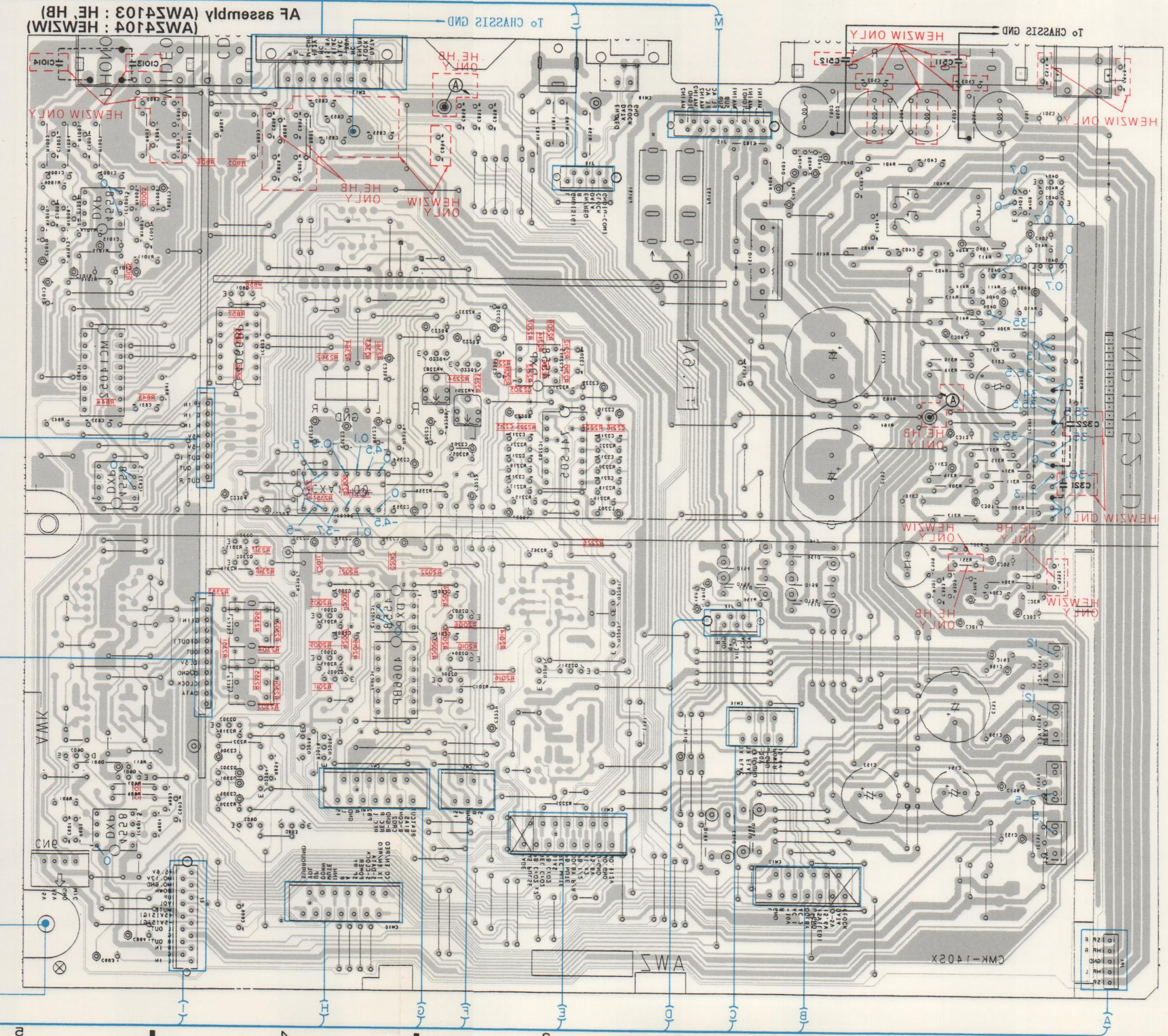




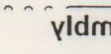


- (B) — To DISPLAY assembly J12 (To page 28)
- (C) — To SUB TRANS assembly CN16 (To page 56)
- (D) — To CD Block MOTHER PCB assembly CN1  
(To page 65)
- (E) — To DISPLAY assembly J11 (To page 27)
- (F) — To 1 MECHA assembly J5 (To page 49)
- (G) — To 2 MECHA assembly J4 (To page 50)
- (H) — To DISPLAY assembly J10 (To page 27)
- (L) — To CD Block MOTHER PCB assembly CN381  
(To page 66)
- (M) — To TRANS CONNECT assembly J15 (To page 55)

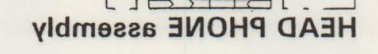




(AWZ4104 : HEWZIW) (AWZ4103 : HE HB)



CWK-14



(M) —To TRANS CONNECT assembly 115 (To page 56)

(L) —To CD Block MOTHER PCB assembly CN381 (To page 66)

(H) —To DISPLAY assembly 110 (To page 57)

(G) —To 2 MECHA assembly 14 (To page 50)

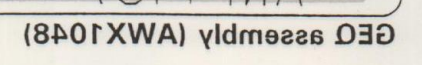
(F) —To 1 MECHA assembly 15 (To page 49)

(E) —To DISPLAY assembly 111 (To page 57)

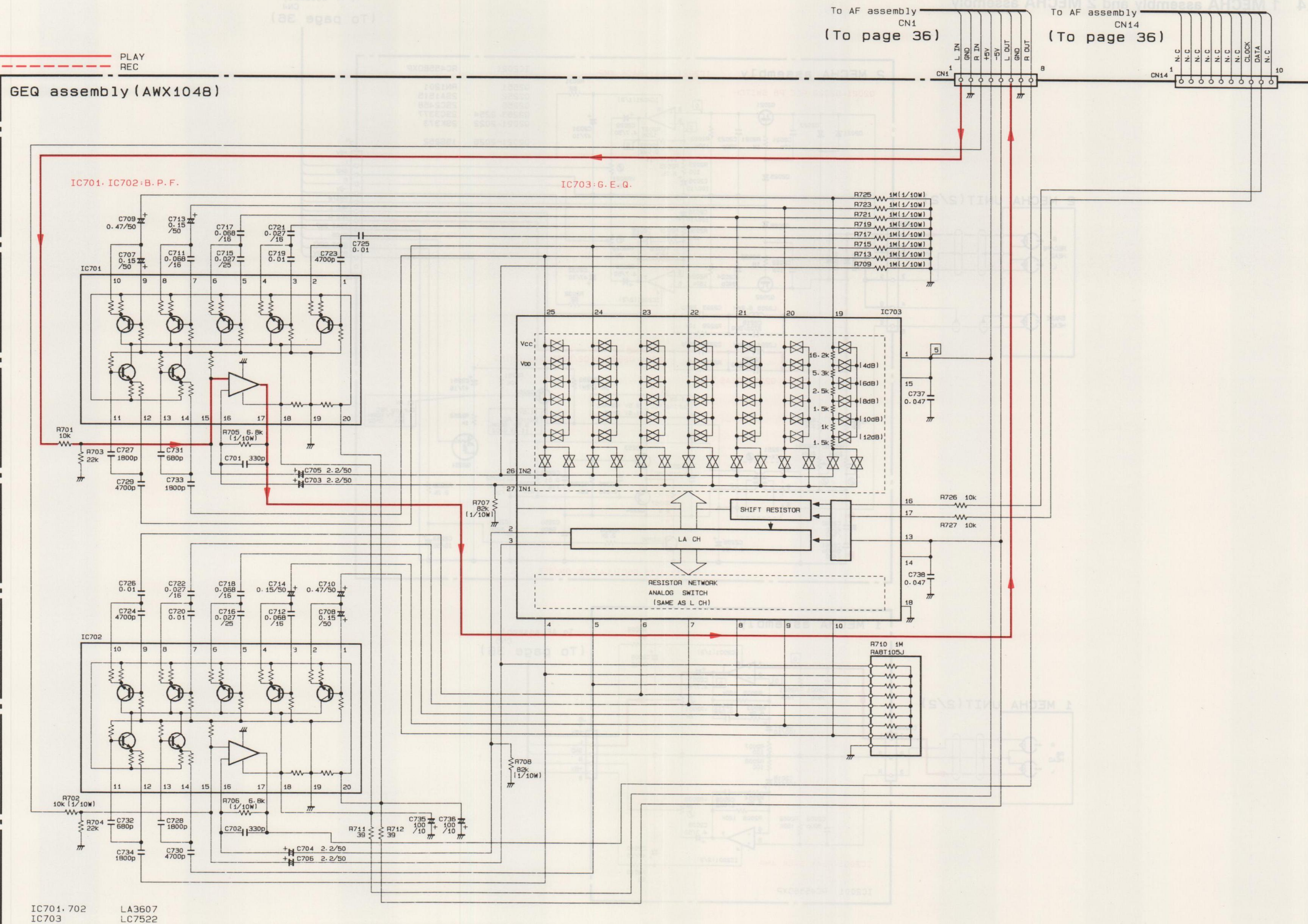
(D) —To CD Block MOTHER PCB assembly CN1 (To page 65)

(C) —To SUB TRANS assembly CN16 (To page 56)

(B) —To DISPLAY assembly 112 (To page 58)







IC701, 702 LA3607  
IC703 LC7522







## NOTE

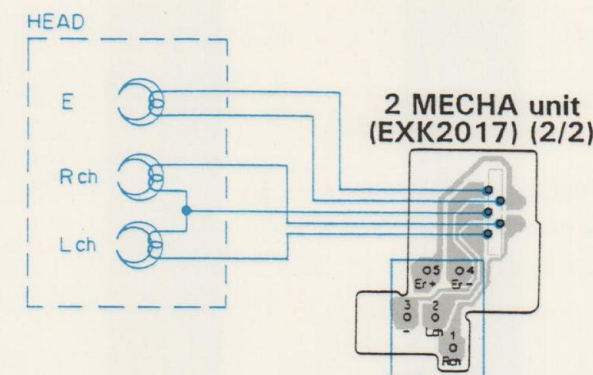
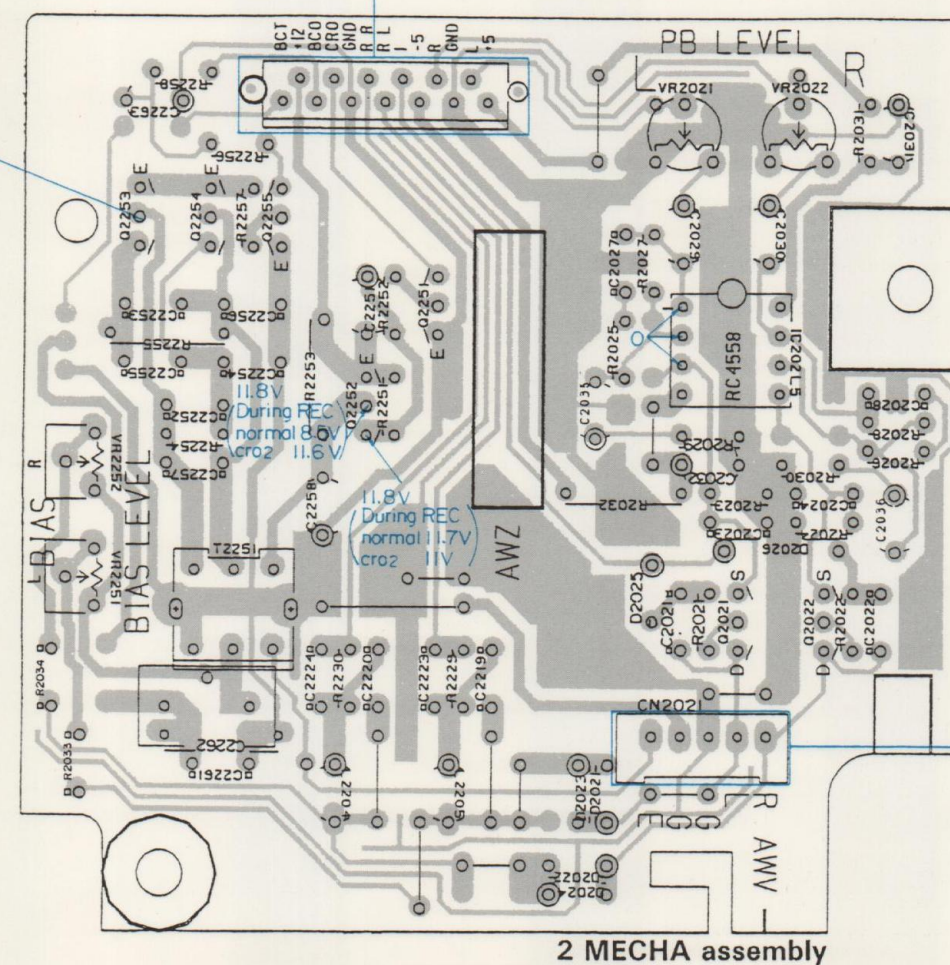
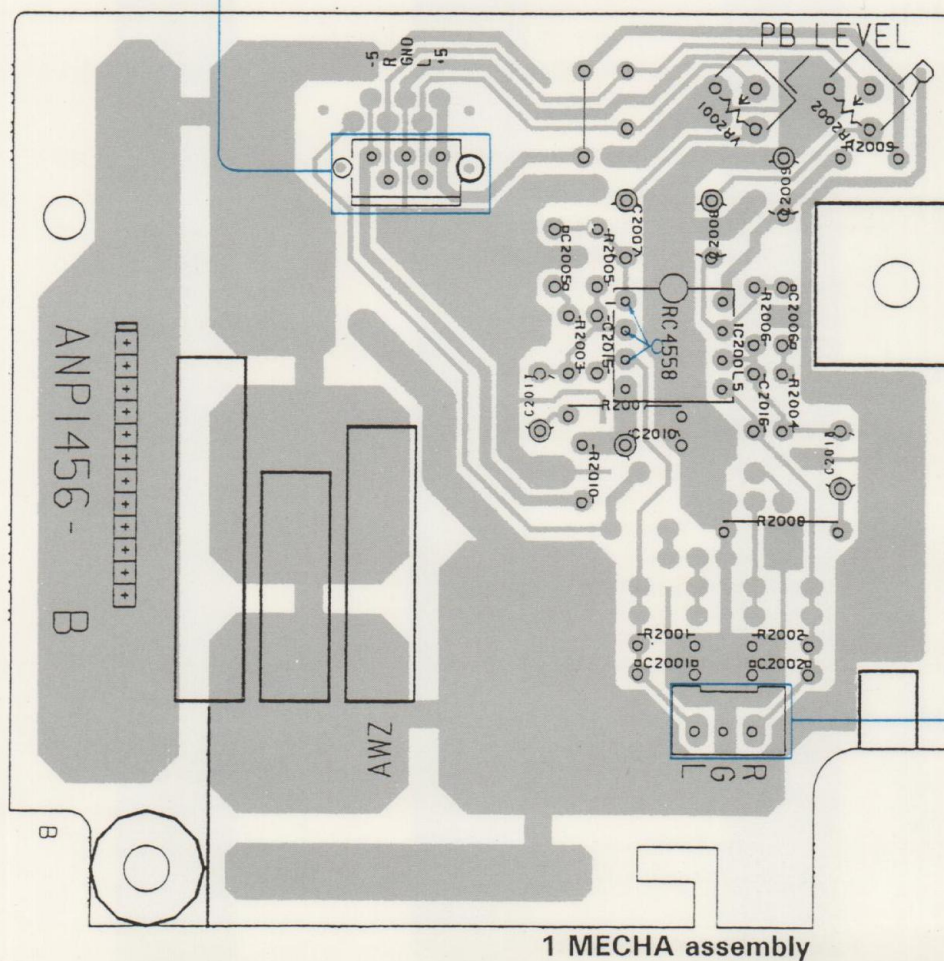
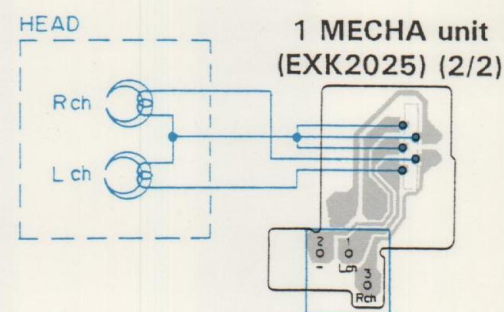
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

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

## Others

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

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



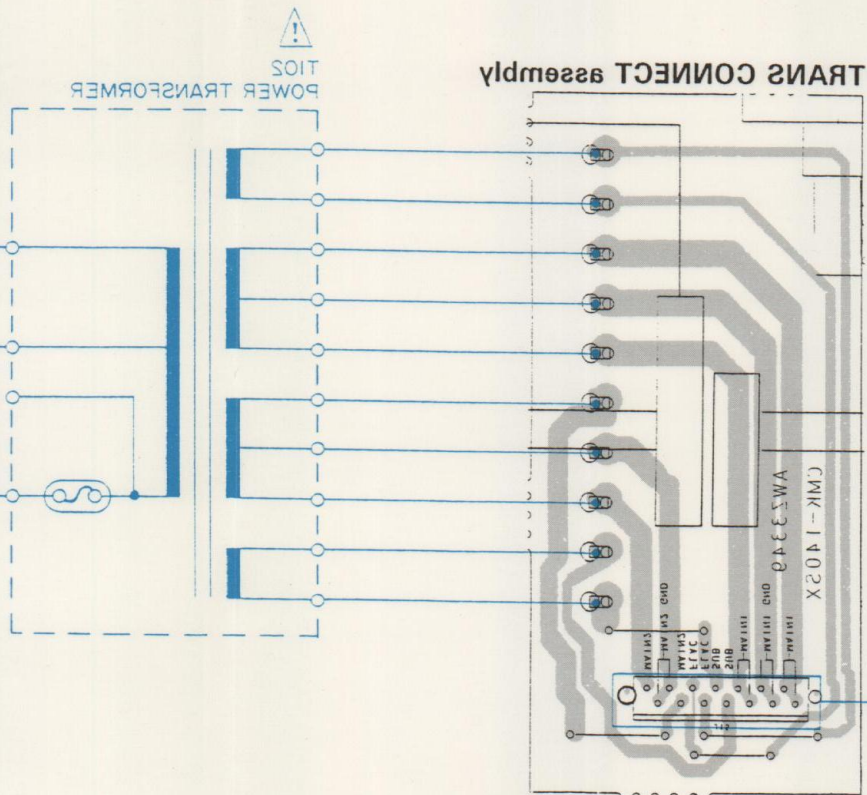
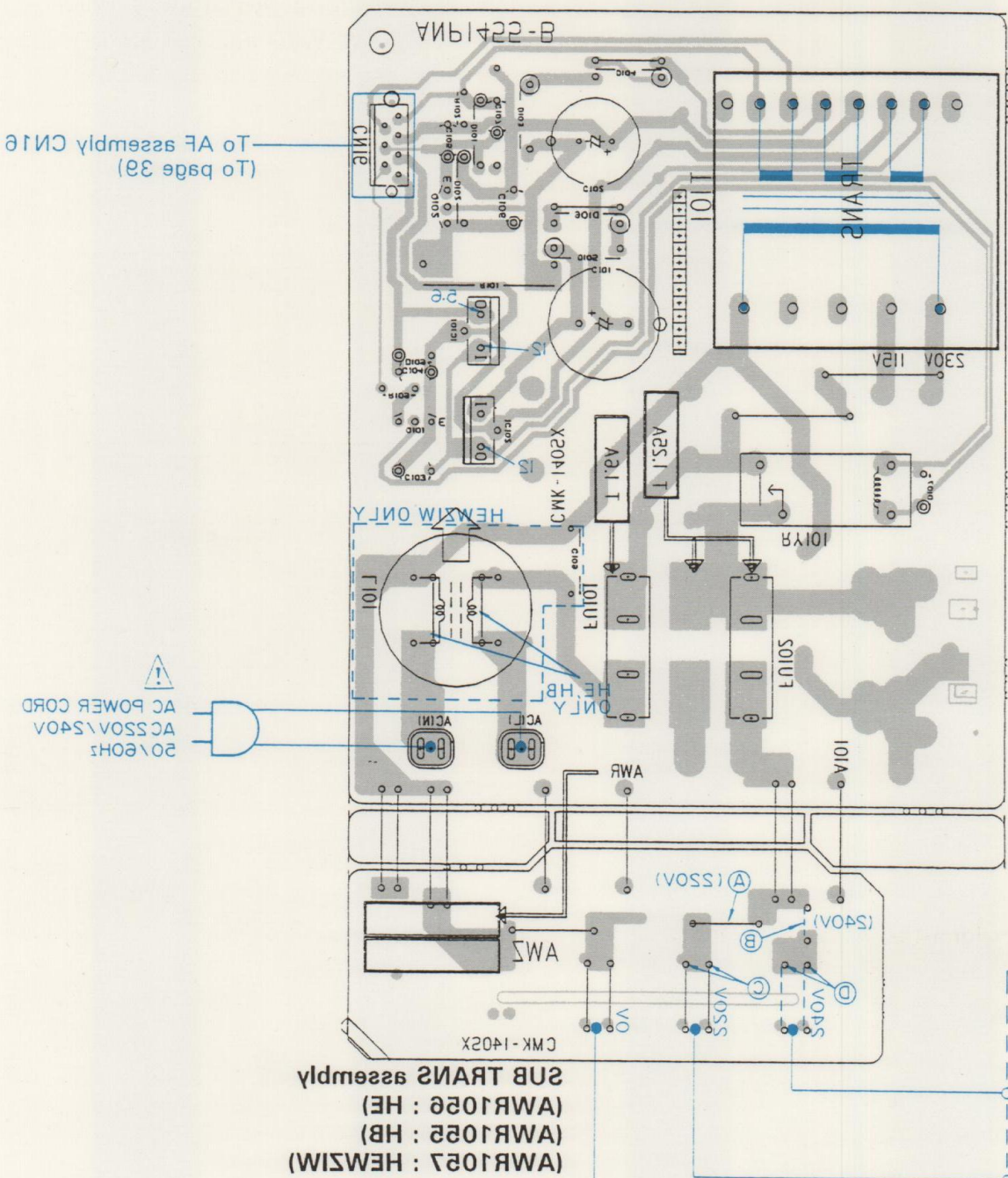






### 3.5 SUB TRANS assembly and TRANS CONNECT assembly

This P.C.B. connection diagram is viewed from the foil side.



| Description | Part No. |
|-------------|----------|
| 250V label  | AAX-193  |
| 240V label  | AAX-192  |

| Jumper wire Voltage | 250V | 240V |
|---------------------|------|------|
| A                   | ○    | x    |
| B                   | x    | ○    |
| C                   | ○    | x    |
| D                   | x    | ○    |

- Line Voltage Selection  
(For HE, HB and HEWSIW types)  
Line voltage can be changed with the following steps.
1. Disconnect the AC Power cord.
  2. Remove the top cover.
  3. Change the position of the jumper wires A - D as follows ;
  4. Stick the line voltage label on the rear panel.

○ : Be needed  
x : Be needless



## Line Voltage Selection

(For HE, HB and HEWZIW types)

Line voltage can be changed with the following steps.

1. Disconnect the AC Power cord.
2. Remove the top cover.
3. Change the position of the jumper wires A - D as follows ;

| Jumper wire Voltage | 220V | 240V |
|---------------------|------|------|
| A                   | ○    | x    |
| B                   | x    | ○    |
| C                   | ○    | x    |
| D                   | x    | ○    |

○ : Be needed  
x : Be needless

4. Stick the line voltage label on the rear panel.

| Description | Part No. |
|-------------|----------|
| 220V label  | AAX-193  |
| 240V label  | AAX-192  |

### NOTE

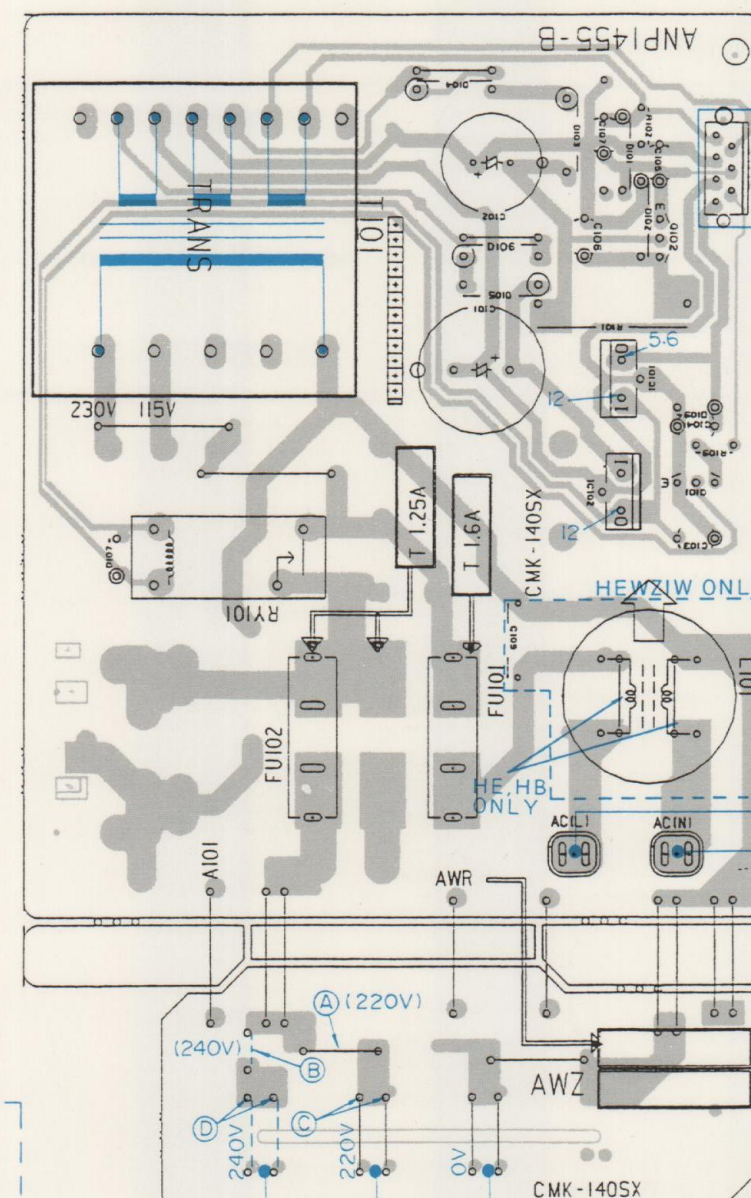
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

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

### Others

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

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

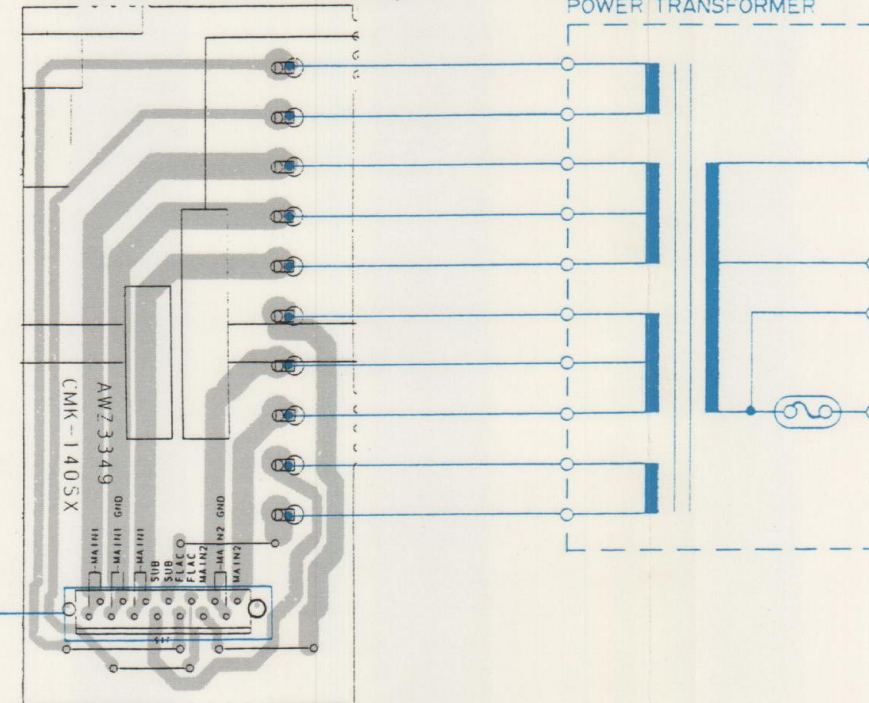


To AF assembly CN16  
(To page 39)

AC POWER CORD  
AC 220V/240V  
50/60Hz

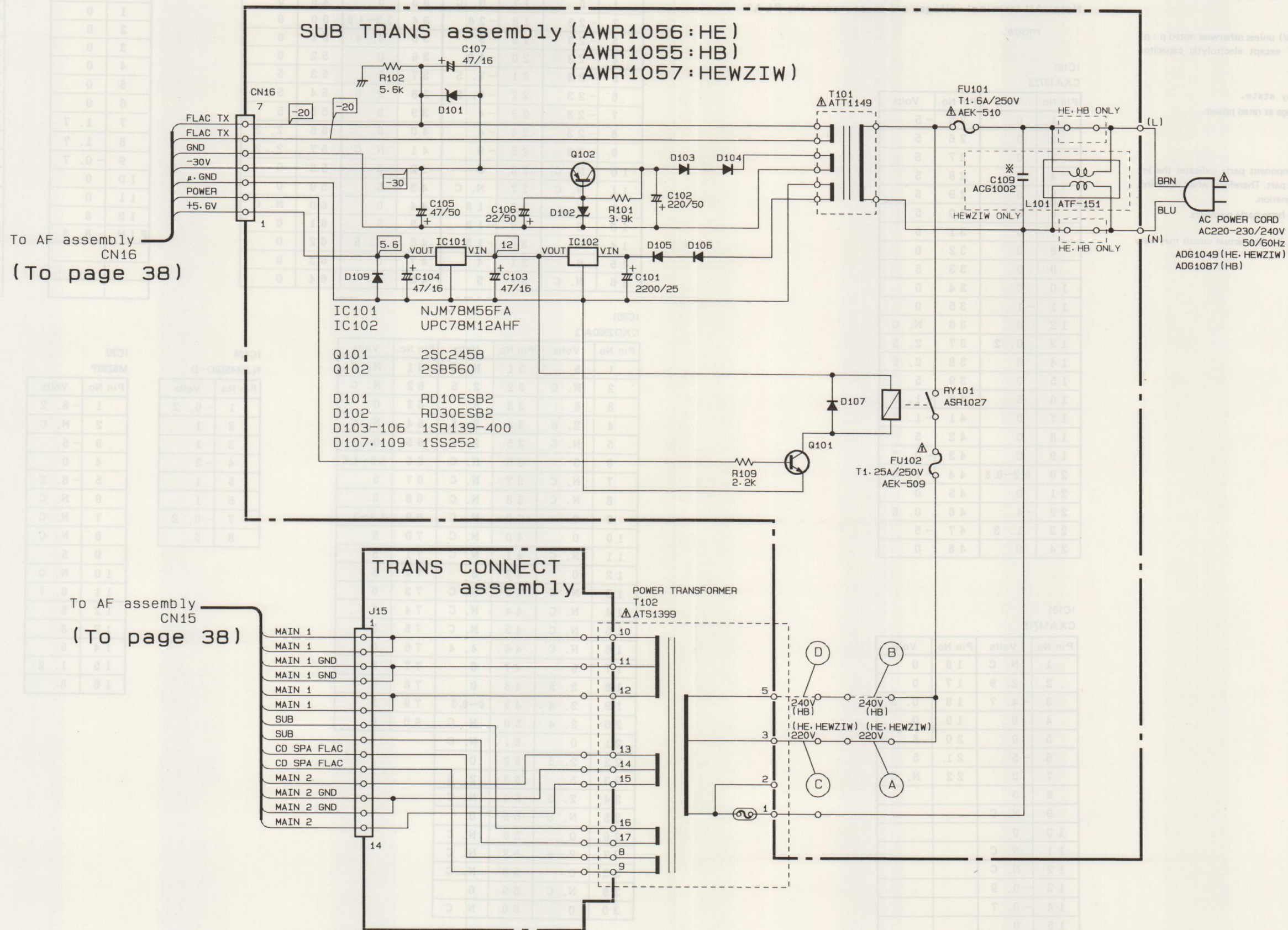
SUB TRANS assembly  
(AWR1056 : HE)  
(AWR1055 : HB)  
(AWR1057 : HEWZIW)

## TRANS CONNECT assembly



To AF assembly J15 (To page 39)







### 3.6 SCHEMATIC AND PCB CONNECTION DIAGRAM (CD BLOCK)

1. RESISTORS:  
Indicated in  $\Omega$ ,  $\frac{1}{4}W$ ,  $\frac{1}{2}W$ ,  $\pm 5\%$  tolerance unless otherwise noted k: k $\Omega$ ,  
M: M $\Omega$ , (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$  (M):  $\pm 20\%$  tolerance

2. CAPACITORS:  
Indicated in capacity ( $\mu F$ )/voltage (V) unless otherwise noted p: pF  
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:  
: DC voltage (V) at play state.  
Value in ( ) is DC voltage at rated power.

4. OTHERS:  
: Signal route.  
: Adjusting point.  
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.  
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCH
- S701  (  )
  - S702 
  - S703 D6
  - S704  (  )
  - S705 
  - S706 D5
  - S707 
  - S708 
  - S709 D4
  - S710 COMPU
  - S711 PGM
  - S712 D3
  - S713 RND
  - S714 SCAN
  - S715 D2
  - S716 REP
  - S717 TIME
  - S718 D1

#### List of semiconductor terminal voltage

Note: All terminal voltages are measured in the PLAY mode.

IC151  
CXA1372S

| Pin No. | Volts   | Pin No. | Volts |
|---------|---------|---------|-------|
| 1       | 0       | 25      | -5    |
| 2       | 0       | 26      | 5     |
| 3       | 0       | 27      | 5     |
| 4       | 0       | 28      | 5     |
| 5       | 0       | 29      | 5     |
| 6       | 0       | 30      | 5     |
| 7       | 0       | 31      | 5     |
| 8       | 0       | 32      | 0     |
| 9       | 0       | 33      | 5     |
| 10      | 0       | 34      | 0     |
| 11      | -1      | 35      | 0     |
| 12      | 0       | 36      | N. C  |
| 13      | 0.2     | 37      | 2.5   |
| 14      | 0       | 38      | 2.5   |
| 15      | 0       | 39      | 5     |
| 16      | 5       | 40      | -1.5  |
| 17      | 0       | 41      | -1.7  |
| 18      | 0       | 42      | 5     |
| 19      | 0       | 43      | -0.7  |
| 20      | 0.2~0.8 | 44      | -1.6  |
| 21      | 0       | 45      | 0     |
| 22      | -4      | 46      | 0.8   |
| 23      | 1.3     | 47      | -5    |
| 24      | 0       | 48      | 0     |

IC101  
CXA1471S

| Pin No. | Volts | Pin No. | Volts |
|---------|-------|---------|-------|
| 1       | N. C  | 16      | 0     |
| 2       | 2.9   | 17      | 0     |
| 3       | -4.7  | 18      | 0.8   |
| 4       | 0     | 19      | 0     |
| 5       | 0     | 20      | 5     |
| 6       | -5    | 21      | 5     |
| 7       | 0     | 22      | N. C  |
| 8       | 0     |         |       |
| 9       | N. C  |         |       |
| 10      | 0     |         |       |
| 11      | N. C  |         |       |
| 12      | N. C  |         |       |
| 13      | -0.9  |         |       |
| 14      | -0.7  |         |       |
| 15      | 0     |         |       |

IC351  
PD4315A

| Pin No. | Volts | Pin No. | Volts | Pin No. | Volts   | Pin No. | Volts |
|---------|-------|---------|-------|---------|---------|---------|-------|
| 1       | 5     | 17      | N. C  | 33      | 5       | 49      | 0     |
| 2       | -2.3  | 18      | -2.6  | 34      | 3.3~4.6 | 50      | 0     |
| 3       | -2.3  | 19      | -5    | 35      | 4.4     | 51      | 0     |
| 4       | -2.3  | 20      | -1.0  | 36      | 0       | 52      | 0     |
| 5       | -2.3  | 21      | -7.5  | 37      | 5       | 53      | 5     |
| 6       | -2.3  | 22      | -6.5  | 38      | 2.5     | 54      | 5     |
| 7       | -2.3  | 23      | -4    | 39      | 0       | 55      | 5     |
| 8       | -2.3  | 24      | -4    | 40      | 5       | 56      | 2.2   |
| 9       | -2.3  | 25      | -9    | 41      | N. C    | 57      | 2.2   |
| 10      | N. C  | 26      | 5     | 42      | 0       | 58      | 0     |
| 11      | N. C  | 27      | N. C  | 43      | 5       | 59      | 0     |
| 12      | 0     | 28      | -1.3  | 44      | 0       | 60      | N. C  |
| 13      | 0     | 29      | -1.3  | 45      | 5       | 61      | 0     |
| 14      | 0     | 30      | -1.3  | 46      | 0.5     | 62      | 0     |
| 15      | 0     | 31      | 4     | 47      | 0       | 63      | 0     |
| 16      | N. C  | 32      | 5     | 48      | 0       | 64      | 0     |

IC301  
CXD2500AQ

| Pin No. | Volts | Pin No. | Volts | Pin No. | Volts   |
|---------|-------|---------|-------|---------|---------|
| 1       | 5     | 31      | N. C  | 61      | N. C    |
| 2       | N. C  | 32      | 2.5   | 62      | N. C    |
| 3       | 5     | 33      | 5     | 63      | 0       |
| 4       | 2.6   | 34      | 2.5   | 64      | N. C    |
| 5       | N. C  | 35      | 2.5   | 65      | 0       |
| 6       | 5     | 36      | N. C  | 66      | 3.3~4.6 |
| 7       | N. C  | 37      | N. C  | 67      | 5       |
| 8       | N. C  | 38      | N. C  | 68      | 0       |
| 9       | 0     | 39      | N. C  | 69      | 2.1~3   |
| 10      | 0     | 40      | N. C  | 70      | 5       |
| 11      | N. C  | 41      | N. C  | 71      | 5       |
| 12      | 0     | 42      | 5     | 72      | 5       |
| 13      | N. C  | 43      | N. C  | 73      | 5       |
| 14      | N. C  | 44      | N. C  | 74      | 5       |
| 15      | N. C  | 45      | N. C  | 75      | 5       |
| 16      | N. C  | 46      | 4.4   | 76      | 0       |
| 17      | 0     | 47      | 0     | 77      | 5       |
| 18      | 2.5   | 48      | 0     | 78      | 5       |
| 19      | 2.4   | 49      | 0~0.3 | 79      | 5       |
| 20      | 2.4   | 50      | N. C  | 80      | 0       |
| 21      | 0     | 51      | N. C  |         |         |
| 22      | 2.5   | 52      | 0     |         |         |
| 23      | 5     | 53      | 2.5   |         |         |
| 24      | 2.5   | 54      | N. C  |         |         |
| 25      | N. C  | 55      | 0     |         |         |
| 26      | 0     | 56      | N. C  |         |         |
| 27      | 2.5   | 57      | N. C  |         |         |
| 28      | 0     | 58      | N. C  |         |         |
| 29      | N. C  | 59      | 0     |         |         |
| 30      | 0     | 60      | N. C  |         |         |

IC404  
NJM4558D-D

| Pin No. | Volts |
|---------|-------|
| 1       | -0.2  |
| 2       | 1     |
| 3       | 1     |
| 4       | -5    |
| 5       | 1     |
| 6       | 1     |
| 7       | -0.2  |
| 8       | 5     |

IC201  
LA6520

| Pin No. | Volts |
|---------|-------|
| 1       | 0     |
| 2       | 0     |
| 3       | 0     |
| 4       | 0     |
| 5       | 0     |
| 6       | 0     |
| 7       | 1.7   |
| 8       | 1.7   |
| 9       | -0.7  |
| 10      | 0     |
| 11      | 0     |
| 12      | 8     |
| FIN     | -8.2  |
|         |       |
|         |       |
|         |       |
|         |       |

IC20  
M5298P

| Pin No. | Volts |
|---------|-------|
| 1       | -8.2  |
| 2       | N. C  |
| 3       | -5    |
| 4       | 0     |
| 5       | -8.2  |
| 6       | N. C  |
| 7       | N. C  |
| 8       | N. C  |
| 9       | 5     |
| 10      | N. C  |
| 11      | 0.7   |
| 12      | 5     |
| 13      | 8     |
| 14      | 5     |
| 15      | 1.2   |
| 16      | 8     |

IC202  
LA6520

| Pin No. | Volts |
|---------|-------|
| 1       | 0.7   |
| 2       | 0.7   |
| 3       | 0.7   |
| 4       | 0     |
| 5       | 0     |
| 6       | 0     |
| 7       | -0.3  |
| 8       | -0.3  |
| 9       | -0.3  |
| 10      | 0     |
| 11      | 0     |
| 12      | 8     |
| FIN     | -8.2  |
|         |       |
|         |       |
|         |       |
|         |       |

IC401  
TC9237N

| Pin No. | Volts |
|---------|-------|
| 1       | 5     |
| 2       | 0     |
| 3       | 5     |
| 4       | 5.5   |
| 5       | 2.5   |
| 6       | 2.5   |
| 7       | 0     |
| 8       | 0     |
| 9       | 2.5   |
| 10      | 2.5   |
| 11      | 5     |
| 12      | 0     |
| 13      | N. C  |
| 14      | 0     |
| 15      | 0     |
| 16      | 1.9   |
| 17      | 1.9   |
| 18      | 5     |
| 19      | 2     |
| 20      | 0     |
| 21      | 0     |
| 22      | 0     |
| 23      | 0     |
| 24      | 5     |
| 25      | 2.5   |
| 26      | 2.5   |
| 27      | 2.5   |
| 28      | 5     |





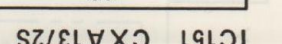
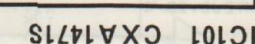
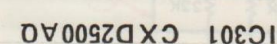
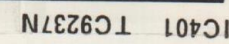


1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table
3. The capacitor terminal marked with  shows negative terminal.
4. The diode marked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







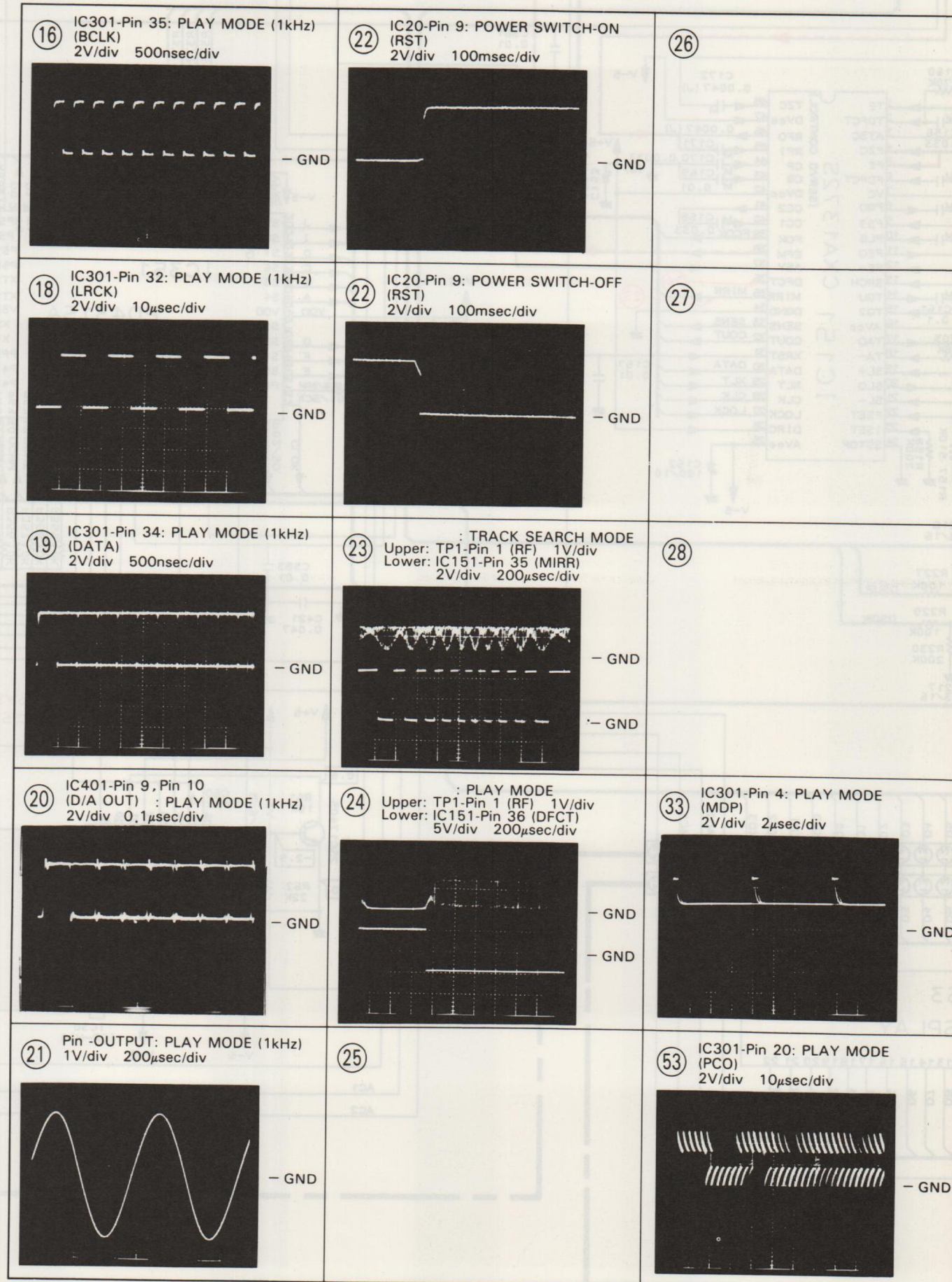
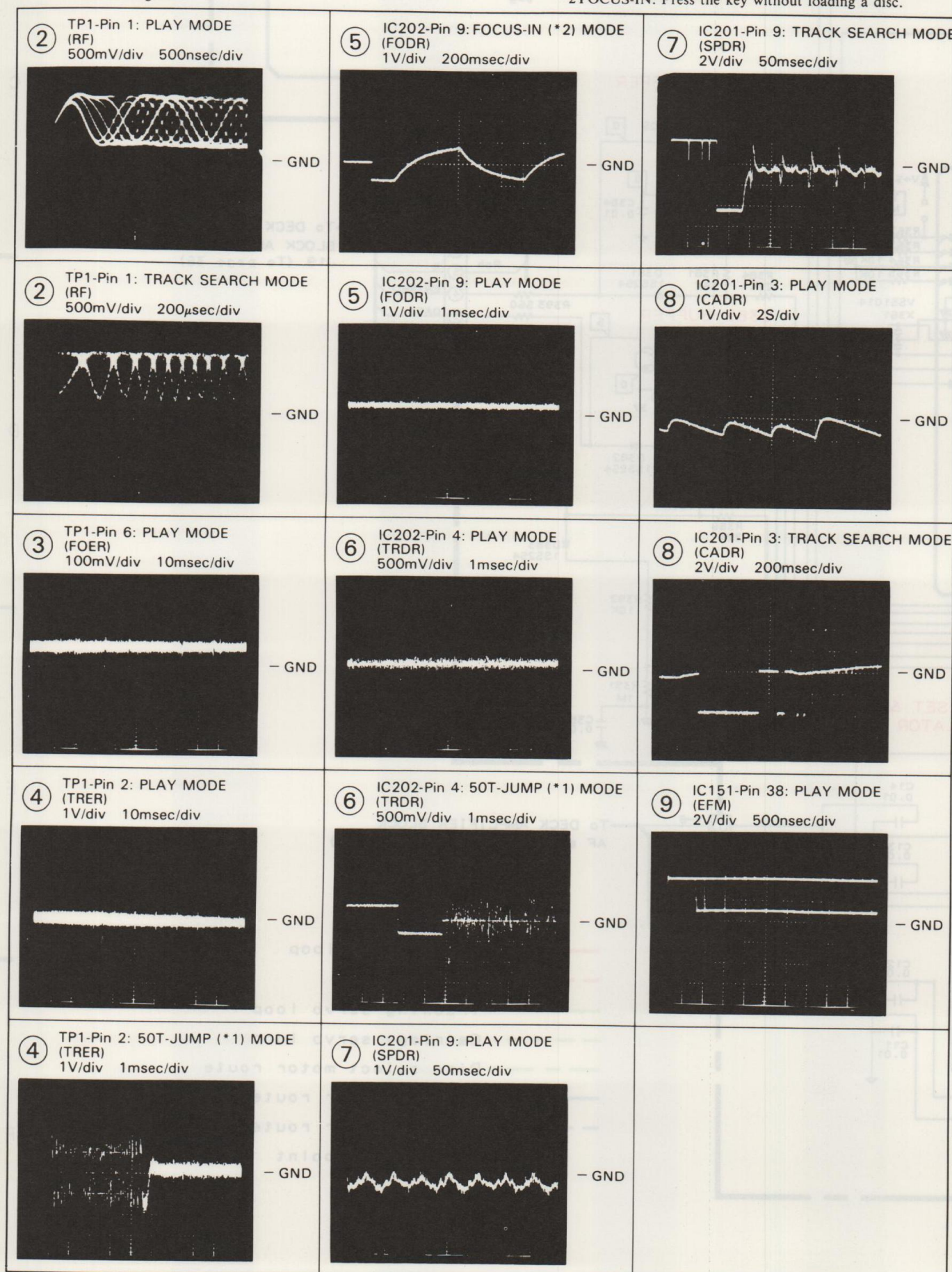


• IC BLOC

## Wave Forms

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.





## 4. PCB PARTS LIST

### NOTES:

- Part without part number cannot be supplied.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

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

|              |                  |          |                                      |
|--------------|------------------|----------|--------------------------------------|
| 560 $\Omega$ | $56 \times 10^1$ | 561..... | RD1/8PM $\Delta$ $\Delta$ $\Delta$ J |
| 47k $\Omega$ | $47 \times 10^3$ | 473..... | RD1/4PS $\Delta$ $\Delta$ $\Delta$ J |
| 0.5 $\Omega$ | 0R5.....         |          | RN2H $\Delta$ $\Delta$ $\Delta$ K    |
| 1 $\Omega$   | 010.....         |          | RS1P $\Delta$ $\Delta$ $\Delta$ K    |

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

|                |                   |           |                                      |
|----------------|-------------------|-----------|--------------------------------------|
| 5.62k $\Omega$ | $562 \times 10^1$ | 5621..... | RN1/4SR $\Delta$ $\Delta$ $\Delta$ F |
|----------------|-------------------|-----------|--------------------------------------|

| Mark | No. | Description | Parts No. |
|------|-----|-------------|-----------|
|------|-----|-------------|-----------|

### LIST OF ASSEMBLIES

#### DECK AMP BLOCK

VR ASSEMBLY  
TRANS CONNECT ASSEMBLY  
HEADPHONE ASSEMBLY

|   |                 |         |
|---|-----------------|---------|
| ● | AF ASSEMBLY     | AWZ4103 |
|   | └─ GEQ ASSEMBLY | AWX1048 |

DISPLAY ASSEMBLY  
1 MECHA SW ASSEMBLY  
2 MECHA SW ASSEMBLY

|   |                    |         |
|---|--------------------|---------|
| ● | SUB TRANS ASSEMBLY | AWR1056 |
|---|--------------------|---------|

1 MECHA ASSEMBLY  
2 MECHA ASSEMBLY

#### CD BLOCK

|   |                      |         |
|---|----------------------|---------|
| ● | MOTHER PCB ASSEMBLY  | PWM1372 |
| ● | SUB PCB ASSEMBLY     | PWX1148 |
|   | LOADING PCB ASSEMBLY |         |
|   | SELECT PCB ASSEMBLY  |         |
|   | MOTOR PCB ASSEMBLY   |         |

### VR ASSEMBLY

#### SEMICONDUCTORS

|       |                     |           |
|-------|---------------------|-----------|
| IC551 | OP-AMP IC           | RC4558DXP |
| IC552 | MECHANISM DRIVER IC | TA7291S   |

|           |            |          |
|-----------|------------|----------|
| Q551, 552 | TRANSISTOR | 2SC1740S |
| Q553      | TRANSISTOR | RN2203   |

#### CAPACITORS

|           |                   |              |
|-----------|-------------------|--------------|
| C551, 552 | ELECTR. CAPACITOR | CEAS4R7M50   |
| C553, 554 | CHIP CAPACITOR    | CCSQCH101J50 |
| C555, 556 | ELECTR. CAPACITOR | CEAS330M16   |
| C557      | ELECTR. CAPACITOR | CEAS220M25   |
| C558      | CERAMIC CAPACITOR | CKSQYF104Z50 |
| C559      | CERAMIC CAPACITOR | CKCYF473Z50  |

| Mark | No. | Description | Parts No. |
|------|-----|-------------|-----------|
|------|-----|-------------|-----------|

### RESISTORS

|           |                   |             |
|-----------|-------------------|-------------|
| VR551     | VARIABLE RESISTOR | ACX1064     |
| R554      | CHIP RESISTOR     | RS1/10S000J |
| R555, 556 | CHIP RESISTOR     | RS1/10S104J |
| R561      | CHIP RESISTOR     | RS1/10S000J |
| R565, 566 | CHIP RESISTOR     | RS1/10S102J |

Other resistors RD1/8PM  $\Delta$   $\Delta$   $\Delta$  J

### TRANS CONNECT ASSEMBLY

TRANS CONNECT assembly has no service part.

### HEADPHONE ASSEMBLY

#### CAPACITORS

|      |                   |             |
|------|-------------------|-------------|
| C453 | CERAMIC CAPACITOR | CKCYF473Z50 |
|------|-------------------|-------------|

#### RESISTORS

|           |                      |             |
|-----------|----------------------|-------------|
| R451, 452 | METAL OXIDE RESISTOR | RS1LMF331J  |
| R453      | CARBON FILM RESISTOR | RD1/8PM100J |

#### OTHERS

|                  |         |
|------------------|---------|
| JACK (HEADPHONE) | AKN1010 |
|------------------|---------|

### ● AF ASSEMBLY (AWZ4103)

#### SEMICONDUCTORS

|            |              |             |
|------------|--------------|-------------|
| IC1001     | OP-AMP IC    | RC4558DXP   |
| IC151      | REGULATOR IC | NJM78M05FAS |
| IC152      | REGULATOR IC | NJM79M05FA  |
| IC153, 154 | REGULATOR IC | MC7812CT    |
| IC155      | IC PROTECTOR | ICP-N75     |



| Mark No.          | Description       | Parts No.    |
|-------------------|-------------------|--------------|
| IC2001            | OP-AMP IC         | RC4558DXP    |
| IC2002            | LOGIC IC          | TC4066BP     |
| IC2201            | OP-AMP IC         | RC4558DXP    |
| IC2202            | LOGIC IC          | SN74LS05N    |
| IC2302            | DOLBY-B IC        | CXA1100P     |
| IC301             | AUDIO IC          | STK4152-2GP  |
| IC601             | OP-AMP IC         | RC4558DXP    |
| IC801             | LOGIC IC          | MC14052BCP   |
| IC802             | LOGIC IC          | TC4066BP     |
| IC833             | OP-AMP IC         | RC4558DXP    |
| Q2001-2004        | TRANSISTOR        | 2SC2458      |
| Q2005, 2006       | TRANSISTOR        | 2SC1740S     |
| Q2007             | TRANSISTOR        | RN2203       |
| Q2008             | TRANSISTOR        | RN2201       |
| Q2009, 2201       | TRANSISTOR        | RN1201       |
| Q2202             | TRANSISTOR        | RN2203       |
| Q2203, 2204       | TRANSISTOR        | 2SC1740S     |
| Q2301-2304        | TRANSISTOR        | 2SC2458      |
| Q2351             | TRANSISTOR        | RN2203       |
| Q401-403          | TRANSISTOR        | 2SC2458      |
| Q404              | TRANSISTOR        | RN1203       |
| Q405              | TRANSISTOR        | 2SC2458      |
| Q406              | TRANSISTOR        | 2SA1048      |
| Q601              | TRANSISTOR        | RN2203       |
| Q602              | N-FET             | 2SK246       |
| Q801              | TRANSISTOR        | RN2203       |
| Q802              | TRANSISTOR        | RN1203       |
| Q803              | TRANSISTOR        | RN2203       |
| D151              | DIODE             | D3SBA20      |
| D152-159          | DIODE             | 1SR139-400   |
| D161              | ZENER DIODE       | RD8.2ESB2    |
| D162              | DIODE             | 1SS252       |
| D163-166          | DIODE             | 1SR139-400   |
| D170              | DIODE             | 1SR139-400   |
| D2301, 2302       | DIODE             | 1SS252       |
| D401              | ZENER DIODE       | RD22EB       |
| D403              | DIODE             | 1SR139-400   |
| D404              | DIODE             | 1SS252       |
| D405              | ZENER DIODE       | RD6.8ESB2    |
| D406, 601         | DIODE             | 1SS252       |
| <b>RELAY</b>      |                   |              |
| RY401             | RELAY             | ASR1035      |
| <b>COILS</b>      |                   |              |
| F2351, 2352       | DOLBY FILTER      | ATF1064      |
| L151              | AXIAL INDUCTOR    | LAU2R2K      |
| L2201, 2202       | INDUCTOR          | LTA392J      |
| L501, 502         | COIL              | ATH-133      |
| <b>CAPACITORS</b> |                   |              |
| C1001-1004        | CERAMIC CAPACITOR | CCMSL101J50  |
| C1005             | CERAMIC CAPACITOR | CKSQYB152K50 |
| C1006             | CERAMIC CAPACITOR | CKCYB152K50  |

| Mark No.    | Description                       | Parts No.    |
|-------------|-----------------------------------|--------------|
| C1007, 1008 | CERAMIC CAPACITOR                 | CKCYB562K50  |
| C1009-1012  | ELECTR. CAPACITOR                 | CEAS2R2M50   |
| C1015, 1016 | ELECTR. CAPACITOR                 | CEAS330M16   |
| C151, 152   | ELECTROLYTIC CAPACITOR (2200/42V) | ACH1109      |
| C153        | ELECTR. CAPACITOR                 | CEAS222M16   |
| C154        | ELECTR. CAPACITOR                 | CEAS102M16   |
| C155, 156   | ELECTR. CAPACITOR                 | CEAS220M16   |
| C157        | ELECTR. CAPACITOR                 | CEAS222M25   |
| C158, 159   | ELECTR. CAPACITOR                 | CEAS220M25   |
| C160        | ELECTR. CAPACITOR                 | CEAS100M25   |
| C161        | CERAMIC CAPACITOR                 | CKDYB103K500 |
| C162        | (0.01/AC250V)                     | ACG1005      |
| C2007, 2008 | MYLAR FILM CAPACITOR              | CQMA273J50   |
| C2009, 2010 | MYLAR FILM CAPACITOR              | CQMA183J50   |
| C2011, 2012 | CERAMIC CAPACITOR                 | CKSQYB152K50 |
| C2201-2204  | ELECTR. CAPACITOR                 | CEAS010M50   |
| C2205, 2206 | CHIP CAPACITOR                    | CKSQYB222K50 |
| C2207, 2208 | AUDIO FILM CAPACITOR              | CFTXA104J50  |
| C2209, 2210 | ELECTR. CAPACITOR                 | CEAS330M16   |
| C2211, 2212 | CERAMIC CAPACITOR                 | CKCYX183M25  |
| C2213, 2214 | MYLAR FILM CAPACITOR              | CQMA752J50   |
| C2215, 2216 | CERAMIC CAPACITOR                 | CKSQYB562K50 |
| C2217, 2218 | MYLAR FILM CAPACITOR              | CQMA273J50   |
| C2221, 2222 | ELECTR. CAPACITOR                 | CEAS2R2M50   |
| C2225, 2226 | ELECTR. CAPACITOR                 | CEAS370M16   |
| C2303, 2304 | ELECTR. CAPACITOR                 | CEAS010M50   |
| C2305       | ELECTR. CAPACITOR                 | CEAS220M16   |
| C2306       | ELECTR. CAPACITOR                 | CEAS220M25   |
| C2351, 2352 | ELECTR. CAPACITOR                 | CEAS100M50   |
| C2353, 2354 | ELECTR. CAPACITOR                 | CEASR22M50   |
| C2355       | ELECTR. CAPACITOR                 | CEAS101M10   |
| C2356-2359  | ELECTR. CAPACITOR                 | CEAS100M50   |
| C301, 302   | ELECTR. CAPACITOR                 | CEAS2R2M50   |
| C303, 304   | CERAMIC CAPACITOR                 | CKMYB331K50  |
| C305, 306   | ELECTR. CAPACITOR                 | CEAS220M50   |
| C307, 308   | ELECTR. CAPACITOR                 | CEAS101M25   |
| C309        | ELECTR. CAPACITOR                 | CEANP220M50  |
| C310        | ELECTR. CAPACITOR                 | CEAS100M50   |
| C311, 312   | ELECTR. CAPACITOR                 | CEAS100M50   |
| C313        | ELECTROLYTIC CAPACITOR (47/50)    | ACH1143      |
| C401-404    | CERAMIC CAPACITOR                 | CKCYF473Z50  |
| C405        | ELECTR. CAPACITOR                 | CEAS221M16   |
| C406        | ELECTR. CAPACITOR                 | CEAS330M25   |
| C407        | ELECTR. CAPACITOR                 | CEAS221M16   |
| C408        | ELECTR. CAPACITOR                 | CEAS100M50   |
| C501        | ELECTR. CAPACITOR (10/100)        | ACH1144      |
| C601, 602   | CERAMIC CAPACITOR                 | CKMYB471K50  |



| Mark No.  | Description       | Parts No.    |
|-----------|-------------------|--------------|
| C603, 604 | ELECTR. CAPACITOR | CEAS2R2M50   |
| C605      | CERAMIC CAPACITOR | CKSQYB681K50 |
| C606      | CERAMIC CAPACITOR | CKCYF473Z50  |
| C831, 832 | CERAMIC CAPACITOR | CCMSL101J50  |
| C856-858  | CERAMIC CAPACITOR | CKCYB471K50  |

## RESISTORS

|              |                      |               |
|--------------|----------------------|---------------|
| VR2201, 2202 | VR                   | VRTB6VS222    |
| R1013        | CHIP RESISTOR        | RS1/10S104J   |
| R159-162     | CARBON FILM RESISTOR | RD1/4PM100J   |
| R163, 164    | METAL OXIDE RESISTOR | RS2LMFR22J    |
| R2003, 2004  | CHIP RESISTOR        | RS1/10S122J   |
| R2005, 2006  | CHIP RESISTOR        | RS1/10S105J   |
| R2007, 2008  | CHIP RESISTOR        | RS1/10S332J   |
| R2009, 2010  | CHIP RESISTOR        | RS1/10S105J   |
| R2011, 2014  | CHIP RESISTOR        | RS1/10S472J   |
| R2016        | CHIP RESISTOR        | RS1/10S472J   |
| R2019, 2020  | CHIP RESISTOR        | RS1/10S154J   |
| R2021, 2022  | CHIP RESISTOR        | RS1/10S222J   |
| R2207, 2208  | CHIP RESISTOR        | RS1/10S104J   |
| R2209, 2210  | CHIP RESISTOR        | RS1/10S683J   |
| R2211, 2212  | CHIP RESISTOR        | RS1/10S223J   |
| R2213, 2214  | CHIP RESISTOR        | RS1/10S333J   |
| R2223, 2224  | CHIP RESISTOR        | RS1/10S471J   |
| R2226        | CHIP RESISTOR        | RS1/10S681J   |
| R2233, 2234  | CHIP RESISTOR        | RS1/10S102J   |
| R2301, 2302  | CHIP RESISTOR        | RS1/10S273J   |
| R2303, 2304  | CHIP RESISTOR        | RS1/10S362J   |
| R2305, 2306  | CHIP RESISTOR        | RS1/10S103J   |
| R2317, 2318  | CHIP RESISTOR        | RS1/10S222J   |
| R2351, 2352  | CHIP RESISTOR        | RS1/10S242J   |
| R2355, 2356  | CHIP RESISTOR        | RS1/10S682J   |
| R2357        | CHIP RESISTOR        | RS1/10S433J   |
| R2361, 2362  | CHIP RESISTOR        | RS1/10S222J   |
| R2363, 2364  | CHIP RESISTOR        | RS1/10S273J   |
| R2366        | CHIP RESISTOR        | RS1/10S103J   |
| R305, 306    | CARBON FILM RESISTOR | RD1/4PM104J   |
| R309-312     | CARBON FILM RESISTOR | RD1/4PM222J   |
| R313         | CARBON FILM RESISTOR | RD1/4PMFL471J |
| R314         | CARBON FILM RESISTOR | RD1/4PMFL101J |
| R315         | CARBON FILM RESISTOR | RD1/4PM102J   |
| R316, 317    | CARBON FILM RESISTOR | RD1/4PMFL222J |
| R318         | CARBON FILM RESISTOR | RD1/4PMFL101J |
| R401, 402    | CARBON FILM RESISTOR | RD1/4PM100J   |
| R409         | CARBON FILM RESISTOR | RD1/2PM182J   |

| Mark No.  | Description          | Parts No.     |
|-----------|----------------------|---------------|
| R416      | METAL OXIDE RESISTOR | RS2LMF181J    |
| R417      | METAL OXIDE RESISTOR | RS2LMF331J    |
| R501, 502 | CARBON FILM RESISTOR | RD1/4PMFL100J |
| R805, 806 | CHIP RESISTOR        | RS1/10S273J   |
| R843, 844 | CHIP RESISTOR        | RS1/10S223J   |
| R855, 856 | CHIP RESISTOR        | RS1/10S332J   |
| R857      | CHIP RESISTOR        | RS1/10S104J   |
| R858      | CHIP RESISTOR        | RS1/10S000J   |
|           | Other resistors      | RD1/8PM□□□J   |

## OTHERS

|          |                             |         |
|----------|-----------------------------|---------|
| CN10     | CONNECTOR (14P)             | KPE14   |
| CN11, 12 | CONNECTOR (13P)             | KPE13   |
| CN16     | CONNECTOR (7P)              | KPE7    |
| CN4      | CONNECTOR (13P)             | KPE13   |
| CN5      | CONNECTOR (5P)              | KPE5    |
|          | PIN JACK 4P (PHONO, LD/VCR) | AKB1124 |
|          | PIN JACK 2P (SURROUND)      | AKB1146 |
|          | SPEAKER TERMINAL 4-P        | AKE-109 |
|          | DC JACK (12V)               | AKN-203 |
|          | SOCKET (14P)                | AKP1048 |
|          | GEQ ASSEMBLY                | AWX1048 |

## GEQ ASSEMBLY (AWX1048)

GEQ ASSEMBLY is a part of AF ASSEMBLY.

## SEMICONDUCTORS

|            |            |        |
|------------|------------|--------|
| IC701, 702 | GEQ IC     | LA3607 |
| IC703      | GEQ EVR IC | LC7522 |

## CAPACITORS

|           |                        |              |
|-----------|------------------------|--------------|
| C701, 702 | CERAMIC CAPACITOR      | CCSSQL331J50 |
| C703-706  | ELECTR. CAPACITOR      | CEAS2R2M50   |
| C707, 708 | ELECTROLYTIC CAPACITOR | CEASR15M50   |
| C709, 710 | ELECTR. CAPACITOR      | CEASR47M50   |
| C711, 712 | CERAMIC CAPACITOR      | CKCYX683M16  |
| C713, 714 | ELECTROLYTIC CAPACITOR | CEASR15M50   |
| C715, 716 | CERAMIC CAPACITOR      | CKCYX273M16  |
| C717, 718 | CERAMIC CAPACITOR      | CKCYX683M16  |
| C719, 720 | CERAMIC CAPACITOR      | CKSQYB103K50 |
| C721, 722 | CERAMIC CAPACITOR      | CKCYX273M16  |
| C723, 724 | CERAMIC CAPACITOR      | CKSQYB472K50 |
| C725, 726 | CERAMIC CAPACITOR      | CKSQYB103K50 |
| C727, 728 | CERAMIC CAPACITOR      | CKSQYB182K50 |
| C729, 730 | CERAMIC CAPACITOR      | CKSQYB472K50 |
| C731, 732 | CERAMIC CAPACITOR      | CKSQYB681K50 |



| Mark No.  | Description       | Parts No.    |
|-----------|-------------------|--------------|
| C733, 734 | CERAMIC CAPACITOR | CKSQYB182K50 |
| C735, 736 | ELECTR. CAPACITOR | CEAS101M10   |
| C737, 738 | CERAMIC CAPACITOR | CKSQYB473K50 |

#### RESISTORS

|           |                      |             |
|-----------|----------------------|-------------|
| R701      | CARBON FILM RESISTOR | RD1/8PM103J |
| R703, 704 | CARBON FILM RESISTOR | RD1/8PM223J |
| R710      | RESISTOR ARRAY (1M)  | RA8T105J    |
| R711, 712 | CARBON FILM RESISTOR | RD1/4PM390J |
| R726, 727 | CARBON FILM RESISTOR | RD1/8PM103J |
|           | Other resistors      | RS1/10S□□□J |

#### DISPLAY ASSY (AWZ3909)

##### SEMICONDUCTORS

|             |                                         |           |
|-------------|-----------------------------------------|-----------|
| IC1501      | LOGIC IC                                | SN74LS05N |
| IC1502      | LOGIC IC                                | SN74LS03N |
| IC1503      | GEQ-BPF IC                              | XRA3826S  |
| IC1504      | OP-AMP IC                               | RC4558DXP |
| IC1505      | SPECTRUM ANALYZER CONTROL MICROCOMPUTER | PD3174A   |
| IC1651      | SYSTEM CONTROL MICROCOMPUTER            | PD5147C   |
| IC1652      | RESET IC                                | M51951BSL |
| Q1501       | TRANSISTOR                              | RN1201    |
| Q1503, 1504 | TRANSISTOR                              | RN1201    |
| Q1505-1507  | TRANSISTOR                              | RN1203    |
| Q1508, 1509 | TRANSISTOR                              | RN2201    |
| Q1510-1513  | TRANSISTOR                              | RN1203    |
| Q1514       | TRANSISTOR                              | RN2203    |
| Q1601       | TRANSISTOR                              | RN2204    |
| Q1602       | TRANSISTOR                              | RN1203    |
| Q1603       | TRANSISTOR                              | RN2204    |
| Q1604       | TRANSISTOR                              | 2SA1515   |
| Q1605       | TRANSISTOR                              | RN1203    |
| Q1606       | TRANSISTOR                              | 2SA1515   |
| Q1607       | TRANSISTOR                              | RN1203    |
| Q1608       | TRANSISTOR                              | 2SA1515   |
| Q1609       | TRANSISTOR                              | RN1203    |
| Q1610       | TRANSISTOR                              | 2SA1515   |
| Q1611       | TRANSISTOR                              | RN1203    |
| D1501-1504  | LED (GREEN)                             | AEL1130   |
| D1505       | LED (RED)                               | AEL1119   |
| D1506, 1507 | LED (RED)                               | AEL1126   |
| D1509       | LED                                     | AEL1128   |
| D1510       | LED (RED)                               | AEL1065   |

| Mark No.   | Description | Parts No. |
|------------|-------------|-----------|
| D1511-1516 | LED (RED)   | AEL1108   |
| D1517-1519 | DIODE       | 1SS252    |
| D1523-1531 | DIODE       | 1SS252    |
| D1535-1543 | DIODE       | 1SS252    |
| D1545      | LED (GREEN) | AEL1129   |

|             |           |         |
|-------------|-----------|---------|
| D1546       | LED (RED) | AEL1065 |
| D1547-1552  | DIODE     | 1SS252  |
| D1601-1615  | DIODE     | 1SS252  |
| D1651-1657  | DIODE     | 1SS252  |
| D1659, 1660 | DIODE     | 1SS252  |

##### SWITCHES

|             |        |         |
|-------------|--------|---------|
| S1504, 1505 | SWITCH | ASG1034 |
| S1507       | SWITCH | ASG1034 |
| S1510-1514  | SWITCH | ASG1034 |
| S1516-1519  | SWITCH | ASG1034 |
| S1522-1525  | SWITCH | ASG1034 |
| S1528       | SWITCH | ASH1014 |
| S1532-1535  | SWITCH | ASG1034 |
| S1537-1539  | SWITCH | ASG1034 |
| S1542-1544  | SWITCH | ASG1034 |
| S1546-1548  | SWITCH | ASG1034 |

##### COILS

|       |                |         |
|-------|----------------|---------|
| L1501 | AXIAL INDUCTOR | LAU221K |
| L1651 | AXIAL INDUCTOR | LAU220K |

##### CAPACITORS

|             |                         |              |
|-------------|-------------------------|--------------|
| C1501       | CERAMIC CAPACITOR       | CKCYF473Z50  |
| C1504       | ELECTR. CAPACITOR       | CEJA470M10   |
| C1505       | (47000/5.5V)            | ACH1070      |
| C1506       | AXIAL CERAMIC CAPACITOR | CKPUYF223Z25 |
| C1507       | CERAMIC CAPACITOR       | CCCSL100D50  |
| C1508       | AXIAL CERAMIC CAPACITOR | CKPUYF223Z25 |
| C1509       | CERAMIC CAPACITOR       | CKMYB102K50  |
| C1510       | CERAMIC CAPACITOR       | CKCYF473Z50  |
| C1601       | ELECTR. CAPACITOR       | CEAS470M10   |
| C1602       | ELECTR. CAPACITOR       | CEASR33M50   |
| C1651, 1652 | CERAMIC CAPACITOR       | CKCYF473Z50  |
| C1653       | ELECTR. CAPACITOR       | CEAS101M16   |
| C1654-1658  | CERAMIC CAPACITOR       | CKPUYB102K50 |
| C1659       | ELECTR. CAPACITOR       | CEAS010M50   |

##### RESISTORS

|              |                       |             |
|--------------|-----------------------|-------------|
| VR1601, 1602 | VR                    | VRTM6V203   |
| VR1603       | VR                    | VRTM6V103   |
| R1544        | RESISTOR ARRAY (22k)  | RA15T223J   |
| R1581, 1582  | CARBON FILM RESISTOR  | RD1/2PM2R2J |
| R1662        | RESISTOR ARRAY (3.3k) | RA8T332J    |
|              | Other resistors       | RD1/8PM□□□J |



| Mark No.      | Description          | Parts No. |
|---------------|----------------------|-----------|
| <b>OTHERS</b> |                      |           |
| V1501         | FL TUBE              | AAV1143   |
| X1502         | CERAMIC RESONATOR    | ASS1018   |
| X1651         | CERAMIC RESONATOR    | ASS1025   |
| CN8           | CONNECTOR (15P)      | KPE15     |
|               | REMOTE RECEIVER UNIT | AXX1023   |

**1 MECHA SW ASSEMBLY****SWITCHES**

|              |        |         |
|--------------|--------|---------|
| S1551 - 1555 | SWITCH | ASG1034 |
|--------------|--------|---------|

**2 MECHA SW ASSEMBLY****SWITCHES**

|              |        |         |
|--------------|--------|---------|
| S1556 - 1560 | SWITCH | ASG1034 |
|--------------|--------|---------|

**◎ SUB TRANS ASSEMBLY (AWR1056)****SEMICONDUCTORS**

|            |              |              |
|------------|--------------|--------------|
| IC101      | REGULATOR IC | NJM78M56FA   |
| IC102      | REGULATOR IC | UPC78M12AHF  |
| Q101       | TRANSISTOR   | 2SC2458      |
| Q102       | TRANSISTOR   | 2SB560       |
| D101       | ZENER DIODE  | RD10ESB2     |
| D102       | ZENER DIODE  | RD30ESB2     |
| D103 - 106 | DIODE        | 1SR139 - 400 |
| D107, 109  | DIODE        | 1SS252       |

**RELAY**

|       |       |         |
|-------|-------|---------|
| RY101 | RELAY | ASR1027 |
|-------|-------|---------|

**TRANSFORMER**

|      |                   |         |
|------|-------------------|---------|
| T101 | POWER TRANSFORMER | ATT1149 |
|------|-------------------|---------|

**CAPACITORS**

|           |                   |            |
|-----------|-------------------|------------|
| C101      | ELECTR. CAPACITOR | CEAS222M25 |
| C102      | ELECTR. CAPACITOR | CEAS221M50 |
| C103, 104 | ELECTR. CAPACITOR | CEAS470M16 |
| C105      | ELECTR. CAPACITOR | CEAS470M50 |
| C106      | ELECTR. CAPACITOR | CEAS220M50 |
| C107      | ELECTR. CAPACITOR | CEAS470M16 |

**RESISTORS**

|      |                      |              |
|------|----------------------|--------------|
| R101 | CARBON FILM RESISTOR | RD1/4PMF392J |
|      | Other resistors      | RD1/8PM□□□J  |

| Mark No.                | Description          | Parts No.   |
|-------------------------|----------------------|-------------|
| <b>1 MECHA ASSEMBLY</b> |                      |             |
| <b>CAPACITORS</b>       |                      |             |
| C2001, 2002             | CERAMIC CAPACITOR    | CKMYB391K50 |
| C2005, 2006             | AUDIO FILM CAPACITOR | CFTXA223J50 |
| C2007, 2008             | ELECTR. CAPACITOR    | CEAS4R7M50  |
| C2009, 2010             | ELECTR. CAPACITOR    | CEAS470M10  |
| C2017, 2018             | ELECTR. CAPACITOR    | CEAS101M10  |

**RESISTORS**

|              |                 |             |
|--------------|-----------------|-------------|
| VR2001, 2002 | VR              | VRTM6H202   |
|              | Other resistors | RD1/8PM□□□J |

**2 MECHA ASSEMBLY****SEMICONDUCTORS**

|              |            |           |
|--------------|------------|-----------|
| IC2001, 2021 | OP-AMP IC  | RC4558DXP |
| Q2021, 2022  | N-FET      | 2SK373    |
| Q2251        | TRANSISTOR | RN1201    |
| Q2252        | TRANSISTOR | 2SA1515   |
| Q2253, 2254  | TRANSISTOR | 2SC3377   |
| Q2255        | TRANSISTOR | 2SC2458   |
| D2021 - 2026 | DIODE      | 1SS252    |

**COILS & TRANSFORMER**

|             |                 |           |
|-------------|-----------------|-----------|
| L2204, 2205 | INDUCTOR        | LTA822J   |
| T2251       | OSC TRANSFORMER | ATX - 043 |

**CAPACITORS**

|             |                      |              |
|-------------|----------------------|--------------|
| C2021, 2022 | CERAMIC CAPACITOR    | CCMSL100D50  |
| C2023, 2024 | CERAMIC CAPACITOR    | CKMYB391K50  |
| C2027, 2028 | AUDIO FILM CAPACITOR | CFTXA223J50  |
| C2029, 2030 | ELECTR. CAPACITOR    | CEAS4R7M50   |
| C2031, 2032 | ELECTR. CAPACITOR    | CEAS470M10   |
| C2035, 2036 | ELECTR. CAPACITOR    | CEAS101M10   |
| C2219, 2220 | CERAMIC CAPACITOR    | CCCSL271K500 |
| C2223, 2224 | CERAMIC CAPACITOR    | CKDYB681K50  |
| C2251       | ELECTR. CAPACITOR    | CEAS470M16   |
| C2252, 2253 | CERAMIC CAPACITOR    | CGMYX103M16  |
| C2254       | CERAMIC CAPACITOR    | CKMYB221K50  |
| C2255       | MYLAR FILM CAPACITOR | CQMA153K50   |
| C2256       | CERAMIC CAPACITOR    | CKMYB681K50  |
| C2257       | MYLAR FILM CAPACITOR | CQMA123K250  |
| C2258       | ELECTR. CAPACITOR    | CEAS4R7M50   |
| C2261       | MYLAR FILM CAPACITOR | CQMA562K400  |
| C2262       | (2000P/630V)         | ACE1020      |
| C2263       | ELECTR. CAPACITOR    | CEAS100M50   |



| Mark             | No.          | Description          | Parts No.   |
|------------------|--------------|----------------------|-------------|
| <b>RESISTORS</b> |              |                      |             |
|                  | VR2021, 2022 | VR                   | VRTM6V202   |
|                  | VR2251, 2252 | VR                   | VRTM6H204   |
|                  | R2253        | CARBON FILM RESISTOR | RD1/2PM360J |
|                  |              | Other resistors      | RD1/8PM□□□J |

● MOTHER PCB ASSEMBLY (PWM1372)

**SEMICONDUCTORS**

|   |            |                        |            |
|---|------------|------------------------|------------|
|   | IC101      | PRE AMP IC             | CXA1471S   |
|   | IC151      | SERVO IC               | CXA1372S   |
| △ | IC20       | REGULATOR IC           | M5298P     |
| △ | IC201, 202 | POWER OP-AMP IC        | LA6520     |
| △ | IC30       | IC PROTECTOR           | ICP-N10    |
|   | IC301      | EFM DEMODULATION IC    | CXD2500AQ  |
|   | IC351      | MICROCOMPUTER IC       | PD4315A    |
|   | IC401      | 8FS DF DA CONVERTER IC | TC9237N    |
|   | IC404      | OP-AMP IC              | NJM4558D-D |
|   | Q101       | TRANSISTOR             | 2SA854S    |
|   | Q381, 382  | TRANSISTOR             | 2SC1740S   |
|   | Q403, 404  | TRANSISTOR             | 2SD2144S   |
|   | Q405       | TRANSISTOR             | DTC124ES   |
|   | Q406       | TRANSISTOR             | DTA124ES   |
|   | Q62        | TRANSISTOR             | 2SC1740S   |
|   | D211       | ZENER DIODE            | MTZJ6.2B   |
|   | D381-385   | DIODE                  | 1SS254     |

**COILS**

|           |                |         |
|-----------|----------------|---------|
| L381      | AXIAL INDUCTOR | LAU010K |
| L401      | AXIAL COIL     | LAUR22K |
| L402, 403 | AXIAL INDUCTOR | LAU010K |

**CAPACITORS**

|           |                        |             |
|-----------|------------------------|-------------|
| C101      | ELECTROLYTIC CAPACITOR | CEAS471M6R3 |
| C102      | ELECTR. CAPACITOR      | CEAS101M10  |
| C103      | CERAMIC CAPACITOR      | CCCCH180J50 |
| C104      | ELECTR. CAPACITOR      | CEAS101M10  |
| C110      | CERAMIC CAPACITOR      | CKCYF103Z50 |
| C11-14    | CERAMIC CAPACITOR      | CKCYF103Z50 |
| C151-153  | ELECTR. CAPACITOR      | CEAS101M10  |
| C155      | MYLAR FILM CAPACITOR   | CQMA182J50  |
| C156      | MYLAR FILM CAPACITOR   | CQMA333K50  |
| C157      | MYLAR FILM CAPACITOR   | CQMA103K50  |
| C158, 159 | MYLAR FILM CAPACITOR   | CQMA104K50  |

| Mark | No.       | Description            | Parts No.   |
|------|-----------|------------------------|-------------|
|      | C160      | ELECTR. CAPACITOR      | CEAS4R7M50  |
|      | C161      | MYLAR FILM CAPACITOR   | CQMA104K50  |
|      | C162      | ELECTR. CAPACITOR      | CEAS010M50  |
|      | C163      | MYLAR FILM CAPACITOR   | CQMA104K50  |
|      | C164      | MYLAR FILM CAPACITOR   | CQMA103K50  |
|      | C167      | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C168      | MYLAR FILM CAPACITOR   | CQMA333K50  |
|      | C169      | MYLAR FILM CAPACITOR   | CQMA103K50  |
|      | C170      | MYLAR FILM CAPACITOR   | CQMA332J50  |
|      | C171      | MYLAR FILM CAPACITOR   | CQMA472J50  |
|      | C172      | MYLAR FILM CAPACITOR   | CQMA472K50  |
|      | C202      | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C212      | MYLAR FILM CAPACITOR   | CQMA103K50  |
|      | C216, 217 | ELECTR. CAPACITOR      | CEAS330M16  |
|      | C221, 222 | ELECTR. CAPACITOR      | CEAS330M16  |
|      | C27       | ELECTROLYTIC CAPACITOR | CEAS471M6R3 |
|      | C28       | ELECTR. CAPACITOR      | CEAS101M10  |
|      | C301      | MYLAR FILM CAPACITOR   | CQMA104K50  |
|      | C302      | ELECTROLYTIC CAPACITOR | CEAS471M6R3 |
|      | C303      | ELECTR. CAPACITOR      | CEAS330M16  |
|      | C306      | CERAMIC CAPACITOR      | CKCYB152K50 |
|      | C307      | MYLAR FILM CAPACITOR   | CQMA473J50  |
|      | C308      | MYLAR FILM CAPACITOR   | CQMA103K50  |
|      | C309      | ELECTR. CAPACITOR      | CEASR47M50  |
|      | C321      | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C351      | ELECTROLYTIC CAPACITOR | CEAS471M6R3 |
|      | C353, 355 | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C361      | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C383—385  | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C403, 404 | CERAMIC CAPACITOR      | CCCCH470J50 |
|      | C410, 411 | CERAMIC CAPACITOR      | CCCSL560J50 |
|      | C412—415  | CERAMIC CAPACITOR      | CCCCH390J50 |
|      | C420      | MYLAR FILM CAPACITOR   | CQMA104K50  |
|      | C421      | CERAMIC CAPACITOR      | CKCYF473Z50 |
|      | C429, 430 | ELECTR. CAPACITOR      | CEAS220M25  |
|      | C431, 432 | MYLAR FILM CAPACITOR   | CQMA104K50  |
|      | C433, 434 | MYLAR FILM CAPACITOR   | CQMA333K50  |
|      | C435      | CERAMIC CAPACITOR      | CKCYF473Z50 |
|      | C436      | CERAMIC CAPACITOR      | CKCYF103Z50 |
|      | C60       | ELECTR. CAPACITOR      | CEAS010M50  |



| Mark | No. | Description | Parts No. |
|------|-----|-------------|-----------|
|------|-----|-------------|-----------|

**RESISTORS**

|            |                 |             |
|------------|-----------------|-------------|
| VR102      | VR              | VRTB6VS223  |
| VR103      | VR              | VRTB6VS102  |
| VR151, 152 | VR              | VRTB6VS223  |
|            | Other resistors | RD1/6PM□□□J |

**OTHERS**

|       |                   |            |
|-------|-------------------|------------|
| CN1   | CONNECTOR (6P)    | KPE6       |
| CN101 | CONNECTOR         | 52045-1610 |
| CN351 | CONNECTOR         | HLEM25S-1  |
| CN381 | CONNECTOR (7P)    | KPE7       |
| X351  | CERAMIC RESONATOR | VSS1014    |
| X401  | XTAL RES (OSC)    | PSS1006    |

**● SUB PCB ASSEMBLY (PWX1148)****SEMICONDUCTORS**

|          |       |        |
|----------|-------|--------|
| D701-706 | DIODE | 1S2473 |
|----------|-------|--------|

**SWITCHES**

|          |        |         |
|----------|--------|---------|
| S701-718 | SWITCH | PSG1006 |
|----------|--------|---------|

**RESISTORS**

|      |                      |             |
|------|----------------------|-------------|
| R701 | CARBON FILM RESISTOR | RD1/4PM103J |
|------|----------------------|-------------|

**OTHERS**

|       |                   |           |
|-------|-------------------|-----------|
| CN701 | CONNECTOR         | HLEM25R-1 |
| V701  | FL INDICATOR TUBE | PEL1053   |

**LOADING PCB ASSEMBLY****SWITCHES**

|           |             |         |
|-----------|-------------|---------|
| S601, 602 | PUSH SWITCH | DSG1016 |
|-----------|-------------|---------|

**SELECT PCB ASSEMBLY****SWITCHES**

|          |             |         |
|----------|-------------|---------|
| S603-606 | PUSH SWITCH | DSG1016 |
|----------|-------------|---------|

**MOTOR PCB ASSEMBLY**

MOTOR PCB assembly has no service part.



## 5. ADJUSTMENTS

### 5.1 DECK AMP BLOCK

#### Adjustment of Mechanical section

- Test tape : STD-301 (3 kHz 30 min)
- Setting of double speed mode : Short-circuit TP1601 and TP1602 of the DISPLAY assembly. To release the mode, disconnect the short circuit.

| 1. Adjustment of tape speed |                          |                                     |                     |                         |                        |                                                                                                                                    |                                                 |
|-----------------------------|--------------------------|-------------------------------------|---------------------|-------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| No.                         | Mode                     | Input signal & Test tape            | Adjustment location |                         | Measuring location     | Adjustment value                                                                                                                   | Remarks                                         |
| 1                           | PLAY                     | Playback the STD-301 tape to 3 kHz. | Deck I              | DISPLAY assembly VR1601 | AF assembly JP-L (Lch) | Press the PLAY button and adjust the frequency to 3010 Hz $\pm$ 10 Hz. Make sure that the wow and flutter is within 0.2 %.         |                                                 |
| 2                           | PLAY (Double speed mode) |                                     |                     | —                       |                        | Press the PLAY button in double speed mode and confirm that the frequency is 6000 Hz $\pm$ 1000 Hz. Note down the figure.          | Release the double speed mode after adjustment. |
| 3                           | PLAY (Double speed mode) |                                     | Deck II             | DISPLAY assembly VR1603 | AF assembly JP-R (Rch) | Press the PLAY button in double speed mode and adjust the frequency to be within $\pm$ 30 Hz of the figure recorded at step No. 2. | Release the double speed mode after adjustment. |
| 4                           | PLAY                     |                                     |                     | DISPLAY assembly VR1602 |                        | Press the PLAY button and adjust the frequency to 3010 Hz $\pm$ 10 Hz. Make sure that the wow and flutter is within 0.2 %.         |                                                 |

#### Adjustment of Electric section

##### ■ Check and conduct the following before adjusting the electric section.

1. Adjustment of tape speed has been completed.
2. Clean and demagnetize the head using a head eraser.
3. When measured, the level should be 0 dBV = 1 Vrms.
4. Use side A of the specified tape for adjustment.  
STD-331B: For adjustment of playback system.  
STD-630: NORMAL blank tape
5. Prepare the following measuring devices:  
AC millivoltmeter, Low-frequency oscillator, Attenuator, Oscilloscope
6. Adjust both L and R channels, unless specified otherwise.
7. Set the DOLBY NR switches to OFF, unless specified otherwise.
8. Warm up the unit for several minutes before adjustment. Especially before adjusting the frequency characteristics of recording and playback, warm up for 3 to 5 minutes in REC/PLAY mode.
9. Make sure to follow the proper order of the adjustment procedure. Any change in the order may cause an improper result.
10. The AF assembly contains JP-L and JP-R.(See Fig.5-4)

#### List of Adjustment

##### Deck I

1. Head azimuth adjustment
2. Playback level adjustment

##### Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Bias oscillation frequency adjustment
4. Recording level adjustment
5. Adjustment of frequency characteristics of recording / playback



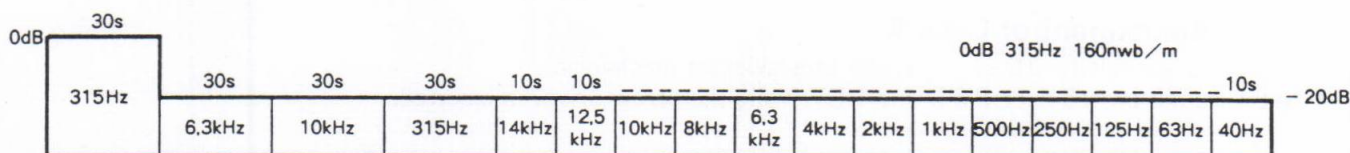


Fig. 5-1 Test tape STD-331B

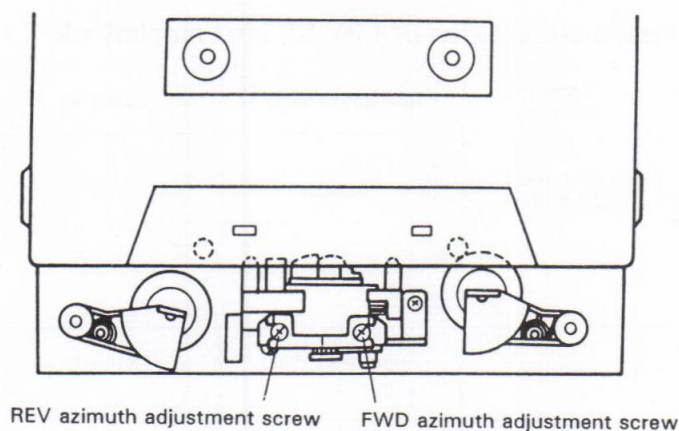
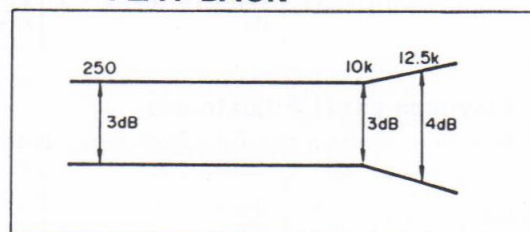


Fig. 5-2 Head azimuth adjustment

## PLAY BACK



## RECORDING

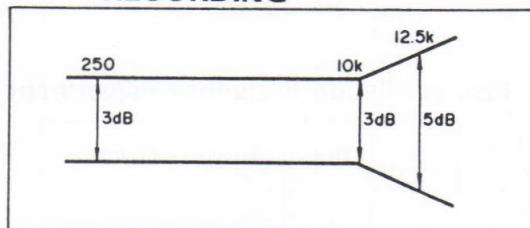


Fig. 5-3 Frequency characteristics

## • Head Adjustment of Deck I

- Deck I is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the screw driver is inserted.

### 1. Head Azimuth Adjustment

| Pro-cedure | Tape selector | Mode | Input signal/test tape                            | Adjustment location                      | Measuring location       | Adjustment value              | Remarks                                                     |
|------------|---------------|------|---------------------------------------------------|------------------------------------------|--------------------------|-------------------------------|-------------------------------------------------------------|
| 1          | NORM          | PLAY | Playback the test tape STD-331B (10 kHz, -20 dB). | Head azimuth adjustment screw (Fig. 5-2) | JP-L (Lch)<br>JP-R (Rch) | Maximum playback signal level | Lock the screw with screw lock after completing adjustment. |

### 2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

| Pro-cedure | Tape selector | Mode | Input signal/test tape                          | Adjustment location                              | Measuring location       | Adjustment value | Remarks |
|------------|---------------|------|-------------------------------------------------|--------------------------------------------------|--------------------------|------------------|---------|
| 1          | NORM          | PLAY | Playback the test tape STD-331B (315 Hz, 0 dB). | 1 Mecha assembly<br>VR2001 (Lch)<br>VR2002 (Rch) | JP-L (Lch)<br>JP-R (Rch) | -5.2 dBv         |         |



## • Head Adjustment of Deck II

- Deck II is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the screw driver is inserted.

### 1. Head Azimuth Adjustment

| Pro-cedure | Tape selector | Mode | Input signal/test tape                            | Adjustment location                      | Measuring location       | Adjustment value              | Remarks                                                     |
|------------|---------------|------|---------------------------------------------------|------------------------------------------|--------------------------|-------------------------------|-------------------------------------------------------------|
| 1          | NORM          | PLAY | Playback the test tape STD-331B (10 kHz, -20 dB). | Head azimuth adjustment screw (Fig. 5-2) | JP-L (Lch)<br>JP-R (Rch) | Maximum playback signal level | Lock the screw with screw lock after completing adjustment. |

### 2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

| Pro-cedure | Tape selector | Mode | Input signal/test tape                          | Adjustment location                              | Measuring location       | Adjustment value | Remarks |
|------------|---------------|------|-------------------------------------------------|--------------------------------------------------|--------------------------|------------------|---------|
| 1          | NORM          | PLAY | Playback the test tape STD-331B (315 Hz, 0 dB). | 2 Mecha assembly<br>VR2021 (Lch)<br>VR2022 (Rch) | JP-L (Lch)<br>JP-R (Rch) | -5.2 dBv         |         |

### 3. Bias oscillation frequency adjustment

| Pro-cedure | Tape selector | Mode | Input signal/test tape                             | Adjustment location       | Measuring location                                                 | Adjustment value                                  | Remarks |
|------------|---------------|------|----------------------------------------------------|---------------------------|--------------------------------------------------------------------|---------------------------------------------------|---------|
| 1          | NORM          | REC  | Load the test tape STD-630 and set to record mode. | 2 Mecha assembly<br>T2251 | Area between<br>① and ②<br>(2 Mecha assembly)<br>shown in Fig.5-6. | The oscillation frequency is 105 kHz $\pm$ 5 kHz. |         |

### 4. Recording Level Adjustment

| Pro-cedure | Tape selector | Mode       | Input signal/test tape                                                                  | Adjustment location                         | Measuring location       | Adjustment value                                                                                     | Remarks |
|------------|---------------|------------|-----------------------------------------------------------------------------------------|---------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------|---------|
| 1          | NORM          | REC        | Apply a signal of 315 Hz to the LD/VCR input terminal and set the function to "LD/VCR". | Input signal level                          | JP-L (Lch)<br>JP-R (Rch) | -5.2 dBv                                                                                             |         |
| 2          | NORM          | REC / PLAY | Record and playback the test tape STD-630 (315 Hz).                                     | AF assembly<br>VR2201 (Lch)<br>VR2202 (Rch) | JP-L (Lch)<br>JP-R (Rch) | Repeat the recording/playback, and make adjustment so that the playback level of 315 Hz is -5.2 dBv. |         |

### 5. Adjustment of frequency characteristics of recording/playback

- As this procedure is for adjustment of the recording bias, be careful not to increase the distortion by under-adjusting the bias.

| Pro-cedure | Tape selector | Mode       | Input signal/test tape                                                                  | Adjustment location                              | Measuring location       | Adjustment value                                                                                                                      | Remarks |
|------------|---------------|------------|-----------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1          | NORM          | REC        | Apply a signal of 315 Hz to the LD/VCR input terminal and set the function to "LD/VCR". | Input signal level                               | JP-L (Lch)<br>JP-R (Rch) | -25.2 dBv                                                                                                                             |         |
| 2          | NORM          | REC / PLAY | Record and playback the test tape STD-630 (315 Hz and 10 kHz).                          | 2 Mecha assembly<br>VR2251 (Lch)<br>VR2252 (Rch) | JP-L (Lch)<br>JP-R (Rch) | Repeat the recording/playback, and make adjustment so that the playback level of 10 kHz remains 0 $\pm$ 0.5 dB in relation to 315 Hz. |         |



# • Adjustment location

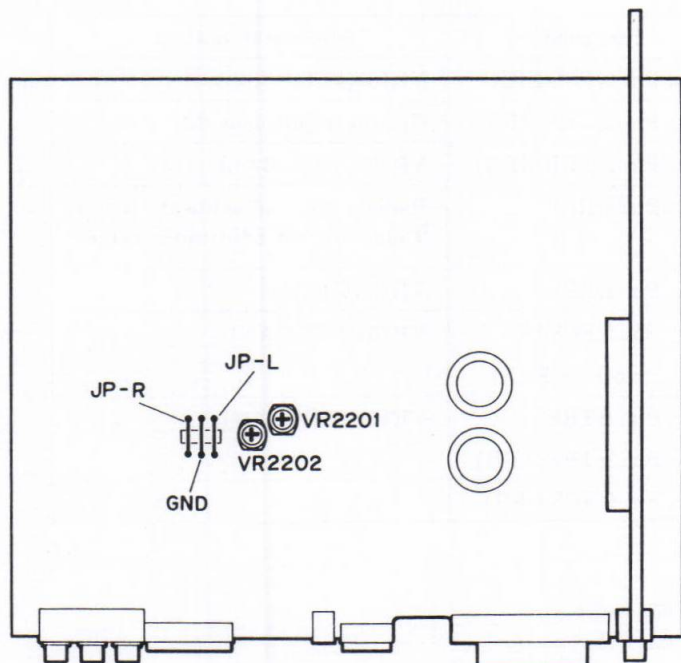


Fig. 5-4 AF assembly

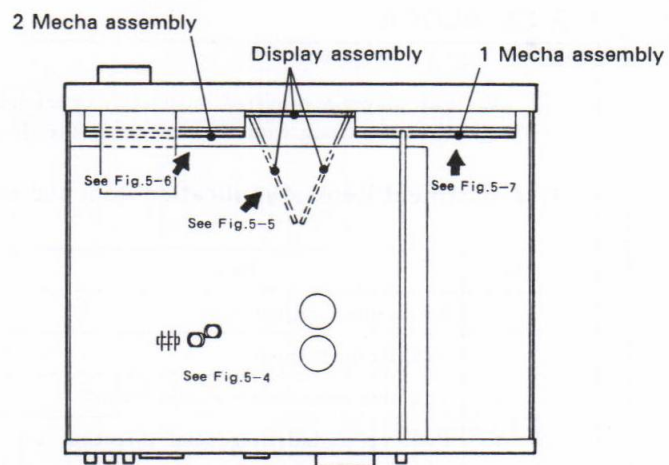


Fig. 5-5 DISPLAY assembly

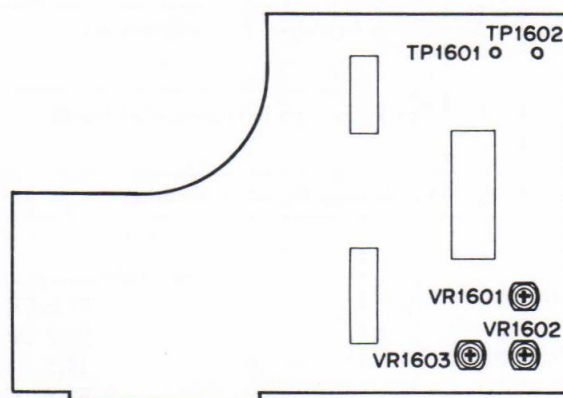


Fig. 5-7 1 Mecha assembly

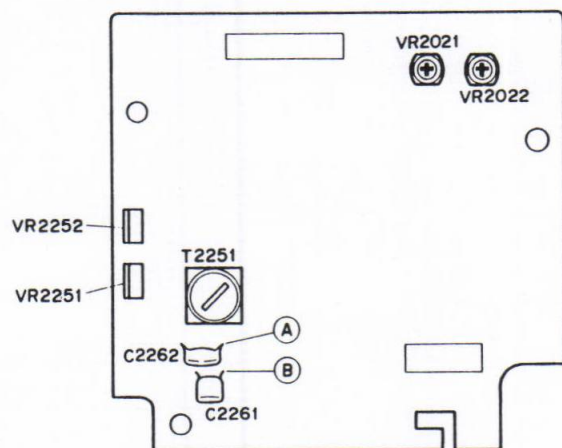
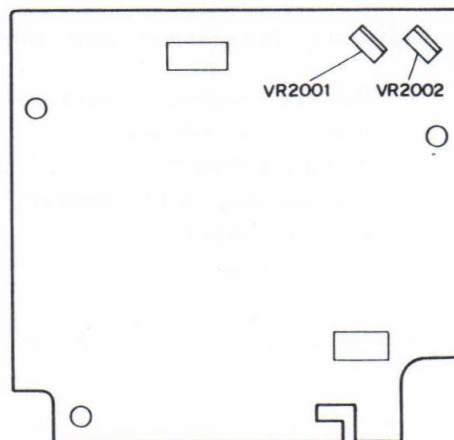


Fig. 5-6 2 Mecha assembly





## 5.2 CD BLOCK

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 pick up or the circuitry. Adjust correctly following the adjustment procedure.

### 1. Adjustment items/verification item and order

| Step | Item                                                | Test point                                | Adjustment location                                               |
|------|-----------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------|
| 1    | Focus offset adjustment                             | TP1, Pin 6(FCS.ERR)                       | VR103(FCS.OFS)                                                    |
| 2    | Grating adjustment                                  | TP1, Pin 2(TRK.ERR)                       | Grating adjustment slit                                           |
| 3    | Tracking error balance adjustment                   | TP1, Pin 2(TRK.ERR)                       | VR102(TRK. BAL)                                                   |
| 4    | Pick up radial/tangential direction tilt adjustment | TP1, Pin 1(RF)                            | Radial tilt adjustment screw,<br>Tangential tilt adjustment screw |
| 5    | RF level adjustment (RF level)                      | TP1, Pin 1(RF)                            | VR1(RF level)                                                     |
| 6    | Focus servo loop gain adjustment                    | TP1, Pin 5(FCS.IN)<br>TP1, Pin 6(FCS.ERR) | VR152(FCS.GAN)                                                    |
| 7    | Tracking servo loop gain adjustment                 | TP1, Pin 3(TRK.IN)<br>TP1, Pin 2(TRK.ERR) | VR151(TRK.GAN)                                                    |
| 8    | Focus error signal verification                     | TP1, Pin 6(FCS.ERR)                       | —                                                                 |

#### ● Abbreviation table

FCS.ERR : Focus Error  
 FCS.OFS : Focus Offset  
 TRK.ERR : Tracking Error  
 TRK.BAL : Tracking Balance  
 FCS.GAN : Focus Gain  
 TRK.GAN : Tracking Gain  
 FCS.IN : Focus In  
 TRK.IN : Tracking In

### 2. 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 k $\Omega$ + 0.001 $\mu$ F)
5. Resistor (100 k $\Omega$ )
6. Standard tools



### 3. Test point and adjustment variable resistor positions

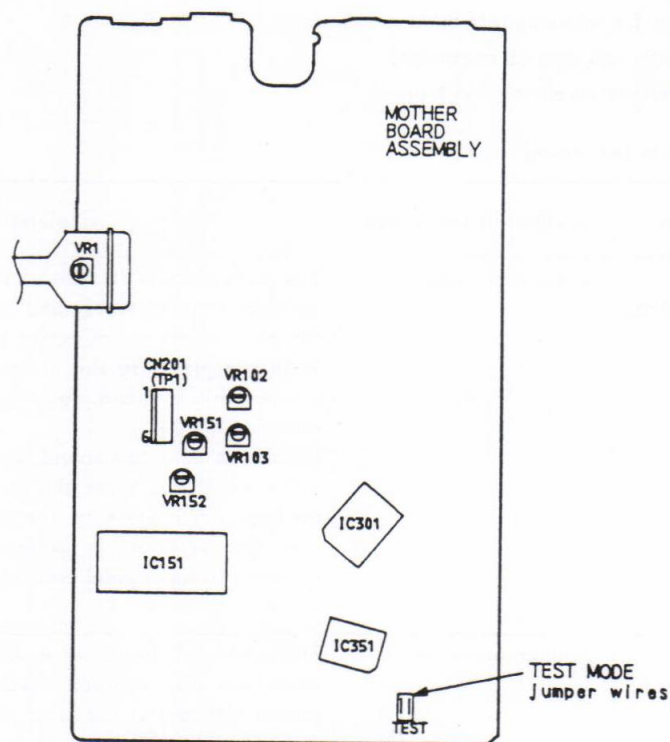


Figure 1 Adjustment Locations

### 4. 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.

### 5. Test mode

This model have a test mode so that the adjustments and checks required for service can be carried out easily. When this model is 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 this model, all adjustments are carried out in test mode.

#### [Setting to test mode]

How to set this model into test mode.

1. Turn off the power switch.
2. Short the test mode jumper wires. (See Figure 1.)
3. Turn on the power switch.

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 test mode :

1. Press the STOP key and stop all operations.
2. Turn off the power switch on the front panel.

# **[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 twice 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 periphery edge 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                                                                                                                                                                                                                                                                                                            |
|-------------|--------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⏮<br>/<br>⏭ | TRACK/<br>MANUAL<br>SEARCH REV | Carriage reverse<br>(inwards)  | Moves the pickup position toward the inner diameter of the disc.<br>When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup does not automatically stop at the mechanical end point in test mode, be careful with this operation. |
| ⏭<br>/<br>⏮ | TRACK/<br>MANUAL<br>SEARCH FWD | Carriage forward<br>(outwards) | Moves the pickup position toward the outer diameter of the disc.<br>When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup 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.                                                                                                                                                                                                        |
| ⏏           | EJECT                          | CD magazine eject              | Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.                                                                             |

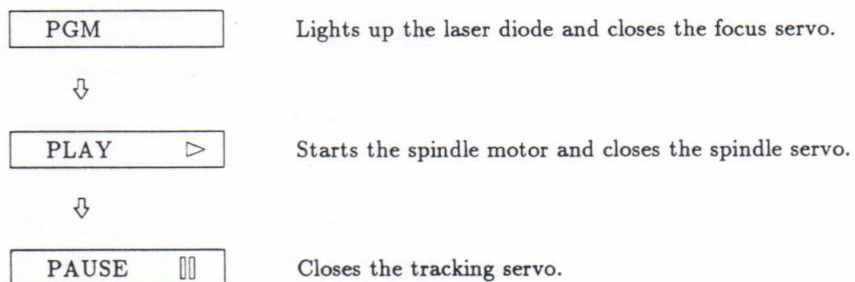
Note : When inserting the magazine, disc 1 of the magazine is loaded automatically



**[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 adjustment**

|                                      |                                                            |                                     |                                               |
|--------------------------------------|------------------------------------------------------------|-------------------------------------|-----------------------------------------------|
| ● Objective                          | Sets 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<br><br>● Disc | VR103 (FCS OFS)<br><br>None needed            |

**[Procedure]**

Adjust VR103 (FCS OFS) so that the DC voltage at TP1, Pin 6 (FCS ERR) is  $-150 \pm 50$  mV.



## 2. Grating adjustment

|                                      |                                                                                            |                       |                                                                     |
|--------------------------------------|--------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------|
| ● Objective                          | To align the tracking error generation laser beam spots to the optimum angle on the track. |                       |                                                                     |
| ● Symptom when out of adjustment     | Play does not start, track search is impossible, tracks are skipped.                       |                       |                                                                     |
| ● Measurement instrument connections | Connect the oscilloscope to TP1, Pin 2 (TRK ERR) via a low pass filter.<br>(See Figure 2)  | ● 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 | Pickup grating adjustment slit                                      |
|                                      |                                                                                            | ● Disc                | YEDS-7                                                              |

### [Procedure]

1. Move the pickup to midway across the disc(R=35 mm) with the MANUAL SEARCH FWD  $\triangleright$  or  $\triangleleft$  key.
2. Press the PGM key, then the PLAY  $\triangleright$  key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again.  
Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

Note : The amplitude of the tracking error signal is about 3 Vp-p (when a  $39\text{ k}\Omega + 0.001\text{ }\mu\text{F}$  low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), then the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.

5. Return the pickup to more or less midway across the disc with the TRACK/MANUAL SEARCH REV  $\triangleleft/\triangleright$  key, press the PAUSE  $\square$  key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

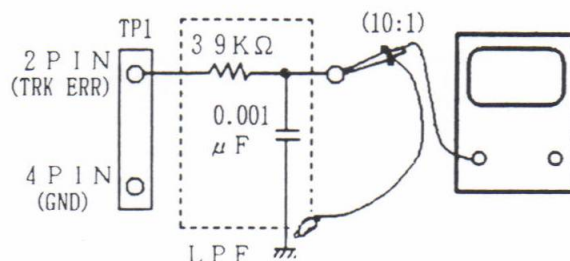
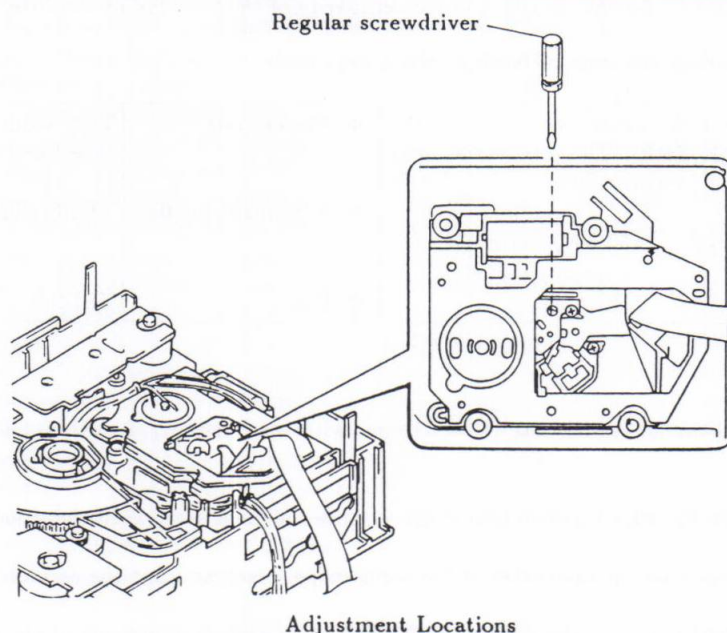


Figure 2





#### [How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1 Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)

This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

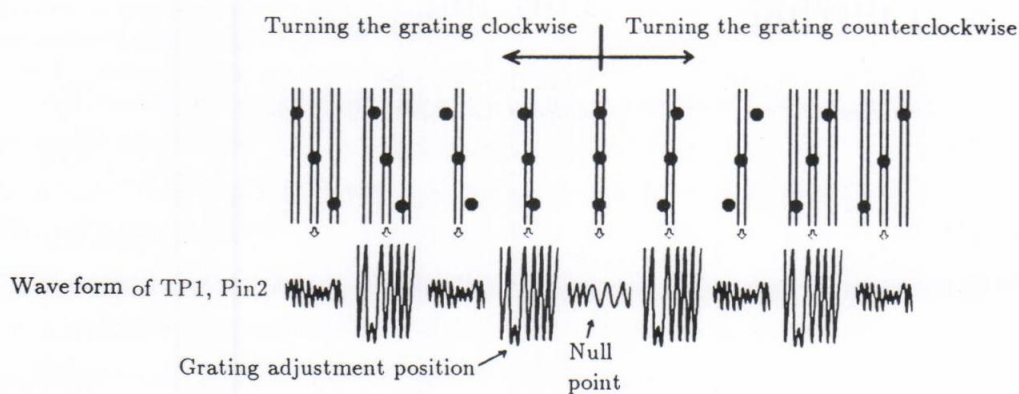
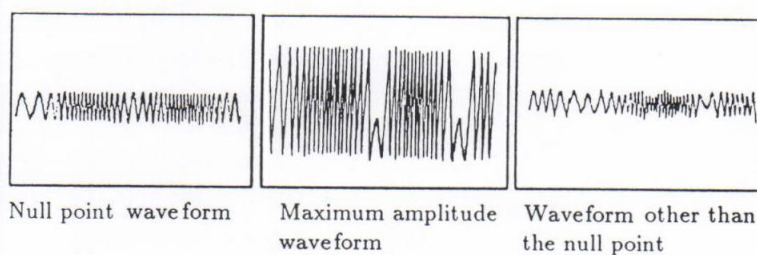


Figure 3



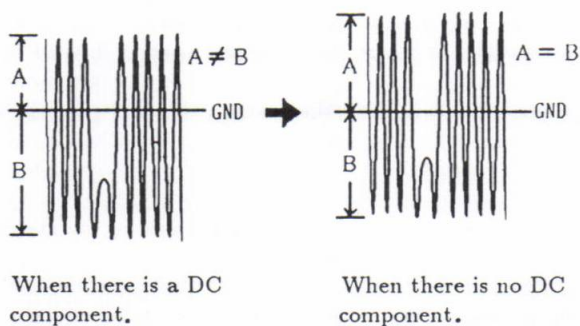


### 3. Tracking error balance adjustment

|                                      |                                                                                                 |                       |                                                                    |
|--------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------|
| ● Objective                          | To correct for the variation in the sensitivity of the tracking photodiode.                     |                       |                                                                    |
| ● 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 | VR102 (TRK BAL)                                                    |
|                                      |                                                                                                 | ● Disc                | YEDS-7                                                             |

#### [Procedure]

1. Move the pickup to midway across the disc (R = 35 mm) with the TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  or  $\blacktriangleleft/\blacktriangleright$  key.
2. Press the PGM key, then the PLAY key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1 Pin 2 (TRK ERR) are the same (in other words, so that there is no DC component).





#### 4. 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 TP1, Pin 1 (RF).                                                                                                                  | ● Player state        | Test mode, play                                                          |
|                                      | [Settings]      20 mV/division<br>200 ns/division<br>AC mode                                                                                                  | ● Adjustment location | Pickup radial tilt adjustment screw and tangential tilt adjustment screw |
|                                      |                                                                                                                                                               | ● Disc                | YEDS-7                                                                   |

##### [Procedure]

1. Press the TRACK/MANUAL SEARCH FWD or key to move the pickup to halfway across the disc (R = 35 mm).  
Press the PGM key, the PLAY key, then the PAUSE 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 5).
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.

Note : Radial and tangential mean the directions relative to the disc shown in Figure 4.

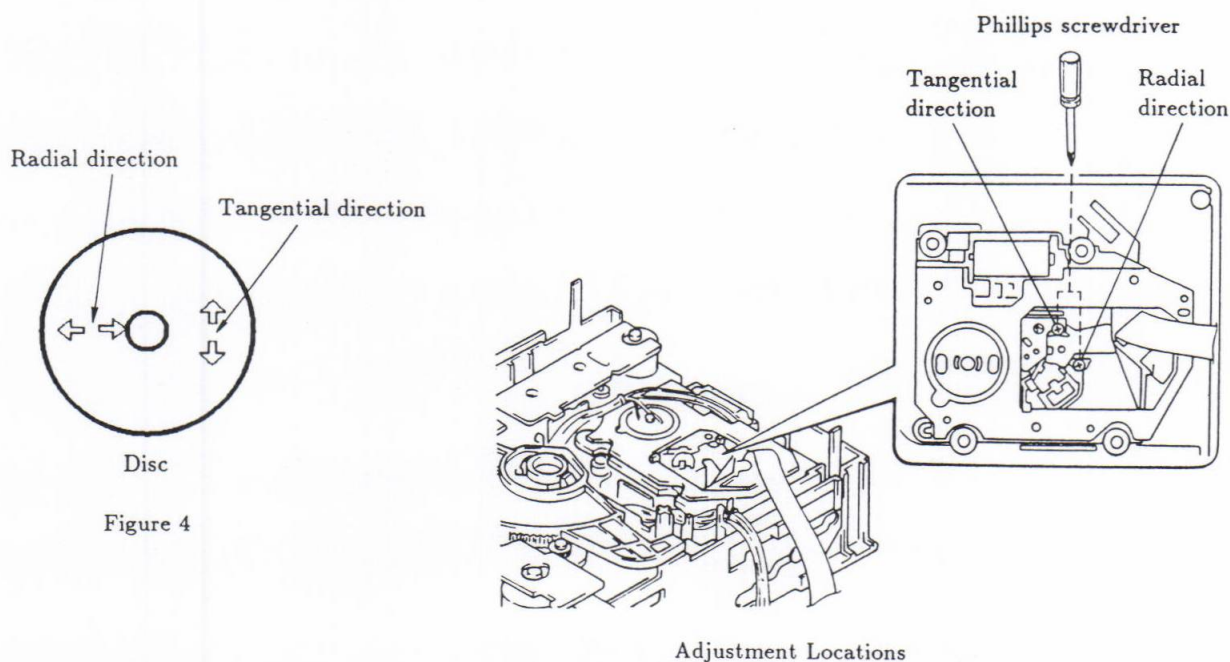


Figure 4



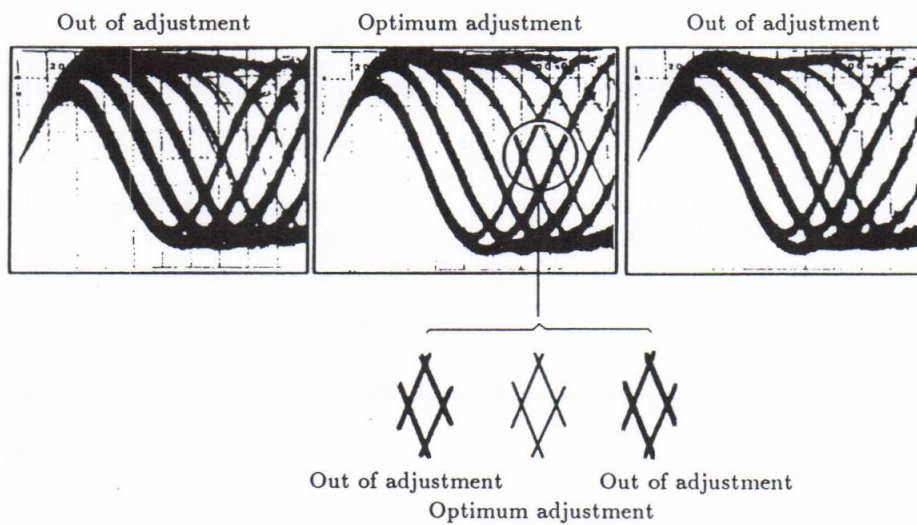


Figure 5 Eye pattern



## 5. RF level adjustment

|                                      |                                                             |                       |                   |
|--------------------------------------|-------------------------------------------------------------|-----------------------|-------------------|
| ● Objective                          | To optimize 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 | VR1 (laser power) |
|                                      |                                                             | ● Disc                | YEDS-7            |

## [Procedure]

1. Move the pickup to midway across the disc ( $R = 35 \text{ mm}$ ) with the TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  or  $\blacktriangleleft/\blacktriangleright$  key, then press the PGM key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\square\square$  key in that order to close the respective servos and put the player into play mode..
2. Adjust VR1 (laser power) so that the RF signal amplitude is  $1.2 \text{ V}_{p-p} \pm 0.1 \text{ V}$ .



## 6. 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 6.                                                                             | ● Player state        | Test mode, play |
|                                      | [Settings]<br>CH1                      CH2<br>20 mV/division    5 mV/division<br>X-Y mode | ● 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  $\blacktriangleleft/\blacktriangleright$  or  $\blacktriangleleft/\blacktriangleright$  key to move the pickup to halfway across the disc (R = 35 mm), then press the PGM key, the PLAY  $\blacktriangleright$  key, then the PAUSE  $\square$  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.

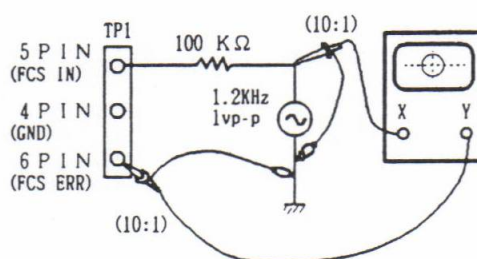
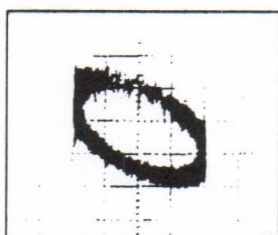
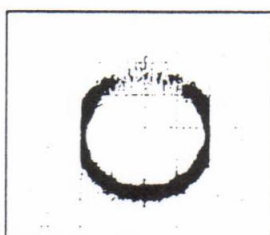


Figure 6

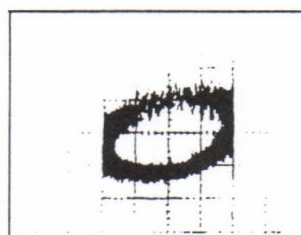
### Focus Gain Adjustment



Higher gain



Optimum gain



Lower gain



## 7. 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 7.                                                                              | ● Player state        | Test mode, play |
|                                      | [Settings]<br>CH1                      CH2<br>50 mV/division    50 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 1 V<sub>p-p</sub>.
2. Press the TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  or  $\blacktriangleleft/\blacktriangleright$  key to move the pickup to halfway across the disc (R = 35 mm), then press the PGM key, the PLAY  $\triangleright$  key, then the PAUSE  $\square$  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 wave form is symmetrical about the X axis and the Y axis.

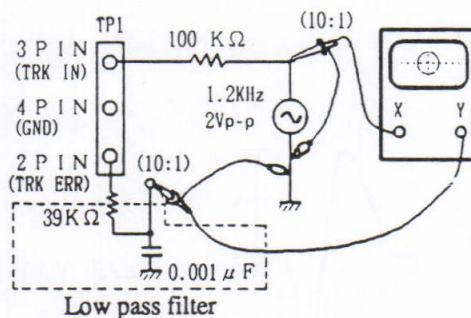
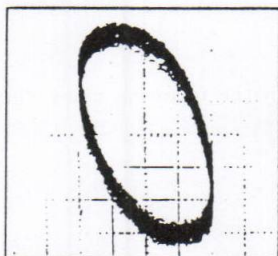


Figure 7

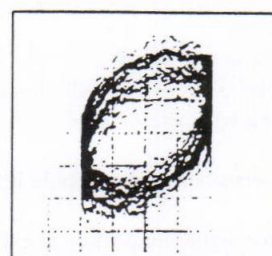
### Tracking Gain Adjustment



Higher gain



Optimum gain



Lower gain



## 8. Focus error signal(focus S curve)verification

|                                      |                                                                                                                                                                                                                                                                        |                       |                 |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|
| ● Objective                          | To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the wave form for the focus error signal. |                       |                 |
| ● Symptom when out of adjustment     |                                                                                                                                                                                                                                                                        |                       |                 |
| ● Measurement instrument connections | Connect the oscilloscope to TP1 Pin 6 (FOCS ERR).                                                                                                                                                                                                                      | ● Player state        | Test mode, stop |
|                                      | [Settings] 100 mV/division<br>5 ms/division<br>DC mode                                                                                                                                                                                                                 | ● Adjustment location | None            |
|                                      |                                                                                                                                                                                                                                                                        | ● Disc                | YEDS-7          |

### [Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PGM key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PGM key is pressed, press this key over and over until you have checked the waveform.

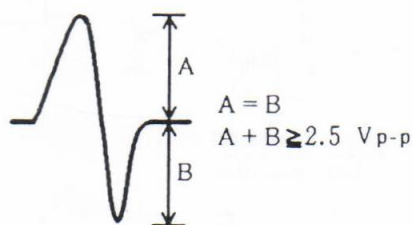


Figure 8

### [Judging the pickup]

Do not judge the pickup until all the adjustments have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 is adjusted (laser power), the RF signal can not be brought up to the standard level.



## 5. REGLAGE

### 5.1 BLOC AMPLI PLATINE

#### Réglages des parties mécaniques

- Bande d'étalonnage: STD-301 (3 kHz, 30 mn.)
- Réglage du mode de vitesse double : Court-circuiter TP1601 et TP1602 de l'ensemble AFFICHAGE. Pour libérer le mode, déconnecter le court-circuit.

| 1. Réglage de la vitesse de bande |                               |                                        |                        |                           |                                |                                                                                                                                                                      |                                                     |
|-----------------------------------|-------------------------------|----------------------------------------|------------------------|---------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| No.                               | Mode                          | Signal appliqué /bande d'étalonnage    | Emplacement du réglage |                           | Emplacement du point de mesure | Valeur relevée                                                                                                                                                       | Obsrvations                                         |
| 1                                 | PLAY                          | Reproduire la bande STD-301 par 3 kHz. | Platine I              | Ensemble AFFICHAGE VR1601 | Ensemble AF JP-L (can. G)      | Appuyer sur la touche PLAY et régler la fréquence sur 3010 Hz $\pm$ 10 Hz. Vérifier que le pleurage et scintillement est dans la limite de 0,2%.                     |                                                     |
| 2                                 | PLAY (Mode de vitesse double) |                                        |                        | —                         |                                | Appuyer sur la touche PLAY dans le mode de vitesse double et vérifier que la fréquence est 6000 Hz $\pm$ 1.000 Hz. Noter le chiffre.                                 | Libérer le mode de vitesse double après le réglage. |
| 3                                 | PLAY (Mode de vitesse double) |                                        | Platine II             | Ensemble AFFICHAGE VR1603 | Ensemble AF JP-R (can. D)      | Appuyer sur la touche PLAY dans le mode de vitesse double et régler la fréquence pour qu'elle soit dans la limite de $\pm$ 30 Hz du chiffre noté dans l'étape No. 2. | Libérer le mode de vitesse double après le réglage. |
| 4                                 | PLAY                          |                                        |                        | Ensemble AFFICHAGE VR1602 |                                | Appuyer sur la touche PLAY et régler la fréquence sur 3010 Hz $\pm$ 10 Hz. Vérifier que le pleurage et scintillement est dans la limite de 0,2%.                     |                                                     |

#### Réglages des parties électriques

##### ■ Vérifier les points suivants et effectuer les opérations suivantes avant procéder aux réglages des parties électriques.

1. Le réglage de la vitesse de bande a été complété.
2. Nettoyer et démagnétiser la tête avec un démagnétiseur de tête.
3. Lors de la mesure, le niveau doit être de 0 dBV = 1 Vepp.
4. Utiliser la face A de la bande spécifiée pour le réglage. STD-331B: Pour le réglage du système de lecture.  
STD-630: Bande vierge NORMAL
5. Préparer les instruments de mesure suivants:  
Millivoltmètre CA, oscillateur à basse fréquence, éatténuateur et oscilloscope.
6. Régler les deux canaux L (gauche) et R (droit), sauf spécification contraire.
7. Régler les commutateurs DOLBY NR sur la position OFF, sauf spécification contraire.
8. Laisser chauffer l'appareil pendant plusieurs minutes avant le réglage. En particulier avant d'effectuer le réglage de la réponse en fréquence d'enregistrement et de lecture, laisser chauffer l'appareil pendant 3 à 5 minutes dans le mode d'enregistrement/lecture (REC/PLAY).

9. Toujours suivre l'ordre spécifié de la méthode de réglage. Tout changement de l'ordre peut provoquer des résultats incorrects.

10. L'ensemble AF comprend JP-L et JP-R. (Voir Fig. 5-4)

#### Liste des réglages

##### Platine I

1. Azimut de la tête
2. Niveau de lecture

##### Platine II

1. Azimut de la tête
2. Niveau de lecture
3. Réglage de fréquence d'oscillation de polarisation
4. Niveau d'enregistrement
5. Réponse en fréquence d'enregistrement / lecture



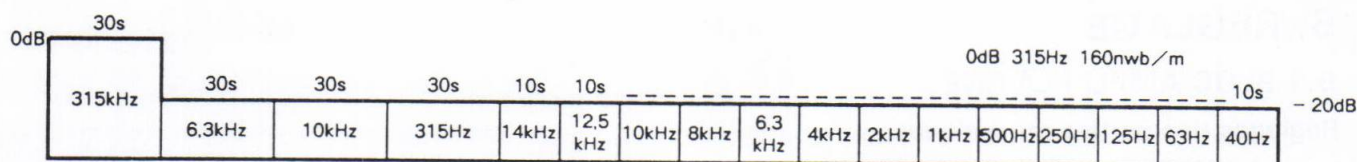


Fig. 5-1 Bande d'étalonnage STD-331B

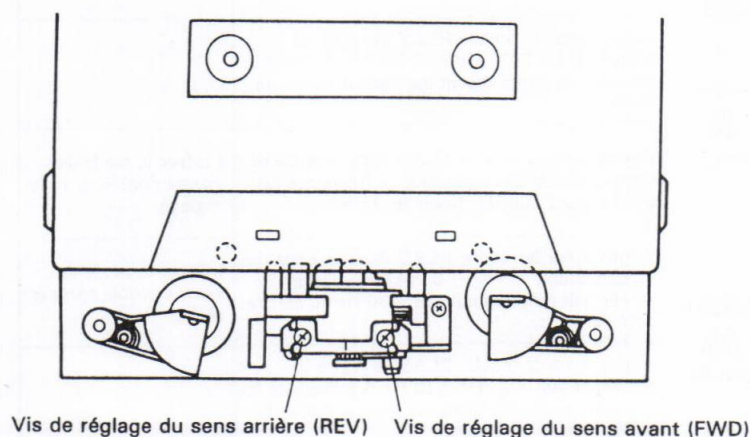
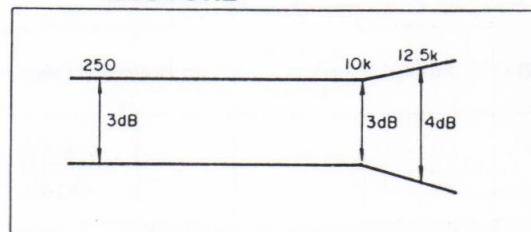


Fig. 5-2 Réglage d'azimut de la tête

## LECTURE



## ENREGISTREMENT

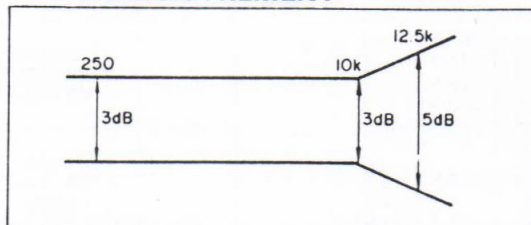


Fig. 5-3 Réponse en fréquence

## • Réglage de la Platine I

- La Platine I est équipée d'un mécanisme de sélection automatique de bande.
- Remarque: Ne pas commuter entre le sens avant (FWD) et le sens arrière (REV) pendant que le tournevis est inséré.

## 1. Réglage d'azimut de la tête

| Opération | Sélecteur de bande | Mode | Signal appliquée / bande d'étalonnage                       | Emplacement du réglage                     | Emplacement du point de mesure | Valeur mesurée                      | Observations                                                      |
|-----------|--------------------|------|-------------------------------------------------------------|--------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------------------------------------|
| 1         | NORM               | PLAY | Reproduire la bande d'étalonnage STD-331B (10 kHz, -20 dB). | Vis de réglage d'azimut de tête (Fig. 5-2) | JP-L (can. G)<br>JP-R (can. D) | Niveau maximum du signal de lecture | Une fois le réglage terminé, bloquer la vis avec un frein de vis. |

## 2. Réglage du niveau de lecture

- Toujours effectuer un réglage minutieux, car la valeur réglée sera le niveau Dolby pour la lecture.

| Opération | Sélecteur de bande | Mode | Signal appliquée / bande d'étalonnage                     | Emplacement du réglage                                | Emplacement du point de mesure | Valeur mesurée | Observations |
|-----------|--------------------|------|-----------------------------------------------------------|-------------------------------------------------------|--------------------------------|----------------|--------------|
| 1         | NORM               | PLAY | Reproduire la bande d'étalonnage STD-331B (315 kHz, 0 dB) | Ensemble MECA 1<br>VR2001 (can. G)<br>VR2002 (can. D) | JP-L (can. G)<br>JP-R (can. D) | -5,2 dBV       |              |



## • Réglage de la Platine II

- La Platine II est équipée d'un mécanisme de sélection automatique de bande.
- Remarque : Ne pas commuter entre le sens avant (FWD) et le sens arrière (REV) pendant que le tournevis est inséré.

### 1. Réglage d'azimut de la tête

| Opération | Sélecteur de bande | Mode | Signal appilié / bande d'étalonnage                         | Emplacement du réglage                     | Emplacement du point de mesure | Valeur mesurée                      | Obserrations                                                      |
|-----------|--------------------|------|-------------------------------------------------------------|--------------------------------------------|--------------------------------|-------------------------------------|-------------------------------------------------------------------|
| 1         | NORM               | PLAY | Reproduire la bande d'étalonnage STD-331B (10 kHz, -20 dB). | Vis de réglage d'azimut de tête (Fig. 5-2) | JP-L (can. G)<br>JP-R (can. D) | Niveau maximum du signal de lecture | Une fois le réglage terminé, bloquer la vis avec un frein de vis. |

### 2. Réglage du niveau de lecture

- Toujours effectuer un réglage minutieux, car la valeur réglée sera le niveau Dolby pour la lecture.

| Opération | Sélecteur de bande | Mode | Signal appilié / bande d'étalonnage                      | Emplacement du réglage                                | Emplacement du point de mesure | Valeur mesurée | Obserrations |
|-----------|--------------------|------|----------------------------------------------------------|-------------------------------------------------------|--------------------------------|----------------|--------------|
| 1         | NORM               | PLAY | Reproduire la bande d'ééalonnfe STD-331B (315 kHz, 0 dB) | Ensemble MECA 2<br>VR2021 (can. G)<br>VR2022 (can. D) | JP-L (can. G)<br>JP-R (can. D) | -5,2 dBV       |              |

### 3. Réglage de fréquence d'oscillation de polarisation

| Opération | Sélecteur de bande | Mode | Signal appilié / bande d'étalonnage                                            | Emplacement du réglage   | Emplacement du point de mesure                             | Valeur mesurée                                         | Obserrations |
|-----------|--------------------|------|--------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------|--------------------------------------------------------|--------------|
| 1         | NORM               | REC  | Charger la bande d'ééalonnage STD-630 et régler dans le mode d'enregistrement. | Ensemble MECA 2<br>T2251 | Zone entre ① et ② (ensemble MECA 2) montrée à la Fig. 5-6. | La fréquence d'oscillation est de 105 kHz $\pm$ 5 kHz. |              |

### 4. Réglage du niveau d'enregistrement

| Opération | Sélecteur de bande | Mode       | Signal appilié / bande d'étalonnage                                                          | Emplacement du réglage                            | Emplacement du point de mesure | Valeur mesurée                                                                                                      | Obserrations |
|-----------|--------------------|------------|----------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------|
| 1         | NORM               | REC        | Appliquer un signal de 315 Hz à la borne d'entrée LD/VCR et régler la fonction sur "LD/VCR". | Niveau du signal d'entrée                         | JP-L (can. G)<br>JP-R (can. D) | -5,2 dBV                                                                                                            |              |
| 2         | NORM               | REC / PLAY | Enregistrer et reproduire la bande d'étalonnageSTD-630 (315 Hz).                             | Ensemble AF<br>VR2201 (can. G)<br>VR2202 (can. D) | JP-L (can. G)<br>JP-R (can. D) | Répéter l'enregistrement/lecture et faire l'ajustment de sorte que le niveau de lecture de 315 Hz soit de -5,2 dBV. |              |

### 5. Réglage de la réponsen fréquence d'enregistrement/lecture

- Cette opération réglant la polarisation d'enregistrement, faire attention de ne pas augmenter la distorsion par un réglage insuffisant de la polarisation.

| Opération | Sélecteur de bande | Mode       | Signal appilié / bande d'étalonnage                                                          | Emplacement du réglage                                | Emplacement du point de mesure | Valeur mesurée                                                                                                                                    | Obserrations |
|-----------|--------------------|------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1         | NORM               | REC        | Appliquer un signal de 315 Hz à la borne d'entrée LD/VCR et régler la fonction sur "VD/VCR". | Niveau du signal d'entrée                             | JP-L (can. G)<br>JP-R (can. D) | -25,2 dBV                                                                                                                                         |              |
| 2         | NORM               | REC / PLAY | Enregistrer et reproduire la bande d'étalonnage STD-630 (315 Hz et 10 kHz).                  | Ensemble MECA 2<br>VR2251 (can. G)<br>VR2252 (can. D) | JP-L (can. G)<br>JP-R (can. D) | Répéter l'enregistrement/lecture et faire l'ajustment de sorte que le niveau de lecture de 10 kHz soit de 0 $\pm$ 0,5 dB en relation avec 315 Hz. |              |



# • Points de réglage

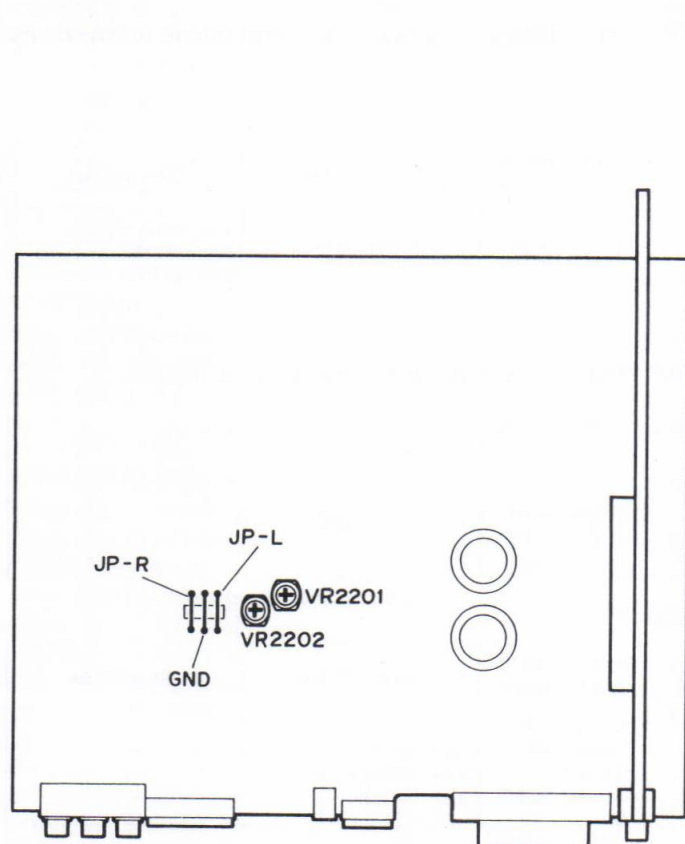


Fig. 5-4 Ensemble AF

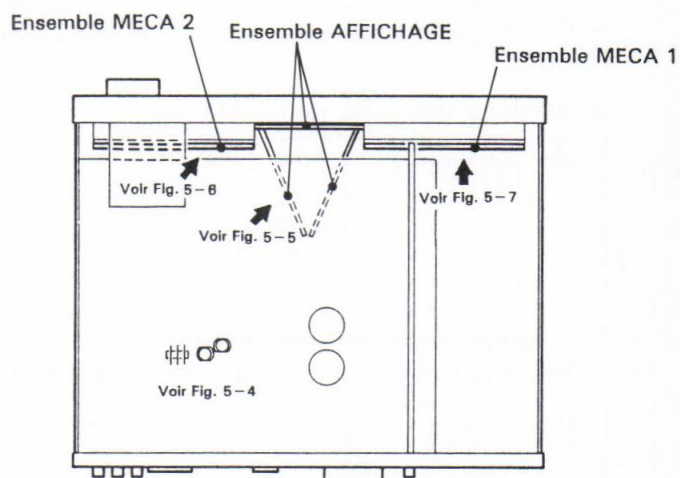


Fig. 5-5 Ensemble AFFICHAGE

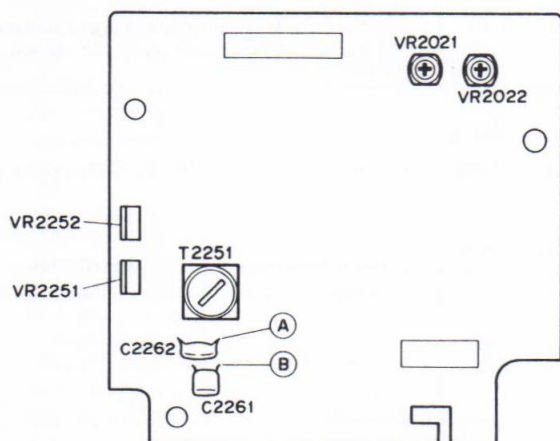


Fig. 5-6 Ensemble MECA 2

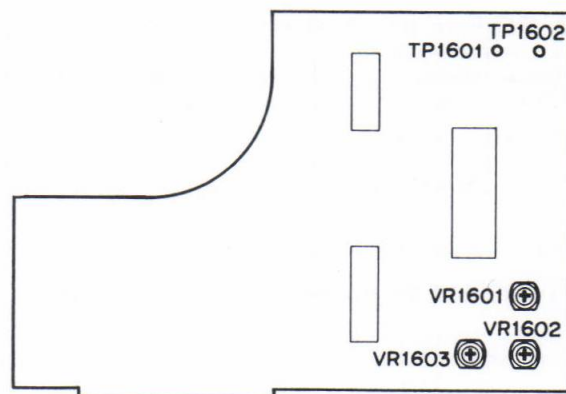


Fig. 5-7 Ensemble MECA 1



## 5.2 BLOC CD

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

### 1. Points de réglage / Point et ordre de vérification

| Etape | Point                                                  | Point d'essai                                         | Emplacement du réglage                                                             |
|-------|--------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------|
| 1     | Réglage du décalage de la mise au point                | TP 1, Broche 6 (FCS. ERR)                             | VR103 (FCS. OFS)                                                                   |
| 2     | Réglage du réseau de diffraction                       | TP 1, Broche 2 (TRK. ERR)                             | Fente de réglage du réseau de diffraction                                          |
| 3     | Réglage d'équilibrage d'erreur d'alignement            | TP 1, Broche 2 (TRK. ERR)                             | VR102 (TRK. BAL)                                                                   |
| 4     | Réglage d'inclinaison radiale/tangentielle du capteur  | TP 1, Broche 1 (RF)                                   | Vis de réglage d'inclinaison radiale,<br>Vis de réglage d'inclinaison tangentielle |
| 5     | Réglage du niveau RF                                   | TP 1, Broche 1 (RF)                                   | VR1 (niveau RF)                                                                    |
| 6     | Réglage de gain de boucle asservie de la mise au point | TP 1, Broche 5 (FCS. IN)<br>TP 1, Broche 6 (FCS. ERR) | VR152 (FCS. GAN)                                                                   |
| 7     | Réglage de gain de boucle asservie de l'alignement     | TP 1, Broche 3 (TRK. IN)<br>TP 1, Broche 2 (TRK. ERR) | VR151 (TRK. GAN)                                                                   |
| 8     | Vérification du signal d'erreur de la mise au point    | TP 1, Broche 6 (FCS. ERR)                             | —                                                                                  |

● Tableau des abréviations

FCS.ERR : erreur de mise au point

FCS.OFS : décalage de mise au point

TRK.ERR: erreur d'alignement

TRK.BAL : équilibrage d'erreur d'alignement

FCS.GAN : gain de mise au point

TRK.GAN: gain d'alignement

FCS.IN : mise au point correcte

TRK.IN : alignement correct

### 2. Instruments de mesure et outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10:1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Filtre passe-bas ( $39\text{ k}\Omega + 0,001\text{ }\mu\text{F}$ )
5. Résistance ( $100\text{ k}\Omega$ )
6. Outils conventionnels



### 3. Point d'essai et positions de réglage de la résistance variable

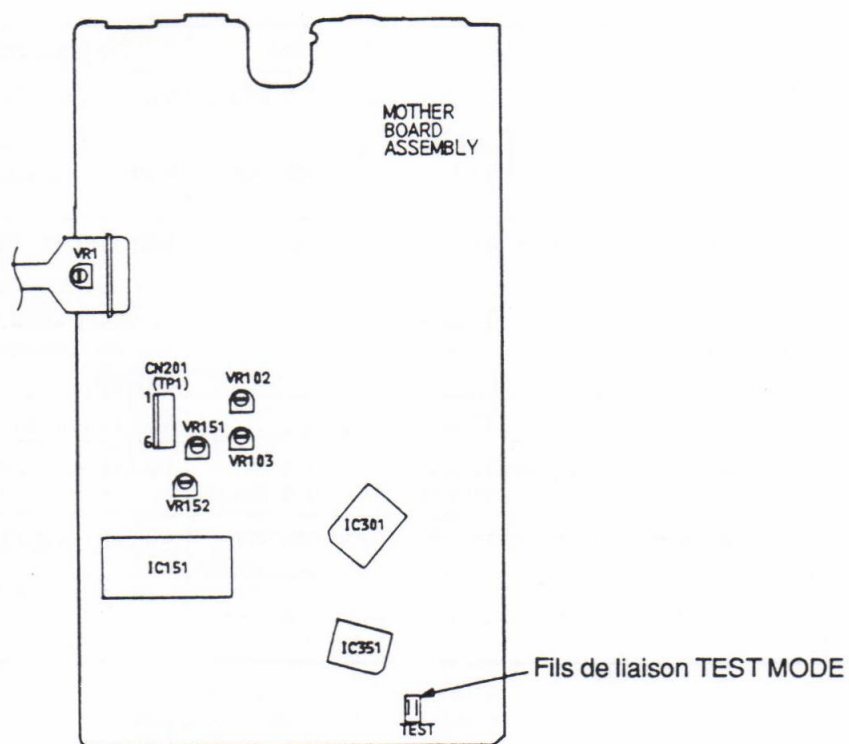


Figure 1 Emplacement des réglages



#### 4. Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

#### 5. Mode d'essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en mode d'essai]

Voici la manière de mettre le modèle en mode d'essai.

1. Commuter l'interrupteur d'alimentation sur arrêt.
2. Court-circuiter les fils de liaison du mode d'essai. (voir Figure 1).
3. Commuter l'interrupteur d'alimentation sur marche.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.



[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Sur le panneau avant, commuter l'interrupteur d'alimentation sur arrêt..

[Fonctionnement des touches en mode d'essai]

| Code | Nom de la touche | Fonction en mode d'essai                             | Explications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | PGM (PROGRAM)    | Fermeture du circuit asservi de la mise au point     | <p>La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement. et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque.</p> <p>Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible.</p> <p>Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, se relève, puis s'abaisse et se soulève, une deuxième fois et enfin, revient à sa position départ.</p>                                                                                                                      |
| ▷    | PLAY             | Asservissement de rotation en service                | <p>Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée.</p> <p>Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum.</p> <p>Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.</p>                                                                                                                                                                                                                                                       |
| ⏏    | PAUSE            | Ouverture/Fermeture du circuit servo de l'alignement | <p>Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture.</p> <p>Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste.</p> <p>Cette touche est de type à bascule et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.</p> |



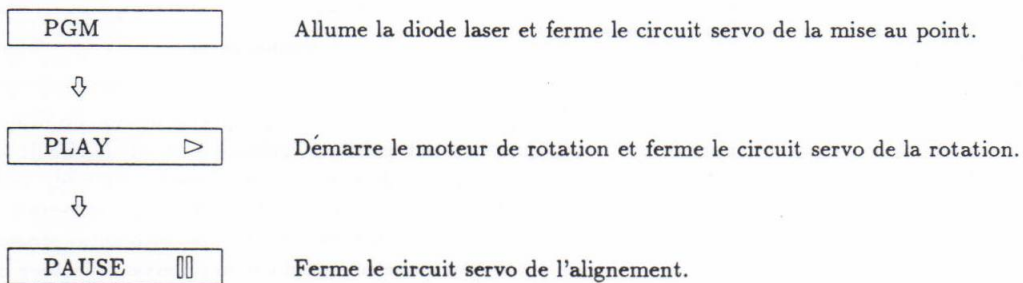
| Code        | Nom de la touche               | Fonction en mode d'essai                   | Explications                                                                                                                                                                                                                                                                                                                                                        |
|-------------|--------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⏮<br>/<br>⏭ | TRACK/<br>MANUAL<br>SEARCH REV | Inversion du chariot<br>(vers l'intérieur) | Déplace le capteur vers la périphérie interne du disque.<br>Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en bouche fermée, celui-ci change automatiquement dans une boucle ouverte.<br>Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution. |
| ⏮<br>/<br>⏭ | TRACK/<br>MANUAL<br>SEARCH FWD | Inversion du chariot<br>(vers l'extérieur) | Déplace le capteur vers la périphérie externe du disque.<br>Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en bouche fermée, celui-ci change automatiquement dans une boucle ouverte.<br>Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution. |
| □           | STOP                           | Arrêt                                      | Initialiser et la rotation du disque s'arrête.<br>Le capteur et le disque ne bougent pas lorsque cette touche est enclenchée.                                                                                                                                                                                                                                       |
| ⏏           | EJECT                          | Ejection du magasin<br>à disques           | Range le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée.                                                                                                          |

Remarque : Lors de l'insertion du magasin, le disque 1 est chargé automatiquement.



[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo. Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.



Attendre 2 à 3 secondes entre chaque opération.



## 1. Réglage du décalage de la mise au point

|                                          |                                                                                |                          |                                                                               |
|------------------------------------------|--------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------|
| • Objectif                               | Règle le décalage CC de l'amplificateur d'erreur de mise au point.             |                          |                                                                               |
| • Symptôme quand déréglé                 | Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair. |                          |                                                                               |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR).                            | • Etat du lecteur        | Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche) |
|                                          | [Réglages] 5 mV/division<br>10 ms/division<br>mode CC                          | • Emplacement du réglage | VR103 (FCS OFS)                                                               |
|                                          |                                                                                | • Disque                 | Aucun requis                                                                  |

### [Marche à suivre]

Ajuster VR103 (FCS OFS) de façon que la tension à TP1 broche 6(FCS ERR) soit  $-150 \pm 50$  mV.



## 2. Réglage du réseau de diffraction

|                                          |                                                                                                         |                          |                                                                                                                 |
|------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| • Objectif                               | Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste |                          |                                                                                                                 |
| • Symptôme quand déréglé                 | La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.              |                          |                                                                                                                 |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR) via un filtre passe-bas. (Voir Figure 2)             | • Etat du lecteur        | Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert |
|                                          | [Réglages] 50 mV/division<br>5 ms/division<br>mode CC                                                   | • Emplacement du réglage | Fente de réglage du réseau de diffraction du capteur                                                            |
|                                          |                                                                                                         | • Disque                 | YEDS-7                                                                                                          |

### [Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque ( $R=35\text{mm}$ ) par la touche TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  ou la touche  $\blacktriangleleft/\blacktriangleright$ .
2. Appuyer sur la touche PGM, puis sur la touche PLAY  $\triangleright$ , dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à partir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

Référence : La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

Remarque : L'amplitude du signal d'erreur d'alignement se situe aux environs de  $3\text{Vc-c}$  (quand un filtre passe-bas de  $39\text{k}\Omega + 0.001\mu\text{F}$  est utilisé). Si cette amplitude est extrêmement petite ( $2\text{Vc-c}$  ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.

5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  ou la touche  $\blacktriangleleft/\blacktriangleright$ , appuyer sur la touche PAUSE  $\square$  et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres n'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

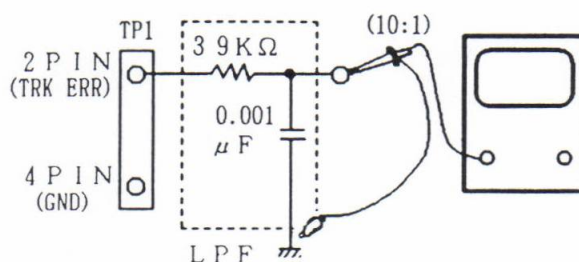
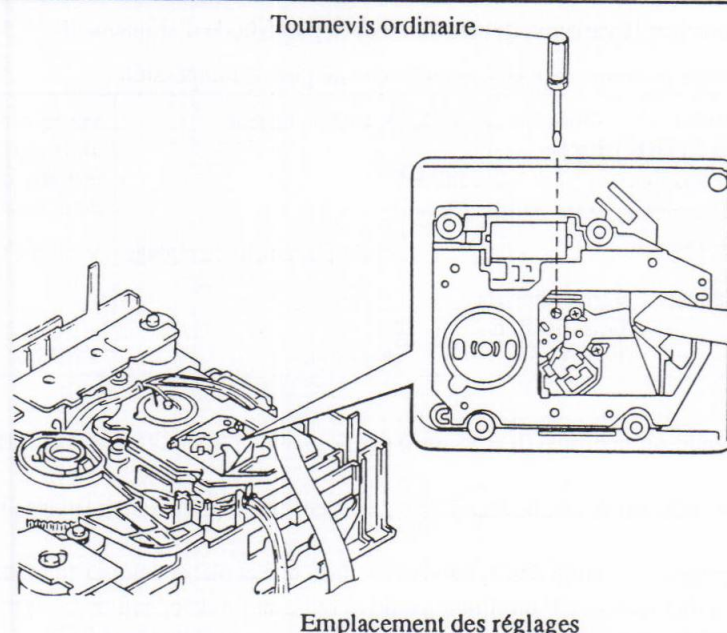


Figure 2





### [Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).

Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référence.

Tourner le réseau de diffraction dans le sens des aiguilles d'une montre      Tourner le réseau de diffraction dans le sens contraire des aiguilles d'une montre

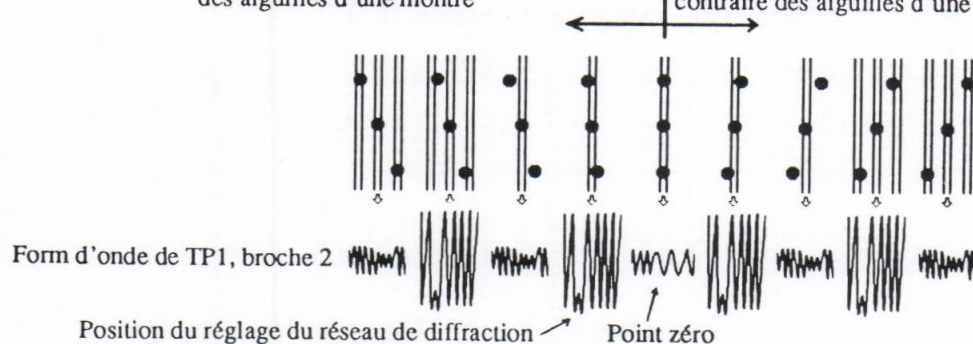
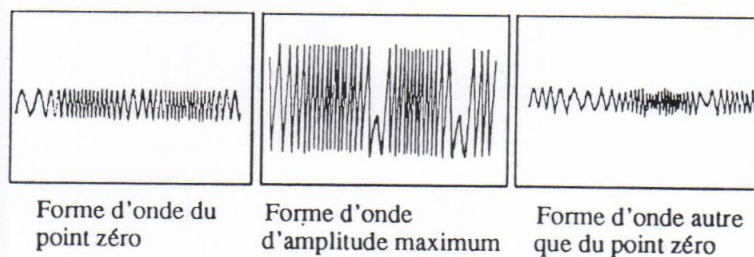


Figure 3



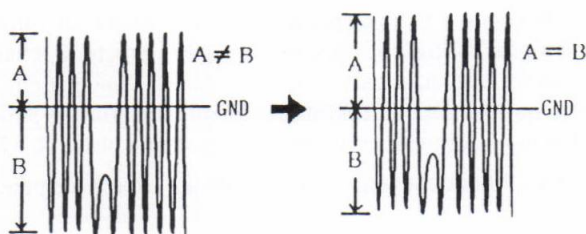


### 3. Réglage d'équilibrage d'erreur d'alignement

|                                          |                                                                                                                                                                                                |                          |                                                                                                                 |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| • Objectif                               | Pour corriger la variation de sensibilité de la photodiode d'alignement                                                                                                                        |                          |                                                                                                                 |
| • Symptôme quand déréglé                 | La lecture ne commence pas, la recherche de piste est impossible.                                                                                                                              |                          |                                                                                                                 |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR).<br>Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas.<br><br>[Réglages] 50 mV/division<br>5 ms/division<br>mode CC | • Etat du lecteur        | Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert |
|                                          |                                                                                                                                                                                                | • Emplacement du réglage | VR102 (TRK BAL)                                                                                                 |
|                                          |                                                                                                                                                                                                | • Disque                 | YEDS-7                                                                                                          |

#### [Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque ( $R = 35 \text{ mm}$ ) par la touche TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  ou la touche  $\blacktriangleleft/\blacktriangleright$ .
2. Appuyer sur la touche PGM, puis sur la touche PLAY  $\blacktriangleright$ , dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC

S'il n'y a pas de composant CC



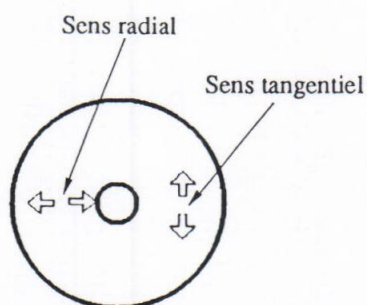
## 4. Réglage d'inclinaison radiale/tangentielle du capteur

|                                          |                                                                                                                                                                            |                                          |                                                                                                 |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------|
| • Objectif                               | Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent verticalement le disque et permettre ainsi la lecture optimum des signaux RF. |                                          |                                                                                                 |
| • Symptôme quand déréglé                 | Son interrompu; certains disques peuvent être lus et pas d'autres.                                                                                                         |                                          |                                                                                                 |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 1 (RF).                                                                                                                             | • Etat du lecteur                        | Mode d'essai, lecture                                                                           |
|                                          | [Réglages] 20 mV/division<br>200 ns/division<br>mode CA                                                                                                                    | • Emplacement du réglage<br><br>• Disque | Vis de réglage d'inclinaison radiale<br>Vis de réglage d'inclinaison tangentielle<br><br>YEDS-7 |

### [Marche à suivre]

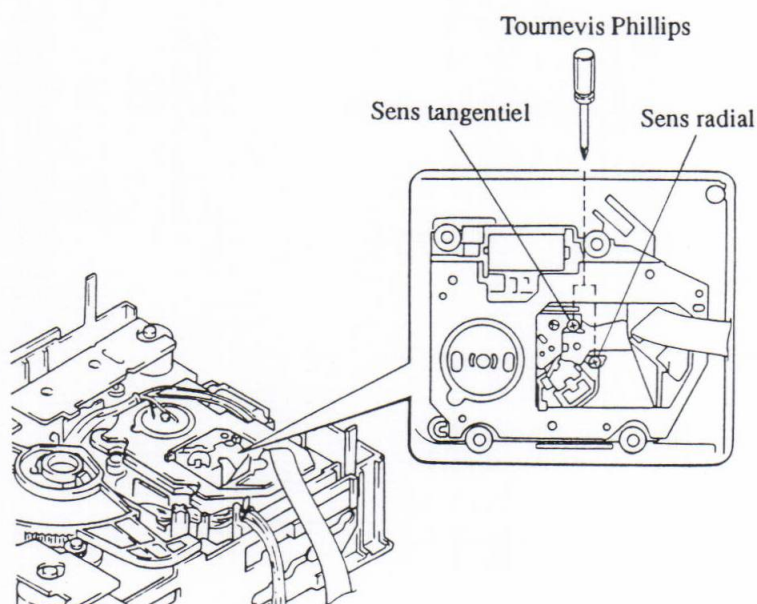
1. Dans le cas d'un lecteur multidisque, utiliser la touche TRACK/MANUAL SEARCH FWD ou la touche pour déplacer le capteur à mi-chemin sur le disque (R = 35 mm).  
Appuyer sur la touche PGM, PLAY et PAUSE dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

Remarque : "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.



Disque

Figure 4



Emplacements des réglages



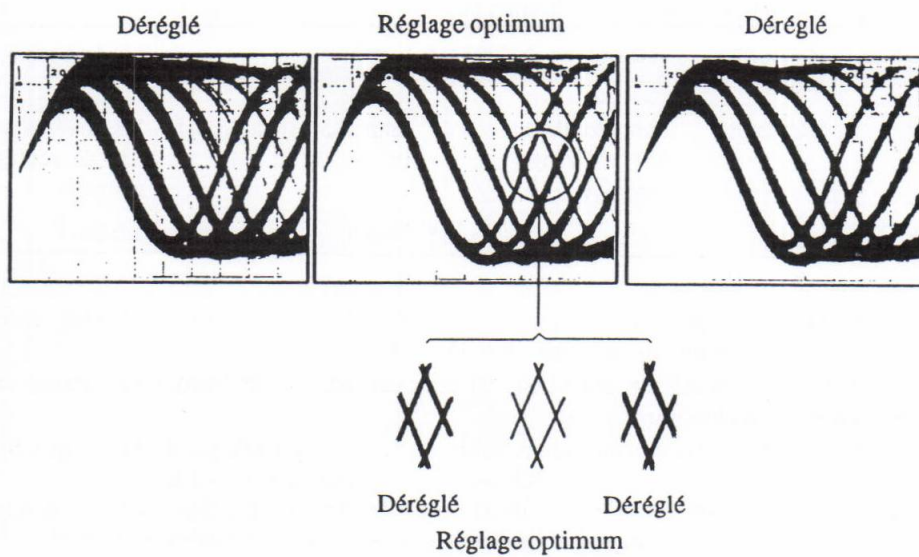


Figure 5 Motif en œil



## 5. Réglage du niveau RF (niveau RF)

|                                          |                                                        |                          |                             |
|------------------------------------------|--------------------------------------------------------|--------------------------|-----------------------------|
| • Objectif                               | Pour optimiser l'amplitude du signal RF de lecture     |                          |                             |
| • Symptôme quand déréglé                 | Pas de lecture ni de recherche                         |                          |                             |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 1 (RF).         | • Etat du lecteur        | Mode d'essai, lecture       |
|                                          | [Réglages] 50 mV/division<br>10 ms/division<br>mode CA | • Emplacement du réglage | VR1 (alimentation du laser) |
|                                          |                                                        | • Disque                 | YEDS-7                      |

### [Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque ( $R = 35 \text{ mm}$ ) à l'aide de la touche TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  ou la touche  $\blacktriangleleft/\blacktriangleright$ .  
Ensuite, appuyer sur la touche TRACK FWD  $\blacktriangleleft$  la touche PLAY  $\blacktriangleright$ , puis sur la touche PAUSE  $\square$ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne  $1,2 V_{c-c} \pm 0,1 V$ .



## 6. Réglage de gain de boucle asservie de la mise au point

|                                          |                                                                                                     |                                      |                           |
|------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------|
| • Objectif                               | Pour optimiser le gain de la boucle d'asservissement de la mise au point.                           |                                      |                           |
| • Symptôme quand déréglé                 | La lecture ne commence pas ou l'actuateur de la mise au point est parasité.                         |                                      |                           |
| • Raccordement des instruments de mesure | Voir Figure 6.                                                                                      | • Etat du lecteur                    | Mode d'essai, lecture     |
|                                          | [Réglages]<br><br>CAN.1                      CAN.2<br>20 mV/division      5 mV/division<br>Mode X-Y | • Emplacement du réglage<br>• Disque | VR152 (FCS GAN)<br>YEDS-7 |

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK/MANUAL SEARCH FWD  $\Rightarrow$  ou la touche  $\Leftarrow$  pour placer le capteur à mi-chemin sur le disque (R = 35 mm). Ensuite, appuyer sur la touche PGM, la touche PLAY  $\triangleright$ , puis sur la touche PLAY  $\square$ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FSC GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

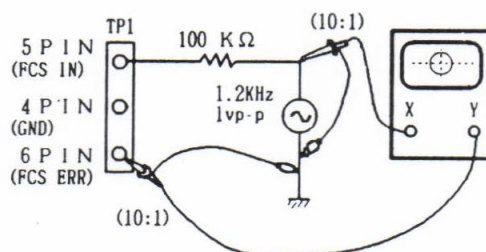
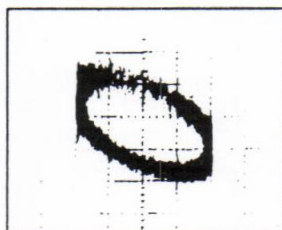
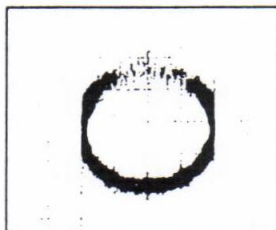


Figure 6

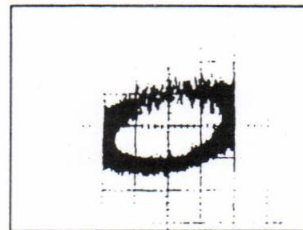
Adjustment de gain de mise au point



Gain Supérieur



Gain optimum



Gain inférieur



## 7. Réglage de gain de boucle asservie de l'alignement

|                                          |                                                                                                        |                                      |                           |
|------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------|
| • Objectif                               | Pour optimiser le gain de la boucle d'asservissement de l'alignement.                                  |                                      |                           |
| • Symptôme quand déréglé                 | La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées. |                                      |                           |
| • Raccordement des instruments de mesure | Voir Figure 7.                                                                                         | • Etat du lecteur                    | Mode d'essai, lecture     |
|                                          | [Réglages]<br>CAN.1                      CAN.2<br>50 mV/division    50mV/division<br>Mode X-Y          | • Emplacement du réglage<br>• Disque | VR151 (TRK GAN)<br>YEDS-7 |

### [Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK/MANUAL SEARCH FWD ou la touche pour placer le capteur à mi-chemin sur le disque (R = 35 mm). Ensuite, appuyer sur la touche PGM, la touche PLAY , puis sur la touche PAUSE , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

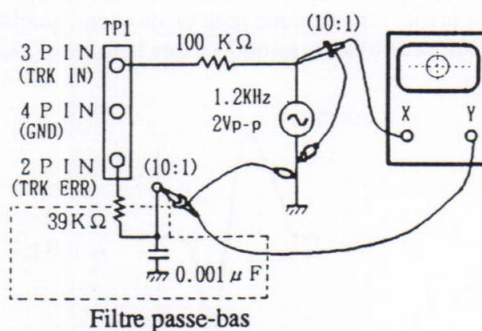


Figure 7

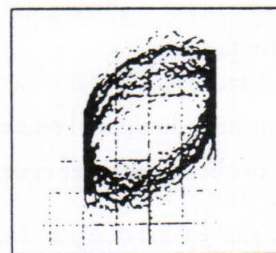
### Adjustment de gain d'alignement



Gain Supérieur



Gain optimum



Gain inférieur



## 8. Vérification du signal d'erreur de la mise au point

|                                          |                                                                                                                                                                                                                                                                                                                                             |                          |                     |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|
| • Objectif                               | Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à partir de la forme d'onde du signal d'erreur de mise au point. |                          |                     |
| • Symptôme quand déréglé                 |                                                                                                                                                                                                                                                                                                                                             |                          |                     |
| • Raccordement des instruments de mesure | Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR).                                                                                                                                                                                                                                                                                         | • Etat du lecteur        | Mode de test, arrêt |
|                                          | [Réglages] 100 mV/division<br>5 ms/division<br>mode CC                                                                                                                                                                                                                                                                                      | • Emplacement du réglage | Aucun               |
|                                          |                                                                                                                                                                                                                                                                                                                                             | • Disque                 | YEDS-7              |

### [Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PGM et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PGM est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

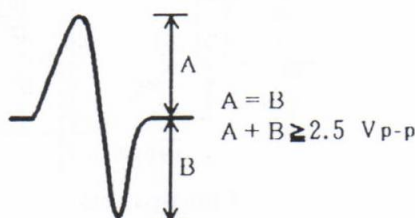


Figure 8

### [Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.



## 5. AJUSTE

### 5.1 BLOQUE DE AMPLIFICADOR DECK

#### Ajuste de la sección mecánica

- Cinta de prueba: STD-301 (3 kHz, 30 min)
- Ajuste del modo de velocidad doble: Cortocircuite TP1601 y TP1602 del conjunto del visualizador (DISPLAY). Para desactivar el modo, desconecte el cortocircuito.

| 1. Ajuste de la velocidad de la cinta |                                         |                                                   |                 |                                   |                                                 |                                                                                                                                                                |                                                           |
|---------------------------------------|-----------------------------------------|---------------------------------------------------|-----------------|-----------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Nº                                    | Modo                                    | Señal de enerada/<br>cinea de prueba              | Punto de ajuste |                                   | Punto de medición                               | Valor de ajuste                                                                                                                                                | Observaciones                                             |
| 1                                     | PLAY                                    | Reproducción de la<br>cinta<br>STDy301 a<br>3 kHz | Sección I       | VR1601 del<br>conjunto<br>DISPLAY | JP-L del<br>conjunto<br>AF (canal<br>izquierdo) | Presione el botón PLAY y ajuste la frecuencia a 3010 Hz ± 10 Hz. Cerciórese de que la fluctuación y el efecto de trémolo estén dentro de los límites del 0,2%. |                                                           |
| 2                                     | PLAY<br>(Modo de<br>velocidad<br>doble) |                                                   |                 | —                                 |                                                 | Presione el botón PLAY en el modo de velocidad doble y compruebe si la frecuencia es 6000 Hz ± 1000 Hz. Anote el valor.                                        | Después del ajuste, desactive el modo de velocidad doble. |
| 3                                     | PLAY<br>(Modo de<br>velocidad<br>doble) |                                                   | Sección II      | VR1603 del<br>conjunto<br>DISPLAY | JP-R del<br>conjunto<br>AF (canal<br>derecho)   | Presione el botón PLAY en el modo de velocidad doble y ajuste la frecuencia de forma que quede a ± 30 Hz del valor anotado en el paso N°2.                     | Después del ajuste, desactive el modo de velocidad doble. |
| 4                                     | PLAY                                    |                                                   |                 | VR1602 del<br>conjunto<br>DISPLAY |                                                 | Presione el botón PLAY y ajuste la frecuencia a 3010 Hz ± 10 Hz. Cerciórese de que la fluctuación y el efecto de trémolo estén dentro de los límites del 0,2%. |                                                           |

#### Ajuste de la sección eléctrica

##### ■ Antes de ajustar el sistema eléctrico, compruebe y realice lo siguiente.

1. El ajuste de la velocidad de la cinta ha finalizado.
2. Limpie y desmagnetice la cabeza empleando un desmagnetizador de cabezas.
3. Cuando se mida, el nivel de nivel debe ser de  $0 \text{ dBV} = 1 \text{ V rms}$ .
4. Emplee el lado A de la cinta especificada para realizar el ajuste.  
STD-331B: Para ajuste del sistema de reproducción.  
STD-630: Cinta en blanco NORMAL
5. Prepare los dispositivos de medición siguientes:  
Milivoltímetro de CA, oscilador de baja frecuencia, atenuador, y osciloscopio
6. Ajuste ambos canales, izquierdo y derecho, a menos que se especifique otra cosa.
7. Ponga los interruptores DOLBY NR en OFF, a menos que se especifique otra cosa.
8. Antes del ajuste, deje que la unidad se caliente durante varios minutos.  
Especialmente antes de ajustar las características de frecuencia de grabación y reproducción, deje que se caliente durante 3 a 5 minutos en el modo REC/PLAY.

9. Cerciórese de seguir el orden apropiado del procedimiento de ajuste. Cualquier cambio en el orden podría causar un resultado inadecuado.
10. El conjunto AF contiene JP-L y JP-R. (Vea la Fig. 5-4)

#### Lista de ajuste

##### Sección I

1. Azimut de la cabeza
2. Nivel de reproducción

##### Sección II

1. Azimut de la cabeza
2. Nivel de reproducción
3. Ajuste de la frecuencia de oscilación de polarización
4. Nivel de grabación
5. Características de frecuencia de grabación/reproducción



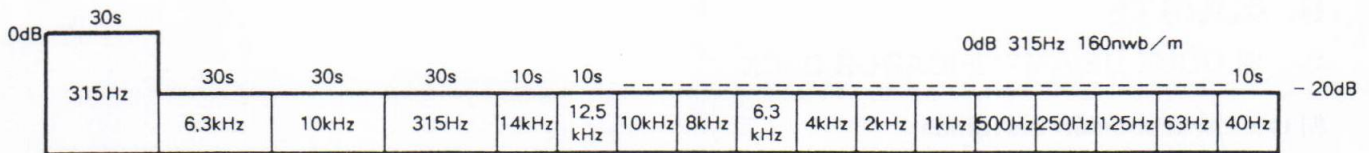
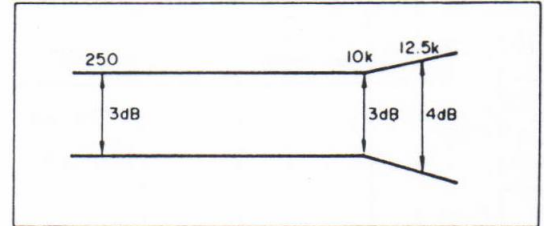


Fig. 5-1 Cinta de prueba STD-331B

## REPRODUCCIÓN



## CRABACIÓN

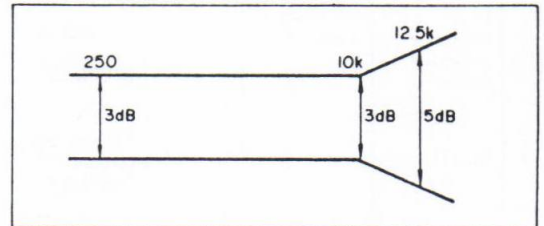


Fig. 5-3 Características de frecuencia

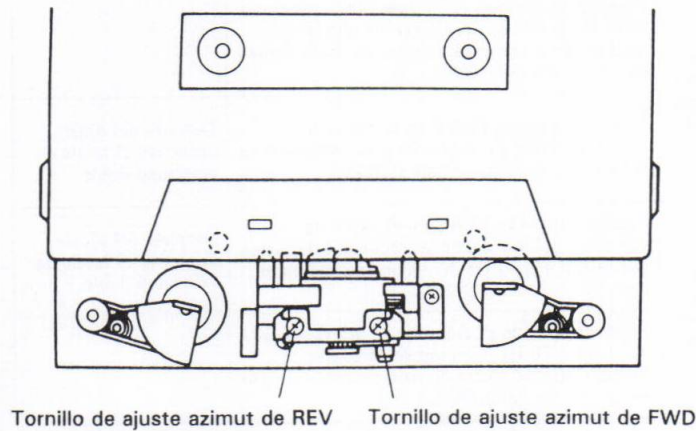


Fig. 5-2 Ajuste del azimuth de la cabeza

## • Ajuste de la sección I

- La sección I dispone de un mecanismo selector automático de cinta.
- Nota : No cambie a FWD ni a REV mientras el destornillador esté insertado.

### 1. Ajuste azimuthal de la cabeza

| Procedimiento | Selector de cinta | Modo | Señal de entrada / cinta de prueba                                  | Punto de ajuste                                      | Punto de medición                              | Valor de ajuste                          | Observaciones                                                                         |
|---------------|-------------------|------|---------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| 1             | NORM              | PLAY | Ponga la cinta de prueba STD-331B en reproducción (10 kHz, -20 dB). | Tornillo de ajuste azimuthal de la cabeza (Fig. 5-2) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | Nivel máximo de la señal de reproducción | Bloquee el tornillo con bloqueador de tornillos después de haber terminado el ajuste. |

### 2. Ajuste del nivel de reproducción

- Tenga mucho cuidado durante el ajuste, ya que el valor ajustado será el nivel Dolby fijado para reproducción.

| Procedimiento | Selector de cinta | Modo | Señal de entrada / cinta de prueba                                | Punto de ajuste                                                        | Punto de medición                              | Valor de ajuste | Observaciones |
|---------------|-------------------|------|-------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------|-----------------|---------------|
| 1             | NORM              | PLAY | Ponga la cinta de prueba STD-331B en reproducción (315 Hz, 0 dB). | Conjunto mecánico 1 VR2001 (canal izquierdo)<br>VR2002 (canal derecho) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | -5,2 dBV        |               |



## • Ajuste de la sección II

- La sección II dispone de un mecanismo selector automático de cinta.
- Nota : No cambie a FWD ni a REV mientras el destornillador esté insertado.

### 1. Ajuste azimutal de la cabeza

| Procedimiento | Selector de cinta | Modo | Señal de entrada / cinta de prueba                                  | Punto de ajuste                                     | Punto de medición                              | Valor de ajuste                          | Observaciones                                                                         |
|---------------|-------------------|------|---------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| 1             | NORM              | PLAY | Ponga la cinta de prueba STD-331B en reproducción (10 kHz, -20 dB). | Tornillo de ajuste azimutal de la cabeza (Fig. 5-2) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | Nivel máximo de la señal de reproducción | Bloguee el tornillo con bloqueador de tornillos después de haber terminado el ajuste. |

### 2. Ajuste del nivel de reproducción

- Tenga mucho cuidado durante el ajuste, ya que el valor ajustado será el nivel Dolby fijado para reproducción.

| Procedimiento | Selector de cinta | Modo | Señal de entrada / cinta de prueba                                | Punto de ajuste                                                           | Punto de medición                              | Valor de ajuste | Observaciones |
|---------------|-------------------|------|-------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|-----------------|---------------|
| 1             | NORM              | PLAY | Ponga la cinta de prueba STD-331B en reproducción (315 Hz, 0 dB). | Conjunto mecánico 2<br>VR2021 (canal izquierdo)<br>VR2022 (canal derecho) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | -5,2 dBV        |               |

### 3. Ajuste de la frecuencia de oscilación de polarización

| Procedimiento | Selector de cinta | Modo | Señal de entrada / cinta de prueba                                   | Punto de ajuste              | Punto de medición                                               | Valor de ajuste                                        | Observaciones |
|---------------|-------------------|------|----------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------|--------------------------------------------------------|---------------|
| 1             | NORM              | REC  | Cargue la cinta de prueba STD-630 y establezca el modo de grabación. | Conjunto mecánico 2<br>T2251 | Área entre ① y ② (conjunto mecánico 2) mostrada en la Fig. 5-6. | La frecuencia de oscilación es de 105 kHz $\pm$ 5 kHz. |               |

### 4. Ajuste del nivel de grabación

| Procedimiento | Selector de cinta | Modo       | Señal de entrada / cinta de prueba                                                       | Punto de ajuste                                                   | Punto de medición                              | Valor de ajuste                                                                                                      | Observaciones |
|---------------|-------------------|------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------|
| 1             | NORM              | REC        | Aplice una señal de 315 Hz al terminal de entrada LD/VCR y ajuste la función a "LD/VCR". | Nivel de la señal de entrada                                      | JP-L (canal izquierdo)<br>JP-R (canal derecho) | -5,2 dBV                                                                                                             |               |
| 2             | NORM              | REC / PLAY | Grabe y reproduzca la cinta de prueba STD-630 (315 Hz).                                  | Conjunto AF<br>VR2201 (canal izquierdo)<br>VR2202 (canal derecho) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | Repita la grabación/reproducción, y realice ajustes de forma que el nivel de reproducción de 315 Hz sea de -5,2 dBV. |               |

### 5. Ajuste de las características de frecuencia de grabación/reproducción

- Como este procedimiento es para el ajuste de la polarización de grabación, tenga cuidado de no aumentar el valor de distorsión mediante el subajuste de la polarización.

| Procedimiento | Selector de cinta | Modo       | Señal de entrada / cinta de prueba                                                       | Punto de ajuste                                                           | Punto de medición                              | Valor de ajuste                                                                                                                                   | Observaciones |
|---------------|-------------------|------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1             | NORM              | REC        | Aplice una señal de 315 Hz al terminal de entrada LD/VCR y ajuste la función a "LD/VCR". | Nivel de la señal de entrada                                              | JP-L (canal izquierdo)<br>JP-R (canal derecho) | -25,2 dBV                                                                                                                                         |               |
| 2             | NORM              | REC / PLAY | Grabe y reproduzca la cinta de prueba STD-630 (315 Hz y 10 kHz).                         | Conjunto mecánico 2<br>VR2251 (canal izquierdo)<br>VR2252 (canal derecho) | JP-L (canal izquierdo)<br>JP-R (canal derecho) | Repita la grabación/reproducción, y realice ajustes de forma que el nivel de reproducción de 10 kHz sea de 0 $\pm$ 0,5 dB en relación con 315 Hz. |               |



• Punto de ajuste

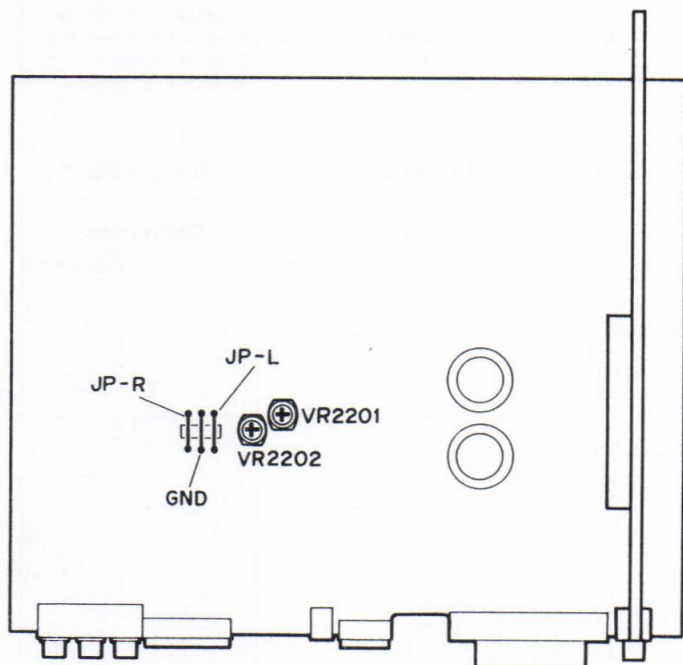


Fig. 5-4 Conjunto AF

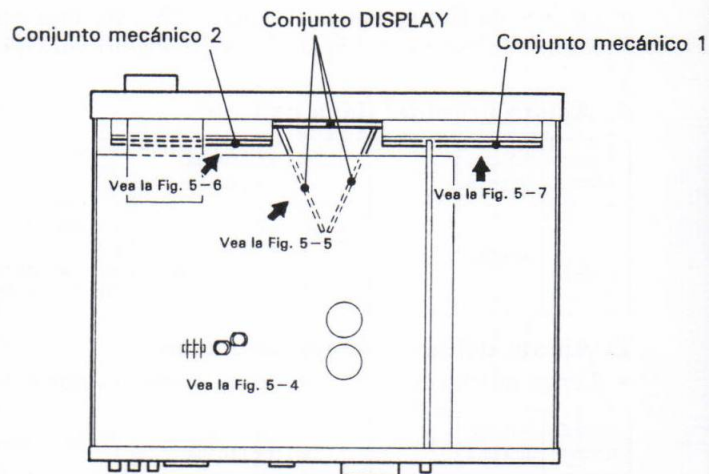


Fig. 5-5 Conjunto DISPLAY

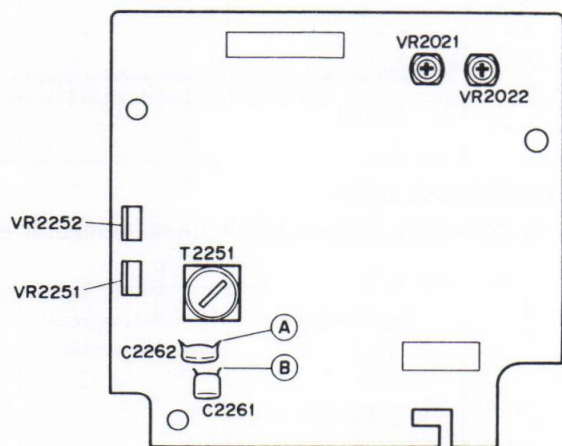


Fig. 5-6 Conjunto mecánico 2

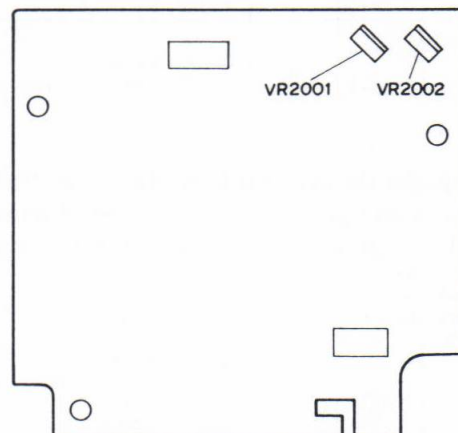


Fig. 5-7 Conjunto mecánico 1



## 5.2 BLOQUE CD

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

### 1. Ítemes de ajuste/verificación y orden

| Paso | Ítem                                                             | Punto de prueba                                         | Lugar de ajuste                                                                                |
|------|------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1    | Ajuste del descentramiento de enfoque                            | TP 1, Patilla 6 (FCS. ERR)                              | VR103 (FCS. OFS)                                                                               |
| 2    | Ajuste de retícula                                               | TP 1, Patilla 2 (TRK. ERR)                              | Ranura de ajuste de retícula                                                                   |
| 3    | Ajuste del equilibrio de ajuste de seguimiento                   | TP 1, Patilla 2 (TRK. ERR)                              | VR102 (TRK. BAL)                                                                               |
| 4    | Ajuste de la inclinación en sentido radial/tangencial del captor | TP 1, Patilla 1 (RF)                                    | Tornillo de ajuste de la inclinación radial<br>Tornillo de ajuste de la inclinación tangencial |
| 5    | Ajuste del nivel de RF                                           | TP 1, Patilla 1 (RF)                                    | VR1 (Nivel de RF)                                                                              |
| 6    | Ajuste de la ganancia del bucle del servo de enfoque             | TP 1, Patilla 5 (FCS. IN)<br>TP 1, Patilla 6 (FCS. ERR) | VR152 (FCS. GAN)                                                                               |
| 7    | Ajuste de la ganancia del bucle del servo de seguimiento         | TP 1, Patilla 3 (TRK. IN)<br>TP 1, Patilla 2 (TRK. ERR) | VR151 (TRK. GAN)                                                                               |
| 8    | Verificación de la señal de error de enfoque                     | TP 1, Patilla 6 (FCS. ERR)                              | —                                                                                              |

#### • Tabla de abreviaturas

FCS.ERR : Error de enfoque  
 FCS.OFS : Descentramiento de enfoque  
 TRK.ERR : Error de seguimiento  
 TRK.BAL : Equilibrio de seguimiento  
 FCS.GAN : Ganancia de enfoque  
 TRK.GAN : Ganancia de seguimiento  
 FCS.IN : Entrada de enfoque  
 TRK.IN : Entrada de seguimiento

### 2. Instrumentos y herramientas de medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Filtro de paso bajo (39 k $\Omega$ , 0,001  $\mu$ F)
5. Resistor (100 k $\Omega$ )
6. Herramientas estándar



### 3. Ubicación de los puros de prueba y los resitores variables de ajuste

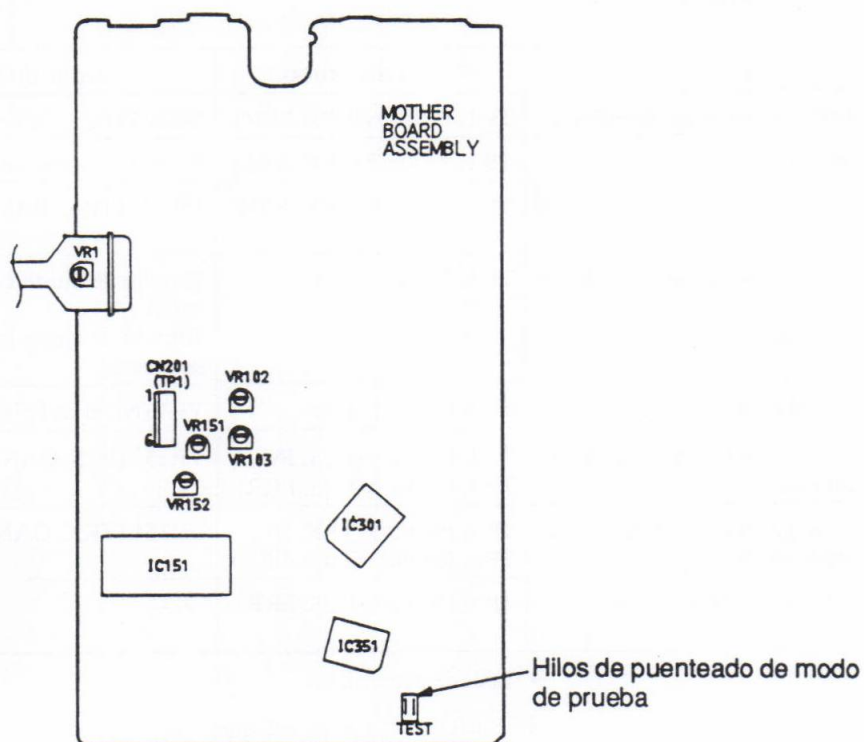


Figura 1 Lugares de ajuste



#### 4. Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

#### 5. Modo de prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Ponga en OFF el interruptor de alimentación.
2. Cortocircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Ponga en ON el interruptor de alimentación.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.



[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Ponga en OFF el interruptor de alimentación del panel frontal.

[Operaciones de teclas en el modo de prueba]

| Código | Nombre de la tecla | Función en el modo de prueba             | Explicación                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------|--------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | PGM<br>(PROGRAM)   | Cierre del servo de enfoque              | <p>El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoca sobre el disco.</p> <p>Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque.</p> <p>Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se ve empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.</p>                                                                                                                                                       |
| ▷      | PLAY               | Activación del servo del eje             | <p>Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado.</p> <p>Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima.</p> <p>Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz láserico incide en la sección del espejo en la periferia del disco, ocurrirá el mismo síntoma.</p>                                                                                                                                                                                                                                                             |
| ⏸      | PAUSE              | Apertura/cierre del servo de seguimiento | <p>Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción.</p> <p>Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo láserico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema.</p> <p>Esta tecla es basculante (de acción alternativa) y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.</p> |



| Código      | Nombre de la tecla             | Función en el modo de prueba               | Explicación                                                                                                                                                                                                                                                                                                                             |
|-------------|--------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⏮<br>/<br>⏭ | TRACK/<br>MANUAL<br>SEARCH REV | Retroceso del carro<br>(hacia adentro)     | Moverá la posición del captor hacia el diámetro interior del disco.<br>Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación. |
| ⏮<br>/<br>⏭ | TRACK/<br>MANUAL<br>SEARCH FWD | Avance del carro<br>(hacia afuera)         | Moverá la posición del captor hacia la periferia del disco.<br>Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.         |
| □           | STOP                           | Parada                                     | Inicializa y se para la rotación del disco.<br>El captor y el disco permanecen donde están cuando se presiona esta tecla.                                                                                                                                                                                                               |
| ⏏           | EJECT                          | Expulsión del cargador de discos compactos | Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.                              |

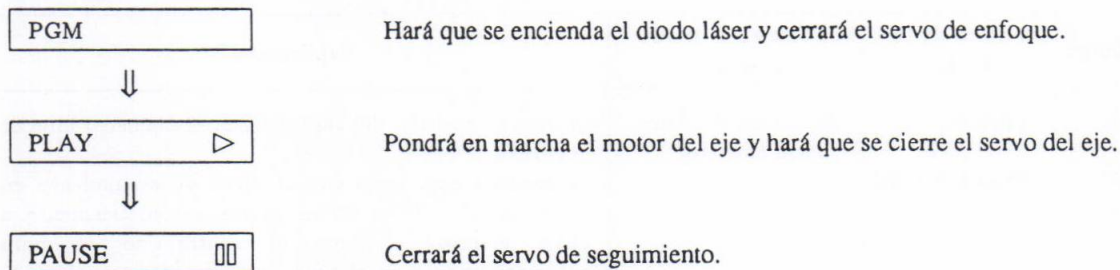
Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.



# [Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.

A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.



Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.



## 1. Ajuste del descentramiento del enfoque

|                                            |                                                                      |                          |                                                                   |
|--------------------------------------------|----------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------|
| • Objetivo                                 | Ajuste de la tensión de CC para el amplificador de error de enfoque. |                          |                                                                   |
| • Síntomas en caso de desajuste            | El reproductor no enfoca y la señal de RF contiene perturbaciones.   |                          |                                                                   |
| • Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 6, (FCS ERR).                 | • Estado del reproductor | Modo de prueba, parado (con el interruptor de alimentación en ON) |
|                                            | [Ajustes]      5 mV/división<br>10 ms/división<br>modo de CC         | • Lugar de ajuste        | VR103 (FCS OFS)                                                   |
|                                            |                                                                      | • Disco                  | No es necesario                                                   |

### [Procedimiento]

Ajuste VR103 (FCS OFS) de forma que la tensión de CC de TP1, patilla 6, (FCS ERR) sea de  $-150 \pm 50$  mV.



## 2. Ajuste de retícula

|                                            |                                                                                                                |                              |                                                                                      |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------|
| • Objetivo                                 | Alineación de los puntos del haz láserico de generación de error de seguimiento al ángulo óptimo en la pista   |                              |                                                                                      |
| • Síntomas en caso de desajuste            | La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.                     |                              |                                                                                      |
| • Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 2, (TRK ERR) a través de un filtro de paso bajo. (Consulte la figura 2) | • Estado del reproductor     | Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto |
|                                            | [Ajustes]      50 mV/división<br>5 ms/división<br>modo de CC                                                   | • Lugar de ajuste<br>• Disco | Ranura de ajuste de retícula del captor<br>YEDS-7                                    |

### [Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35mm) con la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$  de forma que la ranura de ajuste de la retícula quede en el borde exterior del disco, donde puede ajustarse.
2. Presione la tecla PGM, y después la tecla PLAY  $\blacktriangleright$ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el destornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

Referencia : En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3Vp-p(cuando se emplee un filtro de paso bajo de 38k $\Omega$ , 0.001 $\mu$ F). Si esta amplitud es extremadamente pequeña (2Vp-p o menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustarla.

5. Devuelva el captor hasta la mitad más o menos del disco con la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$ , presione la tecla PAUSE  $\square$ , y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

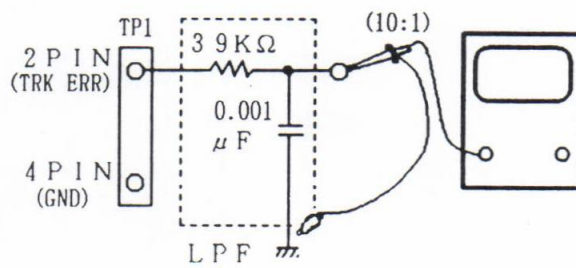
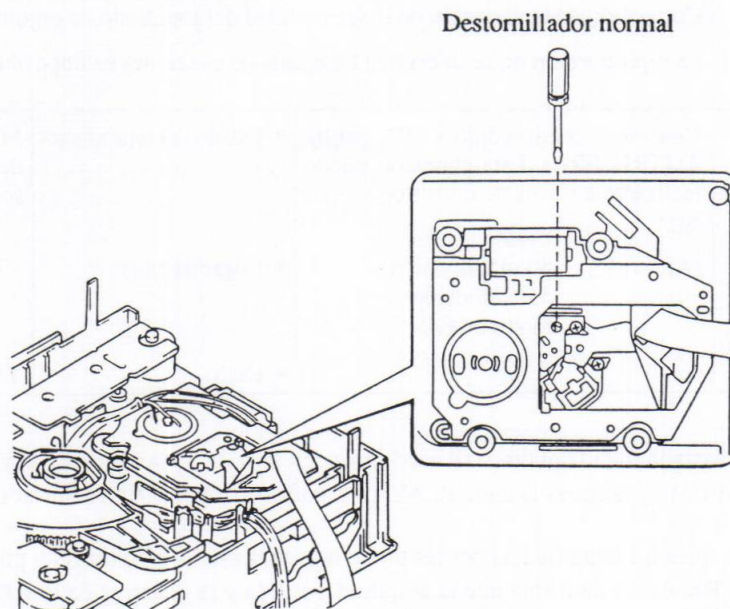


Figura 2





Lugares de ajuste

## [Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lásericos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)

Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

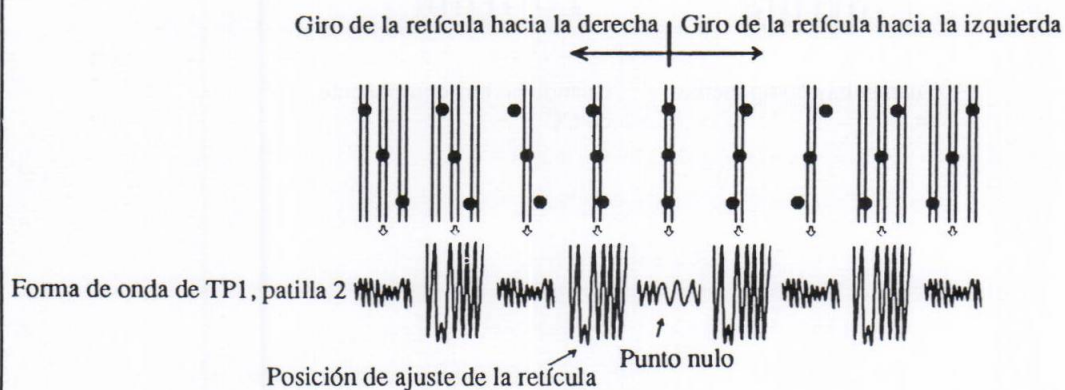
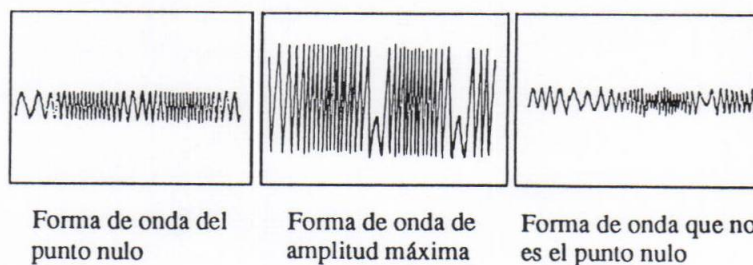


Figura 3



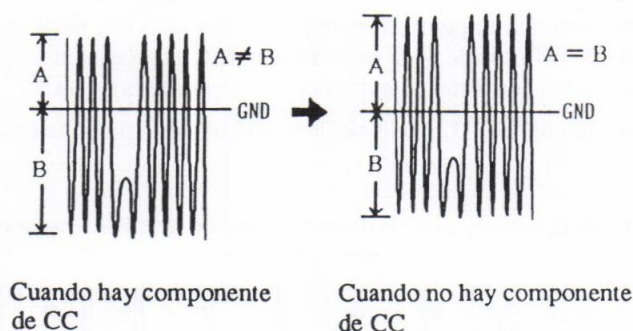


### 3. Ajuste del equilibrio de error de seguimiento

|                                            |                                                                                                                                                                                                                                              |                                                                                                                        |                                                                                                                                  |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| • Objetivo                                 | Corrección de la variación de la sensibilidad del fotodiodo de seguimiento                                                                                                                                                                   |                                                                                                                        |                                                                                                                                  |
| • Síntomas en caso de desajuste            | La reproducción no se inicia o la búsqueda de canciones es imposible.                                                                                                                                                                        |                                                                                                                        |                                                                                                                                  |
| • Conexión de los instrumentos de medición | <p>Conecte el osciloscopio a TP1, patilla 2, (TRK ERR). Esta conexión puede realizarse a través de un filtro de paso bajo.</p> <p>[Ajustes]      50 mV/división<br/>                    5 ms/división<br/>                    modo de CC</p> | <ul style="list-style-type: none"> <li>• Estado del reproductor</li> <li>• Lugar de ajuste</li> <li>• Disco</li> </ul> | <p>Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto</p> <p>VR102 (TRK BAL)</p> <p>YEDS-7</p> |

#### [Procedimiento]

1. Mueva el captor hasta la mitad del disco (R = 35 mm) con la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$ .
2. Presione la tecla PGM, y después la tecla PLAY  $\blacktriangleright$ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1, patilla 2, (TRK ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).





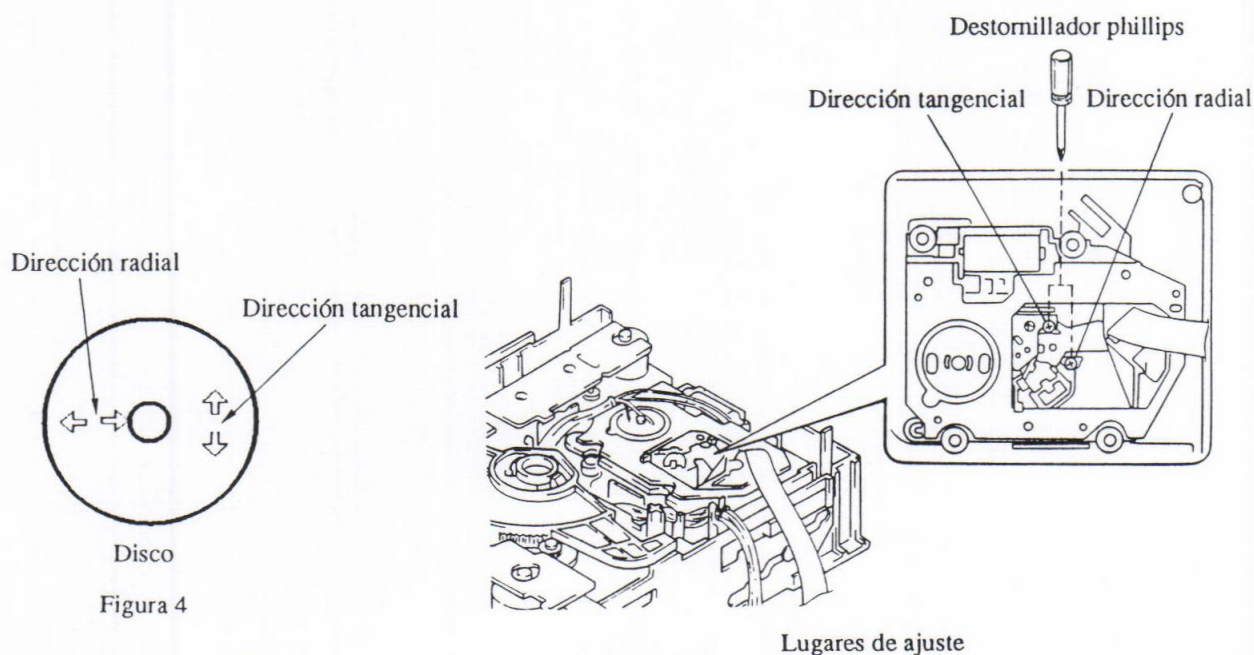
#### 4. Ajuste de la inclinación en sentido radial/tangencial del captor

|                                            |                                                                                                                                                                                                |                          |                                                                                               |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------|
| • Objetivo                                 | Ajustar el ángulo del captor en relación con el disco de forma que los haces lásericos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF. |                          |                                                                                               |
| • Síntomas en caso de desajuste            | Sonido quebrado, algunos discos pueden reproducirse pero otros no.                                                                                                                             |                          |                                                                                               |
| • Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 1, (RF).                                                                                                                                                | • Estado del reproductor | Modo de prueba, reproducción                                                                  |
|                                            | [Ajustes]      20 mV/división<br>200 ns/división<br>modo de CA                                                                                                                                 | • Lugar de ajuste        | Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial |
|                                            |                                                                                                                                                                                                | • Disco                  | YEDS-7                                                                                        |

##### [Procedimiento]

1. Para un tipo de reproducción múltiple de disco compacto, emplee la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$  a fin de mover el captor hasta la mitad del disco ( $R = 35 \text{ mm}$ ). Presione la tecla PGM, la tecla PLAY  $\blacktriangleright$ , y después la tecla PAUSE  $\square\square$ , por este orden, a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.

Nota : Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.





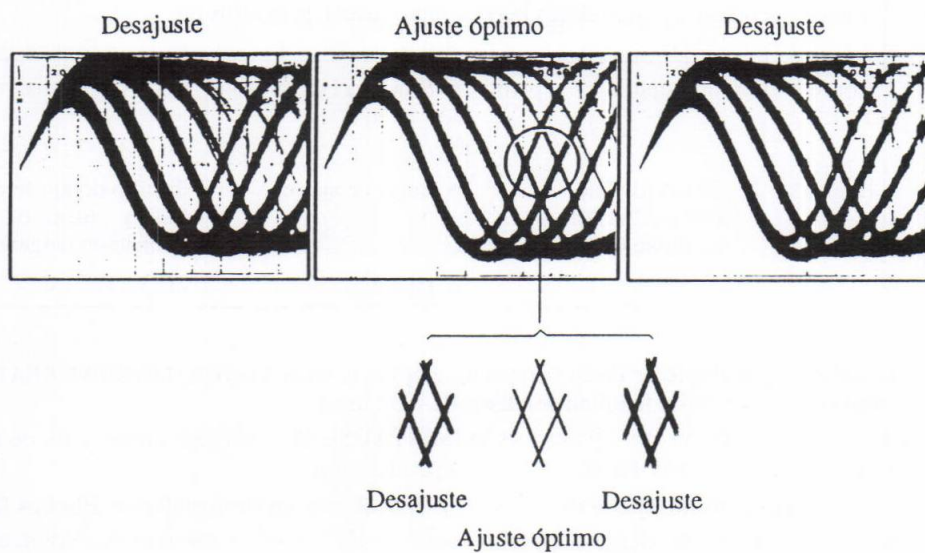


Figura 5 Patrón óptico



## 5. Ajuste del nivel de RF

|                                            |                                                                       |                                  |                                       |
|--------------------------------------------|-----------------------------------------------------------------------|----------------------------------|---------------------------------------|
| • Objetivo                                 | Optimización de la amplitud de la señal de RF de reproducción         |                                  |                                       |
| • Síntomas en caso de desajuste            | La reproducción no se inicia o la búsqueda de canciones es imposible. |                                  |                                       |
| • Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 1, (RF).                       | • Estado del reproductor         | Modo de prueba, reproducción          |
|                                            | [Ajustes]      50 mV/división<br>10ms/división<br>modo de CA          | • Lugar de ajuste<br><br>• Disco | VR1 (potencia de láser)<br><br>YEDS-7 |

### [Procedimiento]

1. Mueva el captor hasta la mitad del disco ( $R = 35 \text{ mm}$ ) con la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$ , presione la tecla PGM, la tecla PLAY  $\triangleright$ , y después la tecla PAUSE  $\square$ , por este orden, a fin de cerrar los servos respectivos, y ponga el reproductor en el modo de reproducción.
2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de  $1,2 \text{ V}_{p-p} \pm 0,1 \text{ V}$ .



## 6. Ajuste de la ganancia del bucle del servo de enfoque

|                                            |                                                                                                               |                                         |                                      |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------|
| • Objetivo                                 | Optimización de la ganancia del bucle del servo de enfoque                                                    |                                         |                                      |
| • Síntomas en caso de desajuste            | La reproducción no se inicia o el actuador de enfoque produce ruido.                                          |                                         |                                      |
| • Conexión de los instrumentos de medición | Consulte la figura 6.                                                                                         | • Estado del reproductor                | Modo de prueba, reproducción         |
|                                            | <p>[Ajustes]</p> <p>CH1                      CH2</p> <p>20 mV/división    5 mV/división</p> <p>Modo X - Y</p> | <p>• Lugar de ajuste</p> <p>• Disco</p> | <p>VR152 (FCS GAN)</p> <p>YEDS-7</p> |

### [Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangle/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleleft$  para mover el captor hasta la mitad del disco (R = 35 mm), y después presione la tecla PGM, la tecla PLAY  $\blacktriangleright$ , y después la tecla PAUSE  $\square$ , por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

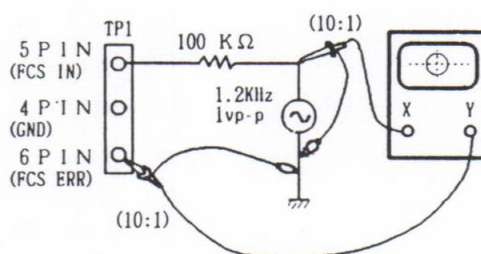
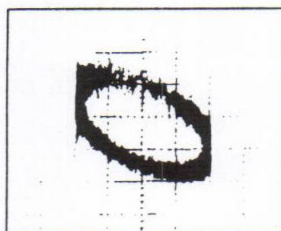
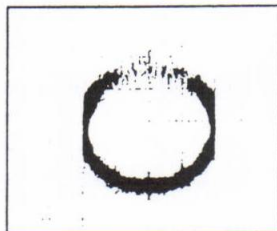


Figura 6

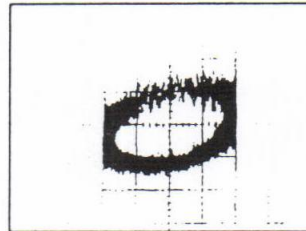
### Ajuste de la ganancia de enfoque



Ganancia superior



Ganancia óptima



Ganancia inferior



## 7. Ajuste de la ganancia del bucle del servo de seguimiento

|                                            |                                                                                                  |                              |                              |
|--------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------|------------------------------|
| • Objetivo                                 | Optimización de la ganancia del bucle del servo de seguimiento                                   |                              |                              |
| • Síntomas en caso de desajuste            | La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.          |                              |                              |
| • Conexión de los instrumentos de medición | Consulte la figura 7.                                                                            | • Estado del reproductor     | Mode de prueba, reproducción |
|                                            | [Ajustes]<br><br>CH1                      CH2<br>50 mV/división      50mV/división<br>Modo X - Y | • Lugar de ajuste<br>• Disco | VR151 (TRK GAN)<br>YEDS-7    |

### [Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK/MANUAL SEARCH FWD  $\blacktriangleleft/\blacktriangleright$  o  $\blacktriangleleft/\blacktriangleright$  para mover el captor hasta la mitad del disco (R = 35 mm), y después presione la tecla PGM, la tecla PLAY  $\blacktriangleright$ , y la tecla PAUSE  $\square\square$ , por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

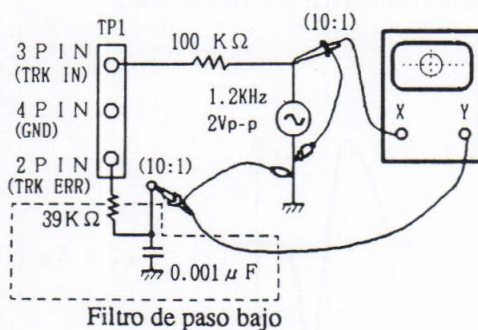
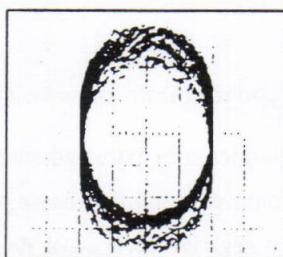


Figura 7

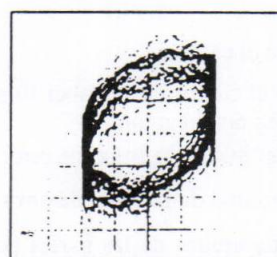
### Ajuste de la ganancia de seguimiento



Ganancia superior



Ganancia óptima



Ganancia inferior



## 8. Verificación de la señal de error de enfoque (curva S de enfoque)

|                                            |                                                                                                                                                                                                                                                                                                   |                          |                        |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------|
| • Objetivo                                 | Juzgar si el captor está bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque. |                          |                        |
| • Síntomas en caso de desajuste            |                                                                                                                                                                                                                                                                                                   |                          |                        |
| • Conexión de los instrumentos de medición | Conecte el osciloscopio a TP1, patilla 6, (FCS ERR).<br><br>[Ajustes]      100 mV/división<br>5 ms/división<br>modo de CC                                                                                                                                                                         | • Estado del reproductor | Modo de prueba, parada |
|                                            |                                                                                                                                                                                                                                                                                                   | • Lugar de ajuste        | Ninguno                |
|                                            |                                                                                                                                                                                                                                                                                                   | • Disco                  | YEDS-7                 |

### [Procedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PGM y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PGM, presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

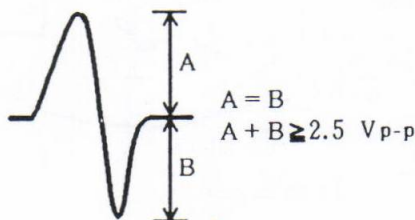


Figura 8

### [Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguientes es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.



## 6. FOR HB AND HEWZIW TYPES

### NOTES:

- Part without part-number cannot be supplied.
- 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 "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

### CONTRAST OF MISCELLANEOUS PARTS

XD – Z65M/HB, HEWZIW and XD – Z65M/HE have the same construction except for the following :

| Mark        | Symbol & Description                                         | Part No.              |                       |                           | Remarks |
|-------------|--------------------------------------------------------------|-----------------------|-----------------------|---------------------------|---------|
|             |                                                              | XD – Z65M/<br>HE type | XD – Z65M/<br>HB type | XD – Z65M/<br>HEWZIW type |         |
| ●           | VR assembly                                                  | Non supply            | Non supply            | Non supply                | *1      |
|             | HEADPHONE assembly                                           | Non supply            | Non supply            | Non supply                | *2      |
|             | AF assembly                                                  | AWZ4103               | AWZ4103               | AWZ4104                   |         |
|             | SUB TRANS assembly                                           | AWR1056               | AWR1055               | AWR1057                   | *3      |
| $\triangle$ | AC Power cord                                                | ADG1049               | ADG1087               | ADG1049                   |         |
|             | Barrier (PVC)                                                | .....                 | AEC1391               | .....                     |         |
|             | Screw (EARTH)                                                | .....                 | .....                 | ABA1047                   |         |
|             | Operating instructions<br>(English/French/German/Italian)    | ARE1237               | .....                 | .....                     |         |
|             | Operating instructions<br>(Dutch/Swedish/Spanish/Portuguese) | ARE1238               | .....                 | .....                     |         |
|             | Operating instructions<br>(English)                          | .....                 | ARB1353               | .....                     |         |
|             | Operating instructions<br>(German, Italian)                  | .....                 | .....                 | ARC1323                   |         |

\*1 : VR assemblies of HE and HB types are the same.

\*2 : HEADPHONE assemblies of HE and HB types are the same.

\*3 : Although SUB TRANS assembly (AWR1056) and SUB TRANS assembly (AWR1055) are different in part number, they consist of the same components.

For details, refer to Line voltage selection. (See page 55)

### HEADPHONE ASSEMBLY (HEWZIW TYPE)

HEADPHONE assembly (HEWZIW type) and HEADPHONE assembly (HE type) have the same construction except for the following :

| Mark | Symbol & Description | Part No.    |             | Remarks |
|------|----------------------|-------------|-------------|---------|
|      |                      | HE type     | HEWZIW type |         |
|      | C451, C452           | .....       | CKCYF473Z50 |         |
|      | C453                 | CKCYF473Z50 | .....       |         |
|      | R453                 | RD1/8PM100J | .....       |         |



**VR ASSEMBLY (HEWZIW TYPE)**

VR assembly (HEWZIW type) and VR assembly (HE type) have the same construction except for the following :

| Mark | Symbol & Description | Part No. |             | Remarks |
|------|----------------------|----------|-------------|---------|
|      |                      | HE type  | HEWZIW type |         |
|      | C561, C562           | .....    | CKMYB221K50 |         |

**● AF ASSEMBLY (AWZ4104)**

AF assembly (AWZ4104) and AF assembly (AWZ4103) have the same construction except for the following :

| Mark | Symbol & Description                                                                     | Part No.                                        |                                                                         | Remarks |
|------|------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------|---------|
|      |                                                                                          | AWZ4103                                         | AWZ4104                                                                 |         |
|      | L501, L502<br>L503, L504                                                                 | ATH - 133<br>.....                              | ATH - 059<br>ATH - 059                                                  |         |
|      | C162 (0.01 $\mu$ F/AC250V)<br>C162<br>C321, C322<br>C502, C503, C513, C514<br>C511, C512 | ACG1005<br>.....<br>.....<br>.....<br>.....     | .....<br>CQMA473K250<br>CCDCH101J50<br>CKCYB103K50<br>CKCYB102K50       |         |
|      | C801 - C804<br>C805 - C808<br>C851 - C853, C855<br>C854<br>C856 - C858                   | .....<br>.....<br>.....<br>.....<br>CKCYB471K50 | CKPUYB391K50<br>CKMYB391K50<br>CKCYF473Z50<br>CQMA224K50<br>CKMYB471K50 |         |
|      | C1001, C1002<br>C1013, C1014                                                             | CCMSL101J50<br>.....                            | CKMYB391K50<br>CKDYB471K50                                              |         |
|      | R351, R352<br>R501, R502<br>R807, R808<br>R1001, R1002                                   | .....<br>RD1/4PMFL100J<br>.....<br>RD1/8PM102J  | RD1/8PM222J<br>RD1/4PMFL101J<br>RD1/8PM221J<br>RD1/8PM222J              |         |

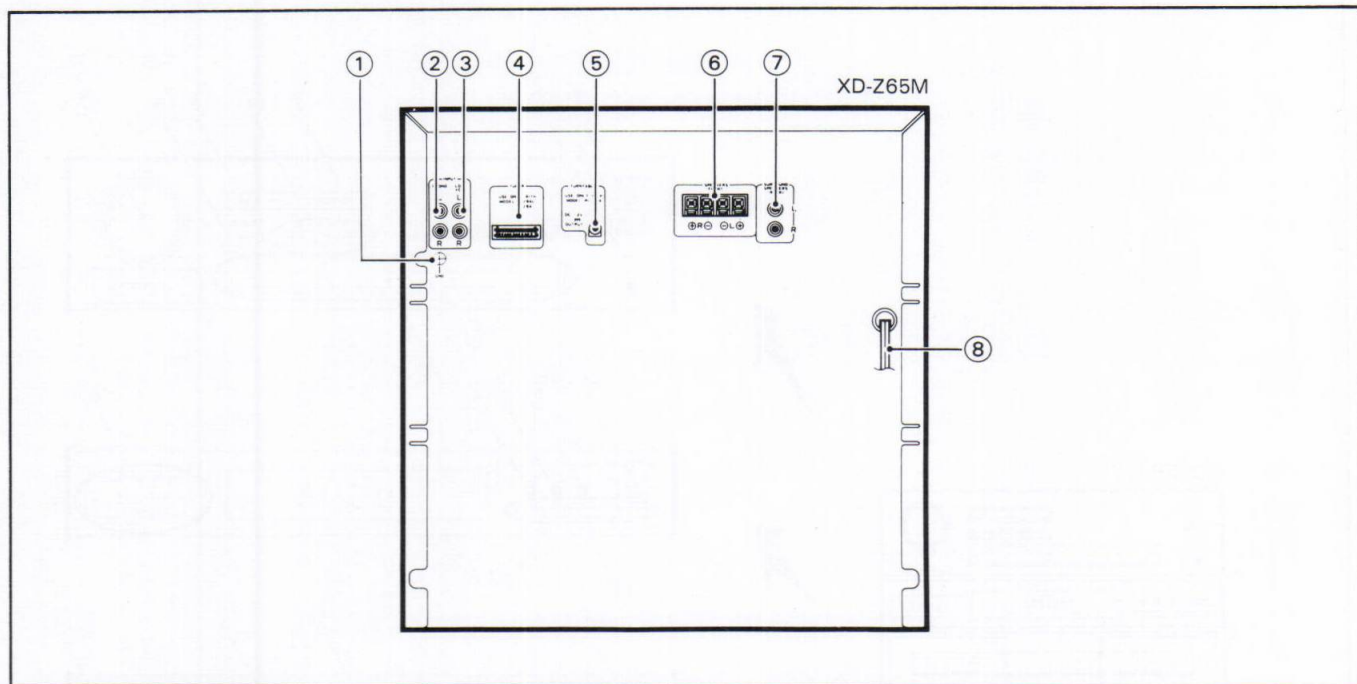
**● SUB TRANS ASSEMBLY (AWR1057)**

SUB TRANS assembly (AWR1057) and SUB TRANS assembly (AWR1056) have the same construction except for the following :

| Mark | Symbol & Description       | Part No. |           | Remarks |
|------|----------------------------|----------|-----------|---------|
|      |                            | AWR1056  | AWR1057   |         |
|      | L101 Line filter           | .....    | ATF - 151 |         |
|      | C109 (0.01 $\mu$ F/AC400V) | .....    | ACG1002   |         |



## 7. PANEL FACILITIES



### REAR PANEL FACILITIES

#### Multi-CD cassette deck amplifier: XD-Z65M

##### ① Ground terminal (GND)

Connect this to the ground terminal on the turntable (except for PL-Z95).

##### ② PHONO input jacks

Connect the audio cord of the turntable to these jacks.

##### ③ LD/VCR jacks

Connect to audio output jacks of LD player or VCR, etc.

##### ④ TUNER jacks

Connect the tuner input/output cord here.

##### ⑤ TURNTABLE (DC 12 V OUTPUT) jack

This jack supplies power to the turntable PL-Z95.

Connect the power supply cord of the turntable to this jack.

##### ⑥ SPEAKERS terminals

**L:** Connect the left speaker system as seen from the listening position.

**R:** Connect the right speaker system as seen from the listening position.

##### NOTE:

Connect a speaker system having a nominal impedance ranging from  $8\ \Omega$  to  $16\ \Omega$ .

##### ⑦ SURROUND SPEAKERS jacks

Connect the surround speaker systems.

##### NOTE:

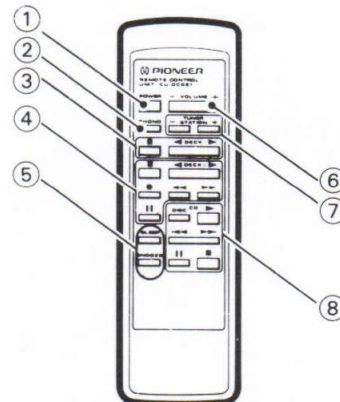
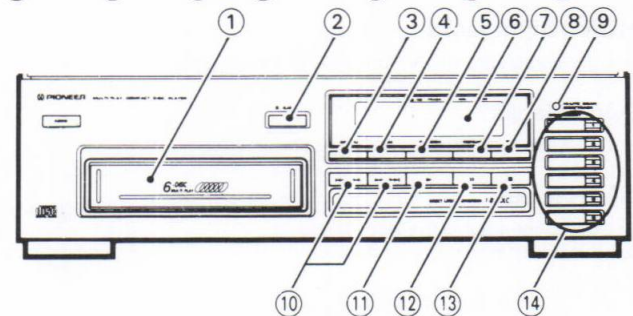
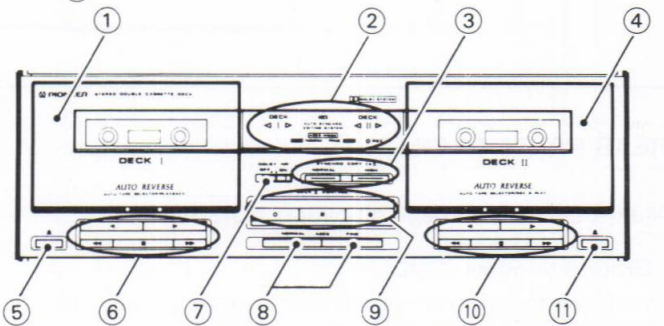
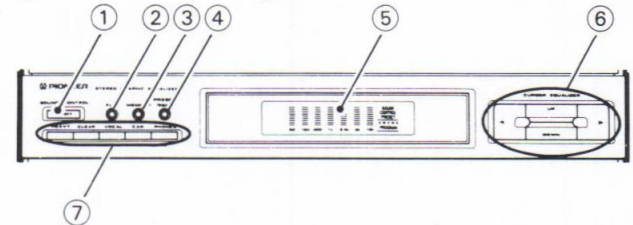
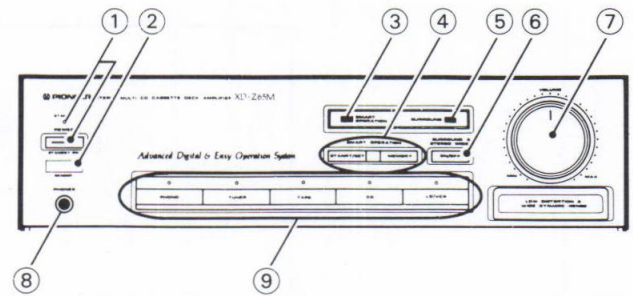
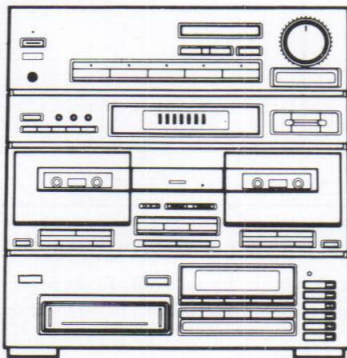
Connect a speaker system having a nominal impedance of  $16\ \Omega$  or more.

##### ⑧ Power cord

Connect this to the household electrical outlet.



XD-Z65M





## FRONT PANEL FACILITIES

### Multi-CD cassette deck amplifier: XD-Z65M

- This unit has an automatic tape type selector.
- Tapes can be played back on deck I; tapes can be played back and recorded on deck II.
- Sound can be recorded as adjusted by the graphic equalizer (excluding synchro copy).

### Amplifier section

#### ① POWER STANDBY/ON switch /STANDBY indicator

This is the switch for electric power.

**ON** : When set to the ON position, power is supplied and the unit becomes operational.

**STANDBY** : When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness. The unit is in STANDBY when only the STANDBY indicator above the POWER switch is lit.

#### ② REMOTE SENSOR window

#### ③ SMART OPERATION indicator

This lights when smart operation is on. It goes out after about 30 seconds.

#### ④ SMART OPERATION buttons

**[START/SET]**

Use when programming memory and operating SMART OPERATION.

**[MEMORY]**

Use when programming SMART OPERATION into memory.

#### ⑤ SURROUND indicator

This lights when SURROUND & STEREO WIDE is on.

#### ⑥ SURROUND & STEREO WIDE button

By turning this switch ON, you can enjoy surround reproduction when rear speakers are used.

By turning this switch ON, you can enjoy STEREO WIDE reproduction with greater left-right spread when rear speakers are not used.

#### NOTE:

*In the case of monaural source, SURROUND & STEREO WIDE effects cannot be obtained.*

#### ⑦ VOLUME control

#### ⑧ PHONES (Headphones) jack

For stereo headphones.

#### NOTE:

*There is no output from the speakers when headphones are plugged into PHONES jack.*

#### ⑨ Input selector buttons

**[PHONO]**

Press to play records on a turntable connected to the PHONO jacks.

**[TUNER]**

Press to listen to radio broadcast.

**[TAPE]**

Press to listen to cassette tape.

**[CD]**

Press to listen to a CD.

**[LD/VCR]**

Press for playback on an LD player or VCR connected to the LD/VCR jacks.

### Graphic equalizer section

#### ① SOUND CONTROL ON/OFF button

This switches the graphic equalizer on/off. When it's on, the SOUND CONTROL indicator in the display section lights.

#### NOTE:

*Sound comes from the rear speakers regardless of whether this button is on or off.*

#### ② FLAT button

Press to reset the equalizer to flat response (no equalization).

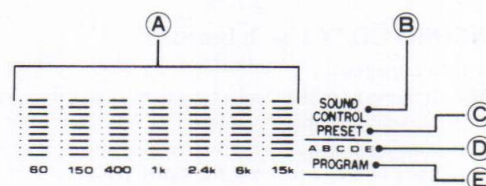
#### ③ MEMORY button

Use this to program your desired equalization setting into the memory recall buttons (A to E).

#### ④ PRESET/PGM (PROGRAM) button

Use to switch between recall of PRESET memory settings and your own original memory settings (PROGRAM) with the memory recall buttons. The memory being recalled is indicated by the lit indicator in the display section.

#### ⑤ Display section



A Visual display of spectrum analyzer and graphic equalizer.

B This lights when the sound control is on.

C When recalling PRESET memory with the memory recall buttons, the line under PRESET lights.

D Display of the memory being recalled with the memory recall buttons.

E When recalling PROGRAM memory with the memory recall buttons, the line under PROGRAM lights.

#### ⑥ CURSOR EQUALIZER buttons

Use to adjust graphic equalizer settings.

[◀, ▶]: Use these to change the frequency range to be adjusted.

[UP, DOWN]: Use these to adjust the degree of equalization.

#### ⑦ Memory recall buttons

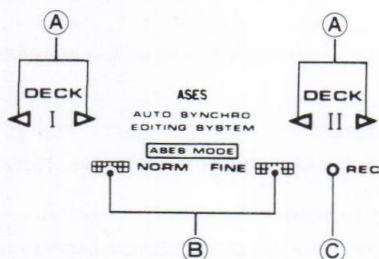
Use to recall preset equalization settings. Also use to program into memory and recall desired sound settings.



## ■ Cassette Deck Section

### ① Deck I cassette door

### ② Operation indicators



**A** Direction (◀, ▶): Indicates direction of tape travel during recording or playback.

#### **B** ASES MODE

**NORM:** Normal edit in progress.

**FINE:** Fine edit in progress.

**C** REC: Lights when recording. It flashes during tape copying.

**Slow flashing:** Normal copy.

**Fast flashing:** High speed copy.

### ③ SYNCHRO COPY I ▶ II buttons

Used for tape copying.

**NORMAL:** Copying from the Deck I tape to the Deck II tape at normal recording/playback speed.

**HIGH:** Copying at about twice normal tape speed. (Copies can be made in about half the NORMAL time.)

### ④ Deck II cassette door

### ⑤ Deck I EJECT button

### ⑥ Deck I operation buttons

▶ (PLAY: FWD) .. For playing back a tape in the forward mode.

◀ (PLAY: REV) ... For playing back a tape in the reverse mode.

■ (STOP)..... For stopping the tape.

▶▶ (FAST) ..... Fast forward in forward mode, rewind in reverse mode.

◀◀ (FAST) ..... Rewind in forward mode, fast forward in reverse mode.

### ⑦ DOLBY\* NR switch

Set this switch to ON for recording with the built-in Dolby Noise Reduction system and for playback of tapes which have been recorded using the Dolby Noise Reduction system. For other tapes, set the Dolby NR switch to OFF.

#### **NOTE:**

When playing back Dolby B-type NR-encoded tapes, always set this switch to the ON position.

\*

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

### ⑧ A.S.E.S. buttons

Used for automatically recording a CD on cassette tape.

#### **NOTE:**

• **FINE** is the mode when performing CD player COMPU PGM EDIT (Computer Allocated Program Editing).

• The **NORMAL** mode provide a blank space of about five seconds between songs.

### ⑨ DECK II CONTROL buttons

● (REC)..... To set to recording standby mode. The REC indicator lights and the direction indicators (◀ and ▶) flash. Recording begins when you press the PLAY button (▶ or ▶▶).

II (PAUSE) ..... Temporarily stops tape travel. Cancels pause mode when pressed again or press the PLAY button.

○ (REC MUTE) ..... Used for creating a blank space between songs. Pressing this button once creates an unrecorded 4-second space.

Continuing to press the button creates an unrecorded space as long as the time the button is pressed.

### ⑩ Deck II operation buttons

Same as Deck I operation buttons ⑥.

### ⑪ Deck II EJECT button

## ■ CD player section

### ① Magazine insertion slot

### ② EJECT button

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

### ③ COMPU button

Press this button and designate the number of minutes of tape for recording with the Manual/Track search button. The CD player then selects tunes and programs them automatically for recording so that the unrecorded portion at the end of the tape is at the shortest distance.

### ④ PGM (Program) button

Use to program a sequence of tracks.

• Press this button after selecting a desired disc and track with DISC SELECT and track search buttons. Tunes will be added to the order in which they are specified.

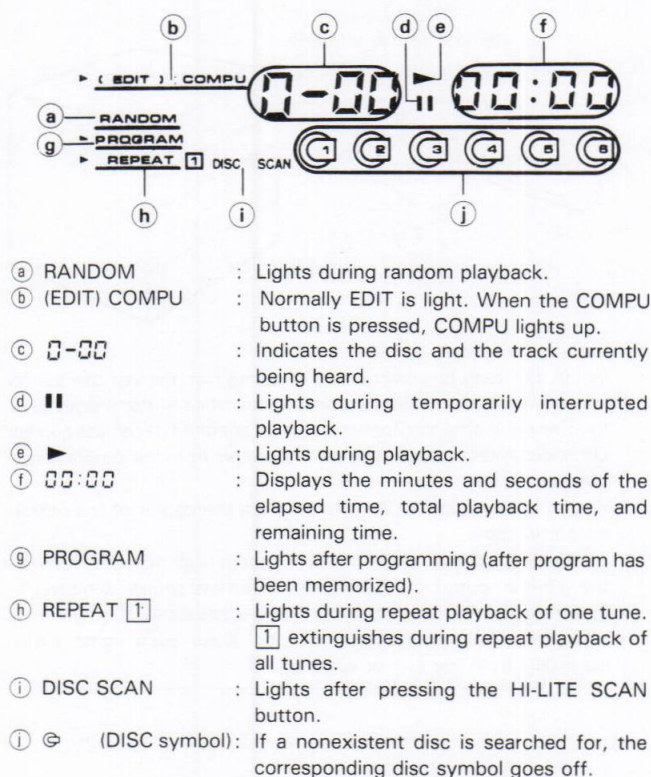
• If only a DISC SELECT button is pressed, all tracks on the specified disc will be added to the program. The letters 'AL' will appear on the indicator.

### ⑤ RANDOM button

Press to begin random playback.



## ⑥ Indicators



### NOTE:

When power is turned on, the CD player section indicators show different indications depending on the condition (disc loaded or not, etc.) prior to when the power was turned off. This is not a malfunction.

## ⑦ REPEAT button

Press to perform repeat playback.

- If pressed during normal playback mode, all tracks on all the discs in the magazine will be played back repeatedly.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- In the case of random playback mode, after all the tracks have been played, random playback will start again.

## ⑧ TIME button

Use to select the method for displaying the playing time on the indicator panel.

Each time the button is pressed, the indication changes from TIME, REMAIN (track remain) and REMAIN (disc remain) : This will not be displayed during programmed playback to TOTAL in that order.

## ⑨ HI-LITE SCAN DISC/TRACK button

If this button is pressed while the unit is stopped, the first ten seconds after the first minute of the first tune on each of the discs from DISC 1 to DISC 6 is played back in sequence (DISC SCAN). If this button is pressed during DISC SCAN, the first ten seconds after the first minute of all the tunes on each of the discs from DISC 1 to DISC 6 is played back (TRACK SCAN).

To reset the start-up time of HI-LITE SCAN, press the HI-LITE SCAN button during normal playback.

Enter the time of current playback in memory and ten-second passages on all the remaining tracks are played back at the memorized time.

## ⑩ Manual/Track search buttons

(◀◀ • ◀, ▶ • ▶▶)

These buttons are used for track search and manual search during normal playback, programmed playback or pause. When these buttons are pressed, either the previous tune or the next tune is established. If they are kept depressed, either fast forward or reverse is established, depending upon the direction of pressing.

## ⑪ PLAY button (►)

Press to begin playback, and to cancel the player from the pause mode.

## ⑫ PAUSE button (II)

Press to temporarily interrupt playback. When pressed again, the pause mode is canceled and playback resumes.

## ⑬ STOP button (■)

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.

When pressed during stop mode, the program stored in memory is cleared.

## ⑭ DISC SELECT buttons (1—6)

Use to select disc numbers for playback or programming.



## Remote control unit

### ① POWER button

### ② PHONO button

Sets function to PHONO.

### ③ Deck I operation buttons

- ▶ ..... Forward play
- ◀ ..... Reverse play
- ..... Stop

### ④ DECK II operation buttons

Same as Deck II operation buttons and DECK II CONTROL buttons on the CD cassette deck amplifier (Except for REC MUTE)

### ⑤ Timer operation buttons

**SLEEP** : Sets the sleep timer.

**SNOOZE**: Turns off power if pressed after timer playback begins. Timer playback begins again approx. 5 minutes later.

### ⑥ VOLUME + (UP)/ - (DOWN) buttons

When pressed, VOLUME on the amplifier is actually moved by a motor.

### ⑦ TUNER STATION buttons

- Before operation, memorize broadcast stations in the STATION CALL buttons.

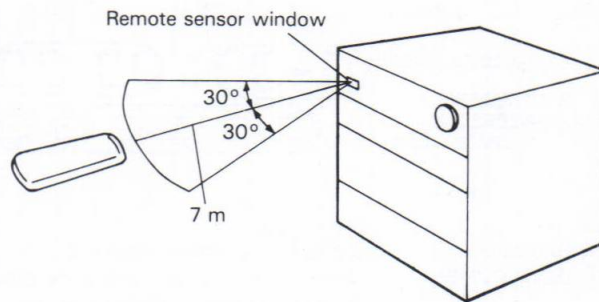
- + ..... Stations change in order in the upward direction.
- ..... Stations change in order in the downward direction.

### ⑧ CD operation buttons

- ▶ ..... Play
- DISC ..... DISC selection
- ..... Stop
- || ..... Pause
- ◀▶, ▶▶ ..... Track search

The amplifier input selector automatically switches to the music source being operated when you press the CD playback (▶) cassette deck playback (◀, ▶), or tuner station controls.

## Range of remote control



When the remote control unit is pointed at the remote sensor window on the amplifier section and any of its buttons is pressed, the tuner and other components can be operated by remote control. Distance: Within a range of approx. 7 meters from the remote sensor window.

Angle: Within approx. 30 degrees from the center of the remote sensor window.

Remote control will not be possible if there is an obstacle between the remote control unit itself and the remote sensor window.

Performance of the remote control unit is adversely affected in the presence of strong fluorescent light. Keep such lights away, especially from the sensor window.



## 8. SPECIFICATIONS

### Multi CD cassette deck amplifier: XD-Z65M

#### Amplifier Section

|                                                               |                                                                   |
|---------------------------------------------------------------|-------------------------------------------------------------------|
| Music power (DIN) .....                                       | 60 W + 60 W (1 kHz, T.H.D. 1 %, 8 Ω)                              |
| Continuous Power Output (DIN) .....                           | 34 W + 34 W<br>(1 kHz, T.H.D. 1 %, 8 Ω)                           |
| Graphic equalizer frequency band.....                         | 60 Hz, 150 Hz,<br>400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz, ± 5.5 dB |
| S/N (DIN, continuous power/50 mW)                             |                                                                   |
| PHONO .....                                                   | 68 dB/60 dB                                                       |
| Total Harmonic Distortion (40 Hz to 20,000 Hz, 22.5 W, 8 Ω)** |                                                                   |
| .....                                                         | No more than 0.2 %                                                |
| Input sensitivity/impedance                                   |                                                                   |
| PHONO (MM) .....                                              | 2.5 mV/47 kΩ                                                      |
| LD/VCR .....                                                  | 150 mV/22 kΩ                                                      |

#### Cassette Deck Section

|                                             |                                                                      |
|---------------------------------------------|----------------------------------------------------------------------|
| Systems .....                               | 4 track, 2-channel stereo                                            |
| Heads .....                                 | Recording/playback head x 1<br>Erasing head x 1<br>Playback head x 1 |
| Motor .....                                 | DC servo 2 speed motor x 2                                           |
| Wow and Flutter .....                       | No more than 0.09 % (WRMS)                                           |
| Fast Winding Time .....                     | Approximately 105 seconds<br>(C-60 tape)                             |
| Frequency Response (– 20 dB recording):     |                                                                      |
| Type I (Normal) tape .....                  | 35 Hz to 14,000 Hz ± 6 dB (EIAJ)                                     |
| Type II (HIGH/CrO <sub>2</sub> ) tape ..... | 35 Hz to 15,000 Hz ± 6 dB (EIAJ)                                     |
| Signal-to-Noise ratio                       |                                                                      |
| Dolby NR OFF .....                          | 56 dB                                                                |
| Noise Reduction Effect                      |                                                                      |
| Dolby B type NR ON .....                    | More than 10 dB (at 5 kHz)                                           |

#### CD Section

|                             |                                                           |
|-----------------------------|-----------------------------------------------------------|
| Type .....                  | Compact disc digital audio system                         |
| Operating temperature ..... | +5°C — +35°C                                              |
| Frequency response .....    | 2 Hz — 20 kHz                                             |
| S/N .....                   | 100 dB or more (EIAJ)                                     |
| Wow and flutter .....       | Limit of measurement<br>(± 0.001 % W.PEAK) or less (EIAJ) |
| Number of channels .....    | 2 channels (stereo)                                       |

#### Furnished Parts

|                                 |   |
|---------------------------------|---|
| Operating Instructions .....    | 1 |
| Remote Control Unit .....       | 1 |
| Dry Cell Batteries .....        | 2 |
| Six-Compact disc-Magazine ..... | 1 |

#### Miscellaneous

|                                |                                  |
|--------------------------------|----------------------------------|
| Power requirements .....       | a.c. 240 Volts~, 50/60 Hz        |
| Power Consumption .....        | 240 W                            |
| Dimensions .....               | 360 (W) x 375.5 (H) x 309 (D) mm |
| Weight (without package) ..... | 10 kg                            |

• Specifications and design subject to possible modification without notice due to improvement.

\*\* Measured By Audio Spectrum Analyzer.

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs.



