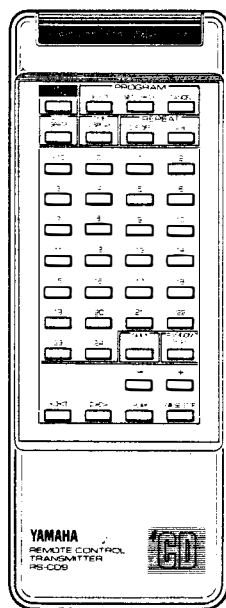
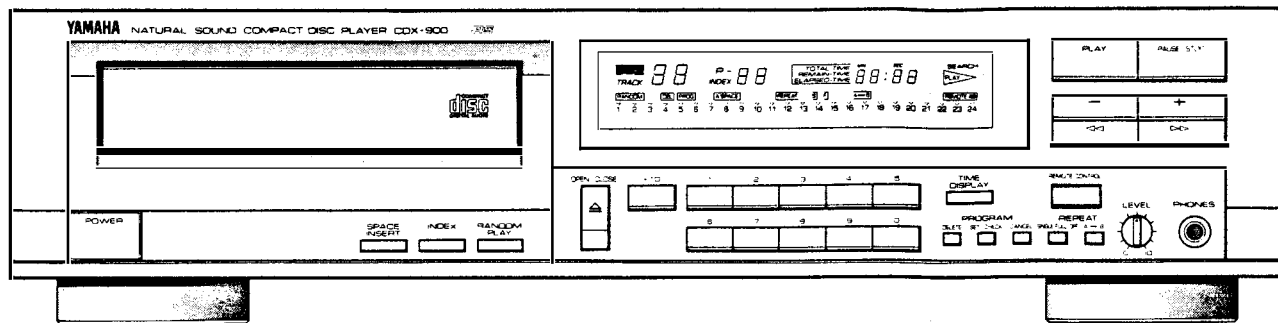


# COMPACT DISC PLAYER CDX-900/CDX-900U

## SERVICE MANUAL



### IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

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SINCE 1887



# YAMAHA

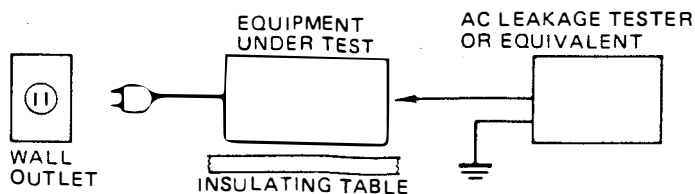
NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

3.25K-363 Printed in Japan '87.3

CDX-900U

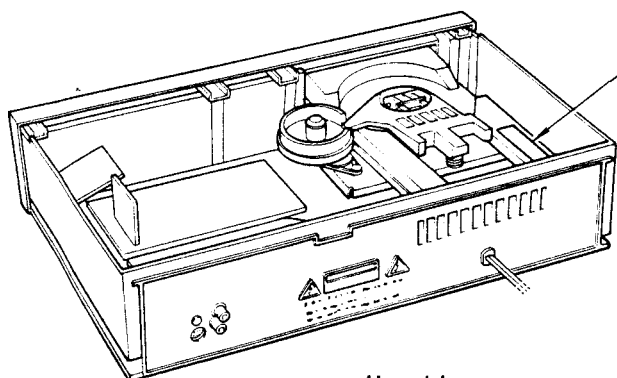
## ■ TO SERVICE PERSONNEL

1. Critical Components Information.  
Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Model Only).  
When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.
  - Meter impedance should be equivalent to 1500 ohm shunted by  $0.15\mu\text{F}$
  - Leakage current must not exceed 0.5mA.
  - Be sure to test for leakage with the AC plug in both polarities.
- **POLARIZATION**  
This tuner product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.



**CAUTION** — USE OF CONTROLS, ADJUSTMENTS, OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.



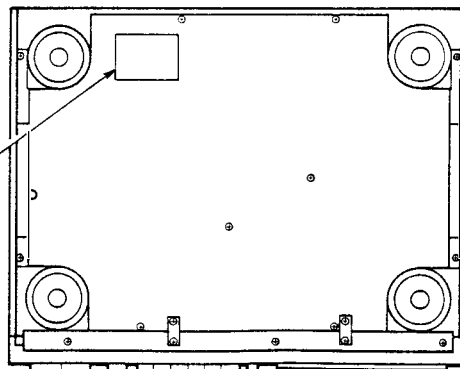
U model

**DANGER**—Invisible laser radiation when open and interlock failed or defeated.  
**AVOID DIRECT EXPOSURE TO BEAM** (CA0853F-1)

C model

**CAUTION**—HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.  
**ATTENTION**—RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX QUAND OUVERT ET ENCLICHENEMENT DÉFECTUEUX (C0674701)

BOTTOM SIDE



U model

THIS PRODUCT COMPLIES WITH OHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT DATE OF MANUFACTURE.

MANUFACTURED BY  
NIPPON GAKKI CO., LTD.  
10-1 NAKAZAWA-CHO.  
HAMAMATSU-SHI.  
SHIZUOKA-KEN, JAPAN

MANUFACTURED:



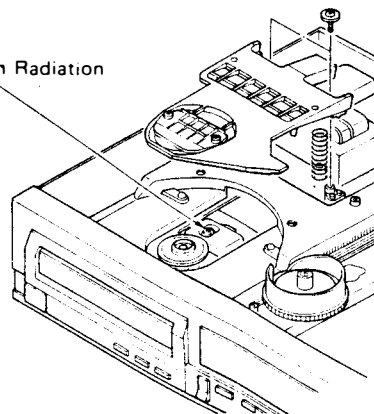
### LASER BEAM RADIATION SPOT DG-1

Laser Diode Properties  
Material: Ga-Al-As  
Wavelength: 780 — 820 nm (25°C)  
Laser Output: Continuous Wave max. 5 mW

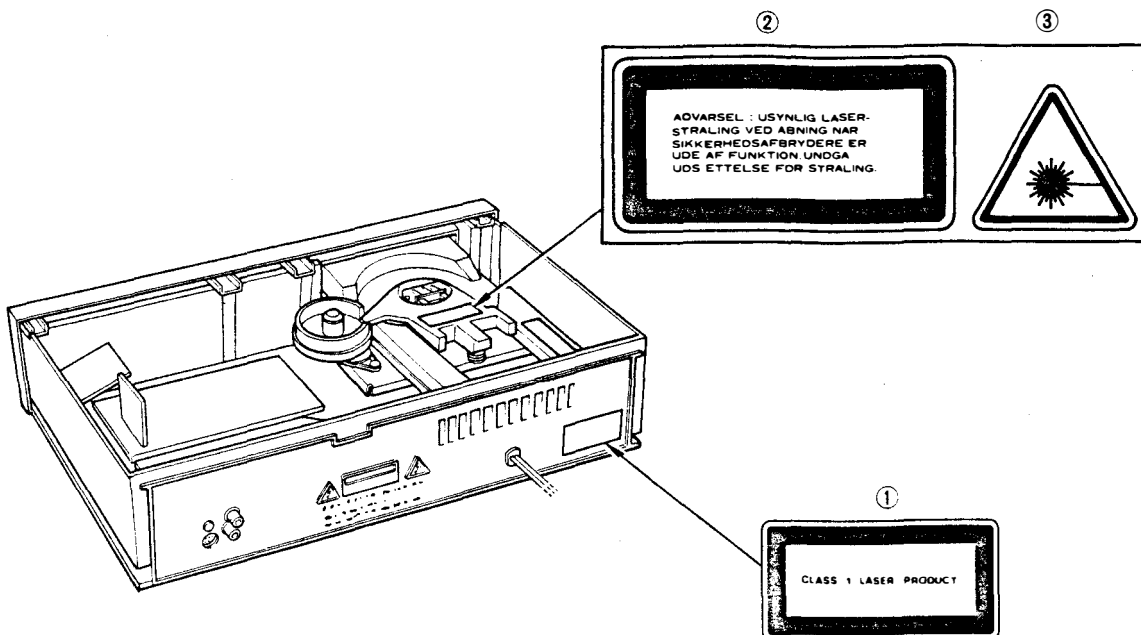
### MLP-7

Laser Diode Properties  
Material: Ga-Al-As  
Wavelength: 755 — 805 nm (25°C)  
Laser Output: Continuous Wave max. 5 mW

Laser Beam Radiation



## W, H models



## English

- ① THIS LABEL IS ATTACHED AT THE PLACE ILLUSTRATED TO INFORM THAT THE APPARATUS CONTAINS A LASER COMPONENT.
- ② THIS LABEL IS ATTACHED IN THE POSITION SHOWN IN THE ILLUSTRATION TO WARN THAT ANY FURTHER PROCEDURE WILL BRING THE USER INTO EXPOSURE WITH THE LASER BEAM.
- ③ THE WARNING LABEL INFORMING OF RADIATION IS PLACED INSIDE THE UNIT AS SHOWN IN THE ILLUSTRATION, TO WARN AGAINST FURTHER MEASURES ON THE UNIT. THE EQUIPMENT CONTAINS A LASER COMPONENT RADIATING LASER RAYS EXCEEDING THE LIMIT OF LASER PRODUCTS OF CLASS 1.

CAUTION—USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

*Swedish*

- ① PÅSKRIFTEN SITTER PÅ APPARATEM SOM VISAS SOM EN UPPMANING OM ATT APPARATEN OMFATTAR EN INBYGGD LASERKOMPONENT.
- ② TEXTSKYLTEN FÖR LASERN ÄR PLACERAD PÅ APPARATEN SOM EN UPPMANING OM ATT APPARATEN INNEHÅLLER EN LASERKOMPONENT.
- ③ VARNINGSSKYLTEN FÖR STRÅLNING HAR PLACERATS I APPARATEN, SOM BILDEN VISAR, SOM EN VARNING OM YTTERLIGARE INGREPP I APPARATEN. MATERIELEN INNEHÅLLER EN LASERKOMPONENT SOM AVGER LASERSTRÅLNING ÖVERSTIGANDE GRÄNSEN FÖR LASERKLASS 1.

**VARNING—INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KUNSKAP OM ATT RISK FÖRELIGGER FÖR RADIOAKTIV ATRÄLNING.**

*Danish*

- ① DETTE MÆRKAT ER ANBRAGT SOM VIST I ILLUSTRATIONEN FOR AT ADVARE BRUGEREN OM AT APPARATET INDEHOLDER EN LASERKOMPONENT.
- ② DETTE MÆRKAT OM LASEREN ER ANBRAGT PÅ APPARATET SOM EN OPLYSNING OM AT APPARATET INDEHOLDER ET LASERKOMPONENT.
- ③ ADVARSELSKILTET OM STRÅLING ER PLACERET INDENI APPARATET, SOM VIST I ILLUSTRATIONEN, SOM EN ADVARSEL OM YDERLIGERE INDGŘEB I APPARATET. APPARATET INDEHOLDER ET LASERKOMPONENT SOM AVGIVER LASESTRÅLING DER OVERSTIGER GÆNSEVERDIEN FOR LASERKLASSE 1.

**ADVARSEL! INDGREB BØR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.**

*Finnish*

- ③"VAROITUS! LAITE SISÄLTÄÄ LASERIODIN, JOKA LÄHETTÄÄ (NÄKYMÄTÖNTÄ) SILMILLE VAARALLISTA LASERSÄTEILYÄ:"

## ■ INTERLOCK OPERATION

The Digital Compact Disc Player reads the disc signals by laser beam detection. It must be avoided for the human body to be directly exposed to the laser beam. Human eyes are especially badly affected by the laser beam. This unit is therefore equipped with an interlock to prevent unnecessary laser output.

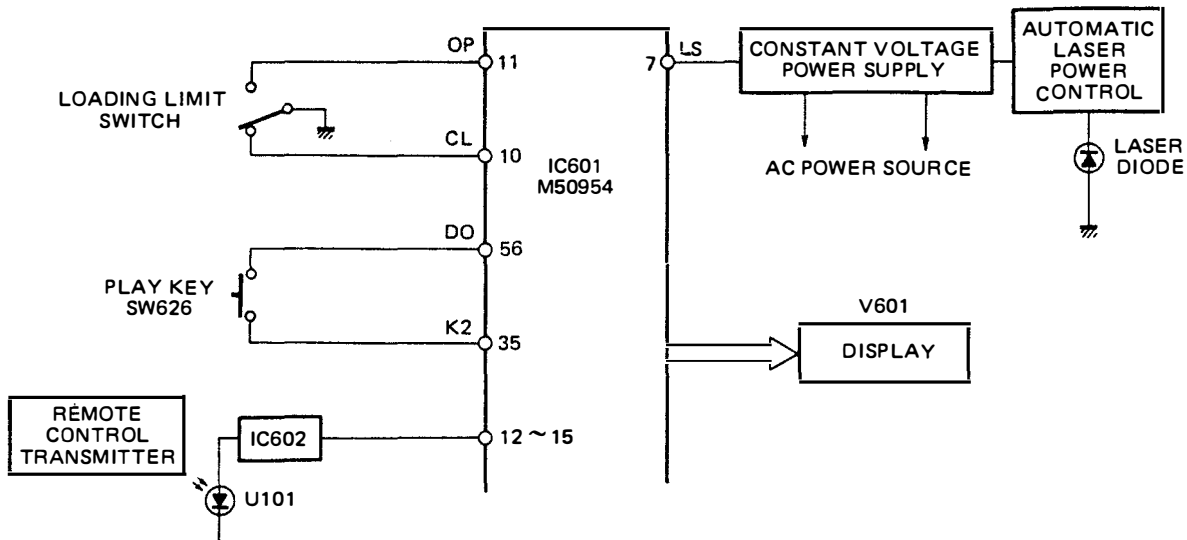
Laser output is controlled by the injection or cutoff of the constant voltage source to the laser diode at Pin 7 (LS) of IC601 (M50954), and also by Automatic Laser Power Control Circuit. When Pin 7 is in "H" (High) level, the laser emits the beam. When Pin 7 is in "L" (Low) level, the laser does not emit the beam.

Pin 7 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the index signals and the following two conditions are met, the laser emits the beam.

- 1) When the Loading Limit Switch is set in "CL" side. (The disc tray is closed.)
- 2) The pickup is located at the area of minimum internal circumference.

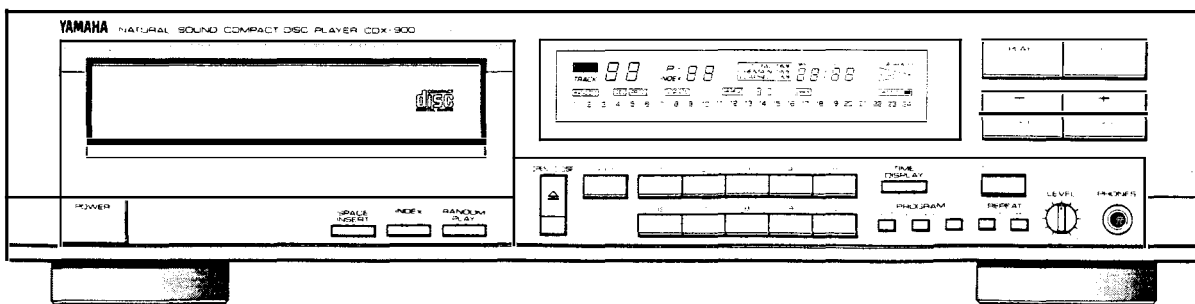
After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

- 1) when the PLAY key (SW626) or that of Remote Control Transmitter is pressed.
- 2) when the **PLAY** display is ON.

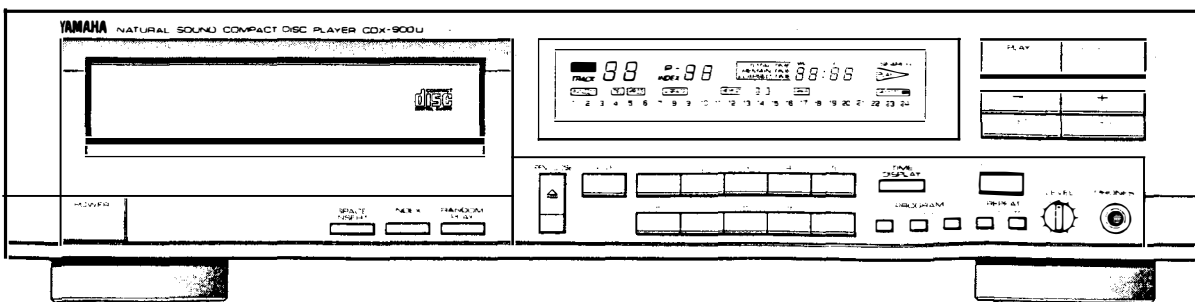


## ■ FRONT PANELS

### ● CDX-900

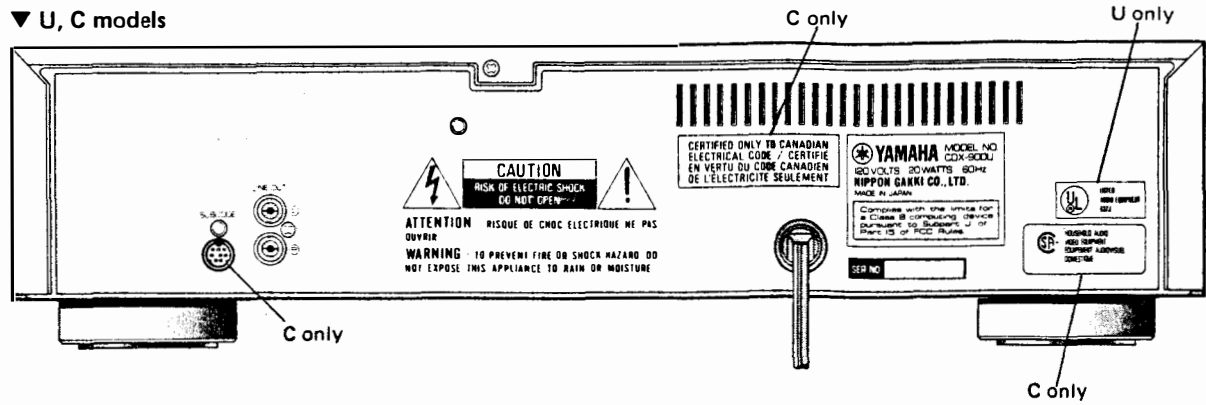


### ● CDX-900U

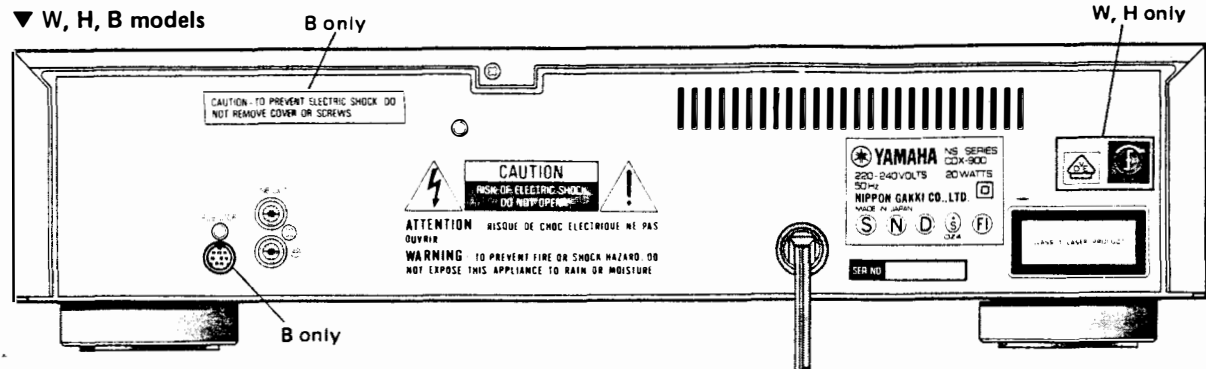


## REAR PANELS

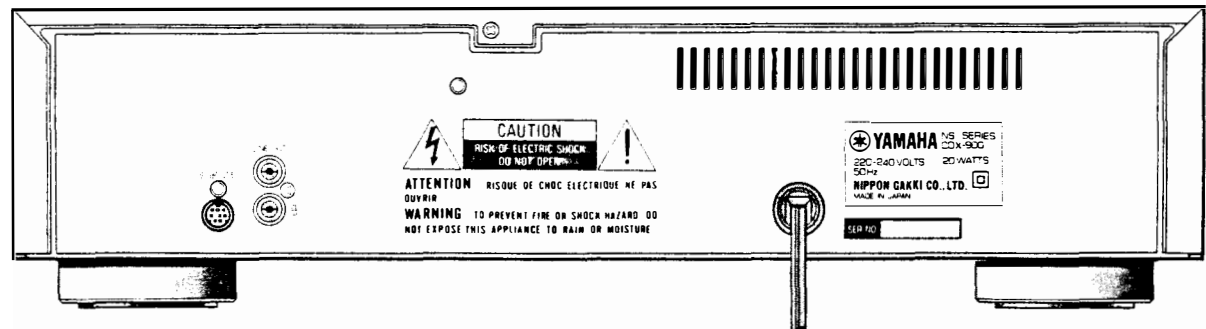
### ▼ U, C models



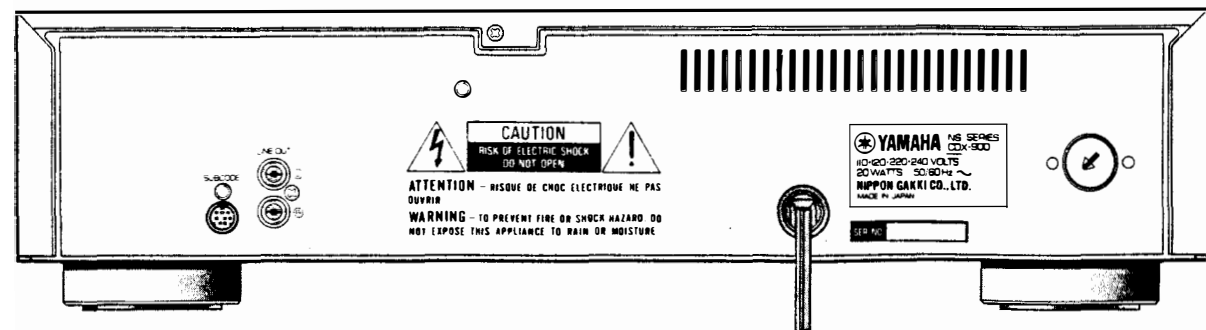
### ▼ W, H, B models



### ▼ A model



### ▼ R model



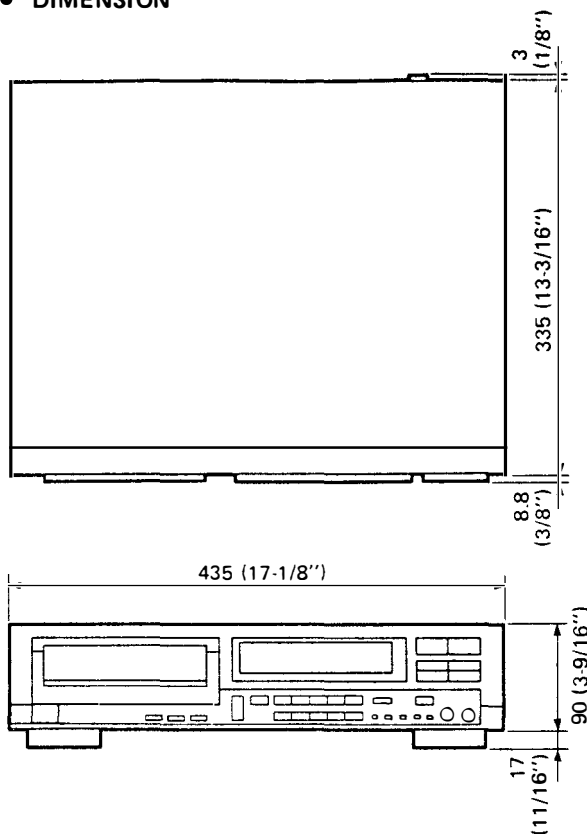
## SPECIFICATIONS

|                             |                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------|
| Format                      | Compact disc digital audio system                                                                 |
| <b>AUDIO SECTION</b>        |                                                                                                   |
| Frequency response          | DC — 20kHz +0.25/−0.25dB                                                                          |
| Harmonic distortion + noise | Less than 0.004% (1kHz)                                                                           |
| S/N ratio                   |                                                                                                   |
| IEC A                       | 108dB                                                                                             |
| Dynamic range               | Better than 97dB                                                                                  |
| Wow & Flutter               | Unmeasurable                                                                                      |
| Channel separation          | Better than 95dB (1kHz)                                                                           |
| Output voltage              | 2V/600 ohm (at full scale: 0dB)                                                                   |
| Output impedance            | 680 ohm                                                                                           |
| Headphone output            | 82mV                                                                                              |
| (Headphone: 8 ohms)         | (at −20dB)                                                                                        |
| <b>INTERNAL SYSTEMS</b>     |                                                                                                   |
| Optical pick-up             | 3-beam laser                                                                                      |
| Error correction system     | CIRC dual error correction system                                                                 |
| D/A conversion              | 16 bit linear                                                                                     |
| Filter                      | Digital filter + five order active filter                                                         |
| <b>FUNCTIONS</b>            |                                                                                                   |
| Music search                | "+" and "−" keys ordered program search                                                           |
| Index search                | Search key                                                                                        |
| Fast forward/rewind         | Dual speed automatic switching                                                                    |
| Total music time display    | DISPLAY key                                                                                       |
| Program function            | 24 selections, random                                                                             |
| Space play                  | Space of more than 3 seconds during program playback                                              |
| Repeat                      | Repeat of all selections, all program selections A ↔ B repeat                                     |
| Disc loading                | Motor driven, horizontal loading                                                                  |
| <b>GENERAL</b>              |                                                                                                   |
| Power requirements          |                                                                                                   |
| U, C Models                 | 120V AC, 60Hz                                                                                     |
| A, W, H, B Models           | 240V-220V AC, 50Hz                                                                                |
| R Model                     | 110V ~ 130V/220V ~ 240V AC, 50/60Hz                                                               |
| Power consumption           | 20W                                                                                               |
| Dimensions (W x H x D)      | 435 x 107 x 347<br>(17-1/8 x 4-3/16 x 13-4/8)                                                     |
| Weight                      | 6.5kg (14 lbs. 5 oz.)                                                                             |
| Accessories                 | Pin plug cord<br>Remote Control Transmitter<br>RS-CD9<br>Two dry-cell penlight batteries (AA: R6) |

\*Specification subject to change without notice.

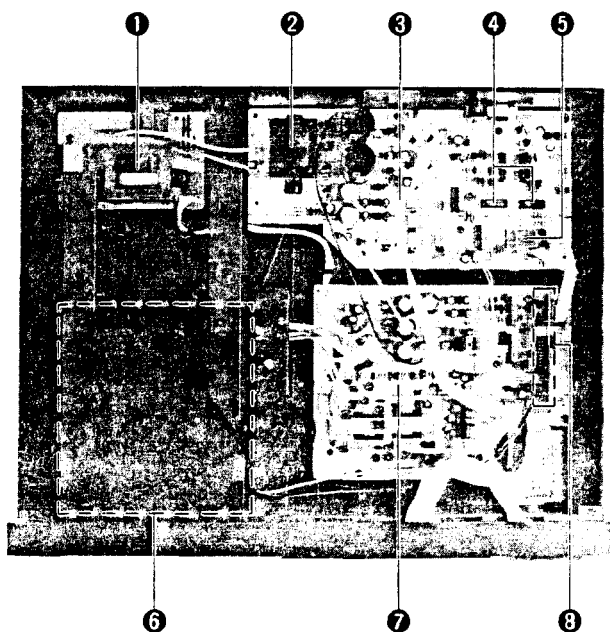
U ..... U.S.A. model  
C ..... Canadian model  
B ..... British model  
A ..... Australian model  
W ..... Federal Republic of Germany  
H ..... European model  
R ..... Other model

## DIMENSION



Unit : mm (inch)

## INTERNAL VIEW



### ① POWER TRANSFORMER (DIGITAL SECTION)

U, C models: XB814001  
A, W, H, B models: XB815001  
R model: XB813001

### ② POWER TRANSFORMER (ANALOG SECTION)

U, C models: XC098001  
A, W, H, B models: XC099001  
R model: XC097001

### ③ MAIN CIRCUIT BOARD (1)

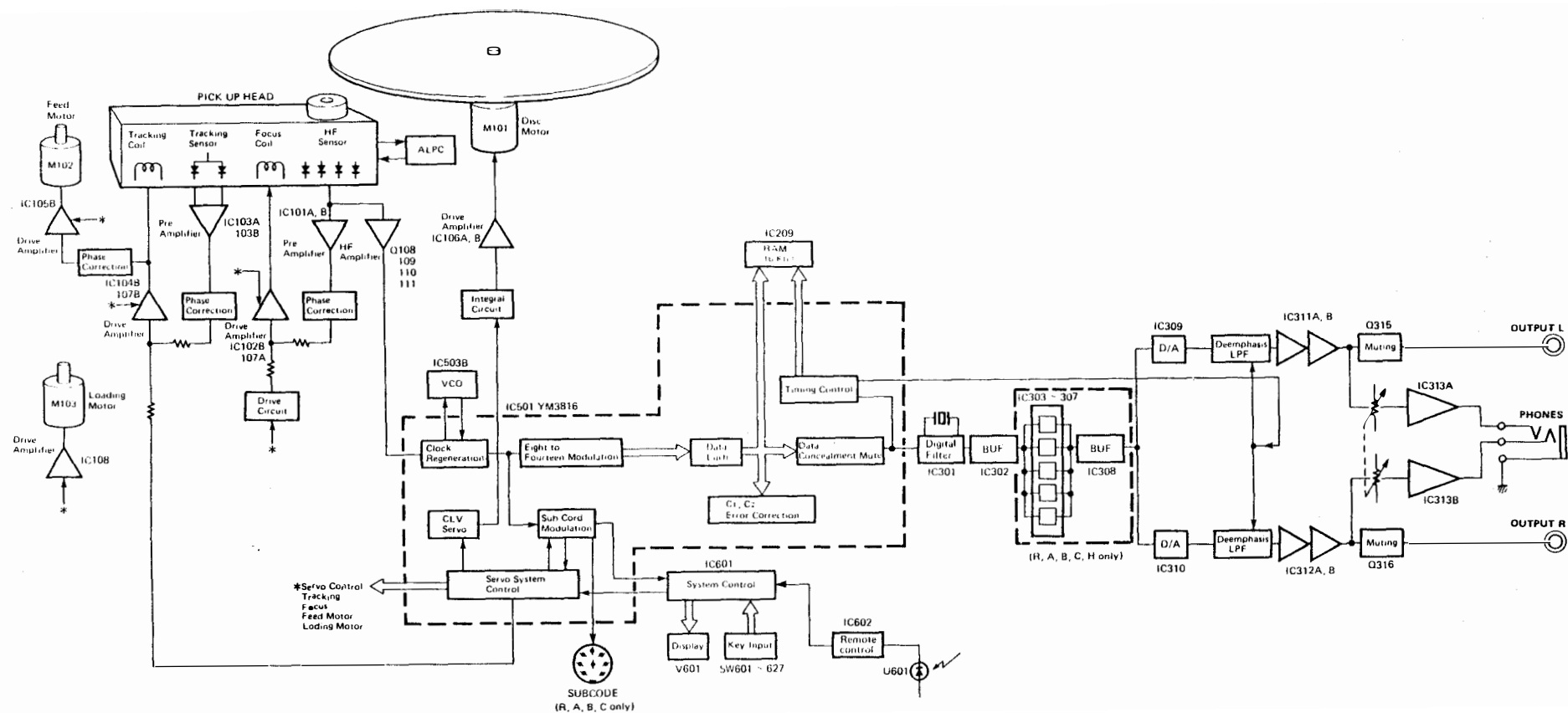
### ④ D/A CONVERTER (IC309, 310): PCM56P

### ⑤ 16 BIT OVER SAMPLING DIGITAL FILTER (IC301) : YM3619DF or YM3404DF

### ⑥ DISC MECHANISM UNIT

### ⑦ SERVO CIRCUIT BOARD

### ⑧ SPC CIRCUIT BOARD



# ■ CHIP COMPONENTS DESCRIPTION

## 1. KIND OF CHIP DEVICE

We have five kinds of chip devices:

- Thick film chip resistor
- Multi-layer ceramic chip capacitor
- Mini-mould (Chip) transistor
- Mini-mould (Chip) diode
- Mini-mould (Chip) IC

## 2. IDENTIFICATION OF FOUR KINDS OF CHIP DEVICES

Since four kinds of chip devices have similar shape and size, it is quite difficult to identify them at a glance, but basically, following identification is available:

### a. Resistor/Jumper resistor

All chip resistors have a 3 digit indication of the value of resistance.

For example, "472" stands for 4.7k ohms and "000" stands for the jumper resistor.

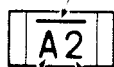
$$47 \times 10^2 = 4700\Omega$$

$$= 4.7k\Omega$$

### b. Ceramic capacitor

Some chip capacitors have a 2 digit indication of the value of capacitance. For example, "A2" stands for 100pF. Some chip capacitors have no indication.

(Example) Special mark



$$1.0 \times 10^2 = 100pF$$

Alphabet Number

### ● Contents of indication

Alphabet . . . . . The numerical value of electrostatic capacity.

Number . . . . . The value of the multiplier.

Special mark . . . . . Temperature characteristic.

### ● Electrostatic capacity

(Alphabet)

| Alphabet        | A   | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Numerical value | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 |

| Alphabet        | N   | P   | O   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Numerical value | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |

| Alphabet        | a   | b   | d   | e   | f   | m   | n   | t   | y   |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Numerical value | 2.5 | 3.5 | 4.0 | 4.5 | 5.0 | 6.6 | 7.6 | 8.0 | 9.0 |

(Number)

| Number        | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9         |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|
| figures value | $10^0$ | $10^1$ | $10^2$ | $10^3$ | $10^4$ | $10^5$ | $10^6$ | $10^7$ | $10^8$ | $10^{-1}$ |

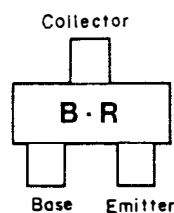
### c. Transistor

The transistors can be identified by their identification codes of 2 to 4 alphabet letters assigned to each of them. Given below is a cross reference table of identification codes and transistors.

Use it to identify each transistor from its code.

| Indication | Parts No. | Description        | HFE rank |
|------------|-----------|--------------------|----------|
| FQ         | iA103700  | Transistor 2SA1037 | Q-rank   |
| FR         | "         | "                  | R-rank   |
| FS         | "         | "                  | S-rank   |
| BQ         | iC241200  | " 2SC2412          | Q-rank   |
| BR         | "         | "                  | R-rank   |
| BS         | "         | "                  | S-rank   |
| AQ         | iB070910  | " 2SB709           | Q-rank   |
| AR         | "         | "                  | R-rank   |
| AS         | "         | "                  | S-rank   |
| YQ         | iD060100  | " 2SD601           | Q-rank   |
| YR         | "         | "                  | R-rank   |
| YS         | "         | "                  | S-rank   |

Ex. Transistor: 2SC2412(R)



As explained above you can identify chip devices tentatively, but actual identification should be made by referring to the parts layout drawing in the service manual.

## 3. SPECIAL NOTICE FOR HANDLING CHIP DEVICES

Chip devices are not heatproof and shockproof. Use caution when handling them.

### a. For shock

Chip devices are made of ceramic or plastic moulding, please do not subject them to direct shock.

- Set chip device flat onto printed circuit board.
- Do not apply unnecessary stress to the chip device. When soldering two terminals of chip device, soldering is done one by one. Sometimes, when one terminal is soldered, the other unsoldered terminal is slightly lifted. In such case, do not try to push down the lifted terminal using the tip of the soldering iron. In such a case, you may crack the chip device or may break the terminals.

### b. For heat

Do not apply high temperature to chip devices for long periods. Soldering should be done quickly.

c. Soldering

- Chip devices can not withstand rapid heating or cooling. Do not heat the chip itself, heat the terminals of chip devices.
- Solder quickly, excessive soldering time will cause damage to chip device.
- Try to reduce amount of solder when soldering. Amount of solder will effect the strength of the chip bending against the printed circuit board. Refer to amount of solder as shown below.

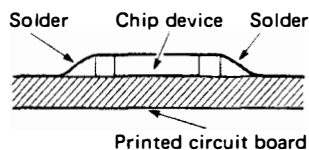


Fig. 7

d. Soldering iron

When soldering chip devices, use the right soldering iron.

- Soldering iron  
Power of soldering iron should be less than 30 watts.  
Diameter of iron chip should be about 2 mm.
- Temperature of iron tip.  
Temperature of soldering iron tip should be less than 536°F. (280°C.)

e. Mounting chip device onto printed circuit board

- Set chip devices as close as possible onto the surface of printed circuit board.  
Do not apply unnecessary pressure to chip devices in order to make it close to the surface of printed circuit board.  
Try to keep distance between chip device and surface of printed circuit board less than 0.5mm.
- Do not connect (solder) wire or terminal of other-parts to terminal of chip device.
- Do not mount chip devices incorrectly, such as (b), (c) and (d).

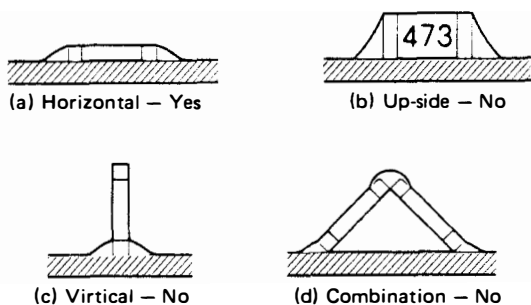


Fig. 8

f. Removal of defective device for repair

When removing chip devices with a forked tip iron, heat the chip device with the fork tip and slide.

When you are going to remove chip devices using regular tip iron, heat two terminals of chip device repeatedly about 2 or 3 times and slide the chip device.

Slide chip device only in the direction specified as shown below.

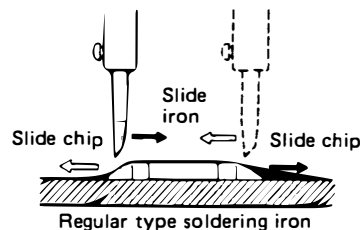


Fig. 9

## ■ DISASSEMBLY PROCEDURES

(Remove parts in disassembly order as numbered.)

### 1. Removal of Top Cover

- Remove 5 screws ( ① ) in Fig. 1, and slide the Top Cover to the back side.

### 2. Removal of Front Panel

- Remove the phones level knob in Fig. 1.
- Remove 6 screws ( ② ) in Fig. 1, and pull the Front Panel forward.

### 3. Removal of Bottom Cover

- Remove 10 screws ( ③ ) in Fig. 1.

### 4. Removal of Disc Tray Ass'y

- Lift Flapper as shown in Fig. 2, and pull Disc Tray Ass'y forward.

The pull off Disc Tray Ass'y by pressing the hook ㉞ in Fig. 3. Now, the jitter can be adjusted.

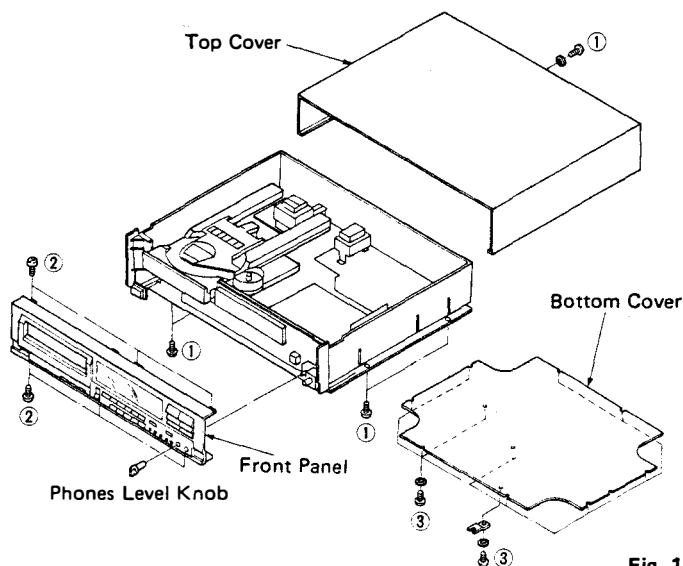


Fig. 1

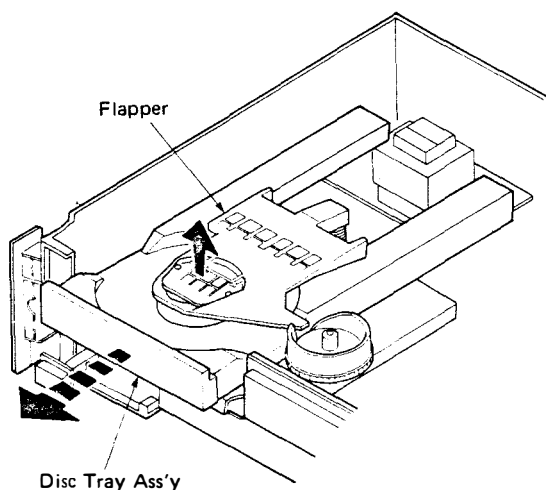


Fig. 2

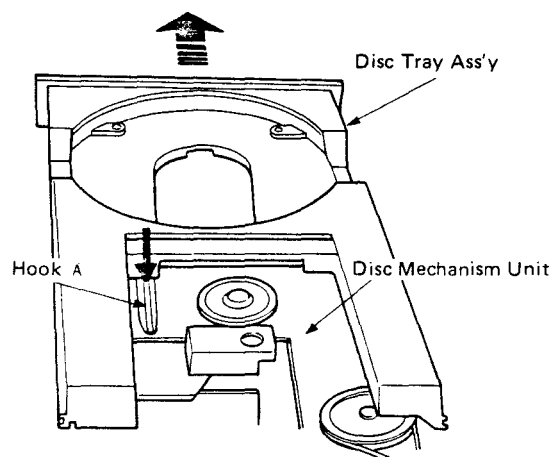


Fig. 3

### 5. Removal of Disc Mechanism Unit

- Remove 2 screws ( ④ ) in Fig. 4.

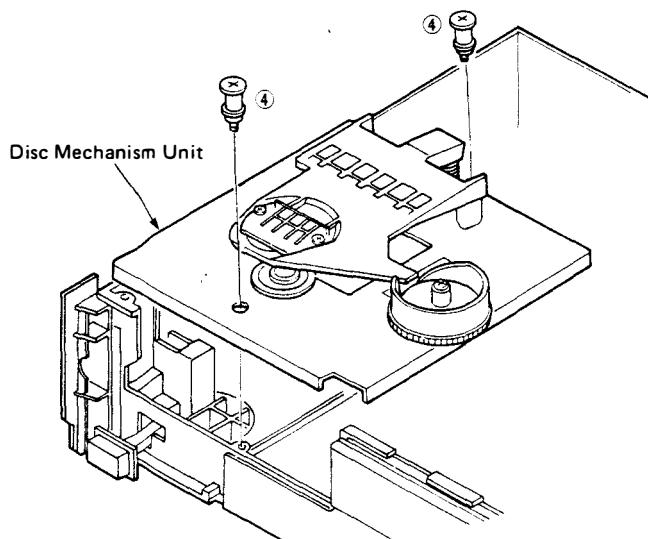


Fig. 4

### 6. Removal of Flapper

- Remove 2 screws ( ⑤ ) fixing Flapper in Fig. 5 and then remove the Flapper.

### 7. Removal of Cam

- Remove screw ( ⑥ ) in Fig. 5 and then pull up the Cam.

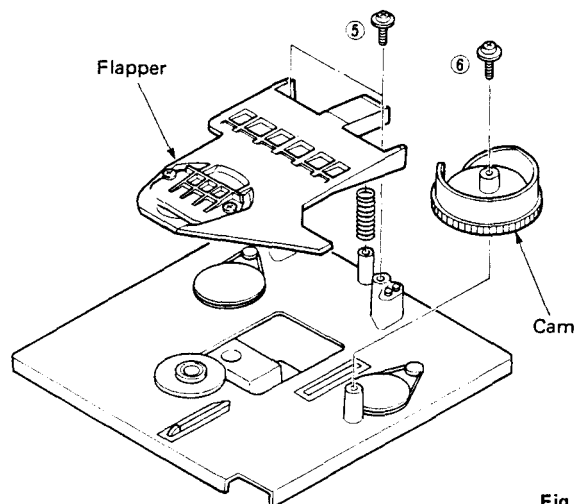


Fig. 5

# ADJUSTMENTS

## Necessary items

### Measuring instruments

Oscilloscope : x 2  
(At least one shall have a bandwidth of 50 MHz or more)

Audio frequency oscillator (A.F. OSC) : x 1

Laser power meter : x 1

(LEADER LPM-8000 (P/N TX915140) or equivalent)

AC voltmeter (ACVM) : x 2

(One dual channel or two single channel meters)

DC voltmeter (DCVM) : x 1

Frequency counter (FC) : x 1

### Jigs

Test disc : x 1

(YEDS-18 P/N TX911730 or

YEDS-7 P/N TX911320)

Filter (See Fig. A) : x 1

Shorting cord : x 1 (Step 3)

DG-1 Special tool (P/N TX901060) : x 1 (Step 5)

### Tools

⊕ Screwdriver : x 1

(For-Pre-Set Potentiometer adjustment)

Core screwdriver : x 1 (Step 3)

⊖ Screwdriver (MLP-5) : x 1 (Step 5)

## Precautions or Special Notes

1. Measure the output level at the output terminal of the AF oscillator.
2. When disc tray has been removed from the mechanism, make sure the position of the loading cam and the leaf switch are correct.
3. The unit should always be in a horizontal position while performing adjustments.

## Adjustment jig (with internal filter)

Connect the filter in Fig. A before measurement.

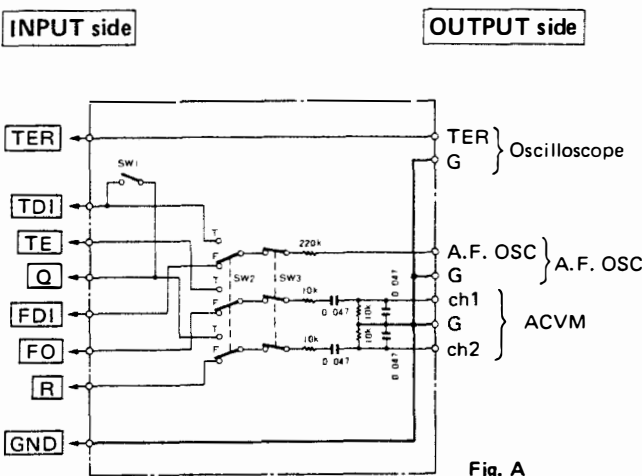
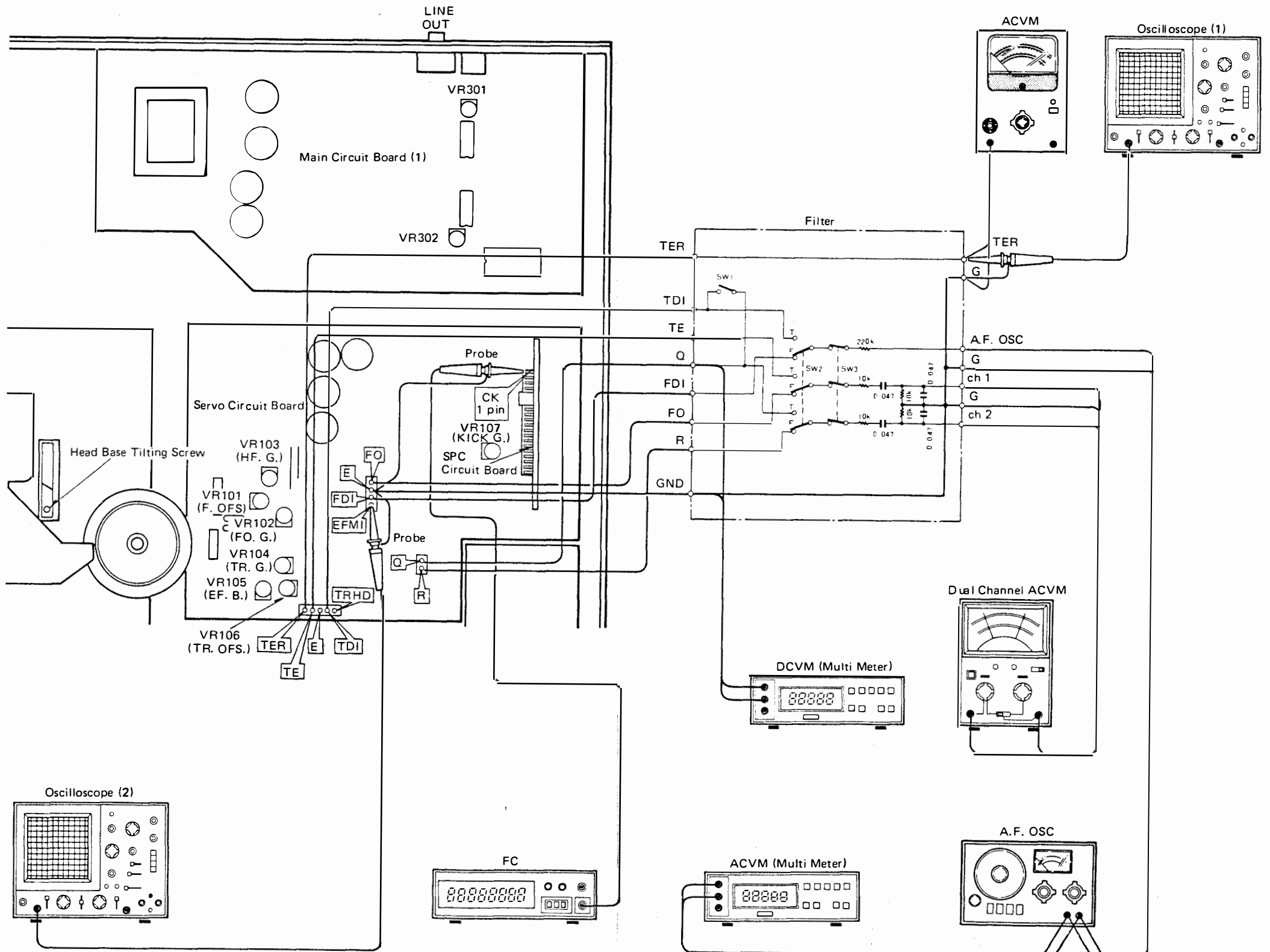


Fig. A

SW1: For diffraction grating and EF balance adjustments  
SW2: FOCUS gain and TRACKING gain switching  
SW3: Filter ON/OFF switch

## Test Point



★Carry out following adjustments in order as numbered.

- Step 1. Confirmation of Laser Output.  
 Step 2. Confirmation of Focus Actuator Operation.  
 Step 3. Adjustment of VCO.  
 Step 4. Adjustment of Diffraction Grating  
 Step 5. Adjustment of Jitter and Focus Offset.  
 Step 6. Adjustment of EF Balance.  
 Step 7. Adjustment of HF Level.

- Step 8. Adjustment of Focus Gain.  
 Step 9. Adjustment of Tracking Gain.  
 Step 10. Adjustment of Tracking Offset.  
 Step 11. Confirmation of Jitter.  
 Step 12. Adjustment of Kick Gain.  
 Step 13. Confirmation of Search Operation.  
 Step 14. Adjustment of D/A Offset

Confirmation of Laser Output (Step 1)

- ① Do not load the disc.
- ② Remove the disc tray.
- ③ Remove the flapper.
- ④ Apply the laser power meter's sensor to the pick-up head as shown in Fig. B.
- ⑤ Press POWER key. (POWER ON)
- ⑥ Measure the laser output during the 5 seconds of FOCUS search mode.

Rating: Laser output = 0.12 mW to 0.36 mW (DG-1)  
 = 0.1 mW to 0.5 mW (MLP-7)

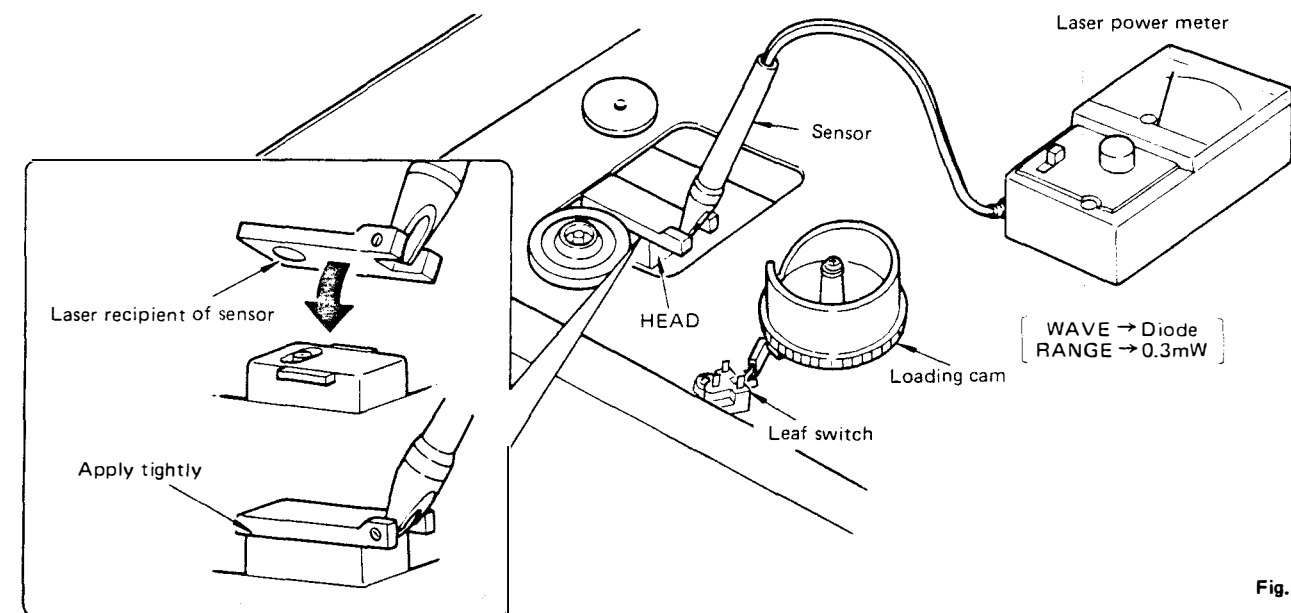


Fig. B

Precautions in handling pick-up head

- (1) No soldering necessary for the unit.
- (2) Since laser light is near-infrared, visual confirmation is difficult. While light is emitted, for safety make sure your eyes are at least 30 cm away from the objective lens.
- (3) Do not disassemble it.
- (4) Do not drop or apply shock to it.
- (5) Do not leave it under high temperature or humidity.
- (6) Do not touch the objective lens. Should there be dirt on the lens, clean using a blower for cameras.

Confirmation of Focus Actuator Operation (Step 2)

Oscilloscope (1) setting

- DC coupling
- 1V/div range (Vertical)  
 (0.1V/div when 10:1 probe is used)
- 0.5 sec/div or 1 msec/div time (Horizontal)

- ① Do not load a disc.
- ② Connect the oscilloscope (1) to **R** and **GND** terminals on the input side of the filter.
- ③ Press POWER key. (POWER ON)
- ④ After confirming that loading cam position is correct press OPEN/CLOSE key for CLOSE operation.
- ⑤ During 5 seconds of FOCUS search, confirm that the waveform is as shown in Fig. C.
- ⑥ Confirm that the pick-up head's objective lens moves smoothly between the lowest and highest points.

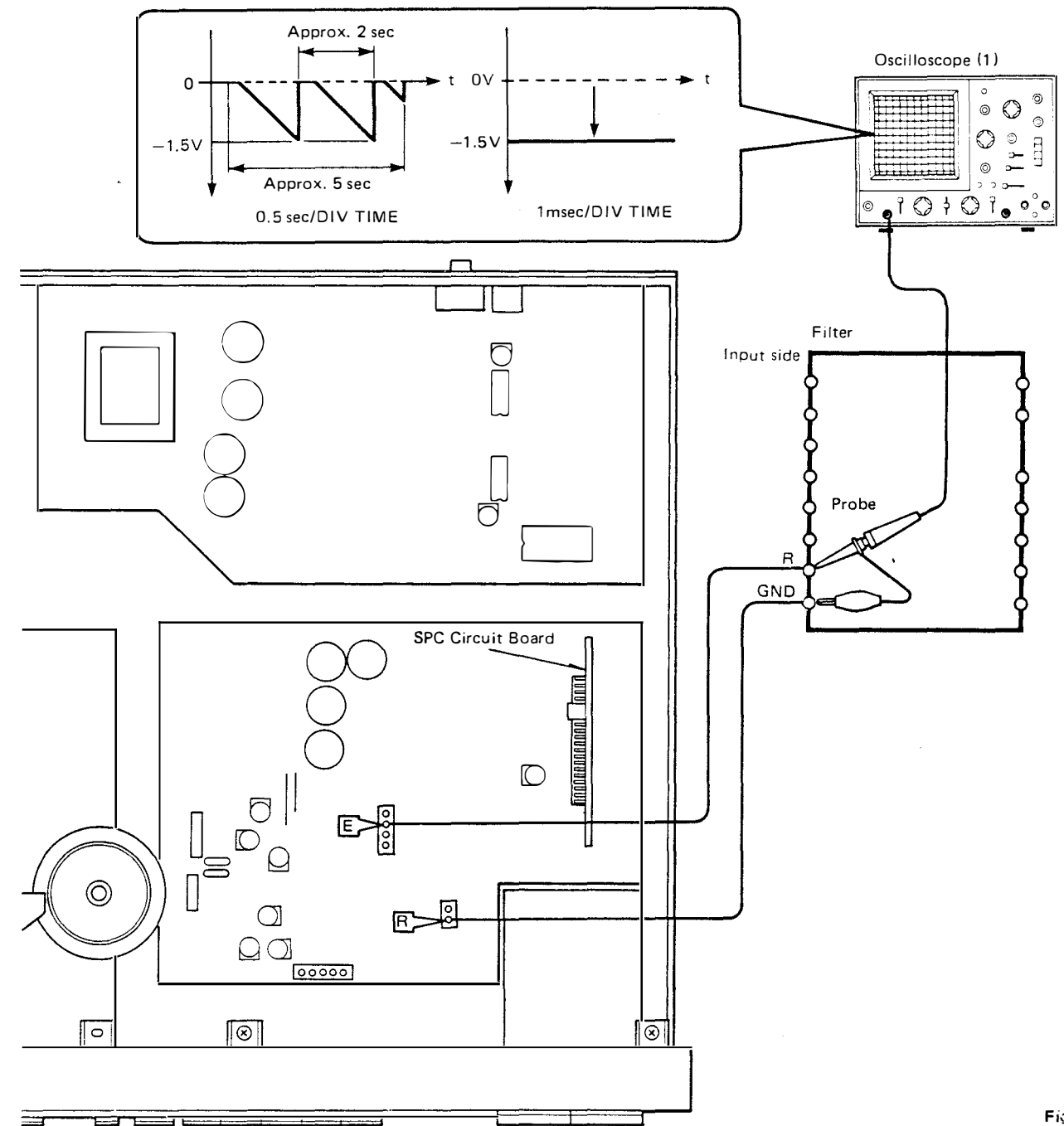


Fig. C

### Adjustment of VCO (Step 3)

- ① Connect the shorting cord and measuring instruments, as shown in Fig. D.
- ② Do not load a disc.
- ③ Press POWER key. (POWER ON)

- ④ While observing the frequency counter indication (FVCO), adjust L501 so that it satisfies the rating.  
Rating:  $F_{VCO} = 4.3218 \text{ MHz} \pm 10 \text{ kHz}$

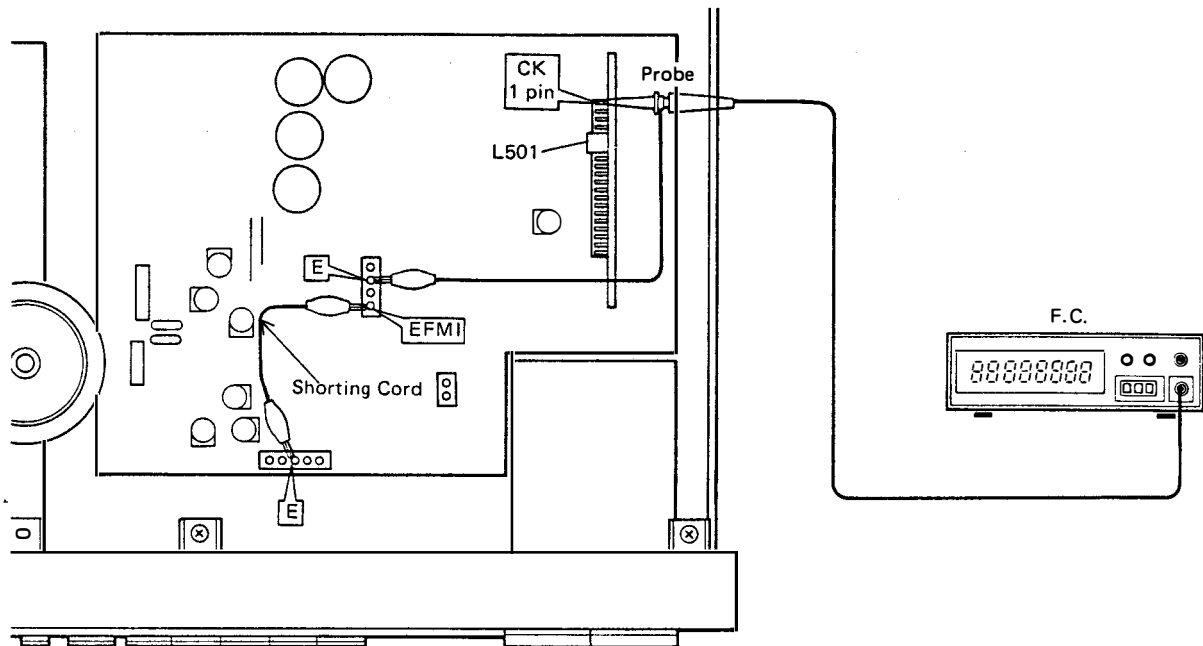


Fig. D

### Adjustment of Diffraction Grating (Step 4)

\* This adjustment requires use of 2 oscilloscopes.

\* Power should not be turned OFF during steps ② through ⑨

#### Oscilloscope (1) setting conditions

- DC coupling
- 0.1V/div range (Vertical)  
(10mV/div when 10:1 probe is used)
- 20 msec/div time (Horizontal)

- ① Connect the filter and measuring instruments, as shown in Fig. E.
  - 1) Connect oscilloscope (1) to the Servo PCB **TER** terminal.
  - 2) Connect oscilloscope (2) to the **EFMI** terminal.
- ② Press POWER key. (POWER ON)
- ③ Load Philips test disc. (Have lead-in data read.)
- ④ Press PLAY key.
- ⑤ Set SW1 in the filter to ON.  
(Short-circuit **TDI** terminal and **Q** terminal: TRACKING SERVO to open)
- ⑥ Observe waveform on oscilloscope (1).
- ⑦ Adjust diffraction grating for maximum signal amplitude **TER** at oscilloscope (1).

Rating:  $E_{TER} \geq 200 \text{ mVp-p}$

- \* When disc has stopped rotating, press PLAY key again and make adjustment.
- \* Adjust at the inner circumference of the disc.

#### Oscilloscope (2) setting conditions

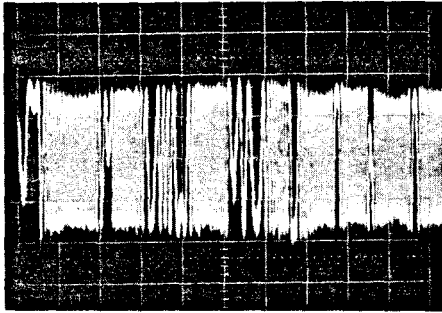
- AC coupling
- 0.5V/div range (Vertical)  
(50 mV/div when 10:1 probe is used)
- 0.2 ~ 0.5  $\mu\text{sec/div}$  time (Horizontal)

\* Oscilloscope (2), should have frequency response of 50MHz or greater.

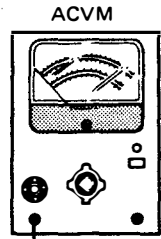
- ⑧ Set SW1 of the filter to OFF.  
(Open the **TDI** and **Q** terminals: TRACKING SERVO  $\rightarrow$  closed)
- ⑨ Confirm that **EFMI** (eye-pattern) signal appears on oscilloscope (2).  
\* Set to the point where **TER** signal amplitude is maximum and **EFMI** (eye-pattern) signal can be observed finely and clearly.

# Oscilloscope (1)

"DC0V" ▶



TER signal amplitude in this state is 400mVp-p.



Filter

TER

TDI

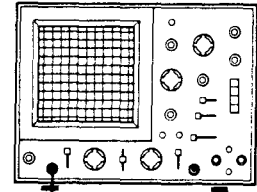
Q

GND

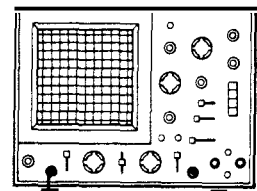


Probe

Oscilloscope (1)



Oscilloscope (2)



VR105  
(EF. B.)

E

EFMI

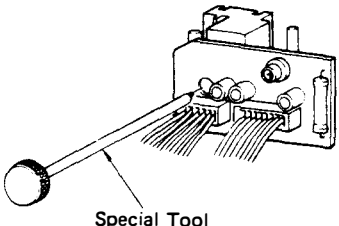
Q

TER

E

TDI

Optical Pick Up Head  
(DG-1)



Optical Pick Up Head (MLP-7)

Diffraction Grating

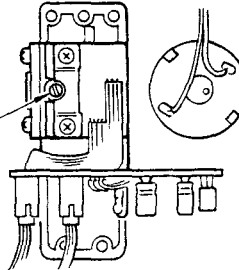
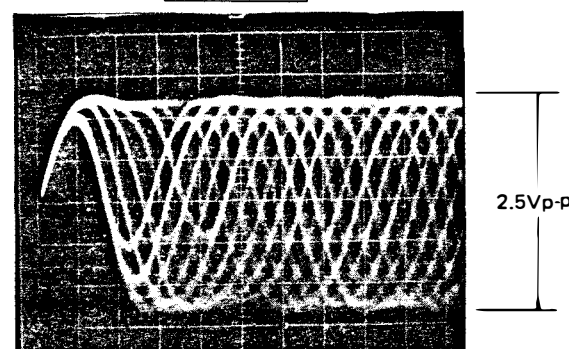


Fig. E

## Oscilloscope (2)

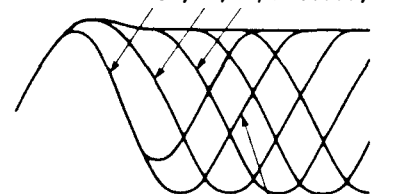
Eye pattern



0.5  $\mu$ sec/div time (Horizontal)  
0.5V/div (Vertical)

## Waveforms 3T – 11T.

3T, 4T, 5T, 6T, ..., 11T



This portion is referred to as the eye pattern.

The abnormal eye pattern has less distinct lines and smaller amplitude than that of the good waveform.

Good waveform



Abnormal waveform



Adjust so that the good waveform is obtained.

## Special tool for DG-1 (TX901060)

### • DG-1

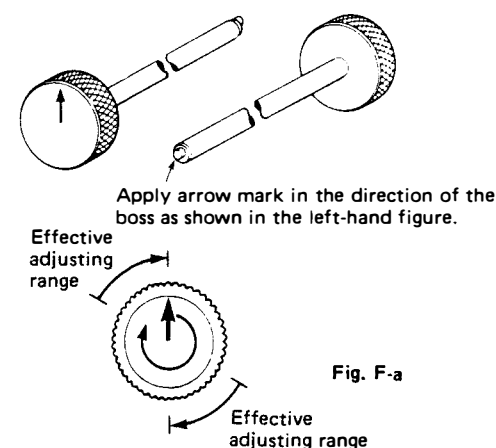
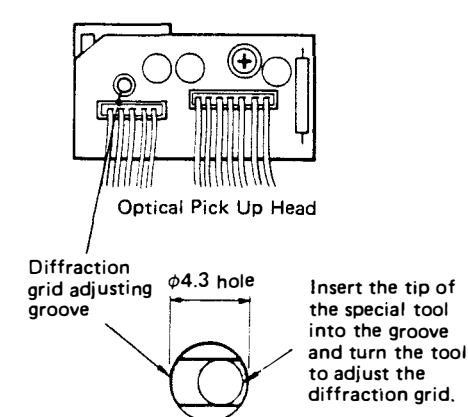
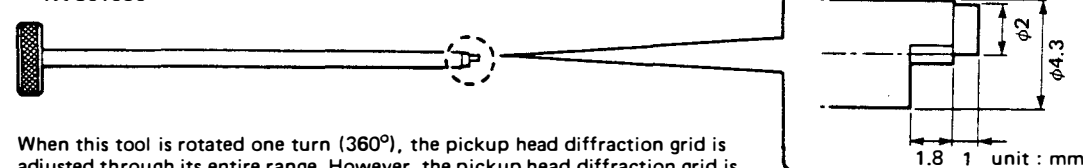


Fig. F-a

### • TX-901060



## Adjustment of Jitter and Focus Offset (Step 5)

### Oscilloscope (2) Settings

- AC coupling
- 0.5 V/div range (Vertical)  
(50 mV/div when 10:1 probe is used)
- 0.2 ~ 0.5  $\mu$ sec/div time (Horizontal)

- ① Remove the disc tray.
- ② Connect oscilloscope (2) to EFMI terminal, as shown in Fig. F.
- ③ Press POWER key. (POWER ON)
- ④ Load the specified disc (35DH5 or Philips test disc).
- ⑤ Confirm that the loading cam position is correct and press OPEN/CLOSE key for CLOSE operation.

- ⑥ Press PLAY key.

- ⑦ Adjust the head base tilting screw so that the EFMI signal (eye-pattern) waveform is distinct and clear.  
\* Adjust at the center of the disc.

- ⑧ Adjust VR101 (FOCUS OFFSET) so that the EFMI (eye-pattern) signal waveform is distinct and clear.  
\* Adjust VR101 within  $\pm 45^\circ$ .

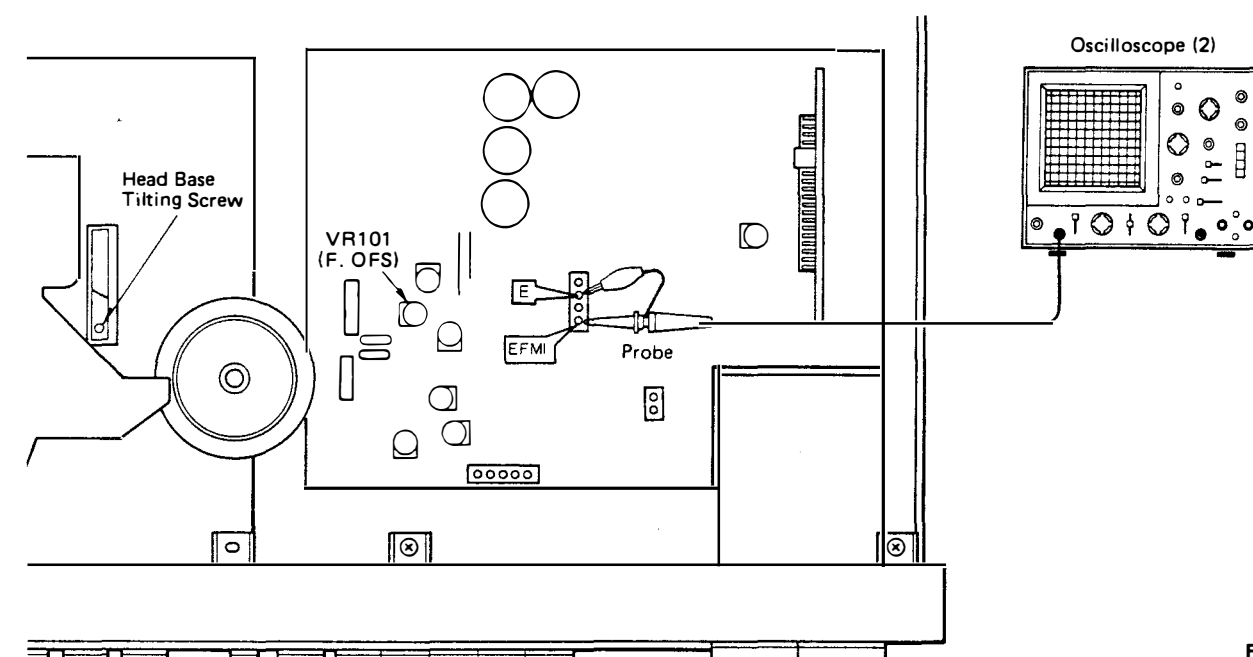
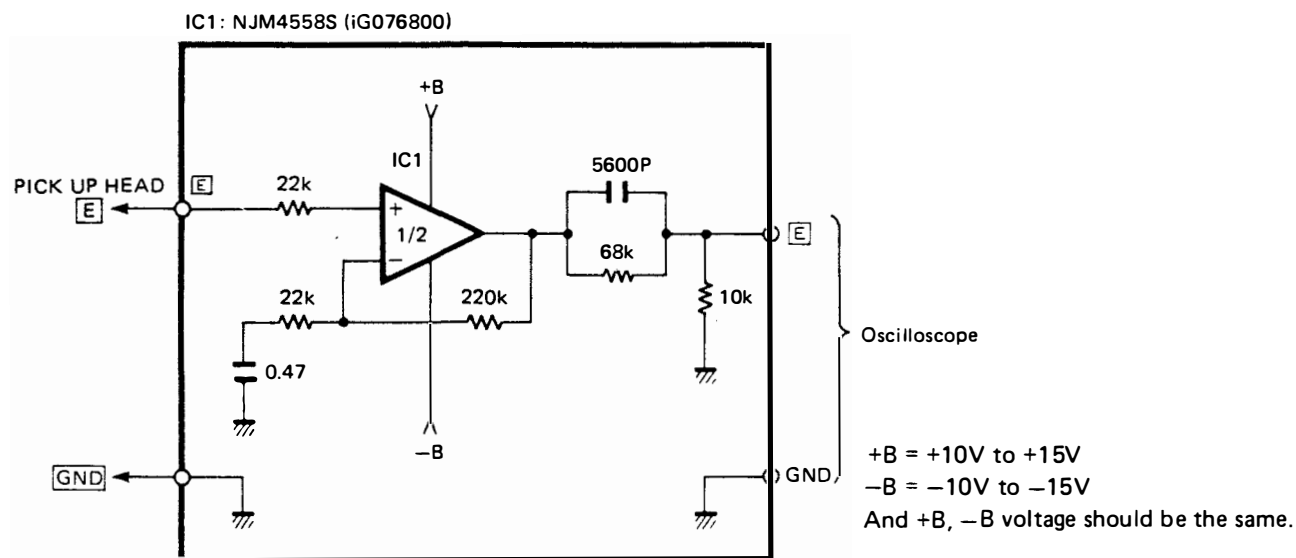


Fig. F

## • SUPPLEMENT

For adjustment by Lissajous's figure use the following adjustment instrument (buffer amplifier).



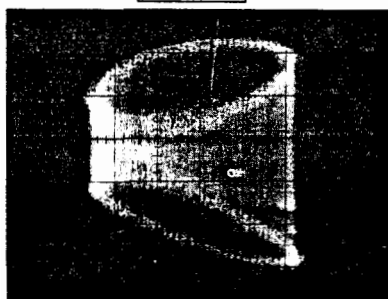
\*The buffer amplifier is used only for this adjustment.  
Don't leave it connected in other adjustments.

### Oscilloscope (1) settings

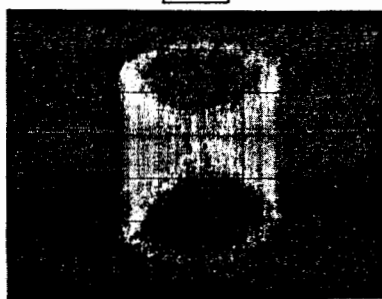
- DC coupling
- X input → **E** signal: 50mV/div  
(5mV/div when 10:1 probe is used)
- Y input → **EFMI** signal: 500mV/div  
(50mV/div is when 10:1 probe is used)
- MODE → X-Y

- ① Connect the adjusting instrument and measuring instrument.
- ② Apply **E** signal and **EFMI** signal to the X, Y inputs of the oscilloscope respectively.
- ③ Set the mode to X-Y and observe Lissajous's figure. Make the lower ellipse horizontal.

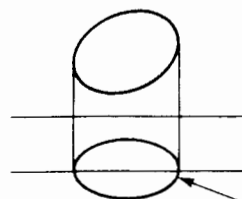
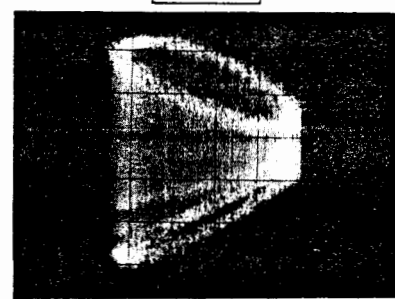
**Incorrect**



**Good**



**Incorrect**



Make the lower ellipse horizontal.

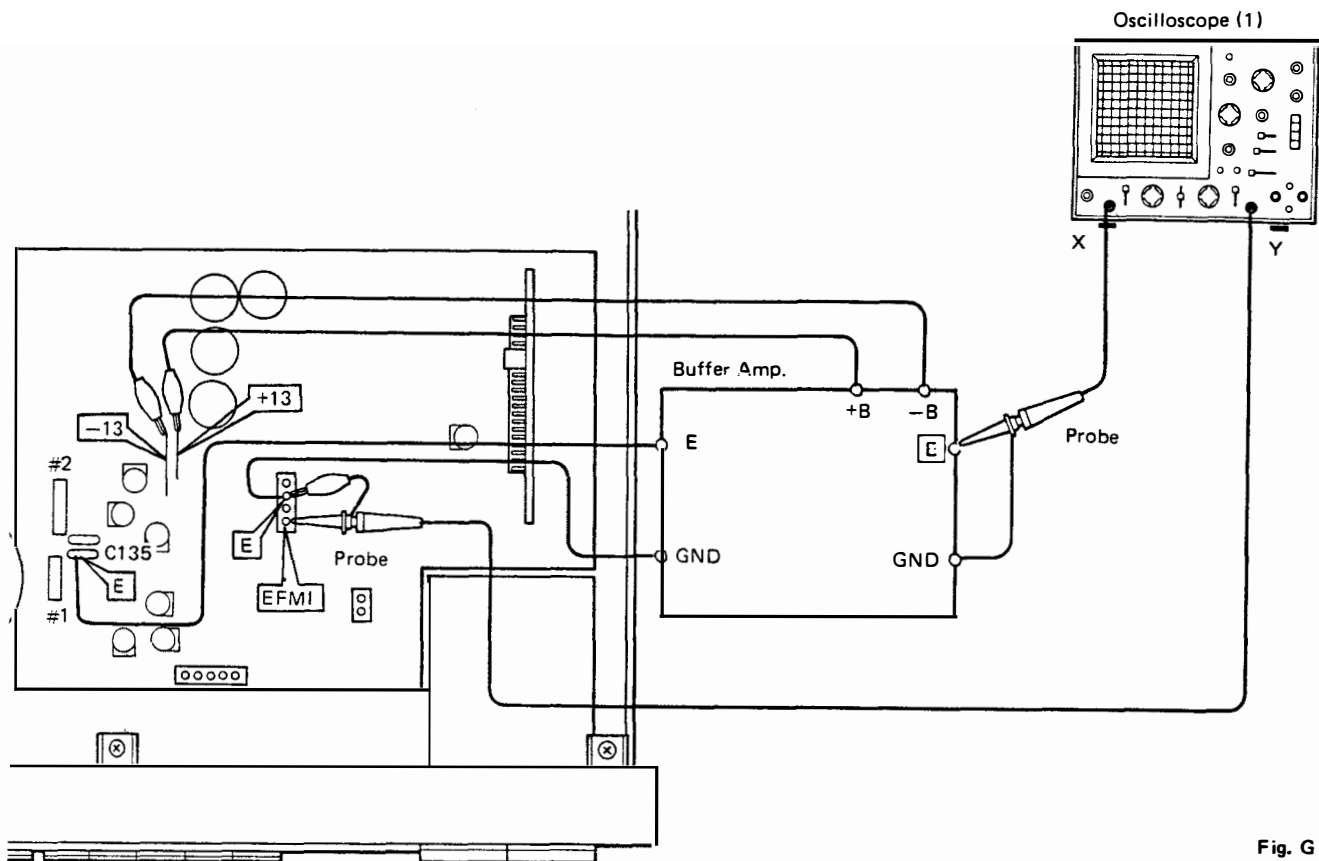


Fig. G

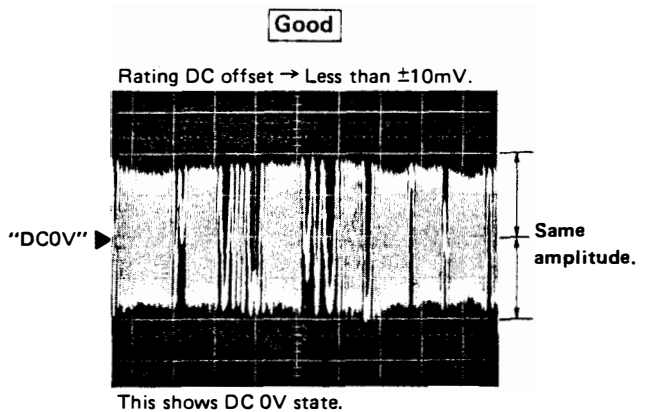
### Adjustment of EF Balance (Step 6)

- \* Power should not be turned OFF during steps ② through ⑦

#### Oscilloscope (1) settings

- DC coupling
- 0.1 V/div range (Vertical)  
(10mV/div when 10:1 probe is used)
- 20 msec/div time (Horizontal)

- ① Connect the filter and measuring instruments as in Step 4.
  - ② Press POWER key. (POWER ON)
  - ③ Load Philips test disc. (Have lead-in data read.)
  - ④ Press PLAY key then Pause.
  - ⑤ Set SW1 in the filter to ON.  
(Short **TDI** terminal to **Q** terminal: TRACKING SERVO is OPEN)
  - ⑥ Observe the waveform on oscilloscope (1).
  - ⑦ Adjust VR105 (EF BALANCE) so that the amplitude of **TER** signal becomes equal above and below DC 0V position.
- \* Adjust at the inner circumference of the disc.



### Adjustment of HF Level (Step 7)

#### Oscilloscope (2) setting

- AC coupling
- 0.5 V/div range (Vertical)  
(50 mV/div when 10:1 probe is used)
- 0.2 ~ 0.5  $\mu$ sec/div time (Horizontal)

- ① Connect oscilloscope (2) to **EFMI** terminal, as shown in Fig. H.
- ② Press POWER key. (POWER ON)
- ③ Load Philips test disc.
- ④ Press PLAY key.
- ⑤ Adjust VR103 (HF-GAIN) so that the **EFMI** signal waveform is 2.5Vp-p.  
\* Adjust at the center of the disc.

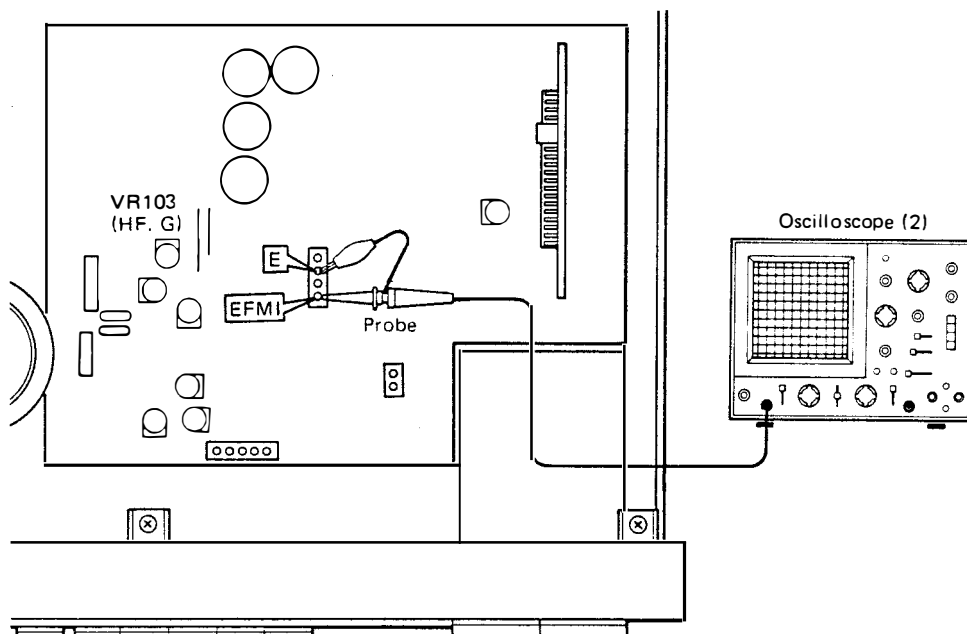


Fig. H

### Adjustment of Focus Gain (Step 8)

\* This confirmation requires use of two single channel voltmeter or one dual channel AC voltmeter.

- ① Connect the filter and measuring instruments, as shown in Fig. I.  
Apply an 800 Hz, 4.5 Vrms signal from the AF oscillator to **FDI** terminal via the resistor (220 kilohms) in the filter.
- ② Set SW3 to OFF.
- ③ Set SW2 to F (FOCUS).
- ④ Press POWER key. (POWER ON)
- ⑤ Load Philips test disc.
- ⑥ Press PLAY key.

- ⑦ Set SW3 to ON.
- ⑧ Read the indications of the AC voltmeters (CH1:  $E_{FO}$ , CH2:  $E_R$ ), adjust VR102 (FOCUS GAIN) so that they satisfy the rating.

Rating:  $E_{FO} - E_R = 10\text{dB}$

|                          |             |
|--------------------------|-------------|
| Example                  | [0dBV = 1V] |
| $E_{FO} = -16\text{dBV}$ | (160mV)     |
| $E_R = -26\text{dBV}$    | (50mV)      |

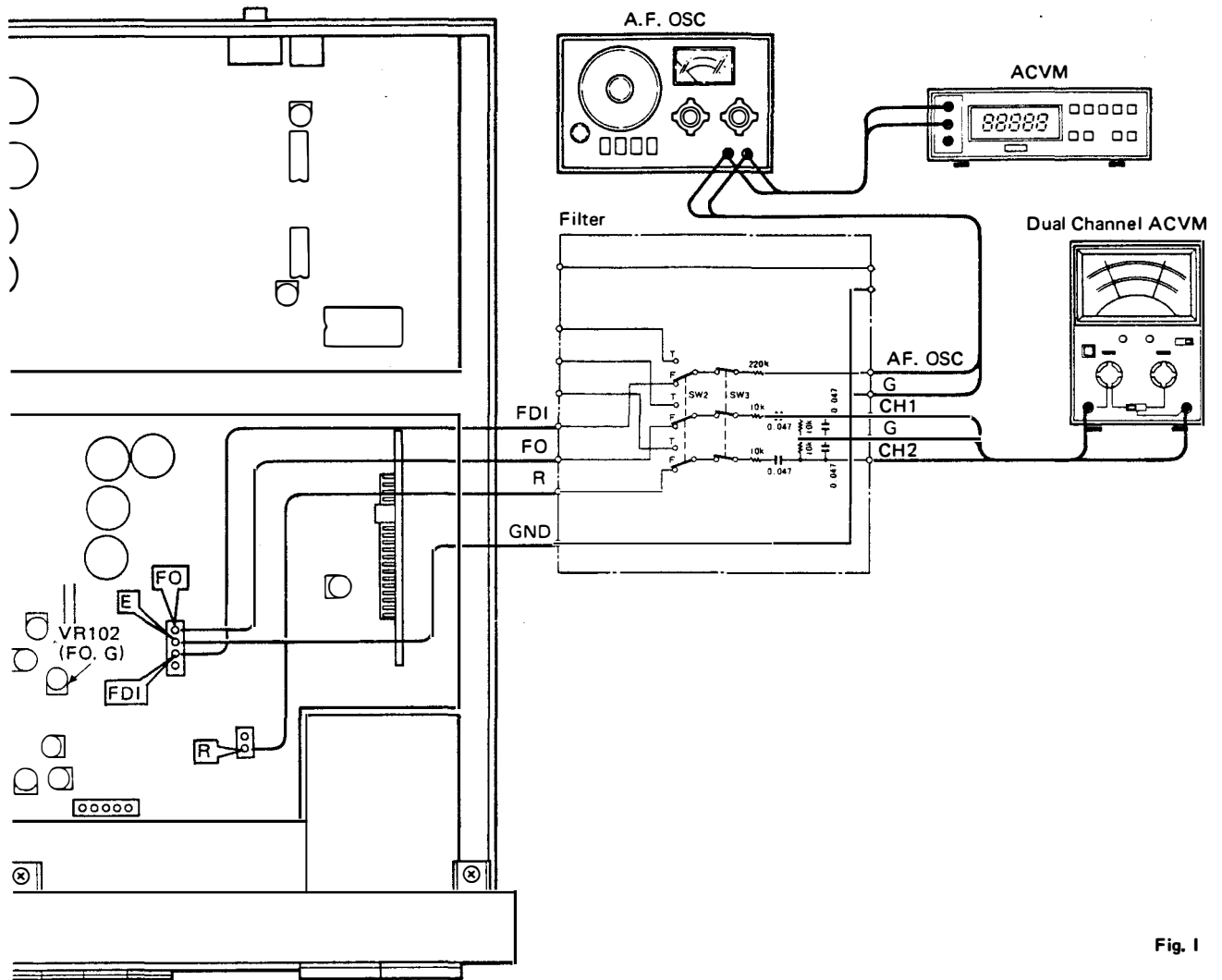


Fig. I

### Adjustment of Tracking Gain (Step 9)

\* This adjustment requires use of two single channel AC voltmeters or one dual channel AC voltmeter.

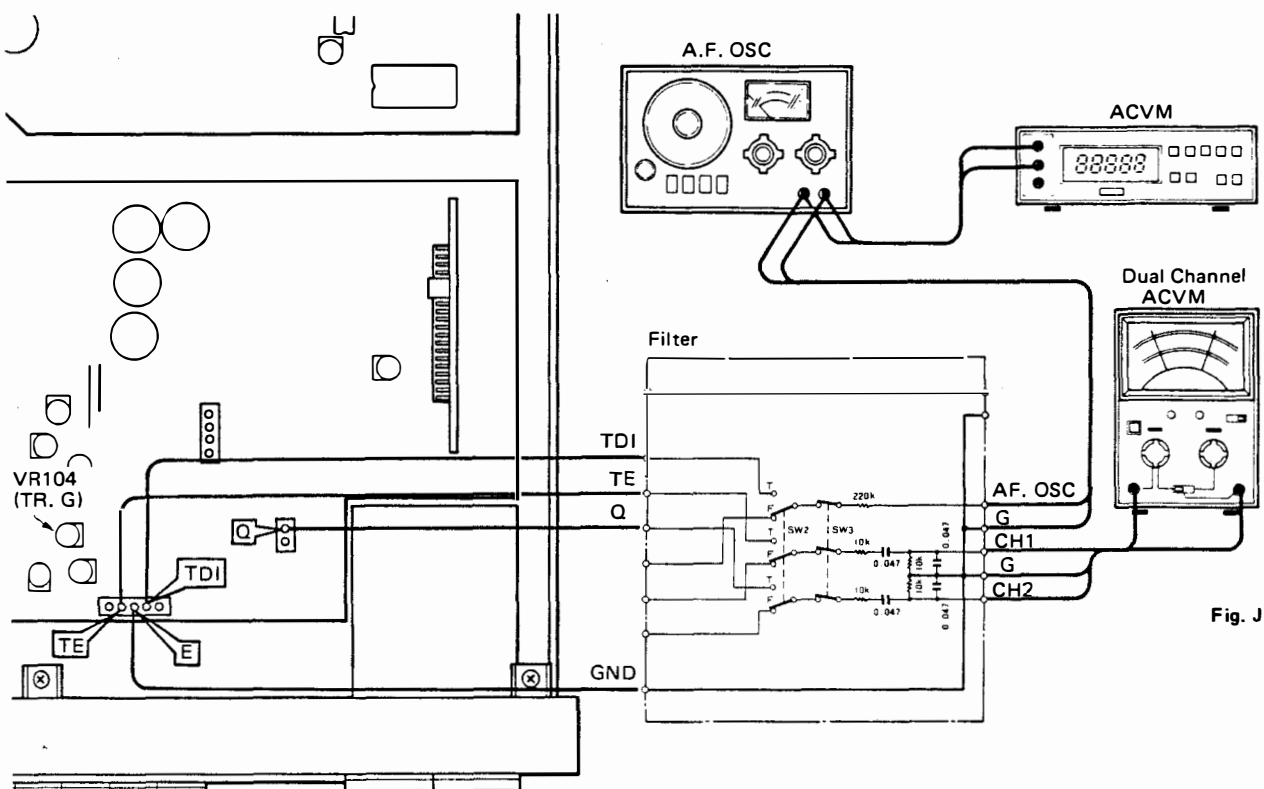
- ① Connect the filter and measuring instruments, as shown in Fig. J.  
Apply a 800 Hz, 100 mVrms signal from the AF oscillator to **TDI** terminal via the resistor (220 kilohms) in the filter.
- ② Set SW3 to OFF.
- ③ Set SW2 to T (TRACKING).
- ④ Press POWER key. (POWER ON)
- ⑤ Load Philips test disc.
- ⑥ Press PLAY key.

⑦ Set SW3 to ON.

⑧ While observing the indications of the AC voltmeters (CH1:  $E_{TE}$ , CH2:  $E_Q$ ), adjust VR104 (TRACKING GAIN) so that they satisfy the rating.

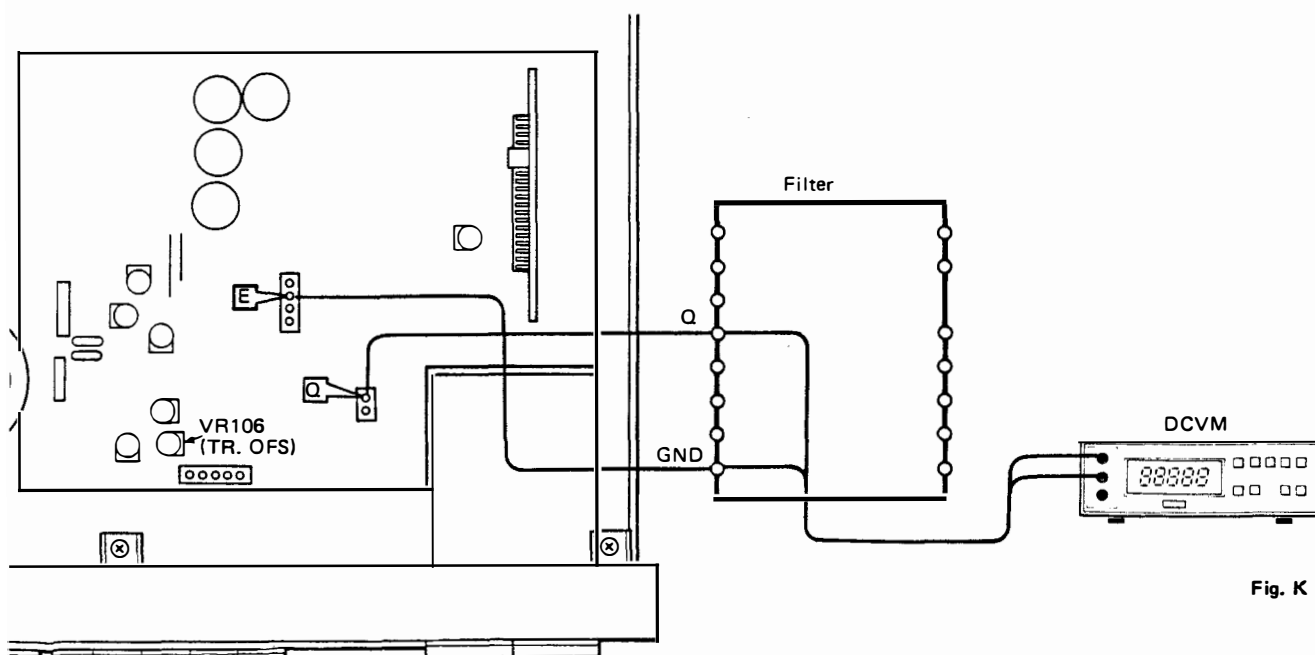
Rating:  $E_{TE} - E_Q = 13\text{dB}$

Example [0dBV = 1V]  
 $E_Q = -30\text{dBV}$  (30mV)  
 $E_{TE} = -17\text{dBV}$  (140mV)



### Adjustment of Tracking Offset (Step 10)

- ① Connect a DC voltmeter to **Q** and **GND** terminals on the Input side of the filter.
- ② Press POWER key. (POWER ON)
- ③ Press STOP key. (STOP mode: Display "0:00")
- ④ While observing the indication ( $E_Q$ ) of the DC voltmeter, adjust VR106 (TRACKING OFFSET) so that it satisfies the rating.  
Rating:  $E_Q = 0 \text{ V DC} \pm 25 \text{ mV DC}$



## Confirmation of Jitter (Step 11)

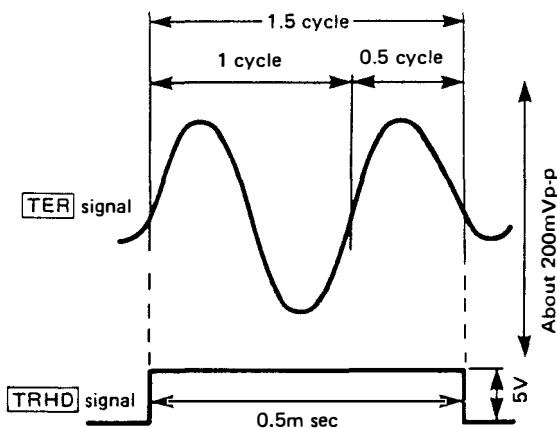
- ① Confirm jitter rating as in ⑦ of Step 4.
- ② When jitter rating is improper, go back to step 4 and also carry out adjustments in steps 5 to 10 again.

## Adjustment of Kick Gain (Step 12)

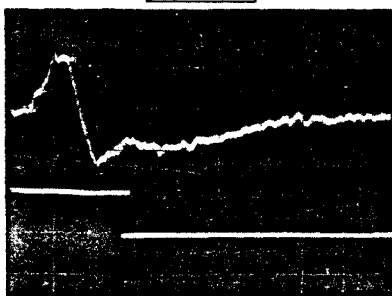
### Oscilloscope (1) (2-ch oscilloscope) Settings

- DC coupling
- CH1 → **TER** terminal: 0.1 V/div (Vertical)  
(10 mV/div when 10:1 probe is used)
- CH2 → **TRHD** terminal: 5 V/div (Vertical)  
(0.5 V/div when 10:1 probe is used)
- TRIGGER MODE: 2 CH
- 0.2 msec/div time (Horizontal)

- ① Connect the filter and measuring instruments, as shown in Fig. L.
- ② Press POWER key. (POWER ON)
- ③ Load Philips test disc.
- ④ Press PLAY key.
- ⑤ Observe waveform while pressing Fast Forward mode key (▶▶) for 3 seconds.
- ⑥ Adjust VR107 (KICK GAIN) so that the **TER** signal cycle is  $1.5 \pm 0.5$  when **TRHD** signal level is High.  
\* Adjust at the inner circumference of the disc.
- ⑦ Press Reverse mode key (◀◀) for 3 seconds and confirm that **TER** signal cycle is within the above specification but in reverse phase.

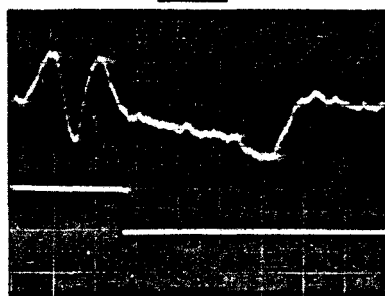


**Incorrect**



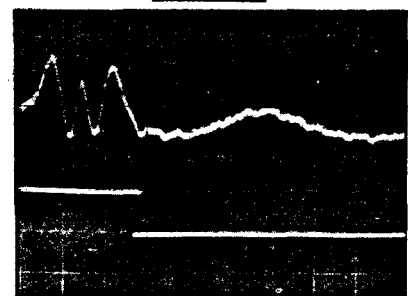
This shows about 0.9 cycle which is incorrect

**Good**

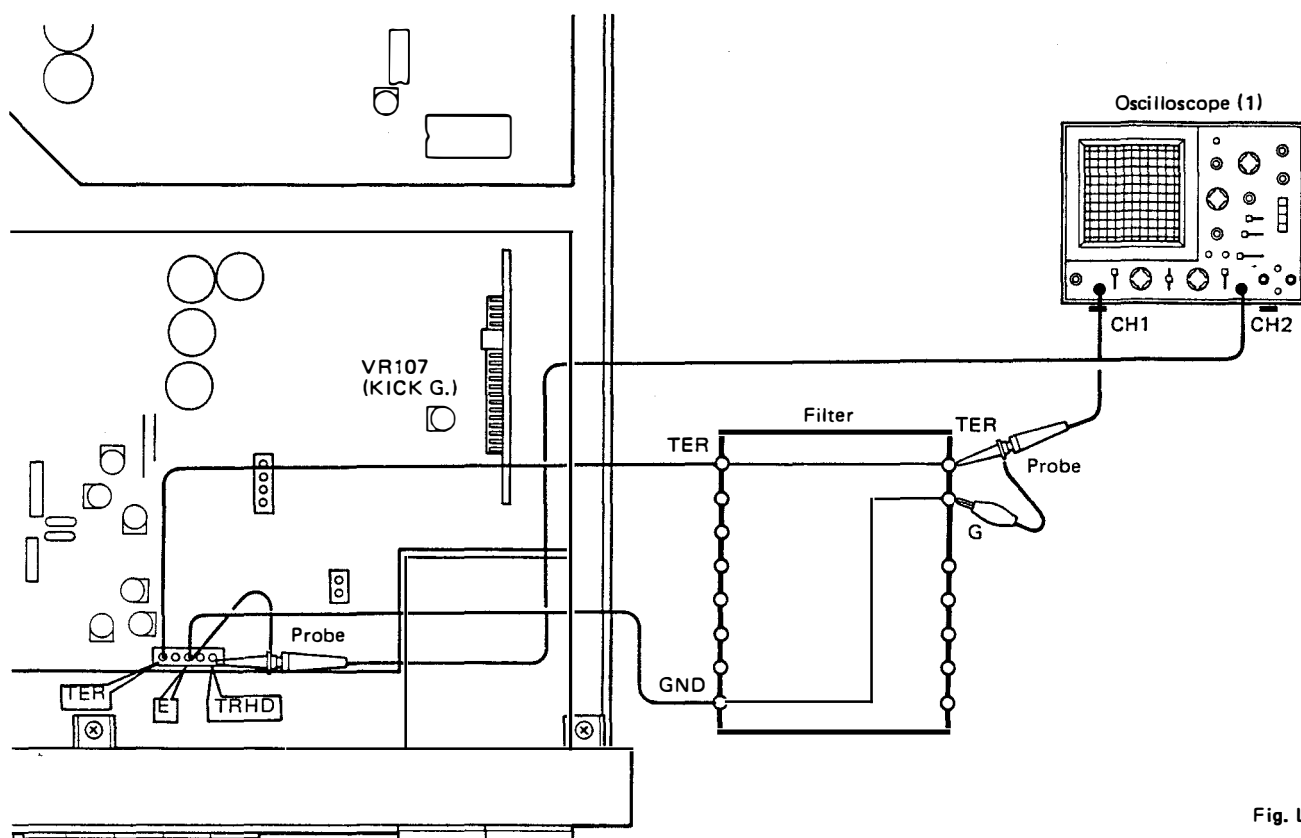


This shows about 1.7 cycle which is within specification.

**Incorrect**



This shows about 2.5 cycle which is incorrect

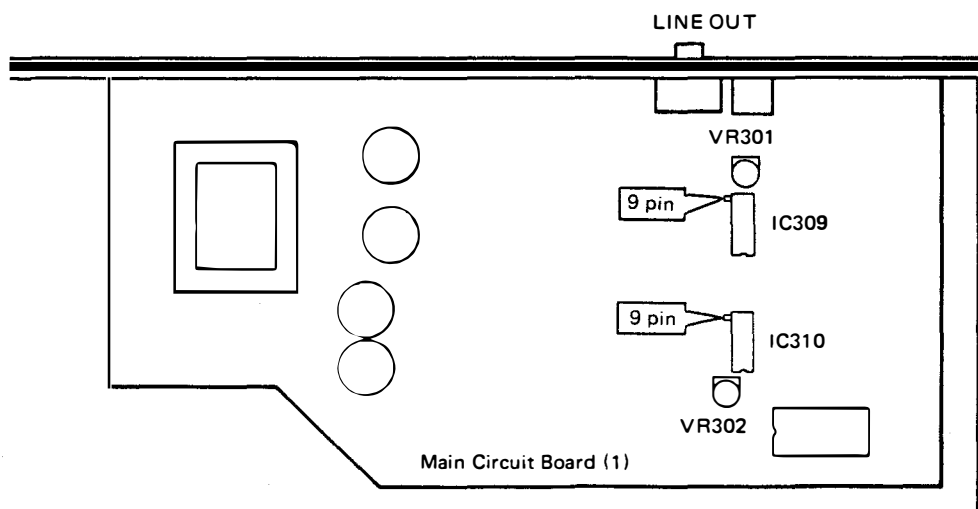


Confirmation of Search ( ◀ , ▶ )  
Operation (Step 13)

- ① Load Philips test disc and press PLAY key.
- ② Press Fast Forward mode key ( ►► ) and confirm that the displayed time (ELAPSED TIME) advances smoothly.
- ③ Press Reverse mode key ( ◀◀ ) and confirm as in step ②.

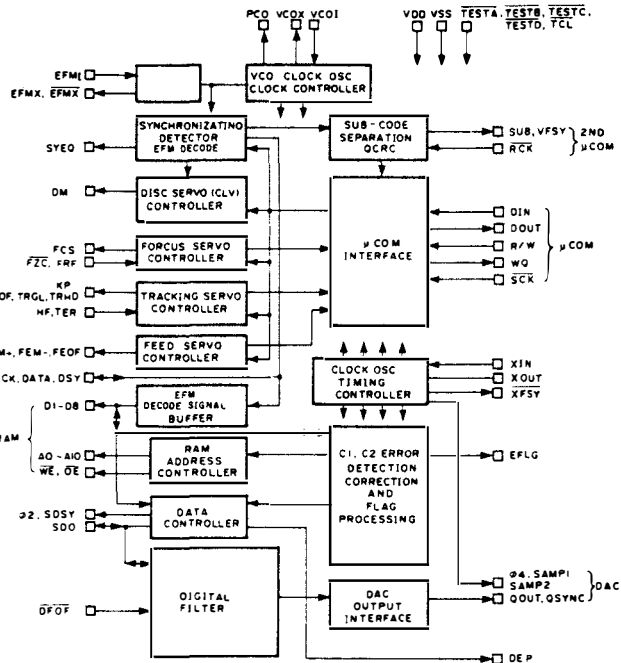
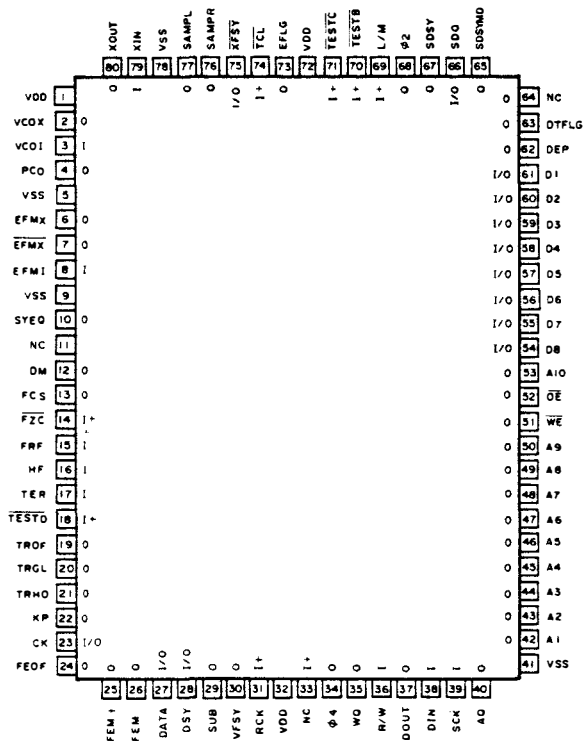
### Adjustment of D/A Offset (Step 14)

- ① Connect a DC voltmeter to DAC output and GND terminals.  
DAC output terminal  
Lch: IC309, 9 pin or 10 pin  
Rch: IC310, 9 pin or 10 pin
- ② Press POWER key. (POWER ON)
- ③ Load Philips test disc.
- ④ Press PLAY key.
- ⑤ While observing the DAC output terminals of the DC voltmeter, adjust VR301 (Lch) and VR302 (Rch) so that it satisfies the rating.  
Rating: DAC output = 0V DC  $\pm$  1mV DC



IC501: YM3816 Signal Processor & Controller for Compact Disc Player (SPC)

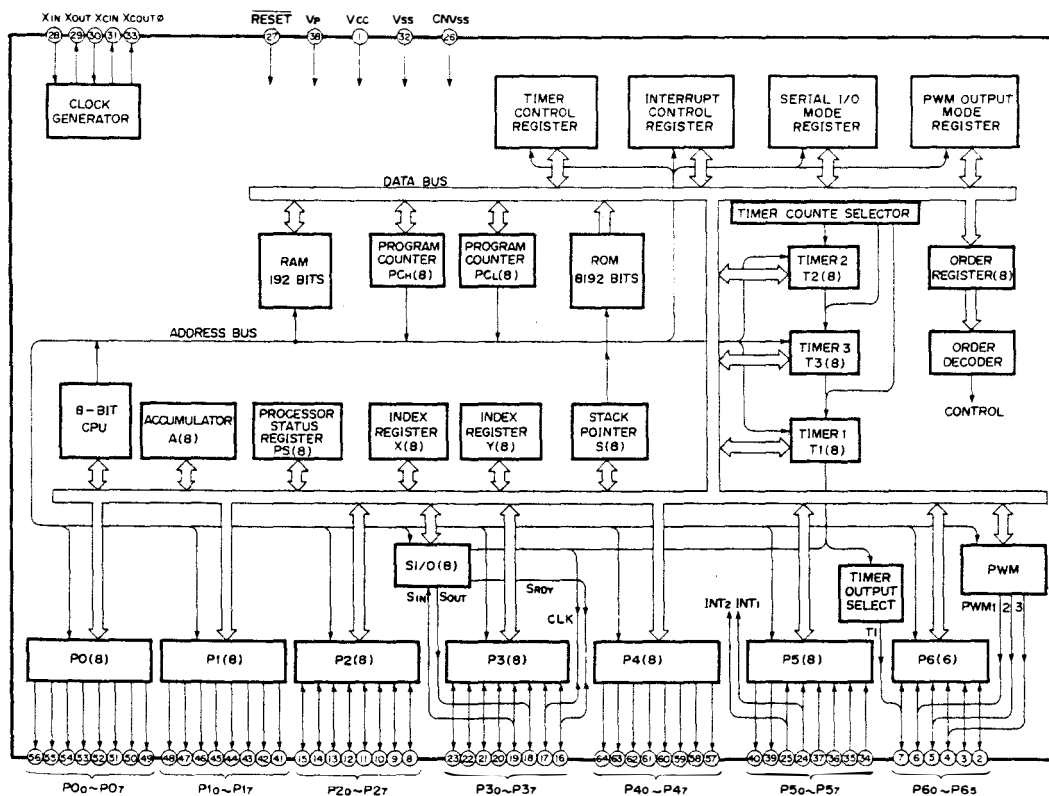
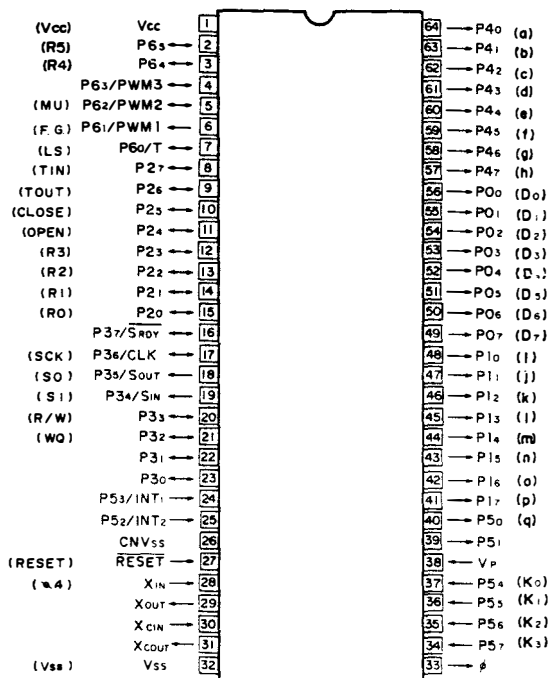
YM-3816 is a CMOS LSI for signal processing and servo control of the compact disc player. It executes such signal processing as demodulation of the EFM signal from the optical pick-up, detection and correction of the erroneous signal and digital filtering which helps to improve the sound quality, as well as such intelligent servo controlling as focus, disc, tracking and feeding.



| Pin No. | Pin Name | I/O | Function                                                                  |
|---------|----------|-----|---------------------------------------------------------------------------|
| 1       | VDD      |     | Power Supply                                                              |
| 2       | VCOX     | O   | Clock Playback Circuit 4PCO                                               |
| 3       | VCOI     | I   |                                                                           |
| 4       | PCO      | O   | GND                                                                       |
| 5       | VSS      |     |                                                                           |
| 6       | EFMX     | O   | EFM Signal External Circuit                                               |
| 7       | EFMX     | O   |                                                                           |
| 8       | EFMI     | I   | GND                                                                       |
| 9       | VSS      |     |                                                                           |
| 10      | SYEQ     | O   | Synchronized Uniform Signal                                               |
| 11      | N.C.     |     | Not Use                                                                   |
| 12      | DM       | O   | Disc Servo { LOW (0V): FORWARD<br>OPEN (2.5V): STOP<br>HIGH (5V): REVERSE |
| 13      | FCS      | O   | Focus Servo System Input                                                  |
| 14      | FZC      | I   |                                                                           |
| 15      | FRF      | I   | Tracking Servo System Input                                               |
| 16      | HF       | I   |                                                                           |
| 17      | TER      | I   |                                                                           |
| 19      | TROF     | O   |                                                                           |
| 20      | TRGL     | O   |                                                                           |
| 21      | TRHD     | O   | { LOW (0V): REW<br>OPEN (2.5V): STOP<br>HIGH (5V): FF                     |
| 22      | KP       | O   |                                                                           |

| Pin No. | Pin Name        | I/O | Function                                               |
|---------|-----------------|-----|--------------------------------------------------------|
| 23      | CK              |     | EFM Demodulated Signal Check Output (4.3218MHz, clock) |
| 24      | FEOF            | O   | Feed Servo System                                      |
| 25      | FEM+            | O   |                                                        |
| 26      | FEM-            | O   |                                                        |
| 23      | CK              | I/O | EFM Demodulated Signal Check Output (4.3218MHz clock)  |
| 27      | DATA            | I/O |                                                        |
| 28      | DSY             | I/O |                                                        |
| 29      | SUB             | O   | Sub-code Output                                        |
| 30      | VFSY            | O   |                                                        |
| 31      | RCK             | I   |                                                        |
| 32      | VDD             |     | Power Supply                                           |
| 33      | NC              | I   | Not Use                                                |
| 34      | $\phi 4$        |     | 4.3218 MHz Clock                                       |
| 35      | WQ              | O   | Q Code Output System                                   |
| 37      | DOUT            | O   |                                                        |
| 36      | R/W             | I   |                                                        |
| 39      | SCK             | I   |                                                        |
| 38      | DIN             | I   |                                                        |
| 41      | VSS             |     | GND                                                    |
| 40      | A0              | O   | RAM Connections                                        |
| 42      | A1              | O   |                                                        |
| 43      | A2              | O   |                                                        |
| 44      | A3              | O   |                                                        |
| 45      | A4              | O   |                                                        |
| 46      | A5              | O   |                                                        |
| 47      | A6              | O   |                                                        |
| 48      | A7              | O   |                                                        |
| 49      | A8              | O   |                                                        |
| 50      | A9              | O   |                                                        |
| 51      | WE              | O   |                                                        |
| 52      | $\overline{OE}$ | O   |                                                        |
| 53      | A10             | O   |                                                        |
| 54      | D8              | I O |                                                        |
| 55      | D7              | I O |                                                        |
| 56      | D6              | I O |                                                        |
| 57      | D5              | I O |                                                        |
| 58      | D4              | I O |                                                        |
| 59      | D3              | I O |                                                        |
| 60      | D2              | I O |                                                        |
| 61      | D1              | I O |                                                        |
| 62      | DEP             | O   | Deemphasis Signal                                      |
| 63      | DTFLG           | O   | Data Error Signal                                      |
| 66      | SDO             | O   | Digital Data Output                                    |
| 67      | SDSY            | O   | LSB first/MSB first                                    |
| 68      | $\phi 2$        | O   | 2.1659MHz Clock                                        |
| 69      | L/M             | I   | SB first (H)/MSB first (L) Switch for SDO              |
| 71      | TESTC           | I   | Test Terminal                                          |
| 64      | NC              | O   | Not Use                                                |
| 65      | SDSYMMD         | O   | BB Word Clock for DAC                                  |
| 76      | SAMPR           | O   | Digrich Signal                                         |
| 77      | SAMPL           | O   |                                                        |
| 34      | $\phi 4$        | O   | 4.3218MHz Clock                                        |
| 18      | TESTD           | I   | Test Terminal                                          |
| 70      | TESTB           | I   |                                                        |
| 74      | TCL             | I   |                                                        |
| 72      | VDD             |     | Power Supply                                           |
| 73      | EFLG            | O   | C1, C2 Error Correction Check Signal                   |
| 75      | XFSY            | I/O | Synchronized Clock Signal                              |
| 78      | VSS             |     | GND                                                    |
| 79      | XIN             | I   | Clock Oscillation                                      |
| 80      | XOUT            | O   |                                                        |

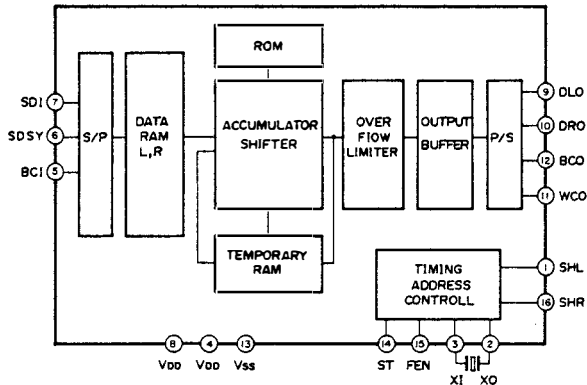
# IC601: M50954-402SP (8 bit $\mu$ -COM)



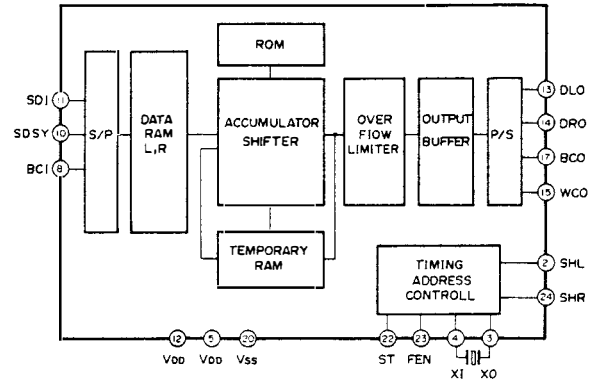
| Pin No. | Pin Name |          | I/O | Function                               |
|---------|----------|----------|-----|----------------------------------------|
| 1       | Vcc      |          |     | Power Supply                           |
| 2       | P65      | R5       | I   | Remote control transmitter input       |
| 3       | P64      | R4       | I   |                                        |
| 4       |          |          |     |                                        |
| 5       | P62      | PLAY     | O   | Play mode output                       |
| 6       |          |          |     | Not used                               |
| 7       | P60      | LASER    | O   | LASER servo output "H" = LASER LIGHT   |
| 8       | P27      | TRAY IN  | O   | Tray loading signal output             |
| 9       | P26      | TRAY OUT | O   | Tray unloading signal output           |
| 10      | P25      | IN       | I   | Tray close mode input "L" = Tray close |
| 11      | P24      | OUT      | I   | Tray open mode input "L" = Tray open   |
| 12      | P23      | R3       | I   | Remote control transmitter input       |
| 13      | P22      | R2       | I   |                                        |
| 14      | P21      | R1       | I   |                                        |
| 15      | P20      | R0       | I   |                                        |
| 16      |          |          |     | Not used                               |
| 17      | P36      | SCK      | O   | Data I/O clock terminal                |
| 18      | P35      | S OUT    | O   | Command, data to SPC                   |
| 19      | P34      | S IN     | I   | Data input from SPC                    |
| 20      | P33      | R/W      | O   | Data I/O control signal                |
| 21      | P32      | WQ       | I   | Data I/O control signal                |
| 22      |          |          |     | Not used                               |
| 23      |          |          |     |                                        |
| 24      |          |          |     |                                        |
| 25      |          |          |     |                                        |
| 26      |          |          |     |                                        |
| 27      | RESET    |          | I   | Reset signal input                     |
| 28      | XIN      |          | I   | φ4 clock input                         |
| 29      |          |          |     | Not used                               |
| 30      |          |          |     |                                        |
| 31      |          |          |     |                                        |
| 32      | Vss      |          |     | GND                                    |
| 33      |          |          |     | Not used                               |
| 34      | P57      | K3       | I   | Key input                              |
| 35      | P56      | K2       | I   |                                        |
| 36      | P55      | K1       | I   |                                        |
| 37      | P54      | K0       | I   |                                        |
| 38      | Vp       |          |     | Pull down for indicator                |
| 39      |          |          |     | Not used                               |
| 40      | P50      | Q        | O   | Segment signal output                  |
| 41      | P17      | P        | O   |                                        |
| 42      | P16      | o        | O   |                                        |
| 43      | P15      | n        | O   |                                        |
| 44      | P14      | m        | O   |                                        |
| 45      | P13      | l        | O   |                                        |
| 46      | P12      | k        | O   |                                        |
| 47      | P11      | j        | O   |                                        |
| 48      | P10      | i        | O   |                                        |
| 49      | P07      | D7       | O   | Digit signal output                    |
| 50      | P06      | D6       | O   |                                        |
| 51      | P05      | D5       | O   |                                        |
| 52      | P04      | D4       | O   |                                        |
| 53      | P03      | D3       | O   |                                        |
| 54      | P02      | D2       | O   |                                        |
| 55      | P01      | D1       | O   |                                        |
| 56      | P00      | D0       | O   |                                        |
| 57      | P47      | h        | O   | Segment signal output                  |
| 58      | P46      | g        | O   |                                        |
| 59      | P45      | f        | O   |                                        |
| 60      | P44      | e        | O   |                                        |
| 61      | P43      | d        | O   |                                        |
| 62      | P42      | c        | O   |                                        |
| 63      | P41      | b        | O   |                                        |
| 64      | P40      | a        | O   |                                        |

# IC301: YM3404DF or YM3619DF (16 bit over sampling digital filter)

## • YM3404DF

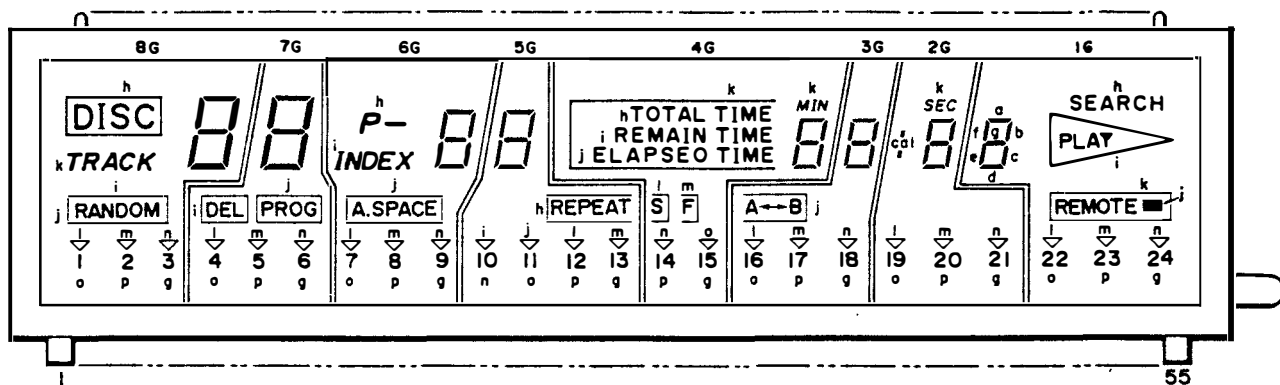


## • YM3619DF



| YM3619<br>Pin No. | YM3404<br>Pin No. | Pin-Name         | I/O | Function                                                                                                  |
|-------------------|-------------------|------------------|-----|-----------------------------------------------------------------------------------------------------------|
| 11                | 7                 | SDI              | I   | Encoded digital signal serial input                                                                       |
| 10                | 6                 | SDSY             | I   | Distinction between Lch and Rch, Data input timing                                                        |
| 8                 | 5                 | BCI              | I   | Bit clock input for input data                                                                            |
| 4                 | 3                 | XI               | I   | Clock OSC. 196 fs = 17.2872MHz<br>or 192 fs = 16.9344 MHz                                                 |
| 3                 | 2                 | XO               | O   |                                                                                                           |
| 22                | 14                | ST               | I   | 1DAC = "L" 2DAC = "H" Switch input                                                                        |
| 23                | 15                | FEN              | I   | System clock switch input 196 fs = "L"<br>192 fs = "H"                                                    |
| 13                | 9                 | DLO              | O   | 1DAC: L, Rch Data input<br>2DAC: Lch Data input                                                           |
| 14                | 10                | DRO              | O   | Rch Data output                                                                                           |
| 15                | 11                | WCO              | O   | Word clock for output data (DLO, DRO)                                                                     |
| 17                | 12                | BCO              | O   | Bit clock for output data and system clock output for SPC II<br>98 fs = 8.6436MHz<br>or 96 fs = 8.4672MHz |
| 2                 | 1                 | SHL              | O   | 1DAC: Lch deglitch signal output<br>2DAC: L, Rch deglitch signal output                                   |
| 24                | 16                | SHR              | O   | 1 DAC: Rch deglitch signal output                                                                         |
| 12                | 8                 | VDD <sub>1</sub> |     | Power supply +5V for digital signal                                                                       |
| 5                 | 4                 | VDD <sub>2</sub> |     | Power supply for clock and deglitch signal                                                                |
| 20                | 13                | VSS              |     | GND                                                                                                       |

## FL DATA



| PIN NO.    | 1 | 2 | 3  | 4  | 5  | 6  | 7 | 8 | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 |
|------------|---|---|----|----|----|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| CONNECTION | F | F | NP | NP | NP | 8G | a | b | NP | NP | NP | 7G | c  | d  | NP | NP | NP | e  | 6G | f  | g  | NP | NP | NP | h  | 5G | i  | NP | NP | NP | j  | 4G | k  | NP |

| PIN NO.    | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 |
|------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| CONNECTION | NP | NP | 3G | l  | m  | NP | NP | NP | 2G | n  | o  | NP | NP | p  | q  | 1G | NP | NP | NP | F  | F  |

### • Anode Connection

|   | 8G     | 7G    | 6G       | 5G     | 4G           | 3G     | 2G     | 1G     |
|---|--------|-------|----------|--------|--------------|--------|--------|--------|
| a | a      | a     | a        | a      | a            | a      | a      | a      |
| b | b      | b     | b        | b      | b            | b      | b      | b      |
| c | c      | c     | c        | c      | c            | c      | c      | c      |
| d | d      | d     | d        | d      | d            | d      | d      | d      |
| e | e      | e     | e        | e      | e            | e      | e      | e      |
| f | f      | f     | f        | f      | f            | f      | f      | f      |
| g | g      | g     | g        | g      | g            | g      | g      | g      |
| h | DISC   | —     | P —      | REPEAT | TOTAL TIME   | —      | —      | SEARCH |
| i | —      | DEL   | INDEX    | ▽ (10) | REMAIN TIME  | —      | col    | PLAY   |
| j | RANDOM | PROG  | A. SPACE | ▽ (11) | ELAPSED TIME | A ↔ B  | —      | —      |
| k | TRACK  | —     | —        | —      | MIN          | —      | SEC    | REMOTE |
| l | ▽ (1)  | ▽ (4) | ▽ (7)    | ▽ (12) | S            | ▽ (16) | ▽ (19) | ▽ (22) |
| m | ▽ (2)  | ▽ (5) | ▽ (8)    | ▽ (13) | F            | ▽ (17) | ▽ (20) | ▽ (23) |
| n | ▽ (3)  | ▽ (6) | ▽ (9)    | 10     | ▽ (14)       | ▽ (18) | ▽ (21) | ▽ (24) |
| o | 1      | 4     | 7        | 11     | ▽ (15)       | 16     | 19     | 22     |
| p | 2      | 5     | 8        | 12     | 14           | 17     | 20     | 23     |
| q | 3      | 6     | 9        | 13     | 15           | 18     | 21     | 24     |

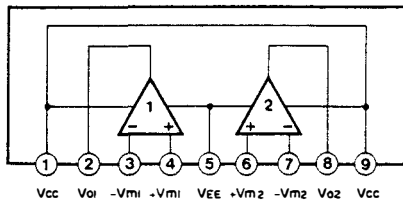
## IC BLOCK

IC101, 102, 104 ~ 106: AN6551, NJM4558S, TA75558S or BA715

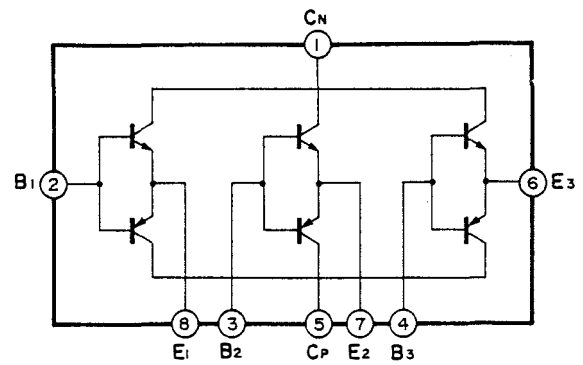
IC103: NJM4560S

IC311, 312: NJM5532S

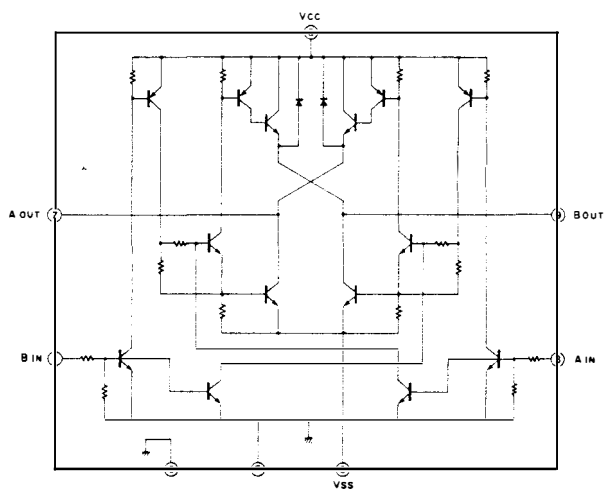
IC313: NJM2043S  
(Dual Ope-amp)



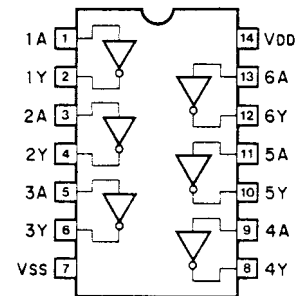
IC107: STA451C (Transistor Array)



IC108: BA6218 (Motor Drive)

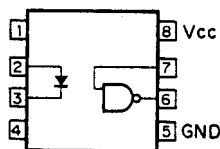


IC302, 308: TC74HC04P (Hex Inverter)

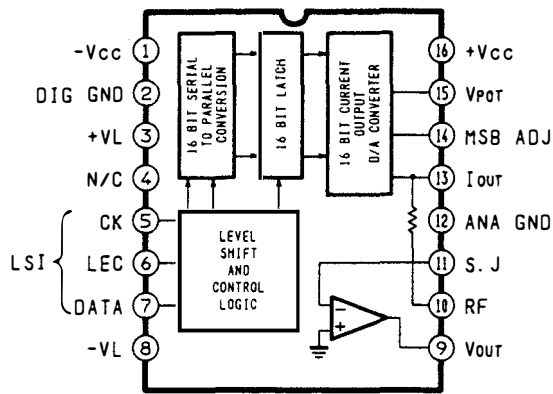


IC303 ~ 306: OCPL-2614

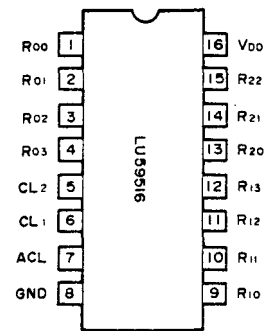
IC307: PC910



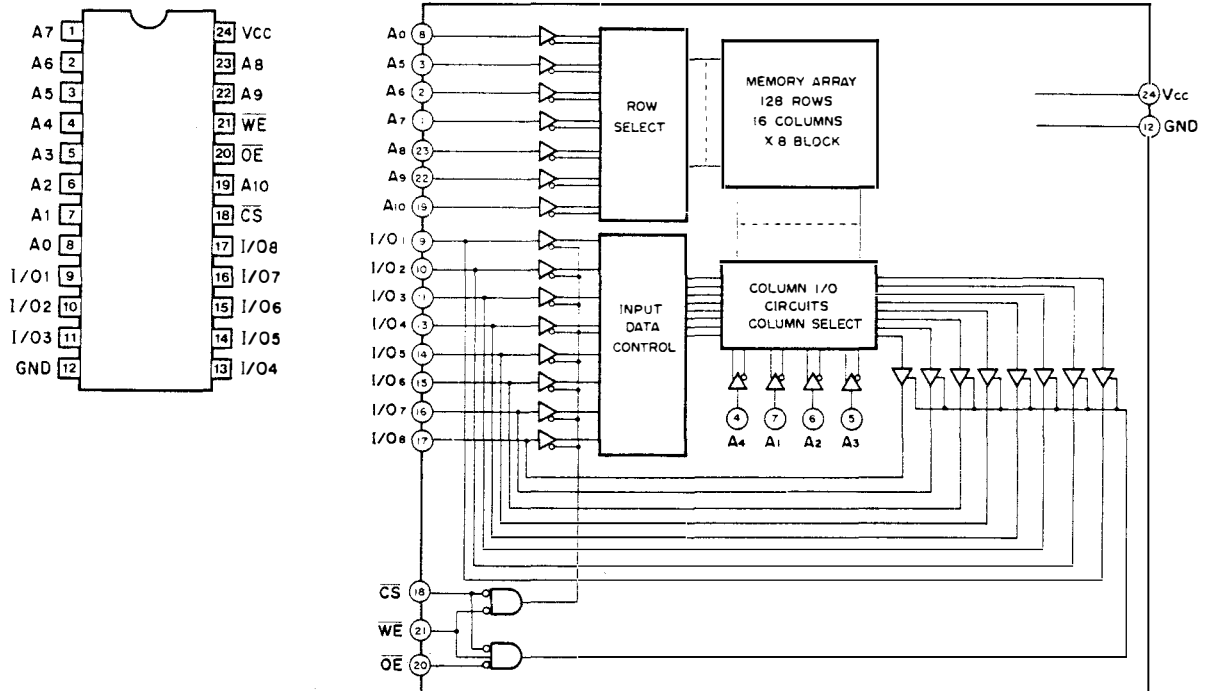
IC309, 310: PCM56P (D/A Converter)



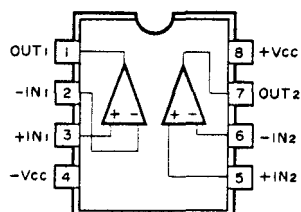
IC602: LU59516 (Decoder)



IC502: MSM5128-20GS, HM6116FP-4 or CXK5816M (RAM)



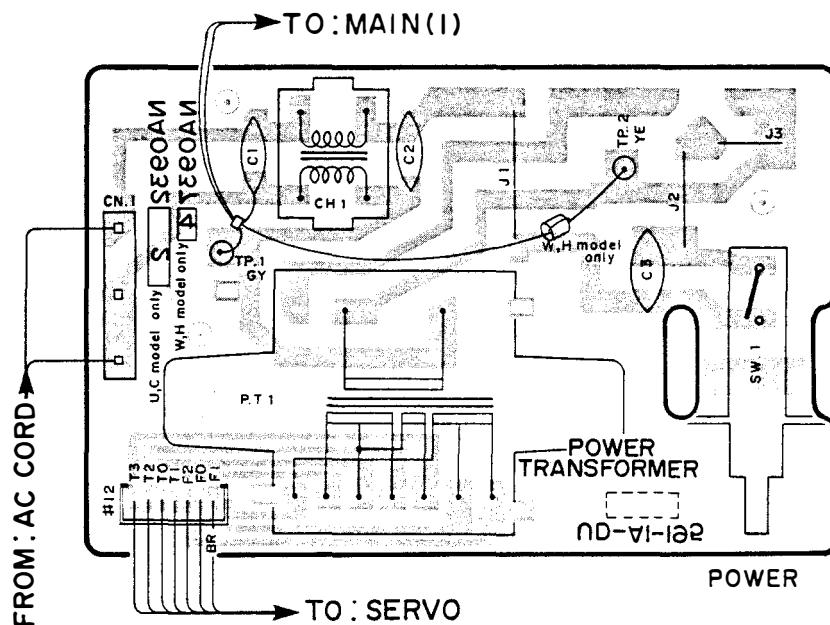
IC503: NJM2043M (T) or AN6558S (Dual Ope-amp)



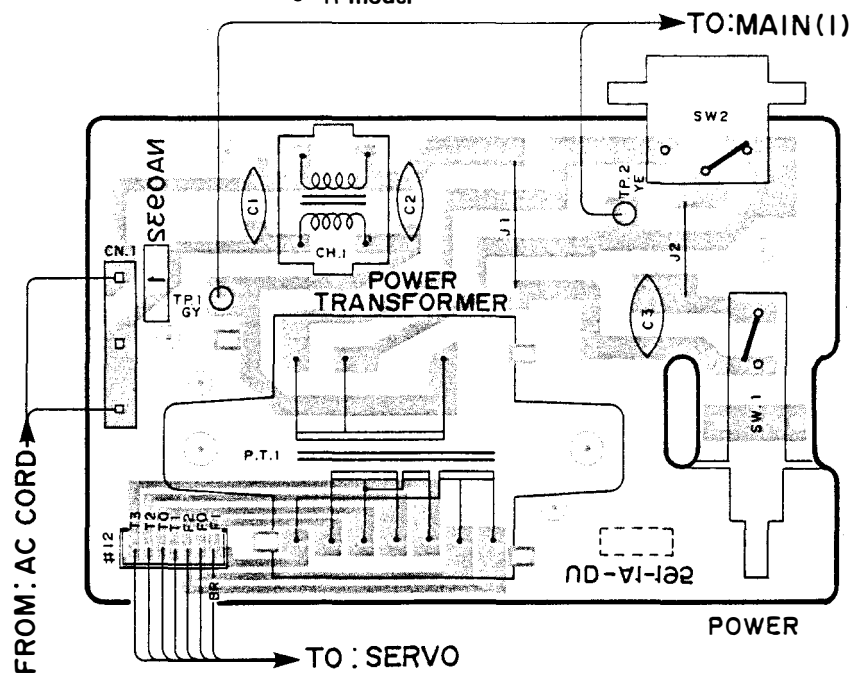
# **PRINTED CIRCUIT BOARD (Pattern side)**

## **Power Unit**

- U, C, A, H, W, B models



- R model

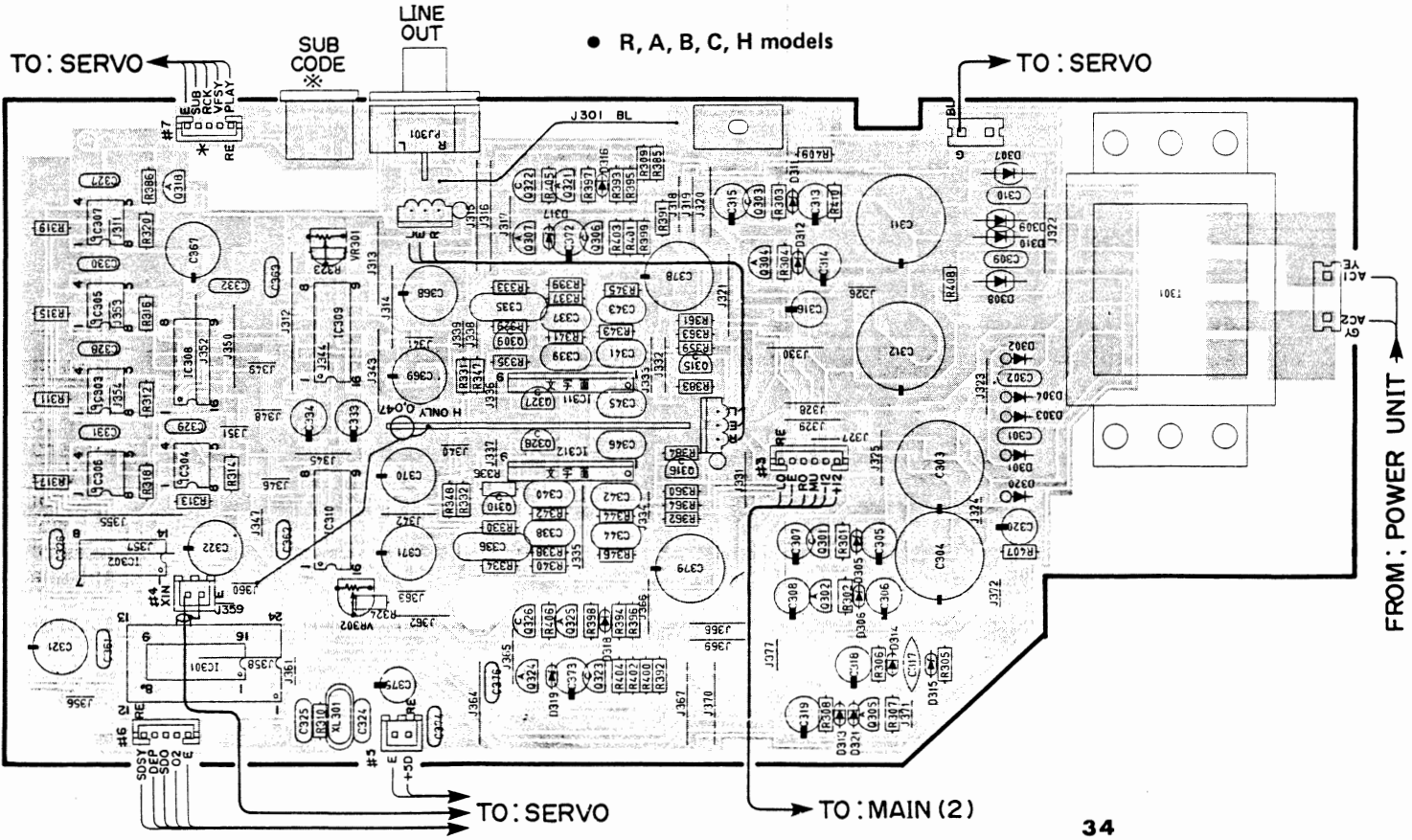
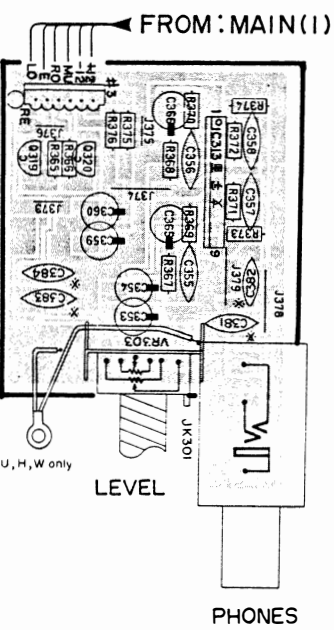
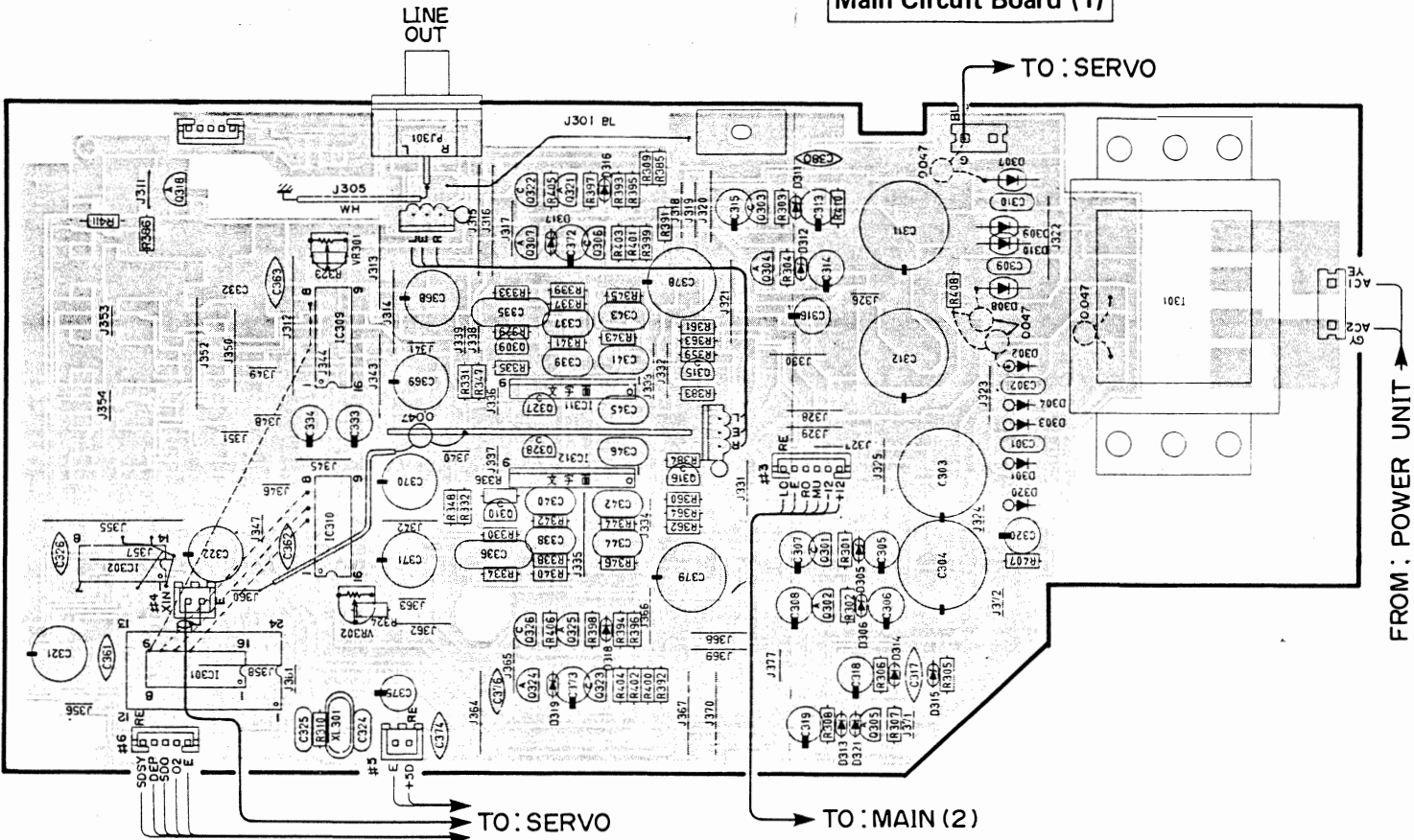


PRINTED CIRCUIT BOARD(Pattern side)

Note) 文字面 : Component side

Main Circuit Board (1)

Main Circuit Board (2)

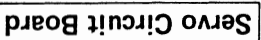
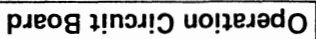
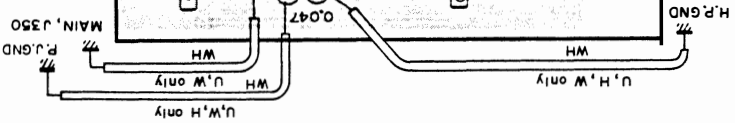


Note) \* marked

|                            | J, R, A, B, C | U, W   | H         |
|----------------------------|---------------|--------|-----------|
| C383, 384                  | OPEN          | 1000P  | 1000P     |
| C381, 382                  | OPEN          | 0.01   | 0.01      |
| C380                       | OPEN          | 0.047  | 0.047     |
| C327 ~ 332                 | 0.039         | OPEN   | 0.039     |
| C367                       | 1000/6.3      | OPEN   | 1000/6.3  |
| IC307                      | PC910         | OPEN   | PC910     |
| IC303 ~ 306                | QCPL-2614     | OPEN   | QCPL-2614 |
| IC308                      | HD74HC04P     | OPEN   | HD74HC04P |
| SUB CORDE                  | SET           | NONSET | NONSET    |
| R311, 313, 315<br>317, 319 | 470           | OPEN   | 470       |
| R312, 314, 316<br>318, 320 | 330           | OPEN   | 330       |
| R409                       | 100K          | OPEN   | OPEN      |
| R411                       | OPEN          | 10K    | OPEN      |
| #7                         | SET           | NONSET | NONSET    |



side



TO: SPC ←

TO: MAIN(1) →

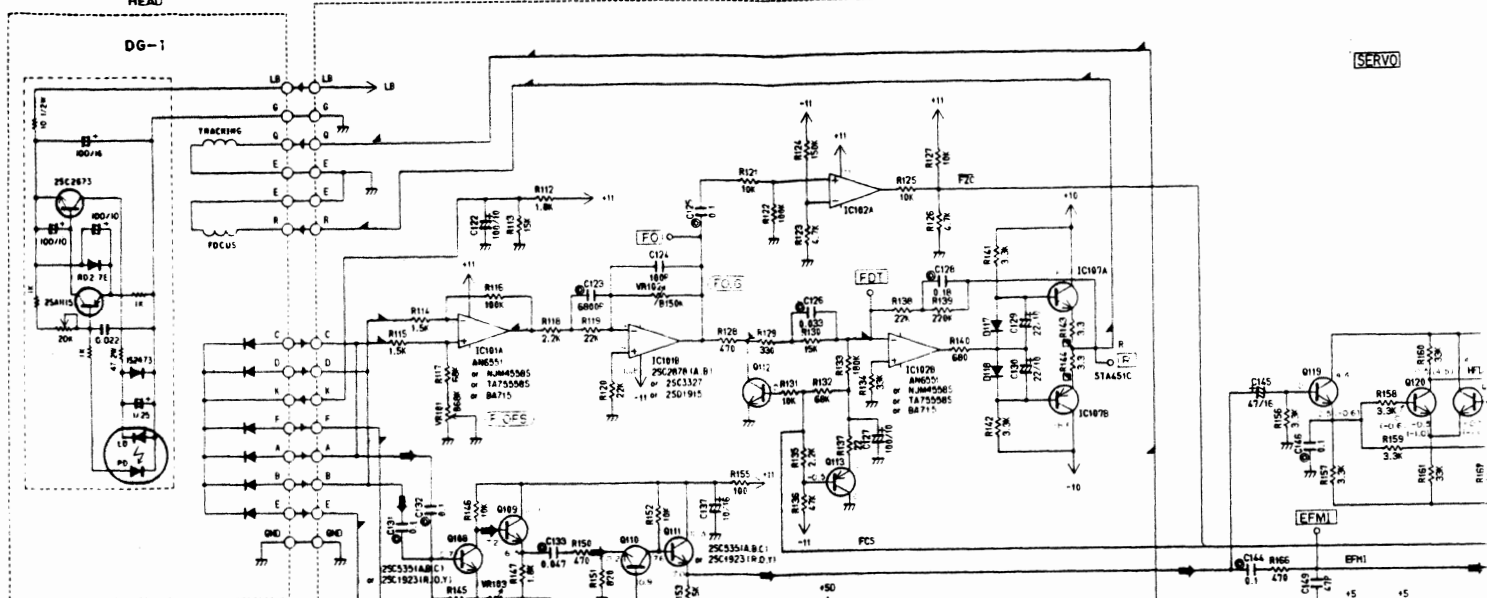
FROM : MAIN(1)

**TO: OPERATION**

# SCHEMATIC DIAGRAM

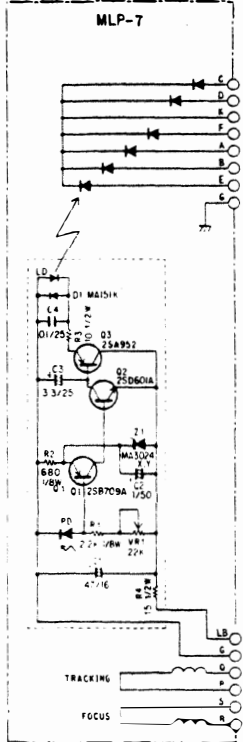
## OPTICAL PICK UP HEAD

DG-1

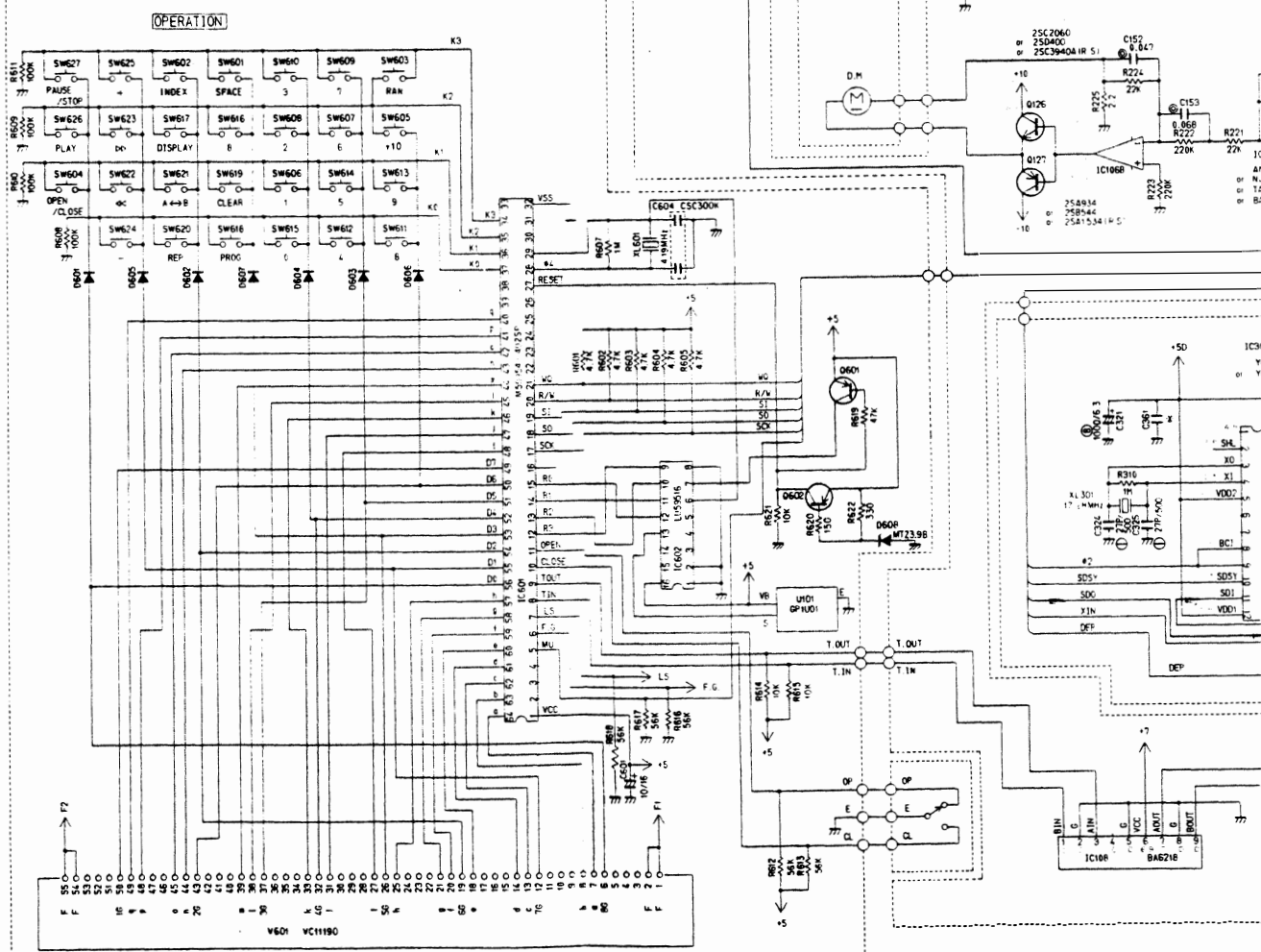


## OPTICAL PICK UP HEAD

MLP-7

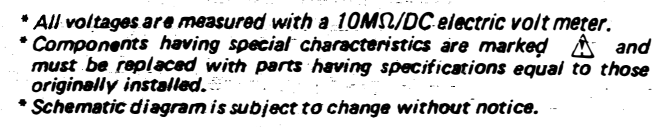


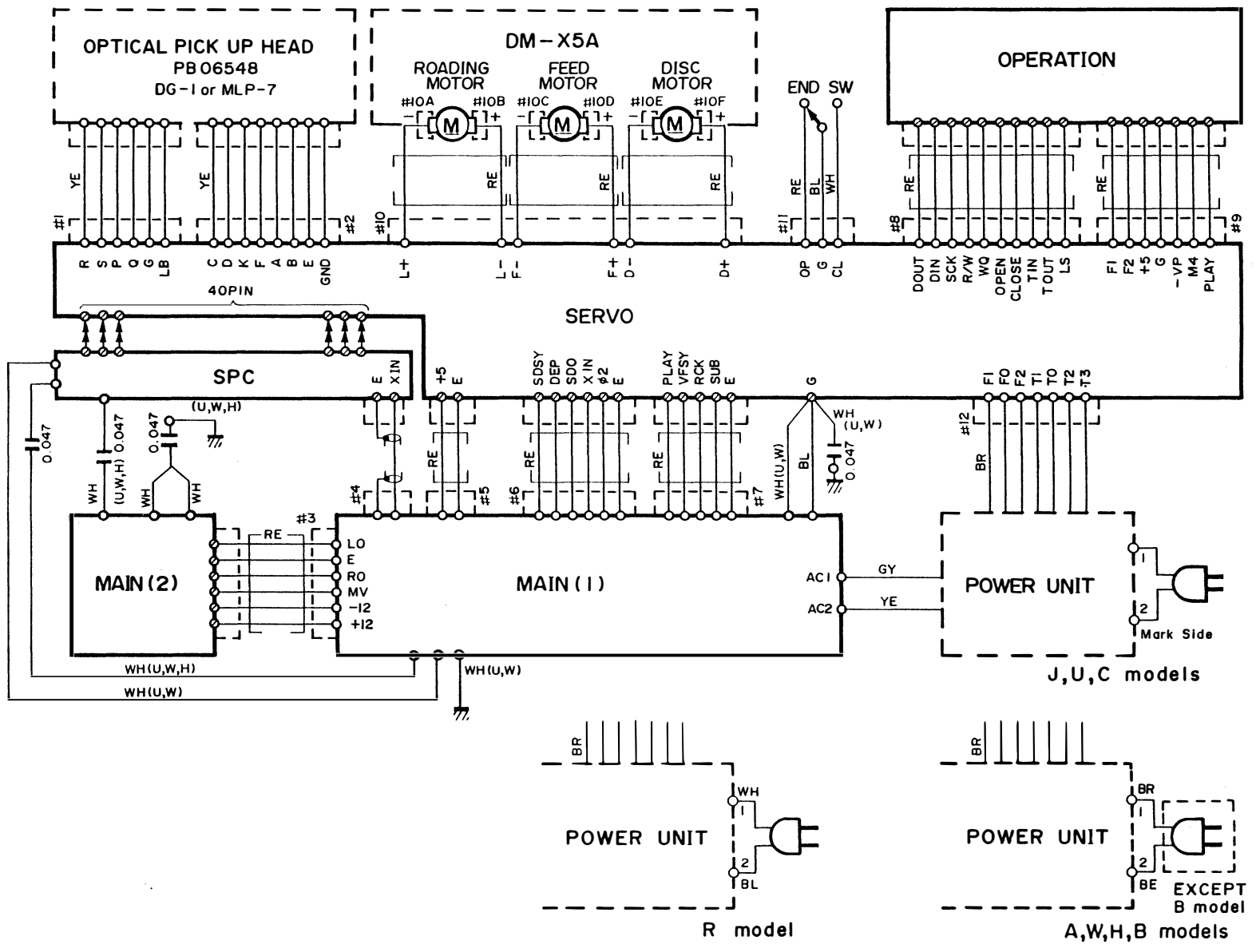
## OPERATION



## PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs

|                                                                                                                                 |                                                                                                                       |                                                                                                                                    |                                                                   |                 |                               |                                        |                |          |              |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------|-------------------------------|----------------------------------------|----------------|----------|--------------|
| 2SA933S (Q, R)<br>2SA1115 (E, F)<br>2SA1310 (R, S, T)<br>2SA934<br>2SB544<br>2SA1534A (RS)<br>2SC1740S (S, R)<br>2SC2603 (E, F) | 2SC3312 (R, S, T)<br>2SC2060<br>2SD400<br>2SC3940A (R, S)<br>2SC2878 (A, B)<br>2SC3327<br>2SD1915<br>2SC535 (A, B, C) | 1SS133<br>MT25 6B<br>MT25 1A<br>MT212A<br>MT210A<br>V111J<br>1SR35 100AT-93X<br>MT23 9B<br>MT27 5B<br>MT26 2A<br>MT28 2A<br>MT224C | NJM4558S<br>TA75558S<br>BA715<br>NJM2043S<br>NJM5532S<br>NJM4556S | 6N137<br>TLP552 | PCM56P<br>LU59516<br>YM3404DF | MSM5128 20GS<br>HM6116FP-4<br>CKK5816M | YM3816 (SPCII) |          |              |
| 2SC1983                                                                                                                         | 2SA1037 (TW)<br>2SB709A (TW)<br>2SC2412<br>78D601                                                                     | 1SV55<br>SV211                                                                                                                     | AN6557                                                            | BA6218          | STA451C                       | NJM2043M (T1)<br>AN6558S               | TC74HC04P      | YM3619DF | M50954-4025P |

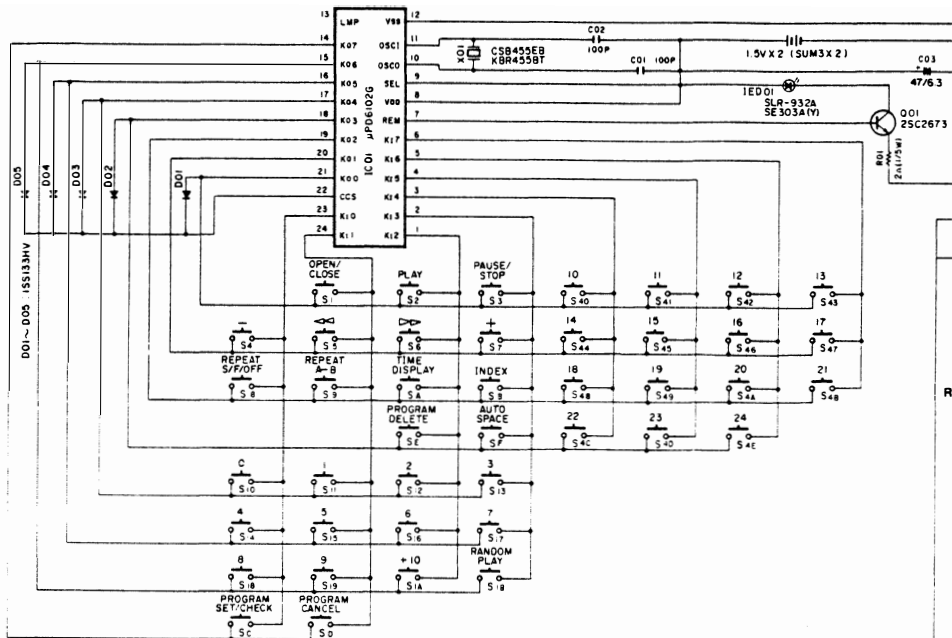




## RS-CD9

## REMOTE CONTROL TRANSMITTER

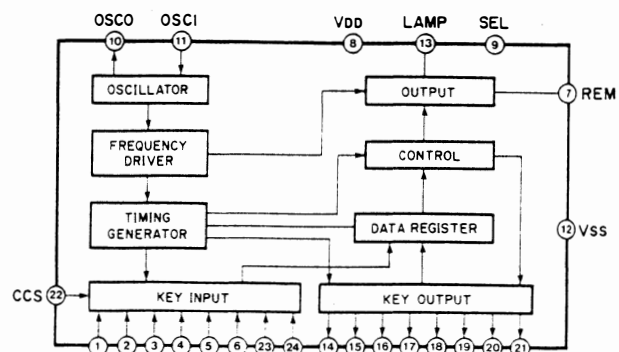
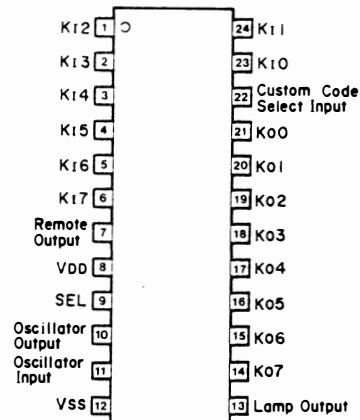
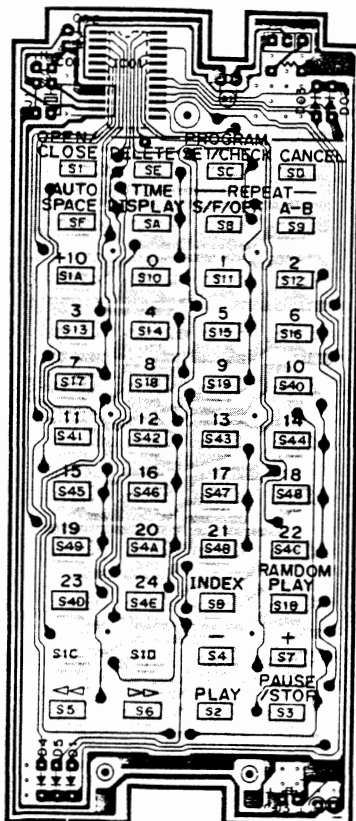
## SCHEMATIC DIAGRAM



| FUNCTION       | DATE CODE |   |   |   |   |   |   | HEX CODE |
|----------------|-----------|---|---|---|---|---|---|----------|
|                | 0         | 1 | 2 | 3 | 4 | 5 | 6 |          |
| OPEN/CLOSE     | 1         | 0 | 0 | 0 | 0 | 0 | 0 | 01       |
| PLAY           | 0         | 1 | 0 | 0 | 0 | 0 | 0 | 02       |
| PAUSE/STOP     | 1         | 1 | 0 | 0 | 0 | 0 | 0 | 03       |
| —              | 0         | 0 | 1 | 0 | 0 | 0 | 0 | 04       |
| ▷              | 1         | 0 | 1 | 0 | 0 | 0 | 0 | 05       |
| ◁              | 0         | 1 | 1 | 0 | 0 | 0 | 0 | 06       |
| +              | 1         | 1 | 1 | 0 | 0 | 0 | 0 | 07       |
| REPEAT S/F/OFF | 0         | 0 | 0 | 1 | 0 | 0 | 0 | 08       |
| REPEAT A-B     | 1         | 0 | 0 | 1 | 0 | 0 | 0 | 09       |
| INDEX          | 1         | 1 | 0 | 1 | 0 | 0 | 0 | 0A       |
| 0              | 0         | 0 | 0 | 0 | 1 | 0 | 0 | 0B       |
| 1              | 1         | 0 | 0 | 0 | 1 | 0 | 0 | 0C       |
| 2              | 0         | 1 | 0 | 0 | 1 | 0 | 0 | 0D       |
| 3              | 1         | 1 | 0 | 0 | 1 | 0 | 0 | 0E       |
| 4              | 0         | 0 | 1 | 0 | 1 | 0 | 0 | 0F       |
| 5              | 1         | 0 | 1 | 0 | 1 | 0 | 0 | 10       |
| 6              | 0         | 1 | 1 | 0 | 1 | 0 | 0 | 11       |
| 7              | 1         | 1 | 1 | 0 | 1 | 0 | 0 | 12       |
| 8              | 0         | 0 | 0 | 1 | 1 | 0 | 0 | 13       |
| 9              | 1         | 0 | 0 | 1 | 1 | 0 | 0 | 14       |
| +10            | 0         | 1 | 0 | 1 | 1 | 0 | 0 | 15       |
| 10             | 0         | 0 | 0 | 0 | 0 | 1 | 0 | 16       |
| 11             | 1         | 0 | 0 | 0 | 0 | 1 | 0 | 17       |
| 12             | 0         | 1 | 0 | 0 | 0 | 1 | 0 | 18       |
| 13             | 1         | 1 | 0 | 0 | 0 | 1 | 0 | 19       |
| 14             | 0         | 0 | 1 | 0 | 0 | 1 | 0 | 1A       |
| 15             | 1         | 0 | 1 | 0 | 0 | 1 | 0 | 1B       |
| 16             | 0         | 1 | 1 | 0 | 0 | 1 | 0 | 1C       |
| 17             | 1         | 1 | 1 | 0 | 0 | 1 | 0 | 1D       |
| 18             | 0         | 0 | 0 | 1 | 1 | 0 | 0 | 1E       |
| 19             | 1         | 0 | 0 | 1 | 1 | 0 | 0 | 1F       |
| 20             | 0         | 1 | 0 | 1 | 1 | 0 | 0 | 20       |
| CUSTOM CODE    | 1         | 0 | 0 | 1 | 1 | 1 | 0 | 79       |

## PRINTED CIRCUIT BOARD(Pattern side)

IC01: μPD6102G



# PARTS LIST

CDX-900/CDX-900U

## ■WARNING

Components having special characteristics are marked  $\Delta$  and must be replaced with parts having specifications equal to those originally installed.

• Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS list. For the parts No. of the carbon resistor, refer to p. 53.

## ■ELECTRICAL PARTS

| Ref. No. | Part No.    | Description           | 部 品 名             | Remarks     | Common Model                 | Mar kets    | ランク      |
|----------|-------------|-----------------------|-------------------|-------------|------------------------------|-------------|----------|
| ※        | NA 09 25 40 | Main Circuit Board    | メ イン シ ー ト        | Black       |                              | J           |          |
| ※        | NA 09 25 50 | "                     | "                 | Black       |                              | R           |          |
| ※        | NA 09 28 70 | "                     | "                 | Silver      |                              | J           |          |
| ※        | NA 09 28 80 | "                     | "                 | Silver      |                              | R           |          |
| ※        | NA 09 35 40 | "                     | "                 | Black       |                              | U           |          |
| ※        | NA 09 35 50 | "                     | "                 | Black       |                              | H           |          |
| ※        | NA 09 35 60 | "                     | "                 | Silver      |                              | U           |          |
| ※        | NA 09 35 70 | "                     | "                 | Silver      |                              | H           |          |
| ※        | NA 09 51 10 | "                     | "                 | Black       |                              | C           |          |
| ※        | NA 09 51 20 | "                     | "                 | Silver      |                              | C           |          |
| ※        | NA 09 51 30 | "                     | "                 | Black       |                              | W           |          |
| ※        | NA 09 51 40 | "                     | "                 | Silver      |                              | W           |          |
| ※        | NA 09 51 50 | "                     | "                 | Black       |                              | A.B         |          |
| ※        | NA 09 51 60 | "                     | "                 | Silver      |                              | A.B         |          |
|          | FC 44 41 00 | Mylar Cap.            | 0.01 $\mu$ F 50V  | マイ ラ ー コ ン  | C301,302,309,310             |             |          |
|          | FG 21 14 70 | Ceramic Cap.          | 47pF 50V          | セ ラ コ ン     | C357,358                     |             |          |
|          | FG 21 22 20 | "                     | 220pF 50V         | "           | C355,356                     |             |          |
|          | FG 44 41 00 | "                     | 0.01 $\mu$ F 50V  | "           | C317                         |             |          |
|          | FG 21 31 00 | "                     | 1000pF 50V        | "           | C383,384                     | U.W,H       |          |
|          | FG 44 41 00 | "                     | 0.01 $\mu$ F 50V  | "           | C381,382                     | U.W,H       |          |
|          | FG 24 44 70 | "                     | 0.047 $\mu$ F 50V | "           | C380                         | U.W,H       |          |
|          | FU 35 12 70 | Mica Cap.             | 27pF 500V         | マ イ カ コ ン   | C324,325                     |             |          |
|          | FC 34 43 90 | Mylar Cap.            | 0.039 $\mu$ F 50V | マイ ラ ー コ ン  | C326,361~363,374,376         | J,R,B,A,H,C |          |
|          | FG 24 44 70 | Ceramic Cap.          | 0.047 $\mu$ F 50V | セ ラ コ ン     | "                            | U,W         |          |
|          | FG 24 44 70 | "                     | 0.047 $\mu$ F 50V | "           | C385~388                     | U,W         |          |
|          | FC 34 43 90 | Mylar Cap.            | 0.039 $\mu$ F 50V | マイ ラ ー コ ン  | C327~332                     | J,R,A,H,B,C |          |
|          | VD 03 27 00 | "                     | 1500pF 50V        | 銅リードマイラーコン  | C339,340                     |             |          |
|          | VB 05 70 00 | "                     | 1600pF 50V        | "           | C345,346                     |             |          |
|          | VD 03 28 00 | "                     | 5100pF 50V        | "           | C341,342                     |             |          |
|          | VD 03 29 00 | "                     | 6800pF 50V        | "           | C343,344                     |             |          |
|          | VD 03 30 00 | "                     | 0.015 $\mu$ F 50V | "           | C337,338                     |             |          |
|          | VD 03 31 00 | "                     | 0.068 $\mu$ F 50V | "           | C335,336                     |             |          |
| ※        | UM 04 92 20 | Electrolytic Cap.     | 2200 $\mu$ F 16V  | オーディオケミコン   | C303,304                     |             |          |
| ※        | VD 10 87 00 | "                     | 3300 $\mu$ F 25V  | ブロックケミコン    | C311,312                     |             |          |
|          | UJ 11 74 70 | "                     | 47 $\mu$ F 6.3V   | ケ ミ コ ン     | C365,366                     |             |          |
|          | UJ 11 81 00 | "                     | 100 $\mu$ F 6.3V  | "           | C305~308                     |             |          |
|          | UJ 11 84 70 | "                     | 470 $\mu$ F 6.3V  | "           | C333,334                     |             |          |
|          | UJ 13 71 00 | "                     | 10 $\mu$ F 16V    | "           | C319,353,354,359,360,372,373 |             |          |
|          | UJ 13 81 00 | "                     | 100 $\mu$ F 16V   | "           | C313~316                     |             |          |
|          | UJ 13 82 20 | "                     | 220 $\mu$ F 16V   | "           | C318                         |             |          |
|          | UJ 14 81 00 | "                     | 100 $\mu$ F 25V   | "           | C320                         |             |          |
|          | UM 04 84 70 | "                     | 470 $\mu$ F 16V   | オーディオケミコン   | C378,379                     |             |          |
|          | UM 02 91 00 | "                     | 1000 $\mu$ F 6.3V | "           | C375                         |             |          |
|          | FZ 00 62 70 | "                     | 1000 $\mu$ F 6.3V | ブラックゲートコン   | C321,322,368~371             |             |          |
|          | FZ 00 62 70 | "                     | 1000 $\mu$ F 6.3V | "           | C367                         | J,R,A,H,B,C |          |
| ※        | XC 02 10 01 | Power Transformer     |                   | 電 源 ト ラ ン ス | T301                         | J           | $\Delta$ |
| ※        | XC 09 70 01 | "                     |                   | "           | T301                         | R           | $\Delta$ |
| ※        | XC 09 80 01 | "                     |                   | "           | T301                         | U.C         | $\Delta$ |
| ※        | XC 09 90 01 | "                     |                   | "           | T301                         | A,H,B,W     | $\Delta$ |
|          | VB 86 19 00 | Pre-Set Potentiometer | B100K $\Omega$    | 半 固 定 抵 抗   | VR301,302                    |             |          |
| ※        | VC 50 93 00 | Potentiometer         | 50KA $\times$ 2   | 可 変 抵 抗 器   | VR303                        |             |          |

※New Parts (新規部品)

# CDX-900/CDX-900U

| Ref. No. | Part No.    | Description                | 部 品 名           | Remarks       | Common Model                     | Markets          | ランク |
|----------|-------------|----------------------------|-----------------|---------------|----------------------------------|------------------|-----|
|          | iA 09 33 00 | Transistor                 | 2SA933S(Q,R)    | ト ラ ン ジ ス タ   | Q305,318,321,325                 |                  |     |
|          | iA 11 15 10 | "                          | 2SA1115(E,F)    | "             | "                                | Inter-changeable |     |
|          | iX 60 31 70 | "                          | 2SA1310(R,S,T)  | "             | "                                |                  |     |
|          | iA 09 34 00 | "                          | 2SA934          | "             | Q302,307,324                     | Inter-changeable |     |
|          | iB 05 44 10 | "                          | 2SB544          | "             | "                                |                  |     |
|          | iC 17 40 70 | "                          | 2SC1740S(S,R)   | "             | Q306,323                         |                  |     |
|          | iC 26 03 10 | "                          | 2SC2603(E,F)    | "             | "                                | Inter-changeable |     |
|          | iX 60 31 80 | "                          | 2SC3312(R,S,T)  | "             | "                                |                  |     |
|          | iC 20 60 00 | "                          | 2SC2060         | "             | Q301,322,326                     | Inter-changeable |     |
|          | iD 04 00 10 | "                          | 2SD400          | "             | "                                |                  |     |
|          | iX 60 42 00 | "                          | 2SC2878(A,B)    | "             | Q309,310,315,316,319,320,327,328 | Inter-changeable |     |
|          | iC 33 27 00 | "                          | 2SC3327         | "             | "                                |                  |     |
|          | iD 12 66 00 | "                          | 2SD1266         | "             | Q303                             | Inter-changeable |     |
|          | iC 32 98 10 | "                          | 2SC3298         | "             | "                                |                  |     |
|          | iA 13 06 10 | "                          | 2SA1306         | "             | Q304                             |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          | iF 00 34 50 | Diode                      | ISS133          | ダ イ オ ード      | D313,314,316,318,321             |                  |     |
|          | iX 60 41 10 | Zener Diode                | MTZ5.6B         | ツェナーダイオード     | D305,306                         |                  |     |
|          | iF 01 06 80 | "                          | MTZ5.1A         | "             | D317,319                         |                  |     |
|          | iF 00 88 50 | "                          | MTZ 12A         | "             | D311,312                         |                  |     |
|          | iF 01 08 80 | "                          | MTZ 10A         | "             | D315                             |                  |     |
|          | iF 00 96 20 | Diode                      | V11J            | ダ イ オ ード      | D307~310                         |                  |     |
|          | iF 00 84 80 | "                          | ISR35-100A      | "             | D301~304,320                     |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          | XA 42 60 01 | IC                         | NJM5532S        | I C           | IC311,312                        |                  |     |
|          | iG 07 74 00 | "                          | NJM4556S        | "             | IC313                            |                  |     |
| ※        | XB 63 70 01 | "                          | PCM56P          | "             | IC309,310                        |                  |     |
|          | iK 00 04 70 | Photo Coupler              | TLP552          | フ ォ ト カ プ ラ ー | IC307                            | J,R,A,H,B,C      |     |
| ※        | VD 02 56 00 | "                          | QCPL-2614       | "             | IC303~306                        | J,R,A,H,B,C      |     |
|          | iR 00 04 10 | IC                         | HD74HCO4P       | I C           | IC302                            |                  |     |
|          | iR 00 04 10 | "                          | HD74HCO4P       | "             | IC308                            | J,R,A,H,B,C      |     |
| ※        | XB 70 00 01 | "                          | YM3619DF        | "             | IC301                            |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
| ※        | VC 39 87 00 | QuaHz Crystal Unit         | 17.28MHz        | 水 晶 振 動 子     | XL301                            |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          | LB 30 24 30 | Phone Jack                 | BL              | ホ ー ン ジャ ッ ク  | JK301 Black                      |                  |     |
|          | LB 30 24 20 | "                          | GY              | "             | JK301 Silver                     |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          | LB 20 26 10 | Pin Jack                   | 2P              | ピ ン ジャ ッ ク    | PJ301                            |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          | LB 91 80 20 | Base Pin                   | 2P i-Type       | XH ベ ー ス ピ ン  |                                  |                  |     |
| ※        | VD 00 48 00 | "                          | 5P i-Type       | PH ベ ー ス ピ ン  |                                  |                  |     |
| ※        | VD 00 49 00 | "                          | 6P i-Type       | "             |                                  |                  |     |
|          | LA 00 20 00 | Lapping Terminal           | P=7.5 2P i-Type | i型ラッピング端子板    |                                  |                  |     |
|          | LA 00 21 10 | "                          | P=5 2P i-Type   | "             |                                  |                  |     |
|          | LB 60 69 60 | DIN Connector              | TCS7580-01-101  | DIN コ ネ ク タ ー |                                  | J,R,A,B,C        |     |
| ※        | VB 71 41 00 | Connector                  | 6P I=300        | PH コ ネ ク タ ー  |                                  |                  |     |
|          | BB 06 95 10 | Ground Plate               |                 | ラ ン ド 金 具     |                                  |                  |     |
|          | BB 07 04 10 | Bus Bar                    | I=55            | バ ス バ ー       |                                  |                  |     |
|          | Ei 33 00 86 | Binding Head Tapping Screw | 3×8 FCRM3-BI    | バイインドタッピングネジ  | PACK                             |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          |             |                            |                 |               |                                  |                  |     |
|          |             |                            |                 |               |                                  |                  |     |

※ New Parts (新規部品)

| Ref. No. | Part No.    | Description                 | 部 品 名             | Remarks           | Common Model             | Markets          | ランク |
|----------|-------------|-----------------------------|-------------------|-------------------|--------------------------|------------------|-----|
| ※        | NA 09 25 20 | Servo Circuit Board         | サ ー ボ シ ー ト       |                   |                          | J                |     |
| ※        | NA 09 25 30 | "                           | "                 |                   |                          | U,W              |     |
| ※        | NA 09 51 70 | "                           | "                 |                   |                          | H                |     |
| ※        | NA 09 51 80 | "                           | "                 |                   |                          | R,A,C,B          |     |
|          | FC 44 41 00 | Mylar Cap.                  | 0.01 $\mu$ F 50V  | マ イ ラ ー コ ン       | C101,102,110,111,119     | J                |     |
|          | FG 44 41 00 | Ceramic Cap.                | 0.01 $\mu$ F 50V  | セ ラ コ ン           | "                        | R,U,A,C,B,H,W    |     |
|          | FG 21 14 70 | "                           | 47pF 50V          | "                 | C149                     |                  |     |
|          | FG 21 21 00 | "                           | 100pF 50V         | "                 | C124                     |                  |     |
|          | FG 21 26 80 | "                           | 680pF 50V         | "                 | C134                     |                  |     |
|          | FG 24 44 70 | "                           | 0.047 $\mu$ F 50V | "                 | C157,158                 | U,W              |     |
|          | FA 15 31 50 | Mylar Cap.                  | 1500pF 50V        | マ イ ラ ー コ ン       | C135,136                 |                  |     |
|          | FA 15 32 20 | "                           | 2200pF 50V        | "                 | C154                     |                  |     |
|          | FA 15 36 80 | "                           | 6800pF 50V        | "                 | C123                     |                  |     |
|          | FA 15 43 30 | "                           | 0.033 $\mu$ F 50V | "                 | C126                     |                  |     |
|          | FA 15 44 70 | "                           | 0.047 $\mu$ F 50V | "                 | C133,152                 |                  |     |
|          | FA 15 46 80 | "                           | 0.068 $\mu$ F 50V | "                 | C153                     |                  |     |
|          | FA 15 51 00 | "                           | 0.1 $\mu$ F 50V   | "                 | C125,131,138,140,144,146 |                  |     |
|          | FA 15 51 20 | "                           | 0.12 $\mu$ F 50V  | "                 | C139                     |                  |     |
|          | FA 15 51 80 | "                           | 0.18 $\mu$ F 50V  | "                 | C128                     |                  |     |
|          | FA 15 53 30 | "                           | 0.33 $\mu$ F 50V  | "                 | C141                     |                  |     |
|          | UJ 11 81 00 | Electrolytic Cap.           | 100 $\mu$ F 6.3V  | ケ ミ コ ン           | C109                     |                  |     |
|          | UJ 11 82 20 | "                           | 220 $\mu$ F 6.3V  | "                 | C108                     |                  |     |
|          | UJ 11 84 70 | "                           | 470 $\mu$ F 6.3V  | "                 | C147                     |                  |     |
|          | UJ 13 72 20 | "                           | 22 $\mu$ F 10V    | "                 | C107,129,130,142,143     |                  |     |
|          | UJ 12 81 00 | "                           | 100 $\mu$ F 10V   | "                 | C122,127,151             |                  |     |
|          | UJ 12 82 20 | "                           | 220 $\mu$ F 10V   | "                 | C105                     |                  |     |
|          | UJ 13 73 30 | "                           | 33 $\mu$ F 16V    | "                 | C114~117,155             |                  |     |
|          | UJ 13 74 70 | "                           | 47 $\mu$ F 16V    | "                 | C145                     |                  |     |
|          | UJ 13 71 00 | "                           | 10 $\mu$ F 16V    | "                 | C137                     |                  |     |
|          | UJ 13 82 20 | "                           | 220 $\mu$ F 16V   | "                 | C106                     |                  |     |
|          | UJ 15 74 70 | "                           | 47 $\mu$ F 35V    | "                 | C121                     |                  |     |
|          | UJ 16 61 00 | "                           | 1 $\mu$ F 50V     | "                 | C148                     |                  |     |
|          | UJ 16 62 20 | "                           | 2.2 $\mu$ F 50V   | "                 | C150                     |                  |     |
|          | UJ 16 81 00 | "                           | 100 $\mu$ F 50V   | "                 | C118,120,156             |                  |     |
|          | UJ 13 92 20 | "                           | 2200 $\mu$ F 16V  | "                 | C103,104                 |                  |     |
|          | UW 84 91 00 | "                           | 1000 $\mu$ F 25V  | "                 | C112,113                 |                  |     |
|          |             |                             |                   |                   |                          |                  |     |
|          | VC 61 25 00 | Pre-Set Potentiometer       | B68K $\Omega$     | 半 固 定 抵 抗         | VR101                    |                  |     |
|          | VB 86 15 00 | "                           | B10K $\Omega$     | "                 | VR103,106                |                  |     |
|          | VB 86 18 00 | "                           | B47K $\Omega$     | "                 | VR104,105                |                  |     |
|          | VC 61 26 00 | "                           | B150K $\Omega$    | "                 | VR102                    |                  |     |
|          | VB 86 22 00 | "                           | B470K $\Omega$    | "                 | VR107                    |                  |     |
|          |             |                             |                   |                   |                          |                  |     |
|          | HV 45 33 30 | Flame Proof Carbon Resistor | 3.3 $\Omega$ 1/4W | 不 燃 化 カ ー ボ ン 抵 抗 | R143,144,197,198         |                  |     |
|          |             |                             |                   |                   |                          |                  |     |
|          | iA 09 33 00 | Transistor                  | 2SA933S(Q,R)      | ト ラ ン ジ ス タ       | Q104,113                 |                  |     |
|          | iA 11 15 10 | "                           | 2SA1115(E,F)      | "                 | "                        | inter-changeable |     |
|          | iX 60 31 70 | "                           | 2SA1310(R,S,T)    | "                 | "                        |                  |     |
|          | iA 09 34 00 | "                           | 2SA934            | "                 | Q103,106,124,127         | inter-changeable |     |
|          | iB 05 44 10 | "                           | 2S8544            | "                 | "                        |                  |     |
| ※        | VC 46 67 00 | Transistor                  | 2SA1534A(R,S)     | "                 | Q107                     |                  |     |
|          | iC 05 35 40 | "                           | 2SC535(A,B,C)     | "                 | Q108,110                 | inter-changeable |     |
|          | VB 17 04 00 | "                           | 2SC1923(R,O,Y)    | "                 | "                        |                  |     |

※New Parts (新規部品)

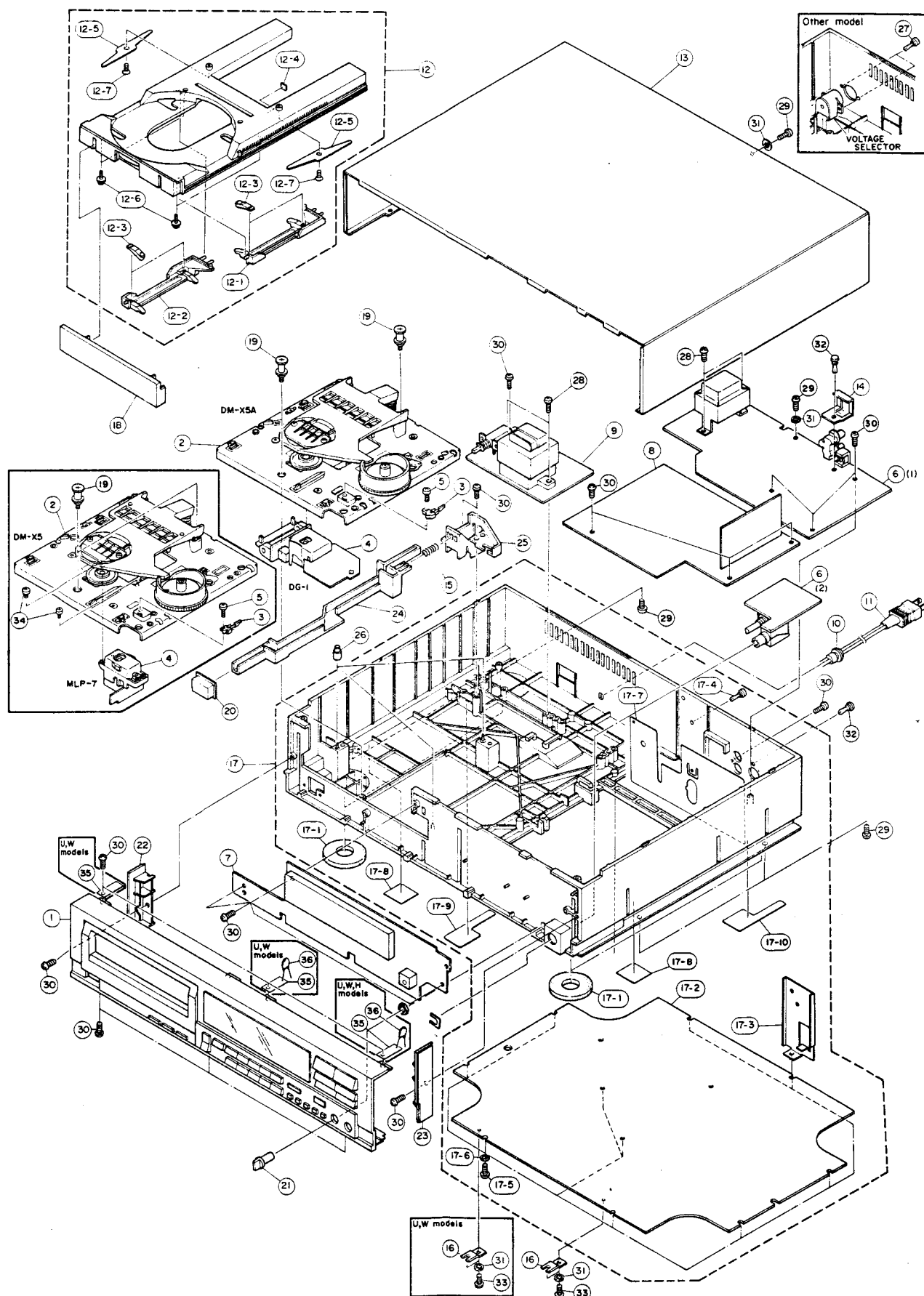
| Ref.<br>No. | Part No. | Description                | 部 品 名           | Remarks     | Common<br>Model              | Markets              | ランク |
|-------------|----------|----------------------------|-----------------|-------------|------------------------------|----------------------|-----|
| iC          | 17 40 70 | Transistor                 | 2SC1740S (S,R)  | ト ラ ン ジ ス タ | Q109,111,114,115,<br>119~122 |                      |     |
| iC          | 26 03 10 | "                          | 2SC2603 (E,F)   | "           | Inter-<br>changeable         |                      |     |
| iX          | 60 31 80 | "                          | 2SC3312 (R,S,T) | "           | }                            |                      |     |
| iC          | 19 83 00 | "                          | 2SC1983         | "           | Q102                         |                      |     |
| iC          | 20 60 00 | "                          | 2SC2060         | "           | Q101,105,123,126             | Inter-<br>changeable |     |
| iD          | 04 00 10 | "                          | 2SD400          | "           | "                            | }                    |     |
| iX          | 60 42 00 | "                          | 2SC2878 (A,B)   | "           | Q112,116~118                 | Inter-<br>changeable |     |
| iC          | 33 27 00 | "                          | 2SC3327         | "           | "                            | }                    |     |
| iF          | 00 34 50 | Diode                      | ISS133          | ダ イ オード     | D108,117~120                 |                      |     |
| iX          | 60 41 10 | Zener Diode                | MTZ5.6B         | ツェナーダイオード   | D107                         |                      |     |
| iF          | 00 64 70 | "                          | MTZ7.5B         | "           | D105                         |                      |     |
| iF          | 00 88 50 | "                          | MTZ 12A         | "           | D114,115                     |                      |     |
| iX          | 60 41 20 | "                          | MTZ6.2A         | "           | D116                         |                      |     |
| iF          | 01 08 20 | "                          | MTZ8.2A         | "           | D106                         |                      |     |
| iF          | 00 90 90 | "                          | MTZ 24C         | "           | D111                         |                      |     |
| iF          | 00 84 80 | Diode                      | ISR35-100A      | ダ イ オード     | D101~104,109,110,<br>112,113 |                      |     |
| iG          | 03 47 00 | IC                         | AN6551          | I C         | IC101,102,104~106            | Inter-<br>changeable |     |
| iG          | 07 68 00 | "                          | NJM4558S        | "           | "                            | }                    |     |
| iG          | 13 22 00 | "                          | BA715           | "           | "                            | }                    |     |
| iG          | 08 02 00 | "                          | NJM2043S        | "           | IC103                        |                      |     |
| iG          | 15 35 00 | "                          | BA6218          | "           | IC108                        |                      |     |
| iG          | 11 94 00 | "                          | STA451C         | "           | IC107                        |                      |     |
| NA          | 09 52 70 | SPC Circuit Board          |                 | SPC シー ト    |                              | J,R,A,C,B            |     |
| NA          | 09 51 90 | "                          |                 | "           |                              | U,W                  |     |
| NA          | 09 52 00 | "                          |                 | "           |                              | H                    |     |
| LB          | 91 80 60 | Base Pin                   | 6P i-Type       | XH ベースピン    |                              |                      |     |
| VD          | 00 46 00 | "                          | 3P i-Type       | PH ベースピン    |                              |                      |     |
| VD          | 00 49 00 | "                          | 6P i-Type       | "           |                              |                      |     |
| VD          | 00 51 00 | "                          | 8P i-Type       | "           |                              |                      |     |
| VD          | 00 53 00 | "                          | 10P i-Type      | "           |                              |                      |     |
| LB          | 20 13 90 | "                          | TEB2P-SHF       | 2.5ピッチベースピン |                              |                      |     |
| LB          | 40 05 70 | "                          | TEB4P-SHF       | "           |                              |                      |     |
| LB          | 50 02 50 | "                          | TEB5P-SHF       | "           |                              |                      |     |
| VD          | 00 50 00 | "                          | 7P i-Type       | PH ベースピン    |                              |                      |     |
| VB          | 71 21 00 | Connector                  | 5P I=180        | PH コネクター    |                              |                      |     |
| VB          | 71 17 00 | "                          | 5P I=100        | "           |                              |                      |     |
| BA          | 08 40 00 | Heat Sink                  |                 | 放熱板         |                              |                      |     |
| Ei          | 33 00 86 | Binding Head Tapping Screw | 3x8 FCRM3-BI    | バインドタッピングネジ | PACK                         |                      |     |

※ New Parts (新規部品)





# EXPLODED VIEW



# MECHANISM PARTS

Note) φ : Diameter

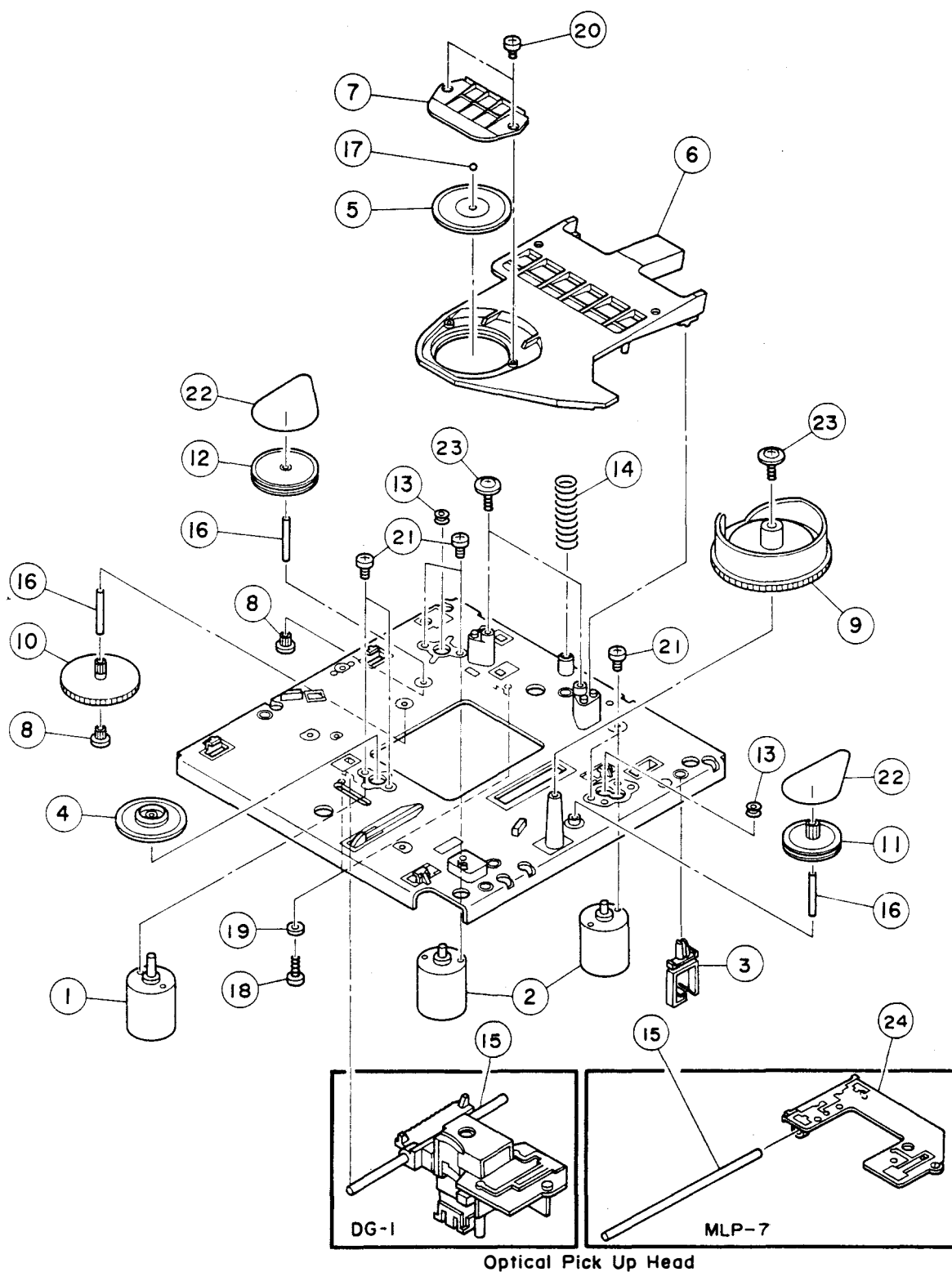
| Ref. No. | Part No.    | Description                | 部 品 名              | Remarks           | Common Model     | Markets     | ランク |
|----------|-------------|----------------------------|--------------------|-------------------|------------------|-------------|-----|
| ※ 1      | NB 64 03 30 | Panel Unit                 | パネルユニット            | Black             |                  | J,R,A,W,H,B |     |
| ※ "      | NB 64 04 60 | "                          | "                  | Silver            |                  | J,R,A,W,H,B |     |
| ※ "      | NB 64 08 60 | "                          | "                  | Black             |                  | U,C         |     |
| ※ "      | NB 64 08 70 | "                          | "                  | Silver            |                  | U,C         |     |
| 2        | NB 64 00 90 | Disc Mechanism Unit        | DM-X5A             | DM ユ ニ ッ ト        |                  | CDX-700     |     |
| ※ "      | NB 63 77 20 | "                          | DM-X5              | "                 | changeable       | CD-X5       |     |
| 3        | KA 90 63 70 | Switch                     | MSW-1485           | エ ン ド ス イ ッ チ     |                  |             |     |
| 4        | PB 06 54 80 | Optical Pick Up Head       | DG-1               | 光ビックアップヘッド        |                  |             |     |
| "        | VC 16 12 00 | "                          | MLP-7              | "                 | changeable       |             |     |
| 5        | Ei 02 61 06 | Binding Head Tapping Screw | 2.6×10 ZMC2-Y      | バインドタッピングネジ       | PACK             |             |     |
| ※ 6      | NA 09 25 40 | Main Circuit Board         |                    | メ イ ン シ ー ト       | Black            | J           |     |
| ※ "      | NA 09 25 50 | "                          |                    | "                 | Black            | R           |     |
| ※ "      | NA 09 28 70 | "                          |                    | "                 | Silver           | J           |     |
| ※ "      | NA 09 28 80 | "                          |                    | "                 | Silver           | R           |     |
| ※ "      | NA 09 35 40 | "                          |                    | "                 | Black            | U           |     |
| ※ "      | NA 09 35 50 | "                          |                    | "                 | Black            | H           |     |
| ※ "      | NA 09 35 60 | "                          |                    | "                 | Silver           | U           |     |
| ※ "      | NA 09 35 70 | "                          |                    | "                 | Silver           | H           |     |
| ※ "      | NA 09 51 10 | "                          |                    | "                 | Black            | C           |     |
| ※ "      | NA 09 51 20 | "                          |                    | "                 | Silver           | C           |     |
| ※ "      | NA 09 51 30 | "                          |                    | "                 | Black            | W           |     |
| ※ "      | NA 09 51 40 | "                          |                    | "                 | Silver           | W           |     |
| ※ "      | NA 09 51 50 | "                          |                    | "                 | Black            | A,B         |     |
| ※ "      | NA 09 51 60 | "                          |                    | "                 | Silver           | A,B         |     |
| ※ 7      | NA 09 25 60 | Operation Circuit Board    |                    | オベレーションシート        |                  |             |     |
| ※ 8      | NA 09 25 20 | Servo Circuit Board        |                    | サーボシート            |                  | J           |     |
| ※ "      | NA 09 25 30 | "                          |                    | "                 |                  | U,W         |     |
| ※ "      | NA 09 51 70 | "                          |                    | "                 |                  | H           |     |
| ※ "      | NA 09 51 80 | "                          |                    | "                 |                  | R,A,C,B     |     |
| ※ 9      | NA 09 32 00 | Power Unit                 |                    | 電 源 ユ ニ ッ ト       |                  | J           |     |
| ※ "      | NA 09 32 10 | "                          |                    | "                 |                  | R           |     |
| ※ "      | NA 09 32 20 | "                          |                    | "                 |                  | U,C         |     |
| ※ "      | NA 09 32 30 | "                          |                    | "                 |                  | A,B         |     |
| ※ "      | NA 09 37 40 | "                          |                    | "                 |                  | W,H         |     |
| 10       | CB 62 01 90 | Cord Stopper               | CM-22B             | コ ー ド ス ト ッ パ ー   |                  | R,A,W,H,B   |     |
| "        | CB 62 02 00 | "                          | CM-22C             | "                 |                  | J,U,C       |     |
| 11       | MG 00 12 10 | Power Cord                 | 15A 125V 2m        | 電 源 コ ー ド         |                  | J           | △   |
| "        | MG 00 22 20 | "                          | 10A 125V 1.98m     | "                 |                  | U,C         | △   |
| "        | MG 00 09 20 | "                          | 7.5A 250V 2.5m     | "                 |                  | A           | △   |
| "        | MG 00 23 10 | "                          | 7.5A 250V 2m       | "                 | Inter-changeable | A           | △   |
| "        | MG 00 16 30 | "                          | 6A 250V 2m         | "                 |                  | R           | △   |
| "        | MG 00 16 20 | "                          | 2.5A 250V 2m       | "                 |                  | W,H         | △   |
| "        | MG 00 23 20 | "                          | 2.5A 250V 2m       | "                 | Inter-changeable | W,H         | △   |
| "        | MG 00 18 60 | "                          | 2.5A 250V 2m       | "                 |                  | B           | △   |
| 12       | NB 63 77 00 | Tray Ass'y                 |                    | ト レ イ Ass'y       |                  | CDX-305     |     |
| 12-1     | CB 65 60 10 | Lifter (R)                 |                    | リ フ タ ー (R)       |                  |             |     |
| 12-2     | CB 65 60 00 | " (L)                      |                    | " (L)             |                  |             |     |
| 12-3     | CB 65 60 20 | Disc Pad                   |                    | デ ィ ス ク パ ッ ド     |                  |             |     |
| 12-4     | CB 62 79 60 | Cushion Rubber             |                    | ク ッ シ ョ ン ゴ ム     |                  |             |     |
| 12-5     | AA 63 08 30 | Spring, Lifter             |                    | ス プ リ ン グ リ フ タ ー |                  |             |     |
| 12-6     | EX 60 02 40 | BW Head Tapping Screw      | 3×8 (φ10) FCRM3-BI | BWヘッドタッピングネジ      |                  |             |     |
| 12-7     | E0 33 00 86 | Flat Head Tapping Screw    | 3×8 FCRM3-BI       | 皿タッピングネジ          | PACK             |             |     |
| 13       | AA 63 12 00 | Top Cover                  |                    | ト ッ プ カ バ ー       | Black            | CDX-500     |     |

※ New Parts (新規部品)

| Ref. No. | Part No.    | Description                | 部 品 名               | Remarks                                | Common Model | Markets       | ランク |
|----------|-------------|----------------------------|---------------------|----------------------------------------|--------------|---------------|-----|
| 13       | VC 51 68 00 | Top Cover                  | ト ッ プ カ バ ー         | Silver                                 | CDX-500      |               |     |
| 14       | AA 63 08 80 | Holder, Socket             | ソ ケ ッ ト ホ ル ダ ー     |                                        |              |               |     |
| 15       | VB 95 81 00 | Spring                     | ス プ リ ン グ           |                                        | CLV-1        |               |     |
| ※ 16     | AA 63 19 40 | Ground Plate               | ア ー ス プ レ ー ト       |                                        |              |               |     |
| ※ 17     | NB 63 95 80 | Main Chassis Ass'y         | メ イン シ ャ ー シ Ass'y  |                                        |              | J,A,C,B       |     |
| ※ "      | NB 63 95 90 | "                          | "                   |                                        |              | R             |     |
| ※ "      | VD 54 53 00 | "                          | "                   |                                        |              | U,W           |     |
| ※ "      | VD 61 24 00 | "                          | "                   |                                        |              | H             |     |
| ※ 17-1   | VC 96 54 00 | Pad                        | パ ッ ド               |                                        | CDX-500      |               |     |
| ※ 17-2   | AA 63 12 10 | Bottom Cover               | ボ ト ム カ バ ー         |                                        |              |               |     |
| 17-3     | AA 63 12 30 | Ground Plate               | ア ー ス 金 具           |                                        | CDX-500      |               |     |
| 17-4     | CB 06 88 80 | Plastic Rivet              | プ ラ ス チ ッ ク リ ベ ッ ト |                                        |              |               |     |
| 17-5     | Ei 33 01 06 | Binding Head Tapping Screw | 3×10 ZMC2-BI        | バイ ン ド タ ッ ピ ン グ ネ ジ                   | PACK         |               |     |
| 17-6     | EV 41 30 36 | Toothed Lock Washer        | φ3 FCRM3-BI         | 歯 付 座 金                                | PACK         |               |     |
| ※ 17-7   | VD 54 50 00 | Shield Plate               | シ ー ル ド プ レ ー ト     |                                        |              | U,W           |     |
| ※ 17-8   | VD 54 51 00 | Earth Plate                | ア ー ス プ レ ー ト       |                                        |              | U,W           |     |
| ※ 17-9   | VD 65 34 00 | Earth Plate (L)            | ア ー ス プ レ ー ト (L)   |                                        |              | U,W           |     |
| ※ 17-10  | VD 65 35 00 | " (R)                      | " (R)               |                                        |              | U,W           |     |
| ※ 18     | NB 64 03 20 | Lid Ass'y                  | リ ッ ド Ass'y         | Black                                  |              |               |     |
| ※ "      | NB 64 04 50 | "                          | "                   | Silver                                 |              |               |     |
| 19       | NB 63 83 90 | Spacial Screw Ass'y        | 段 付 ネ ジ Ass'y       |                                        | CDX-305      |               |     |
| 19-1     | CB 65 79 50 | Damper                     | ダ ン パ ー             |                                        | CDX-305      |               |     |
| 20       | CB 65 91 60 | Button                     | ボ タ ン               | Black POWER                            | CDX-500      |               |     |
| "        | VC 51 71 00 | "                          | "                   | Silver POWER                           | CDX-500      |               |     |
| 21       | CB 65 91 00 | Knob                       | ツ マ ミ               | Black PHONES                           | CDX-500      |               |     |
| "        | VC 51 70 00 | "                          | "                   | Silver PHONES                          | CDX-500      |               |     |
| ※ 22     | CB 65 91 10 | Side Cover (L)             | サ イ ド カ バ ー (L)     | Black                                  |              |               |     |
| ※ "      | CB 66 15 10 | "                          | "                   | Silver                                 |              |               |     |
| ※ 23     | CB 65 91 20 | Side Cover (R)             | サ イ ド カ バ ー (R)     | Black                                  |              |               |     |
| ※ "      | CB 66 15 20 | "                          | "                   | Silver                                 |              |               |     |
| 24       | CB 65 91 40 | Rod, SW                    | ロ ッ ド               |                                        | CDX-500      |               |     |
| 25       | CB 65 91 50 | Holder, SW                 | ホ ル ダ ー             |                                        | CDX-500      |               |     |
| 26       | CB 65 75 10 | Damper                     | ダ ン パ ー             |                                        | CD-X5        |               |     |
| 27       | CB 65 77 50 | Plastic Rivet              | プ ラ ス チ ッ ク リ ベ ッ ト |                                        |              | R             |     |
| 28       | Ei 34 01 46 | Binding Head Tapping Screw | 4×14 FCRM3-BI       | バイ ン ド タ ッ ピ ン グ ネ ジ                   | PACK         |               |     |
| 29       | Ei 33 01 26 | "                          | 3×12 ZMC2-BI        | "                                      | PACK         |               |     |
| 30       | Ei 33 01 06 | "                          | 3×10 ZMC2-BI        | "                                      | PACK         |               |     |
| 31       | EV 41 30 36 | Toothed Lock Washer        | φ3 FCRM3-BI         | 歯 付 座 金                                | PACK         |               |     |
| 32       | CB 06 88 80 | Plastic Rivet              | プ ラ ス チ ッ ク リ ベ ッ ト |                                        |              | J,R,A,C,B     |     |
| 33       | Ei 33 00 86 | Binding Head Tapping Screw | 3×8 FCRM3-BI        | バイ ン ド タ ッ ピ ン グ ネ ジ                   | PACK         |               |     |
| 34       | ED 32 60 46 | Binding Head Screw         | 2.6×4 FCRM3-BI      | バイ ン ド 小 ネ ジ                           | PACK         |               |     |
| 35       | BB 07 11 70 | Grount Plate               | ア ー ス プ レ ー ト       |                                        |              |               |     |
| 36       | FG 24 44 70 | Ceramic Cap.               | 0.047μF 50V         | セ ラ コ ン                                |              |               |     |
|          |             |                            |                     |                                        |              |               |     |
|          |             |                            |                     |                                        |              |               |     |
|          |             | Accessories                | 付 属 品               |                                        |              |               |     |
|          | VA 97 63 00 | Pin Cord                   | 1m                  | ピ ン コ ー ド                              |              | J             |     |
|          | Mi 06 62 10 | "                          | 1.2m                | "                                      |              | R,U,A,C,W,H,B |     |
| ※        | VC 14 85 00 | Remote Control Transmitter | RS-CD9              | リ モ ー ト コ ン ト ロ ー ル<br>ト ラ ン ス ミ ッ タ ー | Black        |               |     |
| ※        | VC 14 87 00 | "                          | RS-CD9              | "                                      | Silver       |               |     |
|          |             | Dry Cell                   | AA R6               | 単 3 乾 電 池                              |              |               |     |
|          |             |                            |                     |                                        |              |               |     |
|          |             |                            |                     |                                        |              |               |     |

※New Parts (新規部品)

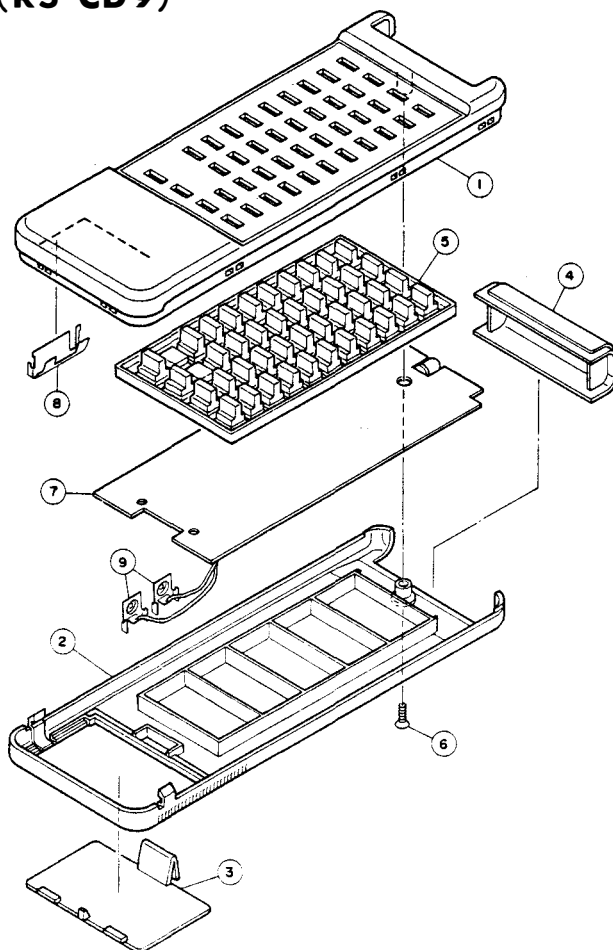
# EXPLODED VIEW(Disc Mechanism Unit)



**Note)  $\phi$  : Diameter**

※New Parts (新規部品)

# EXPLODED VIEW(RS-CD9)



| Ref. No. | Part No.      | Description                | 部 品 名     | Remarks            | Common Model | Markets | ランク |
|----------|---------------|----------------------------|-----------|--------------------|--------------|---------|-----|
| *        | VC 14 85 00   | Remote Control Transmitter | RS-CD9    | リモートコントロールトランスミッター | Black        |         |     |
| *        | VC 14 87 00   | "                          | RS-CD9    | "                  | Silver       |         |     |
| *        | 1 CX 60 05 60 | Case (A) Ass'y             |           | ケース (A) Ass'y      | Black        |         |     |
| *        | " CX 60 05 80 | "                          |           | "                  | Silver       |         |     |
| *        | 2 XX 67 77 20 | Case (B) Ass'y             |           | ケース (B) Ass'y      | Black        |         |     |
| *        | " CX 60 06 00 | "                          |           | "                  | Silver       |         |     |
| *        | 3 XX 67 77 30 | Case (C) Ass'y             |           | ケース (C) Ass'y      | Black        |         |     |
| *        | " XX 67 17 20 | "                          |           | "                  | Silver       |         |     |
| *        | 4 XX 67 16 40 | Filter                     |           | フィルタ               |              |         |     |
| *        | 5 CX 60 05 70 | Rubber, Contact            |           | ゴム 接 点             | Black        |         |     |
| *        | " CX 60 05 90 | "                          |           | "                  | Silver       |         |     |
| *        | 6 XX 67 16 60 | Flat Head Screw            |           | 皿 小 ネ ジ            | Black        |         |     |
| *        | " XX 67 17 50 | "                          |           | "                  | Silver       |         |     |
| *        | 7 NX 60 04 10 | P.C.Board Ass'y            |           | プリント基板 Ass'y       |              |         |     |
| *        | 8 XX 67 16 80 | Dry Cell Terminal A        |           | 電池 電 極 板 A         |              |         |     |
| *        | NX 60 04 10   | P.C.Board Ass'y            |           | プリント基板 Ass'y       |              |         |     |
|          | iX 60 70 40   | IC                         | μPD6102G  | I C                | IC01         |         |     |
|          | QX 60 00 40   | Ceramic Resonator          | KBR455BTL | セラミック振動子           | X01          |         |     |
|          | FG 21 21 00   | Ceramic Cap.               | 100pF 50V | セラコン               | C01,02       |         |     |
|          | UJ 11 74 70   | Electrolytic Cap.          | 47μF 6.3V | ケミコン               | C03          |         |     |
|          | iX 60 36 00   | IED                        | SLR-932A  | I E D              | IED01        |         |     |
|          | iC 26 73 00   | Transistor                 | 2SC2673   | トランジスタ             | Q01          |         |     |
|          | HX 60 14 00   | Carbon Resistor            | 2Ω 1/4W   | カーボン抵抗             | R01          |         |     |
|          | iF 00 34 50   | Diode                      | ISS133    | ダイオード              | D01~05       |         |     |
| 9        | XX 67 16 90   | Dry Cell Terminal B        |           | 電池 電 極 板 B         |              |         |     |

\*New Parts (新規部品)

# Parts List for Carbon Resistor

| Value         | 1/4W Type Part No. | 1/6W Type Part No. | Value         | 1/4W Type Part No. | 1/6W Type Part No. |
|---------------|--------------------|--------------------|---------------|--------------------|--------------------|
| 1.0 $\Omega$  | HJ353100           | *                  | 12K $\Omega$  | HJ357120           | HF857120           |
| 1.8 "         | HJ353180           | *                  | 15 "          | HJ357150           | HF857150           |
| 2.2 "         | HJ353220           | HF853220           | 18 "          | HJ357180           | HF857180           |
| 3.3 "         | HJ353330           | HF853330           | 22 "          | HJ357220           | HF857220           |
| 4.7 "         | HJ353470           | HF853470           | 27 "          | HJ357270           | HF857270           |
| 5.6 "         | HJ353560           | HF853560           | 33 "          | HJ357330           | HF857330           |
| 10 "          | HJ354100           | HF854100           | 39 "          | HJ357390           | HF857390           |
| 15 "          | HJ354150           | HF854150           | 47 "          | HJ357470           | HF857470           |
| 22 "          | HJ354220           | HF854220           | 56 "          | HJ357560           | HF857560           |
| 27 "          | HJ354270           | HF854270           | 68 "          | HJ357680           | HF857680           |
| 33 "          | HJ354330           | HF854330           | 82 "          | HJ357820           | HF857820           |
| 39 "          | HJ354390           | HF854390           | 91 "          | HJ357910           | HF857910           |
| 47 "          | HJ354470           | HF854470           | 100 "         | HJ358100           | HF858100           |
| 56 "          | HJ354560           | HF854560           | 120 "         | HJ358120           | HF858120           |
| 68 "          | HJ354680           | HF854680           | 150 "         | HJ358150           | HF858150           |
| 82 "          | HJ354820           | HF854820           | 180 "         | HJ358180           | HF858180           |
| 100 "         | HJ355100           | HF855100           | 220 "         | HJ358220           | HF858220           |
| 110 "         | HJ355110           | HF855110           | 270 "         | HJ358270           | HF858270           |
| 120 "         | HJ355120           | HF855120           | 330 "         | HJ358330           | HF858330           |
| 150 "         | HJ355150           | HF855150           | 390 "         | HJ358390           | HF858390           |
| 160 "         | HJ355160           | *                  | 470 "         | HJ358470           | HF858470           |
| 180 "         | HJ355180           | HF855180           | 560 "         | HJ358560           | HF858560           |
| 220 "         | HJ355220           | HF855220           | 680 "         | HJ358680           | HF858680           |
| 270 "         | HJ355270           | HF855270           | 820 "         | HJ358820           | HF858820           |
| 330 "         | HJ355330           | HF855330           | 1.0M $\Omega$ | HJ359100           | HF859100           |
| 390 "         | HJ355390           | HF855390           | 1.2 "         | HJ359120           | *                  |
| 470 "         | HJ355470           | HF855470           | 1.5 "         | HJ359150           | HF859150           |
| 510 "         | *                  | HF855510           | 1.8 "         | HJ359180           | HF859180           |
| 560 "         | HJ355560           | HF855560           | 2.2 "         | HJ359220           | HF859220           |
| 680 "         | HJ355680           | HF855680           | 3.3 "         | HJ359330           | HF859330           |
| 820 "         | HJ355820           | HF855820           | 3.9 "         | HJ359390           | *                  |
| 910 "         | HJ355910           | HF855910           | 4.7 "         | HJ359470           | *                  |
| 1.0K $\Omega$ | HJ356100           | HF856100           |               |                    |                    |
| 1.2 "         | HJ356120           | HF856120           |               |                    |                    |
| 1.5 "         | HJ356150           | HF856150           |               |                    |                    |
| 1.8 "         | HJ356180           | HF856180           |               |                    |                    |
| 2.0 "         | HJ356200           | HF856200           |               |                    |                    |
| 2.2 "         | HJ356220           | HF856220           |               |                    |                    |
| 2.4 "         | HJ356240           | HF856240           |               |                    |                    |
| 2.7 "         | HJ356270           | HF856270           |               |                    |                    |
| 3.0 "         | HJ356300           | HF856300           |               |                    |                    |
| 3.3 "         | HJ356330           | HF856330           |               |                    |                    |
| 3.6 "         | HJ356360           | HF856360           |               |                    |                    |
| 3.9 "         | HJ356390           | HF856390           |               |                    |                    |
| 4.7 "         | HJ356470           | HF856470           |               |                    |                    |
| 5.1 "         | HJ356510           | HF856510           |               |                    |                    |
| 5.6 "         | HJ356560           | HF856560           |               |                    |                    |
| 6.8 "         | HJ356680           | HF856680           |               |                    |                    |
| 8.2 "         | HJ356820           | HF856820           |               |                    |                    |
| 9.1 "         | HJ356910           | HF856910           |               |                    |                    |
| 10 "          | HJ357100           | HF857100           |               |                    |                    |

