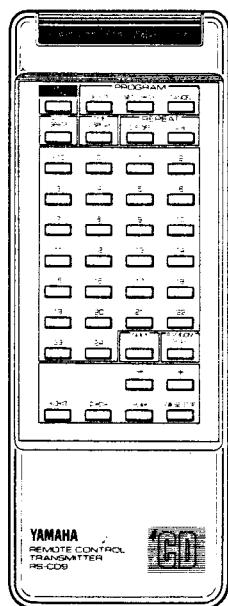
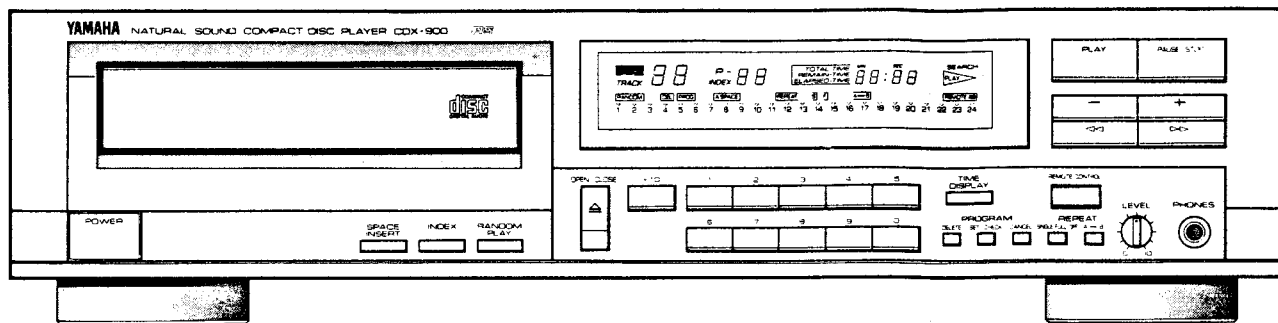


COMPACT DISC PLAYER

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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100080

SINCE 1887



YAMAHA

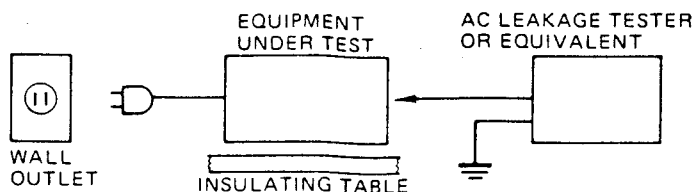
NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

3.25K-363 Printed in Japan '87.3

CDX-900U

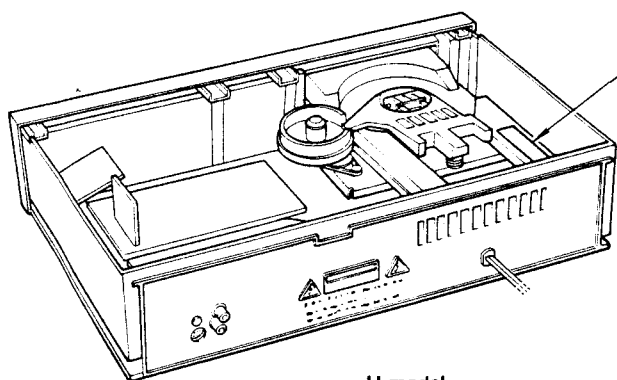
■ TO SERVICE PERSONNEL

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.



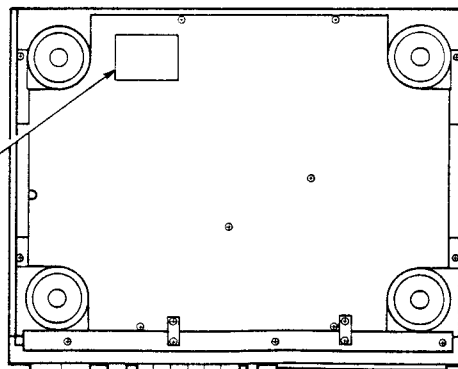
U model

DANGER—Invisible laser radiation when open and interlock failed or defeated.
AVOID DIRECT EXPOSURE TO BEAM. (CA0853Z-1)

C model

CAUTION—HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION—RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX QUAND OUVERT AVEC LE ENCLICHEMENT DE SECURITE ANNULE. (C067470)

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:



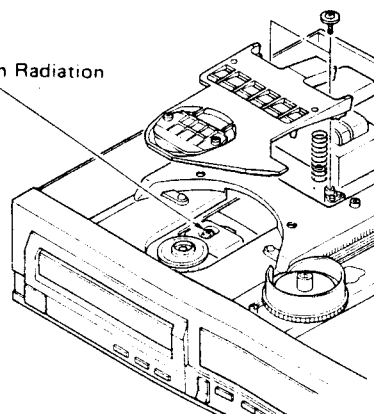
LASER BEAM RADIATION SPOT DG-1

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

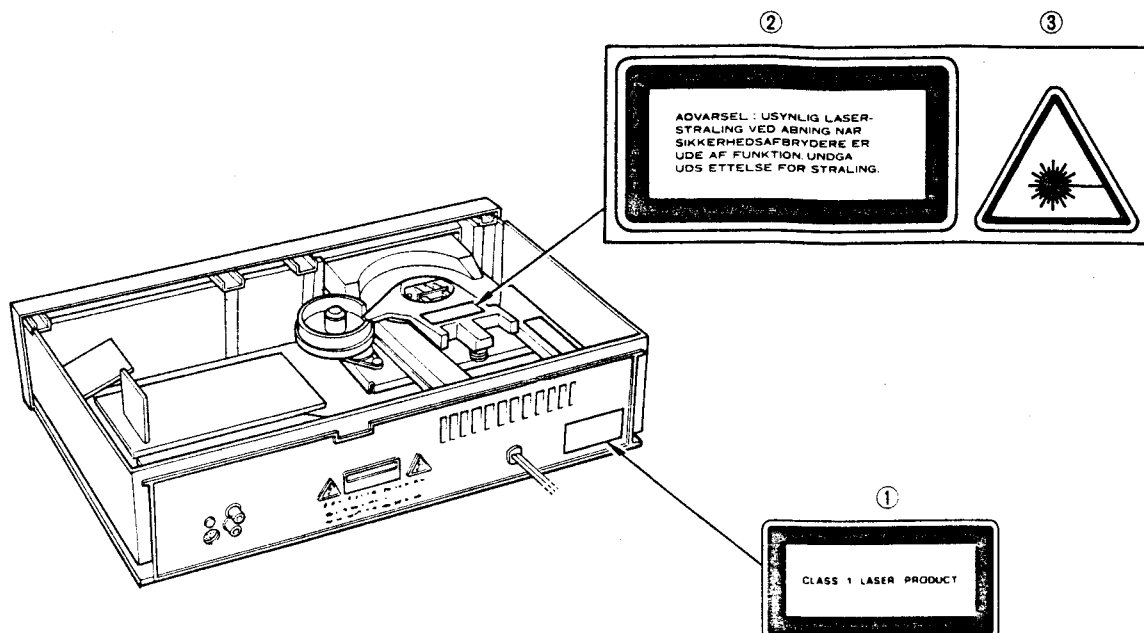
MLP-7

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 SITTE 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 FÖRETAS AV FACKMAN MED KUNSKAP OM ATT RISK FÖRELIGGER FÖR RADIOAKTIV STRÅLNING.

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 INDEN I APPARATET, SOM VIST I ILLUSTRATIONEN, SOM EN ADVARSEL OM YDERLIGERE INDGREB 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 LASERDIODIN, 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.

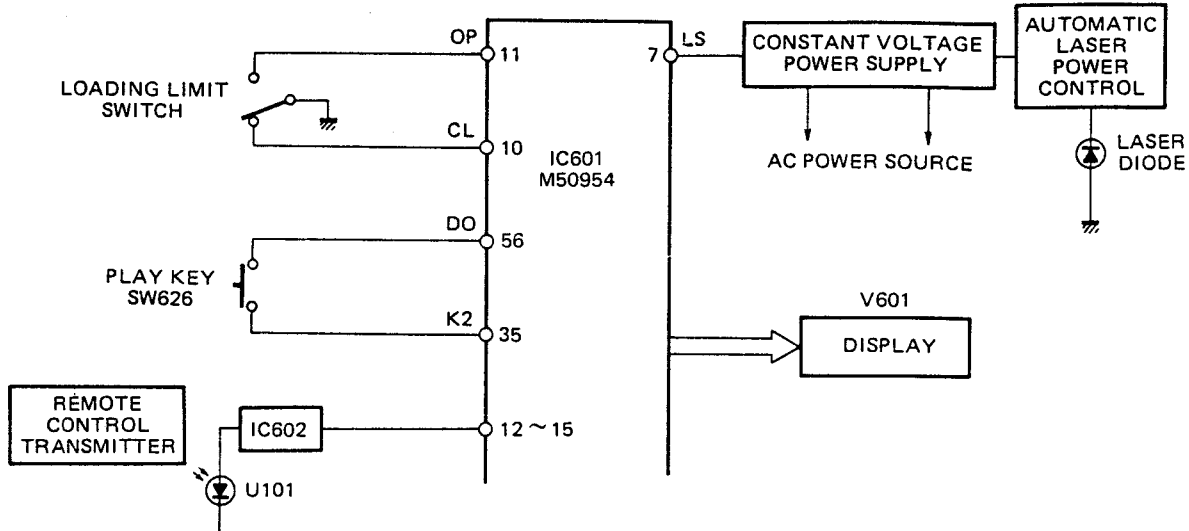
Laser output is controlled by the injection or cutoff of the constant voltage source to the laser diode at Pin 7 (LS) of IC601 (M50954), and also by Automatic Laser Power Control Circuit. When Pin 7 is in "H" (High) level, the laser emits the beam. When Pin 7 is in "L" (Low) level, the laser does not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

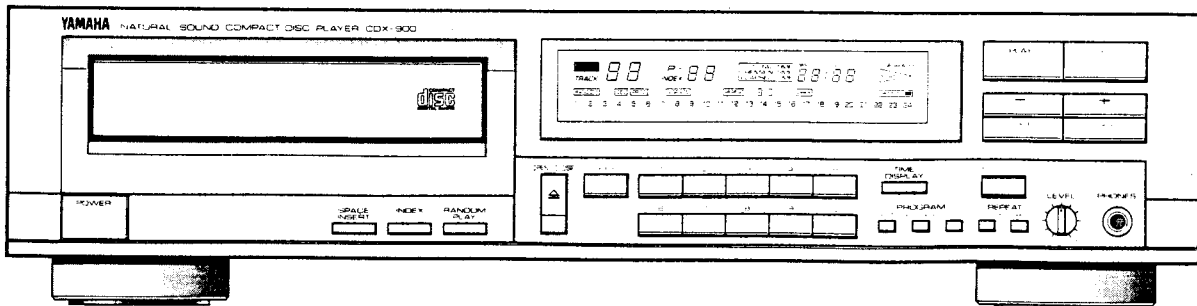
After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

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

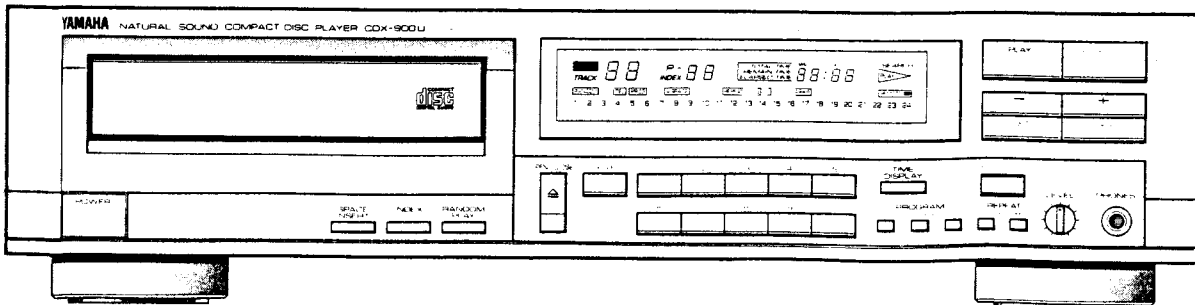


■ FRONT PANELS

● CDX-900

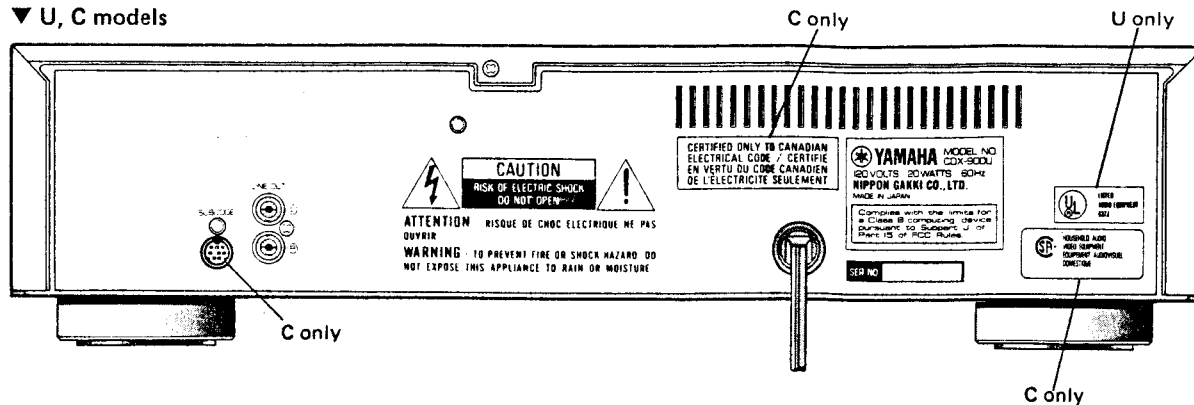


● CDX-900U

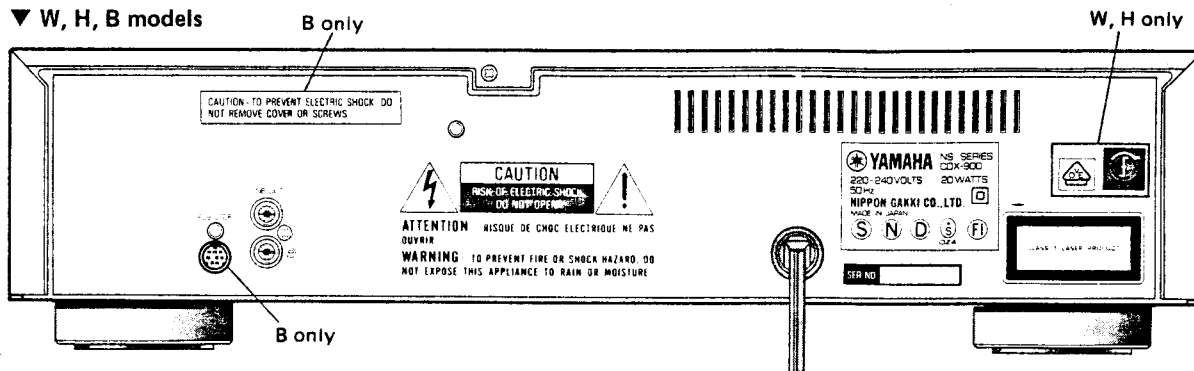


REAR PANELS

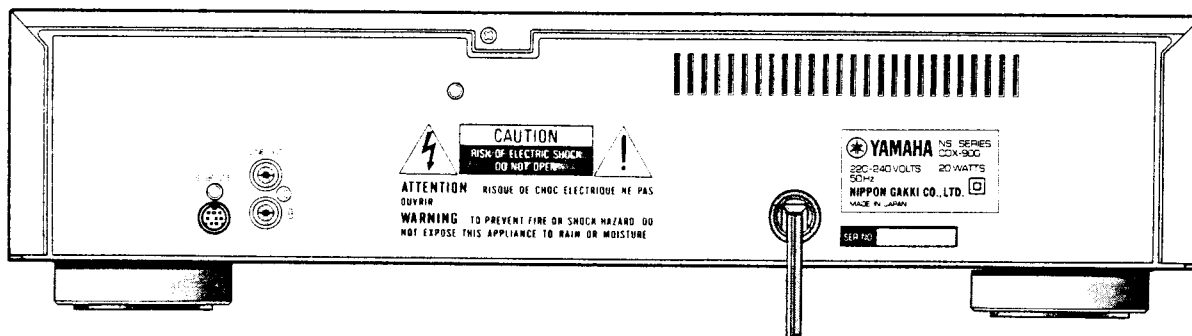
▼ U, C models



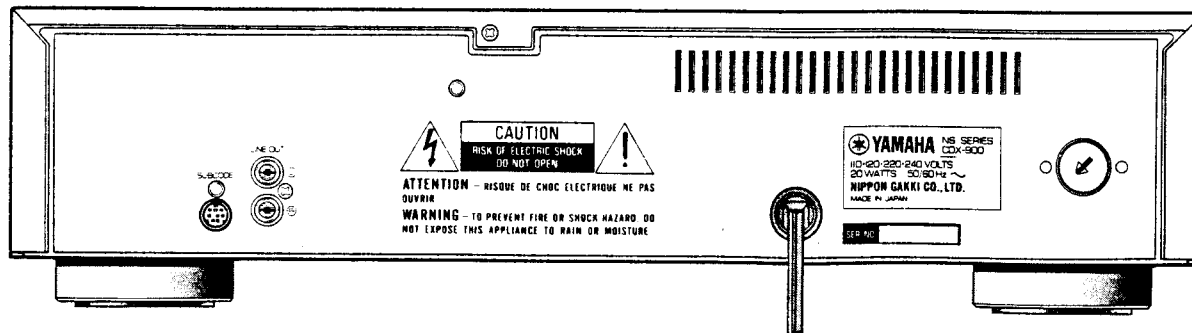
▼ W, H, B models



▼ A model



▼ R model



SPECIFICATIONS

Format	Compact disc digital audio system
--------	-----------------------------------

AUDIO SECTION

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)

INTERNAL SYSTEMS

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

FUNCTIONS

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

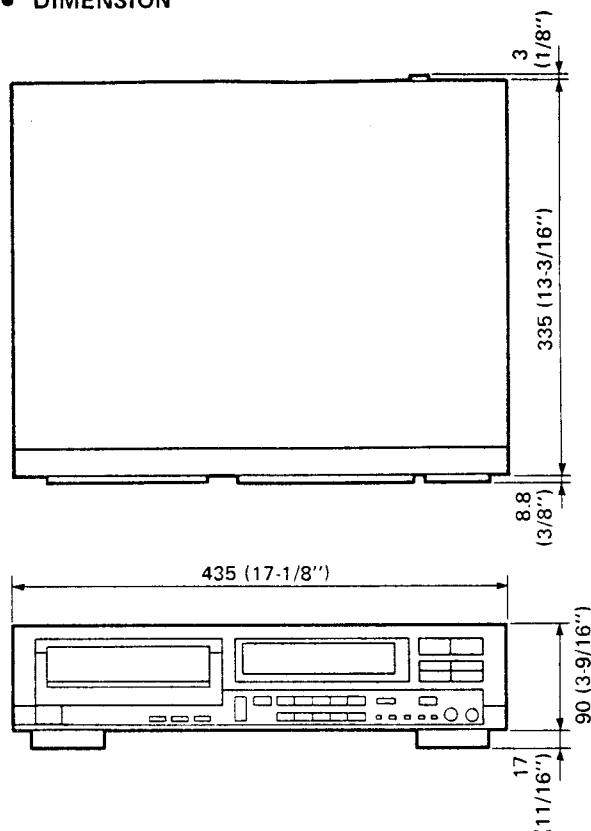
GENERAL

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 (17-1/8 x 4-3/16 x 13-4/8)
Weight	6.5kg (14 lbs. 5 oz.)
Accessories	Pin plug cord Remote Control Transmitter RS-CD9 Two dry-cell penlight batteries (AA: R6)

*Specification subject to change without notice.

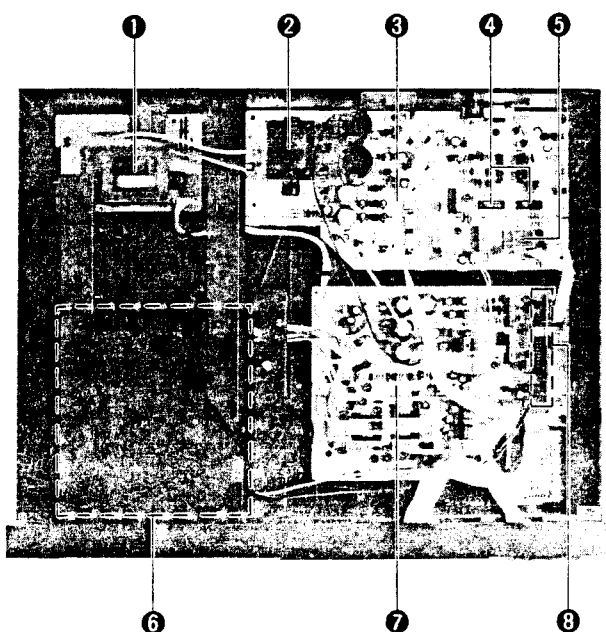
U U.S.A. model
C Canadian model
B British model
A Australian model
W Federal Republic of Germany
H European model
R Other model

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

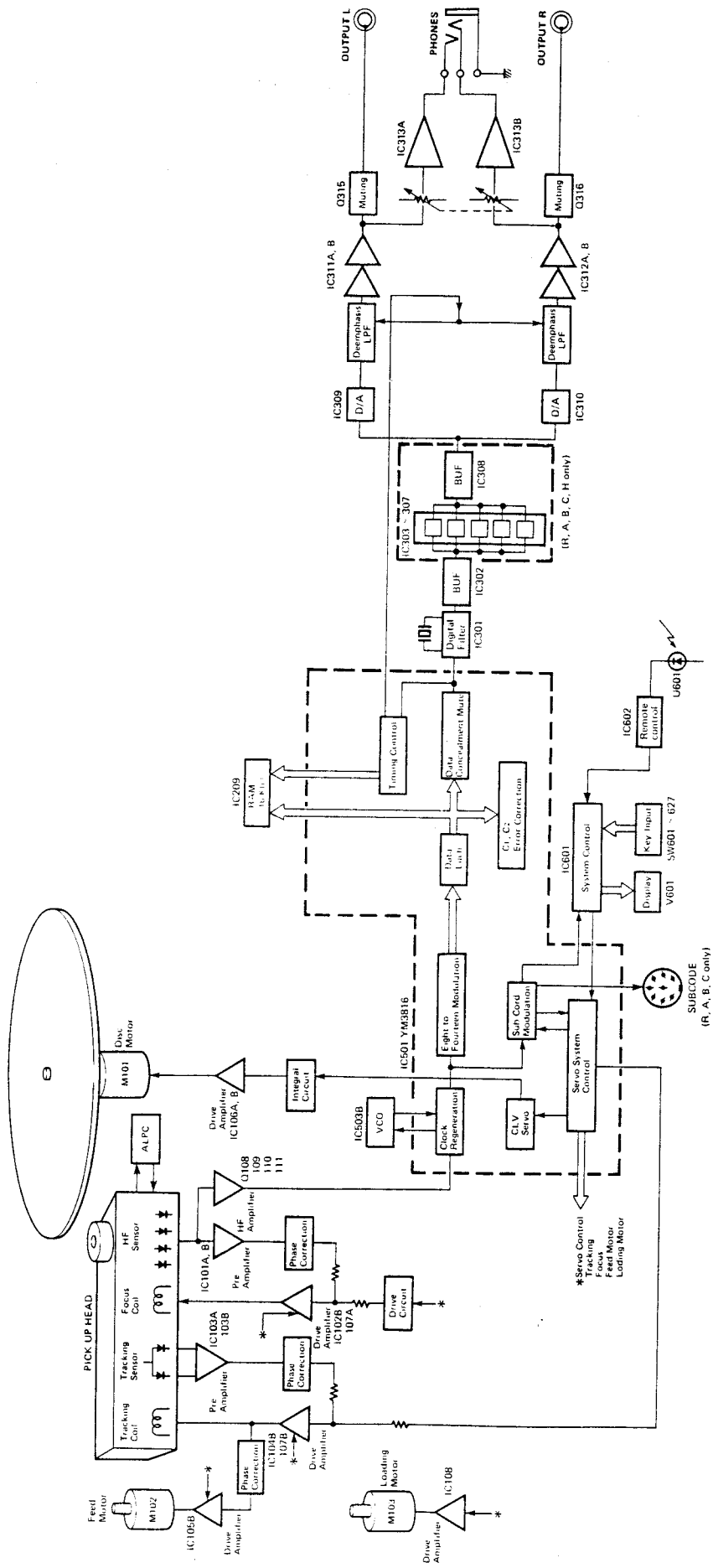
⑤ 16 BIT OVER SAMPLING DIGITAL FILTER (IC301) : YM3619DF or YM3404DF

⑥ DISC MECHANISM UNIT

⑦ SERVO CIRCUIT BOARD

⑧ SPC CIRCUIT BOARD

■ BLOCK DIAGRAM



■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.

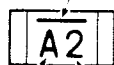
For example, "472" stands for 4.7k ohms and "000" stands for the jumper resistor.

$$47 \times 10^2 = 4700\Omega \\ = 4.7k\Omega$$

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}

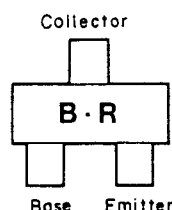
c. Transistor

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.

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 A in Fig. 3. Now, the jitter can be adjusted.

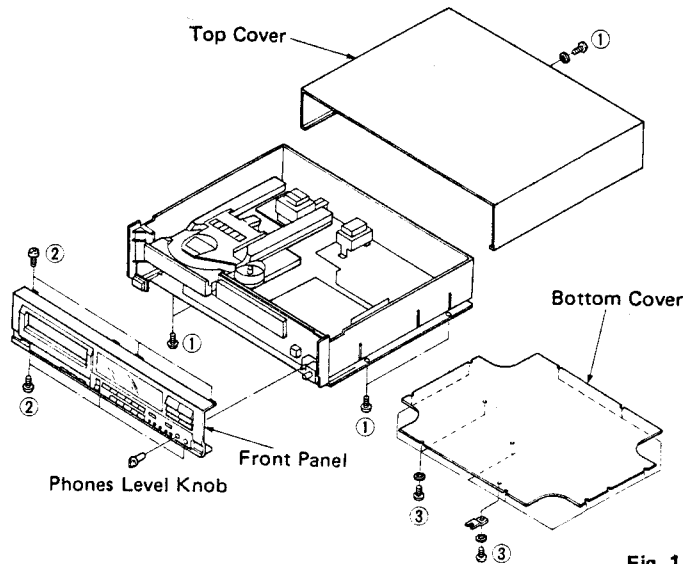


Fig. 1

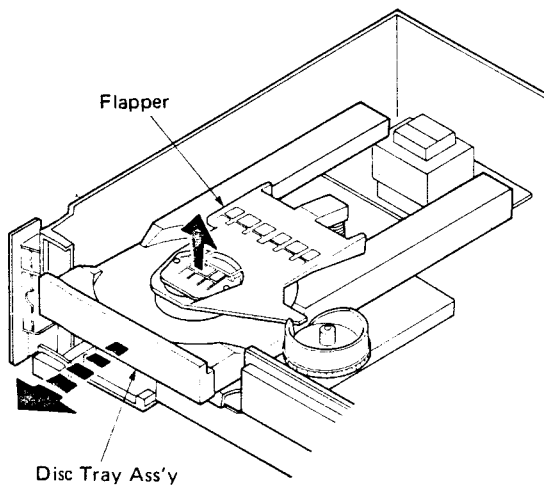


Fig. 2

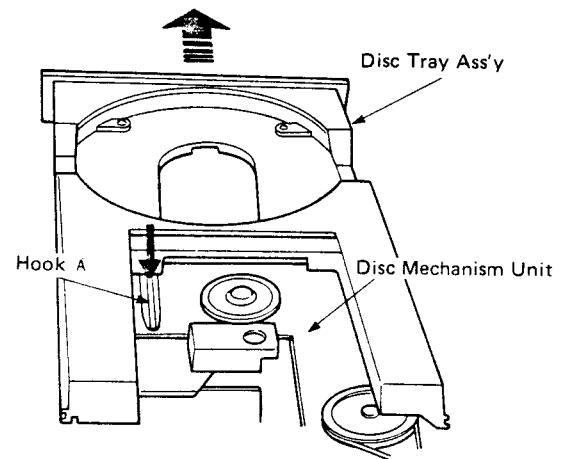


Fig. 3

5. Removal of Disc Mechanism Unit

- Remove 2 screws (④) in Fig. 4.

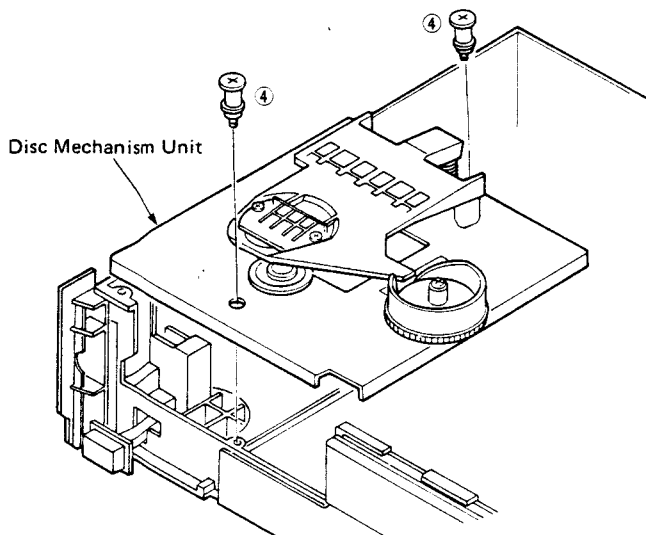


Fig. 4

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.

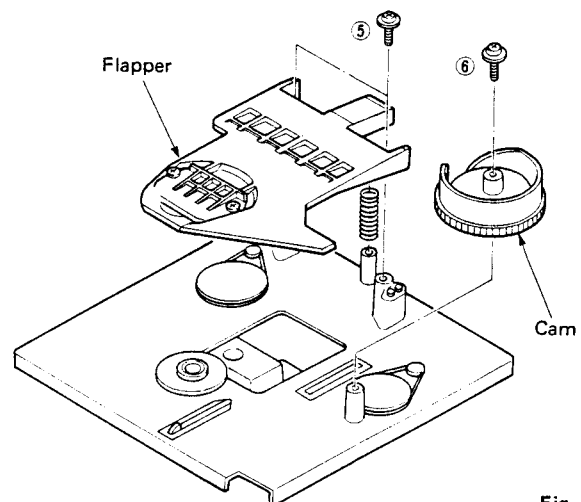


Fig. 5

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

④ 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.

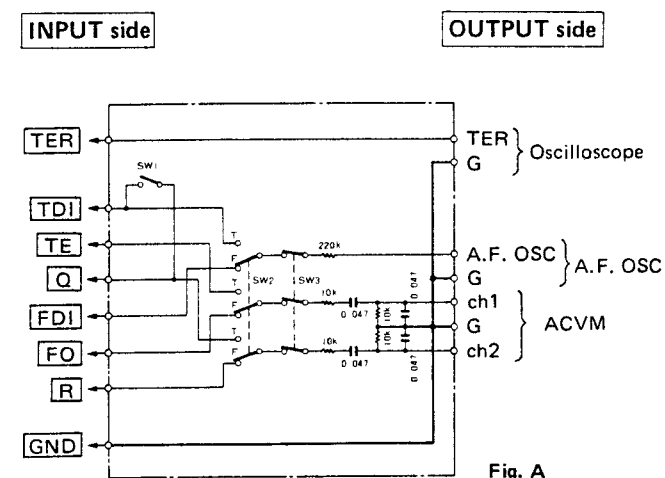
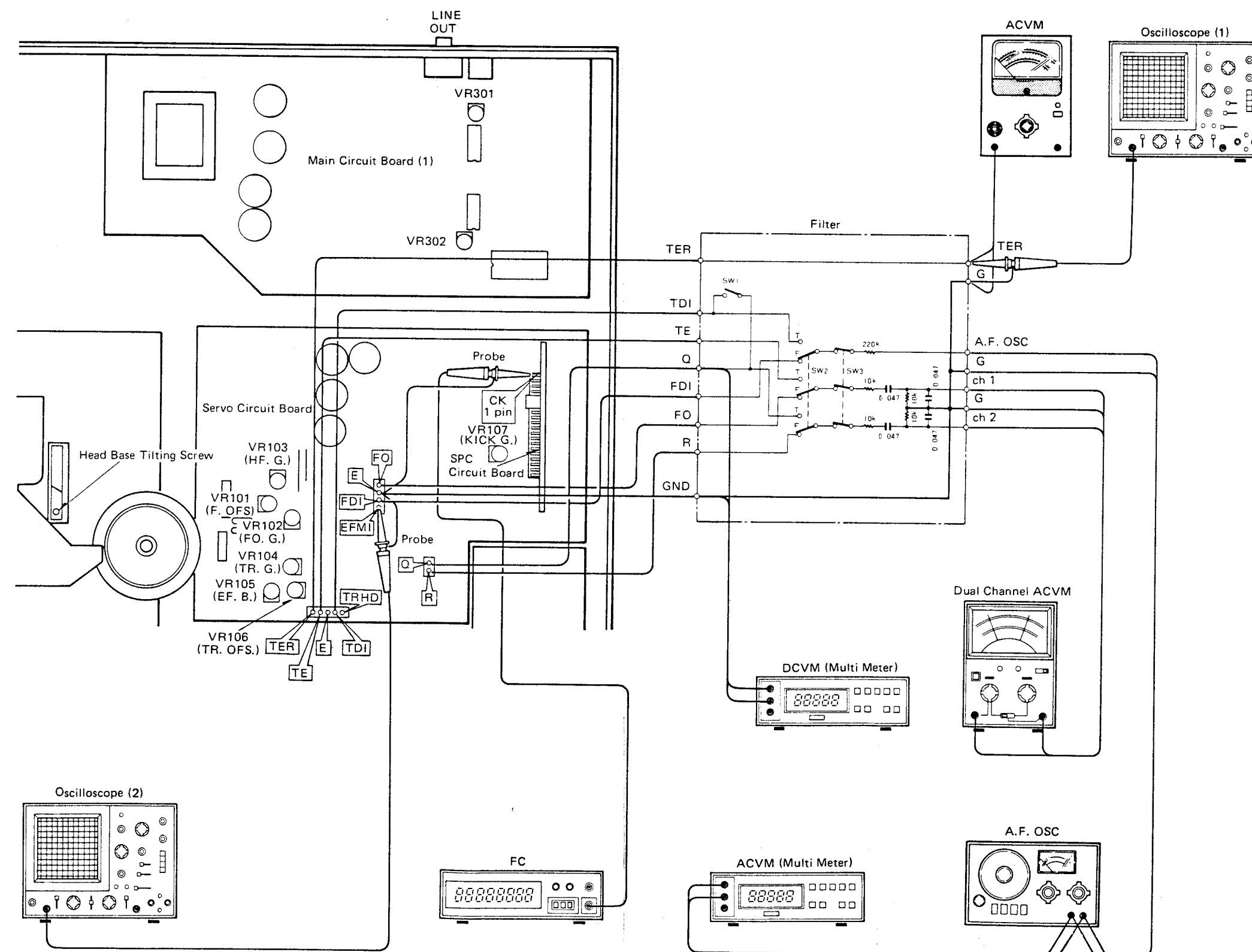


Fig. A

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)

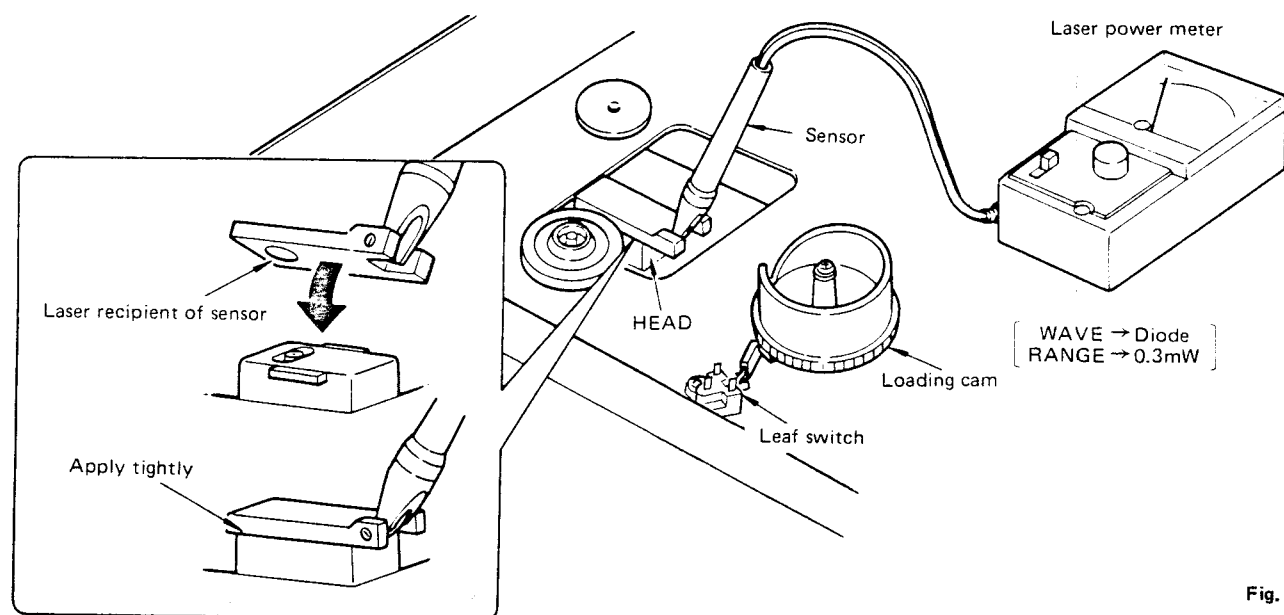


Fig. B

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.

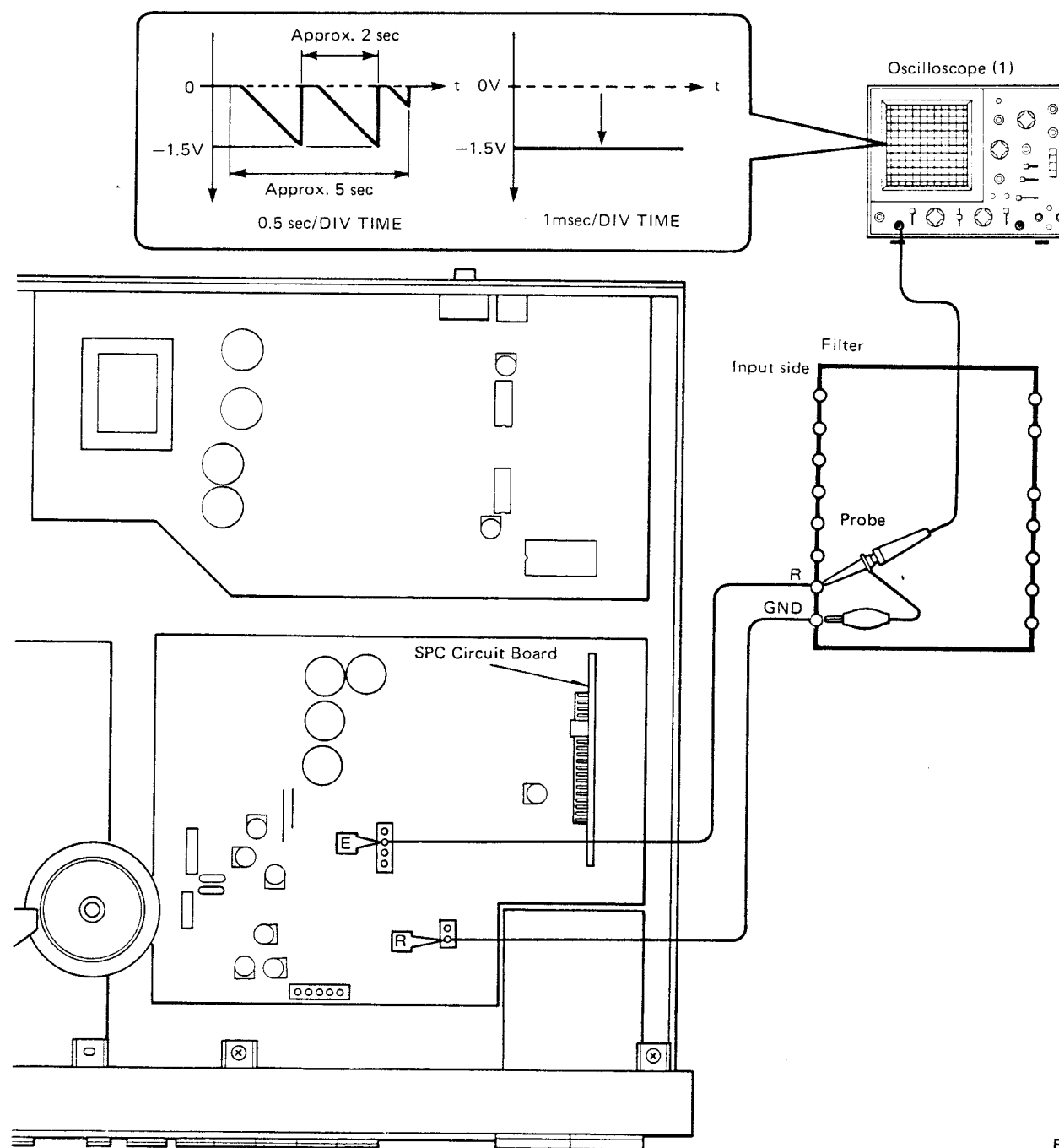


Fig. C

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: $F_{VCO} = 4.3218 \text{ MHz} \pm 10 \text{ kHz}$

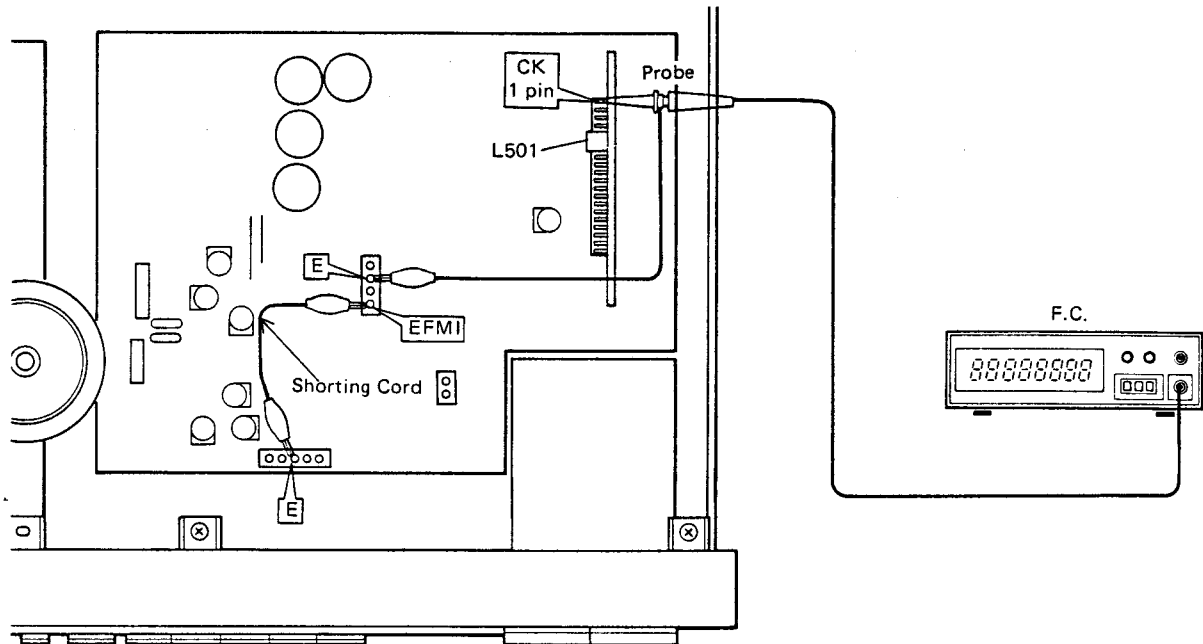


Fig. D

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

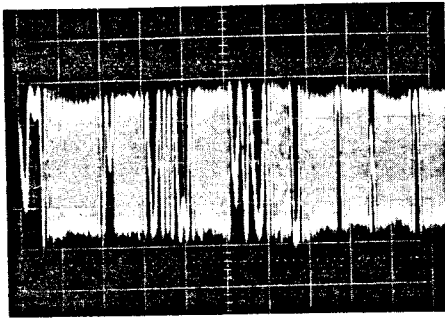
- AC coupling
- 0.5V/div range (Vertical)
(50 mV/div when 10:1 probe is used)
- 0.2 ~ 0.5 $\mu\text{sec/div}$ time (Horizontal)

* 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.

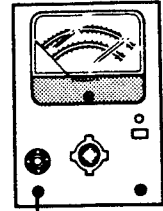
Oscilloscope (1)

"DC0V" ▶



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

ACVM



Filter

TER

TDI

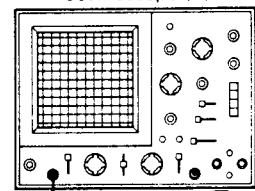
Q

GND

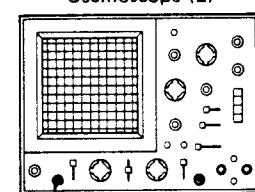
SWI

Probe

Oscilloscope (1)



Oscilloscope (2)



VR105
(EF. B.)

E

EFMI

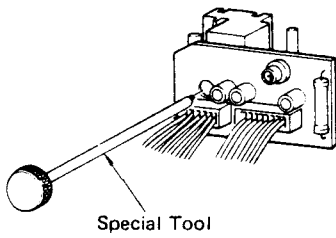
Q

TER

E

TDI

Optical Pick Up Head
(DG-1)



Special Tool

Optical Pick Up Head (MLP-7)

Diffraction
Grating

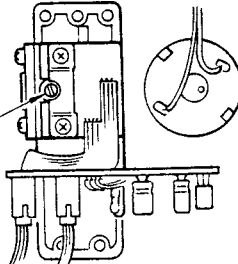
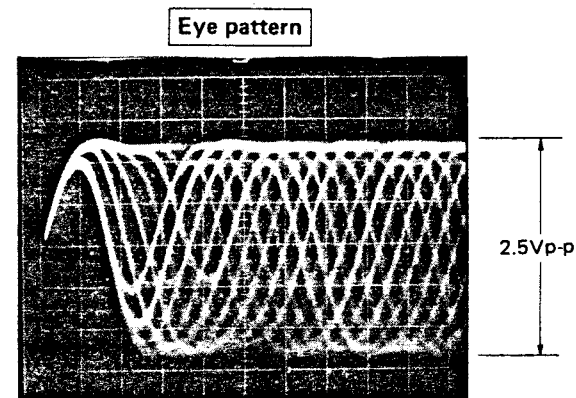


Fig. E

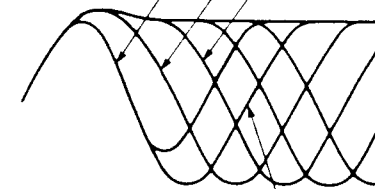
Oscilloscope (2)



0.5 μ sec/div time (Horizontal)
0.5V/div (Vertical)

Waveforms 3T – 11T.

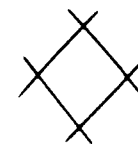
3T, 4T, 5T, 6T, ..., 11T



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



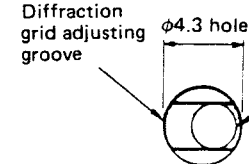
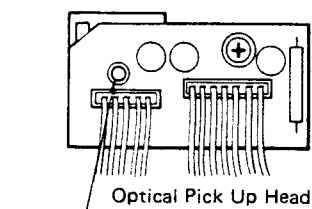
Abnormal waveform



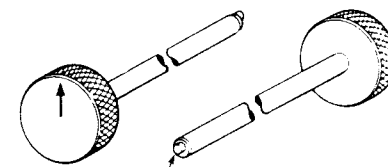
Adjust so that the good waveform is obtained.

Special tool for DG-1 (TX901060)

• DG-1



Insert the tip of the special tool into the groove and turn the tool to adjust the diffraction grid.



Apply arrow mark in the direction of the boss as shown in the left-hand figure.

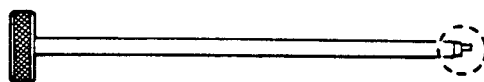
Effective adjusting range



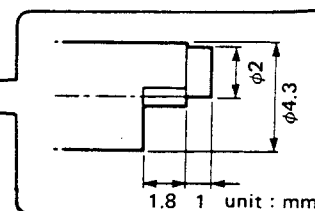
Fig. F-a

Effective adjusting range

• TX-901060



When this tool is rotated one turn (360°), the pickup head diffraction grid is adjusted through its entire range. However, the pickup head diffraction grid is roughly adjusted at the factory, do not excessively rotated the tool. For effective adjustment, refer to the arrow mark on the tool knob.



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 μ 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 $\pm 45^\circ$.

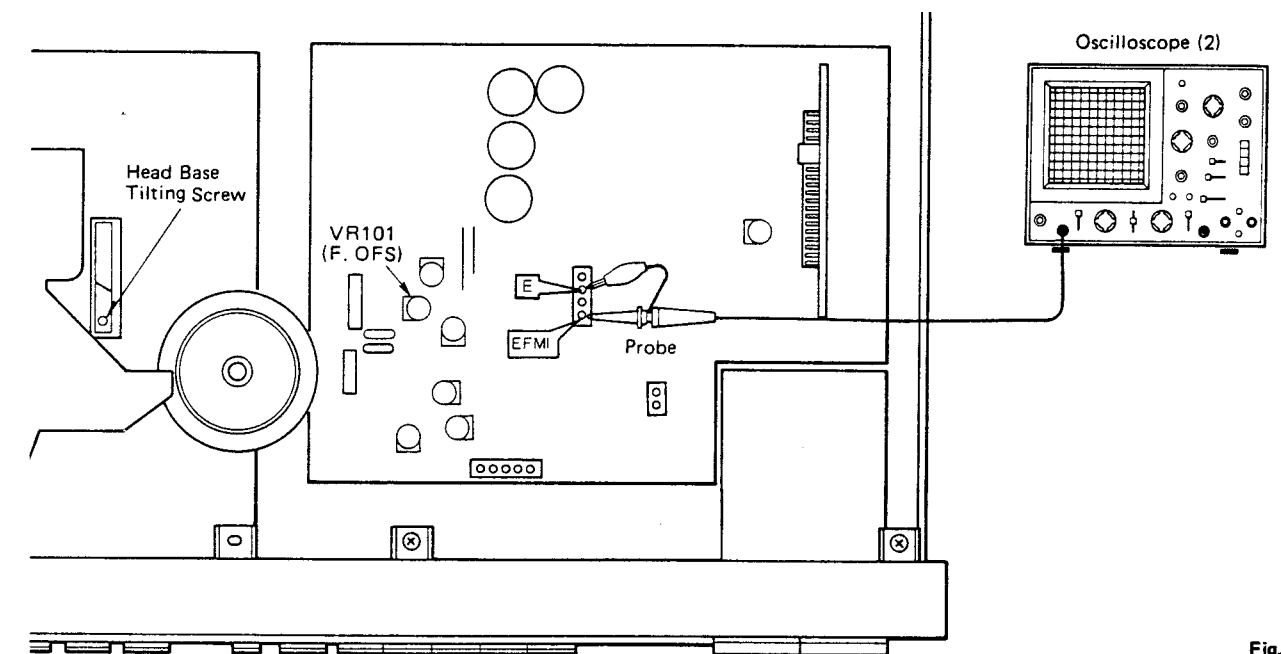
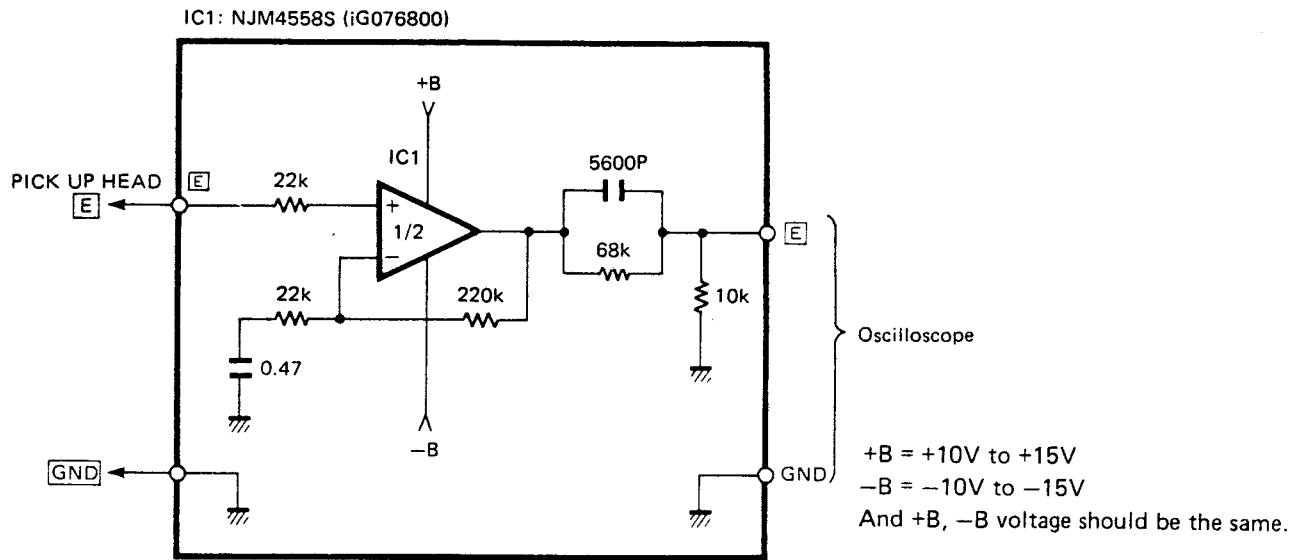


Fig. F

• SUPPLEMENT

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



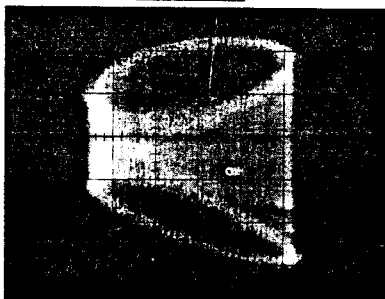
*The buffer amplifier is used only for this adjustment.
Don't leave it connected in other adjustments.

Oscilloscope (1) settings

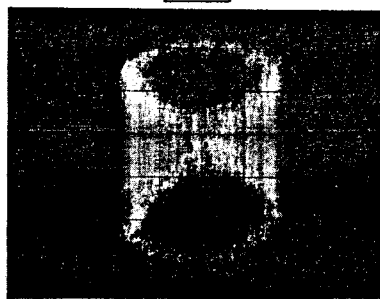
- DC coupling
- X input → **E** signal: 50mV/div
(5mV/div when 10:1 probe is used)
- Y input → **EFM1** signal: 500mV/div
(50mV/div is when 10:1 probe is used)
- MODE → X-Y

- ① Connect the adjusting instrument and measuring instrument.
- ② Apply **E** signal and **EFM1** 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.

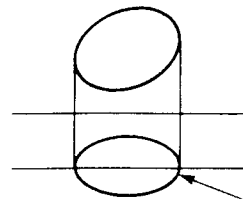
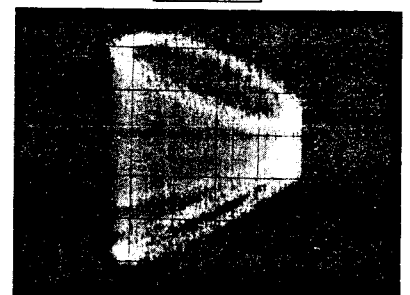
Incorrect



Good



Incorrect



Make the lower ellipse horizontal.

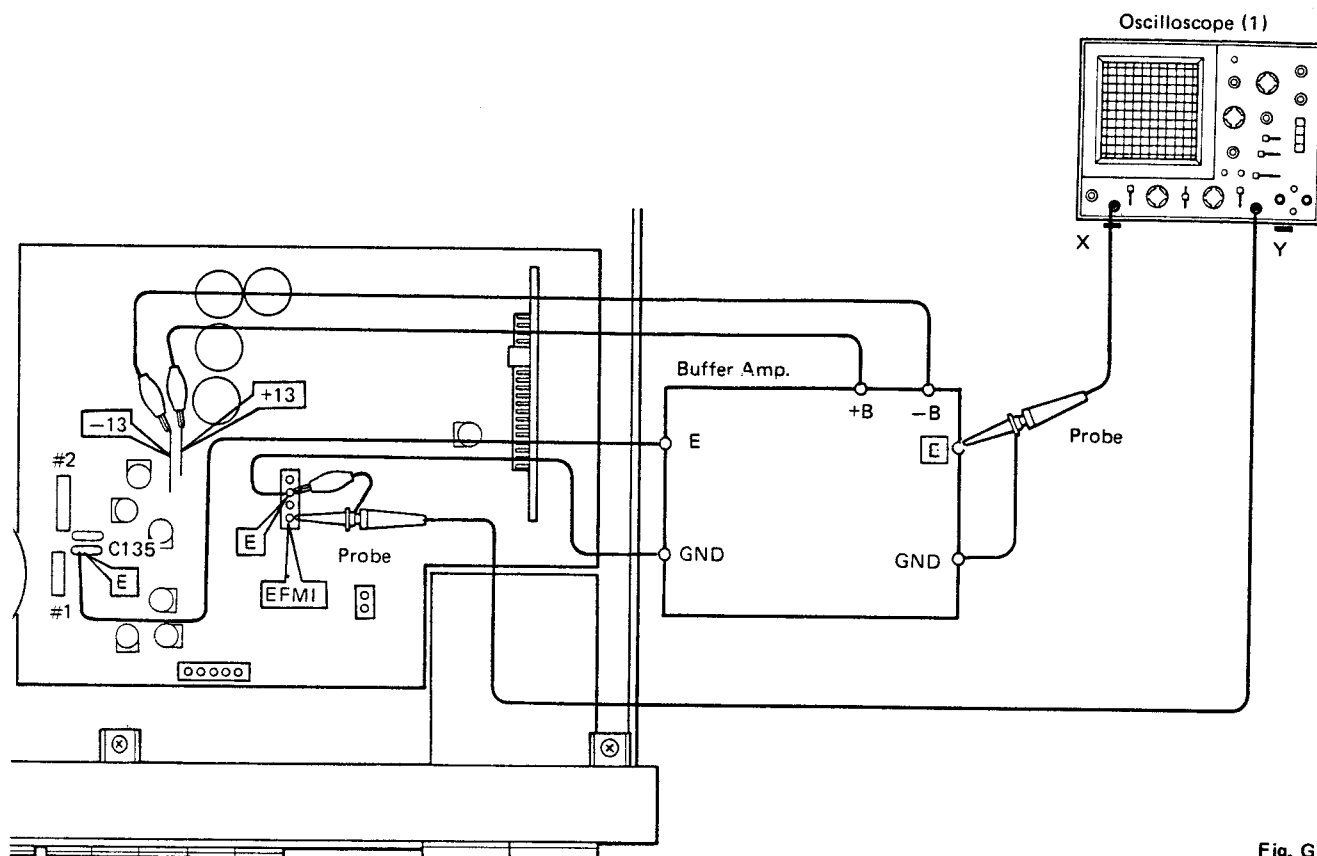


Fig. G

Adjustment of EF Balance (Step 6)

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

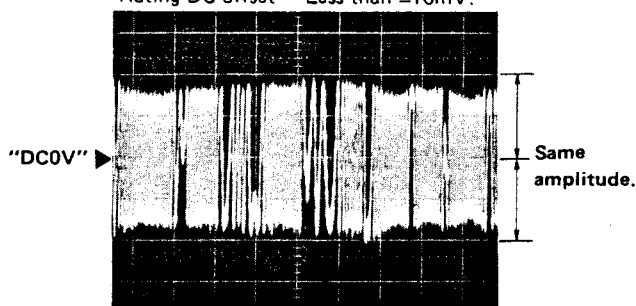
Oscilloscope (1) settings

- 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 SERV0 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.

Good

Rating DC offset → Less than $\pm 10\text{mV}$.



This shows DC 0V state.

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 μ 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.

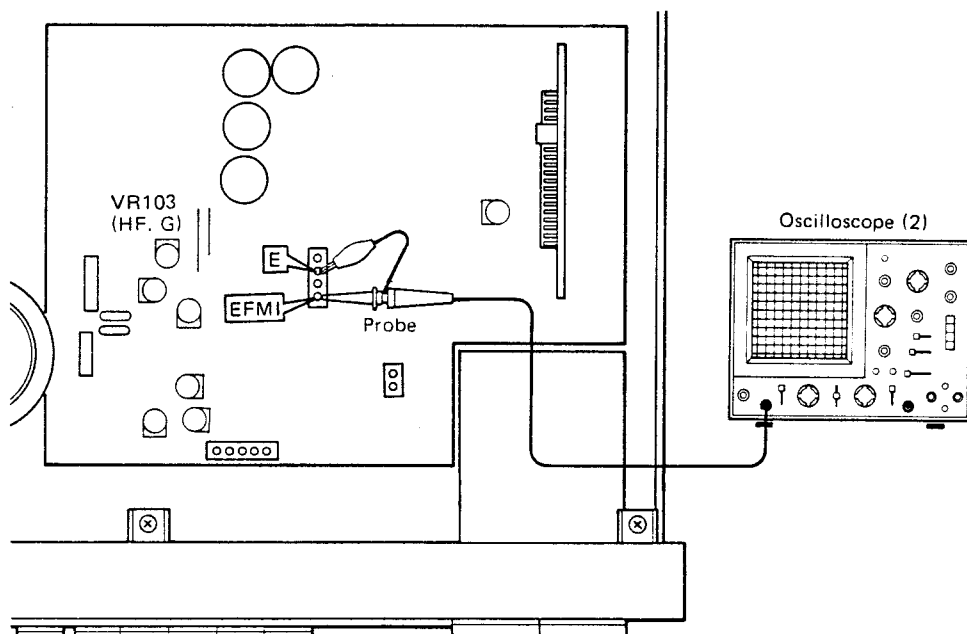


Fig. H

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)

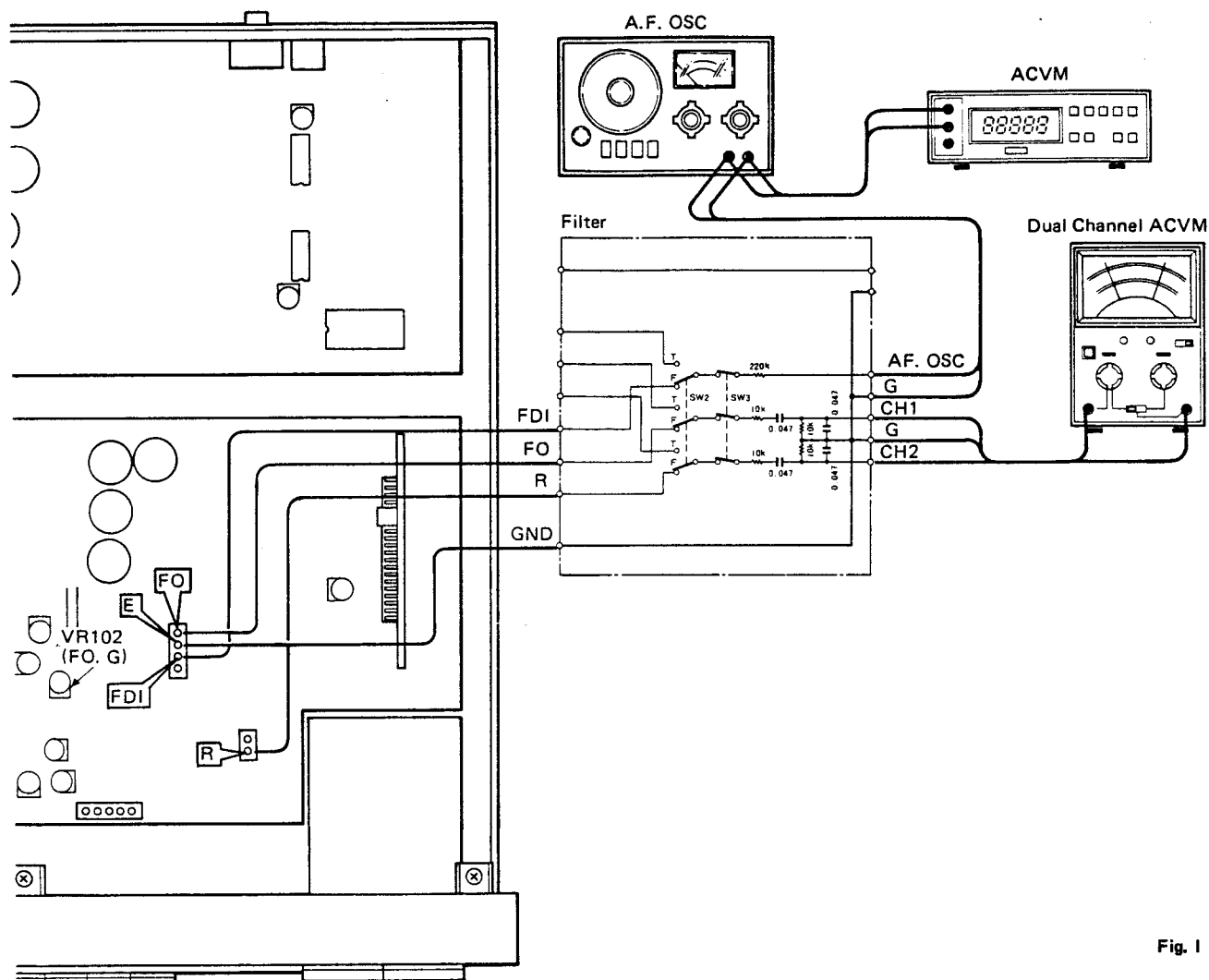


Fig. I

Adjustment of Tracking Gain (Step 9)

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

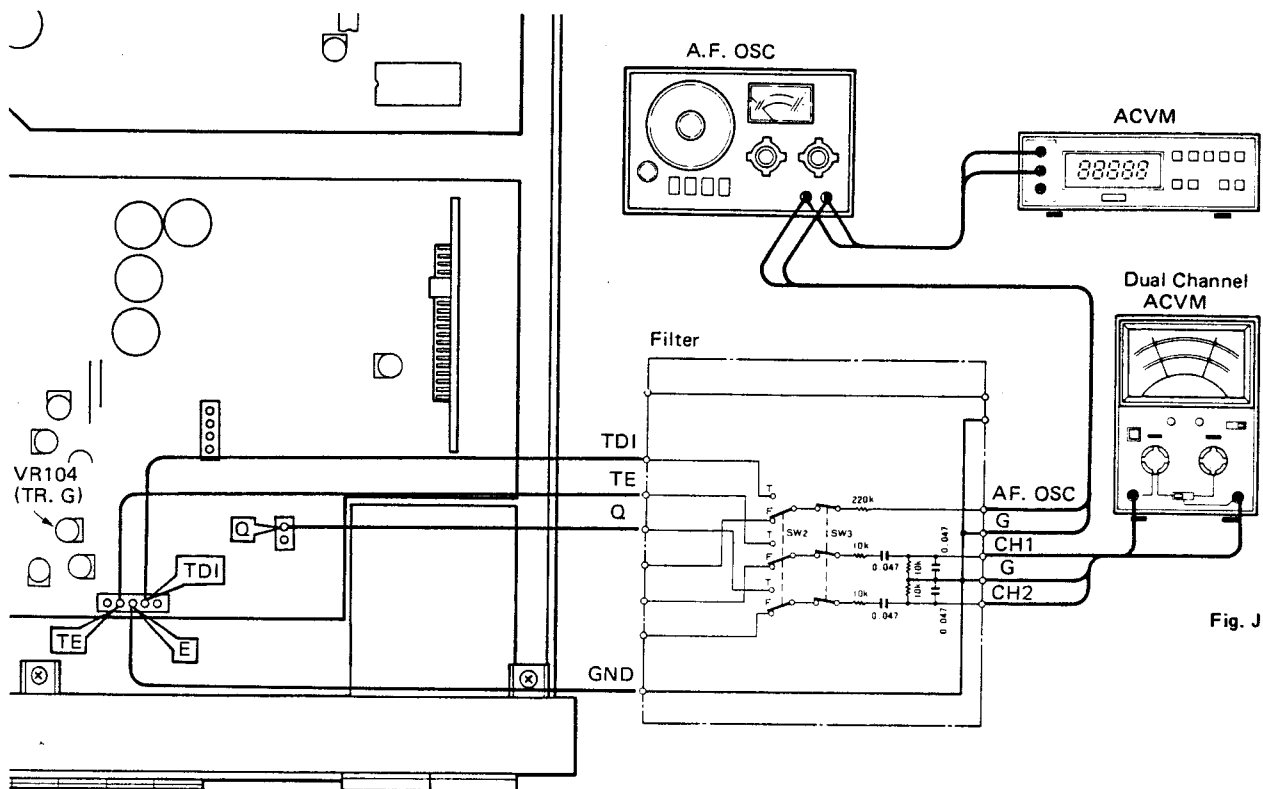
- ① Connect the filter and measuring instruments, as shown in Fig. J.
Apply a 800 Hz, 100 mVrms signal from the AF oscillator to **TDI** terminal via the resistor (220 kilohms) in the filter.
- ② Set SW3 to OFF.
- ③ Set SW2 to T (TRACKING).
- ④ Press POWER key. (POWER ON)
- ⑤ Load Philips test disc.
- 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: $E_{TE} - E_Q = 13\text{dB}$

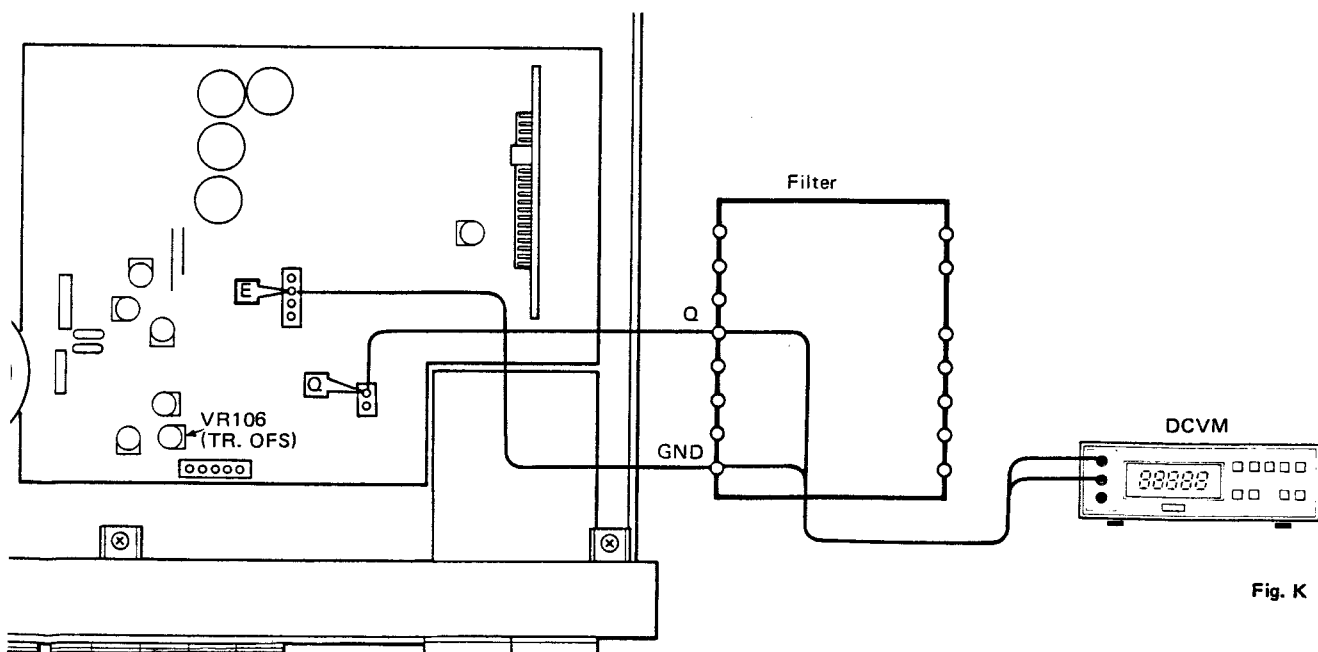
Example [0dBV = 1V]
 $E_Q = -30\text{dBV}$ (30mV)
 $E_{TE} = -17\text{dBV}$ (140mV)



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)

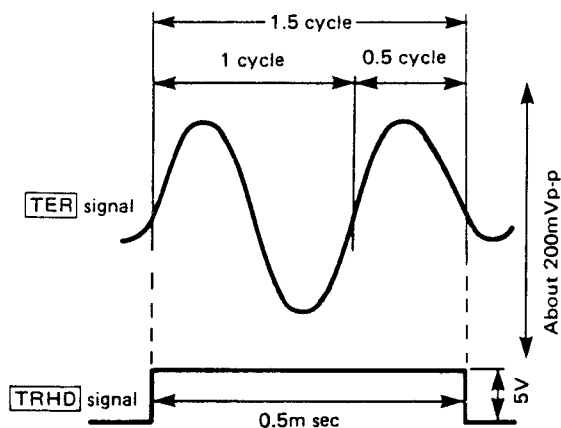
- ① Confirm jitter rating as in ⑦ of Step 4.
- ② When jitter rating is improper, go back to step 4 and also carry out adjustments in steps 5 to 10 again.

Adjustment of Kick Gain (Step 12)

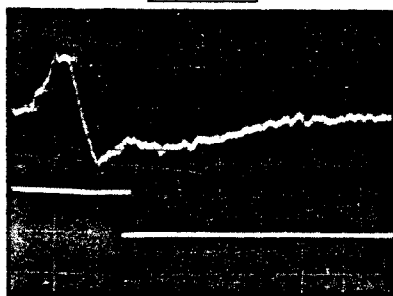
Oscilloscope (1) (2-ch oscilloscope) Settings

- 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)

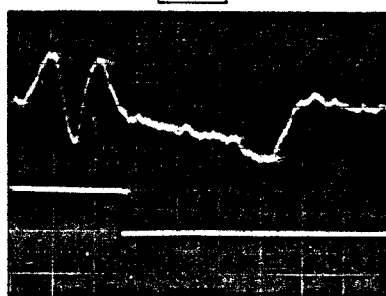
- ① Connect the filter and measuring instruments, as shown in Fig. L.
- ② Press POWER key. (POWER ON)
- ③ Load Philips test disc.
- ④ Press PLAY key.
- ⑤ Observe waveform while pressing Fast Forward mode key (▶▶) for 3 seconds.
- ⑥ Adjust VR107 (KICK GAIN) so that the **TER** signal cycle is 1.5 ± 0.5 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.



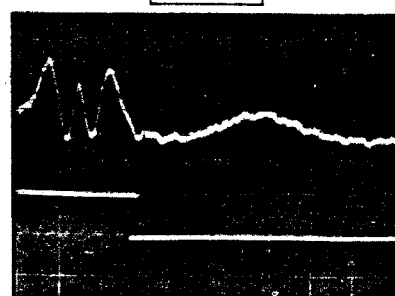
Incorrect



Good



Incorrect



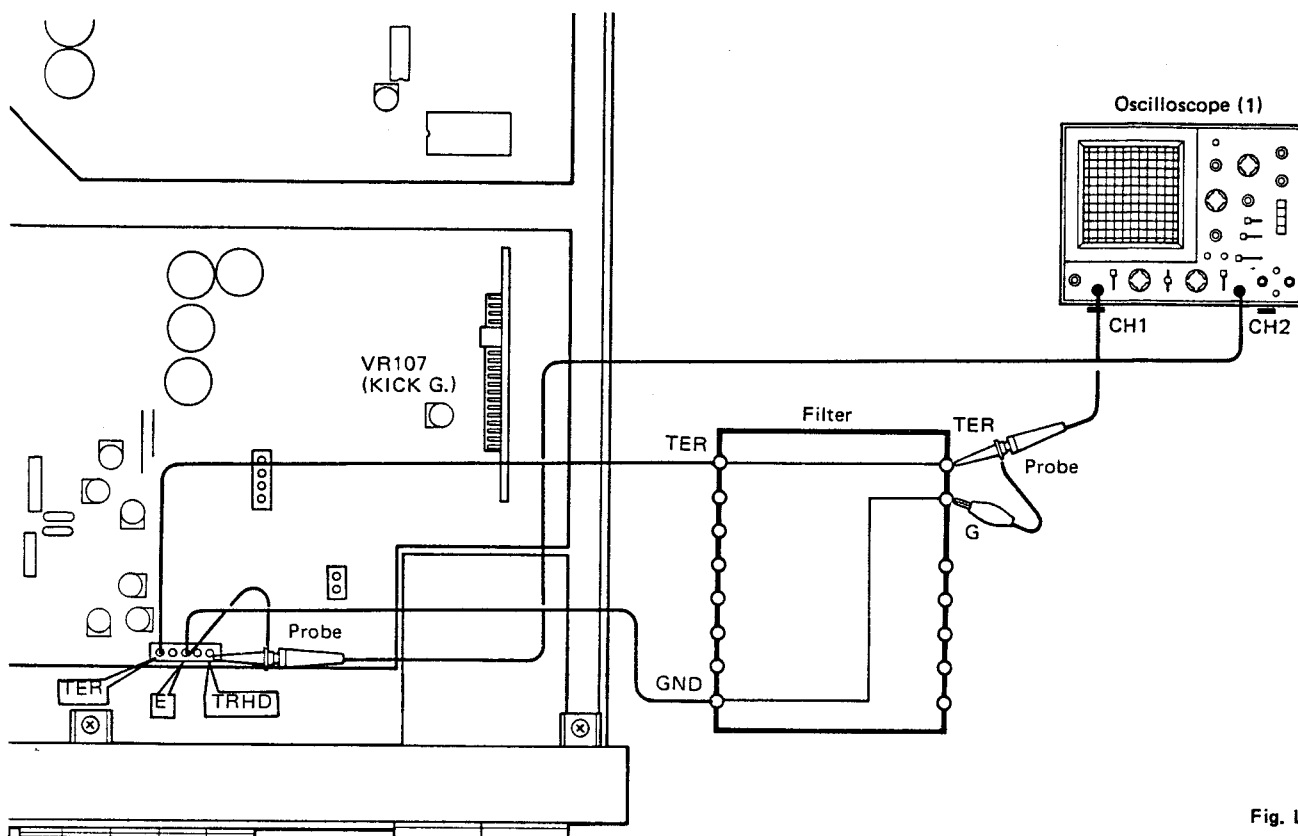


Fig. L

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

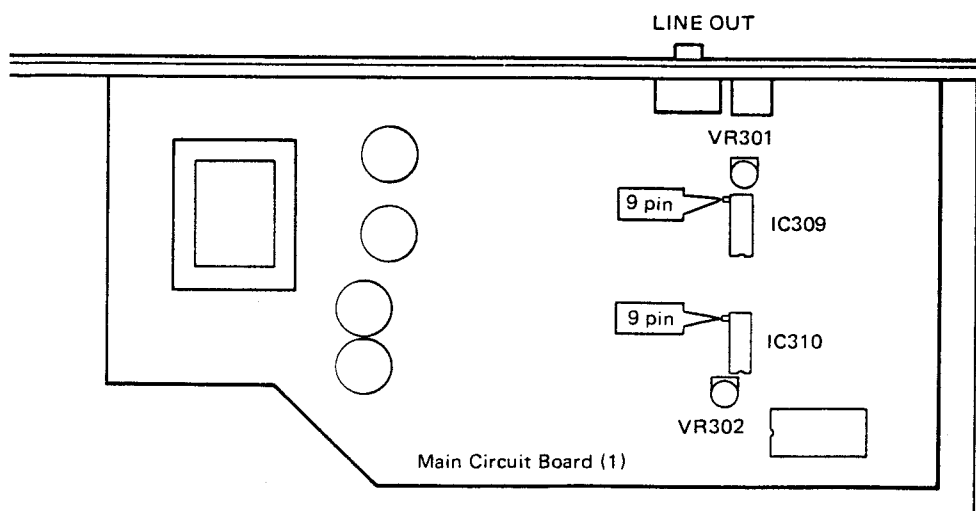
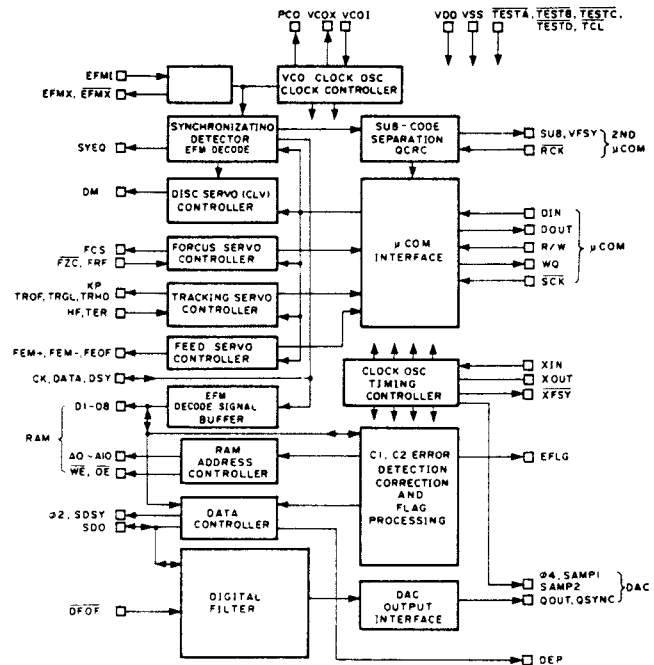
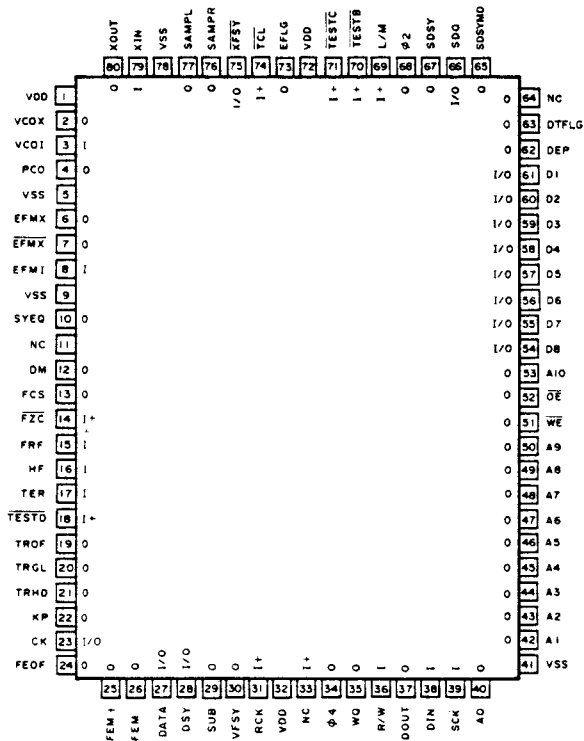


Fig. M

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

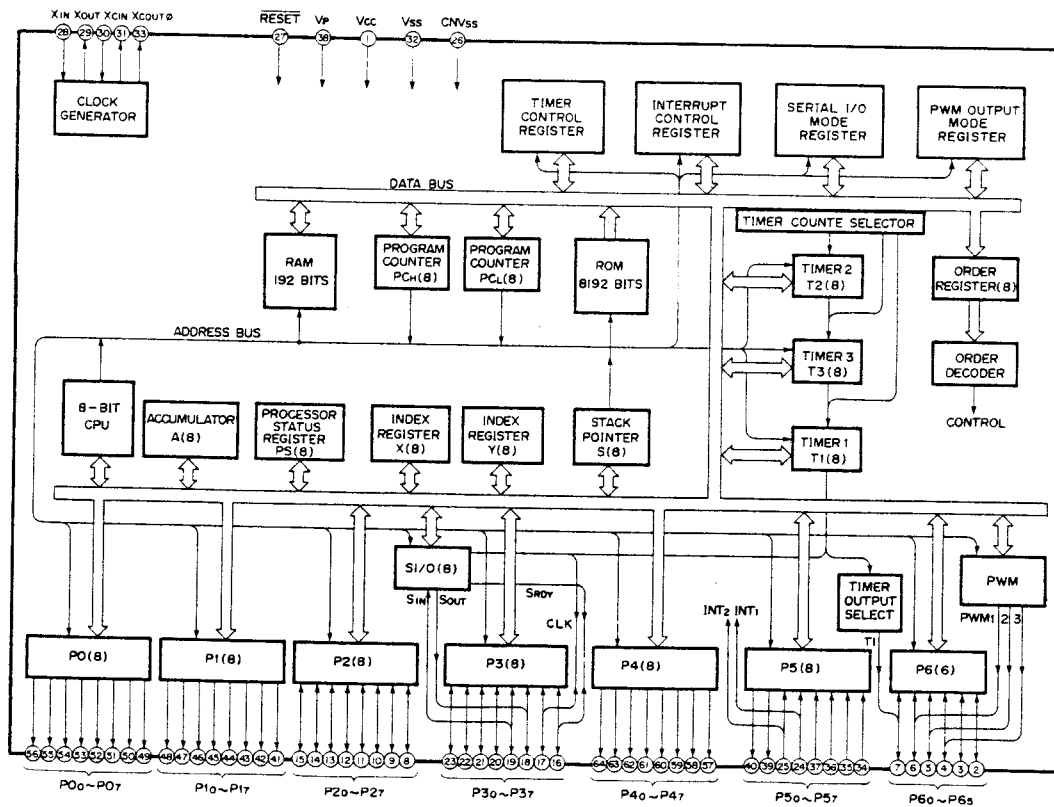
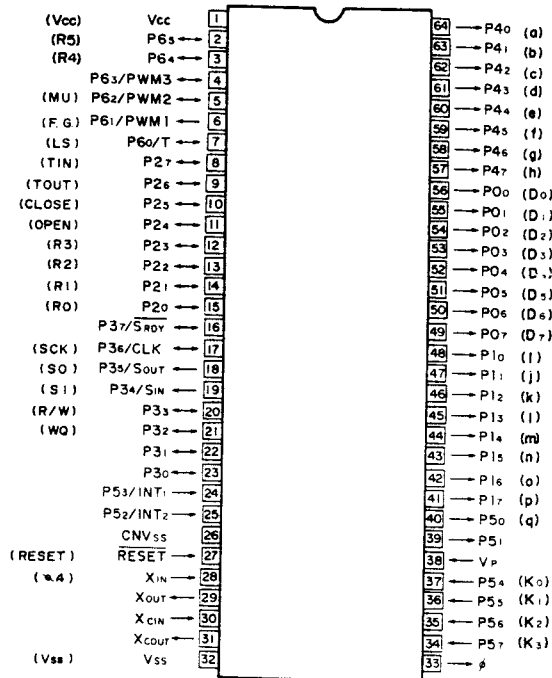
YM-3816 is a CMOS LSI for signal processing and servo control of the compact disc player. It executes such signal processing as demodulation of the EFM signal from the optical pick-up, detection and correction of the erroneous signal and digital filtering which helps to improve the sound quality, as 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	
5	VSS		GND
6	EFMX	O	EFM Signal External Circuit
7	EFMX	O	
8	EFMI	I	
9	VSS		GND
10	SYEQ	O	Synchronized Uniform Signal
11	N.C.		Not Use
12	DM	O	Disc Servo { LOW (0V): FORWARD OPEN (2.5V): STOP HIGH (5V): REVERSE
13	FCS	O	Focus Servo System Input
14	FZC	I	
15	FRF	I	
16	HF	I	Tracking Servo System Input
17	TER	I	
19	TROF	O	
20	TRGL	O	
21	TRHD	O	
22	KP	O	
			{ LOW (0V): REW OPEN (2.5V): STOP HIGH (5V): FF

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	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	SDSYMD	O	BB Word Clock for DAC
76	SAMPR	O	Digrich Signal
77	SAMPL	O	
34	$\phi 4$	O	
18	TESTD	I	4.3218MHz Clock
70	TESTB	I	Test Terminal
74	TCL	I	
72	VDD		
73	EFLG	O	Power Supply
75	XFSY	I/O	C1, C2 Error Correction Check Signal
78	VSS		Synchronized Clock Signal
79	XIN	I	GND
80	XOUT	O	Clock Oscillation

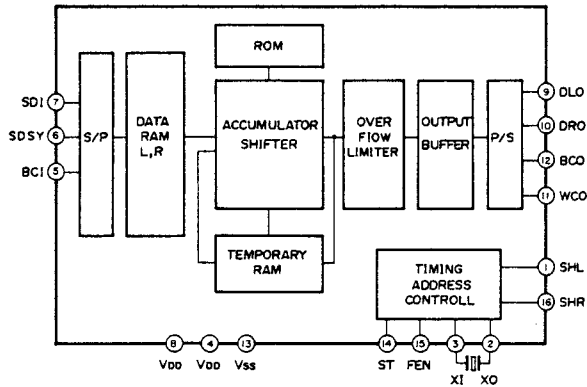
IC601: M50954-402SP (8 bit μ -COM)



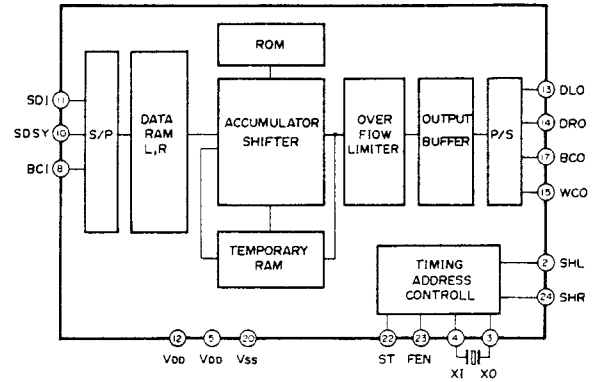
Pin No.	Pin Name		I/O	Function
1	Vcc			Power Supply
2	P65	R5	I	Remote control transmitter input
3	P64	R4	I	
4				Not used
5	P62	PLAY	O	Play mode output
6				Not used
7	P60	LASER	O	LASER servo output "H" = LASER LIGHT
8	P27	TRAY IN	O	Tray loading signal output
9	P26	TRAY OUT	O	Tray unloading signal output
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	ϕ 4 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

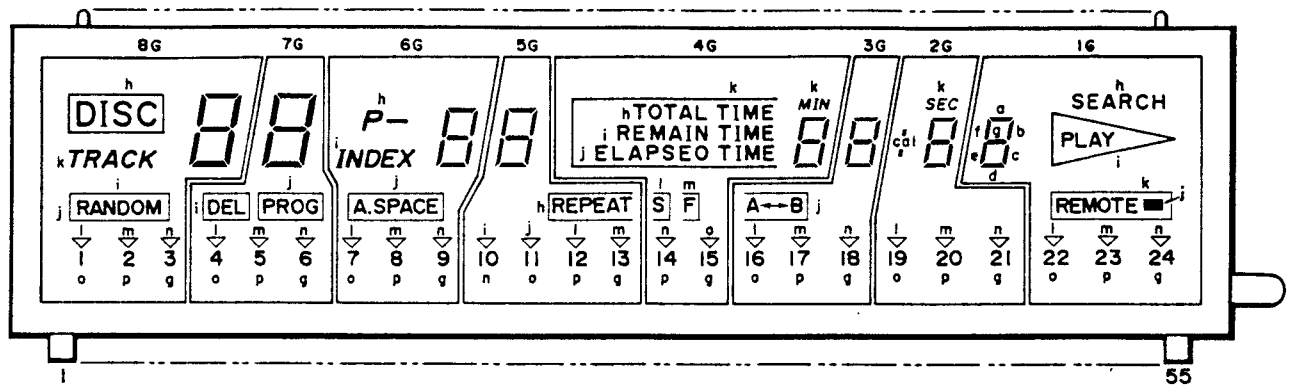


• YM3619DF



YM3619 Pin No.	YM3404 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 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" 192 fs = "H"
13	9	DLO	O	1DAC: L, Rch Data input 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 98 fs = 8.6436MHz or 96 fs = 8.4672MHz
2	1	SHL	O	1DAC: Lch deglitch signal output 2DAC: L, Rch deglitch signal output
24	16	SHR	O	1 DAC: Rch deglitch signal output
12	8	VDD ₁		Power supply +5V for digital signal
5	4	VDD ₂		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

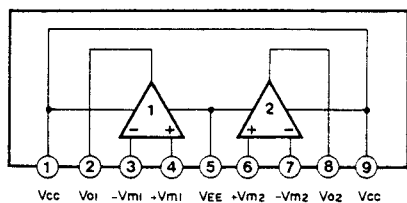
IC BLOCK

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

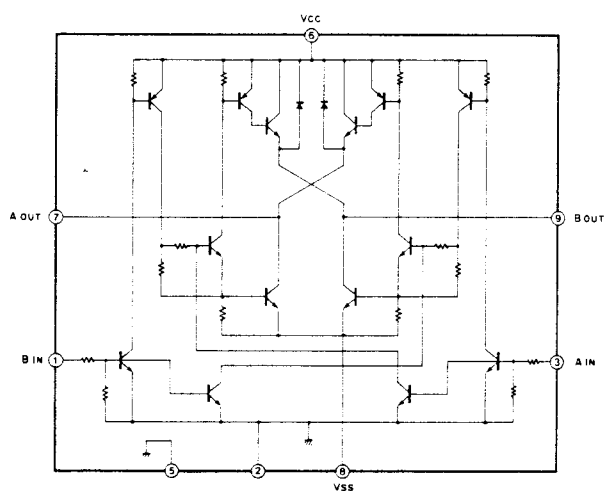
IC103: NJM4560S

IC311, 312: NJM5532S

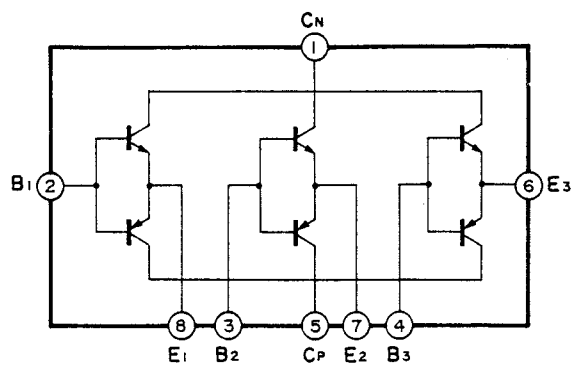
IC313: NJM2043S
(Dual Ope-amp)



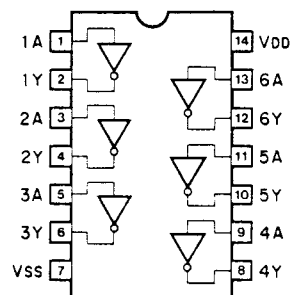
IC108: BA6218 (Motor Drive)



IC107: STA451C (Transistor Array)

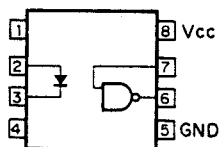


IC302, 308: TC74HC04P (Hex Inverter)

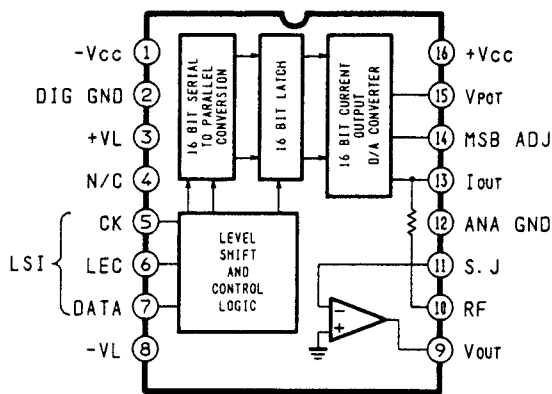


IC303 ~ 306: OCPL-2614

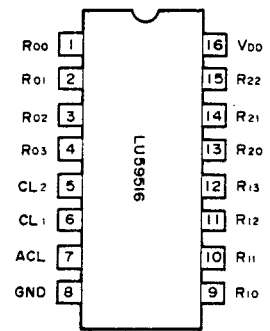
IC307: PC910



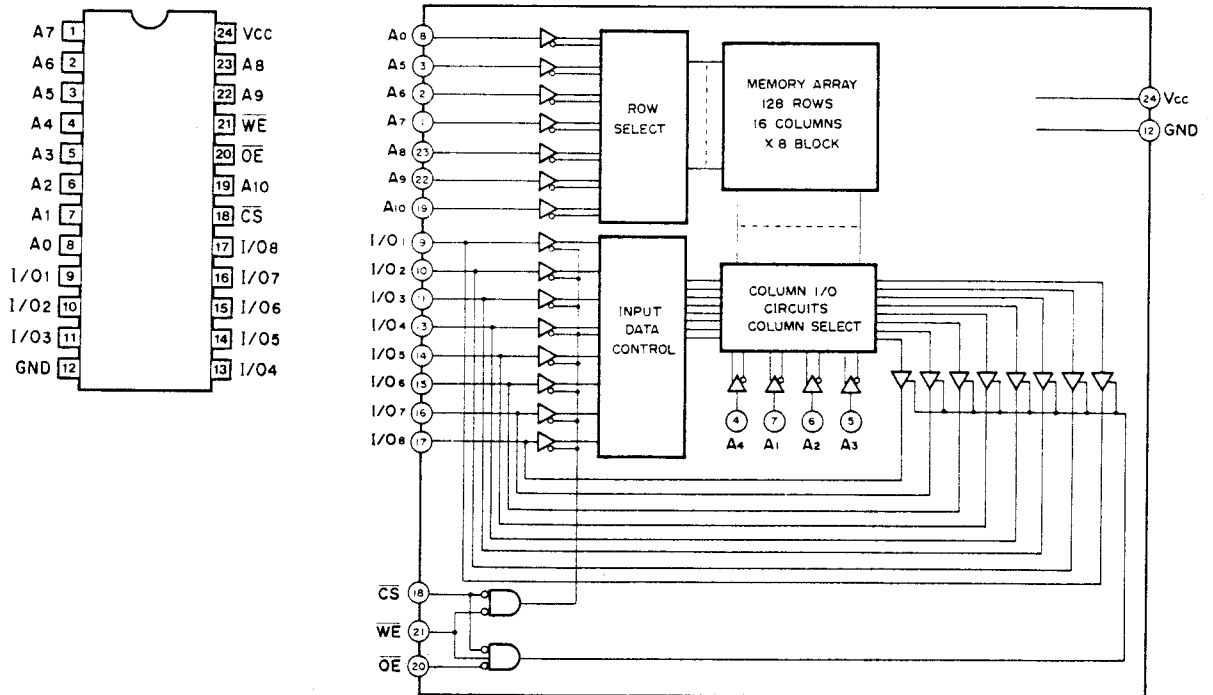
IC309, 310: PCM56P (D/A Converter)



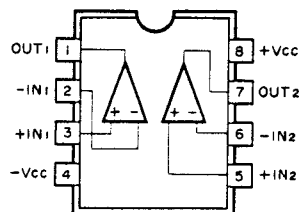
IC602: LU59516 (Decoder)



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



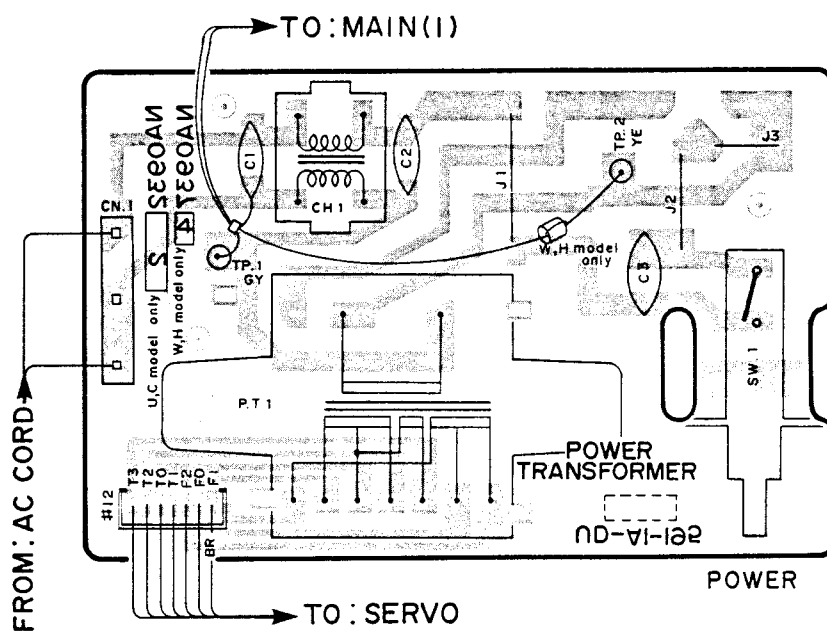
IC503: NJM2043M (T) or AN6558S (Dual Ope-amp)



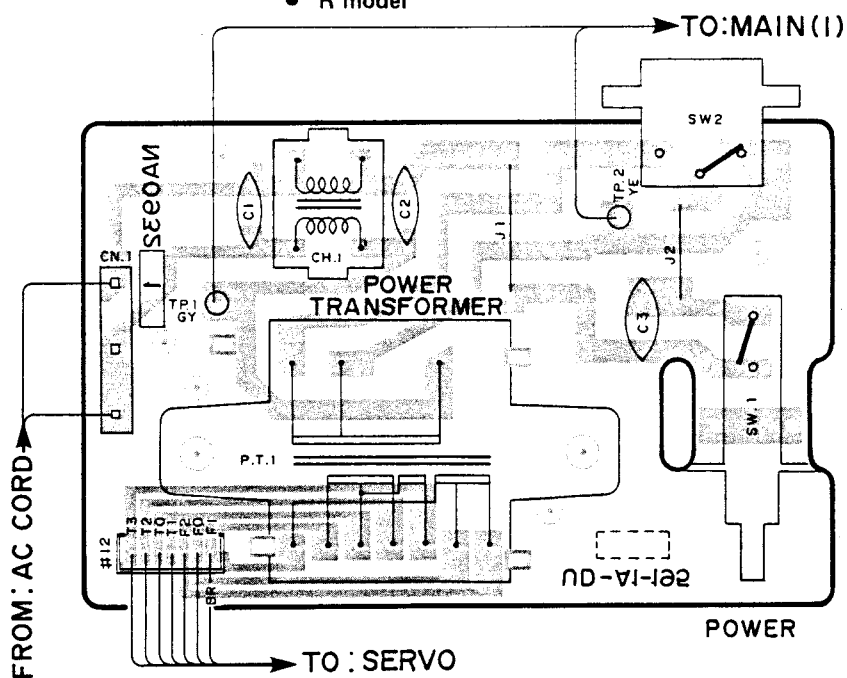
PRINTED CIRCUIT BOARD (Pattern side)

Power Unit

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



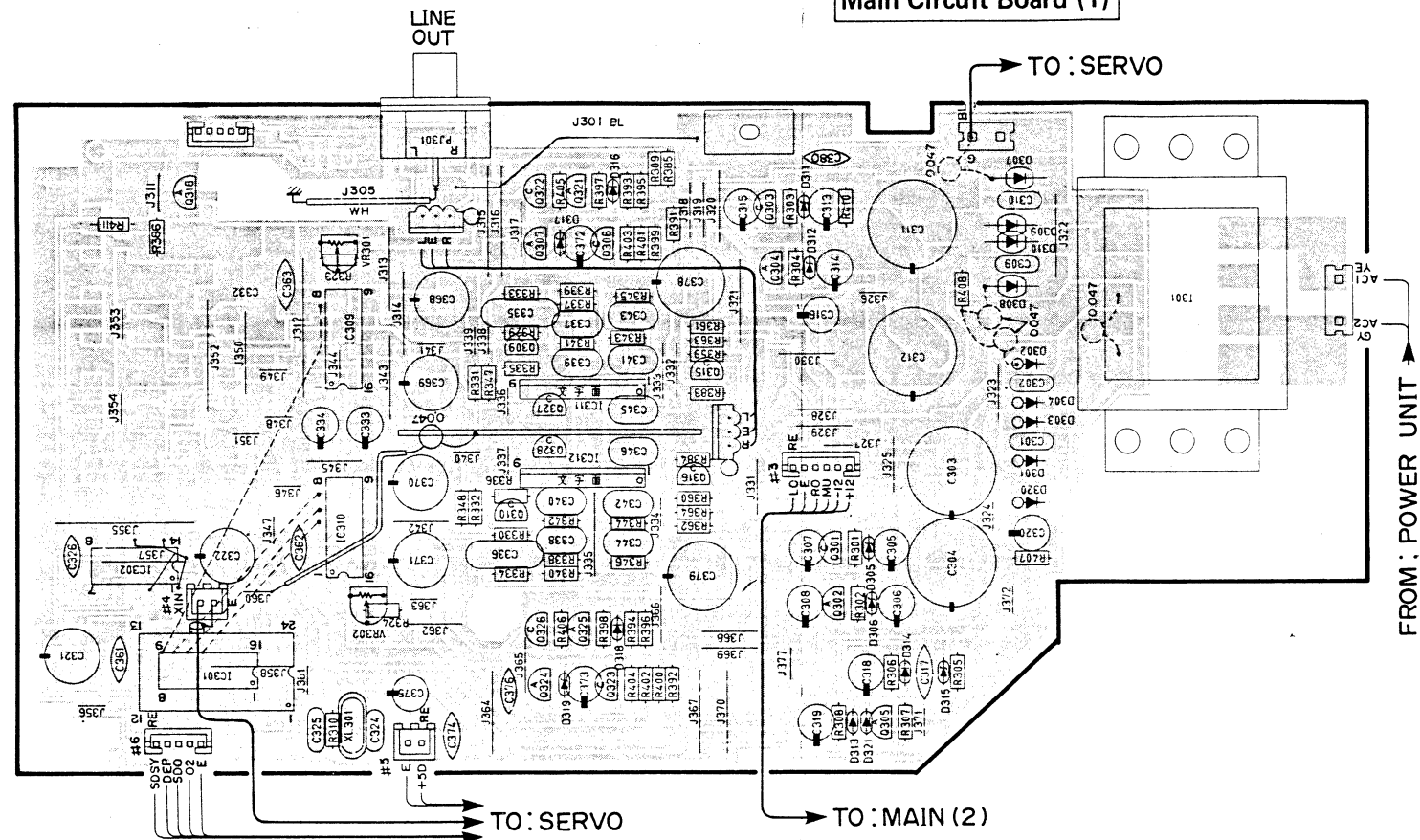
- R model



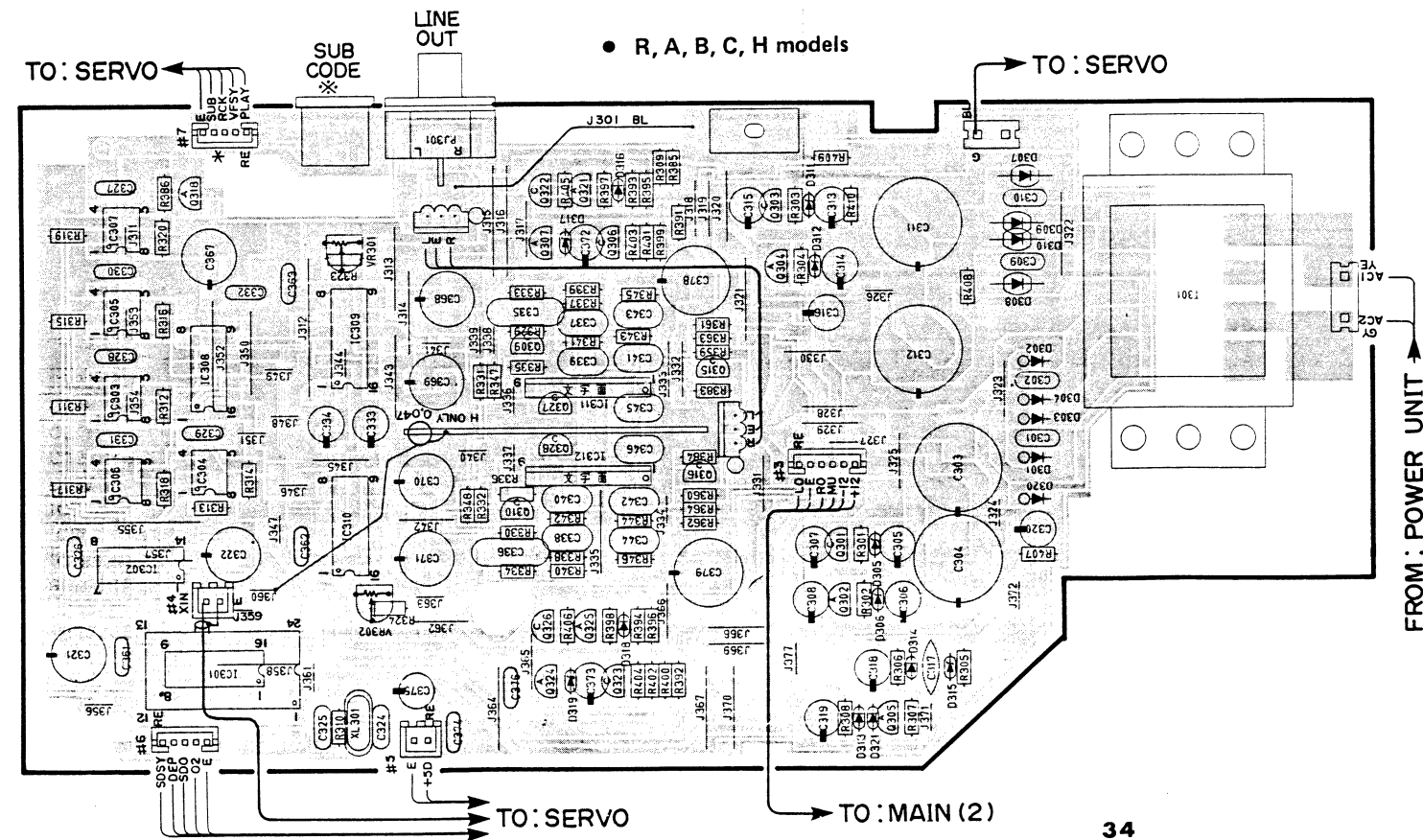
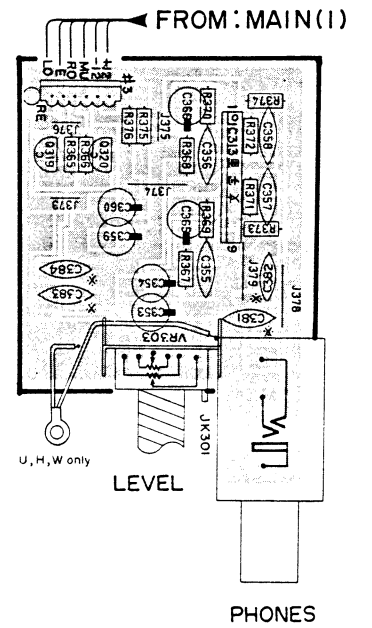
PRINTED CIRCUIT BOARD(Pattern side)

Note) 文字面 : Component side

Main Circuit Board (1)



Main Circuit Board (2)



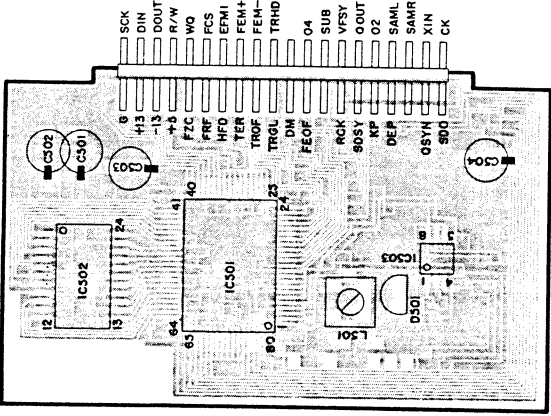
Note) * marked

	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, 315 317, 319	470	OPEN	470
R312, 314, 316 318, 320	330	OPEN	330
R409	100K	OPEN	OPEN
R411	OPEN	10K	OPEN
#7	SET	NONSET	NONSET

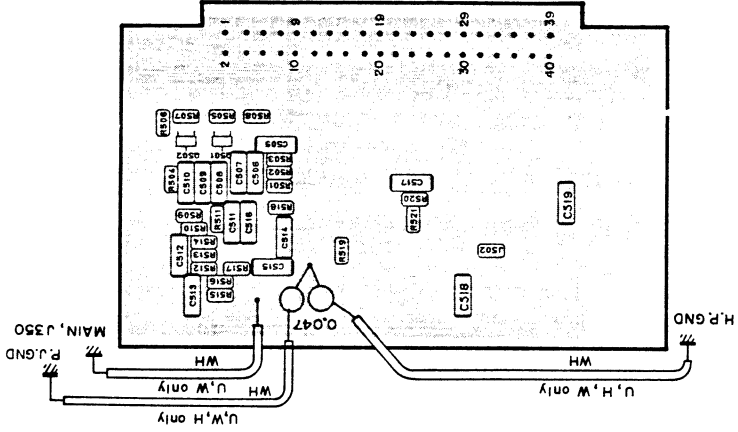
PRINTED CIRCUIT BOARD(Pattern side)

(Note) 文字面 : Component side

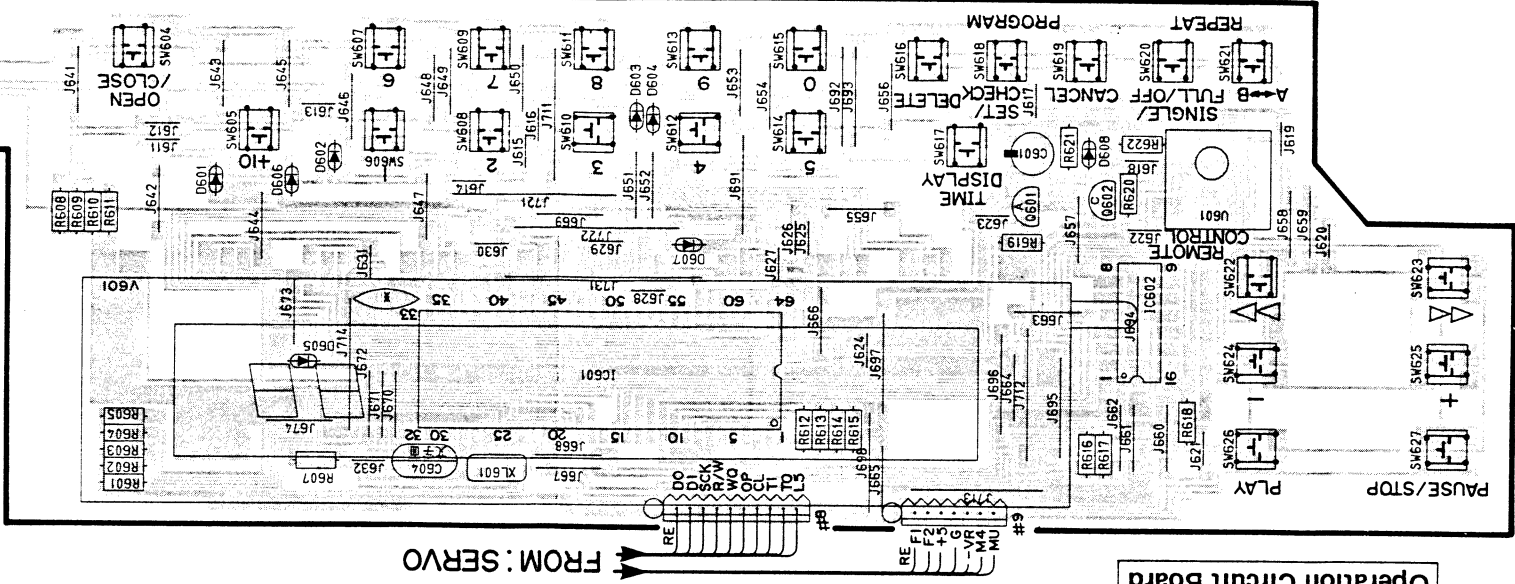
S/C Circuit Board ... Parts side



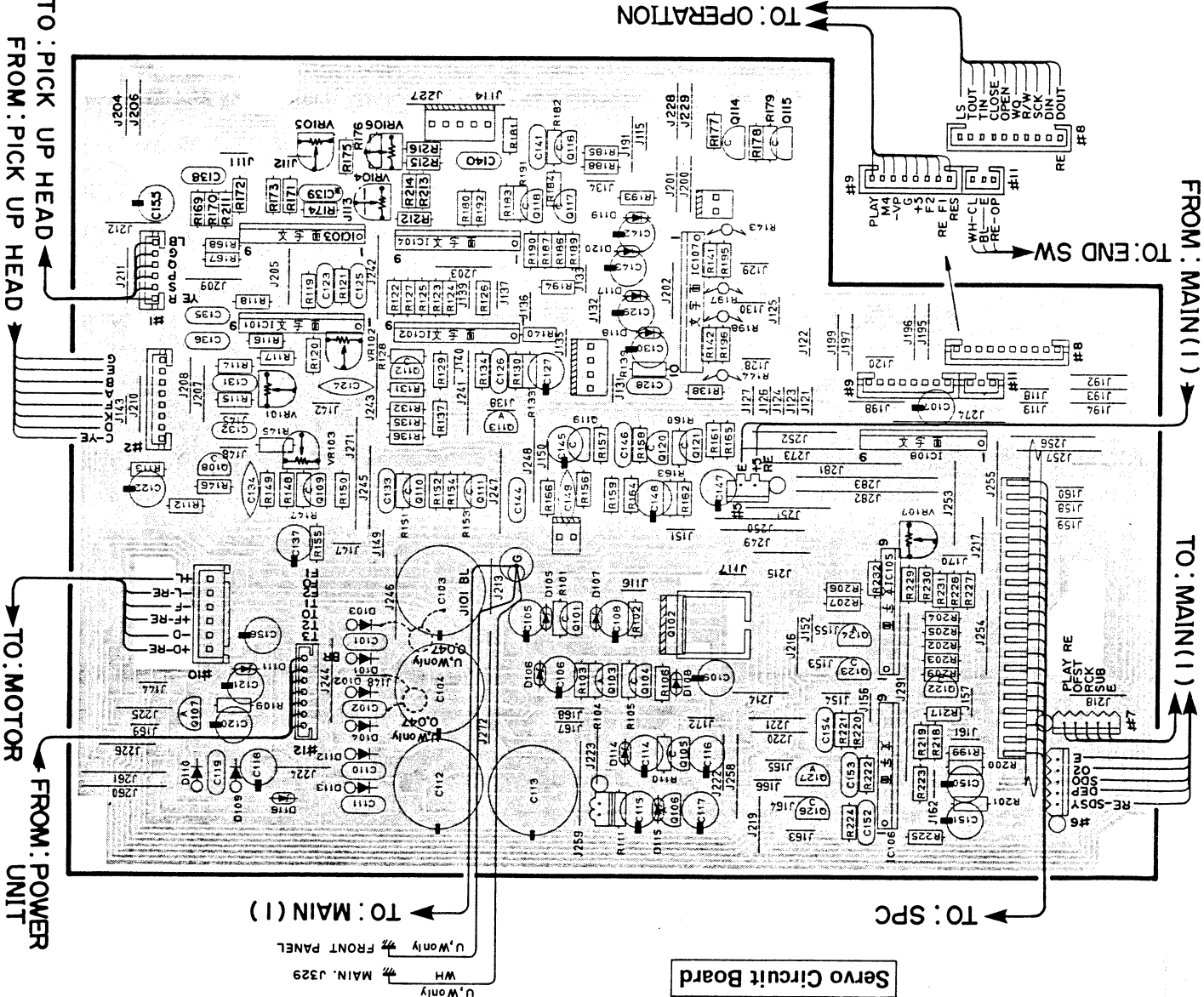
S/C Circuit Board ... Chip side



Operation Circuit Board



Servo Circuit Board



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)
2SA1115 (E, F)
2SA1310 (R, S, T)
2SA934
2SB44
2SA1534A (RS)
2SC1740S (S, R)
2SC2603 (E, F)

2SC3312 (R, S, T)
2SC2060
2SC3940A (R, S)
2SC2878 (A, B)
2SC3327
2SD1915
2SC535 (A, B, C)

1SS133
MTZ5.6B
MTZ5.1A
MTZ12A
MTZ10A
V11J
MTZ24C

15R35-100AT-93X
MTZ3.9B
MTZ7.5B
MTZ6.2A
MTZ24C

NJM4558S
TA75558S
BA715
NJM2043S
NJM4553S
NJM4556S

6N137
TLP552

PCM56P
LU59516
YM3404DF

MSM5128 20GS
HM6116FP-4
CXK5816M

YM3816 (SPCII)

2SC1983

2SA1037 (TW)
2SB708A (TW)
2SC2412
2SD601

15V55
SVC211

AN6557

BA6218

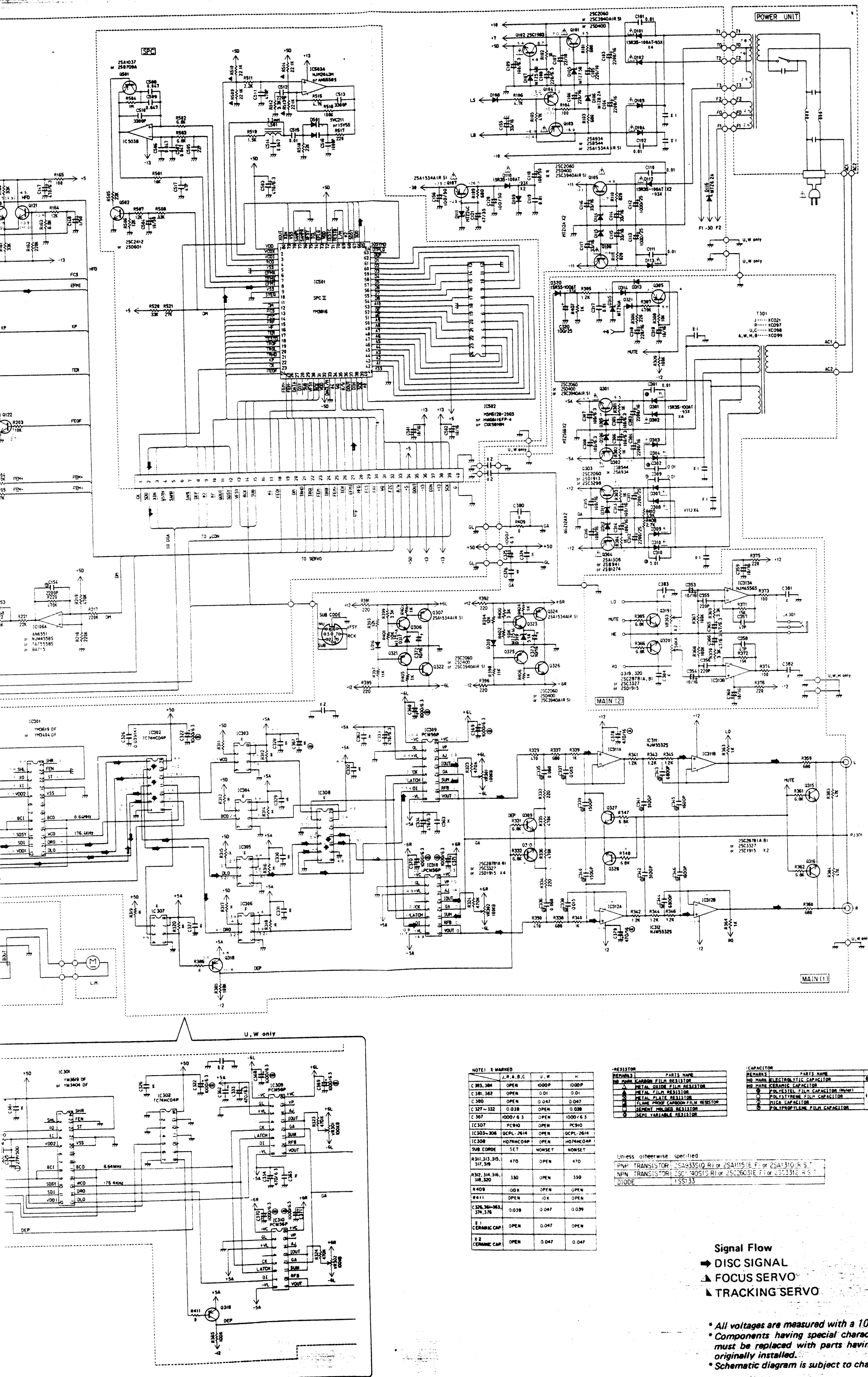
STA451C

NJM2043M (T1)
AN6558S

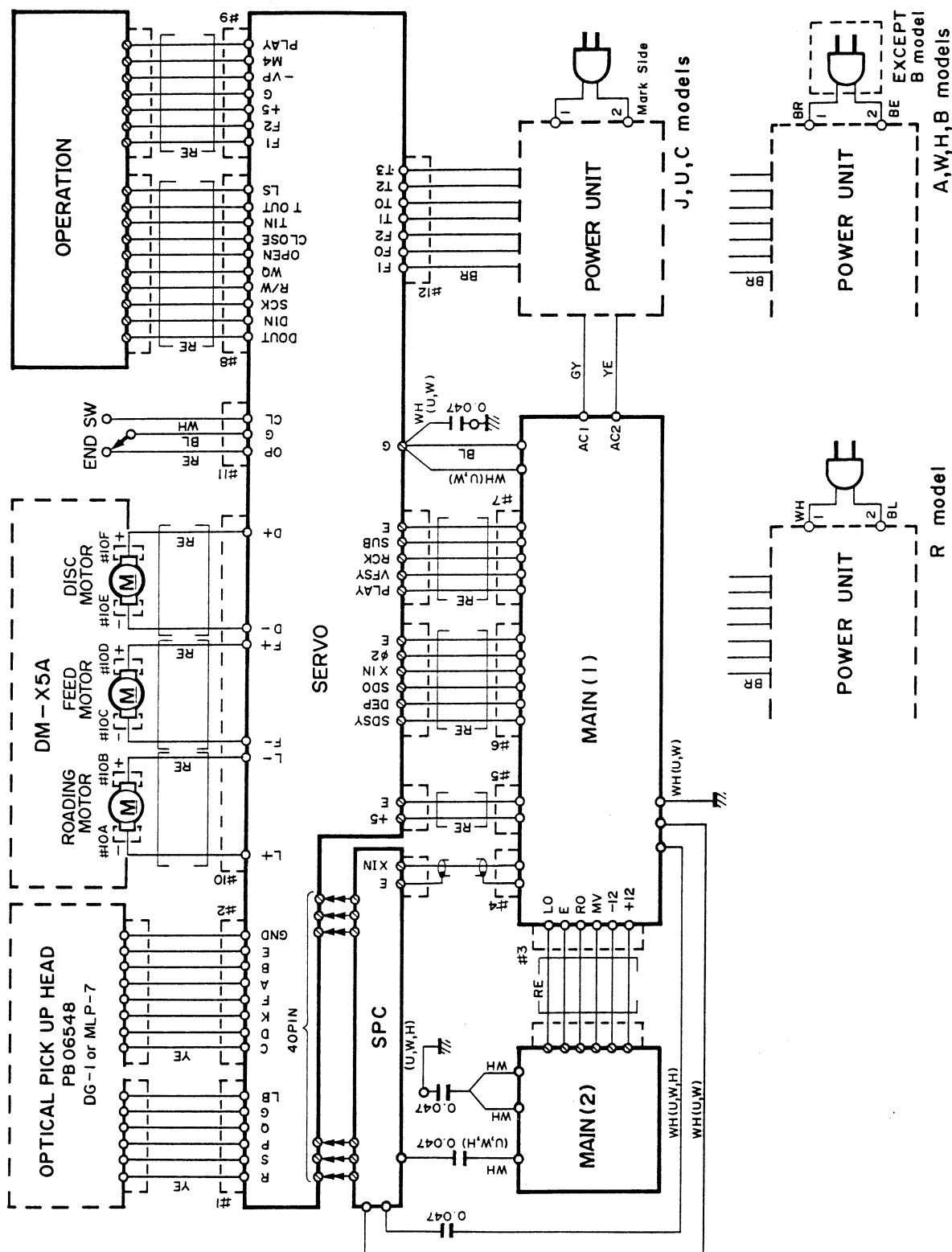
TC74HC04P

YM3619DF

MS0954-4025P



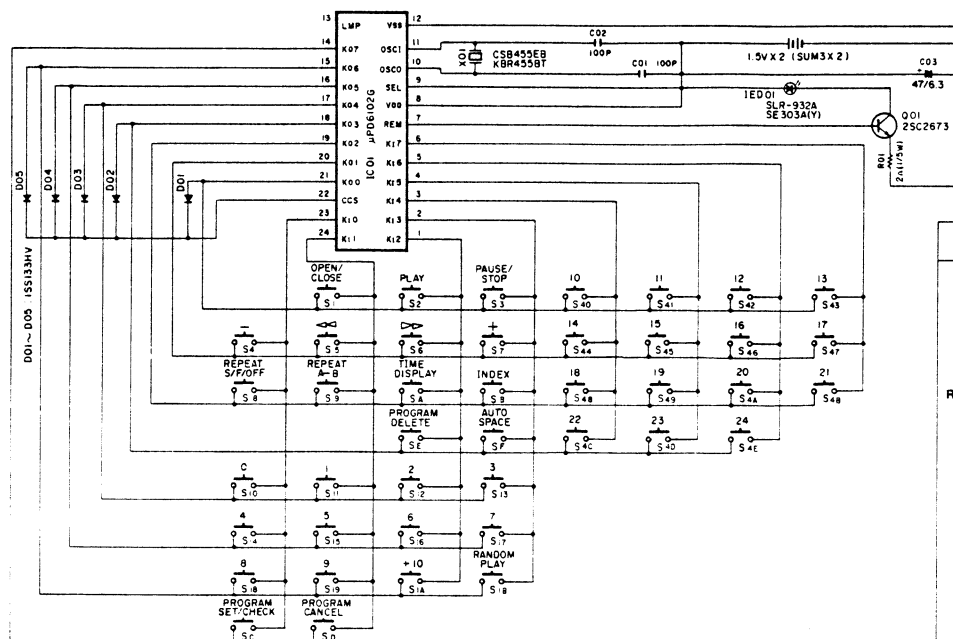
WIRING



RS-CD9

REMOTE CONTROL TRANSMITTER

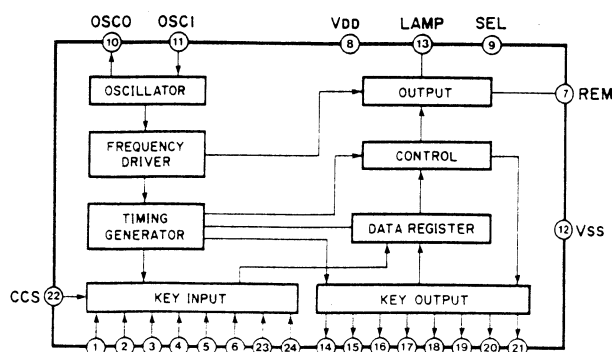
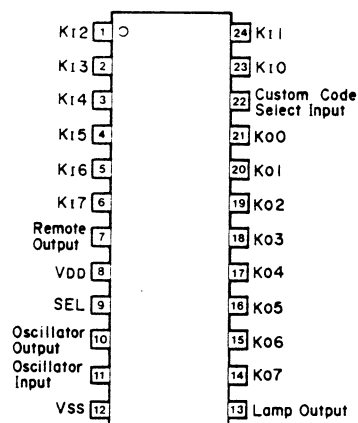
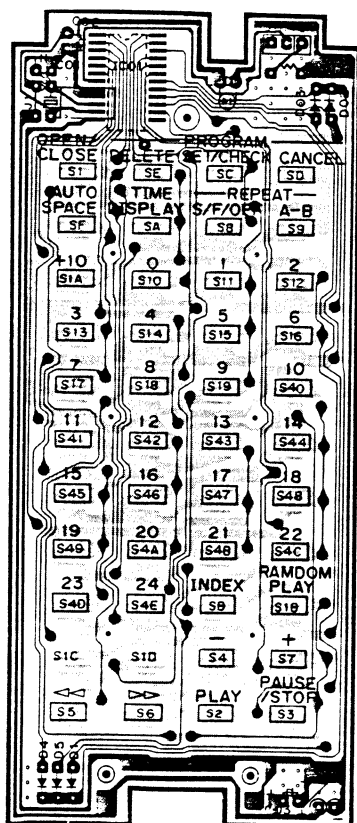
SCHEMATIC DIAGRAM



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
REPEAT S/F/OFF	1	1	1	0	0	0	0	07
+	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	0B
0	0	0	0	0	1	0	0	10
1	1	0	0	0	1	0	0	11
2	0	1	0	0	1	0	0	12
3	1	1	0	0	1	0	0	13
4	0	0	1	0	0	1	0	14
5	1	0	1	0	0	1	0	15
6	0	1	1	0	0	1	0	16
7	1	1	1	0	0	1	0	17
8	0	0	1	1	0	0	1	18
9	1	0	0	1	1	0	0	19
+10	0	1	0	1	1	0	0	1A
10	0	0	0	0	0	1	0	40
11	1	0	0	0	0	1	0	41
12	0	1	0	0	0	1	0	42
13	1	1	0	0	0	1	0	43
14	0	0	1	0	0	1	0	44
15	1	0	1	0	0	1	0	45
16	0	1	1	0	0	1	0	46
17	1	1	1	0	0	1	0	47
18	0	0	1	1	0	0	1	48
19	1	0	0	1	1	0	1	49
20	0	1	0	1	1	0	1	4A
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 Δ 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	Markets	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 μ 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 μ F 50V	"	C317		
	FG 21 31 00	"	1000pF 50V	"	C383,384	U,W,H	
	FG 44 41 00	"	0.01 μ F 50V	"	C381,382	U,W,H	
	FG 24 44 70	"	0.047 μ 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 μ 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 μ F 50V	セ ラ コ ン	"	U,W	
	FG 24 44 70	"	0.047 μ F 50V	"	C385~388	U,W	
	FC 34 43 90	Mylar Cap.	0.039 μ 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 μ F 50V	"	C337,338		
	VD 03 31 00	"	0.068 μ F 50V	"	C335,336		
※	UM 04 92 20	Electrolytic Cap.	2200 μ F 16V	オーディオケミコン	C303,304		
※	VD 10 87 00	"	3300 μ F 25V	ブロックケミコン	C311,312		
	UJ 11 74 70	"	47 μ F 6.3V	ケ ミ コ ン	C365,366		
	UJ 11 81 00	"	100 μ F 6.3V	"	C305~308		
	UJ 11 84 70	"	470 μ F 6.3V	"	C333,334		
	UJ 13 71 00	"	10 μ F 16V	"	C319,353,354,359,360, 372,373		
	UJ 13 81 00	"	100 μ F 16V	"	C313~316		
	UJ 13 82 20	"	220 μ F 16V	"	C318		
	UJ 14 81 00	"	100 μ F 25V	"	C320		
	UM 04 84 70	"	470 μ F 16V	オーディオケミコン	C378,379		
	UM 02 91 00	"	1000 μ F 6.3V	"	C375		
	FZ 00 62 70	"	1000 μ F 6.3V	ブラックゲートコン	C321,322,368~371		
	FZ 00 62 70	"	1000 μ F 6.3V	"	C367	J,R,A,H,B,C	
※	XC 02 10 01	Power Transformer		電 源 ト ラ ン ス	T301	J	
※	XC 09 70 01	"		"	T301	R	
※	XC 09 80 01	"		"	T301	U,C	
※	XC 09 90 01	"		"	T301	A,H,B,W	
	VB 86 19 00	Pre-Set Potentiometer	B100K Ω	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 ブ 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	HD74HC04P	I C	IC302		
	iR 00 04 10	"	HD74HC04P	"	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		

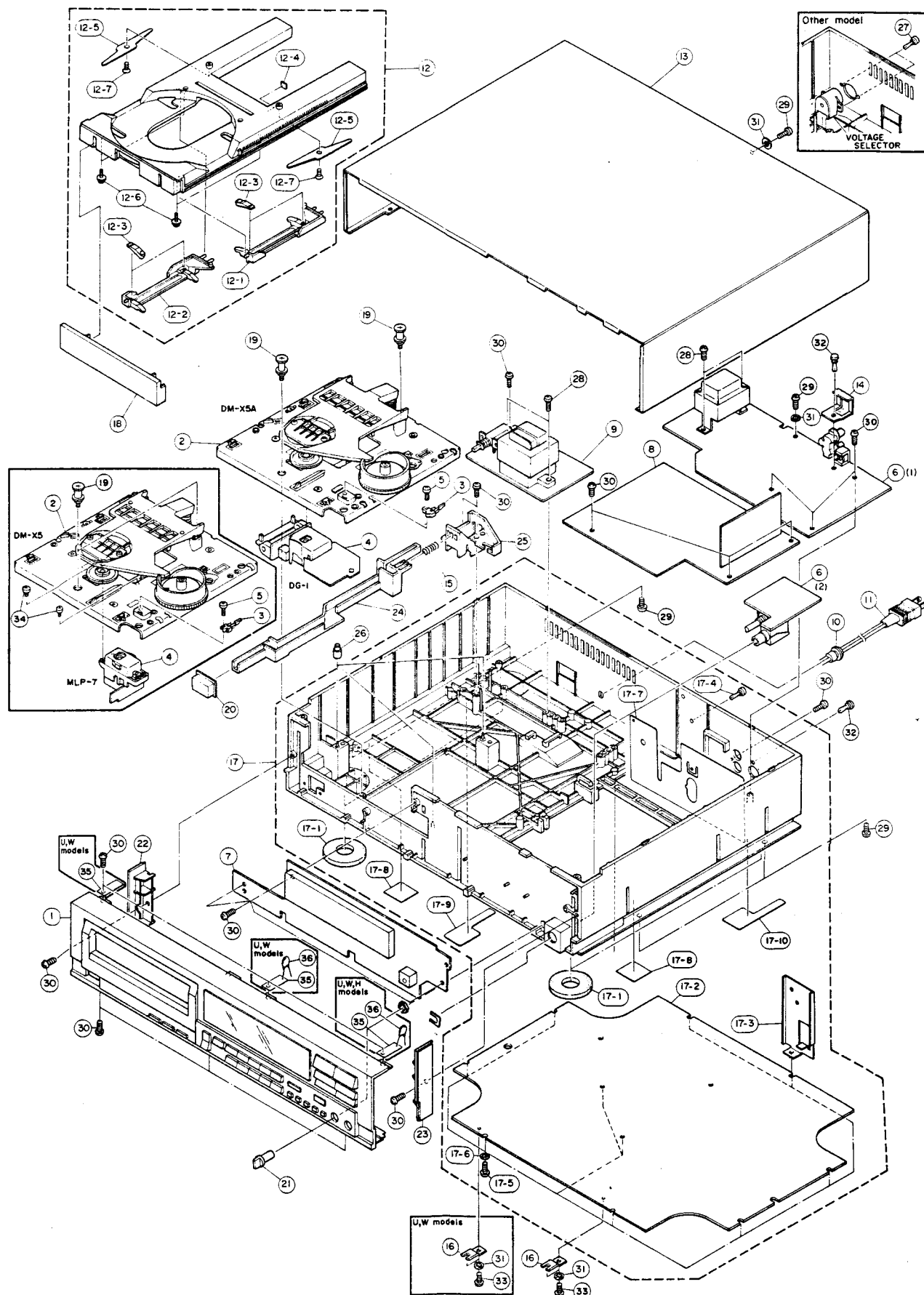
※ New Parts (新規部品)

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 μ F 50V	マ イ ラ ー コ ン	C101,102,110,111,119	J	
	FG 44:41:00	Ceramic Cap.	0.01 μ 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 μ 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 μ F 50V	"	C126		
	FA 15:44:70	"	0.047 μ F 50V	"	C133,152		
	FA 15:46:80	"	0.068 μ F 50V	"	C153		
	FA 15:51:00	"	0.1 μ F 50V	"	C125,131,138,140,144,146		
	FA 15:51:20	"	0.12 μ F 50V	"	C139		
	FA 15:51:80	"	0.18 μ F 50V	"	C128		
	FA 15:53:30	"	0.33 μ F 50V	"	C141		
	UJ 11:81:00	Electrolytic Cap.	100 μ F 6.3V	ケ ミ コ ン	C109		
	UJ 11:82:20	"	220 μ F 6.3V	"	C108		
	UJ 11:84:70	"	470 μ F 6.3V	"	C147		
	UJ 13:72:20	"	22 μ F 10V	"	C107,129,130,142,143		
	UJ 12:81:00	"	100 μ F 10V	"	C122,127,151		
	UJ 12:82:20	"	220 μ F 10V	"	C105		
	UJ 13:73:30	"	33 μ F 16V	"	C114~117,155		
	UJ 13:74:70	"	47 μ F 16V	"	C145		
	UJ 13:71:00	"	10 μ F 16V	"	C137		
	UJ 13:82:20	"	220 μ F 16V	"	C106		
	UJ 15:74:70	"	47 μ F 35V	"	C121		
	UJ 16:61:00	"	1 μ F 50V	"	C148		
	UJ 16:62:20	"	2.2 μ F 50V	"	C150		
	UJ 16:81:00	"	100 μ F 50V	"	C118,120,156		
	UJ 13:92:20	"	2200 μ F 16V	"	C103,104		
	UW 84:91:00	"	1000 μ F 25V	"	C112,113		
	VC 61:25:00	Pre-Set Potentiometer	B68K Ω	半 固 定 抵 抗	VR101		
	VB 86:15:00	"	B10K Ω	"	VR103,106		
	VB 86:18:00	"	B47K Ω	"	VR104,105		
	VC 61:26:00	"	B150K Ω	"	VR102		
	VB 86:22:00	"	B470K Ω	"	VR107		
	HV 45:33:30	Flame Proof Carbon Resistor	3.3 Ω 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	"	2SB544	"	"		
※	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. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
* NA 09 52 70	SPC Circuit Board		S P C シ ー ト			J,R,A,C,B	
* NA 09 51 90	"		"			U,W	
* NA 09 52 00	"		"			H	
UD 11 33 30	Chip Ceramic Cap.	3300pF 50V	チ ッ プ セ ラ コ ン	C510,513			
UD 11 41 00	"	0.01μF 50V	"	C515,518,519			
UD 11 44 70	"	0.047μF 50V	"	C506~509,514			
VB 37 18 00	Ceramic Cap.	22pF 50V	リ ー ド レ ス セ ラ コ ン	C505			
VB 37 26 00	"	47pF 50V	"	C517			
VB 37 38 00	"	220pF 50V	"	C512			
VB 37 42 00	"	470pF 50V	"	C511			
VB 37 46 00	"	1000pF 50V	"	C516			
UJ 11 84 70	Electrolytic Cap.	470μF 6.3V	ケ ミ コ ン	C503			
UJ 13 71 00	"	10μF 16V	"	C501,502,504			
GE 90 20 00	OSC Coil	3.3μH	発 振 コ イ ル	L501			
VB 36 97 00	Chip Jamper		リードレスチップジャンパー	J502			
VB 35 88 00	Chip Resistor	220Ω 1/8W	リードレスチップ低抗	R517			
VB 36 08 00	"	1.5kΩ 1/8W	"	R519			
VB 36 12 00	"	2.2kΩ 1/8W	"	R511			
VB 36 16 00	"	3.3kΩ 1/8W	"	R512			
VB 36 21 00	"	4.7kΩ 1/8W	"	R515			
VB 36 25 00	"	6.8kΩ 1/8W	"	R502,503			
VB 36 29 00	"	10kΩ 1/8W	"	R501			
VB 36 31 00	"	12kΩ 1/8W	"	R506,507			
VB 36 37 00	"	22kΩ 1/8W	"	R505,518			
VB 36 39 00	"	27kΩ 1/8W	"	R521			
VC 31 66 00	Metal Film Resistor	22.1kΩ 1/8W	リードレス金属皮膜抵抗	R509,510,513,514			
VB 36 41 00	Chip Resistor	33kΩ 1/8W	リードレスチップ抵抗	R508,520			
VB 36 53 00	"	100kΩ 1/8W	"	R516			
VB 40 27 00	"	1MΩ 1/8W	"	R504			
iA 10 37 00	Chip Transistor	2SA1037	チ ッ プ ト ラ ン ジ ス タ	Q501	Inter- changeable		
iB 07 09 10	"	2SB709A	"	"			
iC 24 12 00	"	2SC2412VB	"	Q502	Inter- changeable		
iD 06 01 00	"	2SD601	"	"			
iF 00 49 10	Varactor Diode	1SV55	F M バ ラ ク タ ー ダイ オ ー ド	D501	Inter- changeable		
iF 00 49 20	"	SVC211	"	"			
iG 15 75 00	IC	HM6116FP-4	I C	IC502			
iG 15 71 10	"	NJM2043M(T1)	"	IC503			
* XB 69 80 01	"	YM3816(SPCII)	"	IC501			
* VB 97 27 00	Connector	40pin	コ ネ ク タ ー				

EXPLODED VIEW



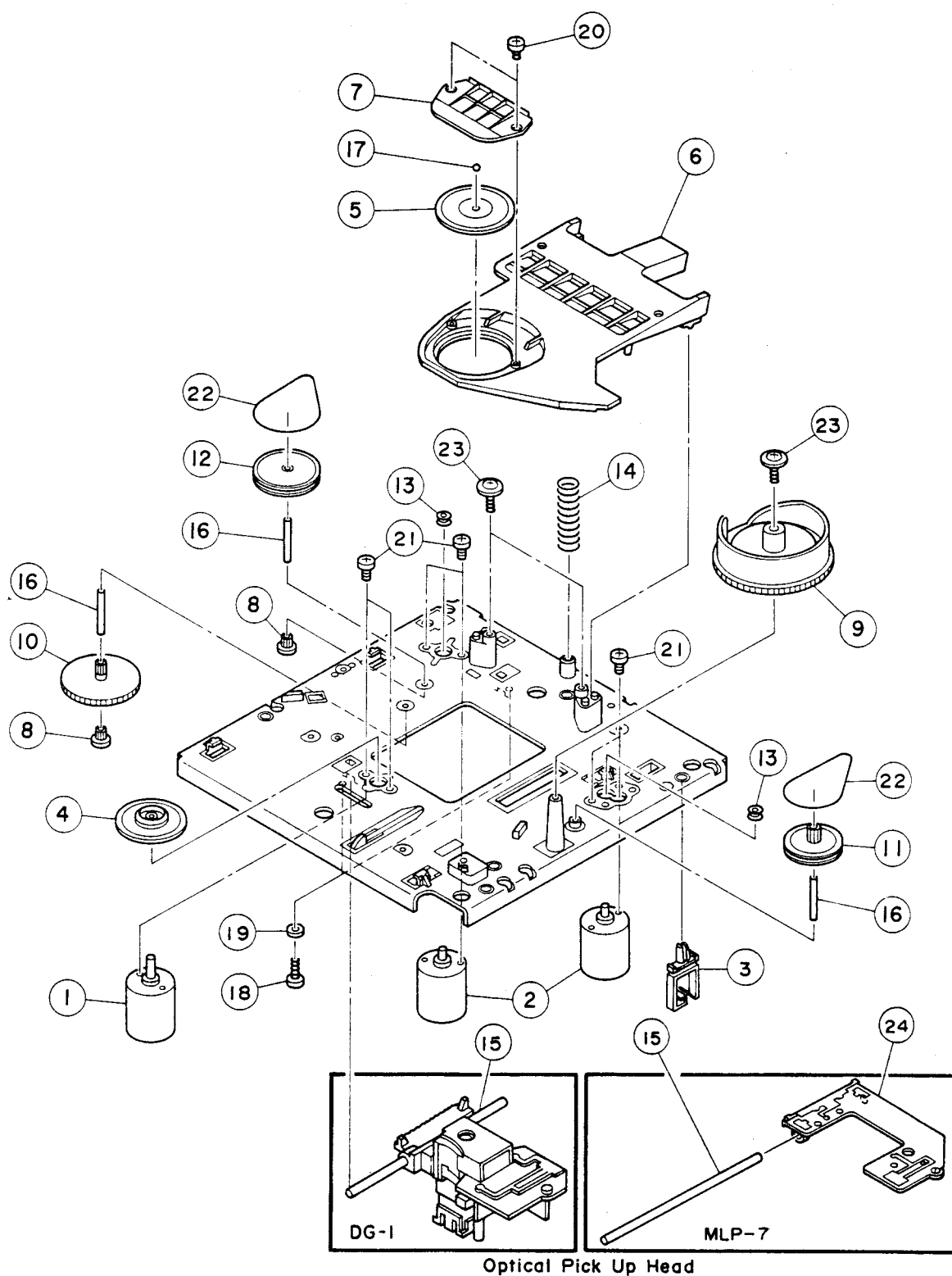
MECHANISM PARTS

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	Inter-changeable	CDX-700		
※ "	NB 63 77 20	"	DM-X5		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 光ピックアップヘッド	Inter-changeable			
"	VC 16 12 00	"	MLP-7				
5	Ei 02 61 06	Binding Head Tapping Screw	2.6X10 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	オペレーションシート				
※ 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	Inter-changeable		A	
"	MG 00 23 10	"	7.5A 250V 2m			A	
"	MG 00 16 30	"	6A 250V 2m	"		R	
"	MG 00 16 20	"	2.5A 250V 2m	Inter-changeable		W,H	
"	MG 00 23 20	"	2.5A 250V 2m			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	3x8 (φ10) FCRM3-BI BWヘッドタッピングネジ				
12-7	EO 33 00 86	Flat Head Tapping Screw	3x8 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)

■ EXPLODED VIEW(Disc Mechanism Unit)

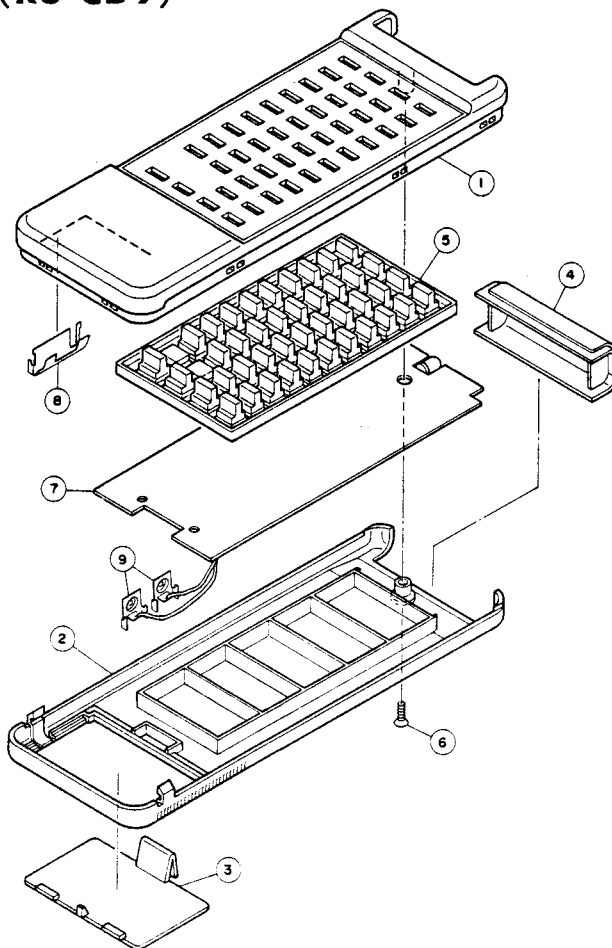


Note) ϕ : Diameter

[illegible]

※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 ー				
* 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 Ω	HJ353100	*	12K Ω	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 Ω	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 Ω	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			

