PIONEER
The Art of Entertainment

Service Manual

● CDX-P600/UC

ORDER NO.
CRT1558

MULTI-COMPACT DISC PLAYER

CDX-P600 UC,EW,ES
CDX-P600 X1B/EW
CDX-P606 UC

COMPACT disc DIGITAL AUDIO

● **See the service manual CDX-M6/UC,EW (CRT1522) for the circuit description.**
● **See the separate manual CX-613 (CRT1518) for the CD mechanism description.**

CONTENTS

SPECIFICATIONS

General

System ..... Compact disc audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Power source ..... 14.4 V DC (10.8 — 15.6 V allowable)
Max. current consumption ..... 1.0 A
Weight ..... 2.4 kg (5.3 lbs.)
Dimensions ..... 275 (W) × 69 (H) × 155 (D) mm
[10-7/8 (W) × 2-3/4 (H) × 6-1/8 (D) in.]

Audio

Frequency characteristics ..... 5 — 20,000 Hz
(±1 dB)
Signal-to-noise ratio ..... 100 dB (1 kHz)
(IHF-A Network)
Dynamic range ..... 94 dB (1 kHz)
Output level ..... 500 mV (1 kHz, 0 dB)
Number of channels ..... 2 (stereo)

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:
Specifications and the design are subject to possible modification without prior notice due to improvements.

● CD Player Service Precautions

1. Since this pin protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.
2. For pick-up unit handling, please refer to "Disassembly". During replacement, handling precautions shall be taken to prevent an electrostatic discharge (protection by a short pin).
3. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.

PIONEER ELECTRONIC CORPORATION 4-1,Meguro 1-Chome,Meguro-ku, Tokyo 153,Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760,Long Beach,California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham,Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1,9120 Melsele,Belgium
PIONEER ELECTRONICS AUSTRALIA PTY.LTD. 178-184 Boundary Road,Braeside,Victoria 3195,Australia TEL:[03]580-9911

K-FFA.DEC.1993 Printed in Japan

CHAPTER 1

1. SAFETY INFORMATION

1.1 CDX-P600/UC,P606/UC

CAUTION

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

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1.2 CDX-P600/EW

1. **Safety Precautions for those who Service this Unit.**
   Follow the adjustment steps (see pages 1-8 through 1-26)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.

Caution:
1. **During repair or tests, minimum distance of 13cm from the focus lens must be kept.**
2. **During repair or tests, do not view laser beam for 10 seconds or longer.**

2. **A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.**

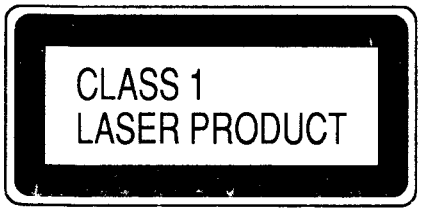


Fig.1

3. **The triangular label is attached to the mechanism unit frame.**

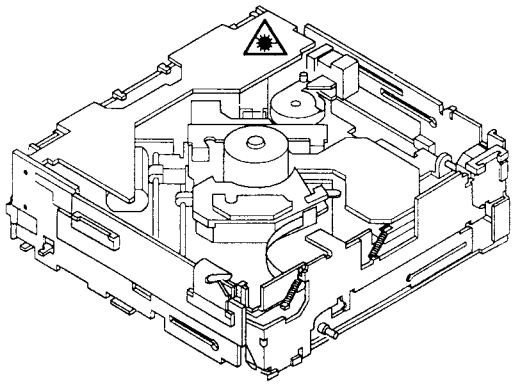


Fig.2

4. **Specifications of Laser Diode**

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 785 nanometers
Radiant power = 69.7 microwatts(Through a circular aperture stop having a diameter of 80 millimeters)
0.55 microwatts(Through a circular aperture stop having a diameter of 7 millimeters)

2. OPERATIONS AND CONNECTION

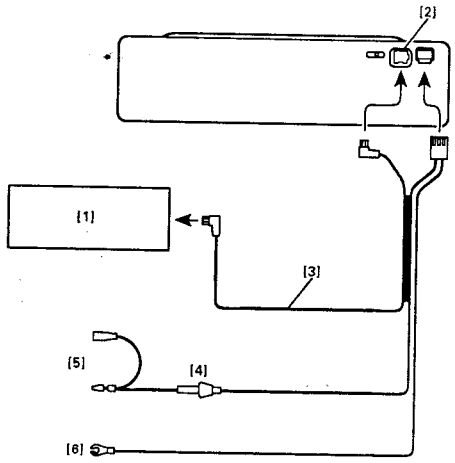


Fig. 3

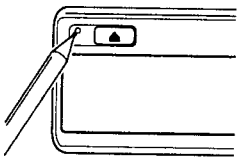


Fig. 4

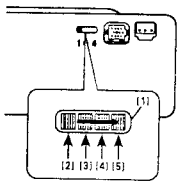


Fig. 5

Connecting the Units

- Before mounting, remove the transportation pin (See "Transportation pin".) and connect the units temporarily. Check that the units are connected correctly by operating the multi-CD controller.
- After connection is complete, press the clear buttons on the player and the multi-CD controller with the tip of a pencil.
- *Be sure to connect the ground lead (black) to the vehicle body or some other metal part that is properly grounded to the chassis. If the ground lead is not properly connected, noise may occur or the player or multi-CD controller may not operate correctly.*
- *This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.*
- *To avoid shorts in the electrical system, be sure to disconnect the battery (–) cable before beginning installation.*
- *Check whether installation and wiring have been completed correctly. Replace the removed car components, then connect the end of the cable to the negative (–) terminal of the battery.*
- *Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.*
- *Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.*
- *Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.*
- *Do not shorten any leads. If you do, the protection circuit may fail to work when it should.*
- *Never feed power to other equipment by cutting the insulation of the power supply lead of the unit and tapping into the lead. The current capacity of the lead will be exceeded, causing over heating.*
- *Replace fuses only with the types stipulated on the fuse holder.*

(Fig. 3)

[1] Multi CD controller or Multiple installation adapter (such as CD-P44)
[2] IP-BUS output (black)
Connect the black connector of the cable to this connector.
[3] IP-BUS cable
[4] Fuse holder
[5] Orange
To the terminal always supplied with power regardless of ignition switch position.
[6] Black (ground)
To the vehicle (metal) body.

Pressing the clear button

If the power does not switch on or if the compact disc player does not operate when the button on the multi-CD controller is pressed, or if the multi-CD controller display is incorrect, press this button on the player with the tip of a pencil to restore normal operation. (This button is located inside the door.) **Always press the clear button on the multi-CD controller, too, after pressing this button. (Fig. 4)**

- If the clear button is pressed when the player contains a magazine or the ignition switch is set to the ON or ACC position, the CD title display and ITS memory are cleared.

Changing the Address Switch

- This unit can be connected from the second to fourth multi-CD players by using the separately sold multiple installation adapter (CD-P44). Each multi-CD player has an address switch so that the multiple installation adapter can identify which player is which. Set the address switch for each player as shown in Fig. 5.
- See the instruction manual for the multiple installation adapter (CD-P44) when you connect multi-CD players using the adapter.

(Fig. 5)

[1] Address switch
This switch can be set to address 1,2,3, or 4, starting from the left.
[2] Address 1
[3] Address 2
[4] Address 3
[5] Address 4

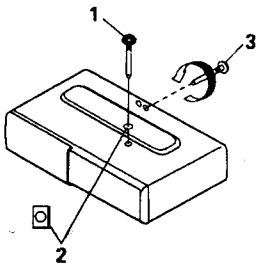


Fig. 6

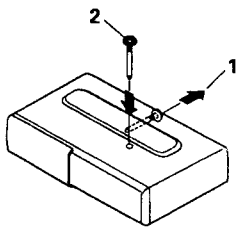


Fig. 7

Transportation pin

Removing the transportation pin

(Fig. 6)

A transportation pin is installed to protect the player during transportation. Before mounting the player, remove the transportation pin and cover the hole with the supplied adhesive seal. Screw the removed transportation pin into the specified hole; it will be needed if you retransport the player.

1. Peel off adhesive tape and remove the pin.
2. Cover the hole with the seal provided.
3. Screw the pin into the left-side hole of the 2 holes.

Reinstalling the pin

(Fig. 7)

To transport the player, reinstall the transportation pin as follows:

Before removing the player

Play back the first track of a disc, and stop within 10 seconds. Remove the magazine, wait about 10 seconds, then remove the player.

1. Remove the pin.
2. Insert the pin in its original position, and fix it with Scotch tape.

3. DISASSEMBLY

● Removing the Case

1.Unfasten six screws A and then remove the upper case.
2.Unfasten four screws B and then remove the lower case.

● Removing the Grille Assy

1. Unlock four catches and dismount the grille assy.

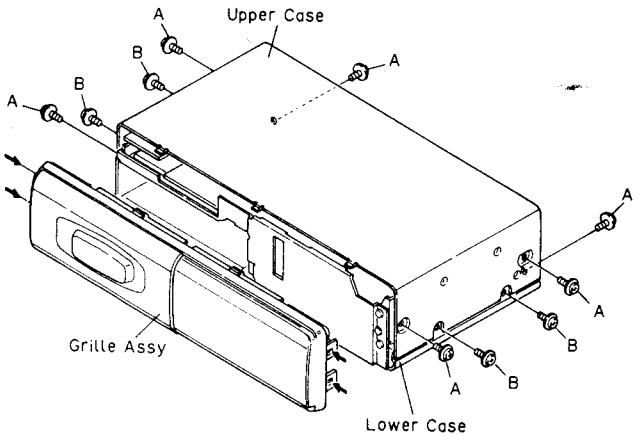


Fig.8

● Removing the Bracket L,R

1. Unfasten six screws.
2. Remove bracket L.
3. Remove bracket R.

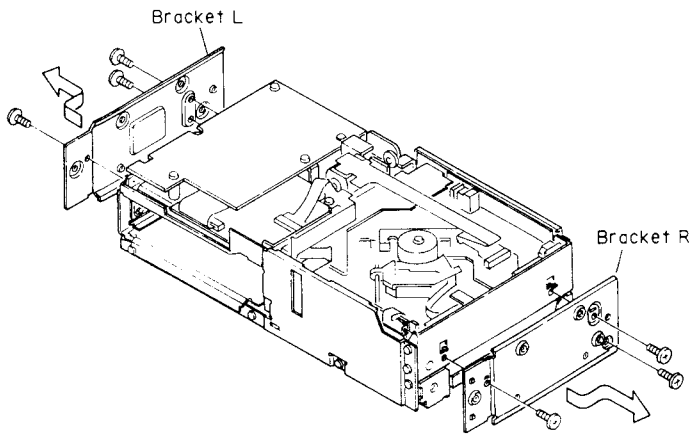


Fig.9

● Removing the Extension P.C.Board

1. Unfasten four screws.
2. Remove the connector.
3. Remove the extension P.C.Board.

NOTE: Be sure to screw in order of 1-4.

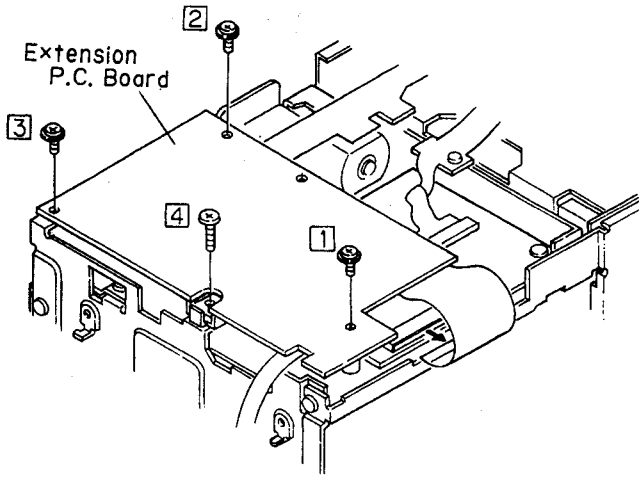


Fig.10

● CN351

Before disconnecting the CN351 connector (PU unit connector), attach a short pin as illustrated.

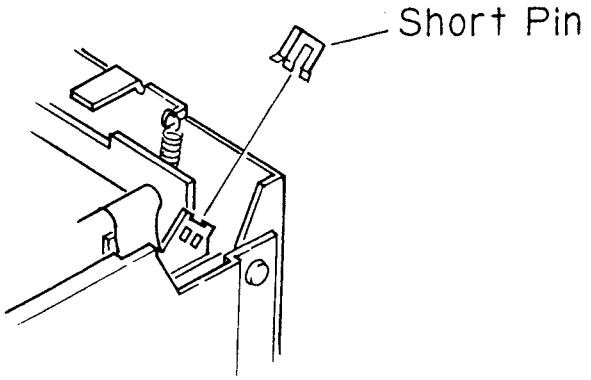


Fig.11

● Removing the Main Unit

1. Unfasten three screws.
2. Remove the three connectors.
3. Remove the main unit.

NOTE: Be sure to screw in order of 1-3.

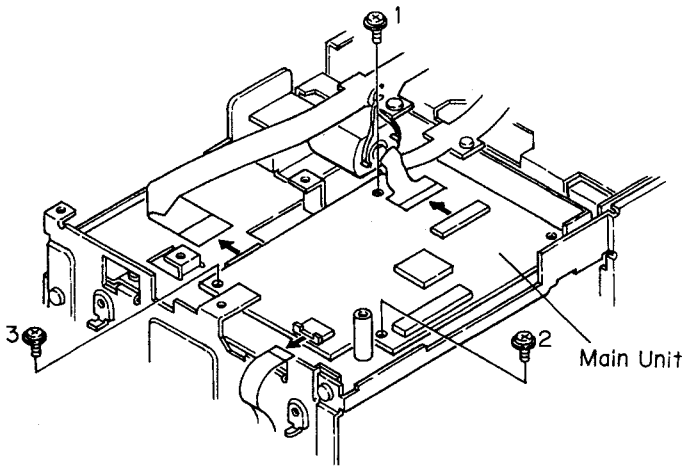


Fig.12

4. ADJUSTMENT

1) Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFOUT (approx. 2.5V) instead of GND.
  If REFOUT and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
  Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.
  And since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.
  If by accident REFOUT comes in contact with GND, immediately switch the regulator or power OFF.
- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and / or electrical shocks to the system when making adjustment.
- When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the button TRACK UP or the button TRACK DOWN key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

2) Test mode

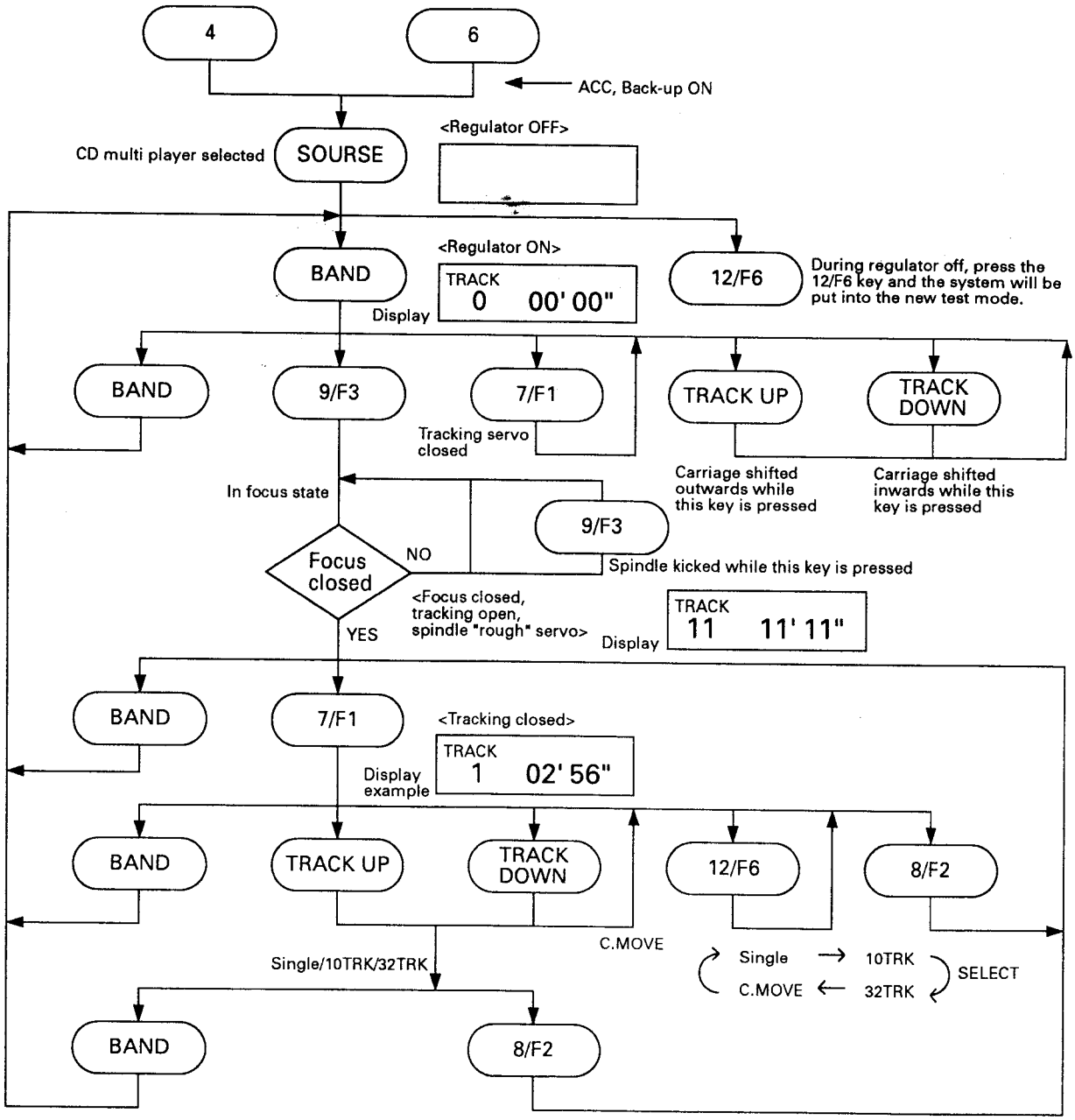
- This unit is adjusted in a combination with the multiple CD control unit (KEH-P5000, etc.). Each regulator key should be operated at the unit. With the KEH-P5000 taken up for reference, a description will be given below concerning how to enter into the test mode, including key operations. The key in the adjustment text is also one of the KEH-P5000 keys.
- How to enter into the test mode
  While pressing keys 4 and 6 at a time, press the back-up ON or clear button ON the KEH-P5000.
- Resetting the test mode
  Press the clear button ON the KEH-P5000. Subsequently press the clear button ON this unit. Or turn off this unit and the KEH-P5000 back-up and wait for about one minute.

a) CD multi-player

Key	Function
BAND	Regulator ON / OFF
TRACK UP	FWD kick
TRACK DOWN	REV kick
7/F1	Tracking close
8/F2	Tracking open
9/F3	Focus close
10/F4	Focus open
11/F5	Jump-Off
12/F6	1/10/32 jump / carriage move switching

- SINGLE / 10TRK / 32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.
- With two or more players connected, disconnect any other CD multi-players and connect one changer only to the control unit. Unless the address switch is positioned at ONE, the system cannot be put into the test mode.

● Flow Chart


4
6
ACC, Back-up ON
CD multi player selected
SOURSE
<Regulator OFF>
BAND
<Regulator ON>
TRACK
0 00' 00"
Display
12/F6
During regulator off, press the 12/F6 key and the system will be put into the new test mode.
BAND
9/F3
7/F1
TRACK UP
TRACK DOWN
Tracking servo closed
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
In focus state
9/F3
Spindle kicked while this key is pressed
Focus closed
NO
YES
<Focus closed, tracking open, spindle "rough" servo>
Display
TRACK
11 11' 11"
BAND
7/F1
<Tracking closed>
TRACK
1 02' 56"
Display example
BAND
TRACK UP
TRACK DOWN
12/F6
8/F2
C.MOVE
Single/10TRK/32TRK
Single → 10TRK
C.MOVE ← 32TRK
SELECT
BAND
8/F2

● Measuring Equipment and Jigs

Adjustment	• Measuring equipment&jigs
1 Grating Adjustment-1 (Rough adjustment)	• Oscilloscope, clock driver, grating adjustment filter (bandpass filter)(GGF-133), AC milli-voltmeter • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
2 Tangential Skew Check	• Oscilloscope, screwdriver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
3 Grating Adjustment-1 (Fine adjustment)	• Oscilloscope, clock driver, two low-pass filters • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
4 Grating Adjustment-2	• Oscilloscope, grating adjustment driver, low-pass filter • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
5 FE Bias Adjustment	• Oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
6 RF Offset Adjustment	• Oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
7 TE Offset Adjustment-1	• DC voltmeter or oscilloscope, volume adjustment driver • Extension Cable:GGD1023
8 Tracking Balance Adjustment-1	• Oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
9 Focus Servo Loop Gain Adjustment-1	• Oscillator, gain adjustment filter (GGF-065), oscilloscope, dual meter milli-voltmeter, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
10 Focus Servo Loop Gain Adjustment-2	• Oscillator, gain adjustment filter, oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
11 Tracking Servo Loop Gain Adjustment-1	• Oscillator, gain adjustment filter (GGF-065), oscilloscope, dual meter milli-voltmeter, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
12 Tracking Servo Loop Gain Adjustment-2	• Oscillator, gain adjustment filter, oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
13 TE Offset Adjustment-2	• DC voltmeter or oscilloscope, volume adjustment driver • Extension Cable:GGD1023

Adjustment	• Measuring equipment&jigs
14 Checking FEY Level	• Oscilloscope • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023
15 Tracking Balance Adjustment-2 and Checking TEY Level	• Oscilloscope, volume adjustment driver • SONY TYPE 4 (or ABEX TCD-782) • Extension Cable:GGD1023

● Adjustment Points

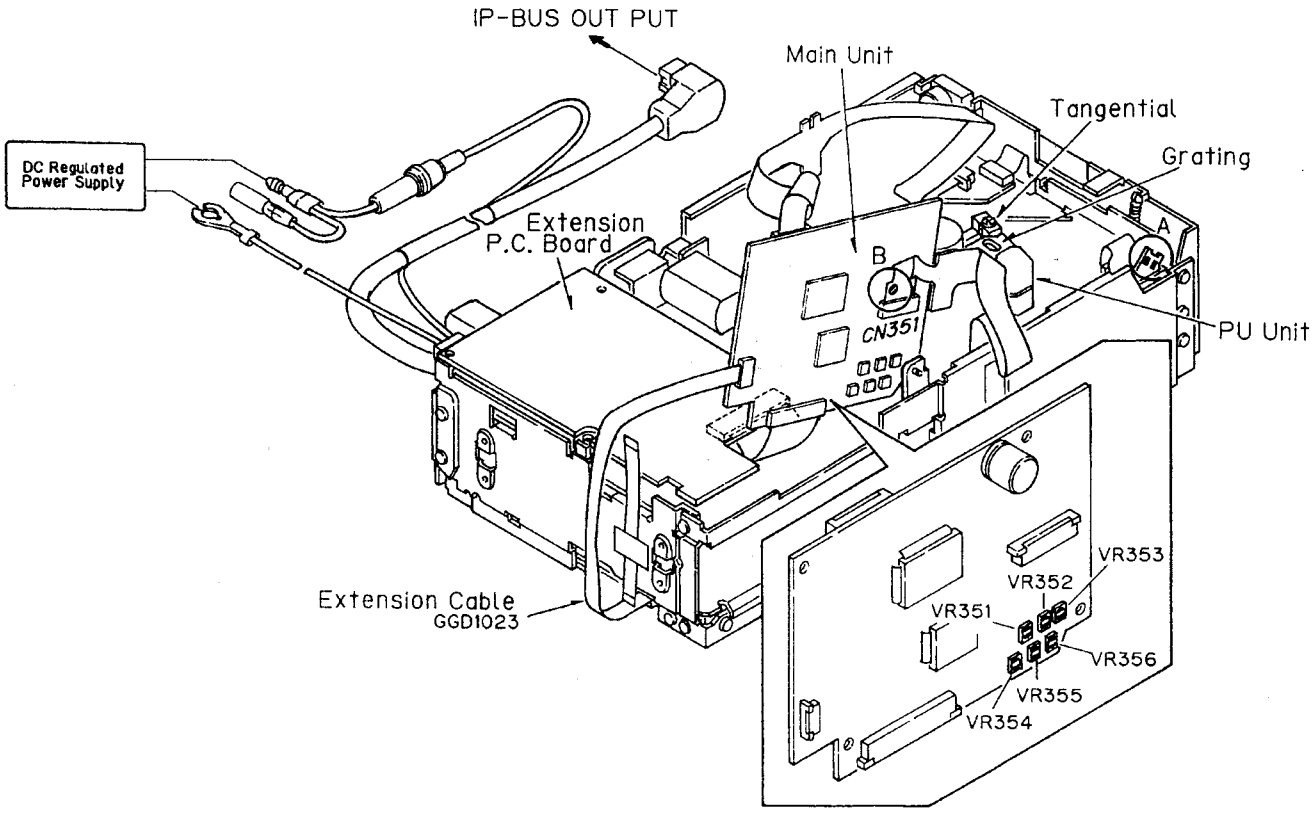


Fig.13

VR351	FE BIAS
VR352	RF OFFSET
VR353	TE OFFSET
VR354	TRACKING BALANCE
VR355	FOCUS SERVO LOOP GAIN
VR356	TRACKING SERVO LOOP GAIN

Note: When pulling out the connector CN351, be sure to install a short pin in section A. Alternatively, the land in section B may be short-circuited (by soldering or the like). When the connector is inserted, be sure to disconnect it before the power is turned on.

● Test Point

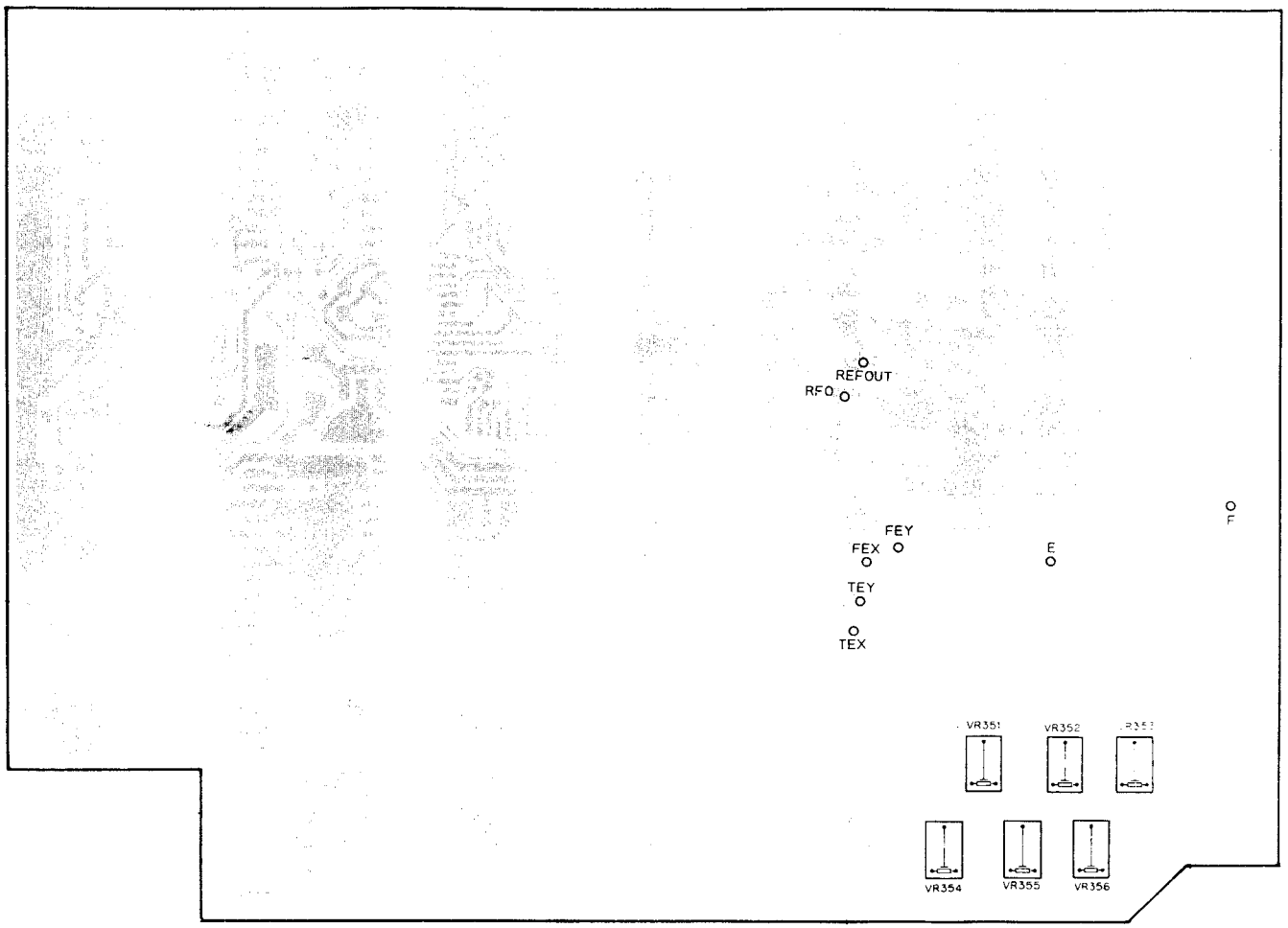
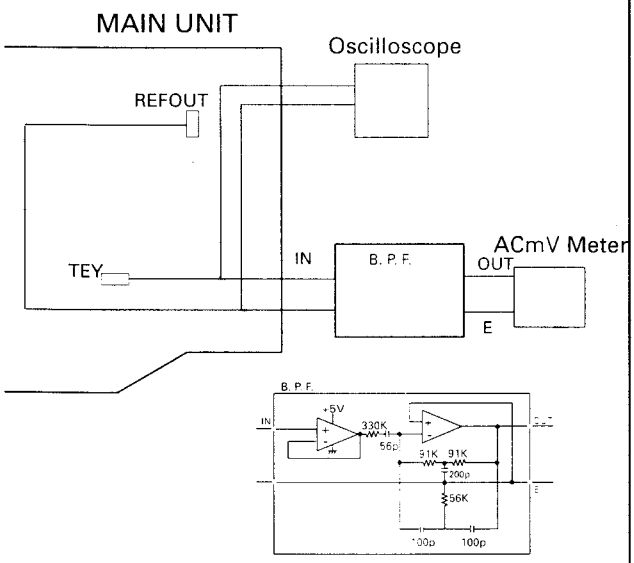


Fig.14

1 Grating Adjustment-1 (Rough adjustment)

- Grating Adjustment-1 (rough adjustment and fine adjustment) may be performed in Grating Adjustment-2.
- **Purpose:**
  The grating may need adjustment in a replaced pick-up unit.
- **Maladjustment symptoms:**
  No disc playback, track jumping.

- **Measuring equipment / jigs:**
  Oscilloscope, clock driver, grating adjustment filter (bandpass filter) (GGF-133), AC milli-voltmeter
- **Measuring point:**
  TEY
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Test mode
- **Adjustment position:**
  Pick-up grating adjustment hole



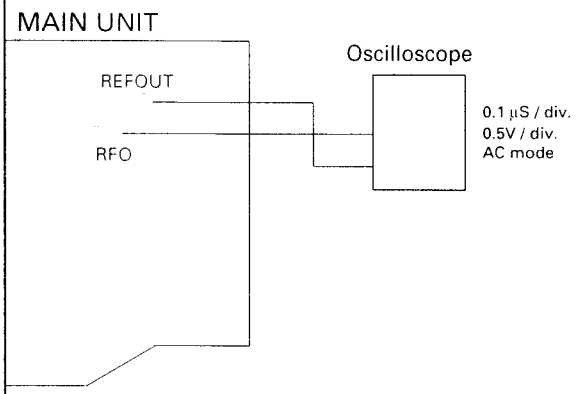
Adjustment Procedure

1. In the test mode, set a test disc-loaded magazine and select the tray with a test disc.
2. Switch regulator ON .
3. Using the TRACK UP or TRACK DOWN key, move the pick-up to about the center of the test disc.
4. **Press the 9/F3 key to close focus.**
5. While monitoring the TEY filter output by AC milli-voltmeter, turn the grating adjustment hole slowly.The AC voltage increases and decreases while turning the screw. Search for the minimum voltage level. (This corresponds to the position where the grating is on a track, and is referred to as the null point.)
6. Then while monitoring TEY by oscilloscope, turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first waveform peak amplitude is reached.

2 Tangential Skew Check

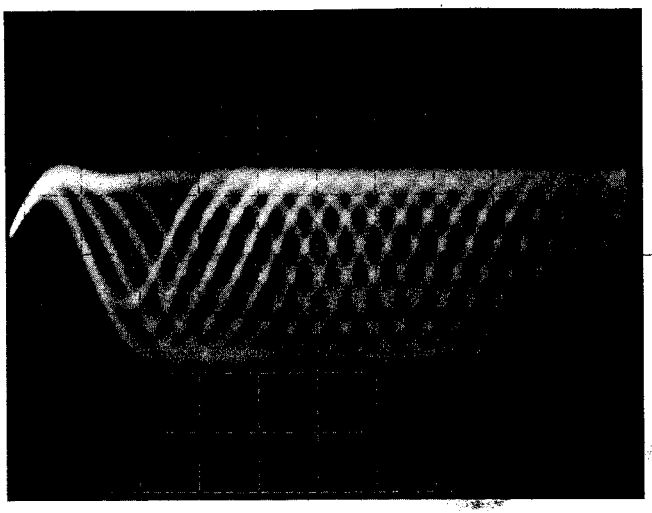
- **Purpose:**
  To check whether tangential skew has been misaligned or not when replacing the pick-up unit.
- **Maladjustment symptoms:**
  No disc playback, track jumping.

- **Measuring equipment / jigs:**
  Oscilloscope, screwdriver
- **Measuring point:**
  RFO
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  Pick-up tangential adjustment screw



Adjustment Procedure

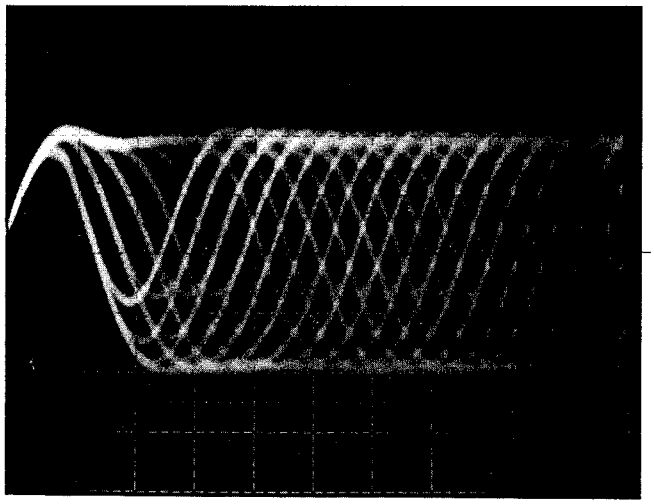
1. Play tune TNO 12 in normal mode. (ABEX TCD-782:TNO19)
2. Adjust the tangential adjustment screw so that the RF wave-form will have a level maximized and an eye pattern clearly viewed. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates, and take the midway point as the adjustment point. As a general guide, look for an overall clear wave-form, and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screw-driver at this stage. (This kind of accident can result in loss of focus.) **(See Waveform 1,2)**
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew, also adjust the grating.



REFOUT

NG

Waveform 1



REFOUT

OK

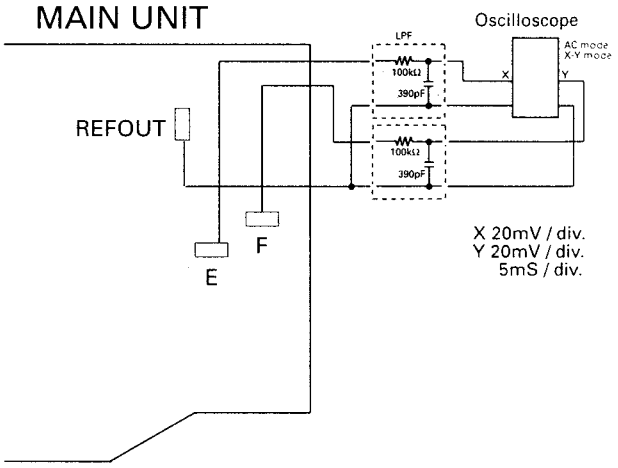
Waveform 2

0.5V/div.
0.5µs/div.
DC mode

3 Grating Adjustment-1(Fine adjustment)

- **Purpose:**
  The grating may need adjustment in a replaced pick-up unit.
- **Maladjustment symptoms:**
  No disc playback, track jumping.

- **Measuring equipment / jigs:**
  Oscilloscope, clock driver, two low-pass filters
- **Measuring point:**
  E LPF output, F LPF output
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Test mode
- **Adjustment position:**
  Pick-up grating adjustment hole



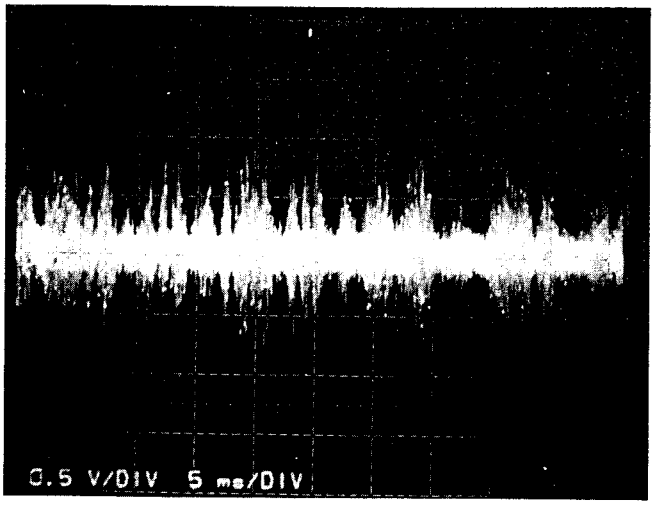
Adjustment Procedure

1. Connect a low-pass filter as shown in the above diagram.
2. Switch regulator ON in test mode, and load a disc.
3. Using the TRACK UP or TRACK DOWN key, move the pick-up to about the center of the test disc.
4. **Press the 9/F3 key to close focus.**
5. Using the driver, adjust the Lissajous figure to a single line (or as close as possible).
   (See Waveform 8)
6. Switch regulator OFF and remove the filters.

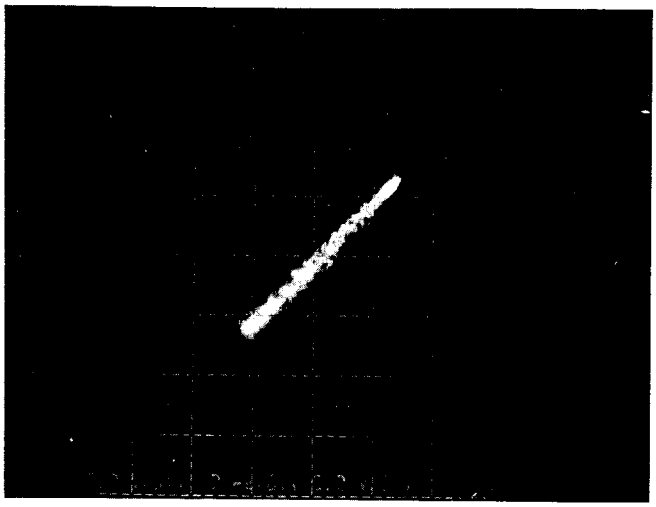
TEY waveform 5ms/div.,500mV/div.

Nul Point

Lissajous figure(AC input)
Horizontal axis E 20mV/div.
vertial axis F 20mV/div.

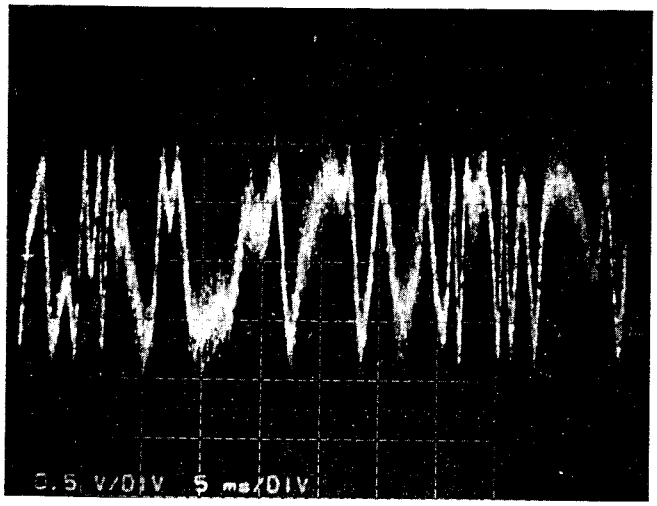


Waveform 3

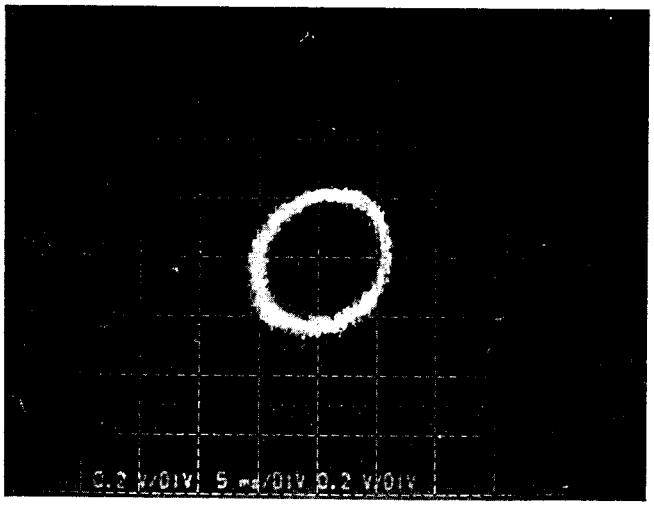


Waveform 4

"Rough" adjustment

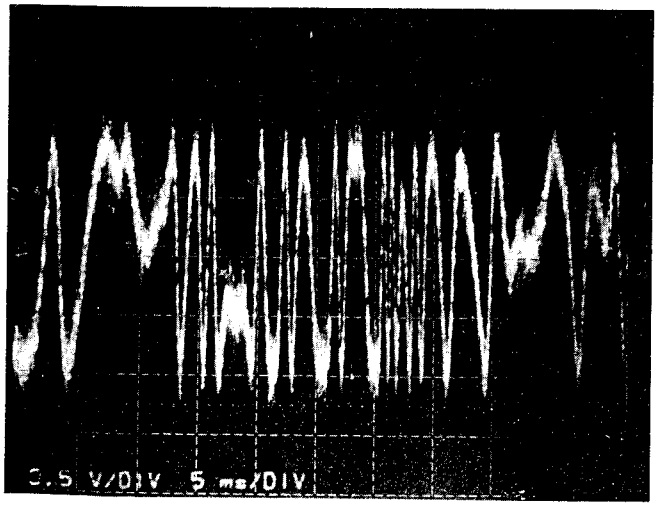


Waveform 5

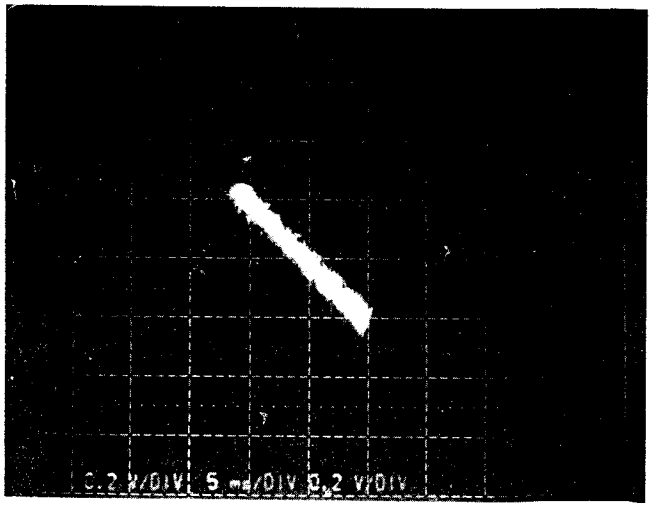


Waveform 6

Final adjustment



Waveform 7

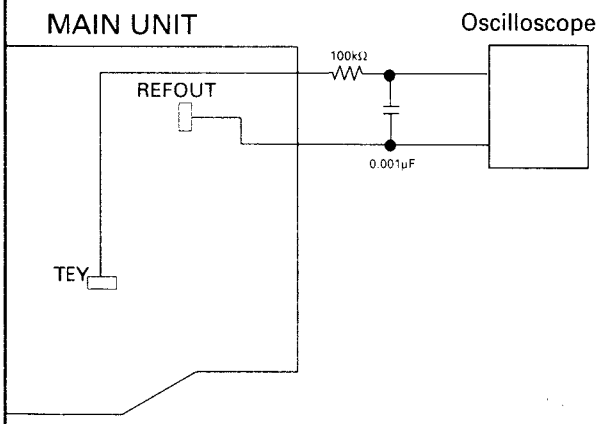


Waveform 8

4 Grating Adjustment-2

• Grating Adjustment-2 may be performed in Grating Adjustment-1 (rough adjustment and fine adjustment).
• **Purpose:**
The grating may need adjustment in a replaced pick-up unit.
• **Maladjustment symptoms:**
No disc playback, track jumping.

• **Measuring equipment / jigs:**
Oscilloscope, grating adjustment driver, low-pass filter
• **Measuring point:**
TEY
• **Test disc and setting:**
SONY TYPE 4 (or ABEX TCD-782) Test mode
• **Adjustment position:**
Pick-up grating adjustment hole



Adjustment Procedure

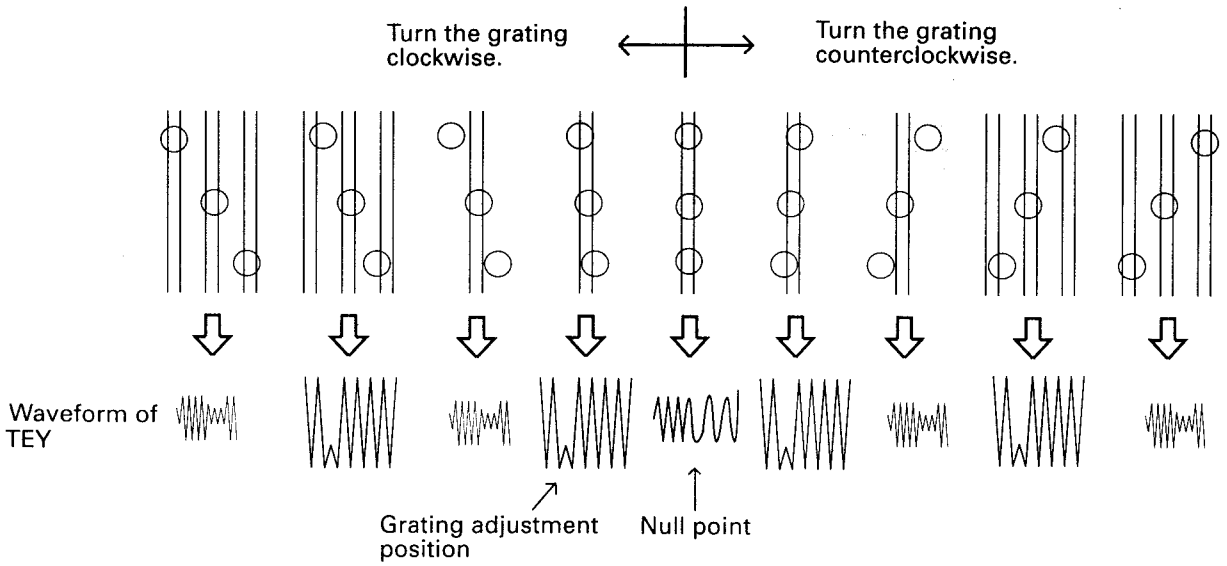
1. In the test mode, set a test disc-loaded magazine and select the tray with a test disc.
2. Switch regulator ON .
3. Using the TRACK UP or TRACK DOWN key, move the pick-up to center of the test disc.
4. **Press the 9/F3 key to close focus.**
5. Insert the adjusting screwdriver in the slit for the pick-up grating adjustment and adjust the grating to seek out the null point. For details, see following page.
6. As the screwdriver is slowly turned clockwise from the null point, the amplitude of the waveform increases gradually. As the screwdriver continues to be turned, the amplitude of the waveform decreases again. Adjust the grating to a point at which the amplitude of the waveform first reaches the maximum while the screwdriver is turned clockwise from the null point.

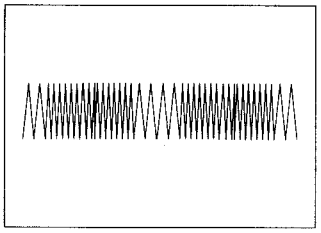
● **How to seek the null point**

When the screwdriver is inserted in the slit for grating adjustment while the angle of the grating is varied, the amplitude of the TEY tracking error signal varies.

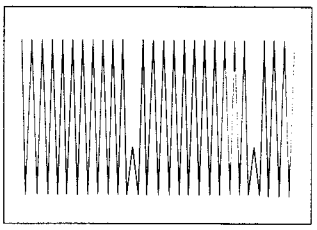
There are 5 or 6 positions where the amplitude of the waveform is decreased in the grating variable range. In only one of the waveform amplitude diminishing positions, the envelope is made smooth . This position denotes the state where three laser beams divided by the grating are aligned right on the same track.

This position is referred to as the null point. Adjust the grating to seek out the null point which is used as a reference position in performing the grating adjustment.

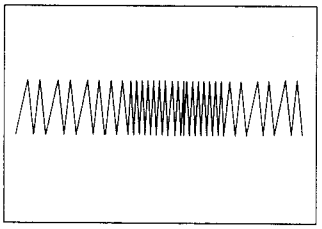




Waveform at null point



Waveform of maximum amplitude

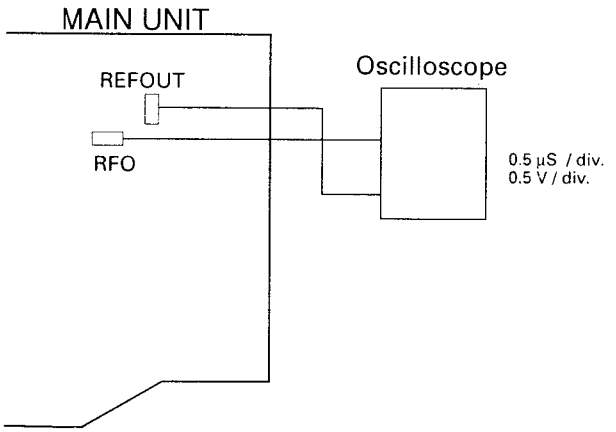


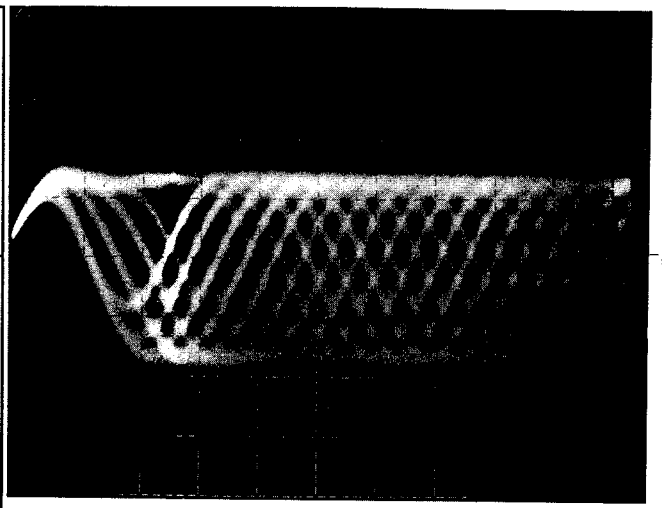
Waveform in positions other than null point

5 FE Bias Adjustment

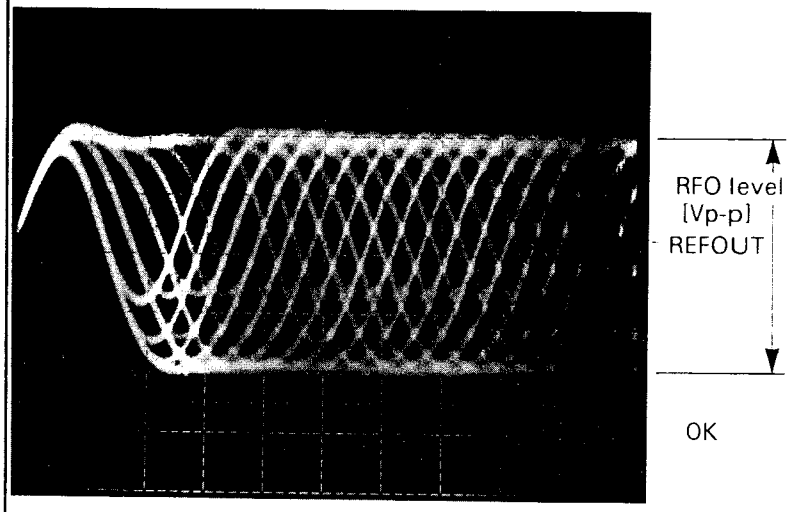
- **Purpose:**
  To adjust the focus servo bias to an optimum value.
- **Maladjustment symptoms:**
  Focus closing difficulty, poor playability.

- **Measuring equipment / jigs:**
  Oscilloscope, volume adjustment driver
- **Measuring point:**
  RFO
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR351 (FEB)





Waveform 9



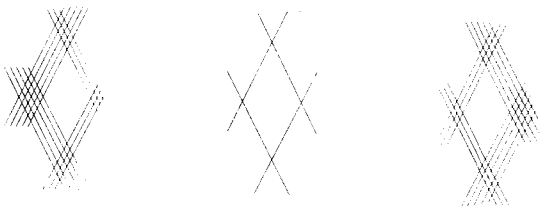
Waveform 10

Adjustment Procedure

1. Play tune TNO 12 in normal mode.(ABEX TCD-782:TNO 19)
2. Observe RFO in respect to REFOUT in the oscilloscope, and adjust VR351 (FEB) to obtain maximum RF and optimum eye pattern. **(See Waveform 9,10)**
3. **After adjustment, measure the RFO output level shown in Waveform 10 and take actions shown below.**

Output level	Action
2.6Vp-p more than	Replace the pick-up
1.2Vp-p - 2.6Vp-p	Normal
1.2Vp-p less than	Replace the pick-up

0.5V/div.
0.5µs/div.
DC mode

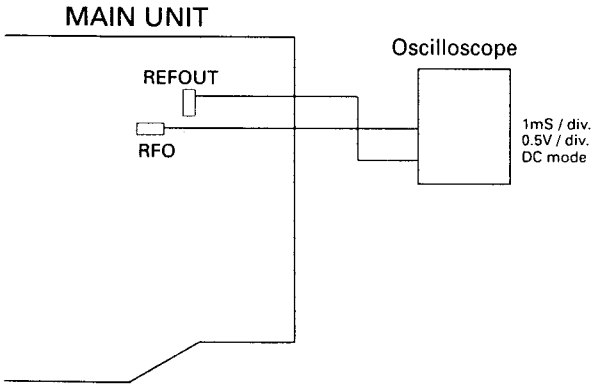


NG OK NG

6 RF Offset Adjustment

- **Purpose:**
  To adjust the RF amplifier offset to a suitable value.
- **Maladjustment symptoms:**
  Focus closure fails readily.

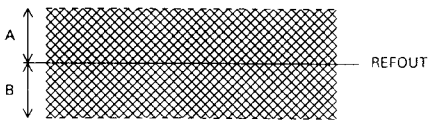
- **Measuring equipment / jigs:**
  Oscilloscope, volume adjustment driver
- **Measuring point:**
  RFO
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR352 (RFO)



When using a multi-channel oscilloscope, do not connect the other negative probe to ground.

Adjustment Procedure

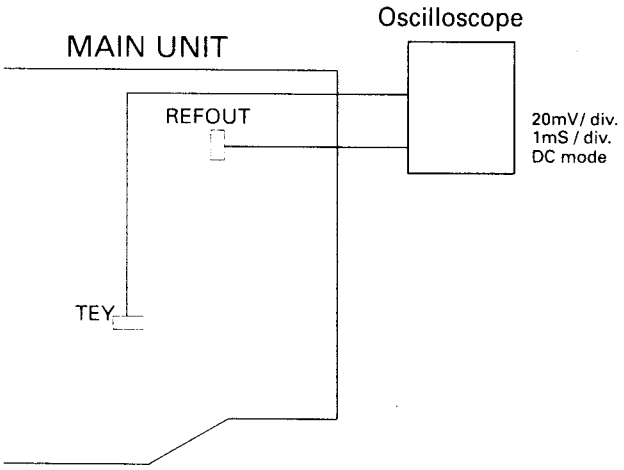
1. Play tune TNO 12 in normal mode.(ABEX TCD-782:TNO 19)
2. Using VR352 to adjust the RFO waveform so that REFOUT appears at the center.(A-B must not exceed 100 mV.)



7 TE Offset Adjustment-1

- **Purpose:**
  To adjust the electrical offset of the tracking servo to zero.
- **Maladjustment symptoms:**
  Search times too long, carriage run-away.

- **Measuring equipment / jigs:**
  DC voltmeter or oscilloscope, volume adjustment driver
- **Measuring point:**
  TEY
- **Test disc and setting:**
  Enpty magazine Test mode
- **Adjustment position:**
  VR353



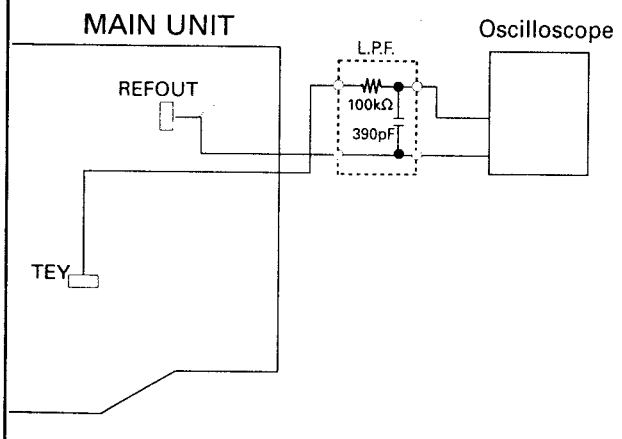
Adjustment Procedure

1. Select a tray without a disc, while in test mode.
2. Switch regulator ON.
3. Using VR353, adjust the TEY output DC voltage in reference to REFOUT to a value of 0±25mV.
4. Switch regulator OFF.

8 Tracking Balance Adjustment-1

- **Purpose:**
  To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
  Search times too long, poor playability, carriage run-away.

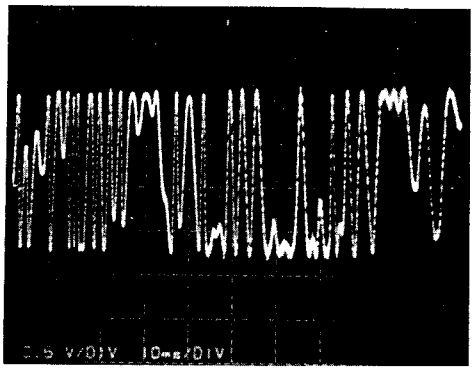
- **Measuring equipment / jigs:**
  Oscilloscope,volume adjustment driver
- **Measuring point:**
  TEY (Tracking error signal)
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Test mode
- **Adjustment position:**
  VR354 (T.BAL)

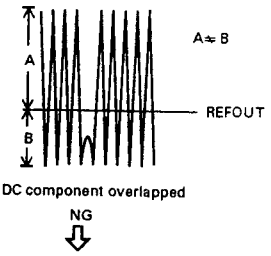


Adjustment Procedure

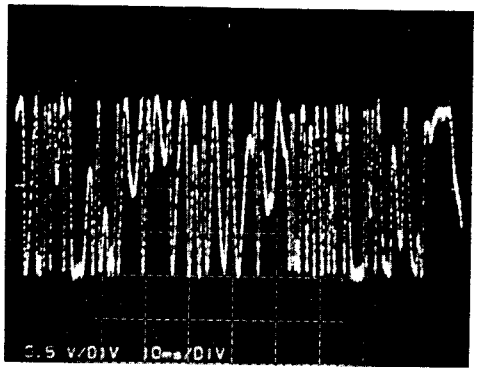
1. After checking that regulator is OFF, connect the low-pass filter as shown in the diagram.
2. Set the test disc. Switch regulator ON.
3. Using the TRACK UP or TRACK DOWN key, move the pick-up to about the center of the signal surface.
4. Press the **9/F3** key to close focus.
5. Using an oscilloscope, observe the TEY signal in respect to REFOUT.
   Then adjust VR354 (T.BAL)to set the positive and negative amplitudes to the same levels.
   (See Waveform 11-13)
6. Switch the power OFF.

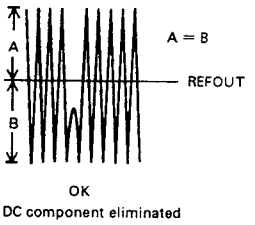
TEY waveform
0.5V/div.
10ms/div.



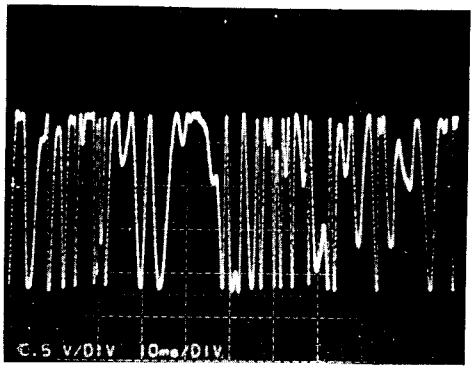


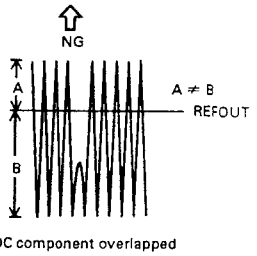
Waveform 11





Waveform 12



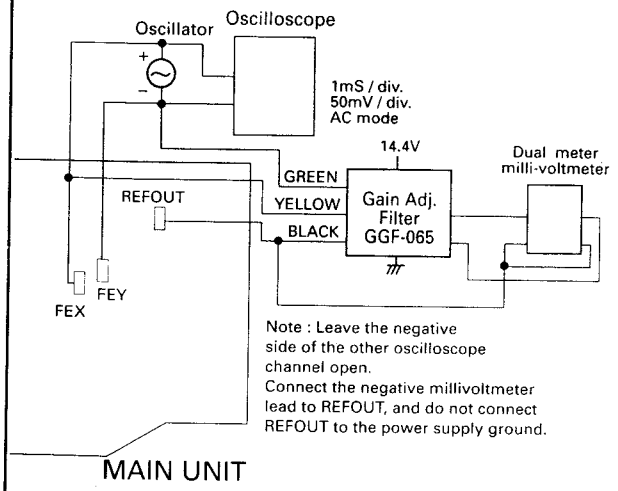


Waveform 13

9 Focus Servo Loop Gain Adjustment-1

- Focus Servo Loop Gain Adjustment-1 may be performed in Focus Servo Loop Gain Adjustment-2.
- **Purpose:**
  To adjust the focus servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playability, reduced resistance to vibration, focus closure fails readily.

- **Measuring equipment / jigs:**
  Oscillator, gain adjustment filter (GGF-065), oscilloscope, dual meter milli-voltmeter, volume adjustment driver
- **Measuring point:**
  FEX, FEY
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR355



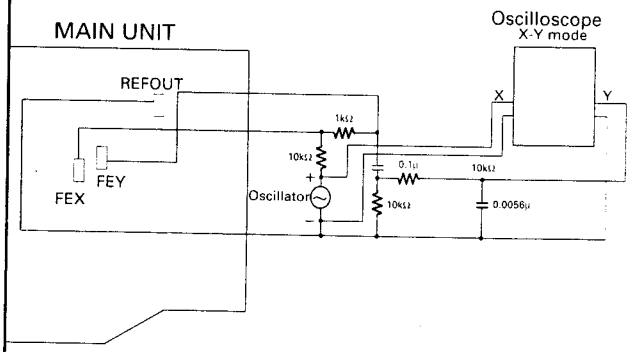
Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode.(ABEX TCD-782 :TNO 19)
3. Set the oscillator to 1kHz,and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR355 to obtain a milli-voltmeter difference of 0±0.5dB.

10 Focus Servo Loop Gain Adjustment-2

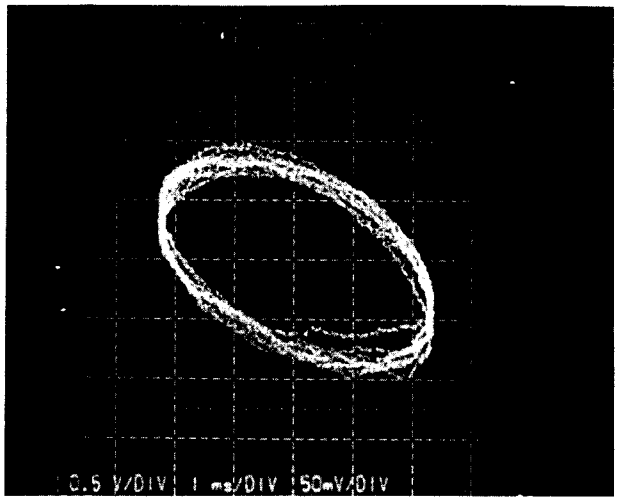
- **Purpose:**
  To adjust the focus servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playabillity, reduced resistance to vibration, focus closure fails readily.

- **Measuring equipment / jigs:**
  Oscillator, gain adjustment filter, oscilloscope
- **Measuring point:**
  FEX, FEY
- **Test disc and setting**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR355



Adjustment Procedure

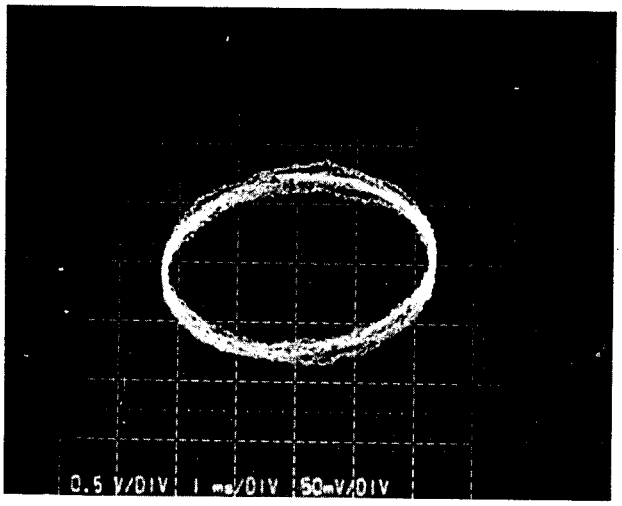
1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tuneTNO 12 in normal mode.(ABEX TCD-782:TNO 19)
3. Set the oscillator at 1kHz and adjust the output of the oscillator to 2Vp-p.
4. Adjust VR355 to make the Lissajou's figure of waveform symmetrical about X and Y axes respectively.



High-level gain

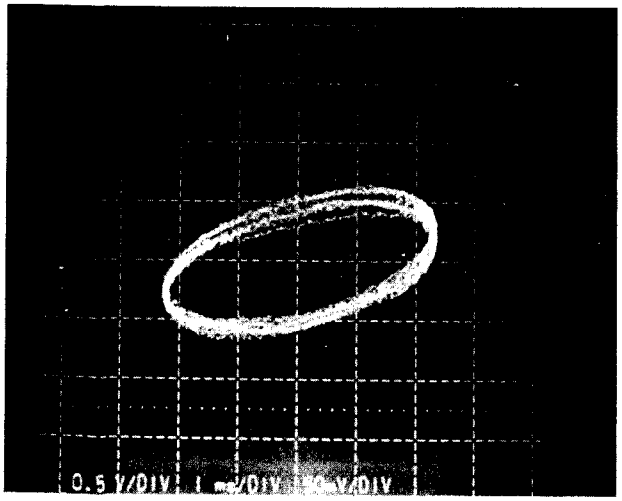
Focus
X=0.5V/div.
Y=50mV/div.
1ms/div.

Waveform 14



Optimum gain

Waveform 15



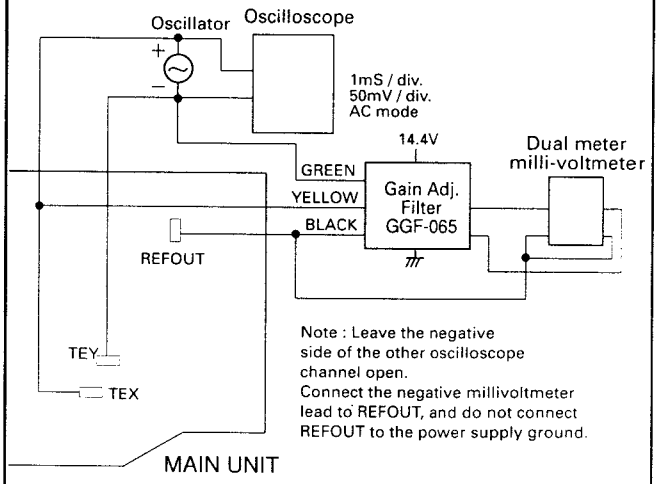
Low-level gain

Waveform 16

11 Tracking Servo Loop Gain Adjustment-1

- Tracking Servo Loop Gain Adjustment-1 may be performed in Tracking Servo Loop Gain Adjustment-2.
- **Purpose:**
  To adjust the tracking servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playability, reduced resistance to vibration.

- **Measuring equipment / jigs:**
  Oscillator, gain adjustment filter(GGF-065), oscilloscope, dual meter milli-voltmeter, volume adjustment driver
- **Measuring point:**
  TEX, TEY
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR356



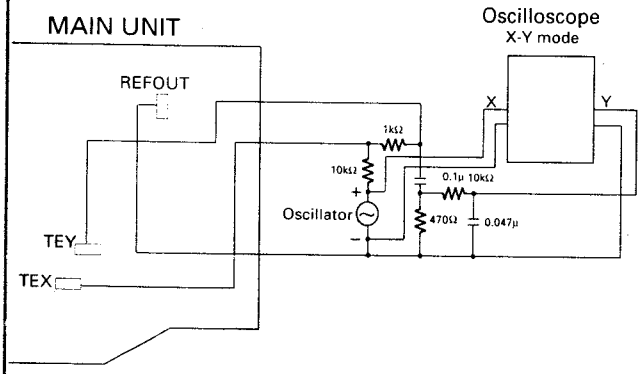
Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode.(ABEX TCD-782:TNO19)
3. Set the oscillator to 1.4kHz, and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.
4. Adjust VR356 to obtain a milli-voltmeter difference of 0±0.5dB.

12 Tracking Servo Loop Gain Adjustment-2

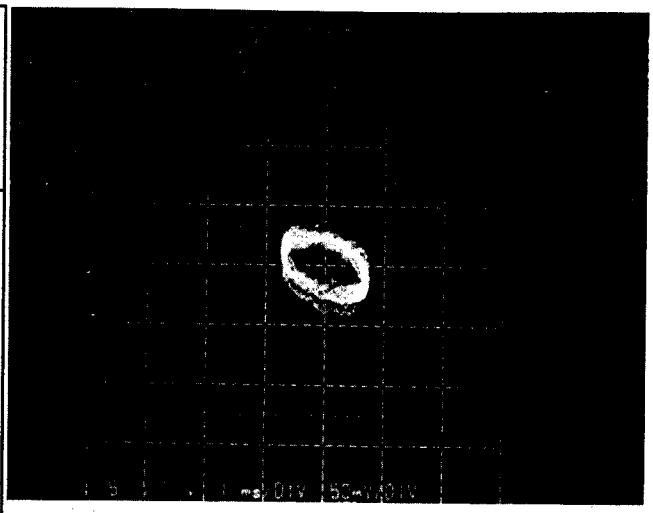
- **Purpose:**
  To adjust the tracking servo loop gain to an optimum value.
- **Maladjustment symptoms:**
  Poor playability, reduced resistance to vibration.

- **Measuring equipment / jigs:**
  Oscillator, gain adjustment filter, oscilloscope
- **Measuring point:**
  TEX, TEY
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Normal mode
- **Adjustment position:**
  VR356



Adjustment Procedure

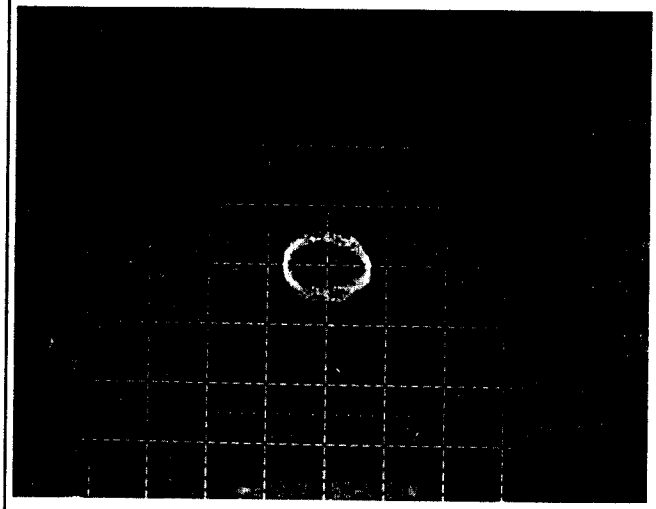
1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode.(ABEX TCD-782:TNO19)
3. Set the oscillator at 1.4kHz and adjust the output of the oscillator to 5Vp-p.
4. Adjust VR356 to make the Lissajou's figure of waveform symmetrical about X and Y axes respectively.



High-level gain

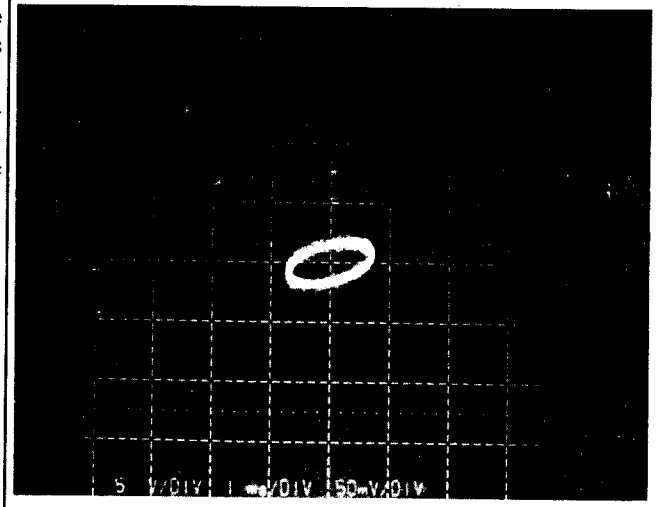
Tracking
X=5V/div.
Y=50mV/div.
2ms/div.

Waveform 17



Optimum gain

Waveform 18



Low-level gain

Waveform 19

13 TE Offset Adjustment-2

- **Purpose:**
  To adjust the electrical offset of the tracking servo to zero.
- **Maladjustment symptoms:**
  Search times too long, carriage run-away.

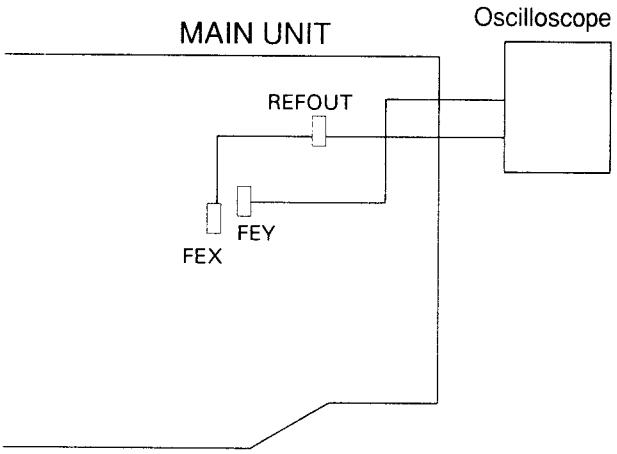
- **Measuring equipment / jigs:**
  DC voltmeter or oscilloscope,
  volume adjustment driver
- **Measuring point:**
  TEY
- **Test disc and setting:**
  No Disc Test mode
- **Adjustment position:**
  VR353

Adjustment Procedure
Same as for TE offset adjustment-1, but with the DC voltage of the TEY output adjusted to 0±50mV.
The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracking balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

14 Checking FEY Level

- **Purpose:**
  Check the focus error level.
- **If the level is insufficient:**
  Focus is hard to close and the playability is worsened.

- **Measuring equipment / jigs:**
  Oscilloscope
- **Measuring point:**
  FEY
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Test mode

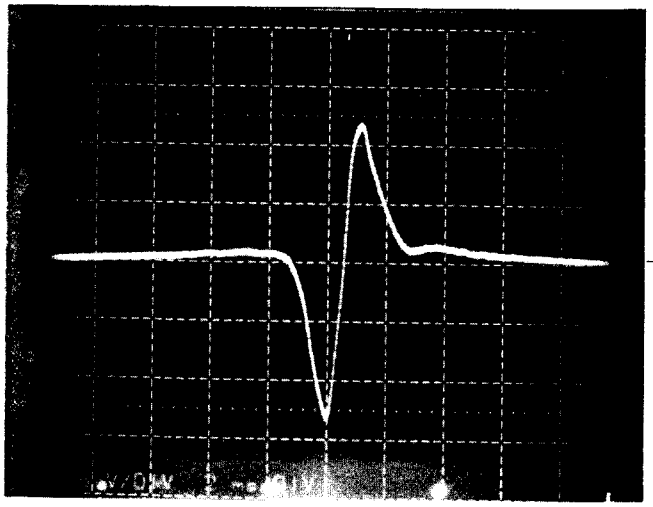


Checkout Procedure(This checkout always must be performed after gain adjustment.)

1. Connect the oscilloscope to REFOUT and FEY. Connect FEX to REFOUT.
2. In the test mode, set a test disc-loaded magazine and select a tray with a test disc.
3. Switch regulator ON.
4. Using the TRACK UP or TRACK DOWN key, move the pick-up to the center of the test disc.
5. **Press the 9/F3 key to close focus. During this action, the disc repeats acceleration and deceleration.**
6. Observe the FEY waveform and measure the FEY level.
7. Switch regulator OFF.
8. Disconnect FEX and REFOUT.

Normal level of FEY:2.6Vp-p±0.6Vp-p
If the level is less than the above, examine the peripheral circuits of the unit or replace the pick-up.

15 Tracking Balance Adjustment-2 and Checking TEY Level



Waveform 20

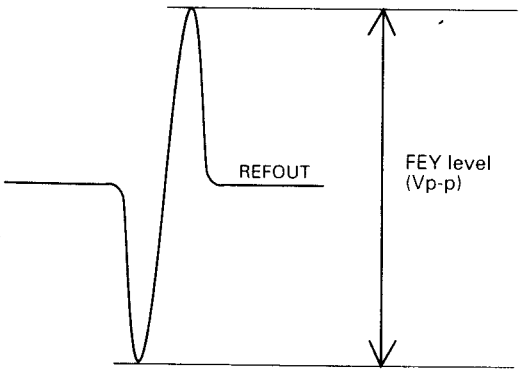
- **Purpose:**
  To adjust the tracking servo offset to zero.
- **Maladjustment symptoms:**
  Search times too long, poor playability, carriage run- away.

- **Measuring equipment / jigs:**
  Oscilloscope,
  volume adjustment driver
- **Measuring point:**
  TEY (Tracking error signal) L.P.F. output
- **Test disc and setting:**
  SONY TYPE 4 (or ABEX TCD-782) Test mode
- **Adjustment position:**
  VR354

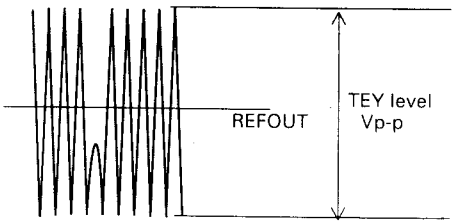
Adjustment Procedure

Steps 1 through 5 are the same as the steps taken in the tracking balance adjustment-1.

6. Check to see that the level of positive and negative amplitudes of TEY signal. If there is deviation, make adjustment using VR354.
7. After adjustment measure the TEY level. (Measurement always should be made afrer the tracking gain adjustment is completed. Before the adjustment, normal level measurement cannot be achieved.)



In addition to the waveform shown above, the FEY level output produces another waveform like ⊣⋁⊢ . However, take measurement only of the above figure of waveform.



Normal range of TEY level:2.0±0.5Vp-p

If the level is out of the above range, examine the peripheral circuits of the unit or replace the pick-up.

● ICs

● Pin Functions (PD5262A)

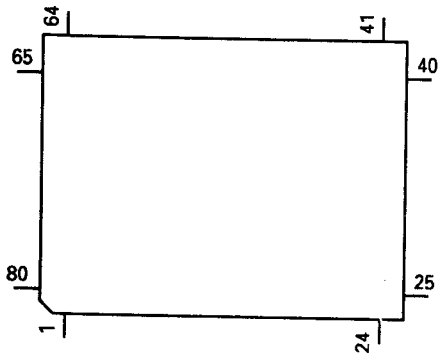
Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	$\overline{\text{TIN}}$	I	C	Tray position input
2	TEMP			Temperature detector
3	VDIN			Power supply short sensor input
4	RSTN	O	NM	Reset output
5	MIRR	I	NM	Mirror detector input
6	LOCK	I	NM	Spindle lock detector input
7	FOK	I	NM	FOK signal input
8	A0	O	NM	LSI data control signal
9	XSCK	I/O	C/NM	LSI clock input/output
10	XSO	O	NM	LSI data output
11	XSI	I	C	LSI data input
12	$\overline{\text{STB}}$	O	C	LSI strobe output
13	$\overline{\text{RST}}$	O	C	LSI reset output
14	CCS	O	C	IP-BUS chip select
15	CPW	O	C	IP-BUS power control
16	$\overline{\text{ASENS}}$	I		ACC power sense input
17	$\overline{\text{BSENS}}$	I		Back up power sense input
18	CIRQ	I		IP-BUS interrupt input
19	CCD	O	C	IP-BUS command / data appointment
20	CRW	O	C	IP-BUS read / wright appointment
21	CSCK	O	C	IP-BUS clock output
22	CSO	O	C	IP-BUS data output
23	CSI	I	C	IP-BUS data input
24	$\overline{\text{EJSW}}$	I		Eject key switch interrupt input
25	$\overline{\text{MAG}}$	I		Magazine lock switch interrupt input
26	CNVCC	I		GND
27	$\overline{\text{RESET}}$	I		Reset input
28	EJLED	O	C	LED output for eject
29	CRST	O	C	IP-BUS reset output
30	XIN	I		Crystal oscillating element connection pin
31	XOUT	O		Crystal oscillating element connection pin
32	VSS			GND
33–40	D7-D0	I/O	C	External RAM data line
41	WE	O	C	External RAM write enable
42	PROT	O	C	External RAM output enable
43	CS	O	C	External RAM chip select
44–56	A12-A0	O	C	External RAM address line
57	$\overline{\text{EJP}}$	I	C	Eject position switch
58	$\overline{6}$/12	I	C	6/12 switching input
59	FECNT	I/O	C	DEFECT port
60	POWER	O	C	CD +5V control
61	CONT	O	C	Servo driver power supply control
62	NC	I	C	Pull down
63	$\overline{\text{HOME}}$	I	C	Home position detector input
64	OPTSW	I	C	Digital output ON/OFF input
65	LOAD	O	C	Mechanism power supply control
66	I3	O	C	Motor driver control output
67	I1	O	C	Motor driver control output
68	I2	O	C	Motor driver control output
69	ENDOUT	O	C	Digital output enable signal
70	CDMUTE	O	C	CD mute output

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
71	ADENA	O	C	A/D reference voltage output
72	$\overline{\text{TESTIN}}$	I	C	Test program mode input
73	VCC			5V
74	VREF	I		A/D converter reference voltage input
75	AVSS	I		A/D GND
76	UNIT#H			UNIT # input
77	UNIT#L		C	UNIT # input
78	$\overline{\text{DISK}}$			Disc detector input
79	$\overline{\text{TSEL}}$	I	C	Tray position detector photo sensor
80	$\overline{\text{TOUT}}$	I	C	Disc sensor timing input

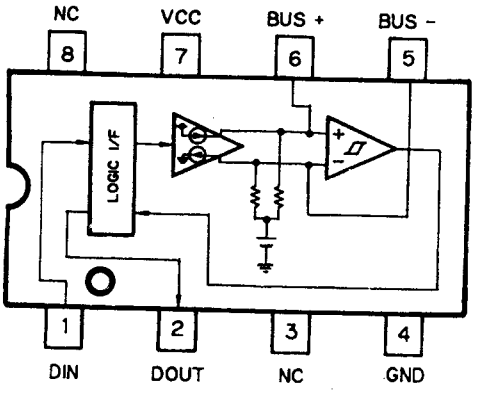
I/O Format	Meaning
C	C MOS
NM	Middle resistivity N channel open drain

IC's marked by are MOS type.*
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

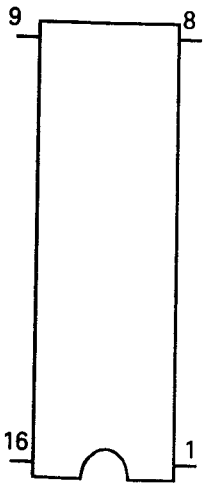
*PD5262A



PA0051AM



PD4308AM



●Pin Functions (PD4308AM)

Pin	Pin Name	I/O	Function and Operation
1	IPSCK	I/O	Clock input/output
2	IPSI	I	Data input
3	IPSO	O	Data output
4	IPIRQ	I	Interrupt input
5	IPRW	O	Read / write output
6	X1		Crystal oscillator connection pin
7	X0		Crystal oscillator connection pin
8	GND		GND
9	RX	I	Data input
10	TX	O	Data output
11	NC		Not used
12	IPCD	O	Command/data output
13	IPCS	O	Chip select output
14	IPRST	O	Reset output
15,16	VDD		Power supply

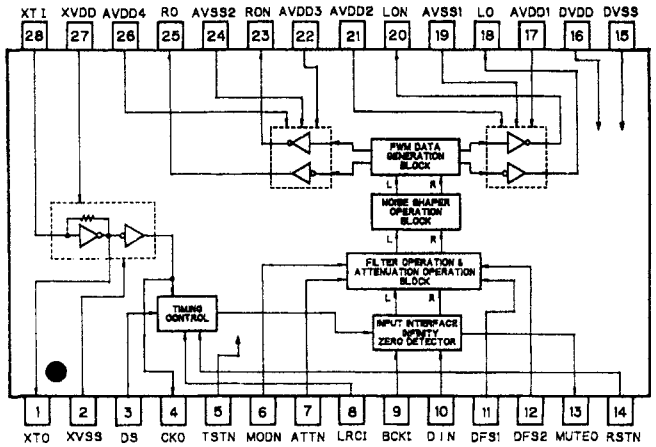
● Pin Functions (SM5871AS)

Pin No.	Pin Name	I/O	Function and Operation
1	XTO	O	Oscillation output
2	XVSS		Crystal VSS (0V)
3	DS	IP	Normal / high-speed play mode select (DS=L : Normal play mode) (DS=H : High-speed play mode)
4	CKO	O	Oscillation output clock (DS=L : 384fs),(DS=H : 192fs)
5	TSTN	IP	Test : H
6	MODN	IP	Mode control
7	ATTN	IP	Soft mute control
8	LRCI	IP	Input data sample rate (fs) clock : H=Lch,L=Rch
9	BCKI	IP	Input data bit clock
10	DIN	IP	Input data
11	DFS1	IP	De-emphasis control 1
12	DFS2	IP	De-emphasis control 2
13	MUTEO	O	Infinity zero detector output
14	RSTN	IP	System reset : H=Normal motion,L=System reset
15	DVSS		Digital GND (0V)
16	DVDD		Digital VDD (5V)
17	AVDD1		Analogue VDD 1 (5V)
18	LO	O	Lch PWM output (+)
19	AVSS1		Analogue GND 1 (0V)
20	LON	O	Lch PWM output (-)
21	AVDD2		Analogue VDD 2 (5V)
22	AVDD3		Analogue VDD 3 (5V)
23	RON	O	Rch PWM output (-)
24	AVSS2		Analogue GND 2 (0V)
25	RO	O	Rch PWM output (+)
26	AVDD4		Analogue VDD 4 (5V)
27	XVDD		Crystal VDD (5V)
28	XTI	I	Oscillation input (384fs : DS=L),(192fs : DS=H)

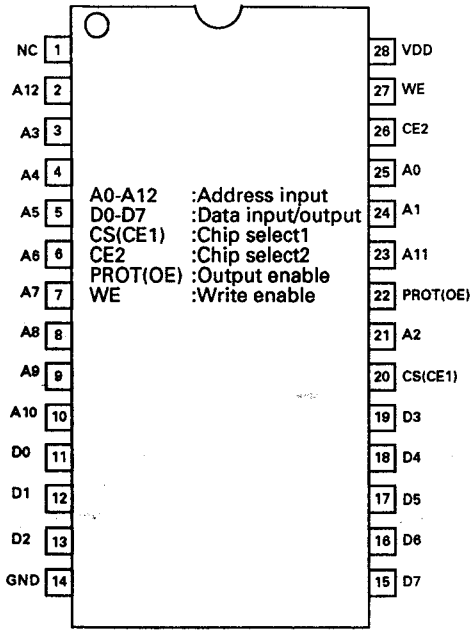
ATTN	SELECT	MODN	
		H	L
	H	Soft mute cancel motion	Soft mute motion hold (fix)
	L	Soft mute motion	

DFS2	SELECT	DFS1	
		L	H
	L	De-emphasis ON 44.1kHz	De-emphasis OFF
	H	De-emphasis ON 48.0kHz	De-emphasis ON 32.0kHz

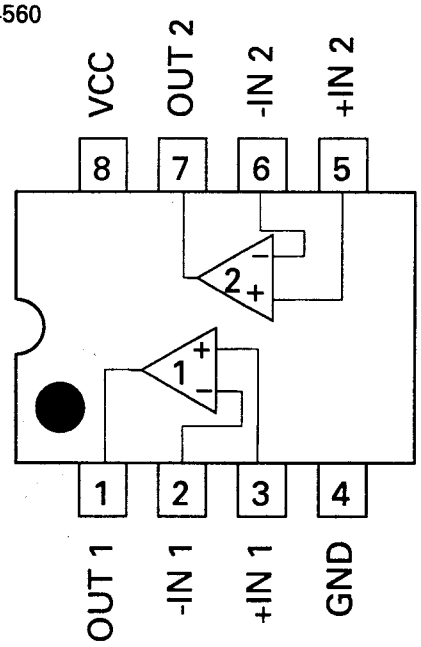
*SM5871AS



*LH-5160HN-10L



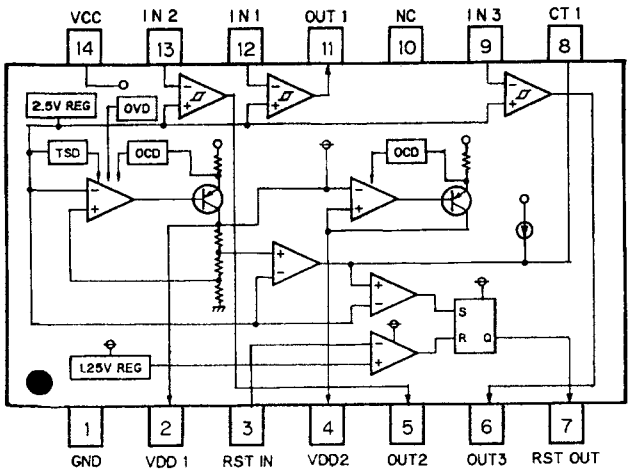
XRA4560F
XRA4560



● Pin Functions (PAJ001A)

Pin No.	Pin Name	I/O	Function and Operation
1	GND		IC P.C.Board (SUB) electric potential / The lowest electric potential of IC
2	VDD1	O	Microcomputer 5V power supply output
3	RSTIN	I	Microcomputer reset control (VSL) detector input
4	VDD2	O	Microcomputer pull up resistance 5V power supply output
5	OUT2	O	Attenuation power detector 2 output
6	OUT3	O	Attenuation power detector 3 output
7	RSTOUT	O	Microcomputer reset control output
8	CT1		Microcomputer reset delay time constant terminal
9	IN3	I	Attenuation power detector 3 input
10	CF		Reference filter capacitor connection terminal
11	OUT1	O	Attenuation power detector 1 output
12	IN1	I	Attenuation power detector 1 input
13	IN2	I	Attenuation power detector 2 input
14	VCC		IC power supply input / The highest electric potential of IC

PAJ001A



5. ELECTRICAL PARTS LIST

NOTES:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

=====Circuit Symbol & No. Part Name=====	Part No.
Unit Number : CWX1631	
Unit Name : Main Unit	
MISCELLANEOUS	
IC 351	UPC1347GS
IC 601	UPD6374AGH
IC 602 652	XRA4558F
IC 651	PA3026
IC 661	TA78L05F
IC 701	UPD6375GC
IC 702	SM5871AS
IC 707	XRA4560F
IC 708	TA78L05F
IC 751	PD5262A
IC 752	LH5160HN-10L
IC 754	PD4308AM
IC 755	PA0051AM
IC 801	XRA6247FP
Q 351	2SB1260
Q 601	2SB709A
Q 651 725 781 801	UN2211
Q 652 653 802	2SB1184F5
Q 721	DTA123JK
Q 722	DTC144EK
Q 723	2SC4453
Q 724	DTC114YK
Q 751	UN2111
D 651 652	SC016-2
D 751	MA151A-MA
D 752	MA151WK-MT
X 702 Crystal Resonator 16.9344MHz	CSS1067
X 751 Ceramic Resonator 8.000MHz	CSS1107
X 752 Ceramic Resonator 12.583MHz	CSS1108
VR 351 352 355 Semi-fixed 47kΩ(B)	CCP1185
VR 353 356 Semi-fixed 2.2kΩ(B)	CCP1177
VR 354 Semi-fixed 22kΩ(B)	CCP1183
Checker Chip	CKF1031
RESISTORS	
R 353	RS1/16S623J
R 354 746 747 748 749 750 751 753 756 760	RS1/16S473J
R 355	RS1/16S122J
R 356 357 658	RS1/16S683J
R 358 359 654	RS1/16S332J
R 360	RS1/16S684J
R 361	RS1/16S153J
R 369 605 607 666 678 720 775 905 908 912	RS1/16S103J
R 370 381	RS1/16S133J
R 375 377 609 613 651 663 671 672 791 804	RS1/16S102J
R 379	RS1/16S513J
R 380 754 761 767 772 777 782 784 788 796	RS1/16S104J
R 382	RS1/8S100J
R 383	RS1/8S120J
R 606	RS1/16S224J
R 611 702 703 704 802 803	RS1/16S102J
R 614 664	RS1/16S912J
R 615 616 661 810	RS1/16S472J
R 652	RS1/16S162J
R 653 739 740 741 742 743 744 745 755 757	RS1/16S222J
R 655	RS1/16S362J
R 656 669	RS1/16S183J
R 660 662 665 811 812 813	RS1/10S131J
R 679	RS1/16S333J
R 708	RS1/16S201J
R 718 719	RS1/16S101J
R 721	RS1/16S471J
R 722 723 724 725 778	RS1/16S103J
R 726 727 728 729	RS1/16S752J
R 730 731	RS1/16S163J
R 732 733	RS1/16S163J
R 734	RS1/16S472J
R 752	RS1/16S123J
R 758 759 762 763 765 768 773 787 931 932	RS1/16S222J
R 766 786 790	RS1/16S563J
R 797	RS1/16S473J
R 799	RS1/16S513J
R 805 806 807	RS1/16S563J
R 821 822	RS1/16S0R0J
R 825 826	RS1/10S241J
R 835 836	RS1/10S241J
R 911	RS1/16S433J
R 916	RS1/16S0R0J
R 922	RS1/16S104J
R 918	RS1/16S154J
R 927	RS1/16S104J
CAPACITORS	
C 351	CEV470M6R3
C 352 751	CKSQYB104K16
C 353 732	CEV101M6R3
C 354 355 608 609 610	CEV100M16
C 357 359 366	CKSRYB102K50
C 358 603	CKSRYB331K50
C 360	CKSRYB271K50
C 361	CCSRCH220J50
C 373	CKSYB224K16
C 601	CKSRYB222K50
C 604 652 654	CKSYB224K16
C 605 606 611 615 616 618 619 661 666 742	CKSRYB103K50
C 614	CKSRYB821K50
C 617 702 708 709 724 744 757	CKSRYB103K50
C 655	CKSQYB333K25
C 657	CKSRYB391K50
C 658	CKSQYB272K50
C 663	CKSQYB333K25
C 665 400μF/10V	CCH1120
C 667 801	CEV220M16

=====Circuit Symbol & No. Part Name=====		Part No.
C 720		CKSYB224K16
C 725 726		CKSRYB102K50
C 727		CKSRYB102K50
C 728 729		CCSRCH080D50
C 730 731		CKSYB104K16
C 733 734		CCSRCH221J50
C 737 738		CCSRCH680J50
C 739 740		CCSRCH680J50
C 741		CKSYB224K16
C 743		CKSRYB103K50
C 756		CKSRYB472K50
C 758		CKSYB104K16
C 759		CKSQYB104K16
C 802 803		CKSQYB223K50

Unit Number : CWX1694
Unit Name : Extension Unit

MISCELLANEOUS

IC 1601		XRA4560
IC 1731		PAJ001A
Q 1601 1602		2SD1048
Q 1603 1722		DTA144EK
Q 1604 1711 1721		DTC114YK
Q 1712		DTA114EK
Q 1713		2SB1299
Q 1714 1715 1761		2SC2458
Q 1723		2SD1859
Q 1731		2SC3673
D 1601 1602		1SS133
D 1603 1701 1703		1SR139
D 1621 1622		RD18JSB1
D 1711		HZS6LB1
D 1721		HZS9LB3
D 1722 1723		HZS5LLA
D 1731		HZS6LB1
L 1701	Choke Coil	CTH1129
SW1751	Switch (ADDRESS)	CSH1035
SW17521753	Switch (EJSW,RESET)	CSG1020
EF1701	EMI Filter	CCG1006

RESISTORS

R 1601 1602 1607 1608		RD1/4PS562JL
R 1603 1604		RD1/4PS682JL
R 1609 1610		RD1/4PS102JL
R 1611 1612		RD1/4PS432JL
R 1613 1614		RD1/4PS562JL
R 1615 1712 1735		RD1/4PS103JL
R 1621 1622		RD1/4PS101JL
R 1701 1731 1733		RD1/4PS104JL
R 1702		RD1/4PS184JL
R 1711		RD1/4PS222JL
R 1713 1714		RD1/4PS331JL
R 1715		RD1/4PS681JL
R 1716		RD1/4PS242JL
R 1717		RD1/4PS362JL
R 1721 1723 1724		RD1/4PS432JL
R 1722		RD1/4PS101JL
R 1732		RD1/4PS104JL
R 1734 1751		RD1/4PS102JL
R 1736		RS1/10S101J
R 1737		RD1/4PS153JL
R 1738		RS1/8S101J
R 1752 1753 1754		RD1/4PS513JL
R 1761		RD1/4PS433JL
R 1762		RD1/4PS273JL
R 1764		RS1/10S104J

=====Circuit Symbol & No. Part Name=====		Part No.

CAPACITORS

C 1603 1604		CCSQCH331J50
C 1605 1606		CCSQSL222J50
C 1607 1608		CEA330M10LL
C 1609		CKSYB103K25
C 1610 1723		CEA101M10LL
C 1621 1622		CCSCH471J50
C 1701		CKSQYB472K50
C 1702		CEAS471M16
C 1703	470µF/16V	CCH-114
C 1704 1711 1721 1722 1734 1738		CKSQYB103K25
C 1705 1713		CEA3R3M50LL
C 1712		CEA220M10LL
C 1726 1727		CEA3R3M50LS
C 1731		CEAR47M50LS2
C 1732		CEA470M6R3LS
C 1733	2200µF/25V	CCL1027
C 1736		CEA010M50LS2
C 1737		CKSQYB104K16
C 1739		CEA4R7M35LL

Unit Number :
Unit Name : Mechanism P.C.Board

S 805	Switch (HOME)	CSN1012

Unit Number :
Unit Name : Photo P.C.Board

D 1	LED	BR4361F
S 801 802	Switch (RSTP,MAG)	CSN1012

Miscellaneous Parts List

D 2	LED	BR4361F
S 803 804	Switch (TRP,DSP)	CSN1012
P 801 802	Photo Transistor	PT4800
M 1	Motor Unit (Spindle)	CXA4540
M 2	Motor Unit (Elevation)	CXA5325
M 3	Motor Unit (Loading)	CXA5324
M 4	Motor Unit (Carriage)	CXA4649
	PU Unit	CGY1027

6. CIRCUIT DESCRIPTION

● Indicating An Error Number

If the CD should fail to operate, or if an error has taken place during the operation and resulted in an error, the player will enter into the error mode. And the cause of such error is numerically indicated.
This is aimed at assisting an analysis or a repair.

(1) Basic Means of Display

•With ERROR indicated in "MODE" on IP-BUS Display date, an error code is transmitte by the use of MIN and SEC. Identical date are transmitted with MIN and SEC.

•Examples of Display

E-XX (4 digits)
Err-XX (6 digits)
ERR-XX (6 digits)
ERROR-XX (8 digits)

(2) Error Codes

Error Code	Classification	Description	Detail / Cause
10	ELECTRIC	Carriage home failure	Unmovable to and from the inner circumference → Home switch failed and / or carriage improper moved
11	ELECTRIC	Focus failure	Focussing failed → Disc scarred or stained on the back or vibrating hard
12	ELECTRIC	SETUP failure	Spindle failed to lock or subcode extraordinary → Spindle defective, disc scarred or stained or vibrating hard
14	ELECTRIC	Blank Disc	Unrecorded CD-R The disc has been in inserted upside down
30	ELECTRIC	Search time out	Target address failed to reach → Carriage / tracking improperly and / or disc scarred
A0	SYSTEM / MECHANISM	Power failure	Mechanism drive power supply VM short sense or no power supply → Switching transistor defective and / or power abnormal or LOAD terminal failure
50	MECHANISM	An error upon ejection	MAG SW release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in / out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

* Setup means a series of operations after focusing up to sound output.

● New Test Mode (IP-BUS System)

[Objective]

This feature is for performing failure analysis in aging.
Control is performed by the head unit (when the head unit enters the test mode).
Unless an abnormal event occurs, the operation is almost the same as normal CD-Multi operation. In case an error such as the servo error should occur, the operation stops with the indication of the replay time at the error without performing normal recovery.

[Main functions]

(1) When a CD is set up, the operation status is displayed.
(2) If the servo error occurs during play, the operation stops with the indication of the replay time at the error.
By pressing a particular key, the display indicating an error cause and replay time can be changed.
(3) Single unit operation is allowed. Disc change, normal play, TR+/-, FF/REW, play mode switching and random play may be performed.

[Details of operation]

(1) How to initiate the new test mode
First initiate the test mode, then select the CD-Multi.
When the jump changeover key is pressed with the power supply to the servo system being OFF, the CD-Multi enters the new test mode.
Because the head unit cannot know that the CD-Multi has entered the new test mode, the head unit is still placed in the test mode and outputs a command in the test mode when requested by pressing a particular key.
(2) How to leave the new test mode
After executing the hard reset of the head unit, the hard reset of the CD-Multi should be performed.

(3) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out, home switch defect
03	Carriage moving on the external circumference	10-second time out, home switch defect
11	Setup started	None
12	Spindle turn / Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock and subcode waiting	Failure to lock, subcode failed to read out of focus
19	End	None

(4) Error Code Description

Code	Classification	Description	Cause / Detail
40	ELECTRIC	Put out of focus detect	FOK=L 100ms → Scar, Stain, Vibration, Servo defect
41	ELECTRIC	Spindle unlocked detect	LOCK=L 150ms → Scar, Stain, Vibration, Servo defect
42	ELECTRIC	Subcode unacceptable detect	Subcode fails to read 500ms → Scar, Stain, Vibration, Servo defect
43	ELECTRIC	Sound skipped	Last address memory operated → Scar, Stain, Vibration, Servo defect

(5) Operation of keys between TEST and NEW TEST Modes

Command Code	Test Mode		New Test Mode
	Name	Operation	Operation
15 00	DDCN	Servo power supply ON / OFF	— (Error stop time / cause select)
15 01	FWDKCK	FWD-KICK	TR+ / FF
15 02	REVKCK	REV-KICK	TR- / REW
15 03	TRKCLS	TRACKING CLOSE	—
15 04	TRKOPN	TRACKING OPEN	PLAY mode select
15 05	FCSCLS	FOCUS CLOSE	—
15 06	FCSOPN	FOCUS OPEN	RANDOM
15 07	JMPOFF	JUMP OFF	—
15 08	CRGTRK	1/10/32 jump and carriage move select	AUTO / MANUAL select

7. EXPLODED VIEW PARTS LIST

● **Chassis (Exploded View : Page 2-3)**

NOTES:

● *Parts marked by "✱ "are generally unavailable because they are not in our Master Spare Parts List.*
● *Parts marked by "◉"are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

● **Parts List (CDX-P600/UC)**

Mark	No.	Description	Part No.
	1	Screw	BMZ26P030FMC
	2	Screw	BMZ26P080FMC
	3	Cord	CDE4211
	4	•••••	
	5	•••••	
	6	Pin	CLA2163
	7	Lower Case	CNB1654
	8	Upper Case	CNB1783
	9	Bracket R	CNC4445
	10	Bracket L	CNC4444
	11	Insulator	CNM3628
✱	12	Seal	CNM3648
	13	Insulator	CNM3779
	14	P.C.Board	CNP3500
	15	Main Unit	CWX1631
◉	16	CD Mechanism Unit	CXK2750
	17	•••••	
	18	Screw	PMS26P040FMC
	19	Screw	PMS30P040FZK
	20	Screw (M6×16)	CBA1295
	21	Screw	HMB60P500FMC
	22	Screw	HMF40P080FZK
	23	Nut	NF60FMC
	24	Angle	CNB1765
	25	Screw	BPZ26P080FMC
	26	Door	CAT1592
	27	•••••	
	28	•••••	
	29	Grille	CNS2914
	30	•••••	
	31	Extension Unit	CWX1694
	32	Connector (CN801) (5P)	CKS1943
	33	Connector (CN351) (17P)	CKS1955
	34	Connector (CN752) (24P)	CKS1962
	35	Connector (CN901) (16P)	CKS2495
	36	Connector (CN804) (16P)	CKS1954
	37	Plug (CN1701) (3P)	CKS-460
	38	•••••	
	39	Connector (CN1702) (22P)	CKS1542
	40	•••••	
	41	Connector (CN1601) (11P)	CKS2479
	42	Heat Sink	CNC4447
	43	Earth Plate	CNC4650
	44	•••••	
	45	Connector Bracket	CNC5181
	46	Transistor (Q1713)	2SB1299
	47	Button	CAC3571
	48	Holder	CNC5043

- The CDX-P600/EW,ES,CDX-P606/UC and CDX-P600/X1B/EW Parts Lists enumerate the parts which differ from those enumerated in the CDX-P600/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The CDX-P600/UC Parts List is given on page 1-36.

		CDX-P600/UC	CDX-P600/EW	CDX-P600/ES	CDX-P606/UC	CDX-P600/X1B/EW
Mark	No. Description	Part No.	Part No.	Part No.	Part No.	Part No.
	3 Cord	CDE4211	CDE4210	CDE4211	CDE4211	CDE4210
	7 Lower Case	CNB1654	CNB1654	CNB1654	CNB1782	CNB1654
	8 Upper Case	CNB1783	CNB1783	CNB1783	CNB1800	CNB1783
	16 CD Mechanism Unit	◉ CXK2750	◉ CXK2750	◉ CXK2750	◉ CXK2750	CXK2755
	26 Door	CAT1592	CAT1592	CAT1592	CAT1602	CAT1592
	29 Grille	CNS2914	CNS2914	CNS2914	CNS2852	CNS2914
	47 Button	CAC3571	CAC3571	CAC3571	CAC3840	CAC3571

● **CD Mechanism Unit (Exploded View : Page 2-5)**

● **Parts List**

Mark No.	Description	Part No.
1	Screw	BMZ20P025FMC
2	Screw	BMZ20P030FMC
3	•••••	
4	Screw	BMZ26P030FMC
5	Screw	BMZ26P050FMC
6	LED (D1,2)	BR4361F
7	Screw (M2×4)	CBA1015
8	Screw (M2×2.5)	CBA1037
9	Screw (M2×7)	CBA1060
10	Screw (M2×3)	CBA1062
11	Screw (M1.7×5.5)	CBA1070
12	Screw (M2×3)	CBA1077
13	•••••	
14	Screw (M2×6)	CBA1229
15	Screw (M2×2.5)	CBA1251
16	Washer	CBF1037
17	Washer	CBF1038
18	Spring	CBH1430
19	Spring	CBH1488
20	Spring	CBH1489
21	Spring	CBH1490
22	Spring	CBH1491
23	Spring	CBH1492
24	Spring	CBH1493
25	Spring	CBH1494
26	Spring	CBH1495
27	Spring	CBH1497
28	Spring	CBH1498
29	Spring	CBH1499
30	Spring	CBH1585
31	Spring	CBH1501
32	Spring	CBH1507
33	Spring	CBH1504
34	Spring	CBH1505
35	Spring	CBH1506
36	Spring	CBH1537
37	Spring	CBH1538
38	Spring	CBH1563
39	Spring	CBH1569
40	Spring	CBL1138

Mark No.	Description	Part No.
41	Spring	CBL1181
42	Spring	CBL1156
43	Spring	CBL1157
44	Spring	CBL1158
45	Connector (5P)	CDE3905
46	PU Unit	CGY1027
47	Connector (6P)	CKS1944
48	Connector (15P)	CKS1953
49	Connector (17P) (CN1,2)	CKS1955
50	Connector (5P)	CKS2208
51	Shaft	CLA2027
52	Shaft	CLA2123
53	Shaft	CLA2126
54	Roller	CLA2127
55	Roller	CLA2159
56	Shaft	CLA2160
57	Collar	CLA2161
58	Shaft	CLA2210
59	Shaft	CLA2213
60	Shaft	CLA2239
61	Holder	CNC4073
62	Weight	CNC4551
63	Bracket	CNC4602
64	Arm	CNC4606
65	Holder	CNC4626
66	Side Frame (L)	CNC4649
67	R Frame	CNC4646
68	Scale	CNC4647
69	Bracket	CNC4630
70	CM Bracket	CNC4631
71	Bracket	CNC4632
72	Arm	CNC4634
73	Arm	CNC4635
74	Arm	CNC4636
75	TG Plate	CNC4637
76	Bracket	CNC4642
77	Frame	CNC4851
78	Frame	CNC4854
79	Cover	CNC4955
80	Frame	CNC4967

Mark	No.	Description	Part No.
	81	Spacer	CNM1787
	82	Sheet	CNM3567
	83	•••••	
	84	P.C.Board	CNP3223
	85	P.C.Board	CNP3225
	86	P.C.Board	CNP3226
	87	Ball	CNR1189
	88	Gear	CNR1289
	89	Gear	CNR1290
	90	Gear	CNR1304
	91	Guide	CNR1309
	92	Holder	CNR1310
	93	Holder	CNR1311
	94	Belt	CNT1047
	95	Holder	CNV3622
	96	Arm	CNV3354
	97	Lock	CNV3355
	98	Screw Bearing	CNV3356
	99	Holder	CNV3357
	100	Roller	CNV3358
	101	Cam	CNV3359
	102	Guide	CNV3360
	103	Guide	CNV3361
	104	Holder	CNV3362
	105	Holder	CNV3363
	106	•••••	
	107	Gear	CNV3366
	108	Gear	CNV3367
	109	Gear	CNV3368
	110	Gear	CNV3371
	111	TRYD Gear	CNV3372
	112	CUPM Gear	CNV3373
	113	Clamper UP Gear	CNV3374
	114	Guide	CNV3375
	115	Guide	CNV3376
	116	Arm	CNV3377
	117	Arm	CNV3378
	118	Guide	CNV3379
	119	Guide	CNV3380
	120	•••••	

Mark	No.	Description	Part No.
	121	Gear	CNV3382
	122	Gear	CNV3383
	123	Gear	CNV3384
	124	Guide	CNV3385
	125	Arm	CNV3386
	126	Roller	CNV3387
	127	Wheel	CNV3526
	128	Arm	CNV3546
	129	Cover	CNV3547
	130	Holder	CNV3548
	131	Damper	CNV3353
	132	Holder	CNV3584
	133	Plate	CNV3629
	134	Composite P.C.Board	CNX1986
	135	•••••	
	136	Composite P.C.Board	CNX2067
	137	Composite P.C.Board	CNX1995
	138	Composite P.C.Board	CNX1996
	139	Composite P.C.Board	CNX1997
	140	Composite P.C.Board	CNX1998
	141	Composite P.C.Board	CNX1999
	142	Switch (S801,802,803,804,805)	CSN1012
	143	Motor Unit (Spindle) (M1)	CXA4540
	144	Motor Unit (Carriage) (M4)	CXA4649
	145	Stage Chassis Unit	CXA5287
	146	•••••	
	147	Mode Ring Unit	CXA5288
	148	Steer R Unit	CXA5289
	149	LM Bracket Unit	CXA5290
	150	Rink Unit	CXA5291
	151	Lever Unit	CXA5292
	152	Arm Unit	CXA5293
	153	Gear Arm Unit	CXA5294
	154	Arm Unit	CXA5295
	155	Plate Unit	CXA5296
	156	TG Bracket Unit	CXA5297
	157	CRG Chassis Unit	CXA5298
	158	Bracket Unit	CXA5299
	159	Arm Unit	CXA5300
	160	Arm Unit	CXA5301

Mark	No.	Description	Part No.
	161	Screw Unit	CXA5302
	162	Arm Unit	CXA5303
	163	Bracket Unit	CXA5304
	164	Bracket Unit	CXA5305
	165	Holder Unit	CXA5308
	166	Frame Unit	CXA5320
	167	Arm Unit	CXA5311
	168	Arm Unit	CXA5313
	169	Bracket Unit	CXA5314
	170	Arm Unit	CXA5315
	171	Main Frame Unit	CXA5316
	172	Lever Unit	CXA5317
	173	Magazine Holder Unit	CXA5321
	174	Upper Frame Unit	CXA5319
	175	Bracket Unit	CXA5322
	176	Motor Unit (Loading) (M3)	CXA5324
	177	Gear	CNV3365
*	178	Motor	CXM1069
	179	Motor Unit (Elevation) (M2)	CXA5325
	180	Gear	CNV3381
*	181	Motor	CXM1061
	182	Whom Bracket Unit	CXA5326
	183	Arm Unit	CXA6362
	184	Damper Unit	CXA5631
	185	Clamper	HEF-102

Mark	No.	Description	Part No.
	186	Screw	JFZ14P016FNI
	187	•••••	
	188	•••••	
	189	•••••	
	190	Screw	JFZ20P025FNI
	191	Screw	JGZ20P070FNI
	192	Screw	PMS20P025FMC
	193	Photo Transistor (P801,802)	PT4800
	194	Washer	YE15FUC
	195	Washer	YE20FUC
	196	Washer	YE25FUC
	197	Sheet	CNM3798
	198	Bracket	CNC5028
	199	Insulator	CNM3786
	200	Sheet	CNM3817
	201	Screw	BMZ26P040FMC
	202	Screw (M2×2.5)	CBA1041
	203	Screw (M2.6×3)	CBA1065
	204	•••••	
	205	Screw	JFZ17P025FNI
	206	Screw	JFZ17P035FNI
	207	Screw	JFZ20P030FNI
	208	Sheet	CNM3826
	209	Roller	CLA2266
	210	Spring	CBH1579

PIONEER
The Art of Entertainment

Service Manual

MULTI-COMPACT DISC PLAYER

CDX-P600 UC,EW,ES
CDX-P600 X1B/EW
CDX-P606 UC

COMPACT disc DIGITAL AUDIO

● See the service manual CDX-M6/UC,EW (CRT1522) for the circuit description.
● See the separate manual CX-613 (CRT1518) for the CD mechanism description.

CHAPTER 2

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1,Meguro 1-Chome,Meguro-ku, Tokyo 153,Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760,Long Beach,California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham,Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1,9120 Melsele,Belgium
PIONEER ELECTRONICS AUSTRALIA PTY.LTD. 178-184 Boundary Road,Braeside,Victoria 3195,Australia TEL:[03]580-9911

K-FFA.DEC.1993 Printed in Japan

1. EXPLODED VIEW

● **Magazine Assy (CXA5483)**

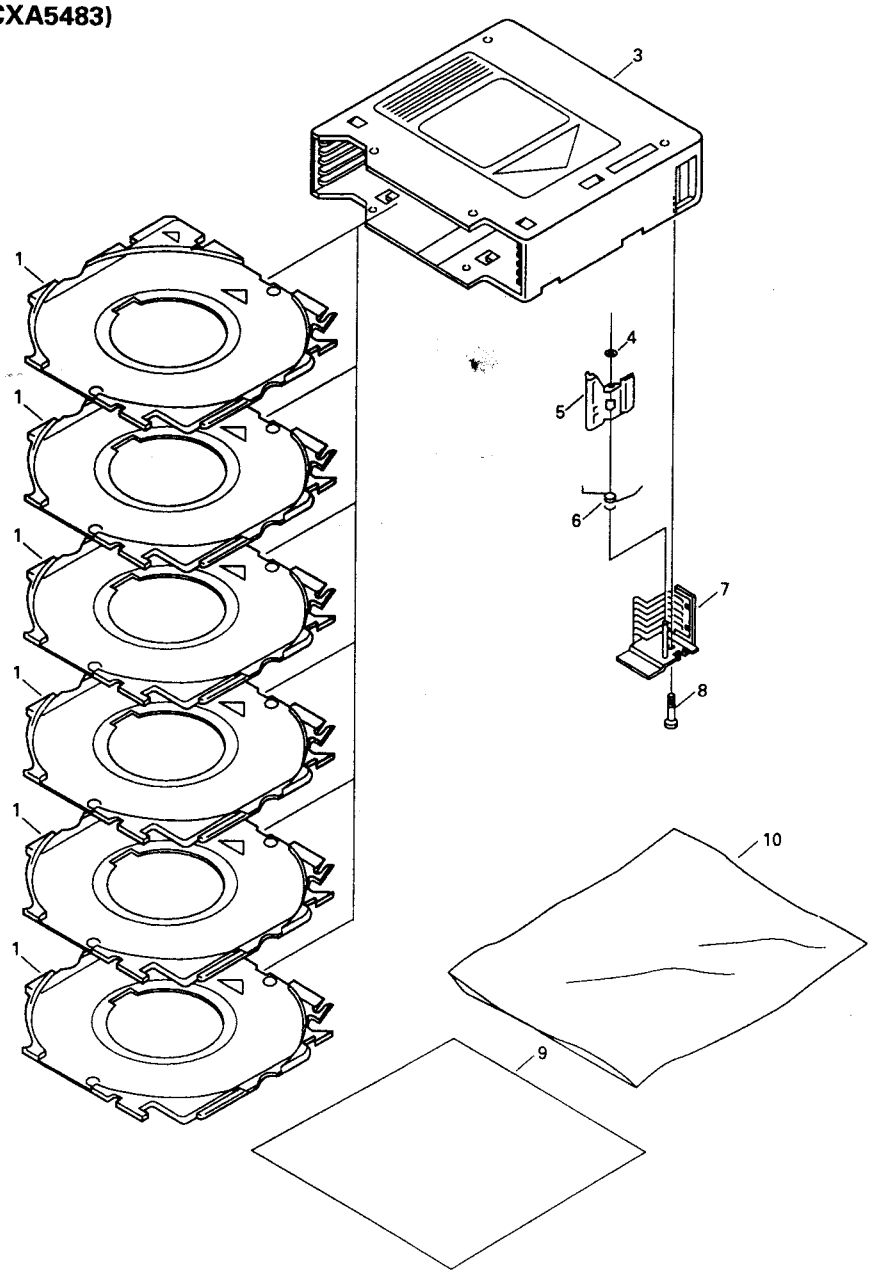


Fig.1

● **Parts List**

Mark	No.	Description	Part No.
	1	Tray Unit	CXA5484
	2	•••••	
*	3	Case Unit	CXA5479
	4	Washer	CBF1039
*	5	Arm	CNV3468
*	6	Spring	CBH1522
*	7	Bracket Unit	CXA5481
*	8	Screw (M2×13)	CBA1272
*	9-1	Owner's Manual	CRD1639
*	9-2	Label	CRW1248
*	10	Polyethylene Bag	CEG1156

● **Chassis (Parts List : Page 1-36)**

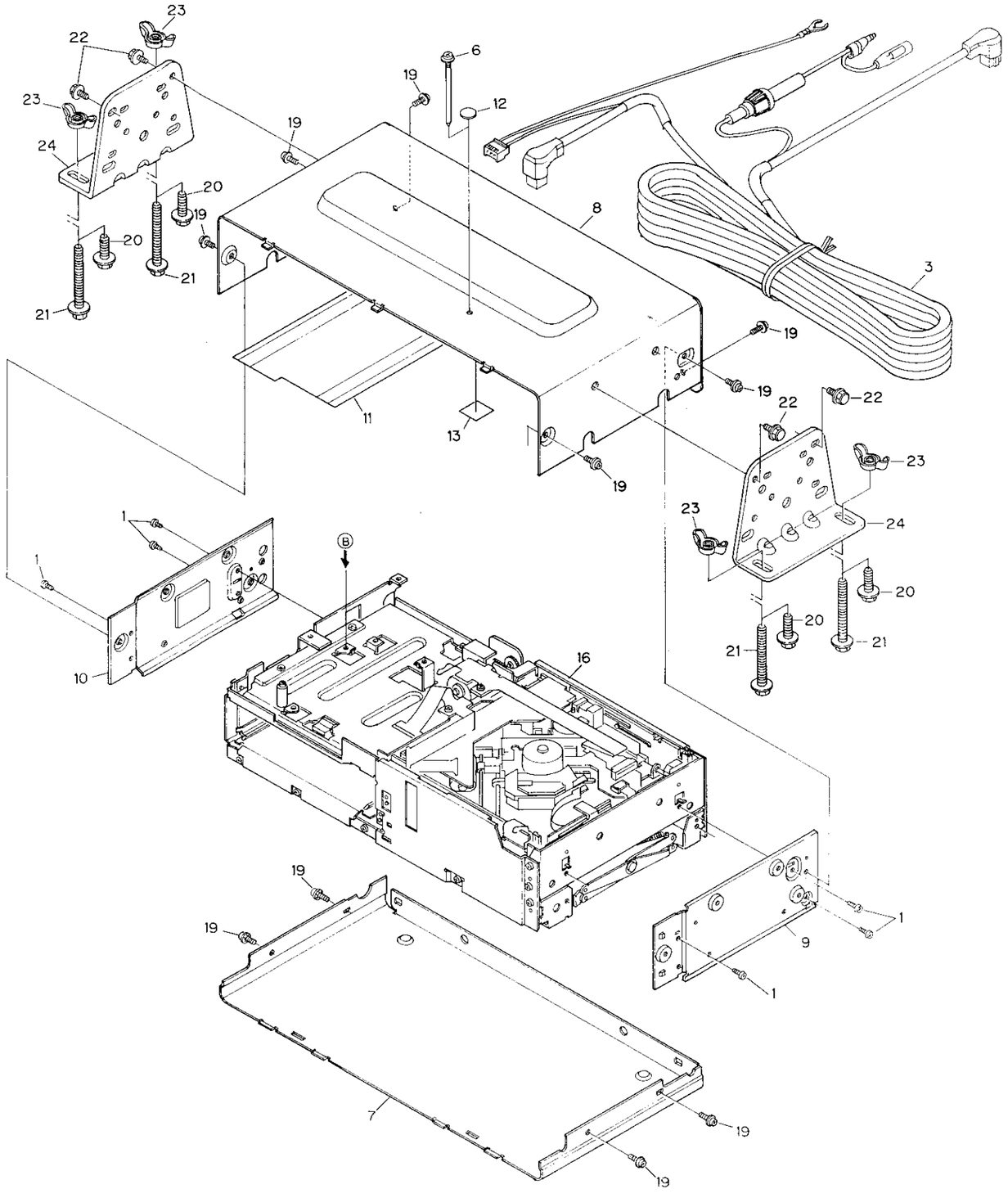


Fig.2

● CD Mechanism Unit (Parts List : Page 1-37)

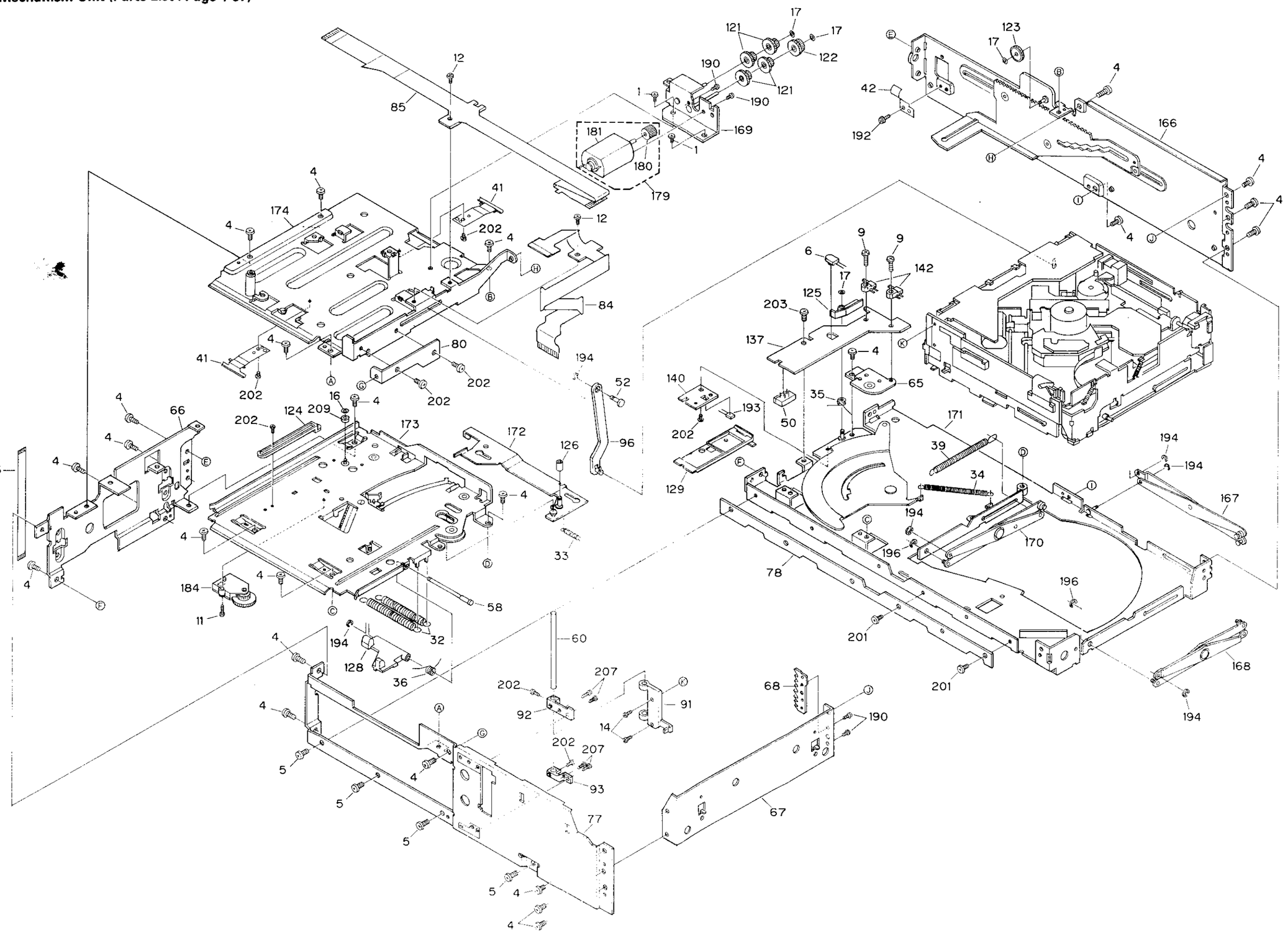


Fig.3

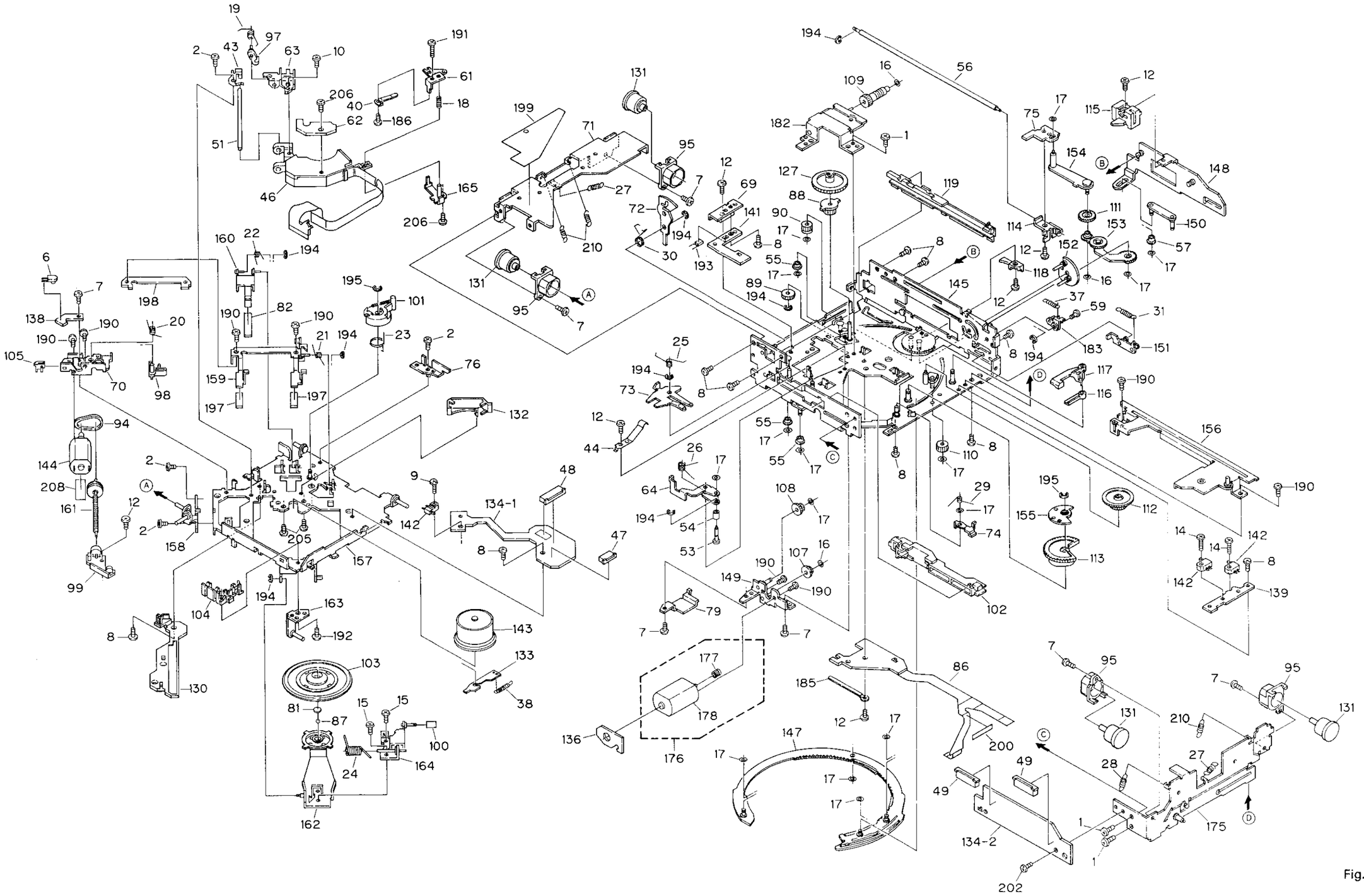

19
97
63
10
191
61
2
43
206
40
18
62
186
51
46
165
206
160
22
194
6
7
198
195
101
138
190
82
190
20
190
21
194
23
2
105
70
98
159
76
197
197
132
94
144
208
161
12
2
2
158
205
157
104
194
163
192
8
130
103
81
87
15
15
100
24
164
162
9
142
134-1
48
8
47
143
133
38
199
71
131
95
27
210
131
95
7
12
69
7
72
194
30
193
141
90
17
8
55
17
89
194
127
88
119
182
16
109
1
56
194
75
17
115
12
154
148
111
153
150
152
57
17
16
17
114
12
118
12
145
8
37
59
31
183
151
8
194
117
116
190
156
190
25
194
73
8
12
44
26
64
17
194
54
53
55
17
55
17
8
110
17
29
17
74
102
108
17
107
16
190
149
190
79
7
7
177
178
136
176
185
12
17
86
200
147
17
17
17
49
49
134-2
202
195
155
113
112
14
14
142
142
8
139
7
95
131
210
27
28
175
1
1
7
95
131

Fig.4

2. PACKING METHOD

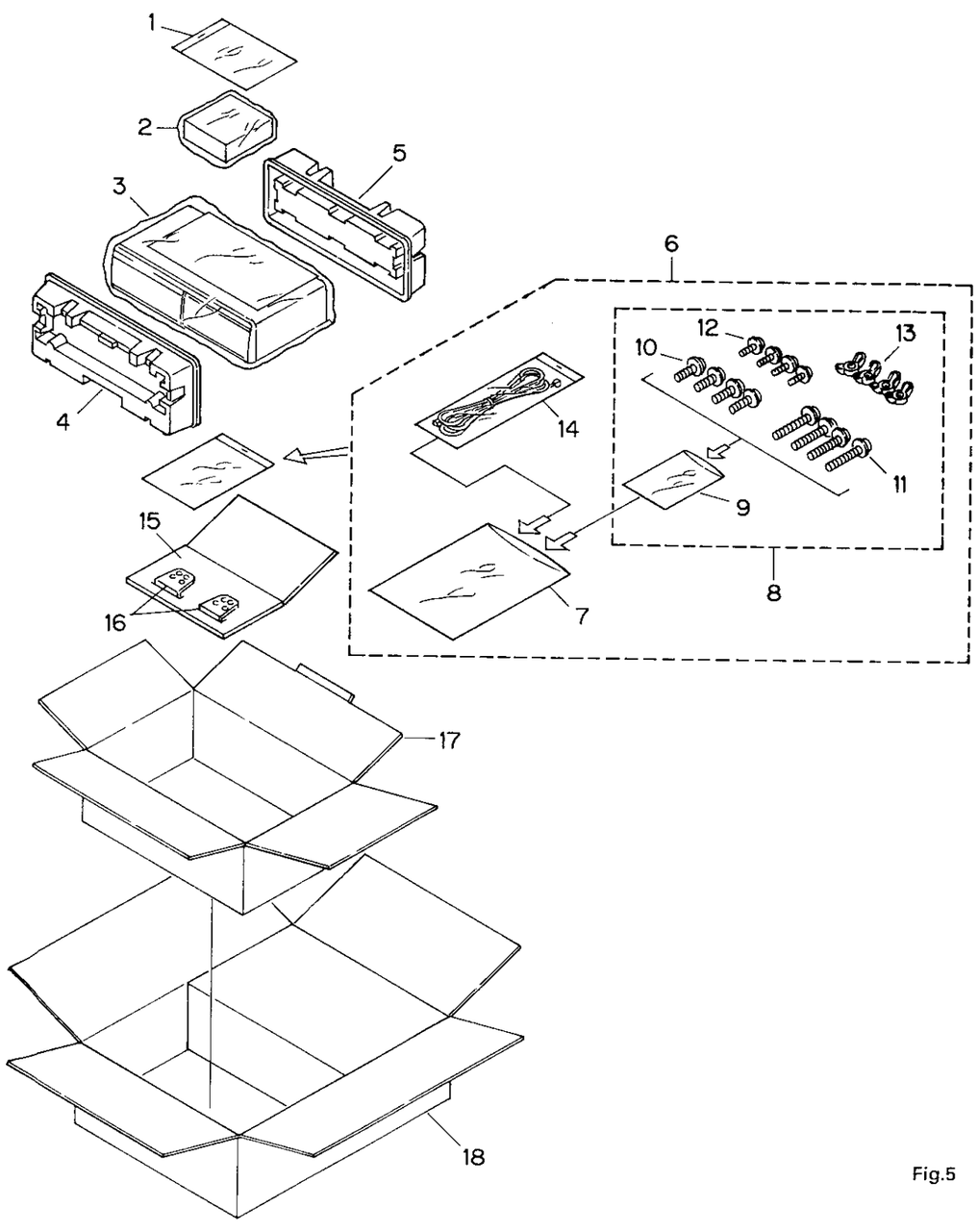


Fig.5

● **Parts List (CDX-P600/UC)**

Mark	No.	Description	Part No.
*	1-1	Card	ARY1048
	1-2	Polyethylene Bag	CEG1116
	1-3	Owner's Manual	CRD1700
	2	Magazine Assy	CXA5483
	3-1	Cover	CEG1149
*	3-2	Seal	CNM3648
*	3-3	Caution Card	CRP1112
	4	Protector	CHP1538
	5	Protector	CHP1539
	6	Accessory Assy	CEA1923
*	7	Polyethylene Bag	E36-622
	8	Screw Assy	CEA1962
*	9	Polyethylene Bag	E36-615
	10	Screw (M6×16)	CBA1295
	11	Screw	HMB60P500FMC
	12	Screw	HMF40P080FZK
	13	Nut	NR60FMC
	14	Cord	CDE4211
	15	Spacer	CHW1317
	16	Angle	CNB1765
	17	Carton	CHG2391
	18	Contain Box	CHL2391

• The CDX-P600/EW,ES,CDX-P606/UC and CDX-P600/X1B/EW Parts Lists enumerate the parts which differ from those enumerated in the CDX-P600/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The CDX-P600/UC Parts List is given on page 2-10.

Mark	No.	Description	CDX-P600/UC Part No.	CDX-P600/EW Part No.	CDX-P600/ES Part No.	CDX-P606/UC Part No.	CDX-P600/X1B/EW Part No.
*	1-1	Card	ARY1048	•••••	•••••	•••••	•••••
	1-2	Polyethylene Bag	CEG1116	CEG1116	CEG1116	CEG1116	* UEG-004
	1-3	Owner's Manual	CRD1700	•••••	•••••	•••••	•••••
		Owner's Manual	•••••	CRD1698	•••••	•••••	CRD1698
		Owner's Manual	•••••	CRD1699	•••••	•••••	CRD1699
		Owner's Manual	•••••	•••••	CRD1697	•••••	•••••
		Owner's Manual	•••••	•••••	•••••	CRD1735	•••••
*	1-4	Card	•••••	CRY-062	•••••	•••••	URY-001
*	1-5	Warranty Card	•••••	•••••	•••••	CRY1070	•••••
	3-1	Cover	CEG1149	CEG1149	CEG1149	CEG1149	* UEG-003
	4	Protector	CHP1538	CHP1538	CHP1538	CHP1538	•••••
	5	Protector	CHP1539	CHP1539	CHP1539	CHP1539	•••••
		Protector	•••••	•••••	•••••	•••••	UHP-008(×2)
	6	Accessory Assy	CEA1923	CEA1922	CEA1923	CEA1923	CEA1922
*	7	Polyethylene Bag	E36-622	E36-622	E36-622	E36-622	UEG-002
	14	Cord	CDE4211	CDE4210	CDE4211	CDE4211	CDE4210
	17	Carton	CHG2391	CHG2390	CHG2392	CHG2452	UHG-017
	18	Contain Box	CHL2391	CHL2390	CHL2392	CHL2452	UHL-001

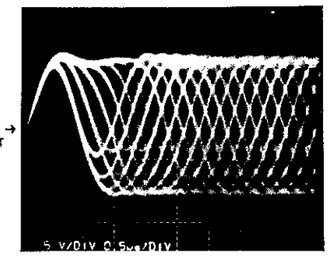
1-3 Owner's Manual

Part No.	Model	Language
CRD1700	CDX-P600/UC	English,French
CRD1698	CDX-P600/EW,CDX-P600/X1B/EW	English,Italian,French,German,Dutch
CRD1699	CDX-P600/EW,CDX-P600/X1B/EW	Spanish,Portuguese,Swedish,Norwegian,Finnish
CRD1697	CDX-P600/ES	English,French,German,Spanish,Arabic
CRD1735	CDX-P606/UC	English,French

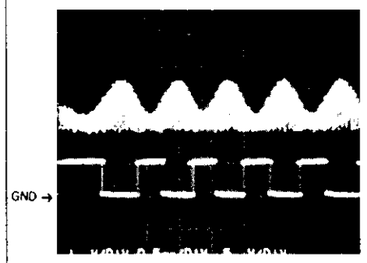
● Wave Forms

Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFOUT: 2.5V

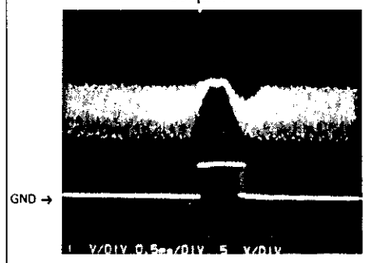
① RFO 0.5V/div. 0.5μs/div.
Normal mode: play



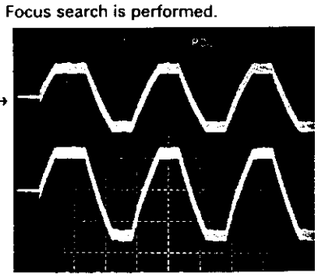
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



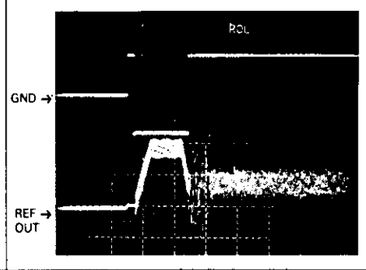
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800μm.



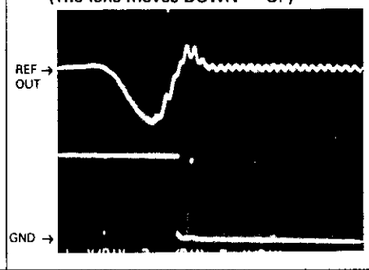
③ CH1: FIN 1V/div.
④ CH2: FOUT+ 2V/div. 0.5s/div.
Test mode: Connect the FEX to REFOUT.
Focus search is performed.



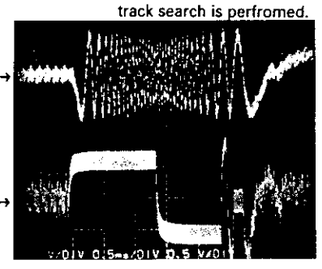
⑤ CH1: FOK 2V/div.
③ CH2: FIN 0.5V/div. 0.5s/div.
Normal mode: Focus close



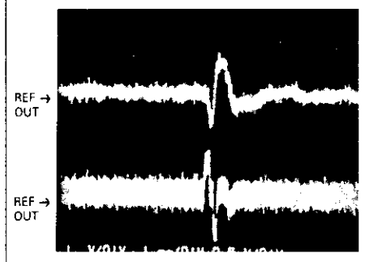
⑥ CH1: FEY 1V/div.
⑦ CH2: XSO 2V/div. 2ms/div.
Normal mode: Focus close
(The lens moves DOWN → UP)



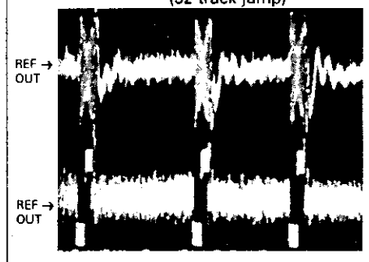
⑧ CH1: TEY 1V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Normal mode: Brake wave from when track search is perfromed.



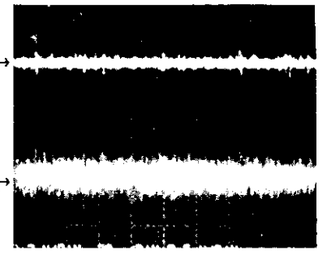
⑧ CH1: TEY 1V/div.
⑨ CH2: TIN 0.5V/div. 1ms/div.
Normal mode: single jump



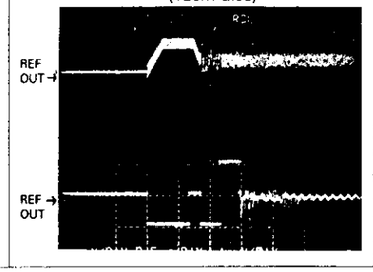
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 5ms/div.
Normal mode: Track search (32 track jump)



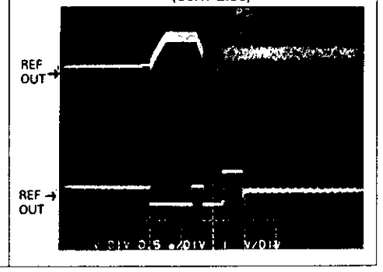
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div. 20ms/div.
Normal mode: Play



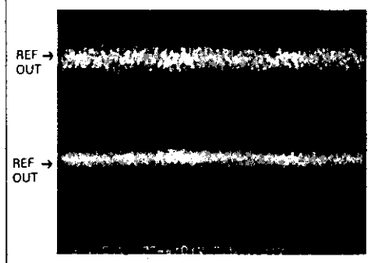
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus search (12cm disc)



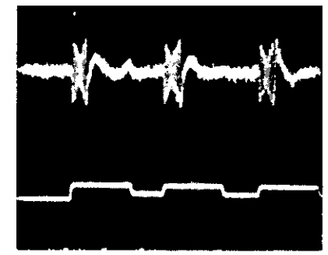
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus search (8cm disc)



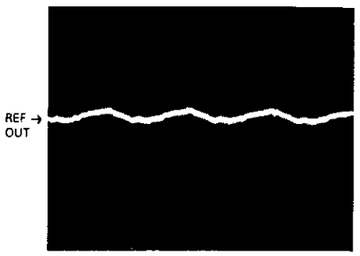
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 20ms/div.
Normal mode: Play



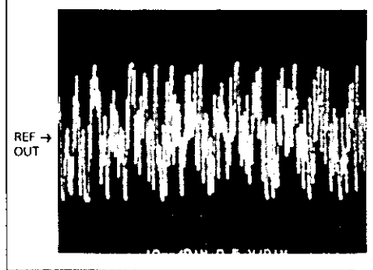
⑧ CH1: TEY
㉓ CH2: CIN 1V/div. 5ms/div.
Normal mode: Search



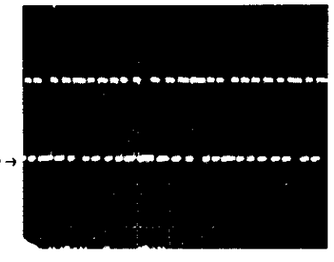
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: Play (12cm disc)



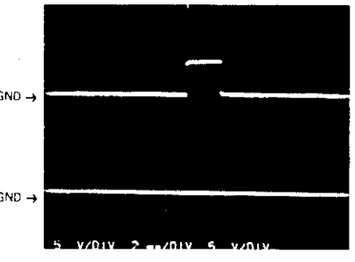
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



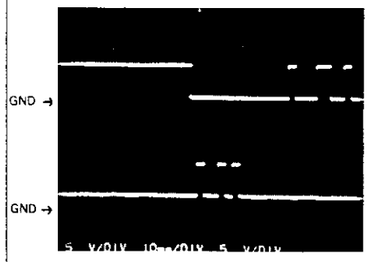
⑪ EFM 2V/div. 5μs/div.
Play



⑫ CH1: MDF 5V/div.
⑬ CH2: MDR 5V/div. 2ms/div.
Play

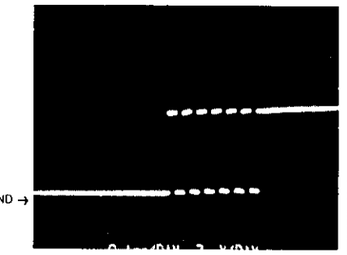


⑫ CH1: MDF 5V/div.
⑬ CH2: MDR 5V/div. 10ms/div.
Search

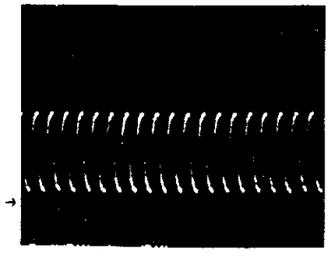


⑭ FLAG 2V/div. 0.1ms/div.
Play

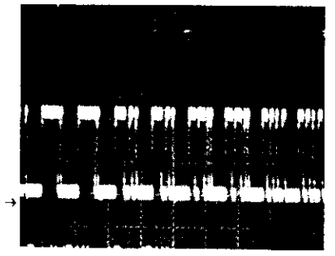
⑭ FLAG 2V/div. 0.1ms/div.
Search



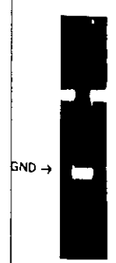
⑯ BCLK1 2V/div. 1μs/div.
Play



⑰ Dout 2V/div. 10μs/div.
Play



⑱ LRCK
Play



50ms/div.

(disc)

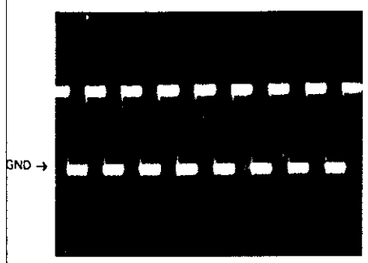
2ms/div.

0.1ms/div.

0µs/div.

⑱ LRCK 2V/div 20µs/div.

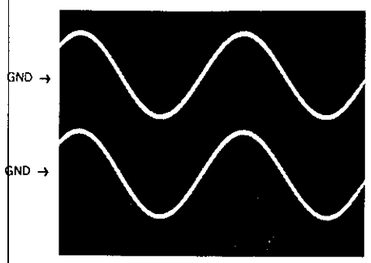
Play



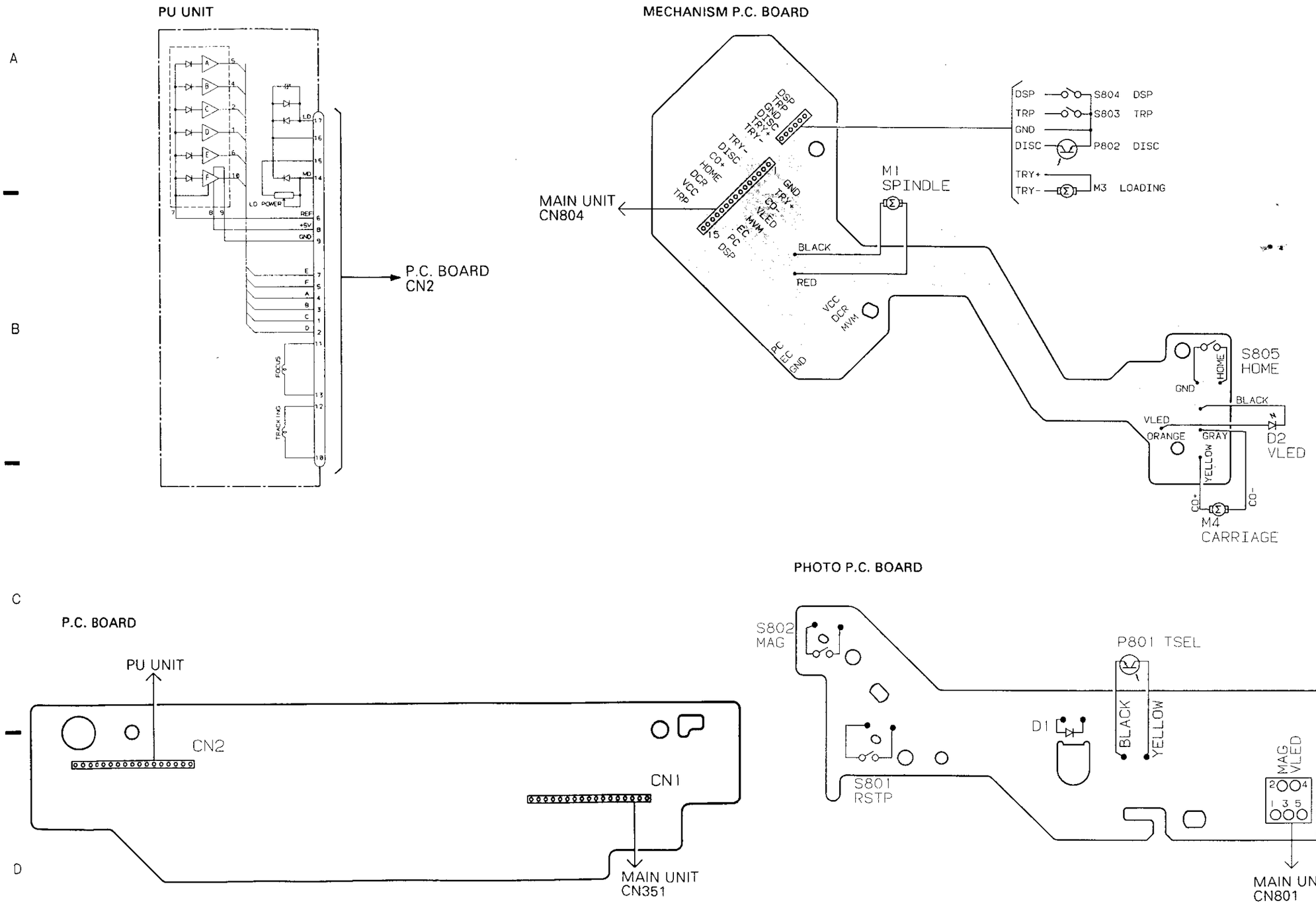
㉑ CH1: LCH 2V/div. 0.2ms/div.

㉒ CH2: RCH 2V/div.

Play (1kHz)



3. CONNECTION DIAGRAM(1)



MAIN UNIT

IC. Q	ADJ
IC752	
Q781	
IC651	
IC754	
IC801	
Q653	
Q751	
Q721 IC755	
Q651 Q801	
IC751	
Q722	
Q802	
Q652	
IC661	
IC652	
IC602	
Q725	
Q724	
IC702	
IC707	
Q351	
IC601	
IC701	
IC351	
IC708	
Q723	
	VR353
	VR352
	VR351
	VR356
	VR355
	VR354
Q601	

JIN UNIT

IC. Q ADJ

IC752
Q781
IC651
IC754
IC801
Q653
Q751
IC755
51 Q801
IC751
Q722
Q802
Q652
IC661
IC652
IC602
Q725
Q724
IC702
C707
Q351
IC601
IC701
IC351
IC708
Q723
VR353
VR352
VR351
VR356
VR355
VR354
Q601

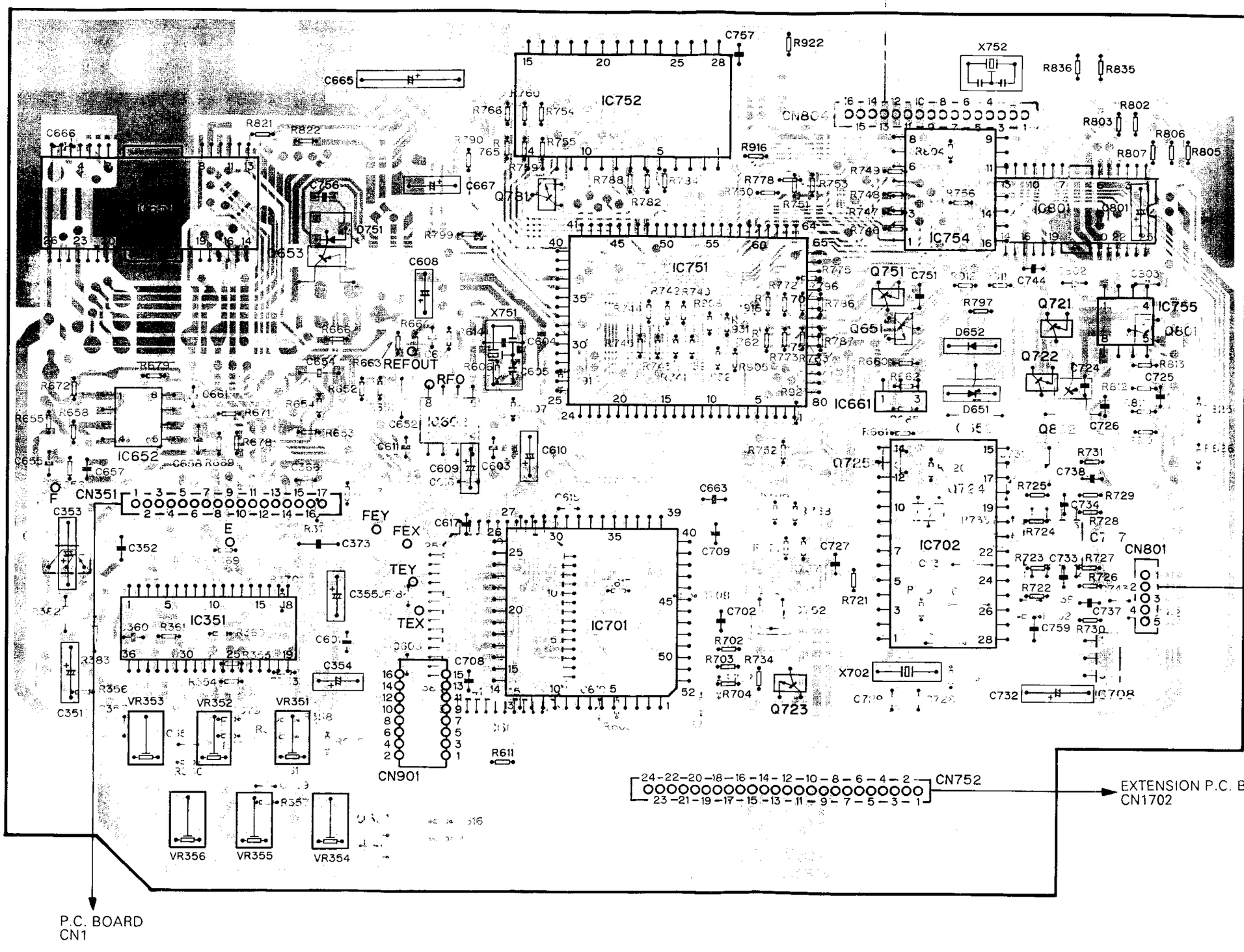
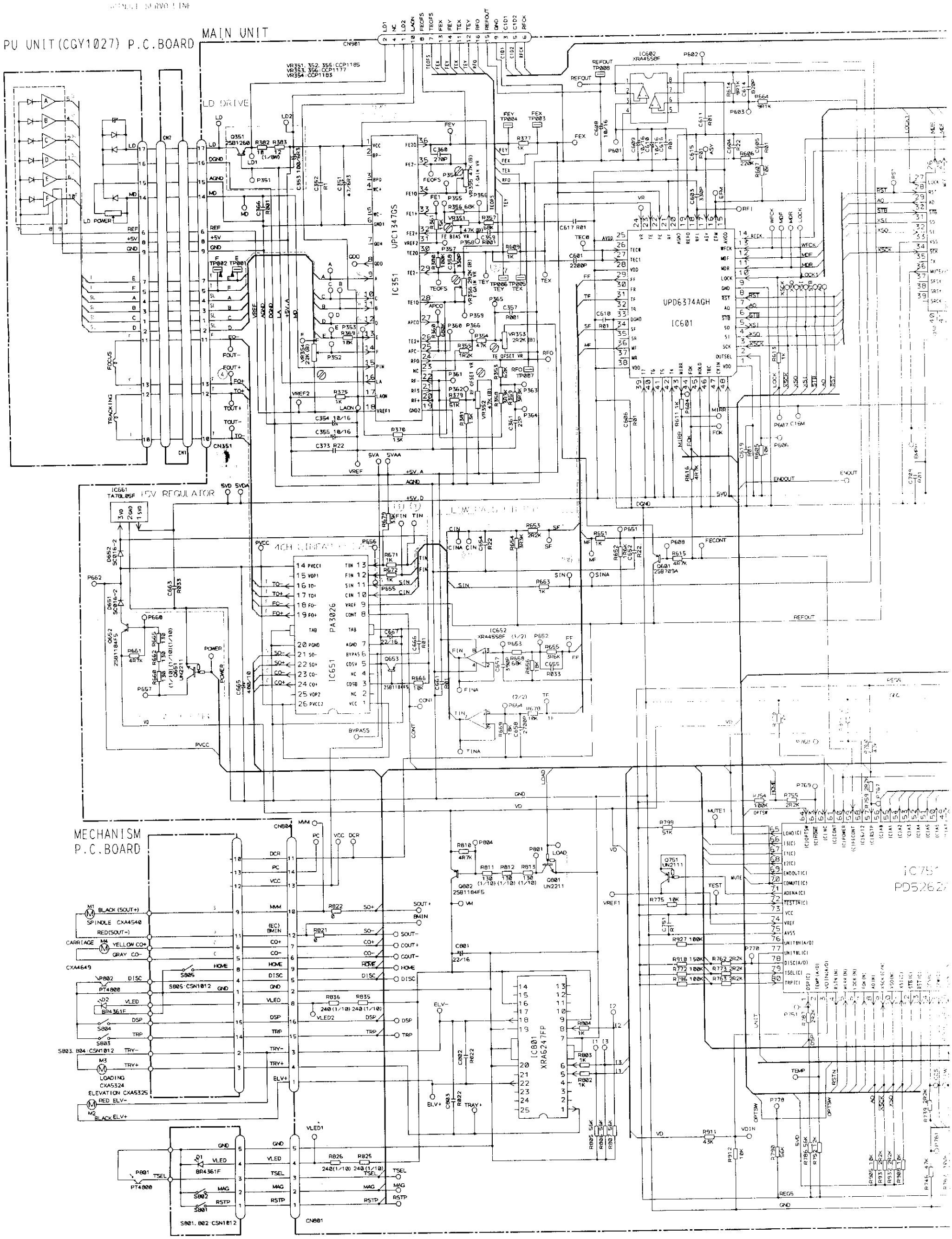


Fig.6

4. SCHEMATIC CIRCUIT DIAGRAM(1)

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE



SWITCHES:
MECHANISM P.C.BOARD
S805 HOME SWITCH ON-OFF
PHOTO P.C.BOARD
S801 RSTP SWITCH ON-OFF
S802 MAG SWITCH ON-OFF
MISCELLANEOUS
S803 TRP SWITCH ON-OFF
S804 DSP SWITCH ON-OFF

The underlined indicates the switch position.

NOTE:
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

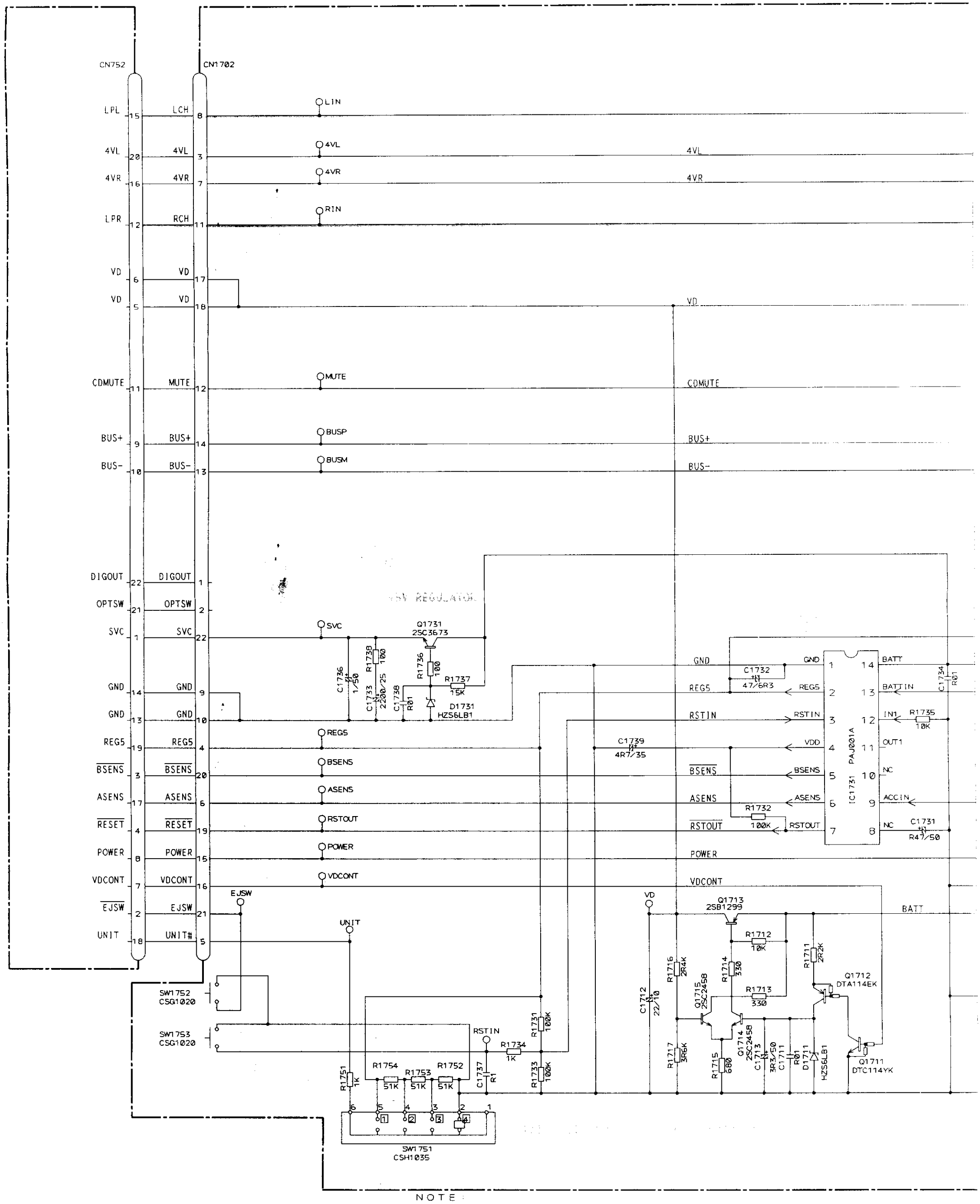
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

EXTENSION P.C.BOARD
CN1702

Fig.7

5. SCHEMATIC CIRCUIT DIAGRAM(2)

MAIN UNIT　　EXTENSION P.C.BOARD

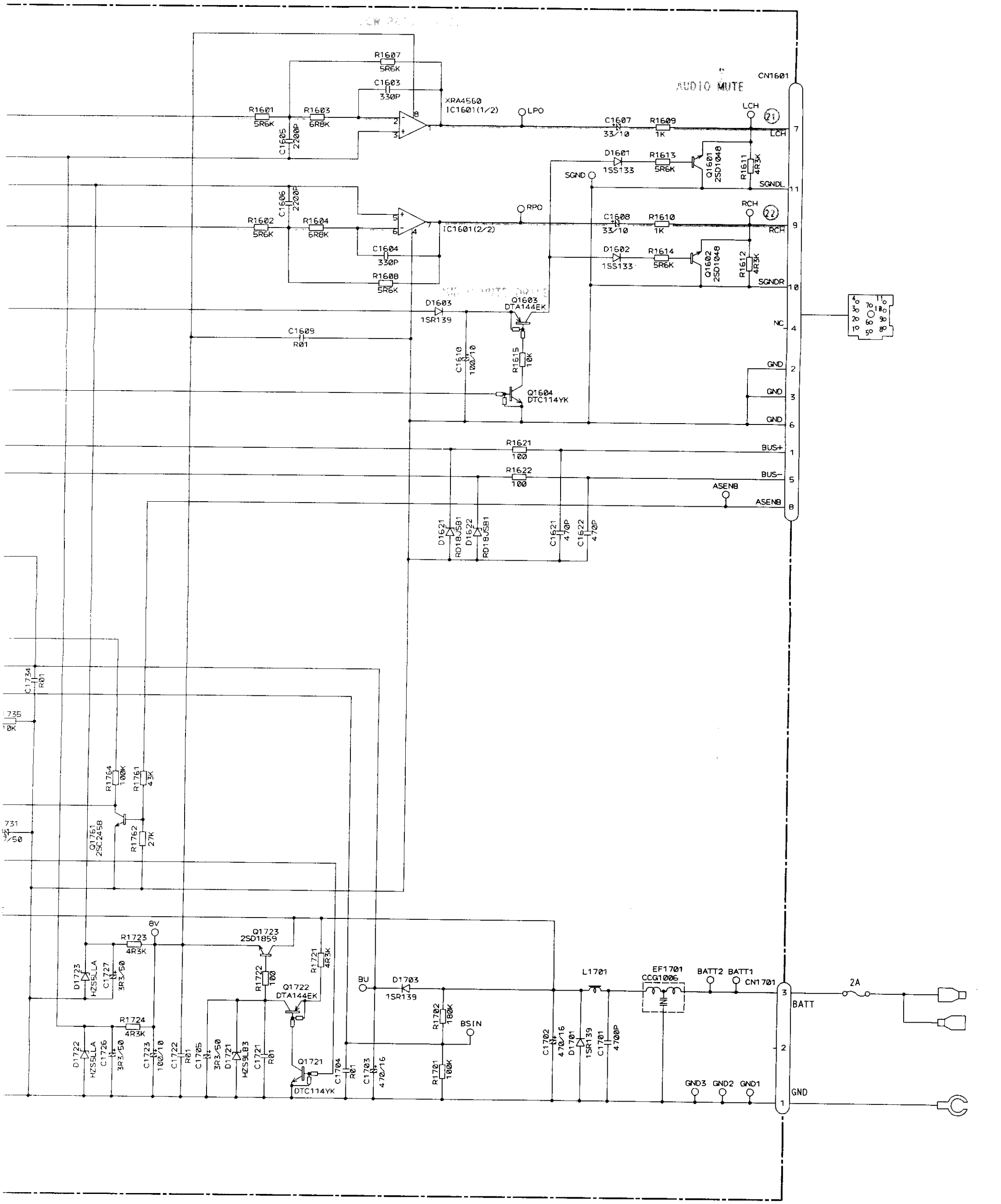


NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points and capacitor are expressed
2.2→2R2
0.022→R022

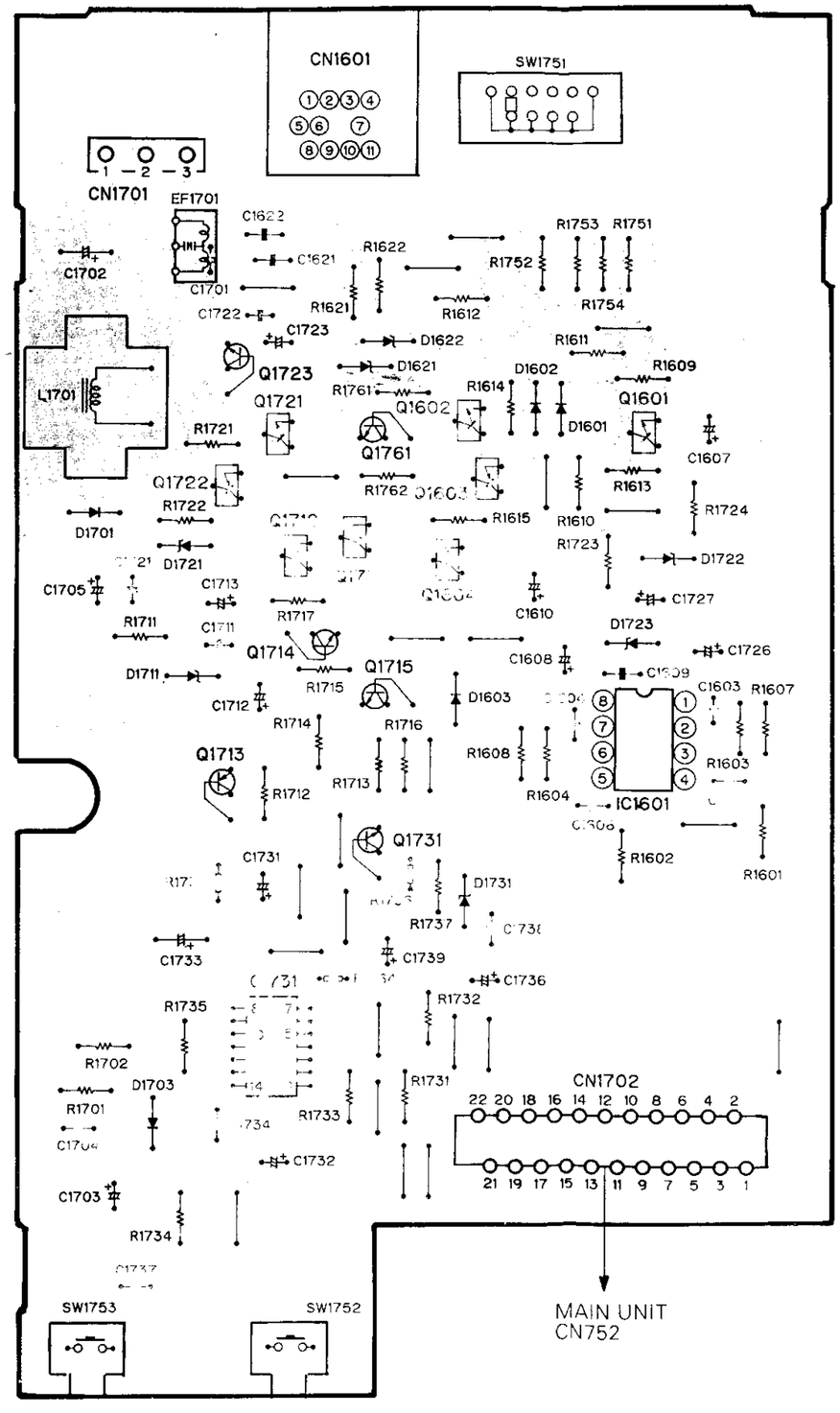


points for resistor
acitor fixed values
ressed as.
2
R022

Fig.8

6. CONNECTION DIAGRAM(2)

EXTENSION P.C. BOARD



IC, Q

A

Q1723

Q1602 Q1761
Q1721 Q1601

B

Q1722 Q1603

Q1711

Q1712 Q1604

Q1714

Q1715

IC1601

Q1713

Q1731

C

IC1731

D

Fig.9

7. BLOCK DIAGRAM

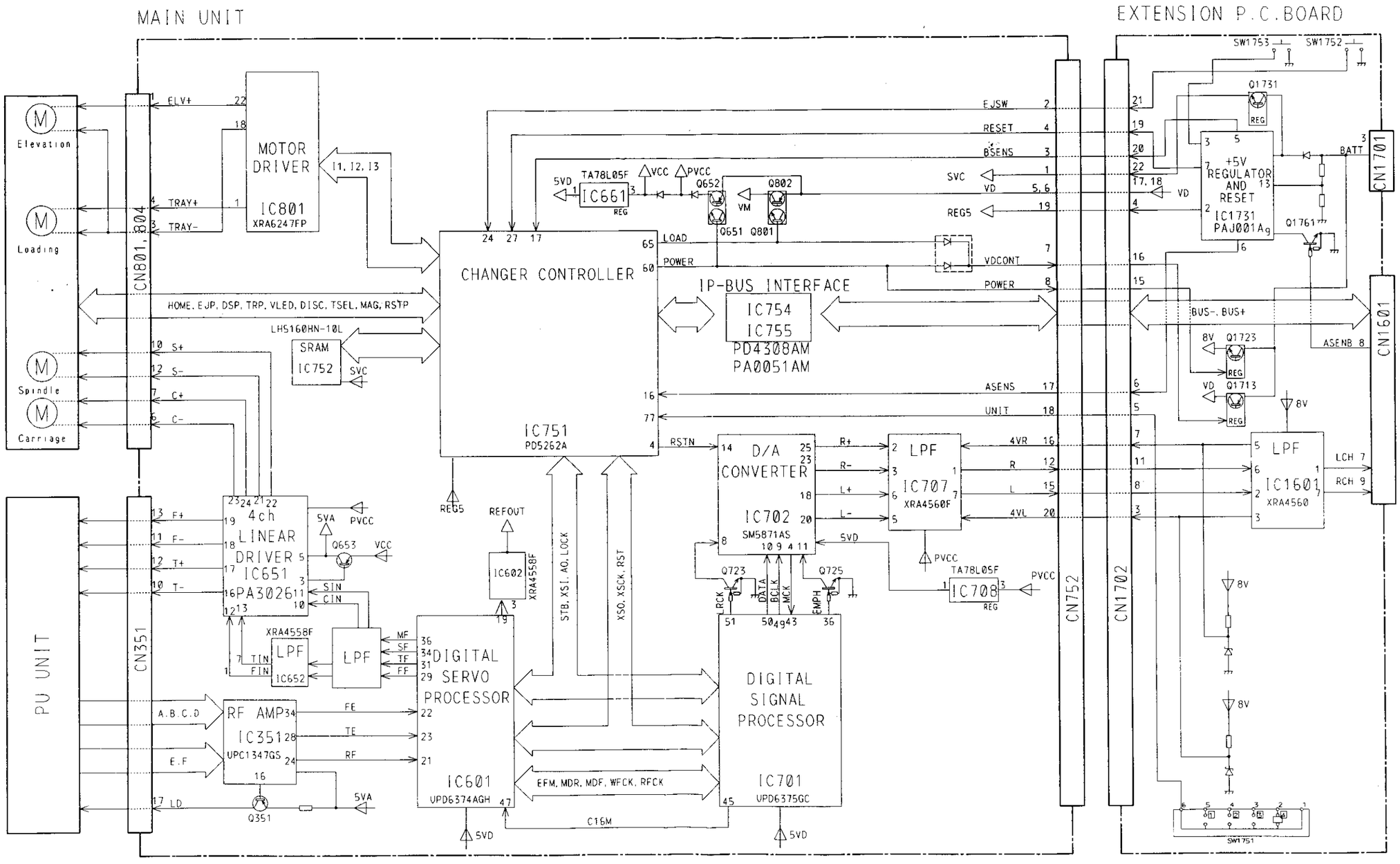


Fig.10