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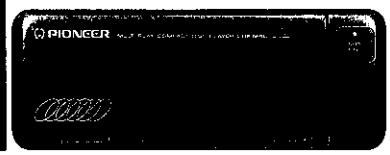
Service Manual



ORDER NO.
CRT1289

MULTI-PLAY COMPACT DISC PLAYER

CDX-M50

UC, EW, ES

COMPACT disc DIGITAL AUDIO

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 allowable)
Power consumption	6.5 W
Maximum power consumption	12 W
Weight	3.2 kg
Dimensions	200 (W) × 75 (H) × 295 (D) mm

Audio

Frequency characteristics	5–20,000 Hz (±1 dB)
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A Network)
Dynamic range	90 dB (1 kHz)
Output level	500 mV (1 kHz, 0 dB)
Number of channels	2 (stereo)

Note:

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

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FS APR. 1990 Printed in Japan

• CD Player Service Precautions

1. Since these screws protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.
2. For pickup 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.

Removal of Screws

Be sure to remove transportation screws (red) and cover the screw holes described in the procedure 4 with adhesive seals before mounting the set. **Keep the screws in a safe place; they may be needed for retransportation of the set.**

1. Peel off adhesive tape to remove the pin ①.
2. Remove three screws ② and three screws ③.
3. Remove three screws ④.
4. Cover the holes from ① to ④ with the adhesive tape ⑤. **In that case, be sure not to cover two spots ② and one spot ③ printed in bold-face type shown below with the seals.**

Reinstallation of Screws

Be sure to reinstall the transportation screws (red) in the procedure described below before re-transporting the set. Incorrect order of reinstallation or use of different screws may cause the set to fail.

1. Let the set operate the beginning of a disc and stop operation within 10 seconds thereafter before removing the set.
2. Remove the magazine and then the set.
3. Reinstall three screws ④.
4. Reinstall three screws ② and three screws ③.

- **Make sure the player is mounted using transportation screws correctly either for horizontal mounting or vertical mounting.**

5. Insert the pin ① and fix with adhesive tape from the above.

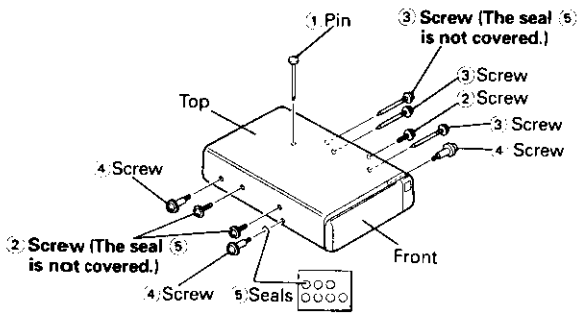


Fig. 1

1. SAFETY INFORMATION (CDX-M50/EW)

1. Safety Precautions for those who Service this Unit.

- Follow the adjustment steps (see pages 9 through 31) 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.

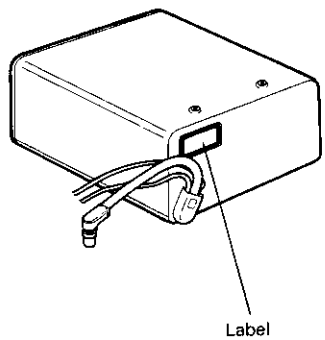


Fig. 2

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

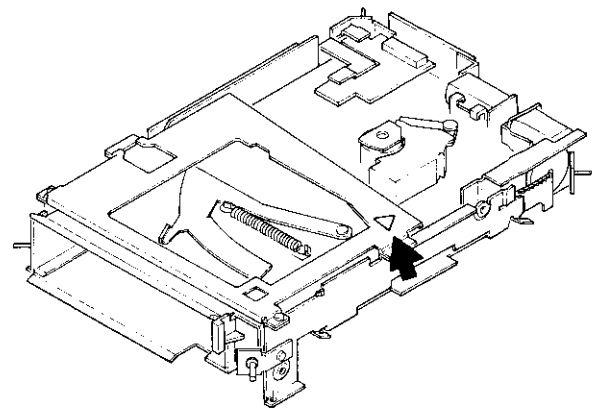


Fig. 3

4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.

Wavelength = 780 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)

SAFETY INFORMATION (CDX-M50/UC)

CAUTION

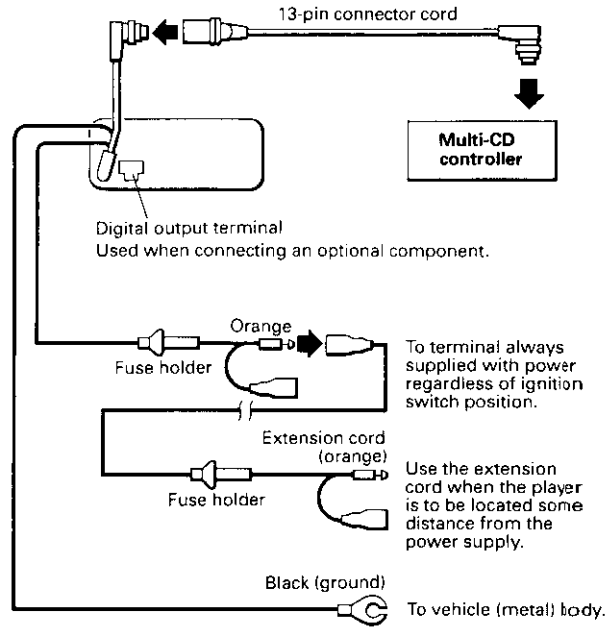
This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly 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.

2. CONNECTING THE UNITS

- Before mounting, remove the transportation screws and connect the units temporarily. Check that the units are connected correctly by operating the multi-CD controller.
- Be sure to properly connect the color-coded leads. Failure to do so can cause malfunctions.
- When connecting the cords, be sure to fix them firmly with clamps or tape. Be sure to protect the cords from damage by taping them at places where they will contact burr.
- After connection is complete, press the clear buttons on the player and the multi-CD controller with the tip of a pencil.
- Wire all connecting cords so that they stay well clear of high-temperature areas such as the heater outlet.
- Do not drill a hole into the engine compartment to connect the orange power cable directly to the battery.
- 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.



3. GENERAL GUIDE

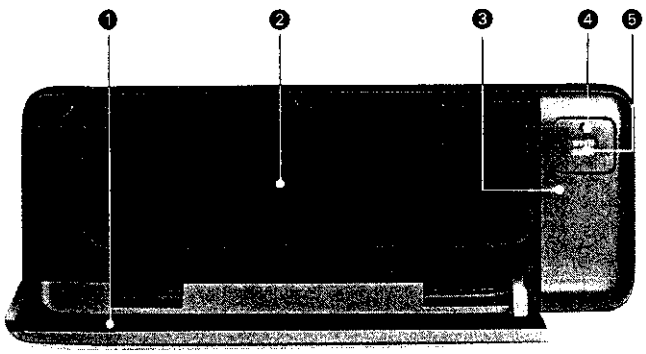


Fig. 4

❶ Door
Be sure never to leave the door open.

❷ Compact disc magazine slot

❸ 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. **Always press the clear button on the multi-CD controller, too, after pressing this button.**

❹ Power indicator
This lamp comes on when the power is turned on.

❺ Door open/eject button
Press this button to open the door ❶ and eject the magazine.

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

Precautions when Using 8-cm (3-ich) CDs

- **Do not use an 8-cm (3-inch) CD without an adapter or without a disc in this player.**
- **When playing an 8-cm (3-inch) CD, use an adapter conforming to the recommended CD standard, or an adapter with the mark.**
- **Read the instructions supplied with the adapter in order to fit the adapter to an 8-cm (3-inch) CD correctly before playing the disc.**

If the above precautions are not taken, the 8-cm (3-inch) CD may fail to play. The disc may be damaged or may get jammed in the player.

Note on last position memory
The owner's manuals for the CD-M1, DEX-M300, DEX-M300SDK, KEX-M700B, and KEX-M700SDK controllers say that the last track memory restarts play from the beginning of the track being played when the disc was stopped. But when you use one of these controllers with this player, the last position memory restarts play around the position at which the disc was stopped.

Note on random play
When using the random play feature of this player, you can get random play using up to six discs in the magazine. The owner's manuals for the CD-M1, DEX-M300, DEX-M300SDK, KEX-M700B, and KEX-M700SDK controllers say that random play works with only one disc. But when you use one of these controllers with this player, all six discs are available.

4. INSTALLATION

Before mounting

- The player can be mounted horizontally or vertically. Before mounting it, set the shock absorption springs to suit the mounting orientation as follows. (If the springs are not set properly, shock absorption will be impaired.)

Horizontal use

- The player is set for horizontal use. Check that the lock screws (2.6 × 4 mm) that hold the shock absorption springs in the correct position are in the holes for H (horizontal) use, as shown in Fig. 5.

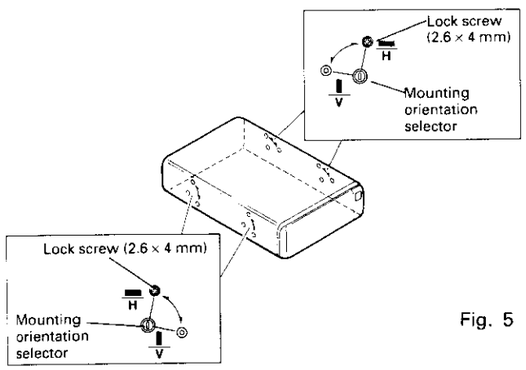


Fig. 5

Vertical use

- Be sure to change the position of the shock absorption springs for vertical use.

1. Remove the four lock screws (2.6 × 4 mm) that hold the shock absorption springs in the correct position.
2. Change the positions of all four springs by turning the mounting orientation selectors to V (vertival) with a small flat-bladed screwdriver, as shown in ① of Fig. 6.
3. Replace the removed screws (2.6 × 4 mm) in the screw holes for V, as shown in ② of Fig. 6.

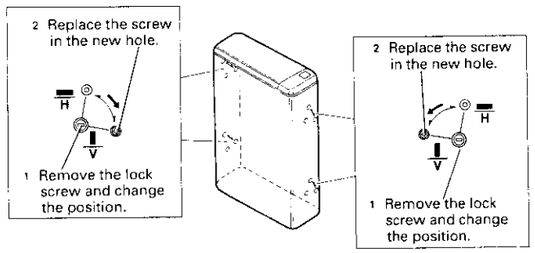


Fig. 6

5. DISASSEMBLY

How to remove the upper case

1. Remove the six screws (A) and then remove the upper case.

How to remove the lower case

1. Remove the four screws (B) and then remove the lower case.

How to remove the grill assembly

1. Remove the two screws (C) and remove the grille assembly.

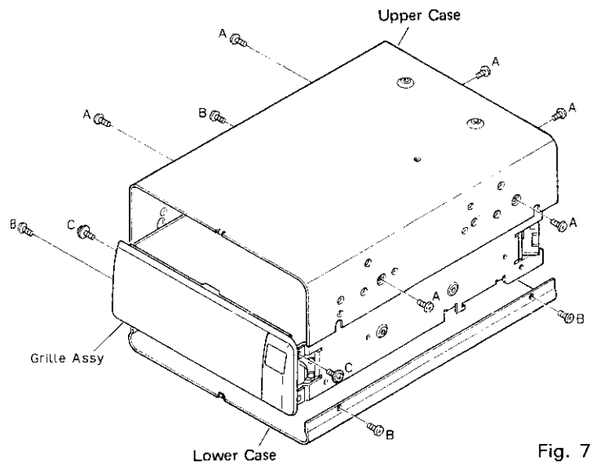


Fig. 7

How to remove the chassis assembly

1. Place the mounting orientation selector on the H side. (For easy removal of shock absorption spring)
2. Remove the two connectors on the main unit and the ground cord.
3. Remove the twelve screws which fix the damper unit, and remove the damper unit.
4. Remove the four shock absorption springs and remove the chassis assembly.

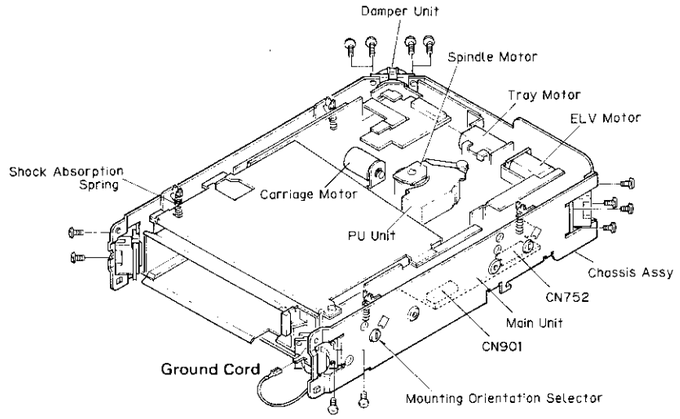
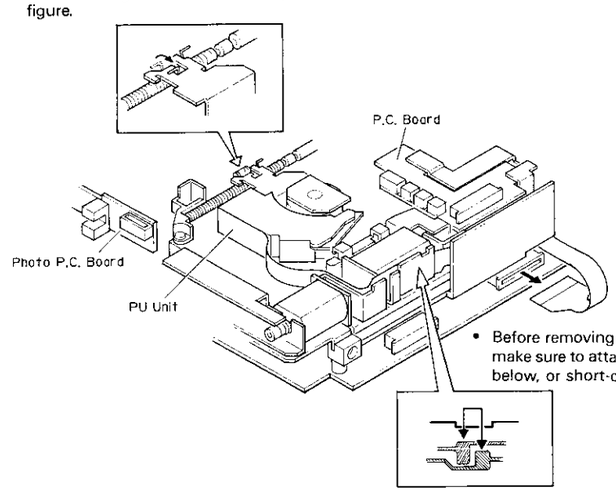


Fig. 8

When moving the PU unit manually, hook the spring as shown in the figure.



- Before removing connector CN351 (the connector to the PU unit), make sure to attach the short-circuit pin at the pattern part as shown below, or short-circuit between the patterns with the jumper line.

Fig. 9

5. BLOCK DIAGRAM

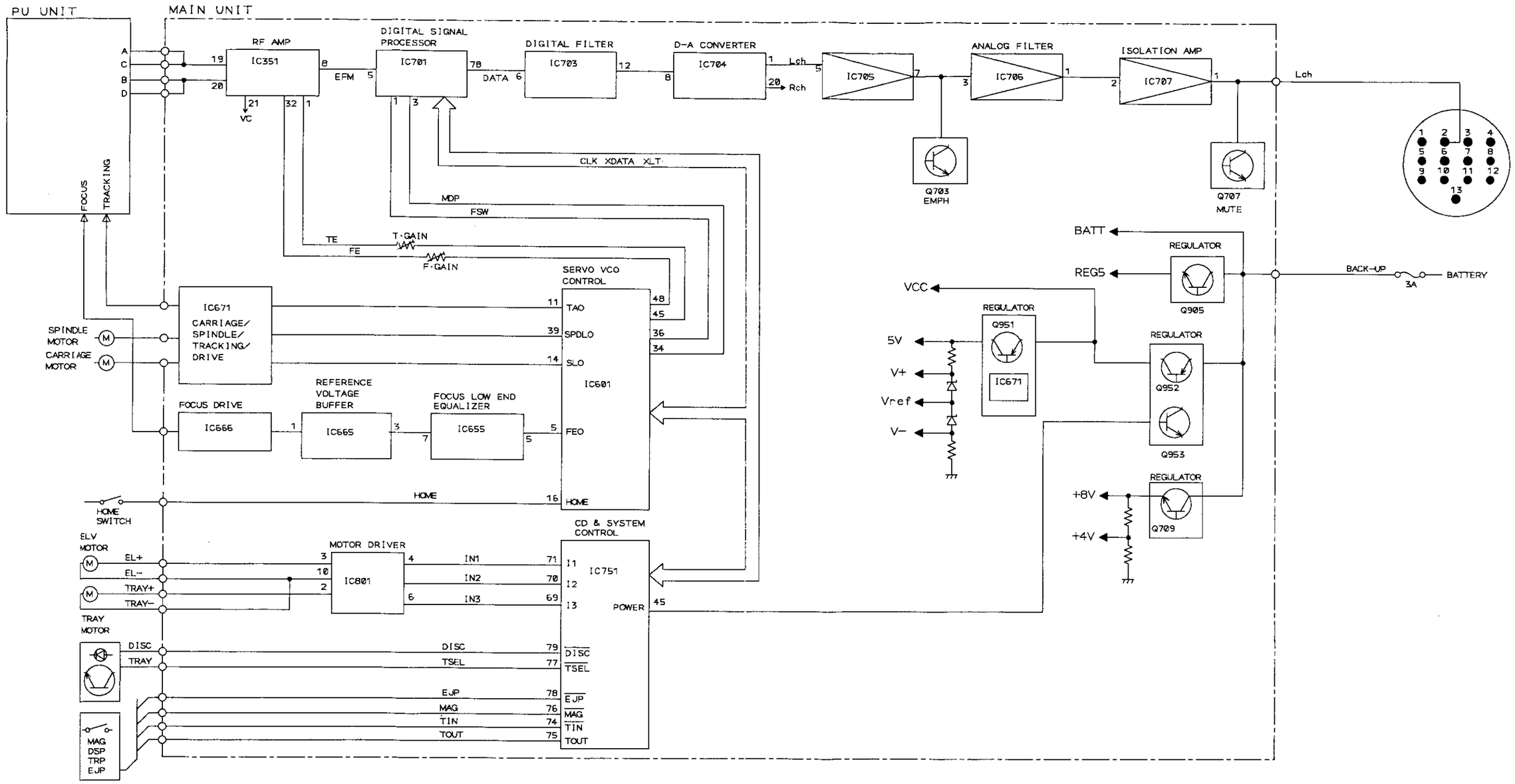


Fig. 10

6. ADJUSTMENT

1) Precautions

- The CDX-M50 uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to pin no. 21 (approx. 2.5V) of IC351 (CXA1081Q) instead of GND. (VC or VREF at test point)

If VC 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 VC and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to VC 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 VC 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.

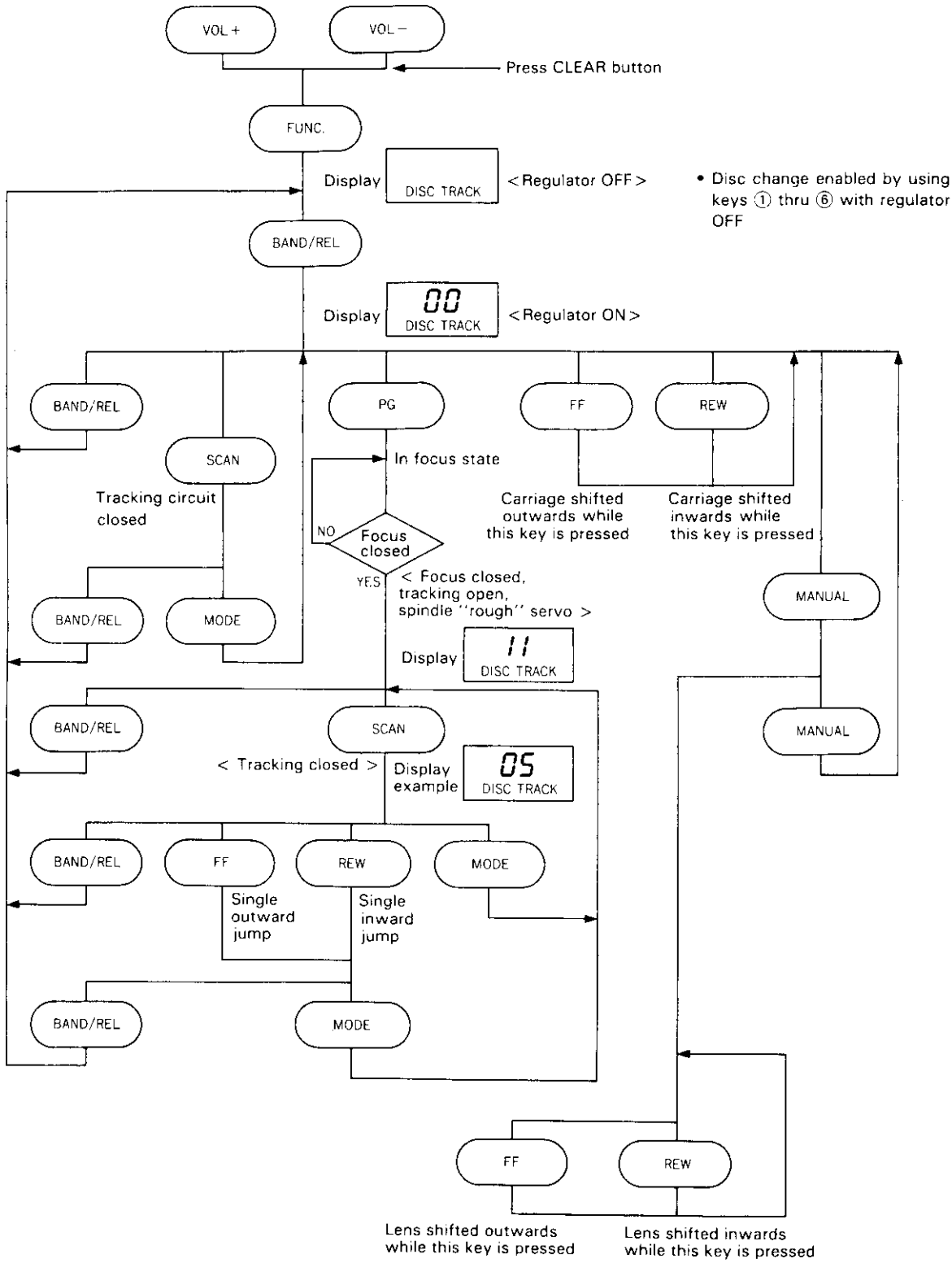
Key	Function
BAND/REL	Regulator ON/OFF
FF	FWD kick
REW	REV kick
SCAN	Tracking close
MODE	Tracking open
PG	Focus close

- 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. (For example, do not press the [P.G] key while a disc is being moved from magazine to clamp after regulator is switched ON in steps 3 thru 5 of Tracking Balance Adjustment I. Nor should the [EJECT] key (in M50) be pressed during focus closed status.)

2) Since CDX-M50 is used in combination with a multi-CD control section such as KEX-M700, all adjustment key operations are executed at that control section.
The KEX-M700 test mode starting procedure and key operations are included for reference purposes. All keys mentioned in the main text are KEX-M700 keys.

- Test mode starting procedure
Switch back-up ON or press the CLEAR button while pressing the [VOL +] and [VOL −] keys together.
- Test mode cancellation
Press the CDX-M50 CLEAR button, followedby the KEX-M700 CLEAR button. (Or switch the KEX-M700 and CDX-M50 back-up OFF.)

• Flow Chart


VOL +
VOL –
Press CLEAR button
FUNC.
Display
DISC TRACK
<Regulator OFF>
• Disc change enabled by using keys ① thru ⑥ with regulator OFF
BAND/REL
Display
00
DISC TRACK
<Regulator ON>
BAND/REL
PG
FF
REW
SCAN
In focus state
Tracking circuit closed
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
NO
Focus closed
YES
< Focus closed, tracking open, spindle "rough" servo >
MANUAL
BAND/REL
MODE
Display
11
DISC TRACK
BAND/REL
SCAN
MANUAL
< Tracking closed >
Display example
05
DISC TRACK
BAND/REL
FF
REW
MODE
Single outward jump
Single inward jump
BAND/REL
MODE
FF
REW
Lens shifted outwards while this key is pressed
Lens shifted inwards while this key is pressed

• Adjustment Points

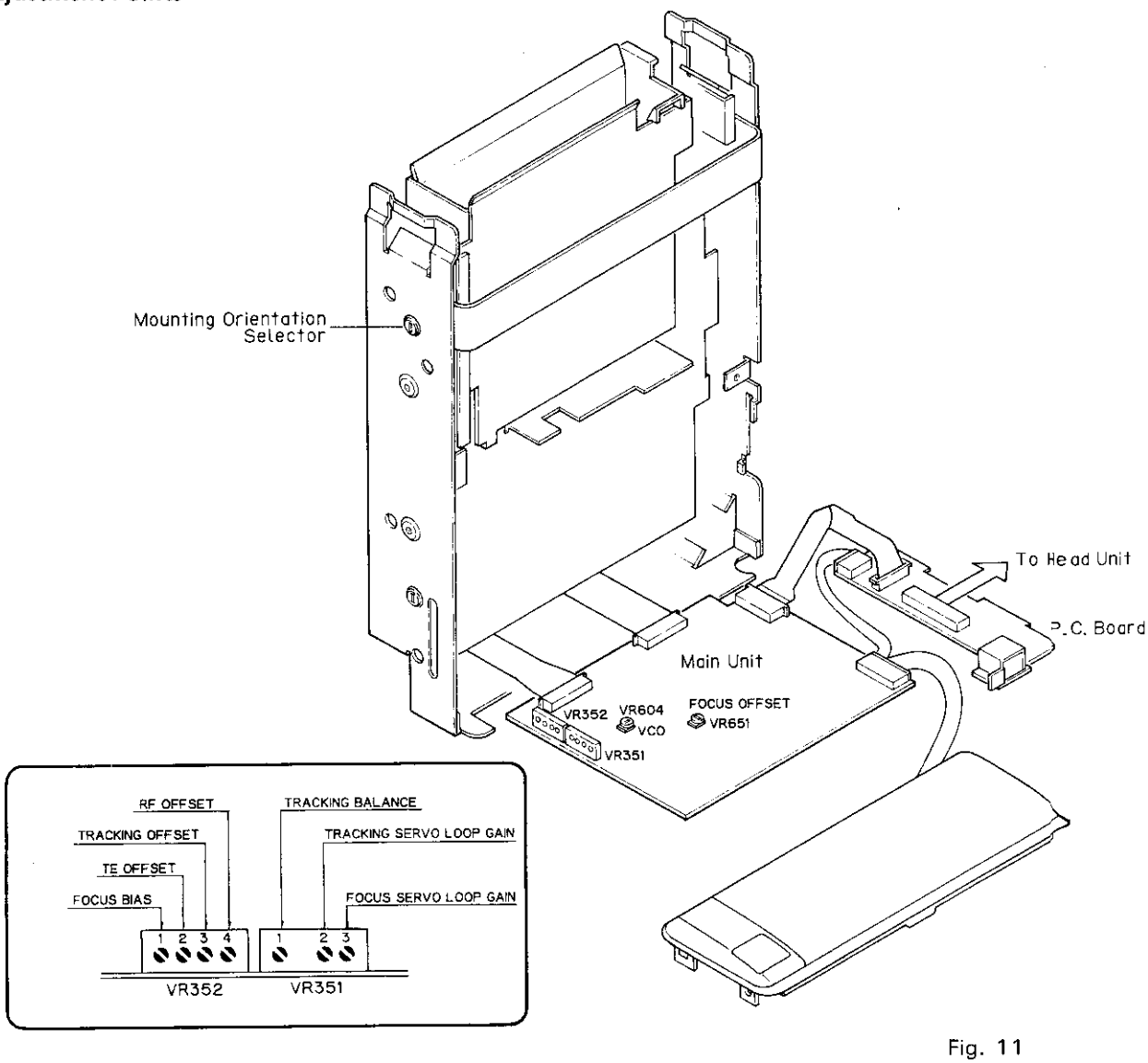


Fig. 11

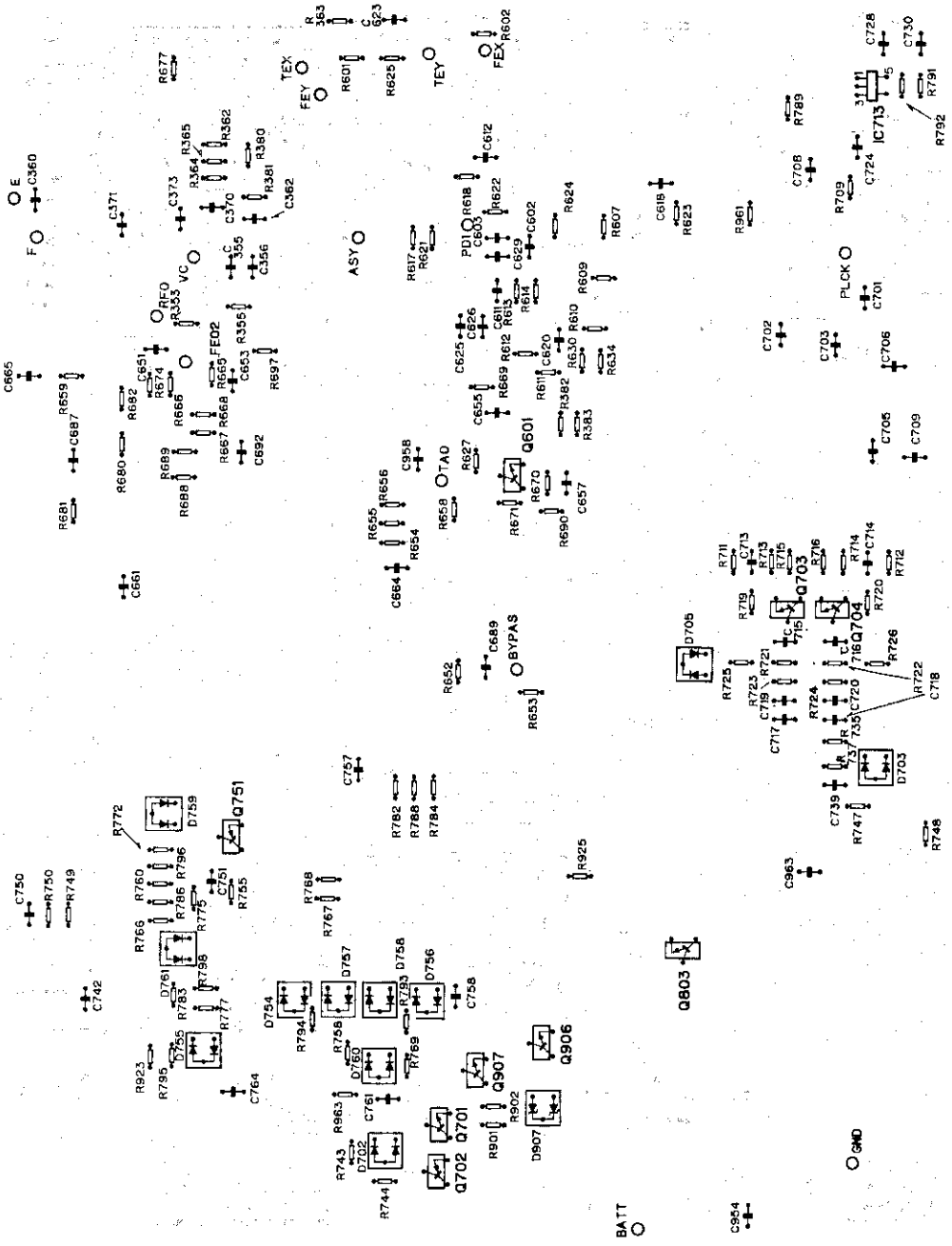


Fig. 12

6.1 Focus Offset Adjustment

● Purpose: To adjust the electrical offset of the focus amplifier to zero.

● Maladjustment symptoms: No focus closing

● Measuring equipment/ jigs	• Multi-meter or oscilloscope
● Measuring point	• FEO2
● Test disc and setting	• Empty magazine, test mode
● Adjustment position	• VR651

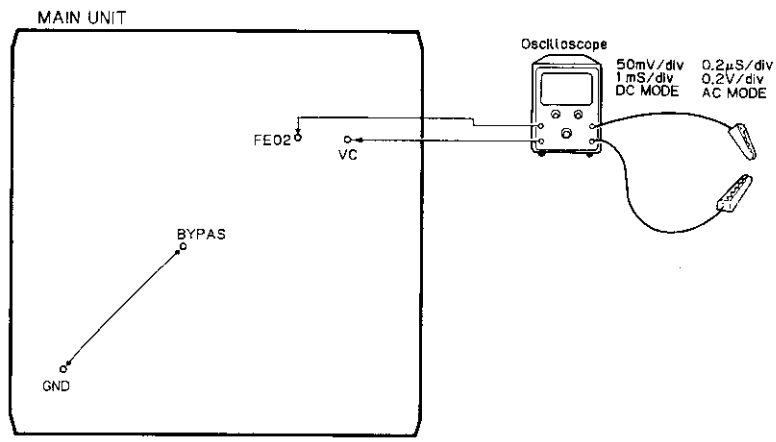


Fig. 13

Adjustment Procedure

1. Connect BYPAS to GND.
2. Switch regulator ON.
3. Using VR651, adjust the FEO2 DC voltage in reference to VC to a value of 0 ± 25mV.

6.2 VCO Free Run Frequency Adjustment

● Purpose: To adjust the EFM decoder reference clock free- run frequency to a suitable value

● Maladjustment symptoms: Spindle lock not possible, distorted sound or no sound at all

● Measuring equipment/ jigs	• Frequency counter
● Measuring point	• Pin No. 70 (PLCK) of IC701 (CXD1167Q)
● Test disc and setting	• Empty magazine • Test mode
● Adjustment position	• VR604

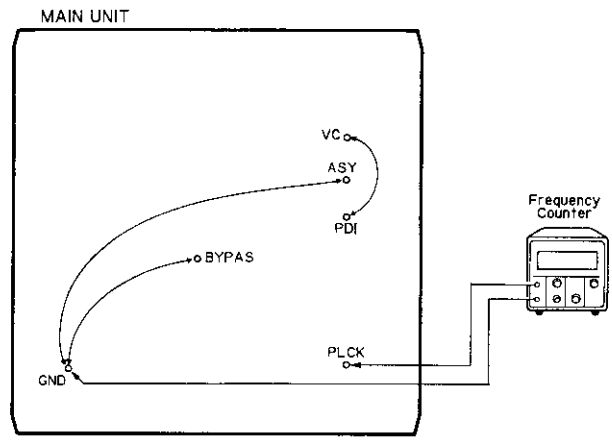


Fig. 14

Adjustment Procedure

1. Connect pin No. 7 (TP ASY) of IC351 to GND. Connect BYPAS to GND.
2. Connect pin no. 1 (TP VC) of IC601 to pin no. 28 (TP PDI).
3. Switch regulator ON while in test mode.
4. Connect the frequency counter to pin No. 70 (TP PLCK) of IC701 (CXD1167Q).
5. Adjust VR604 to obtain a frequency of 4.57 ± 0.005MHz.
6. Switch regulator OFF.
7. Disconnect the leads connecting TP VC to TP PDI, and TP ASY to GND.

Note: Connect TP VC and TP PDI with leads kept as short as possible.

Note: Connect the frequency counter ground to TP GND as shown in the figure.

6.3 RF Offset Adjustment

● Purpose: To adjust the RF amplifier offset to a suitable value

● Maladjustment symptoms: Focus closure fails readily

● Measuring equipment/ jigs	• Oscilloscope
● Measuring point	• RFO
● Test disc and setting	• Empty magazine • Test mode
● Adjustment position	• VR352-4 (RFO)

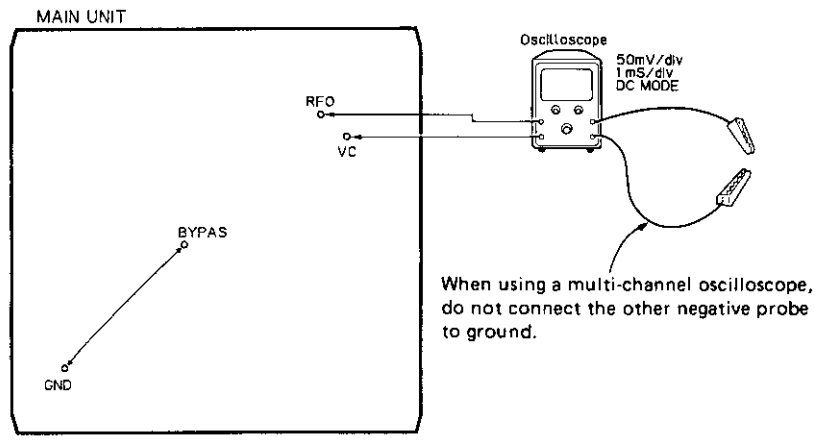


Fig. 15

Adjustment Procedure

1. Connect BYPAS to GND.
2. Switch regulator ON.
3. Using the oscilloscope, measure the RFO DC voltage in reference to VC, and adjust VR352-4 (RFO) to obtain a reading of +40 ± 10mV.

6.4 Tracking Offset Adjustment

● Purpose: To adjust the electrical offset of the tracking amplifier to zero

● Maladjustment symptoms: Search times too long, carriage run-away

● Measuring equipment/ jigs	• Oscilloscope
● Measuring point	• TAO low-pass filter output
● Test disc and setting	• Empty magazine • Test mode
● Adjustment position	• VR352-3 (TO)

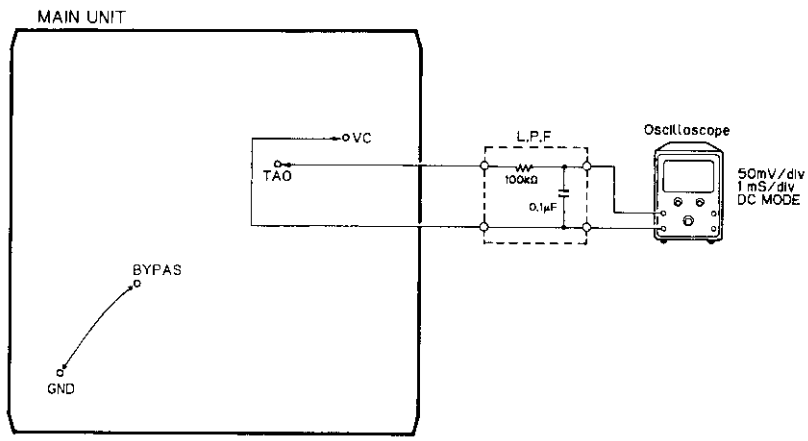


Fig. 16

Adjustment Procedure

1. Insert a low-pass filter between TAO and VC.
2. Check that BYPAS is connected to GND.
3. Switch regulator ON.
4. Using the oscilloscope, measure the TAO LPF output DC voltage in reference to VC, and adjust VR352-3 (TO) to obtain a reading of 0 ± 25mV.
   The low-pass filter may be left in place for later adjustments.

6.5 TE Offset Adjustment - I

● 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
● Measuring point	• TAO low-pass filter output
● Test disc and setting	• Empty magazine • Test mode
● Adjustment position	• VR352-2 (TEO)

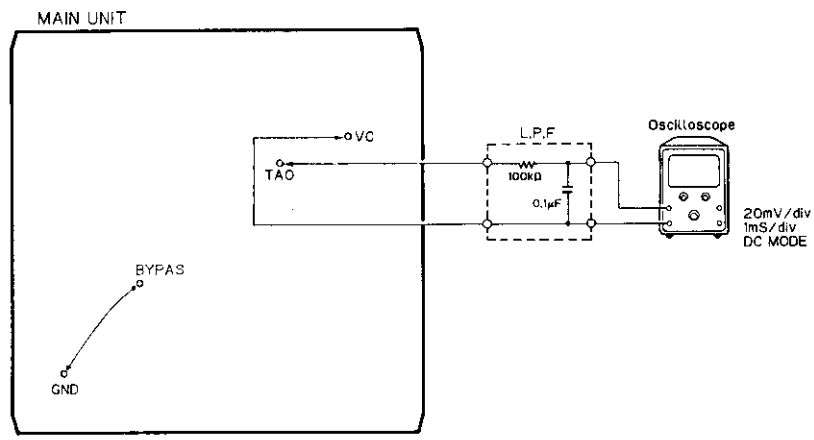


Fig. 17

Adjustment Procedure

1. Check that BYPAS is connected to GND.
2. Switch regulator ON while in test mode.
3. Press the [SCAN] key to close tracking.
4. Using VR352-2 (TEO), adjust the TAO LPF output DC voltage in reference to VC to a value of 0 ± 10mV.
5. Switch regulator OFF.

6.6 Tracking Balance Adjustment - I

● Purpose: To adjust the tracking servo offset to zero.

● Maladjustment symptoms: Search times too long, poor playability, carriage run-away

● Measuring equipment/ jigs	• Oscilloscope
● Measuring point	• TEY (Tracking error signal), low-pass filter output
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
● Adjustment position	• VR351-1 (T. BAL)

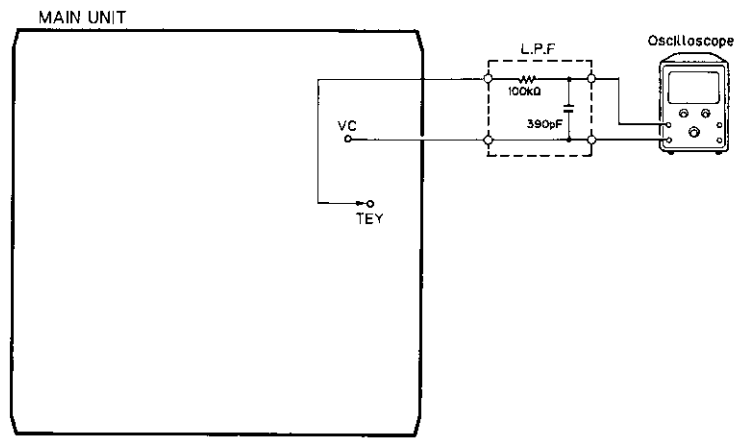
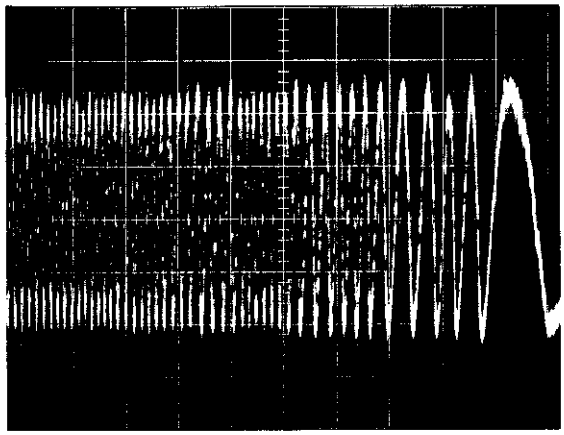


Fig. 18

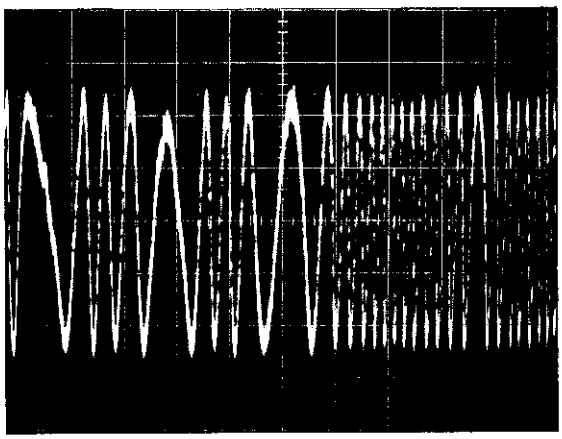
Adjustment Procedure

1. After checking that regulator is OFF, connect the lowpas filter as shown in the diagram.
2. Disconnect BYPAS from ground.
3. Set the test disc (SONY TAPE 4) in magazine tray 6 and load the magazine. Switch regulator ON.
4. Using the [FF] or [REW] key, move the pick-up to about the center of the signal surface.
5. Press the [PG] key to close focus.
6. Using an oscilloscope, observe the TEY signal in respect to VC. Then adjust VR351-1 (T.BAL) to set the positive and negative amplitudes to the same levels. (See Fig. 19-21)
7. Switch the power OFF.
   The low-pass filter may be left in place for later adjustments.



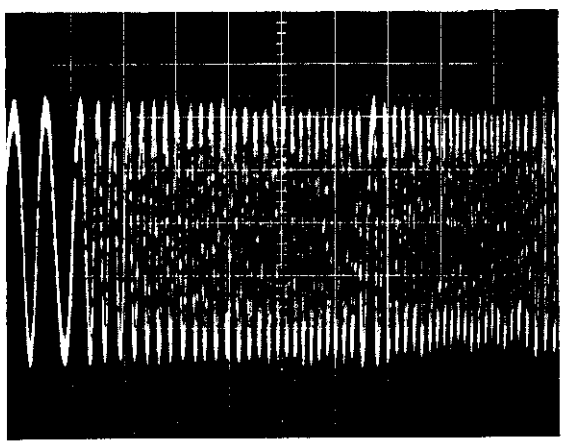
+5% NG

Fig. 19



±0% OK

Fig. 20



−5% NG

10ms/div.
0.2V/div.
DC Mode

Fig. 21

6.7 Tangential Skew Check

● Purpose: To check whether tangential skew has been misaligned or not when replacing the pick-ip unit.

● Maladjustment symptoms: No disc playback; track jumping

● Measuring equipment/ jigs	• Oscilloscope, screwdriver
● Measuring point	• RFO
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
● Adjustment position	• Pick-up tangential adjustment screw

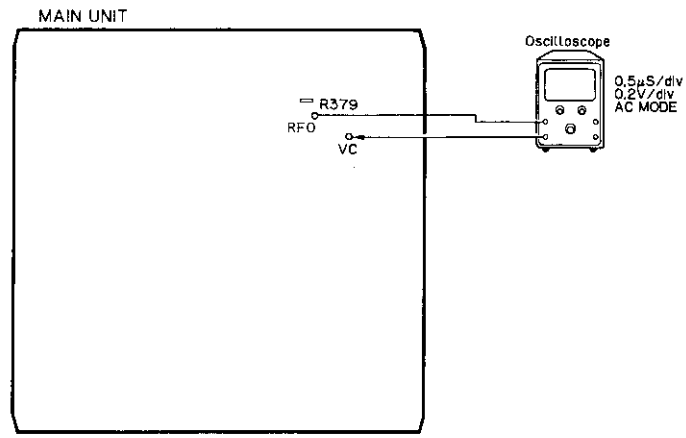
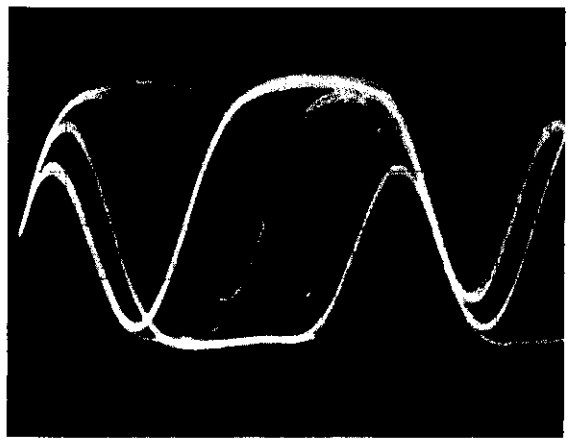


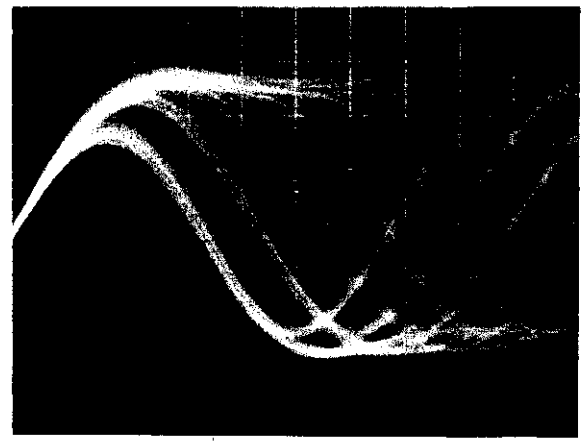
Fig. 22

Adjustment Procedure (with R379 removed)

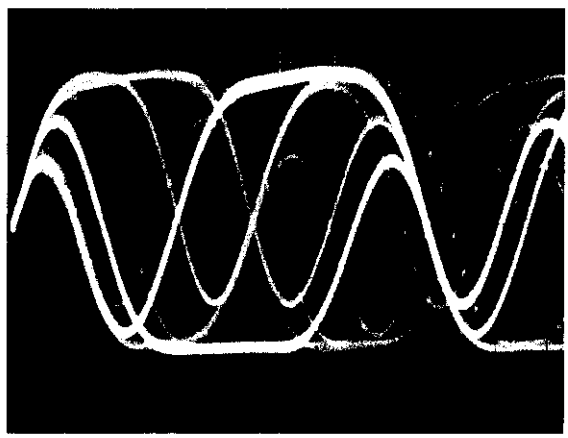
1. Remove R379 (but reconnect after completing adjustment).
2. Play tune TNO 7 in normal mode. (TYPE 3: TNO 23)
3. Check that the valley at the 11T section of the RF waveform is flat.
4. If out of adjustment, readjust to obtain a flat RF waveform. (See Fig. 23-28) Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.)
5. Switch the power OFF and reconnect R379.
6. Apply "screw-lock" to the tangential adjustment screw.
7. After adjusting tangential skew, also adjust the grating.
8. If tangential skew is seriously out of adjustment, carriage stopping and run-away tend to occur in normal mode. In this case,
   a) Switch to test mode,
   b) Shift the pick-up to signal surface center using [FF] or [REW] key,
   c) Press the [PG] key to close focus.
   d) Press the [SCAN] key to close tracking.
   e) Observe RFO in respect to VC, and turn the tangential adjustment screw to obtain a flat waveform at the 11T section.
   f) Repeat the adjustment resuming from step 2.



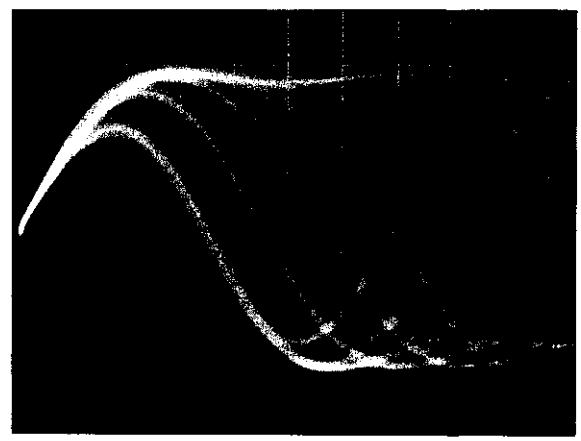
NG Fig. 23



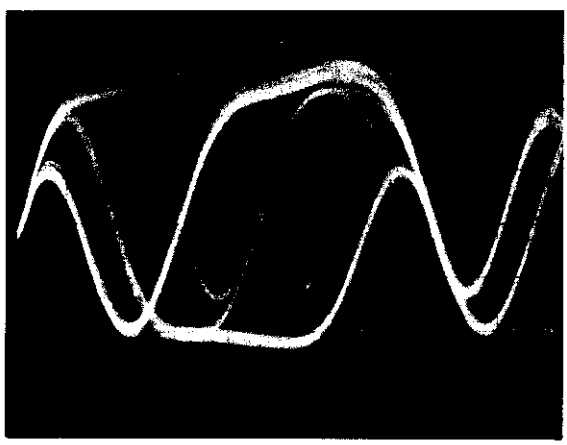
NG Fig. 24



OK Fig. 25

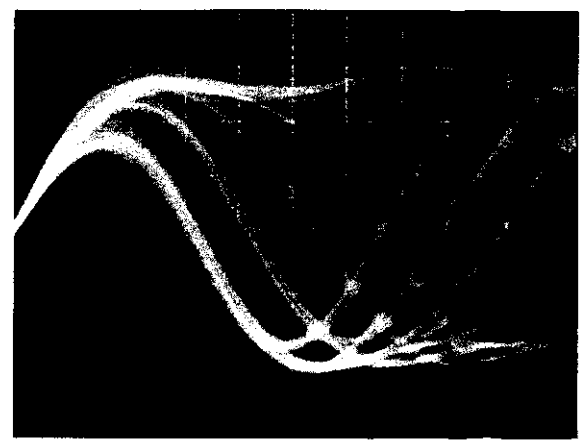


OK Fig. 26



NG Fig. 27

Play tune TN0 7 (TYPE4)

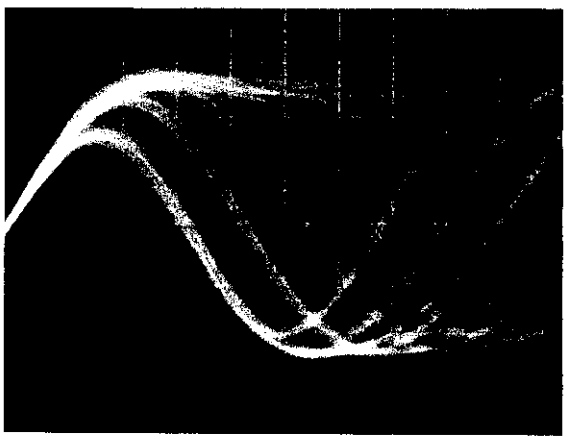


NG Fig. 28

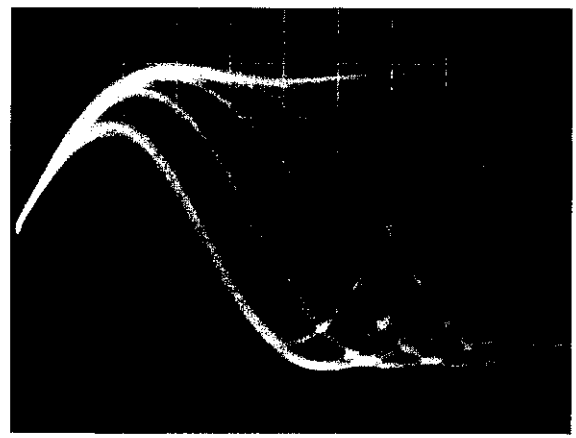
Play tune TN0 12 (TYPE4)

Adjustment Procedure (without R379 removed)

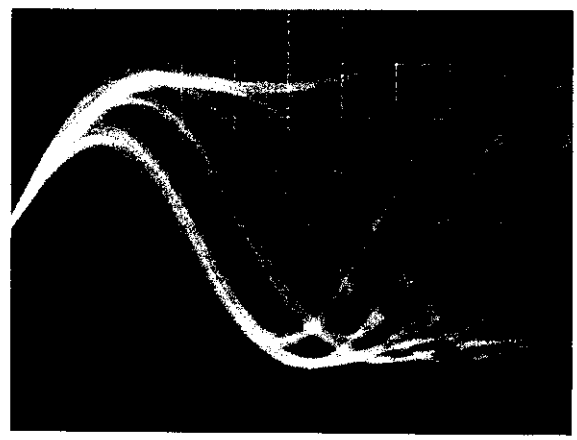
1. Play tune TNO 12 in normal mode. (TYPE 3: TNO 14)
2. Turn the tangential adjustment screw to obtain a good RF waveform eye pattern. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates, and take the midway point as the adjustment point. As a general guide, look for an overall clear waveform, 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 screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig. 29-31)
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew, also adjust the grating.



NG Fig. 29



OK Fig. 30



NG Fig. 31

6.8 Grating Adjustment

● Purpose: The grating may need adjustment in a replaced pick-up assembly.

● Maladjustment symptoms: No disc playback; track jumping

● Measuring equipment/ jigs ● Measuring point ● Test disc and setting ● Adjustment position	• Oscilloscope, clock driver, grating adjustment filter (bandpass filter) (GGF-133) AC millivoltmeter, two low-pass filters • TEY, E LPF output, F LPF output • SONY TYPE 4 (or TYPE 3) • Test mode • Pick-up grating adjustment hole

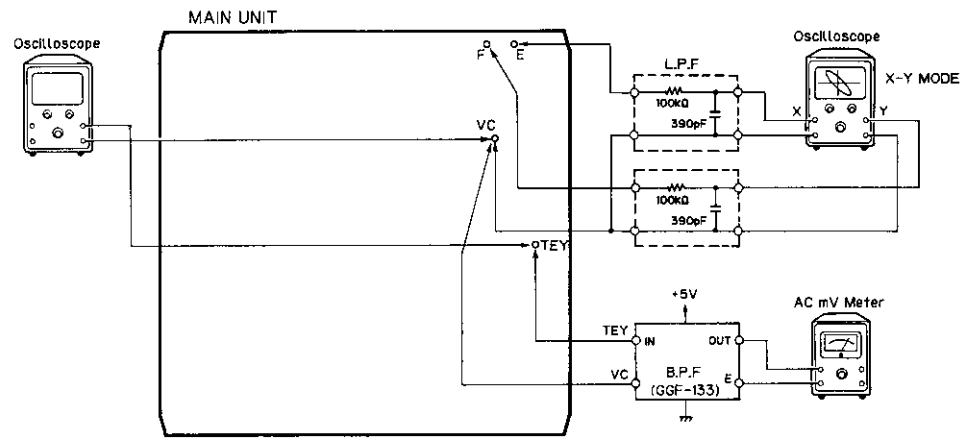


Fig. 32

Adjustment Procedure

1. Connect a low-pass filter (100k, 390p) to test points E, F, and VC as shown in the above diagram.
2. Switch regulator ON in test mode, and load a disc.
3. Press the [PG] key to close focus.
4. Press the [SCAN] key to close tracking.
5. Using the [FF] or [REW] key, move the pick-up to about the center of the signal surface (tune TNO 6). (TYPE 3: TNO 7)
6. Press the [MODE] key to open tracking.
7. 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.)
8. 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. (See Fig. 34-39)

9. With the E low-pass filter output connected to the X axis of the oscilloscope, and the F low-pass filter output connected to the Y axis, apply an input in AC mode and observe the Lissajous figure.
10. Using the driver, adjust the Lissajous figure to a single line (or as close as possible).
11. Switch regulator OFF and remove the filters.

B.P.F. (GGF-133)

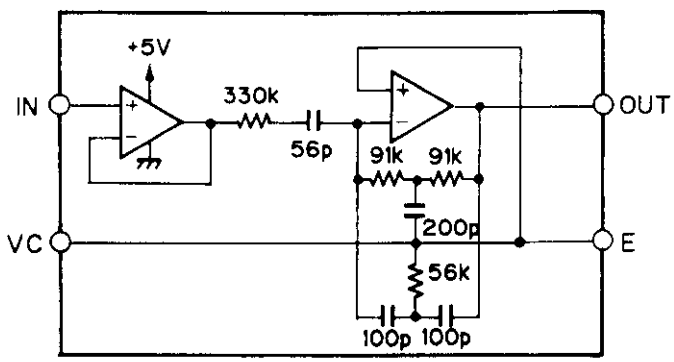


Fig. 33

TEY waveform 10ms/div, 500mV/div

Null Point

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

Fig. 34

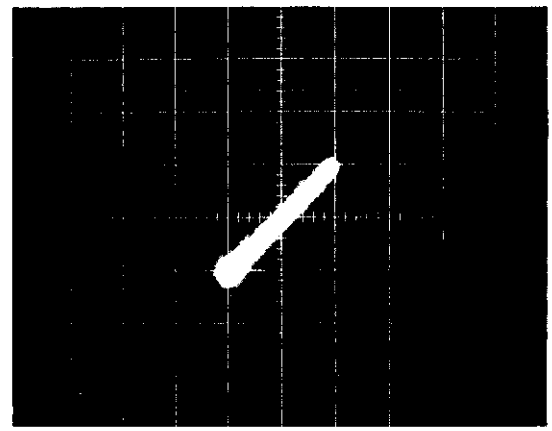


Fig. 35

"Rough" adjustment

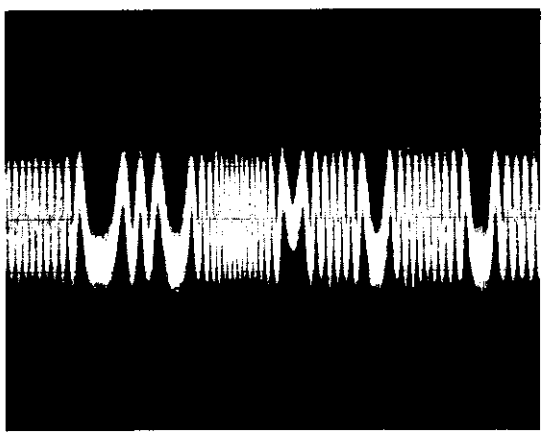


Fig. 36

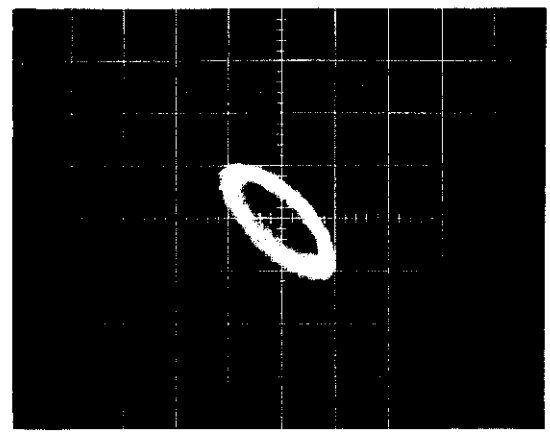


Fig. 37

Final adjustment

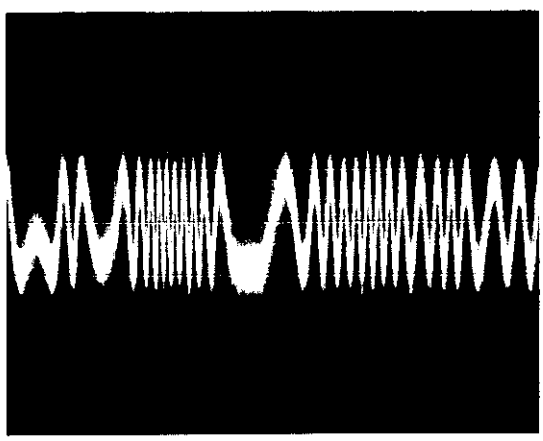


Fig. 38

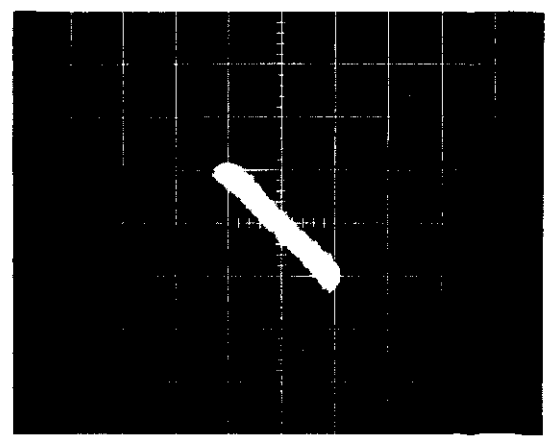


Fig. 39

6.9 Focus Bias Adjustment

● Purpose: To adjust the focus servo bias to an optimum value

● Maladjustment symptoms: Focus closing difficulty, poor playability

● Measuring equipment/ jigs	• Oscilloscope
● Measuring point	• RFO
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
● Adjustment position	• VR352-1 (FEB)

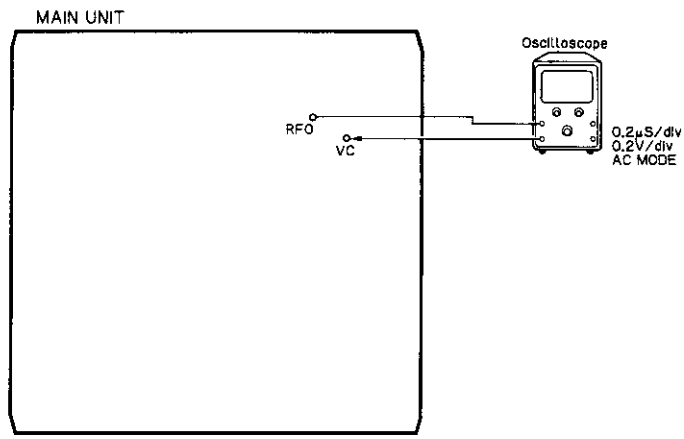
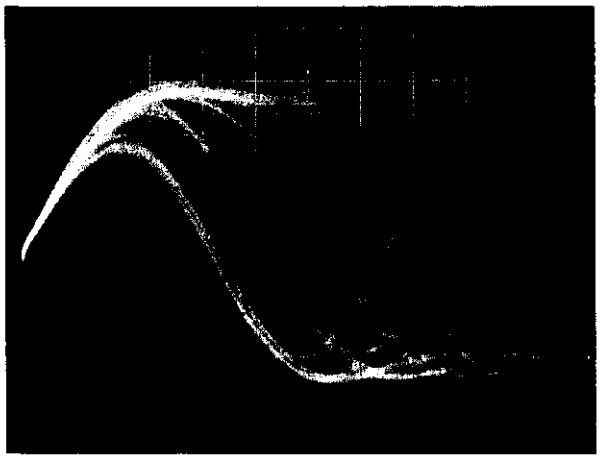


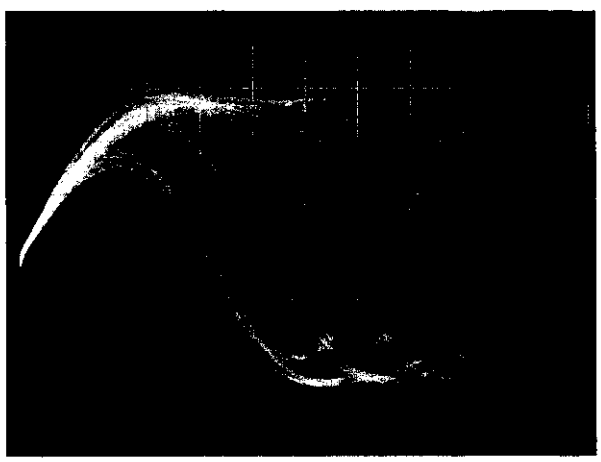
Fig. 40

Adjustment Procedure

1. Play tune TNO 12 in normal mode. (TYPE 3: TNO 14)
2. Observe RFO in respect to VC in the oscilloscope, and adjust VR352-1 (FEB) to obtain maximum RF and optimumeye pattern. (See Fig. 41 and 42)



OK Fig. 41



0.2μs/div.
0.2V/div.
AC Mode

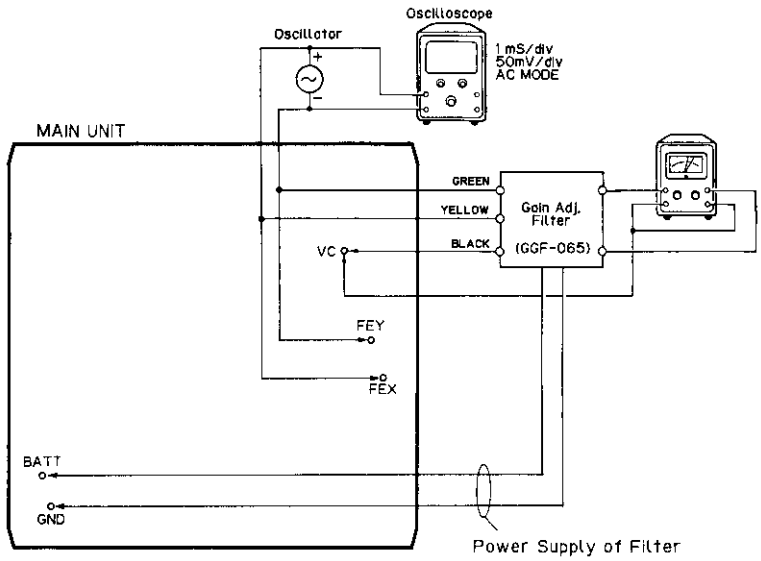
Before adjustment Fig. 42

6.10 Focus Servo Loop Gain Adjustment

● 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), dual meter milli-voltmeter
● Measuring point	• FEX, FEY
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
● Adjustment position	• VR351-3 (FG)



Note: Leave the negative side of the other oscilloscope channel open.

Connect the negative milli-voltmeter lead to VC, and do not connect VC to the power supply ground.

Fig. 43

Adjustment Procedure

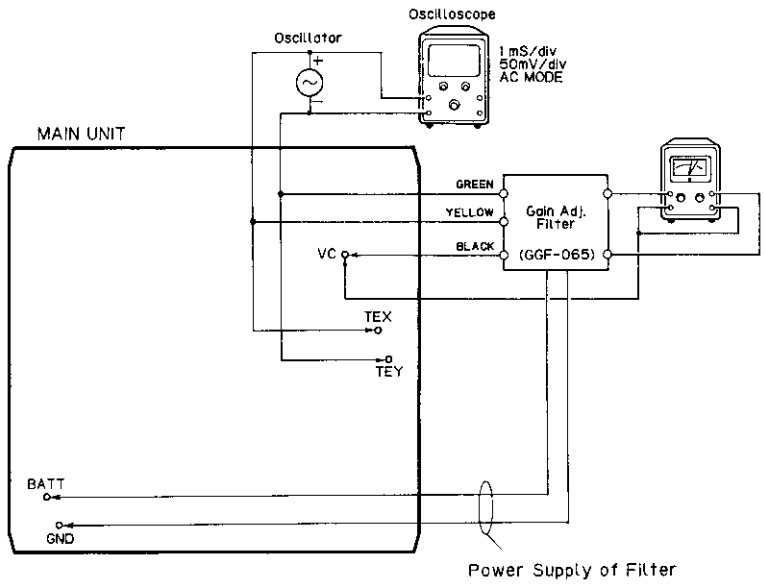
1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode. (TYPE 3: TNO 14)
3. Set the oscillator to 1kHz, and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR351-3 (FG) to obtain a milli-voltmeter difference of 0 ± 0.5dB.

6.11 Tracking Servo Loop Gain Adjustment

● 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), dual meter milli-voltmeter
● Measuring point	• TEX, TEY
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
● Adjustment position	• VR351-2 (TG)



Note: Leave the negative side of the other oscilloscope channel open.

Connect the negative milli-voltmeter lead to VC, and do not connect VC to the power supply ground.

Fig. 44

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. (TYPE 3: TNO 14)
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 100mVp-p.
4. Adjust VR351-2 (TG) to obtain a milli-voltmeter difference of 0 ± 0.5dB.

6.12 TE Offset Adjustment - II

● 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
● Measuring point	• TAO low-pass filter output
● Test disc and setting	• Empty magazine • Test mode
● Adjustment position	• VR352-2

Adjustment Procedure

Same as for TE offset adjustment - I, but with the DC voltage of the TAO LPF 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 - I.

6.13 Tracking Balance Adjustment - II

● Purpose: To adjust the tracking servo offset to zero.

● Maladjustment symptoms: Search times too long, poor playability, carriage run-away

● Measuring equipment/ jigs	• Oscilloscope
● Measuring point	• TEY low-pass filter output
● Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
● Adjustment position	• VR351-1

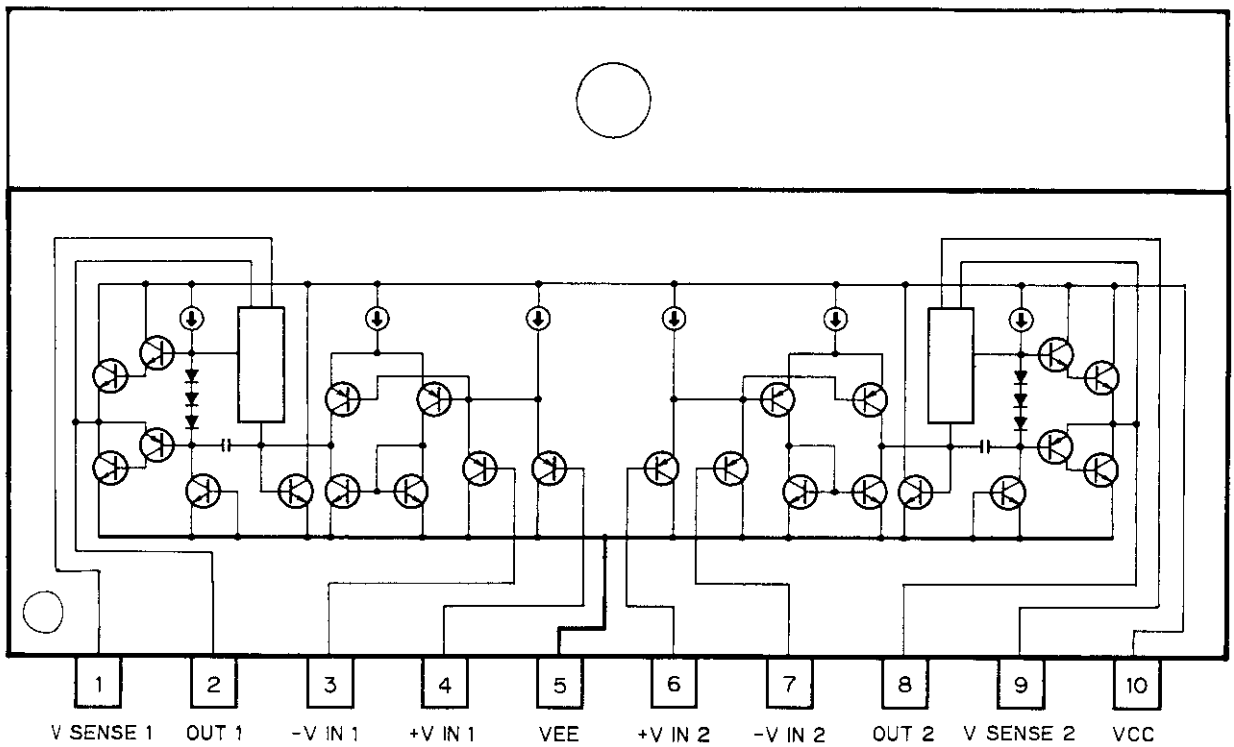
Adjustment Procedure

Steps 1 thru 5 same as tracking balance adjustment-I.

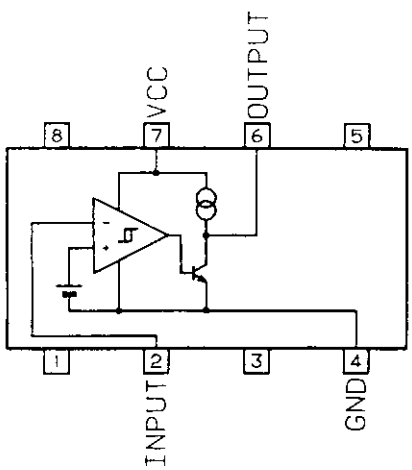
6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig. 19-21). If greater than 5%, adjust with VR351-1.
7. If further adjustment was necessary in step 6, repeat TE offset adjustment -II.

●IC

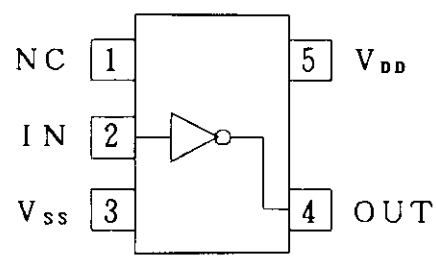
LA6510



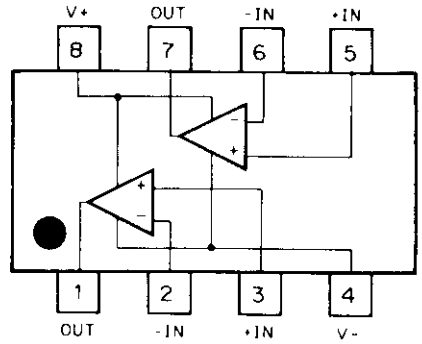
M51945AFP



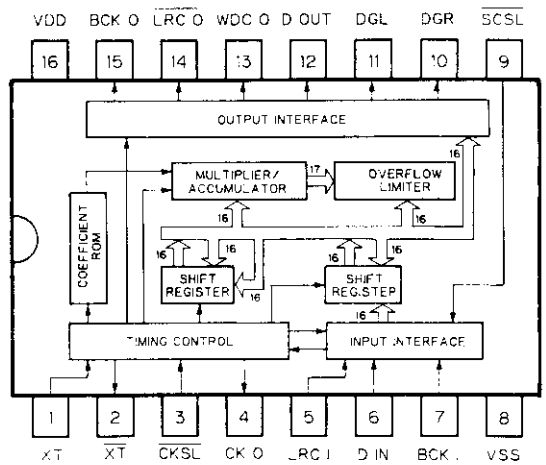
TC4SU69F



M5218FP
UPC358G2



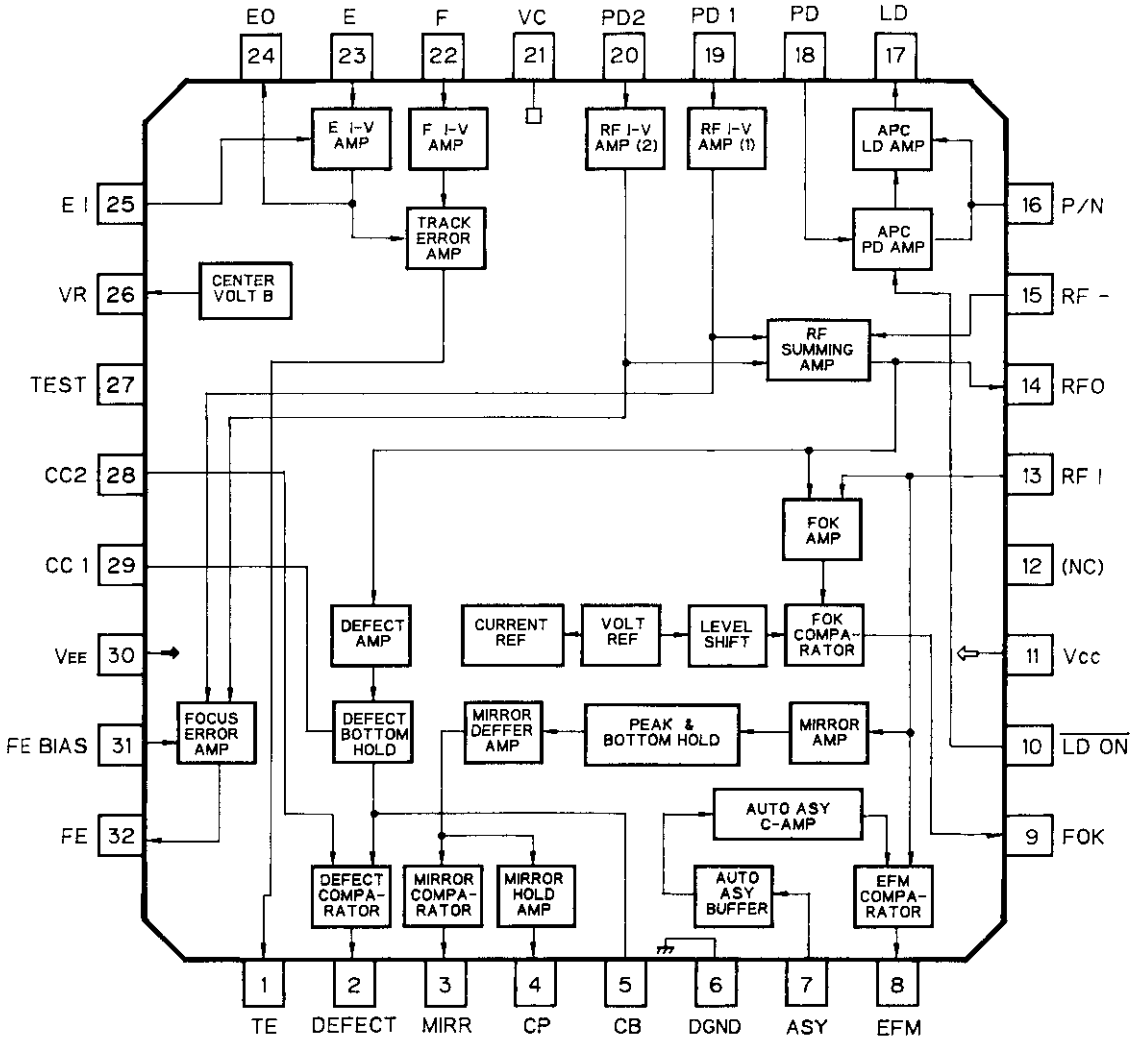
SM5807ES-M



• Pin Functions (SM5807ES-M)

Pin	Pin name	I/O	Function and Operation
1	XT	input	Oscillator input
2	$\overline{XT}$	output	Oscillator output
3	$\overline{CKSL}$		"H":XT← 16.93MHz input
4	CKO	output	Clock output
5	LRCI		44.1kHz synchronization clock input
6	DIN		Serial data input
7	BCKI		Bit clock input(Serial input)
8	VSS		GND
9	$\overline{SCSL}$		System clock switching. "H":192fs(fs:Sampling frequency)
10	DGR	output	R-ch digridge signal(176.4kHz)
11	DGL	output	L-ch digridge signal(176.4kHz)
12	DOUT	output	Serial data output
13	WDCO	output	Output control clock(352.8kHz)
14	$\overline{LRCO}$	output	Output control clock(176.4kHz)
15	BCKO	output	Bit clock output(Serial output)
16	VDD		Power supply(5V)

*CXA1081Q

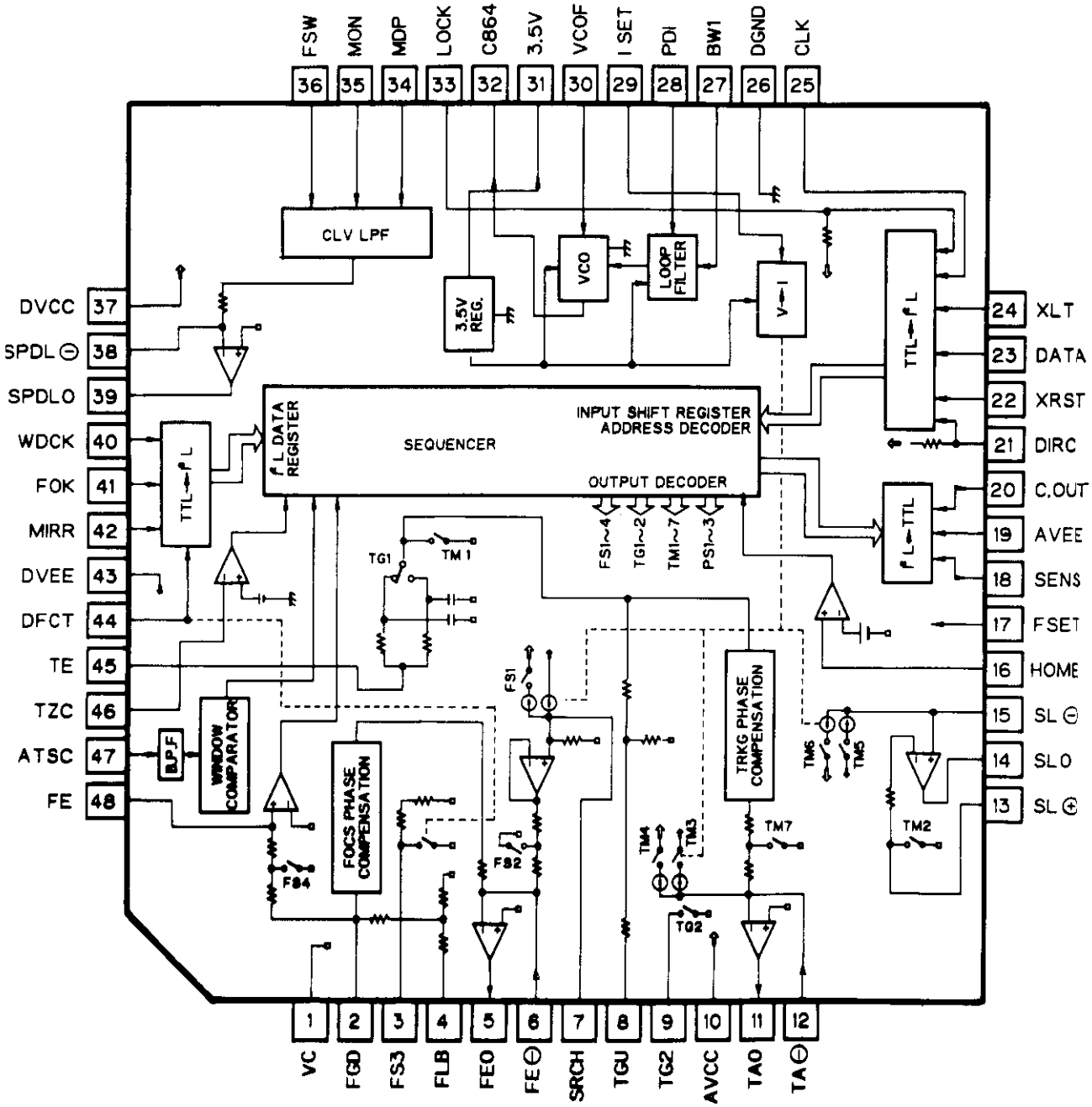


*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

● Pin Functions (CXA1081Q)

Pin No.	Pin. Name	I/O	Function and Operation
1	TE	Output	Tracking error amplifier output pin
2	DEFECT	Output	DEFECT comparator output pin
3	MIRR	Output	MIRR comparator output pin
4	CP	Input	MIRR hold capacitor connector pin - MIRR comparator non-inverting input pin
5	CB	Input	DEFECT bottom hold capacitor connector pin
6	DGND		Ground connection
7	ASY	Input	Auto asymmetry control input pin
8	EFM	Output	EFM comparator output pin
9	FOK	Output	Focus OK comparator output pin
10	$\overline{\text{LDON}}$	Input	Laser diode ON/OFF switching
11	VCC		Positive power supply pin
12	NC		
13	RFI	Input	Input of capacitance-coupled RF summing amplifier output
14	RFO	Output	RF summing amplifier output pin - eye pattern check point
15	RF−	Input	RF summing amplifier feedback input pin
16	P/N	Input	Laser diode P-sub/N-sub selector pin
17	LD	Output	APC LD amplifier output pin
18	PD	Input	APC PD amplifier input pin
19	PD1	Input	RF I-V amplifier (1) inverter input pin - connected to photodiode A + C pin for current input
20	PD2	Input	RF I-V amplifier (2) inverter input pin - connected to photodiode B + D pin for current input
21	VC		Connected to VR
22	F	Input	I-V amplifier inverter input pin - connected to photodiode for current input
23	E	Input	I-V amplifier inverter input pin - connected to photodiode for current input
24	EO	Output	E I-V amplifier output pin
25	EI	Input	E I-V amplifier feedback input for E I-V amplifier gain adjustment
26	VR	Ouput	$(V_{CC} + V_{EE})/2$ DC voltage output pin
27	TEST		Open
28	CC2	Input	Input of capacitance-coupled DEFECT bottom hold output
29	CC1	Output	DEFECT bottom hold output pin
30	VEE		Ground connection
31	FE BIAS	Input	Focus error amplifier non-inverting bias pin Used in focus error amplifier CMR adjustment
32	FE	Output	Focus error amplifier output pin

*CXA1082BQ

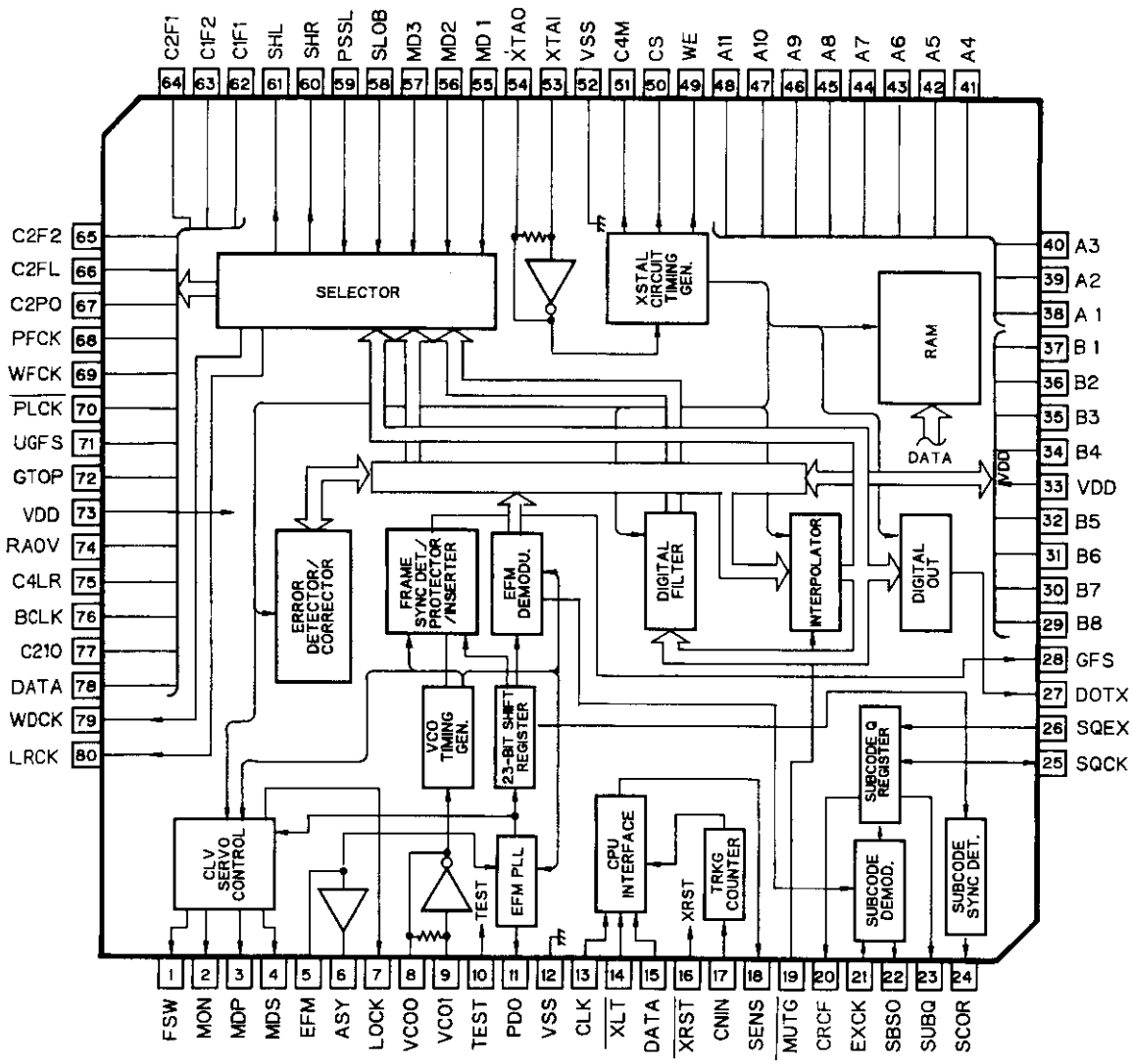

FSW 36
MON 35
MDP 34
LOCK 33
C864 32
3.5V 31
VCOF 30
I SET 29
PDI 28
BW1 27
DGND 26
CLK 25
DVCC 37
SPDL⊖ 38
SPDLO 39
WDCK 40
FOK 41
MIRR 42
DVEE 43
DFCT 44
TE 45
TZC 46
ATSC 47
FE 48
XLT 24
DATA 23
XRST 22
DIRC 21
C.OUT 20
AVEE 19
SENS 18
FSET 17
HOME 16
SL⊖ 15
SLO 14
SL⊕ 13
VC 1
FGD 2
FS3 3
FLB 4
FEO 5
FE⊖ 6
SRCH 7
TGU 8
TG2 9
AVCC 10
TAO 11
TA⊖ 12
CLV LPF
VCO
LOOP FILTER
3.5V REG.
V→I
TTL→fL
fL DATA REGISTER
SEQUENCER
INPUT SHIFT REGISTER
ADDRESS DECODER
OUTPUT DECODER
fL→TTL
FSI~4
TGI~2
TMI~7
PSI~3
TG1
TM1
FS1
FS2
FS4
BPF
WINDOW COMPARATOR
FOCS PHASE COMPENSATION
TRKG PHASE COMPENSATION
TM6
TM5
TM4
TM3
TM7
TM2
TG2

● Pin Functions (CXA1082BQ)

Pin No.	Pin Name	I/O	Function and Operation
1	VC		Servo reference voltage input pin
2	FGD		Connect to pin 3 to switch focus servo OFF when defect occurs
3	FS3		Internal DFCT switch closed when pin 44 is high
4	FLB		Focus servo low region boost external time constant pin
5	FEO	Output	Focus drive output - connect to low-end equalizer
6	FE –	Input	Focus amplifier inverter input pin
7	SRCH		Focus search waveform generation external time constant connector pin
8	TGU	Output	Tracking low-end equalizer connection output pin
9	TG2		Pin 7 discharge switch for starting focus search from lens center
10	AVCC		+ 5V connection
11	TAO	Output	Tracking drive output
12	TA –	Input	Tracking amplifier inverter input pin
13	SL +	Input	Sled amplifier non-inverting input pin
14	SLO	Output	Sled drive output
15	SL –	Input	Sled amplifier inverter input pin
16	HOME	Input	Sled home position detector switch input pin
17	FSET		Focus/tracking phase compensation peak and CLV low-pass filter f_0 setting pin
18	SENS	Output	Output of FZC, AS, TZC, SSTOP, and $\overline{\text{BUSY}}$ depending on command from CPU
19	AVEE		AGND connection
20	COUT	Output	Track counter signal output
21	DIRC		Not used
22	XRST	Input	Reset input pin - reset when "L"
23	DATA	Input	Serial data input from CPU
24	XLT	Input	Latch input from CPU
25	CLK	Input	Serial data transfer clock input from CPU
26	DGND		DGND connection
27	BW1		Loop filter external time constant pin
28	PDI	Input	Input of CXD1135 phase comparator output PDO
29	ISET		Current which determines focus search, track jump, and sled kick height
30	VCOF		VCO free-running frequency more or less inversely
31	3.5V	Output	Proportional to resistance value between pins 30 and 31
32	C864	Output	8.64MHz VCO output pin
33	LOCK		Not used
34	MDP		Connect to MDP pin of CXD1135
35	MON		Connect to MON pin of CXD1135
36	FSW		CLV servo error signal low-pass filter external time constant pin
37	DVCC		+ 5V connection
38	SPDL –	Input	Spindle drive amplifier inverter input pin

Pin No.	Pin Name	I/O	Function and Operation
39	SPDLO	Output	Spindle drive output
40	WDCK	Input	Auto-sequence clock input 176.4kHz
41	FOK	Input	FOK signal input pin
42	MIRR	Input	Mirror signal input pin
43	DVEE		DGND connection
44	DFCT	Input	DEFECT signal input pin - defect countermeasure circuit activated when this input is high
45	TE	Input	Tracking error signal input pin
46	TZC	Input	Tracking zero-cross comparator input pin
47	ATSC	Input	Tracking lens offset detector window comparator input pin
48	FE	Input	Focus error signal input pin

*CXD1167Q



● Pin Functions (CXD1167Q)

Pin No.	Pin Name	I/O	Function and Operation
1	FSW	Output	Spindle motor output filter time constant selector output
2	MON	Output	Spindle motor ON/OFF control output
3	MDP	Output	Spindle-motor drive output - "rough" control in CLV-S mode, and phase control in CLV-P mode
4	MDS	Output	Spindle motor drive output - speed control in CLV-P mode
5	EFM	Input	EFM signal input from RF amplifier
6	ASY	Output	EFM signal slice level control output
7	LOCK	Output	Sampling of GFS signal by WFCK/16 - "H" output if "H", "L" output if "L" detected eight times in succession
8	VCOO	Output	VCO output - f = 8.6436MHz when EFM signal is locked
9	VCOI	Input	VCO input
10	TEST	Input	(0V)
11	PDO	Ouptut	EFM signal and VCO/2 phase comparison output
12	V_{SS}	–	Ground (0V)
13	CLK	Input	Serial data transfer clock input from CPU - data latched by clock leading edge
14	XLT	Input	Latch input from CPU - 8-bit shift register data (serial data from CPU) is latchedin each register.
15	DATA	Input	Serial data input from CPU
16	XRST	Input	System reset signal input - reset when "L"
17	CNIN	Input	Tracking pulse input
18	SENS	Output	Output of internal status according to address
19	MUTG	Input	Muting input - when ATTM of internal register A is "L", MUTG "L" denotes normal status, and "H" muted status
20	CRCF	Output	Sub-code Q CRC check result output
21	EXCK	Input	Clock input for sub-code serial output
22	SBSO	Output	Sub-code serial output
23	SUBQ	Output	Sub-code Q output
24	SCOR	Output	Sub-code synchronizing S0+S1 output
25	SQCK	Input/Output	Sub-code Q read clock
26	SQEX	Input	SQCK selector input
27	DOTX	Output	Digital out output ($\overline{\text{WFCK}}$ output)
28	GFS	Output	Frame synchronizing lock status indicator output
29	B8	Input	Connected to GND
30	B7	Input	Connected to GND
31	B6	Input	Connected to GND
32	B5	Input	Connected to GND
33	V_{DD}	–	Power supply (+5V)
34	B4	Input	Connected to GND
35	B3	Input	Connected to GND

Pin No.	Pin Name	I/O	Function and Operation
36	B2	Input	Connected to GND
37	B1	Input	Connected to GND
38	A1	Input	Connected to GND
39	A2	Input	Connected to GND
40	A3	Input	Connected to GND
41	A4	Input	Connected to GND
42	A5	Input	Connected to GND
43	A6	Input	Connected to GND
44	A7	Input	Connected to GND
45	A8	Input	Connected to GND
46	A9	Input	Connected to GND
47	A10	Input	Connected to GND
48	A11	Input	Connected to GND
49	WE	Output	External RAM write enable signal output (active "L")
50	CS	Output	External RAM chip select signal output (active "L")
51	C4M	Output	X'tal frequency division output (f = 4.2336MHz)
52	V_{SS}	—	Ground (0V)
53	XTAI	Input	Crystal oscillator Input
54	XTAO	Output	Crystal oscillator output
55	MD1	Input	Mode selector input 1
56	MD2	Input	Mode selector input 2
57	MD3	Input	Mode selector input 3
58	SLOB	Input	Audio data output code selector input - 2's complement output "L", offset binary output if "H"
59	PSSL	Input	Audio data output mode selector input - serial output if "L", parallel output if "H"
60	SHR	Output	Aperture correction control output - "H" when right channel
61	SHL	Output	Aperture correction control output - "L" when left channel
62	C1F1	Output	C1F1 output
63	C1F2	Output	C1F2 output
64	C2F1	Output	C2F1 output
65	C2F2	Output	C2F2 output
66	C2FL	Output	C2FL output
67	C2PO	Output	C2PO output
68	RFCK	Output	RFCK output
69	WFCK	Output	WFCK output
70	$\overline{\text{PLCK}}$	Output	$\overline{\text{PLCK}}$ output
71	UGFS	Output	UGFS output
72	GTOP	Output	GTOP output

Pin No.	Pin Name	I/O	Function and Operation
73	V_{DD}	—	Power supply (+5V)
74	RAOV	Output	RAOV output
75	C4LR	Output	C4LR output
76	$\overline{\text{BCLK}}$	Output	$\overline{\text{C21O}}$ output
77	C21O	Output	C21O output
78	DATA	Output	DATA output
79	WDCK	Output	Strobe signal output
80	LRCK	Output	Strobe signal output

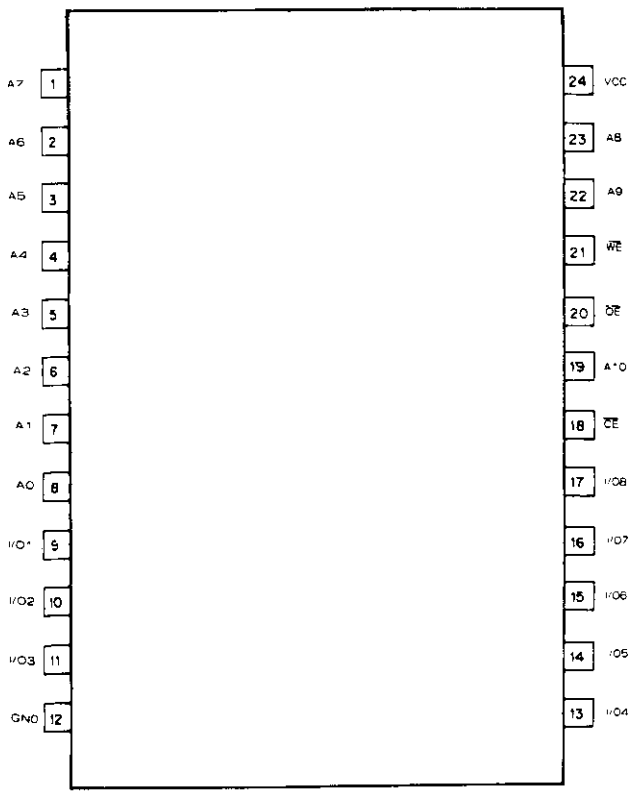
Note:

C1F1:
C1F2: C1 decoding error correction status monitor output

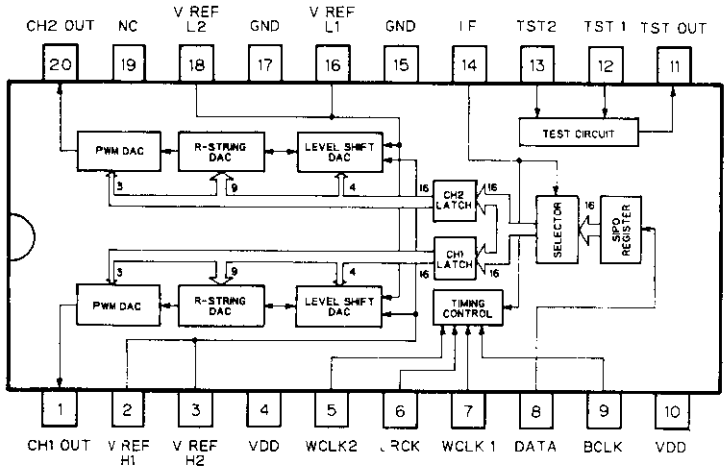
C2F1:
C2F2: C2 decoding error correction status monitor output

C2FL: Corrected status output - "H" if C2 system currently being corrected cannot be corrected
C2PO: C2 pointer indication output - synchronized with audio data output
RFCK: Read frame clock output - crystal oscillator 7.35kHz
WFCK: Write frame clock output - f = 7.35kHz when crystal oscillator is locked
$\overline{\text{PLCK}}$: VCO/2 output - f = 4.3218MHz when EFM signal is locked
UGFS: Unprotected frame synchronizing pattern output
GTOP: Frame synchronization protection status indicator output
RAOV: ±4 frame jitter absorption RAM overflow and underflow indicator output
C4LR: Strobe signal
$\overline{\text{BCLK}}$: C21O inverting output
C21O: Bit clock output
DATA: Audio signal serial data output

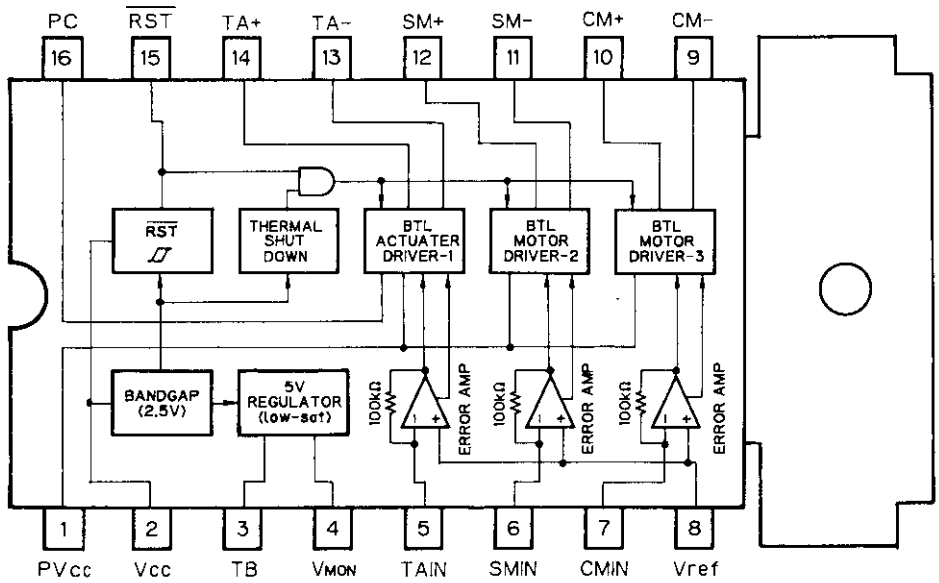
*CXK5816M-15L



LC7881MBM



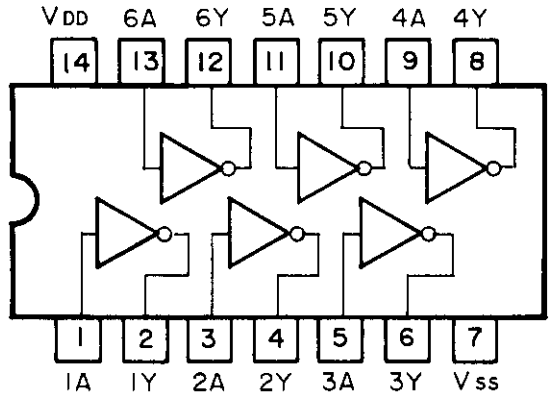
AN8377N



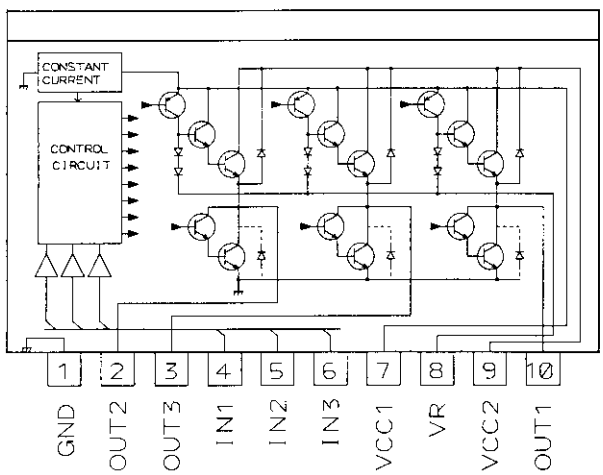
• Pin Functions (AN8377N)

Pin	Pin name	I/O	Function and Operetion
1	PVCC		Driver power supply
2	VCC		Power supply
3	TB	input	Transistor base input
4	VMON	output	5V regulator output
5	TAIN	input	Actuater driver 1 error input
6	SMIN	input	Motor driver 2 error input
7	CMIN	input	Motor driver 3 error input
8	VREF	input	Vref input
9	CM−	output	Motor driver 3 ·inverter output
10	CM+	output	Motor driver 3 ·non-inverting output
11	SM−	output	Motor driver 2 ·inverter output
12	SM+	output	Motor driver 2 ·non-inverting output
13	TA−	output	Actuator driver 1 · inverter output
14	TA+	output	Actuator driver 1 · non-inverting output
15	$\overline{RST}$	output	Reset output
16	PC		PC input

TC74HCU04AF



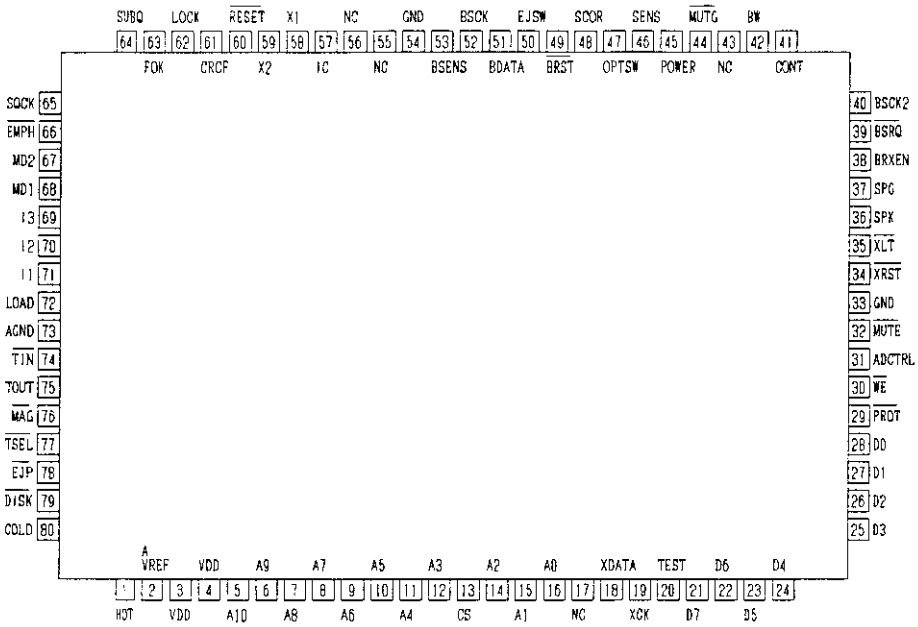
M54649L



TRUTH TABLE (M54649L)

INPUT				OUTPUT		
Pin 4 (IN1)	Pin 5 (IN2)	Pin 6 (IN3)		Pin 10 (OUT1)	Pin 2 (OUT2)	Pin 3 (OUT3)
L	L	L	H	L	L	L
H	L	L		H	L	OPEN
H	L	H		L	H	OPEN
L	H	L		H	OPEN	L
L	H	H		L	OPEN	H
H	H	L	H	L	L	L

*PD4245A



● Pin Functions (PD4245A)

Pin	Pin name	I/O	Output Format	Function
1	HOT	input		High temperature detector
2	AVREF			A/D reference voltage
3	VDD			VDD
4	VDD			VDD
5	A10			
|	|	output	C	RAM address
12	A3			
13	CS	output	C	RAM chip select
14	A2			
|	|	output	C	RAM address
16	A0			
17	NC			
18	XDATA	output	C	LSI data
19	XCK	output	C	LSI clock
20	TEST	input		Unit check mode
21	D7	input/		
|	|	output	C	RAM data
28	D0			
29	$\overline{\text{PROT}}$	output	NH	RAM standby control
30	$\overline{\text{WE}}$	output	NH	RAM write inable
31	ADCTRL	output	NH	AVref control output
32	$\overline{\text{MUTE}}$	output	NH	Line mute output
33	GND			
34	$\overline{\text{XRST}}$	output	NH	LSI reset
35	$\overline{\text{XLT}}$	output	NH	LSI data latch
36	SPK	output	NH	Spindle kick gain switching
37	SPG	output	NH	Spindle gain switching
38	BRXEN	output	C	Pioneer standard bus reception enable output.
39	$\overline{\text{BSRQ}}$	output	C	Pioneer standard bus
40	BSCK2	output	C	Pioneer standard bus shift clock output
41	CONT	output	C	Linear driver ON/OFF control output

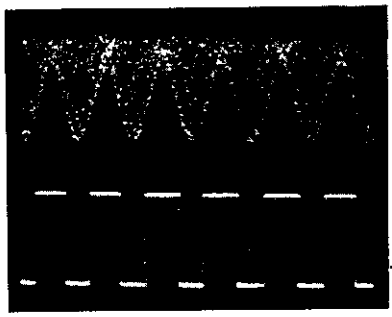
Pin	Pin name	I/O	Output Format	Function
42	BW	output	C	Spindle drive circuit range switching
43	NC			
44	$\overline{MUTG}$	output	C	DSP mute output
45	POWER	output	C	Regurator control output
46	SENS	input		CD LSI internal status monitor input
47	OPTSW	input		Optical link detector input
48	SCOR	input		Sub-code synchronization input
49	$\overline{BRST}$	input		Pioneer standard bus reset input
50	EJSW	input		Eject switch input
51	BDATA	input/ output		Pioneer standard bus data
52	BSCK	input		Pioneer standard bus shift clock input
53	BSENS			+B detect
54	GND			
55, 56	NC			
57	IC			Connect to GND
58	X1	input		Oscillator input
59	X2	output		Oscillator output
60	$\overline{RESET}$			Reset
61	CRCF	input		CR check input
62	LOCK	input		Spindle lock monitor
63	FOK	input		Focus OK
64	SUBQ	input		Sub-code data input
65	SQCK	output	NH	Sub-code clock
66	$\overline{EMPH}$	output	NH	Emphasis selector output
67	MD2	output	NH	IC701 mode control. Digital output ON/OFF
68	MD1	output	NH	IC701 mode control. Digital output ON/OFF
69 I 71	I3 I I1	output	NH	Loading motor driver control output
72	LOAD	output	NH	CD mechanism power supply on/off
73	AGND			A/D converter GND
74	$\overline{TIN}$	input		Tray position detector switch 1
75	TOUT	input		Tray position detector switch 2
76	$\overline{MAG}$	input		Magazine lock switch input
77	$\overline{TSEL}$	input		Tray position detector photosensor
78	$\overline{EJP}$			Eject position switch
79	$\overline{DISK}$			Disc detector input
80	COLD			Low temperature detector

Output Format	Meaning
C	C-MOS
NH	High resistivity N channel open drain

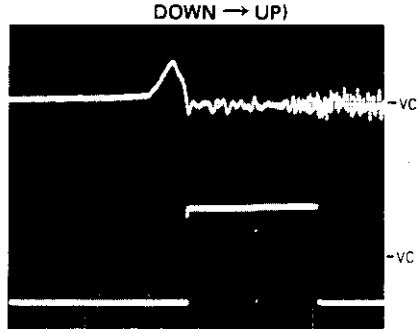
Note: 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage
G: GND VC: Pin 21 of CXA1081Q (2.5V)

• Wave Forms

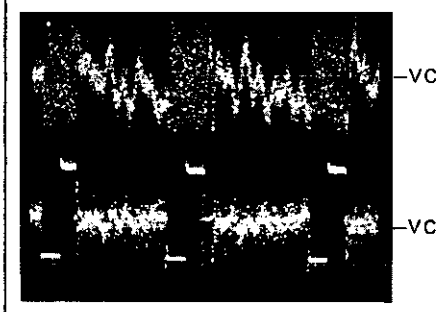
① CH1: RFO 0.4V/div.
② CH2: MIRR 2V/div. 0.4ms/div.
Test mode: Tracking open



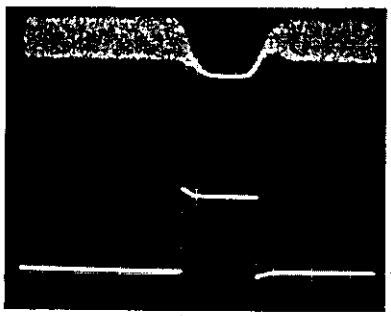
⑦ CH1: FEY 1V/div.
⑧ CH2: SENS 2V/div. 4ms/div.
Normal mode: Focus close (The lens moves DOWN → UP)



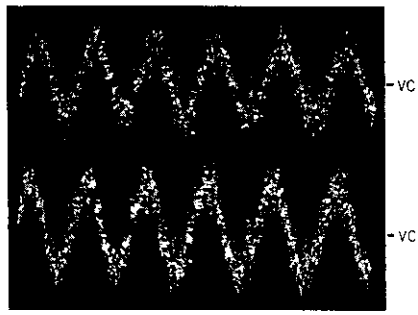
⑨ CH1: TEY 0.4V/div.
⑪ CH2: TAO 0.4V/div. 4ms/div.
Normal mode: Track search (80 track jump)



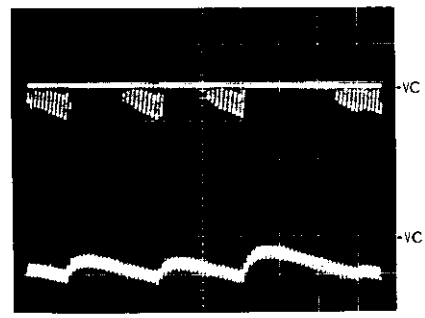
① CH1: RFO 1V/div.
③ CH2: DFCT 2V/div. 0.4ms/div.
Normal mode: The defect part passes 800μm.



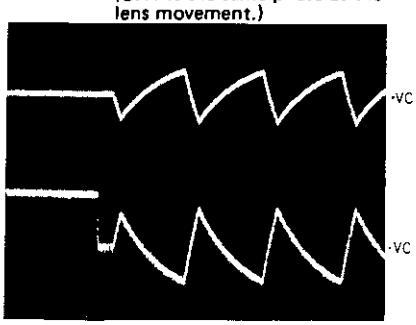
⑨ CH1: TEY 0.4V/div.
⑩ CH2: TZC 0.4V/div. 0.4ms/div.
Test mode: Tracking open



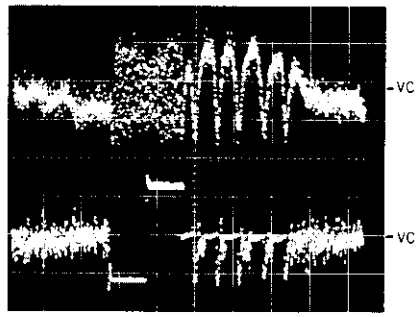
⑫ CH1: SLO 0.4V/div.
⑬ CH2: ATSC 0.02V/div. 2S/div.
Normal mode: PLAY



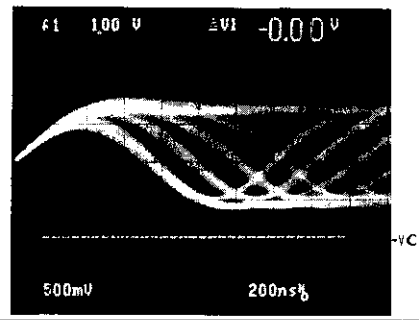
④ CH1: FEO 0.2V/div. 0.4S/div.
⑤ CH2: Pin 7 of CXA1082BQ 0.1V/div.
Test mode: Connect the FOK2 to GND. Focus search is performed. (CH1 is the same phase as the lens movement.)



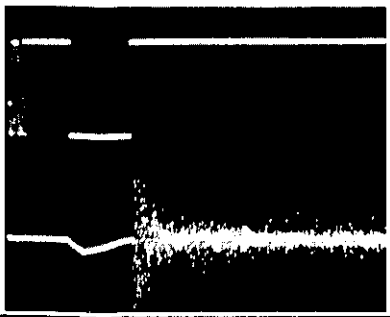
⑨ CH1: TEY 0.4V/div.
⑪ CH2: TAO 0.4V/div. 2ms/div.
Normal mode: Brake wave form when track search is performed.



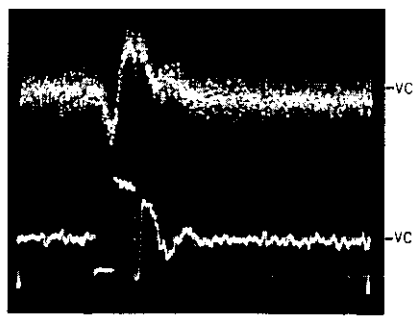
① RFO 0.5V/div. 200ns/div.
Normal mode: PLAY



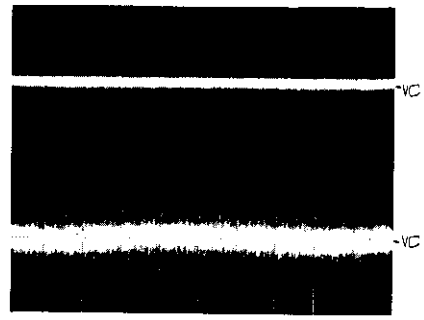
⑥ CH1: FOK2 2V/div.
④ CH2: FEO 0.4V/div. 0.2S/div.
Normal mode: Focus close



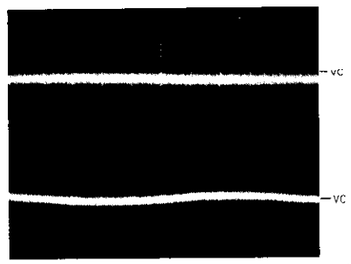
⑨ CH1: TEY 0.4V/div.
⑪ CH2: TAO 0.4V/div. 0.4ms/div.
Test mode: Single jump



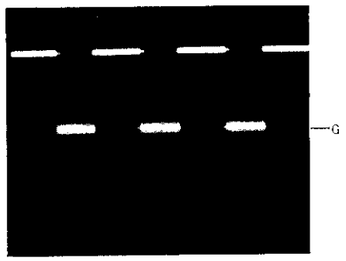
⑦ CH1: FEY 0.5V/div.
⑭ CH2: FEO2 0.5V/div. 20ms/div.
Normal mode: PLAY



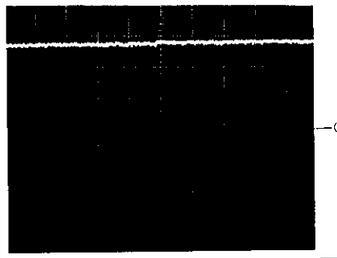
⑨ CH1: TEY 0.5V/div. 20ms/div.
⑪ CH2: TAO 0.5V/div.
Normal mode: PLAY



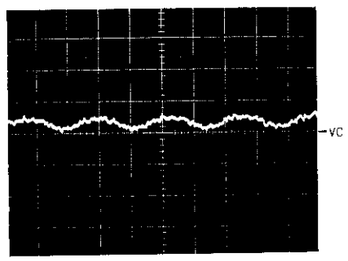
⑰ MDS 2V/div. 50μs/div.
PLAY



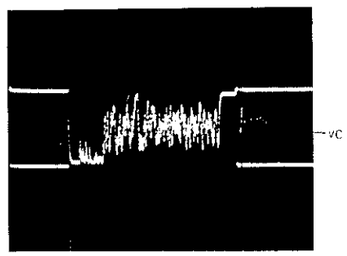
⑲ GFS 2V/div. 200μs/div.
PLAY



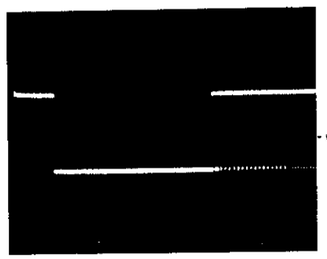
⑮ SPDLO 2V/div. 50ms/div.
PLAY



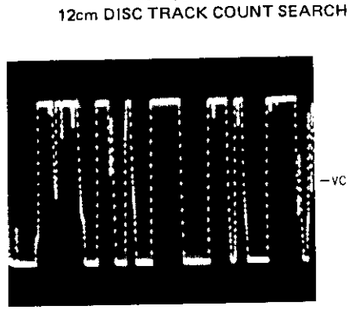
⑰ MDS 2V/div. 0.4S/div.
TRACK COUNT SEARCH



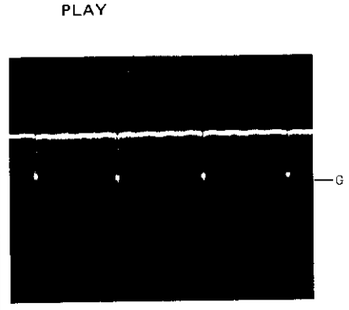
⑱ GFS 2V/div. 0.4S/div.
TRACK COUNT SEARCH



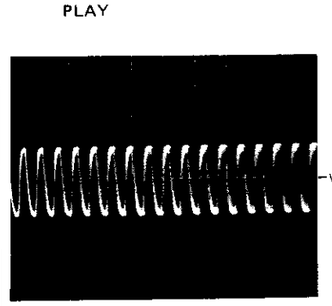
⑮ SPDLO 2V/div. 40ms/div.
12cm DISC TRACK COUNT SEARCH



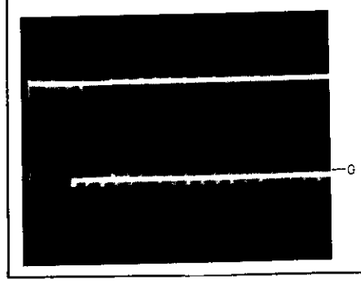
⑱ MDP 2V/div. 200μs/div.
PLAY



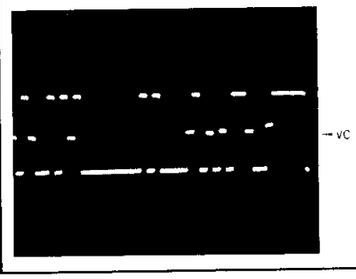
⑳ VCOO 2V/div. 0.2μs/div.
PLAY



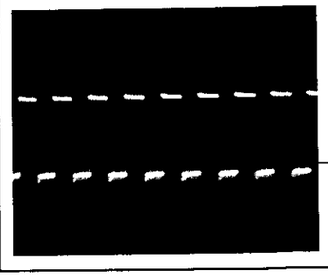
⑯ EFM 2V/div. 0.5μs/div.
PLAY



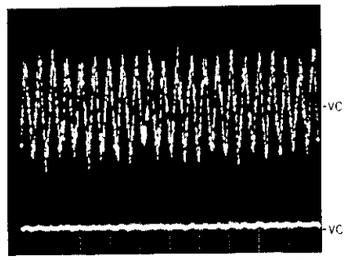
⑱ MDP 2V/div. 10ms/div.
TRACK COUNT SEARCH



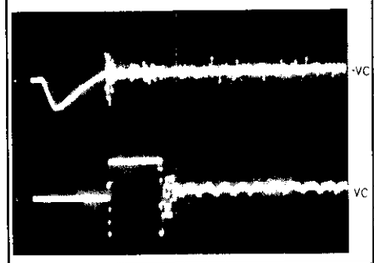
㉑ PLCK 2V/div. 0.2μs/div.
PLAY



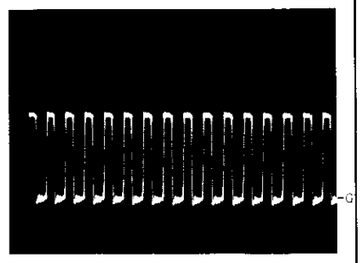
⑨CH1 : TEY 0.4V/div. 0.2ms/div.
⑪CH2 : TAO 0.4V/div.
TRACK COUNT SEARCH



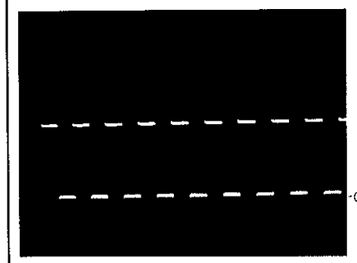
⑭CH1 : FEO2 1V/div. 0.2S/div
⑮CH2 : SPDLO 1V/div.
After 8cm disc loaded



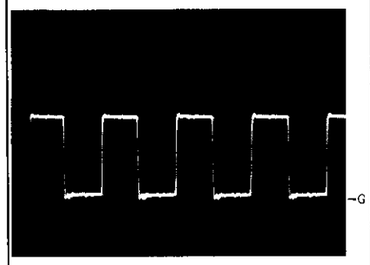
㉗BCLK2(IC704 Pin 9)
2V/div. 0.2μs/div.



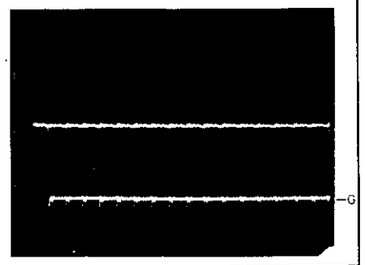
㉙LRCK(IC704 Pin 6)
2V/div.5μs/div.



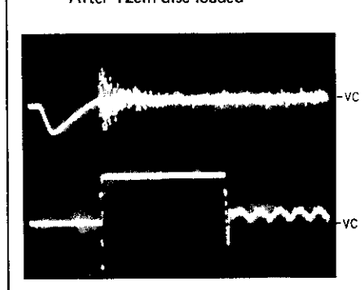
㉓BCLK1(IC703 Pin 7)
2V/div. 0.2μs/div.



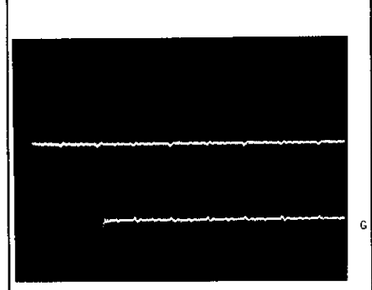
㉘DATA2(IC704 Pin 8)
2V/div. 0.2μs/div.



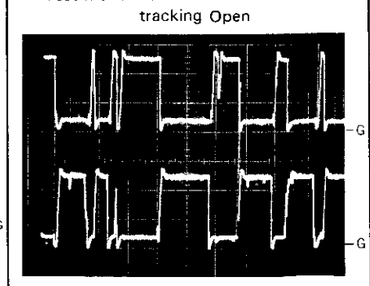
⑭CH1 : FEO2 1V/div. 0.2S/div.
⑮CH2 : SPDLO1V/div.
After 12cm disc loaded



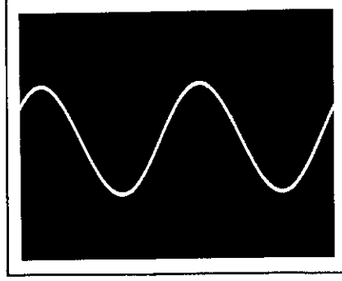
㉕DATA1(IC703 Pin 6)
2V/div. 0.2μs/div.



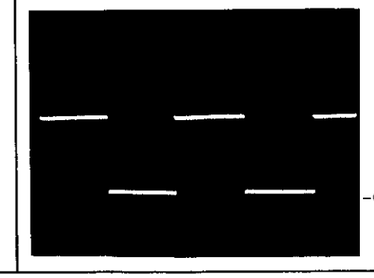
㉚ CH1: S+
㉛ CH2: S− 2V/div. 20ms/div.
Test mode: Focus close
tracking Open



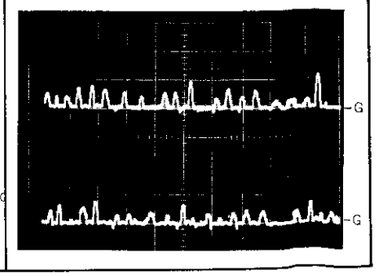
㉔L or R out 0.5V/div. 0.2ms/div.
PLAY (When 1kHz FS)



㉖LRCK1(IC703 Pin 5)
2V/div. 5μs/div.



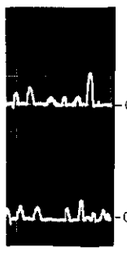
㉜ CH1: T+
㉝ CH2: T− 1V/div. 0.2ms/div.
Normal mode: PLAY



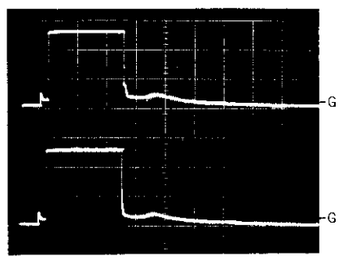
s/div.

en

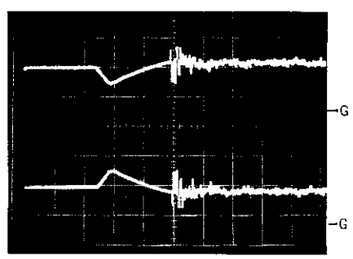
s/div.



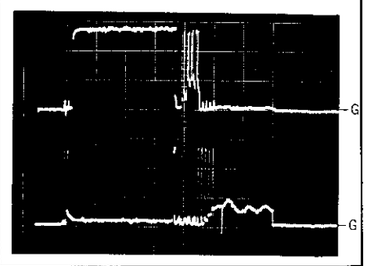
㉞ CH1: F+
㉟ CH2: F−
2V/div. 0.5S/div.
Regulator ON/OFF



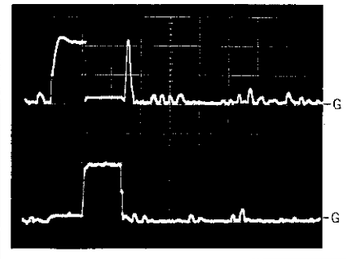
㉞ CH1: F+
㉟ CH2: F−
5V/div. 0.2S/div.
Focus close



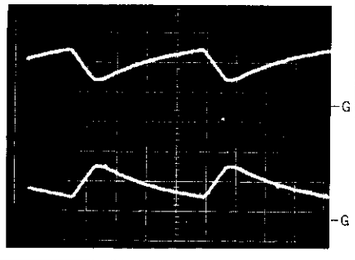
㊱ CH1: C+
㊲ CH2: C−
2V/div. 0.5S/div.
Normal mode: TNO1→TNO23 jump



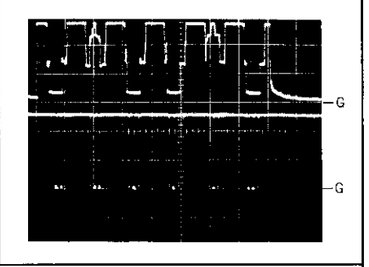
㉜ CH1: T+
㉝ CH2: T−
2V/div. 0.2ms/div.
Single jump forward



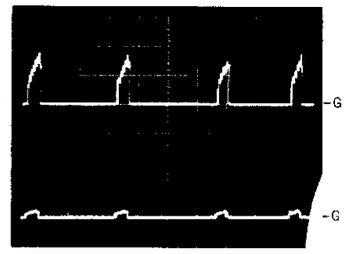
㉞ CH1: F+
㉟ CH2: F−
5V/div. 0.2S/div.
Search



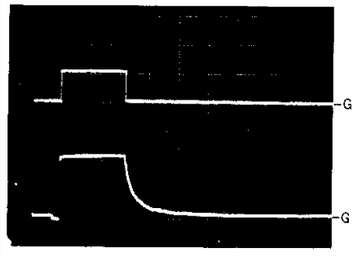
㊵ CH1: DISC
㊶ CH2: TIN
2V/div. 20ms/div.
Tray 1, 3, 4, 6: DISC (12cm DISC)
Tray 2, 5 : NO DISC



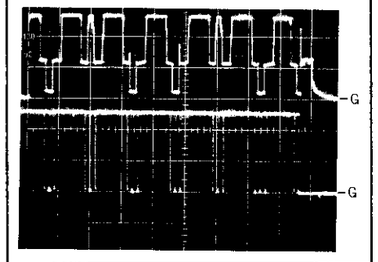
㊱ CH1: C+
㊲ CH2: C−
1V/div. 2S/div.
Normal PLAY



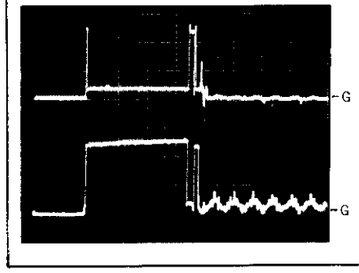
㊳ CH1: CONT
㊴ CH2: VD
5V/div. 0.5S/div.
Normal mode: Power ON/OFF



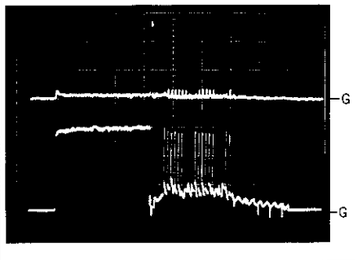
㊵ CH1: DISC
㊶ CH2: TIN
2V/div. 20ms/div.
Tray 1, 3, 4, 6: DISC (8cm DISC)
Tray 2,5 : NO DISC



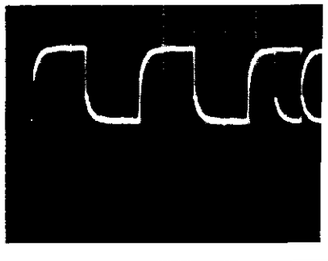
㉚ CH1: S+
㉛ CH2: S−
2V/div. 0.2S/div.
Normal mode: Power ON



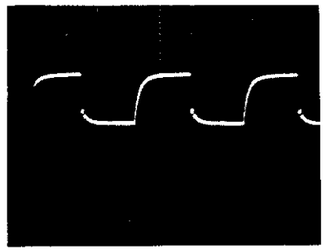
㊱ CH1: C+
㊲ CH2: C−
2V/div. 0.5S/div.
Normal mode: TNO23→TNO1 jump



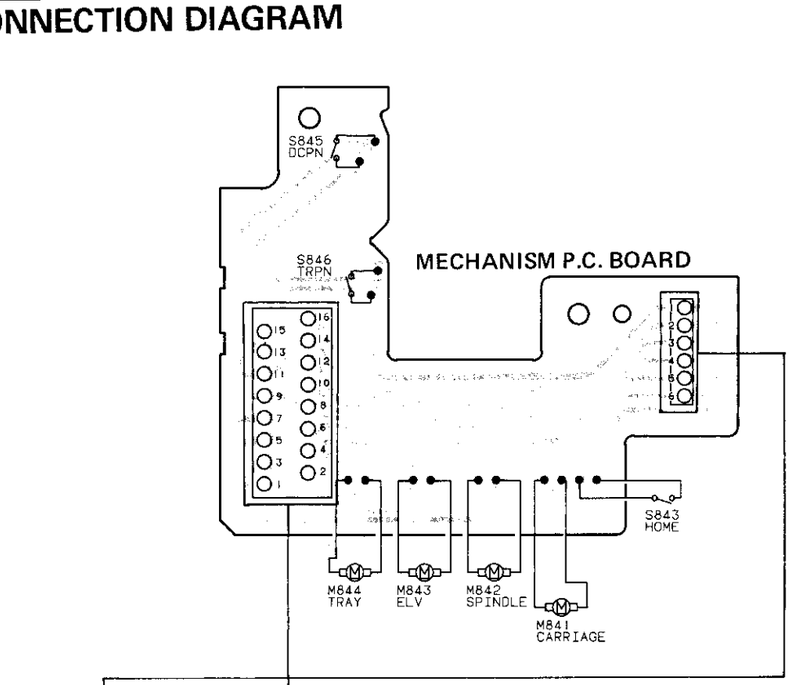
㊷ DOTX 2V/div. 0.2μs/div.

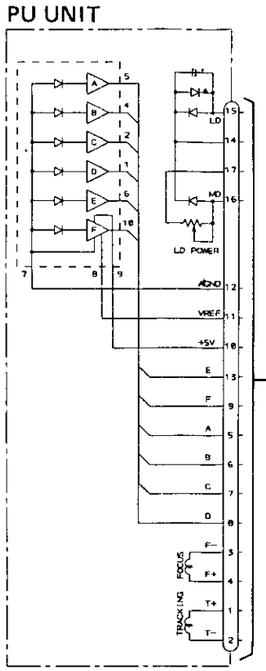


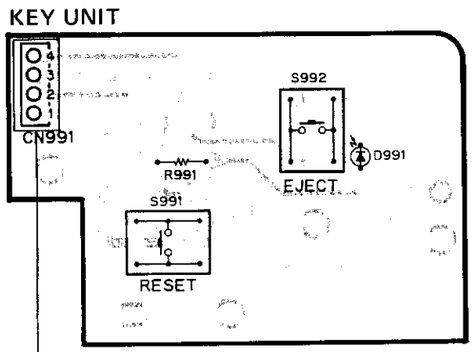
㊸ DOK 2V/div. 0.2μs/div.

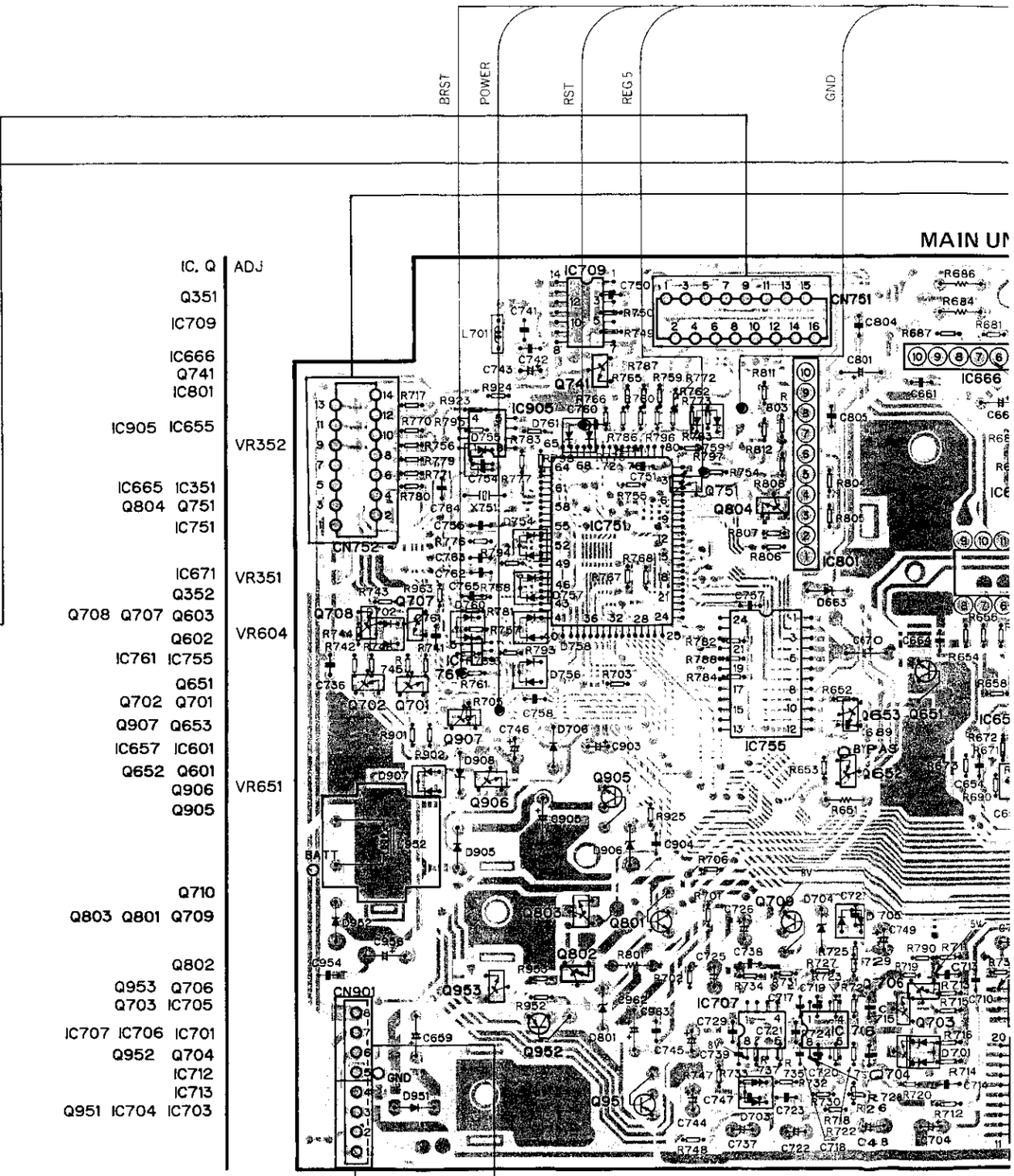


7. CONNECTION DIAGRAM









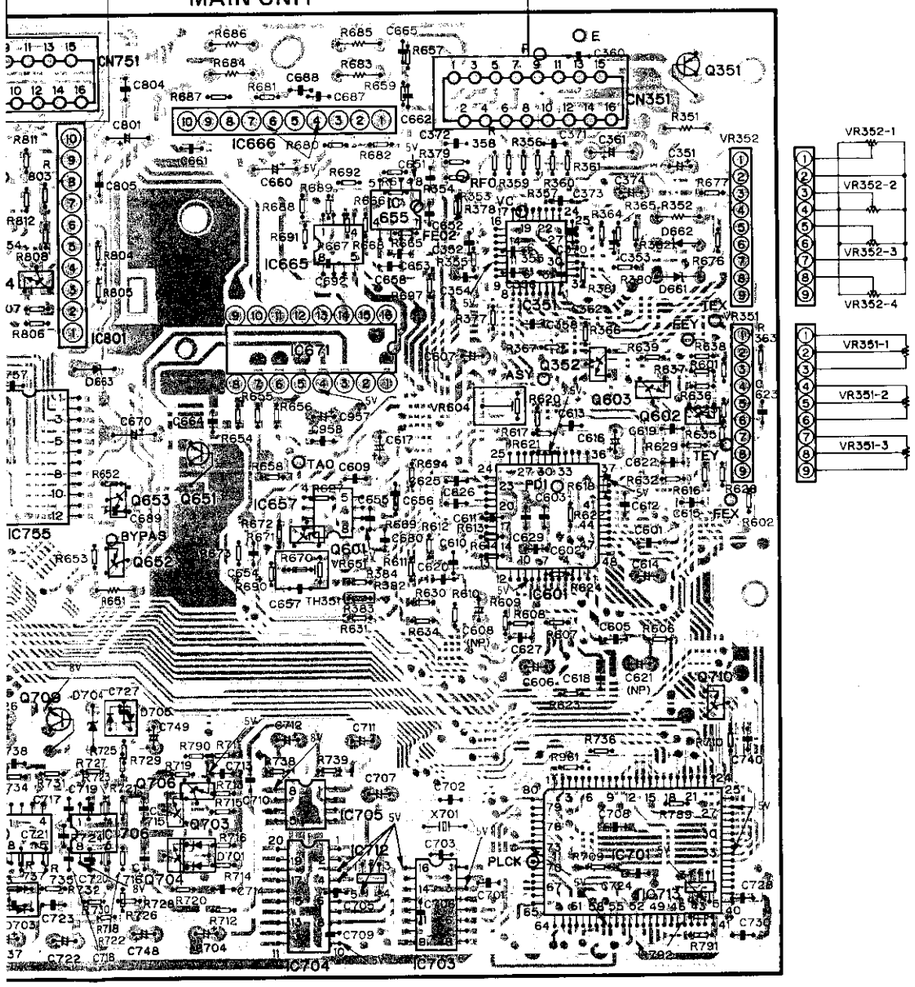
A

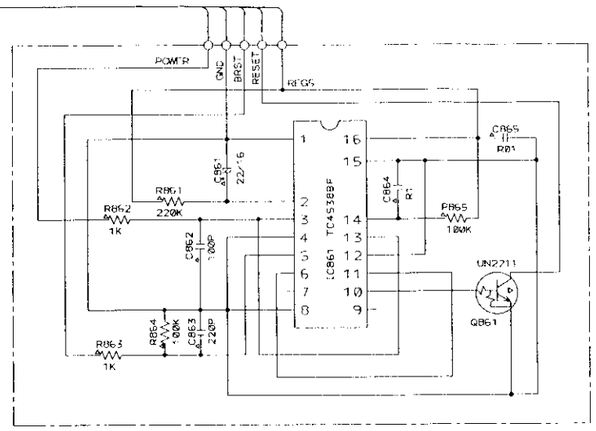
B

C

D

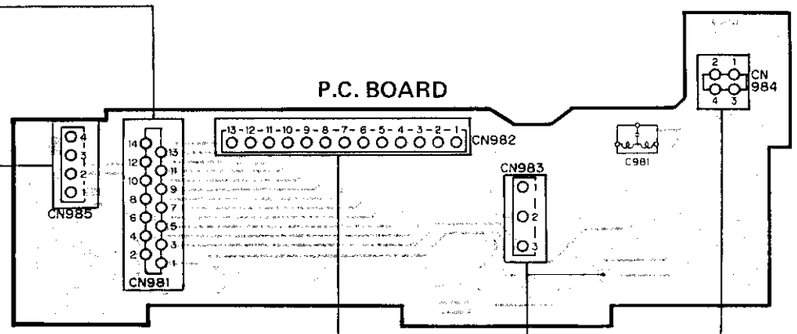
MAIN UNIT

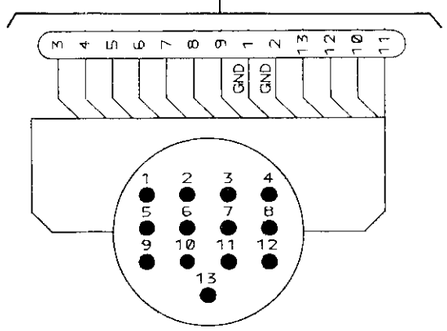


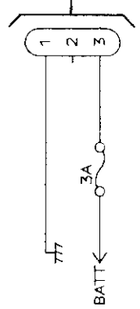


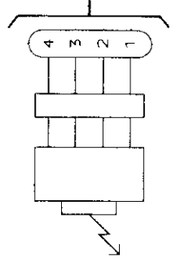
LOGIC UNIT

P.C. BOARD



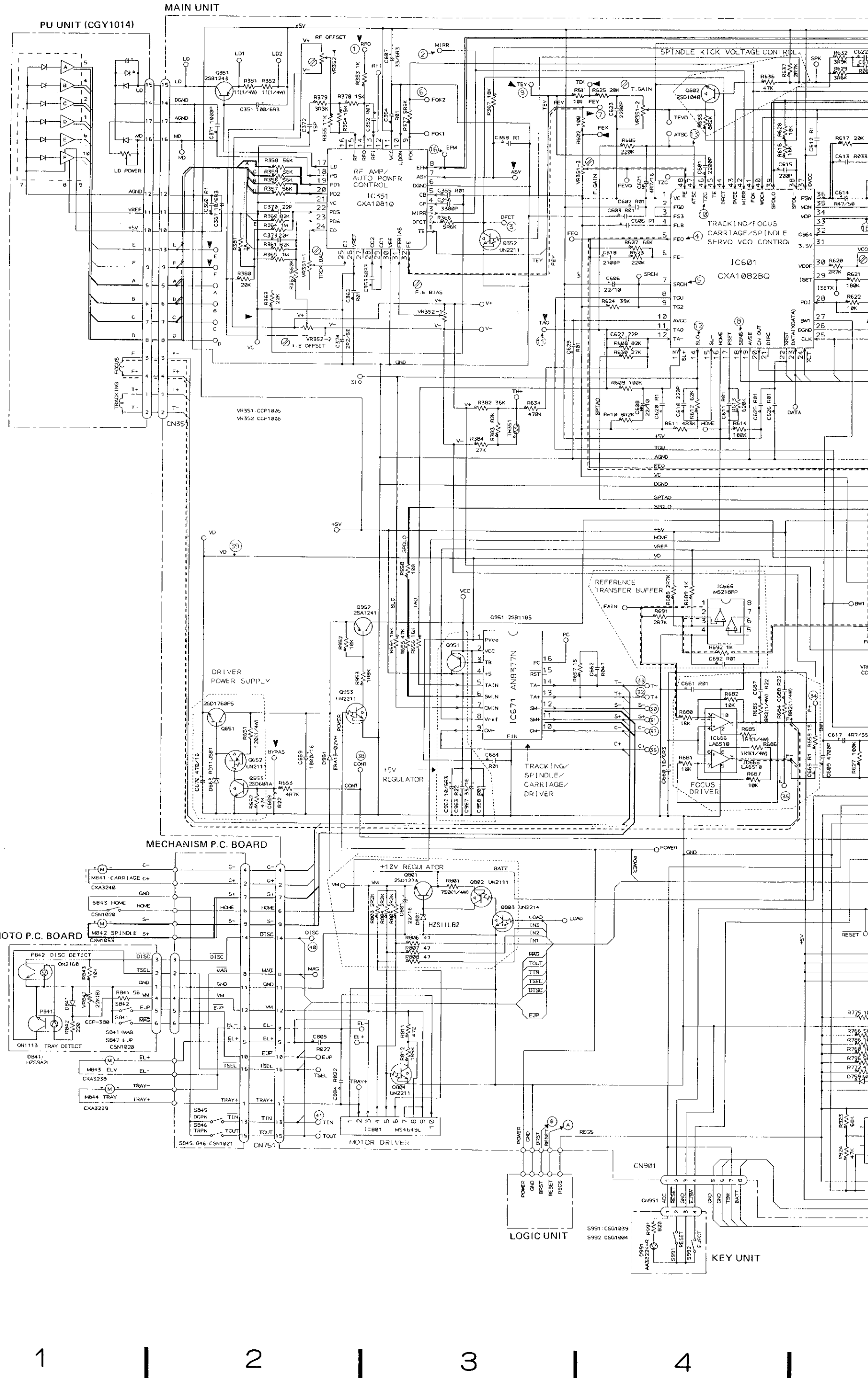






DIGITAL OUTPUT

8. SCHEMATIC CIRCUIT DIAGRAM



SPINDLE KICK VOLTAGE CONTROL

TRACKING/FOCUS CARRIAGE/SPINDLE SERVO VCO CONTROL

IC601
CXA1082BQ

IC701
CXD1167Q

DIGITAL SIGNAL PROCESSOR

DIGITAL FILTER

IC712
TC4S3U69F

IC703
SM5807ES-M

IC713
TC4S30F

ANALOG FILTER
D701·MA151WA-MN

REFERENCE TRANSFER BUFFER

VREF BUFFER

IC655 1/2
M5218FP

IC655 2/2
M5218FP

FOCUS OFFSET

FOCUS LOW END EQUALIZER

IC657 1/2
M5218FP

IC657 2/2
M5218FP

TRACKING LOW END EQUALIZER

+8V REGULATOR

Q709
2SD1859

DIGITAL OUT

IC671
AN8377N

TRACKING/SPINDLE/CARRIAGE/DRIVER

FOCUS DRIVER

IC666
LA6510

IC751
PD4245A

SYSTEM CONTROLLER

IC761
TC4S71F

IC755
CXK5816M-15L

SHIFT REGISTER

LOGIC UNIT

KEY UNIT

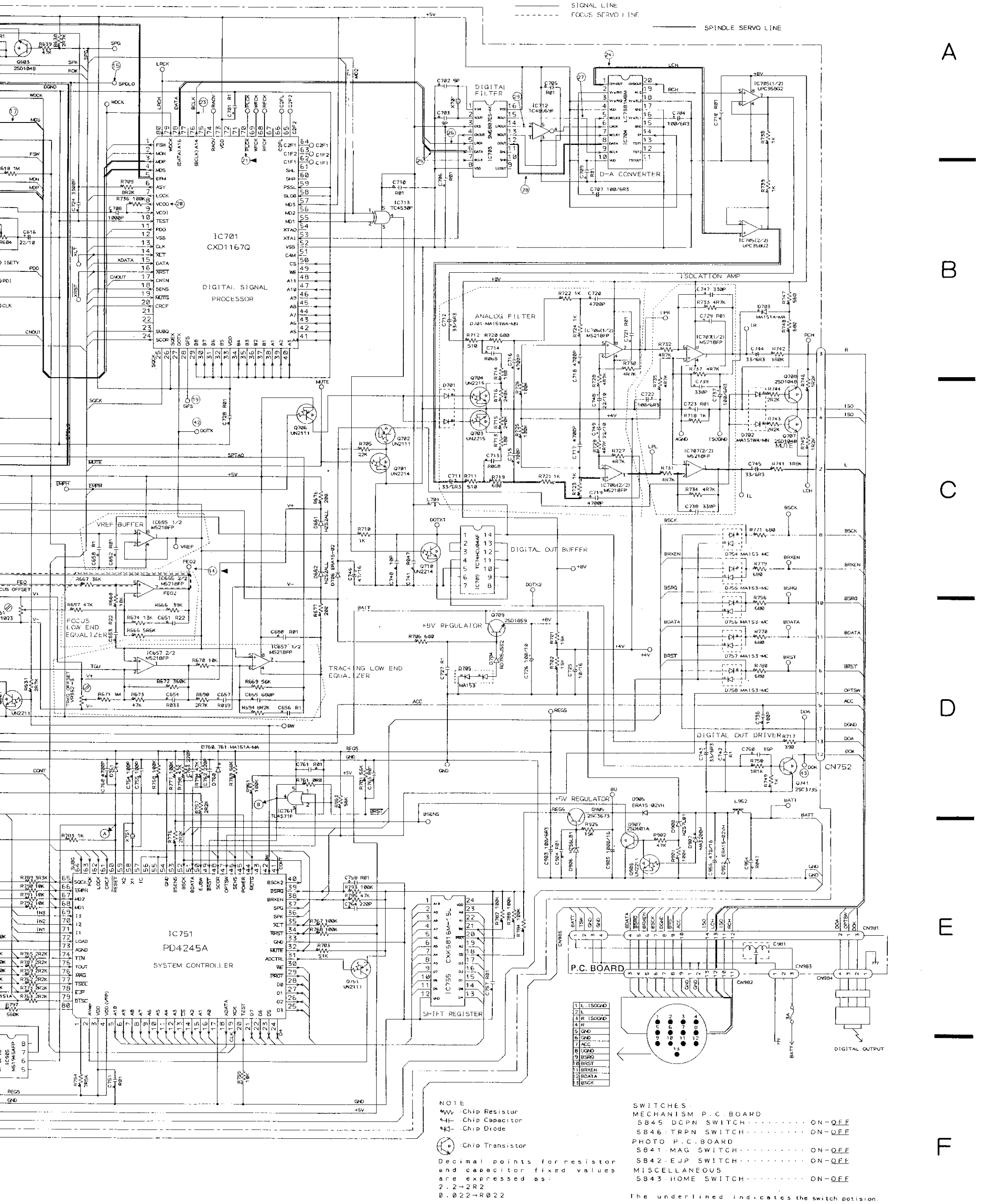
CN901

CN991

S991 CSG1039
S992 CSG1004

NOTE:
Chip Resistor
Chip Capacitor
Chip Diode
Chip Transistor

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



NOTE
- Chip Resistor
- Chip Capacitor
- Chip Diode
- Chip Transistor

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

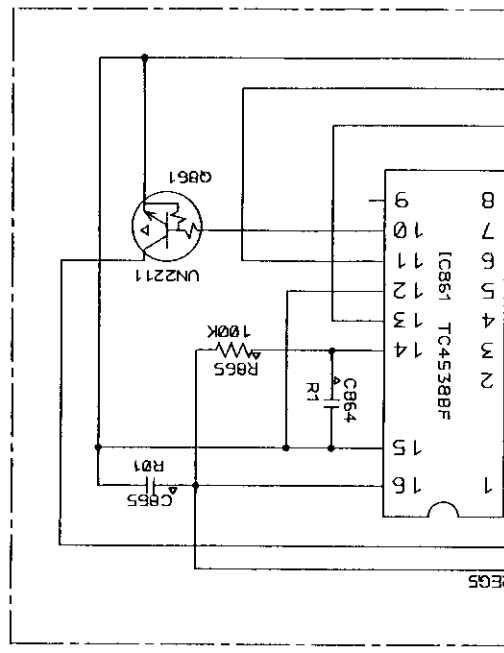
SWITCHES
MECHANISM P.C.BOARD
- S845 DCPN SWITCH ..... ON-OFF
- S846 TRPN SWITCH ..... ON-OFF

PHOTO P.C.BOARD
- S841 MAG SWITCH ..... ON-OFF
- S842 EJP SWITCH ..... ON-OFF

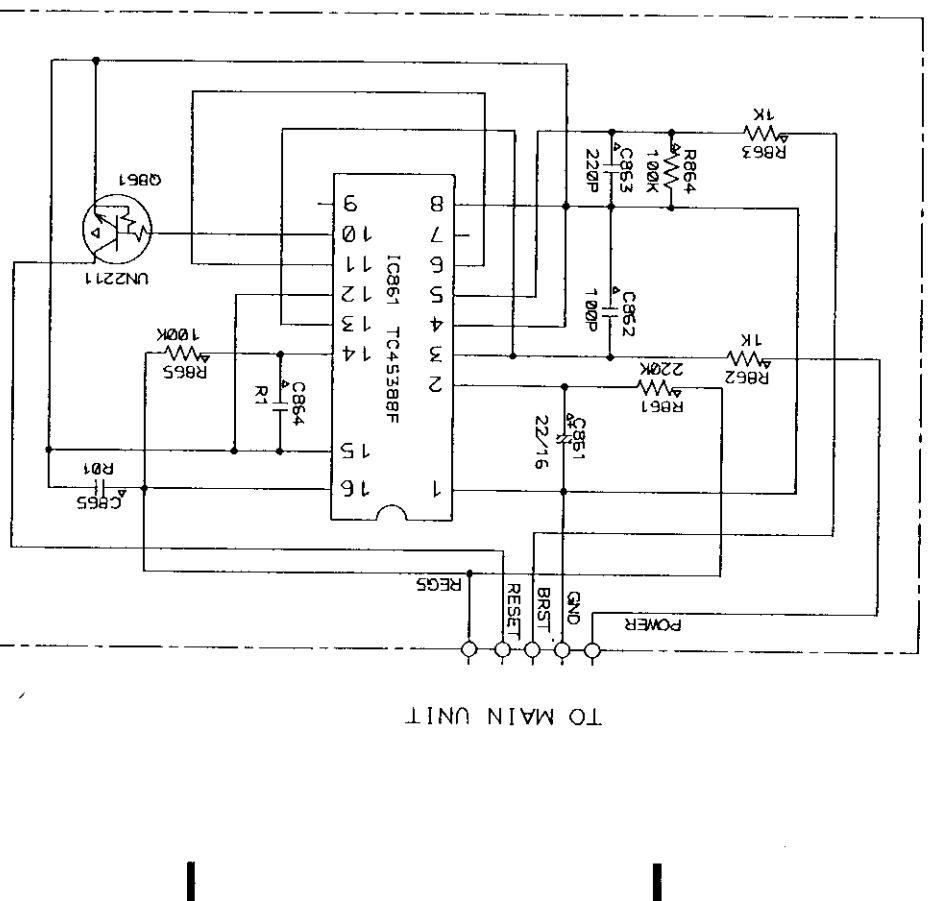
MISCELLANEOUS
- S843 HOME SWITCH ..... ON-OFF

The underlined indicates the switch potision.

Fig. 46



9. CD MECHANISM UNIT EXPLODED VIEW



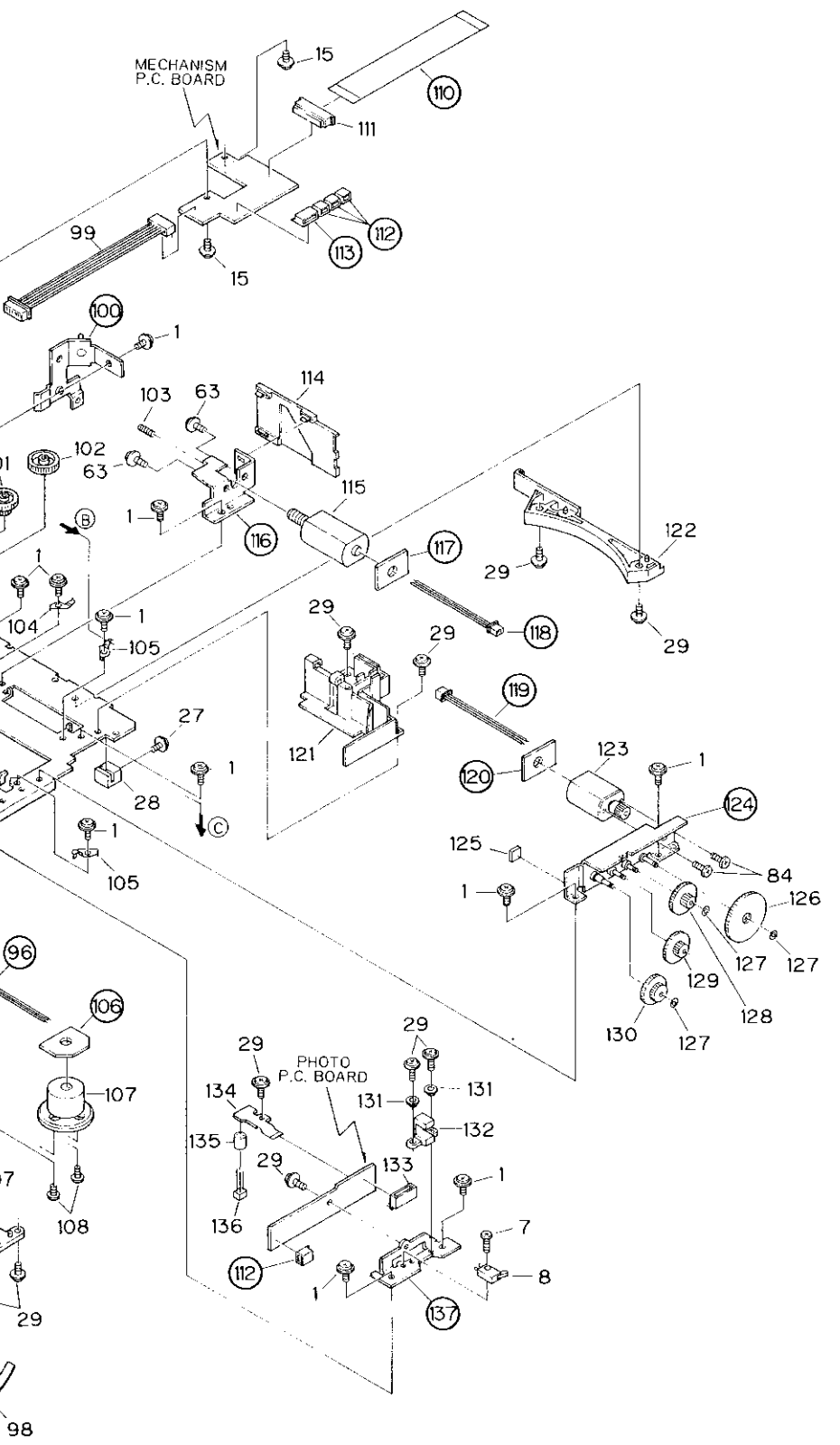


Fig. 47

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

- **Parts List**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	PMS20P030FMC	46	PU Unit	CGY1014
2	Frame		47	Shaft	
3	Spring	CBH1324	48	Spring	CBH1106
4	Spring Holder	CNC3054	49	Luck	CNV1513
5	Connector		50	Arm Unit	
6	P.C. Board		51	Washer	YE20FUC
7	Screw	CBA1070	52	Washer	YE25FUC
8	Switch	CSN1020	53	Lever Unit	
9	EJ Spring	CBH1319	54	Arm	
10	Clamper		55	Bracket Unit	
11	Magazine Holder Unit		56	Lever	
12	Spring	CBH1320	57	Cam Arm	CNV2354
13	Roller	CLA1756	58	Disc UP Collar	
14	Arm	CNV2575	59	Disc UP Arm	CNV2353
15	Screw	CBA1075	60	Washer	CBE1026
16	Magazine Guide	CNV2369	61	Guide	
17	Screw	CBA1077	62	Bracket Unit	
18	Magazine Holder		63	Screw	PMS20P025FMC
19	Damper Unit	CXA3242	64	Holder	CNV2370
20	Magazine Guide	CNV2368	65	Disc UP Spring	CBH1323
21	Arm	CNV2352	66	Disc UP Guide Unit	CXA3236
22	Washer	YE15FUC	67	Sheet	CNM2552
23	Side Frame Unit		68	Guide	CNV1970
24	Roller	CLA1518	69	Bail	CNR1079
25	Stopper	CNT1038	70	Spacer	
26	Cushion		71	Bracket Unit	
27	Screw	CBA1132	72	Arm Unit	
28	Stopper	CNT1039	73	Spring	CBH1104
29	Screw	CBA1080	74	Spacer	CNV1844
30	Arm Guide	CNV2372	75	CRG Holder	CNV2377
31	Chassis Unit		76	Belt	CNT1020
32	Tray Stopper Unit		77	Screw Unit	CXA2375
33	ELV Spring	CBH1322	78	Shaft Cover	
34	Spring	CBH1321	79	CRG Holder	CNV2378
35	Clamper	HEF-102	80	P.C. Board	
36	Bracket Unit		81	Motor Unit(Carriage)	CXA3240
37	Bracket Unit		82	Connector	
38	Screw	CBA1062	83	P.C. Board	
39	Holder Unit		84	Screw	CBA-098
40	Cushion	CNV1863	85	Spring	CBH1335
41	Screw	CLA1319	86	8cm Guide Arm	
42	Holder	CNC1736	87	Sheet	
43	Spring	CBH1105	88	CRG Bracket	
44	Holder	CNV1512	89	Switch	CSN1021
45	Shaft		90	Cam Gear Bracket	

Mark	No.	Description	Part No.
	91	Cam Gear	CNV2357
	92	Cam Lever Unit	
	93	SW Arm	CNV2374
	94	SW Arm	CNV2356
	95	Chassis Unit	
	96	Connector	
	97	Sheet	CNM2554
	98	Sheet	CNM2553
	99	Connector	CDE2699
	100	Bracket Unit	
	101	Wheel	CNV2359
	102	Gear	CNV2360
	103	Screw	CBA1135
	104	Holder	CNC1738
	105	Holder	CNC1739
	106	P.C.Board	
	107	Motor Unit(Spindle)	CXM1053
	108	Screw	HBA-258
	109	Disc Guide	CNV2366
	110	Connector	
	111	Connector	CKS1536
	112	Plug	
	113	Plug	
	114	Holder	CNV2373
	115	Motor Unit(TRAY)	CXA3239
	116	TRAY Bracket	
	117	P.C.Board	
	118	Connector	
	119	Connector	
	120	P.C.Board	
	121	Guide	CNV2376
	122	Disc Guide	CNV2367
	123	Motor Unit(ELV)	CXA3238
	124	ELV Bracket Unit	
	125	Spacer	CNT1041
	126	Gear	CNV2362
	127	Washer	CBF1038
	128	Gear(Brack)	CNV2363
	129	Gear(White)	CNV2371
	130	Gear(White)	CNV2364
	131	Bush	CNV1562
	132	Photo-Interrupter	ON1113
	133	Plug	CKS1053
	134	P.C.Board	CNP2307
	135	Spacer	CNV2365
	136	Photo-Interrupter	ON2160
	137	TSEL Bracket	
	138	Stopper	CNT1049
	139	Screw	CBA1147
	140	Collar	
	141	Collar	
	142	Roller	CLA1846

10. CHASSIS EXPLODED VIEW

Mark	No.	Description	Part No.
	1	Nut	NR60FZK
	2	Screw	HMF40P080FZK
	3	Angle	CNB1303
	4	Screw	CBA1151
	5	Screw	CBA1150
	6	Screw	CBA1146
	7	Pin	CLA1822
	8	Base	
	9	Screw	CBA1094
	10	Screw	CBA1141
	11	Damper Unit	CXA3594
	12	Screw	PMS30P050FZK
	13	Grille Unit	CXA3496
	14	Cushion	CNM2760
	15	Spring	CBH1308
	16	Lever	CNV2310
	17	Spacer	
	18	Button	CAC2484
	19	Spacer	
	20	Shaft	
	21	Shaft	
	22	Spring	CBH1360
	23	Spring	CNC3277
	24	Door	CAT1323
	25	Gear	CNV2287
	26	Damper Unit	CXA3253
	27	Screw	BPZ20P080FMC
	28	Screw	BMZ26P040FZK
	29	Spring	CBH1341
	30	Spring	CBH1309
	31	Chassis Assy	
◉	32	Eject Unit	CWM2164
	33	Screw	BPZ26P060FMC
	34	Plug	
	35	Connector	CKS1940
	36	Holder	
	37	Plug	CKS-460
	38	Connector	
	39	Plug	CKS-470
	40	Connector	CKS1566
	41	Screw	BMZ26P050FZK
	42	P.C.Board	
◉	43	CD Mechanism Unit	CXK2300
	44	Bracket	
	45	Holder	
	46	Connector	CDE2949
	47	Screw	BMZ20P040FMC
	48	Screw	PMS26P040FMC
◉	49	Main Unit	CWX1227
	50	Cord (US, ES)	CDE1791
		Cord (EW)	CDE2446
	51	Cord	CDE2878
	52	Stopper	CNT1042
	53	Connector	CKS1537
	54	Screw	JGZ17P050FMC
	55	Heat Sink	
	56	Connector	CKS1536
	57	Connector	CKS1534
	58	Screw	CBA1145
	59	Plug	
	60	Bracket	
	61	·····	
	62	Screw	PMS26P080FMC
	63	Connector	
	64	Case	CNB1352
	65	Case (UC, ES)	CNB1351
		Case (EW)	CNB1356
◉	66	Logic Unit	CWX1308
	67	Screw	BMZ26P050FMC
	68	Screw	BMZ30P050FZK

• Chassis

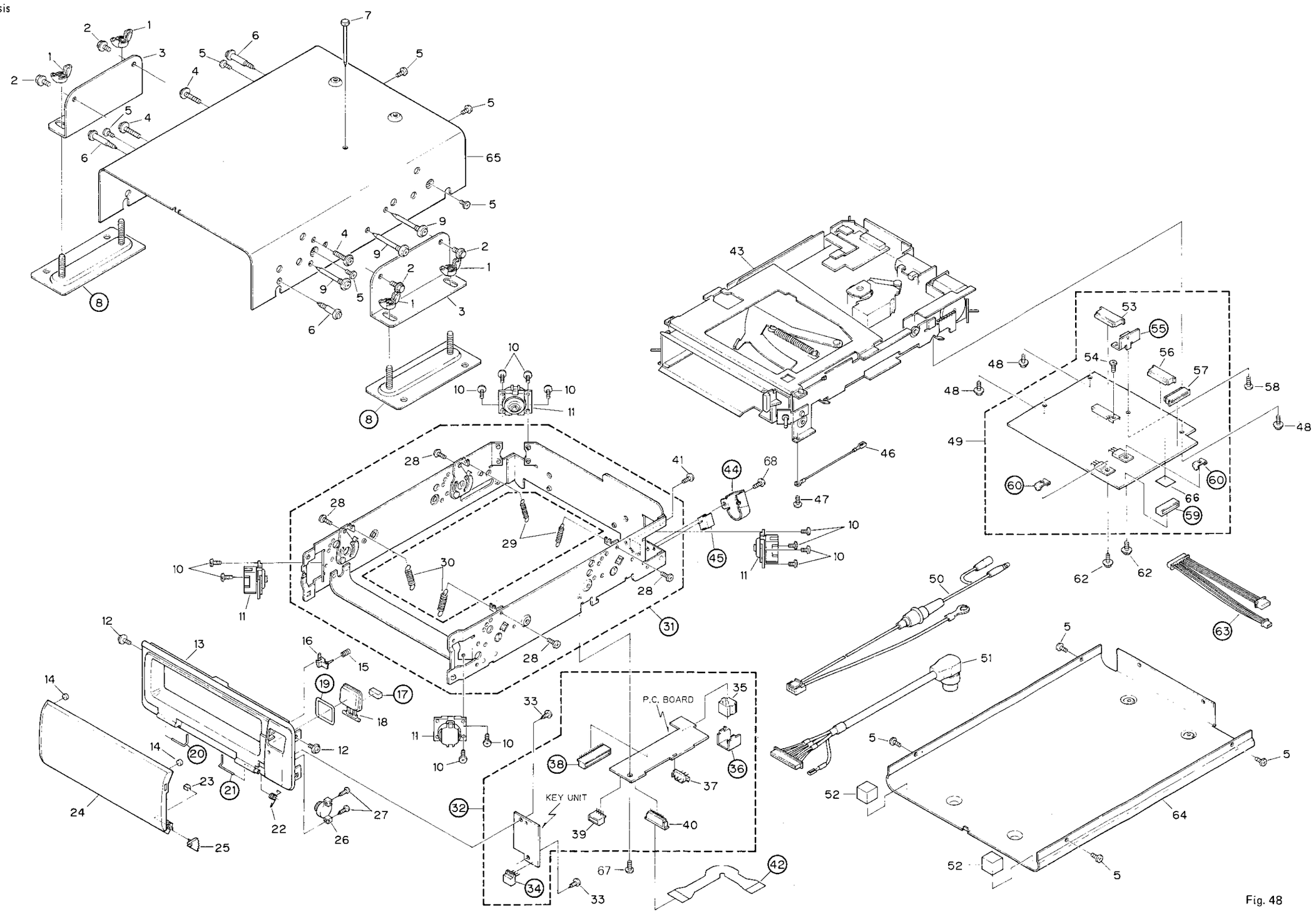


Fig. 48

11. MAGAZINE (PXA1297) EXPLODED VIEW

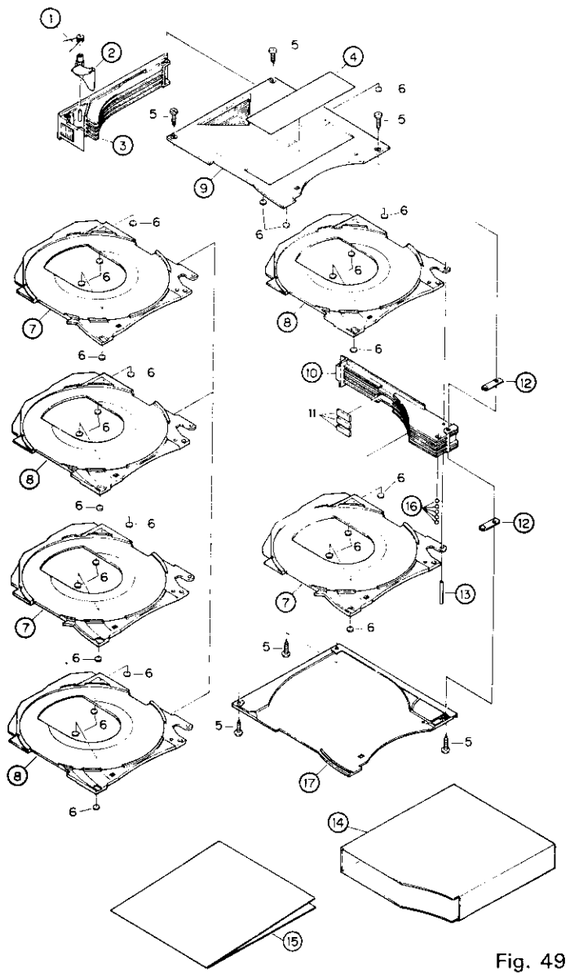


Fig. 49

• Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Spring M		11	Cushion Rubber	PNM1011
2	Lever		12	Spring	
3	Case F		13	Shaft	
4	Caution Label		14	PP Case	
5	Screw	BPZ20P080FZK	15	Label	
6	Cushion	PED-049	16	Ball	
7	Tray A		17	Case B	
8	Tray B				
9	Case T				
10	Case L				

12. PACKING METHOD

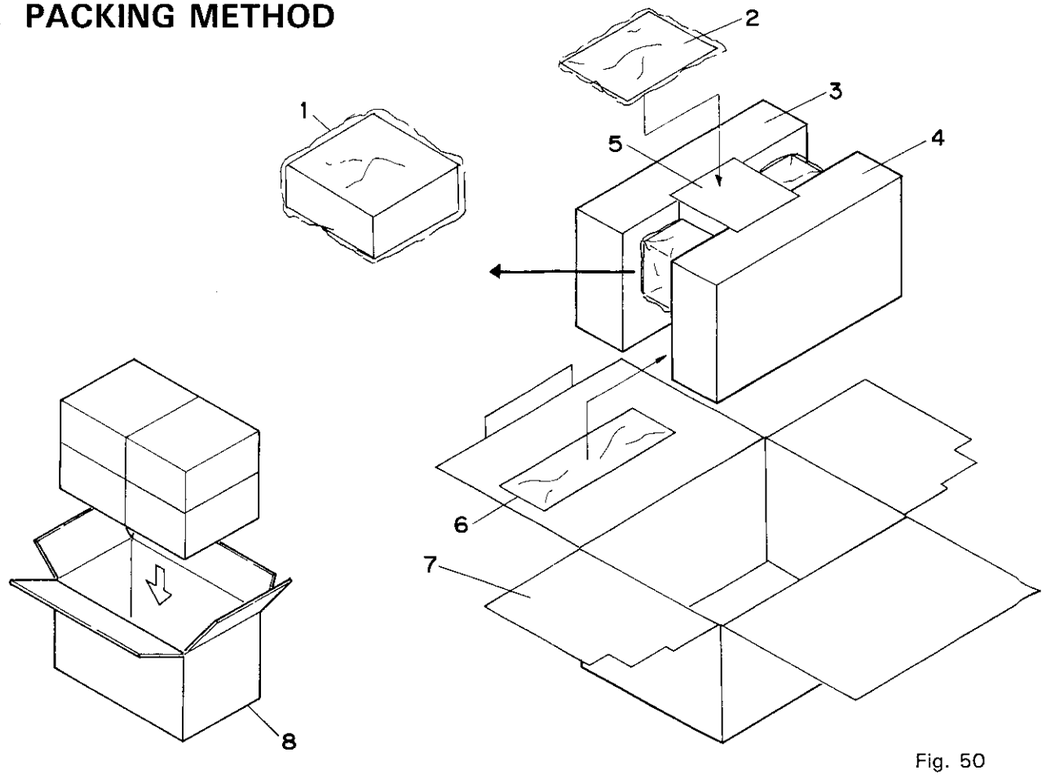


Fig. 50

PACKING METHOD (CDX-M50/UC)

• Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Cover	CEG1082	6-4-4	Screw (× 4)	HMF40P080FZK
2	Owner's Manual	CRD1354	6-4-5	Nut (× 1)	NF40FMC
	Cushion		6-4-6	Nut (× 1)	NF50FMC
	Card		6-4-7	Nut (× 4)	NF60FZK
3	Styrofoam	CHP1312	6-4-8	Nut (× 4)	NR60FZK
4	Styrofoam	CHP1313	6-4-9	Screw (× 1)	PMB50Y160FMC
5	Magazine	PXA1297	6-4-10	Washer (× 1)	WS40FMC
6	Accessory Assy	CEA1518	6-5	Angle (× 2)	CNB1303
6-1	Cord	CDE1790	6-6	Base (× 2)	
6-2	DIN Cord	CDE2862	7	Carton	CHG1805
6-3	Strap	CNF-111	8	Contain Box	CHL1805
6-4	Screw Assy				
6-4-1	Screw for Strap (× 1)	CBA-028			
6-4-2	Screw (× 5)	CBA1069			
6-4-3	Screw (× 4)	HMB60P500FZK			

NSP: Non Spare Part

	CDX-M50/UC	CDX-M50/EW	CDX-M50/ES
Mark No. Description	Part No.	Part No.	Part No.
2 Owner's Manual	CRD1354	CRD1355	CRD1356
	----	CRD1385	----
Card	NSP	NSP	----
6 Accessory Assy	CEA1518	CEA1519	CEA1518
6-1 Cord	CDE1790	CDE2447	CDE1790
7 Carton	CHG1805	CHG1806	CHG1807
8 Contain Box	CHL1805	NSP	NSP

Owner's Manual Part No.	Language
CRD1354	English, French
CRD1355	English, French, German, Spanish
CRD1356	English, French, Spanish, Arabic
CRD1385	Swedish, Norwegian, Dutch, Italian, Finnish

13. ELECTRICAL PARTS LIST

NOTE:

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

Chip Resistor

RS1/8S □□□J, RS1/10S □□□J

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

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

Unit Number :
Unit Name : Key Unit

Mark	Circuit Symbol & No.	Part Name	Part No.
D	991	LED	AA3822K
S	991	Switch(RESET)	CSG1039
S	992	Switch(EJECT)	CSG1004
R	991		RD1/4PS821JL

Unit Number :
Unit Name : P.C.Board

Mark	Circuit Symbol & No.	Part Name	Part No.
C	981		CCG-105

Unit Number :
Unit Name : Main Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
	IC 351		CXA1081Q
	IC 501		CXA1082BQ
	IC 655 657 665 705 707		M5218FP
	IC 666		LA6510
	IC 671		AN8377N
	IC 701		CXD1167Q
	IC 703		SM5807ES-M
	IC 704		LC7881MBM
	IC 705		UPC358G2
	IC 709		TC74HCU04AF

Mark	Circuit Symbol & No.	Part Name	Part No.
	IC 712		TC4SU69F
	IC 713		TC4S30F
	IC 751		PD4245A
	IC 755		CXK5816M-15L
	IC 761		TC4S71F
	IC 801		M54649L
	IC 905		M51945AFP
	Q 351		2SB1243
	Q 352 804 953	Chip Transistor	UN2211
	Q 601 905	Chip Transistor	UN2211
	Q 602 603 707 708	Chip Transistor	2SD1048
	Q 651	Chip Transistor	2SD1760F5
	Q 652 705 802	Chip Transistor	UN2111
	Q 653	Chip Transistor	2SD601A
	Q 701 803	Chip Transistor	UN2214
	Q 702 751	Chip Transistor	UN2111
	Q 703 704	Chip Transistor	UN2215
	Q 709		2SD1859
	Q 710	Chip Transistor	UN2214
	Q 741		2SC1621
	Q 801		2SD1273
	Q 905		2SC3673
	Q 907	Chip Transistor	2SD601A
	Q 951		2SB1185
	Q 952		2SA1241
	D 661 662		HZS2ALL
	D 663		RD11JSB1
	D 701	Chip Diode	MA151WA-MN
	D 702	Chip Diode	MA151WA-MN
	D 703 759 760 761	Chip Diode	MA151A-MA
	D 704		RD7R5JSB2
	D 705 754 755 756 757 758	Chip Diode	MA153-MC
	D 706 905 951 952		ERA15-02VH
	D 801		HZS11LB2
	D 906		HZS6LB1
	D 907	Chip Diode	MA3200M
	D 908		HZS7LB1
	L 701	Inductor	CTF1006
	L 952	Choke Coil	CTH1074
	TH 351	Thermister	CCX1006
	X 701	Crystal Resonator	CSS1052
	X 751		CSS1038
	VR 351	Semi-fixed	CCP1005
	VR 352	Semi-fixed	CCP1006
	VR 604	Semi-fixed	CCP1015
	VR 651	Semi-fixed	CCP1023

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 351 352		RD1/4PS110JL
	R 353 381 689 721 722 723 724 749 783		RS1/10S102J
	R 354 378 701 702		RS1/10S153J
	R 355		RS1/10S113J
	R 356 357 358 359 781		RS1/10S563J
	R 360 361 608		RS1/10S823J
	R 362		RS1/10S564J
	R 363		RS1/10S223J
	R 364 365 618 671		RS1/10S105J
	R 366 377		RS1/10S562J
	R 367 628		RS1/10S183J
	R 379		RS1/10S332J
	R 380 617 625		RS1/10S203J
	R 382 667		RS1/10S363J
	R 383		RS1/10S823J

Mark	Circuit Symbol & No.	Part Name	Part No.
	R 384		RS1/10S273J
	R 601 602		RS1/10S101J
	R 606		RS1/10S224J
	R 607 923		RS1/10S683J
	R 609 614 627 725 726 758 760 767		RS1/10S104J
	R 610 709		RS1/10S822J
	R 611		RS1/10S432J
	R 612		RS1/10S623J
	R 613		RS1/10S624J
	R 616		RS1/10S163J
	R 620 631 637 638 691		RS1/10S272J
	R 621		RS1/10S184J
	R 622 670 680 681 682 755 791 792		RS1/10S103J
	R 623		RS1/10S224J
	R 624 666		RS1/10S393J
	R 629		RS1/10S362J
	R 630		RS1/10S273J
	R 632		RS1/10S392J
	R 634		RS1/10S474J
	R 635 694		RS1/10S822J
	R 636 639 673 924		RS1/10S473J
	R 651		RD1/4PS121JL
	R 652 655 697 772 794 795 798 902		RS1/10S473J
	R 653		RS1/10S472J
	R 654 656		RS1/10S163J
	R 657		RS1/10S150J
	R 658		RS1/10S101J
	R 659		RS1/10S150J
	R 665		RS1/10S562J
	R 668		RS1/10S183J
	R 669 766 769 796 963		RS1/10S563J
	R 672		RS1/10S364J
	R 674		RS1/10S133J
	R 676		RS1/10S201J
	R 677		RS1/10S201J
	R 683 684		RD1/4PS8R2JL
	R 685 686		RD1/4PS181JL
	R 687 790 952		RS1/10S103J
	R 688 690		RS1/10S272J
	R 692 710 718 738 739		RS1/10S102J
	R 703		RS1/10S513J
	R 705		RS1/10S223J
	R 706 756 770 771 779 780		RS1/10S681J
	R 711 712		RS1/10S511J
	R 713 714		RS1/10S181J
	R 715 716		RS1/10S244J
	R 717		RS1/10S391J
	R 719 720 748		RS1/10S681J
	R 727 728 729 730		RS1/10S472J
	R 731 732 733 734 735 737		CCN1023
	R 736		RS1/10S104J
	R 741 742 953		RS1/10S182J
	R 743 744		RS1/10S222J
	R 745 746		RS1/10S122J
	R 747		RS1/10S561J
	R 750		RS1/10S112J
	R 754		RS1/10S752J
	R 757 759 762 763 765 773 776 787 803 804		RS1/10S222J
	R 768 775 777 782 784 786 788 793 901 961		RS1/10S104J
	R 789		RS1/10S332J

Mark	Circuit Symbol & No.	Part Name	Part No.
R	797		RS1/10S564J
R	801		RD1/4PS751JL
R	805		RS1/10S222J
R	806 807 808		RS1/10S470J
R	811		RS1/10S471J
R	812		RS1/10S152J
R	925		RS1/10S153J

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
C	351 704 707 722 737 903		CEA101M6R3LL
C	352 354 652 680 710 721 723 729 761 765		CKSQYB103K50
C	353 613 654		CKSQYB333K25
C	355 362 602 603 611 625 626 629 661 664		CKSQYB103K50
C	356 724		CKSQYB332K50
C	358 605 622 656 658 727		CKSQYB104K25
C	360 612 620 665 701 742		CKSQYB104K25
C	361 660 962		CASA100M6R3
C	370 373		CCSQCH220J50
C	371 708		CKSQYB102K50
C	372		CCSQCH150J50
C	374		CEA2R2M50LL
C	601		CKSQYB222K50
C	606 616 748 749		CEA220M10LL
C	607 743 744 745		CEA330M6R3LL
C	608		CEA220M10NPLL
C	609 760		CKSQYB472K50
C	610 615 762 763		CCSQCH221J50
C	614		CEAR47M50LL
C	617		CEA4R7M35LL
C	618		CKSQYB272K50
C	619		CKSQYB683K25
C	621		CEA4R7M16NPLL
C	623		CKSQYB222K50
C	627		CCSQCH220J50
C	651 653 687 689 963		CKSYB224K25
C	655		CCSQSL681J50
C	657		CKSQYB393K25
C	659 905	1000μF/16V	CCH1003
C	662 741		CKSQYB473K25
C	670 956		CEA471M16L2
C	688		CKSYB224K25
C	692 705 706 709 728 730 751 757 758 958		CKSQYB103K50
C	702 703		CCSQCH090D50
C	711 712		CEA330M6R3LS
C	713 714		CKSQYB683K25
C	715 716 717 718 719 720		CKSQYB472K50
C	725		CEA100M16LL
C	726		CEA101M10LL
C	736 754 755		CCSQCH101J50
C	738 747		CCSQCH331J50
C	739		CCSQCH331J50
C	740		CCSQCH100D50
C	746		CEA470M16LL
C	750		CCSQCH150J50
C	764		CCSQCH221J50
C	801		CASA220M16
C	804 805		CKSQYB223K50
C	904		CKSQYB103K50
C	954		CKSQYB473K25
C	957		CEA330M16LL

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

Mark	Circuit Symbol & No.	Part Name	Part No.
M	841	Motor Unit(Carriage)	CXA3240
M	842	Motor Unit(Spindle)	CXM1053
M	843	Motor Unit(ELV)	CXA3238
M	844	Motor Unit(Tray)	CXA3239
S	843	Switch(Home)	CSN1020
S	845 846	Switch(DCPN, TRPN)	CSN1021

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

Mark	Circuit Symbol & No.	Part Name	Part No.
D	841		HZS9A2L
P	841	Photo-Interrupter	⊖N1113
P	842	Photo-Interrupter	⊖N2160
VR	841	Semi-fixed 22kΩ(B)	CCP-380
S	841 842	Switch(MAG, EJP)	CSN1020
R	841		RD1/4PS560JL
R	842		RD1/4PS221JL
R	843		RD1/4PS103JL

Unit Number :
Unit Name : Logic Unit

Mark	Circuit Symbol & No.	Part Name	Part No.
IC	861		TC4538BF
Q	861	Chip Transistor	UN2211
R	861		RS1/10S224J
R	862 863		RS1/10S102J
R	864 865		RS1/10S104J
C	861		CSZST220M16
C	862		CCSQCH101J50
C	863		CCSQCH221J50
C	864		CKSQYB104K25
C	865		CKSQYB103K50

Miscellaneous Parts List

Mark	Circuit Symbol & No.	Part Name	Part No.
		PU Unit	CGY1014

Pin	Pin name	I/O	Output Format	Function
42	BW	output	C	Spindle drive circuit range switching
3	NC			
44	$\overline{\text{MUTG}}$	output	C	DSP mute output
45	POWER	output	C	Regurator control output
46	SENS	input		CD LSI internal status monitor input
47	OPTSW	input		Optical link detector input
48	SCOR	input		Sub-code synchronization input
49	$\overline{\text{BRST}}$	input		Pioneer standard bus reset input
50	EJSW	input		Eject switch input
51	BDATA	input/ output		Pioneer standard bus data
52	BSCK	input		Pioneer standard bus shift clock input
53	BSENS			+B detect
54	GND			
55, 56	NC			
57	IC			Connect to GND
58	X1	input		Oscillator input
59	X2	output		Oscillator output
60	$\overline{\text{RESET}}$			Reset
61	CRCF	input		CR check input
62	LOCK	input		Spindle lock monitor
63	FOK	input		Focus OK
64	SUBQ	input		Sub-code data input
65	SQCK	output	NH	Sub-code clock
66	$\overline{\text{EMPH}}$	output	NH	Emphasis selector output
67	MD2	output	NH	IC701 mode control. Digital output ON/OFF
68	MD1	output	NH	IC701 mode control. Digital output ON/OFF
69 I 71	I3 I I1	output	NH	Loading motor driver control output
72	LOAD	output	NH	CD mechanism power supply on/off
73	AGND			A/D converter GND
74	$\overline{\text{TIN}}$	input		Tray position detector switch 1
75	TOUT	input		Tray position detector switch 2
76	$\overline{\text{MAG}}$	input		Magazine lock switch input
77	$\overline{\text{TSEL}}$	input		Tray position detector photosensor
78	$\overline{\text{EJP}}$			Eject position switch
79	$\overline{\text{DISK}}$			Disc detector input
80	COLD			Low temperature detector

Output Format	Meaning
C	C-MOS
NH	High resistivity N channel open drain