

Service Manual

COMPACT
disc
DIGITAL AUDIO

DIGITAL

Compact Disc Player

SL-P370

Color

(K)...Black Type



SL-P333 MECHANISM SERIES (SIWD113-3ZA)

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(GC)	Third Region.	(K)
(GN)	Oceania.	(K)
(PX)	Far East-PX.	(K)

SPECIFICATIONS

■ Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz, ± 1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	96 dB
Total harmonic distortion	0.005% (1 kHz, 0 dB)
Harmonic distortion	0.003% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH* (4 DAC)
Output impedance	1 k Ω
Load impedance	More than 10 k Ω
Headphone output level	15 mW max. 32 Ω (adjustable)

■ MASH

- MASH (Multi-Stage Noise Shaping) is an effective over-sampling D/A conversion technique which realizes a high S/N ratio and needs no highly complex manufacturing processes such as a laser trimming.
- MASH is a trademark of NTT (Nippon Telegraph and Telephone Corporation).

■ Pickup

Wavelength	780 nm
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■ General

Power supply	
For Continental Europe:	AC 50/60 Hz, 220 V
For Oceania:	AC 50/60 Hz, 240 V
For others:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption	10 W
Dimensions (W×H×D)	430×88×284 mm
Weight	3.5 kg

Specifications subject to change without notice.

Weight and dimensions shown are approximate.

■ CONTENTS

	Page
PLACEMENT	2
CONNECTIONS	2
ACCESSORIES	2
PRECAUTION OF LASER DIODE	3
LOCATION OF CONTROLS	4, 5
HANDLING PRECAUTIONS FOR OPTICAL PICKUP	6
INSTRUCTIONS FOR TRAVERSE OIL	6
DISASSEMBLY INSTRUCTIONS	7~10
MEASUREMENTS AND ADJUSTMENTS	11~15
NEW SERVO GAIN ADJUSTER	15
TERMINAL FUNCTION OF IC'S	16~20
BLOCK DIAGRAM	21~23

	Page
INTERNAL CONNECTION OF FL	24
SCHEMATIC DIAGRAM	25~30
TERMINAL GUIDE OF IC'S,	
TRANSISTORS AND DIODES	31
PRINTED CIRCUIT BOARDS	32~36
WIRING CONNECTION DIAGRAM	37
TROUBLE SHOOTING GUIDE	38~40
REPLACEMENT PARTS LIST	41~44
REPLACEMENT PARTS LIST	44
PACKING	44
EXPLODED VIEWS	45~47
RESISTORS & CAPACITORS	48, 49

Technics

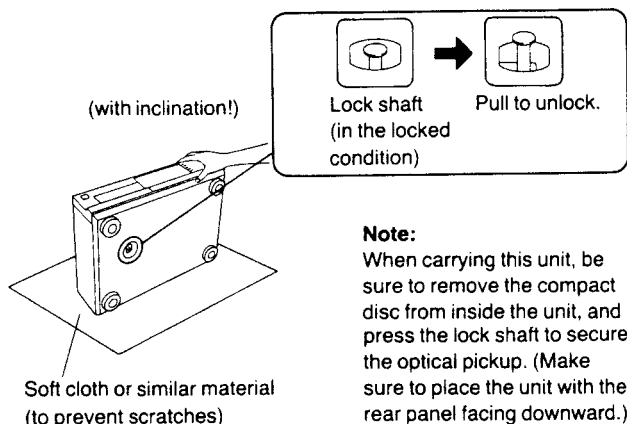
Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Panasonic Tokyo Sales Department
Matsushita Electric Industrial Co., Ltd.
World Trade Center Bldg., 4-1, Hamamatsu-cho,
2-chome, Minato-ku, Tokyo 105, Japan

■ PLACEMENT

Before placement

The optical pickup is secured to prevent damage during transport. Be sure to release it before use.



Notes of placement

- This unit is a precision instrument. Be sure to place it on a flat surface.
- Avoid places such as the following:
 - Near any equipment or device that generates strong magnetism.
 - On any heat-generating equipment or device, or in any place where the temperature is high (35°C or higher).
 - Extremely cold places (5°C or below).
 - Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)
- When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps. Always remove the disc before storing the unit for any period of time.
- To avoid problems due to vibration.
 - Do not place a book or similar object under this unit.
 - Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

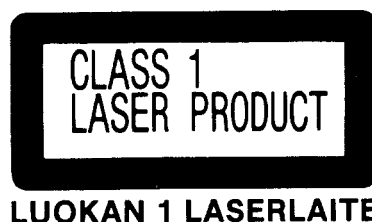
■ CONNECTIONS

Turn power off on all components before making connections.

•Optical output terminal (DIGITAL OUT/OPTICAL)

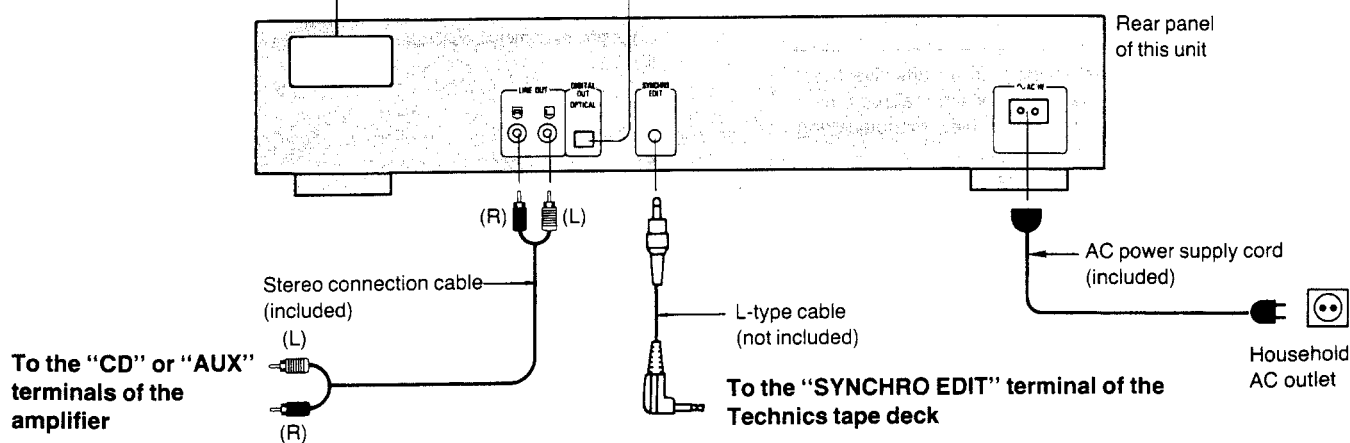
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using an optical cable (optional). A dust-protection cap is inserted in this terminal. Remove this cap only when a connection is to be made to this terminal. (For Continental Europe)

(For Continental Europe)



Note:

The configuration of the AC outlet and AC power supply cord differs according to area.



Note:

Be sure to connect the stereo connection cable with the amplifier when using the synchro edit function even if the optical cable has been connected.

■ ACCESSORIES

- AC power supply cord 1
 - [SJA187 (E)
 - [SJA173 (GN)
 - [RJA0004 (GC, PX)

- Stereo connection cable 1
 - (SJP2249-3)

- Remote control transmitter 1
 - (RAK-SL3006E)
- Batteries 2
 - (UM-4NE/2S)

■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.

Wave length: 780nm

Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

ACHTUNG: Dieses produkt enthält eine laserdioden. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge: 780nm

Maximale strahlungsleistung der lasereinheit: 100μW/VDE

Die strahlung an der lasereinheit ist ungefährlich, wenn folgende punkte beachtet werden:

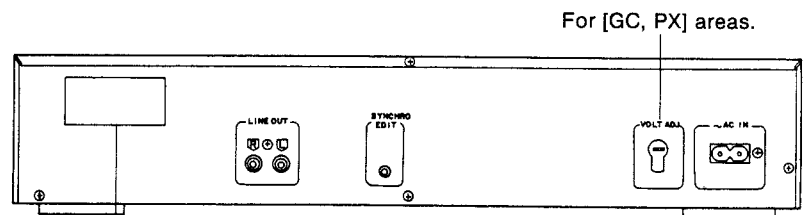
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdioden gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinheit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

• Use of caution labels

Note: ○ Mark is used, × Mark is not used.

Areas	SQWD7	RQLS0021
(PX)	×	×
Others	○	○

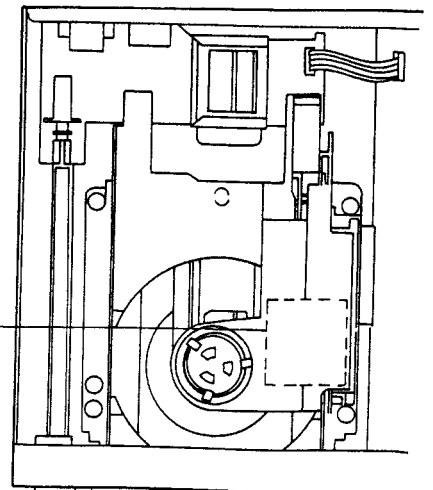


SQWD7



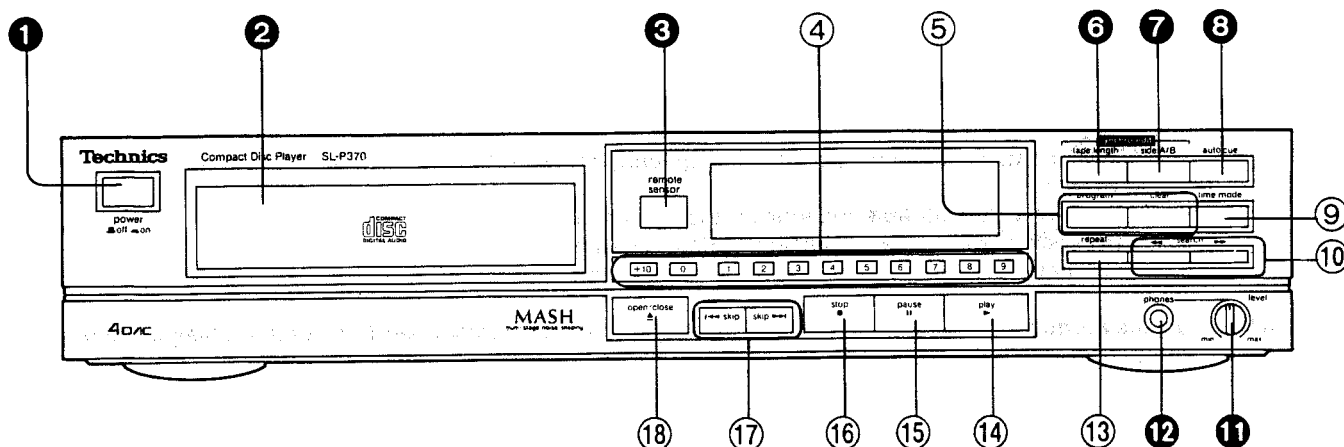
Obs:
Apparaten innehåller laser
Komponent av högre laserklass
än klass 1.

RQLS0021



LOCATION OF CONTROLS

The functions indicated by the black numbers (with white background, ④ etc.) can also be activated using the remote control transmitter.



Control section

① Power switch (power off on)

② Disc holder

③ Remote control signal sensor (remote sensor)

④ Numeric buttons (+10, 0, 1~9)

⑤ Buttons for program function

•Programmed-play button (program)

Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.

•Clear button (clear)

This button can be used to clear tracks from the programmed sequence one at a time.

⑥ Edit tape length button (tape length)

When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.

⑦ Tape-side select button (side A/B)

When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

⑧ Auto cue button (auto cue)

Pressing this button enables the unit to stop at the beginning of every track and switch to the play standby mode.

⑨ Time mode select button (time mode)

⑩ Search buttons (◀◀ search ▶▶)

These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.

⑪ Headphones volume control (level)

Avoid listening to music at high volume levels for extended periods of time.

⑫ Headphones jack (phones)

⑬ Repeat button (repeat)

⑭ Play button (▶ play)

⑮ Pause button (|| pause)

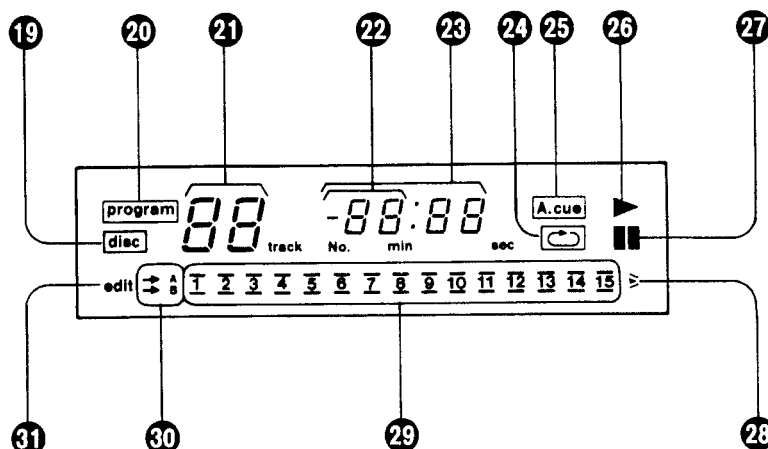
⑯ Stop button (■ stop)

This button can be used to stop disc play, as well as to cancel the various play modes.

⑰ Skip buttons (◀◀ skip/skip ▶▶)

These buttons can be used to skip by track in the forward or reverse direction.

⑱ Disc holder open/close button (▲ open/close)

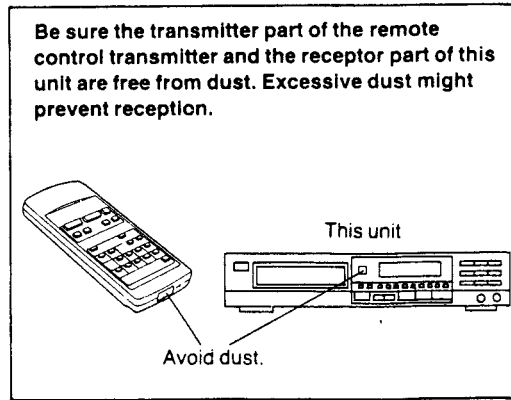
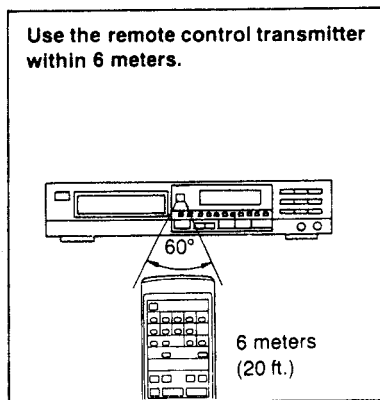
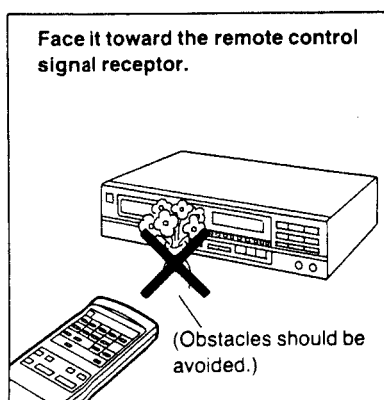


Indicators section

- | | |
|-------------------------------------|---|
| 19 Disc indicator (disc) | 26 Play indicator (▶) |
| 20 Program play indicator (program) | 27 Pause indicator (II) |
| 21 Track number display (track) | 28 "Over" mark (≥) |
| 22 Program number display (No.) | This indicator illuminates if the total number of tracks on the disc is 16 or more. |
| 23 Time display (min/sec) | 29 Track number indicator (1-15) |
| 24 Repeat play indicator () | 30 Tape side indicator (A/B) |
| 25 Auto cue indicator (A. cue) | 31 Compact disc edit indicator (edit) |

Remote control transmitter operation notes

Note that operation may not be correct if direct sunlight or other strong light strikes the remote control signal receptor part of this unit. If there is a problem, place the unit away from the direct sunlight or other strong light source.



Notes:

- The control panel of the remote control transmitter may be covered by a clear plastic protective sheet. This sheet may be removed if desired.
- If this unit is installed in a rack with glass doors, the glass door's thickness or color might make it necessary to use the remote control transmitter a shorter distance from the unit.
- Do not use a remote control transmitter for a TV set, VCR or other component at the same time as this unit's remote control transmitter is being used, because this could result in an operation error.

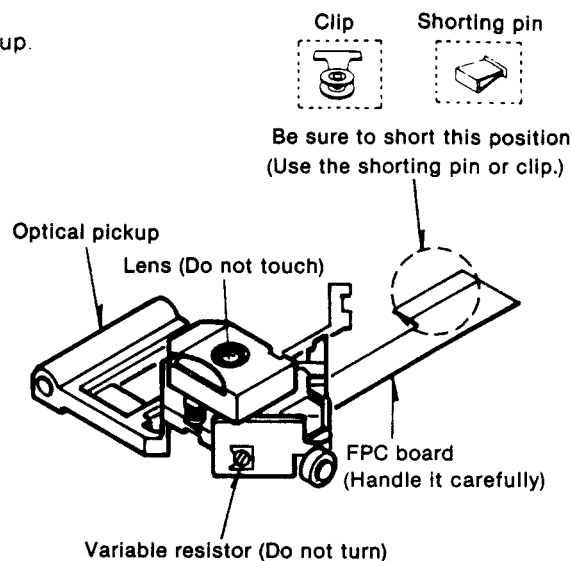
HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.

So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

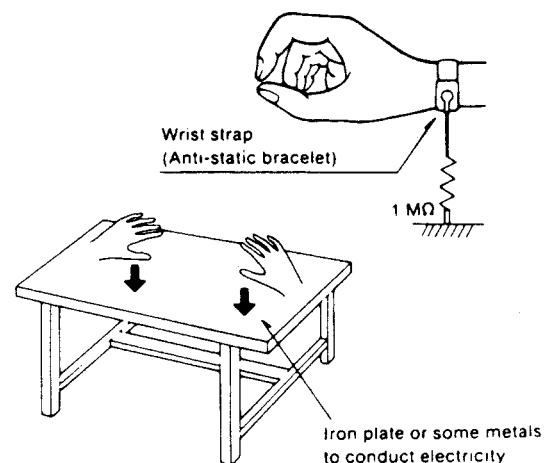


• Grounding for electrostatic breakdown prevention

1. Human body grounding
Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:

The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

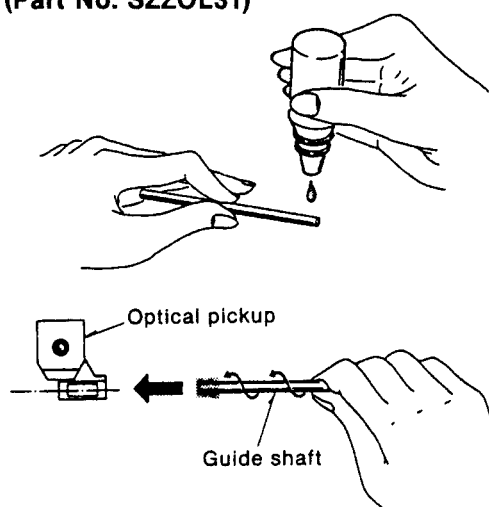


INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZOL31)

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

- (1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
- (2) Apply one drop of the SZZOL31 to the tip of the guide shaft.
- (3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
- (4) After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



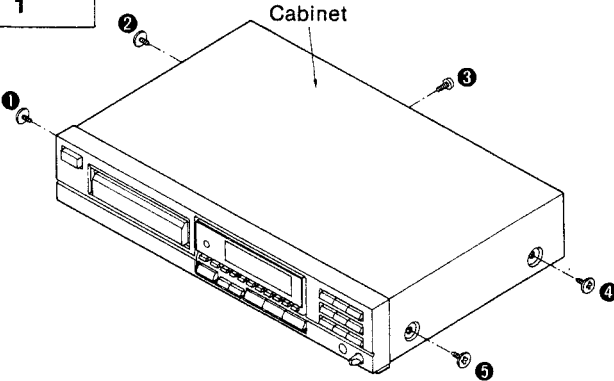
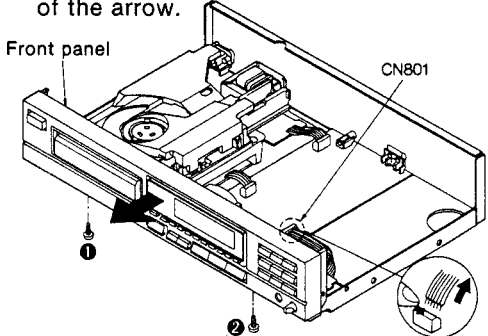
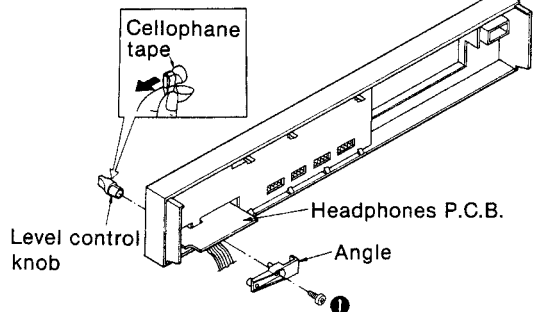
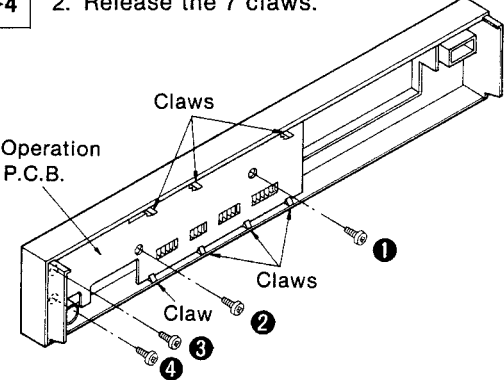
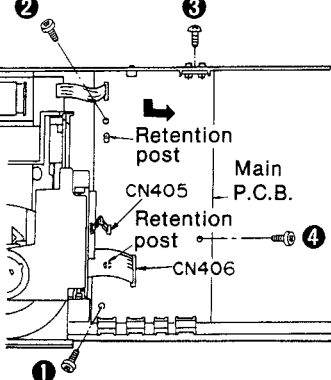
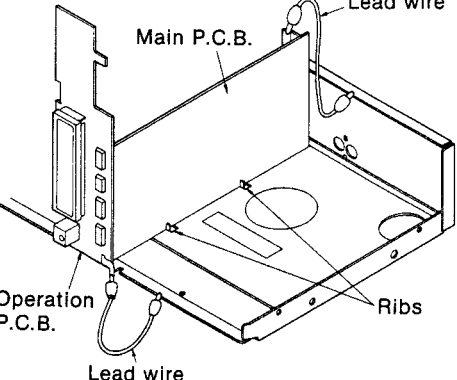
“ATTENTION SERVICER”

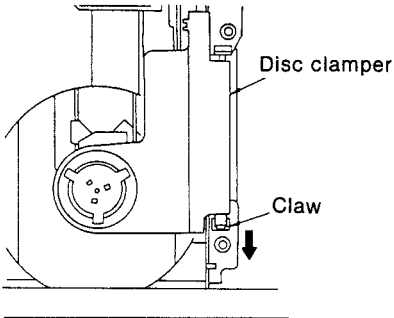
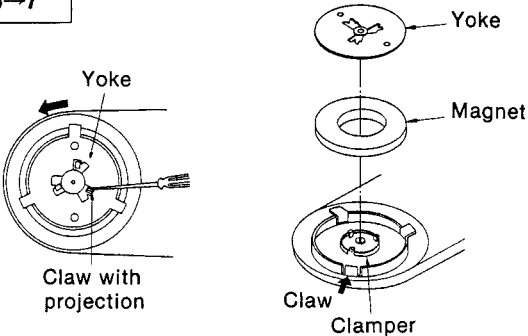
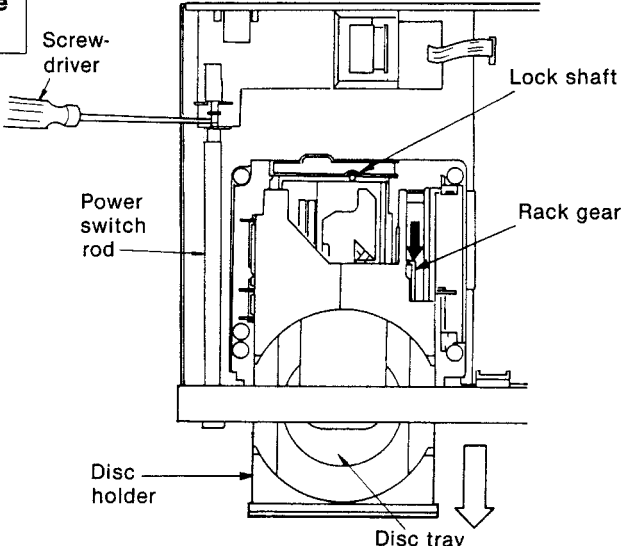
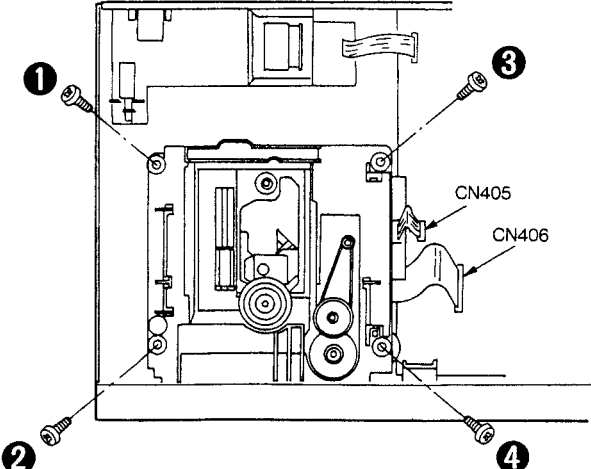
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

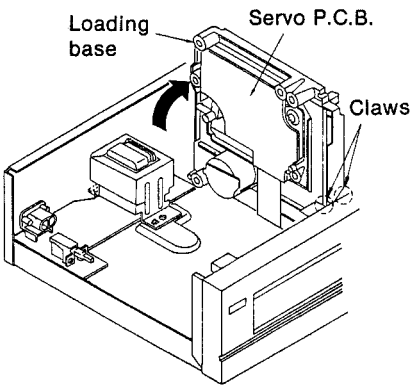
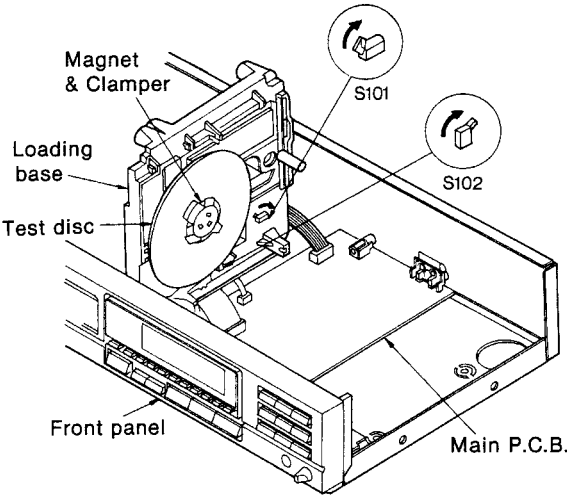
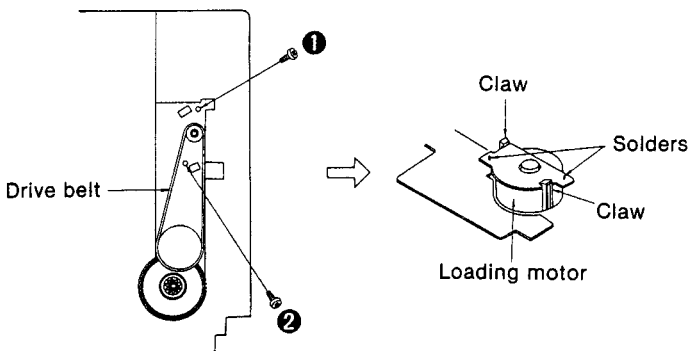
DISASSEMBLY INSTRUCTIONS

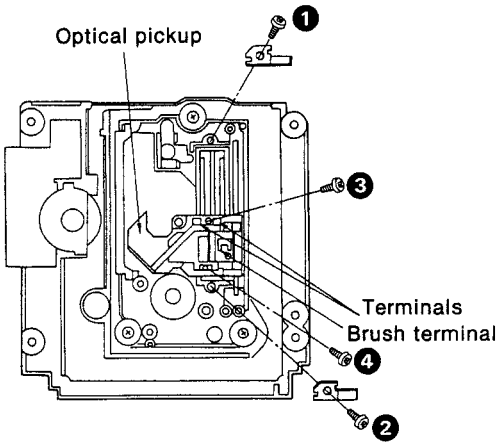
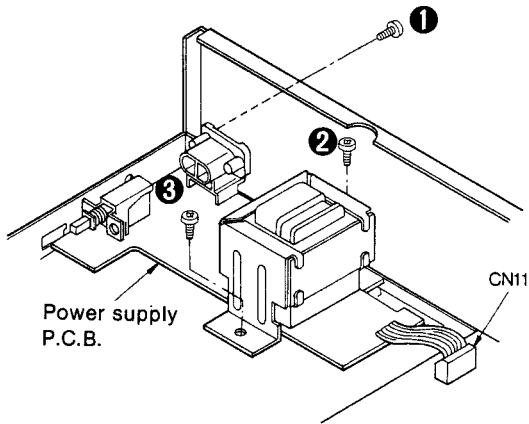
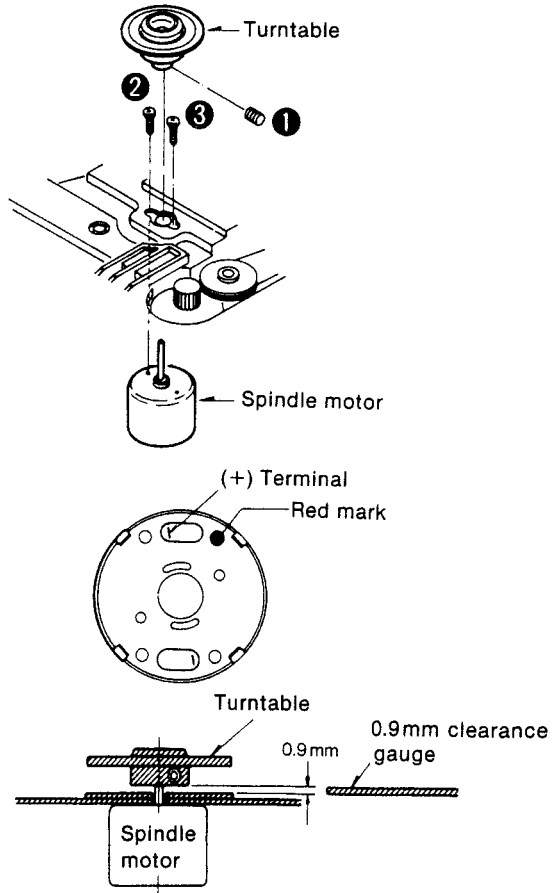
Warning: This product uses a laser diode. Refer to caution statements on page 3.

* This CD player is equipped with FPC board, so handle them with care during disassembly and reassembly.

Ref. No. 1	Removal of the cabinet	Ref. No. 2	Removal of the front panel
Procedure 1	• Remove the 5 screws (①~⑤).	Procedure 1→2	1. Remove the 1 flat cable (CN801). 2. Remove the 2 screws (①, ②). 3. Remove the front panel in the direction of the arrow.
			
Ref. No. 3	Removal of the head phones P.C.B.	Ref. No. 4	Removal of the operation P.C.B.
Procedure 1→2→3	1. Remove the level control knob. 2. Remove the 1 screw (①). 3. Remove the angle.	Procedure 1→2→3→4	1. Remove the 4 screws (①~④). 2. Release the 7 claws.
			
Ref. No. 5	Removal of the main P.C.B.	How to check the main P.C.B.	
Procedure 1→2→3→5			
1. Remove the 2 flat cables (CN405, CN406). 2. Remove the 4 screws (①~④). 3. Lift the main P.C.B. off the retention posts on the chassis. 4. Remove the main P.C.B. in the direction of the arrow.		• When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown. • Keep connect the 2 flat cables (CN405, CN406). 1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire. 2. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.	

Ref. No. 6	Removal of the disc clamber	Ref. No. 7	Removal of the magnet and clamber
Procedure 1→6	 • Push the claw in the direction of the arrow and remove the disc clamber.	Procedure 1→6→7	 1. While lifting the claw with a screwdriver, rotate clamber in the direction of the arrow and remove the yoke and magnet. 2. Release the claw of the clamber.
Ref. No. 8	Removal of the disc holder and power switch rod		
Procedure 1→6→8		• Removal of the disc holder 1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up. 2. Pull out slowly the disc holder. Note: Make sure to release the lock shaft (See page 3). • Removal of the power switch rod 1. Set the power switch in the "OFF" position. 2. Remove the power switch rod by using a screwdriver.	
Ref. No. 9	Removal of the loading base		
Procedure 1→6→8→9		1. Remove the 4 screws (①~④). 2. Remove the 2 flat cables (CN405, CN406).	

Ref. No. 10	How to check the servo P.C.B.	How to play the disc
Procedure 1→6→8→9 →10	 • When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown. • Keep connect the 2 flat cables (CN405, CN406).	1. Place the test disc and magnet on the turntable. 2. Switch the player ON. 3. First push the open/close switch (S102) and next, push the S101. 4. After the test disc starts rotating, release the open/close switches (S101, S102). 
Ref. No. 11	Removal of the servo P.C.B. and loading motor P.C.B.	• Removal of the servo P.C.B. 1. Remove the 3 screws (①~③). 2. Unsolder the 2 terminals of spindle motor. 3. Remove the FPC board from the optical pickup. • Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board. • Removal of the loading motor P.C.B. 1. Remove the 2 screws (④, ⑤). 2. Unsolder the 2 terminals of loading motor.
Ref. No. 12	Removal of the loading motor	1. Remove the drive belt. 2. Remove the 2 screws (①, ②). 3. Release the 2 claws. 4. Unsolder the 2 terminals of the lead wire of the loading motor. 

Ref. No. 13	Removal of the optical pickup	Ref. No. 14	Removal of the power supply P.C.B.
Procedure 1→6→8→9 →11→13	Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 6).	Procedure 1→6→8→14	
	1. Remove the 2 screws (①, ②). 2. Unsolder the 2 terminals and the 2 screws (③, ④).  The diagram shows the optical pickup assembly with four numbered callouts: ① points to a screw on the top cover, ② points to a screw on the bottom cover, ③ points to a terminal on the side, and ④ points to a terminal on the bottom cover. Labels include 'Optical pickup', 'Terminals', and 'Brush terminal'. Caution: Take care not to touch the brush terminal.		 The diagram shows the power supply P.C.B. assembly with three numbered callouts: ① points to a screw on the top cover, ② points to a screw on the side, and ③ points to a screw on the bottom cover. Labels include 'Power supply P.C.B.' and 'CN11'. 1. Remove the 3 screws (①~③). 2. Remove the flat cable (CN11).
Ref. No. 15	Removal of the spindle motor	 The diagram shows the spindle motor assembly with three numbered callouts: ① points to a screw on the turntable, ② points to a screw on the turntable, and ③ points to a screw on the turntable. Labels include 'Turntable', 'Spindle motor', '(+) Terminal', and 'Red mark'. 1. Loosen the screw (①) by using a 1.27 mm allen wrench and remove the turntable. 2. Remove the 2 screws (②, ③). Caution: 1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced. 2. The (+) terminal of the spindle motor is indicated by the red mark. Adjustment of turntable height 1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown right. 2. Tighten the turntable set-screw by using a 1.27 mm allen wrench. Caution: Refer to turntable height adjustment (see page 12).	
Procedure 1→6→8→9 →11→15			

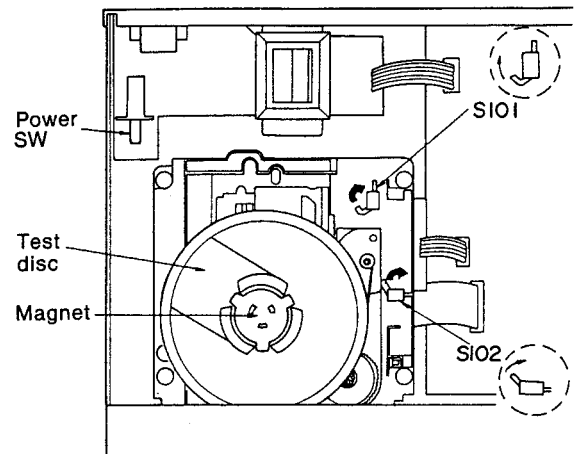
MEASUREMENTS AND ADJUSTMENTS

Caution:

- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.)
With the unit turned "on", laser radiation is emitted from the pickup lens.
Avoid exposure to the laser beam, especially when performing adjustments.

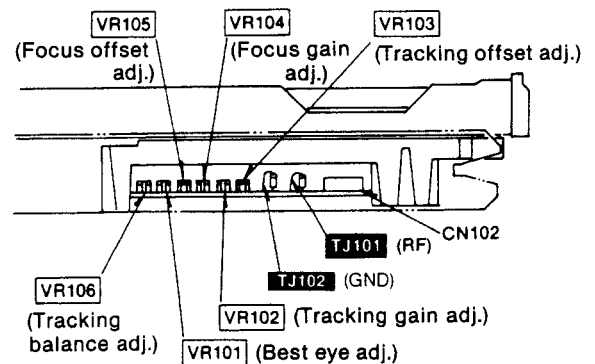
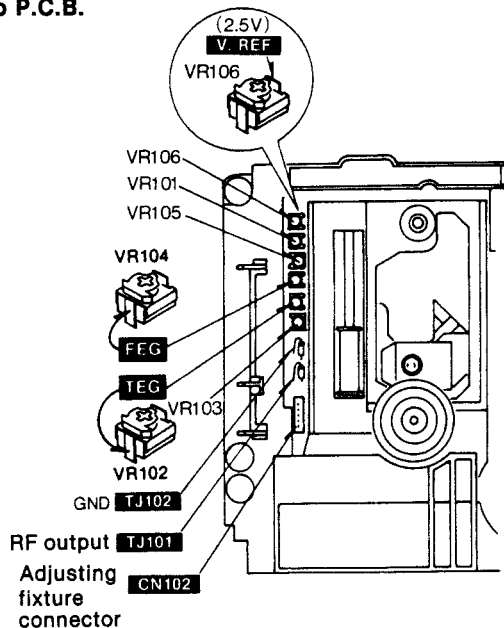
PREPARATION

- Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
- Remove the disc clumper and magnet (see Ref. No. 6, 7 of the same).
- Remove the disc holder and power switch rod (see Ref. No. 8 of the same).
- Place the test disc and magnet on the turntable.
- Switch the player on.
- First push the Open/Close switch S102 in the direction of the arrow and then, push switch S101 in the direction of the arrow as shown in the figure.

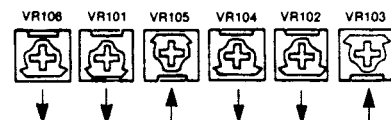


ADJUSTMENT POINTS

• Servo P.C.B.



• Temporary setting of each VR



(Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.)

Measuring Instruments and Special Tools

- * Servo gain adjuster (SZZP1017F or SZZP1094C-1)
- * Test discs
 1. Playability test disc (SZZP1054C or SZZP1014F)
 2. Uneven test disc (SZZP1056C)
 3. Black band test disc (SZZP1057C)
- * Normal disc
- * Dual-beam oscilloscope with bandwidth of 30 MHz or better (with EXT trigger and 1 : 1 probe).
- * Audio frequency (AF) oscillator
- * Conversion connector (SZZP1032F)

- * Allen wrench (M2.0) (SZZP1101C)
- * Allen wrench (M1.27)
- * 0.9mm clearance gauge (RZZ0297)
- * Filter

Perform adjustments depend on the part to be replaced according to followings:

- (1) Spindle motorItems (1), (3) to (8)
- (2) TurntableItems (1), (3) to (8)
- (3) Optical pickupItems (2) to (8)

Adjusting Procedure

- * If you have replaced the optical pickup, spindle motor, or turntable, do the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9 mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (–) terminals via a filter.
(Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)

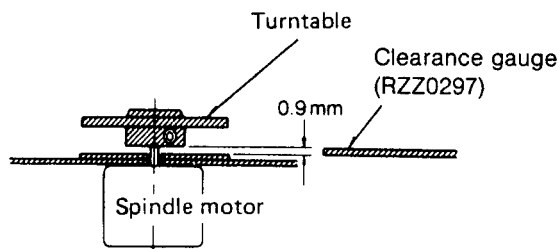
Oscilloscope setting: VOLT 50 mV
SWEEP 1 ms.
Input coupling ... DC

4. Adjust oscilloscope's DC zero balance.
5. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the voltage amplitude of the signal on the oscilloscope.

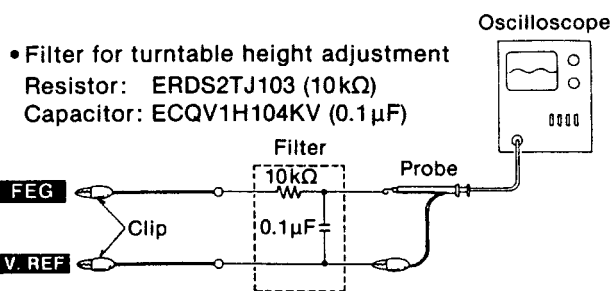
Note 1. If the measured amplitude is within a range of ± 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.

If the amplitude exceeds +15 mV, lower turntable.

If the amplitude is below -15 mV, elevate the turntable.



Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set VR105 at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

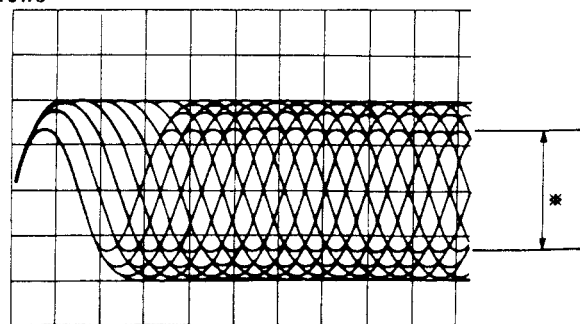
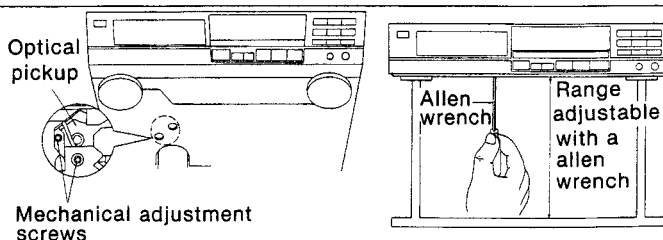


(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B.

Oscilloscope setting: VOLT 100 mV
SWEEP 0.5 μs.
Input coupling ... AC

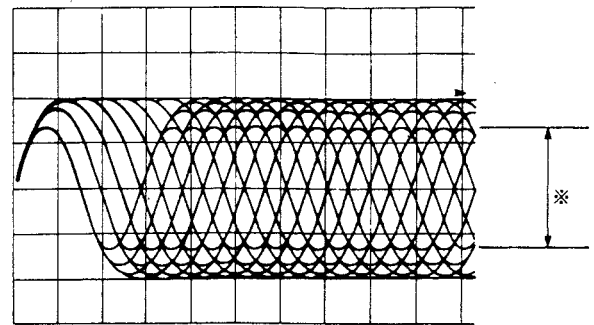
2. Switch the player power **ON**, and play track 9 on the test disc (SZZP1056C). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench (SZZP1101C) until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5. After completing the adjustment, lock the **mechanical adjustments** with lock paint (RZZOL01).



※ Most stretched eye pattern.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

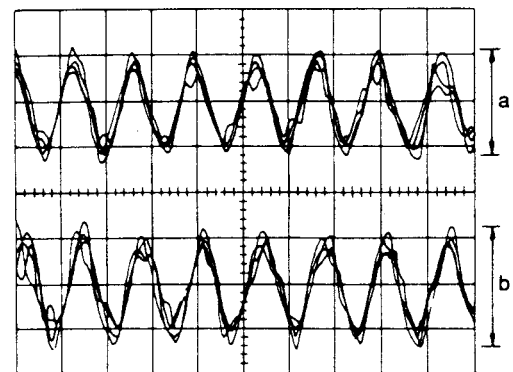
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B.
Oscilloscope setting: VOLT 100 mV
SWEEP 0.5 μ s
Input coupling ... AC
2. Switch the player power **ON**, and play the 1kHz (track 1) on the test disc (SZZP1054C).
3. Adjust **VR101** until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.



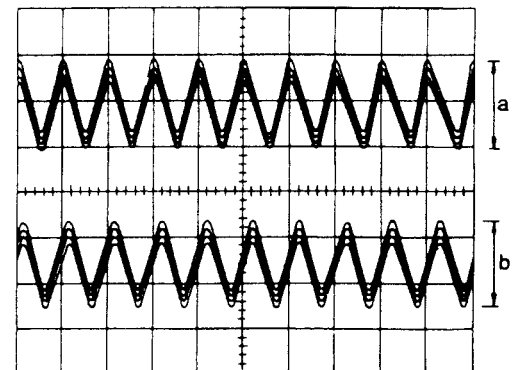
* Most stretched eye pattern.

(4) FOCUS GAIN ADJUSTMENT

1. Connect the servo gain adjuster to the player (see page 15).
2. Set the servo gain adjuster's gain switch to position "2" and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
Oscilloscope setting: VOLT 100 mV
(bboth channels)
SWEEP 0.2 ms.
Input coupling ... AC
5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position "2".

* Adjust **VR104** until a equals b.**(5) TRACKING GAIN ADJUSTMENT**

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).
Oscilloscope setting: VOLT 100 mV
(bboth channels)
SWEEP 0.2 ms.
Input coupling ... AC
3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position "2".

* Adjust **VR102** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.

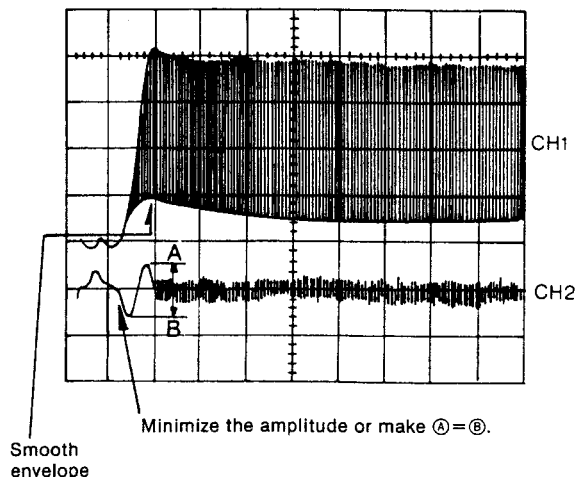
Oscilloscope setting: VOLT. 100 mV (CH. 1)
100 mV (CH. 2)

SWEEP. 0.2 ms.

Input coupling. . . AC (both CH. 1
and 2)

Trigger mode . . . NORM (trigger
CH. 1.)

2. Switch the player power **ON**, and play track 9 on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.

**(7) TRACKING OFFSET ADJUSTMENT**

Note: Make sure that the servo gain adjuster's gain switch is set to position "2".

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B., and its CH. 2 probe (+) to VR102's **TEG** terminal.

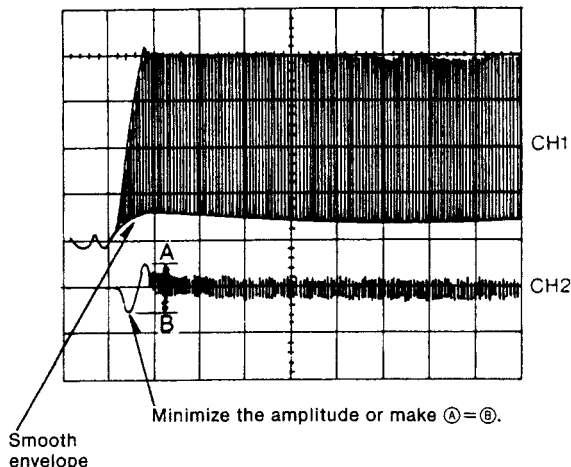
Oscilloscope setting: VOLT. 100 mV (CH. 1)
100 mV (CH. 2)

SWEEP. 0.2 ms.

Input coupling. . . AC (both CH. 1
and 2)

Trigger mode. . . NORM (trigger
CH. 1.)

2. Switch the player power **ON**, and play track 9 on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.

**(8) TRACKING BALANCE ADJUSTMENT**

1. Make sure that the servo gain adjuster's gain switch is set to position "2".
2. Set up the AF oscillator output for 1.1 kHz, 600 mVp-p, and connect it across the OSC and GND terminals on the servo gain adjuster.
3. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.

Oscilloscope setting: VOLT. 100 mV (CH. 1)
200 mV (CH. 2)

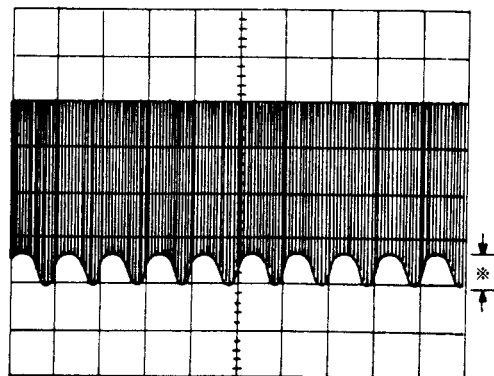
SWEEP. 0.1 ms.

Input coupling. . . AC (both CH. 1
and 2)

Trigger mode . . . NORM (trigger
CH. 2)

4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).

5. Set the servo gain adjuster's gain switch to position "1", and adjust **VR106** so that the waveform of the output section marked with ✕ is balanced.
6. Disconnect the servo gain adjuster's leads from the player.



✕ This section of the waveform must be balanced.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT*** Checking Skip Search**

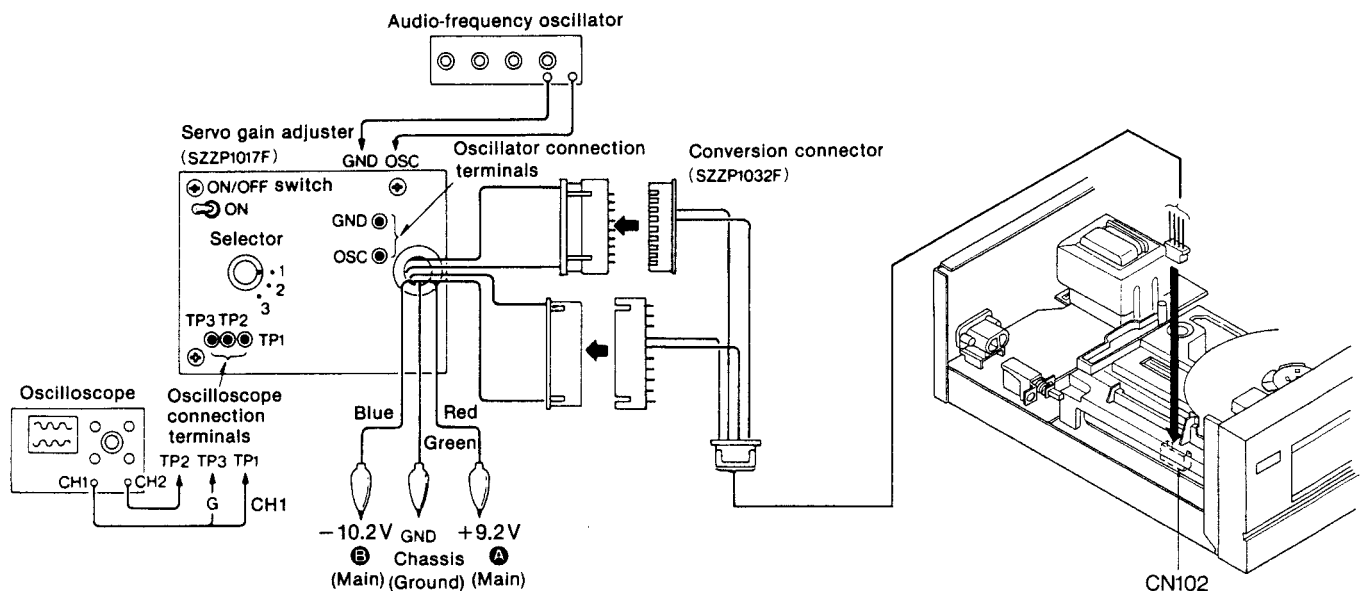
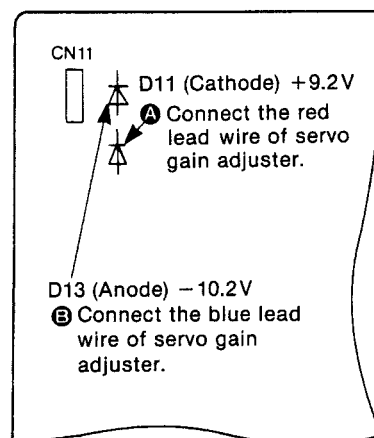
1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

*** Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

*** Checking Using Defect Disc**

1. Play the 0.7 mm black dot and the 0.7 mm wedge on the defect test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc and verify that no sound skip or noise occurs.

• Connection of servo gain adjuster**• Main P.C.B.****■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)**

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C-1

Features:

- (1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
- (2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
- (3) Internal power supply eliminates the need for power supply from the CD player.

■ TERMINAL FUNCTION OF IC'S

• IC101 (AN8373S): Servo amp.

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/Tracking down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	RFDET	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	—	Ground terminal

• IC402 (MN1550PEB): Remote control signal processor

Pin No.	Mark	I/O Division	Function
1	VDD	I	Power supply
2	OSC1	I	Clock input
3	OSC2	—	(Not used, open)
4	P22	—	(Not used, open)
5	RST	I	Reset signal input
6	P21	—	(Not used, open)
7	P20	I	Remote control signal input

Pin No.	Mark	I/O Division	Function
8	IRQ	I	Program enable/de-enable control
9	P31	O	(Not used, open)
10 ┌ 13	P10 ┌ P13	I	Key scan data signal input
14 ┌ 17	P00 ┌ P03		
18	VSS	—	GND terminal

● IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	O	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor output
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	—	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	—	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply
23	SPCNT	O	Track crossing speed control output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus Servo On signal)
31	CNT2	I	Control input (TRON: Tracking Servo On signal)
32	CNT3	I	Control input (KICKF: Kick Direction (Forward) command)
33	CNT4	I	Control input (KICKR: KICK Direction (Backward) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

● IC103 (AN3877N): BTL drive

Pin No.	Mark	I/O Division	Function
1	PVCC	I	Drive power supply
2	VCC	I	Power supply
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input

Pin No.	Mark	I/O Division	Function
9	TD—	O	Inverting output of tracking driver
10	TD+	O	Non-inverting output of tracking driver
11	FD—	O	Inverting output of focus driver
12	FD+	O	Non-inverting output of focus driver
13	TVD—	O	Inverting output of traverse driver
14	TVD+	O	Non-inverting output of traverse driver
15	$\overline{\text{RESET}}$	O	Reset signal output
16	PC	I	PC input (connect to GND.)

• IC301 (MN6625): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	BYTCK	O	Serial data byte clock (Not used, open)
2	FCLK	O	Crystal frame clock (7.35 kHz) (Not used, open)
3	DEMPH	O	De-emphasis ON signal (de-emphasis ON at "H")
4	SRDATA	O	Serial data output (MSB first)
5	SCK	O	Serial bit clock output
6	LRCK	O	LR discrimination signal output
7	WDCK	O	Serial data output word clock
8	LDG	O	L channel deglitch signal (Not used, open)
9	RDG	O	R channel deglitch signal (Not used, open)
10	IPFLAG	O	Interpolation flag (interpolation at "H")
11	FLAG	O	Error flag terminal
12	XCK	O	Clock (16.9344 MHz) output (Not used, open)
13	TEST	I	Test mode selection (Not used, connected to power supply.)
14	TX	O	Digital signal output (Not used, open)
15	SLEEP	I	Mode selector ("L": normal, "H": SLEEP mode) (Not used, connected to GND)
16	CSEL	I	Test terminal ("L": normal) (Not used, connected to GND)
17	X1	I	Clock input (16.9344 MHz)
18	X2	O	Clock output (16.9344 MHz) (Not used, open)
19	VSS	—	GND terminal
20	BLKCK	O	Sub-code block (Q data) clock (75 Hz)
21	CLDCK	O	Sub-code frame (Q data) clock (7.35 kHz)
22	SUBQ	O	Sub-code (Q data) output
23	RST	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input

Pin No.	Mark	I/O Division	Function
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	TRON	I	Tracking servo ON signal (tracking servo ON at "L")
29	STAT	O	Processing condition (CRC, CUE, CLVS, TT STOP, FCLV)
30	SUBC	O	Sub-code serial output data (Not used, open)
31	SBCK	I	Clock for sub-code serial output (Not used, open)
32	SMCK	O	Clock output (4.2336 MHz)
33	VDD	I	Power supply
34	MEMP	I	Emphasis signal input (Not used, open)
35	FG	I	Spindle motor FG signal input (Not used, open)
36	PC	O	Spindle motor ON signal (ON at "L")
37	EC	O	Spindle motor drive signal
38	RESY	O	Resynchronizing signal (Not used, open)
39	DO	I	Drop-out signal (Drop-out at "H")
40	SRF	I	EFM signal input (DSL)
41	EFM	I	EFM signal input (PLL)
42	PCK	I	PLL extract clock input (4.3218 MHz)
43	FPC	O	PLL frequency comparison signal
44 } 51	D7 } D0	I/O	16 K RAM data input/output
52	RAM/OE	O	16 K RAM $\overline{OE}$ signal
53	RAM/WE	O	16 K RAM $\overline{WE}$ signal
54 } 64	RAM/A0 } RAM/A10	O	16 K RAM address signal (RAMA0: LSB, RAMA10: MSB)

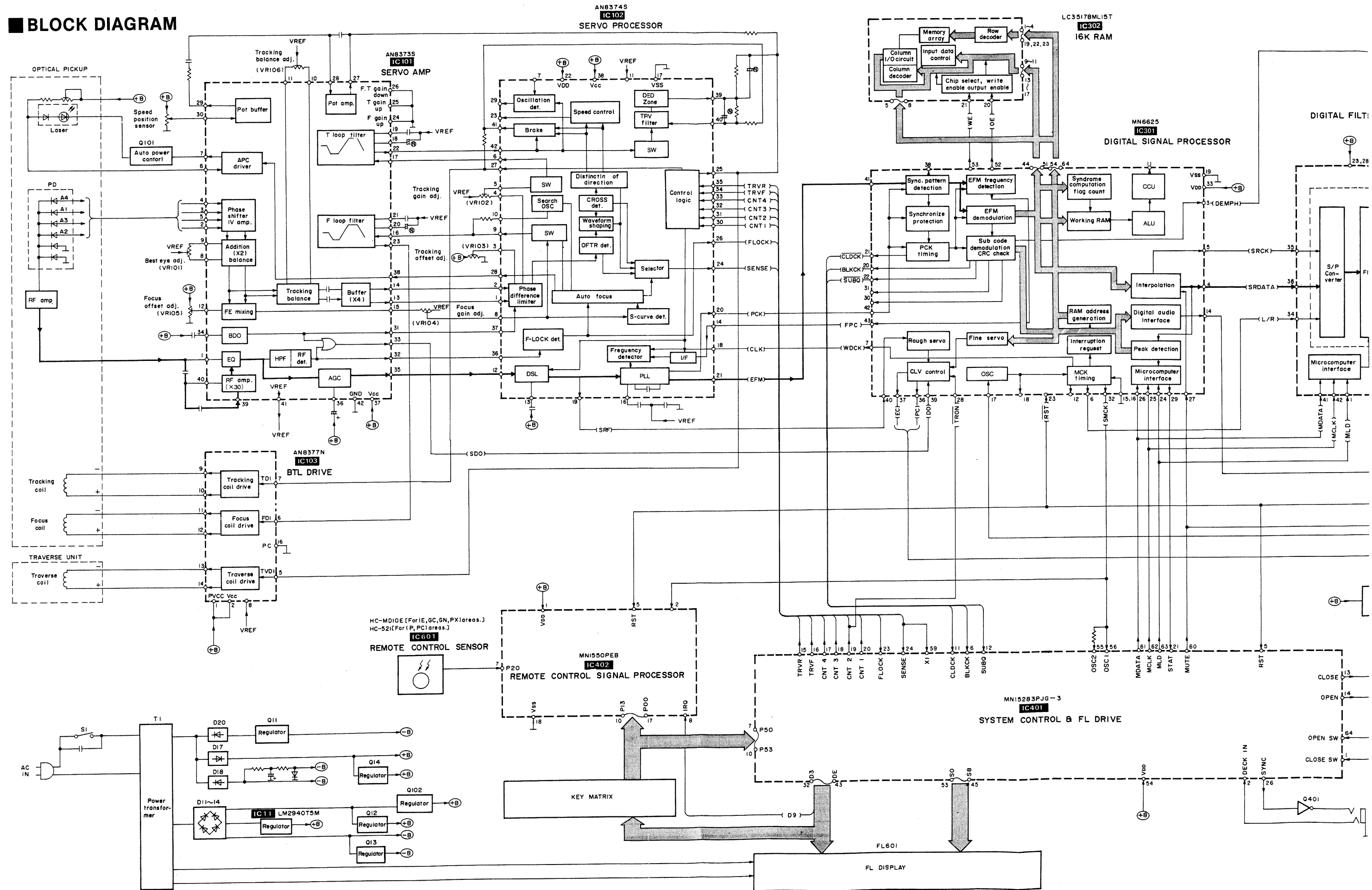
• IC401 (MN15283PJG-3): System control & FL drive

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	CLOSE SW	I	Disc holder "Close" detection	22	NC	—	Not connected
2	DECK IN	I	Synchro edit control input	23	FLOCK	I	Optical servo condition (focus) input
3	NC	—	Not connected	24	SENSE	I	Optical servo condition (Track cross) input
4				25	NC	—	Not connected
5	RST	I	Reset signal input	26	SYNC	O	Synchro edit control output
6	BLKCK	I	Sub-code block (Q data) clock input (75 Hz)	27	DAC	O	(Not used, open)
7 } 10	P50 } P53	I	Key scan data signal input	28	VPP	I	FL drive power supply
11	CLDCK	I	Sub-code block (Q data) clock input (7.35 kHz)	29 } 44	D0 } DF	O	FL glid signal and key scan data signal
12	SUBQ	I	Sub code (Q data) input	45 } 53	S8 } S0	O	FL anode signal
13	CLOSE	O	Loading motor "Close" command	54	VDD	I	Power supply
14	OPEN	O	Loading motor "Open" command	55	OSC2	I	Clock input (4.2336 MHz)
15	TRVR	O	Traverse "Reverse" command signal	56	OSC1		
16	TRVF	O	Traverse "Forward" command signal	57	VSS	—	GND terminal
17	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [Reverse] command)	58	XO	—	Clock terminal (Not used, open)
18	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [Forward] command)	59	XI	I	Optical servo condition (Track cross) input
19	CNT2	O	Optical servo IC control signal (TRON: Tracking servo)	60	MUTE	O	Muting control output
20	CNT1	O	Optical servo IC control signal (FOON: Focus servo)	61	MDATA	O	Command data output
21	STAT	I	Processing status input from signal processor LSI	62	MCLK	O	Command clock output
				63	MLD	O	Command load output
				64	OPEN SW	I	Disc holder "Open" detection

• IC801 (MN6474): Digital filter & D/A converter

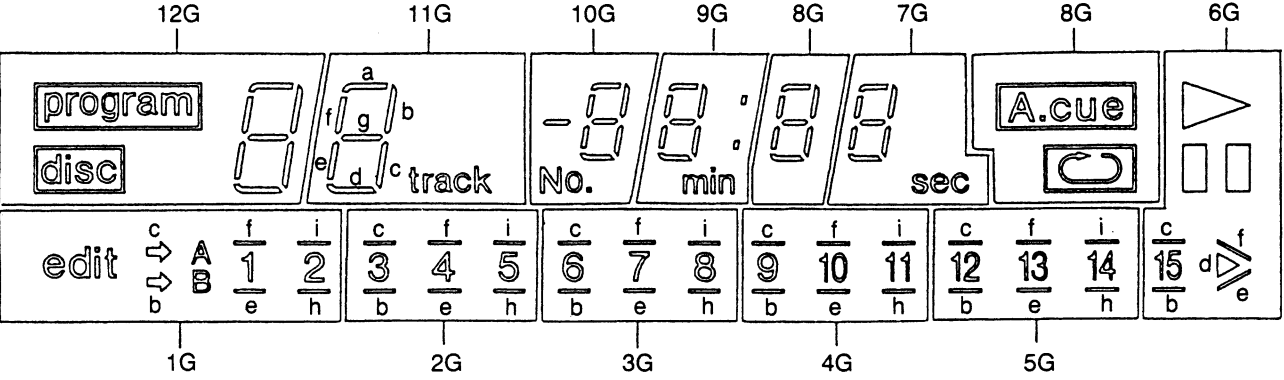
Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)	23	DVDD1	I	Power supply
2	RSTB	I	Reset command	24	DVSS1	—	GND terminal (digital system)
3	IE	I	Not used, connected to GND	25	X2	O	Clock output
4	TP1	O	TEST terminal	26	X1	I	Clock input
5	TP2			27	NC	—	Connected to GND
6	TEST1	I	TEST terminal 1 (connected to GND)	28	DVDD2	I	Power supply
7	TEST2	I	TEST terminal 2 (connected to GND)	29	DVSS2	—	GND terminal (digital system)
8	NC	—	Not connected	30	NSUB	I	Sub-strate terminal (Not used, connected to power supply)
9				31	768 fs	O	768 fs (33.8688 MHz) (Not used, open)
10	AVDD4	I	Power supply	32	192 fs	O	192 fs (8.4672 MHz) (Not used, open)
11	L (—)	O	Lch data output, (—) terminal	33	LRPOL	—	LR clock selector (Not used, connected to power supply)
12	AVSS4	—	GND terminal	34	L/R	I	LR discrimination signal input
13	AVSS3			35	SRCK	I	Serial bit clock input
14	L (+)	O	Lch data output, (+) terminal	36	SRDATA	I	Serial data input (MSB first)
15	AVDD3	I	Power supply	37	DVSS3	—	GND terminal (digital system)
16	NC	—	Not connected	38	DVDD	I	Power supply
17	AVDD2	I	Power supply	39	384 fs	O	384 fs (16.9344 MHz) output
18	R (+)	O	Rch data output, (+) terminal	40	PD	I	Power down terminal (Not used, connected to GND)
19	AVSS2	—	GND terminal (analog system)	41	MDATA	I	Mode control data
20	AVSS1	—		42	MLCK	I	Data clock for MDATA
21	R (—)	O	Rch data output, (—) terminal				
22	AVDD1	I	Power supply				

BLOCK DIAGRAM



INTERNAL CONNECTION OF FL

Grid connection diagram



Anode connection table

	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	15	12	9	6	3	edit A
b	b	b	b	b	b	b	(15)	(12)	(9)	(6)	(3)	B
c	c	c	c	c	c	c	(15)	(12)	(9)	(6)	(3)	(F)
d	d	d	d	d	d	d	▶	13	10	7	4	1
e	e	e	e	e	e	e	/	(13)	(10)	(7)	(4)	(1)
f	f	f	f	f	f	f	/	(13)	(10)	(7)	(4)	(1)
g	g	g	g	g	g	g	▶	14	11	8	5	2
h	program	track	—	min	↻	sec	■	(14)	(11)	(8)	(5)	(2)
i	disc	-	No.	.	A.cue	-	-	(14)	(11)	(8)	(5)	(2)

Pin connection

Pin No.	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F	F	N	a	N	N	b	c	d	e	f	g	h	i	12	11	N	N	N	N	10	9	8	7	6	5	4	3	2	N	N	N	1	N	F	F

SCHEMATIC DIAGRAM

(Parts list on pages 41, 42, 48, 49.)

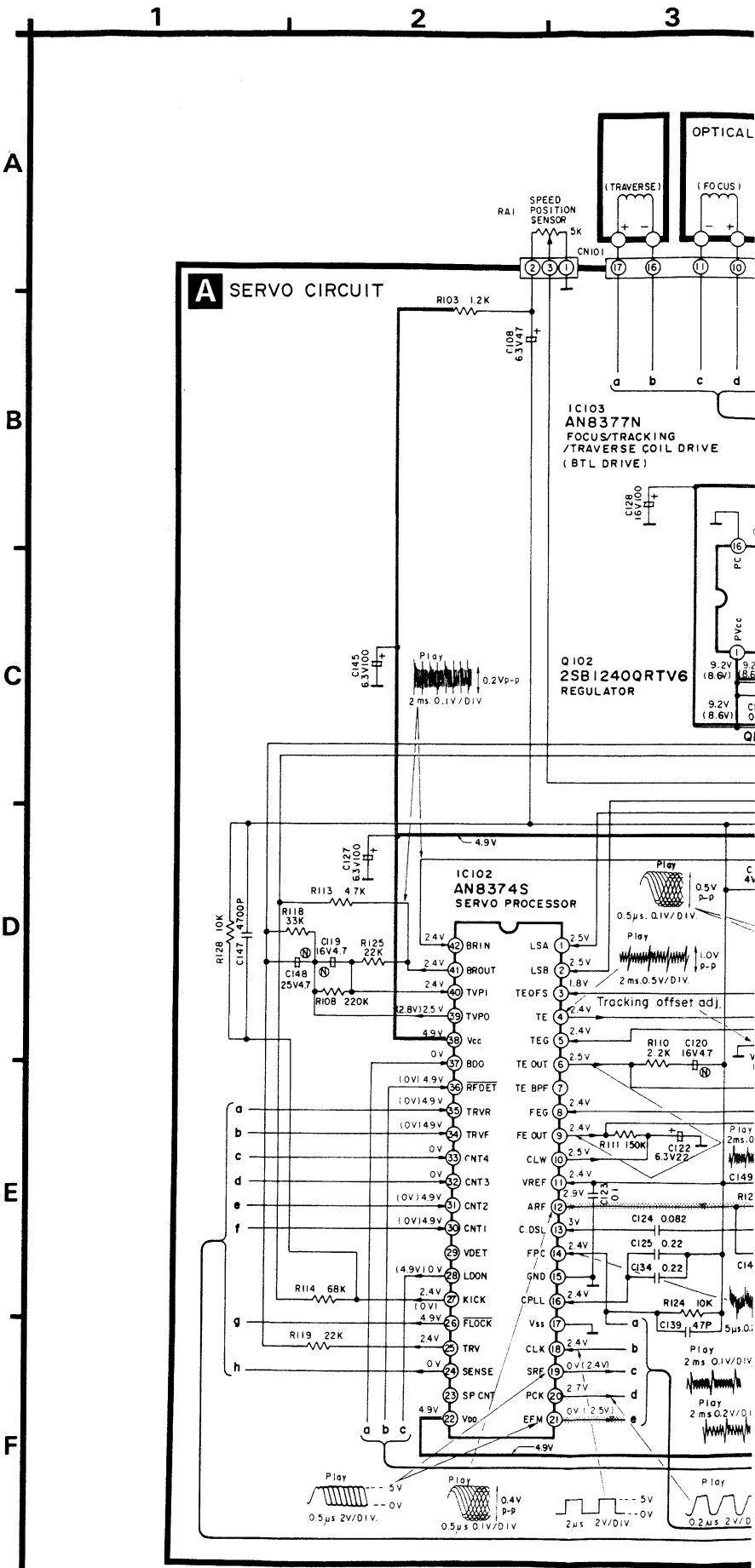
(This schematic diagram may be modified at any time with development of new technology.)

- Notes:
- S1 : Power switch in "on" position.
 - S2 : Voltage selector switch. [For (GC, PX) areas.]
 - S101, 102 : Disc holder open/close detection switches.
 - S601 : Disc holder open/close (▲ open/close) switch.
 - S602 : Stop (■ stop) switch.
 - S603 : Repeat (repeat) switch.
 - S604 : Pause (■ pause) switch.
 - S605 : Play (▶ play) switch.
 - S606, 607 : Search (search) switches. [S606: ◀◀ (B), S607: ▶▶ (F)]
 - S608, 609 : Skip (skip) switches. [S608: ◀◀ (B), S609: ▶▶ (F)]
 - S610 : Time mode select (time mode) switch.
 - S611 : Program (program) switch.
 - S612 : Clear (clear) switch.
 - S613 : Auto cue (auto cue) switch.
 - S614 : Tape side select (side A/B) switch.
 - S615 : Tape length (tape length) switch.
 - S616~626 : Numeric (+10, 0~9) switches. [S616: 1, S617: +10, S618: 2, S619: 3, S620: 4, S621: 5, S622: 6, S623: 7, S624: 8, S625: 9, S626: 0]

- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
- * The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.
- Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- —○— >—/— < >—: Positive voltage lines and negative voltage lines.
- : audio signal lines.

Caution!
IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.



SCHEMATIC DIAGRAM

(Parts list on pages 41, 42, 48, 49.)

(This schematic diagram may be modified at any time with development of new technology.)

Notes:

- **S1** : Power switch in "on" position.
- **S2** : Voltage selector switch.
[For (GC, PX) areas.]
- **S101, 102** : Disc holder open/close detection switches.
- **S601** : Disc holder open/close (▲ open/close) switch.
- **S602** : Stop (■ stop) switch.
- **S603** : Repeat (repeat) switch.
- **S604** : Pause (■ pause) switch.
- **S605** : Play (▶ play) switch.
- **S606, 607** : Search (search) switches.
[S606: ◀◀ (B), S607: ▶▶ (F)]
- **S608, 609** : Skip (skip) switches.
[S608: ◀◀ (B), S609: ▶▶ (F)]
- **S610** : Time mode select (time mode) switch.
- **S611** : Program (program) switch.
- **S612** : Clear (clear) switch.
- **S613** : Auto cue (auto cue) switch.
- **S614** : Tape side select (side A/B) switch.
- **S615** : Tape length (tape length) switch.
- **S616~626** : Numeric (+10, 0~9) switches.
[S616: 1, S617: +10, S618: 2, S619: 3, S620: 4,
S621: 5, S622: 6, S623: 7, S624: 8, S625: 9, S626: 0]

• The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

* The parenthesized are the values of voltage generated during playing (Test disc 1kHz, L+R, 0dB), others are voltage values in stop mode.

Important safety notice:

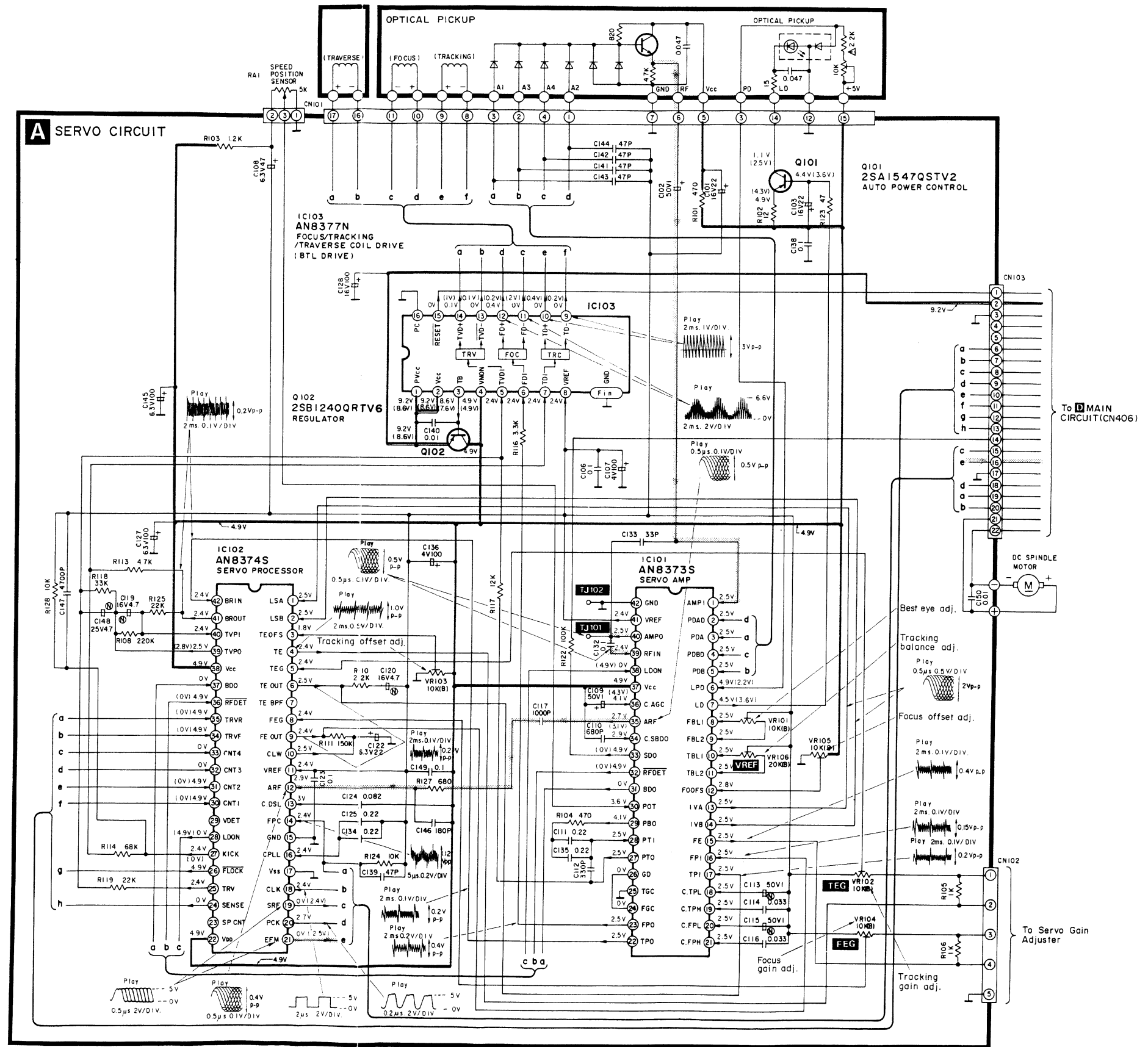
Components identified by ▲ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

• — ◀ — / — ▶ — : Positive voltage lines and negative voltage lines.

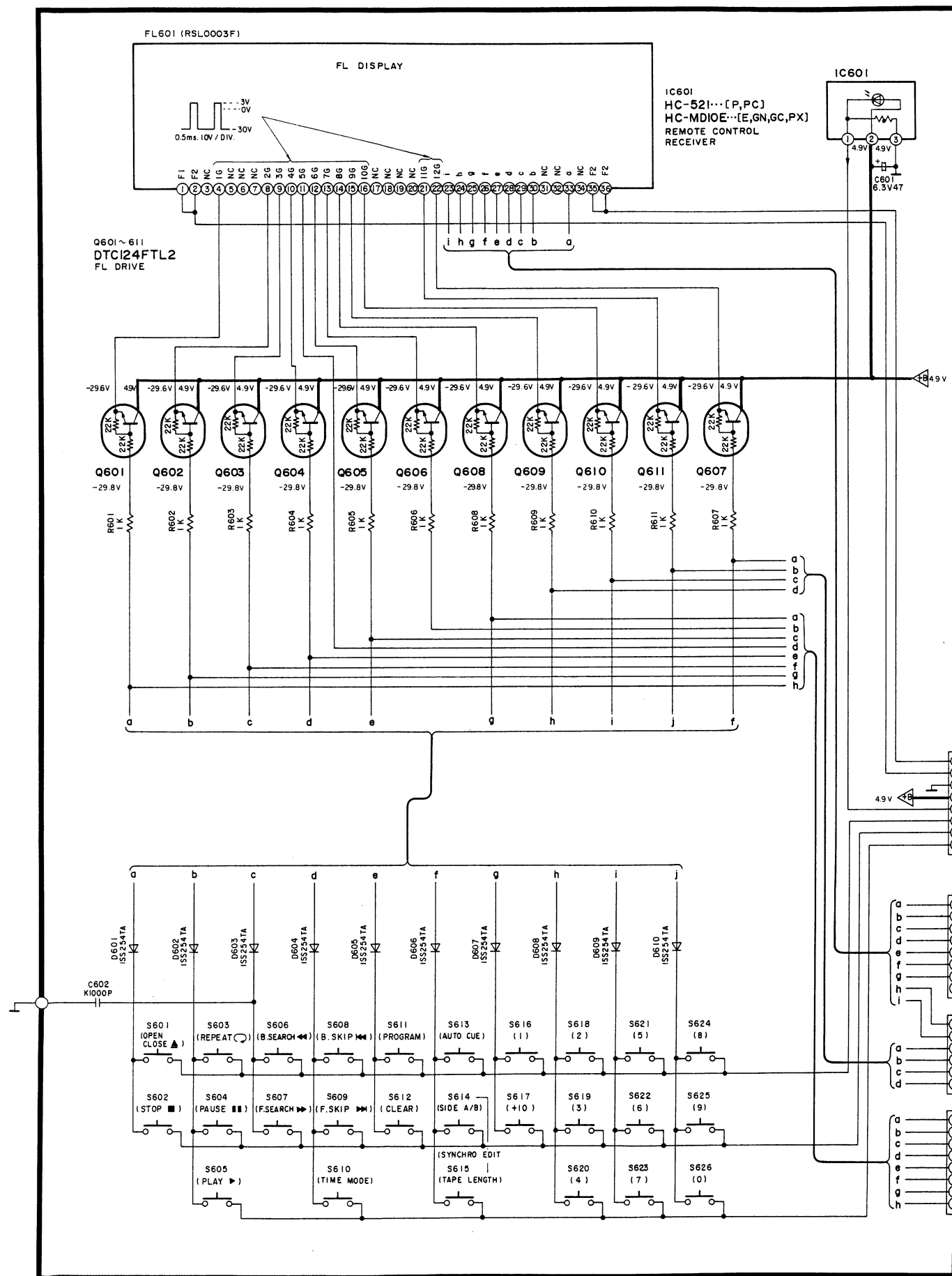
• ——— : audio signal lines.

Caution!

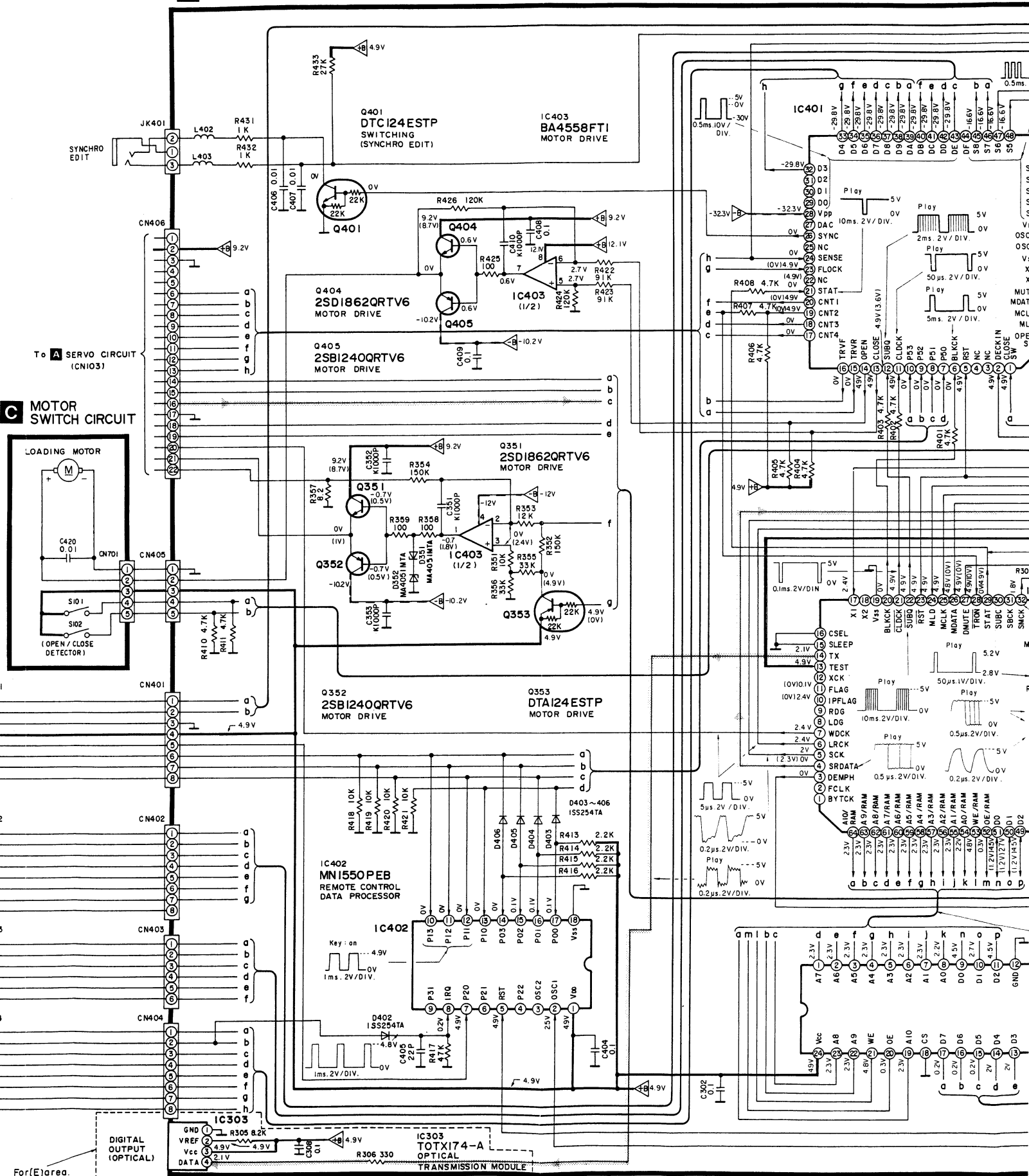
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the pins of IC or LSI with fingers directly.



B OPERATION CIRCUIT

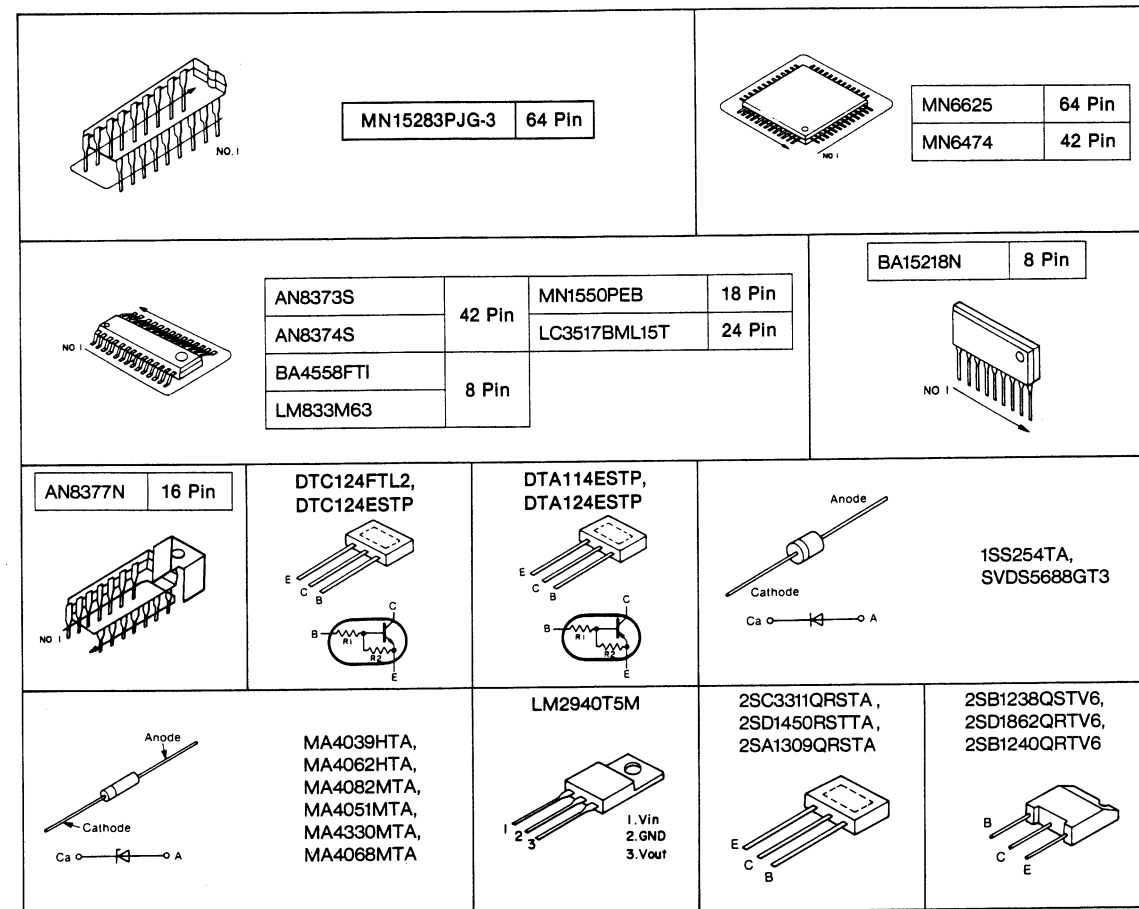


■ MAIN CIRCUIT





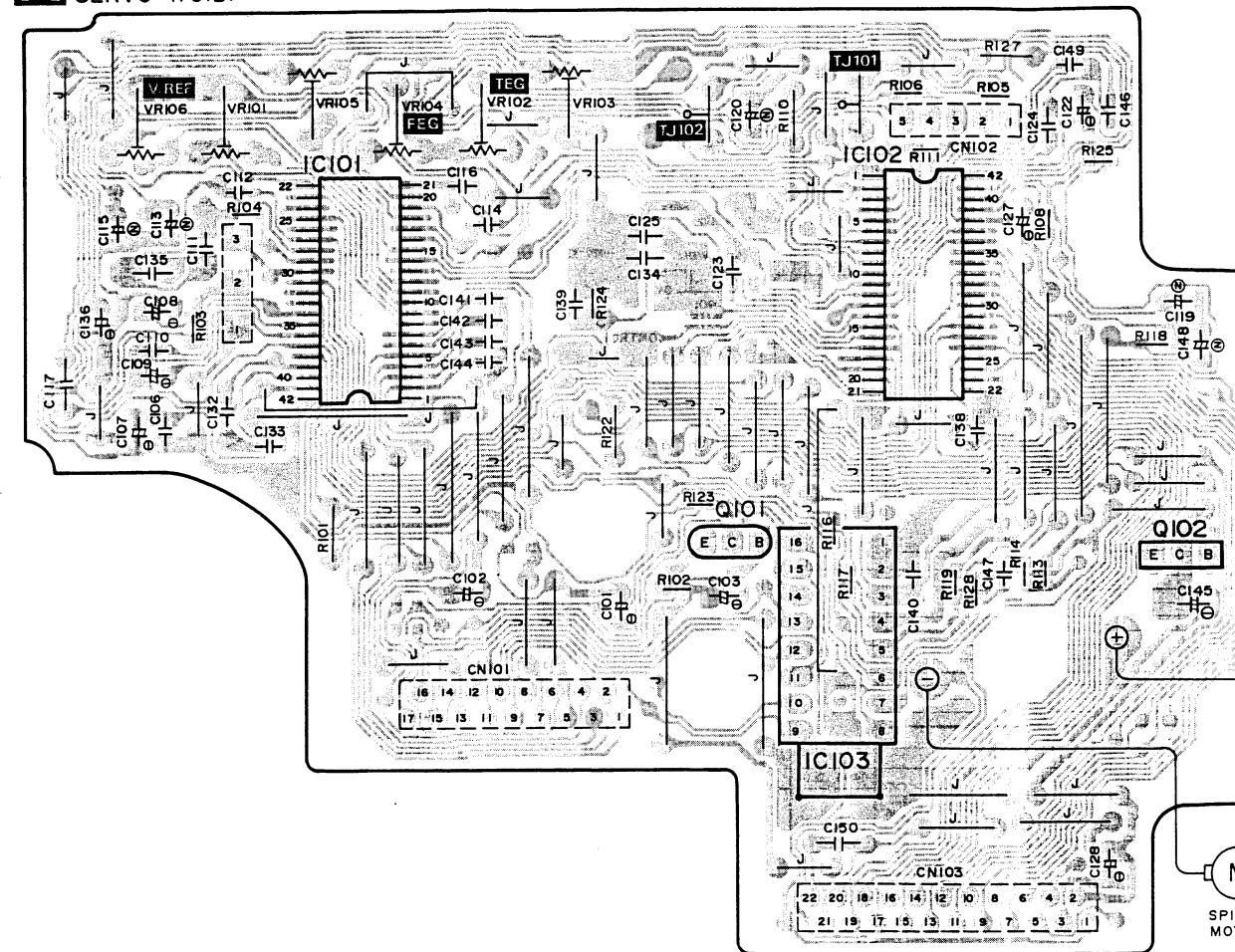
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



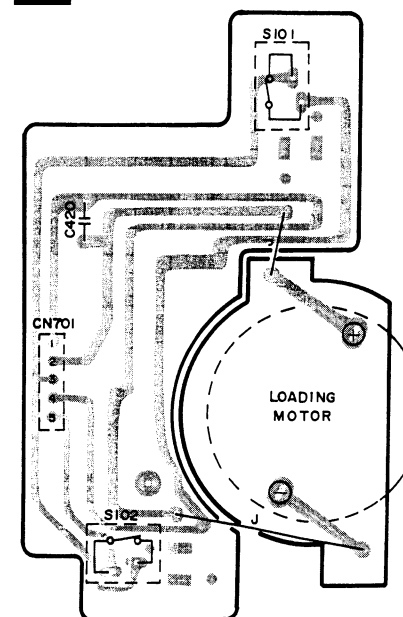
■ PRINTED CIRCUIT BOARDS

A
B
C
D
E
F
G

A SERVO P.C.B.

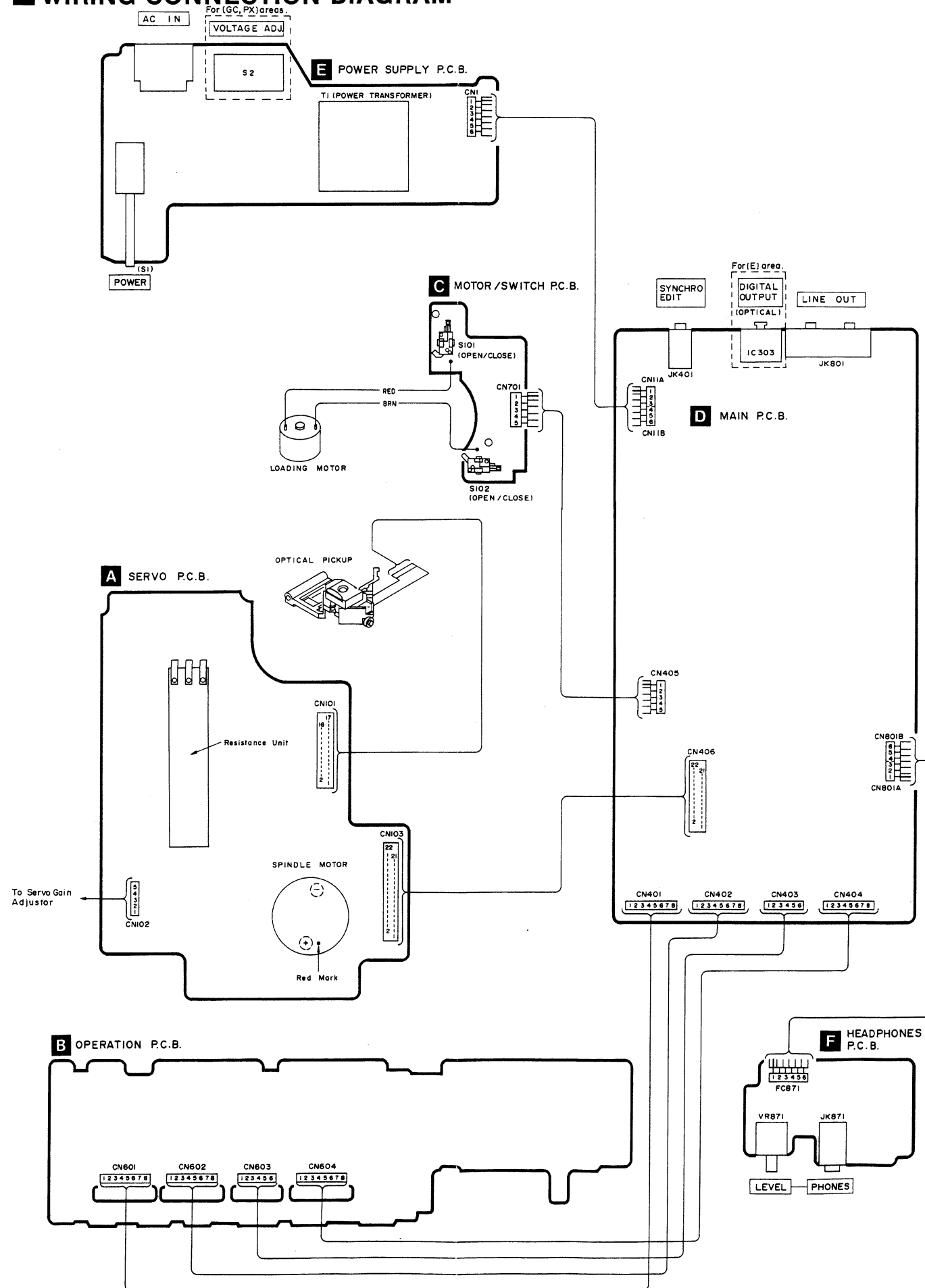


C MOTOR/SWITCH P.C.B.





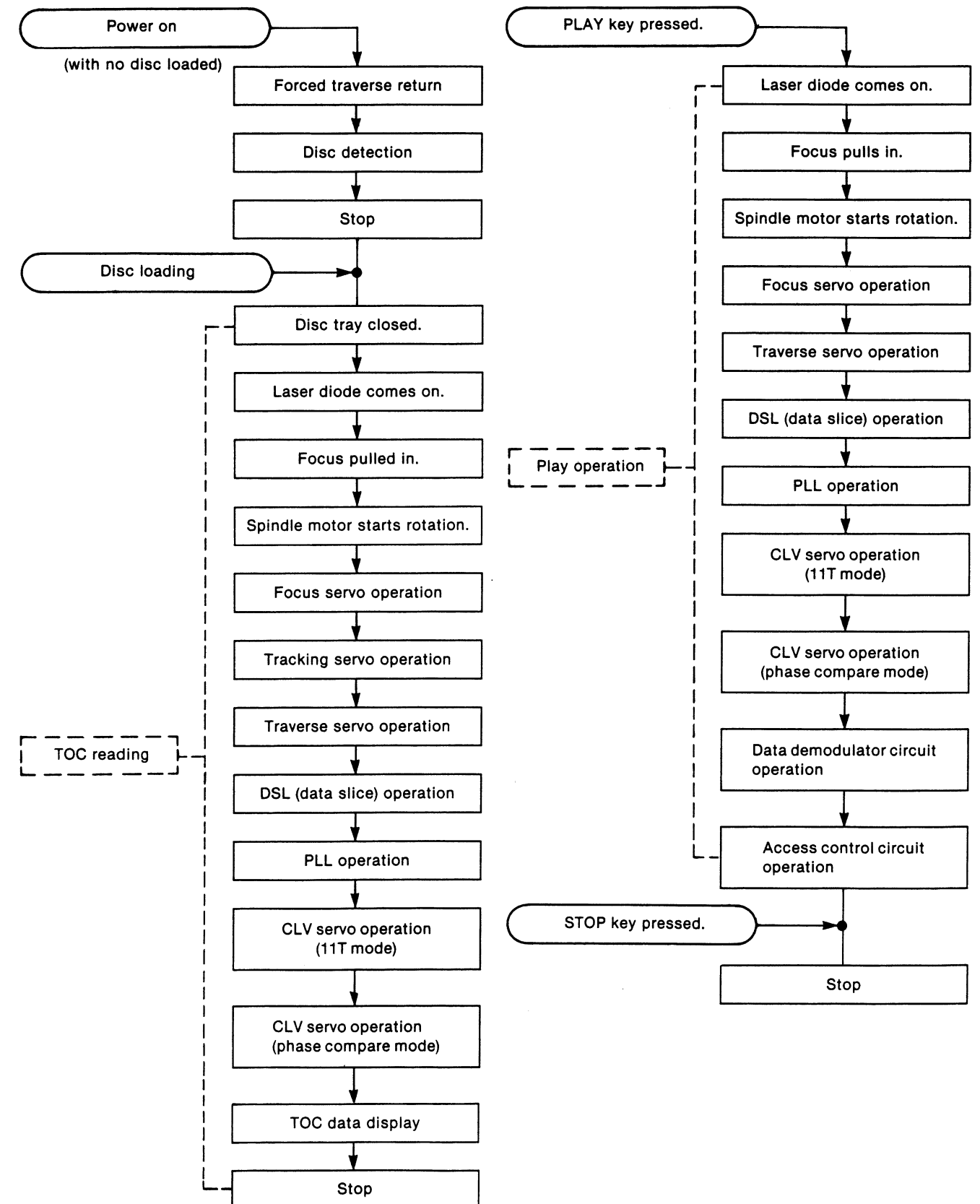
WIRING CONNECTION DIAGRAM



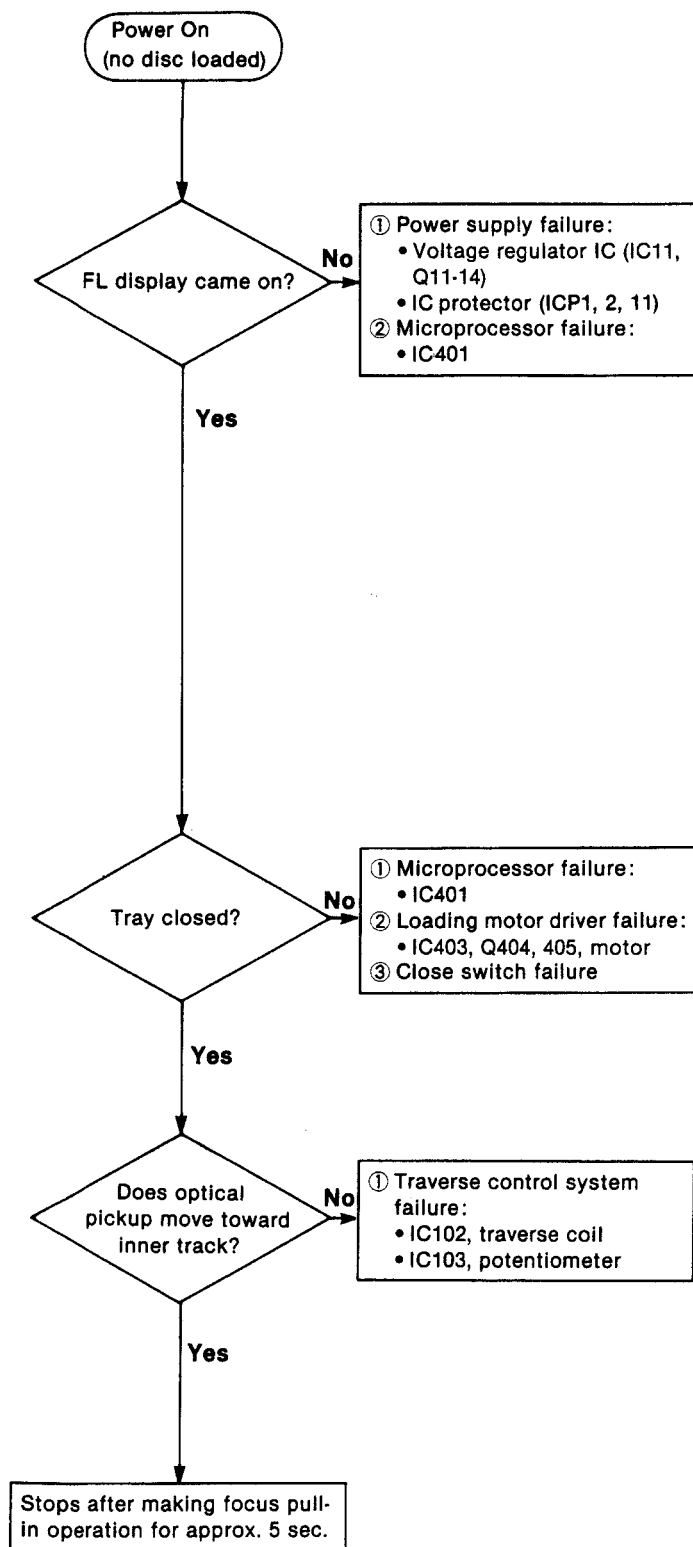
TROUBLESHOOTING GUIDE

SL-P370 Operation Sequence Check Sheet

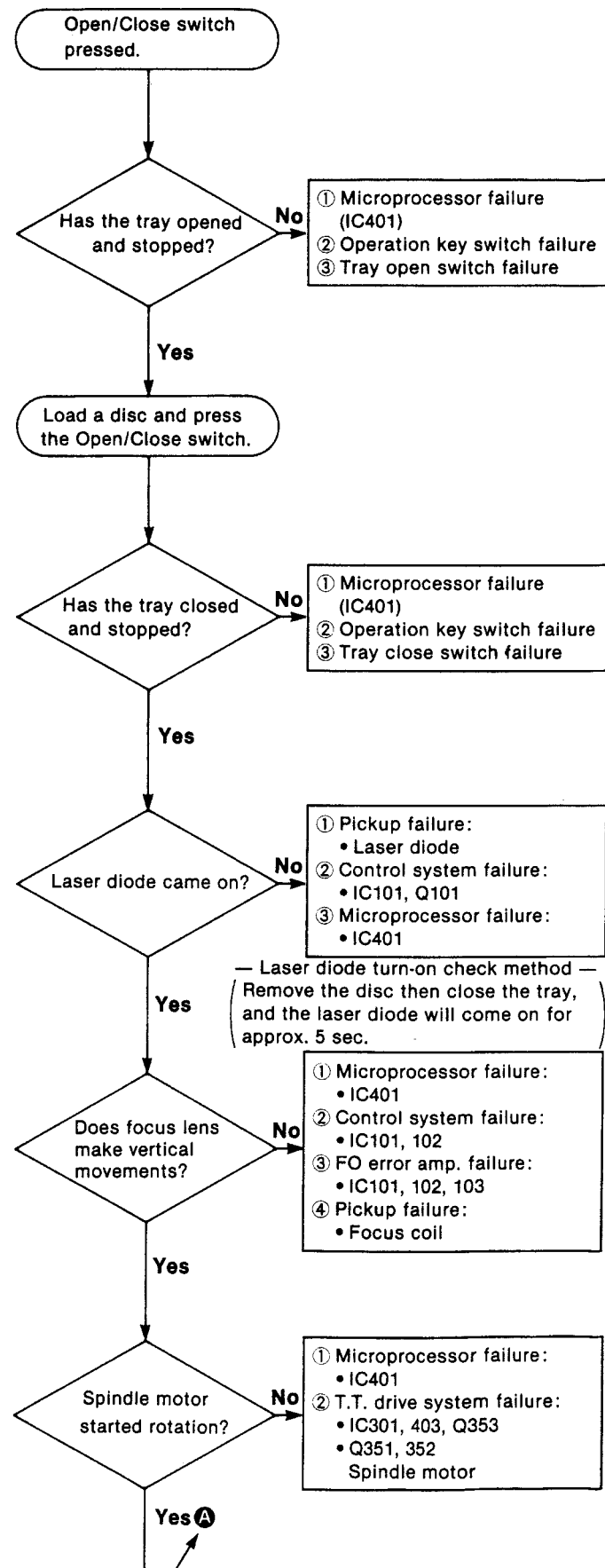
Play Operation Sequence

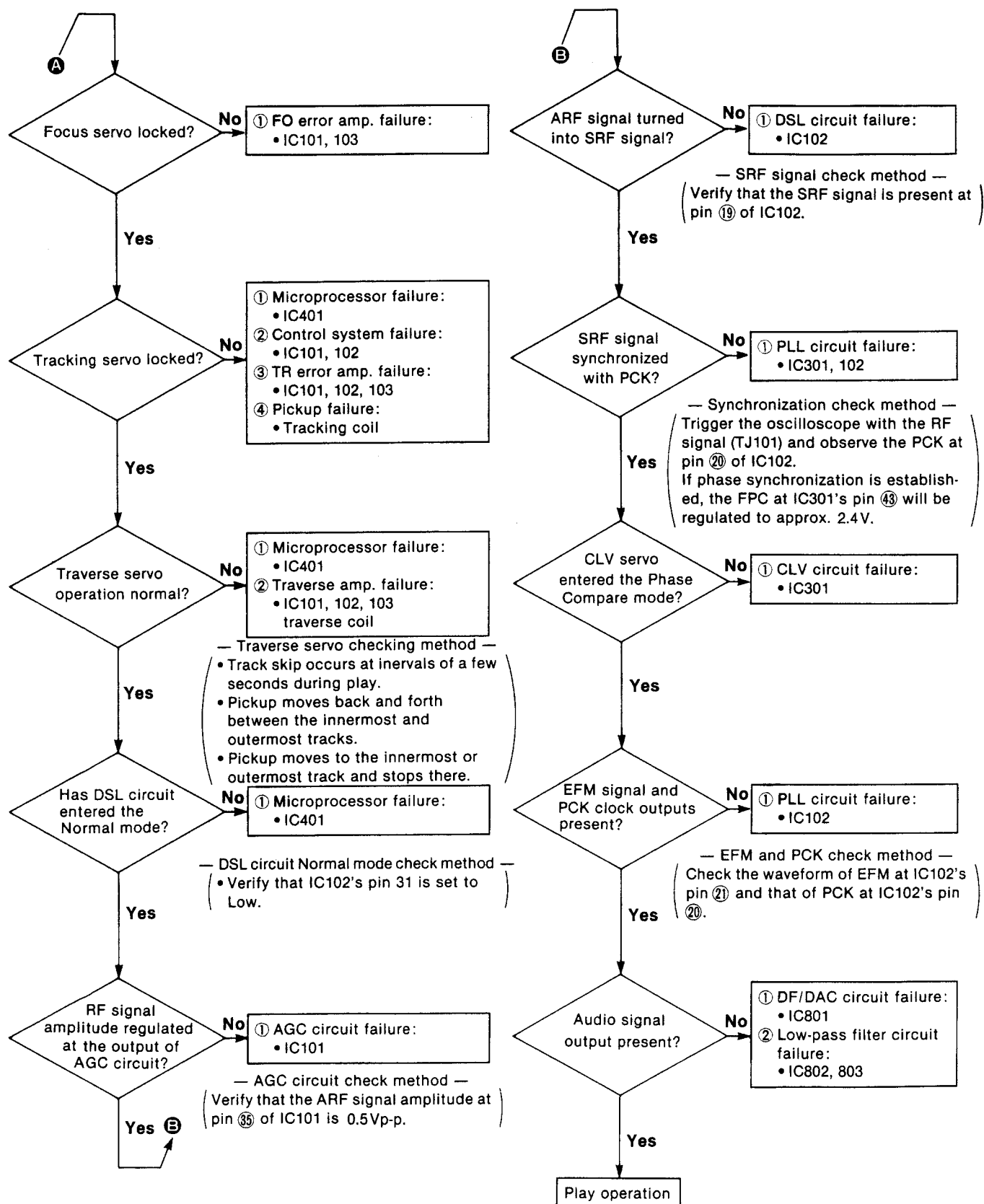


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)





REPLACEMENT PARTS LIST

Notes : * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		D351, 352	MA4051MTA	DIODE	
				D402-406	1SS254TA	DIODE	
				D409	MA4039HTA	DIODE	
IC11	LM2940T5M	IC, REGULATOR		D601-610	1SS254TA	DIODE	
IC301	MN6625	IC, DSP		D801-803	1SS254TA	DIODE	
IC302	LC3517BML15T	IC, 16K RAM		D851-854	1SS254TA	DIODE	
IC303	TOTX174-A	IC, OPTICAL OUT	(E)	D871	1SS254TA	DIODE	
IC401	MN15283PJG-3	IC, SYSTEM CONTROL&FL DRIVE					
IC402	MN1550PEB	IC, REMOTE CONTROL S.P.				I.C. PROTECTOR(S)	
IC403	BA4558F	IC, MOTOR CONTROL					
IC601	HC-521	IC, REMOTE CONTROL RECEIVER	(P, PC)	ICP1, 2	SRUF38	IC PROTECTOR	(GC, PX) Δ
IC601	HC-MD10E	IC, REMOTE CONTROL RECEIVER	(E, GN, GC, PX)			VARIABLE RESISTOR(S)	
IC801	MN6474	IC, DIGITAL FILTER&D/A CONV.					
IC802	LM833M63	IC, DIFFERENTIAL AMP					
IC803	BA4558F	IC, L. P. F.		VR871	EVJCB0F02A14	V. R. HEADPHONES LEVEL	
IC871	BA15218N	IC, HEADPHONES AMP				COIL(S)	
		TRANSISTOR(S)					
				L302	RLQZP4R7KT-Y	COIL	
Q11	2SB1238QSTV6	TRANSISTOR		L402, 403	RLQZP4R7KT-Y	COIL	
Q12	2SC3311A-Q	TRANSISTOR		L801, 802	RLQZP4R7KT-Y	COIL	
Q13	2SA1309A-R	TRANSISTOR		L871-873	RLQZP2R2KT-Y	COIL	
Q14	2SC3311A-Q	TRANSISTOR				FUSE	
Q351	2SD1862QRTV6	TRANSISTOR					
Q352	2SB1240-P	TRANSISTOR		F1	XBA2C012TB0	FUSE	(E, GN) Δ
Q353	DTA124EST	TRANSISTOR		F1	XBA2C025TB0	FUSE	(GC, PX) Δ
Q401	DTC124ES	TRANSISTOR				TRANSFORMER(S)	
Q404	2SD1862QRTV6	TRANSISTOR					
Q405	2SB1240-P	TRANSISTOR		T1	SLTD5K096SC	POWER TRANSFORMER	(P, PC) Δ
Q406, 407	2SC3311A-Q	TRANSISTOR		T1	SLTD5K097SE	POWER TRANSFORMER	(E) Δ
Q601-611	DTC124FTL2	TRANSISTOR		T1	SLTD5K098SG	POWER TRANSFORMER	(GN) Δ
Q801, 802	2SC3311A-Q	TRANSISTOR		T1	SLTD5K099SX	POWER TRANSFORMER	(GC, PX) Δ
Q803, 804	2SD1450RTA	TRANSISTOR				OSCILLATOR(S)	
Q851, 852	DTA124EST	TRANSISTOR					
Q853	DTC124ES	TRANSISTOR		X801	SVQ49U338S	OSCILLATOR	
Q854	DTA114ESTP	TRANSISTOR				DISPLAY TUBE	
Q871, 872	2SD1450RTA	TRANSISTOR					
		DIODE(S)		FL601	RSL0003F	DISPLAY TUBE	
						SWITCH(ES)	
D11-14	SVDS5688GT3	DIODE					
D15	MA4068M	DIODE		S1	ESB8249V	SW, POWER	Δ
D16	MA4062-H	DIODE		S2	SSR187-1	SW, VOLTAGE SELECTOR	(GC, PX) Δ
D17-20	SVDS5688GT3	DIODE					
D21	MA4330MTA	DIODE					
D22	MA4082MTA	DIODE					
D23	1SS254TA	DIODE					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
S101	SSPD17-1	SW, LOADING DET.		JK801	RJH3201N	OUTPUT JACK	
S102	SSPD18-1	SW, LOADING DET.		JK871	QJA0455ZC	HEADPHONES JACK	
S601	EVQQTG05R	SW, OPEN/CLOSE					
S602	EVQQTG05R	SW, STOP				<SERVO P. C. B>	
S603	EVQQTG05R	SW, REPEAT				INTEGRATED CIRCUITS	
S604	EVQQTG05R	SW, PAUSE					
S605	EVQQTG05R	SW, PLAY		IC101	AN8373S	IC, SERVO AMP	
S606	EVQQTG05R	SW, B. SEARCH		IC102	AN8374S	IC, SERVO PROCESSOR	
S607	EVQQTG05R	SW, F. SEARCH		IC103	AN8377N	IC, B. T. L. DRIVE	
S608	EVQQTG05R	SW, B. SKIP					
S609	EVQQTG05R	SW, F. SKIP				TRANSISTORS<SERVO P. C. B. >	
S610	EVQQTG05R	SW, TIME MODE					
S611	EVQQTG05R	SW, PROGRAM		Q101	2SA1547QSTV2	TRANSISTOR	
S612	EVQQTG05R	SW, CLEAR		Q102	2SB1240QR	TRANSISTOR	
S613	EVQQTG05R	SW, AUTO CUE					
S614	EVQQTG05R	SW, SIDE A/B				<SERVO P. C. B>	
S615	EVQQTG05R	SW, EDIT				VARIABLE RESISTORS	
S616	EVQQTG05R	SW, NUMERIC 1					
S617	EVQQTG05R	SW, NUMERIC +10		VR101	EVND3AA00B14	V. R, BEST EYE ADJ.	
S618	EVQQTG05R	SW, NUMERIC 2		VR102	EVND3AA00B14	V. R, TRACKING GAIN ADJ.	
S619	EVQQTG05R	SW, NUMERIC 3		VR103	EVND3AA00B14	V. R, TRACKING OFFSET ADJ.	
S620	EVQQTG05R	SW, NUMERIC 4		VR104	EVND3AA00B14	V. R, FOCUS GAIN ADJ.	
S621	EVQQTG05R	SW, NUMERIC 5		VR105	EVND3AA00B14	V. R, FOCUS OFFSET ADJ.	
S622	EVQQTG05R	SW, NUMERIC 6		VR106	EVND3AA00B24	V. R, TRACKING BALANCE ADJ.	
S623	EVQQTG05R	SW, NUMERIC 7					
S624	EVQQTG05R	SW, NUMERIC 8				<SERVO P. C. B>	
S625	EVQQTG05R	SW, NUMERIC 9				MAGNET RESISTOR ELEMENTS	
S626	EVQQTG05R	SW, NUMERIC 0					
		CONNECTOR (S) & SOCKET (S)		RA1	EW57MOA00Q53	RESISTANCE UNIT	
CN11	SJT30643-V	CONNECTOR (6P)					
CN401, 402	RJU003K008M1	SOCKET (8P)					
CN403	RJU003K006M1	SOCKET (6P)					
CN404	RJU003K008M1	SOCKET (8P)					
CN405	RJS1A1705	CONNECTOR (5P)					
CN406	SJSD2221	CONNECTOR (22P)					
CN601, 602	RJT003K008M	CONNECTOR (8P)					
CN603	RJT003K006M	CONNECTOR (6P)					
CN604	RJT003K008M	CONNECTOR (8P)					
CN801	SJT30643-V	CONNECTOR (6P)					
		FLAT CABLE					
FC1	RWJ1806090KQ	FLAT CABLE (6P)					
FC871	REED150	FLAT CABLE (6P)					
		JACK (S)					
JK1	SJSD16	AC INLET	(P, PC, GN) △				
JK1	SJS9236	AC INLET	(E, GC, PX) △				
JK401	RJJ33T01	SYNCHRO. JACK					

Notes : * Important safety notice:

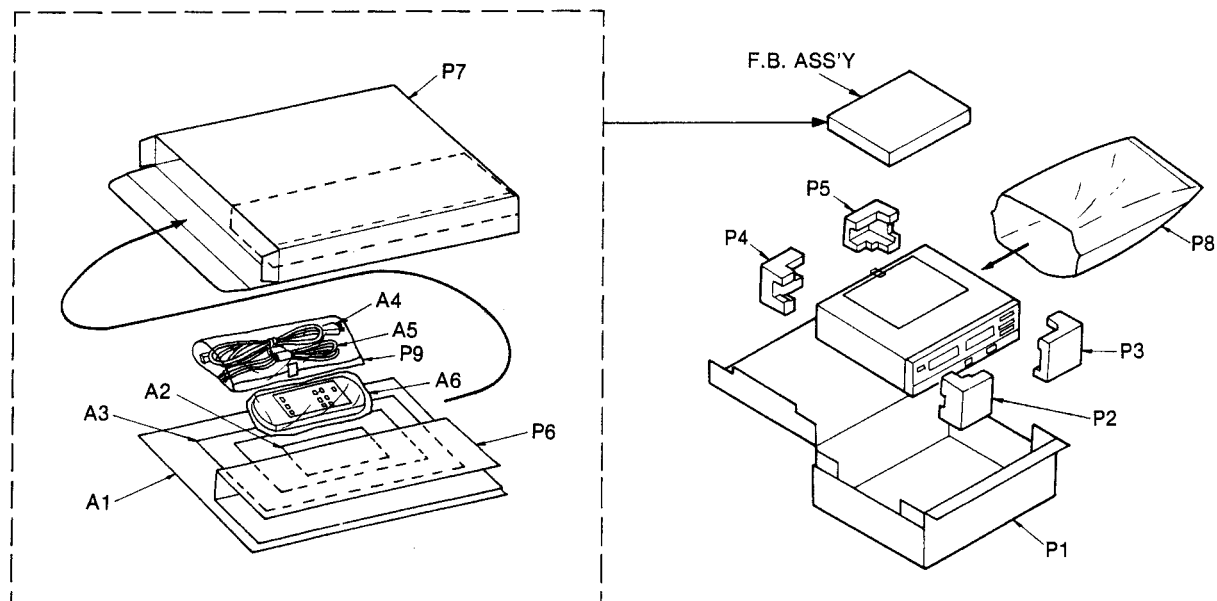
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- * The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
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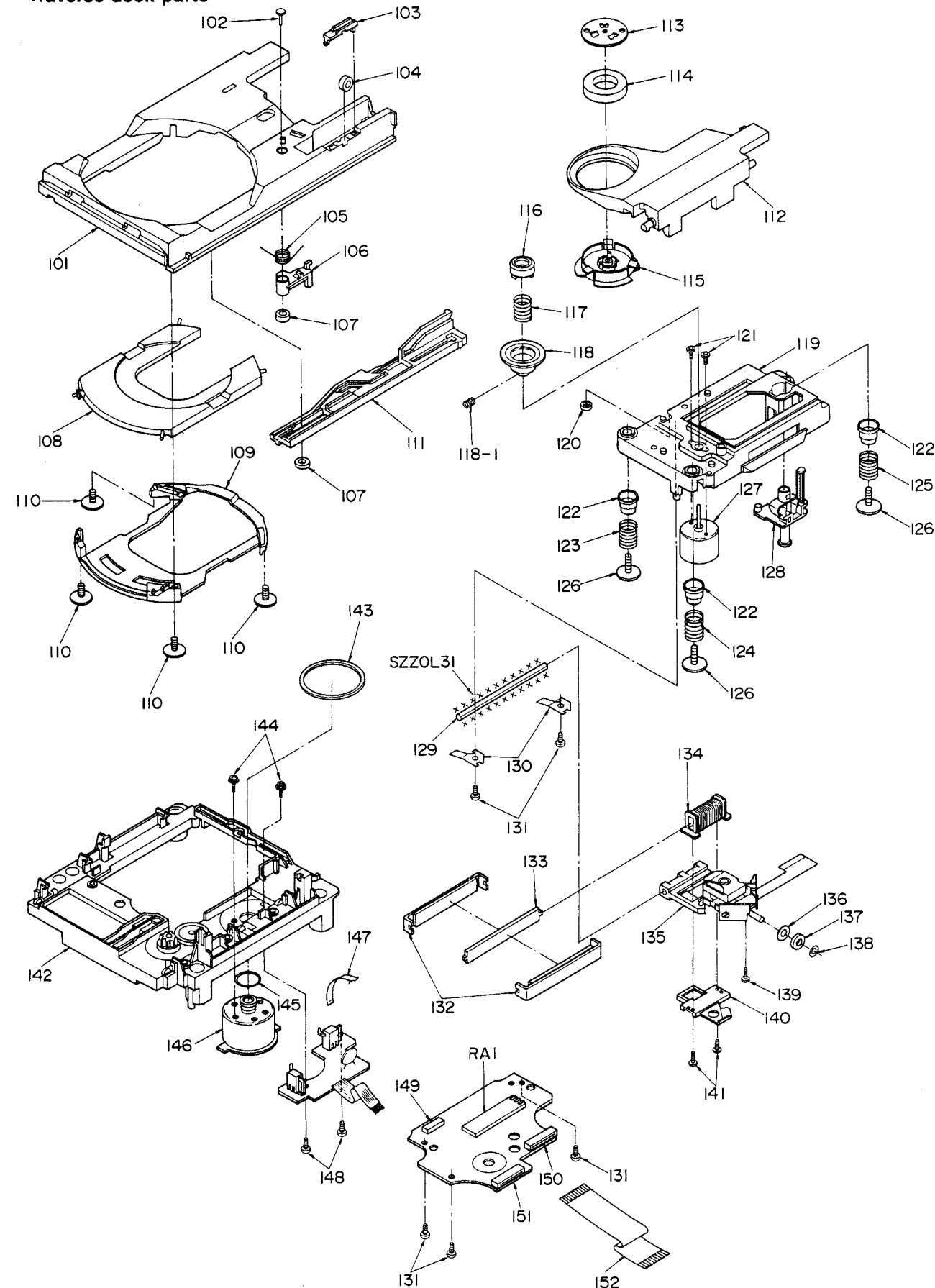
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS		110	SNSD36	SCREW	
1	RKMD078-1K	CABINET		111	SIRD40-2	RACK GEAR	
2	RGKD168-K	TRAY ORNAMENT		112	SIRD42-5	CLAMPER	
3	RGR0055A-I	REAR PANEL	(P, PC)	113	SOYD2	CLAMPER YOKE	
3	RGR0055G-K	REAR PANEL	(E)	114	SOMD4	CLAMPER MAGNET	
3	RGR0055A-J	REAR PANEL	(GN)	115	SIRD51-1	CLAMPER HOLDER	
3	RGR0055H-L	REAR PANEL	(GC)	116	SDOD29-2	RING	
3	RFKHLP370PXK	REAR PANEL ASS'Y	(PX)	117	SRQA010N04	SPRING	
4	RGU0030	POWER BUTTON		118	SDOD28-1E	TURNABLE	
5	RFKJLP370P-K	CHASSIS ASS'Y		118-1	XXE26D5	SCREW	
5-1	RKA0030B	FOOT		119	SISD22-1	TRAVERSE BASE	
6	RMM0047	POWER BUTTON ROD		120	SHGD148	STOPPER RUBBER	
7	RFKGLP370P-K	FRONT PANEL ASS'Y		121	XYN2+C8	SCREW	
7-1	RKWD062	FL ORNAMENT		122	SHGD153-1	CUSHION RUBBER	
7-2	RMR0210	HEADPHONES HOLDER		123	SUSD137-1	SPRING (B)	
8	RGU0245A	MAIN BUTTON		124	SUSD136-1	SPRING (A)	
9	RGU0246	SUB BUTTON		125	SUSD145-1	SPRING (C)	
10	RGU0247A	10 KEY BUTTON		126	SNSD33	SCREW	
11	RGW0048	HEADPHONES KNOB		127	SJGDRF310T-2	SPINDLE MOTOR	
12	SHE185-2	P. C. B. SUPPORT		128	SHRD177-1	LOCK UNIT	
13	RMC0063	HEADPHONES EARTH PLATE		129	SUXD123-1	GUIDE SHAFT	
14	SUSD144	EARTH PLATE		130	SUWD112	GUIDE SHAFT HOLDER	
15	SUWD139-1	FL HOLDER		131	XTB3+10G	SCREW	
16	SJT390	FUSE HOLDER	(E, GN, GC, PX)	132	SOYD21-E	YOKE (A)	
17	VJA1034	PROTECTION CAP	(E)	133	SOYD22	YOKE (B)	
		SCREWS		134	SORD38-E	COIL	
N1	SNE2129-1	SCREW		135	SOAD70A	OPTICAL PICKUP	
N2	XTBS3+8JFZ1	SCREW		136	SHWD33	WASHER	
N3	XTBS26+8J	SCREW		137	SORD37	ROLLER	
N4	XTB3+16JFZ	SCREW		138	SHWD34	WASHER	
N5	XTB3+8F	SCREW		139	SNSD31	SCREW	
		TRAVERSE DECK		140	SHRD176-E	COIL HOLDER	
101	RFKNLP370PAK	DISC TRAY ASS'Y		141	XTB2+5G	SCREW	
102	RMQ0044	PIN		142	RFKNLP370PBK	LOADING BASE ASS'Y	
103	SHRD150	ROLLER HOLDER		143	SMBD7-2	BELT	
104	SDRD12	ROLLER		144	XYN26+F7	SCREW	
105	SUSD83	SPRING		145	RMG0050	MOTOR RUBBER	
106	SIRD96-1	LOCK LEVER		146	SIRD94-E	LOADING MOTOR ASS'Y	
107	SFUMZ15R61	WASHER		147	SIKD150051F	FLAT CABLE	
108	SIRD98-3	DISC TRAY		148	XTB3+8G	SCREW	
109	SIRD107-1	TRAY BASE		149	EMCS0552MP	CONNECTOR (5P)	
				150	SJSD1722M	SOCKET (17P)	
				151	SJSD2222M	SOCKET (22P)	
				152	SIKD150221-1	FLAT CABLE	
						PACKING MATERIAL	

Ref. No.	Part No.	Part Name & Description	Remarks
P1	RPC0411	PACKING CASE	(P, PX)
P1	RPC0412	PACKING CASE	(PC, E, GN, GC)
P2	RPN0224A	CUSHION (F. L.)	
P3	RPN0224B	CUSHION (F. R.)	
P4	RPN0224C	CUSHION (B. L.)	
P5	RPN0224D	CUSHION (B. R.)	
P6	RPN0308	PARTITION	
P7	SPSD152	ACCESSORY BOX	
P8	XZB60X60A01	PROTECTION BAG (UNIT)	
P9	XZB26X17C03	PROTECTION BAG (F. B.)	
		ACCESSORIES	
A1	RQT0379-P	INSTRUCTION MANUAL	(P, PX)
A1	RFKSLP370PCK	INSTRUCTION MANUAL ASS'Y	(PC)
A1	RFKSLP370E-K	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT0377-G	INSTRUCTION MANUAL	(GN, GC)
A2	SQX7179	WARRANTY CARD	(P)
A2	SQX7183	WARRANTY CARD	(PC)
A2	RQA0013	WARRANTY CARD	(E)
A2	SQX7186	WARRANTY CARD	(GN)
A2	SQX7071-1	WARRANTY CARD	(PX)
A3	SQX9129-1	SERVICENTER LIST	(P)
A3	RQCB0169	SERVICENTER LIST	(E, GN, GC)
A4	SJA175-1	POWER CORD	(P) △
A4	SJA175	POWER CORD	(PC) △
A4	SJA187	POWER CORD	(E) △
A4	SJA173	POWER CORD	(GN) △
A4	RJA0004	POWER CORD	(GC, PX) △
A5	SJP2249-3	PIN CORD	
A6	RAK-SL3002P	REMOTE CONTROL TRANSMITTER	(P, PC)
A6	RAK-SL3006E	REMOTE CONTROL TRANSMITTER	(E, GN, GC, PX)
A7	RKK0008	BATTERY COVER	
A8	SJP9215	AC PLUG ADAPTOR	(GC, PX) △

PACKING



• Traverse deck parts



Note: When changing mechanism parts, apply the specified grease to the areas marked "x x" as shown in the drawing.

RESISTORS & CAPACITORS

Notes : * Capacity value are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
			R825, 826	ERDS2TJ471T	1/4W 470	C410	ECBT1H102KB5	50V 1000P
			R827, 828	ERDS2TJ473T	1/4W 47K	C411	ECEA1H33R3	50V 3.3U
			R829, 830	ERDS2TJ471T	1/4W 470	C420	ECKW1H103KB5	50V 0.01U
			R831-834	ERDS2TJ102T	1/4W 1K	C601	ECEA0JK470B	6.3V 47U
			R835, 836	ERDS2TJ331T	1/4W 330	C602	ECBT1H102KB5	50V 1000P
			R837	ERDS2TJ472T	1/4W 4.7K	C801-804	ECBT1H680J5	50V 68P
			R840	ERDS2TJ102T	1/4W 1K	C805-808	ECBT1H470J5	50V 47P
			R851	ERDS2TJ472T	1/4W 4.7K	C809, 810	ECQM1H33KF	50V 0.033U
			R852	ERDS2TJ102T	1/4W 1K	C811, 812	ECQM1H102KF3	50V 1000P
			R853	ERDS2TJ471T	1/4W 470	C813, 814	ECBT1H101KB5	50V 100P
			R854	ERDS2TJ102T	1/4W 1K	C815, 816	ECEA1AN220S	10V 22U
			R855	ERDS2TJ472T	1/4W 4.7K	C817, 818	ECBT1H102KB5	50V 1000P
			R871, 872	ERDS2TJ122T	1/4W 1.2K	C819, 820	ECBT1H471KB5	50V 470P
			R873-876	ERDS2TJ183T	1/4W 18K	C821, 822	ECFR1E104ZF5	25V 0.1U
			R877, 878	ERDS2TJ124T	1/4W 120K	C823, 824	ECEA0JU331B	6.3V 330U
			R879, 880	ERDS2TJ473T	1/4W 47K	C825, 826	ECFR1E104ZF5	25V 0.1U
			R881, 882	ERDS2TJ101T	1/4W 100	C827, 828	ECEA1CK100B	16V 10U
			R883, 884	ERDS2TJ222	1/4W 2.2K	C829	ECFR1E104ZF5	25V 0.1U
						C830, 831	ECBT1H5R6K5	50V 5.6P
						C832	ECBT1E103ZF	25V 0.01U
						C851	ECEA1CK100B	16V 10U
						C852	ECEA0JU471B	6.3V 470U
						C871, 872	ECEA1AKN100B	10V 10U
						C873, 874	ECEA1AKN470B	10V 47U
						C875-879	ECBT1E103ZF	25V 0.01U
								RESISTORS<SERVO P.C.B.>
R11	ERDS2TJ331T	1/4W 330	C1	ECKWKC103PF2	400V 0.01U	R101	ERDS2TJ471	1/4W 470
R12-14	ERDS2TJ101T	1/4W 100	C10	ECEA1CU222E	16V 2200U	R102	ERJ6GEYJ120V	1/10W 12
R15	ERDS2TJ102T	1/4W 1K	C11	ECEA1CU471B	16V 470U	R103	ERJ6GEYJ122	1/10W 1.2K
R16	ERDS2TJ120T	1/4W 12	C12, 13	ECEA1CK101	16V 100U	R104	ERJ6GEYJ471	1/10W 470
R17	ERDS2TJ102T	1/4W 1K	C14	ECEA1CK330	16V 33U	R105, 106	RRJ6GCJ102TE	1/6W 1K
R18	ERDS2TJ222T	1/4W 2.2K	C15	ECEA1CK470	16V 47U	R108	ERJ6GEYJ224V	1/10W 220K
R19, 20	ERDS2TJ102T	1/4W 1K	C16, 17	ECEA1CU331B	16V 330U	R110	ERDS2TJ222	1/4W 2.2K
R301	ERDS2TJ102T	1/4W 1K	C18, 19	ECEA1VU101B	35V 100U	R111	ERJ6GEYJ154V	1/10W 150K
R302	ERDS2TJ561T	1/4W 560	C20	ECFR1E104ZF5	25V 0.1U	R113	ERJ6GEYJ472V	1/10W 4.7K
R303	ERDS2TJ472T	1/4W 4.7K	C21, 22	ECKR1H103ZF5	50V 0.01U	R114	ERJ6GEYJ683V	1/10W 68K
R305	ERDS2TJ822T	1/4W 8.2K (E)	C23	ECEA0JK470B	6.3V 47U	R116	ERJ6GEYJ332V	1/10W 3.3K
R306	ERDS2TJ331T	1/4W 330 (E)	C24	ECFR1E104ZF5	25V 0.1U	R117	ERJ6GEYJ123	1/10W 12K
R351	ERDS2TJ103T	1/4W 10K	C25-28	ECBT1E103ZF	25V 0.01U	R118	ERJ6GEYJ333V	1/10W 33K
R352	ERDS2TJ154T	1/4W 150K	C301, 302	ECFR1E104ZF5	25V 0.1U	R119	RRJ6GCJ223TE	1/6W 22K
R353	ERDS2TJ123T	1/4W 12K	C303	ECBT1H68R8K5	50V 6.8P	R122	ERDS2TJ104	1/4W 100K
R354	ERDS2TJ154T	1/4W 150K	C304	ECEA0JU331B	6.3V 330U	R123	ERJ6GEYJ470V	1/10W 47
R355, 356	ERDS2TJ333T	1/4W 33K	C305	ECFR1E104ZF5	25V 0.1U	R124	RRJ6GCJ103TE	1/6W 10K
R357	ERDS2TJ8R2	1/4W 8.2	C306	ECEA0JK101B	6.3V 100U	R125	RRJ6GCJ222TE	1/6W 2.2K
R358, 359	ERDS2TJ101T	1/4W 100	C307	ECBT1E103ZF	25V 0.01U	R127	ERDS2TJ681	1/4W 680
R401-408	ERDS2TJ472T	1/4W 4.7K	C308	ECFR1E104ZF5	25V 0.1U (E)	R128	RRJ6GCJ103TE	1/6W 10K
R409	ERDS2TJ104T	1/4W 100K	C351-353	ECBT1H102KB5	50V 1000P			
R410-412	ERDS2TJ472T	1/4W 4.7K	C401	ECEA0JK470	6.3V 47U			
R413-416	ERDS2TJ222	1/4W 2.2K	C402	ECFR1E104ZF5	25V 0.1U			
R417	ERDS2TJ473T	1/4W 47K	C403	ECBT1E103ZF	25V 0.01U			
R418-421	ERDS2TJ103T	1/4W 10K	C404	ECFR1E104ZF5	25V 0.1U			
R422, 423	ERDS2TJ913T	1/4W 91K	C405	ECBT1H220J5	50V 22P			
R424	ERDS2TJ124T	1/4W 120K	C406, 407	ECBT1E103ZF	25V 0.01U			
R425	ERDS2TJ101T	1/4W 100	C408, 409	ECFR1E104ZF5	25V 0.1U			
R426	ERDS2TJ124T	1/4W 120K						
R427	ERDS2TJ221T	1/4W 220						
R428-430	ERDS2TJ472T	1/4W 4.7K						
R431, 432	ERDS2TJ102T	1/4W 1K						
R433	ERDS2TJ273T	1/4W 27K						
R601-611	ERDS2TJ102T	1/4W 1K						
R801-804	ERDS2TJ103T	1/4W 10K						
R805-808	ERDS2TJ273T	1/4W 27K						
R809-812	ERDS2TJ473T	1/4W 47K						
R813, 814	ERDS2TJ102T	1/4W 1K						
R815, 816	ERDS2TJ104T	1/4W 100K						
R817, 818	ERDS2TJ391T	1/4W 390						
R819, 820	ERDS2TJ103T	1/4W 10K						
R821, 822	ERDS2TJ123T	1/4W 12K						
R823, 824	ERDS2TJ562T	1/4W 5.6K						

[illegible]