ORDER NO. AD9001012C8

Service Manual

Compact Disc Player

SL-PS50

SL-P333 MECHANISM SERIES (SIWD113-3ZA)

Color

(K)... Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	(K)
(EG)	F.R. Germany & Italy.	(K)
(GC)	Third Region.	(K)
(GN)	Oceania.	(K)

SPECIFICATIONS

Audio

No. of channels	2 (left and right, stereo)
Frequency response	2–20,000 Hz±0.5 dB
Output voltage	2 V (at 0 dB)
Dynamic range	96 dB
S/N ratio	103 dB
Total harmonic distortion	0.003% (1 kHz, 0 dB)
Harmonic distortion	0.002% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH* (4 DAC)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ
Headphone output level	15 mW max. 32Ω (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

General

Power supply

For Great Britain and Oceania: AC50/60Hz, 240V
For Continental Europe and F.R. Germany & Italy: AC 50/60Hz, 220V
For others: AC 50/60Hz, 110V/127V/220V/240V

Power consumption	11 W
Dimensions (W×H×D)	430×126.5×332.5 mm
Weight	5.2 kg

Specifications subject to change without notice.
Weight and dimensions shown are approximate.

Technics

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

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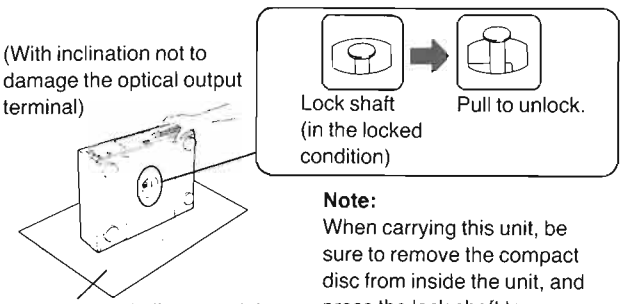
PLACEMENT

Before placement

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

(With inclination not to damage the optical output terminal)



Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and press the lock shaft to secure the optical pickup.
(Make sure to place the unit with the rear panel facing downward.)

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.

ACCESSORIES

- AC power supply cord 1
  (SJA187: (E, EG)
  SJA193: (EB)
  SJA173: (GN)
  RJA0004: (GC))
- Stereo connection cable 1
  (SJP2249-3)
- Remote control transmitter 1
  (RAK-SL3009W)
- 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 laserdiode. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

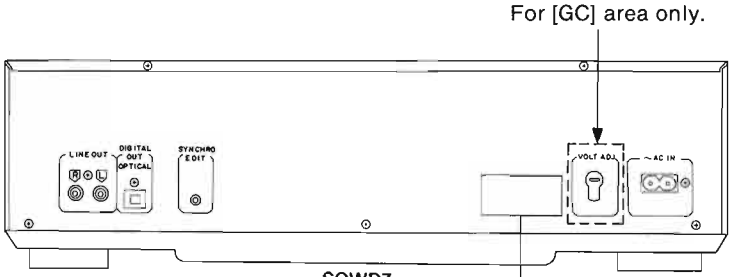
Wellenlänge: 780nm
Maximale strahlungsleistung der lasereinheit: 100μW/VDE

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

1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinrelt 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.

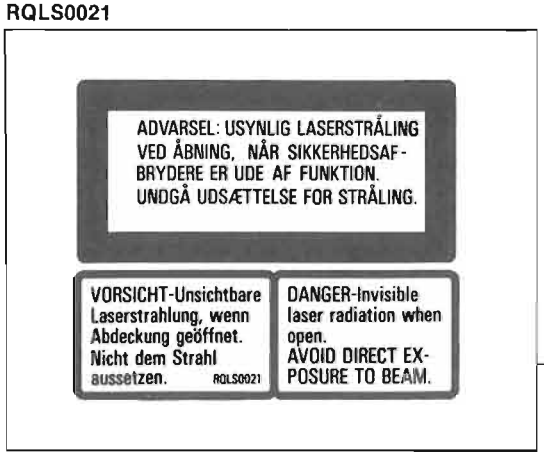
For [GC] area only.

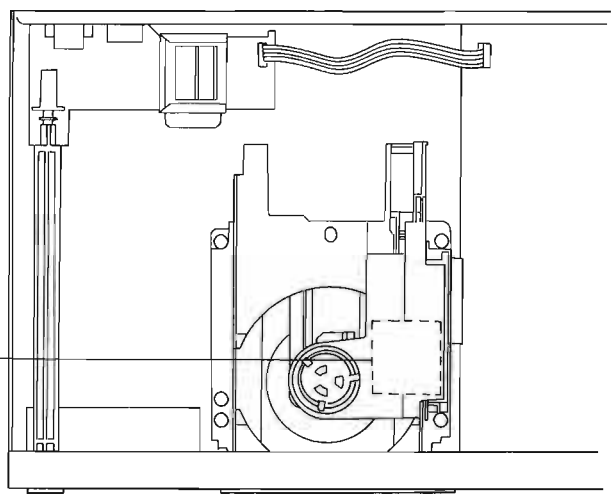


SQWD7

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

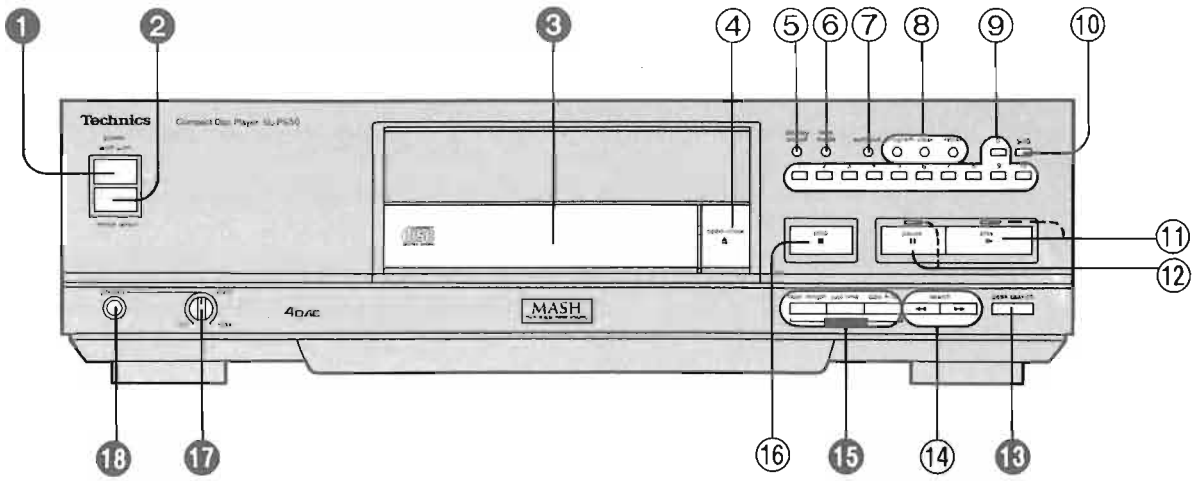
RQLS0021





■ 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

❶ Power switch (power ▙ off ▁ on)

❷ Remote control signal sensor (remote sensor)

❸ Disc holder

④ Disc holder open/close button (▲ open/close)

⑤ Display on/off button (display on/off)
Pressing this button enables the unit to delete the indicators on the display in two steps.

⑥ Time mode select button (time mode)

⑦ 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.

⑧ Buttons for program function

•Program button (program)
Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.

•Clear button (clear)
Each pressing this button makes one track cleared from the programmed sequence.

•Recall button (recall)
This button can be used to display the contents of the programmed track sequence for confirmation.

⑨ Numeric buttons (0~10)

⑩ Input mode button (>10)
Press this button and then the numeric buttons (0~9) to specify the track number 11 and up.

⑪ Play button and indicator (▶ play)

⑫ Pause button and indicator (❚❚ pause)

⑬ Peak level search button (peak search)
Pressing this button enables the unit to search for the "peak signal" locations in tracks on a disc so as to adjust the suitable recording level on the cassette deck.

⑭ Search buttons (◀◀ search ▶▶)
These buttons can be used to move rapidly forward or backward on the disc during play.

⑮ Buttons for edit function (synchro edit)

•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 casette tape used, so that as little tape as possible is wasted.

•Just time edit button (just time)
When recording compact discs to tape, this button can be used to edit the tracks on a disc so as to leave the least possible amount of blank space on the cassette tape.

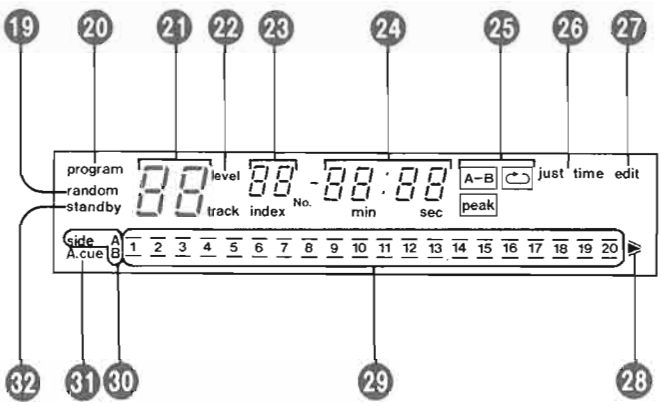
•Tape-side select button (side A/B)
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.

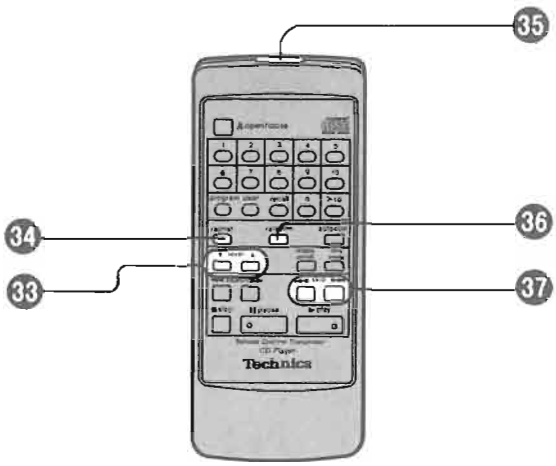
⑯ Stop button (■ stop)
This button can be used to stop disc play, as well as to cancel the various play modes.

⑰ Headphones volume control (level)

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

⑱ Headphones jack (phones)





Unnumbered buttons on the remote control transmitter function identically to their corresponding parts on the unit.

Indicators section

19 Random indicator (random)

20 Program indicator (program)

21 Track number display (track)

22 Level indicator (level)
This indicator lights when the output level is attenuated by the remote control.

23 Index/program number display (index/No.)

24 Time display (min/sec)

25 Operation indicators
The following indicators light during their respective operations.

A-B peak : Peak level search
: Repeat play

26 Just time edit indicator (just time)

27 Compact disc edit indicator (edit)

28 "Over" mark (▶)
This indicator lights if the total number of tracks on the disc is 21 or more.

29 Track number indicator (1–20)

30 Tape side indicator (side A/B)

31 Auto cue indicator (A. cue)

32 Standby indicator (standby)
This indicator lights when the display on/off button is pressed twice in the stop mode.

Remote control transmitter

33 Level button (▼ level ▲)
These buttons can be used to control output level (from 0 dB to −12 dB).

34 Repeat button (repeat)

35 Remote control signal transmission window

36 Random button (random)
This button can be used to play the tracks on a disc in a random sequence.

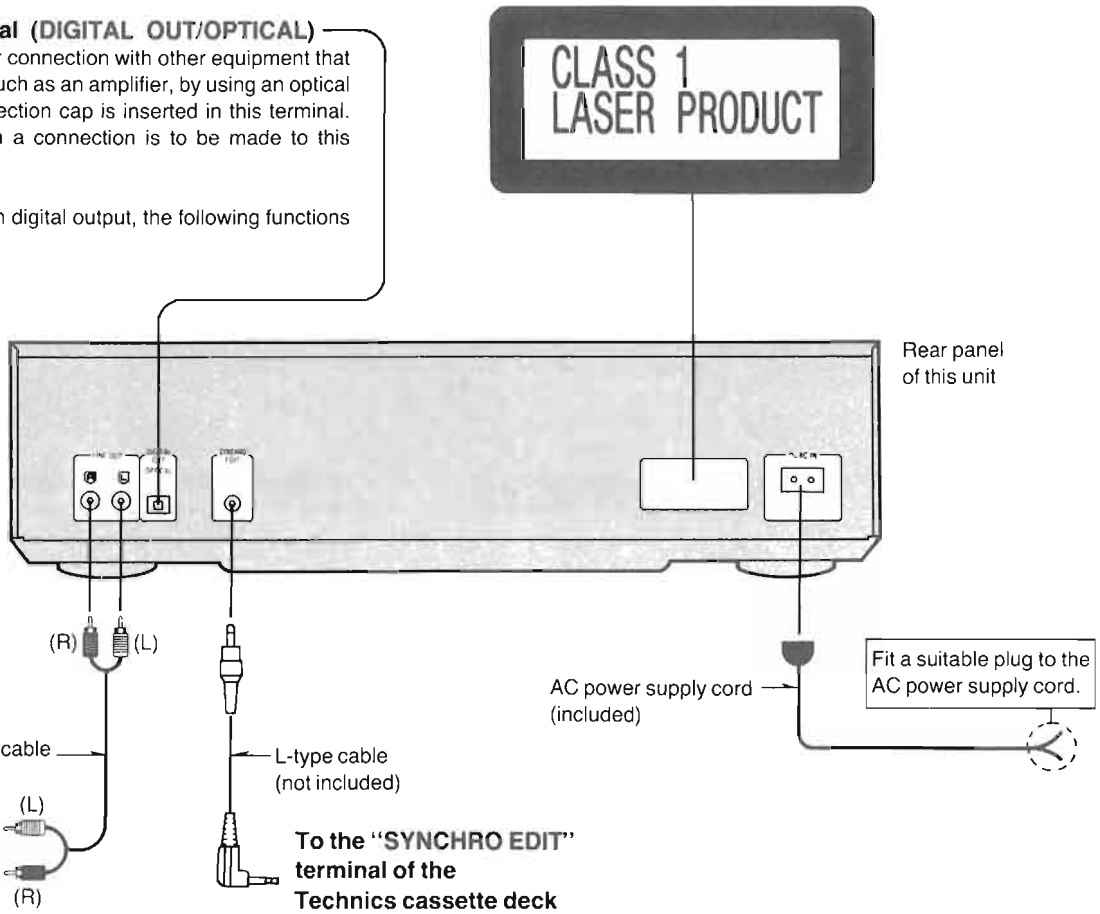
37 Skip buttons (⏮ skip ⏭)
These buttons are used to skip by track in the forward or reverse direction.

■ 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.

Note:
When the unit is working with digital output, the following functions do not work;
•Output level adjustment



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.

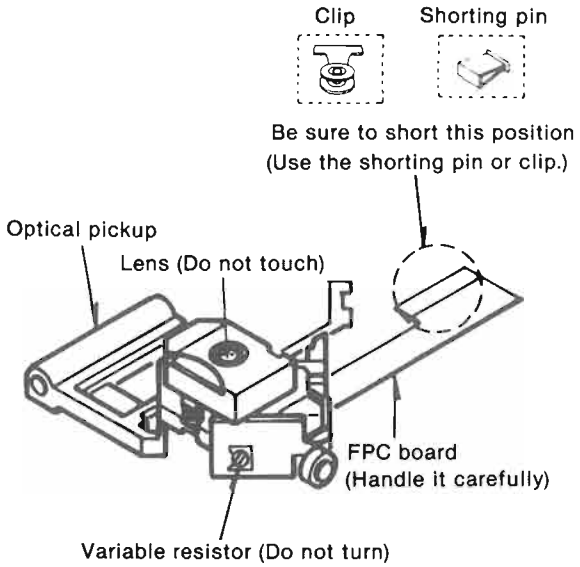
Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

■ 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

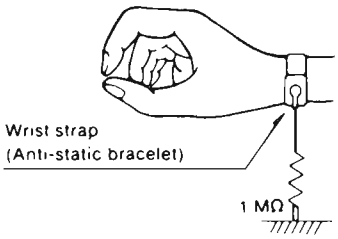
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time 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.

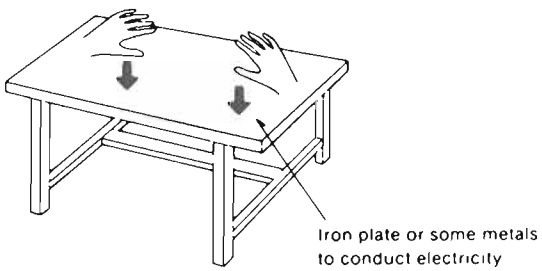


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve 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.



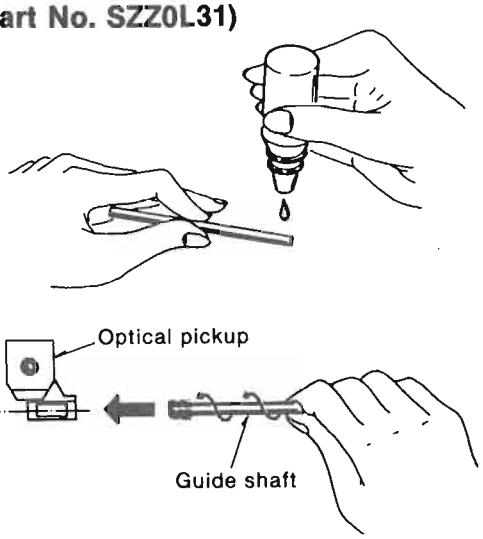


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil. Since 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 SZZ0L31 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.



■ DISASSEMBLY INSTRUCTIONS

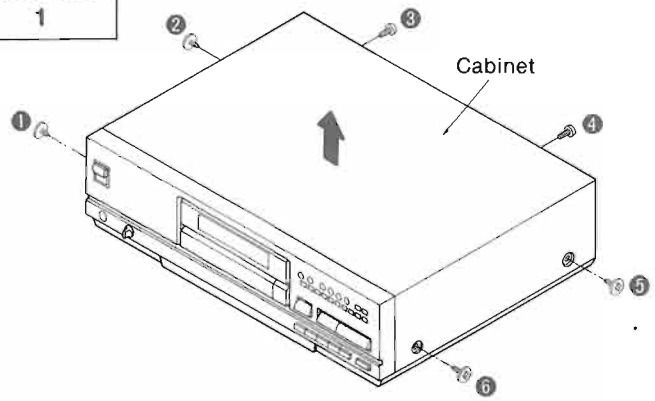
Warning: This product uses a laser diode. Refer to caution statements on page 3.

ACHTUNG: • Die lasereinheit nicht zerlegen.
• Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

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

Ref. No. 1 — **Removal of the cabinet**

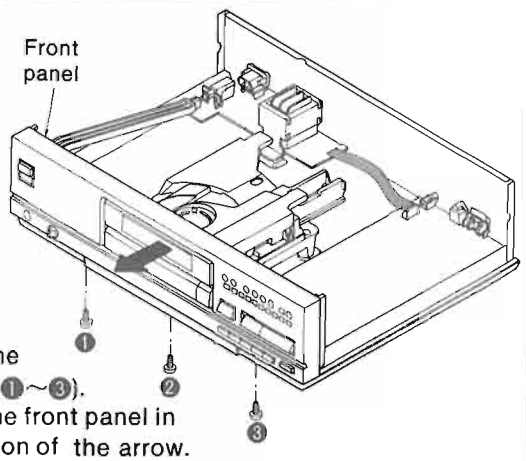
Procedure 1



• Remove the 6 screws (❶~❻).

Ref. No. 2 — **Removal of the front panel**

Procedure 1→2



1. Remove the 3 screws (❶~❸).
2. Remove the front panel in the direction of the arrow.

Ref. No. 3 — **Removal of the FL drive P.C.B. and timer/remote control sensor P.C.B.**

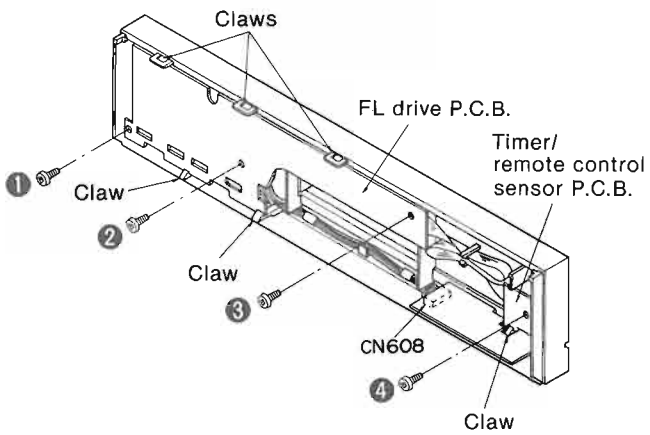
Procedure 1→2→3

■ Removal of the FL drive P.C.B.

1. Remove the 1 connector (CN608).
2. Remove the 3 screws (❶~❸).
3. Remove the 5 claws.

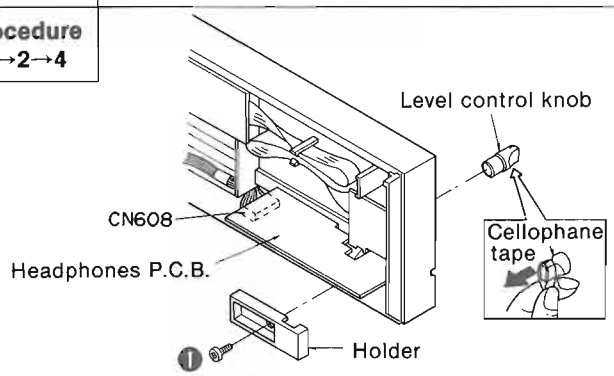
■ Removal of the timer/remote control sensor P.C.B.

1. Remove the 1 screw (❹).
2. Remove the 1 claw.



Ref. No. 4 — **Removal of the headphones P.C.B.**

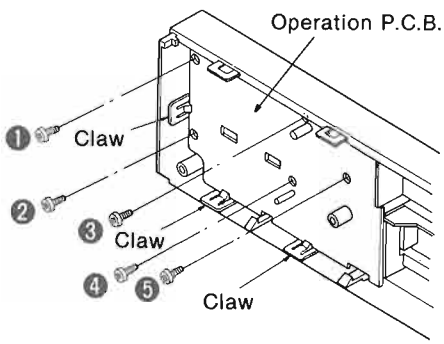
Procedure 1→2→4



1. Pull out the level control knob.
2. Remove the 1 connector (CN608).
3. Remove the 1 screw (❶).
4. Remove the holder.

Ref. No. 5 — **Removal of the operation P.C.B.**

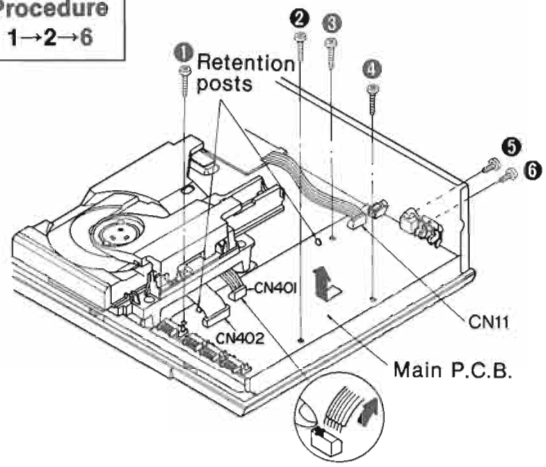
Procedure 1→2→3→5



1. Remove the 5 screws (❶~❺).
2. Remove the 3 claws.

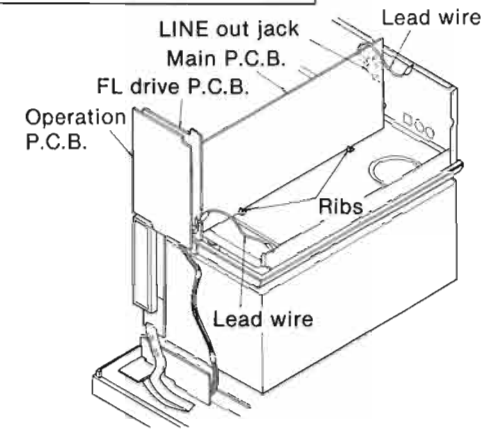
Ref. No. 6 — **Removal of the main P.C.B.**

Procedure 1→2→6



1. Remove the 3 flat cable (CN11, CN401, CN402).
2. Remove the 6 screws (❶~❻).
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.

How to check the main P.C.B.

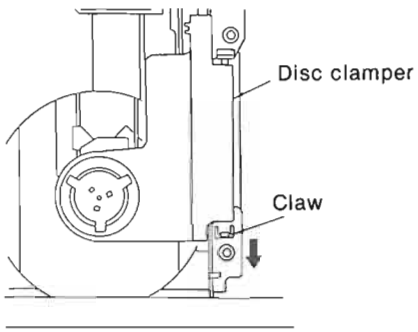


- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.
- Don't remove the 3 flat cables (CN11, CN401, CN402).

1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
2. Connect the FL drive P.C.B. ground terminal to the chassis with a lead wire.

Ref. No. 7 — **Removal of the disc clamper**

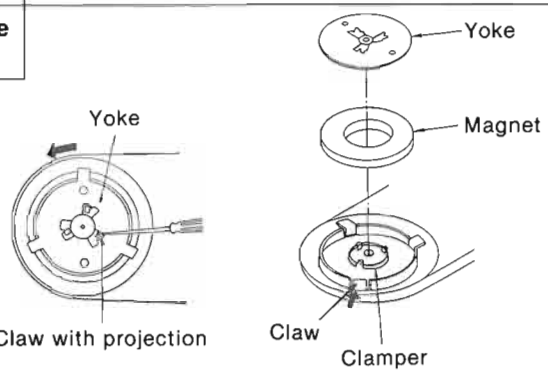
Procedure 1→7



- Push the claw in the direction of the arrow and remove the disc clamper.

Ref. No. 8 — **Removal of the magnet and clamper**

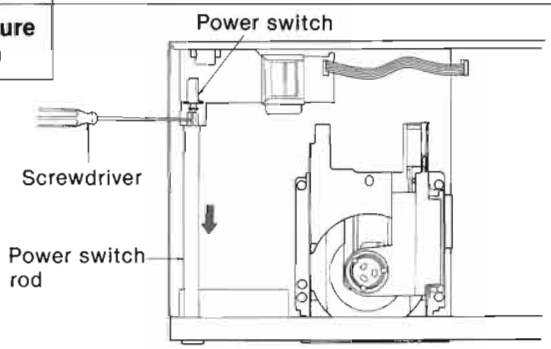
Procedure 1→7→8



1. While lifting the claw with a screwdriver, rotate clamper in the direction of the arrow and remove the yoke and magnet.
2. Release the claw of the clamper.

Ref. No. 9 — **Removal of the power switch rod**

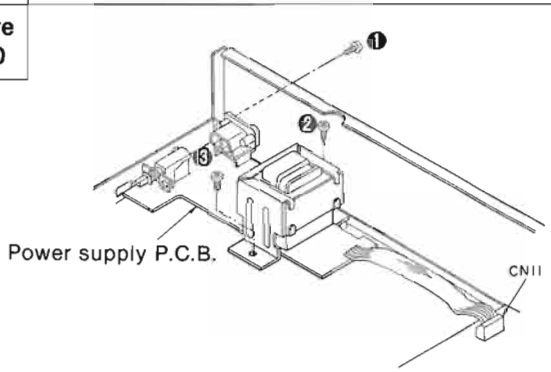
Procedure 1→9



1. Set the power switch in the "OFF" position.
2. Remove the power switch rod by using a screwdriver.

Ref. No. 10 — **Removal of the power supply P.C.B.**

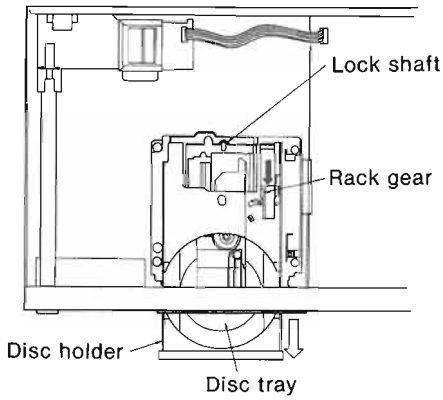
Procedure 1→9→10



1. Remove the 3 screws (❶~❸).
2. Remove the 1 connector (CN11).

Ref. No. 11 — **Removal of the disc holder**

Procedure 1→7→11

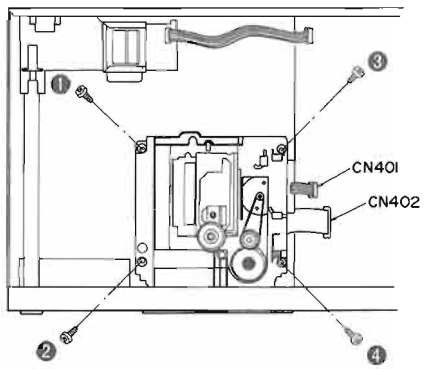


1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
2. Pull out slowly the disc holder.

Note: Make sure to release the lock shaft.

Ref. No. 12 — **Removal of the loading base**

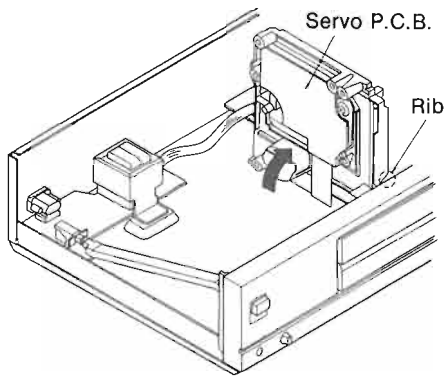
Procedure 1→7→11→12



1. Remove the 4 screws (❶~❹).
2. Remove the 2 flat cables (CN401, CN402).

Ref. No. 13 — **How to check the servo P.C.B.**

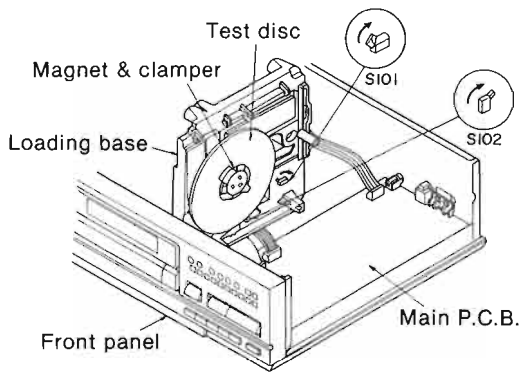
Procedure 1→7→11→12→13



- When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown.
- Don't remove the 2 flat cables (CN401, CN402).

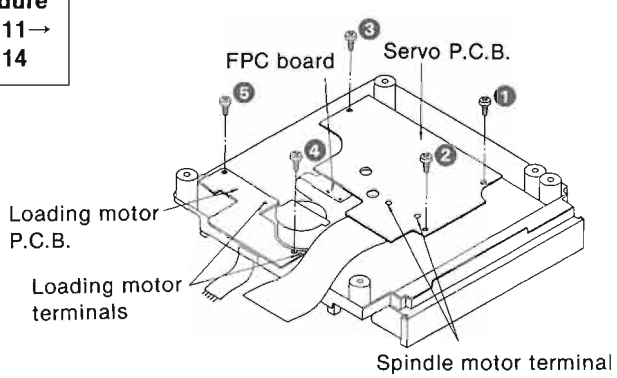
How to play the disc

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. 14 — **Removal of the servo P.C.B. and loading motor P.C.B.**

Procedure 1→7→11→12→14



• Removal of the servo P.C.B.

1. Remove the 3 screws (❶~❸).
2. Unsolder the 2 terminals of spindle motor.
3. Remove the FPC board from the optical pickup.

Caution:

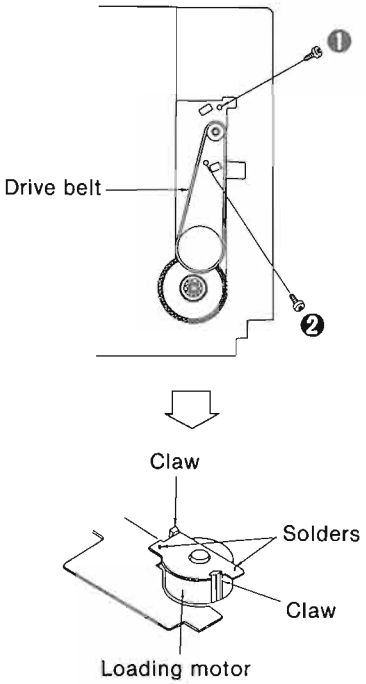
To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.

• Removal of the loading motor P.C.B.

1. Remove the 2 screws (❹, ❺).
2. Unsolder the 2 terminals of loading motor.

Ref. No. 15	Removal of the loading motor

Procedure 1→7→11→12→15



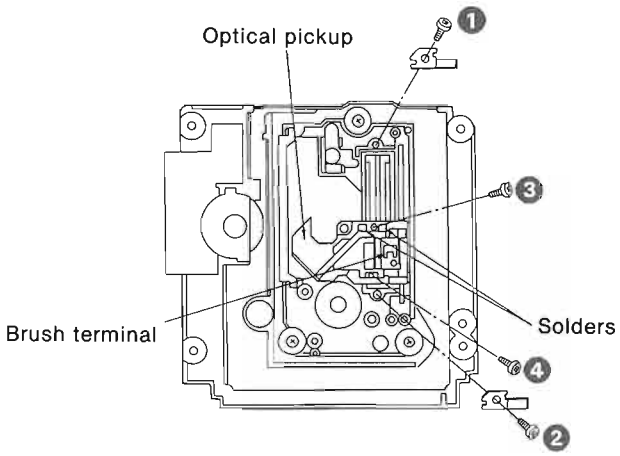
1. Remove the drive belt.
2. Remove the 2 screws (❶, ❷).
3. Release the 2 claws.
4. Unsolder the 2 terminals of the lead wire of the loading motor.

Ref. No. 16	Removal of the optical pickup

Procedure 1→7→11→12→14→16

Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 7).

1. Remove the 2 screws (❶, ❷).
2. Unsolder the 2 terminals and the 2 screws (❸, ❹).



Caution: Take care not to touch the brush terminal.

Ref. No. 17	Removal of the spindle motor

Procedure 1→6→8→9→11→17

1. Loosen the screw (❶) by using a 1.27mm allen wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:

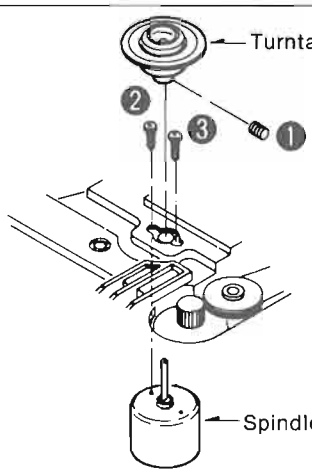
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.

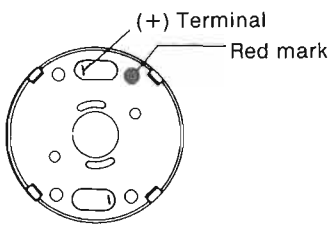
Adjustment of turntable height

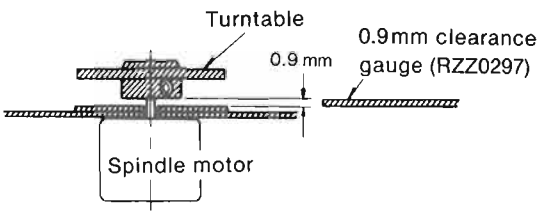
1. Insert a 0.9mm clearance gauge (RZZ0297) between the turntable and loading base as shown right.
2. Tighten the turntable set-screw by using a 1.27mm allen wrench.

Caution:

Refer to turntable height adjustment (see page 13).







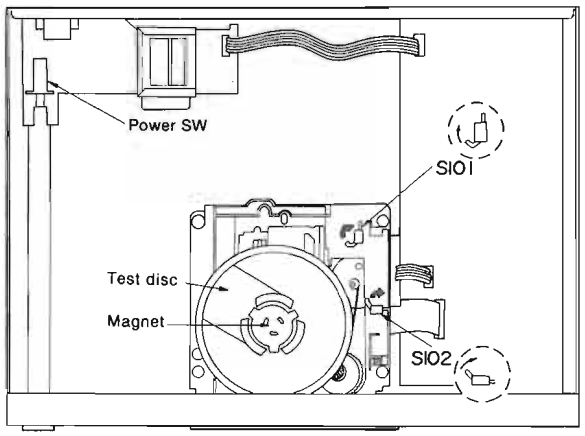
■ MEASUREMENTS AND ADJUSTMENTS

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.

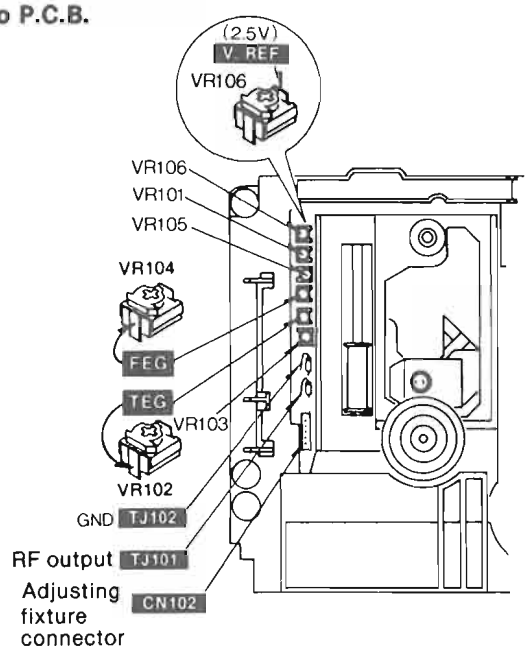
PREPARATION

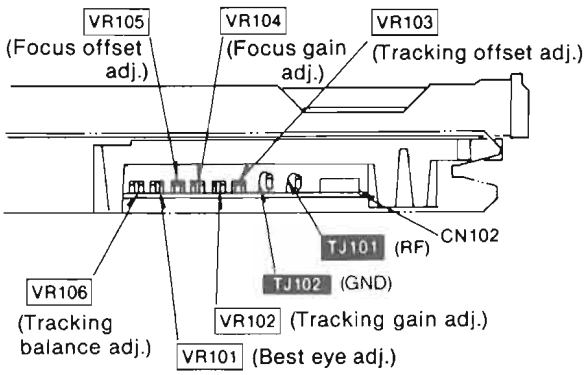
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clamper and magnet (see Ref. No. 7, 8 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 9, 11 of the same).
4. Place the test disc and magnet on the turntable.
5. Switch the player on.
6. 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.



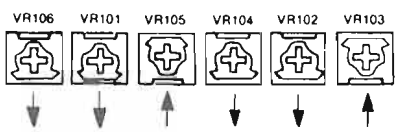
ADJUSTMENT POINTS

• 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) osillator
* Comversion 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 motor ..... Items (1), (3) to (8)
(2) Turntable ..... Items (1), (3) to (8)
(3) Optical pickup..... Items (2) to (8)

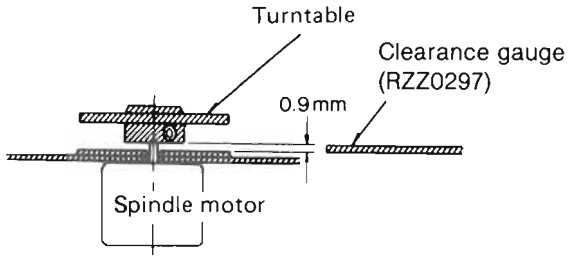
Adjusting Procedure

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

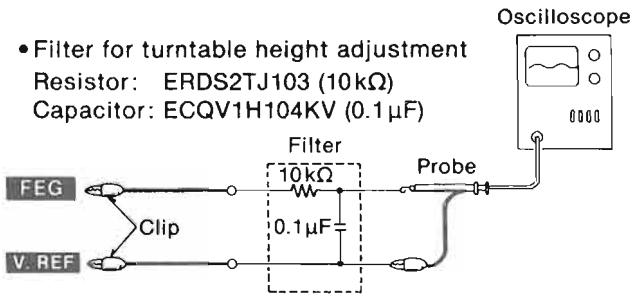
(1) TURNTABLE HEIGHT ADJUSTMENT

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.

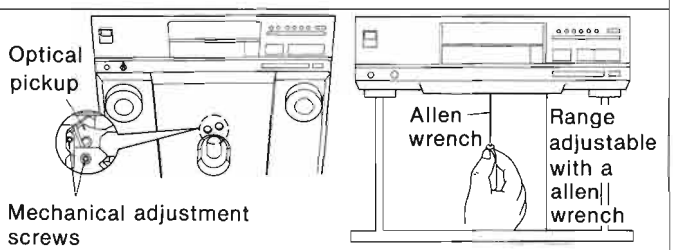


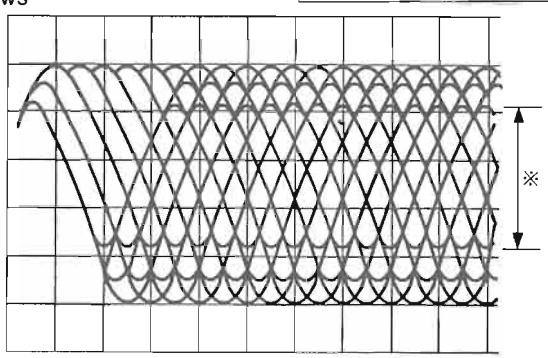
Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)



(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).

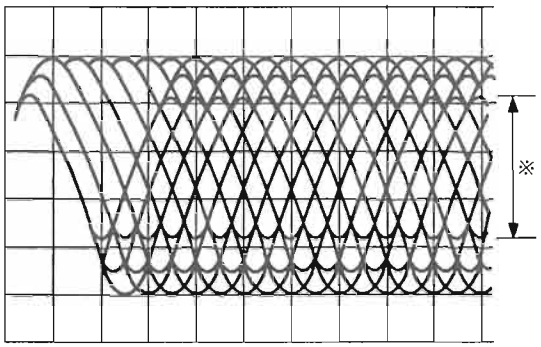




※ Most stretched eye pattern.

(3) BEST EYE (PD BALANCE) ADJUSTMENT

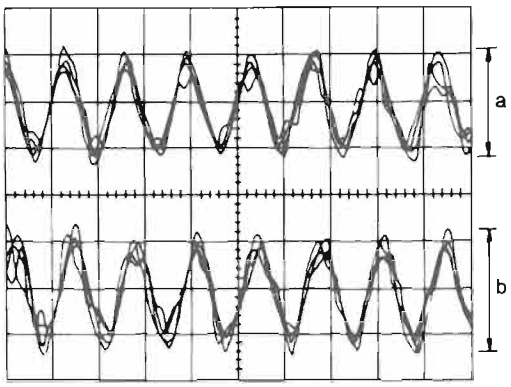
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (–) on the Servo P.C.B.
   Oscilloscope setting: VOLT . . . . . 100 mV
   SWEEP . . . . . 0.5 μ s
   Input coupling . . . AC
2. Switch the player power **ON**, and play the 1kHz (track 1) on the test disc (SZZP1054C).
3. Adjust **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

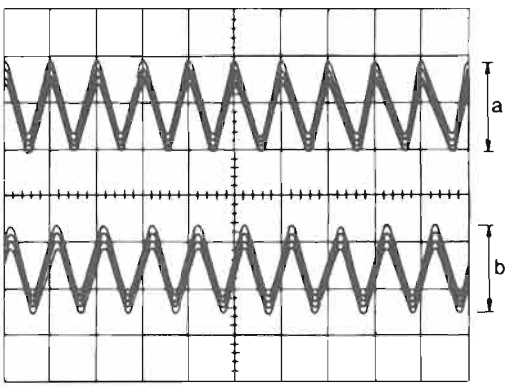
1. Connect the servo gain adjuster to the player (see page 15).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and GND terminals on the servo gain adjuster.
4. 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 (both 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 (both 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"**.

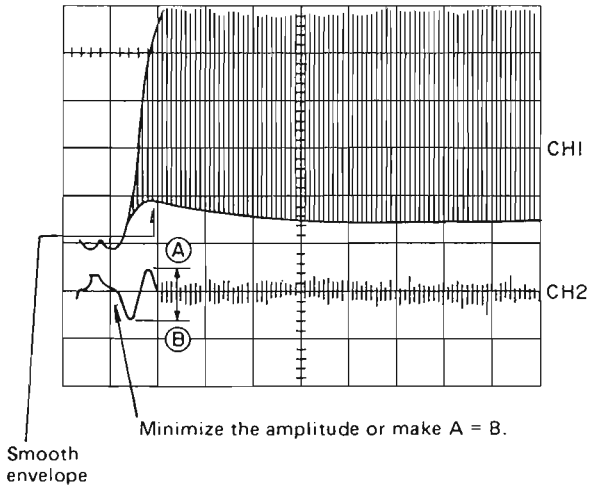


※ Adjust **VR102** until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

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

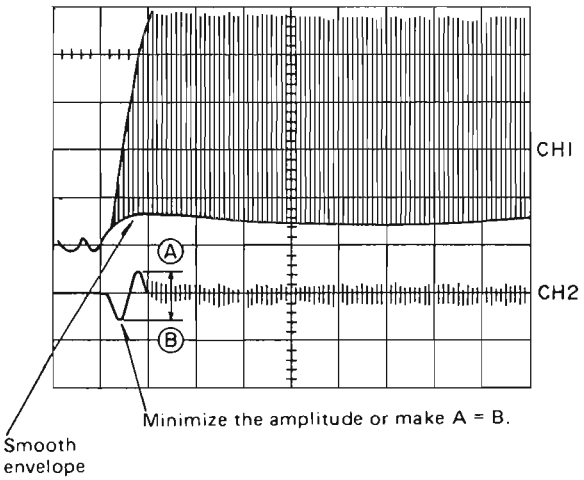
1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (−) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's **FEG** terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. . . . . .0.2 ms.
   Input coupling. . . AC (both CH. 1 and 2)
   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

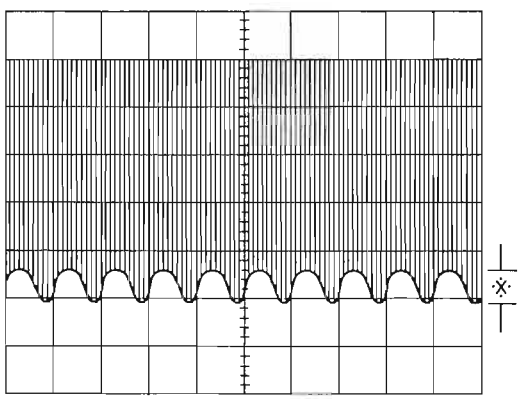
Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

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 wafveform 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).

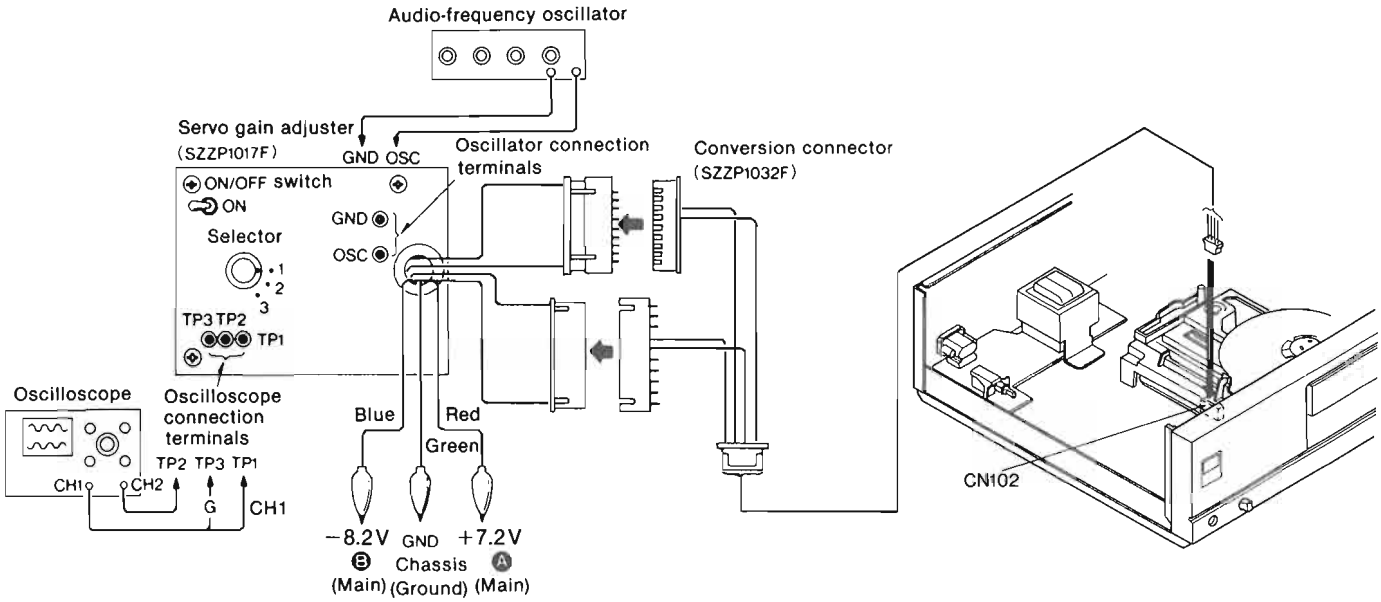
* **Checking Manual Search**

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).

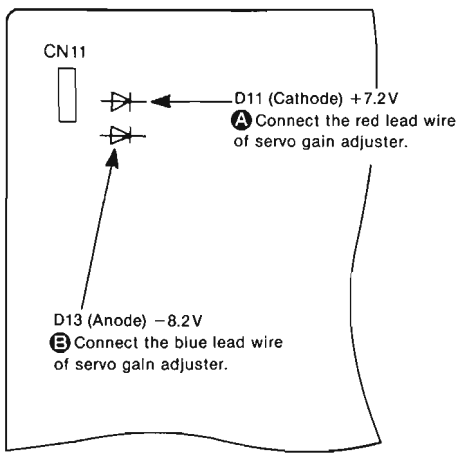
* **Checking Using Defect Disc**

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	$\overline{\text{RFDET}}$	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 terminal
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

• 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 terminal
23	SPCNT	O	Track crossing speed control output 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 terminal
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 terminal
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	$\overline{\text{CLDCK}}$	O	Sub-code frame (Q data) clock (7.35 kHz)
22	$\overline{\text{SUBQ}}$	O	Sub-code (Q data) output
23	$\overline{\text{RST}}$	I	Reset signal input (reset at "L")
24	MLD	I	Command load signal input
25	MCLK	I	Command clock signal input
26	MDATA	I	Command data input
27	DMUTE	I	Muting control
28	$\overline{\text{TRON}}$	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 terminal
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 comparision signal
44 ⟆ 51	D7 ⟆ D0	I/O	16K RAM data input/output
52	RAM/OE	O	16K RAM $\overline{\text{OE}}$ signal
53	RAM/WE	O	16K RAM $\overline{\text{WE}}$ signal
54 ⟆ 64	RAM/A0 ⟆ RAM/A10	O	16K RAM address signal (RAMA0: LSB, RAMA10: MSB)

• IC401 (MN1554PJZ-1): System control

Pin No.	Mark	I/O Division	Function
1	BRECV	——	(Not used, open)
2	BSEND	——	(Not used, open)
3	SYNC	O	(Not used, open)
4	SIRQ	I	Not used (connected to power supply)
5	BLKCK	I	Sub-code block (Q data) clock input (75Hz)
6	CLDCK	I	Sub-code block (Q data) clock input (7.35kHz)
7	SBO	I	(Not used, open)
8	SUBQ	I	Sub-code (Q data) input
9	RST	I	Reset signal input
10 ∫ 13	F/S SW, P21 ∫ P23	O	Not used (connected to power supply)
14	CLOSE	O	Loading motor "Close" command
15	OPEN	O	Loading motor "Open" command
16	SLOW	O	(Not used, open)
17	MUTE	O	Muting control
18	SEEK	O	Traverse servo control (Not used, open)
19	NC	—	Not connected
20	TRV.R	O	Traverse "Reverse" command signal
21	TRV.F	O	Traverse "Forward" command signal
22	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
23	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)
25	VDD	I	Power supply terminal
26	DOWN	O	(Not used, open)
27	UP	O	(Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)

Pin No.	Mark	I/O Division	Function
29	CLOSE SW	I	Disc holder "Open" detection
30	OPEN SW	I	Disc holder "Close" detection
31	BCLK	I	(Not used, connected to GND)
32	BDATA	I	(Not used, connected to GND)
33	STAT	I	Processing status input from signal processing LSI
34	COMP	O	TOC reading control (ON at "L") (connected to GND)
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Optical servo condition (track cross) input
37	RECV	I	Data receipt command signal
38	SEND	I	Data transmission command signal
39	ACK	I	Data discrimination signal
40	CLK	I	Data lock signal
41 ∫ 44	DATA0 ∫ DATA3	I	Key scan signal
45 ∫ 52	NC	I	Not connected
53	OSC2	I	Clock terminal
54	OSC1	I	Clock input
55	X1	I	Optical servo condition input
56	X0	O	(Not used, open)
57	GND	—	GND terminal
58	DMUTE	O	Muting control
59	MDATA	O	Command data output
60	MCLK	O	Data clock output (command clock signal)
61	MLD	O	Data output (command load signal)
62	DOUTON	O	Optical output control signal (Not used, open)
63	EMPH	O	Emphasis signal output
64	NC	——	Not connected

• IC601 (MB88725BPJV): System control and FL drive

Pin No.	Mark	I/O Division	Function
1 ⟆ 14	C0 ⟆ C13	O	FL grid signal
15	C14	O	LED drive signal (PAUSE)
16	C15	O	LED drive signal (PLAY)
17	P00	O	Key scan signal
18	P01		
19	P02	O	Data discrimination signal signal
20	P03	O	Data lock signal
21 ⟆ 24	P10 ⟆ P13	O	Key scan signal
25	P40	I	Remote control signal input
26	P41	—	(Not used, connected to GND)
27	P42	O	Data receipt command signal
28	P43	O	Data transmission command signal
29	P50	—	Synchro edit control terminal
30	P51	I	
31	$\overline{RES}$	I	Reset signal input (reset at "L")
32	VSS	—	GND terminal

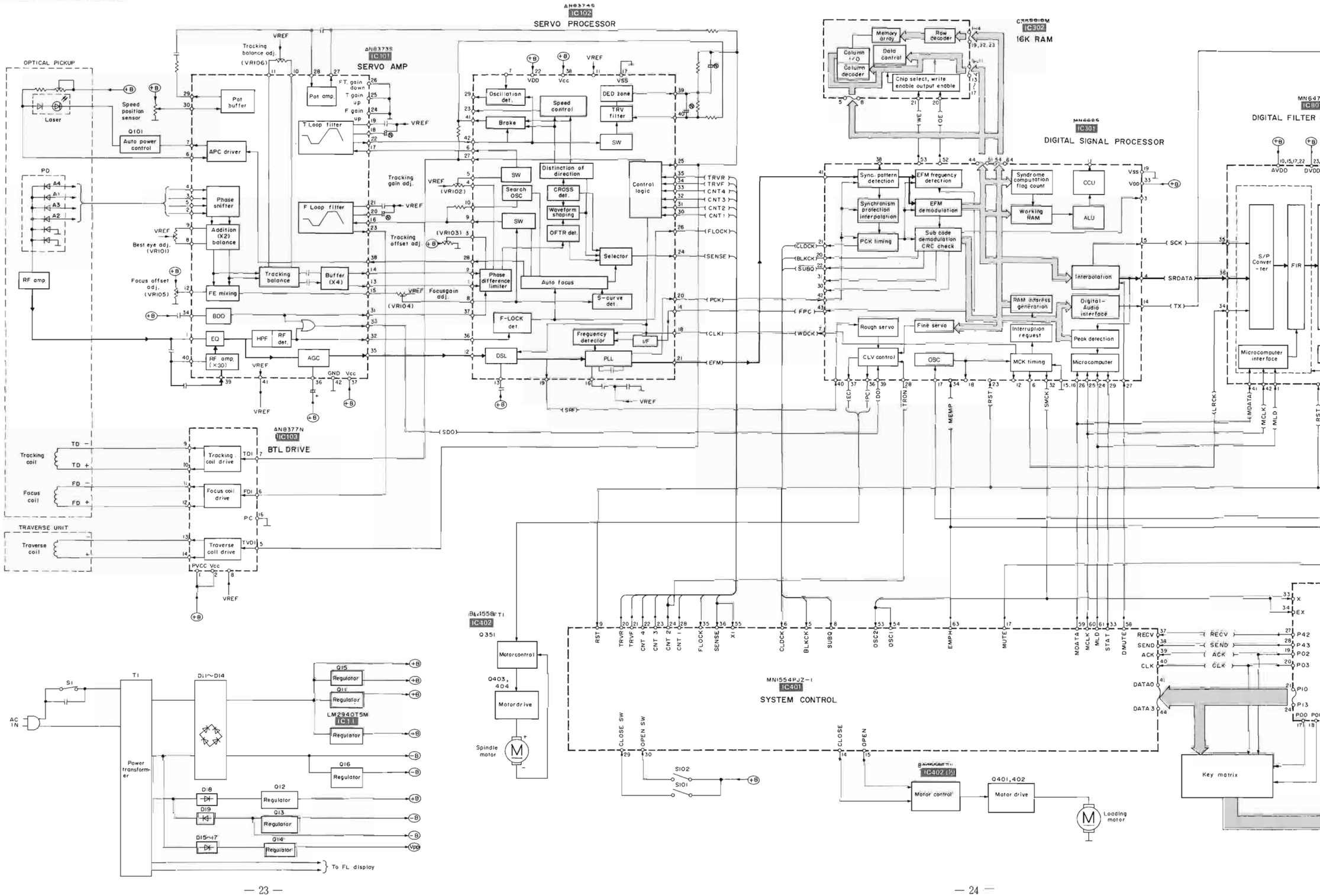
Pin No.	Mark	I/O Division	Function
33	X	I	Clock signal input (4.2336 MHz)
34	EX		
35	SE	I	Not used, connected to power supply
36	FD	—	GND terminal
37	XL	O	Not used, open
38	EXL	O	(Not used, connected to GND)
39) (42	P60) (P63	I	Key return signal
43 ( ) 46	P70 ( ) P73		
47	VPP	I	FL drive power supply
48 ⟆ 63	S0 ⟆ S15	O	FL anode signal
64	VCC	I	Power supply terminal

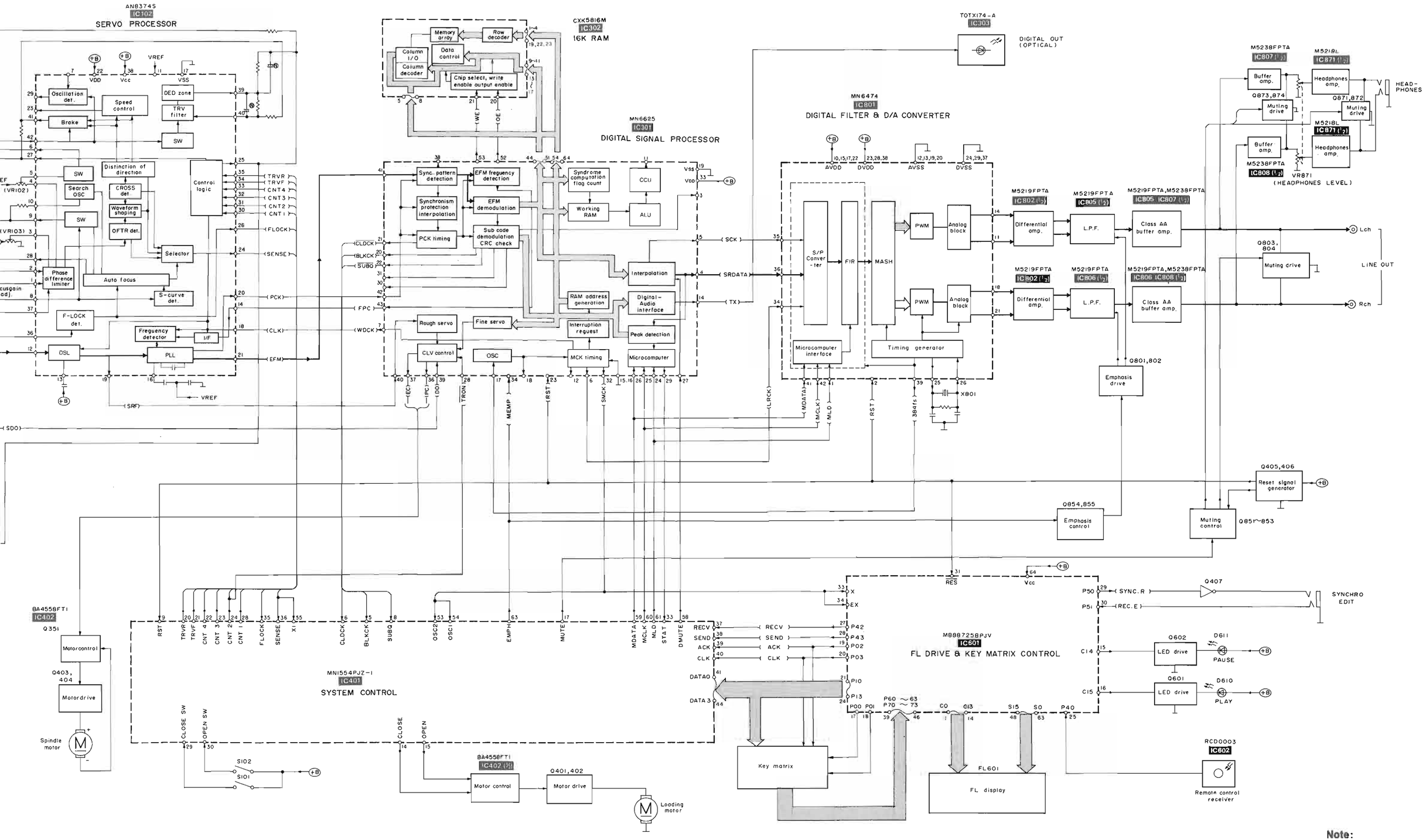
• IC801 (MN6474): Digital filter & D/A converter

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset command
3	IE	I	Not used, connected to GND
4	TP1	—	TEST terminal
5	TP2	—	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	—	Not connected
9	NC	—	Not connected
10	AVDD4	I	Power supply (connected to +4.8V)
11	OUTL (−)	O	Lch data output, (−) terminal
12	AVSS4	I	GND terminal
13	AVSS3	I	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply (connected to +4.8V)
16	NC	—	Not connected
17	AVDD2	I	Power supply (connected to +4.8V)
18	OUTR (+)	O	Rch data output, (+) terminal
19	AVSS2	I	GND terminal (analog system)
20	AVSS1	I	GND terminal (analog system)
21	OUTR (−)	O	Rch data output, (−) terminal

Pin No.	Mark	I/O Division	Function
22	AVDD1	I	Power supply (connected to +4.8V)
23	DVDD1	I	Power supply (connected to +4.9V)
24	DVSS1	I	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	—	Not connected
28	DVDD2	I	Power supply (connected to +4.9V)
29	DVSS2	I	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal (Not used, connected to +4.9V)
31	ZFLGB	O	Zero input detector terminal (Not used, open)
32	192fs	O	192 fs (8.4672 MHz) (Not used, open)
33	LRPOL	I	LR clock selector (Not used, connected to +4.9V)
34	LRCLK	I	LR discrimination signal input
35	BCLK	I	Serial bit clock input
36	SRDATA	I	Serial data input (MSB first)
37	DVSS 3	I	GND terminal (digital system)
38	DVDD	I	Power supply (connected to +4.9V)
39	384 fs	O	384 fs (16.9344 MHz) output
40	PD	I	Power down terminal (Not used, connected to GND)
41	MDATA	I	Mode control data
42	MCLK	I	Data clock for MDATA

■ BLOCK DIAGRAM




AN8374S
IC102
SERVO PROCESSOR
Oscillation det.
Brake
Speed control
DED zone
TRV filter
SW
Distinction of direction
CROSS det.
Waveform shaping
OFTR det.
Search OSC
Control logic
Selector
Phase difference limiter
Auto focus
S-curve det.
F-LOCK det.
Frequency detector
I/F
PLL
OSL
VDD
Vcc
VSS
VREF
CXK5816M
IC302
16K RAM
Memory array
Row decoder
Column I/O
Column decoder
Data control
Chip select, write enable output enable
MN6625
IC301
DIGITAL SIGNAL PROCESSOR
Sync. pattern detection
EFM frequency detection
Synchronism protection interpolation
EFM demodulation
PCK timing
Sub code demodulation CRC check
Syndrome computation flag count
Working RAM
CCU
ALU
Interpolation
Digital-Audio interface
RAM address generation
Peak detection
Interruption request
Microcomputer
Rough servo
Fine servo
CLV control
OSC
MCK timing
TOTX174-A
IC303
DIGITAL OUT (OPTICAL)
MN6474
IC801
DIGITAL FILTER & D/A CONVERTER
S/P Conver-ter
FIR
MASH
PWM
Analog block
Microcomputer interface
Timing generator
M5219FPTA IC802 (L2)
Differential amp.
L.P.F.
M5219FPTA,M5238FPTA IC805 IC807 (L2)
Class AA buffer amp.
M5219FPTA IC803 (L2)
M5219FPTA IC806 (L2)
M5219FPTA,M5238FPTA IC806 IC808 (L2)
M5238FPTA IC807 (L2)
M5219L IC871 (L2)
Buffer amp.
Headphones amp.
Muting drive
Q873,874
Q871,872
M5218L IC871 (L2)
M5238FPTA IC808 (L2)
VR871
HEAD-PHONES
(HEADPHONES LEVEL)
Q803, 804
LINE OUT
Lch
Rch
Q801,802
Emphasis drive
Q405,406
Reset signal generator
Q854,855
Emphasis control
Muting control
Q851~853
BA4558FTI
IC402
Q351
Motor control
Q403, 404
Motor drive
Spindle motor
MN1554PJZ-1
IC401
SYSTEM CONTROL
CLOSE SW
OPEN SW
SI02
SI01
BA4558FTI
IC402 (½)
Q401,402
Motor drive
Loading motor
MB887258PJV
IC601
FL DRIVE & KEY MATRIX CONTROL
Key matrix
FL601
FL display
Q602
LED drive
D611
PAUSE
Q601
D610
PLAY
Q407
SYNCHRO EDIT
RCD0003
IC602
Remote control receiver
X801
384fs
Note:
Audio signal

SL-PS50 SL-PS50

■ SCHEMATIC DIAGRAM (Parts list on pages 44, 45, 51, 52.)

(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. ([GC] area only.)
- **S101, 102** : Disc holder open/close detection switch.
- **S601** : Tape side select (side A/B) switch.
- **S602** : Search (▶▶ search) switch.
- **S603** : Program (program) switch.
- **S604** : Tape length (tape length) switch.
- **S605** : Peak level search (peak search) switch.
- **S606** : Display on/off (display on/off) switch.
- **S607** : Recall (recall) switch.
- **S608** : Search (◀◀ search) switch.
- **S609** : Just time (just time) switch.
- **S610** : Time mode select (time mode) switch.
- **S611** : Clear (Clear) switch.
- **S612~614, 617, 619 ~621, 624, 626, 627, 632, 633** : Numeric (0~10) switches. [S612: 1, S613: 5, S614: 9, S617: 0, S619: 2, S620: 6, S621: 10, S624: >10, S626: 3, S627: 7, S632: 4, S633: 8]
- **S618** : Disc holder open/close (▲ open/close) switch.
- **S625** : Stop (■ stop) switch.
- **S631** : Pause (▮▮ pause) switch.
- **S637** : Play (▶ play) switch.
- **S639** : Auto cue (auto cue) switch.

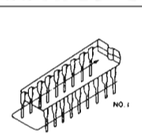
- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring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

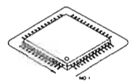
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

- 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.

• TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES



MB88725BPJV	64 Pin

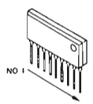


MN6625	64 Pin
MN6474	42 Pin
MN1554PJZ-1	64 Pin

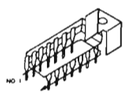
AN8373S	42 Pin
AN8374S	
BA4558FTI	8 Pin
M5219FPTA	
M5238FPTA	

CXK5816M	24 Pin

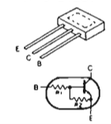
M5218L	8 Pin



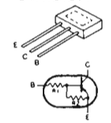
AN8377N	16 Pin

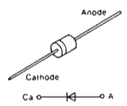


DTC114EST,
DTC124EST

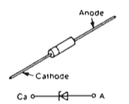


DTA114EST,
DTA124EST



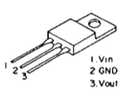


1SS254TA,
SVDS5688GT3
MA29WATA

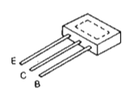


MA4039MTA,
MA4062HTA,
MA4082MTA,
MA4051MTA,
MA4330MTA

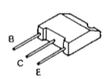
LM2940T5M



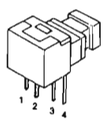
2SC3311QRSTA,
2SD1450RSTTA,
2SA1309QRSTA



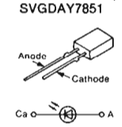
2SB1238QSTV6,
2SD1862QRTV6,
2SB1240QRTV6

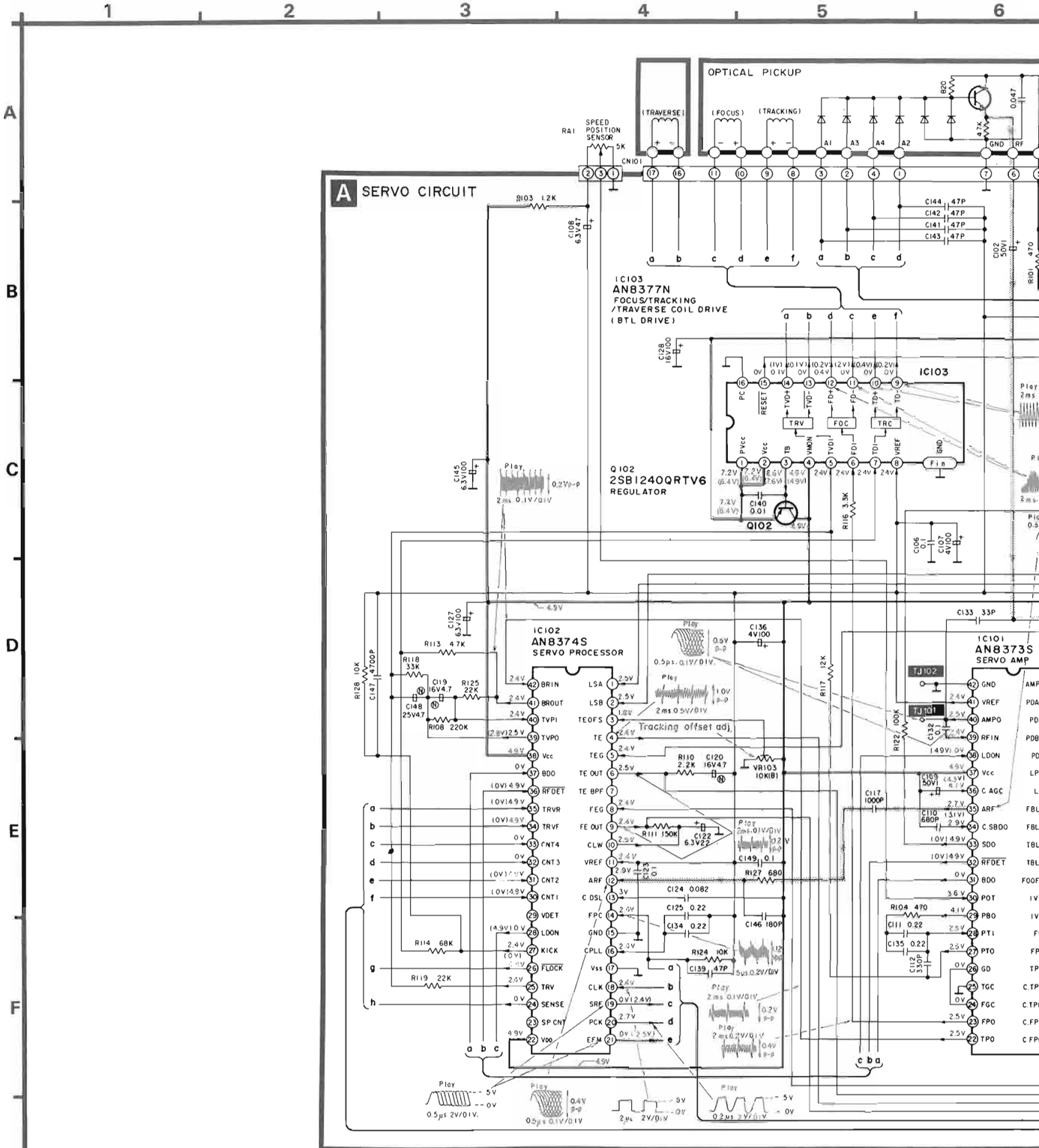


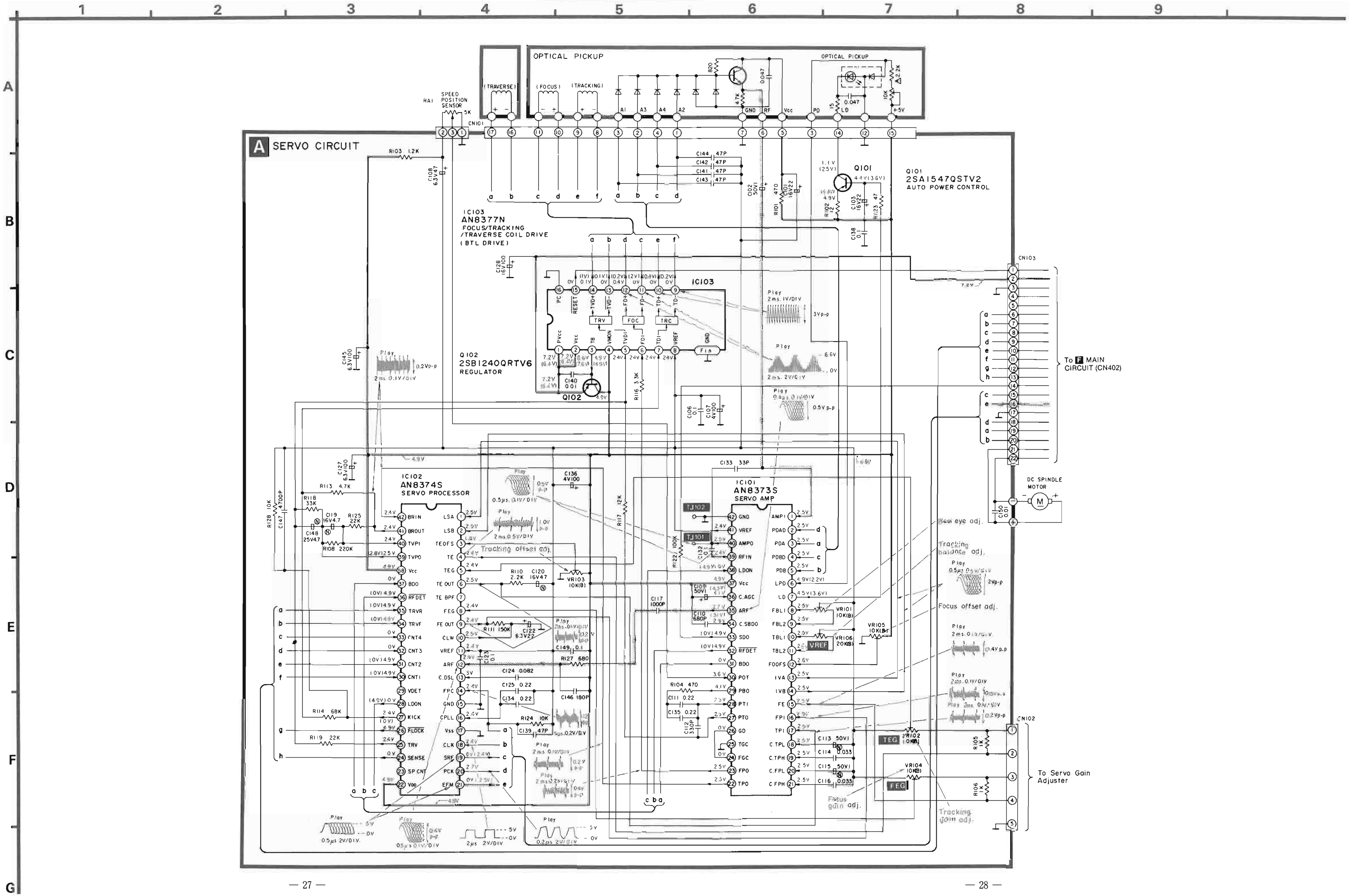
TOTX174-A



SVGDPG7851Y,
SVGDAY7851






A SERVO CIRCUIT
OPTICAL PICKUP
(TRAVERSE)
(FOCUS)
(TRACKING)
SPEED POSITION SENSOR
IC103 AN8377N FOCUS/TRACKING /TRAVERSE COIL DRIVE (BTL DRIVE)
Q102 2SB1240QRTV6 REGULATOR
Q101 2SA1547QSTV2 AUTO POWER CONTROL
IC102 AN8374S SERVO PROCESSOR
IC101 AN8373S SERVO AMP
DC SPINDLE MOTOR
To F MAIN CIRCUIT (CN402)
To Servo Gain Adjuster
Tracking offset adj.
Best eye adj.
Tracking balance adj.
Focus offset adj.
Focus gain adj.
Tracking gain adj.
TEG
FEG
VREF
TJ101
TJ102

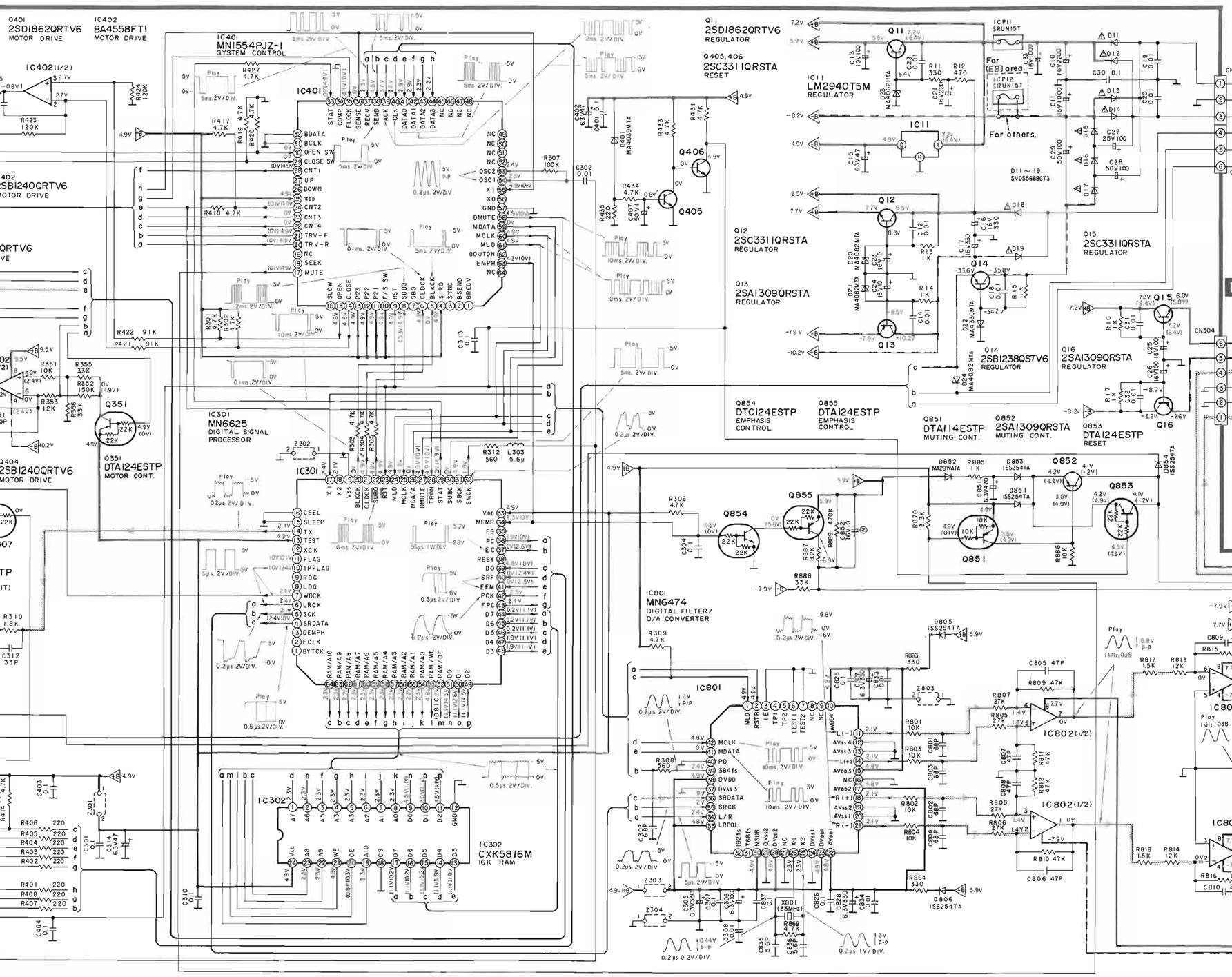
B FL DRIVE CIRCUIT

D REMOTE SENSOR CIRCUIT

E MOTOR/ SWITCH CIRCUIT

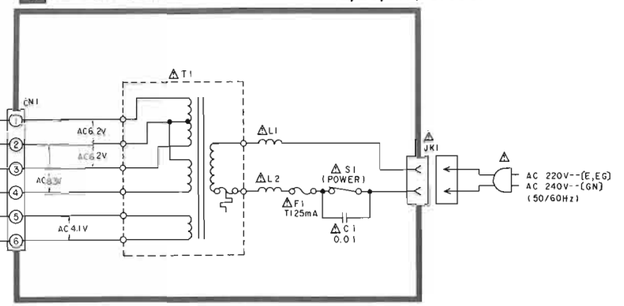
F MAIN CIRCUIT

C OPERATION CIRCUIT

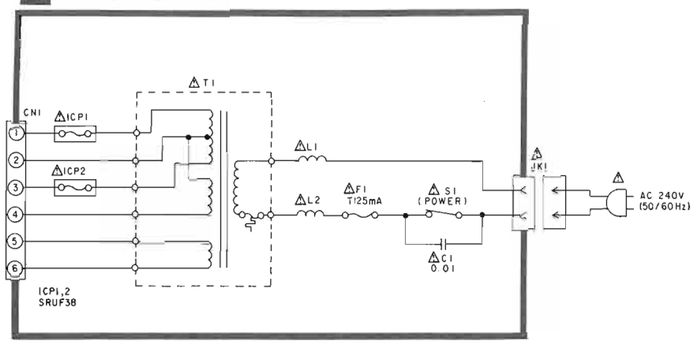

Q401 2SD1862QRTV6 MOTOR DRIVE
IC402 BA4558FTI MOTOR DRIVE
IC401 MN1554PJZ-1 SYSTEM CONTROL
IC301 MN6625 DIGITAL SIGNAL PROCESSOR
IC302 CXK5816M 16K RAM
Q351 DTA124ESTP MOTOR CONT.
Q11 2SD1862QRTV6 REGULATOR
Q405,406 2SC3311QRSTA RESET
IC11 LM2940T5M REGULATOR
Q12 2SC3311QRSTA REGULATOR
Q13 2SA1309QRSTA REGULATOR
Q14 2SB1238QSTV6 REGULATOR
Q15 2SC3311QRSTA REGULATOR
Q16 2SA1309QRSTA REGULATOR
Q854 DTC124ESTP EMPHASIS CONTROL
Q855 DTA124ESTP EMPHASIS CONTROL
Q851 DTA114ESTP MUTING CONT.
Q852 2SA1309QRSTA MUTING CONT.
Q853 DTA124ESTP RESET
IC801 MN6474 DIGITAL FILTER/ D/A CONVERTER
X801 (33MHz)
G POWER SUPPLY CIRCUIT For [E,EG,GN] areas.
AC 220V--(E,EG)
AC 240V--(GN)
(50/60Hz)
B FL DRIVE CIRCUIT
H HEADPHONES JACK CIRCUIT
Q873,874 2SC3311QRSTA MUTING
IC871 M5218L HEADPHONES AMP
Q871,872 2SD1450RSTTA MUTING
IC802,805,806 M5219FPTA OP AMP
IC807,808 M5219FPTA BUFFER AMP
Q801,802 2SC3311QRSTA SWITCHING (EMPHASIS DRIVE)
Q803,804 2SD1450RSTTA MUTING
L ch
R ch
LINE

21 22 23 24 25 26 27 28 29 30 31

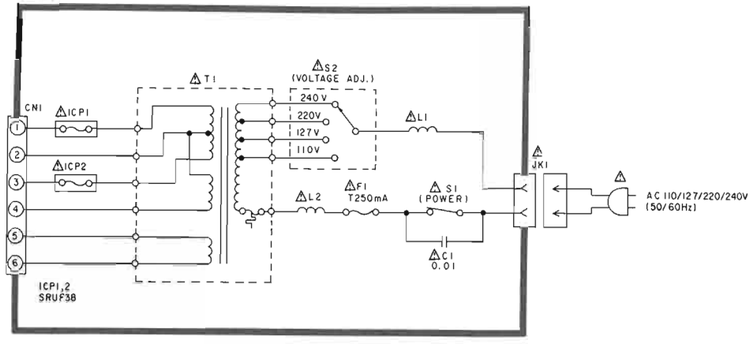
G POWER SUPPLY CIRCUIT For (E,EG,GN) areas.



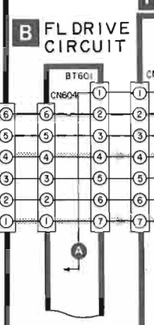
G POWER SUPPLY CIRCUIT For (EB) area.



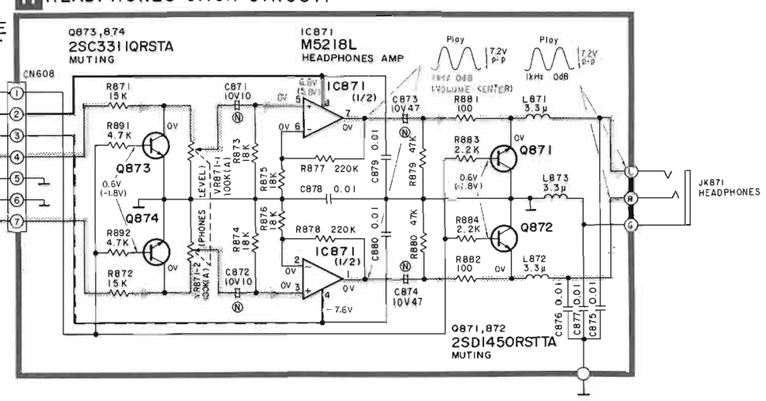
G POWER SUPPLY CIRCUIT For (GC) area.

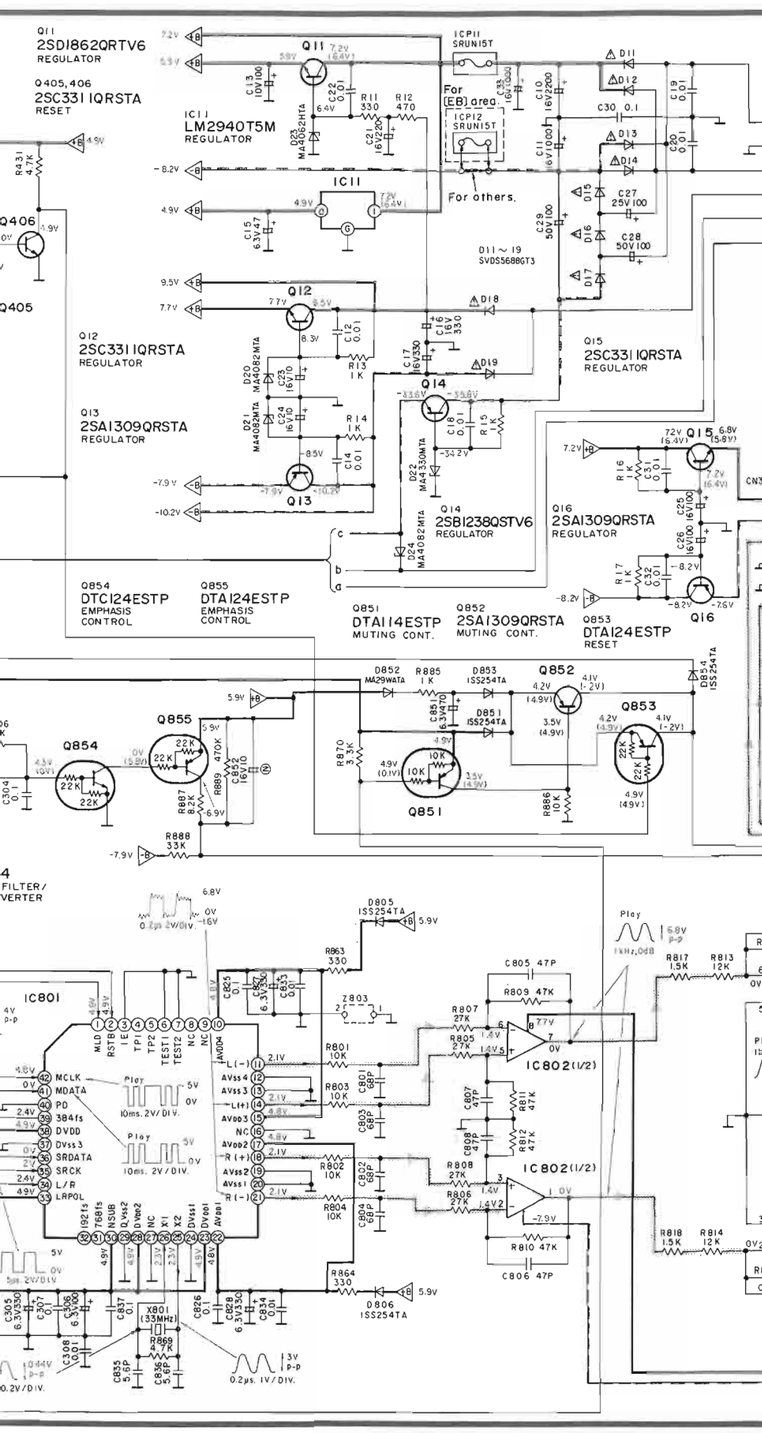


B FL DRIVE CIRCUIT



H HEADPHONES JACK CIRCUIT

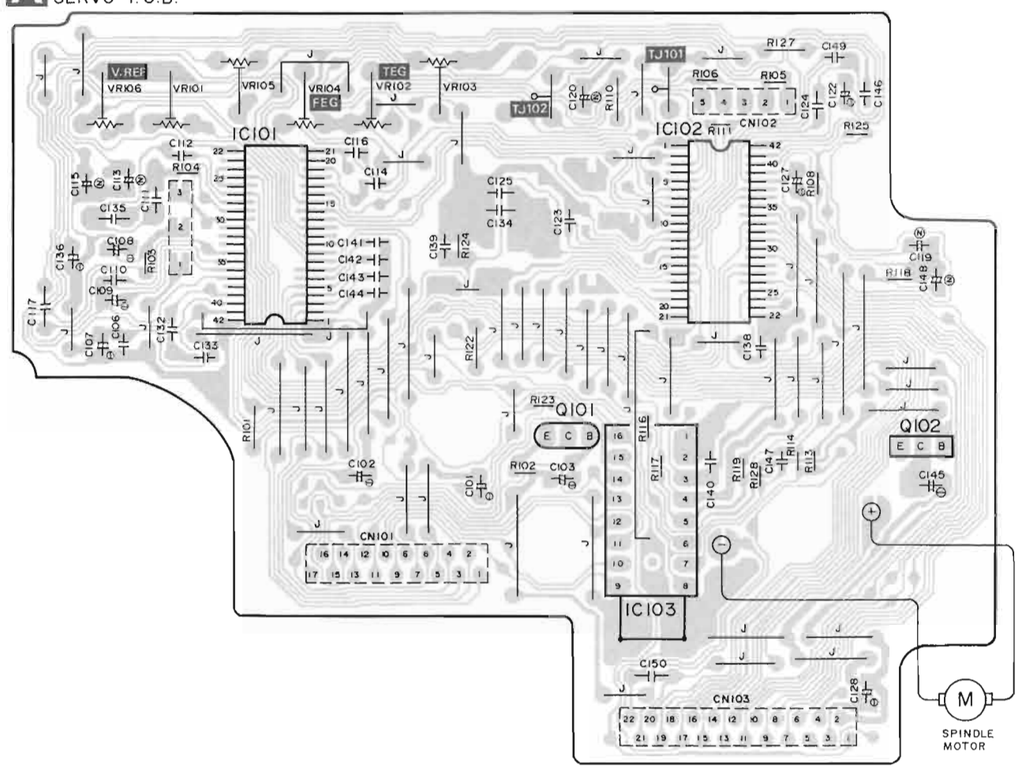




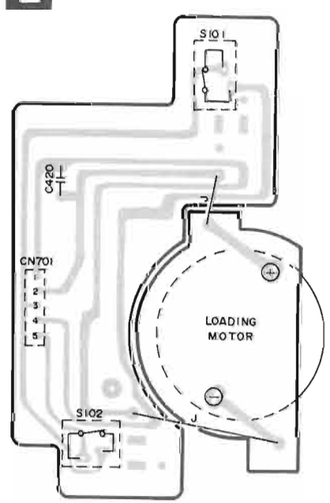
SL-PS50 SL-PS50

■ PRINTED CIRCUIT BOARDS

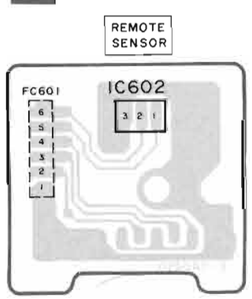
A SERVO P.C.B.



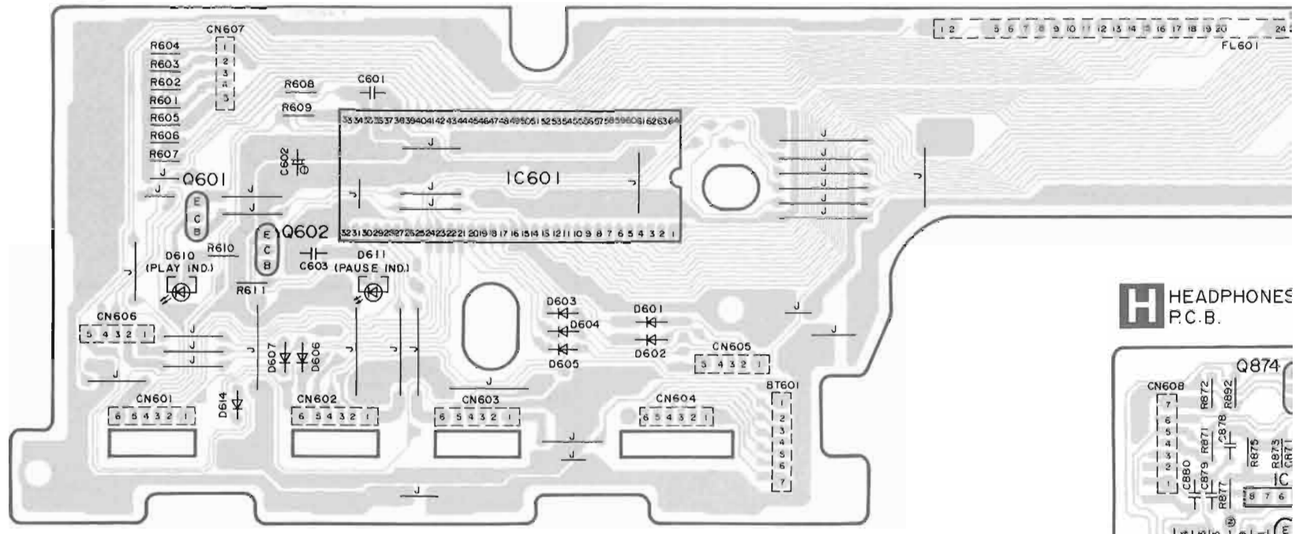
E MOTOR/SWITCH P.C.B.



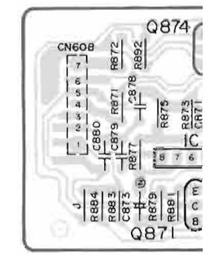
D REMOTE SENSOR P.C.B.



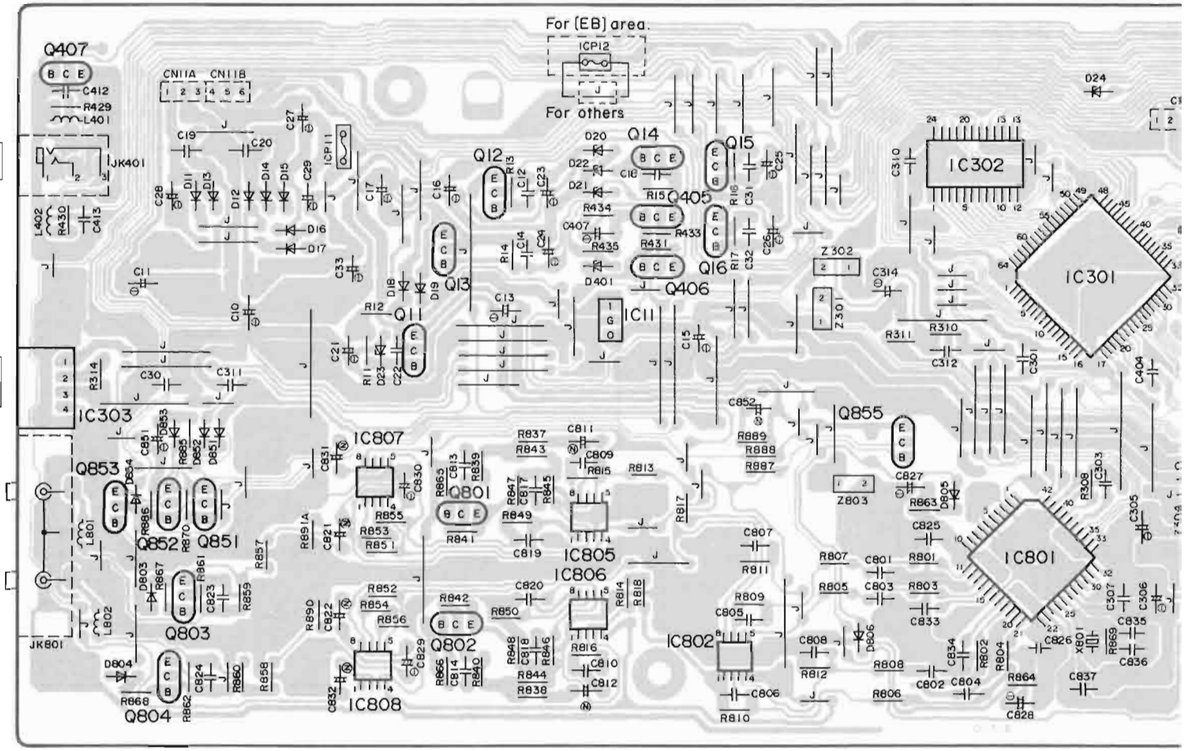
B FL DRIVE P.C.B



H HEADPHONES P.C.B.

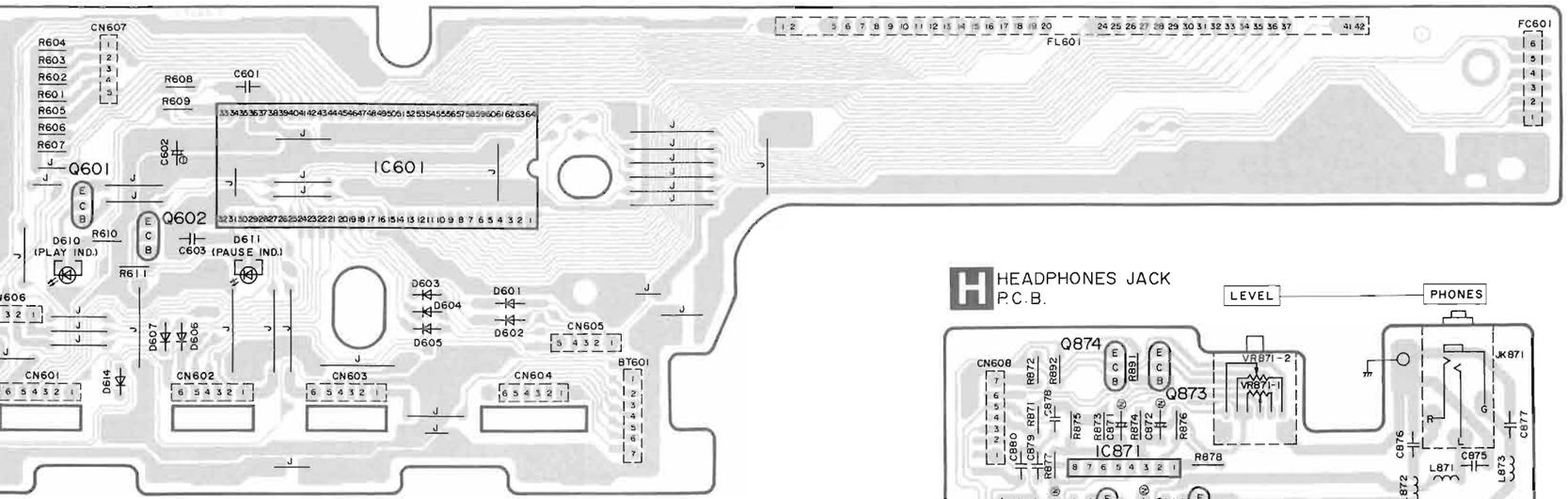


F MAIN P.C.B.

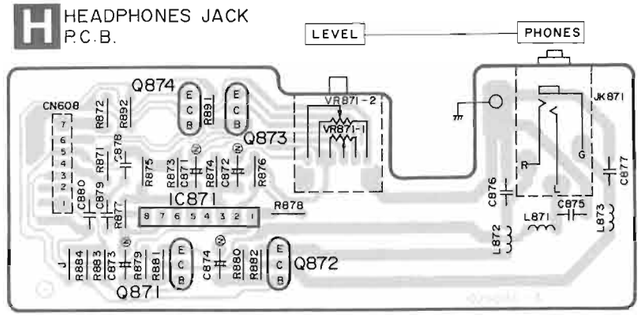


6 7 8 9 10 11 12 13 14 15 16

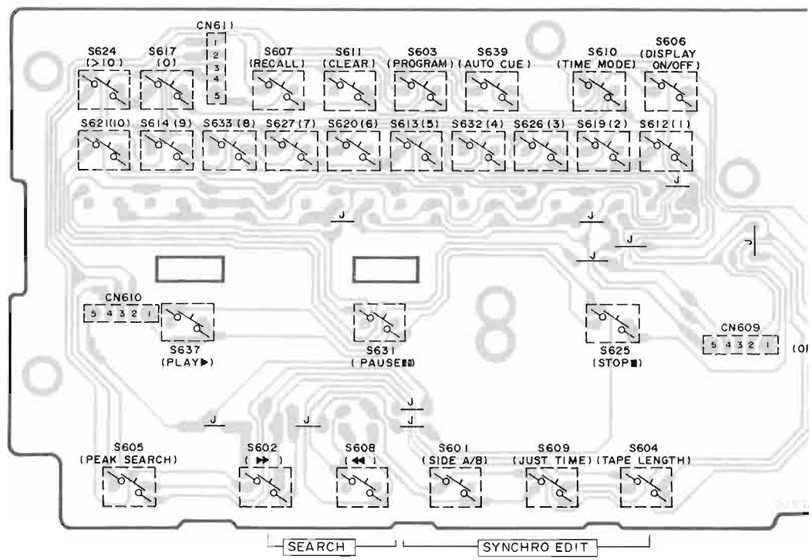
FL DRIVE P.C.B



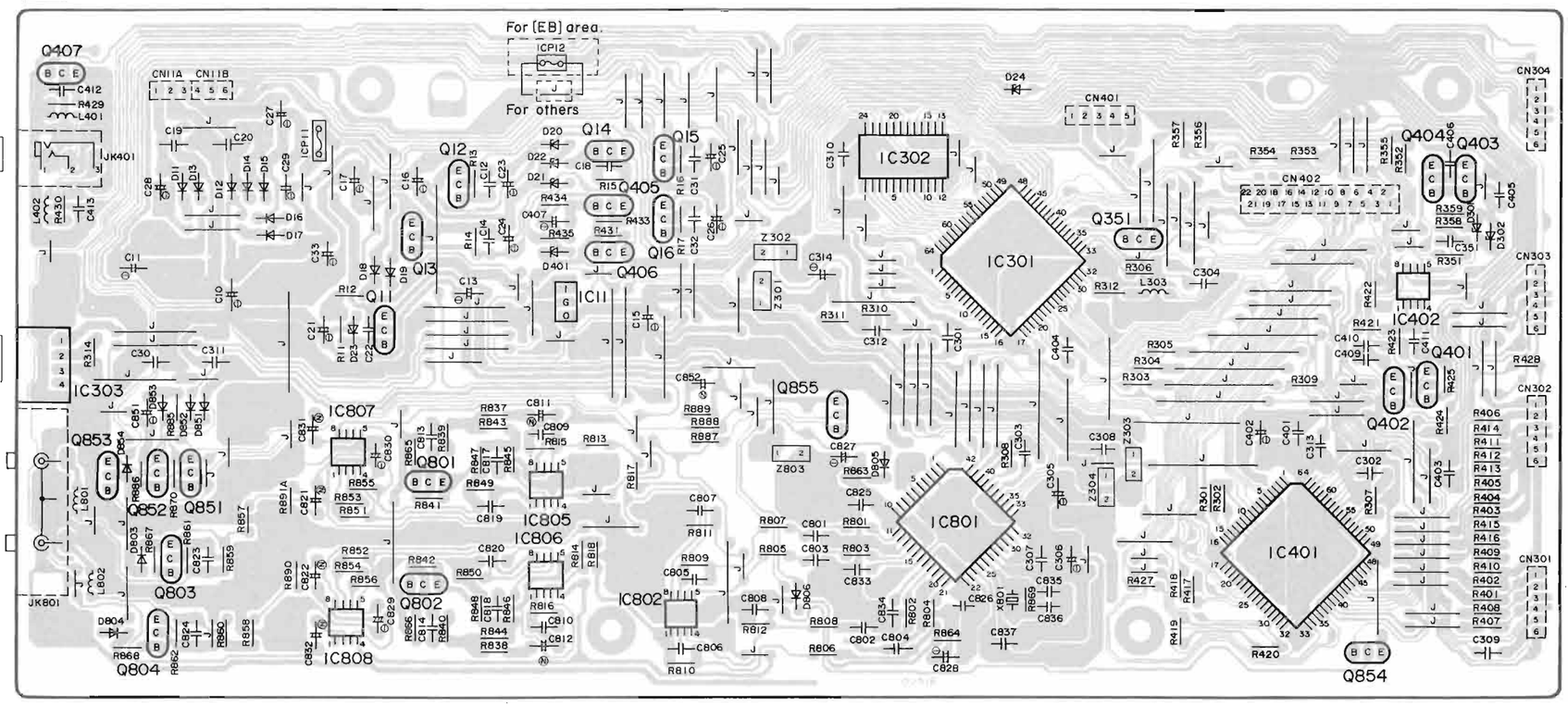
H HEADPHONES JACK P.C.B.



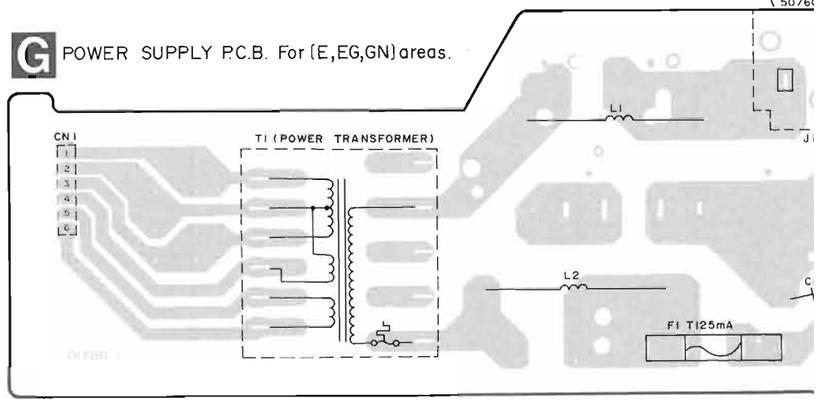
C OPERATION P.C.B.



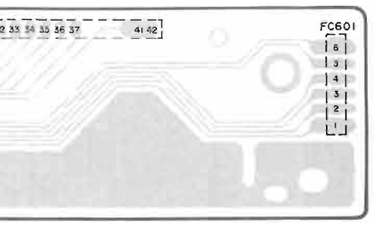
F MAIN P.C.B.

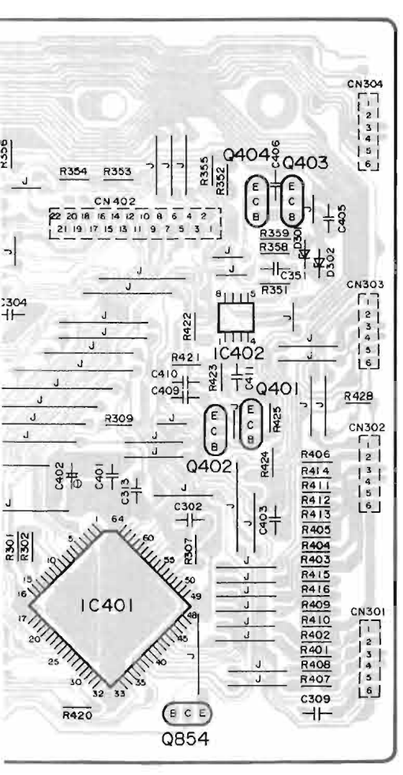


G POWER SUPPLY P.C.B. For (E,EG,GN) areas.

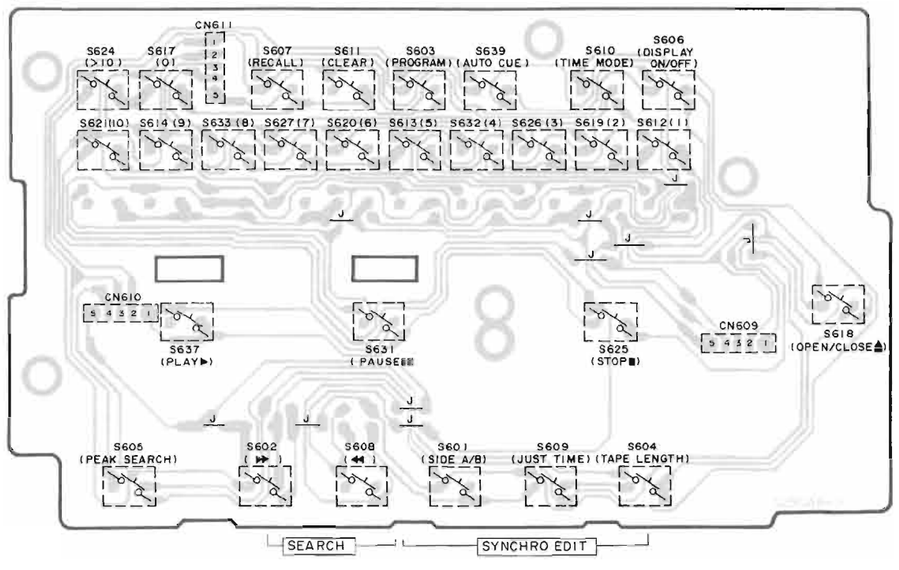


12 13 14 15 16 17 18 19 20 21

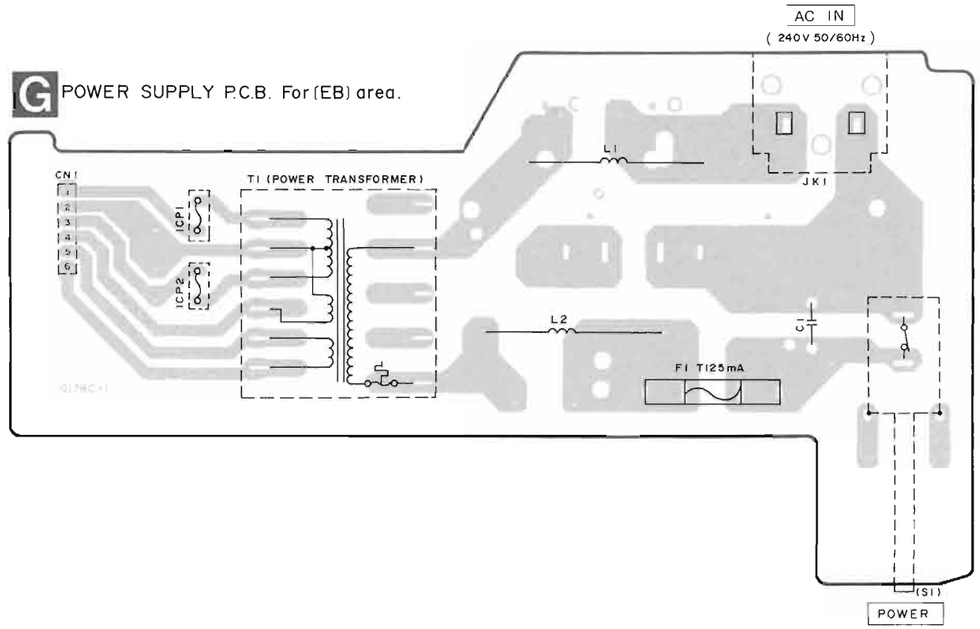




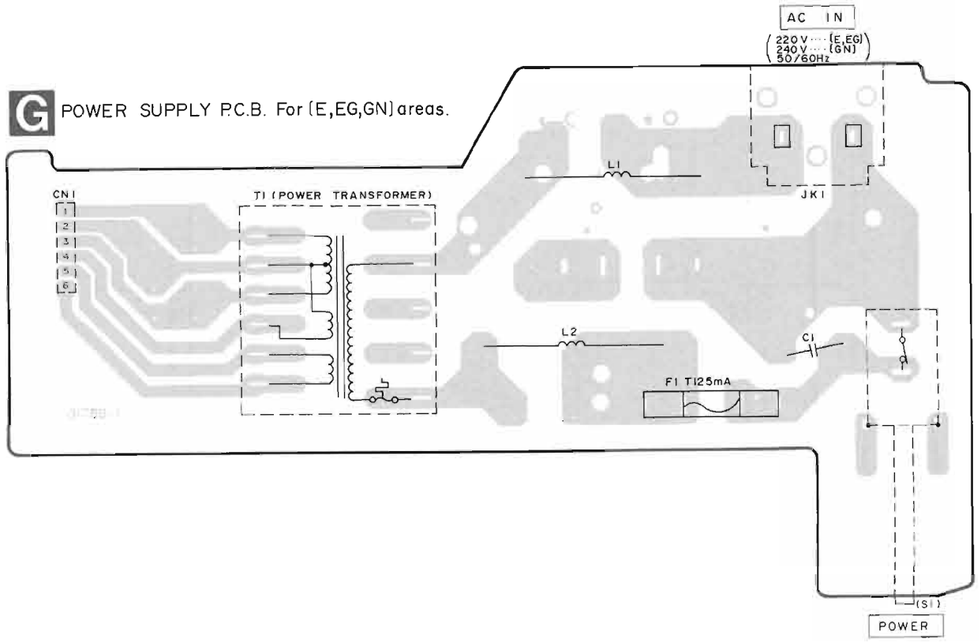
C OPERATION P.C.B.



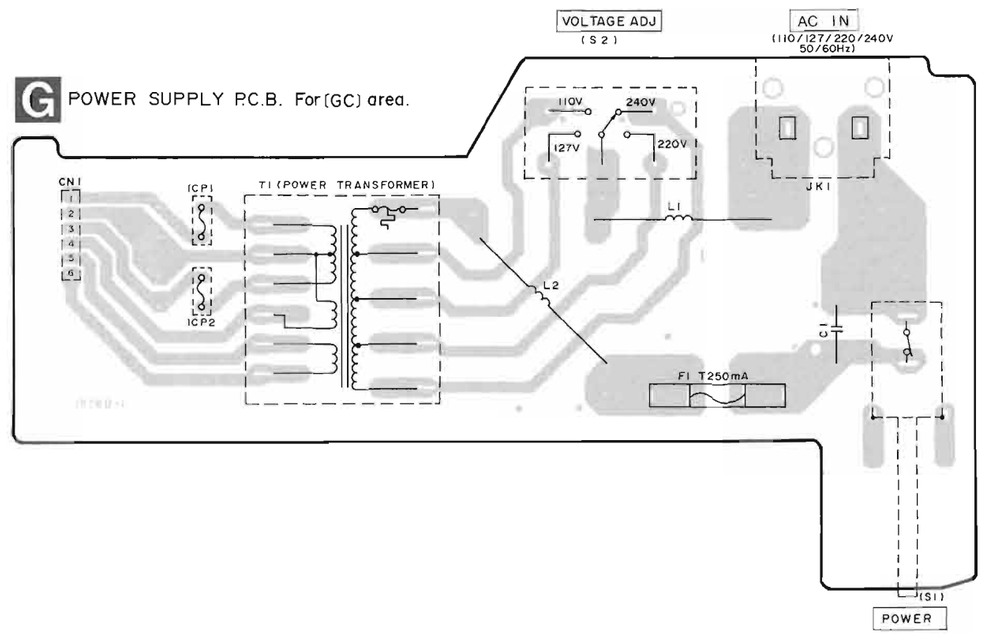
G POWER SUPPLY P.C.B. For (EB) area.



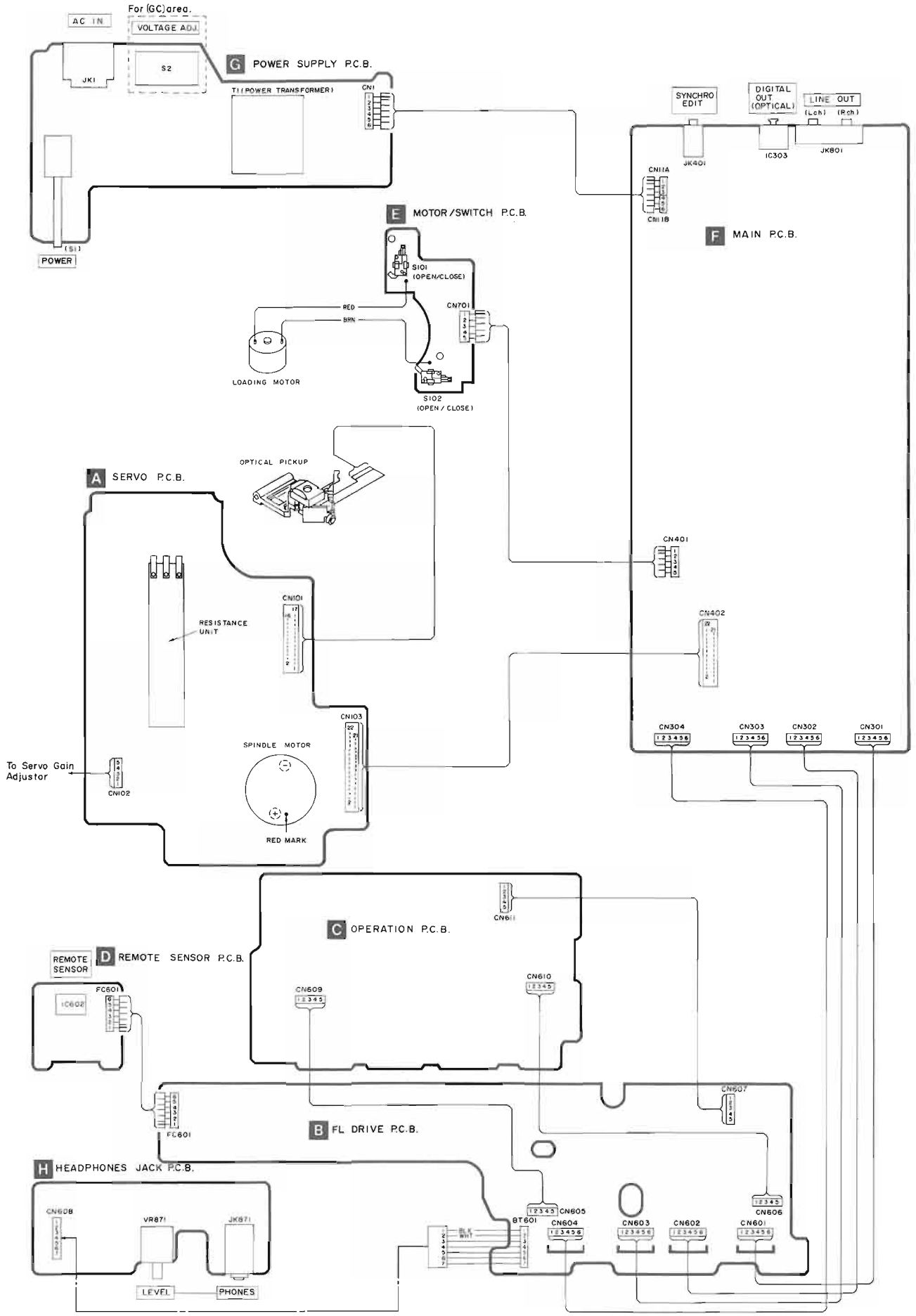
G POWER SUPPLY P.C.B. For (E,EG,GN) areas.



G POWER SUPPLY P.C.B. For (GC) area.

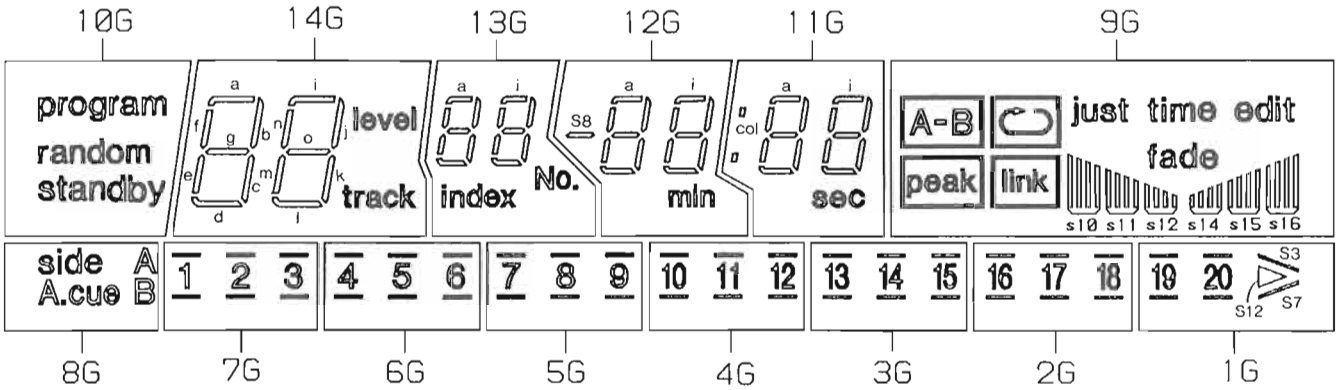


WIRING CONNECTION DIAGRAM



■ INTERNAL CONNECTION OF FL

• **Grid connection diagram**



• **Anode connection table**

	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	a	a	a	a	random	just	A.cue	(1)	(4)	(7)	(10)	(13)	(16)	(19)
S2	b	b	b	b	program	time	-	(2)	(5)	(8)	(11)	(14)	(17)	(20)
S3	f	f	f	f	-	edit	A	(3)	(6)	(9)	(12)	(15)	(18)	
S4	g	g	g	g	-	link	B	1	4	7	10	13	16	19
S5	c	c	c	c	-	peak	side	(1)	(4)	(7)	(10)	(13)	(16)	(19)
S6	e	e	e	e	-	A-	-	(2)	(5)	(8)	(11)	(14)	(17)	(20)
S7	d	d	d	d	-	B	-	(3)	(6)	(9)	(12)	(15)	(18)	
S8	level	No.	—	col	-		-	2	5	8	11	14	17	20
S9	i	i	i	i	-	-	-	-	-	-	-	-	-	-
S10	j	j	j	j	-		-	-	-	-	-	-	-	-
S11	n	n	n	n	standby			-	-	-	-	-	-	-
S12	o	o	o	o	-		-	3	6	9	12	15	18	
S13	k	k	k	k	-	fade	-	-	-	-	-	-	-	-
S14	m	m	m	m	-		-	-	-	-	-	-	-	-
S15	ℓ	ℓ	ℓ	ℓ	-		-	-	-	-	-	-	-	-
S16	track	index	min	sec	-		-	-	-	-	-	-	-	-

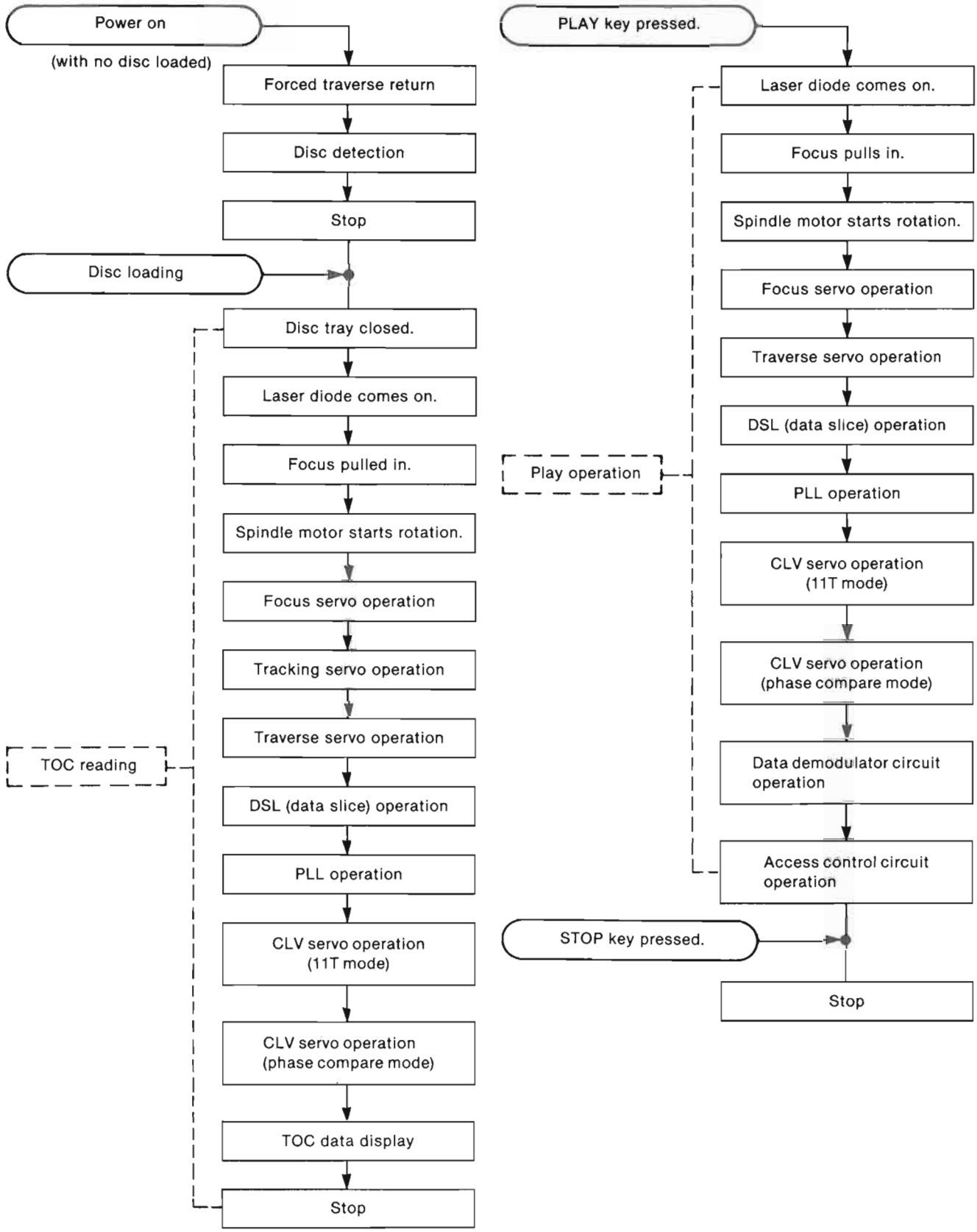
• **Pin connection**

Pin No.	42	41	40	39	38	37	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 2	F 2	N P	N P	N P	1 G	2 G	3 G	4 G	5 G	6 G	7 G	8 G	9 G	10 G	11 G	12 G	13 G	14 G	N P	N P	N P	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S 10	S 11	S 12	S 13	S 14	S 15	S 16	N P	N P	F 1	F 1

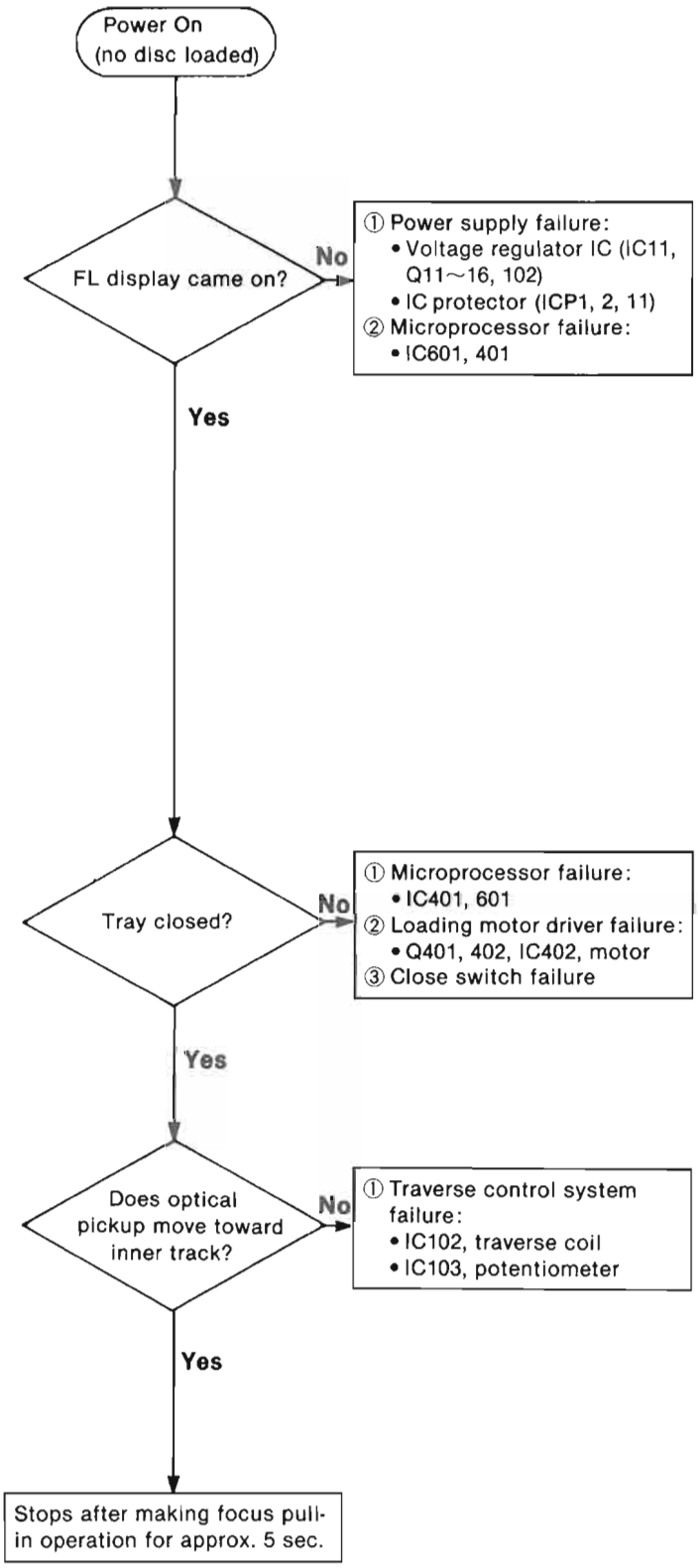
■ TROUBLESHOOTING GUIDE

SL-PS50 Operation Sequence Check Sheet

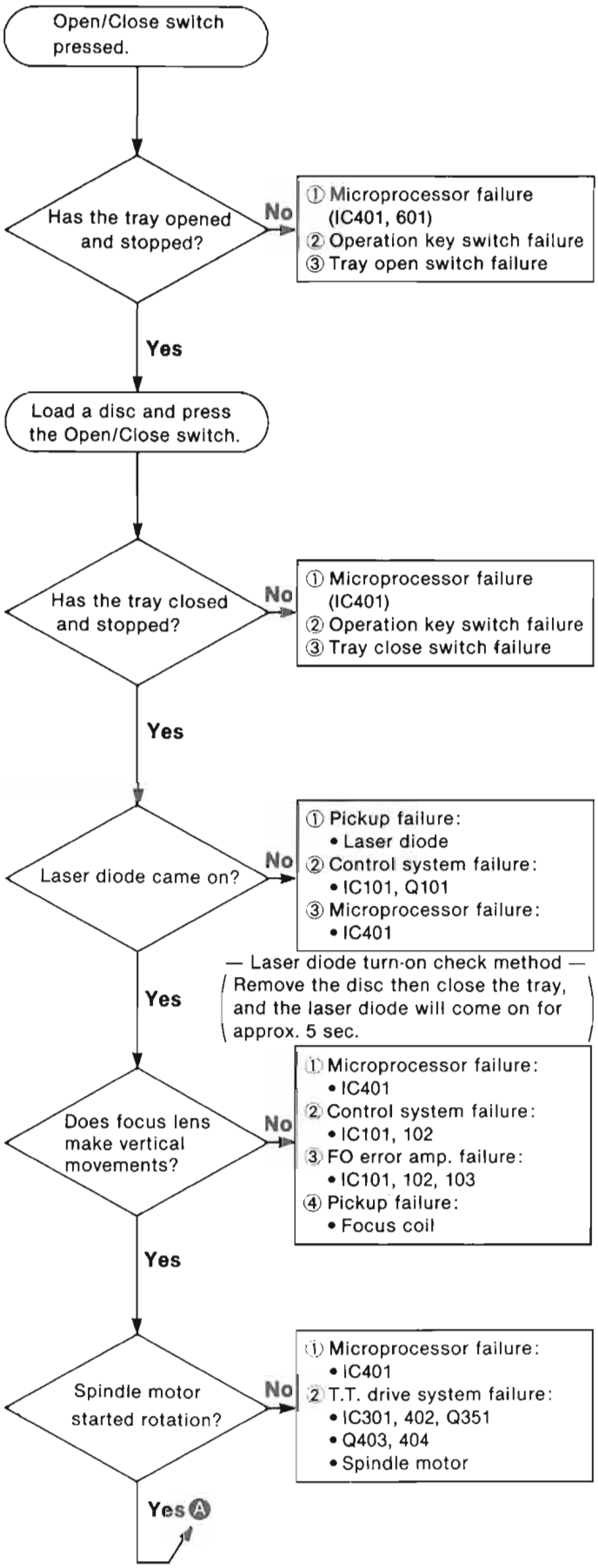
Play Operation Sequence

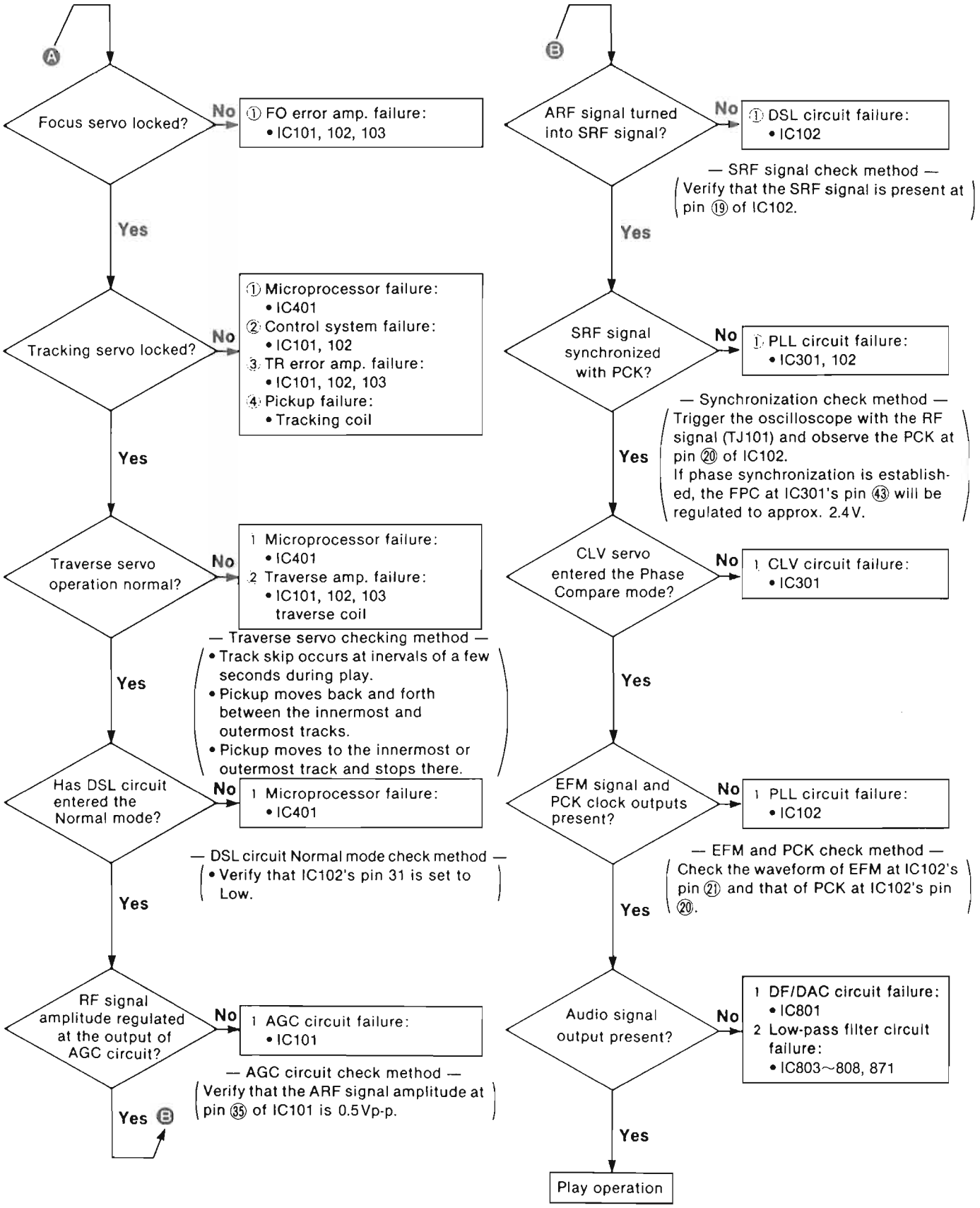


(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)




Ⓐ
Focus servo locked?
No
① FO error amp. failure:
• IC101, 102, 103
Yes
Tracking servo locked?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ TR error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Tracking coil
Yes
Traverse servo operation normal?
No
1 Microprocessor failure:
• IC401
2 Traverse amp. failure:
• IC101, 102, 103
traverse coil
— Traverse servo checking method —
• Track skip occurs at inervals of a few seconds during play.
• Pickup moves back and forth between the innermost and outermost tracks.
• Pickup moves to the innermost or outermost track and stops there.
Yes
Has DSL circuit entered the Normal mode?
No
1 Microprocessor failure:
• IC401
— DSL circuit Normal mode check method —
• Verify that IC102's pin 31 is set to Low.
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
1 AGC circuit failure:
• IC101
— AGC circuit check method —
Verify that the ARF signal amplitude at pin ㉟ of IC101 is 0.5Vp-p.
Yes Ⓑ
Ⓑ
ARF signal turned into SRF signal?
No
① DSL circuit failure:
• IC102
— SRF signal check method —
Verify that the SRF signal is present at pin ⑲ of IC102.
Yes
SRF signal synchronized with PCK?
No
1 PLL circuit failure:
• IC301, 102
— Synchronization check method —
Trigger the oscilloscope with the RF signal (TJ101) and observe the PCK at pin ⑳ of IC102.
If phase synchronization is established, the FPC at IC301's pin ㊸ will be regulated to approx. 2.4V.
Yes
CLV servo entered the Phase Compare mode?
No
1 CLV circuit failure:
• IC301
Yes
EFM signal and PCK clock outputs present?
No
1 PLL circuit failure:
• IC102
— EFM and PCK check method —
Check the waveform of EFM at IC102's pin ㉑ and that of PCK at IC102's pin ⑳.
Yes
Audio signal output present?
No
1 DF/DAC circuit failure:
• IC801
2 Low-pass filter circuit failure:
• IC803~808, 871
Yes
Play operation

REPLACEMENT PARTS LIST

Notes : • 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.
• 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
		INTEGRATED CIRCUIT(S)	
IC11	LM2940T5M	I. C, REGULATOR	
IC301	MN6625	I. C, DIGITAL S. P.	
IC302	CXK5816M	I. C, 16K RAM	
IC303	TOTX174-A	I. C, OPTICAL OUT	
IC401	MN1554PJZ-1	I. C, SYSTEM CONTROL	
IC402	BA4558FT1	I. C, MOTOR DRIVE	
IC601	MB88725BPJV	I. C, SYSTEM CONTROL&FL DRIVE	
IC602	RCD0003	I. C, REMOTE CONTROL RECEIVER	
IC801	MN6474	I. C, DIGITAL FILTER&D/A CONV	
IC802	M5219FP	I. C, BUFFER AMP	
IC805-808	M5219FP	I. C, BUFFER AMP	
IC871	M5218L	I. C, HEADPHONES AMP	
		TRANSISTOR(S)	
Q11	2SD1862QRTV6	TRANSISTOR	
Q12	2SC3311QRSTA	TRANSISTOR	
Q13	2SA1309QRSTA	TRANSISTOR	
Q14	2SB1238QSTV6	TRANSISTOR	
Q15	2SC3311QRSTA	TRANSISTOR	
Q16	2SA1309QRSTA	TRANSISTOR	
Q351	DTA124EST	TRANSISTOR	
Q401	2SD1862QRTV6	TRANSISTOR	
Q402	2SB1240QRTV6	TRANSISTOR	
Q403	2SD1862QRTV6	TRANSISTOR	
Q404	2SB1240QRTV6	TRANSISTOR	
Q405, 406	2SC3311QRSTA	TRANSISTOR	
Q407	DTC124ESTP	TRANSISTOR	
Q601, 602	DTC114ESTP	TRANSISTOR	
Q801, 802	2SC3311QRSTA	TRANSISTOR	
Q803, 804	2SD1450RSTTA	TRANSISTOR	
Q851	DTA114ESTP	TRANSISTOR	
Q852	2SA1309QRSTA	TRANSISTOR	
Q853	DTA124EST	TRANSISTOR	
Q854	DTC124ESTP	TRANSISTOR	
Q855	DTA124EST	TRANSISTOR	
Q871, 872	2SD1450RSTTA	TRANSISTOR	
Q873, 874	2SC3311QRSTA	TRANSISTOR	
		DIODE(S)	
D11-19	SVDS5688GT3	DIODE	⚠
D20, 21	MA4082MTA	DIODE	
D22	MA4330MTA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D23	MA4062HTA	DIODE	
D24	MA4082MTA	DIODE	
D301, 302	MA4051MTA	DIODE	
D401	MA4039MTA	DIODE	
D601-607	1SS254TA	DIODE	
D610	SVGDPG7851Y	DIODE	
D611	SVGDAY7851	DIODE	
D614	1SS254TA	DIODE	
D803-806	1SS254TA	DIODE	
D851	1SS254TA	DIODE	
D852	MA29WATA	DIODE	
D853, 854	1SS254TA	DIODE	
		I. C. PROTECTOR(S)	
ICP1, 2	SRUF38	IC PROTECTOR	(EB, GC) ⚠
ICP11	SRUN15T	IC PROTECTOR	
ICP12	SRUN15T	IC PROTECTOR	(EB)
		VARIABLE RESISTOR(S)	
VR871	EVJCB0F02A15	V. R, HEADPHONES	
		COMPONENT COMBINATION(S)	
Z301-304	EXCELDR35V	COMBINATION PART	
Z803	EXCELDR35V	COMBINATION PART	
		COIL(S)	
L1, 2	SLQX400-D	COIL	⚠
L303	RLQZP5R6KT-Y	COIL	
L401, 402	RLQZP3R3KT-Y	COIL	
L801, 802	RLQZP3R3KT-Y	COIL	
L871-873	RLQZP3R3KT-Y	COIL	
		TRANSFORMER(S)	
T1	SLTD5K098SG	POWER TRANSFORMER	(EB, GN) ⚠
T1	SLTD5K099SX	POWER TRANSFORMER	(GC) ⚠
T1	SLTD5K097SE	POWER TRANSFORMER	(E, EG) ⚠
		FUSE(S)	
F1	XBA2C025TB0	FUSE	(GC) ⚠
F1	XBA2C012TB0	FUSE	(E, EB, EG, GN) ⚠

Ref. No.	Part No.	Part Name & Description	Remarks
		OSCILLATOR(S)	
X801	SVQ49U338S	OSCILLATOR	
		DISPLAY TUBE	
FL601	RSL0038-F	DISPLAY TUBE	
		SWITCH(ES)	
S1	ESB8249V	SW, POWER	⚠
S2	SSR187-1	SW, VOLTAGE SELECTOR	(GC) ⚠
S101	SSPD17	SW, OPEN/CLOSE DET.	
S102	SSPD18	SW, OPEN/CLOSE DET.	
S601	EVQQTG05R	SW, SIDE A/B	
S602	EVQQTG05R	SW, SEARCH(F)	
S603	EVQQTG05R	SW, PROGRAM	
S604	EVQQTG05R	SW, TAPE LENGTH	
S605	EVQQTG05R	SW, PEAK SEARCH	
S606	EVQQTG05R	SW, DISPLAY ON/OFF	
S607	EVQQTG05R	SW, RECALL	
S608	EVQQTG05R	SW, SEARCH(R)	
S609	EVQQTG05R	SW, JUST TIME	
S610	EVQQTG05R	SW, TIME MODE	
S611	EVQQTG05R	SW, CLEAR	
S612	EVQQTG05R	SW, NUMERIC 1	
S613	EVQQTG05R	SW, NUMERIC 5	
S614	EVQQTG05R	SW, NUMERIC 9	
S617	EVQQTG05R	SW, NUMERIC 0	
S618	EVQQTG05R	SW, OPEN/CLOSE	
S619	EVQQTG05R	SW, NUMERIC 2	
S620	EVQQTG05R	SW, NUMERIC 6	
S621	EVQQTG05R	SW, NUMERIC 10	
S624	EVQQTG05R	SW, NUMERIC >10	
S625	EVQQTG05R	SW, STOP	
S626	EVQQTG05R	SW, NUMERIC 3	
S627	EVQQTG05R	SW, NUMERIC 7	
S631	EVQQTG05R	SW, PAUSE	
S632	EVQQTG05R	SW, NUMERIC 4	
S633	EVQQTG05R	SW, NUMERIC 8	
S637	EVQQTG05R	SW, PLAY	
S639	EVQQTG05R	SW, AUTO CUE	
		CONNECTOR(S) & SOCKET(S)	
BT601	REX0144	CONNECTOR ASS'Y	
CN301-303	RJU003K006M1	SOCKET(6P)	
CN304	RJU003K006M1	SOCKET(6P)	
CN401	RJS1A1705	CONNECTOR(5P)	
CN402	SJSD2221	CONNECTOR(22P)	
CN601-603	RJT003K006M	CONNECTOR(6P)	
CN604	RJT003K006M	CONNECTOR(6P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CN605-607	SJT30549BB1	CONNECTOR(5P)	
CN608	RJP7G17ZA	CONNECTOR(7P)	
CN609-611	SJS50581BB	SOCKET(5P)	
CN11A, 11B	RJS1A1703	CONNECTOR (3P)	
		FLAT CABLE(S)	
FC1	REZ0156	FLAT CABLE(6P)	
FC601	REZ0157	FLAT CABLE(6P)	
		JACK(S)	
JK1	SJS9236	JACK, AC INLET	(E, EG, EB, GC)⚠
JK1	SJSD16	JACK, AC INLET	(GN)⚠
JK401	RJJ33T01	JACK, SYNCHRO EDIT	
JK801	RJH3201N	JACK, LINE OUT	
JK871	QJA0455ZC	JACK, HEADPHONES	
		<SERVO P.C.B>	
		INTEGRATED CIRCUITS	
IC101	AN8373S	IC, SERVO AMP	
IC102	AN8374S	IC, SERVO PROCESSOR	
IC103	AN8377N	IC, B.T.L DRIVE	
		TRANSISTORS<SERVO P.C.B.>	
Q101	2SA1547QSTV2	TRANSISTOR	
Q102	2SB1240QR	TRANSISTOR	
		<SERVO P.C.B>	
		VARIABLE RESISTORS	
VR101	EVND3AA00B14	V.R, BEST EYE ADJ.	
VR102	EVND3AA00B14	V.R, TRACKING GAIN ADJ.	
VR103	EVND3AA00B14	V.R, TRACKING OFFSET ADJ.	
VR104	EVND3AA00B14	V.R, FOCUS GAIN ADJ.	
VR105	EVND3AA00B14	V.R, FOCUS OFFSET ADJ.	
VR106	EVND3AA00B24	V.R, TRACKING BALANCE ADJ.	
		<SERVO P.C.B>	
		MAGNET RESISTOR ELEMENTS	
RA1	EWS7M0A00Q53	RESISTANCE UNIT	

Notes : * 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.
* 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.

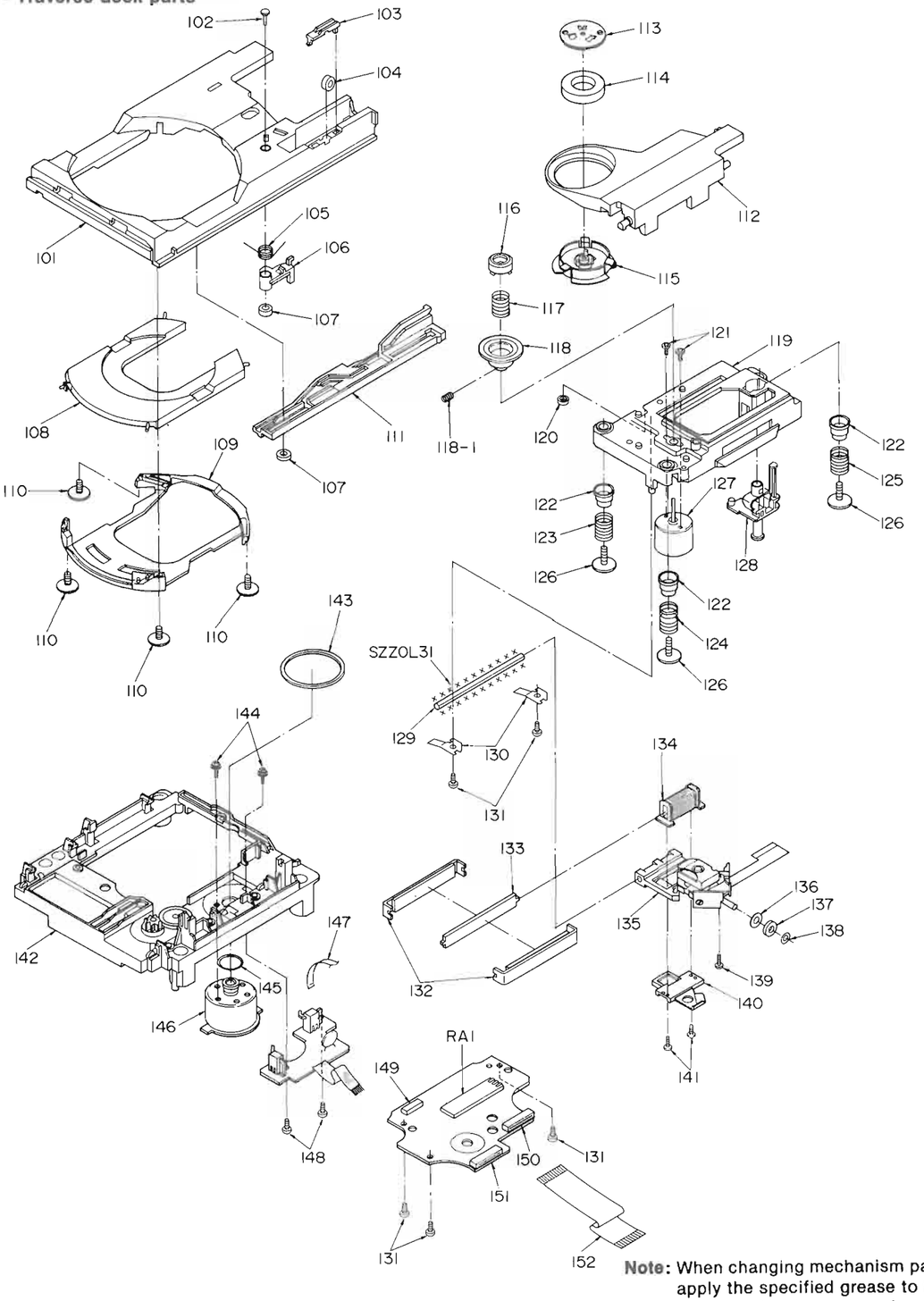
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0089-1K	TOP CASE	
2	SNE2129-1	SCREW	
3	XTB3+8JFZ	SCREW	
4	RGK0168B-K	TRAY ORNAMENT	
5	RFKHLPS50E-K	REAR PANEL ASS'Y	(E)
5	RFKHLPS50EBK	REAR PANEL ASS'Y	(EB, GN)
5	RGR0064B-B	REAR PANEL	(GC)
5	RGR0064A-F	REAR PANEL	(EG)
6	RGU0030	POWER BUTTON	
7	RKU0014	BOTTOM BOARD	(E, EB, EG)
8	RFKJLPS50GNK	CHASSIS ASS'Y	(GC, GN)
8	RMK0073-1	CHASSIS	(E, EB, EG)
8-1	RKA0009-1	FOOT	(GC, GN)
9	RMM0048	POWER SWITCH ROD	
10	RMC0063	H.P. EARTH ANGLE	
11	RMN0056	FL HOLDER	
12	SHRD169	LED HOLDER	
14	RGW0048	KNOB, H.P. LEVEL	
15	RMR0222	H.P. P.C.B. FIXER	
16	RFKGLPS50E-K	FRONT PANEL ASS'Y	
16-1	RGB0020-1	MASH BADGE	
17	RFKNLPS70-K	FRONT GRILLE ASS'Y	
17-1	RKW0070	FL ORNAMENT BOARD	
18	RGK0213	POWER BUTTON SLEEVE	
19	RGU0265B	KNOB, OPERATION	
20	RGU0268B	KNOB, OPEN/CLOSE	
22	SHRD133	OPTICAL CONDUCTION PLATE	
23	SHRD170	COVER, REMOTE CONTROL RECEIV	
24	SHE185-2	P.C.B. SUPPORTER	
25	SKLD8-E	FOOT	(E, EB, EG)
26	XTBS3+8JFZ1	SCREW	
27	XTB3+16JFZ	SCREW	
28	XTB3+8F	SCREW	
29	VJA1034	PROTECTION CAP	
30	SJT390	FUSE HOLDER	⚠
		PACKING MATERIAL	
P1	RPG0449	PACKING CASE	(GN, GC)
P1	RPG0448	PACKING CASE	(E, EG, EB)
P2	RPN0311A	CUSHION(FL)	(GN, GC)
P2	RPN0237A	CUSHION(FL)	(E, EG, EB)
P3	RPN0311B	CUSHION(FR)	(GN, GC)
P3	RPN0237B	CUSHION(FR)	(E, EG, EB)

Ref. No.	Part No.	Part Name & Description	Remarks
P4	RPN0311C	CUSHION(BL)	(GN, GC)
P4	RPN0237C	CUSHION(BL)	(E, EG, EB)
P5	RPN0311D	CUSHION(BR)	(GN, GC)
P5	RPN0237D	CUSHION(BR)	(E, EG, EB)
P6	XZB60X60A01	PROTECTION BAG UNIT	
P7	SPSD152	ACCESSORIES BOX	
P8	XZB26X17C03	PROTECTION BAG(F.B)	
		ACCESSORIES	
A1	RFKSLPS50E-K	INSTRUCTION MANUAL ASS'Y	(E)
A1	RQT0415-G	INSTRUCTION MANUAL	(GN, GC)
A1	RQT0417-D	INSTRUCTION MANUAL	(EG)
A1	RQT0420-B	INSTRUCTION MANUAL	(EB)
A2	SQX7186	WARRANTY CARD	(GN)
A2	RQA0013	WARRANTY CARD	(E, EB, EG)
A3	RQCB0169	SERVICENTER LIST	
A4	SJA193	POWER CORD	(EB) ⚠
A4	SJA173	POWER CORD	(GN) ⚠
A4	RJA0004	POWER CORD	(GC) ⚠
A4	SJA187	POWER CORD	(E, EG) ⚠
A5	SJP2249-3	PIN CORD	
A6	RAK-SL3009W	REMOTE CONTROL TRANSMITTER	
A7	RKK0008	BATTERY CASE	
A8	SJP9215	AC PLUG ADAPTOR	(GC) ⚠
		TRAVERSE DECK	
101	RFKNLP370PAK	DISC TRAY ASS'Y	
102	RMQ0044	PIN	
103	SHRD150	ROLLER HOLDER	
104	SDRD12	ROLLER	
105	SUSD83	SPRING	
106	SIRD96-1	LOCK LEVER	
107	SFUMZ15R61	WASHER	
108	SIRD98-3	DISC TRAY	
109	SIRD107-1	TRAY BASE	
110	SNSD36	SCREW	
111	SIRD40-2	RACK GEAR	
112	SIRD42-5	CLAMPER	
113	SOYD2	CLAMPER YOKE	
114	SOMD4	CLAMPER MAGNET	
115	SIRD51-1	CLAMPER HOLDER	
116	SDOD29-2	RING	
117	SRQA010N04	SPRING	
118	SDOD28-1E	TURNTABLE	
118-1	XXE26D5	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
119	SISD22-1	TRAVERSE BASE	
120	SHGD148	STOPPER RUBBER	
121	XYN2+C8	SCREW	
122	SHGD153-1	CUSHION RUBBER	
123	SUSD137-1	SPRING(B)	
124	SUSD136-1	SPRING(A)	
125	SUSD145-1	SPRING(C)	
126	SNSD33	SCREW	
127	SJGDRF310T-2	SPINDLE MOTOR	
128	SHRD177-1	LOCK UNIT	
129	SUXD123-1	GUIDE SHAFT	
130	SUWD112	GUIDE SHAFT HOLDER	
131	XTB3+10G	SCREW	
132	SOYD21-E	YOKE(A)	
133	SOYD22	YOKE(B)	
134	SORD38-E	COIL	
135	SOAD70A	OPTICAL PICKUP	
136	SHWD33	WASHER	
137	SORD37	ROLLER	
138	SHWD34	WASHER	
139	SNSD31	SCREW	
140	SHRD176-E	COIL HOLDER	
141	XTB2+5G	SCREW	
142	RFKNLP370PBK	LOADING BASE ASS'Y	
142-1	XYN26+F7	SCREW	
142-2	RMG0050	MOTOR RUBBER	
143	SMBD7-2	BELT	
146	SIRD94-E	LOADING MOTOR ASS'Y	
147	SIKD150051F	FLAT CABLE	
148	XTB3+8G	SCREW	
149	EMCS0552MP	CONNECTOR(5P)	
150	SJSD1722M	SOCKET(17P)	
151	SJSD2222M	SOCKET(22P)	
152	SIKD150221-1	FLAT CABLE	

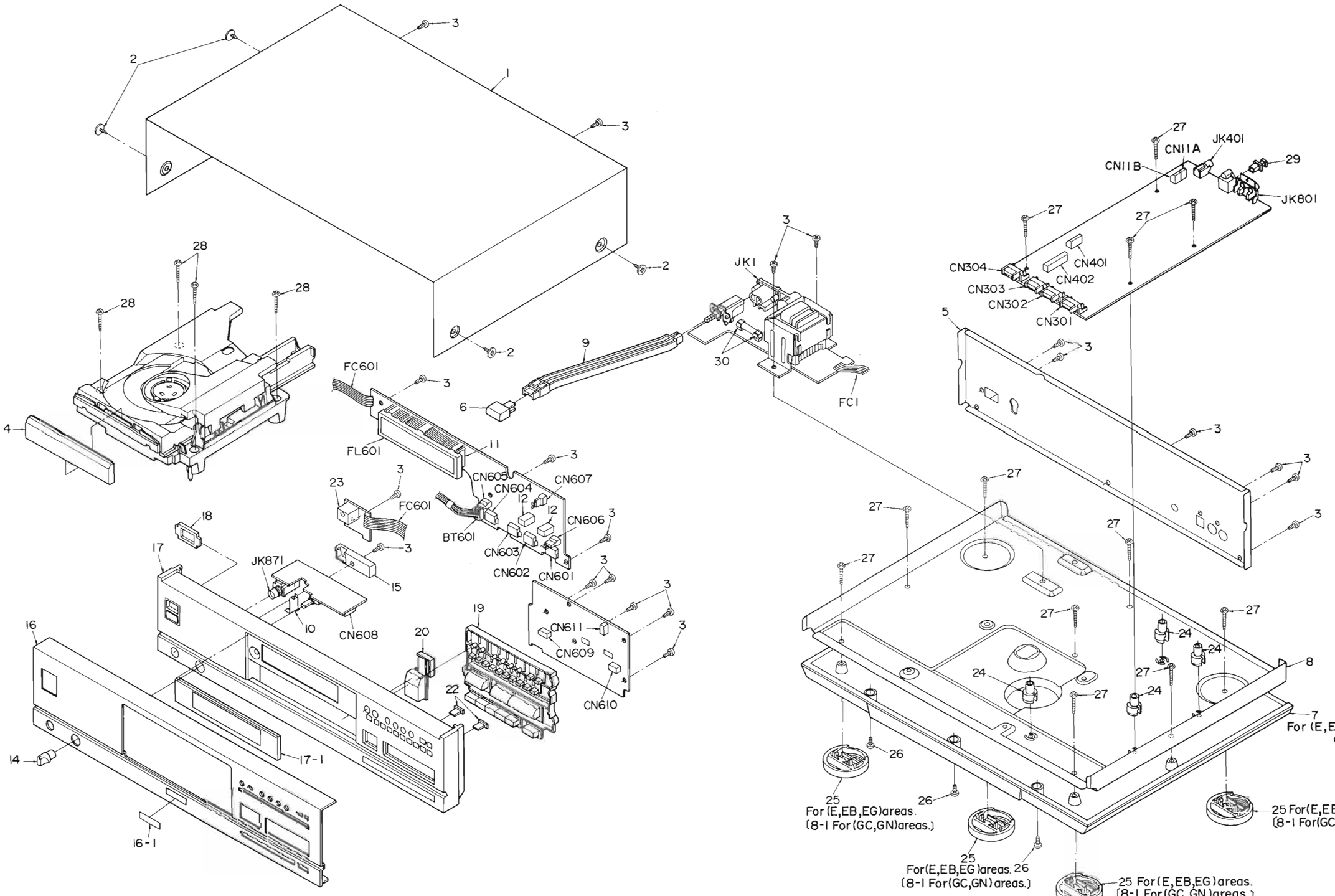
EXPLODED VIEWS

• Traverse deck parts



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

• **Cabinet and chassis parts**



■ RESISTORS & CAPACITORS

Notes : * Capacity valuse 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
		RESISTORS
R11	ERDS2TJ331T	1/4W 330
R12	ERDS2TJ471T	1/4W 470
R13-17	ERDS2TJ102T	1/4W 1K
R301-306	ERDS2TJ472T	1/4W 4.7K
R307	ERDS2TJ104T	1/4W 100K
R308	ERDS2TJ561T	1/4W 560
R309	ERDS2TJ472T	1/4W 4.7K
R310	ERDS2TJ182T	1/4W 1.8K
R311	ERDS2TJ272T	1/4W 2.7K
R312	ERDS2TJ561T	1/4W 560
R314	ERDS2TJ822T	1/4W 8.2K
R351	ERDS2TJ103T	1/4W 10K
R352	ERDS2TJ154T	1/4W 150K
R353	ERDS2TJ123T	1/4W 12K
R354	ERDS2TJ154T	1/4W 150K
R355, 356	ERDS2TJ333T	1/4W 33K
R357	ERDS2TJ8R2	1/4W 8.2
R358, 359	ERDS2TJ101T	1/4W 100
R401-408	ERDS2TJ221T	1/4W 220
R409-420	ERDS2TJ472T	1/4W 4.7K
R421, 422	ERDS2TJ913T	1/4W 91K
R423, 424	ERDS2TJ124T	1/4W 120K
R425	ERDS2TJ101T	1/4W 100
R427	ERDS2TJ472T	1/4W 4.7K
R428	ERDS2TJ273T	1/4W 27K
R429, 430	ERDS2TJ102T	1/4W 1K
R431	ERDS2TJ472T	1/4W 4.7K
R433, 434	ERDS2TJ472T	1/4W 4.7K
R435	ERDS2TJ221T	1/4W 220
R601-608	ERDS2TJ472T	1/4W 4.7K
R609	ERDS2TJ104T	1/4W 100K
R610, 611	ERDS2TJ121	1/4W 120
R801-804	ERDAS3G103T	1/4W 10K
R805-808	ERDAS3G273T	1/4W 27K
R809-812	ERDAS3G473	1/4W 47K
R813, 814	ERDAS3G123T	1/4W 12K
R815, 816	ERDAS3G153T	1/4W 15K
R817, 818	ERDAS3G152T	1/4W 1.5K
R837, 838	ERDAS3G822T	1/4W 8.2K
R839, 840	ERDAS3G222T	1/4W 2.2K
R841, 842	ERDAS3J105T	1/4W 1M
R843, 844	ERDAS3G103T	1/4W 10K
R845, 846	ERDAS3G153T	1/4W 15K
R847, 848	ERDAS3G183	1/4W 18K
R849, 850	ERDAS3J100T	1/4W 10
R851, 852	ERDAS3J330T	1/4W 33

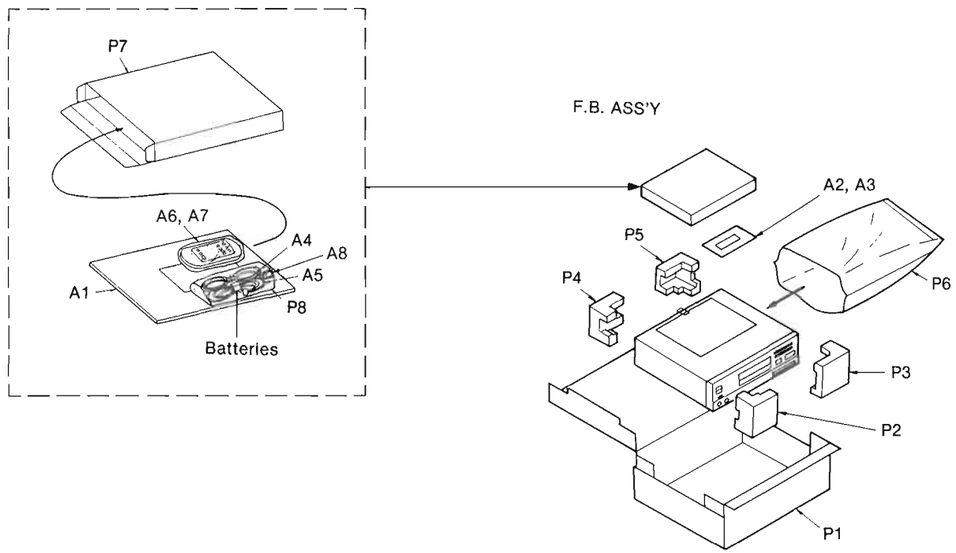
Ref.No.	Part No.	Values & Remarks
R853, 854	ERDAS3J332T	1/4W 3.3K
R855, 856	ERDAS3J102T	1/4W 1K
R857-860	ERDAS3J471T	1/4W 470
R861, 862	ERDAS3J124T	1/4W 120K
R863, 864	ERDS2TJ331T	1/4W 330
R865-868	ERDS2TJ102T	1/4W 1K
R869	ERDS2TJ472T	1/4W 4.7K
R870	ERDS2TJ332T	1/4W 3.3K
R871, 872	ERDS2TJ153T	1/4W 15K
R873-876	ERDS2TJ183T	1/4W 18K
R877, 878	ERDS2TJ224T	1/4W 220K
R879, 880	ERDS2TJ473T	1/4W 47K
R881, 882	ERDS2TJ101T	1/4W 100
R883, 884	ERDS2TJ222T	1/4W 2.2K
R885	ERDS2TJ102T	1/4W 1K
R886	ERDS2TJ103T	1/4W 10K
R887	ERDS2TJ822T	1/4W 8.2K
R888	ERDS2TJ333T	1/4W 33K
R889	ERDS2TJ474T	1/4W 470K
R890, 891A	ERDS2TJ222T	1/4W 2.2K
R891	ERDS2TJ472T	1/4W 4.7K
R892	ERDS2TJ472T	1/4W 4.7K
		CAPACITORS
C1	ECKDKC103PF2	400V 0.01U ⚠
C10	ECA1CPXS222E	16V 2200U
C11	ECA1CPXS102E	16V 1000U
C12	ECBT1C103NS5	16V 0.01U
C13	ECEA1AU101B	10V 100U
C14	ECBT1C103NS5	16V 0.01U
C15	ECEA0JU470B	6.3V 47U
C16, 17	ECEA1CU331B	16V 330U
C18	ECBT1C103NS5	16V 0.01U
C19, 20	ECFR1E103KR	25V 0.01U
C21	ECEA1CU221B	16V 220U
C22	ECBT1C103NS5	16V 0.01U
C23, 24	ECEA1CU100B	16V 10U
C25, 26	ECEA1CU101B	16V 100U
C27	ECEA1EU101B	25V 100U
C28, 29	ECEA1HU101	50V 100U
C30	ECFR1E104ZF5	25V 0.1U
C31, 32	ECBT1C103NS5	16V 0.01U
C33	ECEA1CU102B	16V 1000U
C301	ECFR1E104ZF5	25V 0.1U
C302	ECBT1C103NS5	16V 0.01U
C303	ECBT1H6R8K5	50V 6.8P
C304	ECFR1E104ZF5	25V 0.1U
C305	ECEA0JU331B	6.3V 330U

Ref.No.	Part No.	Values & Remarks
C306	ECEA0JU101B	6.3V 100U
C307	ECFR1E104ZF5	25V 0.1U
C308, 309	ECBT1C103NS5	16V 0.01U
C310, 311	ECFR1E104ZF5	25V 0.1U
C312	ECBT1H330J5	50V 33P
C313	ECFR1E104ZF5	25V 0.1U
C314	ECEA0JU470B	6.3V 47U
C351	ECBT1H102KB5	50V 1000P
C401	ECFR1E104ZF5	25V 0.1U
C402	ECEA0JU470B	6.3V 47U
C403, 404	ECFR1E104ZF5	25V 0.1U
C405, 406	ECBT1H102KB5	50V 1000P
C407	ECEA1HU010B	50V 1U
C409-411	ECBT1H102KB5	50V 1000P
C412, 413	ECBT1C103NS5	16V 0.01U
C420	ECKW1H103KB5	50V 0.01U
C601	ECBT1C103NS5	16V 0.01U
C602	ECEA1CKS100	16V 10U
C603	ECFR1E104ZF5	25V 0.1U
C801-804	ECBT1H680J5	50V 68P
C805-808	ECBT1H470J5	50V 47P
C809, 810	ECBT1H221KBY	50V 220P
C811, 812	ECEA1CBZ330B	16V 33U
C813, 814	ECHR1H822GZ3	50V 8200P
C817, 818	ECHR1H102GZ3	50V 1000P
C819, 820	ECHR1H121JZ3	50V 120P
C821, 822	ECEA1CBZ330B	16V 33U
C823, 824	ECHR1H102GZ3	50V 1000P
C825, 826	ECFR1E1042F5	25V 0.1U
C827, 828	ECEA0JU331B	6.3V 330U
C829, 830	ECEA1AU470B	10V 47U
C831, 832	ECEA1EKN2R2	25V 2.2U
C833, 834	ECBT1C103NS5	16V 0.01U
C835, 836	ECBT1H5R6K5	50V 5.6P
C837	ECFR1E1042F5	25V 0.1U
C851	ECEA0JU471B	6.3V 470U
C852	ECEA1CN100SB	16V 10U
C871, 872	ECEA1AKN100B	10V 10U
C873, 874	ECEA1AN470SB	10V 47U
C875-880	ECBT1C103NS5	16V 0.01U
		RESISTORS<SERVO P.C.B.>
R101	ERDS2TJ471	1/4W 470
R102	ERJ6GEYJ120V	1/10W 12
R103	ERJ6GEYJ122	1/10W 1.2K
R104	ERJ6GEYJ471	1/10W 470
R105, 106	RRJ6GCJ102TE	1/6W 1K
R108	ERJ6GEYJ224V	1/10W 220K

Ref.No.	Part No.	Values & Remarks
R110	ERDS2TJ222	1/4W 2.2K
R111	ERJ6GEYJ154V	1/10W 150K
R113	ERJ6GEYJ472V	1/10W 4.7K
R114	ERJ6GEYJ683V	1/10W 68K
R116	ERJ6GEYJ332V	1/10W 3.3K
R117	ERJ6GEYJ123	1/10W 12K
R118	ERJ6GEYJ333V	1/10W 33K
R119	RRJ6GCJ223TE	1/6W 22K
R122	ERDS2TJ104	1/4W 100K
R123	ERJ6GEYJ470V	1/10W 47
R124	RRJ6GCJ103TE	1/6W 10K
R125	RRJ6GCJ222TE	1/6W 2.2K
R127	ERDS2TJ681	1/4W 680
R128	RRJ6GCJ103TE	1/6W 10K
		CAPACITORS<SERVO P.C.B>
C101	ECEA1CKS220I	16V 22U
C102	ECEA1HKS010I	50V 1U
C103	ECEA1CKS220I	16V 22U
C106	RCUV1E104ZF	25V 0.1U
C107	ECEA0GKS101I	4V 100U
C108	ECEA0JKS470I	6.3V 47U
C109	ECEA1HKS010I	50V 1U
C110	RCUV1H681KB	50V 680P
C111	ECUV1C224KR	16V 0.22U
C112	RCUV1H331KB	50V 330P

Ref.No.	Part No.	Values & Remarks
C113	ECEA1HSN010I	50V 1U
C114	RCUV1E333KB	25V 0.033U
C115	ECEA1HSN010I	50V 1U
C116	RCUV1E333KB	25V 0.033U
C117	ECBT1H102KB5	50V 0.001U
C119, 120	ECEA1CKN4R7I	16V 4.7U
C122	ECEA0JKS220I	6.3V 22U
C123	RCUV1E104ZF	25V 0.1U
C124	ECUV1E823KB	25V 0.082U
C125	ECUV1C224KR	16V 0.22U
C127	ECEA0JKF101I	6.3V 100U
C128	ECEA1CKA101	16V 100U
C132	ECUV1E104KB	25V 0.1U
C133	RCUV1H330KC	50V 33P
C134, 135	ECUV1C224KR	16V 0.22U
C136	ECEA0GKS101I	4V 100U
C138	RCUV1E104ZF	25V 0.1U
C139	RCUV1H470KC	50V 47P
C140	RCUV1E103KB	25V 0.01U
C141-144	RCUV1H470KC	50V 47P
C145	ECEA0JKF101I	6.3V 100U
C146	RCUV1H181KC	50V 180P
C147	RCUV1H472KB	50V 4700P
C148	ECEA1ESN4R7I	25V 4.7U
C149	RCUV1E104ZF	25V 0.1U
C150	RCUV1E103KB	25V 0.01U

■ PACKING



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