

SERV. 34 845

ORDER NO. AD9104111C8

# Service Manual

COMPACT  
disc  
DIGITAL AUDIO

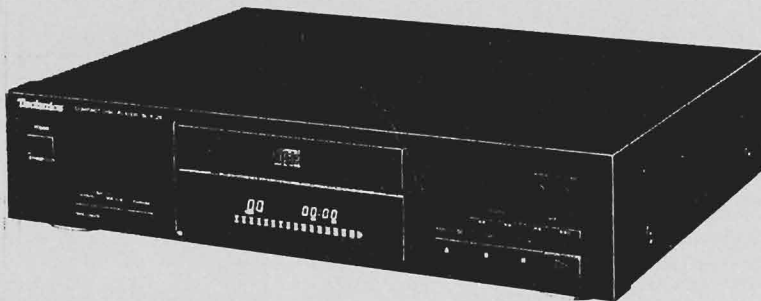
DIGITAL

Compact Disc Player

SL-PJ28

Color

(K)... Black Type



Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	

SL-PG100 MECHANISM SERIES (SODD110Z)

## 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	85 dB
S/N ratio	95 dB
Total harmonic distortion	0.02% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

### ■ Pickup

Wavelength	780 nm
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### ■ General

#### Power supply

For (E, GN) areas:

AC 50/60 Hz, 230~240 V

For (GC) area:

AC 50/60 Hz, 110 V/127 V/220 V/240 V

#### Power consumption

14 W

#### Dimensions (W×H×D)

360×85×290 mm

#### Weight

2.9 kg

#### Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

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# Technics

## ACCESSORIES

- AC power supply cord..... 1 pc.  
(SJA187)..... (E)  
(RJA0004)..... (GC)  
(SJA173)..... (GN)
- Stereo connection cable... 1 pc.  
(SJP2249-3)
- L-type cable..... 1 pc.  
(SJP2257T)
- Power plug adaptor..... 1 pc.  
(For (GC) only)  
(SJP9215)



## BEFORE USE

Be sure to disconnect the mains cord before adjusting the voltage selector.

Use a minus (-) screwdriver to set the voltage selector (on the rear panel) to the voltage setting for the area in which the unit will be used.

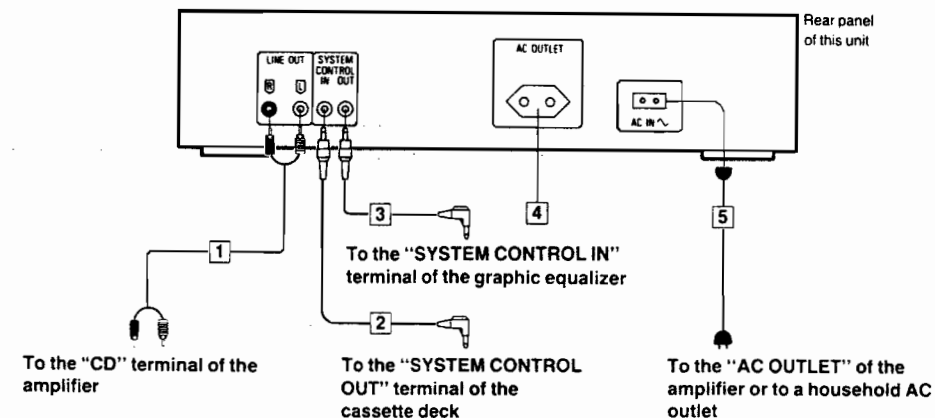
(If the power supply in your area is 117 V or 120 V, set to the "127 V" position.)

Note that this unit will be seriously damaged if this setting is not made correctly. (There is no voltage selector for some countries; the correct voltage is already set.)

## CONNECTIONS

### Notes:

- Turn off all components before making connections.
- See the operating instructions of the tuner for details.



1 Stereo connection cable (included)

2 L-type cable (included)  
This cable can be used only with a Technics cassette deck having the appropriate "SYSTEM CONTROL OUT" terminal.

3 L-type cable (not included)  
This cable is included in a Technics graphic equalizer having the appropriate "SYSTEM CONTROL IN" terminal.

4 "UNSWITCHED" outlet  
Power is always available, regardless of power switch. Audio equipment rated up to 50 W can be connected here.

5 AC power supply cord (Included)  
**Note:**  
The configuration of the AC outlet and AC power supply cord differs according to area.

For (GC) only  
If the power plug will not fit your socket, use the power plug adaptor (included).

## 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: 780 nm  
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.

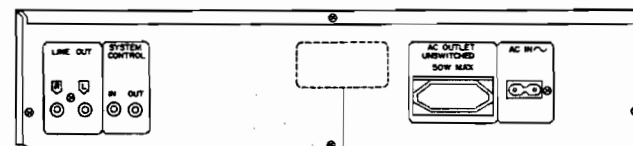
**ACHTUNG:** Dieses produkt enthält eine laserdioden. Im eingeschalteten zustand wird unsichtbare laserstrahlung von der lasereinheit abgestrahlt.

Wellenlänge: 780 nm  
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.

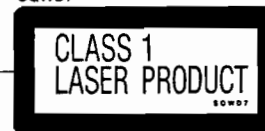


### Use of caution labels

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

Areas	SQWD7	RQLS0021	RQLS0051
(E)	○	○	○
Others	○	○	×

SQWD7



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

RQLS0051

**VARO!** Arvattuessa ja srujalukitus ohitettassa olet alltime näkymättömälle lasersäteilylle. Älä katso siltoeseen.

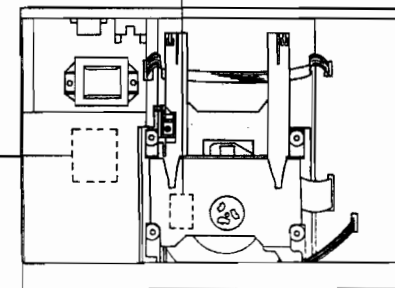
**WARNING!** Osynlig laserstråling når denna del är öppenad och spårren är urkopplad. Betrakta ej strålen. RQLS0051

RQLS0021

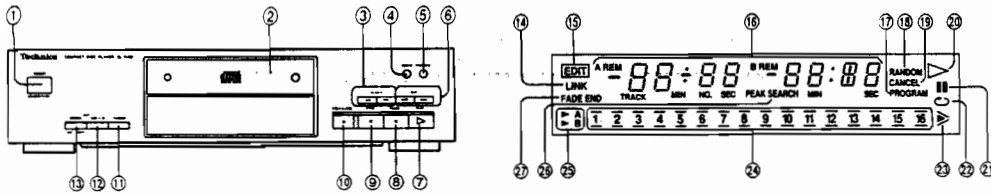
**ADVARSEL:** USYNLIG LASERSTRÅLING VED ÅBNING. NÅR SIKKERHEDSÅFBRYDERE ER UDE AF FUNKTION, UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT- Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen. RQLS0021

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.



## LOCATION OF CONTROLS



### Control section

- ① **Power "STANDBY (OFF)/ON" switch (POWER STANDBY (OFF)/ON)**  
This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY (OFF) position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.
- ② **Disc holder**
- ③ **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.
- ④ **Repeat play button (REPEAT)**
- ⑤ **Program button (PROGRAM)**  
Pressing this button initiates the program play mode. You can then enter specific tracks using the skip buttons.
- ⑥ **Skip buttons (◀◀ SKIP ▶▶)**  
These buttons can be used to skip tracks and to specify the track number or the desired recording time.

### Indicators section

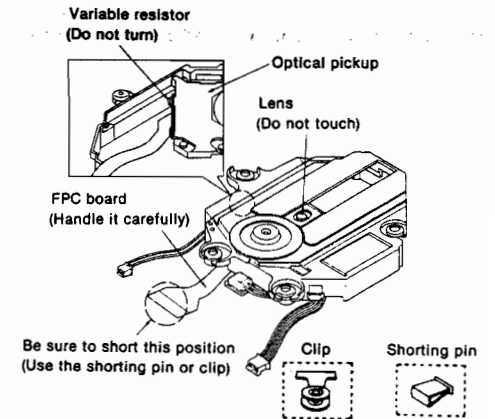
- ⑭ **Link Indicator (LINK)**
- ⑮ **Edit indicator (EDIT)**
- ⑯ **Multi-display**  
This display shows the track number and elapsed play time of the current track, or the remaining time of the tape while the unit is in the CD-edit mode.
- ⑰ **Program indicator (PROGRAM)**
- ⑱ **Random play indicator (RANDOM)**
- ⑲ **Program cancel indicator (CANCEL)**  
Illuminates when the programmed track can be cancelled. (It can be operated only by the remote control transmitter included in the Technics tuner ST-X902.)
- ⑺ **Play button (▷ PLAY)**
- ⑻ **Pause button (|| PAUSE)**
- ⑽ **Stop button (■ STOP)**  
This button can be used to stop the disc play, as well as to cancel the various play modes.
- ⑩ **Disc holder open/close button (▲ OPEN/CLOSE)**
- ⑪ **Random play button (RANDOM)**  
This button can be used to play the tracks on a disc in a random sequence.
- ⑫ **Tape side select button (SIDE A/B)**  
When recording compact discs to tape, this button is used to switch the tape side for addition or cancellation of programmed tracks.
- ⑬ **Edit mode button (NORMAL, TAPE LENGTH)**  
This button can be used to choose one of the edit modes or to specify the tape length to be used.
- ⑳ **Play indicator (▷)**
- ㉑ **Pause indicator (||)**
- ㉒ **Repeat play indicator (↻)**
- ㉓ **"Over" mark (▶)**  
This indicator lights if the total number of tracks on the disc is 17 or more.
- ㉔ **Track number indicator (1-16)**
- ㉕ **Tape side indicator (▶ A, ▶ B)**
- ㉖ **Peak search indicator (PEAK SEARCH)**
- ㉗ **Fade end indicator (FADE END)**  
Illuminates when the unit is normal edit mode.

## HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (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 traverse deck (optical pickup).

### • Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it is extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic 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.

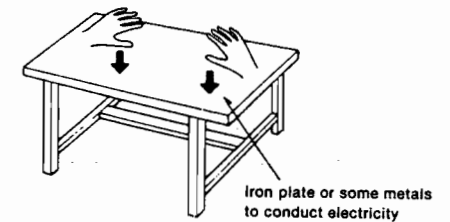
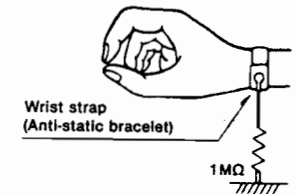


### • Grounding for electrostatic breakdown prevention

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 traverse deck (optical pickup).



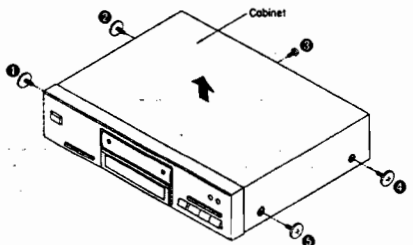
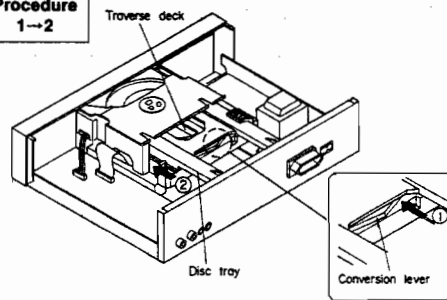
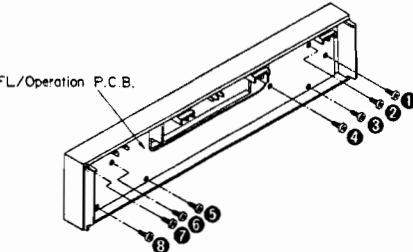
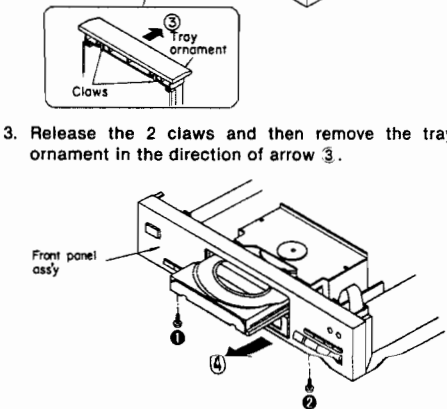
## DISASSEMBLY INSTRUCTIONS

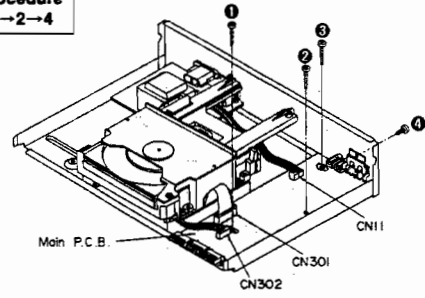
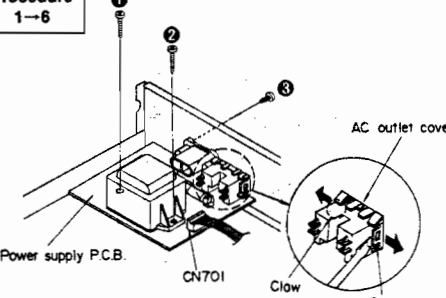
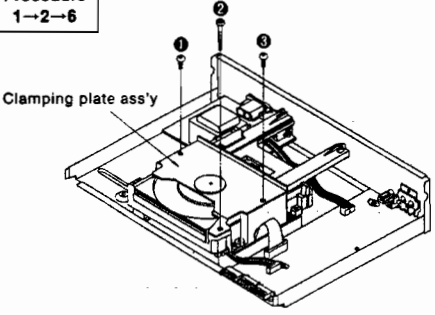
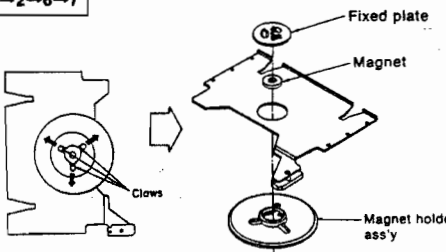
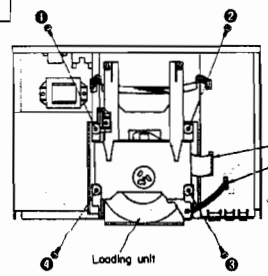
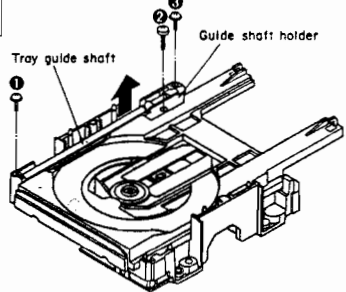
**Warning:** This product uses a laser diode. Refer to caution statements on page 3.

**ACHTUNG:**

- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

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

<p><b>Ref. No. 1</b> <b>Removal of the cabinet</b></p>	<p><b>Ref. No. 2</b> <b>Removal of the front panel ass'y</b></p>
<p><b>Procedure 1</b></p>  <ul style="list-style-type: none"> <li>• Remove the 5 screws (1~5).</li> </ul>	<p><b>Procedure 1→2</b></p>  <ol style="list-style-type: none"> <li>1. Push the conversion lever fully in the direction of arrow ① and lower the traverse deck.</li> <li>2. Move the disc tray in the direction of arrow ②.</li> </ol>
<p><b>Ref. No. 3</b> <b>Removal of the FL/operation P.C.B.</b></p>	
<p><b>Procedure 1→2→3</b></p>  <ul style="list-style-type: none"> <li>• Remove the 8 screws (1~8).</li> </ul>	 <ol style="list-style-type: none"> <li>3. Release the 2 claws and then remove the tray ornament in the direction of arrow ③.</li> <li>4. Remove the 2 screws (1, 2).</li> <li>5. Remove the front panel ass'y in the direction of arrow 4.</li> </ol>

<p><b>Ref. No. 4</b> <b>Removal of the main P.C.B.</b></p>	<p><b>Ref. No. 5</b> <b>Removal of the power supply P.C.B.</b></p>
<p><b>Procedure 1→2→4</b></p>  <ol style="list-style-type: none"> <li>1. Remove the 2 flat cables (CN11, CN301).</li> <li>2. Remove the 1 connector (CN302).</li> <li>3. Remove the 4 screws (1~4).</li> </ol>	<p><b>Procedure 1→6</b></p>  <ol style="list-style-type: none"> <li>1. Remove the 1 flat cable (CN701).</li> <li>2. Remove the 3 screws (1~3).</li> <li>3. Release the 2 claws of the AC outlet cover.</li> </ol>
<p><b>Ref. No. 6</b> <b>Removal of the clamping plate ass'y</b></p>	<p><b>Ref. No. 7</b> <b>Removal of the fixed plate, magnet and magnet holder ass'y</b></p>
<p><b>Procedure 1→2→6</b></p>  <ul style="list-style-type: none"> <li>• Remove the 3 screws (1~3).</li> </ul>	<p><b>Procedure 1→2→6→7</b></p>  <ul style="list-style-type: none"> <li>• Release the 3 claws.</li> </ul>
<p><b>Ref. No. 8</b> <b>Removal of the loading unit</b></p>	<p><b>Ref. No. 9</b> <b>Removal of the tray guide shaft and guide holder</b></p>
<p><b>Procedure 1→2→8</b></p>  <ol style="list-style-type: none"> <li>1. Remove the 1 flat cable (CN301).</li> <li>2. Remove the 1 connector (CN302).</li> <li>3. Remove the 4 screws (1~4).</li> </ol>	<p><b>Procedure 1→2→6→8→9</b></p>  <ol style="list-style-type: none"> <li>1. Remove the 3 screws (1~3).</li> <li>2. Remove the tray guide shaft and guide holder in the direction of arrow.</li> </ol>

<b>Ref. No.</b> 10	<b>Removal of the servo P.C.B.</b>	<ol style="list-style-type: none"> <li>1. Push the top of the connector in the direction of arrow ①.</li> <li>2. Remove the FPC board in the direction of arrow ②.</li> </ol>
<b>Procedure</b> 1→2→8→10		
<ol style="list-style-type: none"> <li>1. Remove the 2 screws (①, ②).</li> <li>2. Release the 2 claws.</li> <li>3. Remove the servo P.C.B. in the direction of arrow.</li> <li>4. Remove the 2 connectors (CP702, CP703).</li> </ol>	<ol style="list-style-type: none"> <li>5. Remove the FPC board (CS701).</li> </ol>	<p><b>Caution:</b> Insert a short pin into the traverse unit FPC board. (Refer to "handling precautions for traverse deck" on page 5.)</p>

<b>Ref. No.</b> 11	<b>Removal of the disc tray.</b>	
<b>Procedure</b> 1→2→6→8→9 →11		
<ol style="list-style-type: none"> <li>1. Push the levers in the direction of arrows ①. The traverse unit will lower and the disc tray will move slightly in the direction of arrow ②.</li> <li>2. Pull the disc tray fully in the direction of arrow ③.</li> </ol>		

<b>Ref. No.</b> 12	<b>Removal of the loading motor and loading motor P.C.B.</b>	<p>Polarity of the loading motor ass'y terminal</p>
<b>Procedure</b> 1→2→6→8→9 →11→12		
<ol style="list-style-type: none"> <li>1. Remove the belt.</li> <li>2. Remove the 2 screws (①, ②).</li> <li>3. Remove the 1 screw (③).</li> <li>4. Unsolder the 2 terminals of loading motor.</li> </ol>		

<b>Ref. No.</b> 13	<b>Removal of the traverse unit</b>	<ol style="list-style-type: none"> <li>1. Widen the boss by using a regular screwdriver or similar object.</li> <li>2. Pull out the pin.</li> </ol>
<b>Procedure</b> 1→2→6→8→9 →10→11→13		
<ol style="list-style-type: none"> <li>1. Remove the lead wire from clammer.</li> <li>2. Remove the 2 pins.</li> </ol>	<ol style="list-style-type: none"> <li>3. Release the claw and then remove the traverse unit in the direction of arrow.</li> </ol>	

<b>Ref. No.</b> 14	<b>Removal of the lock lever</b>	
<b>Procedure</b> 1→2→6→8→9 →11→14		
<ol style="list-style-type: none"> <li>1. Remove the lock lever spring.</li> <li>2. Release the claw in the direction of arrow ① and then remove the lock lever in the direction of arrow ②.</li> </ol>		

<b>Ref. No.</b> 15	<b>Removal of the traverse chassis and conversion lever</b>	
<b>Procedure</b> 1→2→6→8→9 →10→11→13 →14→15		
<ol style="list-style-type: none"> <li>1. Remove the spring.</li> <li>2. Move the slide plate (1) in the direction of arrow ② while pushing the claw (A) in the direction of arrow ①.</li> <li>3. Remove the conversion lever.</li> <li>4. While pushing the claws (B) in the direction of arrow ③, lift the mechanical chassis ass'y.</li> </ol>		

<b>Ref. No.</b> 16	<b>Removal of the slide plate (1) and slide plate (2)</b>	
<b>Procedure</b> 1→2→6→8→9 →10→11→13 →14→15→16		
<p>■ Removal of the slide plate (1)</p> <ul style="list-style-type: none"> <li>• After moving the slide plate (1) fully in the direction of arrow ①, lift it in the direction of arrow ②.</li> </ul>		

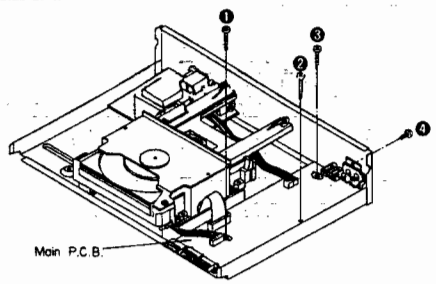
<p>■ Removal of the slide plate (2)</p> <ul style="list-style-type: none"> <li>• While pushing the claw in the direction of arrow ③, remove the slide plate (2) in the direction of arrow ④.</li> </ul>	
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**Ref. No. 17** How to check the main P.C.B.

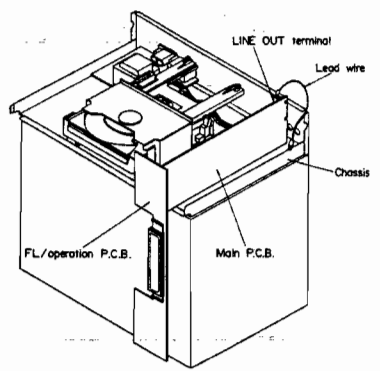
**Procedure**  
1→2→17

• When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.

**Cautions:**  
1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.

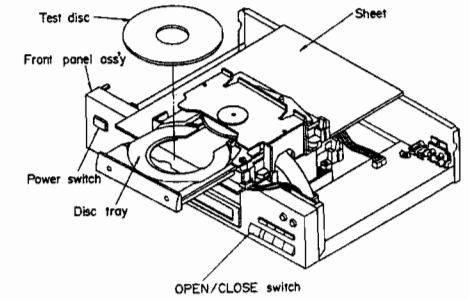


1. Remove the 4 screws (1~4).



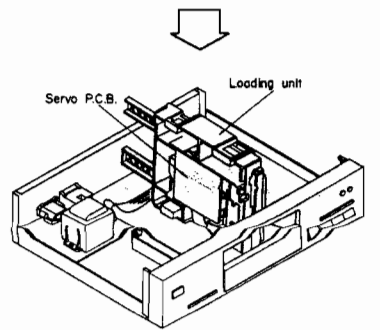
**Ref. No. 18** How to check the servo P.C.B.

**Procedure**  
1→2→18



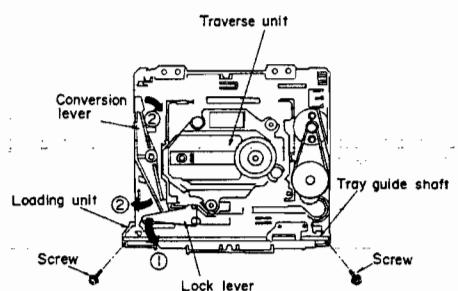
2. Attach the front panel ass'y to the unit.  
3. Turn on the power switch and press the OPEN/CLOSE switch to open the disc tray.  
4. Load the test disc and press the OPEN/CLOSE switch again to close the disc tray.

1. Remove the 4 screws (1~4).

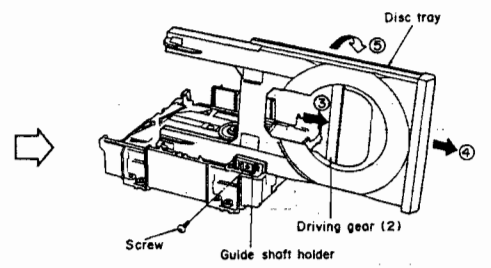


5. Place the loading unit sideways as shown in the figure right.  
6. After placing the unit as shown right, perform check and adjustment of the foil on the servo P.C.B.

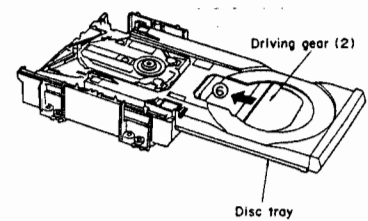
**Installation of the disc tray**



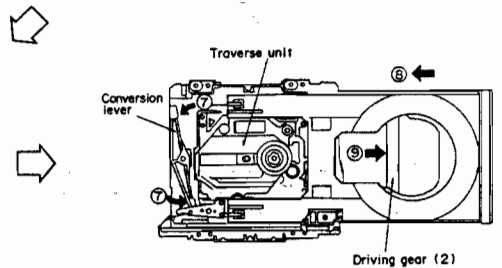
1. Move the lock lever in the direction of arrow ①, and then move the conversion lever in the direction of arrow ②.  
(The traverse unit will move upward.)  
2. Use the two screws to mount the tray guide shaft to the loading unit.



3. Use the screw to mount the disc tray to the guide shaft holder.  
4. Move the driving gear (2) fully in the direction of arrow ③.  
5. Move the disc tray fully in the direction of arrow ④.  
6. Tilt the disc tray downward in the direction of arrow ⑤.



7. Move the driving gear (2) fully in the direction of arrow ⑥.  
8. While continuing to support the disc tray with your hand, slide the driving gear (2) as far as it will go in the direction of arrow ⑥. (Although it will only slide a small amount, this will allow the loading gear to mesh together with the gear of the disc tray.)



9. Move the conversion lever in the direction of arrow ⑦.  
(The traverse unit will move downward.)  
10. Move the disc tray fully in the direction of arrow ⑧.  
(When doing this, confirm that the driving gear (2) slides in the direction of arrow ⑨.)

## MEASUREMENTS AND ADJUSTMENTS

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

**Caution:** During adjustment, never connect CH-2 probe's GND to any place for it may short V-Ref. line.  
(Connect CH-1 probe's GND to specified TP, described in each section.)

### Measuring Instruments and Special Tools

- \* Test discs
  1. Playability test disc (SZZP1054C)
  2. Uneven test disc (SZZP1056C)
- \* Musical program disc (ordinary)
- \* Extension cable kit (RFKZ0009)
- \* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT. trigger and 1:1 probe).
- \* Allen wrench (M2.0) (SZZP1101C)
- \* Lock paint (RZZOL01)

### (1) MECHANICAL ADJUSTMENT

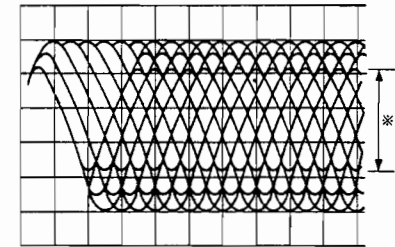
• When the traverse deck is replaced, making adjustments is not necessary. (The traverse deck ass'y is already adjusted.)

• Make adjustments to improve playability if the traverse deck has not been replaced.

1. Connect the oscilloscope's CH. 1 probe across **TP702** (RF) (+) and **TP703** (V-Ref.) (-) on the servo P.C.B.

**Oscilloscope setting:** VOLT.....200mV  
SWEEP.....0.5 $\mu$ s.  
Input coupling.AC

2. Switch the player power ON, and play track 19 on the test disc (SZZP1056C).  
(Playing any other track is selected, the HEX screws can not be accessed.)
3. Leave the player in play mode, and place the traverse deck as shown Ref. No. 18 on page 10.
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.  
(Refer to Fig. 2 on page 13)
5. After completing the adjustment, lock the HEX screws with lock paint (RZZOL01).



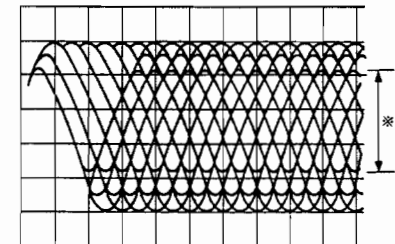
\* Most stretched eye pattern.

### (2) BEST EYE (PD BALANCE) ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TP702** (RF) (+) and **TP703** (V-Ref.) (-) on the servo P.C.B.

**Oscilloscope setting:** VOLT.....200mV  
SWEEP.....0.5 $\mu$ s.  
Input coupling.AC

2. Switch the player power ON, and play the 1kHz (track 1) on the test disc (SZZP1054C).
3. Adjust **VR701** until the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched. (Refer to Fig. 1 on page 13)



\* Most stretched eye pattern.



**(3) 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 Playability**

1. Play the 0.7mm black dot and the 0.7mm wedge on the test disc (SZZP1054C) and verify that no sound skip or noise occurs.
2. Play the middle tracks of the uneven test disc (SZZP1056C) and verify that no sound skip or noise occurs.

**• Adjustment points**

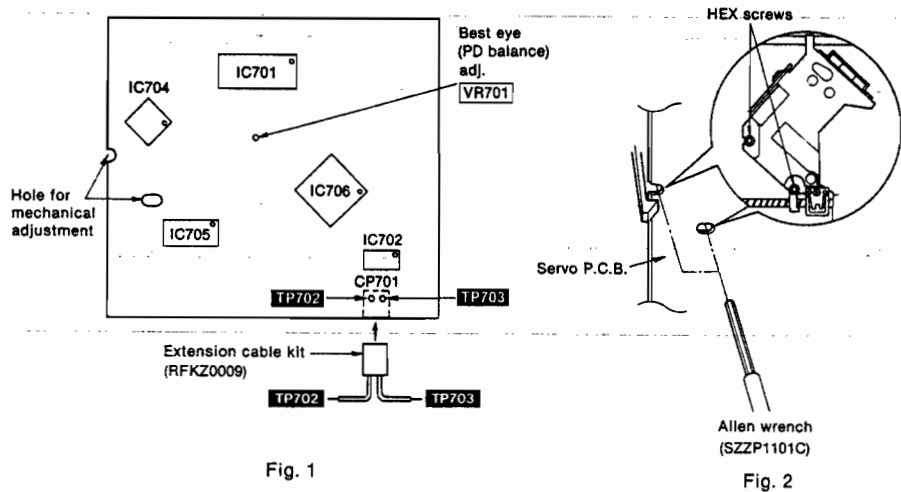
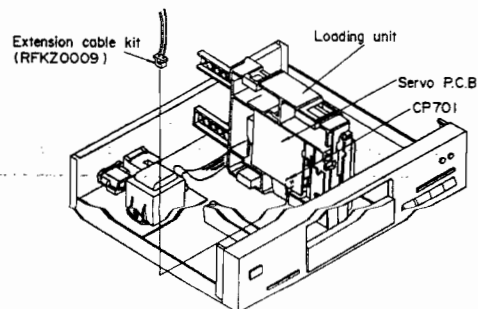


Fig. 1

Fig. 2

**• How to install the extension cable (RFKZ0009)**

※ It may be difficult to insert the extension cable in the close condition of tray, therefore open the disc tray slightly and insert the extension cable.



**■ TERMINAL FUNCTION OF IC'S**

**• IC401 (MN1554PKL1): System control**

Pin No.	Mark	I/O Division	Function
1	MUTE RELAY	O	Muting output (Not used, open)
2	PLUNGER	—	(Not used, open)
3	SYNC	—	(Not used, open)
4	SIRQ	I	(Not used, connected to power supply.)
5	BLKCK	I	Sub-code block clock (f=75Hz)
6	SQCK	O	Sub-code Q register clock
7	SBO	—	(Not used, open)
8	SUB Q	I	Sub-code Q data
9	RESET	I	Reset terminal
10	CLOSE SW	I	Disc holder "close" det.
11	OPEN SW	I	Disc holder "open" det.
12	REST SW	I	Rest det. terminal
13	NC	—	(Not connected)
14	CLOSE	O	Loading motor "close" command signal
15	OPEN	O	Loading motor "open" command signal
16	NC	—	(Not connected)
24			
25	V <sub>DD</sub>	I	Power supply terminal
26	NC	—	(Not connected)
30			
31	FUTA SW	—	(Not used, connected to power supply)
32	MODE	—	(Not used, connected to GND)
33	STAT	I	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)

Pin No.	Mark	I/O Division	Function
34	TLOCK	I	Optical servo condition (tracking) input
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Sense signal
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	DATA 0	I	Key scan signal
44			
45	NC	—	(Not connected)
52			
53	OSC 2	I	Clock input terminal (4.2336 MHz)
54	OSC 1		
55	X1	—	(Not used, connected to GND)
56	X0	—	(Not used, open)
57	V <sub>SS</sub> (GND)	—	GND terminal
58	DMUTE	O	Muting output (H: mute)
59	MDATA	O	Command data signal
60	MCLK	O	Command clock signal
61	MLD	O	Command load signal (L: load)
62	TX (D. OUT)	—	(Not used, open)
63	EMPH	O	De-emphasis signal (Not used, open)
64	SERVO RST	O	Reset signal for servo circuit



• IC601 (MN187204PKX): System control & FL drive

Pin No.	Mark	I/O Division	Function
1 ┆ 7	SEG 6 ┆ SEG 0	O	Segment signal to FL display
8	V <sub>PP</sub>	I	Power supply for FL drive
9	V <sub>CC</sub>	I	Power supply terminal
10	OSC 2	I	System clock terminal (f=4.2336MHz)
11	OSC 1		
12	GND	—	GND terminal
13 • 14	NC	—	(Not connected)
15 ┆ 18	DATA 3 ┆ DATA 0	O	Key scan signal
19	CLK	O	Data clock signal
20	ACK	O	Data discrimination signal
21	SEND	O	Data transmission command signal
22	RECV	O	Data receipt command signal
23 • 24	NC	—	(Not connected)

Pin No.	Mark	I/O Division	Function
25	BSDTO	O	Data signal for system control terminal
26	BSDTI	I	
27	BCKO	O	Clock signal for system control terminal
28	BCKI	I	
29	RESET	I	Reset signal terminal
30 ┆ 35	KEY 5 ┆ KEY 0	I	Key return signal
36	NC	—	(Not connected)
37	CM	—	Not used, connected to GND
38 ┆ 41	NC	—	(Not connected)
42 ┆ 45	CODE 1 ┆ CODE 4	I	Search dial code signal (Not used, open)
46 ┆ 55	DGT 0 ┆ DGT 9	O	Digit signal to FL display
56 ┆ 64	SEG 15 ┆ SEG 7	O	Segment signal to FL display

• IC701 (AN8800SCE2): Servo amp

Pin No.	Mark	I/O Division	Function
1	LDG	I	APC loop gain select
2	LDP	I	APC monitor PD polarity select
3	LD	O	Laser power auto control output
4	LPD	I	LD power monitor PD signal
5	GND	—	GND terminal
6	LDON	I	LD APC ON/OFF ("H": ON, "L": OFF)
7	AMP I	I	RF signal (X30 amp)
8	AMP O	O	
9	RF IN	I	RF AGC signal input
10	RF EQ	—	GND terminal
11	C. AGC	I	AGC detection capacitor input
12	ARF	O	RF signal output
13	C. SBDO	I	Dropout detection capacitor input
14	RF DET	O	RF detection signal ("L": detecting)
15	BDO	O	Dropout detection output
16	V <sub>CC</sub>	I	Power supply terminal
17	SDO	O	Dropout detection pulse output
18	VAD+	O	Power supply terminal for A/D converter (+)
19	VREF	O	Reference voltage output
20	VAD-	O	Power supply terminal for A/D converter (-)
21	OFTR	O	Off track detection ("H": det.)

Pin No.	Mark	I/O Division	Function
22	PLAY	I	Play signal ("H": ON, "L": OFF)
23	WVEL	I	Double velocity ("H": double, "L": single)
24	TES	I	Tracking error shunt ("H": shunt, "L": output)
25	PTO	O	Potential amp output
26	PTI	I	Potential amp input
27	PBO	O	Potential buffer output
28	POT	I	Potential buffer input
29	CROSS	O	Tracking error zero cross output
30	TE	O	Tracking error signal
31	TE BAL	I	Oscillation det. signal
32	TBAL	I	Tracking balance adj. input
33	VDET	O	Oscillation det. signal ("H": det.)
34	FE	O	Focusing error signal
35	FBL 2	I	Focusing balance 2
36	FBL 1	I	Focusing balance 1
37	V <sub>CC</sub>	I	Power supply terminal
38	GND	—	GND terminal
39	PDBD	I	Photo detector Bch input with delay
40	PDA	I	Photo detector Ach input without delay
41	PDB	I	Photo detector Ach input with delay
42	PDAD	I	Photo detector Bch input without delay

## • IC703 (AN8377N): Traverse motor drive

Pin No.	Mark	I/O Division	Function
1	P V <sub>cc</sub>	I	Drive power supply
2	V <sub>cc</sub>	I	Power supply terminal
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVD1	I	Traverse error signal input
6	TD1	I	Tracking error signal input
7	FD1	I	Focus error signal input
8	VREF	I	Reference voltage input

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

## • IC705 (MN6475): Digital filter &amp; D/A converter

Pin No.	Mark	I/O Division	Function
1	LRCK	I	L/R discriminating signal
2	BCLK	I	Serial bit clock input
3	SRDATA	I	Serial data output (MSB first)
4	COT 1	I	Test terminal (Ordinal: L)
5	COT 2		
6	TEST		
7	V <sub>DD</sub>	I	Digital power supply terminal
8	X2	O	Clock terminal (f=33.8688 MHz)
9	X1	I	
10	V <sub>SS</sub>	—	Digital GND terminal
11	AV <sub>DD</sub> L	I	Analog power supply terminal 1
12	OUT. L	O	Analog signal output 1

Pin No.	Mark	I/O Division	Function
13	AV <sub>SS</sub> L	—	Analog GND terminal
14	AV <sub>SS</sub> R		
15	OUT. R	O	Analog signal output 2
16	AV <sub>DD</sub> R	I	Analog power supply terminal 2
17	/RST	I	Reset signal input (Active: L)
18	PWM	O	PWM output (TP: "H": output, "L": High impedance)
19	TP	I	Test terminal (ordinal: L)
20	WVEL	I	Double velocity ("H": double, "L": single)
21	DEMPH	I	Digital de-emphasis ON/OFF ("H": ON)
22	CSEL	I	Clock frequency select of CK 192
23	192FS	O	192fs (8.4672 MHz) signal output (Not used, open)
24	384/768FS	O	Clock output terminal (384 fs = 16.9344 MHz)

• IC704 (MN6650): Digital servo processor

Pin No.	Mark	I/O Division	Function
1	TES	O	Tracking error shunt signal ("H": shunt)
2	PLAY	O	Play signal ("H": play)
3	/RFDET	I	RF det. signal ("L": det.)
4	DO	I	Dropout signal ("H": dropout)
5	OFT	I	Off track signal ("H": off track)
6	ARF	I	RF signal input
7	WVEL	O	Double velocity status signal ("H": double)
8	PBO	I	Potensio buffer signal (analog input)
9	TE	I	Tracking error signal (analog input)
10	FE	I	Focus error signal (analog input)
11	VR2	I	Reference voltage for A/D (Low)
12	VR1	I	Reference voltage for A/D (High)
13	LDON	O	Laser power control ("H": ON)
14	V <sub>ss</sub>	—	GND terminal
15	AV <sub>ss</sub>	—	GND terminal
16	AV <sub>DD</sub>	I	Power supply terminal
17	V <sub>DD</sub>	I	Power supply terminal
18	TRV	O	Traverse servo control output
19	TVD	O	Traverse drive signal output
20	FOD	O	Focus drive signal output
21	TRD	O	Tracking drive signal output

Pin No.	Mark	I/O Division	Function
22	KICK	O	Kick pulse output
23	/TEST	I	Test terminal
24	V <sub>ss</sub>	—	GND terminal
25	CLVS	I	Spindle servo phase synchro signal ("H": CLV, "L": Rough servo)
26	/TRON	O	Tracking servo ON signal ("L": ON)
27	MDATA	I	Command data signal
28	MCLK	I	Command clock signal
29	MLD	I	Command load signal ("L": LOAD)
30	SENSE	O	Sense signal
31	/FLOCK	O	Optical servo condition (focus) output
32	/TLOCK	O	Optical servo condition (tracking) output
33	/RST	I	Reset signal ("L": reset)
34	X1	I	Clock input (f=16.9344 MHz)
35	T0	O	Test terminal (Ordinaly: open)
38	T3		
39	T4	I	Test terminal (Ordinaly: L)
41	T6		
42	VDET	I	Oscillation det. signal ("H": det.)
43	TBAL	O	Tracking balance adj. output
44	TRCRS	I	Track cross signal input

• IC706 (MN6626): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	AVSS	—	GND terminal
2	IREF	I	Reference current input
3	ARF	I	RF signal input
4	DRF	I	DSL bias terminal (Not used, open)
5	DSLFL	I/O	DSL loop filter terminal
6	PLLFL	I/O	PLL loop filter terminal
7	AVDD	I	Power supply terminal
8	RSEL	I	RF signal polarity setting terminal (Not used, connected to VDD)
9	TBUS7 TBUS0	O	Test terminal
16			
17	FLAG	O	Flag terminal
18	IPFLAG	O	Interpolation flag terminal
19	FCLK	O	Crystal frame clock (Not used, open)
20	BYTCK	O	Byte clock (Not used, open)
21	WDCK	O	Word clock (Not used, open)
22	RST	I	Reset terminal
23	TX	O	Digital audio signal
24	LDG	O	Lch deglitch signal (Not used, open)
25	RDG	O	Rch deglitch signal (Not used, open)
26	SRDATA	O	Serial data output (MSB first)
27	SCK	O	Serial bit clock output
28	LRCK	O	L/R discriminating signal
29	XCK	O	Crystal OSC terminal (f=16.9344 MHz)
30	PMCK	O	Frequency division clock signal (Not used, open) (f = $\frac{1}{192} \times CK = 88.2 \text{ kHz}$ )
31	CSEL	I	Test terminal (Connected to GND)
32	PSEL		
33	X1	I	Crystal OSC terminal (f=16.9344 MHz)
34	X2	O	
35	VSS	—	GND terminal
36	SUBQ	O	Sub-code Q data
37	SQCK	I	Sub-code Q register clock
38	CLDCK	O	Sub-code frame clock (f=7.35 kHz) (Not used, open)

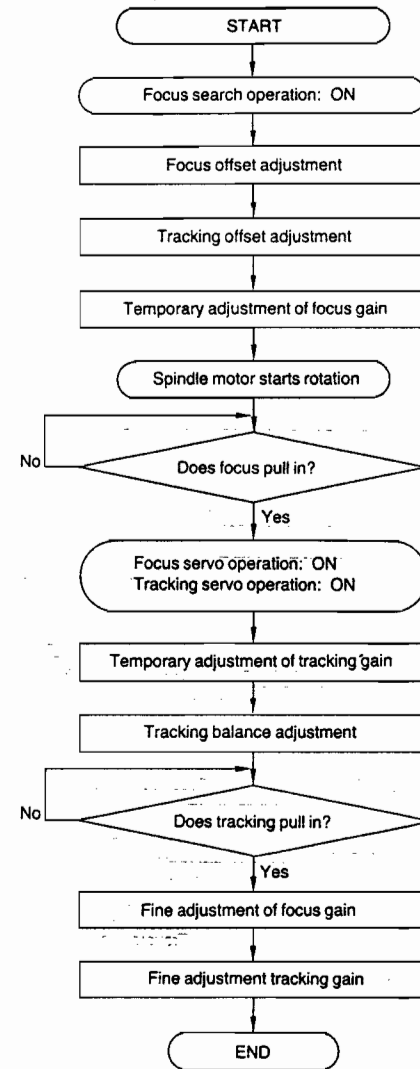
Pin No.	Mark	I/O Division	Function
39	BLKCK	O	Sub-code block clock (f=75 Hz)
40	DEMPPH	O	De-emphasis ON signal ("H": ON)
41	MEMPH	I	Emphasis signal
42	MLD	I	Command load signal ("L": LOAD)
43	MCLK	I	Command clock signal
44	MDATA	I	Command data signal
45	D MUTE	I	Muting input ("H": MUTE)
46	SMCK	O	System clock (f=4.2336 MHz)
47	STAT	O	Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK)
48	CRC	O	Sub-code CRC check terminal ("H": OK, "L": NG)
49	SUBC	O	Sub-code serial output data (Not used, open)
50	SBCK	I	Sub-code serial output clock (Not used, open)
51	TRON	I	Tracking servo ON signal ("L": ON)
52	CLVS	O	Turntable servo phase synchro signal ("H": CLV, "L": Rough servo)
53	PC	O	Turntable motor ON signal ("H": ON)
54	ECM	O	Turntable motor drive signal (Forced mode)
55	ECS	O	Turntable motor drive signal (Servo error signal)
56	VDD	I	Power supply terminal
57	TEST	I	Test terminal (Normal: "H")
58	SSEL	I	"SUBQ" terminal mode select ("H": Q code buffer)
59	MSEL	I	"SMCK" terminal frequency select ("L": SMCK=4.2336 MHz)
60	RESY	O	Re-synchronizing signal of frame sync. (Not used, open)
61	DO	I	Drop-out detection signal ("H": Drop-out) (Not used, connected to GND)
62	EFM	O	EFM signal (Not used, open)
63	PCK	O	PLL extract clock (f=4.3218 MHz)
64	PDO	O	Phase compared signal of EFM and PCK (Not used, open)



2. The servo processor IC MN6650 of the newly-developed digital servo circuit automatically performs the following adjustments which were originally adjusted in the conventional analog servo circuit:  
 (1) Focus offset, (2) Tracking offset, (3) Focus gain, (4) Tracking gain, and (5) Tracking balance. Therefore, you do not have to perform the above-mentioned electrical adjustments manually. Only the best eye (PD balance) needs to be adjusted. You can obtain an optimum servo control for a disc to be played.  
 [You must perform the best eye (PD balance) adjustment manually.]

The following flow chart shows the sequence of automatic adjustments.

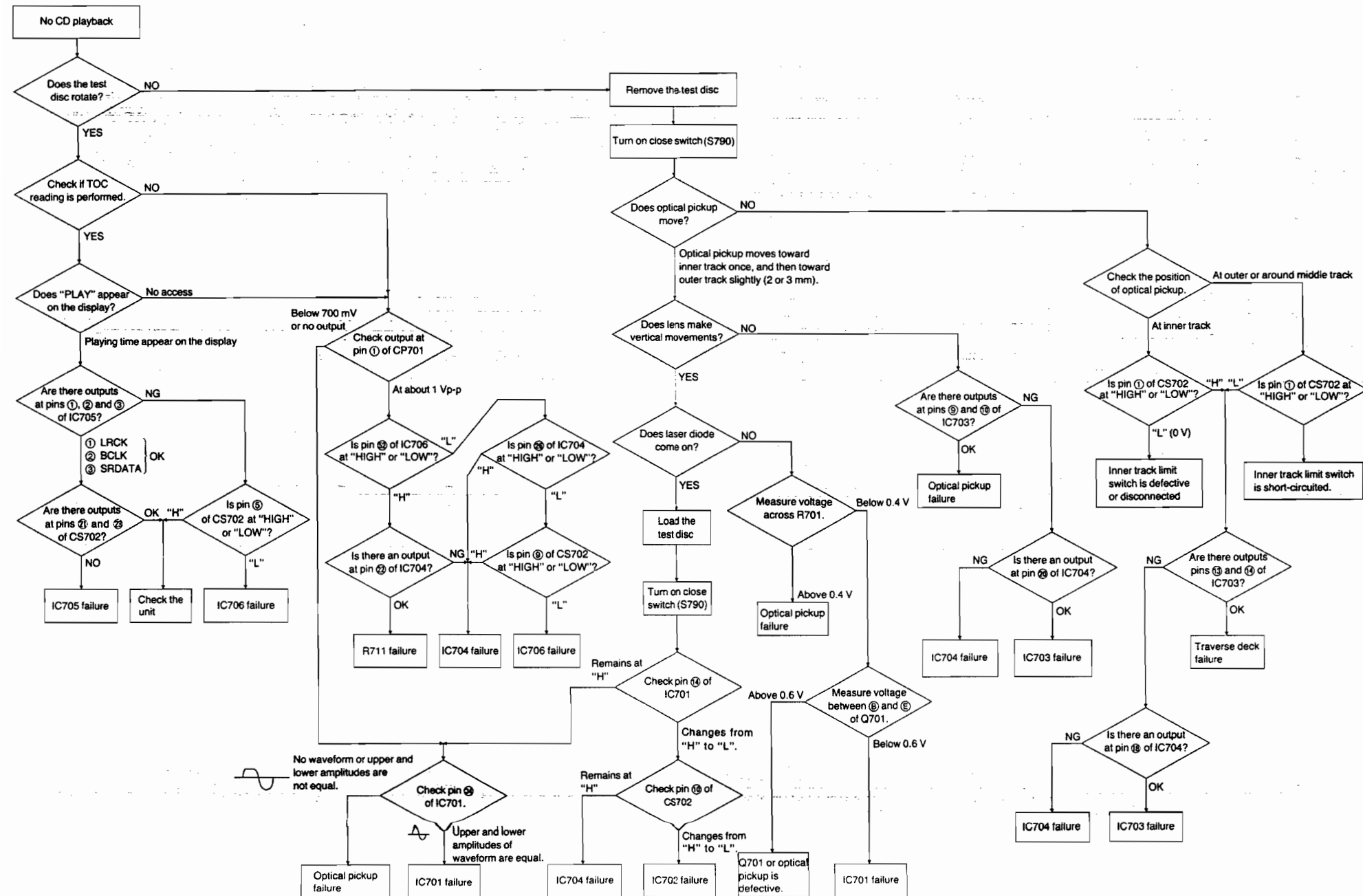
•Flow chart on automatic adjustment sequence



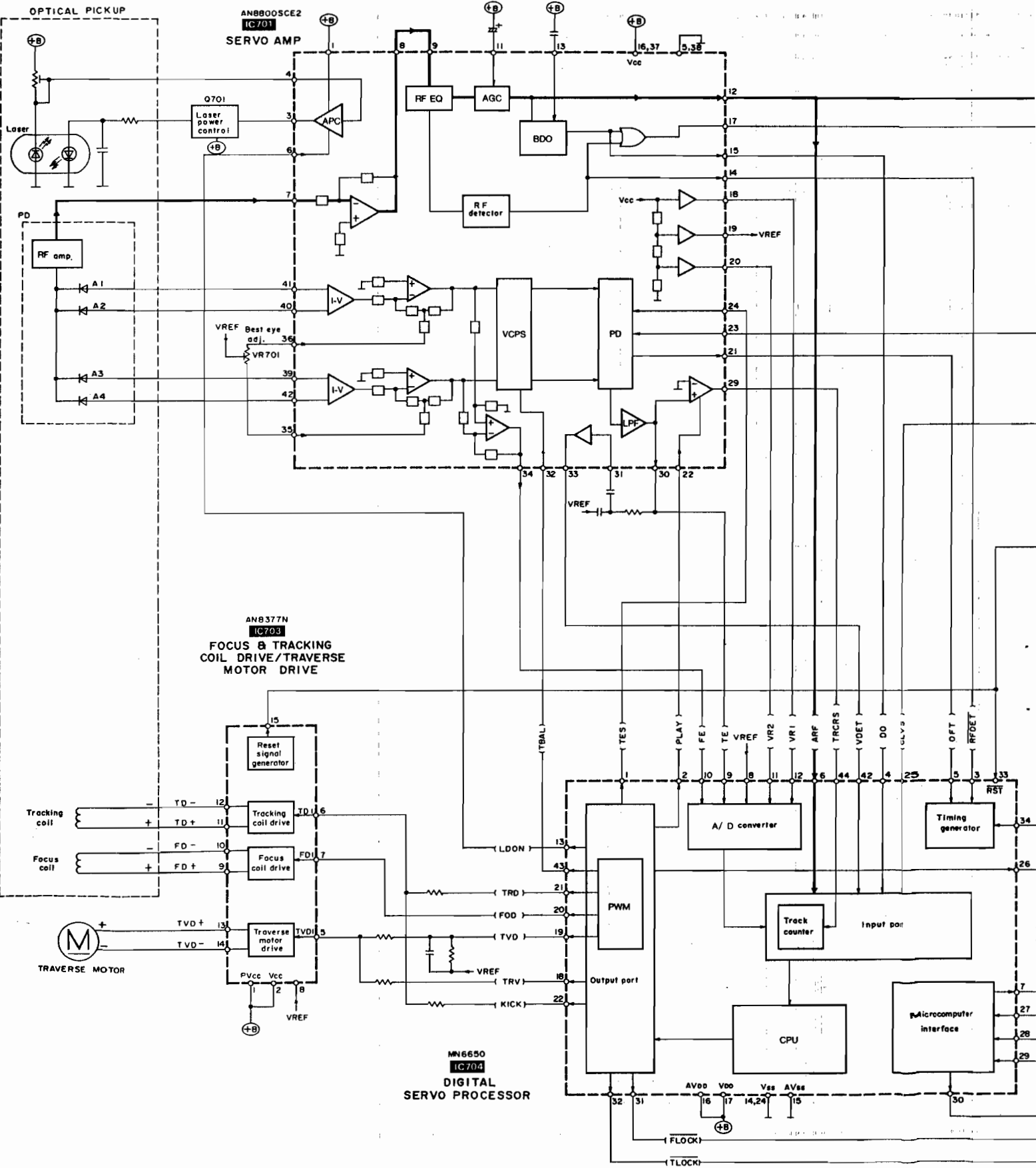
Approx. 2.5 sec.

\*Because the microcomputer precisely performs automatic adjustments as shown in the flow chart, it will take approx. 5 seconds to finish reading TOC data if a used disc is eccentric one or its surface is warped.

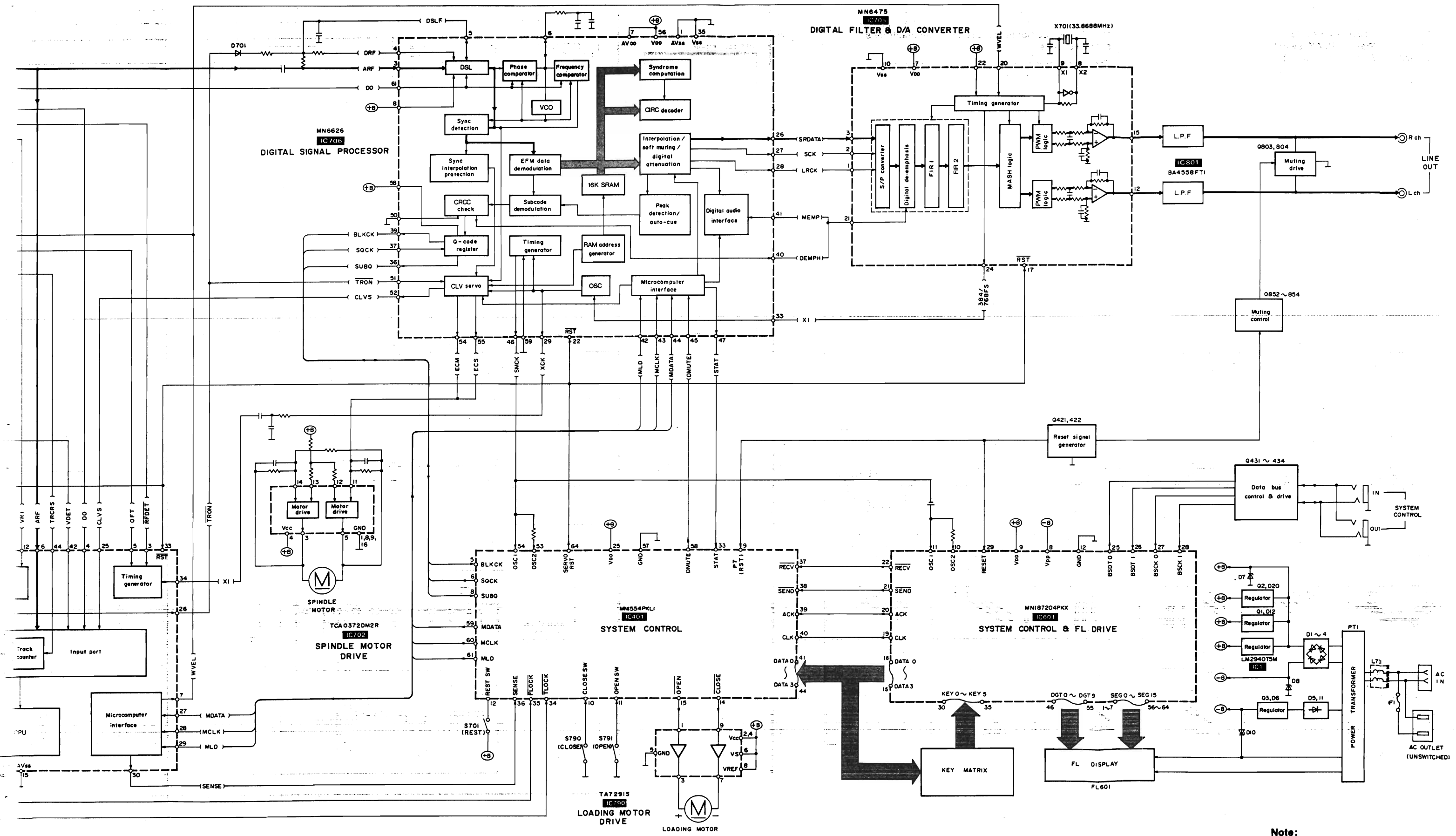
**TRUBLESHOOTING GUIDE**



# BLOCK DIAGRAM







Note:  $\rightarrow$  Audio signal

## ■ SCHEMATIC DIAGRAM (Parts list on pages 42~45.)

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

**Note:**

- S601 : Disc holder open/close (▲ OPEN/CLOSE) switch.
- S602 : Stop (■ STOP) switch.
- S603 : Pause (■ PAUSE) switch.
- S604 : Play (▷ PLAY) switch.
- S605, 606 : Skip (◀◀ SKIP ▶▶) switches.  
[S605: ◀◀, S606: ▶▶]
- S607, 608 : Search (◀◀ SEARCH ▶▶) switches.  
[S607: ◀◀, S608: ▶▶]
- S609 : Repeat play (REPEAT) switch.
- S610 : Program (PROGRAM) switch.
- S611 : Power (STANDBY φ /ON) switch.
- S612 : Edit mode (NORMAL, TAPE LENGTH) switch.
- S613 : Tape side select (SIDE A/B) switch.
- S614 : Random play (RANDOM) switch.
- S701 : Rest detector switch in "off" position.
- S701A : Voltage adj. switch in "240V" position.  
[For (GC) area only.]  
(110V ↔ 127V ↔ 220V ↔ 240V)

- S790 : Disc holder "close" detector switch.
- S791 : Disc holder "open" detector 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.

The supply part number is described alone in the replacement parts list.

Part No.	Original Part No.	Supply Part No.
IC1	LM2940T5M	LM2940T5
IC801	BA4558FT1	SVIBA4558F

- ————— / - - - - - : Positive voltage lines and negative voltage lines.
- [Wavy line] : audio signal lines.

**Caution!**

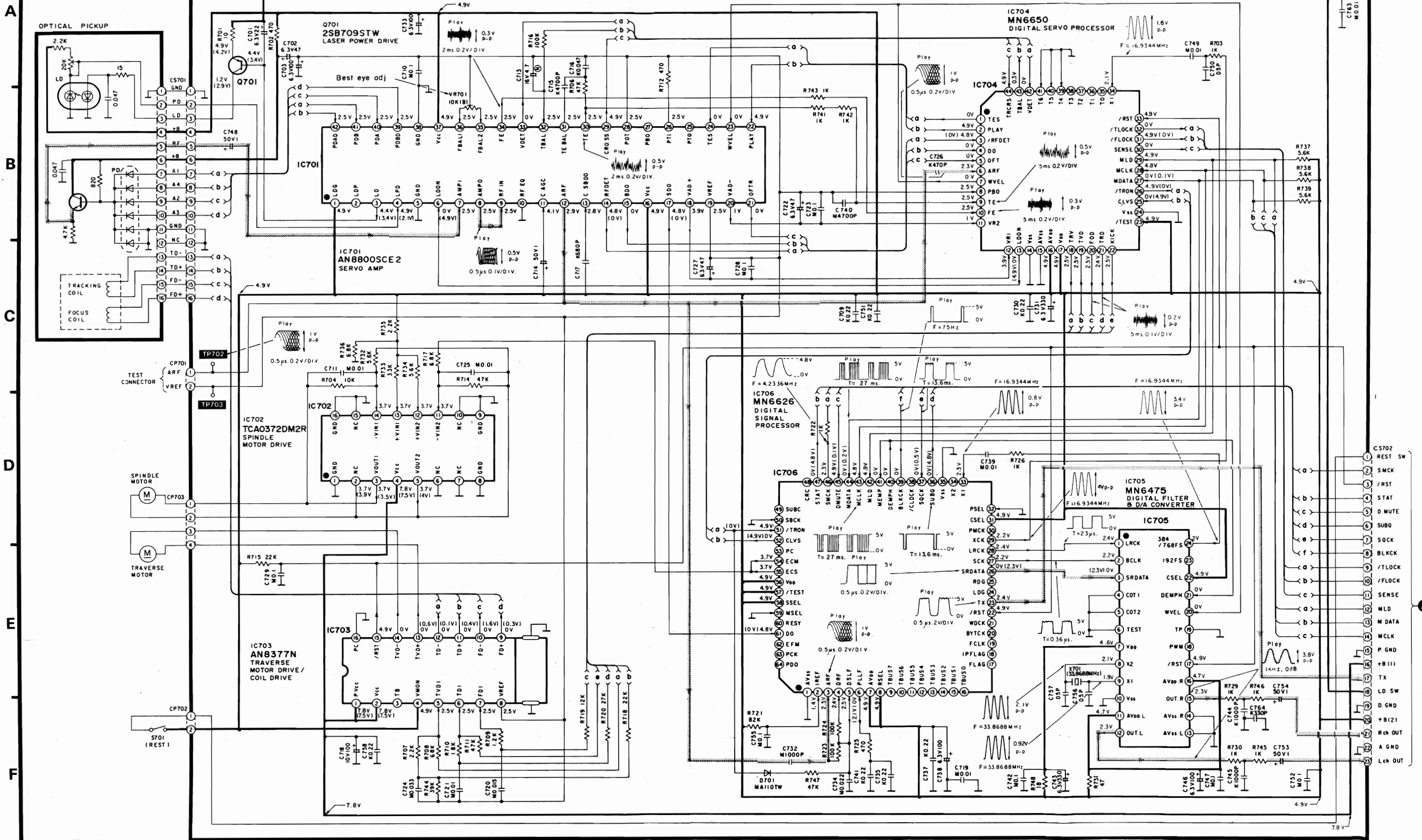
IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.

- 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**

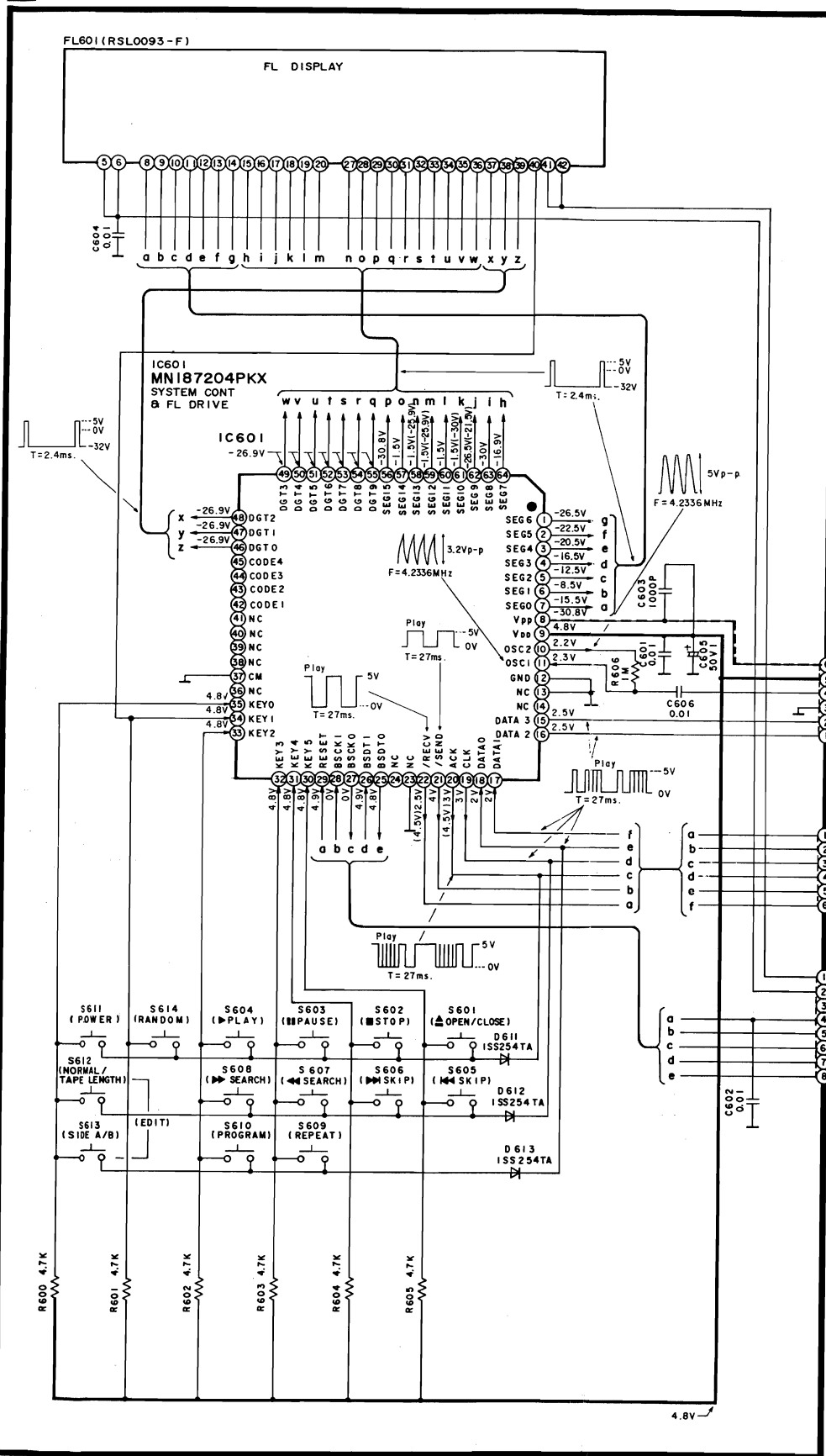
<p>BA4558FT1</p>	<p>TCA0372DM2R</p>	<p>MN6475</p>	<p>AN8800SCE2</p>	<p>AN8377N</p>	<p>MN6650</p>
<p>MN1554PKL1 MN187204PKX MN6626</p>	<p>TA7291S</p>	<p>LM2940T5M</p>	<p>2SC3311QRSTA UN4112TA UN4212TA</p>	<p>2SD2144STA DTA114ESTP DTC144ESTP</p>	<p>2SB1238QSTV6 2SD1862QRTV6</p>
<p>2SD2037EFTA</p>	<p>2SB709STW</p>	<p>MA700ATA 1SS254TA SVD1SR35200V</p>	<p>SVDMTZ8R2B</p>	<p>MA4039HTA MA4062MTA MA4082MTA</p>	<p>MA4330MTA</p>
<p>MA110TW</p>					

A SERVO CIRCUIT

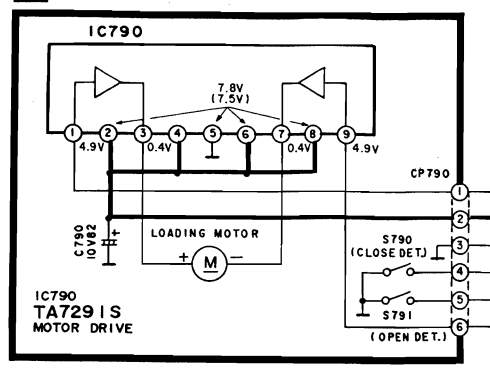


A  
B  
C  
D  
E  
F  
G

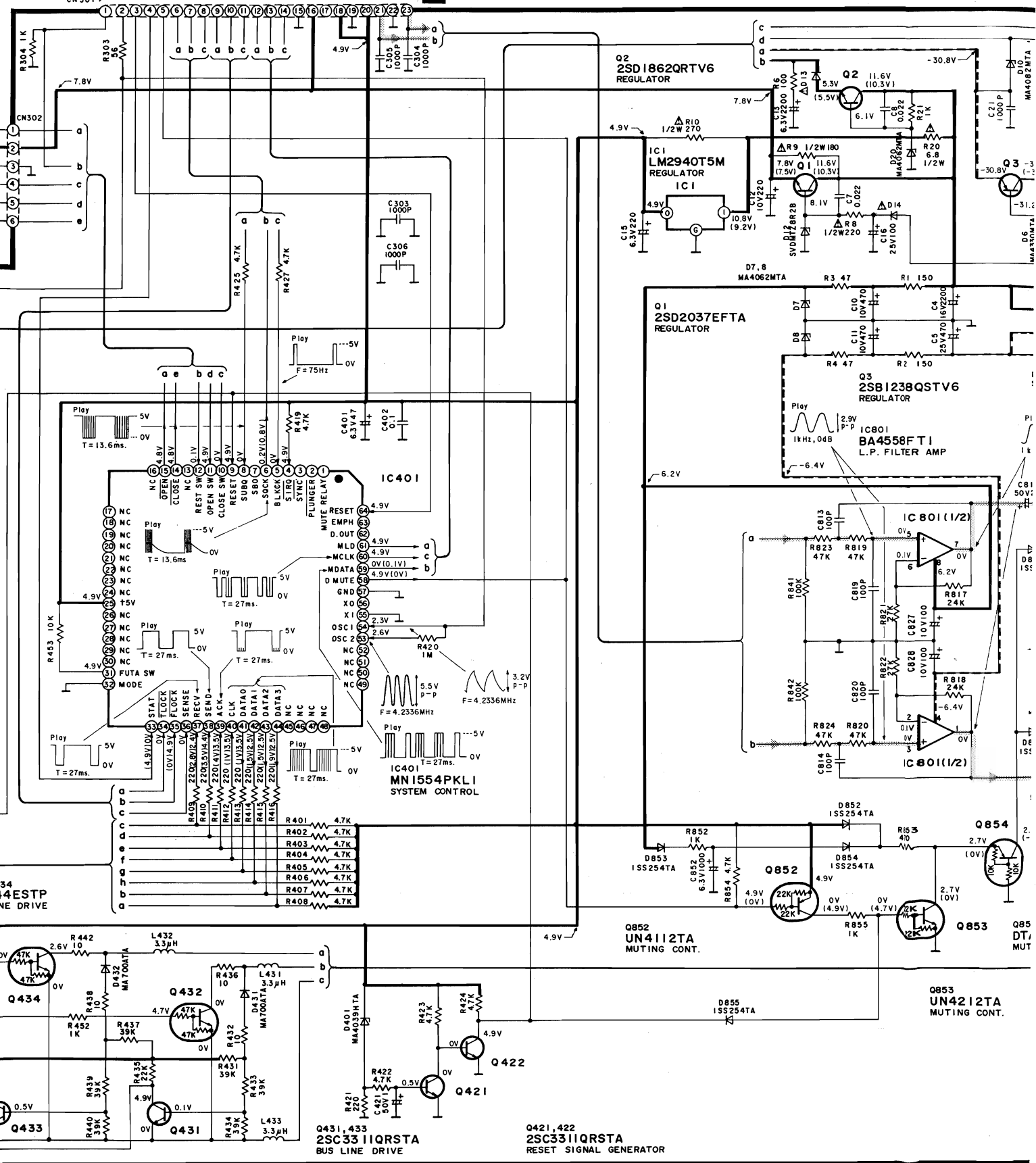
**B** FL/OPERATION CIRCUIT

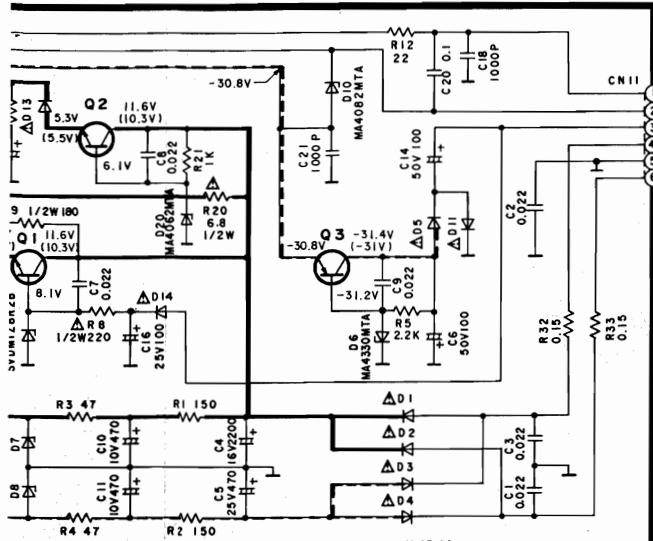


**C** LOADING MOTOR CIRCUIT



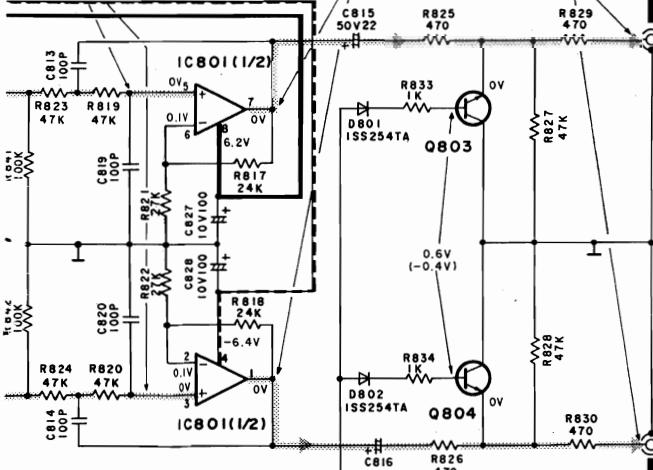
**D** MAIN CIRCUIT





Q3 2SB1238QSTV6 REGULATOR

IC801 BA4558FT1 L.P. FILTER AMP

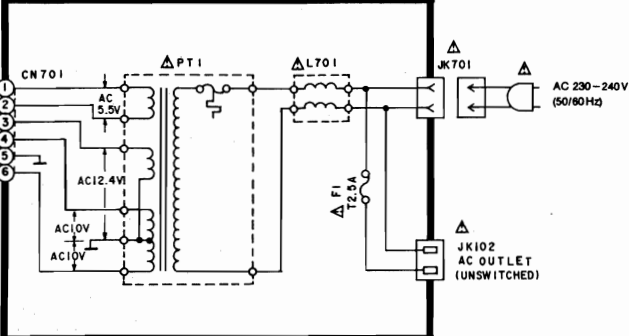


Q853 UN4212TA MUTING CONT.

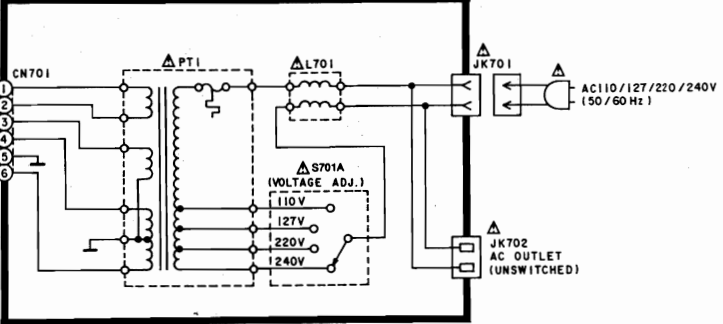
Q854 DTA114ESTP MUTING CONT.

Q803, 804 2SD2144STA MUTING

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



E POWER SUPPLY CIRCUIT For (GC) areas.

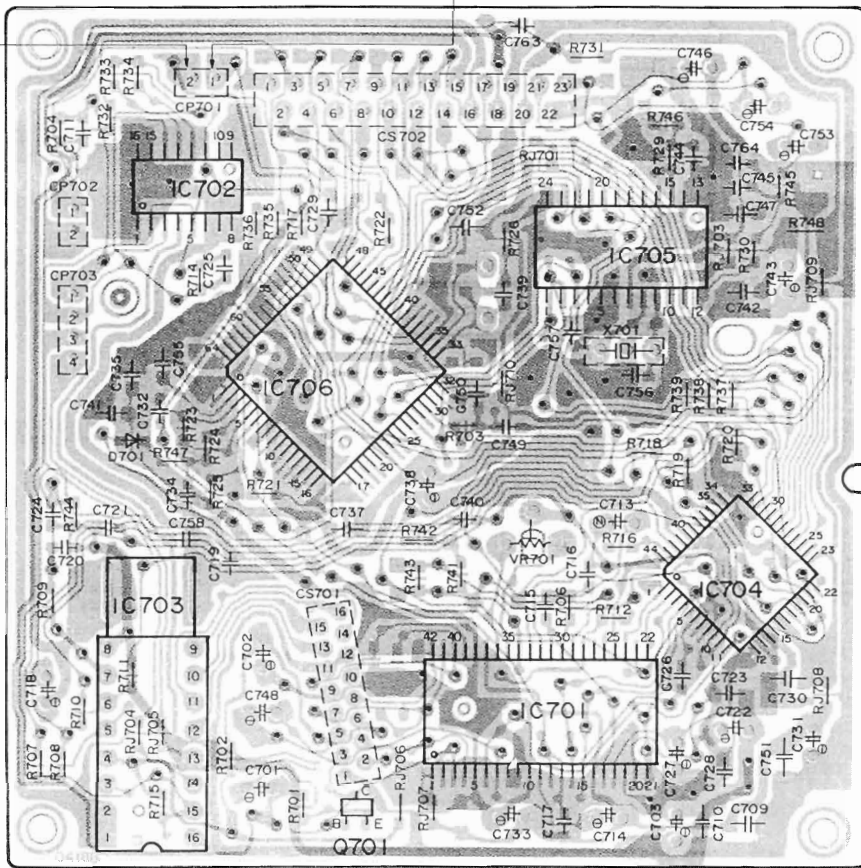


L ch  
JK801 LINE OUT  
R ch

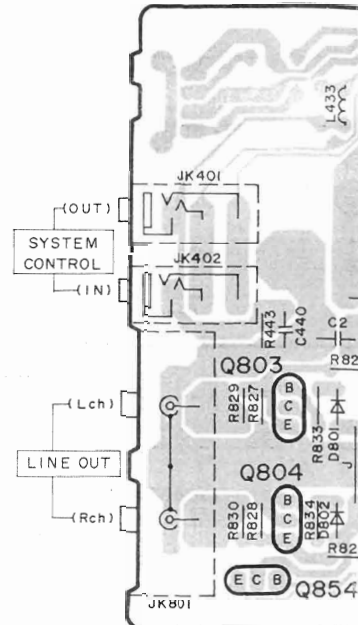
GND1  
GND2  
JK401 OUT  
SYSTEM CONTROL  
JK402 IN

PRINTED CIRCUIT BOARDS

**A** SERVO P.C.B.



**D** MAIN P.C.B.



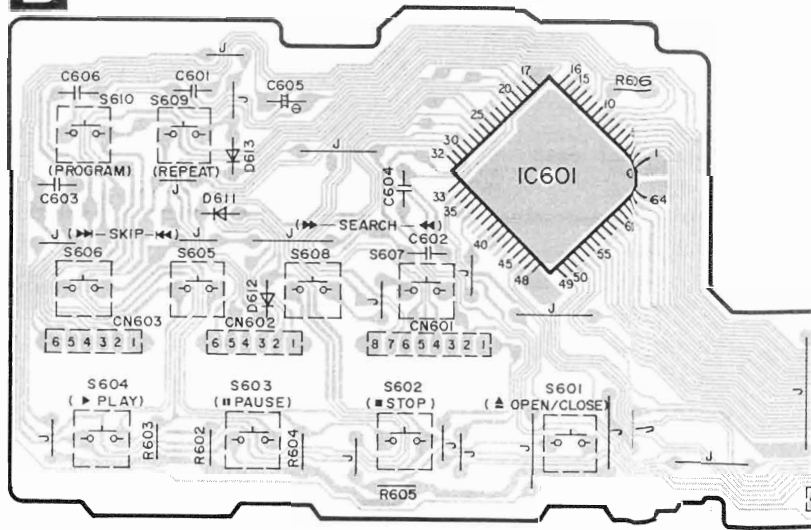
**Notes:**

This diagram shows a front view of the small outline type IC mounting surface.

1. The circuit shown in ( ) on the conductor indicates printed circuit on the back side of the printed circuit board.
2. The circuit shown in ( ) on the conductor indicates printed circuit on the front side of the printed circuit board.
3. The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.

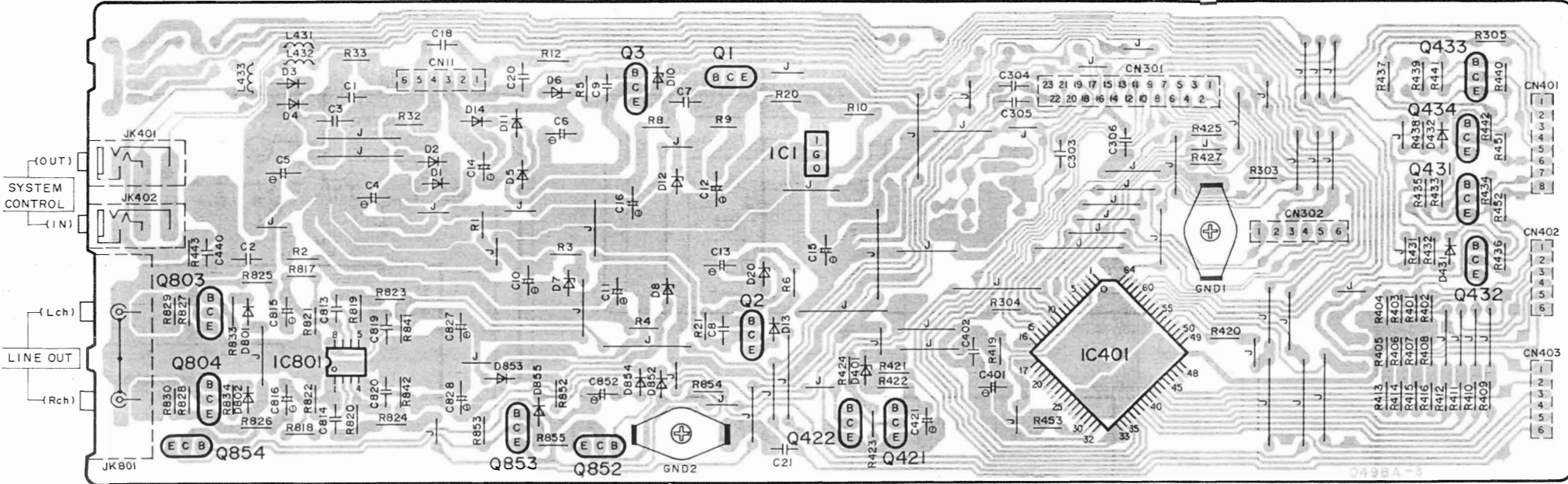
• This circuit board diagram may be modified at any time with the development of new technology.

**B** FL/OPERATION P.C.B.

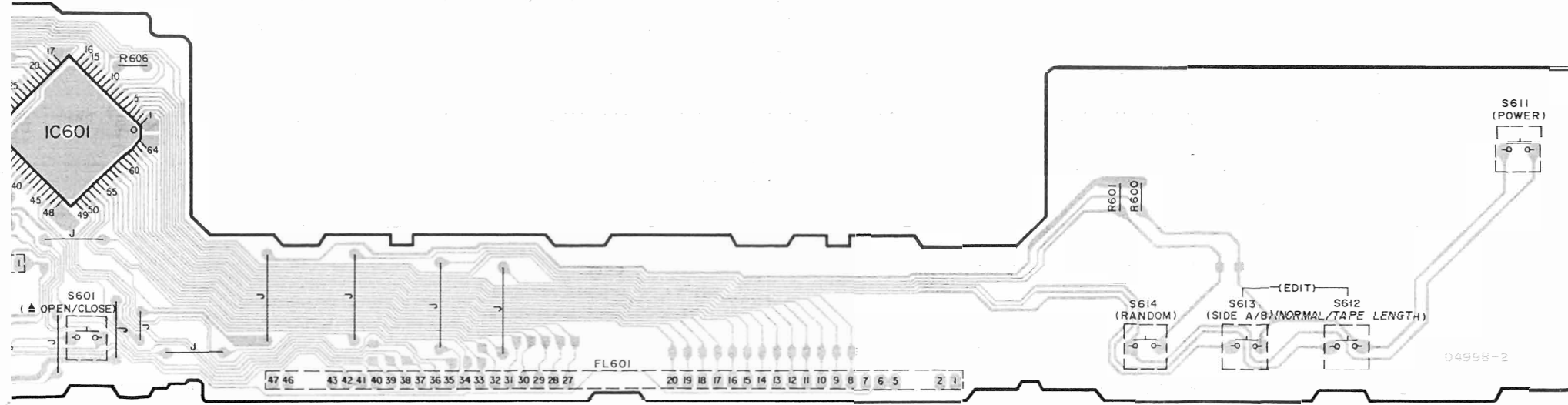
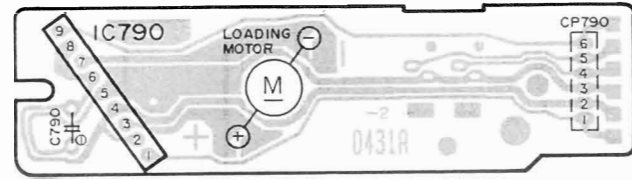




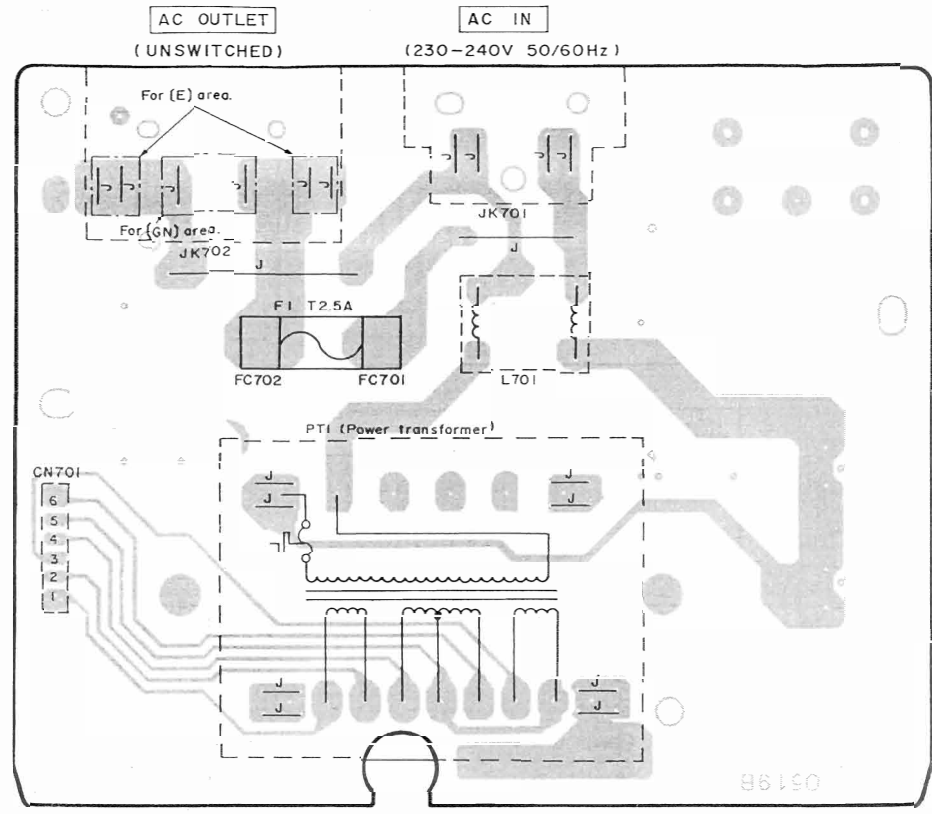
**D** MAIN P.C.B.



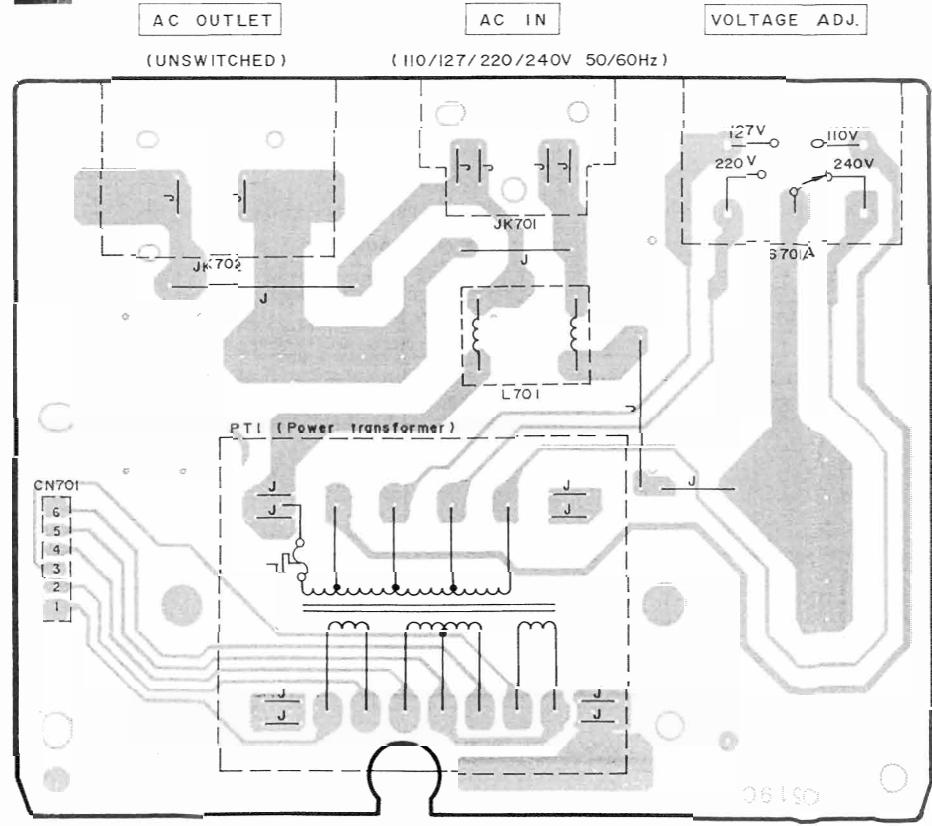
**C** LOADING MOTOR P.C.B.



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

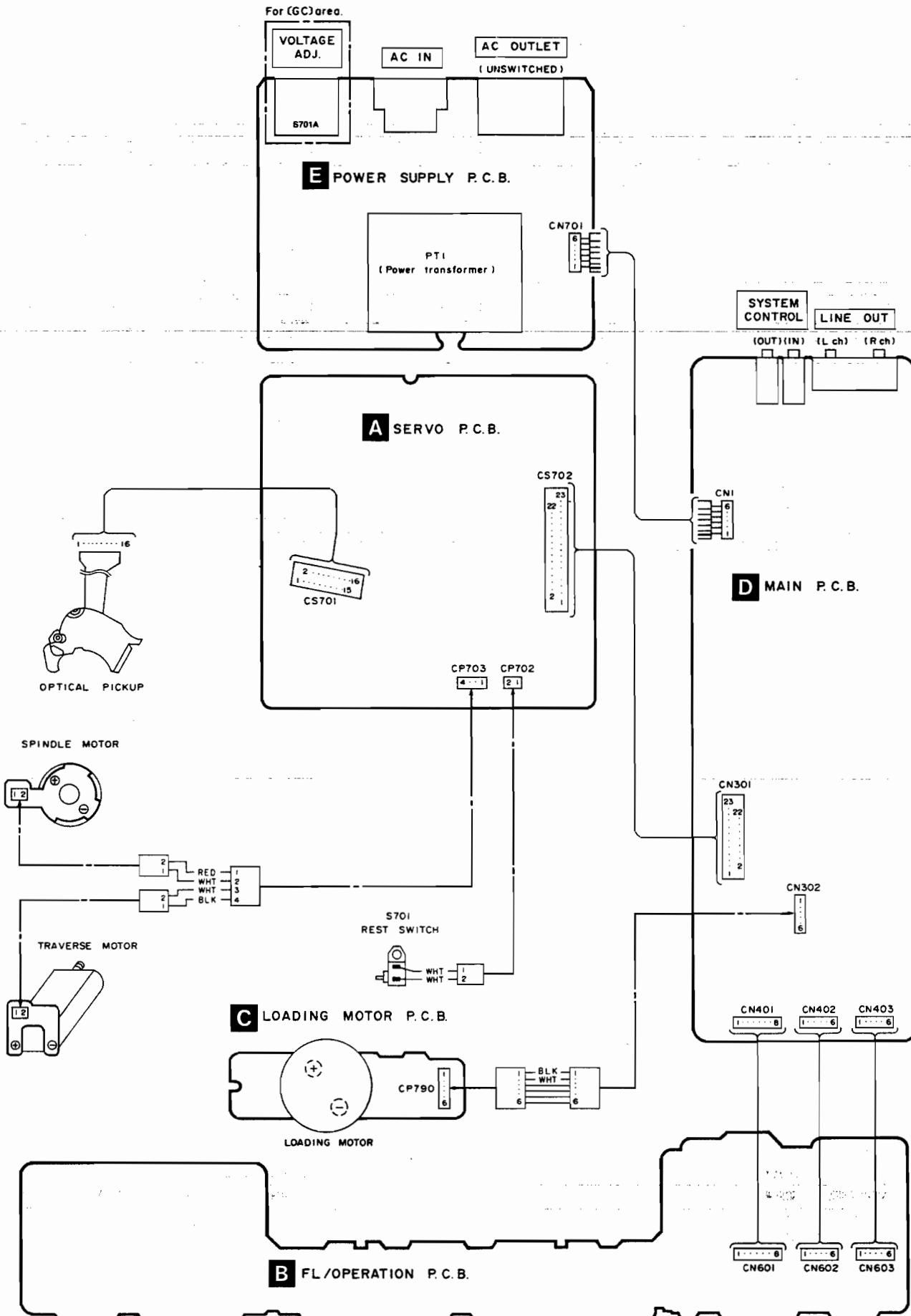


**E** POWER SUPPLY P.C.B. For (GC) area.





# WIRING CONNECTION DIAGRAM



## REPLACEMENT PARTS LIST

### Notes : • Important safety notice:

Components identified by  $\Delta$  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.

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

\* ACHTUNG:

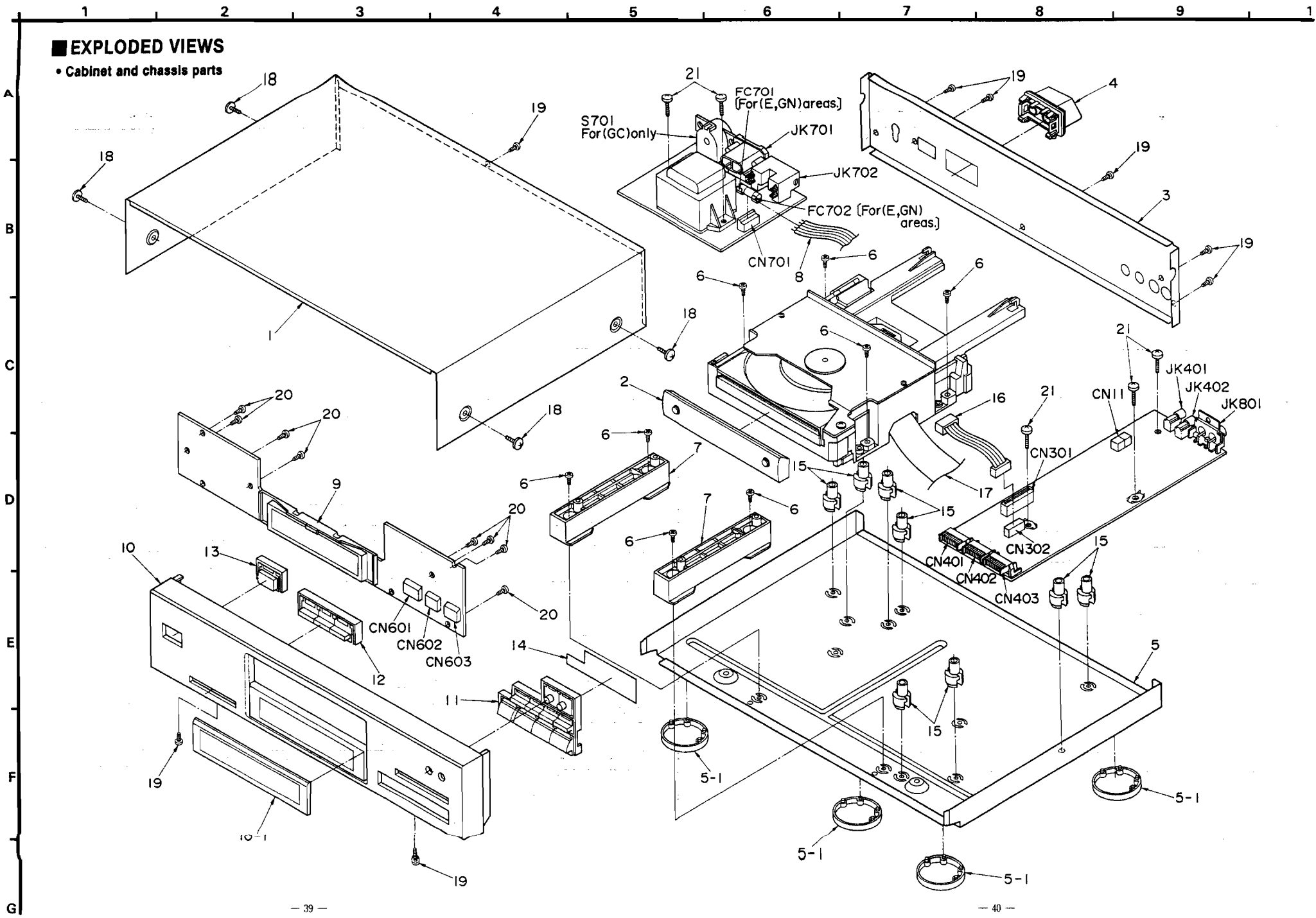
Die Lasereinheit nicht zerlegen.

Die Lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

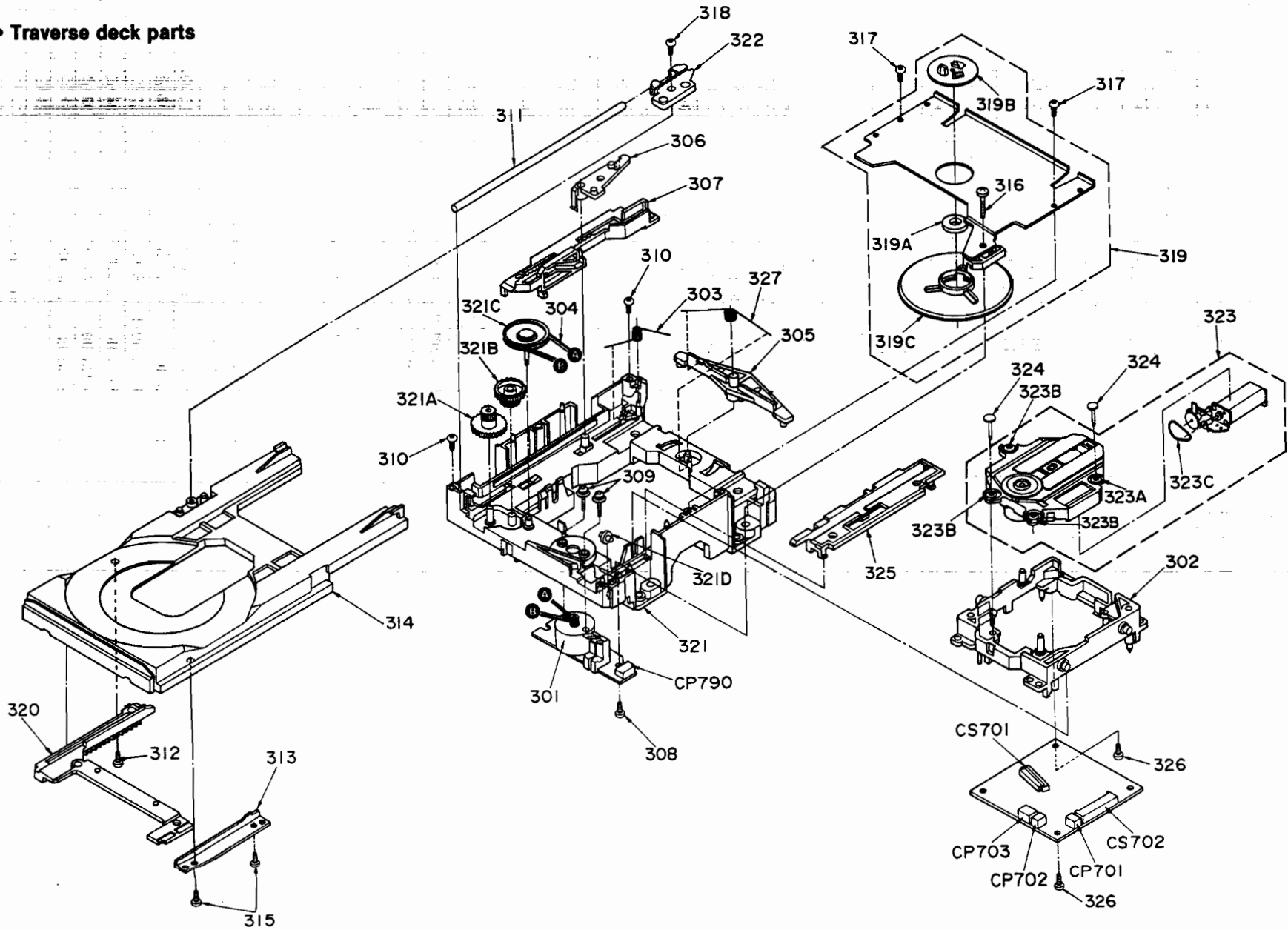
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS					
1	RMD139-K	CABINET		315	XTN2-8G	SCREW	
2	RMD287-K	TRAY ORNAMENT		316	XTB3-25GFZ	SCREW	
3	RMD098K-A1	REAR PANEL	(E)	317	XTN26-6G	SCREW	
3	RMD098L-A2	REAR PANEL	(GC)	318	XTN3-8JFZ	SCREW	
3	RMD098M-A1	REAR PANEL	(GN)	319	RQ0122	CLAMPING PLATE ASS'Y	
4	RJSLA802-A	AC OUTLET COVER	(E)	319A	RMG2452A	MAGNET	
4	SJS9331A	AC OUTLET COVER	(GC)	319B	RMG0334	FIXED PLATE	
4	RJSLA802	AC OUTLET COVER	(GN)	319C	RQ0123	MAGNET HOLDER ASS'Y	
5	RFKJSK502E-K	CHASSIS ASS'Y		320	RFKXLDW7N-K	DRIVE GEAR (2) ASS'Y	
5-1	RKAD011-2	FOOT		321	RFKXDDT77-H	MECHANICAL CHASSIS ASS'Y	
6	XTB3-8JFZ	SCREW		321A	RDG0142	RELAY GEAR	
7	RMD343	MECH SPACER		321B	RDG0143	DRIVE GEAR (1)	
8	RWJ1806195Q	FLAT CABLE (6P)		321C	RDPO041	RELAY PULLEY	
9	RMD094	FL HOLDER		321D	SDRD14	ROLLER (B)	
10	RFNGLPJ28E-K	FRONT PANEL ASS'Y		322	RFKXDDT77C-H	GUIDE HOLDER ASS'Y	
10-1	RW0118-K1	WINDOW		323	SDD01102	TRAVERSE DECK UNIT	$\Delta$
11	RQJ0435-K	MAIN BUTTON		323A	SHGD112	FLOATING RUBBER (A)	
12	RQJ0436-K	SUB BUTTON		323B	SHGD113-1	FLOATING RUBBER (B)	
13	RQJ0437-K1	POWER BUTTON		323C	RDV0014	BELT, RUBBER	
14	RMD226	BUTTON SHEET		324	RMS0123-1	FIXED PIN	
15	SHL187-2	P. C. B. SUPPORT		325	RMD059	SLIDE PLATE (2)	
16	RMD364	CONNECTOR ASS'Y (6P)		326	XTV26-6G	SCREW	
17	RWJ5223150EX	FLAT CABLE (23P)		327	RMD087	SPRING, ASSISTANCE	
18	RHD30607	SCREW				PACKING MATERIAL	
19	XTB3-8JFZ1	SCREW		P1	RPG0852	PACKING CASE	
20	XTB3-8J	SCREW		P2	RPN0413-1	PAD	
21	XTB3-20JFZ	SCREW		P3	RPQ0184	ACCESSORIES PAD	
		TRAVERSE DECK		P4	SPSD152	ACCESSORIES BOX	
				P5	XZB60X60A01	PROTECTION BAG (UNIT)	
				P6	XZB23X20C03	PROTECTION BAG (CORD)	
				P7	RPN0540	TRANSPORTATION PLATE	
301	RMD019	LOADING MOTOR ASS'Y				ACCESSORIES	
302	RMD105	CHASSIS		A1	RFKSLPJ28E-K	INST. MANUAL ASS'Y	(E)
303	RMD063	SPRING, LOCK LEVER		A1	RQ70937-G	INSTRUCTION MANUAL	(GC, GN)
304	RMD0158	BELT, RUBBER		A2	RQAD013	WARRANTY CARD	(E)
305	RMD177	LEVER, CONVERSION		A2	SDX7186	WARRANTY CARD	(GN)
306	RMD178	LEVER, LOCK		A3	RQC80169	SERVICENTER LIST	
307	RMD058	SLIDE PLATE (1)		A4	SJA187	AC POWER SUPPLY CORD	(E) $\Delta$
308	XTN26-6G	SCREW		A4	RJAD004	AC POWER SUPPLY CORD	(GC) $\Delta$
309	XTN26-6GFZ	SCREW		A4	SJA173	AC POWER SUPPLY CORD	(GN) $\Delta$
310	RMD20010	SCREW		A5	SJP2249-3	STEREO CONNECTION CABLE	
311	RMD0046	TRAY GUIDE SHAFT		A6	SJP2257T	L-TYPE CABLE	
312	RMD20009-1	SCREW		A7	SJP9215	POWER PLUG ADAPTOR	(GC) $\Delta$
313	RMD0328	SHUTTER HOLDER					
314	RQ0066-K	TRAY (B)					

**EXPLODED VIEWS**

• Cabinet and chassis parts



• Traverse deck parts



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## REPLACEMENT PARTS LIST

Notes : • Important safety notice:  
 Components identified by  $\Delta$  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 column specify the areas. (Refer to the cover page for area.)  
 Parts without these indications can be used for all areas.  
 \* 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.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT (S)					
IC1	LM2940T5	IC, REGULATOR					
IC401	MN1554PKL1	IC, SYSTEM CONTROL		FL601	RL00093-F	DISPLAY TUBE	
IC601	MN187204PKX	IC, SYSTEM CONTROL/FL DRIVE				SWITCH (ES)	
IC790	TA7291S	IC, LOADING MOTOR DRIVE		S601	EVQ21405R	SW, OPEN/CLOSE	
IC801	SV1B4558F	IC, L. P. F.		S602	EVQ21405R	SW, STOP	
		TRANSISTOR (S)		S603	EVQ21405R	SW, PAUSE	
Q1	2SD2037EPTA	TRANSISTOR		S604	EVQ21405R	SW, PLAY	
Q2	2SD1862QRTV6	TRANSISTOR		S605	EVQ21405R	SW, R. SKIP	
Q3	2SB123BQ5TV6	TRANSISTOR		S606	EVQ21405R	SW, F. SKIP	
Q421, 422	2SC3311A-Q	TRANSISTOR		S607	EVQ21405R	SW, R. SEARCH	
Q431	2SC3311A-Q	TRANSISTOR		S608	EVQ21405R	SW, F. SEARCH	
Q432	DT144EKT96	TRANSISTOR		S609	EVQ21405R	SW, REPEAT	
Q433	2SC3311A-Q	TRANSISTOR		S610	EVQ21405R	SW, PROGRAM	
Q434	DT144EKT96	TRANSISTOR		S611	EVQ21405R	SW, POWER	
Q803, 804	2SD2144S	TRANSISTOR		S612	EVQ21405R	SW, EDIT MODE	
Q852	UN4112	TRANSISTOR		S613	EVQ21405R	SW, SIDE A/B	
Q853	UN4212TA	TRANSISTOR		S614	EVQ21405R	SW, RANDOM	
Q854	DTA114ESTP	TRANSISTOR		S701A	SSR187-1	SW, VOLTAGE ADJ.	(GC) $\Delta$
		DIODE (S)		S790	RS1A005	SW, CLOSE DETECTOR	
D1-5	SVD1SR35200A	DIODE	$\Delta$	S791	RS1A005	SW, OPEN DETECTOR	
D6	MA4330MTA	DIODE				CONNECTOR (S) & SOCKET (S)	
D7, 8	MA4062MTA	DIODE		CM11	RJ51A6806	CONNECTOR (6P)	
D10	MA4082MTA	DIODE		CK301	RJ51A6823	CONNECTOR (23P)	
D11	SVD1SR35200A	DIODE	$\Delta$	CK302	RJT029W06VT	CONNECTOR (6P)	
D12	SVDMT28R2B	DIODE		CM401	RJUD03K008M1	SOCKET (8P)	
D13, 14	SVD1SR35200A	DIODE	$\Delta$	CM402, 403	RJUD03K008M1	SOCKET (6P)	
D20	MA4062MTA	DIODE		CM601	RJT003K008M1	CONNECTOR (8P)	
D401	MA4039HTA	DIODE		CM602, 603	RJT003K008M1	CONNECTOR (6P)	
D431, 432	MA700	DIODE		CK701	SJT30643-V	CONNECTOR (6P)	
D611-613	1SS254TA	DIODE		CP790	RJP6G172A	CONNECTOR (6P)	
D601, 802	1SS254TA	DIODE				JACK (S)	
D852-855	1SS254TA	DIODE					
		COIL (S)					
L431-433	RLQZP3R3KT-Y	COIL					
L701	RLQZ800M-W	COIL	$\Delta$				
		DISPLAY TUBE					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
FC701, 702	EYF52BC	FUSE HOLDER	(E, GN) $\Delta$	CS702	RJ51A6723-1Q	SOCKET (23P)	
		TRANSFORMER (S)					
PT1	RTP1K4B012	POWER TRANSFORMER	(E, GN) $\Delta$				
PT1	RTP1K4E020	POWER TRANSFORMER	(GC) $\Delta$				
		FUSE (S)					
F1	XBA2C25T80	FUSE, 2.5A 250V	(E, GN) $\Delta$				
		GRD PLATE (S)					
GND1, 2	SNE1004-1	GRD PLATE					
		<SERVO P. C. B.>					
		INTEGRATED CIRCUIT (S)					
IC701	AN8800SCE2	IC, SERVO AMP					
IC702	TC40372M2R	IC, SPINDLE MOTOR DRIVE					
IC703	AN8377N	IC, TRAVERSE MOTOR DRIVE					
IC704	MN6650	IC, DIGITAL SERVO PROCESSOR					
IC705	MN6475	IC, DIGITAL FILTER/HD/A CONV.					
IC706	MN6626	IC, DIGITAL SIGNAL PROCESSOR					
		TRANSISTOR (S)					
Q701	2SB709STW	TRANSISTOR					
		DIODE (S)					
D701	MA110TW	DIODE					
		VARIABLE RESISTOR (S)					
VR701	EYNDXA00B14	V. R. BEST EYE ADJ.					
		OSCILLATOR (S)					
X701	RSK233M9M1T	OSCILLATOR (33.8688MHz)					
		SWITCH (ES)					
S701	SSH05	SW, REST DETECTOR					
		PLUG (S) & SOCKET (S)					
CP701	RJP2G172A	PLUG (2P)					
CP702	RJP2G172A	PLUG (2P)					
CP703	RJP4G172A	PLUG (4P)					
CS701	RJU035T016-1	SOCKET (16P)					

**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			
RESISTORS											
R1, 2	ERDSZTJ151	1/4W 150	R855	ERDSZTJ102	1/4W 1K	R712	ERJ6GEYJ471V	1/10W 470			
R3, 4	ERDSZTJ470	1/4W 47	CAPACITORS						R714	ERJ6GEYJ473V	1/10W 47K
R5	ERDSZTJ222	1/4W 2.2K	C1-3	ECXTH2232F	50V 0.022U	R715	ERJ6GEYJ223V	1/10W 22K			
R6	ERDSZTJ101	1/4W 100	C4	ECA1CM222B	16V 2200U	R716	ERJ6GEYJ104V	1/10W 100K			
R8	ERDS1FVJ221T	1/2W 220 Δ	C5	ECA1EM471B	25V 470U	R717	ERJ6GEYJ682V	1/10W 6.8K			
R9	ERDS1FVJ181T	1/2W 180 Δ	C6	ECA1HM101B	50V 100U	R718	ERJ6GEYJ223V	1/10W 22K			
R10	ERDS1FVJ271T	1/2W 270 Δ	C7-9	ECXTH2232F	50V 0.022U	R719	ERJ6GEYJ123V	1/10W 12K			
R12	ERDSZTJ220T	1/4W 22	C10, 11	ECA1AM471B	10V 470U	R720	ERJ6GEYJ273V	1/10W 27K			
R20	ERDS1FVJ682T	1/2W 6.8 Δ	C12	ECEA1AA221Q	10V 220U	R721	ERJ6GEYJ823V	1/10W 82K			
R21	ERDSZTJ102	1/4W 1K	C13	ECA0JM222B	6.3V 2200U	R722	ERJ6GEYJ102V	1/10W 1K			
R32, 33	ERQ16NR15E	1W 0.15	C14	ECA1HM101B	50V 100U	R723	ERJ6GEYJ104V	1/10W 100K			
R303	ERDSZTJ560T	1/4W 56	C15	ECEA0JKA221B	6.3V 220U	R724	ERJ6GEYJ104V	1/10W 100K			
R304, 305	ERDSZTJ102	1/4W 1K	C16	ECA1EM101B	25V 100U	R725	ERJ6GEYJ471V	1/10W 470			
R401-408	ERDSZTJ472	1/4W 4.7K	C18	ECBT1H102KB5	50V 1000P	R726	ERJ6GEYJ102V	1/10W 1K			
R409-416	ERDSZTJ221	1/4W 220	C20	ECFR1E104ZF5	25V 0.1U	R729	ERJ6GEYJ102V	1/10W 1K			
R419	ERDSZTJ472	1/4W 4.7K	C21	ECBT1H102KB5	50V 1000P	R730	ERJ6GEYJ102V	1/10W 1K			
R420	ERDSZTJ105T	1/4W 1M	C303-306	ECBT1H102KB5	50V 1000P	R731	ERJ6GEYJ470V	1/8W 47			
R421	ERDSZTJ221	1/4W 220	C401	ECEA0JKA470B	6.3V 47U	R732	ERJ6GEYJ562V	1/10W 5.6K			
R422-425	ERDSZTJ472	1/4W 4.7K	C402	ECFR1E104ZF5	25V 0.1U	R733	ERJ6GEYJ332V	1/10W 3.3K			
R427	ERDSZTJ472	1/4W 4.7K	C421	ECEA1HKA010B	50V 1U	R734	ERJ6GEYJ562V	1/10W 5.6K			
R431	ERDSZTJ393	1/4W 39K	C420	ECFR1E104ZF5	25V 0.1U	R735	ERJ6GEYJ222V	1/10W 2.2K			
R432	ERDSZTJ100	1/4W 10	C801, 602	ECBT1E1032F	25V 0.01U	R736	ERJ6GEYJ682V	1/10W 6.8K			
R433, 434	ERDSZTJ393	1/4W 39K	C803	ECBT1H102KB5	50V 1000P	R737	ERJ6GEYJ562V	1/10W 5.6K			
R435	ERDSZTJ223	1/4W 22K	C804	ECBT1E1032F	25V 0.01U	R738	ERJ6GEYJ102V	1/10W 1K			
R436	ERDSZTJ100	1/4W 10	C805	ECEA1HKS010	50V 1U	R741	ERJ6GEYJ102V	1/10W 1K			
R437	ERDSZTJ393	1/4W 39K	C806	ECBT1E1032F	25V 0.01U	R742	ERJ6GEYJ102V	1/10W 1K			
R438	ERDSZTJ100	1/4W 10	C790	ECA1AMF820E	10V 82U	R743	ERJ6GEYJ102V	1/10W 1K			
R439, 440	ERDSZTJ393	1/4W 39K	C813, 814	ECBT1H101KB5	50V 100P	R744	ERJ6GEYJ393V	1/10W 39K			
R441	ERDSZTJ223	1/4W 22K	C815, 816	ECEA1HKA220B	50V 22U	R745	ERJ6GEYJ102V	1/10W 1K			
R442, 443	ERDSZTJ100	1/4W 10	C819, 820	ECBT1H101KB5	50V 100P	R746	ERJ6GEYJ102V	1/10W 1K			
R451, 452	ERDSZTJ102	1/4W 1K	C827, 828	ECEA1HKA101B	10V 100U	R747	ERJ6GEYJ473V	1/10W 47K			
R453	ERDSZTJ103	1/4W 10K	C852	ECA0JM102B	6.3V 1000U	R748	ERJ6GEYJ180V	1/8W 18			
R600-605	ERDSZTJ472	1/4W 4.7K	<SERVO P.C.B.>								
R606	ERDSZTJ105T	1/4W 1M	RESISTOR (S)								
R817, 818	ERDSZTJ243T	1/4W 24K	R701	ERJ6GEYJ100V	1/10W 10	JUMPER (S)					
R819, 820	ERDSZTJ473	1/4W 47K	R702	ERJ6GEYJ471V	1/10W 470	RJ701	ERJ6GEYOR00V	CHIP JUMPER			
R821, 822	ERDSZTJ273	1/4W 27K	R703	ERJ6GEYJ102V	1/10W 1K	RJ703	ERJ6GEYOR00V	CHIP JUMPER			
R823, 824	ERDSZTJ473	1/4W 47K	R704	ERJ6GEYJ103V	1/10W 10K	RJ704	ERJ6GEYOR00V	CHIP JUMPER			
R825, 826	ERDSZTJ471	1/4W 470	R706	ERJ6GEYJ473V	1/10W 47K	RJ705	ERJ6GEYOR00V	CHIP JUMPER			
R827, 828	ERDSZTJ473	1/4W 47K	R707	ERJ6GEYJ222V	1/10W 2.2K	RJ706	ERJ6GEYOR00V	CHIP JUMPER			
R829, 830	ERDSZTJ471	1/4W 470	R708	ERJ6GEYJ683V	1/10W 68K	RJ707	ERJ6GEYOR00V	CHIP JUMPER			
R831, 834	ERDSZTJ102	1/4W 1K	R709	ERJ6GEYJ122V	1/10W 1.2K	RJ708	ERJ6GEYOR00V	CHIP JUMPER			
R841, 842	ERDSZTJ104	1/4W 100K	R710	ERJ6GEYJ182V	1/10W 1.8K	RJ709	ERJ6GEYOR00V	CHIP JUMPER			
R852	ERDSZTJ102	1/4W 1K	R711	ERJ6GEYJ473V	1/10W 47K	RJ710	ERJ6GEYOR00V	CHIP JUMPER			
R853	ERDSZTJ471	1/4W 470	CAPACITOR (S)								
R854	ERDSZTJ472	1/4W 4.7K									

**PACKING**

Ref. No.	Part No.	Values & Remarks
C702	ECEA0JKS4701	6.3V 47U
C703	ECEA0JHS1011	6.3V 100U
C709	ECUV1C224KBM	16V 0.22U
C710	ECUV1C104MBM	16V 0.1U
C711	ECUV1E103MBN	25V 0.01U
C713	ECEA1CSM4R71	16V 4.7U
C714	ECEA1HKS0101	50V 1U
C715	ECUV1H472KBN	50V 4700P
C716	ECUV1C473KBN	16V 0.047U
C717	ECUV1H681KBN	50V 680P
C718	ECEA1HKS1011	10V 100U
C719	ECUV1E103MBN	25V 0.01U
C720	ECUV1E153MBN	25V 0.015U
C721	ECUV1E103MBN	25V 0.01U
C722	ECEA0JKS4701	6.3V 47U
C723	ECUV1C104MBM	16V 0.1U
C724	ECUV1E333MBN	25V 0.033U
C725	ECUV1E103MBN	25V 0.01U
C726	ECUV1H471KBN	50V 470P
C727	ECEA0JKS4701	6.3V 47U
C728	ECUV1C104MBM	16V 0.1U
C729	ECUV1C104MBM	16V 0.1U
C730	ECUV1C224KBM	16V 0.22U
C731	ECEA0JKS3311	6.3V 330U
C732	ECUV1H102MBN	50V 1000P
C733	ECEA0JKS1011	6.3V 100U
C734	ECUV1E223MBN	25V 0.022U
C735	ECUV1C224KBM	16V 0.22U
C737	ECUV1C224KBM	16V 0.22U
C738	ECEA0JKS1011	6.3V 100U
C739	ECUV1E103MBN	25V 0.01U
C740	ECUV1H472KBN	50V 4700P
C741	ECUV1C224KBM	16V 0.22U
C742	ECUV1C104MBM	16V 0.1U
C743	ECEA0JKS3311	6.3V 330U
C744	ECUV1H102KBN	50V 1000P
C745	ECUV1H102KBA	50V 1000P
C746	ECEA0JKS1011	6.3V 100P
C747	ECUV1C104MBM	16V 0.1U
C748	ECEA1HKS0101	50V 1U
C749	ECUV1E103MBN	25V 0.01U
C750	ECUV1HDS0DCN	50V 5P
C751	ECUV1C224KBM	16V 0.22U
C752	ECUV1C104MBM	16V 0.1U
C753	ECEA1HKS010	50V 1U
C754	ECEA1HKS010	50V 1U
C755	ECUV1C104MBM	16V 0.1U
C756	ECUV1HDS0DCN	50V 5P
C757	ECUV1HDS0DCN	50V 5P
C758	ECUV1C224KBM	16V 0.22U
C763	ECUV1E103MBN	25V 0.01U
C764	ECUV1H331KBN	50V 330P

