

Service Manual

Compact Disc Player

SL-PG200A

COMPACT
disc
DIGITAL AUDIO
DIGITAL
MASH*
 multi-stage noise shaping

Color

 (K)... Black Type
 (S)... Silver Type

Area

| Country Code | Area | Color |
|--------------|-----------------------|---------|
| (E) | Continental Europe. | (K) (S) |
| (EB) | Great Britain. | (K) (S) |
| (EG) | F.R. Germany & Italy. | (K) (S) |



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 | 100 dB |
| Total harmonic distortion | 0.005% (1 kHz, 0 dB) |
| Harmonic distortion | 0.003% (1 kHz, 0 dB) |
| Wow and flutter | Below measurable limit |
| DA converter | MASH (4 DAC) |
| Output impedance | Approx. 600Ω |
| Load impedance | More than 10 kΩ |
| Headphone output level | 15 mW max. 32Ω (adjustable) |

■ Pickup

| | |
|------------|--------|
| Wavelength | 780 nm |
|------------|--------|

■ General
Power supply
For Great Britain

AC 50/60 Hz, 230 V~240 V

For others

AC 50/60 Hz, 230 V

Power consumption

10 W

Dimensions (W×H×D)

430×103×283 mm

Weight

3.6 kg

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

- Technics (or Panasonic) developed the world's first MASH type DAC and ADC. MASH technology was invented by NTT (LSI Labs).
- ※ MASH is a trademark of NTT.

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*** TECHNICAL INFORMATION**

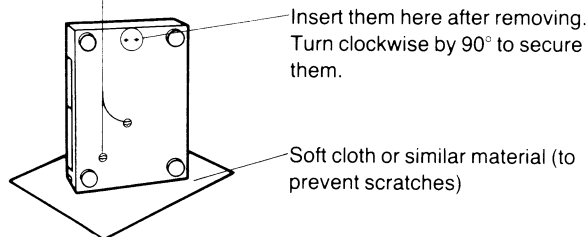
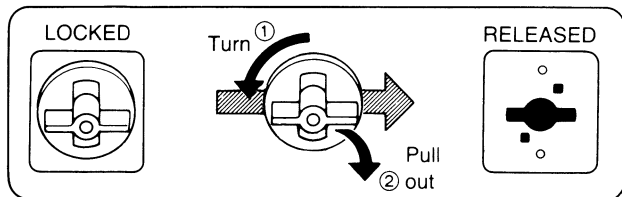
- * This technical information is located on pp 49~56 of the SL-PJ46A Service Manual (Order No. AD8902036C2). Therefore, refer to that Service Manual.

Technics

■ PLACEMENT

Before placement

Two transport security devices are secured to prevent the optical pickup from damage during transport. Be sure to release them before use.



Note:

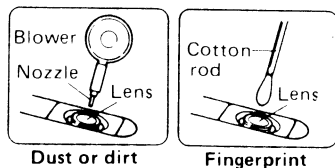
When transporting the unit, be sure to remove the compact disc from inside the unit. And replace the transport security devices again following the reverse order not to damage the optical pickup.

■ CLEANING OF LENS

If the lens is stained causing sound skip or operation failure, open the top cover by pressing the open button, and clean the lens.

● **To remove dust or dirt**

Blow the lens with the blower provided in the cleaning kit to remove dust or dirt.



● **To remove fingerprint**

If the blower is not enough, moisten the cotton rod with the lens cleaner solution and wipe the lens with it from center of the lens to outside.

Notes of placement

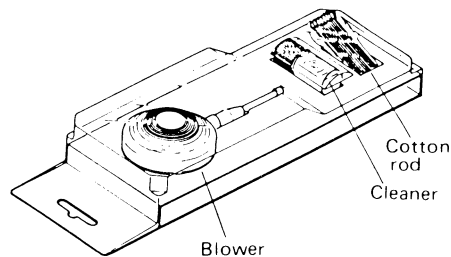
- **This unit is a precision instrument. Be sure to place it on a flat surface.**
- **Avoid places such as the following:**
 - Near any equipment or device that generates strong magnetism.
 - On any heat-generating equipment or device, or in any place where the temperature is high (35°C or higher).
 - 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.

Cautions:

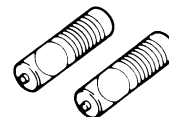
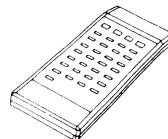
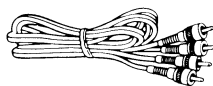
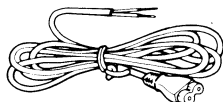
- Do not directly apply the cleaner solution to the lens. Do not apply too much solution to the cotton rod or otherwise the solution will flow into the player.
- Wipe the lens carefully. Do not give too much stress to the lens or otherwise it may scratch the lens or cause optical pickup trouble.
- If the solution should be too much applied, wipe the lens with a dry cotton rod.

Lens cleaning kit (Part No. : SZZP1038C)



■ ACCESSORIES

- AC power supply cord
{ SJA187 (E, EG) 1
 SJA193 (EB) 1
- Stereo connection cable (SJP2249-3) 1
- Remote control transmitter
{ (Black: EUR64798) 1
 (Silver: EUR64799) 1
- Batteries (UM-4NE/2S) 2



■ 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: 100 μ W/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.

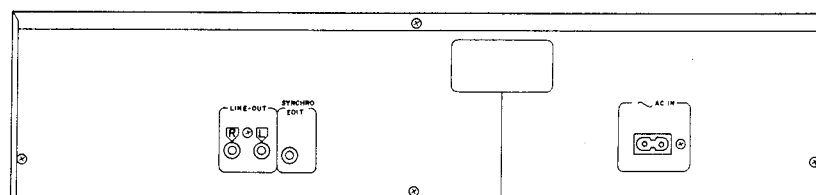
ACHTUNG: Dieses Produkt enthält eine Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

Wellenlänge: 780 nm
 Maximale Strahlungsleistung der Lasereinheit: 100 μ W/VDE

Die Strahlung an der Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Lasereinheit gefährlich ist.
2. Den werkseitig 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.

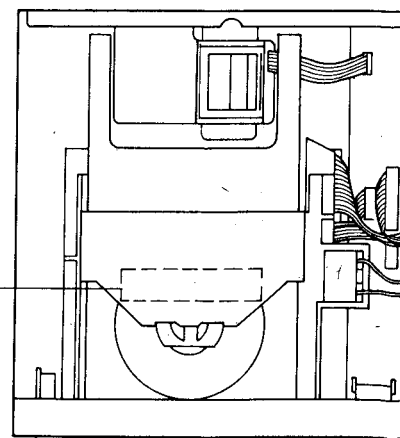
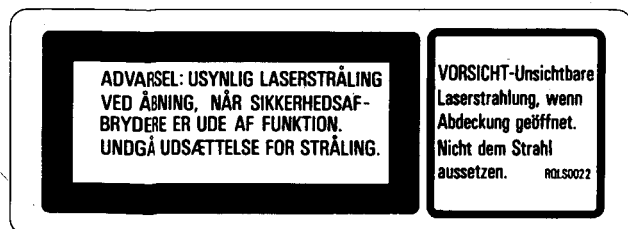


SQWD7



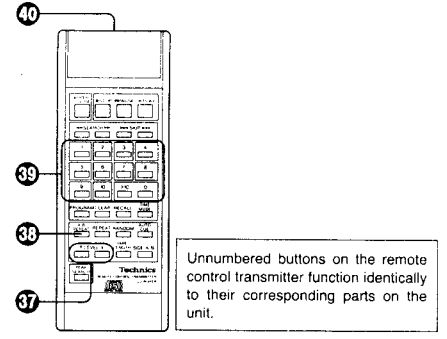
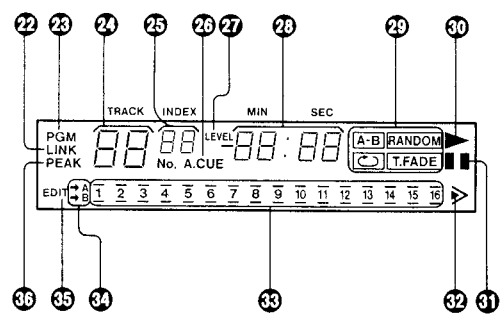
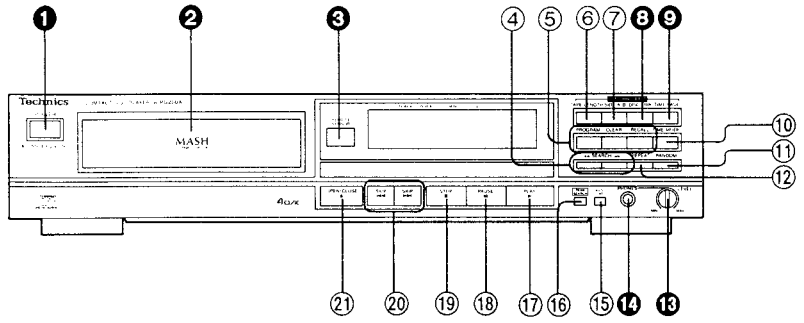
Obs:
 Apparaten innehåller laser
 Komponent av höger laserklass
 än klass 1.

RQLS0022



LOCATION OF CONTROLS

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



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

Control section

- 1 Power "STANDBY \odot /ON" switch (POWER \blacksquare STANDBY \odot \blacksquare 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 \odot 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 Remote control signal sensor (REMOTE SENSOR)**
- 4 Search buttons (\ll SEARCH \gg)**
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.
- 5 Buttons for program function**
 - **Program button (PROGRAM)**
Pressing this button initiates the program 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.
- 6 Edit tape length button (TAPE LENGTH)**
When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.
- 7 Tape-side select button (SIDE A/B)**
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.
- 8 Disc link button (DISC LINK)**
This button can be used for edit recording from several discs.

- 9 Time fade button (TIME FADE)**
Pressing this button in the pause or stop mode causes the fade-out function to work at the specified time. Pressing this button in the edit mode causes the fade-out function to work at the end of the tape when the track added exceeds the remaining time of the tape.
- 10 Time mode select button (TIME MODE)**
- 11 Random play button (RANDOM)**
This button can be used to play the tracks on a disc in a random sequence.
- 12 Repeat button (REPEAT)**
- 13 Headphones volume control (LEVEL)**

Avoid listening to music at high volume levels for extended periods of time.
- 14 Headphones jack (PHONES)**
- 15 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.
- 16 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.
- 17 Play button (\blacktriangleright PLAY)**
- 18 Pause button (\parallel PAUSE)**
- 19 Stop button (\blacksquare STOP)**
This button can be used to stop disc play, as well as to cancel the various play modes.
- 20 Skip buttons (\ll SKIP, \gg SKIP)**
These buttons can be used to specify the number of the desired track and the desired recording time of the tape.
- 21 Disc holder open/close button (\blacktriangle OPEN/CLOSE)**

Indicators section

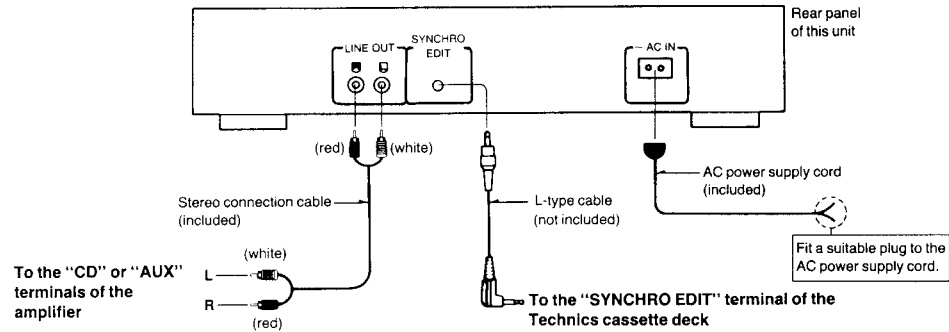
- 22 Disc link indicator (LINK)**
- 23 Program play indicator (PGM)**
- 24 Track number display (TRACK)**
- 25 Index/program number display (INDEX, No.)**
- 26 Auto cue indicator (A. CUE)**
- 27 Level indicator (LEVEL)**
This indicator lights when the output level is attenuated by the remote control.
- 28 Time display (MIN, SEC)**
- 29 Operation indicators**
The following indicators light during their respective operations.
 - $\overline{\text{A-B}}$ \square : Peak level search
 - $\overline{\text{A-B}}$ \square : A-B repeat play (remote control operation)
 - \square : Repeat play
 - $\overline{\text{RANDOM}}$: Random play
 - $\overline{\text{T.FADE}}$: Time fade (fade-out)
- 30 Play indicator (\blacktriangleright)**
- 31 Pause indicator (\parallel)**
- 32 "Over" mark (\blacktriangleright)**
This indicator lights if the total number of tracks on the disc is 17 or more.
- 33 Track number indicator ($\overline{1-16}$)**
- 34 Tape side indicator (\rightarrow A, \rightarrow B)**
- 35 Compact disc edit indicator (EDIT)**
- 36 Peak level search indicator (PEAK)**

Remote control transmitter

- 37 Level buttons (\blacktriangledown LEVEL \blacktriangle)**
These buttons can be used to adjust output level (from 0 dB to -12 dB).
- 38 A-B repeat button (A-B REPEAT)**
This button can be used to play the portion of a disc between two points (A and B) chosen by you.
- 39 Numeric buttons (>10 , 0, 1~10)**
- 40 Remote control signal transmission window**

■ CONNECTIONS

Turn power off on all components before making connections.

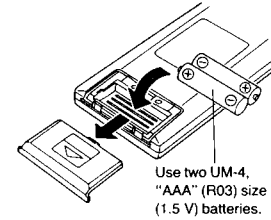


Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

■ REMOTE CONTROL TRANSMITTER

Insertion of remote control transmitter batteries

Battery life is about 1 year.

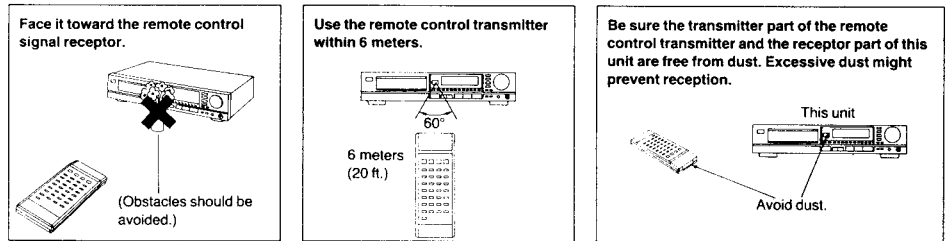


■ Notes concerning use of batteries

- Do not use chargeable batteries (Ni-Cd type).
- Be sure the batteries are inserted so that the positive (+) and negative (-) polarities are correct. Batteries installed with incorrect polarities may leak and damage the remote control transmitter.
- Never subject the batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- If the remote control transmitter is not to be used for a long time, remove the batteries and store them in a cool dark place.
- Remove old, weak or worn-out batteries promptly and dispose of them.
- Never mix old and new batteries, nor batteries of different types (carbon or alkaline).

Remote control transmitter operation notes

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



Notes:

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

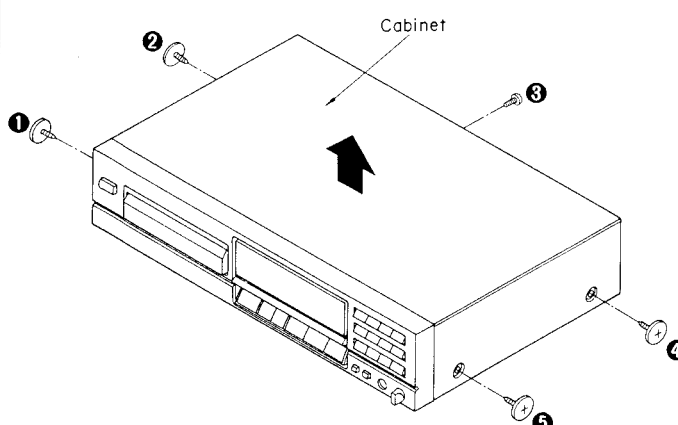
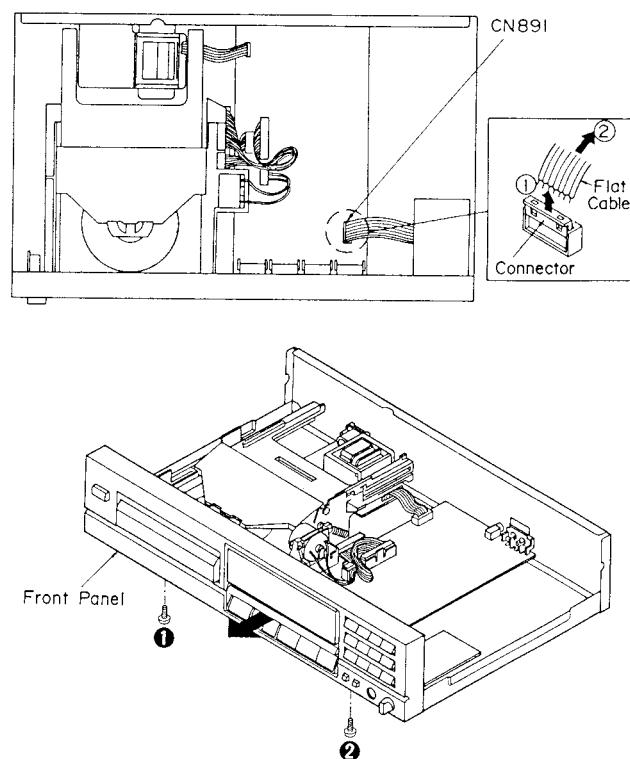
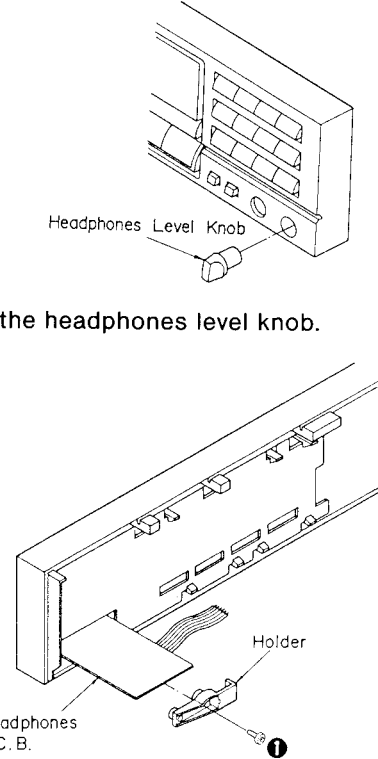
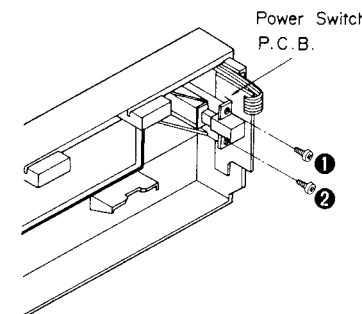
DISASSEMBLY INSTRUCTIONS

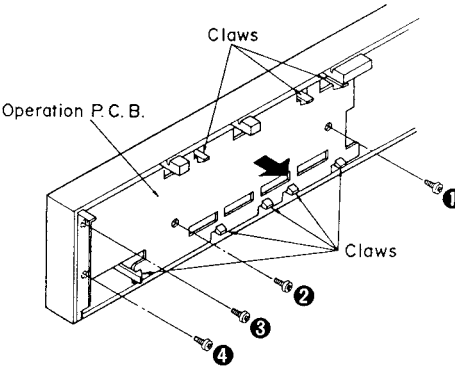
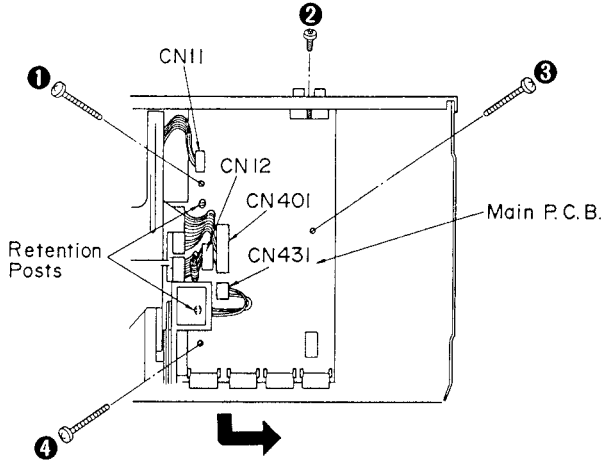
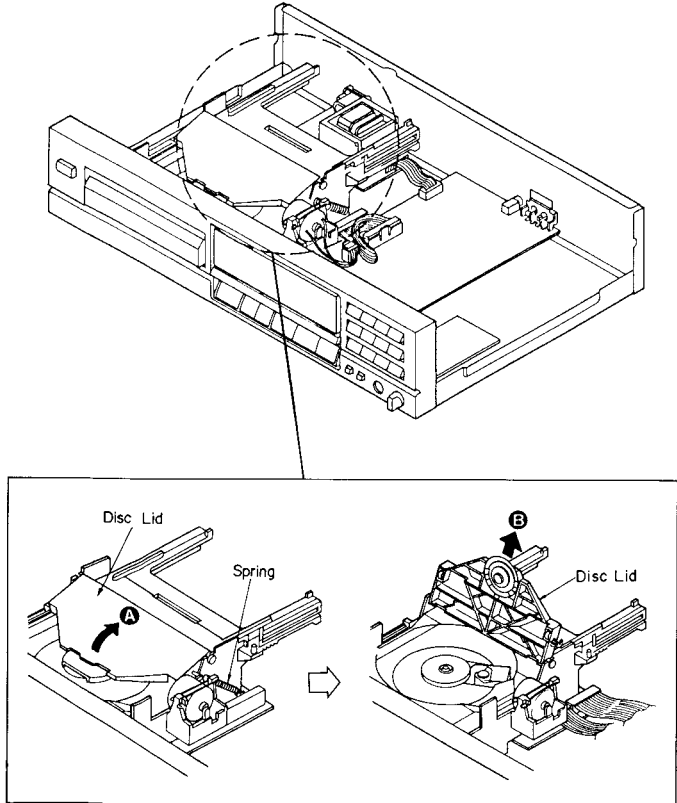
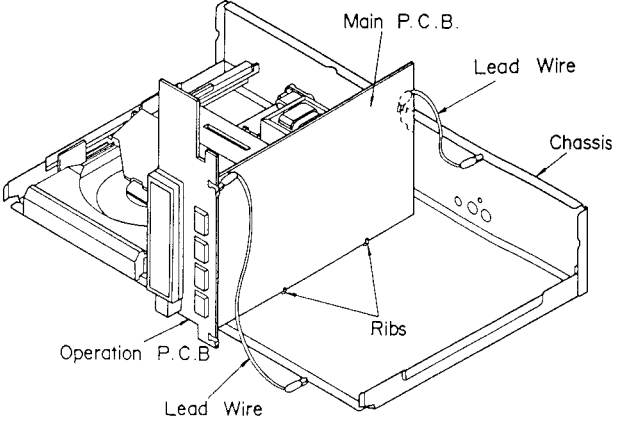
Warning: This product uses a laser diode. Refer to caution statements on page 3.

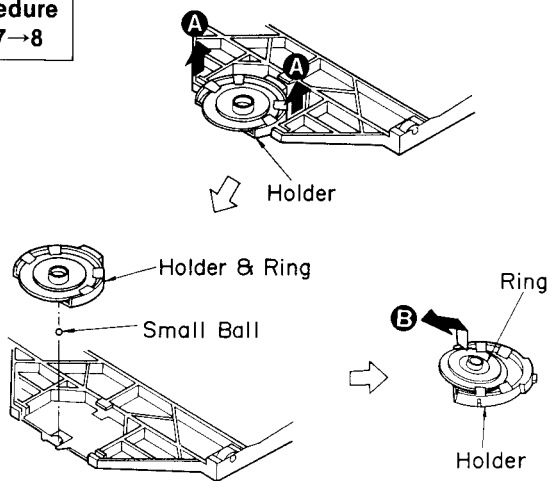
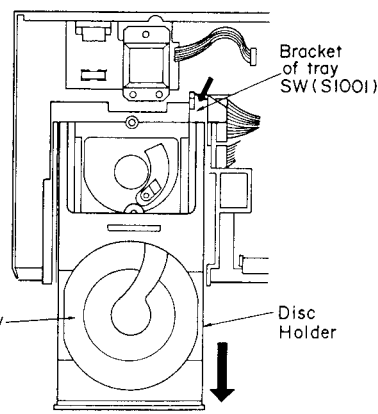
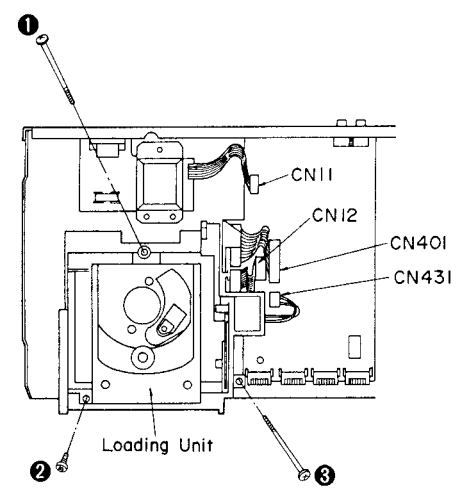
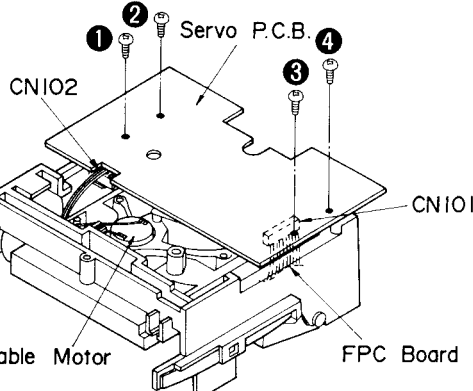
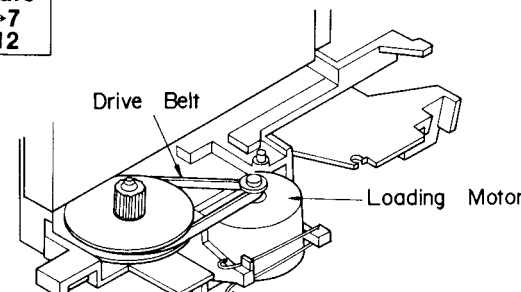
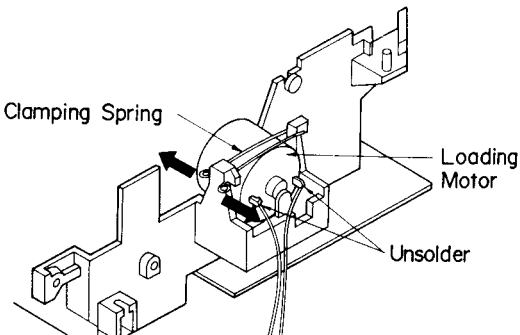
ACHTUNG:

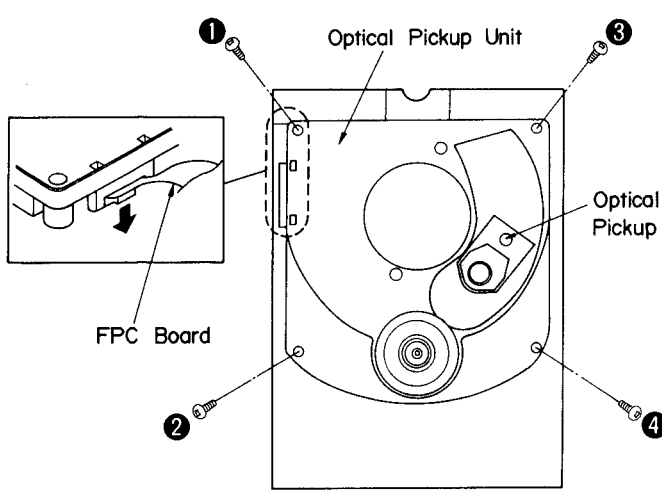
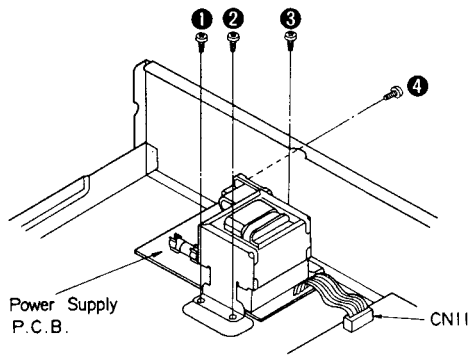
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

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

| | | | |
|----------------------------|---|----------------------------|---|
| <p>Ref. No. 1</p> | <p>Removal of the cabinet</p> | <p>Ref. No. 2</p> | <p>Removal of the front panel</p> |
| <p>Procedure 1</p> |  <p>• Remove the 5 screws (1~5).</p> | <p>Procedure 1→2</p> |  <ol style="list-style-type: none"> 1. Remove the 1 flat cable (CN891). 2. Remove the 2 screws (1, 2). 3. Remove the front panel in the direction of the arrow. |
| <p>Ref. No. 3</p> | <p>Removal of the headphones P.C.B.</p> | <p>Ref. No. 4</p> | <p>Removal of the power switch P.C.B.</p> |
| <p>Procedure 1→2→3</p> |  <ol style="list-style-type: none"> 1. Pull out the headphones level knob. 2. Remove the 1 screw (1). 3. Remove the holder. | <p>Procedure 1→2→4</p> |  <p>• Remove the 2 screws (1, 2).</p> |

| | | |
|---|--|--|
| <p>Ref. No. 5</p> | <p>Removal of the operation P.C.B.</p> | <p>Ref. No. 6</p> <p>Removal of the main P.C.B.</p> |
| <p>Procedure 1→2→3→5</p> |  <ol style="list-style-type: none"> 1. Remove the 4 screws (①~④). 2. Release the 8 claws. 3. Remove the operation P.C.B. in the direction of the arrow. | <p>Procedure 1→2→3 →5→6</p>  <ol style="list-style-type: none"> 1. Remove the 4 screws (①~④). 2. Remove the 3 connectors (CN12, CN401, CN431). 3. Remove the 1 flat cable (CN11). 4. Lift the main P.C.B. off the retention posts on the chassis. 5. Remove the main P.C.B. in the direction of the arrow. |
| <p>Ref. No. 7</p> | <p>Removal of the disc lid</p> | |
| <p>Procedure 1→7</p> | <ol style="list-style-type: none"> 1. Remove the spring. 2. Move the disc lid in the direction of the arrow (A) and pull out this in the direction of the arrow (B). | |
|  | <p>How to check the main P.C.B.</p> <p>When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown below.</p> <ol style="list-style-type: none"> 1. Don't remove the connectors (CN12, CN401, CN431) and flat cable (CN11). 2. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire. 3. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.  | |

| | | | |
|--------------------------------------|---|---|---|
| <p>Ref. No. 8</p> | <p>Removal of the holder and ring</p> | <p>Ref. No. 9</p> | <p>Removal of the disc holder</p> |
| <p>Procedure 1→7→8</p> |  <ol style="list-style-type: none"> 1. Pull out the holder in the direction of the arrow (A). 2. Remove the ring in the direction of the arrow (B). <p>Caution: Be sure to handle the small ball carefully.</p> | <p>Procedure 1→2→7→9</p> |  <ol style="list-style-type: none"> 1. Pull the disc holder slowly in the direction of the arrow until the disc tray comes up. 2. Pull the disc holder until it stops. 3. Push the bracket of tray SW (S1001) in the direction of the arrow. 4. Pull out the disc holder further to remove it. |
| <p>Ref. No. 10</p> | <p>Removal of the loading unit</p> | <p>Ref. No. 11</p> | <p>Removal of the servo P.C.B.</p> |
| <p>Procedure 1→2→7 →9→10</p> |  <ol style="list-style-type: none"> 1. Remove the 3 screws (1~3). 2. Remove the 3 connectors (CN12, CN401, CN431). | <p>Procedure 1→2→7→ 9→10→11</p> |  <ol style="list-style-type: none"> 1. Remove the 4 screws (1~4). 2. Remove the FPC board (CN101) from the optical pickup. 3. Remove the 1 connector (CN102) of the turntable motor. <p>Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board.</p> |
| <p>Ref. No. 12</p> | <p>Removal of the loading motor</p> | | |
| <p>Procedure 1→2→7 →9→12</p> |  <ol style="list-style-type: none"> 1. Remove the drive belt. | |  <ol style="list-style-type: none"> 2. Release the clamping spring. 3. Unsolder the 2 terminals of the lead wire of the loading motor. |

| Ref. No. 13 | Removal of the optical pickup unit | Ref. No. 14 | Removal of the power supply P.C.B. |
|--|---|--------------------------|---|
| Procedure 1→2→7→9→ 10→11→13 |  <ol style="list-style-type: none"> 1. Remove the 4 screws (①~④). 2. Remove the FPC board from the optical pickup. | Procedure 1→14 |  <ol style="list-style-type: none"> 1. Remove the 4 screws (①~④). 2. Remove the 1 connector (CN11). |

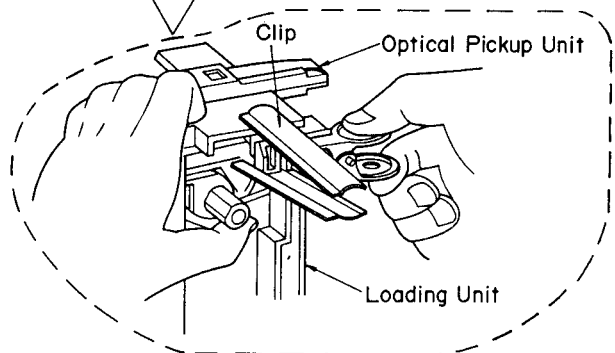
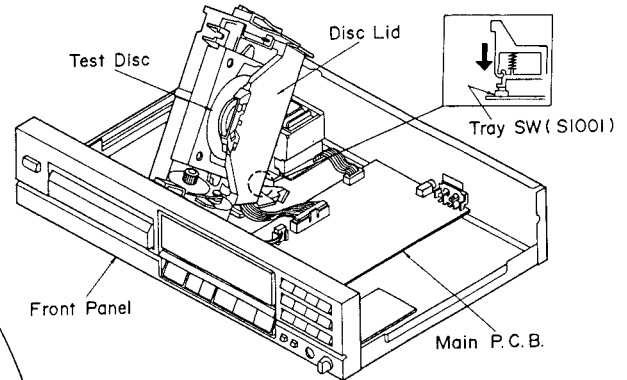
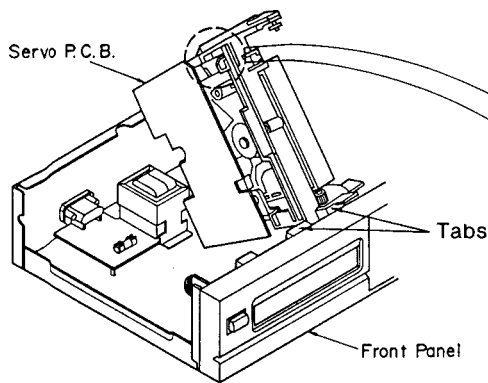
■ CHECKING OF THE SERVO P.C.B.

1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc lid and disc holder (see Ref. No. 7 and No. 9 of the same).
3. Remove the loading unit (see Ref. No. 10 of the same).
4. When checking the soldered surface of the servo P.C.B. and replacing the parts, do as shown below.

(To play a disc)

1. Place the test disc.
2. Reinstall the disc lid to the loading unit.
3. Turn "ON" the power switch of the player.
4. Push the bracket of tray SW (S1001) in the direction of the arrow and release it.

Note: If the test disc fails to rotate, press the tray switch again.

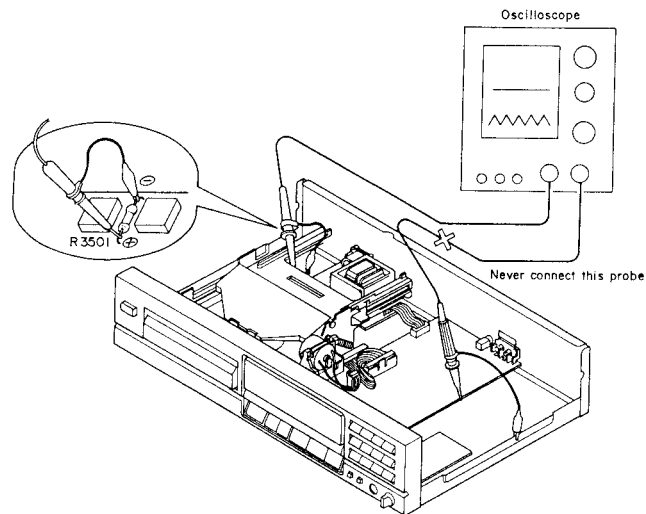


Note: Put on the loading unit on the tabs of the front panel. (Fixed loading unit)
 Hold the loading unit and the optical pickup unit with a clip. (Fixed optical pickup unit)
 Secure the optical pickup assembly with a clip. (Otherwise the clammer will interfere with the disc, restricting turntable rotation.)

MEASUREMENTS AND ADJUSTMENTS

Caution:

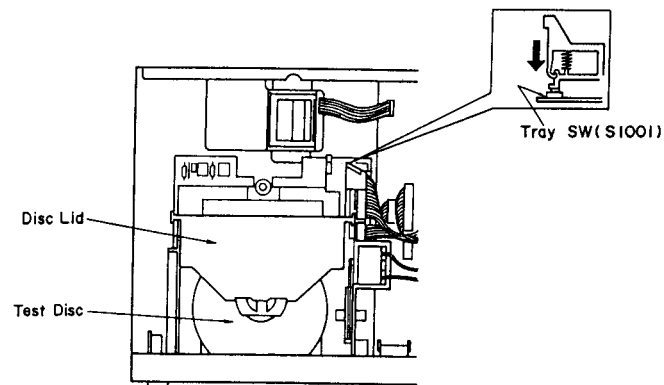
1. It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.)
With the unit turned "on", laser radiation is emitted from the pickup lens.
Avoid exposure to the laser beam, especially when performing adjustments.
2. During laser power or focus offset adjustment, never connect the other probe to the unit.
(Otherwise the unit's power supply will sustain damage.)



PREPARATION

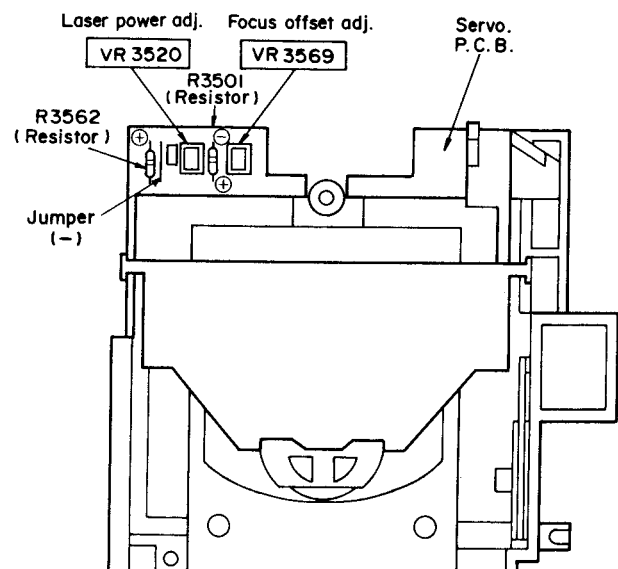
1. Remove the cabinet (see Ref No. 1 of the disassembly instructions).
2. Remove the disc holder (see Ref No. 9 of the same).
3. Place the test disc on the turntable.
4. Turn "ON" the power switch at the player.
5. Push the bracket of tray SW (S1001) in the direction of the arrow and release it.

Note: If the test disc fails to rotate, press the tray switch again.



ADJUSTMENT POINTS

• Servo P.C.B.



Measuring Instruments

- * Playability test disc (SZZP1054C).
- * Normal disc.

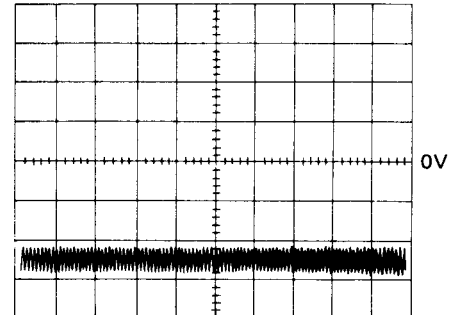
* Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1: 1 probe).

(1) LASER POWER ADJUSTMENT

1. Connect the oscilloscope's CH1 probe across (+) and (-) of **R3501** (Resistor) on the servo P.C.B.
2. Switch the player power ON, and play track No. 1 on the test disc (SZZP1054C).
3. Adjust **VR3520** so that the voltage is $-50 \pm 2\text{mV}$.

Oscilloscope setting:

VOLT20mV
 SWEEP0.2msec.
 INPUTDC

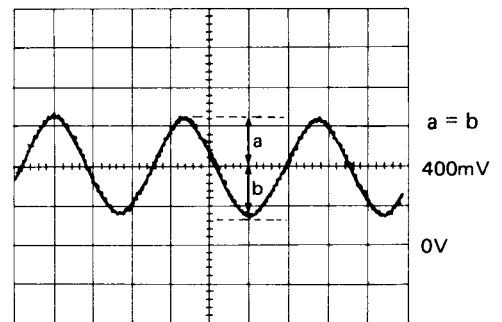


(2) FOCUS OFFSET ADJUSTMENT

1. Connect the oscilloscope's CH1 probe across **R3562** (Resistor) (+) and **Jumper** (-) on the servo P.C.B.
2. Switch the player power ON, and play track No. 1 on the test disc (SZZP1054C).
3. Adjust **VR3569** until the signal amplitude become in the center of **400mV**.

Oscilloscope setting:

VOLT200mV
 SWEEP5msec.
 INPUTDC



(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).

* Playability check by test disc

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

■ TERMINAL FUNCTION OF IC'S

• IC6501 (482220973234/TDA8808T): Photo diode signal processor

| Pin No. | Mark | I/O Division | Function |
|---------|-----------|--------------|--|
| 1 | GCHF | I | Gain control input of HF amplifier. Current output from HF amplitude detector |
| 2 | Vp | I | Positive supply voltage |
| 3 | HFout | O | HF amplifier and equalizer voltage output |
| 4 | DET | I | HF detector voltage input |
| 5 | Sc | I | Starting up capacitor input |
| 6 | Si/RD | I/O | On/off control (start input); ready signal output (starting up procedure successful) |
| 7 | Beg | I | Equalizer reference current input |
| 8 | Bgc | I | DC and LF gain control reference current input |
| 9 | FOC START | I | Focus normalizing circuit starting current |
| 10 | PLLH | O | PLL on hold output |
| 11 | TL | O | Track loss output |
| 12 | DODS | I | Drop out detector suppression input |
| 13 | Vext | I | Negative supply connection for FE and FElag output stage; also substrate connection |
| 14 | LPF | O | Low pass filter for Iret, used in track loss (TL) detector and LF gain control |

| Pin No. | Mark | I/O Division | Function |
|---------|--------|--------------|--|
| 15 | FE | O | Current output of normalized, switched focus error signal |
| 16 | FElag | O | Current output of switched focus error signal, intended for lag network |
| 17 | LO | O | Laser amplifier current output |
| 18 | LM | I | Laser monitor diode input |
| 19 | GCLF | I | Gain control input for AC and LF amplifiers. Current output from LF amplitude detector |
| 20 | Re2 | O | Summation of amplified currents from D3 and D4 |
| 21 | Re1 | O | Summation of amplified currents from D1 and D2 |
| 22, 23 | D1, D2 | I | Current inputs to DC and LF photo diode amplifier |
| 24, 25 | D3, D4 | I | Current inputs to DC and LF photo diode amplifier |
| 26 | HFin | I | Current input to HF amplifier |
| 27 | GND | I | Ground connection of device |
| 28 | DEC | I | Decoupling input (internal bypass) |

• IC6503 (482220973235/TDA8809T): Radial error signal processor

| Pin No. | Mark | I/O Division | Function |
|---------|----------|--------------|---|
| 1 | Vp | I | Positive supply voltage |
| 2 | Cosc1 | I | Frequency setting capacitors for oscillator |
| 3 | Cosc2 | | |
| 4 | Rwob | I | Wobble generator input |
| 5 | Rosc | I | Biassing resistor for oscillator frequency and internal amplitude |
| 6 | DIV4 | I | Radial error digital signal divided by four |
| 7 | REdig | O | Digital output of sign (Re2 - Re1) |
| 8 | B3 | I | Input control bits for off-, catch-, play-status and DAC output current |
| 9 | B2 | | |
| 10 | B1 | | |
| 11 | B0 | | |
| 12 | Vext (+) | I | Positive external voltage input |
| 13 | Vext (-) | I | Negative external voltage input (also substrate connection) |
| 14 | GND | I | GND terminal |
| 15 | RADout | O | Current output of amplified (Re2 - Re1) input currents |
| 16 | REin | I | Radial error input |
| 17 | RElag | O | Voltage output of integrated (Re2 - Re1) input currents |

| Pin No. | Mark | I/O Division | Function |
|---------|------------|--------------|---|
| 18 | Lag | I | Connection of integrator capacitor for (Re1 - Re2) input currents |
| 19 | Lead | O | Lead output |
| 20 | Vref | I | Internal reference voltage output |
| 21 | AGC | I | Gain control input for radial error signal |
| 22 | RDAC | O | Biassing resistor for current output for track jumping (3 ¹ / ₂ bits) |
| 23 | offset in | I | Offset control input for radial offset |
| 24 | offset off | O | Offset control output for radial offset |
| 25 | CLPF | I | Low-pass filter for Re1 and Re2, used for radial offset control |
| 26 | CHPF | I | High-pass filter for Re1 and Re2, used for radial offset control |
| 27 | Re1 | I | Input for amplified currents from photo diodes D1 and D2 |
| 28 | Re2 | I | Input for amplified currents from photo diodes D3 and D4 |

• IC301 (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 | DSLIF | I/O | DSL loop filter terminal |
| 6 | PLLIF | 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 16 | TBUS7 TBUS0 | O | Test terminal |
| 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 (Not used, open) |
| 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 | DEMPH | O | De-emphasis ON signal ("H": ON) |
| 41 | MEMP | 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 ("L": 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) |

• IC401 (MN1871617PKJ): System control & FL drive

| Pin No. | Mark | I/O Division | Function |
|---------------|-----------------|--------------|---|
| 1 | VDD | I | Power supply terminal |
| 2 | OSC2 | I | System clock input (f=4.2336MHz) |
| 3 | OSC1 | | |
| 4 | VSS | — | GND terminal |
| 5 | XI | I | Radial error digital signal |
| 6 | XO | O | Not Used, open |
| 7 | P47 | I | |
| 8 } 12 | P46 } P42 | I | Key return signal |
| 13 | SYNC REC | O | Synchro rec control |
| 14 | REC ENABLE | I | |
| 15 } 18 | D3 } D0 | — | Not used, open |
| 19 | CLK | — | Not used, open |
| 20 | ACK | | |
| 21 | BSEND | | |
| 22 | BRECV | | |
| 23 | P27 | | |
| 24 | OPEN/CLOSE | O | Loading motor control signal |
| 25 | DMUTE | O | Muting output ("H": MUTE) |
| 26 | SI/RD | I/O | On/off control and ready signal |
| 27 } 30 | B3 } B0 | O | Control bits for off-, catch-, play-status and DAC output current |
| 31 | REMOCON | I | Remote control signal |
| 32 | REDIG | I | Radial error digital signal |
| 33 | MDATA | O | Command data signal |
| 34 | MCLK | O | Command clock signal |
| 35 | MLD | O | Command load signal ("L": LOAD) |

| Pin No. | Mark | I/O Division | Function |
|---------------|-----------------------|--------------|---|
| 36 | TL | I | Track loss input |
| 37 | RST | I | Reset terminal |
| 38 | SQCK | O | Sub-code Q register clock |
| 39 | SUBQ | I | Sub-code Q data |
| 40 | TRAY SW | I | Disc holder open/close det. terminal |
| 41 | BLKCK | I | Sub-code block clock (f=75Hz) |
| 42 | DODS | O | Drop-out detect signal |
| 43 | STAT | I | Status signal (CRC, CUE, CLVS, TTSTOP, FCLV, SQOK) |
| 44 | P95 | — | Not used, open |
| 45 | CLVS | I | Spindle servo phase synchro signal ("H": CLV, "L": Rough servo) |
| 46 | TRON | O | Tracking servo ON signal ("L": ON) |
| 47 | DIV4 | O | Radial error digital signal divided by four |
| 48 | EMPH | O | Emphasis signal |
| 49 | HFD | I | PLL on hold input |
| 50 | CM | — | Not used, connected to GND |
| 51 | 130Hz | — | Not used, open |
| 52 | VPP | I | Power supply terminal for FL drive |
| 53 } 56 | 16G } 13G | — | Not used, open |
| 57 } 68 | 12G } 1G | O | FL digit signal |
| 69 } 84 | A/SEGO } P/SEGP | O | FL segment signal and key scan signal |

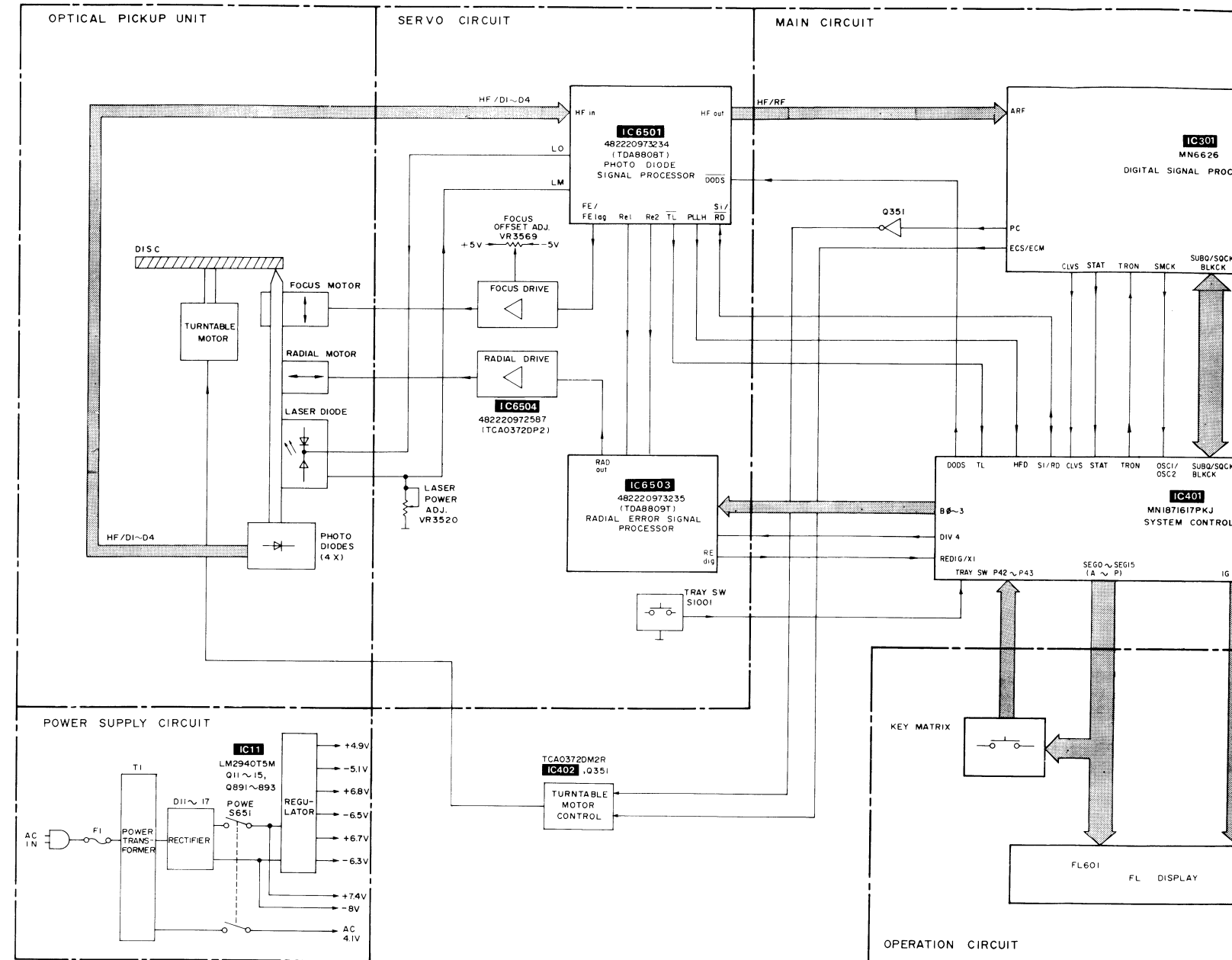
• IC801 (MN6474): Digital filter and D/A converter

| Pin No. | Mark | I/O Division | Function |
|---------|----------|--------------|---|
| 1 | MLD | I | Command load input (load: L) (Not used, connected to VDD) |
| 2 | RSTB | I | Reset terminal |
| 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 terminal |
| 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 terminal |
| 16 | NC | — | Not connected |
| 17 | AVDD2 | I | Power supply terminal |
| 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 |
| 22 | AVDD1 | I | Power supply terminal |
| 23 | DVDD1 | I | Power supply terminal |

| Pin No. | Mark | I/O Division | Function |
|---------|--------|--------------|---|
| 24 | DVSS1 | I | GND terminal (digital system) |
| 25 | X2 | O | Crystal OSC terminal (33MHz) |
| 26 | X1 | I | |
| 27 | NC | — | Not connected |
| 28 | DVDD2 | I | Power supply terminal |
| 29 | DVSS2 | I | GND terminal (digital system) |
| 30 | NSUB | I | Sub-strate terminal (Not used, connected to VDD) |
| 31 | ZFLGB | O | Zero input detector terminal (Not used, open) |
| 32 | 192fs | O | 192fs (8.4672MHz) (Not used, open) |
| 33 | LRPOL | I | LR clock selector (Not used, connected to VDD) |
| 34 | LRCLK | I | LR discrimination signal input |
| 35 | BCLK | I | Serial bit clock input |
| 36 | SRDATA | I | Serial data input (MSB first) |
| 37 | DVSS3 | I | GND terminal (digital system) |
| 38 | DVDD | I | Power supply terminal |
| 39 | 384fs | O | 384fs (16.9344 MHz) output |
| 40 | PD | I | Power down terminal (Not used, connected to GND) |
| 41 | MDATA | I | Mode control data (Not used, connected to VDD) |
| 42 | MCLK | I | Data clock for MDATA (not used, connected to VDD) |

■ BLOCK DIAGRAM

Note)
 • → Audio signal.



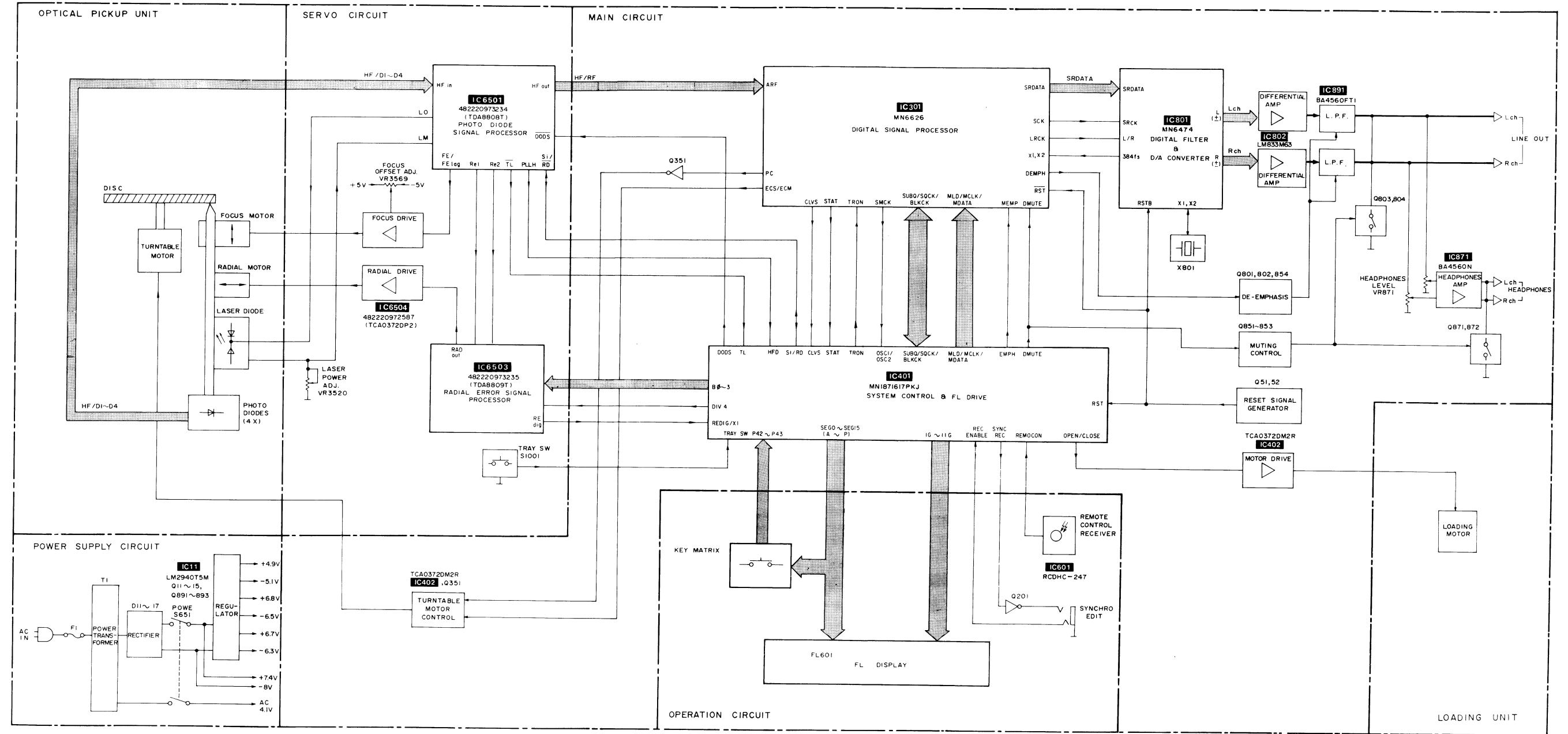
RAD out : Current output of integrated (Re2-Re1) input currents.
 B0~B3 : Control bits for radial circuit.
 DODS : Drop out detect signal.
 D1~D4 : Photodiode currents.
 FE : Focus error signal.
 FE lag : Focus error signal for LAG network.
 HF out : HF amplifier and equalizer voltage output.
 HFin : HF current input.
 LM : Laser monitor diode input.
 LO : Laser amplifier current output.
 Re1 : Radial error signal 1 (summation of amplified currents D3 and D4).
 Re2 : Radial error signal 2 (summation of amplified currents D1 and D2).

RE dig (RE DIG/X1) : Radial error digital.
 RE lag : Radial error signal for LAG network.
 Si/RD : On/off control for laser supply and focus circuit.
 TL : Track loss signal.
 Div4 : Radial error digital divided by four.
 HF/RF/ARF : RF (Audio) signal.
 TRAY SW : Disc holder open/close det. terminal.
 CLVS : Spindle servo phase synchro signal.
 STAT : Status command for CRC etc.
 DMUTE : Data mute command.
 MDATA : Mode control data.
 MLD : Load command for mode control data (Active Low).

P42~46 : Key
 1G~12G : FL
 SEG0~15 : FL
 MCLK : Data
 SUBQ : Sub
 CLDCK : Data
 BLKCK : Sub
 SQCK : Sub
 RST : Res
 (RSTB)
 TRON : Tra
 ECS/ECM : Tur
 PC : Tur
 SMCK : Sys
 (OSC1/OSC2)

BLOCK DIAGRAM

Note)
 • → Audio signal.



RAD out : Current output of integrated (Re2-Re1) input currents.
 B0~B3 : Control bits for radial circuit.
 D0DS : Drop out detect signal.
 D1~D4 : Photodiode currents.
 FE : Focus error signal.
 FE lag : Focus error signal for LAG network.
 HF out : HF amplifier and equalizer voltage output.
 HFin : HF current input.
 LM : Laser monitor diode input.
 LO : Laser amplifier current output.
 Re1 : Radial error signal 1 (summation of amplified currents D3 and D4).
 Re2 : Radial error signal 2 (summation of amplified currents D1 and D2).

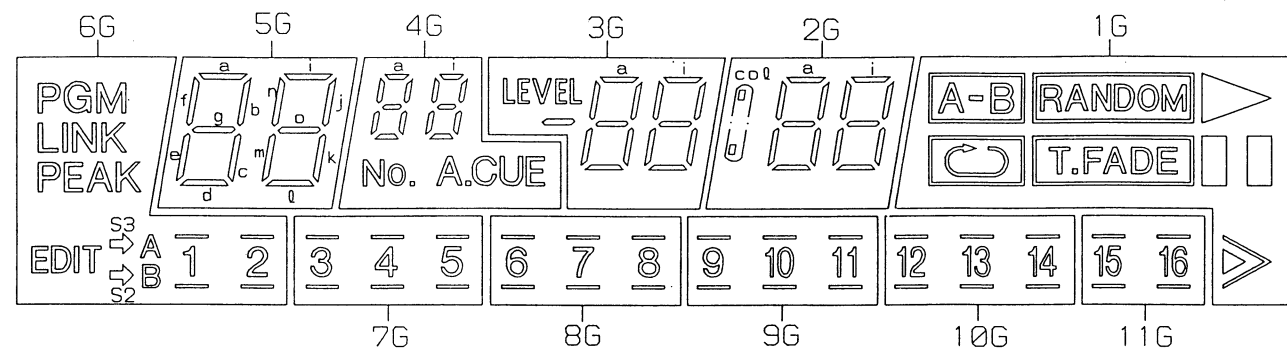
RE dig : Radial error digital.
 (RE DIG/X1)
 RE lag : Radial error signal for LAG network.
 Si/RD : On/off control for laser supply and focus circuit.
 TL : Track loss signal.
 Div4 : Radial error digital divided by four.
 HF/RF/ARF : RF (Audio) signal.
 TRAY SW : Disc holder open/close det. terminal.
 CLVS : Spindle servo phase synchro signal.
 STAT : Status command for CRC etc.
 DMUTE : Data mute command.
 MDATA : Mode control data.
 MLD : Load command for mode control data (Active Low).

P42~46 : Key return signal.
 1G~12G : FL digit signal.
 SEG0~15 : FL segment signal and key scan signal.
 MCLK : Data clock for MDATA.
 SUBQ : Sub-code Q data.
 CLDCK : Data frame clock (7.35 KHz).
 BLKCK : Sub-code Q data block clock (75 Hz).
 SQCK : Sub-code Q register clock.
 RST : Reset command (Active Low).
 (RSTB)
 TRON : Tracking servo ON command (Active Low).
 ECS/ECM : Turntable motor drive signal.
 PC : Turntable motor ON command (Active Low).
 SMCK : System clock (4.2336 MHz).
 (OSC1/OSC2)

LRCK/L/R : L/R data discrimination clock (88.2KHz).
 SRDATA : Serial data output (MSB first).
 SCK : Serial bit clock (2.82MHz).
 (SRCK)
 MEMP/EMPH : De-emphasis command (Active High).
 SYNC REC/ : Synchro rec control.
 REC ENABLE : Remote control signal.
 REMOCON : Remote control signal.
 384fs/X1, X2 : 384fs (16.9344MHz) signal.
 DEMPH : De-emphasis ON signal.
 L (±) : Lch data signal.
 R (±) : Rch data signal.
 OPEN/CLOSE : Loading motor control signal.

INTERNAL CONNECTION OF FL

Grid connection diagram



Anode connection table

| | | | | | | | | | | | |
|-----|------|------|------|-----|-----|----------|----|-------|-------|-----|--------|
| | 11G | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
| P1 | 15 | 12 | 9 | 6 | 3 | EDIT A/B | a | a | a | a | ▶ |
| P2 | (15) | (12) | (9) | (6) | (3) | S2 | b | b | b | b | □□ |
| P3 | (15) | (12) | (9) | (6) | (3) | S3 | f | f | f | f | RANDOM |
| P4 | 16 | 13 | 10 | 7 | 4 | 1 | g | g | g | g | T.FADE |
| P5 | (16) | (13) | (10) | (7) | (4) | (1) | c | c | c | c | ⌂ |
| P6 | (16) | (13) | (10) | (7) | (4) | (1) | e | e | e | e | A- |
| P7 | - | 14 | 11 | 8 | 5 | 2 | d | d | d | d | □B |
| P8 | - | (14) | (11) | (8) | (5) | (2) | - | No. | - | col | ▷ |
| P9 | - | (14) | (11) | (8) | (5) | (2) | i | i | i | i | > |
| P10 | - | - | - | - | - | PGM | j | j | j | j | - |
| P11 | - | - | - | - | - | LINK | n | n | n | n | - |
| P12 | - | - | - | - | - | - | o | o | o | o | - |
| P13 | - | - | - | - | - | PEAK | k | k | k | k | - |
| P14 | - | - | - | - | - | - | m | m | m | m | - |
| P15 | - | - | - | - | - | - | l | l | l | l | - |
| P16 | - | - | - | - | - | - | - | A.CUE | LEVEL | - | - |

Pin connection

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIN NO. | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| CONNECTION | F | F | N | N | P | P | P | P | P | P | P | P | P | P | P | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | N | N | F | F | F | F | F | F | F | F | F | F |

SCHEMATIC DIAGRAM

(Parts list on page 31, 32, 38, 39.)

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

- Notes:**
- S613 : Play (▶) PLAY switch.
 - S614 : Skip (◀◀) SKIP switch.
 - S615 : Search (◀◀) SEARCH switch.
 - S616 : Program (PROGRAM) switch.
 - S617 : Disc link (DISC LINK) switch.
 - S618 : Auto cue (AUTO CUE) switch.
 - S619 : Stop (■) STOP switch.
 - S620 : Skip (▶▶) SKIP switch.
 - S621 : Search (▶▶) SEARCH switch.
 - S622 : Recall (RECALL) switch.
 - S623 : Tape-side select (SIDE A/B) switch.
 - S624 : Random play (RANDOM) switch.
 - S625 : Time fade (TIME FADE) switch.
 - S626 : Disc holder open/close (▲) OPEN/CLOSE switch.
 - S627 : Pause (||) PAUSE switch.
 - S628 : Repeat (REPEAT) switch.
 - S629 : Clear (CLEAR) switch.
 - S630 : Edit tape length (TAPE LENGTH) switch.
 - S631 : Time mode select (TIME MODE) switch.
 - S632 : Peak level search (PEAK SEARCH) switch.
 - S651 : Power "STANDBY Ⓛ /ON" (POWER) switch in "on" position.
 - S1001 : Tray (OPEN/CLOSE) 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 1 kHz, L+R, 0dB), others are voltage values in stop mode.

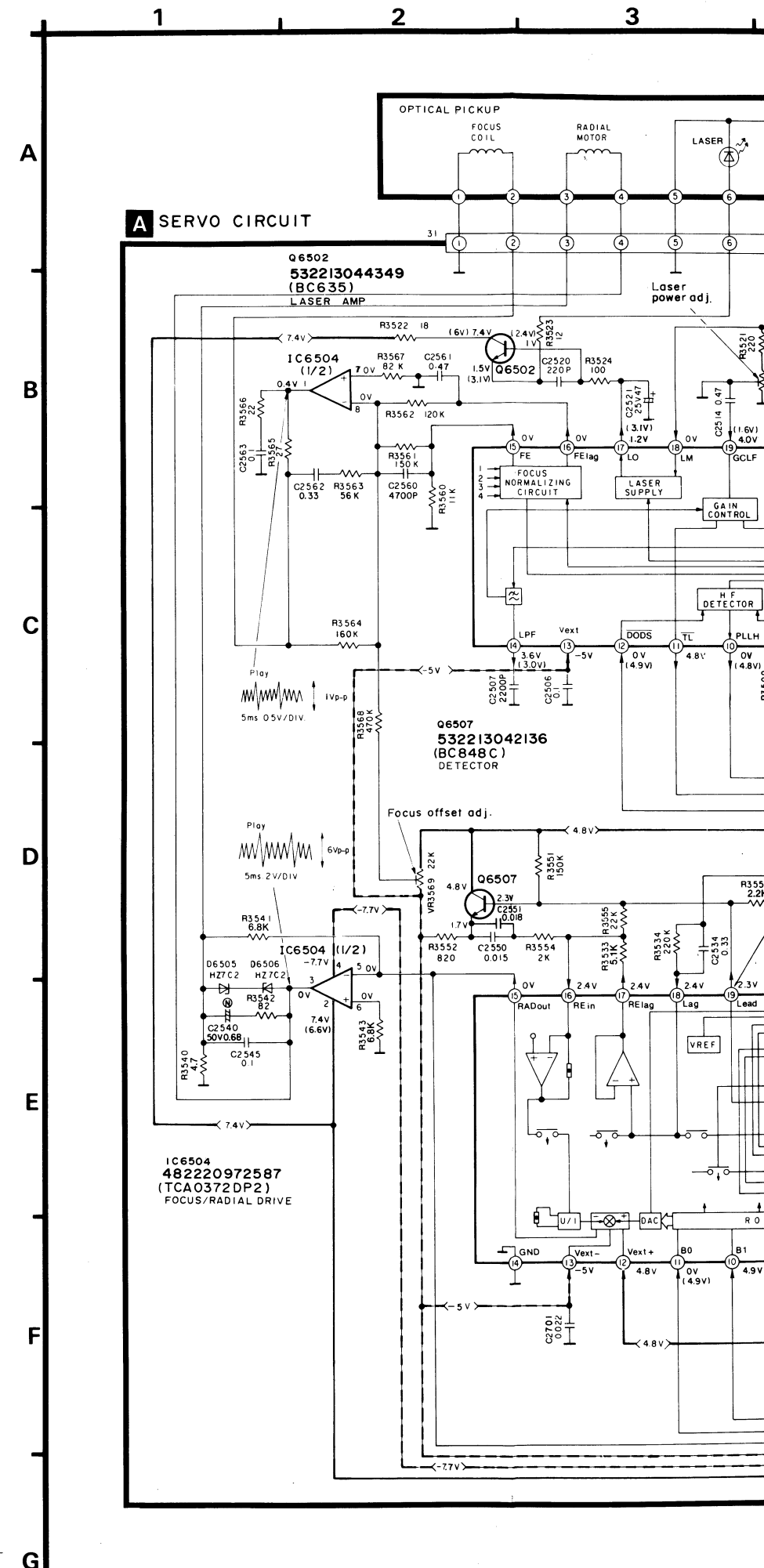
Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

| Part No. | Original Part No. | Supply Part No. |
|----------|-------------------|-----------------|
| IC11 | LM2940T5M | LM2940T5 |
| IC601 | RCDHC-247 | RCD0003 |
| IC891 | BA4560FT1 | SVIBA4560FT1 |

———— / ———— : Positive voltage lines and negative voltage lines.
⋄⋄⋄⋄⋄ : Audio signal lines.

Caution!

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



SCHEMATIC DIAGRAM

(Parts list on page 31, 32, 38, 39.)

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

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

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

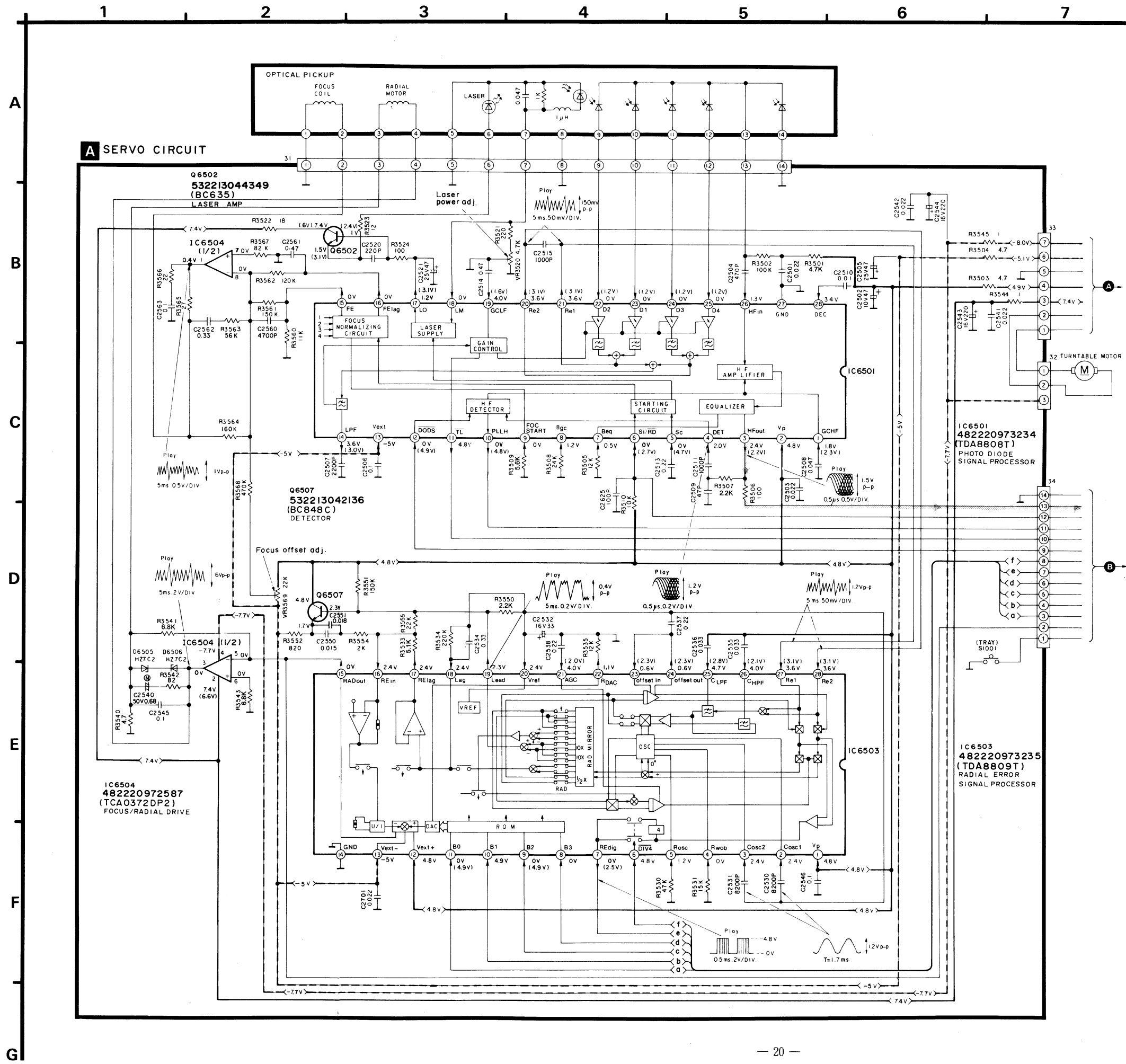
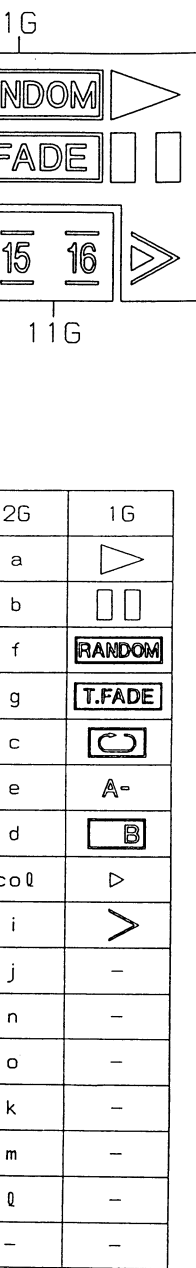
Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

| Part No. | Original Part No. | Supply Part No. |
|----------|-------------------|-----------------|
| IC11 | LM2940T5M | LM2940T5 |
| IC601 | RCDHC-247 | RCD0003 |
| IC891 | BA4560FT1 | SVIBA4560FT1 |

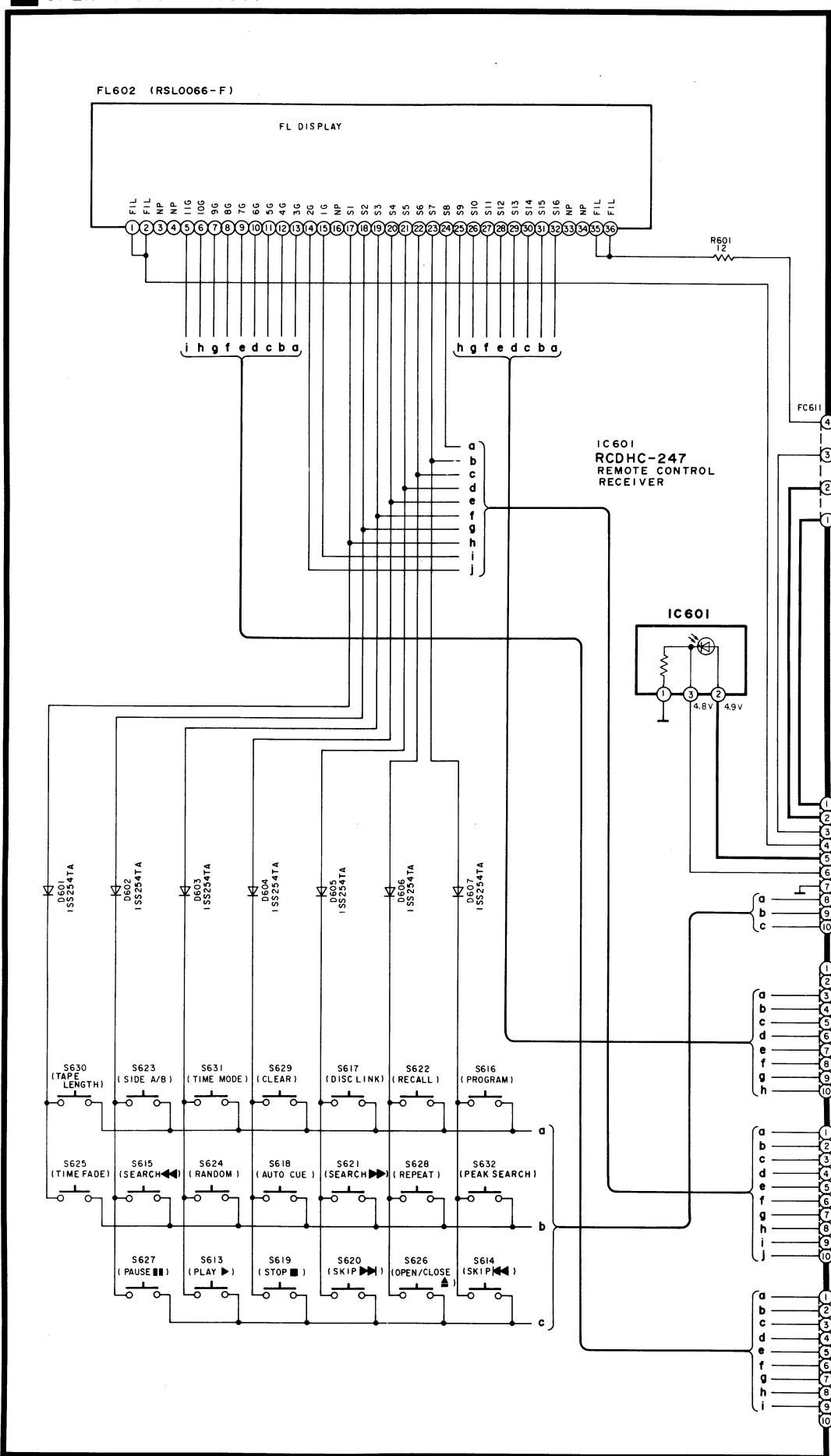
— / - - - - : Positive voltage lines and negative voltage lines.
 ~~~~~ : Audio signal lines.

**Caution!**

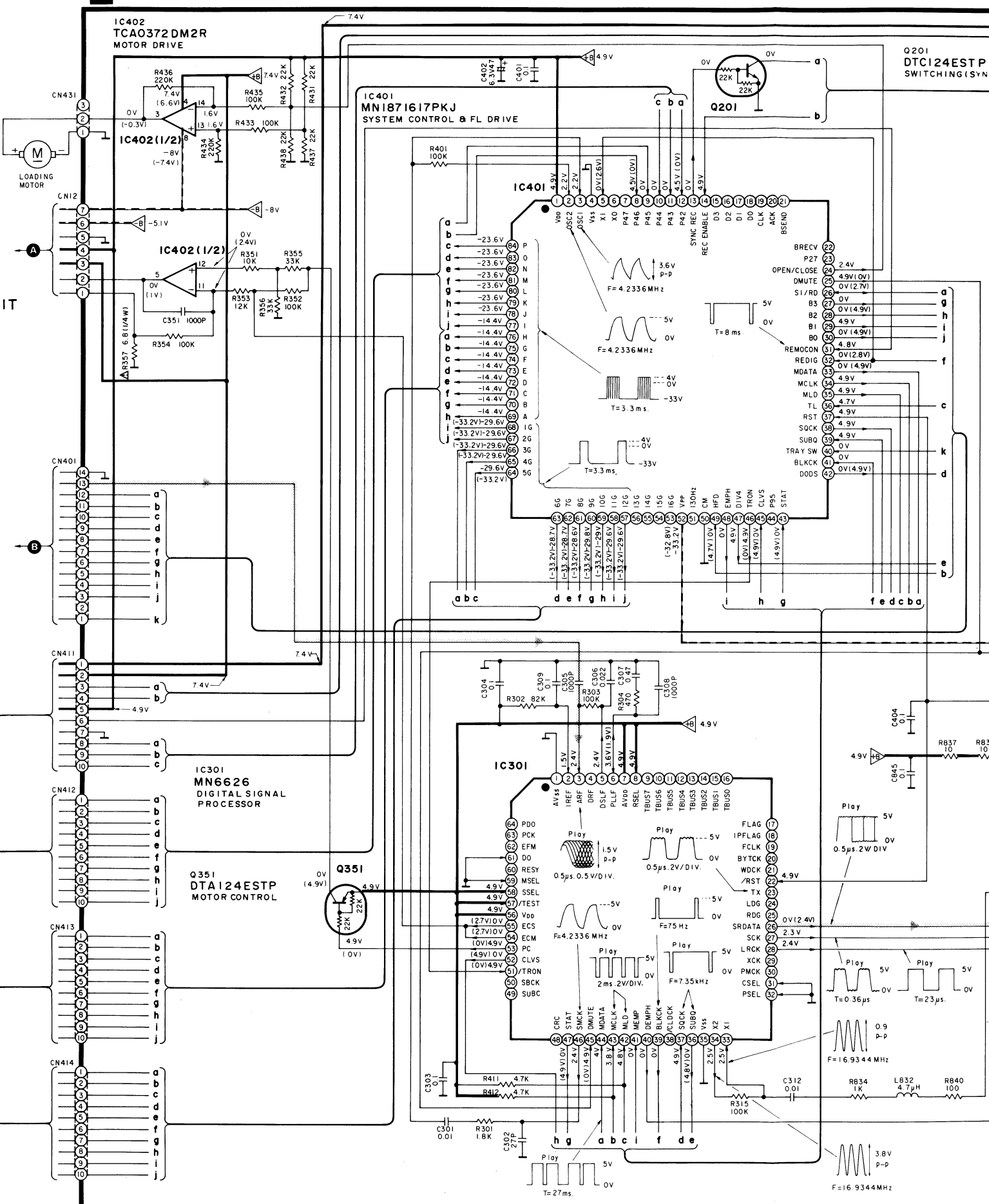
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
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- Do not touch the pins of IC or LSI with fingers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

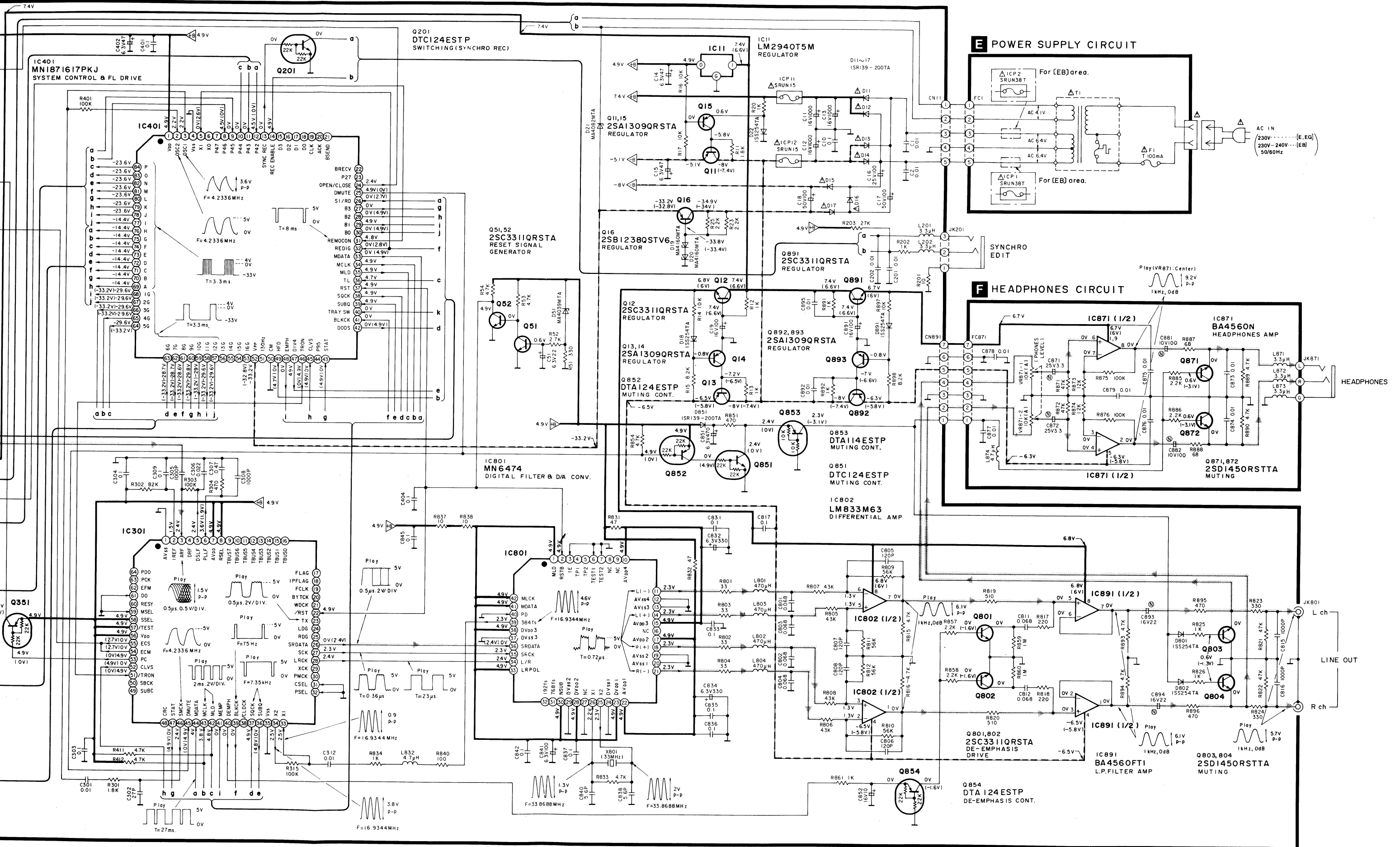


B OPERATION CIRCUIT

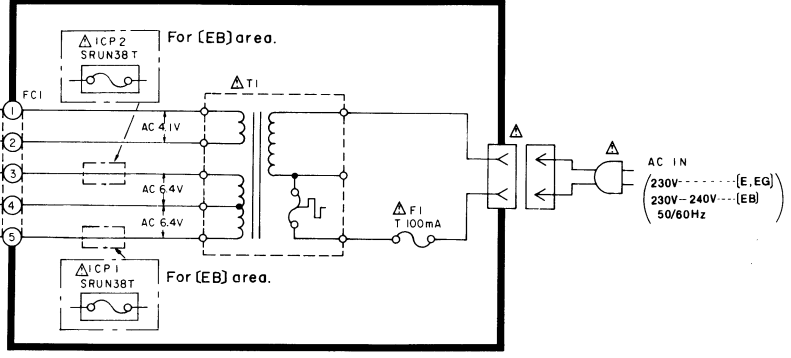


D MAIN CIRCUIT

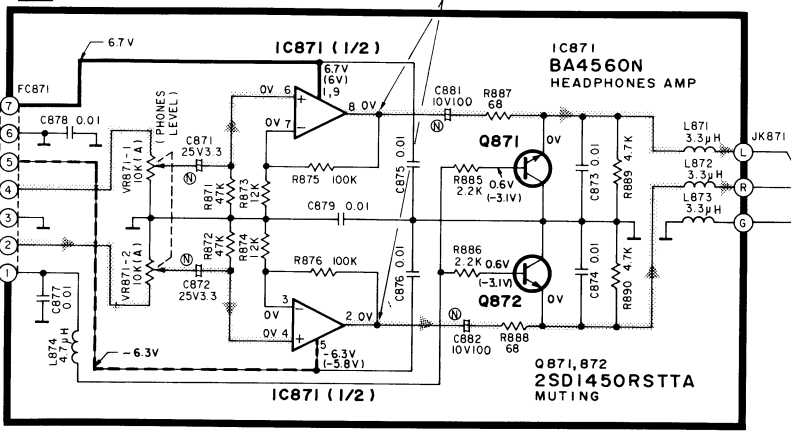




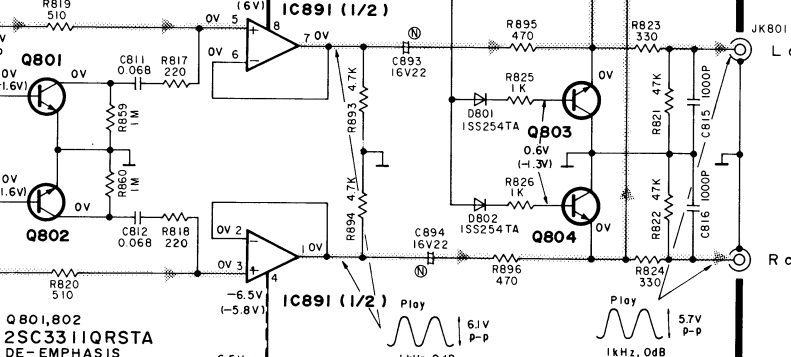
E POWER SUPPLY CIRCUIT



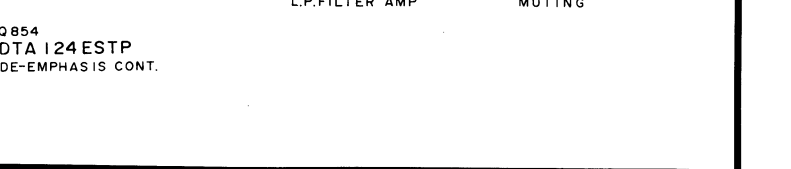
F HEADPHONES CIRCUIT

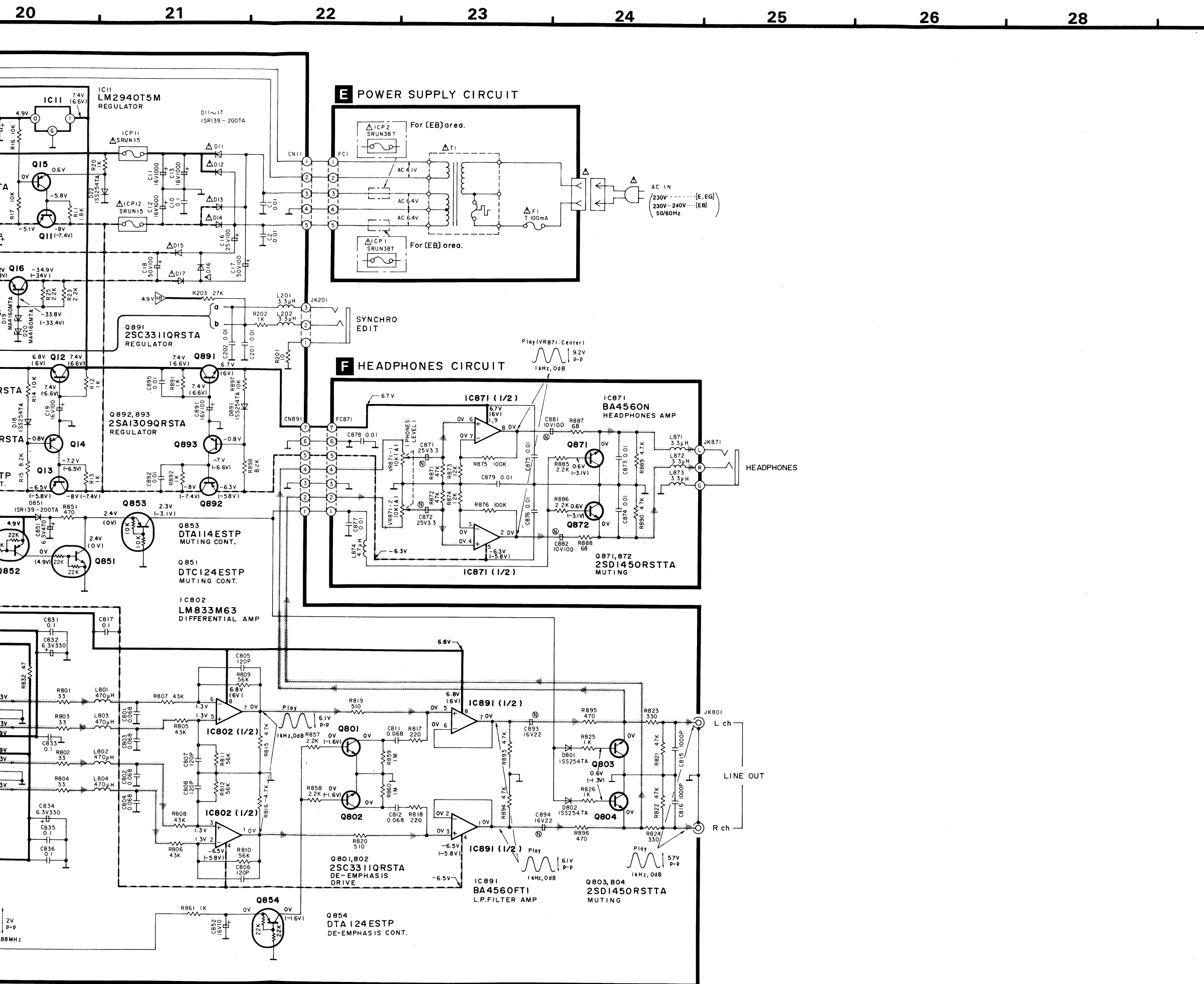


IC801,802 2SC3311QRSTA DE-EMPHASIS DRIVE



IC891,804 BA4560FT1 L.P. FILTER AMP



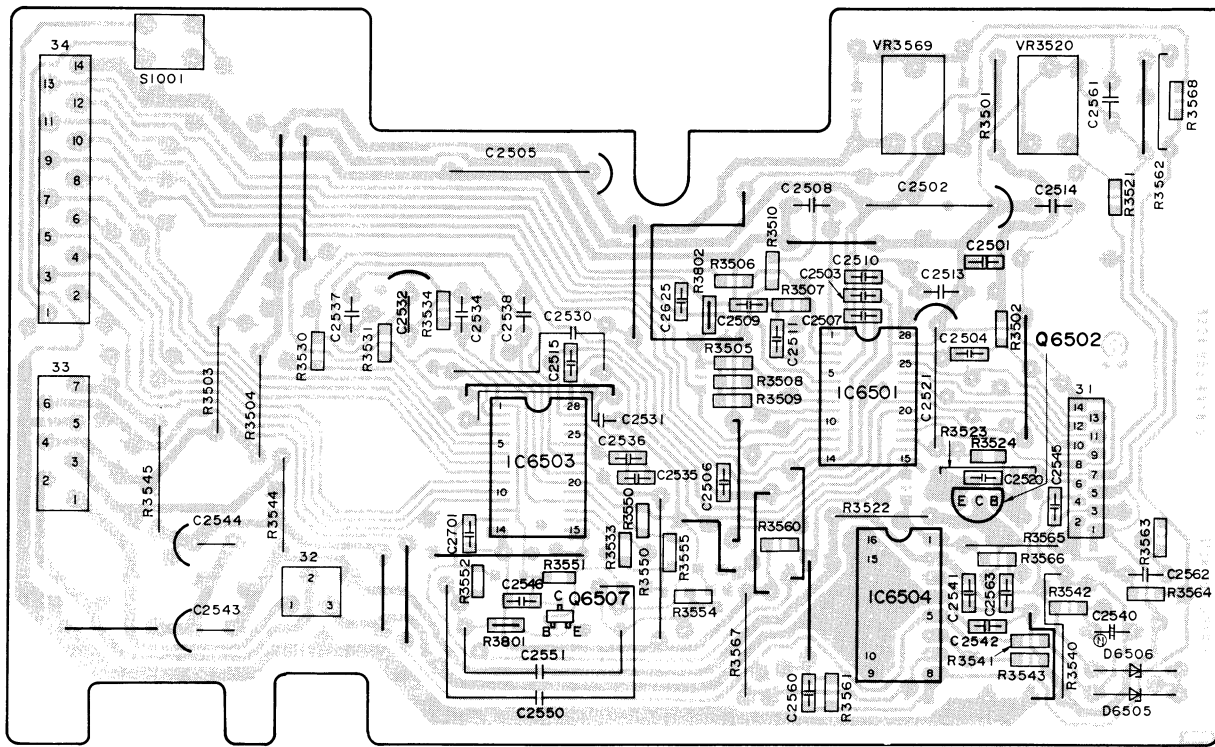


**TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES**

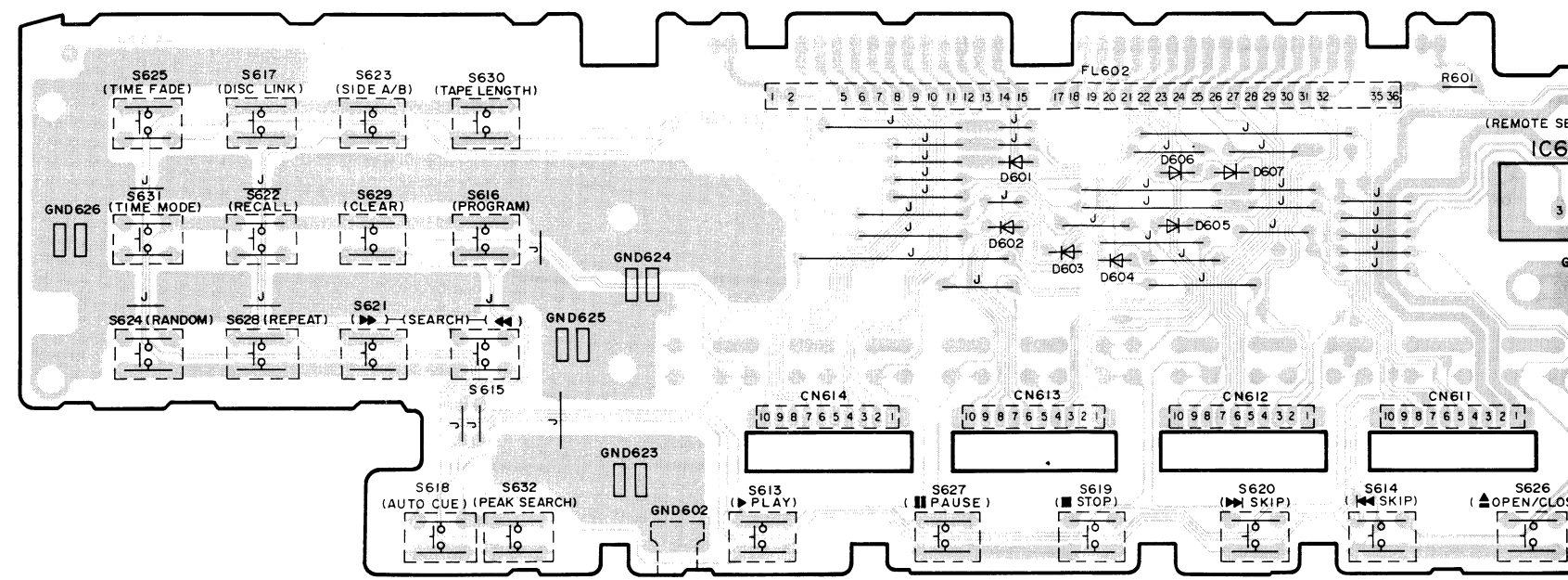
|                                           |                                                            |                                                         |
|-------------------------------------------|------------------------------------------------------------|---------------------------------------------------------|
| <p>BA4560FT1</p>                          | <p>LM833M63</p>                                            | <p>TCA0372DM2R</p>                                      |
|                                           | <p>482220973234 (TDA8808T)<br/>482220973235 (TDA8809T)</p> | <p>482220972587 (TCA0372DP2)</p>                        |
| <p>MN6474</p>                             | <p>MN6626</p>                                              | <p>MN1871617PKJ</p>                                     |
| <p>BA4560N</p>                            | <p>LM2940T5M</p> <p>1. Vin<br/>2. GND<br/>3. Vout</p>      | <p>RCDHC-247</p>                                        |
|                                           | <p>DTA114ESTP<br/>DTA124ESTP<br/>DTC124ESTP</p>            | <p>2SA1309QRSTA<br/>2SC3311QRSTA<br/>2SD1450RSTTA</p>   |
| <p>2SB1238QSTV6</p>                       | <p>532213044349 (BC635)</p>                                | <p>532213042136 (BC848C)</p>                            |
| <p>1SS254TA</p> <p>Anode<br/>Cathode</p>  | <p>1SR139-200TA</p> <p>Anode<br/>Cathode</p>               | <p>MA4039MTA<br/>MA4082MTA</p> <p>Anode<br/>Cathode</p> |
| <p>MA4160MTA</p> <p>Anode<br/>Cathode</p> |                                                            |                                                         |

# PRINTED CIRCUIT BOARDS

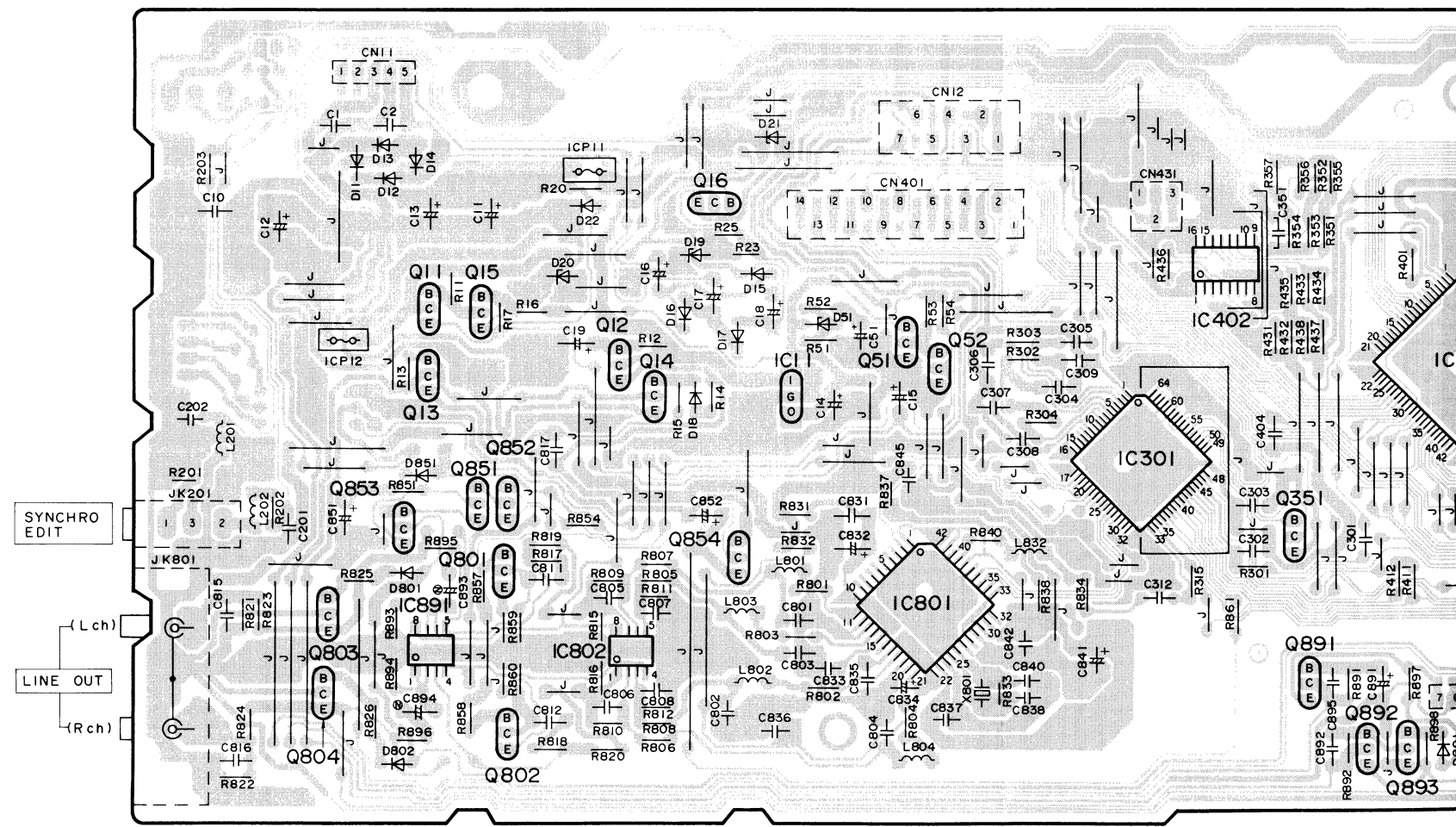
## A SERVO P.C.B.



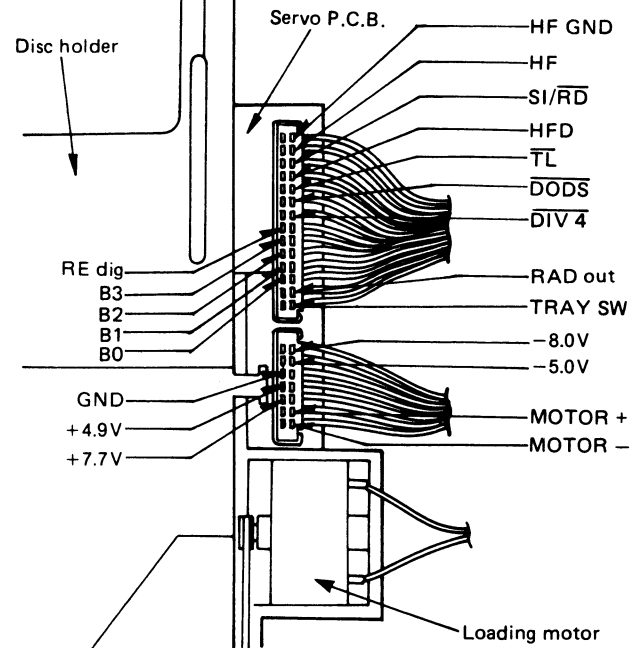
## B OPERATION P.C.B.



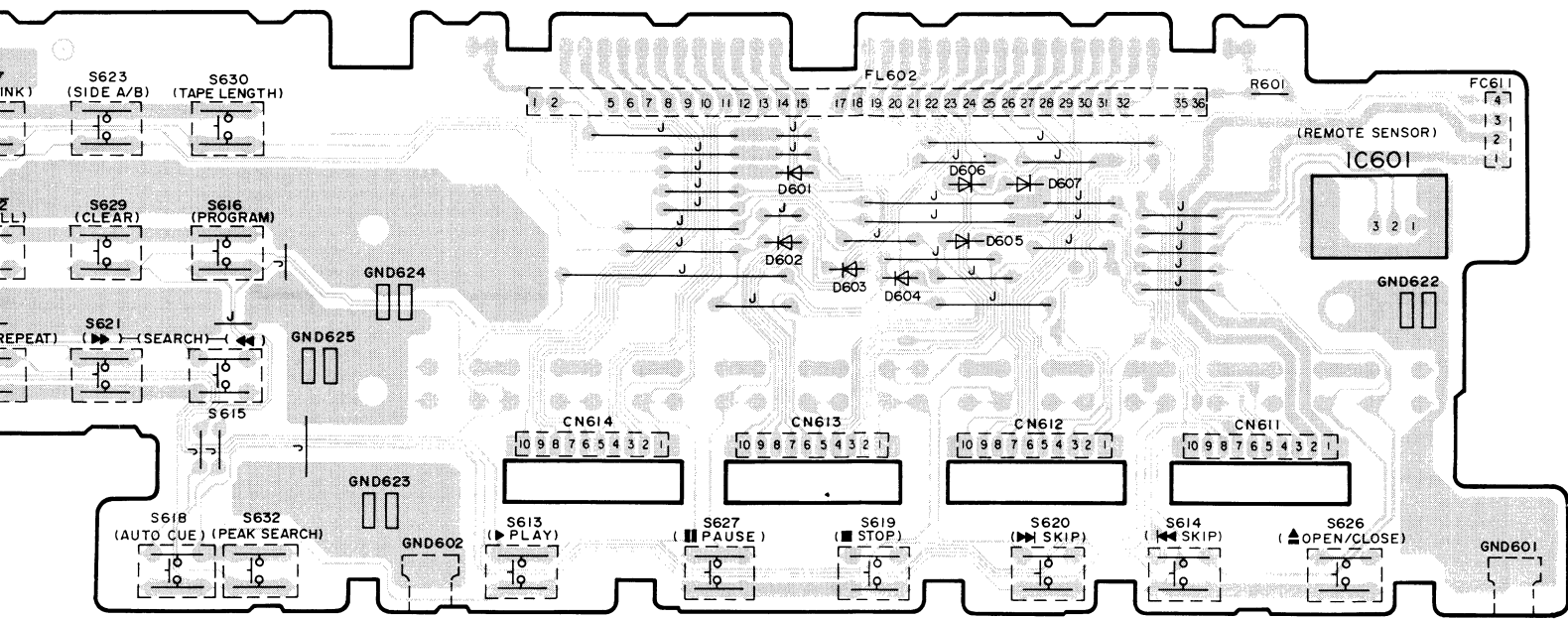
## D MAIN P.C.B.



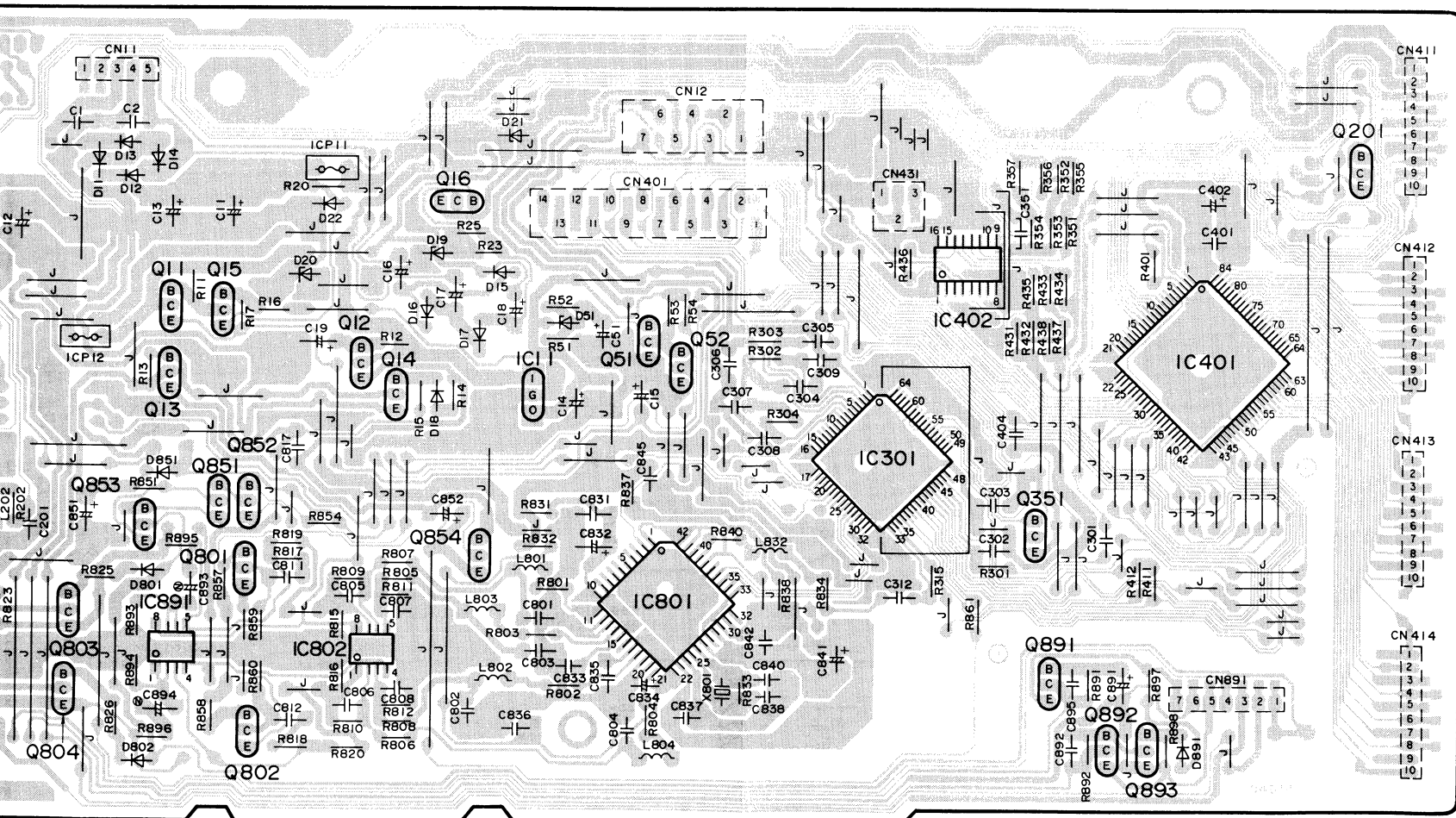
**Note:** Use connector pins to check servo circuit voltages and waveforms.



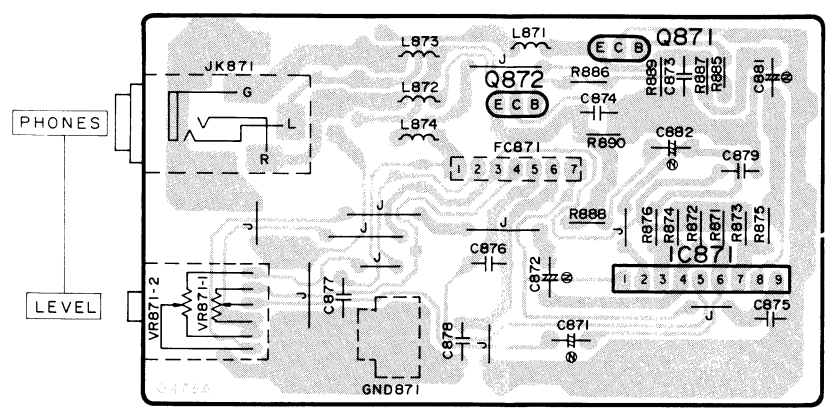
C. B.



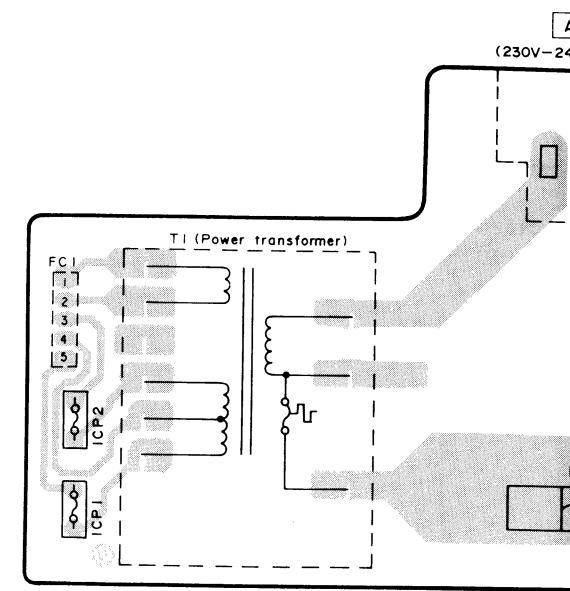
P.C.B.



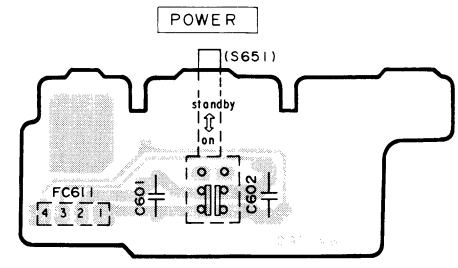
**F** HEADPHONES P.C.B.



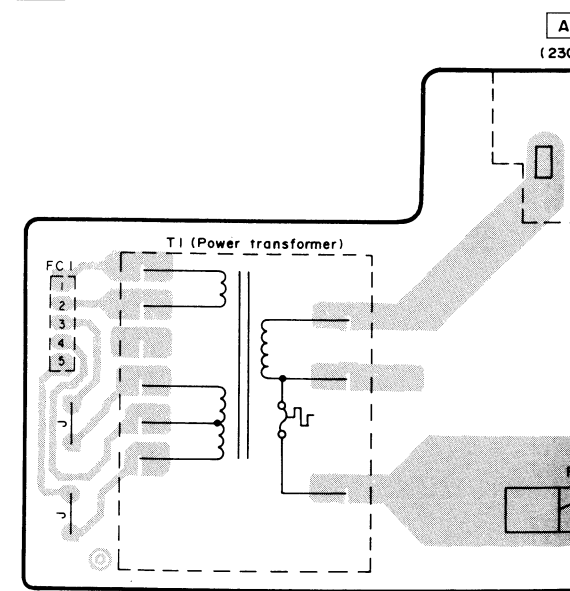
**E** POWER SUPPLY P.C.B. For(EB) area.



**C** POWER SWITCH P.C.B.

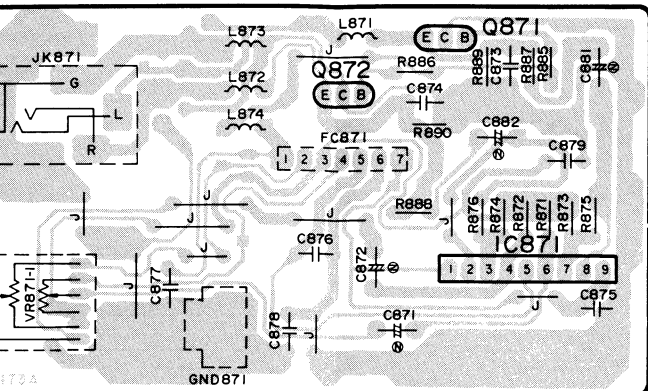


**E** POWER SUPPLY P.C.B. For(E,EG) area.

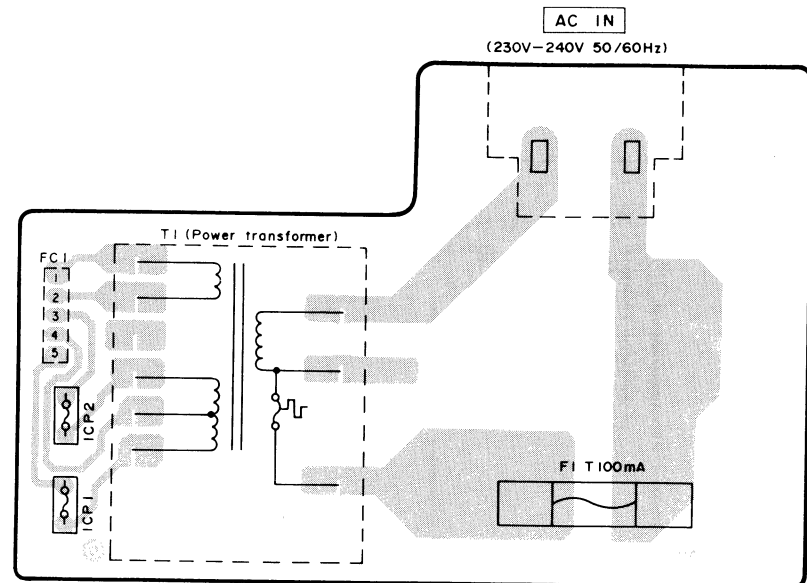


WIRING CONNECTION DIAGRAM

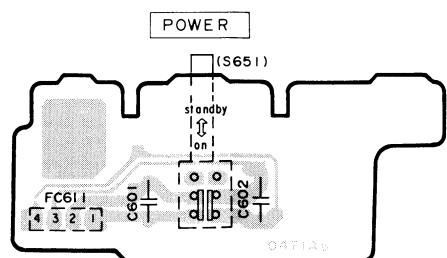
F HEADPHONES P.C.B.



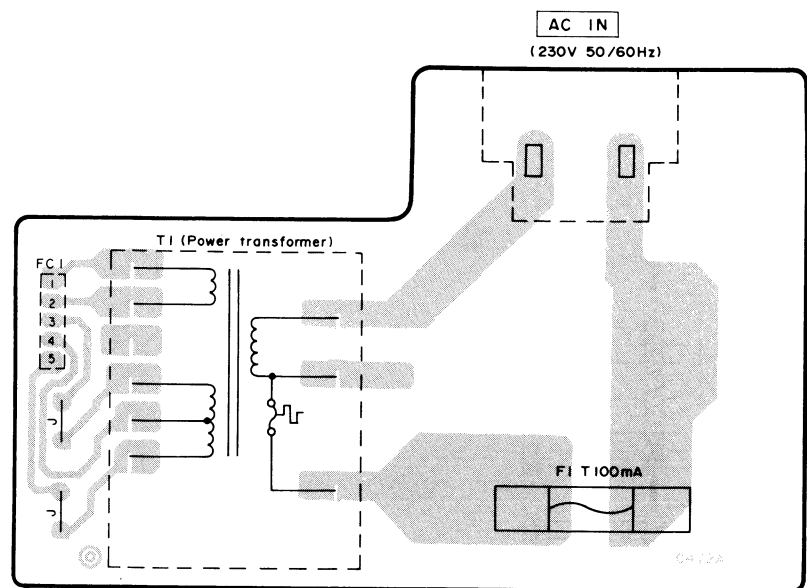
E POWER SUPPLY P.C.B. For(EB) area.



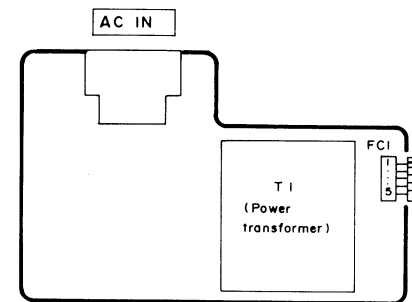
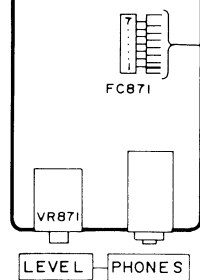
C POWER SWITCH P.C.B.



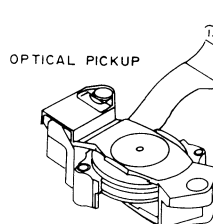
E POWER SUPPLY P.C.B. For(E,EG) areas



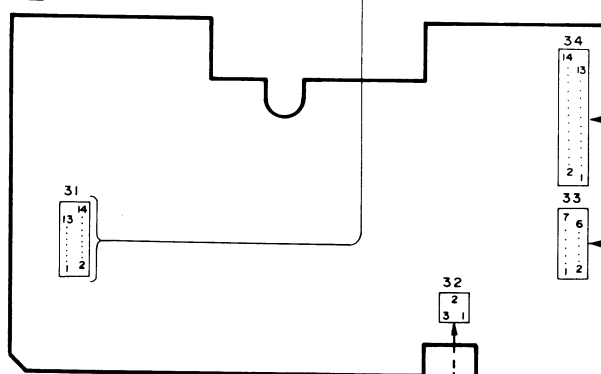
F HEADPHONES P.C.B.



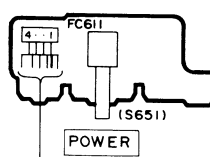
E POWER SUPPLY P.C.B.



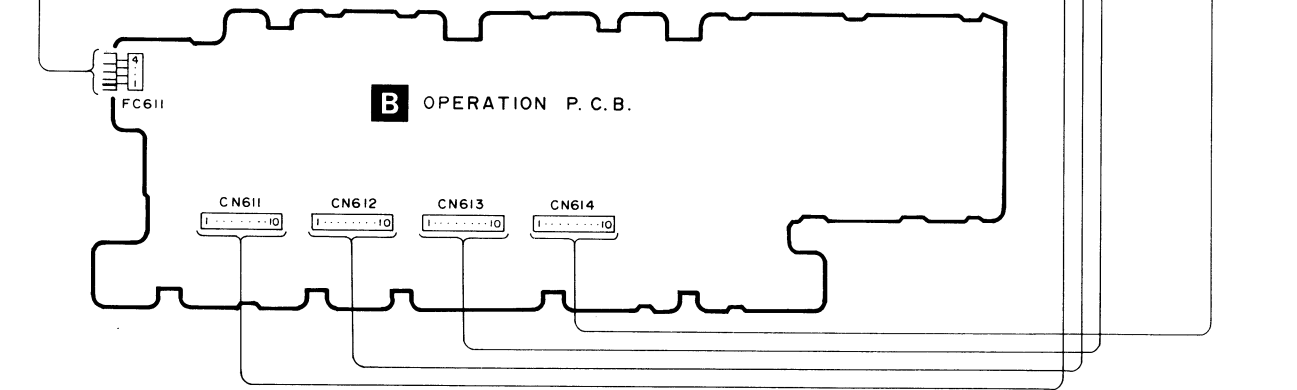
A SERVO P.C.B.



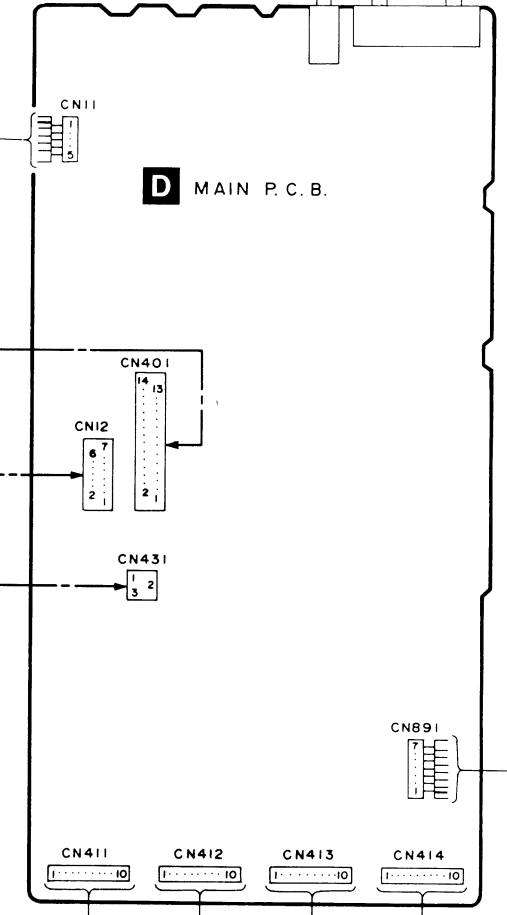
C POWER SWITCH P.C.B.



B OPERATION P.C.B.



D MAIN P.C.B.



SYNCHRO EDIT

LINE OUT

(L ch) (R ch)

LEVEL PHONES



## 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.

\* Remote Control Ass'y:

Supply period for three years from termination of production.

\*  $\square$  indicates in Remarks columns parts that are supplied by MBV.

\* 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            |
|-----------|--------------|------------------------------|-----------|-----------|--------------|-------------------------|--------------------|
|           |              |                              |           |           |              | IC PROTECTOR(S)         |                    |
|           |              | INTEGRATED CIRCUIT(S)        |           |           |              |                         |                    |
| IC11      | LM2940T5     | IC, REGULATOR                |           | ICP1, 2   | SRUN38T      | IC PROTECTOR            | (EB) $\Delta$      |
| IC301     | MN6626       | IC, DIGITAL SIGNAL PROCESSOR |           | ICP11, 12 | SRUN15       | IC PROTECTOR            | $\Delta$           |
| IC401     | MN1871617PKJ | IC, SYSTEM CONTROL&FL DRIVE  | $\square$ |           |              | VARIABLE RESISTOR(S)    |                    |
| IC402     | TCA0372DM2R  | IC, MOTOR DRIVE              |           |           |              |                         |                    |
| IC601     | RC00003      | IC, REMOTE CONTROL RECEIVER  |           | VR871     | EVJCB0F02A14 | V. R, HEADPHONES LEVEL  |                    |
| IC801     | MN6474       | IC, DIGITAL FILTER&D/A CONV. |           |           |              | COIL(S)                 |                    |
| IC802     | LM833M63     | IC, DIFFERENTIAL AMP         |           |           |              |                         |                    |
| IC871     | BA4560N      | IC, HEADPHONES AMP           |           | L201, 202 | RLQZN3R3KL-D | COIL                    | $\square$          |
| IC891     | SVIBA4560FT1 | IC, L. P. F.                 |           | L801-804  | RLQZN471KL-D | COIL                    | $\square$          |
|           |              | TRANSISTOR(S)                |           | L832      | RLQZN4R7KL-D | COIL                    |                    |
| Q11       | 2SA1309A-R   | TRANSISTOR                   |           | L871-873  | RLQZN3R3KL-D | COIL                    | $\square$          |
| Q12       | 2SC3311A-Q   | TRANSISTOR                   |           | L874      | RLQZN4R7KL-D | COIL                    |                    |
| Q13-15    | 2SA1309A-R   | TRANSISTOR                   |           |           |              | TRANSFORMER(S)          |                    |
| Q16       | 2SB1238QSTV6 | TRANSISTOR                   |           |           |              |                         |                    |
| Q51, 52   | 2SC3311A-Q   | TRANSISTOR                   |           | T1        | RTP1K4E013   | POWER TRANSFORMER       | $\Delta$ $\square$ |
| Q201      | DTC124EST    | TRANSISTOR                   |           |           |              | OSCILLATOR(S)           |                    |
| Q351      | DTA124ESTP   | TRANSISTOR                   |           |           |              |                         |                    |
| Q801, 802 | 2SC3311A-Q   | TRANSISTOR                   |           | X801      | RSXA33M8J01T | OSCILLATOR              | $\square$          |
| Q803, 804 | 2SD1450RTA   | TRANSISTOR                   |           |           |              | DISPLAY TUBE            |                    |
| Q851      | DTC124EST    | TRANSISTOR                   |           |           |              |                         |                    |
| Q852      | DTA124ESTP   | TRANSISTOR                   |           | FL602     | RSL0066-F    | DISPLAY TUBE            | $\square$          |
| Q853      | DTA114ESTP   | TRANSISTOR                   |           |           |              | FUSE(S)                 |                    |
| Q854      | DTA124ESTP   | TRANSISTOR                   |           |           |              |                         |                    |
| Q871, 872 | 2SD1450RTA   | TRANSISTOR                   |           | F1        | XBA2C01T80   | FUSE 250V T100mA        | $\Delta$           |
| Q891      | 2SC3311A-Q   | TRANSISTOR                   |           |           |              | SWITCH(ES)              |                    |
| Q892, 893 | 2SA1309A-R   | TRANSISTOR                   |           |           |              |                         |                    |
|           |              | DIODE(S)                     |           | S613      | EVQQB005R    | SW, PLAY                |                    |
| D11-17    | 1SR139-200TA | DIODE                        | $\Delta$  | S614      | EVQQB005R    | SW, SKIP(R)             |                    |
| D18       | 1SS254TA     | DIODE                        |           | S615      | EVQQB005R    | SW, SEARCH(R)           |                    |
| D19, 20   | MA4160M      | DIODE                        |           | S616      | EVQQB005R    | SW, PROGRAM             |                    |
| D21       | MA4082MTA    | DIODE                        |           | S617      | EVQQB005R    | SW, SISC LINK           |                    |
| D22       | 1SS254TA     | DIODE                        |           | S618      | EVQQB005R    | SW, AUTO CUE            |                    |
| D51       | MA4039MTA    | DIODE                        |           | S619      | EVQQB005R    | SW, STOP                |                    |
| D601-607  | 1SS254TA     | DIODE                        |           | S620      | EVQQB005R    | SW, SKIP(F)             |                    |
| D801, 802 | 1SS254TA     | DIODE                        |           | S621      | EVQQB005R    | SW, SEARCH(F)           |                    |
| D851      | 1SR139-200TA | DIODE                        |           | S622      | EVQQB005R    | SW, RECALL              |                    |
| D891      | 1SS254TA     | DIODE                        |           |           |              |                         |                    |

| Ref. No.    | Part No.     | Part Name & Description      | Remarks | Ref. No. | Part No.     | Part Name & Description | Remarks |
|-------------|--------------|------------------------------|---------|----------|--------------|-------------------------|---------|
| S623        | EVQQB005R    | SW, SIDE A/B                 |         |          |              |                         |         |
| S624        | EVQQB005R    | SW, RANDOM                   |         |          |              | DIODE (S)               |         |
| S625        | EVQQB005R    | SW, TIME FADE                |         |          |              |                         |         |
| S626        | EVQQB005R    | SW, OPEN/CLOSE               |         | D6505    | 482213081101 | DIODE                   | MB      |
| S627        | EVQQB005R    | SW, PAUSE                    |         | D6506    | 482213081101 | DIODE                   | MB      |
| S628        | EVQQB005R    | SW, REPEAT                   |         |          |              | VARIABLE RESISTOR(S)    |         |
| S629        | EVQQB005R    | SW, CLEAR                    |         |          |              |                         |         |
| S630        | EVQQB005R    | SW, TAPE LENGTH              |         |          |              |                         |         |
| S631        | EVQQB005R    | SW, TIME MODE                |         | VR3520   | 482210110685 | V. R, LASER POWER ADJ.  | MB      |
| S632        | EVQQB005R    | SW, PEAK SEARCH              |         | VR3569   | 482210020522 | V. R, FOCUS OFFSET ADJ. | MB      |
| S651        | RSP2B010     | SW, POWER                    |         |          |              | SWITCH                  |         |
|             |              | CONNECTOR (S) AND SOCKET (S) |         |          |              |                         |         |
| CN11        | RJS1A6605    | CONNECTOR (5P)               | MB      | S1001    | 482227612523 | SW, TRAY                | MB      |
| CN12        | RJT001H007   | CONNECTOR (7P)               | MB      |          |              |                         |         |
| CN401       | RJT001H014   | CONNECTOR (14P)              | MB      |          |              |                         |         |
| CN411-414   | RJU003K010M1 | SOCKET (10P)                 |         |          |              |                         |         |
| CN431       | RJT001H003   | CONNECTOR (3P)               | MB      |          |              |                         |         |
| CN611-614   | RJT003K010M1 | CONNECTOR (10P)              |         |          |              |                         |         |
| CN891       | RJS1A6607    | CONNECTOR (7P)               | MB      |          |              |                         |         |
|             |              | JACK (S)                     |         |          |              |                         |         |
| JK201       | RJJ33T01     | SYNCHRO EDIT                 |         |          |              |                         |         |
| JK801       | RJH3201N     | LINE OUT                     |         |          |              |                         |         |
| JK871       | QJA0455ZC    | HEADPHONES                   |         |          |              |                         |         |
|             |              | EARTH CONTACT (S)            |         |          |              |                         |         |
| GND601, 602 | SUSD144      | EARTH CONTACT                |         |          |              |                         |         |
| GND621-626  | SMTD3        | EARTH CONTACT                | (S)     |          |              |                         |         |
| GND651      | RMCO108      | EARTH CONTACT                | (S)     |          |              |                         |         |
| GND871      | RMCO075      | EARTH CONTACT                | MB      |          |              |                         |         |
|             |              | FLAT CABLE (S)               |         |          |              |                         |         |
| FC1         | RWJ1805100KQ | FLAT CABLE (5P)              | MB      |          |              |                         |         |
| FC611       | RWJ1804290KK | FLAT CABLE (4P)              | MB      |          |              |                         |         |
| FC871       | RWJ1807130KQ | FLAT CABLE (7P)              | MB      |          |              |                         |         |
|             |              | <SERVO P. C. B. >            |         |          |              |                         |         |
|             |              | INTEGRATED CIRCUIT (S)       |         |          |              |                         |         |
| IC6501      | 482220973234 | I. C, PHOTO DIODE S. P.      | MB      |          |              |                         |         |
| IC6503      | 482220973235 | I. C, RADIAL ERROR S. P.     | MB      |          |              |                         |         |
| IC6504      | 482220972587 | I. C, FOCUS/RADIAL DRIVE     | MB      |          |              |                         |         |
|             |              | TRANSISTOR (S)               |         |          |              |                         |         |
| Q6502       | 532213044349 | TRANSISTOR                   | MB      |          |              |                         |         |
| Q6507       | 532213042136 | TRANSISTOR                   | MB      |          |              |                         |         |

- 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.  
 \* Remote Control Ass'y:  
 Supply period for three years from termination of production.  
 \* [MB] Indicates in Remarks columns parts that are supplied by MBV.  
 \* "(K)" mark parts are used for black type only.  
 \* "(S)" mark parts are used for silver type only.  
 Parts other than "(K)" and "(S)" marked are used for all color types.

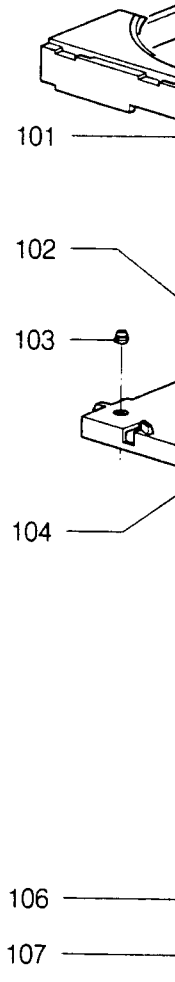
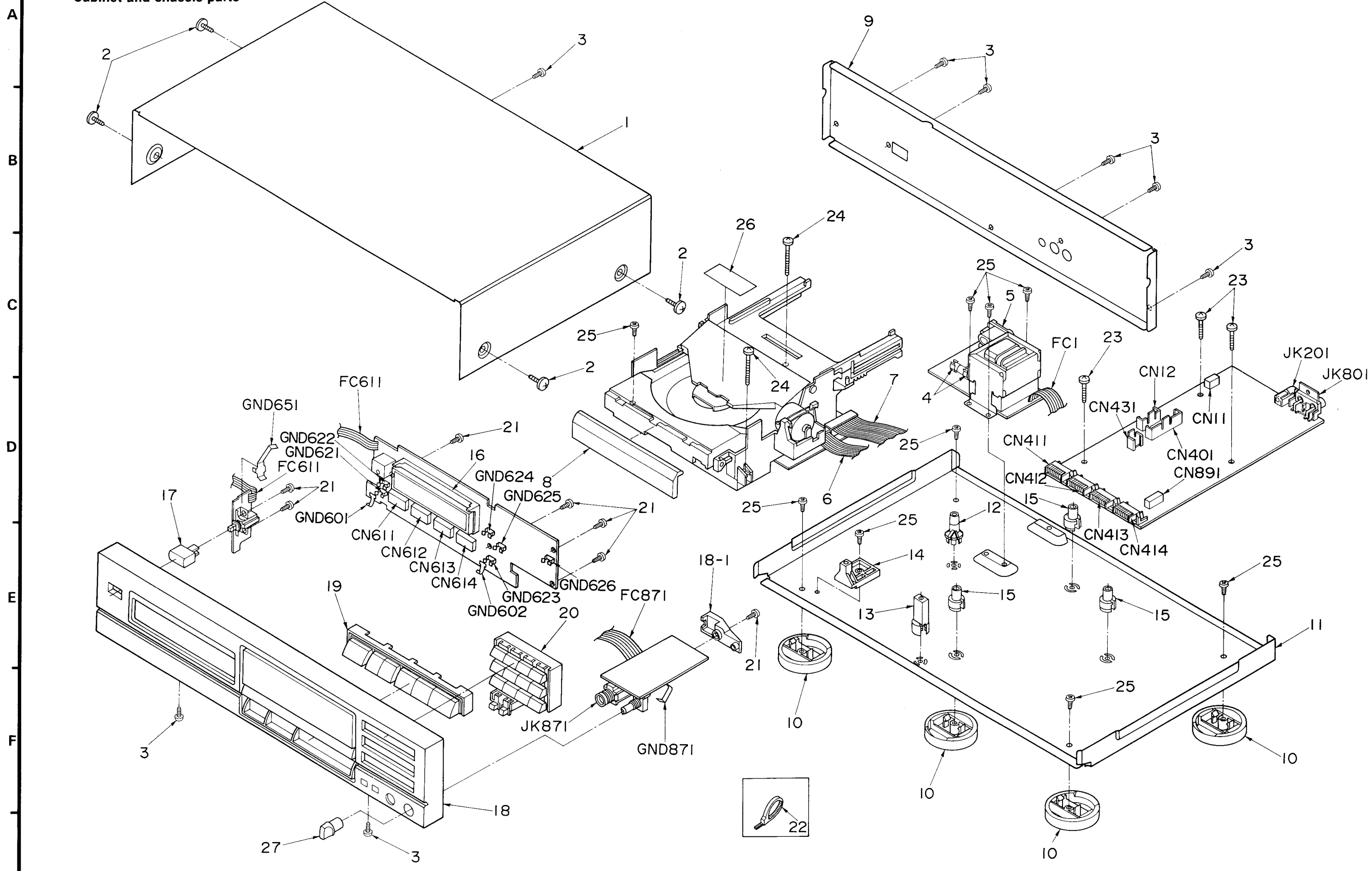
| Ref. No. | Part No.     | Part Name & Description | Remarks      | Ref. No. | Part No.     | Part Name & Description   | Remarks       |
|----------|--------------|-------------------------|--------------|----------|--------------|---------------------------|---------------|
|          |              | CABINET AND CHASSIS     |              | 103      | 482232550177 | GROMMET, CABLE            | [MB]          |
|          |              |                         |              | 104      | 482246692251 | PLATE                     | [MB]          |
|          |              |                         |              | 106      | 482235810115 | BELT, DRIVING             | [MB]          |
| 1        | RKM0152-K    | TOP CASE                | (K) [MB]     | 107      | 482252232359 | WHEEL, GEAR               | [MB]          |
| 1        | RKM0152-S    | TOP CASE                | (S) [MB]     | 108      | 482253251518 | RING, RUBBER              | [MB]          |
| 2        | SNE2129-1    | SCREW                   | (K)          | 109      | 482240261081 | GUIDE                     | [MB]          |
| 2        | SNE2129      | SCREW                   | (S)          | 111      | 482240261132 | GUIDE                     | [MB]          |
| 3        | XTBS3+8JFZ1  | SCREW                   |              | 112      | 482252890638 | ROLLER                    | [MB]          |
| 4        | EYF52BC      | FUSE HOLDER             |              | 113      | 482249251902 | SPRING, COMPRES.          | [MB]          |
| 5        | SJS9236      | AC INLET                | $\Delta$     | 114      | 482246661587 | FOAM                      | [MB]          |
| 6        | REX0007      | CONNECTOR ASS'Y (7P)    | [MB]         | 116      | 482240261107 | LEVER                     | [MB]          |
| 7        | REX0285      | CONNECTOR ASS'Y (14P)   | [MB]         | 117      | 482249263659 | SPRING, BLADE             | [MB]          |
| 8        | RGK0325-K    | TRAY ORNAMENT           | (K) [MB]     | 118      | 482244460568 | LID                       | [MB]          |
| 8        | RGK0325-S    | TRAY ORNAMENT           | (S) [MB]     | 119      | 482249232883 | SPRING, TENSION           | [MB]          |
| 9        | RFKHPG200AE  | REAR PANEL ASS'Y        | (E, EG) [MB] | 121      | 482252890639 | ROLLER                    | [MB]          |
| 9        | RFKHPG200AEB | REAR PANEL ASS'Y        | (EB) [MB]    | 122      | 482246692257 | PLATE                     | [MB]          |
| 10       | RKAD040B     | FOOT                    | [MB]         | 123      | 482240261207 | HOLDER                    | [MB]          |
| 11       | RMK0077A     | CHASSIS                 | [MB]         | 124      | 482252040177 | BALL                      | [MB]          |
| 12       | RMRO020      | SPACER (A)              | [MB]         | 126      | 482253080503 | RING, PRESSURE            | [MB]          |
| 13       | RMRO021      | SPACER (B)              | [MB]         | 127      | 482269130209 | OPTICAL PICKUP UNIT       | [MB]          |
| 14       | RMRO471      | SPACER (C)              | [MB]         | 128      | 482240261196 | SUPPORT                   | [MB]          |
| 15       | RMRO377      | P. C. B. SUPPORT        | [MB]         | 129      | 482249263746 | SPRING, CLAMPING          | [MB]          |
| 16       | RMRO264-2    | VFD HOLDER              |              | 131      | 482236120998 | MOTOR                     | [MB]          |
| 17       | RGU0030      | POWER BUTTON            | (K)          | 132      | 482240250244 | BRACKET                   | [MB]          |
| 17       | RGU0030-S    | POWER BUTTON            | (S)          | 133      | 482249251935 | SPRING, COMPRES.          | [MB]          |
| 18       | RFKPG200AEK  | FRONT PANEL ASS'Y       | (K) [MB]     | 134      | 482246450715 | CHASSIS                   | [MB]          |
| 18       | RFKPG200AES  | FRONT PANEL ASS'Y       | (S) [MB]     |          |              | PACKING MATERIAL          |               |
| 18-1     | RMRO378      | H. P. P. C. B. HOLDER   | [MB]         | P1       | RPG0771      | PACKING CASE              | (K) [MB]      |
| 19       | RGU0467A-K2  | MAIN BUTTON             | (K)          | P1       | RPG0772      | PACKING CASE              | (S) [MB]      |
| 19       | RGU0467B-S1  | MAIN BUTTON             | (S) [MB]     | P2       | RPN0429      | CUSHION                   | [MB]          |
| 20       | RGU0468-K2   | SUB KEY BUTTON          | (K)          | P3       | RMRO024      | LOCK SHAFT                | [MB]          |
| 20       | RGU0468-S1   | SUB KEY BUTTON          | (S) [MB]     | P4       | RQCA0059     | LOCK CAUTION SHEET        | [MB]          |
| 21       | XTBS26+8J    | SCREW                   |              | P5       | XZB60X60A01  | PROTECTION BAG (UNIT)     |               |
| 22       | SHR328       | FASTENER                |              | P6       | XZB23X35C03  | POLYETHYLENE BAG (F. B. ) |               |
| 23       | XTB3+20JFZ   | SCREW                   |              | P7       | XZB26X17C03  | POLYETHYLENE BAG (CORD)   |               |
| 24       | XTB3+35JFZ   | SCREW                   |              |          |              | ACCESSORIES               |               |
| 25       | XTB3+8JFZ    | SCREW                   |              | A1       | RQF0858      | INSTRUCTION MANUAL ASS'Y  | (E) (K) [MB]  |
| 26       | RQLS0022     | LASER CAUTION LABEL     | [MB]         | A1       | RQF0859      | INSTRUCTION MANUAL ASS'Y  | (EB) (K) [MB] |
| 27       | RGW0048      | H. P. VOLUME KNOB       | (K)          | A1       | RQF0860      | INSTRUCTION MANUAL ASS'Y  | (EG) (K) [MB] |
| 27       | RGW0048-S    | H. P. VOLUME KNOB       | (S) [MB]     | A1       | RQF0861      | INSTRUCTION MANUAL ASS'Y  | (E) (S) [MB]  |
|          |              | LOADING UNIT PARTS      |              | A1       | RQF0862      | INSTRUCTION MANUAL ASS'Y  | (EB) (S) [MB] |
| 101      | 482244450603 | TRAY                    | [MB]         |          |              |                           |               |
| 102      | 482232550176 | GROMMET, CABLE          | [MB]         |          |              |                           |               |



# EXPLODED VIEWS

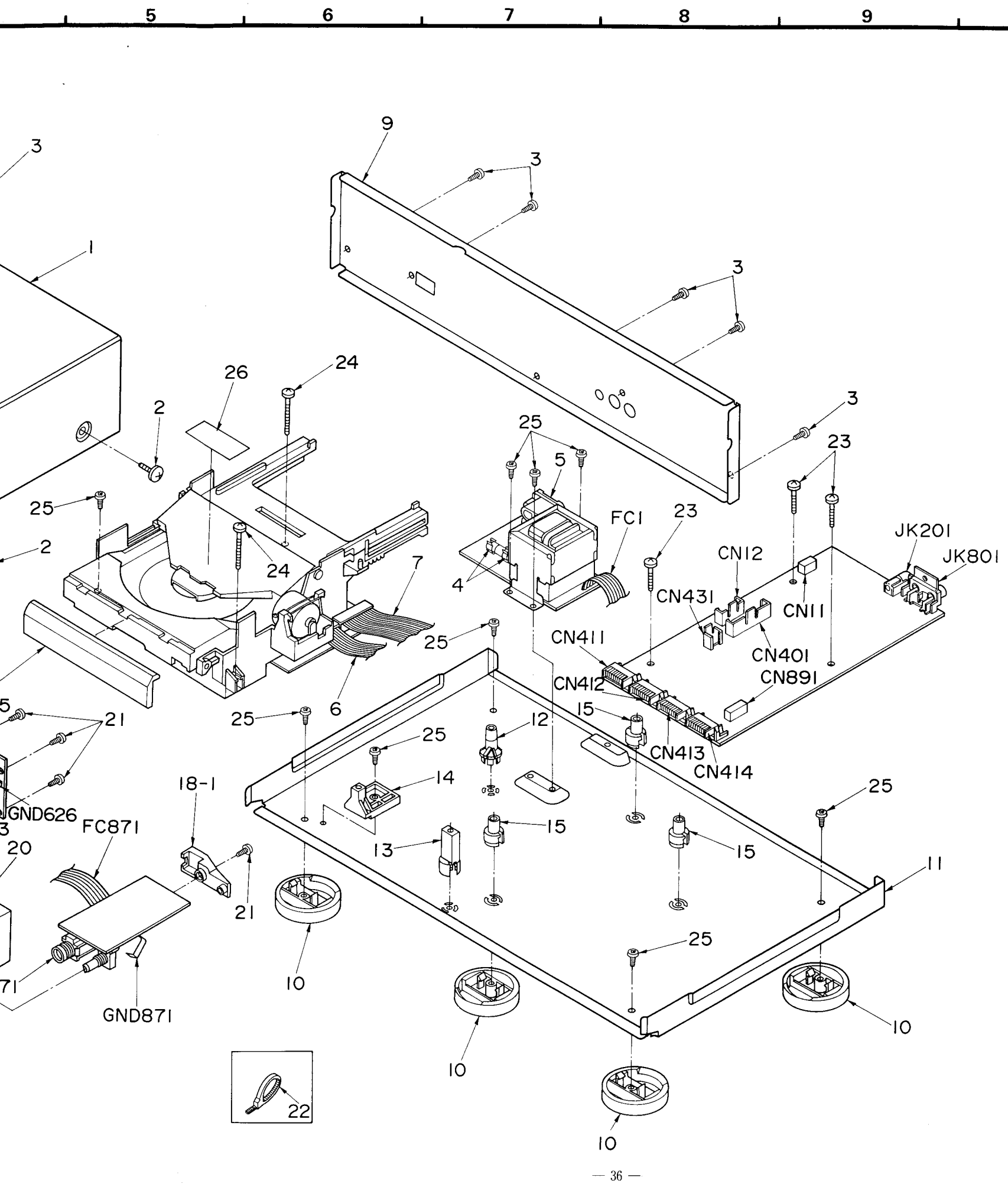
• Cabinet and chassis parts

• Loading unit

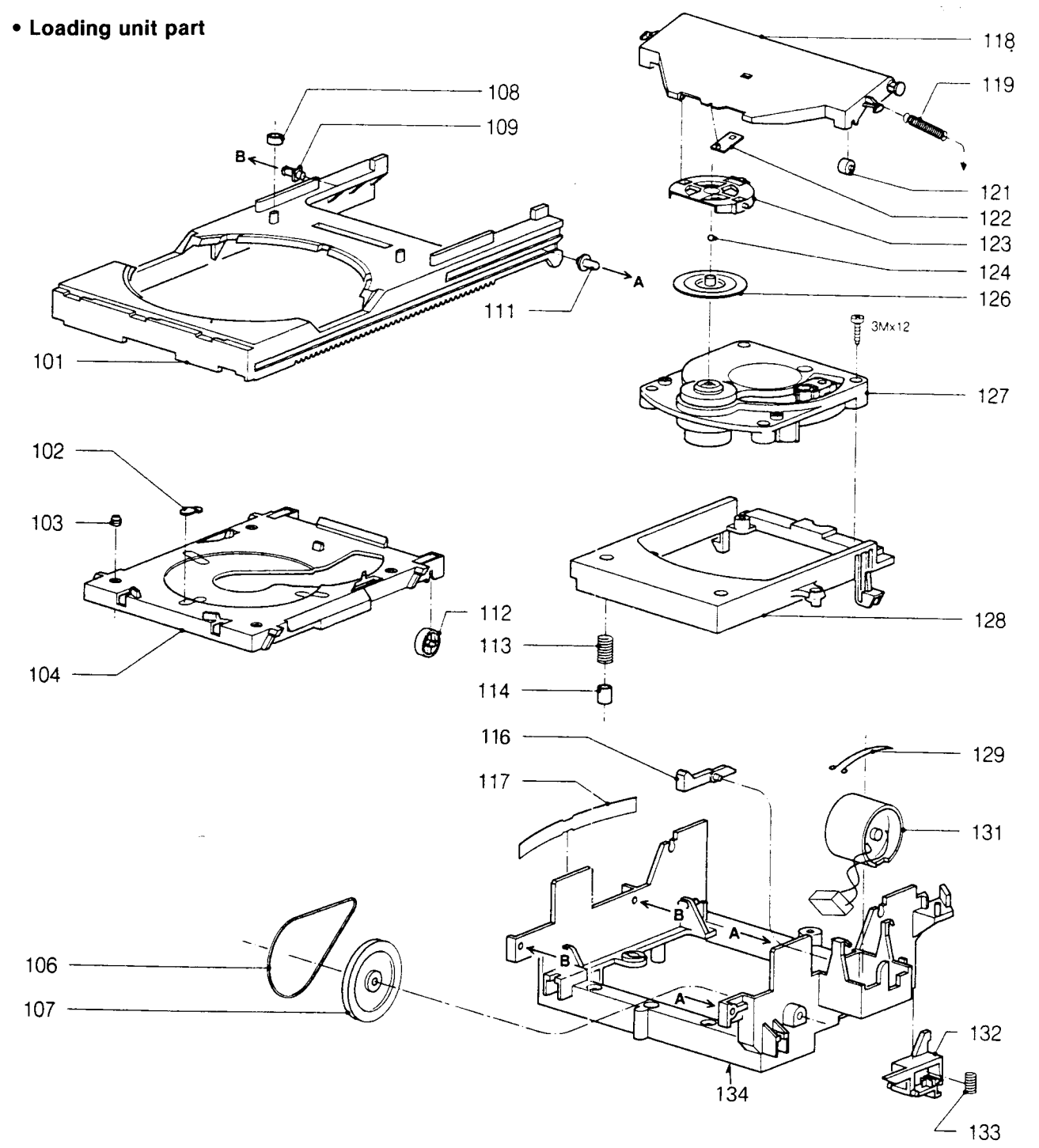


- **Grounding for**
1. Human body ground. Use the anti-static wrist strap to prevent static electricity from your body.
  2. Work table ground. Put a conductive mat on the work table where the optical fiber is handled.

**Caution:**  
The static electricity through the wrist strap may touch the optical fiber.



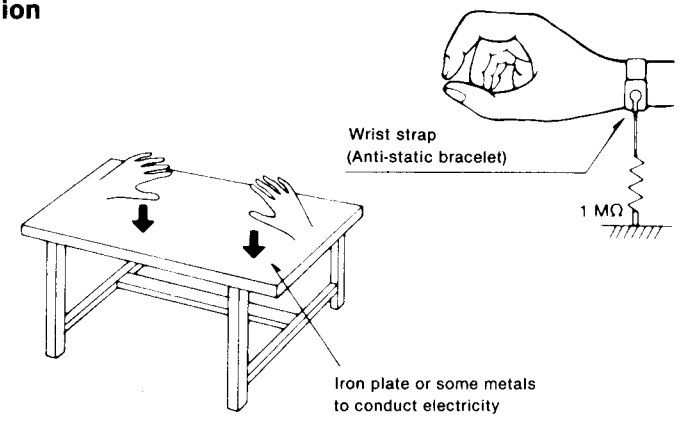
• Loading unit part



• Grounding for electrostatic breakdown prevention

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

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





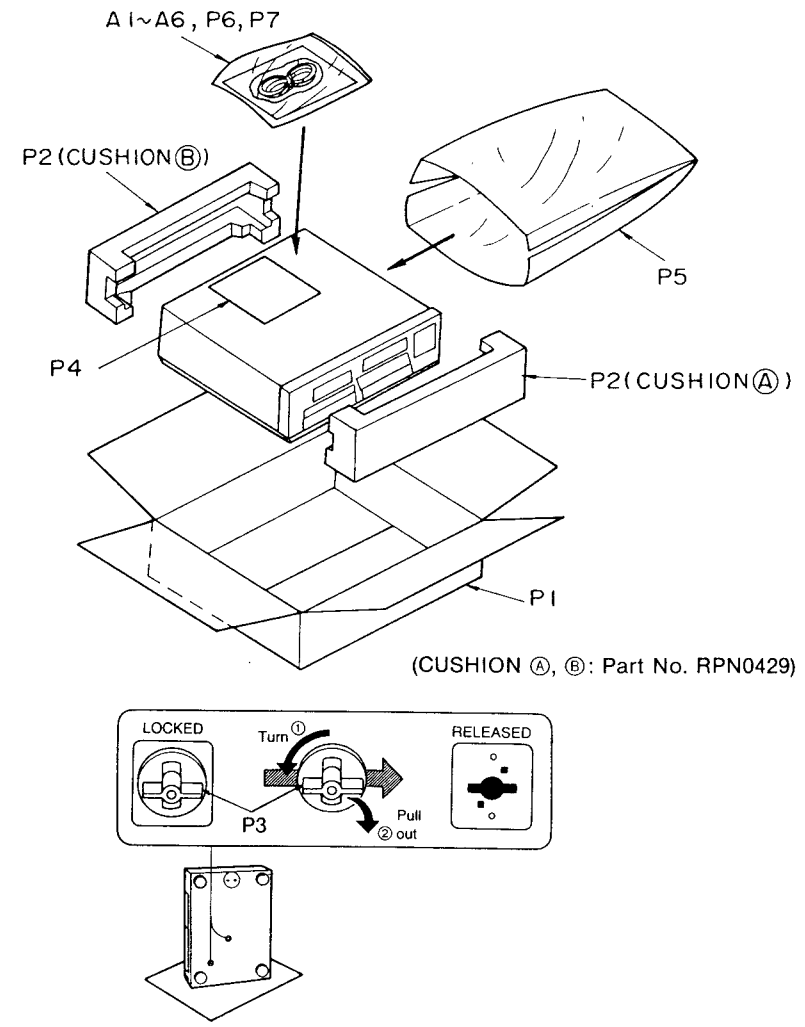
■ TROUBLESHOOTING GUIDE

| Ref. No.       | Part No.      | Values & Remarks |
|----------------|---------------|------------------|
| R3550          | 482211190248  | 1/8W 2.2K [MB]   |
| R3551          | 482211190417  | 1/8W 150K [MB]   |
| R3552          | 482211190171  | 1/8W 820 [MB]    |
| R3554          | 482211190421  | 1/8W 2K [MB]     |
| R3555          | 482211190251  | 1/8W 22K [MB]    |
| R3560          | 482211191494  | 1/8W 11K [MB]    |
| R3561          | 482211190417  | 1/8W 150K [MB]   |
| R3562          | 4822111652845 | 3/5W 120K [MB]   |
| R3563          | 482211190573  | 1/8W 56K [MB]    |
| R3564          | 482211191495  | 1/8W 160K [MB]   |
| R3565          | 4822111652354 | 1/2W 27 [MB]     |
| R3566          | 482211190186  | 1/8W 22 [MB]     |
| R3567          | 4822111652478 | 1/2W 82K [MB]    |
| R3568          | 482211190161  | 1/8W 470K [MB]   |
| CHIP JUMPER(S) |               |                  |
| R3801          | 482211190163  | JUMPER [MB]      |
| R3802          | 482211190163  | JUMPER [MB]      |
| CAPACITORS     |               |                  |
| C2501          | 482212233147  | 50V 0.022U [MB]  |
| C2502          | 482212440433  | 25V 47U [MB]     |
| C2503          | 482212233147  | 50V 0.022U [MB]  |
| C2504          | 482212231727  | 63V 470P [MB]    |
| C2505          | 482212440433  | 25V 47U [MB]     |
| C2506          | 482212233104  | 63V 0.1U [MB]    |
| C2507          | 482212231644  | 63V 2200P [MB]   |
| C2508          | 532212142491  | 100V 0.047U [MB] |
| C2509          | 482212231772  | 50V 47P [MB]     |
| C2510          | 482212232442  | 50V 0.01U [MB]   |
| C2511          | 482212231746  | 50V 1000P [MB]   |
| C2513          | 482212142245  | 63V 0.22U [MB]   |
| C2514          | 482212151252  | 100V 0.47U [MB]  |
| C2515          | 482212231746  | 50V 1000P [MB]   |
| C2520          | 482212231965  | 63V 220P [MB]    |
| C2521          | 482212422027  | 2.5V 47U [MB]    |
| C2530          | 482212151321  | 63V 8200P [MB]   |
| C2531          | 482212151321  | 63V 8200P [MB]   |
| C2532          | 482212440272  | 16V 33U [MB]     |
| C2534          | 532212142661  | 63V 0.33U [MB]   |
| C2535          | 532212231848  | 63V 0.033U [MB]  |
| C2536          | 532212231848  | 63V 0.033U [MB]  |
| C2537          | 482212142245  | 63V 0.22U [MB]   |
| C2538          | 482212142245  | 63V 0.22U [MB]   |
| C2540          | 482212441583  | 50V 0.68U [MB]   |
| C2541          | 482212233147  | 50V 0.022U [MB]  |
| C2542          | 482212233147  | 50V 0.022U [MB]  |
| C2543          | 482212440196  | 16V 220U [MB]    |
| C2544          | 482212440196  | 16V 220U [MB]    |
| C2545          | 482212233104  | 63V 0.1U [MB]    |

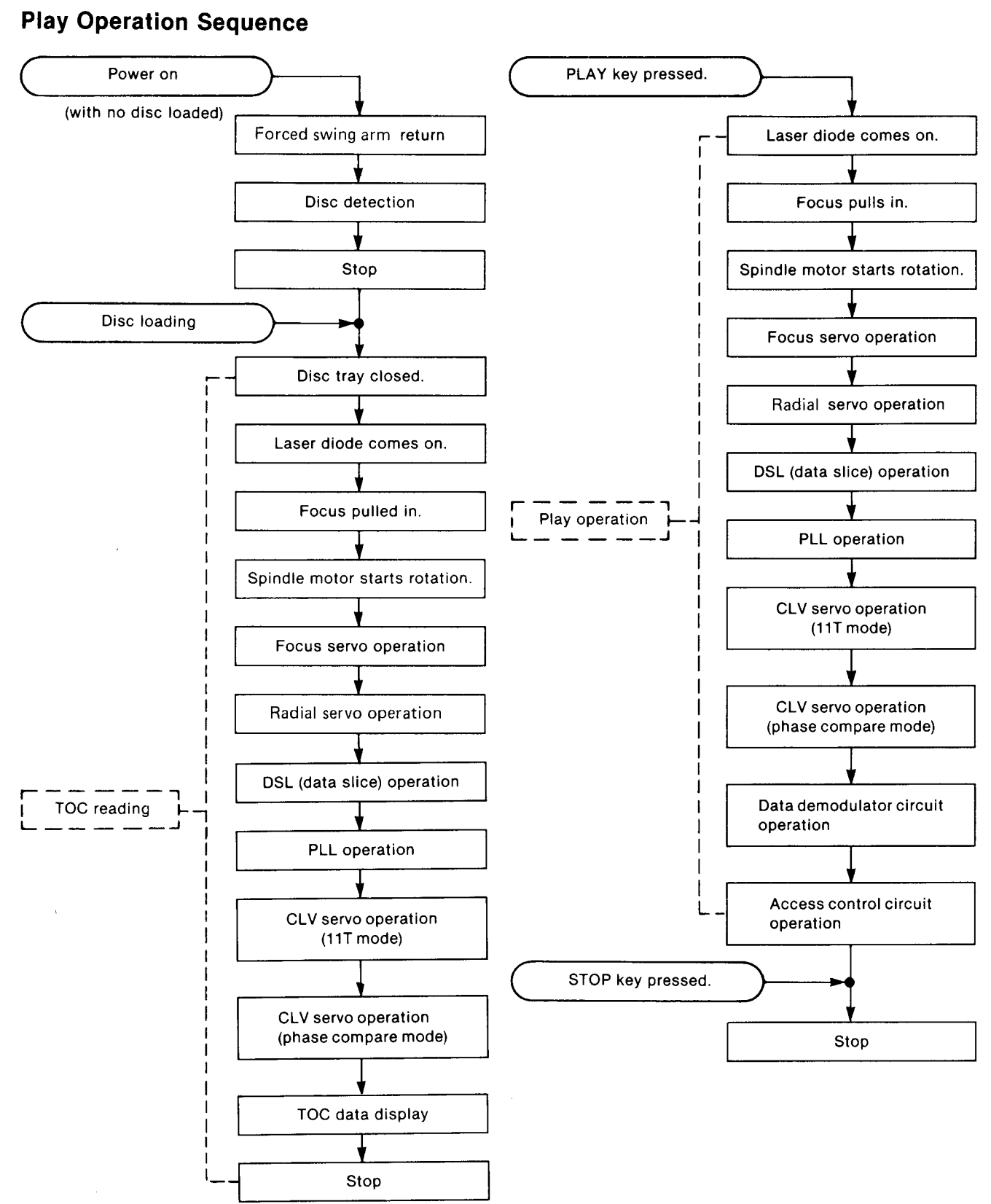
| Ref. No. | Part No.     | Values & Remarks |
|----------|--------------|------------------|
| C2546    | 482212233104 | 63V 0.1U [MB]    |
| C2552    | 482212143526 | 47UF 100N [MB]   |
| C2560    | 482212231784 | 50V 4700P [MB]   |
| C2561    | 482212151252 | 100V 0.47U [MB]  |
| C2562    | 532212142661 | 63V 0.33U [MB]   |
| C2563    | 482212233104 | 63V 0.1U [MB]    |
| C2625    | 482212231765 | 50V 100P [MB]    |
| C2701    | 482212233147 | 50V 0.022U [MB]  |

| Ref. No. | Part No.     | Values & Remarks |
|----------|--------------|------------------|
| C2546    | 482212233104 | 63V 0.1U [MB]    |
| C2552    | 482212143526 | 47UF 100N [MB]   |
| C2560    | 482212231784 | 50V 4700P [MB]   |
| C2561    | 482212151252 | 100V 0.47U [MB]  |
| C2562    | 532212142661 | 63V 0.33U [MB]   |
| C2563    | 482212233104 | 63V 0.1U [MB]    |
| C2625    | 482212231765 | 50V 100P [MB]    |
| C2701    | 482212233147 | 50V 0.022U [MB]  |

■ PACKING

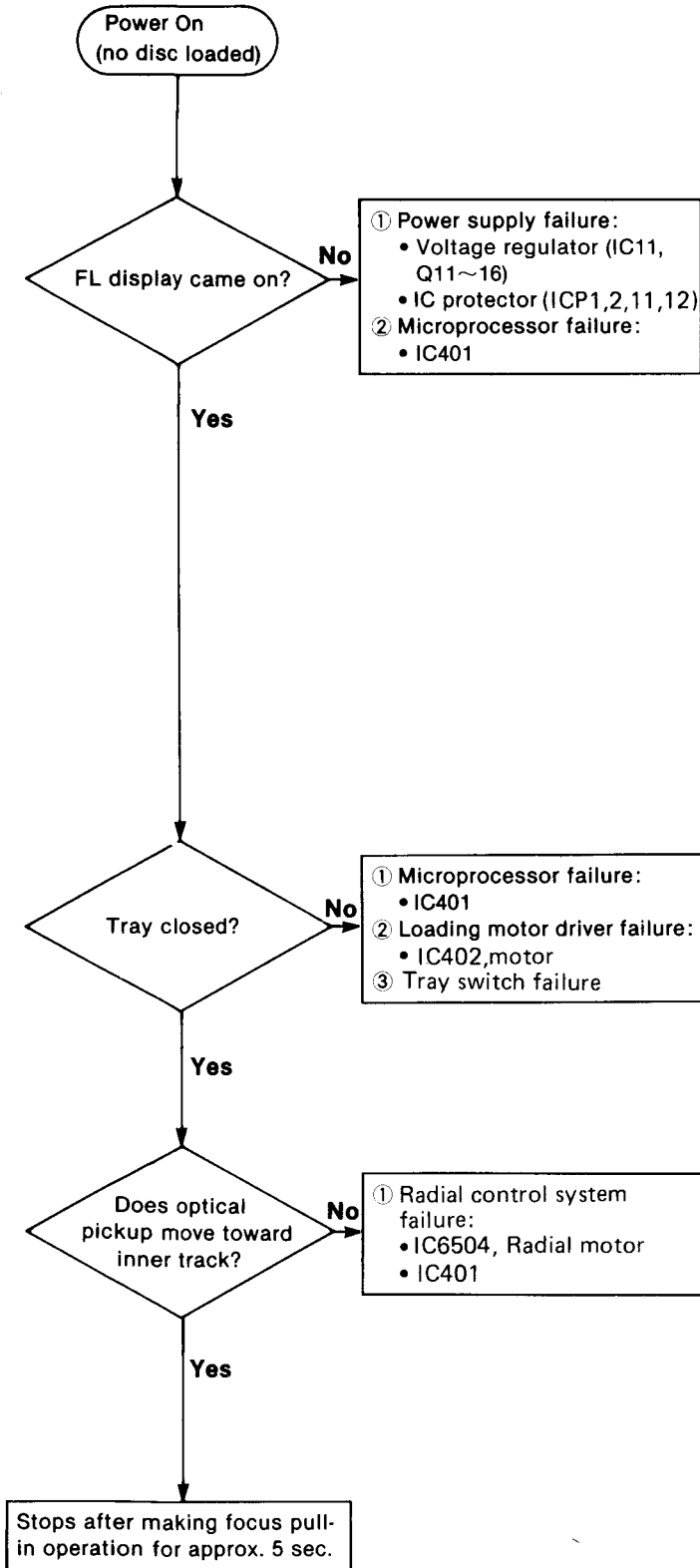


SL-PG200A Operation Sequence Check Sheet





(Operation Sequence Just After Power On)



(TOC Read Operation-PLAY Operation)

