

Service Manual

Compact Disc Player

SL-P550

ORDER NO. HAD8801021C0
A6

COMPACT
disc
DIGITAL AUDIO

DIGITAL



Color

(S) Silver Type
(K) Black Type

SPECIFICATIONS

■ **Audio**
No. of channels: 2 (left and right stereo)
Frequency response: 2~20,000 Hz ± 0.3 dB
Output voltage: 2 V (at 0 dB)
Dynamic range: 98 dB
S/N ratio: 105 dB
Harmonic distortion: 0.002% (1 kHz, 0 dB)
Total harmonic distortion: 0.004% (1 kHz, 0 dB)
Wow and flutter: Below measurable limit
Output impedance: Approx. 600 Ω
Load impedance: More than 10 k Ω
Headphones output level: 15 mW max. 32 Ω (adjustable)

■ **Signal Format**
Sampling frequency: 44.1 kHz
D-A conversion: 16-bit linear

■ **Pickup**
Wavelength: 780 nm

■ **Infrared remote-control transmitter**
Dimensions (W×H×D): 61×19×165 mm
Batteries: UM-4 "AAA" batteries or IEC R03 or equivalent (1.5 V×2)
Weight: 105 g (including batteries)

■ **General**
Power supply
For U.S.A. and Canada: AC 60 Hz, 120 V
For Continental Europe: AC 50 Hz, 220 V
For United Kingdom: AC 50 Hz, 240 V
For Australia: AC 50 Hz, 240 V
For others: AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption: 15 W
Dimensions (W×H×D): 430×102×330 mm
Weight: 4.8 kg

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.
Measured by EIAJ (CP-307).

Area

Color	Area
(K)	(M) U.S.A.
(K)	(MC) Canada.
(S)(K)	(E) Continental Europe.
(S)(K)	(Ei) Italy.
(S)(K)	(EG) F.R. Germany.
(S)(K)	(EK) United Kingdom.
(S)(K)	(EB) Belgium.
(S)(K)	(EF) France.
(S)(K)	(EH) Holland.
(K)	(XL) Australia.
(K)	(XA) Asia, Latin America, Middle Near East, Africa and Oceania.
(K)	(XB) Saudi Arabia.
(K)	(PA) Far East PX.
(K)	(PE) European Military.
(K)	(PC) European Audio Club.

SL-P550

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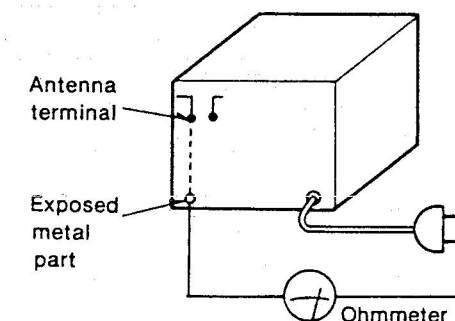
■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

■ INSULATION RESISTANCE TEST

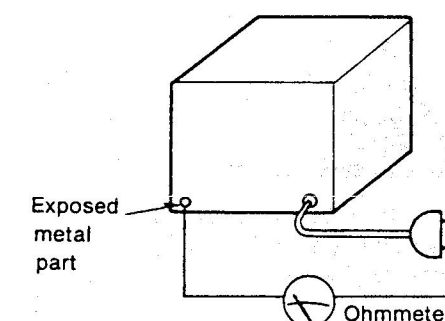
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3M Ω and 5.2M Ω to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3 M Ω —5.2 M Ω



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ ACCESSORIES

- AC power supply cord 1
- Stereo connection cable 1
- Coaxial cable 1
- Remote-control transmitter 1
- Batteries 2

SJA168-1 [XA]
SJA173 [XL]
SJA175-1 [M]
SJA175 [MC]
SFDAC05G02 [EK]
SJA183 [XB]
SJA187 other

SJP2249-1

SJPD19

Black version: EUR64781...[M] and [MC] areas
EUR64782...Other areas
Silver version: EUR64783

UM-3 or IECR6

Technics

Matsushita Services Company
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Panasonic Sales Company,
Division of Matsushita Electric
of Puerto Rico, Inc.
Ave. 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

Panasonic Hawaii, Inc.
91-238, Kauhli St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

Matsushita Electric
of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

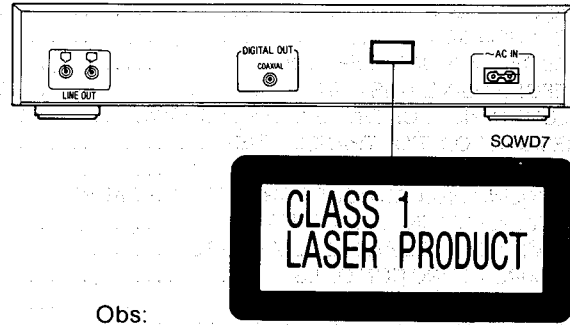
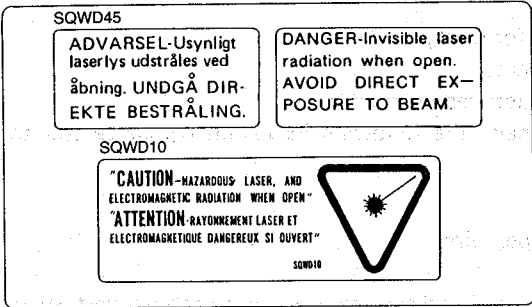
Panasonic Tokyo Office
Matsushita Electric Trading Co., Ltd.
6th Floor, world Trade Center Bldg.,
No. 4-1, Hamamatsu-chō 2-Chome,
Minato-ku, Tokyo 105, Japan

■ PRECAUTION OF LASER DIODE

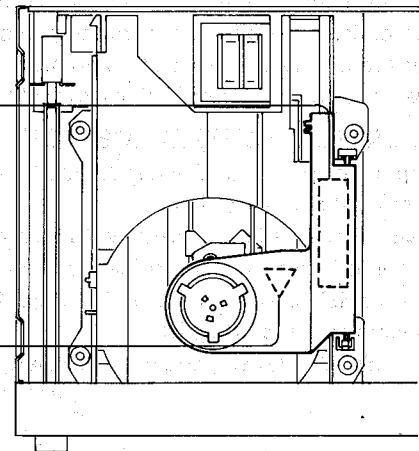
Caution: This product utilizes a laser diode.
ADVASEL: I dette apparat anvendes laser.

• Use of caution labels Note: ○ Mark is used, × Mark is not used.

Areas	SQWD45	SQWD10	SQWD7	SQWD19
[MC]	×	○	×	×
[E]	○	×	○	○
[EK], [XL], [EG], [EB], [EH], [EF], [Ei], [XB], [XA]	○	×	○	○



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

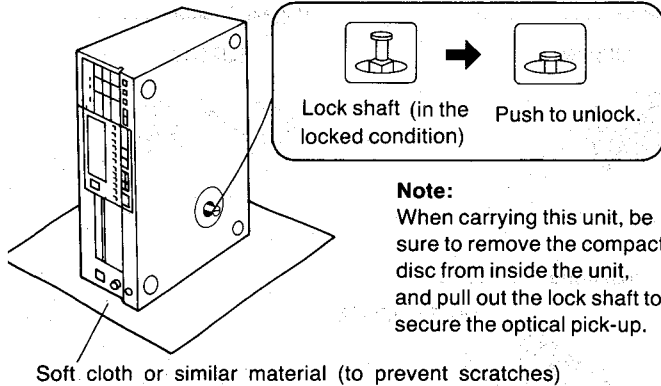


VAROITUS! Laite sisältää laserdiodin,
joka lähettää näkymätöntä silmille
vaarallista lasersäteilyä

■ BEFORE USING THIS UNIT

Before placement

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

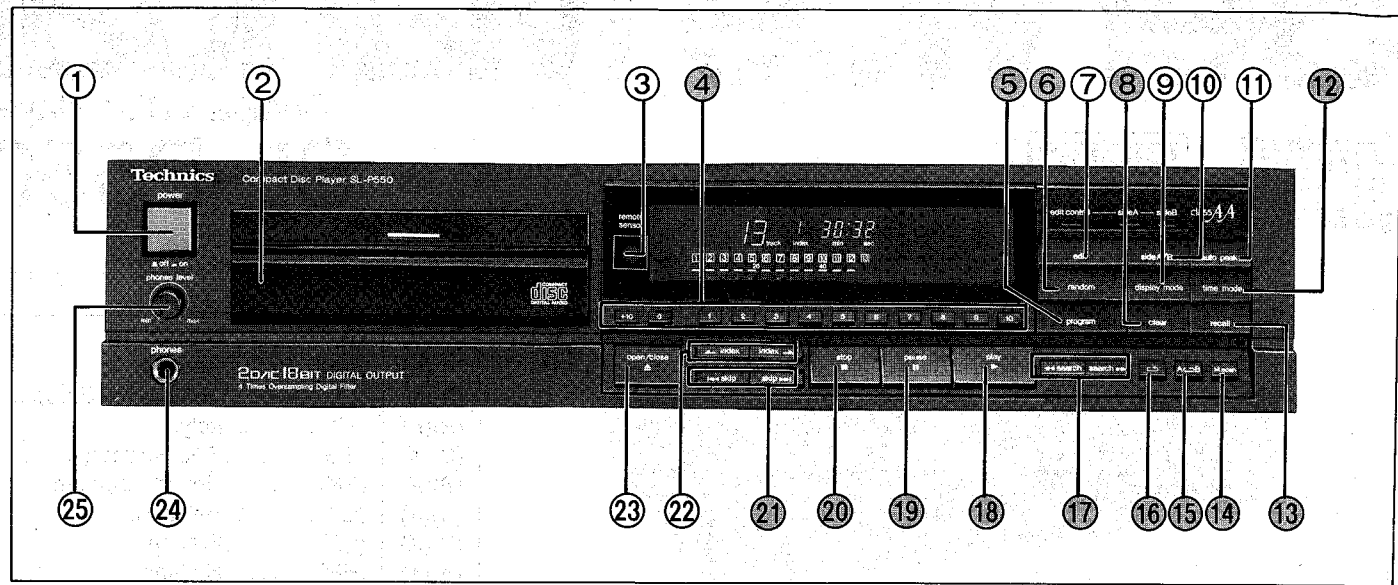


Note:
When carrying this unit, be
sure to remove the compact
disc from inside the unit,
and pull out the lock shaft to
secure the optical pick-up.

Notes of placement

- Place on a flat, level surface so that the front-rear inclination does not exceed 5°.
- 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 (40°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.)
- Do not place heavy objects, other than system components, on top of the unit.
- 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.

■ FLONT PANEL CONTROLS AND FUNCTIONS

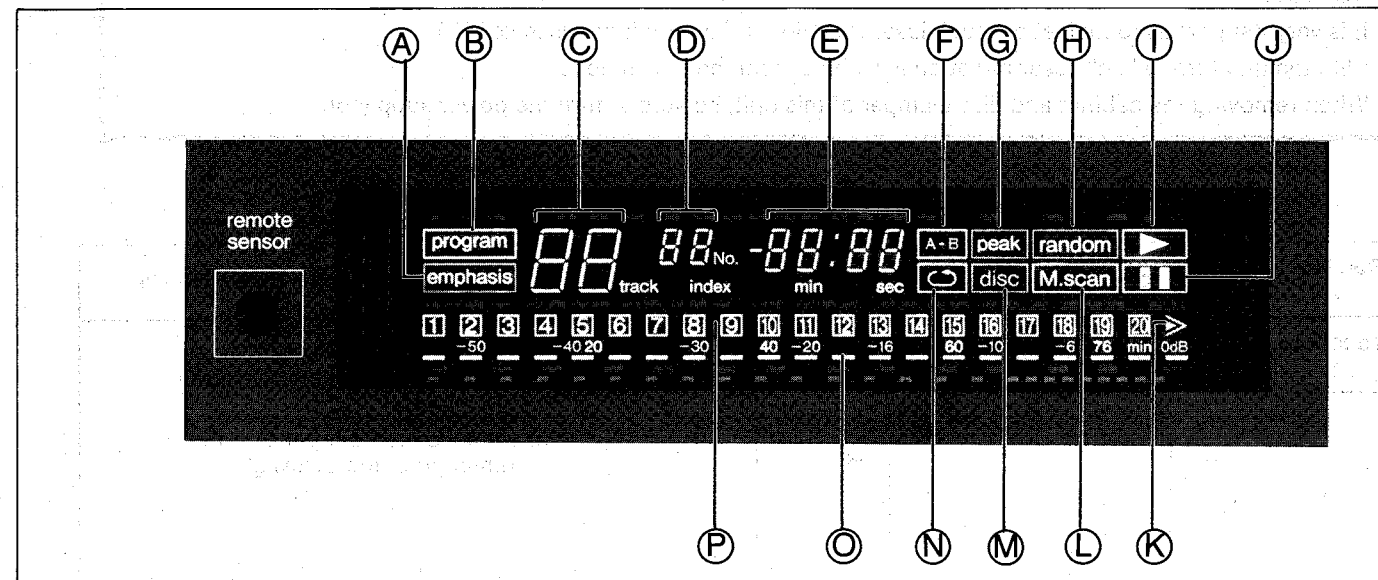


Control section

- Power switch (power)**
- Disc holder**
- Remote-control signal receptor (remote sensor)**
- Numeric buttons (+10, 0, 1~10)**
These buttons can be used to select the track numbers and the recording time.
- Programmed-play button (program)**
- Random-play button (random)**
This button can be used to select "random" play (the unit's microcomputer selects the sequence of track play in a random order).
- Compact-disc edit button (edit)**
When compact-disc sounds are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on the two sides of the tape, considering the length of the cassette tape used, so that there is no interruption of tracks.
- Clear button (clear)**
- Display-mode select button (display mode)**
This button can be used to select, each time it is pressed, either the display of the play position of the disc, or the display of the output level, by the indicator.
- Tape-side select button (side A/B)**
- Peak-level search button (auto peak)**
This button can be used to locate the maximum signal level (peak level) for the signals on the disc. This is a convenient feature that helps when adjusting the recording level when compact-disc sounds are to be recorded to tape.
- Time-mode select button (time mode)**
- Recall button (recall)**
- Music scan button (M. scan)**
This button can be used to play the first part of each track in order.
- A-B repeat button (A↔B)**
- Repeat button ()**
- Search buttons (◀◀ search/search ▶▶)**
These buttons can be used to locate a desired part of the disc at high speed (forward or reverse) during disc play. (The search speed is slow when the button is first pressed, and becomes faster if the button is pressed and held continuously.)
- Play button (play/▶)**
- Pause button (pause/||)**
- Stop button (stop/■)**
This button can be used to stop the disc play, as well as to cancel the various play modes.
- Skip buttons (◀◀ skip/skip ▶▶)**
- Index-skip buttons (◀ index/index ▶)**
These buttons can be used to skip to any desired index number, after which play begins from that point.

What index numbers are...
Index numbers are sub track numbers used to subdivide tracks into smaller parts for reference purposes. Compact discs that have such subdivisions are indicated by the symbol on the notes and commentary that accompany the disc.

The functions indicated by the shaded frames  can also be activated by using the remote-control transmitter's controls.



- ②③ Disc holder open/close button (open/close/▲)
- ②④ Headphones jack (phones)
- ②⑤ Headphones volume control (phones level)

Indicators section

- ① **Emphasis indicator (emphasis)**
The sounds on some compact discs are sounds that are re-recordings (as digital signals) of a sound source originally recorded as analog signals. For some discs of this type, the signal characteristics have been corrected (emphasized), and this indicator illuminates when such discs are loaded in this unit. For such discs, the output level will be displayed as slightly higher than for analog signals.
- ② **Programmed-play indicator (program)**
- ③ **Track number display (track)**
- ④ **Index-number display (No./index)**
This display shows the index number as well as the sequence of programmed play.
- ⑤ **Time display (min./sec.)**
- ⑥ **A-B repeat indicator (A-B)**
- ⑦ **Peak-level search indicator (peak)**
- ⑧ **Random-play indicator (random)**

- ⑨ **Play indicator (▶)**
- ⑩ **Pause indicator (⏸)**
- ⑪ **"Over" mark (▶▶)**
The "▶▶" indicator illuminates if the total number of tracks on the disc is 21 tracks or more. When the play reaches the 21st track and thereafter, the "▶▶" begins flashing.
- ⑫ **Music scan indicator (M.scan)**
- ⑬ **Disc indicator (disc)**
This indicator illuminates when a disc is loaded.
- ⑭ **Repeat indicator (↺)**
- ⑮ **Play-position/digital output-level indicator**
- ⑯ **Music matrix (1~20)**
The numbers of the tracks on the disc are displayed up to a maximum of 20.

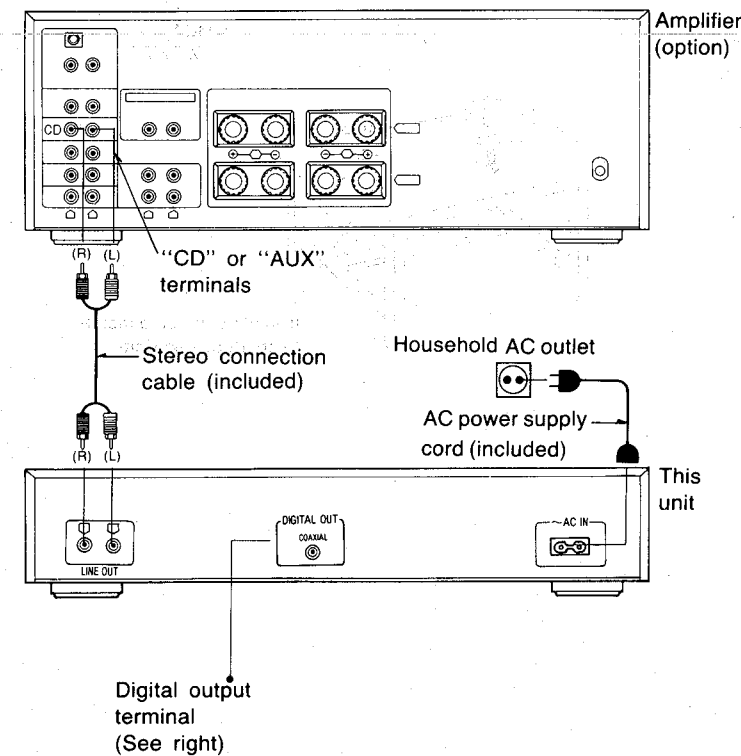
REMOTE CONTROL TRANSMITTER

Control names

The functions indicated by the shaded frames  can also be activated by using buttons on the unit. Refer to pages 4~5 about controls functions.

- ⑰ **Search buttons (◀◀ search ▶▶)**
- ⑱ **Numeric buttons (1~10, +10, 0)**
- ⑲ **Clear button (clear)**
- ⑲ **Programmed-play button (program)**
- ⑲ **A-B repeat button (A-B repeat)**
- ⑲ **Repeat button (repeat)**
- ⑲ **Random-play button (random)**
- ⑲ **Music scan button (music scan)**
- ⑲ **Stop button (■ stop)**
- ⑲ **Pause button (⏸ pause)**
- ⑲ **Play button (▶ play)**
- ⑲ **Skip buttons (◀◀ skip ▶▶)**
- ⑲ **Recall button (recall)**
- ⑲ **Time-mode select button (time mode)**

CONNECTIONS



Note:

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

Digital output terminal (DIGITAL OUT)

The output signals of this unit are output from this terminal as digital signals.

• Coaxial terminal (COAXIAL)

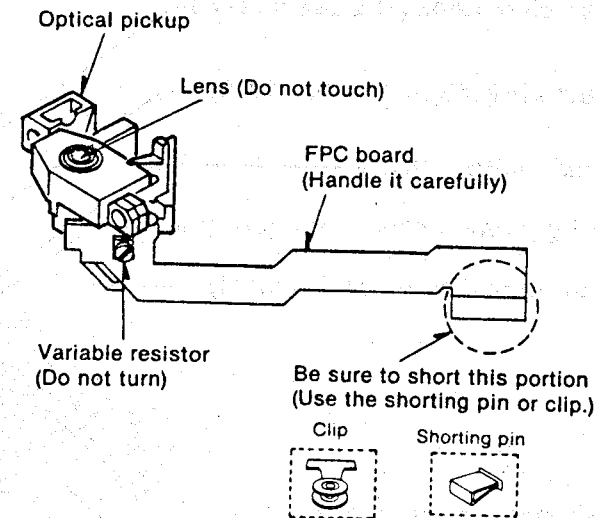
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using a coaxial cable (included).

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

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

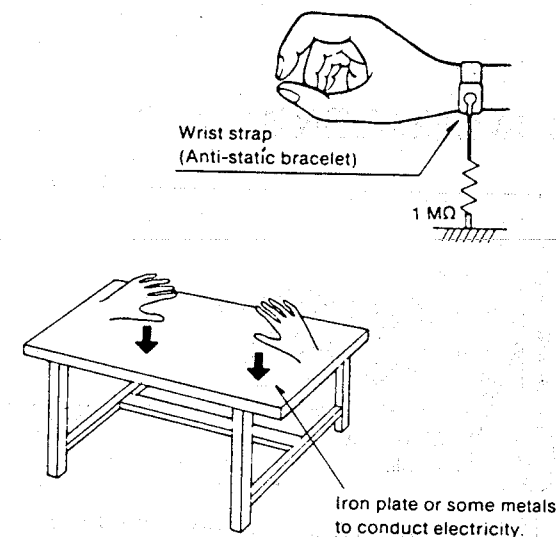


• Grounding for electrostatic breakdown prevention

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

Caution:

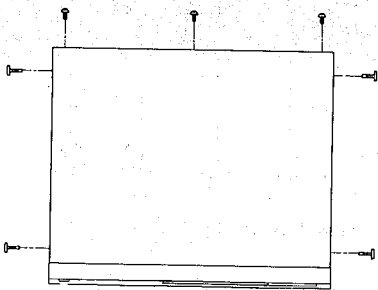
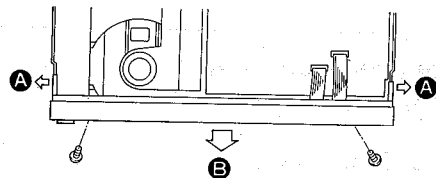
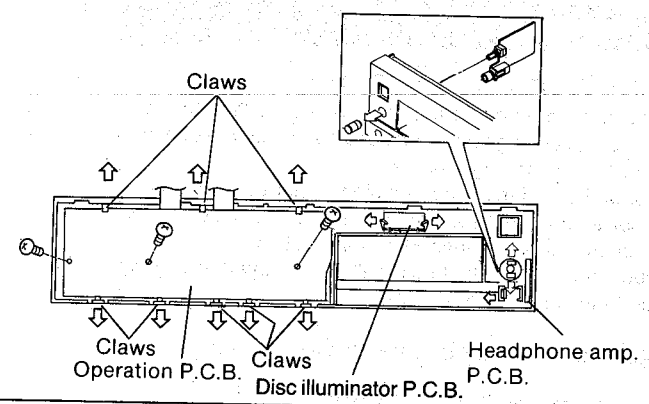
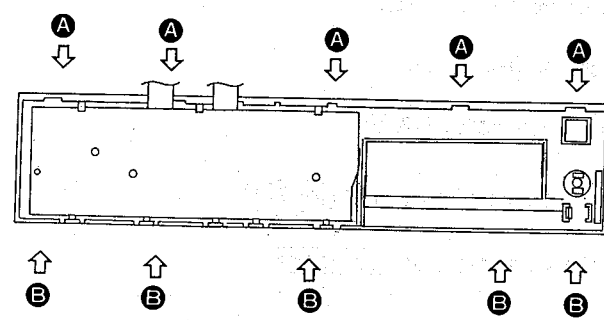
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

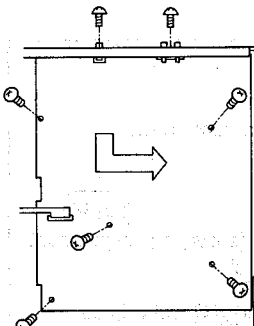
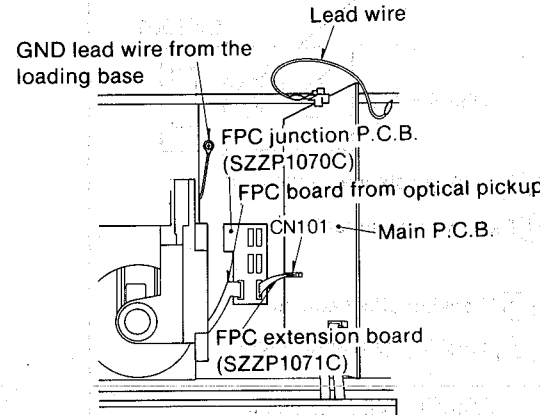
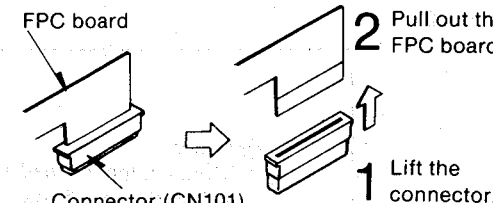
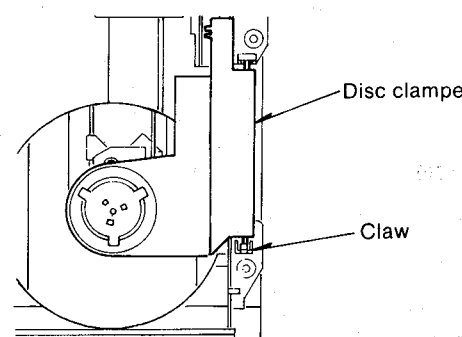
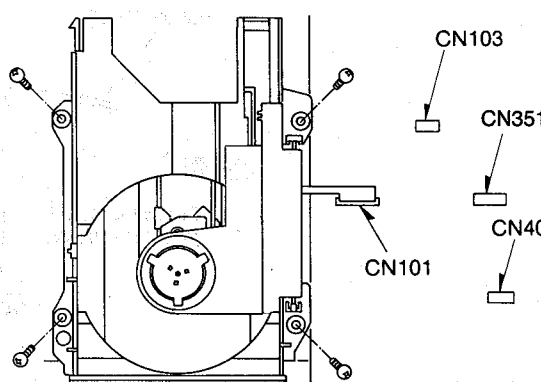


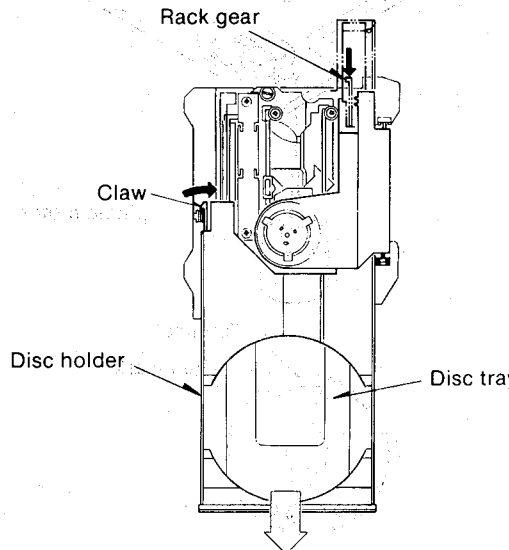
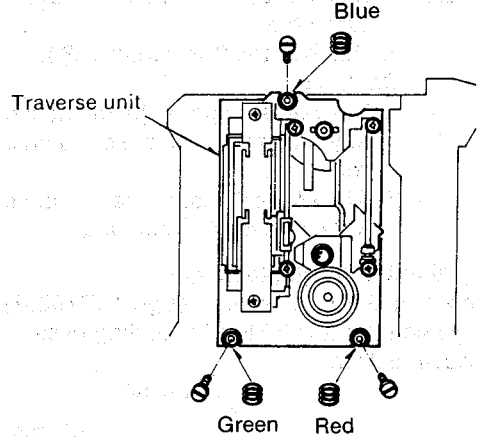
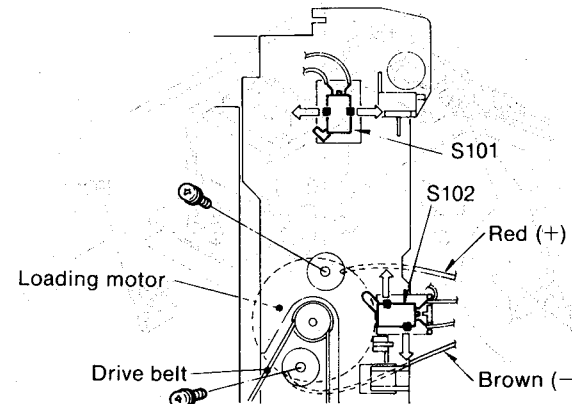
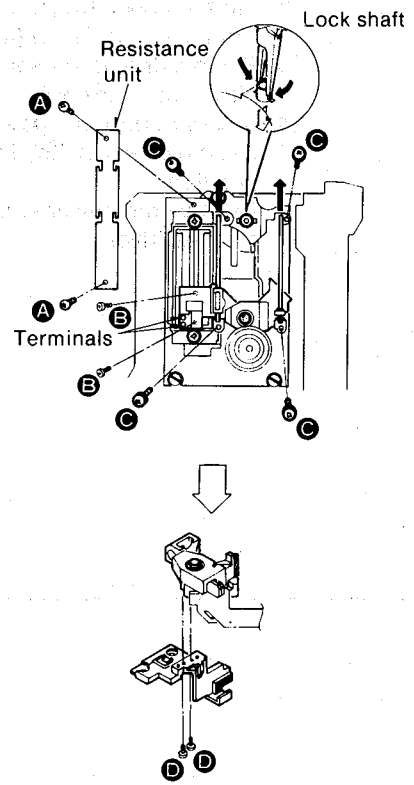
■ DISASSEMBLY INSTRUCTIONS

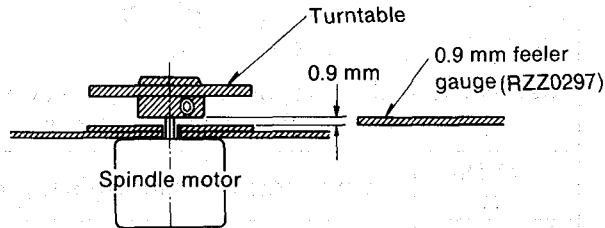
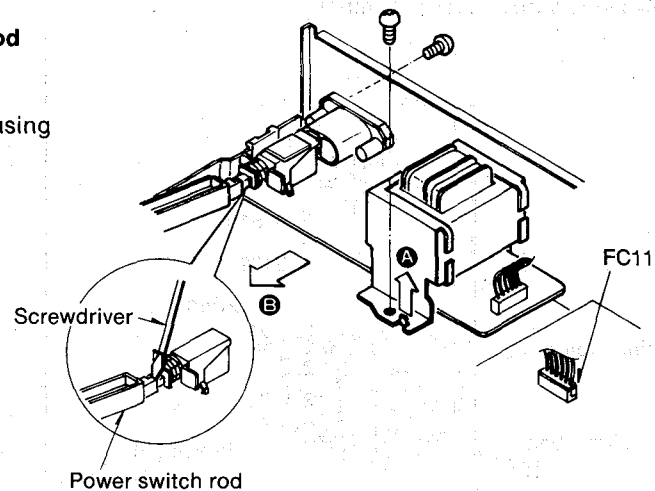
CAUTION:

- It is very dangerous to look at or touch laser radiation. (Laser radiation is invisible.)
- With the unit turned "on", laser radiation is emitted from the pickup lens.
- When removing the cabinet and disc clumper of this unit, be sure to turn the power supply off.

Ref. No. 1	How to remove the cabinet	Ref. No. 2	How to remove the front panel
Procedure 1	1. Remove the 7 screws.  Note: When servicing, lock the lock shaft at the bottom of the unit. (See page 3.)	Procedure 1 + 2 1. Remove the 2 screws. 2. Slightly pull the tabs outwards (arrows A). 3. Remove the front panel in the direction of the arrow B. 	
Ref. No. 3	How to remove the operation P.C.B., headphone amp. P.C.B., and disc illuminator P.C.B.		
Procedure 1 + 2 + 3	A. Operation P.C.B. 1. Remove the 4 screws. 2. Release the 8 claws. B. Headphone amp. P.C.B. 1. Pull out the level control knob. 2. Release the 3 claws. C. Disc illuminator 1. Release the 2 claws. 		
Ref. No. 4	How to remove the front grille		
Procedure 1 + 2 + 3 + 4	1. First release the 5 claws A at the bottom of the front panel. 2. Then release the 5 claws B at the top of the front panel. 		

Ref. No. 5	How to remove the main P.C.B.	How to check the main P.C.B.	
Procedure 1 → 5	- Remove the 7 screws. - Lift the P.C.B. to remove it from the chassis tab. - Remove the P.C.B. in the direction of the arrow.  	- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown. - Remove the main P.C.B. - Remove the FPC board (CN101).  Caution: Insert the shorting pin into the FPC board in order to prevent breakdown of laser diode. (See page 7.) - Connect FPC board from optical pickup to FPC junction P.C.B. (SZZP1070C). Caution: Cover the foil of the FPC junction P.C.B. with friction tape to prevent a short-circuit between the foil and the chassis. - Connect FPC extension board (SZZP1071C) to FPC junction P.C.B. and CN101 of the main P.C.B. - Place the main P.C.B. as shown in the figure. Cautions: - Be sure to connect the P.C.B. ground terminal (line out terminal) and the chassis with a lead wire. - Be sure to connect the GND lead wire from the loading base to the chassis.	
Ref. No. 6	How to remove the disc clamber	Ref. No. 7	How to remove the loading base
Procedure 1 → 6	Release the claw. 	Procedure 1 → 2 → 7	- Pull out the 3 connectors (CN103, CN351 and CN401). - Remove the FPC board (CN101). - Remove the 4 screws. Refer to "HANDLING PRECAUTIONS FOR OPTICAL PICKUP" on page 7. 

Ref. No. 8	How to remove the disc holder	Ref. No. 10	How to remove the traverse unit
Procedure 1 → 2 → 8	- Push the rack gear slowly in the direction of the arrow until the disc tray comes up. - Pull the disc holder until it stops. - Release the claw. - Pull out the disc holder further to remove it. 	Procedure 1 → 2 → 6 → 7 → 8 → 10	Remove the 3 screws.  Caution: Note the color of the 3 springs, they must be reinstalled to their original positions.
Ref. No. 9	How to remove the loading motor	Ref. No. 11	How to remove the optical pickup
Procedure 1 → 2 → 7 → 8 → 9	- Remove the drive belt. - Remove the 2 screws. Note: Red lead wire.....(+) terminal (close to the slit of the motor) Brown lead wire.....(-) terminal  How to remove the switches (S101, S102) - Release the claws. - Note the fitting direction before remove it.	Procedure 1 → 2 → 6 → 7 → 8 → 11	Caution: Refer to "Handling precautions for optical pickup" on page 7. - Remove the 2 screws (A) and the resistance unit. - Unsolder the 2 terminals and 2 screws (B). - Release the claws by using pliers to remove the lock shaft. - Remove the 4 screws (C). - Pull out the optical pickup from the 2 guide shafts. - Remove the 2 screws (D) to separate the holder from the optical pickup. 

Ref. No. 12	How to remove the spindle motor
Procedure 1 → 6 → 7 → 8 → 12	- Loosen the screw ① by using a 1.27 mm hexagonal wrench and remove the turntable. - Remove the 2 screws (②, ③). Caution: - Turntable height adjustment is necessary any time the turntable or spindle motor is replaced. - The (+) terminal of the spindle motor is indicated by the red mark. Adjustment of turntable height - Insert a 0.9 mm feeler gauge (RZZ0297) between the turntable and loading base as shown below.  - Tighten the turntable set-screw by using a 1.27 mm hexagonal wrench. Caution: Refer to optical pickup adjustment (see page 17).
Ref. No. 13	How to remove the power transformer
Procedure 1 → 2 → 8 → 13	- Remove the connector (FC11). - Remove the 2 screws. - Lift the power transformer to remove it from the chassis tab (arrow A). - Remove the power source P.C.B. in the direction of arrow B. • How to remove the power switch rod - Set the power switch in the "OFF" position. - Remove the power switch rod by using a screwdriver. 

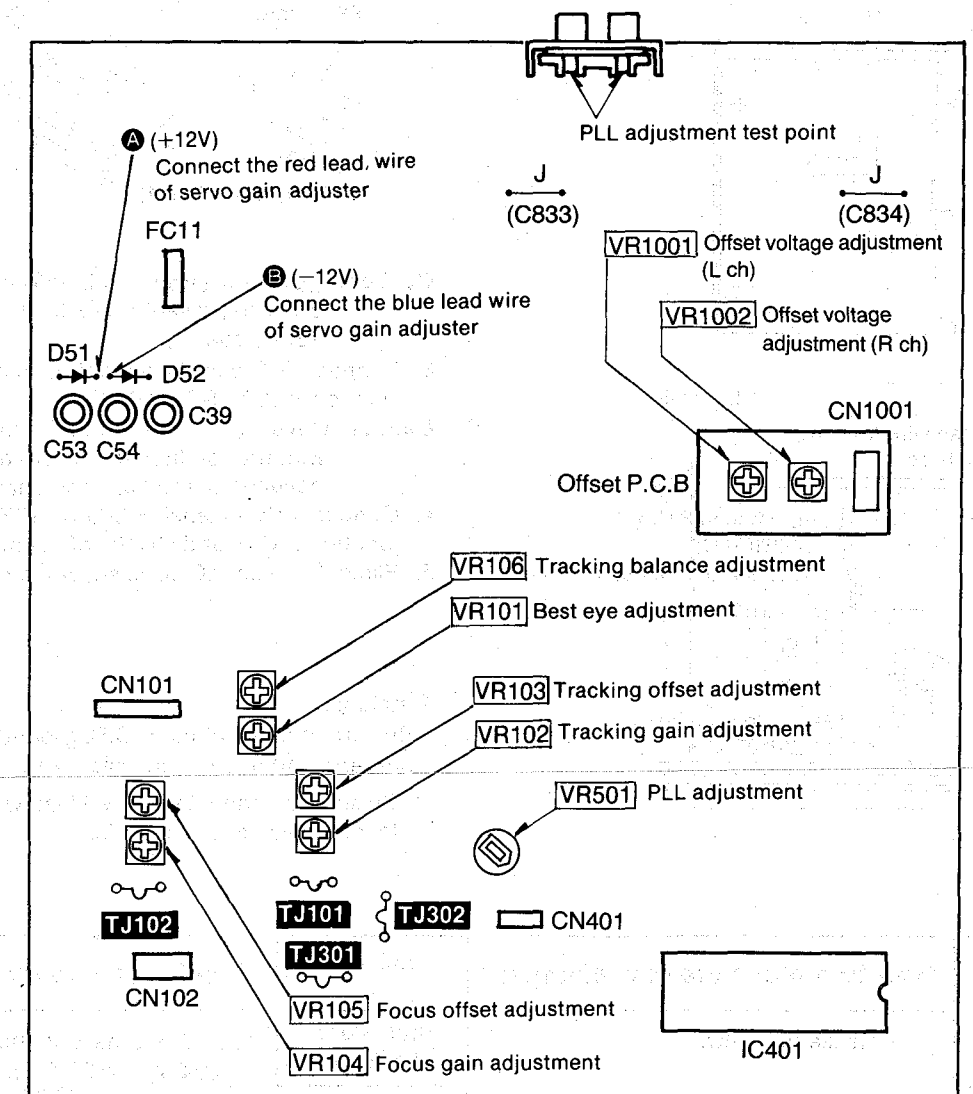
MEASUREMENTS AND ADJUSTMENTS

Caution:

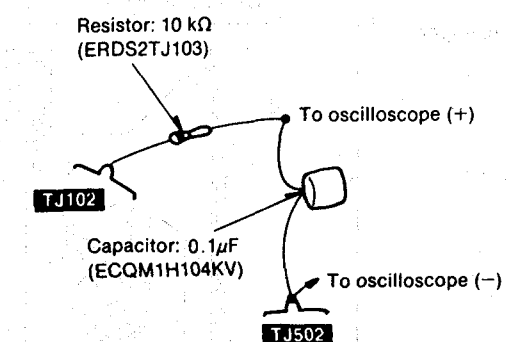
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

ADJUSTMENT POINTS

● Main P.C.B.



● Filter for turntable height adjustment



Compact Disc Player

SL-P550

DEUTSCH

ELEKTRISCHE JUSTIERUNG

Meßinstrumente und Spezialwerkzeuge

- Servo-Verstärkungs-Justierer (SZZP1017F)
- Testplatten
Testplatte (SZZP1014F) alter oder neuer Typ
Inspektions-Testplatte (SZZP1054C)
Ungleichmäßige Platte (SZZP1056C)
Schwarzbandplatte (SZZP1057C)

- Gewöhnliche Platte
- Zweikanal-Oszilloskop (mit Trigger) von 30 MHz oder mehr
- Niederfrequenz-Oszillator
- Zwischenstecker (SZZP1032F)

Justiervverfahren

Schritt 1: Das Gehäuse entfernen.

Schritt 2: Die einzelnen Regelwiderstände provisorisch einstellen.

Schritt 3: Beste Augen-(PD-Balance)-Justierung

Schritt 4: Den Servo-Verstärkungs-Justierer anschließen.

Schritt 5: Fokus-Verstärkungs-Justierung

Schritt 6: Spurlagen-Verstärkungs-Justierung

Schritt 7: Fokus-Offset-Justierung

Schritt 8: Spurlagen-Offset-Justierung

Schritt 9: Spurlagen-Offset-Balance-Justierung

Schritt 10: Den Servo-Verstärkungs-Justierer abtrennen.

Schritt 11: PLL-Justierung

Schritt 12: Nach der Justierung den Betrieb prüfen.

PROVISORISCHE JUSTIERUNG DER EINZELNEN REGELWIDERSTÄNDE

Hinweis:

Wenn bei einer Platte Überspringungen auftreten oder Wiedergabe nicht möglich ist, die einzelnen Regelwiderstände wie abgebildet provisorisch einstellen.

BESTE AUGEN-(PD-BALANCE)-JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.

Oszilloskop-Einstellung:

VOLT 200 mV
KIPP 0,5 μ sec.
EINGANG Wechselstrom

2. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. **VR101** so justieren, daß das Augenmuster des HF-Signals maximal gestreckt ist.
5. Den Netzschalter des Spielers ausschalten.

DEUTSCH

SL-P550

FOKUS-VERSTÄRKUNGS-JUSTIERUNG

1. Den Servo-Verstärkungs-Justierer anschließen.
2. Den Wahlschalter des Servo-Verstärkungs-Justierers auf **2** und den ON-OFF-Schalter auf **ON** stellen.
3. Den Niederfrequenz-Oszillator auf eine Frequenz von **750 Hz** und eine Ausgangsspannung von **100 mVs-s** einstellen. Dann den Oszillator an **OSC (+)** und **GND (-)** des Servo-Verstärkungs-Justierers anschließen.
4. Kanal 1 und Kanal 2 des Oszilloskops an **TP1** und **TP2** des Servo-Verstärkungs-Justierers anschließen. (**TP3** ist die Masseklemme.)

Oszilloskop-Einstellung:

VOLT 200 mV (beide Kanäle)
KIPP 1 msec.
EINGANG Gleichstrom

5. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
6. Den Spieler auf Wiedergabe schalten.
7. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"3"** stellen.
8. Auf dem Oszilloskop werden **750 Hz**-Signale angezeigt. **VR104** justieren, bis die Wellenform-Amplituden beider Kanäle identisch sind.
9. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"3"** auf **"2"** stellen.

SPURLAGEN-VERSTÄRKUNGS-JUSTIERUNG

1. Die Oszilloskop-Einstellung und der Anschluß sind die gleichen wie oben.
2. Den Niederfrequenz-Oszillator auf eine Frequenz von **1,0 kHz** und eine Ausgangsspannung von **100 mVs-s** stellen.
3. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"1"** stellen.

4. Auf dem Oszilloskop werden **1,0 kHz**-Signale angezeigt. **VR102** justieren, bis die Wellenform-Amplituden beider Kanäle identisch sind.
5. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"1"** auf **"2"** stellen.
6. Den Netzschalter des Spielers ausschalten.

FOKUS-OFFSET-JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.
Kanal 2 des Oszilloskops an **TJ102 (+)** und **TJ302 (-)** der Hauptplatine anschließen.

Oszilloskop-Einstellung:

VOLT 200 mV (beide Kanäle)
KIPP 0,5 msec.
EINGANG Wechselstrom (Kanal 1),
Gleichstrom (Kanal 2)
BETRIEBSART NORM
(Schaltgriff auf Kanal 1)

2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1057C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. Die Wellenform von Kanal 1 und Kanal 2 auf dem Oszilloskop prüfen und **VR105** so justieren, daß die Wellenform um den Triggerpunkt so wie in der Abbildung wird.

SPURLAGEN-OFFSET-JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.
Kanal 2 des Oszilloskops an **TJ101 (+)** und **TJ302 (-)** der Hauptplatine anschließen.

Oszilloskop-Einstellung:

VOLT 200 mV (beide Kanäle)
KIPP 0,5 msec.
EINGANG Wechselstrom (Kanal 1),
Gleichstrom (Kanal 2)
BETRIEBSART NORM
(Schaltgriff auf Kanal 1)

2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1057C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. Die Wellenform von Kanal 1 und Kanal 2 auf dem Oszilloskop prüfen und **VR103** so justieren, daß die Wellenform um den Triggerpunkt so wie in der Abbildung wird.

SPURLAGEN-OFFSET-BALANCE-JUSTIERUNG

1. Den Niederfrequenz-Oszillator auf eine Frequenz von **1 kHz** und eine Ausgangsspannung von **200 mVs-s** einstellen. Dann den Oszillator an **OSC (+)** und **GND (-)** des Servo-Verstärkungs-Justierers anschließen.
2. Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.

Oszilloskop-Einstellung:

VOLT 200 mV
KIPP 0,5 msec.
EINGANG Wechselstrom

3. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.

4. Den Spieler auf Wiedergabe schalten.
5. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"1"** stellen.
6. **VR106** so justieren, daß die Ausgangs-Wellenform wie abgebildet wird (Jitter ist minimiert).
7. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"1"** auf **"2"** stellen.
8. Den Netzschalter des Spielers ausschalten.
9. Den Servo-Verstärkungs-Justierer abtrennen und den Kurzschlußstecker von CN102 an der ursprünglichen Position einstecken.

PLL-JUSTIERUNG

1. Kanal 1 des Oszilloskops an die **LINE OUT-Buchse** (entweder linker oder rechter Kanal) und an **Masse** anschließen.

Oszilloskop-Einstellung:

VOLT 1 V

KIPP 1 msec.

EINGANG Gleichstrom

2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1054C) einsetzen.
3. **Spur Nr. 6 (Keil 0,7 mm)** der Testplatte abspielen.

4. Die auf dem Oszilloskop angezeigte Wellenform prüfen und **VR501** in den folgenden Schritten justieren.

Schritt 1. **VR501** langsam im Uhrzeigersinn drehen und den Punkt beobachten, an dem die Wellenform auf dem Oszilloskop anfängt zu verzerren.

Schritt 2. **VR501** langsam entgegen dem Uhrzeigersinn drehen und den Punkt beobachten, an dem die Wellenform auf dem Oszilloskop anfängt zu verzerren.

Schritt 3. **VR501** auf die Mitte zwischen den in den obigen Schritten "1" und "2" beobachteten Punkten einstellen.

PRÜFUNG DES WIEDERGABEBETRIEBS NACH DER JUSTIERUNG**Prüfung des Überspring-Suchlaufs**

1. Eine gewöhnliche Platte abspielen.
2. Die Skip-Taste drücken, um den Überspring-Suchlauf zu prüfen (in Vorwärts- und Rückwärtsrichtung).

Prüfung des manuellen Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Taste für manuellen Suchlauf drücken und prüfen, ob einwandfreier manueller Suchlauf mit niedriger und hoher Geschwindigkeit möglich ist (in Vorwärts- und Rückwärtsrichtung).

Prüfen auf Defekte

1. Die Testplatte (SZZP1054C) abspielen.
2. Die **Spur Nr. 6 (Keil 0,7 mm)** wiedergeben und prüfen, daß kein Tonausfall oder Rauschen auftritt.
3. Die **Spur Nr. 13 (schwarzer Punkt 0,7 mm)** wiedergeben und prüfen, daß ein Tonausfall oder Rauschen auftritt.

JUSTIERUNG DES OPTISCHEN ABTASTERS**Meßinstrumente und Spezialwerkzeuge**

- Zweikanal-Oszilloskop (mit Trigger) von 30 MHz oder mehr
- Testplatten
 - Testplatte (SZZP1014F) alter oder neuer Typ
 - Inspektions-Testplatte (SZZP1054C)
 - Ungleichmäßige Platte (SZZP1056C)

- Sechskantschlüssel (SZZP1044C... 1,5 mm)
- Sechskantschlüssel (1,27 mm)
- Fühlerlehre (RZZ0297)
- Filter
- Schrauben-Versiegelungsfarbe (RZZ0L01)

Justiervorgang

- Wenn der optische Abtaster und der Spindelmotor ausgetauscht werden, die Justierung nach dem folgenden Verfahren durchführen.

Schritt 1: Die einzelnen Regelwiderstände provisorisch justieren.

Schritt 2: Plattentellerhöhe-Justierung

Schritt 3: Mechanische Justierung

Schritt 4: Elektrische Justierung

PLATTENTELLERHÖHE-JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ102 (+)** und **TJ302 (-)** der Hauptplatine durch das Filter anschließen.

Oszilloskop-Einstellung:

VOLT 50 mV

KIPP 1 msec.

EINGANG Gleichstrom

2. Das Oszilloskop auf Gleichstrom-Nullbalance einstellen.
3. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.

Die Plattentellerhöhe wie folgt justieren:

- A. Die 0,9 mm Fühlerlehre (RZZ0297) wie unten gezeigt einführen.
- B. Die Plattenteller-Stellschraube lösen.
- C. Die Plattentellerhöhe durch geringfügiges Bewegen der Fühlerlehre in die entsprechende Richtung justieren.

4. Den Spieler auf Wiedergabe schalten.
5. Den auf dem Oszilloskop angezeigten Gleichstrompegel (A mV) messen. Wenn der Wert von A unter ± 60 mV liegt, ist die Plattentellerhöhe korrekt. Wenn er nicht in diesem Bereich liegt, die erforderlichen Justierungen unter Verwendung der 0,9 mm Fühlerlehre (RZZ0297) durchführen. Wenn A mehr als $+60$ mV beträgt, den Plattenteller absenken. Wenn A weniger als -60 mV beträgt, den Plattenteller anheben.

- D. Die Plattenteller-Stellschraube mit dem 1,27 mm Sechskantschlüssel anziehen.
- E. Die Plattentellerhöhe-Justierung nach den obigen Schritten 1~5 überprüfen.

MECHANISCHE JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.

Oszilloskop-Einstellung:

VOLT 200 mV

KIPP 0,5 μ sec.

EINGANG Wechselstrom

2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1056C) einsetzen.
3. Mit den Tasten für manuellen Suchlauf den Abtaster so positionieren, daß die Schrauben für mechanische Justierung mit den Justieröffnungen in der Bodenplatte ausgerichtet sind.

4. Unter Beobachtung des HF-Signals auf dem Oszilloskop die **beiden Justierschrauben** abwechselnd mit dem 1,5 mm Sechskantschlüssel (SZZP1044C) so einstellen, daß die vertikalen Schwankungen des HF-Signals minimal und das Augenmuster am weitesten gestreckt wird.
5. Den Netzschalter des Spielers ausschalten.
6. Nach der Justierung **Schrauben-Versiegelungsfarbe** (RZZ0L01) auf die Justierschrauben auftragen.

OFFSET-AUSGANGSSPANNUNG-JUSTIERUNG**Meßinstrument**

- Digital-Voltmeter

1. Die Taste "**STOP**" drücken und den CD-Spieler auf "**STOP MODE**" stellen.
2. Den Digital-Voltmeter an den Überbrückungsdraht anschließen, der sich in **C833 (linker Kanal) (+)** oder **C834 (rechter Kanal) (+)** befindet, und an die Ausgangsklemme **GND3 (-)** anschließen.

3. **VR1001 (linker Kanal)** oder **VR1002 (rechter Kanal)** so einstellen, daß die Spannung ± 1 mV beträgt.

FRANÇAIS

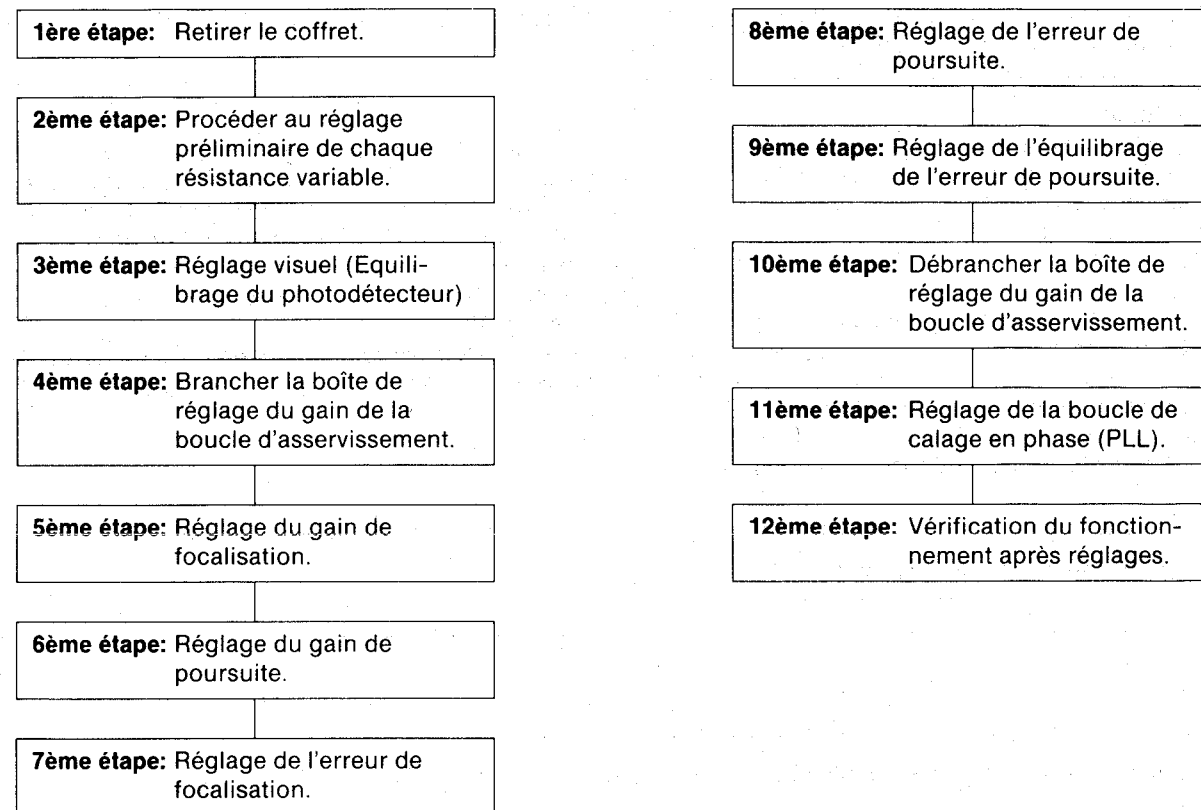
REGLAGES ELECTRIQUES

Appareils de mesure et outillage spécial

- Boîte de réglage du gain de la boucle d'asservissement (SZZP1017F)
- Disques d'essai
 - Disque d'essai (SZZP1014F) nouveau ou ancien modèle
 - Disque de vérification (SZZP1054C)
 - Disque voilé (SZZP1056C)
 - Disque à bande noire (SZZP1057C)

- Disque ordinaire
- Oscilloscope double track à déclenchement, 30 MHz (ou mieux)
- Générateur basse fréquence
- Adaptateur (SZZP1032F)

Procédure de réglage



Réglage préliminaire de chaque résistance variable

Remarque:

Si la lecture du disque est impossible ou que des sauts de portions enregistrées apparaissent, procéder au réglage de chaque résistance variable comme il est indiqué ci-après.

REGLAGE VISUEL (EQUILIBRAGE DU PHOTO-DETECTEUR)

- Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301 (+)** et **TJ302 (-)** du circuit imprimé principal.

Réglages de l'oscilloscope:

TENSION 200 mV
BALAYAGE 0,5 μ s
ENTREE CA

- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
- Procéder à la lecture du disque.
- Régler **VR101** de sorte que la figure du signal radiofréquence soit aussi étirée que possible.
- Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.

REGLAGE DU GAIN DE FOCALISATION

- Brancher la boîte de réglage du gain de la boucle d'asservissement.
- Placer le commutateur de cette boîte sur la position **2** et l'interrupteur d'alimentation sur la position **ON**.
- Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **750 Hz** avec une amplitude de **100 mV crête à crête**. Brancher ce générateur entre les bornes **OSC (+)** et **GND (-)** de la boîte de réglage.
- Relier les entrées (CH1 et CH2) de l'oscilloscope aux bornes **TP1** et **TP2** de la boîte de réglage. (**TP3** est la borne de masse.)

Réglages de l'oscilloscope:

TENSION 200 mV (sur les deux entrées)
BALAYAGE 1 ms
ENTREE CC

- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
- Procéder à la lecture du disque.
- Basculer le commutateur de la boîte de réglage de la position **2** à la position **3**.
- Deux traces du signal à **750 Hz** apparaissent sur l'écran de l'oscilloscope. Régler **VR104** de sorte que les amplitudes des deux traces soient identiques.
- Basculer le commutateur de la boîte de réglage de la position **3** à la position **2**.

REGLAGE DU GAIN DE POURSUITE

- Les raccordements et les réglages de l'oscilloscope sont identiques à ceux du réglage précédent.
- Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **1,0 kHz** avec une amplitude de **100 mV crête à crête**.
- Basculer le commutateur de la boîte de réglage de la position **2** à la position **1**.

- Deux traces du signal à **1,0 kHz** apparaissent sur l'écran de l'oscilloscope. Régler **VR102** de sorte que les amplitudes des deux traces soient identiques.
- Basculer le commutateur de la boîte de réglage de la position **1** à la position **2**.
- Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.

REGLAGE DE L'ERREUR DE FOCALISATION

- Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301 (+)** et **TJ302 (-)** du circuit imprimé principal. Relier l'entrée 2 (CH2) de l'oscilloscope aux bornes **TJ102 (+)** et **TJ302 (-)** du circuit imprimé principal.

Réglages de l'oscilloscope:

TENSION 200 mV (sur les deux entrées)
BALAYAGE 0,5 ms
ENTREE CA (CH1), CC (CH2)
MODE NORM (le déclenchement est commandé par CH1)

- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1057C).
- Procéder à la lecture du disque.
- Observer les deux traces et régler **VR105** de sorte que l'allure des courbes au voisinage du point de déclenchement soit celle de l'illustration.

REGLAGE DE L'ERREUR DE POURSUITE

- Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301 (+)** et **TJ302 (-)** du circuit imprimé principal. Relier l'entrée 2 (CH2) de l'oscilloscope aux bornes **TJ101 (+)** et **TJ302 (-)** du circuit imprimé principal.

Réglages de l'oscilloscope:

TENSION 200 mV (sur les deux entrées)
BALAYAGE 0,5 ms
ENTREE CA (CH1), CC (CH2)
MODE NORM (le déclenchement est commandé par CH1)

- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1057C).
- Procéder à la lecture du disque.
- Observer les deux traces et régler **VR103** de sorte que l'allure des courbes au voisinage du point de déclenchement soit celle de l'illustration.

REGLAGE DE L'EQUILIBRE DE L'ERREUR DE POURSUITE

1. Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **1 kHz** avec une amplitude de **200 mV crête à crête**. Brancher ce générateur entre les bornes **OSC (+)** et **GND (-)** de la boîte de réglage.
2. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301 (+)** et **TJ302 (-)** du circuit imprimé principal.
Réglages de l'oscilloscope:
TENSION200 mV
BALAYAGE0,5 ms
ENTREECA
3. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).

4. Procéder à la lecture du disque.
5. Basculer le commutateur de la boîte de réglage de la position **2** à la position **1**.
6. Régler **VR106** de sorte que l'allure du signal soit celle de l'illustration (l'instabilité de phase est minimale).
7. Basculer le commutateur de la boîte de réglage de la position **1** à la position **2**.
8. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.
9. Débrancher la boîte de réglage et replacer le connecteur de court-circuit de CN102 dans la position d'origine.

REGLAGE DE LA BOUCLE DE CALAGE EN PHASE

1. Brancher l'entrée (CH1) de l'oscilloscope entre la borne de sortie ligne (**LINE OUT**) de la voie droite ou gauche et la **masse**.
Réglages de l'oscilloscope:
TENSION1 V
BALAYAGE1 ms
ENTREECC
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1054C).
3. Lire la **page No. 6** du disque (**coin 0,7 mm**).

4. Observer l'allure du signal sur l'oscilloscope et régler **VR501** de la manière suivante:
1ère étape: Tourner **VR501** doucement dans le sens des aiguilles d'une montre et noter le moment où le signal commence à être perturbé.
2ème étape: Tourner **VR501** doucement dans le sens contraire des aiguilles d'une montre et noter le moment où le signal commence à être perturbé.
3ème étape: Régler **VR501** au milieu des deux positions notées au cours des opérations **1** et **2** ci-dessus.

VERIFICATION DU FONCTIONNEMENT APRES REGLAGES**Vérification du saut de page**

1. Lire un disque ordinaire.
2. Appuyer sur la touche de commande de saut de page et s'assurer que le fonctionnement est correct dans les deux sens.

Vérification de la recherche manuelle

1. Lire un disque ordinaire.
2. Appuyer sur la touche de recherche manuelle et s'assurer que le fonctionnement s'effectue sans à-coups dans les deux vitesses possibles.

Vérification de la lecture

1. Mettre en place un des disques d'essai (SZZP1054C).
2. Lire la **page No. 6 (coin 0,7 mm)** et s'assurer qu'il n'y a ni bruit ni perte de signal.
3. Lire la **page No. 13 (point noir 0,7 mm)** et s'assurer qu'il n'y a ni bruit ni perte d'information.

REGLAGE DU CAPTEUR OPTIQUE**Appareils de mesure et outillage spécial**

- Oscilloscope double trace à déclenchement, 30 MHz (ou mieux)
- Disques d'essai
Disque d'essai (SZZP1014F) nouveau modèle ou ancien modèle
Disque de vérification (SZZP1054C)
Disque voilé (SZZP1056C)
- Clé hexagonale (SZZP1044C...1,5 mm)
- Clé hexagonale (1,27 mm)
- Jauge d'épaisseur (RZZ0297)
- Filtre
- Vernis de blocage (RZZ0L01)

Procédure de réglage

- Si le capteur optique ou le circuit imprimé du moteur de rotation sont remplacés, procéder aux réglages en suivant la procédure décrite ci-dessous.

1ère étape: Procéder au réglage préliminaire de chaque résistance variable.

2ème étape: Réglage de la hauteur de la platine.

3ème étape: Réglage mécanique.

4ème étape: Réglage électrique.

REGLAGE DE LA HAUTEUR DE LA PLATINE

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ102 (+)** et **TJ302 (-)** du circuit imprimé principal.
Réglages de l'oscilloscope:
TENSION50 mV
BALAYAGE1 ms
ENTREECC
2. Régler l'oscilloscope de sorte que la trace soit au centre lorsque l'entrée est égale à 0 V.
3. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).

Réglage de la hauteur de la platine:

- A. Introduire la jauge de 0,9 mm (RZZ0297) comme il est indiqué ci-dessous.
- B. Dévisser la vis de positionnement de la platine.
- C. Régler la hauteur de la platine en déplaçant légèrement la jauge dans la direction voulue.

4. Procéder à la lecture du disque.
5. Mesurer la tension continue (A mV) du signal apparaissant sur l'oscilloscope.
Si la valeur A est à l'intérieur de la fourchette **±60 mV**, la hauteur de la platine est correcte. Dans la cas contraire, procéder aux réglages requis en employant la jauge de profondeur (RZZ0297). Si A est supérieure à **+60 mV**, diminuer la hauteur de la platine. Si A est inférieure à **-60 mV**, augmenter la hauteur de la platine.

- D. Resserrer la vis de positionnement au moyen de la clé de 1,27 mm.
- E. Vérifier la hauteur de la platine en procédant aux opérations 1 à 5 décrites ci-dessus.

REGLAGE MECANIQUE

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301 (+)** et **TJ302 (-)** du circuit imprimé principal.
Réglages de l'oscilloscope:
TENSION200 mV
BALAYAGE0,5 μ s
ENTREECA
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1056C).
3. A l'aide des touches de recherche, déplacer le capteur de telle manière que les vis de réglage mécanique apparaissent à travers les trous pratiqués sur le fond de l'appareil.

4. Observer l'allure du signal radiofréquence sur l'oscilloscope et agir alternativement sur les **deux vis** à l'aide de la clé hexagonale (SZZP1044C) de sorte que la fluctuation verticale des courbes soit minimale et que leur forme soit aussi étirée que possible.
5. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.
6. Le réglage terminé, appliquer une **goutte de vernis de blocage** (RZZ0L01) sur la vis de réglage.

COMPENSATION DU NIVEAU DE SORTIE**Reglage audio**

- Voltmètre digital

1. Appuyer sur la touche "**STOP**" pour amener le lecteur à l'arrêt.
2. Brancher le voltmètre digital entre **C833 (Voie gauche) (+)** ou **C834 (Voie droite) (+)** et la borne de sortie **GND3 (-)**.
3. Régler **VR1001 (Voie gauche)** ou **VR1002 (Voie droite)** de sorte que la tension soit égale à **±1 mV**.

ESPAÑOL

AJUSTE ELECTRICO

Instrumentos de medición y herramientas especiales

- Ajustador de servogancia (SZZP1017F)
- Discos de prueba
 - Disco de prueba (SZZP1014F) tipo antiguo o nuevo
 - Disco de prueba de inspección (SZZP1054C)
 - Disco desperejo (SZZP1056C)
 - Disco de banda negra (SZZP1057C)

- Disco común
- Osciloscopio de dos canales (con disparador) de 30 MHz o más
- Oscilador de baja frecuencia
- Conector de conversión (SZZP1032F)

Procedimiento de ajuste

Paso 1: Saque el mueble.

Paso 2: Realice el ajuste temporario de cada VR.

Paso 3: Ajuste visual óptimo (equilibrio de PD [diferencia de potencia]).

Paso 4: Conecte el ajustador de servogancia.

Paso 5: Ajuste la ganancia de enfoque.

Paso 6: Ajuste la ganancia de seguimiento.

Paso 7: Ajuste la desviación de enfoque.

Paso 8: Ajuste la desviación de seguimiento.

Paso 9: Ajuste el balance de desviación.

Paso 10: Desconecte el ajustador de servogancia.

Paso 11: Ajuste el PLL (Bucle de enganche de fase).

Paso 12: Compruebe el funcionamiento después del ajuste.

AJUSTE TEMPORARIO DE CADA VR

Nota:

Si el disco salta o no puede reproducirse, ajuste temporariamente cada VR como se muestra.

AJUSTE VISUAL OPTIMO (EQUILIBRIO DE PD)

1. Conecte CH1 del osciloscopio a **TJ301 (+)** y **TJ302 (-)** del P.C.B. (tablero de circuitos impresos) principal.

Puesta de osciloscopio: VOLT200 mV
Barrido0,5 μ seg.
EntradaCA

2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).

3. Ponga el reproductor en la modalidad de reproducción.
4. Ajuste **VR101** de modo que el patrón visual de la señal de RF se ensanche al máximo.
5. Ponga el interruptor de alimentación del reproductor en la posición **OFF**.

AJUSTE DE LA GANANCIA DE ENFOQUE

1. Conecte el ajustador de servogancia.
2. Ponga el conmutador selector del ajustador de servogancia en **2** y el interruptor ON-OFF en **ON**.
3. Ajuste el oscilador de baja frecuencia a la frecuencia de **750 Hz** y voltaje de salida a **100 mVp-p**. Luego conecte el oscilador a los terminales **OSC (+)** y **GND (-)** del ajustador de servogancia.
4. Conecte CH1 y CH2 del osciloscopio a **TP1** y **TP2** del ajustador de servogancia (**TP3** es el terminal de puesta a tierra).

Puesta de osciloscopio:

VOLT200 mV (ambos canales)
BARRIDO1 mseg.
ENTRADA.....CC

5. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
6. Ponga el reproductor en la modalidad de reproducción.
7. Cambie el conmutador selector del ajustador de servogancia de **"2"** a **"3"**.
8. En el osciloscopio se visualizarán señales de **750 Hz**. Ajuste **VR104** hasta que las amplitudes de la forma de onda de ambos canales sean iguales.
9. Cambie el conmutador selector del ajustador de servogancia de **"3"** a **"2"**.

AJUSTE DE LA GANANCIA DE SEGUIMIENTO

1. La puesta del osciloscopio y las conexiones son las mismas que las indicadas anteriormente.
2. Ponga el oscilador de baja frecuencia a **1,0 kHz** y voltaje de salida de **100 mVp-p**.
3. Cambie el conmutador selector del ajustador de servogancia de **"2"** a **"1"**.

4. En el osciloscopio se visualizarán señales de **1,0 kHz**. Ajuste **VR102** hasta que las amplitudes de la forma de onda de ambos canales sean iguales.
5. Cambie el conmutador selector del ajustador de servogancia de **"1"** a **"2"**.
6. Ponga en **OFF** el interruptor de alimentación del reproductor.

AJUSTE DE LA DESVIACION DE ENFOQUE

1. Conecte CH1 del osciloscopio a **TJ301 (+)** y **TJ302 (-)** del P.C.B. principal.
Conecte CH2 del osciloscopio a **TJ102 (+)** y **TJ302 (-)** del P.C.B. principal.

Puesta de osciloscopio:

VOLT200 mV (ambos canales)
Barrido.....0.5 mseg.
EntradaCA (CH1), CC (CH2)
Modalidad.....NORM (Disparo vía CH1)

2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1057C).
3. Ponga el reproductor en la modalidad de reproducción.
4. Verifique la forma de onda de CH1 y CH2 en el osciloscopio, y ajuste **VR105** de modo que la forma de onda alrededor del punto de disparo sea como la que se muestra en la figura.

AJUSTE DE LA DESVIACION DE SEGUIMIENTO

1. Conecte CH1 del osciloscopio a **TJ301 (+)** y **TJ302 (-)** del P.C.B. principal.
Conecte CH2 del osciloscopio a **TJ101 (+)** y **TJ302 (-)** del P.C.B. principal.

Puesta de osciloscopio:

VOLT200 mV (ambos canales)
Barrido.....0.5 mseg.
EntradaCA (CH1), CC (CH2)
Modalidad.....NORM (Disparo vía CH1)

2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1057C).
3. Ponga el reproductor en la modalidad de reproducción.
4. Verifique la forma de onda de CH1 y CH2 en el osciloscopio y ajuste **VR103** de modo que la forma de onda alrededor del punto de disparo sea como la que se muestra en la figura.

AJUSTE DEL EQUILIBRIO DE DESVIACION DEL SEGUIMIENTO

1. Ajuste el oscilador de baja frecuencia a la frecuencia de **1 kHz** y voltaje de salida de **200 mVp-p**. Luego conecte el oscilador a los terminales **OSC (+)** y **GND (-)** del ajustador de servogancia.
2. Conecte CH1 del osciloscopio a **TJ301 (+)** y **TJ302 (-)** del P.C.B. principal.

Puesta de osciloscopio:

VOLT200 mV
Barrido0,5 mseg.
EntradaCA

3. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).

4. Ponga el reproductor en la modalidad de reproducción.
5. Cambie el conmutador selector del ajustador de servogancia de **"2"** a **"1"**.
6. Ajuste **VR106** de modo que la forma de onda de la salida sea como se muestra (la fluctuación se hace mínima).
7. Lleve el conmutador selector del ajustador de servogancia de **"1"** a **"2"**.
8. Ponga en **OFF** el interruptor de alimentación del reproductor.
9. Desconecte el ajustador de servogancia e inserte el conector de cortocircuito de CN102 en la posición original.

AJUSTE DEL PLL (BUCLE DE ENGANCHE DE FASE)

1. Conecte CH1 del osciloscopio al **terminal LINE OUT** (del canal L o del R) y a **tierra**.

Puesta de osciloscopio: VOLT 1 V
Barrido 1 mseg.
Entrada CC

2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1054C).
3. Reproduzca el **surco No. 6 (cuña de 0,7 mm)** del disco de prueba.

4. Verifique la forma de onda que se visualiza en el osciloscopio y ajuste **VR501** de acuerdo con los siguientes pasos.

Paso 1. Gire lentamente **VR501** en el sentido de las manecillas del reloj y observe el punto en el que la forma de onda del osciloscopio comienza a deformarse.

Paso 2. Gire lentamente **VR501** en el sentido contrario a las manecillas del reloj y observe el punto en que la forma de la onda del osciloscopio comienza a deformarse.

Paso 3. Fije **VR501** en la posición intermedia entre los puntos observados en los pasos anteriores "1" y "2".

COMPROBACION DEL FUNCIONAMIENTO DE RE-PRODUCCION DESPUES DEL AJUSTE**Comprobación de exploración de salto**

1. Reproduzca un disco común.
2. Pulse el botón de salto para comprobar la exploración de salto (tanto en la modalidad directa como en la inversa).

Comprobación de exploración manual

1. Reproduzca un disco común.
2. Pulse el botón de exploración manual para comprobar si la exploración manual se puede realizar suavemente a velocidades bajas y altas (tanto en la modalidad directa como en la inversa).

Comprobación de reproducibilidad

1. Reproduzca el disco de prueba (SZZP1054C).
2. Reproduzca el **surco No. 6 (cuña de 0,7 mm)** y verifique si no hay salto de sonido o ruido.
3. Reproduzca el **surco No. 13 (punto negro de 0,7 mm)** y verifique si no hay salto de sonido o ruido.

AJUSTE DE LA TOMA OPTICA**Instrumentos de medición y herramientas especiales**

- Osciloscopio de dos canales (con disparador) de 30 MHz o más
- Discos de prueba
Disco de prueba (SZZP1014F) tipo antiguo o nuevo
Disco de prueba de inspección (SZZP1054C)
Disco despajeo (SZZP1056C)

- Llave de tuercas hexagonal (SZZP1044C... 1,5 mm)
- Llave de tuercas hexagonal (1,27 mm)
- Calibre de espesor (RZZ0297)
- Filtro
- Adherencia de cierre de tornillo (RZZ0L01)

Procedimiento de ajuste

- Si se cambia la toma óptica y el motor del eje, ajústelos de acuerdo con el siguiente procedimiento.

Paso 1: Ajustar temporariamente cada VR.

Paso 2: Ajuste la altura del plato giradiscos.

Paso 3: Ajuste mecánico.

Paso 4: Ajuste eléctrico.

AJUSTE DE LA ALTURA DEL PLATO GIRADISCOS

1. Conecte CH1 del osciloscopio a **TJ102 (+)** y **TJ302 (-)** del P.C.B. principal a través del filtro.

Puesta de osciloscopio: VOLT 50 mV
Barrido 1 mseg.
Entrada CC

2. Ajuste el equilibrio cero de CC del osciloscopio.
3. Lleve el interruptor de alimentación del reproductor a **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
4. Ponga el reproductor en la modalidad de reproducción.

Ajuste la altura del plato giradiscos de la siguiente forma:

- A. Inserte el calibre de espesor de 0,9 mm (RZZ0297), como se muestra abajo.
- B. Afloje el tornillo de ajuste del plato giradiscos.
- C. Ajuste la altura del plato giradiscos moviendo el calibre levemente en la dirección apropiada.

5. Mida el nivel de CC (AmV) que se visualiza en el osciloscopio.

Si el valor de A está dentro de la gama de ± 60 mV, la altura del plato giradiscos es correcta. Si no está dentro de esta gama, realice los ajustes necesarios utilizando el calibre de espesor (RZZ0297). Si A es mayor que $+60$ mV, baje el plato giradiscos. Si A es menor que -60 mV, levante el plato giradiscos.

- D. Apriete el tornillo de ajuste del plato giradiscos usando la llave de tuerca hexagonal de 1,27 mm.
- E. Compruebe el ajuste de la altura del plato giradiscos siguiendo los pasos 1~5 anteriores.

AJUSTE MECANICO

1. Conecte CH1 del osciloscopio a **TJ301 (+)** y **TJ302 (-)** del P.C.B. principal.

Puesta de osciloscopio: VOLT 200 mV
Barrido 0,5 μ seg.
Entrada CA

2. Lleve el interruptor de alimentación del reproductor a **ON** e inserte el disco de prueba (SZZP1056C).
3. Utilizando los botones de exploración manual, mueva la toma de modo que los tornillos de ajuste mecánico se alineen con los orificios de ajuste del panel inferior.

4. Mientras comprueba la señal de RF del osciloscopio, apriete los **dos tornillos de ajuste** alternativamente con la llave hexagonal de 1,5 mm (SZZP1044C) de modo que la fluctuación vertical de la señal de RF se haga mínima y que el patrón visual se ensanche al máximo.

5. Lleve el interruptor de alimentación del reproductor a **OFF**.
6. Después del ajuste, aplique **adherencia de cierre de tornillo** (RZZ0L01) a los tornillos de ajuste.

ADJUSTE DEL AUDIO**Instrumento de medición**

- Voltímetro digital

1. Pulse el botón de parada **"STOP"** y ponga el reproductor en la modalidad de parada.
2. Conecte el voltímetro digital al cable de conexión montado en **C833 (Lch) (+)** o **C834 (Rch) (+)** y al terminal de salida **GND3 (-)**.

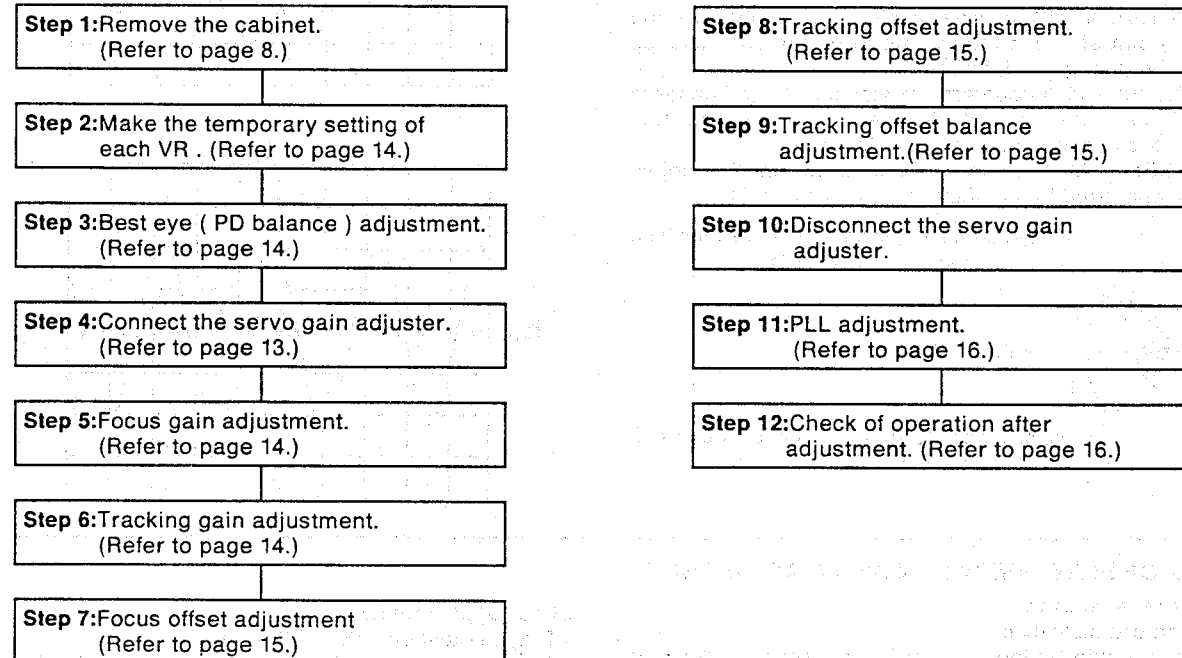
3. Ajuste **VR1001 (Lch)** o **VR1002 (Rch)** de modo que el voltaje sea ± 1 mV.

ELECTRICAL ADJUSTMENT

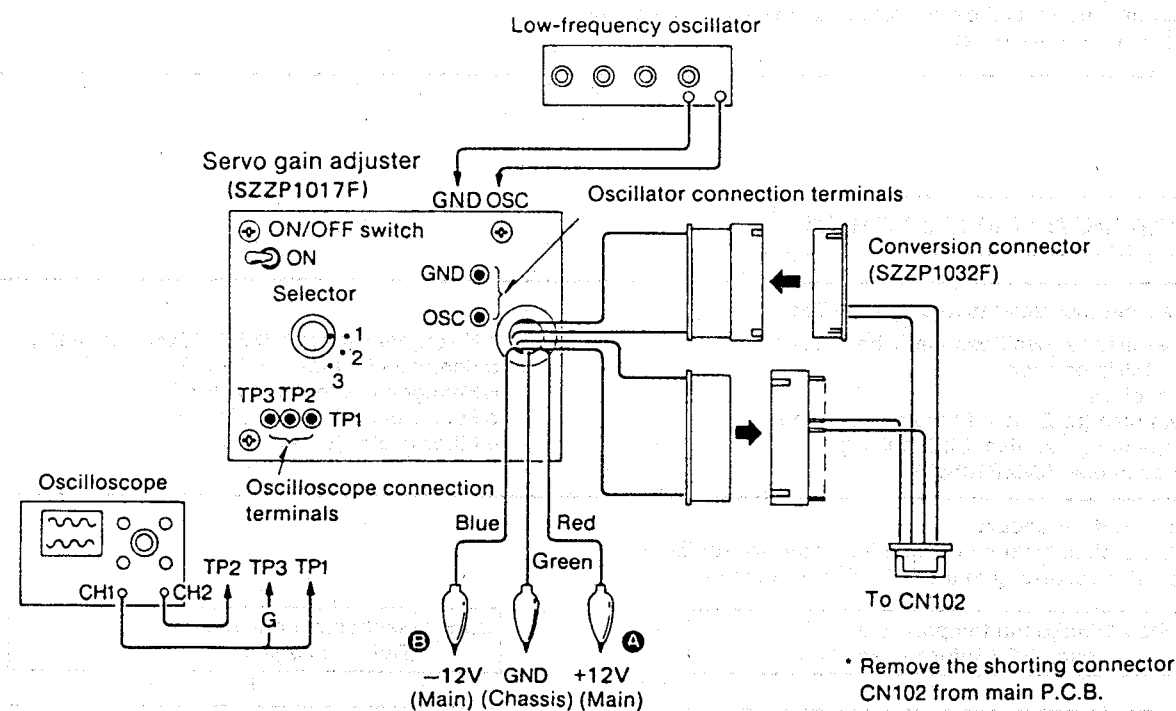
Measuring Instruments and Special Tools

- Servo gain adjuster (SZZP1017F)
- Test discs
 - Test disc (SZZP1014F) old or new type
 - Inspection test disc (SZZP1054C)
 - Uneven disc (SZZP1056C)
 - Black band disc (SZZP1057C)
- Ordinary disc
- Two-channel oscilloscope (with trigger) of 30MHz or over
- Low frequency oscillator
- Conversion connector(SZZP1032F)

Adjustment Procedure

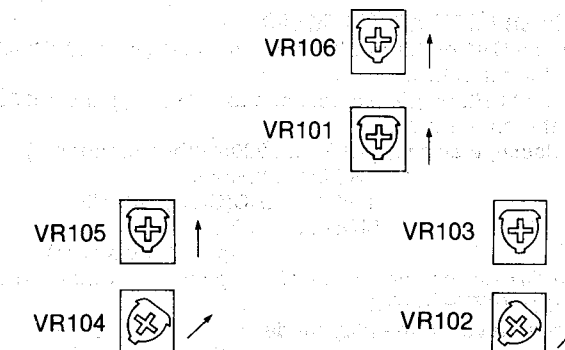


Connection of Servo Gain Adjuster



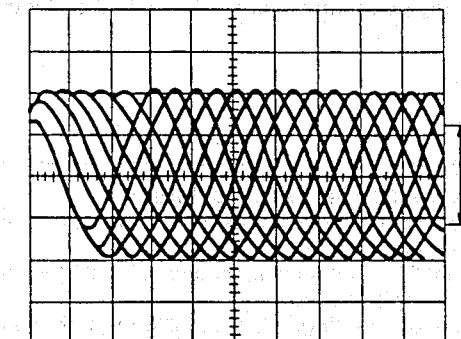
TEMPORARY SETTING OF EACH VR

Note :
If a disc skips or can not be played back , adjust each VR temporarily, as shown.



BEST EYE(PD BALANCE) ADJUSTMENT

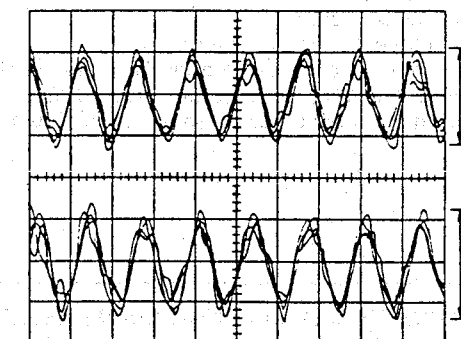
- 1.Connect CH1 of the oscilloscope to **TJ301 (+)** and **TJ302 (-)** of the main P.C.B.
Oscilloscope setting:VOLT.....200mV
SWEEP.....0.5μsec.
INPUT.....AC
- 2.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
- 3.Set the player to the play mode.
- 4.Adjust **VR101** so that the eye pattern of RF signal is stretched to maximum.
- 5.Turn **OFF** the power switch of the player.



*Most stretched eye pattern

FOCUS GAIN ADJUSTMENT

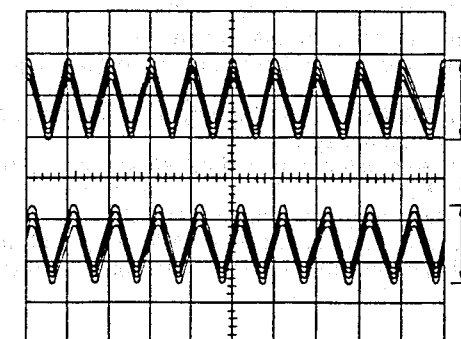
- 1.Connect the servo gain adjuster.(Refer to page 13.)
- 2.Set the selector switch of the servo gain adjuster to **2** and ON-OFF switch to **ON**.
- 3.Set the low frequency oscillator to a frequency of **750Hz** and an output voltage of **100mVp-p**. Then connect the oscillator to **OSC (+)** and **GND (-)** terminals of the servo gain adjuster.
- 4.Connect CH1 and CH2 of the oscilloscope to **TP1** and **TP2** of the servo gain adjuster.(TP3 is the ground terminal.)
Oscilloscope setting:VOLT.....200mV(both channels)
SWEEP.....1msec.
INPUT.....DC
- 5.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
- 6.Set the player to the play mode.
- 7.Set the selector switch of the servo gain adjuster from **"2"** to **"3"**.
- 8.**750Hz** signals will be displayed on the oscilloscope. Adjust **VR104** until the waveform amplitudes of both channels are equal.
- 9.Shift the selector switch of the servo gain adjuster from **"3"** to **"2"**.



* Make a=b

TRACKING GAIN ADJUSTMENT

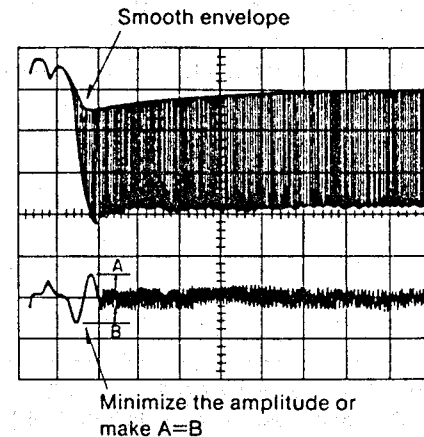
- 1.Oscilloscope setting and connection are same as above.
- 2.Set the low frequency oscillator to a frequency of **1.0kHz** and an output voltage of **100mVp-p**.
- 3.Set the selector switch of the servo gain adjuster from **"2"** to **"1"**.
- 4.**1.0kHz** signals will be displayed on the oscilloscope. Adjust **VR102** until the waveform amplitudes of both channels are equal.
- 5.Shift the selector switch of the servo gain adjuster from **"1"** to **"2"**.



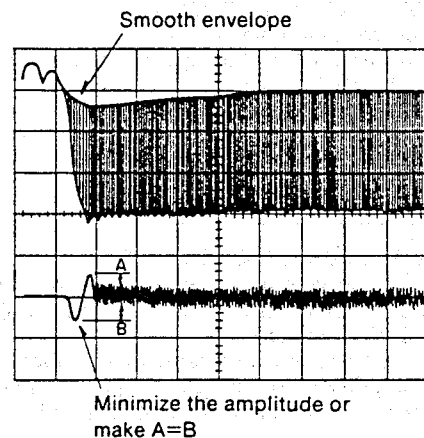
*Make a=b

FOCUS OFFSET ADJUSTMENT

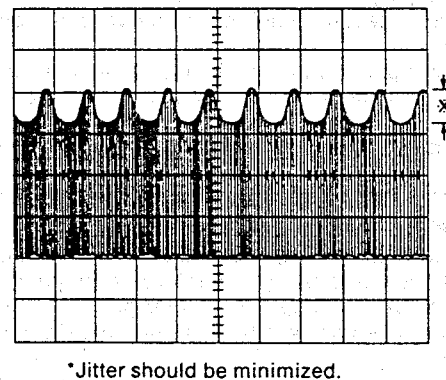
1. Connect CH1 of the oscilloscope to **TJ301 (+)** and **TJ302 (-)** of the main P.C.B.
Connect CH2 of the oscilloscope to **TJ102 (+)** and **TJ302 (-)** of the main P.C.B.
Oscilloscope setting: VOLT.....200mV(both channels)
SWEEP.....0.5msec.
INPUT.....AC(CH1),DC(CH2)
MODE.....NORM
(Triggering via CH1)
2. Turn **ON** the power switch of the player and insert the test disc (SZZP1057C).
3. Set the player to the play mode.
4. Check the waveform of CH1 and CH2 on the oscilloscope and adjust **VR105**, so that the waveform around the triggering point becomes as shown in the illustration.

**TRACKING OFFSET ADJUSTMENT**

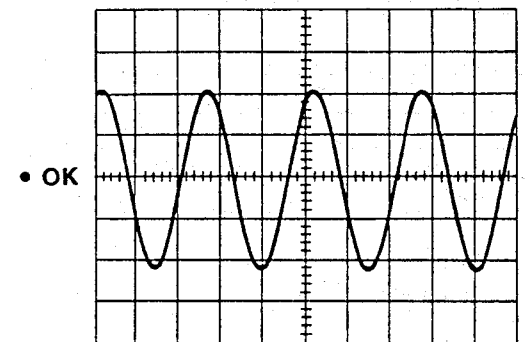
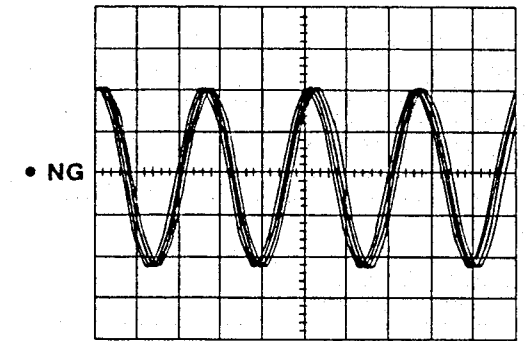
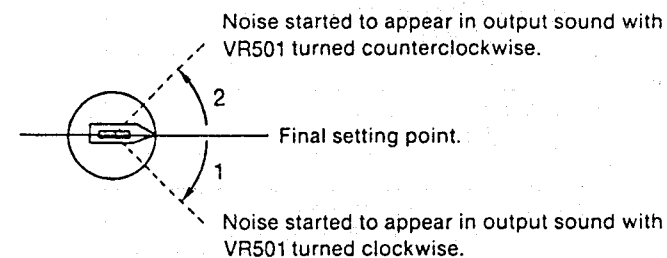
1. Connect CH1 of the oscilloscope to **TJ301 (+)** and **TJ302 (-)** of the main P.C.B.
Connect CH2 of the oscilloscope to **TJ101 (+)** and **TJ302 (-)** of the main P.C.B.
Oscilloscope setting: VOLT.....200mV(both channels)
SWEEP.....0.5msec.
INPUT.....AC(CH1),DC(CH2)
MODE.....NORM
(Triggering via CH1)
2. Turn **ON** the power switch of the player and insert the test disc (SZZP1057C).
3. Set the player to the play mode.
4. Check the waveform of CH1 and CH2 on the oscilloscope and adjust **VR103**, so that the waveform around the triggering point becomes as shown in the illustration.

**TRACKING OFFSET BALANCE ADJUSTMENT**

1. Set the low frequency oscillator to a frequency of **1kHz** and an output voltage of **200mVp-p**. Then connect the oscillator to **OSC (+)** and **GND (-)** terminals of the servo gain adjuster.
2. Connect CH1 of the oscilloscope to **TJ301 (+)** and **TJ302 (-)** of the main P.C.B.
Oscilloscope setting: VOLT.....200mV
SWEEP.....0.5msec.
INPUT.....AC
3. Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
4. Set the player to the play mode.
5. Set the selector switch of the servo gain adjuster from "2" to "1".
6. Adjust **VR106**, so that the output waveform is as shown (jitter is minimized).
7. Shift the selector switch of the servo gain adjuster from "1" to "2".
8. Turn **OFF** the power switch of the player.
9. Disconnect the servo gain adjuster, and insert the shorting connector of CN102 to the original position.

**PLL ADJUSTMENT**

1. Connect CH1 of the oscilloscope to the **LINE OUT** terminal (either of Lch or Rch) and **ground**.
Oscilloscope setting: VOLT.....1V
SWEEP.....1msec.
INPUT.....DC
2. Turn **ON** the power switch of the player and insert the test disc (SZZP1054C).
3. Play **Track No.6 (wedge 0.7mm)** of the test disc.
4. Check the waveform displayed on the oscilloscope and adjust **VR501** in the following steps.
Step 1. Turn **VR501** clockwise slowly and observe the point at which the waveform on the oscilloscope begins to be disturbed.
Step 2. Turn **VR501** counterclockwise slowly and observe the point at which the waveform on the oscilloscope begins to be disturbed.
Step 3. Set **VR501** in the middle between the points observed in the above steps "1" and "2".

**CHECK OF PLAY OPERATION AFTER ADJUSTMENT****Check of skip search**

1. Play an ordinary disc.
2. Press the skip button and verify skip search operation (forward and reverse).

Check of manual search

1. Play an ordinary disc.
2. Press the manual search button and verify that smooth manual search can be performed at low and high speeds (forward and reverse).

Check of playability

1. Play the test disc (SZZP1054C).
2. Play the track No.6 (wedge 0.7mm) and verify that there is no skip sound or noise.
3. Play the track No.13 (black dot 0.7mm) and verify that there is no skip sound or noise.

OPTICAL PICKUP ADJUSTMENT**Measuring Instruments and Special Tools**

- Tow-channel oscilloscope (with trigger) of 30MHz or over
- Test discs
Test disc (SZZP1014F) old or new type
Inspection test disc (SZZP1054C)
Uneven disc (SZZP1056C)

- Hexagonal wrench (SZZP1044C....1.5mm)
- Screw lock paint (RZZ0L01)
- Hexagonal wrench (1.27mm)
- Feeler gauge (RZZ0297)
- Filter (Refer to page 12)

Adjustment Procedure

- If the optical pickup and spindle motor are replaced, adjust it according to the following procedure.

Step 1: Make the temporary of each VR. (Refer to page 14.)

Step 2: Turntable height adjustment. (Refer to page 17.)

Step 3: Mechanical adjustment. (Refer to page 17.)

Step 4: Electrical adjustment. (Refer to page 13.)

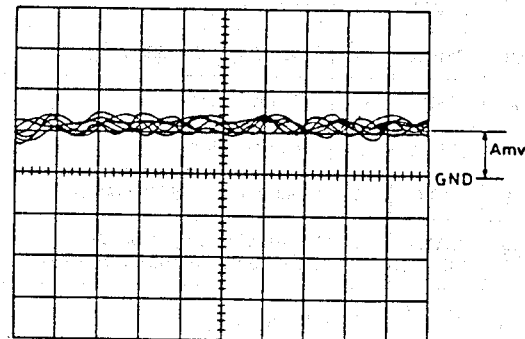
TURNTABLE HEIGHT ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ102 (+)** and **TJ302 (-)** of the main P.C.B. through the filter. (Refer to page 12.)

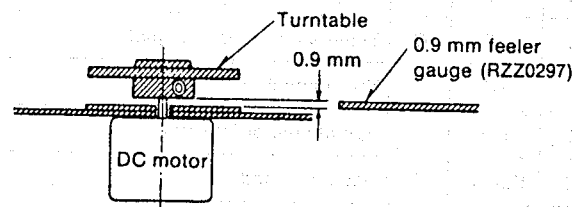
Oscilloscope setting: VOLT.....50mV
SWEEP.....1msec.
INPUT.....DC

2. Set the oscilloscope to DC zero balance.
3. Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
4. Set the player to the play mode.
5. Measure the DC level (AmV) displayed on the oscilloscope.

If the value of A is within the range of $\pm 60\text{mV}$, the turntable height is correct. If it is not within this range, make the necessary adjustments using the 0.9mm feeler gauge (RZZ0297). If A is more than $+60\text{mV}$, make the turntable lower. If A is less than -60mV , make the turntable higher.

**Adjust the turntable height as follow:**

A. Insert the 0.9mm feeler gauge (RZZ0297) as shown below.



B. Loosen the turntable set-screw.

C. Adjust the turntable height to 0.9mm with the feeler gauge as shown above.

D. Tighten the turntable set-screw by using a 1.27mm hexagonal wrench.

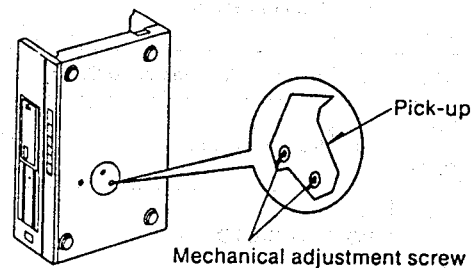
E. Check the turntable height adjustment by following steps 1 ~ 5 above.

MECHANICAL ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ301 (+)** and **TJ302 (-)** of the main P.C.B.

Oscilloscope setting: VOLT.....200mV
SWEEP.....0.5μsec.
INPUT.....AC

2. Turn **ON** the power switch of the player and insert the test disc (SZZP1056C).
3. Using the manual search buttons, move the pickup so that the mechanical adjustment screws line up with the adjustment holes in the bottom panel.

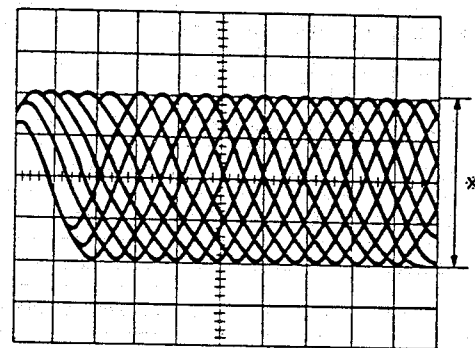


Note: The mechanical adjustment screws have been already locked with screw lock paint at the factory. It might be hard to turn them.

4. Monitoring RF signal on the oscilloscope, adjust the two adjusting screws alternately with the 1.5mm hexagonal wrench (SZZP1044C) so that the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.

5. Turn **OFF** the power switch of the player.

6. After the adjustment, apply **screw lock paint (RZZ0L01)** to the adjusting screws.

**AUDIO ADJUSTMENT****Measuring Instrument**

• Digital Voltmeter

OFFSET VOLTAGE ADJUSTMENT

1. Press **"STOP"** button and set the player in **"STOP MODE"**.

2. Connect the digital voltmeter to jumper wire mounted in **C833 (Lch) (+)** or **C834 (Rch) (+)** and **GND (-)** terminal.
3. Adjust **VR1001 (Lch)** or **VR1002 (Rch)** so that the voltage is $0 \pm 1\text{mV}$.

■ TERMINAL FUNCTION OF LSI**• AN8370S (Optical Servo Control)**

Pin No.	Mark	I/O	Function
1	VEE	I	Power supply (connected to -5V)
2	LSA	I	Phase difference input (A)
3	GND	I	GND terminal
4	LSB	I	Phase difference input (B)
5	APC	O	Auto laser power control output
6	TEOUT	O	Tracking error signal output
7	TEG	I	Tracking error gain adjusting input
8	TE(+)	I	Phase difference to voltage conversion (+)
9	TE(-)	I	Phase difference to voltage conversion (-)
10	APC(-)	I	Laser power inversion input
11	C.MEM	I	Capacitor connection for phase difference memory
12	APC(+)	I	Laser power non inversion input
13	VREFE	O	Reference current generation
14	SENSE	O	Selector output (track-crossed)
15	HIN	I	Tracking hold circuit input
16	HOUT	O	Tracking hold circuit output
17	SPCNT	O	Trackcrossing speed control output (not used, (Not connected))
18	C.MSP	I	Trackcrossing reference speed setting capacitor connection (Not connected)
19	C.AF	I	Auto focus timer capacitor connection
20	KICK	O	Track kick signal output
21	VCC	I	Power supply (connected to +5V)
22	CNT1	I	Control input (FOON Focus servo "ON" signal)

Pin No.	Mark	I/O	Function
23	CNT2	I	Control input (TRON Tracking servo ON signal)
24	CNT3	I	Control input (KICKF Kick direction [Forward] command)
25	CNT4	I	Control input (KICKR Kick direction [Reverse] command)
26	F.LOCK	O	Focus lock signal output
27	C.FBDO	O	Capacitor connection for inversion RF high detection
28	C.SBDO	O	Capacitor connection for inversion RF low detection
29	C.SBRT	O	Capacitor connection for non-inversion RF slow detection
30	C.FBRT	O	Capacitor connection for non-inversion RF fast detection
31	RF OUT	O	RF signal output
32	BDO	O	Drop-out detection output
33	RF IN	I	RF signal input
34	S.OUT	O	Focus search signal output
35	C.LW	I	Capacitor connection for triangular wave generation
36	FE.OUT	O	Focus error signal output
37	FEG	I	Focus error gain adjusting input
38	FE.REF	I	Focus error comparison voltage generation
39	PDB	I	Photo detection current input (B)
40	IVB	O	Current/ voltage conversion (B)
41	IVA	O	Current/ voltage conversion (A)
42	PDA	I	Photo detection current input (A)

● MN53010PEH (Serial/Parallel converter)

Pin No.	Mark	I/O	Function
1	WCO	O	Output data word clock (DALO,DBLO,DARO,DBRO)
2	DARO	O	Rch data output, (+)terminal
3	DBRO	O	Rch data output, (-)terminal
4	RST	O	Reset output data to "0"
5	VDD	I	Power supply (connected to +5V)
6	VSS	I	GND terminal
7	F2DAC	I	"H": 2DAC 18-bit "L": 2DAC 17-bit
8	FLOAT	I	"H": 4DAC 18-bit "L": 4DAC 17-bit
9	PHASE	I	"H": Phase inversion "L": Normal mode
10	LRCK	I	Inverter input
11	LRCK	O	LRCK signal inverter output
12	SIN	I	Data input
13	WCI	I	Input data word clock
14	BCI	I	Input data bit clock
15	VSS	I	GND terminal
16	NC	---	Not connected
17	VDD	I	Power supply (connected to +5V)
18	SHR	I	Rch Deglitcher signal

Pin No.	Mark	I/O	Function
18	SHR	I	Rch Deglitcher signal
19	SHL	I	Lch Deglitcher signal
20	NC	---	Not connected
31			
			NORMAL MODE delay: 180ms
			TEST MODE delay: 1.45ms
			TEST MODE delay: 0.73ms
			TEST MODE delay: 0ms
32	NTEST1	I	H
33	NTEST2	I	H
34	NTEST3	I	"H": Normal mode "L": Reset
35	DALO	O	Lch data output, (+)terminal
36	DBLO	O	Rch data output, (-)terminal
37	VDD	I	Power supply (connected to +5V)
38	VSS	I	GND terminal
39	NC	---	Not connected
40	GAIN	O	Gain selector signal H: 0~-12dB L: below -12dB
41	SH	O	Deglitch signal H: Sample L: Hold
42	BCO	O	Output data bit clock

● AN8371S (Data slice and PLL)

Pin No.	Mark	I/O	Function
1	VEE	I	Power supply (connected to -5V)
2	SRF	O	RF signal output data-sliced into digital value
3	EFM	O	EFM signal output synchronized with PCK
4	D.GND	I	GND terminal (digital system)
5	PCK	O	Clock output extracted from SRF
6	VCC	I	Power supply (connected to +5V)
7	VA	I	VCO free run frequency adjusting current input (not connected)
8	VC1	I	Capacitor connection for VCO oscillator frequency
9	VC2	I	Capacitor connection for VCO oscillator frequency
10	VR	I	Resistor connection for VCO oscillator frequency
11	PD	I	Capacitor connection for PLL DO protection
12	PL1	I	PLL loop filter connection

Pin No.	Mark	I/O	Function
13	PL2	I	PLL loop filter connection
14	FPC	I	Frequency comparison error signal input
15	RF	I	RF signal input
16	ARF	O	RF signal output with AGC output
17	AGC	I	ARF signal input for AGF drop-out detection input
18	AC	I	Loop filter for AGC connected
19	DO	O	Drop-out detection pulse output
20	A.GND	I	GND terminal (analog system)
21	DSL	I	RF signal input for data slicing
22	SLC	I	Slicing level control signal input
23	FC1	I	Filter capacitor for data slicer connected
24	FC2	I	Filter capacitor for data slicer connected

● MN6622 (Digital Signal Processing: EFM Decoder, Error Correction, CLV Servo)

Pin No.	Mark	I/O	Function
1	MEMP	I	Emphasis signal input
2	PC	O	Spindle motor "ON" signal(ON at "L")
3	EC	O	Spindle motor drive signal
4	FG	I	Not connected
5	TTF	I	Spindle motor free run
6	FLAG0	O	Not connected
7	IPFLAG	O	Not connected
8	FLAG6	O	Not connected
9	PCK	I	PLL extract clock input(4.2336MHz)
10	VDD	I	Power supply (connected to +5V)
11	EFM	I	EFM signal input (PLL)
12	SRF	I	EFM signal input (DSL)
13	DO	I	Drop-out signal ("H" at drop-out)
14	CLVS	O	Not connected
15	EPC	O	PLL frequency comparison signal
16	BSEL	O	Not connected
17	RIN	I	Remote control signal input
18	FSL	I	Not used (connected to GND)
19	SLEEP	I	Not used (connected to GND)
20	SUBC	O	Not connected
21	SBCK	I	Not connected
22	BLKCK	O	Sub-code block(Q-data) clock (75Hz)
23	CLOCK	O	Sub-code frame(Q-data) clock (7.35kHz)
24	SUBQ	O	Sub-code(Q-data) output
25	CRC	O	Not connected
26	RST	O	Reset signal input ("L" = Reset)
27	MLD	I	Data input (command load)
28	MCLK	I	Data clock input (command clock)
29	MDATA	I	Data input (command data)
30	DMUTE	I	Muting control (Not used, connected to GND)
31	TRON	I	Tracking servo "ON" signal (ON at "L")
32	STAT	O	Processing condition (CRC,OTC,CLVOK,TT,STOP) output
33	TX	O	Digital output signal

Pin No.	Mark	I/O	Function
34	TSTR	I	Not used (connected to +5V)
35	TEST	I	Not used (connected to +5V)
36	VSS	I	GND terminal
37	X2	O	Clock output (16.9344MHz)
38	X1	I	Clock input (16.9344MHz)
39	SEL	I	Not used (connected to GND)
40	LDG/WDCKS	O	Deglitch signal at Lch/word clock for serial DAC
41	RDG	O	Not connected
42	DEMPH	O	Not connected
43	SMCK	O	Clock output (4.2336MHz)
44	WS	O	Not connected
45	SRCK	O	Not connected
46	XCK	O	Clock output (16.9344MHz)
47	DA15/SRDATA	O	DA parallel output(MSB)/Serial data output(MSB FIRST)
48	DA14/SRDATA	O	Not connected
49	DA13/SCK	O	DA Parallel output/serial data output bit clock
50	DA12/WDCK	O	Not connected
51	DA11/BYCK	O	Not connected
52	VSS	I	GND terminal
53	DA10/R/L	O	DA parallel output/ R/L signal (R at "H")
54	DA9	O	Not connected
56	DA7	O	Not connected
57	DA6	O	Not used (connected to GND)
58	DA5	O	Not connected
63	DA0	O	Not connected
64	D7	I/O	16K RAM DATA
71	D0	I/O	16K RAM DATA
72	RAMOE	O	16K RAM OE signal
73	RAMWE	O	16K RAM WE signal
74	RAMA0	O	16K RAM address
84	RAMA10	O	16K RAM address

● MN1554PEF (System Control)

Pin No.	Mark	I/O	Function
1	GND	I	GND terminal
2	DMUTE	O	Muting control
3	MDATA	O	Command data output
4	MCLK	O	Data clock output (command clock)
5	MLD	O	Data output (command load)
6	DOUTON	O	Optical output control signal
7	EMPH	O	Emphasis signal output
8	P11	I	Not connected
9	P12	I	Not connected
10	P13	I	Not connected
11	SYNC	O	Not connected
12	SIRQ	I	Not used (connected to +5V)
13	BLKCK	I	Sub-code block(Q data) clock input (75Hz)
14	CLDCK	I	Sub-code block(Q data) clock input (7.35KHz)
15	SBO	I	Not connected
16	SUBQ	I	Sub-code(Q data) input
17	RST	I	Reset signal input
18	P20	O	Not used (connected to +5V)
19	P21	O	Not used (connected to +5V)
20	P22	O	Not used (connected to +5V)
21	P23	O	Not used (connected to +5V)
22	CLOSE	O	Loading motor "Close" command
23	OPEN	O	Loading motor "Open" command
24	P32	O	Not connected
25	MUTE2	O	Muting control
26	SEEK	O	Traverse servo control
27	P41	O	Not connected
28	TRV.R	O	Traverse "Reverse" command signal
29	TRV.F	O	Traverse "Forward" command signal
30	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
31	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
32	CNT2	O	Optical servo IC control (TRON: Tracking servo)

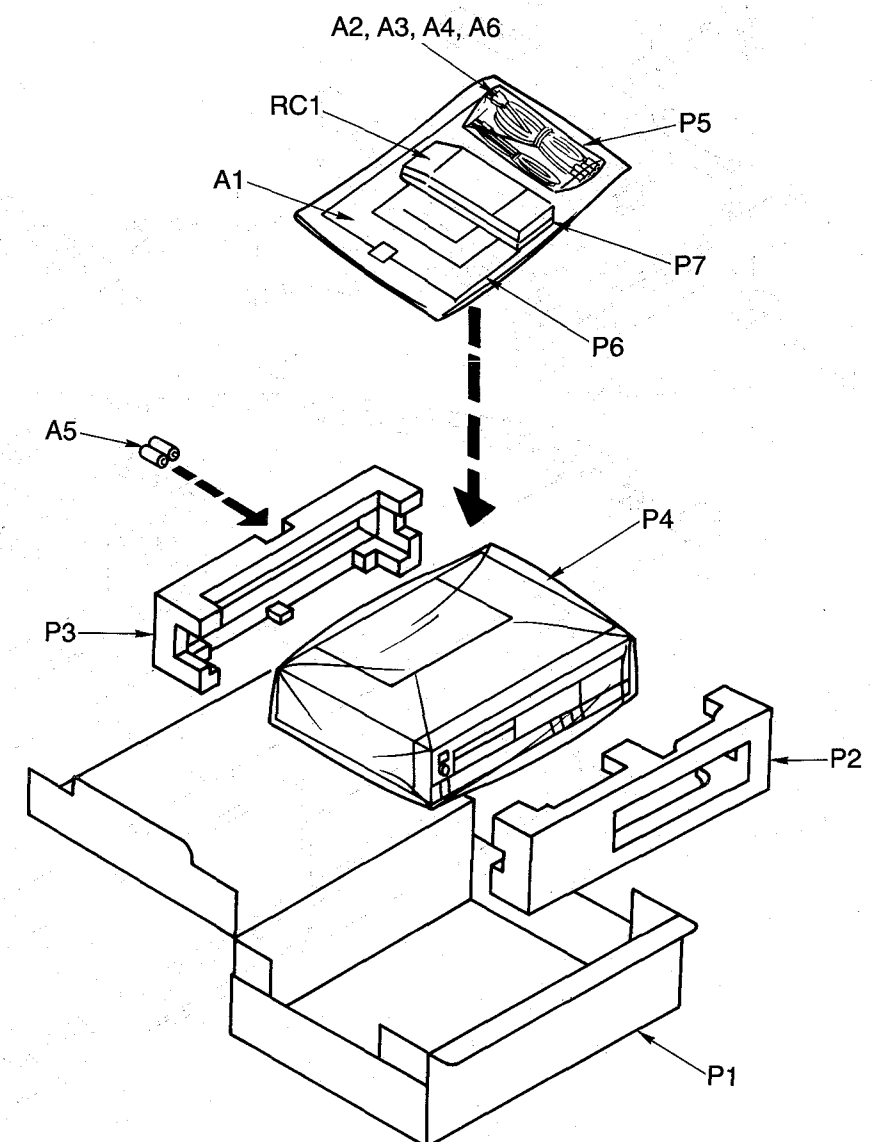
Pin No.	Mark	I/O	Function
33	VDD	I	Power supply (connected to +5V)
34	VR.R	O	Not connected
35	VR.F	O	Not connected
36	CNT1	O	Optical servo IC control signal (FOON: Focus servo)
37	P60	I	Disc holder "Open/close" detection
38	P61	I	Disc holder "Open/close" detection
39	P62	I	Not used (connected to GND)
40	P63	I	Not used (connected to GND)
41	STAT	I	Processing status input from signal processing LSI
42	COMP	O	TOC reading control (ON at "L")
43	FLOCK	I	Optical servo condition(focus) input
44	SENSE	I	Optical servo condition(track cross) input
45	RECK	I	Data receipt command signal
46	SEND	I	Data transmission command
47	ACK	I	Data discrimination signal
48	CLK	I	Data lock signal
49	D0	I	Key scan
50	D1	I	Key scan
51	D2	I	Key scan
52	D3	I	Key scan
53	PA0	I	
54	PA1	I	Not connected
55	PA2	I	
56	PA3	I	Not connected
57	PB0	I	Not connected
58	PB1	I	Key scan
59	PB2	I	Key scan
60	PB3	I	Key scan
61	OSC2	I	Clock terminal
62	OSC1	I	Clock input
63	X1	I	Optical servo condition input
64	X0	O	Not connected

● YM3404B (Digital filter)

Pin No.	Mark	I/O	Function
1	SHL	O	1DAC(ST="L"): Lch Deglitcher signal 2DAC(ST="H"): L/Rch Deglitcher signal
2	X0	O	Clock output
3	X1	I	Clock input
4	VDD2	I	Power supply (connected to +5V)
5	BCI	I	Bit clock input (input data)
6	SDSY	I	R/L signal
7	SDI	I	Data input
8	VDD1	I	Power supply (connected to +5V)

Pin No.	Mark	I/O	Function
9	DLO	O	1DAC(ST="L"): L/Rch data output terminal 2DAC(ST="H"): Lch data output terminal
10	RDO	O	Rch data output (not connected)
11	WCO	O	Output data word clock
12	BCO	O	Bit clock output (output data)
13	VSS	I	GND terminal
14	ST	I	1DAC/2DAC selector terminal
15	FEN	I	System clock selector terminal
16	SHR	O	1DAC(SP="L"): Rch deglitch signal

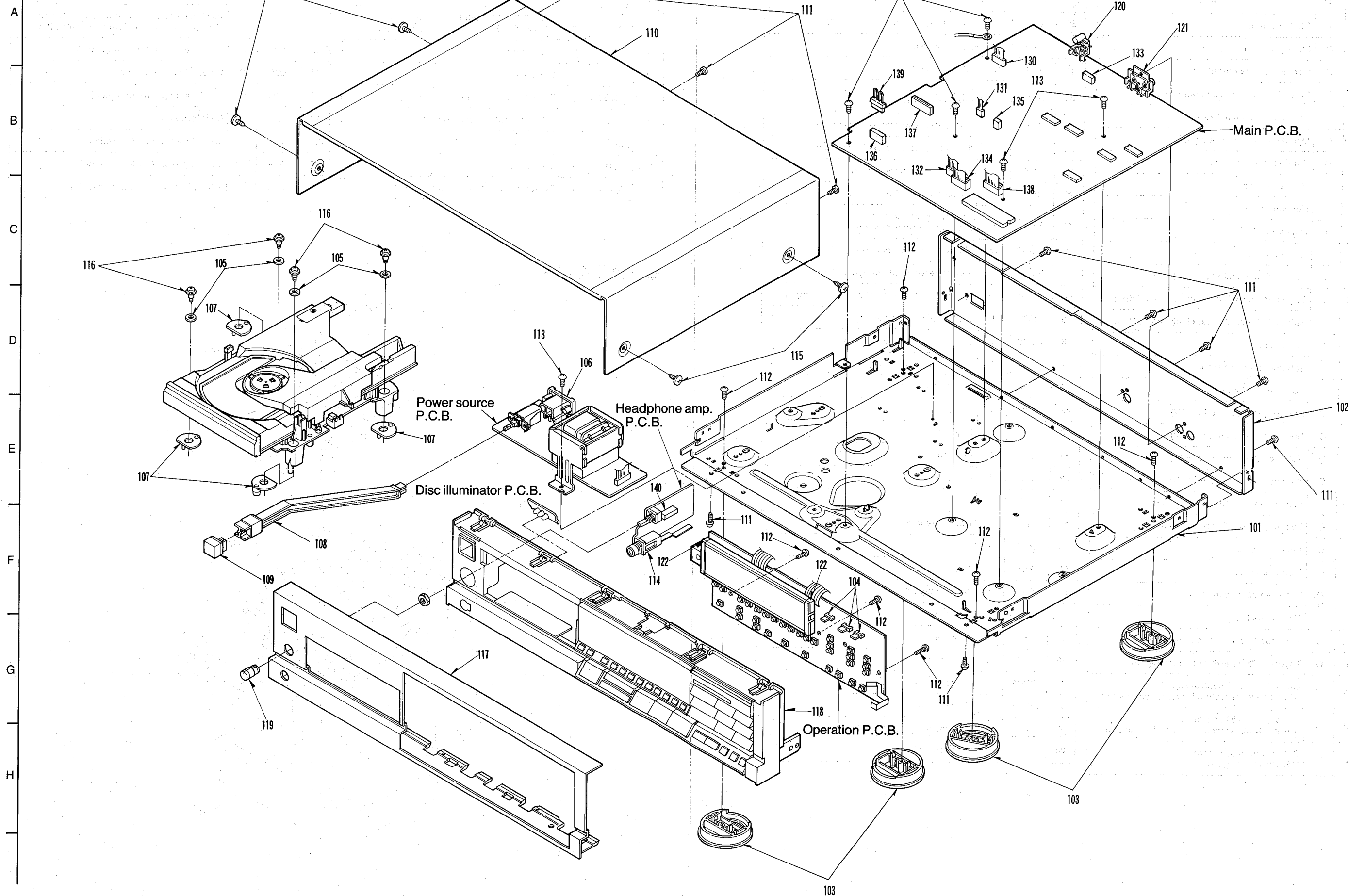
■ PACKING

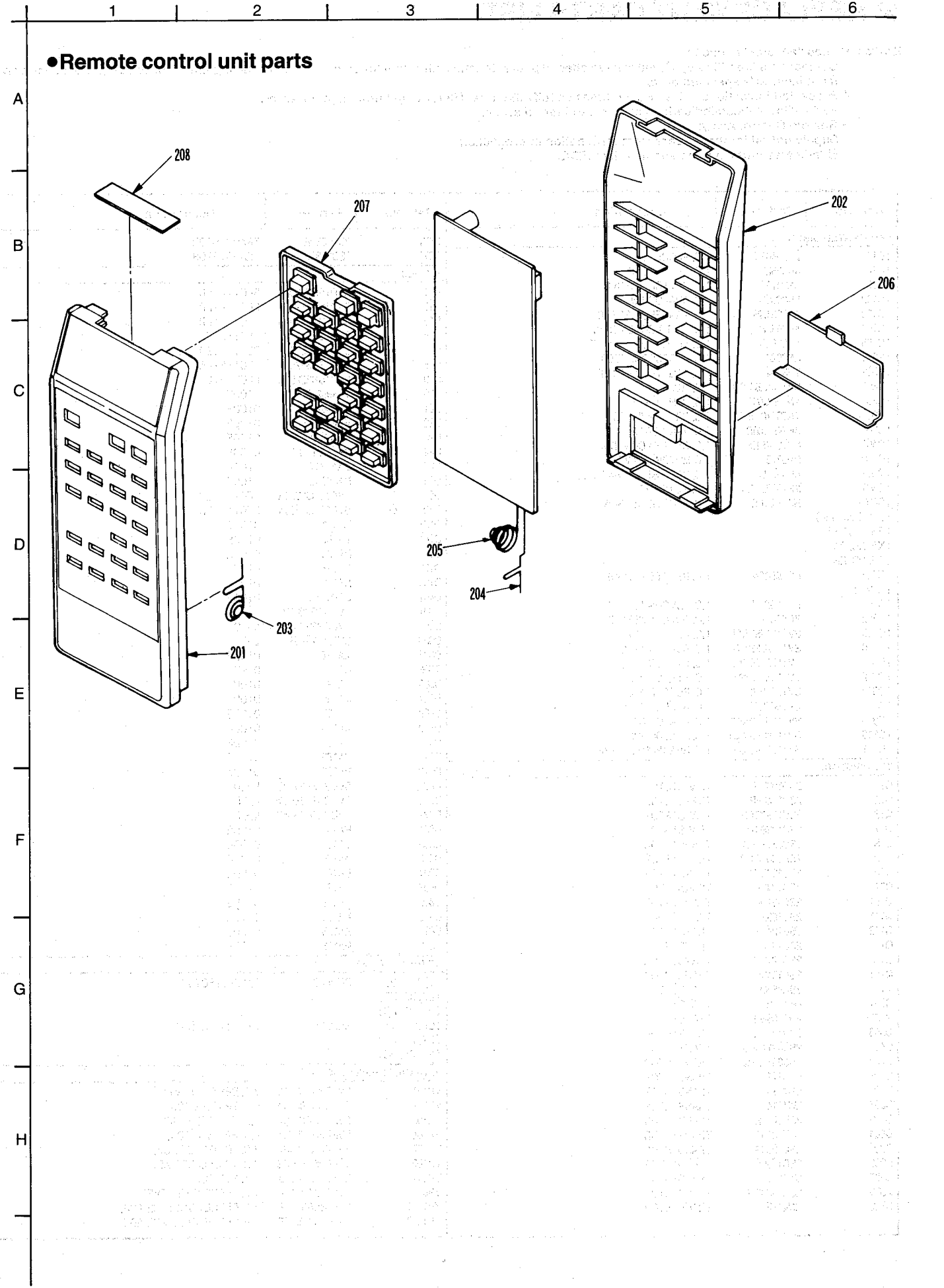
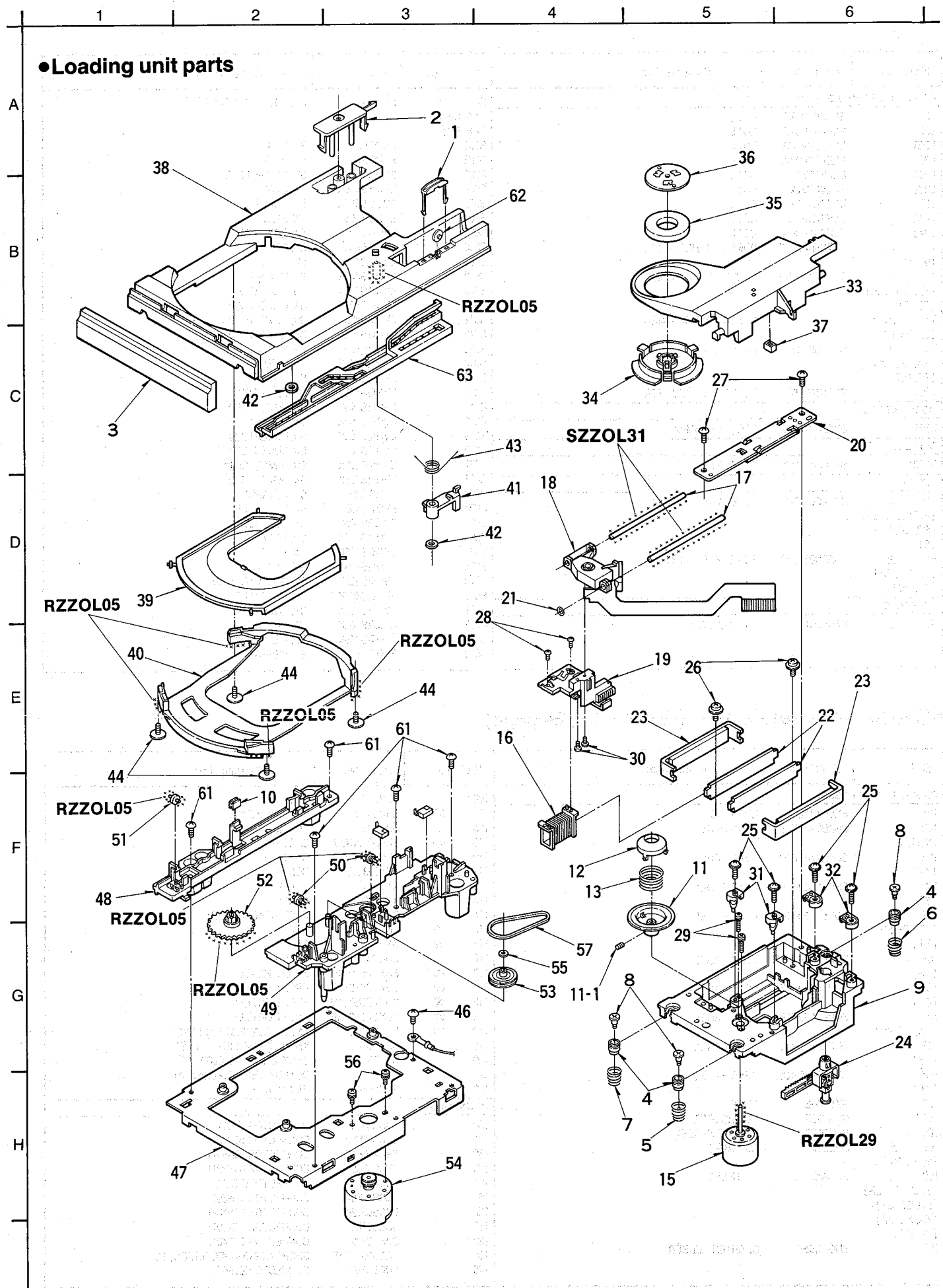


EXPLODED VIEWS

SL-P550 SL-P550

● Cabinet and chassis parts





REPLACEMENT PARTS LIST

Notes : * Important safety notice :

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

* Bracketed indications in Ref. No. columns specify the area. (Refer to the first 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.

* Δ Indicates parts that the supplied by MESA.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			Q871	2SD1330R	TRANSISTOR
IC11	LM2940T5	I.C. REGULATOR	Q872	2SD1330R	TRANSISTOR
IC12	AN6552S	I.C. REGULATOR	DIODES		
IC101	AN8370S	I.C. OPTICAL SERVO	D11	SVD1SR35200A	RECTIFIER
IC102	MN6636S	I.C. ANALOG SW.	D12	SVD1SR35200A	RECTIFIER
IC103	AN6554NS	I.C. TRAVERSE SERVO	D13	SVD1SR35200A	RECTIFIER
IC104	AN6552S	I.C. FO/TR COIL DRIVE	D14	SVD1SR35200A	RECTIFIER
IC105	AN6552S	I.C. FO/TR COIL DRIVE	D17	SVD1SR35200A	RECTIFIER
IC301	MN6622	I.C. MICROCOMPUTER	D18	SVD1SR35200A	RECTIFIER
IC302	YM3404B	I.C. DIGITAL FILTER	D19	SVD1SR35200A	RECTIFIER
IC303	SV1CXK5816M	I.C. 16K RAM	D20	MA4062-H	DIODE
IC304	MN74HC00S	I.C. NAND GATE	D21	MA4062-H	DIODE
IC305	MN53010PEH	I.C. S/P CONVERTER	D22	MA4056-M	DIODE
IC306	MN74HC00S	I.C. NAND GATE	D23	MA4082M	DIODE
IC401	MN1554PEF	I.C. SYSTEM CONTROL	D24	SVDMT233	DIODE
IC402	BA6218	I.C. MOTOR DRIVE	D25	Δ MA4033M	DIODE
IC501	AN8371S	I.C. DATA SLICE AND PLL	D26	Δ MA4033M	DIODE
IC601	MN15283PEJ	I.C. FL DRIVE	D51	Δ SVD1SR35200A	RECTIFIER
IC602	HC-MD10E	I.C. REMOTE SENSOR	D52	Δ SVD1SR35200A	RECTIFIER
(E, EK, XL, EG)			D131	MA165	DIODE
(EH, EF, E1)			D181	MA165	DIODE
(XA, XB, PA)			D182	MA165	DIODE
(PE, PC, EB)			D183	MA165	DIODE
IC602	HC-MD12M	I.C. REMOTE SENSOR	D184	MA165	DIODE
(M, MC)			D401	MA4033M	DIODE
IC801	PCM56P-J	I.C. D/A CONVERTER	D601	SVGDPG7851Y	L.E.D
IC802	PCM56P-J	I.C. D/A CONVERTER	D602	SVGDPG7851Y	L.E.D
IC809	SV1NJM5532M	I.C. BUFFER AMP.	D603	SVGDY7851	L.E.D
IC810	SV1NJM5532M	I.C. BUFFER AMP.	D604	MA165	DIODE
IC811	SV1NJM5532M	I.C. FILTER AMP.	D605	MA165	DIODE
IC812	SV1NJM5532M	I.C. FILTER AMP.	D606	MA165	DIODE
IC813	SV1M5219FP	I.C. BUFFER AMP.	D607	MA165	DIODE
IC814	SV1M5219FP	I.C. BUFFER AMP.	D608	MA165	DIODE
IC815	SV1UPD4053G1	I.C. ANALOG SW.	D609	MA165	DIODE
IC816	SV1UPD4053G1	I.C. ANALOG SW.	D610	MA165	DIODE
IC871	SV1NJM4556SA	I.C. HEADPHONES AMP.	D611	MA165	DIODE
TRANSISTORS			D612	MA165	DIODE
Q11	2SD1862-P	TRANSISTOR	D629	SVDSLRL-54MW4	L.E.D
Q12	2SB1240-P	TRANSISTOR	D630	SVDSLRL-54MW4	L.E.D
Q13	2SD1762DEF	TRANSISTOR	D631	SVDSLRL-54MW4	L.E.D
Q17	2SB1238QR	TRANSISTOR	D801	MA165	DIODE
Q18	2SC3311A-Q	TRANSISTOR	D805	MA165	DIODE
Q19	2SA1309QRS	TRANSISTOR	D806	MA165	DIODE
Q20	2SD1862-P	TRANSISTOR	D807	MA165	DIODE
Q21	2SB1240-P	TRANSISTOR	D808	MA165	DIODE
Q101	2SC4010-P	TRANSISTOR	D809	MA165	DIODE
Q141	2SD1862-P	TRANSISTOR	D810	MA165	DIODE
Q142	2SB1240-P	TRANSISTOR	D811	MA165	DIODE
Q161	2SD1862-P	TRANSISTOR	D812	MA165	DIODE
Q162	2SB1240-P	TRANSISTOR	I.C. PROTECTORS		
Q181	2SC1846-Q	TRANSISTOR	ICP1 Δ	SRUF38	I.C. PROTECTOR
Q182	2SA885Q	TRANSISTOR	(EK, XA, XB)		
Q351	UN4112	TRANSISTOR	(PA, PE, PC)		
Q352	2SD1862-P	TRANSISTOR	ICP2 Δ	SRUF38	I.C. PROTECTOR
Q353	2SB1240-P	TRANSISTOR	(EK, XA, XB)		
Q401	2SC3311A-Q	TRANSISTOR	(PA, PE, PC)		
Q402	2SC3311A-Q	TRANSISTOR	VARIABLE RESISTORS		
Q501	UN4112	TRANSISTOR	VR101	EVND3AA00B53	V.R. BEST EYE ADJ.
Q601	UN4114	TRANSISTOR	VR102	EVND3AA00B14	V.R. TR GAIN ADJ.
Q602	UN4114	TRANSISTOR	VR103	EVND3AA00B14	V.R. TR OFFSET ADJ.
Q803	2SD1330R	TRANSISTOR	VR104	EVND3AA00B14	V.R. FO GAIN ADJ.
Q804	2SD1330R	TRANSISTOR	VR105	EVND3AA00B14	V.R. FO OFFSET ADJ.
Q805	2SD1330R	TRANSISTOR	VR106	EVND3AA00B53	V.R. TR BALANCE ADJ.
Q806	2SD1330R	TRANSISTOR	VR501	EVN38CA00B13	V.R. PLL ADJ.
Q807	UN4111	TRANSISTOR	VR871	EVUN1A022A14	V.R. HEADPHONE LEVEL
Q808	2SA1309QRS	TRANSISTOR	VR1001	EVN38CA00B15	V.R. OFFSET VOLTAGE ADJ.
Q809	UN4112	TRANSISTOR	VR1002	EVN38CA00B15	V.R. OFFSET VOLTAGE ADJ.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
COILS AND TRANSFORMERS			S2 Δ	SSR187-1	SW. VOLTAGE SELECTOR
L301	ELEPK1R0KA	COIL	(XA, XB, PA)		
L302	ELEPK3R3KA	COIL	(PE, PC)		
L303	ELEPK2R2KA	COIL	S101	SSPD15	SW. REST
L304	ELEPK1R0KA	COIL	S102	SSPD16	SW. REST
L801	ELEV820KA	COIL	S601	EVQQS405K	SW. OPEN/CLOSE
L802	ELEV820KA	COIL	S602	EVQQS405K	SW. STOP
L871	ELEPK1R0KA	COIL	S603	EVQQS405K	SW. PAUSE
L872	ELEPK1R0KA	COIL	S604	EVQQS405K	SW. PLAY
L873	ELEPK1R0KA	COIL	S605	EVQQS405K	SW. PROGRAM
T1 Δ	SLTD5K060SC	POWER TRANSFORMER	S606	EVQQS405K	SW. RECALL
(M, MC)			S607	EVQQS405K	SW. TIME
T1 Δ	SLTD5K061SE	POWER TRANSFORMER	S608	EVQQS405K	SW. M.SCAN
(E, EG, EB, EH)			S609	EVQQS405K	SW. NUMERIC(1)
(EF, E1)			S610	EVQQS405K	SW. NUMERIC(2)
T1 Δ		POWER TRANSFORMER	S611	EVQQS405K	SW. NUMERIC(3)
(EK, XL)			S612	EVQQS405K	SW. NUMERIC(4)
T1 Δ	SLTD5K063SX	POWER TRANSFORMER	S613	EVQQS405K	SW. NUMERIC(5)
(XA, XB, PA)			S614	EVQQS405K	SW. CLEAR
(PE, PC)			S615	EVQQS405K	SW. F. INDEX
T301	SLZS10VN17	PULSE TRANSFORMER	S616	EVQQS405K	SW. F. SEARCH
OSCILLATORS			S617	EVQQS405K	SW. NUMERIC(6)
X301	SVQAT1693ATA	OSC., 16.934MHZ	S618	EVQQS405K	SW. NUMERIC(7)
DISPLAYS			S619	EVQQS405K	SW. NUMERIC(8)
FL601	SAD16MT09GK	DISPLAY	S620	EVQQS405K	SW. NUMERIC(9)
FUSES			S621	EVQQS405K	SW. NUMERIC(10)
F1 Δ	XBA2C012TB0	FUSE, 250V, T125mA	S622	EVQQS405K	SW. NUMERIC(10)
(E, EK, XL, EG)			S623	EVQQS405K	SW. R. INDEX
(EB, EH, EF)			S624	EVQQS405K	SW. R. SEARCH
(E1)			S625	EVQQS405K	SW. SIDE A/B
F1 Δ	XBA2C025TB0	FUSE, 250V, T250mA	S626	EVQQS405K	SW. EDIT
(XA, XB, PA)			S627	EVQQS405K	SW. PEAK
(PE, PC)			S628	EVQQS405K	SW. DISPLAY
SWITCHES			S629	EVQQS405K	SW. NUMERIC(+10)
S1 Δ	ESB8249V	SW. POWER	S630	EVQQS405K	SW. FF. SEARCH
			S631	EVQQS405K	SW. A/B REPEAT
			S632	EVQQS405K	SW. RANDOM
			S633	EVQQS405K	SW. FR. INDEX
			S634	EVQQS405K	SW. REPEAT

Cabinet and chassis parts (Refer to 23, 24 page)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS			108	SUBD14	ROD
101	SKUD191ZF0A	CHASSIS	109 $\otimes$	SBC666-5	BUTTON, POWER
102	SGPD770ZF0B	REAR PANEL	109 $\otimes$	SBC666	BUTTON, POWER
(M, MC)			110 $\otimes$	SKCD590KE1A	CABINET
102	SGPD770ZF1C	REAR PANEL	110 $\otimes$	SKCD590SW1A	CABINET
(XA)			111	XTB3+8JFZ	SCREW
102	SGPLP550-KE	REAR PANEL	112	XTB3+8G	SCREW
(E)			113	XTB3+8J	SCREW
102	SGPLP550-KEB	REAR PANEL	114	SJJ126B	JACK(HEADPHONES)
(EB, EH, EF)			115 $\otimes$	SNE2129-1	SCREW
(E1)			115 $\otimes$	SNE2129	SCREW
102	SGPLP550-KEG	REAR PANEL	116	SHDD4	SCREW
(EG)			117 $\otimes$	SGWLP550-KM	FRONT PANEL
102	SGPLP550-KEK	REAR PANEL	117 $\otimes$	SGWLP550-SE	FRONT PANEL
(EK)			118 $\otimes$	SGYLP550-KM	FRONT GRILLE
102	SGPLP550-KPA	REAR PANEL	118 $\otimes$	SGYLP550-SE	FRONT GRILLE
(PA, PE, PC)			119 $\otimes$	SBN1161-2	KNOB, HEADPHONES LEVEL
102	SGPLP550-KXB	REAR PANEL	119 $\otimes$	SBN1161-3	KNOB, HEADPHONES LEVEL
(XB)			120	SJFD7	JACK (DIGITAL OUT)
102	SGPLP550-KXL	REAR PANEL	121	SJFD4	OUTPUT TERMINAL(PHONO)
(XL)			122	SHRD166	FL HOLDER
103	SKLD8-E	FOOT	CONNECTORS		
104	SHRD165	LED HOLDER	130	SJSD0605	CONNECTOR (FC11)
105	SHGD123	RUBBER SPACER	131	EMCS0350Z	CONNECTOR (CN103)
106 Δ	SJSD16	AC INLET	132	EMCS0550Z	CONNECTOR (CN401)
(M, MC, XL)			133	EMCS0750Z	CONNECTOR (CN801)
106 Δ	SJS9236	AC INLET	134	SJSD0905	CONNECTOR (FC402)
(E, EK, EG, EB)			135	EMCS0250Z	CONNECTOR (CN351)
(EH, EF, E1)			136	EMCS0552M	CONNECTOR (CN102)
(XA, XB, PA)			137	SJSD1709	CONNECTOR (CN101)
(PE, PC)			138	SJSD0905	CONNECTOR (FC401)
107	SHGD122-1	CUSHION RUBBER	139	SRDJ001N14E	SHORTING CONNECTOR (CN102)
			140	EMCS0750Z	CONNECTOR (CN871)

●Loading unit parts (Refer to 25 page)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
LOADING MECHANICAL			29	XYM2+C12	SCREW
1	SHRD150	ROLLER HOLDER	30	XQN17+C6	SCREW
2	SHRD144	COVER WITH CLAW	31	SHRD136	GUIDE SHAFT HOLDER(A)
3	SGXD3240ZK0C	ORNAMENT PANEL	32	SHRD137	GUIDE SHAFT HOLDER(B)
3	SGXD3240MA0A	ORNAMENT PANEL	33	SIRD42-2	CLAMPER
4	SHGD110	CUSHION RUBBER	34	SIRD51	HOLDER
5	SUSD126	SPRING (RED)	35	SOMD4	MAGNET
6	SUSD127	SPRING (BLUE)	36	SOYD2	YOKE
7	SUSD128	SPRING (YELLOW)	37	SHGD119	CUSHION RUBBER
8	SFXGB20-01	SCREW	38	SIRLP990-KM	DISC HOLDER
9	SISD13-3	TRAVERSE BASE	39	SIRD98	DISC TRAY
10	SFGZB63M51	CUSHION RUBBER	40	SIRD99	TRAY BASE
11	SDOD28-1E	TURNABLE	41	SIRD96	LOCK LEVER
11-1	XXE26D5	SCREW	42	SFUMZ15R61	WASHER
12	SDOD29-2	RING	43	SUSD83	SPRING
13	SRQA010N04	SPRING	44	SFXGQ06N01	SCREW
15	SJGDRF310T	SPINDLE MOTOR	46	XTV3+6BFN	SCREW
16	SORD21E-1	TRAVERSE COIL	47	SIWLP320-KM	LOADING BASE
17	SUXD78-2	GUIDE SHAFT	48	SIRD43-3	BRACKET(A), LOADING BASE
18	SOAD60A-1	OPTICAL PICKUP	49	SIRLP320KM3	BRACKET(B), LOADING BASE
19	EWSL11A00000	COIL HOLDER	50	SDRD2	ROLLER
20	EWS7G0A00Q53	RESISTANCE UNIT	51	SDRD6	ROLLER
21	SHGD131	STOPPER	52	SDGD38	MAIN GEAR
22	SOYD8E-1	YOKE (A)	53	SDGD39-2	PULLEY GEAR
23	SOYD9	YOKE (B)	54	SMNLP320-KM	LOADING MOTOR
24	SHRD23-2	LOCK SHAFT	55	SHWD20	WASHER
25	XTV3+12GFZ	SCREW	56	XYN26+T4	SCREW
26	SNSD27	SCREW	57	SMBD3	DRIVE BELT
27	XTV3+8G	SCREW	61	XTV3+8JFZ	SCREW
28	XTV2+4G	SCREW	62	SDRD12	ROLLER
			63	SIRD40-2	RACK GEAR

●Packing (Refer to 22 page)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL			(E, EB, EH, EF)		
P1	SPND259	CARTON BOX	A1	SQULP550-KMC	INSTRUCTION MANUAL
(M, E, EK, XL)			(MC)		
(EG, EB, EH)			A1	SQULP550-KPA	INSTRUCTION MANUAL
(E1, XA, XB)			(PA, PE, PC)		
(PA, PE, PC)			A1	SQULP550-KXB	INSTRUCTION MANUAL
P1	SPND260	CARTON BOX	(XB)		
(MC)			A2	SFDAC05G02	POWER CORD
P1	SPND261	CARTON BOX	(EK)		
(EF)			A2	SJA168	POWER CORD
P1	SPND269	CARTON BOX	(XA, PA, PE)		
(E, EK, EG, EB)			(PC)		
(EH, E1)			A2	SJA172	POWER CORD
P1	SPND270	CARTON BOX	(MC)		
(EF)			A2	SJA173	POWER CORD
P2	SPSD142	PAD(FRONT)	(XL)		
P3	SPSD143	PAD(REAR)	A2	SJA175-1	POWER CORD
P4	XZB60X60A010	PROTECTION BAG(UNIT)	(M)		
P5	XZB26X17C03	PROTECTION BAG(CORDS)	A2	SJA183	POWER CORD
P6	XZB23X35C03	PROTECTION BAG(INST. MANUAL)	(XB)		
P7	XZB10X26B05S	PROTECTION BAG(REMOTE CONT.)	A2	SJA187	POWER CORD
ACCESSORIES			(E, EG, EB, EH)		
A1	SQUD291	INSTRUCTION MANUAL	(EF, E1)		
(M)			A3	RJP120ZBS-H	AC PLUG ADAPTOR
A1	SQUD293	INSTRUCTION MANUAL	(XA, XB, PA)		
(XL, XA)			(PE, PC)		
A1	SQUD295	INSTRUCTION MANUAL	A4	SJP2249-1	OUTPUT CORD
(EG)			A5	UM-4NE	BATTERY
A1	SQUD297	INSTRUCTION MANUAL	(E, EK, XL, EG)		
(E1)			(EB, EH, EF)		
A1	SQUD298	INSTRUCTION MANUAL	(E1, XA, XB)		
(EK)			(PA, PE, PC)		
A1	SQULP550-KE	INSTRUCTION MANUAL	A5	UM-4NEP	BATTERY
			(M, MC)		
			A6	SJPD19	DIGITAL OUTPUT CORD

●Remote control unit parts (Refer to 26 page)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			(PA, PE, PC)		
IC1	MN6030B	I.C. REMOTE SIGNAL	C2	ECKD1H101KB	CERAMIC, 100PF, 50V
(E, EK, XL, EG)			(M, MC)		
(EB, EH, EF)			C2	ECKD1H121KB	CERAMIC, 120PF, 50V
(E1, XA, XB)			(E, EK, XL, EG)		
(PA, PE, PC)			(EB, EH, EF)		
IC1	MN6030CA	I.C. REMOTE SIGNAL	(E1, XA, XB)		
(M, MC)			(PA, PE, PC)		
TRANSISTORS			C3	ECEA0GK101	ELECTROLYTIC, 100 μ F, 4V
Q1	UN1231	TRANSISTOR	MECHANISM PARTS		
DIODES			201	UR64VCS532	UPPER CABINET
D1	LN66	L.E.D	(M, MC)		
D2	MA154WK	DIODE	201	UR64VCS534	UPPER CABINET
D4	MA154WK	DIODE	(E, EK, XL, EG)		
D6	MA154WA	DIODE	(EB, EH, EF)		
			(E1, XA, XB)		
			(PA, PE, PC)		
OSCILLATOR			201	UR64VCS575	UPPER CABINET
X1	CSB420PB1	OSCILLATOR	202	UR64CS803A	LOWER CABINET
(E, EK, XL, EG)			202	UR64CS803B	LOWER CABINET
(EB, EH, EF)			203	UR64TD374	BATTERY TERMINAL(COMMON)
(E1, XA, XB)			204	UR64TD812	BATTERY TERMINAL(+)
(PA, PE, PC)			205	UR64TD813	BATTERY TERMINAL(-)
X1	CSB455EB1	OSCILLATOR	206	UR64EC804	BATTERY COVER
(M, MC)			206	UR64EC804A	BATTERY COVER
RESISTORS			207	UR64CT811A	BUTTON
R1	ERDS2TJ1R0	CARBON, 1 Ω , 1/4W	208	UR52SB327	PLATE
CAPACITORS			REMOTE CONTROL ASS'Y		
C1	ECKD1H101KB	CERAMIC, 100PF, 50V	RC1	EUR64781	REMOTE CONT.(REF TO NOTE)
(M, MC)			(M, MC)		
C1	ECKD1H471KB	CERAMIC, 470PF, 50V	RC1	EUR64782	REMOTE CONT.(REF TO NOTE)
(E, EK, XL, EG)			(E, EK, XL, EG)		
(EB, EH, EF)			(EB, EH, EF)		
(E1, XA, XB)			(E1, XA, XB)		
			(PA, PE, PC)		
			RC1	EUR64783	REMOTE CONT.(REF TO NOTE)

■ RESISTOR & CAPACITORS

Notes: * Important safety notice:

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

* Bracketed indications in Ref. No. columns specify the area.

Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value
				47 $\times 10^1$ (ohm)

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50		M	330
Type	Voltage		Peculiarity	Value
				(33 $\times 10^0$ microfarad)

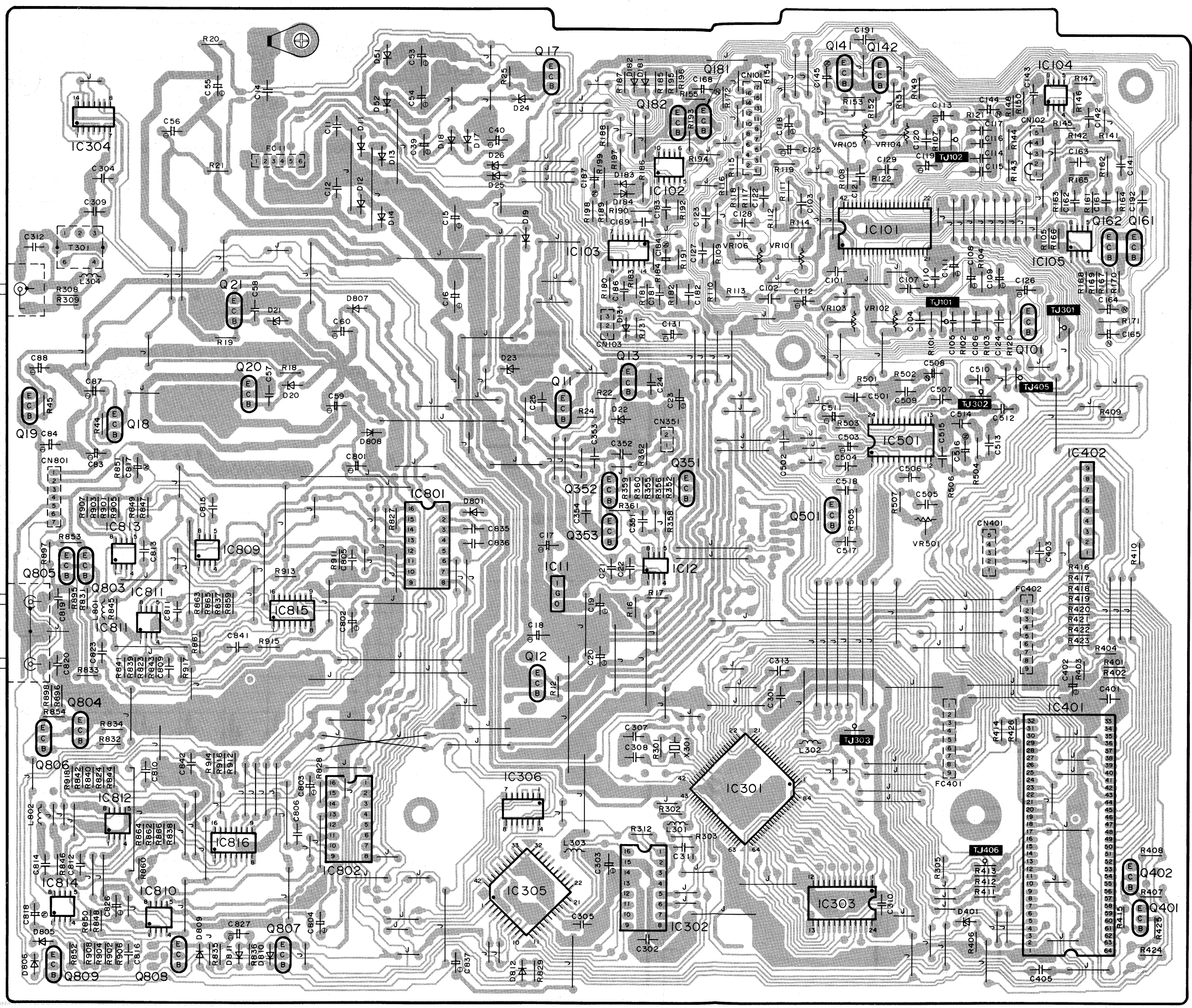
Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : $\pm 5\%$
ERG : Metal Oxide	12 : 1/2W	F : $\pm 1\%$
ERX : Metal Film	25 : 1/4W	G : $\pm 2\%$
ERQ : Fuse Type Metal	1A : 1W	K : $\pm 10\%$
ERD L : Carbon (chip)	18 : 1/8W	
ERD K : Metal Film (chip)	S2 : 1/4W	
ERC : Solid	S1 : 1/2W	
	2F : 1/4W	
	50 : 1/2W	
	2A : 2W	

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V	C : $\pm 0.25\text{pF}$
ECCD : Ceramic	1A : 10V	J : $\pm 5\%$
ECKD : Ceramic	1C : 16V	K : $\pm 10\%$
ECQM : Polyester	1E : 25V	Z : $\pm 80\%$
	1H : 50V	P : $\pm 100\%$
ECQP : Polypropylene	1V : 35V	-0%
	50 : 50V	
ECCG : Ceramic	05 : 50V	M : $\pm 20\%$
ECEADDDN : Non Polar Electrolytic	2H : 500V	
QCUC : Ceramic (Chip Type)	2A : 100V	D : $\pm 0.5\text{pF}$
ECUX : Ceramic (Chip Type)	1 : 100V	G : $\pm 2\%$
ECF : Semiconductor	KC : 400V AC	
	KC : 125VAC (UL)	
	1J : 63V	
EECW : Liquid electrolyte double layer capacitor		

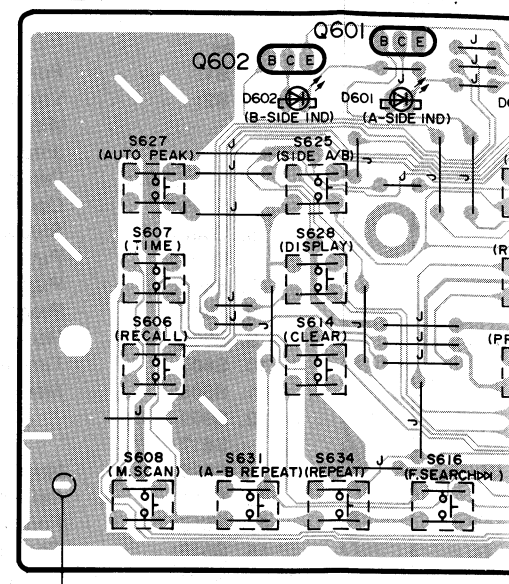
Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE, WATTAGE)								
R12	ERDS2TJ101	100 1/4	R193	ERDS2TJ101	100 1/4	R833	ERDS2TJ102	1K 1/4
R16	ERDS2TKG6801	6.8K 1/4	R195	ERDS2TJ103	10K 1/4	R834	ERDS2TJ102	1K 1/4
R17	ERDS2TKG6801	6.8K 1/4	R196	ERDS2TJ103	10K 1/4	R835	ERDS2TJ103	10K 1/4
R18	ERDS2TJ331	330 1/4	R197	ERDS2TJ473	47K 1/4	R836	ERDS2TJ102	1K 1/4
R19	ERDS2TJ331	330 1/4	R198	ERDS2TJ473	47K 1/4	R837	ERDS2TKF1202	12K 1/4
R20	ERDS2TJ471	470 1/4	R199	ERDS2TJ473	47K 1/4	R838	ERDS2TKF1202	12K 1/4
R21	ERDS2TJ471	470 1/4	R301	ERDS2TJ121	120 1/4	R839	ERDS2TJ823	82K 1/4
R22	ERDS2TJ471	470 1/4	R302	ERDS2TJ122	1.2K 1/4	R840	ERDS2TJ823	82K 1/4
R24	ERDS2TJ471	470 1/4	R303	ERDS2TJ391	390 1/4	R841	ERDS2TJ103	10K 1/4
R25	ERDS2TJ222	2.2K 1/4	R305	ERDS2TJ221	220 1/4	R842	ERDS2TJ103	10K 1/4
R44	ERDS2TJ102	1K 1/4	R308	ERDS2TJ151	150 1/4	R843	ERDS2TJ824	820K 1/4
R45	ERDS2TJ102	1K 1/4	R309	ERDS2TJ151	150 1/4	R844	ERDS2TJ824	820K 1/4
R101	ERDS2TJ154	150K 1/4	R312	ERDS2TJ104	100K 1/4	R845	ERDS2TJ182	1.8K 1/4
R102	ERDS2TJ332	3.3K 1/4	R352	ERDS2TJ334	330K 1/4	R846	ERDS2TJ182	1.8K 1/4
R102	ERDS2TJ472	4.7K 1/4	R355	ERDS2TJ333	33K 1/4	R847	ERDS2TJ821	820 1/4
R103	ERDS2TJ472	4.7K 1/4	R356	ERDS2TJ333	33K 1/4	R848	ERDS2TJ821	820 1/4
R104	ERDS2TJ223	22K 1/4	R358	ERDS2TJ103	10K 1/4	R849	ERDS2TJ182	1.8K 1/4
R104	ERDS2TJ683	68K 1/4	R359	ERDS2TJ274	270K 1/4	R850	ERDS2TJ182	1.8K 1/4
R105	ERDS2TJ334	330K 1/4	R360	ERDS2TJ123	12K 1/4	R851	ERDS2TJ271	270 1/4
R107	ERDS2TJ683	68K 1/4	R361	ERDS2TJ101	100 1/4	R852	ERDS2TJ271	270 1/4
R109	ERDS2TJ822	8.2K 1/4	R362	ERDS2TJ8R2	8.2 1/4	R853	ERDS2TJ271	270 1/4
R110	ERDS2TJ682	6.8K 1/4	R401	ERDS2TJ472	4.7K 1/4	R854	ERDS2TJ271	270 1/4
R111	ERDS2TJ682	6.8K 1/4	R402	ERDS2TJ472	4.7K 1/4	R859	ERDS2CKF4702	47K 1/4
R112	ERDS2TJ822	8.2K 1/4	R403	ERDS2TJ472	4.7K 1/4	R860	ERDS2CKF4702	47K 1/4
R113	ERDS2TJ152	1.5K 1/4	R404	ERDS2TJ472	4.7K 1/4	R861	ERDS2TKF1001	1K 1/4
R114	ERDS2TJ152	1.5K 1/4	R406	ERDS2TJ221	220 1/4	R862	ERDS2TKF1001	1K 1/4
R115	ERDS2TJ102	1K 1/4	R407	ERDS2TJ102	1K 1/4	R863	ERDS2TKF1202	12K 1/4
R116	ERDS2TJ182	1.8K 1/4	R408	ERDS2TJ102	1K 1/4	R864	ERDS2TKF1202	12K 1/4
R117	ERDS2TJ182	1.8K 1/4	R409	ERDS2TJ472	4.7K 1/4	R865	ERDS2TKF1202	12K 1/4
R118	ERDS2TJ102	1K 1/4	R410	ERDS2TJ472	4.7K 1/4	R866	ERDS2TKF1202	12K 1/4
R119	ERDS2TJ102	1K 1/4	R411	ERDS2TJ472	4.7K 1/4	R871	ERDS2TJ103	10K 1/4
R120	ERDS2TJ120	12 1/4	R412	ERDS2TJ472	4.7K 1/4	R872	ERDS2TJ103	10K 1/4
R121	ERDS2TJ393	39K 1/4	R413	ERDS2TJ472	4.7K 1/4	R873	ERDS2TJ123	12K 1/4
R122	ERDS2TJ471	470 1/4	R414	ERDS2TJ472	4.7K 1/4	R874	ERDS2TJ123	12K 1/4
R131	ERDS2TJ270	27 1/4	R415	ERDS2TJ104	100K 1/4	R875	ERDS2TJ104	100K 1/4
R141	ERDS2TJ102	1K 1/4	R416	ERDS2TJ221	220 1/4	R876	ERDS2TJ104	100K 1/4
R142	ERDS2TJ333	33K 1/4	R417	ERDS2TJ221	220 1/4	R885	ERDS2TJ222	2.2K 1/4
R143	ERDS2TJ124	120K 1/4	R418	ERDS2TJ221	220 1/4	R886	ERDS2TJ222	2.2K 1/4
R144	ERDS2TJ333	33K 1/4	R419	ERDS2TJ221	220 1/4	R887	ERDS2TJ680	68 1/4
R145	ERDS2TJ153	15K 1/4	R420	ERDS2TJ221	220 1/4	R888	ERDS2TJ680	68 1/4
R146	ERDS2TJ122	1.2K 1/4	R421	ERDS2TJ221	220 1/4	R889	ERDS2TJ470	47 1/4
R147	ERDS2TJ682	6.8K 1/4	R422	ERDS2TJ221	220 1/4	R890	ERDS2TJ470	47 1/4
R148	ERDS2TJ104	100K 1/4	R423	ERDS2TJ221	220 1/4	R895	ERDS2TJ104	100K 1/4
R149	ERDS2TJ152	1.5K 1/4	R424	ERDS2TJ472	4.7K 1/4	R896	ERDS2TJ104	100K 1/4
R150	ERDS2TJ103	10K 1/4	R425	ERDS2TJ220	22 1/4	R897	ERDS2TJ121	120 1/4
R151	ERDS2TJ101	100 1/4	R426	ERDS2TJ472	4.7K 1/4	R898	ERDS2TJ121	120 1/4
R152	ERDS2TJ153	15K 1/4	R501	ERDS2TJ224	220K 1/4	R901	ERDS2TJ101	100 1/4
R153	ERDS2TJ270	27 1/4	R502	ERDS2TJ562	5.6K 1/4	R902	ERDS2TJ101	100 1/4
R154	ERDS2TJ393	3.3 1/4	R503	ERDS2TJ474	470K 1/4	R903	ERDS2TJ331	330 1/4
R155	ERDS2TJ330	33 1/4	R504	ERDS2TJ221	220 1/4	R904	ERDS2TJ331	330 1/4
R161	ERDS2TJ333	33K 1/4	R505	ERDS2TJ104	100K 1/4	R905	ERDS2TJ103	10K 1/4
R162	ERDS2TJ222	2.2K 1/4	R506	ERDS2TJ333	33K 1/4	R906	ERDS2TJ103	10K 1/4
R163	ERDS2TJ333	33K 1/4	R507	ERDS2TJ102	1K 1/4	R907	ERDS2TJ333	33K 1/4
R164	ERDS2TJ153	15K 1/4	R601	ERDS2TJ331	330 1/4	R908	ERDS2TJ333	33K 1/4
R165	ERDS2TJ122	1.2K 1/4	R602	ERDS2TJ472	4.7K 1/4	R911	ERDS2TJ332	3.3K 1/4
R166	ERDS2TJ102	1K 1/4	R603	ERDS2TJ472	4.7K 1/4	R912	ERDS2TJ332	3.3K 1/4
R167	ERDS2TJ681	680 1/4	R604	ERDS2TJ472	4.7K 1/4	R913	ERDS2TJ332	3.3K 1/4
R168	ERDS2TJ272	2.7K 1/4	R605	ERDS2TJ472	4.7K 1/4	R914	ERDS2TJ332	3.3K 1/4
R169	ERDS2TJ392	3.9K 1/4	R606	ERDS2TJ472	4.7K 1/4	R915	ERDS2TJ472	4.7K 1/4
R170	ERDS2TJ101	100 1/4	R607	ERDS2TJ472	4.7K 1/4	R916	ERDS2TJ472	4.7K 1/4
R171	ERDS2TJ270	27 1/4	R608	ERDS2TJ472	4.7K 1/4	R917	ERDS2TJ472	4.7K 1/4
R172	ERDS2TJ393	3.3 1/4	R609	ERDS2TJ472	4.7K 1/4	R918	ERDS2TJ472	4.7K 1/4
R180	ERDS2TJ474	470K 1/4	R610	ERDS2TJ472	4.7K 1/4	R1001	ERDS2TKG1003	100K 1/4
R181	ERDS2TJ471	470 1/4	R611	ERDS2TJ472	4.7K 1/4	R1002	ERDS2TKG1003	100K 1/4
R182	ERDS2TJ564	560K 1/4	R612	ERDS2TJ472	4.7K 1/4	R1003	ERDS2TKG1003	100K 1/4
R183	ERDS2TJ564	560K 1/4	R613	ERDS2TJ472	4.7K 1/4	R1004	ERDS2TKG1003	100K 1/4
R184	ERDS2TJ223	22K 1/4	R614	ERDS2TJ472	4.7K 1/4	CAPACITORS(VALUE, VOLTAGE)		
R185	ERDS2TJ473	47K 1/4	R615	ERDS2TJ472	4.7K 1/4	C1	△ ECKDKC103PF2	0.01 125
R186	ERDS2TJ473	47K 1/4	R616	ERDS2TJ105	1M 1/4	C11	△ ECFD1H103KB	0.01 50
R187	ERDS2TJ473	47K 1/4	R625	ERDS2TJ221	220 1/4	C12	△ ECFD1H103KB	0.01 50
R188	ERDS2TJ473	47K 1/4	R823	ERDS2TJ392	3.9K 1/4	C14	ECFD1E104ZF	0.1 25
R189	ERDS2TJ562	5.6K 1/4	R824	ERDS2TJ392	3.9K 1/4	C15	ECEA1CU332	3300 16
R190	ERDS2TJ123	12K 1/4	R827	ERDS2TJ564	560K 1/4	C16	ECEA1CU332	3300 16
R191	ERDS2TJ154	150K 1/4	R828	ERDS2TJ564	560K 1/4	C17	ECEA1CU470	47 16
R192	ERDS2TJ824	820K 1/4	R829	ERDS2TJ473	47K 1/4	C18	ECEA1CU470	47 16
			R831	ERDS2TJ102	1K 1/4	C19	ECEA0JS331	330 6.3
			R832	ERDS2TJ102	1K 1/4			

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
C20	ECEA0JS331	330 6.3	C129	ECKD1H681K	680P 50	C507	ECKD1H102KB	0.001 50
C21	ECFD1E104ZF	0.1 25	C131	ECEA0JK221	220 6.3	C508	RBP1CN100CT	10 16
C22	ECFD1E104ZF	0.1 25	C141	ECQM1H153JZ	0.015 50	C509	ECCD1H100KC	10P 50
C23	ECEA0JS331	330 6.3	C142	ECQM1H122JZ	0.0012 50	C510	ECQM1H104JZP	0.1 50
C24	ECFD1H103KB	0.01 50	C143	ECQM1H473JZ	0.047 50	C511	ECEA1HUR47	0.47 50
C25	ECFD1H103KB	0.01 50	C144	ECEA1HKNR22	2.2 50	C512	ECKD1H681K	680P 50
C39	ECEA50V330V	330 50	C145	ECEA1HKNR22	0.22 50	C513	ECKD1H681K	680P 50
C40	ECEA50V330V	330 50	C161	ECQM1H153JZ	0.015 50	C514	ECQM1H154JZ	0.15 50
C53	ECEA1CU331	330 16	C162	ECKD1H681K	680P 50	C515	ECQM1H153JZ	0.015 50
C54	ECEA1CU331	330 16	C163	ECQM1H103JZ	0.01 50	C516	ECEA1HKNR22	2.2 50
C55	ECEA1CU221	220 16	C164	ECEA1HKNR33	3.3 50	C517	ECKD1H471KB	470P 50
C56	ECEA1CU221	220 16	C165	ECEA1HKNR01	0.1 50	C518	ECKD1H472KB	0.0047 50
C57	ECFD1H103KB	0.01 50	C168	ECEA1CKN100	10 16	C601	RCBS1C103MY	0.01 16
C58	ECFD1H103KB	0.01 50	C169	ECFD1H103KB	0.01 50	C602	ECEA1CKS100	10 16
C59	REC1C101MOT	100 16	C181	ECQM1H474JZ	0.47 50	C801	ECEA0JU471	470 6.3
C60	REC1C101MOT	100 16	C182	RCBS1H221KBY	220P 50	C802	ECEA0JU471	470 6.3
C83	ECEA1AU101	100 10	C183	ECQM1H682JZ	0.0068 50	C803	ECEA0JU471	470 6.3
C84	ECEA1AU101	100 10	C184	ECEA1HKN010	1 50	C804	ECEA0JU471	470 6.3
C87	REC1C101MOT	100 16	C186	ECQM1H224JZ	0.22 50	C805	ECQP2A271JSP	270P 100
C88	REC1C101MOT	100 16	C187	ECEA1HKNR47	0.47 50	C806	ECQP2A271JSP	270P 100
C101	ECQV1H104JZ	0.1 50	C191	ECFD1H103KB	0.01 50	C809	ECQP1382JZ	0.0039 100
C102	ECKD1H102KB	0.001 50	C192	ECFD1H103KB	0.01 50	C810	ECQP1382JZ	0.0039 100
C103	ECKD1H102KB	0.001 50	C301	ECFD1E104ZF	0.1 25	C811	ECCD1H220K	22P 50
C104	ECKD1H681K	680P 50	C302	ECFD1E104ZF	0.1 25	C812	ECCD1H220K	22P 50
C105	ECKD1H471KB	470P 50	C303	ECEA0JK470	47 6.3	C813	ECQP2A103JSP	0.01 100
C106	ECKD1H471KB	470P 50	C304	ECFD1E104ZF	0.1 25	C814	ECQP2A103JSP	0.01 100
C107	ECCD1H220K	22P 50	C305	ECFD1H103KB	0.01 50	C815	ECQP1122JZ	0.0012 100
C108	ECEA1HK0R1	0.1 50	C307	ECCD1H220K	22P 50	C816	ECQP1122JZ	0.0012 100
C109	ECEA1HK010	1 50	C308	ECCD1H070CC	7P 50	C817	ARA1AN330MOT	330 10
C110	ECQV1H104JZ	0.1 50	C309	ECFD1E104ZF	0.1 25	C818	ARA1AN330MOT	330 10
C111	ECEA1HK100	10 50	C310	ECFD1E104ZF	0.1 25	C819	ECKD1H102KB	0.001 50
C112	ECEA1HK100	10 50	C311	ECFD1H103KB	0.01 50	C820	ECKD1H102KB	0.001 50
C113	ECEA1HK010	1 50	C312	ECFD1H103KB	0.01 50	C823	ARA1A470MOT	47 10
C114	RCBS1C182MXY	0.0018 16	C313	ECFD1E104ZF	0.1 25	C826	ARA1A470MOT	47 10
C115	ECKD1H682KB	0.0068 50	C351	ECKD1H102KB	0.001 50	C827	ECEA0JU471	470 6.3
C116	ECQM1H333JZ	0.033 50	C352	ECKD1H102KB	0.001 50	C835	ECFD1H103KB	0.01 50
C117	RCBS1H221KBY	220P 50	C353	ECKD1H102KB	0.001 50	C836	ECFD1H103KB	0.01 50
C118	ECEA1HK010	1 50	C354	ECFD1H103KB	0.01 50	C837	ECEA0JK220	22 6.3
C119	ECEA0JK220	22 6.3	C401	ECFD1E104ZF	0.1 25	C841	ECQM1H152JZ	0.0015 50
C120	RCBS1H681KBY	680P 50	C402	ECEA0JK470	47 6.3	C842	ECQM1H152JZ	0.0015 50
C121	ECFD1H103KB	0.01 50	C403	ECFD1E104ZF	0.1 25	C871	ARA1EN3R3M0	3.3 25
C122	ECBT1H101KB5	100P 50	C405	ECFD1E104ZF	0.1 25	C872	ARA1EN3R3M0	3.3 25
C123	ECBT1H101KB5	100P 50	C501	ECQM1H104JZP	0.1 50	C873	ECQM1H103KF	0.01 50
C124	ECKD1H222KB	0.0022 50	C502	ECFD1E104ZF	0.1 25	C874	ECQM1H103KF	0.01 50
C125	ECEA0JK470	47 6.3	C503	ECEA1CKS100	10 16	C875	ECFTD103KXL	0.01 25
C126	ECEA0JK470	47 6.3	C504	ECFD1E104ZF	0.1 25	C876	ECFTD103KXL	0.01 25
C127	ECKD1H102KB	0.001 50	C505	ECFD1E104ZF	0.1 25	C878	ECFTD103KXL	0.01 25
C128	ECKD1H102KB	0.001 50	C506	ECCD1H150KC	15P 50	C879	ECFTD103KXL	0.01 25

B MAIN P.C.B.

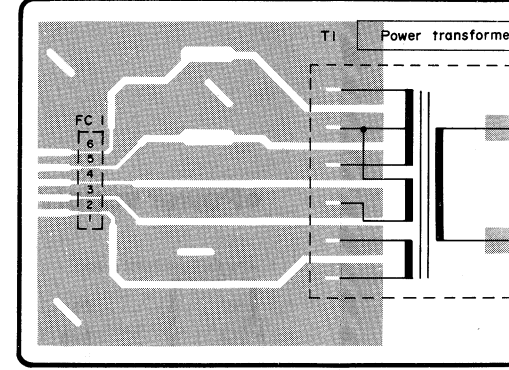


A OPERATION P.C.B.

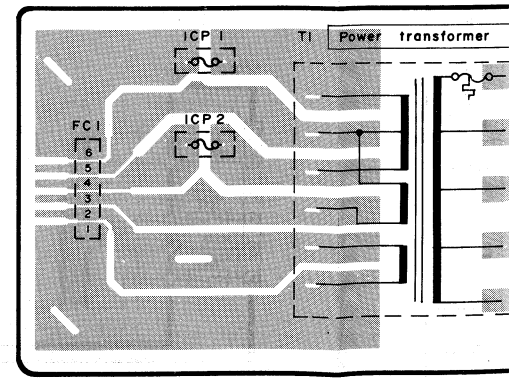


C POWER SOURCE P.C.B.

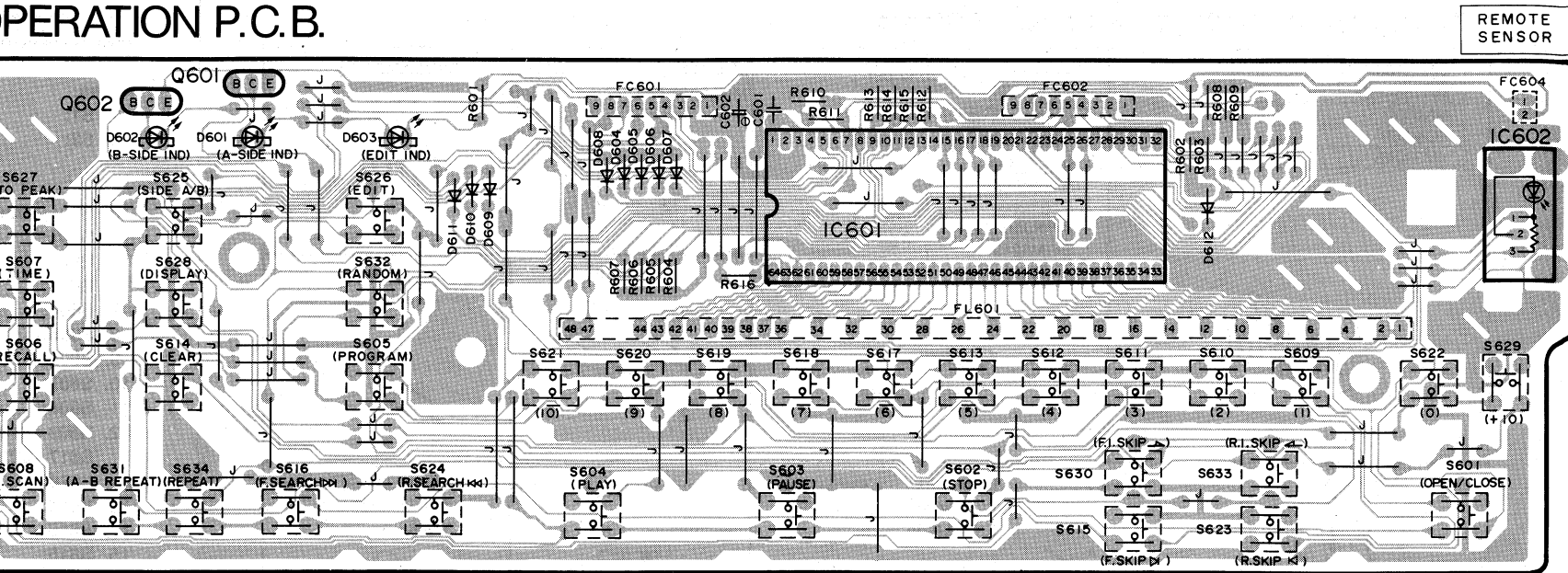
For (M) and (MC) areas



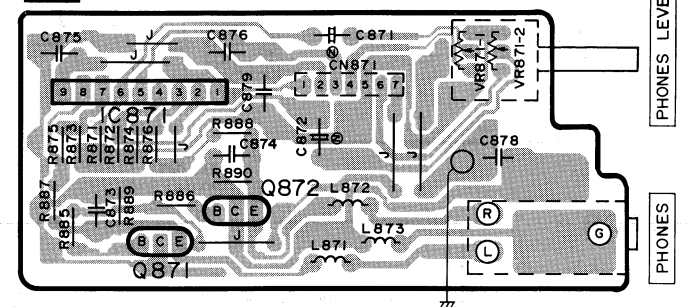
For (XA), (XB), (PA), (PE) and (PC) areas



OPERATION P.C.B.

REMOTE
SENSOR

D HEADPHONES P.C.B.

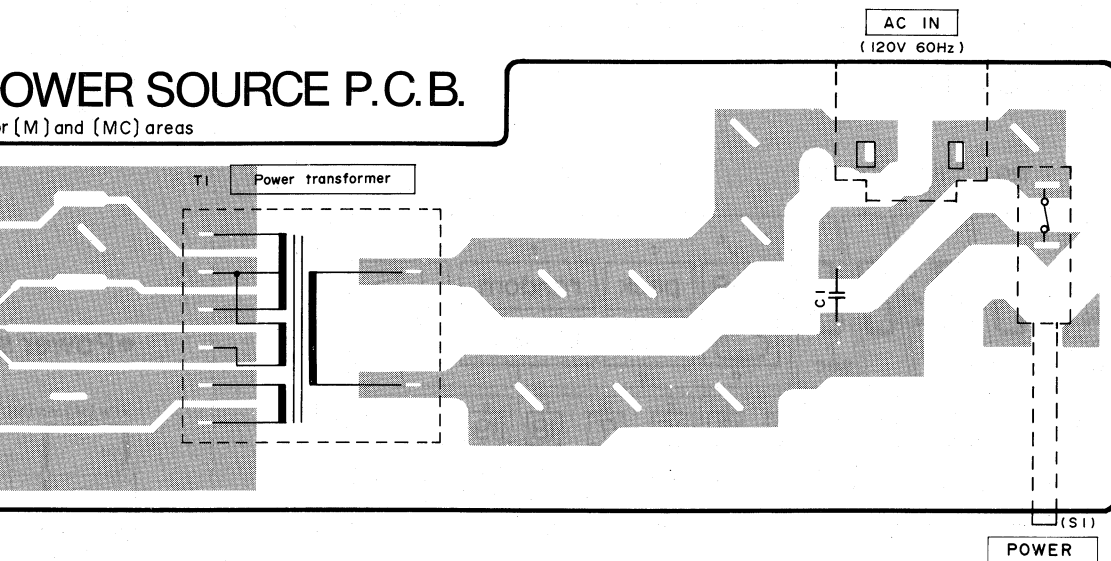


PHONES LEVEL

PHONES

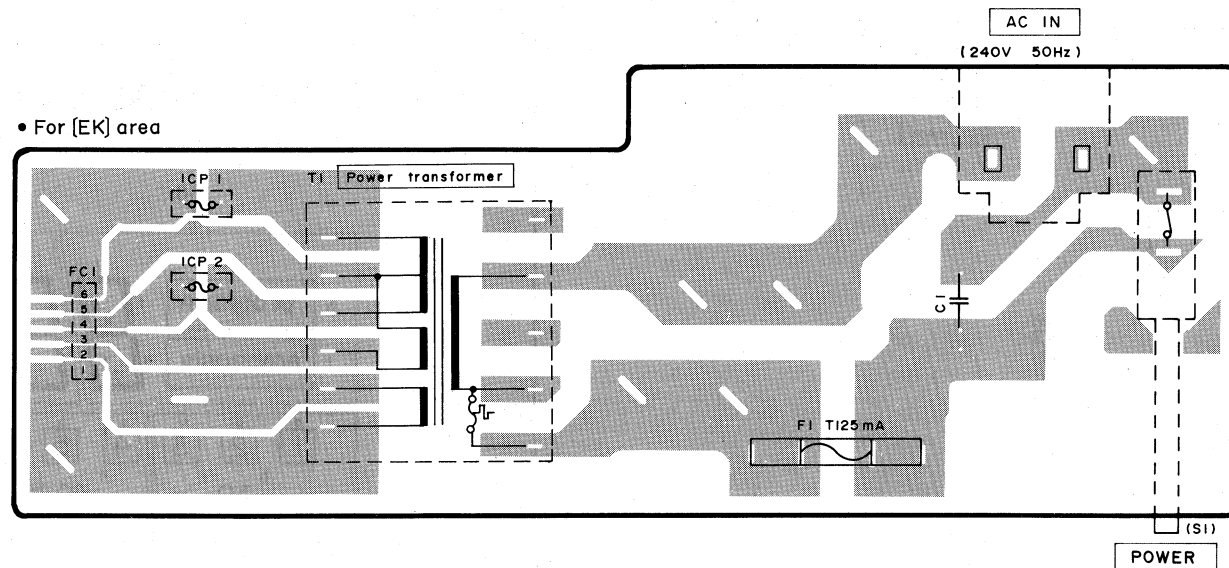
POWER SOURCE P.C.B.

r (M) and (MC) areas

AC IN
(120V 60Hz)

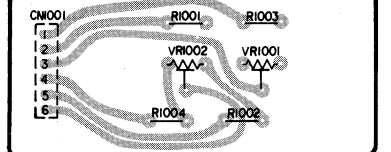
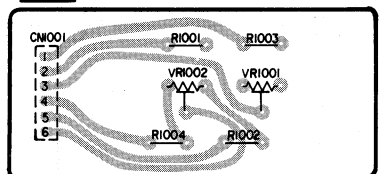
POWER

• For [EK] area

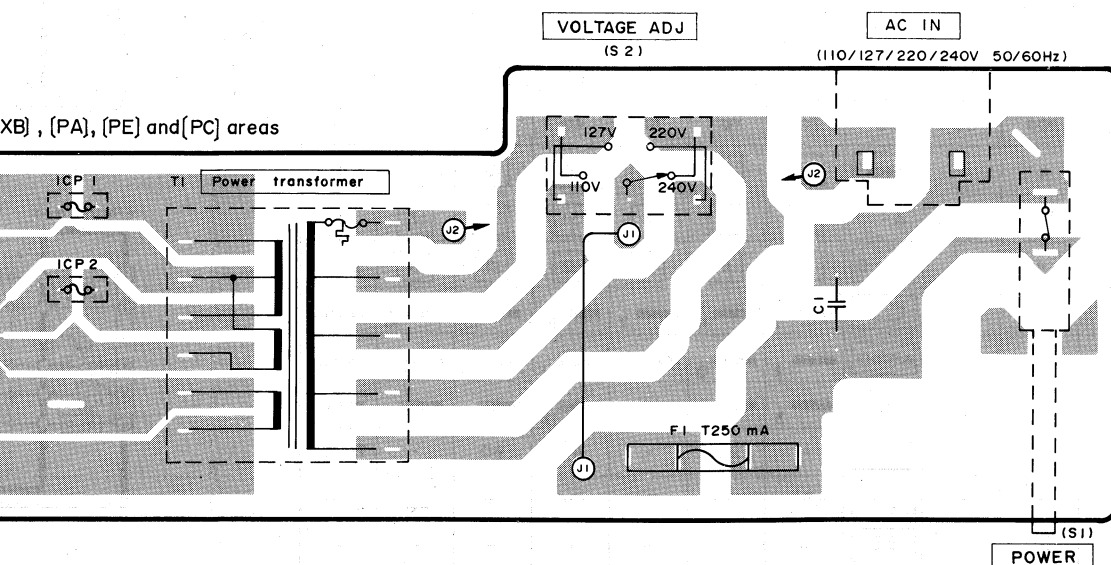
AC IN
(240V 50Hz)

POWER

E OFFSET VR P.C.B.

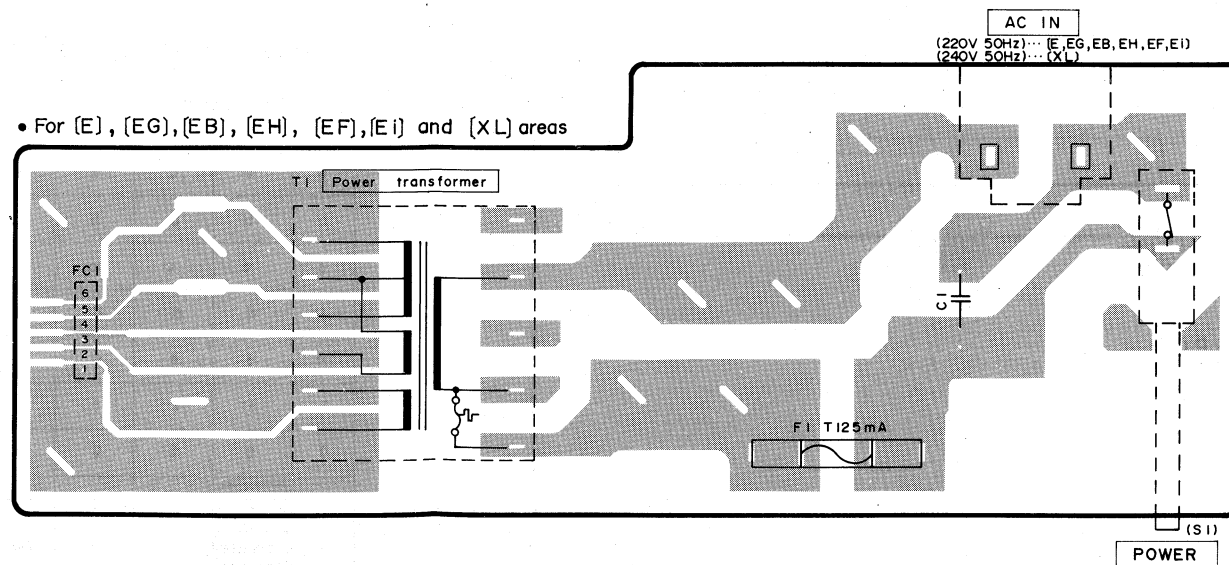


XB), (PA), (PE) and (PC) areas

VOLTAGE ADJ
(S 2)AC IN
(110/127/220/240V 50/60Hz)

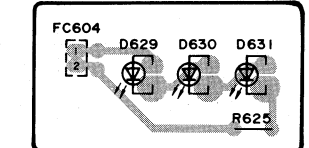
POWER

• For (E), (EG), (EB), (EH), (EF), (EI) and (XL) areas

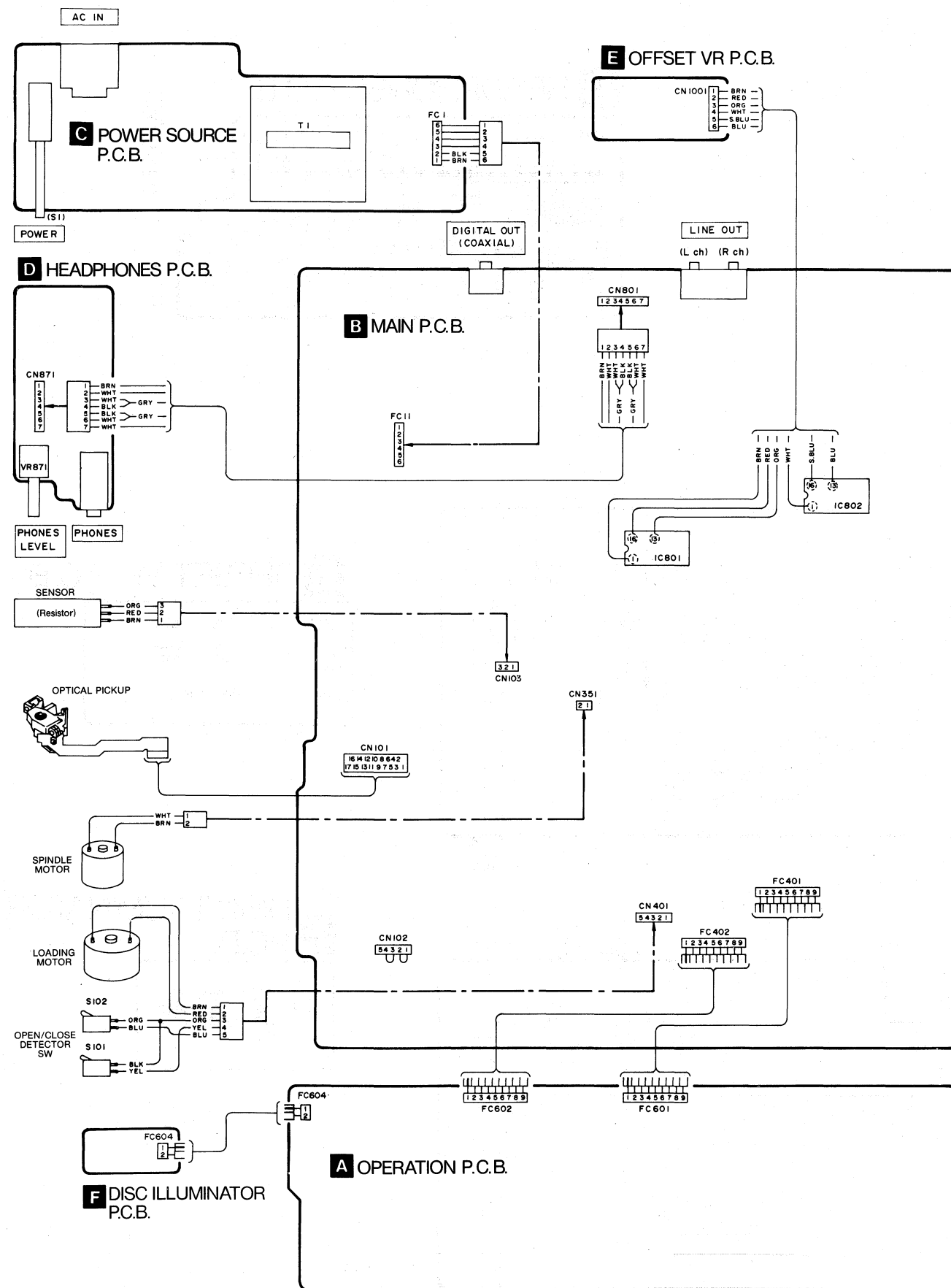
AC IN
(220V 50Hz) (E, EG, EB, EH, EF, EI)
(240V 50Hz) (XL)

POWER

F DISC ILLUMINATOR P.C.B.



■ PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



■ TERMINAL GUIDE OF TRANSISTORS, IC'S AND DIODES

- **Terminal guide of IC's, Transistors and Diodes**

MN15283PEE	64 pin
MN1554PEF	
MN6030	22 pin
PCM56P-J	
YM3404B	16 pin

AN8370	42 pin
AN8371	
SVICXK5816M	24 pin
SVIUPD4053G1	
MN74HC00	
AN6554NS	14 pin
MN6636S	
SVINJM5532	10 pin
SVIM5219	
AN6552S	8 pin

MN6622 84 pin
MN53010PEH 42 pin

SVINJM4556SA

SVIBA6218

LM2940T5
M5F78M08L

MA154WK

MA165

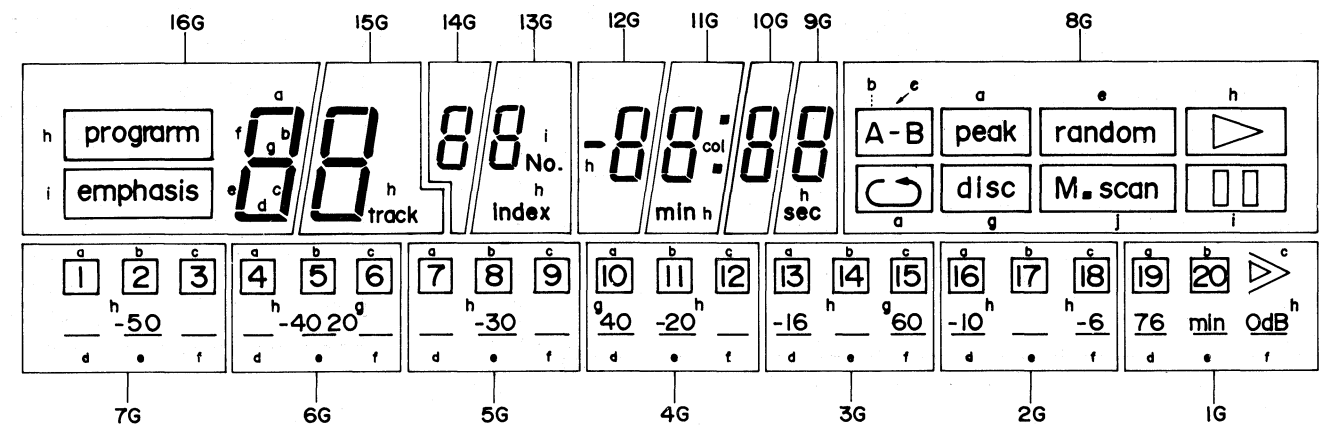
MA4033 SVDMTZ33
MA4082 MA4062-H
MA4056

SVD1S35200A

SVGDPG7851Y
SVGDAY7851
LN66

■ INTERNAL CONNECTIONS OF FL

- **Grid connection diagram**



- **Anode connection table**

	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	a	a	peak	1	4	7	10	13	16	19
b	b	b	b	b	b	b	b	b	A-	2	5	8	11	14	17	20
c	c	c	c	c	c	c	c	c	B	3	6	9	12	15	18	▶▶
d	d	d	d	d	d	d	d	d	↻	1	4	7	10	13	16	19
e	e	e	e	e	e	e	e	e	random	2	5	8	11	14	17	20
f	f	f	f	f	f	f	f	f	M.scan	3	6	9	12	15	18	21
g	g	g	g	g	g	g	g	g	disc	-	20	-	40	60	-	76 min
h	program	track	-	index	■	min	-	sec	▶	-50	-40	-30	-20	-16	-10 -6	0 dB
i	emphasis	-	-	No.	-	col	-	-	II	-	-	-	-	-	-	-

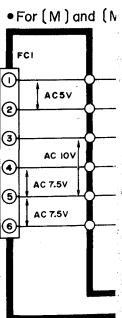
■ Sct

[This schema development

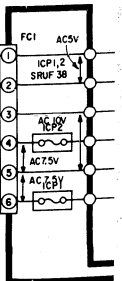
Notes:

1. **S1:**
2. **S2:**
3. **S101, 10**
4. **S601:**
5. **S602:**
6. **S603:**
7. **S604:**
8. **S605:**
9. **S606:**
10. **S607:**
11. **S608:**
12. **S609~61**
S617~6:
S629:
13. **S614:**
14. **S615:**
15. **S616:**
16. **S623:**
17. **S624:**
18. **S625:**
19. **S626:**
20. **S627:**
21. **S628:**
22. **S630:**
23. **S631:**

● Power



- For (EK) area



SCHEMATIC DIAGRAM

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

Notes:

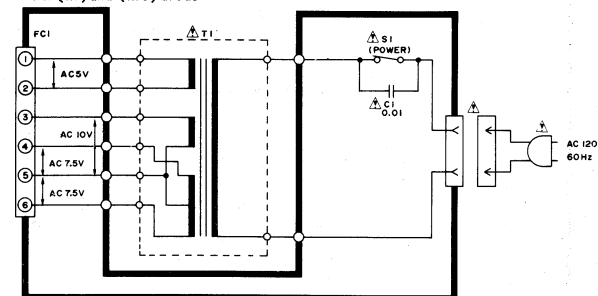
1. **S1:** Power switch in "on" position.
2. **S2:** Voltage selector switch.
(For [XA], [XB], [PA], [PE] and [PC] areas.)
3. **S101, 102:** Disc holder open/close detection switch.
4. **S601:** Open/Close switch.
5. **S602:** Stop switch.
6. **S603:** Pause switch.
7. **S604:** Play switch.
8. **S605:** Program switch.
9. **S606:** Recall switch.
10. **S607:** Time mode switch.
11. **S608:** Memory scan switch.
12. **S609-613, S617-621, S629:** Numeric switch.
13. **S614:** Clear switch.
14. **S615:** Forward skip switch.
15. **S616:** Forward search switch.
16. **S623:** Reverse skip switch.
17. **S624:** Reverse search switch.
18. **S625:** Side A/B switch.
19. **S626:** Edit switch.
20. **S627:** Auto peak switch.
21. **S628:** Display switch.
22. **S630:** Forward index skip switch.
23. **S631:** A-B Repeat switch.

24. **S632:** Random switch.
25. **S633:** Reverse index skip switch.
26. **S634:** Repeat switch.
27. The voltage value and waveform 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 taster or the measuring unit.
*The parenthesized are the values of voltage generated during playing (Test disc 1 kHz, L+R, 0 dB), others are voltage values in stop mode.
28. 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.
29. ——— : Porisitive voltage lines.
----- : Negative voltage lines.
~~~~~ : Audio signal lines.

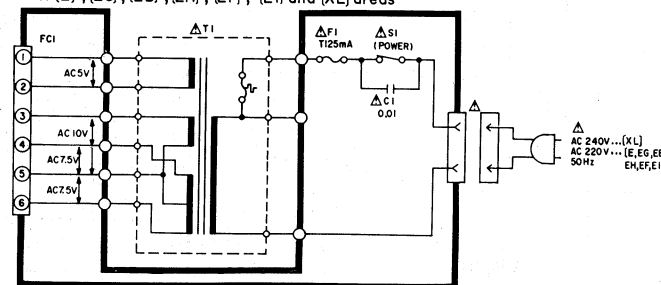
**\*Caution!**  
IC and LSI are sensitive to static electricity.  
Secondary trouble can be prevented by taking care furing repair.  
\*Cover the parts boxes made of plastics with alminum foil.  
\*Ground the soldering iron.  
\*Put a conductive mat on the work table.  
\*Do not touch the legs of IC or LSI with the fingers directly.

## Power supply circuit

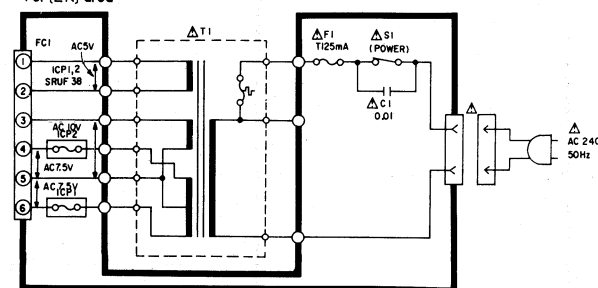
•For [M] and [MC] areas



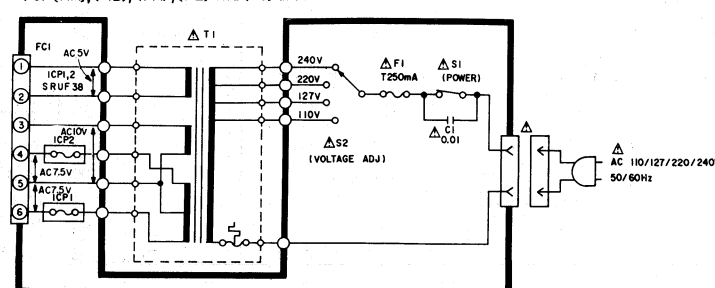
•For [E], [EG], [EB], [EH], [EF], [Ei] and [XL] areas



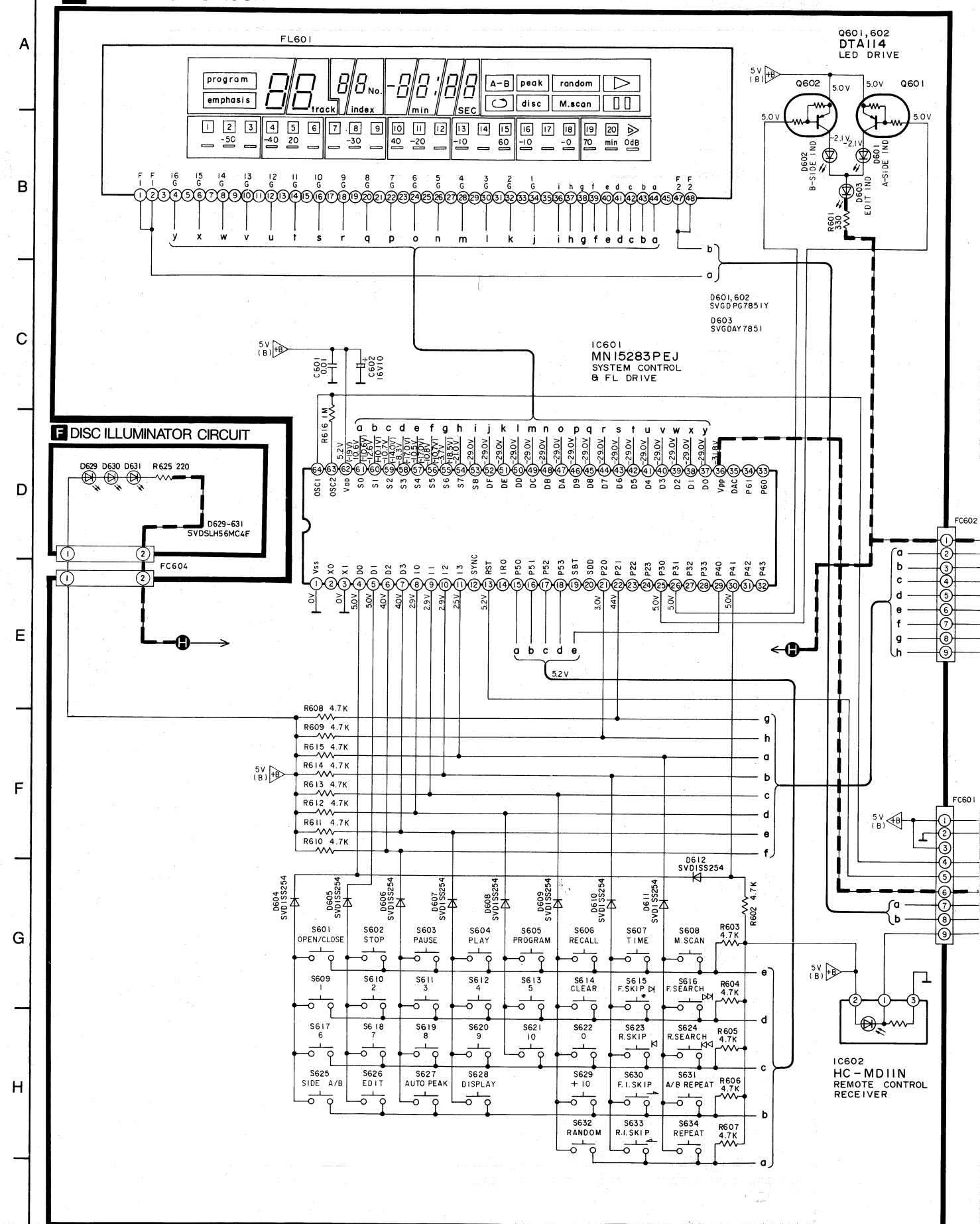
•For [EK] area



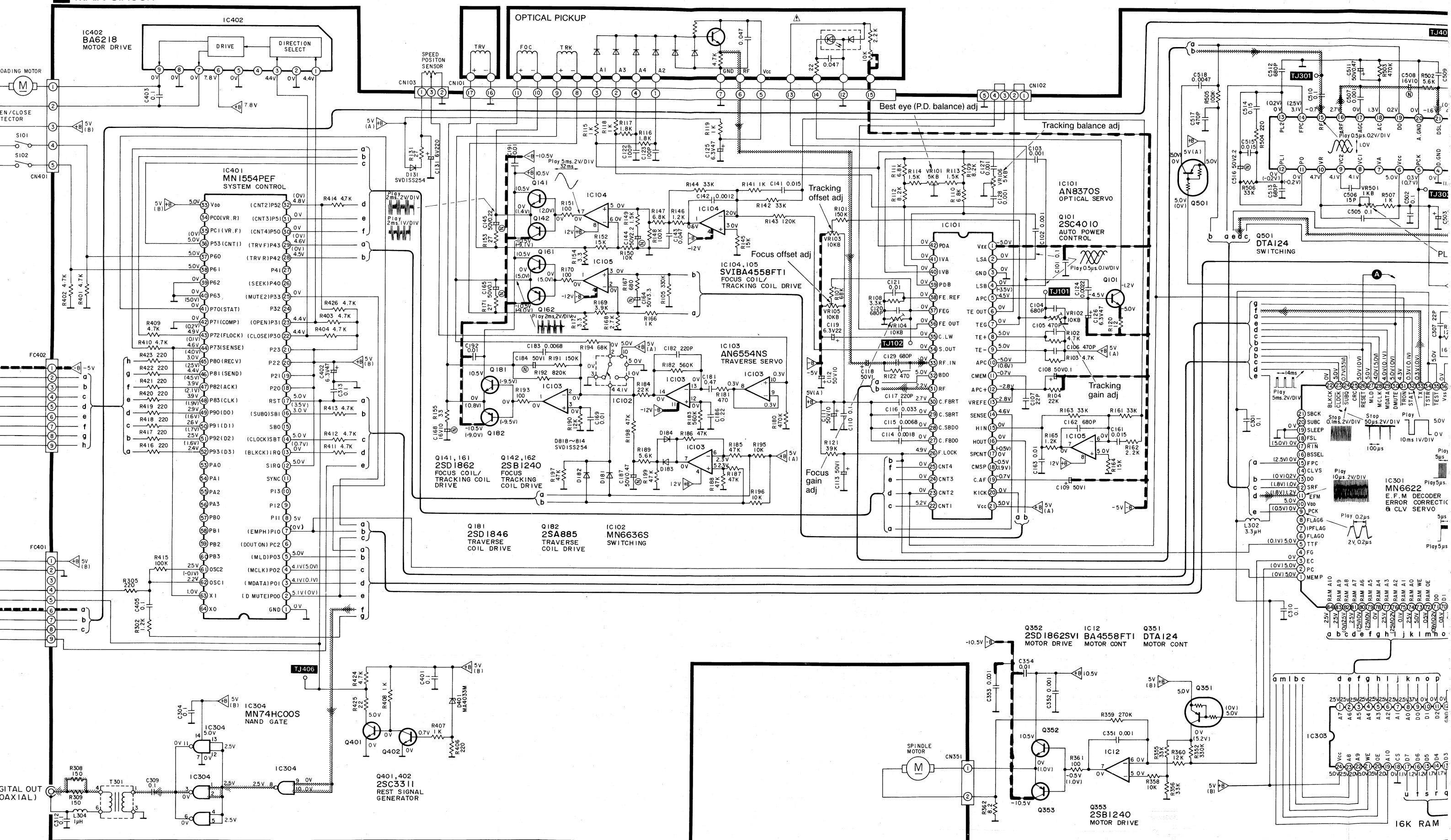
•For [XA], [XB], [PA], [PE] and [PC] areas

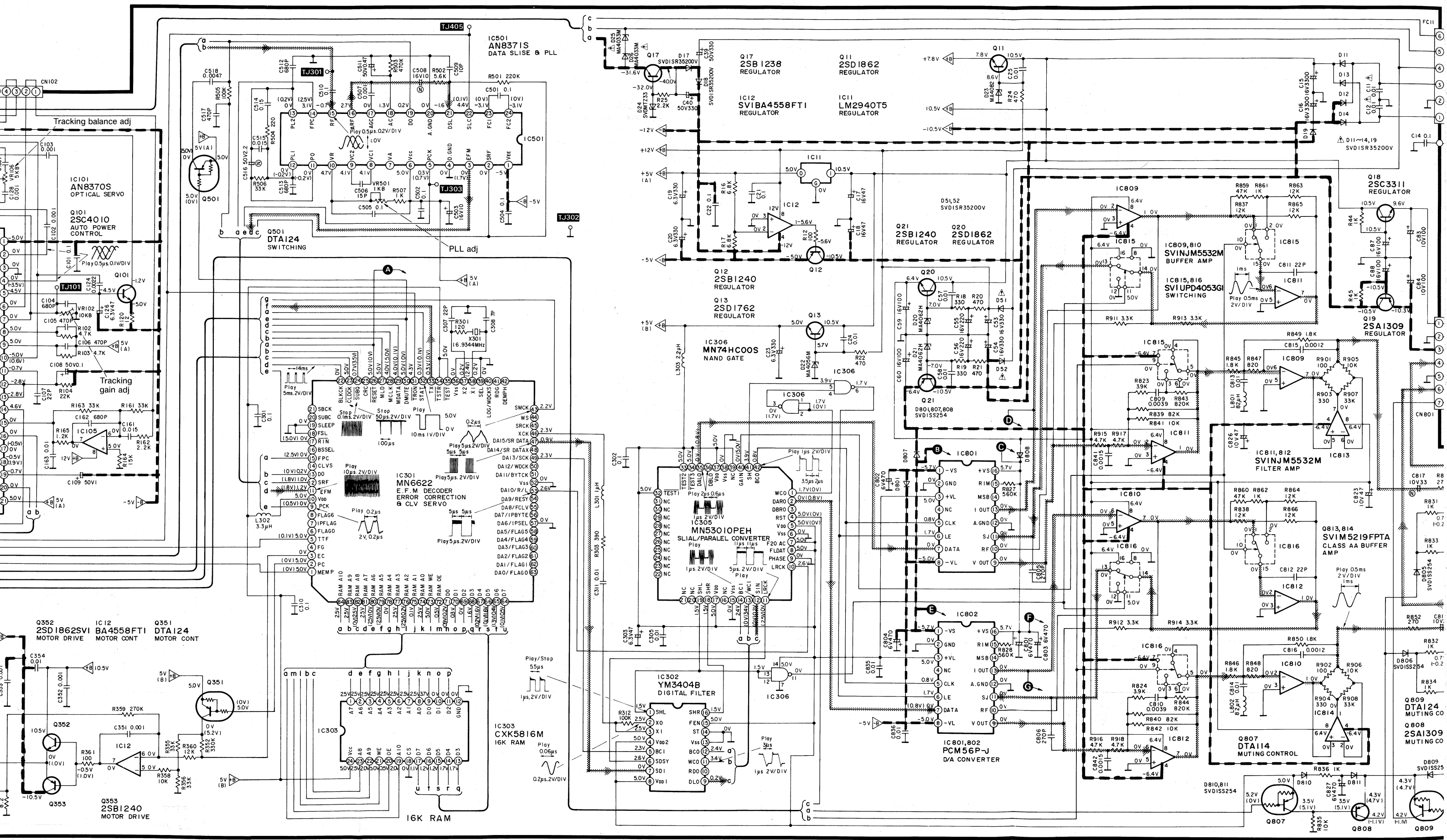


## A OPERATION CIRCUIT



# B MAIN CIRCUIT

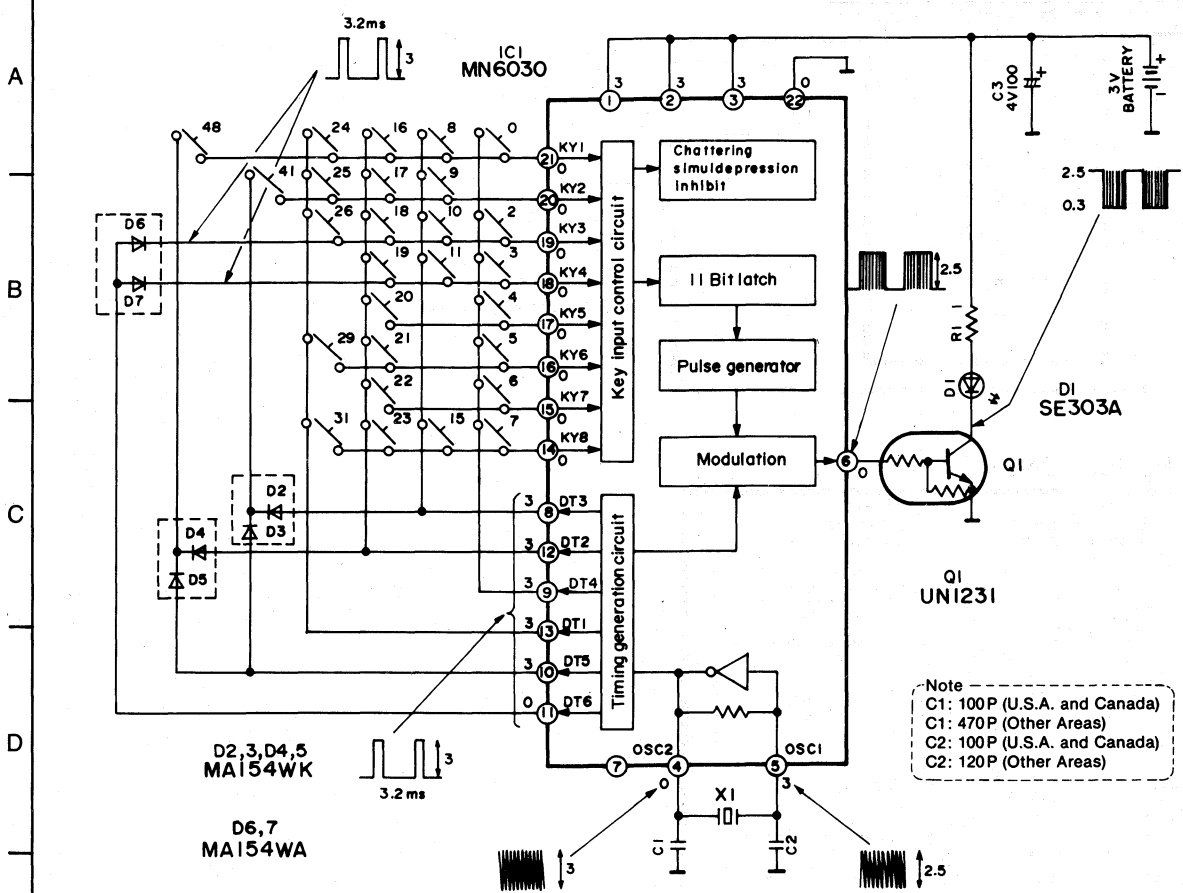




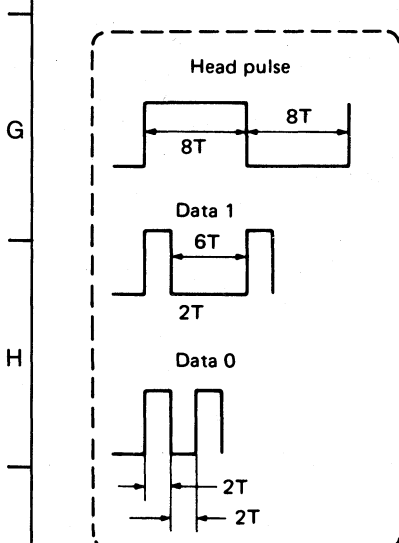
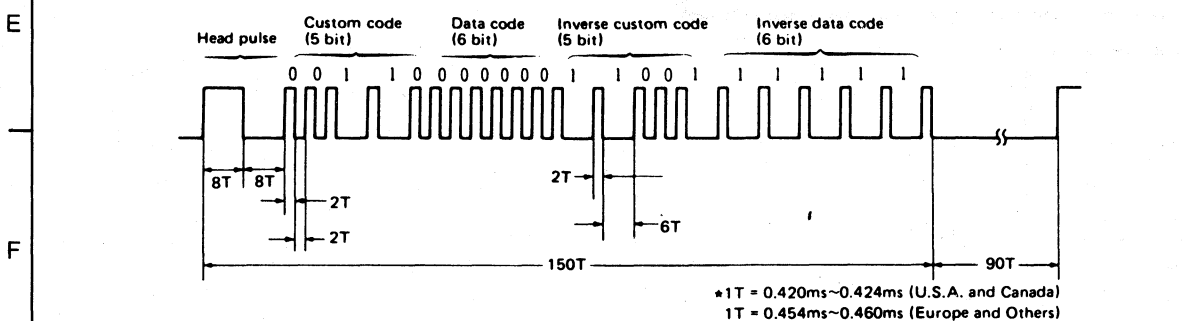


BLOCK DIAGRAM

Remote control unit

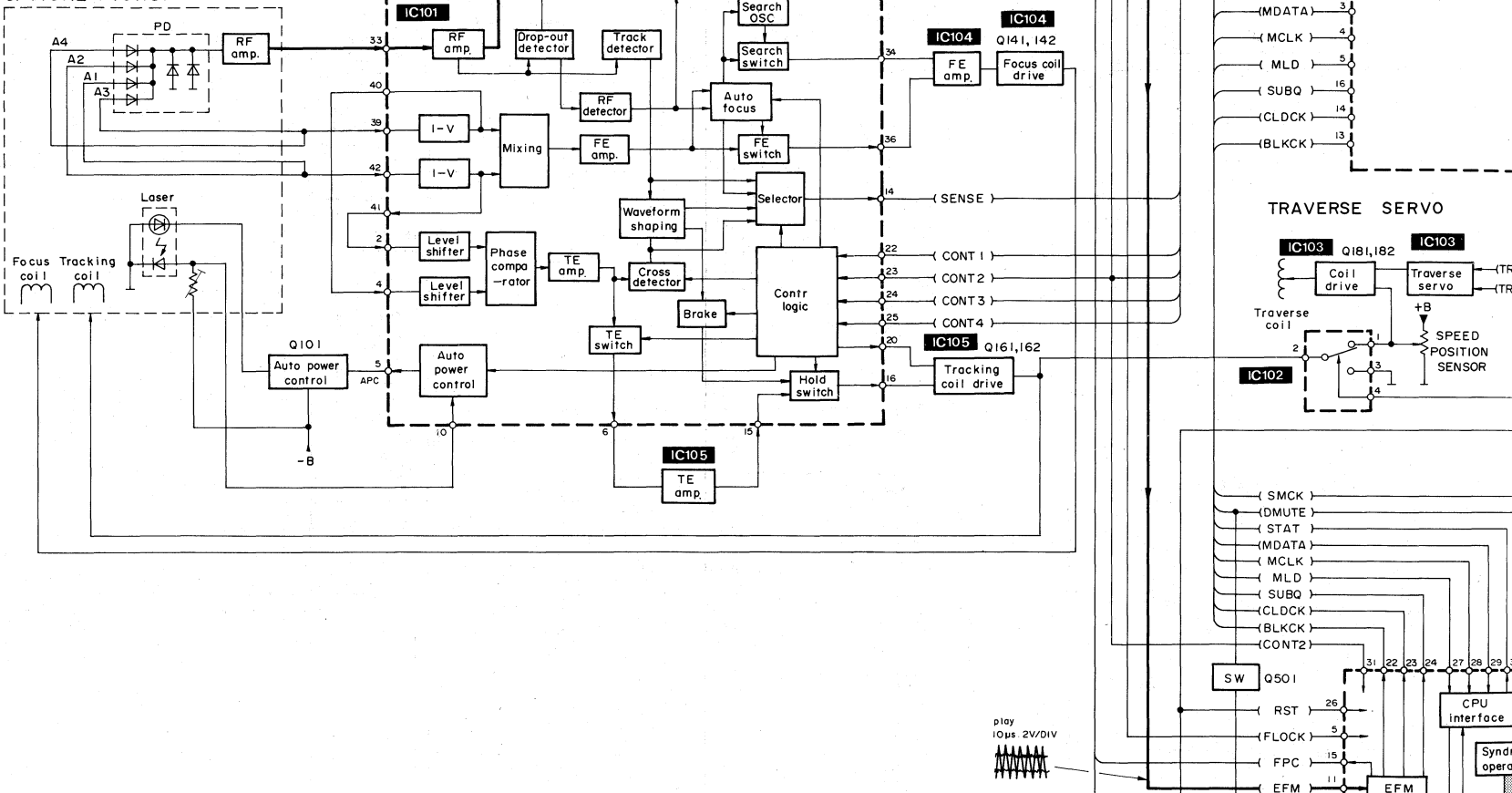


Remote control data code

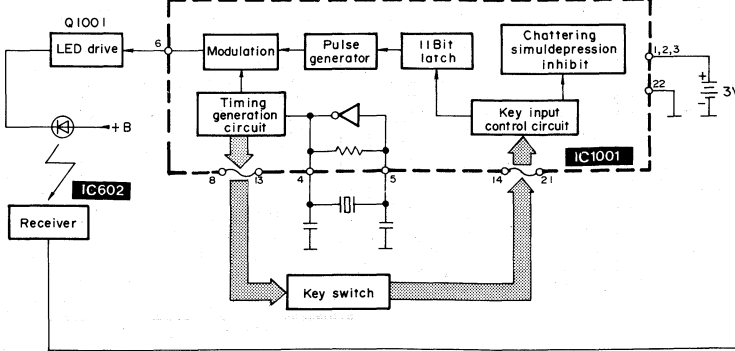


| Key No. | Function | Data Code | Key No. | Function   | Data Code |
|---------|----------|-----------|---------|------------|-----------|
| 16      | 1        | 010000    | 11      | clear      | 001011    |
| 17      | 2        | 010001    | 8       | A-B repeat | 001000    |
| 18      | 3        | 010010    | 7       | repeat     | 000111    |
| 19      | 4        | 010011    | 15      | M scan     | 001111    |
| 20      | 5        | 010100    | 9       | recall     | 001001    |
| 21      | 6        | 010101    | 4       | ◀ search   | 000100    |
| 22      | 7        | 010110    | 5       | search ▶   | 000101    |
| 23      | 8        | 010111    | 2       | ◀ skip     | 000010    |
| 24      | 9        | 011000    | 3       | skip ▶     | 000011    |
| 25      | 0        | 011001    | 6       | pause      | 000110    |
| 26      | +10      | 011010    | 10      | ◀ play     | 001010    |
| 41      | time     | 101001    | 29      | Program    | 011101    |
| 0       | stop     | 000000    | 31      | random     | 011111    |

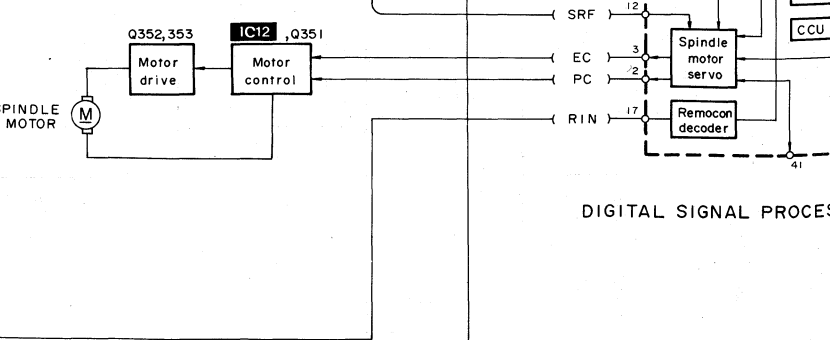
OPTICAL PICKUP



REMOTE CONTROL TRANSMITTER



SPINDLE MOTOR DRIVE



DIGITAL SIGNAL PROCES



