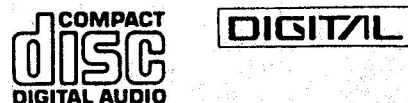


Service Manual

Compact Disc Player SL-P550



Color
(S) Silver Type
(K) Black Type

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.

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. 600Ω
 - Load impedance: More than 10 kΩ
 - Headphones output level: 15 mW max. 32Ω (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).

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, Kauhū 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

SL-P550

CONTENTS

	Page		Page
SAFETY PRECAUTION	2	EXPLODED VIEWS	23-26
ACCESSORIES	2	REPLACEMENT PARTS LIST	27-30
PRECAUTION OF LASER DIODE	3	RESISTORS AND CAPACITORS	30-32
BEFORE USING THIS UNIT	3	PRINTED CIRCUIT BOARDS	33-36
FRONT PANEL CONTROLS AND FUNCTIONS	4, 5	PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM	37
REMOTE CONTROL TRANSMITTER	6	TERMINAL GUIDE OF TRANSISTORS, IC'S AND DIODES	38
CONNECTIONS	6	INTERNAL CONNECTION OF F.L.	38
HANDLING PRECAUTIONS FOR OPTICAL PICKUP	7	SCHEMATIC DIAGRAM	39-45
DISASSEMBLY INSTRUCTIONS	8-11	BLOCK DIAGRAM	45-48
MEASUREMENTS AND ADJUSTMENTS	12-17		
TERMINAL FUNCTION OF LSI	18-22		
PACKING	22		

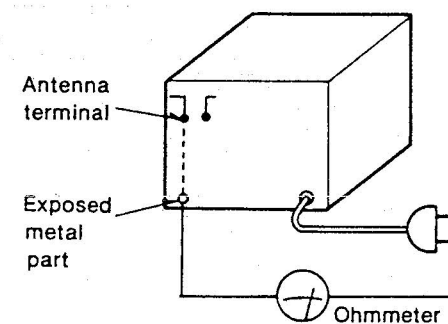
SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

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.

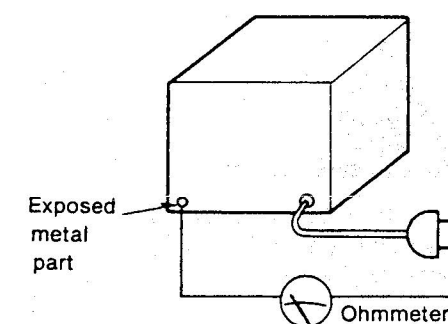
INSULATION RESISTANCE TEST

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 3MΩ and 5.2MΩ 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 = 3MΩ—5.2MΩ



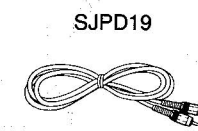
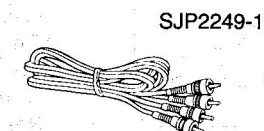
(Fig. B)
Resistance = Approx ∞

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

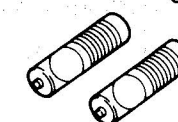
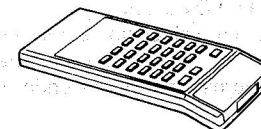
- AC power supply cord 1
- Stereo connection cable 1
- Coaxial cable 1
- Remote-control transmitter 1
- Batteries 2

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



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

- UM-3 or IECR6



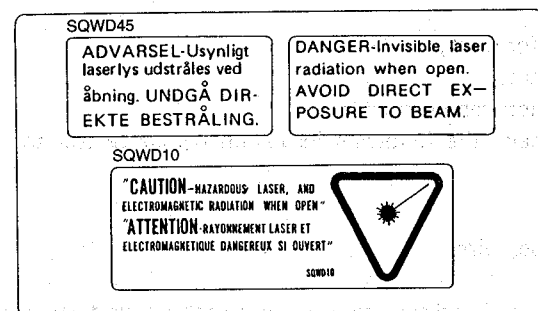
Technics

■ PRECAUTION OF LASER DIODE

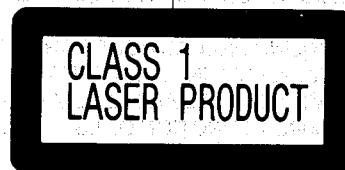
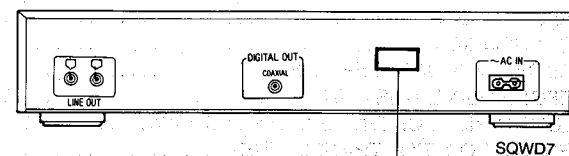
Caution: This product utilizes a laser diode.
ADVARSEL: I dette apparat anvendes laser.

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

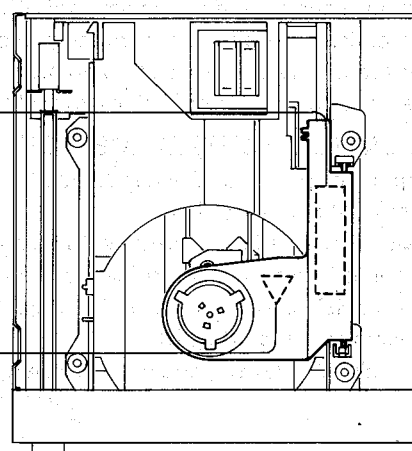
Areas	SQWD45	SQWD10	SQWD7	SQWD19
[MC]	×	○	×	×
[E]	○	×	○	○
[EK], [XL], [EG], [EB], [EH], [EF], [Ei], [XB], [XA]	○	×	○	○



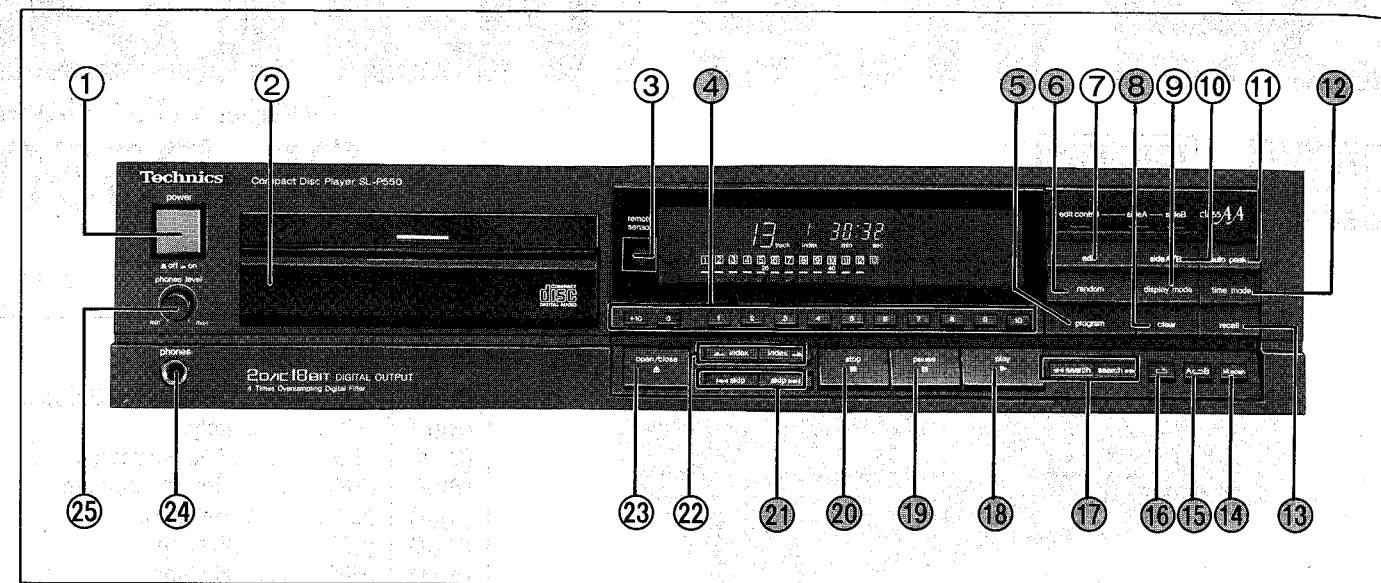
VAROITUS! Laite sisältää laseriodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä



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



■ FRONT PANEL CONTROLS AND FUNCTIONS



Control section

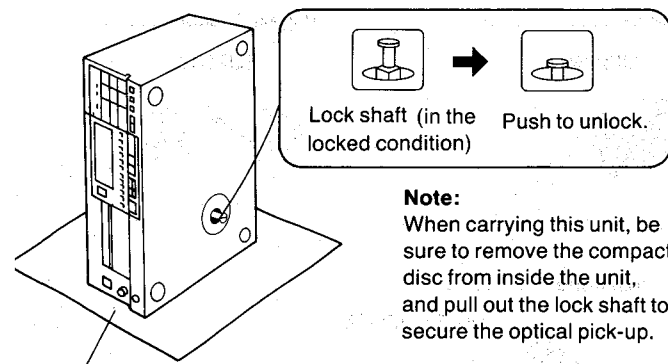
- ① **Power switch (power)**
- ② **Disc holder**
- ③ **Remote-control signal receptor (remote sensor)**
- ④ **Numeric buttons (+10, 0, 1~10)**
 These buttons can be used to select the track numbers and the recording time.
- ⑤ **Programmed-play button (program)**
- ⑥ **Random-play button (random)**
 This button can be used to select "random" play (the unit's microcomputer selects the sequence of track play in a random order).
- ⑦ **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.
- ⑧ **Clear button (clear)**
- ⑨ **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.
- ⑩ **Tape-side select button (side A/B)**
- ⑪ **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.
- ⑫ **Time-mode select button (time mode)**
- ⑬ **Recall button (recall)**
- ⑭ **Music scan button (M. scan)**
 This button can be used to play the first part of each track in order.
- ⑮ **A-B repeat button (A↔B)**
- ⑯ **Repeat button (⏮)**
- ⑰ **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.)
- ⑱ **Play button (play/▶)**
- ⑲ **Pause button (pause/⏸)**
- ⑳ **Stop button (stop/■)**
 This button can be used to stop the disc play, as well as to cancel the various play modes.
- ㉑ **Skip buttons (⏮ skip/skip ⏭)**
- ㉒ **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 **INDEX** on the notes and commentary that accompany the disc.

■ BEFORE USING THIS UNIT

Before placement


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

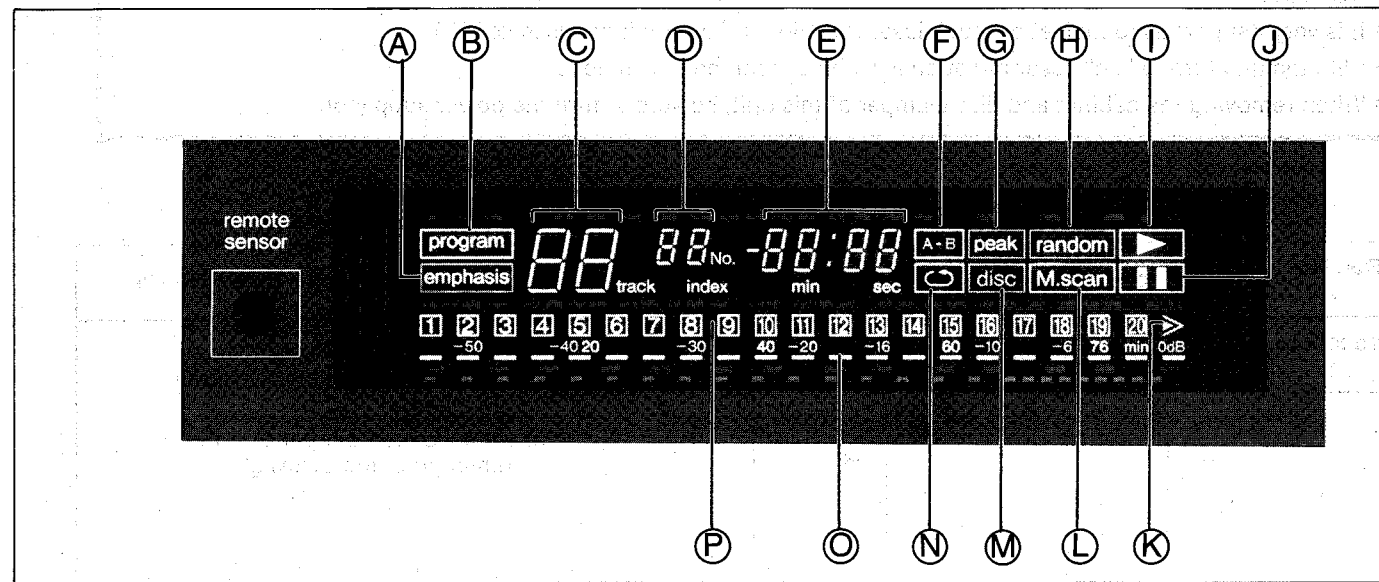


Soft cloth or similar material (to prevent scratches)

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.

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



- ⑳ Disc holder open/close button (open/close/▲)
- ㉑ Headphones jack (phones)
- ㉒ Headphones volume control (phones level)

Indicators section


- Ⓐ **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.
- Ⓑ **Programmed-play indicator (program)**
- Ⓒ **Track number display (track)**
- Ⓓ **Index-number display (No./index)**
This display shows the index number as well as the sequence of programmed play.
- Ⓔ **Time display (min./sec.)**
- Ⓕ **A-B repeat indicator (A-B)**
- Ⓖ **Peak-level search indicator (peak)**
- Ⓗ **Random-play indicator (random)**

- Ⓛ **Play indicator (▶)**
- Ⓜ **Pause indicator (⏸)**
- Ⓚ **“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.
- Ⓛ **Music scan indicator (M.scan)**
- Ⓜ **Disc indicator (disc)**
This indicator illuminates when a disc is loaded.
- Ⓝ **Repeat indicator (↺)**
- Ⓞ **Play-position/digital output-level indicator**
- Ⓟ **Music matrix (1~20)**
The numbers of the tracks on the disc are displayed up to a maximum of 20.

REMOTE CONTROL TRANSMITTER

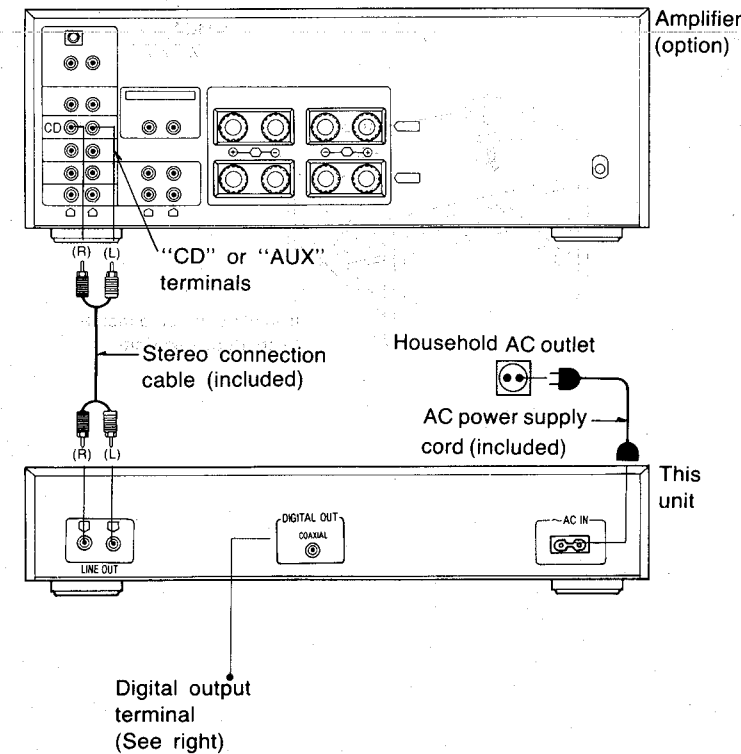
Black version: EUR64781...[M] and [MC] areas
EUR64782...Other areas
Silver version: EUR64783

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 ▶▶)
- ④ Numeric buttons (1~10, +10, 0)
- ⑧ Clear button (clear)
- ⑤ Programmed-play button (program)
- ⑮ A-B repeat button (A-B repeat)
- ⑯ Repeat button (repeat)
- ⑥ Random-play button (random)
- ⑭ Music scan button (music scan)
- ⑳ Stop button (■ stop)
- ⑲ Pause button (⏸ pause)
- ⑱ Play button (▶ play)
- ㉑ Skip buttons (◀◀ skip ▶▶)
- ⑬ Recall button (recall)
- ⑫ Time-mode select button (time mode)

CONNECTIONS



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).

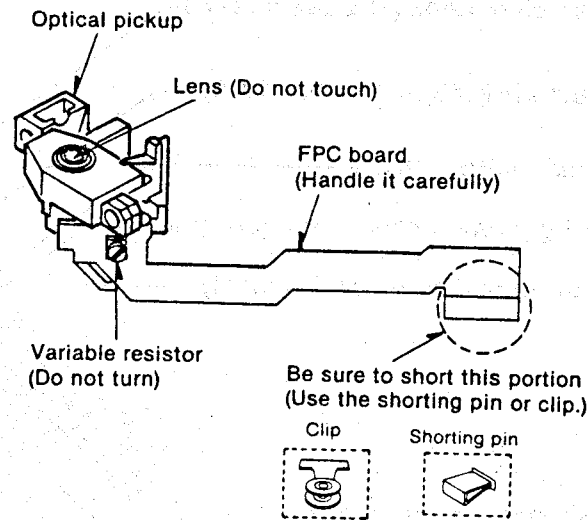
Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

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

● Handling of optical pickup

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

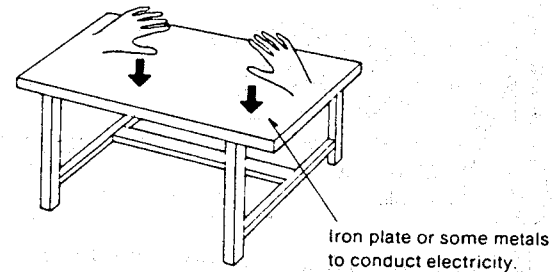
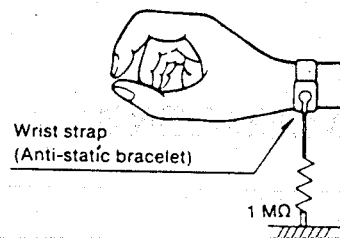


● Grounding for electrostatic breakdown prevention

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

Caution:

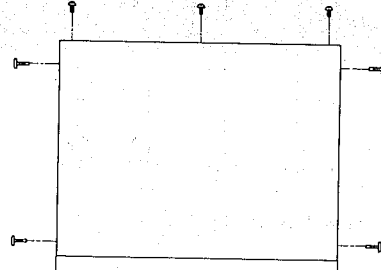
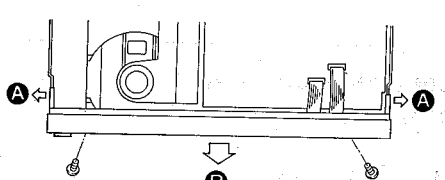
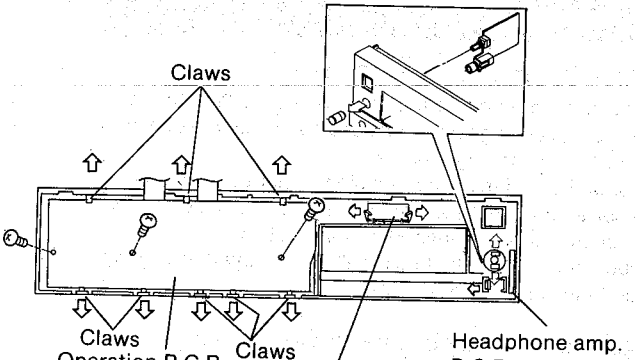
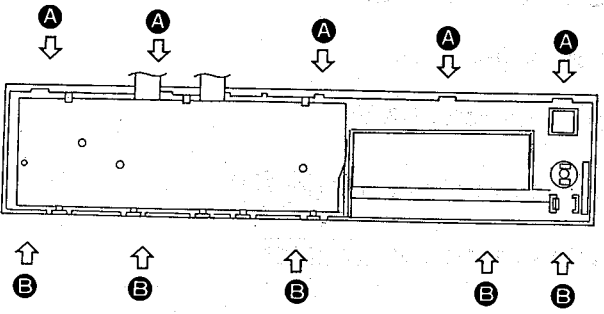
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

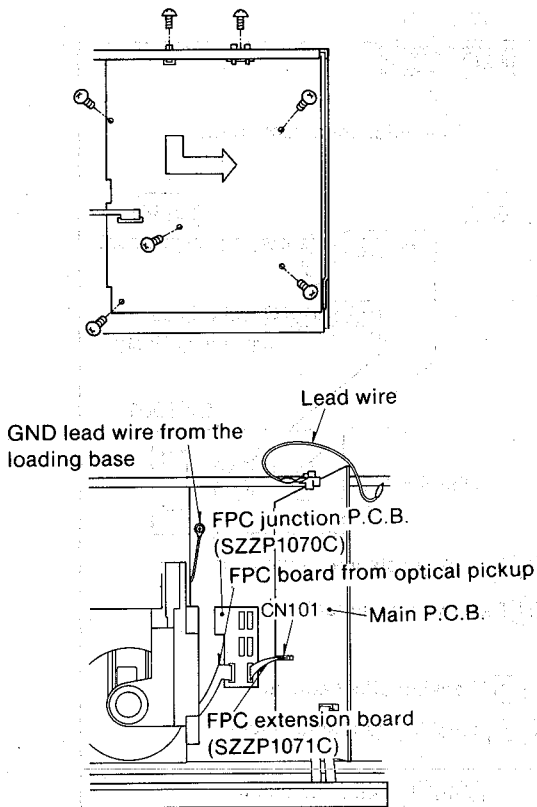
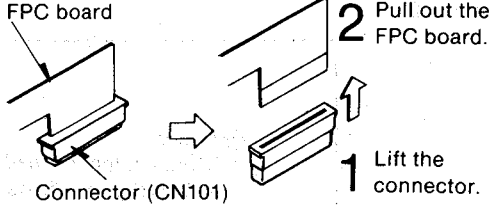


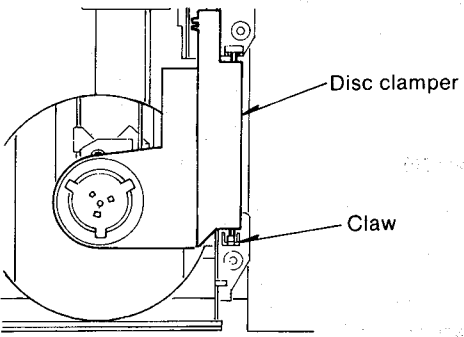
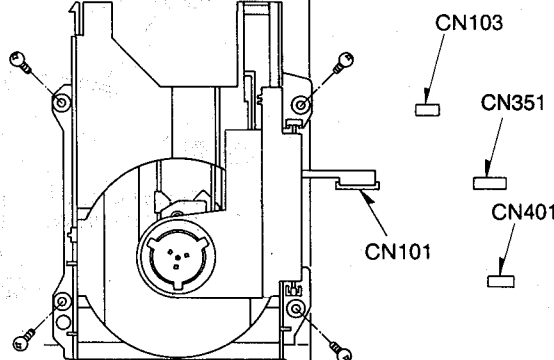
■ DISASSEMBLY INSTRUCTIONS

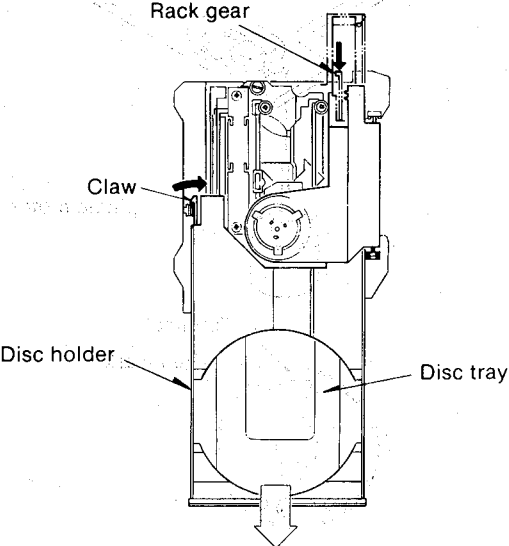
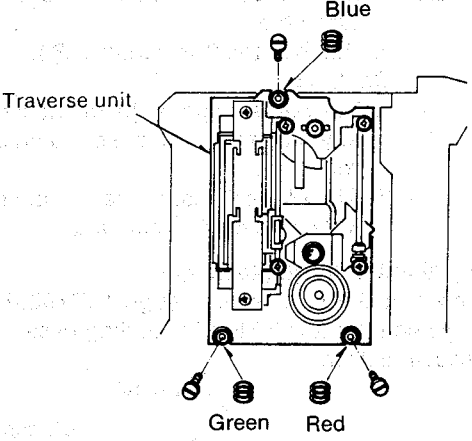
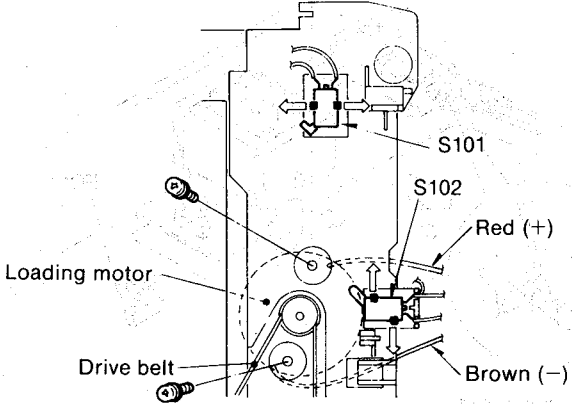
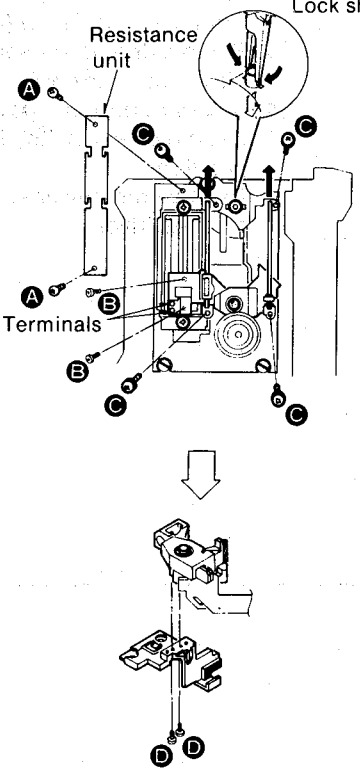
CAUTION:

- 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 clasper 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.	Procedure 1 → 2	
 <p>Note: When servicing, lock the lock shaft at the bottom of the unit. (See page 3.)</p>		<ol style="list-style-type: none"> 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			
<ol style="list-style-type: none"> 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. 			

<p>Ref. No. 5</p>	<p>How to remove the main P.C.B.</p>	<p>How to check the main P.C.B.</p>
<p>Procedure 1 → 5</p>	<ol style="list-style-type: none"> 1. Remove the 7 screws. 2. Lift the P.C.B. to remove it from the chassis tab. 3. Remove the P.C.B. in the direction of the arrow. 	<ul style="list-style-type: none"> • When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown. <ol style="list-style-type: none"> 1. Remove the main P.C.B. 2. Remove the FPC board (CN101).
	 <p>Caution: Insert the shorting pin into the FPC board in order to prevent breakdown of laser diode. (See page 7.)</p> <ol style="list-style-type: none"> 3. Connect FPC board from optical pickup to FPC junction P.C.B. (SZZP1070C). <p>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.</p> <ol style="list-style-type: none"> 4. Connect FPC extension board (SZZP1071C) to FPC junction P.C.B. and CN101 of the main P.C.B. 5. Place the main P.C.B. as shown in the figure. <p>Cautions:</p> <ul style="list-style-type: none"> • 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. 	

<p>Ref. No. 6</p>	<p>Ref. No. 7</p>
<p>Procedure 1 → 6</p>	<p>Procedure 1 → 2 → 7</p>
<p>• Release the claw.</p> 	<p>1. Pull out the 3 connectors (CN103, CN351 and CN401).</p> <p>2. Remove the FPC board (CN101).</p> <p>3. Remove the 4 screws.</p> <p>Refer to "HANDLING PRECAUTIONS FOR OPTICAL PICKUP" on page 7.</p> 

<p>Ref. No. 8</p>	<p>Ref. No. 10</p>
<p>Procedure 1 → 2 → 8</p>	<p>Procedure 1 → 2 → 6 → 7 → 8 → 10</p>
<ol style="list-style-type: none"> 1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up. 2. Pull the disc holder until it stops. 3. Release the claw. 4. Pull out the disc holder further to remove it. 	<ul style="list-style-type: none"> • Remove the 3 screws.
	 <p>Caution: Note the color of the 3 springs, they must be reinstalled to their original positions.</p>
<p>Ref. No. 9</p>	<p>Ref. No. 11</p>
<p>Procedure 1 → 2 → 7 → 8 → 9</p>	<p>Procedure 1 → 2 → 6 → 7 → 8 → 11</p>
<p>Note:</p> <p>Red lead wire..... (+) terminal (close to the slit of the motor)</p> <p>Brown lead wire..... (-) terminal</p>	<p>Caution:</p> <p>Refer to "Handling precautions for optical pickup" on page 7.</p>
<p>How to remove the loading motor</p> <ol style="list-style-type: none"> 1. Remove the drive belt. 2. Remove the 2 screws. 	<ol style="list-style-type: none"> 1. Remove the 2 screws (A) and the resistance unit. 2. Unsolder the 2 terminals and 2 screws (B). 3. Release the claws by using pliers to remove the lock shaft. 4. Remove the 4 screws (C). 5. Pull out the optical pickup from the 2 guide shafts. 6. Remove the 2 screws (D) to separate the holder from the optical pickup. 
<p>How to remove the switches (S101, S102)</p> <ul style="list-style-type: none"> • Release the claws. • Note the fitting direction before remove it. 	

Ref. No. 12
How to remove the spindle motor

Procedure
1 → 6 → 7 → 8 → 12

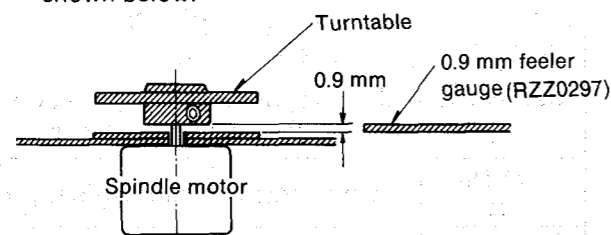
- Loosen the screw ① by using a 1.27 mm hexagonal wrench and remove the turntable.
- Remove the 2 screws ②, ③.

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

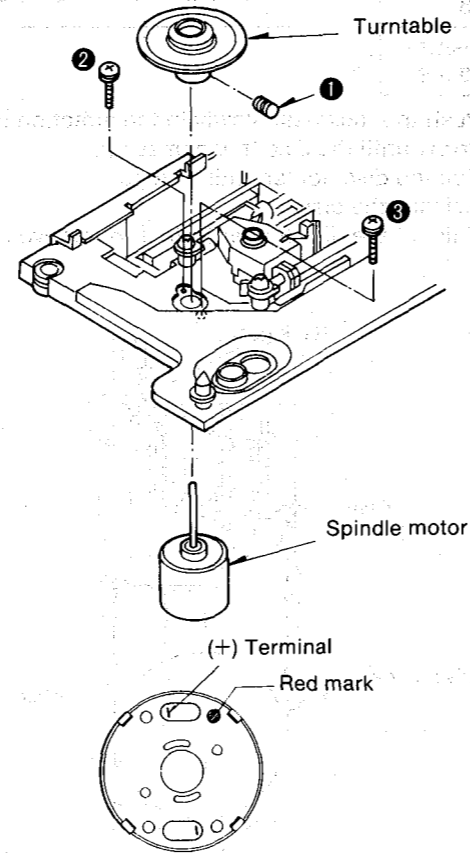
- Insert a 0.9 mm feeler gauge (RZZ0297) between the turntable and loading base as shown below.



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

Caution:

Refer to optical pickup adjustment (see page 17).



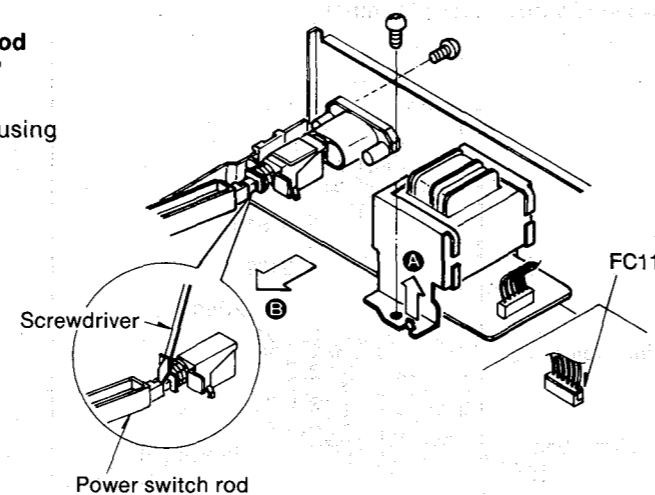
Ref. No. 13
How to remove the power transformer

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.



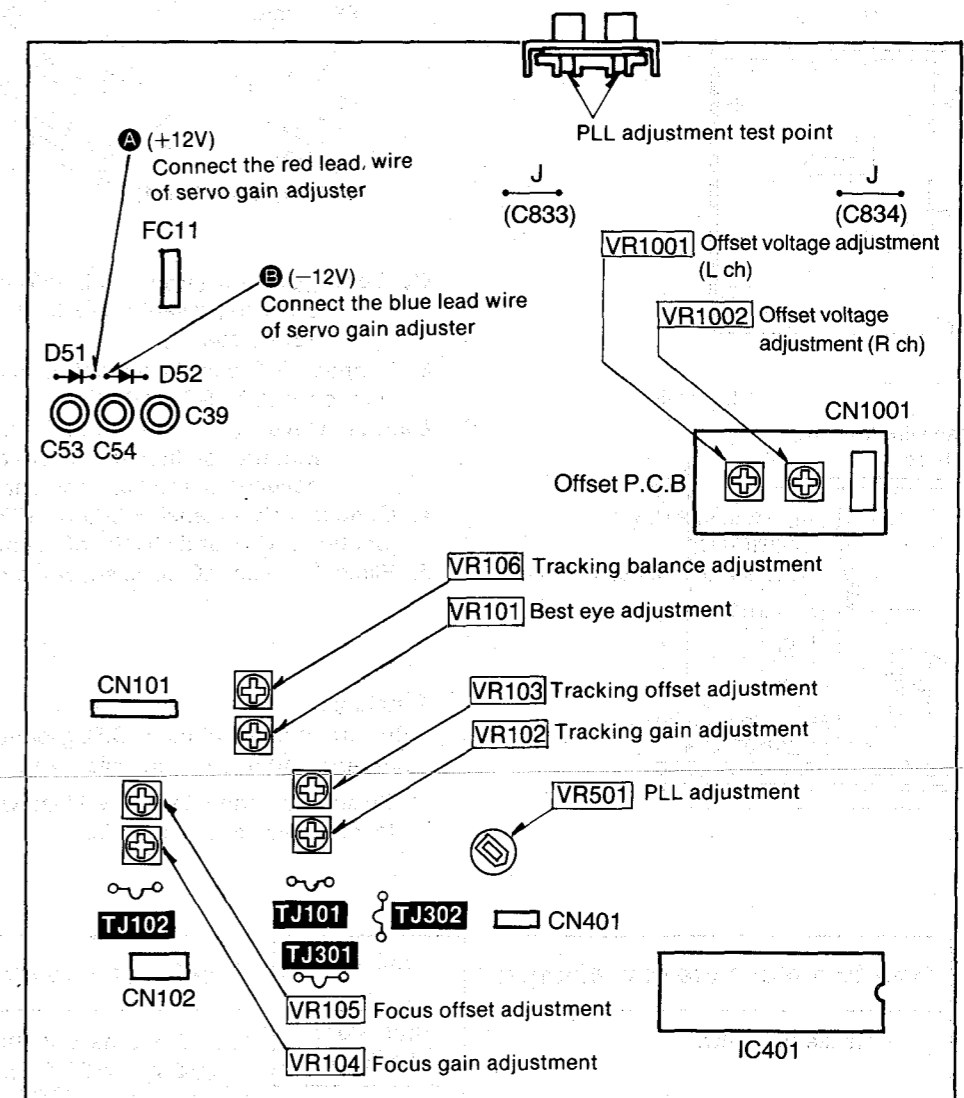
MEASUREMENTS AND ADJUSTMENTS

Caution:

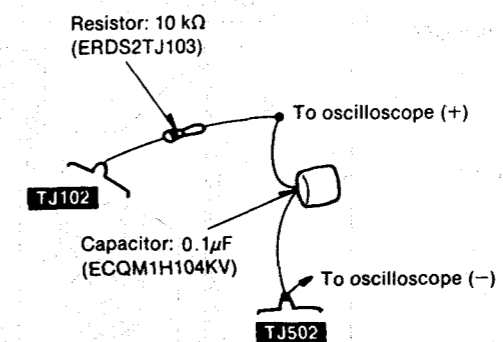
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.)
- With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustments.

ADJUSTMENT POINTS

Main P.C.B.



Filter for turntable height adjustment



Compact Disc Player

SL-P550

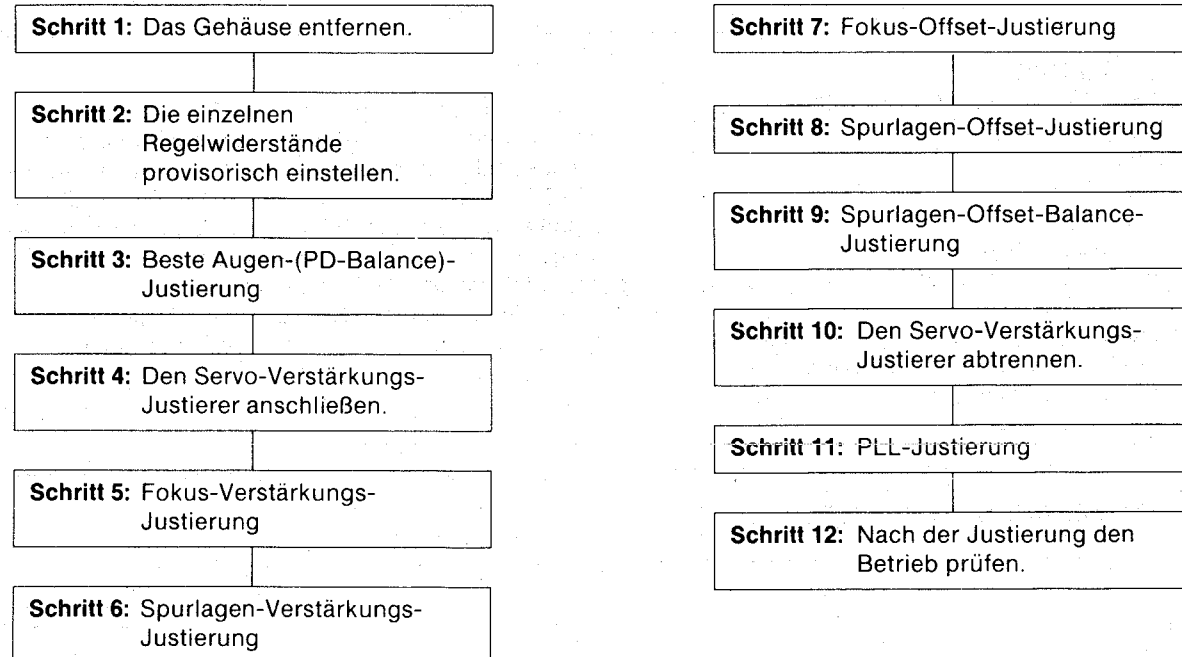
DEUTSCH

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)

Justierverfahren



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.
 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.
- Oszilloskop-Einstellung:**
 VOLT 200 mV
 KIPP 0,5 µsec.
 EINGANG Wechselstrom

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.)
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.

Oszilloskop-Einstellung:

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

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.
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.

Oszilloskop-Einstellung:

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

SPURLAGEN-OFFSET-JUSTIERUNG

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

Oszilloskop-Einstellung:

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

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.
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.

Oszilloskop-Einstellung:

VOLT 200 mV
 KIPP 0,5 msec.
 EINGANG Wechselstrom

PLL-JUSTIERUNG

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

- 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**
- Eine gewöhnliche Platte abspielen.
 - Die Skip-Taste drücken, um den Überspring-Suchlauf zu prüfen (in Vorwärts- und Rückwärtsrichtung).
- Prüfung des manuellen Suchlaufs**
- Eine gewöhnliche Platte abspielen.
 - 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

- Die Testplatte (SZZP1054C) abspielen.
- Die **Spur Nr. 6 (Keil 0,7 mm)** wiedergeben und prüfen, daß kein Tonausfall oder Rauschen auftritt.
- 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)

Justierverfahren

- 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

- Kanal 1 des Oszilloskops an **TJ102 (+)** und **TJ302 (-)** der Hauptplatine durch das Filter anschließen.
Oszilloskop-Einstellung:
VOLT 50 mV
KIPP 1 msec.
EINGANG Gleichstrom
- Das Oszilloskop auf Gleichstrom-Nullbalance einstellen.
- Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.

Die Plattentellerhöhe wie folgt justieren:

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

- Den Spieler auf Wiedergabe schalten.
- 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.

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

MECHANISCHE JUSTIERUNG

- Kanal 1 des Oszilloskops an **TJ301 (+)** und **TJ302 (-)** der Hauptplatine anschließen.
Oszilloskop-Einstellung:
VOLT 200 mV
KIPP 0,5 μ sec.
EINGANG Wechselstrom
- Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1056C) einsetzen.
- Mit den Tasten für manuellen Suchlauf den Abtaster so positionieren, daß die Schrauben für mechanische Justierung mit den Justieröffnungen in der Bodenplatte ausgerichtet sind.

- 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.
- Den Netzschalter des Spielers ausschalten.
- Nach der Justierung **Schrauben-Versiegelungsfarbe** (RZZ0L01) auf die Justierschrauben auftragen.

OFFSET-AUSGANGSSPANNUNG-JUSTIERUNG

Meßinstrument

- Digital-Voltmeter

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

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

FRANÇAIS

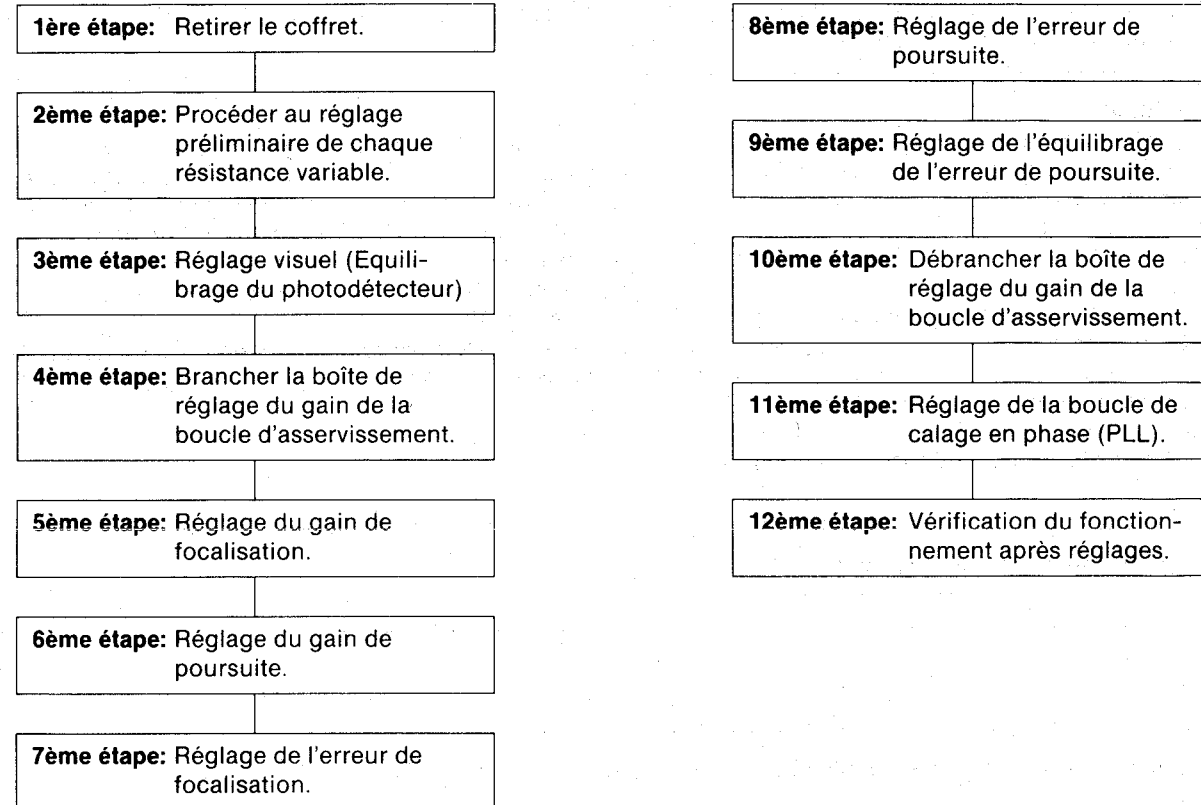
REGLAGES ELECTRIQUES

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)

1. 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

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

REGLAGE DU GAIN DE FOCALISATION

1. Brancher la boîte de réglage du gain de la boucle d'asservissement.
2. Placer le commutateur de cette boîte sur la position **2** et l'interrupteur d'alimentation sur la position **ON**.
3. 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.
4. 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

5. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
6. Procéder à la lecture du disque.
7. Basculer le commutateur de la boîte de réglage de la position **2** à la position **3**.
8. 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.
9. Basculer le commutateur de la boîte de réglage de la position **3** à la position **2**.

REGLAGE DU GAIN DE POURSUITE

1. Les raccordements et les réglages de l'oscilloscope sont identiques à ceux du réglage précédent.
2. 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**.
3. Basculer le commutateur de la boîte de réglage de la position **2** à la position **1**.

4. 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.
5. Basculer le commutateur de la boîte de réglage de la position **1** à la position **2**.
6. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.

REGLAGE DE L'ERREUR DE FOCALISATION

1. 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)

2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1057C).
3. Procéder à la lecture du disque.
4. 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

1. 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)

2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1057C).
3. Procéder à la lecture du disque.
4. 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

- 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.
- 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
- 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 **1**.
- Régler **VR106** de sorte que l'allure du signal soit celle de l'illustration (l'instabilité de phase est minimale).
- 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**.
- 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

- 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
- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1054C).
- Lire la **plage No. 6** du disque (**coin 0,7 mm**).
- 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 plage**

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

Vérification de la recherche manuelle

- Lire un disque ordinaire.
- 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

- Mettre en place un des disques d'essai (SZZP1054C).
- Lire la **plage No. 6 (coin 0,7 mm)** et s'assurer qu'il n'y a ni bruit ni perte de signal.
- Lire la **plage 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

- 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
- Régler l'oscilloscope de sorte que la trace soit au centre lorsque l'entrée est égale à 0 V.
- 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.
- 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.

Réglage de la hauteur de la platine:

- Introuduire la jauge de 0,9 mm (RZZ0297) comme il est indiqué ci-dessous.
- Dévisser la vis de positionnement de la platine.
- Régler la hauteur de la platine en déplaçant légèrement la jauge dans la direction voulue.
- Resserrer la vis de positionnement au moyen de la clé de 1,27 mm.
- Vérifier la hauteur de la platine en procédant aux opérations 1 à 5 décrites ci-dessus.

REGLAGE MECANIQUE

- 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
- Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1056C).
- 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.
- 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.
- Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.
- 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

- Appuyer sur la touche "**STOP**" pour amener le lecteur à l'arrêt.
- Brancher le voltmètre digital entre **C833 (Voie gauche) (+)** ou **C834 (Voie droite) (+)** et la borne de sortie **GND3 (-)**.
- 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.
ENTRADACC

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)
Barrido0,5 mseg.
EntradaCA (CH1), CC (CH2)
ModalidadNORM (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)
Barrido0,5 mseg.
EntradaCA (CH1), CC (CH2)
ModalidadNORM (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 desparejo (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**

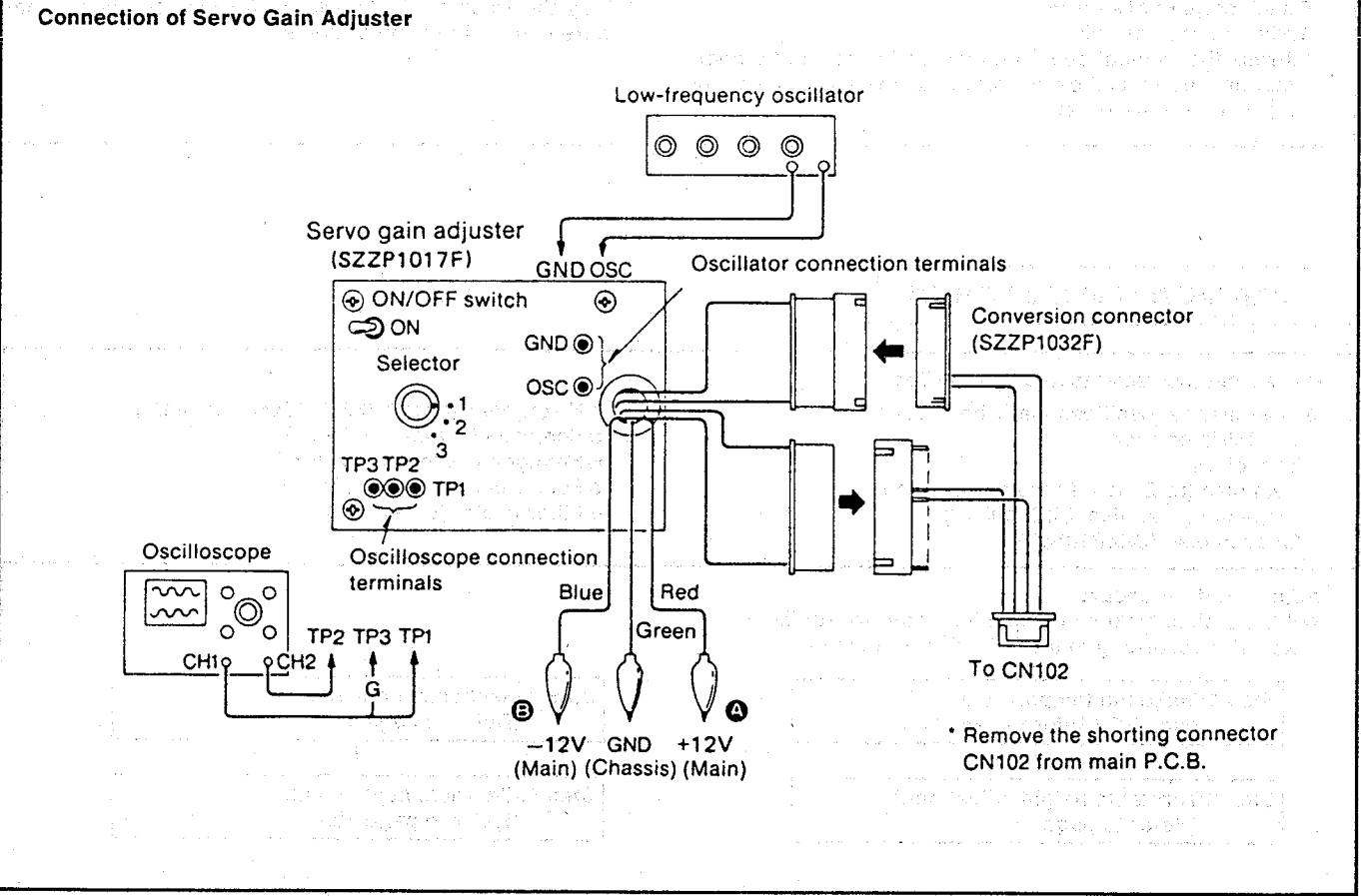
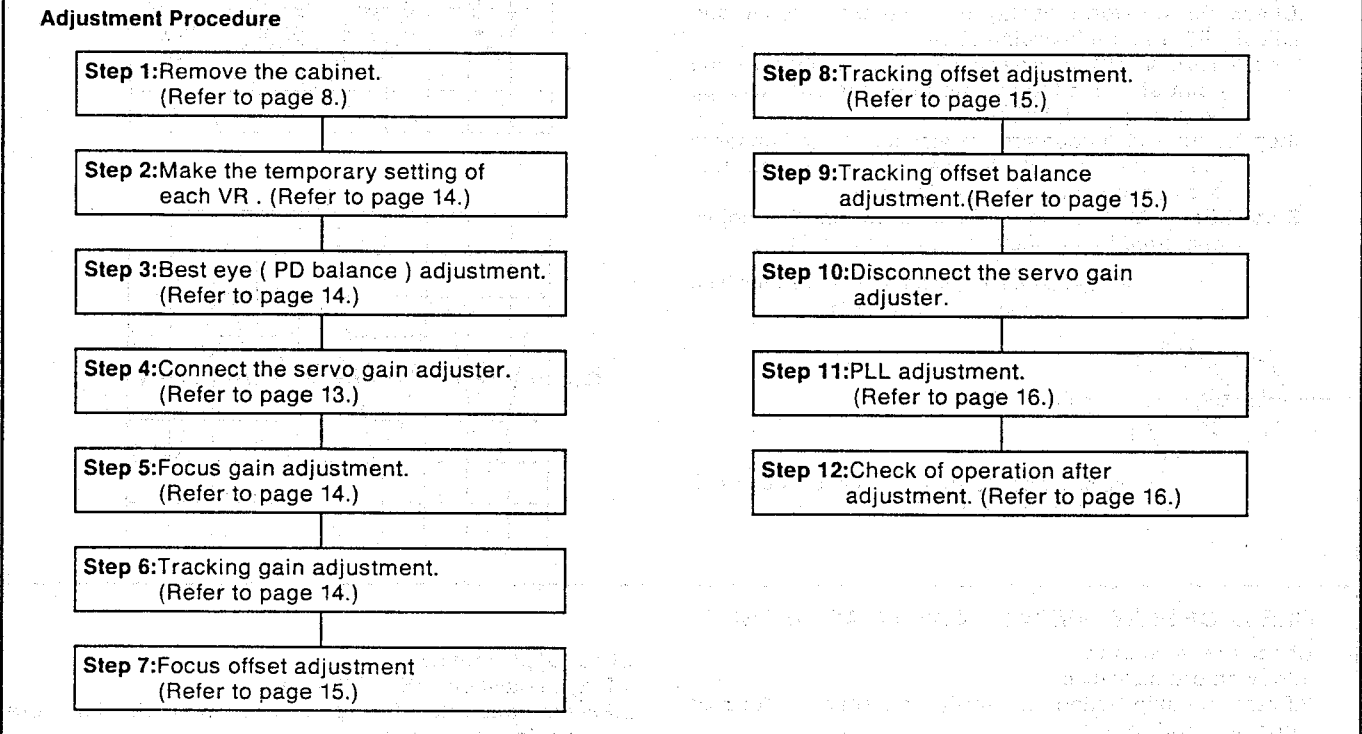
- Voltímetro digital

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.

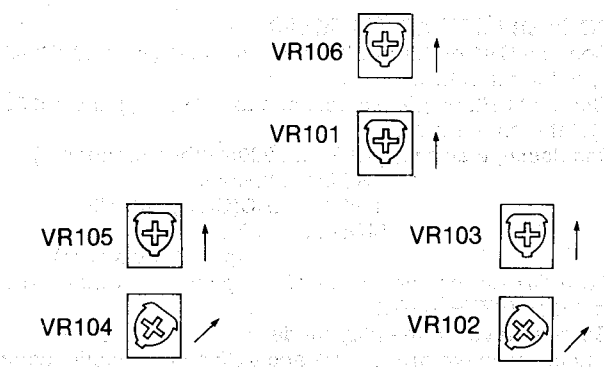
ELECTRICAL ADJUSTMENT

- 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)



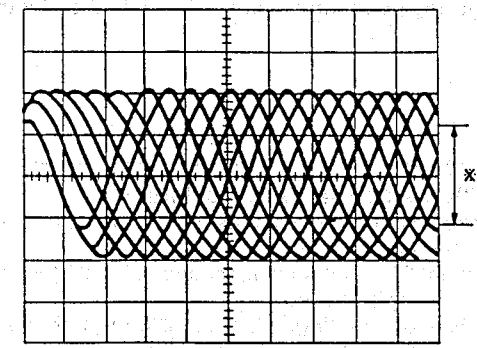
TEMPORARY SETTING OF EACH VR

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



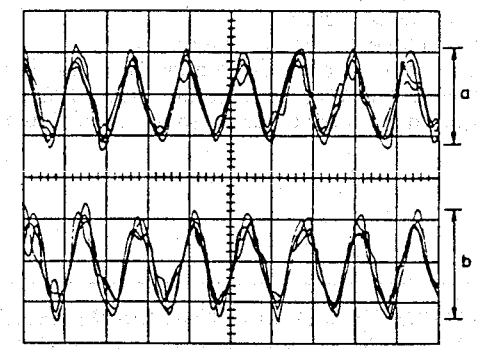
BEST EYE(PD BALANCE) ADJUSTMENT

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



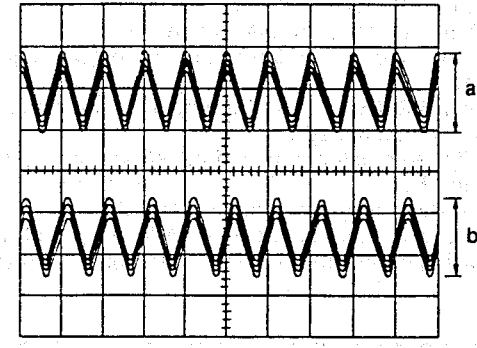
FOCUS GAIN ADJUSTMENT

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.)
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".



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".

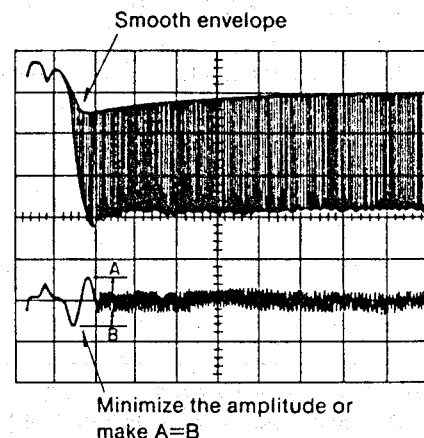


FOCUS OFFSET ADJUSTMENT

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)

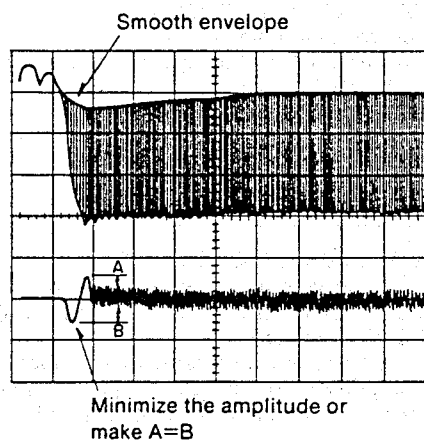
2. Turn ON the power switch of the player and insert the test disc (SZZP1057C).
3. Set the player to the play mode.
4. Check the waveform of CH1 and CH2 on the oscilloscope and adjust VR105, so that the waveform around the triggering point becomes as shown in the illustration.

**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.

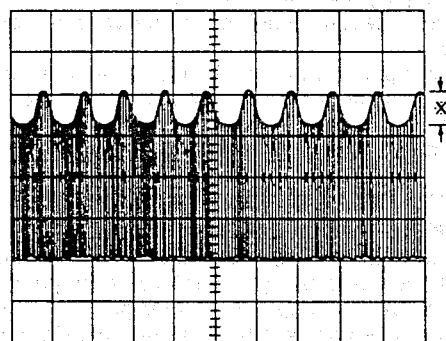
**TRACKING OFFSET BALANCE ADJUSTMENT**

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.

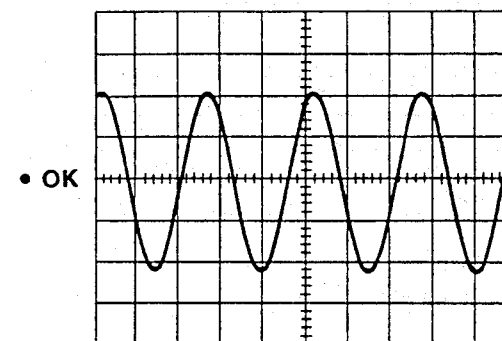
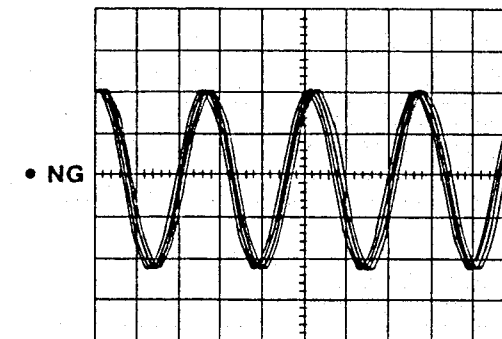
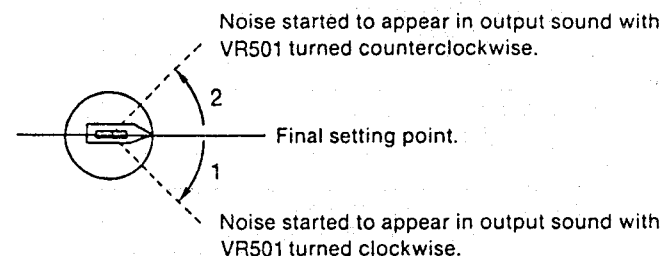
Oscilloscope setting: VOLT.....1V
SWEEP.....1msec.
INPUT.....DC

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.)

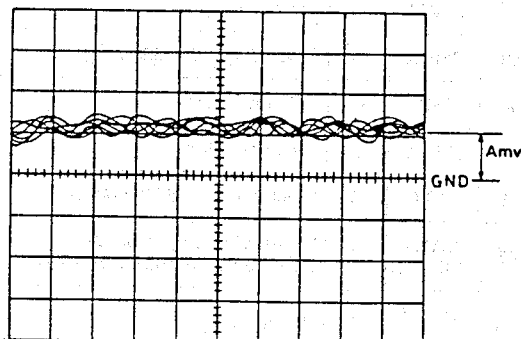
TURNTABLE HEIGHT ADJUSTMENT

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

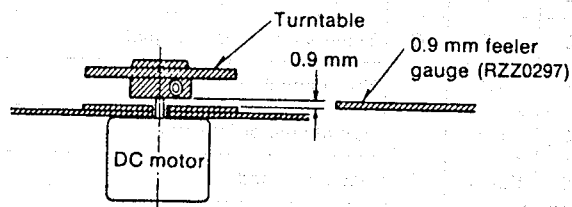
- Set the oscilloscope to DC zero balance.
- Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
- Set the player to the play mode.
- Measure the DC level (AmV) displayed on the oscilloscope.

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.



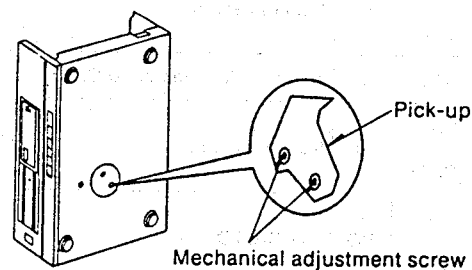
- Loosen the turntable set-screw.
- Adjust the turntable height to 0.9mm with the feeler gauge as shown above.
- Tighten the turntable set-screw by using a 1.27mm hexagonal wrench.
- Check the turntable height adjustment by following steps 1 ~ 5 above.

MECHANICAL ADJUSTMENT

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

Oscilloscope setting: VOLT.....200mV
SWEEP.....0.5 μ sec.
INPUT.....AC

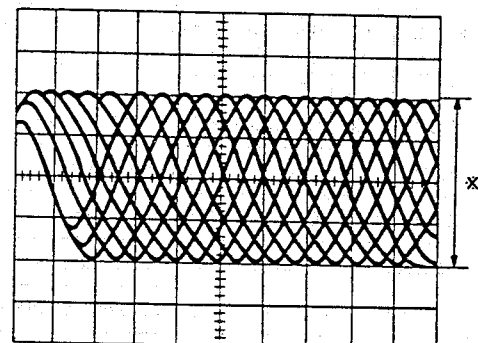
- Turn **ON** the power switch of the player and insert the test disc (SZZP1056C).
- Using the manual search buttons, move the pickup so that the mechanical adjustment screws line up with the adjustment holes in the bottom panel.



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.

- Turn **OFF** the power switch of the player.
- After the adjustment, apply **screw lock paint (RZZ0L01)** to the adjusting screws.



AUDIO ADJUSTMENT

Measuring Instrument

• Digital Voltmeter

OFFSET VOLTAGE ADJUSTMENT

- Press "**STOP**" button and set the player in "**STOP MODE**".
- Connect the digital voltmeter to jumper wire mounted in **C833 (Lch) (+)** or **C834 (Rch) (+)** and **GND (-)** terminal.
- 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	Pin No.	Mark	I/O	Function
1	VEE	I	Power supply (connected to -5V)	23	CNT2	I	Control input (TRON Tracking servo ON signal)
2	LSA	I	Phase difference input (A)	24	CNT3	I	Control input (KICKF Kick direction [Forward] command)
3	GND	I	GND terminal	25	CNT4	I	Control input (KICKR Kick direction [Reverse] command)
4	LSB	I	Phase difference input (B)	26	F.LOCK	O	Focus lock signal output
5	APC	O	Auto laser power control output	27	C.FBDO	O	Capacitor connection for inversion RF high detection
6	TEOUT	O	Tracking error signal output	28	C.SBDO	O	Capacitor connection for inversion RF low detection
7	TEG	I	Tracking error gain adjusting input	29	C.SBRT	O	Capacitor connection for non-inversion RF slow detection
8	TE(+)	I	Phase difference to voltage conversion (+)	30	C.FBRT	O	Capacitor connection for non-inversion RF fast detection
9	TE(-)	I	Phase difference to voltage conversion (-)	31	RF OUT	O	RF signal output
10	APC(-)	I	Laser power inversion input	32	BDO	O	Drop-out detection output
11	C.MEM	I	Capacitor connection for phase difference memory	33	RF IN	I	RF signal input
12	APC(+)	I	Laser power non inversion input	34	S.OUT	O	Focus search signal output
13	VREFE	O	Reference current generation	35	C.LW	I	Capacitor connection for triangular wave generation
14	SENSE	O	Selector output (track-crossed)	36	FE.OUT	O	Focus error signal output
15	HIN	I	Tracking hold circuit input	37	FEG	I	Focus error gain adjusting input
16	HOUT	O	Tracking hold circuit output	38	FE.REF	I	Focus error comparison voltage generation
17	SPCNT	O	Trackcrossing speed control output (not used, (Not connected))	39	PDB	I	Photo detection current input (B)
18	C.MSP	I	Trackcrossing reference speed setting capacitor connection (Not connected)	40	IVB	O	Current/ voltage conversion (B)
19	C.AF	I	Auto focus timer capacitor connection	41	IVA	O	Current/ voltage conversion (A)
20	KICK	O	Track kick signal output	42	PDA	I	Photo detection current input (A)
21	VCC	I	Power supply (connected to +5V)				
22	CNT1	I	Control input (FOON Focus servo "ON" signal)				

● 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			
31	NC	---	Not connected
			NORMAL MODE delay: 180ms TEST MODE delay: 1.45ms TEST MODE delay: 0.73ms TEST MODE delay: 0ms
32	NTEST1	I	H L H L
33	NTEST2	I	H H L L
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	CLDCK	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/WCKS	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/WCK	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 serro 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)

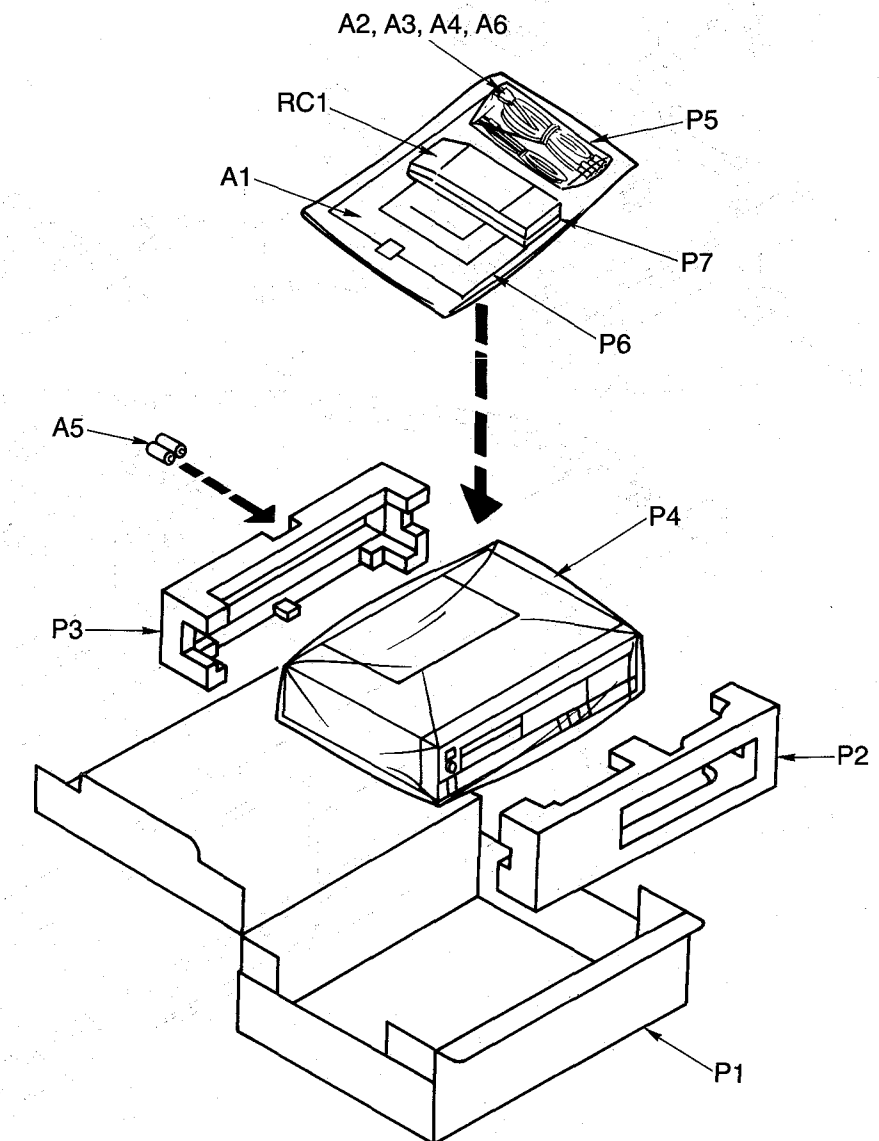
Pin No.	Mark	I/O	Function
33	VDD	I	Power supply (connected to +5V)
34	VR.R	O	Not connected
35	VR.F	O	Not connected
36	CNT1	O	Optical servo IC control signal (FOON: Focus servo)
37	P60	I	Disc holder "Open/close" detection
38	P61	I	Disc holder "Open/close" detection
39	P62	I	Not used (connected to GND)
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)

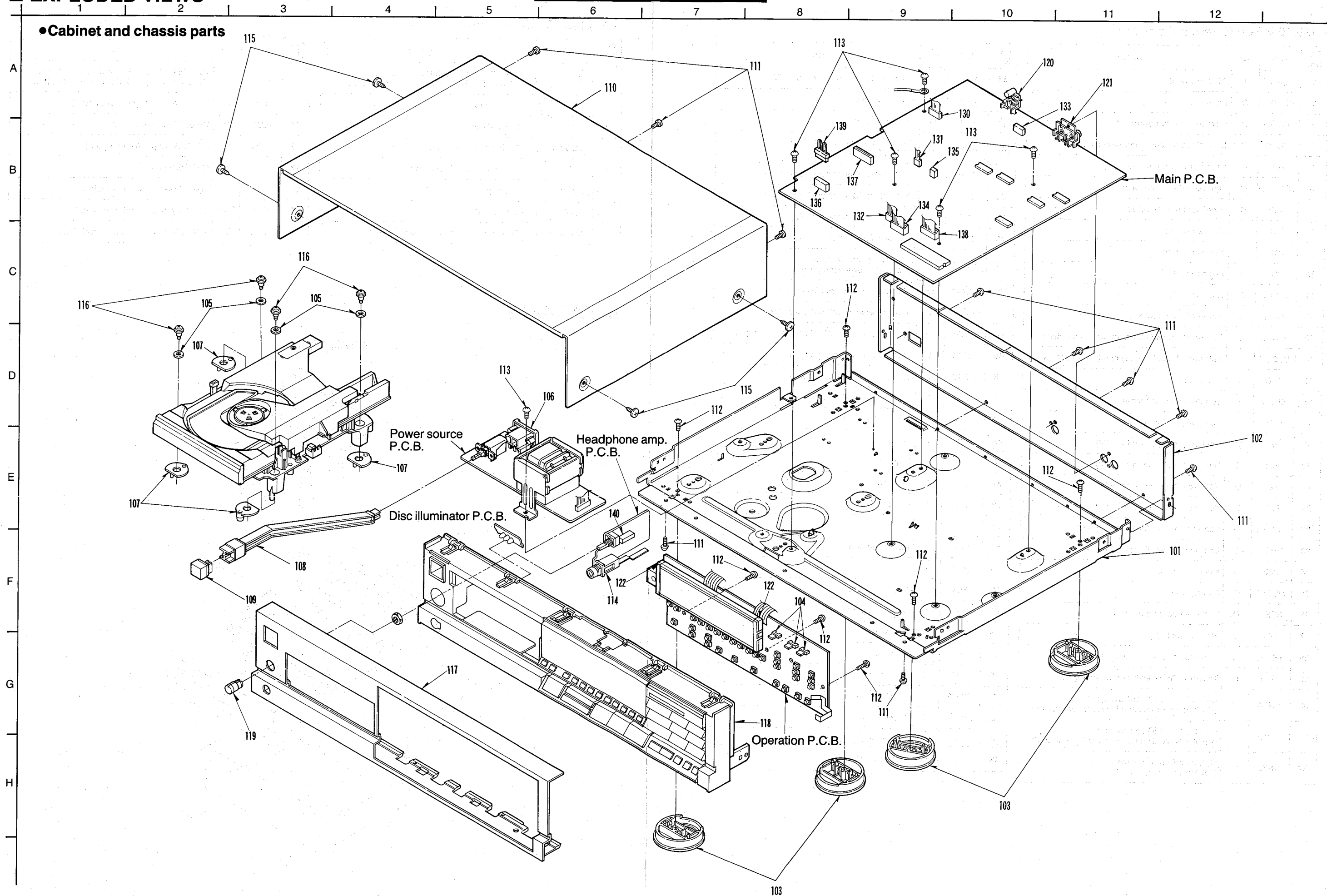
Pin No.	Mark	I/O	Function
9	DLO	O	1DAC(ST="L"): L/Rch data output terminal 2DAC(ST="H"): Lch data output terminal
10	RDO	O	Rch data output (not connected)
11	WCO	O	Output data word clock
12	BCO	O	Bit clock output (output data)
13	VSS	I	GND terminal
14	ST	I	1DAC/2DAC selector terminal
15	FEN	I	System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

■ PACKING

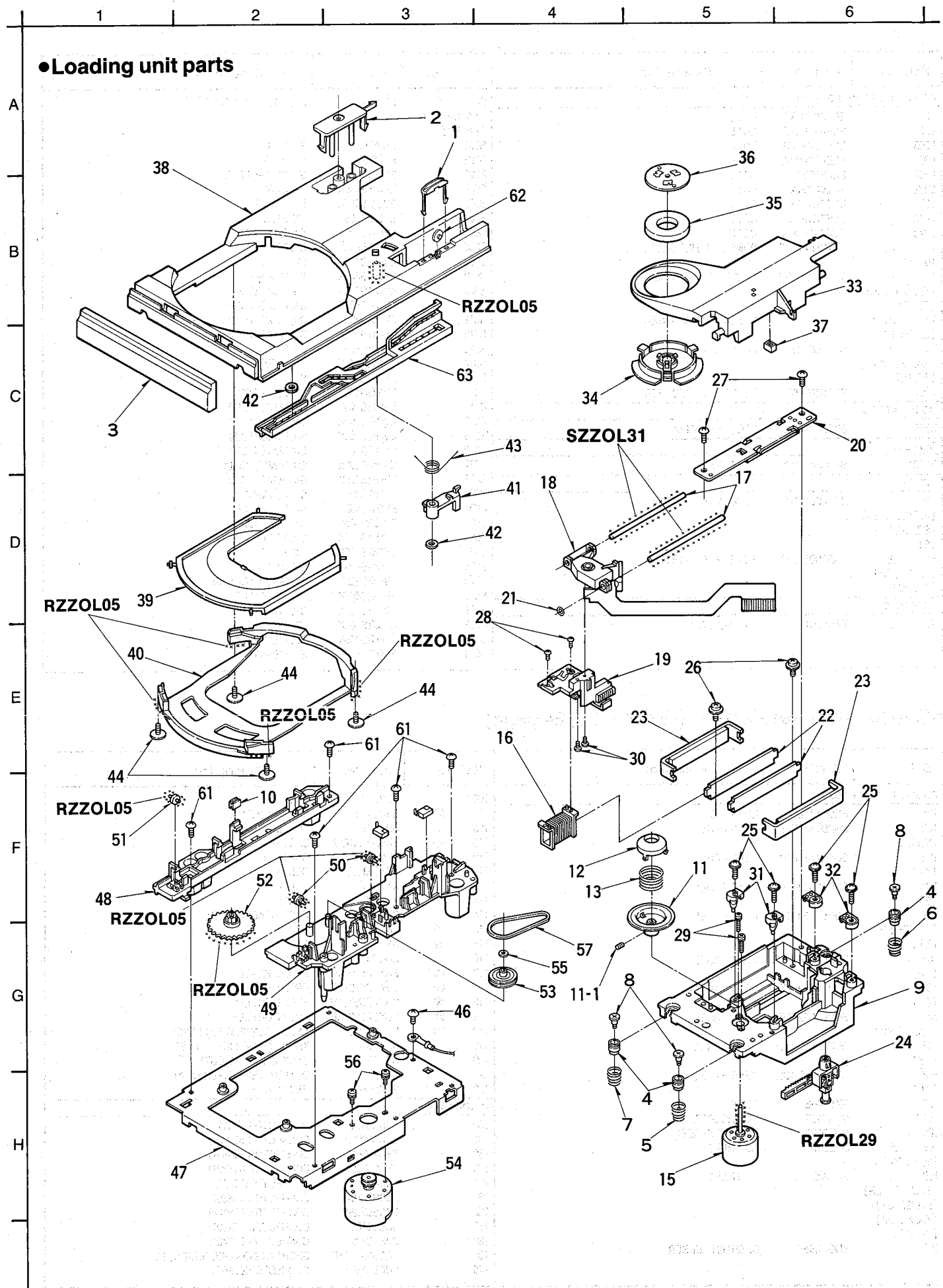


EXPLODED VIEWS

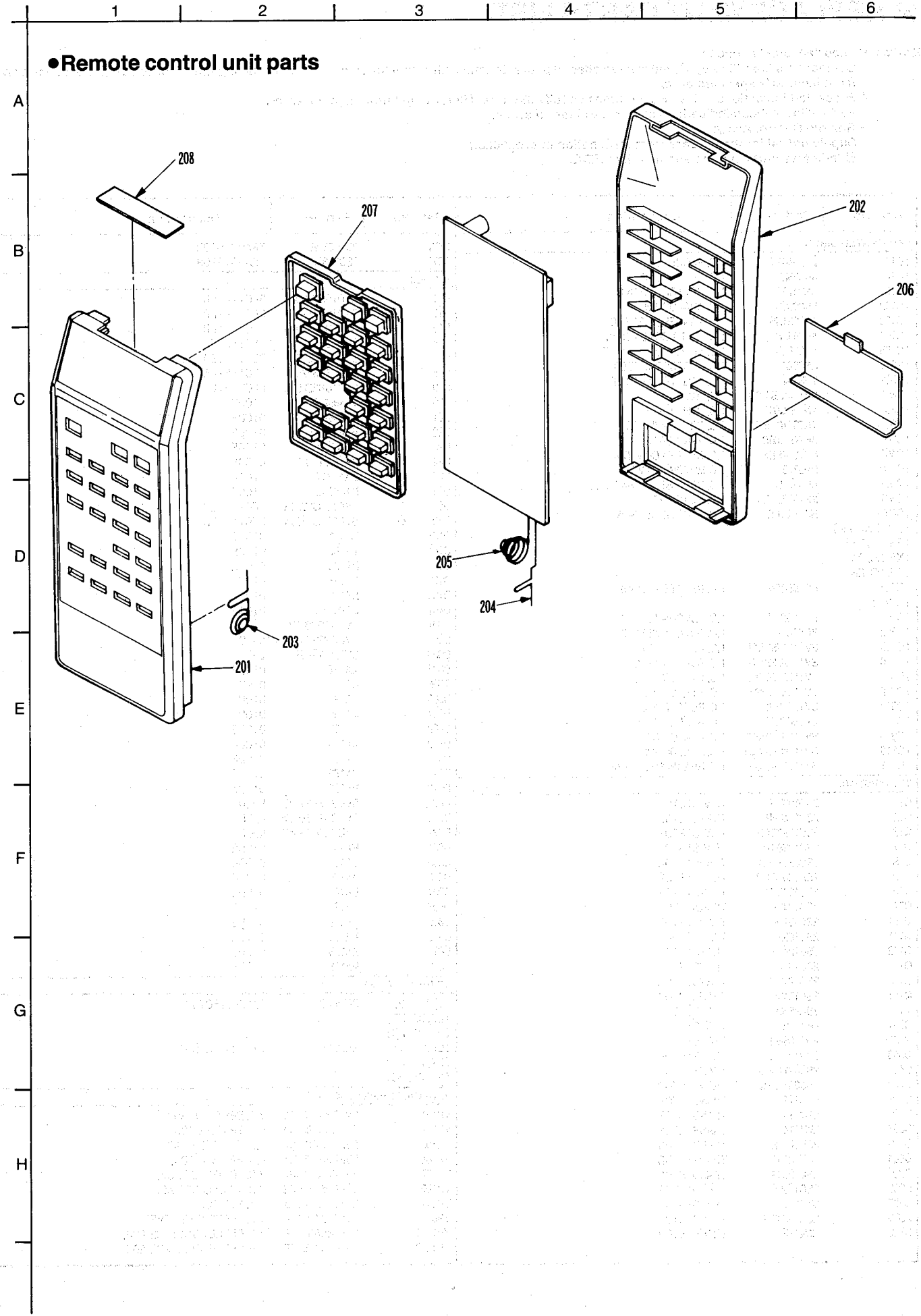
SL-P550 SL-P550



●Loading unit parts



●Remote control unit parts



REPLACEMENT PARTS LIST

Notes: * Important safety notice: Components identified by a triangle 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. * indicates parts that the supplied by MESA.

Main replacement parts list table with columns: Ref. No., Part No., Description, Ref. No., Part No., Description. Categories include INTEGRATED CIRCUITS, TRANSISTORS, DIODES, OSCILLATORS, DISPLAYS, FUSES, SWITCHES, I.C. PROTECTORS, and VARIABLE RESISTORS.

Continuation of replacement parts list table with columns: Ref. No., Part No., Description, Ref. No., Part No., Description. Categories include COILS AND TRANSFORMERS, OSCILLATORS, DISPLAYS, FUSES, SWITCHES.

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

Cabinet and chassis parts table with columns: Ref. No., Part No., Description, Ref. No., Part No., Description. Categories include CABINET AND CHASSIS and CONNECTORS.

● Loading unit parts (Refer to 25 page)

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
LOADING MECHANICAL					
1	SHRD150	ROLLER HOLDER	29	XYM2+C12	SCREW
2	SHRD144	COVER WITH CLAW	30	XQN17+C6	SCREW
3	Ⓚ SGXD3240ZK0C	ORNAMENT PANEL	31	SHRD136	GUIDE SHAFT HOLDER(A)
3	Ⓛ SGXD3240MA0A	ORNAMENT PANEL	32	SHRD137	GUIDE SHAFT HOLDER(B)
4	SHGD110	CUSHION RUBBER	33	SIRD42-2	CLAMPER
5	SUSD126	SPRING (RED)	34	SIRD51	HOLDER
6	SUSD127	SPRING (BLUE)	35	SOMD4	MAGNET
7	SUSD128	SPRING (YELLOW)	36	SOYD2	YOKE
8	SFXGB20-01	SCREW	37	SHGD119	CUSHION RUBBER
9	SISD13-3	TRAVERSE BASE	38	SIRLP990-KM	DISC HOLDER
10	SFGZB63M51	CUSHION RUBBER	39	SIRD98	DISC TRAY
11	SDOD28-1E	TURNTABLE	40	SIRD99	TRAY BASE
11-1	XXE26D5	SCREW	41	SIRD96	LOCK LEVER
12	SDOD29-2	RING	42	SFUMZ15R61	WASHER
13	SRQA010N04	SPRING	43	SUSD83	SPRING
15	SJGDRF310T	SPINDLE MOTOR	44	SFXGQ06N01	SCREW
16	SORD21E-1	TRAVERSE COIL	46	XTV3+6BFN	SCREW
17	SUXD78-2	GUIDE SHAFT	47	SIRLP320-KM	LOADING BASE
18	Δ SOAD60A-1	OPTICAL PICKUP	48	SIRD43-3	BRACKET(A), LOADING BASE
19	EWSL11A00000	COIL HOLDER	49	SIRLP320KM3	BRACKET(B), LOADING BASE
20	EWS7G0A00Q53	RESISTANCE UNIT	50	SDRD2	ROLLER
21	SHGD131	STOPPER	51	SDRD6	ROLLER
22	SOYD8E-1	YOKE (A)	52	SDGD38	MAIN GEAR
23	SOYD9	YOKE (B)	53	SDGD39-2	PULLEY GEAR
24	SHRD23-2	LOCK SHAFT	54	SMNLP320-KM	LOADING MOTOR
25	XTV3+12GFZ	SCREW	55	SHWD20	WASHER
26	SNSD27	SCREW	56	XYN26+T4	SCREW
27	XTV3+8G	SCREW	57	SMBD3	DRIVE BELT
28	XTV2+4G	SCREW	61	XTV3+8JFZ	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					
P1	Ⓚ SPND259	CARTON BOX	(E, EB, EH, EF)		
(M, E, EK, XL)			A1	SQULP550-KMC	INSTRUCTION MANUAL
(EG, EB, EH)			(MC)		
(E1, XA, XB)			A1	SQULP550-KPA	INSTRUCTION MANUAL
(PA, PE, PC)			(PA, PE, PC)		
P1	Ⓚ SPND260	CARTON BOX	A1	SQULP550-KXB	INSTRUCTION MANUAL
(MC)			(XB)		
P1	Ⓚ SPND261	CARTON BOX	A2	△ SFDAC05G02	POWER CORD
(EF)			(EK)		
P1	Ⓛ SPND269	CARTON BOX	A2	△ SJA168	POWER CORD
(E, EK, EG, EB)			(XA, PA, PE)		
(EH, E1)			(PC)		
P1	Ⓛ SPND270	CARTON BOX	A2	△ SJA172	POWER CORD
(EF)			(MC)		
P2	SPSD142	PAD(FRONT)	A2	△ SJA173	POWER CORD
P3	SPSD143	PAD(REAR)	(XL)		
P4	XZB60X60A010	PROTECTION BAG(UNIT)	A2	△ SJA175-1	POWER CORD
P5	XZB26X17C03	PROTECTION BAG(CORDS)	(M)		
P6	XZB23X35C03	PROTECTION BAG(INST. MANUAL)	A2	△ SJA183	POWER CORD
P7	XZB10X26B05S	PROTECTION BAG(REMOTE CONT.)	(XB)		
ACCESSORIES					
A1	SQUD291	INSTRUCTION MANUAL	(E, EG, EB, EH)		
(M)			(EF, E1)		
A1	SQUD293	INSTRUCTION MANUAL	A3	△ RJP120ZBS-H	AC PLUG ADAPTOR
(XL, XA)			(XA, XB, PA)		
A1	SQUD295	INSTRUCTION MANUAL	(PE, PC)		
(EG)			A4	SJP2249-1	OUTPUT CORD
A1	SQUD297	INSTRUCTION MANUAL	A5	UM-4NE	BATTERY
(E1)			(E, EK, XL, EG)		
(EK)			(EB, EH, EF)		
A1	SQUD298	INSTRUCTION MANUAL	(E1, XA, XB)		
(E1)			(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					
IC1	MN6030B	I.C. REMOTE SIGNAL	(PA, PE, PC)		
(E, EK, XL, EG)			C2	ECKD1H101KB	CERAMIC, 100PF, 50V
(EB, EH, EF)			(M, MC)		
(E1, XA, XB)			C2	ECKD1H121KB	CERAMIC, 120PF, 50V
(PA, PE, PC)			(E, EK, XL, EG)		
IC1	MN6030CA	I.C. REMOTE SIGNAL	(EB, EH, EF)		
(M, MC)			(E1, XA, XB)		
TRANSISTORS					
Q1	UN1231	TRANSISTOR	(PA, PE, PC)		
DIODES					
D1	LN66	L.E.D	C3	ECEA0GK101	ELECTROLYTIC, 100μF, 4V
D2	MA154WK	DIODE	MECHANISM PARTS		
D4	MA154WK	DIODE	201	Ⓚ UR64VCS532	UPPER CABINET
D6	MA154WA	DIODE	(M, MC)		
OSCILLATOR					
X1	CSB420PB1	OSCILLATOR	201	Ⓚ UR64VCS534	UPPER CABINET
(E, EK, XL, EG)			(E, EK, XL, EG)		
(EB, EH, EF)			(EB, EH, EF)		
(E1, XA, XB)			(E1, XA, XB)		
(PA, PE, PC)			(PA, PE, PC)		
X1	CSB455EB1	OSCILLATOR	201	Ⓛ UR64VCS575	UPPER CABINET
(M, MC)			202	Ⓚ UR64CS803A	LOWER CABINET
RESISTORS					
R1	ERDS2TJ1R0	CARBON, 1Ω, 1/4W	202	Ⓚ UR64CS803B	LOWER CABINET
CAPACITORS					
C1	ECKD1H101KB	CERAMIC, 100PF, 50V	203	UR64TD374	BATTERY TERMINAL(COMMON)
(M, MC)			204	UR64TD812	BATTERY TERMINAL(+)
C1	ECKD1H471KB	CERAMIC, 470PF, 50V	205	UR64TD813	BATTERY TERMINAL(-)
(E, EK, XL, EG)			206	Ⓚ UR64EC804	BATTERY COVER
(EB, EH, EF)			206	Ⓛ UR64EC804A	BATTERY COVER
(E1, XA, XB)			207	UR64CTB11A	BUTTON
			208	UR52SB327	PLATE
			REMOTE CONTROL ASS'Y		
			RC1	Ⓚ EUR64781	REMOTE CONT.(REF TO NOTE)
			(M, MC)		
			RC1	Ⓚ EUR64782	REMOTE CONT.(REF TO NOTE)
			(E, EK, XL, EG)		
			(EB, EH, EF)		
			(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
				47x10 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
				(33x10 ⁰ microfarad)

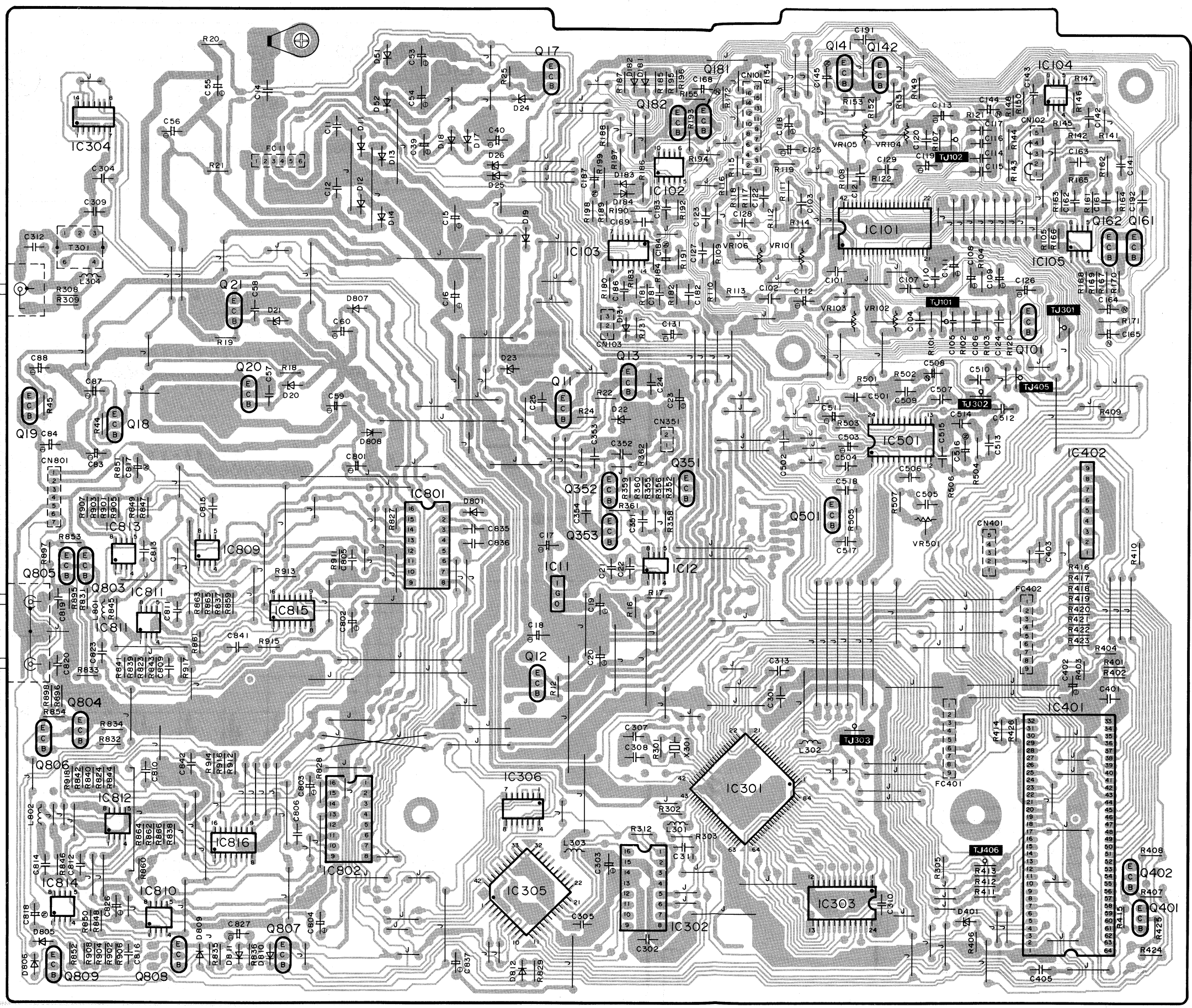
Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : ±5%
ERG : Metal Oxide	12 : 1/2W	F : ±1%
ERX : Metal Film	25 : 1/4W	G : ±2%
ERQ : Fuse Type Metal	1A : 1W	K : ±10%
ERD ⊕ L : Carbon (chip)	18 : 1/8W	
ERD ⊕ K : Metal Film (chip)	S2 : 1/4W	
ERC : Solid	S1 : 1/2W	
	2F : 1/4W	
	50 : 1/2W	
	2A : 2W	

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V	C : ±0.25pF
ECCD : Ceramic	1A : 10V	J : ±5%
ECKD : Ceramic	1C : 16V	K : ±10%
ECQM : Polyester	1E : 25V	Z : +80%
	1H : 50V	P : +100%
ECQP : Polypropylene	1V : 35V	-0%
	50 : 50V	
ECG : Ceramic	05 : 50V	M : ±20%
ECEA ⊕ ⊕ ⊕ ⊕ : Non Polar Electrolytic	2H : 500V	
	2A : 100V	D : ±0.5pF
QCUC ⊕ : Ceramic (Chip Type)	1 : 100V	G : ±2%
ECUX : Ceramic (Chip Type)	KC : 400V AC	
ECF : Semiconductor	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	R196	ERDS2TJ103	10K 1/4	R834	ERDS2TJ102	1K 1/4
R17	ERDS2TKG6801	6.8K 1/4	R197	ERDS2TJ103	10K 1/4	R835	ERDS2TJ103	10K 1/4
R18	ERDS2TJ331	330 1/4	R198	ERDS2TJ473	47K 1/4	R836	ERDS2TJ102	1K 1/4
R19	ERDS2TJ331	330 1/4	R199	ERDS2TJ473	47K 1/4	R837	ERDS2TKF1202	12K 1/4
R20	ERDS2TJ471	470 1/4	R301	ERDS2TJ121	120 1/4	R838	ERDS2TKF1202	12K 1/4
R21	ERDS2TJ471	470 1/4	R302	ERDS2TJ122	1.2K 1/4	R839	ERDS2TJ823	82K 1/4
R22	ERDS2TJ471	470 1/4	R303	ERDS2TJ391	390 1/4	R840	ERDS2TJ823	82K 1/4
R24	ERDS2TJ471	470 1/4	R305	ERDS2TJ221	220 1/4	R841	ERDS2TJ103	10K 1/4
R25	ERDS2TJ222	2.2K 1/4	R308	ERDS2TJ151	150 1/4	R842	ERDS2TJ103	10K 1/4
R44	ERDS2TJ102	1K 1/4	R309	ERDS2TJ151	150 1/4	R843	ERDS2TJ824	820K 1/4
R45	ERDS2TJ102	1K 1/4	R312	ERDS2TJ104	100K 1/4	R844	ERDS2TJ824	820K 1/4
R101	ERDS2TJ154	150K 1/4	R352	ERDS2TJ334	330K 1/4	R845	ERDS2TJ182	1.8K 1/4
R102	ERDS2TJ332	3.3K 1/4	R355	ERDS2TJ333	33K 1/4	R846	ERDS2TJ182	1.8K 1/4
R102	ERDS2TJ472	4.7K 1/4	R356	ERDS2TJ333	33K 1/4	R847	ERDS2TJ821	820 1/4
R103	ERDS2TJ472	4.7K 1/4	R358	ERDS2TJ103	10K 1/4	R848	ERDS2TJ821	820 1/4
R104	ERDS2TJ223	22K 1/4	R359	ERDS2TJ274	270K 1/4	R849	ERDS2TJ182	1.8K 1/4
R104	ERDS2TJ683	68K 1/4	R360	ERDS2TJ123	12K 1/4	R850	ERDS2TJ182	1.8K 1/4
R105	ERDS2TJ334	330K 1/4	R361	ERDS2TJ101	100 1/4	R851	ERDS2TJ271	270 1/4
R107	ERDS2TJ683	68K 1/4	R362	ERDS2TJ8R2	8.2 1/4	R852	ERDS2TJ271	270 1/4
R109	ERDS2TJ822	8.2K 1/4	R401	ERDS2TJ472	4.7K 1/4	R853	ERDS2TJ271	270 1/4
R110	ERDS2TJ682	6.8K 1/4	R402	ERDS2TJ472	4.7K 1/4	R854	ERDS2TJ271	270 1/4
R111	ERDS2TJ682	6.8K 1/4	R403	ERDS2TJ472	4.7K 1/4	R859	ERDS2CKF4702	47K 1/4
R112	ERDS2TJ822	8.2K 1/4	R404	ERDS2TJ472	4.7K 1/4	R860	ERDS2CKF4702	47K 1/4
R113	ERDS2TJ152	1.5K 1/4	R406	ERDS2TJ221	220 1/4	R861	ERDS2TKF1001	1K 1/4
R114	ERDS2TJ152	1.5K 1/4	R407	ERDS2TJ102	1K 1/4	R862	ERDS2TKF1001	1K 1/4
R115	ERDS2TJ102	1K 1/4	R408	ERDS2TJ102	1K 1/4	R863	ERDS2TKF1202	12K 1/4
R116	ERDS2TJ182	1.8K 1/4	R409	ERDS2TJ472	4.7K 1/4	R864	ERDS2TKF1202	12K 1/4
R117	ERDS2TJ182	1.8K 1/4	R410	ERDS2TJ472	4.7K 1/4	R865	ERDS2TKF1202	12K 1/4
R118	ERDS2TJ102	1K 1/4	R411	ERDS2TJ472	4.7K 1/4	R866	ERDS2TKF1202	12K 1/4
R119	ERDS2TJ102	1K 1/4	R412	ERDS2TJ472	4.7K 1/4	R871	ERDS2TJ103	10K 1/4
R120	ERDS2TJ120	12 1/4	R413	ERDS2TJ472	4.7K 1/4	R872	ERDS2TJ103	10K 1/4
R121	ERDS2TJ393	39K 1/4	R414	ERDS2TJ472	4.7K 1/4	R873	ERDS2TJ123	12K 1/4
R122	ERDS2TJ471	470 1/4	R415	ERDS2TJ104	100K 1/4	R874	ERDS2TJ123	12K 1/4
R131	ERDS2TJ270	27 1/4	R416	ERDS2TJ221	220 1/4	R875	ERDS2TJ104	100K 1/4
R141	ERDS2TJ102	1K 1/4	R417	ERDS2TJ221	220 1/4	R876	ERDS2TJ104	100K 1/4
R142	ERDS2TJ333	33K 1/4	R418	ERDS2TJ221	220 1/4	R885	ERDS2TJ222	2.2K 1/4
R143	ERDS2TJ124	120K 1/4	R419	ERDS2TJ221	220 1/4	R886	ERDS2TJ222	2.2K 1/4
R144	ERDS2TJ333	33K 1/4	R420	ERDS2TJ221	220 1/4	R887	ERDS2TJ680	68 1/4
R145	ERDS2TJ153	15K 1/4	R421	ERDS2TJ221	220 1/4	R888	ERDS2TJ680	68 1/4
R146	ERDS2TJ122	1.2K 1/4	R422	ERDS2TJ221	220 1/4	R889	ERDS2TJ470	47 1/4
R147	ERDS2TJ682	6.8K 1/4	R423	ERDS2TJ221	220 1/4	R890	ERDS2TJ470	47 1/4
R148	ERDS2TJ104	100K 1/4	R424	ERDS2TJ472	4.7K 1/4	R895	ERDS2TJ104	100K 1/4
R149	ERDS2TJ152	1.5K 1/4	R425	ERDS2TJ220	22 1/4	R896	ERDS2TJ104	100K 1/4
R150	ERDS2TJ103	10K 1/4	R426	ERDS2TJ472	4.7K 1/4	R897	ERDS2TJ121	120 1/4
R151	ERDS2TJ101	100 1/4	R501	ERDS2TJ224	220K 1/4	R898	ERDS2TJ121	120 1/4
R152	ERDS2TJ153	15K 1/4	R502	ERDS2TJ562	5.6K 1/4	R901	ERDS2TJ101	100 1/4
R153	ERDS2TJ270	27 1/4	R503	ERDS2TJ474	470K 1/4	R902	ERDS2TJ101	100 1/4
R154	ERDS2TJ3R3	3.3 1/4	R504	ERDS2TJ221	220 1/4	R903	ERDS2TJ331	330 1/4
R155	ERDS2TJ330	33 1/4	R505	ERDS2TJ104	100K 1/4	R904	ERDS2TJ331	330 1/4
R161	ERDS2TJ333	33K 1/4	R506	ERDS2TJ333	33K 1/4	R905	ERDS2TJ103	10K 1/4
R162	ERDS2TJ222	2.2K 1/4	R507	ERDS2TJ102	1K 1/4	R906	ERDS2TJ103	10K 1/4
R163	ERDS2TJ333	33K 1/4	R601	ERDS2TJ331	330 1/4	R907	ERDS2TJ333	33K 1/4
R164	ERDS2TJ153	15K 1/4	R602	ERDS2TJ472	4.7K 1/4	R908	ERDS2TJ333	33K 1/4
R165	ERDS2TJ122	1.2K 1/4	R603	ERDS2TJ472	4.7K 1/4	R911	ERDS2TJ332	3.3K 1/4
R166	ERDS2TJ102	1K 1/4	R604	ERDS2TJ472	4.7K 1/4	R912	ERDS2TJ332	3.3K 1/4
R167	ERDS2TJ681	680 1/4	R605	ERDS2TJ472	4.7K 1/4	R913	ERDS2TJ332	3.3K 1/4
R168	ERDS2TJ272	2.7K 1/4	R606	ERDS2TJ472	4.7K 1/4	R914	ERDS2TJ332	3.3K 1/4
R169	ERDS2TJ392	3.9K 1/4	R607	ERDS2TJ472	4.7K 1/4	R915	ERDS2TJ472	4.7K 1/4
R170	ERDS2TJ101	100 1/4	R608	ERDS2TJ472	4.7K 1/4	R916	ERDS2TJ472	4.7K 1/4
R171	ERDS2TJ270	27 1/4	R609	ERDS2TJ472	4.7K 1/4	R917	ERDS2TJ472	4.7K 1/4
R172	ERDS2TJ3R3	3.3 1/4	R610	ERDS2TJ472	4.7K 1/4	R918	ERDS2TJ472	4.7K 1/4
R180	ERDS2TJ474	470K 1/4	R611	ERDS2TJ472	4.7K 1/4	R1001	ERDS2TKG1003	100K 1/4
R181	ERDS2TJ471	470 1/4	R612	ERDS2TJ472	4.7K 1/4	R1002	ERDS2TKG1003	100K 1/4
R182	ERDS2TJ564	560K 1/4	R613	ERDS2TJ472	4.7K 1/4	R1003	ERDS2TKG1003	100K 1/4
R183	ERDS2TJ564	560K 1/4	R614	ERDS2TJ472	4.7K 1/4	R1004	ERDS2TKG1003	100K 1/4
R184	ERDS2TJ223	22K 1/4	R615	ERDS2TJ472	4.7K 1/4	CAPACITORS(VALUE,VOLTAGE)		
R185	ERDS2TJ473	47K 1/4	R616	ERDS2TJ105	1M 1/4	C1	△ ECKDK103PF2	0.01 125
R186	ERDS2TJ473	47K 1/4	R625	ERDS2TJ221	220 1/4	C11	△ ECFD1H103KB	0.01 50
R187	ERDS2TJ473	47K 1/4	R823	ERDS2TJ392	3.9K 1/4	C12	△ ECFD1H103KB	0.01 50
R188	ERDS2TJ473	47K 1/4	R824	ERDS2TJ392	3.9K 1/4	C14	ECFD1E104ZF	0.1 25
R189	ERDS2TJ562	5.6K 1/4	R827	ERDS2TJ564	560K 1/4	C15	ECEA1CU332	3300 16
R190	ERDS2TJ123	12K 1/4	R828	ERDS2TJ564	560K 1/4	C16	ECEA1CU332	3300 16
R191	ERDS2TJ154	150K 1/4	R829	ERDS2TJ473	47K 1/4	C17	ECEA1CU470	47 16
R192	ERDS2TJ824	820K 1/4	R831	ERDS2TJ102	1K 1/4	C18	ECEA1CU470	47 16
			R832	ERDS2TJ102	1K 1/4	C19	ECEA0J331	330 6.3

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
C20	ECEA0J331	330 6.3	C129	ECKD1H681K	680P 50	C507	ECKD1H102KB	0.001 50
C21	ECFD1E104ZF	0.1 25	C131	ECEA0J331	330 6.3	C508	RBP1CN100CT	10 16
C22	ECFD1E104ZF	0.1 25	C141	ECQM1H153JZ	0.015 50	C509	ECCD1H100KC	10P 50
C23	ECEA0J331	330 6.3	C142	ECQM1H122JZ	0.0012 50	C510	ECQM1H104JZP	0.1 50
C24	ECFD1H103KB	0.01 50	C143	ECQM1H473JZ	0.047 50	C511	ECEA1HJR47	0.47 50
C25	ECFD1H103KB	0.01 50	C144	ECEA1HKNR2R2	2.2 50	C512	ECKD1H681K	680P 50
C39	ECEA50V330V	330 50	C145	ECEA1HKNR2R2	2.2 50	C513	ECKD1H681K	680P 50
C40	ECEA50V330V	330 50	C161	ECQM1H153JZ	0.015 50	C514	ECQM1H154JZ	0.15 50
C53	ECEA1CU331	330 16	C162	ECQM1H153JZ	0.015 50	C515	ECQM1H153JZ	0.015 50
C54	ECEA1CU331	330 16	C163	ECQM1H103JZ	0.01 50	C516	ECEA1HKNR2R2	2.2 50
C55	ECEA1CU221	220 16	C164	ECEA1HKNR3R3	3.3 50	C517	ECKD1H471KB	470P 50
C56	ECEA1CU221	220 16	C165	ECEA1HKNR1	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	ECEA1HKNR10	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	ECFD1E104ZF	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	ECFD1H070CC	7P 50	C817	ARA1ANG30MOT	330 10

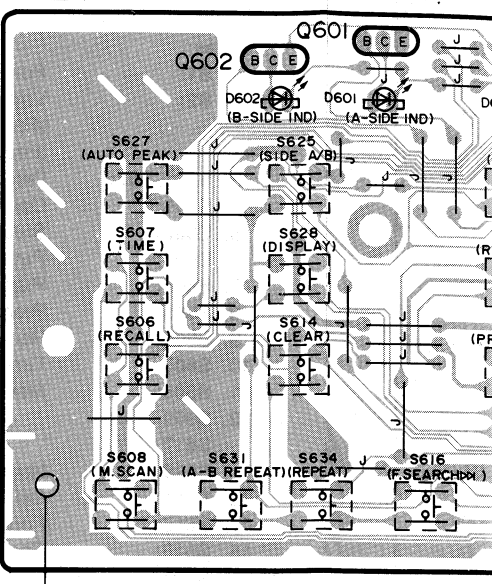
B MAIN P.C.B.



DIGITAL OUT (COAXIAL)

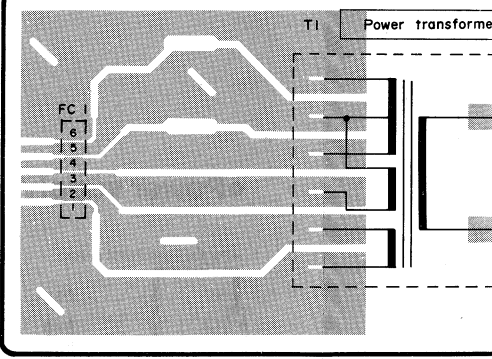
LINE OUT

A OPERATION P.C.B.

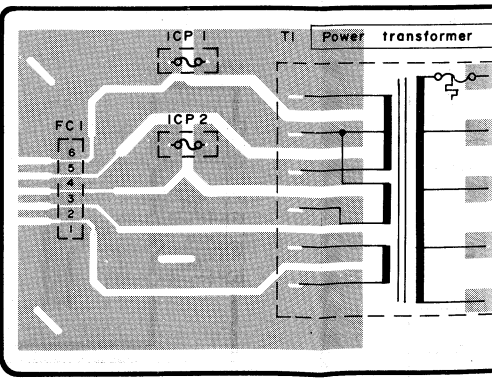


C POWER SOURCE P.C.B.

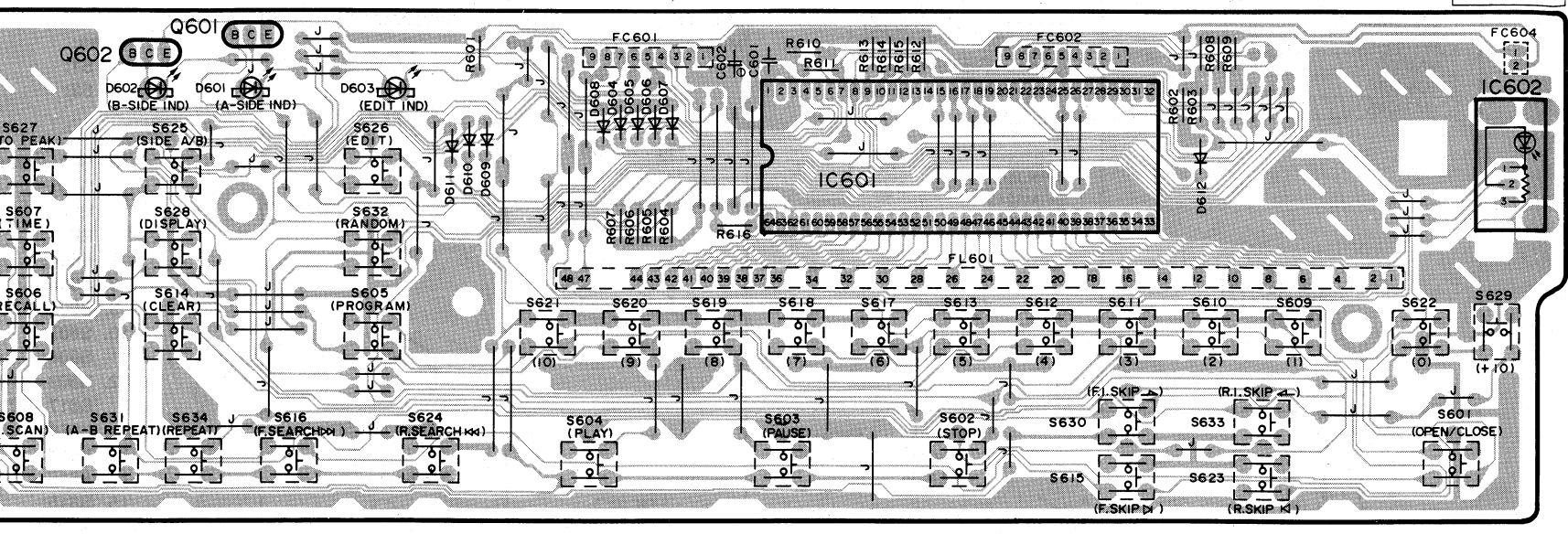
• For (M) and (MC) areas



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

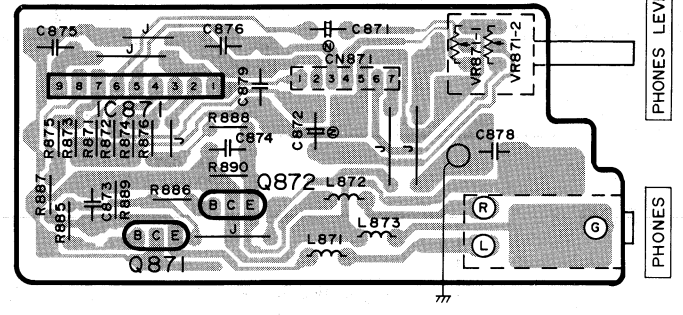


OPERATION P.C.B.



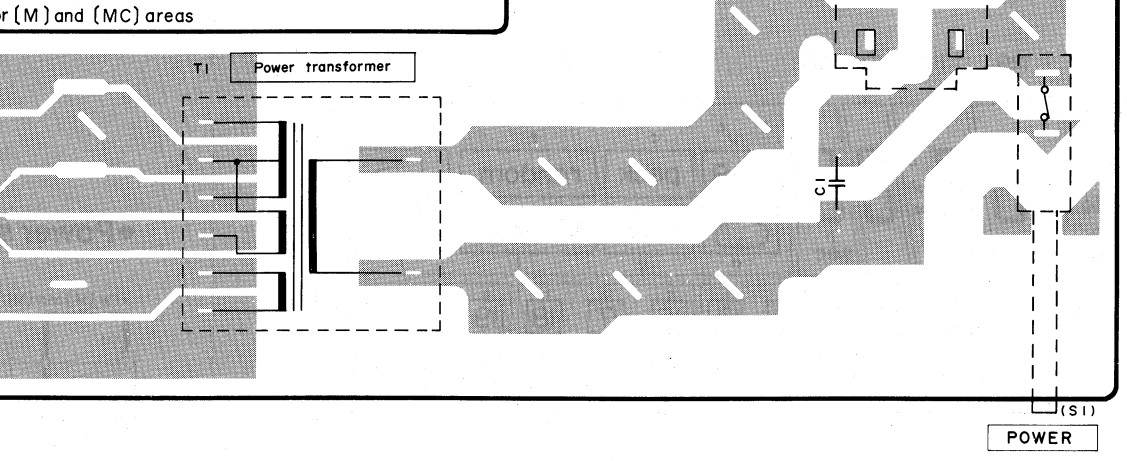
REMOTE SENSOR

D HEADPHONES P.C.B.

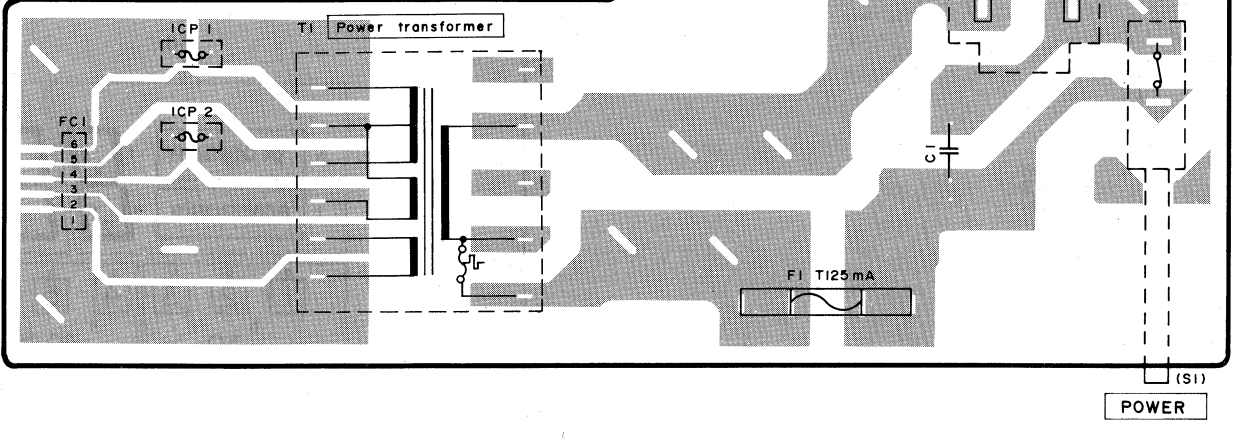


PHONES LEVEL
PHONES

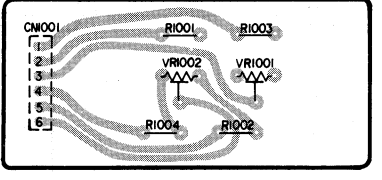
POWER SOURCE P.C.B.



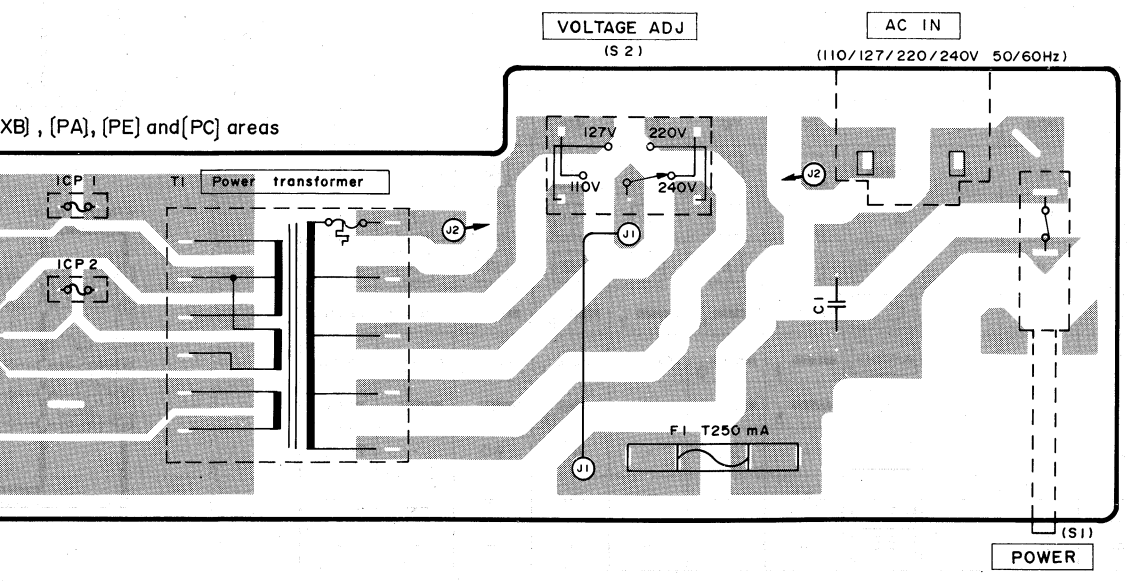
For [EK] area



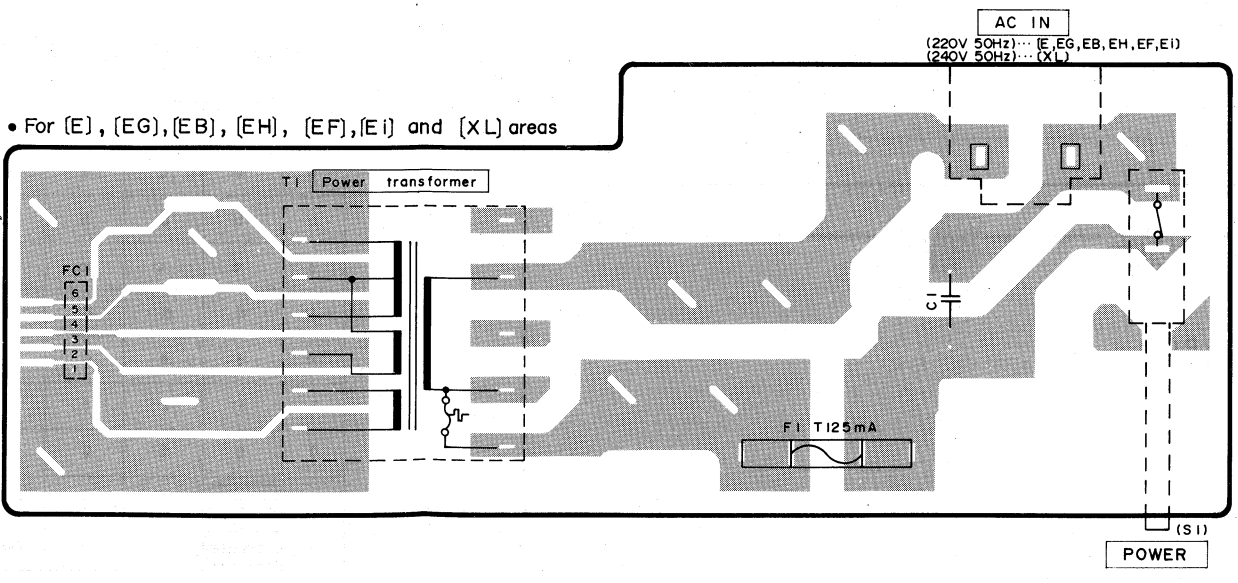
E OFFSET VR P.C.B.



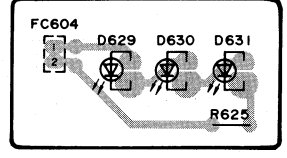
[XB], [PA], [PE] and [PC] areas



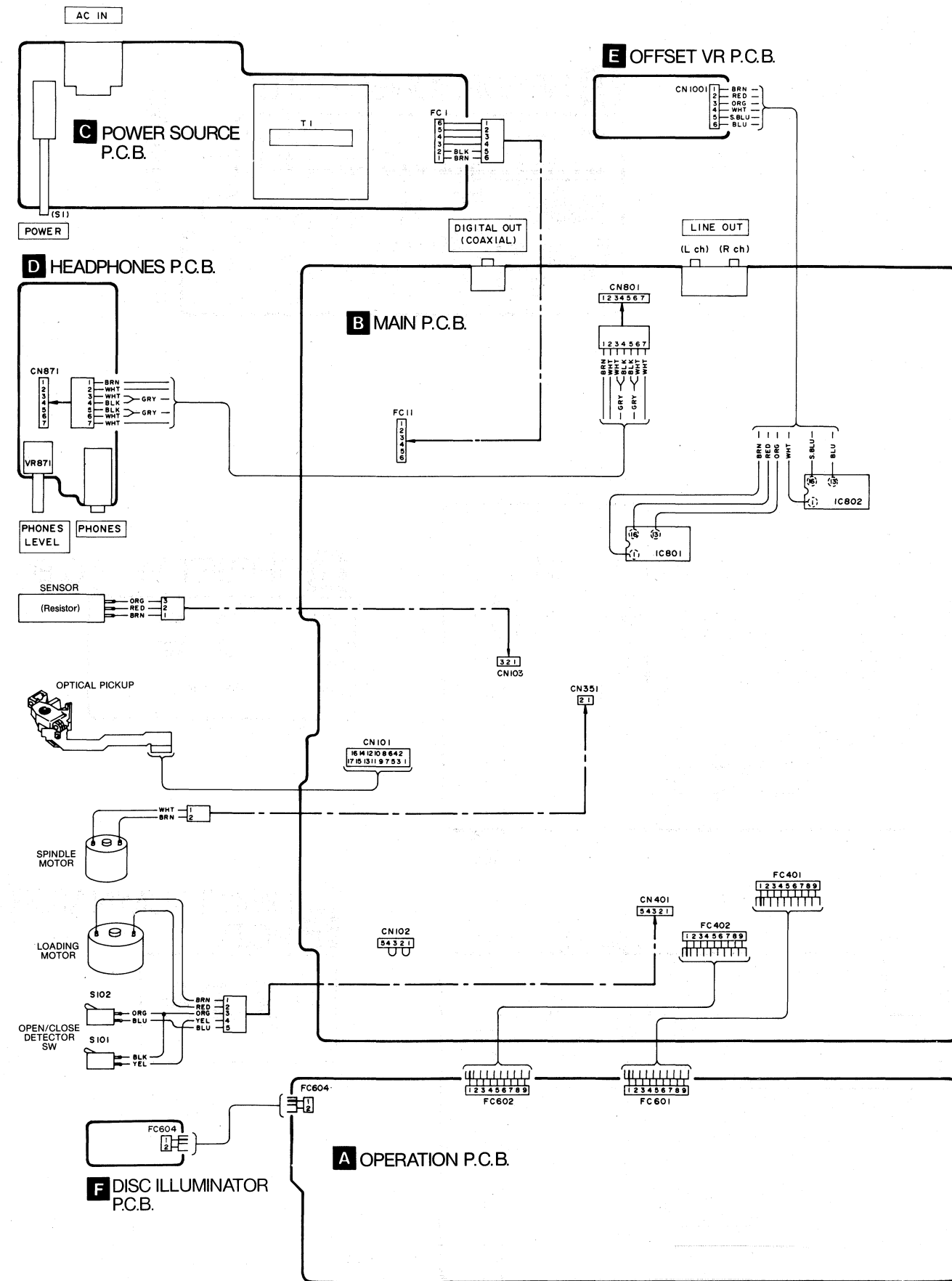
For [E], [EG], [EB], [EH], [EF], [EI] and [XL] areas



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

<table border="1"> <tr><td>MN15283PEE</td><td>64 pin</td></tr> <tr><td>MN1554PEF</td><td>22 pin</td></tr> <tr><td>MN6030</td><td>22 pin</td></tr> <tr><td>PCM56P-J</td><td>16 pin</td></tr> <tr><td>YM3404B</td><td>16 pin</td></tr> </table>	MN15283PEE	64 pin	MN1554PEF	22 pin	MN6030	22 pin	PCM56P-J	16 pin	YM3404B	16 pin	<table border="1"> <tr><td>AN8370</td><td>42 pin</td></tr> <tr><td>AN8371</td><td>24 pin</td></tr> <tr><td>SVICXK5816M</td><td>16 pin</td></tr> <tr><td>SVIUPD4053G1</td><td>16 pin</td></tr> <tr><td>MN74HC00</td><td>14 pin</td></tr> <tr><td>AN6554NS</td><td>10 pin</td></tr> <tr><td>MN6636S</td><td>10 pin</td></tr> <tr><td>SVINJM5532</td><td>8 pin</td></tr> <tr><td>SVIM5219</td><td>8 pin</td></tr> <tr><td>AN6552S</td><td>8 pin</td></tr> </table>	AN8370	42 pin	AN8371	24 pin	SVICXK5816M	16 pin	SVIUPD4053G1	16 pin	MN74HC00	14 pin	AN6554NS	10 pin	MN6636S	10 pin	SVINJM5532	8 pin	SVIM5219	8 pin	AN6552S	8 pin	<table border="1"> <tr><td>MN6622</td><td>84 pin</td></tr> <tr><td>MN53010PEH</td><td>42 pin</td></tr> </table>	MN6622	84 pin	MN53010PEH	42 pin	<table border="1"> <tr><td>SVINJM4556SA</td><td></td></tr> </table>	SVINJM4556SA	
MN15283PEE	64 pin																																						
MN1554PEF	22 pin																																						
MN6030	22 pin																																						
PCM56P-J	16 pin																																						
YM3404B	16 pin																																						
AN8370	42 pin																																						
AN8371	24 pin																																						
SVICXK5816M	16 pin																																						
SVIUPD4053G1	16 pin																																						
MN74HC00	14 pin																																						
AN6554NS	10 pin																																						
MN6636S	10 pin																																						
SVINJM5532	8 pin																																						
SVIM5219	8 pin																																						
AN6552S	8 pin																																						
MN6622	84 pin																																						
MN53010PEH	42 pin																																						
SVINJM4556SA																																							
<table border="1"> <tr><td>MA154WK</td><td></td></tr> </table>	MA154WK		<table border="1"> <tr><td>MA165</td><td></td></tr> </table>	MA165		<table border="1"> <tr><td>MA4033</td><td>SVDMTZ33</td></tr> <tr><td>MA4082</td><td>MA4062-H</td></tr> <tr><td>MA4056</td><td></td></tr> </table>	MA4033	SVDMTZ33	MA4082	MA4062-H	MA4056		<table border="1"> <tr><td>SVIBA6218</td><td></td></tr> </table>	SVIBA6218		<table border="1"> <tr><td>LM2940T5</td><td>M5F78M08L</td></tr> </table>	LM2940T5	M5F78M08L																					
MA154WK																																							
MA165																																							
MA4033	SVDMTZ33																																						
MA4082	MA4062-H																																						
MA4056																																							
SVIBA6218																																							
LM2940T5	M5F78M08L																																						

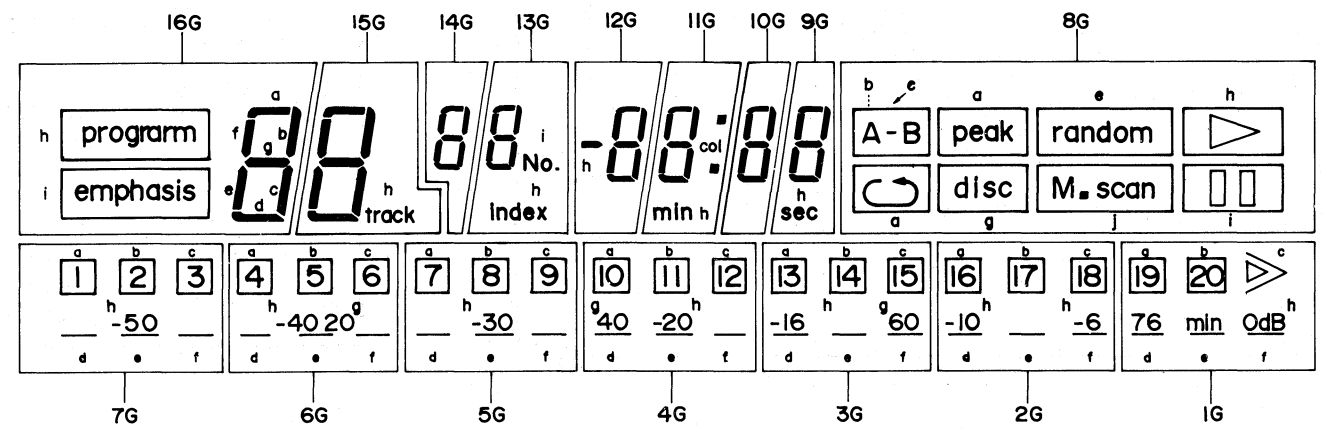
SCH

(This schem development

- Notes:
- S1:
 - S2:
 - S101, 10
 - S601:
 - S602:
 - S603:
 - S604:
 - S605:
 - S606:
 - S607:
 - S608:
 - S609-61
 - S617-62
 - S629:
 - S614:
 - S615:
 - S616:
 - S623:
 - S624:
 - S625:
 - S626:
 - S627:
 - S628:
 - S630:
 - S631:

INTERNAL CONNECTIONS OF FL

Grid connection diagram

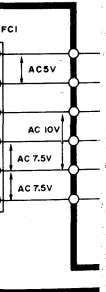


Anode connection table

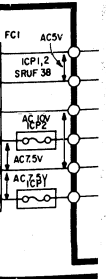
	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	a	a	peak	1	4	7	10	13	16	19
b	b	b	b	b	b	b	b	b	A-	2	5	8	11	14	17	20
c	c	c	c	c	c	c	c	c	B	3	6	9	12	15	18	▶▶
d	d	d	d	d	d	d	d	d	↻	1	4	7	10	13	16	19
e	e	e	e	e	e	e	e	e	random	2	5	8	11	14	17	20
f	f	f	f	f	f	f	f	f	M.scan	3	6	9	12	15	18	21
g	g	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	0 dB
i	emphasis	-	-	No.	-	col	-	-		-	-	-	-	-	-	-

Power

*For (M) and (N)



*For (EK) area



SCHEMATIC DIAGRAM

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

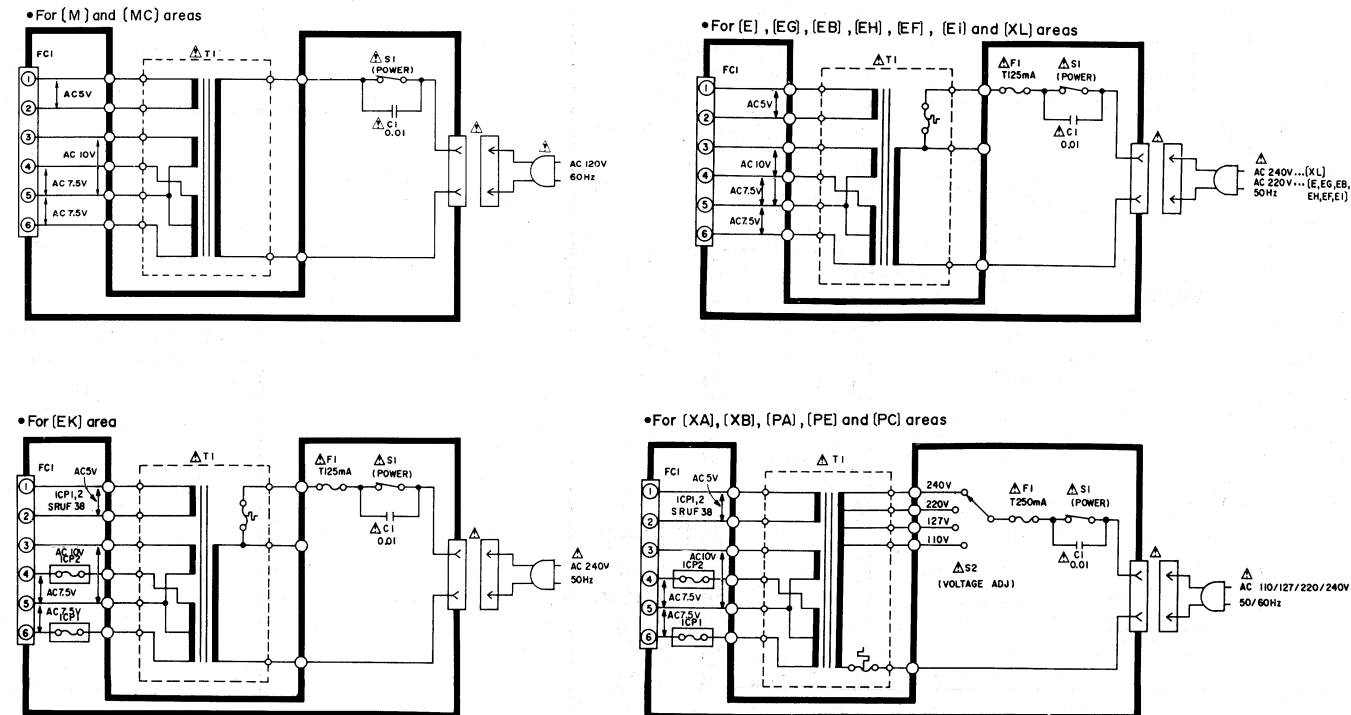
Notes:

- 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.

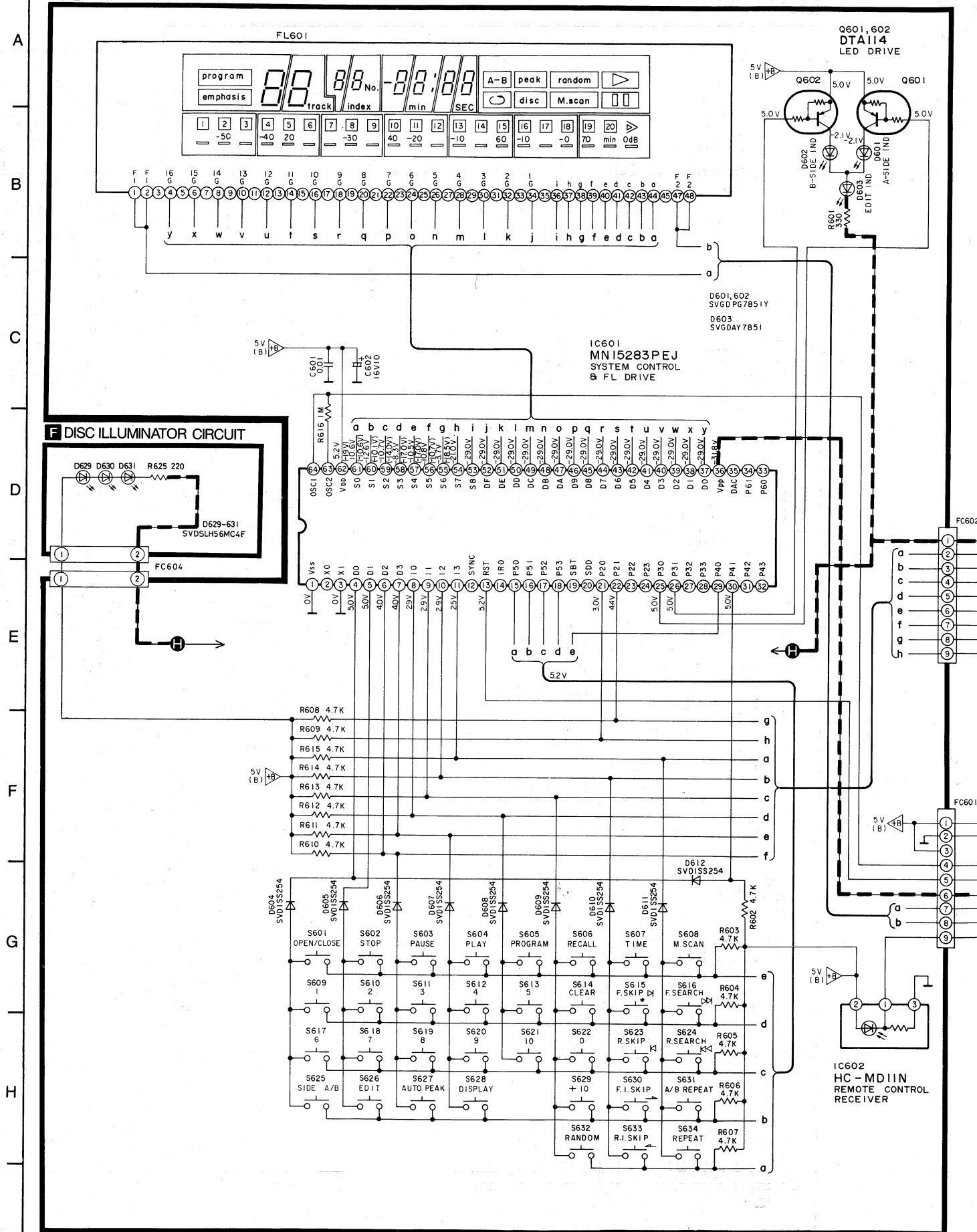
- 24. S632: Random switch.
- 25. S633: Reverse index skip switch.
- 26. S634: Repeat switch.
- 27. The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error 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. ——— : Positive 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 during repair.
 *Cover the parts boxes made of plastics with aluminum foil.
 *Ground the soldering iron.
 *Put a conductive mat on the work table.
 *Do not touch the legs of IC or LSI with the fingers directly.

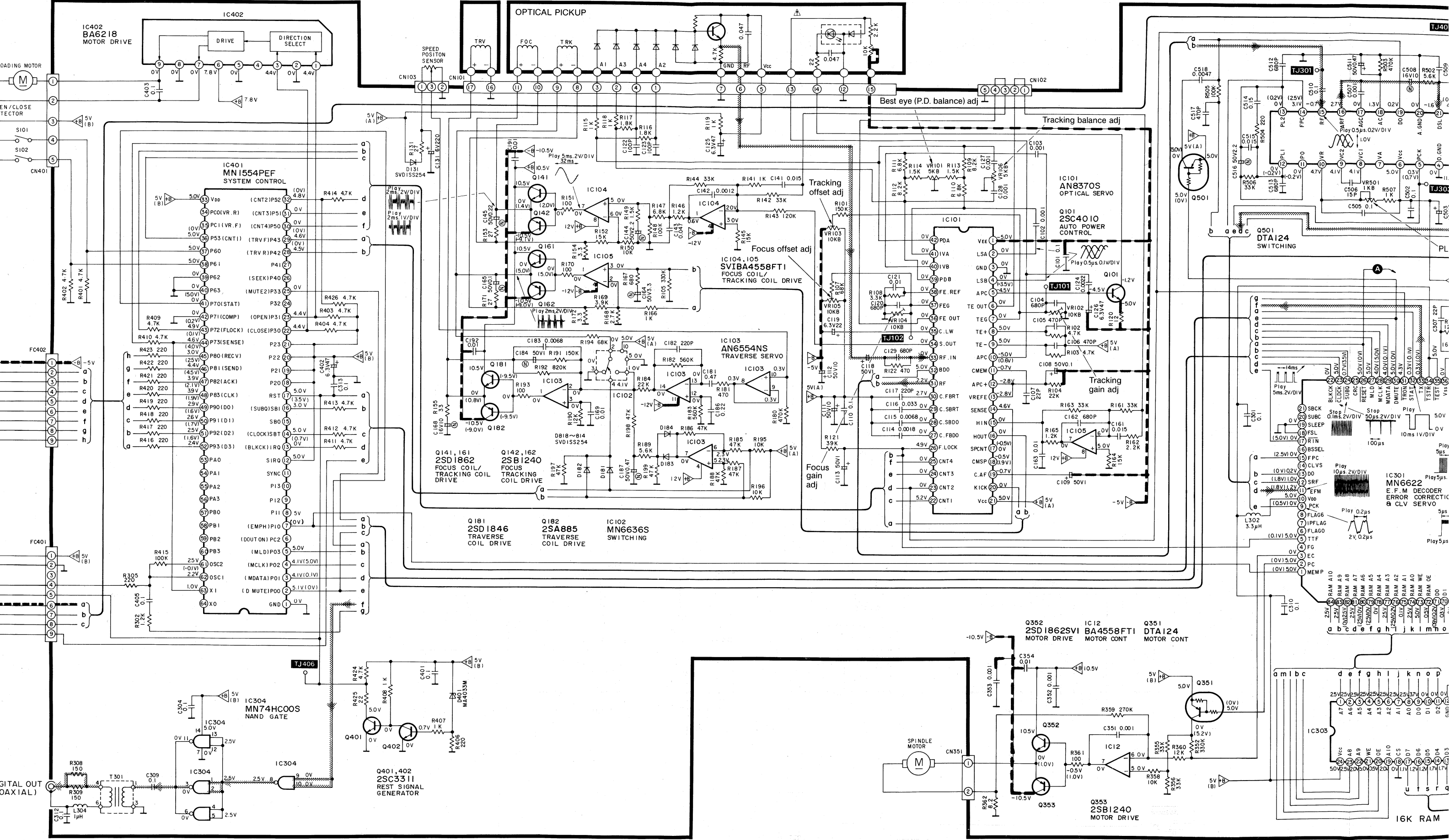
Power supply circuit

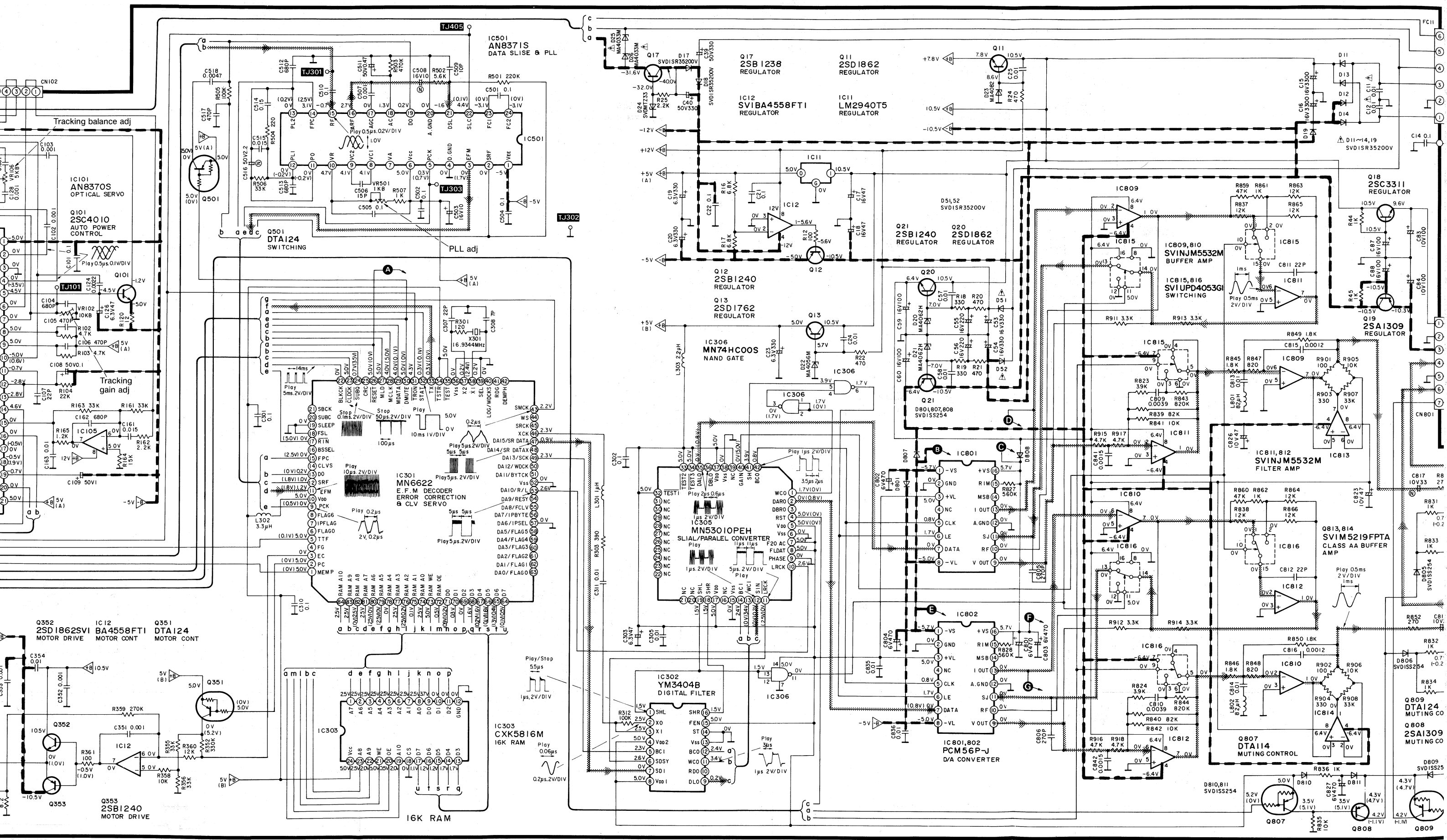


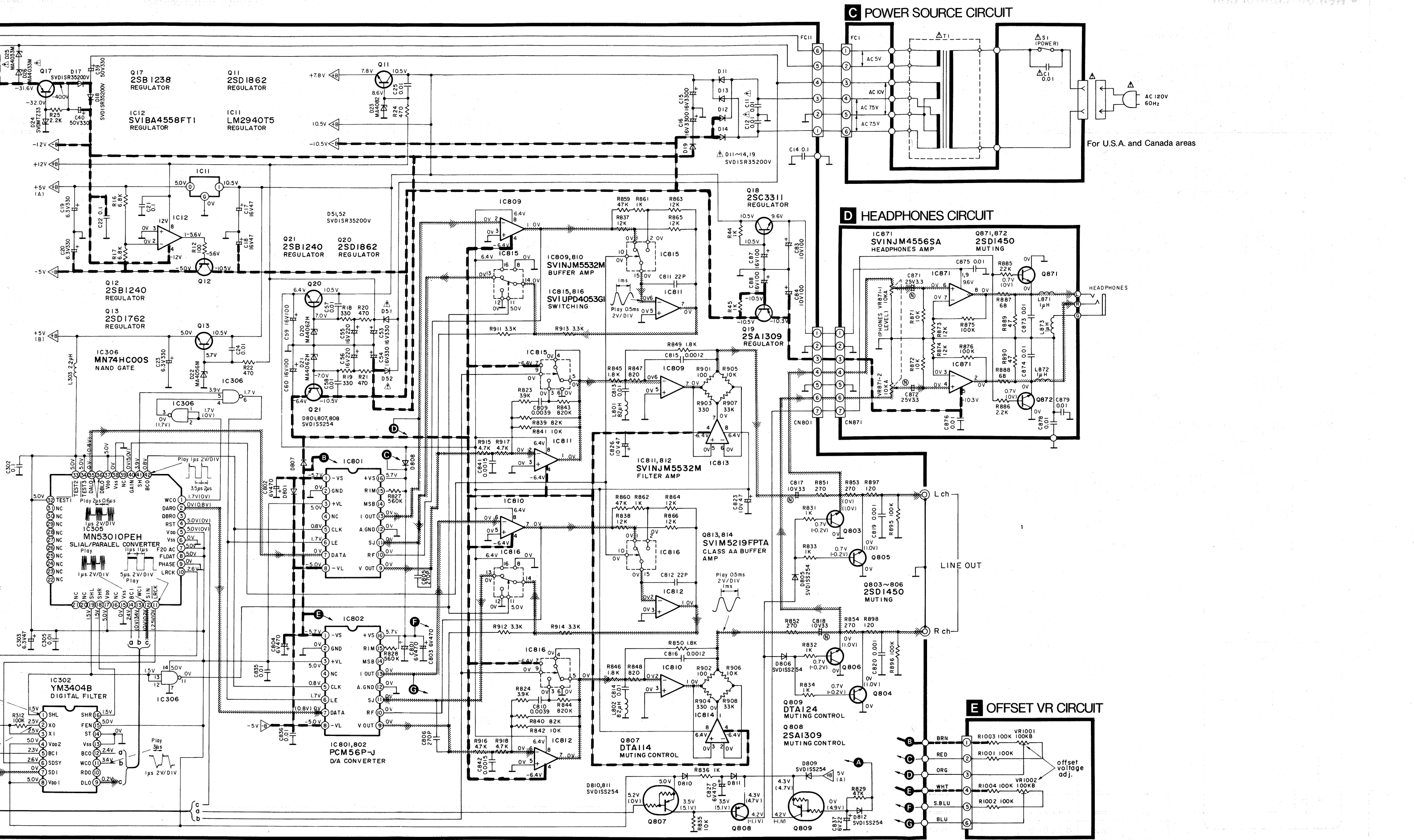
A OPERATION CIRCUIT



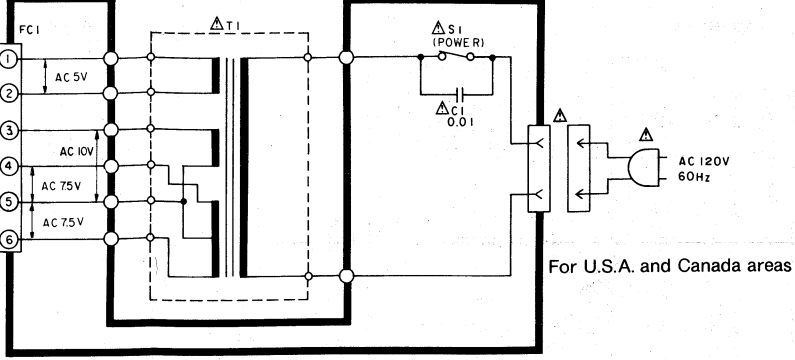
B MAIN CIRCUIT





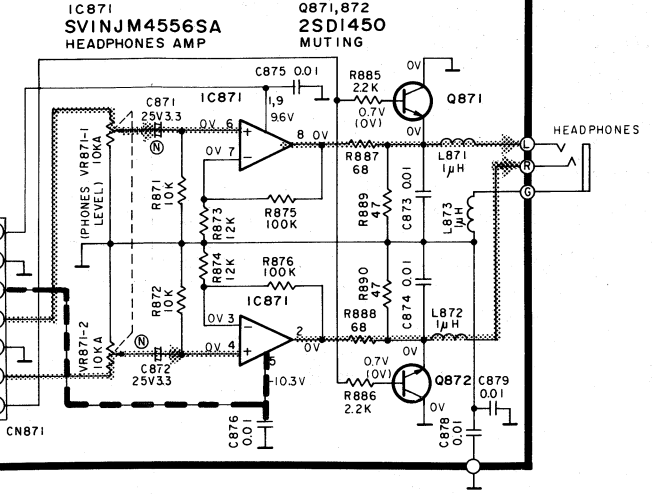


C POWER SOURCE CIRCUIT

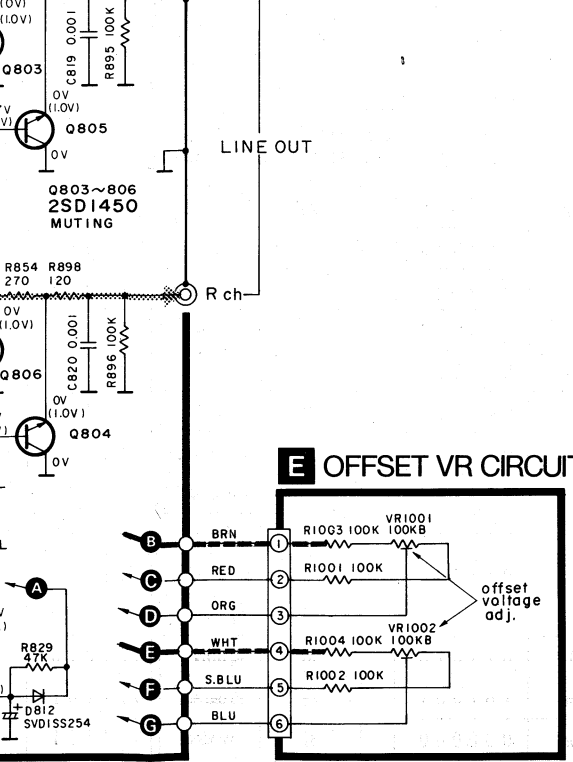


For U.S.A. and Canada areas

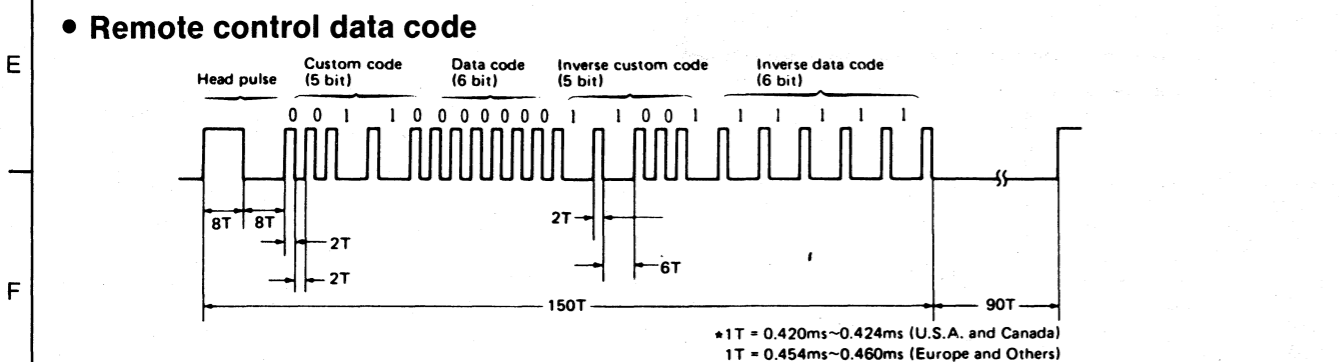
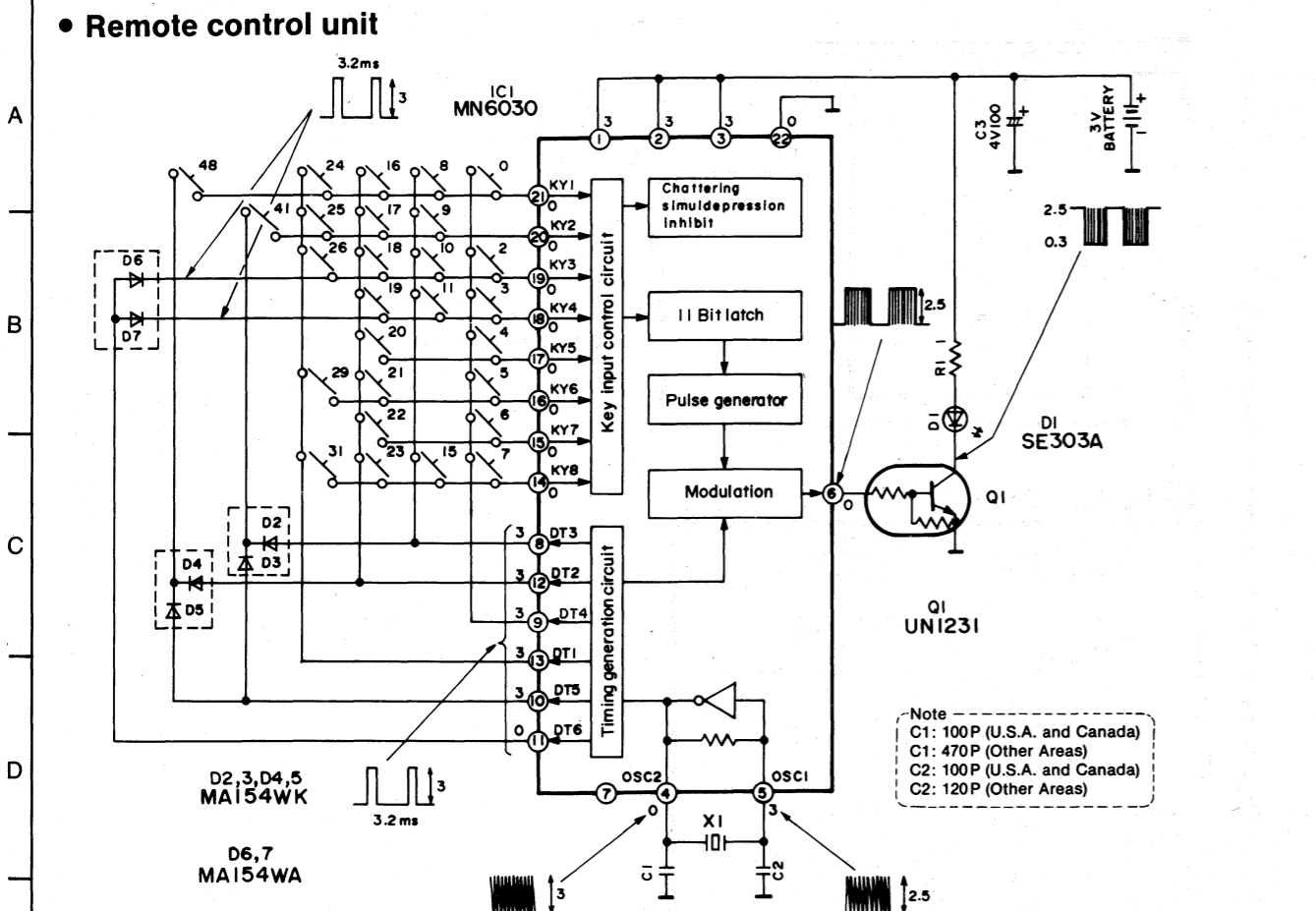
D HEADPHONES CIRCUIT



E OFFSET VR CIRCUIT



■ BLOCK DIAGRAM



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

