

Service Manual

COMPACT
disc
DIGITAL AUDIO

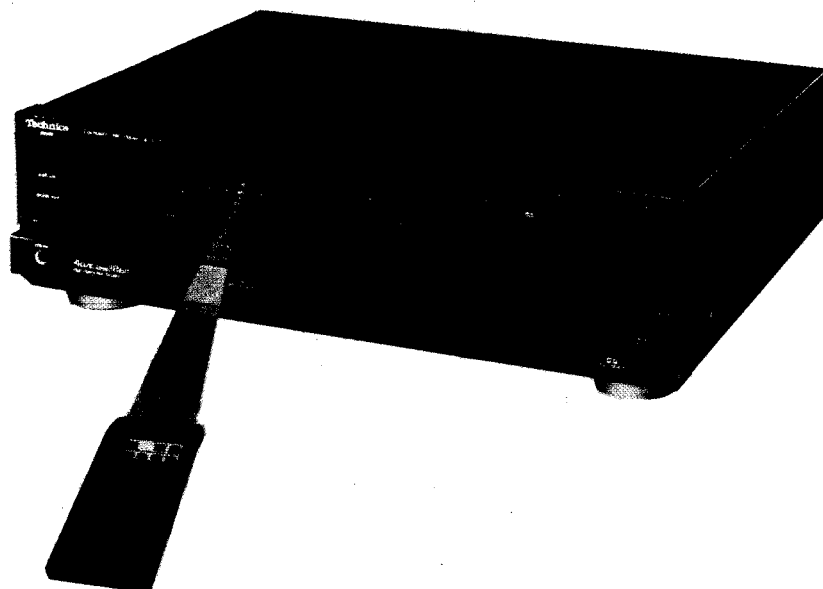
DIGITAL

Compact Disc Player

SL-P777

Color

(K)... Black Type



Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EK)	United Kingdom.	(K)
(XL)	Australia.	(K)
(EG)	F.R. Germany.	(K)
(EB)	Belgium.	(K)
(EH)	Holland.	(K)
(EF)	France.	(K)
(EI)	Italy.	(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.	(K)

SPECIFICATIONS

■ Audio

No. of channels	2 channel (stereo)
Output voltage	2.5Vrms
Frequency response	2~20,000Hz±0.3dB
Dynamic range	98dB
S/N ratio	112dB
Total harmonic distortion	0.003%
Harmonic distortion	0.0015%
Channel separation	100dB
Digital filter	18-bit realizing high resolution output

DA converter

4 times oversampling
4 DAC system
(silent processing DAC)

Output impedance	600Ω
Digital output	optical
Realizing resolution output	18-bit

■ Signal format

Sampling frequency	44.1kHz
Error correction	Technics New Super Decoding Algorithm (8 Samples Linear Interpolation)

■ Pickup

Type	Aspherical Surface Glass Press Lens Fine focus 1 beam
Beam source	Semiconductor laser
Wave length	780nm

■ Traverse unit

Type	High speed linear motor
------	-------------------------

■ General

Power supply

For Continental Europe:	AC 50/60Hz, 220V
For United Kingdom:	AC 50/60Hz, 110V/127V/220V/240V

For Australia AC 50/60Hz, 240V

For others: AC 50/60Hz, 110V/127V/220V/240V

Power consumption 15W

Headphones output level 60mW/32Ω

Dimensions (W × H × D) 430 × 126.5 × 338mm

Weight 6kg

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

Technics

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

Panasonic Tokyo Sales Department
Matsushita Electric Industrial Co., Ltd.
World Trade Center Bldg., 4-1, Hamamatsu-cho,
2-chome, Minato-ku, Tokyo 105, Japan

CONTENTS

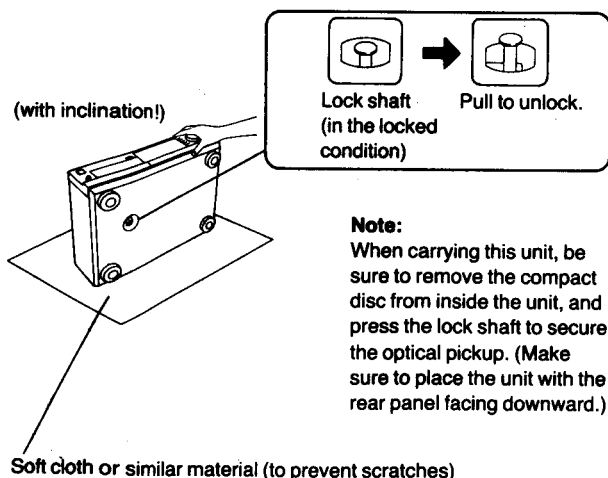
	Page
PLACEMENT	2
ACCESSORIES	2
PRECAUTION OF LASER DIODE	3
CONNECTIONS	4
REMOTE CONTROL TRANSMITTER	4
LOCATION OF CONTROLS	5, 6
BASIC OPERATION	7, 8
CONVENIENT FUNCTIONS	9
HANDLING PRECAUTIONS FOR OPTICAL PICKUP	10
INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)	10
DISASSEMBLY INSTRUCTIONS	11~14
MEASUREMENTS AND ADJUSTMENTS	15~19
NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)	19
TERMINAL FUNCTION OF IC's	20~25

	Page
INTERNAL CONNECTION OF FL	28
BLOCK DIAGRAM	27~29
SCHEMATIC DIAGRAM	30~37
TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES	38
WIRING CONNECTION DIAGRAM	39
PRINTED CIRCUIT BOARDS	40~45
TROUBLESHOOTING GUIDE	46~48
PACKING	49
RESISTORS & CAPACITORS	50, 51
REPLACEMENT PARTS LIST	52~54
EXPLODED VIEW	55
REPLACEMENT PARTS LIST	56
EXPLODED VIEW	57, 58
REPLACEMENT PARTS LIST	59
EXPLODED VIEW	60

PLACEMENT

Before placement

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

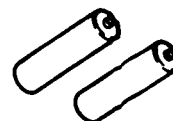
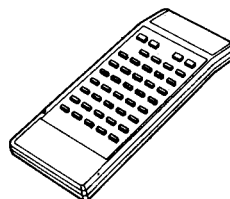
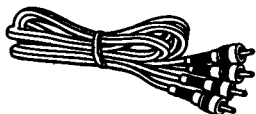
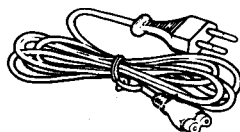


Notes of placement

- 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.

ACCESSORIES

- | | | | | |
|--|--|-------------------------------------|--|------------------------------------|
| ● AC power supply cord 1
SJA187 (E, EG, EB, EH, EF, EI)
SJA173 (XL)
SJA193 (EK)
SJA168-1 (XA, PA, PE, PC)
SJA183 (XB) | ● Stereo connection cable 1
(SJP2249-4) | ● Optical cable 1
(SJPD16) | ● Remote control transmitter 1
(EUR64729) | ● Batteries 2
(UM-4NE/2S) |
|--|--|-------------------------------------|--|------------------------------------|



Compact Disc Player

DEUTSCH

ELEKTRISCHE JUSTIERUNG

■ Abmessungen und Einstellungen

Achtung:

- Vermeiden Sie den Laserstrahl direkt anzublicken oder zu berühren, weil hohe Gefahr besteht. (Laserstrahlen sind unsichtbar). Während die CD-Einheit auf ON geschaltet ist, werden Laserstrahlen aus der Aufnahmelinse emittiert. Vermeiden Sie direkte Aussetzung von den Laserstrahlen besonders bei Einstellungsoperationen.

Vorbereitung

1. Beseitigen Sie das Kabinett (Siehe Ref. Nr. 1 des Wartungshandbuchs).
2. Beseitigen Sie den CD-Klemmer und Magnet (Siehe Ref. Nr. 2 des Wartungshandbuchs).
3. Beseitigen Sie den CD-Plattenhalter und Stromschalterstab (Siehe Ref. Nr. 3 des Wartungshandbuchs).
4. Setzen Sie die Test-CD-Platte und Magnet auf die Drehplatte.
5. Schalten Sie die CD-Einheit auf ON.
6. Drücken Sie zuerst den OPEN/CLOSE Schalter S102 in Pfeilrichtung, und danach (innerhalb von 4 Sekunden) drücken Sie den Schalter S101 in Pfeilrichtung, wie abgebildet.

Meßinstrumente und Fachgeräte

- Servoverstärkerregler (SZZP1017F oder SZZP1094C)
- Test-CD Platte
- 1. Test-CD-Platte (SZZP1054C oder SZZP1014F)
- 2. Unregelmäßige Test-CD-Platte (SZZP1056C)
- 3. Schwarzbandtest-CD-Platte (SZZP1057C)

- Normale CD-Platte
- Doppelstrahloszilloskop mit 30 MHz Bandbreite oder höher (zusammen mit EXT Auslöser und 1:1 Sonde)
- Tonfrequenzoszillator (AF)
- Konversionsanschluß (SZZP1032F)
- Allen Schraubendreher (M2,0)
- Allen Schraubendreher (M1,27)
- 0,9 mm Umgrenzungslehre (RZZ0297)

Führen Sie die Einstellungen an den Teilen die ersetzt werden wie folgend durch:

- (1) Spindelmotor Teile 1,3 bis 8
- (2) Drehplatte..... Teile 1,3 bis 8
- (3) Optischer Tonabnehmer Teile 2 bis 8

Einstellungsverfahren

- Falls Sie den Spindelmotor oder die Drehplatte ersetzt haben, gehen Sie wie folgend durch:

(1) Einstellung des Zwischenraumes der Drehplatte

1. Setzen Sie die 0,9 mm Umgrenzungslehre (RZZ0297) zwischen der Drehplatte und der CD-Empfangsgrundplatte (Siehe Abbildung rechts).
2. Ziehen Sie die Schraube der Drehplatte mit dem 1,27 mm Allen Schraubendreher fest.
3. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch die Terminale VR104 **REF** (+) und durch VR106 **VOLT** (-) über einen Filter an.

(Anmerkung: Eine Voltzahl von 2,5 V befindet sich am Terminal V. REF. Bitte achten Sie darauf, daß Sie das Chassis der CD-Einheit mit dem Oszilloskop nicht berühren um einen Kurzschluß zu vermeiden).

Einstellung des Oszilloskops:

VOLT..... 50 mV

SWEEP..... 1 ms.

Eingabekopplung DC

4. Stellen Sie den DC Nullausgleich des Oszilloskops ein.

5. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.
6. Messen Sie die Spannungsamplitude der Signal auf dem Oszilloskop ab.

Anmer-

- kung 1. Falls die bemessene Amplitude zwischen den Werten von ± 15 mV sich bewegt, liegt die Höhe der Drehplatte richtig. Falls die Amplitude außer den oben genannten Werten liegt, stellen Sie die Höhe der Drehplatte mit Hilfe der Umgrenzungslehre ein.

Falls die Amplitude $+15$ mV überschreitet, setzen Sie die Drehplatte etwas herab.

Falls die Amplitude -15 mV unterschreitet, setzen Sie die Drehplatte etwas herauf.

Anmer-

- kung 2. Falls die bemessene Amplitude weit über oder unter den oben benannten Werte übertrifft, setzen Sie **VR105** genau oder in der Nähe der Mitte und versuchen Sie erneut die Höhe einzustellen (Vergewissern Sie sich, daß Sie gleichzeitig die Fokusausschweichung mit einstellen sollen).

(2) Mechanische Einstellung

1. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch **TJ101** (+) und durch **TJ102** (-) des Servos P.C.B. an.

Einstellung des Oszilloskops:

VOLT..... 100 mV

SWEEP..... 0,5 µs.

Eingabekopplung AC

2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur 9 auf der Test-CD-Platte (SZZP1056C).

3. Stellen Sie die CD-Einheit im Betriebsmodus und setzen Sie die Einheit wie rechts abgebildet.

4. Stellen Sie beide mechanische Einstellungsschrauben mit dem 2,0 mm Allen-Schraubendreher abwechselnd ein, bis die Amplitudvariation der RF-Signale des Oszilloskops auf das Minimum gebracht wird.

5. Nach der Einstellung, verschließen Sie die mechanische Einstellungen mit dem Siegelack RZZOL01 dicht ab.

(3) "BEST EYE" (PD Ausgleich) Einstellung

1. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch **TJ101** (+) und durch **TJ102** (-) des Servos P.C.B. an.

Einstellung des Oszilloskops:

VOLT..... 100 mV (CH. 1)

SWEEP..... 0.5 ms.

Eingabekopplung AC

2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie den 0,5 mm schwarzen Punkt auf der Test-CD-Platte SZZP1014F oder SZZP1054C ab.

3. Stellen Sie den **VR101** bis die RF-Signalausgangsmusteramplitude maximal liegt.

4) Fokusstärkeeinstellung

1. Schließen Sie die Servoverstärkerregelung an dem CD-Plattenspieler an. (Siehe Seite 7.)

2. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position "2" ein und den ON/OFF Schalter auf **ON**.

3. Setzen Sie die Oszillatorausgabe für **825 Hz, 150 mVp-p**, und schließen Sie diesen an den OSC und GND Terminale des Servoverstärkerreglers an.

4. Schließen Sie die CH. 1 und CH. 2 Prüfungs-sonden des Oszilloskops an die entsprechenden Terminale der Servoverstärkerreglers TP1 und TP2 an. (TP3 ist Erde)

Einstellung des Oszilloskops:

VOLT..... 100 mV

SWEEP..... 1 ms.

Eingabekopplung AC

5. Spielen Sie die Test-CD-Platte (SZZP1014F oder SZZP1054C) ab.

6. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position "3" ein um eine 825 Hz-Signal auf dem Oszilloskop sehen zu können. Stellen Sie den **VR104** ein bis die Signalamplitude an beide Kanäle gleich werden.

7. Setzen Sie den Verstärkungsschalter zur Position "2" wieder ein.

(5) Spurstärkeeinstellung

1. Setzen Sie die Oszillatorausgabe für **1,1 kHz, 150 mVp-p**, und schließen Sie diesen an den OSC und GND Terminale des Servoverstärkerreglers.

2. Schließen Sie die CH. 1 und CH. 2 Prüfungs-sonden des Oszilloskops an die entsprechenden Terminale der Servoverstärkerreglers TP1 und TP2. (TP3 ist Erde)

Einstellung des Oszilloskops:

VOLT..... 100 mV

beide Kanäle

SWEEP..... 1 ms.

Eingabekopplung AC

3. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.

4. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position "1" ein und Sie werden eine 1.1 kHz-Signal auf dem Oszilloskop sehen. Stellen Sie den **VR102** ein bis die Signalamplitude an beide Kanäle gleich werden.

5. Setzen Sie den Verstärkungsschalter an Position "2" wieder ein.

(6) Einstellung der Fokusausschleichung

Anmerkung: Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerregelung sich in Position "2" befindet.

1. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch **TJ101** (+) und durch **TJ102** (-) des Servos P.C.B. und die CH. 2 Sende (+) mit dem **FEG** Terminal des VR104 an.

Einstellung des Oszilloskops:

VOLT..... 100 mV (CH. 1)

SWEEP..... 0,5 ms.

Eingabekopplung AC (beide CH. 1 und CH. 2)

Auslösermodus NORM (Auslöser CH. 1)

2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur No. 9 auf der Test-CD-Platte SZZP1057C ab.

3. Lösen Sie die Sonde CH. 1 des Oszilloskops in solcher Weise, daß folgende Wellenformen beobachtet werden können. Stellen Sie den **VR105** ein bis die Inklination der Hülle des RF-Signals der CH. 1 sanft herabsinkt und die Signalamplitude der CH. 2 auf das Minimum kommt, d.h., daß der Wert der Amplitude A den von Amplitude B entspricht.

(7) Einstellung der Spurausweichung

Anmerkung: Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerregelung sich in Position "2" befindet.

1. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch **TJ101** (+) und durch **TJ102** (-) des Servos P.C.B. und die CH. 2 Sonde (+) mit dem **FEG** Terminal des VR102 an.

Einstellung des Oszilloskops:

VOLT 100 mV (CH. 1)

200 mV (CH. 2)

SWEEP 0,5 ms.

Eingabekopplung AC (beide CH. 1 und CH. 2)

Auslösermodus NORM (Auslöser CH. 1)

2. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Spur No. 9 auf der Test-CD-Platte SZZP1057C ab.
3. Lösen Sie die Sonde CH. 1 des Oszilloskops in solcher Weise, daß folgende Wellenformen beobachtet werden können. Stellen Sie den **VR103** ein bis die Inklination der Hülle des RF-Signals der CH. 1 sanft herabsagt und die Signalamplitude der CH. 2 auf das Minimum kommt d. H., daß der Wert der Amplitude A den von Amplitude B entspricht.

(8) Spurausgleicheinstellung

1. Vergewissern Sie sich, daß der Verstärkungsschalter der Servoverstärkerregelung sich in Position "2" befindet.
2. Stellen Sie die AF-Oszillatorausgabe für **1,1 kHz, 600 mVp-p** ein, und schließen Sie den Oszillator an die OSC und GND Terminals der Servoverstärkerregelung an.
3. Schließen Sie die CH. 1 Prüfungs-sonde des Oszilloskops durch **TJ101** (+) und durch **TJ102** (-) des Servos P.C.B. und die CH. 2 Sonde (+) mit dem OSC Terminal der Servoverstärkerregelung an.

Einstellung des Oszilloskops:

VOLT 100 mV (CH. 1)

SWEEP 0,5 ms.

Eingabekopplung AC (beide CH. 1 und CH. 2)

Auslösermodus NORM (Auslöser CH. 2)

4. Schalten Sie den Plattenspieler auf **ON** und spielen Sie die Test-CD-Platte SZZP1014F oder SZZP1054C ab.
5. Setzen Sie den Verstärkungsschalter der Servoverstärkerregelung auf Position "1" ein und stellen Sie **VR106** bis das Zittern der Signalwellenform auf CH. 1 auf das Minimum gebracht wird wie unten gezeigt.
6. Schalten Sie die Servoverstärkerregelungsanschlüsse von der CD-Einheit ab.

(9) Überprüfung der Betriebsoperation nach der Einstellung**•Überprüfung der Sprungsuchfunktion**

1. Spielen Sie irgendeine Musik CD-Platte ab.
2. Drücken Sie die Sprungtaste um die normale Sprungsuchfunktion (vor- und rückwärts) zu überprüfen.

•Überprüfung der Handsuchfunktion

1. Spielen Sie irgendeine Musik CD-Platte ab.
2. Drücken Sie die Handsuchfunktionstaste um einwandfreie Handsuchfunktionen entweder bei hoher oder niedriger Geschwindigkeit, zu überprüfen.

•Überprüfung mit Benützung einer defektiven Test-CD-Platte

1. Spielen Sie die defektive Test-CD-Platte (SZZP1054C) an dem 0,9 mm schwarzen Punkt und an dem 0,7 mm Keil und prüfen Sie nach, daß weder Töne übergesprungen werden noch irgendeine Geräusche entstehen.
2. Spielen Sie die mittleren Spuren der unregelmäßigen defektiven Test-CD-Platte und prüfen Sie nach, daß weder Töne übergesprungen werden noch irgendeine Geräusche entstehen.

FRANÇAIS

REGLAGES ELECTRIQUES

■ Mesure et réglage

Attention:

- Il est très dangereux de voir ou de toucher le rayon laser. (Le rayonnement laser est invisible.) Une fois l'appareil mis sur la position "marche" (on), le rayon laser est émis de la lentille de la tête de lecture. Eviter donc l'exposition au rayon laser lors du réglage en particulier.

PREPARATION

1. Enlever le coffret (voir Ref. N° 1 dans le Manuel d'Entretien original).
2. Enlever le crampon de disque et l'aimant (voir Ref. N° 2 du même Manuel).
3. Enlever le support de disque et la tige d'interrupteur général (voir Ref. N° 2 du même Manuel).
4. Mettre le disque d'essai et l'aimant en place sur la platine tourne-disque.
5. Mettre le lecteur de disques sur la position "marche".
6. Pousser d'abord le commutateur ouverture/fermeture S102 dans la direction de la flèche, puis avant 4 secondes, pousser le commutateur S101 dans la direction de la flèche comme il est indiqué sur la figure.

Instruments de mesure et outils spéciaux

- Servorégleur de gain (SZZP1017F ou SZZP1094C)
- Disque d'essai
- 1. Disque d'essai de possibilité de lecture (SZZP1054C ou SZZP1014F)
- 2. Disque d'essai d'inégalité (SZZP1056C)
- 3. Disque d'essai de bande noire (SZZP1057C)
 - Disque normal
 - Oscilloscope double trace avec une largeur de bande de 30 MHz ou plus (avec déclencheur EXT et sonde 1:1)

- Oscillateur pour audiofréquences (AF)
- Connecteur de conversion (SZZP1032F)
- Clef hexagonale (M2, 0)
- Clef hexagonale (M1, 27)
- Calibre de tolérance de 0,9 mm (RZZ0297)

Le réglage doit être effectué selon la pièce remplacée, comme il est indiqué ci-dessous.

- (1) Moteur à broche Articles 1, 3 à 8
- (2) Platine tourne-disque Articles 1, 3 à 8
- (3) Tête de lecture optique Articles 2 à 8

Procédure de réglage

- Après avoir remplacé le moteur à broche ou la platine tourne-disque, effectuer le réglage suivant:

(1) Réglage de hauteur de platine tourne-disque

1. Introduire le calibre de tolérance de 0,9 mm (RZZ0297) entre la platine tourne-disque et la base de charge (voir la figure à droite).
2. Serrer la vis de fixation de platine tourne-disque à l'aide de la clef hexagonale de 1,27 mm.
3. Raccorder les bornes **FEG** (+) de VR104 et **V REF** (-) de VR106 de la sonde de voie 1 (CH. 1) de l'oscilloscope par un filtre.
(Remarque: Une tension de 2,5 V apparaît à la borne V.REF. Veiller donc à ne pas court-circuiter le châssis du lecteur de disques et la terre de l'oscilloscope.)

Réglage de l'oscilloscope:

Tension (VOLT) 50 mV

Dent de scie (SWEEP) 1 ms.

Couplage d'entrée courant continu

4. Régler la balance nulle à courant continu de l'oscilloscope.

5. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).

6. Mesurer l'amplitude de tension du signal sur l'oscilloscope.

Remarque 1. Si l'amplitude mesurée est dans une fourchette de ± 15 mV, la hauteur de platine tourne-disque est correcte. Par contre, si elle est en dehors de cette fourchette, régler la hauteur de platine tourne-disque en utilisant le calibre de tolérance comme un levier.

Si l'amplitude dépasse +15 mV, abaisser la platine tourne-disque.

Si l'amplitude est inférieure à -15 mV, élever la platine tourne-disque.

Remarque 2. Si l'amplitude mesurée est largement supérieure ou inférieure à la fourchette mentionnée ci-dessus, régler VR105 au centre ou à ses environs, puis essayer de nouveau de régler la hauteur. (Ne pas omettre alors de régler également le foyer.)

■ PRECAUTION OF LASER DIODE

CAUTION: This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pick up lens.
Wave length: 780nm
Maximum output radiation power from pick up: 100μW/VDE

Laser radiation from the pick up lens is safety level, but be sure the followings:

1. Do not disassemble the optical pick up unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pick up lens for a long time.

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

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

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

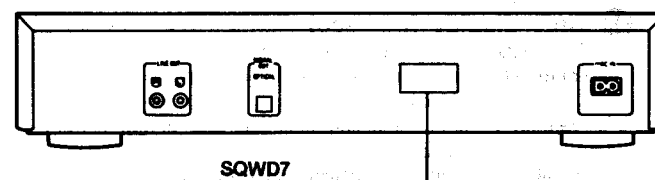
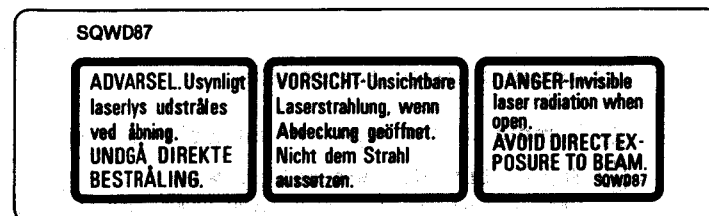
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdioden gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinheit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

ADVARSEL: I dette a apparat anvendes laser.

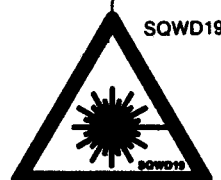
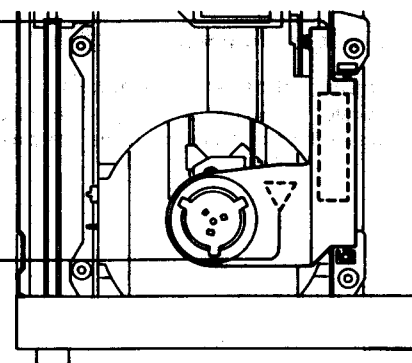
• Use of caution labels

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

Areas	SQWD7	SQWD87	SQWD19
(PA, PE, PC)	×	○	○
Others	○	○	○



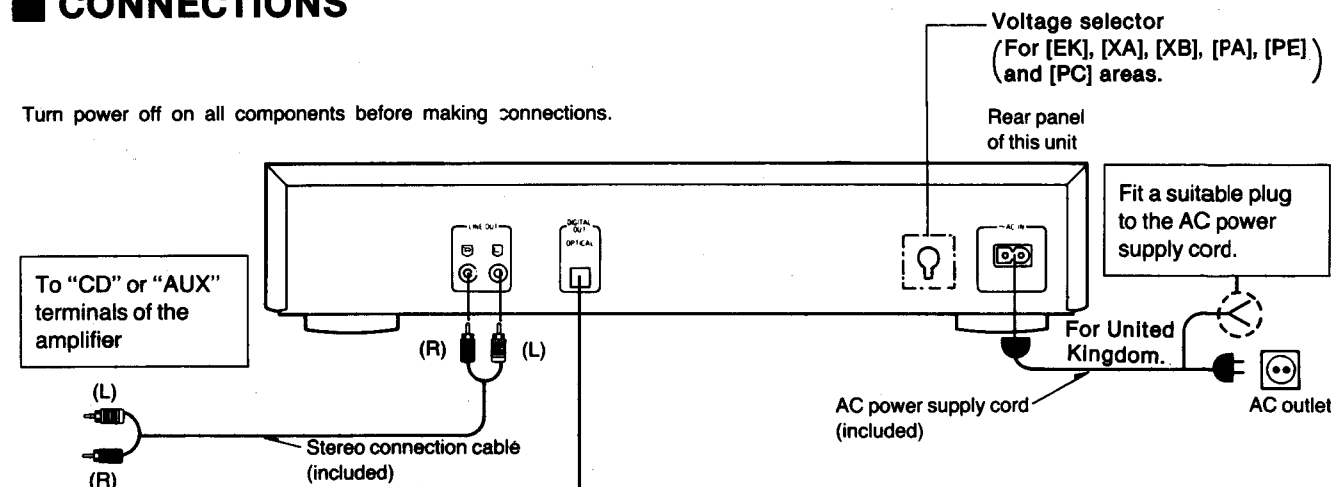
Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.



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

■ CONNECTIONS

Turn power off on all components before making connections.



• Optical output terminal (DIGITAL OUT/OPTICAL)

This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using an optical cable (included). A dust-protection cap is inserted in this terminal. Remove this cap only when a connection is to be made to this terminal.

CAUTION

When using the optical cable, please keep the following points in mind:

1. The maximum length of optical cable to be used with this unit is 3 m (approx. 10 ft.).
2. Always make sure the plug is fully inserted. If the plug is not inserted all the way, an imperfect connection will result.
3. The optical cable must never be bent or coiled tightly. Doing so will permanently damage the optical fiber in the cable and, therefore, prevent proper data transmission. If the cable must be coiled (for storage, etc.), the diameter of the loop should be at least 15 cm (approx. 6 inches).
4. Handle the optical cable's plug very carefully. Keep the plug free from dust or damage. Dust can be removed by wiping the plug with a soft cloth. Do not use any cleaners or solvents to clean the plug.

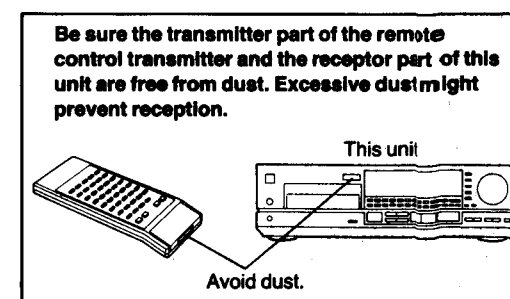
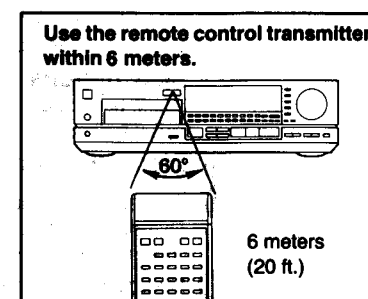
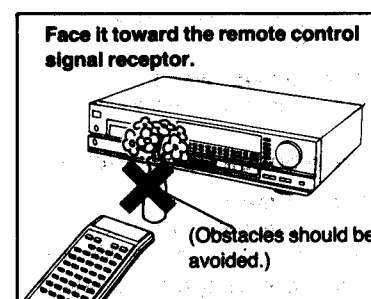
Note:

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

■ REMOTE CONTROL TRANSMITTER

Remote control transmitter operation notes

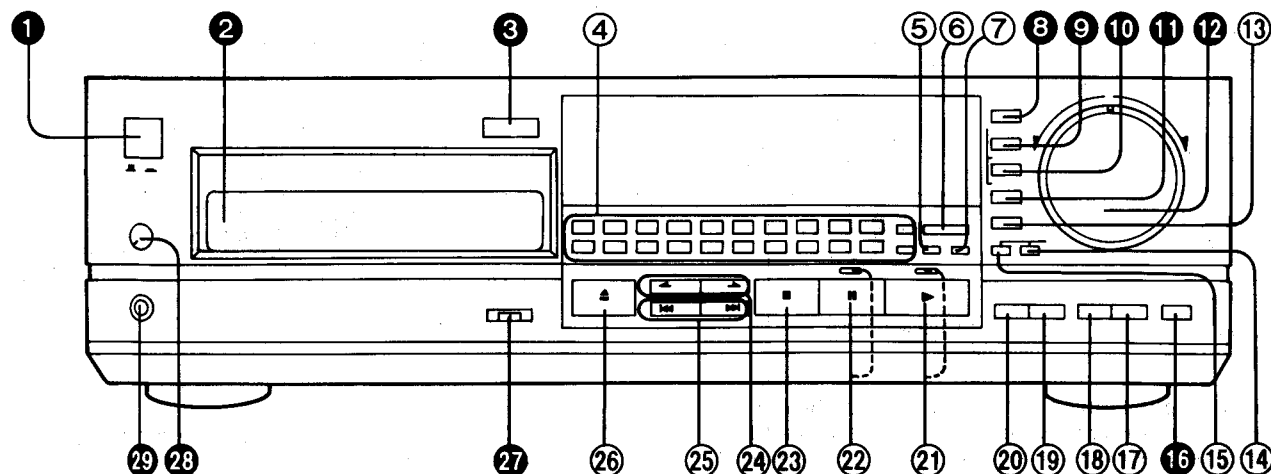
Note that operation may not be correct if direct sunlight or other strong light strikes the remote control signal receptor part of this unit. If there is a problem, place the unit away from the direct sunlight or other strong light source.



Note: The control panel of the remote control transmitter may be covered by a clear plastic protective sheet. This sheet may be removed if desired.

LOCATION OF CONTROLS

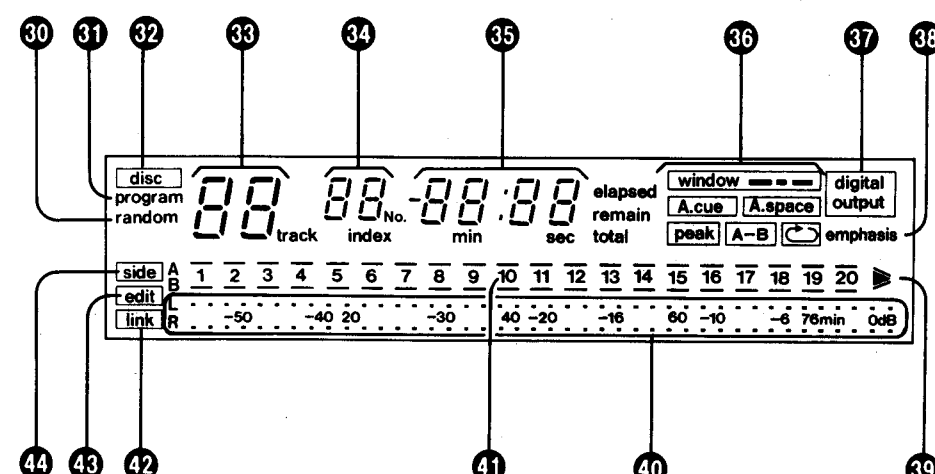
The functions indicated by the black numbers (with white background, ④ etc.) can be also activated using the remote control transmitter.



Control section

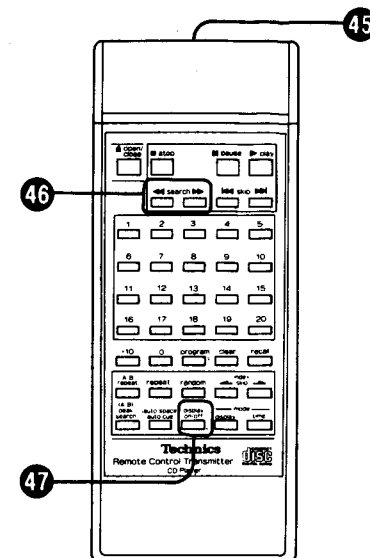
- ① Power switch (power)
- ② Disc holder
- ③ Remote control signal sensor (remote sensor)
- ④ Numeric buttons (+10, 0, 1~20)
- ⑤ Clear button (clear)
This button can be used to clear tracks from the programmed sequence one at a time.
- ⑥ Programmed-play button (program)
Pressing this button initiates the programmed play mode. You can then enter specific tracks using the numeric buttons.
- ⑦ Recall button (recall)
This button can be used to display the contents of the programmed track sequence for confirmation.
- ⑧ Window search button (window)
Press this button to perform searches when the unit is in the pause mode. Search for any point on the disc using the search dial. Release the dial at the desired point and that point on the disc is repeated again and again.
- ⑨ Edit tape length button (edit tape length)
When compact discs are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on each side of the tape, depending on the length of the cassette tape used, so that as little tape as possible is wasted.
- ⑩ Tape-side select button (side A/B)
When recording compact discs to tape, this button can be used to check the number of tracks and amount of tape left over for side A or B.
- ⑪ Disc link button (disc link)
This button can be used for edit recording from several discs.
- ⑫ Search dial (search)
This dial can be used to locate specific places on the disc during play at high speed, either forward or reverse.
- ⑬ Peak level search button (peak search)
This button can be used to locate the maximum signal level (peak level) for the signals on the disc.
- ⑭ Time mode select button (time mode)
- ⑮ Display mode select button (display mode)
- ⑯ Digital output button (digital output)
This button can be used to switch to on and off for digital output.
- ⑰ Auto cue/auto space button (auto cue/edit auto space)
Pressing this button causes the unit to switch to the play standby mode.
When editing, this button can be used to insert the silent gaps between the tracks.
- ⑱ Random play button (random)
This button can be used to play the tracks on a disc in a random sequence.
- ⑲ Repeat button (repeat)
- ⑳ A-B repeat button (A-B repeat)
This button can be used to play the portion of a disc between two points (A and B) chosen by you.
- ㉑ Play button and Indicator (▶ play)
- ㉒ Pause button and indicator (⏸ pause)
- ㉓ Stop button (■ stop)
This button can be used to stop disc play, as well as to cancel the various play modes.
- ㉔ Index skip buttons (← index/index →)
These buttons can be used to skip by index number (smaller divisions within specific tracks).
- ㉕ Skip buttons (⏮ skip/skip ⏭)
These buttons can be used to skip by track in the forward or reverse direction.
- ㉖ Disc holder open/close button (⏏ open/close)
- ㉗ Timer start switch (⏰ timer)
This switch allows you to use a separately purchased audio timer to switch the unit on automatically at a preset time.
- ㉘ Headphones volume control (phones level)
- ㉙ Headphones jack (phones)

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



Indicators section

- ③① Random play indicator (random)
- ③② Programmed-play indicator (program)
- ③③ Disc indicator (disc)
- ③④ Track number display (track)
- ③⑤ Index/program number display (index/No.)
- ③⑥ Time display (min/sec)
The indicators display the following types of time information.
"elapsed": time elapsed since the beginning of the current selection
"remain": time remaining until the end of the current selection
"total": total elapsed time since the beginning of the disc or total time remaining until the end of the disc, depending on whether the "elapsed" or "remain" indicator is illuminated.
- ③⑦ Operation indicators
The indicators below illuminate during their respective operations.
window search
A.cue: auto cue
A.space: auto space
peak: peak level search
A-B: A-B peak level search and A-B repeat play
repeat play
- ③⑧ Digital output indicator (digital output)
- ③⑨ Emphasis Indicator (emphasis)
This indicator illuminates when discs recorded with pre-emphasis in the high-frequency range are played.



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

- ③⑨ "Over" mark (▶)
This indicator lights if the total number of tracks on the disc is 21 or more.
- ④① Play position/output level indicator
This indicator toggles between its 2 modes each time the display mode select button is pressed.
- ④② Track number indicator (1~20)
- ④③ Disc link indicator (link)
- ④④ Compact disc edit indicator (edit)
- ④⑤ Tape side indicator (side A/B)

Remote control transmitter

- ④⑤ Remote control signal transmission window
- ④⑥ Search buttons (◀◀ search ▶▶)
These buttons can be used to move rapidly forward or backward on the disc during play. The search speed is slow when the button is pressed at first and becomes faster if the button is pressed and held continuously.
- ④⑦ Display switch (display on/off)
This switch allows you to turn off the display during play if you wish.
The display returns for about 5 seconds whenever an operation button is pressed and then goes out again.

(2) Réglage mécanique

1. Raccorder les bornes **TJ101** (+) et **TJ102** (-) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire.

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV
Dent de scie (SWEEP) 0,5 ms.
Couplage d'entrée courant alternatif

2. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire la voie 9 du disque d'essai (SZZP1058C).

3. Laisser le lecteur de disques en mode de lecture (PLAY), et le mettre en place comme il est indiqué sur la figure à droite.

4. Régler alternativement les deux vis de réglage mécanique à l'aide de la clef hexagonale de 2,0 mm jusqu'à ce que la variation d'amplitude de signaux de radiofréquence sur l'oscilloscope soit minimisée.

(3) Réglage de la meilleure mire (balance PD)

1. Raccorder les bornes **TJ101** (+) et **TJ102** (-) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire.

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV
Dent de scie (SWEEP) 0,5 ms.
Couplage d'entrée courant alternatif

2. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire le point noir de 0,5 mm sur le disque d'essai (SZZP1014F ou SZZP1054C).

3. Régler **VR101** jusqu'à ce que l'amplitude de mire de signaux de radiofréquence soit maximisée.

(4) Réglage du gain de foyer

1. Raccorder le servorégleur de gain au lecteur de disques (voir page 7).

2. Mettre le commutateur de gain du servorégleur de gain sur la position "2" et l'interrupteur marche/arrêt sur la position "marche" (ON).

3. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **825 Hz, 150 mVp.p.**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.

4. Raccorder respectivement les sondes de la voie 1 (CH. 1) et la voie 2 (CH. 2) de l'oscilloscope aux bornes TP1 et TP2 du servorégleur de gain [TP3 est la terre (GND)].

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV (pour les deux voies)
Dent de scie (SWEEP) 1 ms.
Couplage d'entrée courant alternatif

5. Commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).

6. Mettre le commutateur de gain du servorégleur de gain sur la position "3". Un signal de 825 Hz sera alors observé sur l'oscilloscope. Régler **VR104** jusqu'à ce que les amplitudes de signaux des deux voies soient identiques l'une à l'autre.

7. Remettre le commutateur de gain sur la position "2".

(5) Réglage du gain de piste

1. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **1,1 kHz, 150 mVp.p.**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.

2. Raccorder respectivement les sondes de la voie 1 (CH. 1) et la voie 2 (CH. 2) de l'oscilloscope aux bornes TP1 et TP2 du servorégleur de gain [TP3 est la terre (GND)].

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV (pour les deux voies)
Dent de scie (SWEEP) 1 ms.
Couplage d'entrée courant alternatif

3. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).

4. Mettre le commutateur de gain du servorégleur de gain sur la position "1". Un signal de 1,1 kHz sera alors observé sur l'oscilloscope. Régler **VR102** jusqu'à ce que les amplitudes de signaux des deux voies soient identiques l'une à l'autre.

5. Remettre le commutateur de gain sur la position "2".

(6) Réglage de décalage de foyer

Remarque: S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position "2".

1. Raccorder les bornes **TJ101** (+) et **TJ102** (-) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne **FEQ** de VR104.

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV (voie 1)
100 mV (voie 2)
Dent de scie (SWEEP) 0,5 ms.
Couplage d'entrée courant alternatif (pour les deux voies)
Mode de déclenchement NORM (voie 1 de déclenchement)

2. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire la voie 9 du disque d'essai (SZZP1057C).

3. Déclencher la voie 1 (CH. 1) de l'oscilloscope pour que les formes d'onde suivantes soient observées. Régler **VR105** jusqu'à ce que l'inclinaison dans l'enveloppe de signaux de radiofréquence sur la voie 1 (CH. 1) soit en douceur et que l'amplitude de signaux de la voie 2 (CH. 2) soient minimisée, c'est-à-dire que l'amplitude A soit égale à celle B.

(7) Réglage de décalage de voie

Remarque: S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position "2".

1. Raccorder les bornes **TJ101** (+) et **TJ102** (-) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne **TEG** de VR102.

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV (voie 1)
200 mV (voie 2)
Dent de scie (SWEEP) 0,5 ms.
Couplage d'entrée courant alternatif (pour les deux voies)
Mode de déclenchement NORM (voie 1 de déclenchement)

2. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire la voie 9 du disque d'essai (SZZP1057C).

3. Déclencher la voie 1 (CH. 1) de l'oscilloscope pour que les formes d'onde suivantes soient observées. Régler **VR103** jusqu'à ce que l'inclinaison dans l'enveloppe de signaux de radiofréquence sur la voie 1 (CH. 1) soit en douceur et que l'amplitude de signaux de la voie 2 (CH. 2) soient minimisée, c'est-à-dire que l'amplitude A soit égale à celle B.

(8) Réglage de balance de voie

1. S'assurer que le commutateur de gain du servorégleur de gain est mis sur la position "2".

2. Régler la puissance de sortie de l'oscillateur pour audiofréquences sur **1,1 kHz, 600 mVp.p.**, et raccorder les bornes OSC (oscillateur) et GND (terre) de ce dernier sur le servorégleur de gain.

3. Raccorder les bornes **TJ101** (+) et **TJ102** (-) de la sonde de voie 1 (CH. 1) de l'oscilloscope sur la plaquette de circuit imprimé auxiliaire, et raccorder également la sonde de voie 2. (CH. 2) et la borne OSC sur le servorégleur de gain.

Réglage de l'oscilloscope:
Tension (VOLT) 100 mV (voie 1)
Dent de scie (SWEEP) 0,5 ms.
Couplage d'entrée courant alternatif (pour les deux voies)
Mode de déclenchement NORM (voie 2 de déclenchement)

4. Mettre le lecteur de disques sur la position "marche" (ON), et commencer à lire le disque d'essai (SZZP1014F ou SZZP1054C).

5. Mettre le commutateur de gain du servorégleur de gain sur la position "1", et régler **VR106** jusqu'à ce que le vacillement contenu dans la forme d'onde de la voie 1 (CH. 1) soit minimisé comme il est indiqué ci-dessous.

6. Débrancher les conducteurs du servorégleur de gain du lecteur de disques.

(9) Contrôle de fonctionnement de lecture après réglage**•Contrôle de la recherche par sauts**

1. Lire un disque de programme musical ordinaire.
2. Appuyer sur la touche de saut pour contrôler le fonctionnement normal de recherche par sauts (dans les directions vers l'avant et vers l'arrière).

•Contrôle de la recherche manuelle

1. Lire un disque de programme musical ordinaire.
2. Appuyer sur la touche de recherche manuelle pour contrôler le fonctionnement normal de recherche manuelle à vitesse réduite ou élevée (dans les directions vers l'avant et vers l'arrière).

•Contrôle de l'utilisation d'un disque défectueux

1. Lire le point noir de 0,7 mm et le coin de 0,7 mm sur le disque d'essai défectueux (SZZP1054C), et vérifier qu'il ne se produit aucun saut sonore ou bruit.
2. Lire les voies du milieu du disque d'essai inégal, et vérifier qu'il ne se produit aucun saut sonore ou bruit.

ESPAÑOL**AJUSTE ELECTRICO****■ MEDICIONES Y AJUSTES****Precaución:**

- Es muy peligroso mirar directamente o tocar los rayos de láser (Las radiaciones de láser son invisibles.) Cuando el aparato está encendido las radiaciones de láser son emitidas desde el lente de captación. Evite exponerse a los rayos de láser, especialmente mientras realice los ajustes.

PREPARACION

1. Quite la cabina (ver el número de referencia 1 en el manual de servicio original).
2. Quite el freno del disco y el imán (ver el número de referencia 2 del mismo manual).
3. Quite el soporte del disco y la barra del interruptor de corriente (ver el número de referencia 3 del mismo manual).
4. Coloque el disco de prueba e imán en el tornamesa.
5. Encienda el aparato.
6. Primero empuje el conmutador OPEN/CLOSE (S102) en la dirección de la flecha y luego, dentro de un lapso de 4 segundos, empuje el conmutador S101 en la dirección de la flecha como se muestra en la figura.

Instrumentos de medición y herramientas especiales

- Ajustador de servogancia (SZZP1017F o SZZP1094C)
- Discos de prueba

1. Disco para pruebas de reproducción (PLAY) (SZZP1054C o SZZP1014F).
 2. Disco de superficie no uniforme para pruebas (SZZP1056C).
 3. Disco de banda negra para pruebas (SZZP1057C)
- Disco normal
 - Osciloscopio de dos canales con amplitud de banda de 30 MHz o mejorada (con "disparador" EXT y sonda de 1:1)

- Oscilador de frecuencia de audio (FA)

- Conector de conversión (SZZP1032F)

- Llave Allen (M2.0)

- Llave Allen (M1.27)

- Calibrador de 0.9 mm (RZZ0297)

Los ajustes a ejecutar dependen de las partes a ser reemplazadas de acuerdo a lo siguiente:

- (1) Motor del eje Items 1, y del 3 al 8
- (2) Tornamesa Items 1, y del 3 al 8
- (3) Captador óptico Items del 2 al 8

Procedimiento de ajuste

- Si ha reemplazado el motor del eje o tornamesa, realice los siguientes ajustes:

(1) AJUSTE DE LA ALTURA DEL TORNAMESA

1. Introduzca el calibrador de 0.9 mm (RZZ0297) entre el tornamesa y la base de carga (ver la figura a la derecha).
2. Ajuste el tornillo de retención del tornamesa con la llave Allen de 1.27 mm.
3. Conecte la sonda CH.1 del osciloscopio al **FEG** (+) del VR104 y el **V REF** (-) del VR106 mediante un filtro. (Nota: Un voltaje de 2.5 voltios aparecerá en el terminal V.REF. Tener cuidado de que no se establezca un corto circuito entre el chasis del aparato y el conductor de tierra del osciloscopio).

Ajustes en el osciloscopio:

Voltaje 50 mV
 "Sweep" 1 ms
 "Coupling" de entrada CD

(2) AJUSTES MECANICOS

1. Conecte la sonda CH1 del osciloscopio al TJ101 (+) y TJ102 (-) en el P.C.B. Servo.

Ajustes en el osciloscopio:

Voltaje 100 mV
 "Sweep" 0.5 μ s.
 "Coupling" de entrada CA

2. Encienda el aparato, y reproduzca la banda 9 en el disco de prueba (SZZP1056C).

(3) AJUSTE VISUAL OPTIMO (EQUILIBRIO DE PD)

1. Conecte la sonda CH.1 del osciloscopio al **TJ101** (+) y **TJ102** (-) en el P.C.B. Servo.

Ajustes en el osciloscopio:

Voltaje 100 mV
 "Sweep" 0.5 μ s.
 "Coupling" de entrada CA

(4) AJUSTE DE LA GANANCIA DE ENFOQUE

1. Conecte el ajustador de servogancia al aparato (ver la página 7).
2. Coloque el conmutador del ajustador de ganancia en la posición "2" y el interruptor ON/OFF en ON.
3. Ajuste la emisión del oscilador AF en **825 Hz, 150 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de ganancia del servo.
4. Conecte las sondas CH.1 y CH.2 del osciloscopio a los terminales TP1 y TP2 del ajustador de servogancia respectivamente (el TP3 es para tierra).

Ajuste en el osciloscopio:

Voltaje 100 mV
 (ambos canales)
 "Sweep" 1 ms
 "Coupling" de entrada CA

4. Ajuste el balance cero DC del osciloscopio.
5. Encienda el aparato y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
6. Mida la amplitud del voltaje de la señal en el osciloscopio.

Nota 1. Si la amplitud medida está en el rango de ± 15 mV, la altura del tornamesa es correcta. Si está fuera de este rango, ajuste la altura del tornamesa usando el calibrador como palanca.

Si la amplitud excede los +15 mV, baje el tornamesa. Si la amplitud es menor de -1 mV, eleve el tornamesa.

Nota 2. Si la amplitud medida, sobrepasa o está muy por debajo del rango arriba indicado, coloque el VR105 en o cerca del centro, y luego trate de ajustar la altura de nuevo.

(Luego ajuste la compensación del foco.)

3. Con el aparato en el modo de reproducción, colóquelo en la posición indicada en la figura de la derecha.
4. Ajuste de manera alternada los dos tornillos de ajuste mecánicos con la llave Allen de 2.0 mm hasta que la señal RF de la variación de amplitud en el osciloscopio sea mínima.
5. Después de completar los ajustes, selle los ajustes mecánicos con la pintura RZZOL01.

2. Encienda el aparato y reproduzca el punto negro de 0.5 mm del disco de prueba (SZZP1014F o SZZP1054C).
3. Ajuste el **VR101** hasta que la amplitud del patrón de "ojo" de la señal RF sea máxima.

5. Reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
6. Coloque el conmutador del ajustador de ganancia en la posición "3" y verá una señal de 825 Hz en el osciloscopio. Ajuste el **VR104** hasta que las amplitudes de la señal en ambos canales sean idénticas unas a otras.
7. Coloque otra vez el conmutador de ganancia en la posición "2".

(5) AJUSTE DE LA GANANCIA DEL SEGUIMIENTO (TRACKING)

1. Ajuste la salida del oscilador de FA en **1.1 kHz**, **150 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de servogancia.
 2. Coloque las sondas CH. 1 y CH. 2 del osciloscopio en los terminales TP1 y TP2 del ajustador de ganancia, respectivamente (el TP3 es de tierra).
- Ajustes en el osciloscopio:**
- Voltaje 100 mV
(ambos canales)
- "Sweep" 1 ms
- "Coupling" de entrada CA
3. Encienda el aparato y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
 4. Coloque el conmutador del ajustador de ganancia en la posición "1" verá una señal de 1,1 kHz en el osciloscopio. Ajuste el **VR102** hasta que las amplitudes de la señal en ambos canales sean idénticas unas a otras.
 5. Coloque otra vez el conmutador de ganancia en la posición "2".

(6) AJUSTE DE LA COMPENSACION DEL ENFOQUE

Nota: Asegúrese de que el conmutador del ajustador de servogancia esté colocado en la posición "2".

1. Conecte la sonda CH. 1 del osciloscopio al **TJ101** (+) y **TJ102** (-) del P.C.B. Servo y la sonda CH. 2 (+) al terminal **FEG** del VR104.
- Ajustes en el osciloscopio:**
- Voltaje 100 mV (CH. 1)
..... 100 mV (CH. 2)
- "Sweep" 0,5 ms
- "Coupling" de entrada CA
(ambos canales 1 y 2)
- Modalidad de disparo NORMAL
(disparo del CH. 1)
2. Encienda el aparato y reproduzca la banda 9 del disco de prueba (SZZP1057C).
 3. Dispare el CH. 1 del osciloscopio de tal manera que las siguientes ondas aparezcan. Ajuste el **VR103** hasta que la base de la envoltura de la señal RF en el CH. 1 sea uniforme y la amplitud de la señal en el CH. 2 sea mínima, es decir, cuando la amplitud A sea igual a la amplitud B.

(7) AJUSTE DE LA COMPENSACION DEL SEGUIMIENTO (TRACKING)

Nota: Asegúrese de que el conmutador del ajustador de servogancia esté colocado en la posición "2".

1. Conecte la sonda CH. 1 del osciloscopio al **TJ101** (+) y **TJ102** (-) del P.C.B. Servo y la sonda CH. 2 (+) al terminal **TEG** del VR102.
- Ajustes en el osciloscopio:**
- Voltaje 100 mV (CH. 1)
..... 200 mV (CH. 2)
- "Sweep" 0,5 ms
- "Coupling" de entrada CA
(ambos canales 1 y 2)
- Modalidad de disparo NORMAL
(disparo del CH. 1)
2. Encienda el aparato y reproduzca la banda 9 del disco de prueba (SZZP1057C).
 3. Dispare el CH. 1 del osciloscopio de tal manera que las siguientes ondas aparezcan. Ajuste el **VR103** hasta que la base de la envoltura de la señal RF en el CH. 1 sea uniforme y la amplitud de la señal en el CH. 2 sea mínima, es decir, cuando la amplitud A sea igual a la amplitud B.

(8) AJUSTE DEL BALANCE DEL SEGUIMIENTO (TRACKING)

1. Asegúrese de que el conmutador del ajustador de servogancia esté colocado en la posición "2".
 2. Ajuste la salida del oscilador de FA en **1,1 kHz**, **600 mVp-p** y conéctelo a los terminales OSC y GND del ajustador de servogancia.
 3. Conecte la sonda CH. 1 del osciloscopio al **TJ101** (+) y al **TJ102** (-) del P.C.B. Servo y la sonda CH. 2 (+) al terminal OSC del ajustador de servogancia.
- Ajustes en el osciloscopio:**
- Voltaje 100 mV (CH. 1)
- "Sweep" 0.5 ms
- "Coupling" de entrada CA
(ambos canales 1 y 2)
- Modalidad de disparo NORMAL
(disparo del CH. 2)
4. Encienda el aparato, y reproduzca el disco de prueba (SZZP1014F o SZZP1054C).
 5. Coloque el conmutador del ajustador de servogancia en la posición "1" y ajuste el **VR106** hasta que las irregularidades de las ondas de la señal en el CH. 2 sea mínima como se muestra más abajo.
 6. Desconecte el ajustador de servogancia del aparato.

(9) COMPROBACION DE LA FUNCION DE REPRODUCCION DESPUES DE LOS AJUSTES

•Comprobación de la localización de salto

1. Reproduzca un disco de programa musical ordinario.
2. Presione el botón de salto para comprobar la función normal de localización de salto (en ambas direcciones, de avance y retroceso).

•Comprobación de la localización manual

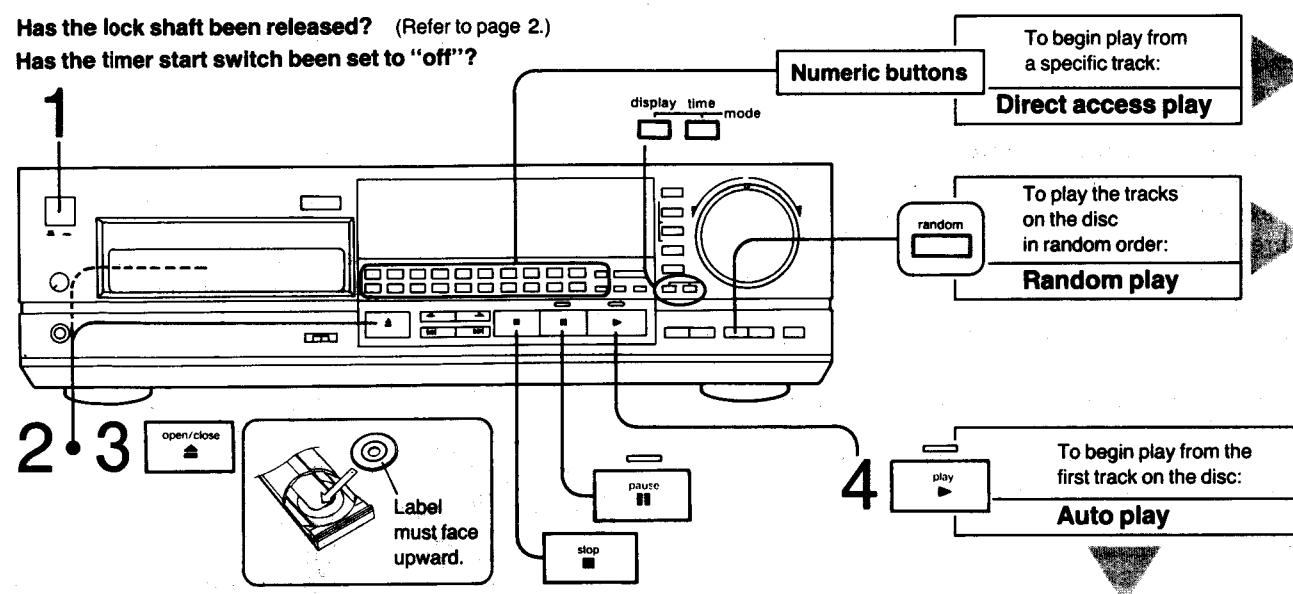
1. Reproduzca un disco de programa musical ordinario.
2. Presione el botón de localización manual para comprobar las funciones de localización manual a velocidad lenta o alta (en ambas direcciones, de avance y retroceso).

•Comprobación mediante el empleo de un disco defectuoso

1. Reproduzca el punto negro de 0,7 mm y el patrón de "cuña" de 0,7 mm del disco defectuoso de prueba (SZZP1054C) y compruebe de que no ocurran saltos ni ruidos.
2. Reproduzca las bandas intermedias del disco de prueba de superficie no uniforme para pruebas y verifique que no ocurran saltos ni ruidos.

BASIC OPERATION

Has the lock shaft been released? (Refer to page 2.)
Has the timer start switch been set to "off"?

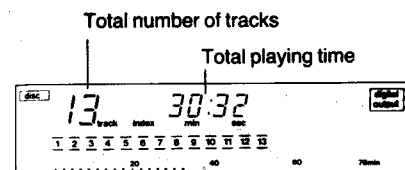


Auto play

Playing an entire disc from the first track to the last.

Basic operations such as turning the power ON and OFF are the same for the other play modes as well.

- 1 Press the power switch to turn power ON.**
Turn down your amplifier volume first. If, inadvertently, the volume is set too loud, damage to your speakers could result.
- 2 Press the open/close button to open the disc holder and insert a disc.**
- 3 Press the open/close button again to close the disc holder.**
The total number of tracks on the disc and the total playing time are displayed.

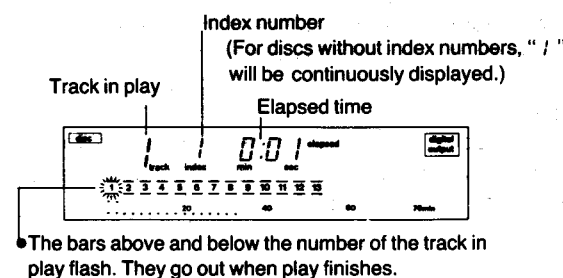


Notes:

- Attempting to change discs while the disc holder is in the process of opening can scratch or damage your discs.
- Before attempting to use the remote control transmitter to open the disc holder, make sure that there are no obstructions in front of the unit (the closed glass door of an audio rack, etc.)
- The total playing time displayed includes the silent sections between tracks. For this reason, it may differ by a few seconds from the playing time printed in the disc's liner notes.

4 Press the play button.

Disc play begins from the first track on the disc and the play indicator lights up.



- The unit stops automatically when the last track on the disc finishes playing. (The display returns to the total number of tracks and total playing time indications.)
- Switch power OFF when finished.
- To stop disc play, press the stop button.**
The unit switches to the stop mode and the total number of tracks and total playing time are displayed.
- To temporarily stop disc play, press the pause button.**
 - The pause indicator lights up.
 - Press the play button to play again.

Direct access play

To listen to a disc from track 3, press the numeric button **3**. Play begins directly from track 3.

Choosing a specific track

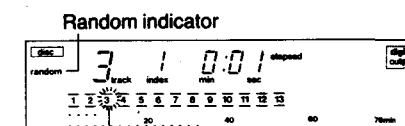
Tracks 1-20: Press the appropriate numeric button **1** - **20** directly.
Tracks 21 and up: First press **+10**, then **0** - **9**.
(Press **+10** twice for 20, three times for 30, and so on.)

- Playback begins from the track selected and continues from subsequent tracks until the end of the disc is reached.
- The unit stops automatically when the last track on the disc finishes playing.

Random play

All the tracks on the disc are played in a new, randomly selected order. The order is different every time. Listening to tracks in a different order can be a refreshing change of pace.

Press the random play button.



When play begins from track 3
(The bars above and below the number of the track in play flash. They go out when play finishes.)

- The unit stops automatically when all the tracks on the disc finish playing.

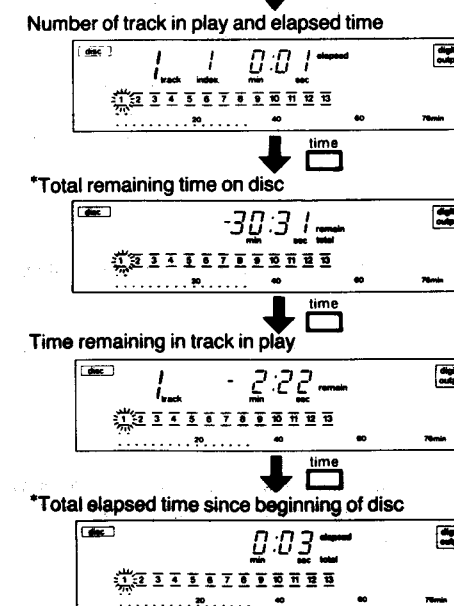
To cancel random play while a disc is playing, press the random play button again.

When the track in play finishes playing, play continues from subsequent tracks in the normal order until the end of the disc is reached.

Changing the indications of the time mode display and bar indication.

Time display

Each time the time mode select button is pressed during play or when the unit is in the pause mode switches the display among the following modes.



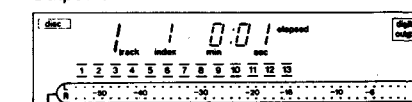
Bar indication

Pressing the display mode select button switches the play position display to an output level meter. (Press the display mode select button again to switch back.)



The upper bar indicates the current playing position. The lower bar shows the total playing time on the disc. (min=minutes)

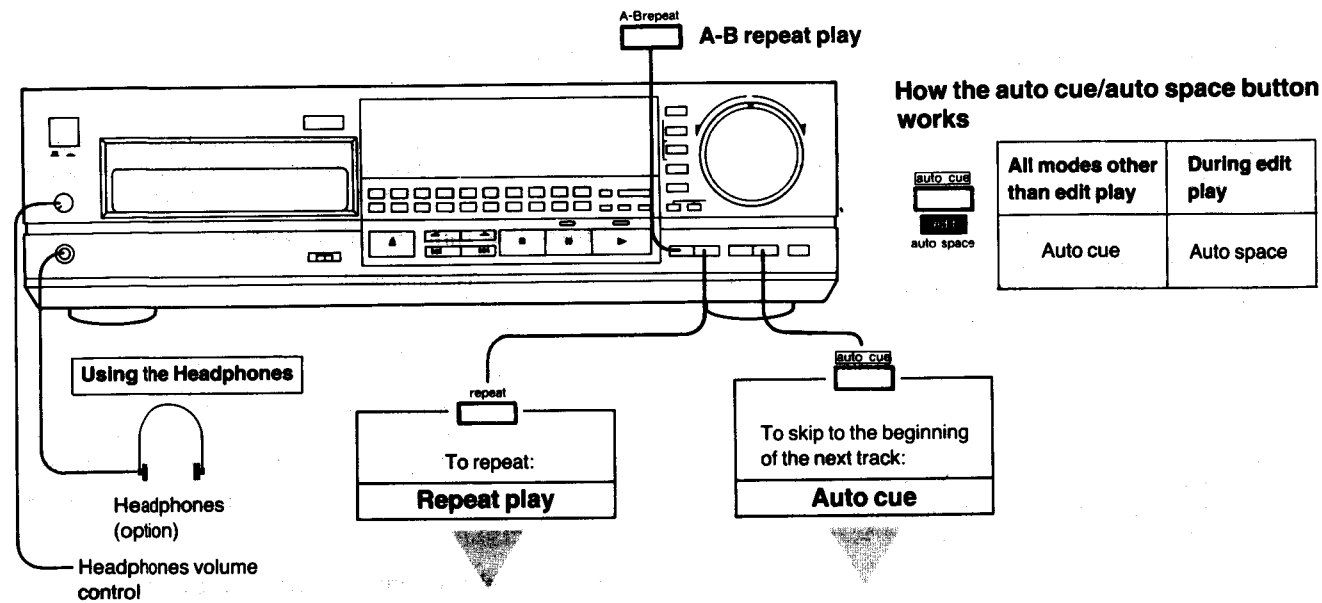
Output level meter



The upper bar indicates the output level for the left channel and the lower bar the output level for the right channel. (dB=decibel)

*not displayed during random play

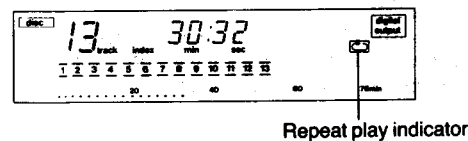
CONVENIENT FUNCTIONS



Repeat play

This function allows you to repeat the entire disc or the tracks in the programmed sequence.

Press the repeat button.



Pressing the repeat button again cancels the repeat play.

A-B repeat play

You can specify the beginning point (A) and the ending point (B) of the section to be repeated and repeat only that section.

- During play, press the A-B repeat button at the point where you want the repeated section to begin.
 - A- illuminates.
- Press the A-B repeat button again at the point where you want the repeated section to end.
 - A-B and B- illuminate. A-B repeat play starts.
 - Pressing the A-B repeat button again cancels A-B repeat.

Cue memory function

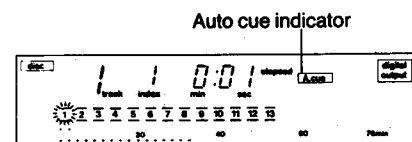
If specified only point (A) by pressing the A-B repeat button, that point (A) will be in memory. During play, if pressing the play button, play starts from the point (A) again.

Auto cue

The auto cue function allows the unit to wait in the standby condition at the beginning of each tune so as to start play right when you are ready. When each tune finishes playing the unit skips to the beginning of the next tune and switches to the play standby mode. This function is especially convenient when used together with programmed play.

- Press the auto cue button.
- Press the play button.

The unit switches to the play standby mode.
The play indicator flashes.



- Press the play button to start play.

Pressing the auto cue button again cancels auto cue.

Note:

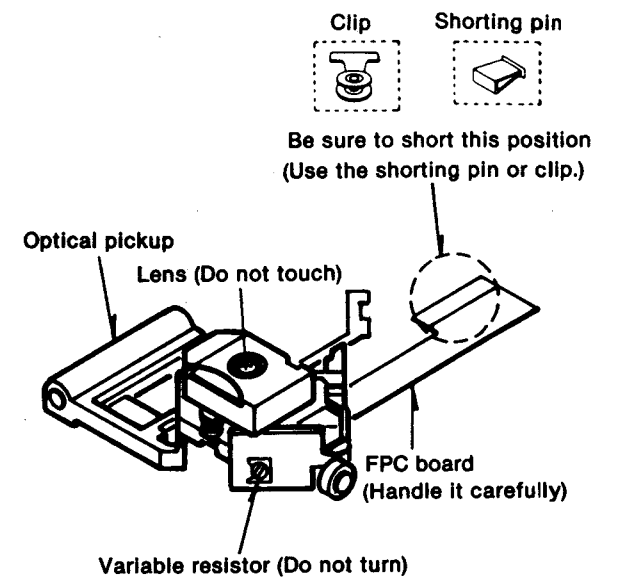
The auto cue function may not function at the beginning of the tune if a selection begins with a very soft passage or if there is a lot of background noise.

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

- Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shock.
- 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.
- Take care not to apply excessive stress to the flexible board. (FPC board)
- Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

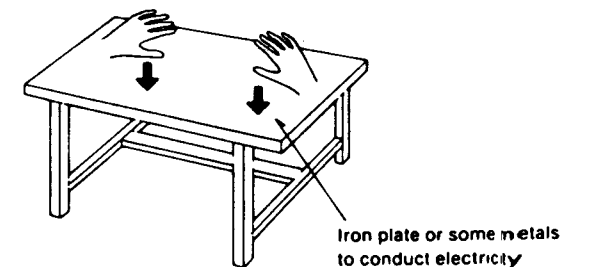
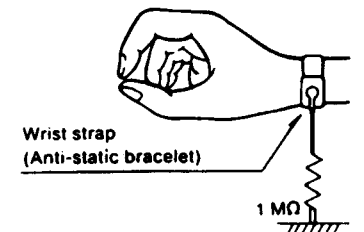


Grounding for electrostatic breakdown prevention

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

Caution:

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

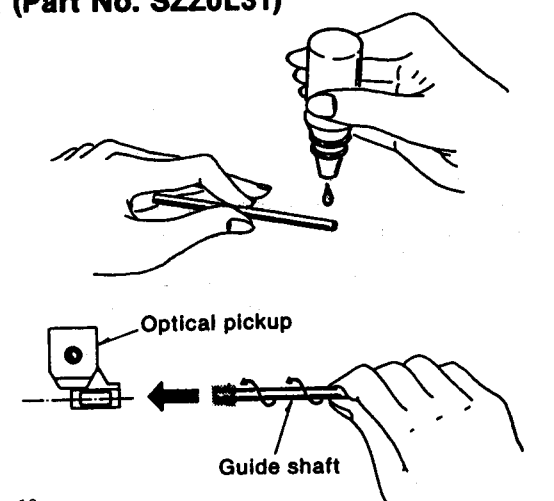


INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

The container contains 6g (approx. 3ml) of oil.
One application (one shaft) uses 0.05ml of oil.

How to Use

- Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
- Apply one drop of the SZZ0L31 to the tip of the guide shaft.
- Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
- After securing the guide shaft, move the optical pickup by hand several times to the left and right to distribute the oil on the guide shaft.



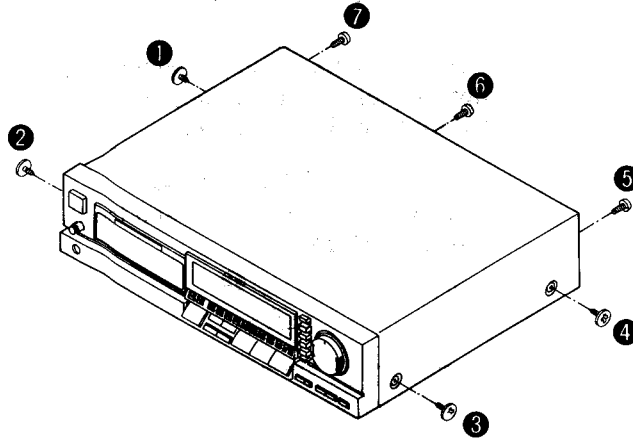
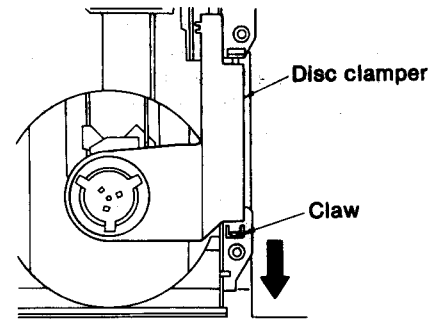
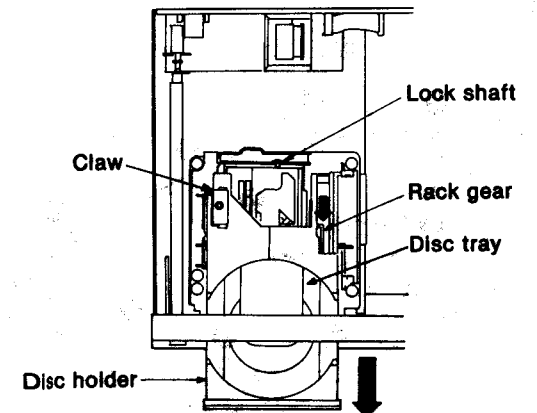
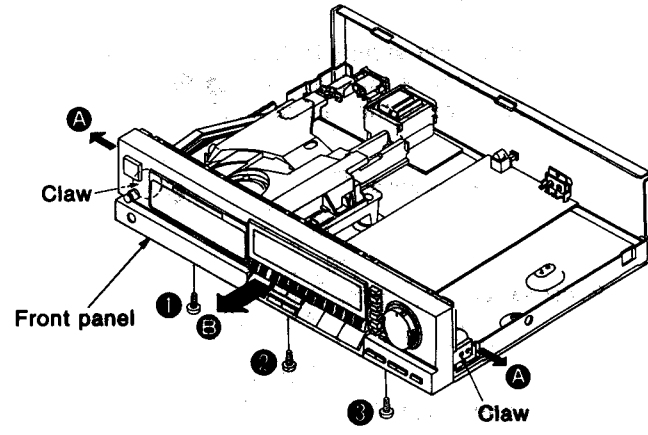
DISASSEMBLY INSTRUCTIONS

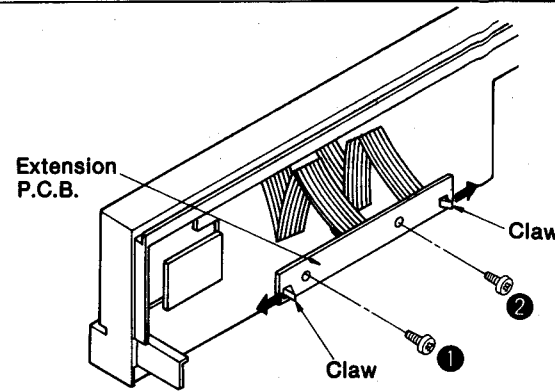
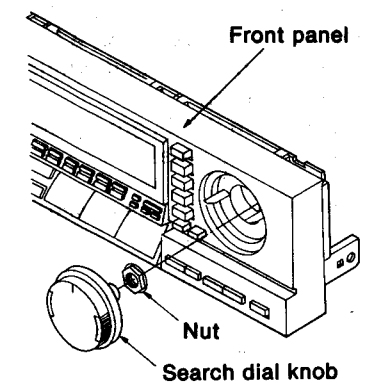
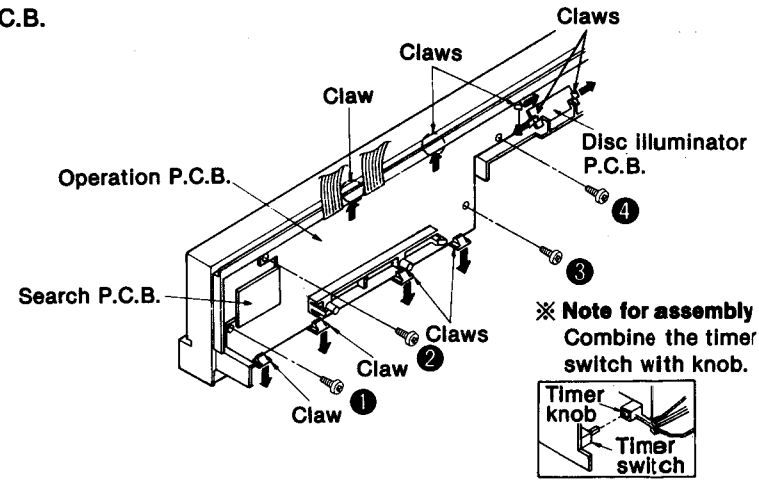
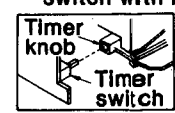
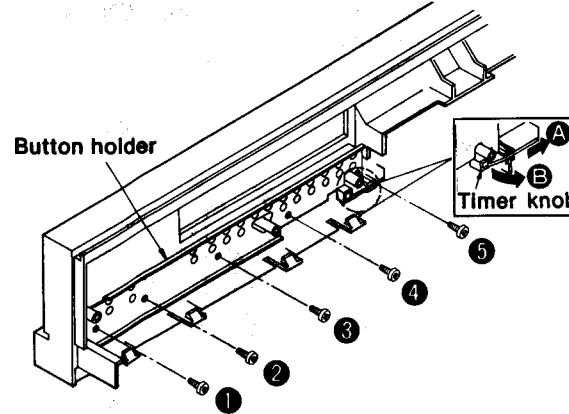
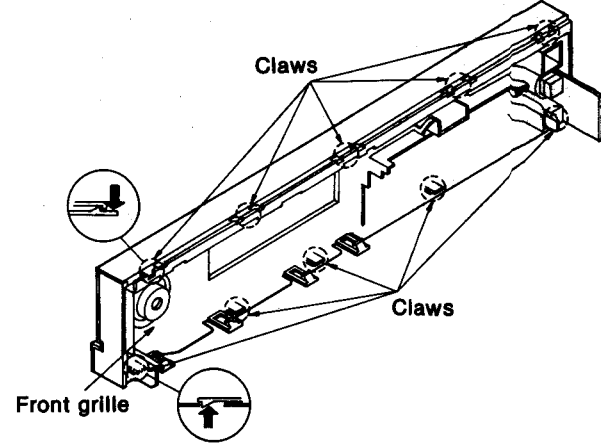
Warning: This product uses a laser diodes. Refer to caution statements on page 3.

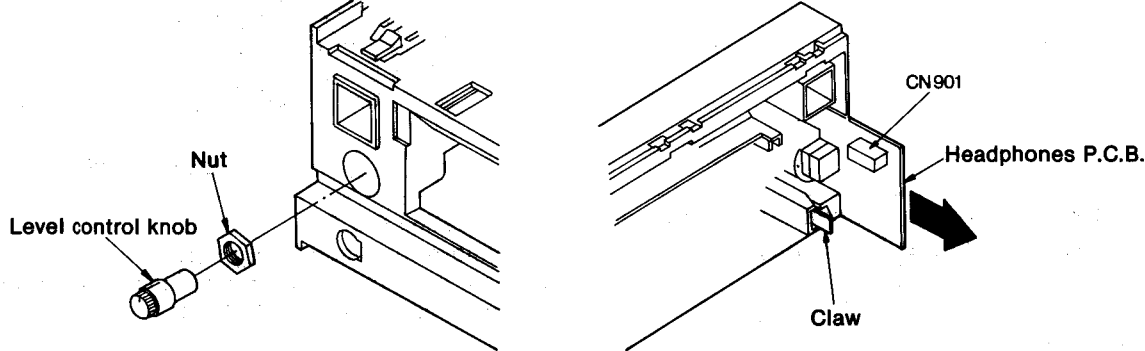
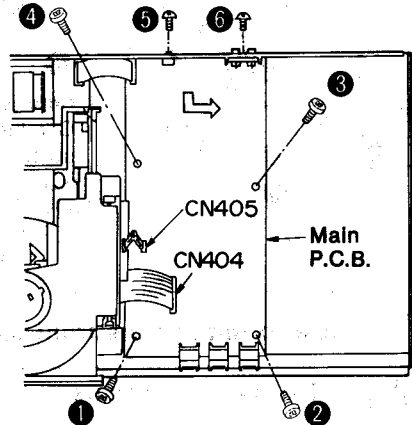
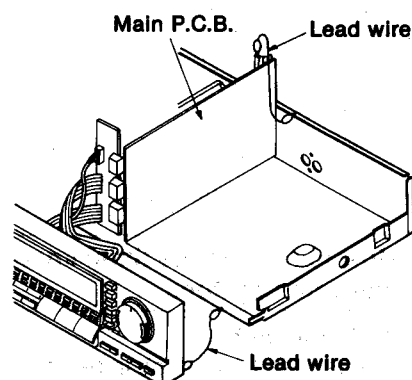
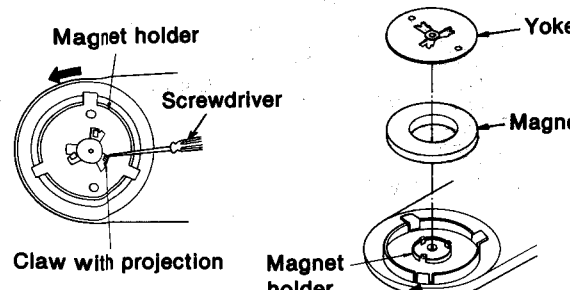
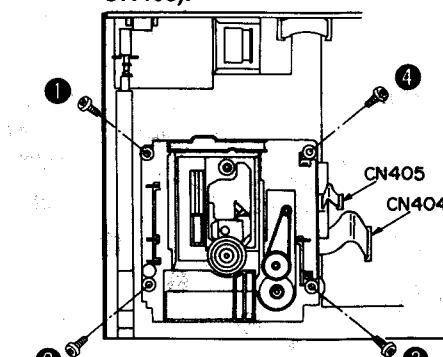
ACHTUNG:

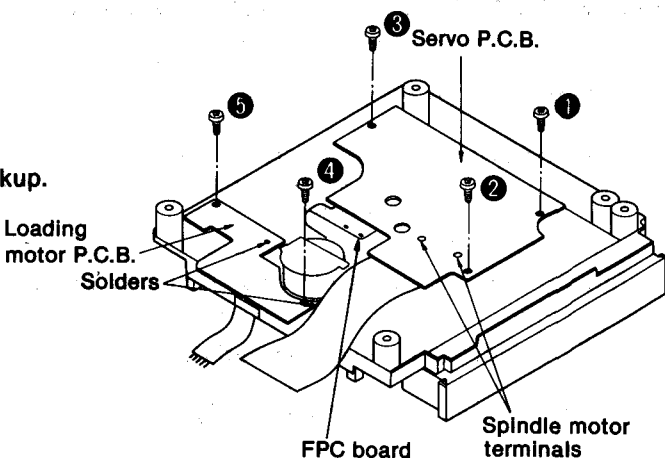
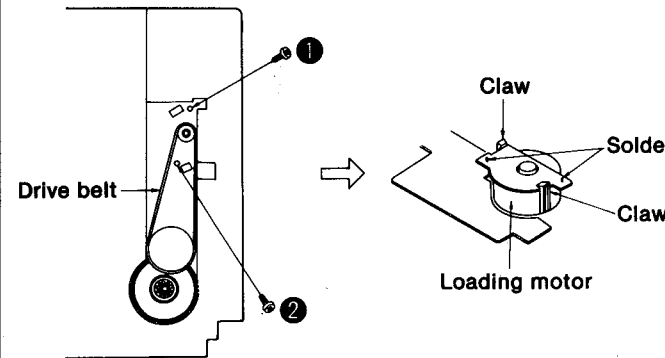
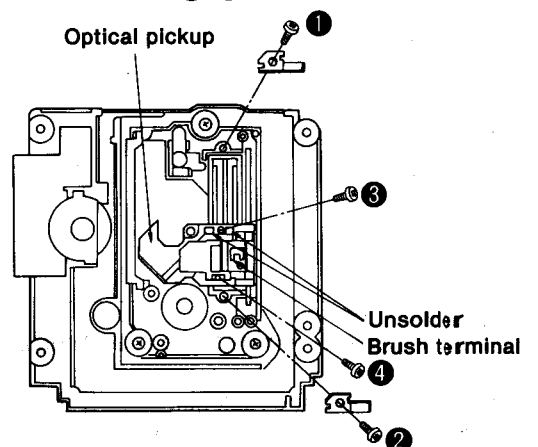
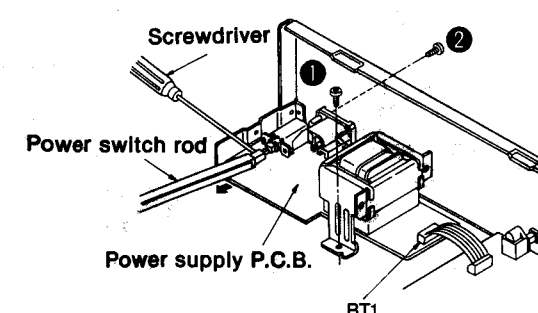
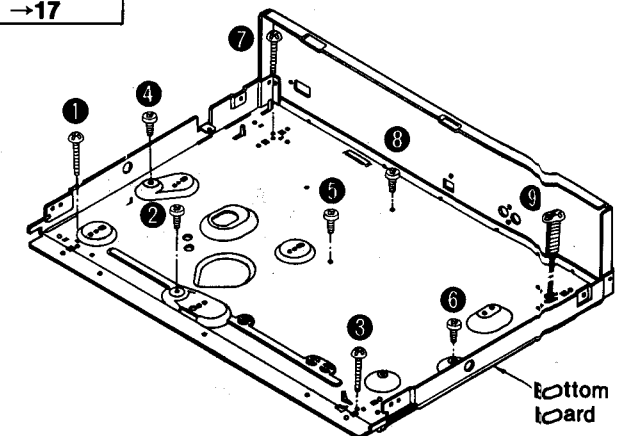
- Die Lasereinheit nicht zerlegen.
- Die Lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

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

Ref. No. 1	How to remove the cabinet	Ref. No. 2	How to remove the disc clumper
Procedure 1	1. Remove the 7 screws (①~⑦).	Procedure 1→2	1. Push the claw in the direction of the arrow and remove the disc clumper.
			
Ref. No. 3	How to remove the disc holder	Ref. No. 4	How to remove the front panel
Procedure 1→2→3	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. Note: Make sure to release the lock shaft.	Procedure 1→2→3→4	1. Remove the 3 screws (①~③). 2. Slightly pull out the 2 claws in the direction of the arrow A. 3. Remove the front panel in the direction of the arrow B.
			

Ref. No. 5	How to remove the extension P.C.B.		
Procedure 1→2→3 →4→5	1. Remove the 2 screws (①, ②). 2. Push the 2 claws in the direction of the arrow and remove the extension P.C.B.		
Ref. No. 6	How to remove the search P.C.B., disc illuminator P.C.B. and operation P.C.B.	Ref. No. 7	How to remove the timer knob and operation buttons
Procedure 4→5→6	A. Search P.C.B. 1. Remove the search dial knob and nut. B. Disc Illuminator P.C.B. 1. Push the 2 claws in the direction of the arrow and remove the LED P.C.B.	Procedure 4→5→6 →7	A. Timer knob 1. Push the timer knob in the direction of the arrow A and remove it in the direction of the arrow B. B. Operation buttons 1. Remove the 5 screws (①~⑤). 2. Remove the button holder.
		C. Operation P.C.B. 1. Remove the 4 screws (①~④). 2. Push the 7 claws in the direction of the arrow and remove the operation P.C.B. Note: To remove the search dial knob, push it with a screwdriver through the front panel's back opening.	
			
		Note for assembly Combine the timer switch with knob.	
			
			
		Ref. No. 8 How to remove the front grille 1. Release the 10 claws.	
			

Ref. No. 9	How to remove the headphones P.C.B.	
Procedure 4→5→6 →8→9	1. Remove the level control knob and nut. 2. Remove the connector (CN901). 3. Release the claw.	
		
Ref. No. 10	How to remove the main P.C.B.	How to check the main P.C.B.
Procedure 1→2→3 →4→10	1. Remove the 6 screws (①~⑥). 2. Lift the main P.C.B. off the retention posts on the chassis. 3. Remove the main P.C.B. in the direction of the arrow.	• When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.
		1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire. 2. Connect the loading base ground terminal to the chassis with a lead wire. 3. Connect the operation P.C.B. ground terminal to the chassis with a lead wire. 
Ref. No. 11	How to remove the magnet and holder	Ref. No. 12
Procedure 1→2→11	1. While lifting the claw with a screwdriver, rotate magnet holder in the direction of the arrow and remove the yoke and magnet. 2. Release the claw of the magnet holder.	1. Remove the 4 screws (①~④). 2. Remove the flat cables (CN404, CN405).
		

Ref. No. 13	How to remove the servo P.C.B. and loading motor P.C.B.	
Procedure 12→13	A. Servo P.C.B. 1. Remove the 3 screws (①~③). 2. Unsolder the 2 terminals of spindle motor. 3. Remove the FPC board from the optical pickup.	
Caution: To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board. B. Loading motor P.C.B. 1. Remove the 2 screws (④, ⑤). 2. Unsolder the 2 terminals of loading motor.		
Ref. No. 14	How to remove the loading motor	Ref. No. 15
Procedure 12→14	1. Remove the drive belt. 2. Remove the 2 screws (①, ②). 3. Release the 2 claws. 4. Unsolder the 2 terminals of the lead wire of loading motor.	Procedure 12→13→15 Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 10).
		1. Remove the 2 screws (①, ②). 2. Unsolder the 2 terminals and the 2 screws (③, ④). 
Ref. No. 16	How to remove the power switch rod and power supply P.C.B.	
Procedure 1→16	A. Power switch rod 1. Set the power switch in the "OFF" position. 2. Remove the power switch rod by using a screwdriver.	Caution: Take care not to touch the brush terminal.
B. Power supply P.C.B. 1. Remove the 2 screws (①, ②). 2. Release the flat cable (BT1). 		Ref. No. 17 Procedure 10→12→16→17 How to remove the bottom board 1. Remove the 9 screws (①~⑨). 

MEASUREMENTS AND ADJUSTMENTS

Caution:

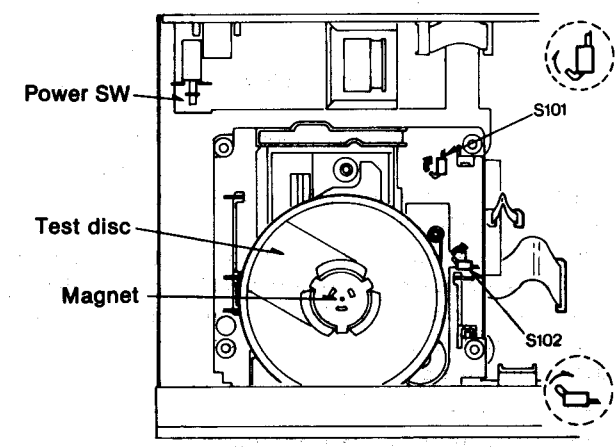
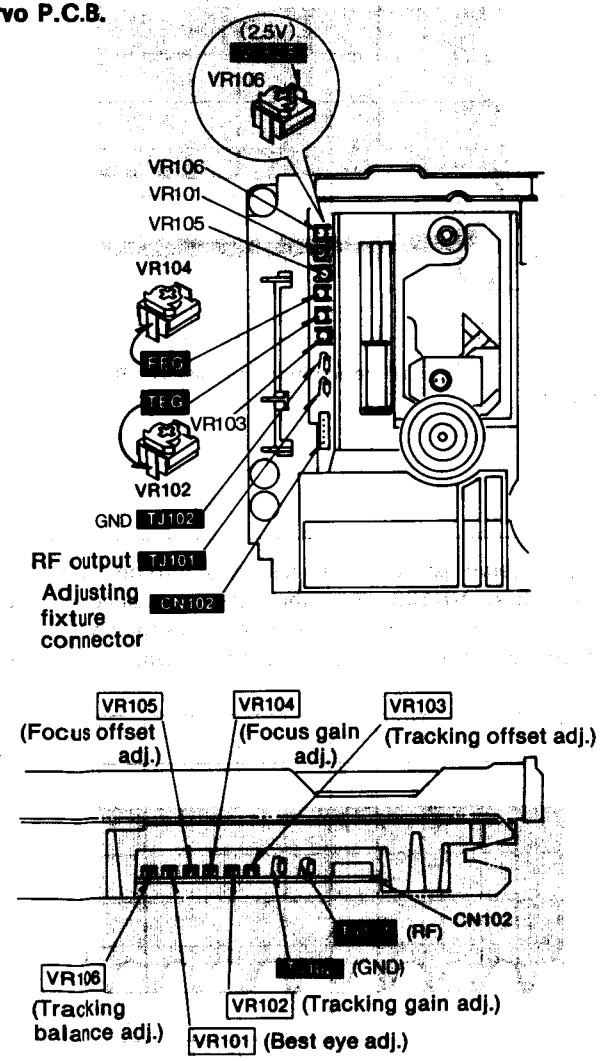
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam, especially when performing adjustments.

PREPARATION

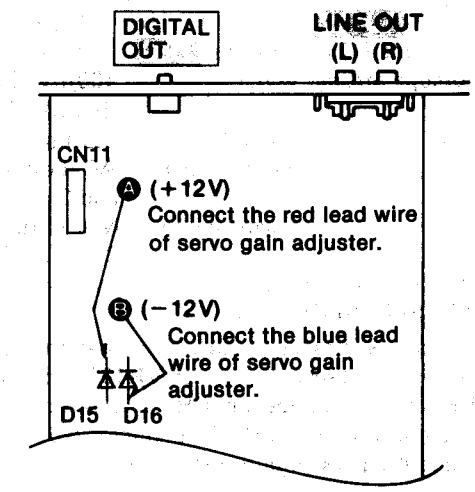
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clumper and magnet (see Ref. No. 2 and No. 11 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 3 and No. 16 of the same).
4. Place the test disc and magnet on the turntable.
5. While holding the Open/Close switches (S101, S102) in the directions indicated by the arrows, switch the player power ON.
6. After the test disc starts rotating, release the Open/Close switch (S101, S102).

ADJUSTMENT POINTS

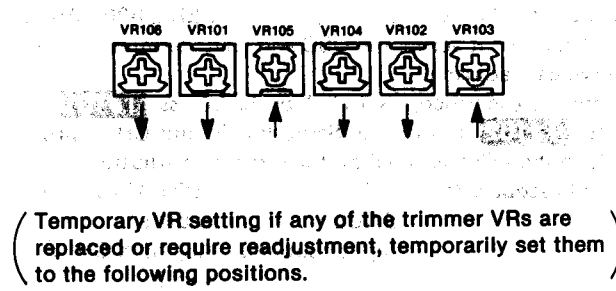
• Servo P.C.B.



• Main P.C.B.



• Temporary setting of each VR



Measuring Instruments and Special Tools

- * Servo gain adjuster (SZZP1017F or SZZP1094C) ...Refer to page 19.
- * Test discs
- 1. Playability test disc (SZZP1054C or SZZP1014F)
- 2. Uneven test disc (SZZP1056C)
- 3. Black band test disc (SZZP1057C)
- * Normal disc
- * Dual-beam oscilloscope with bandwidth of 30MHz or better (with EXT trigger and 1:1 probe).
- * Audio frequency (AF) oscillator

- * Adapter (SZZP1032F)
- * Allen wrench (M2.0)
- * Allen wrench (M1.27)
- * 0.9mm clearance gauge (RZZ0297)

As to the replacement of the following parts, refer to the specified sections for adjustment.

- (1) Spindle motor..... Sections (1), (3) to (8)
- (2) Turntable..... Sections (1), (3) to (8)
- (3) Optical pickup..... Sections (2) to (8)

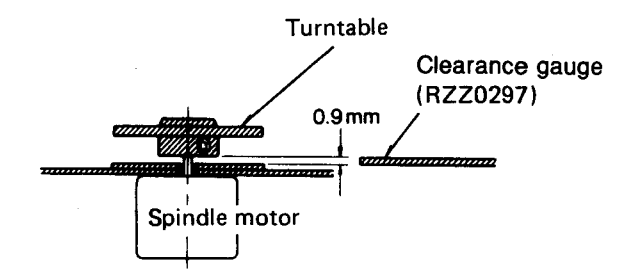
Adjusting Procedure

- * If you have replaced the spindle motor or turntable, perform the following adjustment:

(1) TURNTABLE HEIGHT ADJUSTMENT

1. Insert the 0.9mm clearance gauge (RZZ0297) between the turntable and the loading base (see the figure at right).
2. Tighten the turntable retention screw with the 1.27 mm allen wrench.
3. Connect the oscilloscope's CH. 1 probe across VR104's **FEG** (+) and VR106's **V. REF** (-) terminals . (Note: A voltage of 2.5V appears at the V. REF terminal. Take care not to short the player's chassis to the oscilloscope ground.)
Oscilloscope setting: VOLT 50 mV
SWEEP 1 ms.
Input coupling ... DC
4. Adjust oscilloscope's DC zero balance.
5. Switch the player power ON, and play the test disc (SZZP1014F or SZZP1054C).
6. Measure the DC level displayed on the oscilloscope.

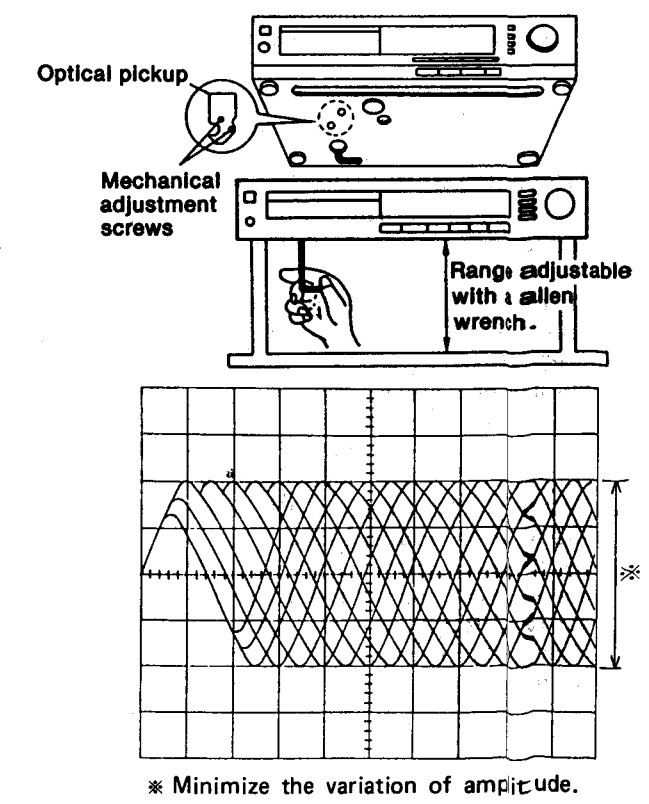
Note 1. If the measured amplitude is within a range of ± 15 mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15mV, lower turntable.
If the amplitude is below -15mV, elevate the turntable.



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

(2) MECHANICAL ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (-) on the Servo P.C.B.
Oscilloscope setting: VOLT 100 mV
SWEEP 0.5 μ s.
Input coupling ... AC
2. Switch the player power ON, and play track 9 on the test disc (SZZP1056C). (Playing any other track may yield a false adjustment.)
3. Leave the player in Play mode, and place it as shown in the figure on the right.
4. Alternately adjust the two mechanical adjusting screws with the 2.0mm allen wrench until the RF signal amplitude variation on the oscilloscope is minimized.
5. After completing the adjustment, lock the mechanical adjustments with lock paint (RZZOL01).

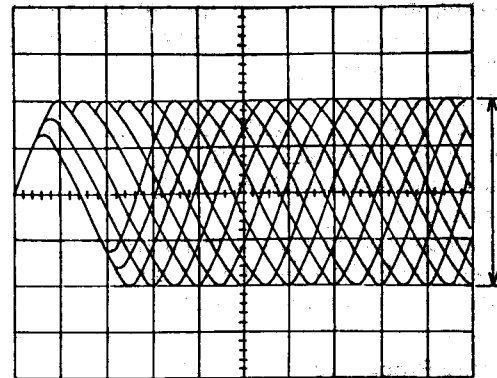


(3) BEST EYE (PD BALANCE) ADJUSTMENT

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (-) on the Servo P.C.B.

Oscilloscope setting: VOLT 200mV
 SWEEP 0.5 μ s.
 Input coupling ... AC

2. Switch the player power **ON**, and play the 0.5 mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.



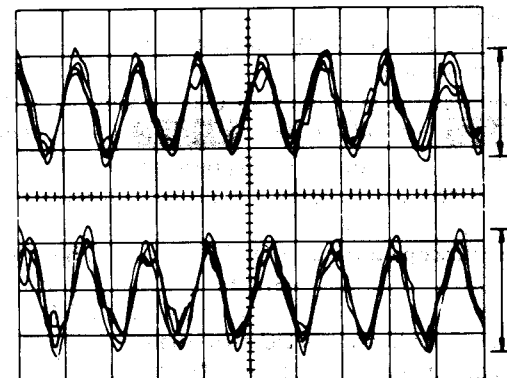
* Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

1. Connect the servo gain adjuster to the player (see page 19).
2. Set the servo gain adjuster's gain switch to position "2" and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and **GND** terminals on the servo gain adjuster.
4. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).

Oscilloscope setting: VOLT 100 mV
 (both channels)
 SWEEP 1 ms.
 Input coupling ... AC

5. Play the test disc (SZZP1014F or SZZP1054C).
6. Set the servo gain adjuster's gain switch to position "3", and you will see a 825 Hz signal on the oscilloscope. Adjust **VR104** until the signal amplitudes on both channels become identical to each other.
7. Set the gain switch back to position "2".



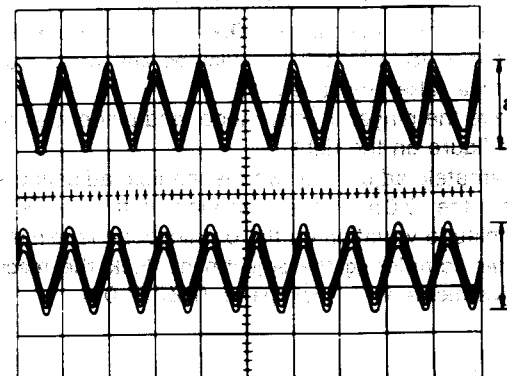
* Adjust **VR104** until a equals b.

(5) TRACKING GAIN ADJUSTMENT

1. Set up the AF oscillator output for **1.1 kHz, 150 mVp-p**, and connect it across the OSC and **GND** terminals on the servo gain adjuster.
2. Connect oscilloscope's CH. 1 and CH. 2 probes to the servo gain adjuster's TP1 and TP2 terminals, respectively (TP3 is GND).

Oscilloscope setting: VOLT 100 mV
 (both channels)
 SWEEP 1 ms.
 Input coupling ... AC

3. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).
4. Set the servo gain adjuster's gain switch to position "1", and you will see a 1.1 kHz signal on the oscilloscope. Adjust **VR102** until the signal amplitudes on both channels become identical to each other.
5. Set the gain switch back to position "2".



* Adjust **VR102** until a equals b.

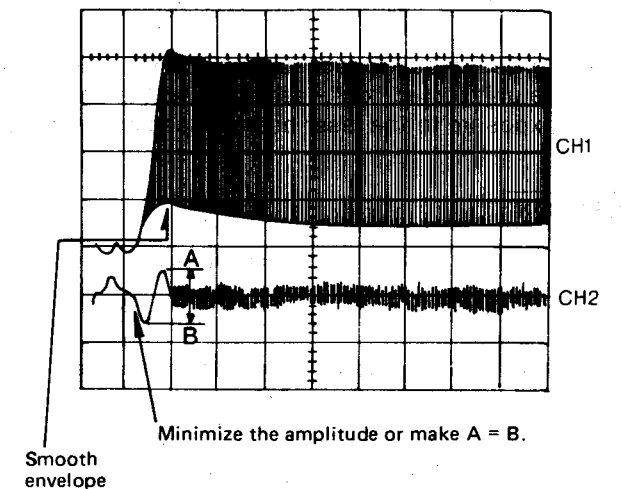
(6) FOCUS OFFSET ADJUSTMENT

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

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (-) on the Servo P.C.B. and its CH. 2 probe (+) to **VR104's FEG** terminal.

Oscilloscope setting: VOLT 100 mV (CH. 1)
 100 mV (CH. 2)
 SWEEP 0.5ms
 Input coupling ... AC (both CH. 1 and 2)
 Trigger mode ... NORM (trigger CH. 1.)

2. Switch the player power **ON**, and play track 9 on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR105** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



Minimize the amplitude or make A = B.

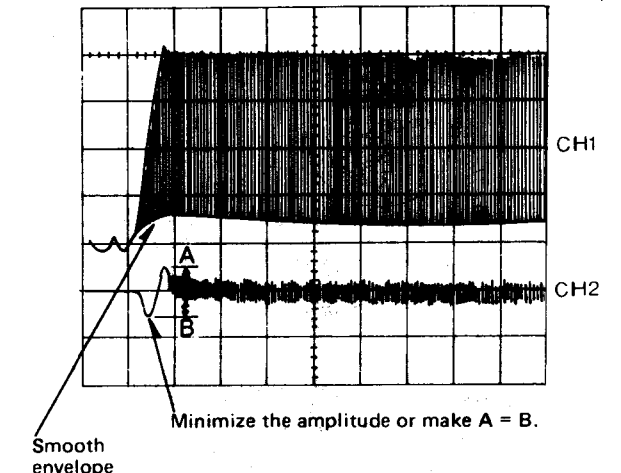
(7) TRACKING OFFSET ADJUSTMENT

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

1. Connect the oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (-) on the Servo P.C.B., and its CH. 2 probe (+) to **VR102's TEG** terminal.

Oscilloscope setting: VOLT 100mV (CH. 1)
 200mV (CH. 2)
 SWEEP 0.5ms.
 Input coupling ... AC (both CH. 1 and 2)
 Trigger mode ... NORM (trigger CH. 1.)

2. Switch the player power **ON**, and play track 9 on the test disc (SZZP1057C).
3. Trigger the oscilloscope's CH. 1 so that the following waveforms are observed. Adjust **VR103** until the dip in the RF signal envelope on CH. 1 is smooth and the signal amplitude on CH. 2 is minimized, i.e. when amplitude A equals amplitude B.



Minimize the amplitude or make A = B.

(8) TRACKING BALANCE ADJUSTMENT

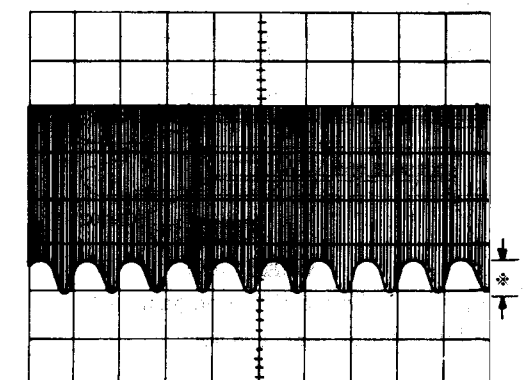
1. Make sure that servo gain adjuster's gain switch is set to position "2".
2. Set up the AF oscillator output for **1.1 kHz, 600 mVp-p**, and connect it across the OSC and **GND** terminals on the servo gain adjuster.

3. Connect oscilloscope's CH. 1 probe across **TJ101** (+) and **TJ102** (-) on the Servo P.C.B. and CH. 2 probe (+) to the OSC terminal on the servo gain adjuster.

Oscilloscope setting: VOLT 100 mV (CH. 1)
 SWEEP 0.5ms.
 Input coupling ... AC (both CH. 1 and 2)
 Trigger mode ... NORM (trigger CH. 2)

4. Switch the player power **ON**, and play the test disc (SZZP1014F or SZZP1054C).

5. Set the servo gain adjuster's gain switch to position "1", and adjust **VR106** until the jitter contained in the signal waveform on CH. 1 is minimized as shown below.
6. Disconnect the servo gain adjuster's leads from the player.



* Jitter should be minimized.

(9) CHECK OF PLAY OPERATION AFTER ADJUSTMENT*** Checking Skip Search**

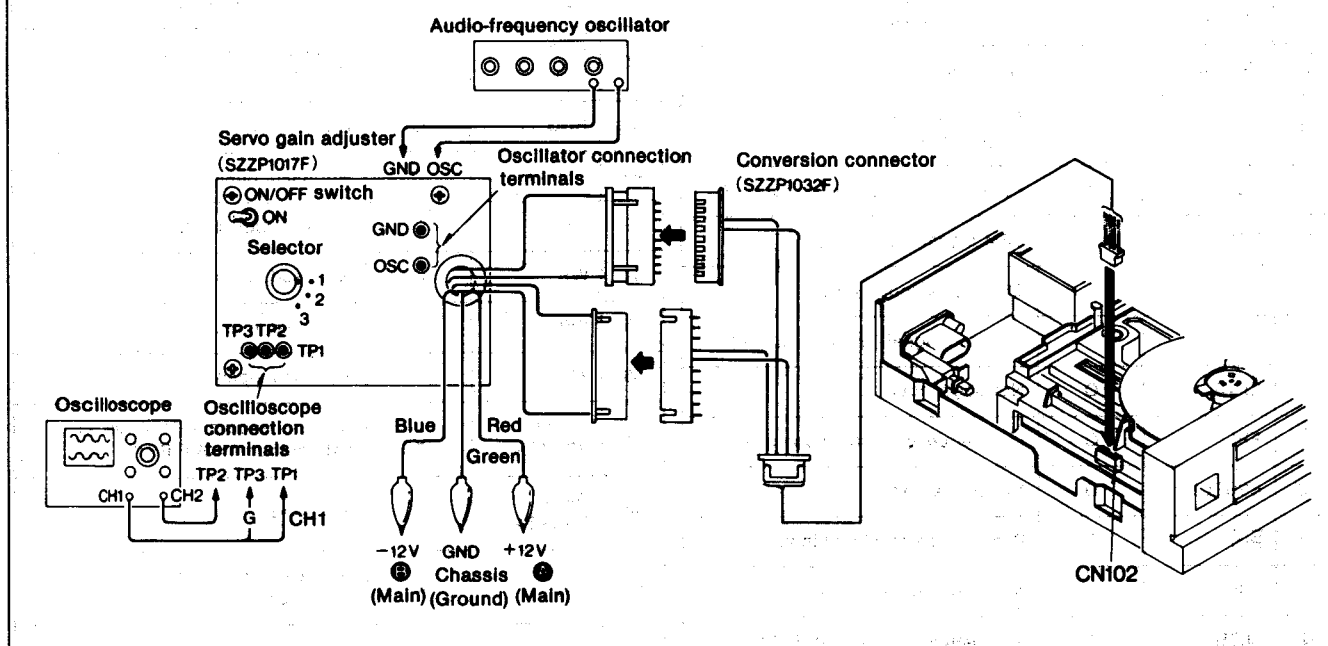
1. Play an ordinary musical program disc.
2. Press the skip button to check for normal skip search operation (in both the forward and reverse directions).

*** Checking Manual Search**

1. Play an ordinary musical program disc.
2. Press the manual search button to check for smooth manual search operations at either low or high speed (in both the forward and reverse directions).

*** Checking Using Defect Disc**

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

• Connection of servo gain adjuster**■ TERMINAL FUNCTIONS OF IC's****• IC101 (AN8373S): Servo amp.**

Pin No.	Mark	I/O Division	Function
1	AMP1	I	RF signal input (X30 amp.)
2	PDAD	I	Photo detector current input (A2)
3	PDA	I	Photo detector current input (A1)
4	PDBD	I	Photo detector current input (A4)
5	PDB	I	Photo detector current input (A3)
6	LPD	I	Non-inverting laser power input
7	LD	O	Laser power auto control output
8	FBL1	I	PD balance adjustment
9	FBL2	I	
10	TBL1	I	Tracking balance adjustment
11	TBL2	I	
12	FOOFS	I	Focus offset adjustment
13	IVA	O	Current/voltage conversion output (A)
14	IVB	O	Current/voltage conversion output (B)
15	FE	O	Focus gain adjustment output
16	FPI	I	Focus error signal input
17	TPI	I	Tracking error signal input
18	C. TPL	I	Tracking error filter capacitor input
19	C. TPH		
20	C. FPL	I	Focus error filter capacitor input
21	C. FPH		

Pin No.	Mark	I/O Division	Function
22	TPO	O	Tracking error signal output
23	FPO	O	Focus error signal output
24	FGC	I	Focus gain up signal input (Not used, connected to GND)
25	TGC	I	Tracking gain up signal input (Not used, connected to GND)
26	GD	I	Focus/tracking gain down signal input (Not used, connected to GND)
27	PTO	O	Position detecting amp. output
28	PTI	I	Position detecting amp. input
29	PBO	O	Position detecting buffer output
30	POT	I	Position detecting buffer input
31	BDO	O	Dropout detection output
32	RFDET	O	RF detection signal output
33	SDO	O	Dropout detection pulse output
34	C. SBDO	I	Dropout detecting capacitor input
35	ARF	O	RF signal output
36	C. AGC	I	AGC detecting capacitor input
37	VCC	I	Power supply (+5 V input)
38	LDON	I	Laser power control input
39	RF IN	I	RF signal input
40	AMPO	O	RF signal output
41	VREF	O	Reference voltage output
42	GND	I	Ground terminal

■ NEW SERVO GAIN ADJUSTER (Servo Amp. Adjusting Fixture)

The following introduces the improved version of the current servo gain adjuster (SZZP1017F):

Part number: SZZP1094C

Features:

- (1) Contains all oscillation frequencies and output adjustments needed for focus servo gain, tracking servo gain, and tracking balance adjustment (requires no external oscillator).
- (2) Panel indicators indicate the best points of focus and tracking servo gains (no oscilloscope needed).
- (3) Internal power supply eliminates the need for power supply from the CD player.

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)	22	VDD	I	Power supply (+5 V input)
2	LSB	I	Phase difference input (B)	23	SPCNT	O	Track crossing speed control output (Not used, open)
3	TEOFS	I	Tracking offset adjustment	24	SENSE	O	Selector output (track crossing state)
4	TE	O	Tracking gain adjustment	25	TRV	O	Traverse servo control output
5	TEG	I		26	FLOCK	O	Focus lock signal output
6	TE OUT	O	Tracking error signal output	27	KICK	O	Track kick signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)	28	LDON	O	Laser power control output
8	FE G	I	Focus gain adjustment	29	VDET	O	Focus/tracking gain up output (Not used, open)
9	FE OUT	O	Focus error signal output	30	CNT1	I	Control input (FOON: Focus servo ON signal)
10	CLW	O	Triangular wave oscillator capacitor input	31	CNT2	I	Control input (TRON: Tracking servo ON signal)
11	VREF	I	Reference voltage input	32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
12	ARF	I	RF signal input	33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
13	CDSL	I	Data slice filter capacitor input	34	TRVF	I	Traverse forward command signal
14	FPC	I	Frequency difference signal input	35	TRVR	I	Traverse backward command signal
15	GND	I	Ground terminal	36	RFDET	I	RF detection signal input
16	C. PLL	I	PLL loop filter constant	37	BDO	I	Dropout detection input
17	VSS	I	Ground terminal	38	VCC	I	Power supply (+5 V input)
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input	39	TVPO	O	Traverse position detecting resistor/capacitor inputs
19	SRF	O	Sliced and digitized RF signal output	40	TVPI	I	
20	PCK	O	Clock output extracted from SRF	41	BROUT	O	Tracking drive control output
21	EFM	O	EFM signal output synchronous with PCK	42	BRIN	I	Tracking error signal input

• IC103 (AN8377): BTL drive

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	PVCC	I	Driver power supply (+8.2V input)	9	TD-	O	Inverting output of tracking driver
2	VCC	I	Power supply (+8.2V input)	10	TD+	O	Non-inverting output of tracking driver
3	TB	O	External transistor base driving output	11	FD-	O	Inverting output of focus driver
4	VMON	O	Voltage output	12	FD+	O	Non-inverting output of focus driver
5	TVDI	I	Traverse error signal input	13	TVD-	O	Inverting output of traverse driver
6	FDI	I	Focus error signal input	14	TVD+	O	Non-inverting output of traverse driver
7	TDI	I	Tracking error signal input	15	RESET	O	Reset signal output
8	VREF	I	Reference voltage input	16	PC	I	PC input (connect to GND)

• IC301 (MN6622): Digital signal processing

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	MEMP	I	Emphasis signal input	33	TX	O	Digital output signal
2	PC	O	Spindle motor "ON" signal (ON at "L")	34	TSTR	I	Not used (connected to +5V)
3	EC	O	Spindle motor drive signal	35	TEST	I	Not used (connected to +5V)
4	FG	I	Not used, open	36	VSS	I	GND terminal
5	TTF	I	Focus lock signal input	37	X2	O	Not used, open
6	FLAG0	O	Not used, open	38	X1	I	Clock input (16.9344 MHz)
7	IPFLAG	O	Not used, open	39	SEL	I	Not used (connected to GND)
8	FLAG6	O	Not used, open	40	LDG/WDCKS	O	Frequency pull-in clock signal (88.2 kHz)
9	PCK	I	PLL extract clock input (4.2336 MHz)	41	RDG	O	Not used, open
10	VDD	I	Power supply (connected to +5V)	42	DEMPH	O	Not used, open
11	EFM	I	EFM signal input (PLL)	43	SMCK	O	Clock output (4.2336 MHz)
12	SRF	I	EFM signal input (DSL)	44	WS	O	Not used, open
13	DO	I	Drop-out signal ("H" at drop-out)	45	SRCK	O	Not used, open
14	CLVS	O	Not used, open	46	XCK	O	Not used, open
15	FPC	O	PLL frequency comparison signal	47	DA15/SRDATA	O	DA parallel output (MSB)/serial data output (MSB FIRST)
16	BSSEL	O	Not connected	48	DA14/SRDATA	O	Not used, open
17	RIN	I	Remote control signal input	49	DA13/SCK	O	DA parallel output/serial data output bit clock
18	FSL	I	Not used (connected to GND)	50	DA12/WDCK	O	Not used, open
19	SLEEP	I	Not used (connected to GND)	51	DA11/BYCK	O	Not used, open
20	SUBC	O	Not used, open	52	VSS	I	GND terminal
21	SBCK	I	Not used, open	53	DA10/R/L	O	DA parallel output/R/L signal (R at "H")
22	BLKCK	O	Sub-code block (Q-data) clock (75 Hz)	54	DA9	O	Not used, open
23	CLDCK	O	Sub-code frame (Q-data) clock (7.35 kHz)	56	DA7	O	
24	SUBQ	O	Sub-code (Q-data) output	57	DA6	O	Not used (connected to GND)
25	CRC	O	Not used, open	58	DA5	O	Not used, open
26	RST	I	Reset signal input ("L" = Reset)	63	DA0	O	
27	MLD	I	Data input (command load)	64	D7	I/O	16K RAM DATA
28	MCLK	I	Data clock input (command clock)	71	D0		
29	MDATA	I	Data input (command data)	72	RAMOE	O	16K RAM OE signal
30	DMUTE	I	Muting control (Not used, connected to GND)	73	RAMWE	O	16K RAM WE signal
31	TRON	I	Tracking servo "ON" signal (ON at "L")	74	RAMA0	O	16K RAM address
32	STAT	O	Processing condition (CRC, OTC, CLVOK, TT, STOP) output	84	RAMA10		

•IC401 (MN1554PEZ-1): System control

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	BRECV	—	(Not used, open)	29	CLOSE	I	Disc holder "Open" detection
2	BSEND	—	(Not used, open)	30	OPEN	I	Disc holder "Close" detection
3	SYNC	O	(Not used, open)	31	BCLK	I	(Not used, connected to GND)
4	SIRQ	I	Not used (connected to +5V)	32	BDATA	I	(Not used, connected to GND)
5	BLKCK	I	Sub-code block (Q data) clock input (75Hz)	33	STAT	I	Processing status input from signal processing LSI
6	CLDCK	I	Sub-code block (Q data) clock input (7.35kHz)	34	COMP	O	TOC reading control (ON at "L") (Not used, open)
7	SBO	I	(Not used, open)	35	FLOCK	I	Optical servo condition (focus) input
8	SUBQ	I	Sub-code (Q data) input	36	SENSE	I	Optical servo condition (track cross) input
9	RST	I	Reset signal input	37	RECV	I	Data receipt command signal
10 13	P20 P23	O	Not used (connected to +5V)	38	SEND	I	Data transmission command signal
14	CLOSE	O	Loading motor "Close" command	39	ACK	I	Data discrimination signal
15	OPEN	O	Loading motor "Open" command	40	CLK	I	Data lock signal
16	SLOW	O	(Not used, open)	41 44	DATA0 DATA3	I	Key scan signal
17	MUTE	O	Muting control	45 52	NC	I	Not connected
18	SEEK	O	Traverse servo control (Not used, open)	53	OSC2	I	Clock terminal
19	NC	—	Not connected	54	OSC1	I	Clock input
20	TRV.R	O	Traverse "Reverse" command signal	55	X1	I	Optical servo condition input
21	TRV.F	O	Traverse "Forward" command signal	56	X0	O	(Not used, open)
22	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)	57	GND	I	GND terminal
23	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)	58	DMUTE	O	Muting control
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)	59	MDATA	O	Command data output
25	VDD	I	Power supply (connected to +5V)	60	MCLK	O	Data clock output (command clock signal)
26	DOWN	O	(Not used, open)	61	MLD	O	Data output (command load signal)
27	UP	O	(Not used, open)	62	DOUTON	O	Optical output control signal (Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)	63	EMPH	O	Emphasis signal output
				64	NC	—	Not connected

•IC601 (MB88724BPEV1): FL drive and timing signal generator

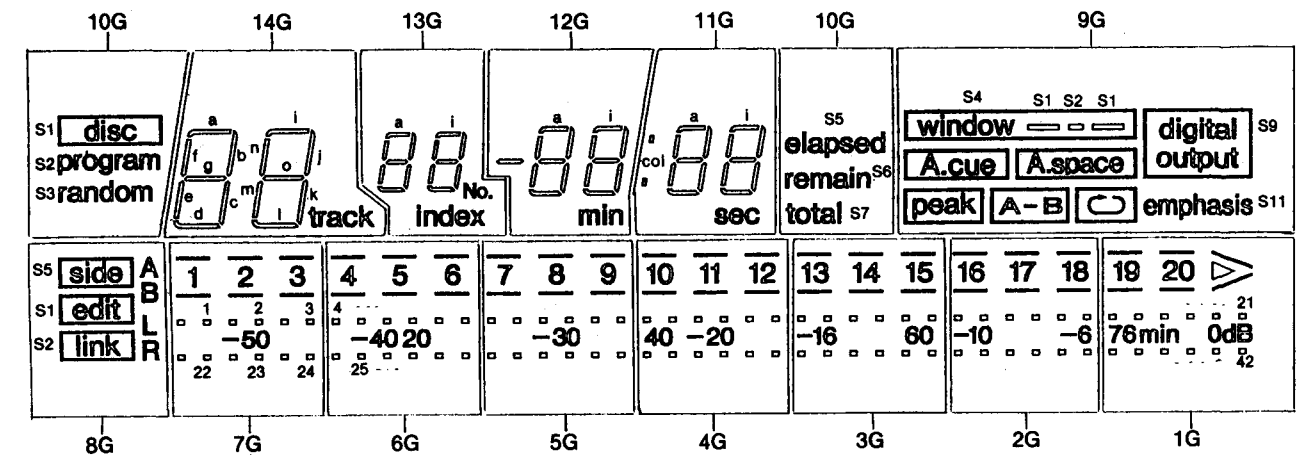
Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1 14	C0 C13	O	FL grid signal	33	X	I	Clock signal input (4.2336MHz)
15	C14	O	LED drive signal (PAUSE)	34	EX	I	(Not used, connected to +5V)
16	C15	O	LED drive signal (PLAY)	35	SE	I	Not used, connected to +5V
17	P00	O	Key scan signal	36	WD	I	GND terminal
18	P01	O	Key scan signal	37	XL	O	Not used, open
19	P02	O	Data discrimination signal signal	38	EXL	O	Not used, open
20	P03	O	Data lock signal	39 42	P60 P63	I	Key return signal
21 24	P10 P13	O	Key scan signal	43 46	P70 P73	I	Key return signal
25	P40	I	Remote control signal input (Not used, open)	47	VF	I	FL drive power supply (connected to -31.3V)
26	P41	—	Not used, open	48 63	S0 S15	O	FL anode signal
27	P42	O	Data receipt dommand signal	64	VCC	I	Power supply (connected to +5V)
28	P43	O	Data transmission command signal				
29	P50	—	Not used, open				
30	P51	I	GND terminal				
31	RES	I	Reset signal input (reset at "L")				
32	VSS	I	GND terminal				

•IC801 (MN6471): Digital filter and D/A converter

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)	22	AVDD1	I	Power supply (connected to +5V)
2	RSTB	I	Reset signal input (reset at "L")	23	DVDD1	I	Power supply (connected to +5V)
3	IE	I	Not used, connected to GND	24	DVSS1	I	GND terminal (digital system)
4	TP1	—	TEST terminal	25	X2	O	Clock output
5	TP2	—		26	X1	I	Clock input
6	TEST1	I	TEST terminal 1 (connected to GND)	27	NC	—	Not connected
7	TEST2	I	TEST terminal 2 (connected to GND)	28	DVDD2	I	Power supply (connected to +5V)
8	NC	—	Not connected	29	DVSS2	I	GND terminal (digital system)
9	NC	—	Not connected	30	NSUB	I	Sub-strate terminal (Not used, connected to +5V)
10	AVDD4	I	Power supply (connected to +5V)	31	ZFLGB	O	Zero input detector terminal
11	OUTL (-)	O	Lch data output, (-) terminal	32	192fs	O	192 fs (8.4672 MHz) (Not used, open)
12	AVSS4	I	GND terminal	33	LRPOL	I	LR clock selector (Not used, connected to GND)
13	AVSS3	I	GND terminal	34	LRCLK	I	LR discrimination signal input
14	OUTL (+)	O	Lch data output, (+) terminal	35	BCLK	I	Serial bit clock input
15	AVDD3	I	Power supply (connected to +5V)	36	SRDATA	I	Serial data input (MSB first)
16	NC	—	Not connected	37	DVSS 3	I	GND terminal (digital system)
17	AVDD2	I	Power supply (connected to +5V)	38	DVDD	I	Power supply (connected to +5V)
18	OUTR (+)	O	Rch data output, (+) terminal	39	384 fs	O	384 fs (16.9344 MHz) output
19	AVSS2	I	GND terminal (analog system)	40	PD	I	Power down terminal (Not used, connected to GND)
20	AVSS1	I	GND terminal (analog system)	41	MDATA	I	Command data input
21	OUTR (-)	O	Rch data output, (-) terminal	42	MCLK	I	Command clock input

■ INTERNAL CONNECTION OF FL

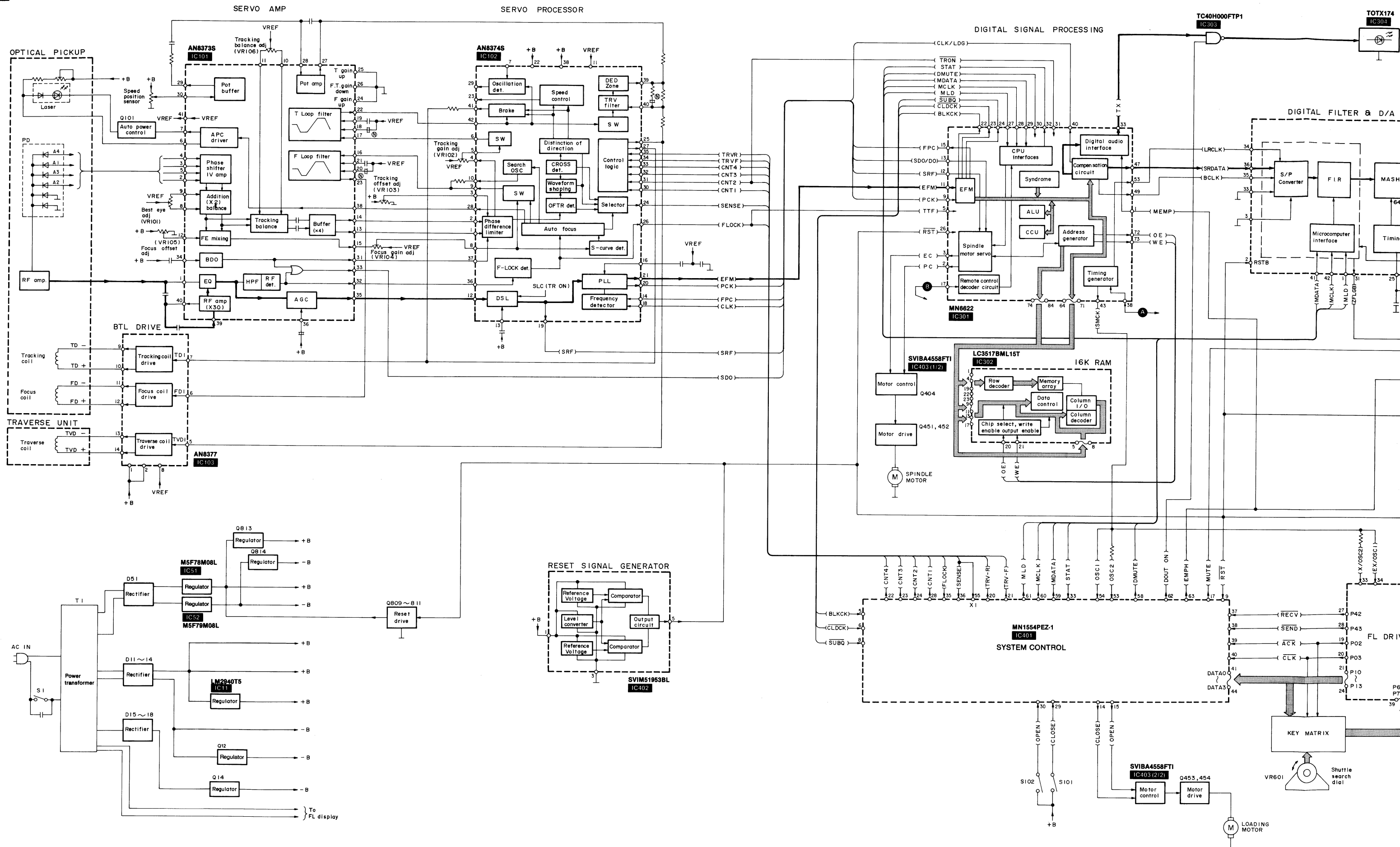
• Grid connection diagram



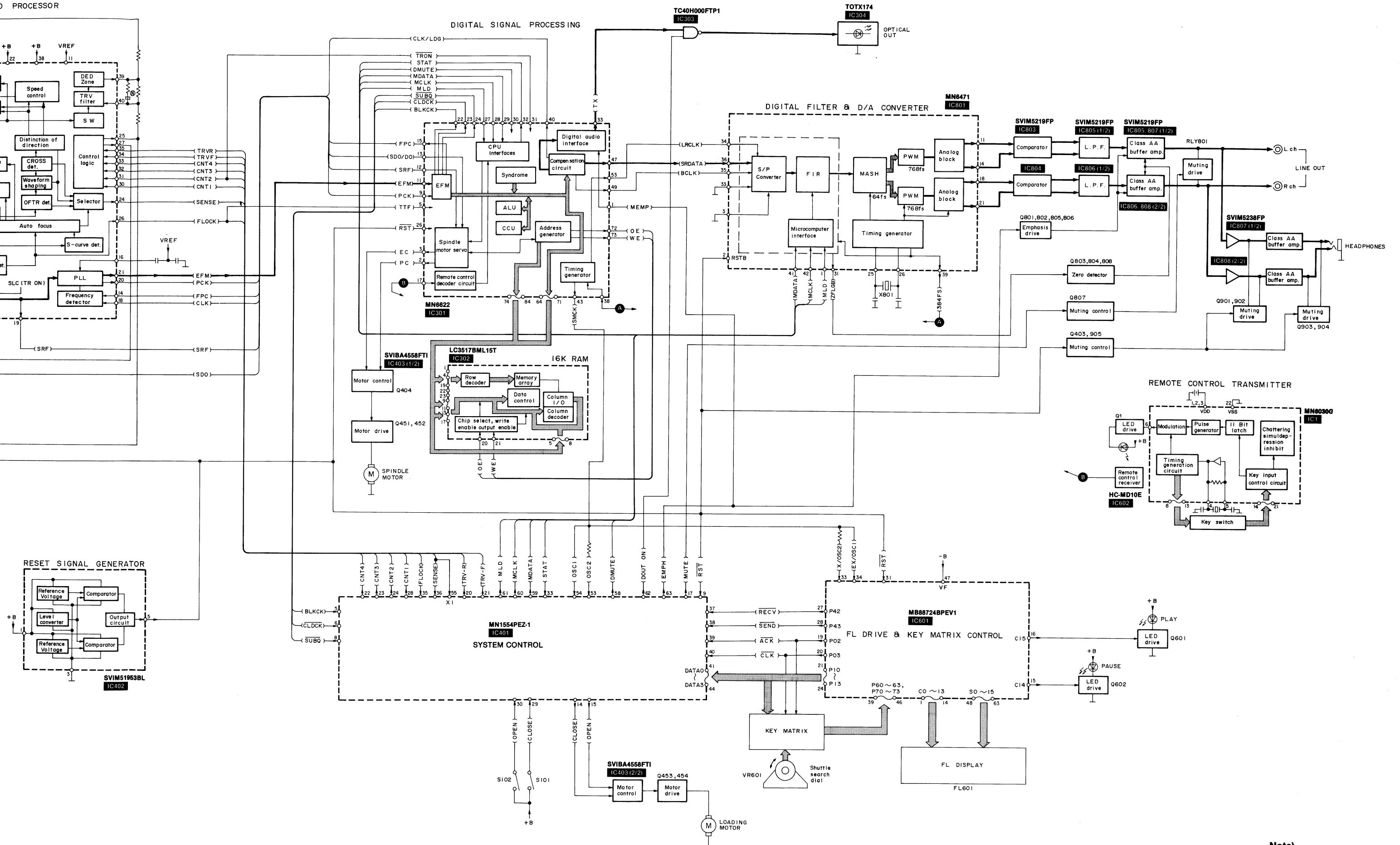
• Anode connection table

	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
S1	a	a	a	a	disc	—	edit	1	4	7	10	13	16	19
S2	b	b	b	b	program	—	link	2	5	8	11	14	17	20
S3	f	f	f	f	random	A.space	A	3	6	9	12	15	18	21
S4	g	g	g	g	-	window	B	1	4	7	10	13	16	19
S5	c	c	c	c	elapsed	peak	side	1	4	7	10	13	16	19
S6	e	e	e	e	remain	A-	-	2	5	8	11	14	17	20
S7	d	d	d	d	total	B	-	3	6	9	12	15	18	21
S8	-	No.	—	col	-	↺	-	2	5	8	11	14	17	20
S9	i	i	i	i	-	digital output	-	1	4	7	10	13	16	19
S10	j	j	j	j	-	A.cue	-	2	5	8	11	14	17	20
S11	n	n	n	n	-	emphasis	-	3	6	9	12	15	18	21
S12	o	o	o	o	-	-	-	3	6	9	12	15	18	21
S13	k	k	k	k	-	-	-	22	25	28	31	34	37	40
S14	m	m	m	m	-	-	-	23	26	29	32	35	38	41
S15	l	l	l	l	-	-	-	24	27	30	33	36	39	42
S16	track	index	min	sec	-	-	-	-	20	-	40	60	-	76min
S17	-	-	-	-	-	-	L R	-50	-40	-30	-20	-16	-10 -6	0 dB

BLOCK DIAGRAM



PROCESSOR



Note)
 • → Audio signal

SCHEMATIC DIAGRAM

(Parts list on pages 50~54.)

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

Notes:

- **S1** : Power switch in "on" position.
- **S2** : Voltage selector switch.
- **S101** : Disc holder open/close detection switch.
- **S102** : Disc holder open/close detection switch.
- **S601** : Edit tape length (edit tape length) switch.
- **S602** : Random play (random) switch.
- **S603** : Auto cue/auto space (auto cue/edit auto space) switch.
- **S604** : Digital output (digital output) switch.
- **S606** : Programmed-play (program) switch.
- **S609** : Window search (window) switch.
- **S610** : Disc link (disc link) switch.
- **S611** : Repeat (repeat) switch.
- **S613** : Display mode select (display mode) switch.
- **S614** : Recall (recall) switch.
- **S617** : Tape-side select (side A/B) switch.
- **S619** : A-B repeat (A-B repeat) switch.
- **S620** : Peak level search (peak search) switch.
- **S621** : Time mode select (time mode) switch.
- **S622** : Clear (clear) switch.

- **S625~630** : S625: 1, S626: 5, S627: 9, S628: 13, S629: 17, S630: 0, S633: 2, S634: 6, S635: 10, S636: 14, S637: 18, S638: +10, S641: 3, S642: 7, S643: 11, S644: 15, S645: 19, S649: 4, S650: 8, S651: 12, S652: 16, S653: 20

- **S632** : Disc holder open/close (▲ open/close) switch.
- **S640** : Stop (■ stop) switch.
- **S646, 654** : Index skip (←index/index→) switch. S646: ←(F), S654: →(R)
- **S648** : Pause (■ pause) switch.
- **S647, 655** : Skip (◀◀ skip/skip ▶▶) switch. S647: ▶▶(F), S655: ◀◀(R)
- **S656** : Play (▶ play) switch.
- **S657** : Timer start (timer) switch.

The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.

Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

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

Important safety notice:

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

• —○— : Positive voltage lines and negative voltage lines.

• —●— : Audio signal lines.

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

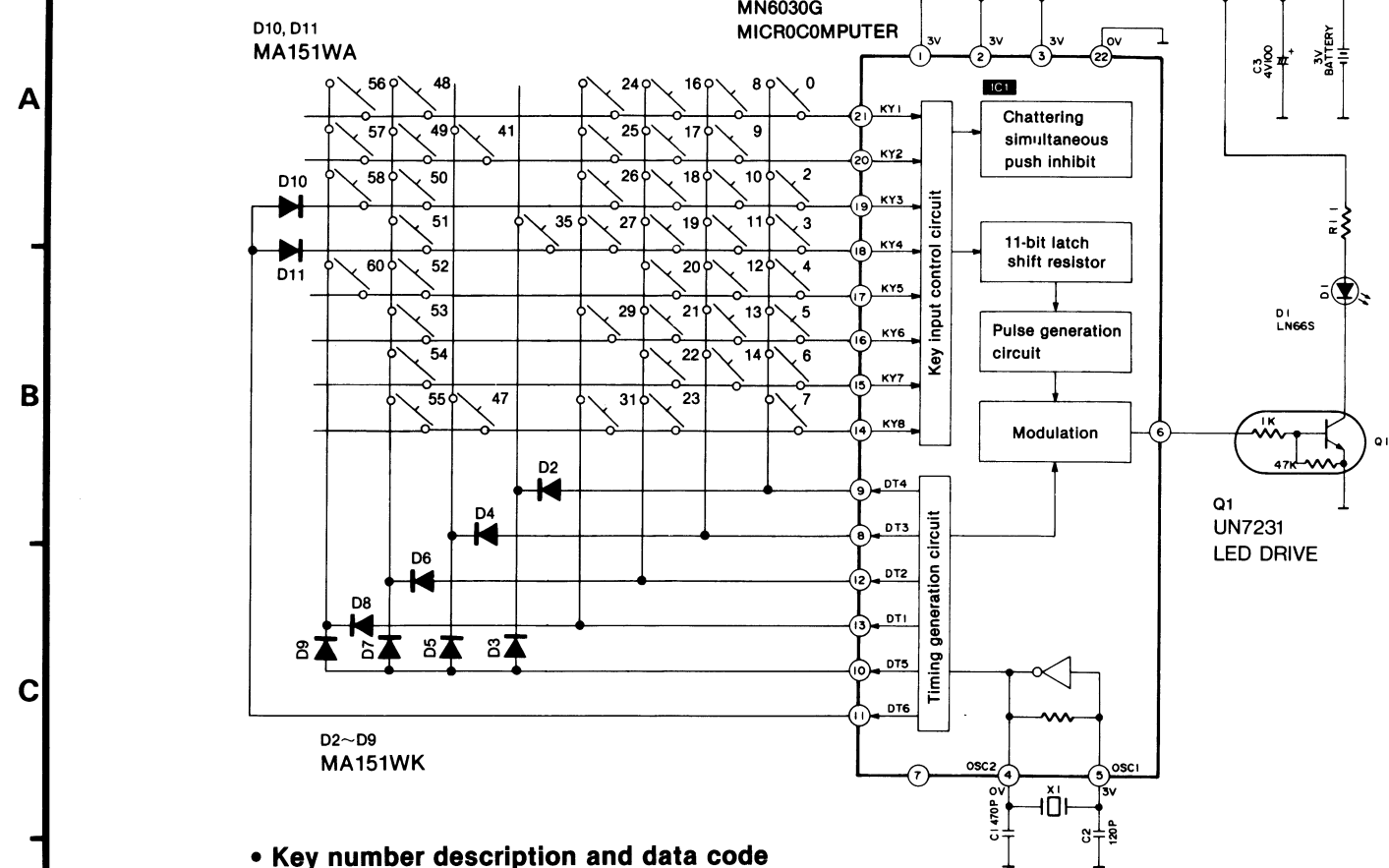
• Cover the parts boxes made of plastics with aluminum foil.

• Ground the soldering iron.

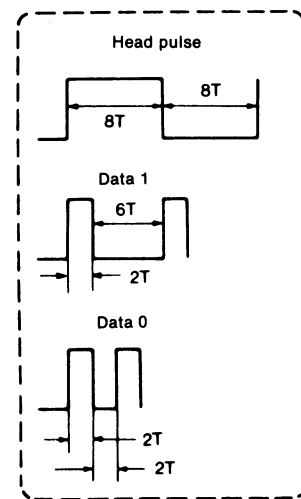
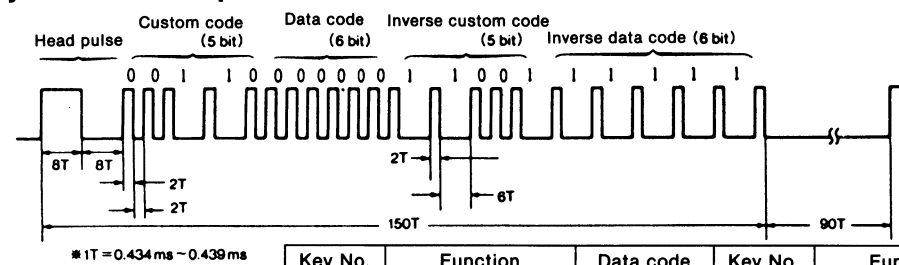
• Put a conductive mat on the work table.

• Do not touch the pins of IC or LSI with fingers directly.

• Remote control transmitter



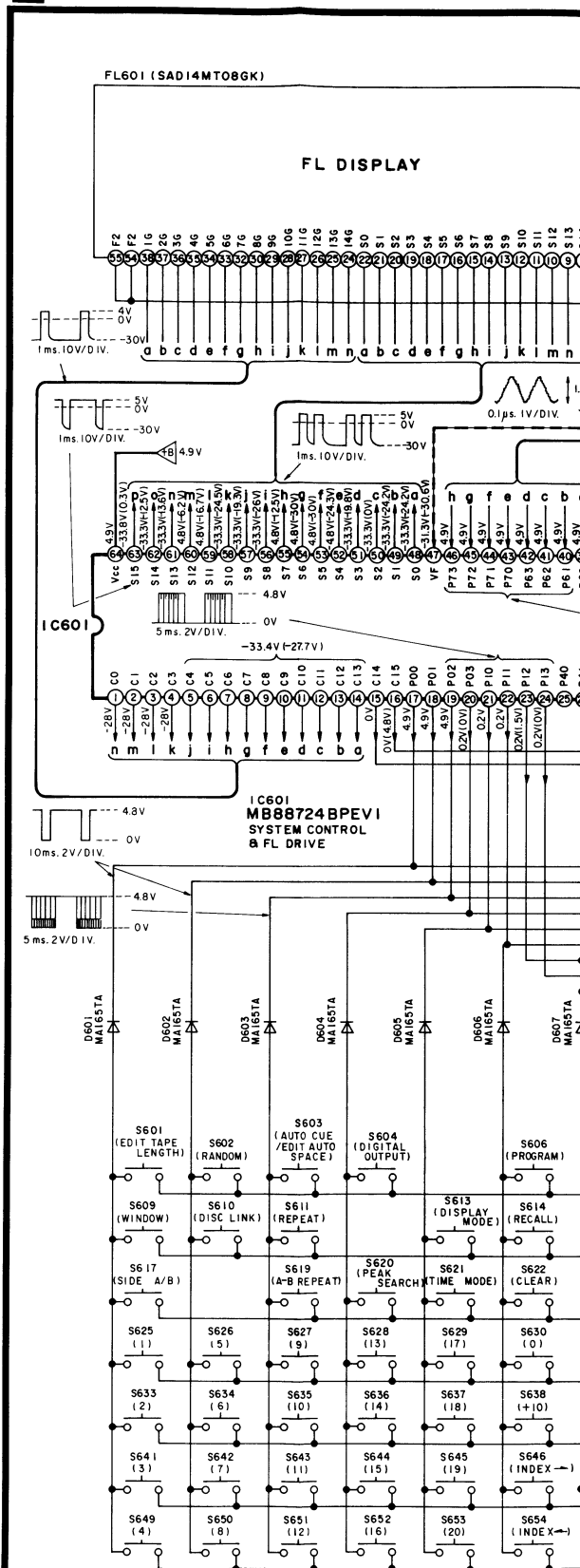
• Key number description and data code

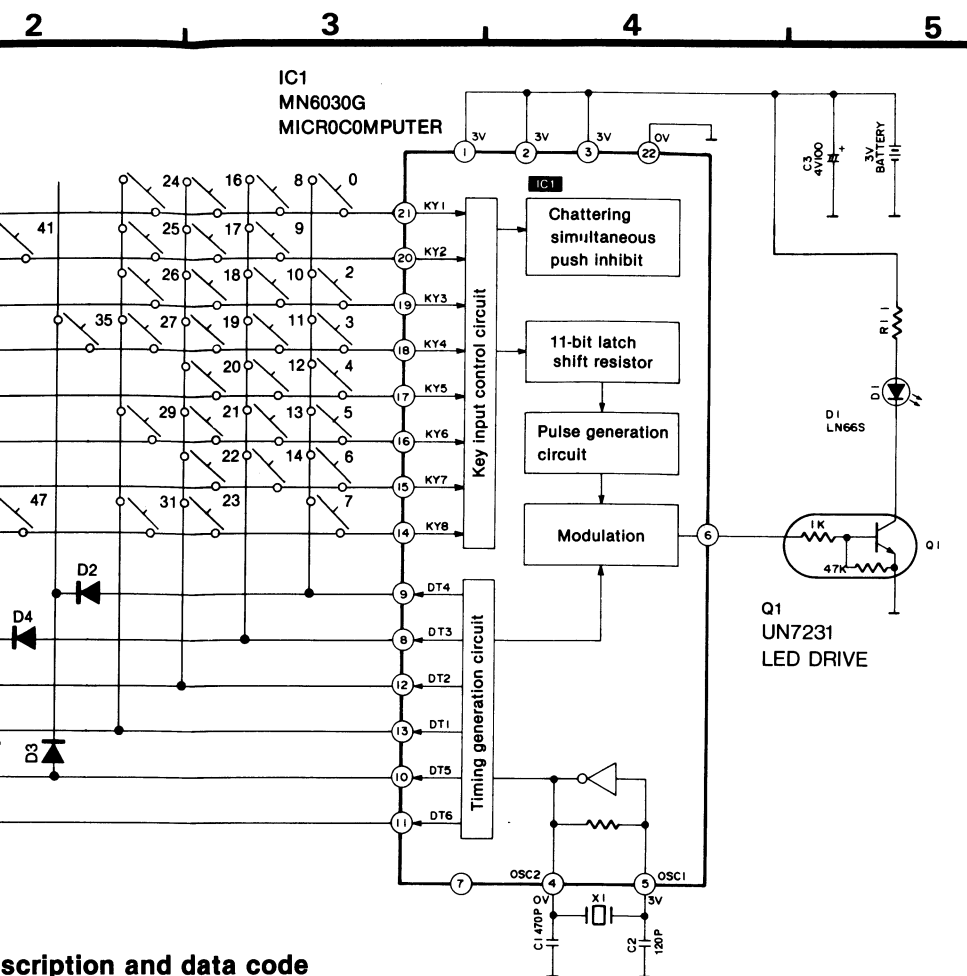


Key No.	Function	Data code	Key No.	Function	Data code
0	stop	000000	24	9	011000
2	skip ◀◀	000010	25	0	011001
3	skip ▶▶	000011	26	+10	011010
4	search ◀◀	000100	27	display ON/OFF	011011
5	search ▶▶	000101	29	program	011101
6	pause	000110	31	random	011111
7	repeat	000111	35	auto cue	100011
8	A-B repeat	001000	41	time mode	101001
9	recall	001001	47	display mode	101111
10	play	001010	48	10	110000
11	clear	001011	49	11	110001
12	index skip ◀	001100	50	12	110010
13	index skip ▶	001101	51	13	110011
14	open/close	001110	52	14	110100
16	1	010000	53	15	110101
17	2	010001	54	16	110110
18	3	010010	55	17	110111
19	4	010011	56	18	111000
20	5	010100	57	19	111001
21	6	010101	58	20	111010
22	7	010110	60	(A-B) peak search	111100
23	8	010111			

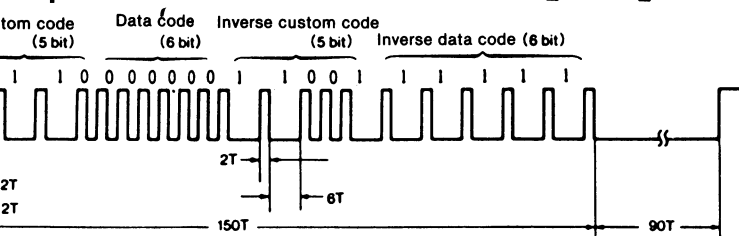
※Custom code: 01100

A OPERATION CIRCUIT





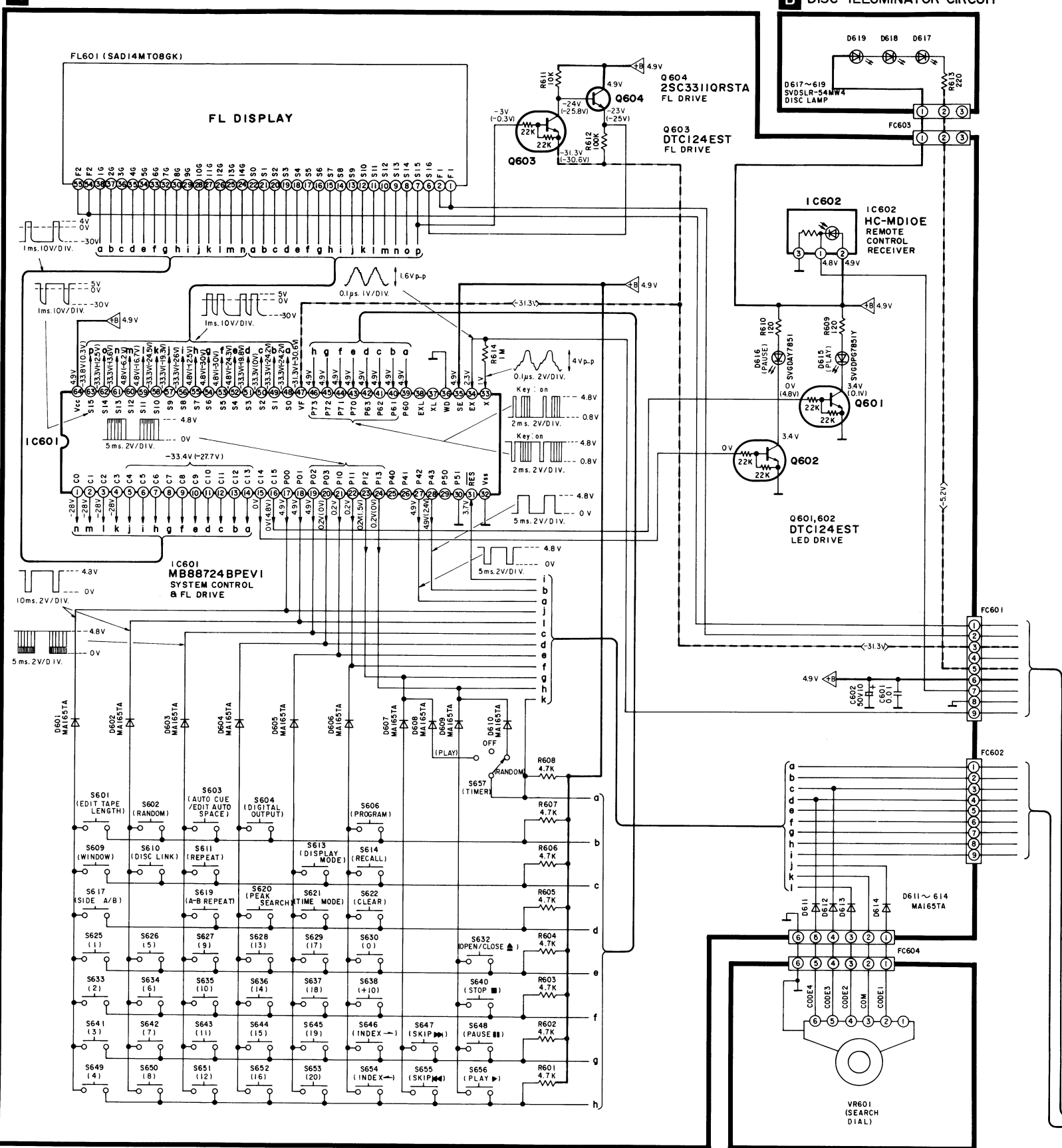
script and data code



Key No.	Function	Data code	Key No.	Function	Data code
0	stop	000000	24	9	011000
2	skip ◀◀	000010	25	0	011001
3	skip ▶▶	000011	26	+ 10	011010
4	search ◀◀	000100	27	display ON/OFF	011011
5	search ▶▶	000101	29	program	011101
6	pause	000110	31	random	011111
7	repeat	000111	35	auto cue	100011
8	A-B repeat	001000	41	time mode	101001
9	recall	001001	47	display mode	101111
10	play	001010	48	10	110000
11	clear	001011	49	11	110001
12	index skip ◀	001100	50	12	110010
13	index skip ▶	001101	51	13	110011
14	open/close	001110	52	14	110100
16	1	010000	53	15	110101
17	2	010001	54	16	110110
18	3	010010	55	17	110111
19	4	010011	56	18	111000
20	5	010100	57	19	111001
21	6	010101	58	20	111010
22	7	010110	60	(A-B) peak search	111100
23	8	010111			

※Custom code: 01100

A OPERATION CIRCUIT

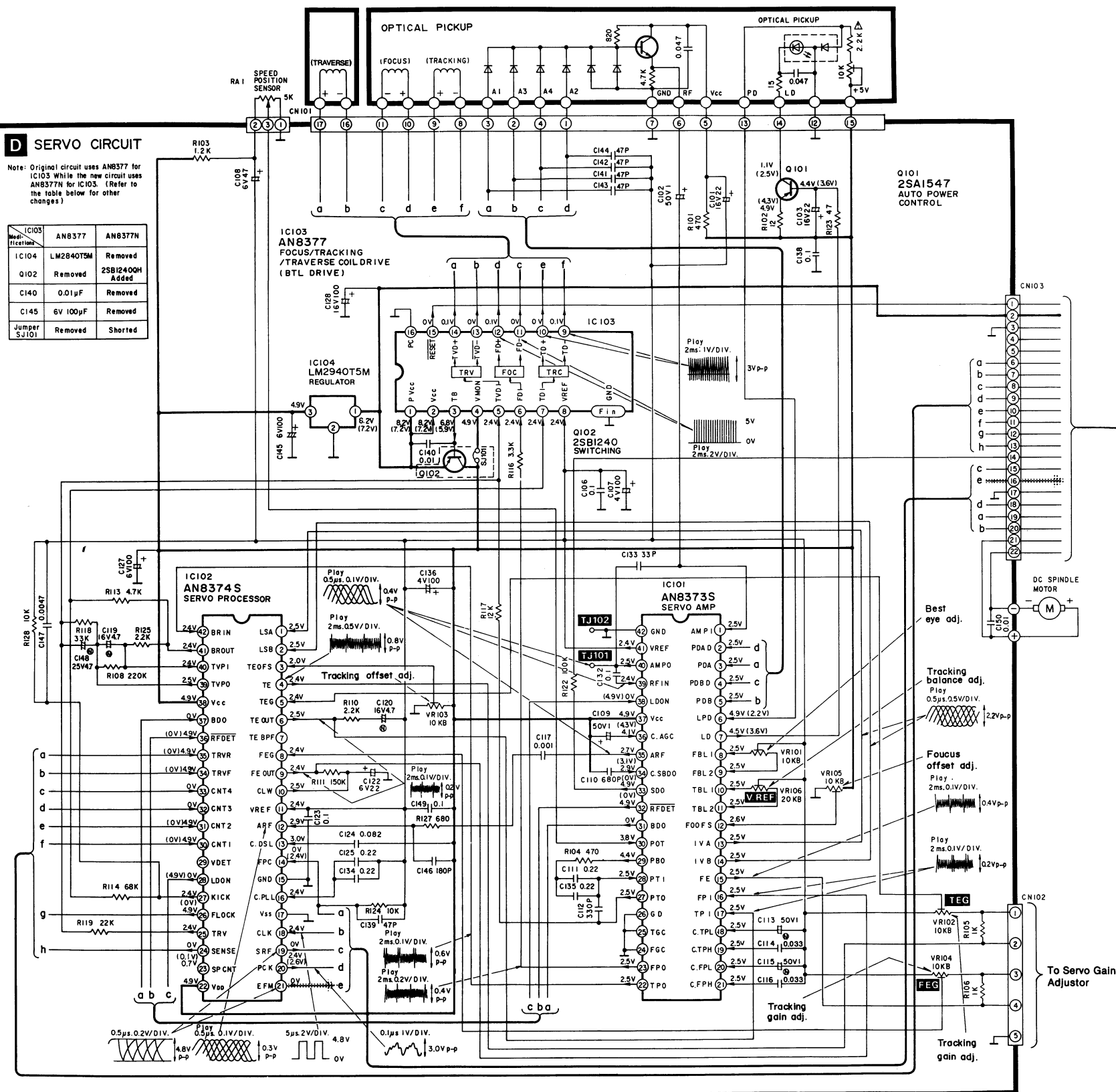


C SEARCH CIRCUIT

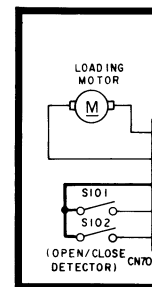
D SERVO CIRCUIT

Note: Original circuit uses AN8377 for IC103. While the new circuit uses AN8377N for IC103. (Refer to the table below for other changes)

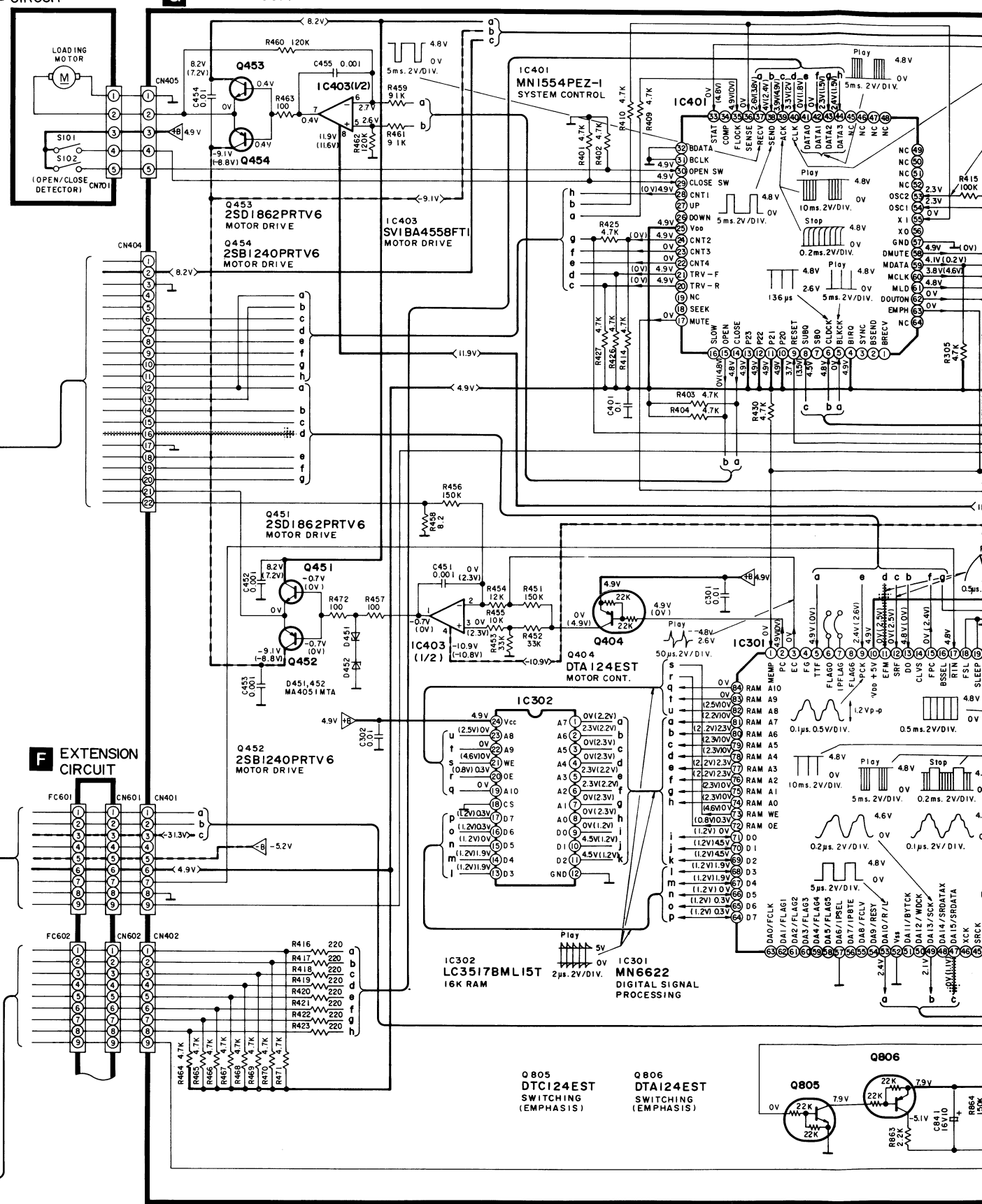
IC103	AN8377	AN8377N
IC104	LM2940TSM	Removed
Q102	Removed	2SB1240H Added
C140	0.01μF	Removed
C145	6V 100μF	Removed
Jumper SJ101	Removed	Shorted



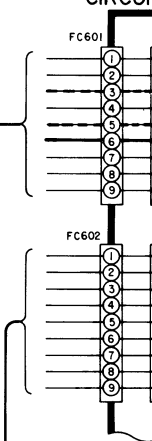
E MOTOR/SWITCH CIRCUIT



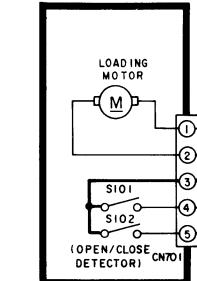
G MAIN CIRCUIT



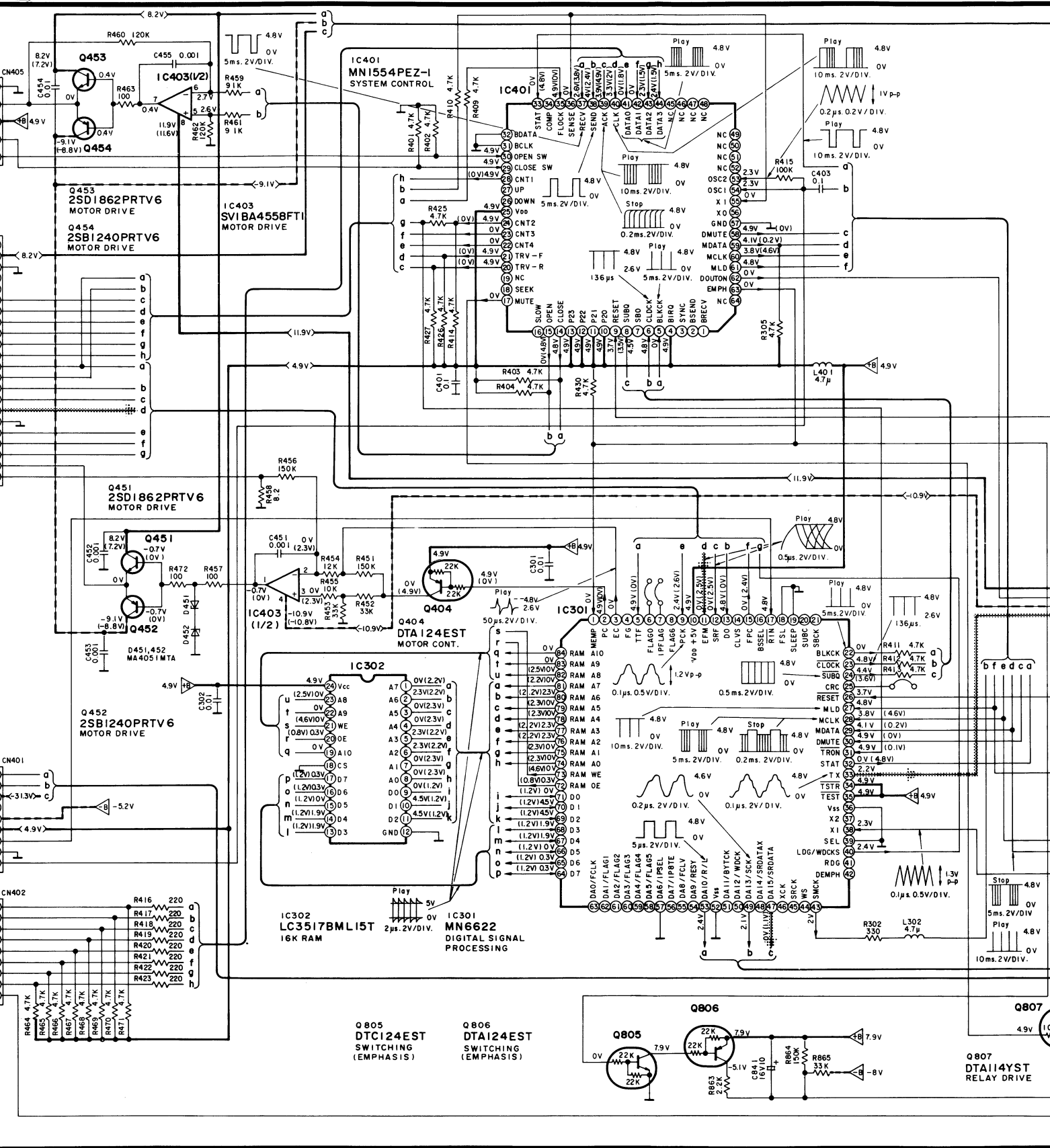
F EXTENSION CIRCUIT



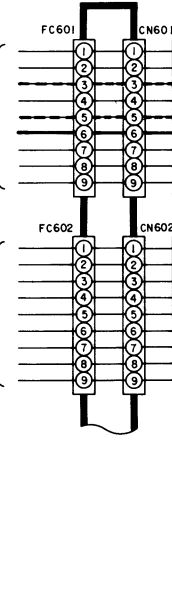
E MOTOR/SWITCH CIRCUIT



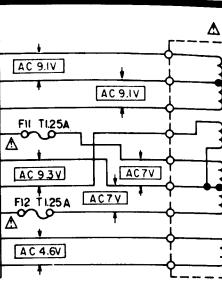
G MAIN CIRCUIT



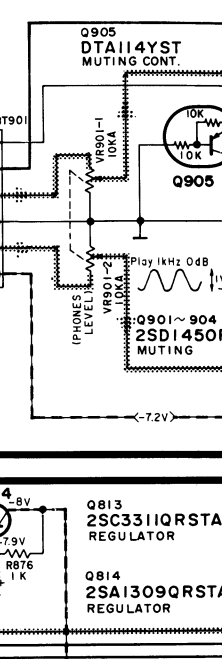
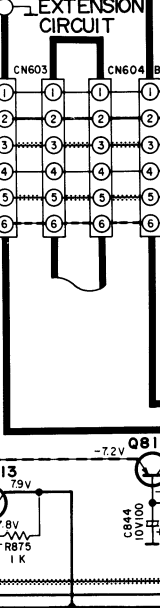
F EXTENSION CIRCUIT

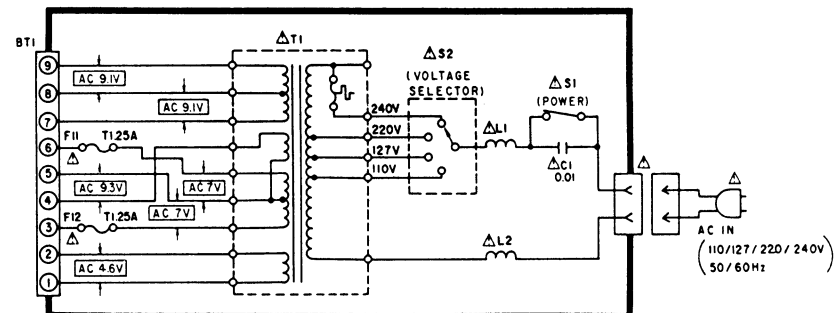


H POWER SUPPLY CIRCUIT

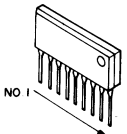


F EXTENSION CIRCUIT





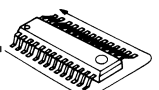
■ TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES



SVIM51953BL	5 Pin
-------------	-------

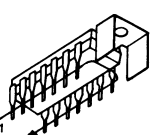
LM2940T5,
LM2940T5M,
M5F78M08L
(M5F79M08L)

1. Vin (GND)
2. GND (Vin)
3. Vout



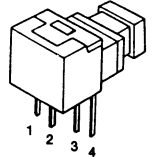
SVIMS219FPTA	8 Pin	LC35178ML15T	24 Pin
SVIM5238FPTA		AN8373S	42 Pin
BA4558FTI		AN8374S	
M5218FPTA		TC40H000FTPN	14 Pin

AN8377	16 Pin
--------	--------



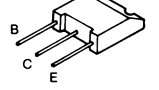
MN6471	42 Pin
MN6622	84 Pin
MN1554PEZ-1	64 Pin

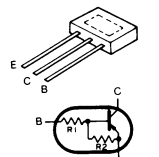
T0TX174



MB887248PEV1	64 Pin
--------------	--------

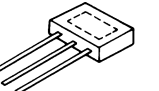
2SB1238,
2SD1862,
2SB1240,
2SA1547



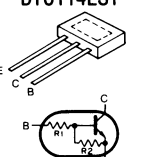


DTA124EST,
DTA114YST

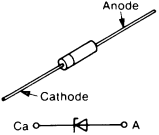
2SD1450,
2SC3311,
2SA1309

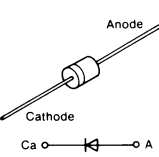


DTC124EST,
DTC114EST



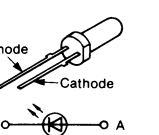
MA4056M,
MA4330M,
MA4091M,
MA4033M,
MA4051M



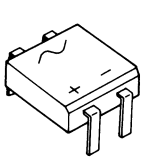


MA165,
SVD1SR35200M

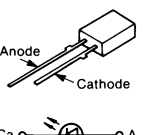
SVDSLRL-54MW4



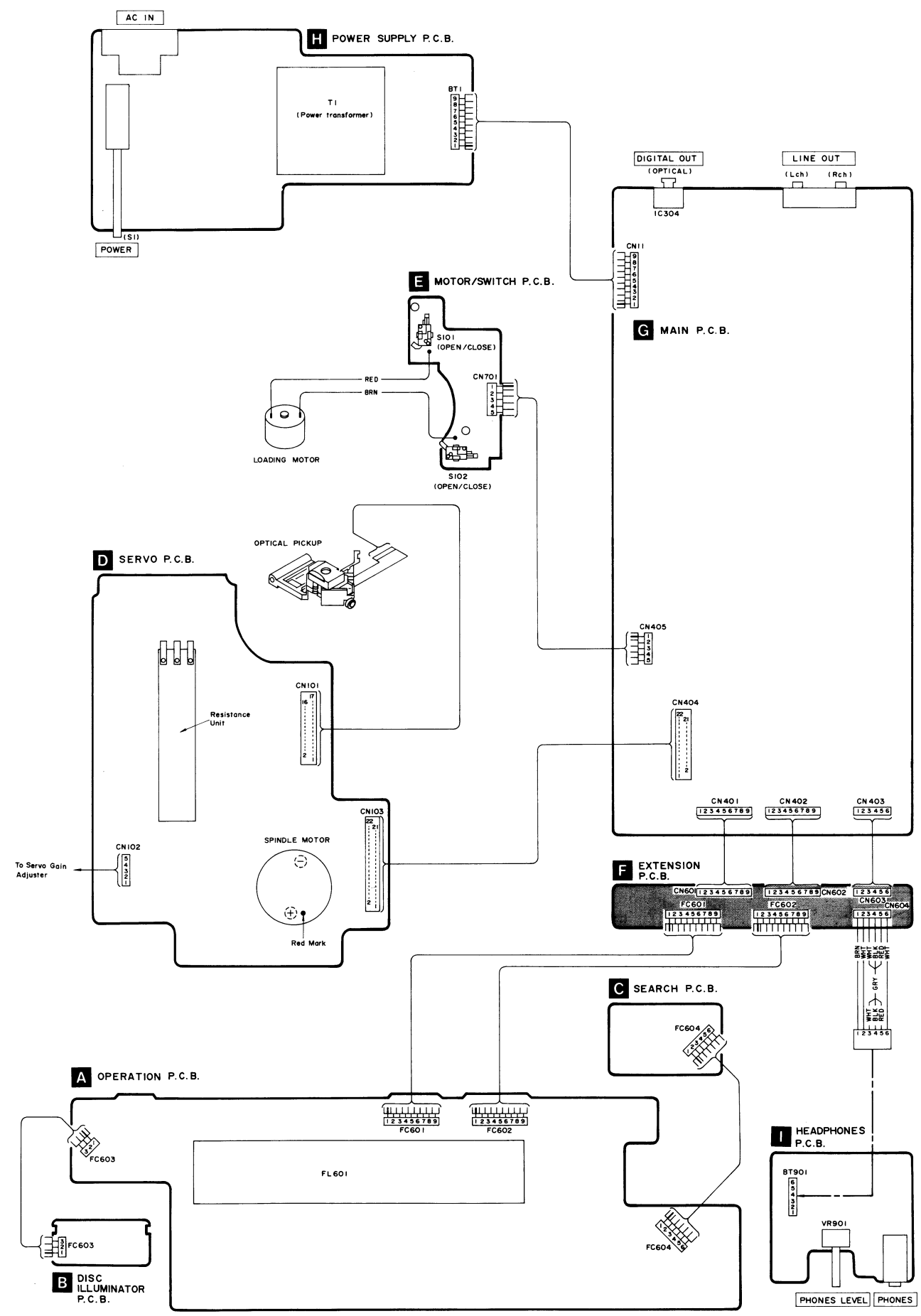
SVDRDF02M



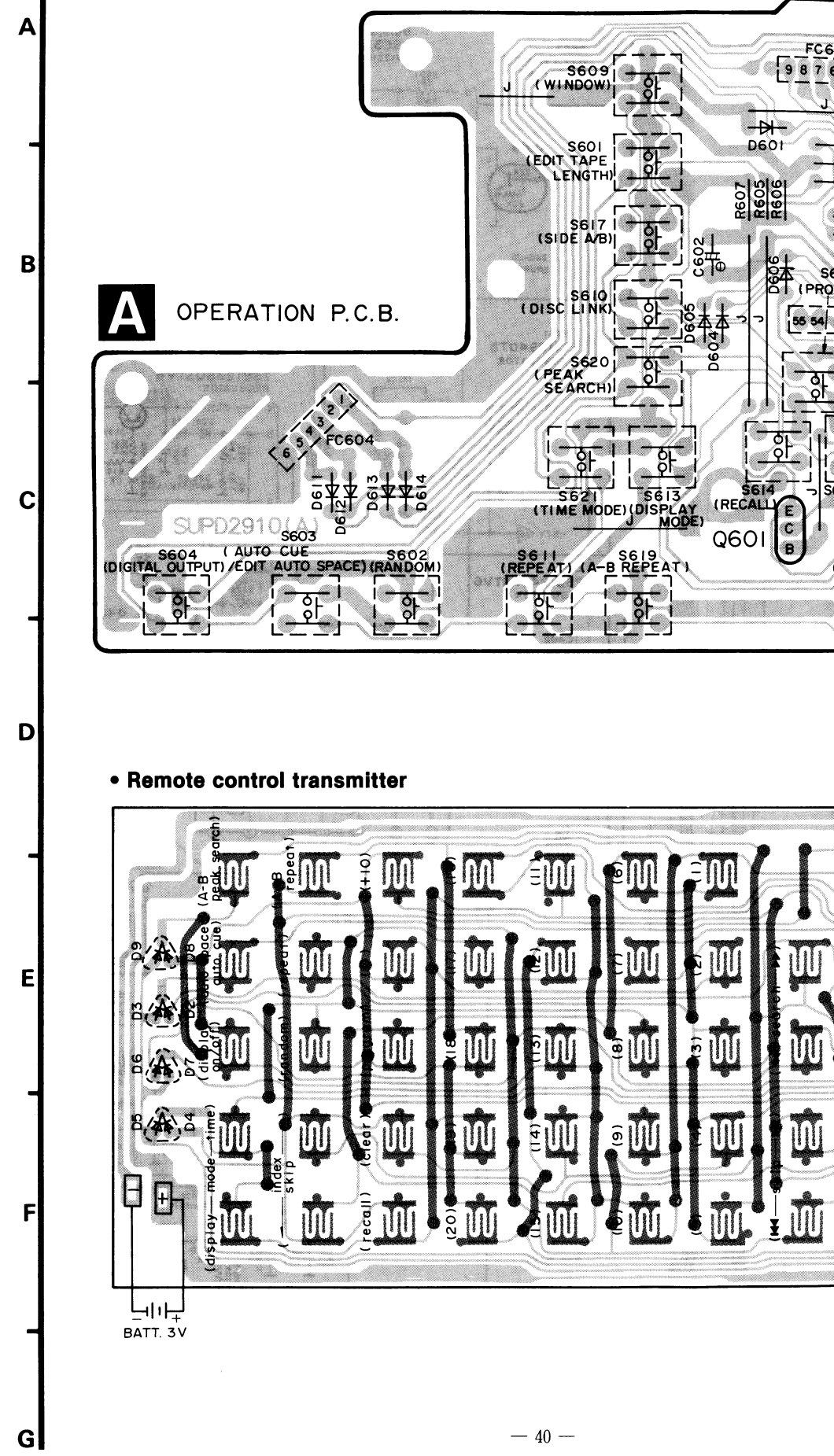
SVGDPG7851Y,
SVGDAY7851



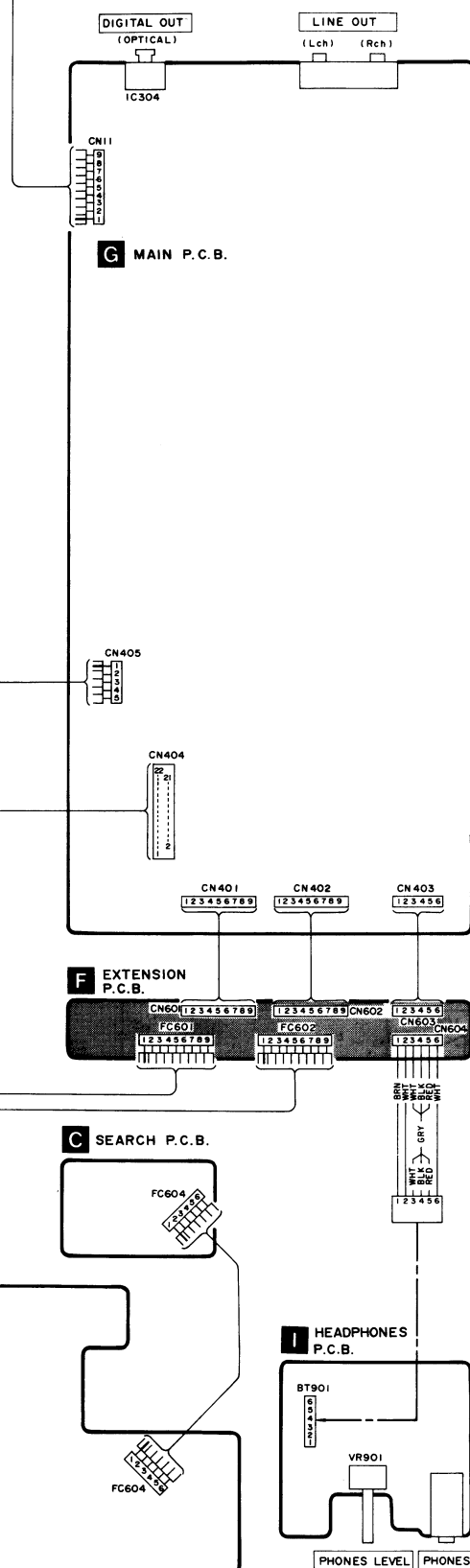
■ WIRING CONNECTION DIAGRAM



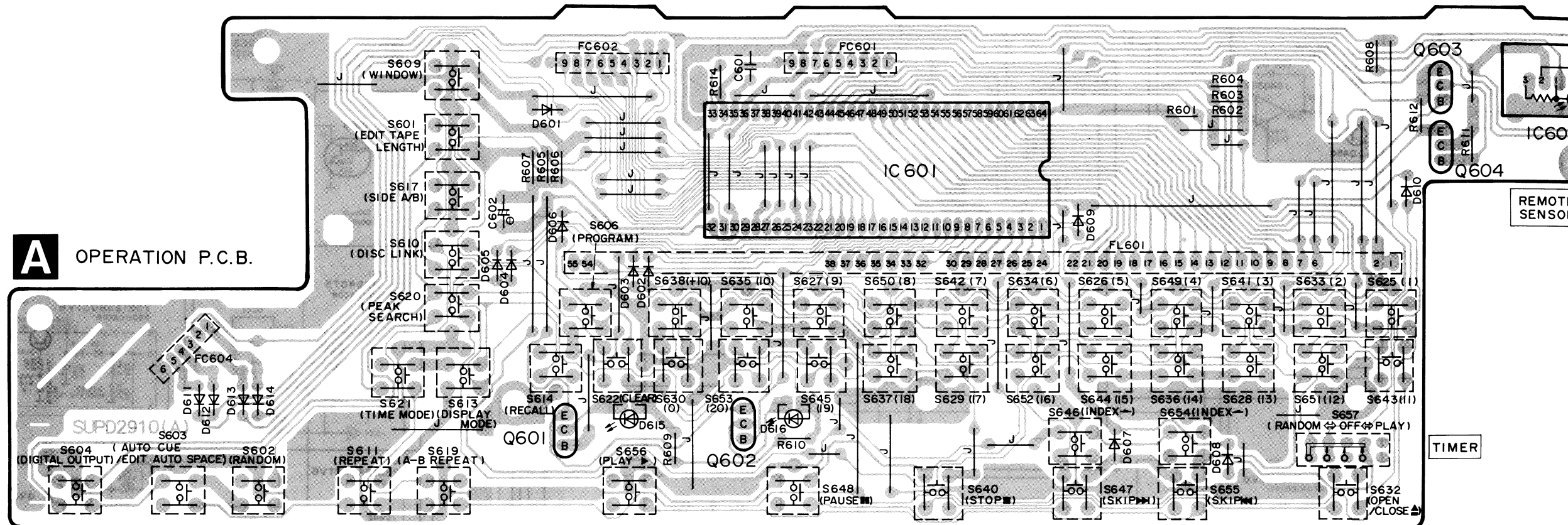
■ PRINTED CIRCUIT BOARDS



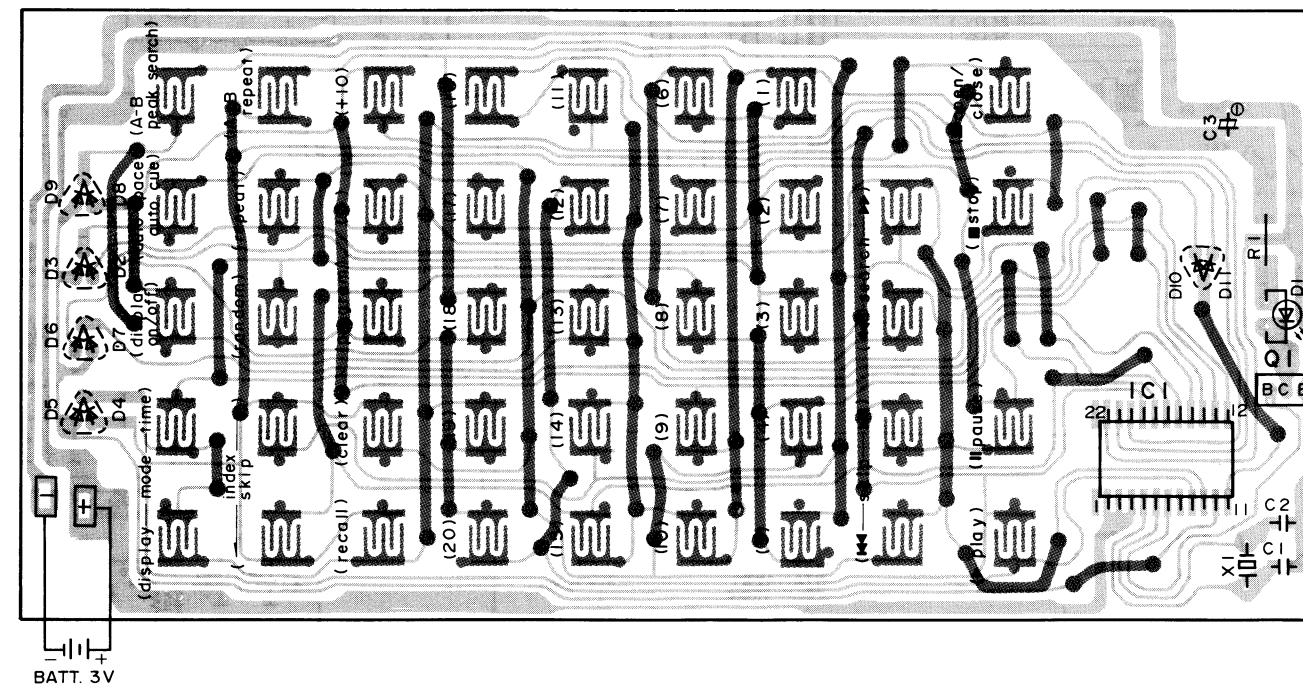
PRINTED CIRCUIT BOARDS



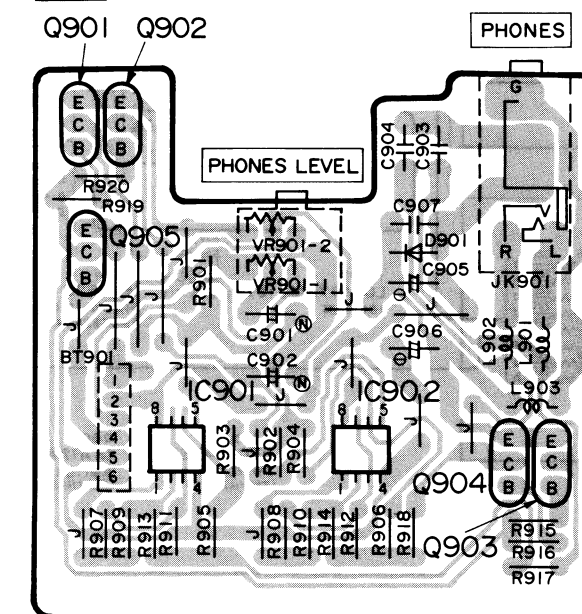
A OPERATION P.C.B.



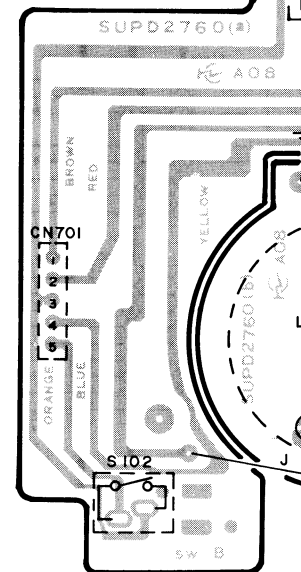
Remote control transmitter

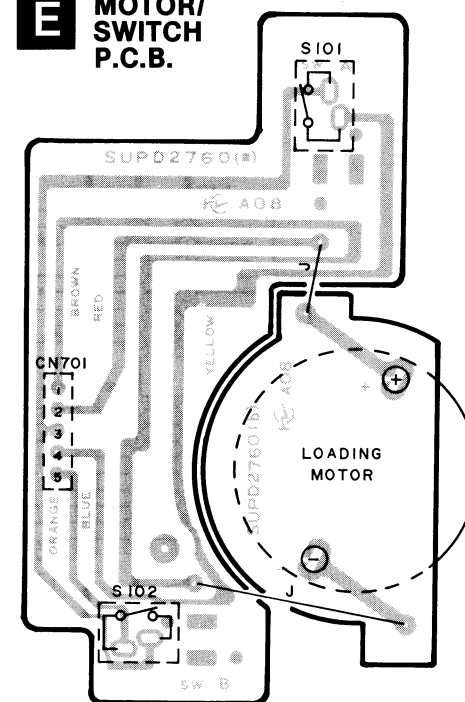
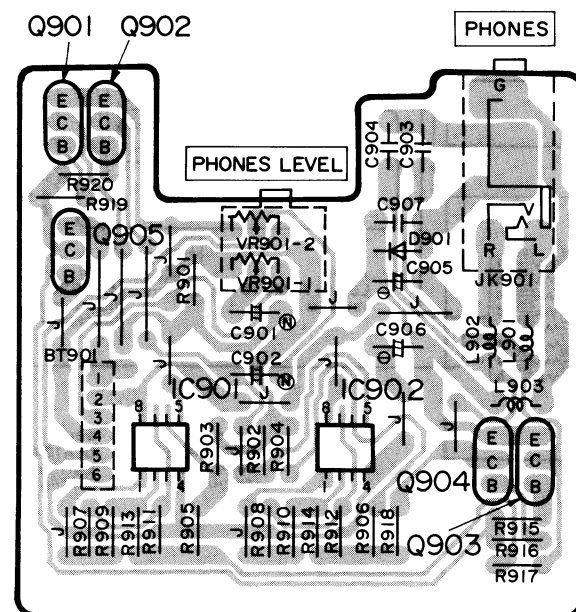
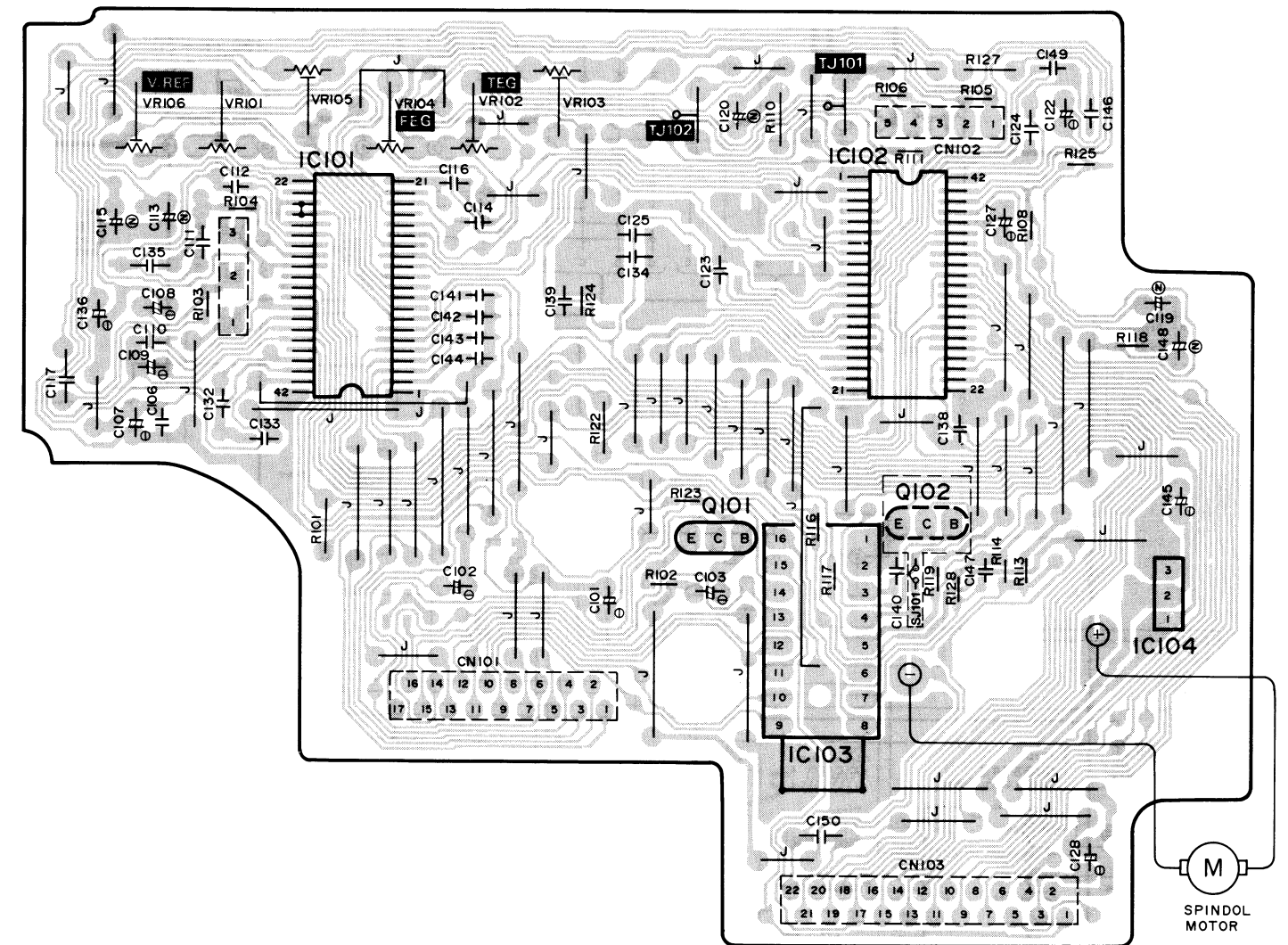


I HEADPHONES P.C.B.



E MOTOR/SWITCH P.C.B.

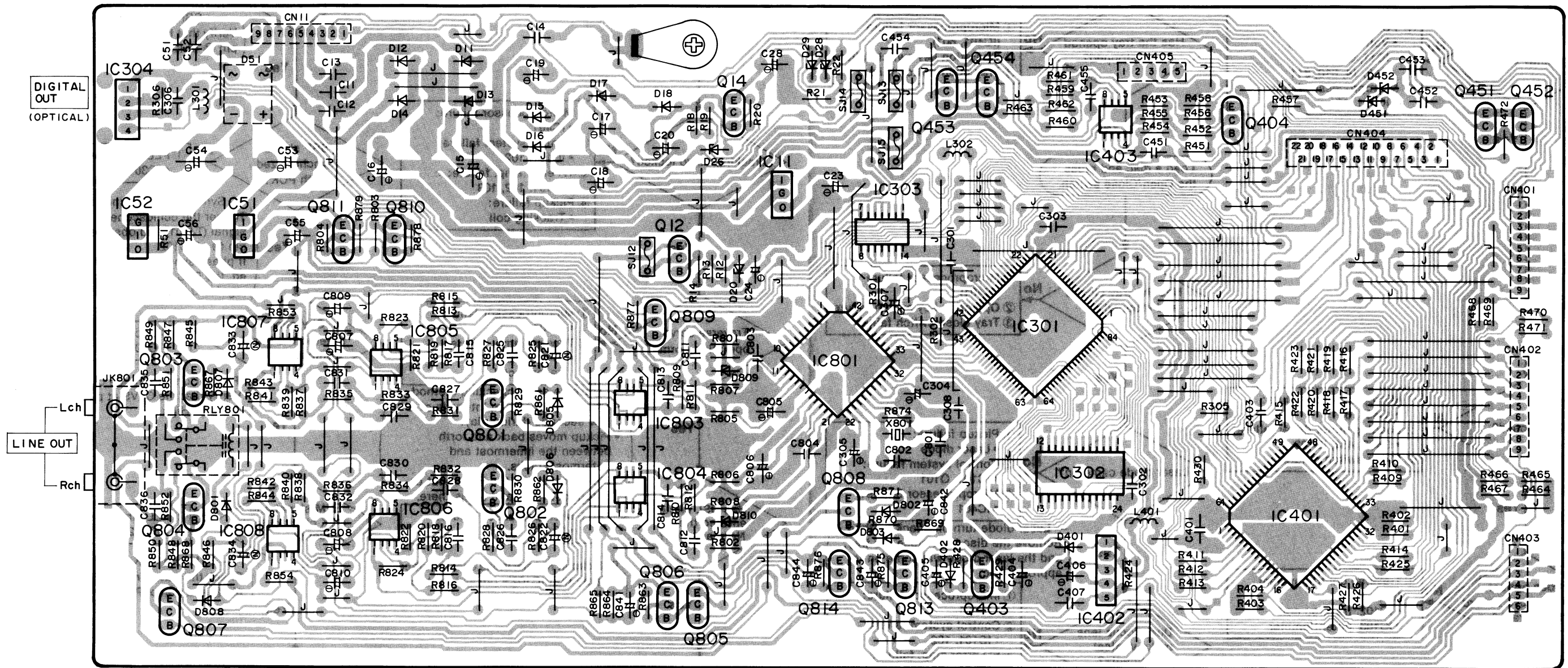




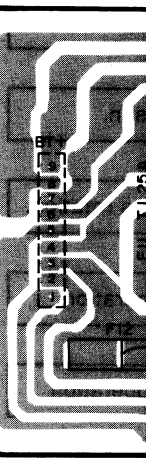
IC103 Modifications	AN8377	AN8377N
IC104	LM2940T5M	Removed
Q102	Not used	2SB1240QR Added
C140	0.01μF	Removed
C145	6V 100μF	Removed
Jumper SJ101	Not used	Shorted

• For (E), (XL)

G MAIN P.C.B.

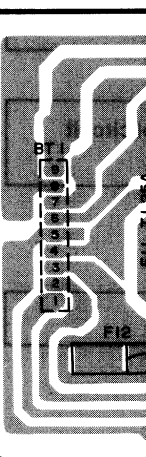


H POWER

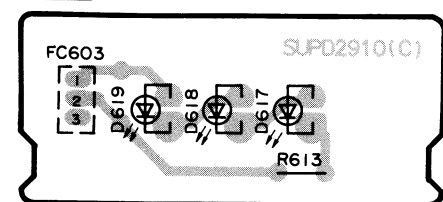


• For (EK), (X)

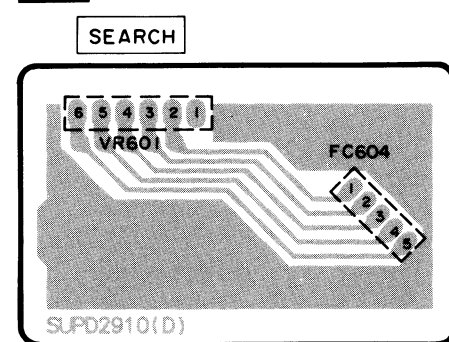
H POWER



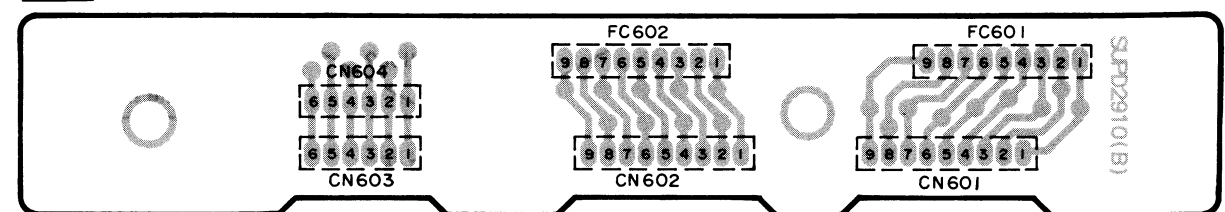
B DISC ILLUMINATOR P.C.B.



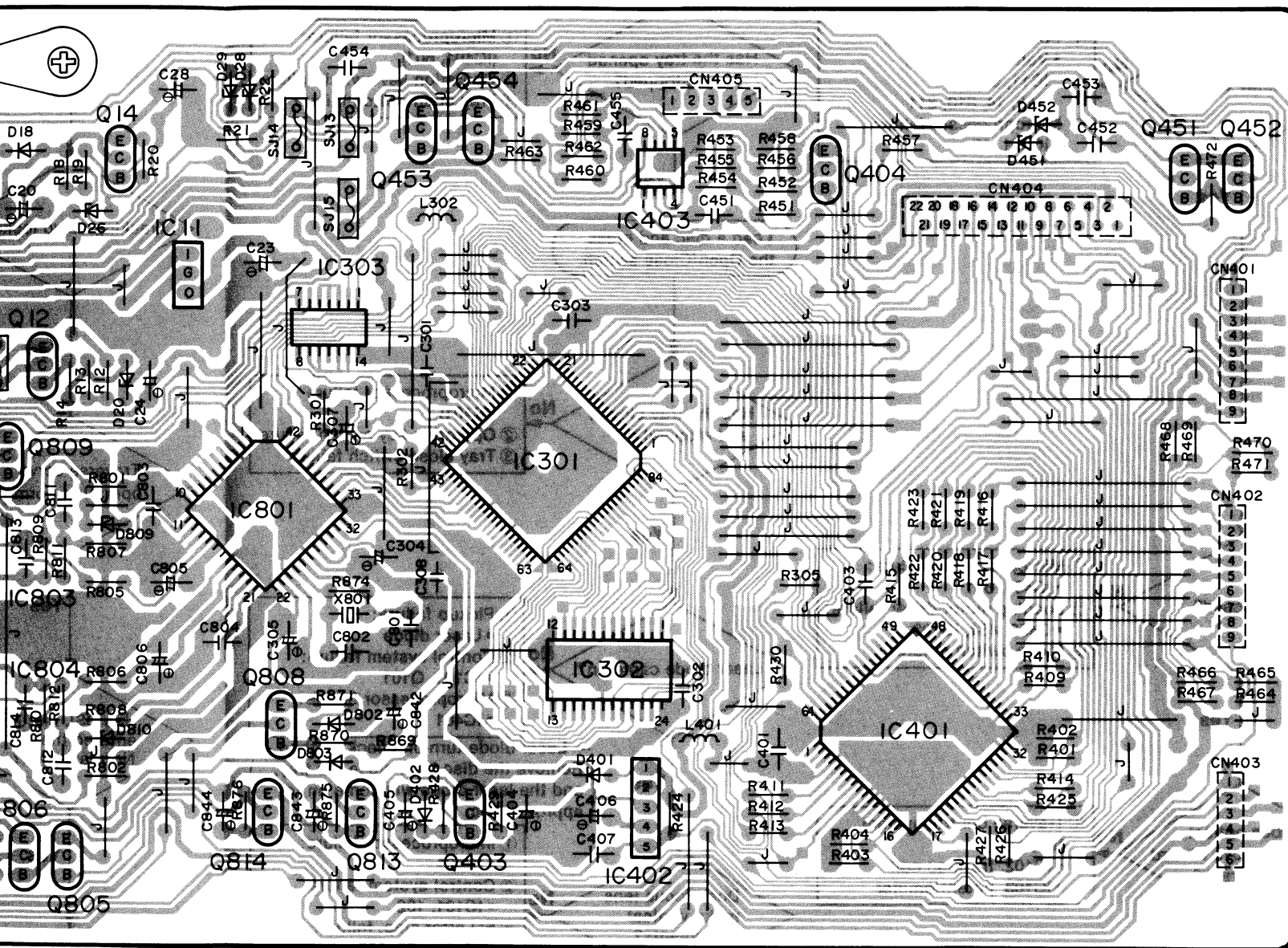
C SEARCH P.C.B.



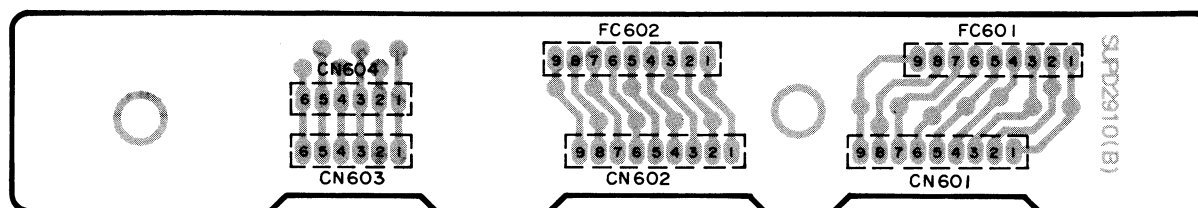
F EXTENSION P.C.B.



20 21 22 23 24 25 26 27 28 29

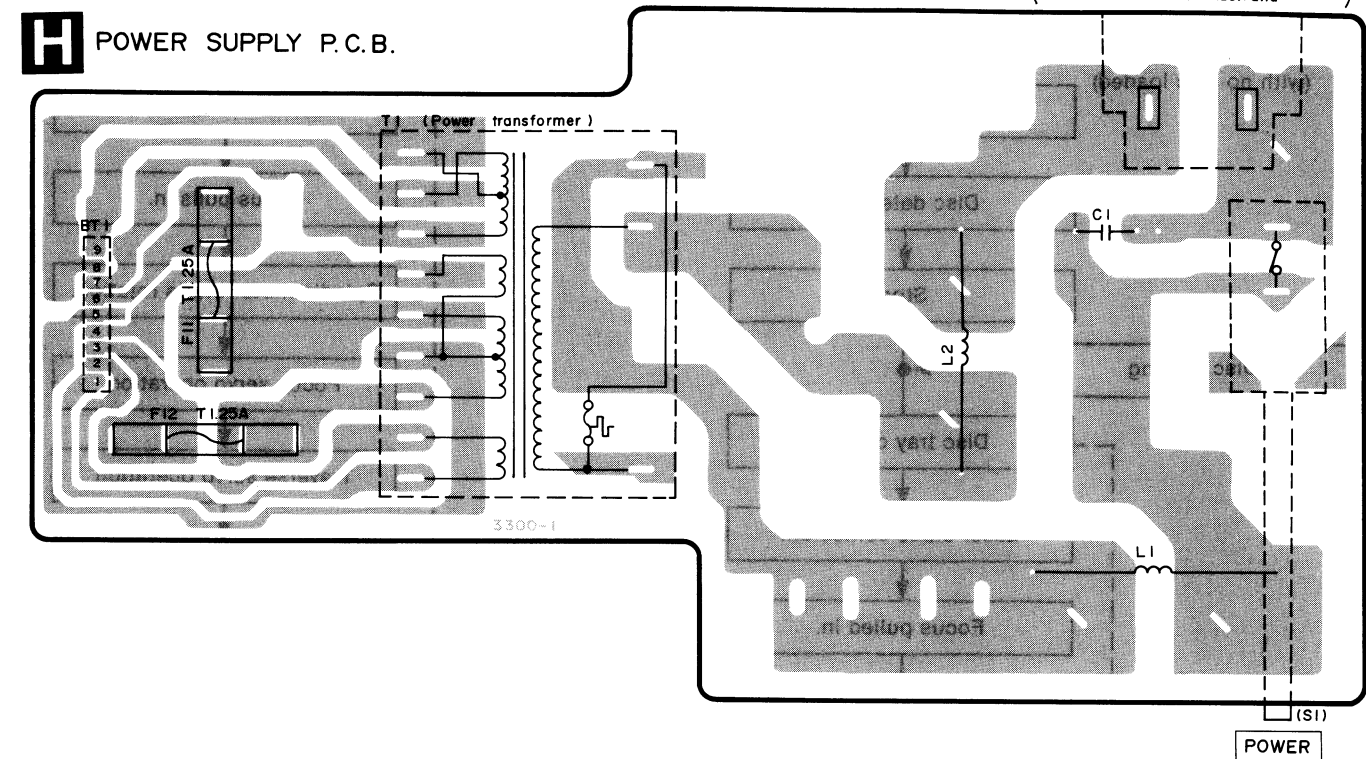


F EXTENSION P.C.B.



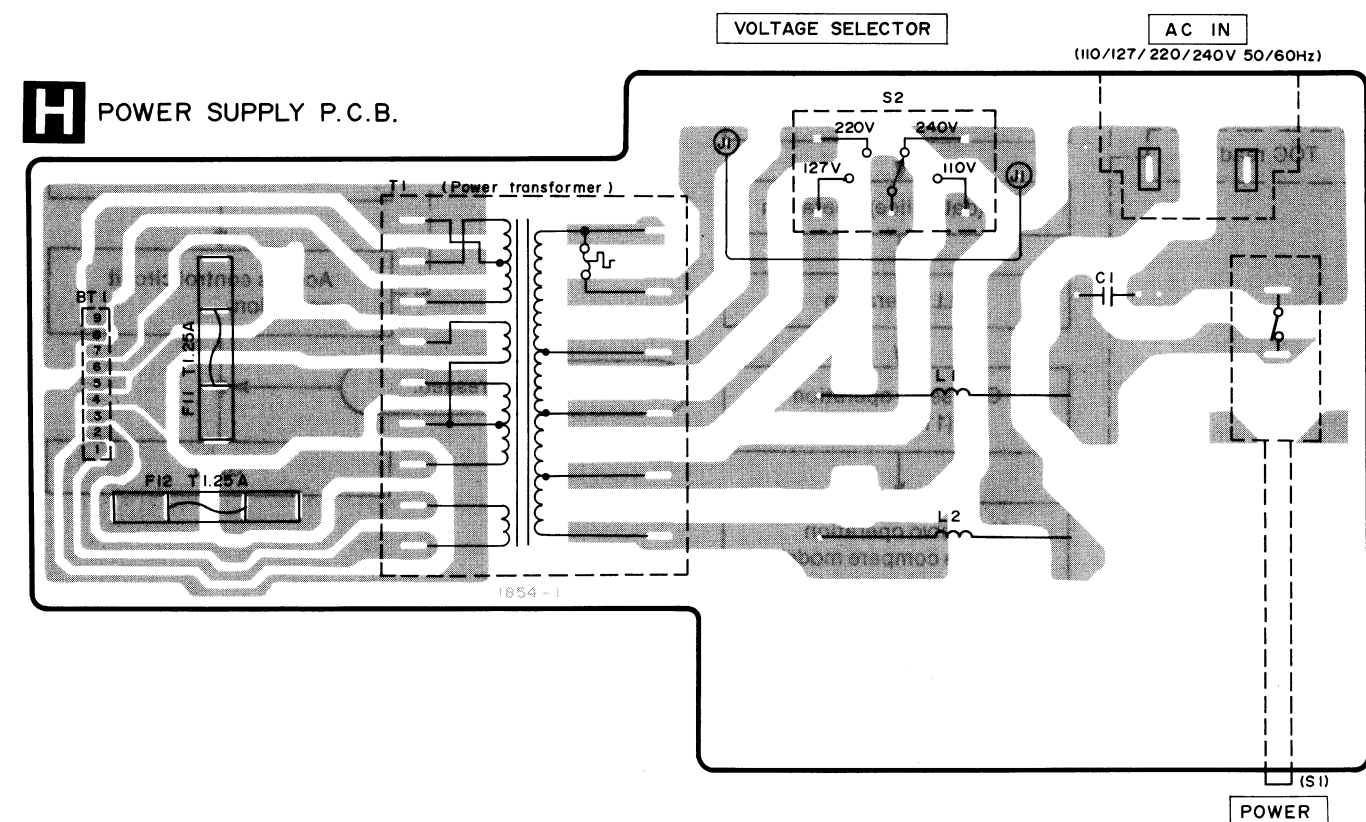
- For (E), (XL), (EG), (EB), (EH) and (EI) areas.

H POWER SUPPLY P.C.B.



- For (EK), (XA), (XB), (PA), (PE) and (PC) areas.

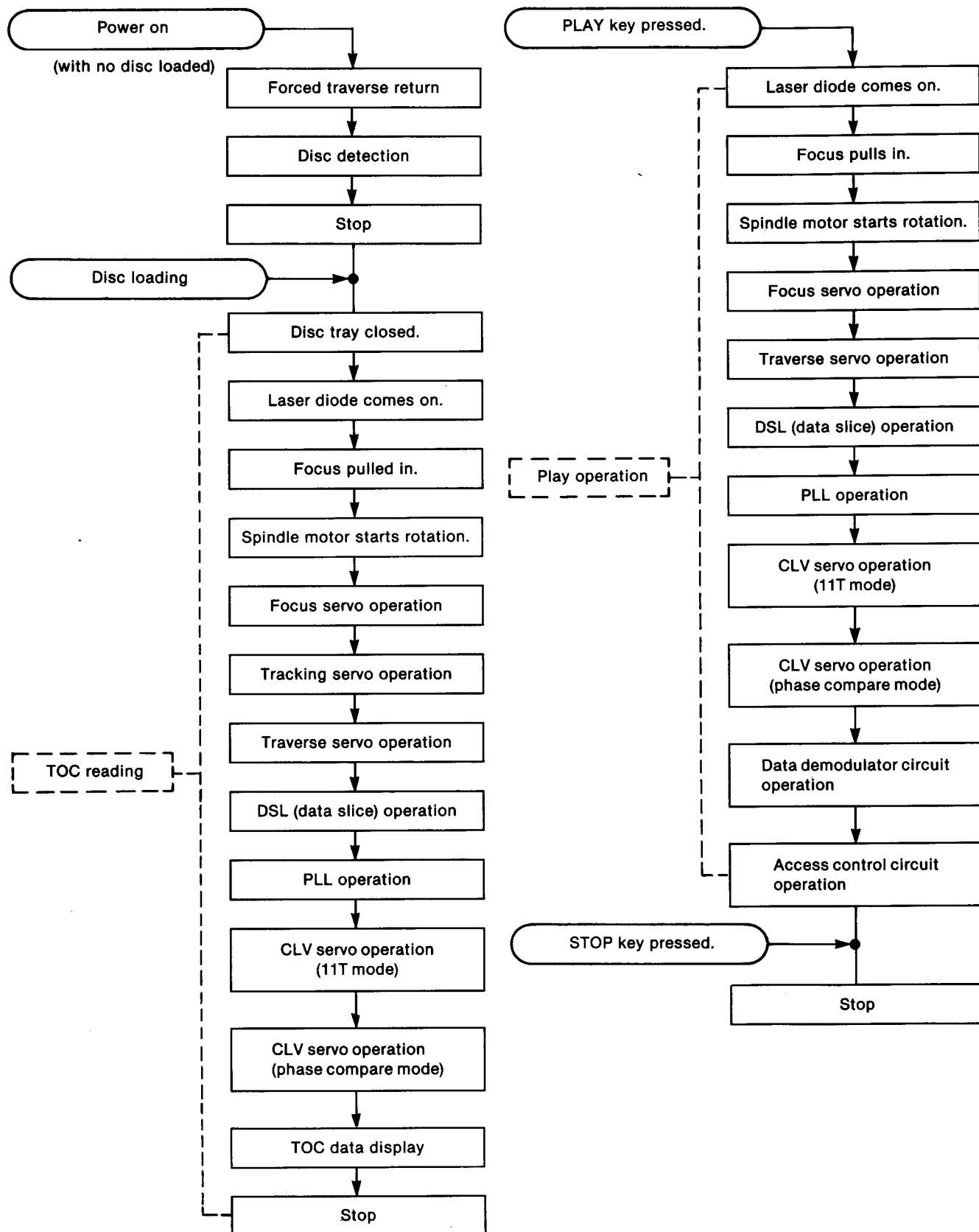
H POWER SUPPLY P.C.B.



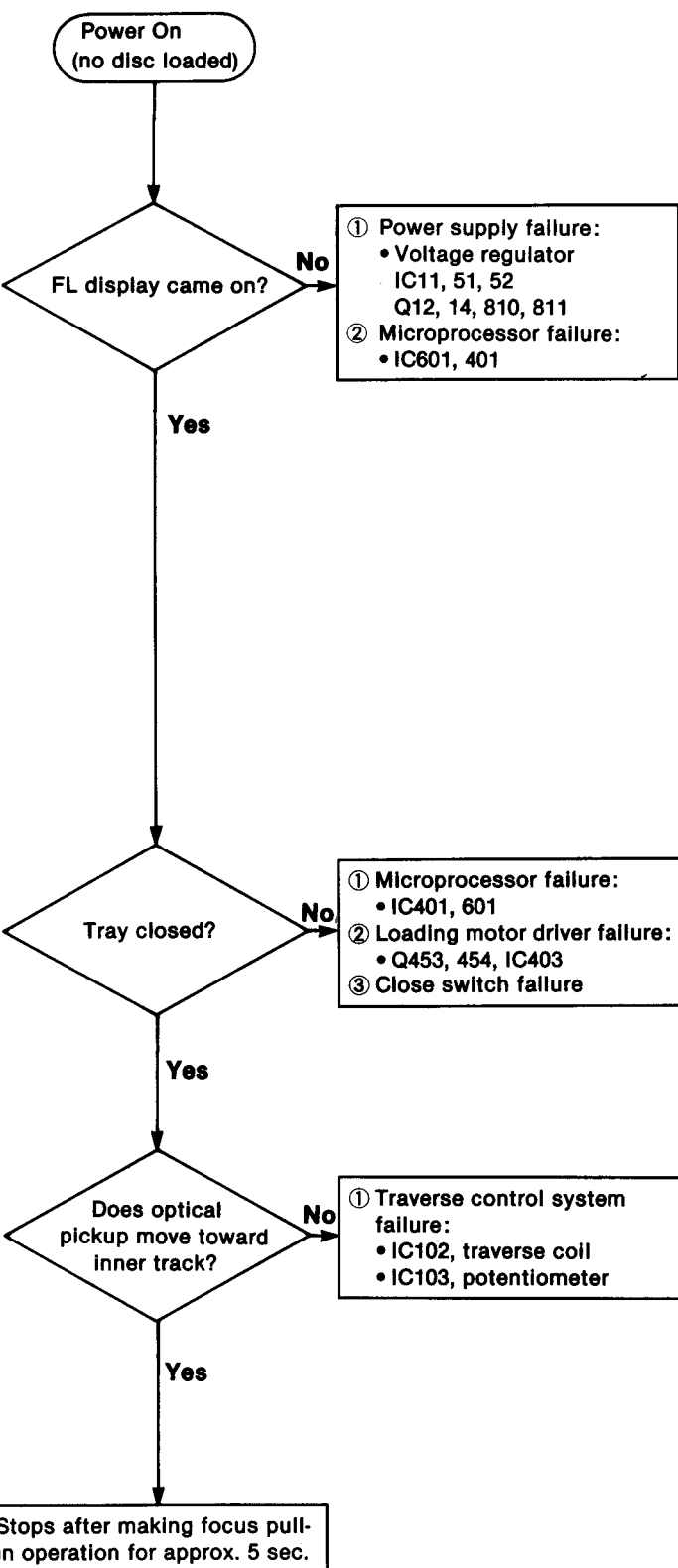
■ TROUBLESHOOTING GUIDE

SL-P777 Operation Sequence Check Sheet

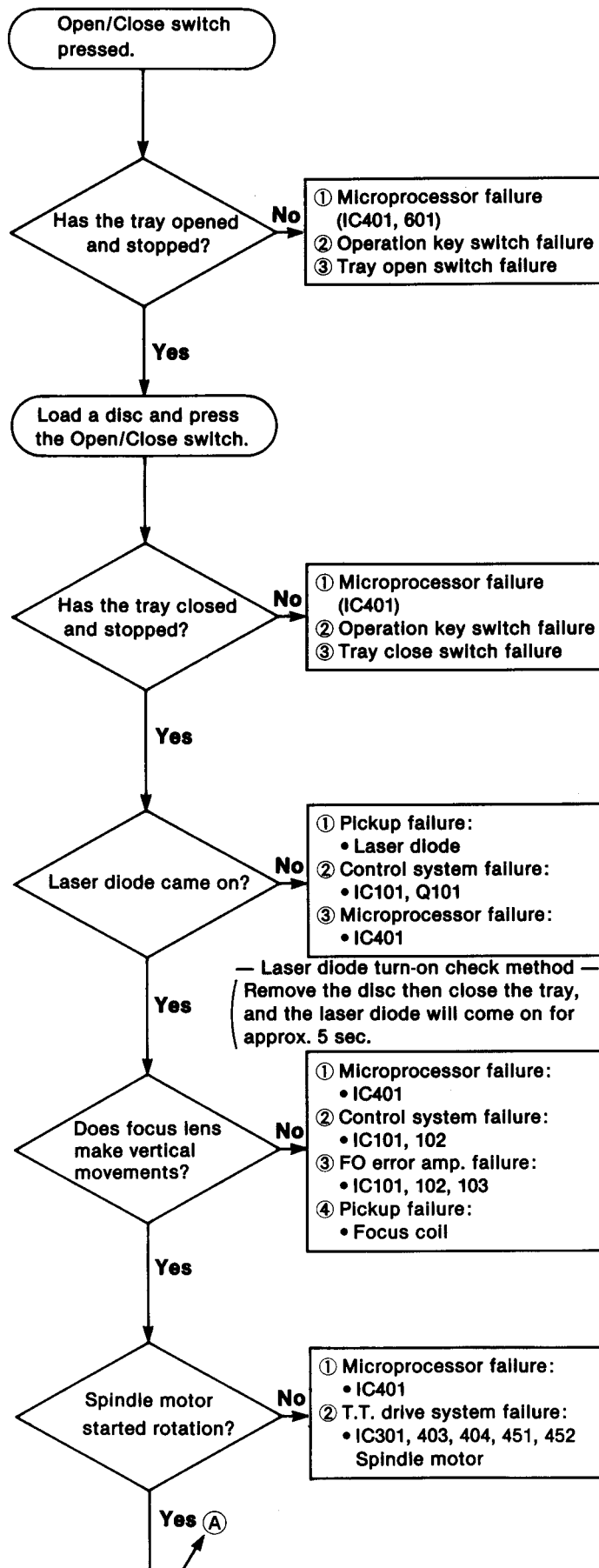
Play Operation Sequence

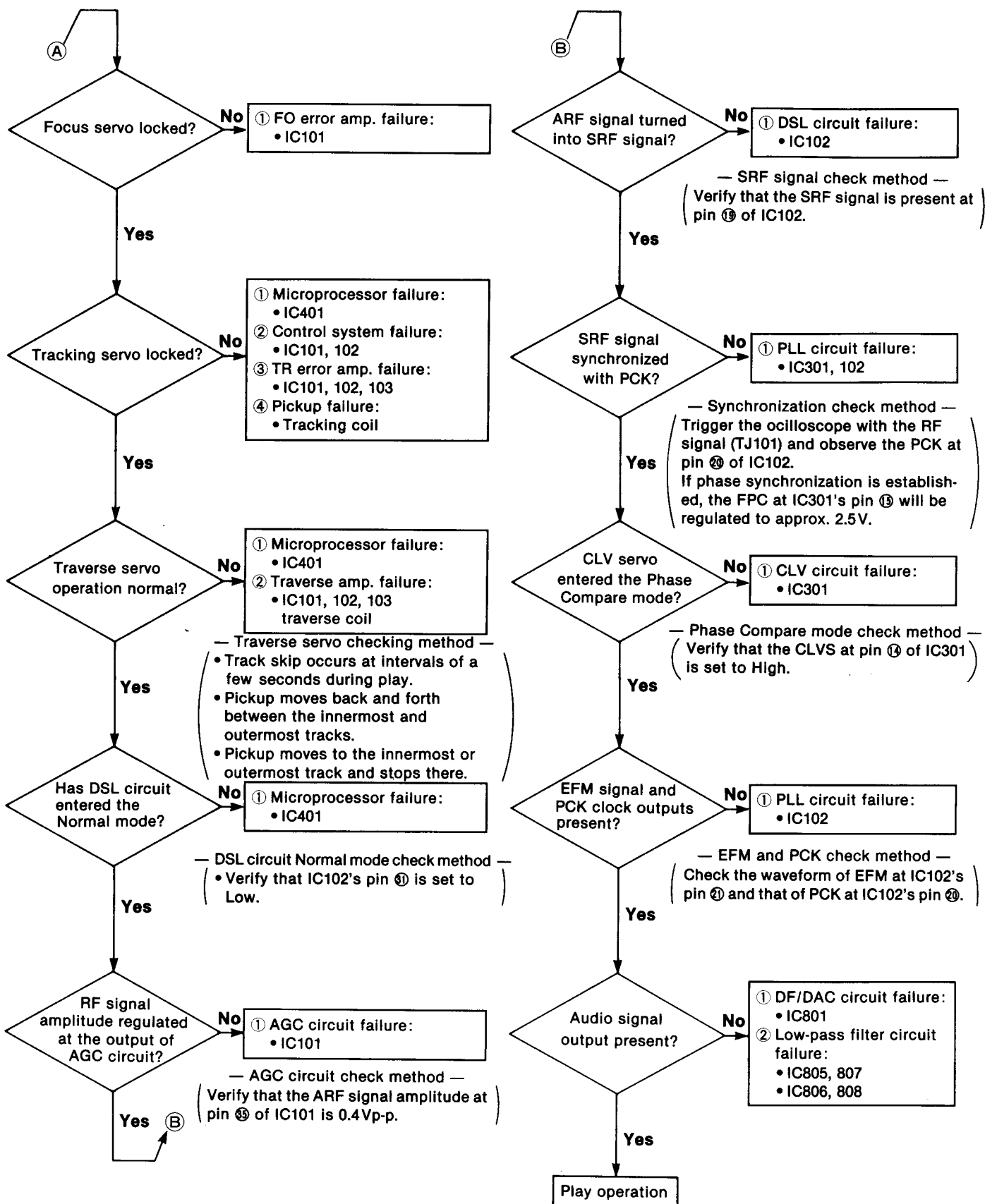


Operation Sequence Just After Power On)



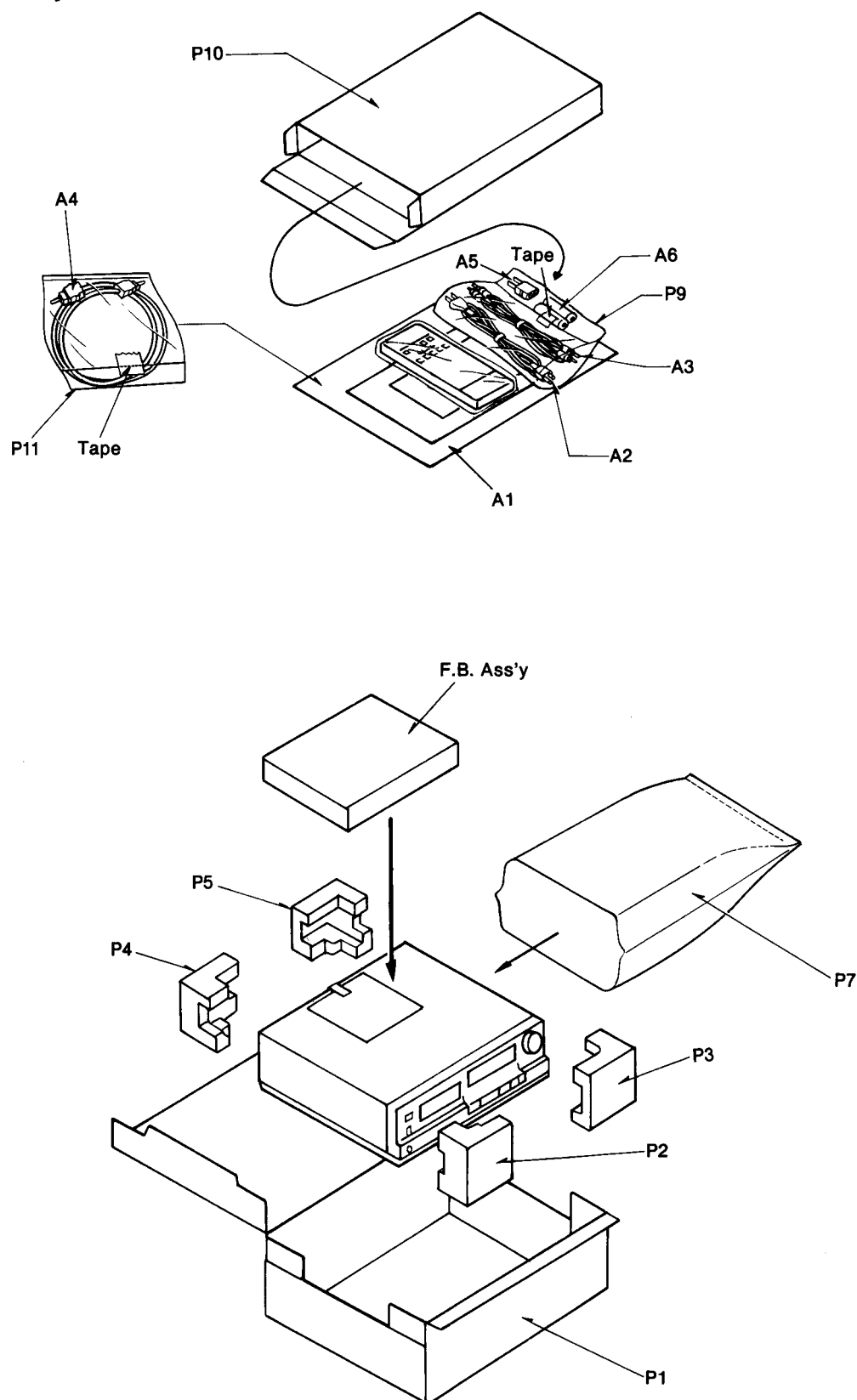
(TOC Read Operation-PLAY Operation)





■ PACKING

• F.B. Ass'y



RESISTORS & CAPACITORS

Notes : * Important safety notice :

Components identified by $\triangle$ 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.

Numbering System For Resistors

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1K Ω)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470 Ω)

Numbering System For Capacitors

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001 μ F)	Tolerance	Unique
ECEA	50	M		330
Type	Voltage (50V)	Characteristics		Value (33 μ F)

● Capacity values are in microfarads (μ F) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).

● Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000 Ω , 1M = 1,000k Ω

Resistor Type		Wattage		Tolerance
ERD	: Carbon	10 : 1/8W	12 : 1/2W	J : $\pm 5\%$
ERG	: Metal Oxide	14 : 1/4W	25 : 1/4W	F : $\pm 1\%$
ERQ	: Fuse Type Metal	1A : 1W	18 : 1/8W	G : $\pm 2\%$
ERX	: Metal Film	S2 : 1/4W	S1 : 1/2W	J : $\pm 5\%$
ERD L	: Carbon (chip)	2F : 1/4W	50 : 1/2W	K : $\pm 10\%$
ERO K	: Metal Film (chip)	2A : 2W	3A : 3W	M : $\pm 20\%$
ERC	: Solid	6G : 1/10W	8G : 1/8W	
ERF	: Incombustible Box-Shaped			
ERM	: Wire-Wound			
RRJ	: Chip Resistor			
ERJ	: Chip Resistor			

Capacitor Type		Voltage		Tolerance
ECE	: Electrolytic	0J : 6.3V	1A : 10V	K : $\pm 10\%$
ECCD	: Ceramic	1C : 16V	1E : 25V	M : $\pm 20\%$
ECKD	: Ceramic Capacitor	1H : 50V	1V : 35V	Z : $\pm 80\%$
ECQM	: Polyester	50 : 50V	05 : 50V	-20
ECQP	: Polypropylene	2H : 500V	2A : 100V	J : $\pm 5\%$
ECG	: Ceramic	1 : 100V	1J : 63V	G : $\pm 2\%$
ECEA N	: Non Polar Electrolytic	KC : 400V AC	0G : 4V	F : $\pm 1\%$
OCU	: Ceramic (Chip Type)	KC : 125V AC		C : $\pm 0.25\mu$ F
ECUX	: Ceramic (Chip Type)	(UL)		D : $\pm 0.5\mu$ F
ECF	: Semiconductor			
EECW	: Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)			R452	ERDS2T J333	33K 1/4	R808	ERDAS3G103	10K 1/4
R12	ERDS2T J471	470 1/4	R453	ERDS2T J333	33K 1/4	R809	ERDS2T J393	39K 1/4
R13	ERDS2T J471	470 1/4	R454	ERDS2T J123	12K 1/4	R810	ERDS2T J393	39K 1/4
R14	ERDS2T J101	100 1/4	R455	ERDS2T J103	10K 1/4	R811	ERDS2T J393	39K 1/4
R18	ERDS2T J102	1K 1/4	R456	ERDS2T J154	150K 1/4	R812	ERDS2T J393	39K 1/4
R19	ERDS2T J102	1K 1/4	R457	ERDS2T J101	100 1/4	R813	ERDS2T J472	4.7K 1/4
R20	ERDS2T J101	100 1/4	R458	ERDS2T J8R2	8.2 1/4	R814	ERDS2T J472	4.7K 1/4
R21	ERDS2T J392	3.9K 1/4	R459	ERDS2T J913	91K 1/4	R815	ERDS2T J472	4.7K 1/4
R22	ERDS2T J392	3.9K 1/4	R460	ERDS2T J124	120K 1/4	R816	ERDS2T J472	4.7K 1/4
R51	ERDS2T J561	560 1/4	R461	ERDS2T J913	91K 1/4	R817	ERDS2T J272	2.7K 1/4
R301	ERDS2T J561	560 1/4	R462	ERDS2T J124	120K 1/4	R818	ERDS2T J272	2.7K 1/4
R302	ERDS2T J331	330 1/4	R463	ERDS2T J101	100 1/4	R819	ERDS2T J272	2.7K 1/4
R305	ERDS2T J472	4.7K 1/4	R464	ERDS2T J472	4.7K 1/4	R820	ERDS2T J272	2.7K 1/4
R306	ERDS2T J822	8.2K 1/4	R465	ERDS2T J472	4.7K 1/4	R821	ERDS2T J103	10K 1/4
R401	ERDS2T J472	4.7K 1/4	R466	ERDS2T J472	4.7K 1/4	R822	ERDS2T J103	10K 1/4
R402	ERDS2T J472	4.7K 1/4	R467	ERDS2T J472	4.7K 1/4	R823	ERDS2T J103	10K 1/4
R403	ERDS2T J472	4.7K 1/4	R468	ERDS2T J472	4.7K 1/4	R824	ERDS2T J103	10K 1/4
R404	ERDS2T J472	4.7K 1/4	R469	ERDS2T J472	4.7K 1/4	R825	ERDAS3G183	18K 1/4
R409	ERDS2T J472	4.7K 1/4	R470	ERDS2T J472	4.7K 1/4	R826	ERDAS3G183	18K 1/4
R410	ERDS2T J472	4.7K 1/4	R471	ERDS2T J472	4.7K 1/4	R827	ERDAS3G392	3.9K 1/4
R411	ERDS2T J472	4.7K 1/4	R472	ERDS2T J101	100 1/4	R828	ERDAS3G392	3.9K 1/4
R412	ERDS2T J472	4.7K 1/4	R601	ERDS2T J472	4.7K 1/4	R829	ERDS2T J105	1M 1/4
R413	ERDS2T J472	4.7K 1/4	R602	ERDS2T J472	4.7K 1/4	R830	ERDS2T J105	1M 1/4
R414	ERDS2T J472	4.7K 1/4	R603	ERDS2T J472	4.7K 1/4	R831	ERDAS3G183	18K 1/4
R415	ERDS2T J104	100K 1/4	R604	ERDS2T J472	4.7K 1/4	R832	ERDAS3G183	18K 1/4
R416	ERDS2T J221	220 1/4	R605	ERDS2T J472	4.7K 1/4	R833	ERDAS3G222	2.2K 1/4
R417	ERDS2T J221	220 1/4	R606	ERDS2T J472	4.7K 1/4	R834	ERDAS3G222	2.2K 1/4
R418	ERDS2T J221	220 1/4	R607	ERDS2T J472	4.7K 1/4	R835	ERDAS3G393	39K 1/4
R419	ERDS2T J221	220 1/4	R608	ERDS2T J472	4.7K 1/4	R836	ERDAS3G393	39K 1/4
R420	ERDS2T J221	220 1/4	R609	ERDS2T J121	120 1/4	R837	ERDS2T J100	10 1/4
R421	ERDS2T J221	220 1/4	R610	ERDS2T J121	120 1/4	R838	ERDS2T J100	10 1/4
R422	ERDS2T J221	220 1/4	R611	ERDS2T J103	10K 1/4	R839	ERDS2T J330	33 1/4
R423	ERDS2T J221	220 1/4	R612	ERDS2T J104	100K 1/4	R840	ERDS2T J330	33 1/4
R424	ERDS2T J472	4.7K 1/4	R613	ERDS2T J221	220 1/4	R841	ERDS2T J102	1K 1/4
R425	ERDS2T J472	4.7K 1/4	R614	ERDS2T J105	1M 1/4	R842	ERDS2T J102	1K 1/4
R426	ERDS2T J472	4.7K 1/4	R801	ERDS2T J560	56 1/4	R843	ERDS2T J332	3.3K 1/4
R427	ERDS2T J472	4.7K 1/4	R802	ERDS2T J560	56 1/4	R844	ERDS2T J332	3.3K 1/4
R428	ERDS2T J223	22K 1/4	R803	ERDS2T J271	270 1/4	R845	ERDS2T J271	270 1/4
R429	ERDS2T J222	2.2K 1/4	R804	ERDS2T J271	270 1/4	R846	ERDS2T J271	270 1/4
R430	ERDS2T J472	4.7K 1/4	R805	ERDAS3G103	10K 1/4	R847	ERDS2T J560	56 1/4
R451	ERDS2T J154	150K 1/4	R806	ERDAS3G103	10K 1/4	R848	ERDS2T J560	56 1/4
			R807	ERDAS3G103	10K 1/4	R849	ERDS2T J331	330 1/4

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
R850	ERDS2TJ331	330 1/4	C302	ECFTD103KXL	0.01 25	RESISTORS(VALUE, WATTAGE)		
R851	ERDS2TJ124	120K 1/4	C303	ECFR1E104ZF5	0.1 25	R101	ERDS2TJ471	470 1/4
R852	ERDS2TJ124	120K 1/4	C304	ECEA0JS221	220 6.3	R102	ERJ6GEYJ120V	12 1/10
R853	ERDS2TJ102	1K 1/4	C305	ECEA0JS221	220 6.3	R103	ERJ6GEYJ122	1.2K 1/10
R854	ERDS2TJ102	1K 1/4	C306	ECFR1E104ZF5	0.1 25	R104	ERJ6GEYJ471	470 1/10
R861	ERDS2TJ102	1K 1/4	C307	ECEA0JS331	330 6.3	R105	RRJ6GCJ102TE	1K 1/6
R862	ERDS2TJ102	1K 1/4	C308	ECFR1E104ZF5	0.1 25	R106	RRJ6GCJ102TE	1K 1/6
R863	ERDS2TJ222	2.2K 1/4	C401	ECFR1E104ZF5	0.1 25	R108	ERJ6GEYJ224V	220K 1/10
R864	ERDS2TJ154	150K 1/4	C403	ECFR1E104ZF5	0.1 25	R110	ERDS2TJ222	2.2K 1/4
R865	ERDS2TJ333	33K 1/4	C404	ECEA0JUM71	470 6.3	R111	ERJ6GEYJ154V	150K 1/10
R867	ERDS2TJ563	56K 1/4	C405	ECEA1AU470	47 10	R113	ERJ6GEYJ472V	4.7K 1/10
R868	ERDS2TJ563	56K 1/4	C406	ECEA1HK0R1	0.1 50	R114	ERJ6GEYJ883V	68K 1/10
R869	ERDS2TJ103	10K 1/4	C407	ECKR1H103ZF5	0.01 50	R116	ERJ6GEYJ332V	3.3K 1/10
R870	ERDS2TJ102	1K 1/4	C451	ECKD1H102KB	1000P 50	R117	ERJ6GEYJ123	12K 1/10
R871	ERDS2TJ102	1K 1/4	C452	ECKD1H102KB	1000P 50	R118	ERJ6GEYJ333V	33K 1/10
R874	ERDS2TJ472	4.7K 1/4	C453	ECKD1H102KB	1000P 50	R119	RRJ6GCJ223TE	22K 1/6
R875	ERDS2TJ102	1K 1/4	C454	ECFTD103KXL	0.01 25	R122	ERDS2TJ104	100K 1/4
R876	ERDS2TJ102	1K 1/4	C455	ECKD1H102KB	1000P 50	R123	ERJ6GEYJ470V	47 1/10
R877	ERDS2TJ472	4.7K 1/4	C601	ECBT1E103ZF	0.01 25	R124	RRJ6GCJ103TE	10K 1/6
R878	ERDS2TJ102	1K 1/4	C602	ECEA1HKS100B	10 50	R125	RRJ6GCJ222TE	2.2K 1/6
R879	ERDS2TJ102	1K 1/4	C801	ECCR1H050C5	5P 50	R127	ERDS2TJ681	680 1/4
R901	ERDS2TJ103	10K 1/4	C802	ECCR1H050C5	5P 50	R128	RRJ6GCJ103TE	10K 1/6
R902	ERDS2TJ103	10K 1/4	C803	ECFR1E104ZF5	0.1 25	CAPACITORS(VALUE, VOLTAGE)		
R903	ERDS2TJ123	12K 1/4	C804	ECFR1E104ZF5	0.1 25	C101	ECEA1CKS2201	22 16
R904	ERDS2TJ123	12K 1/4	C805	UKS0J221M1TA	220 6.3	C102	ECEA1HKS0101	1 50
R905	ERDS2TJ104	100K 1/4	C806	UKS0J221M1TA	220 6.3	C103	ECEA1CKS2201	22 16
R906	ERDS2TJ104	100K 1/4	C807	UKS1A470M1TA	47 10	C106	RCUV1E104ZF	0.1 25
R907	ERDS2TJ330	33 1/4	C808	UKS1A470M1TA	47 10	C107	ECEA0GKS1011	100 4
R908	ERDS2TJ330	33 1/4	C809	UKS1A470M1TA	47 10	C108	ECEA0JKS4701	47 6.3
R909	ERDS2TJ332	3.3K 1/4	C810	UKS1A470M1TA	47 10	C109	ECEA1HKS0101	1 50
R910	ERDS2TJ332	3.3K 1/4	C811	ECQP1331J23	330P 100	C110	RCUV1H681KB	680P 50
R911	ERDS2TJ100	10 1/4	C812	ECQP1331J23	330P 100	C111	ECUV1C224KR	0.22 16
R912	ERDS2TJ100	10 1/4	C813	ECCR1H150JC5	15P 50	C112	RCUV1H331KB	330P 50
R913	ERDS2TJ102	1K 1/4	C814	ECCR1H150JC5	15P 50	C113	ECEA1HSDN0101	1 50
R914	ERDS2TJ102	1K 1/4	C815	ECQP1331J23	330P 100	C114	RCUV1E333KB	0.033 25
R915	ERDS2TJ222	2.2K 1/4	C816	ECQP1331J23	330P 100	C115	ECEA1HSDN0101	1 50
R916	ERDS2TJ222	2.2K 1/4	C821	ARIAN330MOT	33 10	C116	RCUV1E333KB	0.033 25
R917	ERDS2TJ121	120 1/4	C822	ARIAN330MOT	33 10	C117	ECBT1H102KB5	0.001 50
R918	ERDS2TJ121	120 1/4	C825	ECQP2A392JSP	0.0039 100	C119	ECEA1CKN4R71	4.7 16
R919	ERDS2TJ222	2.2K 1/4	C826	ECQP2A392JSP	0.0039 100	C120	ECEA1CKN4R71	4.7 16
R920	ERDS2TJ222	2.2K 1/4	C827	ECCD1H151K	150P 50	C122	ECEA0JKS2201	22 6.3
CAPACITORS(VALUE, VOLTAGE)			C828	ECCD1H151K	150P 50	C123	RCUV1E104ZF	0.1 25
C1	△ ECKDKC103PF2	0.01 125	C829	ECQM1H392JZ	0.0039 50	C124	ECUV1E823KB	0.082 25
C11	△ ECKR1H103ZF5	0.01 50	C830	ECQM1H392JZ	0.0039 50	C125	ECUV1C224KR	0.22 16
C12	△ ECKR1H103ZF5	0.01 50	C831	ECCR1H101JC5	100P 50	C127	ECEA0JKF1011	100 6.3
C13	△ ECKR1H103ZF5	0.01 50	C832	ECCR1H101JC5	100P 50	C128	ECEA1CKA1011	100 16
C14	△ ECKR1H103ZF5	0.01 50	C833	ARIAN330MOT	33 10	C132	ECUV1E104KB	0.1 25
C15	ECEA1CU332	3300 16	C834	ARIAN330MOT	33 10	C133	RCUV1H330KC	33P 50
C16	ECEA1CU222	2200 16	C835	ECQM1H102JZ	0.001 50	C134	ECUV1C224KR	0.22 16
C17	ECEA1CU331	330 16	C836	ECQM1H102JZ	0.001 50	C135	ECUV1C224KR	0.22 16
C18	ECEA16V1000	1000 16	C841	ECEA1CKS100	10 16	C136	ECEA0GKS1011	100 4
C19	ECEA1VU331E	330 35	C842	ECEA1AK220B	22 10	C138	RCUV1E104ZF	0.1 25
C20	ECEA1VU331E	330 35	C843	ECEA1AU101	100 10	C139	RCUV1H470KC	47P 50
C23	ECEA1AU470	47 10	C844	ECEA1AU101	100 10	C140	RCUV1E103KB	0.01 25
C24	ECEA1AU470	47 10	C901	ARIEN3R3MOT	3.3 25	C141	RCUV1H470KC	47P 50
C28	ECEA1HK010	1 50	C902	ARIEN3R3MOT	3.3 25	C142	RCUV1H470KC	47P 50
C51	△ ECKR1H103ZF5	0.01 50	C903	ECFTD103KXL	0.01 25	C143	RCUV1H470KC	47P 50
C52	△ ECKR1H103ZF5	0.01 50	C904	ECFTD103KXL	0.01 25	C144	RCUV1H470KC	47P 50
C53	ECEA1CPX222E	2200 16	C905	ARA1A220MOT	22 10	C145	ECEA0JKF1011	100 6.3
C54	ECEA1CPX222E	2200 16	C906	ARA1A220MOT	22 10	C146	RCUV1H181KC	180P 50
C55	UKS1A470M1TA	47 10	C907	ECFTD103KXL	0.01 25	C147	RCUV1H472KB	0.0047 50
C56	UKS1A470M1TA	47 10	SERVO P.C.B.			C148	ECEA1ESN4R71	4.7 25
C301	ECFTD103KXL	0.01 25				C149	RCUV1E104ZF	0.1 25
						C150	RCUV1E103KB	0.01 25

REPLACEMENT PARTS LIST

Notes : * Important safety notice :

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

* 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.

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

* ACHTUNG :

Die lasereinheit nicht zerlegen.

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

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			D15	△ SVD1SR35200A	DIODE
IC11	LM2940T5	I.C. REGULATOR	D16	△ SVD1SR35200A	DIODE
IC51	M5F78M08L	I.C. REGULATOR	D17	△ SVD1SR35200A	DIODE
IC52	M5F79M08L	I.C. REGULATOR	D18	△ SVD1SR35200A	DIODE
IC301	MN6622	I.C. DIGITAL SIGNAL PROCESSING	D20	MA4056-M	DIODE
IC302	LC3517BM15T	I.C. 16K RAM	D26	MA4330M	DIODE
IC303	TC40H000FTP1	I.C. NAND GATE	D28	MA4033M	DIODE
IC304	SV1T0TX174	I.C. OPTICAL TRANSMISSION	D29	MA4033M	DIODE
IC401	MN1554PEZ-1	I.C. SYSTEM CONTROL	D51	△ SVD1SR35200A	DIODE
IC402	SV1M51953BL	I.C. RESET	D401	△ SVD1SR35200A	DIODE
IC403	SV1BA4558F	I.C. MOTOR DRIVE	D402	MA165	DIODE
IC601	MB88724BPEV1	I.C. FL DRIVE/SYSTEM CONTROL	D451	MA4051-M	DIODE
IC602	HC-MD10E	I.C. REMOTE SENSOR	D452	MA4051-M	DIODE
IC801	MN6471	I.C. DF & D/A CONVERTER	D601	MA165	DIODE
IC803	SV1M5219FP	I.C. BUFFER AMP	D602	MA165	DIODE
IC804	SV1M5219FP	I.C. BUFFER AMP	D603	MA165	DIODE
IC805	SV1M5219FP	I.C. BUFFER AMP	D604	MA165	DIODE
IC806	SV1M5219FP	I.C. BUFFER AMP	D605	MA165	DIODE
IC807	SV1M5238FP	I.C. CLASS AA BUFFER AMP	D606	MA165	DIODE
IC808	SV1M5238FP	I.C. CLASS AA BUFFER AMP	D607	MA165	DIODE
IC901	MS218FPTA	I.C. HEADPHONE AMP	D608	MA165	DIODE
IC902	MS218FPTA	I.C. HEADPHONE AMP	D609	MA165	DIODE
SJ12	SRUN15	I.C. PROTECTOR	D610	MA165	DIODE
SJ13	SRUN15	I.C. PROTECTOR	D611	MA165	DIODE
SJ14	SRUN15	I.C. PROTECTOR	D612	MA165	DIODE
SJ15	SRUN15	I.C. PROTECTOR	D613	MA165	DIODE
TRANSISTORS			D614	MA165	DIODE
Q12	2SB1240PRTV3	TRANSISTOR	D615	SVGDPG7851Y	L.E.D.
Q14	2SB1238QS	TRANSISTOR	D616	SVGDAY7851	L.E.D.
Q403	DTC114EST	TRANSISTOR	D617	SVDSLRL-54MW4	L.E.D.
Q404	DTA124EST	TRANSISTOR	D618	SVDSLRL-54MW4	L.E.D.
Q451	2SD1862PRTV3	TRANSISTOR	D619	SVDSLRL-54MW4	L.E.D.
Q452	2SB1240PRTV3	TRANSISTOR	D801	MA165	DIODE
Q453	2SD1862PRTV3	TRANSISTOR	D802	MA165	DIODE
Q454	2SB1240PRTV3	TRANSISTOR	D803	MA165	DIODE
Q601	DTC124EST	TRANSISTOR	D805	MA165	DIODE
Q602	DTC124EST	TRANSISTOR	D806	MA165	DIODE
Q603	DTC124EST	TRANSISTOR	D807	MA165	DIODE
Q604	2SC3311A-Q	TRANSISTOR	D808	MA165	DIODE
Q801	2SC3311A-Q	TRANSISTOR	D809	MA4051-M	DIODE
Q802	2SC3311A-Q	TRANSISTOR	D810	MA4051-M	DIODE
Q803	2SC3311A-Q	TRANSISTOR	D901	MA4091-M	DIODE
Q804	2SC3311A-Q	TRANSISTOR	VARIABLE RESISTORS		
Q805	DTC124EST	TRANSISTOR	VR601	EVQWVP02504E	V.R. SEARCH
Q806	DTA124EST	TRANSISTOR	VR901	EVU57A022A14	V.R. HEAD PHONE
Q807	DTA114YST	TRANSISTOR	COILS AND TRANSFORMERS		
Q808	DTA124EST	TRANSISTOR	L1	△ SLQX400-D	COIL
Q809	DTC124EST	TRANSISTOR	L2	△ SLQX400-D	COIL
Q810	2SC3311A-Q	TRANSISTOR	L301	ELEPK1R0KA	COIL
Q811	2SC3311A-Q	TRANSISTOR	L302	ELEPK4R7KA	COIL
Q813	2SC3311A-Q	TRANSISTOR	L401	ELEPK4R7KA	COIL
Q814	2SA1309Q	TRANSISTOR	L901	ELEV2R7KA	COIL
Q901	2SD1450	TRANSISTOR	L902	ELEV2R7KA	COIL
Q902	2SD1450	TRANSISTOR	L903	ELEV2R7KA	COIL
Q903	2SD1450	TRANSISTOR	T1	△ SLTD5V086E	POWER TRANSFORMER
Q904	2SD1450	TRANSISTOR	(E, EG, EB, EH)		
Q905	DTA114YST	TRANSISTOR	(EF, EI)		
DIODES			T1	△ SLTD5V087G	POWER TRANSFORMER
D11	△ SVD1SR35200A	DIODE	(EK, XB, XA)		
D12	△ SVD1SR35200A	DIODE	(PA, PE, PC)		
D13	△ SVD1SR35200A	DIODE	T1	△ SLTD5V088X	POWER TRANSFORMER
D14	△ SVD1SR35200A	DIODE	(XL)		

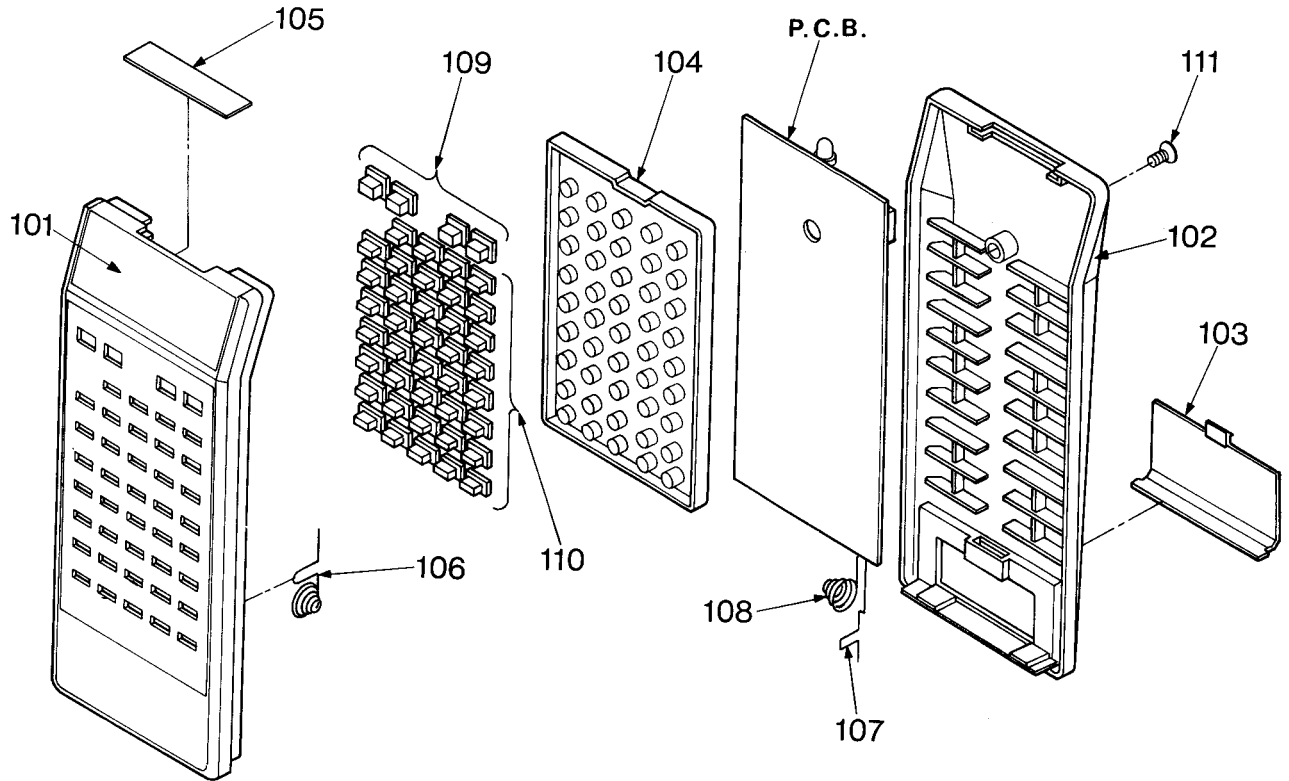
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
OSCILLATORS			S637	EVQQS405K	SW, NO.18
X801	SVQ49U338S	OSCILLATOR	S638	EVQQS405K	SW, + 10
DISPLAYS			S640	EVQQS405K	SW, STOP
FL601	SAD14MT08GK	DISPLAY	S641	EVQQS405K	SW, NO.3
FUSES			S642	EVQQS405K	SW, NO.7
F11	△ XBA2C12TR0	FUSE(250V, T125MA), 250VDT125MA	S643	EVQQS405K	SW, NO.11
F12	△ XBA2C12TR0	FUSE(250V, T125MA), 250VDT125MA	S644	EVQQS405K	SW, NO.15
SWITCHES			S645	EVQQS405K	SW, NO.19
S1	△ ESB8249V	SW, POWER	S646	EVQQS405K	SW, I.FDSKIP
S2	△ SSR187-1	SW, VOLTAGE SELECTER	S647	EVQQS405K	SW, FDSKIP
(EK, XA, XB)			S648	EVQQS405K	SW, PAUSE
(PA, PE, PC)			S649	EVQQS405K	SW, NO.4
S101	SSPD17	SW, LOADING DET	S650	EVQQS405K	SW, NO.8
S102	SSPD18	SW, LOADING DET	S651	EVQQS405K	SW, NO.12
S601	EVQQS405K	SW, EDIT	S652	EVQQS405K	SW, NO.16
S602	EVQQS405K	SW, RANDOM	S653	EVQQS405K	SW, NO.20
S603	EVQQS405K	SW, A.CUE	S654	EVQQS405K	SW, I.RDSKIP
S604	EVQQS405K	SW, DIGITAL ON/OFF	S655	EVQQS405K	SW, RDSKIP
S606	EVQQS405K	SW, PROGRAM	S656	EVQQS405K	SW, PLAY
S609	EVQQS405K	SW, WINDOW	S657	RSS3A18YA-H	SW, TIMER
S610	EVQQS405K	SW, LINK	RELAYS		
S611	EVQQS405K	SW, REPEAT	RLY801	AG80239	RELAY
S613	EVQQS405K	SW, DISPLAY	SERVO P.C.B.		
S614	EVQQS405K	SW, RECALL	INTEGRATED CIRCUITS		
S617	EVQQS405K	SW, SIDE A/B	IC101	AN8373S	I.C. SERVO AMP
S619	EVQQS405K	SW, AB REPEAT	IC102	AN8374S	I.C. SERVO PROCESSOR
S620	EVQQS405K	SW, PEAK	IC103	AN8377	I.C. B.T.L DRIVE
S621	EVQQS405K	SW, TIME MODE	IC104	LM2940T5M	I.C. RESET
S622	EVQQS405K	SW, CLEAR	TRANSISTORS		
S625	EVQQS405K	SW, NO.1	Q101	2SA1547QSTV2	TRANSISTOR
S626	EVQQS405K	SW, NO.5	VARIABLE RESISTORS		
S627	EVQQS405K	SW, NO.9	VR101	EVND3AA00B14	V.R. BEST EYE ADJ.
S628	EVQQS405K	SW, NO.13	VR102	EVND3AA00B14	V.R. TRACKING GAIN ADJ.
S629	EVQQS405K	SW, NO.17	VR103	EVND3AA00B14	V.R. TRACKING OFFSET ADJ.
S630	EVQQS405K	SW, NO.0	VR104	EVND3AA00B14	V.R. FOCUS GAIN ADJ.
S632	EVQQS405K	SW, OPEN/CLOSE	VR105	EVND3AA00B14	V.R. FOCUS OFFSET ADJ.
S633	EVQQS405K	SW, NO.2	VR106	EVND3AA00B24	V.R. TRACKING BALANCE ADJ.
S634	EVQQS405K	SW, NO.6	MAGNET RESISTOR ELEMENTS		
S635	EVQQS405K	SW, NO.10	RA1	EW57M0A00Q53	RESISTANCE UNIT
S636	EVQQS405K	SW, NO.14			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
REMOTE CONTROL			RESISTORS		
INTEGRATED CIRCUITS			R1	ERD25TLJ1R0U	RESISTOR
IC1	MN6030G	I.C.	CAPACITORS		
TRANSISTORS			C1	ECU1H471KCG	CAPACITOR
Q1	UN7231	TRANSISTOR	C2	ECU1H121KCG	CAPACITOR
DIODES			C3	ECEA06K101	ELECTROLYTIC, 100 μ F, 4V
D1	LN66-S	L.E.D.	MECHANISM PARTS		
D2	MA151WK	DIODE	101	UR64VCS719	UPPER CABINET
D3	MA151WK	DIODE	102	UR64CS365	LOWER CABINET
D4	MA151WK	DIODE	103	UR64EC366	BATTERY COVER
D5	MA151WK	DIODE	104	UR64CT369	RUBBER CONTACT
D6	MA151WK	DIODE	105	UR52SB327	PLATE(SMOKE)
D7	MA151WK	DIODE	106	UR64TD374	BATTERY TERMINAL(COMMON)
D8	MA151WK	DIODE	107	UR64TD372	BATTERY TERMINAL (+)
D9	MA151WK	DIODE	108	UR64TD373	BATTERY TERMINAL (-)
D10	MA151WA	DIODE	109	SBCLP990-KN1	BUTTON(A)
D11	MA151WA	DIODE	110	SBCLP990-KN2	BUTTON(B)
OSCILLATOR			111	XTS26*10GFZ	SCREW
X1	CSB420PB1	OSCILLATOR	REMOTE CONTROL ASS'Y		
			RC1	EUR64729	REMOTE CONTROL

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL			(E1)		
P1	SPND329	PACKING CASE	A1	SQULP777-E	INSTRUCTION BOOK
(EK, E, EG, EB)			(E, EB, EH)		
(EH, E1, XA)			A1	SQULP777-PA	INSTRUCTION BOOK
(XL, XB, PC)			(PA, PE, PC)		
(PA, PE)			A1	SQULP777-XB	INSTRUCTION BOOK
P1	SPND331	PACKING CASE	(XB)		
(EF)			A2	△ SJA168	POWER CORD
P2	SPSD180	PAD	(XA, PA, PE)		
P3	SPSD181	PAD	(PC)		
P4	SPSD196	PAD	A2	△ SJA173	POWER CORD
P5	SPSD197	PAD	(XL)		
P7	XZB60X60A01	PROTECTION BAG	A2	△ SJA183	POWER CORD
P9	XZB26X17C03	PROTECTION BAG(CORDS)	(XB)		
P10	SPSD152	ACCESSORY BOX	A2	△ SJA187	POWER CORD
P11	XZB23X20C03	PROTECTION BAG	(E, EB, EH, EG)		
ACCESSORIES			(EF, E1)		
A1	SQU0355	INSTRUCTION BOOK	A2	△ SJA193	POWER CORD
(EF, EK, XL)			(EK)		
(XA)			A3	SJP2249-4	CORD
A1	SQU0357	INSTRUCTION BOOK	A4	SJPD16	OPTICAL OUTPUT CORD
(EG)			A5	△ RJP120ZBS-H	AC PLUG ADAPTOR
A1	SQU0358	INSTRUCTION BOOK	(XB, XA, PA)		
			(PE, PC)		
			A6	UM-4NE/2S	BATTERY

EXPLODED VIEW

• Remote control unit parts



REPLACEMENT PARTS LIST

Notes : * Important safety notice :

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

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

Parts without these indications can be used for all areas.

* Remote Control Ass'y:

Supply period for three years from termination of production.

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

* ACHTUNG :

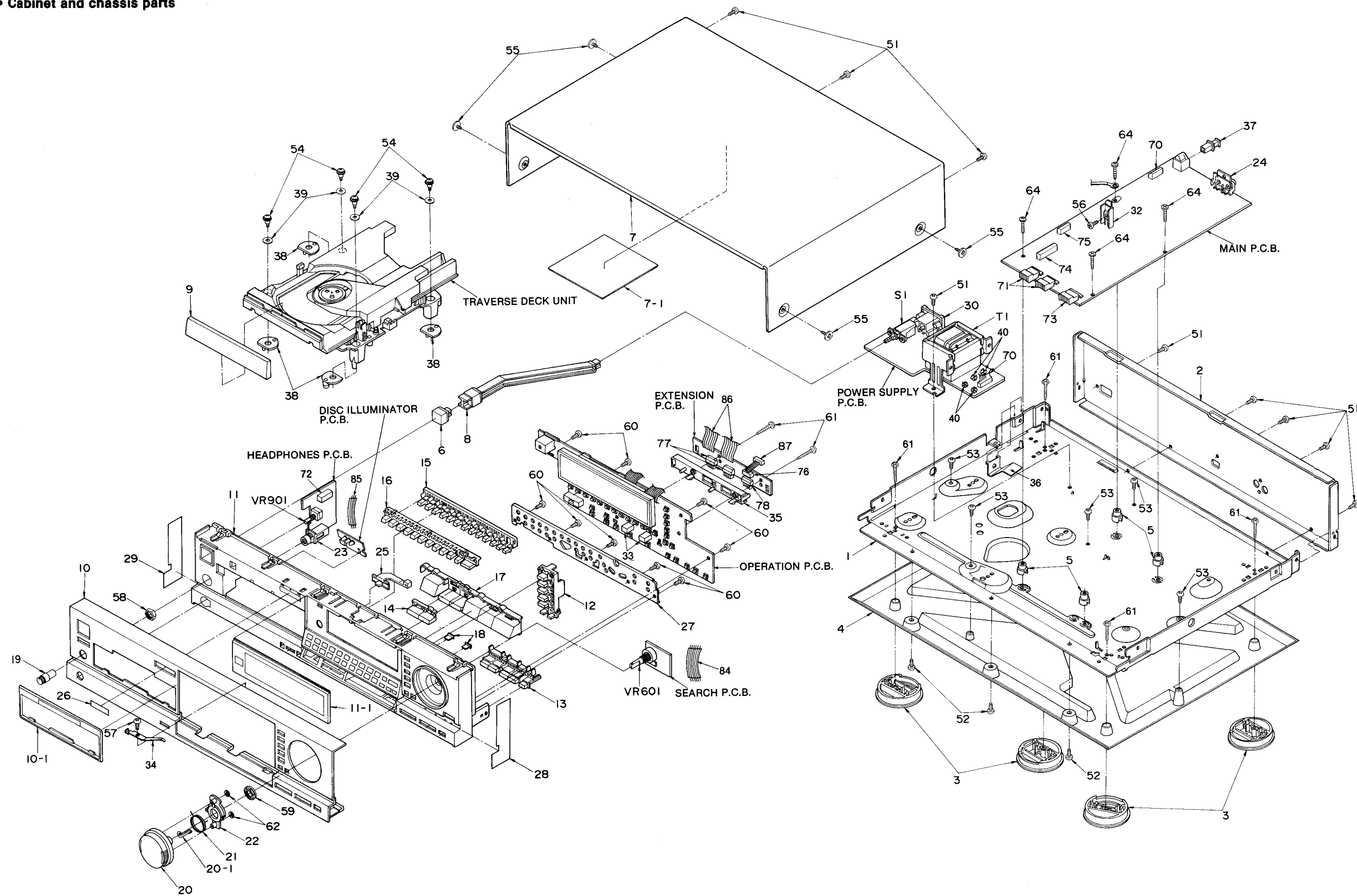
Die Lasereinheit nicht zerlegen.

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

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS			26	SGUD214	ORNAMENT
1	SKUD192ZF2A	CHASSIS	27	SUWD94-1	BRACKET
2	SGPD720ZF3A	REAR PANEL	28	SGXD3160KE0A	ORNAMENT(R)
(XA)			29	SGXD3170KE0A	ORNAMENT(L)
2	SGPLP777-KE	REAR PANEL	30	Δ SJS16	AC INLET
(E)			(XL)		
2	SGPLP777-KEB	REAR PANEL	30	Δ SJS9236	AC INLET
(EB, EH, EF)			(E, EG, EB, EH)		
(EI)			(EF, EI, EK)		
2	SGPLP777-KEG	REAR PANEL	(XB, XA, PA)		
(EG)			(PE, PC)		
2	SGPLP777-KEK	REAR PANEL	31	SMXD43	SHIELD COVER
(EK)			32	SMYD11	HEAT SINK
2	SGPLP777-KPA	REAR PANEL	33	SHRD169	LED HOLDER
(PA, PE, PC)			34	SUSD167	PLATE
2	SGPLP777-KXB	REAR PANEL	35	SHRD197	HOLDER
(XB)			36	SUWD116	BRACKET
2	SGPLP777-KXL	REAR PANEL	37	VJA1024	CAP
(XL)			38	SHGD171	RUBBER
3	SKLD8-E	FOOT	39	SHGD174	RUBBER SPACER
4	SKUD230KF0A	BOTTOM COVER	40	SJT390	FUSE HOLDER
5	SHE185-2	HOLDER	51	XTBS3*8JFZ1	SCREW
6	SBC666-1	BUTTON	52	XTB3*10JFZ	SCREW
7	SYQD772KME1	CABINET	53	XTB3*12G	SCREW
7-1	SHGD35	RUBBER CUSHION	54	SNSD17	SCREW
8	SUBD12	POWER SWITCH ROD	55	SNE2129-3	SCREW
9	SGXD3330ZK0A	ORNAMENT	56	XTN3*8J	SCREW
10	SGWLP777-KE	FRONT PANEL	57	XTN17*3JFN	SCREW
10-1	SGXLP777-K	ORNAMENT	58	XNS7	NUT
11	SGYLP777-KE	FRONT GRILL	59	SNE4021	NUT
11-1	SGUD192	FILTER	60	XTB3*8G	SCREW
12	SBCD4840ZK0A	BUTTON	61	XTB3*20G	SCREW
13	SBCD4811ZK0A	BUTTON	62	CSTW-2	WASHER
14	SBCD4790ZK0B	BUTTON	64	XTB3*16JFZ	SCREW
15	SBCD4780ZK0B	BUTTON	70	SJSD0905	SOCKET(9P), CN11, BT1
16	SBCD4770ZK0B	BUTTON	71	SJS50980WL	SOCKET(9P), CN401, 402
17	SBCD4760ZK0B	BUTTON	72	EMCS0650Z	CONNECTOR, BT901
18	SHRD133	LED BLOCK	73	SJS50680WL	SOCKET(6P), CN603
19	SBN1161-2	KNOB	74	SJSD2221	SOCKET(22P), CN404
20	SBNLP777-KE	KNOB	75	SJT30543-V	CONNECTOR(5P), CN405
20-1	SHR9451	SPACER	76	EMCS0650ZL	CONNECTOR(6P), CN604
21	SUSD162	SPRING	77	SJT30947WL	CONNECTOR(9P), CN601, 602
22	SHRD202	SPRING	78	SJT30647WL	CONNECTOR(6P), CN603
23	SJJD19	JACK	84	S1KD552061	FLAT CABLE(6P), FC604
24	SJFD4-1	TERMINAL PLATE	85	RWJ1003050KK	FLAT CABLE(3P), FC603
25	SBD082ZK0A	KNOB	86	S1KD772091	FLAT CABLE(9P), FC601, 602
			87	SWKD772061	CONNECTOR(6P)ASS'Y

EXPLODED VIEW

• Cabinet and chassis parts



REPLACEMENT PARTS LIST

Notes : * Important safety notice :
 Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 * Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
 Parts without these indications can be used for all areas.
 * Remote Control Ass'y:
 Supply period for three years from termination of production.
 * Warning : This product uses a laser diode. Refer to caution statements on page 3.
 * ACHTUNG :
 Die lasereinheit nicht zerlegen.
 Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
TRAVERSE			129	SUMD112	GUIDE SHAFT HOLDER
TRAVERSE DECK			131	SDGD58	MAIN GEAR
102	S1SD22-1	TRAVERSE BASE	132	SDGD59-2	GEAR
103	SDDD28-1E	TURNTABLE	133	SIRD94-E	LOADING MOTOR
103-1	XXE26D5	SCREW	134	XTB3+10G	SCREW
104	SDDD29-2	RING	135	SMBD7	BELT
106	SRQA010ND4	SPRING	137	SFUMZ15R61	WASHER
107	SORD37	ROLLER	138	SDRD14	ROLLER
108	SORD38-E	COIL	139	XTB3+8G	SCREW
109	SUXD123-1	GUIDE SHAFT	140	SIRD97-2E	HOLDER
110	Δ S0AD70A	OPTICAL PICKUP	141	SIRD107-1	TRAY BASE
111	SHRD176-E	COIL HOLDER	142	SIRD40-2	RACK GEAR
113	SHGD148	STOPPER	143	SIRD96	LOCK LEVER
114	S0YD21-E	YOKE	145	SIRD98-2	DISC TRAY
115	S0YD22	YOKE	146	SUSD63	SPRING
116	SHRD177-1	LOCK UNIT	147	SNSD36	SCREW
117	SHWD33	WASHER	148	SIWD105	BRACKET
118	SHWD34	WASHER	149	SJGDRF310T-2	SPINDLE MOTOR
119	SNSD31	SCREW	150	SIRD51-1	HOLDER
120	XTN2+5G	SCREW	151	SIRD42-3	LEAD WIRE CLAMP
121	XYN2+C8	SCREW	152	SOMD4	MAGNET
122	XYN26+J6	SCREW	153	S0YD2	YOKE
123	SHGD153-1	CUSHION RUBBER	154	SIKD150051	FLAT CABLE
124	SUSD136-1	SPRING	155	SIKD150221-1	FLAT CABLE
125	SUSD137-1	SPRING	156	SHRD150	ROLLER HOLDER
126	SNSD33	SCREW	157	SJSD1722M	SOCKET(17P)
127	SIWLP555-KN	LOADING BASE	158	SJSD2222M	SOCKET(22P)
128	SUSD145-1	SPRING	159	SJT30543-V	CONNECTOR(5P)
			160	SDRD12	ROLLER
			161	EMCS0552MP	CONNECTOR(5P)

EXPLODED VIEW

• Traverse deck parts

