ORDER NO. AD8812309C9

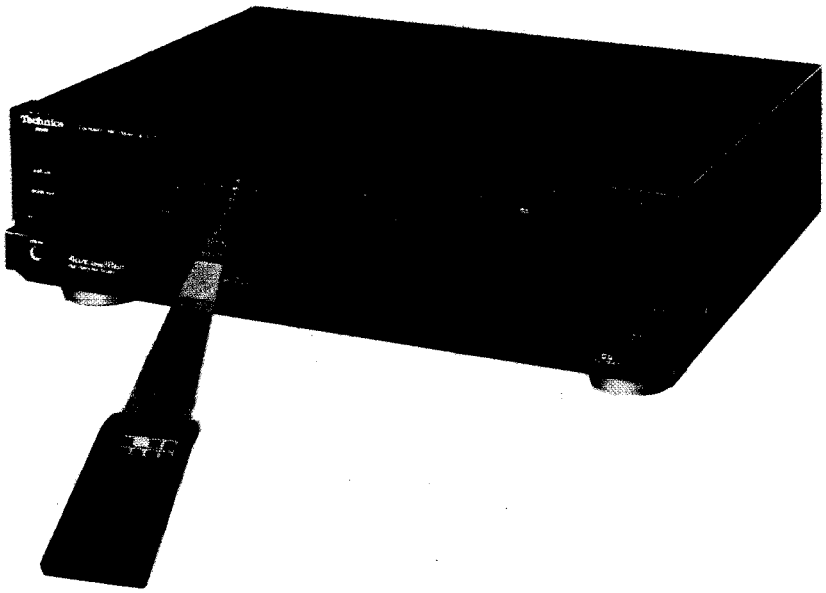
Service Manual

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 4 times oversampling
DA converter	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 Decording 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

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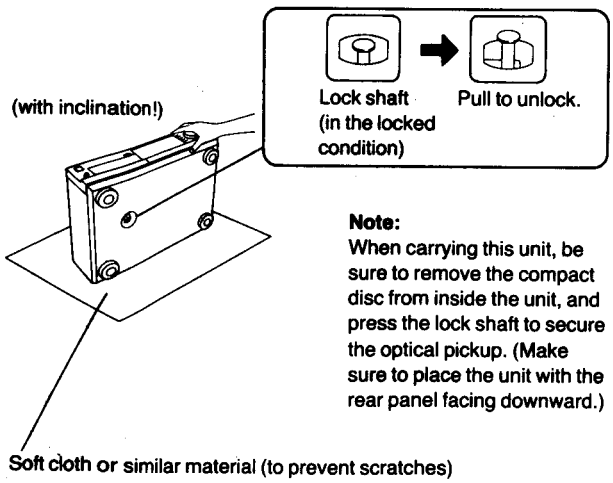
■ PLACEMENT

Before placement

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



Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and press the lock shaft to secure the optical pickup. (Make sure to place the unit with the rear panel facing downward.)

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 emitiert. 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) Spindelmoter ..... 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 Prüfungssonde des Oszilloskops durch die Terminale VR104 [illegible] (+) und durch VR106 [illegible] (−) 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.

Anmerkung 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.

Anmerkung 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 Fokusausweichung mit einstellen sollen).

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(2) Mechanische Einstellung

1. Schließen Sie die CH. 1 Prüfungssonde des Oszilloskops durch TJ101 (+) und durch TJ102 (−) des Servos P.C.B. and.
   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 Amplitudevariation der RF-Signale des Oszilloskops auf das Minimum gebracht wird.
5. Nach der Einstellung, verschließen Sie die mechanische Einstellungen mit dem Siegellack RZZOL01 dicht ab.

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

1. Schließen Sie die CH. 1 Prüfungssonde 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-Signalaugenmusteramplitude 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 Prüfungssonden 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 Prüfungssonden 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 Fokusausweichung

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

1. Schließen Sie die CH. 1 Prüfungssonde 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 herabsagt 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. Sehließen Sie die CH. 1 Prüfungssonde 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 Servoverstärkerrogelung 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 Terminale der Servoverstärkerregelung an.
3. Schließen Sie die CH. 1 Prüfungssonde 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.

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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 laserd 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 laserdiode. 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:

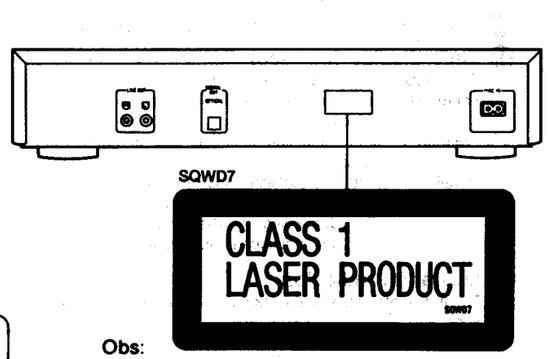
1. Die lasereinheit nicht zerlegen, da die strahlung an der freigelegten laserdiode gefährlich ist.
2. Den werksseitig justierten einstellregler der lasereinreit nicht verstellen.
3. Nicht mit optischen instrumenten in die fokussierlinse blicken.
4. Nicht über längere zeit in die fokussierlinse blicken.

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	○	○	○



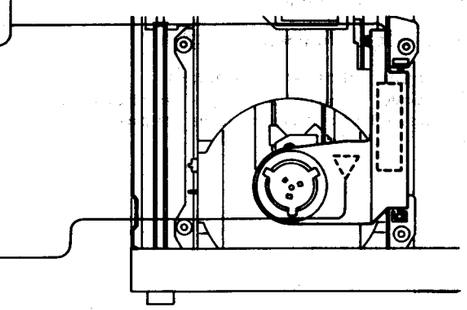
SQWD87

ADVARSEL. Usynligt laserlys udstråles ved åbning. UNDGÅ DIREKTE BESTRÅLING.

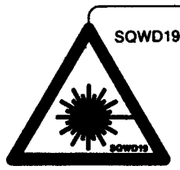
VORSICHT-Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet. Nicht dem Strahl aussetzen.

DANGER-Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM. SQWD87

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



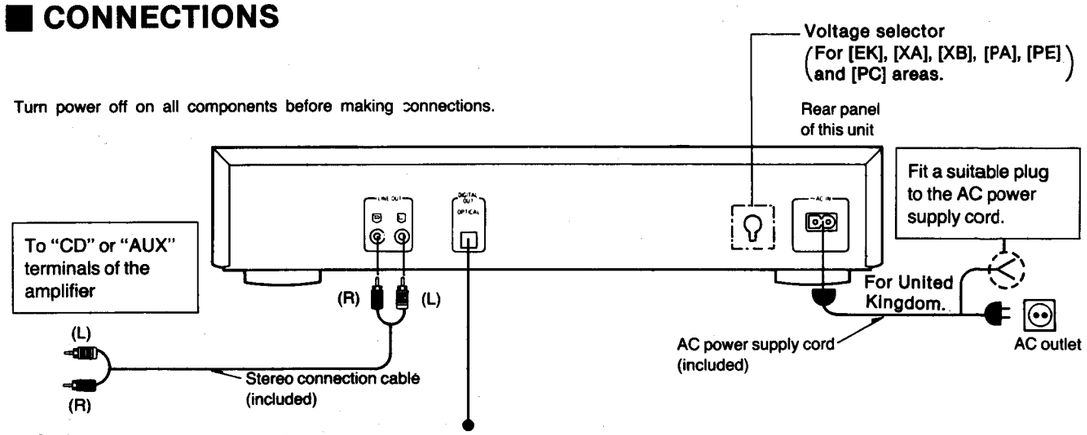
SQWD19



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

■ 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.

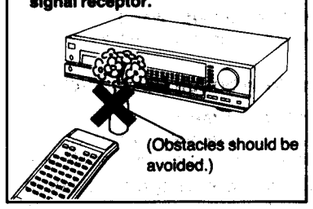
Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

■ REMOTE CONTROL TRANSMITTER

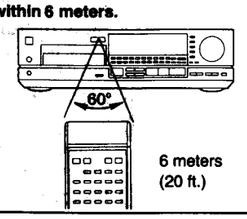
Remote control transmitter operation notes

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.

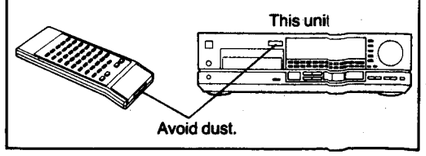
Face it toward the remote control signal receptor.



Use the remote control transmitter within 6 meters.



Be sure the transmitter part of the remote control transmitter and the receptor part of this unit are free from dust. Excessive dust might prevent reception.



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.

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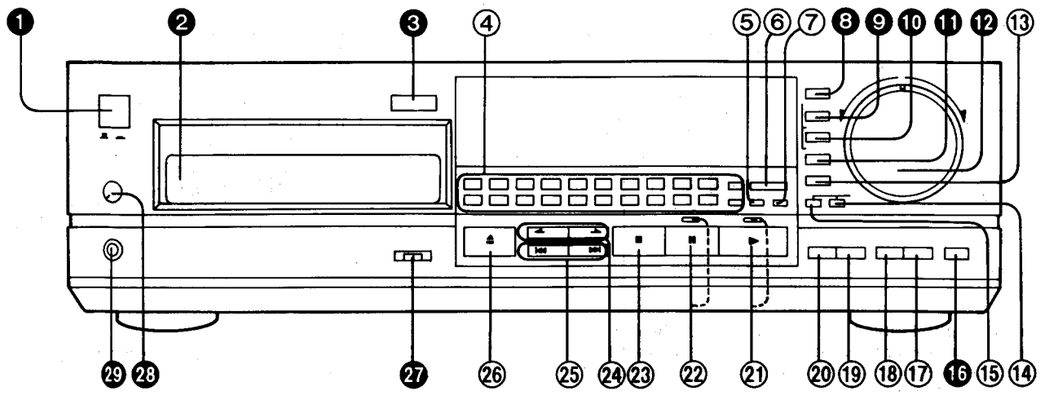
■ LOCATION OF CONTROLS

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



Control section

❶ Power switch (power)

❷ Disc holder

❸ 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.

❽ 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.

❾ 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.

❿ 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.

⓫ Disc link button (disc link)
This button can be used for edit recording from several discs.

⓬ Search dial (search)
This dial can be used to locate specific places on the disc during play at high speed, either forward or reverse.

⓭ 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.

⓮ Time mode select button (time mode)

⓯ Display mode select button (display mode)

⓰ Digital output button (digital output)
This button can be used to switch to on and off for digital output.

⓱ 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.

⓲ Random play button (random)
This button can be used to play the tracks on a disc in a random sequence.

⓳ Repeat button (repeat)

⓴ 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.

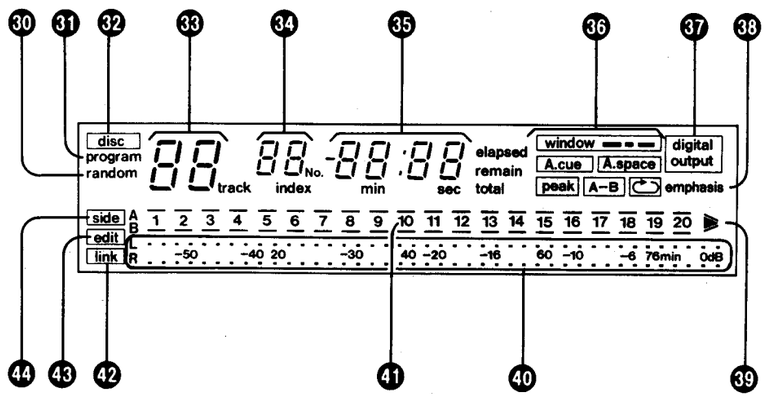
㉖ Disc holder open/close button (⏏ open/close)

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)

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

㉙ Headphones jack (phones)



Indicators section

㉚ Random play indicator (random)

㉛ Programmed-play indicator (program)

㉜ Disc indicator (disc)

㉝ Track number display (track)

㉞ Index/program number display (index/No.)

㉟ 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.

㊱ Operation indicators
The indicators below illuminate during their respective operations.
window: 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

㊲ Digital output indicator (digital output)

㊳ Emphasis indicator (emphasis)
This indicator illuminates when discs recorded with pre-emphasis in the high-frequency range are played.

㊴ "Over" mark (▶)
This indicator lights if the total number of tracks on the disc is 21 or more.

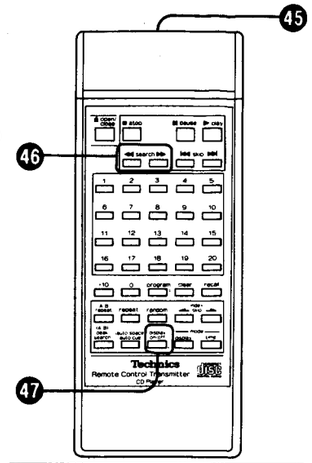
㊵ Play position/output level indicator
This indicator toggles between its 2 modes each time the display mode select button is pressed.

㊶ Track number indicator (1–20)

㊷ Disc link indicator (link)

㊸ Compact disc edit indicator (edit)

㊹ Tape side indicator (side A/B)



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

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.

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(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.
   Reglage 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 FEG 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'eveloppe 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.

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(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 servoganancia (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 remplazadas 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 remplazado 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
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.)

(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 µs.
   "Coupling" de entrada ..... CA
2. Encienda el aparato, y reproduzca la banda 9 en el disco de prueba (SZZP1056C).
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. Despues de completar los ajustes, selle los ajustes mecánicos con la pintura RZZOL01.

(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 µs.
   "Coupling" de entrada ..... CA
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.

(4) AJUSTE DE LA GANANCIA DE ENFOQUE

1. Conecte el ajustador de servoganancia 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 servoganancia respectivamente (el TP3 es para tierra).
   Ajuste en el osciloscopio:
   Voltaje ..... 100 mV
   (ambos canales)
   "Sweep" ..... 1 ms
   "Coupling" de entrada ..... CA
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"**.

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(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 servoganancia.
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 servoganancia 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 servoganancia 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 servoganancia 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 servoganancia.
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 servoganancia.
   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 servoganancia 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 servoganancia 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 verique que no ocurran saltos ni ruidos.

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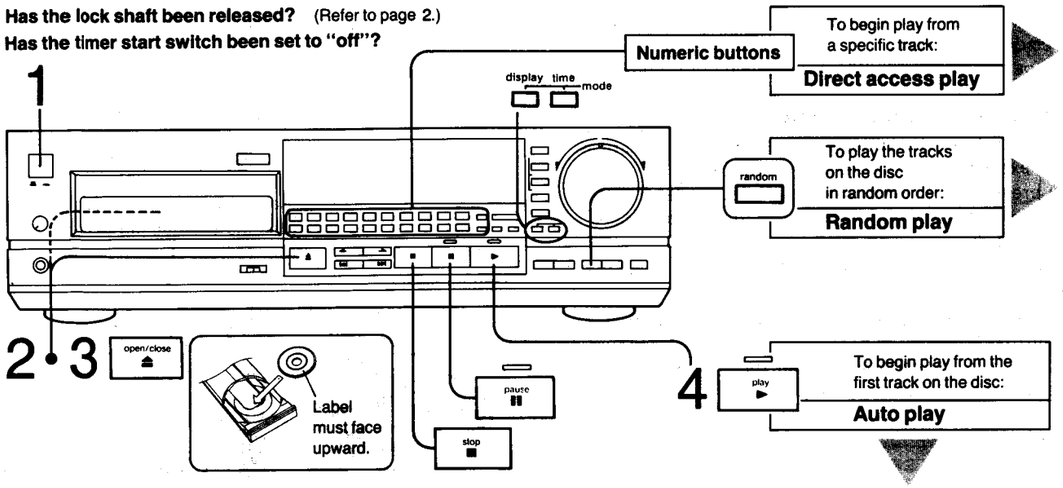
Printed in Japan
F8812 3000 TW/TK

■ 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.

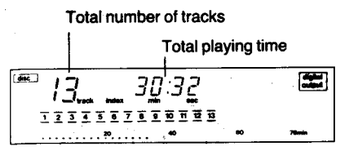
1 Press the power switch to turn power ON.

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.

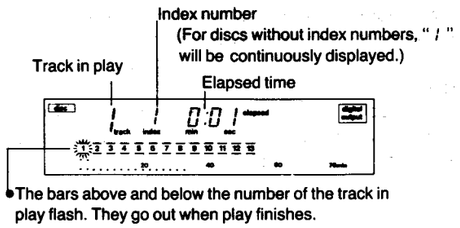
The total number of tracks on the disc and the total playing time are displayed.



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 bars above and below the number of the track in play flash. They go out when play finishes.
- 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.

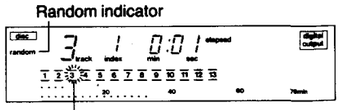
Choosing a specific track
Tracks 1–20: Press the appropriate numeric button [1] – [20] directly.
Tracks 21 and up: First press [+10], then [0] – [9].
(Press [+10] twice for 20, three times for 30, and so on.)

- 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.



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

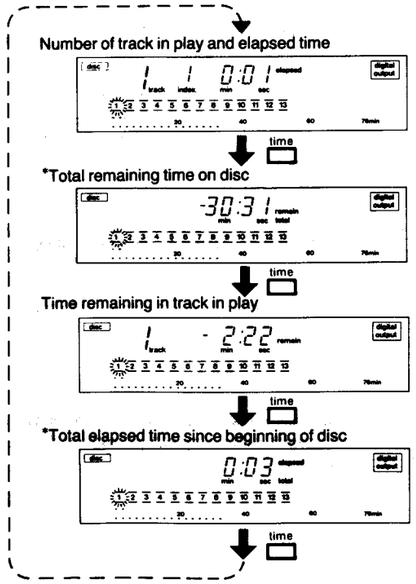
•To cancel random play while a disc is playing, press the random play button again.

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

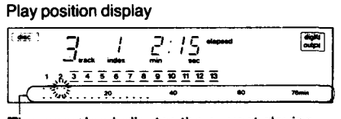
Each time the time mode select button is pressed during play or when the unit is in the pause mode switches the display among the following modes.



Bar indication

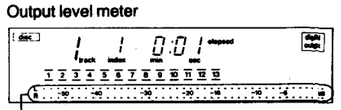
Pressing the display mode select button switches the play position display to an output level meter. (Press the display mode select button again to switch back.)

Play position display



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

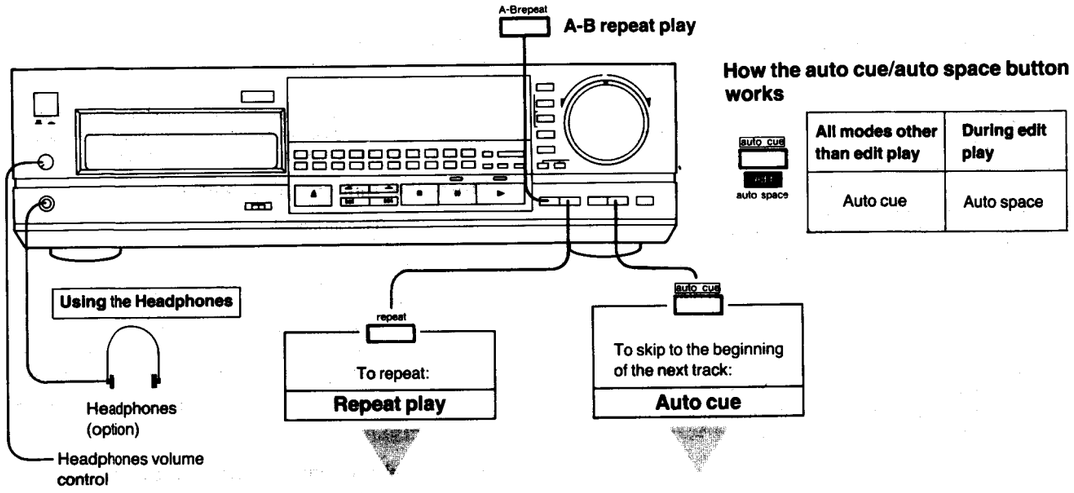
Output level meter



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



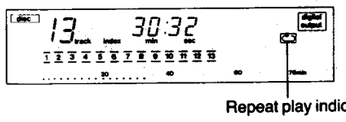
How the auto cue/auto space button works

All modes other than edit play	During edit play
Auto cue	Auto space

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.

① During play, press the A-B repeat button at the point where you want the repeated section to begin.
- ● A– illuminates.

② Press the A-B repeat button again at the point where you want the repeated section to end.
- ● A–B and ↻ 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.

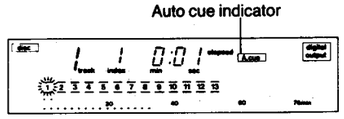
Auto cue

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.

1 Press the auto cue button.

2 Press the play button.

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



3 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.

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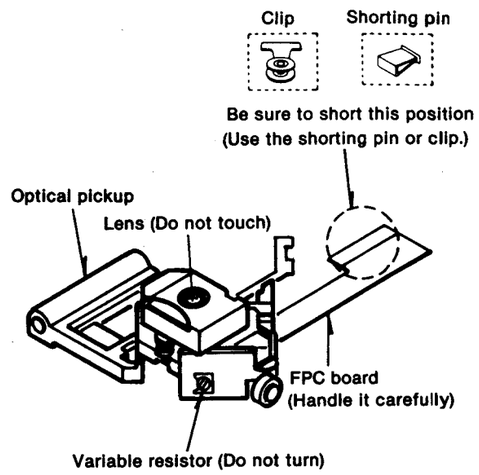
■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

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

• Handling of optical pickup

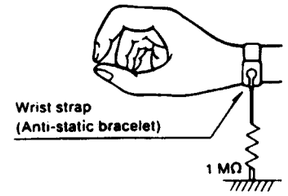
1. Do not subject the optical pickup to static electricity as it is extremely sensitive to electrical shok.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. **(FPC board)**
   When removing or connecting the short pin, finish the job in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

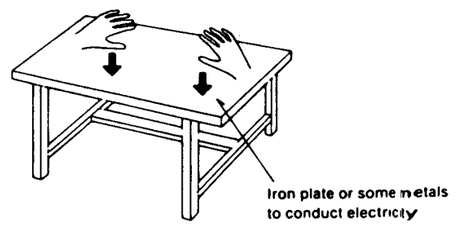


• Grounding for electrostatic breakdown prevention

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

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



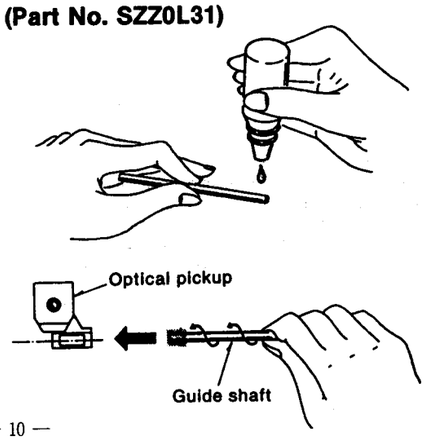


■ INSTRUCTIONS FOR TRAVERSE OIL (Part No. SZZ0L31)

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

How to Use

(1) Remove the guide shaft in the traverse deck from the optical pickup and clean off any dust from the guide shaft.
(2) Apply one drop of the SZZ0L31 to the tip of the guide shaft.
(3) Hold the guide shaft so that its oiled end touches the optical pickup and insert it into the bearing while rotating it slowly.
(4) 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.

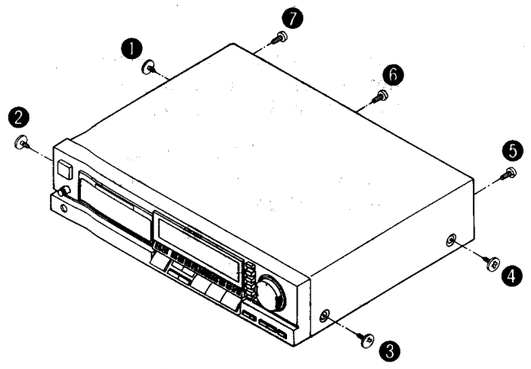
ACHTUNG:
- Die lasereinheit nicht zerlegen.
- Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

*** 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

Procedure 1

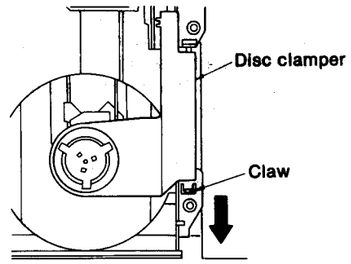
1. Remove the 7 screws (❶~❼).



Ref. No. 2 — How to remove the disc clamper

Procedure 1→2

1. Push the claw in the direction of the arrow and remove the disc clamper.

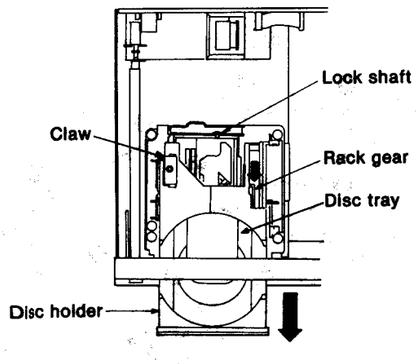


Ref. No. 3 — How to remove the disc holder

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.

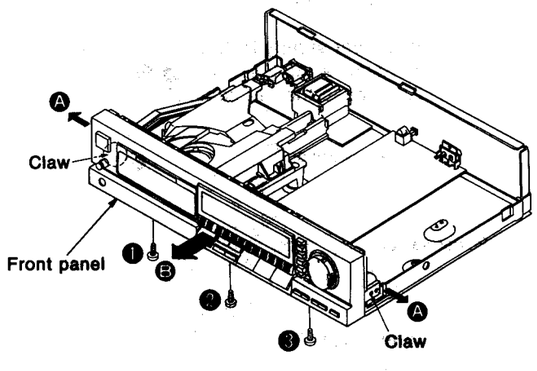
Note: Make sure to release the lock shaft.



Ref. No. 4 — How to remove the front panel

Procedure 1→2→3→4

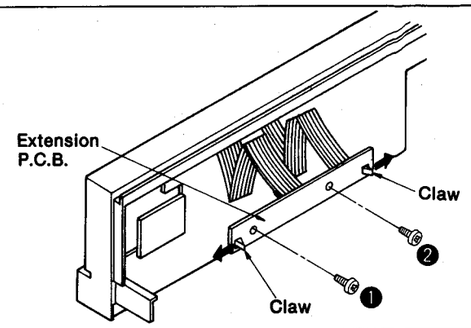
1. Remove the 3 screws (❶~❸).
2. Slightly pull out the 2 claws in the direction of the arrow Ⓐ.
3. Remove the front panel in the direction of the arrow Ⓑ.



Ref. No. 5 — How to remove the extension P.C.B.

Procedure 1→2→3→4→5

1. Remove the 2 screws (❶, ❷)
2. Push the 2 claws in the direction of the arrow and remove the extension P.C.B.

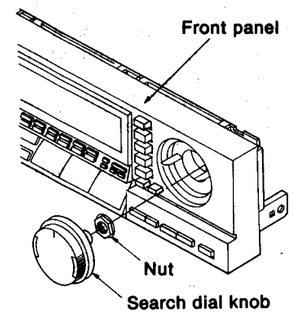


Ref. No. 6 — How to remove the search P.C.B., disc illuminator P.C.B. and operation P.C.B.

Procedure 4→5→6

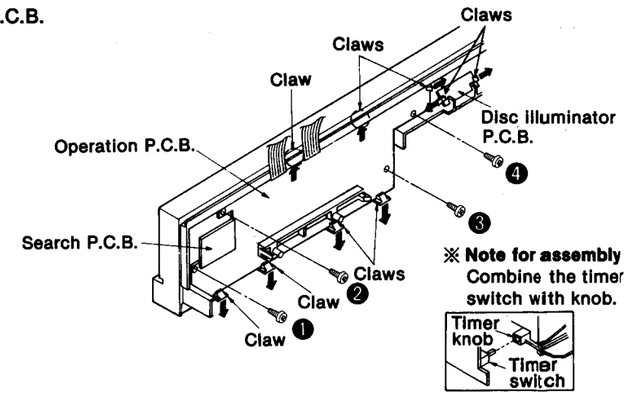
A. Search P.C.B.
1. Remove the search dial knob and nut.

B. Disc illuminator P.C.B.
1. Push the 2 claws in the direction of the arrow and remove the LED P.C.B.



C. Operation P.C.B.
1. Remove the 4 screws (❶~❹).
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.



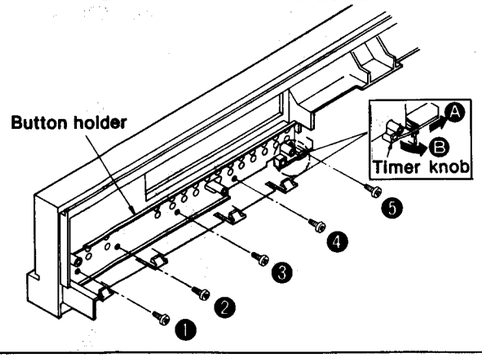
※ Note for assembly
Combine the timer switch with knob.

Ref. No. 7 — How to remove the timer knob and operation buttons

Procedure 4→5→6→7

A. Timer knob
1. Push the timer knob in the direction of the arrow Ⓐ and remove it in the direction of the arrow Ⓑ.

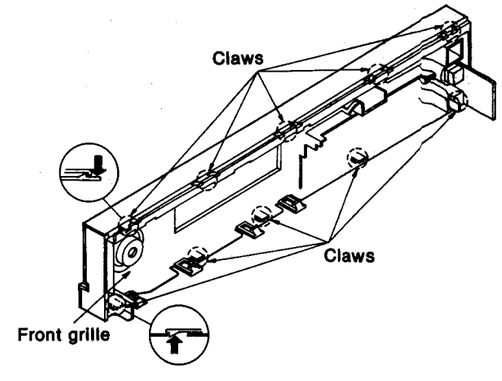
B. Operation buttons
1. Remove the 5 screws (❶~❺).
2. Remove the button holder.



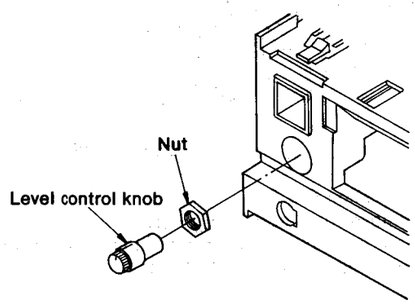
Ref. No. 8 — How to remove the front grille

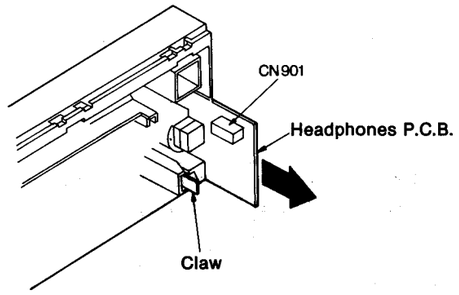
Procedure 4→5→6→8

1. Release the 10 claws.

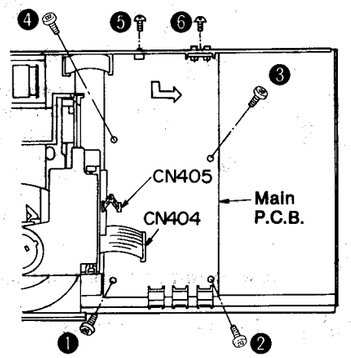


Ref. No. 9	How to remove the headphones P.C.B.
Procedure 4→5→6 →8→9	1. Remove the level control knob and nut. 2. Remove the connector (CN901). 3. Release the claw.





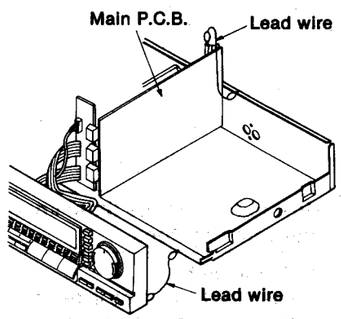
Ref. No. 10	How to remove the main P.C.B.
Procedure 1→2→3 →4→10	1. Remove the 6 screws (❶~❻). 2. Lift the main P.C.B. off the retention posts on the chassis. 3. Remove the main P.C.B. in the direction of the arrow.



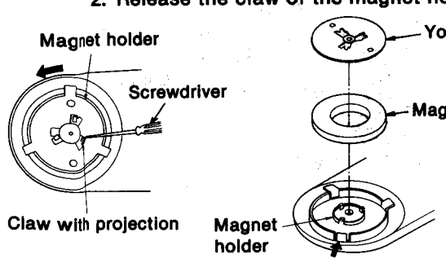
How to check the main P.C.B.

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

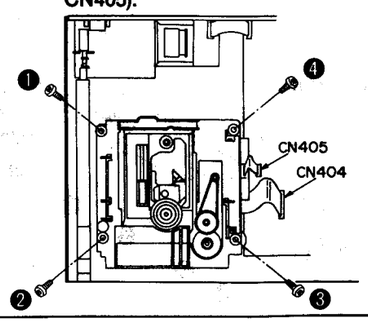
1. Connect the main P.C.B. ground terminal (LINE OUT terminal) to the chassis with a lead wire.
2. Connect the loading base ground terminal to the chassis with a lead wire.
3. Connect the operation P.C.B. ground terminal to the chassis with a lead wire.



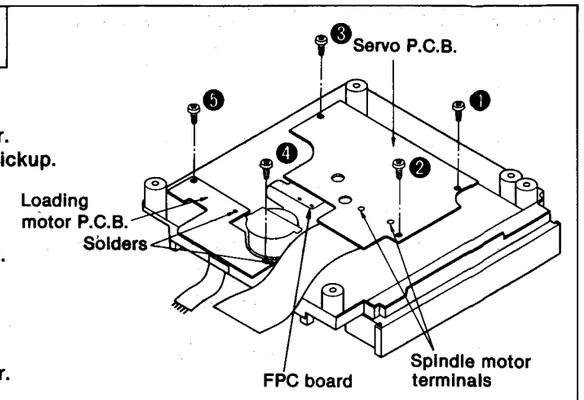
Ref. No. 11	How to remove the magnet and holder
Procedure 1→2→11	1. While lifting the claw with a screwdriver, rotate magnet holder in the direction of the arrow and remove the yoke and magnet. 2. Release the claw of the magnet holder.



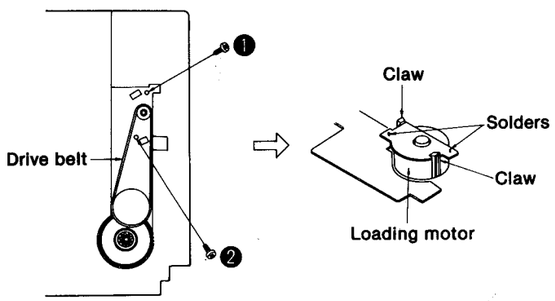
Ref. No. 12	How to remove the loading base
Procedure 1→2→3 →4→12	1. Remove the 4 screws (❶~❹). 2. Remove the flat cables (CN404, CN405).



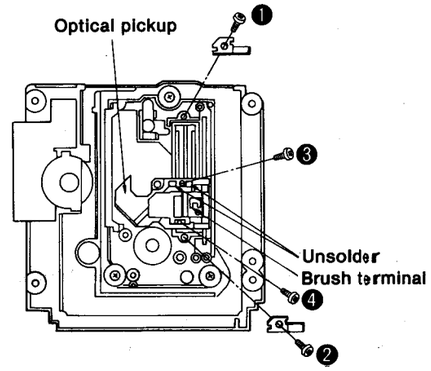
Ref. No. 13	How to remove the servo P.C.B. and loading motor P.C.B.
Procedure 12→13	**A. Servo P.C.B.** 1. Remove the 3 screws (❶~❸). 2. Unsolder the 2 terminals of spindle motor. 3. Remove the FPC board from the optical pickup. **Caution:** To prevent the breakdown of the laser diode, antistatic shorting pin is inserted into the FPC board. **B. Loading motor P.C.B.** 1. Remove the 2 screws (❹, ❺). 2. Unsolder the 2 terminals of loading motor.



Ref. No. 14	How to remove the loading motor
Procedure 12→14	1. Remove the drive belt. 2. Remove the 2 screws (❶, ❷). 3. Release the 2 claws. 4. Unsolder the 2 terminals of the lead wire of loading motor.

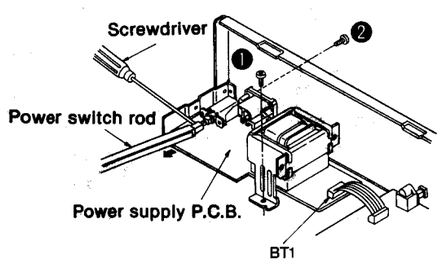


Ref. No. 15	How to remove the optical pickup
Procedure 12→13→15	**Refer to the handling precautions for optical pickup and instructions for traverse oil (See page 10).** 1. Remove the 2 screws (❶, ❷) 2. Unsolder the 2 terminals and the 2 screws (❸, ❹).

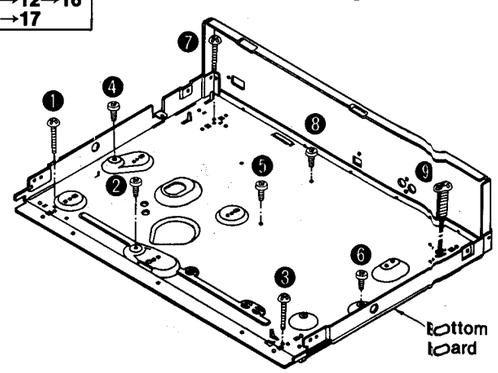


Caution: Take care not to touch the brush terminal.

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. **B. Power supply P.C.B.** 1. Remove the 2 screws (❶, ❷). 2. Release the flat cable (BT1).



Ref. No. 17	How to remove the bottom board
Procedure 10→12→16 →17	1. Remove the 9 screws (❶~❾).



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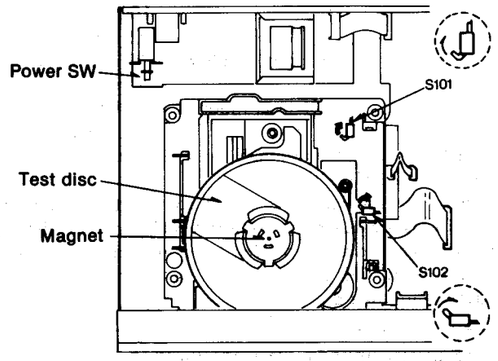
■ MEASUREMENTS AND ADJUSTMENTS

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.

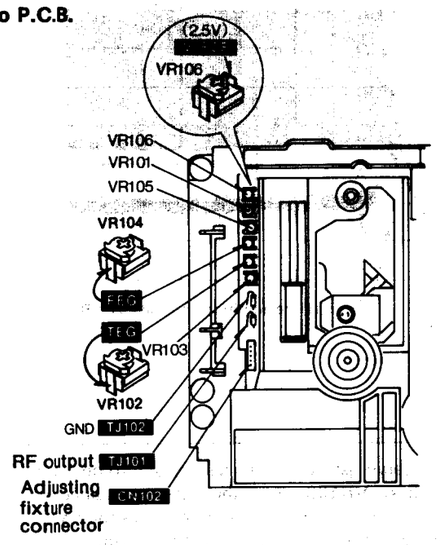
PREPARATION

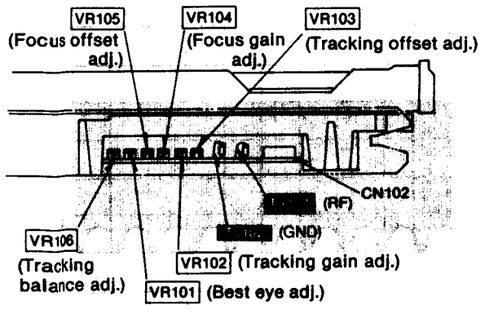
1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).
2. Remove the disc clamper and magnet (see Ref. No. 2 and No. 11 of the same).
3. Remove the disc holder and power switch rod (see Ref. No. 3 and No. 16 of the same).
4. Place the test disc and magnet on the turntable.
5. While holding 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).



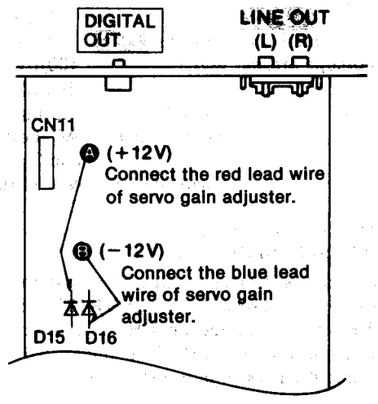
ADJUSTMENT POINTS

• **Servo P.C.B.**

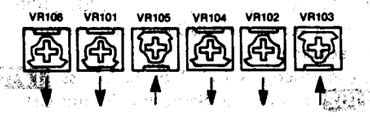




• **Main P.C.B.**



• **Temporary setting of each VR**



(Temporary VR setting if any of the trimmer VRs are replaced or require readjustment, temporarily set them to the following positions.)

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.

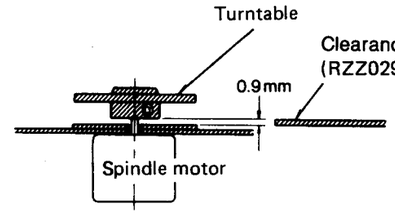
(1) Spindle motor..... Sections (1), (3) to (8)
(2) Turntable..... .Sections (1), (3) to (8)
(3) Optical pickup..... Sections (2) to (8)

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 1.27mm 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.

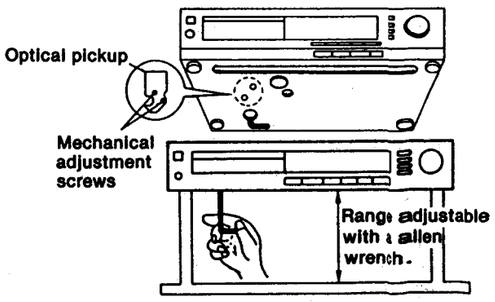
Note 1. If the measured amplitude is within a range of +/− 15mV, the turntable height is correct. If it is outside this range, adjust the turntable height by using the clearance gauge as a pry.
If the amplitude exceeds +15mV, lower turntable.
If the amplitude is below −15mV, elevate the turntable.

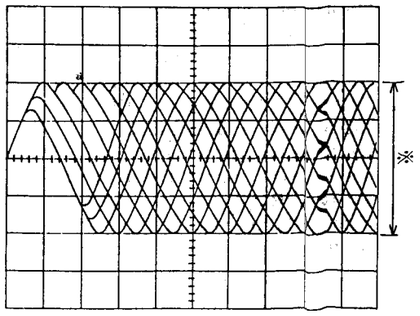


Note 2. If the measured amplitude greatly surpasses or falls short of the range above, set **VR105** at or around the center, then try to adjust the height again. (Then be sure to adjust the focus offset as well.)

(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 μs.
   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).



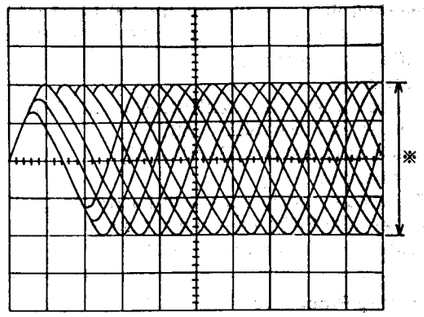


※ Minimize the variation of amplitude.

D

(3) BEST EYE (PD BALANCE) ADJUSTMENT

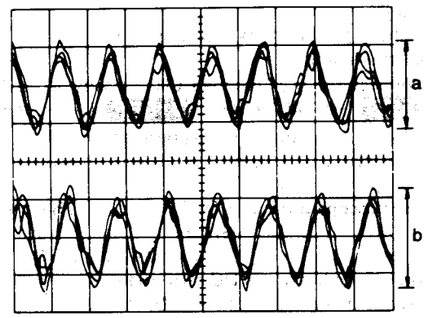
1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (–) on the Servo P.C.B.
   Oscilloscope setting: VOLT 200mV
   SWEEP . . . . . 0.5 μs.
   Input coupling . . . AC
2. Switch the player power **ON**, and play the 0.5 mm black dot on the test disc (SZZP1014F or SZZP1054C).
3. Adjust **VR101** until the RF signal eye pattern amplitude is maximized.



※ Maximize the amplitude.

(4) FOCUS GAIN ADJUSTMENT

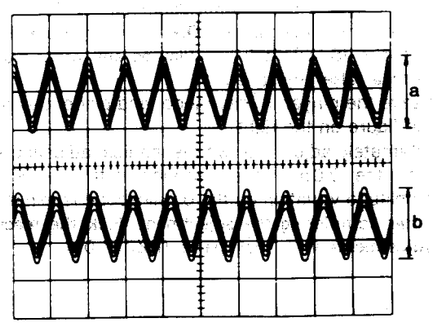
1. Connect the servo gain adjuster to the player (see page **19**).
2. Set the servo gain adjuster's gain switch to position **"2"** and the ON/OFF switch to **ON**.
3. Set up the AF oscillator output for **825Hz, 150 mVp-p**, and connect it across the OSC and **GND** terminals on the servo gain adjuster.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

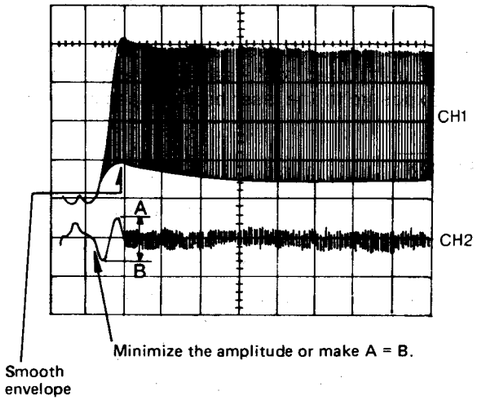


※ Adjust VR102 until a equals b.

(6) FOCUS OFFSET ADJUSTMENT

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

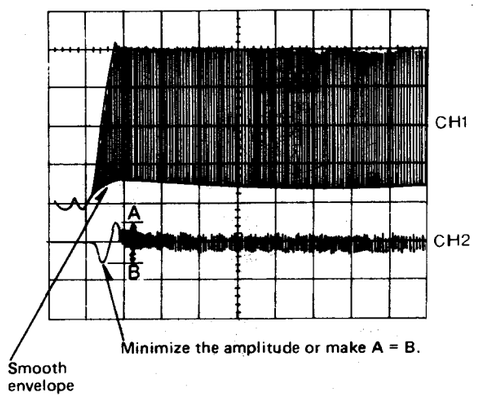
1. Connect the oscilloscope's CH. 1 probe across TJ101 (+) and TJ102 (–) on the Servo P.C.B. and its CH. 2 probe (+) to VR104's FEG terminal.
   Oscilloscope setting: VOLT. . . . . .100 mV (CH. 1)
   100 mV (CH. 2)
   SWEEP. 0.5ms
   Input coupling. . . AC (both CH. 1 and 2)
   Trigger mode . . . .NORM (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.



(7) TRACKING OFFSET ADJUSTMENT

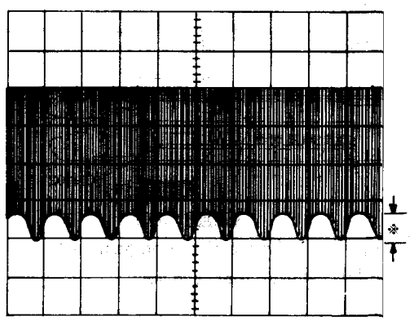
Note: Make sure that the servo gain adjuster's gain switch is set to position **"2"**.

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.



(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.

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(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).

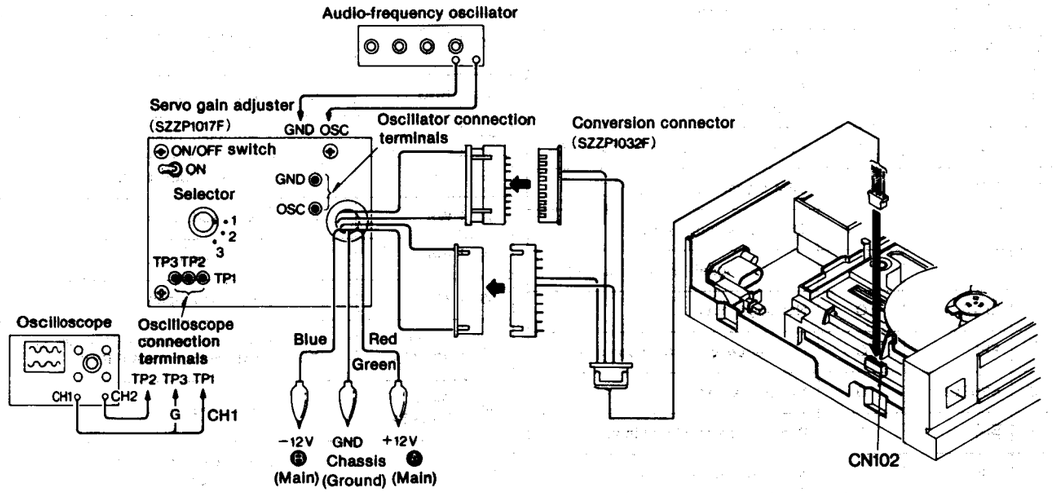
*** Checking Manual Search**

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 0.7 mm black dot and the 0.7 mm 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



■ 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.

■ 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	$\overline{\text{RFDET}}$	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

• IC102 (AN8374S): Servo processor

Pin No.	Mark	I/O Division	Function
1	LSA	I	Phase difference input (A)
2	LSB	I	Phase difference input (B)
3	TEOFS	I	Tracking offset adjustment
4	TE	O	Tracking gain adjustment
5	TEG	I	
6	TE OUT	O	Tracking error signal output
7	TE BPF	I	Tracking error gain detecting filter (Not used, open)
8	FEG	I	Focus gain adjustment
9	FE OUT	O	Focus error signal output
10	CLW	O	Triangular wave oscillator capacitor input
11	VREF	I	Reference voltage input
12	ARF	I	RF signal input
13	CDSL	I	Data slice filter capacitor input
14	FPC	I	Frequency difference signal input
15	GND	I	Ground terminal
16	C. PLL	I	PLL loop filter constant
17	VSS	I	Ground terminal
18	CLK	I	Frequency pull-in clock signal (88.2 kHz) input
19	SRF	O	Sliced and digitized RF signal output
20	PCK	O	Clock output extracted from SRF
21	EFM	O	EFM signal output synchronous with PCK

Pin No.	Mark	I/O Division	Function
22	VDD	I	Power supply (+5 V input)
23	SPCNT	O	Track crossing speed control output (Not used, open)
24	SENSE	O	Selector output (track crossing state)
25	TRV	O	Traverse servo control output
26	$\overline{\text{FLOCK}}$	O	Focus lock signal output
27	KICK	O	Track kick signal output
28	LDON	O	Laser power control output
29	VDET	O	Focus/tracking gain up output (Not used, open)
30	CNT1	I	Control input (FOON: Focus servo ON signal)
31	CNT2	I	Control input (TRON: Tracking servo ON signal)
32	CNT3	I	Control input (KICKF: Kick direction (forward) command)
33	CNT4	I	Control input (KICKR: Kick direction (reverse) command)
34	TRVF	I	Traverse forward command signal
35	TRVR	I	Traverse backward command signal
36	$\overline{\text{RFDET}}$	I	RF detection signal input
37	BDO	I	Dropout detection input
38	VCC	I	Power supply (+5 V input)
39	TVPO	O	Traverse position detecting resistor/capacitor inputs
40	TVPI	I	
41	BROUT	O	Tracking drive control output
42	BRIN	I	Tracking error signal input

• IC103 (AN8377): BTL drive

Pin No.	Mark	I/O Division	Function
1	PVCC	I	Driver power supply (+8.2V input)
2	VCC	I	Power supply (+8.2V input)
3	TB	O	External transistor base driving output
4	VMON	O	Voltage output
5	TVDI	I	Traverse error signal input
6	FDI	I	Focus error signal input
7	TDI	I	Tracking error signal input
8	VREF	I	Reference voltage input

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

• IC301 (MN6622): Digital signal processing

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

Pin No.	Mark	I/O Division	Function
33	TX	O	Digital output signal
34	$\overline{\text{TSTR}}$	I	Not used (connected to +5V)
35	$\overline{\text{TEST}}$	I	Not used (connected to +5V)
36	VSS	I	GND terminal
37	X2	O	Not used, open
38	X1	I	Clock input (16.9344 MHz)
39	SEL	I	Not used (connected to GND)
40	LDG/ WDCKS	O	Frequency pull-in clock signal (88.2 kHz)
41	RDG	O	Not used, open
42	DEMPH	O	Not used, open
43	SMCK	O	Clock output (4.2336 MHz)
44	WS	O	Not used, open
45	SRCK	O	Not used, open
46	XCK	O	Not used, open
47	DA15/ SRDATA	O	DA parallel output (MSB)/serial data output (MSB FIRST)
48	DA14/ SRDATA	O	Not used, open
49	DA13/ SCK	O	DA parallel output/serial data output bit clock
50	DA12/ WDCK	O	Not used, open
51	DA11/ BYTCK	O	Not used, open
52	VSS	I	GND terminal
53	DA10/R/L	O	DA parallel output/R/L signal (R at "H")
54 ∫ 56	DA9 ∫ DA7	O	Not used, open
57	DA6	O	Not used (connected to GND)
58 ∫ 63	DA5 ∫ DA0	O	Not used, open
64 ∫ 71	D7 ∫ D0	I/O	16K RAM DATA
72	RAMOE	O	16K RAM OE signal
73	RAMWE	O	16K RAM WE signal
74 ∫ 84	RAMA0 ∫ RAMA10	O	16K RAM address

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•IC401 (MN1554PEZ-1): System control

Pin No.	Mark	I/O Division	Function
1	BRECV	—	(Not used, open)
2	BSEND	—	(Not used, open)
3	SYNC	O	(Not used, open)
4	SIRQ	I	Not used (connected to +5V)
5	BLKCK	I	Sub-code block (Q data) clock input (75Hz)
6	CLDCK	I	Sub-code block (Q data) clock input (7.35kHz)
7	SBO	I	(Not used, open)
8	SUBQ	I	Sub-code (Q data) input
9	RST	I	Reset signal input
10 ∫ 13	P20 ∫ P23	O	Not used (connected to +5V)
14	CLOSE	O	Loading motor "Close" command
15	OPEN	O	Loading motor "Open" command
16	SLOW	O	(Not used, open)
17	MUTE	O	Muting control
18	SEEK	O	Traverse servo control (Not used, open)
19	NC	–	Not connected
20	TRV.R	O	Traverse "Reverse" command signal
21	TRV.F	O	Traverse "Forward" command signal
22	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
23	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
24	CNT2	O	Optical servo IC control (TRON: Tracking servo)
25	VDD	I	Power supply (connected to +5V)
26	DOWN	O	(Not used, open)
27	UP	O	(Not used, open)
28	CNT1	O	Optical servo IC control signal (FOON: Focus servo)

Pin No.	Mark	I/O Division	Function
29	CLOSE	I	Disc holder "Open" detection
30	OPEN	I	Disc holder "Close" detection
31	BCLK	I	(Not used, connected to GND)
32	BDATA	I	(Not used, connected to GND)
33	STAT	I	Processing status input from signal processing LSI
34	COMP	O	TOC reading control (ON at "L") (Not used, open)
35	FLOCK	I	Optical servo condition (focus) input
36	SENSE	I	Optical servo condition (track cross) input
37	RECV	I	Data receipt command signal
38	SEND	I	Data transmission command signal
39	ACK	I	Data discrimination signal
40	CLK	I	Data lock signal
41 ∫ 44	DATA0 ∫ DATA3	I	Key scan signal
45 ∫ 52	NC	I	Not connected
53	OSC2	I	Clock terminal
54	OSC1	I	Clock input
55	X1	I	Optical servo condition input
56	X0	O	(Not used, open)
57	GND	I	GND terminal
58	DMUTE	O	Muting control
59	MDATA	O	Command data output
60	MCLK	O	Data clock output (command clock signal)
61	MLD	O	Data output (command load signal)
62	DOUTON	O	Optical output control signal (Not used, open)
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
1 ∫ 14	C0 ∫ C13	O	FL grid signal
15	C14	O	LED drive signal (PAUSE)
16	C15	O	LED drive signal (PLAY)
17	P00	O	Key scan signal
18	P01		
19	P02	O	Data discrimination signal signal
20	P03	O	Data lock signal
21 ∫ 24	P10 ∫ P13	O	Key scan signal
25	P40	I	Remote control signal input (Not used, open)
26	P41	—	Not used, open
27	P42	O	Data receipt dommand signal
28	P43	O	Data transmission command signal
29	P50	—	Not used, open
30	P51	I	GND terminal
31	$\overline{RES}$	I	Reset signal input (reset at "L")
32	VSS	I	GND terminal

Pin No.	Mark	I/O Division	Function
33	X	I	Clock signal input (4.2336MHz)
34	EX		
35	SE	I	Not used, connected to +5V
36	WD	I	GND terminal
37	XL	O	Not used, open
38	EXL	O	Not used, open
39) 42	P60) P63	I	Key return signal
43 (46	P70 (P73		
47	VF	I	FL drive power supply (connected to −31.3V)
48 ∫ 63	S0 ∫ S15	O	FL anode signal
64	VCC	I	Power supply (connected to +5V)

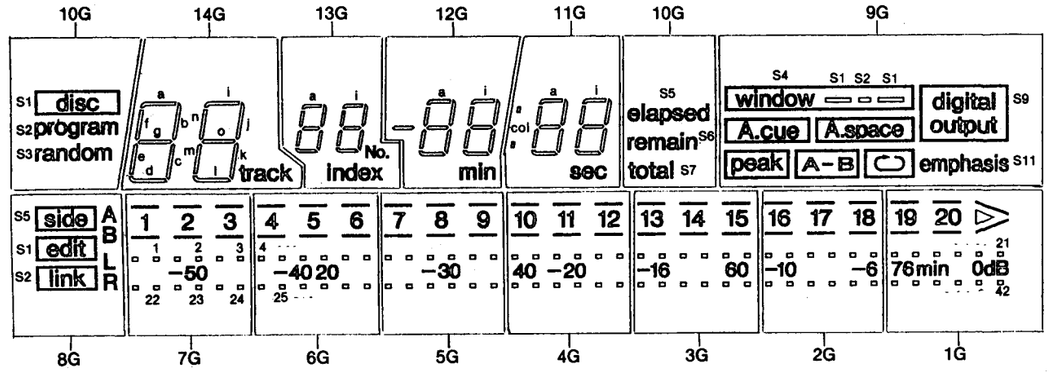
•IC801 (MN6471): Digital filter and D/A converter

Pin No.	Mark	I/O Division	Function
1	MLD	I	Command load input (load: L)
2	RSTB	I	Reset signal input (reset at "L")
3	IE	I	Not used, connected to GND
4	TP1	—	TEST terminal
5	TP2	—	
6	TEST1	I	TEST terminal 1 (connected to GND)
7	TEST2	I	TEST terminal 2 (connected to GND)
8	NC	—	Not connected
9	NC	—	Not connected
10	AVDD4	I	Power supply (connected to +5V)
11	OUTL (−)	O	Lch data output, (−) terminal
12	AVSS4	I	GND terminal
13	AVSS3	I	GND terminal
14	OUTL (+)	O	Lch data output, (+) terminal
15	AVDD3	I	Power supply (connected to +5V)
16	NC	—	Not connected
17	AVDD2	I	Power supply (connected to +5V)
18	OUTR (+)	O	Rch data output, (+) terminal
19	AVSS2	I	GND terminal (analog system)
20	AVSS1	I	GND terminal (analog system)
21	OUTR (−)	O	Rch data output, (−) terminal

Pin No.	Mark	I/O Division	Function
22	AVDD1	I	Power supply (connected to +5V)
23	DVDD1	I	Power supply (connected to +5V)
24	DVSS1	I	GND terminal (digital system)
25	X2	O	Clock output
26	X1	I	Clock input
27	NC	—	Not connected
28	DVDD2	I	Power supply (connected to +5V)
29	DVSS2	I	GND terminal (digital system)
30	NSUB	I	Sub-strate terminal (Not used, connected to +5V)
31	ZFLGB	O	Zero input detector terminal
32	192fs	O	192 fs (8.4672 MHz) (Not used, open)
33	LRPOL	I	LR clock selector (Not used, connected to GND)
34	LRCLK	I	LR discrimination signal input
35	BCLK	I	Serial bit clock input
36	SRDATA	I	Serial data input (MSB first)
37	DVSS 3	I	GND terminal (digital system)
38	DVDD	I	Power supply (connected to +5V)
39	384 fs	O	384 fs (16.9344 MHz) output
40	PD	I	Power down terminal (Not used, connected to GND)
41	MDATA	I	Command data input
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	/
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	/
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	▶
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

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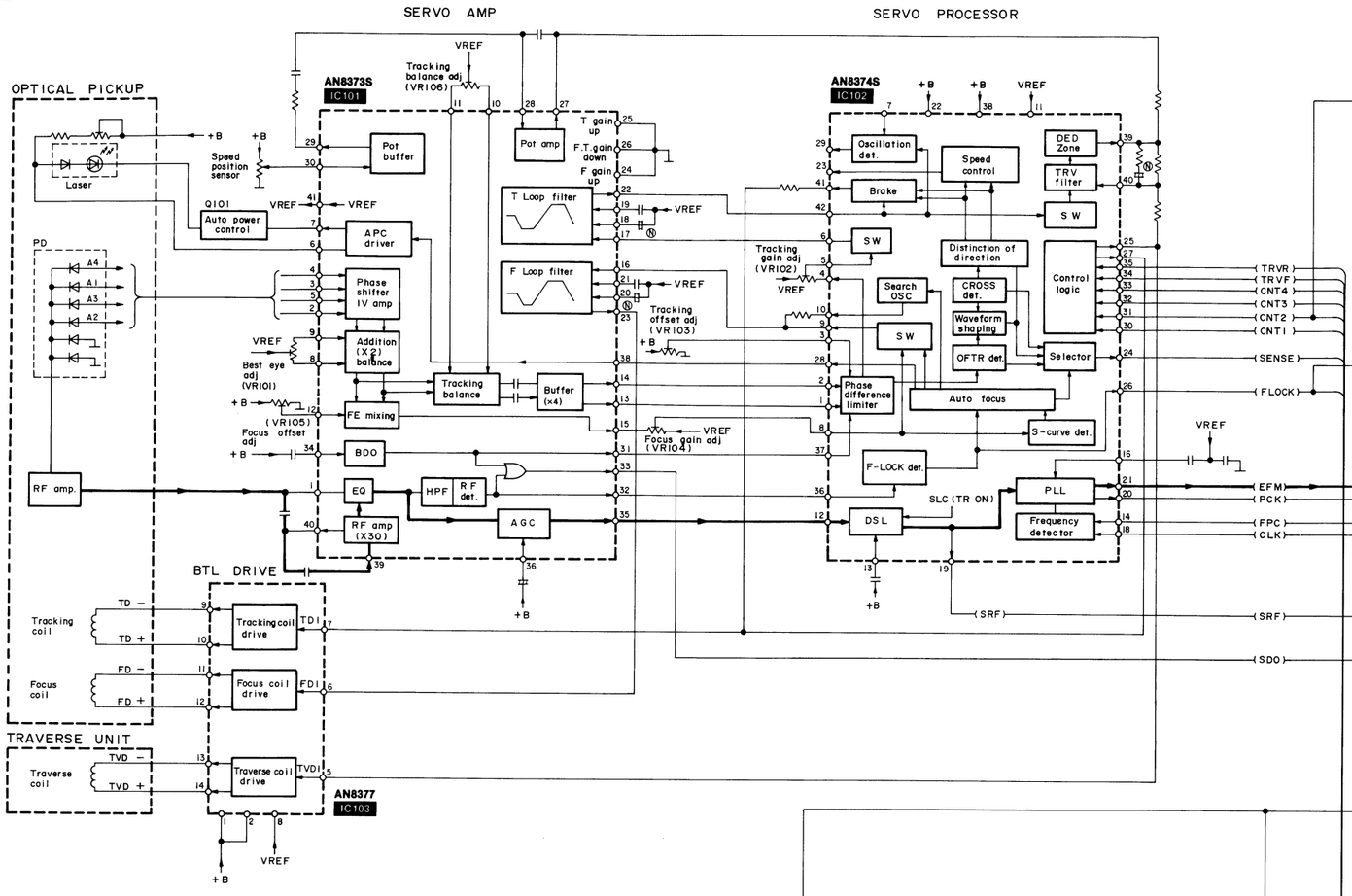
■ BLOCK DIAGRAM



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D PROCESSOR

+B +B VREF

Speed control
DED Zone
TRV filter
S W
Distinction of direction
CROSS det.
Waveform shaping
OFTR det.
Control logic
Selector
Auto focus
S-curve det.
PLL
Frequency detector
SLC (TR ON)
VREF

TRVR TRVF CNT4 CNT3 CNT2 CNT1 SENSE FLOCK EFM PCK FPC CLK SRF SDO

DIGITAL SIGNAL PROCESSING

CLK/LDG TRON STAT DMUTE MDATA MCLK MLD SUBQ CLDCK BLKCK TX

CPU interfaces
Digital audio interface
Compensation circuit
Syndrome
EFM
ALU
CCU
Address generator
Spindle motor servo
Remote control decoder circuit
Timing generator

FPC SDO/DO SRF EFM PCK TTF RST EC PC

MN6622
IC301

SMCK MEMP OE WE

TC40H000FTP1
IC303

TOTX174
IC304
OPTICAL OUT

DIGITAL FILTER & D/A CONVERTER

MN6471
IC801

LRCLK SRDATA BCLK
S/P Converter
FIR
MASH
64fs
PWM 768fs
PWM 768fs
Analog block
Analog block
Microcomputer interface
Timing generator
RSTB
MDATA MCLK MLD ZFLG 384FS
X801

SVIM5219FP IC803
Comparator
SVIM5219FP IC804
Comparator
SVIM5219FP IC805(1/2)
L.P.F.
IC806(1/2)
L.P.F.
SVIM5219FP IC805,807(1/2)
Class AA buffer amp.
Class AA buffer amp.
IC806,808(2/2)

RLY801
Muting drive
L ch
R ch
LINE OUT

Q801,802,805,806
Emphasis drive

SVIM5238FP IC807(1/2)
Class AA buffer amp.
IC808(2/2)
Class AA buffer amp.
HEADPHONES
Q901,902
Muting drive
Muting drive
Q903,904

Q803,804,808
Zero detector
Q807
Muting control
Q403,905
Muting control

SVIBA4558FTI IC403(1/2)
Motor control
Q404
Motor drive
Q451,452
SPINDLE MOTOR

LC3517BML15T IC302
16K RAM
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable output enable
OE WE

REMOTE CONTROL TRANSMITTER

MN6030C IC1
VDD VSS
LED drive
Modulation
Pulse generator
11 Bit latch
Chattering simul dep-ression inhibit
Timing generation circuit
Key input control circuit
Key switch
Remote control receiver
HC-MD10E IC602

RESET SIGNAL GENERATOR

Reference Voltage
Comparator
Level converter
Output circuit
Reference Voltage
Comparator
SVIM51953BL IC402

CNT4 CNT3 CNT2 CNT1 FLOCK SENSE TRV-R TRV-F MLD MCLK MDATA STAT OSCI OSC2 DMUTE DOUT ON EMPH MUTE RST X/OSC2 EX/OSCI RST

BLKCK CLDCK SUBQ

MN1554PEZ-1
IC401
SYSTEM CONTROL

RECV SEND ACK CLK DATA0 DATA3 P42 P43 P02 P03 P10 P13

MB88724BPEV1
IC601
FL DRIVE & KEY MATRIX CONTROL

VF
PLAY
LED drive Q601
PAUSE
LED drive Q602
P60~63, P70~73
C0~13
S0~15
KEY MATRIX
VR601
Shuttle search dial
FL DISPLAY
FL601

OPEN CLOSE CLOSE OPEN
S102 S101
+B

SVIBA4558FTI IC403(2/2)
Motor control
Q453,454
Motor drive
LOADING MOTOR

Note)
• ⟶ Audio signal

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SL-P777 SL-P777

■ SCHEMATIC DIAGRAM

(Parts list on pages 50～54.)

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

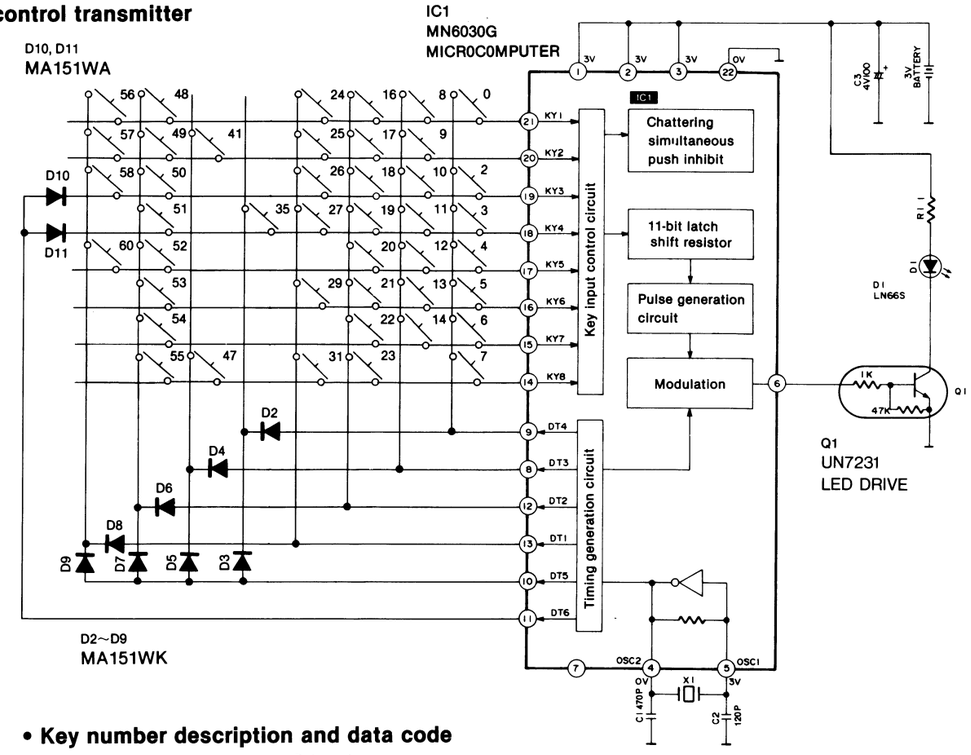
Notes:

- **S1** : Power switch in "**on**" position.
- **S2** : Voltage selector switch.
  (For [EK], [XA], [XB], [PA], [PE] and [PC] only.)
- **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, 633～638, 641～645, 649～653** : [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.

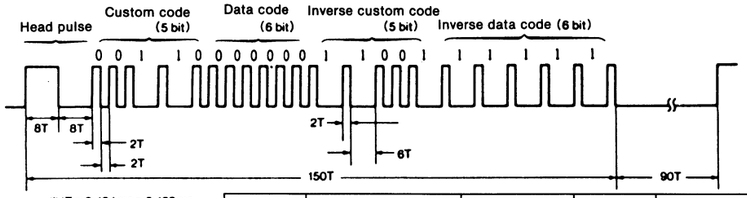
Caution!

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.

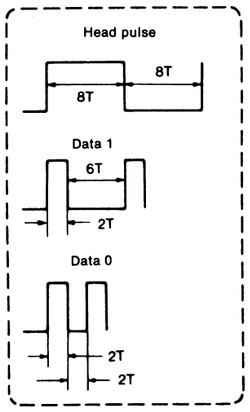
• Remote control transmitter



• Key number description and data code



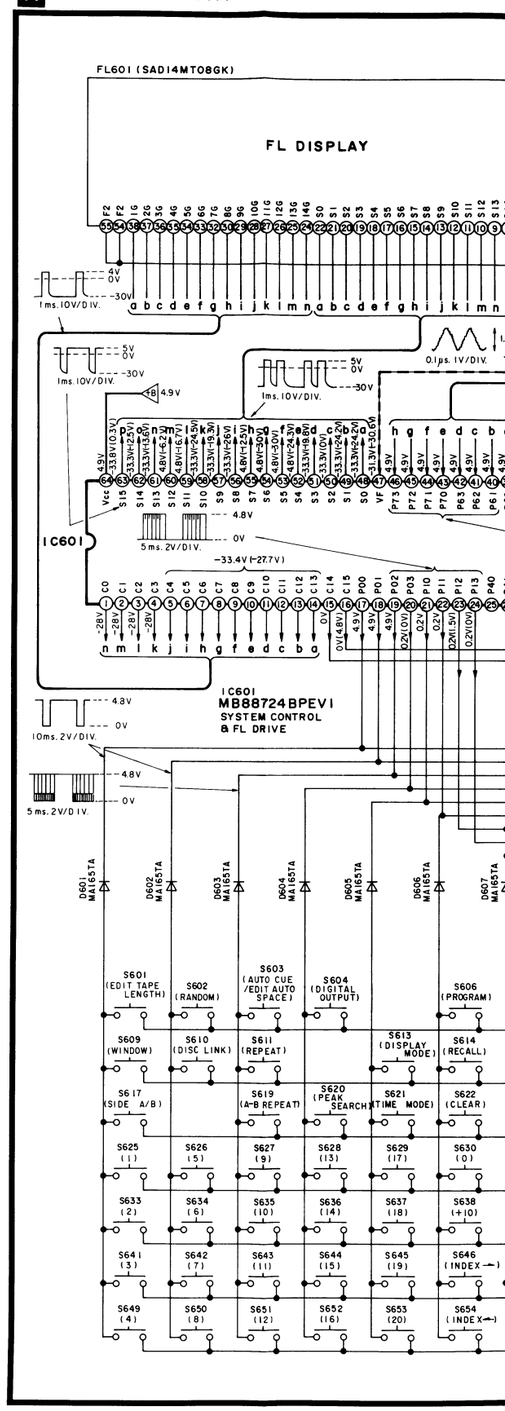
＊1T = 0.434 ms ~ 0.439 ms



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



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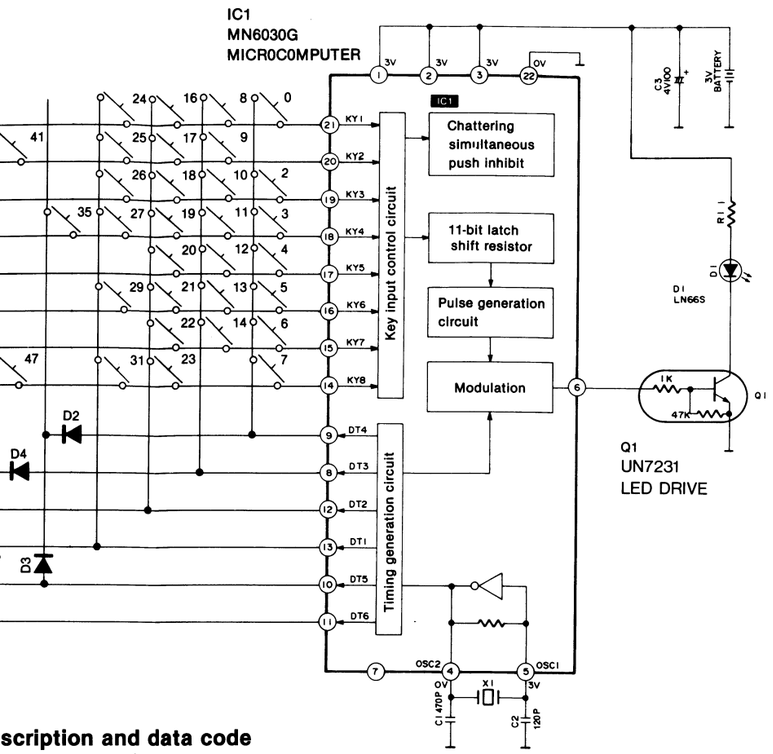
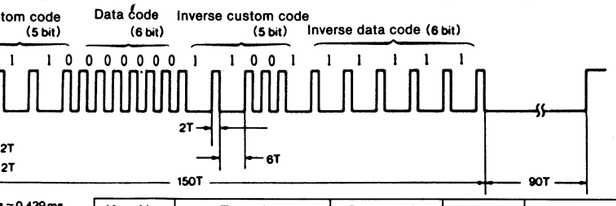
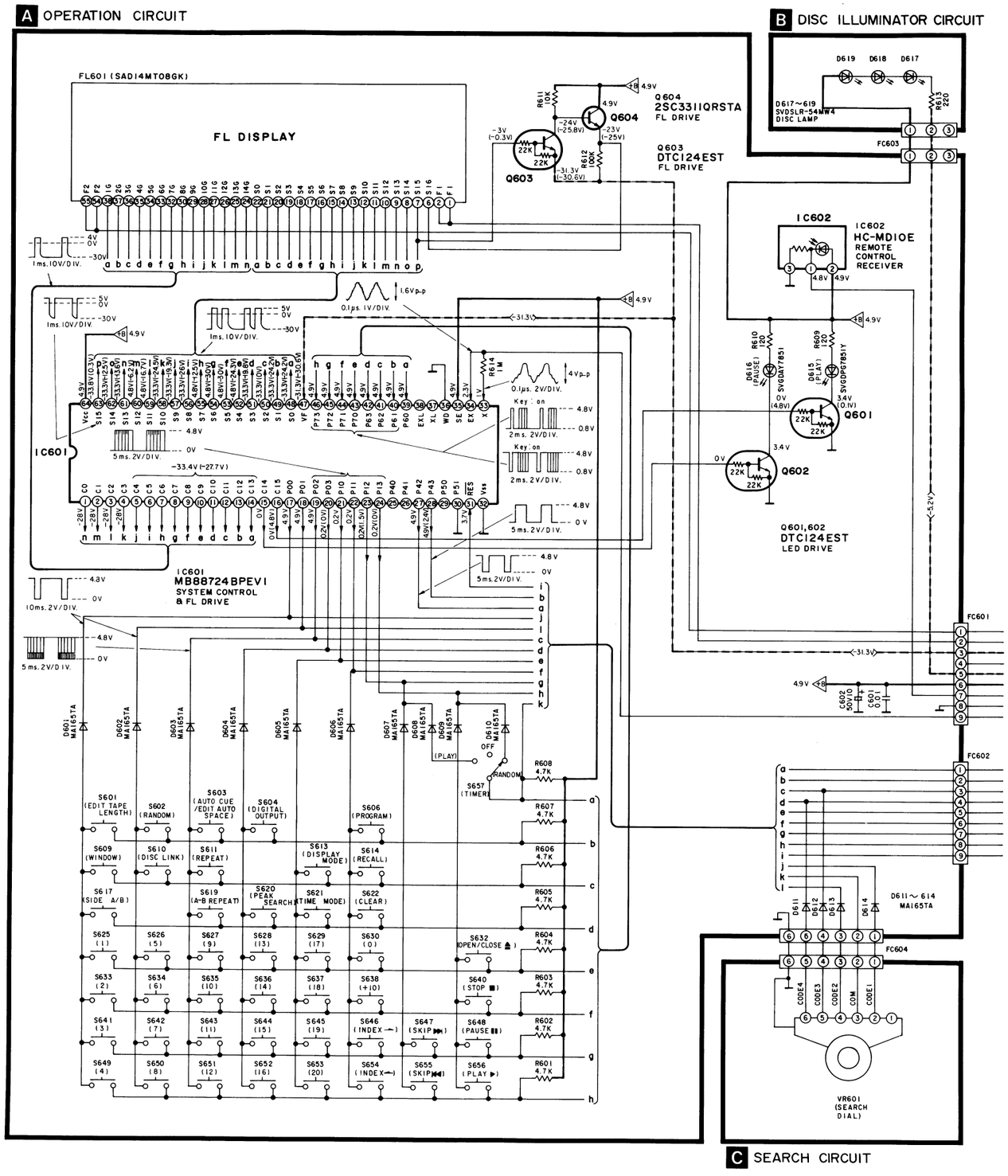


scription and data code



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



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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 Modifications	AN8377	AN8377N
IC104	LM2840T5M	Removed
Q102	Removed	2SB1240QH Added
C140	0.01μF	Removed
C145	6V 100μF	Removed
Jumper SJ101	Removed	Shorted

OPTICAL PICKUP

SPEED POSITION SENSOR

(TRAVERSE)

(FOCUS) (TRACKING)

OPTICAL PICKUP

CN101

IC103
AN8377
FOCUS/TRACKING
/TRAVERSE COIL DRIVE
(BTL DRIVE)

IC104
LM2940T5M
REGULATOR

IC102
AN8374S
SERVO PROCESSOR

IC101
AN8373S
SERVO AMP

Q101
2SA1547
AUTO POWER CONTROL

Q102
2SB1240
SWITCHING

CN103

DC SPINDLE MOTOR

Best eye adj.

Tracking balance adj.

Foucus offset adj.

Tracking gain adj.

Tracking gain adj.

TEG

FEG

To Servo Gain Adjustor

Tracking offset adj.

E MOTOR/SWITCH CIRCUIT

LOADING MOTOR

SI01

SI02

(OPEN/CLOSE DETECTOR)

CN701

CN405

F EXTENSION CIRCUIT

FC601 CN601 CN401

FC602 CN602 CN402

G MAIN CIRCUIT

CN404

Q453
2SD1862PRTV6
MOTOR DRIVE

Q454
2SB1240PRTV6
MOTOR DRIVE

IC403(1/2)

IC403
SVIBA4558FTI
MOTOR DRIVE

Q451
2SD1862PRTV6
MOTOR DRIVE

Q452
2SB1240PRTV6
MOTOR DRIVE

Q451
MA4051MTA

IC401
MN1554PEZ-I
SYSTEM CONTROL

IC403
(1/2)

Q404
DTA124EST
MOTOR CONT.

IC302
LC3517BML15T
16K RAM

IC301
MN6622
DIGITAL SIGNAL PROCESSING

Q805
DTC124EST
SWITCHING
(EMPHASIS)

Q806
DTA124EST
SWITCHING
(EMPHASIS)

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E MOTOR/SWITCH CIRCUIT

G MAIN CIRCUIT

H POWER SUPPLY CI

F EXTENSION CIRCUIT

F EXTENSION CIRCUIT

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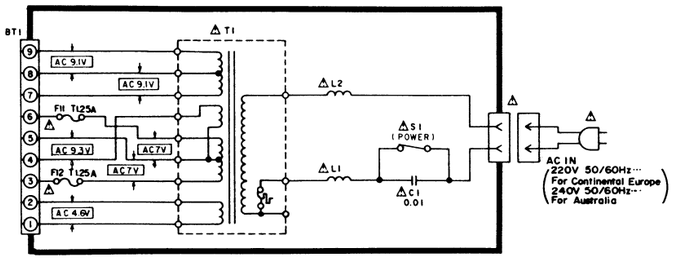
H POWER SUPPLY CIRCUIT

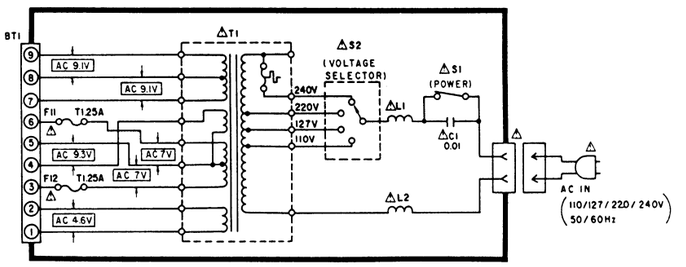
I HEADPHONES CIRCUIT

F EXTENSION CIRCUIT

- **Power supply circuit for (E), (XL), (EG), (EB), (EH) and (Ei) areas.**



- **Power supply circuit for (EK), (XA), (XB), (PA), (PE) and (PC) areas.**



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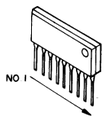
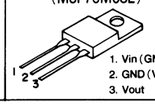
SL-P777 SL-P777

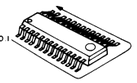
■ TERMINAL GUIDE OF IC's, TRANSISTORS AND DIODES



SVIM51953BL	5 Pin

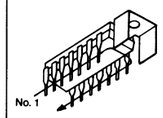
LM2940T5,
LM2940T5M,
M5F78M08L
(M5F79M08L)

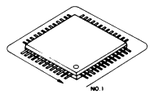




SVIMS219FPTA	8 Pin	LC3517BML15T	24 Pin
SVIM5238FPTA		AN8373S	42 Pin
BA4558FTI		AN8374S	
M5218FPTA		TC40H000FTPN	14 Pin

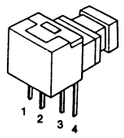
AN8377	16 Pin



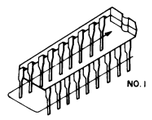


MN6471	42 Pin
MN6622	84 Pin
MN1554PEZ-1	64 Pin

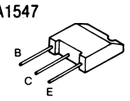
T0TX174

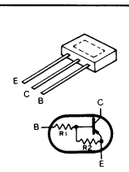


MB88724BPEV1	64 Pin



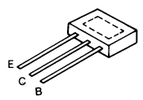
2SB1238,
2SD1862,
2SB1240,
2SA1547



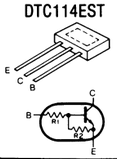


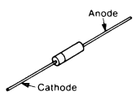
DTA124EST,
DTA114YST

2SD1450,
2SC3311,
2SA1309

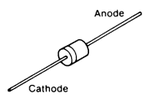


DTC124EST,
DTC114EST



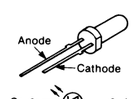


MA4056M,
MA4330M,
MA4091M,
MA4033M,
MA4051M

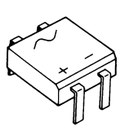


MA165,
SVD1SR35200M

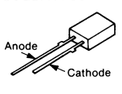
SVDSLR-54MW4



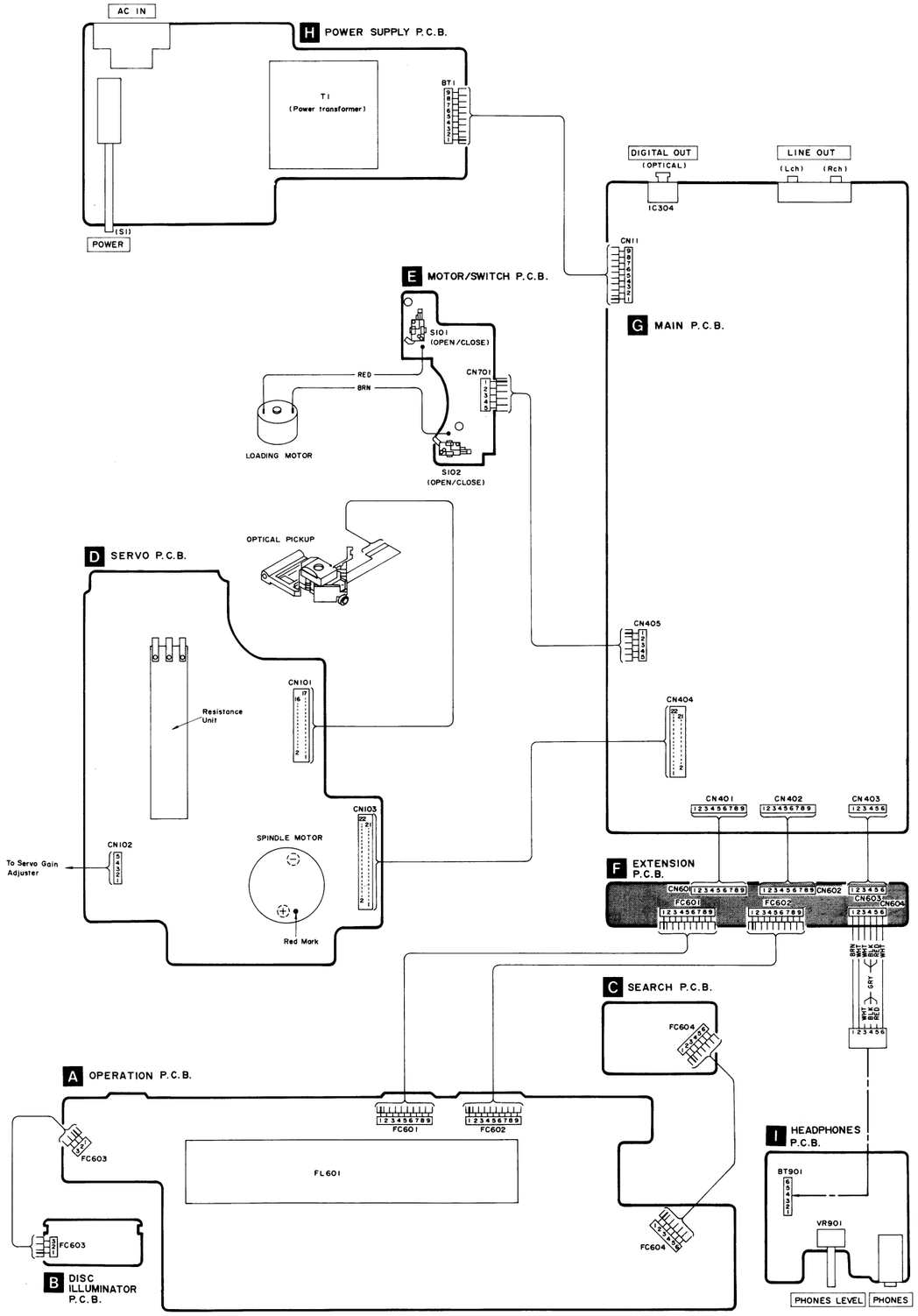
SVDRDF02M



SVGDPG7851Y,
SVGDAY7851



■ WIRING CONNECTION DIAGRAM



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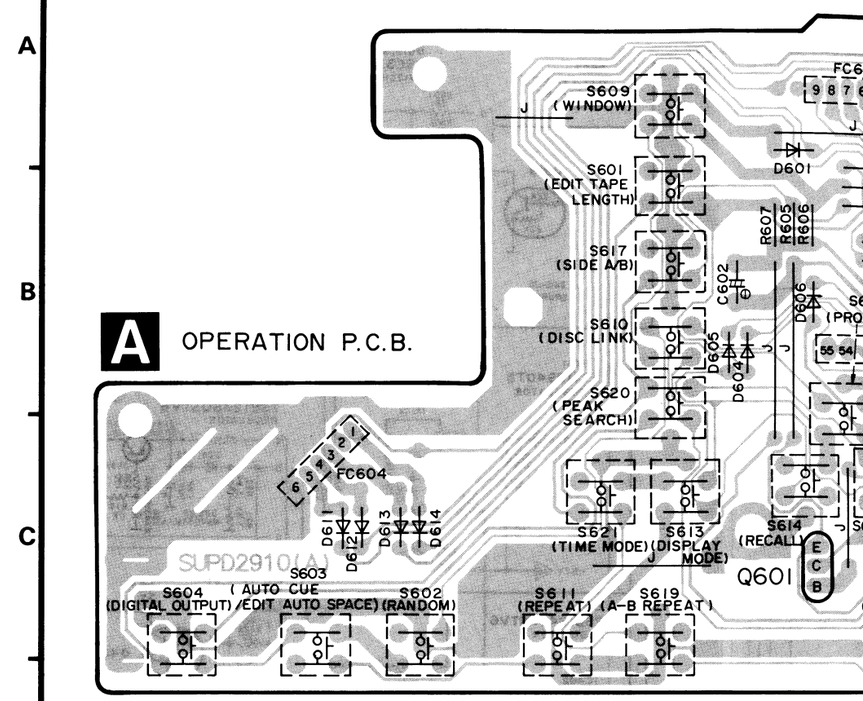
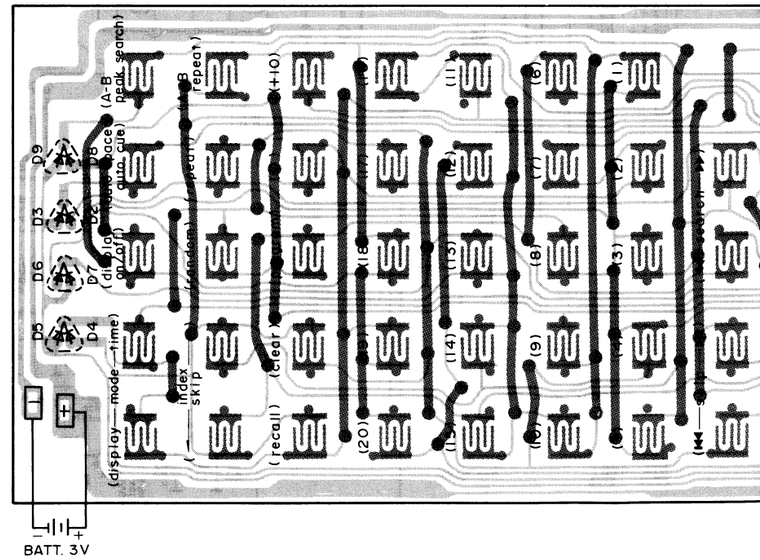
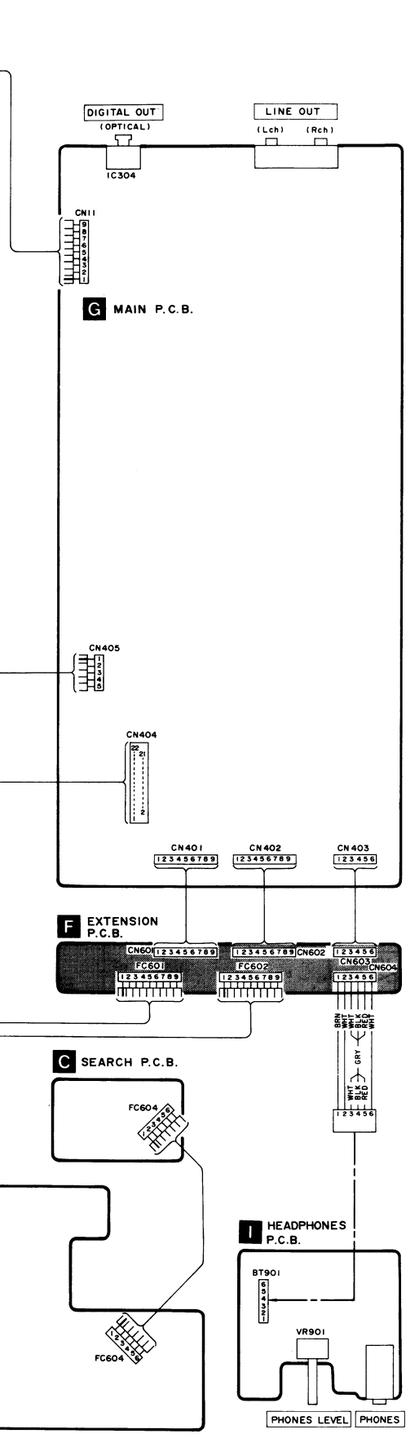
■ PRINTED CIRCUIT BOARDS

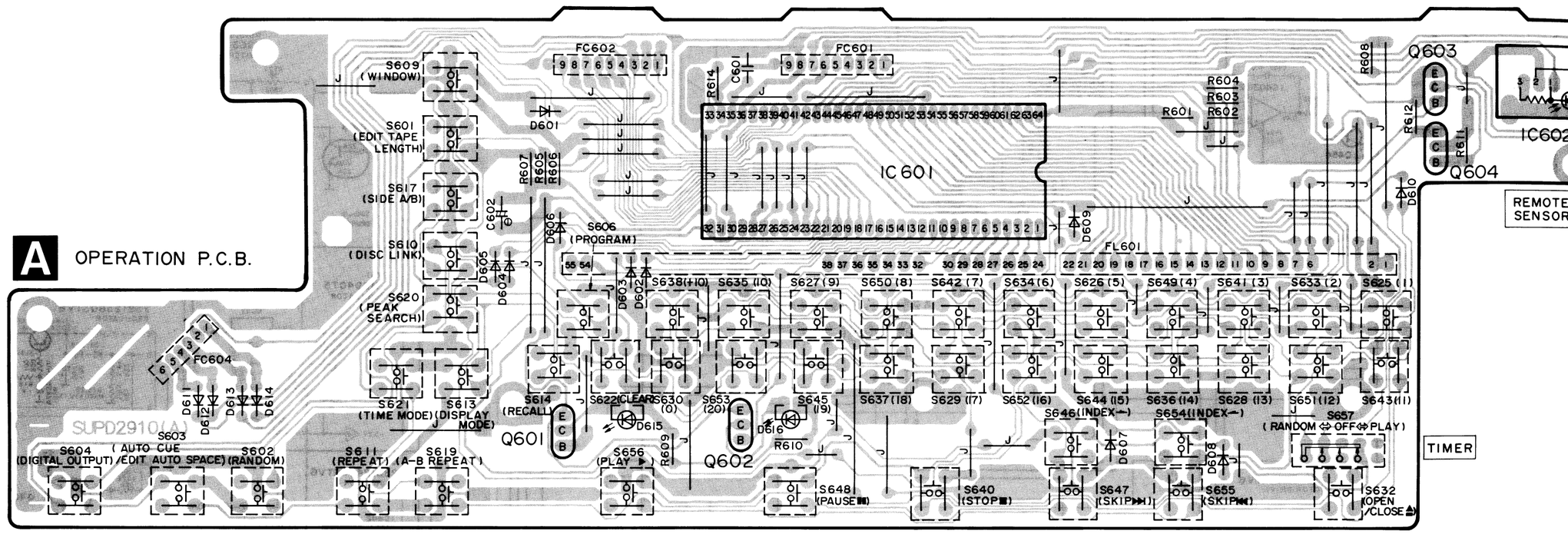


• Remote control transmitter

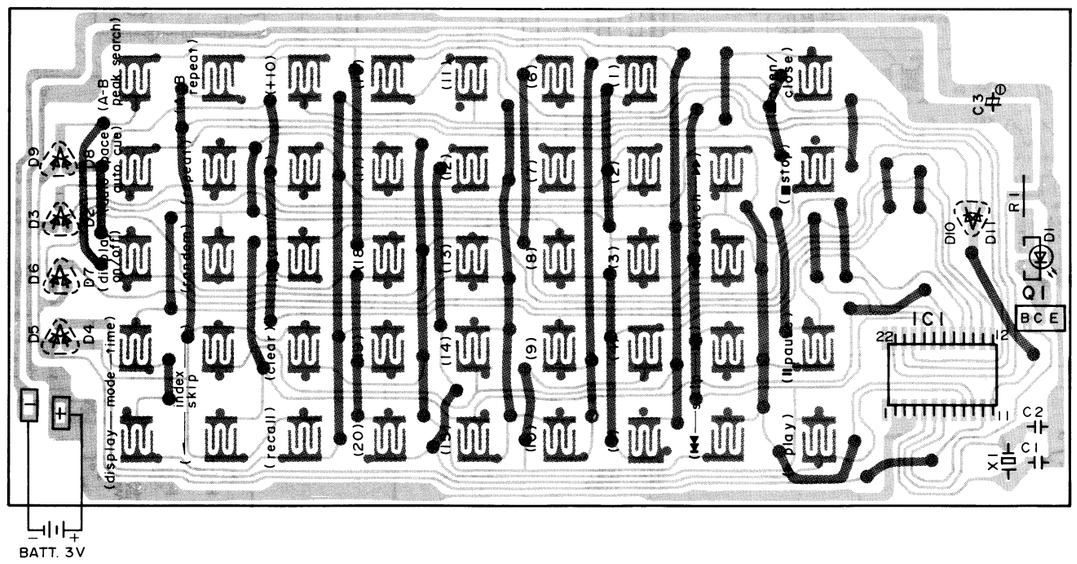


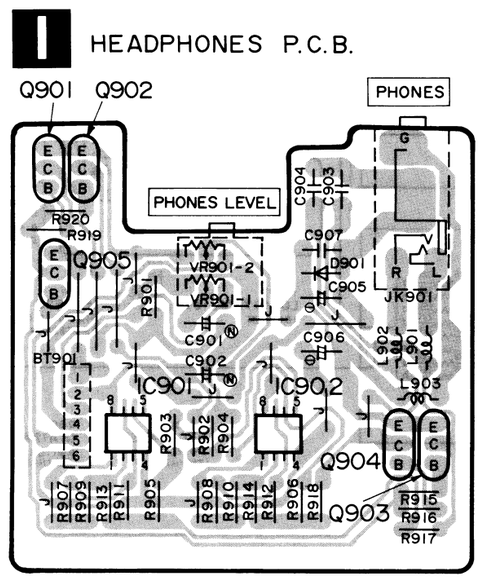
■ PRINTED CIRCUIT BOARDS

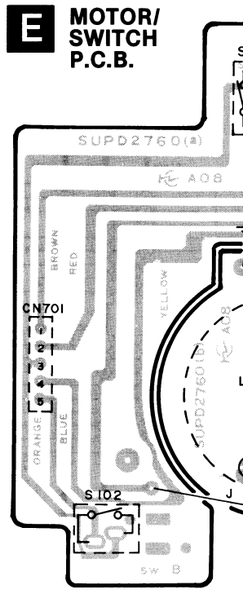




• **Remote control transmitter**







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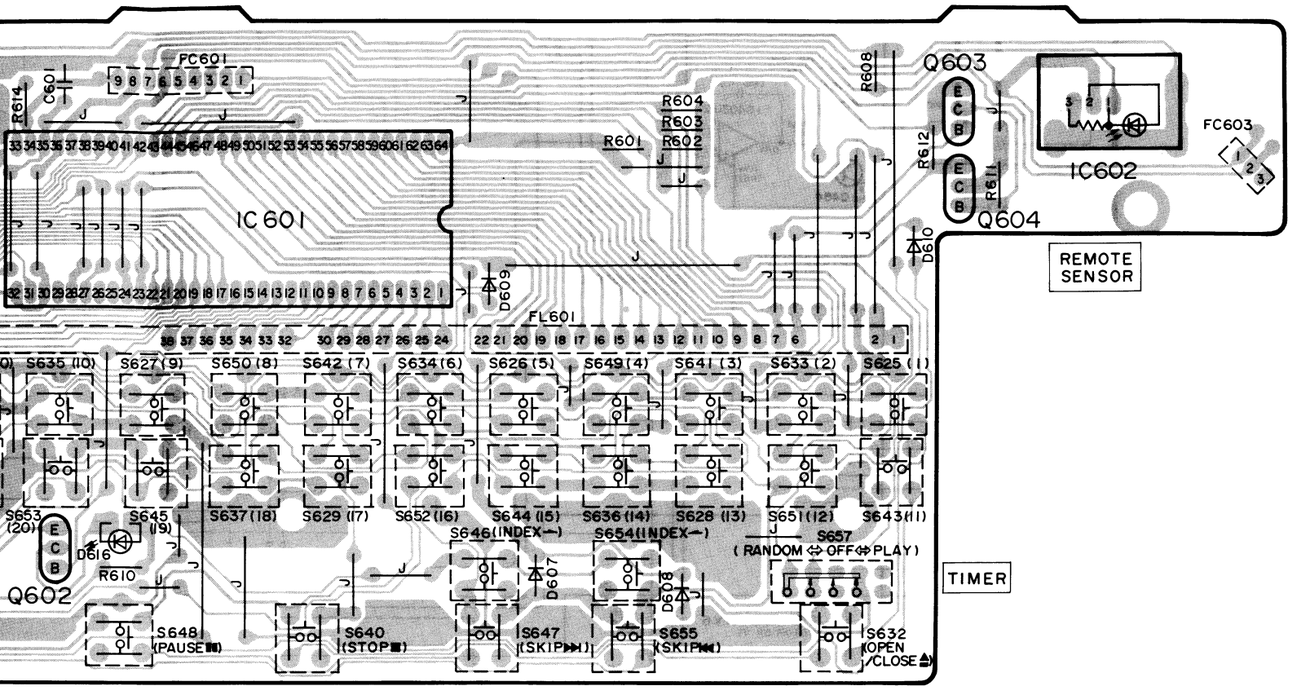
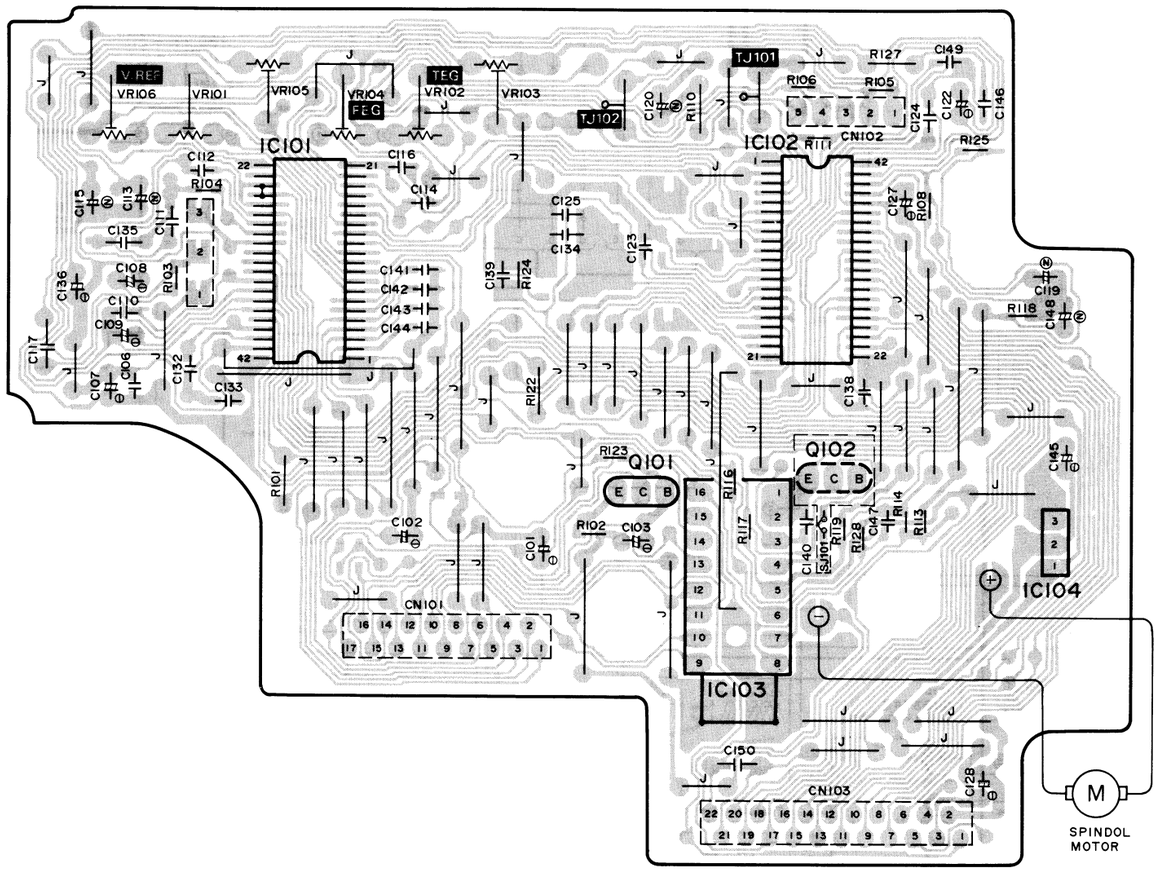
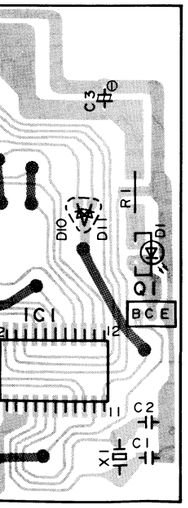
5 6 7 8 9 10 11 12 13 14

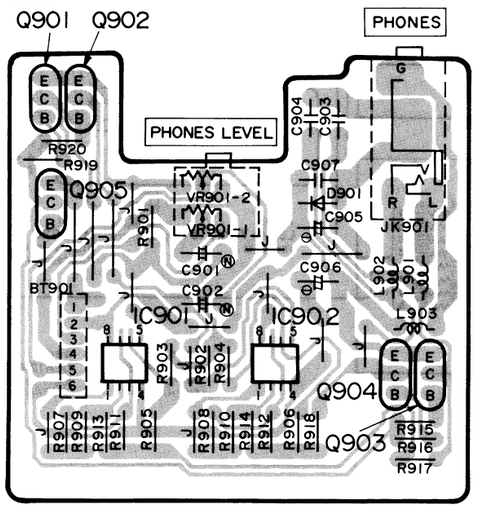


D **SERVO P.C.B.**

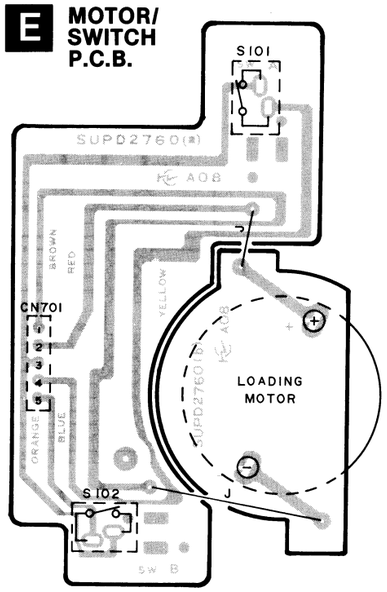




I HEADPHONES P.C.B.



E **MOTOR/ SWITCH P.C.B.**



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

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

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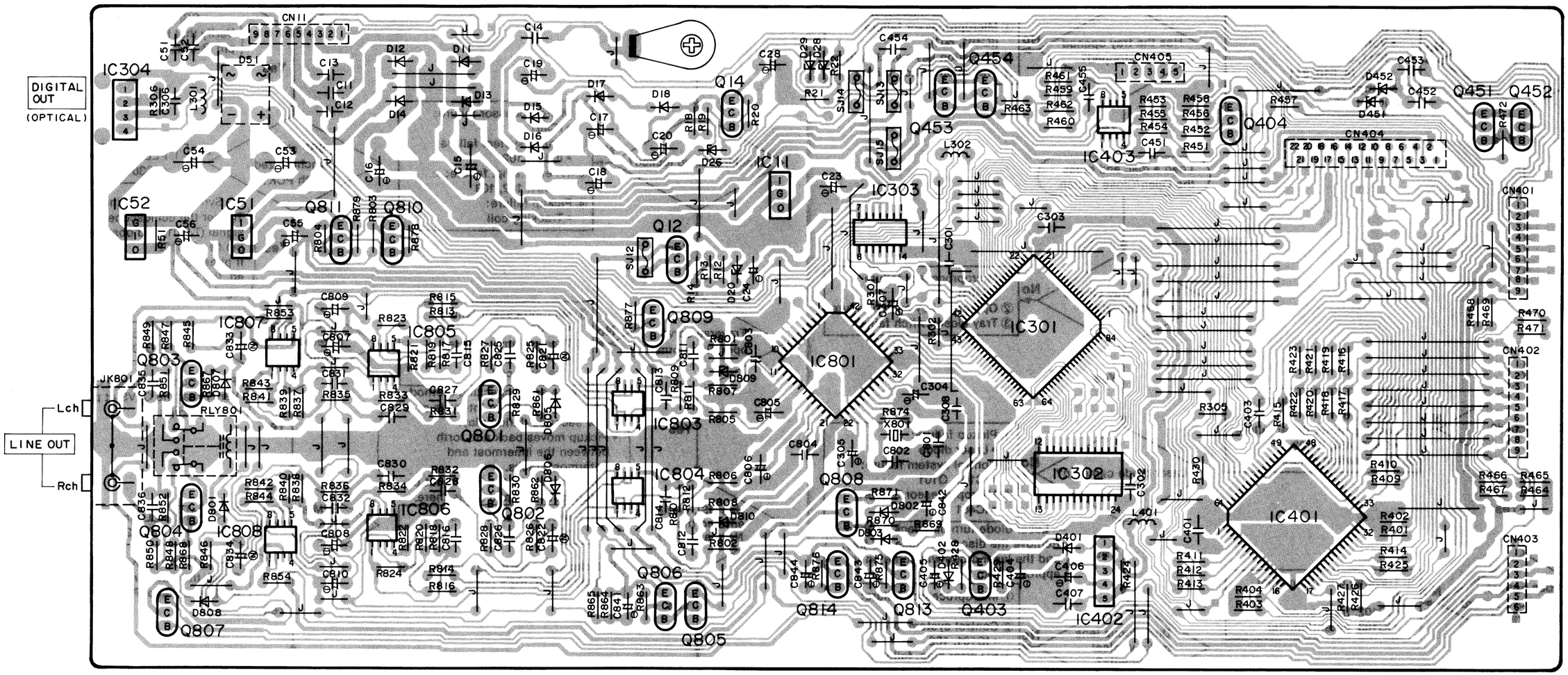
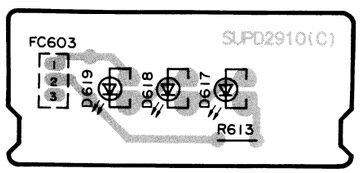
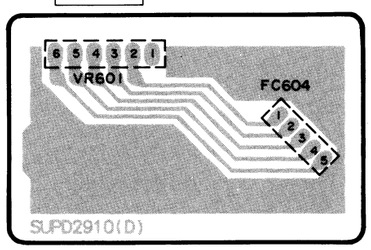
G MAIN P.C.B.



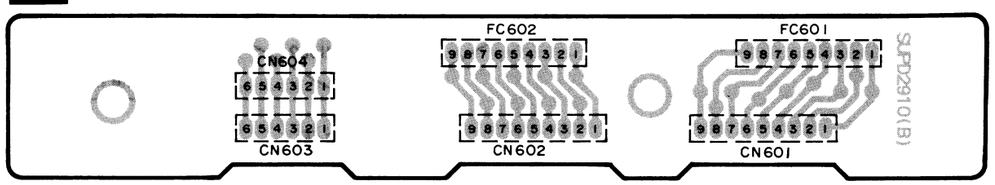
B DISC ILLUMINATOR P.C.B.



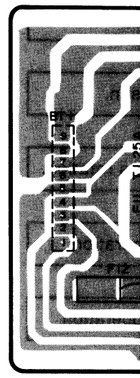
C SEARCH P.C.B.



F EXTENSION P.C.B.

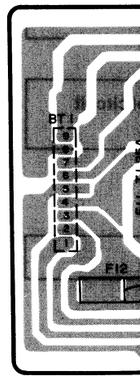


H POWER



• For (E), (XL)

H POWER



• For (EK), (X)

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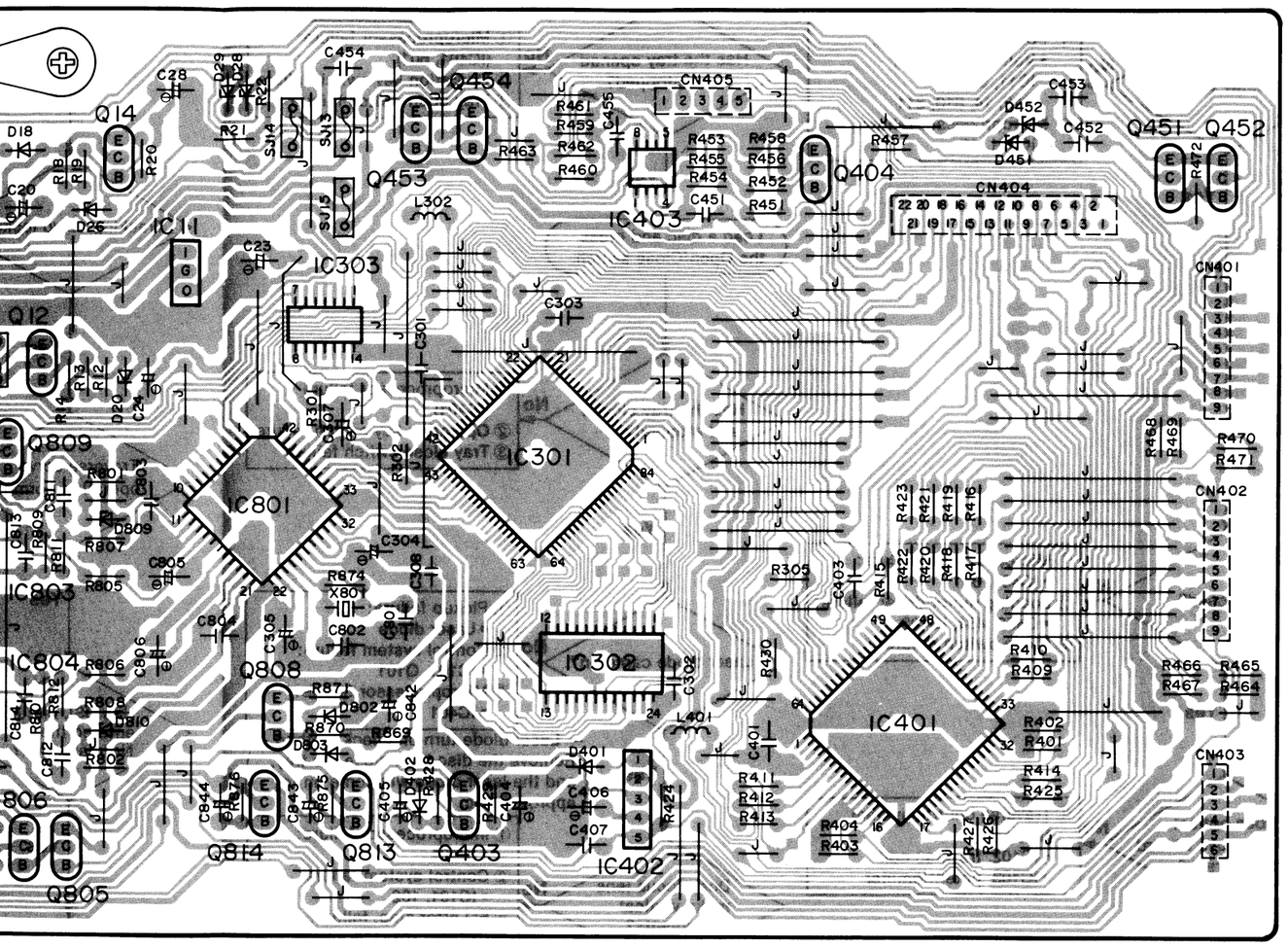
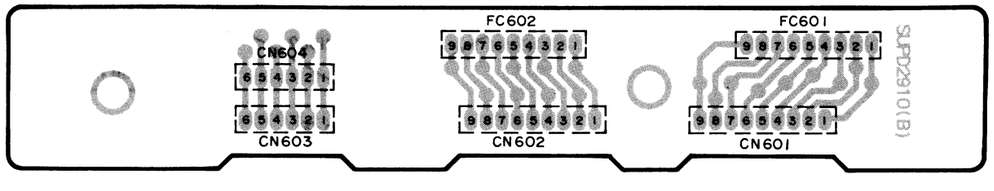
19 20 21 22 23 24 25 26 27 28 29

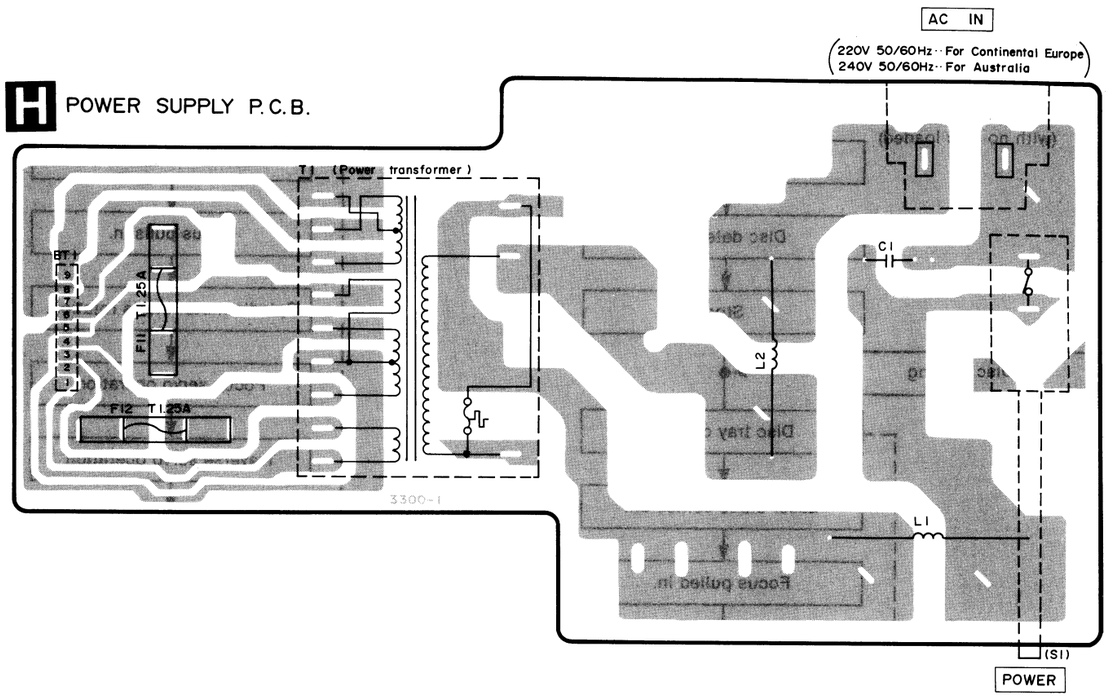


F EXTENSION P.C.B.



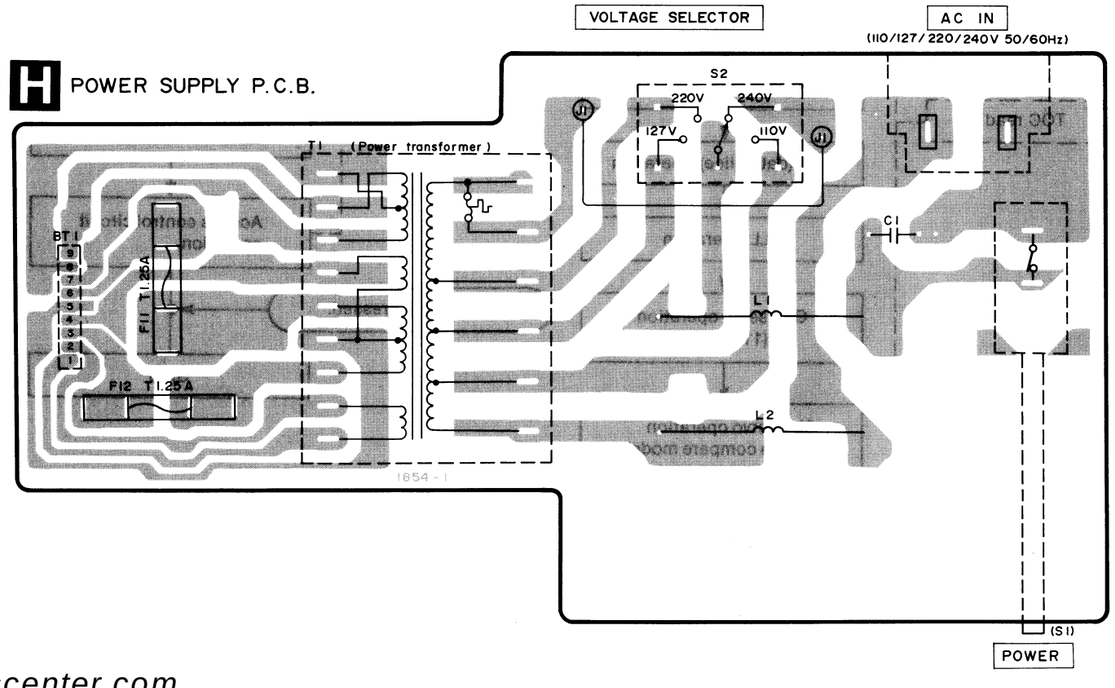
• For (E), (XL), (EG), (EB), (EH) and (Ei) areas.

H POWER SUPPLY P.C.B.



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

H POWER SUPPLY P.C.B.



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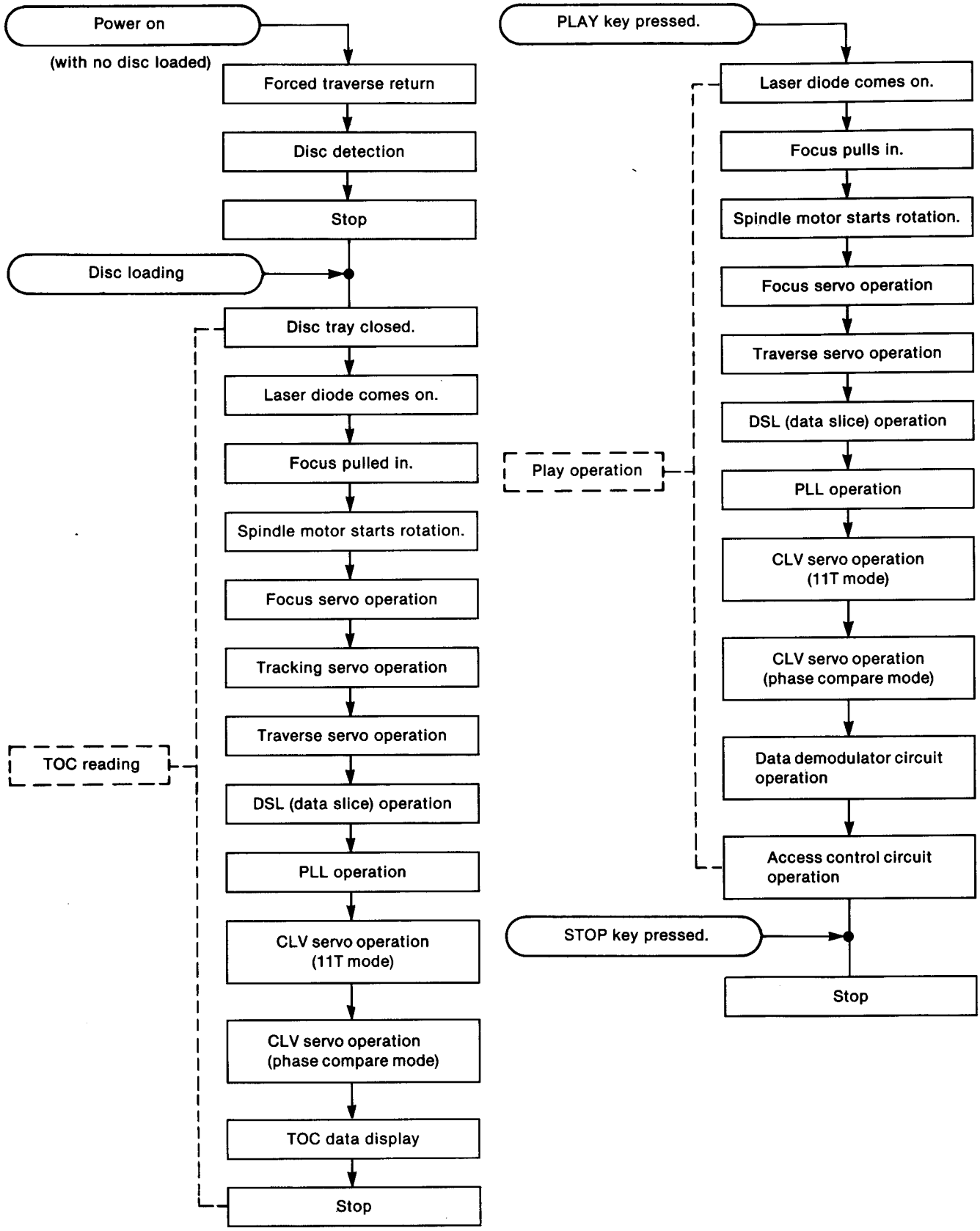
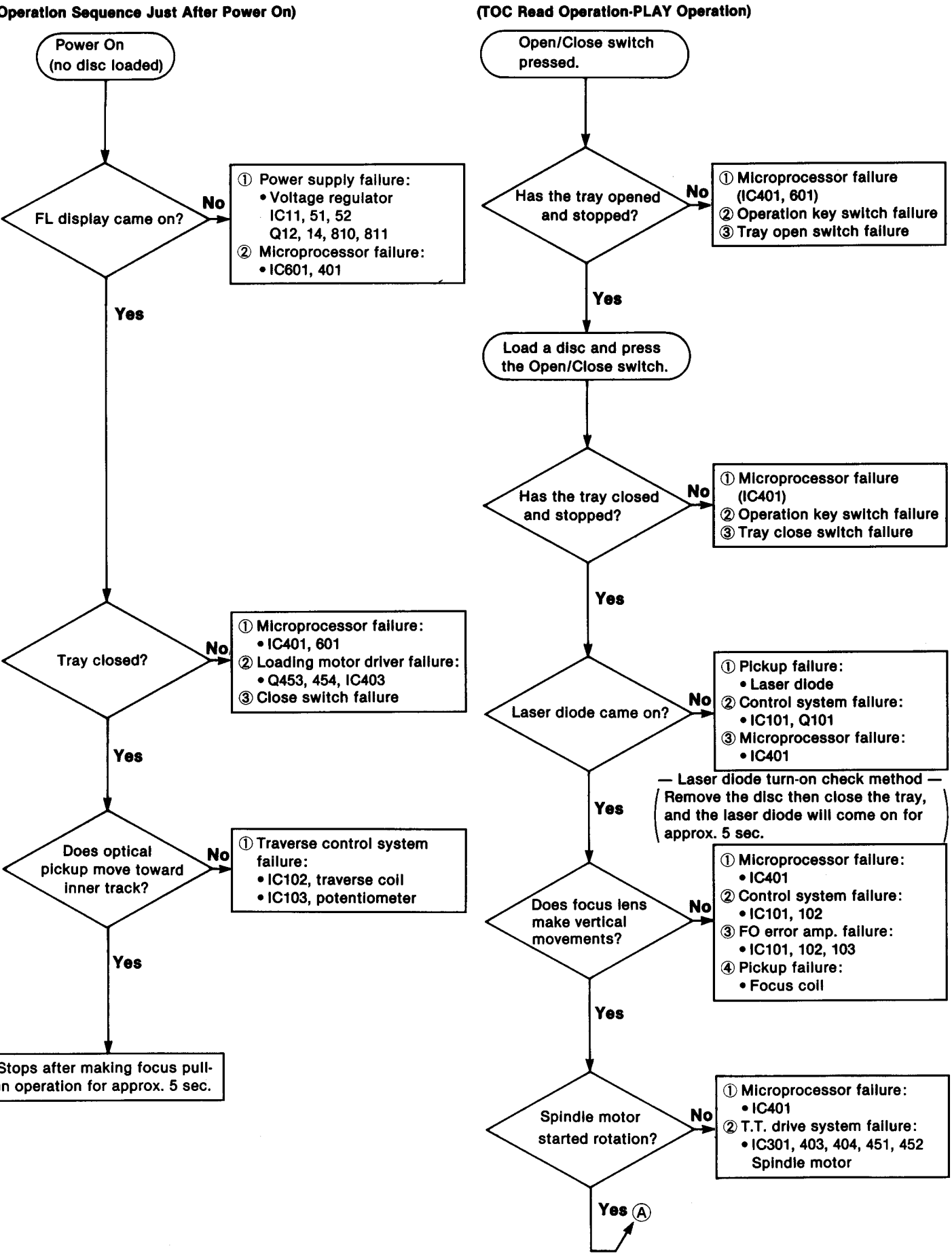
■ TROUBLESHOOTING GUIDE

SL-P777 Operation Sequence Check Sheet

Play Operation Sequence





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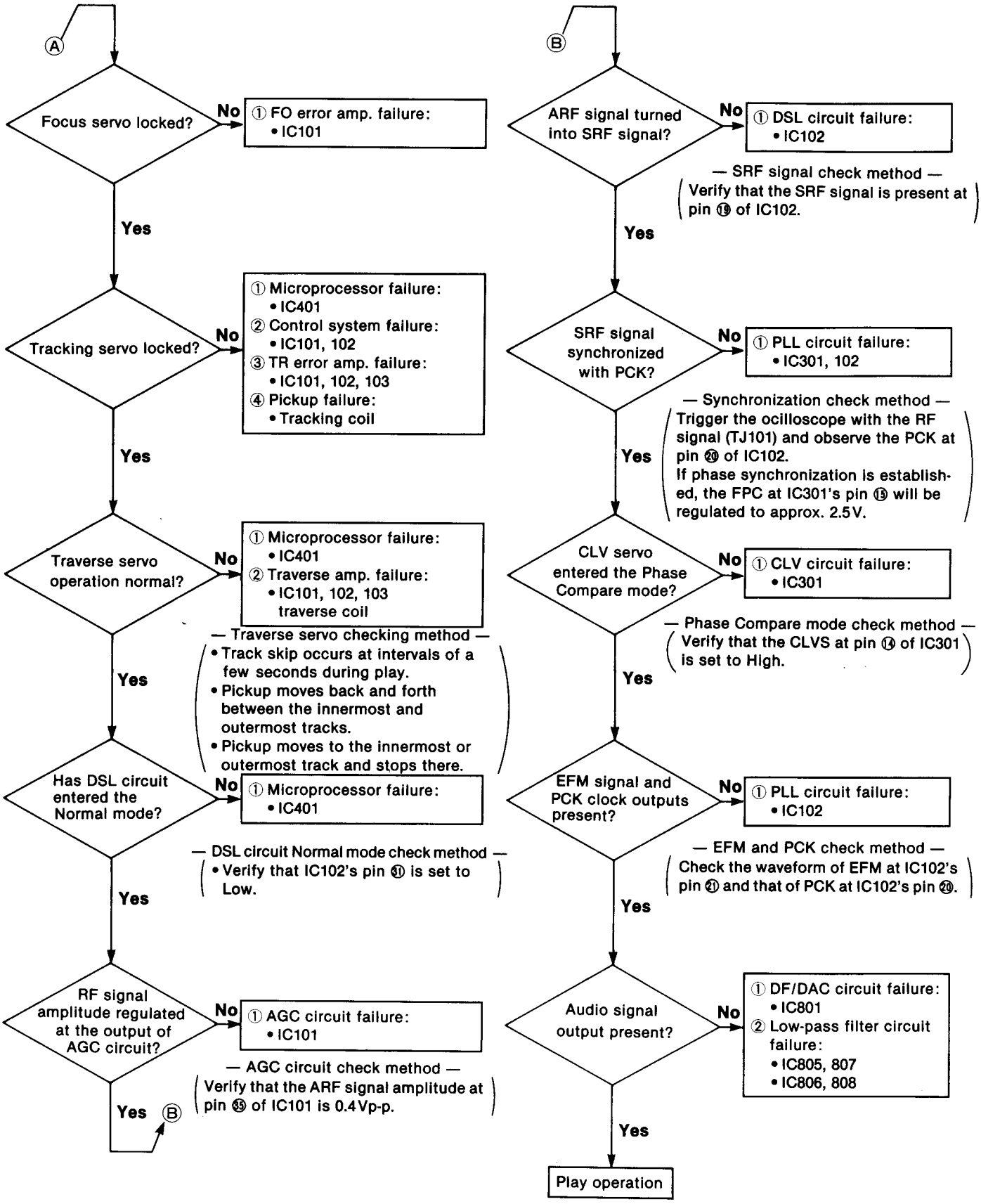
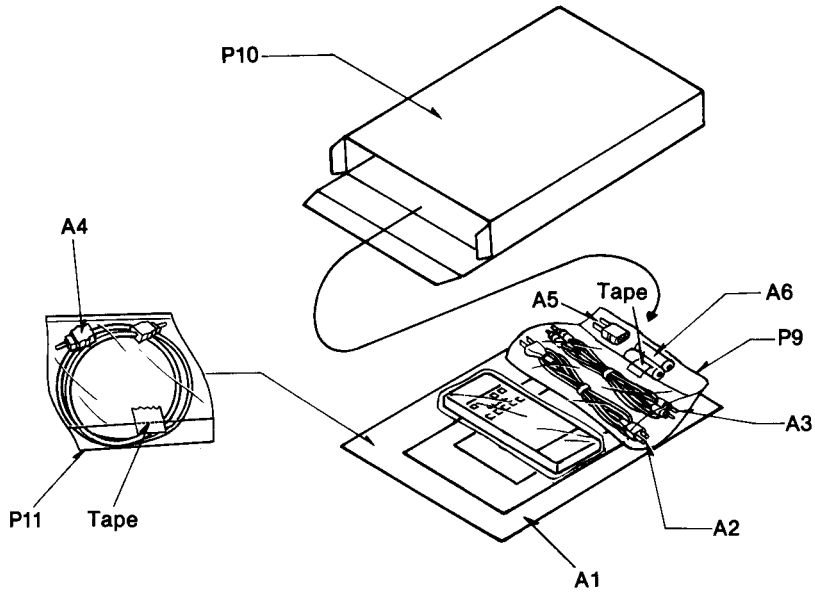
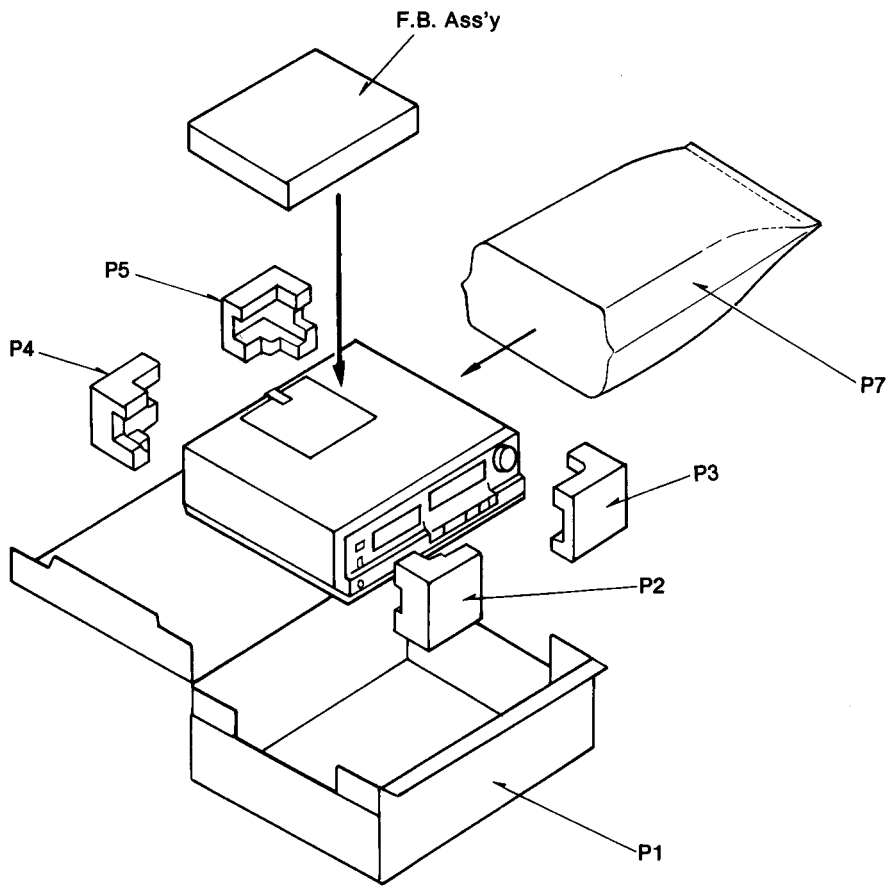

Ⓐ
Focus servo locked?
No
① FO error amp. failure:
• IC101
Yes
Tracking servo locked?
No
① Microprocessor failure:
• IC401
② Control system failure:
• IC101, 102
③ TR error amp. failure:
• IC101, 102, 103
④ Pickup failure:
• Tracking coil
Yes
Traverse servo operation normal?
No
① Microprocessor failure:
• IC401
② Traverse amp. failure:
• IC101, 102, 103
traverse coil
— Traverse servo checking method —
• Track skip occurs at intervals of a few seconds during play.
• Pickup moves back and forth between the innermost and outermost tracks.
• Pickup moves to the innermost or outermost track and stops there.
Yes
Has DSL circuit entered the Normal mode?
No
① Microprocessor failure:
• IC401
— DSL circuit Normal mode check method —
• Verify that IC102's pin ㉛ is set to Low.
Yes
RF signal amplitude regulated at the output of AGC circuit?
No
① AGC circuit failure:
• IC101
— AGC circuit check method —
Verify that the ARF signal amplitude at pin ㉟ of IC101 is 0.4Vp-p.
Yes Ⓑ
Ⓑ
ARF signal turned into SRF signal?
No
① DSL circuit failure:
• IC102
— SRF signal check method —
Verify that the SRF signal is present at pin ⑲ of IC102.
Yes
SRF signal synchronized with PCK?
No
① PLL circuit failure:
• IC301, 102
— Synchronization check method —
Trigger the ocilloscope with the RF signal (TJ101) and observe the PCK at pin ⑳ of IC102.
If phase synchronization is established, the FPC at IC301's pin ⑬ will be regulated to approx. 2.5V.
Yes
CLV servo entered the Phase Compare mode?
No
① CLV circuit failure:
• IC301
— Phase Compare mode check method —
Verify that the CLVS at pin ⑭ of IC301 is set to High.
Yes
EFM signal and PCK clock outputs present?
No
① PLL circuit failure:
• IC102
— EFM and PCK check method —
Check the waveform of EFM at IC102's pin ㉑ and that of PCK at IC102's pin ⑳.
Yes
Audio signal output present?
No
① DF/DAC circuit failure:
• IC801
② Low-pass filter circuit failure:
• IC805, 807
• IC806, 808
Yes
Play operation

■ PACKING

- **F.B. Ass'y**





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■ RESISTORS & CAPACITORS

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.

Numbering System For Resistors

Example:

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

Numbering System For Capacitors

Example:

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

● Capacity values are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
● Resistance values are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : ±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 : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : +80 −20 %
ECQM : Polyester	50 : 50V	05 : 50V	J : ±5%
ECQP : Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG : Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N : Non Polar Electrolytic	KC : 400V AC	0G : 4V	C : ±0.25pF
QCU : Ceramic (Chip Type)	KC : 125V AC (UL)		D : ±0.5pF
ECUX : Ceramic (Chip Type)			
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R12	ERDS2TJ471	470 1/4
R13	ERDS2TJ471	470 1/4
R14	ERDS2TJ101	100 1/4
R18	ERDS2TJ102	1K 1/4
R19	ERDS2TJ102	1K 1/4
R20	ERDS2TJ101	100 1/4
R21	ERDS2TJ392	3.9K 1/4
R22	ERDS2TJ392	3.9K 1/4
R51	ERDS2TJ561	560 1/4
R301	ERDS2TJ561	560 1/4
R302	ERDS2TJ331	330 1/4
R305	ERDS2TJ472	4.7K 1/4
R306	ERDS2TJ822	8.2K 1/4
R401	ERDS2TJ472	4.7K 1/4
R402	ERDS2TJ472	4.7K 1/4
R403	ERDS2TJ472	4.7K 1/4
R404	ERDS2TJ472	4.7K 1/4
R409	ERDS2TJ472	4.7K 1/4
R410	ERDS2TJ472	4.7K 1/4
R411	ERDS2TJ472	4.7K 1/4
R412	ERDS2TJ472	4.7K 1/4
R413	ERDS2TJ472	4.7K 1/4
R414	ERDS2TJ472	4.7K 1/4
R415	ERDS2TJ104	100K 1/4
R416	ERDS2TJ221	220 1/4
R417	ERDS2TJ221	220 1/4
R418	ERDS2TJ221	220 1/4
R419	ERDS2TJ221	220 1/4
R420	ERDS2TJ221	220 1/4
R421	ERDS2TJ221	220 1/4
R422	ERDS2TJ221	220 1/4
R423	ERDS2TJ221	220 1/4
R424	ERDS2TJ472	4.7K 1/4
R425	ERDS2TJ472	4.7K 1/4
R426	ERDS2TJ472	4.7K 1/4
R427	ERDS2TJ472	4.7K 1/4
R428	ERDS2TJ223	22K 1/4
R429	ERDS2TJ222	2.2K 1/4
R430	ERDS2TJ472	4.7K 1/4
R451	ERDS2TJ154	150K 1/4
R452	ERDS2TJ333	33K 1/4
R453	ERDS2TJ333	33K 1/4
R454	ERDS2TJ123	12K 1/4
R455	ERDS2TJ103	10K 1/4
R456	ERDS2TJ154	150K 1/4
R457	ERDS2TJ101	100 1/4
R458	ERDS2TJ8R2	8.2 1/4
R459	ERDS2TJ913	91K 1/4
R460	ERDS2TJ124	120K 1/4
R461	ERDS2TJ913	91K 1/4
R462	ERDS2TJ124	120K 1/4
R463	ERDS2TJ101	100 1/4
R464	ERDS2TJ472	4.7K 1/4
R465	ERDS2TJ472	4.7K 1/4
R466	ERDS2TJ472	4.7K 1/4
R467	ERDS2TJ472	4.7K 1/4
R468	ERDS2TJ472	4.7K 1/4
R469	ERDS2TJ472	4.7K 1/4
R470	ERDS2TJ472	4.7K 1/4
R471	ERDS2TJ472	4.7K 1/4
R472	ERDS2TJ101	100 1/4
R601	ERDS2TJ472	4.7K 1/4
R602	ERDS2TJ472	4.7K 1/4
R603	ERDS2TJ472	4.7K 1/4
R604	ERDS2TJ472	4.7K 1/4
R605	ERDS2TJ472	4.7K 1/4
R606	ERDS2TJ472	4.7K 1/4
R607	ERDS2TJ472	4.7K 1/4
R608	ERDS2TJ472	4.7K 1/4
R609	ERDS2TJ121	120 1/4
R610	ERDS2TJ121	120 1/4
R611	ERDS2TJ103	10K 1/4
R612	ERDS2TJ104	100K 1/4
R613	ERDS2TJ221	220 1/4
R614	ERDS2TJ105	1M 1/4
R801	ERDS2TJ560	56 1/4
R802	ERDS2TJ560	56 1/4
R803	ERDS2TJ271	270 1/4
R804	ERDS2TJ271	270 1/4
R805	ERDAS3G103	10K 1/4
R806	ERDAS3G103	10K 1/4
R807	ERDAS3G103	10K 1/4
R808	ERDAS3G103	10K 1/4
R809	ERDS2TJ393	39K 1/4
R810	ERDS2TJ393	39K 1/4
R811	ERDS2TJ393	39K 1/4
R812	ERDS2TJ393	39K 1/4
R813	ERDS2TJ472	4.7K 1/4
R814	ERDS2TJ472	4.7K 1/4
R815	ERDS2TJ472	4.7K 1/4
R816	ERDS2TJ472	4.7K 1/4
R817	ERDS2TJ272	2.7K 1/4
R818	ERDS2TJ272	2.7K 1/4
R819	ERDS2TJ272	2.7K 1/4
R820	ERDS2TJ272	2.7K 1/4
R821	ERDS2TJ103	10K 1/4
R822	ERDS2TJ103	10K 1/4
R823	ERDS2TJ103	10K 1/4
R824	ERDS2TJ103	10K 1/4
R825	ERDAS3G183	18K 1/4
R826	ERDAS3G183	18K 1/4
R827	ERDAS3G392	3.9K 1/4
R828	ERDAS3G392	3.9K 1/4
R829	ERDS2TJ105	1M 1/4
R830	ERDS2TJ105	1M 1/4
R831	ERDAS3G183	18K 1/4
R832	ERDAS3G183	18K 1/4
R833	ERDAS3G222	2.2K 1/4
R834	ERDAS3G222	2.2K 1/4
R835	ERDAS3G393	39K 1/4
R836	ERDAS3G393	39K 1/4
R837	ERDS2TJ100	10 1/4
R838	ERDS2TJ100	10 1/4
R839	ERDS2TJ330	33 1/4
R840	ERDS2TJ330	33 1/4
R841	ERDS2TJ102	1K 1/4
R842	ERDS2TJ102	1K 1/4
R843	ERDS2TJ332	3.3K 1/4
R844	ERDS2TJ332	3.3K 1/4
R845	ERDS2TJ271	270 1/4
R846	ERDS2TJ271	270 1/4
R847	ERDS2TJ560	56 1/4
R848	ERDS2TJ560	56 1/4
R849	ERDS2TJ331	330 1/4

Ref. No.	Part No.	Value.
R850	ERDS2TJ331	330 1/4
R851	ERDS2TJ124	120K 1/4
R852	ERDS2TJ124	120K 1/4
R853	ERDS2TJ102	1K 1/4
R854	ERDS2TJ102	1K 1/4
R861	ERDS2TJ102	1K 1/4
R862	ERDS2TJ102	1K 1/4
R863	ERDS2TJ222	2.2K 1/4
R864	ERDS2TJ154	150K 1/4
R865	ERDS2TJ333	33K 1/4
R867	ERDS2TJ563	56K 1/4
R868	ERDS2TJ563	56K 1/4
R869	ERDS2TJ103	10K 1/4
R870	ERDS2TJ102	1K 1/4
R871	ERDS2TJ102	1K 1/4
R874	ERDS2TJ472	4.7K 1/4
R875	ERDS2TJ102	1K 1/4
R876	ERDS2TJ102	1K 1/4
R877	ERDS2TJ472	4.7K 1/4
R878	ERDS2TJ102	1K 1/4
R879	ERDS2TJ102	1K 1/4
R901	ERDS2TJ103	10K 1/4
R902	ERDS2TJ103	10K 1/4
R903	ERDS2TJ123	12K 1/4
R904	ERDS2TJ123	12K 1/4
R905	ERDS2TJ104	100K 1/4
R906	ERDS2TJ104	100K 1/4
R907	ERDS2TJ330	33 1/4
R908	ERDS2TJ330	33 1/4
R909	ERDS2TJ332	3.3K 1/4
R910	ERDS2TJ332	3.3K 1/4
R911	ERDS2TJ100	10 1/4
R912	ERDS2TJ100	10 1/4
R913	ERDS2TJ102	1K 1/4
R914	ERDS2TJ102	1K 1/4
R915	ERDS2TJ222	2.2K 1/4
R916	ERDS2TJ222	2.2K 1/4
R917	ERDS2TJ121	120 1/4
R918	ERDS2TJ121	120 1/4
R919	ERDS2TJ222	2.2K 1/4
R920	ERDS2TJ222	2.2K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1 ⚠	ECKDKC103PF2	0.01 125
C11 ⚠	ECKR1H103ZF5	0.01 50
C12 ⚠	ECKR1H103ZF5	0.01 50
C13 ⚠	ECKR1H103ZF5	0.01 50
C14 ⚠	ECKR1H103ZF5	0.01 50
C15	ECEA1CU332	3300 16
C16	ECEA1CU222	2200 16
C17	ECEA1CU331	330 16
C18	ECEA16V1000	1000 16
C19	ECEA1VU331E	330 35
C20	ECEA1VU331E	330 35
C23	ECEA1AU470	47 10
C24	ECEA1AU470	47 10
C28	ECEA1HK010	1 50
C51 ⚠	ECKR1H103ZF5	0.01 50
C52 ⚠	ECKR1H103ZF5	0.01 50
C53	ECEA1CPX222E	2200 16
C54	ECEA1CPX222E	2200 16
C55	UKS1A470M1TA	47 10
C56	UKS1A470M1TA	47 10
C301	ECFTD103KXL	0.01 25

Ref. No.	Part No.	Value.
C302	ECFTD103KXL	0.01 25
C303	ECFR1E104ZF5	0.1 25
C304	ECEA0JS221	220 6.3
C305	ECEA0JS221	220 6.3
C306	ECFR1E104ZF5	0.1 25
C307	ECEA0JS331	330 6.3
C308	ECFR1E104ZF5	0.1 25
C401	ECFR1E104ZF5	0.1 25
C403	ECFR1E104ZF5	0.1 25
C404	ECEA0JU471	470 6.3
C405	ECEA1AU470	47 10
C406	ECEA1HK0R1	0.1 50
C407	ECKR1H103ZF5	0.01 50
C451	ECKD1H102KB	1000P 50
C452	ECKD1H102KB	1000P 50
C453	ECKD1H102KB	1000P 50
C454	ECFTD103KXL	0.01 25
C455	ECKD1H102KB	1000P 50
C601	ECBT1E103ZF	0.01 25
C602	ECEA1HKS100B	10 50
C801	ECCR1H050C5	5P 50
C802	ECCR1H050C5	5P 50
C803	ECFR1E104ZF5	0.1 25
C804	ECFR1E104ZF5	0.1 25
C805	UKS0J221M1TA	220 6.3
C806	UKS0J221M1TA	220 6.3
C807	UKS1A470M1TA	47 10
C808	UKS1A470M1TA	47 10
C809	UKS1A470M1TA	47 10
C810	UKS1A470M1TA	47 10
C811	ECQP1331JZ3	330P 100
C812	ECQP1331JZ3	330P 100
C813	ECCR1H150JC5	15P 50
C814	ECCR1H150JC5	15P 50
C815	ECQP1331JZ3	330P 100
C816	ECQP1331JZ3	330P 100
C821	AR1AN330M0T	33 10
C822	AR1AN330M0T	33 10
C825	ECQP2A392JSP	0.0039 100
C826	ECQP2A392JSP	0.0039 100
C827	ECCD1H151K	150P 50
C828	ECCD1H151K	150P 50
C829	ECQM1H392JZ	0.0039 50
C830	ECQM1H392JZ	0.0039 50
C831	ECCR1H101JC5	100P 50
C832	ECCR1H101JC5	100P 50
C833	AR1AN330M0T	33 10
C834	AR1AN330M0T	33 10
C835	ECQM1H102JZ	0.001 50
C836	ECQM1H102JZ	0.001 50
C841	ECEA1CKS100	10 16
C842	ECEA1AK220B	22 10
C843	ECEA1AU101	100 10
C844	ECEA1AU101	100 10
C901	AR1EN3R3M0T	3.3 25
C902	AR1EN3R3M0T	3.3 25
C903	ECFTD103KXL	0.01 25
C904	ECFTD103KXL	0.01 25
C905	ARA1A220M0T	22 10
C906	ARA1A220M0T	22 10
C907	ECFTD103KXL	0.01 25
SERVO P.C.B.		

Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R101	ERDS2TJ471	470 1/4
R102	ERJ6GEYJ120V	12 1/10
R103	ERJ6GEYJ122	1.2K 1/10
R104	ERJ6GEYJ471	470 1/10
R105	RRJ6GCJ102TE	1K 1/6
R106	RRJ6GCJ102TE	1K 1/6
R108	ERJ6GEYJ224V	220K 1/10
R110	ERDS2TJ222	2.2K 1/4
R111	ERJ6GEYJ154V	150K 1/10
R113	ERJ6GEYJ472V	4.7K 1/10
R114	ERJ6GEYJ683V	68K 1/10
R116	ERJ6GEYJ332V	3.3K 1/10
R117	ERJ6GEYJ123	12K 1/10
R118	ERJ6GEYJ333V	33K 1/10
R119	RRJ6GCJ223TE	22K 1/6
R122	ERDS2TJ104	100K 1/4
R123	ERJ6GEYJ470V	47 1/10
R124	RRJ6GCJ103TE	10K 1/6
R125	RRJ6GCJ222TE	2.2K 1/6
R127	ERDS2TJ681	680 1/4
R128	RRJ6GCJ103TE	10K 1/6
CAPACITORS(VALUE,VOLTAGE)		
C101	ECEA1CKS220I	22 16
C102	ECEA1HKS010I	1 50
C103	ECEA1CKS220I	22 16
C106	RCUV1E104ZF	0.1 25
C107	ECEA0GKS101I	100 4
C108	ECEA0JKS470I	47 6.3
C109	ECEA1HKS010I	1 50
C110	RCUV1H681KB	680P 50
C111	ECUV1C224KR	0.22 16
C112	RCUV1H331KB	330P 50
C113	ECEA1HSN010I	1 50
C114	RCUV1E333KB	0.033 25
C115	ECEA1HSN010I	1 50
C116	RCUV1E333KB	0.033 25
C117	ECBT1H102KB5	0.001 50
C119	ECEA1CKN4R7I	4.7 16
C120	ECEA1CKN4R7I	4.7 16
C122	ECEA0JKS220I	22 6.3
C123	RCUV1E104ZF	0.1 25
C124	ECUV1E823KB	0.082 25
C125	ECUV1C224KR	0.22 16
C127	ECEA0JKF101I	100 6.3
C128	ECEA1CKA101I	100 16
C132	ECUV1E104KB	0.1 25
C133	RCUV1H330KC	33P 50
C134	ECUV1C224KR	0.22 16
C135	ECUV1C224KR	0.22 16
C136	ECEA0GKS101I	100 4
C138	RCUV1E104ZF	0.1 25
C139	RCUV1H470KC	47P 50
C140	RCUV1E103KB	0.01 25
C141	RCUV1H470KC	47P 50
C142	RCUV1H470KC	47P 50
C143	RCUV1H470KC	47P 50
C144	RCUV1H470KC	47P 50
C145	ECEA0JKF101I	100 6.3
C146	RCUV1H181KC	180P 50
C147	RCUV1H472KB	0.0047 50
C148	ECEA1ESN4R7I	4.7 25
C149	RCUV1E104ZF	0.1 25
C150	RCUV1E103KB	0.01 25

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■ 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
INTEGRATED CIRCUITS		
IC11	LM2940T5	I.C, REGULATOR
IC51	M5F78M08L	I.C, REGULATOR
IC52	M5F79M08L	I.C, REGULATOR
IC301	MN6622	I.C, DIGITAL SIGNAL PROCESSING
IC302	LC3517BML15T	I.C, 16K RAM
IC303	TC40H000FTP1	I.C, NAND GATE
IC304	SVIT0TX174	I.C, OPTICAL TRANSMISSION
IC401	MN1554PEZ-1	I.C, SYSTEM CONTROL
IC402	SVIM51953BL	I.C, RESET
IC403	SVIBA4558F	I.C, MOTOR DRIVE
IC601	MB88724BPEV1	I.C, FL DRIVE/SYSTEM CONTROL
IC602	HC-MD10E	I.C, REMOTE SENSOR
IC801	MN6471	I.C, DF & D/A CONVERTER
IC803	SVIM5219FP	I.C, BUFFER AMP
IC804	SVIM5219FP	I.C, BUFFER AMP
IC805	SVIM5219FP	I.C, BUFFER AMP
IC806	SVIM5219FP	I.C, BUFFER AMP
IC807	SVIM5238FP	I.C, CLASS AA BUFFER AMP
IC808	SVIM5238FP	I.C, CLASS AA BUFFER AMP
IC901	M5218FPTA	I.C, HEADPHONE AMP
IC902	M5218FPTA	I.C, HEADPHONE AMP
SJ12	SRUN15	I.C,PROTECTOR
SJ13	SRUN15	I.C,PROTECTOR
SJ14	SRUN15	I.C,PROTECTOR
SJ15	SRUN15	I.C,PROTECTOR
TRANSISTORS		
Q12	2SB1240PRTV3	TRANSISTOR
Q14	2SB1238QS	TRANSISTOR
Q403	DTC114EST	TRANSISTOR
Q404	DTA124EST	TRANSISTOR
Q451	2SD1862PRTV3	TRANSISTOR
Q452	2SB1240PRTV3	TRANSISTOR
Q453	2SD1862PRTV3	TRANSISTOR
Q454	2SB1240PRTV3	TRANSISTOR
Q601	DTC124EST	TRANSISTOR
Q602	DTC124EST	TRANSISTOR
Q603	DTC124EST	TRANSISTOR
Q604	2SC3311A-Q	TRANSISTOR
Q801	2SC3311A-Q	TRANSISTOR
Q802	2SC3311A-Q	TRANSISTOR
Q803	2SC3311A-Q	TRANSISTOR
Q804	2SC3311A-Q	TRANSISTOR
Q805	DTC124EST	TRANSISTOR
Q806	DTA124EST	TRANSISTOR
Q807	DTA114YST	TRANSISTOR
Q808	DTA124EST	TRANSISTOR
Q809	DTC124EST	TRANSISTOR
Q810	2SC3311A-Q	TRANSISTOR
Q811	2SC3311A-Q	TRANSISTOR
Q813	2SC3311A-Q	TRANSISTOR
Q814	2SA1309Q	TRANSISTOR
Q901	2SD1450	TRANSISTOR
Q902	2SD1450	TRANSISTOR
Q903	2SD1450	TRANSISTOR
Q904	2SD1450	TRANSISTOR
Q905	DTA114YST	TRANSISTOR
DIODES		
D11 ⚠	SVD1SR35200A	DIODE
D12 ⚠	SVD1SR35200A	DIODE
D13 ⚠	SVD1SR35200A	DIODE
D14 ⚠	SVD1SR35200A	DIODE

Ref. No.	Part No.	Description
D15 ⚠	SVD1SR35200A	DIODE
D16 ⚠	SVD1SR35200A	DIODE
D17 ⚠	SVD1SR35200A	DIODE
D18 ⚠	SVD1SR35200A	DIODE
D20	MA4056-M	DIODE
D26	MA4330M	DIODE
D28	MA4033M	DIODE
D29	MA4033M	DIODE
D51 ⚠	SVDRDF02M	DIODE
D401 ⚠	SVD1SR35200A	DIODE
D402	MA165	DIODE
D451	MA4051-M	DIODE
D452	MA4051-M	DIODE
D601	MA165	DIODE
D602	MA165	DIODE
D603	MA165	DIODE
D604	MA165	DIODE
D605	MA165	DIODE
D606	MA165	DIODE
D607	MA165	DIODE
D608	MA165	DIODE
D609	MA165	DIODE
D610	MA165	DIODE
D611	MA165	DIODE
D612	MA165	DIODE
D613	MA165	DIODE
D614	MA165	DIODE
D615	SVGDPG7851Y	L.E.D
D616	SVGDAY7851	L.E.D
D617	SVDSLR-54MW4	L.E.D
D618	SVDSLR-54MW4	L.E.D
D619	SVDSLR-54MW4	L.E.D
D801	MA165	DIODE
D802	MA165	DIODE
D803	MA165	DIODE
D805	MA165	DIODE
D806	MA165	DIODE
D807	MA165	DIODE
D808	MA165	DIODE
D809	MA4051-M	DIODE
D810	MA4051-M	DIODE
D901	MA4091-M	DIODE
VARIABLE RESISTORS		
VR601	EVQWVP02504E	V.R, SEARCH
VR901	EVU57A022A14	V.R, HEAD PHONE
COILS AND TRANSFORMERS		
L1 ⚠	SLQX400-D	COIL
L2 ⚠	SLQX400-D	COIL
L301	ELEPK1R0KA	COIL
L302	ELEPK4R7KA	COIL
L401	ELEPK4R7KA	COIL
L901	ELEV2R7KA	COIL
L902	ELEV2R7KA	COIL
L903	ELEV2R7KA	COIL
T1 ⚠ (E, EG, EB, EH) (EF, EI)	SLTD5V086E	POWER TRANSFORMER
T1 ⚠ (EK, XB, XA) (PA, PE, PC)	SLTD5V087G	POWER TRANSFORMER
T1 ⚠ (XL)	SLTD5V088X	POWER TRANSFORMER

Ref. No.	Part No.	Description
OSCILLATORS		
X801	SVQ49U338S	OSCILLATOR
DISPLAYS		
FL601	SAD14MT08GK	DISPLAY
FUSES		
F11 ⚠	XBA2C12TR0	FUSE(250V,T125MA), 250VDT125MA
F12 ⚠	XBA2C12TR0	FUSE(250V,T125MA), 250VDT125MA
SWITCHES		
S1 ⚠	ESB8249V	SW, POWER
S2 ⚠	SSR187-1	SW, VOLTAGE SELECTER
(EK, XA, XB)		
(PA, PE, PC)		
S101	SSPD17	SW, LOADING DET
S102	SSPD18	SW, LOADING DET
S601	EVQQS405K	SW, EDIT
S602	EVQQS405K	SW, RANDOM
S603	EVQQS405K	SW, A.CUE
S604	EVQQS405K	SW, DIGITAL ON/OFF
S606	EVQQS405K	SW, PROGRAM
S609	EVQQS405K	SW, WINDOW
S610	EVQQS405K	SW, LINK
S611	EVQQS405K	SW, REPEAT
S613	EVQQS405K	SW, DISPLAY
S614	EVQQS405K	SW, RECALL
S617	EVQQS405K	SW, SIDE A/B
S619	EVQQS405K	SW, AB REPEAT
S620	EVQQS405K	SW, PEAK
S621	EVQQS405K	SW, TIME MODE
S622	EVQQS405K	SW, CLEAR
S625	EVQQS405K	SW, NO.1
S626	EVQQS405K	SW, NO.5
S627	EVQQS405K	SW, NO.9
S628	EVQQS405K	SW, NO.13
S629	EVQQS405K	SW, NO.17
S630	EVQQS405K	SW, NO.0
S632	EVQQS405K	SW, OPEN/CLOSE
S633	EVQQS405K	SW, NO.2
S634	EVQQS405K	SW, NO.6
S635	EVQQS405K	SW, NO.10
S636	EVQQS405K	SW, NO.14
S637	EVQQS405K	SW, NO.18
S638	EVQQS405K	SW, +10
S640	EVQQS405K	SW, STOP
S641	EVQQS405K	SW, NO.3
S642	EVQQS405K	SW, NO.7
S643	EVQQS405K	SW, NO.11
S644	EVQQS405K	SW, NO.15
S645	EVQQS405K	SW, NO.19
S646	EVQQS405K	SW, I.FDSKIP
S647	EVQQS405K	SW, FDSKIP
S648	EVQQS405K	SW, PAUSE
S649	EVQQS405K	SW, NO.4
S650	EVQQS405K	SW, NO.8
S651	EVQQS405K	SW, NO.12
S652	EVQQS405K	SW, NO.16
S653	EVQQS405K	SW, NO.20
S654	EVQQS405K	SW, I.RDSKIP
S655	EVQQS405K	SW, RDSKIP
S656	EVQQS405K	SW, PLAY
S657	RSS3A18YA-H	SW, TIMER
RELAYS		
RLY801	AG80239	RELAY
SERVO P.C.B.		
INTEGRATED CIRCUITS		
IC101	AN8373S	I.C, SERVO AMP
IC102	AN8374S	I.C, SERVO PROCESSOR
IC103	AN8377	I.C, B.T.L DRIVE
IC104	LM2940T5M	I.C, RESET
TRANSISTORS		
Q101	2SA1547QSTV2	TRANSISTOR
VARIABLE RESISTORS		
VR101	EVND3AA00B14	V.R, BEST EYE ADJ.
VR102	EVND3AA00B14	V.R, TRACKING GAIN ADJ.
VR103	EVND3AA00B14	V.R, TRACKING OFFSET ADJ.
VR104	EVND3AA00B14	V.R, FOCUS GAIN ADJ.
VR105	EVND3AA00B14	V.R, FOCUS OFFSET ADJ.
VR106	EVND3AA00B24	V.R, TRACKING BALANCE ADJ.
MAGNET RESISTOR ELEMENTS		
RA1	EWS7M0A00Q53	RESISTANCE UNIT

Ref. No.	Part No.	Description
REMOTE CONTROL		
INTEGRATED CIRCUITS		
IC1	MN6030G	I.C
TRANSISTORS		
Q1	UN7231	TRANSISTOR
DIODES		
D1	LN66-S	L.E.D
D2	MA151WK	DIODE
D3	MA151WK	DIODE
D4	MA151WK	DIODE
D5	MA151WK	DIODE
D6	MA151WK	DIODE
D7	MA151WK	DIODE
D8	MA151WK	DIODE
D9	MA151WK	DIODE
D10	MA151WA	DIODE
D11	MA151WA	DIODE
OSCILLATOR		
X1	CSB420PB1	OSCILLATOR

Ref. No.	Part No.	Description
RESISTORS		
R1	ERD25TLJ1R0U	RESISTOR
CAPACITORS		
C1	ECUV1H471KCG	CAPACITOR
C2	ECUV1H121KCG	CAPACITOR
C3	ECEA0GK101	ELECTROLYTIC, 100μF, 4V
MECHANISM PARTS		
101	UR64VCS719	UPPER CABINET
102	UR64CS365	LOWER CABINET
103	UR64EC366	BATTERY COVER
104	UR64CT369	RUBBER CONTACT
105	UR52SB327	PLATE(SMOKE)
106	UR64TD374	BATTERY TERMINAL(COMMON)
107	UR64TD372	BATTERY TERMINAL (+)
108	UR64TD373	BATTERY TERMINAL (-)
109	SBCLP990-KN1	BUTTON(A)
110	SBCLP990-KN2	BUTTON(B)
111	XTS26+10GFZ	SCREW
REMOTE CONTROL ASS'Y		
RC1	EUR64729	REMOTE CONTROL

Ref. No.	Part No.	Description
PACKING MATERIAL		
P1	SPND329	PACKING CASE
(EK, E, EG, EB)		
(EH, EI, XA)		
(XL, XB, PC)		
(PA, PE)		
P1	SPND331	PACKING CASE
(EF)		
P2	SPSD180	PAD
P3	SPSD181	PAD
P4	SPSD196	PAD
P5	SPSD197	PAD
P7	XZB60X60A01	PROTECTION BAG
P9	XZB26X17C03	PROTECTION BAG(CORDS)
P10	SPSD152	ACCESSORY BOX
P11	XZB23X20C03	PROTECTION BAG
ACCESSORIES		
A1	SQUD355	INSTRUCTION BOOK
(EF, EK, XL)		
(XA)		
A1	SQUD357	INSTRUCTION BOOK
(EG)		
A1	SQUD358	INSTRUCTION BOOK
(EI)		
A1	SQULP777-E	INSTRUCTION BOOK
(E, EB, EH)		
A1	SQULP777-PA	INSTRUCTION BOOK
(PA, PE, PC)		
A1	SQULP777-XB	INSTRUCTION BOOK
(XB)		
A2 ⚠	SJA168	POWER CORD
(XA, PA, PE)		
(PC)		
A2 ⚠	SJA173	POWER CORD
(XL)		
A2 ⚠	SJA183	POWER CORD
(XB)		
A2 ⚠	SJA187	POWER CORD
(E, EB, EH, EG)		
(EF, EI)		
A2 ⚠	SJA193	POWER CORD
(EK)		
A3	SJP2249-4	CORD
A4	SJPD16	OPTICAL OUTPUT CORD
A5 ⚠	RJP120ZBS-H	AC PLUG ADAPTOR
(XB, XA, PA)		
(PE, PC)		
A6	UM-4NE/2S	BATTERY

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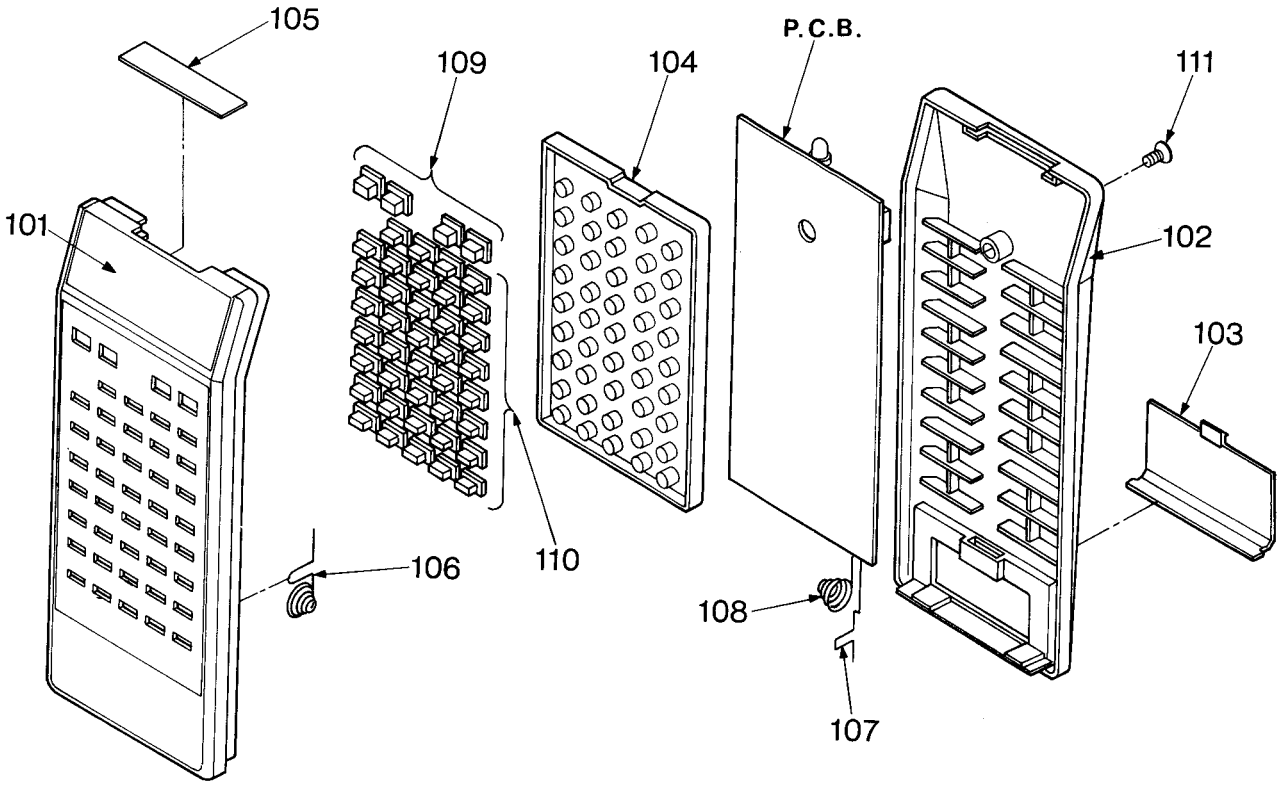
1 2 3 4 5

A B C D E F G

■ EXPLODED VIEW

• **Remote control unit parts**



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■ REPLACEMENT PARTS LIST

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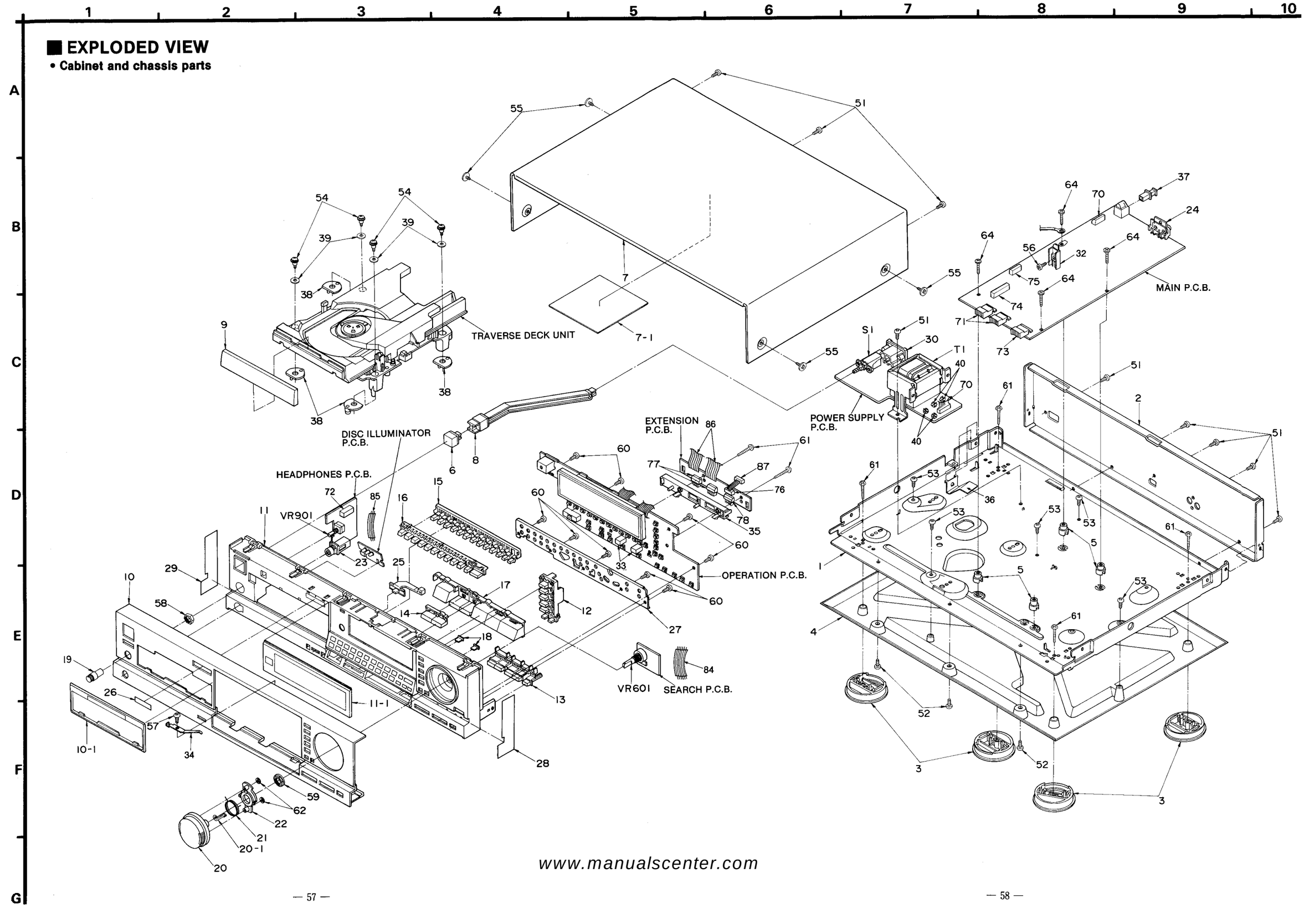
Supply period for three years from termination of production.
* Warning : This product uses a laser diode. Refer to caution statements on page 3.
* ACHTUNG :
Die lasereinheit nicht zerlegen.
Die lasereinheit darf nur gegen eine vom hersteller spezifizierte einheit ausgetauscht werden.

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
1	SKUD192ZF2A	CHASSIS
2	SGPD720ZF3A	REAR PANEL
(XA)		
2	SGPLP777-KE	REAR PANEL
(E)		
2	SGPLP777-KEB	REAR PANEL
(EB, EH, EF)		
(EI)		
2	SGPLP777-KEG	REAR PANEL
(EG)		
2	SGPLP777-KEK	REAR PANEL
(EK)		
2	SGPLP777-KPA	REAR PANEL
(PA, PE, PC)		
2	SGPLP777-KXB	REAR PANEL
(XB)		
2	SGPLP777-KXL	REAR PANEL
(XL)		
3	SKLD8-E	FOOT
4	SKUD230KF0A	BOTTOM COVER
5	SHE185-2	HOLDER
6	SBC666-1	BUTTON
7	SYQD772KME1	CABINET
7-1	SHGD35	RUBBER CUSHION
8	SUBD12	POWER SWITCH ROD
9	SGXD3330ZK0A	ORNAMENT
10	SGWLP777-KE	FRONT PANEL
10-1	SGXLP777-K	ORNAMENT
11	SGYLP777-KE	FRONT GRILL
11-1	SGUD192	FILTER
12	SBCD4840ZK0A	BUTTON
13	SBCD4811ZK0A	BUTTON
14	SBCD4790ZK0B	BUTTON
15	SBCD4780ZK0B	BUTTON
16	SBCD4770ZK0B	BUTTON
17	SBCD4760ZK0B	BUTTON
18	SHRD133	LED BLOCK
19	SBN1161-2	KNOB
20	SBNLP777-KE	KNOB
20-1	SHR9451	SPACER
21	SUSD162	SPRING
22	SHRD202	SPRING
23	SJJD19	JACK
24	SJFD4-1	TERMINAL PLATE
25	SBDD92ZK0A	KNOB
26	SGUD214	ORNAMENT
27	SUWD94-1	BRACKET
28	SGXD3160KE0A	ORNAMENT(R)
29	SGXD3170KE0A	ORNAMENT(L)
30 ⚠	SJSD16	AC INLET
(XL)		
30 ⚠	SJS9236	AC INLET
(E, EG, EB, EH)		
(EF, EI, EK)		
(XB, XA, PA)		
(PE, PC)		
31	SMXD43	SHIELD COVER
32	SMYD11	HEAT SINK
33	SHRD169	LED HOLDER
34	SUSD167	PLATE
35	SHRD197	HOLDER
36	SUWD116	BRACKET
37	VJA1024	CAP
38	SHGD171	RUBBER
39	SHGD174	RUBBER SPACER
40	SJT390	FUSE HOLDER
51	XTBS3+8JFZ1	SCREW
52	XTB3+10JFZ	SCREW
53	XTB3+12G	SCREW
54	SNSD17	SCREW
55	SNE2129-3	SCREW
56	XTN3+8J	SCREW
57	XTN17+3JFN	SCREW
58	XNS7	NUT
59	SNE4021	NUT
60	XTB3+8G	SCREW
61	XTB3+20G	SCREW
62	CSTW-2	WASHER
64	XTB3+16JFZ	SCREW
70	SJSD0905	SOCKET(9P), CN11,BT1
71	SJS50980WL	SOCKET(9P), CN401,402
72	EMCS0650Z	CONNECTOR, BT901
73	SJS50680WL	SOCKET(6P), CN603
74	SJSD2221	SOCKET(22P), CN404
75	SJT30543-V	CONNECTOR(5P), CN405
76	EMCS0650ZL	CONNECTOR(6P), CN604
77	SJT30947WL	CONNECTOR (9P), CN601,602
78	SJT30647WL	CONNECTOR(6P), CN603
84	SIKD552061	FLAT CABLE(6P), FC604
85	RWJ1003050KK	FLAT CABLE(3P), FC603
86	SIKD772091	FLAT CABLE(9P), FC601,602
87	SWKD772061	CONNECTOR(6P)ASS'Y

■ EXPLODED VIEW

• **Cabinet and chassis parts**



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* Warning : This product uses a laser diode. Refer to caution statements on page 3.
* ACHTUNG :
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Ref. No.		Part No.	Description
TRAVERSE			
TRAVERSE DECK			
102		SISD22-1	TRAVERSE BASE
103		SD0D28-1E	TURNTABLE
103-1		XXE26D5	SCREW
104		SD0D29-2	RING
106		SRQA010N04	SPRING
107		S0RD37	ROLLER
108		S0RD38-E	COIL
109		SUXD123-1	GUIDE SHAFT
110	⚠	S0AD70A	OPTICAL PICKUP
111		SHRD176-E	COIL HOLDER
113		SHGD148	STOPPER
114		S0YD21-E	YOKE
115		S0YD22	YOKE
116		SHRD177-1	LOCK UNIT
117		SHWD33	WASHER
118		SHWD34	WASHER
119		SNSD31	SCREW
120		XTN2+5G	SCREW
121		XYN2+C8	SCREW
122		XYN26+J6	SCREW
123		SHGD153-1	CUSHION RUBBER
124		SUSD136-1	SPRING
125		SUSD137-1	SPRING
126		SNSD33	SCREW
127		SIWLP555-KN	LOADING BASE
128		SUSD145-1	SPRING
129		SUWD112	GUIDE SHAFT HOLDER
131		SDGD58	MAIN GEAR
132		SDGD59-2	GEAR
133		SIRD94-E	LOADING MOTOR
134		XTB3+10G	SCREW
135		SMBD7	BELT
137		SFUMZ15R61	WASHER
138		SDRD14	ROLLER
139		XTB3+8G	SCREW
140		SIRD97-2E	HOLDER
141		SIRD107-1	TRAY BASE
142		SIRD40-2	RACK GEAR
143		SIRD96	LOCK LEVER
145		SIRD98-2	DISC TRAY
146		SUSD83	SPRING
147		SNSD36	SCREW
148		SIWD105	BRACKET
149		SJGDRF310T-2	SPINDLE MOTOR
150		SIRD51-1	HOLDER
151		SIRD42-3	LEAD WIRE CLAMP
152		S0MD4	MAGNET
153		S0YD2	YOKE
154		SIKD150051	FLAT CABLE
155		SIKD150221-1	FLAT CABLE
156		SHRD150	ROLLER HOLDER
157		SJSD1722M	SOCKET(17P)
158		SJSD2222M	SOCKET(22P)
159		SJT30543-V	CONNECTOR(5P)
160		SDRD12	ROLLER
161		EMCS0552MP	CONNECTOR(5P)

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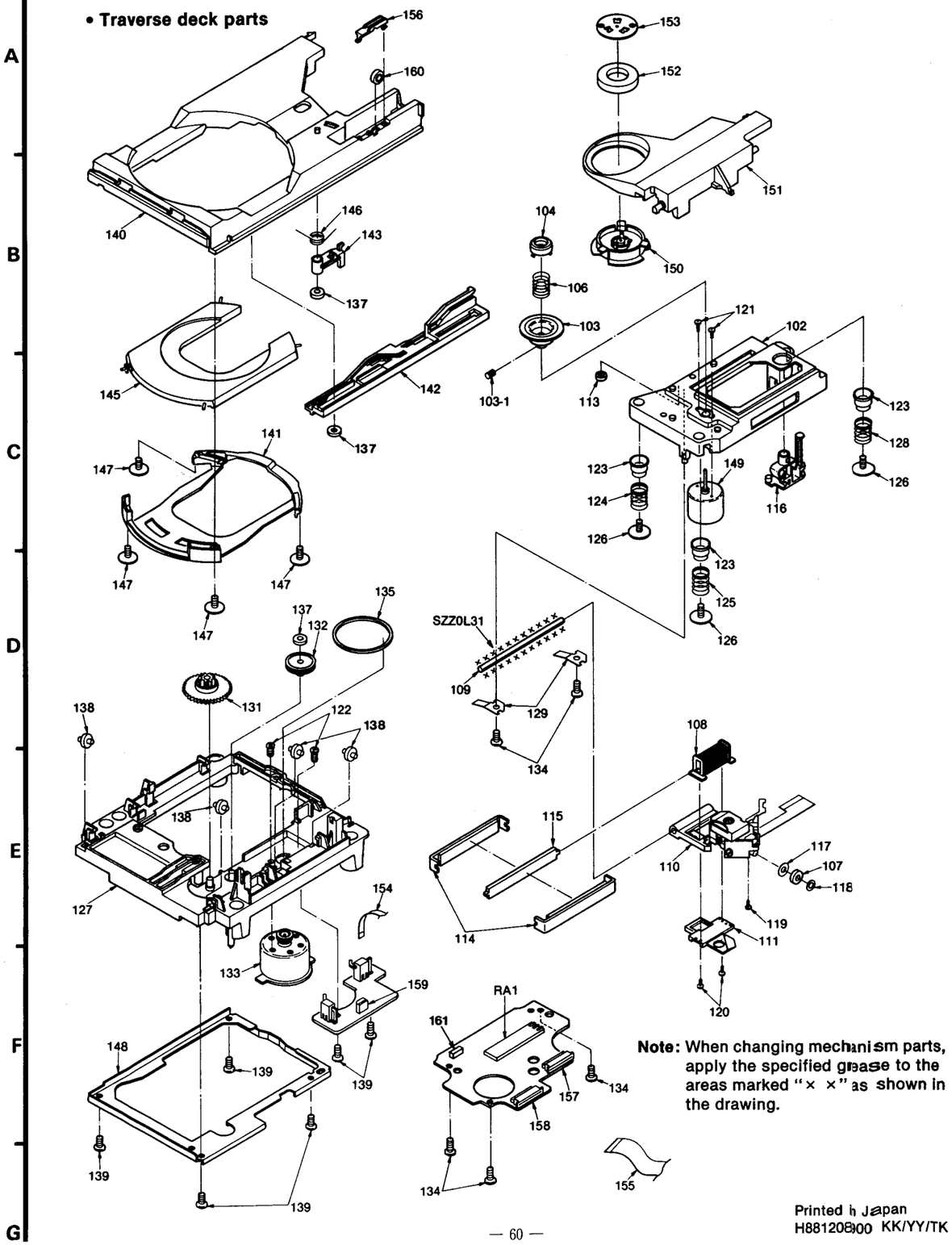
■ EXPLODED VIEW

• **Traverse deck parts**



Note: When changing mechanism parts, apply the specified grease to the areas marked "× ×" as shown in the drawing.

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