ORDER NO. SD81061954C8

Service Manual

Turntable System

SL-B202

[E],[EK],[XL],[EG],[EB],[EH],
[EF],[Ei],[EA],[EC],[XA],[XM]

SL-B202(K)

[E],[EK],[XL],[EG],[EB],[EH],
[EF],[Ei],[EA],[EC],[XA],[XM]

Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EA] is available in Austria.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.

*** The colors of this model include silver and black.**
*** The black type model is provided with (K) in the Service Manual.**

English

Specifications

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

■ General

Power supply:	~110-120/220-240 V, 50 or 60 Hz
Power consumption:	3 W
Dimensions: (W×H×D)	43 × 10.6 × 37.5 cm (16-15/16" × 4-7/32" × 14-3/4") [Maximum height when top (dust cover) is open 43 × 37 × 42 cm (16-15/16" × 14-9/16" × 16-17/32")]
Weight:	4.2 kg (9.3 lb.)

■ Turntable section

Type:	Automatic turntable Auto return Auto stop
Drive method:	Belt drive
Motor:	DC motor
Drive control method:	F.G. servo control
Turntable platter:	Aluminum die-cast Diameter 30.4 cm (12 inches)
Turntable speeds:	33-1/3 rpm and 45 rpm
Pitch control:	6% adjustment range
Wow and flutter:	0.045% WRMS (JIS C5521) ±0.06% peak (IEC 98A Weighted)
Rumble:	−70 dB (IEC 98A Weighted)

■ Tonearm section

Type:	Universal tonearm 'S" shaped tubular arm Static balanced type
Effective length:	230 mm (9-1/16")
Overhang	15 mm (19/32")
Tracking error angle:	Within 2°32' at the outer groove of 30 cm (12") record Within 0°32' at the inner groove of 30 cm (12") record
Offset angle:	22°
Stylus pressure adjustment range:	0—2.5 g
Applicable cartridge weight range:	5—7.5 g
Headshell weight:	8 g
Phono cable capacitance:	135 pF

Technics

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

■ Cartridge section

Type:	Moving magnet
Frequency response:	10 Hz to 35 kHz 20 Hz to 10 kHz ±1 dB
Output voltage:	2.5 mV at 1 kHz 5 cm/s zero to peak lateral velocity (7 mV at 1 kHz 10 cm/s zero to peak 45° velocity [DIN 45 500])
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 1.8 dB at 1 kHz
Compliance (dynamic):	10×10^{-6} cm/dyne at 100 Hz
Stylus pressure:	1.75 ±0.25 g (17.5 ±2.5mN)
Load impedance:	47 kΩ to 100 kΩ
Weight:	5 g (cartridge only)
Replacement stylus:	EPS-25CS Equivalent replacement stylus: EPS-25ES

Deutsch

TECHNISH DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungefähre Werte.

■ Allgemeine Daten

Stromversorgung:	~110—120/220—240 V, 50/60 Hz Wechselstrom
Leistungsaufnahme:	3 W
Abmessungen (B×H×T):	43 × 10,6 × 37,5 cm (Maximale Höhe bei geöffnetem Oberteil (Staubabdeckung) 43 ×37 × 42 cm)
Gewicht:	4,2 kg

■ Plattenspieler

Typ:	Automatischer Plattenspieler Rückführautomatik Stopautomatik
Antrieb:	Riemenantrieb
Motor:	Gleichstrommotor
Antriebsregel-Methode:	FG-Servo-Steuerung
Plattenteller:	Aluminium-Spritzguß Durchmesser 30,4 cm
Plattenteller-Drehzahlen:	33-1/3 und 45 U/min
Drehzahl-Feinregulierung:	6% Einstellbereich
Gleichlaufschwankungen:	0,045% WRMS (JIS C5521) ±0,06% Spitze (IEC 98A bewertet)
Rumpel-Geräusch-spannungsabstand:	−70 dB (IEC 98A bewertet)

■ Tonarm

Typ:	Universal-Tonarm S-förmiger Rohrtonarm Statisch ausbalanciert
Effektive Länge:	230 mm
Überhang:	15 mm
Spurfehlwinkel:	2°32' bei der Einlaufrille einer 30 cm-Platte 0°32' bei der Auslaufrille einer 30 cm-Platte
Kröpfungswinkel:	22°
Auflagekraft-Einstellbereich:	0—2,5 g
Zulässiger Tonabnehmer-Gewichtbereich:	5—7,5 g
Tonarmkopf-Gewicht:	8 g
Phonokabel-Kapazitanz:	135 pF

■ Tonabnehmer

Typ:	Magnetischer Tonabnehmer
Frequenzgang:	10 Hz bis 35 kHz 20 Hz bis 10 kHz ±1 dB
Ausgangsspannung:	2,5 mV bei 1 kHz 5 cm/s Null-zu-Spitze, lateral [7 mV bei 1 kHz 10 cm/s Null-zu-Spitze, 45° (DIN 45 500)]
Kanaltrennung:	22 dB bei 1 kHz
Kanalabweichung:	Innerhalb 1,8 dB bei 1 kHz
Nachgiebigkeit (dynamisch):	10×10^{-6}cm/dyn bei 100 Hz
Auflagekraft:	1,75 ±0,25 g (17,5 ±2,5 mN)
Impedanz:	47 kΩ bis 100 kΩ
Gewicht:	5 g (nur Tonabnehmer)
Ersatznadel:	EPS-25CS Gleichwertiger Ersatztonabnehmer: EPS-25ES

Francais

CARACTERSTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

■ Généralités

Alimentation:	Alternatif 110-120/220-240V, 50 ou 60 Hz
Consommation:	3 W
Dimensions: (L × H × P)	43 × 10,6 × 37,5 cm (Hauteur maximum lorsque le dessus (couvercle protège-poussière) est ouvert 43 × 37 × 42 cm)
Poids:	4,2 kg

■ Platine de lecture

Type:	Platine automatique Retour automatique Arrêt automatique
Système d'entraînement:	Entraînement par courroie
Moteur:	Moteur C.C.
Groupe de réglage:	Servocommande du générateur de fréquences
Plateau de lecture:	En aluminium moulé sous pression Diamètre 30,4 cm

Vitesses de rotation: 33-1/3 et 45 t/p.m
Réglage d'écart: Plage de réglage de 6%
Pleurage et scintillement: 0,045% de valeur efficace (JIS C5521)
±0,06% de crête (IEC 98A Pondéré)
Ronflement: −70 dB (IEC 98A Pondéré)

■ Bras de lecture

Type: Bras de lecture universel
Bras tubulaire en forme de "S"
De type à équilibrage statique
Longueur effective: 230 mm
Porte-à-faux: 15 mm
Angle d'erreur de piste: En deçà de 2°32' au sillon extérieur d'un disque de 30 cm
En deçà de 0°32' au sillon intérieur d'un disque de 30 cm
Angle de décalage: 22°
Plage de réglage de la pression d'appui: 0—2,5 g
Gamme du poids des cellules pick-up utilisables: 5—7,5 g
Poids de la coque porte-cellule: 8 g
Capacitance propre du câble pick-up: 135 pF

■ Cellule pick-up

Type: Aimant mobile
Réponse en fréquence: 10 Hz à 35 kHz
20 Hz à 10 kHz ±1 dB
Tension de sortie: 2,5 mV à 1kHz; 5 cm/s., zéro à vitesse latérale de crête
(7 mV à 1 kHz
10 cm/s., zéro à vitesse 45° de crête [DIN 45 500])
Séparation de canal: 22 dB à 1 kHz
Equilibrage des canaux: En deçà de 1,8 dB à 1 kHz
Elasticité (dynamique): 10×10^{-6}cm/dyne à 100 Hz
Pression de la pointe de lecture: 1,75±0,25 g
(17,5±2,5 mN)
Impédance de charge: 47 kΩ to 100 kΩ
Poids: 5 g (cellule seule)
Pointe de lecture de remplacement: EPS-25CS
Pointe de lecture de remplacement équivalente: EPS-25ES

Español

ESPECIFICATIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
El peso y las dimensiones indicados son aproximados.

■ En general

Alimentación de corriente: ~110—120/220—240 V, 50 ó 60 Hz
Consumo de corriente: 3 W
Dimensiones: 43 × 10,6 × 37,5 cm
(Ancho × Alto × Prof.) 43 × 37 × 42 cm
Altura máxima cuando la parte de arriba (tapa contra el polvo) está abierta
Peso: 4,2 kg

■ Sección del plato giratorio

Tipo: Plato giratorio automático
Retorno automático
Parada automática
Método de accionamiento: Accionamiento por correa
Motor: Motor de corriente continua
Método de control de accionamiento: Servocontrol por generador de frecuencias
Platillo del plato giratorio: Aluminio fundido
Diámetro 30,4 cm
Velocidades del plato giratorio: 33-1/3 y 45 rpm
Control de altura de sonido: Ámbito de ajuste de 6%
Ululaciones y trémolo: 0,045% WRMS (JIS C5521)
±0,06% cresta (IEC 98A Ponderado)
Ruido de rodadura: −70 dB (IEC 98A Ponderado)

■ Sección del brazo sonoro

Tipo: Brazo sonoro universal
Brazo tubular en forma de "S"
Tipo equilibrado estático
Longitud efectiva: 230 mm
Proyección: 15 mm
Angulo de error de seguimiento: Inferior a 2°32' en el surco exterior de un disco de 30 cm
Inferior a 0°32' en el surco interior de un disco de 30 cm
Angulo de descentramiento: 22°
Radio de ajuste de la presión de la aguja: 0 a 2,5 g
Radio de peso de cartucho utilizable: 5—7,5 g
Peso de la cápsula de la cabeza: 8 g
Capacitancia de cable de fono: 135 pF

■ Sección del cartucho

Tipo: Imán móvil
Respuesta de frecuencia: de 10 Hz a 35 kHz
20 Hz a 10 kHz ±1 dB
Voltaje de salida: 2,5 mV a 1 kHz
Con velocidad lateral de cero a cresta de 5 cm/s
[7 mV a 1 kHz Velocidad de 45° de cero a cresta de 10 cm/s (DIN 45 500)]
Separación de canales: 22 dB a 1 kHz
Equilibrio de canales: Sin exceder 1,8 dB a 1 kHz
Elasticidad (dinámica): 10×10^{-6} cm/dina a 100 Hz
Presión de la aguja: 1,75 ±0,25 g (17,5 ±2,5 mN)
Impedancia de carga: 47 kΩ a 100 kΩ
Peso: 5 g (cartucho sólo)
Aguja de recambio: EPS-25CS
Aguja de recambio equivalente: EPS-25ES

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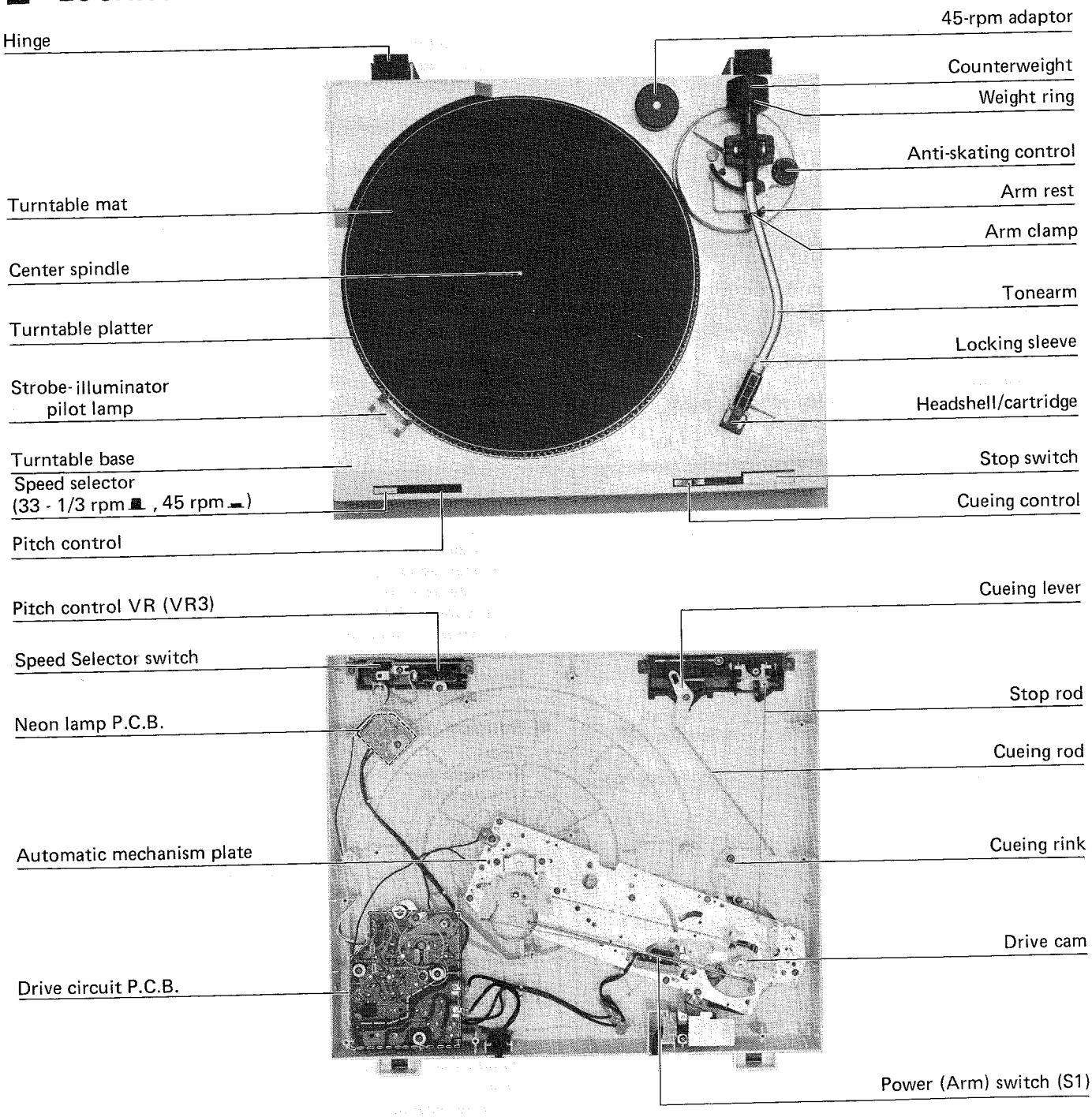
LOCATION OF CONTROLS



■ DISASSEMBLY INSTRUCTIONS

• How to remove the bottom board and automatic mechanism plate

1. Fix the tonearm on the rest.
2. Remove the turntable.
3. Close the dust cover, and turn over the unit, taking care not to scratch it.
4. Remove the bottom board setscrews ❶ ~ ❾. Then the bottom board can be removed. **(See Fig. 1)**
5. Remove the setscrews ❿~⓳ in the automatic mechanism plate and take off the stop rod, then the automatic mechanism plate can be detached.

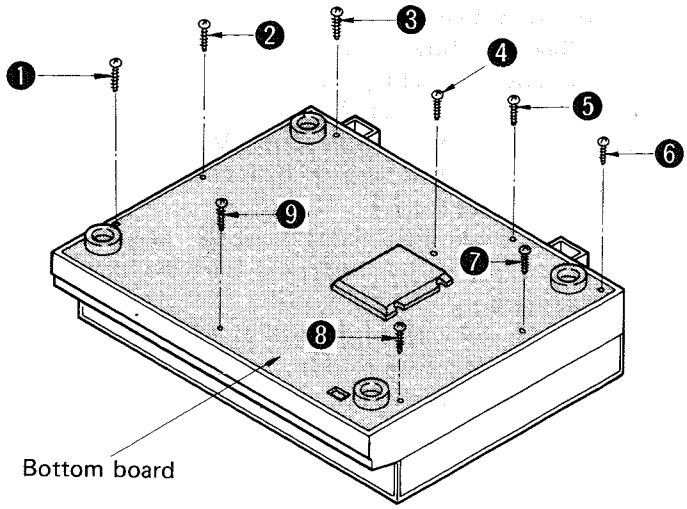


Fig. 1

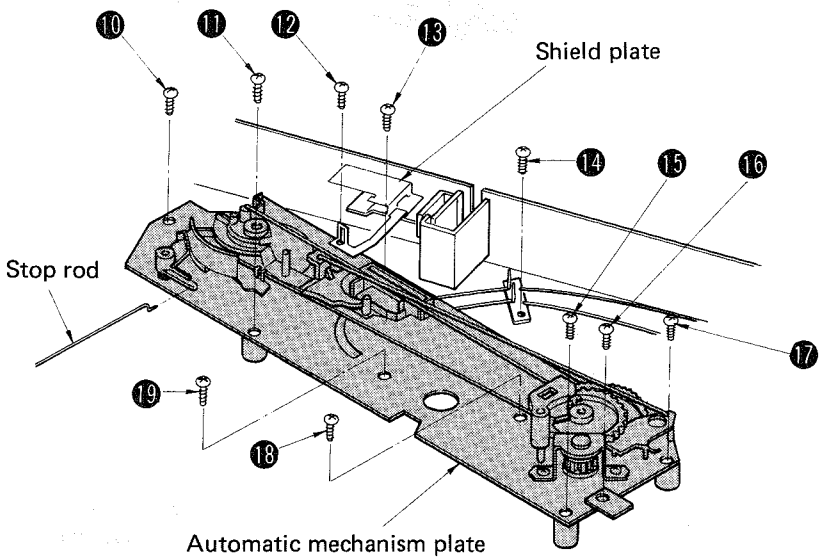


Fig. 2

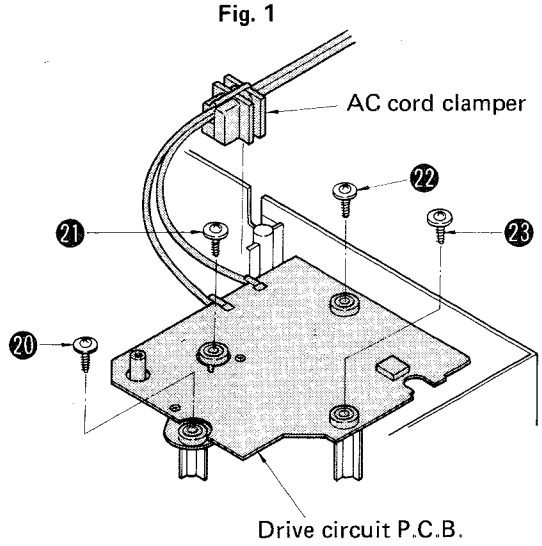


Fig. 3

• How to remove the drive circuit P.C.B. and motor

1. Remove the bottom board. **(Refer to "How to remove the bottom board and automatic mechanism plate".)**
2. Remove the AC cord clamper and disengage the set screws ⓴ to ㉓ of the drive circuit P. C. B, then the P. C. B. can be detached. **(See Fig. 3)**
3. Disengage the motor bracket fitting screws ㉔ , ㉕ and disconnect the soldered motor terminals ㉖ , ㉗ then the motor can be detached. **(See Fig. 4)**
4. For assembling, mount the motor so as the arrow on **Fig. 4** comes to the position of hall IC (IC 1).

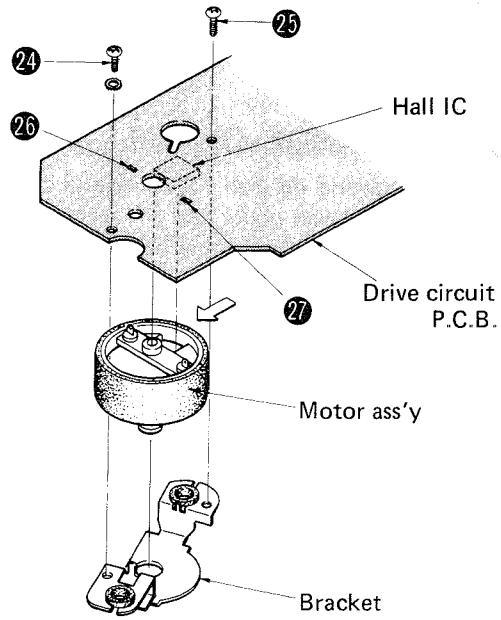


Fig. 4

• How to remove the tonearm and lift base plate

1. Remove the bottom board and automatic mechanism plate. **(Refer to "How to remove the bottom board and automatic mechanism plate".)**
2. Remove the canceller spring from the PU fixing plate, loosen the PU fixing plate set screw ㉘ with a hexagon wrench, then the plate is disassembled when lifted upward. **(See Fig. 5)**
3. Remove the shield plate fixing screw ㉙ and disconnect the soldered five lead wires from the tonearm. **(See Fig. 5)**
4. Disengage the scerw ㉚ of the lead wire fixing plate and remove the tonearm stopper, then the tonearm can be taken off. **(See Fig. 5)**

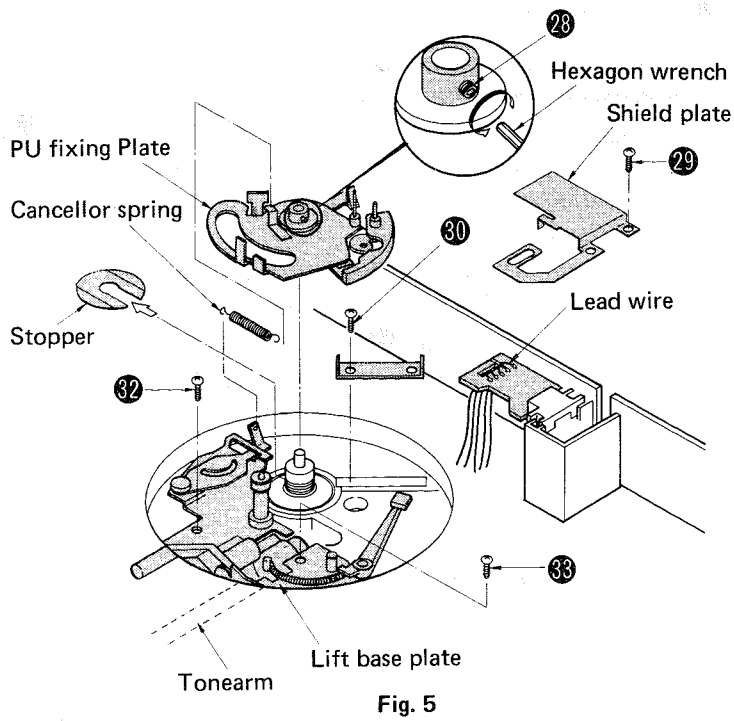


Fig. 5

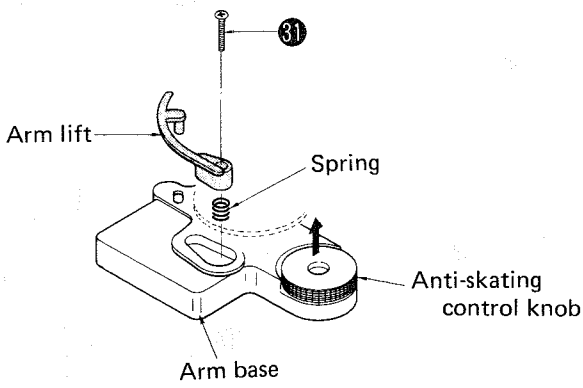


Fig. 6

5. To disassemble the lift substrate, diseangage the arm lift fixing screw ㉛ before turning over the body, then remove the arm lift. **(See Fig. 6)**

Note: Remove the spring under the arm lift at the same time.

6. Remove the anti-skating control knob. **(See Fig. 6)**
7. Turn over the unit and remove the PU fixing plate.
8. Remove the lift base plate setscrews ㉜ and ㉝ . Then, the lift base plate can be removed. **(See Fig. 5)**

■ EXCHANGE OF HALL IC

In exchanging the hall IC, be sure to check that the spacer is placed under the IC and to solder the IC exactly since the mounting height of hall IC is limited. **(See Fig. 7)**

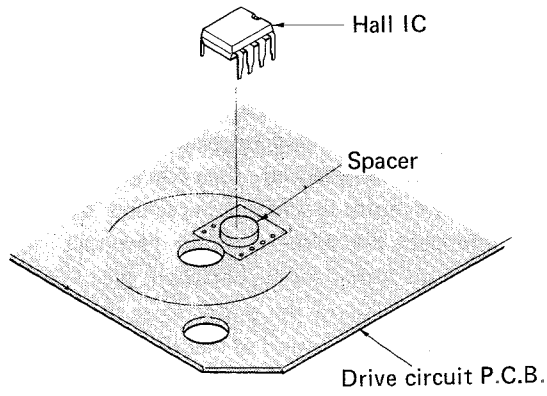


Fig. 7

■ CARTRIDGE INSTALLATION

When installing a cartridge, follow the instructions that came with the cartridge.

1. Connect the lead wires to the cartridge terminals. The terminals of most cartridges are color coded. Connect each lead wire to the terminal of the same color.
   White (L+) . . . . . **Left channel** +
   Blue (L–) . . . . . **Left channel** –
   Red (R+) . . . . . **Right channel** +
   Green (R–) . . . . . **Right channel** –
2. Mount the cartridge in the headshell using the screws provided with the cartridge. **(Fig. 8)**

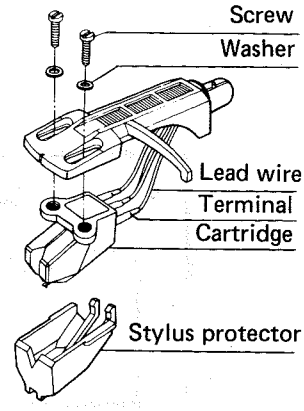
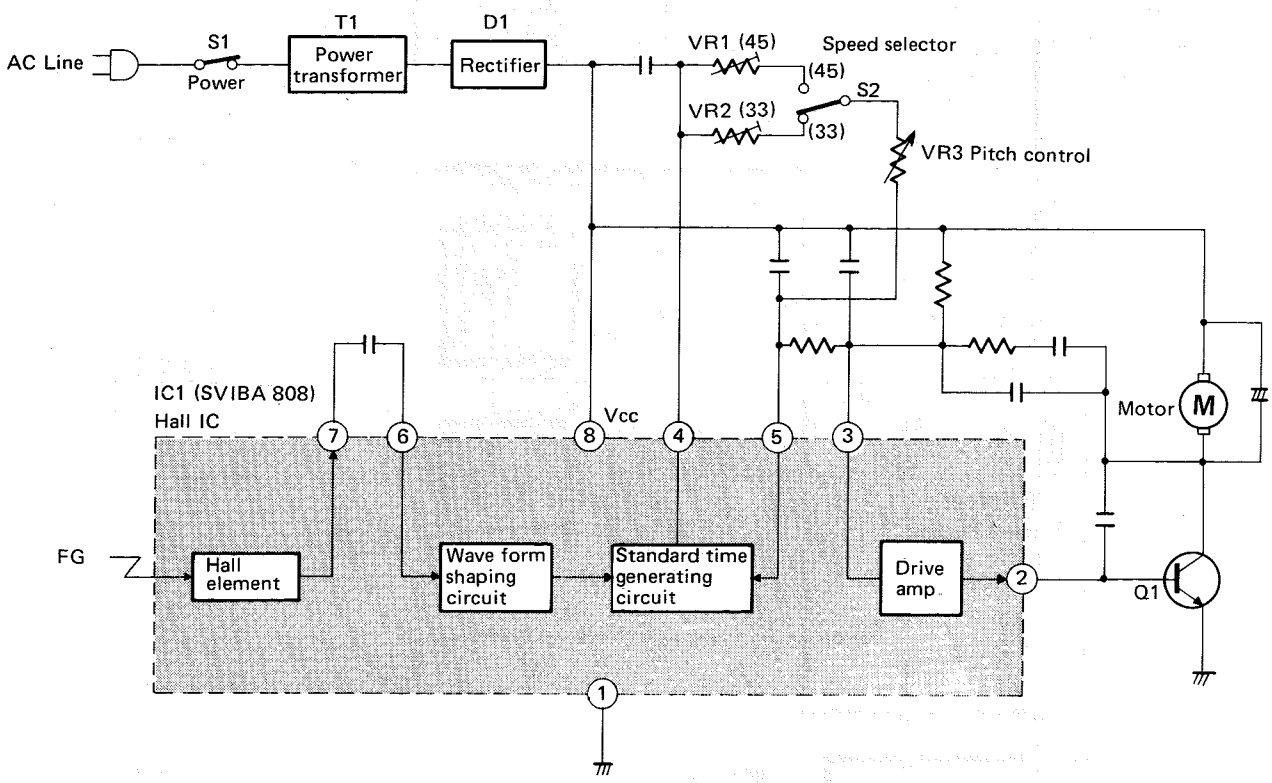
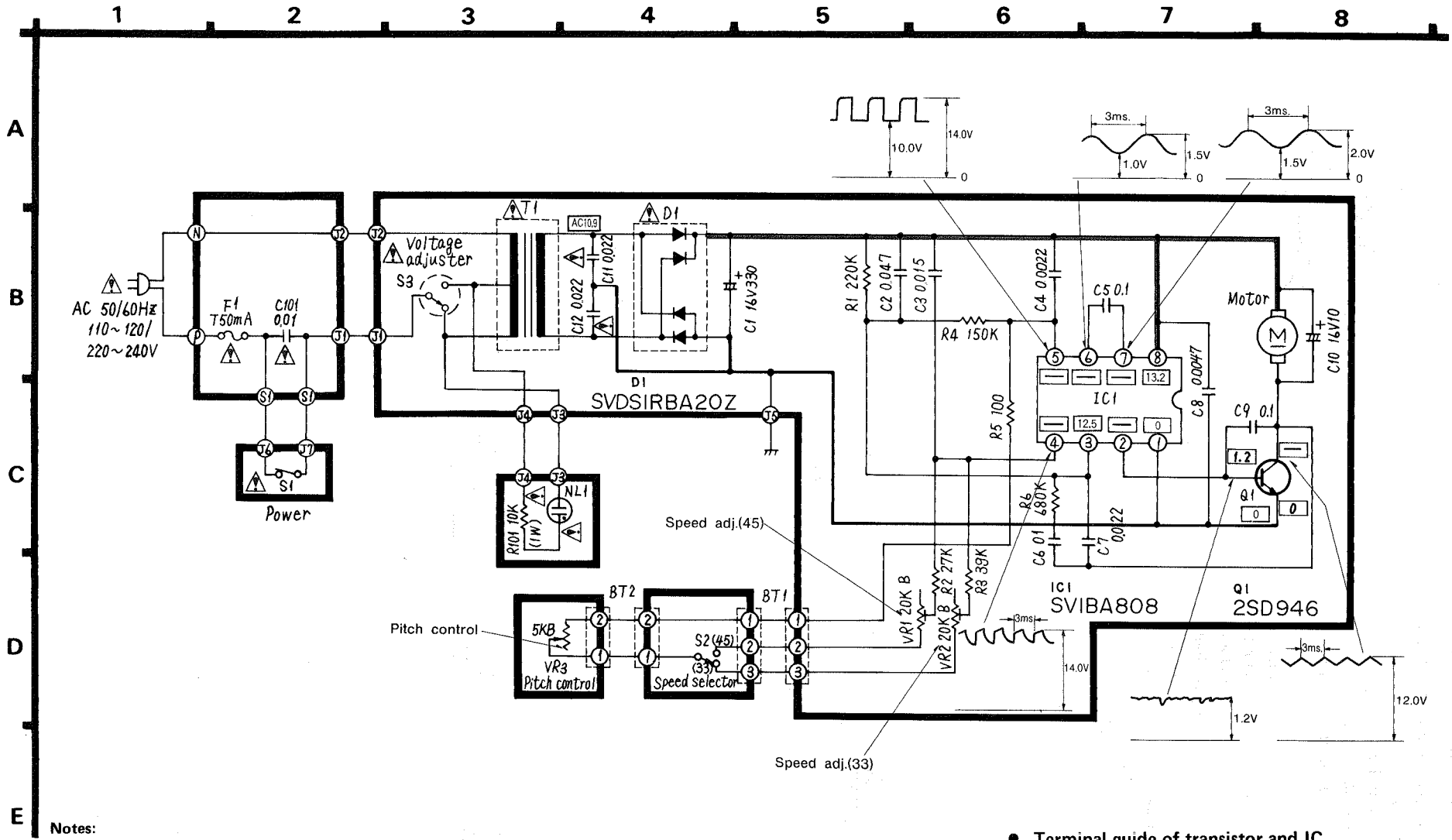


Fig. 8

■ BLOCK DIAGRAM



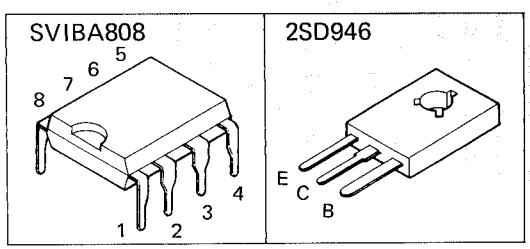
SCHEMATIC DIAGRAM (This schematic diagram may be modified at any time with the development of new technology.)



Notes:

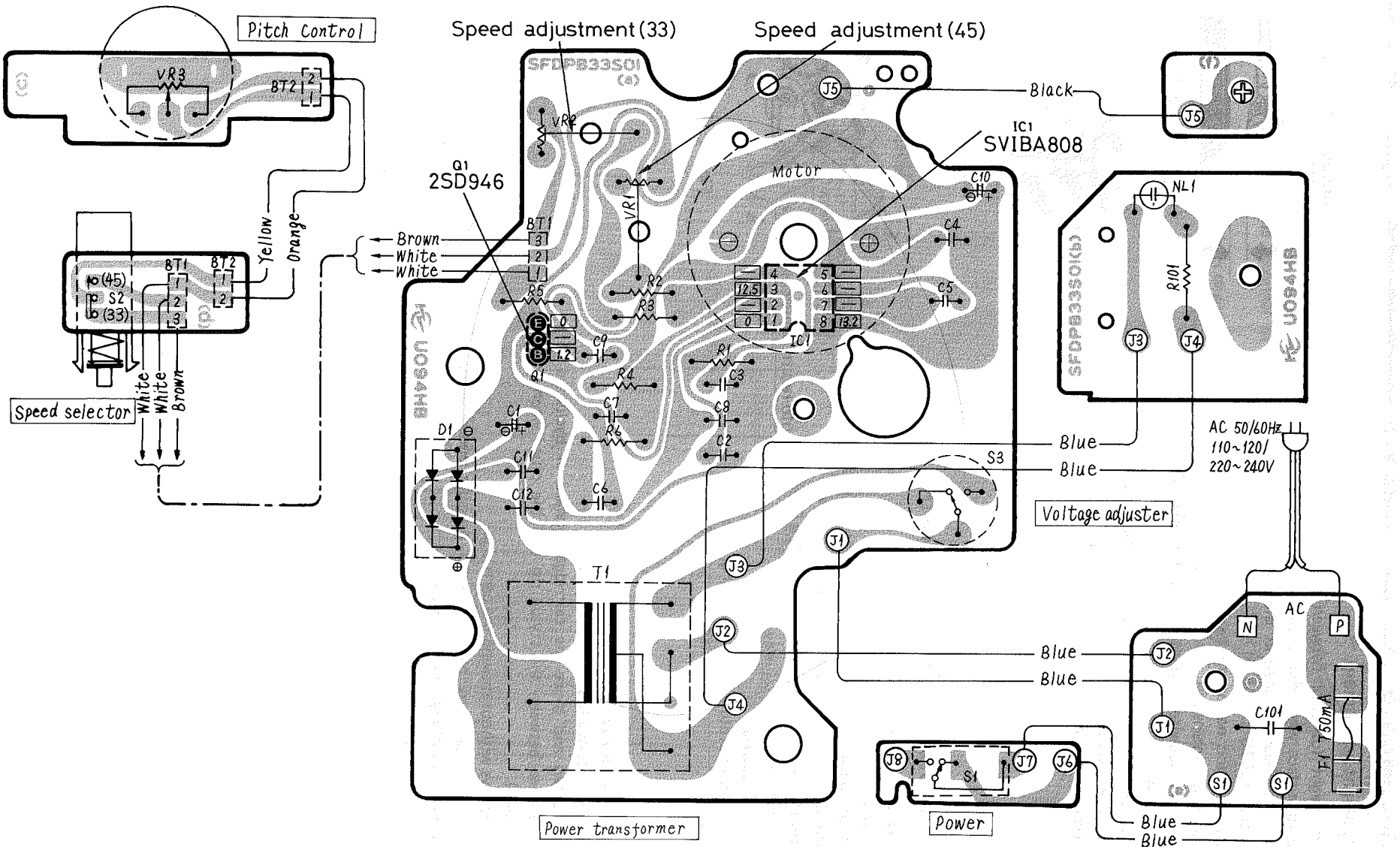
1. **S1** : Power (Arm) switch in **"on"** position.
2. **S2** : Speed selector switch in **"33-1/3 rpm"** position
   33-1/3 rpm ⟷ 45 rpm
3. **S3** : Voltage adjuster switch in **"220–240V"** position
   110–120V ⟷ 220–240V
4. The value and waveform in □ are of the reference voltage for the turntable rotation (33-1/3 rpm) of this unit, measured by DC voltmeter (high impedance) and osilloscope on the basis of chassis.
   Therefore the measured value may include some error depending on the internal impedance of DC circuit tester and other conditions.
5. ▬▬ +Ⓑ voltage line.
6. 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.

- **Terminal guide of transistor and IC**



■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) Lines



MEASURMENTS AND ADJUSTMENTS English

• Arm-lift height adjustment

The arm-lift height (distance between the stylus tip and the record surface when the cueing control is at the "▼" position) has been adjusted at the factory to approximately 5 mm(3/16"). **(Fig. 9)**
If the clearance is too narrow or too wide (because of different cartridge dimensions, for example), turn the adjustment screw clockwise or counterclockwsie. **(Fig. 10)**
Clockwise rotation
—distance between the record and stylus tip is decreased
Counterclockwise rotation
—distance between the ercord and stylus tip is increased.

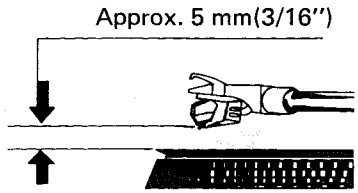


Fig. 9 (Abb. 9)

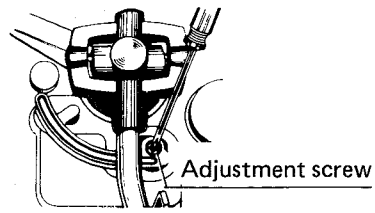


Fig. 10 (Abb. 10)

• Adjustment of automatic return position (Fig. 11)

(Remove the rubber cap.)
1. Put the stylus protector on the cartridge.
2. Remove the tonearm toward the center of the record. Then, the auto-return adjustment screw will appear.

If the tonearm tends to return to the arm rest before the play has finished.
—turn counterclockwise.
If the tonearm fails to return after the final groove.
—turn clockwise.

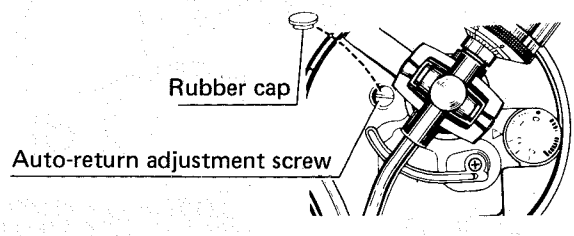


Fig. 11 (Abb. 11)

• Overhang adjustment (Fig. 12)

15 mm is the correct overhang for this tonearm.
Loosen the screws and move the cartridge forward or backward until the distance between the stylus tip and the plug becomes 52 mm (2-3/64").
Tighten the screws without moving the cartridge.
Adjust the horizontal zero balance, stylus pressure and armlift height whenever you change the cartridge.

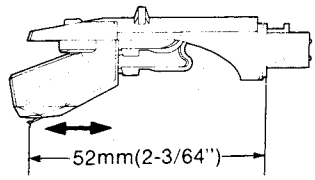


Fig. 12 (Abb. 12)

• Adjustment of rotational speed

When the hall IC (IC1) or the variable resistors (VR1, 2) are changed, or if the rated rotation is not reached even when the pitch control knob is turned, adjust the rotational speed in the following procedure.

1. Place the set on a player repair bench.
2. Turn the pitch control knob to the center position, and put on a record disc for playing.
3. Push the speed selector switch to 33-1/3 r.p.m. **(See Fig. 13)**
4. Turn the VR2 with a screw driver from the lower part of the set to the rated rotation (33-1/3 r.p.m.) and check the rotation with a strobe while adjusting the speed. **(See Fig. 14)**
5. Push the speed selector switch to 45 r.p.m. **(See Fig. 13)**
6. Turn the VR1 with a screw driver from the lower part of the set to the rated rotation (45 r.p.m.) and check the rotation with a strobe while adjusting the speed. **(See Fig. 14)**
7. As the more simple method, it is also possible to adjust VR1 and VR2 by removing the turntable. **(See Fig. 15)**

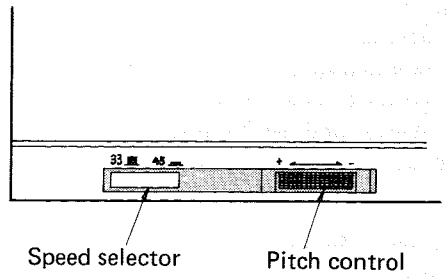


Fig. 13 (Abb. 13)

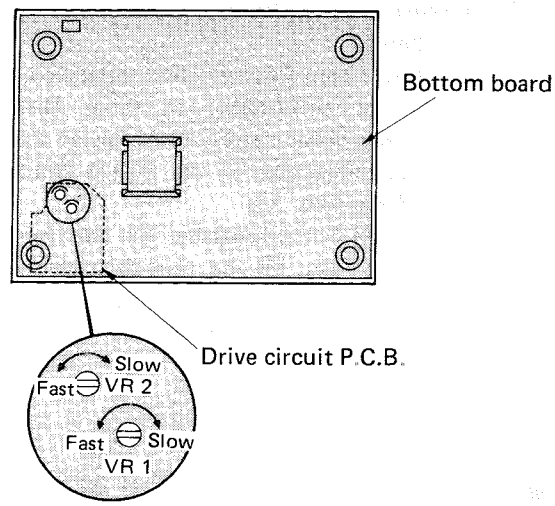


Fig. 14 (Abb. 14)

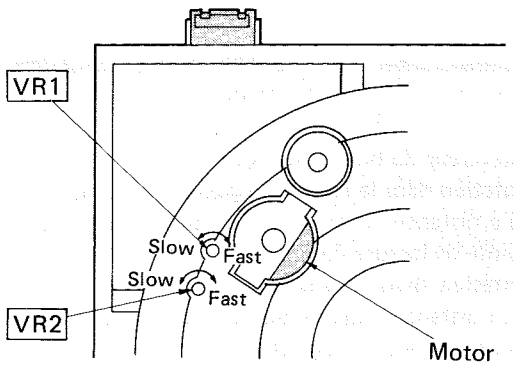


Fig. 15 (Abb. 15)

■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

• Justierung der Tonarmlifthöhe

Die Tonarmlifthöhe, d.h. der Abstand zwischen Nadelspitze und Schallplattenoberfläche bei Liftsteuerungs-Position "▼", wurde werkseiting auf ca. 5 mm eingstellt. **(Abb. 9)**
Falls der Abstand zu groß oder zu klein ist (z.B. wegen unterschiedlicher Tonabnehmergröße), drehen Sie die Justierschraube im Uhrzeigersinn oder entgegen dem Uhrzeigersinn. **(Abb. 10)**

Drehung im Uhrzeigersinn
—Der Abstand zwischen der Platte und der Nadelspitze wird kleiner.
Drehung entgegen dem Uhrzeigersinn
—Der Abstand zwischen der Platte und der Nadelspitze wird größer.

• Justierung des Abschaltpunktes der Automatik (Abb. 11)

(Die Gummikappe abnehmen)

1. Setzen Sie den Nadelschutz auf den Tonabnehmer auf.
2. Führen Sie den Tonarm gegen die Plattenmitte.
   Die Justierschraube für den Abschaltpunkt der Automatik wird dann sichtbar.

Falls der Tonarm zu früh zurückkehrt.
—Entgegen dem Uhrzeigersinn drehen.
Falls der Tonarm nach Erreichen der Auslaufrille nicht zurückkehrt.
—Im Uhrzeigersinn drehen.

• Justierung des Überhangs (Abb. 12)

Der korrekte Überhang für dieses Gerät beträgt 15 mm. Lösen Sie die Befestigungsschrauben und versetzen Sie den Tonabnehmer vorwärts oder rückwärts, bis der Abstand zwischen dem Stecker und der Nadelspitze 52 mm beträgt. Ziehen Sie die Befestigungsschrauben an, ohne dabei den Tonabnehmer zu verschieben.
Justieren Sie die horizontale "**0**"-Balance, die Auflagekraft und die Tonarmlifthöhe nach jedem Auswechseln des Tonabnehmers.

• Justierung der Drehzahl

Wenn das Hall-IC (IC1) oder die halbfest eingestellten Widerstände (VR1, 2) ausgewechselt werden, oder wenn die Nenndrehzahl selbst durch Drehen des Drehzahl-Feineinstellers nicht erreicht werden kann, ist die Drehzahl auf folgende Weise zu justieren.

1. Das Gerät auf einem Reparaturtisch aufstellen.
2. Den Drehzahl-Feineinsteller in seine Mittelposition stellen und eine Schallplatte zum Abspielen auflegen.
3. Den Drehzahlumschalter in die 33-1/3 U/min-Position drücken. **(Siehe Abb. 13)**
4. VR2 mit einem Schraubenzieher von der Unterseite des Gerätes her drehen, bis die Nenndrehzahl von 33-1/3 U/min erreicht ist, was sich durch Beobachten der Stroboskopmusters während der Justierung feststellen läßt. **(Siehe Abb. 14)**
5. Den Drehzahlumschalter in die 45 U/min-Position drücken. **(Siehe Abb. 13)**
6. VR1 mit einem Schraubenzieher von der Unterseite des Gerätes her drehen, bis die Nenndrehzahl von 45 U/min erreicht ist, was sich durch Beobachten des Stroboskopmusters während der Justierung feststellen läßt. **(Siehe Abb. 14)**
7. Eine einfachere Methode besteht darin, VR1 und VR2 nach Entfernen des Plattentellers zu justieren. **(Siehe Abb. 15)**

■ MESURAGES ET RÉGLAGES — Français

• Mise au point de la hauteur de l'élévateur du bras

La hauteur de l'élévateur du bras (distance entre l'extrémité de la pointe de lecture et la surface du disque, lorsque la commande de pose et de relevage est à la position "▼") a été réglée en usine sur approximativement 5 mm. **(Fig. 9)**
Si l'écartement est trop étroit ou trop large (par exemple, á cause des dimensions de cellules pick-up différentes), tourner la vis de réglage dans le sens des aiguilles d'une montre ou dans le sens contraire tout en appuyant sur l'élévateur du bras. **(Fig. 10)**
Rotation dans le sens des aiguilles d'une montre.
—La distance entre la surface du disque et l'extrémité de la pointe de lecture diminue.
Rotation dans le sens contraire des aiguilles d'une montre.
—La distance entre la surface du disque et l'extrémité de la pointe de lecture augmente.

• Mise au point de la position de retour automatique (Fig. 11)

(Retirer le capuchon en cauoutchouc.)

1. Placer le capot protecteur de la pointe de lecture sur la cellule pick-up.
2. Dpéplacer le bras de lecture vers le centre du disque. Alors, la vis de réglage du retour automatique apparaîtra.

Si le bras de lecture tend à revenir vers le support du bras avant que l'audition ne soit terminée.
—Tourner dans le sens contraire des aiguilles d'une montre.
Si le bras de lecture ne peut revenir en arrière après le dernier sillon.
—Tourner dans le sens des aiguilles d'une montre.

• Réglage du porte-à faux (Fig. 12)

Les surplomb approprié pour ce bras de lecture est de 15mm. Desserrer les vis et déplacer la cellule vers l'avant ou vers l'arriére jusqu'à ce que la distance entre l'extrémité de la pointe de lecture et la fiche soit de 52 mm (2-3/64"). Serrer les vis sans faire bouger la cellule.

Mettre au point l'equilibrage zéro horizontal, la force verticale d'appul de la pointe de lecture et la hauteur du bras élévateur chaque fois que vous changez de cellule.

• Réglage la vitesse rotationnelle

Lorsque le circuit intégré de Hall (IC1) ou les résistances semi-fixes (VR1, 2) sont changées, ou si la rotation nominale n'est pas atteinte lorsque la manette de réglage d'écart est tournée, régler la vitesse rotationnelle selon le mode opératoire suivant.

1. Placer l'appareil sur un établi de réparation pour électrophone.
2. Tourner la manette de réglage d'écart sur la position centrale et placer un disque pour le faire jouer.
3. Pousser le commutateur de changement de vitesse sur 33-1/3 t/p.m. **(Voir Fig. 13)**
4. Tourner **VR2** avec un tournevis à partir de la partie inférieure de l'appareil sur la rotation nominale (33-1/3 t/p.m.) et vérifier la rotation avec un stroboscope tout en ajustant la vitesse. **(Voir Fig. 14)**
5. Pousser le commutateur de changement de vitesse sur 45 t/p.m. **(Voir Fig. 13)**
6. Tourner VR1 avec un tournevis à partir de la partie inférieure de l'appareil sur la rotation nominale (45 t/p.m.) et vérifier la rotation avec un stroboscope tout en ajustant la vitesse. **(Voir Fig. 14)**
7. Comme méthode plus simple, il est possible aussi de régler VR1 et VR2 en retirant le plateau de lecture. **(Voir Fig. 15)**

■ MEDICIONES Y AJUSTES — Español

• Ajuste de la altura de elevación del brazo

La altura de elevación del brazo (o sea, la distancia entre la punta de la aguja y la superficie del disco cuando el control de colocación está en la posición "▼") ha sido regulada en la fábrica aproximadamente a 5 mm. **(Fig. 9)**

En caso que la distancia fuese demasiado abundante o demasiado escasa (debido, por ejemplo, a la diferencia de dimensiones de los cartuchos), girar el tornillo de ajuste hacia la derecha o hacia la izquierda mientras se empuja para abajo la elevación del brazo. **(Fig. 10)**

Rotación hacia la derecha
—reduce la distancia entre le disco y la punta de la aguja.
Rotación hacia la izquierda
—aumenta la distancia entre el disco y la punta de la aguja.

• Ajuste de la posición para retorno automático (Fig. 11)

(Quitar la tapita de goma.)

1. Colocar la protección de la aguja en el cartucho.
2. Mover el brazo sonoro hacia el centro del disco.
   Con ello, aparecerá el tornillo de ajuste del retorno automático.

Cuando el brazo sonoro tienda a volver a su apoyo antes de terminar la ejecución:
—Girar hacia la izquerda.
En caso que el brazo sonoro no vuelva después de haber tocado el último surco del disco:
—Girar hacia la derecha.

• Ajuste de la proyección (Fig. 12)

La proyección correcta para este cartucho es de 15 mm. Aflojar los tornillos y mover el cartucho para adelante y para atrás hasta que la distancia entre la punta de la aguja y la clavija sea de 52 mm (2-3/64").

Apretar los tornillos sin mover el cartucho,.
Regular el equilibrio horizontal a cero, la presión de la aguja y la altura de elevación del brazo toda vez que se cambia el cartucho.

• Ajuste de velocidad rotacional

Cuando se cambian el IC de Hall (IC1) y los resistores variables (VR1, 2), o si no se alcanza la rotación nominal, aun cuando se gire la perilla de control de altura, ajuste la velocidad rotacional de la siguiente manera:

1. Coloque el aparato sobre un banco de reparaciones para tocadiscos.
2. Gire la perilla de control de altura a la posición central y ponga un disco para tocar.
3. Apriete el interruptor selector de velocidad a 33-1/3 r.p.m. **(Vea la Fig. 13)**
4. Gire el VR2 con un destornillador de la parte inferior del aparato a la rotación nominal (33-1/3 r.p.m.) y verifique la rotación con un estroboscopio meintras ajusta la velocidad. **(Vea la Fig. 14)**
5. Apriete el interruptor selector de velocidad a 45 r.p.m. **(Vea la Fig. 13)**
6. Gire el VR1 con un destornillador de la parte inferior del aparato a la rotación nominal (45 r.p.m.)y verifique la rotación con un estroboscopio mientras ajusta la velocidad. **(Vea la Fig. 14)**
7. Como un método más simple, es posible también ajustar VR1 y VR2 removiendo el plato giradiscos. **(Vea la Fig. 15)**

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice:
Components indentified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. [K]-marked parts are used for black type only, while ○-marked parts are for silver type only.
4. Parts other than [K]-and ○-marked are used for both black and silver types.
5. Bracketed indications in Ref. No columns specify the area. Parts without these indications can be used for all areas.

Black type model No. : SL-B202 (K)

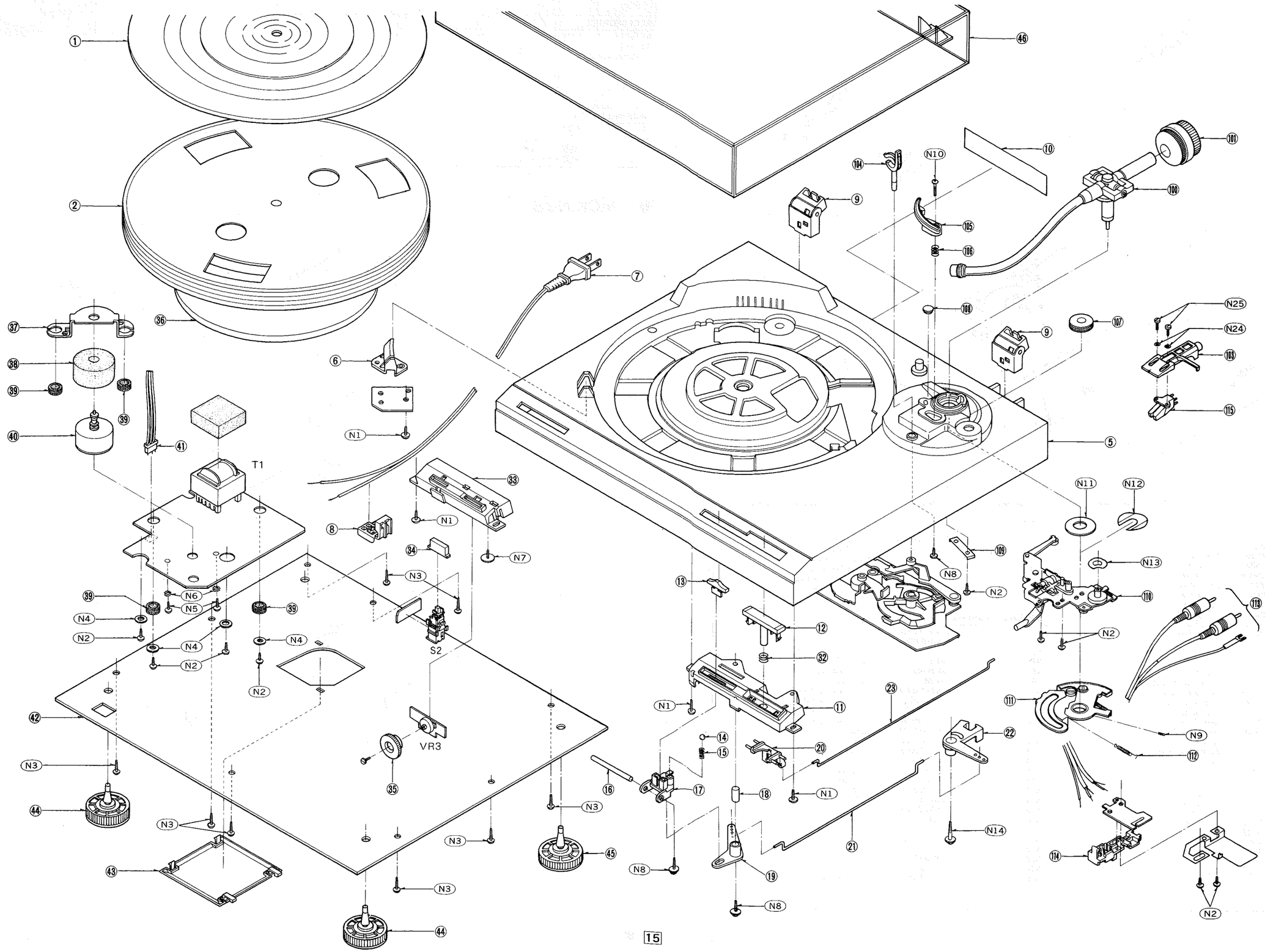
Areas

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EA] is available in Austria.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.

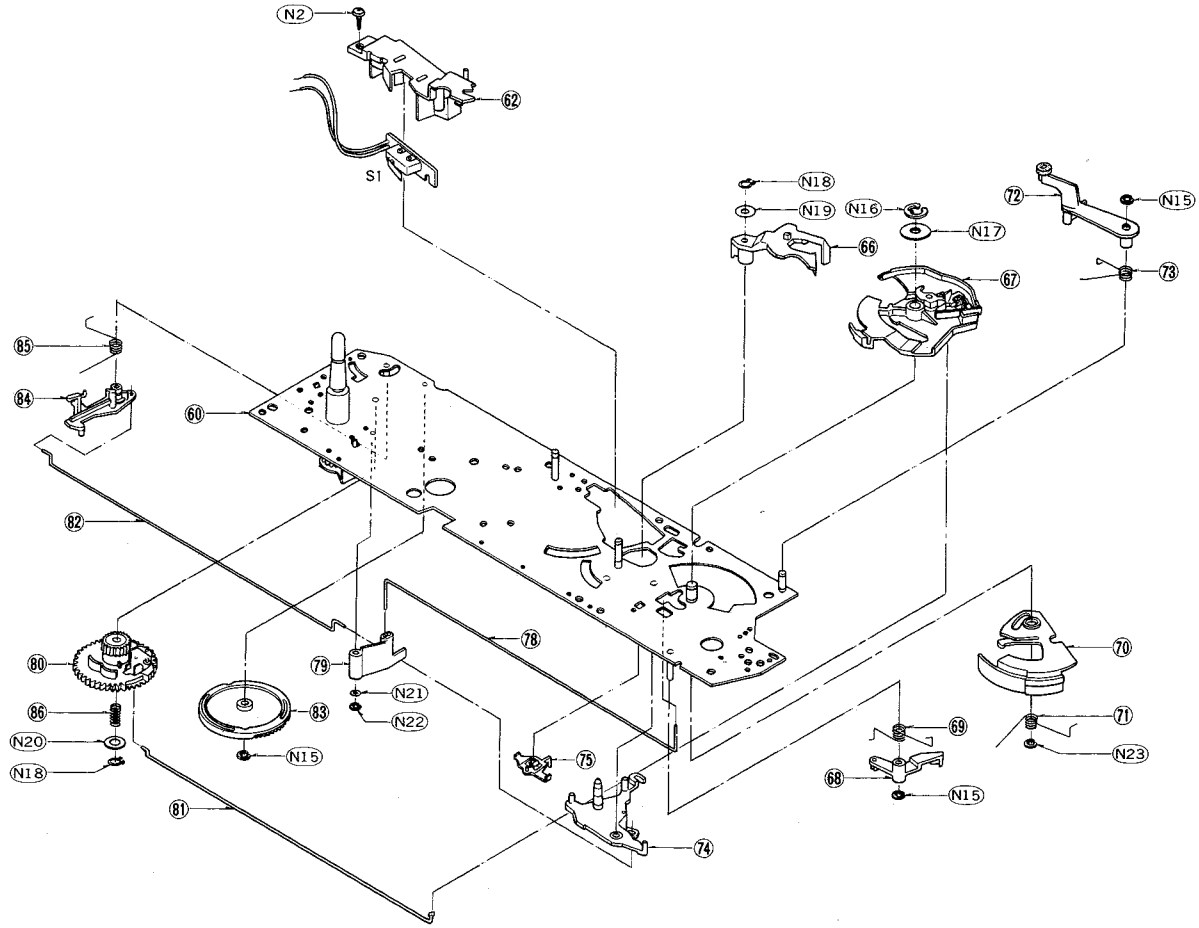
Ref. No.		Part No.	Part Name & Description			
INTEGRATED CIRCUIT						
IC1		SVIBA808	IC, Hall IC (Speed Detector)			
TRANSISTOR						
Q1		2SD549	Transistor			
DIODE						
D1	⚠	SVDSIRBA20Z	Diode, Rectifier			
VARIABLE RESISTORS						
VR1,2		**EVTS3MA00B24**	Speed Adjustment, 20kΩ(B)			
VR3		EVLEAAT12B53	Pitch Control 5kΩ(B)			
SWITCHES						
S1	⚠	SFDSSS5GLP1	Switch, Power Source			
S2		SFDSB33N02	Switch, Speed Selector			
S3	⚠	SFDSHXW01335	Switch, Voltage Adjuster			
LAMP						
NL1	⚠	SFDNE2HU	Neon Lamp, Strobe			
POWER TRANSFORMER						
T1	⚠	SLTF6373	Transformer, Power Source			
FUSE						
F1	⚠	XBAS2C005TIW	Fuse, T 0.05A, 250V			
RESISTORS						
R1		**ERD25TJ224**	Carbon	1/4W	220kΩ	±5%
R2		**ER025CKF2702**	Metal Film	1/4W	27kΩ	±1%
R3		**ER025CKF3902**	Metal Film	1/4W	39kΩ	±1%
R4		**ERD25TJ154**	Carbon	1/4W	150kΩ	±5%
R5		**ERD25FJ101**	Carbon	1/4W	100Ω	±5%
R6		**ERD25TJ684**	Carbon	1/4W	680kΩ	±5%
R101	⚠	**ERGIANJ103**	Metal Oxide	1W	10kΩ	±5%
CAPACITORS						
C1		**ECEAIC331**	Electrolytic	16V	330μF	
C2		ECFBIE473MRM	Ceramic	25V	0.047μF	±20%
C3		ECQMIH153KZ	Polyester	50V	0.015μF	±10%
C4		ECKDIH222ZF	Ceramic	50V	0.0022μF	+80% −20%
C5,6		ECFBIB104ZRM	Ceramic	12V	0.1μF	±20%
C7		ECFBIE223MRM	Ceramic	25V	0.022μF	±20%
C8		ECKDIH472ZF	Ceramic	50V	0.0047μF	+80% −20%
C9		ECFBIB104ZRM	Ceramic	12V	0.1μF	+80% −20%
C10		**ECEAIHS100**	Electrolytic	50V	10μF	
C11,12	⚠	ECKDIH223ZF	Ceramic	50V	0.022μF	+80% −20%

Ref. No.		Part No.	Part Name & Description	
C101 [Other Areas]	⚠	ECQU2A103MF	Polyester 250VAC 0.01μF	±20%
C101 [EG,XA,XM]	⚠	ECQE2A103MZ	Polyester 250VAC 0.01μF	±20%
CABINET and CHASSIS PARTS				
1		SFTGB20-01	Turntable Mat	
2		SFTEB22N01	Turntable	
5	○	SFACB22N01	Cabinet (Silver)	
5	[K]	SFACB22N21	Cabinet (Black)	
6		SFUM212-07	Cover, Strove	
7 [Other Areas]	⚠	SJA137	AC Cord	
7 [EK]	⚠	SJA139	AC Cord	
7 [XL]	⚠	SJA141	AC Cord	
8 [XL]		SFUM190-12	Bushing, AC Cord	
8 [Other Areas]		SFUM190-11	Bushing, AC Cord	
9		SFATB33N01A	Hinge	
10 [E, EC]		SFNNB22S01	Name Plate	
10 [EK, XL]		SFNNB22G03	Name Plate	
10 [XA, XM]		SFNNB22X01	Name Plate	
10 [Other Areas]		SFNNB22R01	Name Plate	
11		SFUMB33N06	Guide, Knob	
12		SFKTB33N01A	Knob, Stop	
13		SFKTQ34N01	Knob, Cueing	
14		SFYB-5-32	Ball, Cueing	
15		SFQA130-11	Spring, Cueing	
16		SFXJQ34N01	Shaft, Cueing	
17		SFUMB33N03	Slider, Cueing	
18		SFXOQ34N01	Pipe, Cueing	
19		SFUMQ34N04	Rink, Cueing (A)	
20		SFUMB33N02	Rink, Stop	
21		SFUZB33N02	Rod, Cueing	
22		SFUMB33N11	Rink, Cueing (B)	
23		SFUZB33N03	Rod, Stop	
32		SFQAB33N01	Spring, Knob Stop	
33		SFUMB33N05	Guide, 33/45r.p.m. Pich Control	
34		SFKTD33-01	Knob, 33/45r.p.m. Selector	
35		SFKTD11N01	Knob, Pich Control	
36		SFGB321-1	Belt	
37		SFUPB33N01	Plate, Motor	
38		SFGHB33N01	Rubber Cushion, Motor	
39		SFGZB33N01	Rubber Cushion, Motor & P.C.B.	
40		SFMHB33-01E	Motor Ass'y	
41		SFDJB33N01E	Connector Ass'y 3P	
42		SFAUB33N01	Bottom Board	
43		SFUMB33N09	Cover, Gere	
44		SFGAB33N01	Insulator, Front	
45		SFGAB33N02	Insulator, Rear	
46		SFADB33N01E	Dust, Cover	

■ EXPLODED VIEWS·····Cabinet & Chassis



■ EXPLODED VIEWS·····Automatic Mechanism Plate



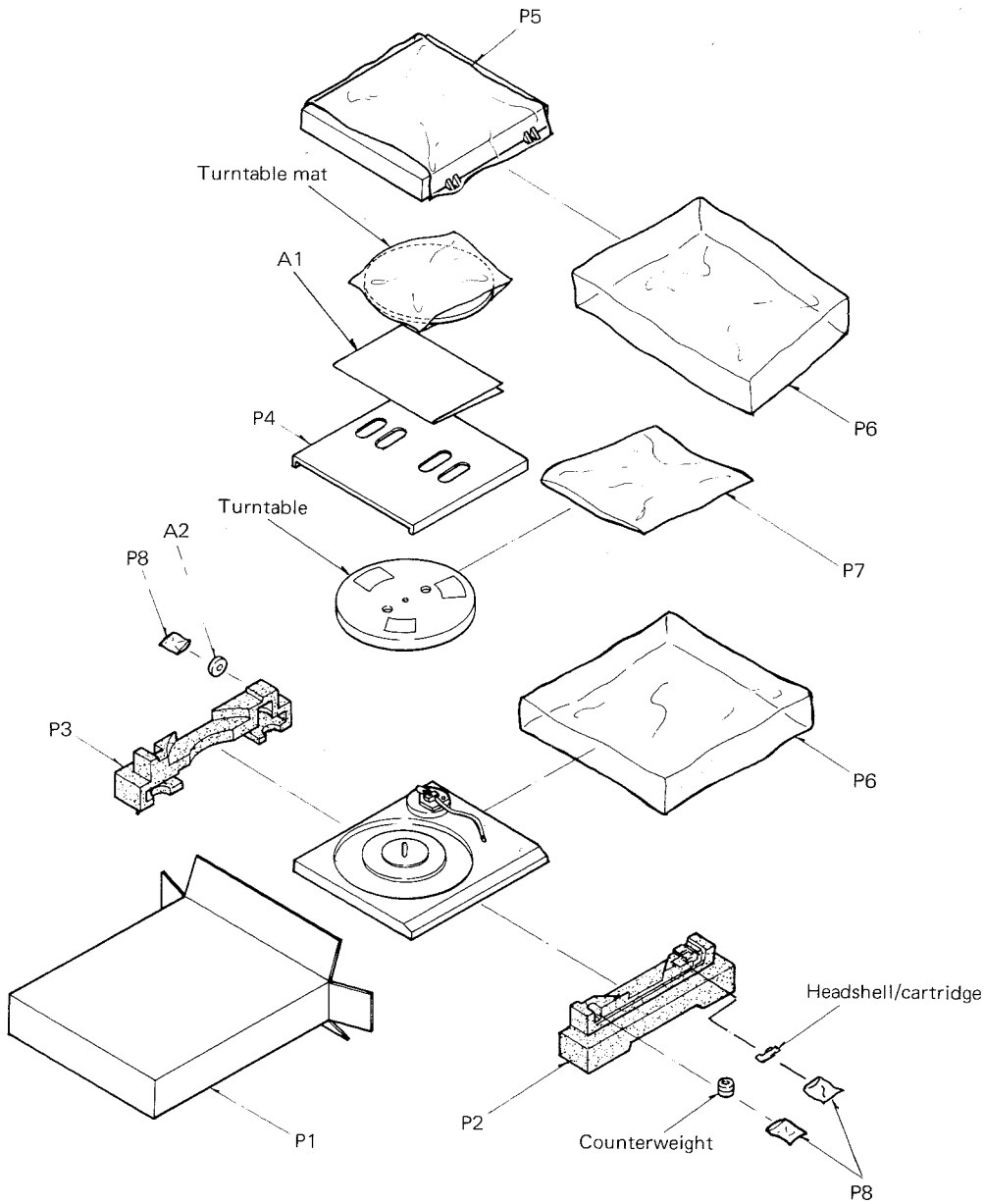
Ref. No.		Part No.	Part Name & Description
AUTOMATIC MECHANISM ASS'Y			
60		SFUKB22N21R	Plate, Automatic Mechanism
62		SFUMQ34N36	Case, Switch
66		SFUMQ34N38	Lever, Stop
67		SFUMQ22N03E	Cam, Drive
68		SFUMB33N01	Lever, Start
69		SFQSB33N02	Spring, Start Lever
70		SFUMQ22N02E	Cam, Start
71		SFQSQ22N01	Spring, Start
72		SFUMQ34N43	Plate, Brake
73		SFQSQ34N28	Spring, Brake
74		SFUMQ34N37	Lever Switch
75		SFUMQ34N32	Support, Actuating Rod
78		SFQSQ34N23	Rod, Actuating
79		SFUMQ34N42	Connector, Actuating
80		SFUGQ34N21E	Main Gear Ass'y
81		SFQSQ34N22	Rod, Actuating
82		SFQSQ34N26	Rod, Switch
83		SFUGQ34N22	Gear, Drive
84		SFUMQ34N31	Plate, Stop Gear
85		SFQSQ34N21	Spring, Stop Gear
86		SFQAQ34N21	Spring, Main Gear
TONE ARM PARTS			
100		SFPAM20201A	Tonearm
101		SFPWG20201A	Balance Weight
103		SFPCC21101A	Head Shell
104		SFPRT30301E	Arm Rest
105		SFPRT30302E	Arm Lift
106		SFPSP30304	Spring, Arm Lift
107		SFPJK30301	Knob, Canceller
108	O	SFGK170–01	Rubber Cap (Silver)
108	K	SFGK171F01	Rubber Cap (Black)
109		SFUPB33N04	Clamper, Phono Cord

Ref. No.		Part No.	Part Name & Description
110		SFPAB30305A	Lift Plate Ass'y
111		SFUPB33N03A	Arm Base
112		SFQHB33N01	Spring, Canceller
113		SFDHC07–01A	Phono Cord Ass'y
114		SFUM212–08	Bushing, Phono Cord
115		EPC–U25S	Cartridge * Not available as parts
		EPS–25CS	Stylus Please order to Sales department
SCREWS, WASHERS and CIRCLIPS			
N1		**XTV3+10BFN**	Screw, Tapping, ⊕ 3 x 10
N2		**XTV3+8BFN**	Screw, Tapping, ⊕ 3 x 8
N3		XTCS3+16GFYR	Screw, Tapping, ⊕ 3 x 16
N4		**XWE3**	Washer, ϕ3
N5		**XSN3+10S**	Screw, Tapping, ⊕ 3 x 10
N6		**XWC3B**	Washer, ϕ3
N7		**XTV3+14BFN**	Screw, Tapping, ⊕ 3 x 14
N8		XTW3+10Q	Screw, Tapping, ⊕ 3 x 10
N9		XXES3D5FZ–1S	Screw Tapping, ⊕ 3 x 5
N10		**XTS3+16BFZ**	Screw, Tapping, ⊕ 3 x 16
N11		SFXWH31–01	Washer
N12		SFXW301–02	Washer
N13		SFPWW13005	Washer
N14		SFXGD20–01	Screw
N15		**XUC3FT**	Circlip, ϕ3
N16		**XUC5FT**	Circlip, ϕ5
N17		SFXWQ30–11	Washer
N18		**XUB4FT**	Circlip
N19		SFXWQ34N26	Washer
N20		**XWE4**	Washer, ϕ4
N21		SFXWQ34N21	Washer
N22		**XUC2FT**	Circlip, ϕ2
N23		**XUC25FT**	Circlip, ϕ2.5
N24		SFPCW9601	Washer, Cartridge
N25		SFCZV8800	Screw, Cartridge

Ref. No.		Part No.	Part Name & Description
ACCESSORIES			
A1 [E]		SFNUB22S01	Instructions Book, Printed Matter
A1 [EK]		SFNUB22G01	Instructions Bood, Printed Matter
A1 [Other Areas]		SFNUB22X01	Instructions Book, Printed Matter
A2		SFWE212-01	Adaptor, 45r p m
A3 [XA, XM]		SFDKI19118	2pin Plug
PACKING PARTS			
P1	○	SFHPB22M01	Carton Box (Silver)
P1 [EF]	○	SFHPB22C01	Carton Box (Silver)
P1	●	SFHPB22M21	Carton Box (Black)
P1 [EF]	●	SFHPB22J21	Carton Box (Black)

Ref. No.		Part No.	Part Name & Description
P2		SFHHB33N01	Pad, Front
P3		SFHHB33N02	Pad, Rear
P4		SFHDQ34N01	Pad, Turntable
P5		SFHZ144X02	Sheet
P6		SFYH60X60	Polyethlene Bag, Unit/Dust Cover
P7		SFYH40X45	Polyethlene Bag, Turntable
P8		SPB1083	Polyethlene Bag, Accessories

■ PACKINGS



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