

Service Manual

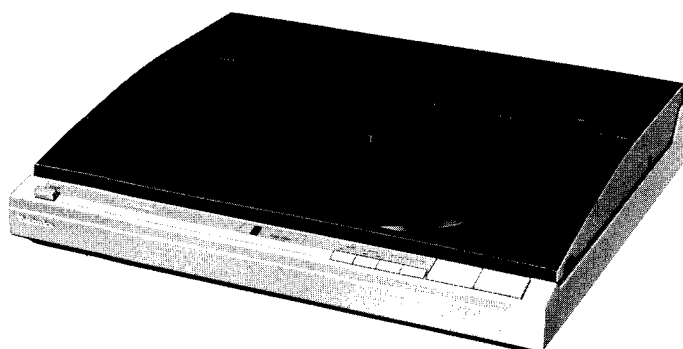
Turntable System

SL-L2

QUARTZ Direct Drive
Automatic Turntable System

Color

(S)..... Silver Type
(K) Black Type



is the standard mark for plug-in-connector type.

Products carrying this mark are interchangeable and adaptable among each other.

Color	Areas
(S) (K)	[E] Switzerland and Scandinavia.
(S) (K)	[EK] United Kingdom.
(S) (K)	[XL] Australia.
(S) (K)	[EG] ... F.R. Germany.
(S) (K)	[EB] Belgium.
(S) (K)	[EH] Holland.
(S) (K)	[EF] France.
(S) (K)	[Ei] Italy.
(S) (K)	[EC] Czechoslovakia.
(S) (K)	[XA] Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(S) (K)	[PA] Far East PX.
(S) (K)	[PE] European Military.
(S) (K)	[PC] European Audio Club.

Please use this manual together with the service manual for Model No. SL-L2 [M],
Order No. HAD85032458C1.

SPECIFICATIONS

■ Turntable section

Type: Quartz direct drive
Automatic turntable system

Features: Auto start/Auto lead-in,
Auto return,
Auto stop,
Repeat play,
Direct music select play,
Forward and backward skip play,
Forward and backward search play,
Auto size select,
Record presence detection

Drive method: Direct drive

Motor: Brushless DC motor

Drive control method: Quartz-phase-locked control

Turntable platter: Aluminum die-cast
Diameter 30 cm

Turntable speeds: 33-1/3 rpm and 45 rpm
Auto speed select
(Manual selection possible)

Wow and flutter: 0.012% WRMS*
0.025% WRMS (JIS C5521)
±0.035% peak
(IEC 98A Weighted)

*Measured by obtaining signal from built-in frequency generator of motor assembly.

Rumble: -56 dB (IEC 98A Unweighted)
-78 dB (IEC 98A Weighted)

■ Tonearm section

Type: Linear tracking tonearm
4-pivot gimbal suspension

Effective length: 10.5 cm

Tracking error angle: Within ±0.1°

Effective mass: 9 g (including cartridge)

Resonance frequency: 12 Hz

Tonearm drive motor: DC motor

Stylus pressure: 1.25 g (fixed)

Technics

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

Panasonic Tokyo Office
Matsushita Electric Trading Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105, Japan

■ Cartridge section

Model No.:	EPC-P30
Type:	Moving magnet stereo cartridge
	
Magnetic circuit:	All laminated core
Frequency response:	10 Hz ~ 40 kHz
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
Recommended load impedance:	47 kΩ~100 kΩ
Compliance (dynamic):	12×10^{-6} cm/dyne at 100 Hz
Stylus pressure range:	1.25±0.25 g (12.5±2.5 mN)
Weight:	6 g (cartridge only)
Replacement stylus:	EPS-30ES (Elliptical stylus)

■ General

Power supply:	For United Kingdom and Australia: AC240 V, 50 Hz For continental Europe: AC 220 V, 50 Hz For others: ~110-127/220-240 V, 50 or 60 Hz
Power consumption:	13 W
Dimensions: (W × H × D)	43 × 9 × 35 cm (Maximum height when the dust cover is open)
Weight:	39 cm 5.1 kg

Specifications are subject to change without notice for further improvement.

TECHNISCHE DATEN

■ Plattenteller

Typ:	Automatisches Plattentellersystem mit Quarz-Direktantrieb
Eigenschaften:	Auto-Start/Auto-Zuführung Auto-Rückkehr Auto-Stop Wiederholtes Abspielen Direktmusikwahl Vorwärts- und Rückwärtssprung Vorwärts- und Rückwärtssuche Autom. Größenwahl Schallplattendetektion Direktantrieb
Antrieb:	Direktantrieb
Motor:	Kollektorloser Gleichstrommotor
Antriebsregel-Methode:	Quarz-Steuerung QPL
Plattenteller:	Aluminium-Druckguß Durchmesser 30 cm
Plattenteller-Drehzahlen:	33-1/3 und 45 U./min Automatische Drehzahlwahl (manuelle Wahl möglich)
Gleichlaufschwankungen:	0,012% WRMS* 0,025% WRMS (JIS C5521) ±0,035% Spitze (IEC 98A bewertet)

*Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorteils.

Rumpeln:	-56 dB (IEC 98A unbewertet) -78 dB (IEC 98A bewertet)
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■ Tonarm

Typ:	Linearabtastungs-Tonarm mit Kardanaufhängung mit 4-Punkt-Drehlager
Effektive Länge:	10,5 cm
Spurfehlwinkel:	Innerhalb ±0,1°
Effektive Masse:	9 g (einschließlich Tonabnehmer)
Resonanzfrequenz:	12 Hz
Tonarm-Antriebsmotor:	Gleichstrommotor
Nadeldruck:	1,25g (nicht einstellbar)

■ Tonabnehmer

Modell-Nr.:	EPC-P30
Type:	Beweglicher Magnet-Stereo-Tonabnehmer
	
Magnetkreis:	Ganzlamellenkern
Frequenzgang:	10 Hz bis 40 kHz
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
Empfohlene Endimpedanz:	47 kΩ~100 kΩ
Nachgiebigkeit (dynamisch):	12×10^{-6} cm/dyn bei 100 Hz
Nadeldruckbereich:	1,25±0,25 g (12,5±2,5 mN)
Gewicht:	6 g (nur Tonabnehmer)
Ersatznadel:	EPS-30ES (elliptisch)

■ Allgemeine Daten

Stromversorgung:	~220 V, 50 Hz
Leistungsaufnahme:	13W
Abmessungen: (B × H × T)	43 × 9 × 35 cm (Maximale Höhe bei vollständig geöffneter Staubabdeckung)
Gewicht:	39 cm 5,1 kg

Die technischen Daten können infolge von Verbesserungen ohne Ankündigung geändert werden.

CARACTERISTIQUES

■ Section de la platine

Type:	Entraînement direct par quartz Système de platine automatique
Caracérlistiques:	Démarrage automatique/Entrée automatique, Retour automatique, Arrêt automatique, Audition répétée, Audition sélectionnée musicale directe, Audition de saut vers l'avant et l'arrière, Audition de recherche vers l'avant et l'arrière, Sélection automatique du diamètre d'un disque, Détection de la présence d'un disque.
Système d'entraînement:	Entraînement direct
Moteur:	Moteur C.C. sans balai
Système de commande d'entraînement:	Réglage d'accrochage de phase par quartz
Plateau de lecture:	Aluminium moulé sous pression Diamètre 30 cm
Vitesses de la platine:	33-1/3 et 45 t/p.m. Sélecteur de vitesse automatique (Sélection manuelle possible)
Pleurage et scintillement:	0,012% de valeur efficace* 0,025% de valeur efficace (JIS C5521) ±0,035% de crête (IEC 98A pondéré)

* Mesuré par l'obtention d'un signal provenant du générateur de fréquences incorporé de l'ensemble du moteur.

Ronflement:	−56 dB (IEC 98A non pondéré) −78 dB (IEC 98A pondéré)
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■ Section du bras de lecture

Type:	Bras de lecture d'alignement linéaire de type à suspension à la cardan sur 4 pivots
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Longueur effective:	10,5 cm
Erreur d'angle d'alignement:	En deçà de ±0,1°
Masse réelle:	9 g (y compris la cellule)
Fréquence de résonance:	12 Hz
Moteur d'entraînement du bras de lecture:	Moteur C.C.
Force verticale d'appui:	1,25 g (Fixé)

■ Section de la cellule pick-up

No du modèle:	EPC-P30
Type:	Cellule pick-up stéréo à aimant mobile 
Circuit magnétique:	Noyau entièrement feuilleté
Réponse en fréquence:	10 Hz à 40 kHz
Tension de sortie:	2,5 mV à 1 kHz; 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 des canaux:	22 dB à 1 kHz
Equilibrage des canaux:	En deçà de 1,8 dB à 1 kHz
Impédance de charge recommandée:	47 kΩ~100 kΩ
Elasticité acoustique (dynamique)	12×10 ⁻⁶ cm/dyne à 100 Hz
Plage de la force verticale d'appui:	1,25±0,25 g (12,5±2,5 mN)
Poids:	6 g (cellule seule)
Remplacement de la pointe de lecture:	EPS-30ES (Pointe de lecture ellipsoïdale)

■ Généralités

Alimentation:	Alternatif 220 V, 50 Hz
Consommation:	13W
Dimensions: (L × H × P)	43 × 9 × 35 cm (Hauteur maximum lorsque le couvercle protège-poussière est ouvert: 39 cm)
Poids:	5,1 kg

Sujet à changement sans preavis.

Ululations y trémolo:	0,012% WRMS* 0,025% WRMS (JIS C5521) ±0,035% crête (IEC 98A Ponderado)
* Medido obteniendo una señal proveniente del generador de frecuencias incorporado del conjunto del motor.	
Ruido de rodadura:	−56 dB (IEC 98A No ponderado) −78 dB (IEC 98A Ponderado)

■ Sección del brazo sonoro

Tipo:	Brazo sonoro de seguimiento lineal con suspensión cardánica de 4 pivotes
Longitud efectiva:	10,5 cm
Angulo de error de seguimiento:	Inferior a 0,1° aproxim.
Masa efectiva:	9 g (incluyendo el cartucho)
Frecuencia de resonancia:	12 Hz
Motor de accionamiento del brazo sonoro:	Motor de corriente continua
Presión de la aguja:	1,25 g (fija)

■ Sección del cartucho

Núm. del modelo:	EPC-P30
Tipo:	Cartucho estereofónico de imán móvil 
Circuito magnético:	Núcleo totalmente laminado
Respuesta de frecuencia:	10 Hz a 40 kHz
Voltaje de salida:	2,5 mV a 1 kHz 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:	Inferior a 1,8 dB a 1 kHz
Impedancia de carga recomendada:	47 kΩ a 100 kΩ
Elasticidad (dinámica):	12×10 ⁻⁶ cm/dina a 100 Hz
Radio de presión de la aguja:	1,25±0,25 g (12,5±2,5 mN)
Peso:	6 g (cartucho solamente)
Aguja de recambio:	EPS-30ES (Aguja elíptica)

■ En general

Alimentación de corriente:	~110-127/220-240V, 50 ó 60 Hz
Consumo de corriente:	13W
Dimensiones: (Ancho×Alto×Prof.)	43 × 9 × 35 cm (Altura máxima cuando la tapa contra el polvo está abierta: 39 cm)
Peso:	5,1 kg

Estas especificaciones están sujetas a cualquier cambio sin previo aviso.

ESPECIFICACIONES

■ Sección del plato giratorio

Type:	Sistema de plato giratorio automático con accionamiento directo por cuarzo
Ventajas:	Comienzo/descenso automáticos Retorno automático Parada automática Ejecución repetida Ejecución con selección directa de la música Ejecución con salto hacia adelante y hacia atrás Ejecución con búsqueda hacia adelante y hacia atrás Ejecución con búsqueda hacia adelante y hacia atrás Selección automática del tamaño Detección de presencia de disco

Método de accionamiento:	Accionamiento directo
Motor:	Motor de corriente continua sin escobillas
Método de control de accionamiento:	Control enclavado de fase de cuarzo
Platillo del plato giratorio:	Aluminio fundido 30 cm de diámetro
Velocidades del plato giratorio:	33-1/3 y 45 rpm Selección automática de la velocidad (También posibilidad de seleccionar a mano)

MESSUNGEN UND JUSTIERUNGEN Deutsch

Verwendete Geräte und Zustand des Gerätes

1. Oszilloskop

2. Gleichstrom-Voltmeter
3. Plate (SFTR007) für Justierung

4. Den Empfindlichkeits-Wahlschalter des optischen Sensors auf "M" stellen.

Schritt	Gegenstand	Vorbereitungen für die Justierung	Zu justierende Teile	Justiermethode
1	Startposition	1) Das Gehäuseoberteil öffnen und die Platte auflegen. 2) Den Ein/Aus-Schalter einschalten. 3) Den Startschalter drücken.	Absenktions-Justier1)	1) Die Startposition-Justierschraube drehen. Falls er zwischen Musikstücken absenkt, die Schraube entgegen dem Uhrzeigersinn drehen.
2	Uhrfrequenz	1) Leistungsdraht mit Klemme an IC301, Stift 29 und Stift 1 der Betriebs-Platine anschließen. 2) Das Oszilloskop and IC301 Stift 18 anschließen.	VR301 (Abb. 2)	1) Den Ein/Aus-Schalter einschalten. 2) VR301 so justieren, daß der Zyklus der Ausgangswellenform 1,6 msec. $\pm 0,06$ msec. beträgt. (Abb. 3)
3	Sensorverstärkung	1) Das Gleichstrom-Voltmeter an IC401, Stift 12 (+) und Masse (-) anschließen. 2) Die Platte für Justierung mit Seite A auflegen.	VR401 (Abb. 2)	1) Den Ein/Aus-Schalter einschalten. 2) Der Tonarm ist in der Ruheposition. (Unbespielter Teil der Platte.) 3) VR401 so abgleichen, daß die Ausgangsspannung $8,5 \pm 0,3V$ beträgt.
4	Sensorauflösung	1) Das Oszilloskop an IC401, Stift 9 (+) und Masse (-) anschließen. 2) Die Platte für Justierung mit Seite A auflegen.	VR402 (Abb. 2)	1) Den Ein/Aus-Schalter einschalten. 2) Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. (Ausgangsleistung tritt auf zwischen den Musikstücken.) 3) VR402 so abgleichen, daß die maximale Ausgangsleistung zwischen den Musikstücken $3V \pm 0,3V$ beträgt. (Abb. 4)
5	Nadel-Absenktposition	1) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren. 2) Die Platte für Justierung mit Seite B auflegen. 3) Das Gehäuseoberteil schließen. 4) Das Gerät an den Verstärker anschließen. (Die Lautsprecher an die Lautsprecher-Anschlüsse anschließen.)	VR302 (Abb. 5)	1) Den Ein/Aus-Schalter einschalten. 2) Den F-Überspring-Schalter zweimal drücken und dann die Start-Taste drücken. 3) Nach beendetem Absenken den B-Überspring-Schalter nochmals drücken, zum Zwecke des Absenkens, wie bereits erwähnt. 4) Überprüfen, daß die Absenktposition bei "18~19" liegt. 5) VR302 so justieren, daß die Absenktposition bei "18~19" auf der Skala ist.
6	Tonarm-Spurfehlwinkel	1) Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".) 2) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren. 3) Das Gehäuseoberteil schließen. 4) Eine Platte auflegen.	Justierschraube (Abb. 6)	1) Den Ein/Aus-Schalter einschalten. 2) Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. 3) Die Justierschraube so weit drehen, daß die Tonarmmitte mit der V-Kerbe der Liftstange übereinstimmt.
7	Servo-Verstärkung und Offsetspannung	1) Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".) 2) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren. 3) Das Gleichstrom-Voltmeter an CN301, Stift 5 (+) und Stift 2 (-) anschließen. 4) Die Sensorabdeckung entfernen.	VR501 (Servo Verstärkung) Schraube (Offset-Spannung) (Abb. 7)	1) Den Ein/Aus-Schalter einschalten. 2) Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen. 3) Das Gehäuseoberteil öffnen. 4) Den Tonarm ganz nach links bewegen. Dann VR501 so justieren, daß die Spannung $6,0V$ beträgt. (Servo-Verstärkung) 5) Den Tonarm zur Mitte hin stellen und überprüfen, daß die Ausgangsspannung $3,0V$ beträgt. 6) Falls die Spannung nicht $3,0V$ beträgt, ist die Schraube so zu justieren, daß die Ausgangsspannung $3,0V$ beträgt. (Offset-Spannung)

MESURAGES ET RÉGLAGES Français

Equipement utilisé et conditions de service de l'appareil

1. Oscilloscope

2. Voltmètre à C.C.
3. Disque (SFTR007) pour la mise au point

4. Régler le sélecteur de sensibilité de détecteur optique sur "M".

Etape	Article	Préparatifs pour la réglage	Portion du réglage	Méthode de mise au point
1	Position de démarrage	1) Ouvrir la boîte supérieure et installer un disque. 2) Mettre en circuit l'interrupteur d'alimentation. 3) Appuyer sur la touche "Start" (mise en marche).	Vis d'ajustement de la position descendante. (Fig. 1)	1) Tourner la vis de réglage du positionnement de démarrage. Si elle descend entre les pages, la tourner dans le sens inverse des aiguilles d'une montre.
2	Fréquences des impulsions de rythme	1) Raccorder le fil de jonction avec attache à la broche 1 et à la broche 29 de IC301 du circuit de fonctionnement. 2) Raccorder l'oscilloscope à la broche 18 de IC301.	VR301 (Fig. 2)	1) Mettre en circuit l'interrupteur d'alimentation. 2) Ajuster VR301 de telle sorte que le cycle de la forme d'onde de sortie soit de 1,6 msec. $\pm 0,06$ msec. (Fig. 3)
3	Gain du dispositif détecteur	1) Raccorder un voltmètre à C.C. aux 12 ergots (+) de IC401 et à la terre (-). 2) Installer le disque pour la mise au point avec le côté A vers le haut.	VR401 (Fig. 2)	1) Mettre en marche l'interrupteur d'alimentation. 2) Le bras de lecture est à la position de repos. (Zone vierge du disque.) 3) Ajuste VR401 de telle sorte que la tension de sortie soit de $8,5V \pm 0,3V$.
4	Résolution du dispositif détecteur	1) Raccorder l'oscilloscope aux 9 ergots (+) de IC401 et à la terre (-). 2) Installer le disque pour la mise au point avec le côté A vers la haut.	VR402 (Fig. 2)	1) Mettre en circuit l'interrupteur d'alimentation. 2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. (La puissance de sortie est délivrée entre les pages.) 3) Ajuster VR402 de telle sorte que la puissance de crête entre les pages soit de $3V \pm 0,3V$. (Fig. 4)
5	Position de pose/relevage de la pointe de lecture	1) Ouvrir le boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive. 2) Installer le disque pour la mise au point avec le côté B vers le haut. 3) Refermer le boîtier supérieur. 4) Raccorder l'appareil à l'amplificateur. (Raccorder les haut-parleurs aux bornes des haut-parleurs.)	VR302 (Fig. 5)	1) Mettre en circuit l'interrupteur d'alimentation. 2) Appuyer deux fois sur le commutateur de saut F, puis appuyer sur le commutateur de mise en route. 3) Après l'achèvement de la pose/relevage, appuyer à nouveau sur le commutateur de saut B en vue de la pose, comme il a été mentionné auparavant. 4) S'assurer que la position descendante est au comptage de "18~19". 5) Régler VR302 de telle sorte que la position descendante soit au comptage de "18~19".
6	Angle de décalage du bras de lecture	1) Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".) 2) Ouvrir la boîte supérieure et maintenir appuyée la touche du boîtier avec une bande adhésive. 3) Refermer le boîtier supérieur. 4) Installer un disque.	Vis de réglage (Fig. 6)	1) Mettre en circuit l'interrupteur d'alimentation. 2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. 3) Tourner la vis de réglage de façon à ce que le centre de bras coïncide avec la rainure en V de la tige d'élévation.
7	Amplification servo-mécanique et tension d'écart de réglage	1) Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".) 2) Ouvrir le boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive. 3) Raccorder le voltmètre à C.C. à la broche 5 (+) et à la broche 2 (-) de CN301. 4) Retirer le couvercle du dispositif détecteur.	VR501 (Amplification servo-mécanique) Plaquette à Vis. (Tension de décalage) (Fig. 7)	1) Mettre en circuit l'interrupteur d'alimentation. 2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. 3) Ouvrir le boîtier supérieur. 4) Déplacer complètement le bras de lecture vers la gauche. Puis, ajuster VR501 de telle sorte que la tension soit de $6,0V$. (Amplification servo-mécanique) 5) Régler le bras de lecture au centre et s'assurer que la tension de sortie soit de $3,0V$. 6) Si la tension n'est pas de $3,0V$, ajuster la vis de telle sorte que la tension de sortie soit de $3,0V$. (Tension de décalage)

MEDICIONES Y AJUSTE Español

Equipos usados y estado del aparato

- | | |
|-------------------------------------|--|
| 1. Osciloscopio | 3. Disco (SFTR007) de ajuste |
| 2. Voltímetro de corriente continua | 4. Poner el selector de sensibilidad del sensor óptico en "M". |

Paso	Punto tratado	Preparativos para el ajuste	Porción a ajustar	Manera de hacer el ajuste
1	Posición de arranque	1) Abrir el gabinete superior y colocar el disco. 2) Encender el interruptor de la corriente. 3) Empujar el interruptor de arranque ("Start").	Tornillo de regulación de la posición de descenso (Fig. 1)	1) Hacer girar el tornillo de regulación de la posición de descenso. Si se deposita en medio de una pieza, girar el tornillo hacia la izquierda.
2	Frecuencia del reloj	1) Conectar el hilo conductor con clip a 29 pernos y 1 perno de IC301 de tablero de circuitos de operación. 2) Conectar el osciloscopio al pasador 18 de IC301.	VR301 (Fig. 2)	1) Encender el interruptor de la corriente. 2) Regular VR301 de manera que el ciclo de forma de onda de salida sea 1,6 mseg. $\pm 0,06$ mseg. (Fig. 3)
3	Ganancia del sensor	1) Conectar el voltímetro de CC a 12 pernos (+) de IC401 y tierra (-). 2) Colocar el disco de ajuste con el lado A mirando hacia arriba.	VR401 (Fig. 2)	1) Encender el interruptor de la corriente. 2) El brazo sonoro está en la posición de descanso. (Área negra del disco.) 3) Regular VR401 de manera tal que la tensión de salida sea de 8,5V $\pm 0,3$ V.
4	Resolución del sensor	1) Conectar el osciloscopio a 9 pernos (+) de IC401 y tierra (-). 2) Colocar el disco de ajuste con el lado A mirando hacia arriba.	VR402 (Fig. 2)	1) Encender el interruptor de la corriente. 2) Mantener el interruptor de salto F oprimido para mover el brazo sonoro. (La salida se suministra entre las piezas.) 3) Regular VR402 de manera tal que la salida de cresta entre las piezas sea de 3V $\pm 0,3$ V. (Fig. 4)
5	Posición de descenso de aguja.	1) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta. 2) Colocar el disco de ajuste con el lado B mirando hacia arriba. 3) Cerrar el gabinete superior. 4) Conectar el aparato al amplificador. (Conectar los altoparlantes a los bornes para conexión de los mismos.)	VR302 (Fig. 5)	1) Encender el interruptor de la corriente. 2) Apretar el interruptor de salto F dos veces y luego apretar el interruptor de arranque. 3) Después de completar el descenso, de nuevo apretar el interruptor de salto B con el fin de descenso como mencionado previamente. 4) Asegurarse de que la posición de descenso se encuentre en el número "18~19". 5) Regular VR302 de manera que la posición de descenso esté en conteo "18~19".
6	Angulo de descentramiento del brazo sonoro	1) Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".) 2) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta. 3) Cerrar el gabinete superior. 4) Colocar el disco.	Tornillo de ajuste (Fig. 6)	1) Encender el interruptor de la corriente. 2) Mantener el interruptor de salto F oprimido para mover el brazo sonoro. 3) Girar el tornillo de ajuste de manera tal que el centro del brazo concuerde con la ranura en V de la barra de elevación.
7	Ganancia del servomecanismo y tensión de desnivel	1) Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".) 2) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta. 3) Conectar el voltímetro de CC a 5 pernos (+) y 2 pernos (-) de CN301. 4) Remover la cubierta de sensor.	VR501 (Ganancia del servomecanismo) Tornillo (Tensión de desnivel) (Fig. 7)	1) Encender el interruptor de la corriente. 2) Mantener el interruptor de salto F oprimido para mover el brazo sonoro. 3) Abrir el gabinete superior. 4) Mover completamente el brazo sonoro a la izquierda. Luego, regular VR501 de manera que la tensión sea 6,0V. (Ganancia del servomecanismo.) 5) Colocar el brazo sonoro en el centro y asegurarse de que la tensión de salida sea de 3,0V. 6) Si la tensión no es 3,0V, regular el tornillo de manera que la tensión de salida sea 3,0V. (Tensión de desnivel)

CHANGE IN REPLACEMENT PARTS LIST

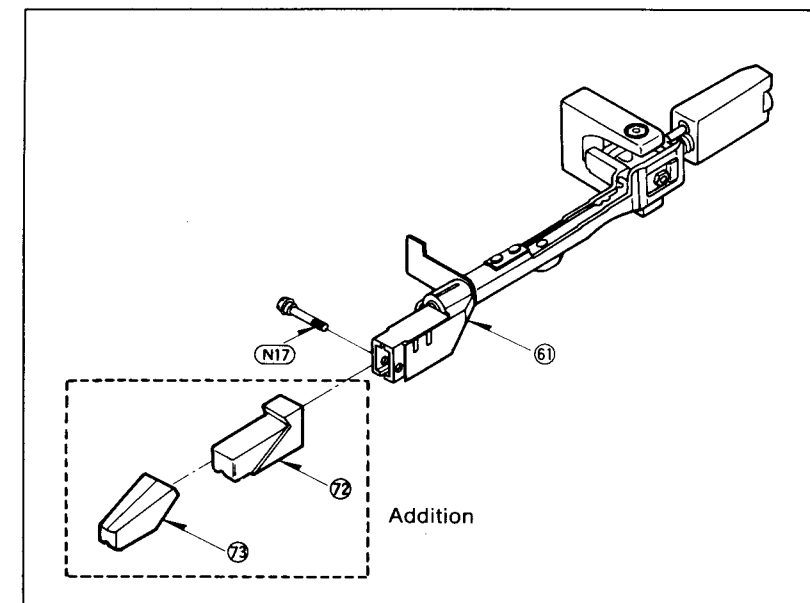
Notes:

- Mentioned in this parts list are only those changes in Model No. SL- L2 for destination [M] area.
- Important safety notice:
Components identified by a $\triangle$ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- $\odot$ -marked parts are used for black only, while $\bigcirc$ -marked parts are for silver type only.
- Parts other than $\odot$ -and $\bigcirc$ -marked are used for both black and silver types.
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Change of Part	Area & Color	Part Name & Description
	SL-L2 [M] $\rightarrow$ SL-L2/(K)		
SWITCHES			
S901	Addition	SFDSHXW225-3 [XA, PA, PE, PC] only	Voltage Selector $\triangle$
POWER TRANSFORMERS			
T1	SLT48DTL3A	SLT48DTE13E [EK, XL] SLT57D77E [XA, PA, PE, PC] SLT48DT10E [other]	Power Source $\triangle$
FUSES			
F1	Addition	XBA2C02T1B [XA, PA, PE, PC] only XBA2C05T1B [other]	250V, T200mA $\triangle$ 250V, T500mA $\triangle$
F2	Addition	XBA2C05T1B [XA, PA, PE, PC] only	250V, T500mA $\triangle$
CABINET AND CHASSIS PARTS			
1	SFADC11M01E	SFADC11N01E	Dust Cover
5	SFACC12N01E	SFACC12N01E $\bigcirc$ SFACC12N21E $\odot$	Cabinet
5-1	SFKBBD2N01	SFKBBD2N01 $\bigcirc$ SFKBBD2N21 $\odot$	Badge
6	SFGCQ06N02	SFGCQ06X01 [XA, PA, PE, PC] SFGCQ06N02 [other]	Rubber Cushion
7	SFKKC12N01	SFKKC12S01	Ornament Plate
43	SFACC13N011	SFACC13N011 $\bigcirc$ SFACC13N211 $\odot$	Cover
44	SFNNC12M01	SFNNC12X01 [XA] SFNNC12R01 [EG] SFNNC12P02 [PC] SFNNC12S01 [E, EC] SFNNC12G01 [EK, XL] SFNNC12P01 [PA, PE] SFNNC12Q01 [other]	Name Plate
45	SFDJHSC0491	SFDJHSC0491 [XL] SFDJHSC04912 [XA, PA, PE, PC] SFDJHSC0516 [other]	AC Socket $\triangle$

Ref. No.	Change of Part	Area & Color	Part Name & Description
	SL-L1 [M] $\rightarrow$ SL-L1/(K)		
60	SFACC13N012	SFACC13N012 SFACC13N212	Except for [XA, PA, PE, PC] $\bigcirc$ Except for [XA, PA, PE, PC] $\odot$ Cover
TONER ARM PARTS			
72	Addition	EPC-P33 [PA, PE, PC] EPC-P30 [other]	* Cartridge
73	Addition	EPS-33ES [PA, PE, PC] EPS-30ES [other]	* Stylus
ACCESSORIES			
A1	SFNUC12M01	SFNUC12G01 [EK] SFNUC12I01 [EI] SFNUC12P01 [PA, PE, PC] SFNUC12S01E [E, EB, EH, EC] SFNUC12X01 [other]	Instruction Book
A4	SFDAC05M02	SFDAC05G02 [EK] SFDAC05L01 [XL] SFDAC05X02 [XA] SFDAC05N01 [PA, PE, PC] SFDAC05E02 [other]	AC Cord $\triangle$
A5	Addition	SFDKI19118 [XA] only	Pug $\triangle$
A6	Addition	QJP0603S [PA, PE, PC] only	Adaptor $\triangle$
PACKING PARTS			
P1	SFHPC12M01	SFHPC12C01 [EF] only $\bigcirc$ SFHPC12M01 [other] $\bigcirc$ SFHPC12F21 [EF] only $\odot$ SFHPC12S21 [other] $\odot$	Carton Box

• Addition of cartridge and stylus



■ SCHEMATIC DIAGRAM AND PRINTED CIRCUIT BOARD

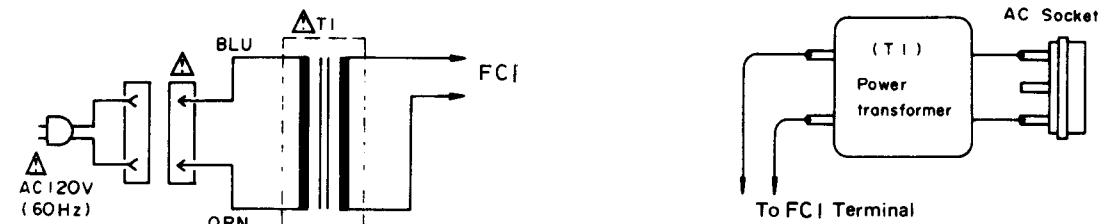
Important safety notice:

Components identified by Δ mark have special characteristics important for safety.

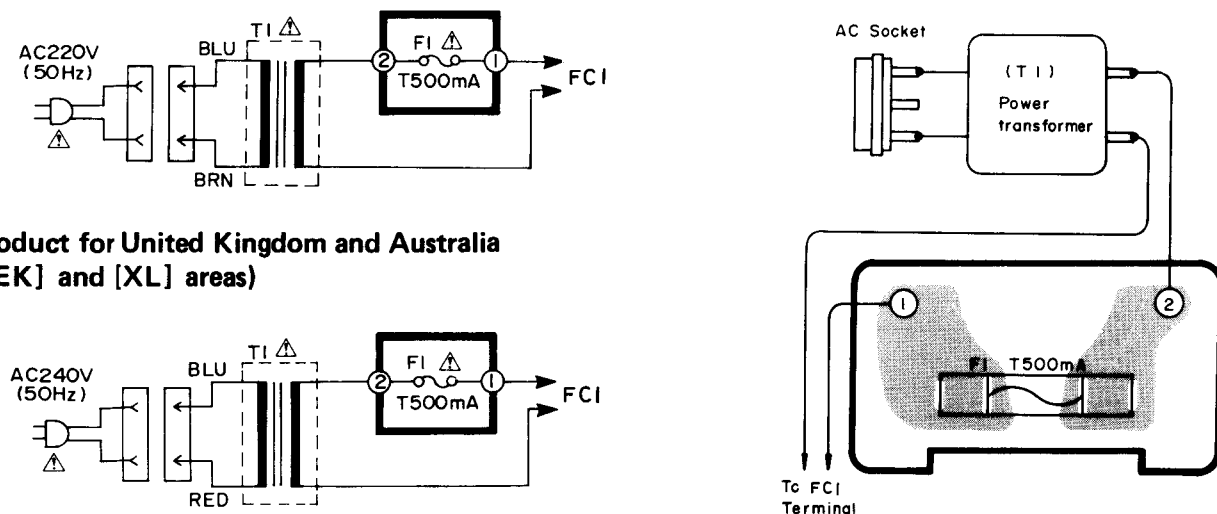
When replacing any of these components use only manufacturer's specified parts.

• Change in power source circuit

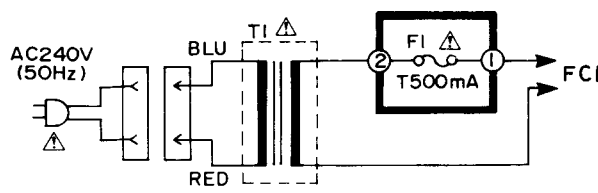
Product for U.S.A. ([M] area)



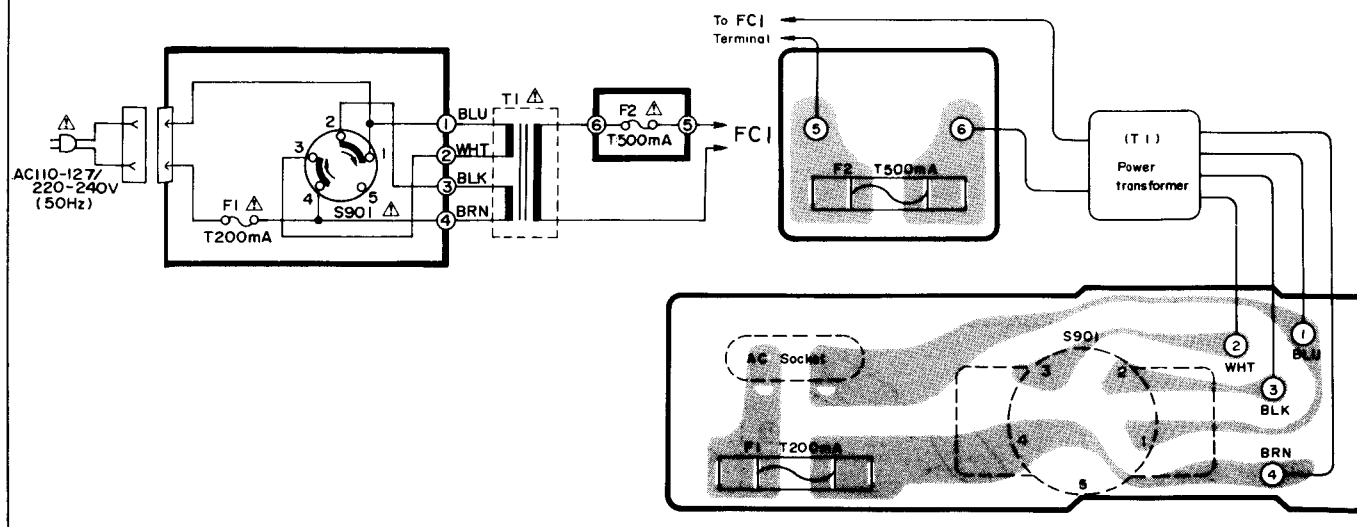
Product for Continental Europe ([E], [EG], [EB], [EH], [EF], [Ei] and [EC] areas.)



Product for United Kingdom and Australia ([EK] and [XL] areas)



Product for Southeast Asia, Oceania, Africa, Middle Near East, Central South America, Far East PX, European Military and European Audio Club. ([XA], [PA], [PE], and [PC] areas.)



■ REPLACEMENT PARTS LIST

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. $\odot$ -marked parts are used for black only, while $\circ$ -marked parts are for silver type only.
4. Part other than $\odot$ - and $\circ$ -marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.
6. The "S" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

Ref. No.	Part. No.	Description
INTEGRATED CIRCUIT		
IC1	AN7812	Regulator
IC101	AN6638	Turntable Drive
IC201	AN6683	Turntable Control
IC301	MN1420FPQ	Microcomputer
IC302	AN6914	Comparator
IC401	AN6690	Arm Motor Drive & Blank Groove Detection
TRANSISTOR		
Q1	2SC1383	Regulator
Q2, 401	2SD638	Regulator
Q301, 303, 308, 311	2SD636	Switching
Q302	2SD892	Switching
Q305, 306, 309, 310, 312	2SB641	Switching
DIODE		
D1~4	Δ SVD1SR35200V	Rectifier
D5	MA4056	5.6V Zener
D6~9	SVDAY5525S	LED
D10	MA4100	10V Zener
D301~303, 305, 306, 312, 402, 403	MA 165	Switching
D307, 310	SVDGL-9HY82	LED
D308	MA4062	6.2V Zener
D309	SVDGL-9PG2	LED
D311	LN513RAM	LED
D401	MA4068	6.8V Zener
D501, 701	$\odot$ MA162A	Switching
D502	SVDSLV31VC3	LED
CRYSTAL		
X201	SVQSH41TR	4.193 MHz
VARIABLE RESISTOR		
VR301	EVN61AA00B24	Clock Frequency Adjustment, 20 k Ω (B)
VR302	EVJE1AF20B54	Stylus Cue-down Position Control, 50 k Ω (B)
VR401	EVN61AA00B55	Sensor Gain Adjustment, 500k Ω (B)
VR402	EVN61AA00B25	Sensor Resolution Adjustment, 200k Ω (B)
VR501	EVNKOAA00B14	Servo Gain Adjustment, 10k Ω (B)
RELAY		
RL701	SFDYQ11N02	Muting
SWITCH		
S1	Δ SFDSC02N02	Power
S901	Δ SFDSHXW225-3	Voltage Selector
[XA, PA, PE, PC] only		

Ref. No.	Part. No.	Description
S301~306	EVQQS405K	Operation
S307	SFDSC05N01	Reset
S308, 309, 401	SFDHSW08314	Size, Speed and Sens Selector
S601	SFDSC02N03	Rest position
PHOTO INTERRUPTER		
PC501	0N1186	Offset Angle Sensor
PC502	SFPABJ0205R	Blank Groove Sensor
PC601	0N1161	Tonearm Position Sensor
HALL ELEMENT		
H101, 102	0H-002	Turntable Position Detector
POWER TRANSFORMER		
T1	Δ SLT48DTE13E	Power Source
[EK, XL]		
T1	Δ SLT57DT7E	Power Source
[XA, PA, PE, PC]		
T1 [other]	Δ SLT48DT10E	Power Source
FUSE		
F1	Δ XBA2C02T1B	250V, T200 mA
[XA, PA, PE, PC]		
F1 [other]	Δ XBA2C05T1B	250V, T500 mA
F2	Δ XBA2C05T1B	250V, T500 mA
[XA, PA, PE, PC] only		
CABINET AND CHASSIS PARTS		
1	SFADC12N01E	Dust Cover (1)
1-1	SFGZJ02N01	Rubber Cushion (2)
2	SFGZC02N01	Rubber Cushion (2)
3	SFUMC02N14	Latch, Dust cover (2)
4	SFUMQ06N22	Latch, Dust cover (2)
5	$\circ$ SFACC12N01E	Cabinet (1)
5	$\odot$ SFACC12N21E	Cabinet (1)
5-1	$\circ$ SFKBB2N01	Badge (1)
5-1	$\odot$ SFKBB2N21	Badge (1)
6	SFGCQ06X01	Rubber Cushion (2)
[XA, PA, PE, PC]		
6 [other]	SFGCQ06N02	Rubber Cushion (2)
7	SFKKC12S01	Ornament Plate (1)
8	SRKTK15N26	Knob, Power (1)
10	SFKTC13N01	Knob, Operation (1)
11	SFUPC13N01	Guide (1)
13	SFUMC13N01	Holder (1)
14	SFGBC10-01	Belt, Tonearm Drive (1)
15	SFUMQ06N06A	Worm Ass'y (1)
16	SFMHC02N02R	Motor, Tonearm Drive (1)
17	SFUMC02N07	Motor Cover (1)
18	SFUMC02N05	Lever, Rest Switch (1)
19	SFUMQ06N09	Holder, Rest Switch (1)
20	SFUZC05N02E	Rope Ass'y (1)

Ref. No.	Part. No.	Description
21	SFXJQ06N01	Guide Rail (1)
22	SFUMQ06N07	Clamper, Guide Rail (1)
23	SFGCQ06N01	Cushion, Guide Rail (1)
24	SFUMC02N06	Base, Rest Switch (1)
25	SFUPBL3N11E	Base, Motor (1)
26	SFUML11R03	Wheel, Tonearm Drive (1)
27	SFUMC02N10	Holder, Lead Wire (1)
28	SFUZC02N01	Rod, Rest Switch (1)
29	SFUMC02N12	Holder, Lead Wire (1)
30	SFUMV05N23	Cap (1)
31	SFATQ06N01E	Hinge (2)
32	SFUKE13N01E	Base (1)
33	SFGCQ06N03	Rubber Cushion, Dust Cover (2)
34	SFGCC05N05	Cushion, Guide Rail (1)
35	SFUMC05N22	Pulley (1)
36	SFQCC05N01	Spring, Insulator (4)
37	SFGAJ02N01	Insulator (4)
38	SFAUC13N01	Bottom Cover (1)
39	SFDJC13N03E	Connector Ass'y (1)
40	SFKTC13N01	Knob, Selectors (3)
41	SFKTC06N02	Knob, Cueing Down Position Control (1)
42	SFUMC05N15	Holder, Rest Switch (1)
43	$\circ$ SFACC13N011	Cover (1)
43	$\odot$ SFACC13N211	Cover (1)
44 [XA]	SFNNC12X01	Name Plate (1)
44 [EG]	SFNNC12R01	Name Plate (1)
44 [PC]	SFNNC12P02	Name Plate (1)
44 [E, EC]	SFNNC12S01	Name Plate (1)
44	SFNNC12G01	Name Plate (1)
[EK, XL]		
44	SFNNC12P01	Name Plate (1)
[PA, PE]		
44 [other]	SFNNC12Q01	Name Plate (1)
45 [XL]	Δ SFDJHSC0491	AC Socket (1)
45	Δ SFDJHSC04912	AC Socket (1)
[XA, PA, PE, PC]		
45 [other]	Δ SFDJHSC0516	AC Socket (1)
46	SFDJ02N04E	Jack, Phono Output (1)
47	SFWE06N01	45 rpm Adaptor (1)
48	SFQAC06N01	Spring (1)
49	SFTGQ06N01	Turntable Mat (1)
50	SFTEQ05N01	Turntable Platter (1)
51	SFTMC07-01E	Rotate Magnet, Turntable Platter (1)
52	SFMGQ34N01	Cover, Stator Coil (1)
53	SFMZC06N01R	Stator Frame Ass'y (1)
54	SFDJC13N02E	Connector, Ass'y (1)
55	SFGKQ06N01	Cap (1)
56	SFQA913-01	Spring (1)
57	SFQHQ34N22	Spring (1)
58	SFQPC05N01	Spring, Rest Switch (1)
59	SFUMC13N03	Prism (1)
60	$\circ$ SFACC13N012	Cover (1)
60	$\odot$ SFACC13N212	Cover (1)

Ref. No.	Part. No.	Description	
TONEARM PARTS			
61	SFPAMJ0201A	Tonearm Ass'y	(1)
62	SFPKDJ0201R	Tonearm Base	(1)
62-1	SFSP00504	Spring	(1)
63	SFPGML1101	Rubber, Guide	(2)
65	SFPABJ0205R	Sensor Ass'y	(1)
66	SFDZC05N01E	Solenoid Ass'y	(1)
67	SFPCS0Q601	Cover, Sensor Case	(1)
68	SFPAK0Q601	Plate	(1)
69	SFPCSJ0201	Case	(1)
70	SFPGM0Q601	Rubber	(1)
71	SFSP00302	Spring, Adjustment	(2)
72	EPC-P33	★ Cartridge	(1)
[PA, PE, PC]			
72 [other]	EPC-P30	★ Cartridge	(1)
73	EPS-33ES	★ Stylus	(1)
[PA, PE, PC]			
73 [other]	EPS-30ES	★ Stylus	(1)
SCREWS, WASHERS AND NUTS			
N1	SFXG006N01	Screw	(2)
N2	⑤ XTV3+10BFN	Screw, ③×10	(11)
N3	XTW3+14TFZ	Screw, ③×14	(2)
N4	XTV3+6JFZ	Screw, ③×6	(4)
N5	XTW3+14QFYR	Screw, ③×14	(6)
N6	XSN3+30S	Screw, ③×30	(1)
N7	XWE3D10	Washer, φ3	(1)
N8	XNC3HS	Nut	(2)
N9	CSTW3	Washer	(2)
N10	XWE3A8BW	Washer	(1)
N11	XTV3+20J	Screw, ③×20	(1)

Ref. No.	Part. No.	Description	
N12	XTN16+10G	Screw, ③1.6×10	(1)
N13	⑤ XTV3+6BFN	Screw, ③×6	(4)
N14	SFXWC06N02	Washer	(1)
N15	⑤ XSN3+5S	Screw	(3)
N16	SFPEV0Q601	Screw, Cartridge	(1)
N17	XTS26+6JFZ	Screw, ③2.6×6	(1)
N18	XYN2+C4FZ	Screw, ③2×4	(1)
N19	SFXN623-1	Nut	(1)
N20	SFPTN00301	Screw	(1)
N21	XSN3+12S	Screw, ③3×12	(1)
N22	XWA3B	Washer, φ3	(1)
N23	XTN23+6JFZ	Screw, ③2.3×6	(1)
N24	XTV3+8BFZ	Screw, ③3×8	(1)
ACCESSORIES			
A1 [EK]	SFNUC12G01	Instruction Book	(1)
A1 [Ei]	SFNUC12I01	Instruction Book	(1)
A1	SFNUC12P01	Instruction Book	(1)
[PA, PE, PC]			
A1	SFNUC12S01E	Instruction Book	(1)
[E, EB, EH, EC]			
A1 [other]	SFNUC12X01	Instruction Book	(1)
A2	SFDHC05N01	Phono Output Cord	(1)
A3	SFDLJ02N11E	Ground Wire	(1)
A4 [EK]	△ SFDAC05G02	AC Cord	(1)
A4 [XL]	△ SFDAC05L01	AC Cord	(1)
A4 [XA]	△ SFDAC05X02	AC Cord	(1)
A4	△ SFDAC05N01	AC Cord	(1)
[PA, PE, PC]			
A4 [other]	△ SFDAC05E02	AC Cord	(1)

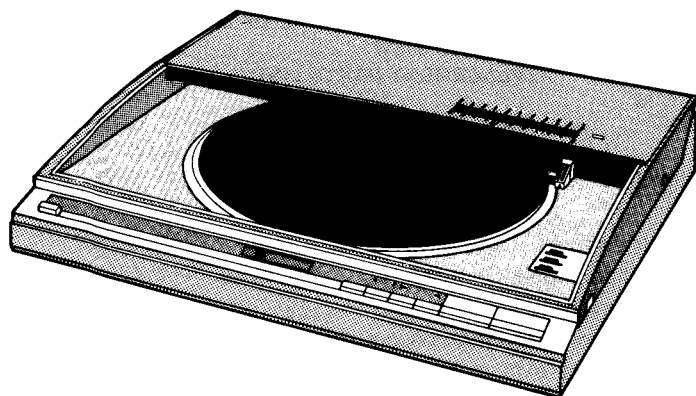
Ref. No.	Part. No.	Description	
A5 [XA]	△ SFDKI19118	Plug	(1)
only			
A6	△ QJP0603S	Adaptor	(1)
[PA, PE, PC]			
only			
PACKING PARTS			
P1 [EF]	○ SFHPC12C01	Carton Box	(1)
only			
P1	○ SFHPC12M01	Carton Box	(1)
[other]			
P1 [EF]	⊗ SFHPC12F21	Carton Box	(1)
only			
P1	⊗ SFHPC12S21	Carton Box	(1)
[other]			
P2	SFHHC13N01	Pad, Front	(1)
P3	SFHHC13N02	Pad, Rear	(1)
P4	SFHKC05N01	Clamper, Turntable Platter	(2)
P5	SFHQ06N01	Spacer, Tonearm	(1)
P6	SFHSC13N01	Spacer, Dust Cover	(1)
P7	SFYH60×60	Polyethylene Bag	(1)
P8	SFYH17×16	Polyethylene, Cord	(1)
P9	SFYF33B35	Polyethylene, Turntable Mat	(1)
P10	SFHDD04N01	Pad, Turntable Mat	(1)

Color	Areas	Color	Areas
(S) (K)	[E] Switzerland and Scandinavia.	(S) (K)	[XA] Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(S) (K)	[EK] United Kingdom.		
(S) (K)	[XL] Australia.		
(S) (K)	[EG] ... F.R. Germany.		
(S) (K)	[EB] Belgium.	(S) (K)	[PA] Far East PX.
(S) (K)	[EH] Holland.	(S) (K)	[PE] European Military.
(S) (K)	[EF] France.	(S) (K)	[PC] European Audio Club.
(S) (K)	[Ei] Italy.		
(S) (K)	[EC] Czechoslovakia.		

Service Manual

Turntable System

SL-L2



Color

(S) ... Silver Type

Area

[M] U.S.A.
[MC] Canada

T4P is the standard mark for the "P-mount" plug-in-connector system. Products carrying this mark are interchangeable and compatible with each other.

SPECIFICATIONS

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

■ Turntable section

Type:	Quartz direct drive Fully automatic turntable system
Features:	Auto start/Auto lead-in Auto return Auto stop Repeat play Direct music select play Forward and backward skip play Forward and backward search play Auto size select Record presence detection
Drive method:	Direct drive
Motor:	Brushless DC motor
Drive control method:	Quartz-phase-locked control
Turntable platter:	Aluminum die-cast Diameter 30 cm (12")
Turntable speeds:	33-1/3 rpm and 45 rpm Auto speed select (Manual selection possible)
Wow and flutter:	0.012% WRMS* 0.025% WRMS (JIS C5521) ±0.035% peak (IEC 98A Weighted)
*Measured by obtaining signal from built-in frequency generator of motor assembly.	
Rumble:	-56 dB (IEC 98A Unweighted) -78 dB (IEC 98A Weighted)

■ Tonearm section

Type:	Linear tracking tonearm 4-pivot gimbal suspension T4P
Effective length:	10.5 cm (4-1/8")
Tracking error angle:	Within ±0.1°
Effective mass:	9 g (including cartridge)
Resonance frequency:	12 Hz
Tonearm drive motor:	DC motor
Stylus pressure:	1.25 g (Fixed)
Applicable cartridge weight:	6 g
Phono cable capacitance:	150 pF

■ General

Power supply:	AC 120 V, 60 Hz
Power consumption:	14W
Dimensions: (W × H × D)	43 × 9 × 35 cm (16-15/16" × 3-17/32" × 13-25/32") (Maximum height when the dust cover is open.) 39 cm (15-11/32")
Weight:	5.1 kg (11.2 lb.)

Technics

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and Service Company
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Secaucus, New Jersey 07094

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Victoria Industrial Park
Carolina, Puerto Rico 00630

■ CONTENTS

	Page		Page
SAFETY PRECAUTION	2	BLOCK DIAGRAM	15, 16
LOCATION OF CONTROLS	3	CIRCUIT BOARD AND WIRING	
DISASSEMBLY INSTRUCTIONS	4 ~ 7	CONNECTION DIAGRAM	15, 16
HOW TO SET THE TONEARM DRIVE ROPE	7	SCHEMATIC DIAGRAM	19 ~ 22
MEASUREMENTS AND ADJUSTMENTS	8, 9	FUNCTION OF TERMINAL OF MN1420FPQ	22
TROUBLESHOOTING	10 ~ 12	EXPLODED VIEW	23 ~ 25
HOW TO REPLACE CHIPS	13	REPLACEMENT PARTS LIST	25, 26
RESISTORS AND CAPACITORS	14		

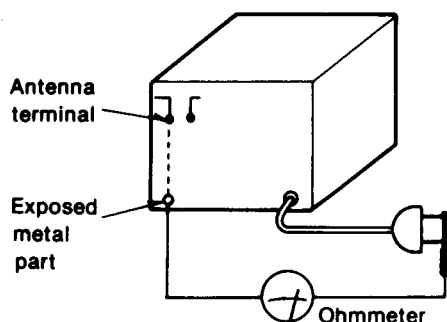
■ SAFETY PRECAUTION (This "safety precaution" is applied only in the U.S.A.)

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

● INSULATION RESISTANCE TEST

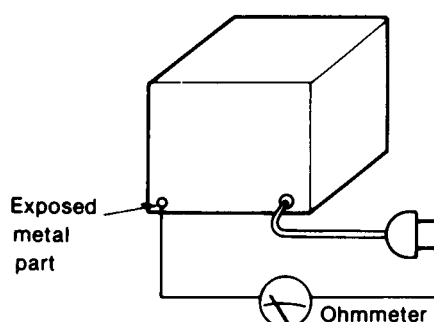
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with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

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



(Fig. A)

Resistance = $3\text{M}\Omega$ — $5.2\text{M}\Omega$

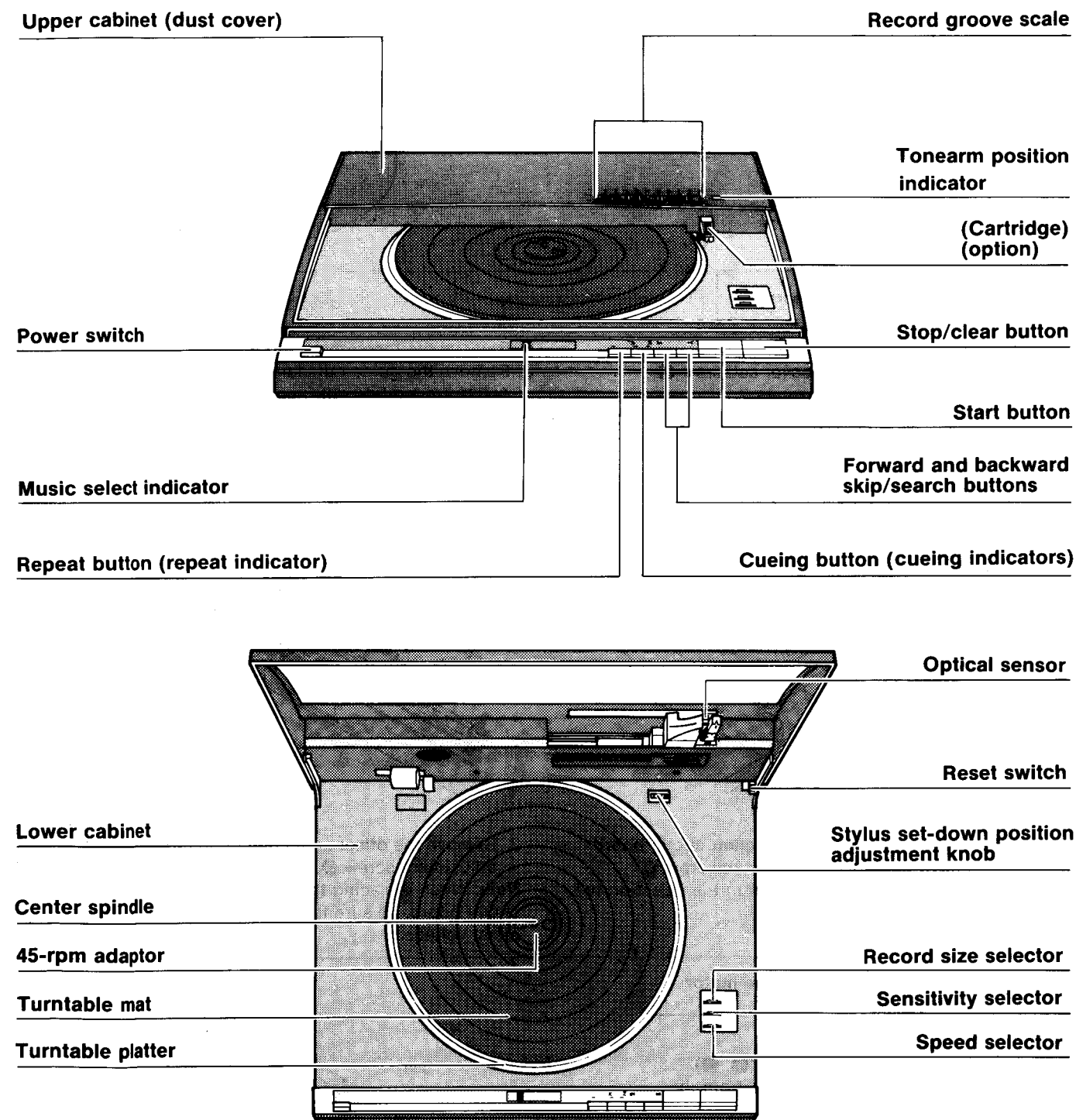


(Fig. B)

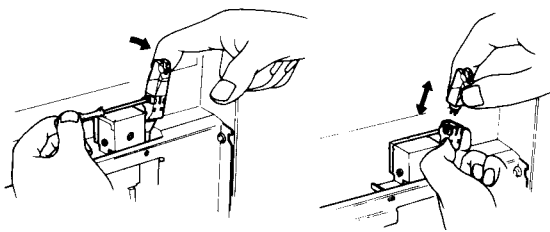
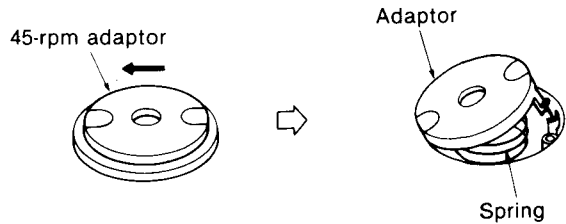
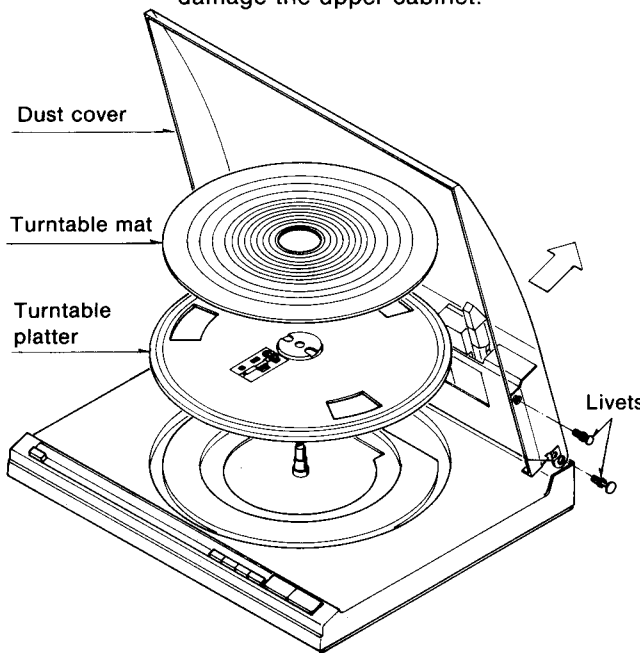
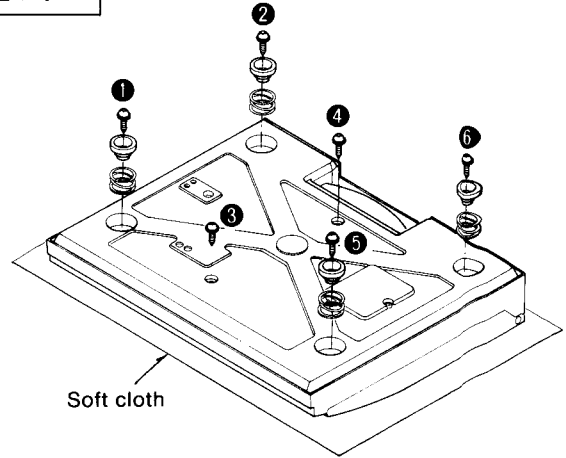
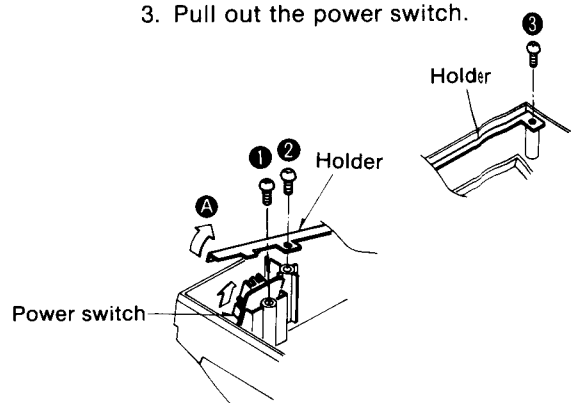
Resistance = Approx ∞

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

■ LOCATION OF CONTROLS



■ DISASSEMBLY INSTRUCTIONS

Ref. No 1	How to remove the cartridge	Ref. No 3	How to remove the 45 rpm adaptor
Procedure 1	1. Open the upper cabinet. 2. Remove the setscrew and pull out the cartridge. Note: When attaching the cartridge again, match the tonearm connector with the cartridge pin, then completely insert it and tighten the setscrew. 	Procedure 2 + 3	• The 2 adaptor claws fit into the turntable platter, so remove the 45 rpm adaptor by pushing it in the direction of the arrow.  Note: When removing the 45 rpm adaptor, remove the turntable platter; otherwise the 45 rpm adaptor claws will be broken.
Ref. No 2	How to remove the turntable platter	Ref. No 4	How to remove the bottom board
Procedure 2	1. Open the upper cabinet. 2. Remove the turntable mat, and lift the turntable platter. Note: •When removing the turntable platter, it is not necessary to remove the 45 rpm adaptor. •The turntable platter is tightly fitted to the center spindle. When removing the turntable platter, take care not to damage the upper cabinet. 	Procedure 2 + 4	1. Turn over the unit on a soft cloth. 2. Remove the 6 setscrews (① ~ ⑥). 
Ref. No 5	How to remove the power switch		
Procedure 2 + 4 + 5	1. Remove the 3 setscrews (① ~ ③). 2. Lift the holder slightly in the direction of arrow A. 3. Pull out the power switch. 		

★ To remove the dust cover

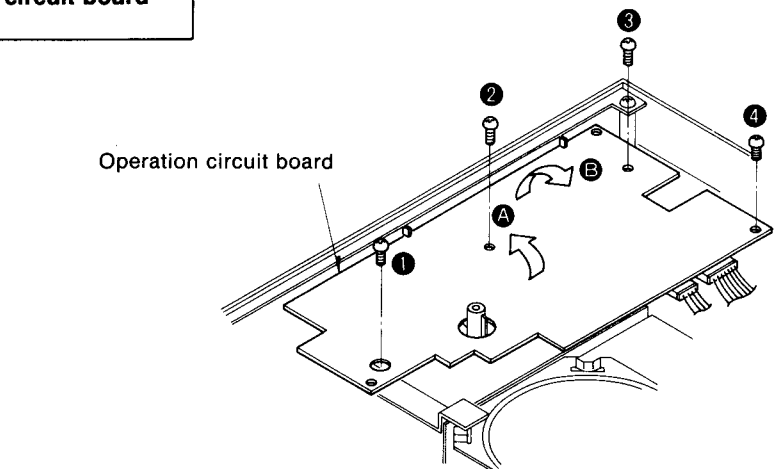
1. Pull out the 4 right and left rivets.

2. Remove the dust cover in the direction of the arrow.

★ To remove the dust cover

1. Pull out the 4 right and left rivets.
2. Remove the dust cover in the direction of the arrow.

Ref. No 6	How to remove the operation circuit board
Procedure 2 → 4 → 6	1. Remove the 4 setscrews (① ~ ④). 2. Remove the operation circuit board in the direction of arrows (A, B).



Operation circuit board

Holder

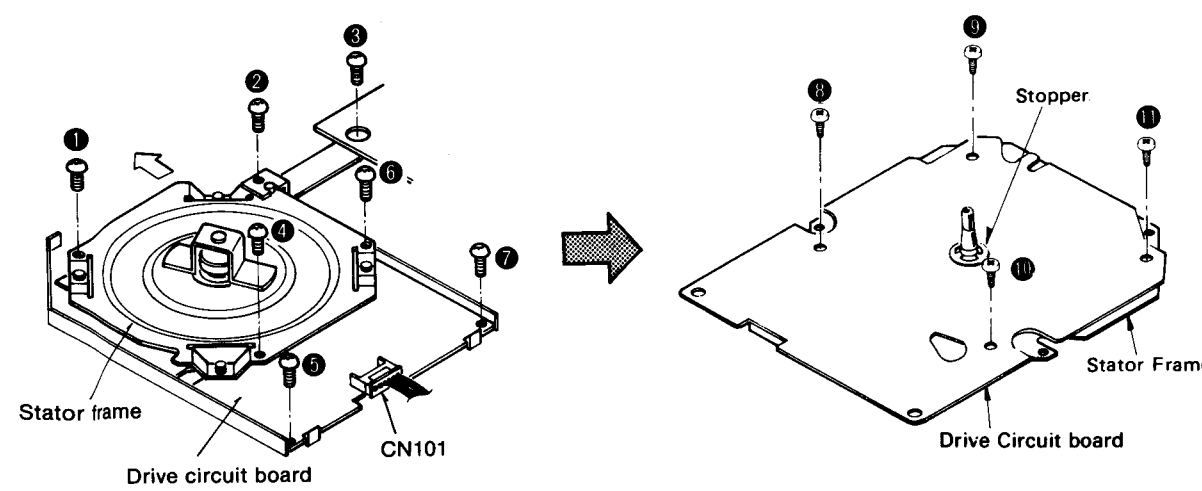
Operation button

Operation circuit board

★ **Caution when replacing the board**

1. The operation circuit board fits into guide rails.
2. Match the operation button to the hole in the holder.

Ref. No 7	How to remove the drive circuit board and stator frame
Procedure 2 → 4 → 7	1. Remove the 7 setscrews (① ~ ⑦). 2. Pull out the connector CN101. 3. Remove the stator frame in the direction of the arrow. 4. Cut off the stopper with nippers. 5. Remove the 4 setscrews (⑧ ~ ⑪). 6. Then, separate the drive circuit board and stator frame.



Stator frame

Drive circuit board

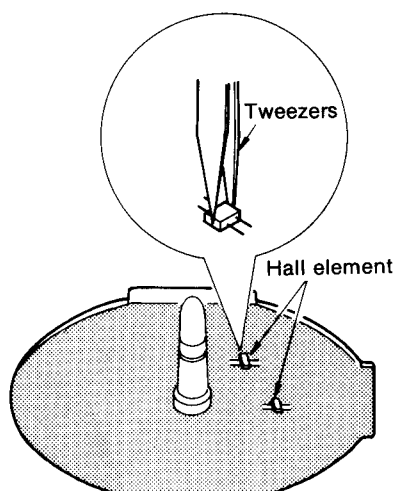
CN101

Stopper

Stator Frame

Drive Circuit board

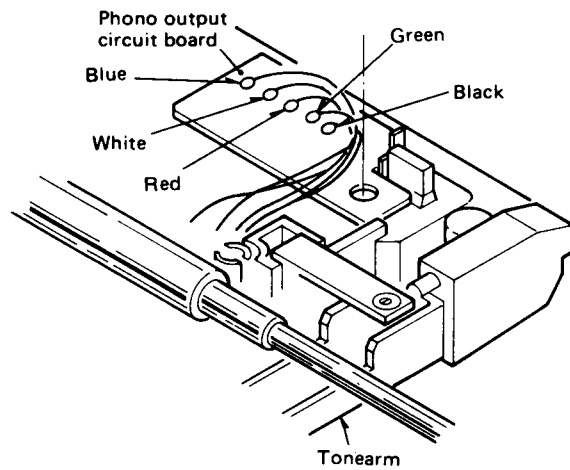
Ref. No 8	How to remove the Hall element
Procedure 2 → 8	1. Remove the terminal solder by use of solder sucker. 2. Hold the Hall element with a tweezers and remove it while touching the soldering iron to the terminal. Note: Fit the Hall element with the part No. print up.



Tweezers

Hall element

Ref. No 9	How to remove the tonearm
Procedure 2 → 4 → 9	1. Remove the dust cover. 2. Remove the shield cover setscrew ①. 3. Unsolder the 5 lead wires. 4. Turn the worm gear with your fingers to move the tonearm inward. 5. Remove the tonearm setscrew ②. 6. Remove the guide rail clamber, and pull out the guide rail. 7. Remove the tonearm in the direction of arrow ④.



Phono output circuit board

Blue

White

Red

Green

Black

Tonearm

Shield cover

Lead wires

Clamber

Indicator cover

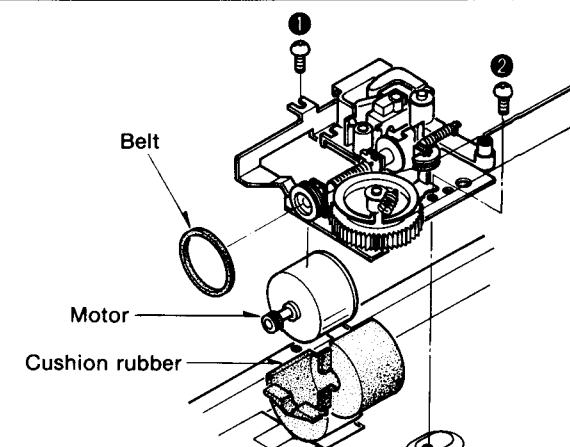
★ **To remove offset angle detection circuit board**

1. Remove the indicator cover setscrew ③.
2. Remove the indicator cover in the direction the arrow ⑤.

3. Remove the offset angle detection circuit board adjustment screw ④.

Note: When replacing the offset angle detection circuit board, be sure to adjust the servo gain and offset voltage.

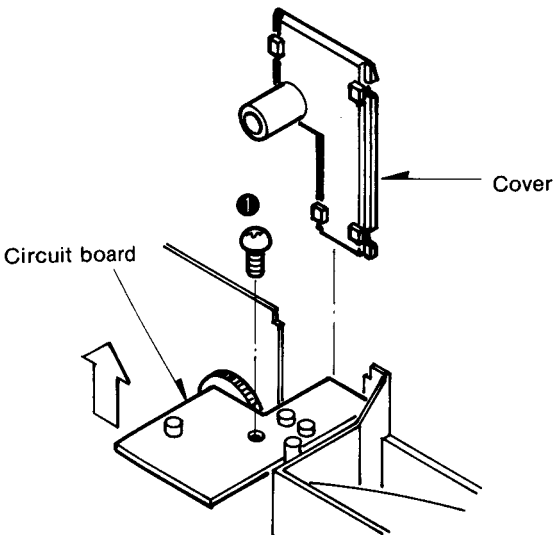
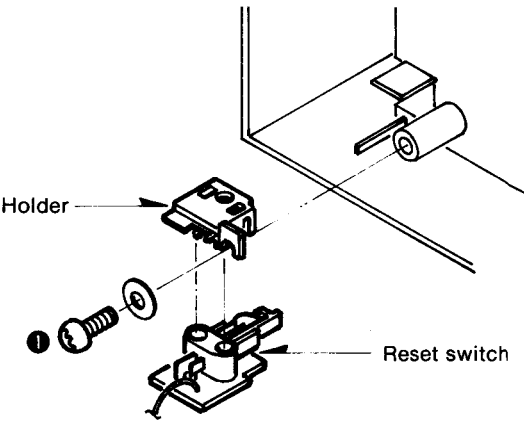
Ref. No 10	How to remove the arm drive motor
Procedure 2 → 4 → 10	1. Remove the dust cover. 2. Remove the 2 setscrews (①, ②). 3. Unsolder the 2 lead wires from the motor. 4. Remove the belt and arm drive motor. 5. Open the cushion rubber. Note: Connection of the arm drive motor Red wire..... (+) terminal of the arm drive motor. Blue wire..... (-) terminal of the arm drive motor. • An arrow mark is the (-) terminal.



Belt

Motor

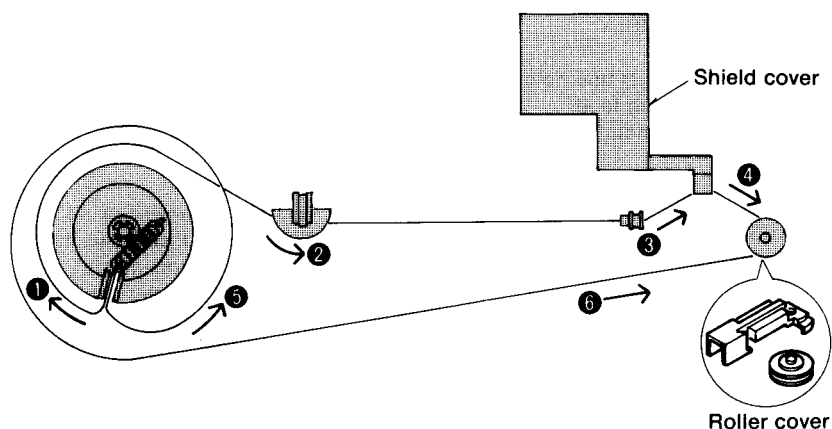
Cushion rubber

Ref. No 11	How to remove the stylus set-down position volume circuit board	Ref. No 12	How to remove the reset switch
Procedure 2 ▶ 4 ▶ 11	1. Remove the cover. 2. Remove the stylus set-down position volume circuit board setscrew ❶.	Procedure 2 ▶ 4 ▶ 12	1. Remove the screw ❶. 2. Remove the 2 claws of the switch holder. 3. Unsolder the 2 switch terminals. Note: When replacing the reset switch, be sure to open the upper cabinet.
			

■ HOW TO SET THE TONEARM DRIVE ROPE

When setting the rope, follow the procedure given below.

1. Remove the dust cover and tonearm cover.
2. Remove the roller cover.
3. Set the rope in the order of steps 1 ~ 6.
4. Fit the rope connector to the tonearm.
5. Set the roller cover and turn the worm gear by hand to see that the tonearm moves.



■ MEASUREMENTS AND ADJUSTMENTS

• Equipment used and condition of the set

1. Oscilloscope
2. DC voltmeter
3. Record (SFTR007) for adjustment
4. Set the optical sensor sensitivity selector to "M".

• Caution

To adjust servo gain and offset voltage.....

1. Remove the dust cover.
2. Disassembly the tonearm as in Fig. 7.

Step	Item	Preparations	Parts adjusted	Procedure
1	Start position	1) Open the upper cabinet and put on the record. 2) Turn the power switch on. 3) Push the "start" switch.	Start position adjust screw. (Fig. 1)	1) Turn the start position adjusting screw. If it descends between tunes, turn the screw counterclockwise.
2	Clock frequency	1) Connect lead wire with clip to IC301 29-pin and 1-pin of operation circuit board. 2) Connect the oscilloscope to IC301 8-pin.	VR301 (Fig. 2)	1) Turn the power switch on. 2) Adjust VR301 so that the cycle of output waveform is $1.6\text{msec} \pm 0.06\text{msec}$. (Fig. 3)
3	Sensor gain	1) Connect DC voltmeter to IC401 12-pin (+) and ground (-). 2) Put on the record for adjustment with side A up.	VR401 (Fig. 2)	1) Turn the power switch on. 2) Tonearm is on a between songs gap (blank area of the record). 3) Adjust VR401 so that the output voltage is $8.5 \pm 0.3\text{V}$.
4	Sensor resolution	1) Connect the oscilloscope to the IC401 9-pin (+) and ground (-). 2) Put on the record for adjustment with side A up.	VR402 (Fig. 2)	1) Turn the power switch on. 2) Keep the F skip switch depressed to move the tonearm. (Output is delivered between the tunes.) 3) Adjust VR402 so that the peak output between tunes is $3.0 \pm 0.3\text{V}$. (Fig. 4)
5	Stylus cue-down position	1) Open the upper cabinet and hold the cabinet switch with tape. 2) Put on the record for adjustment with side B up. 3) Close the upper cabinet. 4) Connect the unit to the amplifier (Connect the speakers to the speaker terminals.)	VR302 (Fig. 5)	1) Turn the power switch on. 2) Press the F skip switch twice and then press the start switch. 3) After completion of cueing, again press the B skip switch to cue down. 4) Make sure that the descending position is at count "18~19".
6	Tonearm offset angle	1) Remove the dust cover. (Refer to "DISASSEMBLY INSTRUCTIONS.") 2) Open the upper cabinet and hold the cabinet switch with tape. 3) Close the upper cabinet. 4) Put on the record.	Adjusting screw (Fig. 6)	1) Turn the power switch on. 2) Keep the F skip switch depressed to move the tonearm. 3) Turn the adjusting screw so that the arm center matches the V-groove of the lift bar.
7	Servo gain and offset voltage	1) Remove the dust cover. (Refer to "DISASSEMBLY INSTRUCTIONS.") 2) Open the upper cabinet and hold the cabinet switch with tape. 3) Connect the DC voltmeter to CN301 5-pin (+) 2-pin (-). 4) Remove the sensor cover.	VR501 (Servo gain) (Fig. 7) Screw (Offset voltage) (Fig. 7)	1) Turn the power switch on. 2) Keep the F skip switch depressed to move the tonearm. 3) Open the upper cabinet. 4) Completely shift the tonearm to the left. Then, adjust VR501 so that the voltage is 6.0V (Servo gain). 5) Set the tonearm to the center and make sure that the output voltage is 3.0V. 6) If the voltage is not 3.0V, adjust screw so that the output voltage is 3.0V (Offset voltage).

• Adjustment points

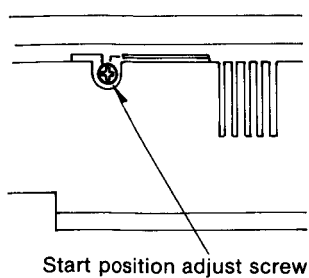


Fig. 1

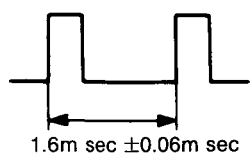


Fig. 3



Fig. 4

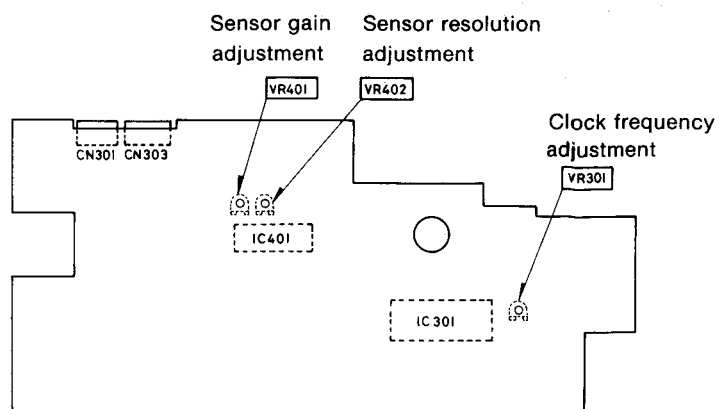


Fig. 2

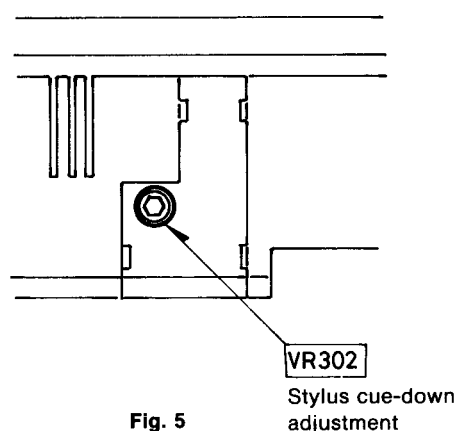


Fig. 5

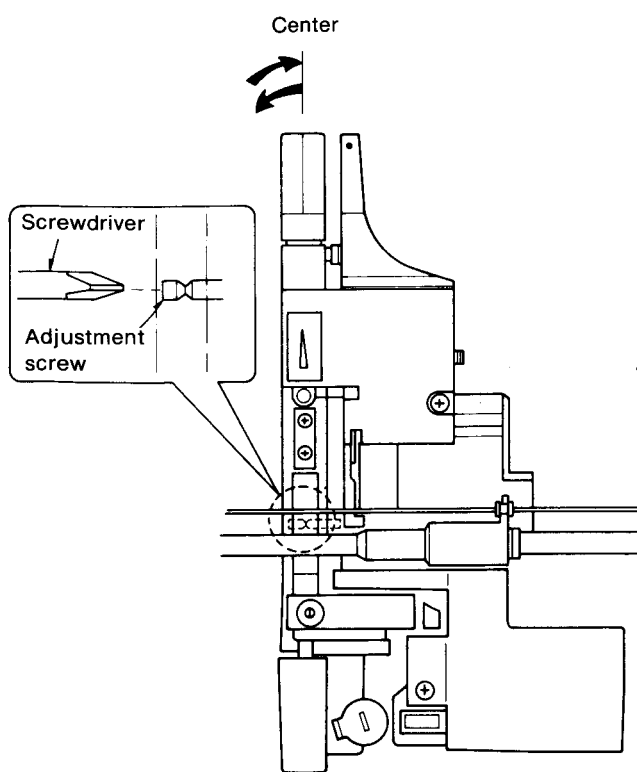


Fig. 6

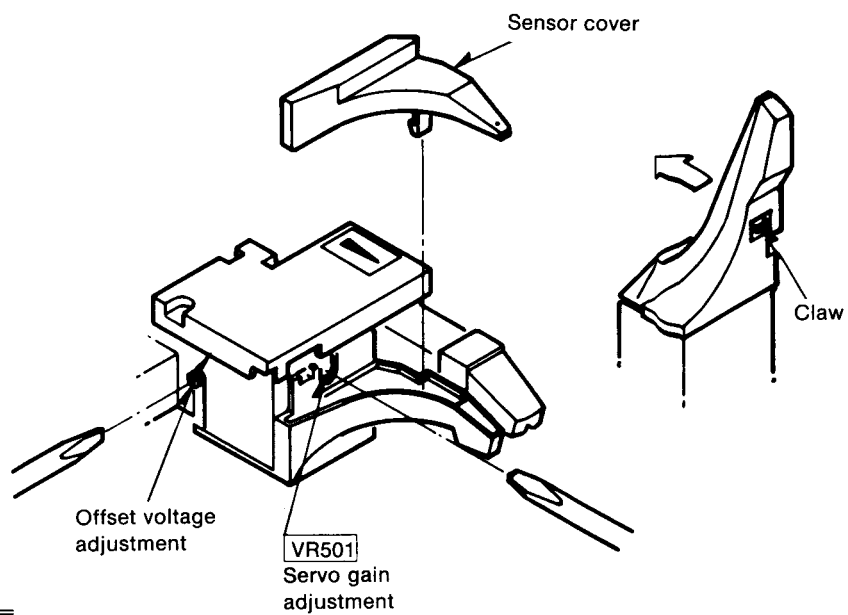


Fig. 7

■ TROUBLESHOOTING

1. How to use the repair table (Fig. 8)

- ① Remove the bottom board.
- ② Remove the operation circuit board and connect the P.C.B. ground terminal to the chassis (Stator frame.)
- ③ Put the unit on the repair table.
- ④ Fit the turntable platter and put on the turntable mat.
- ⑤ Put on the record and check the circuits from under the unit.

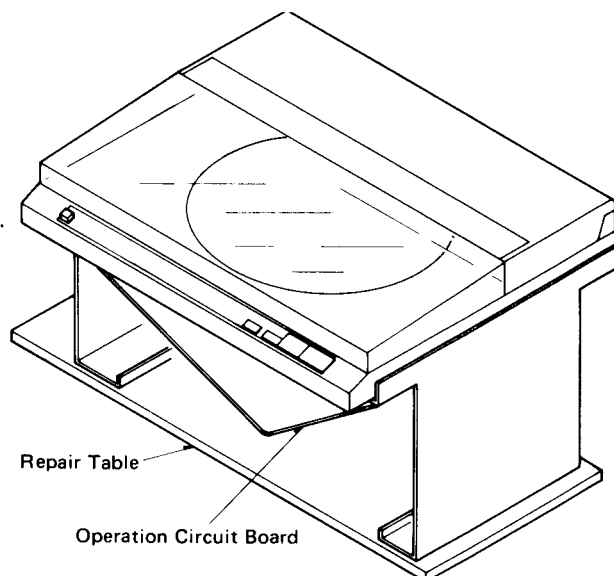


Fig. 8

2. How to raise the set (Fig. 9)

Note: Turntable platter is not fixed on the center spindle.
Take care so that the turntable platter will not come loose. Also, take care allow the set to fall down.

- ① Remove the bottom board.
- ② Completely open the upper cabinet.
- ③ Hold the reset (cabinet) switch with the tape.
- ④ Fit the turntable platter.
- ⑤ Raise the unit and check the circuits.

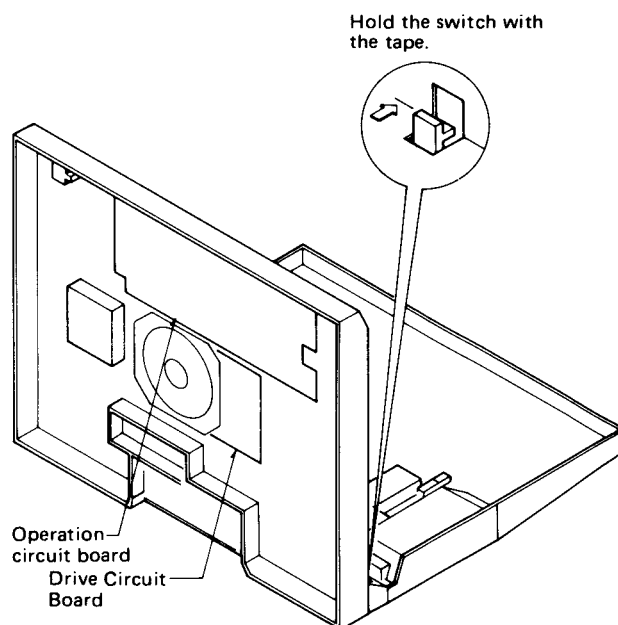


Fig. 9

3. How to turn over the set (Fig. 10)

Note: This purpose is to check the voltage of each circuit during stop of the turntable.

- ① Remove the turntable platter and turn over the unit.
- ② Remove the bottom board.
- ③ Turn the power switch "on" and check the voltage.

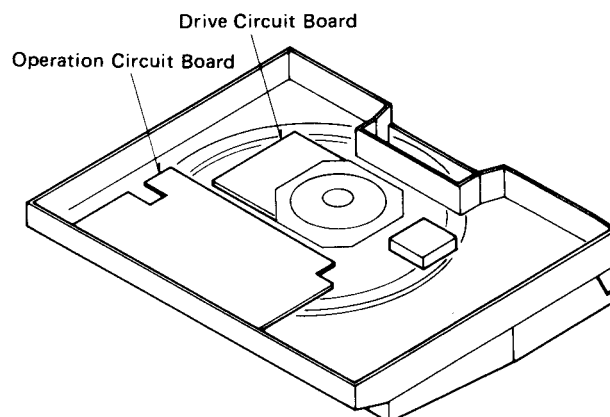
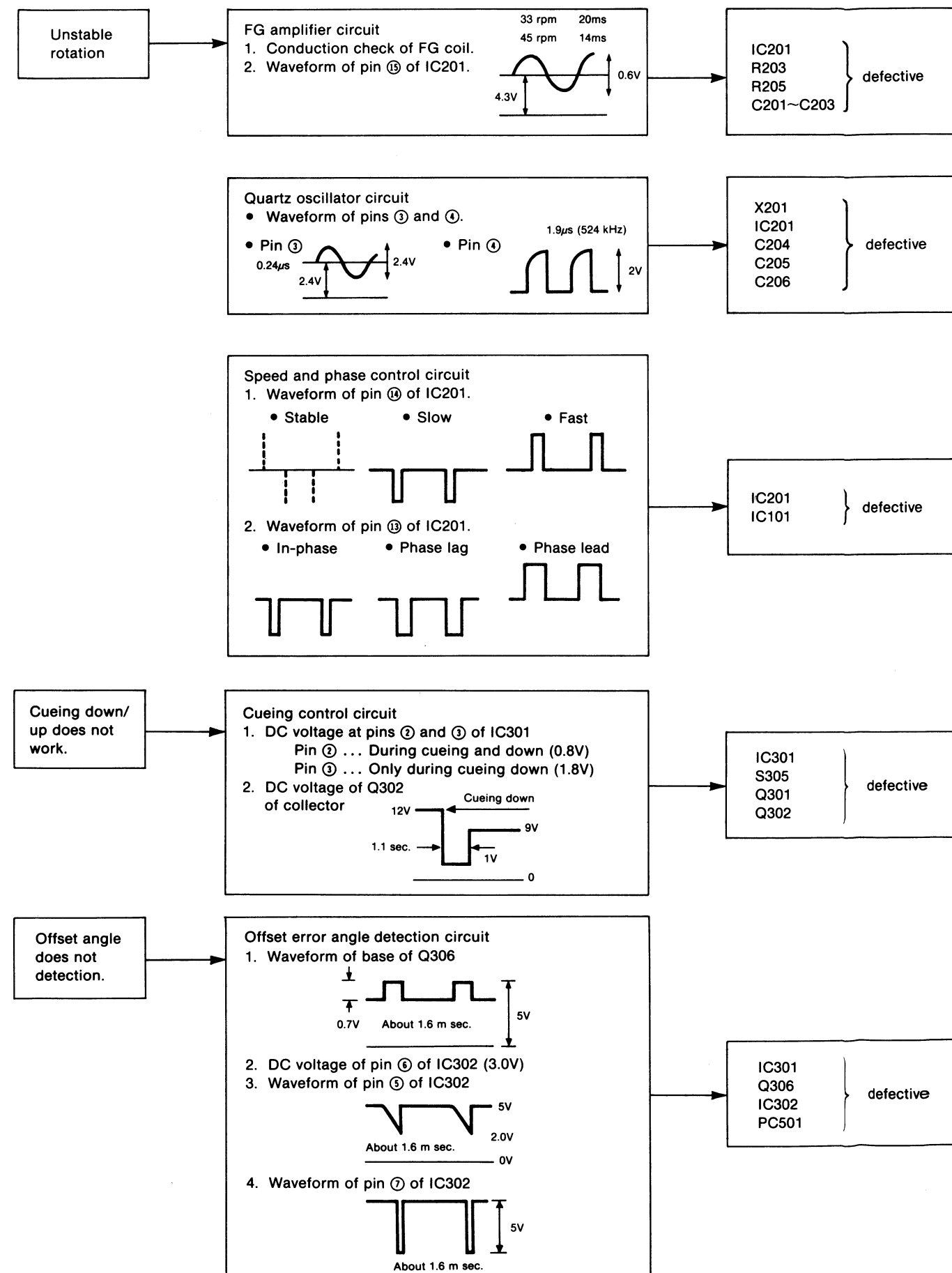
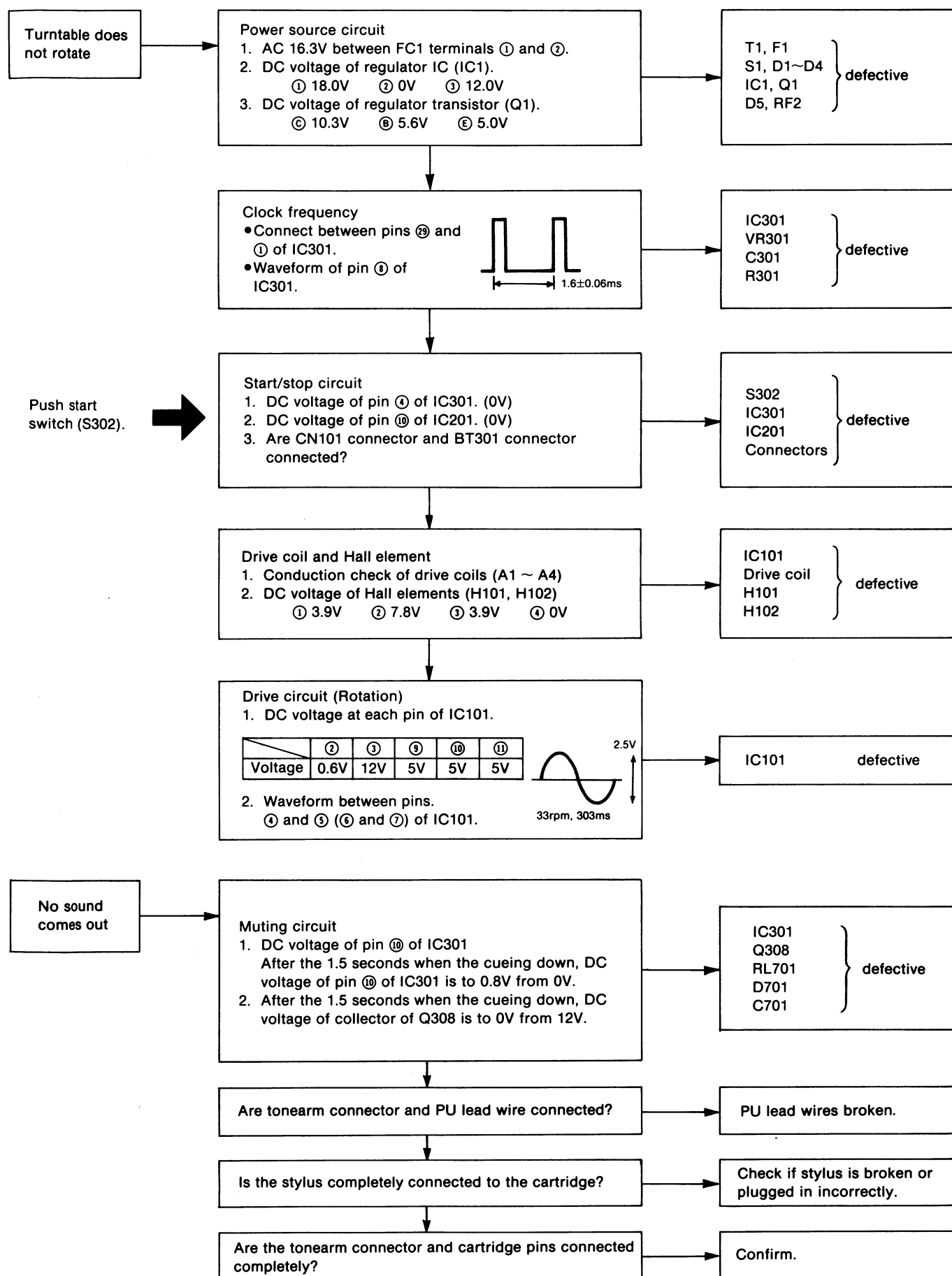


Fig. 10

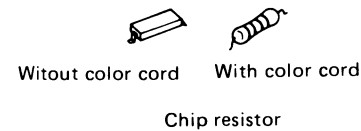


■ HOW TO REPLACE CHIPS

(Resistor, capacitor and jumper)

● Removing procedure

1. Completely remove the solder from both ends of the chip by use of solder sucker.
2. Touch the soldering iron to the end of the chip as shown in Fig. A, then turn the tweezers in the direction of the arrow.



Do not re-use chip resistor or capacitor without color cord.

● Replacing procedure

1. Place solder on the foil where the chip is fitted. Then solder the chip by holding the soldering iron as shown in Fig. B.

Note:

1. If the chip jumper is removed, connect a coated lead wire to the part. (See Fig. C).
- Chip jumper is marked with "J" on the printed circuit board.

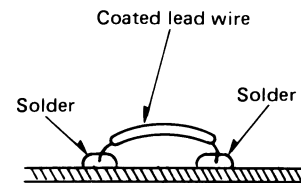


Fig. C

● Terminal guide of transistors, and IC's.

	AN6638 AN6690	2SB641, 2SD638 2SD636
2SD892 2SD1226 2SD1153 2SC1383	AN7812	

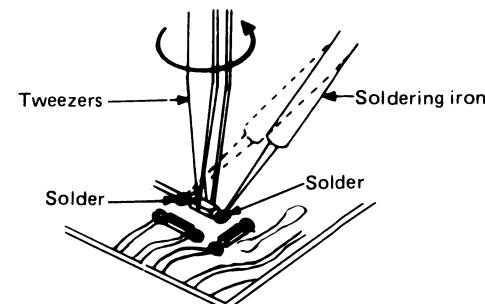


Fig. A

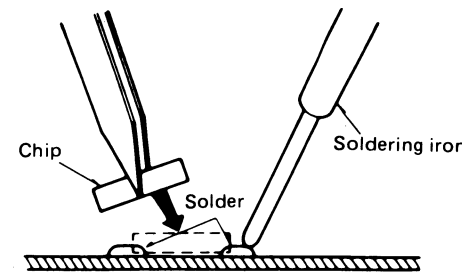


Fig. B

● Note for replacing chips

1. Do not heat the chip more than 3 seconds.
2. Do not rub the electrode against the chip.
3. Use the tweezers with care not to damage the surface of the chip.
4. It is desirable to use a pencil type soldering iron. And use soldering iron less than 60W.

■ RESISTORS AND CAPACITORS

- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 2. Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 3. This "S" mark is service standard parts and may differ from production parts.

4. Unless otherwise specified.
All resistors are in OHMS (Ω) K = 1000 Ω , M = 1000k Ω .
All capacitors are in MICROFARADS (μ F), P = 10⁻⁶ μ F.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERG	1	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	F : $\pm 1\%$
ERG : Metal Oxide	1 : 1W	J : $\pm 5\%$
ERX : Metal Film	2 : 2W	G : $\pm 2\%$

ERD2FCG□□□ → Fuse type carbon (1/4W)
ERDS2TJ□□□ → Small type carbon (1/4W)

Capacitor Type	Voltage		Tolerance
	ECEA Type	Others	
ECEA : Electrolytic	1A : 10V	1H : 50V DC	J : $\pm 5\%$
ECKD : Ceramic	1C : 16V	2H : 500V DC	K : $\pm 10\%$
ECQM : Polyester	1E : 25V	1 : 100V	Z : +80%, -20%
ECCD : Ceramic	1V : 35V		P : +100%, -0%
ECKD : Ceramic	1H : 50V		M : $\pm 20\%$
ECEB : Electrolytic	1J : 63V		
ECFR : Ceramic	50 : 50V		
ECFB : Ceramic			

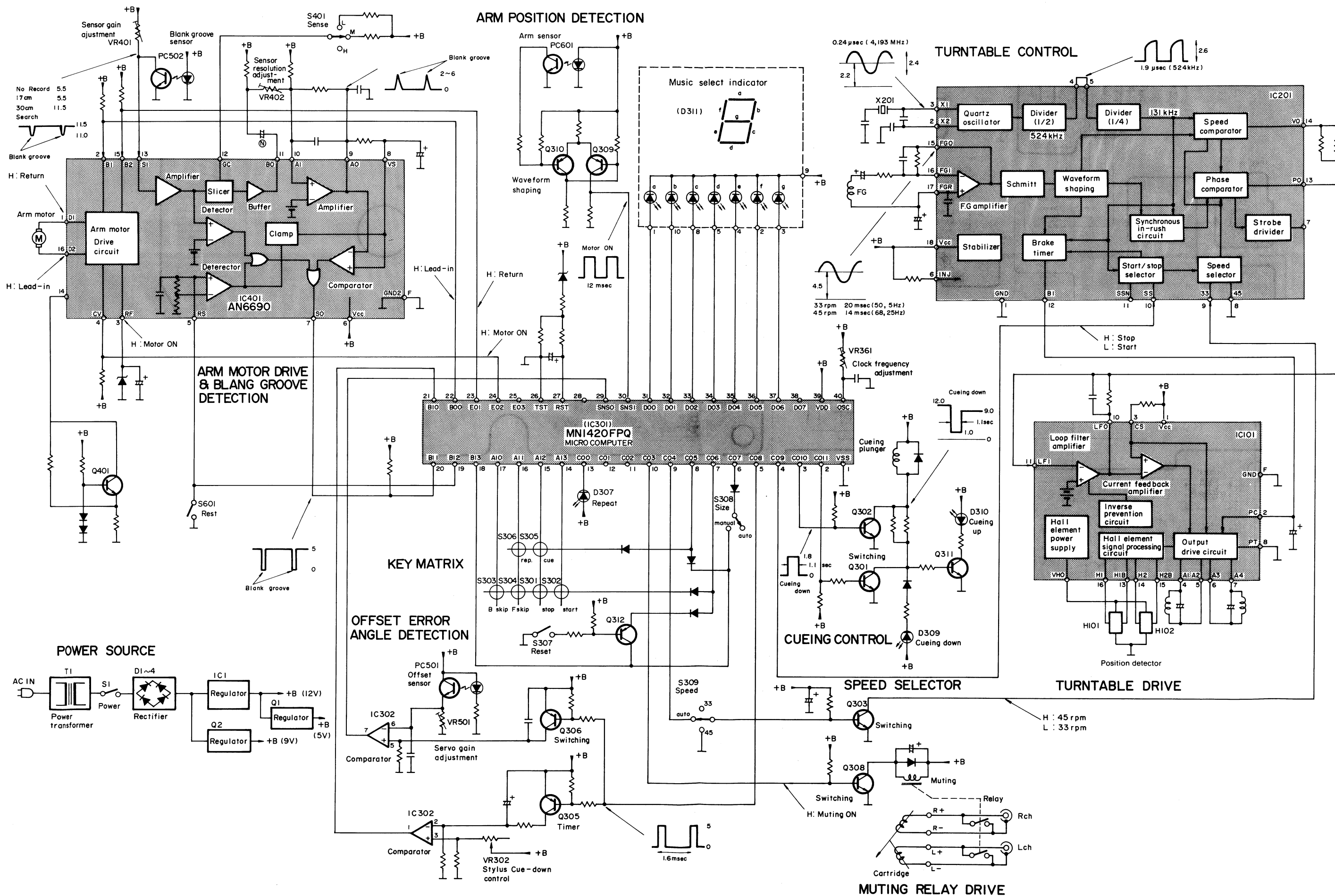
Ref. No.	Part No.	Value
RESISTORS		
R1	ERDS2TJ101	100
R2	ERDS2TJ221	220
R4	ERDS2TJ221	220
R5, 6	ERDS2TJ680	68
R7	ERDS2TJ821	820
R8	ERDS2TJ102	1K
R9	ERDS2TJ221	220
R103	ERDS2TJ104	100K
R104	ERX1ANJ2R7	2.7
R105	ERDS2TJ270	27
R201	ERDS2TJ273	27K
R202	ERDS2TJ394	390K
R203	ERDS2TJ680	68
R204	ERDS2TJ151	150
R205	ERDS2TJ223	22K
R207	ERDS2TJ102	1K
R208	ERDS2TJ680	68
R301	ERDS2TJ562	5.6K
R303	ERDS2TJ272	2.7K
R304, 305	ERDS2TJ331	330
R306	ERDS2TJ154	150K
R307	ERDS2TJ820	82
R309	ERDS2TJ471	470
R310	ERDS2TJ272	2.7K
R311	ERDS2TJ562	5.6K
R312, R313	ERDS2TJ103	10K
R314	ERDS2TJ332	3.3K

Ref. No.	Part No.	Value
R315	ERDS2TJ101	100
R316	ERDS2TJ394	390K
R317	ERDS2TJ333	33K
R318	ERDS2TJ103	10K
R319	ERDS2TJ223	22K
R320	ERDS2TJ392	3.9K
R321	ERDS2TJ272	2.7K
R322	ERDS2TJ332	3.3K
R325, 326	ERDS2TJ332	3.3K
R327	ERDS2TJ472	4.7K
R328	ERDS2TJ471	470
R329, 330	ERDS2TJ103	10K
R331, 332	ERDS2TJ272	2.7K
R333	ERDS2TJ332	3.3K
R334	ERDS2TJ102	1K
R335	ERDS2TJ821	820
R336	ERDS2TJ103	10K
R337	ERDS2TJ472	4.7K
R338	ERDS2TJ563	56K
R339	ERDS2TJ103	10K
R340	ERDS2TJ333	33K
R341	ERDS2TJ683	68K
R342	ERDS2TJ563	56K
R343	ERDS2TJ271	270
R350	ERDS2TJ561	560
R351	ERDS2TJ123	12K
R352	ERDS2TJ103	10K
R354	ERDS2TJ473	47K

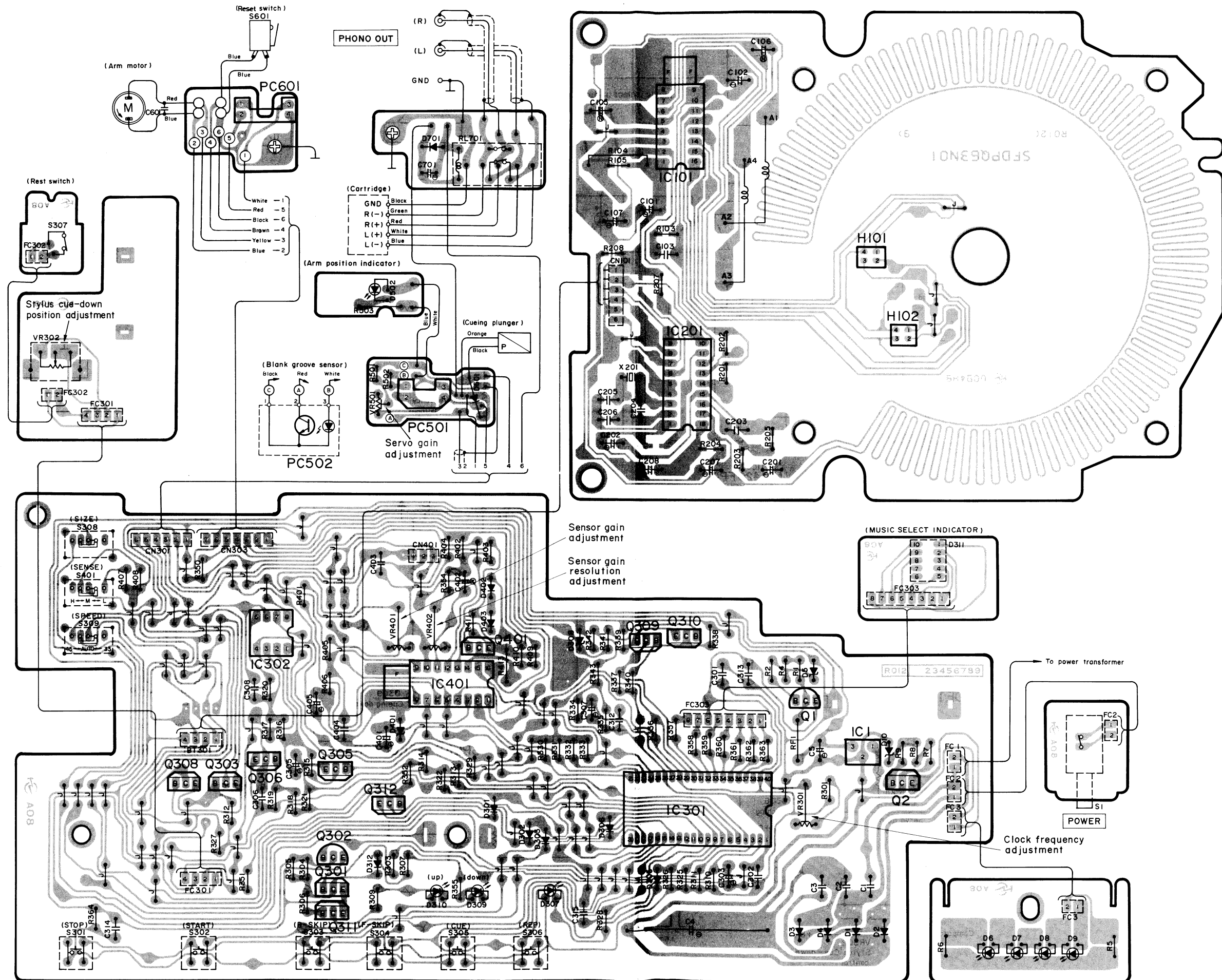
Ref. No.	Part No.	Value
R355	ERDS2TJ101	100
R357, 358	ERDS2TJ681	680
R359, 360	ERDS2TJ681	680
R361, 362	ERDS2TJ681	680
R363	ERDS2TJ681	680
R364	ERDS2TJ333	33K
R401	ERDS2TJ103	10K
R402, 403	ERDS2TJ123	12K
R404, 405	ERDS2TJ474	470K
R406	ERDS2TJ104	100K
R407	ERDS2TJ563	56K
R408	ERDS2TJ154	150K
R409, 410	ERDS2TJ471	470
R411	ERDS2TJ5R6T	5.6
R413	ERG2SJ680H	68
R501	ERD25FJ391	390
R502	ERD25FJ271	270
R503	ERD25FJ471	470
RF1	Δ ERD2FCG220	22
CAPACITORS		
C1, 2	Δ ECQG1223KZ	0.022
C3	Δ ECQG1223KZ	0.022
C4	ECEB1EU222	2200
C5	ECEA1CU330	33
C101	ECEA1CU330	33
C102	ECEA50ZR22	0.22

Ref. No.	Part No.	Value
C103	ECQV5274KZ	0.27
C105, 106	Δ ECEA1AN470S	47
C107	ECEA1HU010	1
C201	ECEA1UJ470	47
C202	ECEA50ZR22	0.22
C203	ECQMIH683KV	0.068
C204	ECCDIH121J	120P
C205	ECCDIH330JC	33P
C206	ECCDIH121J	120P
C207	ECEA1UJ470	47
C208	ECEA1UJ221	220
C301	ECCDIH101K	100P
C302	ECFRIE104ZFM	0.1
C303	ECEA1UJ470	47
C305	ECEA50M1R	1
C306	ECQGIH104KZT	0.1
C307	ECEA1HU3R3	3.3
C308	ECFRIE104ZFM	0.1
C312, 313	ECFRIE104ZFM	0.1
C314	ECKDH681KB	680P
C315	ECCDIH101J	100P
C401	ECEA1UJ47	0.47
C402	Δ ECEA1CN100	10
C403, 404	Δ ECQGIH473KZT	0.047
C405	ECEA1UJ100	10
C601	ECFB104ZM	0.1
C701	ECEA1UJ101	100

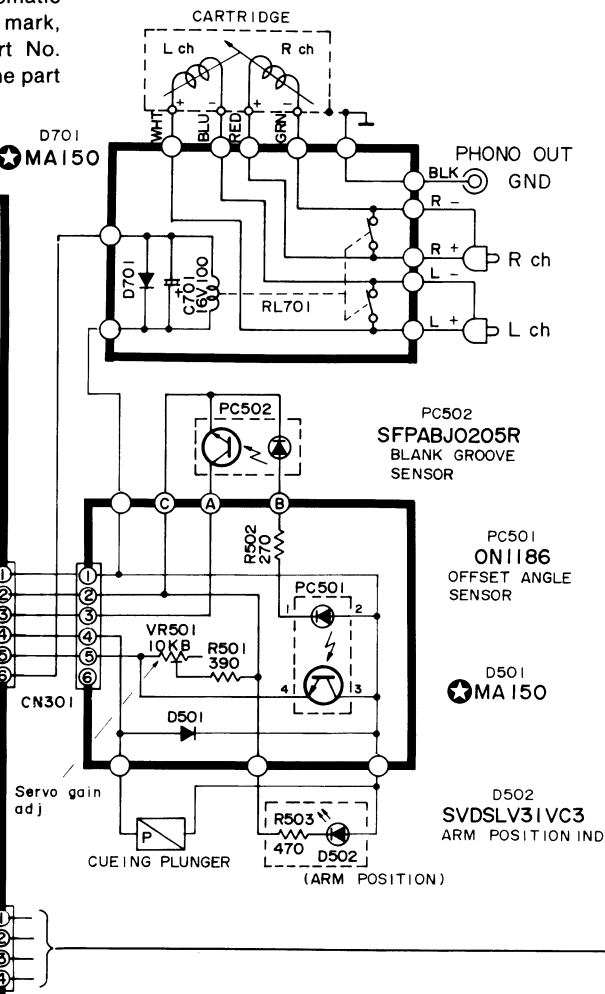
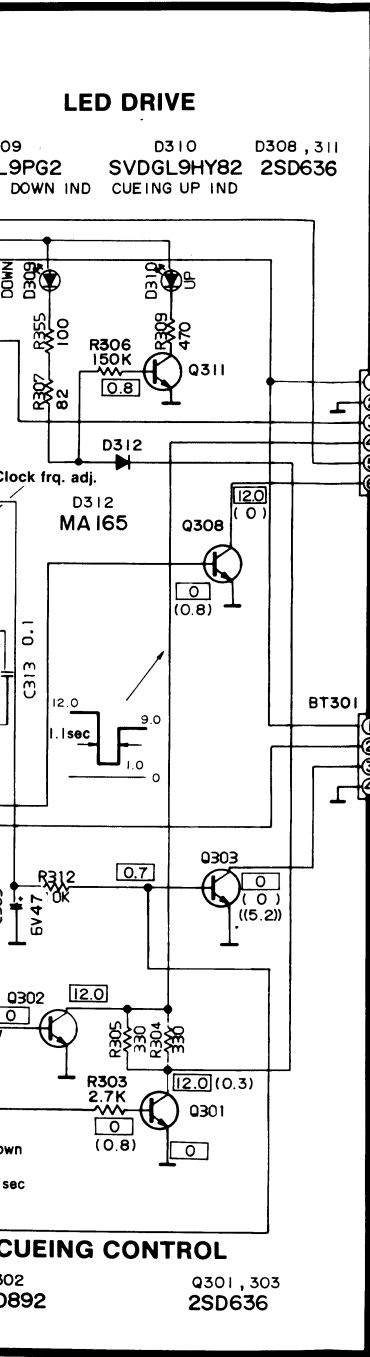
BLOCK DIAGRAM



■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



and diodes mentioned in the schematic
part No. Regarding the part No. with ⚡ mark,
different from the replacement part No.
for replacement part, please use the part



SCHEMATIC DIAGRAM

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

IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

Product for MC only

FUSE REPLACEMENT

⚡ symbol located near the fuse indicates fast-operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

FUSIBLE REMPLACEMENT

⚡ Le symbole qui se trouve près du fusible signifie un fusible à action rapide. Pour une protection continue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se reporter au symbole pour la valeur des fusibles.

Notes:

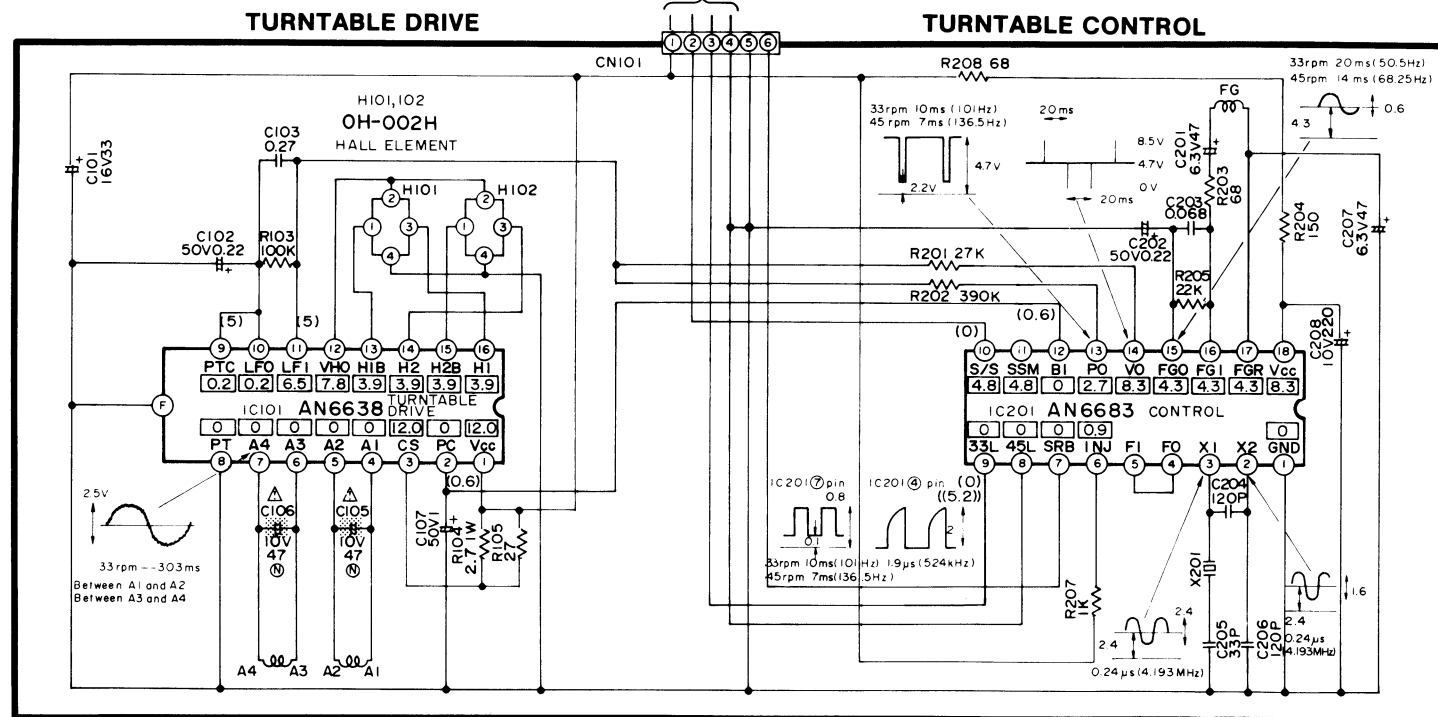
1. **S1** : Power switch in "on" position.
2. **S301** : Stop switch.
3. **S302** : Start switch.
4. **S303** : Backward skip/search switch.
5. **S304** : Forward skip/search switch.
6. **S305** : Cueing control switch.
7. **S306** : Repeat switch.
8. **S307** : Cabinet (Reset) switch in "on" position. (Upper cabinet is closed)
9. **S308** : Record size selector switch in "auto" position.
10. **S309** : Speed selector switch in "auto" position.
11. **S401** : Sensitivity selector switch in "M" position.
12. **S601** : Rest switch in "off" position. (Tonearm is off the rest position.)
13. The voltage value and waveform are the standard values of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
 - * $\square$ is the voltage when turntable is stopped.
 - * $\square$ is the voltage when turntable is in rotating.
 - * $\square$ is the voltage when tonearm is in lead-in mode.
 - * $\square$ is the voltage when tonearm is in return mode.
 - * $< >$ is the voltage at 45 rpm.
14. — Positive voltage lines.
15. 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.

*The part numbers of diodes mentioned in the schematic diagram stand for production part numbers. Regarding part numbers with a ⚡ mark, the production part numbers are different from the replacement part numbers. Therefore, when placing an order for replacement part(s), please use the part number(s) in the replacement parts list.

FUNCTION OF TERMINAL (MN1420FPQ)

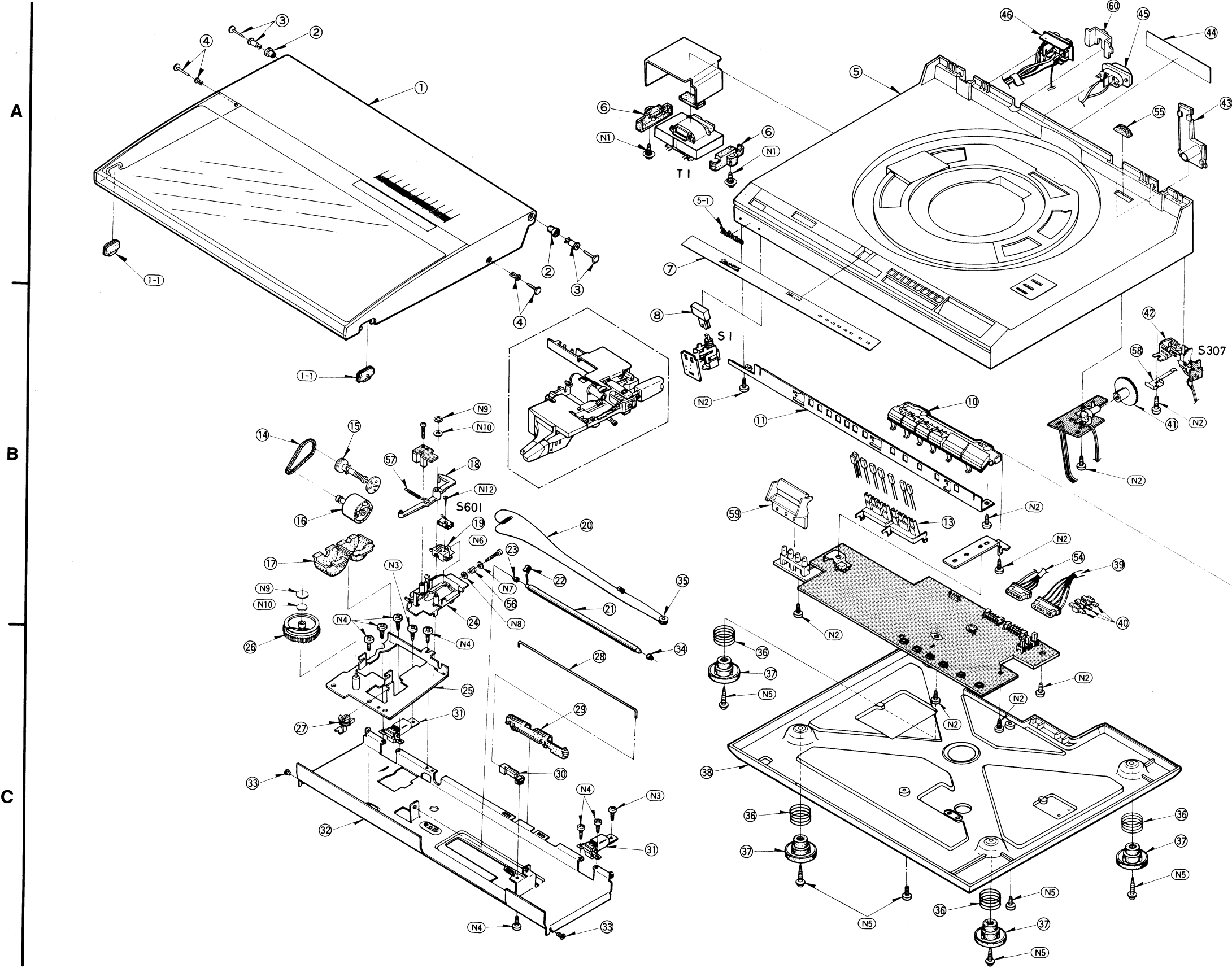
No.	Mark	Description
1	VSS	Ground terminal
2	CO11	Cueing control terminal ("H" during cueing and cueing down)
3	CO10	Cueing control terminal ("H" only cueing down)
4	CO9	Turntable start/stop select terminal (Start at "L", stop at "H")
5	CO8	Key scan output terminal (Each key is read in through key scan with A-port)
6	CO7	
7	CO6	
8	CO5	Turntable speed select output terminal (45 rpm "L", 33 rpm "H")
9	CO4	
10	CO3	
11	CO2	Not used in this unit
12	CO1	
13	CO0	Repeat indicator output terminal (Indicator ON at "L")
14	AI3	Key scan input terminal (Each key is read in through key scan with C-port)
15	AI2	
16	AI1	
17	AI0	
18	BI3	Record size selector input terminal (Read in through key scan with C-port)
19	BI2	Rest position detection input terminal ("L" when tonearm is on rest)
20	BI1	Blank detection and record detection terminals. (Blank pulse is active at "L"; 30 cm record is present with "H" at rest position; 30 cm record is not present with "L". When it is at "L" outside the rest position, 17 cm is present; and no is record present at "H".)
21	BI0	Cueing time read input terminal
22	EO0	Arm motor drive control terminal
23	EO1	
24	EO2	
25	EO3	Not used in this unit
26	TST	Test terminal
27	RST	Reset terminal (Micom is reset at "L")
28	CSLCT	Select terminal
29	SNS0	Offset angle detection signal input terminal
30	SNS1	Arm position detection signal input terminal
31	DO0	Segment display output terminal (Lights up at "L")
32	DO1	
33	DO2	
34	DO3	
35	DO4	
36	DO5	
37	DO6	Not used in this unit
38	DO7	
39	VDD	Power supply terminal
40	OSC	Oscillation circuit (Clock frequency is adjusted to 1.6ms)

ic electricity.
vented by taking care during repair.
e of plastics with aluminum foil.
e work table.
or LSI with the fingers directly.



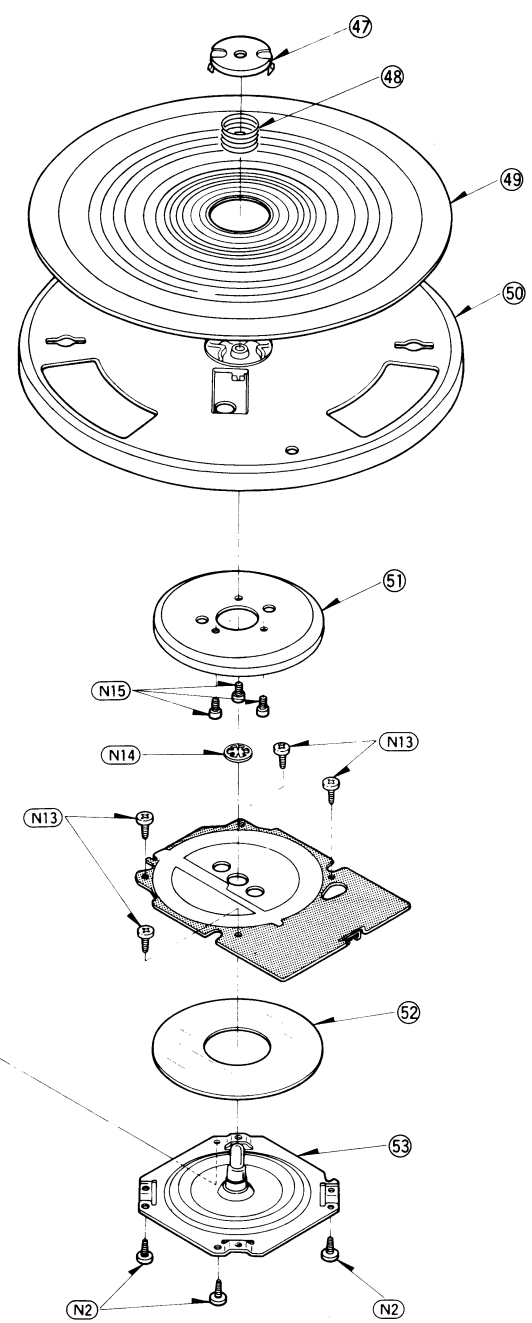
EXPLODED VIEW

Cabinet and chassis parts



A	1-1	4	3	2	1	2	6	7	5-1	6	5	46	60	45	55	44	43	47	48	49	50											
B			14	17	16	1-1	15	57	18	24	19	23	56	4	3	22	20	21	8	35	59	11	13	10	54	39	40	58	42	41	51	52
C			26	33	27	32	31	25	30	29	28	33	31	34	38	37	36	36	37	36	37	36	37	36	37	36	37	36	37	53		

Tonearm parts



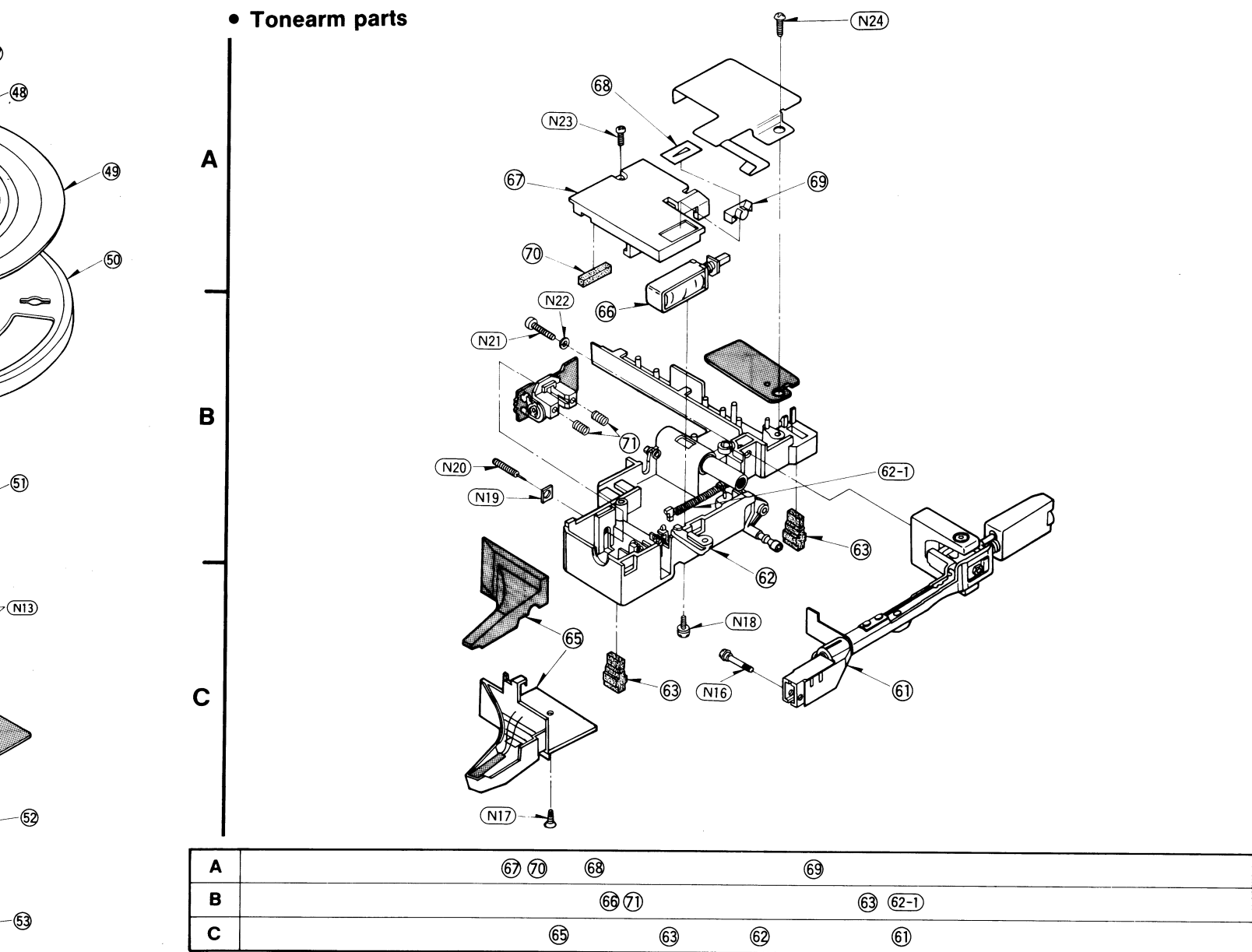
A	
B	
C	

REPLACEMENT PARTS

- Notes: 1. Part numbers are given in parentheses. Please use this information when ordering parts.
2. Important safety information: Components identified by a triangle (▲) have special characteristics. When replacing these components, please refer to the manufacturer's instructions.
3. Bracketed indications indicate parts that are not included in the standard kit. Parts with a triangle (▲) are not included in the standard kit.

Ref. No.	Part. No.	Part Name
INTEGRATED CIRCUIT		
IC1	AN7812	Regulator
IC101	AN6638	Tuner
IC201	AN6683	Tuner
IC301	MN1420FPQ	Microprocessor
IC302	AN6914	Comparator
IC401	AN6690	Armature

Tonearm parts



REPLACEMENT PARTS LIST

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 - Important safety notice:
Components identified by a Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 - Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
 - The "S" mark is service standard parts and may differ from production parts.
 - The parenthesized numbers in the columns of description stand for the quantity per set.
- Area**
- [M]..... U.S.A.
[MC]..... Canada

Ref. No.	Part. No.	Description
INTEGRATED CIRCUIT		
IC1	AN7812	Regulator
IC101	AN6638	Turntable Drive
IC201	AN6683	Turntable Control
IC301	MN1420FPQ	Microcomputer
IC302	AN6914	Comparator
IC401	AN6690	Arm Motor Drive & Blank Groove Detection

Ref. No.	Part. No.	Description
TRANSISTOR		
Q1	2SC1383	Regulator
Q2, 401	2SD638	Regulator
Q301, 303, 308, 311	2SD636	Switching
Q302	2SD892	Switching
Q305, 306, 309, 310, 312	2SB641	Switching

Ref. No.	Part. No.	Description
DIODE		
D1~4	Δ SVD1SR35200V	Rectifier
D5	MA4056	5.6V Zener
D6~9	SVDAY5525S	LED
D10	MA4100	10V Zener
D301~303, 305, 306, 312, 402, 403	MA 165	Switching

Ref. No.	Part. No.	Description
D307, 310	SVDGL-9HY82	LED
D308	MA4062	6.2V Zener
D309	SVDGL-9PG2	LED
D311	LN513RAM	LED
D401	MA4068	6.8V Zener
D501, 701	Δ MA162A	Switching
D502	SVDSL3V1VC3	LED
CRYSTAL		
X201	SVQSH41TR	4.193 MHz
VARIABLE RESISTOR		
VR301	EVN61AA00B24	Clock Frequency Adjustment, 20 k Ω (B)
VR302	EVJE1AF20B54	Stylus Cue-down Position Control, 50 k Ω (B)
VR401	EVN61AA00B55	Sensor Gain Adjustment, 500k Ω (B)
VR402	EVN61AA00B25	Sensor Resolution Adjustment, 200k Ω (B)
VR501	EVNK0AA00B14	Servo Gain Adjustment, 10k Ω (B)
RELAY		
RL701	SFDYQ11N02	Muting
SWITCH		
S1	Δ SFDSC02N02	Power Operation
S301~306	EVQQS405K	Reset
S307	SFDSC05N01	Size, Speed and Sens Selector
S308, 309, 401	SFDSHSW08314	Reset position
S601	SFDSC02N03	Rest position
PHOTO INTERRUPTER		
PC501	0N1186	Offset Angle Sensor
PC502	SFPABJ0205R	Blank Groove Sensor
PC601	0N1161	Tonearm Position Sensor
HALL ELEMENT		
H101, 102	0H-002	Turntable Position Detector
POWER TRANSFORMER		
T1 [M]	Δ SLT48DTL3A	Power Source
T1 [MC]	Δ SLT48DT11C	Power Source
FUSE		
F1 [MC]	Δ XBA2F08NU100	250V, 800 mA only
CABINET AND CHASSIS PARTS		
1	SFADC12M01E	Dust Cover (1)
1-1	SFGJ02N01	Rubber Cushion (2)
2	SFGZC02N01	Rubber Cushion (2)
3	SFUMC02N14	Latch, Dust cover (2)
4	SFUMQ06N22	Latch, Dust cover (2)
5	SFACC12N01E	Cabinet (1)
5-1	SFKBBD2N01	Badge (1)

Ref. No.	Part. No.	Description
6	SFGCQ06N02	Rubber Cushion, Transformer (2)
7	SFKKC12N01	Ornament (1)
8	SRKTK15N26	Knob, Power (1)
10	SFKTC13N01	Knob, Operation (1)
11	SFUPC13N01	Guide (1)
13	SFUMC13N01	Holder (1)
14	SFGBC10-01	Belt, Tonearm Drive (1)
15	SFUMJ02N07A	Worm Ass'y (1)
16	SFMHC02N02R	Motor, Tonearm Drive (1)
17	SFUMC02N07	Motor Cover (1)
18	SFUMC02N05	Lever, Rest Switch (1)
19	SFUMQ06N09	Holder, Rest Switch (1)
20	SFUZC05N02E	Rope Ass'y (1)
21	SFXJQ06N01	Guide Rail (1)
22	SFUMQ06N07	Clamper, Guide Rail (1)
23	SFGCQ06N01	Cushion, Guide Rail (1)
24	SFUMC02N06	Base, Rest Switch (1)
25	SFUPBL3N11E	Base, Motor (1)
26	SFUML11R03	Wheel, Tonearm Drive (1)
27	SFUMC02N10	Holder, Lead Wire (1)
28	SFUZC02N01	Rod, Rest Switch (1)
29	SFUMC02N12	Holder, Lead Wire (1)
30	SFUMV05N23	Cap (1)
31	SFATQ06N01E	Hinge (2)
32	SFUKE13N01E	Base (1)
33	SFGCQ06N03	Rubber Cushion, Dust Cover (2)
34	SFGCQ05N05	Cushion, Guide Rail (1)
35	SFUMC05N22	Pulley (1)
36	SFQCC05N01	Spring, Insulator (1)
37	SFGAJ02N01	Insulator (4)
38	SFAUC13N01	Bottom Cover (1)
39	SFDJC13N03E	Connector Ass'y (1)
40	SFKTC13N01	Knob, Selectors (3)
41	SFKTQ06N02	Knob, Cueing Down Position Control (1)
42	SFUMC05N15	Holder, Reset Switch (1)
43	SFACC13N011	Cover (1)
44 [M]	SFNNC12M01	Name Plate (1)
44 [MC]	SFNNC12C01	Name Plate (1)
45	Δ SFDJHSC0491	AC Socket (1)
46	SFDJJ02N04E	Jack, Phono Output (1)
47	SFWEC06N01	45 rpm Adaptor (1)
48	SFQAC06N01	Spring (1)
49	SFTGQ06N01	Turntable Mat (1)
50	SFTEQ05N01	Turntable Platter (1)
51	SFTMC07-01E	Rotate Magnet, Turntable Platter (1)
52	SFMGQ34N01	Cover, Stator Coil (1)
53	SFMZC06N01R	Stator Frame Ass'y (1)
54	SFDJC13N02E	Connector, Ass'y (1)
55	SFGKQ06N01	Cap (1)
56	SFQA913-01	Spring (1)
57	SFQHQ34N22	Spring (1)
58	SFQPC05N01	Spring, Reset Switch (1)
59	SFUMC13N03	Prism (1)
60	SFACC13N012	Cover (1)

Ref. No.	Part. No.	Description
TONEARM PARTS		
61	SFPAMJ0201A	Tonearm Ass'y (1)
62	SFPKDJ0201R	Tonearm Base (1)
62-1	SFPSP00504	Spring (1)
63	SFPGML1101	Rubber, Guide (2)
65	SFPABJ0205R	Sensor Ass'y (1)
66	SFDZC05N01E	Solenoid Ass'y (1)
67	SFPCS0Q601	Cover, Sensor Case (1)
68	SFPAK0Q601	Plate (1)
69	SFPCSJ0201	Case (1)
70	SFPGM0Q601	Rubber (1)
71	SFPSP00302	Spring, Adjustment (2)
SCREWS, WASHERS AND NUTS		
N1	SFXGQ06N01	Screw (2)
N2	Δ XTV3+10BFN	Screw, Δ 3 $\times$ 10 (11)
N3	XTW3+14TFZ	Screw, Δ 3 $\times$ 14 (2)
N4	XTV3+6JFZ	Screw, Δ 3 $\times$ 6 (4)
N5	XTW3+14QFYR	Screw, Δ 3 $\times$ 14 (6)
N6	XSN3+30S	Screw, Δ 3 $\times$ 30 (1)
N7	XWE3D10	Washer, ϕ 3 (1)
N8	XNC3HS	Nut (2)
N9	CSTW3	Washer (2)
N10	XWE3A8BW	Washer (1)
N11	XTV3+20J	Screw, Δ 3 $\times$ 20 (1)
N12	XTN16+10G	Screw, Δ 1.6 $\times$ 10 (1)
N13	Δ XTV3+6BFN	Screw, Δ 3 $\times$ 6 (4)
N14	SFXWC06N02	Washer (1)
N15	Δ XSN3+5S	Screw (3)
N16	SFPEV0Q601	Screw, Cartridge (1)
N17	XTS26+6JFZ	Screw, Δ 2.6 $\times$ 6 (1)
N18	XYN2+C4FZ	Screw, Δ 2 $\times$ 4 (1)
N19	SFXN623-1	Nut (1)
N20	SFPTN00301	Screw (1)
N21	XSN3+12S	Screw, Δ 3 $\times$ 12 (1)
N22	XWA3B	Washer, ϕ 3 (1)
N23	XTN23+6JFZ	Screw, Δ 2.3 $\times$ 6 (1)
N24	XTV3+8BFZ	Screw, Δ 3 $\times$ 8 (1)
ACCESSORIES		
A1 [M]	SFNUC12M01	Instruction Book (1)
A1 [MC]	SFNUC12C01E	Instruction Book (1)
A2	SFDHC05N01	Phono Output Cord (1)
A3	SFDLJ02N11E	Ground Wire (1)
A4 [M]	Δ SFDAC05M01	AC Cord (1)
A4 [MC]	Δ SRDA010C01	AC Cord (1)
PACKING PARTS		
P1 [M]	SFHPC12M01	Carton Box (1)
P1 [MC]	SFHPC12C01	Carton Box (1)
P2	SFHHC13N01	Pad, Front (1)
P3	SFHHC13N02	Pad, Rear (1)
P4	SFHKC05N01	Clamper, Turntable Platter (2)
P5	SFHKK06N01	Spacer, Tonearm (1)
P6	SFHSC13N01	Spacer, Dust Cover (1)
P7	SFYH60 $\times$ 60	Polyethylene Bag (1)
P8	SFYH17 $\times$ 16	Polyethylene, Cord (1)
P9	SFYF33B35	Polyethylene, Turntable Mat (1)
P10	SFHDD04N01	Pad, Turntable Mat (1)

Parts Change Notice

Model No. SL-L2
SL-L3

Service Manual
Order No. HAD85052561A9
HAD85052563A9

Please revise the original parts list in the Service Manual to conform to the change (s) shown herein. If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change		*The circled item indicates the reason. If no marking, see the Notes in the bottom column.				
1.	Improve performance					
2.	Change of material or dimension					
3.	To meet approved specification					
4.	Standardization					
5.	Addition					
6.	Deletion					
7.	Correction					
8.	Other					
Interchangeability Code		**The circled item indicates the interchangeability. If no marking, see the Notes in the bottom column.				
Parts		Set Production				
A	Original		Early	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.		
	New		Late			
B	Original		Early	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.		
	New		Late			
C	Original		Early	New parts only may be used in early or late production sets. Stock new parts.		
	New		Late			
D	Original		Early	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.		
	New		Late			
E	Other					
Part Number						
Model No.	Ref. No.	Original Part No.	New Part No.	Notes (***)	Part Name & Descriptions	
SL-L2	16	SFMHC02N02R	SFMHJ02N01R	7, C	Motor (with Capstan)	1
SL-L3	16	SFMHC02N02R	SFMHJ02N01R	7, C	Motor (with Capstan)	1

File this Parts Change Notice with your copy of the Service Manual.

Technics

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Printed in Japan
8511005 00 0 TK