

# Service Manual

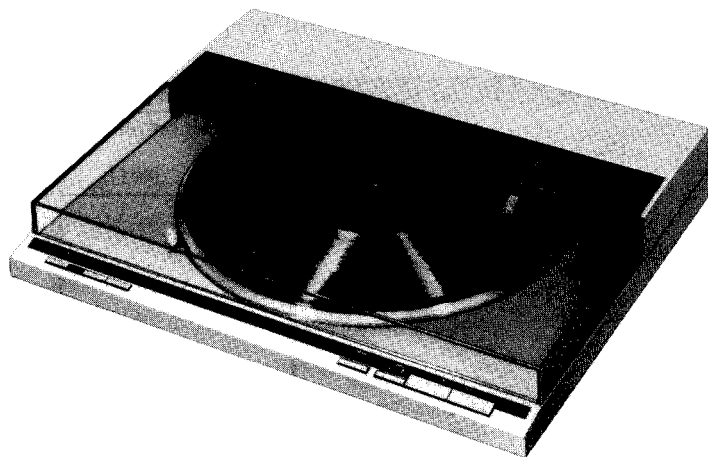
QUARTZ Direct Drive Automatic Turntable System

## SL-QL1

[E], [EK], [XL], [EF],  
[XA], [EB], [EG], [EI], [EH]

## SL-QL1(K)

[XL], [EG],  
[E], [EH], [XA]



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

### Areas

- \* [E] is available in Switzerland and Scandinavia.
- \* [EK] is available in United Kingdom.
- \* [XL] is available in Australia.
- \* [EF] is available in France.
- \* [EB] is available in Belgium.
- \* [EG] is available in F.R. Germany.
- \* [EI] is available in Italy.
- \* [EH] is available in Holland.
- \* [XA] is available in East South Asia, Oceania, Africa, Middle Near East and Central South America.

English

## Specifications

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

### ■ General

**Power supply:** ~ 110-120/220-240V, 50/60 Hz  
**Power consumption:** 20 W  
**Dimensions:** 43 x 8.8 x 35 cm  
**(W x H x D)** 43 x 39.7 x 35 cm  
 (Maximum height when top  
 (dust cover) is open.)  
**Weight:** 7.4 kg (16.3 lb.)

### ■ Turntable section

**Type:** Quartz direct drive  
 Automatic turntable  
 Auto start/Auto lead-in  
 Auto return  
 Auto stop  
 Repeat play  
 Auto speed select  
 Manual speed selection possible.  
 Auto size select  
 2-speed search functions  
 Record presence detection  
**Drive method:** Direct drive  
**Motor:** Brushless DC motor  
**Drive control method:** Quartz-phase-locked control  
**Turntable platter:** Aluminum die-cast  
 Diameter 31.2 cm

**Turntable speeds:** 33-1/3 rpm and 45 rpm  
 Auto speed select  
 (Manual selection possible)  
**Speed deviation:** Within  $\pm 0.002\%$   
**Wow and flutter:** 0.012% WRMS\*  
 0.025% WRMS (JIS C5521)  
 $\pm 0.035\%$  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:** Dynamic balanced type  
 Linear tracking tonearm  
 4-pivot gimbal suspension  
**Effective length:** 10.5 cm (4-1/8")  
**Tracking error angle:** Within  $\pm 0.1^\circ$   
**Effective mass:** 9 g (including cartridge)  
**Resonance frequency:** 12 Hz  
**Tonearm drive motor:** DC motor

# Technics

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

## Cartridge section

<b>Type:</b>	Moving magnet stereo cartridge One point suspension system
<b>Magnet:</b>	Samarium cobalt (Sm-Co)
<b>Cantilever:</b>	Pure boron pipe
<b>Magnetic circuit:</b>	All laminated core
<b>Frequency response:</b>	10 Hz to 50 kHz 20 Hz to 35 kHz $\pm 3$ dB 20 Hz to 10 kHz $\pm 1$ dB
<b>Output voltage:</b>	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])

<b>Channel separation:</b>	More than 22 dB at 1 kHz
<b>Channel balance:</b>	Within 1.8 dB at 1 kHz
<b>Recommended load impedance:</b>	47 k $\Omega$ ~ 100k $\Omega$
<b>Compliance (dynamic):</b>	12 x 10 <sup>-6</sup> cm/dyne at 100 Hz
<b>Vertical tracking angle:</b>	20°
<b>Stylus pressure range:</b>	1.25 $\pm$ 0.25 g (12.5 $\pm$ 2.5 mN)
<b>Stylus tip:</b>	0.3 x 0.7 mil (7.5 x 18 $\mu$ m)
<b>Weight:</b>	6 g (cartridge only)
<b>Replacement stylus:</b>	EPS-22ES (Equivalent replacement stylus: EPS-22EB (EPS-202ED).)

Deutsch

## TECHNISCHE DATEN

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

### Allgemeine Daten

<b>Stromversorgung:</b>	~ 110-120/220-240 V, 50/60 Hz Wechselstrom
<b>Leistungsaufnahme:</b>	20 W
<b>Abmessungen: (B x H x T)</b>	43 x 8,8 x 35 cm 43 x 39,7 x 35 cm (Maximale Höhe bei vollständig geöffnetem Gehäuseoberteil.)
<b>Gewicht:</b>	7,4 kg

### Plattenspieler

<b>Typ:</b>	Quarz-Direktantrieb Automatischer Plattenspieler Auto-Start/Auto-Zuführung Rückführautomatik Stopp-Automatik Wiederhol-Betrieb Automatische Drehzahlwahl Manuelle Drehzahlwahl möglich 2-Geschwindigkeiten- Suchfunktionen Plattenpräsenz-Registrierung
<b>Antrieb:</b>	Direktantrieb
<b>Motor:</b>	Kollektorloser Gleichstrommotor
<b>Antriebsregel-Methode:</b>	Quarz-Steuerung (QPL)
<b>Plattenteller:</b>	Aluminium-Druckguß Durchmesser 31,2 cm
<b>Plattenteller- Drehzahlen:</b>	33-1/3 und 45 U/min Automatische Drehzahlwahl (manuelle Wahl möglich) Innerhalb $\pm 0,002\%$
<b>Drehzahlabweichung: Gleichlaufschwankungen:</b>	0,012% WRMS* 0,025% WRMS (JIS C5521) $\pm 0,035\%$ Spitze (IEC 98A bewertet)

\*Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorbauteils.

<b>Rumpel-Fremdspannungsabstand:</b>	-56 dB (IEC 98A unbewertet)
<b>Rumpel-Geräuschspannungsabstand:</b>	-78 dB (IEC 98A bewertet)

### Tonarm

<b>Typ:</b>	Dynamisch ausbalancierter Tangential-Tonarm mit Kardanaufhängung mit 4-Punkt-Drehlager
<b>Effektive Länge:</b>	105 mm
<b>Spurfehlwinkel:</b>	Innerhalb $\pm 0,1^\circ$
<b>Effektive Masse:</b>	9 g (einschließlich Tonabnehmer)
<b>Resonanzfrequenz:</b>	12 Hz
<b>Tonarm-Antriebsmotor:</b>	Gleichstrommotor

### Tonabnehmer

<b>Typ:</b>	Stereo-Magnet-Tonabnehmer mit Einpunkt-Aufhängungssystem
<b>Magnet:</b>	Samarium-Kobalt (SM-Co)
<b>Nadelträger:</b>	Röhre aus reinem Bor
<b>Magnetkreis:</b>	Ganzlamellenkern
<b>Frequenzgang:</b>	10 Hz bis 50 kHz 20 Hz bis 35 kHz $\pm 3$ dB 20 Hz bis 10 kHz $\pm 1$ dB
<b>Ausgangsspannung:</b>	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)] Mehr als 22 dB bei 1 kHz
<b>Kanaltrennung:</b>	Mehr als 22 dB bei 1 kHz
<b>Empfohlene Endimpedanz:</b>	47 k $\Omega$ ~ 100k $\Omega$
<b>Nachgiebigkeit (dynamisch):</b>	12 x 10 <sup>-6</sup> cm/dyn bei 100 Hz
<b>Vertikaler Spurwinkel:</b>	20°
<b>Auflagekraft-Einstellbereich:</b>	1,25 $\pm$ 0,25 g (12,5 $\pm$ 2,5 mN)
<b>Nadelspitze:</b>	0,3 x 0,7 Mil (7,5 x 18 $\mu$ m)
<b>Gewicht:</b>	6 g (nur Tonabnehmer)
<b>Ersatznadel:</b>	EPS-22ES (Gleichwertige Ersatznadel: EPS-22ED (EPS-202ED))

## CARACTERISTIQUES

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

### ■ Généralités

**Alimentation:** Alternatif 110-120/220-240V, 50/60 Hz  
**Consommation:** 20 W  
**Dimensions:** 43 x 8,8 x 35 cm  
 (L x H x P)  
 43 x 39,7 x 35 cm  
 (Hauteur maximum lorsque le dessus  
 (couvercle protégé-poussière) est ouvert.)  
**Poids:** 7,4 kg

### ■ Platine de lecture

**Type:** Entraînement direct à quartz  
 Platine automatique  
 Départ automatique/Entrée automatique  
 Retour automatique  
 Arrêt automatique  
 Audition répétée  
 Sélection de vitesse automatique  
 Sélection de vitesses manuelle possible  
 Sélection automatique du diamètre  
 Fonctions exploratrices à 2 vitesses  
 Détection de la présence d'un disque

### ■ Système d'entraînement

**Type:** Entraînement direct  
**Moteur:** Moteur C.C. sans balai  
**Groupe de réglage:** Réglage d'accrochage de phase par quartz  
**Plateau de lecture:** Aluminium moulé sous pression  
 Diamètre 31,2 cm

### ■ Vitesses de rotation:

33-1/3 et 45 t/p.m.  
 Sélecteur de vitesse automatique  
 (Sélection manuelle possible)

### ■ Déviation de la vitesse:

En deçà de  $\pm 0,002\%$

### ■ Pleurage et

**scintillement:** 0,012% de valeur efficace\*  
 0,025% de valeur efficace  
 (JIS C5521)  
 $\pm 0,035\%$  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)

### ■ Bras de lecture

**Type:** Bras de lecture d'alignement linéaire  
 de type à équilibre dynamique  
 avec suspension à la cardan à 4 pivots  
**Longueur effective:** 105 mm  
**Angle d'erreur de piste:** En deçà de  $\pm 0,1^\circ$   
**Masse réelle:** 9 g (y compris la cellule pick-up)  
**Fréquence de résonance:** 12 Hz  
**Moteur d'entraînement du bras de lecture:** Moteur C.C. sans noyau

### ■ Cellule pick-up

**Type:** Cellule pick-up stéréo à aimant mobile  
 Système de suspension ponctuelle  
 Samarium-Cobalt (Sm-Co)  
**Aimant:** Tube à bore pur  
**Porte-à-faux:** Noyau entièrement feuilleté  
**Circuit magnétique:** Noyau entièrement feuilleté  
**Réponse en fréquence:** 10 Hz à 50 kHz  
 20 Hz à 35 kHz  $\pm 3$  dB  
 20 Hz à 10 kHz  $\pm 1$  dB  
**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:

Plus de 22 dB à 1 kHz

### ■ Équilibrage des canaux:

Endeçà de 1,8 dB à 1 kHz

### ■ Impédance de charge recommandée:

47 k $\Omega$  ~ 100 k $\Omega$

### ■ Élasticité (dynamique):

12 x 10<sup>-6</sup> cm/dyne à 100 Hz

### ■ Angle d'alignement vertical:

20°

### ■ Plage de la force verticale:

1,25  $\pm$  0,25 g (12,5  $\pm$  2,5 mN)

### ■ Extrémité de la pointe de lecture:

0,3 x 0,7 mil (7,5 x 18 $\mu$ m)

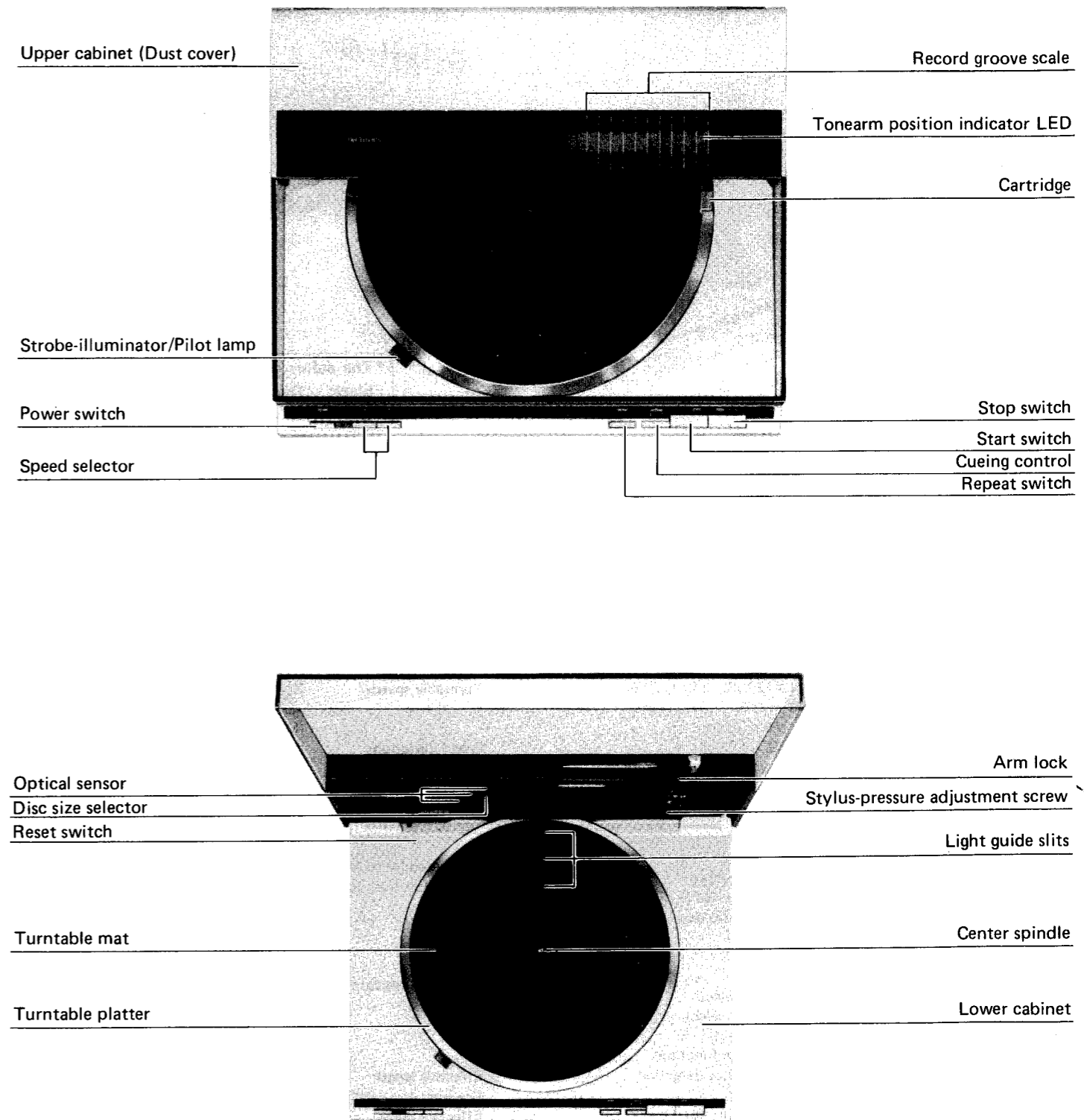
### ■ Poids:

6 g (cellule seule)

### ■ Remplacement de la pointe de lecture:

EPS-22ES  
 (Pointe de lecture de remplacement équivalente: EPS-22ED (EPS-202ED))

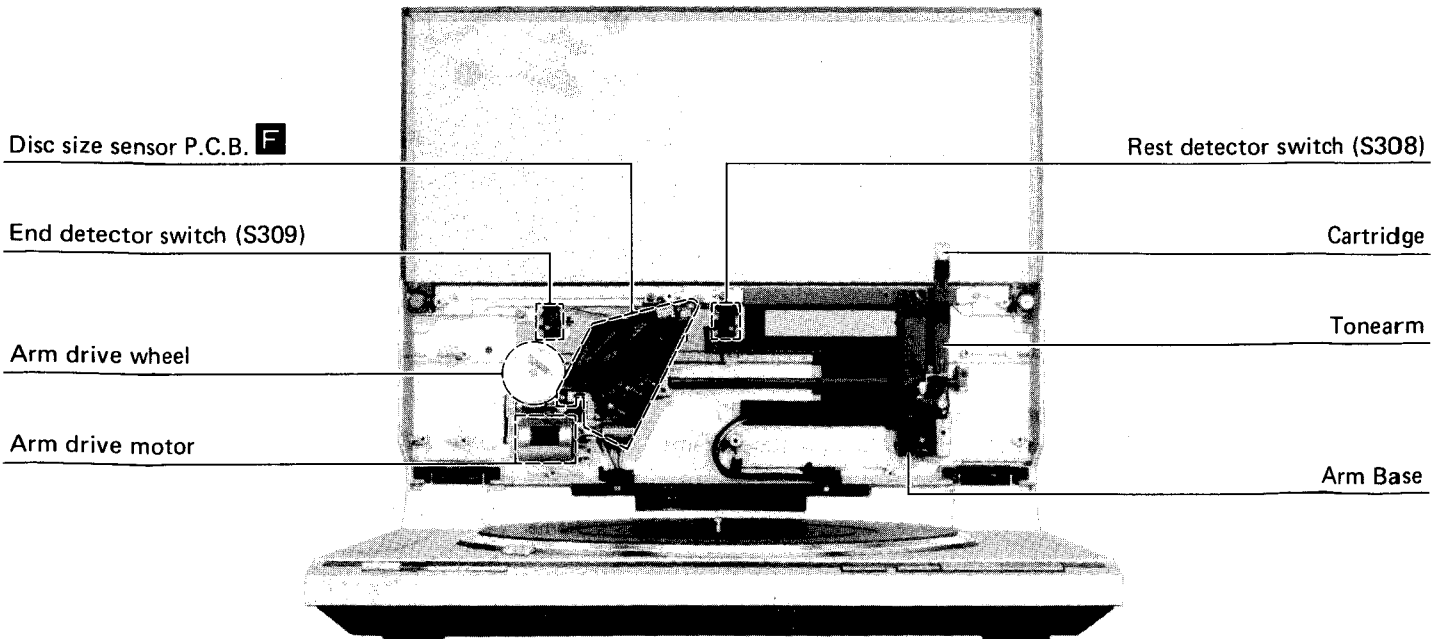
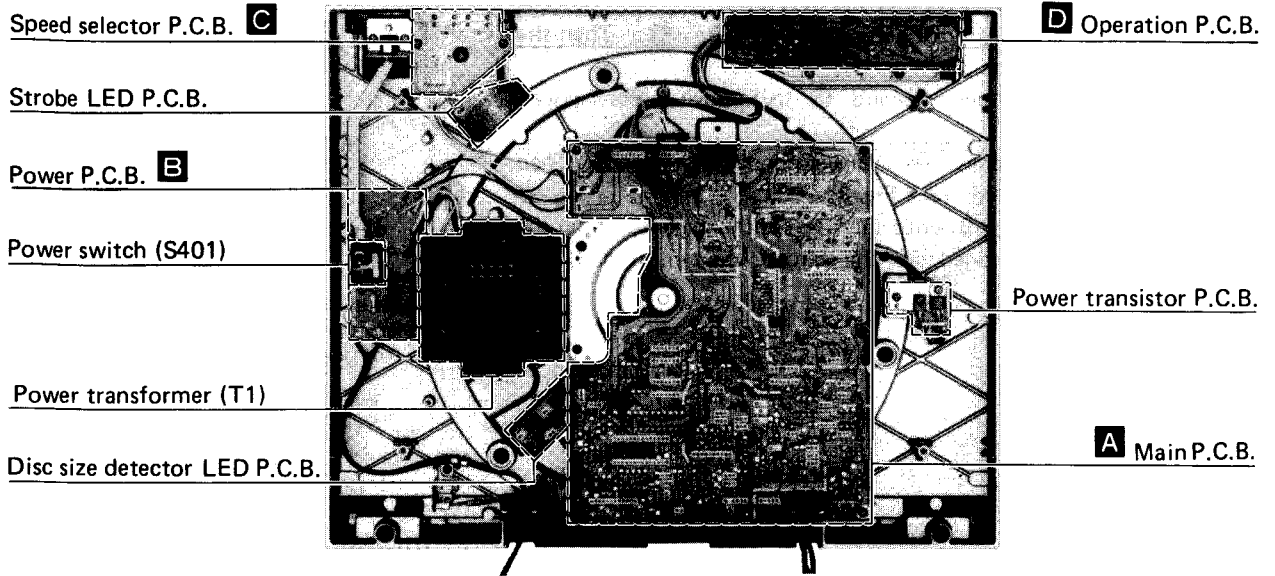
## ■ LOCATION OF CONTROLS



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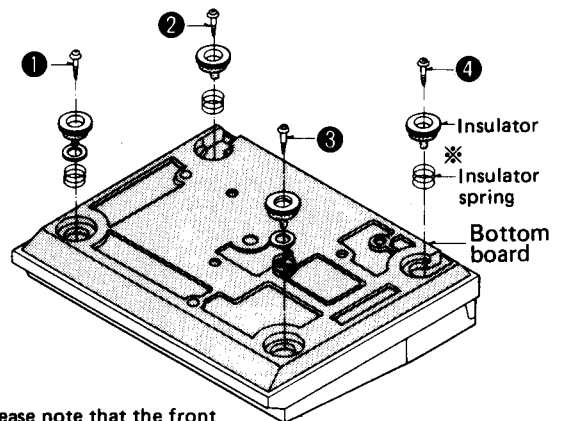
\* S309 (end detection switch) will be replaced by MN1400PE of which the end detection unit is built into MN1400PA (IC301) in the course of manufacture. At the time of servicing, it is possible to replace MN1400PA with MN1400PE, but not MN1400PE with MN1400PA. Incidentally, MN1400PE will be supplied as repair parts.

## DISASSEMBLY INSTRUCTIONS

### How to remove the bottom board and main P.C.B.

1. Remove the turntable and turntable seat.
2. Turn the main body upside down, using a soft sheet of cloth or the like as a cushion to protect the upper cabinet and dust cover.
3. Remove the insulator and bottom board setscrews ① ~ ④. Then the bottom board can be removed. (See Fig. 1)
4. Remove the rear cover setscrews ⑤ and ⑥ to remove the rear cover. (Fig. 2)
5. Remove the main P.C.B. setscrews ⑦ ~ ⑩ and connectors ⑪ ~ ⑮. Then the main P.C.B. can be removed. (See Fig. 3)

\*When installing the main P.C.B. onto the main body, make sure that the connector ⑮ (CN102) is engaged with the stator frame pin. (Fig. 3)



\*Please note that the front and rear insulator springs are different from each other.  
 Front . . . . .White  
 Rear . . . . .Yellow

Fig. 1

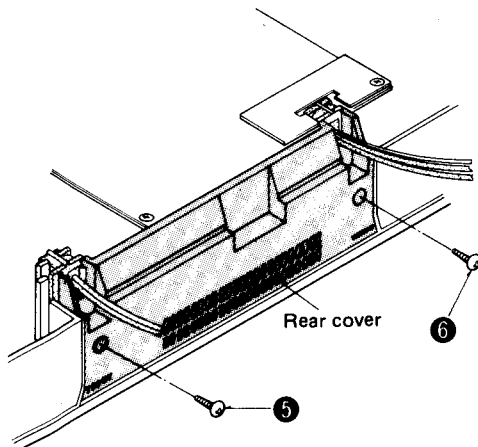


Fig. 2

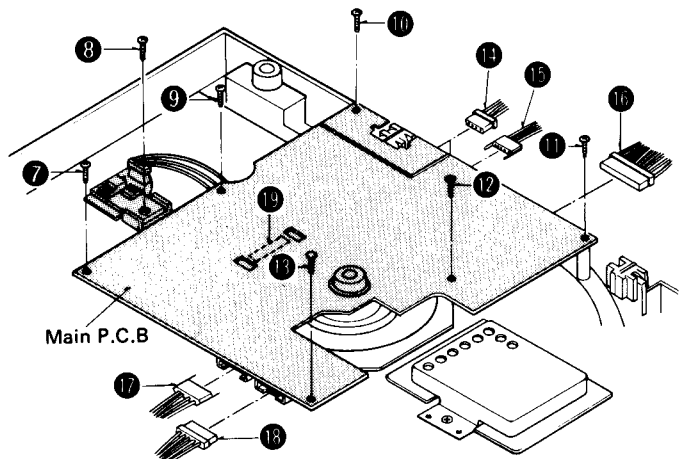


Fig. 3

### How to remove the stator frame

1. Remove the main P.C.B.  
(Refer to "How to remove the bottom board and main P.C.B.")
2. Remove the stator frame setscrews ⑲ ~ ⑳. Then the stator frame can be removed. (Fig. 4)

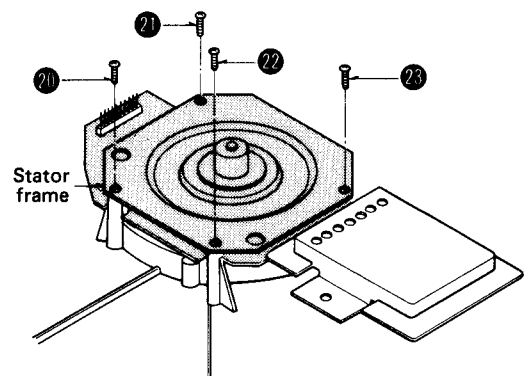


Fig. 4

## ● How to remove the cartridge

1. Open the upper cabinet and turn the arm lock in the direction of the arrow to lock the tonearm.
2. Loosen the cartridge setscrew with the attached screwdriver. (Turn the setscrew until it is freed as shown in Fig. 5.)
3. Pull out the cartridge, taking care not to touch the stylus. (Fig. 6)
4. When mounting the cartridge, match the tonearm connector with the cartridge pin and completely insert the cartridge and tighten the setscrew. (Fig. 6)

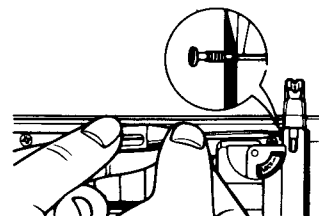


Fig. 5

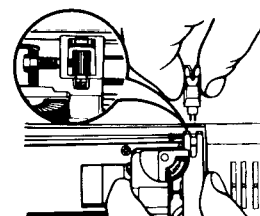


Fig. 6

## ● How to remove the surface plate and dust cover

1. Remove the cartridge. (Refer to "How to remove the cartridge".)
2. Open the upper cabinet and push the scale part of the surface plate from inside. (Fig. 7)  
\* Carefully remove the surface plate since it is secured with double-sided tape.
3. Remove the dust cover setscrews 24 ~ 26. (Fig. 8)
4. Completely open the dust cover; remove the upper cabinet cover setscrews 27 ~ 33; and remove the upper cabinet cover while pulling the tonearm in the direction of the arrow. (Fig. 9)
5. Remove the dust cover setscrews 34 and 35.  
Then the dust cover can be removed by pulling it in the direction of the arrow. (Fig. 10)

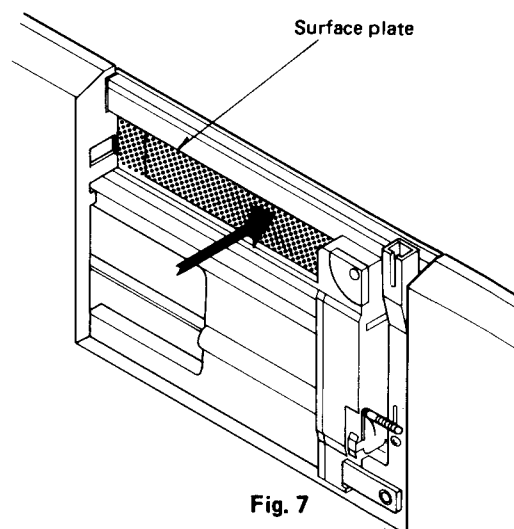


Fig. 7

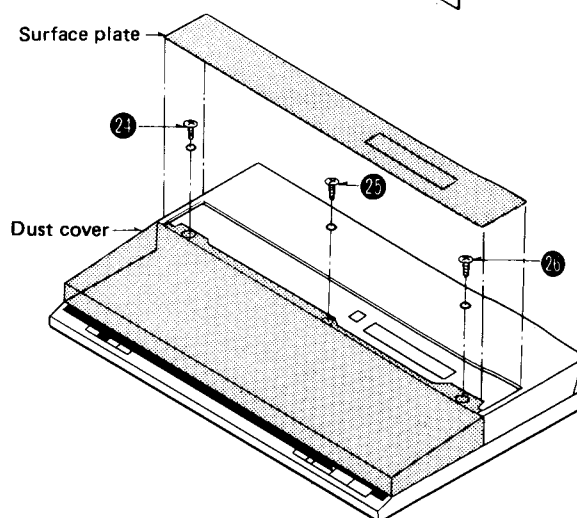


Fig. 8

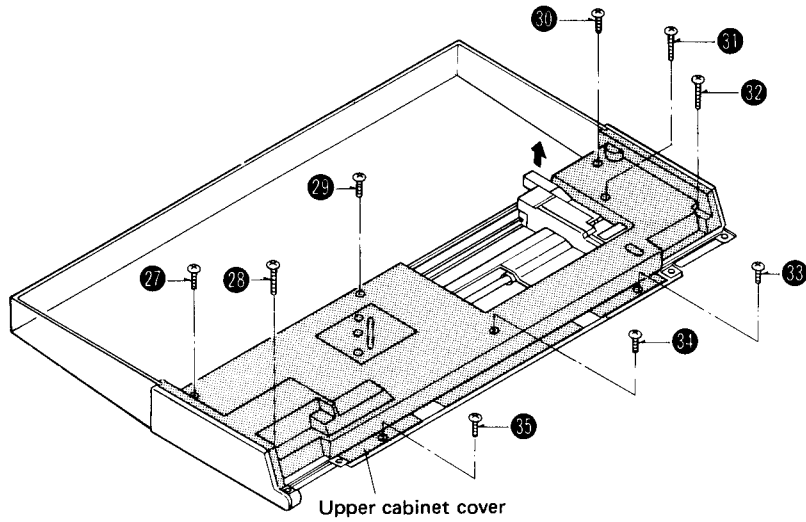


Fig. 9

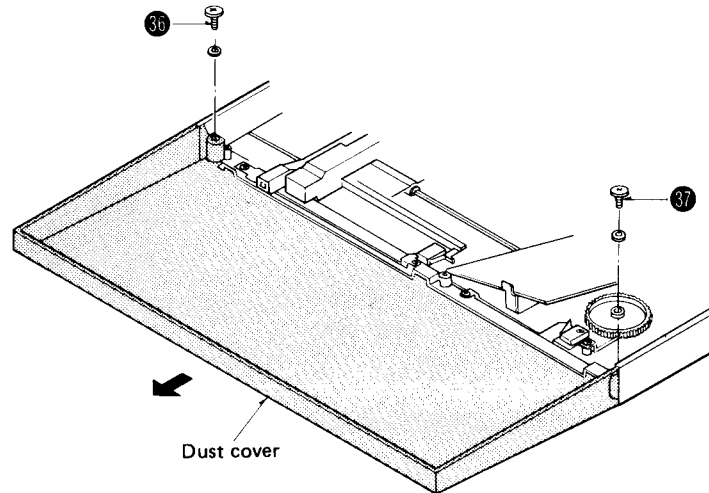


Fig. 10

● **How to remove the upper cabinet**

1. Remove the rear cover. (Refer to "How to remove the bottom board and main P.C.B.")
2. Remove the connectors ⑩ ~ ⑫. (Fig. 11)
3. Remove the hinge setscrews ⑪ ~ ⑬; open the upper cabinet and remove it by lifting. (Fig. 11)

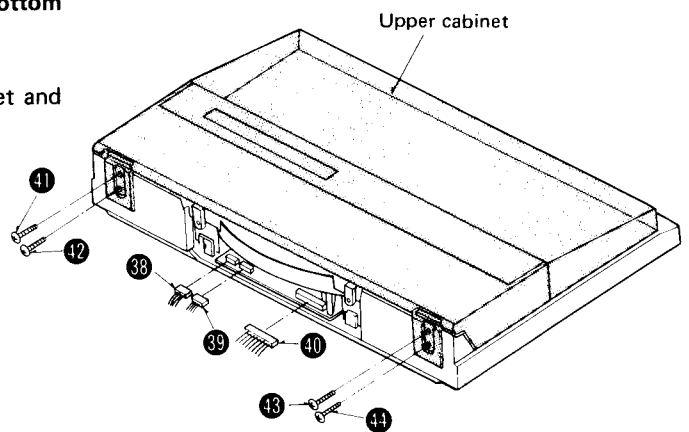


Fig. 11

● **How to remove the arm drive plate and disc size sensor P.C.B.**

1. Remove the upper cabinet cover. (Refer to "How to remove the surface plate and dust cover.")
2. Remove the disc size sensor P.C.B. setscrew ④⑤ and connectors ④⑥, ④⑦. (Fig. 12)
3. To remove the disc size sensor P.C.B. completely, remove the upper cabinet and the lead wire clasper setscrew ④⑧ in Fig. 12. (Refer to "How to remove the upper cabinet.")
4. Remove the arm drive rope from the tonearm, and remove the arm drive plate setscrews ④⑨ ~ ④⑫. Then the arm drive board can be detached. (Fig. 12)

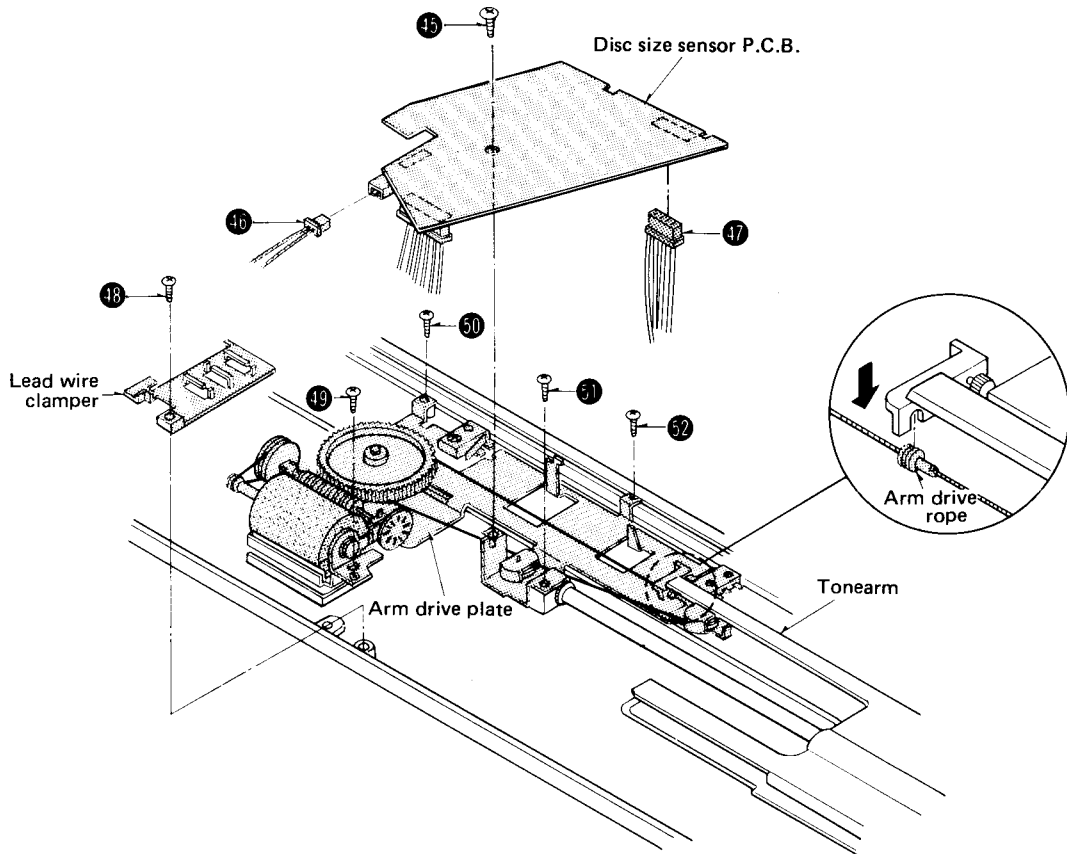


Fig. 12

● **How to remove the tonearm**

1. Remove the upper cabinet. (Refer to "How to remove the upper cabinet.")
2. Remove the arm drive plate. (Refer to "How to remove the arm drive plate and disc size sensor P.C.B.")
3. Remove the tonearm guide rail setscrew ⑤③ and lead wire clasper setscrews ⑤④, ⑤⑤. Then the tonearm can be removed. (Fig. 13)

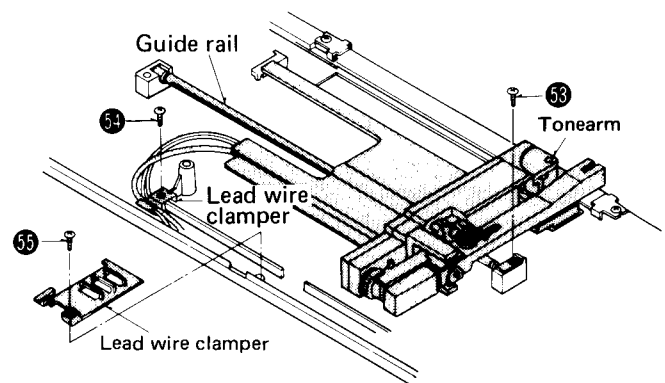


Fig. 13



## ■ HOW TO SET THE TONEARM DRIVE ROPE

If the rope is disengaged or when setting a new rope, follow the procedure below.

1. Remove the upper cabinet cover.  
(Refer to "Disassembly instructions.")
2. Remove the E-ring (56) and washer (57) to remove the arm drive wheel. (Fig. 14)
3. Turn over the arm drive wheel, and set the rope according to the steps 1 ~ 3 in Fig. 15.
4. Holding the rope set over the arm drive wheel, set the drive wheel and rope according to the steps 4 ~ 5 in Fig. 16.
5. After setting the rope, rotate the worm gear by hand to adjust the tonearm and rope connector positions, and secure them.
6. Rotate the worm gear by hand to check that the tonearm moves smoothly.
7. Mount the E-ring (56) and washer (57).

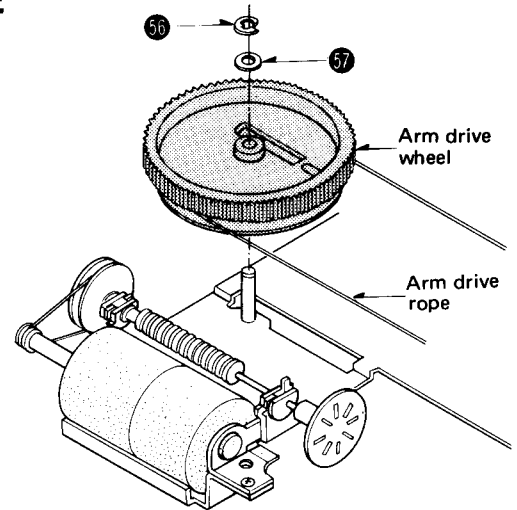


Fig. 14

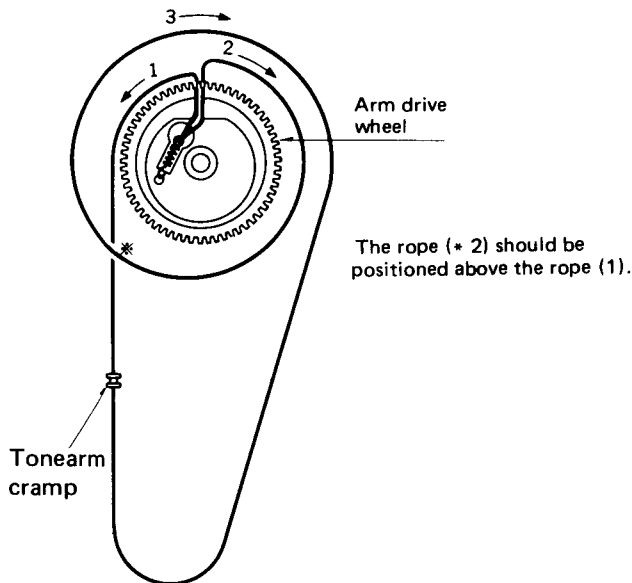


Fig. 15

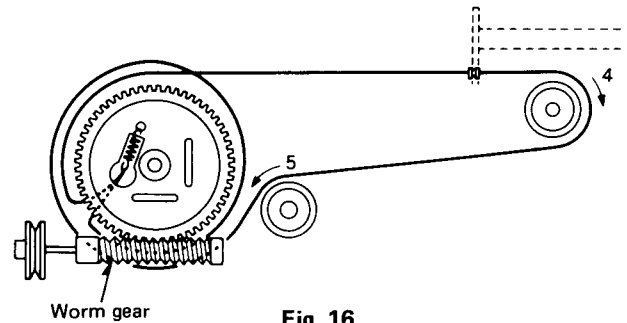


Fig. 16

## ■ REPLACEMENT OF HALL ELEMENT

When replacing the Hall element of the stator frame, be sure to place it with the marking side up as shown Fig. 17.

\* The leg position is not specified provided that the marking side is up.

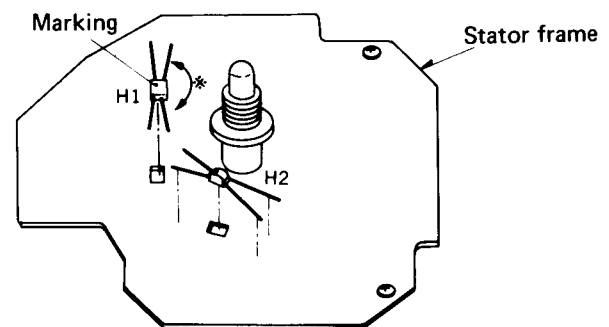


Fig. 17

DESCRIPTION OF CONNECTOR

Two types of connectors are used for this unit: one is directly soldered to the printed circuit board, and the other is insertion type.

The insertion type is represented by "CN", while the direct soldering type is by "BT". (See Fig. 18)

Note: Soldered connectors (indicated by BT) cannot be pulled out.

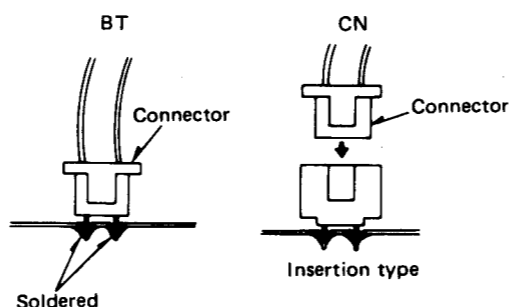


Fig. 18

MEASUREMENTS AND ADJUSTMENTS English

Adjustment of auto start

(Use a 30cm disc for this adjustment.)

- Remove the surface plate. (Refer to "Disassembly instructions.")
- Make sure that the tonearm is at the start position (the outermost periphery of turntable).
- Insert the screwdriver into the adjusting hole. (Fig. 19)
  - \* The start position is too much inside: Turn the screwdriver counterclockwise.
  - \* The start position is too much outside: Turn the screwdriver clockwise.
- If the start position is still deflected, turn the auto start position adjusting screw. (Fig. 19)
  - \* The start position is too much inside: Turn it clockwise.
  - \* The start position is too much outside: Turn it counterclockwise.
- After the adjustment, be sure to lock the adjusting screw with bond.

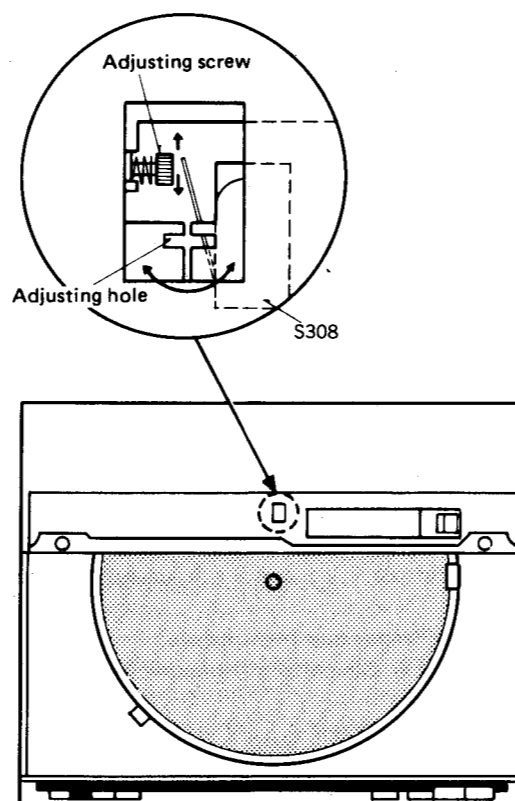


Fig. 19

Adjustment for the stylus pressure

Stylus pressure is normally set to 1.25 grams but may be raised or lowered by ±0.25 grams. It may be necessary to increase stylus pressure when playing records cut at high levels, or when room temperature is low, or when the unit easily picks up eternal vibrations. This will help prevent distortion and groove-skipping. To adjust stylus pressure, turn either way, as shown in the diagram. The screw is coupled to the graduated ring.

Note: Do not turn the stylus pressure adjustment screw further than the set limits (1.5 g ~ 1.0 g)

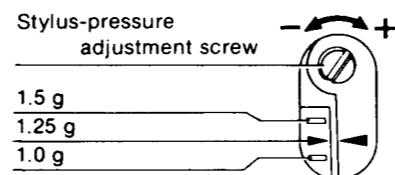


Fig. 20

Offset adjustment of tonearm and servo gain

After repair of the tonearm and arm drive circuit, make the adjustment according to the following procedure.

Tools and equipment used

- DC electronic voltmeters (VTVM).
- 1mm pitch record.
- Flat head screwdriver (small).
- Phillips head screwdriver (small).
- Hexagon wrench (M1.5).

Condition of the set

- Remove the dust cover and surface plate. (Refer to "Disassembly instructions.")
- Turn the reset switch (S307) "on" by pressing it with tape. (Fig. 21)
- Remove the rear cover. (Refer to "Disassembly instructions.")
- Completely open the upper cabinet and make sure that the tonearm operates when the start button is pressed.

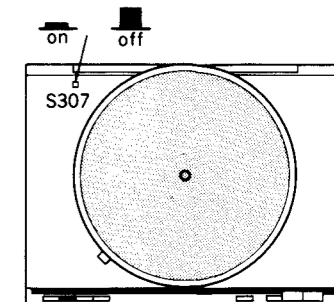
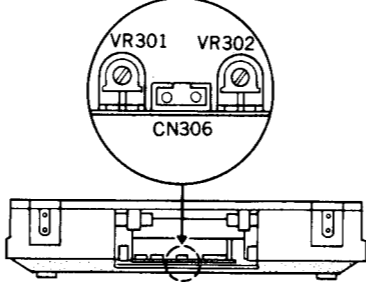
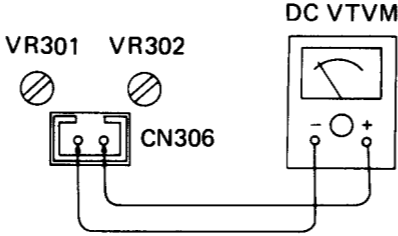
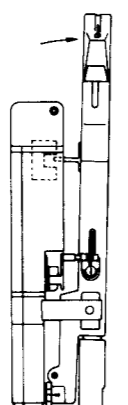
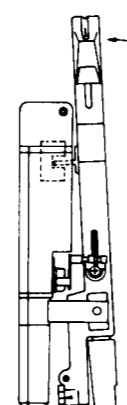
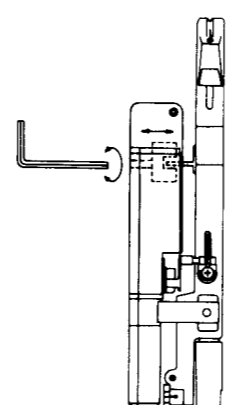
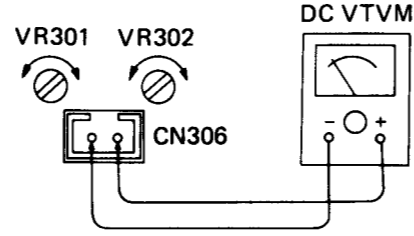


Fig. 21

Note: The tonearm does not operate with the turntable removed.

Step	Item	Adjustment method
1	Adjustment of arm lift height (See Fig. A)	<ol style="list-style-type: none"> <li>Turn the power switch "on" and move the tonearm towards the center of disc by pressing the start button.</li> <li>Press the cueing button to check that the clearance between the cartridge stylus and the guide rail is about 26mm.</li> <li>If the clearance is incorrect, adjust the lift height by turning the adjusting screw with a flat head screwdriver.                             <ul style="list-style-type: none"> <li>- Turn clockwise when excessive (&gt; 26mm).</li> <li>- Turn anticlockwise when insufficient (&lt; 26mm).</li> </ul> </li> </ol> <p>Note: The lift height adjusting screws of the replacement tonearm is completely tightened up. So, loosen the adjusting screw before making the above adjustment.</p>
2	Offset angle adjustment of tonearm (See Fig. B)	<ol style="list-style-type: none"> <li>Turn the power switch "on" and move the tonearm towards the center of disc by pressing the start button.</li> <li>Make sure that the arm center is aligned with the V groove of the lift lever.</li> <li>Make sure that the arm base is in parallel with the arm. (Check the clearance between (A) and (B) in Fig. B.)</li> <li>If the arm base is not in parallel with the arm, adjust it by turning the offset angle adjusting screw.</li> </ol>

Step	Item	Adjustment method
3	Adjustment of tonearm sensitivity	<p>① Turn the power switch "on" and move the tonearm towards the center of disc by pressing the start button.</p> <p>② Press the cueing button and make sure that the arm is lowered.</p> <p>③ Connect the DC VTVM to the connector pin. (See Fig. C, D)</p> <p>④ Read the voltage values with the tonearm fully shifted to the right and left respectively. (See Fig. E, F)</p> <p>⑤ Calculate the center voltage from the difference between the two voltage values. For example, when the voltage is 1.5V in Fig. E and 0.02V in Fig. F then  <math display="block">\frac{1.5V - 0.02V}{2} + 0.02V = 0.76V</math>                     (middle point voltage)</p> <p>⑥ Set the tonearm to the center position, and turn the adjusting screw of the arm base by a hexagon wrench until the center voltage is achieved. (See Fig. G)</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>
4	Servo gain and offset adjustment	<p>① Put a recrod on the turntable.</p> <p>② Open the dustcover 1 or 2 cm, turn the power switch "on" and lower the tonearm. (In this case, do not allow the stylus to touch the disc.)</p> <p>③ Connect the DC VTVM to the connector pin. (See Fig. H)</p> <p>④ Make sure that VR301 has been completely turned clockwise.</p> <p>⑤ Turn VR302 until the DC VTVM indicates 0.72V. (Servo gain adjustment)</p> <p>⑥ Put a 1 mm-pitch record on the turntable, close the dust cover, and play the record.</p> <p>⑦ Turn VR301 until the DC VTVM indicates 0.6V. (Offset adjustment)</p> <div style="display: flex; justify-content: center; align-items: center;">  </div>

■ MESSUNGEN UND JUSTIERUNGEN ■ Deutsch

● Justierung der Auto-Start-Position

(Für diese Justierung ist eine 30cm-Platte zu verwenden.)

1. Die Deckplatte abnehmen. (Siehe "Entfernen der Deckplatte".)
2. Überprüfen, daß der Tonarm in der Start-Position ist (am Außenrand des Plattentellers).
3. Den Schraubenzieher in das Justierloch einführen. (Abb. 19)

\* Die Start-Position ist zu weit innen: Den Schraubenzieher entgegen dem Uhrzeigersinn drehen.

\* Die Start-Position ist zu weit außen: Den Schraubenzieher im Uhrzeigersinn drehen.

4. Wenn die Start-Position noch immer von der korrekten Position abweicht, die Auto-Start-Position-Justierschraube drehen. (Abb. 19)

\* Die Start-Position ist zu weit innen: Im Uhrzeigersinn drehen.

\* Die Start-Position ist zu weit außen: Entgegen dem Uhrzeigersinn drehen.

5. Nach erfolgter Justierung muß die Justierschraube mit Lack gesichert werden.

● Justieren Sie die Auflagekraft in dem folgenden Fällen (Siehe Abb. 20)

Die normale Auflagekraft beträgt 1,25g, doch kann sie um ± 0,25 g gesenkt oder erhöht werden.

Es könnte notwendig sein, die Auflagekraft zu erhöhen, wenn Plattern abgespielt werden, die bei hohem Pegel geschnitten wurden, wenn die Raumtemperatur tief ist, oder wenn der Plattenspieler externer Vibration ausgesetzt ist. Dies hilft dabei, Verzerrung und Überspringen der Rillen zu vermeiden.

Zum Justieren der Auflagekraft kann die Schraube nach links oder rechts gedreht werden, wie in der Skizze gezeigt. Die Schraube ist mit dem gradierten Ring gekoppelt.

Anmerkung:

Drehen Sie die Auflagekraft-Justierschraube nie weiter, als bis zu den Begrenzungen (1,5 g ~ 1,0 g).

● Reibungswinkel-Justierung des Tonarms und der Servo-Verstärkung

Nach der Reparatur des Tonarms und der Tonarm-Antriebschaltung, sind die folgenden Justierungen durchzuführen.

Benötigte Werkzeuge und Instrumente

1. Elektronisches Gleichstrom-Röhrenvoltmeter oder Prüfgerät.
2. Platte mit 1mm-Rillenabstand.
3. Flachkopf-Schraubenzieher (klein).
4. Kreuzkopf-Schraubenzieher (Philips) (klein).
5. Sechskant-Schlüssel (M1,5).

Zustand des Gerätes

1. Die Staubabdeckung und die Plattentellerauflage entfernen. (Siehe "Anleitung für die Zerlegung".)
2. Den Deckelschalter (S307) durch Drücken mit Band einschalten. (Abb. 21)
3. Die Gehäuserückseite entfernen. (Siehe "Anleitung für die Zerlegung".)
4. Das obere Gehäuse vollständig öffnen und überprüfen, daß der Tonarm funktioniert, wenn die Start-Taste gedrückt wird.

Anmerkung: Der Tonarm funktioniert bei ausgebautem Plattenteller nicht.

## MESURAGES ET MISES AU POINT Français

Schritt	Einstell-Gegenstand	Justiermethode
1	<b>Justierung der Tonarm-Liftheöhe (Siehe Abb. A)</b>	<ol style="list-style-type: none"> <li>Den Netzschalter einschalten und den Tonarm durch Drücken der Start-Taste gegen die Plattenmitte bewegen.</li> <li>Die Lifttaste drücken und überprüfen, daß der Abstand zwischen der Tonabnehmer-Nadelspitze und der Führungsschiene ca. 26mm beträgt.</li> <li>Falls der Abstand nicht korrekt ist, die Liftheöhe durch Drehen der Justierschraube mit einem Flachkopf-Schraubenzieher justieren. – Bei zu großem Abstand: im Uhrzeigersinn drehen (&gt; 26mm). – Bei zu kleinem Abstand: entgegen dem Uhrzeigersinn drehen (&lt; 26mm). <b>Anmerkung:</b> Die Liftheöhe-Justierschraube des Ersatztonarms ist vollständig angezogen. Die Justierschraube ist daher vor dem Durchführen obiger Justierung zu lösen.</li> </ol>
2	<b>Reibungswinkel-Justierung des Tonarms (Siehe Abb. B)</b>	<ol style="list-style-type: none"> <li>Den Netzschalter einschalten und den Tonarm durch Drücken der Start-Taste gegen die Plattenmitte bewegen.</li> <li>Überprüfen, daß die Tonarmmitte mit der V-Kerbe der Liftachse übereinstimmt.</li> <li>Überprüfen, daß der Tonarm parallel zum Tonarmträger ist. (Den Abstand zwischen A und B in Abb. B überprüfen.)</li> <li>Falls der Tonarmträger nicht parallel zum Tonarm ist, durch Drehen der Reibungswinkel-Justierschraube justieren.</li> </ol>
3	<b>Justierung der Tonarm-Empfindlichkeit</b>	<ol style="list-style-type: none"> <li>Den Netzschalter einschalten und den Tonarm durch Drücken der Start-Taste gegen die Plattenmitte bewegen.</li> <li>Die Lifttaste drücken und überprüfen, daß der Tonarm abgesenkt wird.</li> <li>Das Gleichstrom-Röhrenvoltmeter an die Anschlußstifte anschließen. (Siehe Abb. C und D)</li> <li>Die Spannungswerte bei ganz nach rechts und dann nach links gestelltem Tonarm ablesen. (Siehe Abb. E und F)</li> <li>Vom Unterschied zwischen den beiden Spannungswerten die Mittelspannung berechnen. Zum Beispiel, wenn die Spannung in Abb. E 1,5V, und in Abb. F 0,02V beträgt: <math display="block">\frac{(1,5V - 0,02V)}{2} + 0,02V = 0,76V</math> (Mittelpunkt-Spannung)</li> <li>Den Tonarm in die Mittelposition stellen, und die Justierschraube der Armbasis mit dem Sechskantschlüssel drehen, bis die Mittelspannung erreicht wird. (Siehe Abb. G)</li> </ol>
4	<b>Servo-Verstärkungs- und Reibungswinkel-Justierung</b>	<ol style="list-style-type: none"> <li>Eine Platte auf den Plattenteller legen.</li> <li>Die Staubabdeckung 1 oder 2 cm öffnen, den Netzschalter einschalten und den Tonarm absenken. (In diesem Fall darauf achten, daß die Abtastnadel die Platte nicht berührt.)</li> <li>Das Gleichstrom-Röhrenvoltmeter an die Steckerstifte anschließen.</li> <li>Überprüfen, daß VR301 bis zum Anschlag im Uhrzeigersinn gedreht worden ist.</li> <li>VR302 drehen, bis das Gleichstrom-Röhrenvoltmeter, 0,72V anzeigt. (Servo-Verstärkungs-Justierung)</li> <li>Die Platte mit 1mm-Rillenabstand auf den Plattenteller auflegen, die Staubabdeckung schließen, und die Platte abspielen.</li> <li>VR301 drehen, bis das Gleichstrom-Röhrenvoltmeter 0,6V anzeigt. (Reibungswinkel-Justierung)</li> </ol>

### • Mise au point du démarrage automatique

(Utiliser un disque de 30 cm pour cette mise au point.)

- Enlever la plaque ornementale. (Se référer aux "Instructions pour le Démontage".)
- S'assurer que le bras de lecture est sur la position de démarrage (la périphérie la plus à l'extérieure de la platine).
- Insérer le tournevis dans le trou de réglage. (Fig. 19)  
\* La position de démarrage est trop à l'intérieur: Tourner le tournevis dans le sens inverse des aiguilles d'une montre.  
\* La position de démarrage est trop à l'extérieur: Tourner le tournevis dans le sens des aiguilles d'une montre.

- Si la position de démarrage est encore déviée, tourner la vis de mise au point du démarrage automatique. (Fig. 19)

\* La position de démarrage est trop à l'intérieur: La tourner dans le sens des aiguilles d'une montre.

\* La position de démarrage est trop à l'extérieur: La tourner dans le sens inverse des aiguilles d'une montre.

- Après la mise au point, s'assurer de bloquer la vis de mise au point avec un adhésif.

### • Mettre au point la force verticale d'appui de la pointe de lecture dans les cas suivants. (Voir Fig. 20.)

La force verticale d'appui de la pointe de lecture est normalement réglée sur 1,25 g, mais elle peut être augmentée ou diminuée de  $\pm 0,25$  g.

Il pourra être nécessaire d'augmenter la force verticale d'appui de la pointe lorsqu'on joue des disques enregistrés à des niveaux élevés, ou lorsque la température de la pièce est basse, ou encore lorsque l'appareil capte facilement des vibrations extérieures.

Cela aidera à empêcher une distorsion et un sautilllement des sillons. Pour régler cette force verticale d'appui de la pointe de lecture, tourner la vis de réglage d'un côté ou de l'autre, comme il est montré sur le schéma. La vis est couplée avec la bague graduée.

**Nota:**

Ne pas tourner la vis de réglage de la force verticale d'appui de la pointe de lecture plus que les limites de réglage admissibles (1,5 ~ 1,0 g).

### • Mise au point du décalage du bras de lecture et de l'amplification servo-mécanique

Après la révision du bras de lecture et du circuit d'entraînement du bras, effectuer la mise au point suivante selon la procédure ci-dessous.

#### Outils et équipement à utiliser:

- Vérificateur ou voltmètre électronique (VTVM) à C.C.
- Disque à écarts de 1 mm.
- Tournevis à tête plate (petit).
- Tournevis à tête Philips (petit).
- Clef hexagonale (M1,5).

#### Conditions du réglage:

- Retirer le couvercle protège-poussière et la plaque de surface. (Se référer aux "Instructions pour le Démontage".)
- Mettre "en marche" le commutateur (S307) du couvercle en appuyant dessus avec un ruban. (Fig. 21)
- Retirer le capot arrière. (Se référer aux "Instructions pour le Démontage".)
- Ouvrir complètement le boîtier supérieur et s'assurer que le bras de lecture fonctionne lorsqu'on appuie sur la touche de démarrage.

**Nota:** Le bras de lecture ne fonctionne pas lorsque la platine est retirée.

Etape	Article	Méthode de réglage
1	Mise au point de la hauteur d'élévation du bras (Voir Fig. A)	<p>① Mettre "en marche" l'interrupteur d'alimentation et déplacer le bras de lecture vers le centre du disque en appuyant sur la touche de démarrage.</p> <p>② Appuyer sur la touche de pose/relevage pour vérifier si l'intervalle entre la pointe de lecture de la cellule pick-up et le rail de guidage est d'à peu près 26 mm.</p> <p>③ Si l'intervalle n'est pas suffisant, ajuster la hauteur d'élévation en tournant la vis de réglage avec un tournevis à tête plate.</p> <p>– Tourner dans le sens des aiguilles d'une montre si l'intervalle est excessif (&gt; 26 mm).</p> <p>– Tourner dans le sens inverse des aiguilles d'une montre si l'intervalle est insuffisant (&lt; 26 mm).</p> <p><b>Nota:</b> La vis de réglage de la hauteur d'élévation du bras de lecture de rechange est serrée à fond. Aussi, la desserrer avant d'effectuer la mise au point ci-dessus.</p>
2	Mise au point de l'angle de décalage du bras de lecture (Voir Fig. B)	<p>① Mettre "en marche" l'interrupteur d'alimentation et déplacer le bras de lecture vers le centre du disque en appuyant sur la touche de démarrage.</p> <p>② S'assurer que le centre du bras soit aligné avec l'encoche en V du levier d'élévation.</p> <p>③ S'assurer que le socle du bras soit parallèle au bras. (Vérifier l'intervalle entre A et B dans la Fig. B)</p> <p>④ Si le socle du bras n'est pas parallèle au bras, l'ajuster en tournant la vis de réglage de l'angle de décalage.</p>
3	Mise au point de la sensibilité du bras de lecture	<p>① Mettre "en marche" l'interrupteur d'alimentation et déplacer le bras de lecture vers le centre du disque en appuyant sur la touche de démarrage.</p> <p>② Appuyer sur la touche de pose/relevage et s'assurer que le bras soit abaissé.</p> <p>③ Brancher le voltmètre électronique à C.C. à la broche du connecteur. (Voir les Figs. C et D)</p> <p>④ Observer les valeurs de tension avec le bras de lecture complètement orienté respectivement vers la droite et la gauche. (Voir les Figs. E et F)</p> <p>⑤ Calculer la tension moyenne à partir de la différence entre les deux valeurs de tension.</p> <p>Par exemple, lorsque la tension est de 1,5V dans la Fig. E et de 0,02V dans la Fig. F, alors:</p> $\frac{(1,5V - 0,02V)}{2} + 0,02V = 0,76V$ <p>(tension du point intermédiaire)</p> <p>⑥ Placer le bras de lecture sur la position du centre, et tourner la vis de réglage du socle du bras avec une clef hexagonale jusqu'à ce que la tension médiane soit obtenue. (Voir Fig. G)</p>
4	Mise au point du décalage et de l'amplification servomécanique	<p>① Placer un disque sur la platine.</p> <p>② Ouvrir le couvercle protège-poussière de 1 à 2 cm, mettre "en marche" l'interrupteur d'alimentation et abaisser le bras de lecture. (Dans ce cas, ne pas laisser la pointe de lecture toucher le disque.)</p> <p>③ Brancher le voltmètre électronique à C.C. à la broche du connecteur.</p> <p>④ S'assurer que VR301 à été entièrement tourné dans le sens des aiguilles d'une montre.</p> <p>⑤ Tourner VR302 jusqu'à ce que le voltmètre électronique à C.C. indique 0,72V. (Mise au point de l'amplification servo-mécanique.)</p> <p>⑥ Placer un disque à écarts de 1 mm sur la platine, refermer le couvercle protège-poussière et faire jouer le disque.</p> <p>⑦ Tourner VR301 jusqu'à ce que le voltmètre électronique à C.C. indique 0,6V. (Mise au point du décalage.)</p>

REPLACEMENT PARTS LIST... Cabinet & Chassis Parts

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
  - Important safety notice: Components indentified by  $\Delta$  make have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
  - $\square$ -marked parts are used for black type only, while  $\circ$ -marked parts are for silver type only.
  - Parts other than  $\square$  and  $\circ$ -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.

Black type model No. : SL-QL1 (K)

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
<b>MAIN CABINET PARTS</b>					
1	SFTGQ11N01	Turntable Mat	61	SFADQ11N01E	Dust Cover
2	SFTEQ11N01A	Turntable	62	SFUMC07-19	Guide, Lead Wire
3	$\square$ SFACQ11N01	Cabinet (Silver)	63	SFKKQ11N02	Surface Plate
3	SFACQ11N03	Cabinet (Black)	64	$\circ$ SFATQ11N01A	Hing (Silver)
4	SFUMQ11N11	Rear Cover	64	$\square$ SFATQ11N02A	Hing (Black)
5 [E] only	SFNNQ11S01	Name Plate	65	SFUPC07-01E	Arm Drive Plate
5 [EK],[XL]	SFNNQ11G01	Name Plate	66	SFUMC07-07	Clamper, Lead Wire
5 [EG],[EB],[EF]	SFNNQ11R01	Name Plate	67	SFUMC07-23	Pulley
5 [EH],[EI]	SFNNQ11X01	Name Plate	68	SFUMC07-22	Stopper, Pulley
5 [XA] only	SFNNQ11X01	Name Plate	69	SFUMC10-05	Arm Drive Wheel
6	SFDJQ11N05E	Connector, 3 Pin (With Wire)	70	SFDJC10-02E	Connector, 4 Pin (With Wire)
7	SFKKQ11N01	Surface Plate	71	SFXZC07-01R	Worm Ass'y
8	SFUMQ11N09	Spacer Strobe	72	SFGBC10-01	Belt, Arm Drive
9	SFUMQ11N15	Spacer, Strobe L.E.D.	73	SFUZC07-05E	Arm Drive Rope
10	SFDJQ11N06E	Connector, 2 Pin (With Wire)	74	SFMHC07-01E	Arm Drive Motor
11	SFUMQ11N01E	Guide (A), Operation Knob	75	SFGCQ11N03	Cushion, Arm Drive Motor
12	SFUMQ11N03	Guide (B), Speed Selector Knob	76	SFUPQ11N15	Supporter, Arm Drive Motor
13	SFKTQ11N03	Knob, Speed Selector	77	SFDJQ11N03E	Connector, 12 Pin (With Wire)
14	SFKTQ11N04	Knob, Power	78	SFUZQ11N02	Lable, Surface Plate
15	SFUMQ11N06	Shaft, Power Switch Knob	<b>TONARM PARTS</b>		
16	SFUPQ11N04	Bracket, Power Switch Knob	101	SFPAM00701A	Tonearm Cartridge
17	SFUMQ11N05	Joint Rod, Power Switch	102	EPCP22SK	Cartridge Stylus
18	SFDJQ11N02E	Connector, 6 Pin (With Wire)	103	SFPCS00701A	Tonearm Position Indicator
19	SFGCC07-06	Cushion, Power Transformer	104	SFPKD00701E	Arm Base
20	SFUPQ11N09	Cover, Power Transformer	105	SFDZC07-01E	Cueing Plunger (RL501)
21	SFUMC07-08	Spacer, Disc Size Detect L.E.D.	106	SFJL00701A	Lift Ass'y
22	SFDJC07-05E	Connector, 2 Pin (With Wire)	107	SFSP01505	Spring, Lift Ass'y
23	SFAUQ11N01E	Bottom Board	108	SFPKD00702	Arm Base Cover
24	SFQCC07-01	Spring (Front), Audio Insulator	109	SFSP00706	Spring, Rest Position Adjustment
25	SFQCC07-01	Spring (Rear), Audio Insulator	110	SFDJC07-03E	Connector, Phono (With Wire)
26	$\Delta$ SFGAC07-01E	Audio Insulator	111	SFDJC07-02E	Connector, 5 Pin (With Wire)
27	$\Delta$ SJAB8	AC Cord	113	SFPGM00702	Cushion, Lead Wire
27 [EK] only	QFC1205M	AC Cord	114	SFPZB00709	Bracket, Arm Base
27 [XL] only	QFC1208M	AC Cord	115	SFGZ172-01	Spacer, Arm Base Cover
28	SFUM190-11	Clamper, AC Cord	<b>SCREWS, WASHERS and CIRCUITS</b>		
28 [XL] only	SFUM190-12	Clamper, AC Cord	N1	XTV3+8BFN	Screw, Tapping, $\oplus$ 3 x 8
29	SFDHC07-01A	Phono Cord	N2	XTV3+8BFZ	Screw, Tapping, $\oplus$ 3 x 8
30	SFMZQ11N01Z	Stator Fram	N3	SFXGQ20-01	Screw, Insulator
31	SFDJQ11N01E	Connector, 8 Pin (With Wire)	N4	XYE3+EJB	Screw, Tapping, $\oplus$ 3 x 8
32	SFUZQ11N03	Shield Plate	N5	XYN3+C8	Screw, $\oplus$ 3 x 8
33	SFDJQ11N04E	Connector, 5 Pin (With Wire)	N6	SFXWQ11N02	Washer, Insulator
34	SFDFQ11N01	Plate, Power Transistor	N7	XTV3+8BFN	Screw, Tapping, $\oplus$ 3 x 6
35	SFDCC07-01	Sheet, Power Transistor	N8	XTS26+6B	Screw, Tapping, $\oplus$ 2.6 x 6
36	SFDBC07-01	Bushing	N9	SFXGQ11N01	Screw, Dust Cover
37	SFDSTWM9901A	Switch, Power Switch	N10	SFXWQ11N01	Washer, Dust Cover
38	SFUM190-11	Clamper, Phono Cord	N11	XTV3+16BFZ	Screw, Tapping, $\oplus$ 3 x 16
39	SFGZQ11N01	Spacer, L.E.D. (D325, 328, 329)	N12	SFXW551D2	Washer, Arm Drive Wheel
40	SFGZQ11N02	Spacer, L.E.D. (D321 ~ 324)	N13	XUC3FT	Circlip, Arm Drive Wheel
<b>UPPER CABINET PARTS</b>					
50	SFUMQ11N12	Upper Cabinet Cover	N14	XYN23+C10BN	Screw, $\oplus$ 2.3 x 10
51	SFNZC07M01	Lable, Disc Size Selector	N15	XYC4+CJ20FZ	Screw, Tapping, $\oplus$ 4 x 20
52	SFUPQ11N08	Guide, Upper Cabinet Cover	N16	XTN3+8BFZ	Screw, Tapping, $\oplus$ 3 x 8
53	SFUMC07-16	Shutter	N17	SFPEV00701	Screw, Cartridge
54	SFGCQ11N01	Cushion (A), Guide Rail (A)	N18	XTN3+4B	Screw, Tapping, $\oplus$ 3 x 4
55	SFXJQ11N01	Guide Rail (A), Tonearm	N19	XTN23+6BFZ	Screw, Tapping, $\oplus$ 2.3 x 6
56	SFUPC07-04	Supporter (A), Guide Rail (A)	N20	XSN2+4BV	Screw, $\oplus$ 2 x 4
57	SFUPQ11N03	Guide Rail (B), Upper Cabinet	N21	XWA2BFZ	Washer, Spring, $\phi$ 2
58	SFUPQ11N05	Supporter (B), Guide Rail (B)	N22	XXE3D2FZS	Screw, Lift Ass'y
59	SFGCQ11N02	Cushion (B), Guide Rail (B)	N23	XWC3B	Washer, External Toothed Lock $\phi$ 3
60	$\circ$ SFACQ11N02	Upper Cabinet (Silver)	N24	XSN3+8S	Screw, $\oplus$ 3 x 8
60	$\square$ SFACQ11N04	Upper Cabinet (Black)	N25	XXE3D6FZS	Screw, Offset Angle Adjustment
			N26	SFXGC10-06	Screw, Rest Position, Adjustment
			N27	SFXWQ11N04	Washer, Dust Cover
			N28	SFXWQ11N05	Washer, Upper Cabinet Cover

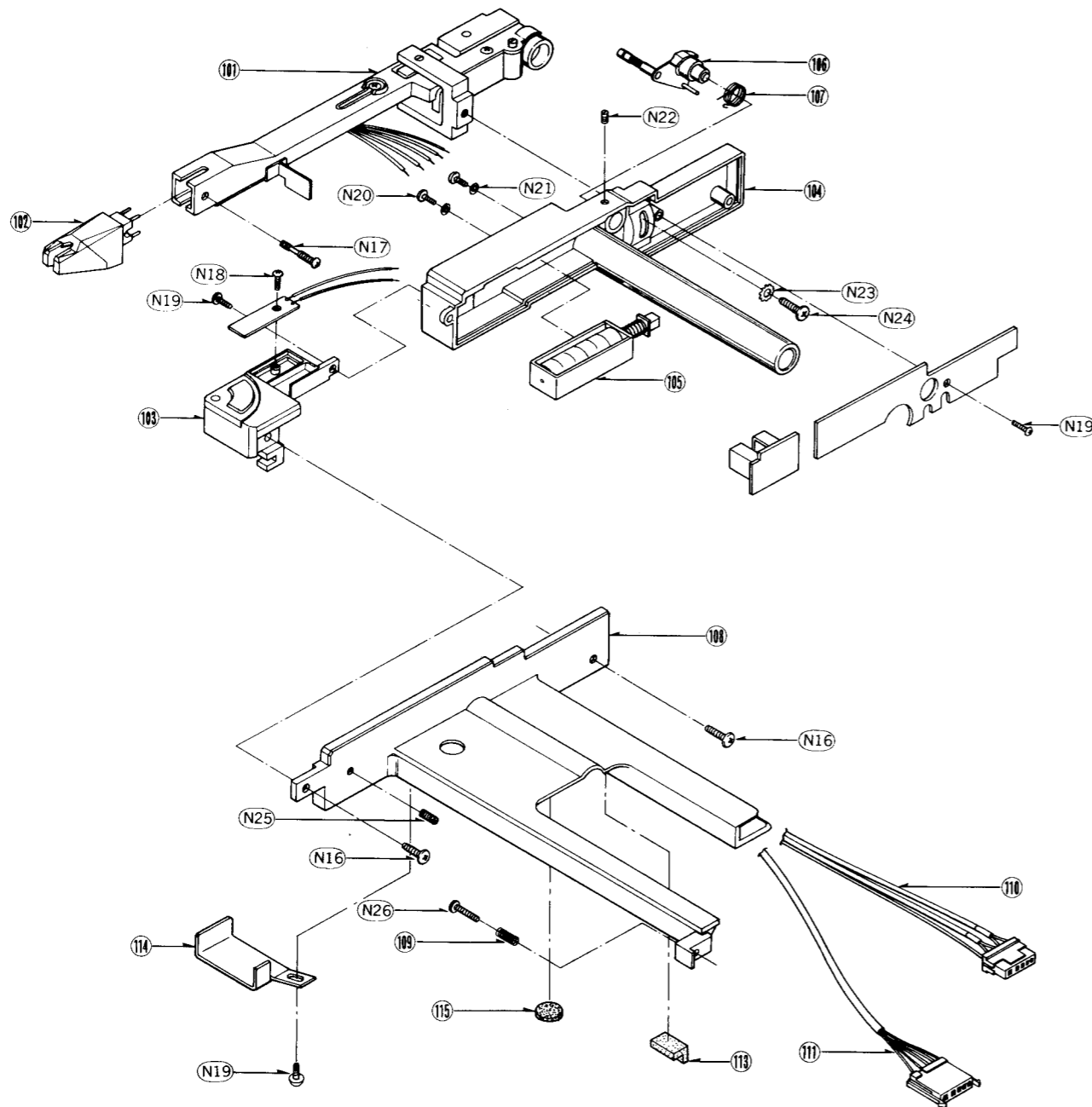
Ref. No.	Part No.	Part Name & Description
<b>ACCESSORIES</b>		
A1 [E] only	SFNUQ11S01	Instructions Book, Printed Matter
A1 [EK] only	SFNUQ11G01	Instructions Book, Printed Matter
A1	SFNUQ11X01	Instructions Book, Printed Matter
A2	SFWE212-01	45 Adaptor
A3	SFCZB30001	Brush
A4	SFWTC07-01	Screw Driver
A5 [XA] only	SFDK119118	2 Pin Plug
<b>PACKING PARTS</b>		
P1	○ SFHPQ11M01	Carton Box, (Silver)
P1 [EF] only	○ SFHPQ11C01	Carton Box, (Silver)
P1	⊗ SFHPQ11M21	Carton Box, (Black)

Ref. No.	Part No.	Part Name & Description
P2	SFHHQ11N01	Pad, Front
P3	SFHHQ11N02	Pad, Rear
P4	SFHDQ11N01	Pad, Top
P5	SFHSQ11N01E	Spacer, Tonearm
P6	SFHSQ11N02	Spacer, Dust Cover
P7	SFYH60X60	Polyethylene Bag, Unit
P8	SFYH40X45	Polyethylene Bag, Turntable
P9	SFYF09A15	Polyethylene Bag, Accessories
P10 [XA] only	SFHSC07-02	Spacer (A), Corner
P11 [XA] only	SFHSC07-03	Spacer (B), Corner

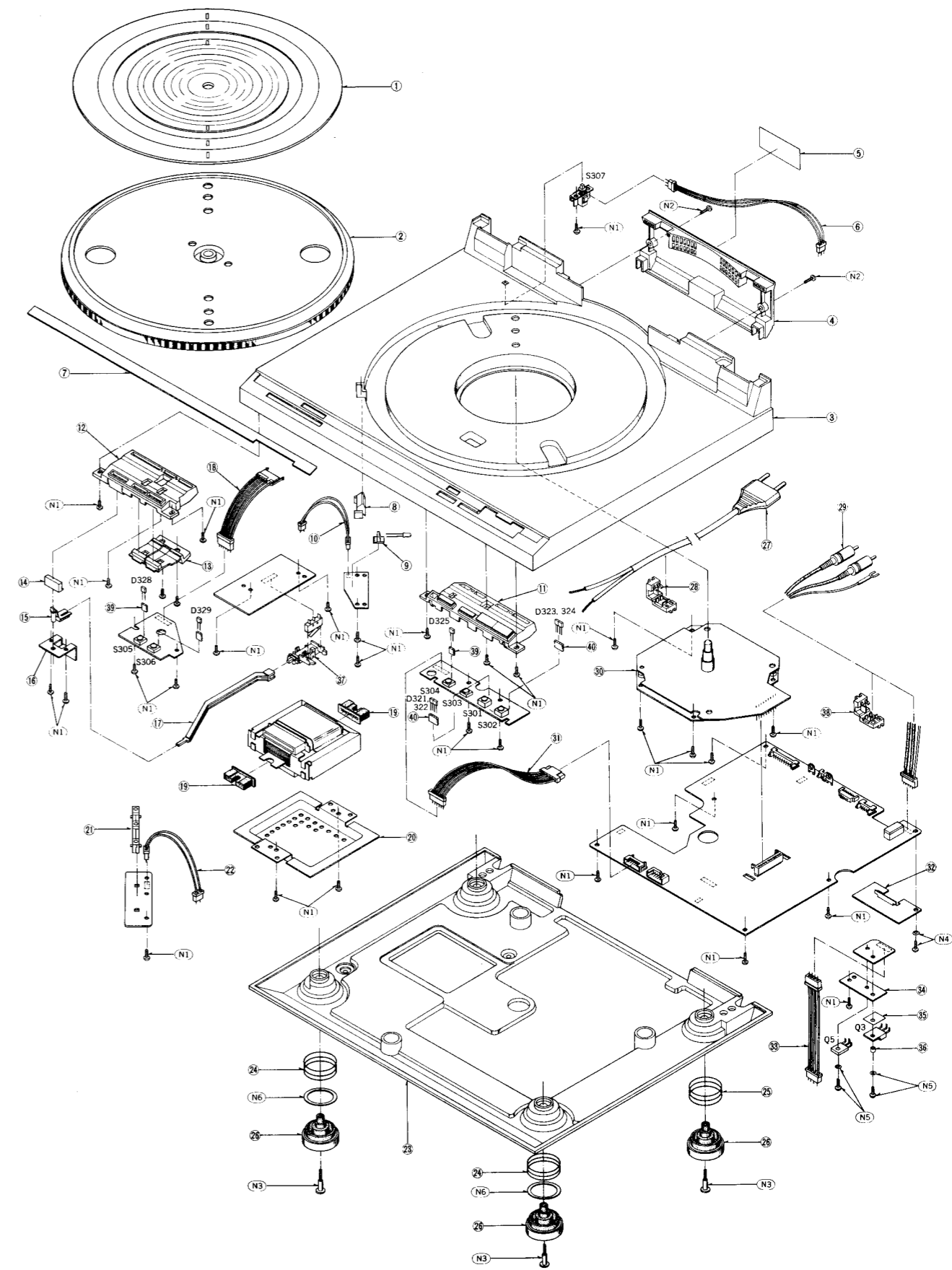
**Areas**

- \* [E] is available in Switzerland and Scandinavia.
- \* [EK] is available in United Kingdom.
- \* [XL] is available in Australia.
- \* [EF] is available in France.
- \* [EB] is available in Belgium.
- \* [EG] is available in F.R. Germany.
- \* [EI] is available in Italy.
- \* [EH] is available in Holland.
- \* [XA] is available in East South Asia, Oceania, Africa, Middle Near East and Central South America.

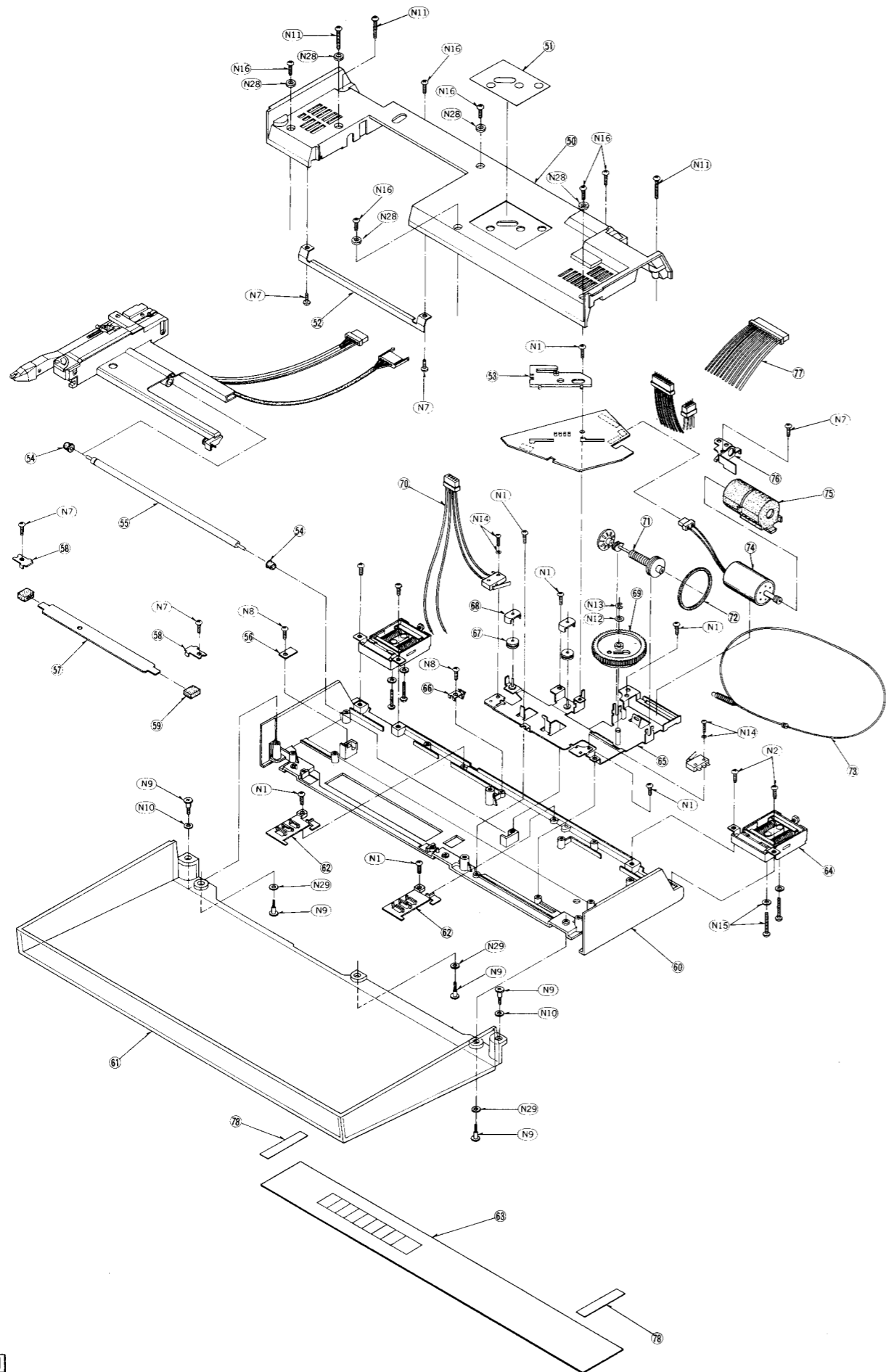
■ EXPLODED VIEW.....Tonearm



■ EXPLODED VIEW.....Main Cabinet



EXPLODED VIEW.....Upper Cabinet



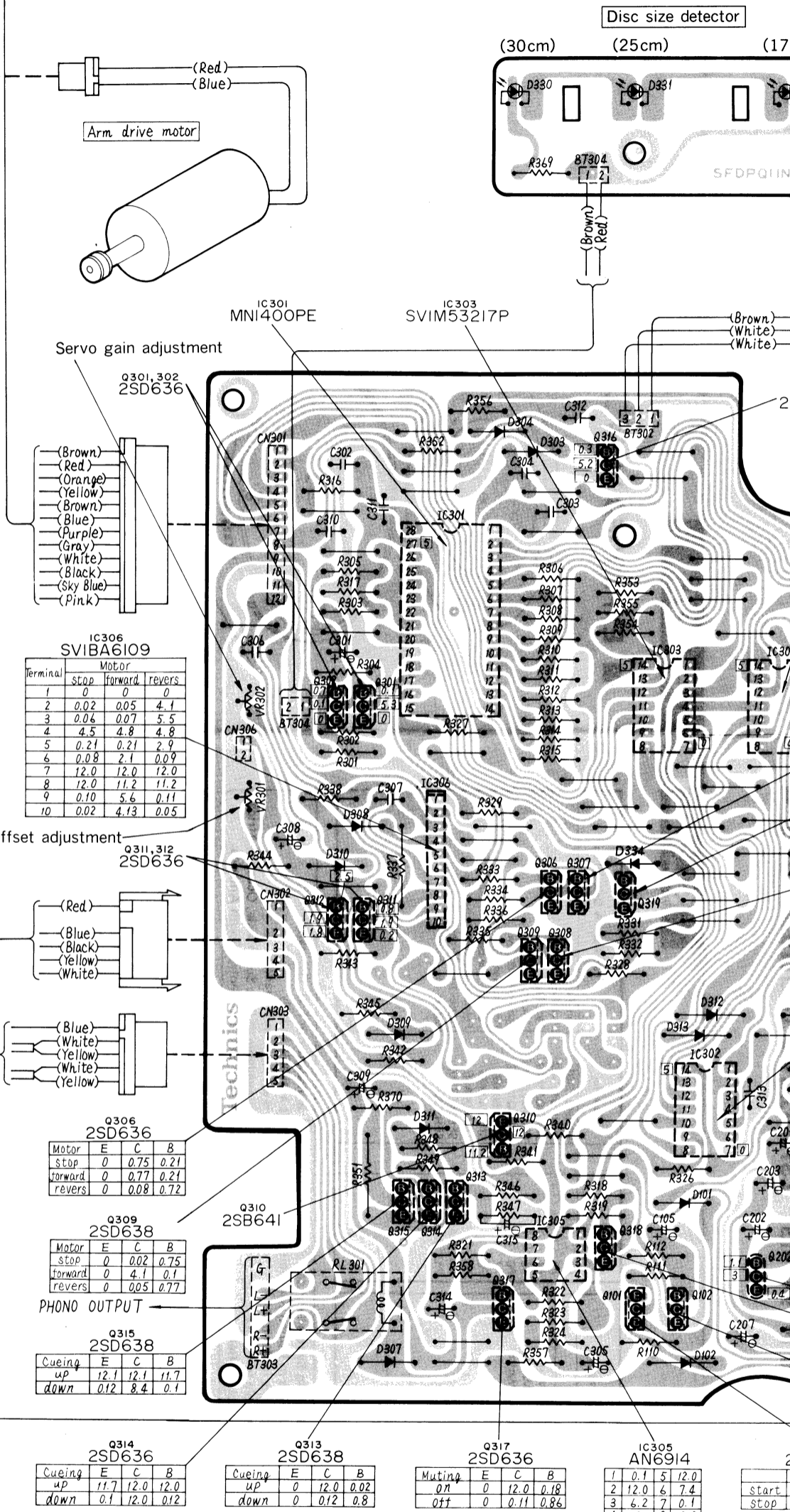
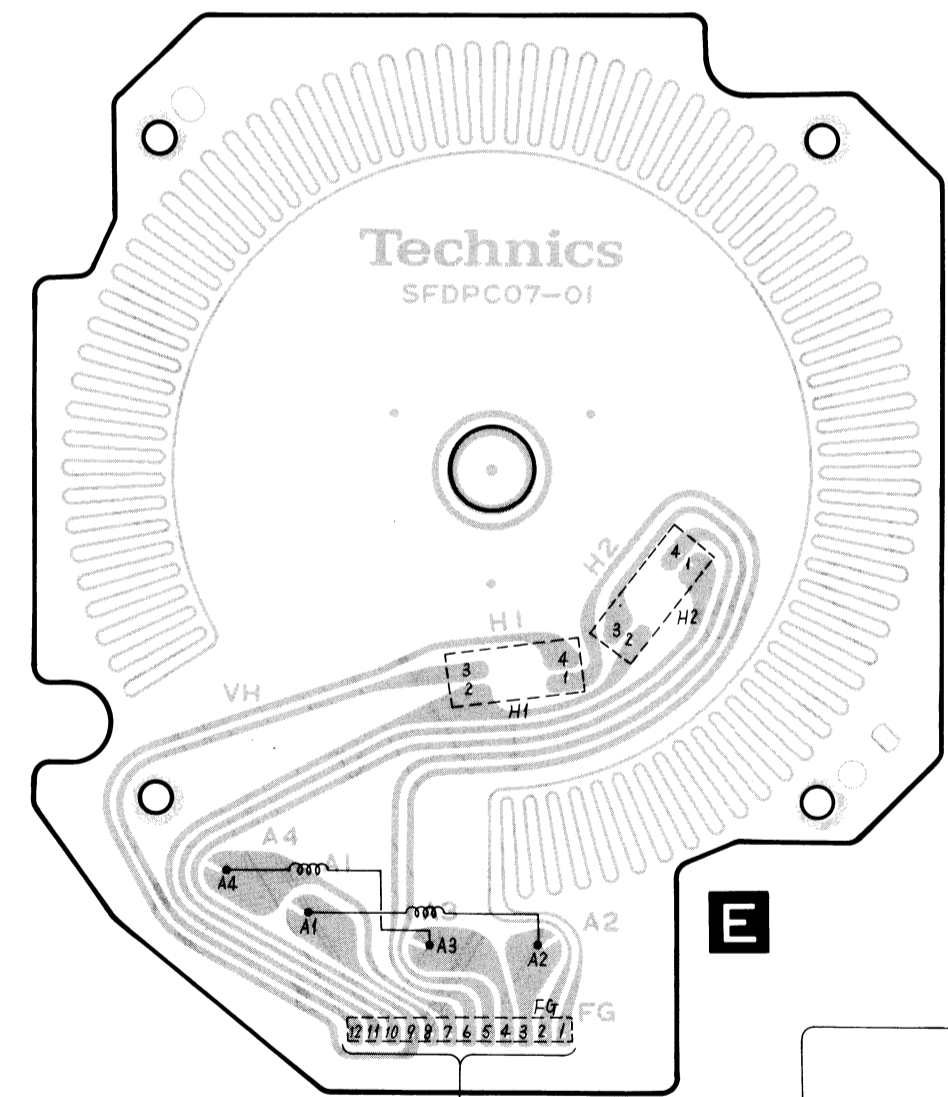
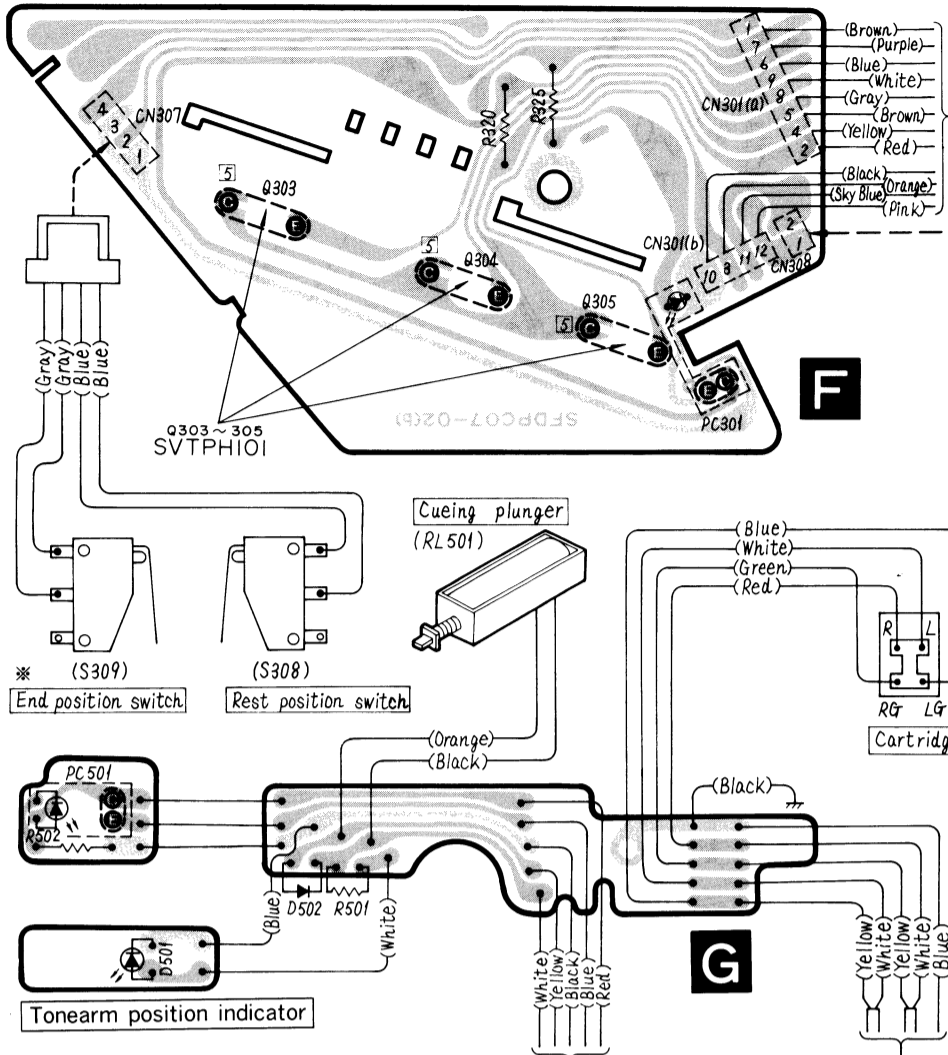
REPLACEMENT PARTS LIST...Electrical Parts

**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  $\Delta$  make have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. 3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

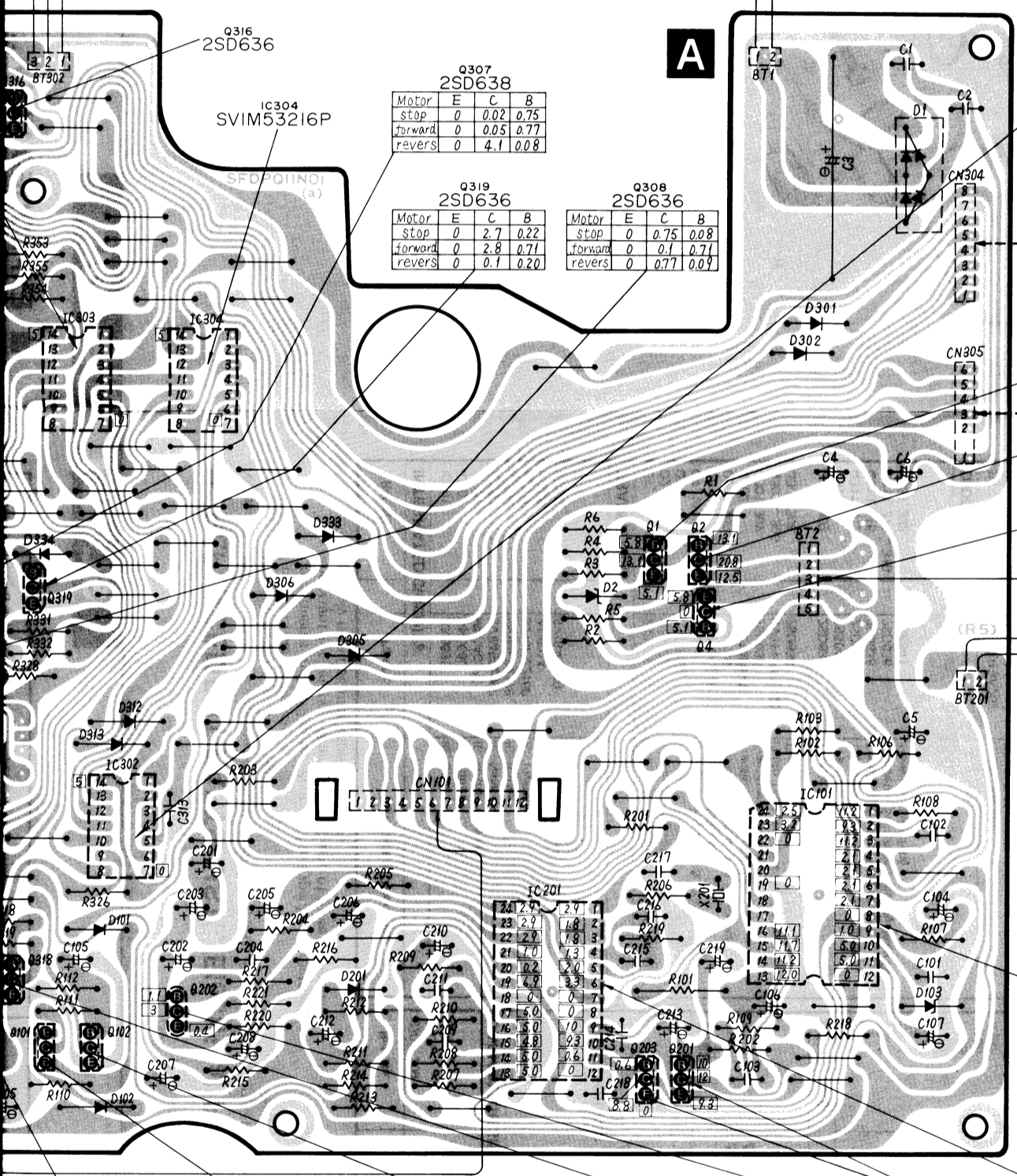
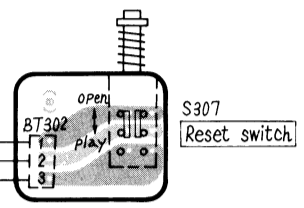
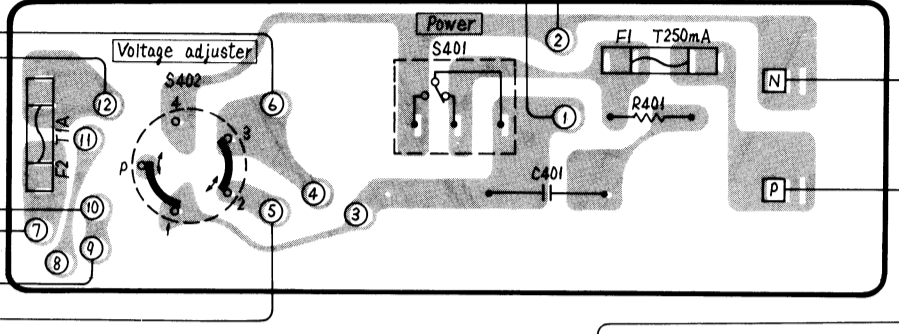
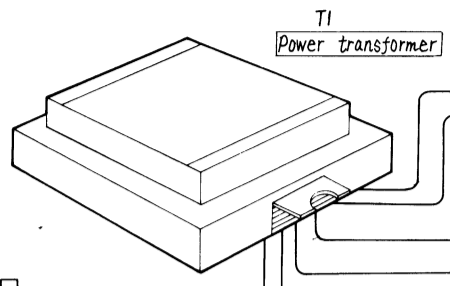
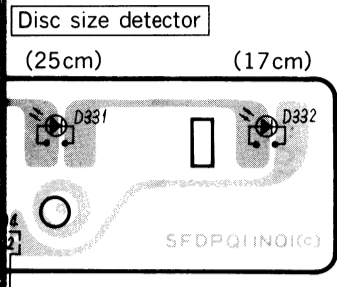
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
<b>INTEGRATED CIRCUITS</b>					
IC101	AN6635	IC, Drive	S308, 309	$\Delta$ SFDS2MSL-4	Switch, Rest & End Detector
IC201	AN6680	IC, Control	S401	$\Delta$ SFDS55GLS	Switch, Power Source
IC301	MN1400PE	IC, Micro-Computer	S402	$\Delta$ SFDSHXW01317	Switch, Voltage Adjuster
IC302	SVIM53200P	IC, Nand Gate	<b>VARIABLE RESISTORS</b>		
IC303	SVIM53217P	IC, Buffer	VR301	EVNM0AA00B14	Offset Adjustment, 10k $\Omega$ (B)
IC304	SVIM53216P	IC, Inverter	VR302	EVNM0AA00B13	Servo Gain Adjustment, 1k $\Omega$ (B)
IC305	AN6914	IC, Comparator	<b>TRANSFORMER</b>		
IC306	SVIBA6109	IC, Arm Motor Drive	T1	$\Delta$ SLT66PS5E	Transformer, Power Source
<b>TRANSISTORS</b>					
Q1, 102	2SD636	Transistor, Regulator & Drive Detector	<b>FUSE</b>		
Q2	2SD638	Transistor, Regulator	F1	$\Delta$ XBAS2C025T1A	Fuse, 250V, 250mA
Q3	2SC1826	Transistor, Regulator	F2	$\Delta$ XBA2C10TR0	Fuse, 250V, 1A
Q4, 101	2SB641	Transistor, Regulator & Drive Detector	<b>RESISTORS</b>		
Q5	2SC1846-R	Transistor, Regulator	R1	ERD25FJ562	Carbon, 5.6k $\Omega$ , 1/4W, $\pm$ 5%
Q201, 203	2SD636	Transistor, Regulator & Switching	R2	ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
Q202	<b>2SC1328-T</b>	Transistor, FG Amplifier	R3, 4	ERD25FJ562	Carbon, 5.6k $\Omega$ , 1/4W, $\pm$ 5%
Q301, 302	2SD636	Transistor, Switching	R5	ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
Q303 ~ 305	SVTPH101-Q2	Photo Transistor, Disc Size Detector	R6	ERD25TJ683	Carbon, 68k $\Omega$ , 1/4W, $\pm$ 5%
Q306, 308	2SD636	Transistor, Buffer	R101	ERX1ANJ1R5	Metal Film, 1.5 $\Omega$ , 1W, $\pm$ 5%
Q307, 309	2SD638	Transistor, Switching	R102	ERD25FJ562	Carbon, 5.6k $\Omega$ , 1/4W, $\pm$ 5%
Q310	2SB641	Transistor, Offset & Servo Amplifier	R103	ERD25FJ152	Carbon, 1.5k $\Omega$ , 1/4W, $\pm$ 5%
Q313, 315	2SD638	Transistor, Cueing Relay Driver	R106	ERD25FJ271	Carbon, 270 $\Omega$ , 1/4W, $\pm$ 5%
Q314, 316 ~ 319	2SD636	Transistor, Switching & Muting Relay Driver	R107	ERD25TJ563	Carbon, 56k $\Omega$ , 1/4W, $\pm$ 5%
Q331, 332	2SB641	Transistor, Switching	R108, 109	ERD25FJ101	Carbon, 100 $\Omega$ , 1/4W, $\pm$ 5%
<b>DIODES</b>					
D1	$\Delta$ SVDSIRBA20Z	Diode, Rectifier	R110	ERD25TJ473	Carbon, 47k $\Omega$ , 1/4W, $\pm$ 5%
D2	MA1051A	Diode, 5.1V Zener	R111	ERD25TJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%
D101, 201, 334	MA162A	Diode	R112	ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
301 ~ 307, 502, 309 ~ 311, 333			R201	ERD25FJ331	Carbon, 330 $\Omega$ , 1/4W, $\pm$ 5%
D103	<b>RVDRD6R8EB</b>	Diode, 6.8V Zener	R202	ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
D202	SVDGD4205ALC	Light Emitting Diode, Strobe	R203	ERD25FJ470	Carbon, 47 $\Omega$ , 1/4W, $\pm$ 5%
D308	MA26TO-A	Diode	R204	ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
D102, 312, 313	20A90	Diode	R205	ERD25TJ124	Carbon, 120k $\Omega$ , 1/4W, $\pm$ 5%
326, 327			R206	ERD25FJ391	Carbon, 390 $\Omega$ , 1/4W, $\pm$ 5%
D321 ~ 325	SVDP5531K	Light Emitting Diode, Red	R207	ERD25TJ273	Carbon, 27k $\Omega$ , 1/4W, $\pm$ 5%
328, 329			R208	ERD25TJ224	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
D330 ~ 332	SVDP5531K	Light Emitting Diode, Red	R209	ERD25TJ823	Carbon, 82k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R210	ERD25FJ392	Carbon, 39k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R211, 212	ERD25TJ233	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R213	ERD25FJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R214	ERD25FJ471	Carbon, 470 $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R215	ERD25TJ683	Carbon, 68k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R216	ERD25FJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%
D501	SVDP5531K	Light Emitting Diode, Red	R217	ERD25FJ471	Carbon, 470 $\Omega$ , 1/4W, $\pm$ 5%
<b>PHOTO INTERRUPTERS</b>					
PC301	ON1161	Photo Interrupter, Arm Position Detector	R218	ERD25FJ181	Carbon, 180 $\Omega$ , 1/4W, $\pm$ 5%
PC501	ON1108	Photo Interrupter, Offset Angle Detector	R219	ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
<b>HALL ELEMENT</b>					
H1, 2	H-300A	Hall Element, Turntable Position Detector	R220	ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
<b>CRYSTAL</b>					
X201	SVQU306115	Crystal, 4.19328MHz Counter Oscillator	R221	ERD25FJ181	Carbon, 180 $\Omega$ , 1/4W, $\pm$ 5%
<b>RELAY</b>					
RL301	SFDYQ11N01	Relay, Muting	R301	ERD25TJ183	Carbon, 18k $\Omega$ , 1/4W, $\pm$ 5%
RL501	SFDZC07-01E	Relay, Plunger, Cueing	R302	ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
<b>SWITCHES</b>					
S301, 302	EVQQBR08K	Switch, Start & Stop	R303	ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
S303 ~ 306	EVQQB04K	Switch, Repeat Cueing & Speed Selector	R304	ERD25FJ150	Carbon, 15 $\Omega$ , 1/4W, $\pm$ 5%
S307	ESB6247	Switch, Reset Switch	R305	ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
			R306, 307	ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
			R308, 309	ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
			R310, 311	ERD25TJ473	Carbon, 47k $\Omega$ , 1/4W, $\pm$ 5%
			R312	ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
			R313, 314	ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
			R315, 316	ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
			R317	ERD25TJ473	Carbon, 47k $\Omega$ , 1/4W, $\pm$ 5%
			R318	ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
			R319	ERD25FJ101	Carbon, 100 $\Omega$ , 1/4W, $\pm$ 5%
			R320	ERD25FJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%



\* S309 (end detection switch) will be replaced by MN1400PE of which the end detection unit is built into MN1400PA (IC301) in the course of manufacture.  
 At the time of servicing, it is possible to replace MN1400PA with MN1400PE, but not MN1400PE with MN1400PA. Incidentally, MN1400PE will be supplied as repair parts.







Q307 2SD638

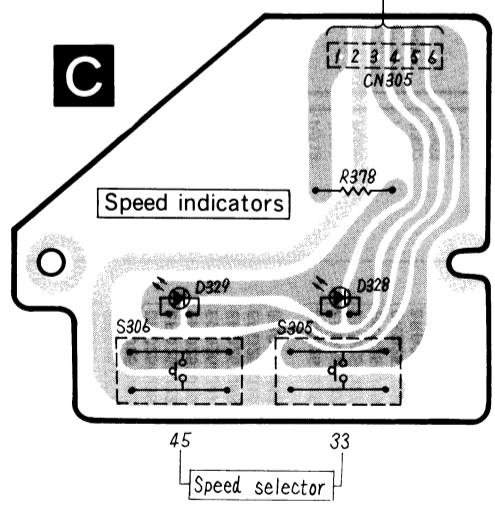
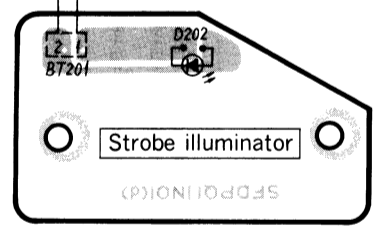
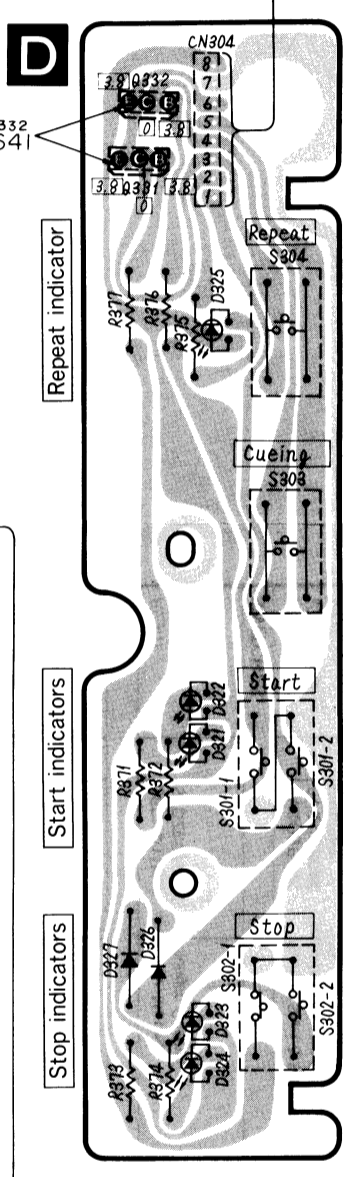
Motor	E	C	B
stop	0	0.02	0.75
forward	0	0.05	0.77
revers	0	4.1	0.08

Q319 2SD636

Motor	E	C	B
stop	0	2.7	0.22
forward	0	2.8	0.71
revers	0	0.1	0.20

Q308 2SD636

Motor	E	C	B
stop	0	0.75	0.08
forward	0	0.1	0.77
revers	0	0.77	0.09



IC305 AN6914

1	0.1	5	12.0
2	12.0	6	7.4
3	6.2	7	0.1
4	0	8	12.0

Q101 2SB641

	E	C	B
start	12.0	0.12	11.4
stop	0	0.05	11.5

Q102 2SD636

	E	C	B
start	0	5.3	0.06
stop	0	0.1	0.03

Q318 2SD636

	E	C	B
Cueing up	0	0.03	0.64
down	0	12.0	0.12

Q202 2SC1328

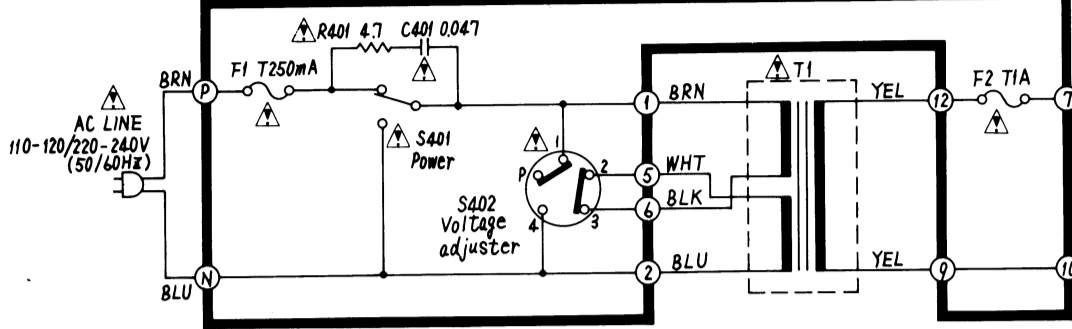
Q201, 203 2SD636

IC201 AN6680

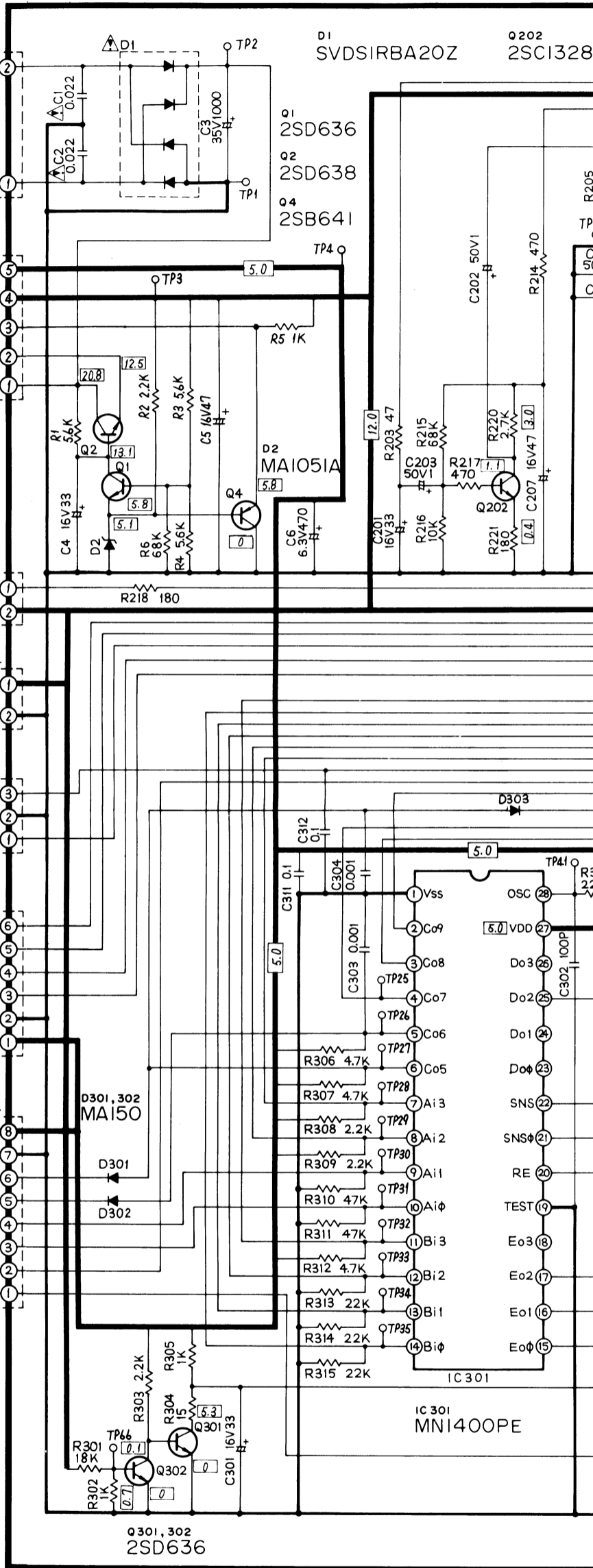
1 2 3 4 5 6 7

A  
B  
C  
D  
E  
F  
G  
H  
I

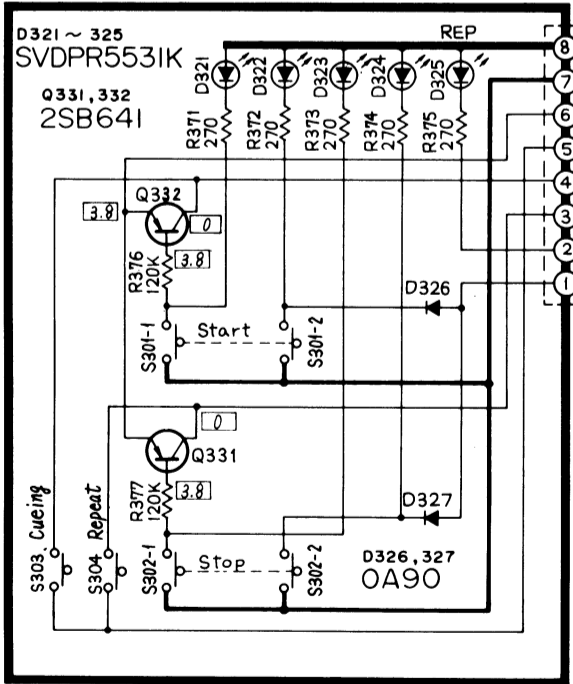
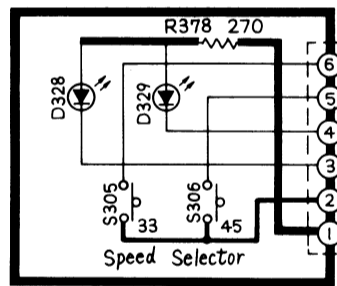
**B Power source circuit**



**A Turntable drive and logic control circuit**



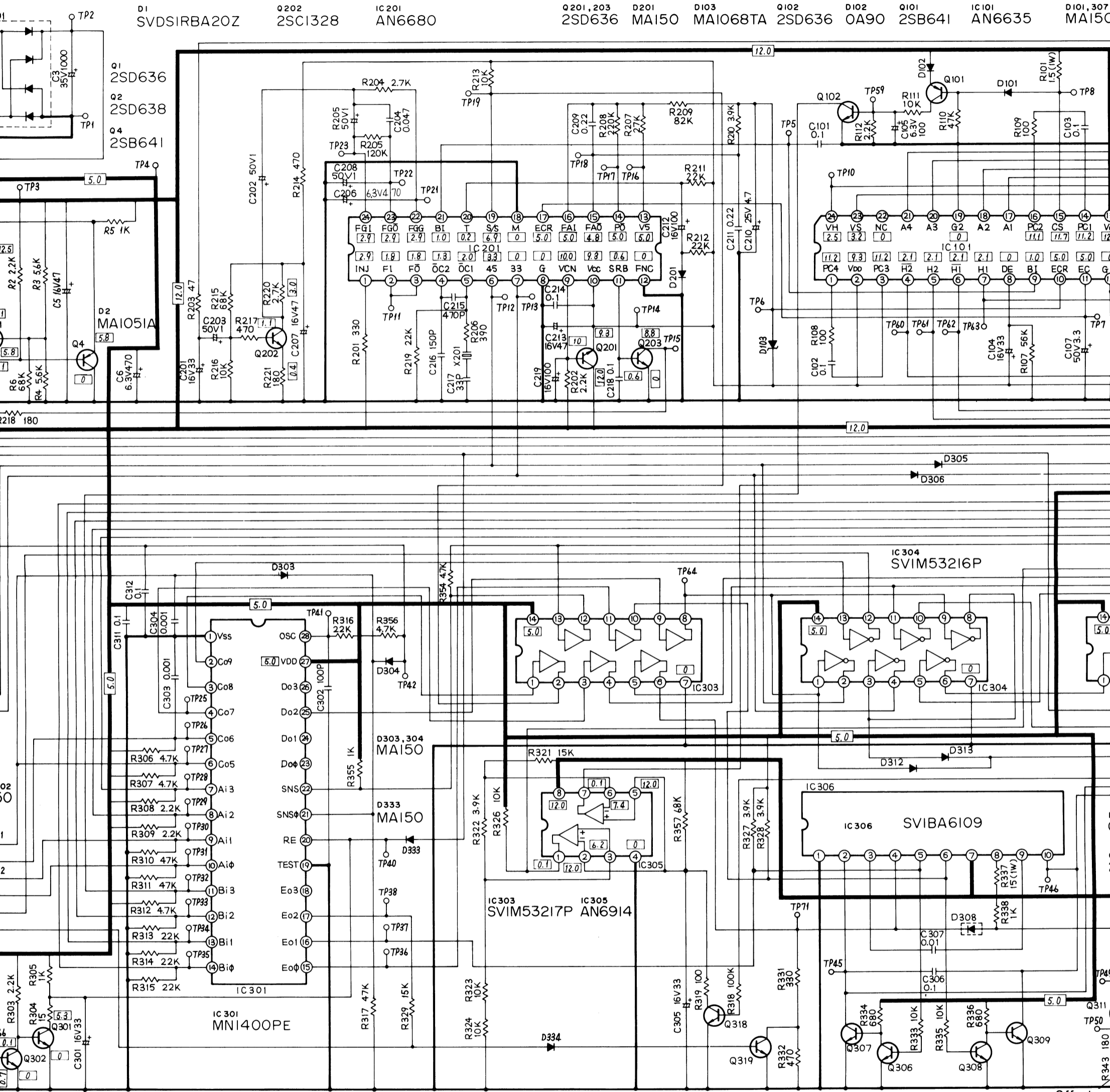
**C Speed select**



**D Operation circuit**

le drive and logic control circuit

Q102				Q101			
	E	C	B		E	C	B
start	0	5.3	0.06	start	12.0	0.12	11.4
stop	0	0.1	0.03	stop	12.0	0.05	11.5



Q301, 302 2SD636 D334 MAI50 Q318, 319 2SD636 Q306, 308 2SD636 Q307, 309 2SD638 D308 Offset adj MA26TO-A

Q318				
	E	C	B	
Cueing	0	0.03	0.64	
up	0	12.0	0.12	
down	0	12.0	0.12	

Q319				
	E	C	B	
Motor	0	2.7	0.22	
stop	0	2.8	0.71	
forward	0	0.1	0.20	
revers	0	0.1	0.20	

Q307				
	E	C	B	
Motor	0	0.02	0.75	
stop	0	0.05	0.77	
forward	0	4.1	0.08	
revers	0	4.1	0.08	

Q306				
	E	C	B	
Motor	0	0.75	0.21	
stop	0	0.77	0.21	
forward	0	0.08	0.72	
revers	0	0.08	0.72	

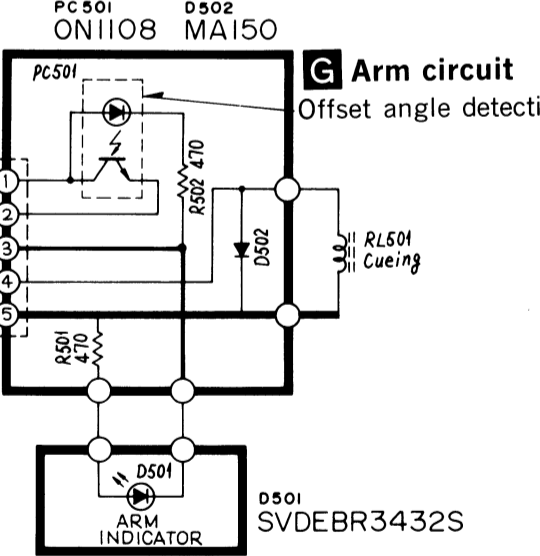
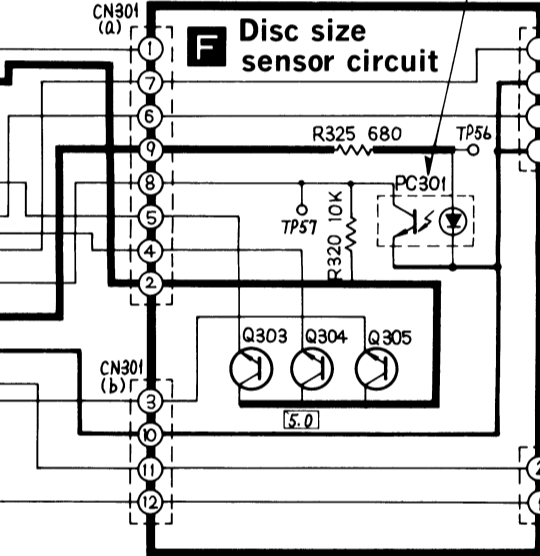
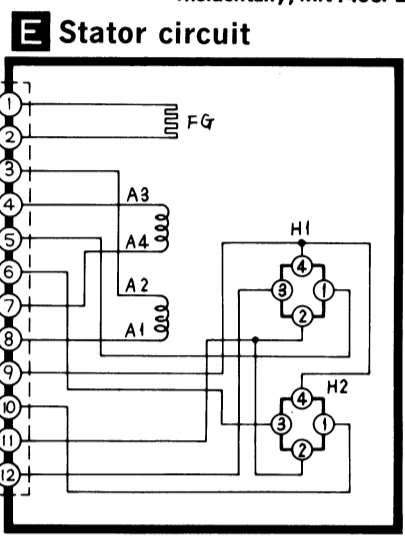
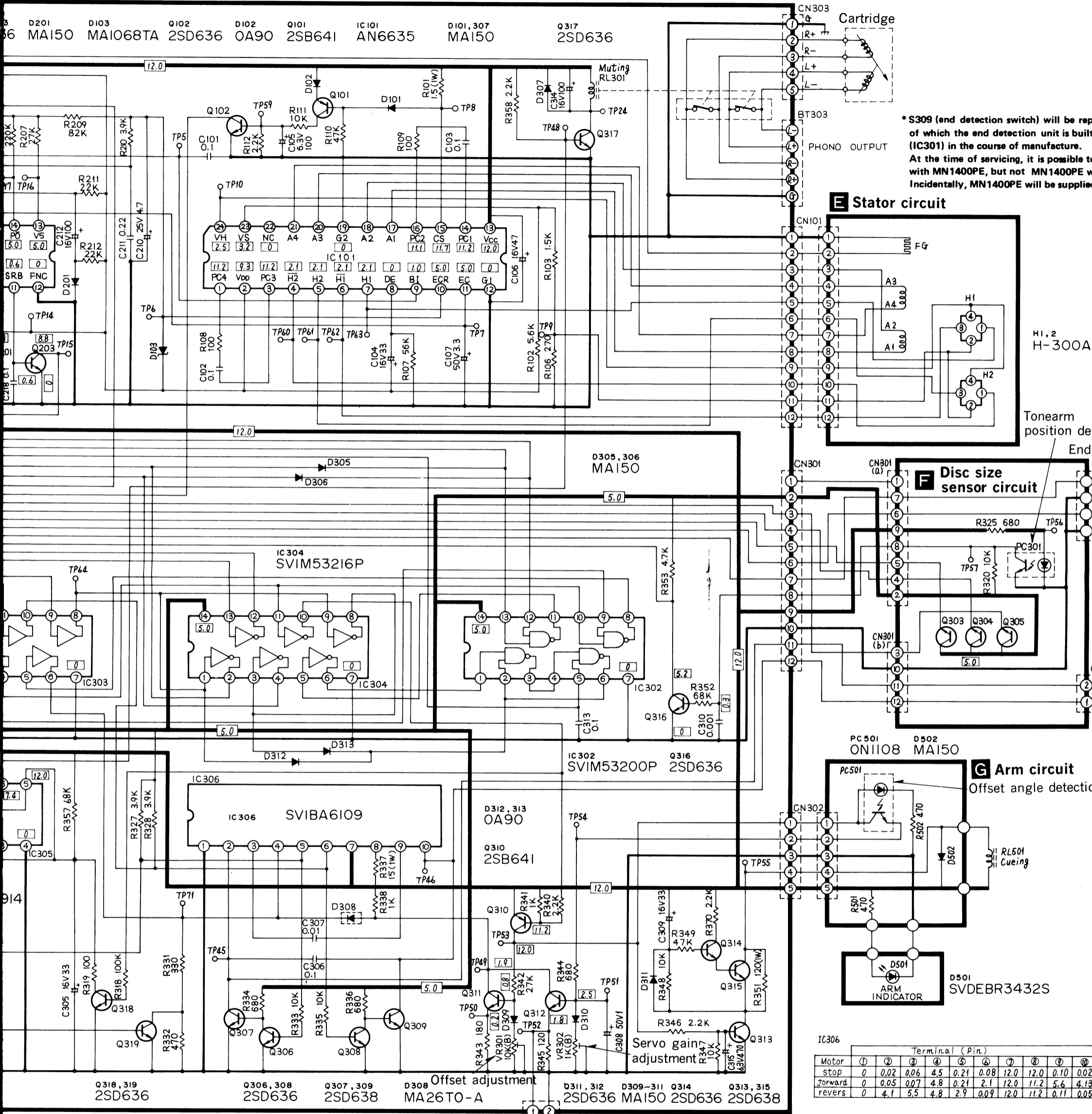
Q308				
	E	C	B	
Motor	0	0.75	0.08	
stop	0	0.1	0.71	
forward	0	0.77	0.09	
revers	0	0.77	0.09	

Q309				
	E	C	B	
Motor	0	0.02	0.75	
stop	0	4.1	0.1	
forward	0	0.05	0.77	
revers	0	0.05	0.77	

Q102			
	E	C	B
start	0	5.3	0.06
stop	0	0.1	0.03

Q101			
	E	C	B
start	12.0	0.12	11.4
stop	12.0	0.05	11.5

Q317			
	E	C	B
Muting on	0	12.0	0.18
Muting off	0	0.11	0.86



IC306	Terminal (Pin)									
	1	2	3	4	5	6	7	8	9	10
Motor	0	0.02	0.06	4.5	0.21	0.08	12.0	12.0	0.10	0.02
stop	0	0.05	0.07	4.8	0.24	2.1	12.0	11.2	5.6	4.13
forward	0	4.1	5.5	4.8	2.9	0.09	12.0	11.2	0.11	0.05
revers	0									

Q307			
	E	C	B
Motor	0	0.02	0.75
stop	0	0.05	0.77
forward	0	4.1	0.08
revers	0		

Q306			
	E	C	B
Motor	0	0.75	0.21
stop	0	0.77	0.21
forward	0	0.08	0.72
revers	0		

Q308			
	E	C	B
Motor	0	0.75	0.08
stop	0	0.1	0.71
forward	0	0.77	0.09
revers	0		

Q309			
	E	C	B
Motor	0	0.02	0.75
stop	0	0.05	0.77
forward	0	4.1	0.1
revers	0	0.05	0.77

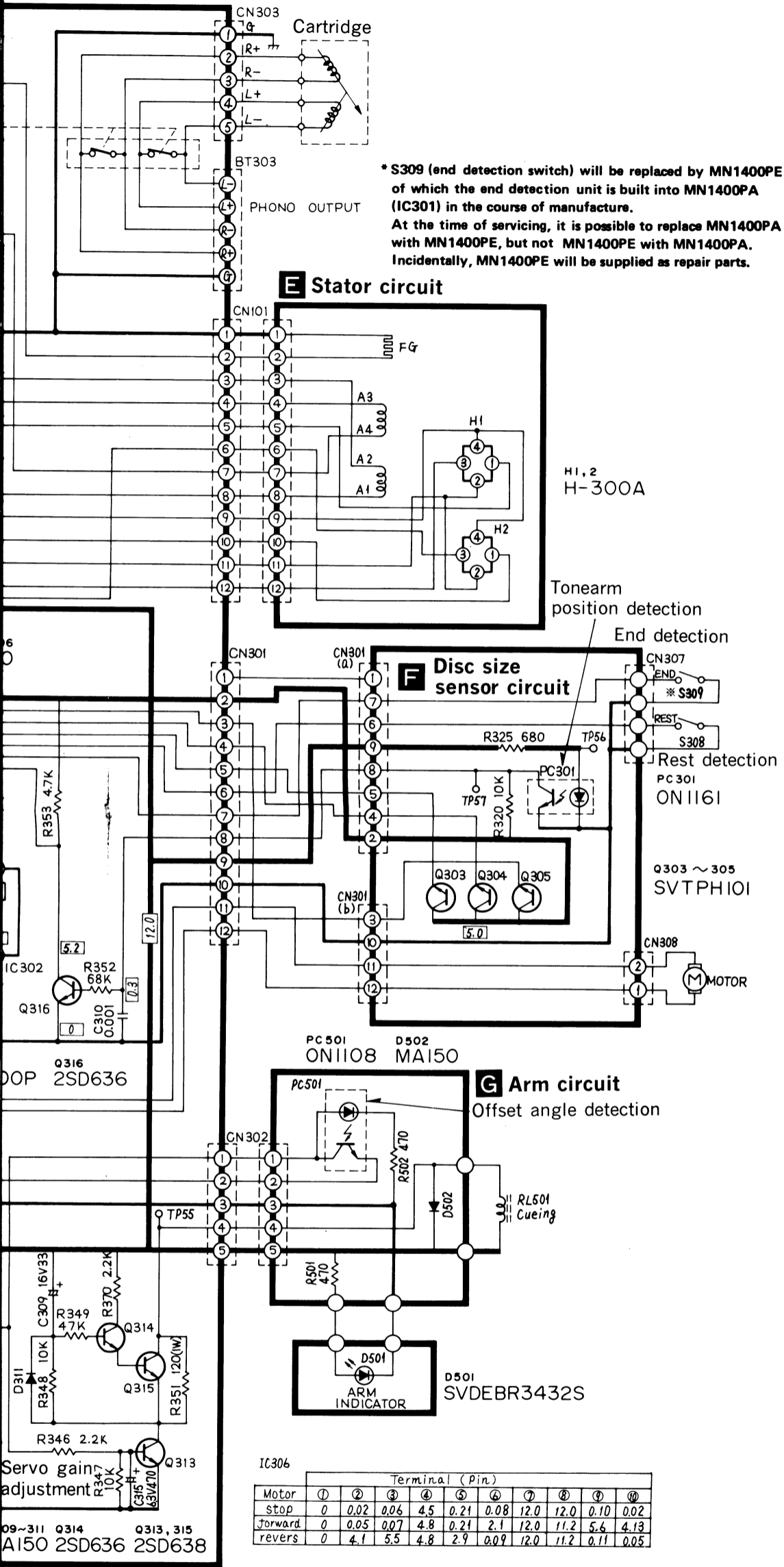
Q314			
	E	C	B
Cueing up	11.7	12.0	12.0
Cueing down	0.1	12.0	0.12

Q313			
	E	C	B
Cueing up	0	12.0	0.02
Cueing down	0	0.12	0.8

Q315			
	E	C	B
Cueing up	12.1	12.1	11.7
Cueing down	0.12	8.4	0.1



B
0.18
0.86



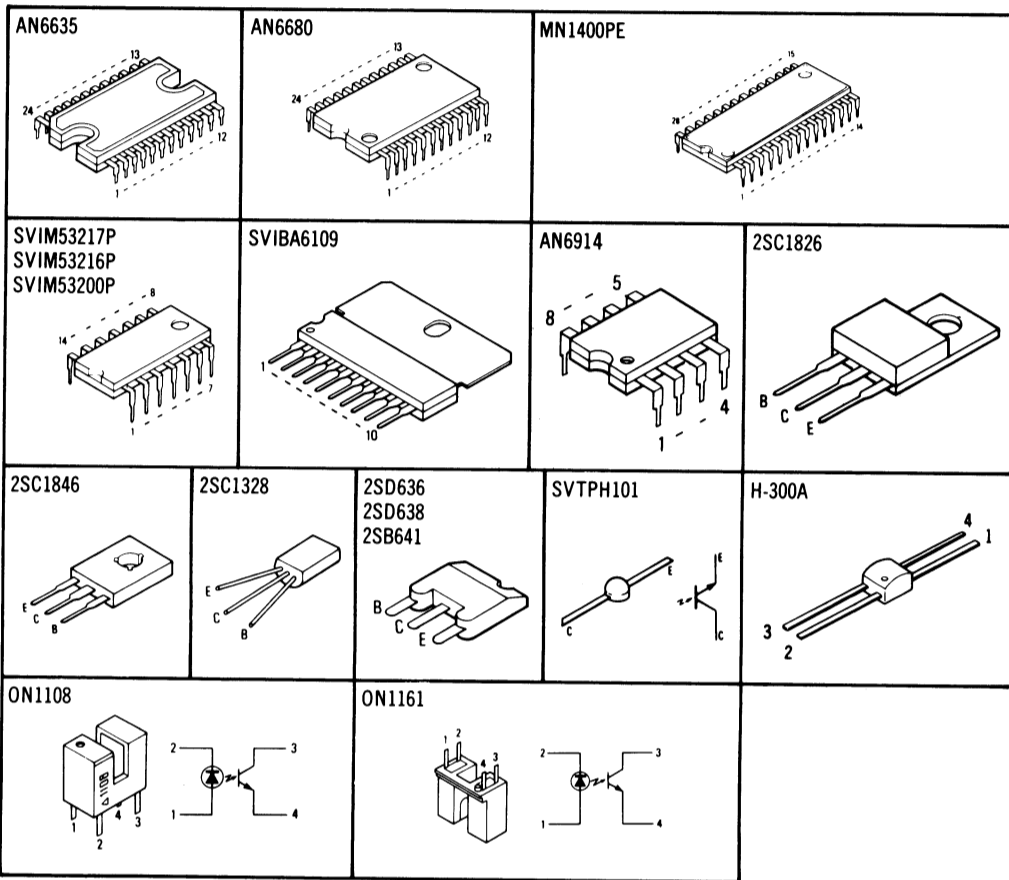
IC306		Terminal (Pin)									
Motor	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
stop	0	0.02	0.06	4.5	0.21	0.08	12.0	12.0	0.10	0.02	
forward	0	0.05	0.07	4.8	0.21	2.1	12.0	11.2	5.6	4.13	
revers	0	4.1	5.5	4.8	2.9	0.09	12.0	11.2	0.11	0.05	

Q313		Q315			
Cueing	E	C	B		
up	0	12.0	0.02		
down	0	0.12	0.8		

Notes:

- S301-1, 301-2**: Start switch in "off" position. (not push condition).  
 ◀◀ ..... Moves inward (S301-1)  
 ◀ ..... Moves faster (S301-2)
  - S302-1, 302-2**: Stop switch in "off" position. (not push condition).  
 ▶▶ ..... Moves outward (S302-1)  
 ▶ ..... Moves faster (S302-2)
  - S303**: Cueing switch in "▼" position. (not push condition).
  - S304**: Repeat switch in "off" position. (not push condition).
  - S305, 306**: Speed select switch in "off" position. (not push condition).  
 S305. . . . . 33-1/3 r.p.m. S306. . . . . 45 r.p.m.
  - S307**: Reset switch in "on" position.
  - S308**: Rest position switch in "off" position.
  - S309**: End position switch in "off" position.
  - S401**: Power switch in "on" position.
  - S402**: Voltage adjuster switch in "220 - 240V" position.  
 110 - 120V ↔ 220 - 240V
11. The value in □ is the standard voltage for this unit operated at 33-1/3r.p.m., which was measured by DC electronic voltmeter (high impedance) on the basis of the chassis. Accordingly, the voltage value may sometimes include a slight error depending on the internal impedance of the DC voltmeter (tester, etc.) used for the measurement.
12. — + ⊕ voltage line.
13. 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.

• Terminal guide of transistor, IC's and photo interrupters.



• Reference voltage and waveform at each IC terminal (pin)

This indicated voltage values and waveform are measured by oscilloscope at 33r.p.m. rotation.

IC101 (AN6635)

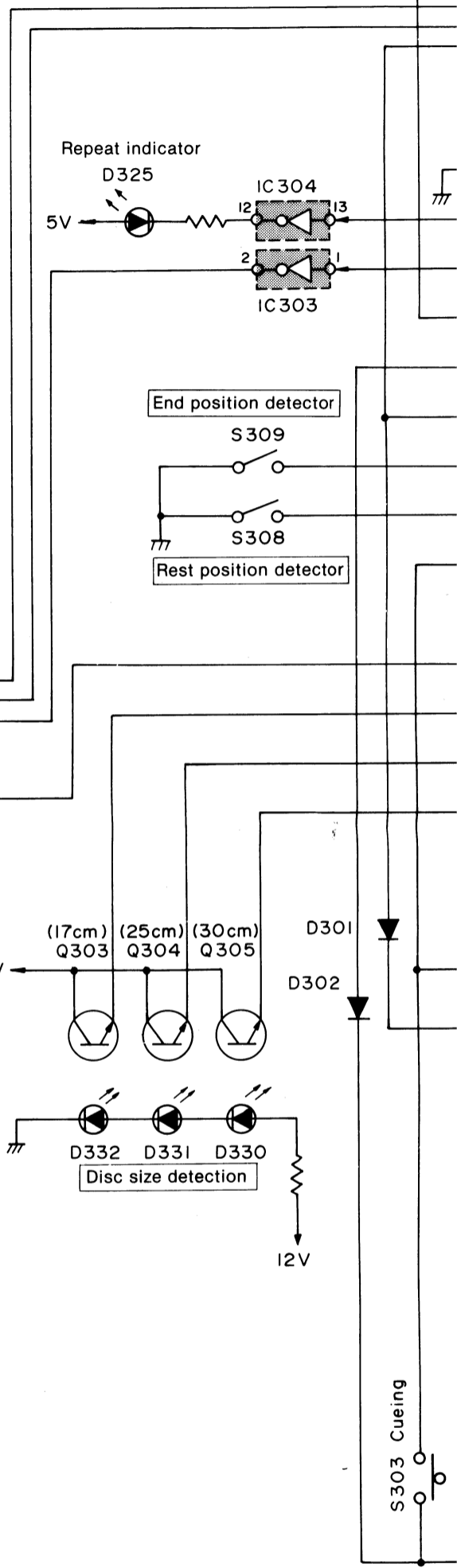
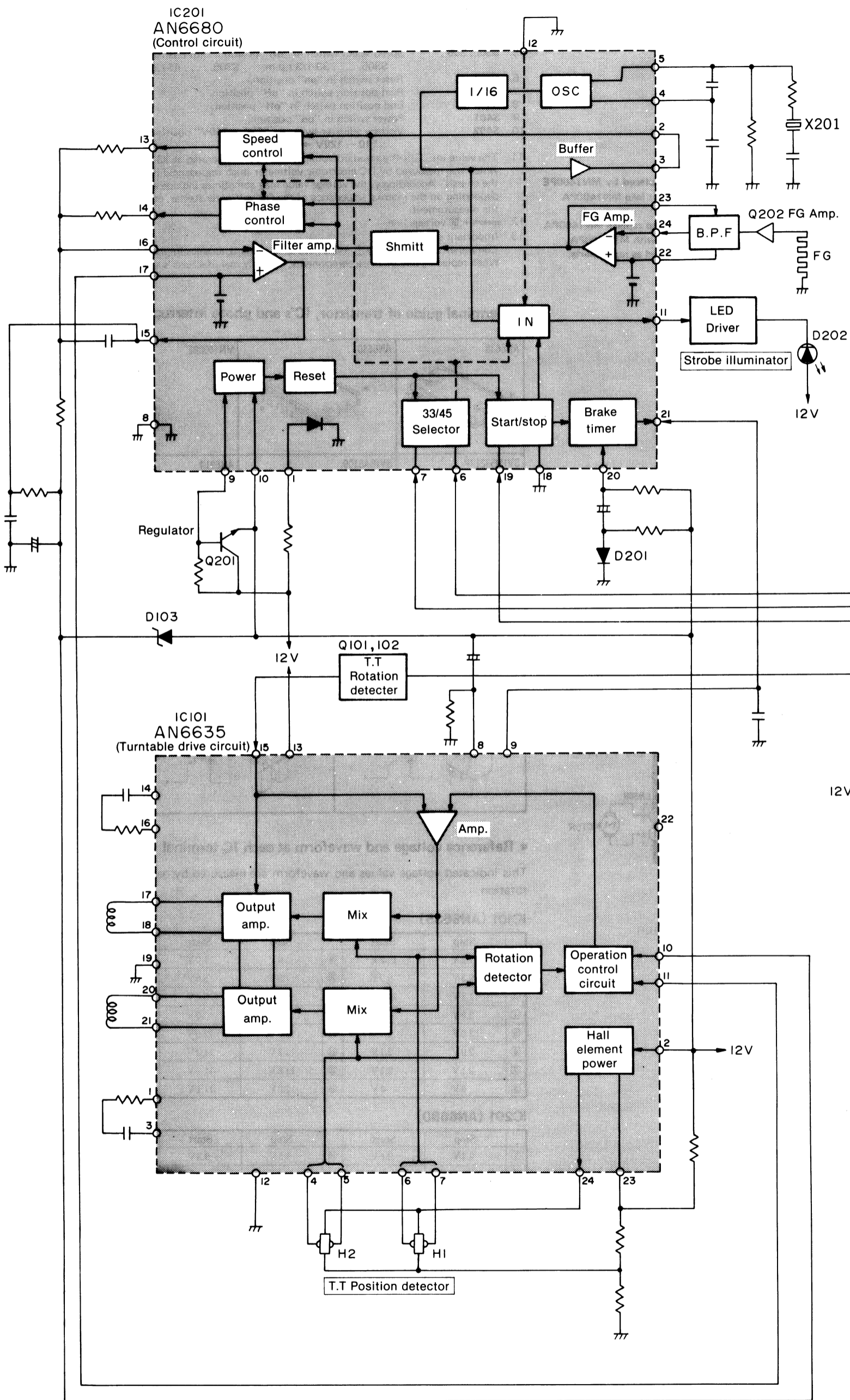
	Stop	Start		Stop	Start		Stop	Start
①	11.2V	11.2V	⑨	0V	1.0V	⑰	Stop	Start
②	9.3V	9.3V	⑩	7.8V	5.0V	⑱	0.6V	
③	11.2V	11.2V	⑪	5.0V	5.0V	⑳		
④	2.0V	2.1V	⑫	0V	0V	㉑		
⑤	2.0V	2.1V	⑬	12.0V	12.0V	⑲	0V	0V
⑥	2.0V	2.1V	⑭	11.2V	11.2V	㉒	0V	0V
⑦	2.1V	2.1V	⑮	11.8V	11.7V	㉓	3.2V	3.2V
⑧	0V	0V	⑯	11.2V	11.1V	㉔	2.5V	2.5V

IC201 (AN6680)

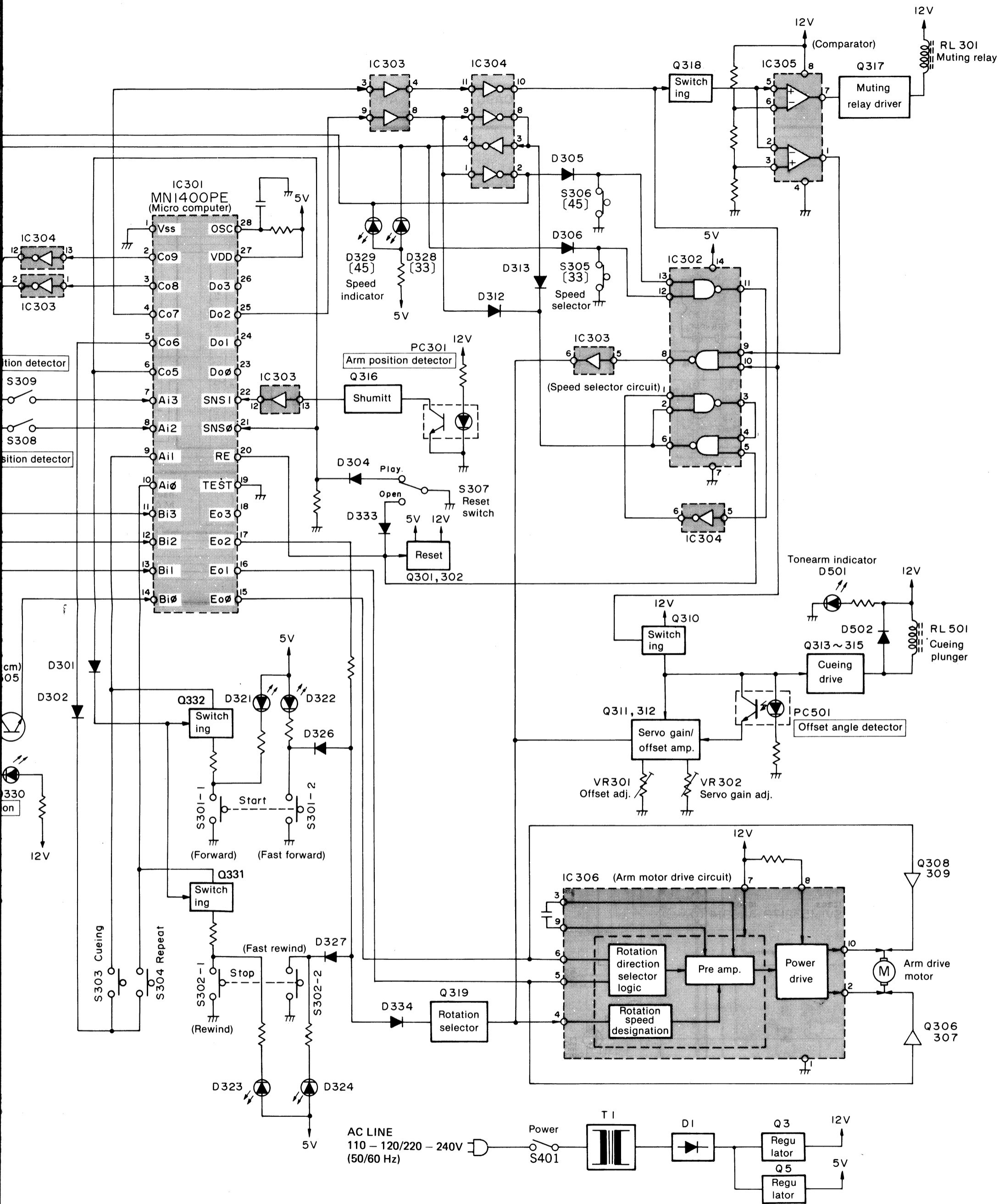
	Stop	Start		Stop	Start		Stop	Start
①	2.4V	2.4V	⑩	9.3V	9.3V	⑰	5.0V	5.0V
②		Same as at left	⑪		Same as at left	⑱	0V	0V
③			⑫			0V	0V	⑲
④		Same as at left	⑬	0.15V		⑳	5.0V	0.2V
⑤			⑭			0V	0V	㉑
⑥	3.3V	3.3V	⑮			㉒	3.1V	2.9V
⑦	0V	0V	⑯	8.0V		㉓	3.1V	
⑧	0V	0V	⑰	1.9V	5.0V	㉔	2.7V	2.9V
⑨	10.0V	10.0V						

■ BLOCK DIAGRAM

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Continued from page 22

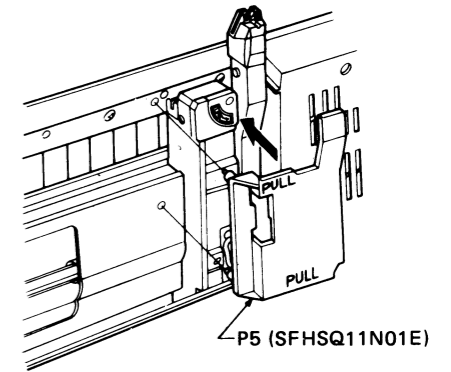
Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
R321	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	<b>CAPACITORS</b>		
R322	ERD25FJ392	Carbon, 3.9kΩ, 1/4W, ± 5%	C1, 2	ECKD1H223PF	Ceramic, 0.022μF, 50V, ± 100%
R323, 324	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	C3	ECEB1VS102	Electrolytic, 1000μF, 35V
R325	ERD25FJ681	Carbon, 680Ω, 1/4W, ± 5%	C4	ECEA1CS330	Electrolytic, 33μF, 16V
R326	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	C5	ECEA1ES470	Electrolytic, 47μF, 25V
R327, 328	ERD25FJ392	Carbon, 3.9kΩ, 1/4W, ± 5%	C6	ECEA0JS471	Electrolytic, 470μF, 6.3V
R329	ERD25TJ153	Carbon, 15kΩ, 1/4W, ± 5%	C101, 102	ECQM1H104KZ	Polyester, 0.1μF, 50V, ± 10%
R331	ERD25FJ331	Carbon, 330Ω, 1/4W, ± 5%	C103	ECQM1H104KZ	Polyester, 0.1μF, 50V, ± 10%
R332	ERD25FJ471	Carbon, 470Ω, 1/4W, ± 5%	C104	ECEA1CS330	Electrolytic, 33μF, 16V
R333	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	C105	ECEA1ES470	Electrolytic, 47μF, 25V
R334	ERD25FJ681	Carbon, 680Ω, 1/4W, ± 5%	C106	ECEA1ES470	Electrolytic, 47μF, 25V
R335	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	C107	ECEA50Z3R3	Electrolytic, 3.3μF, 50V
R336	ERD25FJ681	Carbon, 680Ω, 1/4W, ± 5%	C201	ECEA1CS330	Electrolytic, 33μF, 16V
R337	ERG1ANJ150	Metal Oxide, 15Ω, 1W, ± 5%	C202	ECEA50Z1	Electrolytic, 1μF, 50V
R338	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	C203	ECEA50M1R	Electrolytic, 1μF, 50V
R340	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	C204	ECQM1H473KZ	Polyester, 0.047μF, 50V, ± 10%
R341	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	C205	ECEA50Z1	Electrolytic, 1μF, 50V
R342	ERD25TJ273	Carbon, 27kΩ, 1/4W, ± 5%	C206	ECEA0JS471	Electrolytic, 470μF, 6.3V
R343	ERD25FJ181	Carbon, 180Ω, 1/4W, ± 5%	C207	ECEA1ES470	Electrolytic, 47μF, 25V
R344	ERD25FJ681	Carbon, 680Ω, 1/4W, ± 5%	C208	ECEA50Z1	Electrolytic, 1μF, 50V
R345	ERD25FJ121	Carbon, 120Ω, 1/4W, ± 5%	C209	ECQV05224JZ	TF, 0.22μF, 50V, ± 5%
R346	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	C201	ECEA25Z4R7	Electrolytic, 4.7μF, 25V
R347, 348	ERD25FJ103	Carbon, 10kΩ, 1/4W, ± 5%	C211	ECQV05224JZ	TF, 0.22μF, 50V, ± 5%
R349	ERD25TJ473	Carbon, 47kΩ, 1/4W, ± 5%	C212	ECEA1ES101	Electrolytic, 100μF, 25V
R351	ERG1ANJ121	Metal Oxide, 120Ω, 1W, ± 5%	C213	ECEA1ES470	Electrolytic, 47μF, 25V
R352	ERD25TJ683	Carbon, 68kΩ, 1/4W, ± 5%	C214	ECKF1E104ZV	Ceramic, 0.1μF, 25V, ± 80%
R353, 354	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	C215	ECCD1H471K	Ceramic, 470pF, 50V, ± 10%
R355	ERD25FJ102	Carbon, 1kΩ, 1/4W, ± 5%	C216	ECCD1H151K	Ceramic, 150pF, 50V, ± 10%
R356	ERD25FJ472	Carbon, 4.7kΩ, 1/4W, ± 5%	C217	ECCD1H330K	Ceramic, 33pF, 50V, ± 10%
R357	ERD25TJ683	Carbon, 68kΩ, 1/4W, ± 5%	C218	ECKF1E104ZV	Ceramic, 0.1μF, 25V, ± 80%
R358	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	C301	ECEA1CS330	Electrolytic, 33μF, 16V
R361, 362	ERD25FJ271	Carbon, 270Ω, 1/4W, ± 5%	C302	ECCD1H101K	Ceramic, 100pF, 50V, ± 10%
R363, 364	ERD25FJ271	Carbon, 270Ω, 1/4W, ± 5%	C303, 304	ECKD1H102KB	Ceramic, 0.001μF, 50V, ± 10%
R365	ERD25FJ271	Carbon, 270Ω, 1/4W, ± 5%	C305	ECEA16Z33	Electrolytic, 33μF, 16V
R366, 367	ERD25TJ124	Carbon, 120kΩ, 1/4W, ± 5%	C306	ECQM1H104KZ	Polyester, 0.1μF, 50V, ± 10%
R368	ERD25FJ271	Carbon, 270Ω, 1/4W, ± 5%	C307	ECQM1H103KZ	Polyester, 0.01μF, 50V, ± 10%
R369	ERD25FJ331	Carbon, 330Ω, 1/4W, ± 5%	C308	ECEA50Z1	Electrolytic, 1μF, 50V
R370	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%	C309	ECEA1CS330	Electrolytic, 33μF, 16V
R401	ERD50TJ4R7	Carbon, 4.7Ω, 1/2W, ± 5%	C310	ECQM1H102KB	Polyester, 0.001μF, 50V, ± 10%
R501, 502	ERD25FJ471	Carbon, 470Ω, 1/4W, ± 5%	C311, 312	ECKF1E104ZV	Ceramic, 0.1μF, 25V, ± 80%
			C313	ECKF1E104ZV	Ceramic, 0.1μF, 25V, ± 80%
			C314	ECEA1ES101	Electrolytic, 100μF, 25V
			C315	ECEA0JS471	Electrolytic, 470μF, 6.3V
			C401 [E],[EK],[XL]	ECNC4A473MD	Paper, 0.047μF, 450VAC, ± 20%
			C401	ECQE2A473MZ	Polyester, 0.047μF, 250VAC, ± 20%

**Areas**

- \* [E] is available in Switzerland and Scandinavia.
- \* [EK] is available in United Kingdom.
- \* [XL] is available in Australia.
- \* [EF] is available in France.
- \* [EB] is available in Belgium.
- \* [EG] is available in F.R. Germany.
- \* [EI] is available in Italy.
- \* [EH] is available in Holland.
- \* [XA] is available in East South Asia, Oceania, Africa, Middle Near East and Central South America.

■ **PACKING**

1. Make sure that the tonearm is at the start position (the outermost periphery of turntable).
2. Mount the arm spacer. (Do not lock the arm.)



3. Pack the components according to the following procedure.

