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Service Manual

QUARTZ Turntable System

SL-Q303

[M], [MC]

Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Specifications

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

■ General

Power supply:	120 V, AC, 50 Hz/60 Hz
Power consumption:	7 W
Dimensions: (W x H x D)	43 x 10.6 x 37.5 cm (16-15/16" x 4-7/32" x 14-3/4") Maximam height when top (dust cover) is open. 43 x 37 x 42 cm (16-15/16" x 14-9/16" x 16-17/32")
Weight:	6.5 kg (14.3 lb.)

■ Turntable section

Type:	Quartz direct drive Automatic turntable (Auto start Auto return Auto stop Manual play Repeat play)
Drive method:	Direct drive
Motor:	Brushless DC motor
Drive control method:	Quartz-phase-locked control
Turntable platter	Aluminum die-cast Diameter 31.2 cm (12-9/32 inches)
Turntable speeds:	33-1/3 rpm and 45 rpm
Wow and flutter:	0.012% WRMS* 0.025% WRMS (JIS C5521) ± 0.035% peak (IEC 98A Weighted)

*This rating refers to turntable assembly alone, excluding effects of record, cartridge or tonearm, but including platter.
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:	Universal tonearm "S" shaped tubular arm Static balanced type
Effective length:	230 mm (9-1/16")
Overhang:	15 mm (19/32")
Tracking error angle:	Within 2°32' at the outer groove of 30 cm (12") record Within 0°32' at the inner groove of 30 cm (12") record
Offset angle:	22°
Friction:	Less than 7 mg (lateral, vertical)
Effective mass:	11 g (without cartridge)
Stylus pressure adjustment range:	0 – 2.5 g
Applicable cartridge weight range:	(See page 10)
Headshell weight:	7.5 g
Phono cable capacitance:	135pF

Technics

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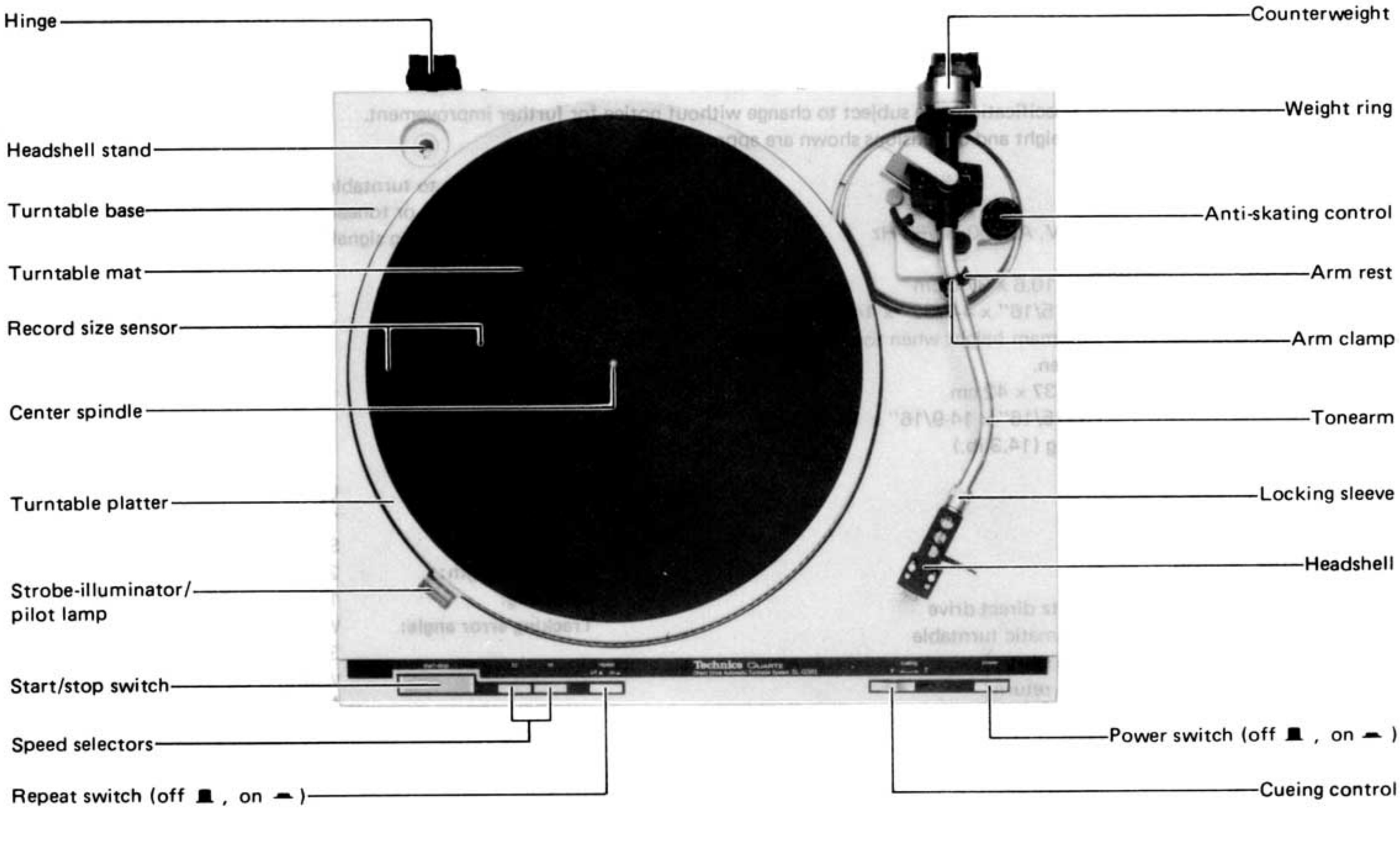
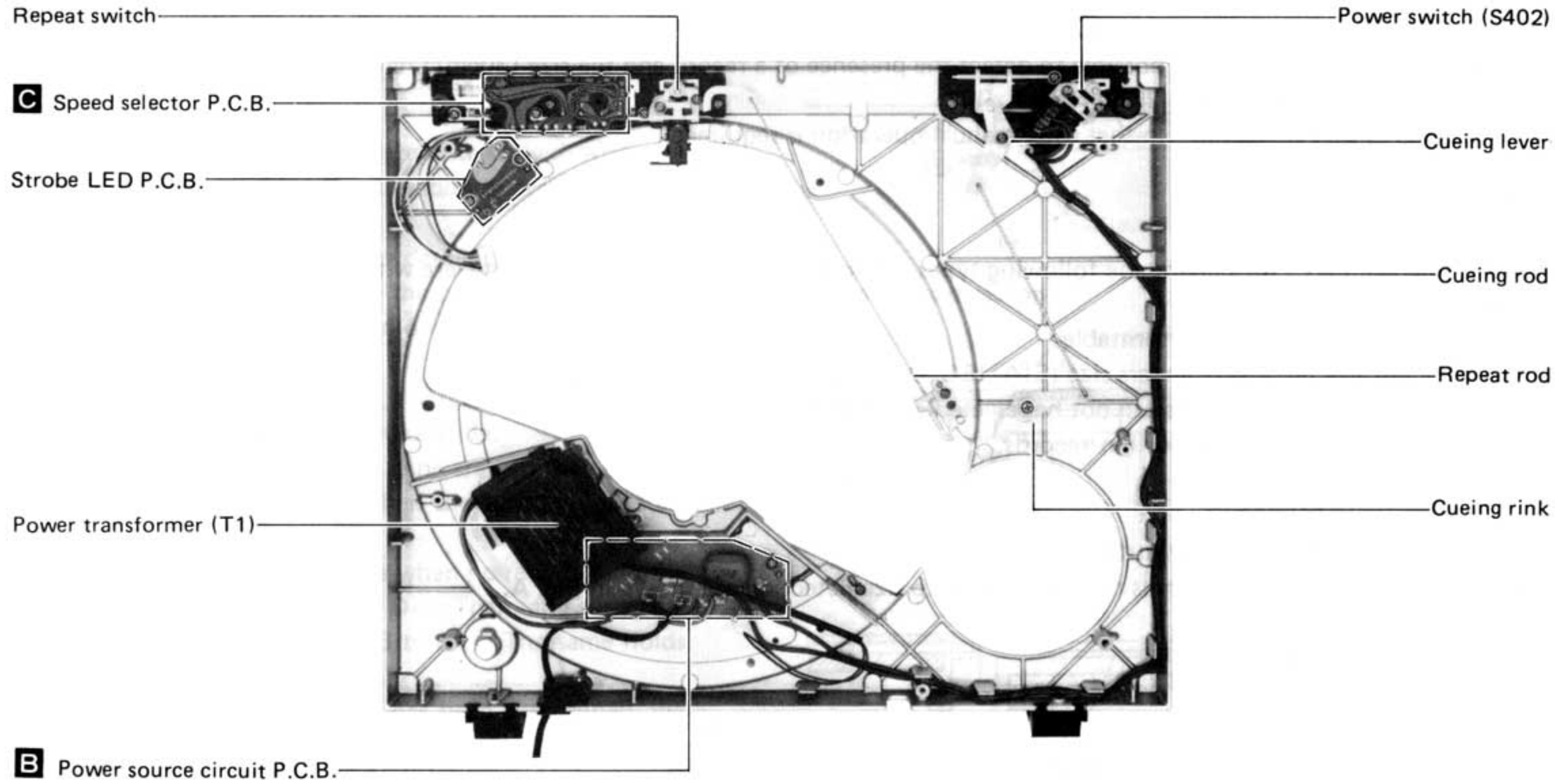
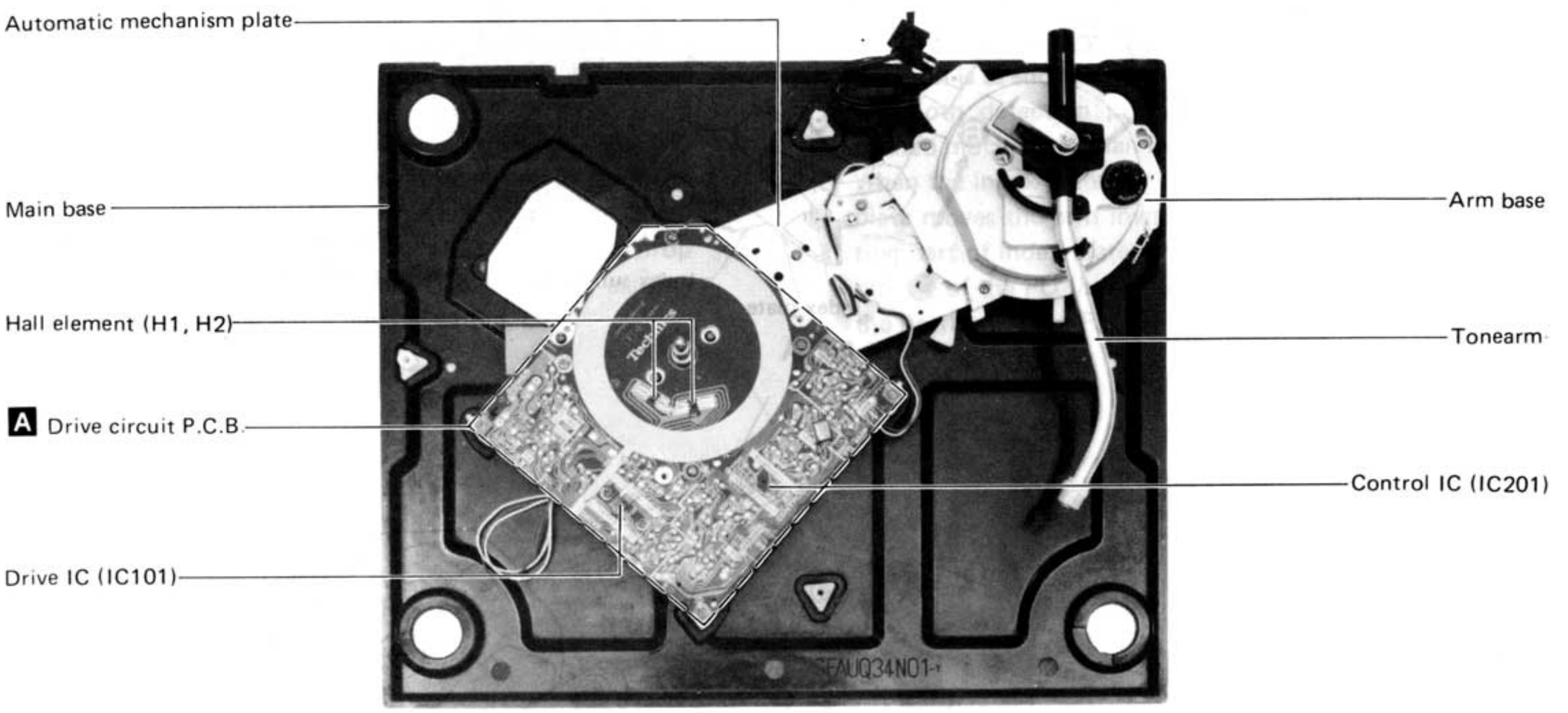
■ LOCATION OF CONTROLS




Repeat switch
C Speed selector P.C.B.
Strobe LED P.C.B.
Power switch (S402)
Cueing lever
Cueing rod
Repeat rod
Cueing rink
Power transformer (T1)
B Power source circuit P.C.B.


Automatic mechanism plate
Main base
Hall element (H1, H2)
A Drive circuit P.C.B
Drive IC (IC101)
Arm base
Tonearm
Control IC (IC201)

■ TECHNICAL EXPLANATION

• Principles of Auto Size Detection

This unit employs a mechanical detection system instead of a conventional electrical detection system.
The mechanical system makes it possible to detect the presence of a record and the size (30cm/17cm) of the record.
However, it is unable to detect a 25cm record.
It is detected as a 17cm record. In that case, manual operation is required.

Note:
Playing special records
Follow "Manual play" for playing the following types of records. (Special records may interfere with correct automatic operation.)
This is not a malfunction of the turntable.
* Non-standard size records (standars size (EIA, IEC, DIN, JIS.) are 17,25 and 30 cm).
(However, 25 cm (10") records can not be selected automatically by sensor.)
* Sono-sheets, on light record and thin records.
* Badly warped records.

• Mechanism operation for auto size detection

The mechanism and the part names necessary for auto size detection are shown in **Fig. A.**

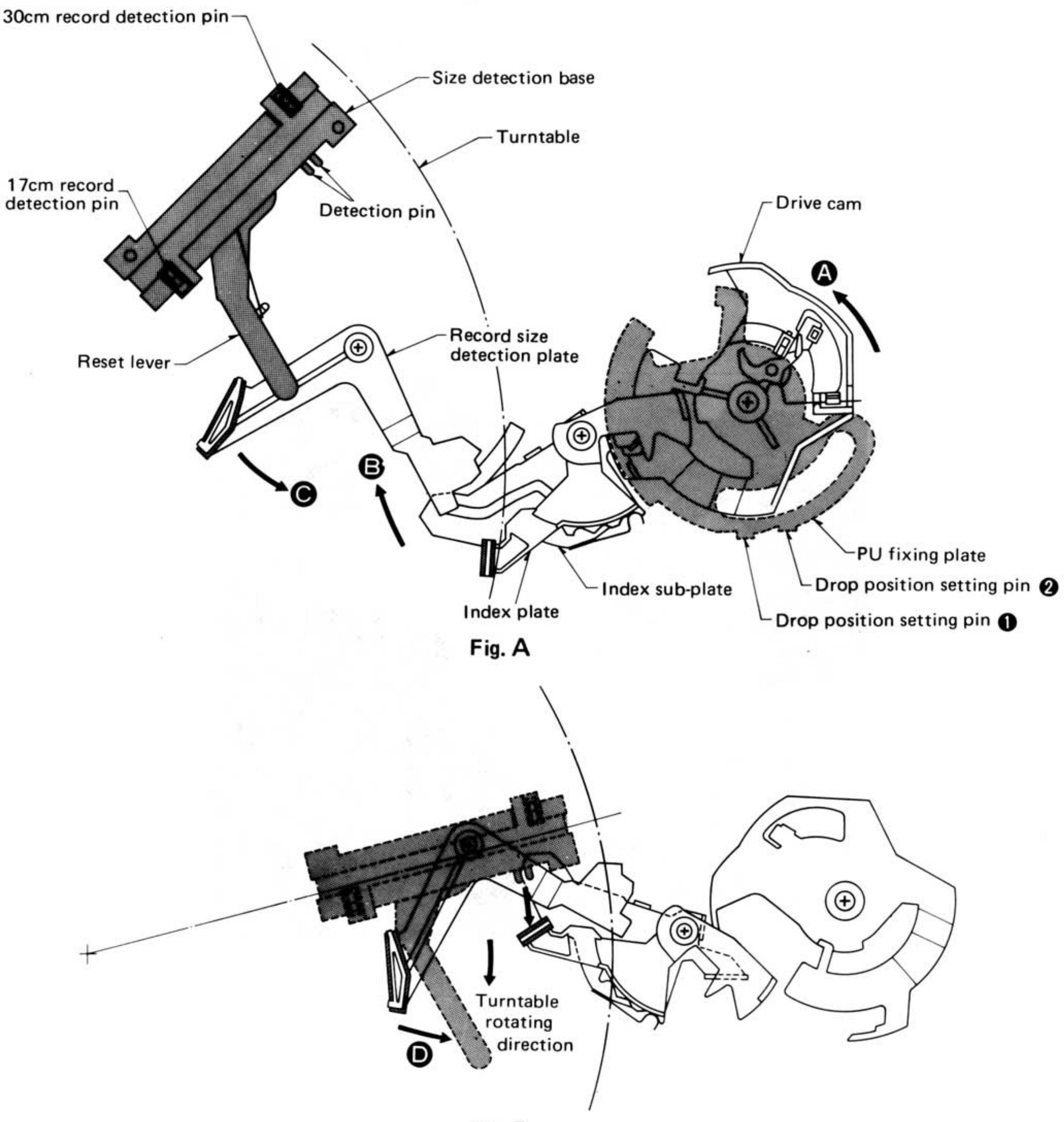


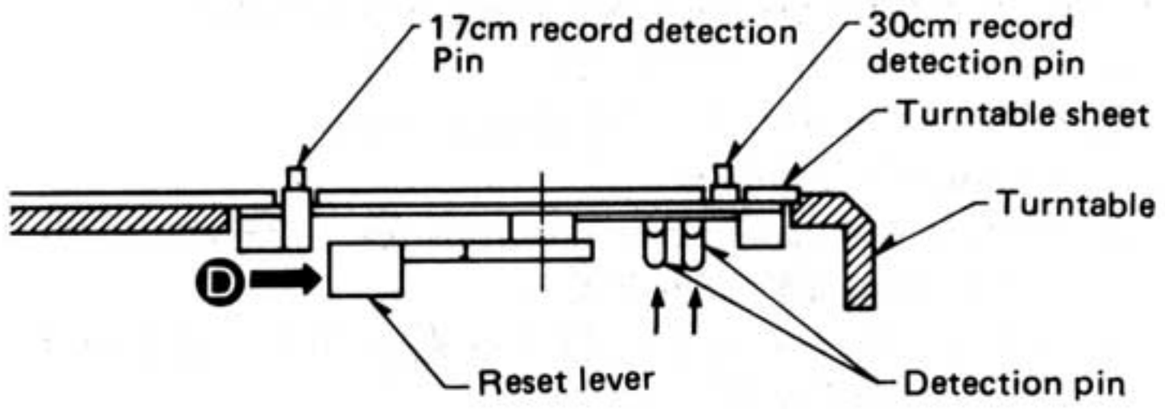
Fig. A

Fig. B

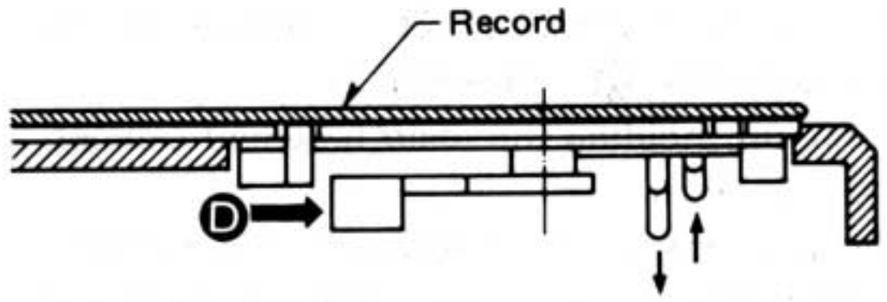
Detection of a record

1. When the start button is pressed without putting a record on the turntable, the drive cam rotates in the direction of arrow Ⓐ to turn the index sub-plate in the direction of arrow Ⓑ. At that time, the index plate moves in the same manner as the index sub-plate. **(See Fig. A)**
2. The record size detection plate interlocked with the index sub-plate rotates in the direction of arrow Ⓒ. **(See Fig. A)**
3. Then, the reset lever of the size detection base, attached to the turntable, is pushed by the record size detection plate and moves in the direction of arrow Ⓓ. **(See Fig. B)**
4. When the reset lever is pushed, the record detection pins are projected on both inside and outside.
   In this case, as both detection pins are up, they do not touch the index plate even when the turntable rotates. **(See Fig. B, C-a)**
5. The index plate does not move when no record is on the turntable (dotted line in **Fig. D**). Then, the turntable rotates 3 times for detecting 3 times. (The same holds true for record size detection.)
6. When the index plate position has been determined, the PU fixing plate tends to move the arm, but the arm does not move because the short drop position setting pin ❶ of the PU fixing plate touches the no-record detecting part of the index plate. **(See Fig. D)**

a. No record



b. 30cm record detection



c. 17cm record detection

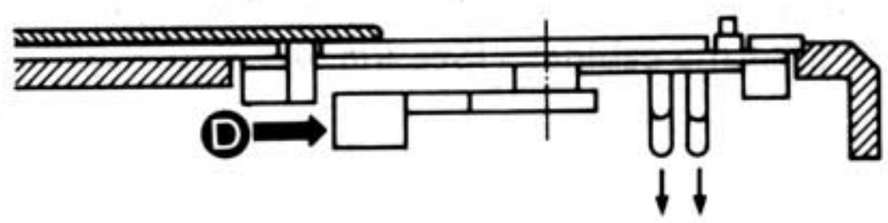


Fig. C

Detection of 30cm record

1. The operation is the same as for record detection, but as a record is on the turntable, both inside and outside detection pins are down. **(See Fig. C-b)**
2. As the detection pins are down, only the inside detection pin is down. **(See Fig. C-b)**
3. The detection pin touches the index plate and pushes it in the direction of arrow Ⓔ. Then, the index plate position is as shown by the solid line in **Fig. D** .
4. When the index plate position has been determined, the PU fixing plate moves the arm inward, but the 30cm record detecting part of the index plate touches the drop position setting pin ❷ of the PU fixing plate, causing the arm to drop at the position. **(See Fig. D)**

Detection of 17cm record

1. In the case of 17cm record, the outside detection pin is up and the inside pin is down. Therefore, both detection pins are down. **(See Fig. C-c)**
2. The detection pin touches the index plate to push it in the direction of arrow Ⓕ. In this case, the index plate position is as shown by the broken line in **Fig. D.**
   (As both detection pins are down, the index plate is pushed much more than in 30cm.)
3. When the index plate has been determined, the PU fixing plate moves the arm inward, but the 17cm record detecting part of index plate touches the drop position setting pin ❷ of the PU fixing plate, causing the arm to drop at the position. **(See Fig. D)**

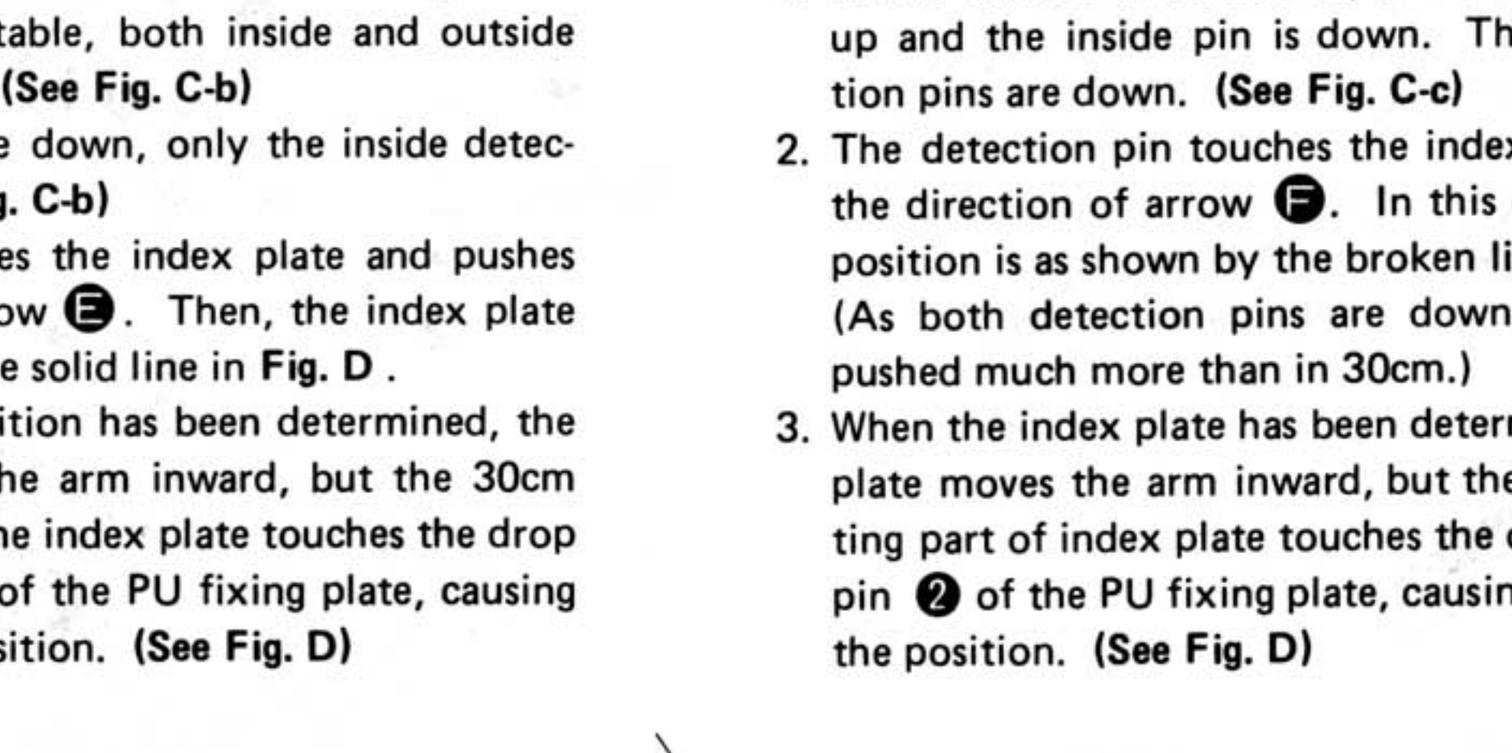


Fig. D

■ DISASSEMBLY INSTRUCTIONS

- **How to remove the main base and cabinet**

1. Fix the tonearm on the rest.
2. Remove the headshell and counter weight.
3. Remove the turntable.
4. Remove the panel cover setscrews ❶ ~ ❸ and earth lead setscrew ❹. **(See Fig. 1)**
5. Remove the connectors ❺ and ❻ of the drive circuit P.C.B. **(See Fig. 1)**
6. Close the dust cover, and turn over the unit, taking care not to scratch it.
7. Remove the insulator setscrews ❼ ~ ❿ and phono cord clamper setscrew ⓫. **(See Fig. 2)**
8. Turn the unit up, holding the main base and cabinet.
9. Remove the dust cover.
10. Remove the tonearm from the rest, shift the tonearm inward, and lift the cabinet. Then, the main base and cabinet can be disassembled. **(See Fig. 3)**
11. When assembling the main base and cabinet, make sure that the cueing lever of the arm base is engaged with the cueing ring of the cabinet. **(See Fig. 4)**

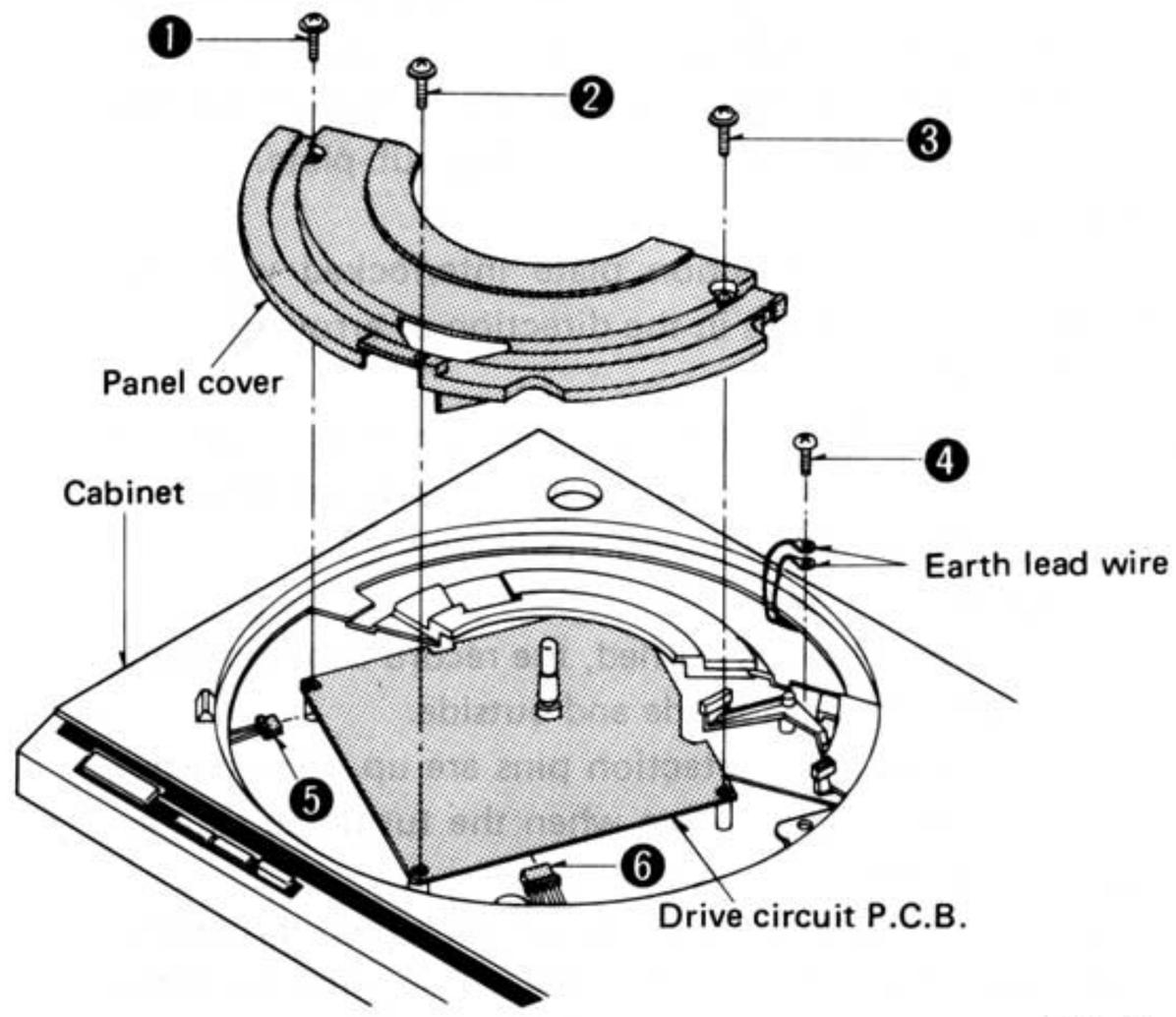
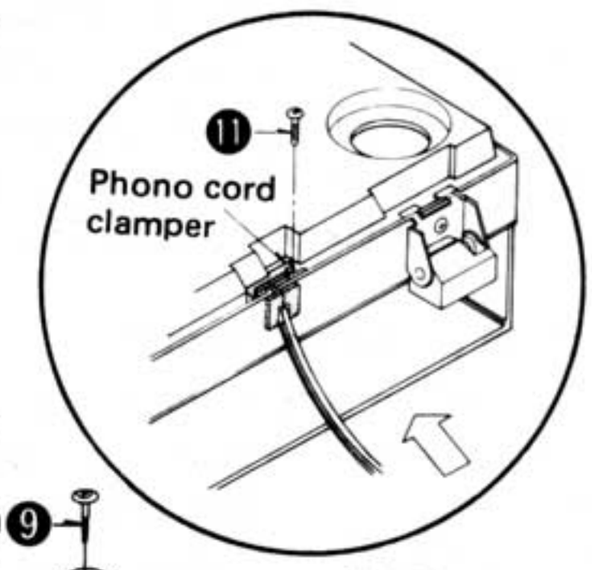
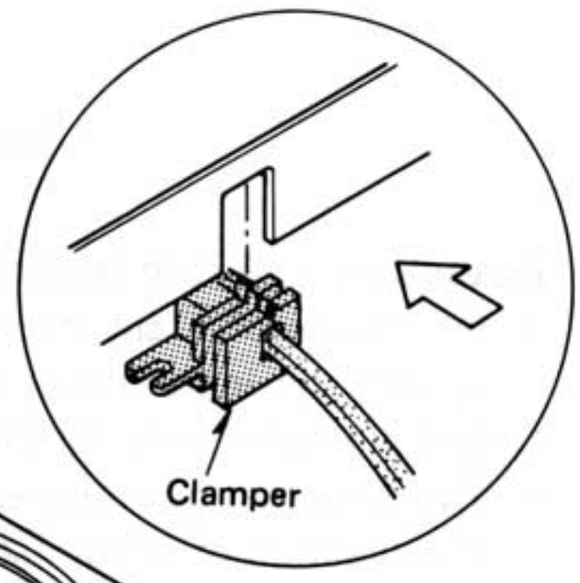


Fig. 1

※ The insulator spring (black) at this position is different from other three springs.





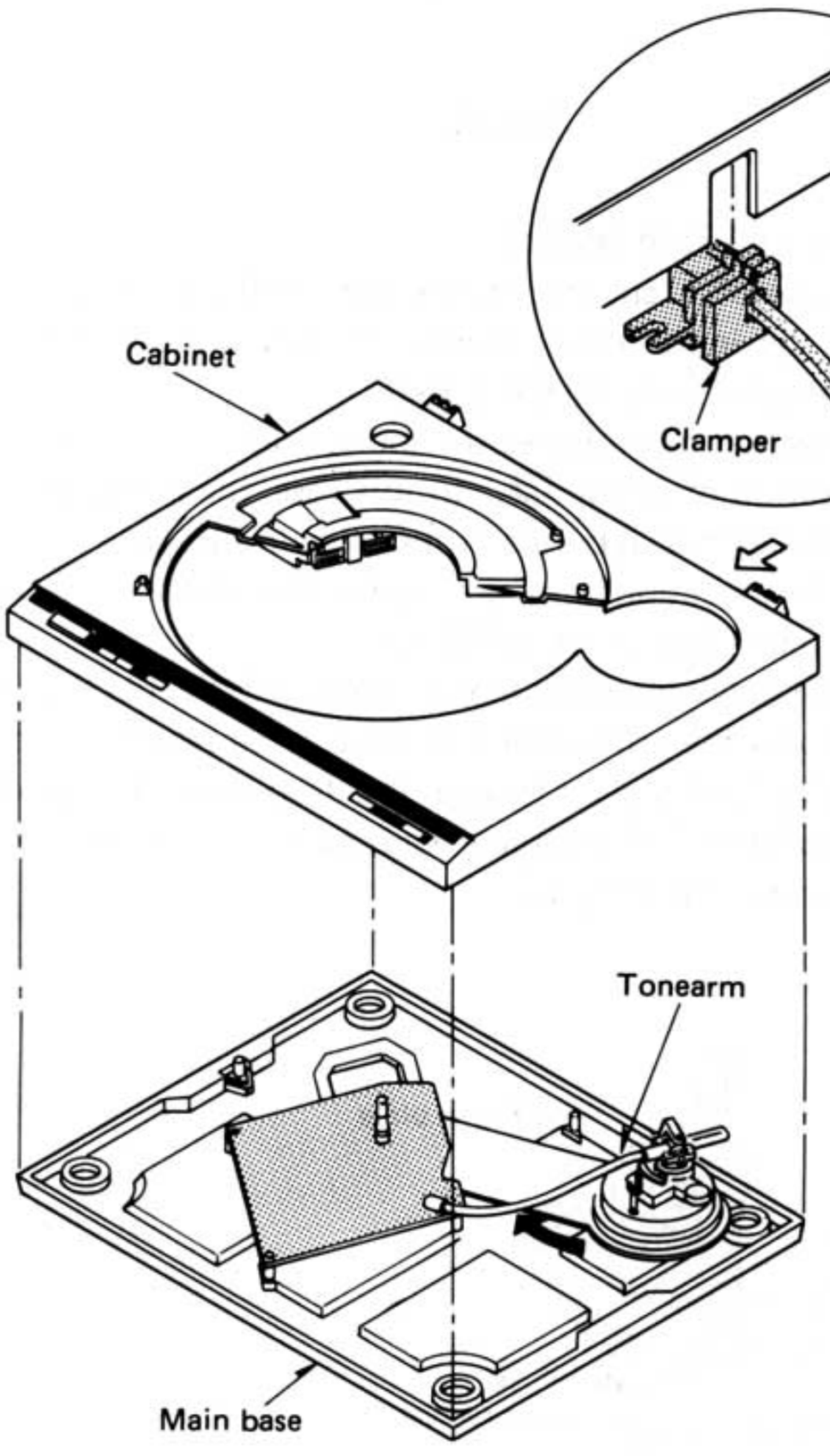


Fig. 3

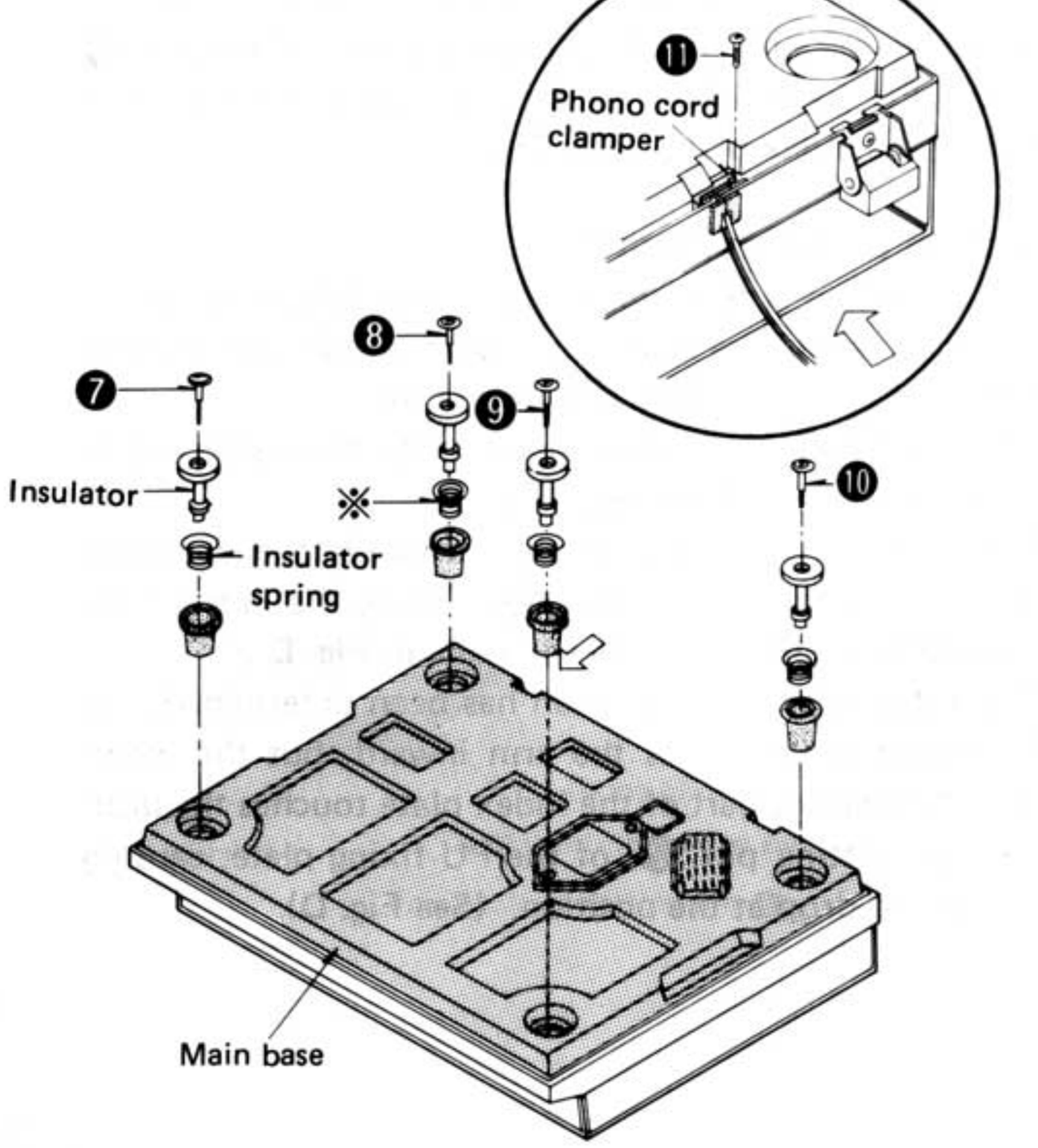


Fig. 2

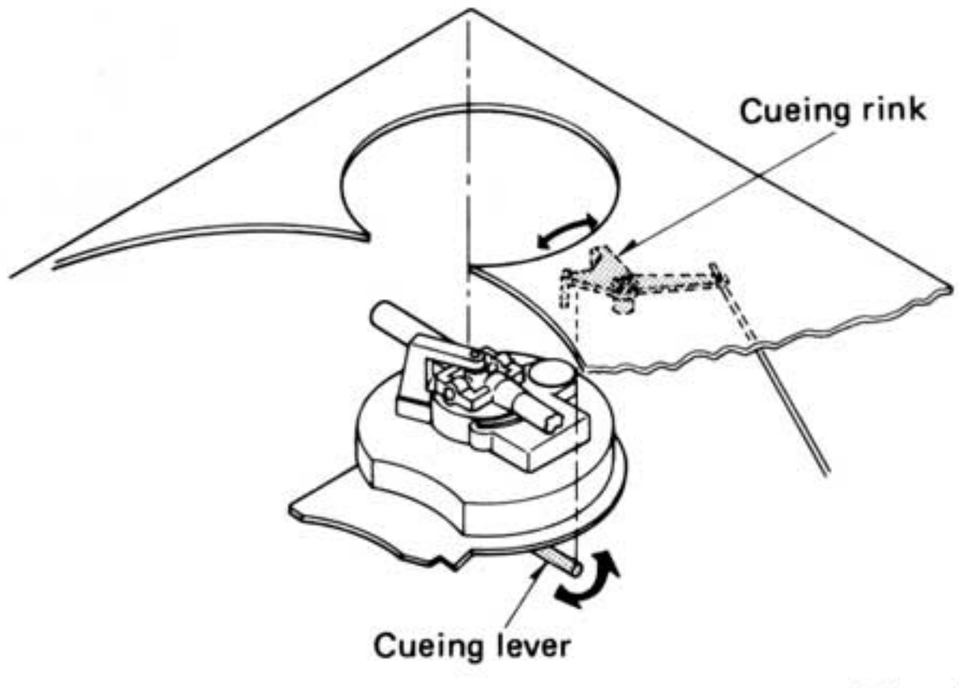


Fig. 4

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

1. Remove the main base and cabinet. **(Refer to "How to remove the main base and cabinet".)**
2. Remove the drive circuit P.C.B. setscrews ⑫ ~ ⑮ . **(See Fig. 5)**
3. Remove the stator frame setscrews ⑯ ~ ⑳ . Remove the regulator transistor (Q3) setscrew ㉑ and connector ㉒ . Then, the drive circuit P.C.B. can be separated from the stator frame. **(See Fig. 5)**
4. When removing the drive circuit P.C.B. and stator frame together, remove the connector ㉒ and setscrews ⑯ ~ ⑳ . **(See Fig. 5)**

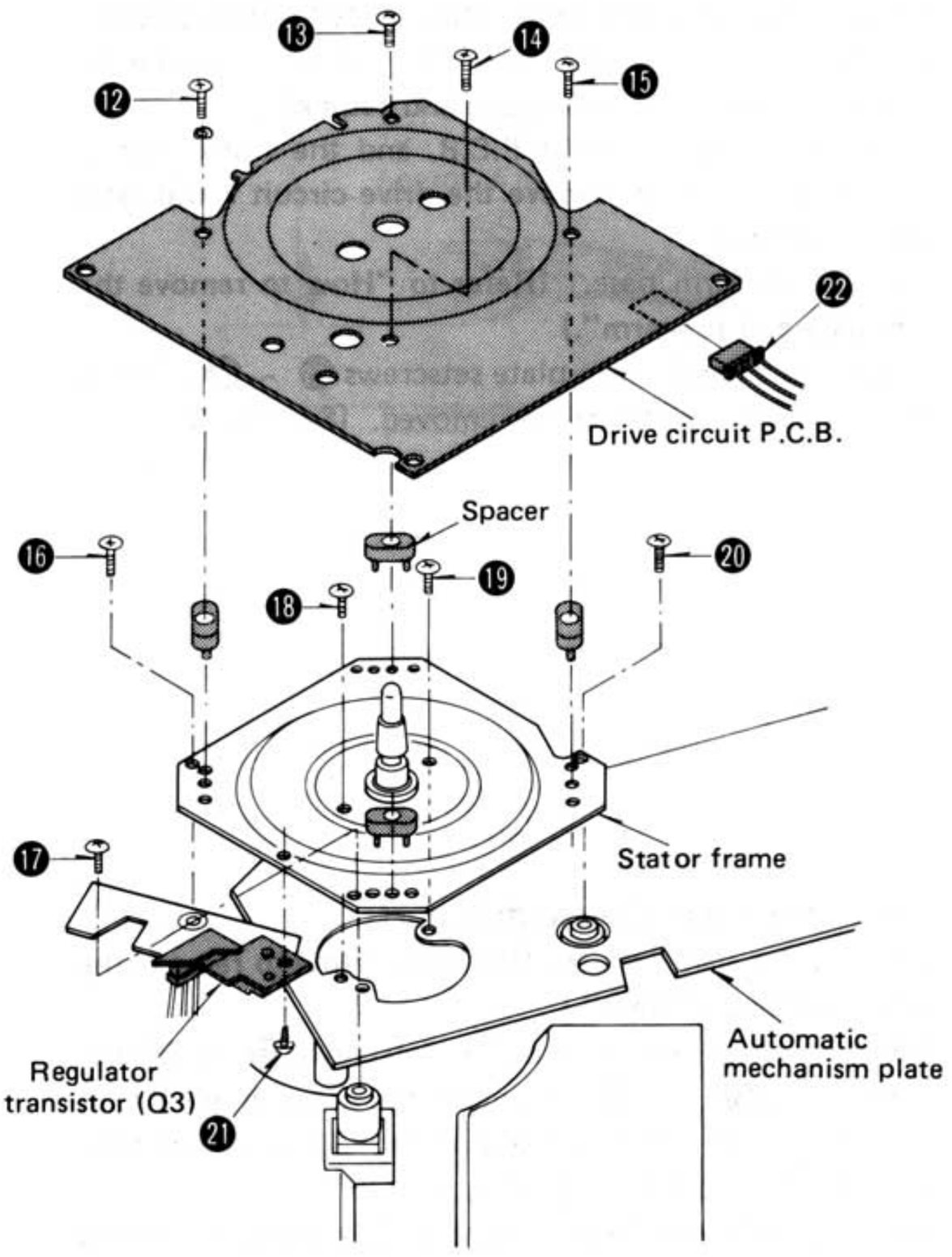


Fig. 5

• How to remove the arm base and tonearm

1. Separate the main base from the cabinet. **(Refer to "How to remove the main base and cabinet".)**
2. Remove the arm base setscrews ㉓ ~ ㉕ . Then, the arm base can be removed. **(See Fig. 6)**
3. When removing the tonearm, turn over the arm base and remove the PU fixing plate setscrew ㉖ and canceller spring. **(See Fig. 7)**
4. Remove the phono output P.C.B. setscrew ㉗ and unsolder the 5 lead wires from the tonearm. **(See Fig. 7)**

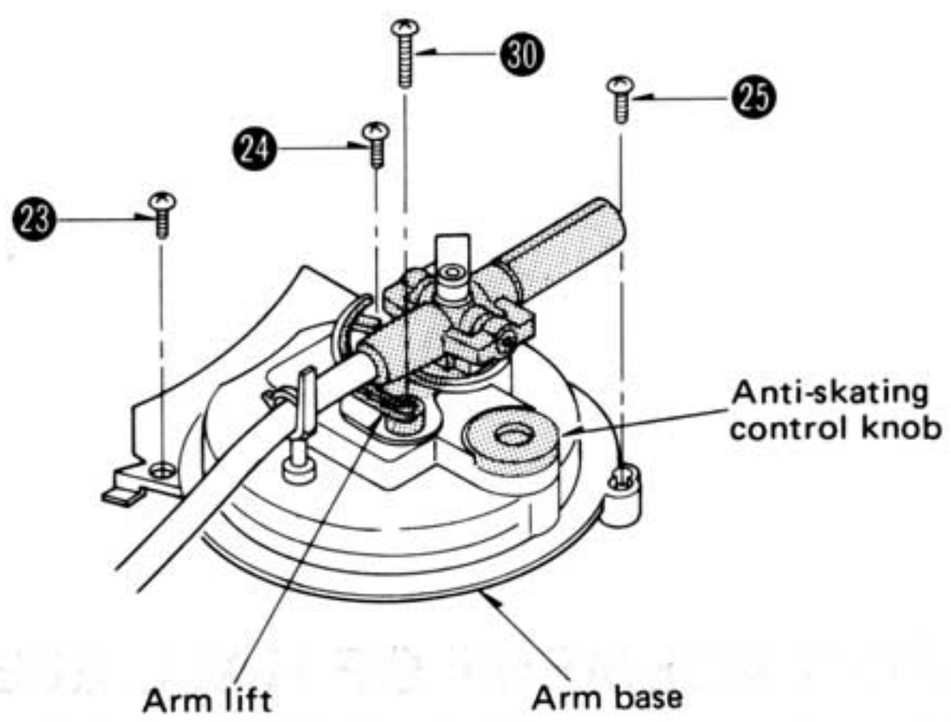


Fig. 6

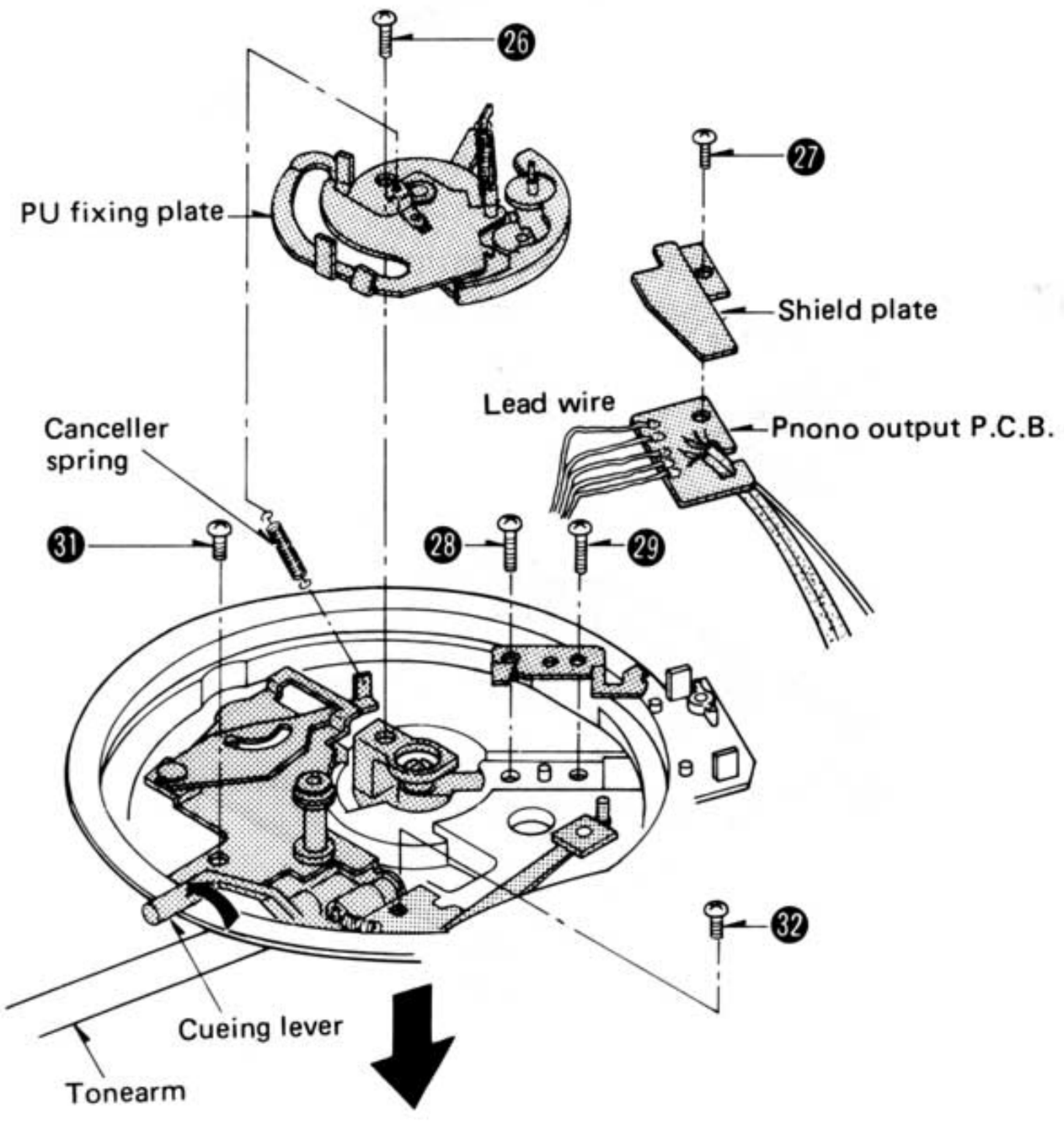


Fig. 7

5. Remove the tonearm setscrews ㉘ and ㉙ . Then, the tonearm can be removed in the direction of the arrow. **(See Fig. 7)**
6. When removing this lift base plate, remove the arm lift setscrew ㉚ before tuning over the arm base, and then remove the arm lift. **(See Fig. 6)**

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

7. Remove the anti-skating control knob. **(See Fig. 6)**
8. Turn over the arm base and remove the PU fixing plate.
9. Remove the lift base plate setscrews ㉛ and ㉜. Then, the lift base plate can be removed.
10. Before mounting the arm base, make sure that the automatic mechanism is in the initial stage, and then shift the cueing lever of the arm base down in the direction of the arrow in order to make cueing-up. **(See Fig. 7)**

- **How to remove the automatic mechanism plate**

1. Separate the main base from the cabinet. **(Refer to "How to remove the main base and cabinet".)**
2. Remove the drive circuit P.C.B. and the stator frame. **(Refer to "How to remove the drive circuit P.C.B. and stator frame".)**
3. Remove the arm base. **(Refer to "How to remove the arm base and tonearm".)**
4. Remove the mechanism plate setscrews ㉝ ~ ㊱. Then, the mechanism plate can be removed. **(See Fig. 8)**

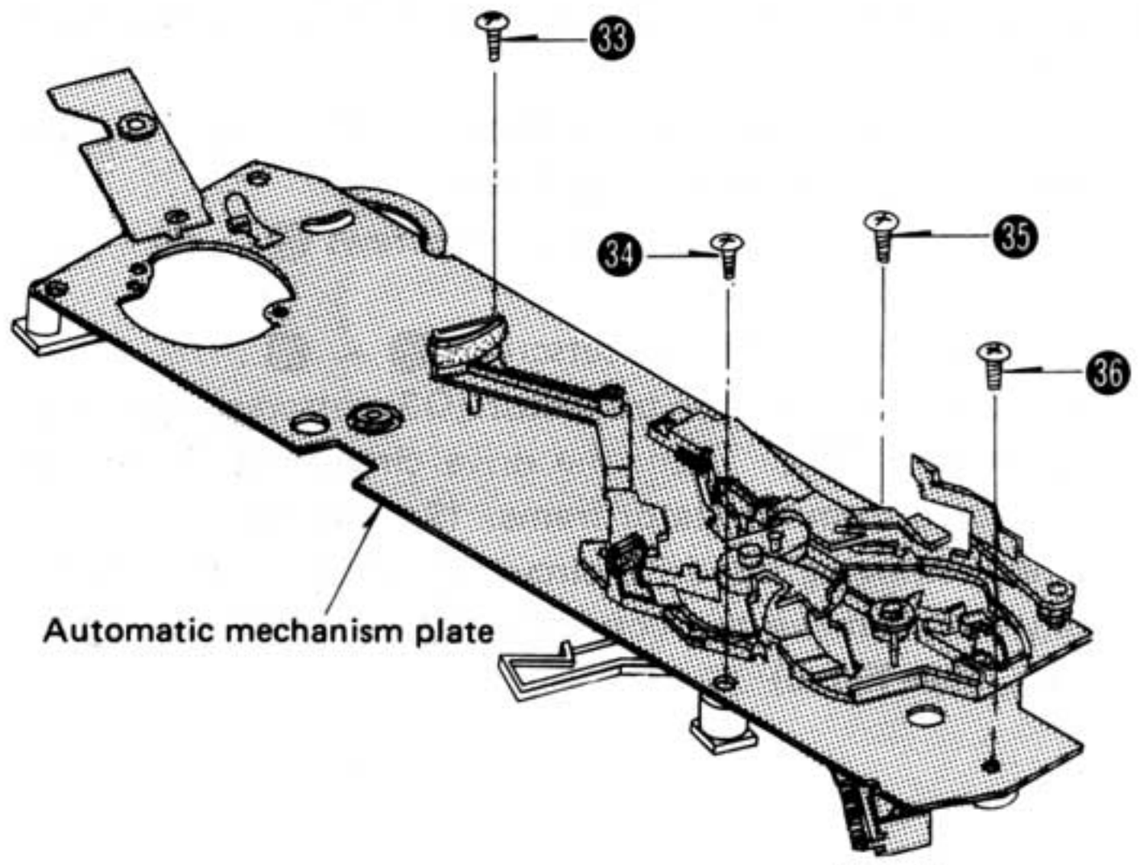


Fig. 8

- **How to replace the electric parts**

1. Remove the panel cover. **(Refer to "How to remove the main base and cabinet".)**
2. Remove the drive circuit P.C.B. setscrews ㊲ ~ ㊵ and connectors ㊶ ~ ㊸. Remove the drive circuit P.C.B. by lifting it as shown by the arrow. Then, the electric parts can be replaced. **(See Fig. 9)**
   To replace the regulator transistor (Q3), the stator frame must be removed beforehand.

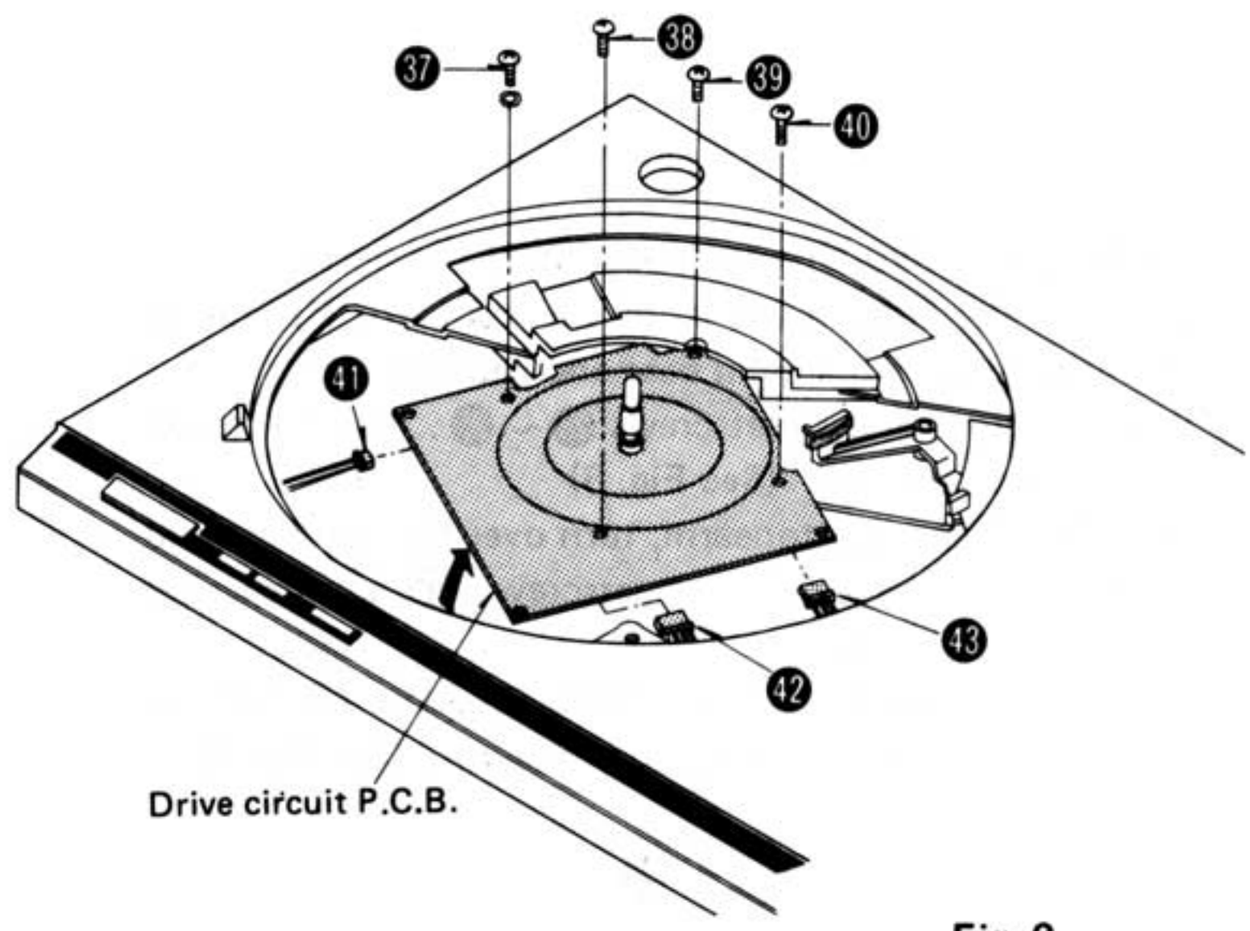


Fig. 9

■ REPLACEMENT OF HALL ELEMENT

When replacing the Hall element, note that the Hall element surface must be faced to the magnet of the turntable.
The legs are allowed to be reverse in position provided that the surface is up. **(See Fig. 10)**

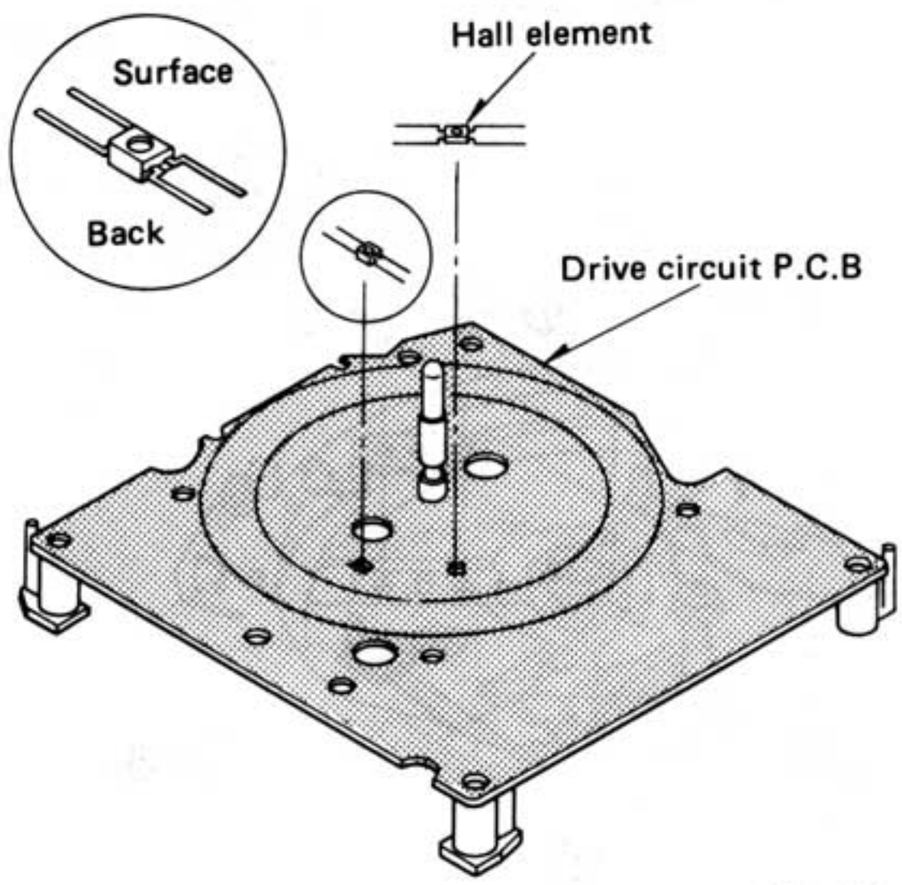


Fig. 10

■ MEASUREMENTS AND ADJUSTMENTS

• Arm-lift height adjustment

The arm-lift height (distance between the stylus tip and record surface when the cueing control is set to the " ▼ " position) has been adjusted at the factory to approximately 5 mm (3/16"). **(Fig. 11)**

If the clearance is too narrow or too wide (because of different cartridge dimensions, for example), turn the adjustment screw clockwise or counterclockwise.

(See Fig. 12)

Clockwise rotation

—distance between the record and stylus tip is decreassed.

Counterclockwise rotation

—distance between the record and stylus tip is increased.

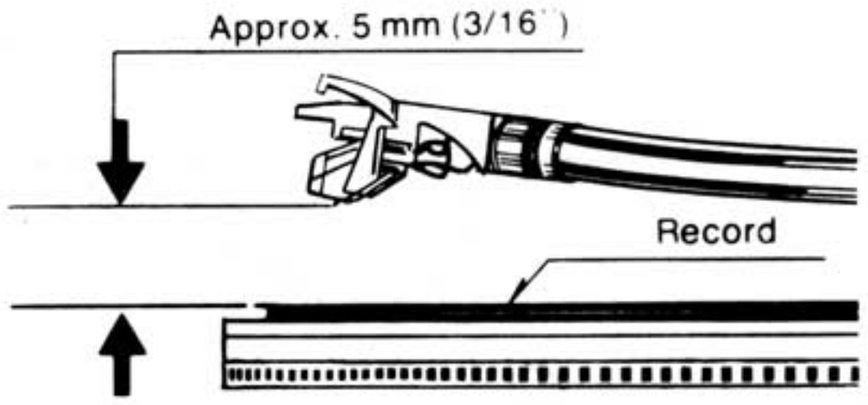


Fig. 11

• Adjustment of automatic start position (Fig. 13)

Note:

The auto-start and auto-return adjustment screw are located together. When the tonearm is in or near the arm rest, the auto-start adjustment screw is visible; **(See Fig. 13)** when the tonearm is near the center of a record, the auto-return adjustment screw is visible. **(See Fig. 14)**

If the stylus does not land in the lead-in groove, adjust as follows.

1. Clamp the tonearm to the arm rest.
2. Take off the rubber cap covering the adjustment screw section.
   Turn the screw with a screwdriver, clockwise or counterclockwise as necessary.
   If the stylus lands too far in,
   —turn counterclockwise.
   If the stylus descends outside the record,
   —turn clockwise.
   Adjust so the stylus tip lands 1 ~ 2mm in from the edge of the record.

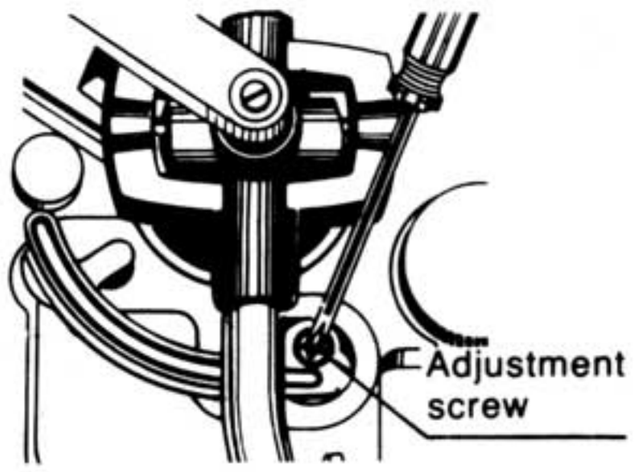


Fig. 12

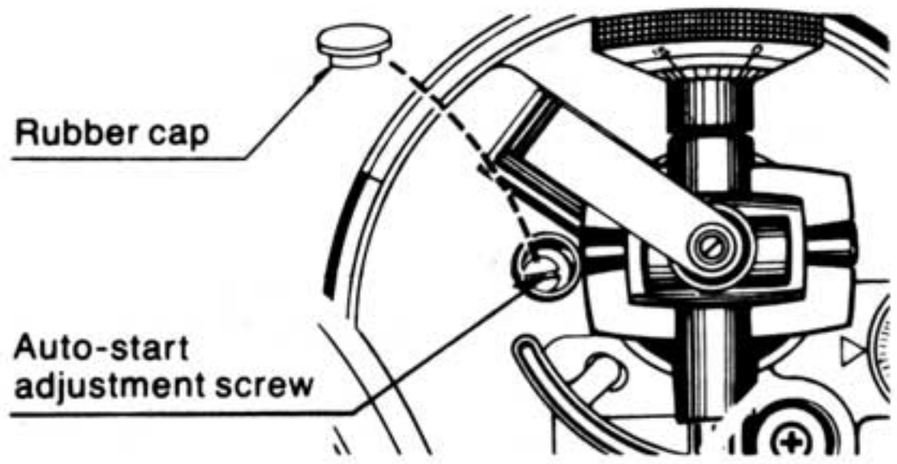


Fig. 13

• Adjustment of automatic return position (Fig. 14)

1. Put the stylus protector on the cartridge.
2. Take off the rubber cap covering the adjustment screw section and move the tonearm toward the center of the record.
   Then, the auto-return position adjustment screw will appear.
   If the tonearm tends to return to the arm rest before the play has finished,
   —turn counterclockwise.
   If the tonearm fails to return after the final groove,
   —turn clockwise.

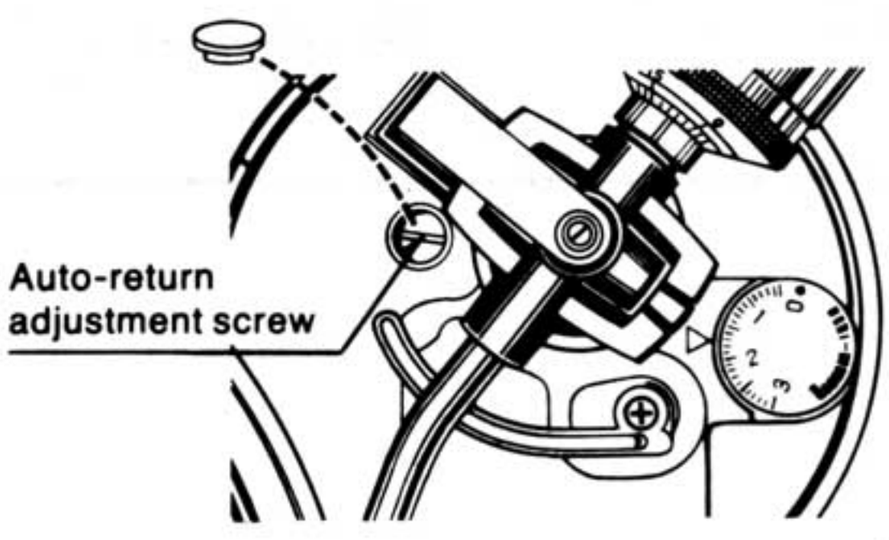


Fig. 14

- **Overhang adjustment** **(See Fig. 15)**

1. Insert the headshell in the gauge.
2. Loosen the screws and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.
3. Tighten the screws without moving the cartridge.

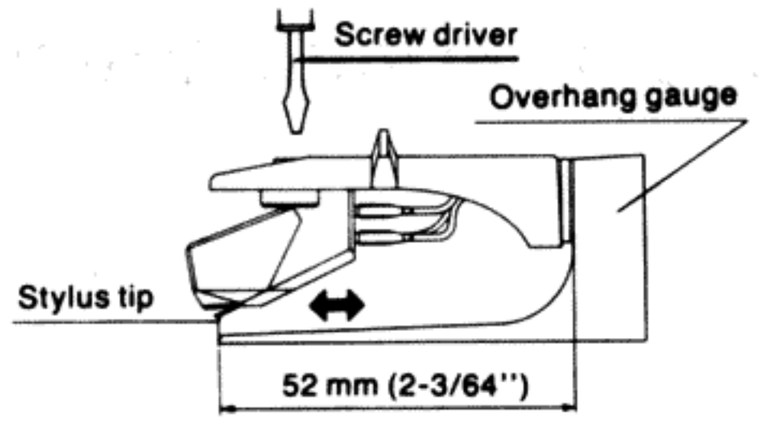


Fig. 15

■ CARTRIDGE INSTALLATION

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

1. Connect the lead wires to the cartridge terminals.
   The terminals of most cartridges are color coded.
   Connect each lead wire to the terminal of the same color.
   White (L+) . . . . . **Left channel +**
   Blue (L–) . . . . . **Left channel –**
   Red (R+) . . . . . **Right channel +**
   Green (R–) . . . . . **Right channel –**
2. Mount the cartridge in the headshell using the screws provided with the cartridge. **(Fig. 16)**

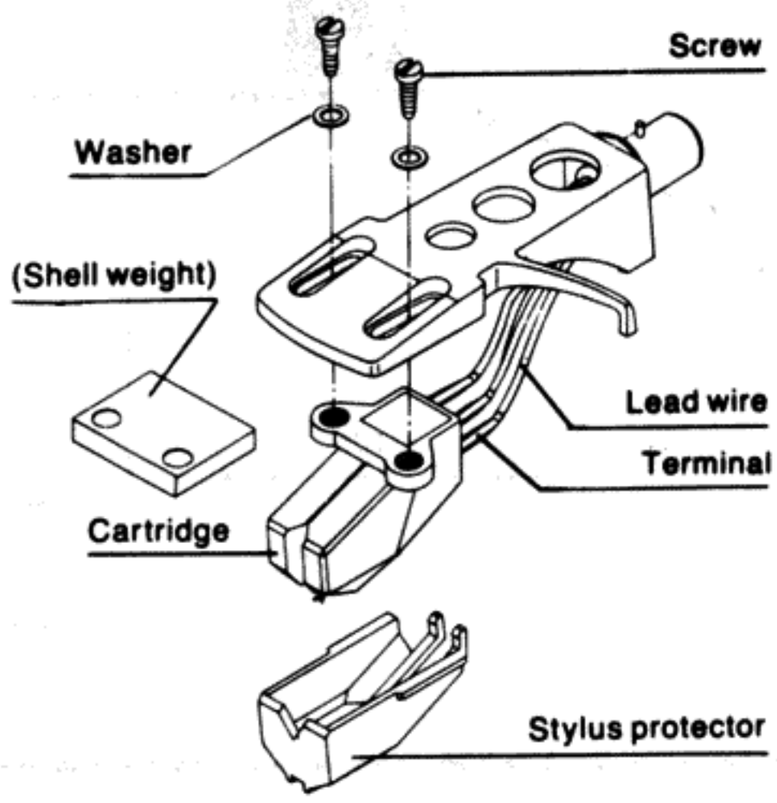


Fig. 16

■ ABOUT CARTRIDGE WEIGHT

(See chart below)

Cartridges weighing between 3.5 and 7.5 g can be used on this tonearm (with the headshell and accessory shell weight supplied).
If you purchase the optional auxiliary weight (part number: SFPWG17202), cartridges weighting up to 10.5 g can be used.

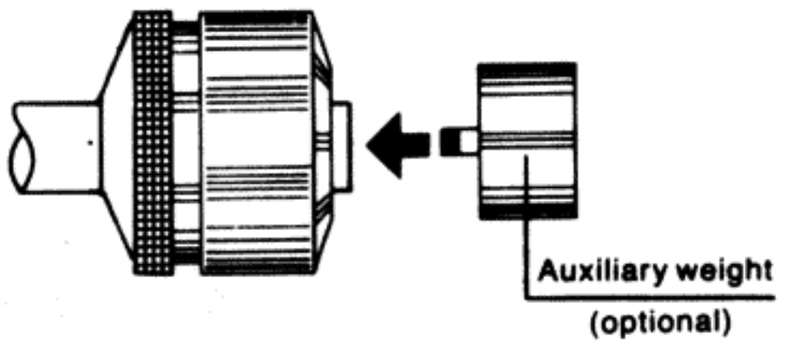
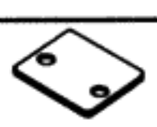


Fig. 17

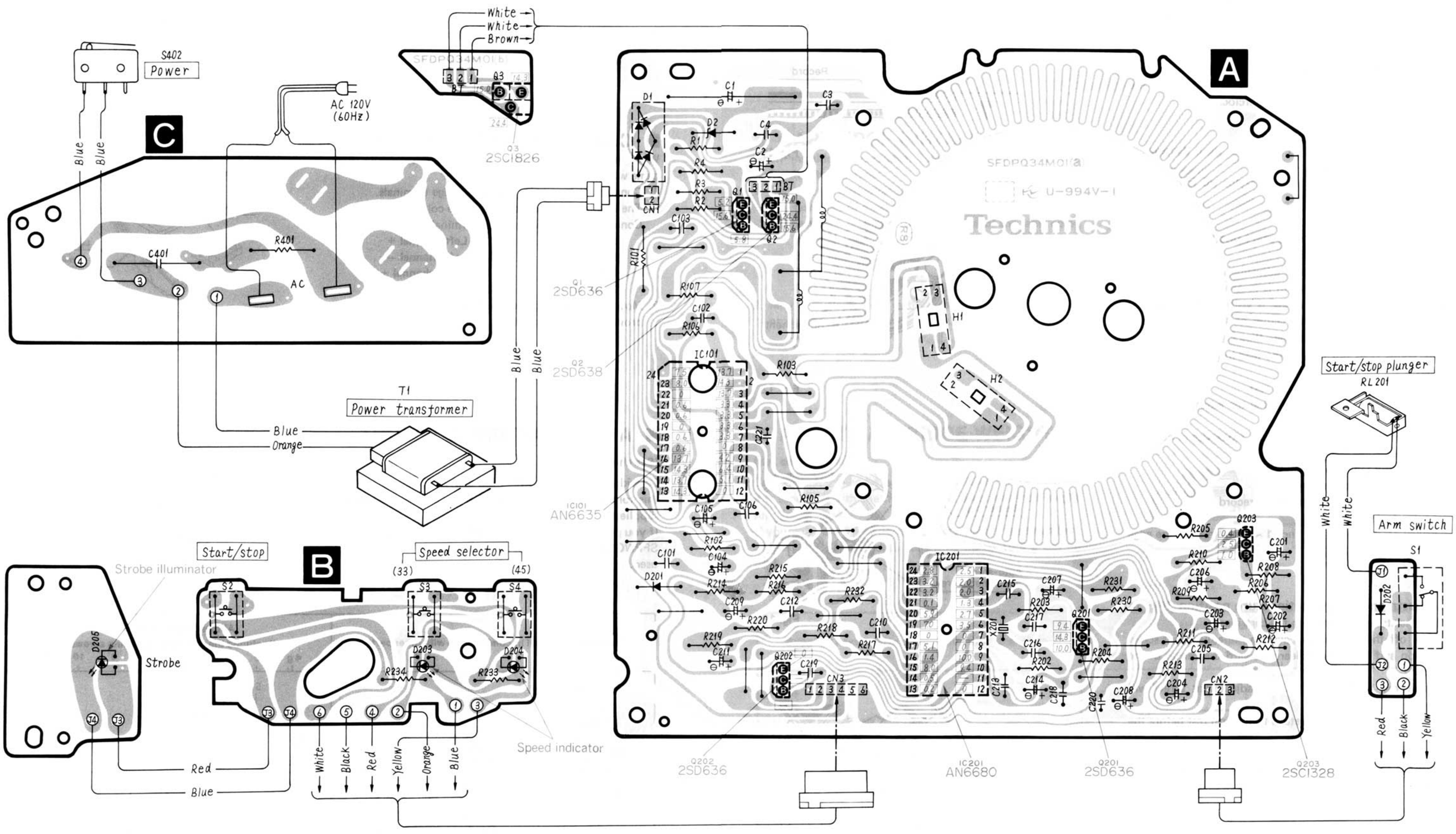
Supplied headshell in combination with other parts.	**Allowable cartridge weight.** **(Included the cartridge mounting screws)** 4 g 5 6 7 8 9 10 11
A)  **Headshell only** (7.5 g)	5 g – 7.5 g
B)  +  **Shell weight**	3.5 g – 5 g
C)  +  (Optional) +  (Optional) (Auxiliary weight) (SFPWG17202)	7.5 g – 8.5 g
D)  +  (Auxiliary weight) (SFPWG17202)	8.5 g – 10.5 g

Note:

- Attach the auxiliary weight to the rear end of the tonearm. **(Fig. 17)**
- **When attached, the auxiliary weight bumps against the dust cover, so remove the cover during play.**

■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) Lines



■ SCHEMATIC DIAGRAM

• 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 contiue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

Oper ion circuit

C

D205 SVDEBR5505S

D203, 204 SVDPR5531K

D202 SVDRMIZ

• Product for [MC] only

Turntable drive circuit

A

Q203 2SC1328

Q2 2SD638 Q1 2SD636

Q3 2SC1826

IC201 AN6680

IC101 AN6635

D2 MA1051A

Q201, 202 2SD636

D1 SVDSIRBA20Z

Power source circuit

B

H1, 2 OH-001

Fig. A

Notes:

1. **S1** : Arm switch in "**on**" position.
2. **S2** : Start/stop switch in "**off**" position. (not push condition)
3. **S3, 4** : Speed selector switch in "**off**" position. (not push condition)
   S3 . . . . .33-1/3 r.p.m. S4 . . . . 45 r.p.m.
4. **S402** : Power switch in "**on**" position.
5. The value in ☐ is the reference voltage at stop of turntable, measured by DC electronic circuit tester (high-impedance) on the basis of chassis. (S1 . . . . "on")
   Therefore, the measured value may include some error depending on the internal impedance of DC circuit tester and other conditions.
6. ▬ + Ⓑ voltage line.

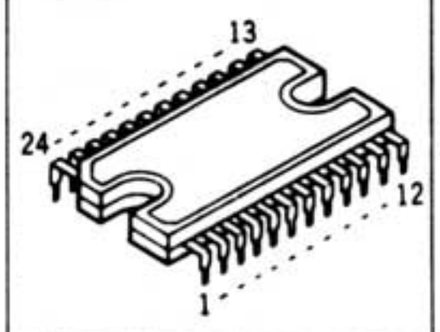
IMPORTANT SAFETY NOTICE

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.

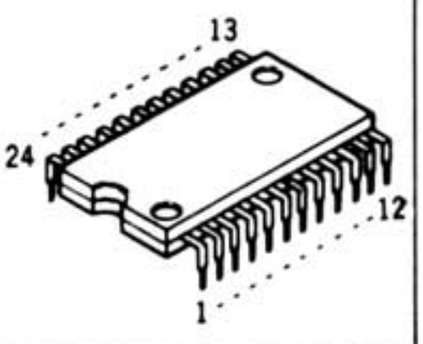
* The power switch of this unit is changed in type from primary side ON-OFF to secondary side ON-OFF type in the course of manufacture.
Therefore, check the type when repairing. For the circuit of the secondary side ON-OFF type, See **Fig. A** on page 14.

• Terminal guide of transistors and IC's

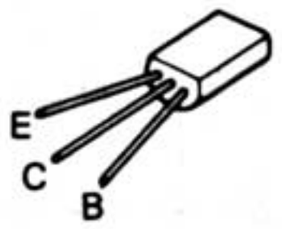
AN6635



AN6680

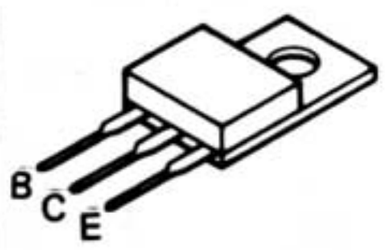


2SC1328

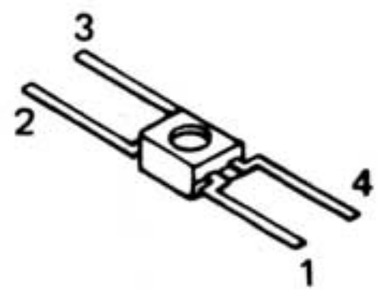


2SD636
2SD638

2SC1826



OH-001



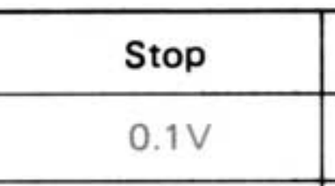
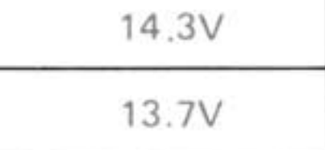
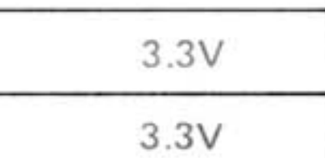
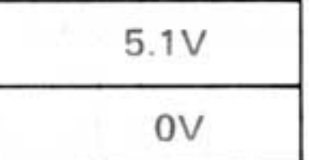
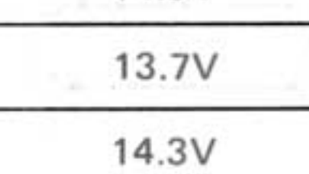
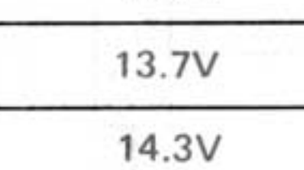
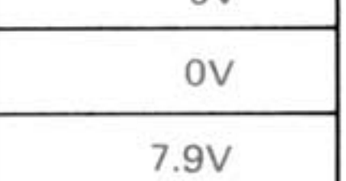
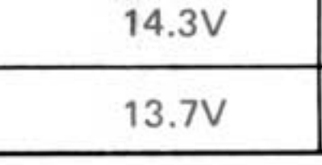
• Reference voltage and waveform at each IC terminal (pin)

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

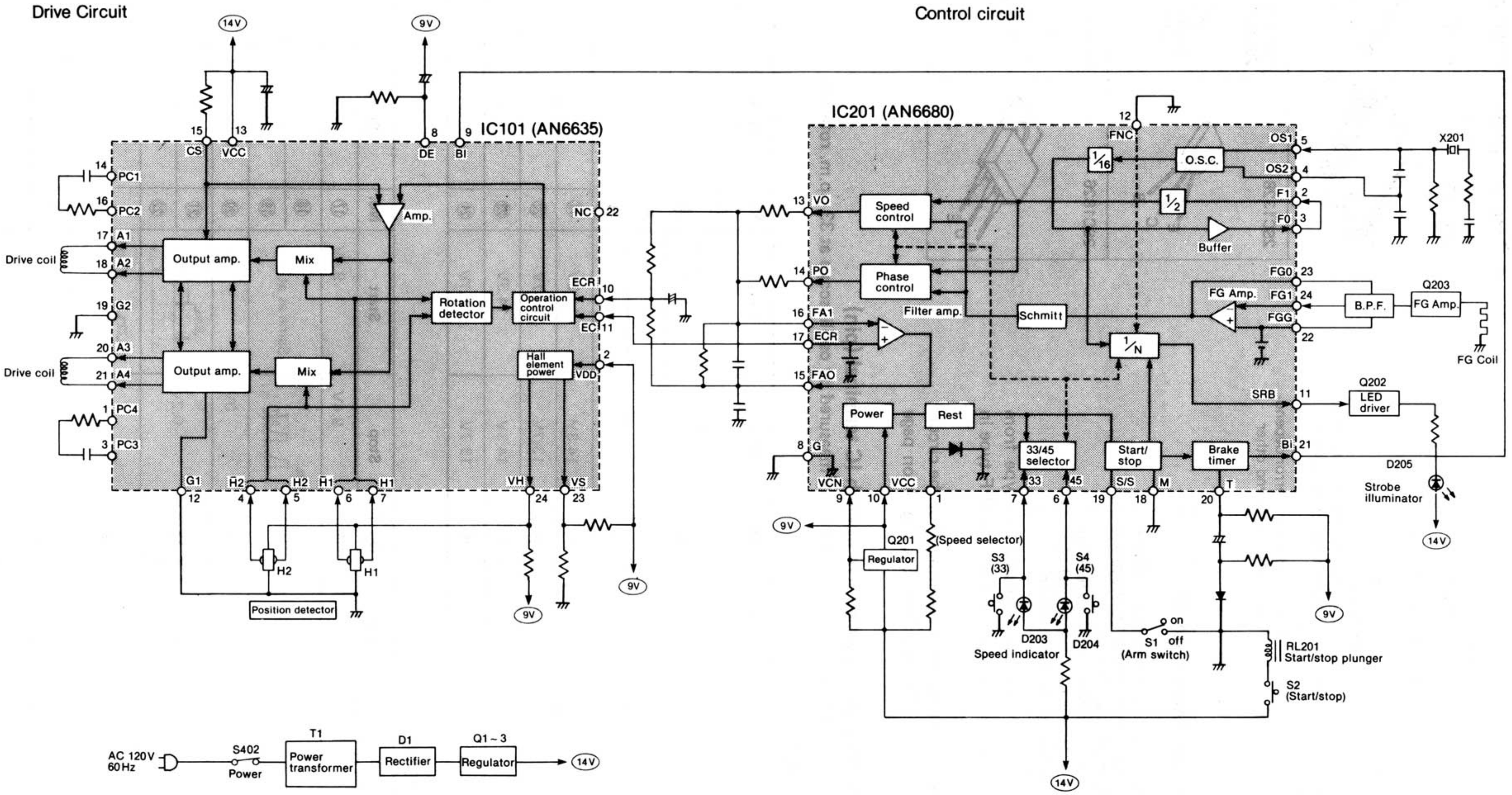
IC101 (AN6635)

No.	Stop	Start	No.	Stop	Start	No.	Stop	Start
①	13.7V	13.7V	⑨	0.1V	4.2V	⑰	0.6V	
②	14.3V	14.3V	⑩	6.4V	5.2V	⑱		
③	13.7V	13.7V	⑪	5.1V	5.1V	⑳		
④	3.3V	3.3V	⑫	0V	0V	㉑		
⑤	3.3V	3.3V	⑬	14.3V	14.3V	⑲	0V	0V
⑥	3.3V	3.3V	⑭	13.7V	13.7V	㉒	0V	0V
⑦	3.3V	3.3V	⑮	14.3V	14.3V	㉓	8.0V	7.9V
⑧	0V	0V	⑯	13.7V	13.7V	㉔	7.5V	7.5V

IC201 (AN6680)

No.	Stop	Start	No.	Stop	Start	No.	Stop	Start
①	2.5V	2.5V	⑩	9.4V	9.4V	⑰	5.1V	5.1V
② ③		Same as at left	⑪		Same as at left	⑱	0V	0V
						⑲	0V	7.0V
④		Same as at left	⑫	0V	0V	⑳	5.9V	0.2V
⑤		Same as at left	⑬	0.2V		㉑	0.1V	4.2V
						㉒	3.2V	3.0V
⑥	3.5V (45r.p.m. . . 0V)	3.5V (45r.p.m. . . 0V)	⑭			㉓	3.2V	
⑦	0V (45r.p.m. . .4.0V)	0V (45r.p.m. . .4.0V)	⑮	8.0V		㉔	2.8V	3.0V
⑧	0V	0V						
⑨	10.0V	10.0V	⑯	1.4V	5.2V			

■ BLOCK DIAGRAM



■ TROUBLE SHOOTING GUIDE

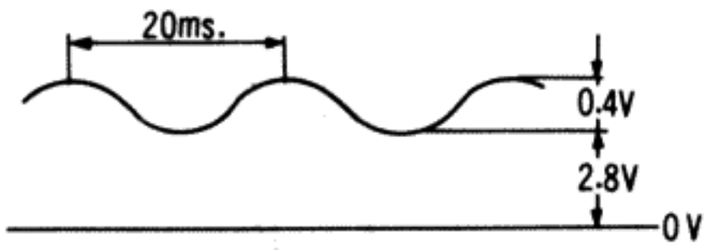
1. No rotation

	Check point	Checking method	Possible defects
1	Power supply circuit	Q3 emitter voltage ⟶ 14.3V	Q1 ~ 3 D1, 2
2	Constant voltage circuit	Q201 emitter voltage ⟶ 9.4V	Q201
3	Control circuit (S/S circuit)	With arm switch (S1) turned on/off, the voltage changes of IC201 terminal ⑲ are as follows: S1 "on" ⟶ 7.0V "off" ⟶ 0V	S1 IC201
4	Drive circuit	Voltage ar each terminal of IC101 (in start mode) (S1 . . . . . "on")	IC101

Terminal	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫
Voltage	13.7	9.4	13.6	3.3	3.3	3.3	3.3	0	4.2	6.4	5.1	0
Terminal	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	㉔
Voltage	14.3	13.7	14.3	13.6	0.6	0.6	0	0.6	0.6	0	8.0	0.7

Note: Besides the above-mentioned defects, burnt-out drive coil is also possible. But if it is on one phase, the moto rotates although the driving torque is halved. Also, it is possible that both Hall elements are defective.

2. Abnormal rotation

	Check point	Checking method	Possible defects
1	FG amplifier circuit	Solder lead wire to terminal ㉓ of IC201; remove it from the bottom plate and measure the waveform in the state of rotation. **(See Fig. 18)** 	Q203 IC201 FG coil pattern breakage
2	Control circuit (Reference voltage circuit)	Voltage of IC201 terminal ⑰ 5.1V	IC201

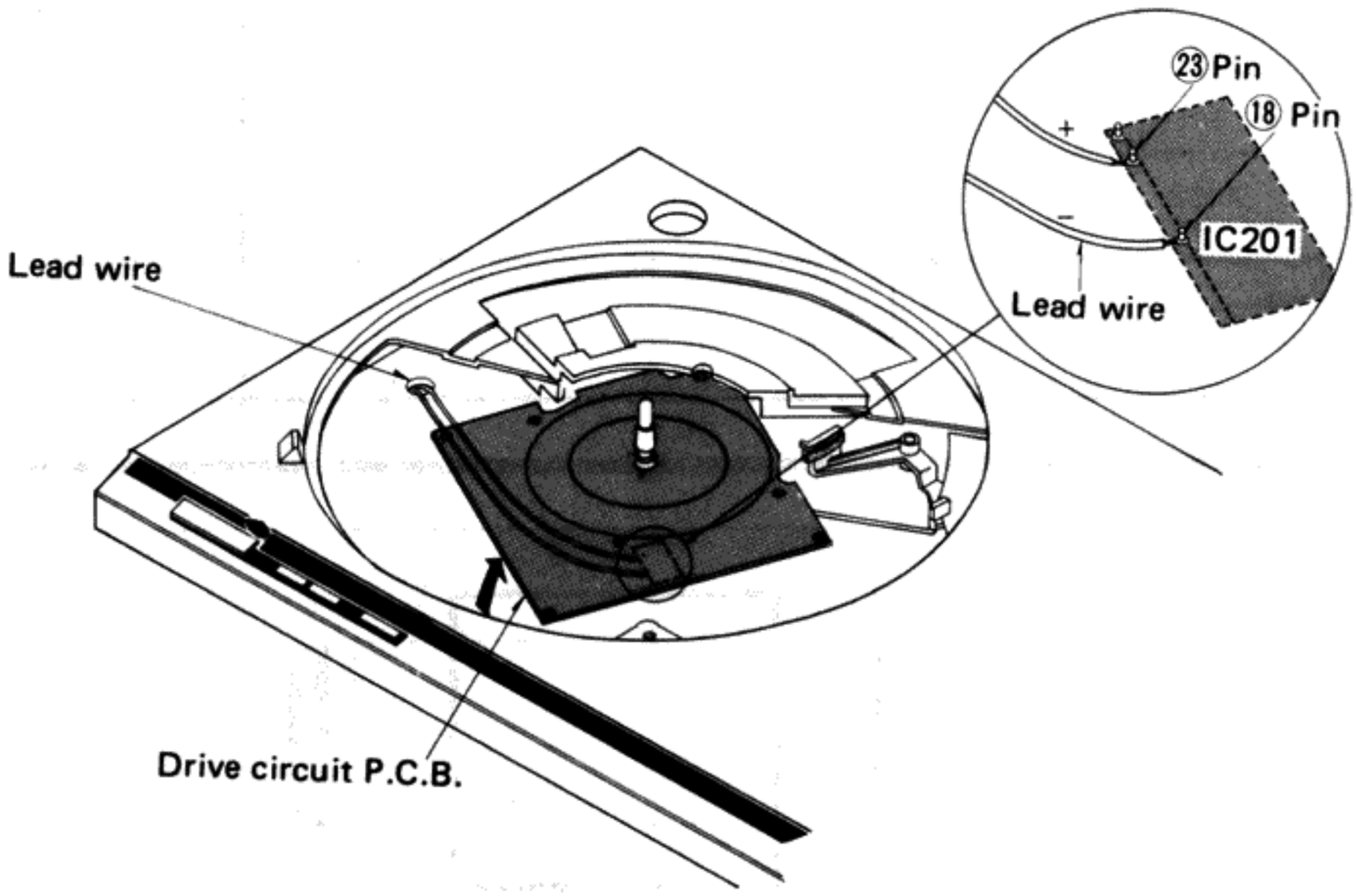
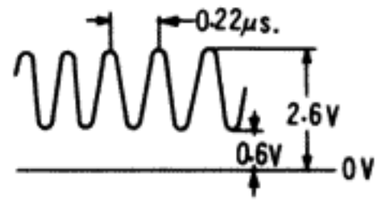
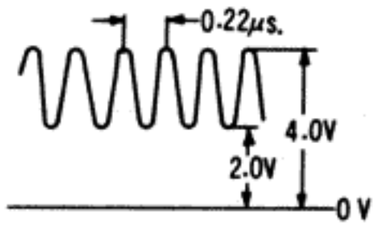
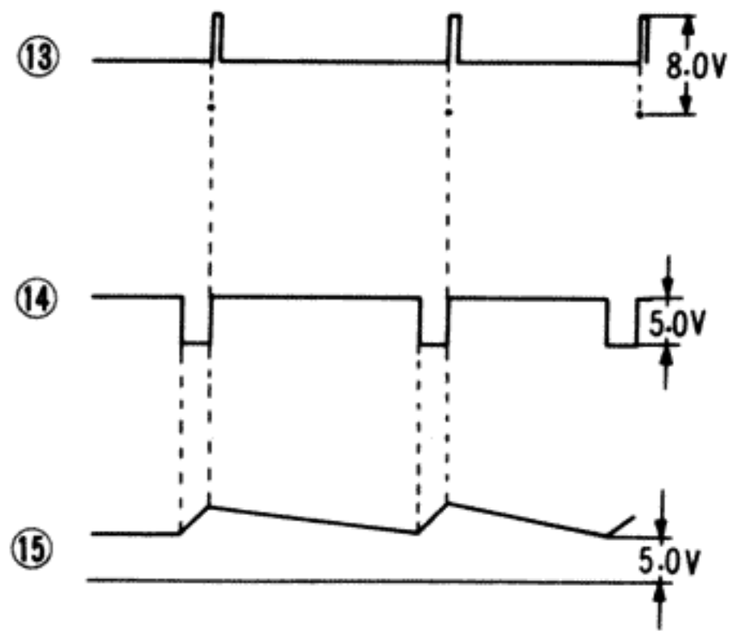


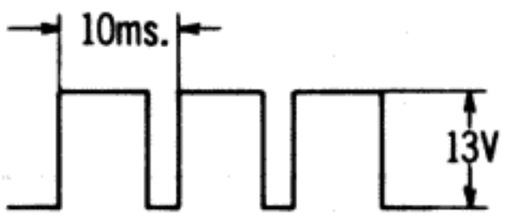
Fig. 18

3. Unstable rotation (Uneven rotation, repeat of normal and reverse rotations)

	Check point	Checking method	Possible defects
1	Control circuit (Crystal oscillator)	Measure the waves at IC201 terminals ④ and ⑤. ④  ⑤ 	X201 IC201
2	Control circuit (Brake, timer circuit)	Voltage at IC201 terminals ⑳ and ㉑. (S1 . . . . ' on") ⑳ ⟶ 5.9V ㉑ ⟶ 4.2V	IC201 IC101
3	Control circuit (Control output circuit)	Instead of FG signal, apply FG signal by CR oscillator, **(Refer to "How to check the control circuit.)** Measure the waves at IC201 terminals ⑬, ⑭, ⑮. 	IC201

Note: Besides the above, it is possible that Hall elements are defective. In this case, the symptom may be that the turntable reversely rotates because the turntable position cannot be detected.

4. Others

	Check point	Checking method	Possible defects
1	Strobe LED does not light up.	Q202 collector output waveform. 	D215 Q202
2	33/45 r.p.m. changeover is impossible.	Voltage at IC201 terminals ⑥ and ⑦. Speed / Terminal: 33 / 45 ⑥: 3.5V / 0V ⑦: 0V / 4.0V	IC201 S3, 4

•How to check the control circuit

Instruments used

1. CR oscillator
2. Oscilloscope (Two channel type)
3. 50V 1μF electrolytic condenser

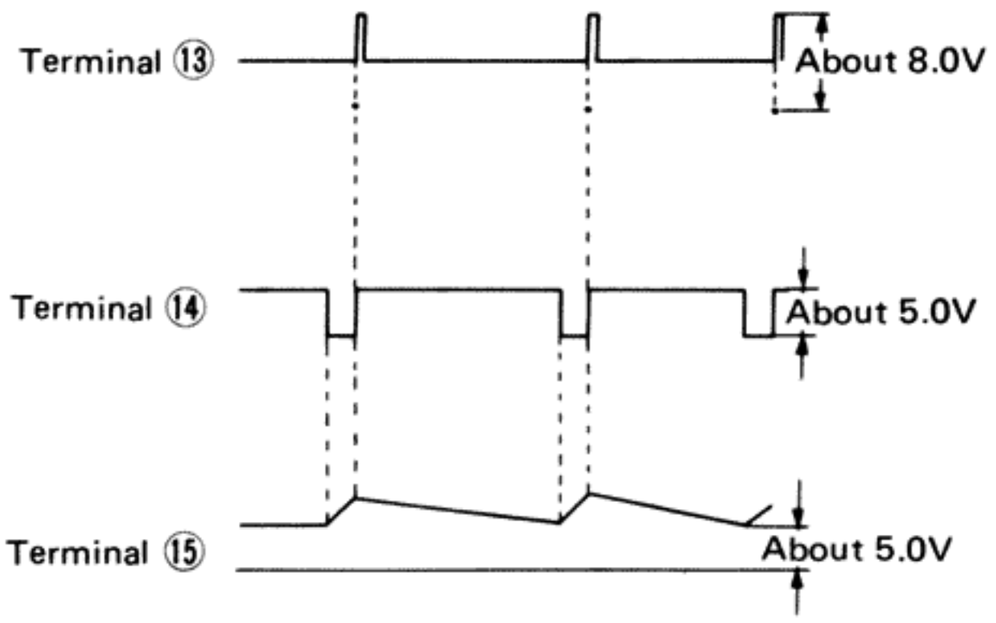
Setting

1. Remove the turntable and panel cover. **(Refer to "Disassembly instructions".)**
2. Remove the connector (CN2) from the arm switch.
3. Unsolder the positive ⊕ side of C203.

Checking procedure

1. Solder the condenser to the negative ⊖ side of C203, and connect the CR oscillator to it.
   Or, connect the oscillator to the positive ⊕ side of C203.
   (See Fig. 19)
2. Checking the output of the oscillator on the oscilloscope, adjust so that the waveform becomes as shown below.

3. Measure the waves at terminals ⑬ , ⑭ , ⑮ of IC201.
   When the output waveforms are as shown below, the control circuit is normal.
   However, because of ther stability of the CR oscillator, the waveforms are not the same as those in normal rotation.



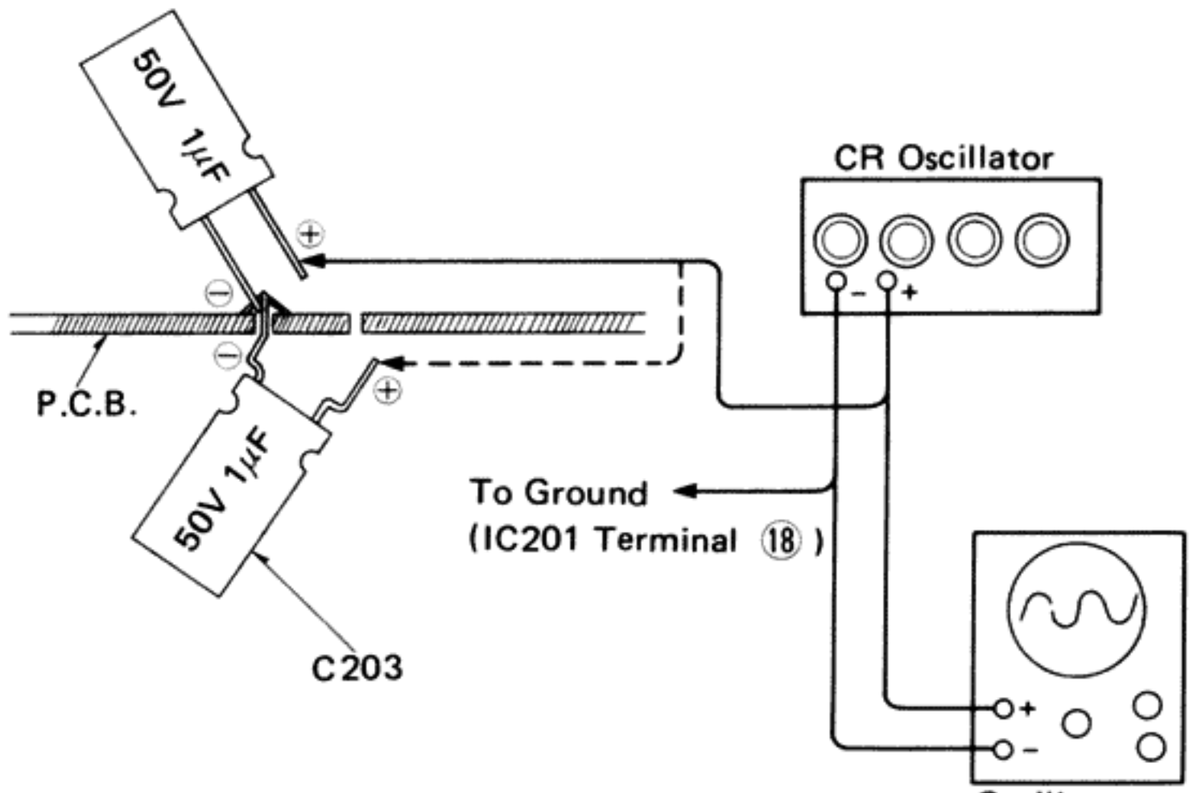


Fig. 19

■ 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 indentified by ⚠ make have special characteristcs important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Brakerted indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC101		AN6635	IC, Drive
IC201		AN6680	IC, Control
TRANSISTORS			
Q1, 201, 202		2SD636	Transistor, Regulator & Switching
Q2		2SD638	Transistor, Regulator
Q3		2SC1826	Transistor, Regulator
Q203		**2SC1328–T**	Transistor, FG Amplifier
DIODES			
D1	⚠	SVDS1RBA20Z	Diode, Rectifier
D2		MA1051A	Diode, 5.1V Zener
D201		**MA162A**	Diode
D202		SVDRM1Z	Diode
D203, 204		SVDPR5531K	Light Emitting Diode, Speed Indicator (Red)
D205		SVDEBR5505S	Light Emitting Diode, Strobe
HALL ELEMENT			
H1, 2		OH-001	Hall Element, Turntable Position Detector
CRYSTAL			
X201		SVQU306115	Crystal, 4,19328MHz Counter Oscillator

Ref. No.		Part No.	Part Name & Description
SOLENOID			
RL201		SFDZQ34N01Z	Solenoid Ass'y, Start/Stop
SWITCHES			
S1	⚠	SFDSAH2985	Switch, Arm (Rest) Switch
S2 ~ 4		EVQQJR02K	Switch, Start/Stop & Speed Selector
S402		SFDSQ34N05R	Switch, Power Source
FUSE			
F1 [MC] only	⚠	XBA2F08NU100	Fuse T 0.8A 250V
POWER TRANSFORMER			
T1 [M]	⚠	SLT57PL1A	Transformer, Power Source
T1 [MC]	⚠	SLT57P23C	Transformer, Power Source
RESISTORS			
R1		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R2		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ± 5%
R3		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ± 5%
R4		**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ± 5%
R101		**ERX1ANJ1R2**	Metal Oxide, 1W, 1.2Ω, ± 5%
R102		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ± 5%
R103		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ± 5%

Ref. No.		Part No.	Part Name & Description
R105		**ERD25TJ683**	Carbon, 1/4W, 68kΩ, ± 5%
R106, 107		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R202		**ERD25FJ391**	Carbon, 1/4W, 390Ω, ± 5%
R203		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R204		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ± 5%
R205		**ERD25FJ470**	Carbon, 1/4W, 47Ω, ± 5%
R206		**ERD25TJ154**	Carbon, 1/4W, 150kΩ, ± 5%
R207		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R208		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R209		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ± 5%
R210		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R211		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ± 5%
R212		**ERD25TJ124**	Carbon, 1/4W, 120kΩ, ± 5%
R213		**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ± 5%
R214		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R215		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R216		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ± 5%
R217		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R218		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R219		**ERD25TJ563**	Carbon, 1/4W, 56kΩ, ± 5%
R220		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ± 5%
R230		**ERD25FJ181**	Carbon, 1/4W, 180Ω, ± 5%
R231		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R232		**ERD25TJ224**	Carbon, 1/4W, 220kΩ, ± 5%
R233		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ± 5%
R234		**ERD25FJ181**	Carbon, 1/4W, 180Ω, ± 5%
R401	⚠	**ERD50FJ4R7**	Carbon, 1/2W, 4.7Ω, ± 5%

Ref. No.		Part No.	Part Name & Description
CAPACITORS			
C1		**ECEB1HS471**	Electrolytic, 50V, 470μF
C2		**ECEA25Z4R7**	Electrolytic, 25V 4.7μF
C3, 4	⚠	ECKD1H223ZF	Ceramic, 50V, 0.022μF, +80 −20%
C101, 102		ECQM1H104KZ	Polyester, 50V, 0.1μF, ± 10%
C103		ECQM1H104KZ	Polyester, 50V, 0.1μF, ± 10%
C104		**ECEA1CS330**	Electrolytic, 16V, 33μF
C105		**ECEA1AS470**	Electrolytic, 10V, 47μF
C106		ECKF¹E104ZV	Ceramic, 25V, 0.1μF, +80 −20%
C201		**ECEA1CS330**	Electrolytic, 16V, 33μF
C202, 203		**ECEA50Z1**	Electrolytic, 50V, 1μF
C204		**ECEA50Z1**	Electrolytic, 50V, 1μF
C205		ECQM1H473KZ	Polyester, 50V, 0.047μF, ± 10%
C206		**ECEA1ES470**	Electrolytic, 25V, 47μF
C207		**ECEA50Z1**	Electrolytic, 50V, 1μF
C208		**ECEA0JS471**	Electrolytic, 6.3V, 470μF
C209		**ECEA1AS470**	Electrolytic, 10V, 47μF
C210		ECQV05224JZ	TF, 50V, 0.22μF, ± 5%
C211		**ECEA50Z2R2**	Electrolytic, 50V, 2.2μF
C212		ECQV05224JZ	TF, 50V, 0.22μF, ± 5%
C213		ECKF1E104ZV	Ceramic, 25V, 0.1μF, +80 −20%
C214		**ECEA1ES470**	Electrolytic, 25V, 47μF
C215		ECCD1H471K	Ceramic, 50V, 470pF, ± 10%
C216		ECCD1H330K	Ceramic, 50V, 33pF, ± 10%
C217		ECCD1H151K	Ceramic, 50V, 150pF, ± 10%
C218		ECKF1E104ZV	Ceramic, 25V, 0.1μF, +80 −20%
C219, 220		ECQV05224JZ	TF, 50V, 0.22μF, ± 5%
C221		ECQM1H103KZ	Polyester, 50V, 0.01μF, ± 10%
C401 [M]	⚠	ECQF1A473MD	Polypropylene, 125VAC, 0.047μF, ± 20%
C401 [MC]	⚠	ECQU2A473MF	Polypropylene, 250VAC, 0.047μF, ± 20%

■ REPLACEMENT PARTS LIST...Cabinet, Chassis and Packing Parts

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.

2. Important safety notice:
Components indentified by ⚠ make have special characteristcs important for safety. When replacing any of these components, use only manufacturer's specified parts.

3. Brakerted indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

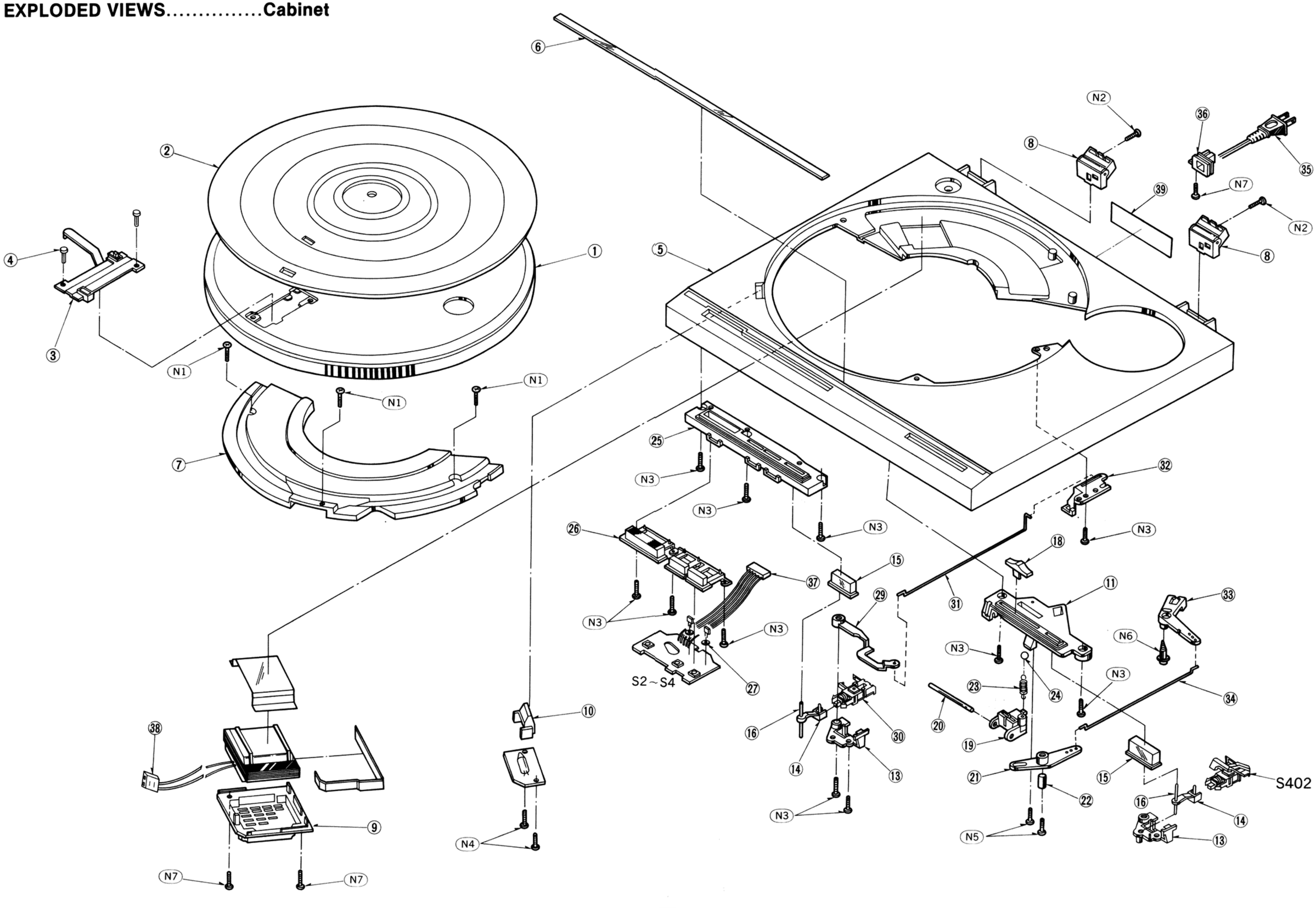
Areas

* [M] is available in U.S.A.
* [MC] is available in Canada.

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1		SFTEQ34N01E	Turntable
2		SFTGQ34N01	Turntable Mat
3		SFUMQ34N01E	Base, Disc Size Sensor
4		SFUZD33–01E	Latch, Disc Size Sensor Base
5		SFACQ34N01	Cabinet
6		SFKKQ34G01	Surface Plate
7		SFUMQ34N22	Cover, Panel
8		SFATQ34N01A	Hinge
9		SFUMQ34N06	Cover, Transformer
10		SFUMQ11N09	Cover, Neon Lamp Strove
11		SFUMQ34N02	Guide, Power Switch
13		SFUMQ34N12	Plate, Power/Repeat Switch
14		SFUMQ34N13	Plate, Power/Repeat Knob
15		SFKTQ34N02	Knob, Power/Repeat
16		SFXJQ34N02	Shaft, Power/Repeat
18		SFKTQ34N01	Knob, Cueing
19		SFUMQ34N23	Slider, Cueing
20		SFXJQ34N01	Shaft Guide
21		SFUMQ34N04	Rink, Cueing (A)
22		SFXOQ34N01	Pipe, Cueing
23		SFQA130–11	Spring, Cueing
24		SFYB–5–32	Ball, Cueing
25		SFUMQ34N03	Guide, Start/Stop Switch
26		SFKTQ34N03	Knob, Start/Stop Switch
27		SFGZD11N01	Spacer, LED Speed
29		SFUMQ34N05	Rink, Repeat
30		SFDSQ34N01	Switch, Repeat
31		SFUZQ34N01	Rod, Repeat
32		SFUMQ34N21	Guide, Repeat
33		SFUMQ34N11	Rink, Cueing (B)
34		SFUZQ34N02	Rod, Cueing
35	⚠	**RJA9Y**	AC Cord
36		SFUMQ34N09	Bushing, AC Cord
37		SFDJQ34N03E	Connector Ass'y 6P
38		SFDJQ34N04E	Connector Ass'y 2P
39 [M]		SFNNQ34M01	Name Plate
39 [MC]		SFNNQ34C01	Name Plate

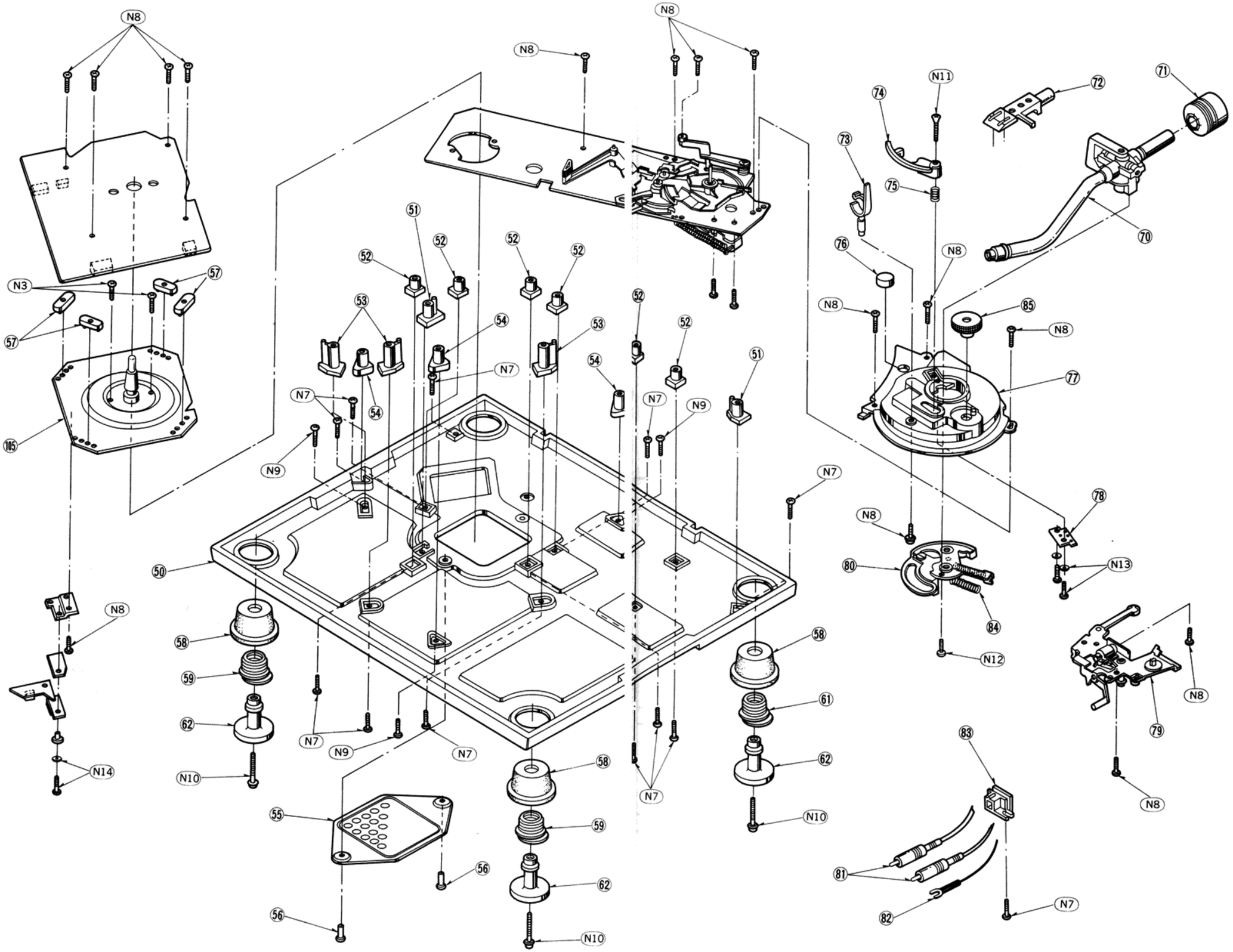
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
40		SFADQ34N01E	Dust Cover
MAIN BASE and TONE ARM PARTS			
50		SFAUQ34N01	Bottom Board
51		SFUMQ34N08	Supporter, Mechanism Plate (A)
52		SFUMQ34N14	Supporter, Mechanism Plate (B)
53		SFUMQ34N15	Supporter, Drive P.C.B.
54		SFUMQ34N16	Supporter, Clamper
55		SFUPQ34N01	Cover, Gear
56		SFUZQ34N06E	Latch, Gear Cover
57		SFMZQ34N31	Spacer, Driver P.C.B.
58		SFGAQ34N01	Rubber Insulator
59		SFQHQ34N01	Spring, Insulator Front & Rear Left
61		SFQHQ34N03	Spring, Insulator Rear Right
62		SFUMQ34N07E	Foot, Insulator
105		SFMZQ34N01A	Stater Frame Ass'y
TONE ARM PARTS			
70		SFPAM30301A	Tone Arm
71		SFPWG30301A	Balance Weight
72		SFPCC31002K	Head Shell
73		SFPRT30301E	Arm Rest
74		SFPRT30302E	Lift Arm
75		SFPSP30304	Spring, Left Arm
76		SFGK170–01	Rubber Cap
77		SFPKD30301	Base, Tone Arm
78		SFPAB30310	Sub Base, Tone Arm
79		SFPAB30305A	Plate, Left Ass'y
80		SFPAB30301A	Plate, Tone Arm
81 [MC]		SFDH212–01	Phono Cord
81 [M]		SFDHD33M01	Phono Cord
82		SFEL028–01E	Ground Wire
83		SFUMQ34N10	Bushing, Phono Cord
84		SFPSP30302	Spring, Anti-Skate Force Control
85		SFPJK30301	Knob, Anti-Skate Force Control

■ EXPLODED VIEWS.....Cabinet

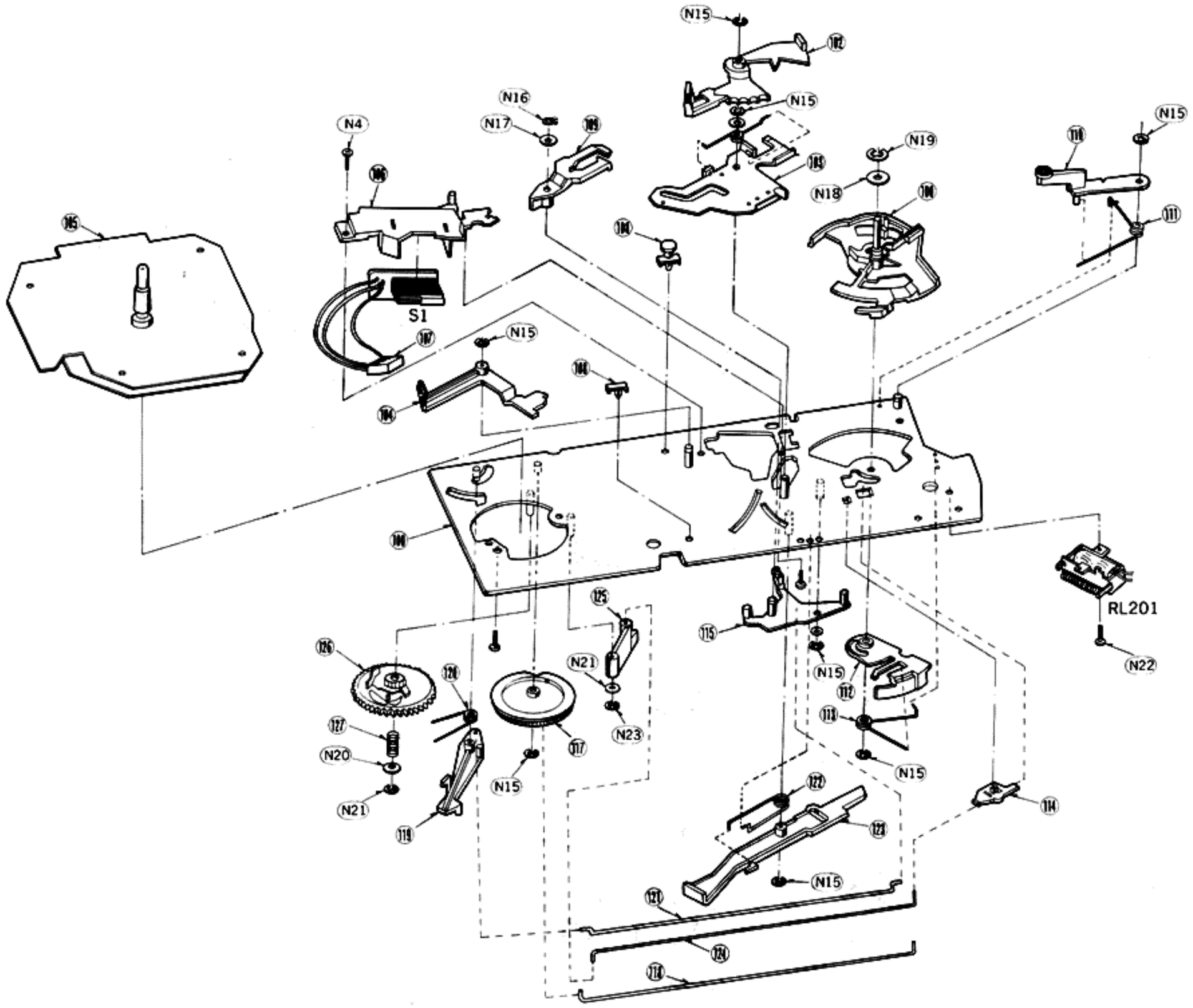


21 22

■ EXPLODED VIEWS.....Main Base



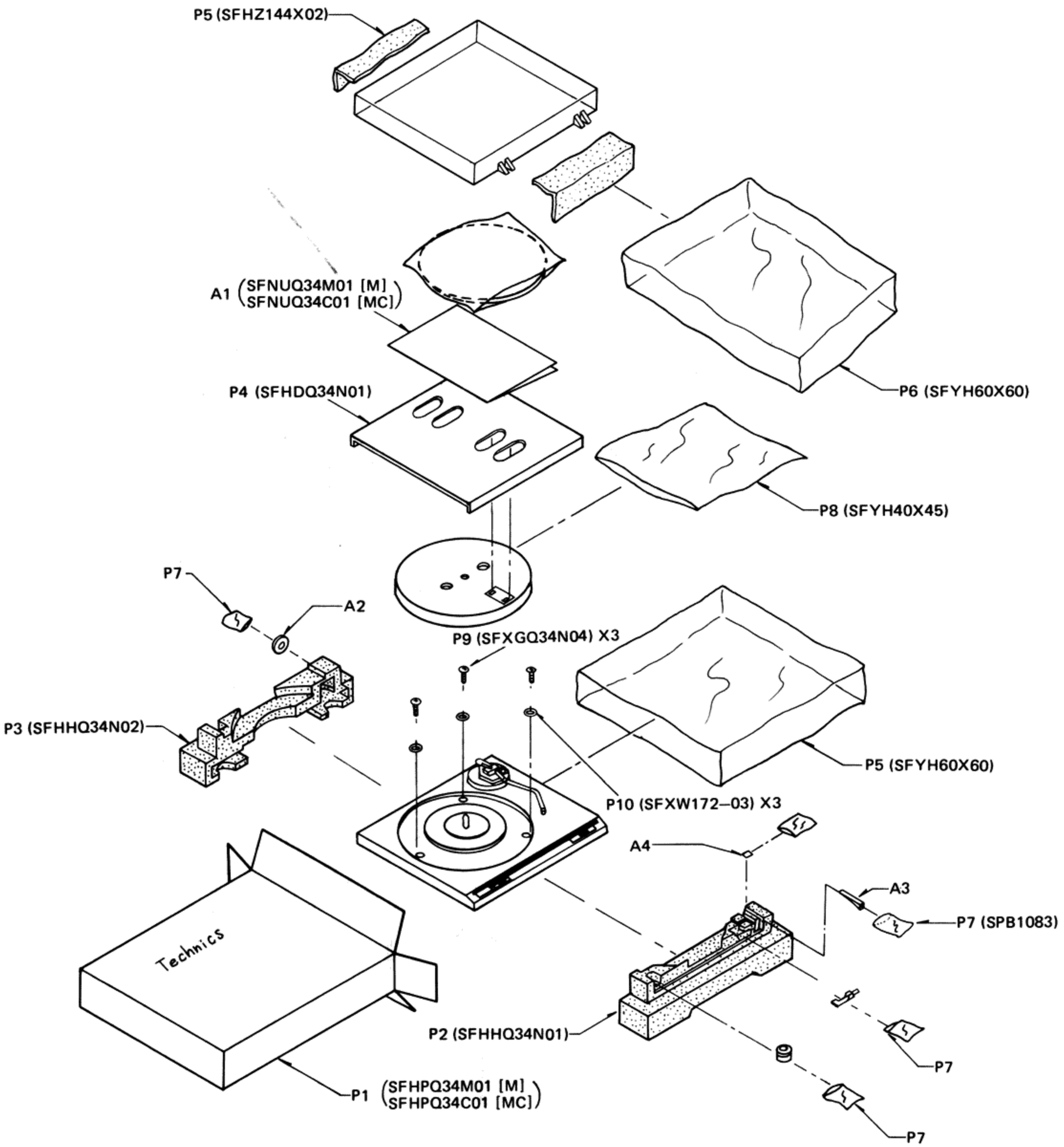
■ EXPLODED VIEWS.....Automatic Mechanism Plate



Ref. No.		Part No.	Part Name & Description
AUTOMATIC MECHANISM ASS'Y			
100		SFUKQ34N21E	Plate, Automatic Mechanism
101		SFUMQ34N39E	Cam, Drive
102		SFUMQ34N34E	Index Plate Ass'y
103		SFUPQ34N23E	Index Sub Plate Ass'y
104		SFUMQ34N33E	Plate, Disk Size Sensor
105		SFMZQ34N01A	Stater Frame Ass'y
106		SFUMQ34N36	Case, Switch
107		SFDJQ34N02E	Connector Ass'y 3P
108		SFEZQ34N01	Clamper
109		SFUMQ34N38	Lever, Stop
110		SFUMQ34N43	Plate, Brake
111		SFQSQ34N28	Spring, Brake
112		SFUMQ34N35	Cam, Start
113		SFQSQ34N24	Spring, Start
114		SFUMQ34N32	Support, Actuating Rod
115		SFUMQ34N37	Lever, Switch
117		SFUGQ34N22	Gear, Drive
118		SFQSQ34N22	Rod, Drive
119		SFUMQ34N31	Plate, Stop Gear
120		SFQSQ34N21	Spring, Stop Gear
121		SFQSQ34N26	Rod, Switch
122		SFQSQ34N25	Spring, Repeat Lever
123		SFUMQ34N41	Lever, Repeat
124		SFQSQ34N23	Rod, Actuating
125		SFUMQ34N42	Connector, Actuating
126		SFUGQ34N21E	Main Gear Ass'y
127		SFQAQ34N21	Spring, Main Gear
SCREWS, WASHERS and CIRCLIPS			
N1		XTW3+14GFZ	Screw, Tapping, ⊕ 3 x 14
N2		**XTV3+8BFZ**	Screw, Tapping, ⊕ 3 x 8
N3		**XTV3+8BFN**	Screw, Tapping, ⊕ 3 x 8
N4		XTW3+8T	Screw, Tapping, ⊕ 3 x 8
N5		XTW3+10Q	Screw, Tapping, ⊕ 3 x 10
N6		SFXGQ20–01	Screw, Tapping
N7		XTW3+10TFZ	Screw, Tapping, ⊕ 3 x 10
N8		**XTV3+10BFN**	Screw, Tapping, ⊕ 3 x 10

Ref. No.		Part No.	Part Name & Description
N9		XTW4+10QFZ	Screw, Tapping, ⊕ 4 x 10
N10		XTW4+30TFYR	Screw, Tapping, ⊕ 4 x 30
N11		**XTS3+16BFZ**	Screw, Tapping, ⊕ 3 x 16
N12		SFXGQ34N02	Screw, Tapping
N13		XYN3+C12S	Screw, Tapping, ⊕ 3 x 12
N14		XYN3+C8S	Screw, Tapping, ⊕ 3 x 8
N15		**XUC3FT**	Circlip, ϕ3
N16		**XUB4FT**	Circlip, ϕ4
N17		SFXWQ34N26	Washer
N18		SFXWQ30–11	Washer
N19		**XUC5FT**	Circlip, ϕ5
N20		**XWE4BW**	Washer, ϕ4
N21		SFXWQ34N21	Washer
N22		**XTV3+6BFN**	Screw, Tapping, ⊕ 3 x 6
N23		**XUC2FT**	Circlip, ϕ2
ACCESSORIES			
A1 [M]		SFNUQ34M01	Instructions Book, Printed Matter
A1 [MC]		SFNUQ34C01	Instructions Book, Printed Matter
A2		SFWE212–01	Adaptor, 45 rpm
A3		SFK0135–01	Overhung Gueage
A4		SFCZB30505	Shell Weight
PACKING PARTS			
P1 [M]		SFHPQ34M01	Carton Box
P1 [MC]		SFHPQ34C01	Carton Box
P2		SFHHQ34N01	Pad, Front
P3		SFHHQ34N02	Pad, Rear
P4		SFHDQ34N01	Pad, Turntable
P5		SFHZ144X02	Sheet
P6		SFYH60X60	Polyethylene Bag, Unit & Dust Cover
P7		SPB1083	Polyethylene Bag, Accessoris
P8		SFYH40X45	Polyethylene Bag, Turntable
P9		SFXGQ34N04	Screw, Clamp
P10		SFXW172–03	Washer

■ PACKINGS



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