

Service Manual

Turntable System

SL-D303

[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 or 60 Hz
Power consumption:	6 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")
	Maximum 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 kg (13.2 lb.)

■ Turntable section

Type:	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:	F-G servo control
Turntable platter:	Aluminum die-cast Diameter 31.2 cm (12-9/32 inches)
Turntable speeds:	33-1/3 rpm and 45 rpm
Pitch control:	10% adjustment range
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)
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■ 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 5
Headshell weight:	7.5 g
Phono cable capacitance:	135 pF

Technics

Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

Panasonic Hawaii, Inc.
320 Waiakamilo Road, Honolulu,
Hawaii 96817

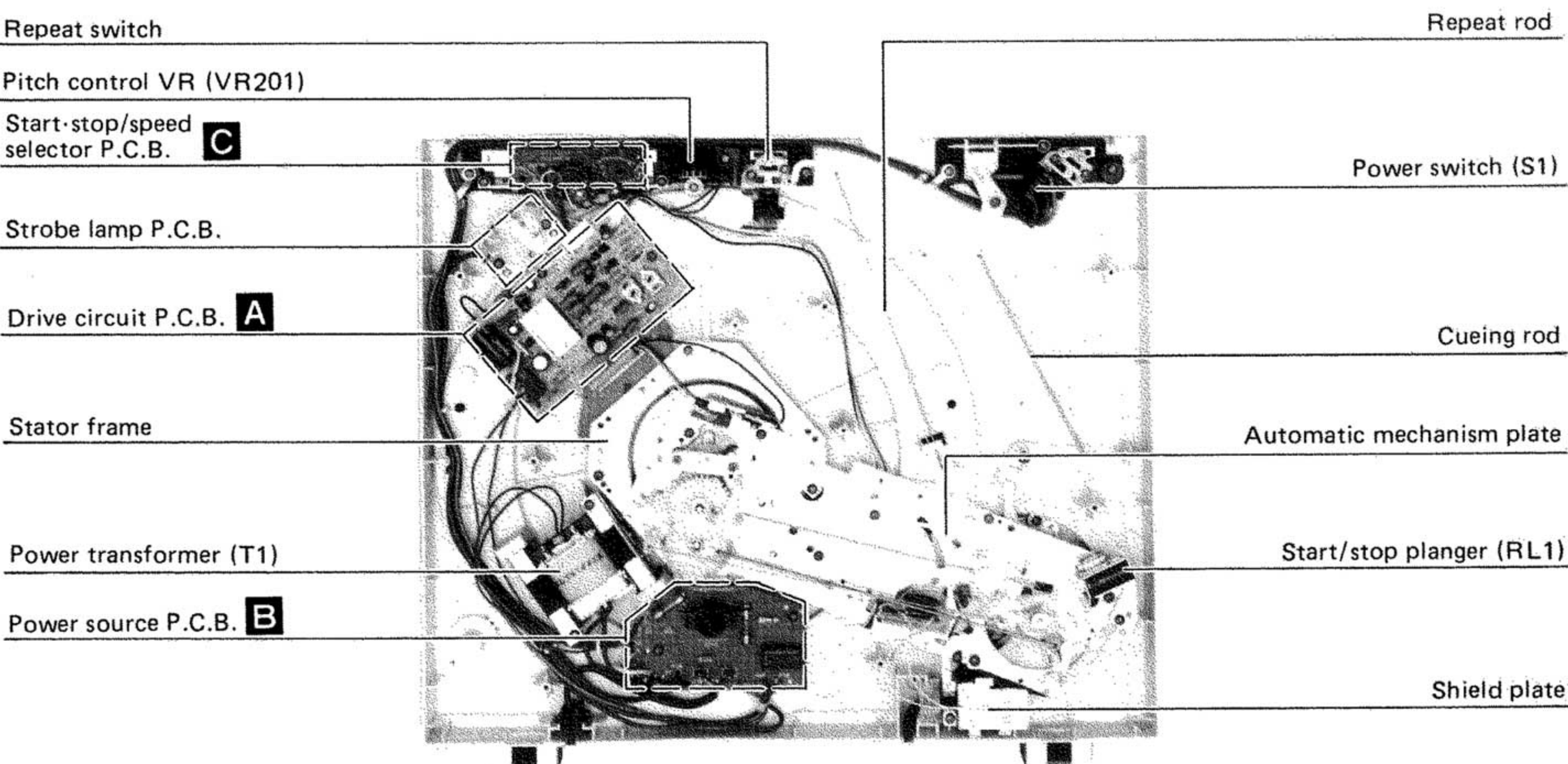
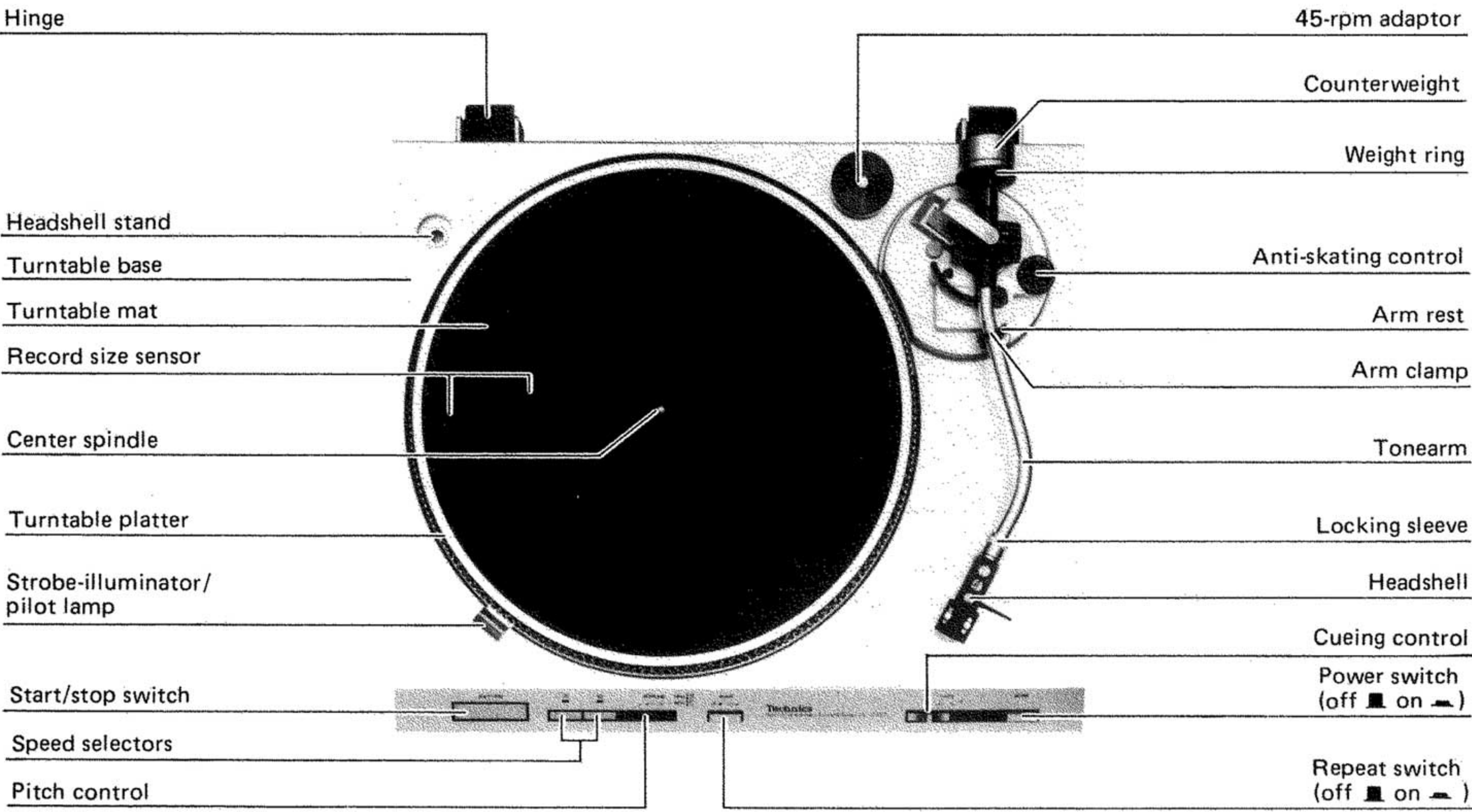
Panasonic Canada
Division of Matsushita Electric
of Canada Limited
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3

Panasonic Sales Company,
Division of Matsushita Electric
of Puerto Rico, Inc.
Ave. 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

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■ LOCATION OF CONTROLS



■ DISASSEMBLY INSTRUCTIONS

● How to remove the bottom board and automatic mechanism plate

1. Fix the tonearm on the rest.
2. Remove the turntable.
3. Close the dust cover, and turn over the unit, taking care not to scratch it.
4. Remove the bottom board setscrews ① ~ ⑦. Then, the bottom board can be removed. (See Fig. 1)
5. Remove the shield plate setscrews ⑧ and ⑨. (See Fig. 2)
6. Remove the regulator transistor P.C.B. setscrew ⑩. (See Fig. 2)
7. Remove the automatic mechanism plate setscrews ⑪ ~ ⑯. Then, the automatic mechanism plate can be removed. (See Fig. 2)

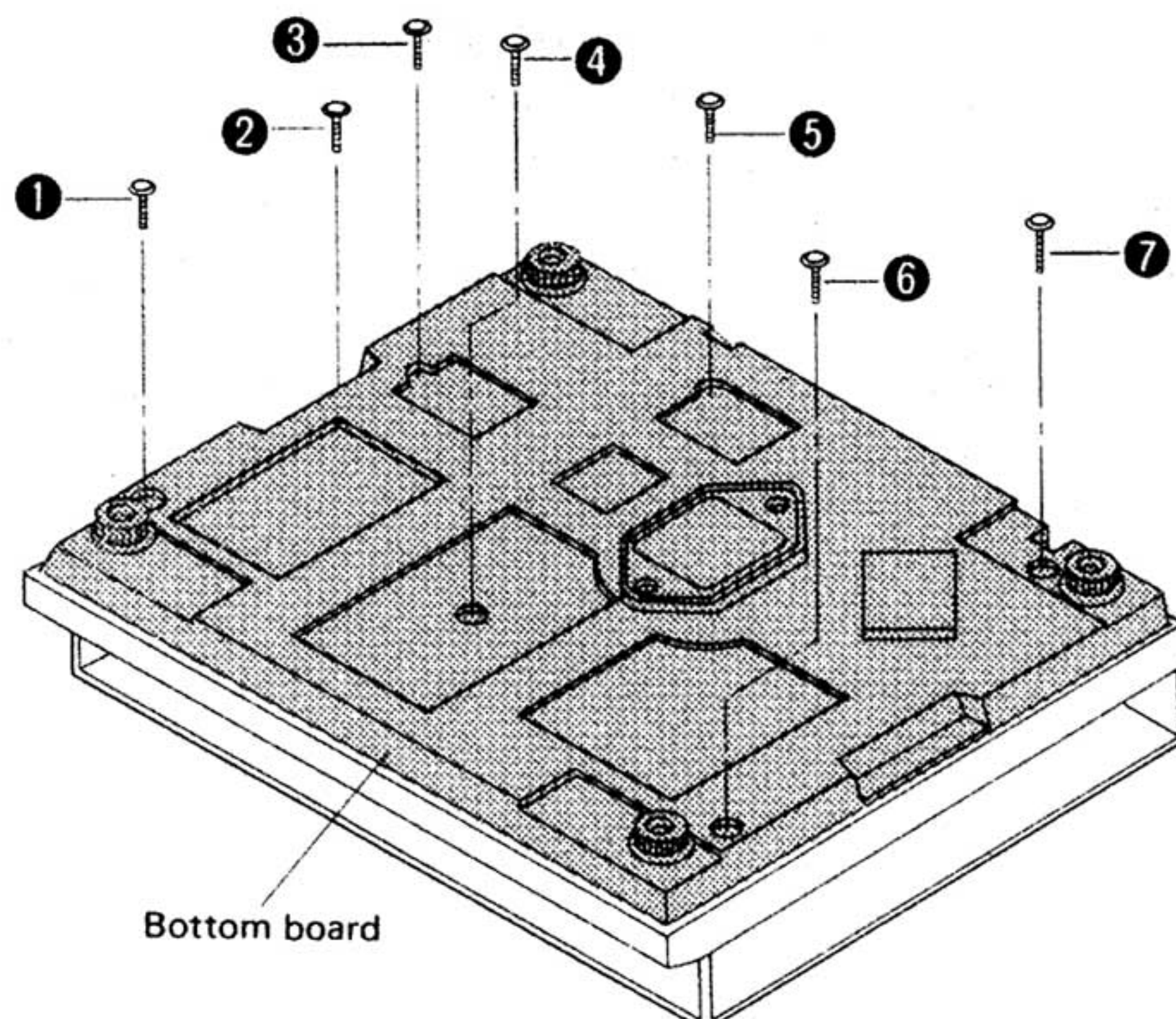


Fig. 1

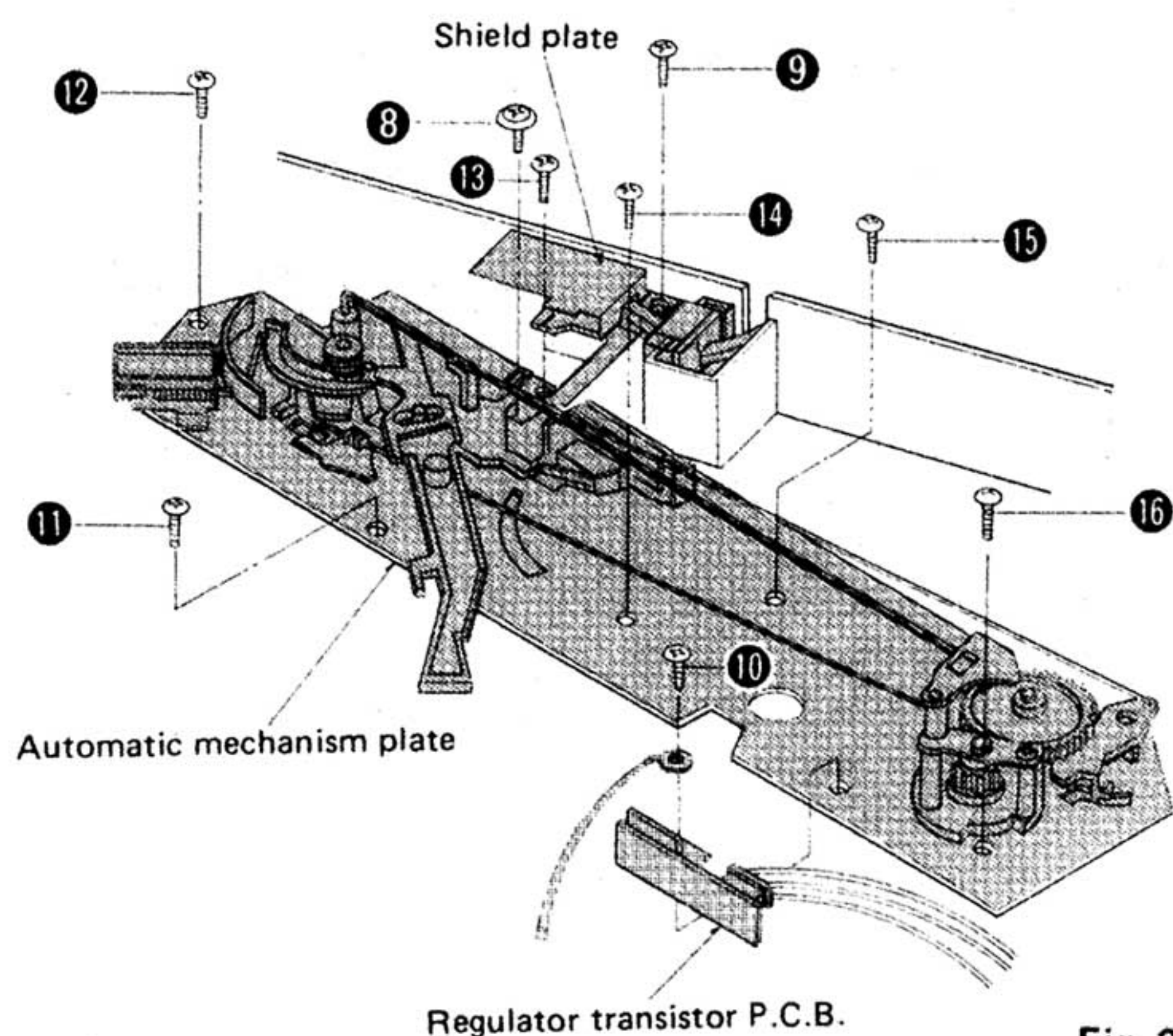


Fig. 2

● How to remove the stator frame

1. Remove the bottom board and automatic mechanism plate. (Refer to "How to remove the bottom board and automatic mechanism plate".)
2. Open the "lead holder" of the lead connector and pull out the lead wire of the arrow (A) in Fig. 3.
3. Remove the stator frame setscrews ⑰ ~ ⑲. Then the stator frame can be removed. (See Fig. 3)

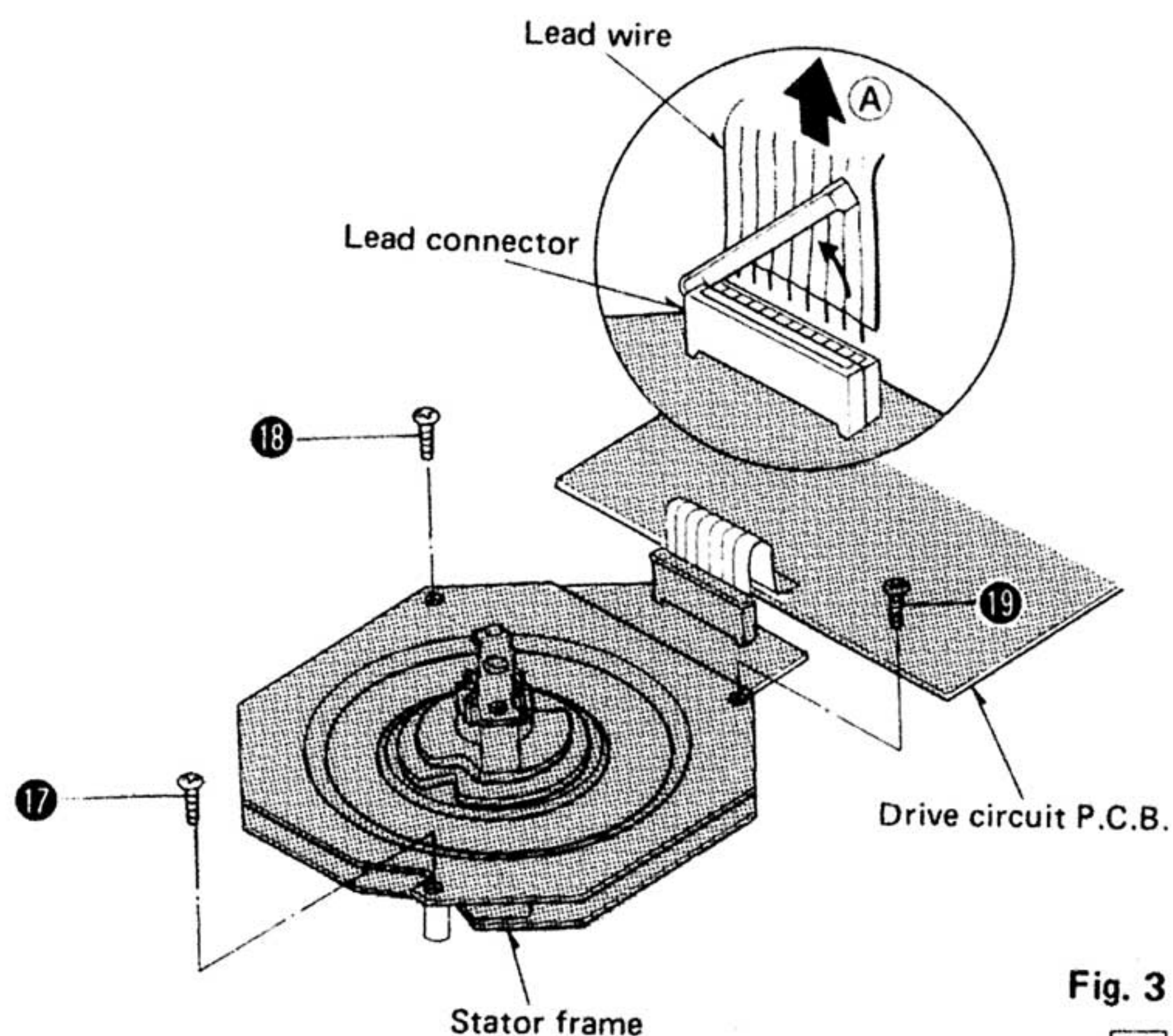


Fig. 3

● How to remove the drive circuit P.C.B.

1. Remove the bottom board. (Refer to "How to remove the bottom board and automatic mechanism plate".)
2. Open the "lead holder" of the lead connector and pull out the lead wire. (Refer to "How to remove the stator frame".)
3. Remove the drive circuit P.C.B. setscrews ②① ~ ②② and connectors ②③ and ②④. Then the drive circuit P.C.B. can be removed. (See Fig. 4)

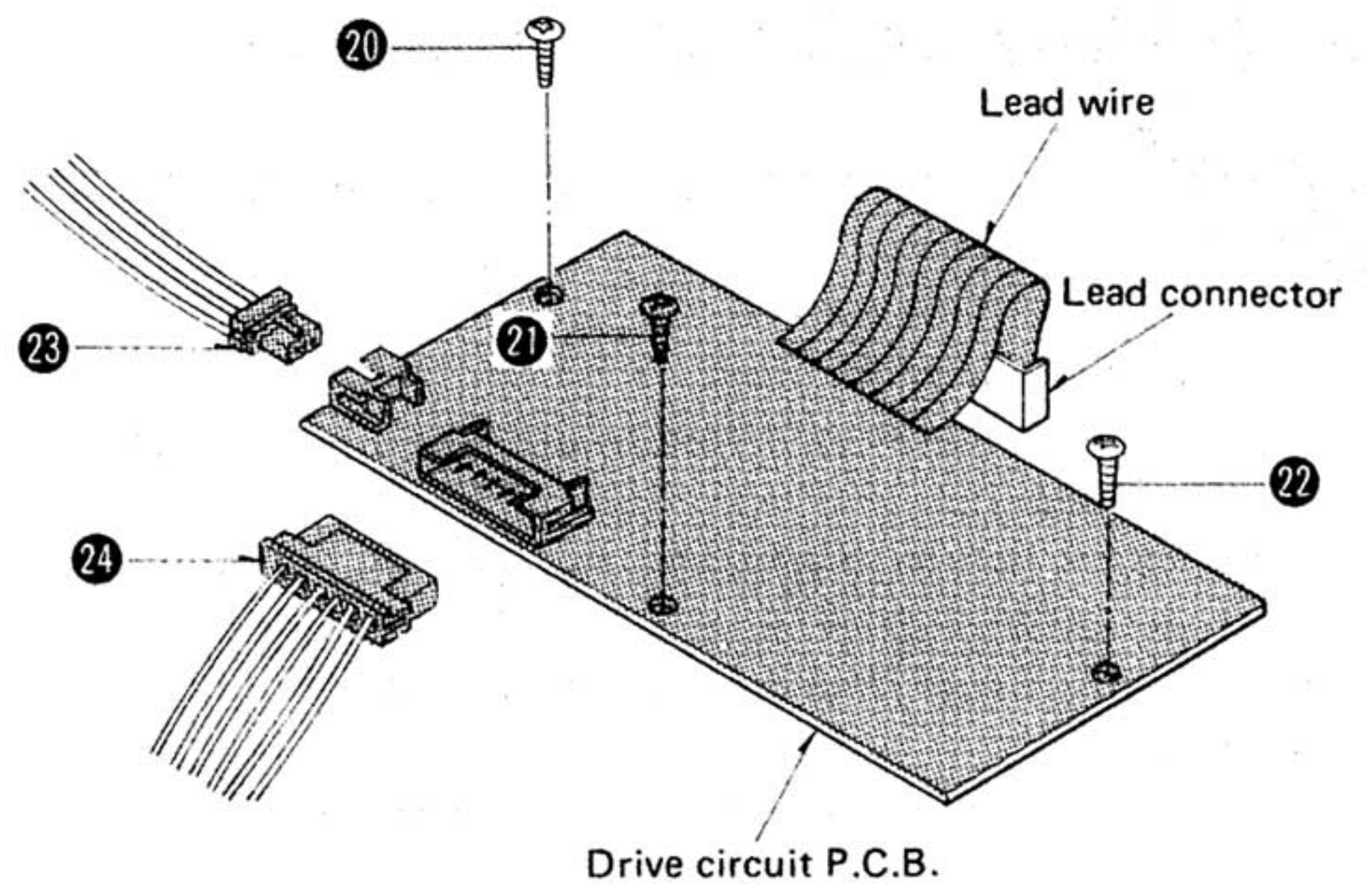


Fig. 4

● How to remove the tonearm and lift base plate

1. Remove the bottom board and automatic mechanism plate. (Refer to "How to remove the bottom board and automatic mechanism plate".)
 2. Remove the PU fixing plate setscrew ②⑤ and canceller spring. (See Fig. 5)
 3. Unsolder the 5 lead wires from the tonearm. (See Fig. 5)
 4. Remove the tonearm setscrews ②⑥ and ②⑦. Then the tonearm can be removed. (See Fig. 5)
 5. To disassemble the lift substrate, disengage the arm lift fixing screw ②⑧ before turning over the body, then remove the arm lift. (See Fig. 6)
- Note:** Remove the spring under the arm lift at the same time.
6. Remove the anti-skating control knob. (See Fig. 6)
 7. Turn over the unit and remove the PU fixing plate.
 8. Remove the lift base plate setscrews ②⑨ and ③①. Then, the lift base plate can be removed. (See Fig. 5)

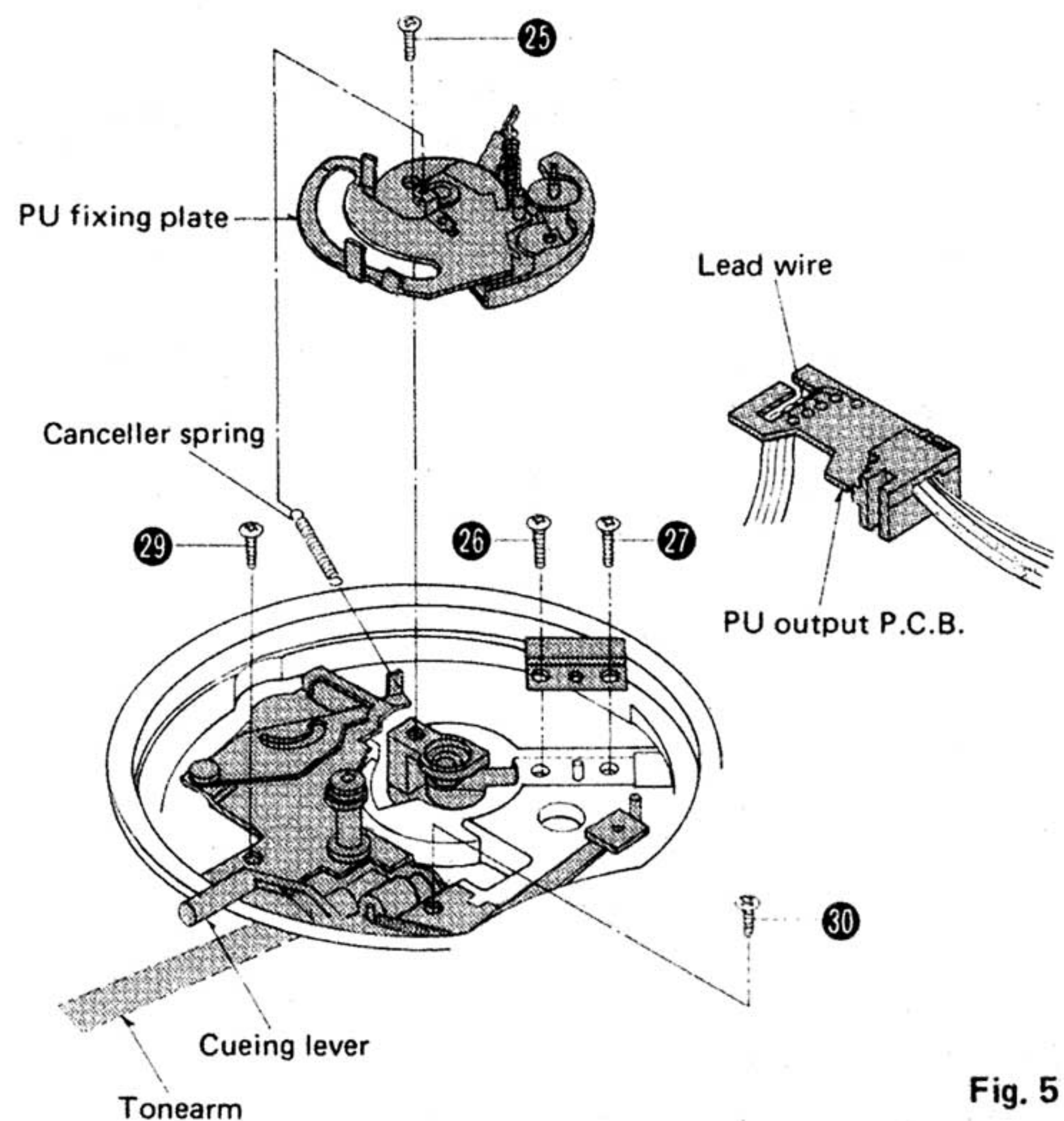


Fig. 5

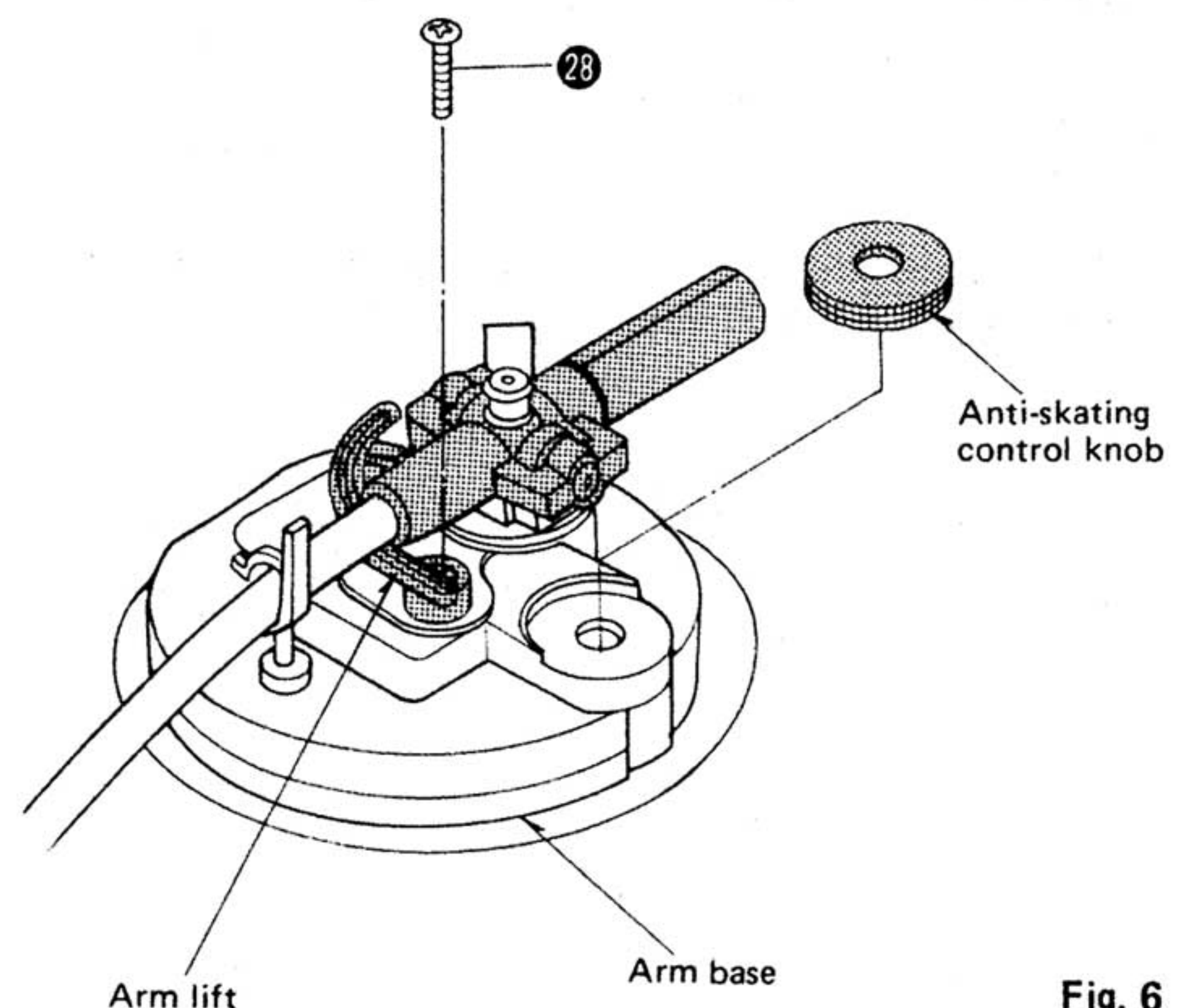


Fig. 6

■ 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. 7.

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

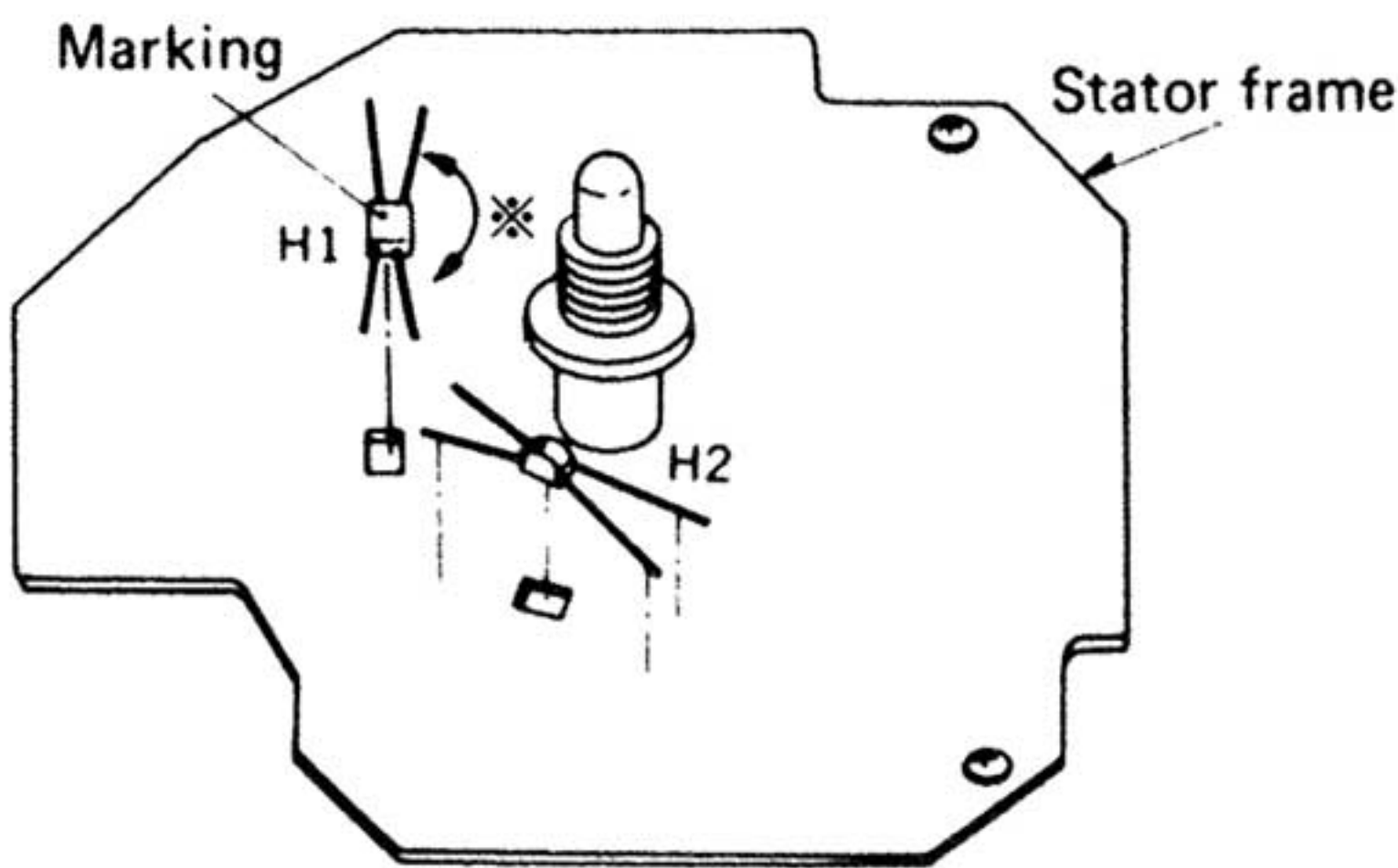


Fig. 7

■ CARTRIDGE INSTALLATION

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

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

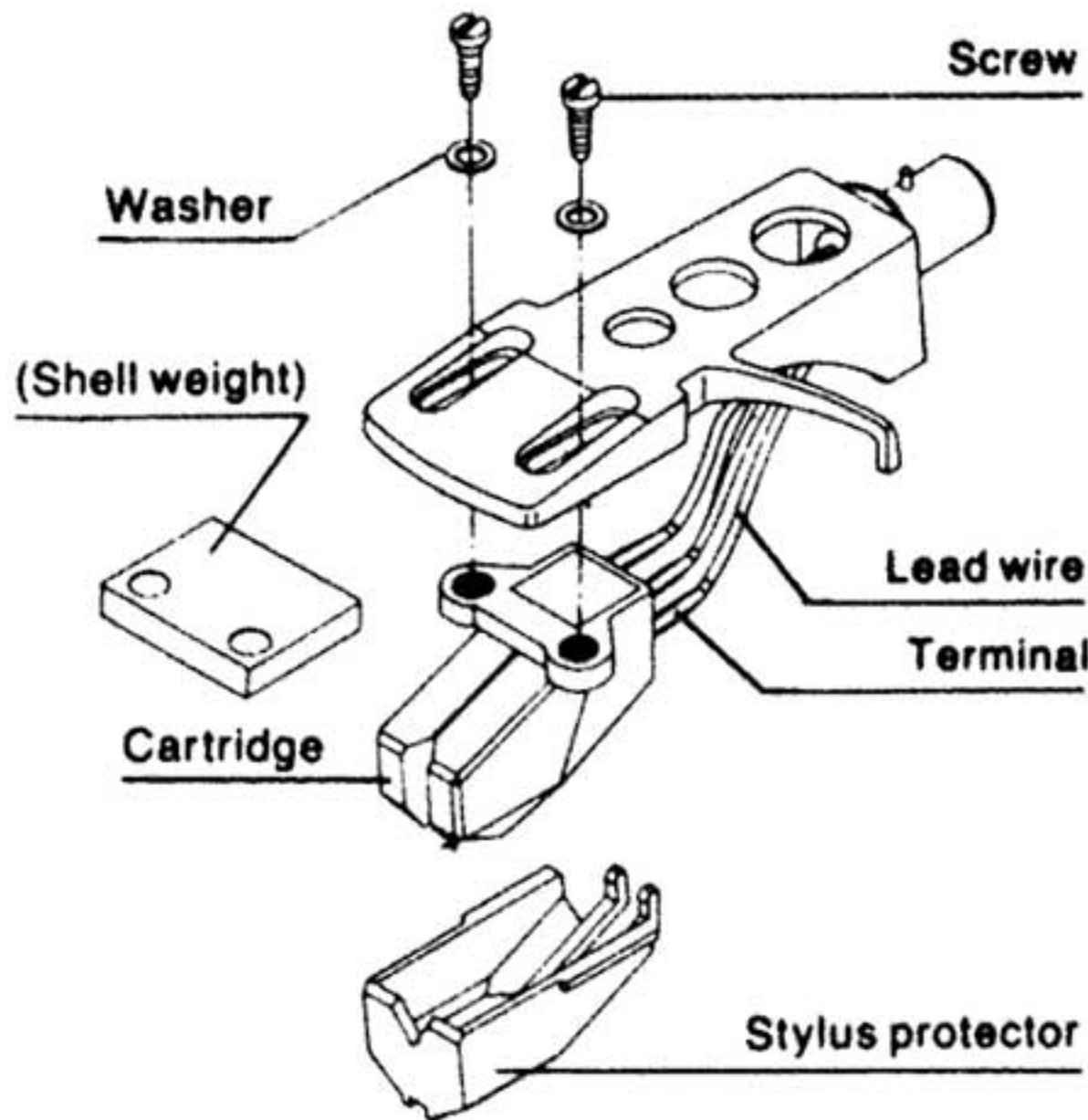


Fig. 8

■ 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 weighing up to 10.5 g can be used.

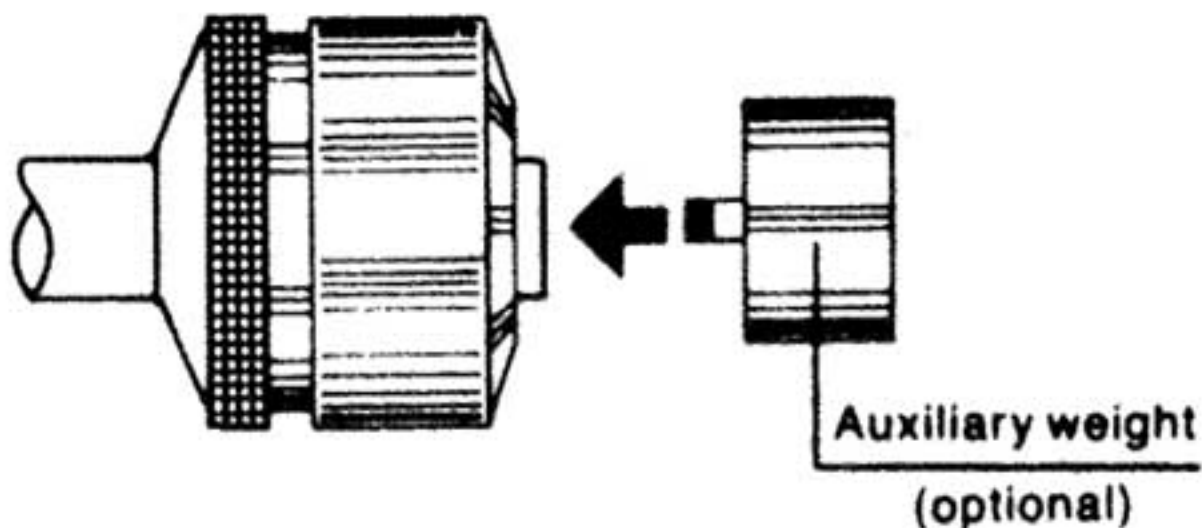
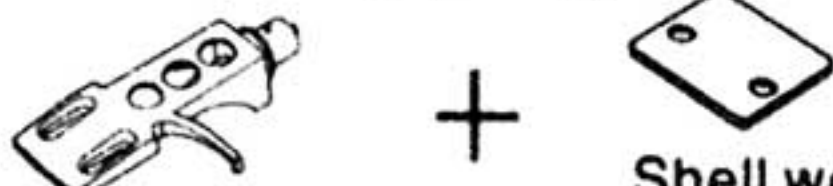
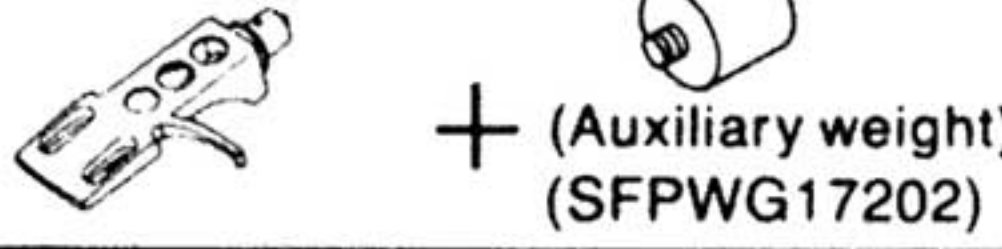


Fig. 9

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)  Headshell + Shell weight	3.5 g	5 g						
C)  Headshell + (Optional) Shell weight + (Optional) Auxiliary weight (SFPWG17202)					7.5 g	8.5 g		
D)  Headshell + (Auxiliary weight) (SFPWG17202)						8.5 g	10.5 g	
Note: • Attach the auxiliary weight to the rear end of the tonearm. (Fig. 9) • When attached, the auxiliary weight bumps against the dust cover, so remove the cover during play.								

■ 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. 10)

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. 11)

Clockwise rotation

—distance between the record and stylus tip is decreased.

Counterclockwise rotation

—distance between the record and stylus tip is increased.

● Adjustment of automatic start position (Fig. 12)

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. 12) when the tonearm is near the center of a record, the auto-return adjustment screw is visible. (See Fig. 13)

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.

● Adjustment of automatic return position (Fig. 13)

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**.

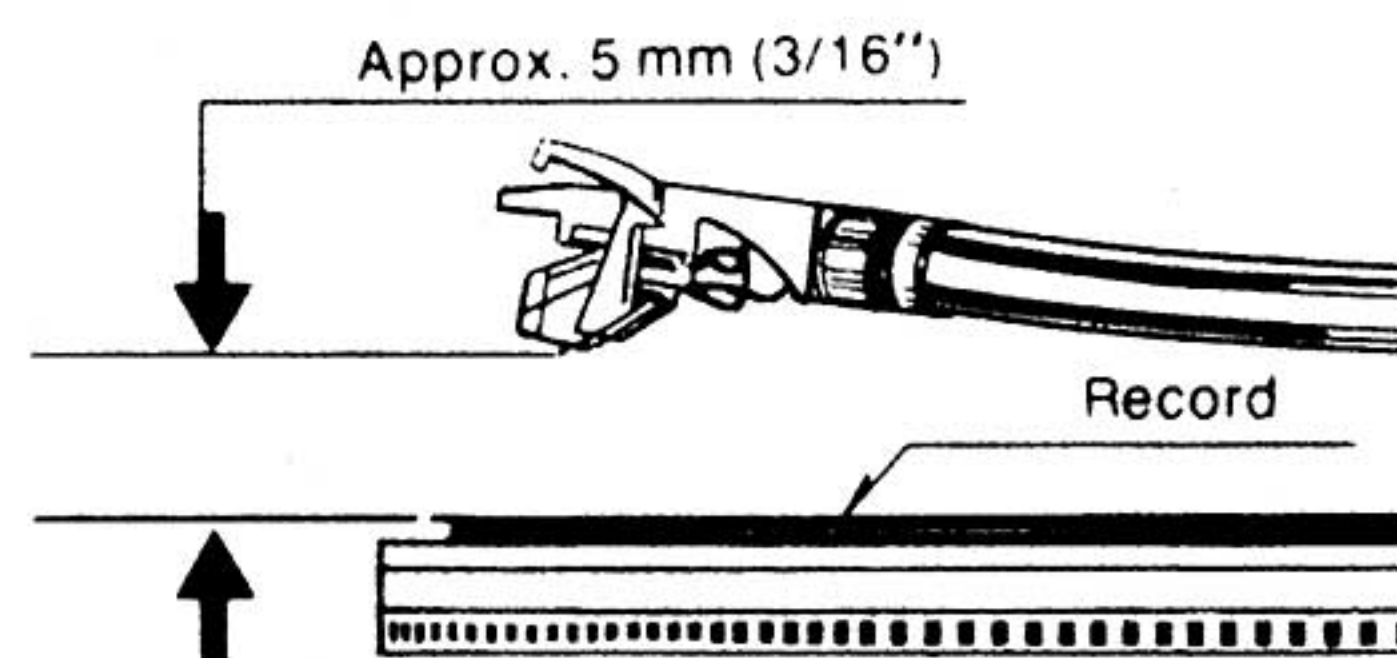


Fig. 10

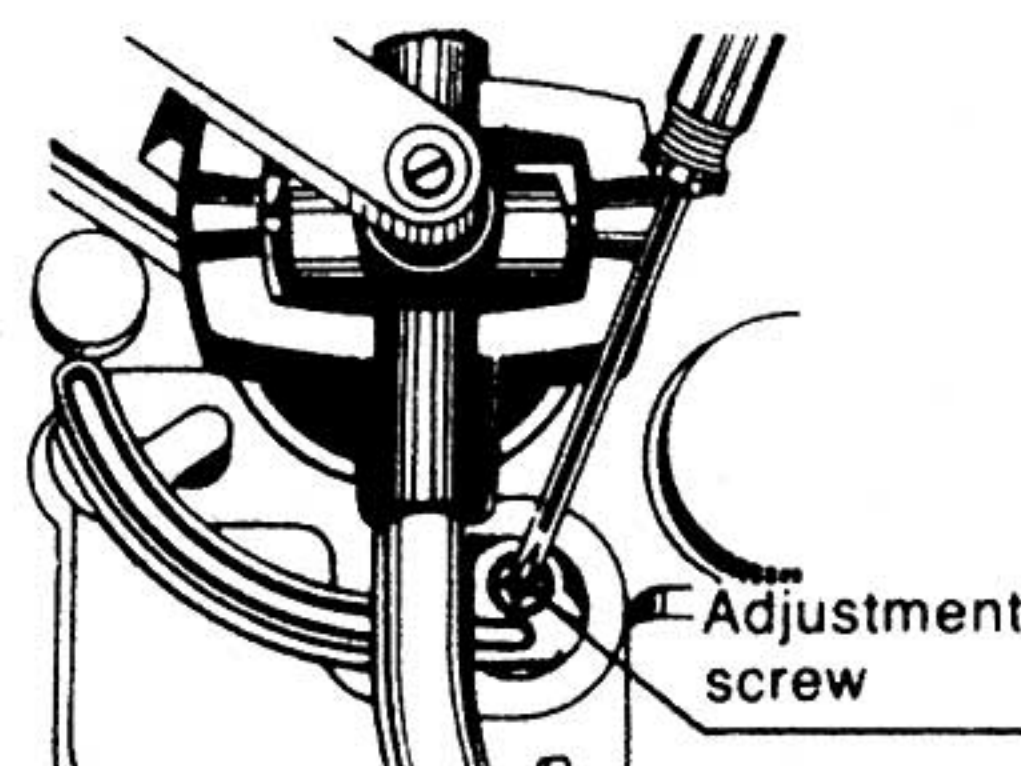


Fig. 11

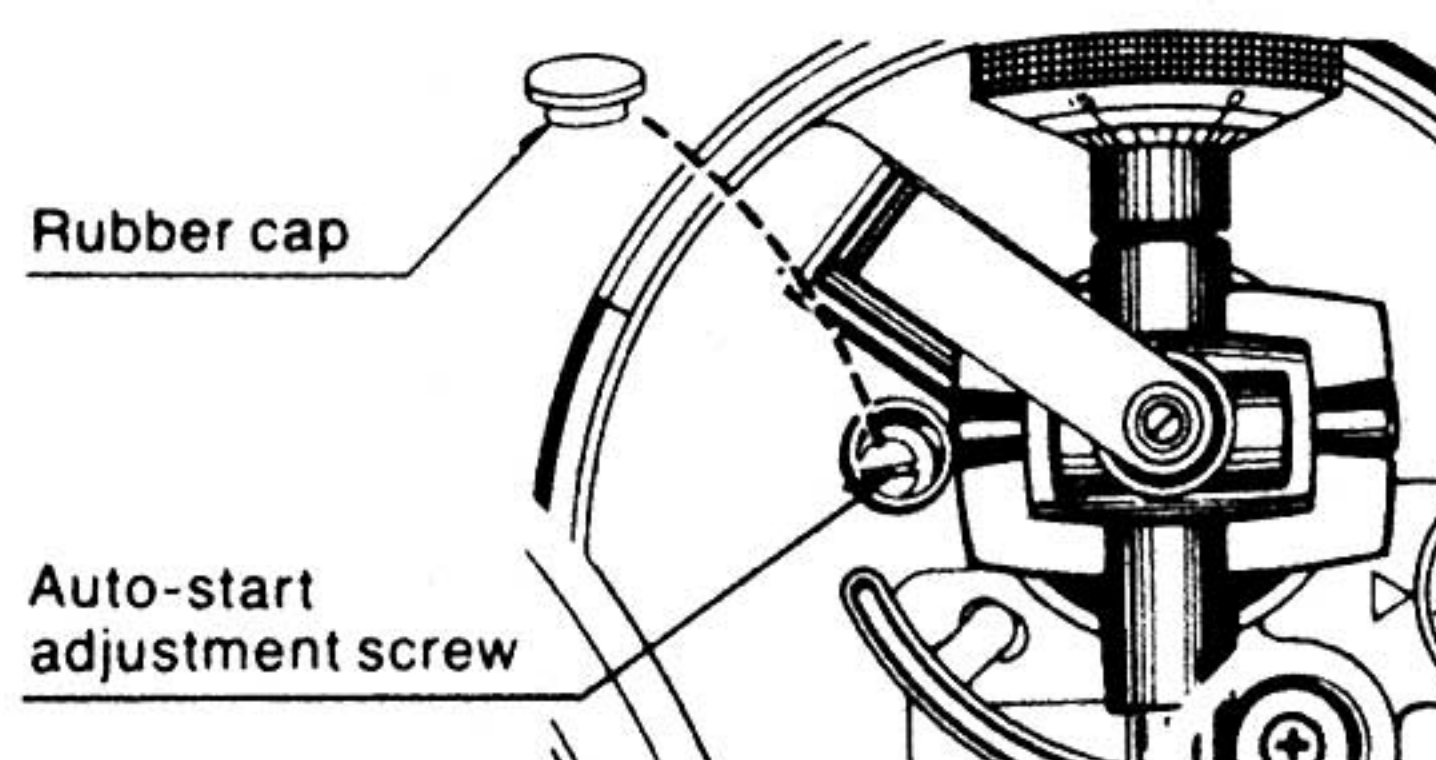


Fig. 12

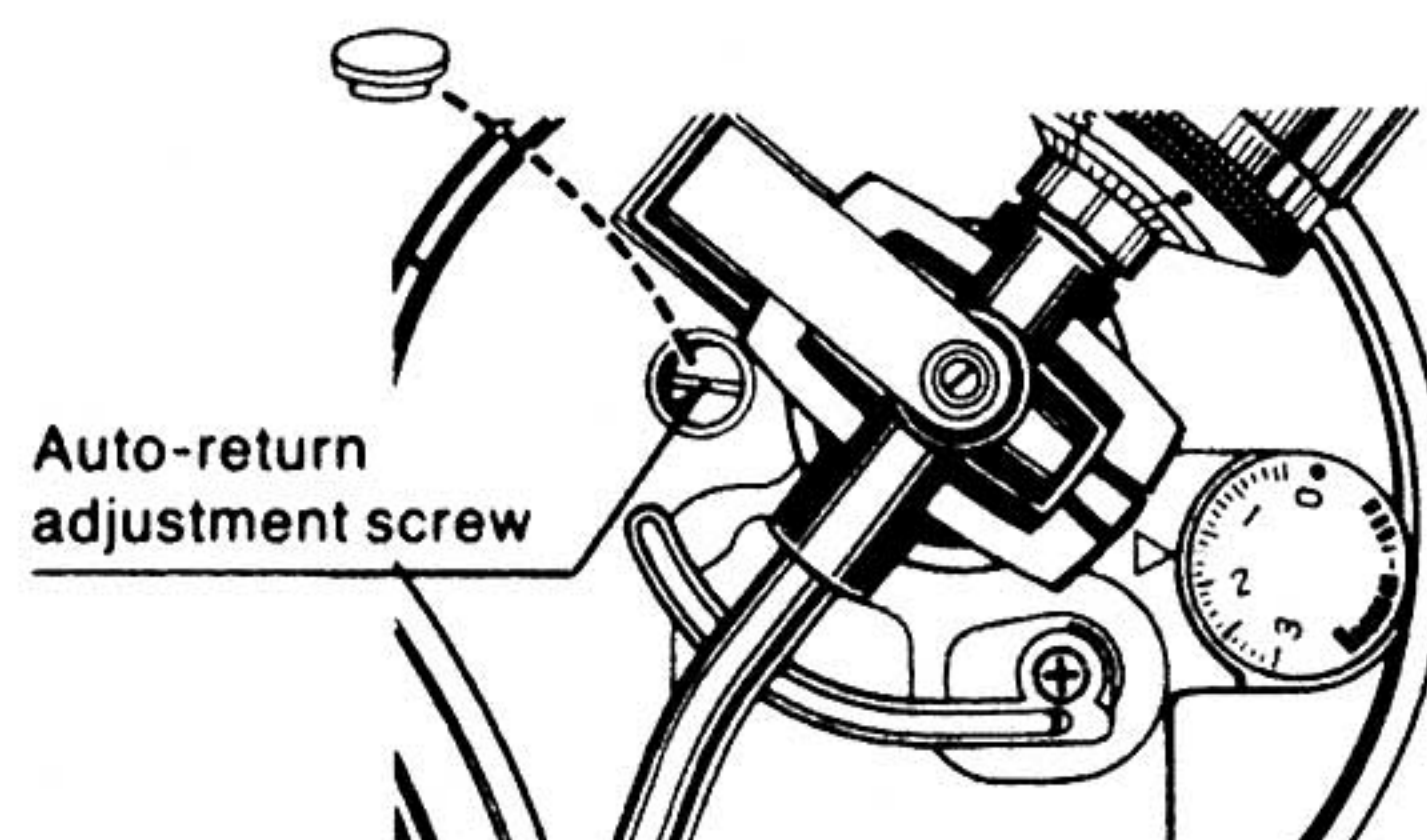


Fig. 13

● Overhang adjustment (See Fig. 14)

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.

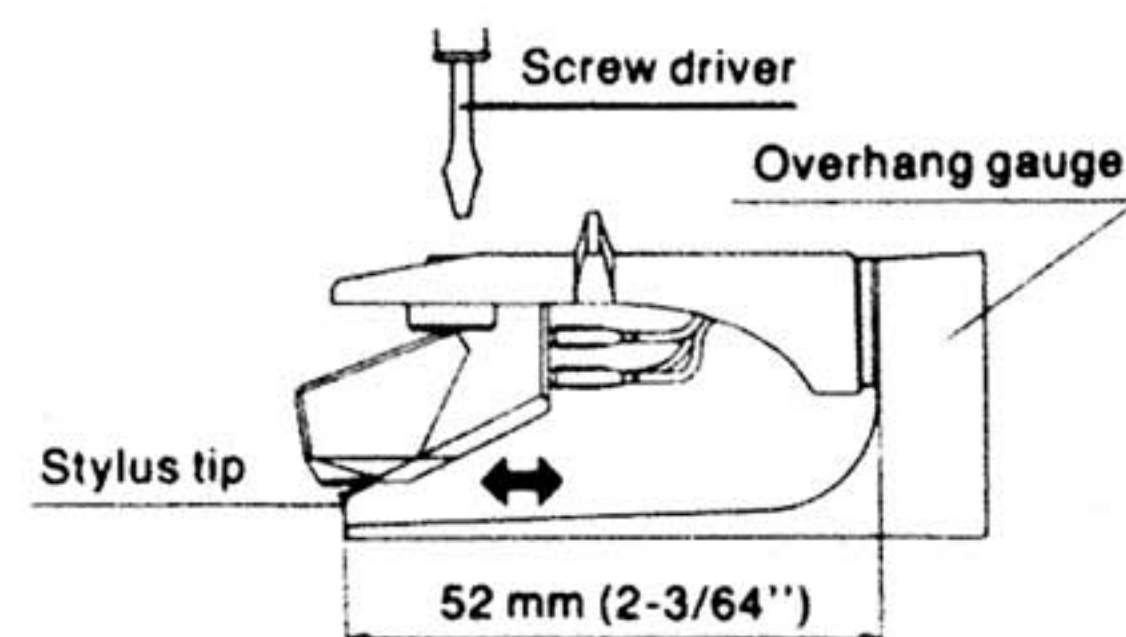


Fig. 14

● Adjustment of rotational speed

After replacement of drive IC (IC101) and variable resistors (VR202, 203) or when the rated speed is not obtained by turning the pitch control knob, perform the adjustment according to the following procedure.

1. Remove the bottom plate. (Refer to "Disassembly Instructions".)
2. Place the set on the player repair table.
3. Put on the record and play.
4. Push the speed selector button to "45 r.p.m.". (See Fig. 15)
5. Turn the pitch control knob to central position.
6. Adjust VR202 by the screwdriver from under the set until the rated speed (45 r.p.m.) is obtained while checking it through the stroboscope. (See Fig. 16)
7. Push the speed selector button to "33 r.p.m.". (See Fig. 15)
8. Adjust VR203 by the screwdriver until the rated speed (33-1/3 r.p.m.) is obtained while checking it through the stroboscope. (See Fig. 16)
9. After completing the above-mentioned adjustment, check that the rated speeds can be obtained by pushing the speed selector button.

Note: Be sure to perform the adjustment of 45 r.p.m. first. As a simple method, it is also possible to adjust VR202 and VR203, removing the turntable. (See Fig. 17)

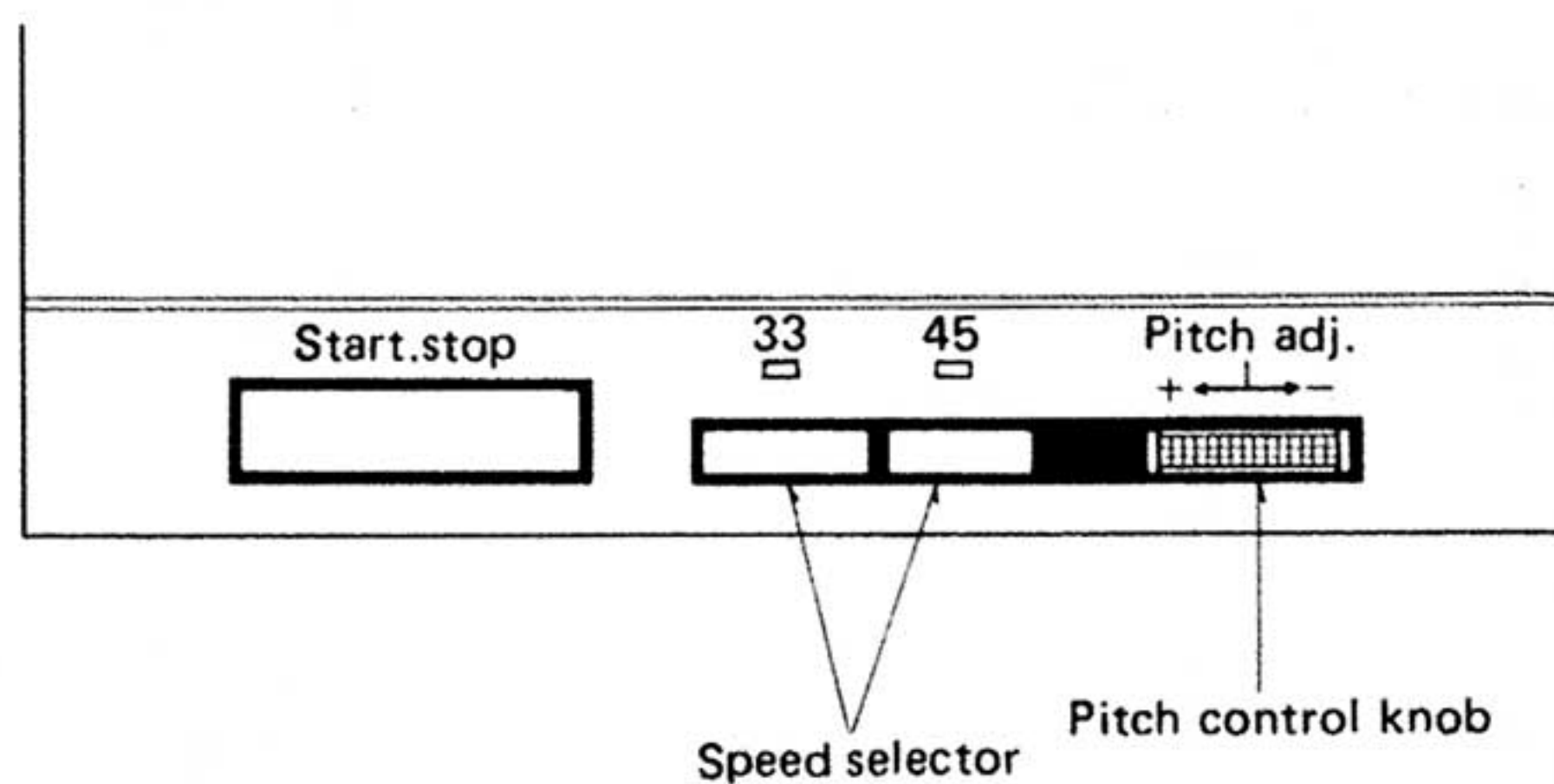


Fig. 15

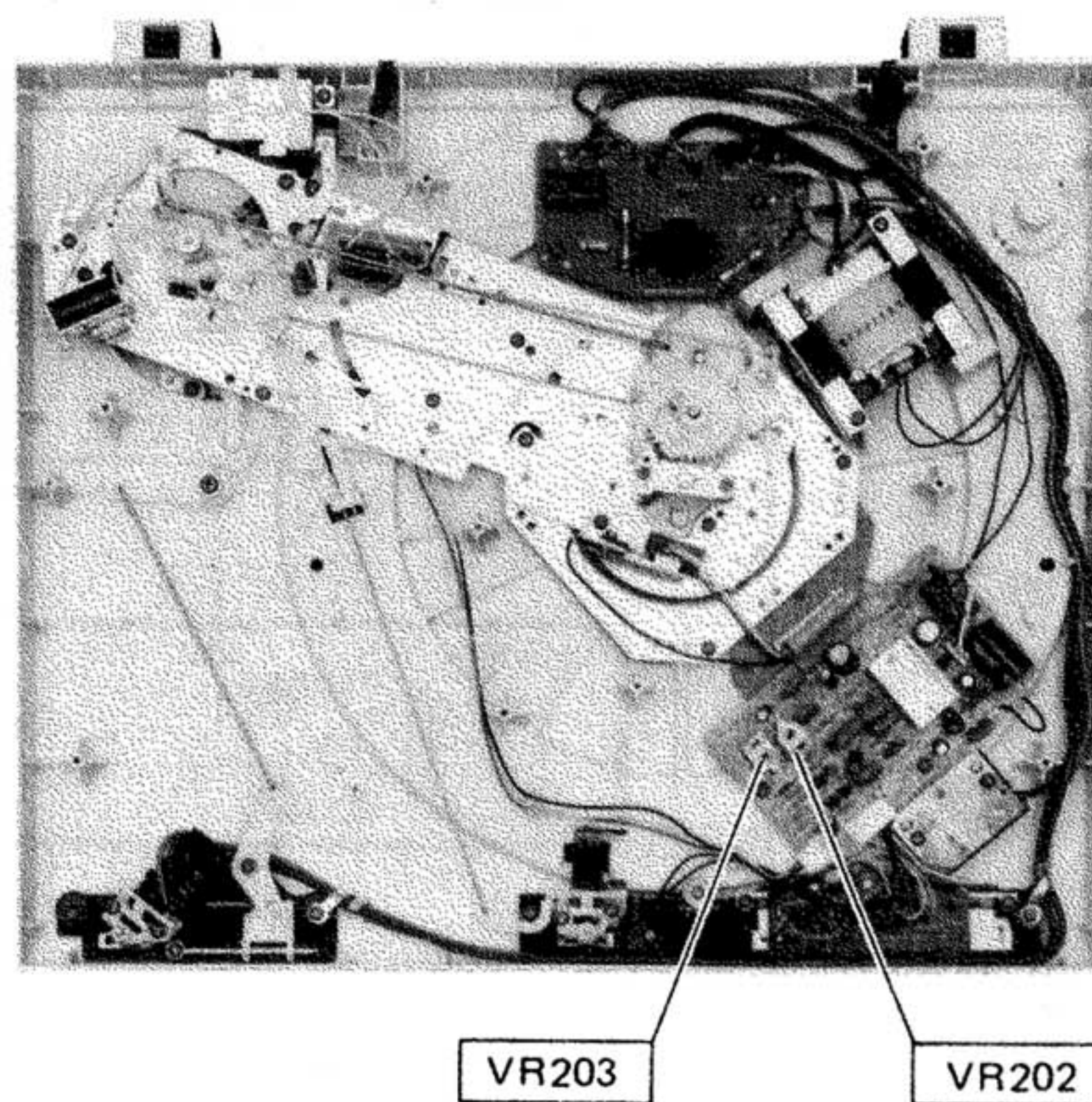


Fig. 16

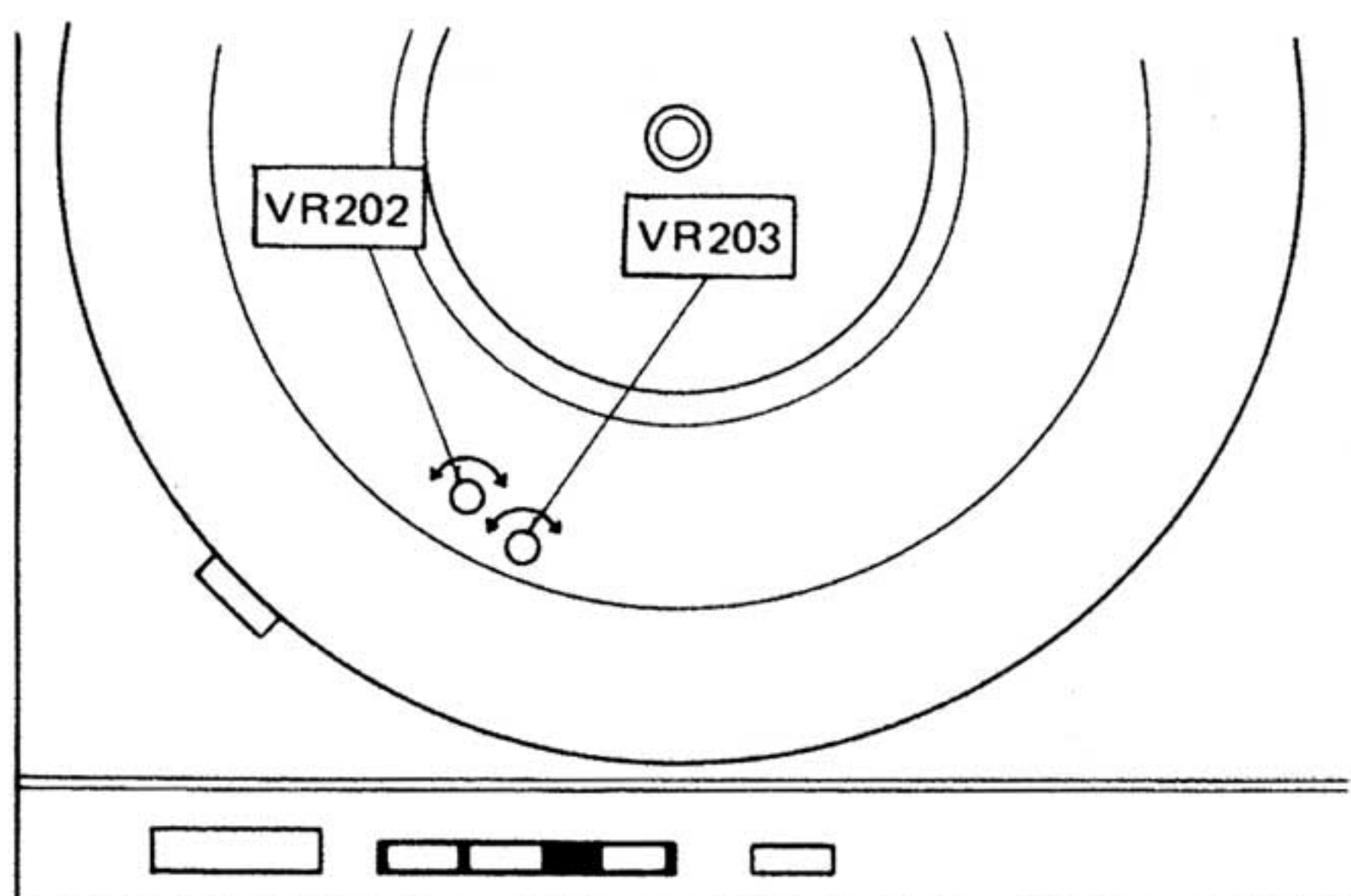
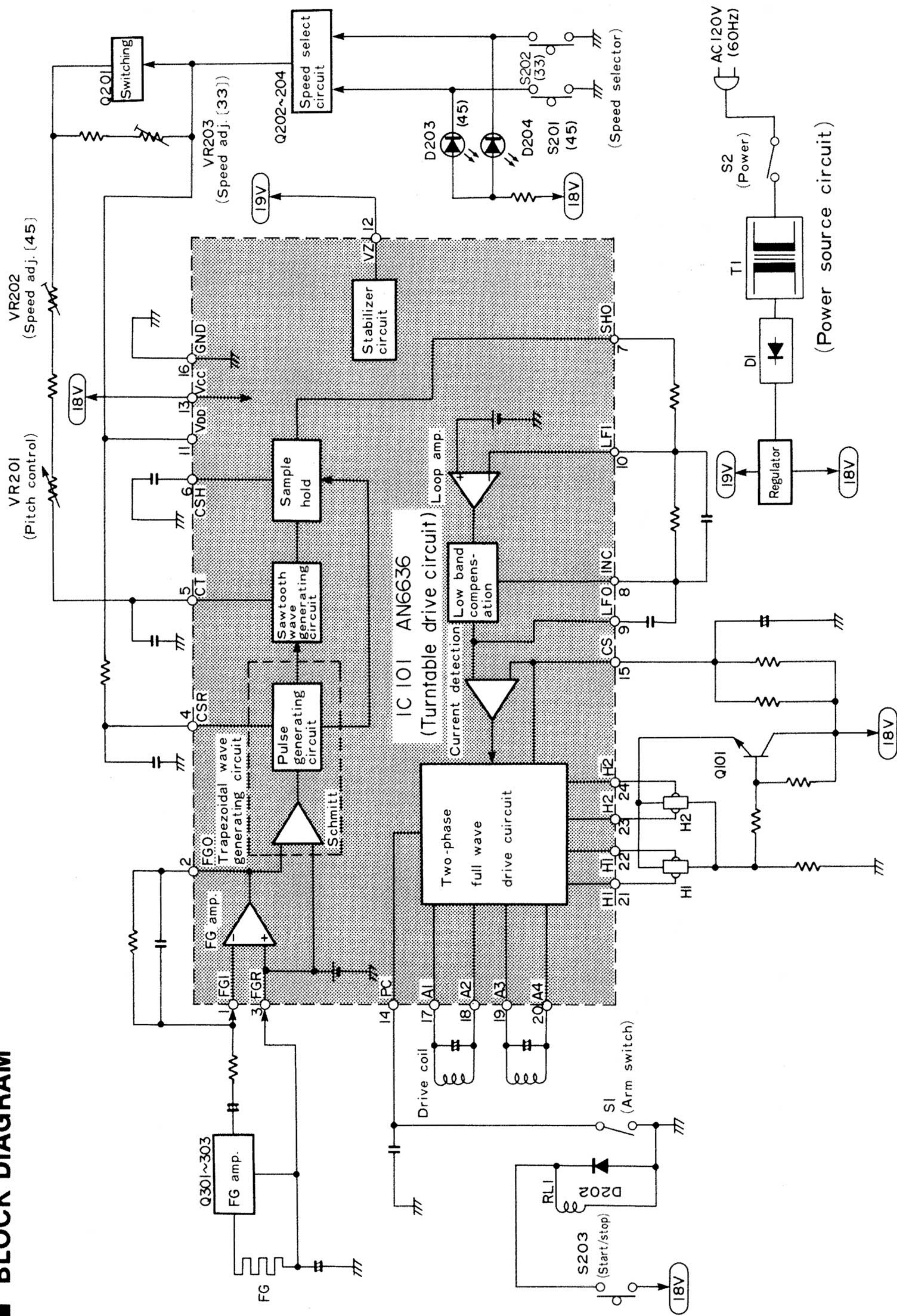
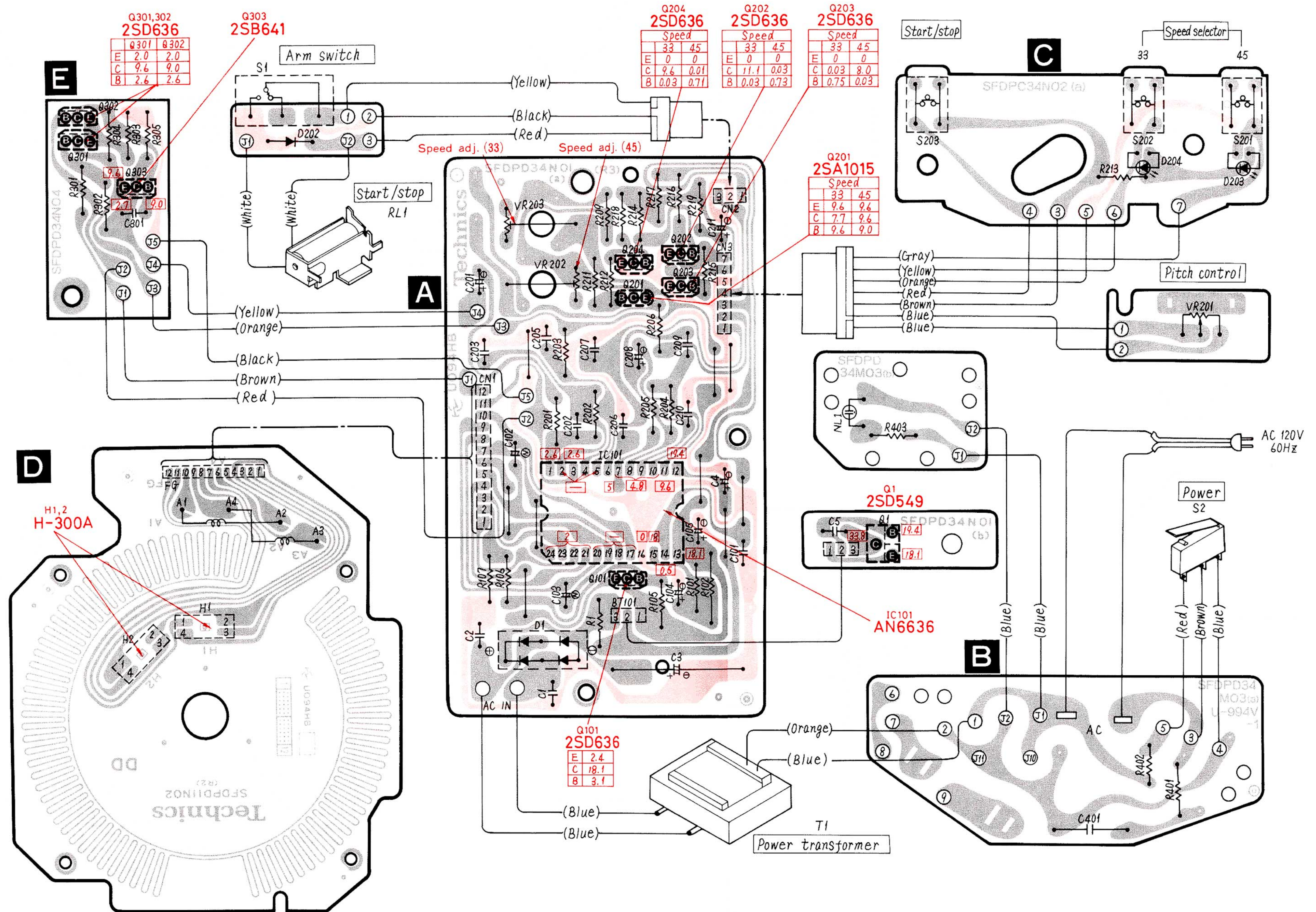


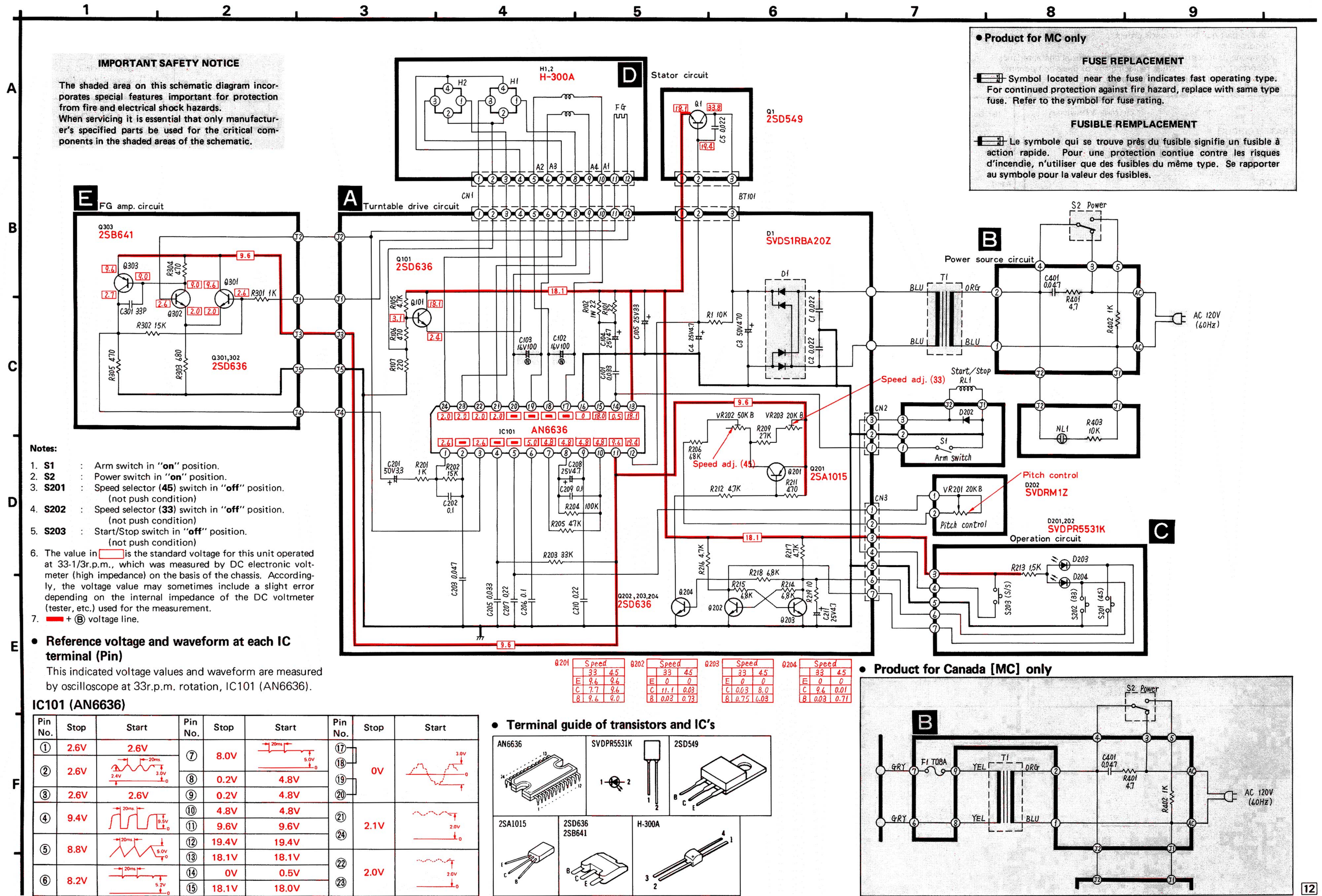
Fig. 17



■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines





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 Δ 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.

Areas

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

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC101		AN6636	IC, Drive
TRANSISTORS			
Q1		2SD549	Transistor, Reguletor
Q101, 301, 302		2SD636	Transistor, Regulator
Q201		2SA1015-Y	Transistor, Switching
Q202, 203, 204		2SD636	Transistor, Speed Selector & Switching
Q303		2SB641	Transistor, FG Amplifier
DIODES			
D1	Δ	SVDS1RBA20Z	Diode, Rectifier
D202		SVDRM1Z	Diode
D203, 204		SVDP5531K	Light Emitting Diode, Speed Indicator
HALL ELEMENT			
H1, 2		H-300A	Hall Element, Turntable Position Detector
LAMP			
NL1	Δ	SFDNE2HU	Neon Lamp, Strove
SOLENOID			
RL1		SFDZQ34N01Z	Solenoid Ass'y, Start/Stop
VARIABLE RESISTORS			
VR201		EVLEAAT12B24	Pitch Control 20kΩ (B)
VR202		EVTS3MA00B54	Speed Adjustment 45 r.p.m. 50kΩ (B)
VR203		EVTS3MA00B24	Speed Adjustment 33 r.p.m. 20kΩ (B)
SWITCHES			
S1		SFDSA2985	Switch, Arm (Rest) Switch
S2	Δ	SFDSS5GLP	Switch, Power Source
S201, 202, 203		EVQQJR02K	Switch, Start/Stop & Speed Selector
TRANSFORMER			
T1 [M]	Δ	SLT48PL1A	Transformer, Power Source
T1 [MC]	Δ	SLT48P16C	Transformer, Power Source
FUSE			
F1 [MC] only	Δ	XBA2F08NU100	Fuse, T 0.8A 250V

Ref. No.		Part No.	Part Name & Description
RESISTORS			
R1		ERD25FJ103	Carbon, 1/4W, 10kΩ, ± 5%
R101		ERD25FJ220	Carbon, 1/4W, 22Ω, ± 5%
R102		ERX1ANJ2R2	Metal Oxide, 1W, 2.2Ω, ± 5%
R105		ERD25FJ472	Carbon, 1/4W, 4.7kΩ, ± 5%
R106		ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R107		ERD25FJ221	Carbon, 1/4W, 220Ω, ± 5%
R201		ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R202		ERD25TJ153	Carbon, 1/4W, 15kΩ, ± 5%
R203		ERD25TJ333	Carbon, 1/4W, 33kΩ, ± 5%
R204		ERD25TJ104	Carbon, 1/4W, 100kΩ, ± 5%
R205		ERD25FJ473	Carbon, 1/4W, 47kΩ, ± 5%
R206		ERO25CKF6802	Metal Film, 1/4W, 68kΩ, ± 1%
R209		ERD25TJ273	Carbon, 1/4W, 27kΩ, ± 5%
R211		ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R212		ERD25FJ472	Carbon, 1/4W, 4.7kΩ, ± 5%
R213		ERD25FJ152	Carbon, 1/4W, 1.5kΩ, ± 5%
R214, 215		ERD25FJ682	Carbon, 1/4W, 6.8kΩ, ± 5%
R216, 217		ERD25FJ472	Carbon, 1/4W, 4.7kΩ, ± 5%
R218		ERD25FJ682	Carbon, 1/4W, 6.8kΩ, ± 5%
R219		ERD25FJ100	Carbon, 1/4W, 10Ω, ± 5%
R301		ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R302		ERD25TJ153	Carbon, 1/4W, 15kΩ, ± 5%
R303		ERD25FJ681	Carbon, 1/4W, 680Ω, ± 5%
R304, 305		ERD25FJ471	Carbon, 1/4W, 470Ω, ± 5%
R401	Δ	ERD50FJ4R7	Carbon, 1/2W, 4.7Ω, ± 5%
R402	Δ	ERD25FJ102	Carbon, 1/4W, 1kΩ, ± 5%
R403	Δ	ERG1ANJ103	Metal Oxide, 1W, 10kΩ, ± 5%
CAPACITORS			
C1, 2	Δ	ECKD1H223PF	Ceramic, 50V, 0.022μF, ±100%
C3		ECEB1HS471	Electrolytic, 50V, 470μF, ±10%
C4		ECEA25Z4R7	Electrolytic, 25V, 4.7μF, ±10%
C5		ECKD1H223PF	Ceramic, 50V, 0.022μF, ±100%
C101		ECQM1H333KZ	Polyester, 50V, 0.033μF, ±10%
C102, 103	Δ	ECEA1CN101S	Non-Polay Electrolytic, 16V, 100μF, ±10%
C104		ECEA1ES470	Electrolytic, 25V, 47μF, ±10%
C105		ECEA1VS330	Electrolytic, 35V, 33μF, ±10%
C201		ECEA50Z3R3	Electrolytic, 50V, 3.3μF, ±10%
C202		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
C203		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C205		ECQM1H333KZ	Polyester, 50V, 0.033μF, ±10%
C206		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
C207		ECQM1H224KZ	Polyester, 50V, 0.22μF, ±10%
C208		ECEA25Z4R7	Electrolytic, 25V, 4.7μF, ±10%
C209		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
C210		ECQM1H224KZ	Polyester, 50V, 0.22μF, ±10%
C211		ECEA25Z4R7	Electrolytic, 25V, 4.7μF, ±10%
C301		ECCD1H330K	Ceramic, 50V, 33pF, ± 5%
C401 [M]	Δ	ECQF1A473MD	Polyester, 125VAC, 0.047μF, ± 20%
C401 [MC]	Δ	ECQU1A473ME	Polyester, 125VAC, 0.047μF, ± 20%

■ REPLACEMENT PARTS LIST.....Cabinet & Chassis 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 Δ make have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
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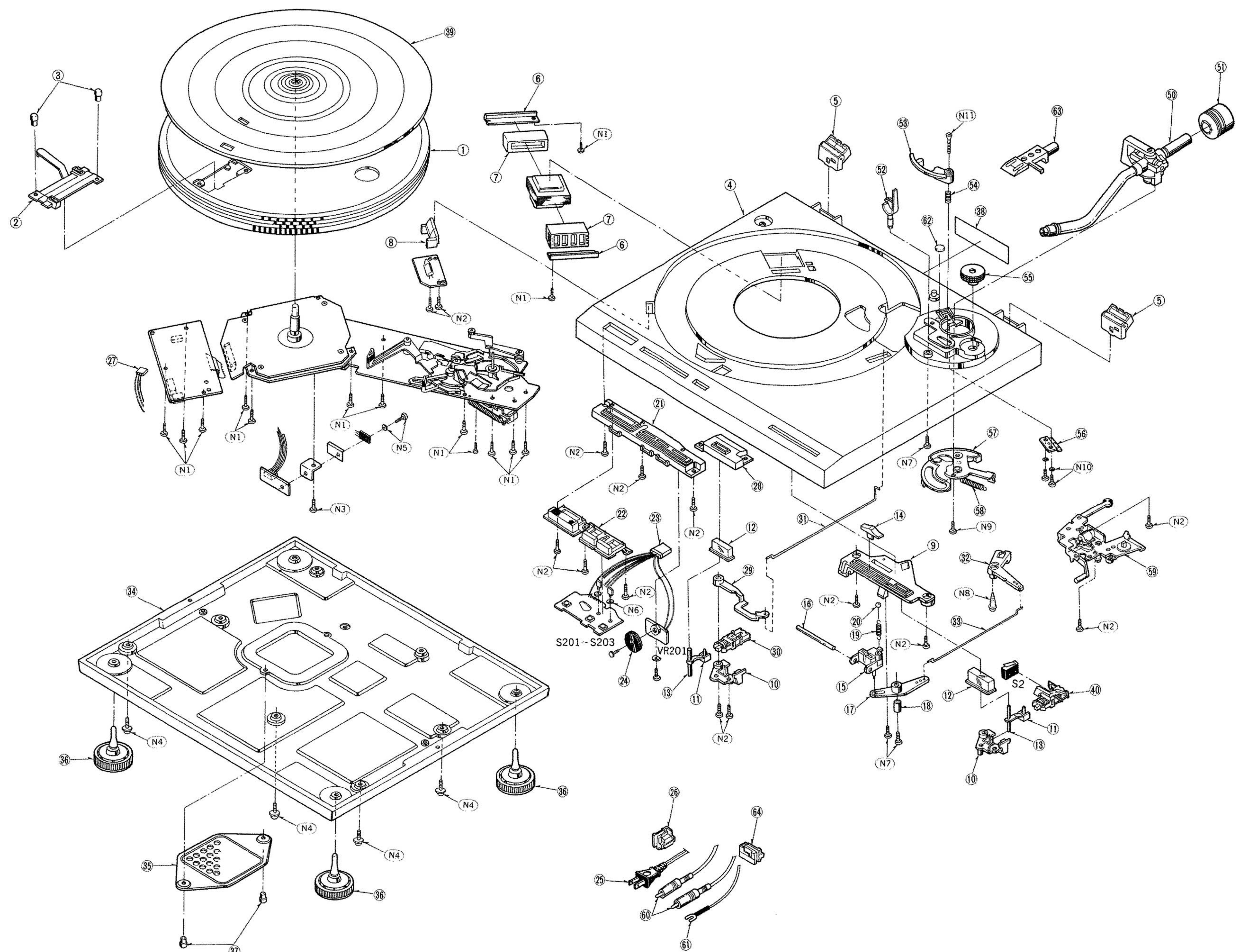
Areas

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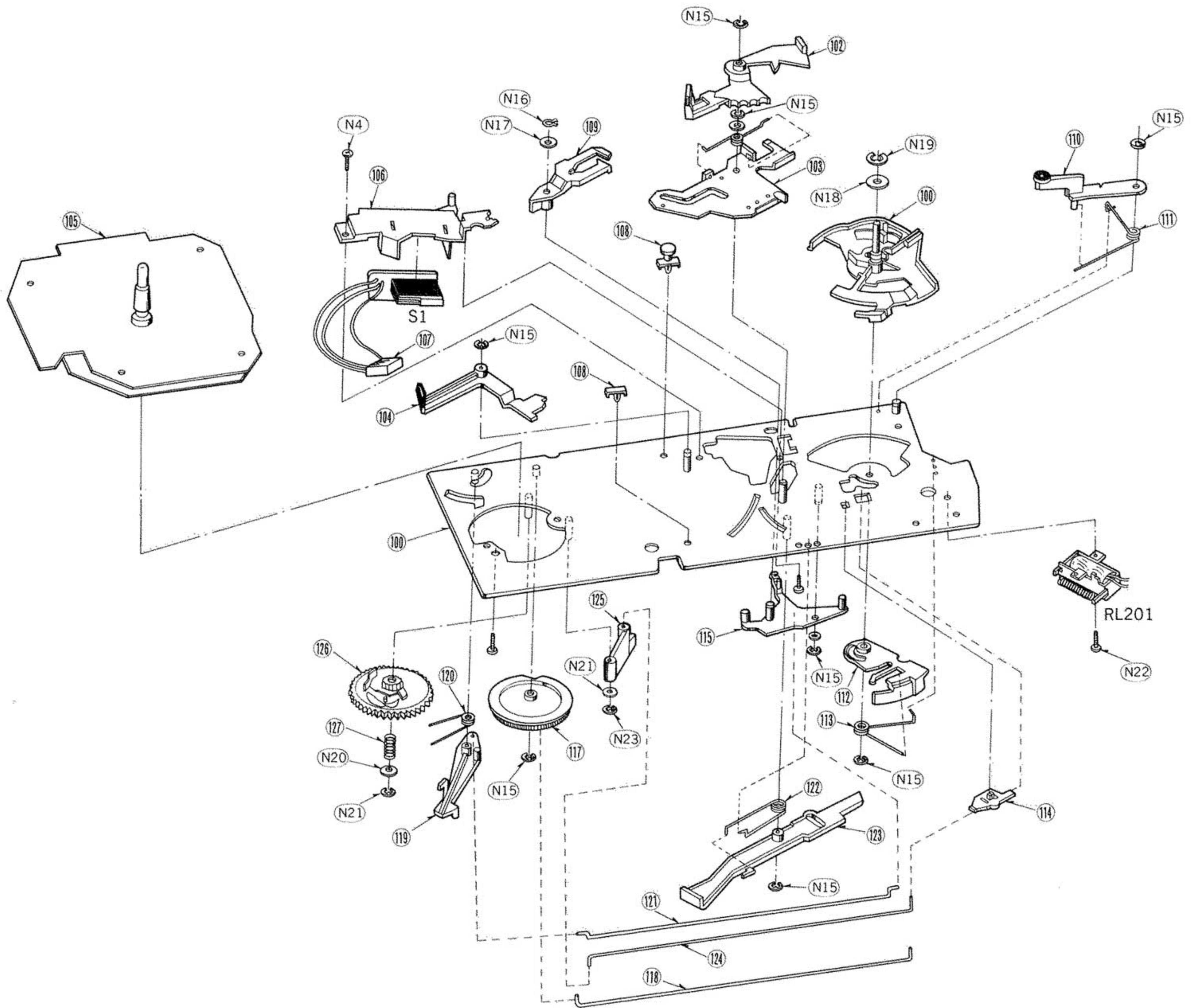
Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1	SFTED34N01E	Turntable
2	SFUMQ34N01E	Base, Disc Size Sensor
3	SFUZD33-01E	Latch, Disc Size Sensor Base
4	SFACD34N01	Cabinet
5	SFATB33N01A	Hinge
6	SFUPD34N01	Plate, Transformer
7	SFGCD34N01	Rubber Cushion, Transformer
8	SFUMQ11N09	Cover, Neon Lamp Strove
9	SFUMQ34N02	Guide, Power Switch
10	SFUMQ34N12	Plate, Power/Repeat Switch
11	SFUMQ34N13	Plate, Power/Repeat Knob
12	SFKTQ34N02	Knob, Power/Repeat
13	SFXJQ34N02	Shaft, Power/Repeat
14	SFKTQ34N01	Knob, Cueing
15	SFUMQ34N23	Slider, Cueing
16	SFXJQ34N01	Shaft, Cueing
17	SFUMQ34N04	Rink, Cueing (A)
18	SFXOQ34N01	Pipe, Cueing
19	SFQA130-11	Spring, Cueing
20	SFYB-5-32	Ball, Cueing
21	SFUMD34N01	Guide, Start/Stop
22	SFKTQ34N03	Knob, Start/Stop
23	SFDJD34N03E	Connector Ass'y 7P
24	SFKTD11N01	Knob, Speed Adjustment
25	Δ RJA9Y	AC Cord
26	SFUM190-12	Bushing, AC Cord
27	SFDJD34N01E	Connector Ass'y 3P
28	SFUMB33N04	Guide, Repeat Knob
29	SFUMQ34N05	Rink, Repeat
30	SFDSQ34N03	Switch, Repeat
31	SFUZD34N01	Rod, Repeat
32	SFUMB33N11	Rink, Cueing (B)
33	SFUZQ34N02	Rod, Cueing
34	SFAUD34N01	Bottom Board
35	SFUPQ34N01	Gear, Cover
36	SFGAD34N01	Audio Insulator
37	SFUZQ34N06E	Latch, Gear Cover
38 [M] 38 [MC]	SFNND34M01 SFNND34C01	Name Plate Name Plate
39	SFTGQ34N01	Turntable Mat
40	SFDSTWM9901A SFADB33N01E	Power Switch Dust Cover
TONE ARM PARTS		
50	SFPAM30301A	Tone Arm
51	SFPWG30301A	Balance Weight
52	SFPRT30301E	Arm Rest
53	SFPRT30302E	Lift Arm
54	SFPSP30304	Spring, Lift Arm
55	SFPJK30301	Knob, Anti-Skating
56	SFUPD34N02	Sub Plate Tone Arm
57	SFPAB30301A	Plate, Tone Arm

Ref. No.	Part No.	Part Name & Description
58	SFPSP30302	Spring, Anti-Skate Force Control
59	SFPAB30305A	Plate, Lift Ass'y
60	SFDH212-01	Phono Cord
61	SFEL028-01E	Ground Wire
62	SFGK170-01	Rubber, Cap
63	SFPCC31001K	Head Shell
64	SFUM212-08	Bushing, Phono Cord
SCREWS, WASHERS and CIRCLIPS		
N1	XTV3+10BFN	Screw, Tapping, $\oplus$ 3 x 10
N2	XTV3+8BFN	Screw, Tapping, $\oplus$ 3 x 8
N3	XTV3+6BFN	Screw, Tapping, $\oplus$ 3 x 6
N4	XTWS3+20QFYR	Screw, Tapping, $\oplus$ 3 x 20
N5	XYN3+C8S	Screw, Tapping, $\oplus$ 3 x 8
N6	SFXWQ11N03	Washer
N7	XTW3+10Q	Screw, Tapping, $\oplus$ 3 x 10
N8	SFXGQ20-01	Screw
N9	SFXGQ34N02	Screw
N10	XYN3+C12S	Screw, Tapping, $\oplus$ 3 x 12
N11	XTS3+16BFZ	Screw, Tapping, $\oplus$ 3 x 16
N12	XTW3+8E	Screw, Tapping, $\oplus$ 3 x 8
N15	XUC3FT	Circlip, ϕ 3
N16	XUB4FT	Circlip, ϕ 4
N17	SFXWQ34N26	Washer
N18	SFXWQ30-11	Washer
N19	XUC5FT	Circlip, ϕ 5
N20	XWE4BW	Washer, ϕ 4
N21	SFXWQ34N21	Washer
N22	XTV3+6BFN	Screw, Tapping, $\oplus$ 3 x 6
N23	XUC2FT	Circlip, ϕ 2
ACCESSORIES		
A1 [M] A1 [MC]	SFNUD34M01 SFNUD34C01	Instructions Book, Printed Matter Instructions Book, Printed Matter
A2	SFWE212-01	Adaptor, 45r.p.m
A3	SFK0135-01	Overhung Gueage
A4	SFCZB30505	Shell Weight
PACKING PARTS		
P1 [M] P1 [MC]	SFHPD34M01 SFHPD34C01	Carton Box 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	SFYH40X45	Polyethylene Bag, Turntable
P8	SFYF09A15	Polyethylene Bag, Accessories
P9	SFYF05A06	Polyethylene Bag, 45 Adaptor

EXPLODED VIEWS.....Cabinet & Chassis



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, Disc Size Sensor
105	SFMZD34N01Z	Stator Frame Ass'y
106	SFUMQ34N36	Case, Switch
107	SFDJD34N02E	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

Ref. No.	Part No.	Part Name & Description
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
123	SFUMQ34N41	Lever, Repeat
124	SFQSQ34N23	Rod, Actuating
125	SFUMQ34N42	Connector, Actuating
126	SFUGQ34N21E	Main Gear Ass'y
127	SFQAQ34N21	Spring, Stop Gear

■ PACKINGS

