

Service Manual

Turntable System SL-DD2



Color

(S)...Silver Type

Area

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

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

Specifications

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

■ General

Power supply: 120V AC, 60 Hz
Power consumption: 4 W
Dimensions: 43×10×37.5 cm
(16-15/16"×3-15/16"×14-3/4")
(Maximum height when dust cover is open.
43×37×41 cm
(16-15/16"×14-9/16"×16-1/8"))
Weight: 4.5 kg (9.9 lb.)

■ Turntable section

Type: Direct drive
Automatic turntable
Auto return
Auto stop
Drive method: Direct drive
Motor: Brushless DC motor
Turntable platter: Aluminum die-cast
Diameter 31.2 cm (12-9/32")
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: Statically balanced straight tonearm
Plug-in connector cartridge system
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
Effective mass: 13.5 g (including cartridge)
Stylus pressure: 1.25 g (Fixed)
Applicable cartridge weight: 6 g
Phono cable capacitance: 90 pF

Technics

Matsushita Engineering and Service Company
50 Meadowland Parkway,
Secaucus, New Jersey 07094

Panasonic Hawaii Inc.
91-238 Kauhii St. Ewa Beach
P.O. Box 774
Honolulu, Hawaii 96808-0774

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

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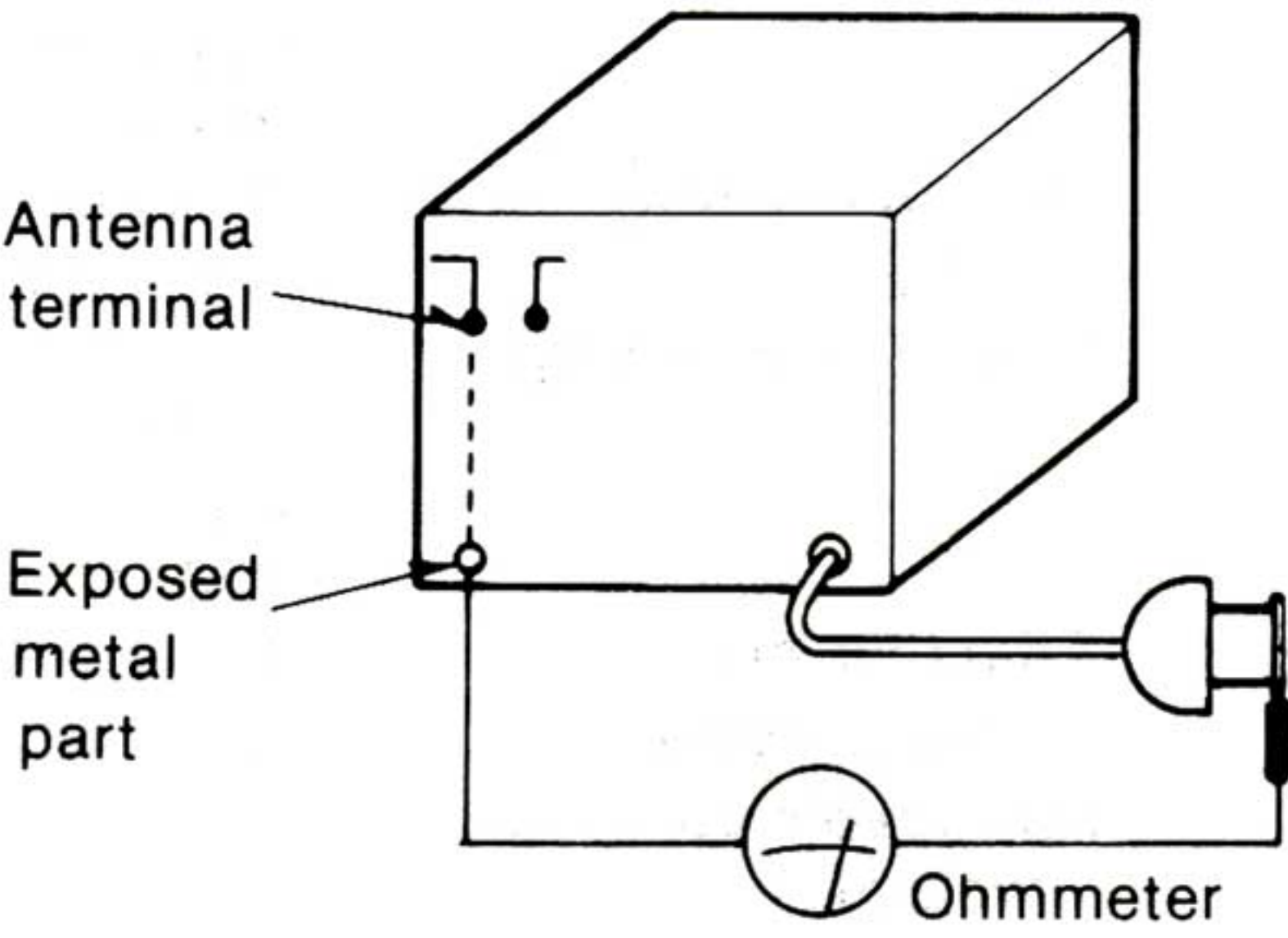
■ SAFETY PRECAUTION (This “safety precaution” is applied only in U.S.A.)

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

● INSULATION RESISTANCE TEST

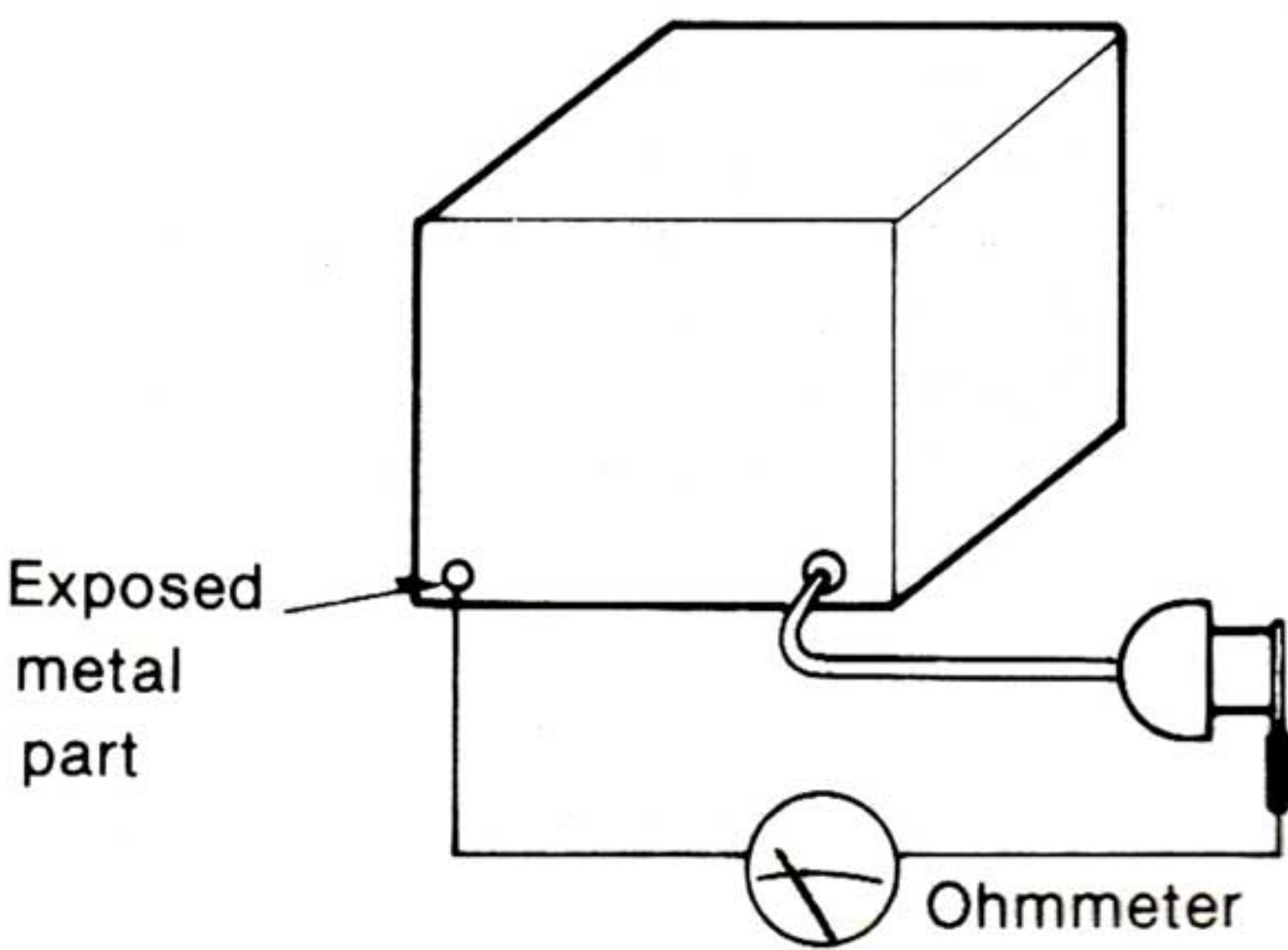
- 1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
- 2. Turn on the power switch.
- 3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment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

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



(Fig. A)

Resistance = 3 MΩ—5.2 MΩ

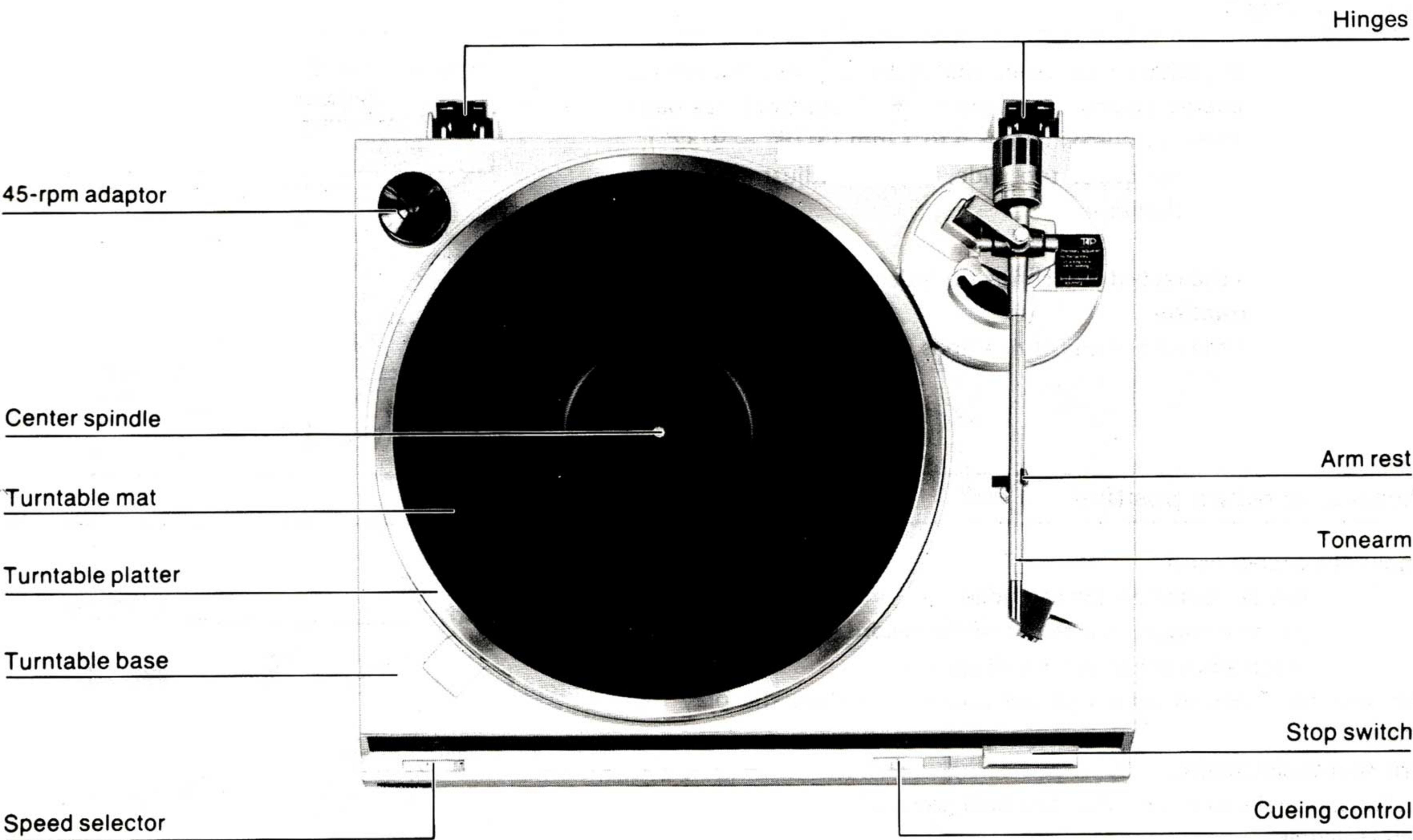


(Fig. B)

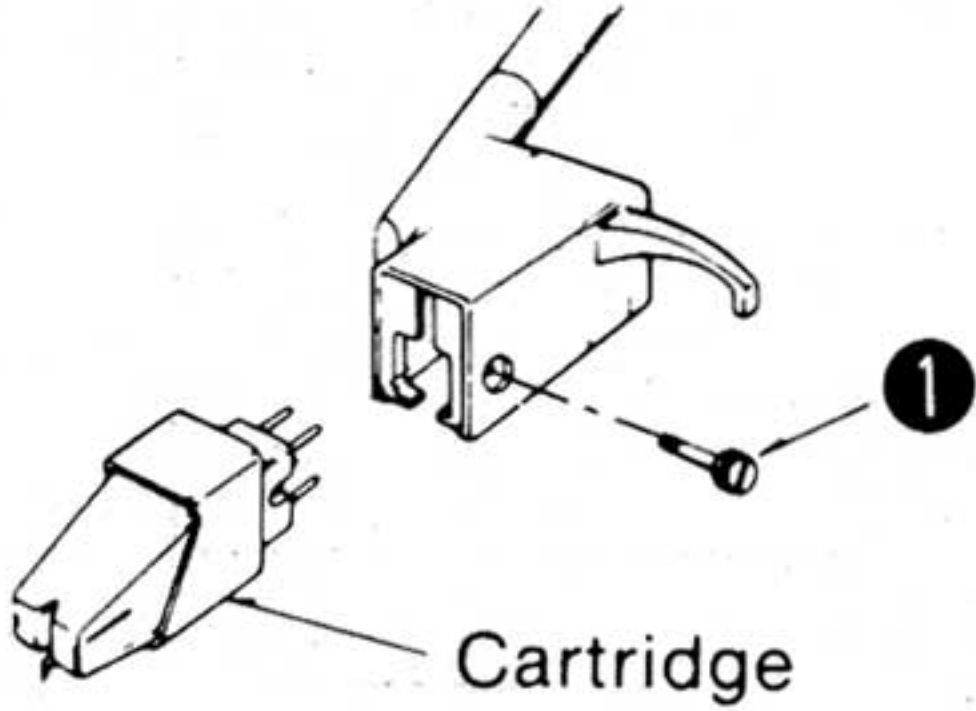
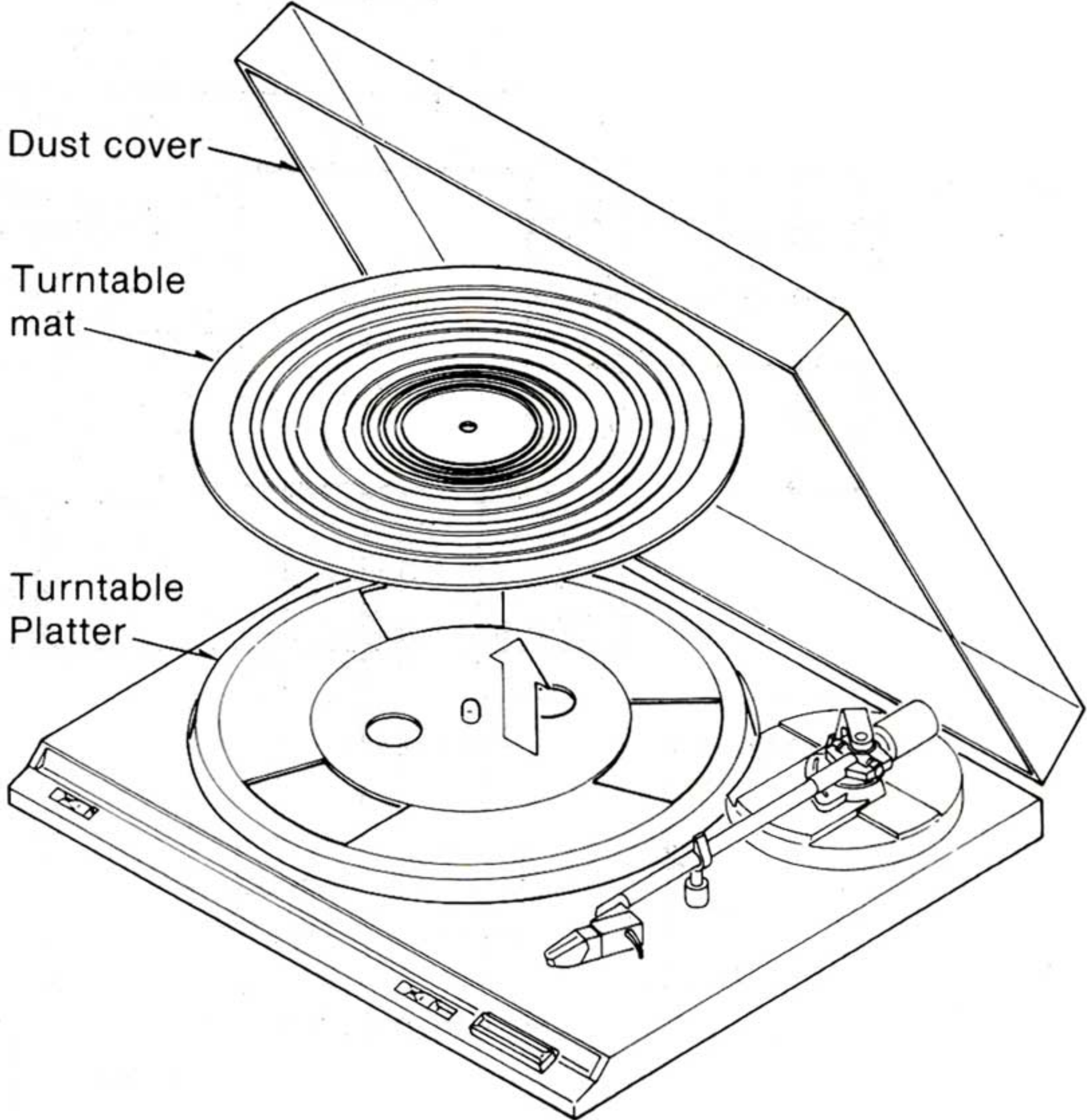
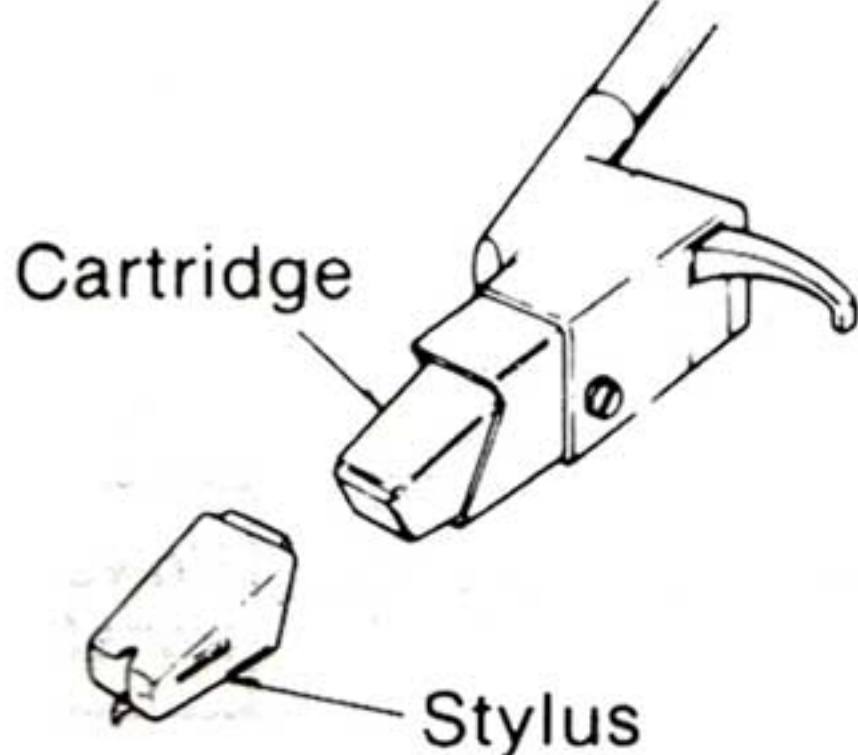
Resistance = Approx ∞

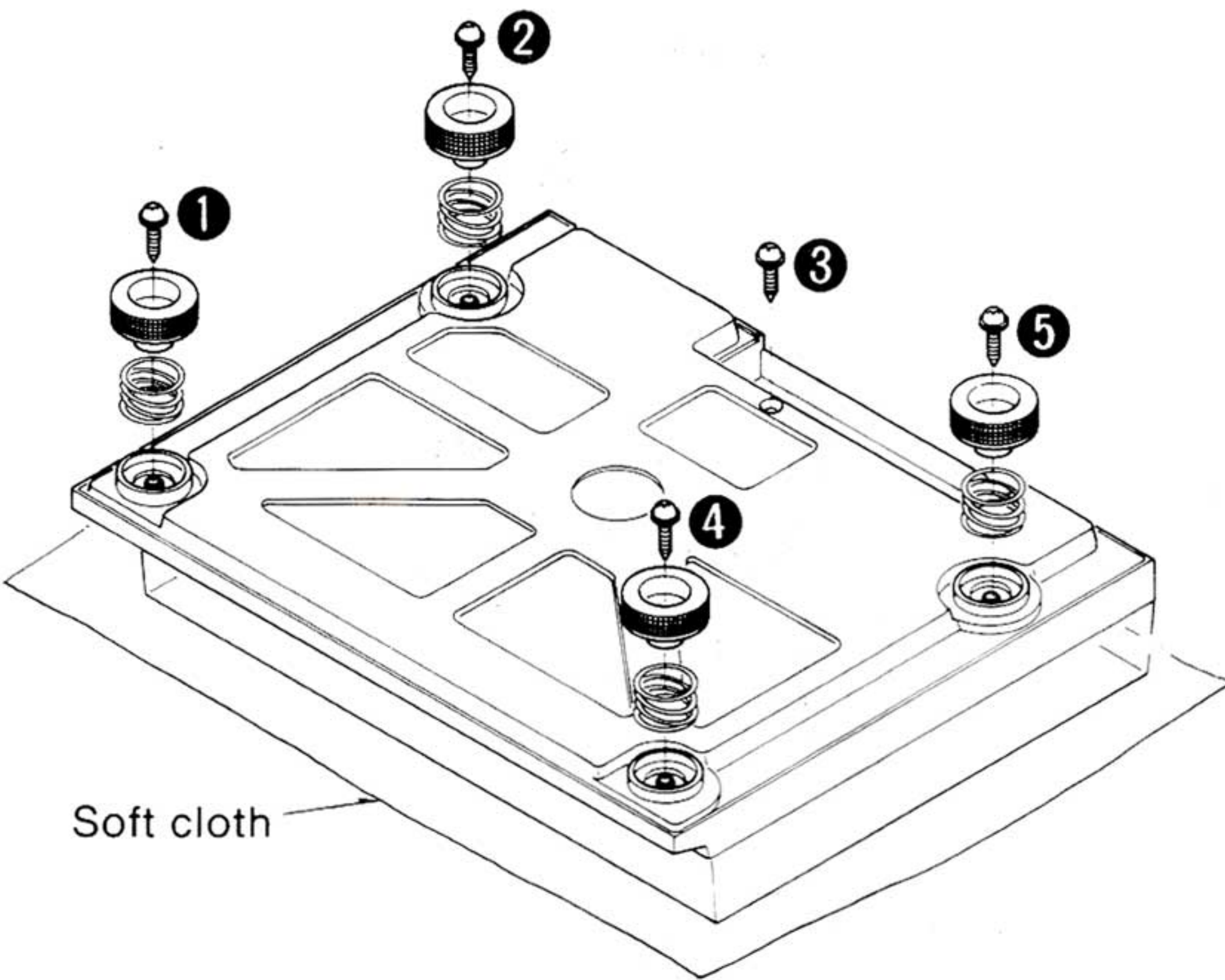
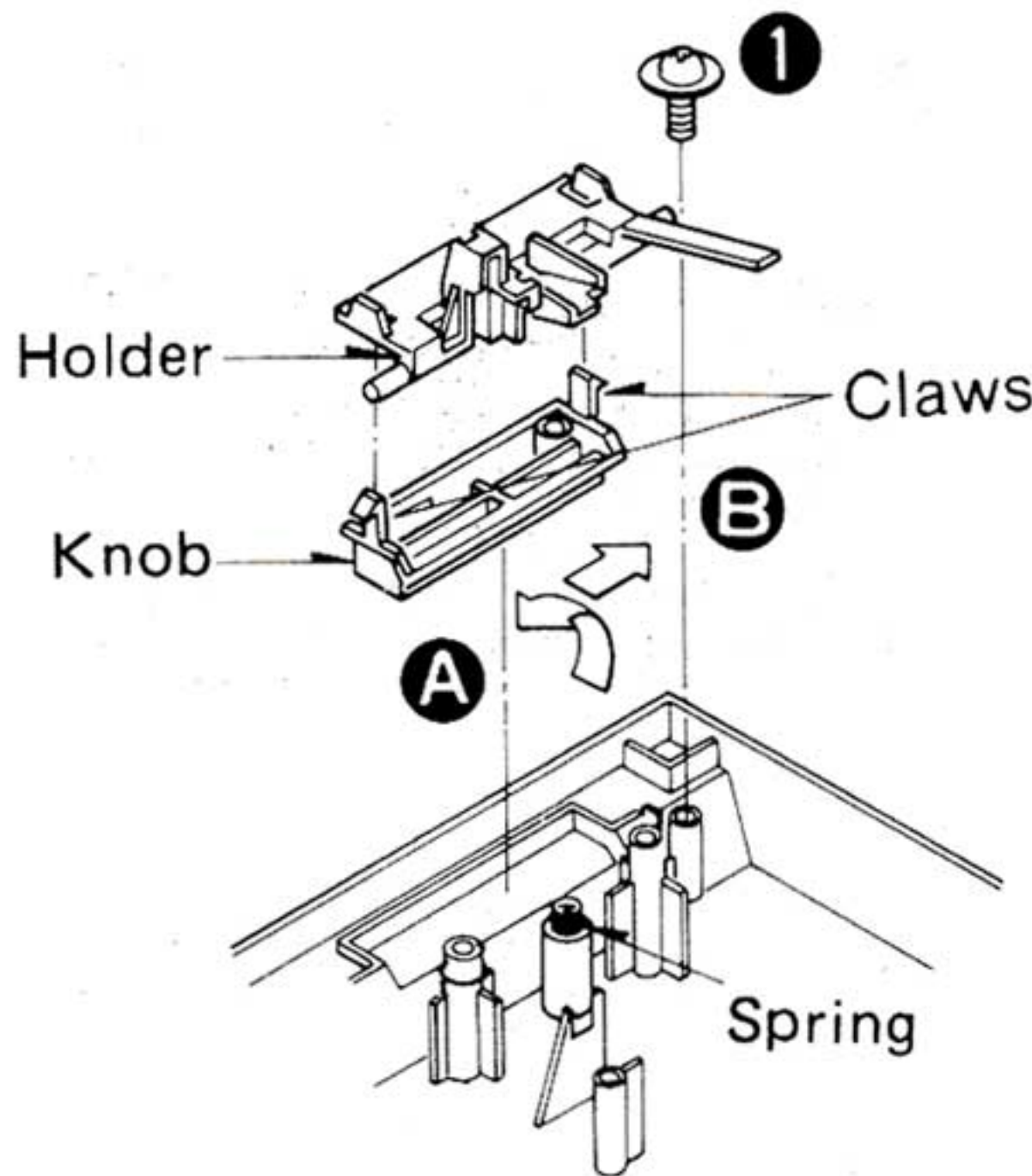
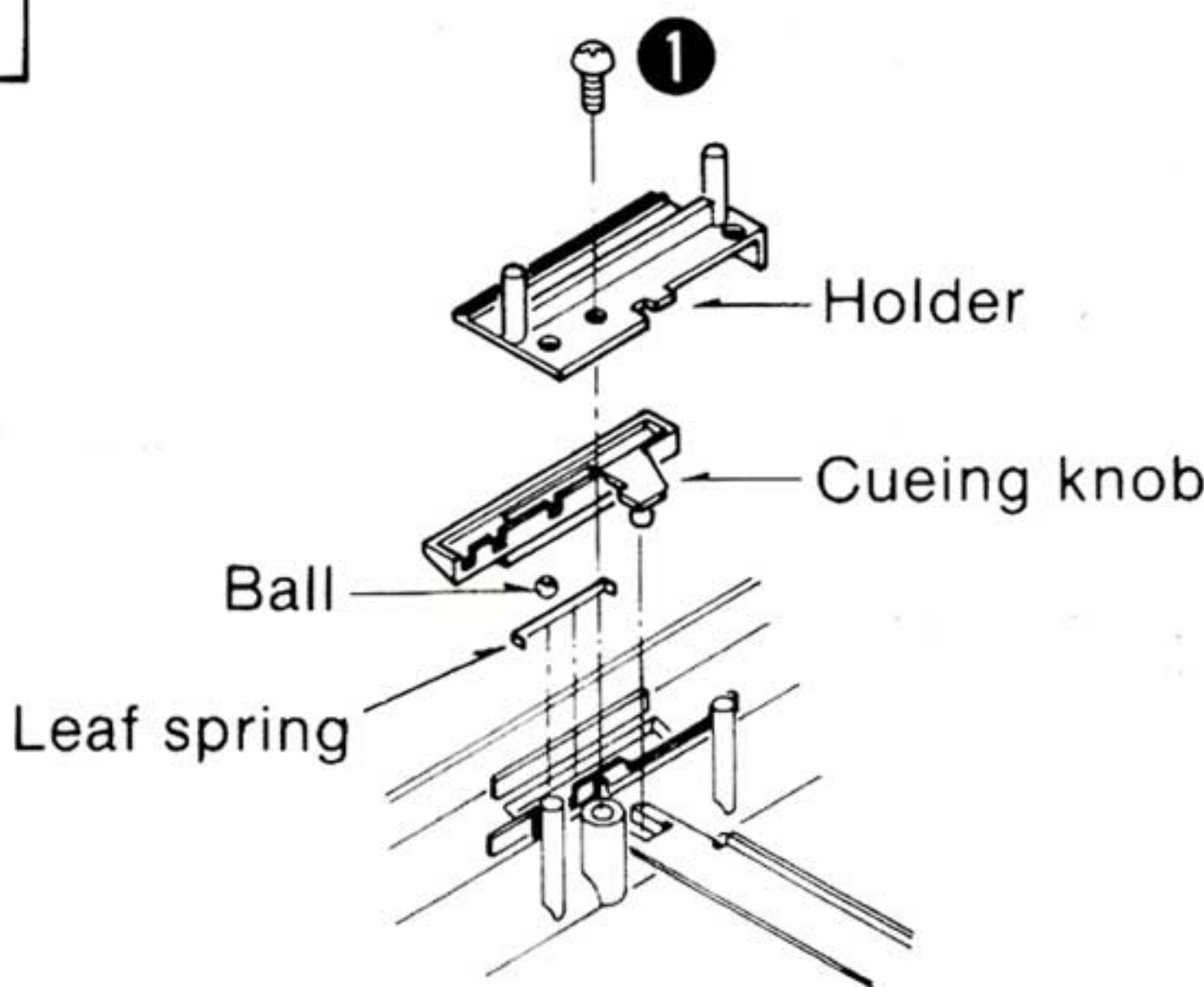
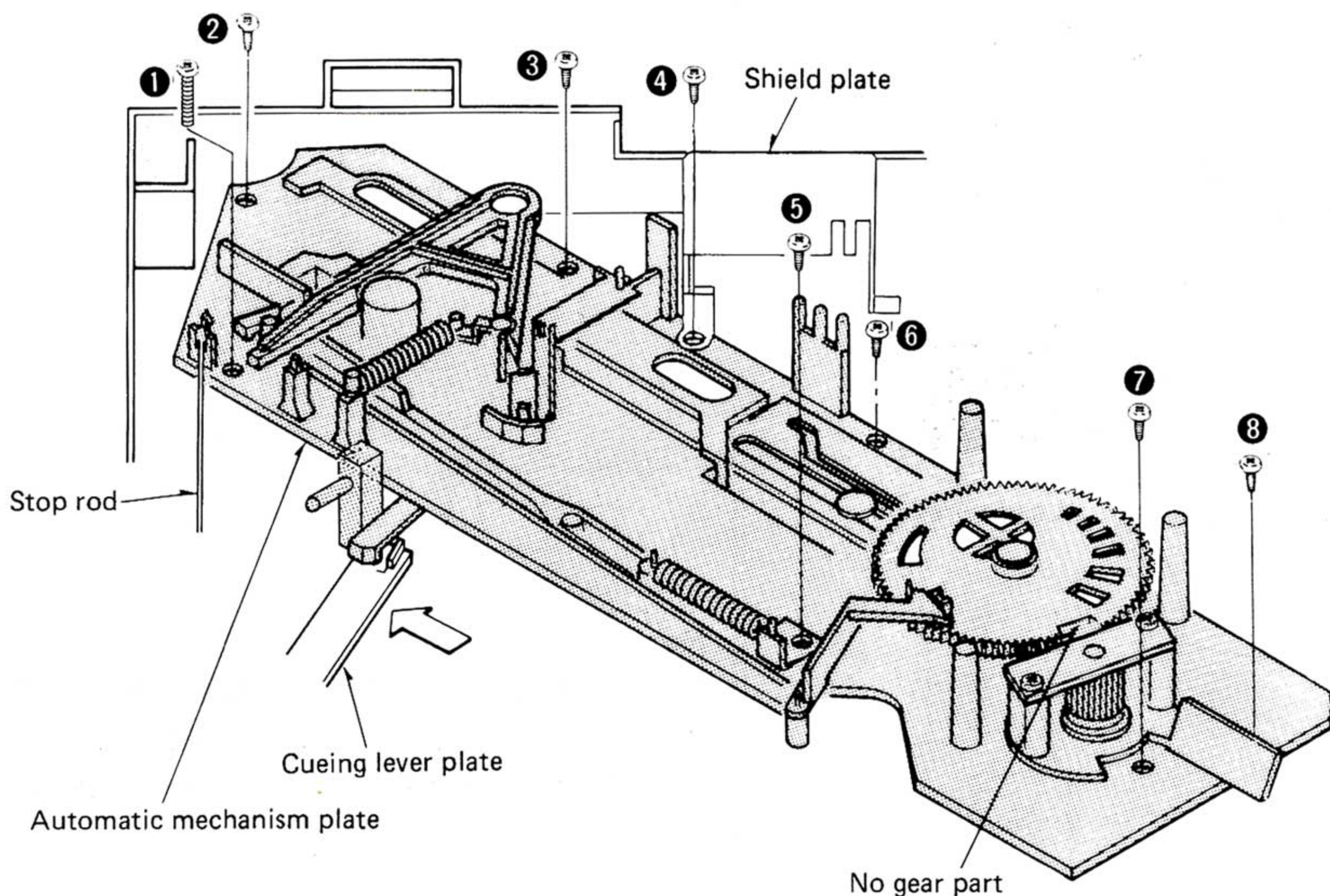
- 4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

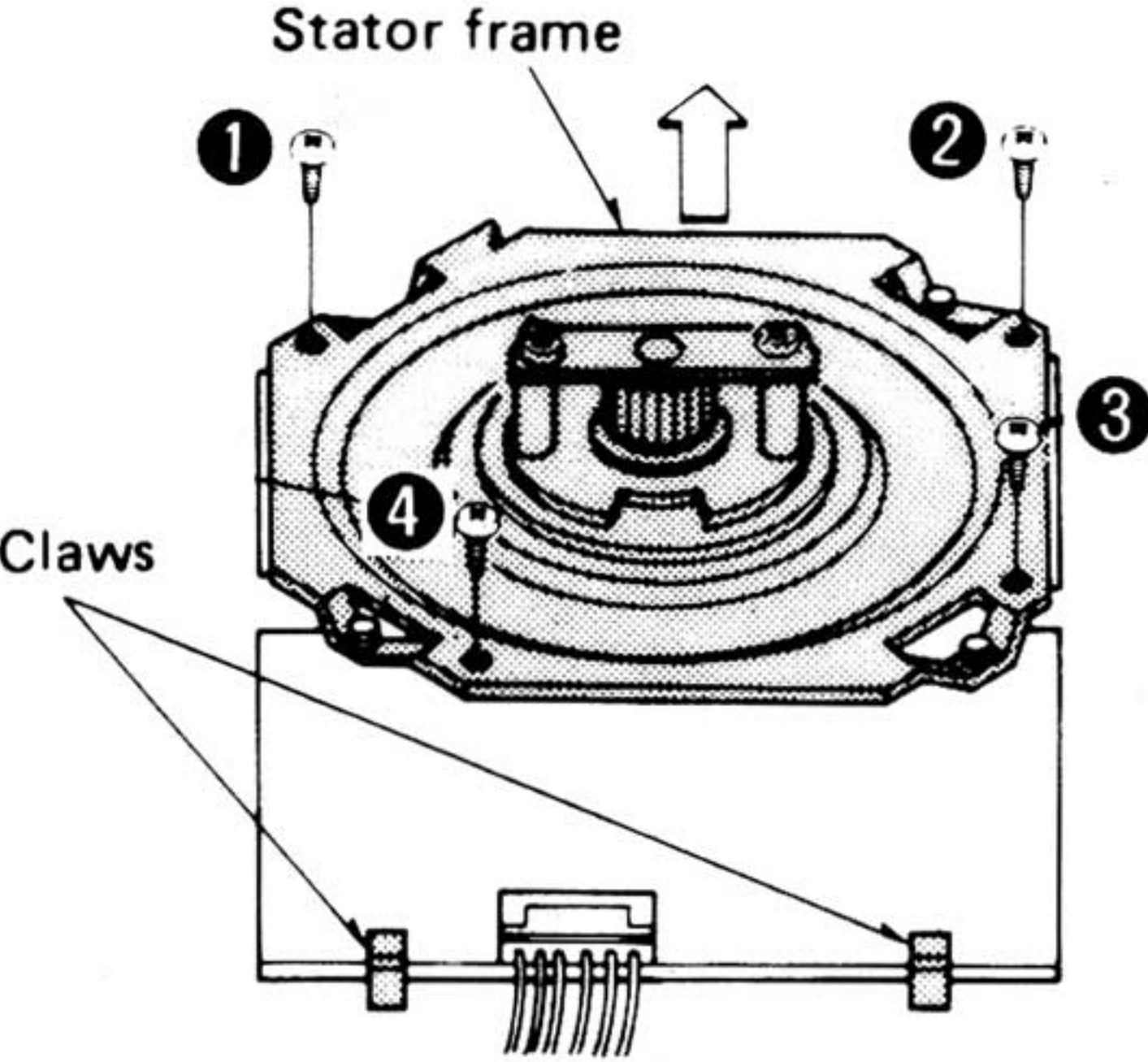
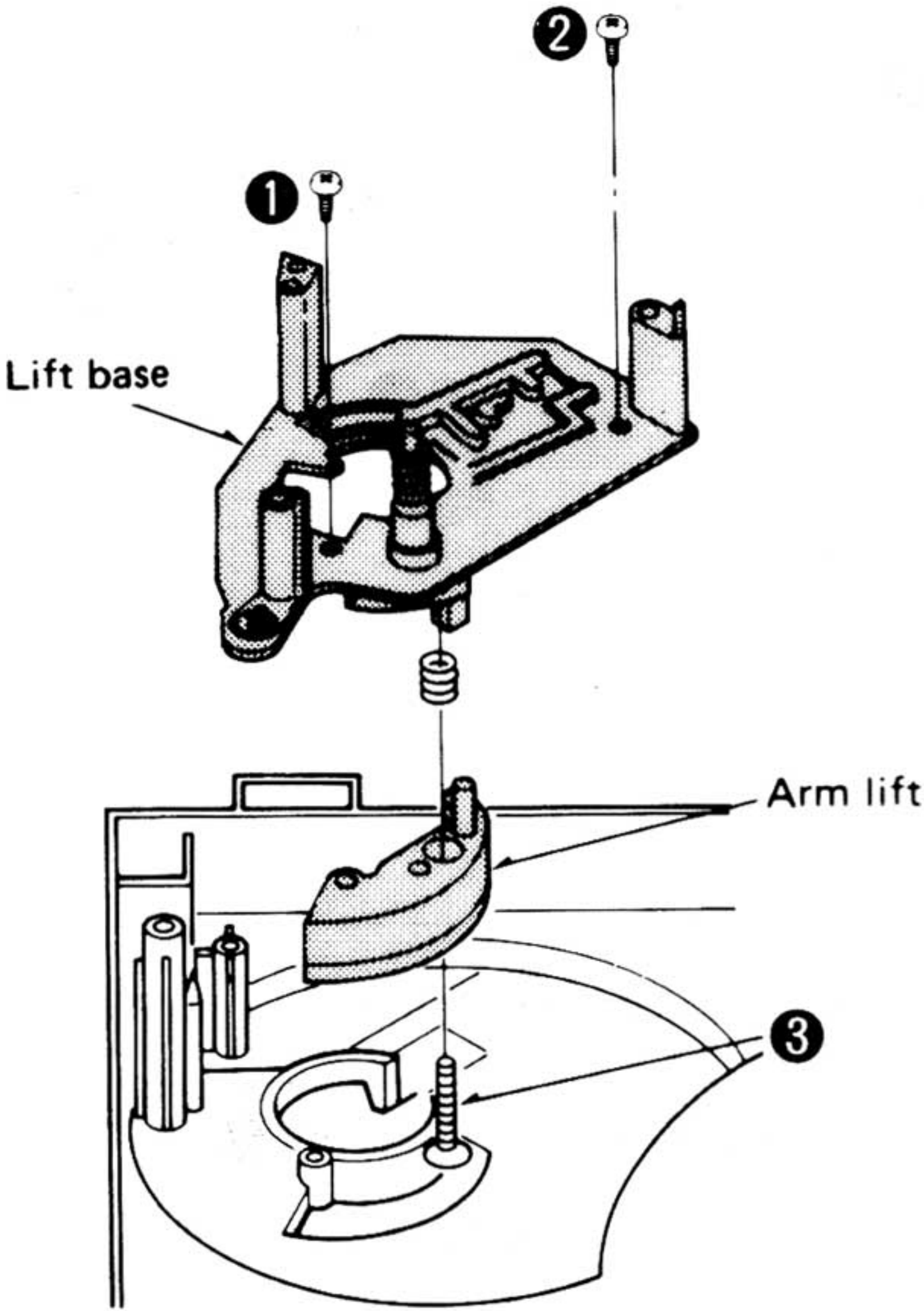
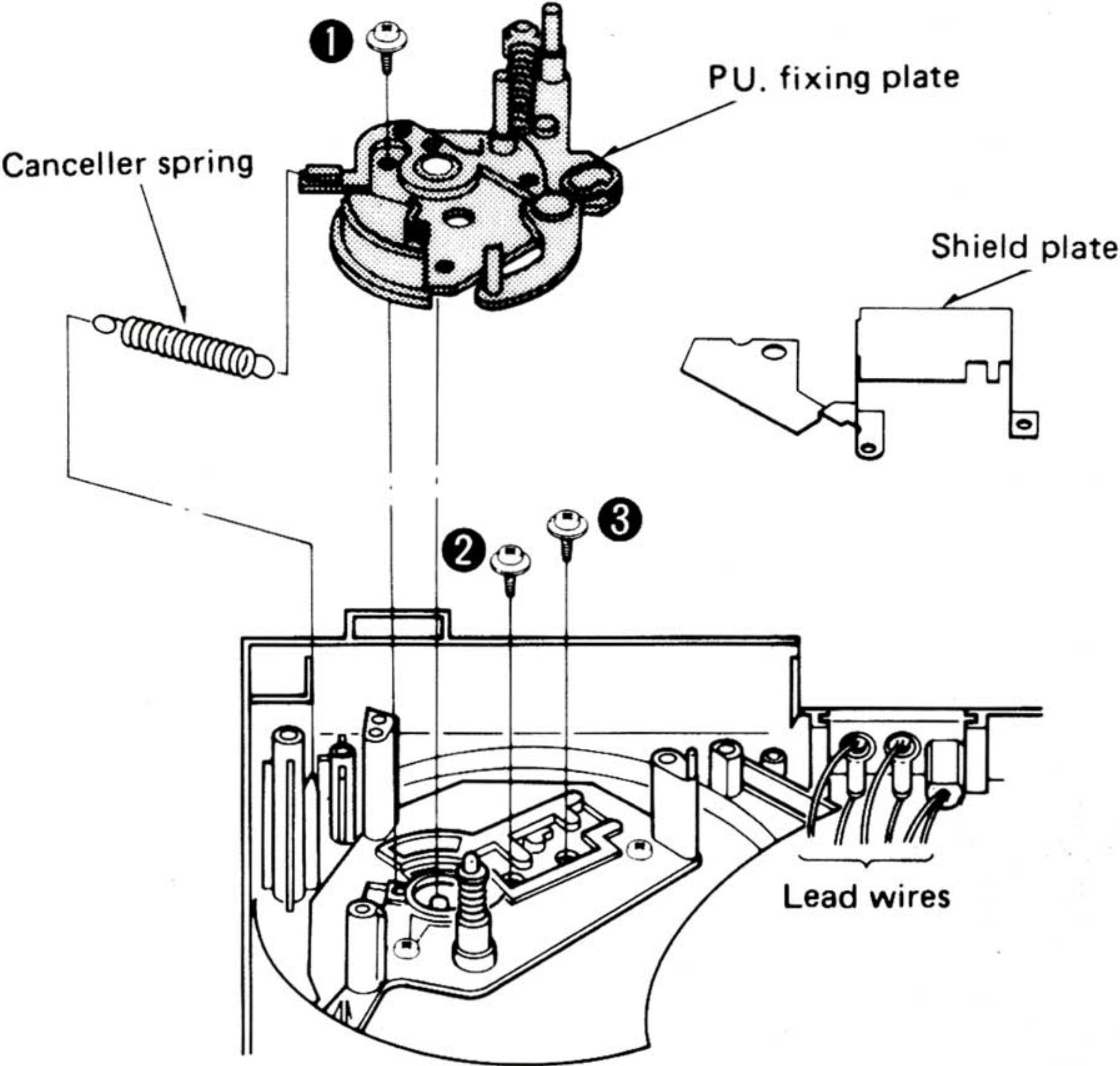
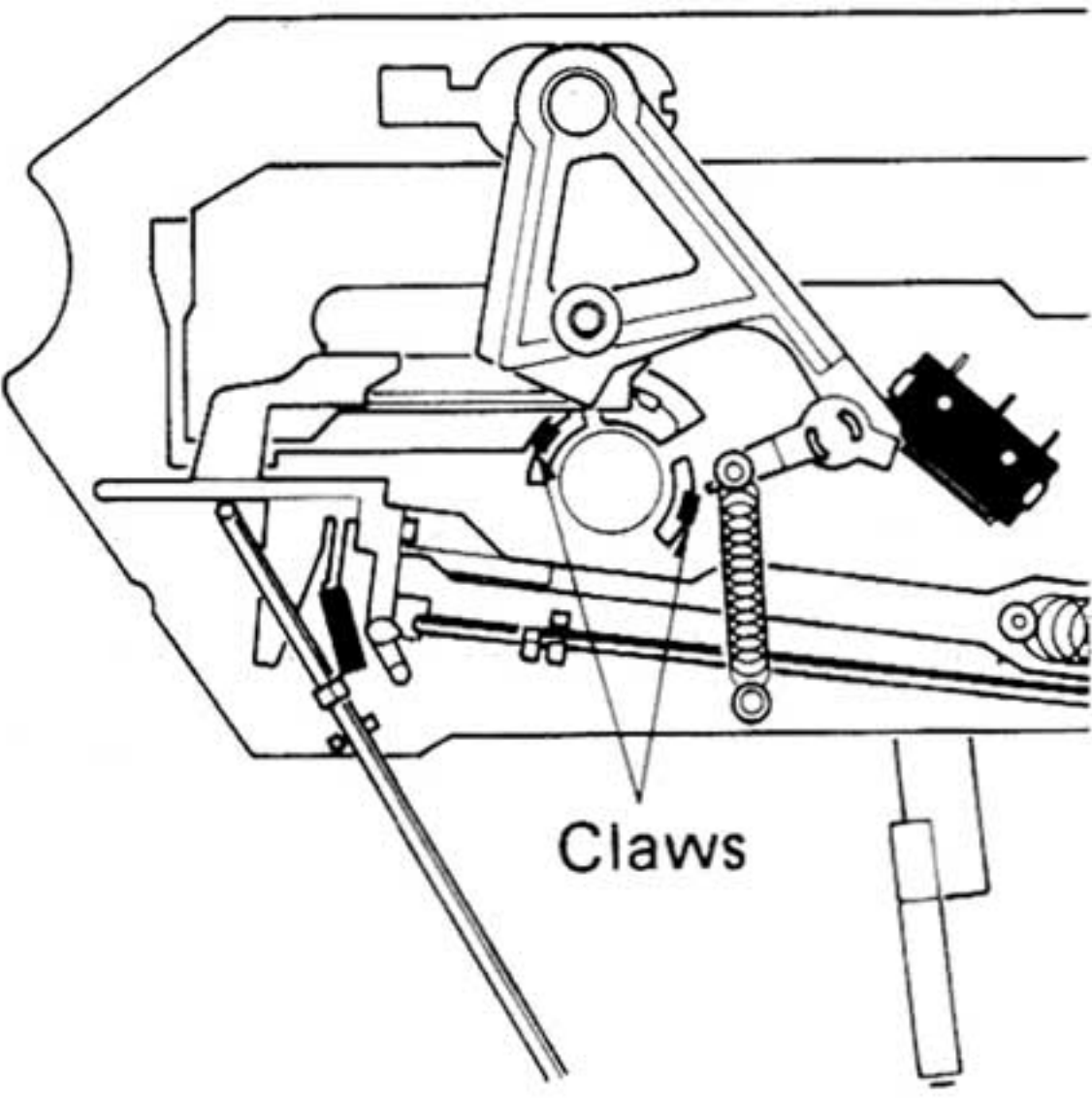
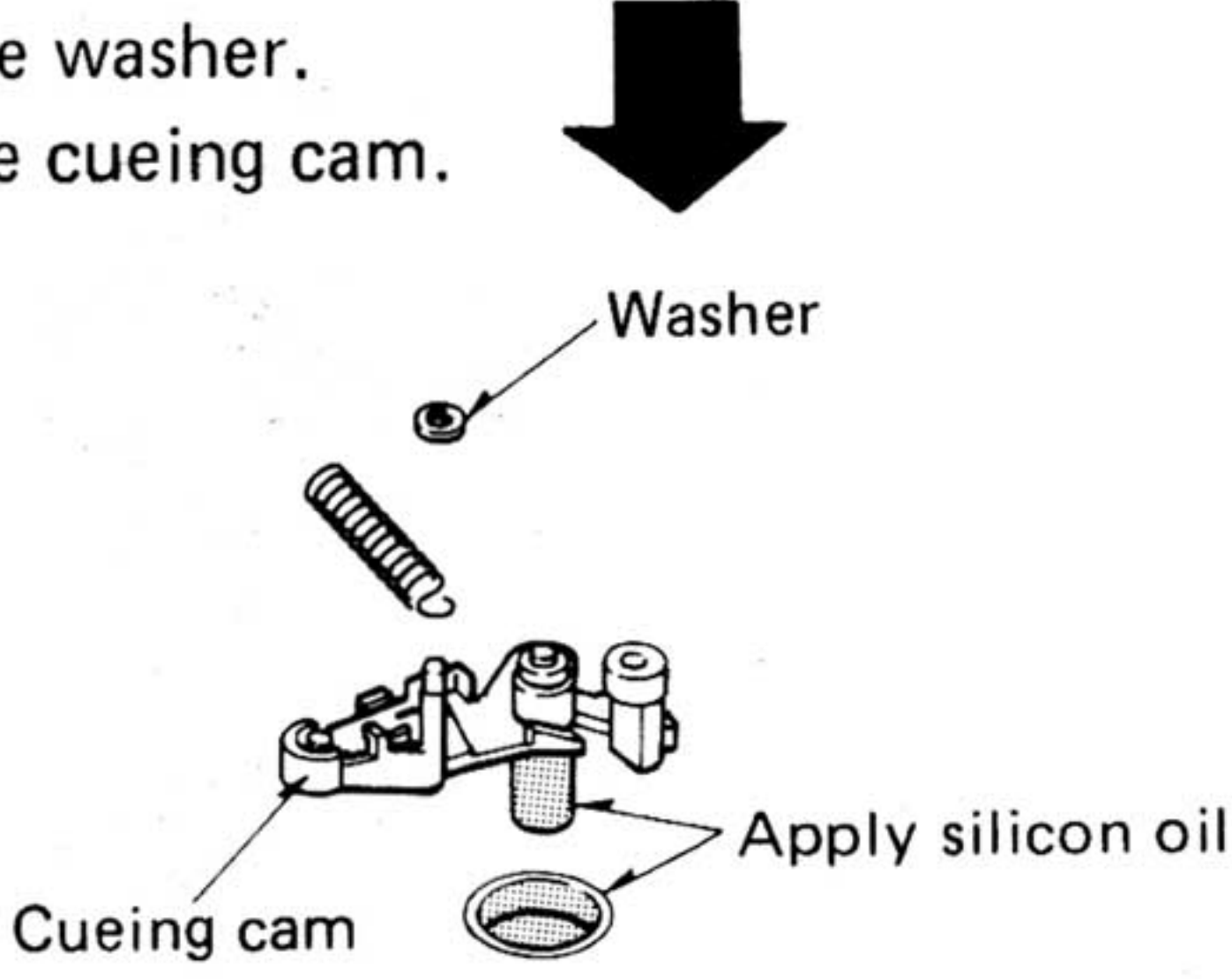
■ LOCATION OF CONTROLS



■ DISASSEMBLY INSTRUCTIONS

Ref. No 1	How to remove the cartridge	Ref. No 3	How to remove the turntable platter
Procedure 1	<div>1. Remove the setscrew ❶.</div> <div>2. Pull out the cartridge, taking care that your hand does not touch the stylus tip.</div> <div><p>Cartridge</p></div>	Procedure 3	<div>1. Open the dust cover and remove the turntable mat.</div> <div>2. Lift up the turntable platter.</div> <div><p>Dust cover</p><p>Turntable mat</p><p>Turntable Platter</p></div>
Ref. No 2	How to remove the stylus		
Procedure 2	<div>• Pull out the stylus, taking care not to touch the stylus tip.</div> <div><p>Cartridge</p><p>Stylus</p></div>		

Ref. No 4	How to remove the bottom board	Ref. No 6	How to remove the stop knob
Procedure 3 ▶ 4	<div>1. Turn over the unit on a soft cloth.</div> <div>2. Remove the 5 setscrews (❶ ~ ❷).</div> <div></div> <div>Soft cloth</div>	Procedure 3 ▶ 4 ▶ 6	<div>1. Remove the setscrew ❶.</div> <div>2. Remove the holder (with knob) in the direction of the arrows (A, B).</div> <div>3. Release the 2 claws.</div> <div></div> <div>Holder</div> <div>Knob</div> <div>Claws</div> <div>Spring</div> <div>Note: When attaching the stop knob, do not forget to attach the spring.</div>
Ref. No 5	How to remove the cueing knob	Ref. No. 7	How to remove the automatic mechanism plate
Procedure 3 ▶ 4 ▶ 5	<div>• Remove the setscrew ❶</div> <div></div> <div>Holder</div> <div>Cueing knob</div> <div>Ball</div> <div>Leaf spring</div> <div>Caution:</div> <div>When removing the cueing knob, please note the ball bearing which is held between the leaf spring and knob and take care not to drop or lose it.</div>	Procedure 3 ▶ 4 ▶ 7	<div>1. Move the cueing control knob to "cueing down" position.</div> <div>2. Release the stop rod.</div> <div>3. Remove the 8 setscrews. (❶ ~ ❸).</div> <div>4. Lift up the automatic mechanism plate.</div> <div>Note:</div> <div>When fitting the automatic mechanism plate, check the following points.</div> <div><ul style="list-style-type: none">• Turn the main gear until it comes to the no gear part.• Shift the cueing lever plate in the direction of the arrow.</div>
<div></div> <div>Shield plate</div> <div>Stop rod</div> <div>Cueing lever plate</div> <div>Automatic mechanism plate</div> <div>No gear part</div>			

<p>Ref. No. 8</p>	<p>How to remove the stator frame</p>	<p>Ref. No. 10</p>	<p>How to remove the lift base and lift</p>
<p>Procedure 3 ▶ 4 ▶ 7 ▶ 8</p>	<p>1. Remove the 4 setscrews. (① ~ ④).</p> <p>2. Remove the stator frame from the 2 claws in the direction of the arrow.</p> 	<p>Procedure 3 ▶ 4 ▶ 7 ▶ 9 ▶ 10</p>	<p>1. Remove the 2 setscrews. (①, ②). Then the lift base can be removed.</p> <p>2. To remove the arm lift, remove the screw ③.</p> 
<p>Ref. No. 9</p>	<p>How to remove the tonearm</p>		
<p>Procedure 3 ▶ 4 ▶ 7 ▶ 9</p>	<p>1. Remove the PU fixing plate setscrew ①.</p> <p>2. Remove the shield plate.</p> <p>3. Unsolder the 5 lead wires of the phono terminal.</p> <p>4. Remove the 2 setscrews. (②, ③).</p> <p>★ PU lead wiring method.</p> <p>WhiteL channel (+) terminal</p> <p>BlueL channel (-) terminal</p> <p>RedR channel (+) terminal</p> <p>GreenR channel (-) terminal</p> <p>BlackGround terminal</p> 		
		<p>Ref. No. 11</p>	<p>How to remove the cueing cam</p>
		<p>Procedure 3 ▶ 4 ▶ 7 ▶ 11</p>	<p>● Release the 2 claws with a driver.</p>  <p>1. Remove the washer.</p> <p>2. Pull out the cueing cam.</p>  <p>Note:</p> <p>If the cueing time of the tonearm becomes too short, or if the cueing cam is replaced, apply silicon oil (Part No. SZZ0L12) according to the following procedure.</p> <p>1. Remove the cueing cam.</p> <p>2. Apply silicon oil to the cueing cam and oil tank.</p>

MEASUREMENTS AND ADJUSTMENT

1. Arm-lift height

The arm-lift height (distance between the stylus tip and the record surface when the cueing control is at the "▼" position) has been adjusted at the factory to approximately 5 to 7 mm (3/16" ~ 9/32"). If the clearance is too narrow or too wide, turn the adjustment screw clockwise or counterclockwise.

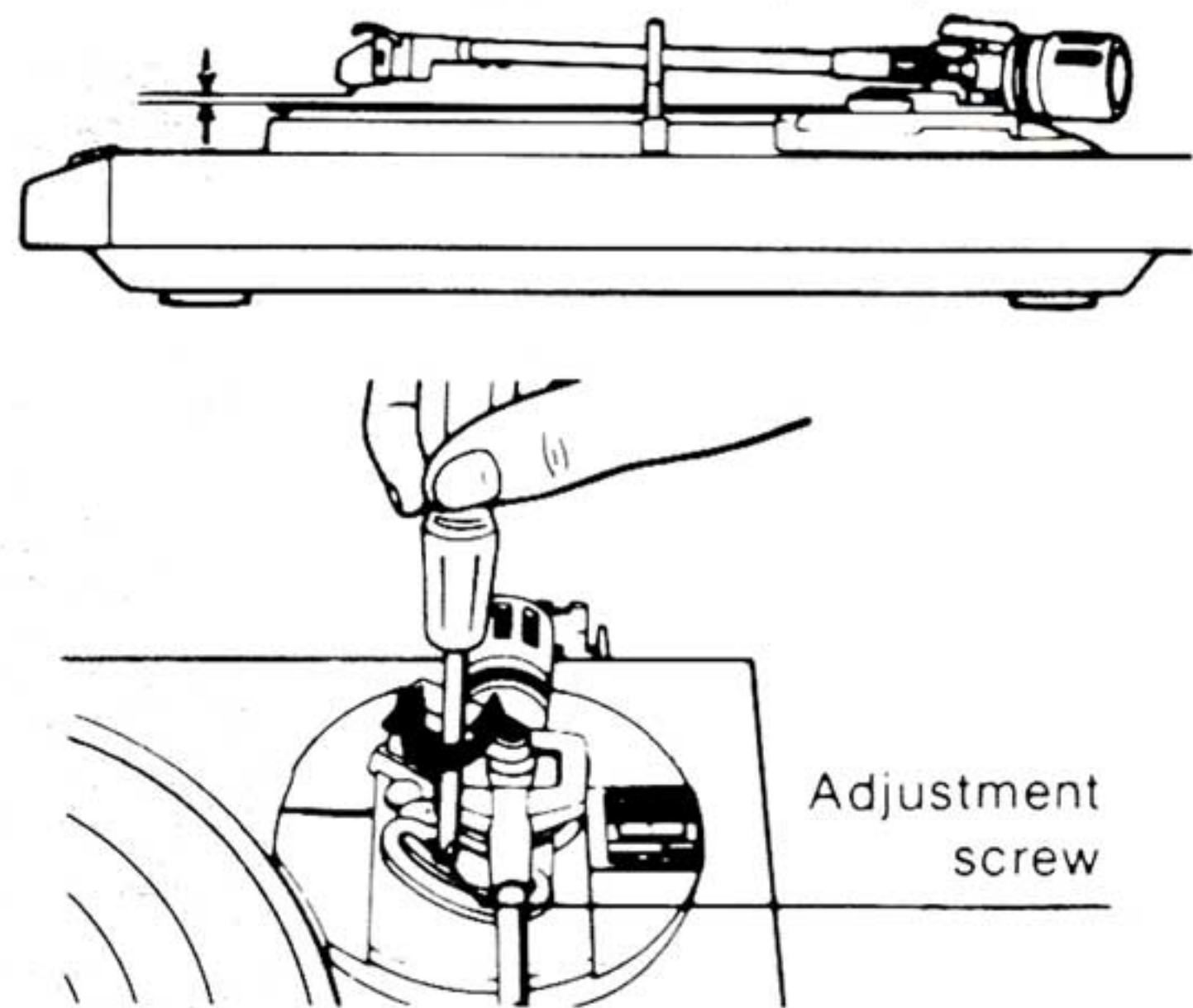
Clockwise rotation

— distance between the record and stylus tip is decreased.

Counterclockwise rotation

— distance between the record and stylus tip is increased.

5 mm ~ 7 mm (3/16" ~ 9/32")



2. Automatic return position

(Remove the rubber cap.)

1. Put the stylus protector on the cartridge.
2. Move the tonearm toward the center of the record.

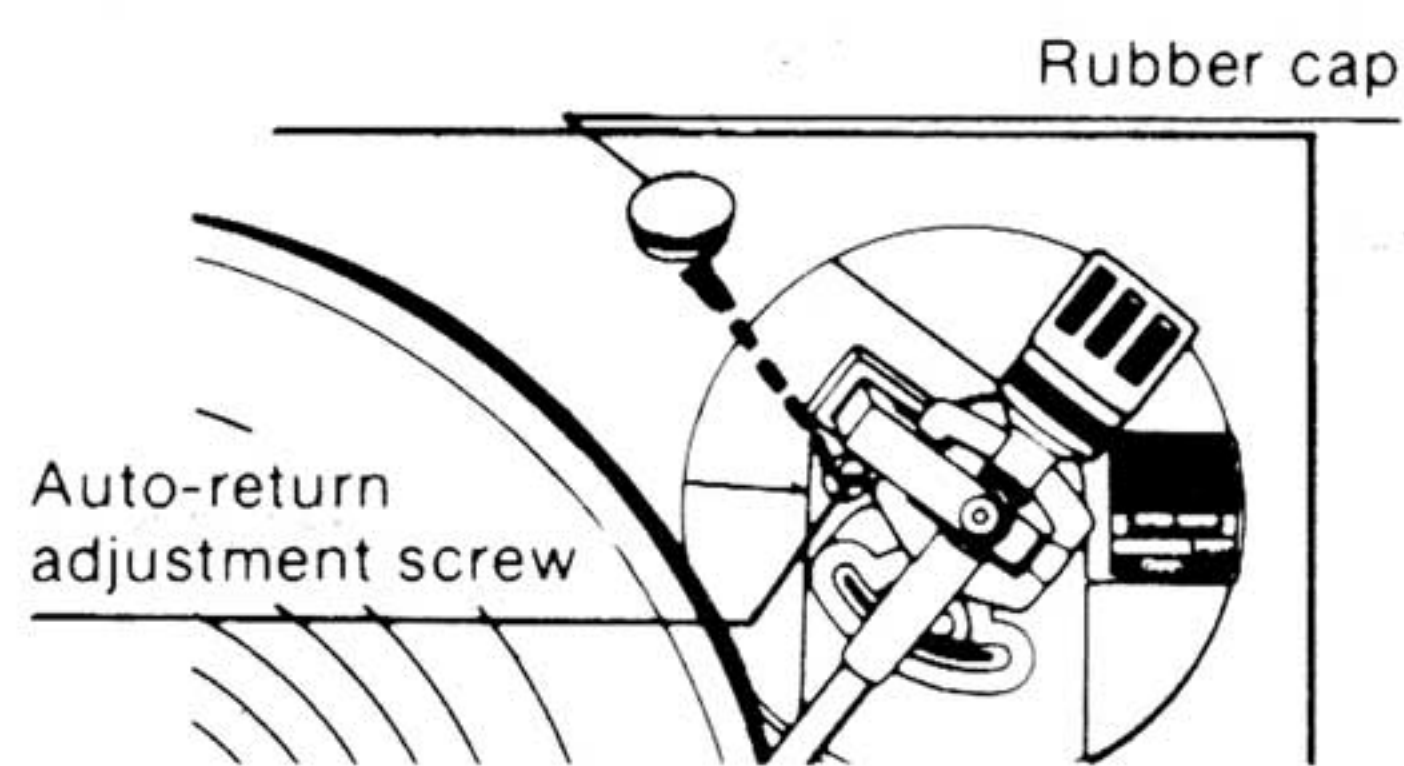
The auto-return adjustment screw will appear.

If the tonearm tends to return to the arm reset before the play has finished.

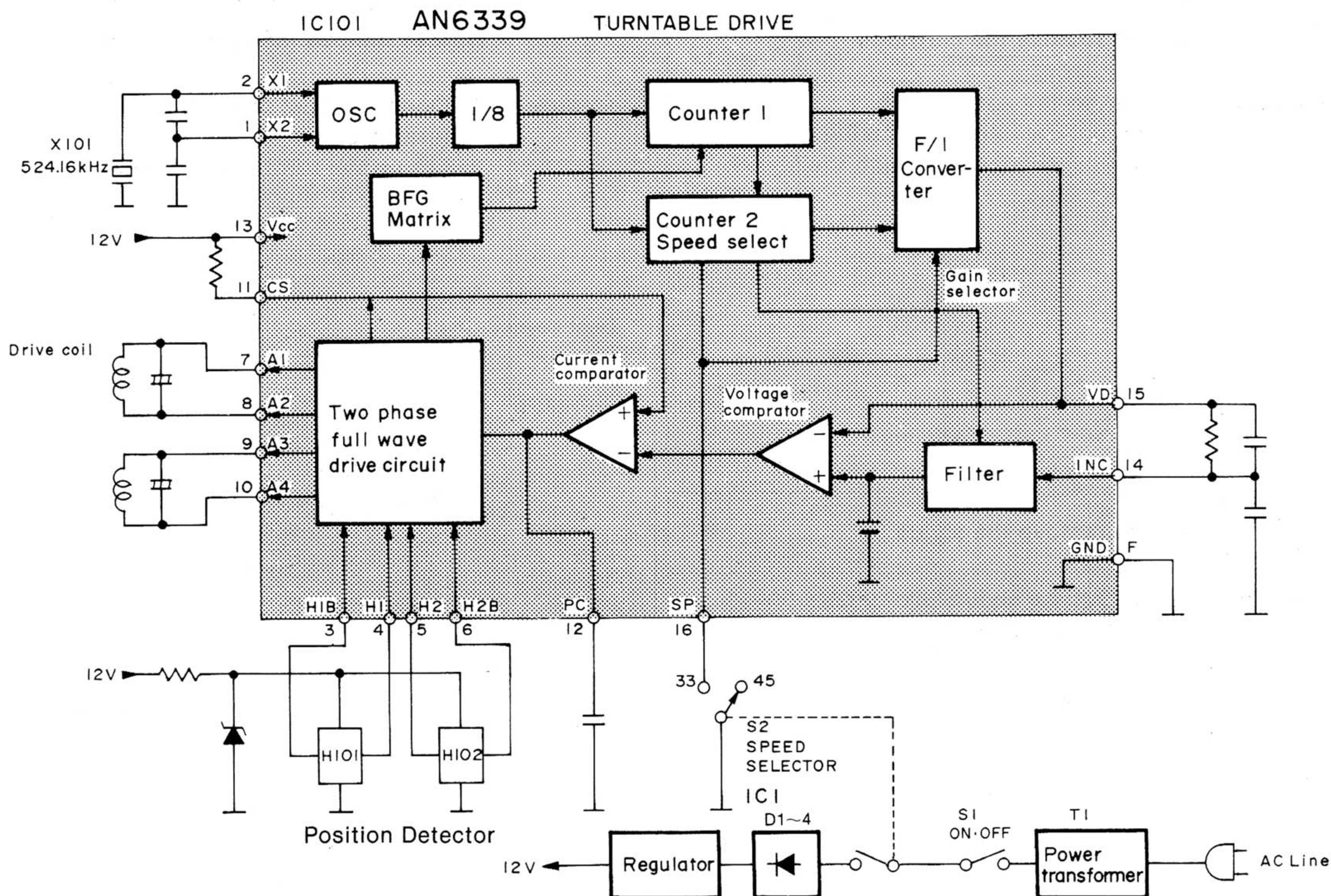
— turn counterclockwise.

If the tonearm fails to return after the final groove.

— turn clockwise.



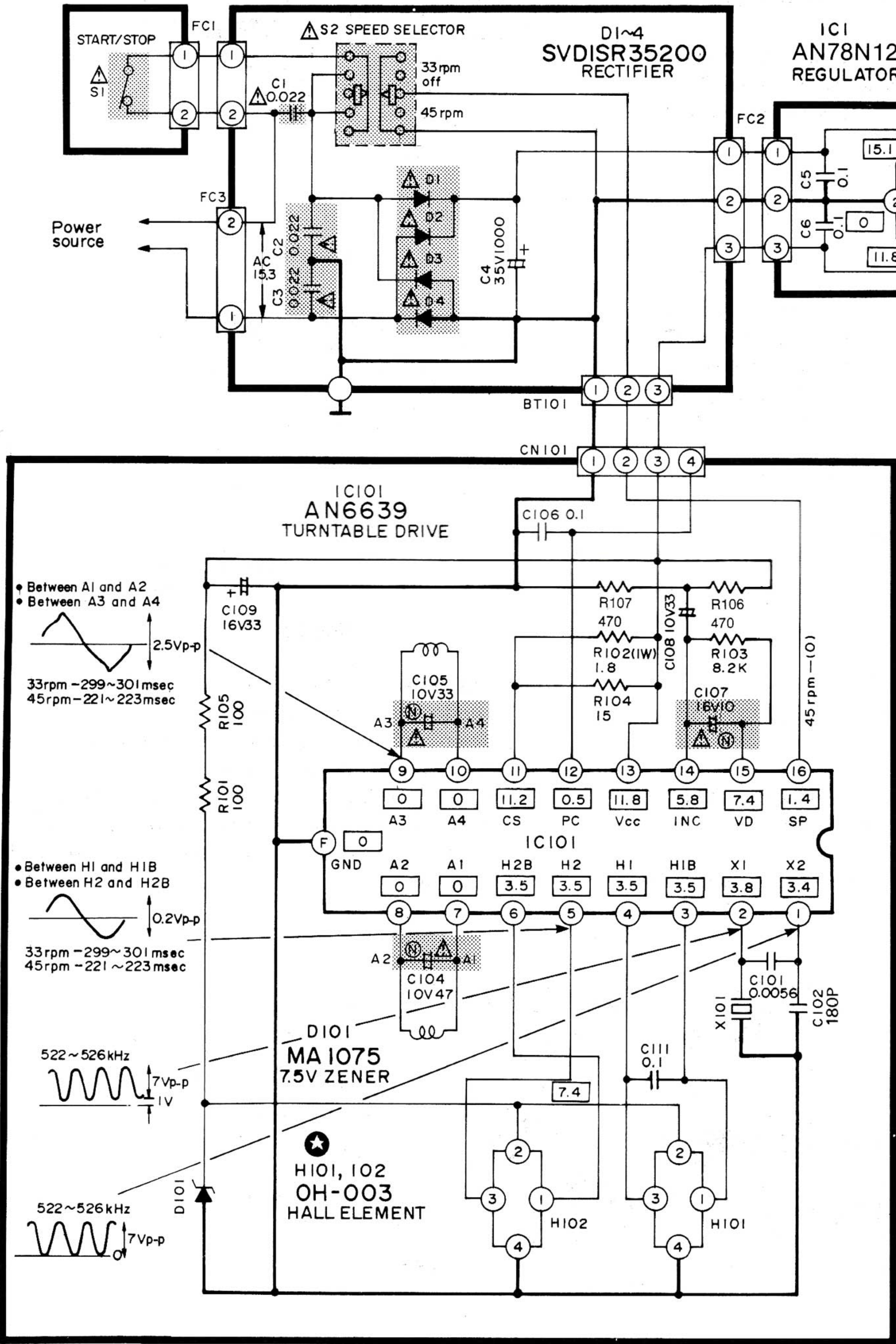
BLOCK DIAGRAM



■ SCHEMATIC DIAGRAM

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

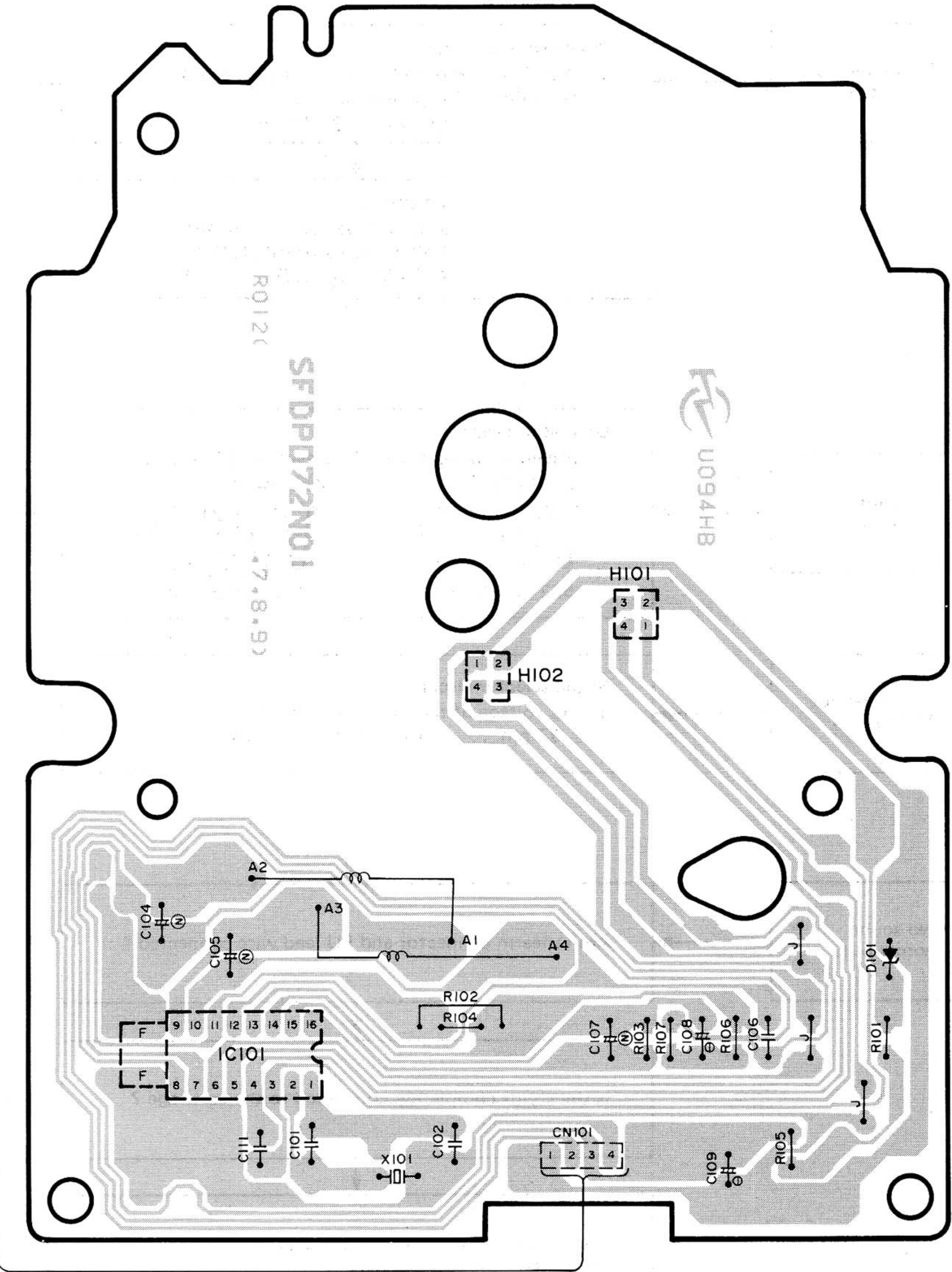
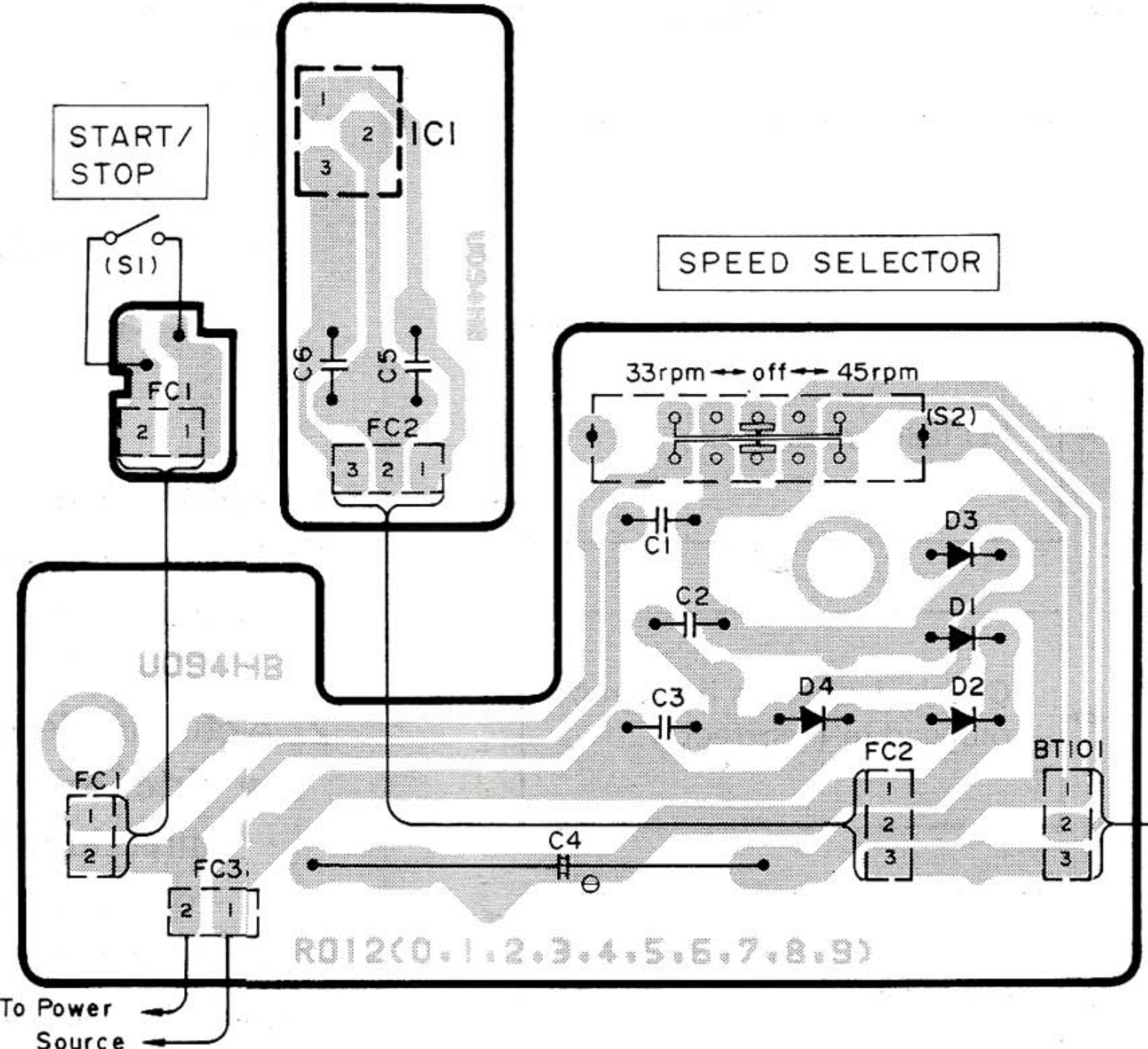
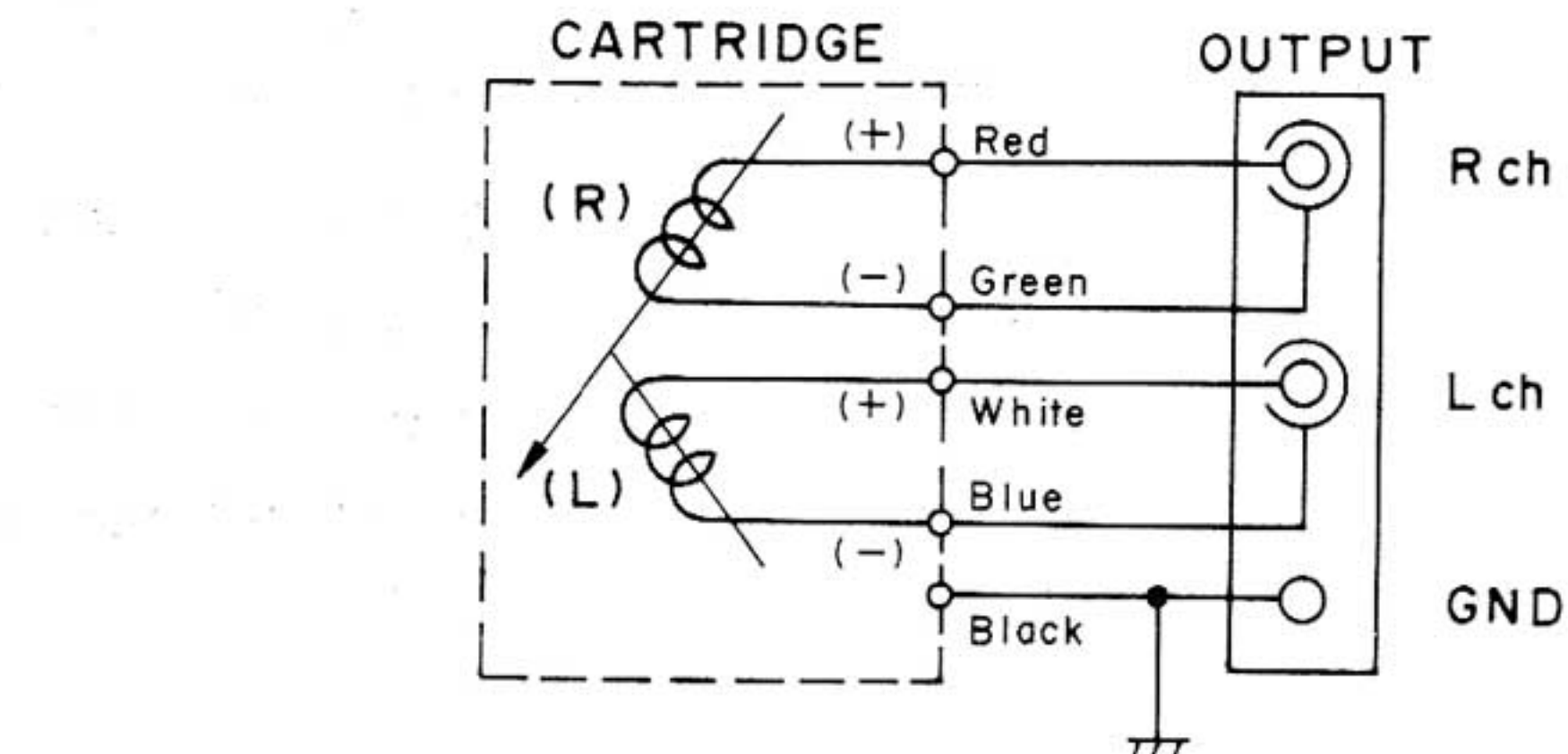
- Notes: 1. **S1** : On/off (power) switch in "on" position.
2. **S2** : Speed selector switch in "off" position.
3. The voltage value, and waveforms are the reference voltage values of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis when the unit is in play.
4. Important safety notice:
Components identifier by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.



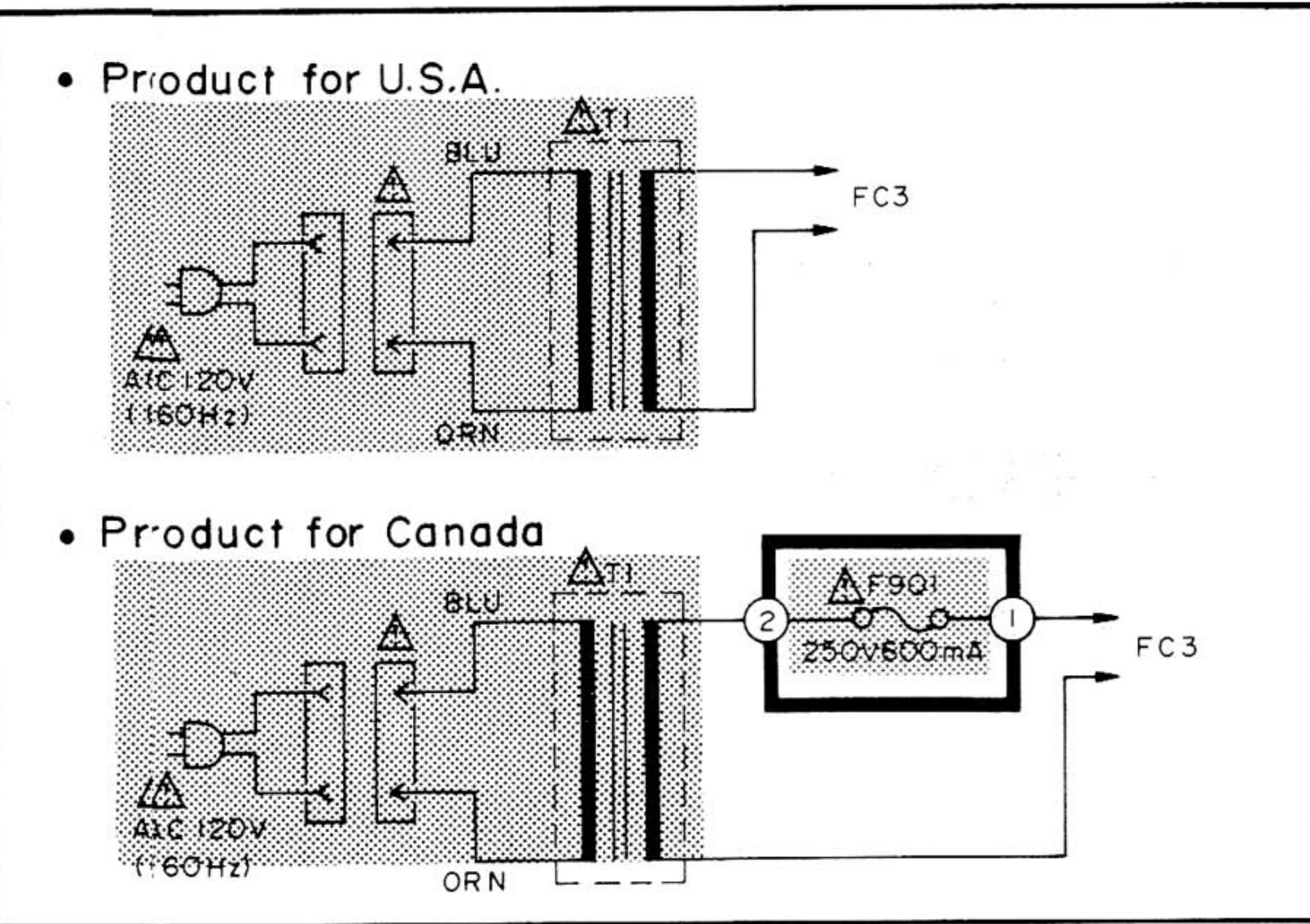
■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

IMPORTANT SAFETY NOTICE

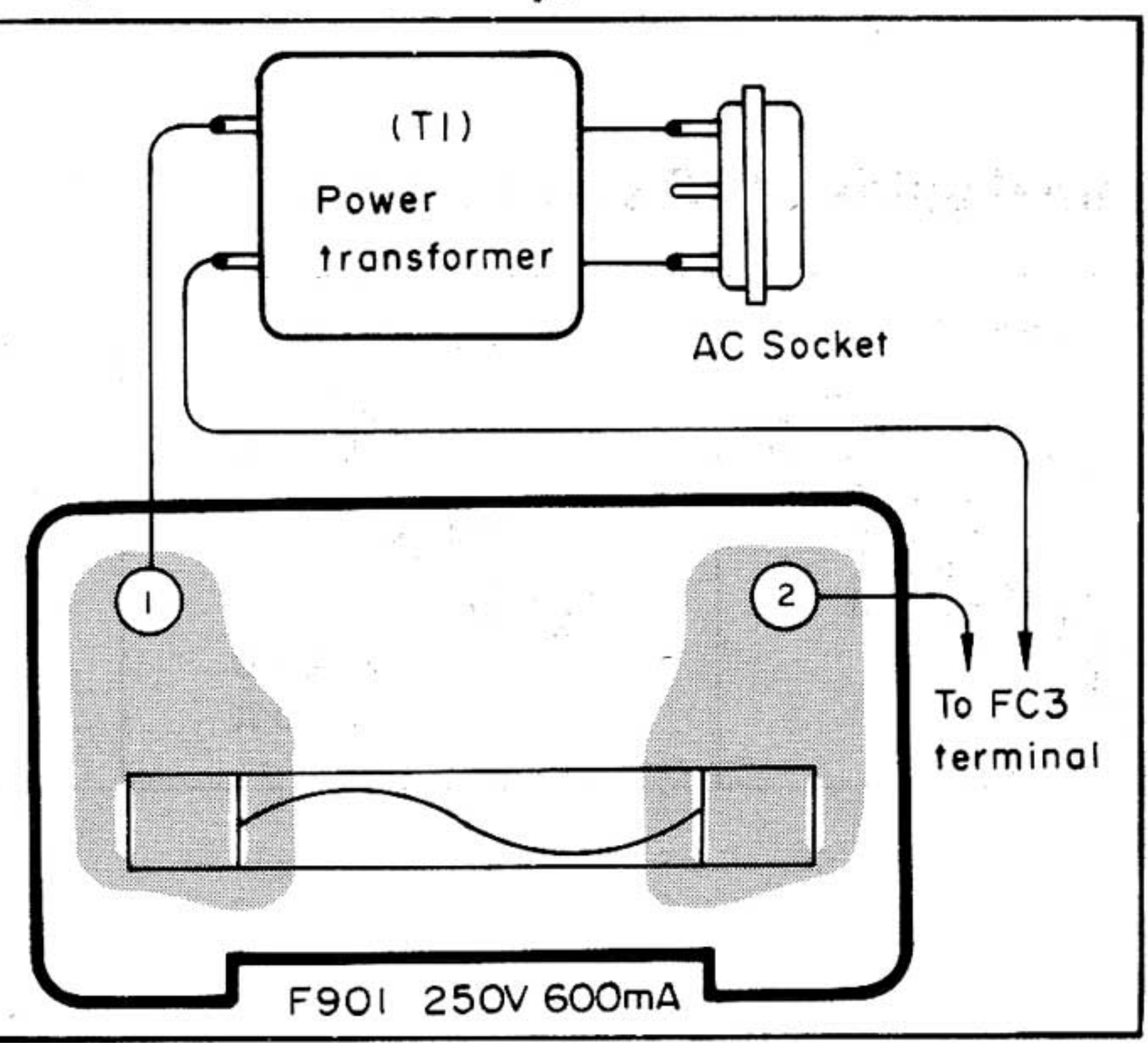
The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.



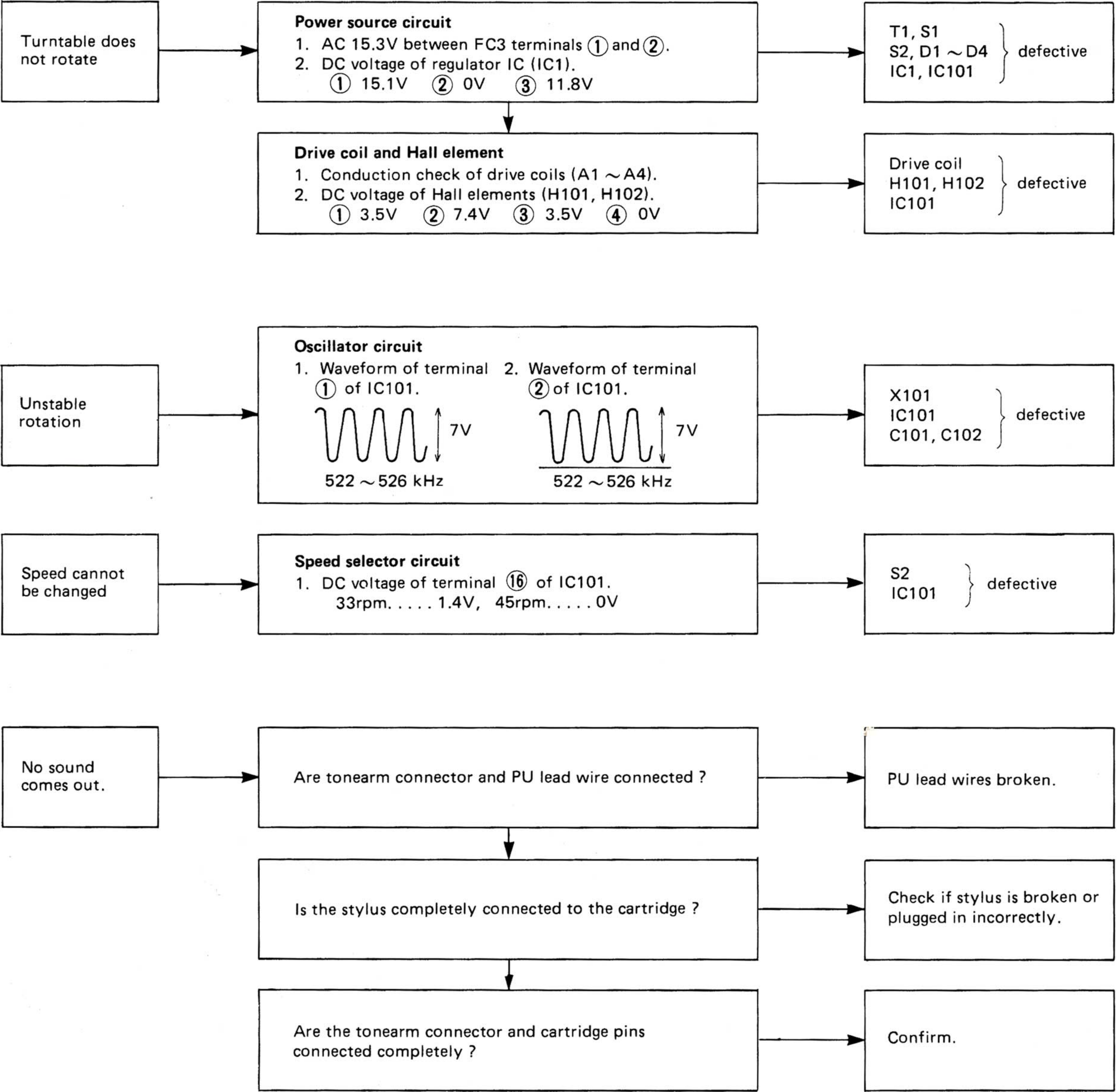
Power Source Circuit



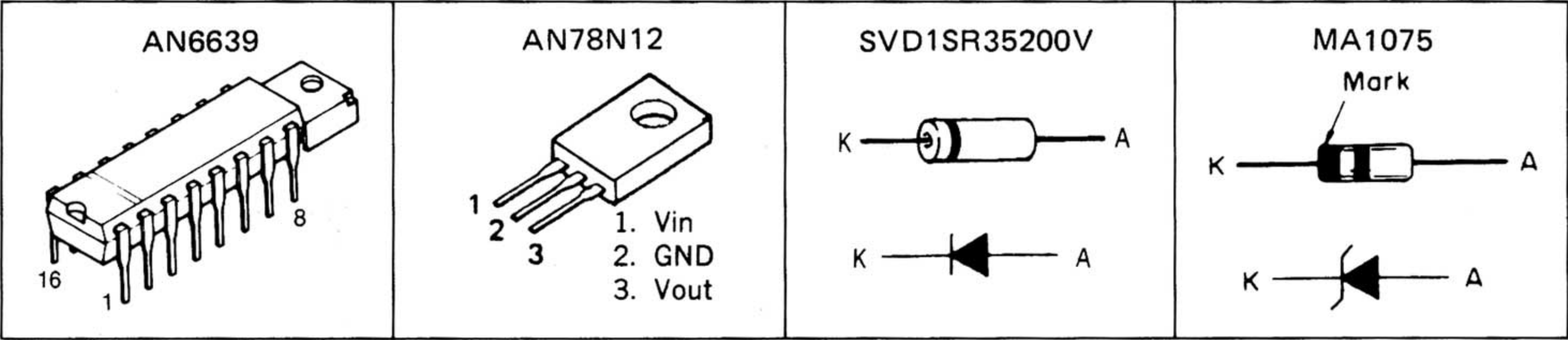
Power Source Circuit (For Canada only)



■ TROUBLE SHOOTING



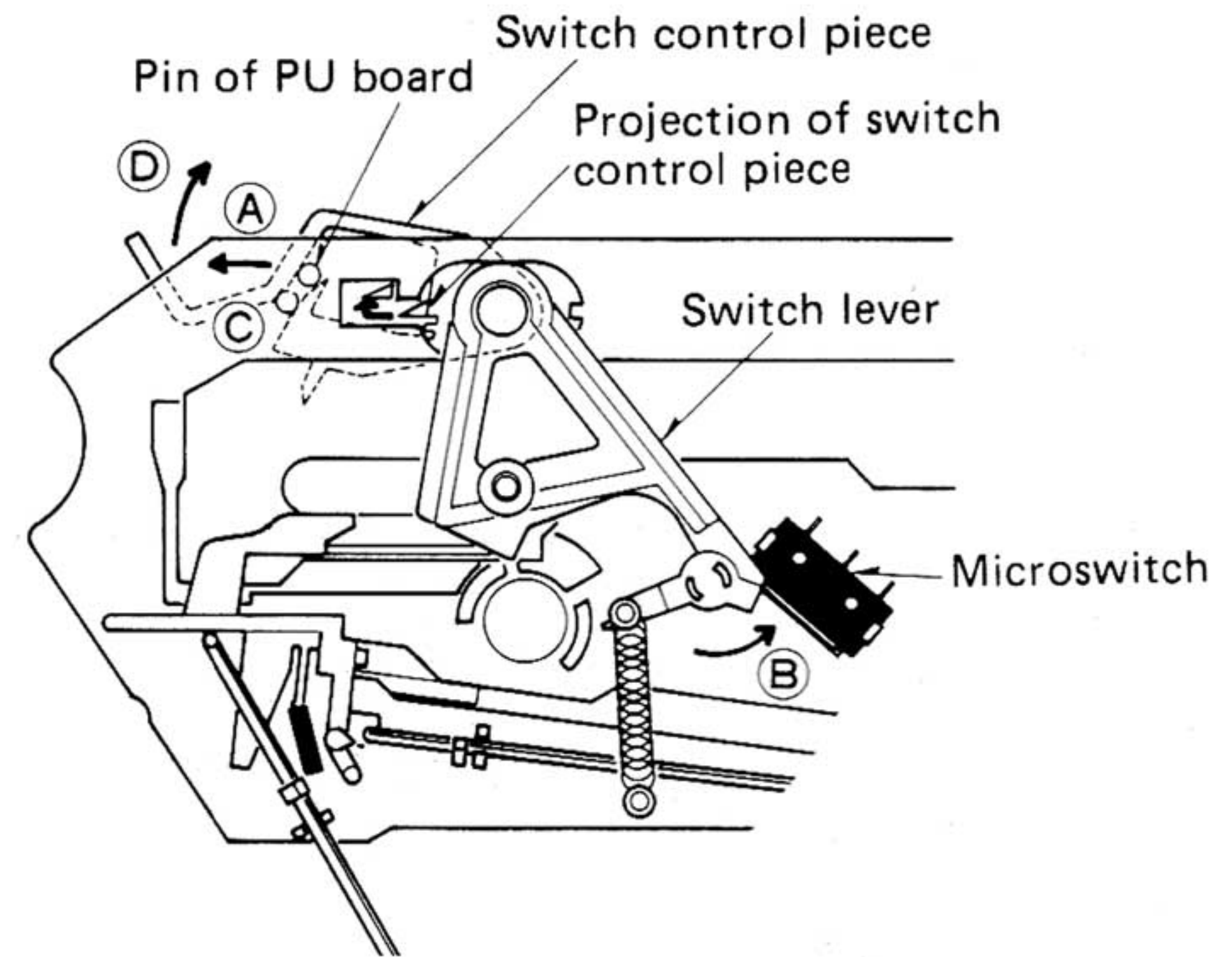
● Terminal guide of IC's and diodes



■ OPERATIONAL DESCRIPTION OF MECHANISM

● Manual start (Fig. 1)

1. Shift the tonearm to the turntable side.
 - The PU board rotates and the pin of PU board applies a force to the switch control piece in the direction of arrow ①.
2. The switch lever move in the direction of arrow ②.
3. The pin of switch lever holds the contact of microswitch (power).
 - Drive circuit power supply turns ON and motor starts operating.
4. When the pin of PU board moves to point ③, the switch control piece moves in the direction of arrow ④, and the projection of switch control piece is locked by the mechanism board.
 - Microswitch keeps turning ON.

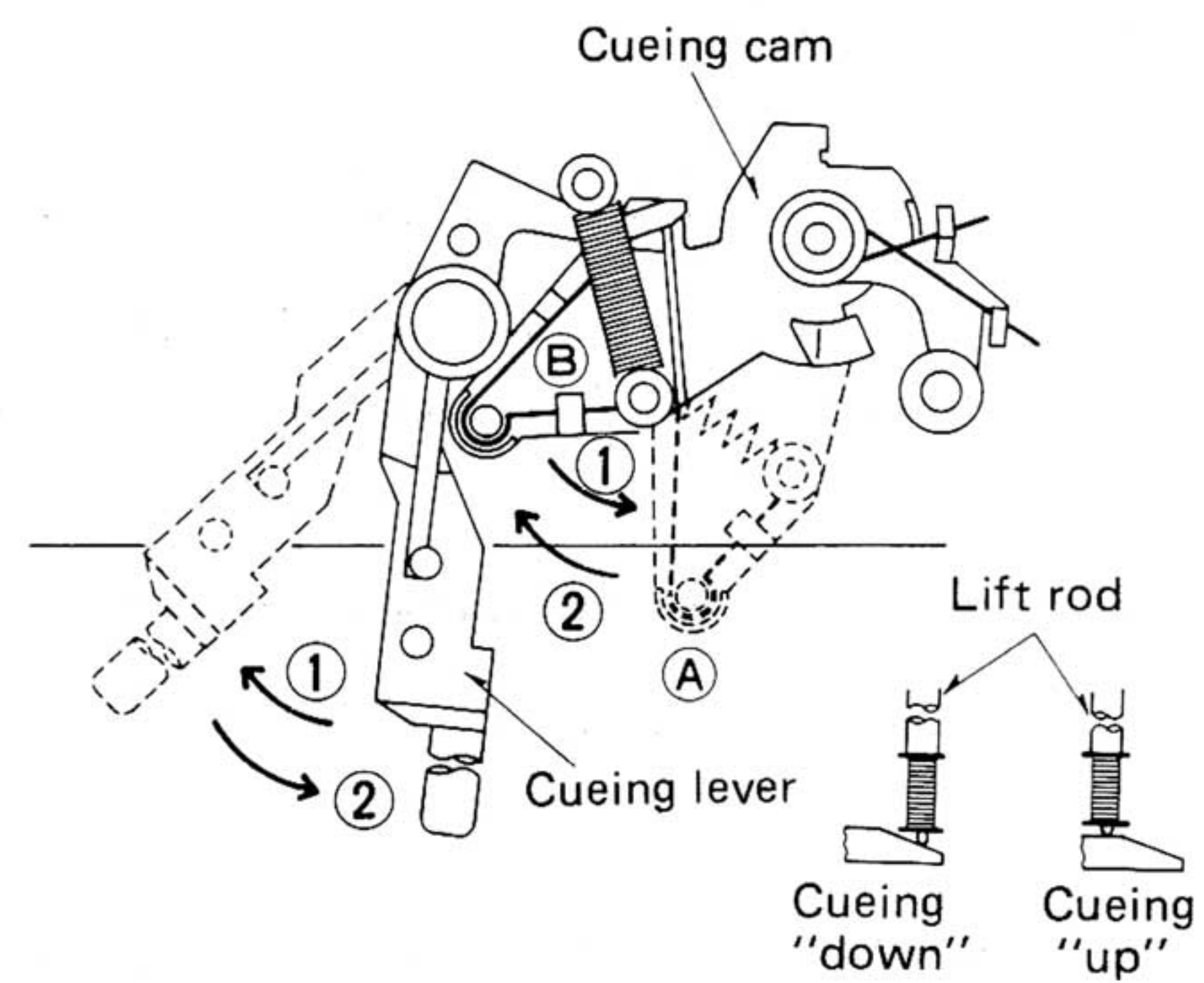


(Fig. 1)

● Cueing up/down (Fig. 2)

1. When the cueing knob is set to up/down position, the cueing lever and cueing cam rotate via the cueing rod.
 - Rotation in the direction of arrow ①: Cueing up
 - Rotation in the direction of arrow ②: Cueing down
2. The lift rod is pushed up or down by the cueing cam operation.

Note: The cueing cam takes about 6 ~ 8 sec. to move from point ① to point ②.
(Cueing up to cueing down).

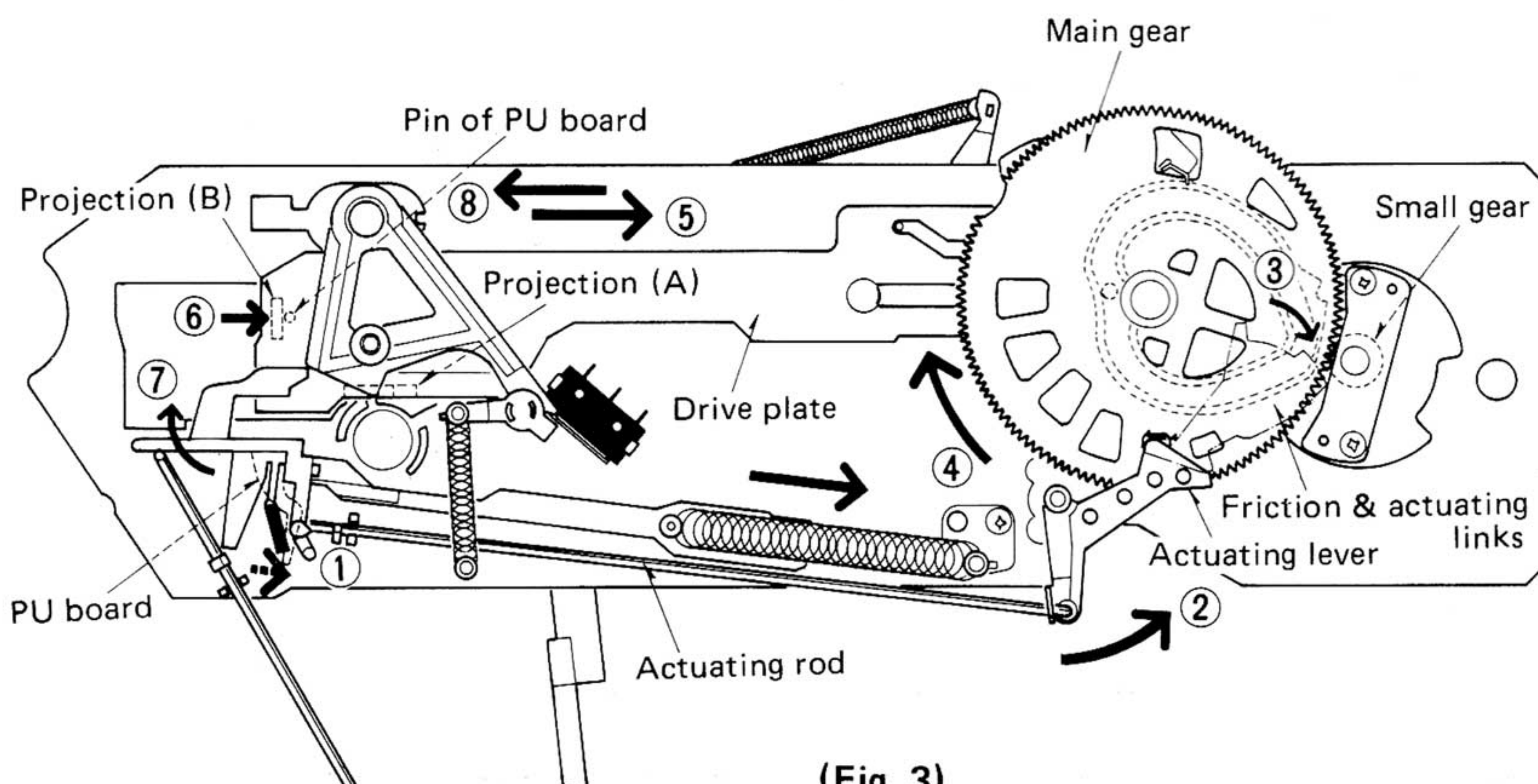


(Fig. 2)

● Auto return (Fig. 3)

1. Tonearm moves to the center of turntable.
 - PU board rotates to hold the Actuating rod. (Arrow ①)
2. Actuating lever rotates. (Arrow ②)
 - Friction link and Actuating link are pushed out direction ③, then small gear engages with main gear to rotate the latter.
3. Main gear rotation causes the drive plate to move in the direction of arrow ⑤.

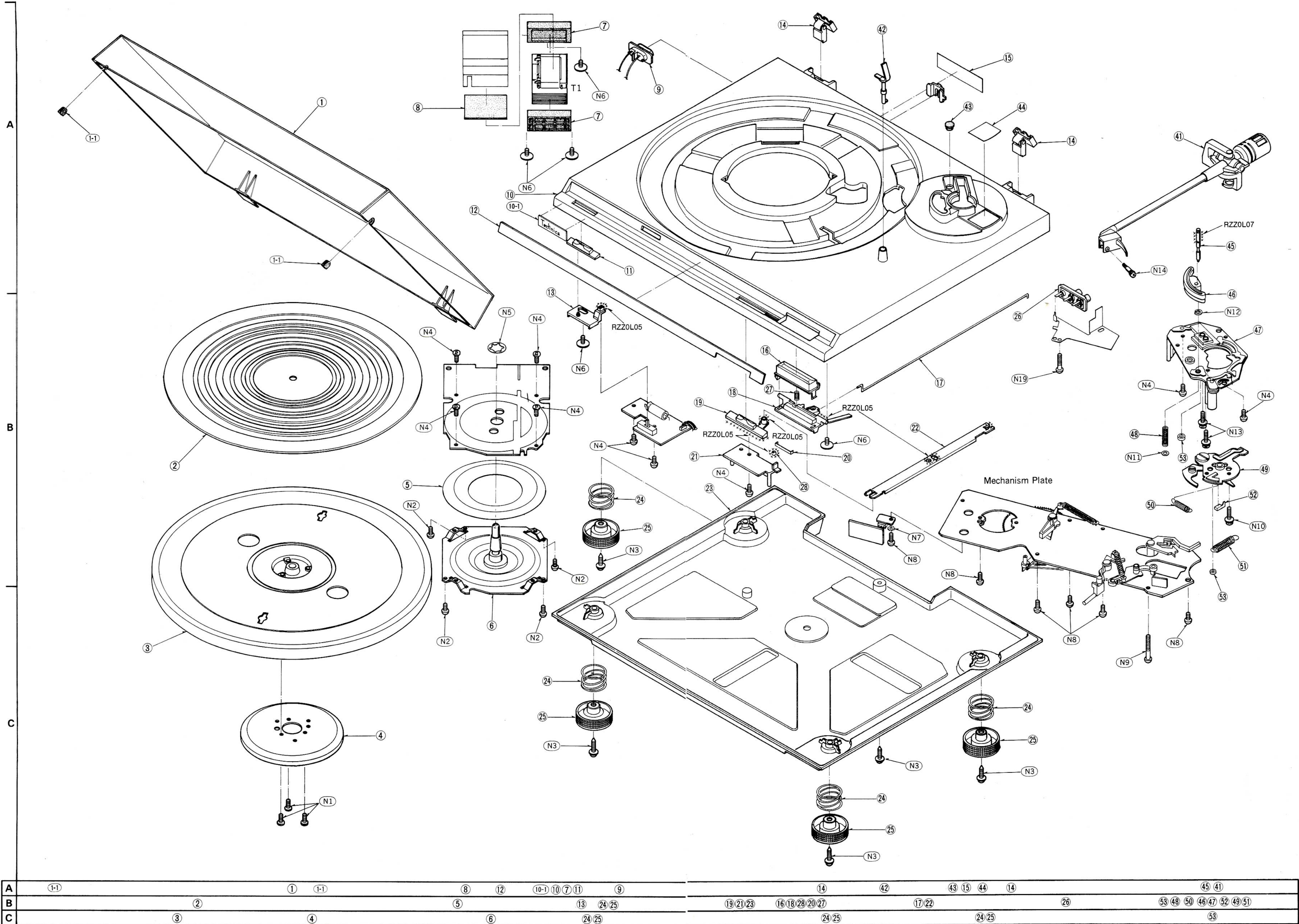
- The projection (A) of drive plate pushes the cueing cam to rotate it for cueing up.
 - The projection (B) of drive plate touches the pin of PU board to rotate it in the direction of arrow ⑦, thereby shifting the tonearm back to the rest position.
4. As the main gear rotates further, drive plate moves in the direction of arrow ⑧, thereby resetting the mechanism.



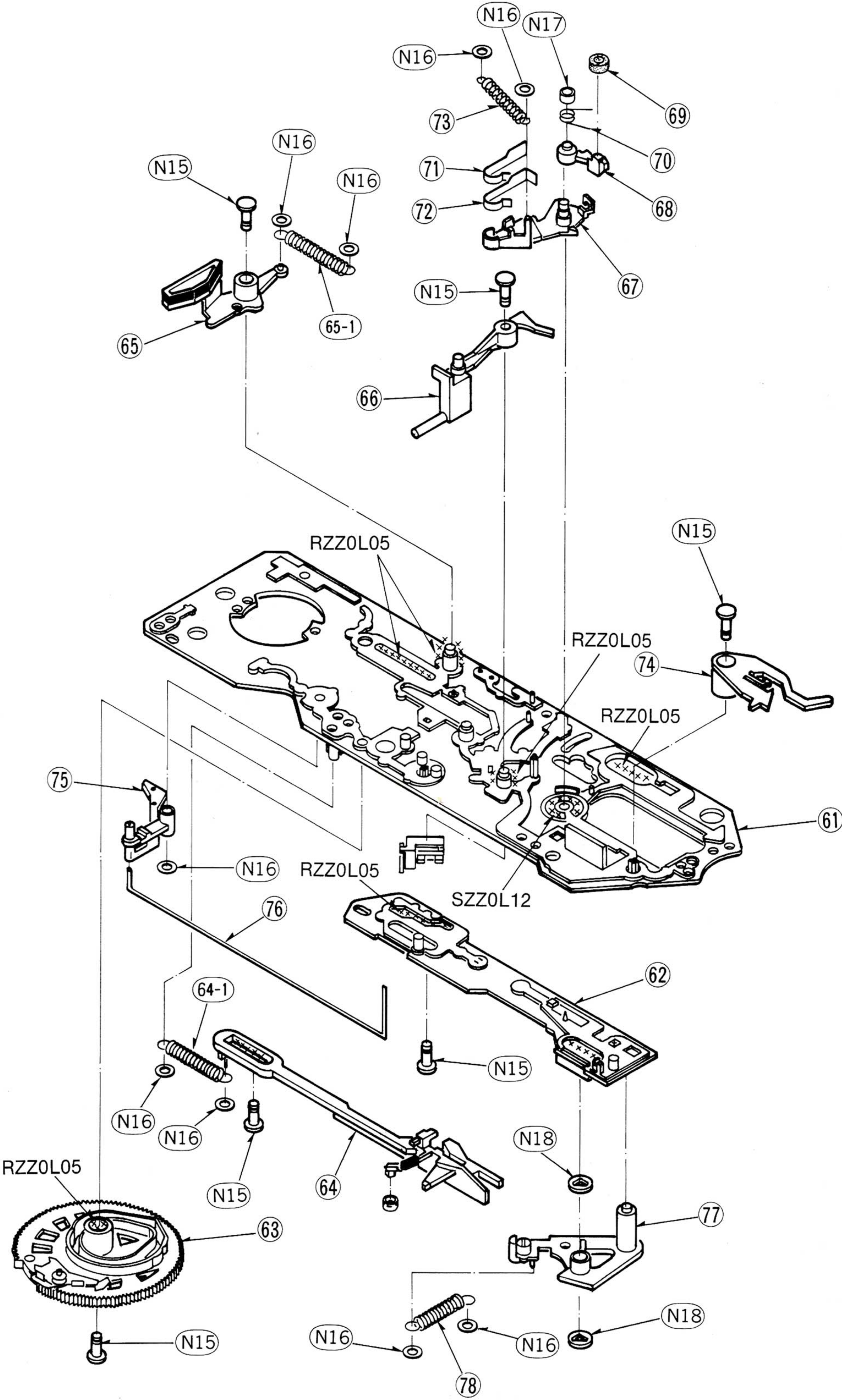
(Fig. 3)

EXPLODED VIEW

Cabinet and chassis parts




● Automatic mechanism parts



			69
		73	70
		71	68
		72	67
	65-1		
65			
	66		
			74
75			61
	76		62
64-1			
			64
63			77
			78
A	B	C	











REPLACEMENT PARTS LIST


- Notes:
- 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
 - 2. Important safety notice: Components identified by  mark 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.


- 4. The "Ⓢ" mark is service standard parts and may differ from production parts.
- 5. The parenthesized numbers in the column of description stand for the quantity per set.

Area

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

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1	AN78N12	Regulator
IC101	AN6639	Turntable Drive
DIODES		
D1~4	 SVD1SR35200V	Rectifier
D101	MA1075-FV	7.5V, Zener
SWITCHES		
S1	 SFDS272R01	Power
S2	 SFDSHSW0949	Speed Selector
HALL ELEMENTS		
H101, 102	OH-002	Turntable Position Detector
POWER TRANSFORMERS		
T1 [M]	 SLT48DTL3A	Power Source
T1 [MC]	 SLT48DT11C	Power Source
OSCILLATOR		
X101	SVFCSB525P	525 kHz Ceramic Oscillator
FUSE		
F901 [MC] only  XBA2F06NU100 250V, 600mA		
Ref. No.	Part No.	Description
RESISTORS		
R101	ERD10TLJ101U	Chip Carbon, 1/8W, 100Ω, ±5%
R102	ERX1ANJ1R8	Metal Film, 1W, 1.8Ω, ±5%
R103	ERD10TLJ822U	Chip Carbon, 1/8W, 8.2KΩ, ±5%
R104	ERD10TLJ150U	Chip Carbon, 1/8W, 15Ω, ±5%
R105	ERD10TLJ101U	Chip Carbon, 1/8W, 100Ω, ±5%
R106, 107	ERD10TLJ471U	Chip Carbon 1/8W, 470Ω, ±5%
CAPACITORS		
C1, 2, 3 	ECQG1223KZ	Polyester, 100V, 0.022μF, ±10%
C4	ECEB1VU102	Electrolytic, 35V, 1000μF
C5, 6	ECFR1H104ZF	Ceramic, 50V, 0.1μF, ±20%
C101	ECQM1H562JV	Polyester, 50V, 0.0056μF, ±5%
C102	ECUV1H181JCM	Chip Ceramic, 50V, 180PF, ±5%
C104 	ECEA1AN470SB	Non Polar Electrolytic, 10V, 47μF
C105 	ECEA1AN330S	Non Polar Electrolytic, 10V, 33μF
C106	ECFR1H104ZF	Ceramic, 50V, 0.1μF, ±20%
C107 	ECEA1CN100S	Non Polar Electrolytic, 16V, 10μF
C108	ECEA1AN330S	Electrolytic, 10V, 33μF
C109	ECEA1CU330	Electrolytic, 16V, 33μF
C111	ECFR1H104ZF	Ceramic, 50V, 0.1μF, ±20%

Ref. No.	Part No.	Description
CABINET and CHASSIS PARTS		
1	SFADZ15R01E	Dust Cover (1)
1-1	SFGZD04N01	Rubber Cushion (2)
2	SFTGBD2N01	Turntable Mat (1)
3	SFTEDD2N01	Turntable Platter (1)
4	SFTMC07-01E	Magnet (1)
5	SFMGQ34N01	Cover, Stator Coil (1)
6	SFMZQ63M53A	Stator Flame Ass'y (1)
7	SFGCC05N02	Rubber Cushion (2)
8	SFGZC05N03	Rubber Cushion (1)
9	 SFDJHSC0491	AC Socket (1)
10	SFACDD2N01E	Cabinet (1)
10-1	SFKBBD2N01	Badge (1)
11	SFKTBD2N03	Knob, Speed Selector (1)
12	SFKKDD2N01	Ornament Plate (1)
13	SFUMQD3N01	Lever, Speed Selector (1)
14	SFATZ15R01A	Hinge (2)
15 [M]	SFNNDD2M01	Name Plate (1)
15 [MC]	SFNNDD2C01	Name Plate (1)
16	SFKTBD2N01	Button, Stop (1)
17	SFUZB63M01	Rod, Stop Button (1)
18	SFUMBD3N01	Base, Stop Button (1)
19	SFKTBD2N02	Button, Cueing (1)
20	SFQPZ15R02	Spring, Cueing Button (1)
21	SFUMBD3N02	Guide, Cueing Button (1)
22	SFUMBD2N03	Lever, Cueing (1)
23	SFAUBD2N01	Bottom, Cover (1)
24	SFGABD2N01	Insulator (4)
25	SFQCQD3N01	Spring, Insulator (4)
26	SFDJBD2N01	Jack, Phono Outlet (1)
27	SFQHZ15R01	Spring, Stop Button (1)
28	SFYB-5-32	Ball (1)
TONEARM PARTS		
41	SFPAMDD201A	Tonearm (1)
42	SFKUZ15R01	Arm Rest (1)
43	SFGK170-01	Rubber Cap (1)
44	SFKKBD2N02	Plate, Cancellor (1)
45	SFXJBD2N51	Lift Shaft (1)
46	SFUMBD2N51	Lift Arm (1)
47	SFUPBD3N51E	Arm Base (1)
48	SFQAZ15R53	Spring (1)
49	SFUPB63M52E	Fixing Plate (1)
50	SFQHB63M57	Spring (1)
51	SFQHB63M56	Spring (1)
52	SFUMZ15R57	Spring Pin (1)
53	SFGZZ15R02	Holder (2)
AUTOMATIC MECHANISM PARTS		
61	SFUKQ62M52E	Mechanism Plate (1)
62	SFUBQ62M51E	Drive Plate (1)
63	SFUGB63M51E	Main Gear Ass'y (1)
64	SFUMQQ2M53E	Cut Lever Ass'y (1)
64-1	SFQHQ62M51	Spring (1)
65	SFUMQ62M52E	Record Size Detector Ass'y (1)
65-1	SFQHB63M53	Spring (1)
66	SFUMB63M59	Cueing Lever (1)
67	SFUMB63M60	Cueing Cam (1)
68	SFUMB63M61	Brake Plate (1)
69	SFUZB63M52	Felt, Brake Plate (1)
70	SFQSB63M52	Spring, Brake (1)
71	SFQPB63M52	Spring, Cueing Cam (1)
72	SFQPB63M54	Spring, Cueing Cam (1)
73	SFQHB63M55	Spring, Cueing Cam (1)

Ref. No.	Part No.	Description
AUTOMATIC MECHANISM PARTS		
74	SFUMB63M65	Switch Lever (1)
75	SFUMB63M54	Lever, Drive Operation (1)
76	SFQSB63M51	Rod, Lever Operation (1)
77	SFUMQ62M61E	Switch Lever Ass'y (1)
78	SFQHQD3N01	Spring (1)
SCREWS and WASHERS		
N1	XTN3+6J	Tapping, ⊕3×6 (3)
N2	XTV3+6J	Tapping, ⊕3×6 (4)
N3	XTW3+14QFYR	Tapping, ⊕3×14 (4)
N4	XTV3+8G	Tapping, ⊕3×8 (10)
N5	SFXWC06N02	Washer (1)
N6	SFXGQ06N01	Screw (4)
N7	XWC3B	Washer, φ3 (1)
N8	XTV3+10G	Tapping, ⊕3×10 (6)
N9	XTV3+30J	Tapping, ⊕3×30 (1)
N10	SFXGQ34N02	Screw (1)
N11	SFXWZ15R51	Washer (2)
N12	XUC3FY	Washer, φ3 (1)
N13	XYN3+F12	Tapping, ⊕3×12 (2)
N14	SFPEV0Q601	Screw, Cartridge (1)
N15	SFUMZ15R56	Pin (6)
N16	SFXWZ15R51	Washer (9)
N17	SFUMZ15R61	Washer (1)
N18	SFXWB63M52	Washer (2)
N19	XTV3+20J	Screw, ⊕3×20 (1)
ACCESSORIES		
A1 [M]	SFNUDD2M01	Instruction Book (1)
A1 [MC]	SFNUDD2C01E	Instruction Book (1)
A2	SFDHBD2N01	Phono Cord (1)
A3	SFDLJ02N11E	Ground Wire (1)
A4	 SFDAC05M01	AC Cord (1)
A5	SFWE212-01	45 Adaotor (1)
PACKING PARTS		
P1 [M]	SFHPDD2M01	Carton Box (1)
P1 [MC]	SFHPDD2C01	Carton Box (1)
P2	SFHHBD3N01	Pad, Left (1)
P3	SFHHBD3N02	Pad, Right (1)
P4	SFHZBD2N01	Clamper, Tonearm Weight (1)
P5	SFHZZ15R02	Clamper, Cord (1)
P6	SFHZZ15R03	Clamper, Tonearm (1)
P7	SFHKB63M01	Clamper, Turntable Platter (2)
P8	SFYF75A45	Polyethylene Sheet (1)
P9	SFYH60X60	Polyethylene Bag, Unit (1)
P10	SFYH52X50	Polyethylene Bag, Dust Cover (1)
P11	SFYH17X16	Polyethylene Bag, Cord (1)
P12	SFYF32A35	Polyethylene Bag, Turntable mat (1)
P13	SFHDBD2N01	Pad, Turntable Mat (1)