SL D934

ORDER NO. HAD85042530C1
A2

Service Manual

Turntable System

SL-D93U

Direct Drive
Automatic Turntable System

Color

(K)...Black Type

Area

[M]... U.S.A.

System

SC-A240E

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

■ TURNTABLE SECTION

Type:	Automatic turntable
Features:	Auto-start, 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, catrridge 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:	Static-balanced straight tonearm Plug-in connector cartridge system
Overhang:	15 mm (19/32")
Effective length:	230 mm (9-1/16")
Tracking error angle:	Within 2°32′ at outer groove of 30 cm (12") disc. Within 0°32′ at inner groove of 30 cm (12") disc.
Effective mass:	13.5 g (including cartridge)
Stylus pressure:	1.25 g (Fixed)
Applicable cartridge weight:	6 g
Phono cable capacitance:	90 pF

■ CARTRIDGE SECTION

Type:	Cartridge model number EPC—P33S Moving magnet stereo cartridge One-point suspension system All laminated core
Frequency response:	10 Hz to 40 kHz
Output voltage:	2.5 mV at 1 kHz 5 cm/s. zero to peak lateral velocity [7 mV at 1 kHz 10 cm/s. zero to peak 45° velocity (DIN 45 500)]
Channel separation:	22 dB at 1 kHz
Channel balance:	Within 2 dB at 1 kHz
Compliance (dynamic):	12×10^{-6} cm/dyne at 100 Hz
Stylus pressure:	1.25 ± 0.25 g (12.5 ± 2.5 mN)
Load impedance:	47 kΩ to 100 kΩ
Weight:	6 g (cartridge only)
Replacement stylus:	EPS—33CS

■ GENERAL

Power supply:	AC 120V, 60 Hz
Power consumption:	4 W
Dimensions (W x H x D):	430 x 96 x 375 mm (16-15/16" x 3-25/32" x 14-3/4")
Weight:	3.9 kg (8.6 lb.)

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

Technics

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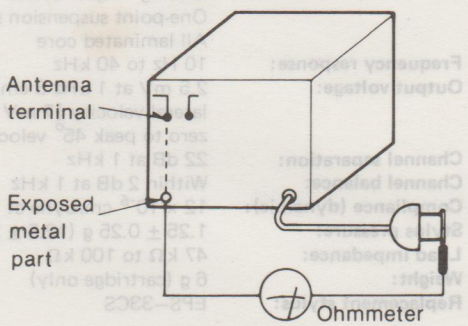
■ SAFETY PRECAUTION

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

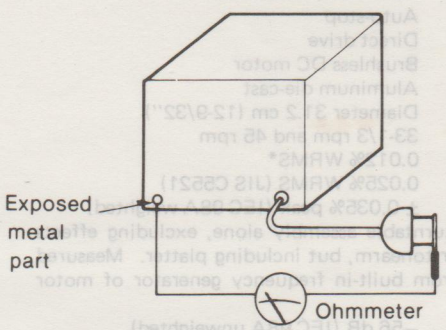
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with 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 = 3MΩ—5.2MΩ

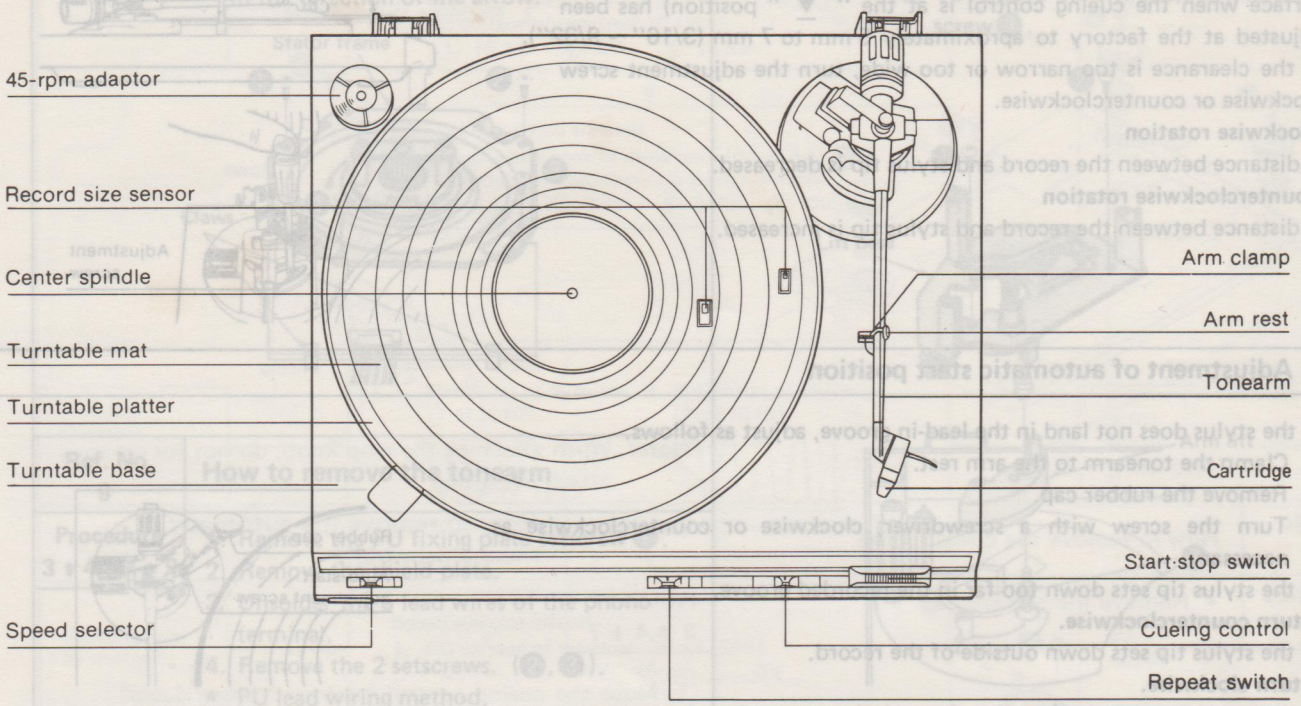


(Fig. B)

Resistance = Approx ∞

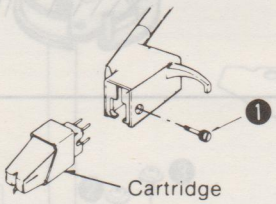
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS

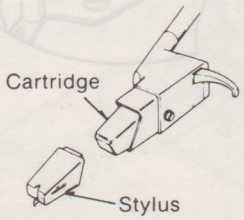


■ DISASSEMBLY INSTRUCTIONS

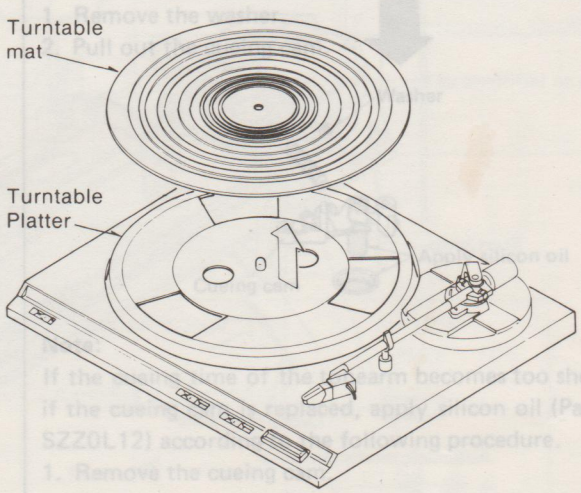
Ref. No 1	How to remove the cartridge
Procedure 1	1. Remove the setscrew ❶. 2. Pull out the cartridge, taking care that your hand does not touch the stylus tip.



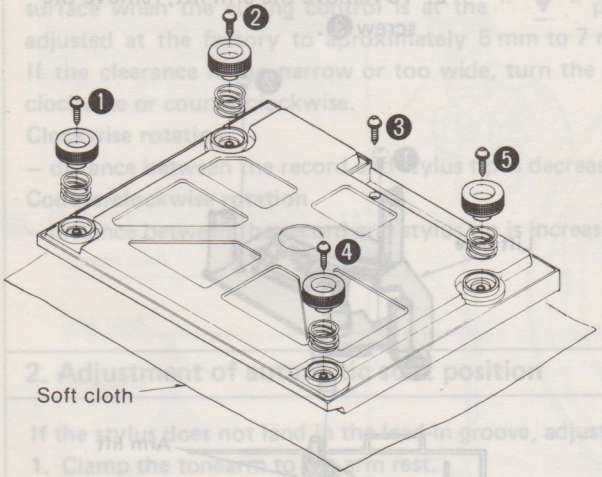
Ref. No 2	How to remove the stylus
Procedure 2	• Pull out the stylus, taking care not to touch the stylus tip.



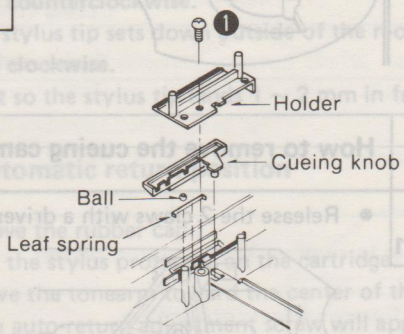
Ref. No 3	How to remove the turntable platter
Procedure 3	1. Remove the turntable mat. 2. Lift up the turntable platter.



Ref. No 4	How to remove the bottom board
Procedure 3 ➧ 4	1. Turn over the unit on a soft cloth. 2. Remove the 5 setscrews (❶~❺)

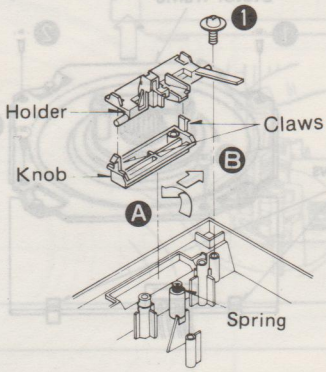


Ref. No 5	How to remove the cueing knob
Procedure 3 ➧ 4 ➧ 5	• Remove the setscrew ❶



Caution:
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.

Ref. No 6	How to remove the stop knob
Procedure 3 ➧ 4 ➧ 6	1. Remove the setscrew ❶. 2. Remove the holder (with knob) in the direction of the arrows (Ⓐ, Ⓑ). 3. Release the 2 claws.

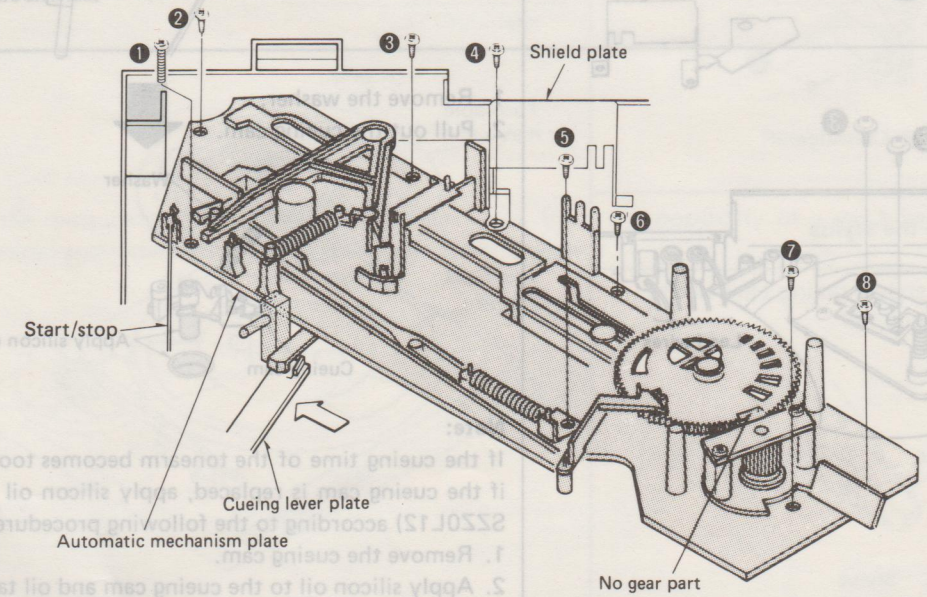


Note: When attaching the stop knob, do not for get to attach the spring.

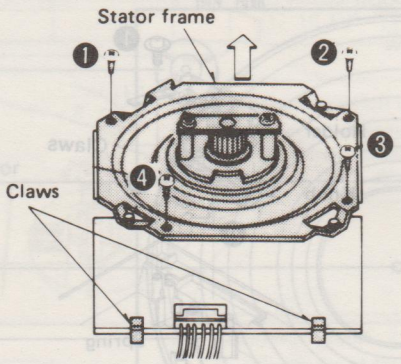
Ref. No. 7	How to remove the automatic mechanism plate
Procedure 3 ➧ 4 ➧ 7	1. Move the cueing control knob to "cueing down" position. 2. Release the start/stop rod. 3. Remove the 8 setscrews. (❶~❽). 4. Lift up the automatic mechanism plate.

Note:
When fitting the automatic mechanism plate, check the following points.

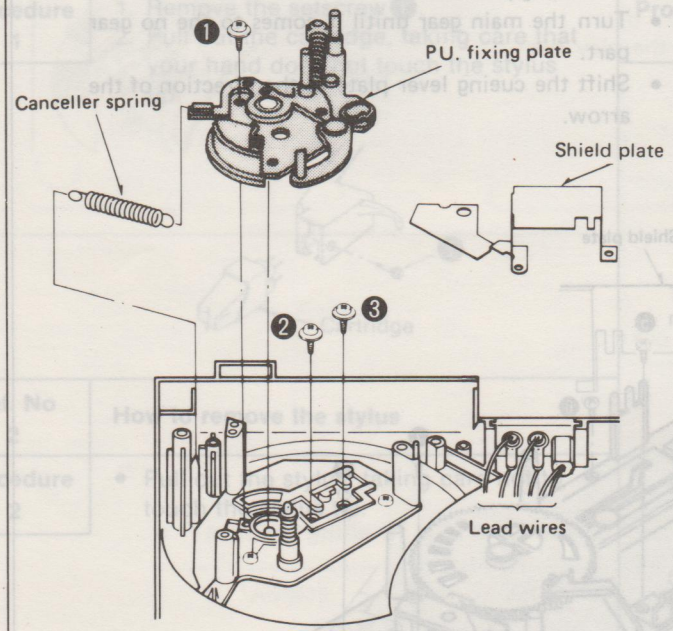
- Turn the main gear unitil it comes to the no gear part.
- Shift the cueing lever plate in the direction of the arrow.



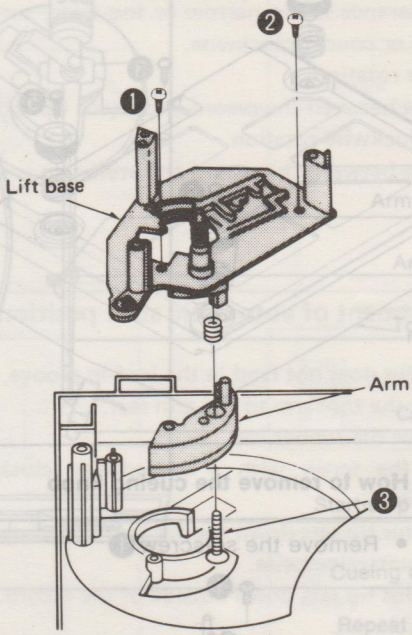
Ref. No. 8	How to remove the stator frame
Procedure 3 ➧ 4 ➧ 7 ➧ 8	1. Remove the 4 setscrews. (❶ ~ ❹). 2. Remove the stator frame from the 2 claws in the direction of the arrow.



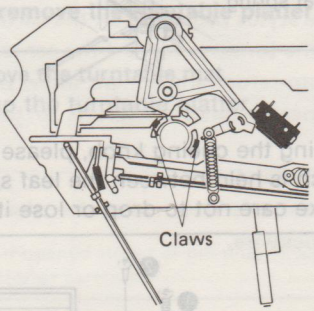
Ref. No. 9	How to remove the tonearm
Procedure 3 ➧ 4 ➧ 7 ➧ 9	1. Remove the PU fixing plate setscrew ❶. 2. Remove the shield plate. 3. Unsolder the 5 lead wires of the phono terminal. 4. Remove the 2 setscrews. (❷, ❸). ★ PU lead wiring method. White . . . . . .L channel (+) terminal Blue . . . . . .L channel (–) terminal Red . . . . . .R channel (+) terminal Green . . . . . .R channel (–) terminal Black . . . . . .Ground terminal



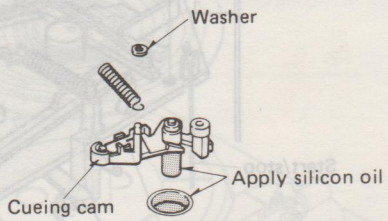
Ref. No. 10	How to remove the lift base and lift
Procedure 3 ➧ 4 ➧ 7 ➧ 9 ➧ 10	1. Remove the 2 setscrews. (❶, ❷). Then the lift base can be removed. 2. To remove the arm lift, remove the screw ❸.



Ref. No. 11	How to remove the cueing cam
Procedure 3 ➧ 4 ➧ 7 ➧ 11	• Release the 2 claws with a driver.



1. Remove the washer.
2. Pull out the cueing cam.



Note:
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.
1. Remove the cueing cam.
2. Apply silicon oil to the cueing cam and oil tank.

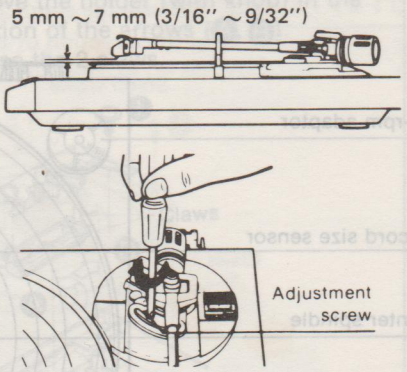
■ MEASUREMENTS AND ADJUSTMENT

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 aproximately 5 mm 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.

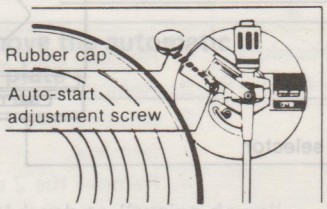
Counterclockwise rotation
– distance between the record and stylus tip is increased.



2. Adjustment of automatic start position

If the stylus does not land in the lead-in groove, adjust as follows.
1. Clamp the tonearm to the arm rest.
2. Remove the rubber cap.
3. Turn the screw with a screwdriver, clockwise or counterclockwise as necessary.

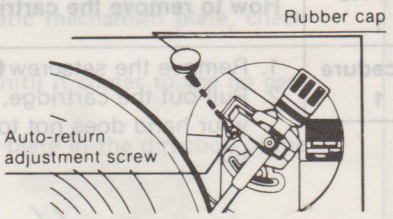
If the stylus tip sets down too far in the recorded groove.
–turn counterclockwise.
If the stylus tip sets down outside of the record.
–turn clockwise.
Adjust so the stylus tip lands 1 ~ 2 mm in from the edge of the record.



3. 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.



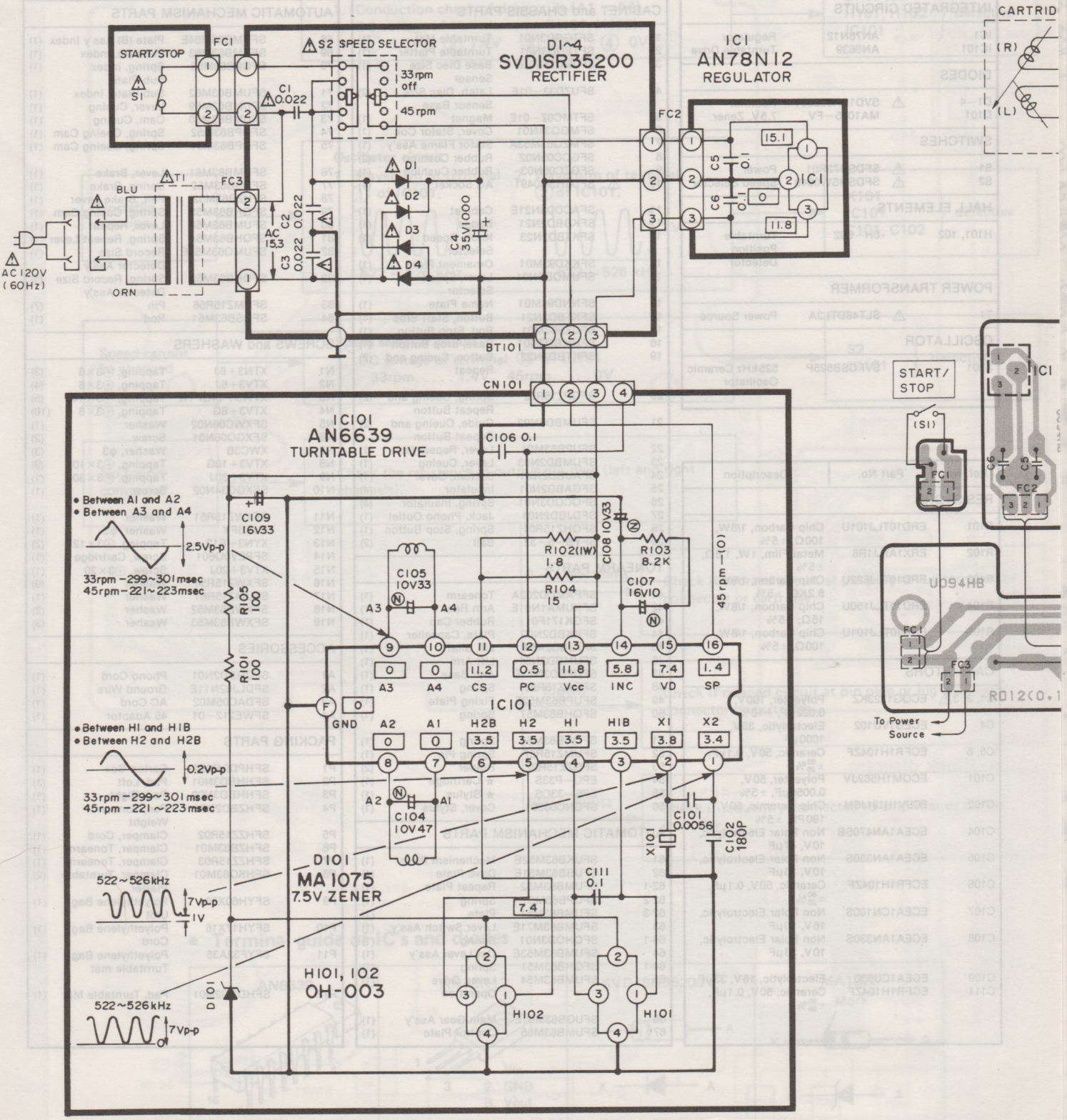
■ SCHEMATIC DIAGRAM

(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 the unit is in play.
4. Important safety notice:
Components identifier by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

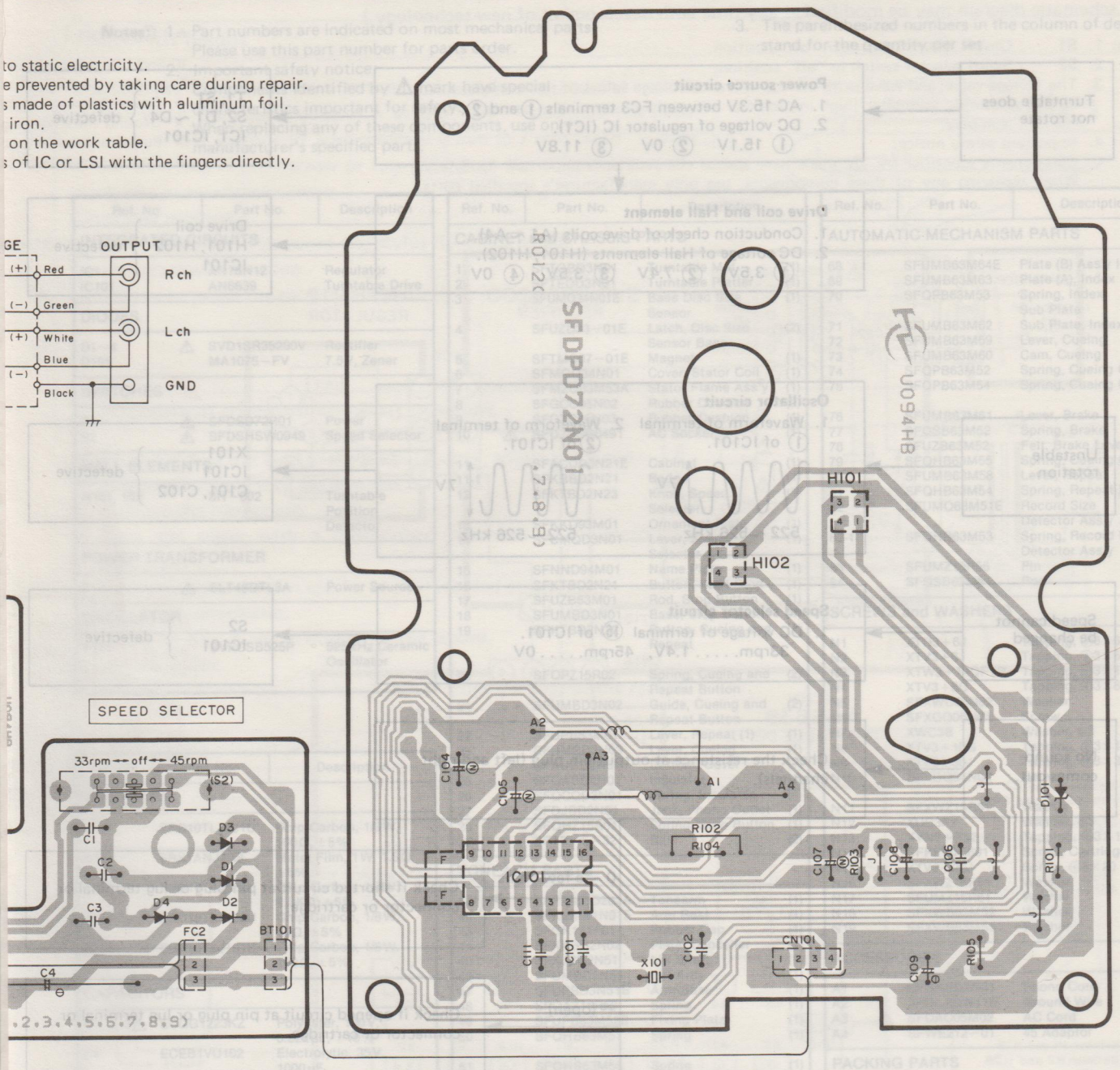
★ **Caution !**

IC and LSI are sensitive
Secondary trouble can b
★ Cover the parts boxe
★ Ground the soldering
★ Put a conductive mat
★ Do not touch the leg

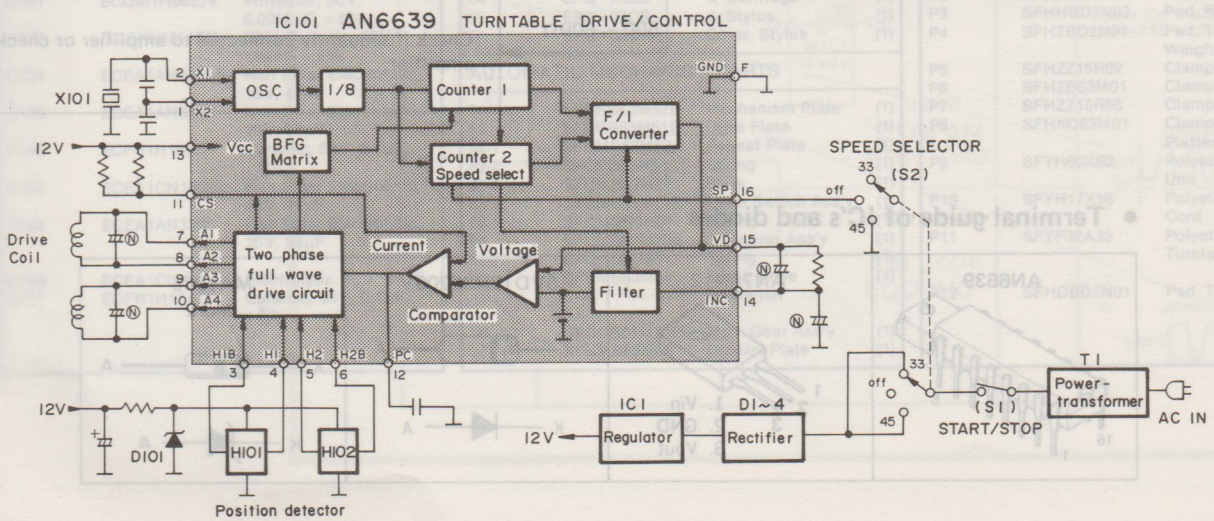


■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

to static electricity.
e prevented by taking care during repair.
s made of plastics with aluminum foil.
iron.
on the work table.
s of IC or LSI with the fingers directly.



• Block diagram



■ TROUBLE SHOOTING

Turntable does not rotate

Power source circuit
1. AC 15.3V between FC3 terminals ① and ②.
2. DC voltage of regulator IC (IC1).
   ① 15.1V ② 0V ③ 11.8V

→ T1, S1, S2, D1 ~ D4, IC1, IC101 } defective

Drive coil and Hall element
1. Conduction check of drive coils (A1 ~ A4).
2. DC voltage of Hall elements (H101, H102).
   ① 3.5V ② 7.4V ③ 3.5V ④ 0V

→ Drive coil, H101, H102, IC101 } defective

Unstable rotation

AC 120V (60Hz)

Oscillator circuit
1. Waveform of terminal ① of IC101.
   7V, 522 ~ 526 kHz
2. Waveform of terminal ② of IC101.
   7V, 522 ~ 526 kHz

→ X101, IC101, C101, C102 } defective

Speed cannot be changed

Speed selector circuit
1. DC voltage of terminal ⑯ of IC101.
   33rpm. . . . . 1.4V, 45rpm. 0V

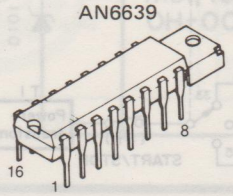
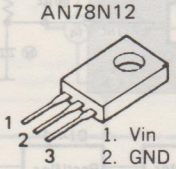
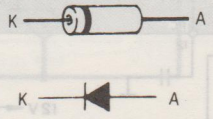
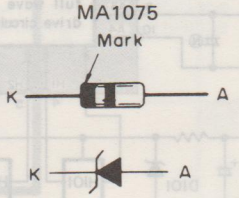
→ S2, IC101 } defective

No sound comes out.

Check the resistance at output pin plug (left and right channels).

- 0 ~ a few ohms → Check if shorted circuit at pin plug or lug terminal or connector or cartridge.
- ∞ (open) → Check if opened circuit at pin plug or lug terminal or connector or cartridge.
- 500 ~ 600Ω → Check if sequently connected to amplifier or check amplifier.

• Terminal guide of IC's and diodes

AN6639	AN78N12	SVD1SR35200V	MA1075
			
16, 1, 8	1, 2, 3 1. Vin 2. GND 3. Vout	K, A	Mark K, A

■ 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. The parenthesized numbers in the column of description stand for the quantity per set.

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	⚠	SFDSD72R01	Power
S2	⚠	SFDSHSW0949	Speed Selector
HALL ELEMENTS			
H101, 102		0H-002	Turntable Position Detector
POWER TRANSFORMER			
T1	⚠	SLT48DTL3A	Power Source
OSCILLATOR			
X101		SVFCSB525P	525kHz Ceramic Oscillator

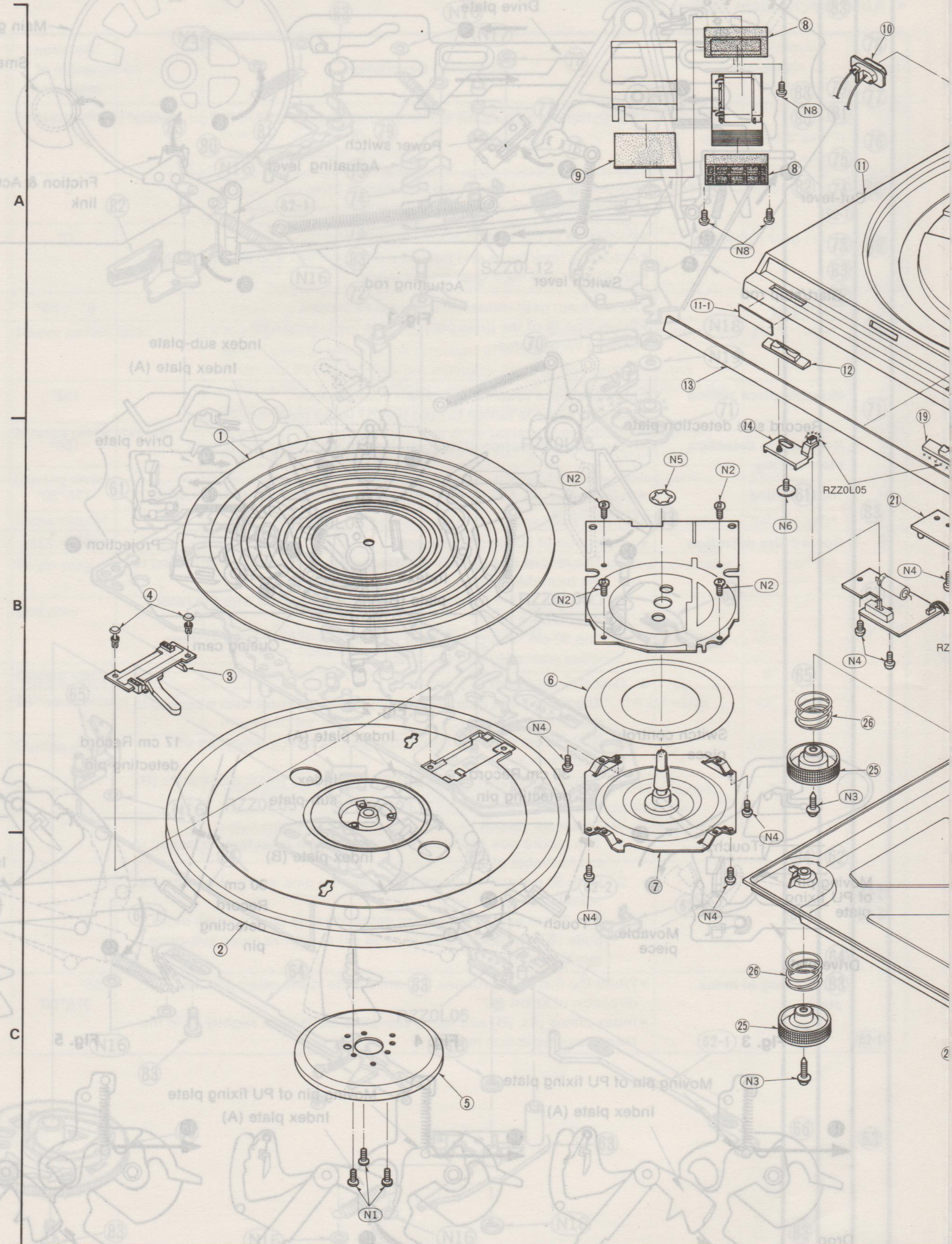
Ref. No.	Part No.	Description
RESISTORS		
R101	ERD10TLJ101U	Chip Carbon, 1/8W, 100Ω, ±5%
R102	ERX1ANJ1R8	Metal Film, 1W, 1.8Ω, ±5%
R103	ERD10TLJ822U	Chip Carbon, 1/8W, 8.2KΩ, ±5%
R104	ERD10TLJ150U	Chip Carbon, 1/8W, 15Ω, ±5%
R105	ERD10TLJ101U	Chip Carbon, 1/8W, 100Ω, ±5%
CAPACITORS		
C1, 2, 3⚠	ECQG1223KZ	Polyester, 100V, 0.022μF, ±10%
C4	ECEB1VU102	Electrolytic, 35V, 1000μF
C5, 6	ECFR1H104ZF	Ceramic, 50V, 0.1μF, $\pm^{80}_{20}$%
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, $\pm^{80}_{20}$%
C107	ECEA1CN100S	Non Polar Electrolytic, 16V, 10μF
C108	ECEA1AN330S	Non Polar Electrolytic, 10V, 33μF
C109	ECEA1CU330	Electrolytic, 16V, 33μF
C111	ECFR1H104ZF	Ceramic, 50V, 0.1μF, $\pm^{80}_{20}$%

Ref. No.		Part No.	Description	
CABINET and CHASSIS PARTS				
1		SFTGBD3N01	Turntable Mat	(1)
2		SFTEDD3N01	Turntable Platter	(1)
3		SFUMQ34N01E	Base Disc Size Sensor	(1)
4		SFUZD33-01E	Latch, Disc Size Sensor Base	(2)
5		SFTMC07-01E	Magnet	(1)
6		SFMGQ34N01	Cover, Stator Coil	(1)
7		SFMZQ63M53A	Stator Flame Ass'y	(1)
8		SFGCC05N02	Rubber Cushion	(2)
9		SFGZC05N03	Rubber Cushion	(1)
10	⚠	SFDJHSC0491	AC Socket	(1)
11		SFACDD3N21E	Cabinet	(1)
11-1		SFKBBD2N21	Badge	(1)
12		SFKTBD2N23	Knob, Speed Selector	(1)
13		SFKKD93M01	Ornament Plate	(1)
14		SFUMQD3N01	Lever, Speed Selector	(1)
15		SFNND94M01	Name Plate	(1)
16		SFKTBD2N21	Button, Start Stop	(1)
17		SFUZB63M01	Rod, Stop Button	(1)
18		SFUMBD3N01	Base, Stop Button	(1)
19		SFKTBD2N22	Button, Cueing and Repeat	(2)
20		SFQPZ15R02	Spring, Cueing and Repeat Button	(2)
21		SFUMBD3N02	Guide, Cueing and Repeat Button	(2)
22		SFUPB63M01	Lever, Repeat (1)	(1)
23		SFUMBD2N03	Lever, Cueing	(1)
24		SFAUBD2N01	Bottom, Cover	(1)
25		SFGABD2N01	Insulator	(4)
26		SFQCQD3N01	Spring, Insulator	(4)
27		SFDJBD2N01	Jack, Phono Outlet	(1)
28		SFQHZ15R01	Spring, Stop Button	(1)
29		SFYB-5-32	Ball	(2)
TONEARM PARTS				
41		SFPAMDD202A	Tonearm	(1)
42		SFKUMA1N01E	Arm Rest	(1)
43		SFGK171F01	Rubber Cap	(1)
44		SFKKBD2N02	Plate, Canceller	(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)
54		EPC-P33S	★ Cartridge	(1)
55		EPS-33CS	★ Stylus	(1)
56		SFCNC03301	Cover, Stylus	(1)
AUTOMATIC MECHANISM PARTS				
61		SFUKB63M52E	Mechanism Plate	(1)
62		SFUBB63M51E	Drive Plate	(1)
62-1		SFUMB63M52	Repeat Plate	(1)
62-2		SFQPB63M51	Spring	(1)
62-3		SFUMB63M51	Plate	(1)
63		SFUMB63M71E	Lever Switch Ass'y	(1)
63-1		SFQHQD3N01	Spring	(1)
64		SFUMB63M53E	Cut Lever Ass'y	(1)
64-1		SFQHB63M51	Spring	(1)
65		SFUMB63M54	Lever, Drive Operation	(1)
66		SFUGB63M51E	Main Gear Ass'y	(1)
67		SFUMB63M65	Control Plate	(1)

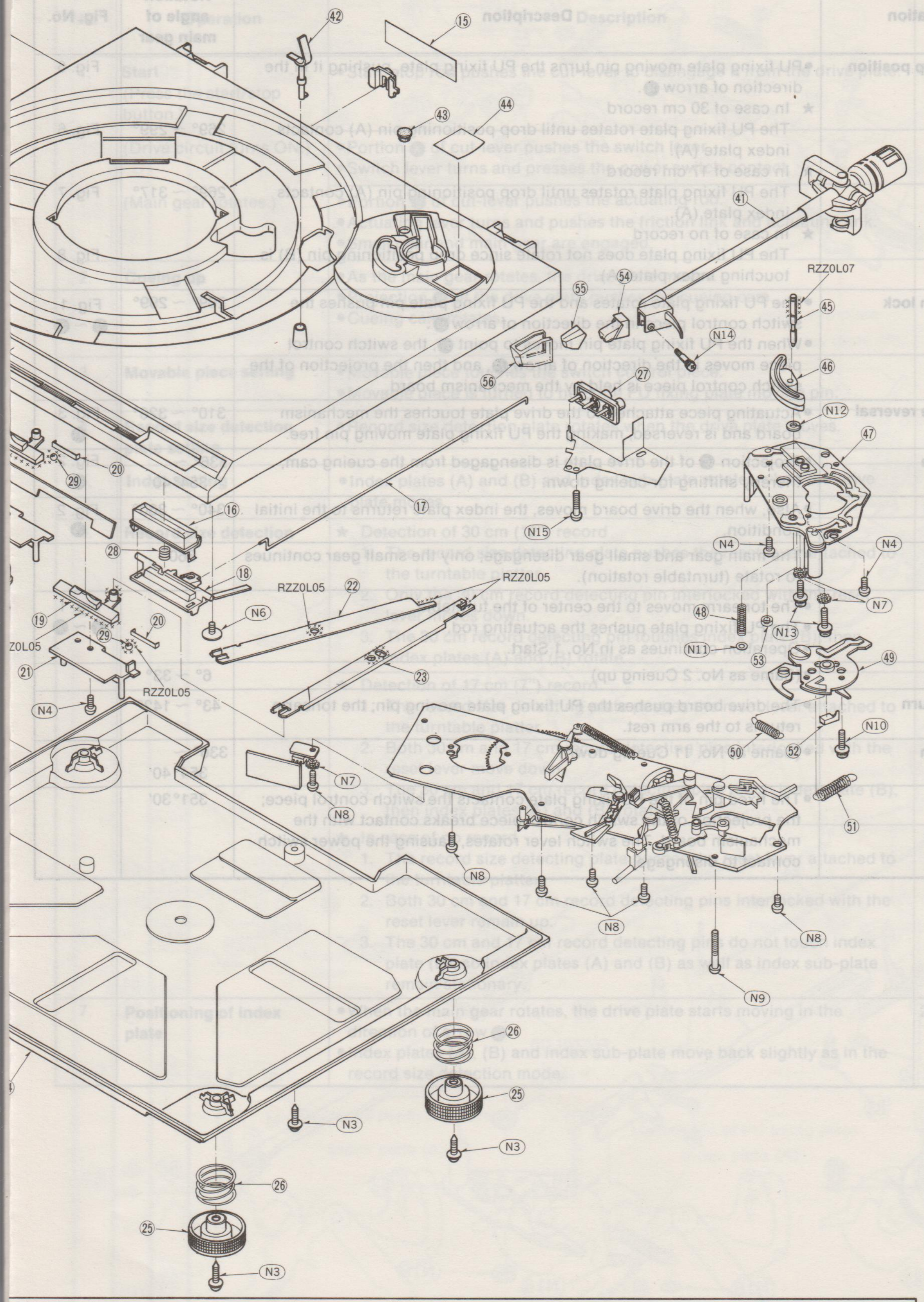
Ref. No.		Part No.	Description	
AUTOMATIC MECHANISM PARTS				
68		SFUMB63M64E	Plate (B) Ass'y Index	(1)
69		SFUMB63M63	Plate (A), Index	(1)
70		SFQPB63M53	Spring, Index Sub Plate	(1)
71		SFUMB63M62	Sub Plate, Index	(1)
72		SFUMB63M59	Lever, Cueing	(1)
73		SFUMB63M60	Cam, Cueing	(1)
74		SFQPB63M52	Spring, Cueing Cam	(1)
75		SFQPB63M54	Spring, Cueing Cam	(1)
76		SFUMB63M61	Lever, Brake	(1)
77		SFQSB63M52	Spring, Brake	(1)
78		SFUZB63M52	Felt, Brake Lever	(1)
79		SFQHB63M55	Spring, Cueing Cam	(1)
80		SFUMB63M58	Lever, Repeat	(1)
81		SFQHB63M54	Spring, Repeat Lever	(1)
82		SFUMQ63M51E	Record Size Detector Ass'y	(1)
82-1		SFQHB63M53	Spring, Record Size Detector Ass'y	(1)
83		SFUMZ15R56	Pin	(7)
84		SFQSB63M51	Rod	(1)
SCREWS and WASHERS				
N1		XTN3+6J	Tapping, ⊕3×6	(3)
N2		XTV3+6J	Tapping, ⊕3×6	(4)
N3		XTW3+14QFYR	Tapping, ⊕3×14	(5)
N4		XTV3+8G	Tapping, ⊕3×8	(10)
N5		SFXWC06N02	Washer	(1)
N6		SFXGQ06N01	Screw	(2)
N7		XWC3B	Washer, φ3	(3)
N8		XTV3+10G	Tapping, ⊕3×10	(9)
N9		XTV3+30J	Tapping, ⊕3×30	(1)
N10		SFXGQ34N02	Screw	(1)
N11		SFXWZ15R51	Washer	(1)
N12		XUC3FY	Washer, φ3	(1)
N13		XYN3+F12	Tapping, ⊕3×12	(2)
N14		SFPEV0Q601	Screw, Cartridge	(1)
N15		XTV3+20J	Screw, ⊕3×20	(1)
N16		SFXWZ15R51	Washer	(9)
N17		SFUMZ15R61	Washer	(1)
N18		SFXWB63M52	Washer	(2)
N19		SFXWB63M53	Washer	(3)
ACCESSORIES				
A1		SFDHBD2N01	Phono Cord	(1)
A2		SFDLJ02N11E	Ground Wire	(1)
A3	⚠	SFDAC05M02	AC Cord	(1)
A4		SFWE212-01	45 Adaptor	(1)
PACKING PARTS				
P1		SFHPD94M01	Carton Box	(1)
P2		SFHHBD3N01	Pad, Left	(1)
P3		SFHHBD3N02	Pad, Right	(1)
P4		SFHZBD2N01	Pad, Tonearm Weight	(1)
P5		SFHZZ15R02	Clamper, Cord	(1)
P6		SFHZB63M01	Clamper, Tonearm	(1)
P7		SFHZZ15R03	Clamper, Tonearm	(1)
P8		SFHKQ63M01	Clamper, Turntable Platter	(2)
P9		SFYH60X60	Polyethylene Bag, Unit	(1)
P10		SFYH17X16	Polyethylene Bag, Cord	(1)
P11		SFYF32A35	Polyethylene Bag, Turntable mat	(1)
P12		SFHDBD2N01	Pad, Turntable Mat	(1)

■ EXPLODED VIEW

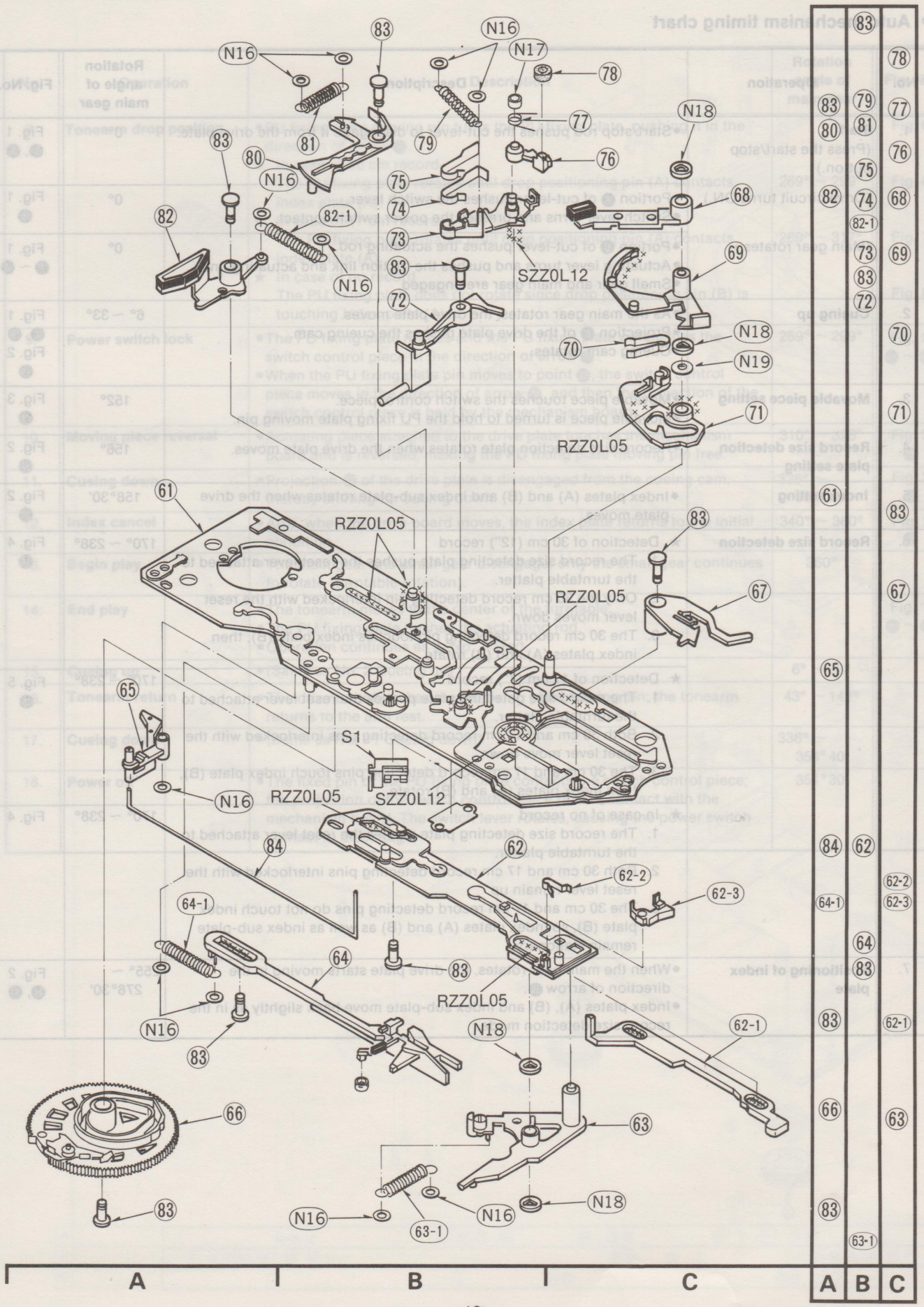
- **Cabinet and chassis parts**



A				9	8 8	11-1	13 12	11 10
B	4	3	1	6	7	14	25 26	21 19
C			2	5			25 26	24



	42	43 15	44	56	55 27	54	41 45 46
29 19 21 20 29 20 28 16 18	22	17 23					48 50 53 47 51 52 49
25 26		25 26					



■ OPERATIONAL DESCRIPTION OF MECHANISM

• Auto mechanism timing chart

No.	Operation	Description	Rotation angle of main gear	Fig. No.
1.	**Start** (Press the start/stop button.)	• Start/stop rod pushes the cut-lever to disengage it from the drive plate.	0°	Fig. 1 ❶, ❷
	(Drive circuit turns ON.)	• Portion Ⓐ of cut-lever pushes the switch lever. • Switch lever turns and presses the power switch contact.	0°	Fig. 1 ❸
	(Main gear rotates.)	• Portion Ⓑ of cut-lever pushes the actuating rod. • Actuating lever turns and pushes the friction link and actuating link. • Small gear and main gear are engaged.	0°	Fig. 1 ❹ ~ ❼
2.	**Cueing up**	• As the main gear rotates, the drive plate moves. • Projection Ⓒ of the drive plate pushes the cueing cam. • Cueing cam rotates.	6° ~ 33°	Fig. 1 ❽, ❾ Fig. 2 ❿
3.	**Movable piece setting**	• Movable piece touches the switch control piece. • Movable piece is turned to hold the PU fixing plate moving pin.	152°	Fig. 3 ⓫
4.	**Record size detection plate setting**	• Record size detection plate rotates when the drive plate moves.	156°	Fig. 2 ⓬
5.	**Index setting**	• Index plates (A) and (B) and index sub-plate rotates when the drive plate moves.	158°30′	Fig. 2 ⓭
6.	**Record size detection**	★ Detection of 30 cm (12") record 1. The record size detecting plate pushes the reset lever attached to the turntable platter. 2. Only the 30 cm record detecting pin interlocked with the reset lever moves down. 3. The 30 cm record detecting pin touches index plate (B), then index plates (A) and (B) rotate.	170° ~ 238°	Fig. 4 ⓮
		★ Detection of 17 cm (7") record 1. The record size detecting plate pushes the reset lever attached to the turntable platter. 2. Both 30 cm and 17 cm record detecting pins interlocked with the reset lever move down. 3. The 30 cm and 17 cm record detecting pins touch index plate (B), then index plates (A) and (B) rotate.	170° ~ 238°	Fig. 5 ⓯
		★ In case of no record 1. The record size detecting plate pushes the reset lever attached to the turntable platter. 2. Both 30 cm and 17 cm record detecting pins interlocked with the reset lever remain up. 3. The 30 cm and 17 cm record detecting pins do not touch index plate (B), so index plates (A) and (B) as well as index sub-plate remain stationary.	170° ~ 238°	Fig. 4
7.	**Positioning of index plate**	• When the main gear rotates, the drive plate starts moving in the direction of arrow ⓰. • Index plates (A), (B) and index sub-plate move back slightly as in the record size detection mode.	255° ~ 278°30′	Fig. 2 ⓰, ⓱

No.	Operation	Description	Rotation angle of main gear	Fig. No.
8.	**Tonearm drop position**	• PU fixing plate moving pin turns the PU fixing plate, pushing it in the direction of arrow ⑱. ★ In case of 30 cm record The PU fixing plate rotates until drop positioning pin (A) contacts index plate (A). ★ In case of 17 cm record The PU fixing plate rotates until drop positioning pin (A) contacts index plate (A). ★ In case of no record The PU fixing plate does not rotate since drop positioning pin (B) is touching index plate (A).	 269° ~ 299° 269° ~ 317° 	Fig. 6 Fig. 6 Fig. 7 Fig. 8
9.	**Power switch lock**	• The PU fixing plate rotates and the PU fixing plate pin pushes the switch control piece in the direction of arrow ⑳. • When the PU fixing plate pin moves to point ㉑, the switch control piece moves in the direction of arrow ㉒, and then the projection of the switch control piece is held by the mechanism board.	269° ~ 299°	Fig. 1 ⑳ ~ ㉒
10.	**Moving piece reversal**	• Actuating piece attached to the drive plate touches the mechanism board and is reversed, making the PU fixing plate moving pin free.	310° ~ 326°	Fig. 3 ㉓
11.	**Cueing down**	• Projection Ⓒ of the drive plate is disengaged from the cueing cam, thereby shifting for cueing down.	336° ~ 354°40′	Fig. 2 ㉔
12.	**Index cancel**	• Also, when the drive board moves, the index plate returns to the initial condition.	340° ~ 360°	Fig. 2 ㉕
13.	**Begin play**	• The main gear and small gear disengage; only the small gear continues to rotate (turntable rotation).	360°	
14.	**End play**	• The tonearm moves to the center of the turntable. • The PU fixing plate pushes the actuating rod. • Operation continues as in No. 1 Start.		Fig. 1 ④ ~ ⑦
15.	**Cueing up**	• (Same as No. 2 Cueing up)	6° ~ 33°	
16.	**Tonearm return**	• The drive board pushes the PU fixing plate moving pin; the tonearm returns to the arm rest.	43° ~ 142°	
17.	**Cueing down**	• (Same as No. 11 Cueing down)	336° ~ 354°40′	
18.	**Power off**	• The fixed pin of the PU fixing plate contacts the switch control piece; the projection of the switch control piece breaks contact with the mechanism board. The switch lever rotates, causing the power switch contact to disengage.	351°30′	

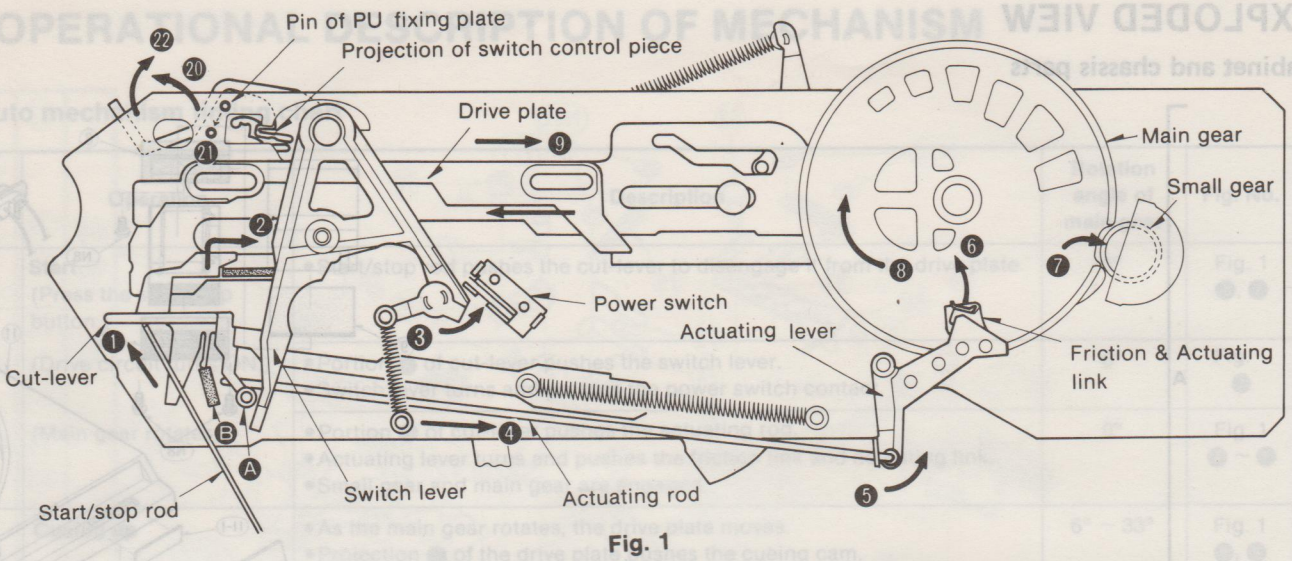


Fig. 1

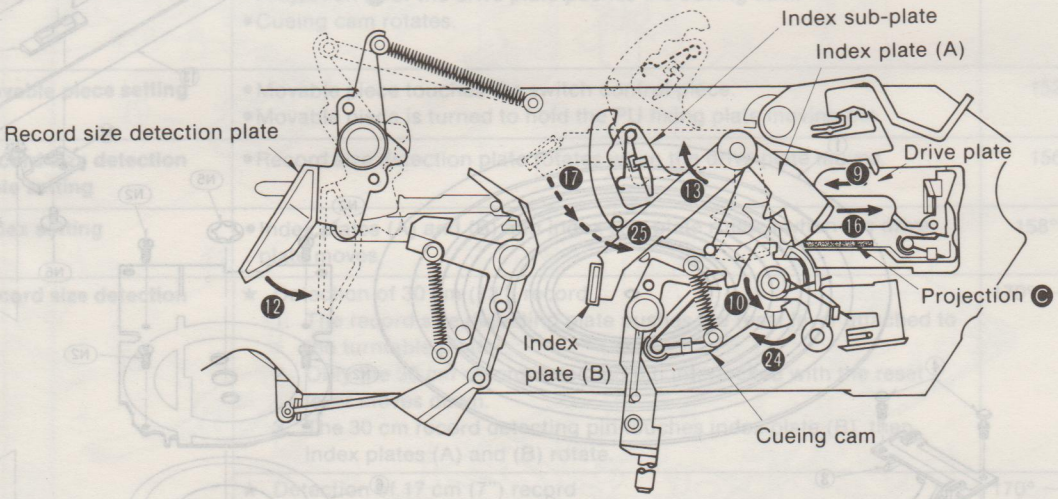


Fig. 2

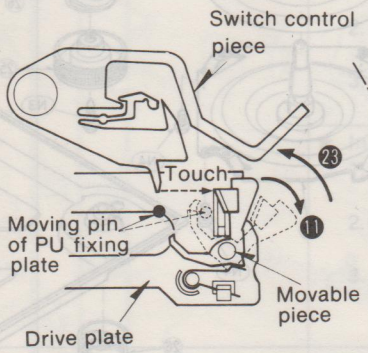


Fig. 3

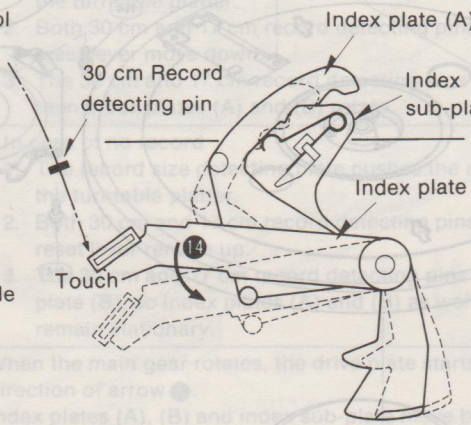


Fig. 4

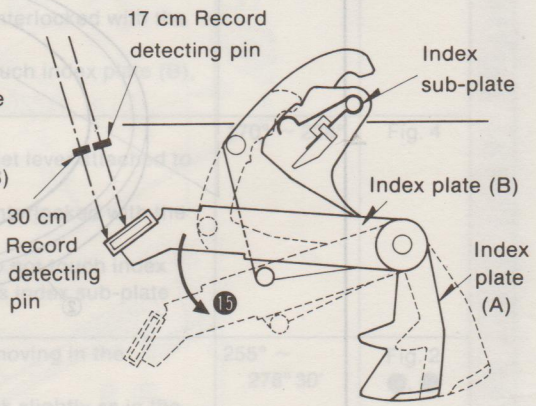


Fig. 5

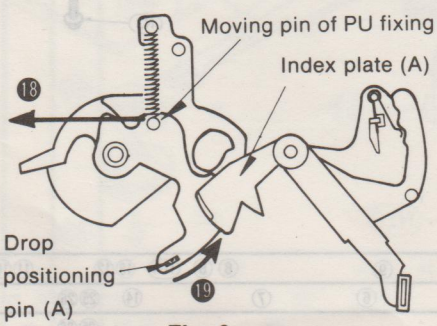


Fig. 6

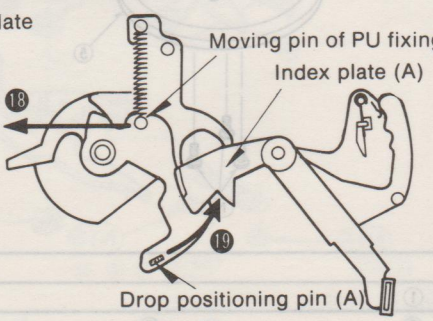


Fig. 7

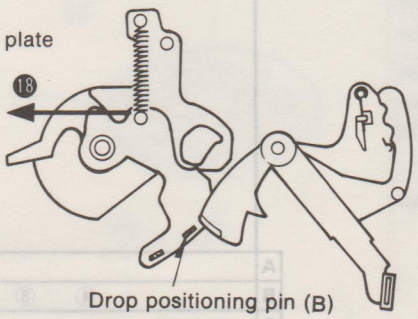


Fig. 8

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