SERVICE MANUAL

SANYO

STEREO TURNTABLE

TP 747
(U.S.A.)

SPECIFICATIONS

MOTOR & TURNTABLE SECTION

Motor	DC Servo Motor
Drive System	Belt Drive
Speeds	33-1/3 & 45 rpm
Speed Change	Electronic Control
Turntable Platter	Aluminum Alloy Die-Cast
Diameter	308 mm
Weight	0.7 Kg
Wow & Flutter	0.05 %
Signal to Noise Ratio	60 dB
Speed Adjustment Range	±3.0 %

TONEARM SECTION

Type	Static Blance Type (S-Shape)
Effective Length	222 mm
Cue Control	Viscous Damped (Down only)
Anti-Skating System	Calibrated — Spring Type
Lateral Balance	Fix weight
Cartridge Weight Range	
With Headshell	20 gr
Minimum Tracking Pressure	1.5 gr
Tracking Error	+3°, -1°
Counterweight Calibration	0 to 3.0 gr
Antiskate Calibration	0 to 4.0 gr

GENERAL

Power Requirement	AC: 120 V, 60 Hz
Power Consumption	4.0 W
Dimension (W)x(D)x(H)	17-1/4"x6-1/4"x14-7/8"
Weight	17 lbs.

*Specifications are subject to change without notice.

BLOCK DIAGAM OF THE DC SERVO

Principle of Operation

The frequency generator is placed coaxially with the motor shaft. The output signal from the frequency generator is converted into a rectangular wave in the speed detecting circuit, which is then supplied to the differentiating circuit to obtain a differentiated wave form synchronized to the frequency of rotation.

The leading edge of the differentiated wave form is used for switching a transistor ON or OFF to obtain a saw-tooth wave whose wave peak is proportional to the frequency.

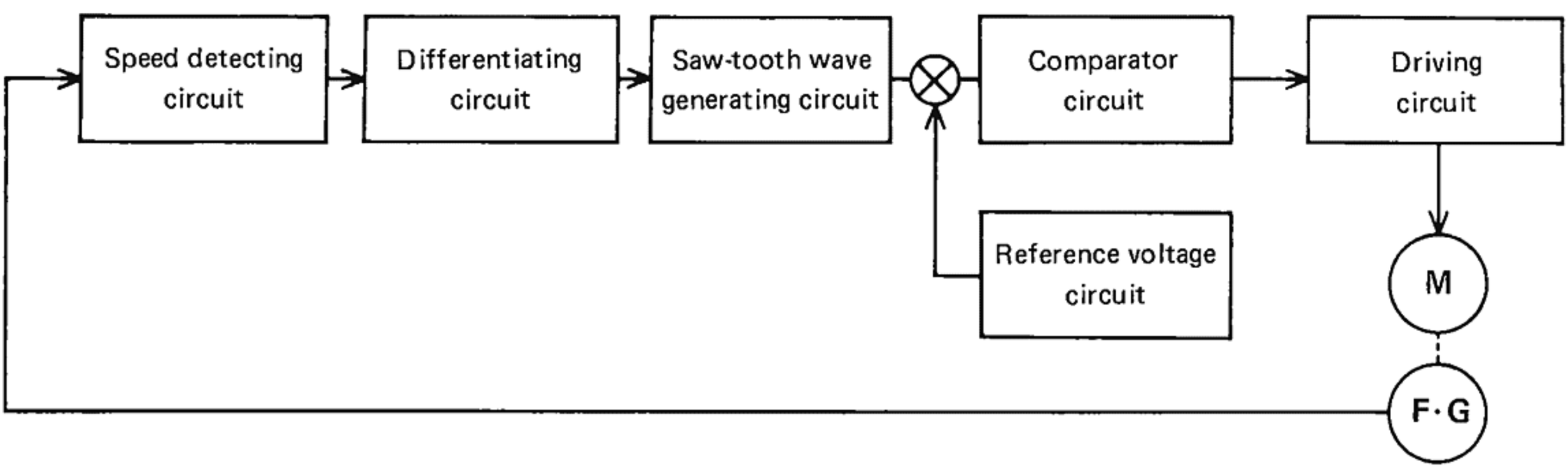
The saw-tooth wave thus generated is compared with a reference voltage obtained from a reference voltage circuit separately composed, and the portion of the saw-tooth wave exceeding the reference voltage is taken out as the control signal.

the driving signal for the motor is obtained by integrating the control signal (rectangular pulse).

Motor speed can be adjusted by changing the reference voltage.

Control frequency:

EP disk	motor speed 1520 rpm	304 Hz
LP disk	motor speed 1130 rpm	226 Hz

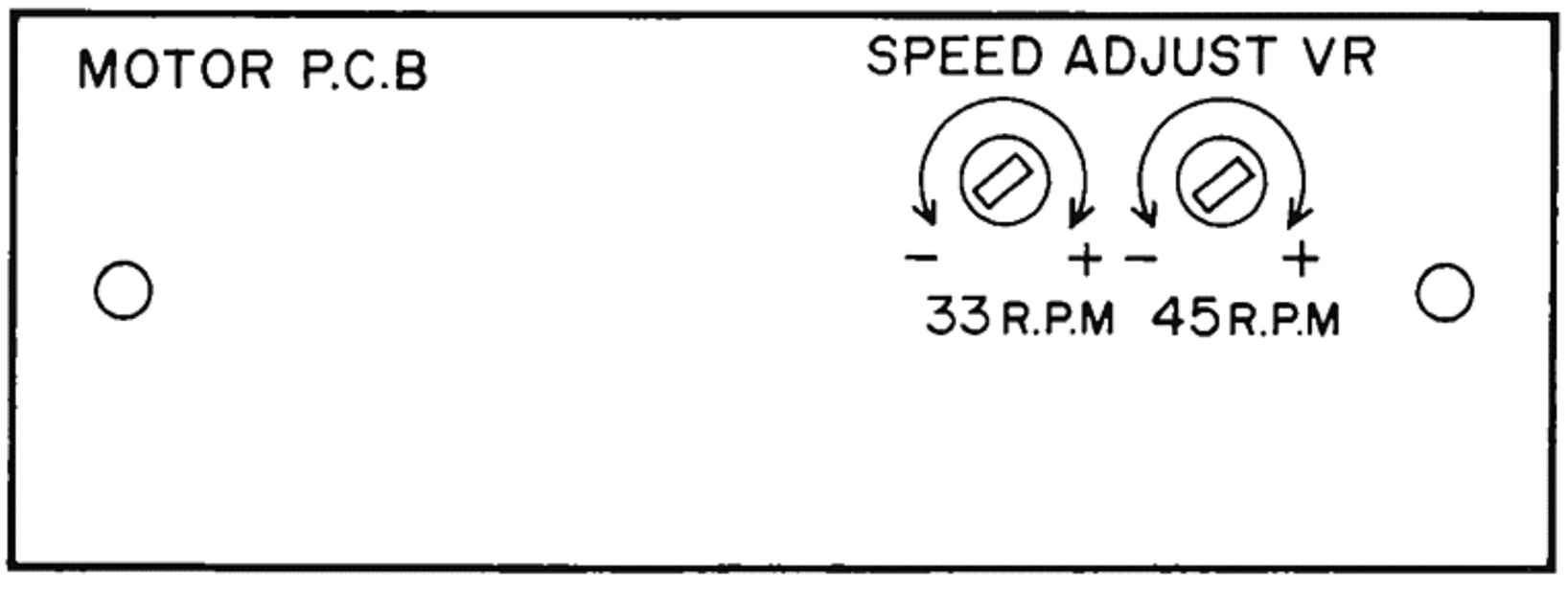


SPEED ADJUSTMENT

- This unit is built-in F·G· SERVO circuit and the speed has been adjusted accurately in the factory.
- If, for any reason, when you change the speed, turn these volumes with the screwdriver to the "+" direction or "–" direction.

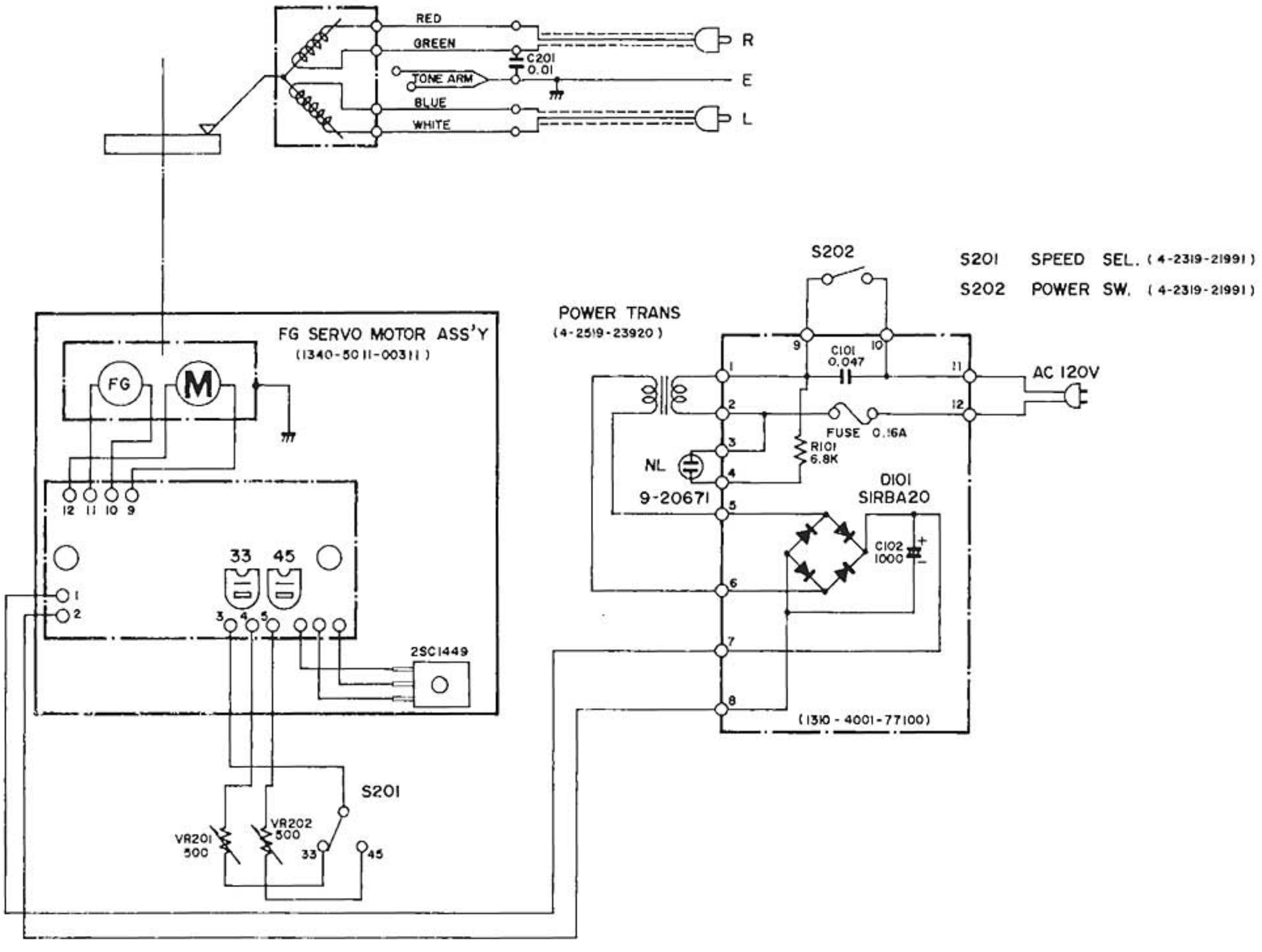
  "+" direction ..... This increases the speed.

  "–" direction ..... This decreases the speed.

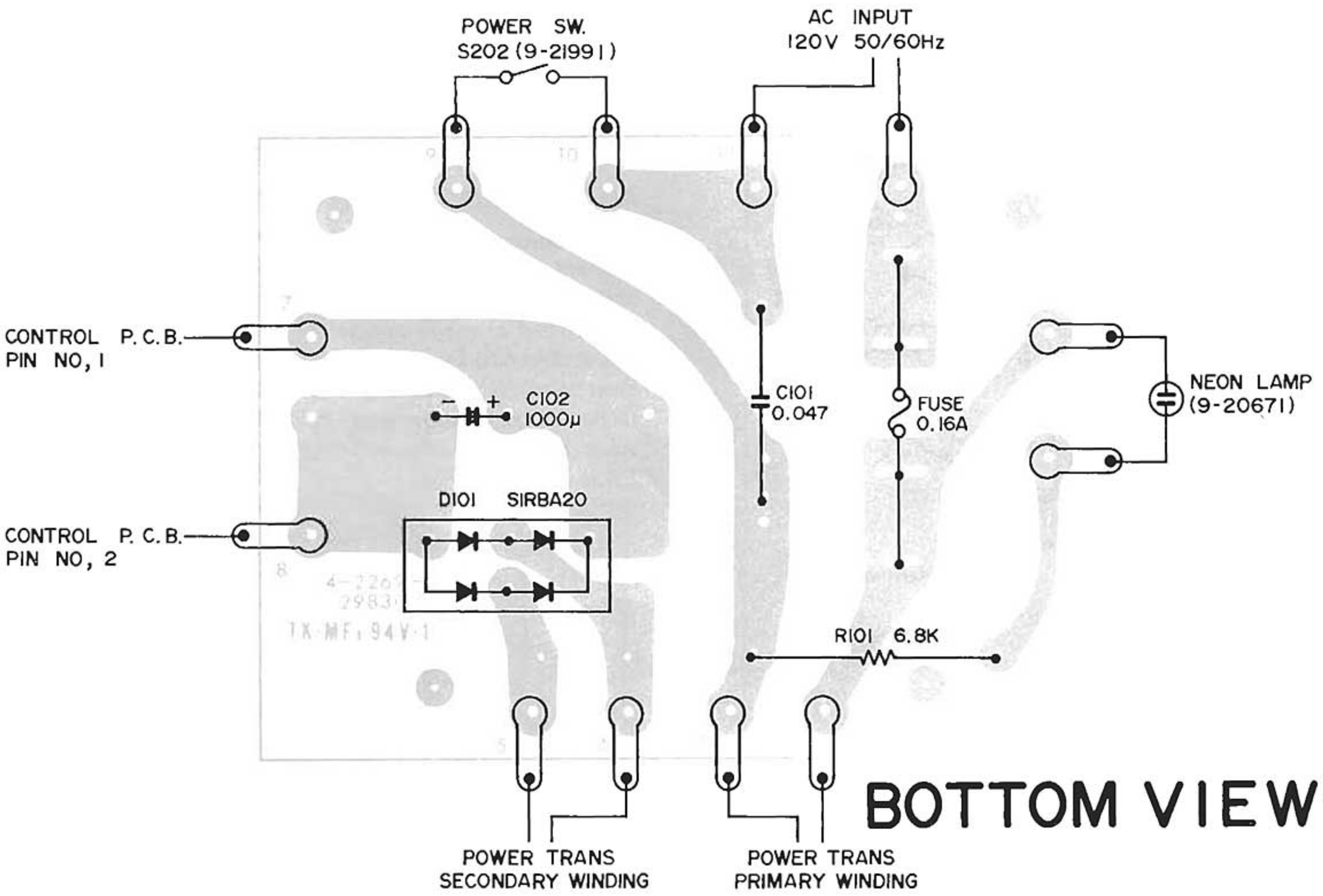


BOTTOM VIEW

SCHEMATIC DIAGRAM



POWER SUPPLY CIRCUIT BOARD

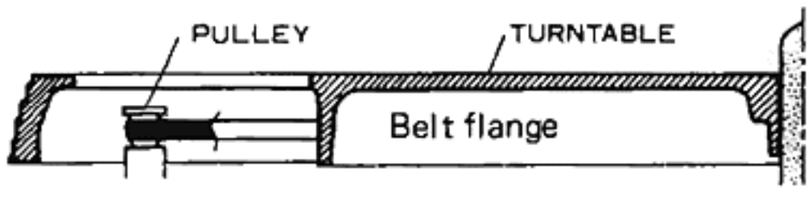


BOTTOM VIEW

ADJUSTMENT INSTRUCTION

IMPORTANT

When belting the pulley, the portion of the drive belt running around the belt flange of the turntable should be placed uniformly in the middle of the flange. Unless the belt is kept level, it may run off the flange.



ADJUSTMENT OF STYLUS PRESSURE

1. **When the tonearm is balanced, the stylus pressure is zero. Accordingly, turn the dial on the counterweight until the zero mark comes to the line on the tonearm. Be careful not to touch the counterweight while turning the dial. (Fig. 1)**
2. **Turn the counterweight clockwise as seen from the rear (in the arrow-marked direction) until the recommended gram pressure on the dial meets the reference line on the tonearm. (Fig. 2)**
   When setting the stylus pressure, squeeze the counterweight with thumb and forefinger, as in Fig. 2, and turn it. Do not touch the dial, which rotates with the counterweight.

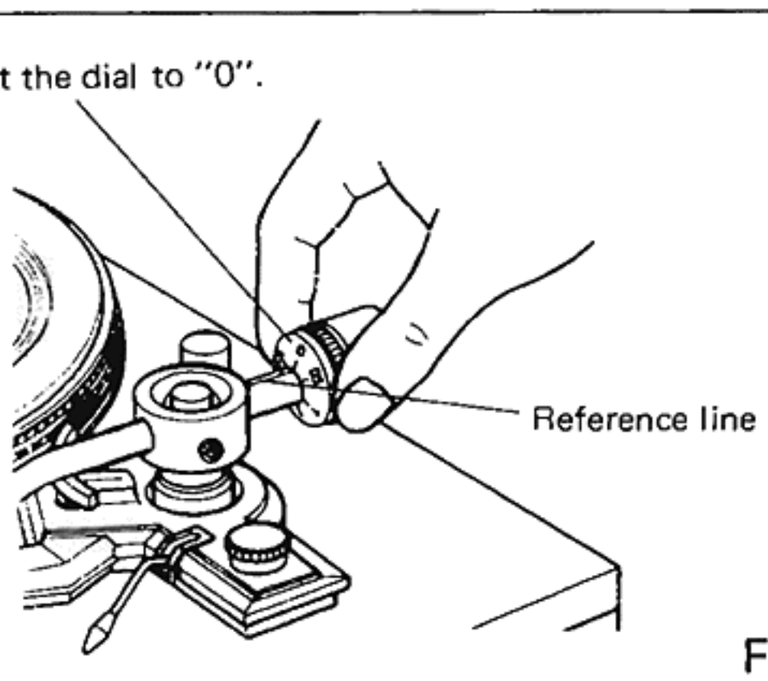


Fig. 1

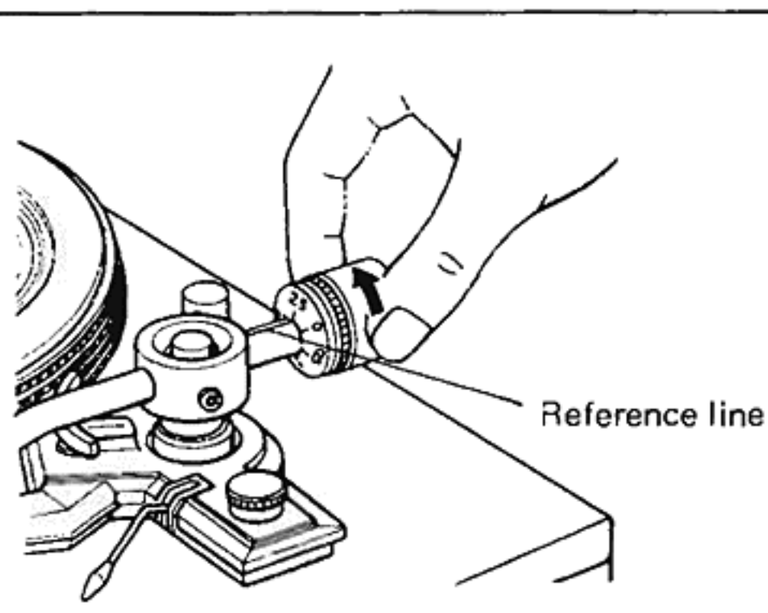


Fig. 2

OVERHANG ADJUSTMENT

After each replacement, the new cartridge must be adjusted for proper overhang. This is necessary for the accurate positioning of the stylus in order to reproduce distortion-free sound. (Fig. 3)

- **Prior to making cartridge adjustment, unplug the power cord so the turntable cannot start to rotate.**

(1) **Set the cartridge on the head shell and lightly secure the fastening bolts. Do not tighten the bolts strongly.**
(2) **Lift the tonearm off its rest and position it just above the overhang point.**
(3) **Hold the cartridge with your fingers and slide it to the fore or to the rear until the stylus is exactly above the center of the overhang point.**
(4) **Return the tonearm to its rest and lock it there. Fasten the cartridge securely in its position by tightening the fastening bolts.**

NOTE:

After each replacement of the stylus or the cartridge and after each adjustment of the cartridge for correct overhang, the stylus pressure should be corrected.

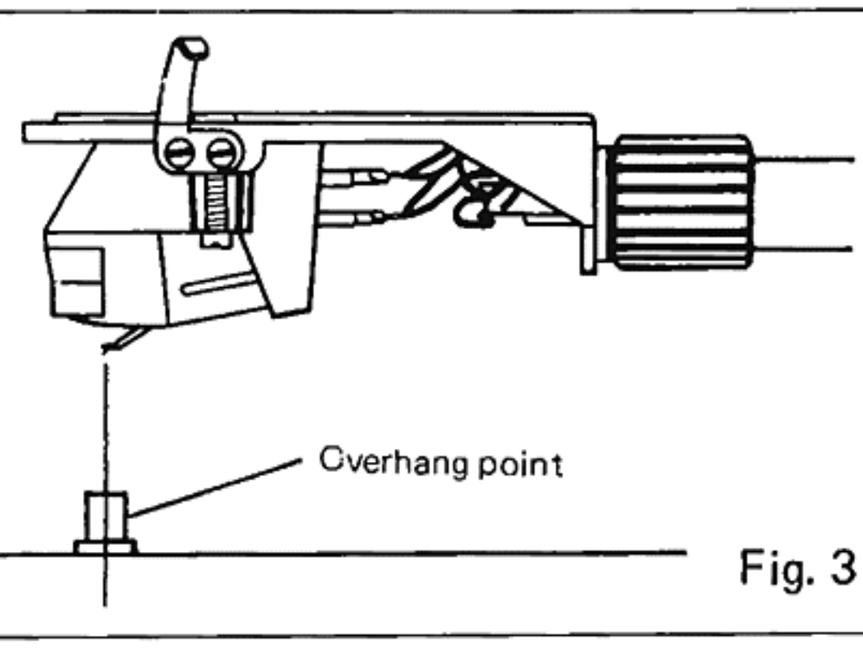


Fig. 3

ADJUSTMENT OF ANTI-SKATING FORCE

To compensate for a skating force which constantly pulls the tonearm toward the center of the record, an offsetting force must be applied. This is the anti-skating force, which must be identical in magnitude to and working in an exactly opposite direction for the skating force. The anti-skating force must be adjusted according to the stylus pressure.
If the stylus pressure is set to "2.5" (grams) as in the previous section, set the anti-skating force adjusting knob to 2.5 as in Fig. 4.

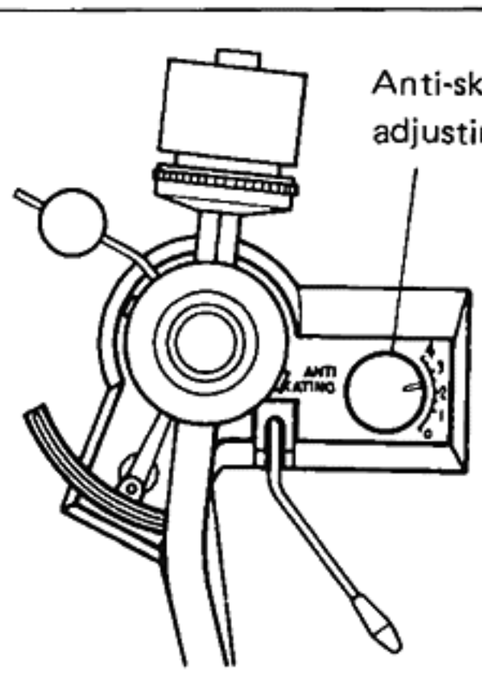


Fig. 4

CARTRIDGE REPLACEMENT AND ADJUSTMENT

Replacement of stylus (Fig. 5)

We recommend that you use the diamond stylus, which is available from SANYO.

Under normal operating conditions, the stylus has a service life of 400 to 500 operating hours, althought its durability varies significantly due to various factors. Check the stylus regularly for wear and damage, becouse a worn-out or damaged stylus will not only produce noise but will chisel the grooves of your records. Early replacement of the stylus will provide your records with the best protection and increase listening pleasure.

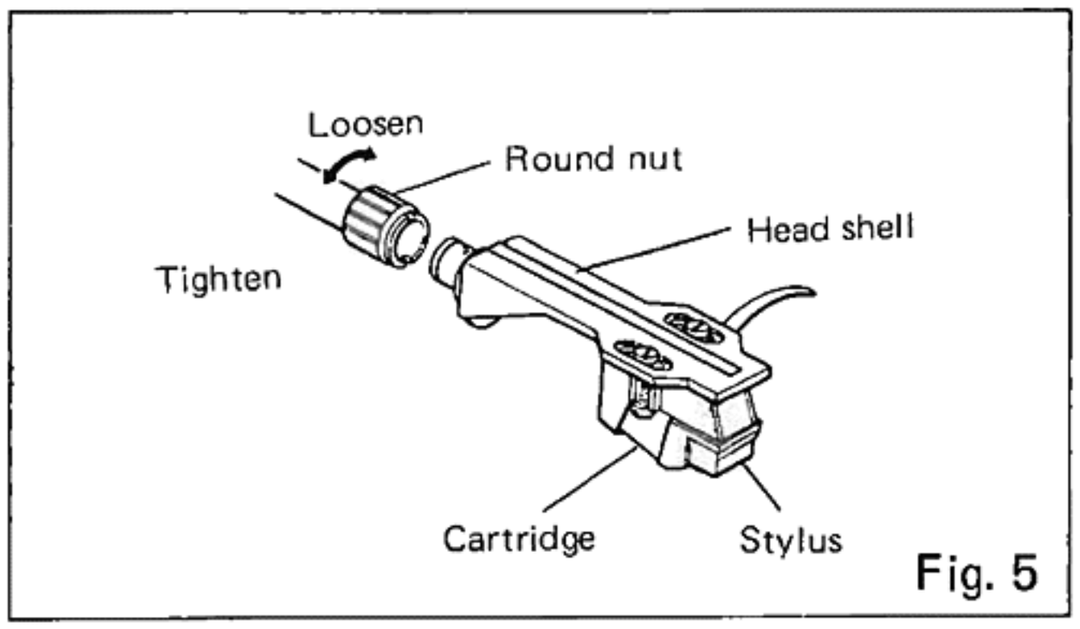


Fig. 5

Replacement of cartridge (Fig. 6)

Since the cartridge is incorporated into the head shell, it is recommended that the two be replaced together.

The new head shell-cartridge assembly can simply be attached to the tonearm.

To replace the cartridge alone, go through the following steps:

(1) Loosen the round collar on the tonearm and detach the head shell.

(2) Disconnect the lead wires carefully from the cartridge pins, holding the metal tip of each lead wire with a pair of pliers.

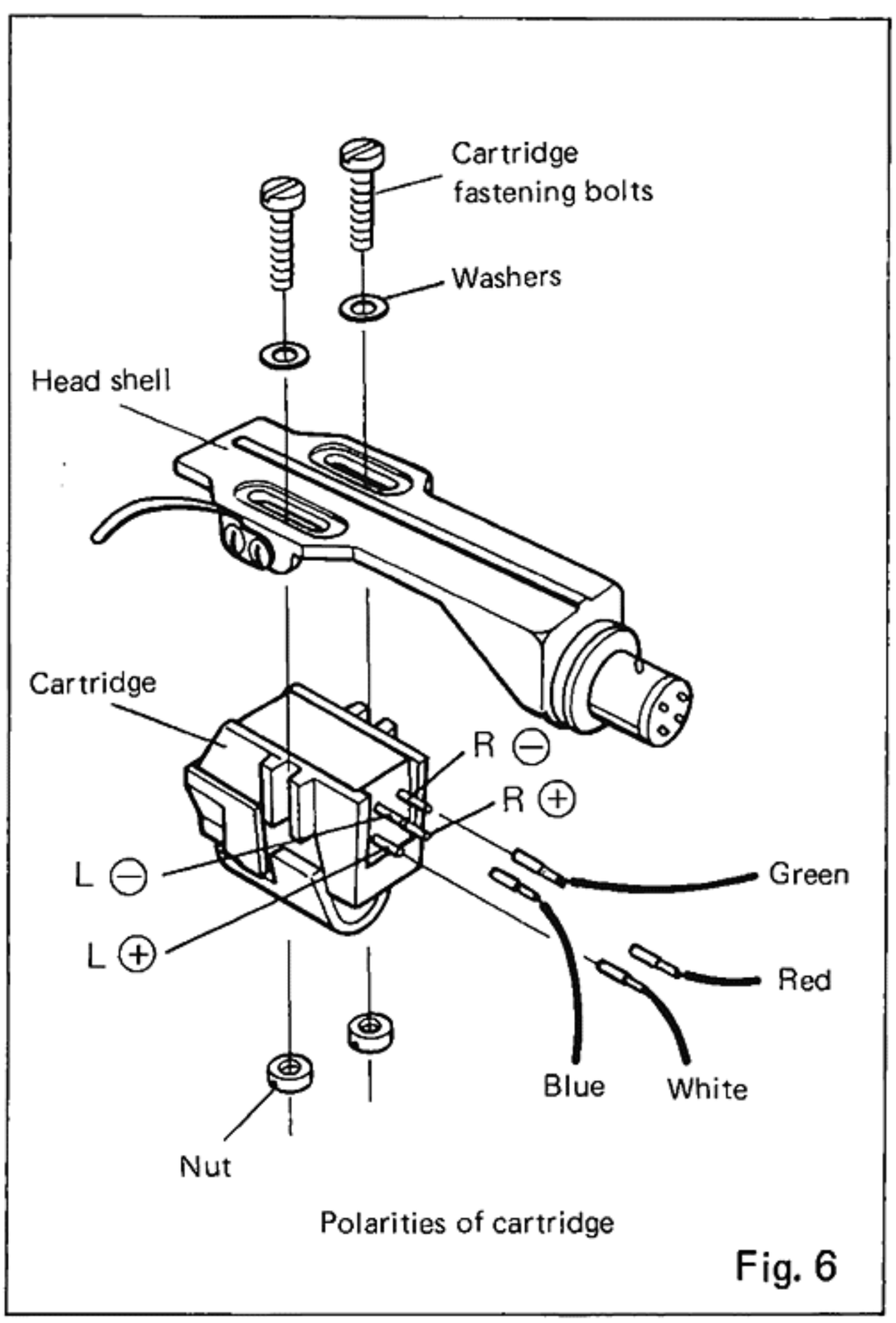
(3) Remove the bolts fastening the cartridge to the head shell.

(4) Set a new cartridge into the head shell. Do not fasten the cartridge tightly since its overhang is to be adjusted later on.

(5) Connect the four lead wires correctly to the cartridge pins. They are colored for ease of identification.

White lead wire	L (+) (Left channel (+))
Blue lead wire	L (–) (Left channel (–))
Red lead wire	R (+) (Right channel (+))
Green lead wire	R (–) (Right channel (–))

(6) Adjust the cartridge for proper overhang. (cf. "Adjustment of overhang)



Polarities of cartridge

Fig. 6

Application of cartridge

The tonearm of this automatic turntable has an adjustable counterweight which can offset the combined weight of the head shell and the cartridge within a range of 11 to 19 grams. Since the head shell alone weight 7 grams, the weight of the cartridge to be used must be 4 to 12 grams.

PICK-UP ARM HEIGHT ADJUSTMENT

Loosen the pick-up arm height adjusting screw (A & B) and adjust the height by sliding the support arm (57) and secure the screw.

PICK-UP RAISING POSITION ADJUSTMENT (Return point)

Turn screw (C) clockwise to move outwards, and counterclockwise to move inwards.

PRE CAUTION FOR HOWLING

Speakers may produce a howling sound if they are placed improperly in relation to the turntable unit. For the best sound, position the speakers as far away from the turntable as possible.
Resonance can be prevented by positioning the speaker boxes and the turntable on separate and rigid boards.

If the howling sound still occurs after placement of the turntable, please follow the instructions below:

1. Loosen the screws located in each of the four corners of the Player Cabinet Bottom Plate. The four screws must be loosened as far as they will go by using a screwdriver, thereby letting the screws run idle without removing them from the bottom plate. By loosening these screws, the Player Board will rise approx. (1 ~ 3mm) from the cabinet. (Fig. 7)

2. The dust cover can easily be adjusted to fit the turntable, by loosening each of the six screws (fastening the Hinge to the cabinet) and sliding the Hinge upward.
   Be sure to tighten the six screws after the adjustment. (Fig. 8)

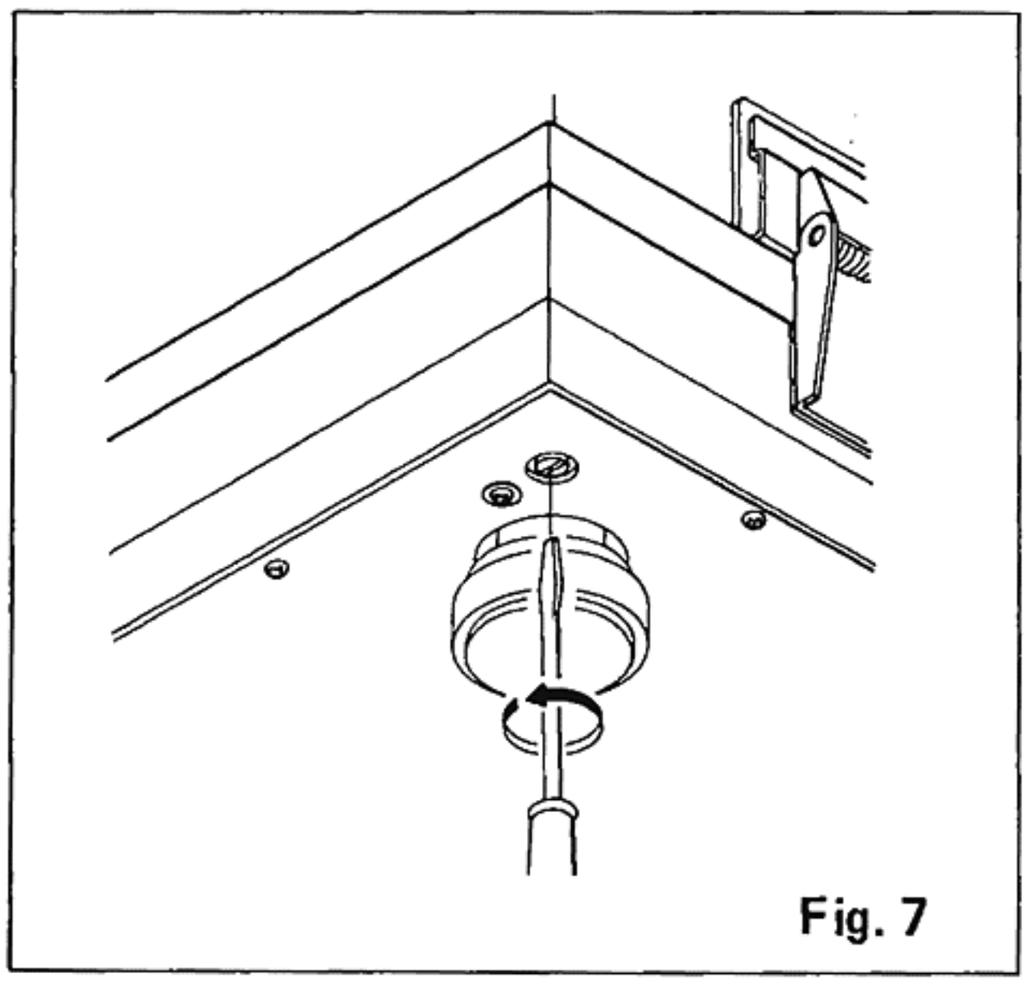


Fig. 7

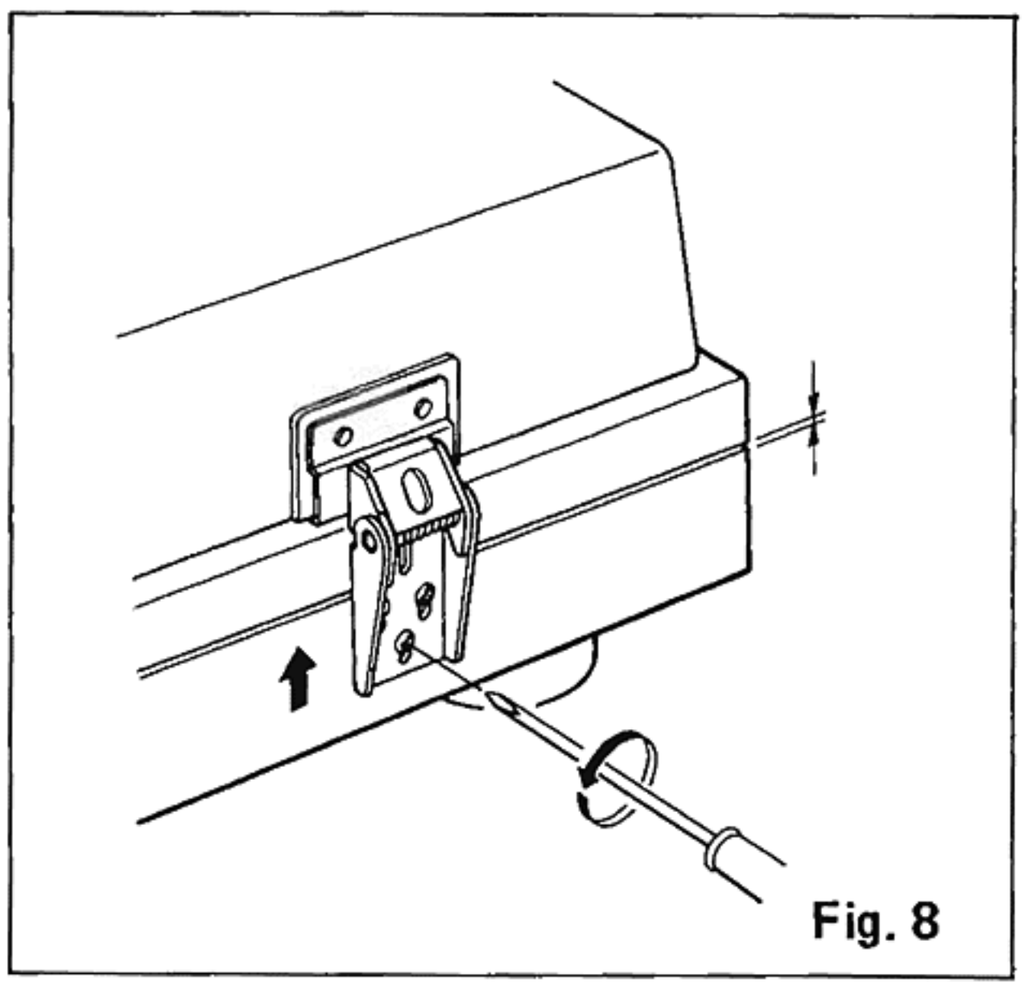
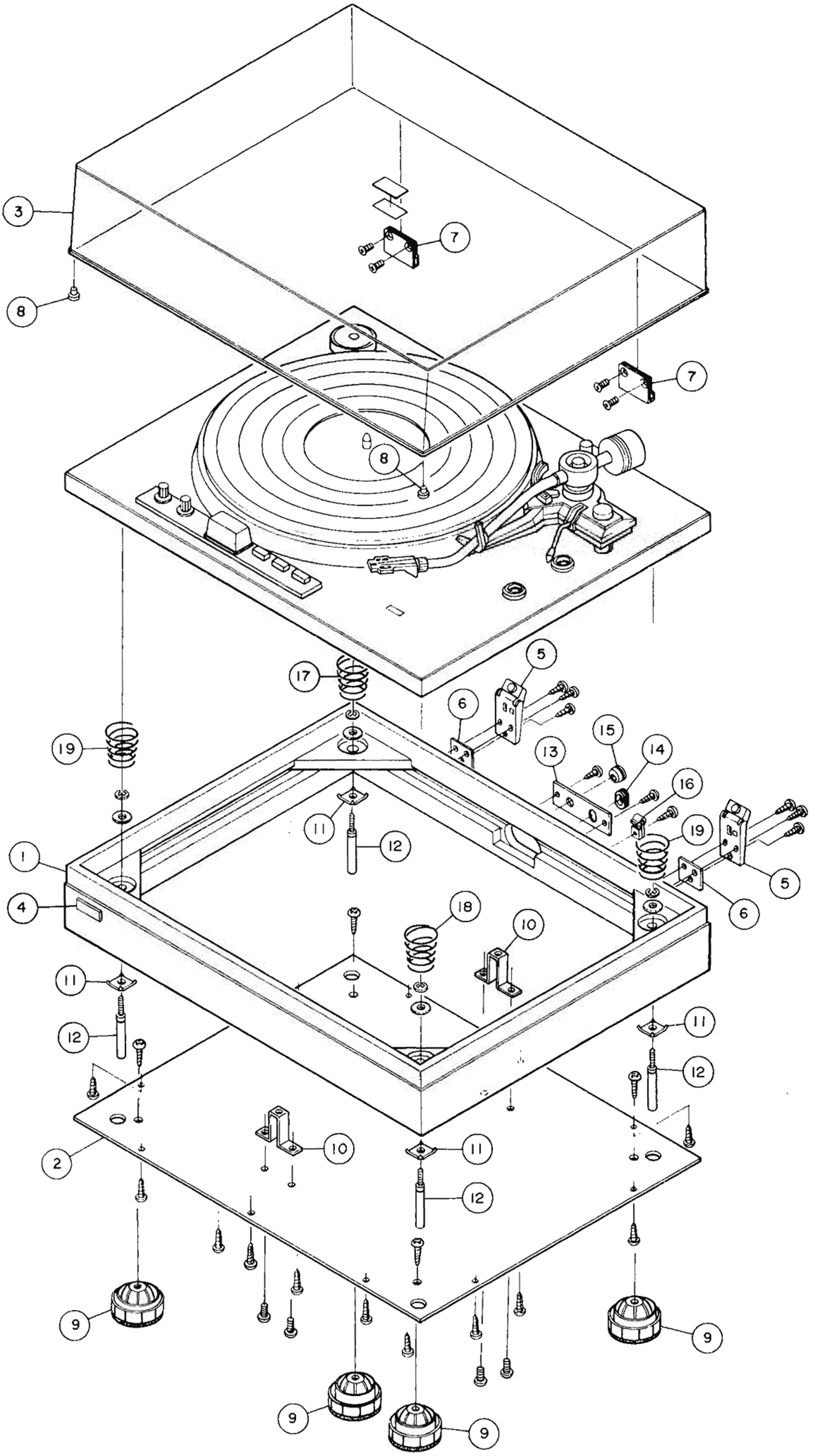


Fig. 8

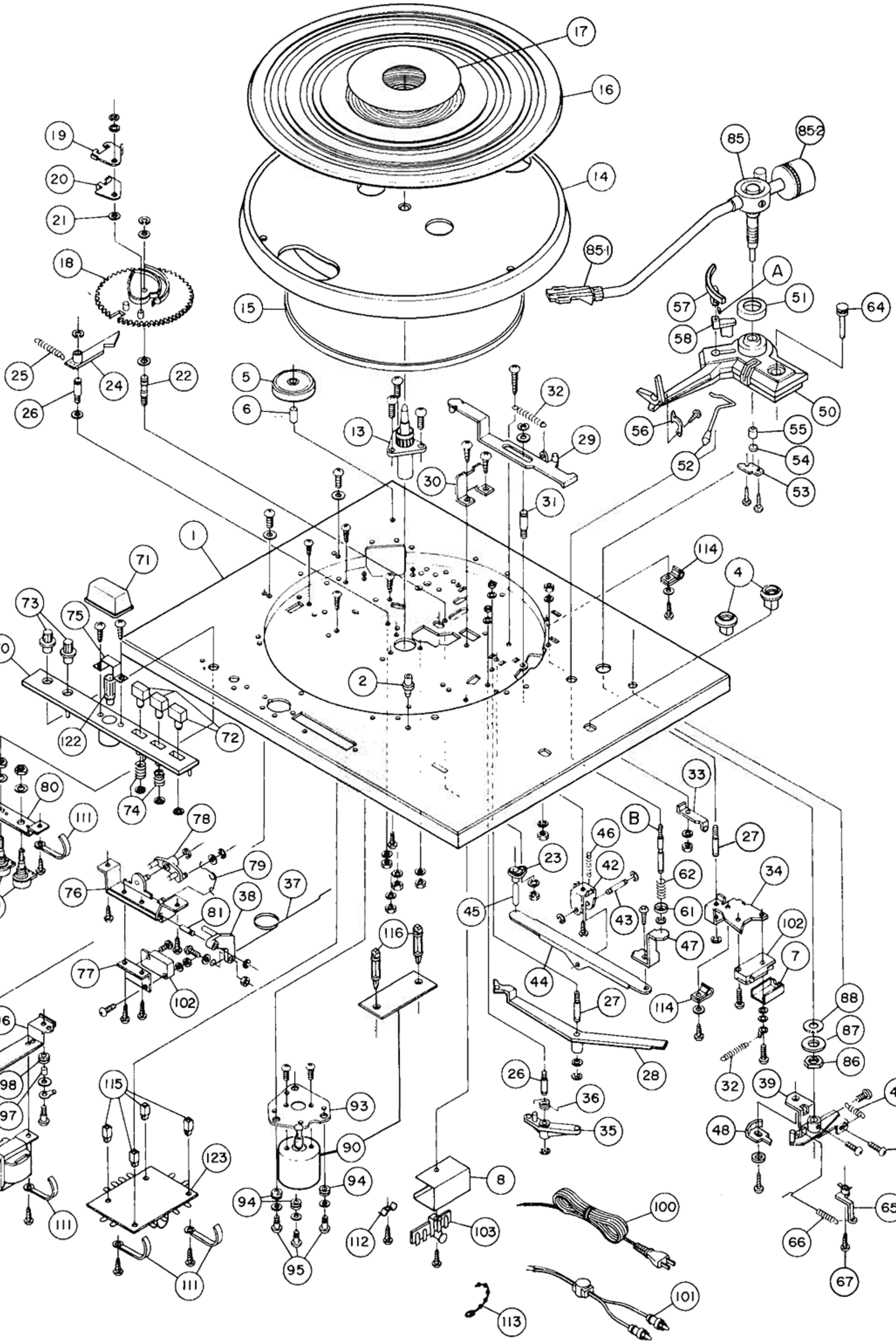
CAUTION

Should the DC Servo motor, controled PCB assembly or any of the transistors, diodes, volume controls, resistors, capacitors, etc. installed on the control PCB assembly develop trouble, do not replace only the faulty parts but the motor and the control PCB assembly as well.
This is necessary because the control PCB assembly is finely adjusted to match the performance characteristics of the motor. If only the faulty parts have been replaced, we shall not be held responsible for deterioration in the performance of the unit.

EXPLODED VIEW OF CABINET



EXPLODED VIEW OF TURNTABLE



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKING		
	131 6 1139 60603	Box Corrugate-EXP	1
	131 6 3009 19520	Pad (Bottom T.T.)	1
	131 6 3009 19980	Pad (Top)	1
	131 6 3009 22070	Pad (Right, Left)	2
	ACCESSORIES		
	131 6 4119 55100	Explanatory Booklet	1
	131 6 4159 23601	Notes	1
	134 2 4119 10700	Sub Weight	1
	134 2 4201 11300	Screw — For using the cartridge	2
	134 2 4202 11300	Nut — For using the cartridge	2
	134 2 4203 01800	Washer — For using the cartridge	2
	CABINET		
1	131 2 1101 33301	Cabinet	1
2	131 2 1105 18001	Plate Bottom	1
3	131 0 2022 90090	Lid Assy	1
4	131 2 1301 14400	Badge Sanyo	1
5	131 0 2002 14204	Hinge Assy	2
6	134 2 5205 11400	Cushion	2
7	131 2 2108 00900	Hinge	2
8	131 2 2904 12300	Pad Lid	2
9	131 0 1003 90010	Leg Assy	4
10	134 2 2403 17100	Angle Mount	2
11	131 2 4203 15202	Washer	4
12	134 2 4201 12400	Screw	4
13	131 2 3101 39300	Metal Mount	1
14	131 2 6111 15800	Bushing	1
15	131 2 6111 11300	Bushing AC, Cord	1
16	131 2 3608 11000	Cramp Wire	1
17	134 2 5102 13400	Spring Mount L B	1
18	134 2 5102 13401	Spring Mount RF	1
19	134 2 5102 13402	Spring Mount LF, RB	2
	108 3 1104 00006	E ring 4mm	4
	131 2 4203 86000	Washer 6.5x14x1.0 (Shaft)	4
	106 3 1103 11302	Screw, Round HD Tapping 3.1x13 (Plate Bottom)	10
	102 3 1103 01401	Screw, Pan HD Tapping 3.0x14 (Hinge Assy) (Metal Mount) (Cramp Wire)	9
	101 3 1204 01005	Screw, Flat HD 4.0x10 (Hinge)	4
	101 3 1504 01016	Screw, Truss HD 4.0x10 (Angle Mount) (Leg)	8
	131 2 4202 12904	Nut 4x13 (Frange) (Leg)	4
	TURNTABLE UNIT		
1	134 0 6001 12802	Unit Plate Assy	1
2	131 2 1503 11501	Decorate Sign (Overhang point)	1
4	134 2 4118 16800	Boss	2
5	134 2 2901 10502	Adapter EP	1
6	134 2 2902 00302	Pin Adapter EP	1
7	131 2 1401 10300	Cover	1
8	131 2 6103 15000	Cover Shield	1
13	134 0 9902 10300	Assembly Plan	1
14	134 2 6101 11800	Turntable	1
15	134 2 6302 10700	Belt	1
16	134 2 6102 13400	Mat Turntable	1
17	134 2 6103 10000	Plate Decorate T.T.	1
18	134 2 4110 11200	Gear Cycling	1

Ref. No.	Part No.	Description	Q'ty
	TURNTABLE UNIT		
19	134 2 4122 10800	Trip (A)	1
20	134 2 4122 11300	Trip (B)	1
21	134 2 4107 12600	Collar	1
22	134 2 4106 16700	Shaft	1
23	134 2 4118 14600	Boss	1
24	134 2 4120 14900	Lever	1
25	134 2 5101 27400	Spring	1
26	134 2 4106 16200	Shaft	2
27	134 2 4106 15500	Shaft	2
28	134 2 4123 12900	Arm	1
29	134 0 6035 11100	Arm Return Assy	1
30	134 2 4121 10602	Guide	1
31	134 2 4106 15700	Shaft	1
32	134 2 5101 26600	Spring	2
33	134 2 4108 18600	Plate	1
34	134 2 4108 19300	Plate	1
35	134 2 4120 16600	Lever	1
36	134 2 5101 26800	Spring	1
37	134 2 5101 26900	Spring	1
38	134 2 4120 16700	Lever	1
39	134 0 6022 11900	Plate PU Fix Assy	1
40	134 2 5101 20501	Spring	1
42	134 2 2403 16300	Angle Mount	1
43	134 2 4106 17200	Shaft	1
44	134 2 4123 15401	Arm	1
45	134 2 4106 21600	Shaft	1
46	134 2 5101 21200	Spring	1
47	134 2 2403 16500	Angle Mount	1
48	134 2 4108 19500	Plate	1
50	134 2 3201 10901	Base Pick up	1
51	131 2 1407 10800	Cover Decorate	1
52	134 0 6017 10800	Lifter Assy	1
53	134 2 4108 18200	Plate	1
54	131 2 2904 11500	Pad Lid	1
55	134 2 5205 11300	Cushion	1
56	134 2 3308 10501	Holder Pick up	1
57	134 0 6047 90010	Support Arm Assy	1
58	134 2 3310 11002	Support Arm	1
B	134 2 4116 12300	Spindle Lifting	1
61	134 2 4213 10800	Washer Bowl	1
62	134 2 5101 27300	Spring	1
A	131 2 4201 16102	Screw	1
64	134 2 1601 13801	Knob (Anti Skating Adjust Knob)	1
65	134 2 4123 15100	Arm	1
66	134 2 5101 27100	Spring	1
67	131 2 4201 16300	Screw	1
70	134 2 1404 10901	Housing	1
71	134 2 1101 10901	Case	1
72	134 2 1101 14000	Knob (33 rpm, 45 rpm, Reject Knob)	3
73	134 2 1601 14100	Knob (Speed Adjust Knob)	2
74	134 2 5101 26700	Spring	2
75	131 2 6110 26000	Shelter Light	1
76	134 0 5008 10800	Selector Speed Assy	1
77	134 2 4108 17900	Plate	1
78	134 2 4108 18800	Plate	1
79	134 2 5101 27200	Spring	1
80	134 2 4108 18900	Plate	1
81	134 2 4106 21700	Shaft	1
85	134 0 4001 05301	Tone Arm Assy	1
85-1	134 0 4002 10402	Arm Head Assy	1
85-2	134 0 4003 00202	Weight Assy	1
86	134 2 4202 11502	Nut	1
87	134 2 4203 02301	Washer	1
88	134 2 5202 10900	Rubber Cushion	1

Note: Specifications are subject to change without notice for further improvement.

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	TURNTABLE UNIT		
90	134 0 5011 00311	Motor Assy	1
93	134 2 4108 18300	Plate	1
94	134 2 5202 11800	Rubber Cushion	3
95	131 2 4108 10300	Spindle Pulley	3
96	134 2 4108 19000	Plate	1
97	131 2 4209 10300	Sleeve	2
98	131 2 6111 15400	Bushing	2
100	4 2439 20394	Power Cord	1
101	131 0 4004 14500	Wire Shield Assy	1
102	4 2319 21991	SW Micro (S201,202)	2
103	4 2379 21500	Lug 1-4P	1
C201	C1HYDZ103A--	Ceramic 0.01 μF 50V +80,–20 %	1
111	131 2 3608 10200	Cramp Wire	7
112	131 2 3608 10300	Cramp Wire	1
113	131 2 3608 12400	Cramp Wire	1
114	131 2 3608 11000	Cramp Wire	1
115	131 2 3614 17101	Mount P.C. Board (Power)	4
116	131 2 3614 19300	Mount P.C. Board (Motor)	2
120	4 2519 23920	Power Trans	1
121	4 2229 25710	VR B-500x1 VR201,202	2
122	4 6129 20671	Neon Lamp	1
123	131 0 4001 77100	Power Supply P.C. Assy	1
	4 2349 21370	Fuse 0.16A	1
	4 2359 22930	Socket	2
	131 2 6108 11201	Cover Sever	2
C101	C2JNRM473C--	Polypropilene 0.047 μF	1
C102	C1CRB-108A--	Electrolytic 1000 μF 16V	1
D101	DDD-S1RBA20--	Diode Bridge SIRBA20	1
R101	R3AXPK682A	Oxide Metal Film 6.8K 1W ±10 %	1
	104 3 1203 00002	Nut Hex HD2 3.0mm ⑬—3, ㉒—1, ㉓—1, ㉖—1, ㉗—1 ㉛—1, ㉝—1, ㊴—1, ⑩②—1	11
	131 2 4207 10000	Nut Lock (PSN-3) ②—1, ⑦⓪—4	5
	131 2 4220 10502	CS Ring 3.0mm ⑲—1, ⑦⑧—1	2
	131 2 4220 10503	CS Ring 6.0mm ⑦②—3	3
	108 3 1102 00000	E ring 2.0mm ⑥⓪—1	1
	108 3 1103 00007	E Ring 3.0mm ㉖—2, ㉗—4, ㉛—1, ㊸—2 ⑥⓪—1, ⑦⑥—2	12
	108 3 1104 00006	E Ring 4.0mm ㉒—1	1
	102 3 1203 00602	Screw, Pan HD Tapping 3x6 ⑧—1, ⑨—2, ㉚—2, ㊷—1, ㊹—1 ㊸—2, ⑦⑤—2, ⑦⑥—2, ⑦⑦—2, ⑧⓪—2 ⑪⑤—4, ⑫⓪—2	27
	102 3 1202 60602	Screw, Pan HD Tapping 2.6x6 ⑫②—2	2
	102 3 1202 60601	Screw, Pan HD Tapping 2.6x6 ⑤⑥—1	1
	102 3 1203 00802	Screw, Pan HD Tapping 3x8 ⑥—1, ⑪②—1 MOTOR P. C. B-2	4
	102 3 1203 01002	Screw, Pan HD Tapping 3x10 ㉞—1, ⑪④—2	3
	101 3 1103 01201	Screw, Pan HD 3x12 ⑩②—2	2
	101 3 1103 01602	Screw, Pan HD 3x16 ⑩②—2	2
	101 3 1102 60401	Screw, Pan HD 2.6x4 Motor - 2	2

Ref. No.	Part No.	Description	Q'ty
	TURNTABLE UNIT		
	101 3 1103 00802	Screw, Pan HD 3x8 ㊳—1, ⑦⑦—1	2
	101 3 1103 02501	Screw, Pan HD 3x25 ㊴—1	1
	101 3 1104 00602	Screw, Pan HD 4x6 ㊴—2	2
	134 2 2104 11600	Screw, Pan HD 4x10 ⑨⑥—2	2
	101 3 1104 05001	Screw, Pan HD 4x50 ①—2	2
	131 2 4201 13502	Screw, Pan HD 3x8 ⑬—3	3
	131 2 4201 13507	Screw, Pan HD 3x10 ⑫⓪—2	2
	102 3 1203 50601	Screw, Pan HD Tapping 3.5x6 ⑪④—2	3
	105 3 1202 60003	Spring Washer 2.6mm Motor - 3	3
	105 3 1203 00002	Spring Washer 3.0mm ⑬—3, ㉖—2, ㉗—2 ㉛—1, ㊳—1, ⑩②—1	11
	131 2 4203 83200	Washer 3.2x8x0.5 ㉗—1, ㊳—1, ⑦⑦—1, ⑦⑧—1, ⑩②—2 Motor - 3	9
	131 2 4203 83202	Washer 3.2x10x1 ㉖—1, ㉗—1, ㉛—1, ㉟—1 ⑪④—2, ⑫⓪—1	8
	131 2 4203 83201	Wahser 3.2x10x0.5 ⑥⓪—1	1
	131 2 4203 84212	Washer 4.2x10x0.5 ㉛—1	1
	131 2 4203 85200	Washer 5.2x10x0.3 ㉗—1	1
	131 2 4203 82600	Washer 2.6x10x0.5 Motor - 2	2
	131 2 4203 17100	Nylon Washer 0.5T ㉓—1, ⑦③—2	3
	131 2 4203 84500	Washer 4.5x10x0.8 ⑪④—1	1

Note:
Specifications are subject to change without notice for further improvement.

SANYO ELECTRIC INC.
1200 West Artesia Blvd.,
P.O. Box 5177
Compton, California 90220

Nov/'76/4600 Printed in Japan