〈ART-125-0〉

SERVICE MANUAL

DIRECT DRIVE
STEREO TURNTABLE

PL-71

KUT

PIONEER®

〈75C02M61K〉

CONTENTS

1. SPECIFICATIONS

Phono Motor and Turntable

Motor	Brushless DC servo-Direct-drive motor
Speed	Two speeds: 33-1/3 rpm, 45 rpm
Wow and flutter	0.05% (WRMS) or less
S/N	60 dB or more (in case of using Pioneer cartridge model PC-50)
Turntable platter	31 cm diam, Aluminum alloy

Tonearm

Tonearm type	Static balance, S-shape, pipe arm
Effective arm length	224mm
Overhang	14.5mm
Usable cartridge weight	4g (MIN) to 32g (MAX)

Available of any cartridge conforming to EIA standard.

Subfunctions

Anti-skating force control
Lateral balancer
Hinges (Free-adjustable)
Height-adjustable arm
Large-size shock absorbers
Arm elevator
Speed fine adjusters (33-1/3 rpm, 45 rpm: for use in turntable speed adjustment with stroboscope and strobolight)

Others

Power requirements	AC 120V, 50/60Hz
Power comsumption	5.2W (MAX)
Outer dimensions	480(W) x 410(D) x 185(H)mm 18-7/8(W) x 16-1/8(D) x 7-1/4(H)in.
Weight	11.0 kg, 24 lb 3 oz

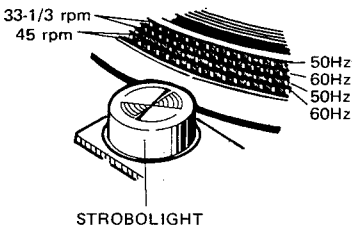
Accessory Group

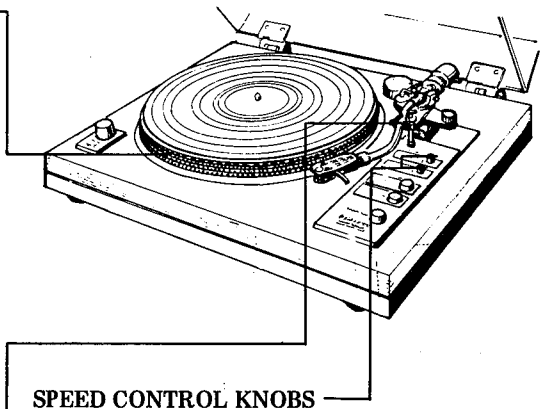
45 rpm adaptor (with overhang gauge)	1
Screwdriver	1
Output cord (Connection cord)	1
Weight plate (Cartridge weight-adjustable)	1
Cartridge mounting screws	10
Cartridge mounting nuts	2
Cartridge mounting washers	2
Operating instructions	1

2. OPERATIONS

STROBOSCOPE

The proper part of the stroboscope band to read illuminated by the strobolight depends upon the frequency of the power sources and record speeds as below.



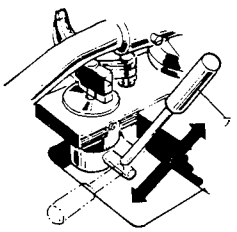


ARM ELEVATOR

This is a lever for controlling the up-and-down movement of the tonearm.

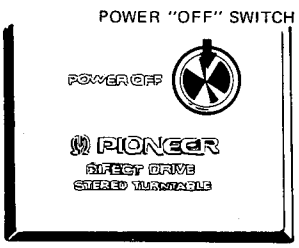
Setting the ARM ELEVATOR up, the arm head will be floated from the surface of the record. Setting the ARM ELEVATOR down, the arm head will be quietly descended on the surface of the record.

This is a convenient device for cueing in any portion of the record without fear of scratching the record surface.



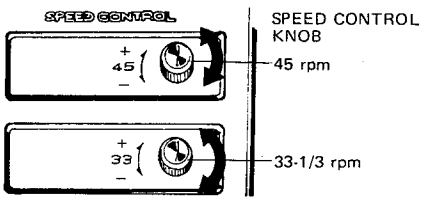
POWER "OFF" SWITCH

Push this button for turning off.



SPEED CONTROL KNOBS

With either of the speed selectors pressed, watch the appropriate stroboscope band and strobolight. Adjust the precise speed (so that the band appears to stand still) by turning the speed control knobs. Turn toward + (clockwise) for faster speed, toward — (counterclockwise) for slower. When the stroboscope appears to stand still, the speed is correct.



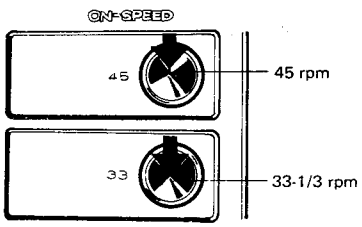
45 RPM BUTTON

Push this button for playing a 45 rpm speed record. Simultaneously the power will be turned on.

33-1/3 RPM BUTTON

Push this button for playing a 33-1/3 rpm speed record.

Simultaneously the power will be turned on.



3. PRINCIPLE OF MOTOR OPERATION

Construction of motor control for the PL-71 is depicted in Fig. 2

1. Applying power sets the oscillator into operation. Output of this circuit passes to the pole position detecting circuit (L1~L6).
2. Here, assume that coupling between L1 and L4 is the tightest. Voltage induced in L4 is rectified and applied to Q106/Q109 in the driver.
3. Q109 in turn conducts and causes current to flow in the associated drive coil (A-1). The rotor moves in the direction shown by arrow in Fig. 1. The magnetic pole affixed to the rotor induces a voltage proportional to rotor movement, in the sensing coil (A-4).
4. Voltage induced in A-4 is rectified by a diode in the speed sensor and applied to Q103 in the control stage. This point is also fed from the reference voltage generator (voltage E_S) through a fine speed control pot.
5. Voltage applied to the base of Q103 in the control stage controls current that flows in Q104.
6. Q104 serves as a constant current source for Q106 through Q111 in the driver and therefore controls current flow in the drive coils.
7. When ambient temperature change causes driver current to rise, the speed of rotation increases above the rated value. Q104 current increases and Q106~Q111 currents decrease. As a result, the speed of rotation falls off.

Pole Position Detector

Fig. 1 shows a simplified view of the drive and sense coils. With power applied and coupling between L1 and L4 high, Q109 causes current to flow through A-1. As a result, the rotor end of coil A-1 becomes a south pole (S1) and attracts N1. The rotor moves in the direction shown by arrow. Coupling factor between L2 and L5 increases and operation of Q110 causes current to flow in coil A-2. Pole S2 attracts pole N2 and rotor rotation continues. In the same manner, S3 attracts Pole N3. Continuation of this process causes the rotor to turn on a steady basis.

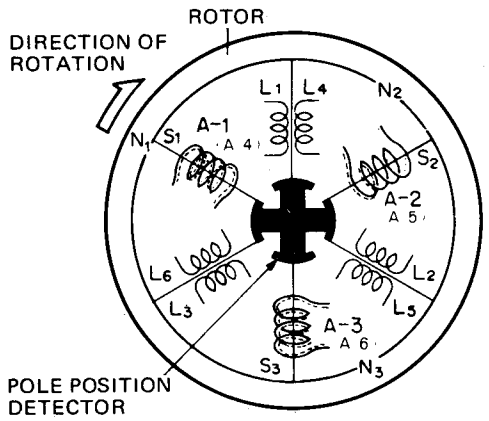


Fig. 1

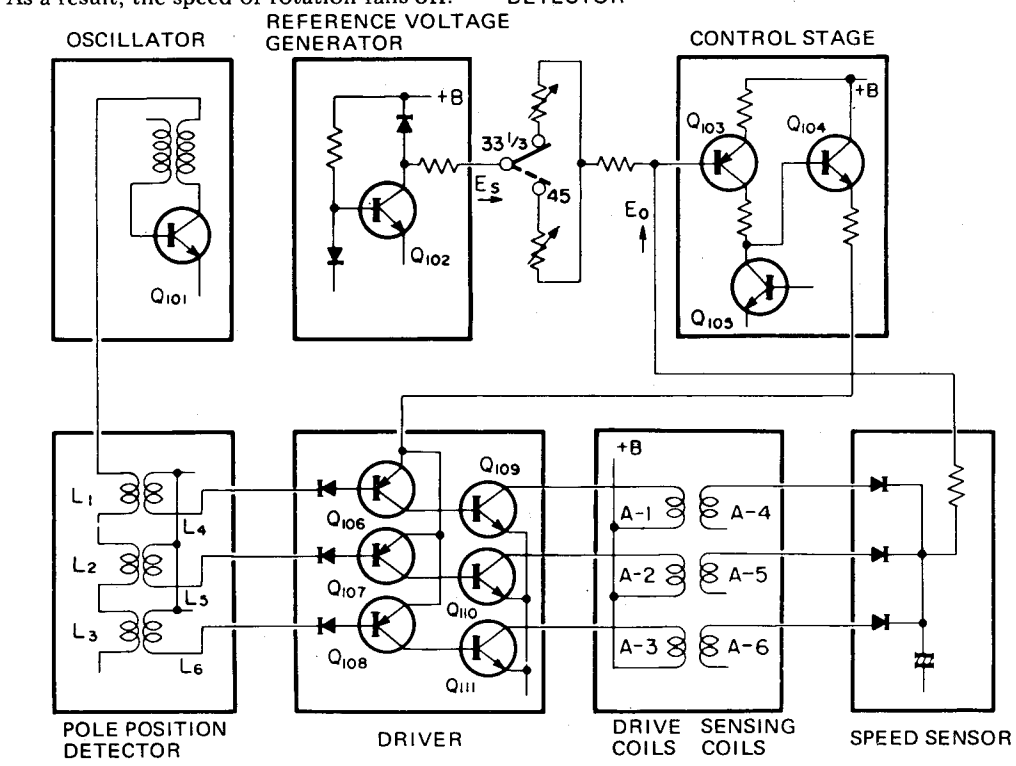


Fig. 2

4. ADJUSTMENT

When adjustment of the fine speed control does not give a satisfactory speed, adjust the motor in accordance with the following procedure.

1. Remove the bottom cover.
2. Set the fine speed control to the midposition.
3. While observing the edge of the turntable platter with a strobe, adjust screws inside the motor as shown in Fig. 3.
4. Alternate switching between 33-1/3 and 45 rpm speeds while making adjustment. Make sure that both speeds are correct.

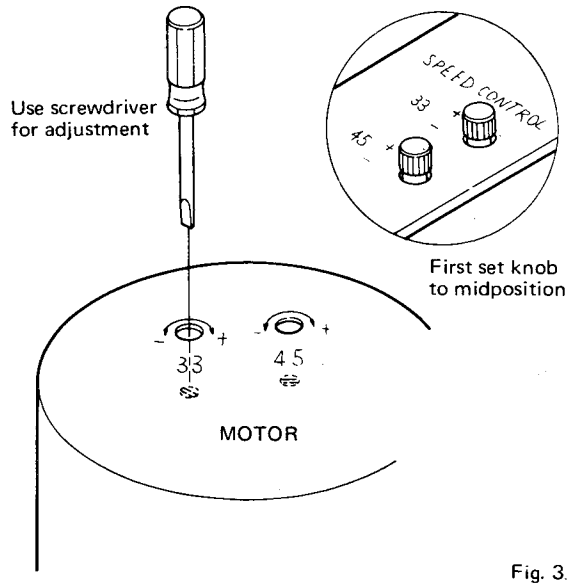


Fig. 3.

Selection of Line Voltage

If model PL-51 does not agree with the line voltage of your service area, set the unit to the proper line voltage as follows:

1. Remove the bottom cover, now you can see the terminal board (Fig. 4).
2. Unsolder the lead (White) from the terminal.
3. Solder the lead (White) to the terminal of your local line voltage.

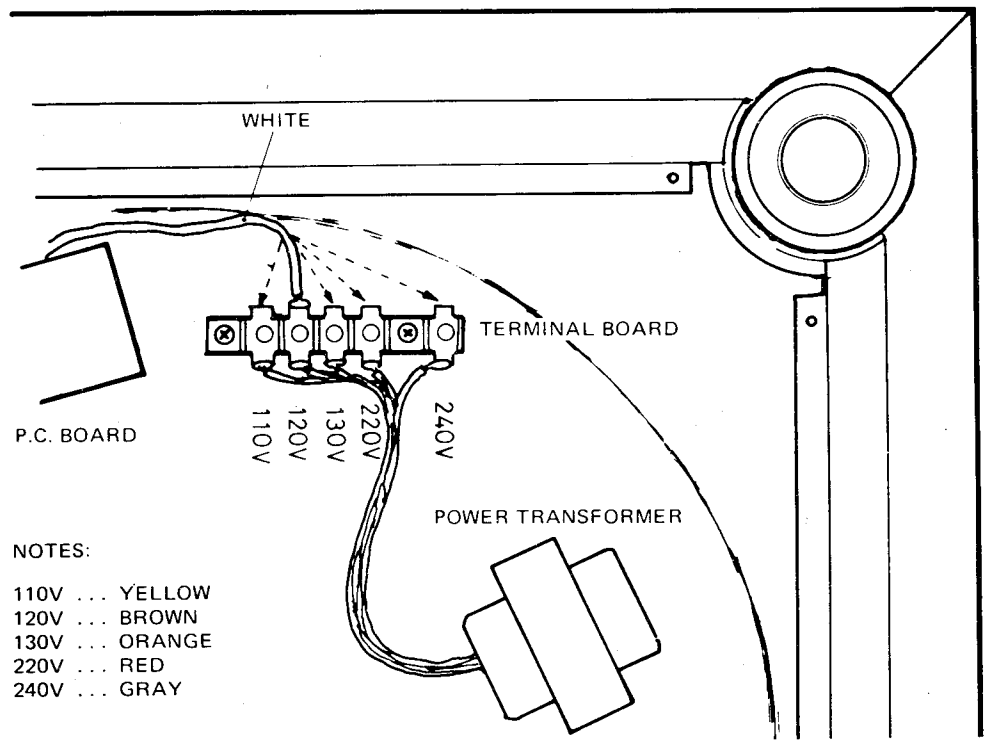
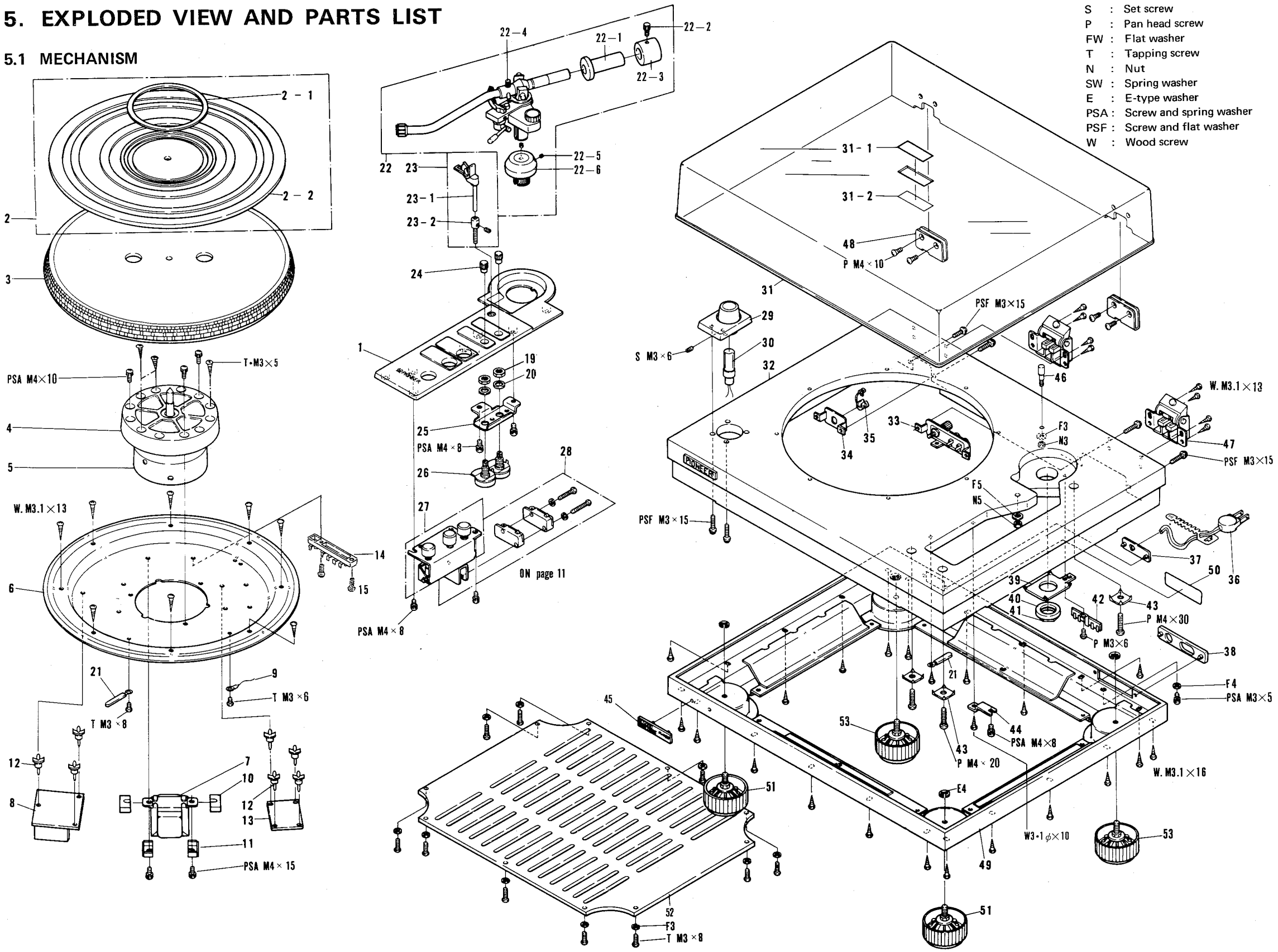


Fig. 4

5. EXPLODED VIEW AND PARTS LIST

5.1 MECHANISM

S : Set screw
P : Pan head screw
FW : Flat washer
T : Tapping screw
N : Nut
SW : Spring washer
E : E-type washer
PSA : Screw and spring washer
PSF : Screw and flat washer
W : Wood screw



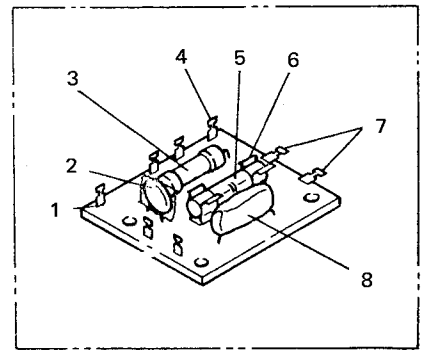
NOTICE: Any parts asterisked(*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Control panel	PAM-014-A	
2*	Rubber mat assembly	KEA-019-0	
2-1	Ring	KAH-007-A	
2-2	Rubber mat	KEB-058-A	
3	Turntable platter	PNR-013-0	
4	Motor cover	PNW-021-A	
5	Motor	KXM-021-G	
6*	Motor panel	KNA-572-F	
7	Power transformer	KTT-015-0	
8	Power supply circuit assembly	KWR-030-E	
9*	Grand cord assembly	KDX-006-A	
10	Transformer base rubber (A)	KEB-063-0	
11	Transformer holder	KNA-603-A	
12*	Boss	KNK-186-A	
13	Power P.C. board assembly	KNP-054-C	
14	Terminal board (5P)	KKE-006-B	
15	Panhead screw M4 x 12		
19	Nut M9	B71-004-0	
20	Washer	M45-086-A	
21*	Cord fixer	KEX-004-A	
22	Tonearm assembly	PPD-504-0	
22-1	Weight sleeve	KXA-688-D	
22-2	Weight-fasten screw	KXA-689-A	
22-3	Main weight	KLA-632-B	
22-4	Lateral crooked bar-held screw	KBA-040-A	
22-5	Set screw M4 x 8		
22-6	Arm stand	KLA-710-B	
23	Arm rest assembly	PXA-019-A	
23-1*	Arm rest unit	PNW-027-A	
23-2*	Rest stand	KLA-716-0	
24	Knob ... speed control	KLA-518-A	
25*	Variable resistor mounting angle	KNA-715-0	
26	Variable resistor	KCS-007-0	
27	Function button assembly	KXB-040-0	
28	Switch assembly	PXA-008-A	
29	Strobo lamp cover	KXB-015-C	
30	Strobo lamp	PEL-001-0	
31	Dust cover	KNK-266-A	
31-1*	Name plate A	KAM-042-0	
31-2*	Name plate B	A55-013-A	
32	Upper board	KMM-077-F	
33	Output terminal assembly	KXA-571-F	
34*	Plate	KNA-522-C	
35	Power cord grommet	E32-056-0	
36	AC cord	KDG-011-0	

NOTICE: Any parts asterisked(*) are subject to being not supplied.

Key No.	Description	Part No.	
37	Name plate C	KNK-253-D	
38	Name plate D	KNK-254-C	
39	Plate	KNA-763-0	
40	Washer ring	B22-646-0	
41	Nut	KLA-748-0	
42	1L-4P terminal	KKC-021-0	
43	Claw washer	KBE-002-A	
44*	Angle	KNA-716-0	
45	Name plate E	KAM-092-0	
46	Adaptor pin	KLA-588-0	
47	Hinge assembly	KXA-603-A	
48	Lock plate	N61-084-0	
49	Under board	KNA-629-E	Including key No. 51～53
50*	Name plate F	PAL-027-0	
51	Insulator assembly (G)	KXA-796-B	
52	Bottom cover	KMS-074-0	
53	Insulator assembly (H)	KXA-797-B	

POWER P.C. BOARD

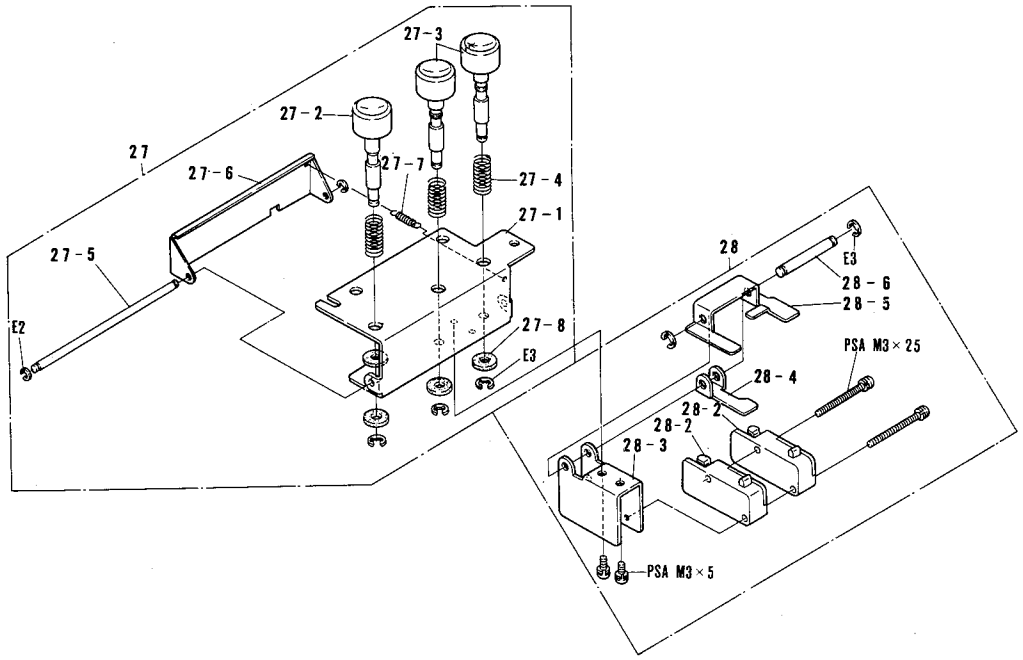


Parts List

NOTICE: Any parts asterisked(*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Power P.C. board assembly	KNP-054-C	
2	Capacitor 0.01μF 1.4kV	C43-003-0	
3	Metal oxide 3.9k 3W	RS3P 392J	
4*	Terminal (B)	KNK-222-0	
5	Fuse 0.3A	E21-030-0	
6	Fuse holder	K91-006-0	
7*	Terminal (L-shaped)	K28-003-0	
8	Capacitor 0.033μF	KCE-009-0	

5.2 OPERATION MECHANISM ASSEMBLY (PXA-008-B)



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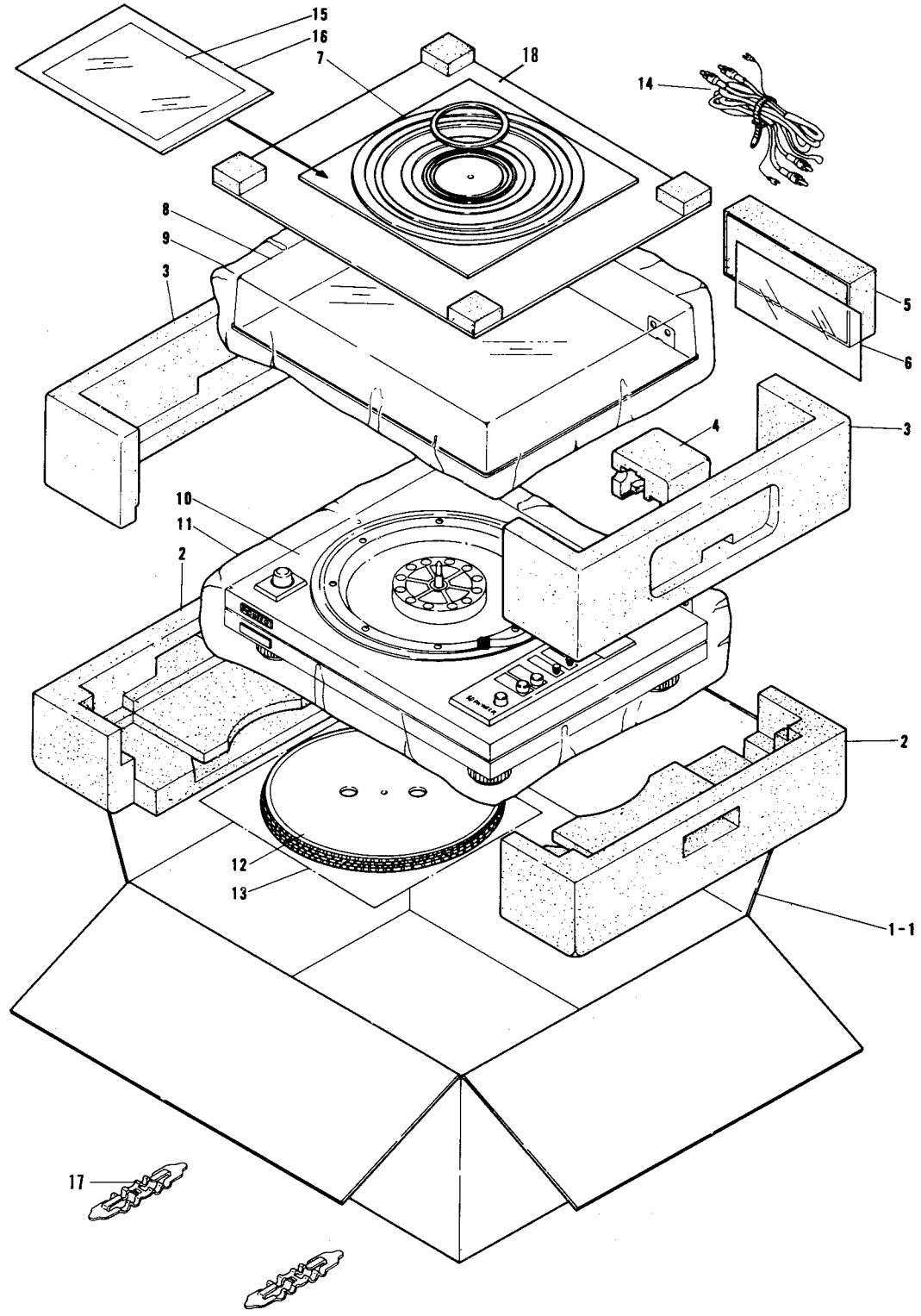
Key No.	Description	Part No.	
27	Function button assembly	KXB-040-0	
27-1*	Angle	KNA-138-C	
27-2	Button A assembly (power OFF)	KXB-041-0	
27-3	Button B assembly (speed selector)	KXB-042-0	
27-4	Spring	KBH-099-0	
27-5*	Shaft	KLA-141-0	
27-6*	Button stopper angle	KNA-144-B	
27-7	Spring	KBH-029-D	
27-8	Rubber washer	KNK-109-0	
28	Switch assembly	KXB-063-F	
28-2	Microswitch	KSF-023-0	
28-3*	Microswitch mounting angle	PNB-014-0	
28-4*	Plate A	KNA-730-0	
28-5*	Plate B	KNA-731-0	
28-6*	Shaft	KLA-727-0	

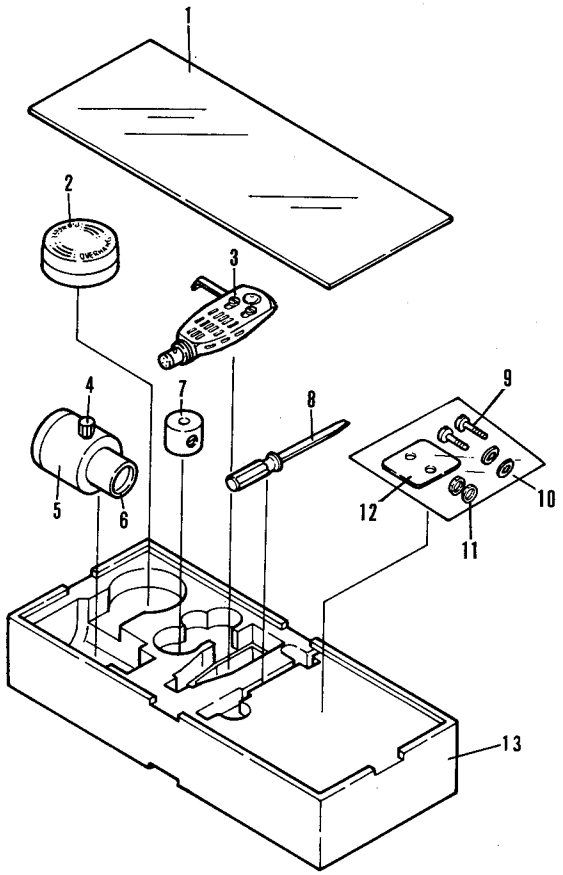
5.3 PACKING



NOTICE: Any parts asterisked(*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Packing case	PHG-036-0	
2	Styrotector B	KHA-227-A	
3	Styrotector A	KHA-226-B	
4	Tonearm packing	KHA-233-A	
5	Parts box	KHX-030-0	
6	Parts box cover	KHX-002-0	
7*	Rubber mat assembly	KEA-019-0	
8	Dust cover	KNK-266-A	
9*	Vinyl bag		
10*	PL-71		
11	Vinyl bag	H56-603-0	
12	Turntable platter	PNR-013-0	
13*	Vinyl bag		
14	Output cord assembly	PDE-003-A	
15	Operating instructions	KRB-069-A	
16*	Vinyl bag		
17	Packing case flap stopper	KNK-403-0	
18	Top cordboard	KHC-059-0	

5.4 ACCESSORY PARTS

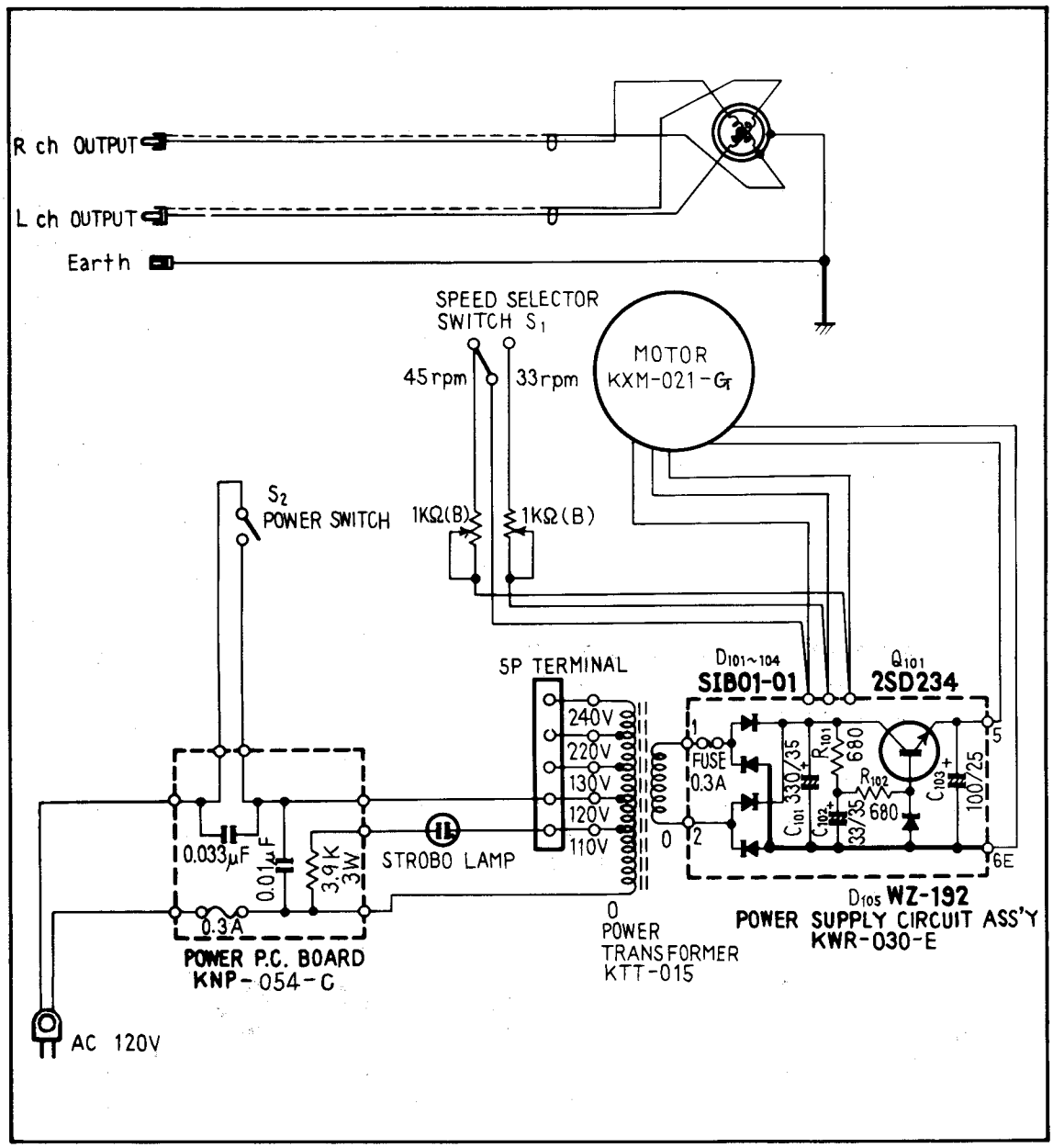


NOTICE: Any parts asterisked(*) are subject to being not supplied.

Key No.	Description	Part No.	
1	Parts box cover	KHX-002-0	
2	EP adaptor	KNK-376-A	
3*	Head shell		
4	Weight-fasten screw	KXA-689-A	
5	Main weight	KLA-632-B	
6	Weight sleeve	KXA-688-D	
7	Lateral balance weight	KLA-633-B	
8	Screw driver	KEX-002-A	
9	Cartridge mounting screw 8mm	KBA-043-0	
9	Cartridge mounting screw 5mm	KBA-044-0	
9	Cartridge mounting screw 15mm	KBA-045-0	
9	Cartridge mounting screw 11.5mm	B11-657-C	
9	Cartridge mounting screw 13mm	B11-044-C	
10	Washer	B23-642-0	
11	Nut	B71-653-0	
12	Weight plate	N64-698-A	
13	Part box	KHX-030-0	

6. SCHEMATIC DIAGRAMS P.C. BOARD PATTERN AND PARTS LIST

6.1 SCHEMATIC DIAGRAMS



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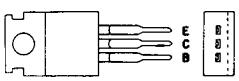
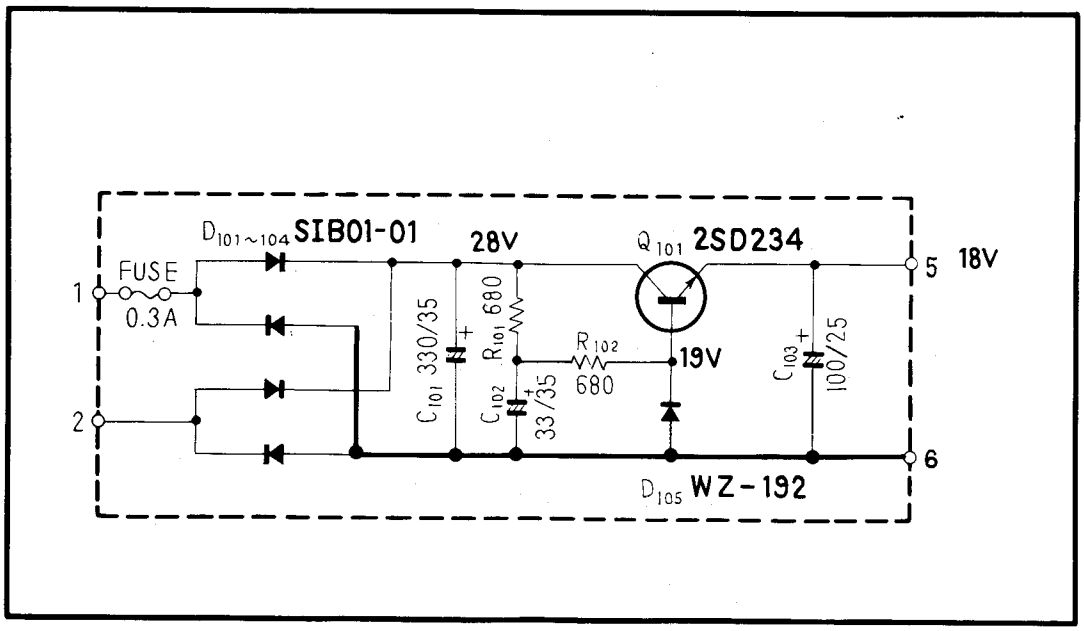
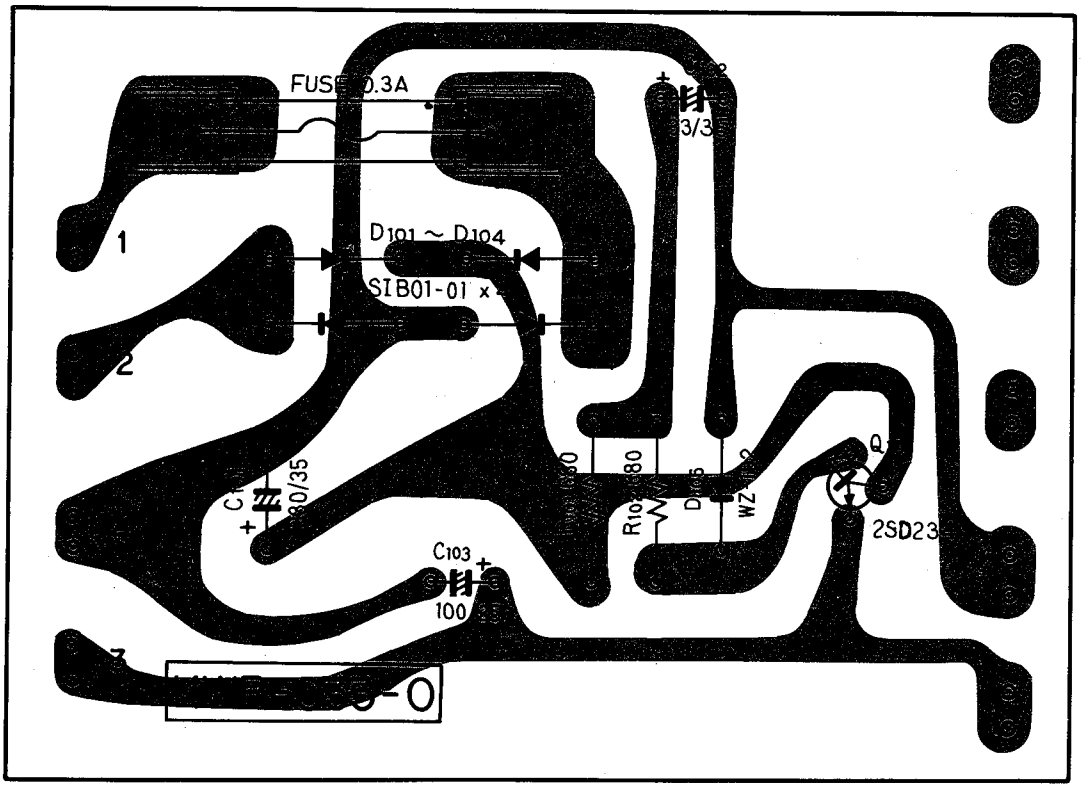


6.2 POWER SUPPLY CIRCUIT ASSEMBLY



Foil Side



- CAPACITORS: IN μF UNLESS OTHERWISE NOTED p: pF
- RESISTORS: IN Ω, ¼W UNLESS OTHERWISE NOTED k: kΩ, M: MΩ

Parts List of Power Supply Circuit Assembly

CAPACITORS

Symbol	Description	Part No.	
C101	Electrolytic 330 35V	CEA 331P 35	
C102	Electrolytic 33 35V	CEA 330P 35	
C103	Electrolytic 100 25V	CEA 101P 25	

RESISTORS

Symbol	Description	Part No.	
R101	Carbon film 680	RD¼PS 681J	
R102	Carbon film 680	RD¼PS 681J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q101	Transistor 2SD234		
D101	Diode SIB01-01		
D102	Diode SIB01-01		
D103	Diode SIB01-01		
D104	Diode SIB01-01		
D105	Zener diode WZ-192		

OTHERS

Symbol	Description	Part No.	
	Fuse 0.3A	E21-030-0	
	Fuse holder	K91-006-0	

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