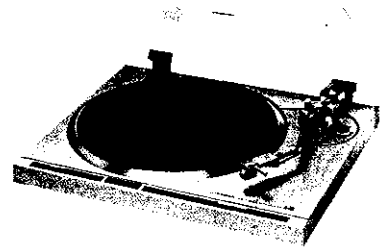
PIONEER®

Service Manual



STEREO TURNTABLE

PL-200 S S/G

For descriptions and adjustment methods of the D.D.motor and the mechanism employed in this model, refer to the Supplementary Service Manual (ART-467) for the PL-200, PL-255, PL-300, and PL-400 models.

CONTENTS

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<ART-461-0>

1. SPECIFICATIONS

Motor and Turntable

Drive System ..... Direct-drive
Motor ..... DC servo motor
Turntable Platter ..... 310mm diam. aluminum alloy die-cast
Moment of Inertia ..... 150kg-cm² (including platter mat)
Speeds ..... 33-1/3 and 45rpm
Speed Control Range ..... ±2%
Wow and Flutter ..... Less than 0.025% (WRMS)
Signal-to-Noise Ratio ..... More than 75dB (DIN-B)
(with Pioneer cartridge model PC-110/II)

Tonearm

Type ..... Static-balance type, S-shaped pipe arm
Effective Arm Length 221mm
Overhang 15.5mm
Usable Cartridge Weight ..... 4g (min.) to 9g (max.)

Subfunctions

Auto-return mechanism, Anti-skating force control, Stylus pressure direct-readout counterweight, Cueing device, Strobe light, Free top hinges

Semiconductors

ICs 2
Transistors 2
Diodes 2
Hall Elements 3

Miscellaneous

Power Requirements:
S, S/G models .... AC110–120/220–240V ~ (switchable), 50, 60Hz
Power Consumption 7W
Dimensions ..... 420(W) x 96(H) x 365(D)mm
16-1/2(W) x 3-13/16(H) x 14-3/8(D)in.
Weight ..... 6kg/13 lb 4 oz

PC-110/II Specifications

Type ..... Moving magnet type
Stylus ..... 0.5 mil diamond (PN-110/II)
Output Voltage ..... 3.5mV (1kHz, 50mm/s LAT)
Tracking Force ..... 1.5g to 2.5g (proper 2.2g)
Frequency Response ..... 1.5 to 25,000Hz
Recommended Load ..... 50kΩ +170 ~ 300pF

Accessories

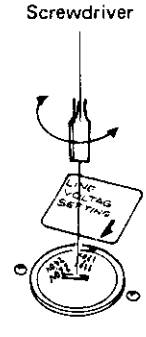
EP Adapter 1
Operating Instructions (French and German furnished on model for WE) 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

LINE VOLTAGE SELECTOR SWITCH

The line voltage selector switch is located on the top surface of the cabinet of this turntable. Before your turntable is shipped from the factory, the switch is set to the power requirements of the turntable's destination, check that it is set properly before plugging the power cord into the outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows:

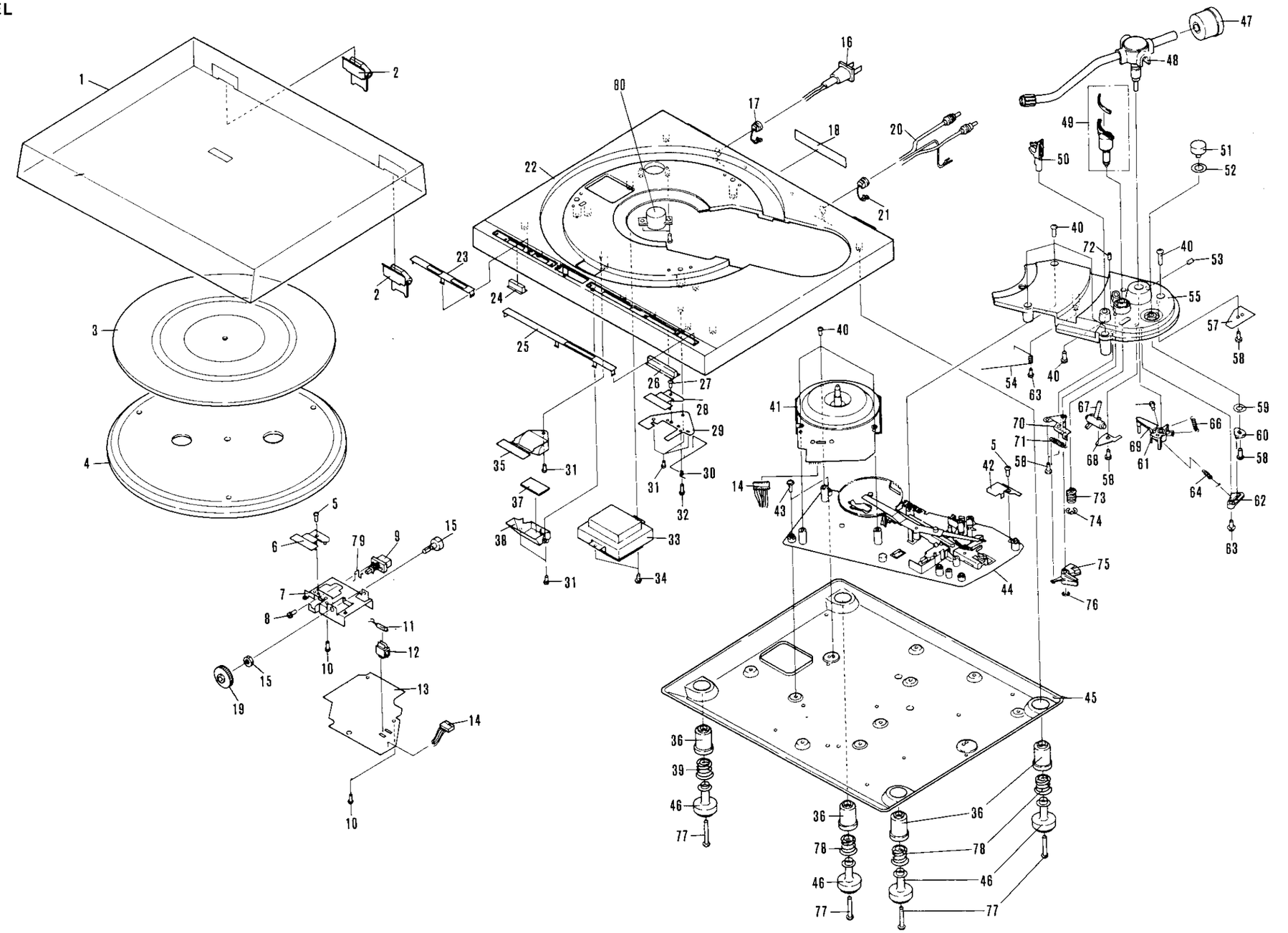
1. Disconnect the power cord.
2. Provide yourself with a medium-sized screwdriver. Insert the tip of the screwdriver into the groove of the selector switch and turn it so that the power voltage marking of your area points to the white mark by the arrow on the label.



S and S/G model

2. EXPLODED VIEWS

2.1 MAIN PANEL



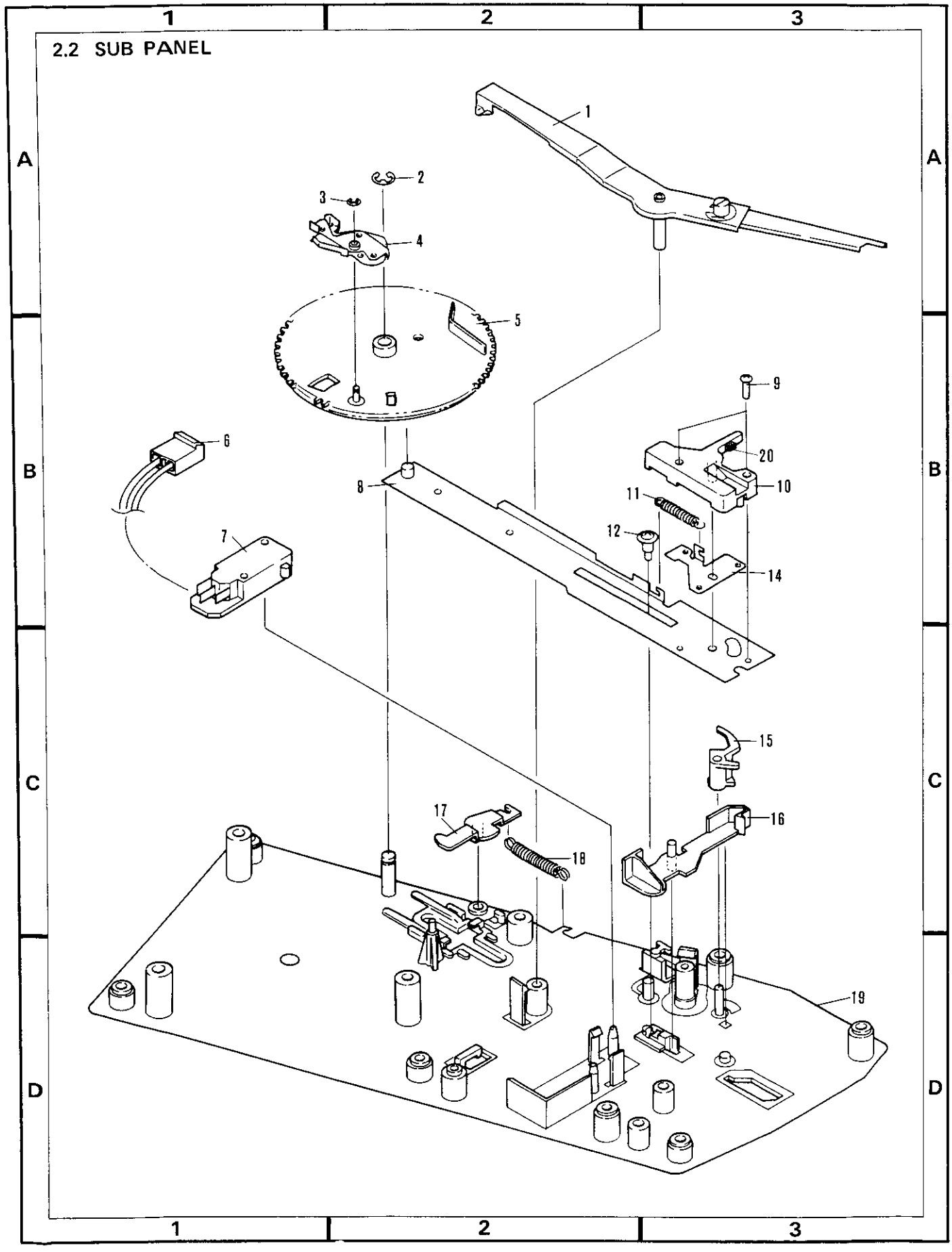
Parts List of Main Panel

NOTE:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Key No.	Part No.	Description
1.	PNV-034	Dust cover
2.	PXB-155	Hinge assembly
3.	PEB-150	Rubber mat assembly
4.	PNR-114	Turntable platter
5.		Deltite screw 3 x 8
6.		Button guide C
7.		Angle
8.		Semes A screw 3 x 5
9.	PSG-020	Push switch
10.		Taptite P screw 3 x 8
⚠11.	PEL-037	Neon lamp
12.	PNX-074	Neon lamp base
⚠13.		Power supply assembly
14.	PDE-061	Connector assembly
15.	PCS-016	Variable resistor
⚠16.	PDG-004	AC power cord
17.	PEC-058	Strain relief
18.		Label
19.	PAC-047	Knob
20.	PDE-044	OUTPUT cord
21.	PEC-056	Strain relief
22.	PNX-125	Panel
23.	PAM-061	Name plate
24.	PAC-043	Push button
25.	PAM-060	Name plate
26.	PAC-044	Button
27.		Deltite screw 3 x 8
28.	PNX-052	Button guide A
29.		Button base
30.	PXB-151	Cut spring A assembly
31.		Taptite P screw 3 x 8
32.	PBA-086	Screw
⚠33.	PTT-086	Power transformer
34.		Taptite P screw 4 x 10
35.	PNX-051	Lens
36.	PEB-163	Rubber cushion
37.		Mirror
38.		Lens holder
39.	PBH-240	Foot spring
40.	PBA-108	Screw
41.	PXM-074	Motor
42.		Protector
43.	PBA-109	Screw
⚠44.		Subpanel assembly
45.		Base
46.	PNX-062	Foot case
47.	PXB-092	Weight assembly
48.	PPD-590	Arm assembly
49.	PXB-107	EV sheet assembly
50.	PXB-094	Arm rest assembly
51.	PAC-045	AS knob
52.	PBF-005	AS washer
53.		Hexagon socket headless set screw
54.	PXB-152	Cut spring B assembly
55.	PNX-053	Arm base
56.	PBA-108	Screw
57.		OUTPUT terminal
58.		Taptite P screw 3 x 8
59.	PBE-012	Washer
60.	PNX-054	AS adjusting plate
61.	PNX-061	PU plate B
62.	PNX-055	Lever
63.		Washer faced taptite P screw 3 x 10
64.	PBH-236	AS spring
65.		- - - - - - - - - - - - - - - - - -
66.	PBH-259	PU plate spring
67.	PXT-382	EV lever unit
68.	PBK-042	EV plate spring A
69.	PNX-060	PU plate A
70.	PXT-385	EV plate spring B unit
71.	PBH-238	EV cam spring
72.		Hexagon socket headless set screw 3 x 12
73.	PBH-237	EV spring
74.		E type washer 7
75.	PNX-059	EV cam
76.		E type washer 3
77.	PBA-099	Screw
78.	PBH-241	Foot spring B
79.	PBH-261	Spring
⚠80.	PSB-006	Line voltage selector

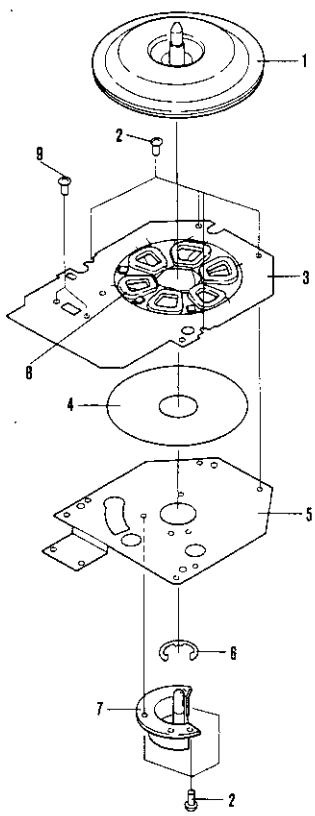
2.2 SUB PANEL



Parts List of Sub Panel

Key No.	Part No.	Description
1.	PXT-355	Detector lever unit
2.		E type washer 4
3.		E type washer 1.5
4.	PYY-058	Return signal unit
5.	PNX-036	Cam
⚠6.	PDE-070	Connector assembly
⚠7.	PSF-009	Microswitch
8.		Plate
9.		Pan head screw 2.6 x 10
10.	PNX-033	EV cam
11.	PBH-224	Spring
12.	PBA-103	Screw
13.		
14.	PNC-126	START plate
15.	PNX-031	Switch plate
16.	PNX-030	Switch lever
17.	PNX-035	Plate
18.	PBH-225	Spring
19.		Sub panel unit
20.	PEC-065	EV cam cushion

2.3 D.D. MOTOR



Key No.	Part No.	Description
1.		Rotor unit
2.		Taptite screw 3x5
3.		Control assembly
4.		Insulator
5.		Base unit
6.		EW12
7.		Shaft holder
8.		Coil
9.		Taptite screw 3x12

3. SCHEMATIC DIAGRAM AND PARTS LIST

NOTE:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω——56 ×10¹——561 . . . . . RD¼PS 5 6 1 J
47kΩ——47 ×10³——473 . . . . . RD¼PS 4 7 3 J
0.5Ω——OR5 . . . . . RN2H 0 R 5 K
1Ω——010 . . . . . RS1P 0 1 0 K

Ex. 2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ 562 × 10¹ 5621 . . . . . RN¼SR 5 6 2 1 F

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

Parts List of D.D. motor (PXM-074)

CAPACITORS

Part No.	Symbol & Description
CEA 101M 6.3NP	C1
CKDYF 403Z 50	C2
CKDYB 681Z 50	C3
CQMA 104J 50	C4
CSZA R47K 35	C5
CKDYF 103Z 50	C6, C13
CQMA 104K 50	C7
CEA 010P 50	C8
CEA 100P 16	C9
CEA 471P 16	C10–C12

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

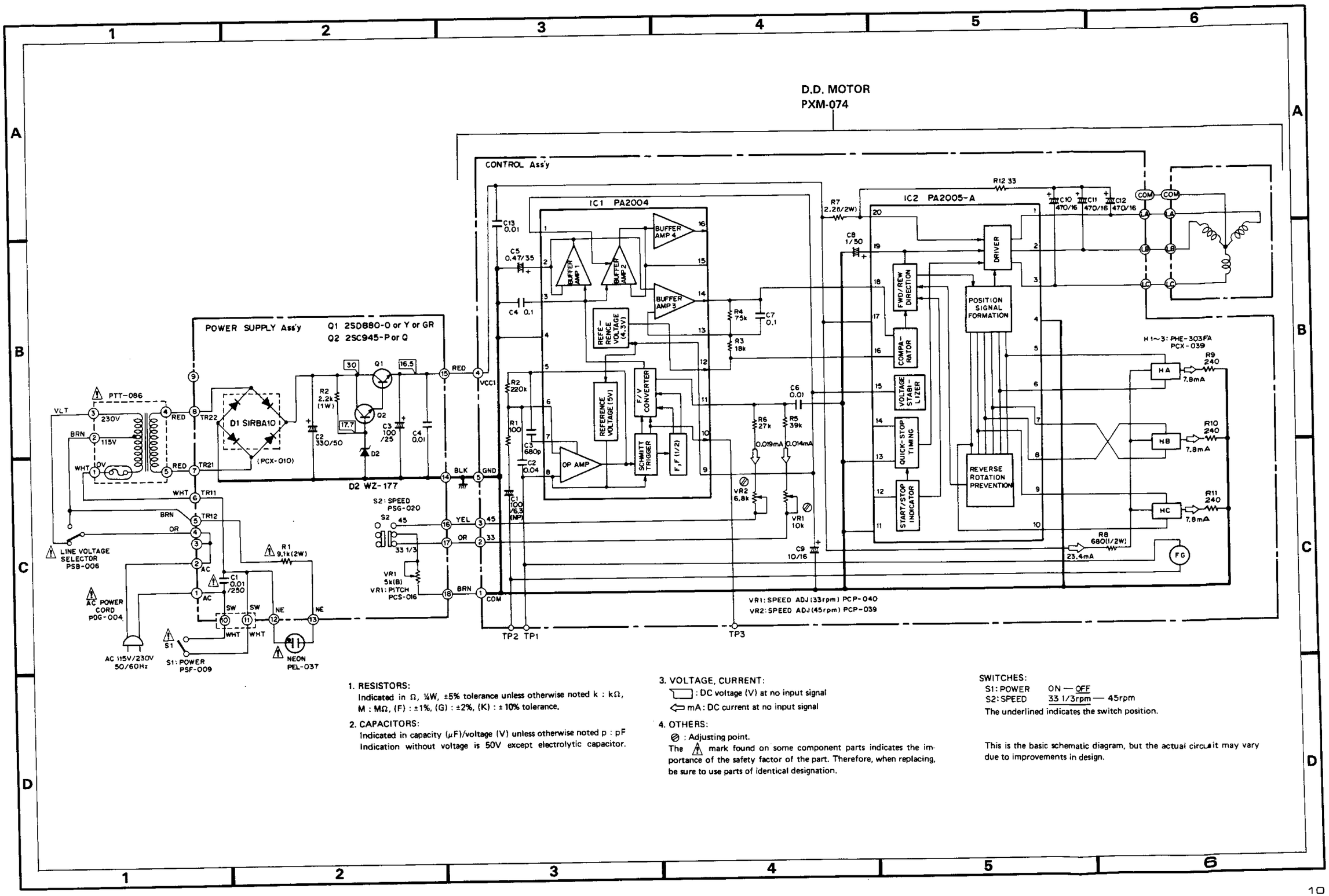
Part No.	Symbol & Description	
RD¼PS □□□J	R1–R6, R9–R12	
RD½PS □□□J	R7, R8	
PCP-040	VR1	(10k-B)
PCP-039	VR2	(6.8k-B)

SEMICONDUCTORS AND OTHERS

Part No.	Symbol & Description	
PA2004	IC1	
PA2005A	IC2	
PHE-303FA	H1–H3	Hall element

Parts List of Power Supply Assembly

Part No.	Symbol & Description	
2SD880	Q1	
2SD945	Q2	
PCX-010	D1	
WZ-177	D2	
CKDYF 103Z 50	C4	
CEA 331M 50L	C2	
CEA 101M 25L	C3	
⚠ PCL-032	C1	
⚠ RS2PF 912J	R1	
RS1PF 222J	R2	
PSG-020	S2	Speed selector
PCS-016 5k-B	VR1	Speed control
PDE-061		Connector assembly
⚠ PEL-037		Neon lamp
PNX-015		Insulator
PBH-261		Push button spring



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ± 10% tolerance.

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
▭ : DC voltage (V) at no input signal
⇦ mA : DC current at no input signal

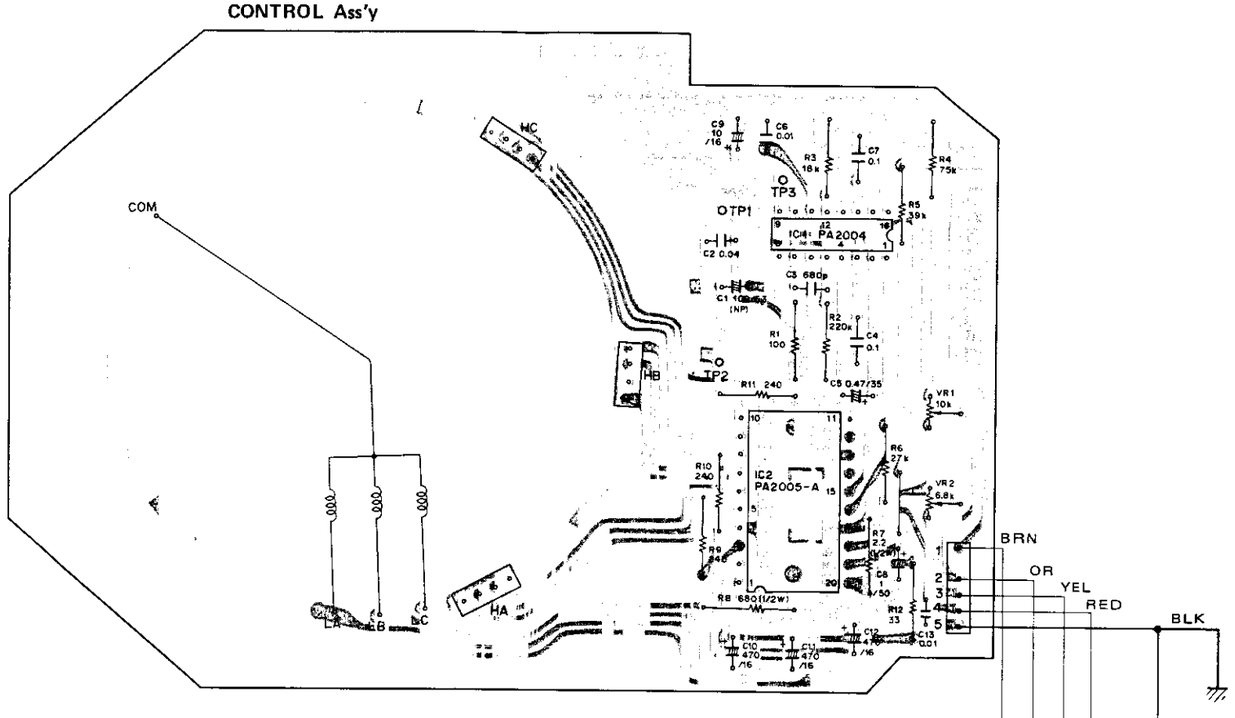
4. OTHERS:
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

SWITCHES:
S1: POWER ON — OFF
S2: SPEED 33 1/3rpm — 45rpm
The underlined indicates the switch position.

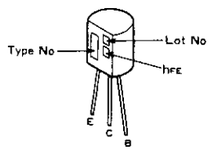
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

4. P.C.BOARD CONNECTION DIAGRAM

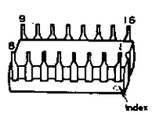
CONTROL Ass'y



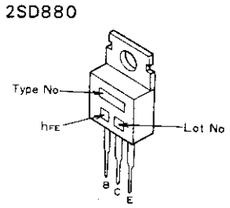
2SC945



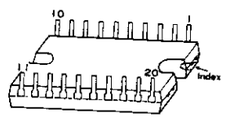
PA2004

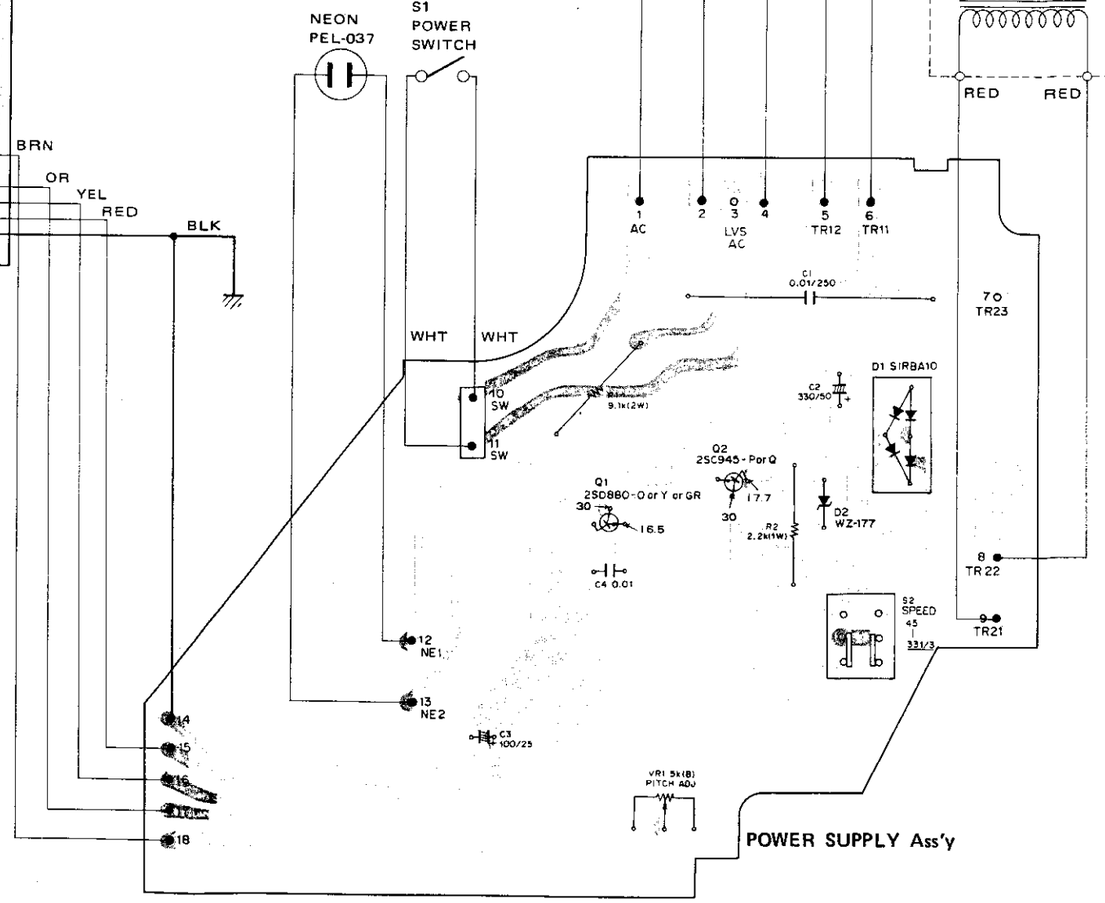


2SD880

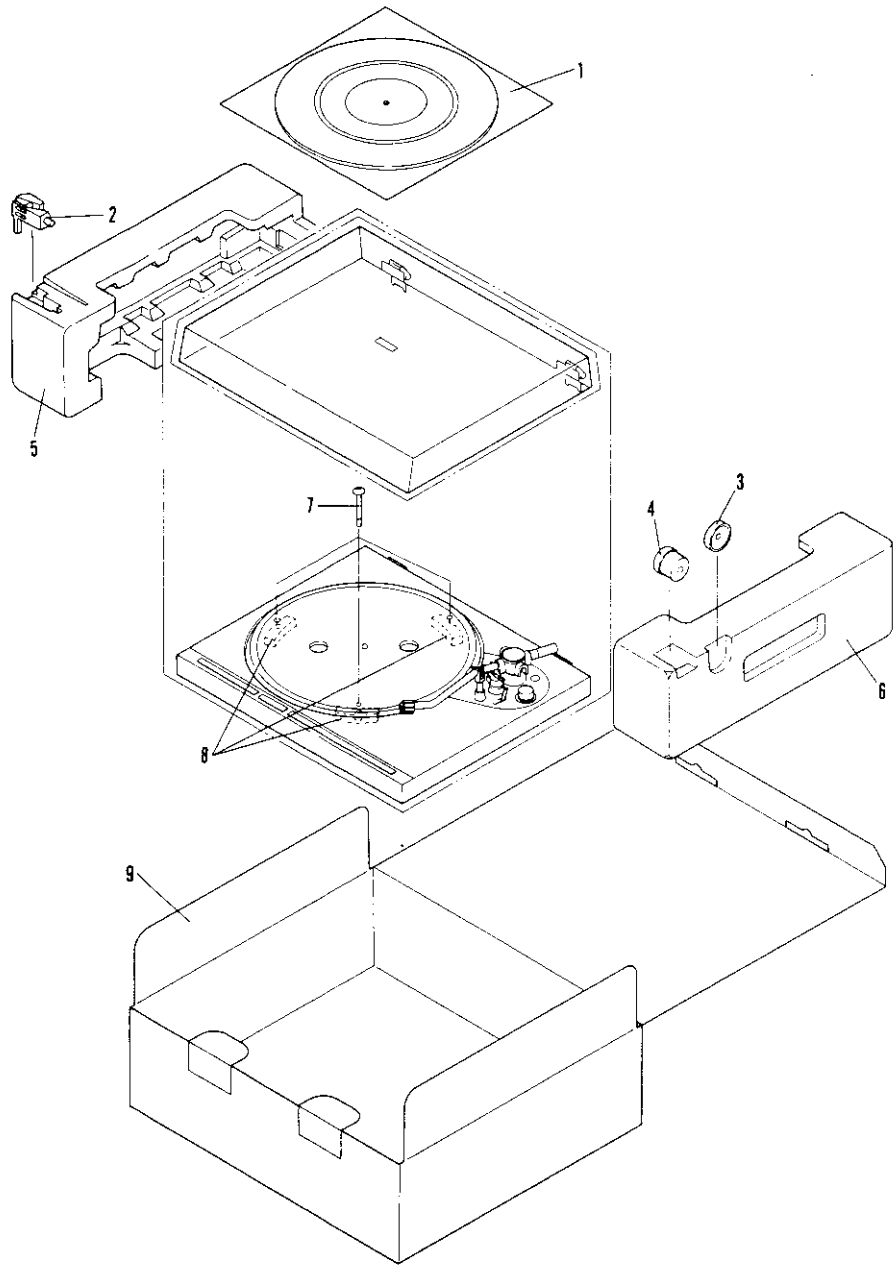


PA2005A





5. PACKING



Parts List

Key No.	Part No.	Description
1.	PEB-150	Rubber mat assembly
2.	PXA-792	Headshell assembly
	PXT-910	Cartridge assembly
	PBA-905	Cartridge mounting screw
3.	N93-603	45 adaptor
4.	PXB-092	Weight assembly
5.	PHA-107	Side protector L
6.	PHA-108	Side protector R
7.	PBA-100	Screw
8.	PNX-064	Turntable protector
9.	PHG-386 (S)	Packing case
	PHG-366 (S/G)	
	PRB-130	Operating instructions
	H56-603	Vinyl bag

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ADDITIONAL

Service Manual

PIONEER®

STEREO TURNTABLE

PL-200
PL-200X
PL-255
PL-250
PL-260
PL-300
PL-300X
PL-400
PL-400X

■ This additional service manual describes the trouble shooting and the precautions for reassembly. For all other details, refer to the service manuals shown in the table below which have already been issued.

Model		Parts No.	Main description
PL-200/WE, WB, WP	PL-200X/WE, WB	ART-425	Exploded views and parts list
PL-200/KUT, KCT	PL-200X/KU	ART-426	"
PL-200/S,S/G		ART-461	"
PL-255/ S/G		ART-463	"
PL-255/KUT, KCT		ART-399	"
PL-250/KU		ART-486	"
PL-260/KU		ART-487	"
PL-300/S		ART-462	"
PL-300/KUT, KCT	PL-300X/KU	ART-439	"
PL-300/WE, WB, WP	PL-300X/WE, WB	ART-390	"
PL-400/S, S/G		ART-464	"
PL-400/KUT, KCT	PL-400X/KU	ART-392	"
PL-400/WE, WB, WP	PL-400X/WE, WB	ART-391	"
Additional			
PL-200, 200X, 255, 300, 300X, 400, 400X		ART-467	Circuit and mechanism descriptions

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< ART-516-0 >

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1. TROUBLE SHOOTING

Use the following directions to find the cause of each type of breakdown. Improperly adjusted units should be completely readjusted.

NOTE:
Indicated ☆ mark applicable to the PL-255, PL-260, PL-400, and PL-400X.

☆ 1.1 DOES NOT LEAD IN

START

- Motor does not rotate.
  - Refer to the "Motor does not rotate" section.
- Arm clamp is not released.
- Depression in EV rubber sheet
- Tracking force is too heavy.
- See ❶ Insufficient torque on the lead-in latch
- PU plate is not properly attached.

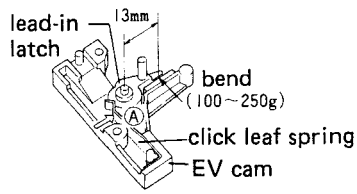


Fig. 1-1 Adjustment of lead-in latch with insufficient torque.

Procedure for dealing with item ❶

As shown in figure 1-1, if the force required to turn over the lead-in latch is less than 100g at a point 13mm from the center, bend the click leaf spring toward Ⓐ until the force is 100—250g.

☆ 1.2 DOES NOT REPEAT

START

- Repeat switch is not ON.
- See ❷ The start lever unit pin is separated from the driving lever unit section.
- See ❸ Locking lever SP(B) is weak.

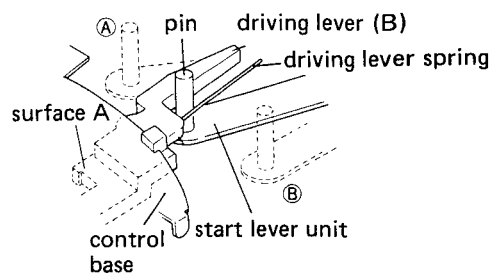


Fig. 1-2 Misaligned pin of start lever unit.

Procedure for dealing with item ❷

As shown in figure 1-2, if the start lever unit pin is out of line in the direction of Ⓐ, repeat will not operate. If it is too far in the direction of Ⓑ, the unit will not start. In these cases, assemble referring to the method of joining the panel and bottom panel (lid).

Procedure for dealing with item ❸

As shown in figure 1-3, if the locking lever SP(B) is too weak, surfaces A and B of the locking lever will be separated. The spring must then be reworked so that surfaces A and B are always in contact with each other. The repeat function operates normally when driving lever (B), surface A touches surface C of the locking lever and driving lever (B) remains in that position.

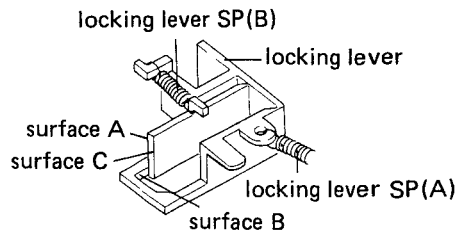


Fig. 1-3 Weak locking lever SP(B)

☆ 1.3 REPEAT FUNCTION IS REPEATED

Separate the panel section and bottom panel and, as shown in figure 1-4, apply a tension of 10g to the start lever unit pin in direction Ⓐ. If the repeat function operates, the selector and reset plate sections are not moving properly. If the unit stops, the driving lever (B) is not moving properly.

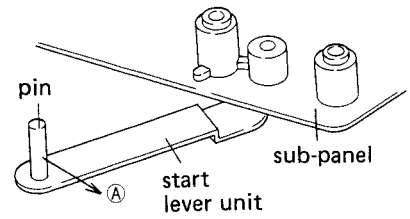
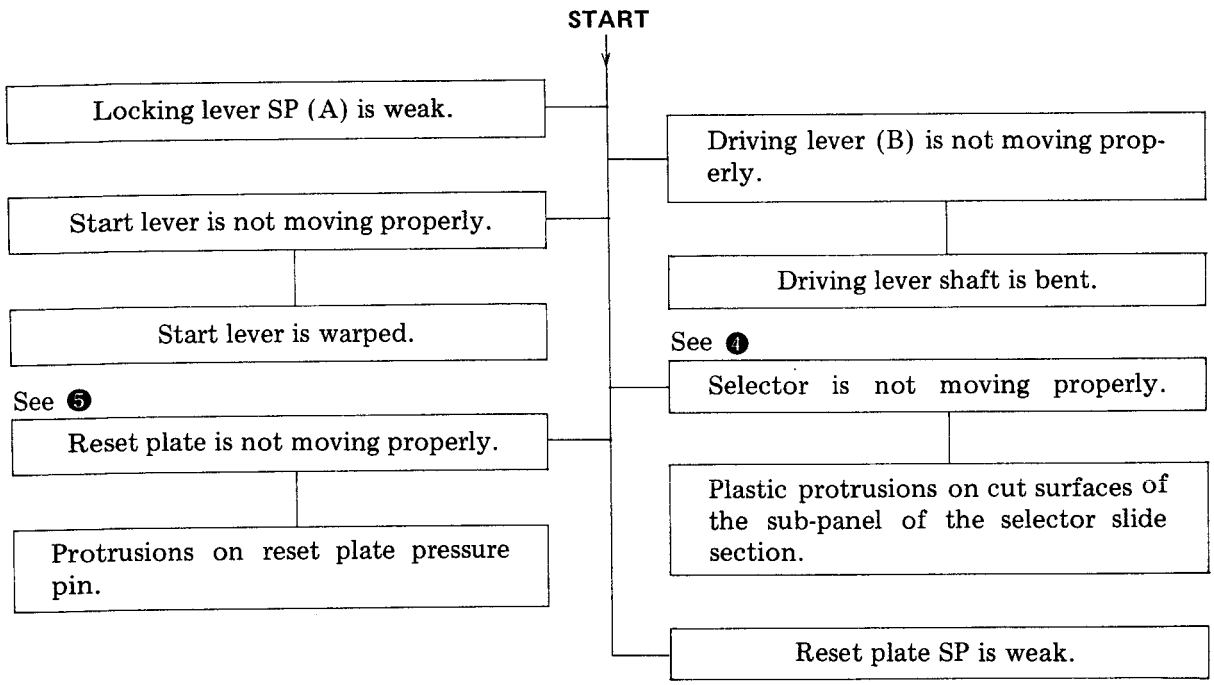


Fig. 1-4 Check of repeat operation.



Procedure for Dealing with Item ❹

If there are plastic protrusions remaining from the original-pressing process on surfaces Ⓐ,Ⓑ, and Ⓒ of the sub-panel which slides with the selector, the movement of the selector will be adversely affected. Therefore, these protrusions must be removed (Fig. 1-5).

Procedure for Dealing with Item ❺

If there are plastic protrusions on the pressure pin section of section Ⓓ of the reset plate, these protrusions will come in contact with the lower surface of the driving panel when the reset plate moves in direction Ⓔ and the movement of the reset plate will be adversely affected. Therefore, these protrusions must be removed (Fig. 1-5).

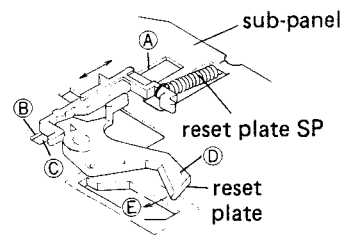


Fig. 1-5 Improper movement of selector.

1.4 AUTO-RETURN DOES NOT WORK

START

- Change in starting position adjustment.
- See ❻
- After starting, incomplete reset of the signal plate.
  - The curved section of the signal plate is deformed.
- Looseness in the PU plate attachment.
- Starting plate does not follow the signal plate.
- Too much grease between the signal plate and the cam.
- Inner diameter of the starting plate bearing is small.
- Protrusions on the caulk section of the starting plate bearing.
- Not enough grease between the starting plate and signal plate.
- The inner areas of records can not be tracked.
- Arm lead wire is caught on something.
- PU cord is touching the PU plate.
- PU plate is touching the leaf spring (start panel).
- Operation of the detection lever is not smooth.

Procedure for Dealing with Item ❻

After performing the return operation, if the curved section of the signal plate and curved section of the starting plate are not in contact with surfaces Ⓐ and Ⓑ respectively of the cam, reset will be incomplete and the starting position will be late. As a result, the return function may not operate at times. In this case, bend the signal plate Ⓒ so that dimension A is 0.5mm or larger.

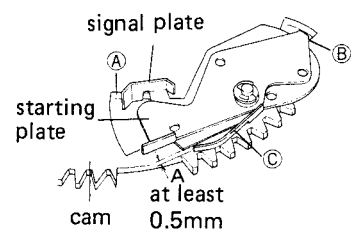


Fig. 1-6 Incomplete reset of starting and signal plates.

1.5 RETURN IS FAST (RETURN AT 1mm PITCH)

See ❼

Protrusions on the pinion gear section.

Procedure for Dealing with Item ❼

If there are rough areas of plastic protruding from the Ⓐ section of the protruding section of the pinion gear, the return function may operate at a pitch of only 1mm. In this case, remove the plastic protrusions completely (Fig. 1-7).

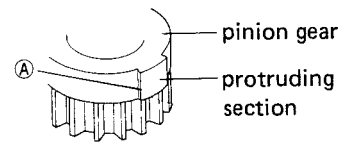


Fig. 1-7 Elimination of pinion gear protrusions.

☆ 1.6 TONEARM DOES NOT LOWER IN CORRECT POSITION

START

- Incorrect adjustment.
- Location of stylus was changed during cartridge replacement.
- PU plate operation is not smooth.
  - The PU plate SP is weak.

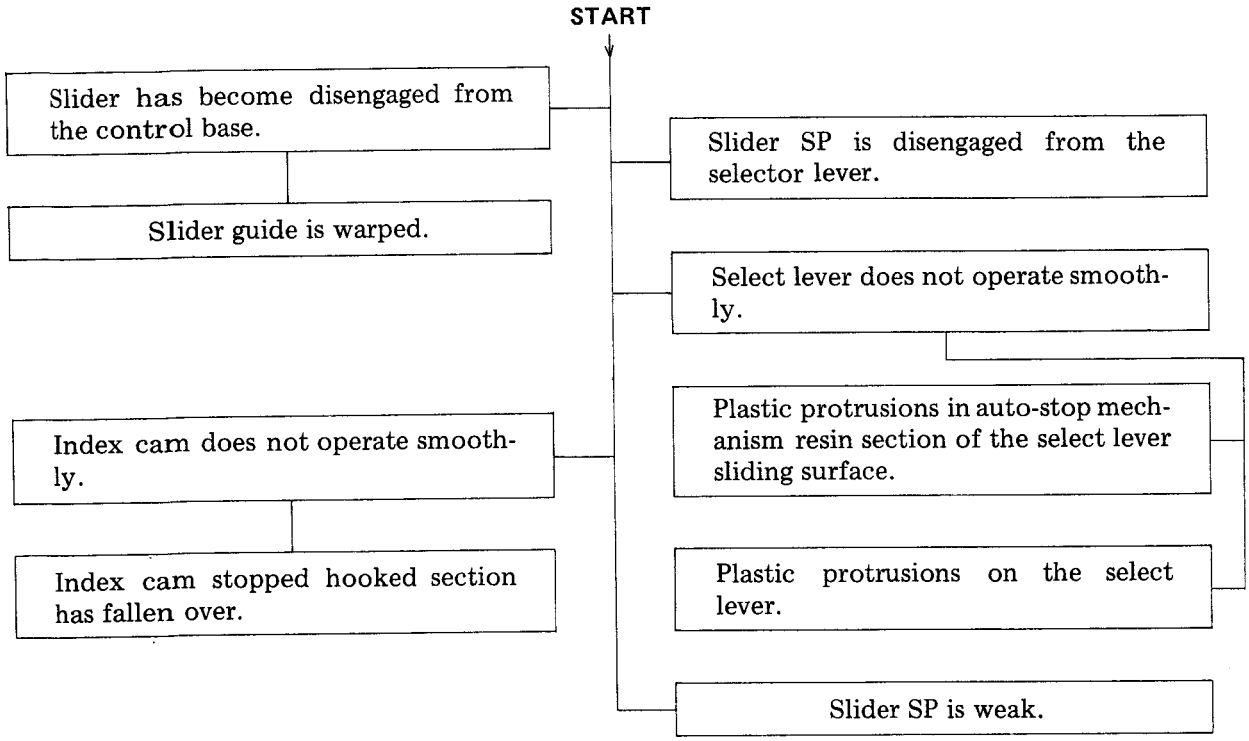
☆ 1.7 RECORD SIZE SELECTOR DOES NOT WORK

- **Tonearm descends at 17cm location when record size selector is set at 30cm.**

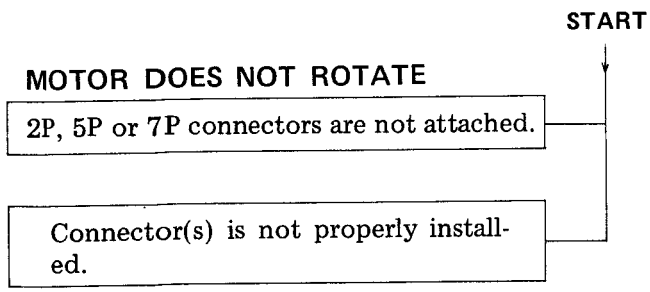
START

- Slider and panel are in contact.
  - Slider is warped.
- Slider does not operate smoothly.
  - Slider is warped.

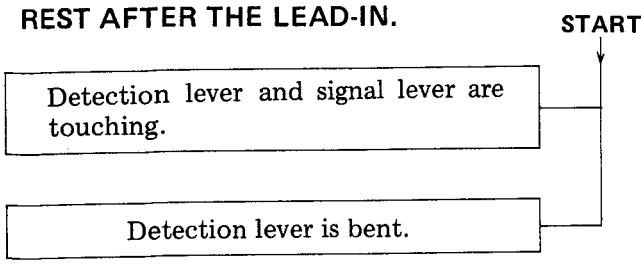
- **Tonearm descends at 30cm location when record size selector is set at 17cm.**



1.8 MOTOR DOES NOT ROTATE



1.9 ☆ WITH THE RECORD SIZE SET AT 17cm, THE TONEARM IS RETURNED TO THE ARM REST AFTER THE LEAD-IN.



☆ 1.10 AUTO OPERATION REPEATS

START

Detection lever and leaf spring (start plate) are touching at the mechanism stop location.

Leaf spring is deformed.

Cut spring (B) and detector lever are touching.

Cut spring (B) is bent.

Cut spring (B) does not operate smoothly.

Cut spring (B) and (A) are touching.

1.11 MOTOR DOES NOT STOP

START

Start panel is not moving properly.

EV cam is warped.

The start plate spring is weak.

See ❽

The switch lever and switch locker are not locking.

The installation location of the PU plate is incorrect.

Procedure for Dealing with Item ❽

In order to turn the power OFF, the PU plate shaft touches surface Ⓐ of the switch locker pushing it over so it locks with the switch lever turning the micro-switch OFF (fig. 1-8). If the amount of push on the switch locker is insufficient, it can not lock with the switch lever. With the tonearm locked in the arm rest, as shown in figure 1-9, attach the PU plate precisely midway between the first and second points from the arm base scale mark counting away from you (only for auto-return models; for fully automatic models, align with the center point).

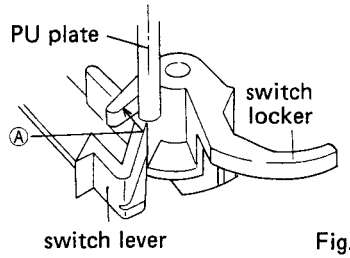


Fig. 1-8

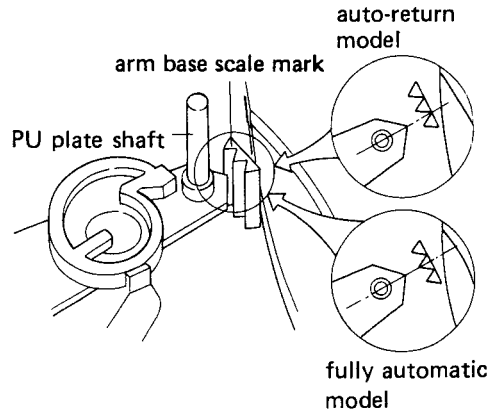


Fig. 1-9 Adjustment of PU plate attachment location

2. PRECAUTIONS FOR REASSEMBLY

Follow these directions and precautions when reassembling a unit after completing repairs. Be sure to lubricate as required, make no mistakes when attaching parts, and avoid all other careless mistakes that may be the cause of trouble later on.

2.1 AREAS THAT REQUIRE LUBRICATION

NOTE:
Types of lubricants and areas where they are used are listed in table 1.

Table 1

Type of Oil	Areas used
Silicon Oil #50000	raising shaft
GYA-008	all other areas

Lubrication points are specified for oils other than GYA-008. Never use a different type of oil.

- **Cam Section**

Apply oil to the heart-shaped grooved section (rear side of the cam) and lock plate sliding section in order to minimize wear on the sliding section and the burden on the mechanism.

- **Driving Plate Assembly**

Decrease the burden on the mechanism and the wear on the sliding section.

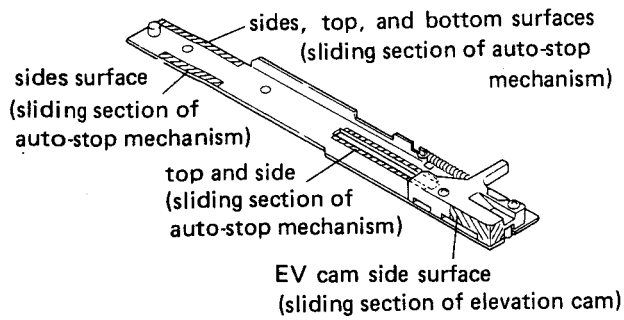


Fig. 2-1 Driving panel assembly section Switch Locker Section

- **Switch Locker Section**

Apply oil to the switch locker (opening) and sub-panel base sliding section to decrease the burden on the mechanism.

When applying oil to the opening (shaft hole), do not apply any oil 2—3mm from the bottom surface. If oil is applied 2—3mm within the bottom surface, it may come out the bottom and go between the switch lever and sub-panel base causing the switch lever to operate ineffectively.

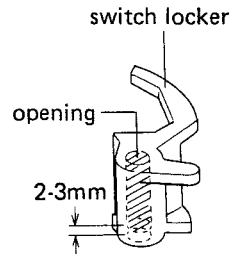


Fig. 2-2 Switch locker section

- **Selector Section**

Apply oil to the surface of the sub-panel base of the selector sliding section to decrease the burden on the mechanism and wear on the sliding section.

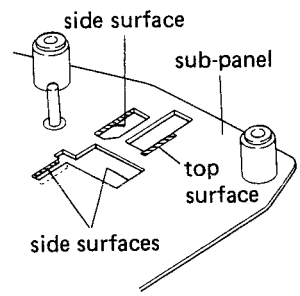


Fig. 2-3 Selector section

☆

- **Reset Plate Section**

Apply oil to the sub-panel base (shaft) and sliding section of the reset plate to decrease the burden on the mechanism.

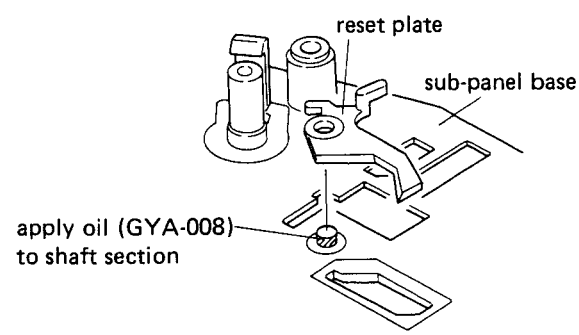


Fig. 2-4 Reset plate section

NOTE:
Indicated ☆ mark applicable to the PL-255, PL-260, PL-400 and PL-400X.

☆

- **Index Cam Section**

Apply oil to the index cam, sub-panel shaft section, and lower surface of the hooked section to decrease the burden on the mechanism.

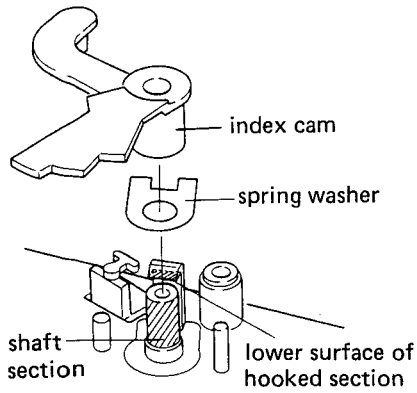


Fig. 2-5 Index cam section

- **EV Lever Unit Section**

Apply oil to the sliding sections of leaf spring (A) and EV lever unit to decrease the burden on the mechanism.

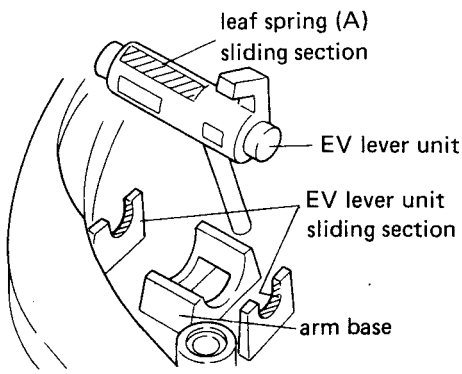


Fig. 2-6 EV lever unit section

- **Elevation Cam Section**

Apply oil to the elevation cam and sliding section of the raising shaft to decrease the burden when operated.

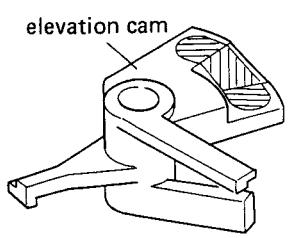


Fig. 2-7 Elevation cam section

- **EV Sheet Section**

Apply oil to the raising shaft and sliding section of the bearing to assure stability in the elevation lowering speed.

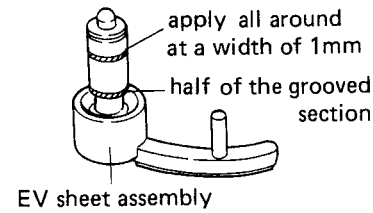


Fig. 2-8 EV sheet section

☆

- **Driving Lever (B) Section**

Apply oil to the driving lever (B), control base, and the sliding section of the driving lever shaft to decrease the burden when operated.

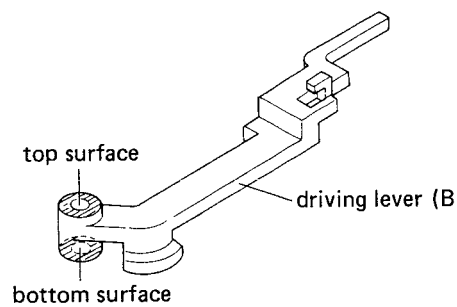


Fig. 2-9 Driving lever (B) section 1

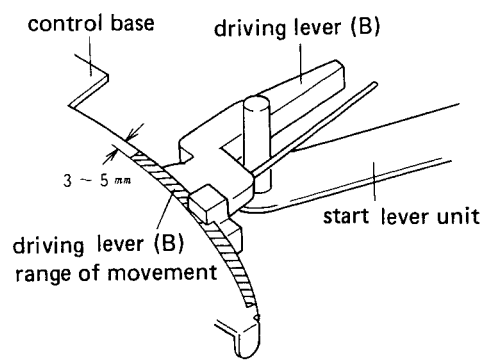


Fig. 2-10 Driving lever (B) section 2

☆ 2.2 PRECAUTIONS FOR ATTACHMENT OF PARTS AND REASSEMBLY

- **Reset Plate SP Attachment**

As shown in figure 2-11, the reset plate SP hook is attached by putting the open section on the sub-panel base side.

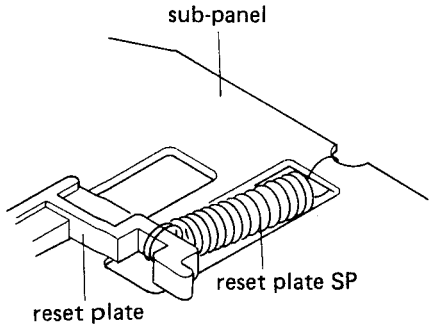


Fig. 2-11 Reset plate SP attachment

- **Cam Assembly Attachment**

The cam assembly is attached by letting the lock plate go in the direction Ⓐ as shown in figure 2-12.

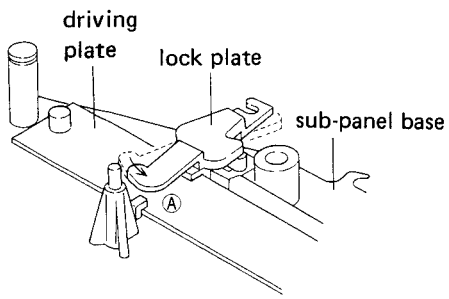


Fig. 2-12 Cam assembly attachment

- **Motor Attachment**

When installing the motor, set the cam in the mechanism stop location and verify that the starting plate section Ⓑ does not protrude beyond surface Ⓐ of the cam. If the motor is attached with the starting plate section Ⓑ protruding, the starting plate may be deformed, the motor pinion gear may be scratched, and the return function may be damaged.

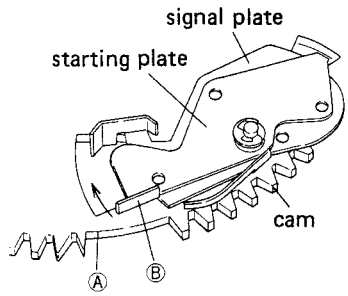


Fig. 2-13 Motor attachment

- **PU Plate Attachment**

Push the PU plate into place so that the PU plate bearing section touches the revolution shaft attachment nut. Installation direction is as shown in figure 2-14. Note that there is a difference between auto-return and fully automatic models.

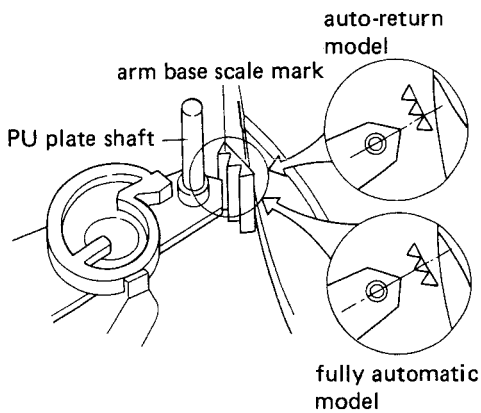


Fig. 2-14 PU plate attachment

- **AS Knob Attachment**

When installing the AS knob, put the AS knob rib against the AS knob revolution control stopper (attached to the arm base) and affix with the screw. As the stopper may break, be sure to press the AS knob down firmly when installing it.

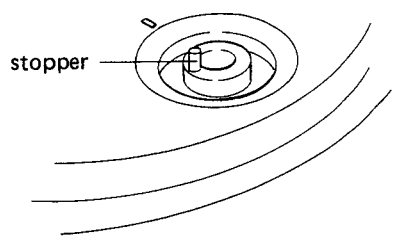


Fig. 2-15 AS knob attachment

- **Arm Base Attachment**

When attaching the arm base section to the mechanism section, put the mechanism section switch locker and switch lever in the locked position and verify that the tonearm is in the arm rest location. Also be sure to put the manual elevation lever in the up position and check that the PU plate shaft is in the position shown in figure 2-16.

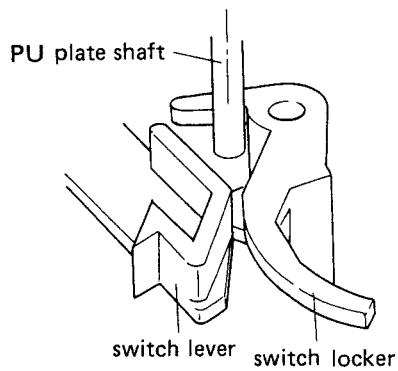


Fig. 2-16 Arm base attachment

- **Wiring the Connector**

When attaching the wires to the 2P connector from the micro-switch, bend the lead wires from the connector housing as shown in figure 2-17 before attaching.

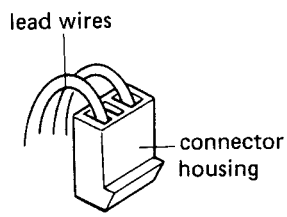


Fig. 2-17 Wiring the connector

☆

- **Start Lever Unit Attachment**

Attach the shaft section of the start lever unit as shown in figure 2-18 so that it comes between the reset plate and start panel.

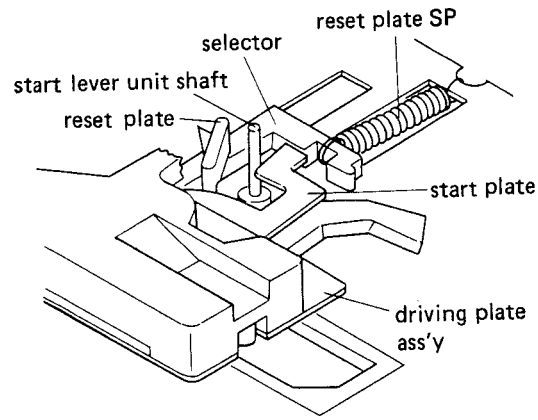


Fig. 2-18 Start lever unit attachment