SERIAL NO. 3007

ONKYO SERVICE MANUAL

Semi-automatic Turntable System

model CP-60A

INDEX

ONKYO®
AUDIO COMPONENT

SPECIFICATIONS

Type	Semi−Automatic Player
Turntable	30cm(12")Aluminum diecast belt driven. 1.1kg(2.4LBS)
Motor	4 Pole Synchronous
Speed	33⅓,45rpm.
Wow & Flutter	below 0.08%
Signal to Noise Ratio	over 48dB
Tonearm	Static Balanced pipe arm with exchangeable Headshell, anti−skating system & lateral balancer.
Stylus Pressure	Variable from 0−4grams.
Overhang	15mm(⅝")
Effective arm length	210mm(8¼")
Tracking error	±1.5°
Cartridge	VM type
Frequency Response	20−25000Hz
L/R Balance	Max Difference 2.5dB
Separation	25dB(1KHz)
Output	3.5mv(1KHz)
Compliance	10×10^{-6}cm/dyne
Load Impedance	50KΩ
Rec Stylus Pressure	2.0g
Stylus	0.5mil diamond
Stylus Model NO.	DN−27ST
Power Supply Rating	AC110−120/220−240V 50/60Hz
Power Consumption	10W
Dimentions	480W ×190H ×400Dmm (18²⁹⁄₃₂" W×7¹⁵⁄₃₂" H×15²⁴⁄₃₂" D)
Weight	9.5kg 21LBS.

SERVICE ADJUSTMENT AND PROCEDURE

Power voltage selection

The record player has been set at a voltage of 220/240V before shipment.
To change for 110/120V, turn switch to the right position.
To change voltage, detach the fixture plate, adjust switch position and reattach the fixture plate.
The voltage selector switch is located on the side of the turntable.

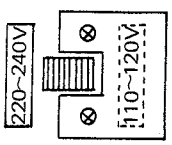


Fig 1

60Hz Pulley replacement

This turntable was adjusted to 50Hz before shipment.

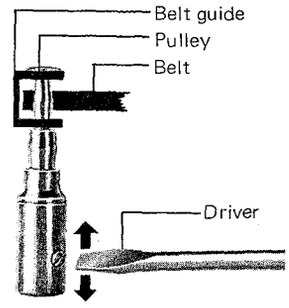
When operating this set on 60Hz power, it is necessary to change the pulley.

To change the pulley, first remove the 50Hz pulley with a screw driver and replace it with the 60Hz pulley in the accessory box.

Adjust pulley height to line up with drive belt guide before tightening pulley lock screw.

Adjust the pulley up or down so that the belt does not touch the belt-guide.

Tighten pulley lock screw.



Stylus set down

(A) When the deviation is very slight.

That is deviation less than 2mm(0.1") at stylus point, proceed as follows.

Adjustment screw(24) is located on top of turntable.

(Remove cap.)

(1) To shift the stylus point inside, rotate the adjustment screw(24) with a small screw driver clockwise.

To shift it outside, rotate screw counter-clockwise.

(2) After adjustment, be sure to replace the cap.

(B) When the adjustment cannot be made with adjustment screw(24), proceed as follows.

(1) Set the adjustment screw(24) to the horizontal position.

(2) Remove the screws which attaches the board to the cabinet and dismount the player from the cabinet.

(3) Loosen the 2 screws(139) of the arm base assembly.

(4) Set the record size selector to the position of 30cm(12").

(5) Set the start lever to play and rotate the turntable by hand until auto-lead-in action, place the stylus point to the start position for a 12" record.

(6) Securely tighten 2 screws(139) of arm base assembly. And then adjust the gap between slewing plate-2(39) and friction rubber(140) between 2 to 2.5mm(0.1").

(7) Confirm that the movement of the slewing plate -2(39) is about 1.5mm(1/16") when the arm is at the highest position.

(8) Connect the power source and check that the stylus set down point is correct.

(9) If a slight additional adjustment is required, proceed as outlined in paragraph"A".

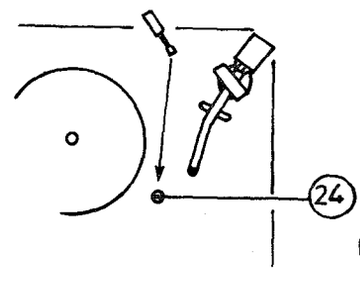
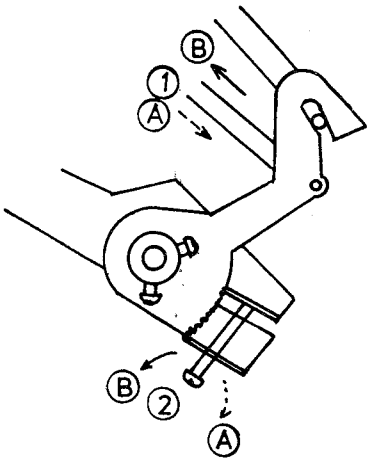


Fig 2

Auto-return

Adjust the return position with the fine adjustment screw shown in Fig3.
After final adjustment, apply lock−tite to the screw.
The stylus point moves below the correct point when it is rotated clockwise(A).
The stylus point moves closest to the record edge when it is rotated counterclockwise(B).



① actuating slide(147)
② fine adjustment screw (137)

Fig 3

Tonearm height

(A) Auto operation

First adjust the height with eccentric pin screw adjustment(2). The tonearm lifts up when pin screw(2) is rotated clockwise, and the tonearm goes down when it is rotated counterclockwise.

Since it's height is adjusted with an eccentric screw, arm descends suddenly as it comes to a certain point. (As it is rotated clock−wise.)

Please make adjustment carefully.

(B) Manual operation

Adjust the height with adjustment screw(1).

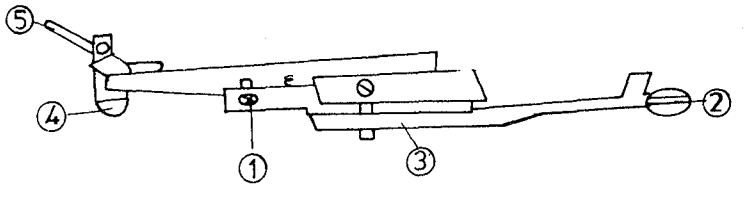
When adjustment screw(1) is rotated clockwise, the tonearm falls. When it is rotated counterclockwise, it rises.

Adjustment screw(1) is irrelevant to the height of the tonearm during auto operation.

When it is rotated counter−clock−wise (when the tonearm is lifted) the return (lifter) from "UP" to "DOWN" position may be accelerated.

Please be careful.

After adjustment, apply lock−tite to adjustment screw(1) and eccentric pin screw(2).



① adjustment screw
② eccentric pin screw adjustment (45)
③ elevation shaft stopper (44)
④ cam holder
⑤ arm lifter (144)

Fig 4

Tonearm descending speed

Remove E washer and spring in Fig 5. Use care not to damage the shaft. Push the arm all the way through toward the center of the turntable and pull up the elevation plate.

(A) To accelerate descending speed

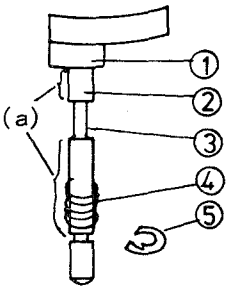
Wipe off the silicone oil sticking to part(a) and the spring. Reduce the amount of silicone oil in the oil reservoir.

(B) To deccelerate descending speed

Reverse of steps(A) above and add silicone oil to oil reservoir. Apply a small amount of silicome oil to part(a) and the spring. (In replenishing oil, use high viscous silicone oil only.

When oil is not viscous or amount of feed is too much, it flows into rotation plate and it may cause tonearm slip. Be sure to abide by these precautions.)

Move the elevation shaft up and down a few times by hand to distribute oil to all parts.



① elevation plate (162)
② elevation shaft (106)
③ oil reservoir
④ elevation spring (141)
⑤ E washer (143)

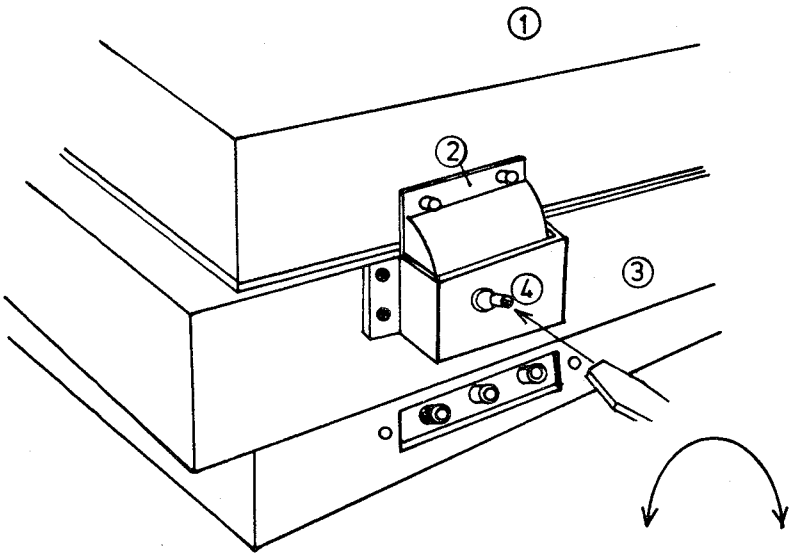
Fig 5

Dust cover hinge

(A) If dust cover moves too freely(drops).
Turn the adjustment screw to the left.

(B) If dust cover does not meet base.
Turn the adjustment screw to the right.

(C) If one side of dust cover lifts up.
When the right side (left side) lifts up, tighten the left side (right side) hinge.



① dust cover
② metal groove of the dust cover
③ player box
④ hinge

Disassembly

(1) Disassemble the dust cover from the main body.
(2) Remove the turntable and lock the tonearm with hook.
(3) Loosen the 8 wood screws which fix the bottom plate. The bottom plate can be removed and mechanical parts will be accessible.
(4) Remove the 2 screws which hold the output terminal (flat washer and nut) and 4P socket and plug.
(5) As the turntable and cabinet are fastened with 4mm($\frac{5}{32}$") screws on the corner, remove these screws and remove the turntable.

Service notes

1. It is not possible to adjust the cabinet height by the insulator.
2. It is not recommended to fix the arm with hook while holding the lifter at "Up" position.
   It is not good to set it at up while holding arm fixed.
3. As the output terminal is connected driectly to the shell and it is not earthed, connect the earth lead wire to the earth terminal of the player and that of the amplifier.
4. Set the earth terminal side of output terminal always to R. (relation with the attached PU−E code)
5. If mechanical noise occurs during auto−lead−in and auto−return, clean the slewing plate and replace the friction rubber.

Semi auto operation

(cf. EXPLODED VIEW (I)&(II)

1. Setting the record size selector. Moves the selector(133) to correct position.
2. Setting the control lever to play. Moves start cam−1(113) and start cam−2(116) which will rotate by 25.
3. The end which is in contact with the cam−1(113) of repeat lever(30) is pushed up and the other end inclines toward the center of main gear(17). At the same time, start lever(32) falls into the notch of cam−2(116) and the other end pushes the clutch lever(8) and switch lever−2(10).
4. Clutch plate(13) is pushed by the clutch lever(8) and the other end is pushed out to the notched part of the main gear(17).
   Then the microswitch(126) is engaged being depressed by switch lever−2(10). Moter starts revolving changing belt which turns turntable.
5. The projection at the outer cricumference of center gear attached to center shaft(2) kicks the projected clutch plate.
6. Main gear(17) is engaged with center gear and it starts revolving.
7. The end which is in contact with cam surface at the outer circumference of main gear(17) of selector guide(26) is disengaged from the gear stop position.
8. The caulked end of the pin of the slewing plate(38) is pushed down by the grooved cam prepared at the edge face of the main gear(17) and the other end pushed up by the see−saw mechanism.
9. Through the cue−see−saw(44) attached to the slewing plate, elevation shaft ascends to lift the arm.
   And then, slewing plate−2(39) and the plate spring attached to the slewing plate assembly are pressed against the friction rubber.
10. Through the groove cam of the gear, slewing plate makes right turn swing as it rubs against friction rubber.
    As the result the arm tends to turn in outer direction.
    But due to the restriction of the arm rest, it only slips in between the friction rubber and plate spring.
    attached to the arm base assembly. Arm base assembly is firmly fixed to the arm rotating shaft.
11. The repeat lever(30) kicks transfer lever(18) and the inner groove of the branching cam grooves is opened.
    Locking of start lever is released by main gear.
12. Selector guide falls into a concave part of cam and the pin of the selector arm(27) is pressed against the stepped part of the preset selector(133).
13. When the slewing plate(38) is guided by transfer lever(18) and the pin at it's end enters into the inner cam groove, slewing plate rotates in left turn.
14. Friction rubber(140) rubs against the slewing plate and the arm gradually shifts inside.
15. Transfer lever(18) completes its function and is changed over by the slewing plate.
16. Arm stops by contacting the pin at the end of the select arm to which the stepped part of arm base(135) is pressed.
    And then the slewing plate(38) only slides between the friction rubber(140) and slewing plate−2(39).
17. As the depth of the groove cam becomes deeper, the pin side of the slewing plate(38) lifts up and the other end sinks and the arm descends on the record disc through elevation shaft(106).

18. Slewing plate(38) detaches from elevation shaft(106) and friction rubber(140).
19. The end which contacts the face of cam at the outer circumference of selector guide hooks at the convex part of the cam and select arm is detached from the selector.
20. Arm starts to move along the sound groove of the record.
21. The end of the projected clutch plate(13) is returned by the projected part of sub−mechanical−chassis.
22. Gearing of center gear and main gear is disengaged by hooking at the notched part of main gear.
23. The part at which the selector guide(26) contacts the cam drops into the concave part of the gear and stops the gear at that position.

Packing procedure

Player

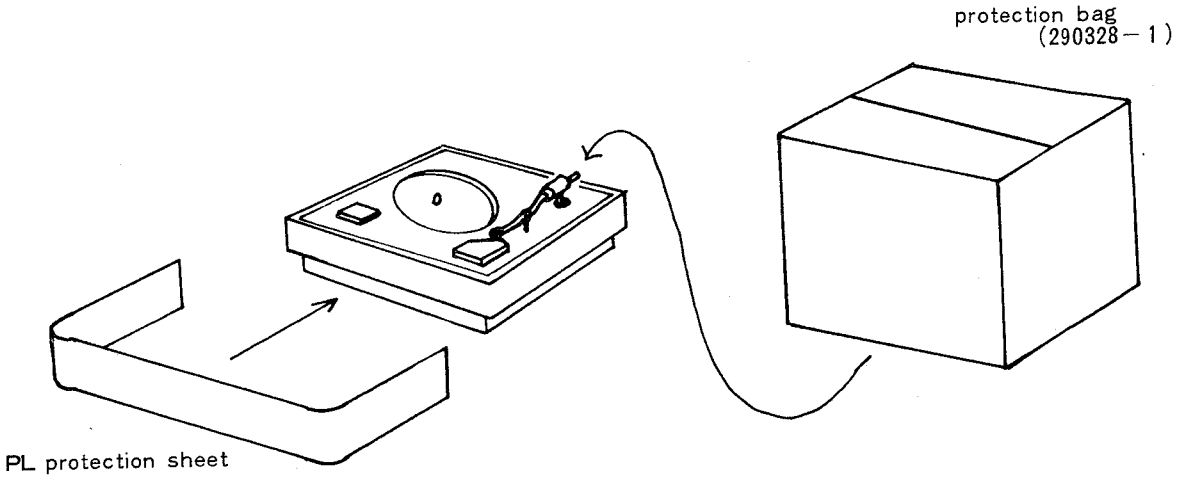
(1) Remove the counter weight and head shell and attach the arm lock and the anti—skating system with a vinyl tie strip.

(2) Lock the motor and set the slide switch(132) to correct frequency.

(3) Fold the AC cord and tie the cord with a tie strip and wrap with AC cord wrapper and hold with a rubber band.

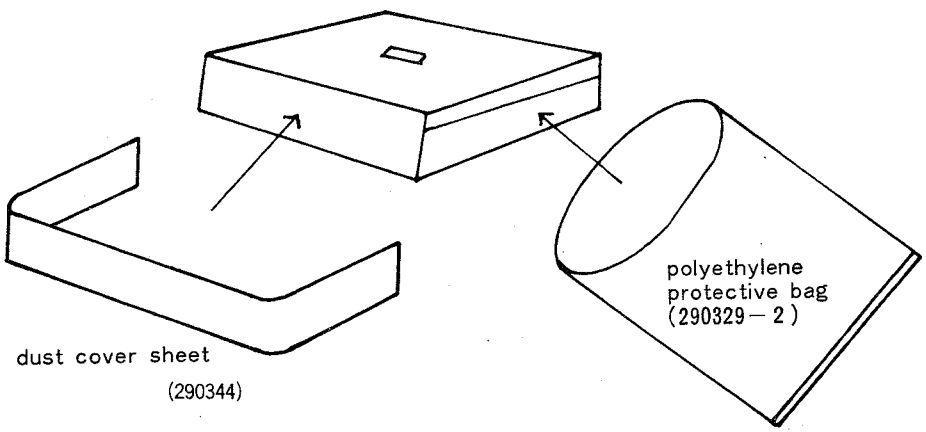
(4) Wrap the PL cabinet with the PL protection sheet and hold the end of the wrapping paper on the cabinet with adhesive tape.

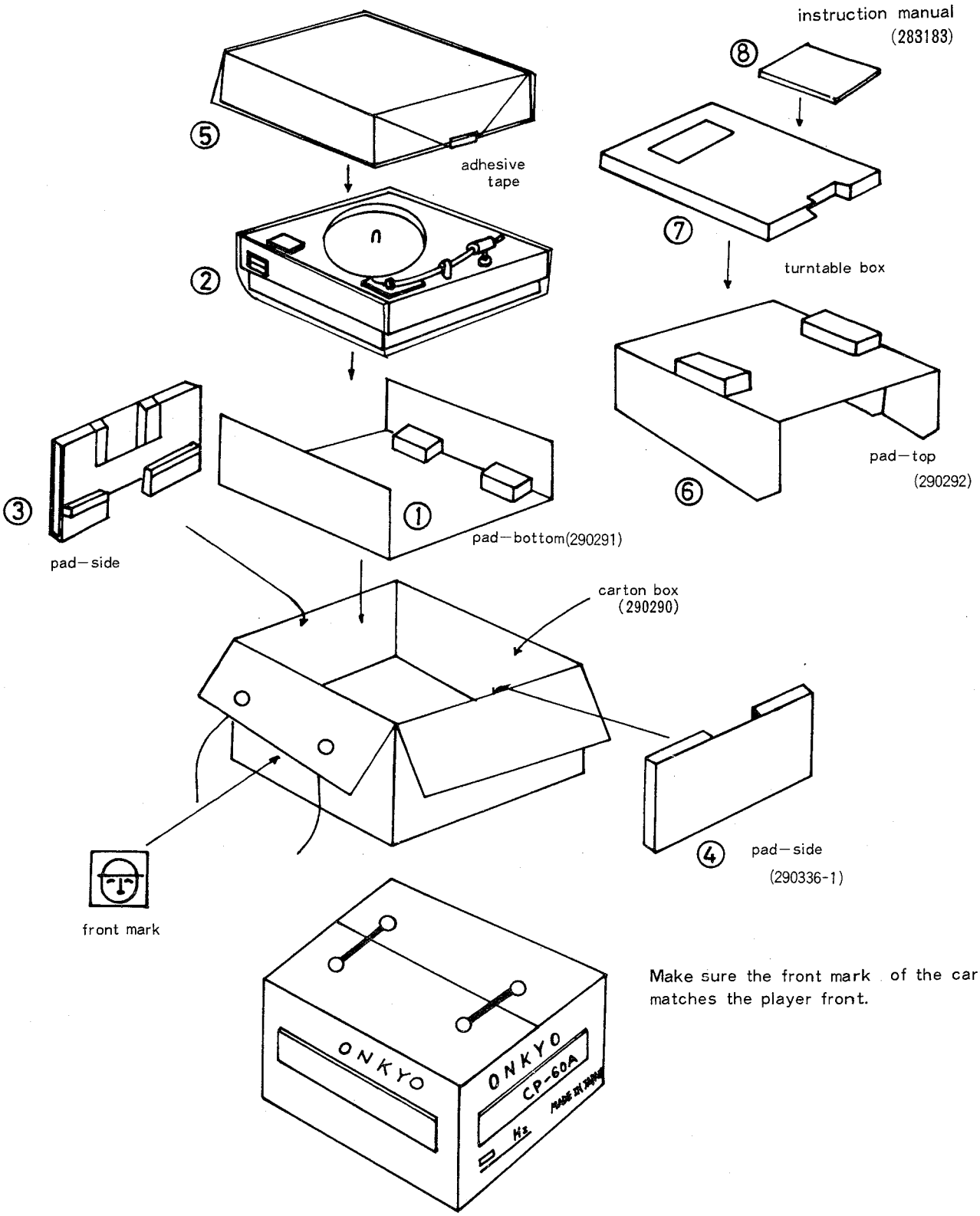
(5) Put the player in the protection bag.



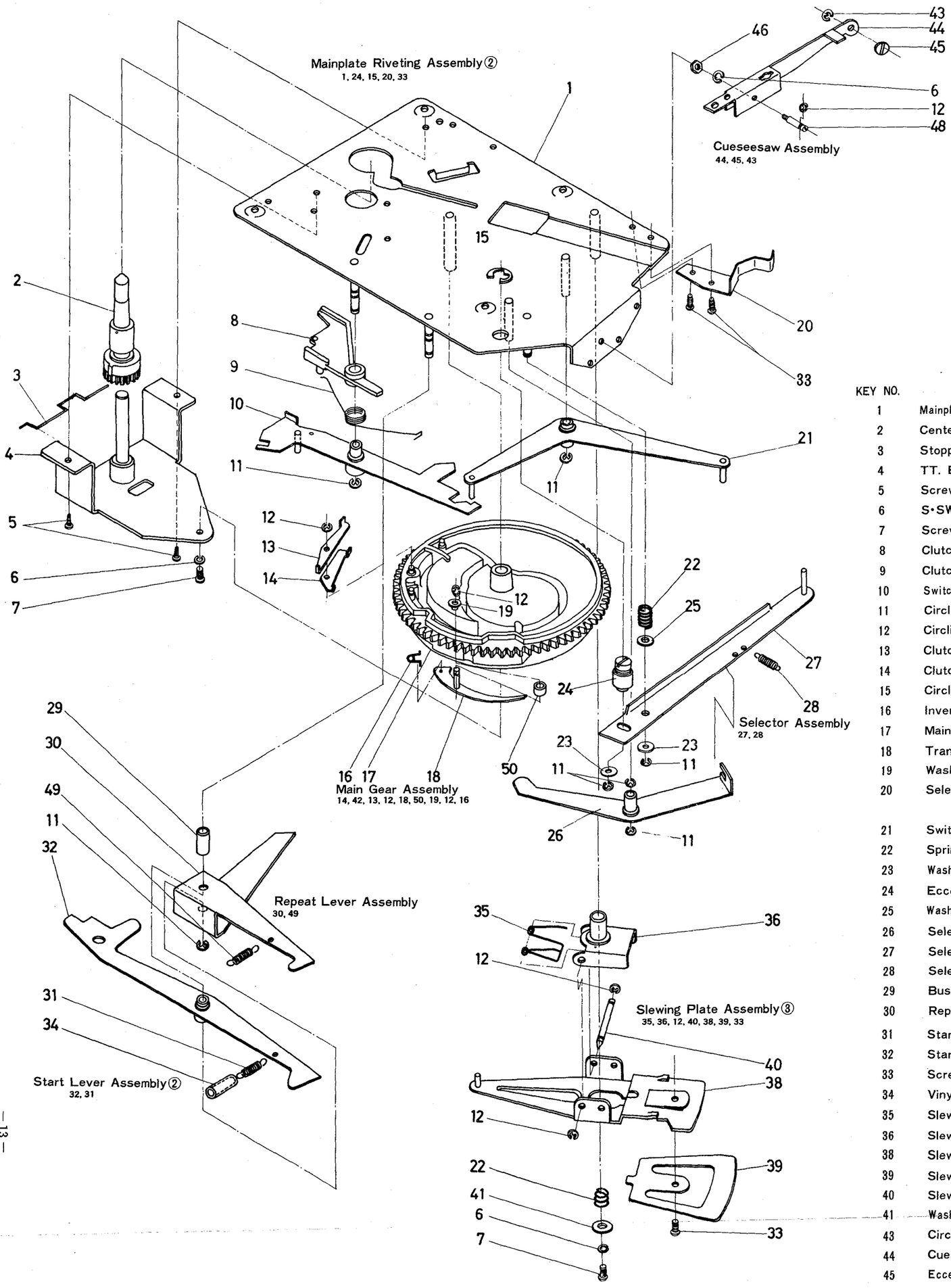
Dust cover

Wrap the dust cover with the dust cover sheet and hold the end of the cover sheet on the back with adhesive tape. Pack the dust cover with polyethylene protective bag.



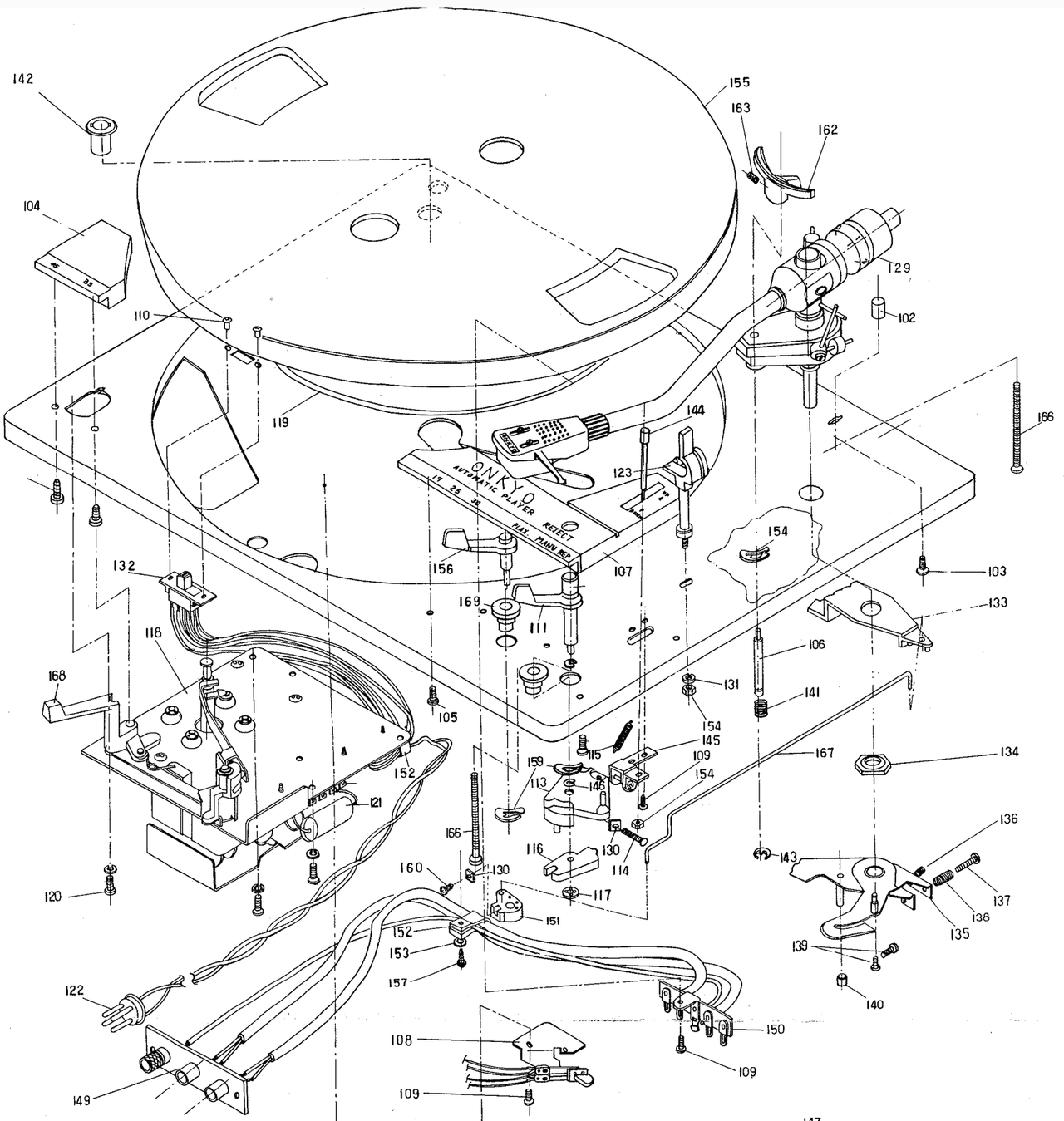


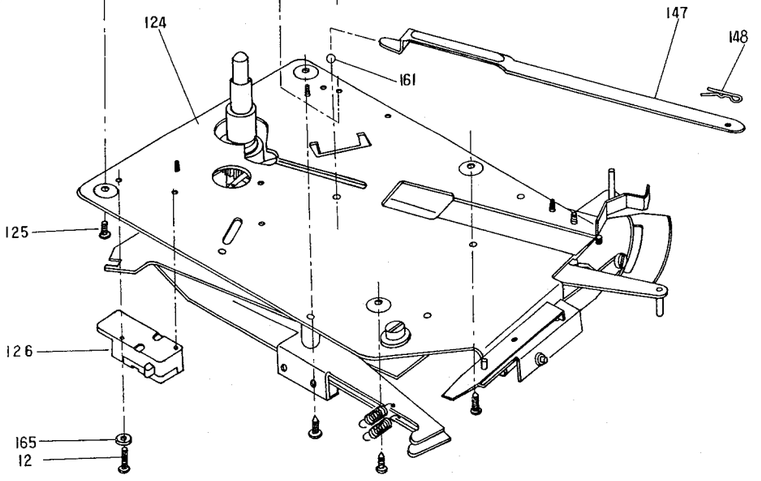
Make sure the front mark of the carton matches the player front.



KEY NO.	DESCRIPTION
1	Mainplate Riveting Assembly ①
2	Center Shaft Assembly
3	Stopper
4	TT. Bearing Assembly
5	Screw FMT ⊕ 3×8
6	S·SW—3
7	Screw FM ⊕3×6
8	Clutch Lever
9	Clutch Lever Spring
10	Switch Lever Assembly 2
11	Circlip E—3
12	Circlip E—2
13	Clutch plate
14	Clutch Guide
15	Circlip E—6
16	Inversion Spring
17	Main Gear
18	Transfer Lever Assembly
19	Washer (Nylon)
20	Selector Lever
21	Switch Lever Assembly 1
22	Spring
23	Washer FW4.5φ×12φ×0.5t
24	Eccentric Screw
25	Washer FW4.5φ×12φ×0.8t
26	Selector Guide
27	Selector Arm
28	Selector Spring
29	Bush
30	Repeat Lever
31	Start Lever Spring
32	Start Lever
33	Screw FMT ⊕3×6
34	Vinyl Tube
35	Slewing Plate Spring
36	Slewing Plate Base
38	Slewing Plate ①
39	Slewing Plate ②
40	Slewing Plate Shaft
41	Washer FM3.2φ×10φ×0.5t
43	Circlip
44	Cueseesaw
45	Eccentric Pin Screw Adjustment
46	Nut F·LN—3
48	Cut Lever Shaft
49	Repeat Lever Spring
50	Gear Bush

EXPLODED VIEW(I)





101 Baseplate Sub Assembly
102 Adaptor Rest
103 Screw FMT 3×6
104 Speed Selector Cover
105 Screw FMT 3×8(1)
106 Elevation Shaft
107 Selector Cover
108 Muting Switch Assembly
109 Screw FMT 3×8(2)
110 Screw FM3×8
111 Control Lever
112 Reject Button Assembly
113 Start Cam①
114 Screw FM3×15
115 Start Cam Spring
116 Start Cam②
117 CS Retaining Ring
118 Phono Motor Assembly
119 Belt
120 Screw FM×12
121 Terminal
122 Power Supply Cord
123 Arm Rest
124 Mechanical Chassis Assembly
125 Screw FMT3×8
126 Microswitch

128 Screw FM2.6×14
129 Tonearm Assembly
130 M3 Nut
131 S.SW−3
132 Slide Switch
133 Selector
134 Arm Base Nut
135 Arm Base Assembly

136 Arm Spring
137 Screw FM3×20
138 Retaining Spring
139 Arm Base Screw
140 Friction Rubber
141 Elevation Spring
142 Shell Stand
143 E−3
144 Arm Lifter

145 Cam Holder Assembly
146 CS Retaining Washer
147 Actuating Slide
148 Actuating Slide Spring
149 5P terminal Assembly
150 Lug Terminal Assembly(5P)
151 Selector Cam
152 Cord Holder
153 Washer FM3×0.5
154 Nut M3
155 Turntable
156 Selector Lever
157 Screw FMT3×12(2)
158 Capacitor (0.2μF400WV)
159 Circlip E−8
160 ScrewFM3×12
161 Steelball (4φ)
162 Elevation Plate
163 Screw M2.6
164 Circlip E−7
165 Washer FW3
166 Screw FM4×60
167 Selector Pin
168 Speed Selector Lever
169 Lever Base

EXPLODED VIEW(II)

PARTS LIST

PARTS NO.	DESCRIPTION	SPECIFICATIONS	Q'TY	STOCK NO.	
	Player	MSS−5812A	1	242094	
101	Baseplate Sub Assembly				
102	Adaptor Rest				
104	Speed Selector Cover				
107	Control Cover				
108	Muting Switch Assembly				
111	Control Leber				
112	Reject Button Assembly				
113	Start Cam (1)				
115	Start Cam Spring				
116	Start Cam (2)				
118	Phono Motor Assembly				
119	Belt				
122	Power Supply Cord				
123	Arm Rest				
124	Mechanical Chassis Assembly				
	Reject Spring				
126	Microswitch				
129	Tonearm Assembly				
132	Slide Switch				
133	Selector				
134	Arm Base Nut				
135	Arm Base Assembly				
140	Friction Rubber				
144	Arm Lifter				
145	Cam Holder Assembly				
147	Actuating Slide				
150	Lug Terminal Assembly (5P)				
151	Selector Cam				
156	Selector Lever				
167	Selector Pin				
168	Speed Selector Lever Sele				
169	Lever Base				
155	Turntable				
	Counter Weight				
	Lateral Balancer				
	Anit−skating Sistem				
	Turntable Sheet				
	Head shell				
	Cartridge	OC−27M			
	Stylus	DN−27ST			
2	Center Shaft Assembly				
17	Main Gear				
35−40	Slewing Plate Assembly				
	Player Box		1	280757	
	Dust Cover		1	280638	
	Hinge		2	280641−1	
	Carton Box		1	290290	
	Pad−bottom		1	290291	
	Pad−top		1	290292	
	Pad−side		2	290336	
	Protection Bag		1	290328−1	
	Dust Cover Bag		1	290329−1	

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A-401 Printed in Japan.