

clarion

Service Manual

Published by Service Administration Section

CD Mechanism module

929-0020-00
929-0022-00

Mechanism Disassembly, Replacement
and Description of Operations

Main applicable models

929-0020-00	929-0022-00
PE-2024A(CDC5030)	PE-2035A(5670CD)
PF-2046U	PE-2036A(5631CD)
PN-2027U(CV98B)	PE-2036B(S1500)
PU-2045A	PE-2036C(CDC6030)
PU-2052A	PE-2039A(CDC6000)

Be sure to put on ground bands in disassembling or replacing work.

A. REMOVING THE DRIVE UNIT (FLOATING)

This diagram illustrates the exploded view of the drive unit assembly. It shows the drive unit hook, Spring A, and Spring B. The drive unit hook is shown in two positions: one where it is engaged with the drive unit and another where it is disengaged. Spring A is shown in two positions: one where it is engaged with the drive unit and another where it is disengaged. Spring B is shown in its engaged position. The drive unit is shown in its assembled position, with the drive unit hook and Spring A attached to it.

Figure A-1

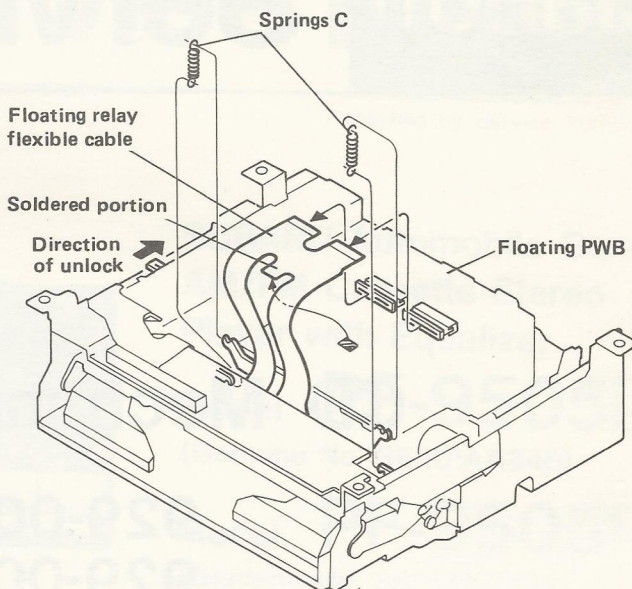


Figure A-2

1. Undo the three springs suspending the drive unit.
2. Undo the two springs suspending the drive unit.
3. Unsolder between the floating relay flexible cable and the floating PWB, then disconnect the said flexible cable from its associated connectors on the said PWB.
4. Move the shift plate in the direction of an arrow to unlock the drive unit.

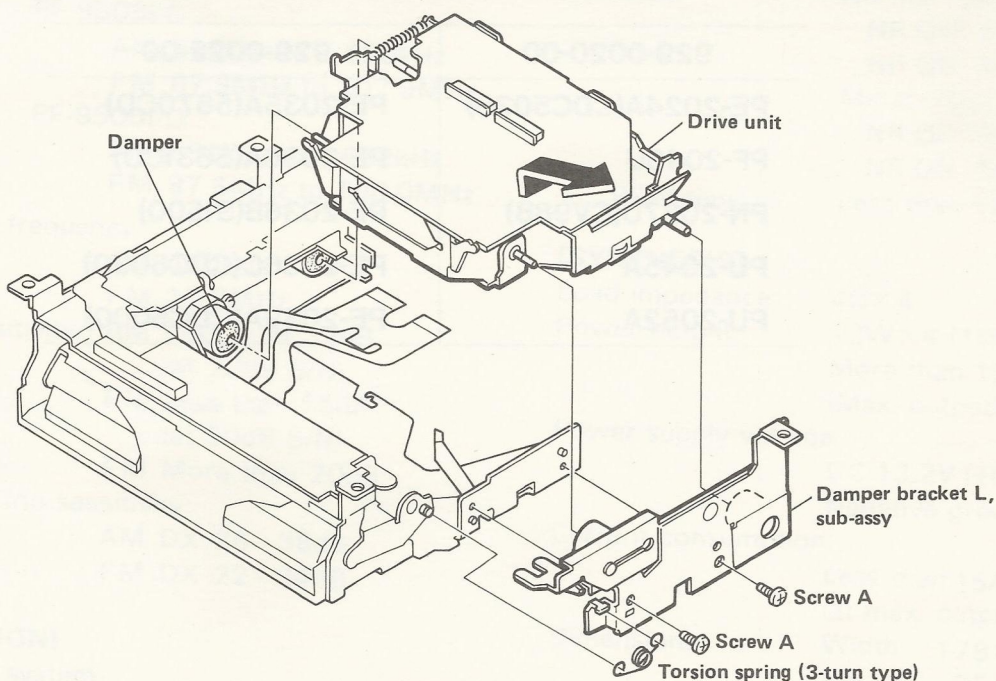


Figure A-3

5. Undo the torsion spring.
 6. Remove the two screws A, then detach the damper bracket L sub-assy.
 7. Detach the drive unit from the damper.
- When reassembling, insert the shaft to the damper positively. (In this case, apply alcohol to the hole of the damper in advance.)

B. REMOVING THE GEAR PLATE SUB-ASSY

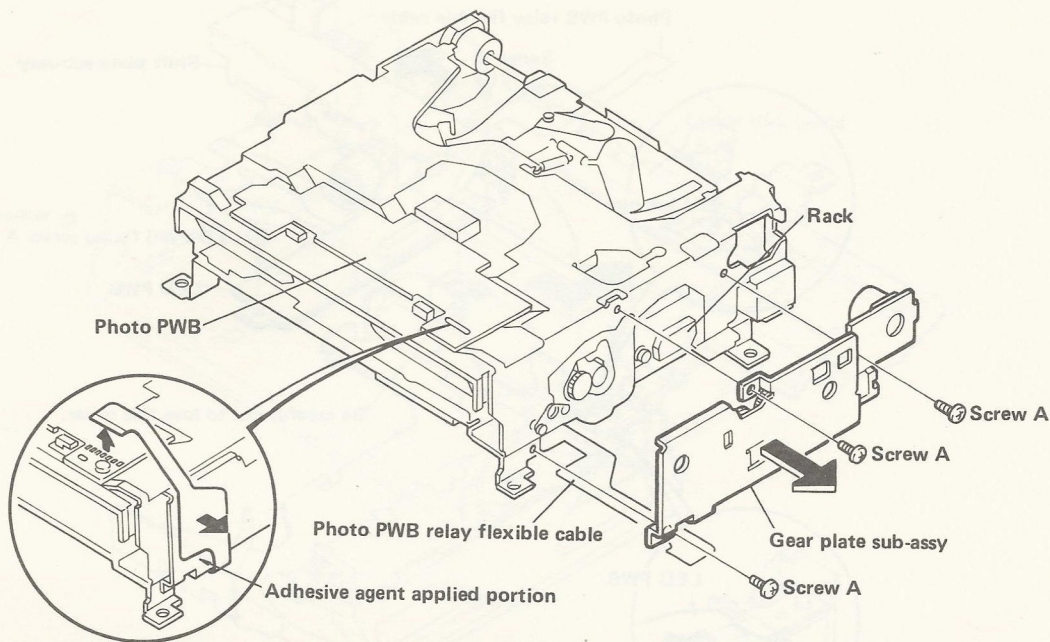


Figure B-1

1. Disconnect the photo PWB relay flexible cable from on the photo PWB.

2. Peel off the photo PWB relay flexible cable in its adhesively attached portion.
3. Remove the three screws A.

4. Detach the gear plate sub-assy. (Even with the drive unit kept installed, it can be detached.)

Building in the gear plate assy:

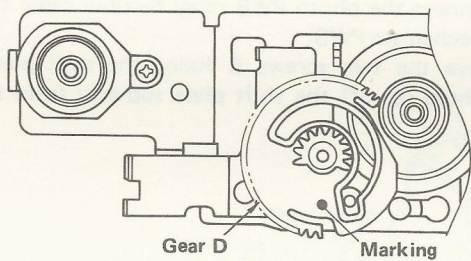


Figure B-2

1. Locate the gear D as shown in Figure B-2. Thereupon, confirm that the gear is out of engagement, and then build in the gear plate assy (to the rack).

C. REMOVING THE SHIFT PLATE CHASSIS SUB-ASSY

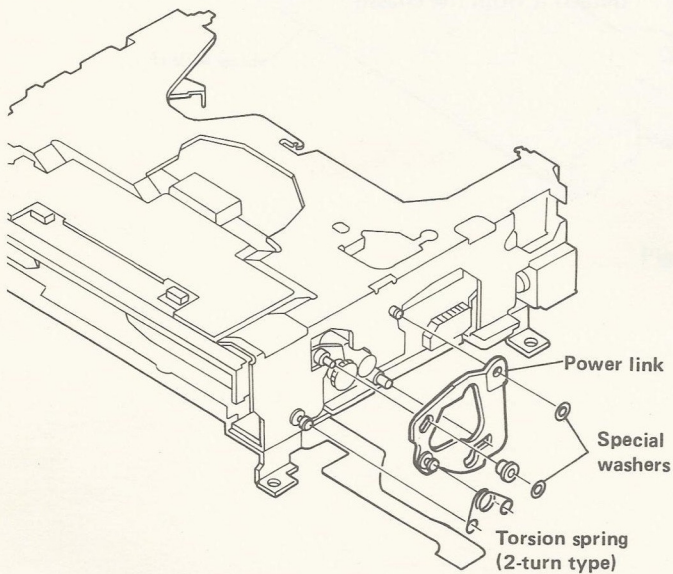


Figure C-1

1. Detach the drive unit. (Refer to "A. Removing the drive unit".)

2. Detach the gear plate sub-assy. (Refer to "B. Removing the gear plate sub-assy".)

3. Undo the torsion spring.

4. Remove the two special washers, then the power link.

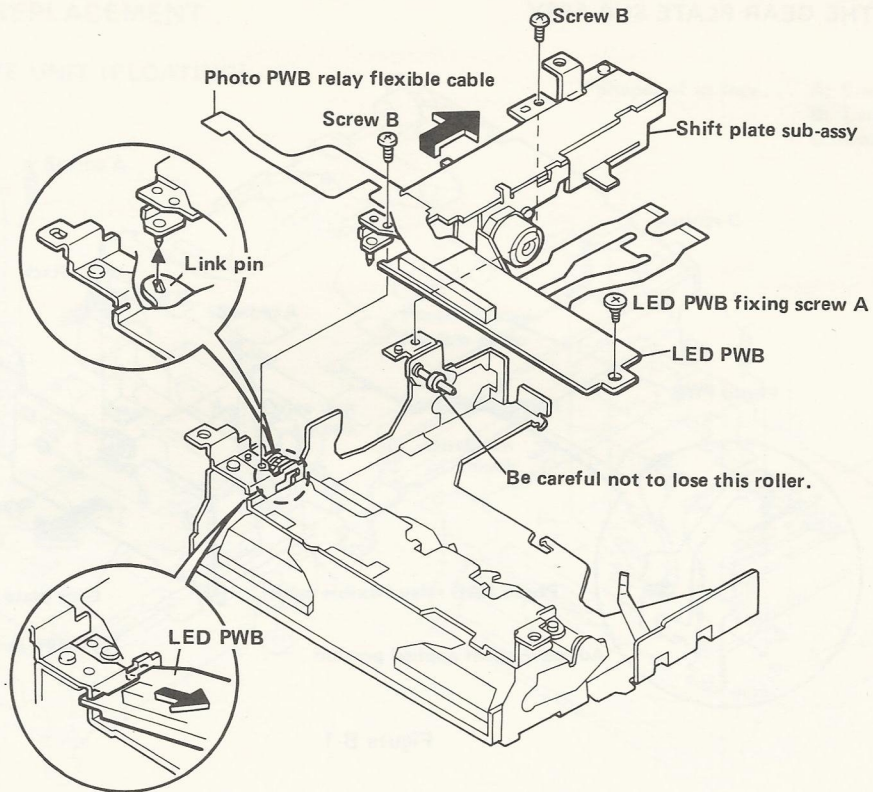


Figure C-2

5. Remove the screw A fixing the LED PWB. (Note that the catch at the left side of the LED PWB is engaged with a hole.)
6. Disconnect the photo PWB relay flexible cable from on the mechanism PWB.
7. Remove the two screws B fixing the shift plate assy, then hold up off the shift plate sub-assy from the link pin.

D. REMOVING THE FRONT SUB-ASSY

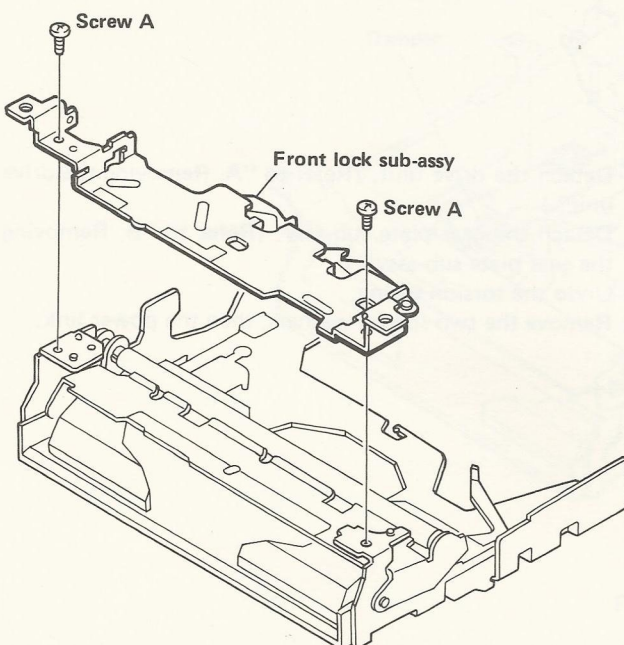


Figure D-1

1. Perform the above items A to C completely.
2. Remove the two screws A.
3. Unlock the front lock (to the drawn-in state), then detach it from the chassis.

E. REMOVING THE LOWER DISK GUIDE SUB-ASSY

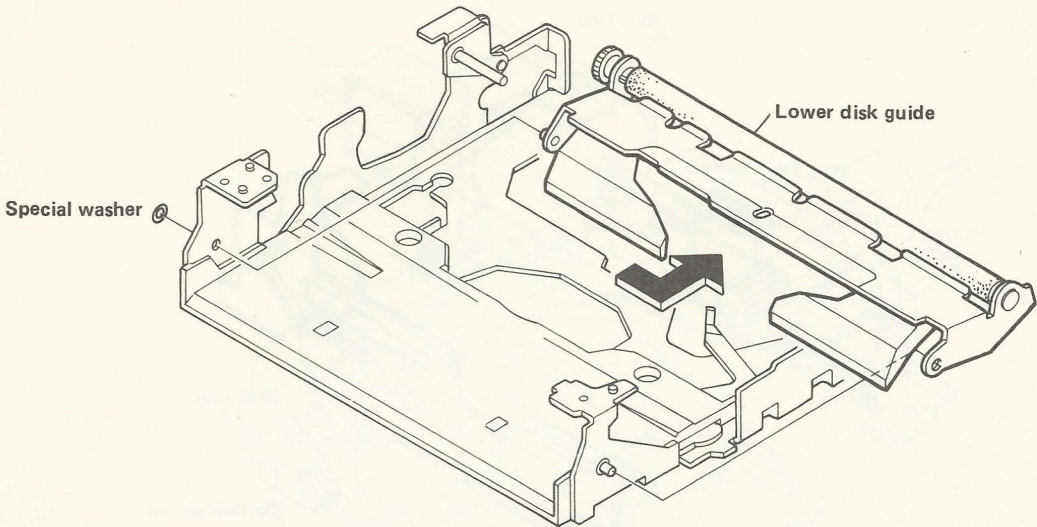


Figure E-1

1. Perform the above items A to D completely.
 2. Remove the special washer.
- Be careful not to handle the roller of the lower disk guide.

F. REMOVING THE SENSOR LINK ASSY

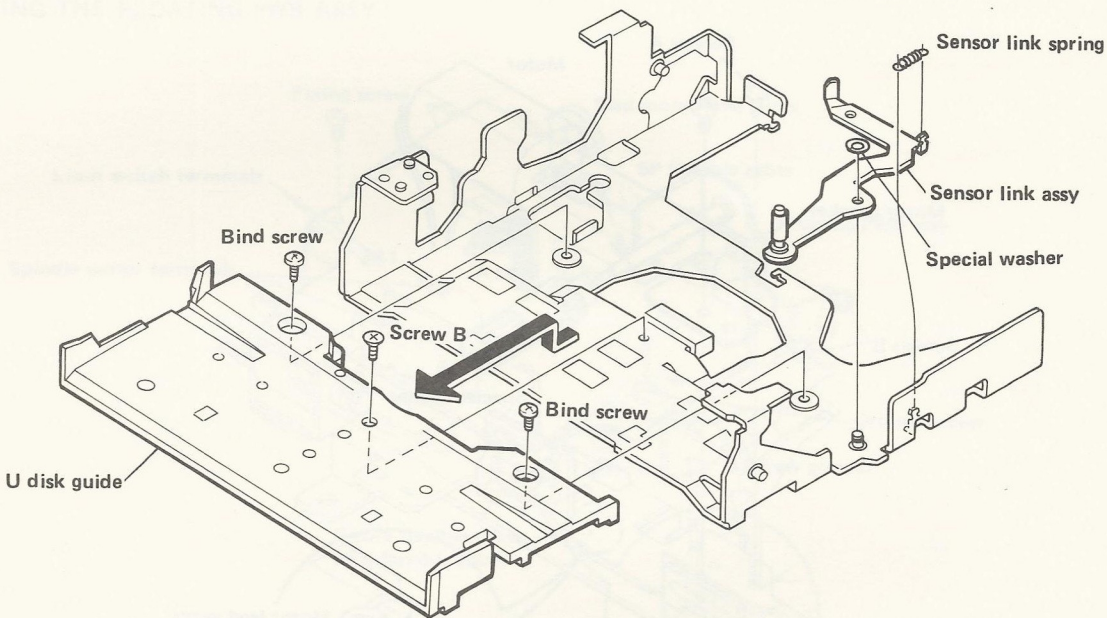


Figure F-1

1. Perform the above items A to E completely.
2. Remove the two bind screws and screw B, then detach the U disk guide.
3. Undo the sensor link spring and remove the special washer, then detach the sensor link assy.

G. REMOVING THE SHIFT PLATE SUB-ASSY

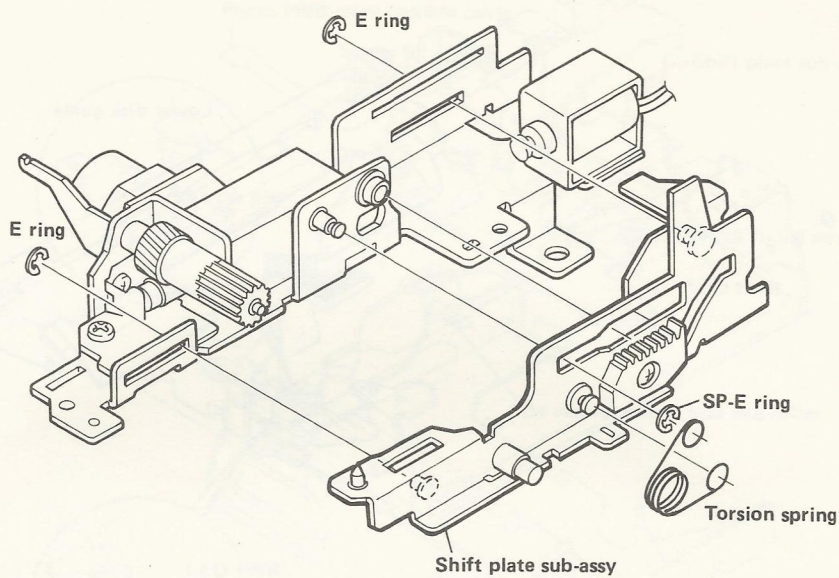


Figure G-1

1. Perform the above items A to C completely.
2. Detach the shift plate chassis sub-assy.
3. Undo the torsion spring.
4. Remove the two E rings and one SP-E ring.
5. Detach the shift plate sub-assy.

H. REMOVING THE LOADING MOTOR ASSY

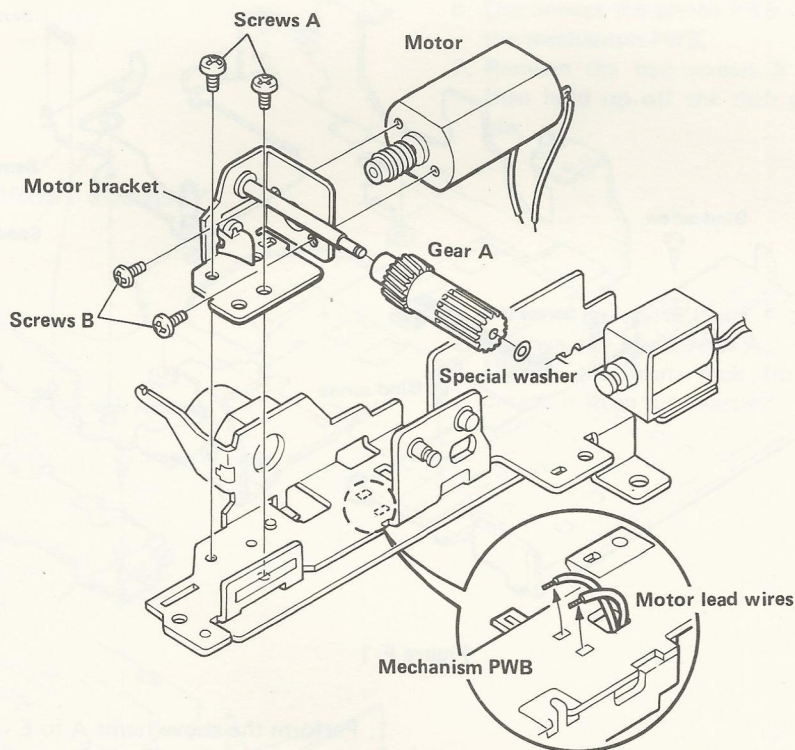


Figure H-1

1. Perform the above items A to G completely.
2. Disconnect the motor lead wires from on the mechanism PWB.
3. Remove the two screws A.
4. Remove the special washer of the gear A.
5. Remove the two screws B.

I. REMOVING THE CLAMPER LINK ASSY

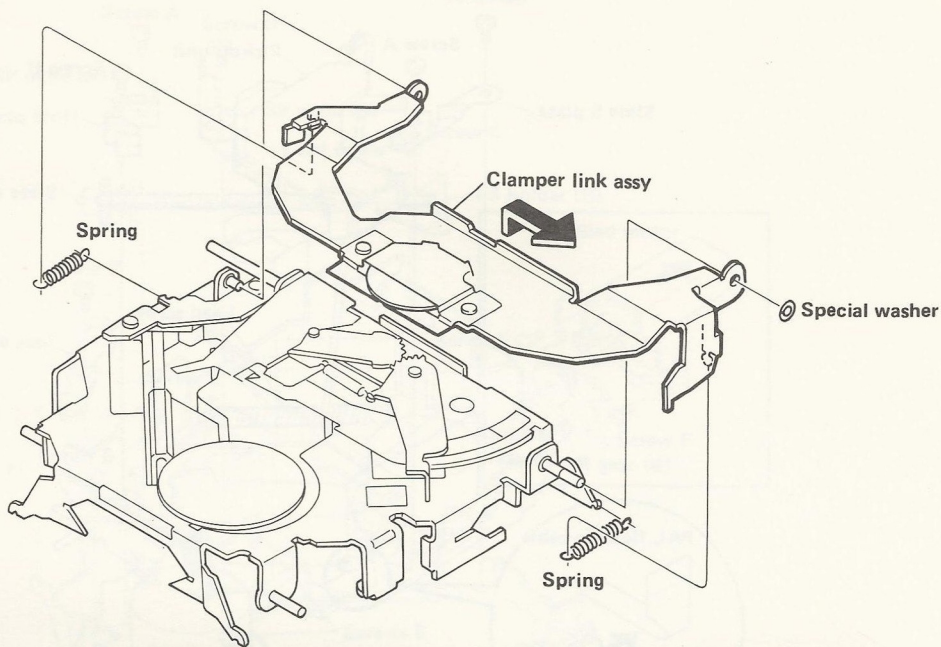


Figure I-1

1. Detach the drive unit. (Refer to "A. Removing the drive unit".)
2. Undo the two springs.
3. Remove the special washer, then detach the clasper link assy.

J. REMOVING THE FLOATING PWB ASSY

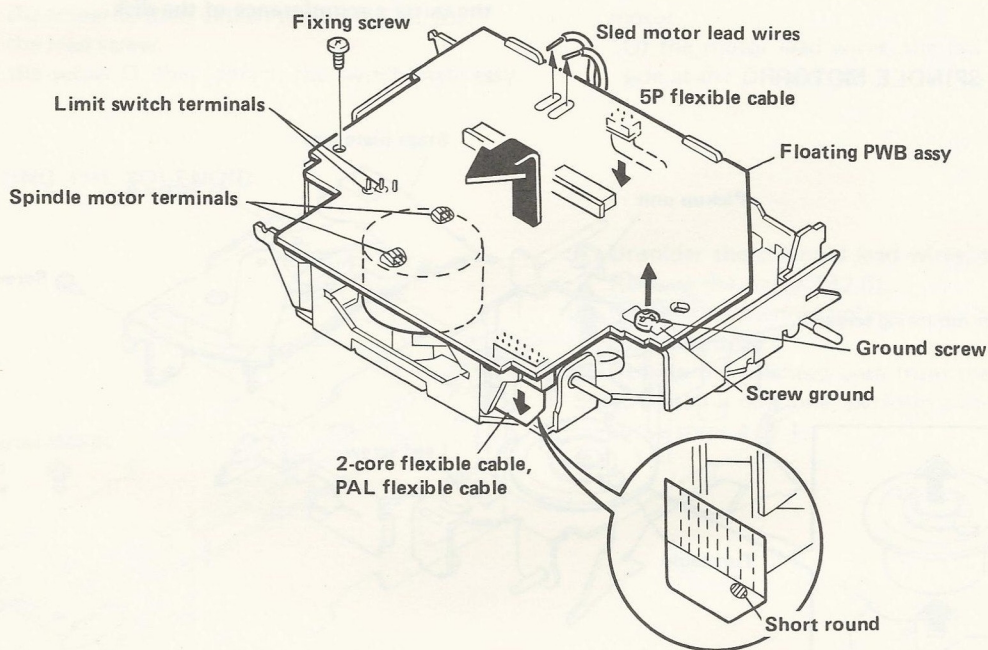


Figure J-1

1. Unsolder the screw ground, spindle motor terminal and limit switch terminal sections.
 2. Disconnect the lead wires of the sled motor.
 3. Remove the ground screw and the two fixing screws.
 4. Let the floating PWB assy float up from the drive mechanism, then disconnect the 5P flexible cable from its associated connector.
 5. Further, let the floating FPC float up, and put a piece of solder on the short round of the PAL flexible cable to make a short-circuit. After that, disconnect the PAL flexible cable as well.
- This terminal is directly connected to the laser section. Therefore, to avoid electrostatic breakdown, use a soldering iron well grounded.

K. REMOVING THE PICKUP UNIT

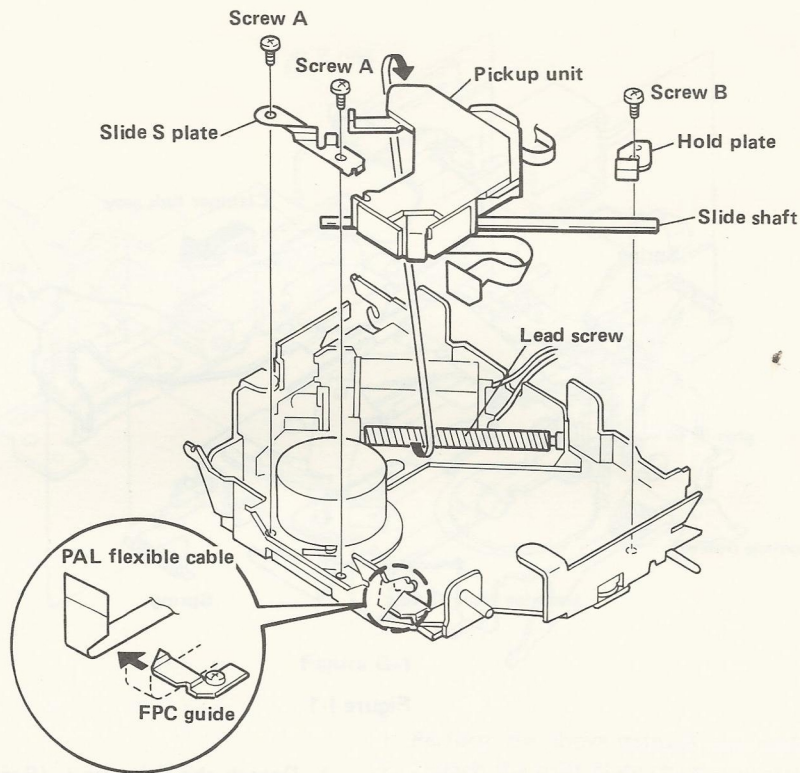


Figure K-1

1. Detach the floating PWB assy. (Refer to "J. Removing the floating PWB assy".)
 2. Release the PAL flexible cable from the FPC guide.
 3. Remove the two screws A, then detach the slide S plate.
 4. Remove the screw B, then detach the hold plate.
 5. Detach the pickup unit from the lead screw. (Note that the slide shaft may drop.)
- When putting the PAL flexible cable to the FPC guide, care should be taken so that the pickup is not caught in the outer circumference of the disk.

L. REMOVING THE SPINDLE MOTOR

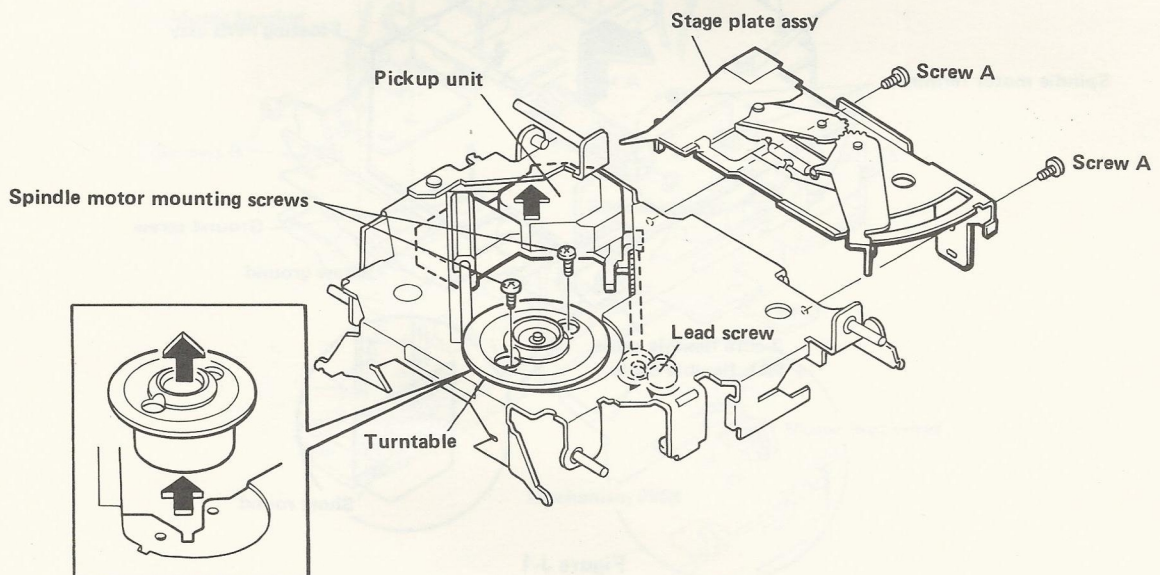


Figure L-1

1. Perform the above items A to I completely.
2. Remove the two screws A, then detach the stage plate assy.
3. Rotating the lead screw, move the pickup unit to the outer circumference.
4. Put the screwdriver's holes (2 places) into alignment with the spindle motor mounting screw locations. There-upon, remove these two screws, and slide off the spindle motor towards the pickup.

M. REMOVING THE SLED MOTOR

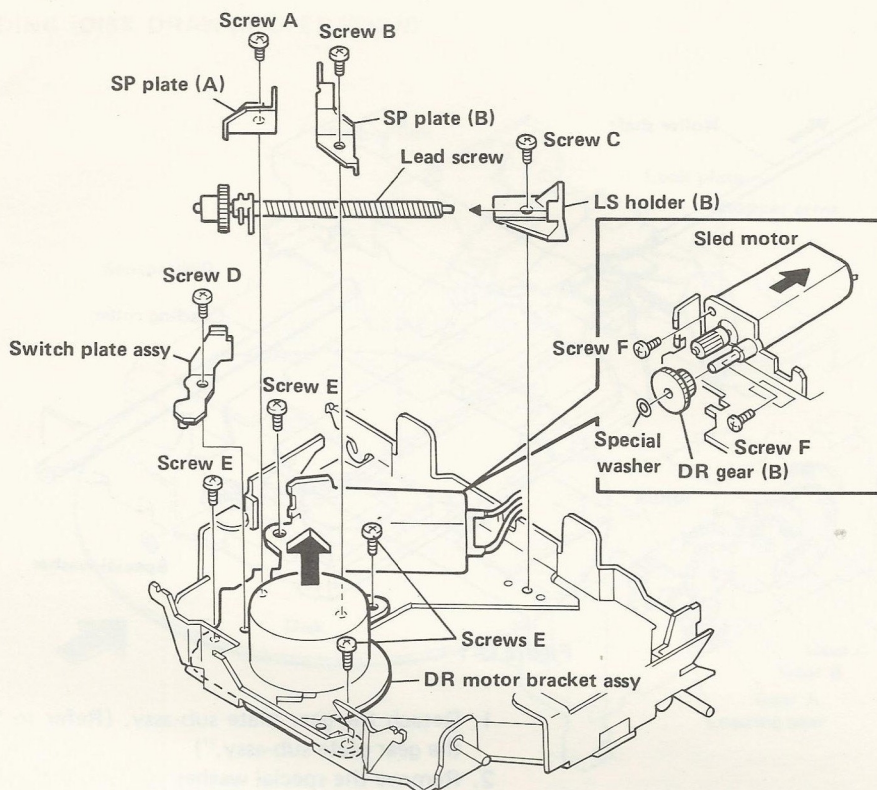


Figure M-1

1. Perform the above items A to K completely. (Detach the stage plate assy as well.)
2. Remove the Screw A, then detach the SP plate (A).
3. Remove the screw B, then detach the SP plate (B).
4. Remove the screw C, then detach the LS holder (B).
5. Remove the lead screw.
6. Remove the screw D, then detach the switch plate assy.
7. Remove the four screws D, then detach the DR motor bracket sub-assy.
8. Remove the special washer, then detach the DR gear (B).
9. Remove the two screws F, then detach the sled motor.

*Of the motor lead wires, the red one is of the positive side at the DR gear (B).

N. REPLACING THE SOLENOID

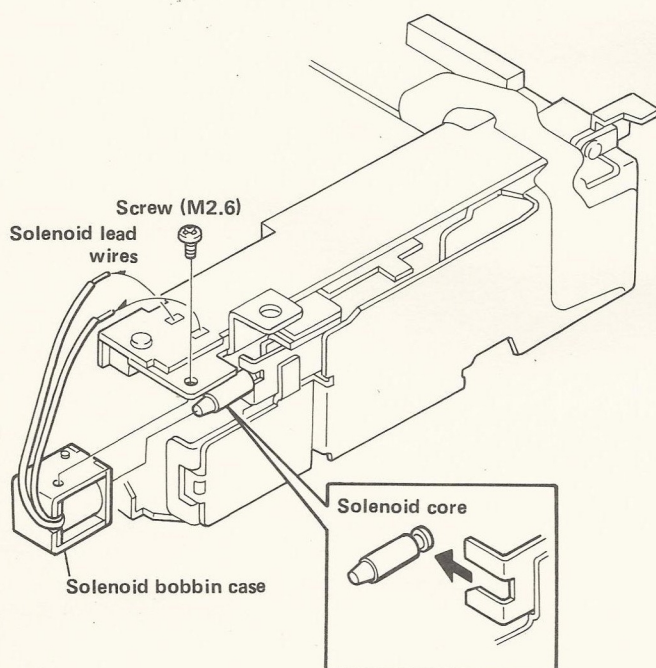


Figure N-1

1. Unsolder the solenoid lead wires, then disconnect them.
2. Remove the screw (M2.6).
3. Detach the solenoid bobbin case. (Note that the solenoid core may drop.)
4. Release the solenoid core from the trigger plate groove.
5. To install a new one, perform a reverse procedure of the above steps 4 to 1.

O. REPLACING THE LOADING ROLLER

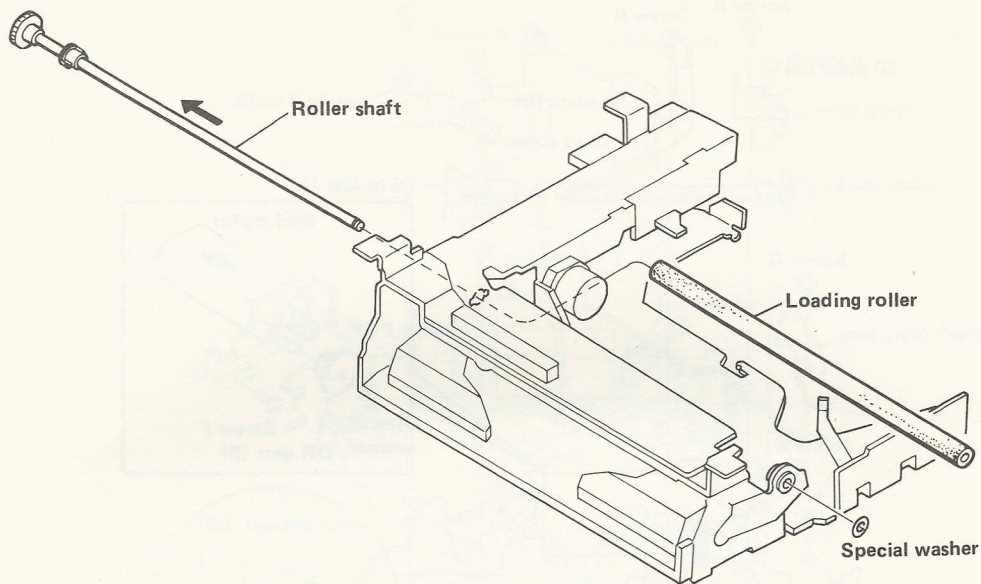


Figure O-1

1. Detach the gear plate sub-assy. (Refer to "B. Removing the gear plate sub-assy.")
2. Remove the special washer.
3. Draw out the roller shaft together with the roller gear, then take out the loading roller.
4. To install a new one, perform a reverse procedure of the above steps 3 to 1. (In this case, be careful not to let grease adhere to any mechanical section of the loading roller.)

DESCRIPTION OF OPERATIONS

A. DISK LOADING (DISK DRAW-IN OPERATION)

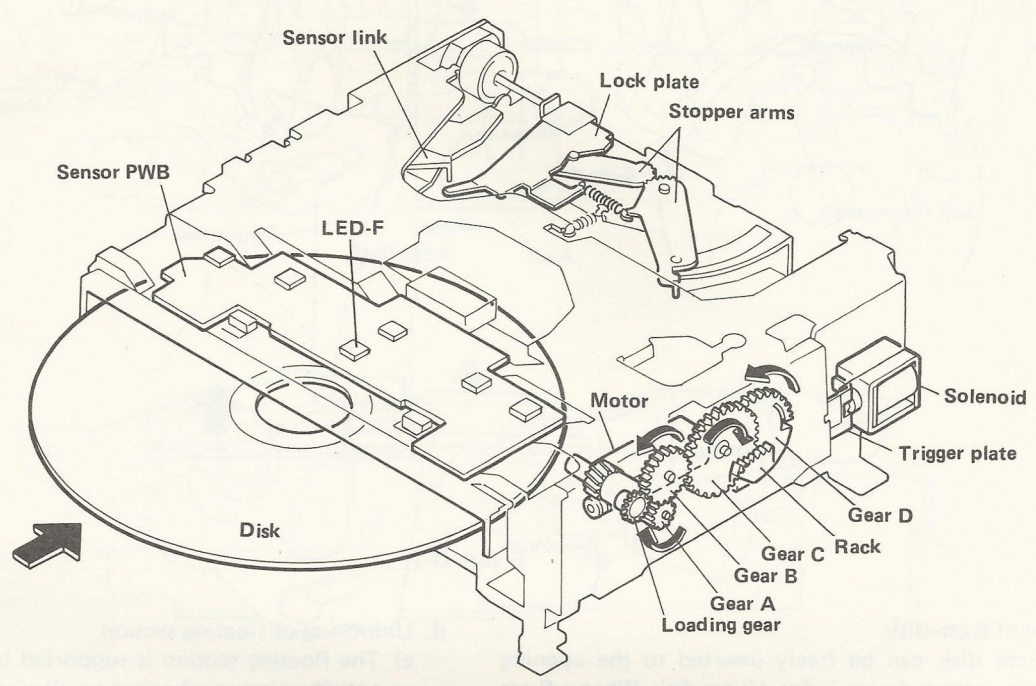


Figure P-1

- 1. When the mechanism is energized, the photosensor unit turn ON. (A photosensor operate on infrared rays that are not visible to eyes.)
 - 2. When the disk is put in to the opening section, the light of the LED-F is intercepted by the disk. Thereby, the sensor unit works, the loading motor rotates so that the loading roller rotates by way of gears.
 - 3. The disk is further entered and rides on the loading roller in rotation, which is then put between the loading roller and the U disk guide. Thereby, the disk is drawn into the mechanism due to the rotation of the loading roller.
 - 4. The combination of six photosensors monitors the disk drawn-in state by means of pattern sensing.
 - a) 8-cm disk/12-cm disk discrimination
 - b) Disk existence/non-existence detection
 - c) Discrimination between disk and different object
- The above process of steps 1 to 4 is common between 12-cm and 8-cm disks.

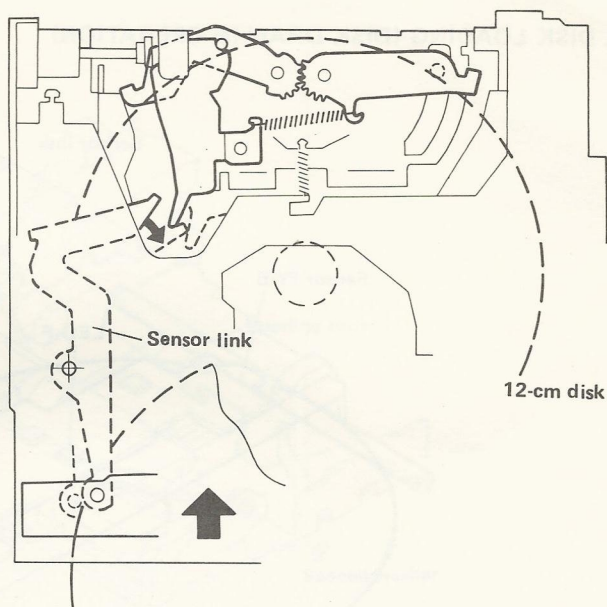
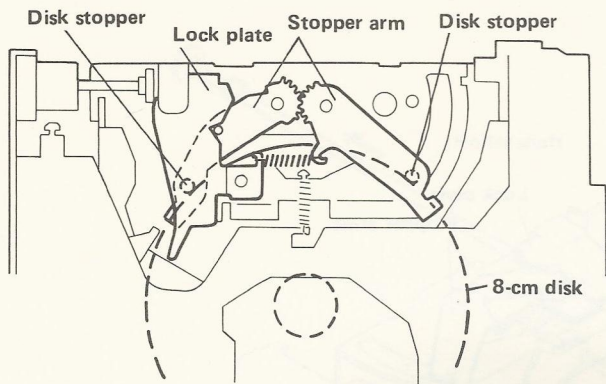


Figure Q-1

5. Loading of 8-cm disk

- a) A 8-cm disk can be freely inserted to the opening section, whose design is for 12-cm disk. When a 8-cm disk is inserted and its loading starts, it is pressed against the two stopper pins so that it is controlled into line with the center of the turntable.
- b) By the photosensor unit, the 8-cm disk is recognized during its loading, and then the completion of its positioning is also recognized. After that the chucking operation is shifted to.
- c) When the completion of drawing in the 12-cm or 8-cm disk is recognized by the photosensor unit, the solenoid is energized for a specified period of time and the trigger plate is thereby slid so that the intermittent gear (gear D) is engaged with the gear C.
- d) When the gear D starts rotating due to the force of the motor, the intermittent gear bites with the rack on the shift plate so that the shift plate slides.
- e) The shift plate perform a centralized control over the floating block mechanism section, the lower disk guide section and the clamper up/down mechanism section in their operation.

6. Unlocking of floating section

- a) The floating section is supported by a spring-damper antivibration mechanism to alleviate the sound jump due to car vibrations in the play mode. During disk loading, the floating section is subject to locking by the floating lock mechanism so that it is unified with the loading mechanism section. In the disk loading operation, the floating section is released from locking when chucking is performed after the disk has been drawn in.
- b) The shift plate has the floating section right side lock catch and the front side and left side lock mechanism engaging portion. When the shift plate slides towards the rear of the mechanism, the front side and left side lock mechanisms work to unlock the floating section.

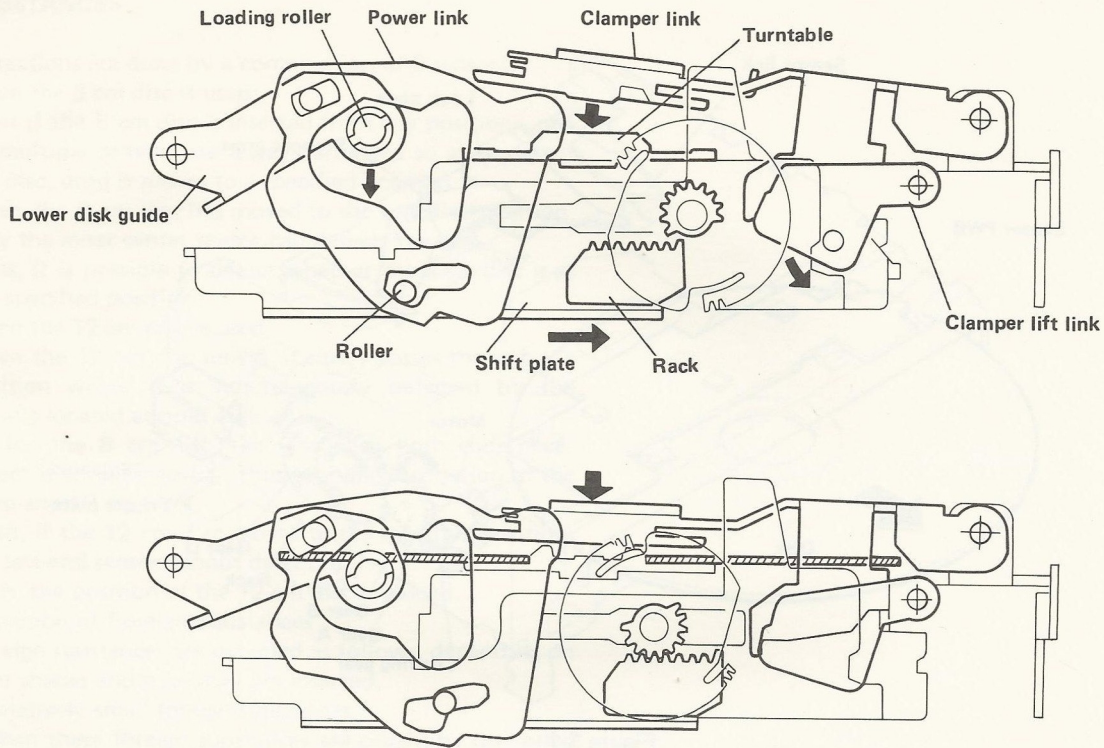


Figure R-1

7. Disk chucking

- a) The shift plate has a roller which is engaged with the power link. When the shift plate slides, the power link thus performs a rotational motion due to the cam groove provided to the power link itself. The power link is in engagement with the lower disk guide, to which the shutter and loading roller are installed. When the power link performs a rotational motion, the lower disk guide also performs a rotational motion so that the loading roller holding the disk starts to descend.
- b) By way of the roller, the clamper lift link is in engagement with the shift plate provided with a cam groove. At the start of disk loading, the clamper link is lifted put on the shaft provided to the clamper lift link. When the shift plate slides, the clamper lift link starts to descend and at the same time the clamper link also starts to descend.
- c) When the loading roller descends, the disk put on the loading roller also goes down on the turntable on the floating section (drive unit).
- d) To the clamper link, the clamper ring is installed in such a way that it can rotate. The disk on the turntable is held by this clamper ring.
- e) The shift plate slides further. Thus, the loading roller and the clamper lift link work to a point without floating vibration area. Then, where the shift plate presses against the chucking detection switch, the loading motor is disenergized to stop the shift plate.

B. DISK EJECTION

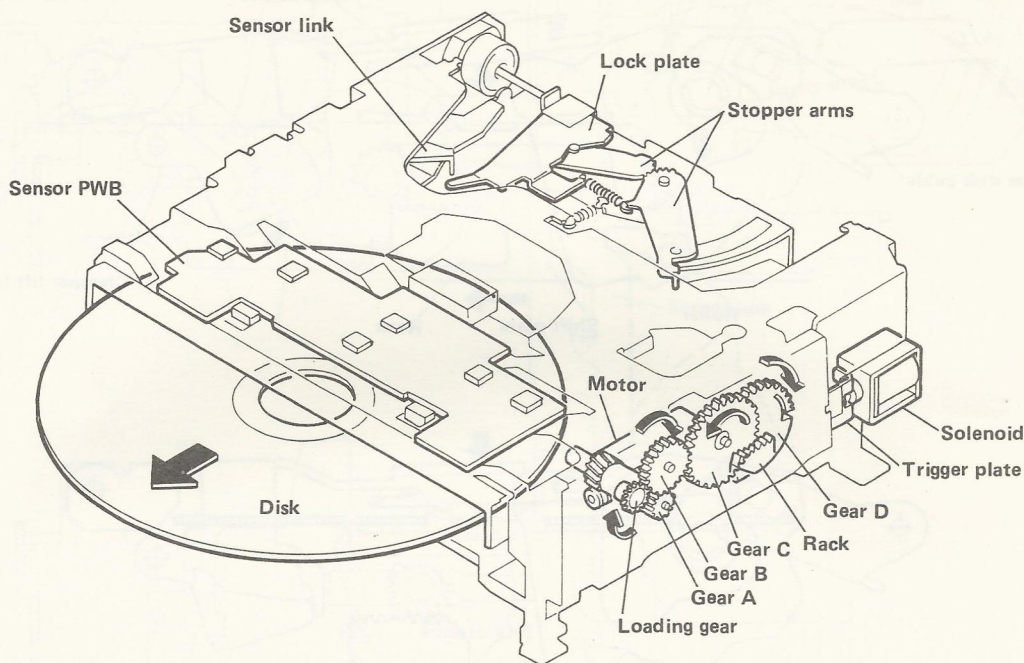


Figure S-1

1. When the loading motor is reversely rotated, the shift plate starts to slide outwards due to the power transmitting through gears.
2. As the shift plate slides, the floating section lock, clamper lift link and lower disk guide mechanisms work to lock the floating mechanism. Then, the clamper link is lifted up and the lower disk guide is also up.
3. The loading roller rotates in the direction in which the disk is ejected out, so that the disk on the roller started to be ejected.
4. Eject of 8-cm disk
The 8-cm disk is ejected put between the loading roller and the U disk guide. Thus, the loading roller rotates for an specified period of time. The ejection of the 8-cm disk is completed where it comes entirely off the loading roller.
5. Ejection of 12-cm disk
 - a) When the 12-cm disk starts to be ejected, the sensor link performs a rotational motion.
 - b) When the sensor link performs a rotational motion, the lock plate also makes a rotational motion.
 - c) When loading the 12-cm disk, the lock plate holds the stopper arms L and R at the 12-cm disk position. Thus, when the lock plate performs a rotational motion, the stopper arm L is undone so that the stopper arms L and R return to the initial position.
 - d) The photosensor unit detects that the 12-cm disk is held by its specified portion on the loading roller. Thereby, the motor rotation is stopped.

C. RELOADING (FOR 12-cm DISK ONLY)

1. When a 12-cm disk is loaded and then ejected, it stops where it is held by its specified portion on the loading roller.
When the 12-cm disk remains undrawn out of the mechanism, it is subject to the automatic loading operation at a passage of 15 seconds after the ejection operation.
2. After being loading, the disk waits in the pause mode.

D. DETECTION OF 8 cm/12 cm DISK, AND FOREIGN SUBSTANCES

All detections are done by a combination of 6 sensors.

1. When the 8 cm disc is used;

Even if the 8 cm disc is inserted from any positions, one or multiple sensors are always arranged so as to detect the disc, until it moves to a specified position.

When the 8 cm disc has moved to the specified position, only the inner center sensor can detect the disc.

Thus, it is possible to detect whether the 8 cm disc is at the specified position.

2. When the 12 cm disc is used;

When the 12 cm disc moves, it surely passes through the position where it is simultaneously detected by the sensors located at both ends.

As for the 8 cm disc, the sensors at both ends never detect it simultaneously, thus enabling distinction of the 8 cm and 12 cm discs.

Then, if the 12 cm disc moves to the specified position, the left-end sensor cannot detect it.

Thus, the position of the 12 cm disc is judged.

3. Detection of Foreign Substances

Foreign substances are detected as follows, depending on their shapes and how they are inserted.

i) Relatively small foreign substances

When these foreign substances are caught by the rollers and moved on, all the sensors cannot detect as a result. All the sensors are arranged before the rollers. Therefore, such foreign substances can be detected and discharged before coming off the rollers.

ii) Relatively large foreign substances

These foreign substances are not detected by the same sensors as when the 8 cm or 12 cm discs are at the specified position.

The foreign substances are discharged when it is not detected within a specified time that they are at the specified position.

iii) Foreign substances resembling the disc shape

These foreign substances, or depending on how they are inserted, may be chucked. It happens when the shape or position of the foreign substances have the same combination of the sensors as when the 8 cm or 12 cm disc is at the specified position.

In such a case, part of the foreign substances is overlapping the rollers.

After chucking, it is judged first whether a pickup focus is adjusted, and only when aligned, the spindle motor is rotated.

When there are foreign substances, the focus cannot be adjusted, and the foreign substances are not dislocated and come off the rollers.

Therefore, they can be detected as foreign substances and discharged.