



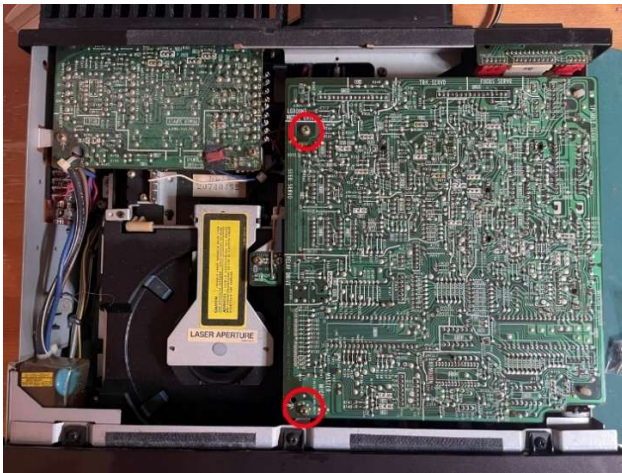
Sony CDP-101 of laser pickup service

Removal and clean/re-lubricating of laser pickup assembly

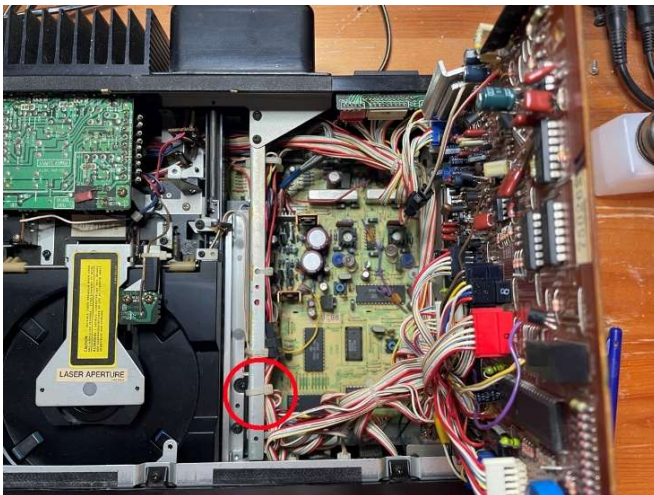
Removing the laser pickup assembly requires disconnecting 2 connectors on the Audio Board which are obscured by the CD mechanism. To gain access some other cables under the servo board need to be released first to ease access to the Audio board.

Releasing the audio board

1. Ensure the player is the right way up.
2. Remove the 2 screws on the left hand side of the servo board (circled)



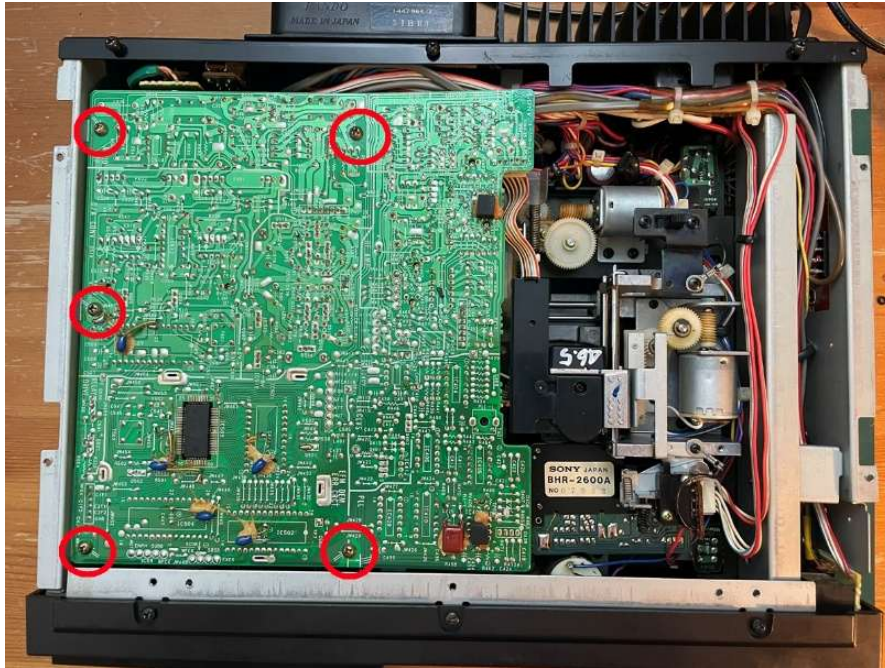
3. The servo board is hinged on the right. From the left side swing the servo board to the vertical position.
4. Running along the centre support bar are groups of cables held in place with cable ties. Cut the cable tie nearest to the front. (circled)



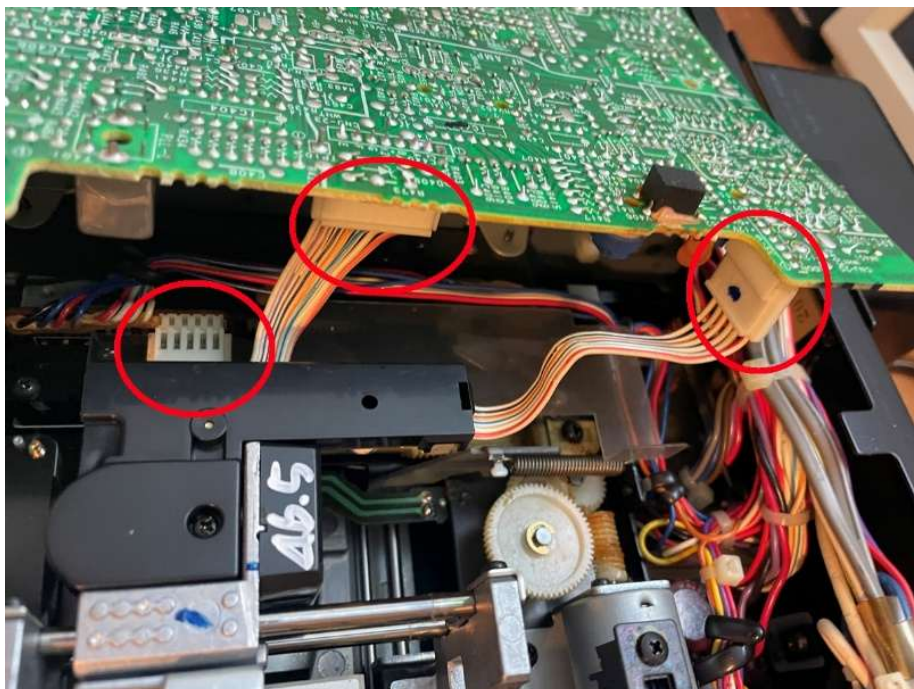
5. Put the servo board back down and refit the 2 screws from step 2

Removing the laser assembly

6. Turn the player over so it is upside down
7. Remove the 5 screws holding the audio board in place (circled)



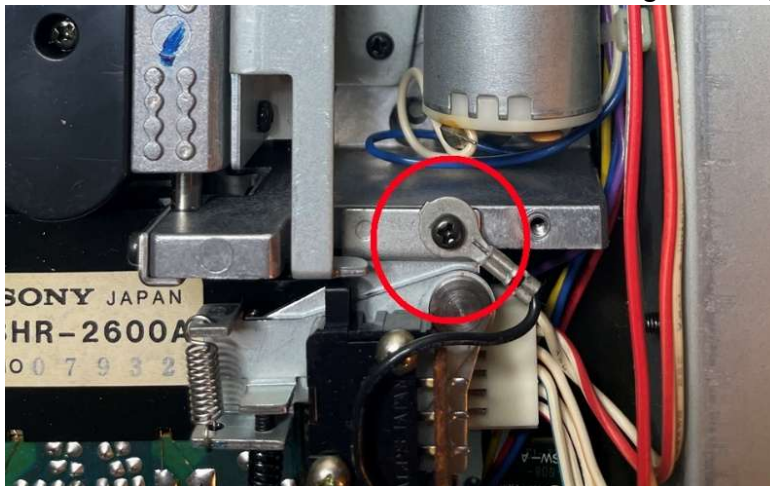
8. From the edge next to the laser pickup assembly, lift up the audio board and disconnect the 3 cables CNJ23, CNJ25 and the connector on the limit switch PCB (circled)



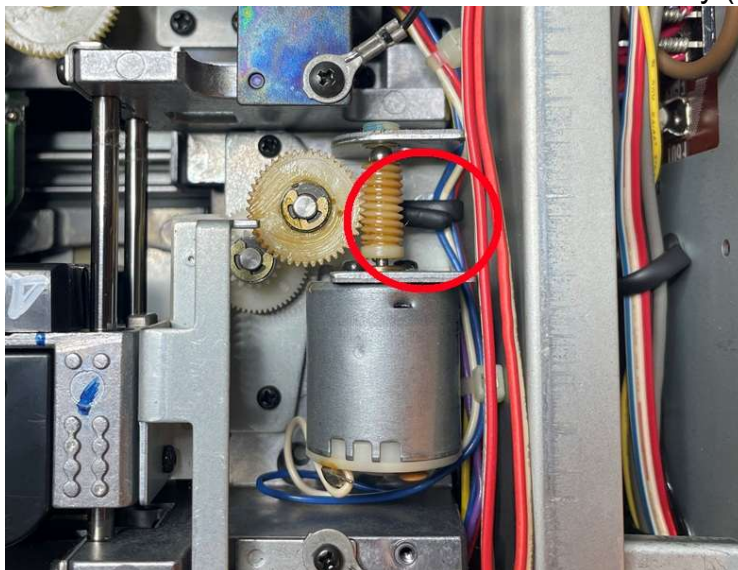
9. Unscrew the bleep switch bracket (circled)



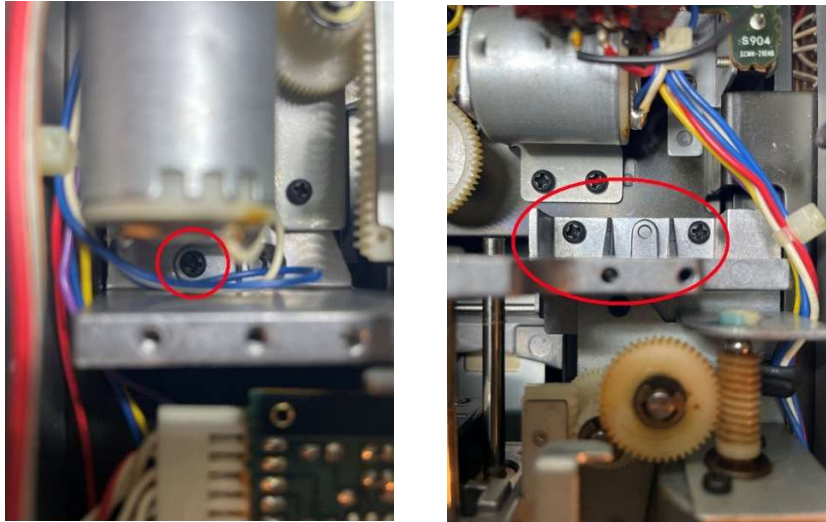
10. Unscrew the laser home switch bracket and grounding wire



11. Release the cable restraint on the laser assembly (circled)



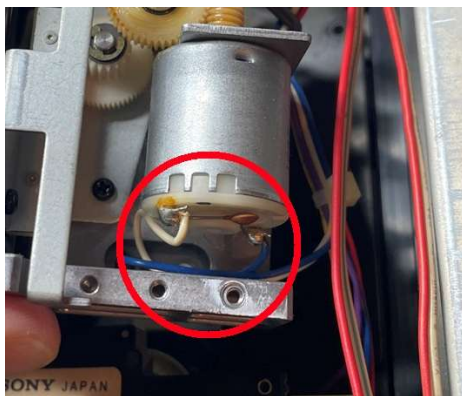
12. Remove the three screws holding the laser assembly in place positioned above and below the laser drive motor. (circled)



13. Carefully lift out the laser pickup assembly



14. Cut or de-solder the wires going to the laser drive motor. This is easier with the assembly lifted out. Make a note of which wire goes where.



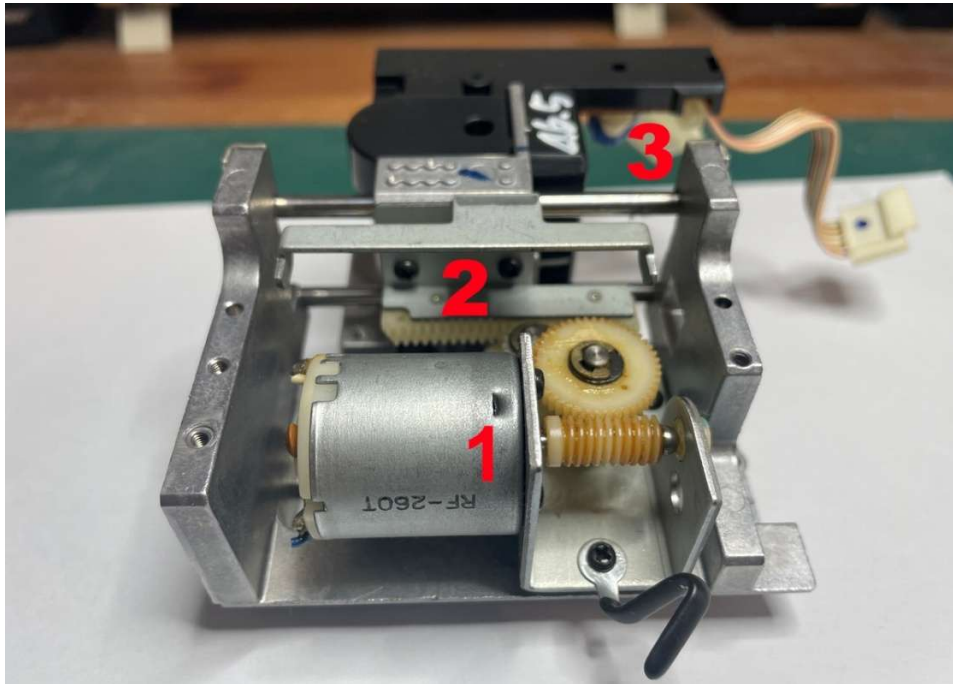
15. Place the laser assembly to one side, with the laser lens facing up.

Disassembling the laser pickup mechanism

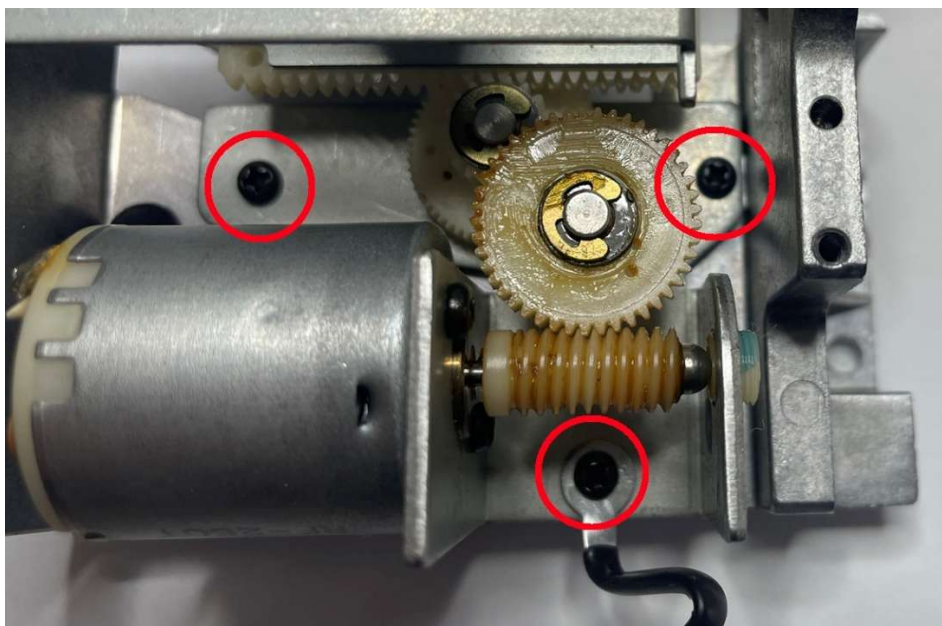
Note: when working with the laser pickup, wear an antistatic wrist strap to ensure the laser is not damaged from a static discharge.

To disassemble the laser pickup assembly, remove components in the following order:

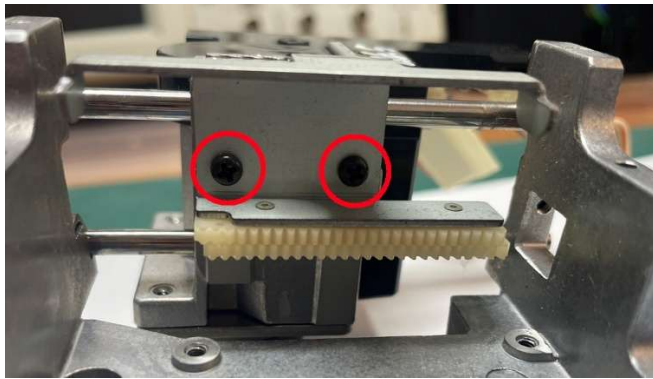
1. Motor and gears assembly (1)
2. Rack from the laser sled (2) (Optional)
3. Laser sled guide rails (3)



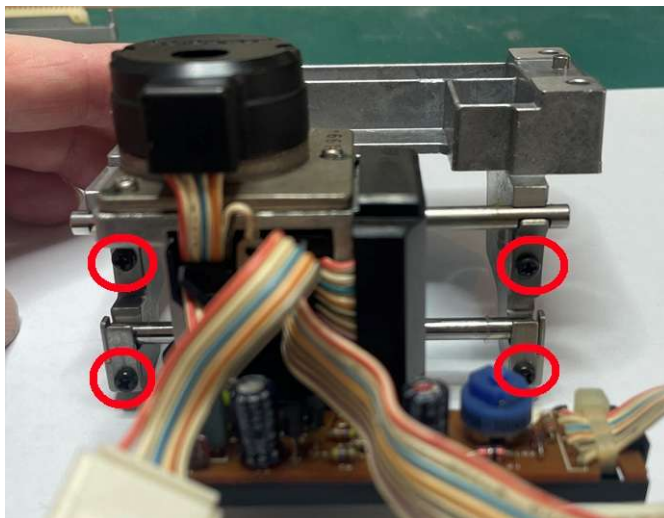
1. Remove the 3 screws holding the gear assembly and lift off and put aside.
(circled)



2. Remove the 2 screws holding the sled rack gear in place and put aside (circled) (Optional)

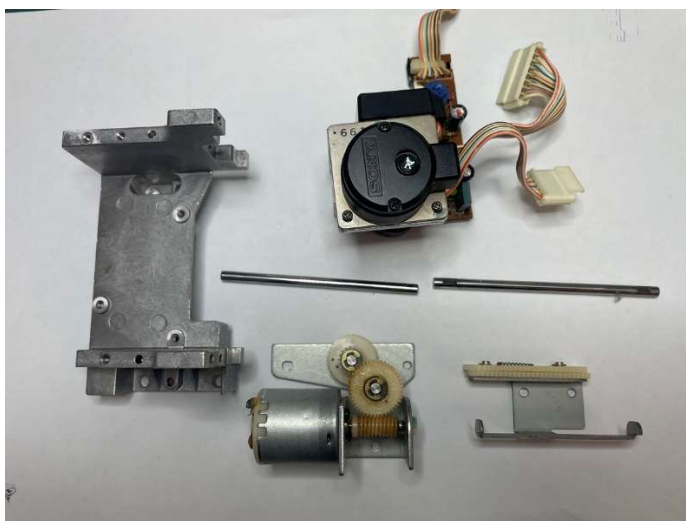


3. Remove the 4 screws and clamps holding the guide rails in place. (circled)



Note: The shorter lower rail's clamps have end caps, whereas the longer upper rail's clamps do not but are different lengths. Ensure to note the position of each rail and keep its corresponding clamps with it.

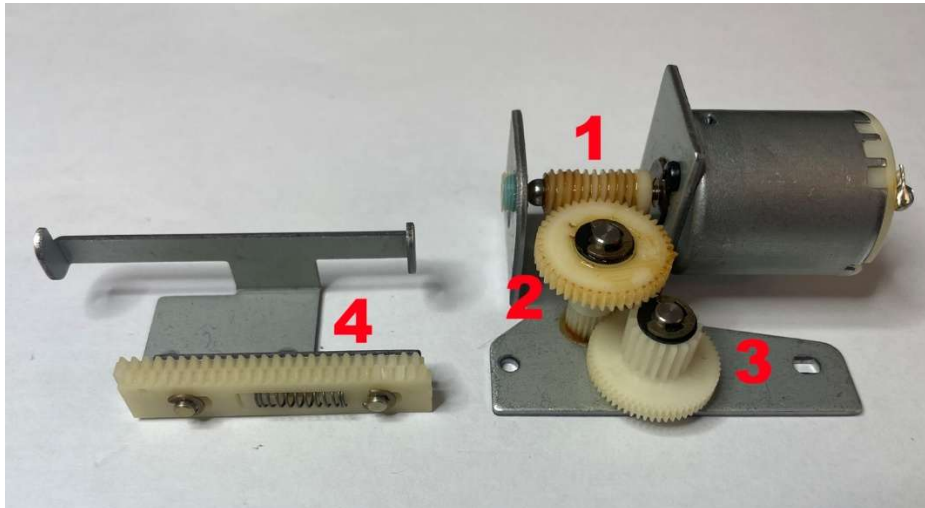
4. The Laser pickup assembly is now disassembled



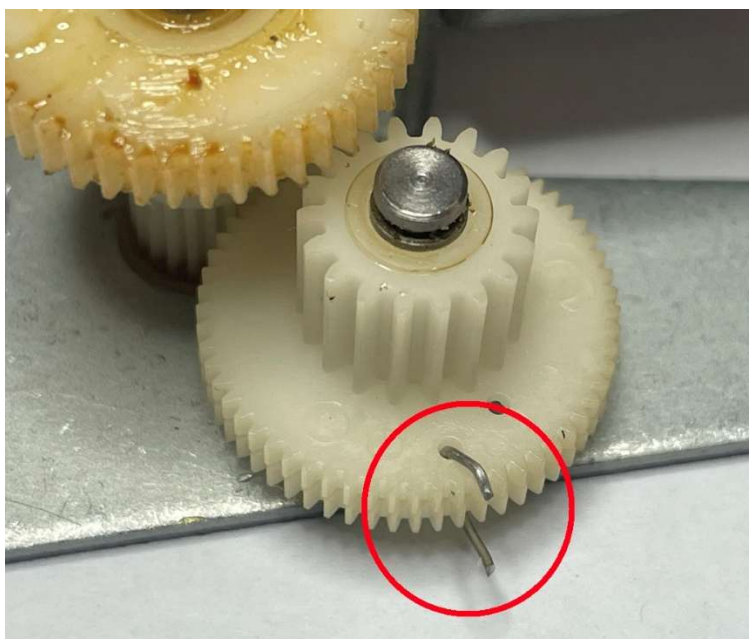
Servicing the gear assembly

The gear assembly is made of 4 gears:

1. Motor worm gear (1)
2. Worm wheel gear (2)
3. Spur gear (3)
4. Rack gear (4)



Note: The lower gear on the spur gear (3) is split in two with both halves sprung loaded internally to preload the gear and reduce gear slop. Lifting out the worm wheel gear (2) will cause this pretension to be released. To prevent this from happening a small piece of wire can be inserted in to a retaining hole (circled) to hold it in place, simplifying the rebuild stage. (circled) The rack gear (4) also has a similar design.



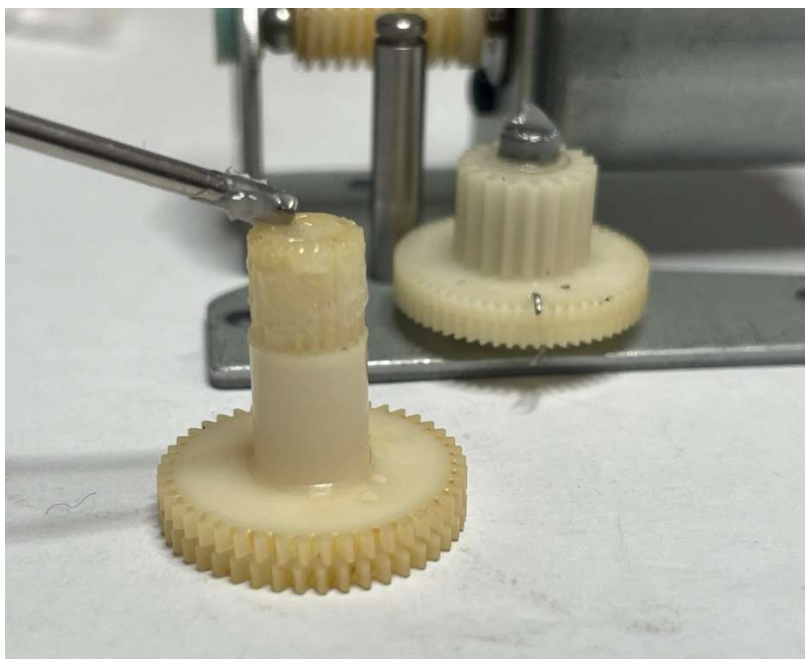
Removal and cleaning of gears

1. Remove the retaining clip and washers from the worm wheel gear (2) and spur gear (3) and put aside.
2. Lift out the worm wheel gear (2), followed by the spur gear (3) these may be difficult to do due to hardened grease. Rotate back and forth gently to release.
3. Using IPA remove all traces of grease from the gears and spindles.
4. Clean the grease off from the worm gear but do not remove the motor from its housing.

Reassembling and lubricating the gear assembly

Gear train lubrication and reassembly

1. Inspect all gear teeth and if necessary remove any debris.
2. Apply lithium grease to the worm gear evenly across it
3. Insert lithium grease into the base of the shaft of the spur gear (3) and place on to its spindle.
4. Insert grease into the base of the worm wheel gear and some on its lower cog. Place on to its spindle and ensure it meshes with the spur gear.

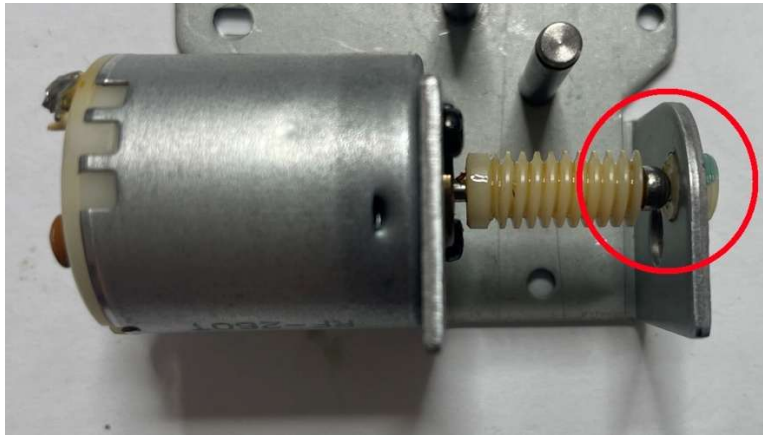


Note: The top gear of the worm wheel gear is made of two halves. Ensure it is complete

5. Refit the retaining clips and washers to the top of the worm wheel and spur gears, ensuring there is adequate grease around the washers.
6. Remove the retaining wire from the lower cog on the spur gear (3)
7. Apply 9VDC to the motor and allow the grease to spread evenly. Alternate the polarity to ensure spread across the gears.

Motor lubrication and thrust bearing adjustment

1. Loosen off the lateral play screw and apply a tiny amount of lithium grease to the thrust bearing (circled)

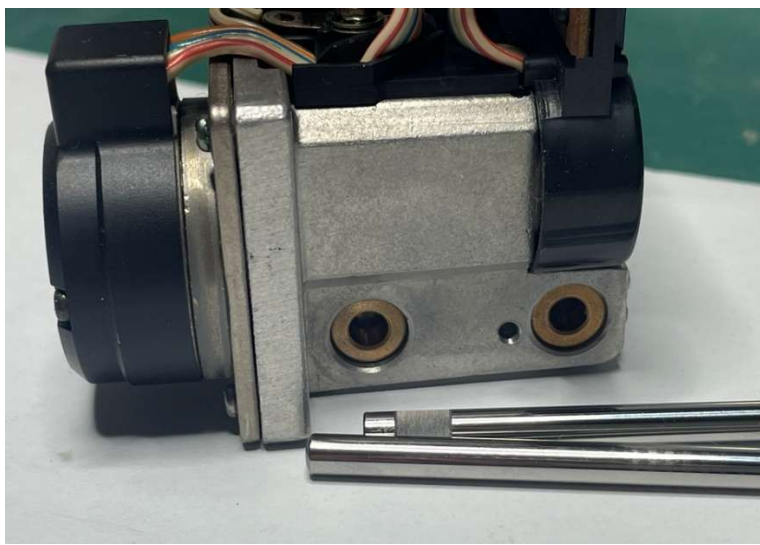


2. Apply a small amount of machine oil to the two bearings of the motor.
3. Adjust the lateral play screw to eliminate any play.
4. Apply 9V DC to the motor and measure the current draw.
5. Current draw should be 17-20mA. Adjust the lateral play screw to bring it in line.

Reassembly of sled rails and rack gear

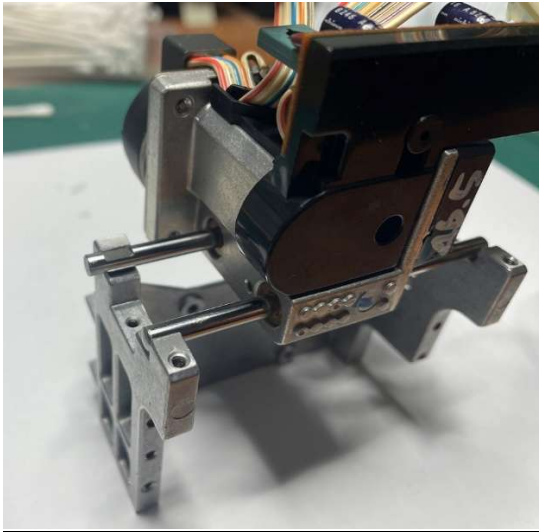
Note: while handling the laser assembly wear a static discharge wrist band.

1. Using IPA clean the sled rails and bushes they slide in to until perfectly smooth.



2. Apply a tiny amount of lithium grease to the laser assembly bushings

3. Insert the longer guide rail with the notch in the bushings nearest the lens and the shorter guide in the other bushings.
4. With the base of the laser assembly away from you, place the laser assembly on the base with the lens pointing away from you and align the guide rails with their mounting points so the top rail (nearest the lens) has its notches pointing up.



Note: When the laser assembly is resting on the base, it's very precarious. Be ready to apply the clamps immediately to prevent the laser assembly falling off the base.

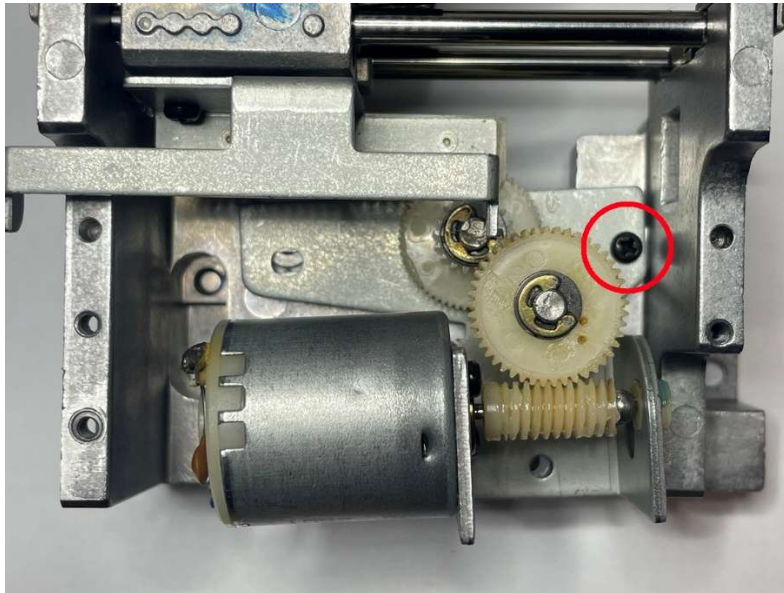
5. Apply the L shaped clamps to the lower rail. Once you have the first clamp on, the laser assembly is more stable.
6. The clamps for the upper rail are different sizes. The longer one is used on the side with the deeper indent (left side in this image)



7. Turn the whole assembly over and fit the rack gear to the laser assembly with the gear at the bottom.

Note: The rack gear is made of two halves which are sprung loaded. Before offering up the motor assembly, push the lower half of the rack towards the left to bring it in line with the top half. This will allow proper engagement between the rack and spur gear.

8. Offer up the motor assembly to the rack gear but do not try to engage the gear with the rack. Fit the right hand screw of the motor assembly in place. (circled)



9. Using tweezers push the lower half of the rack to the left to bring both halves in line.
10. Push the motor assembly towards the rack and hold in place so it engages, then fit the left hand screw to hold the motor assembly in place.
11. Fit the last screw, including the cable harness fixing.
12. Once back together apply power to the motor and confirm correct operation.

Refitting the laser assembly

1. Offer up the laser assembly to the chassis and reconnect the wires to the sled motor (blue to the bottom, white to top)
2. Fit laser assembly in to place and re fit the 3 fixing screws
3. From the edge next to the laser pickup assembly, lift up the audio board and reconnect the 3 cables CNJ23, CNJ25 and the connector on the limit switch PCB
4. Refit bleep switch using fixing screw
5. Refit audio board with 5 fixing screws

The procedure is complete.