

Sega Dreamcast Optical Drive Gear Replacement Guide

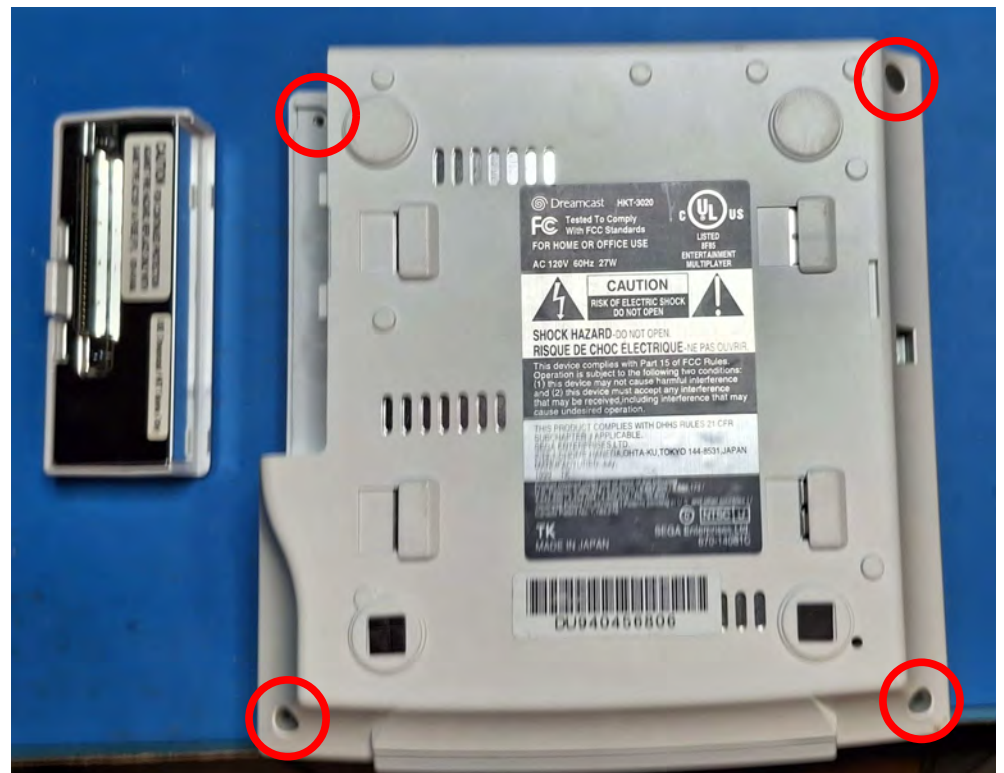
If the Dreamcast Optical Drive is noisier than usual and/or will read discs randomly, a possible failure mode is a cracked spur gear on the drive motor.

Replacement of the broken spur gear does not guarantee the optical drive will be able to read discs. Other failure modes could be present, such as bad capacitors on optical drive circuit board and/or laser has failed.

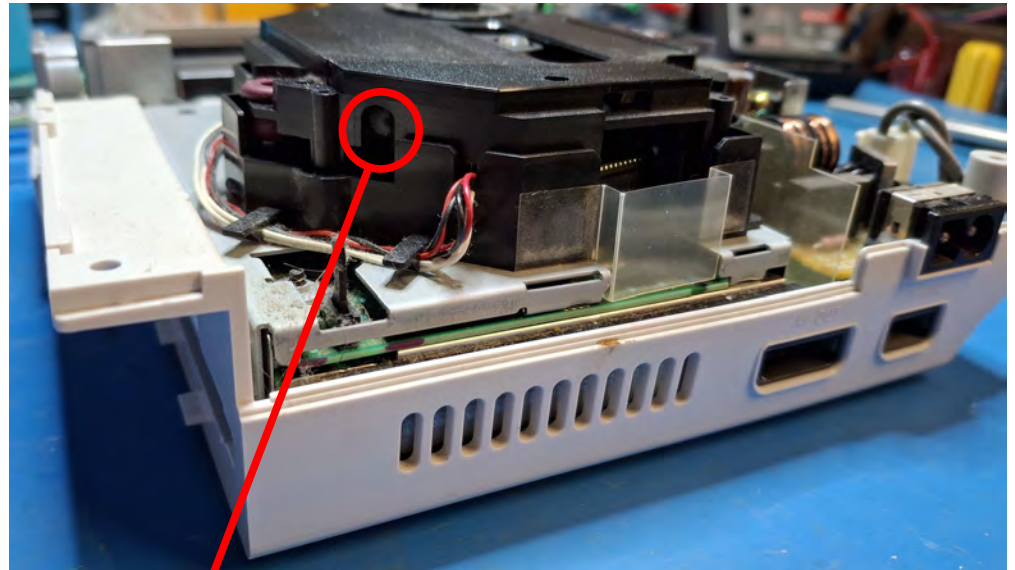
This repair guide is for spur gear replacement only.

Flip Dreamcast over and separate modem from console and remove 4 screws.

Flip Dreamcast back over and remove top shell.



At this step, the spur gear is visible and can be inspected for possible crack. Looking for the crack may require using a fine tipped tool to manually spin the spur gear. Detecting the crack maybe difficult, if unsure continue to next steps for better access.

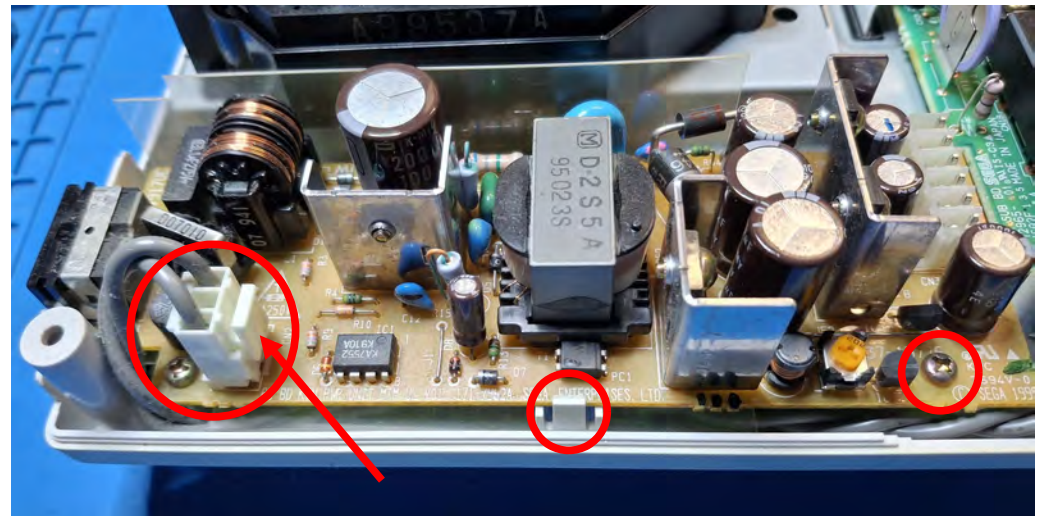
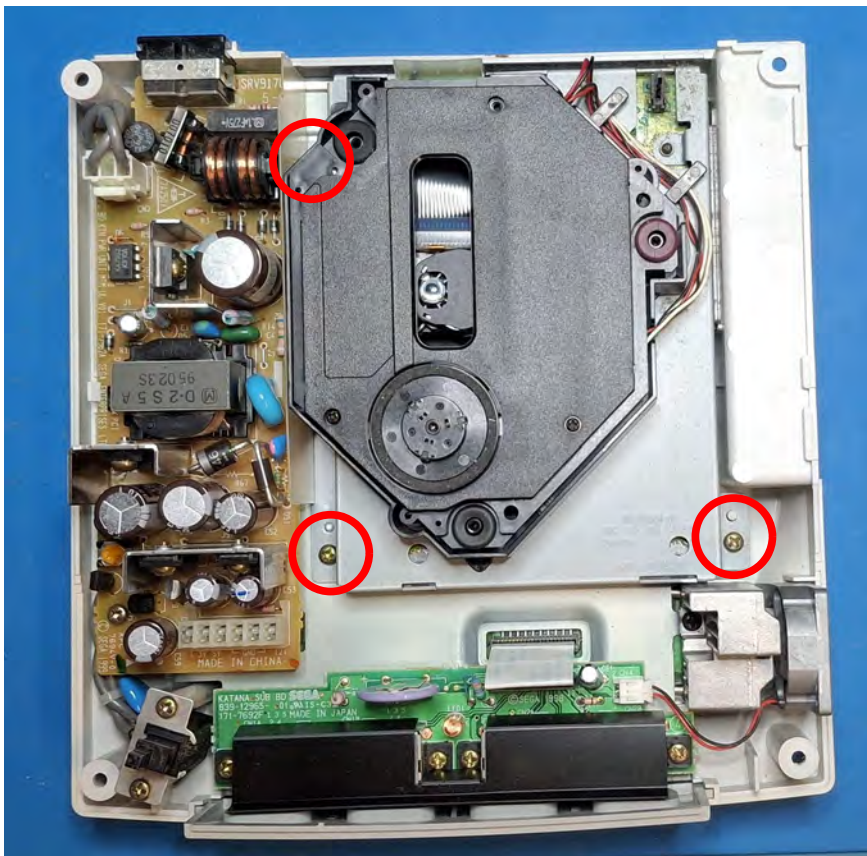


Best practice is to remove power supply circuit board and plastic shield first then remove optical drive assembly. Components overlap and make removal and installation of optical drive assembly easier.

Caution - next steps involve working around power supply circuit board. Ensure power cord is removed and act as if capacitors have a charge.

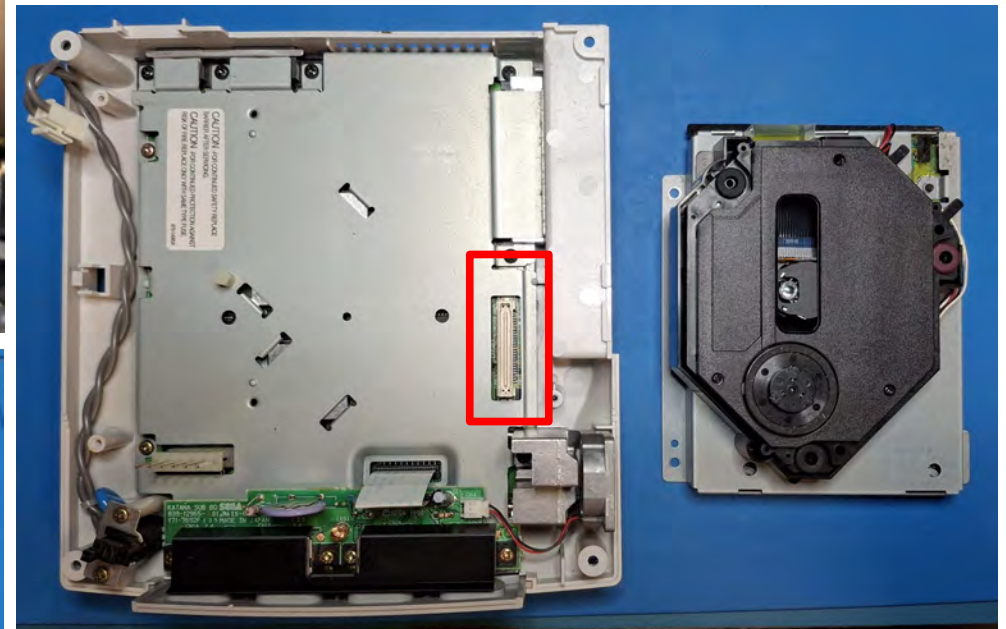
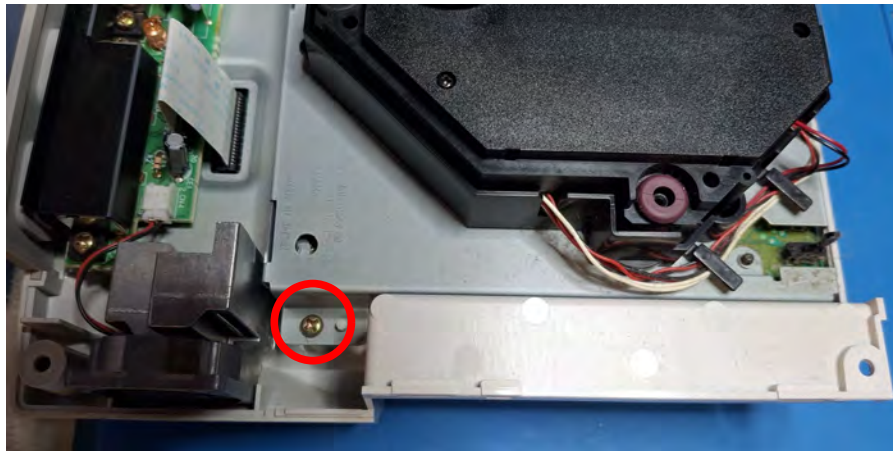
Power supply circuit board removal: Separate power switch connector from circuit board, press tab in on connector and pull straight up and push aside. Next remove 2 screws (***Caution these screws maybe longer than screws used to secure optical drive, do not mix with shorter optical drive screws.**)

Power supply circuit board can be removed by lifting up carefully. More upward pressure will need to be applied at the connector on lower right hand side of the circuit board. There is a small clip on the left hand side that may hold up removal as well. Keep right hand side of circuit board higher than left hand side to get past this clip.



3 screws secure the optical drive assembly to the top metal shield (*Caution these screws maybe shorter than screws used to secure power supply circuit board, do not mix with longer power supply circuit board screws.)

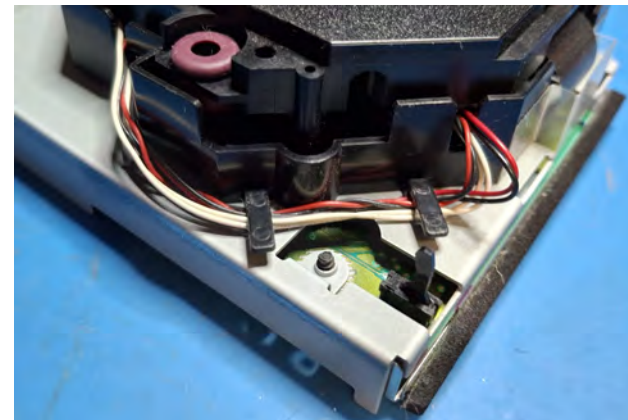
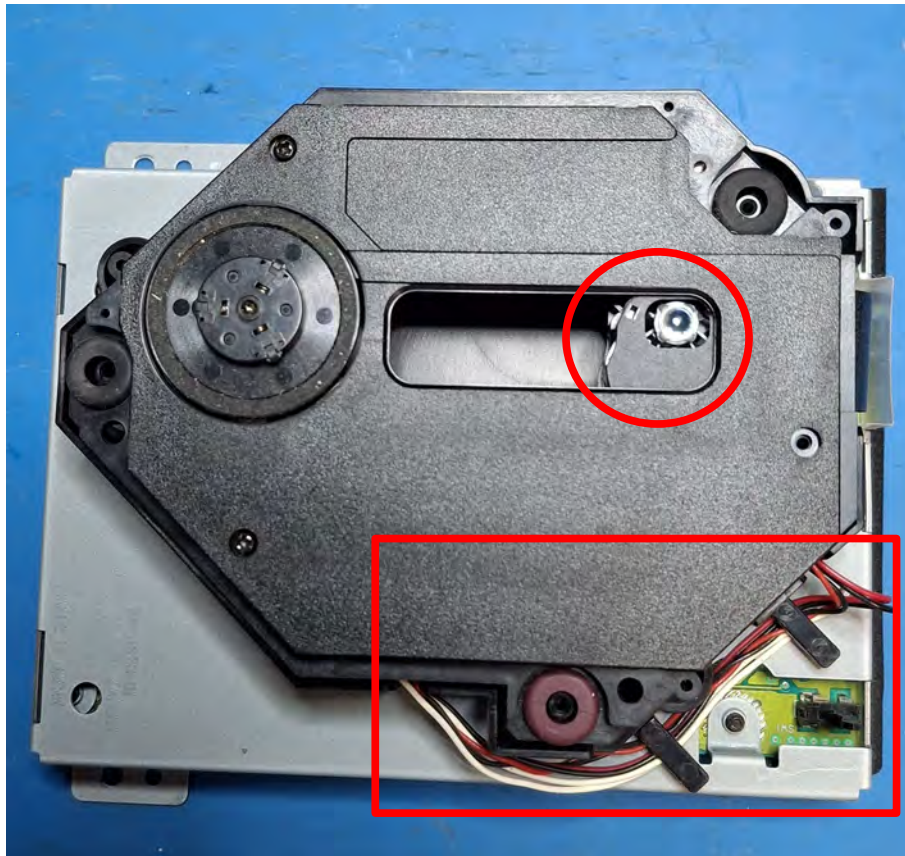
With 3 screws removed, lift optical drive assembly straight up. There will be resistance in lower right hand corner where the connector is located.



Next steps: Preparing optical drive assembly for disassembly

The optical pickup (laser) needs to be in the position shown below in order to separate the spindle/optical pickup assembly from the rest of the optical drive assembly. It is safe to move this by hand, requires some force to move and will make a grinding noise, this is okay. Try not touch optical pickup (laser) lens while performing this move.

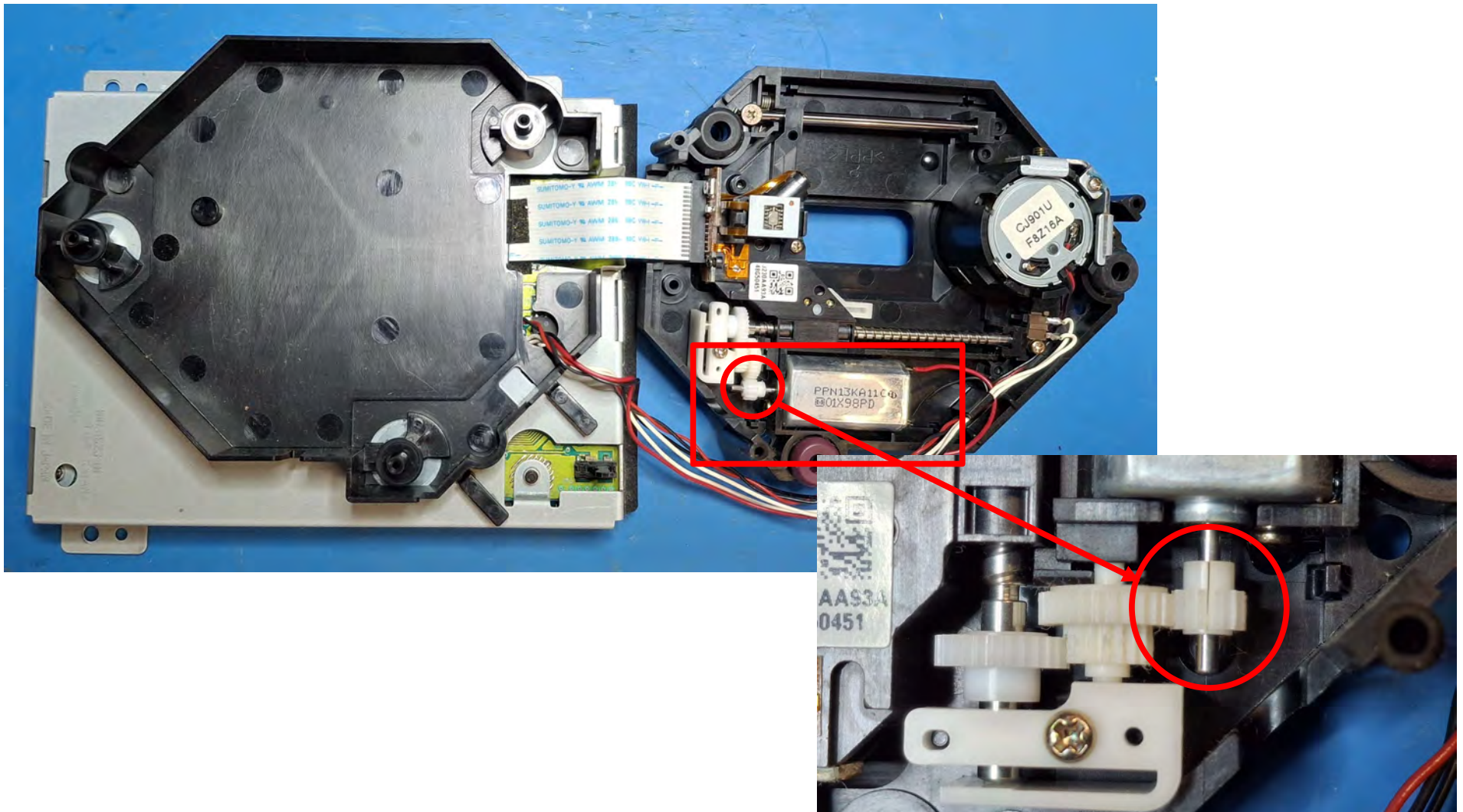
The small bundle of wires must be pulled from the retaining tabs. Lift each tab and slide wires out. Should look like lower right photo.



The spindle/optical pickup assembly can be lifted up and flipped as shown in photo below.

Try not touch optical pickup (laser) lens while lifting spindle/optical pickup assembly. The spindle/optical pickup assembly may stick from the rubber dampeners, light upward pressure will separate the two assemblies.

Spur gear to be replaced shown below.

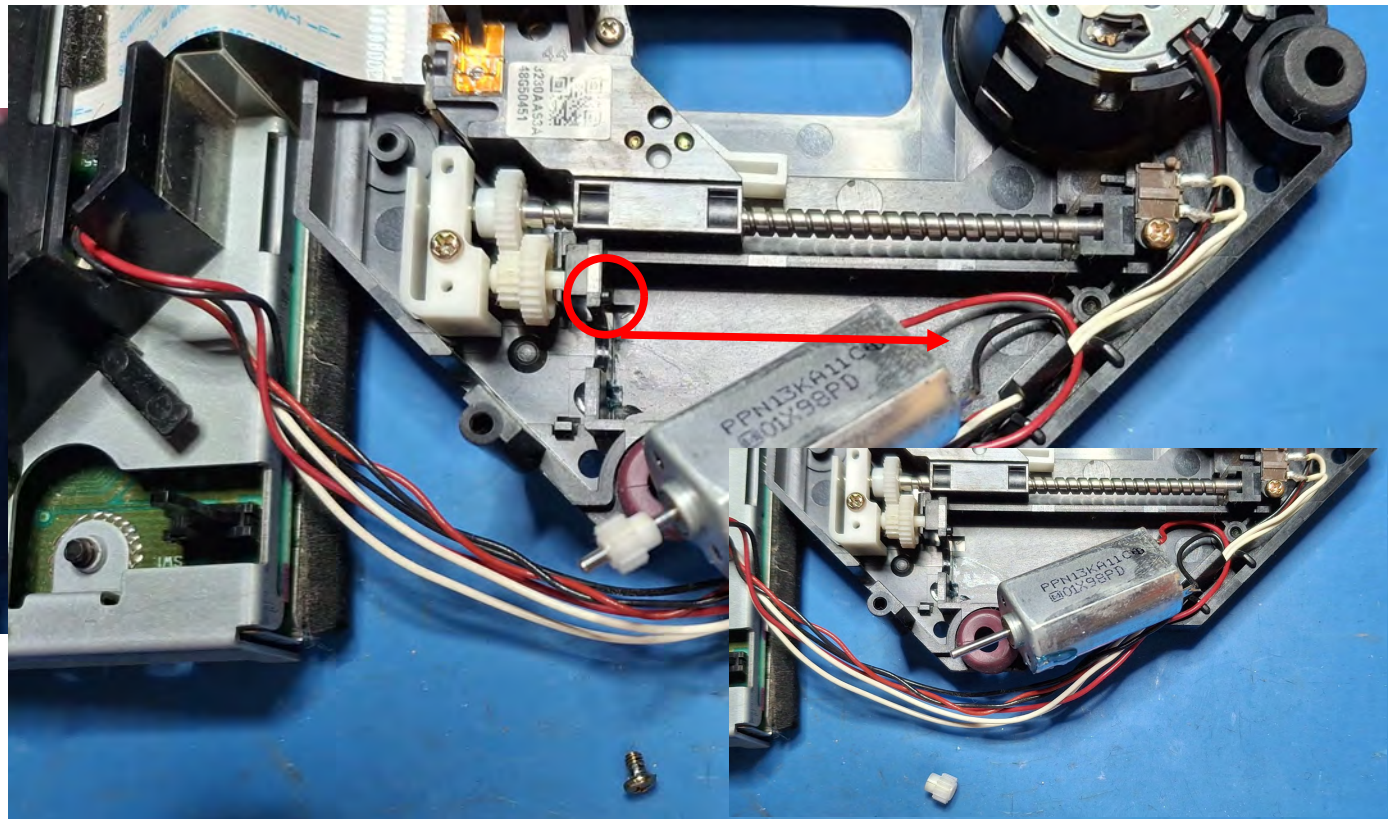


Next steps: Separating optical pickup positioning motor

Remove small screw. Note this screw will have blue green thread locker applied and requires more force to remove. Use a proper fitting screwdriver and apply more force to keep from stripping screw.

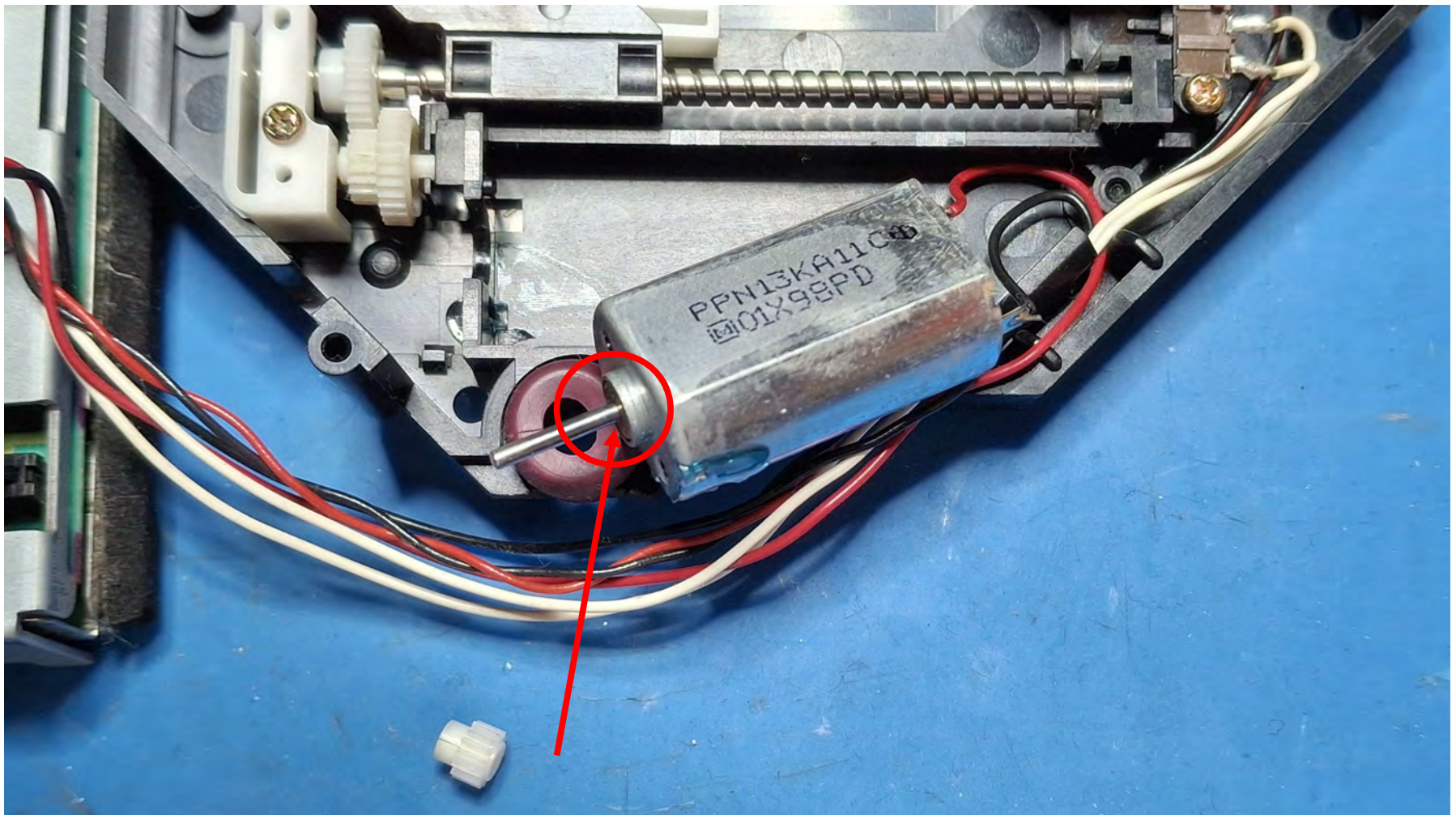
Slide motor back before lifting up to get past locating pin as shown in photo below.

The failed spur gear can now be removed and opportunity to clean the other gears.



Take this opportunity while the motor is out to lubricate the spindle bushing. Not necessary to do but will help longevity and may reduce drive noise.

Use a very light oil, and use sparingly, once applied spin the shaft a few times for the oil to seep into the bronze bushing. Try to avoid getting any oil on the shaft where the new gear will be pushed into place. If oil is present on the shaft clean with Isopropyl alcohol.



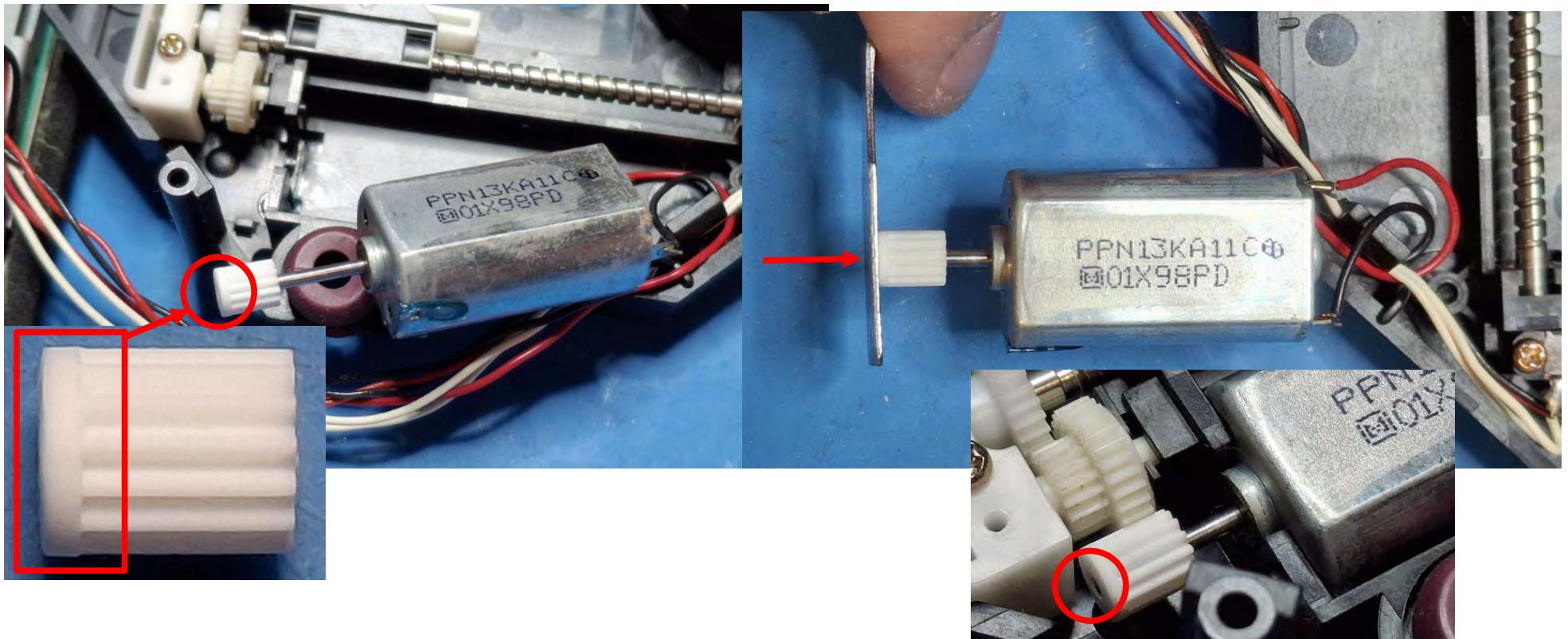
Next steps: Installation of new spur gear

Place the new gear onto the shaft as shown, ensure the band on the gear is facing away from the body of the motor. **Caution: The new gear has a correct and incorrect orientation.** The gear is held in place by an interference fit, no adhesives are necessary to hold gear to shaft. Force to press gear into place is high and can be done by hand.

Give the gear a light press by hand to get it to just sit on the shaft as shown.

With a flat tool or small coin placed on the back of the gear, firmly grip the motor and push gear into position, stopping when the motor shaft presses against the flat tool or small coin. Ensure press force is perpendicular to the gear shaft so as to not wander or press spur gear at an angle.

The motor shaft can protrude past the gear by a small amount. When the motor is reinstalled verify gear interface is not obstructed by the band on spur gear.



Next steps: Reinstall optical pickup positioning motor

Slide motor back into position onto locating pin as shown in photo below and fasten screw. Re-installation of screw can be tricky to get started.

Right hand picture shows what a new gear should look like once motor is reinstalled.

Lubricant/grease is **NOT** necessary on the gears.

Follow steps in reverse to reassemble the Dreamcast.

