005966 Universal Laser Diode Mount TO-38 TO-18 TO-5: M9x0.5 M13x0.5 0.8 mm PCB - MANUAL

Important information before assembly

Caution: Before starting assembly, wear an ESD wrist strap. The laser diode is sensitive to electrostatic discharge and can be permanently damaged if handled incorrectly.

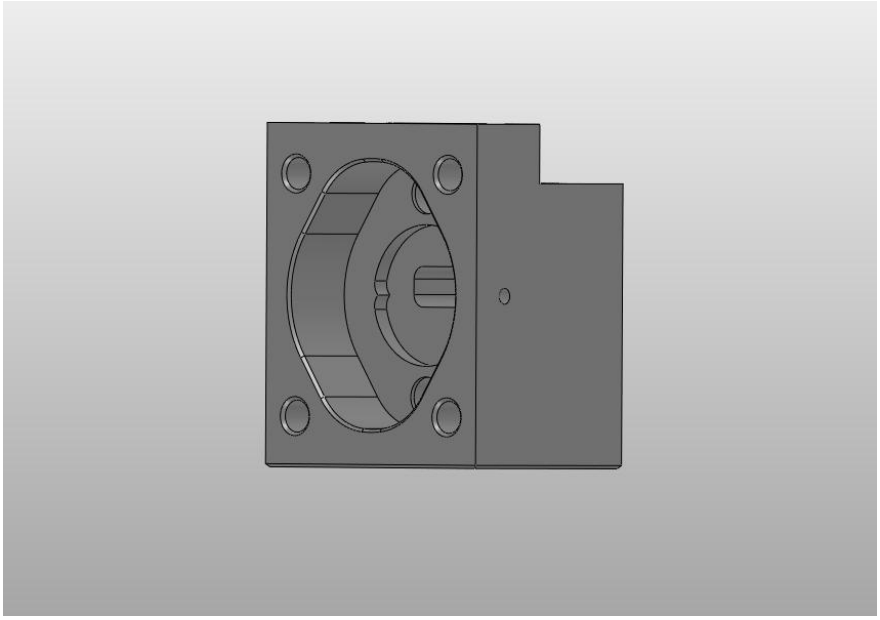
During assembly, keep all optical surfaces clean. Thermal paste must not get onto the diode window, the emitter, or the lens surfaces.

Before soldering the PCB, always check the documentation for the laser diode being used and confirm which lead is the anode (+) and which lead is the cathode (-). The PCB has solder pads marked "+" and "-", so the diode orientation must match these markings. When looking at the front of the mount, the diode cathode (-) should be on the right-hand side.

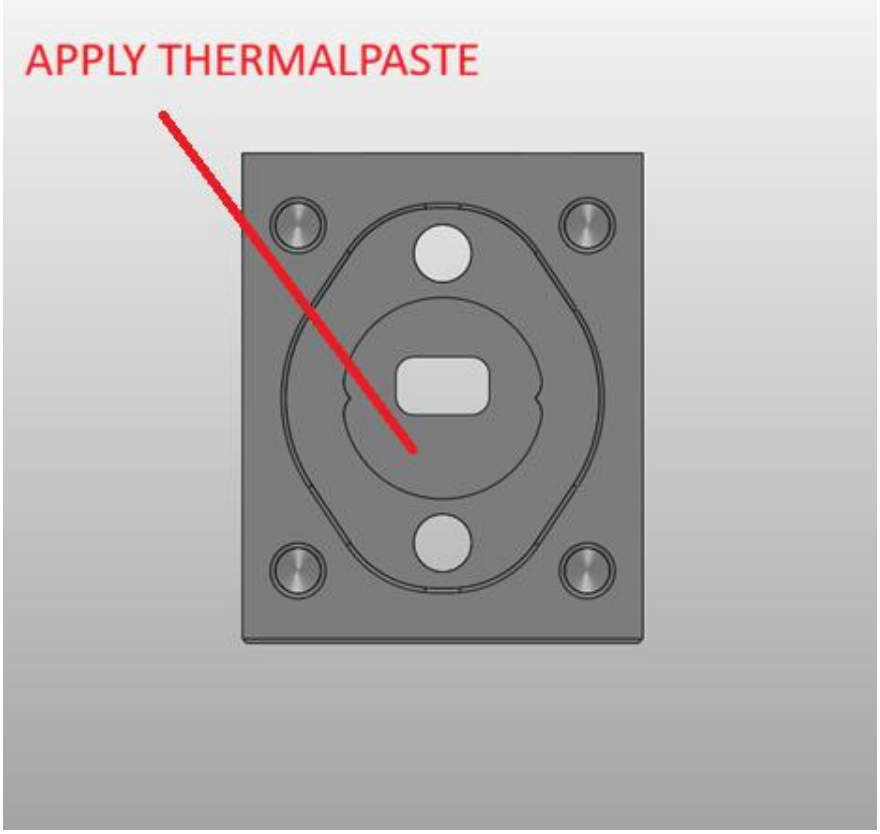
1. Installing the laser diode in the mount body

1.1. TO-5 laser diode

Thoroughly clean the diode seat in the main body.

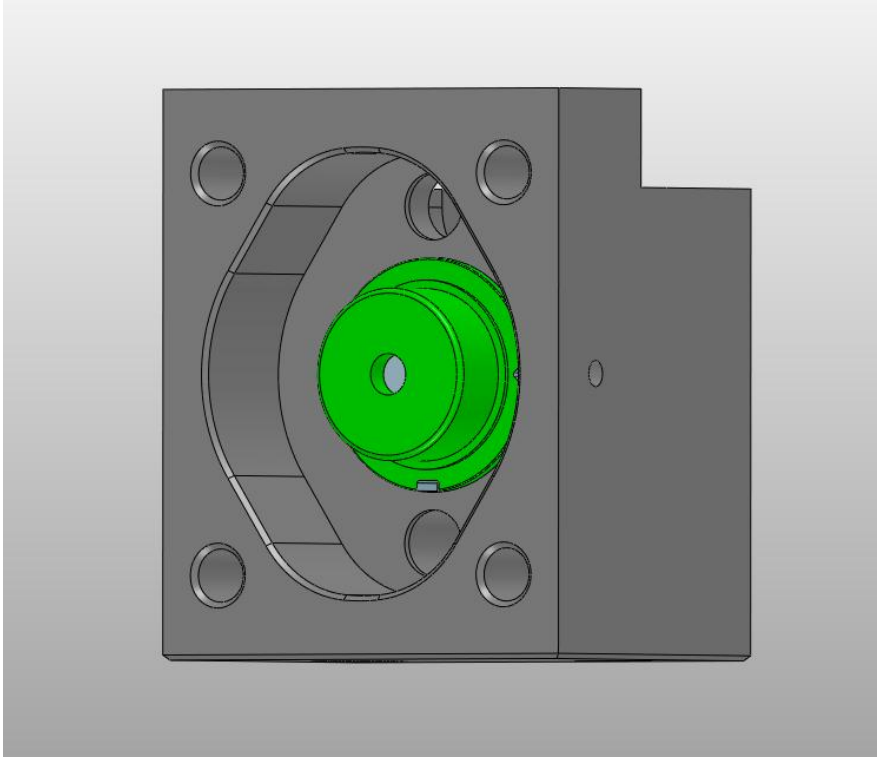


Apply a thin, even layer of thermal paste to the surface of the diode seat.



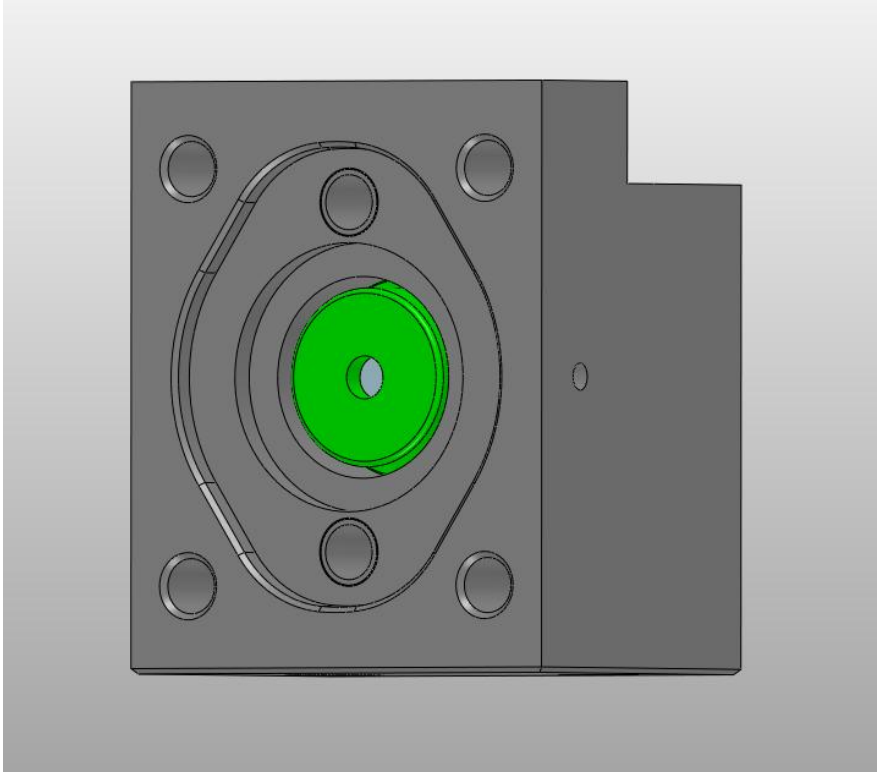
Insert the TO-5 diode into the seat in the body. Position the diode so that the alignment features of the housing match the shape of the seat in the mount. Once inserted, the diode should sit securely and should not rotate in the seat.

Check the orientation of the diode leads according to its technical documentation. The cathode (-) should be on the right-hand side when looking at the front of the mount. This orientation allows the PCB to be soldered correctly later.



Remove any excess thermal paste that has spread outside the seat. Be careful not to contaminate the diode window or any optical surfaces.

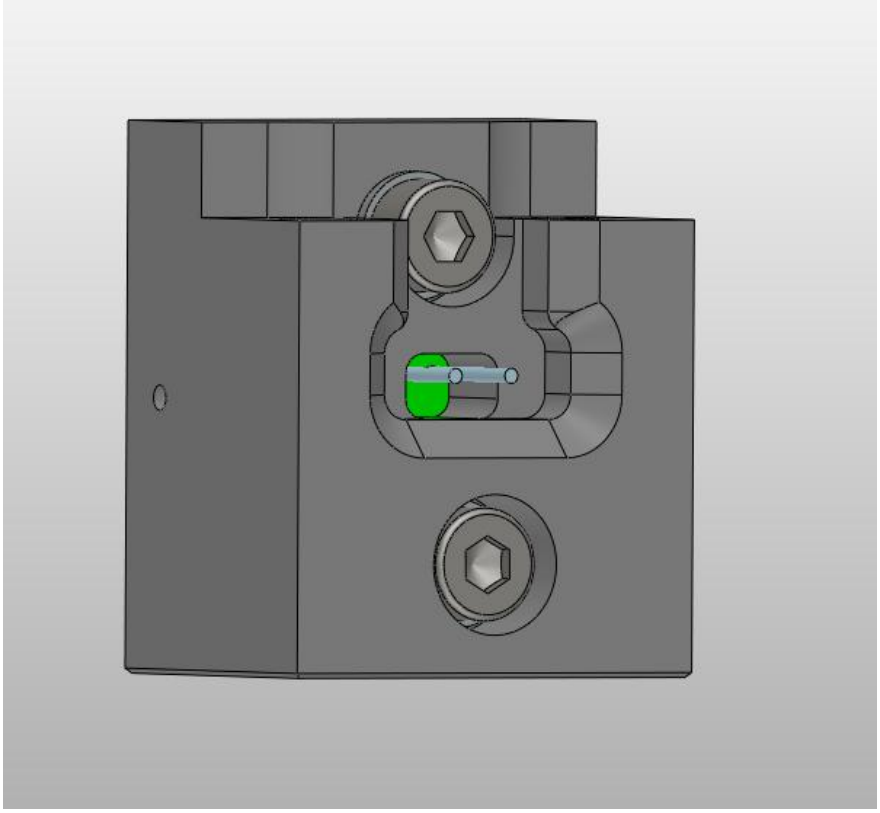
Place the clamping plate over the correctly seated diode. The larger phase in the plate should face upward.



While holding the diode in the correct position, fasten the clamping plate with two socket head cap screws:

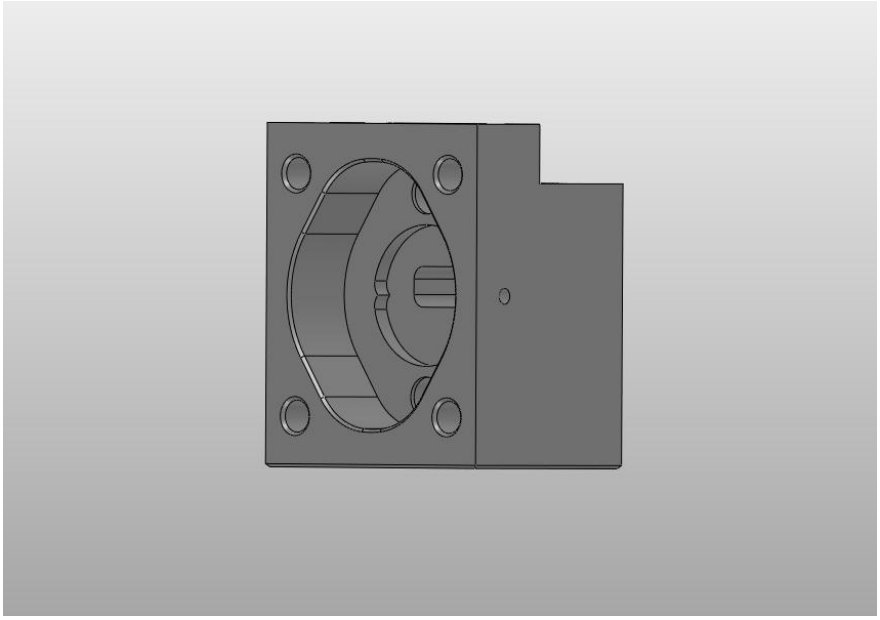
- upper screw: M2.5 x 8 mm,
- lower screw: M2.5 x 10 mm.

Tighten the screws evenly to 0.4 Nm so that the clam plate securely holds the diode without causing it to move in the seat.

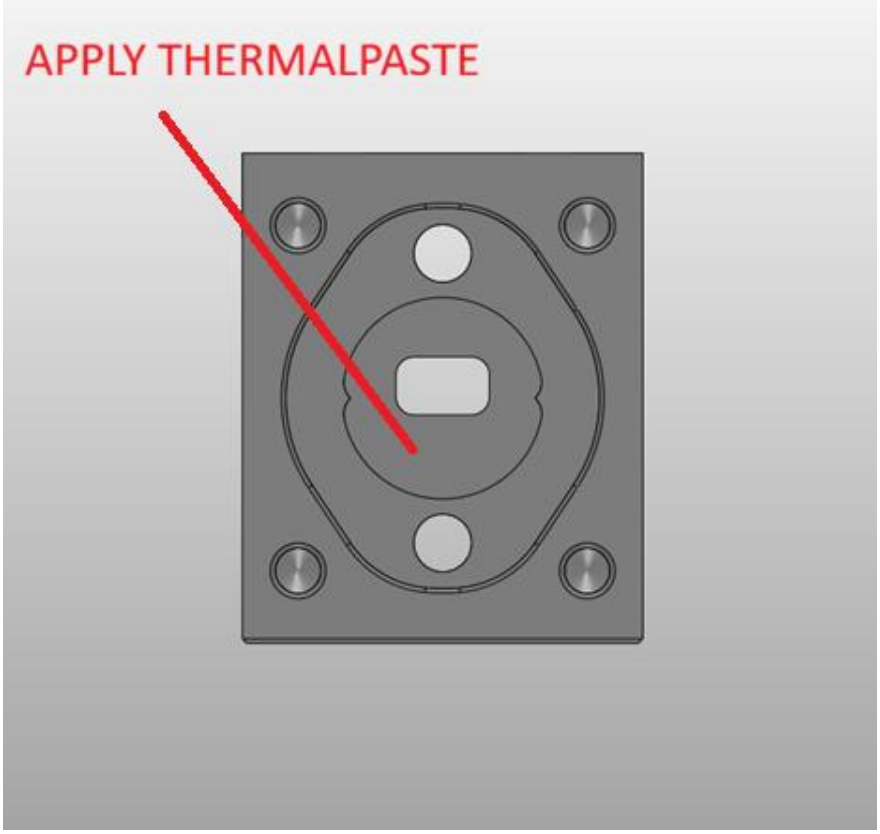


1.2. TO-18 laser diode

Thoroughly clean the diode seat in the main body.

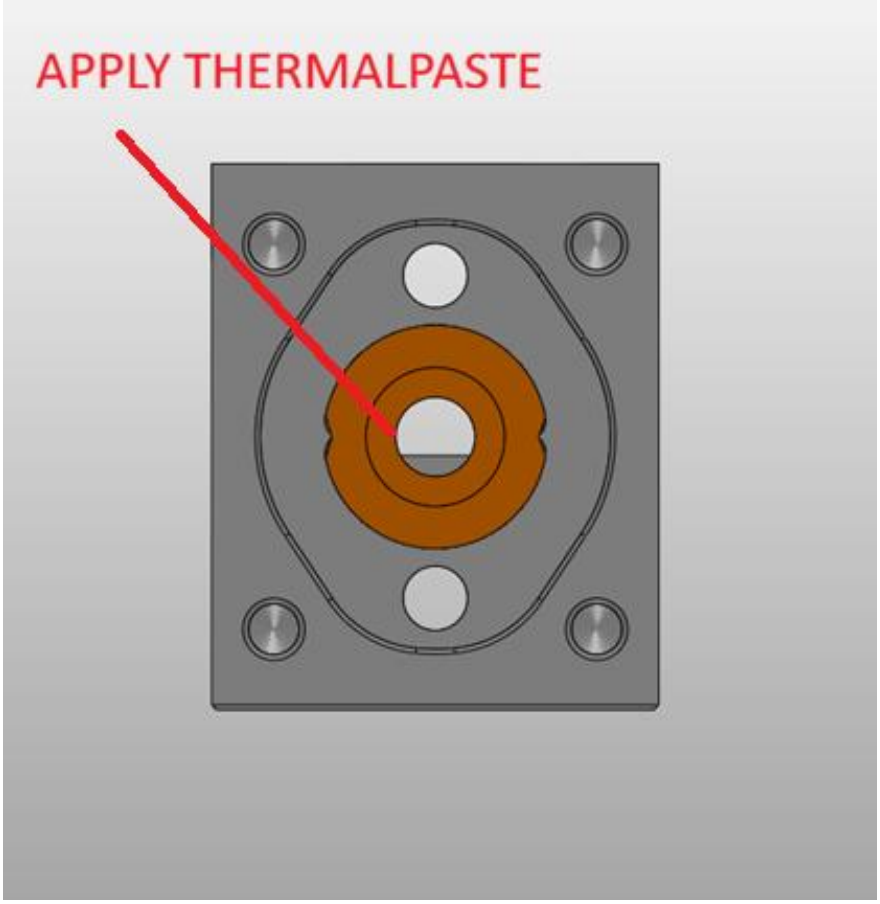


Apply a thin, even layer of thermal paste to the seat surface in the body.



Insert the copper TO-18 adapter into the seat in the body. The adapter should be seated securely and should contact the seat surface evenly.

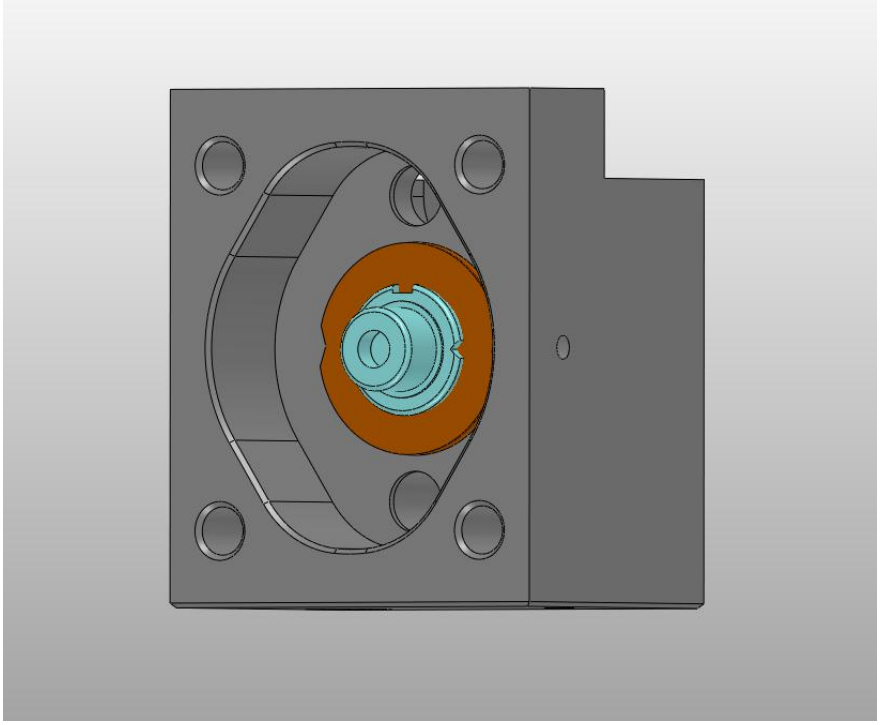
Apply a thin layer of thermal paste to the diode seat in the TO-18 adapter.



If the TO-18 diode being used has three leads, check its technical documentation. In some diodes, one of the leads is directly connected to the housing. If this lead is not used in this assembly, it should be removed before seating the diode in the adapter.

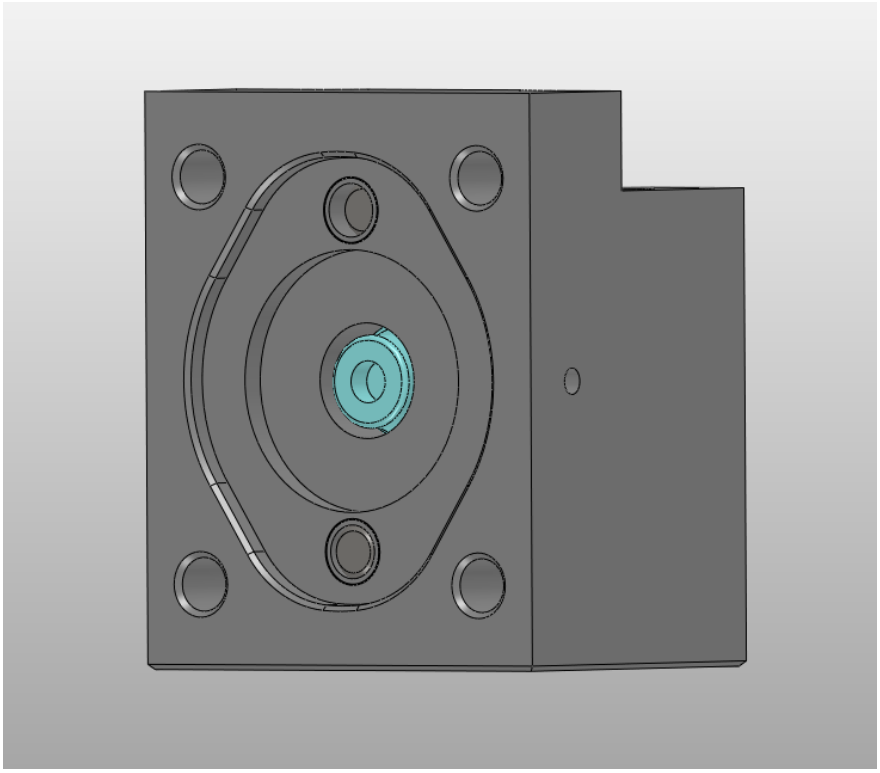
Insert the TO-18 diode into the adapter. Position the diode so that the alignment features of its housing match the shape of the seat. Once inserted, the diode should sit securely and should not rotate in the adapter.

Check the orientation of the diode leads according to its technical documentation. The cathode (-) should be on the right-hand side when looking at the front of the mount.



Remove any excess thermal paste that has spread outside the adapter seat. Be careful not to contaminate the diode window or any optical surfaces.

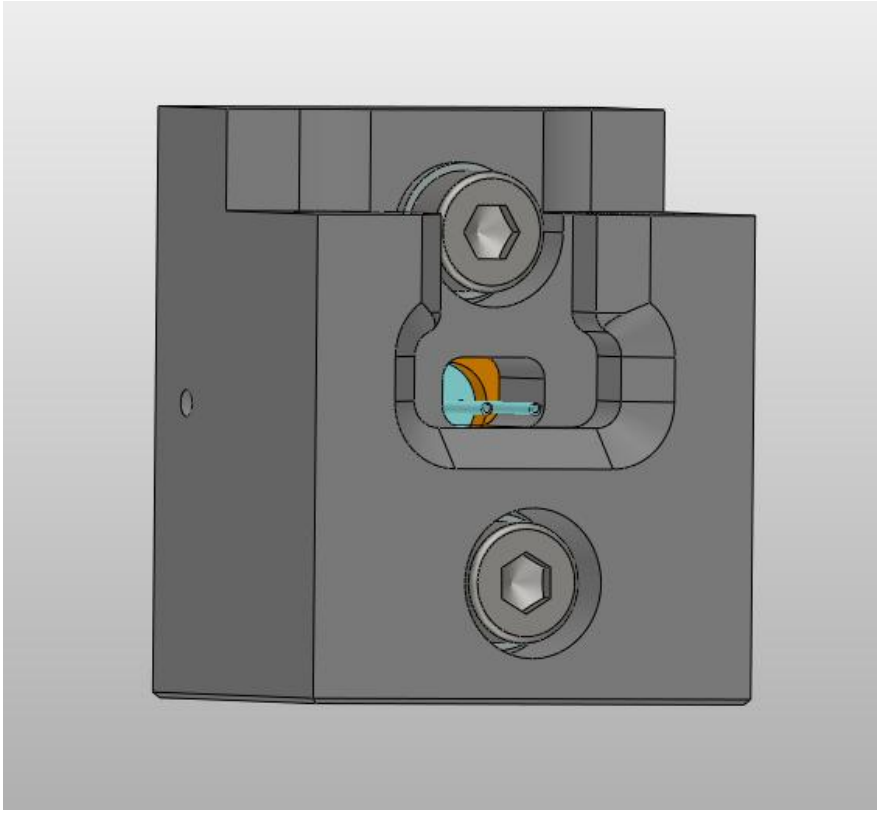
Place the clamping plate over the correctly seated diode. The larger phase in the plate should face upward.



While holding the diode in the correct position, fasten the clamping plate with two socket head cap screws:

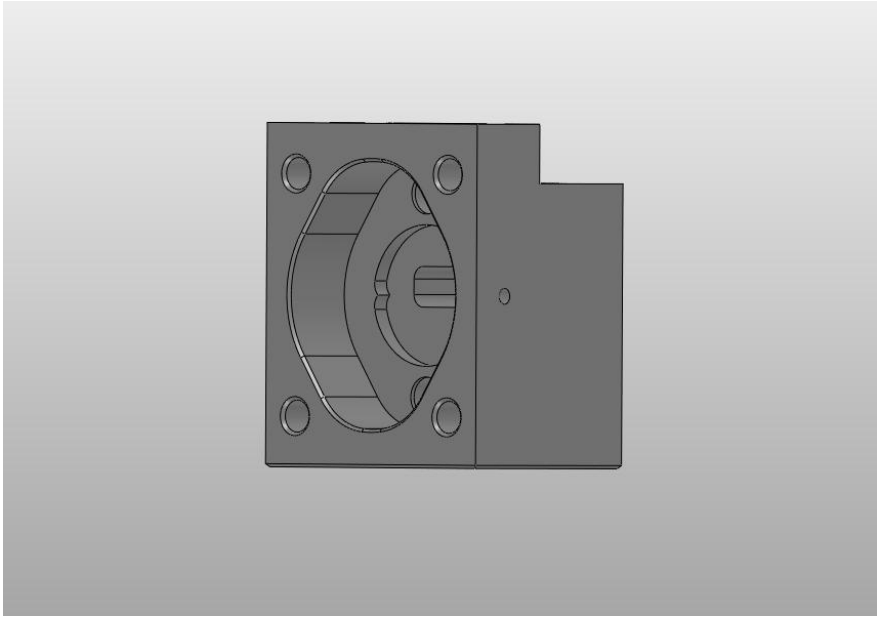
- upper screw: M2.5 x 8 mm,
- lower screw: M2.5 x 10 mm.

Tighten the screws evenly to 0.4 Nm so that the clamping plate securely holds the diode without causing it to move in the adapter.

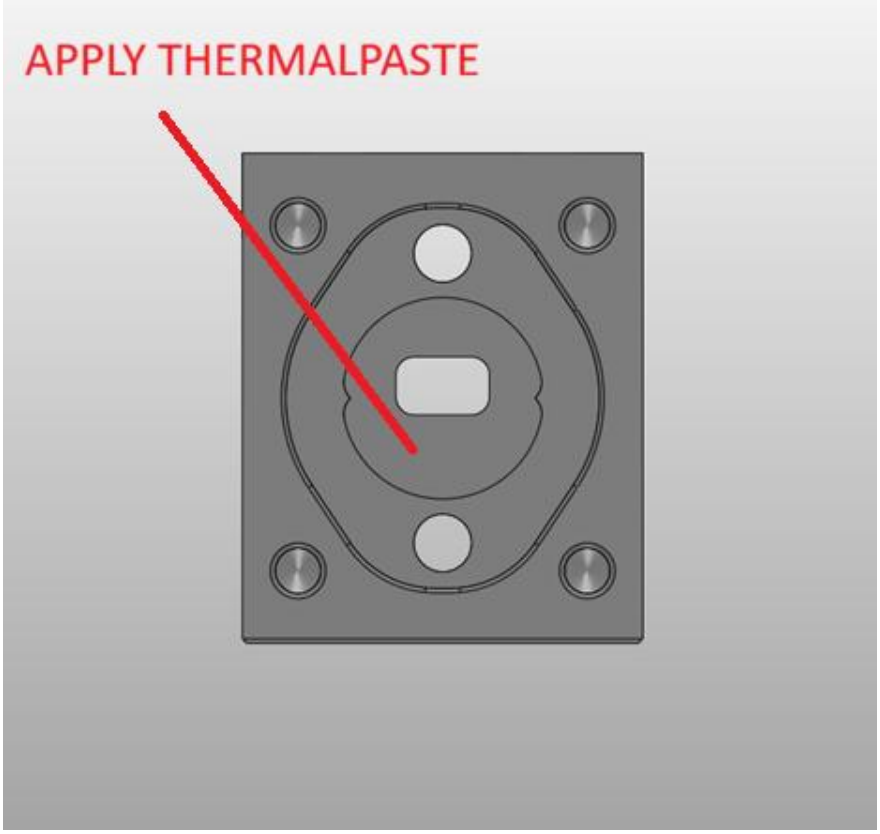


1.3. TO-38 laser diode

Thoroughly clean the diode seat in the main body.

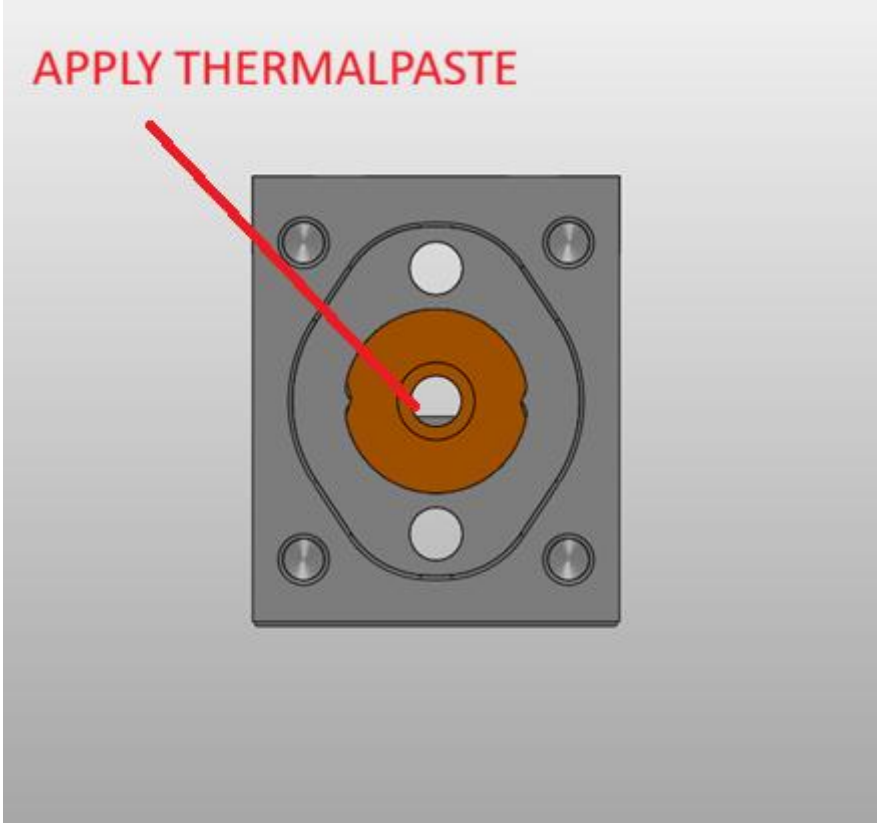


Apply a thin, even layer of thermal paste to the seat surface in the body.



Insert the copper TO-38 adapter into the seat in the body. The adapter should be seated securely and should contact the seat surface evenly.

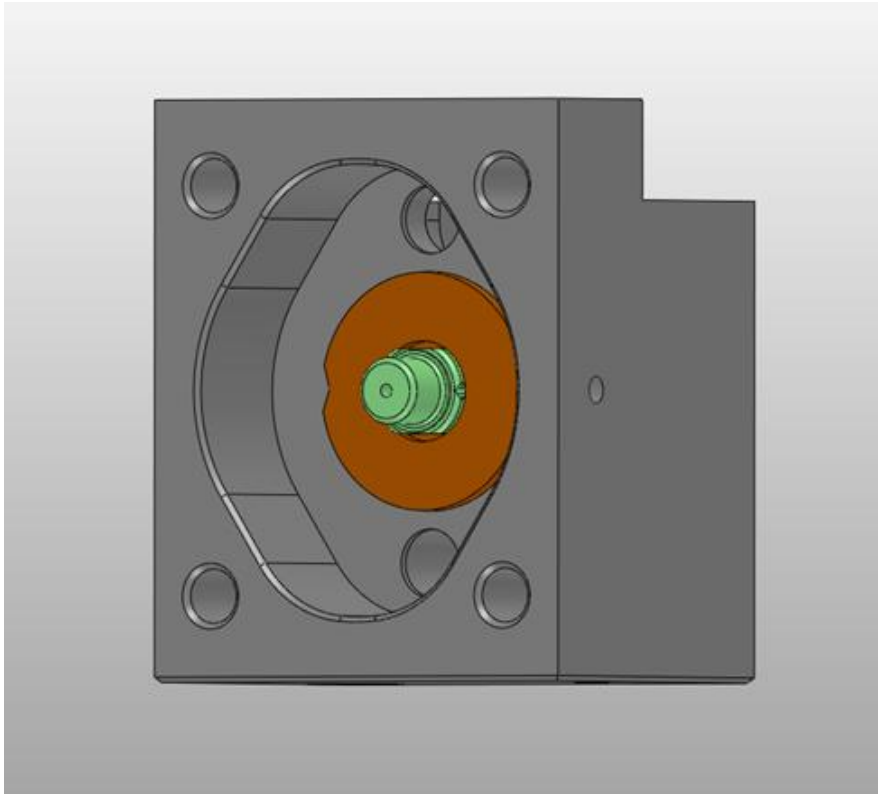
Apply a thin layer of thermal paste to the diode seat in the TO-38 adapter.



If the TO-38 diode being used has three leads, check its technical documentation. In some diodes, one of the leads is directly connected to the housing. If this lead is not used in this assembly, it should be removed before seating the diode in the adapter.

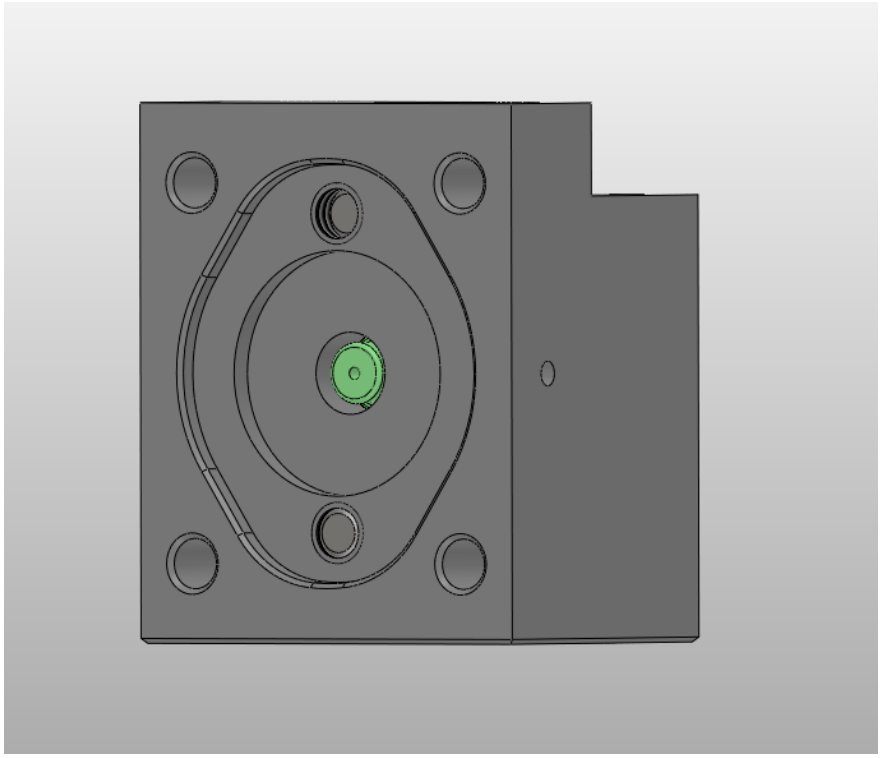
Insert the TO-38 diode into the adapter. Position the diode so that the alignment features of its housing match the shape of the seat. Once inserted, the diode should sit securely and should not rotate in the adapter.

Check the orientation of the diode leads according to its technical documentation. The cathode (-) should be on the right-hand side when looking at the front of the mount.



Remove any excess thermal paste that has spread outside the adapter seat. Be careful not to contaminate the diode window or any optical surfaces.

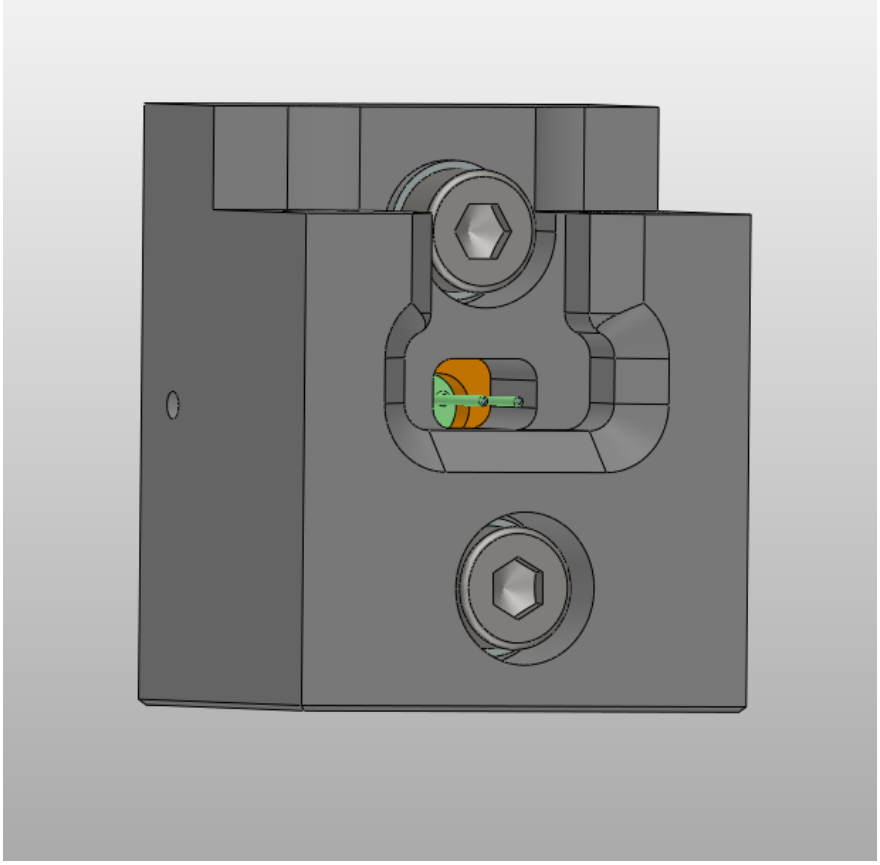
Place the clamping plate over the correctly seated diode. The larger phase in the plate should face upward.



While holding the diode in the correct position, fasten the clamping plate with two socket head cap screws:

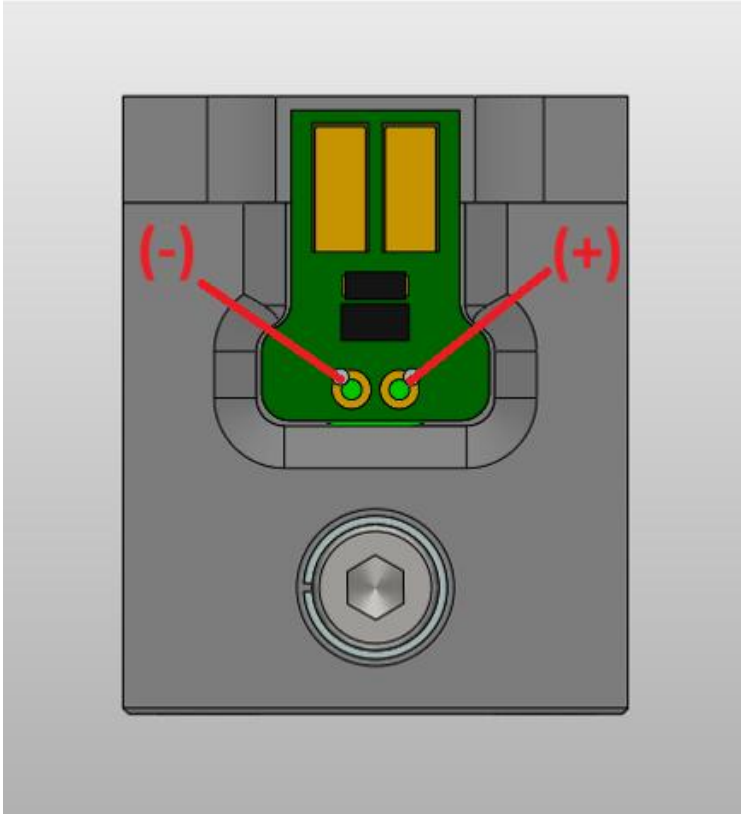
- upper screw: M2.5 x 8 mm,
- lower screw: M2.5 x 10 mm.

Tighten the screws evenly to 0.4 Nm so that the clamping plate securely holds the diode without causing it to move in the adapter.



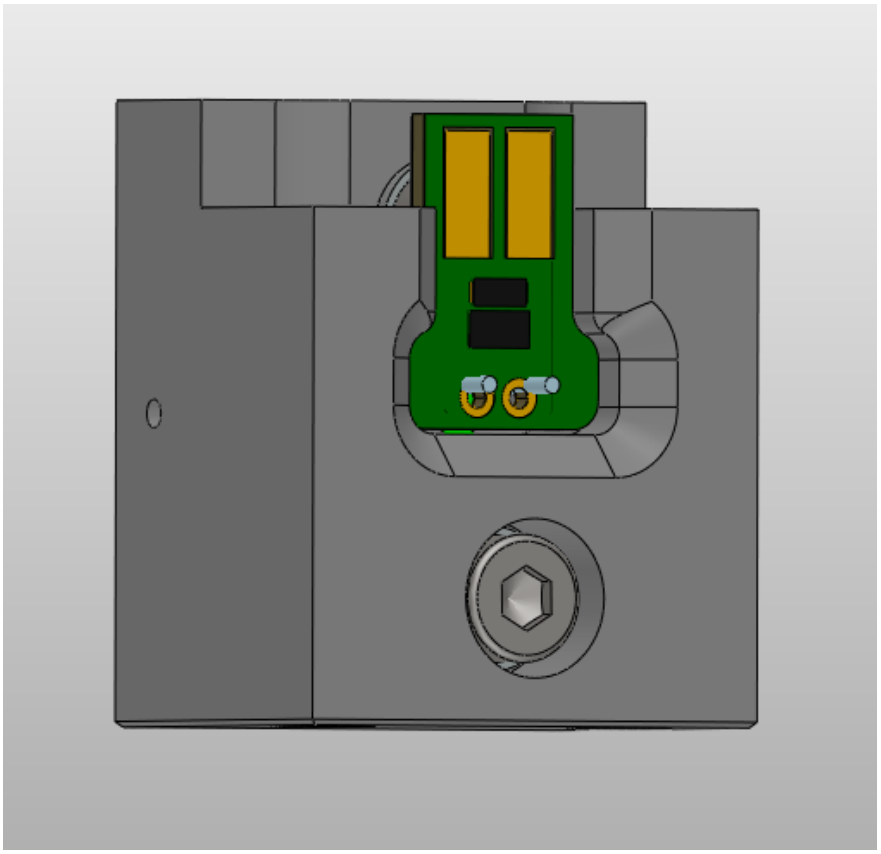
2. Soldering the PCB

Install the PCB with the resistor side facing outward from the mount.



Depending on the diode type and the shape of its leads, it may be necessary to gently bend the leads to align them with the solder pads on the PCB. Bend the leads carefully to avoid damaging the diode.

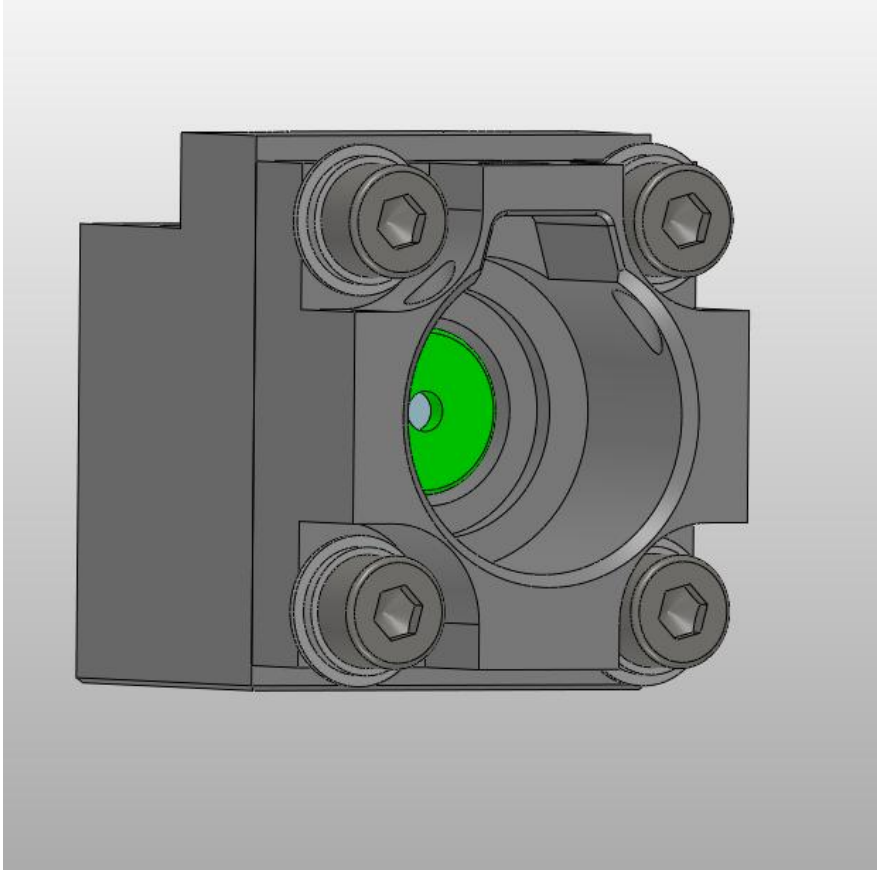
Solder the corresponding diode leads (+) and (-) to the matching solder pads on the PCB marked "+" and "-".



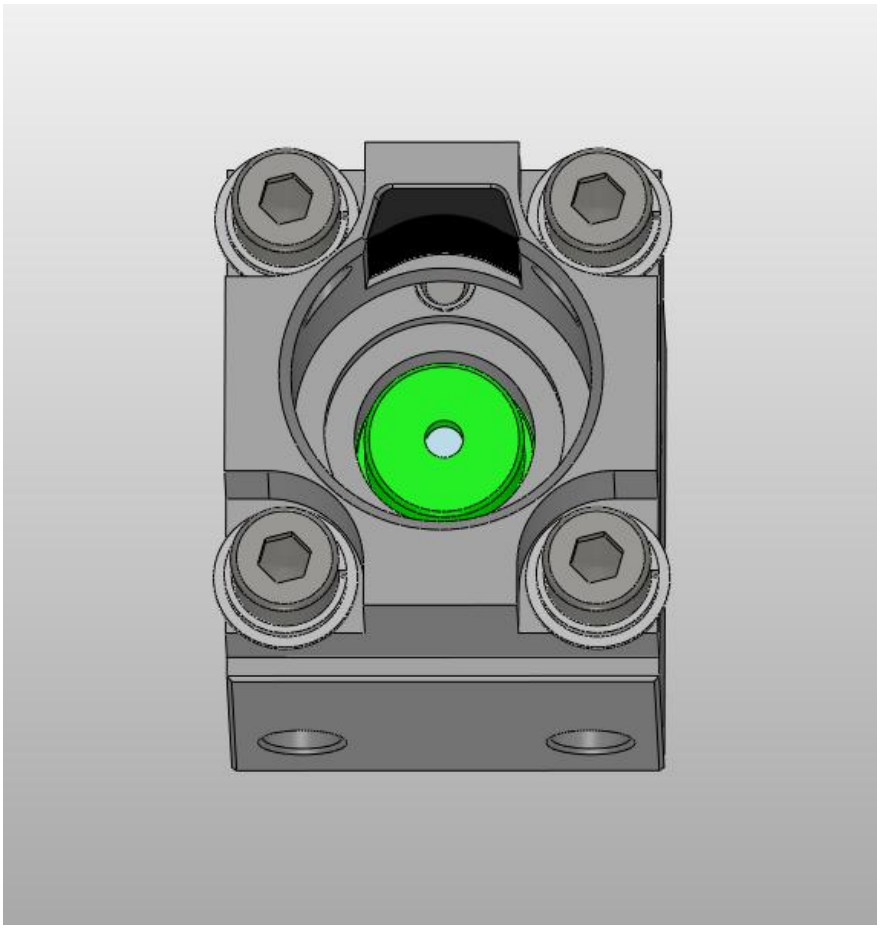
3. Installing the lens barrel holder

Attach the lens barrel holder to the mount body using four M2.5 x 8 socket head cap screws and four M2.5 spring washers.

During the initial assembly stage, tighten the screws evenly to 0.1 Nm so that the holder rests against the mount body while still allowing adjustment during collimation. After the beam has been correctly aligned, perform the final tightening to 0.8 Nm.



Next, insert the plastic insert. The insert will later press against the lens barrel and lock its position after collimation.

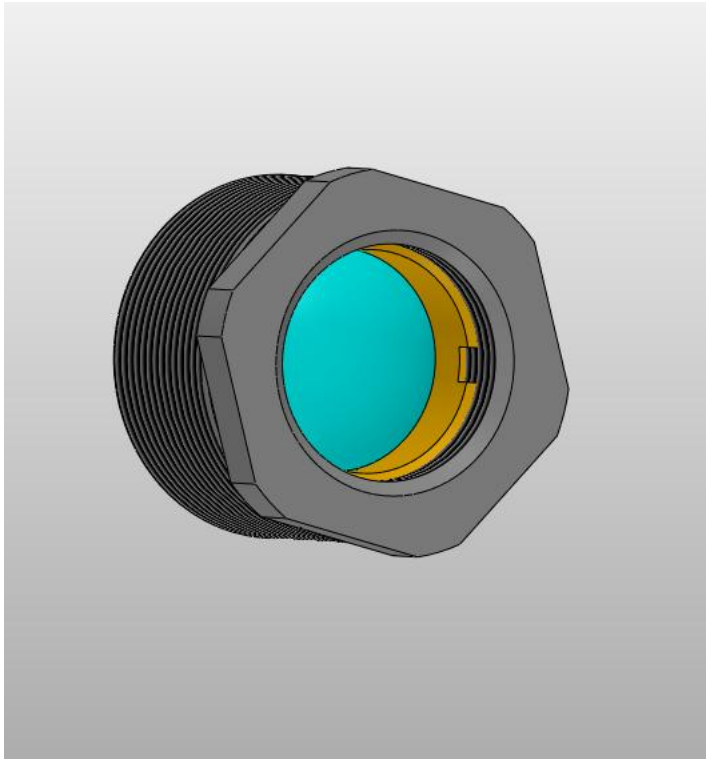


4. Installing the optics

4.1. Installing a Lens in an M9 × 0.5 Threaded Barrel

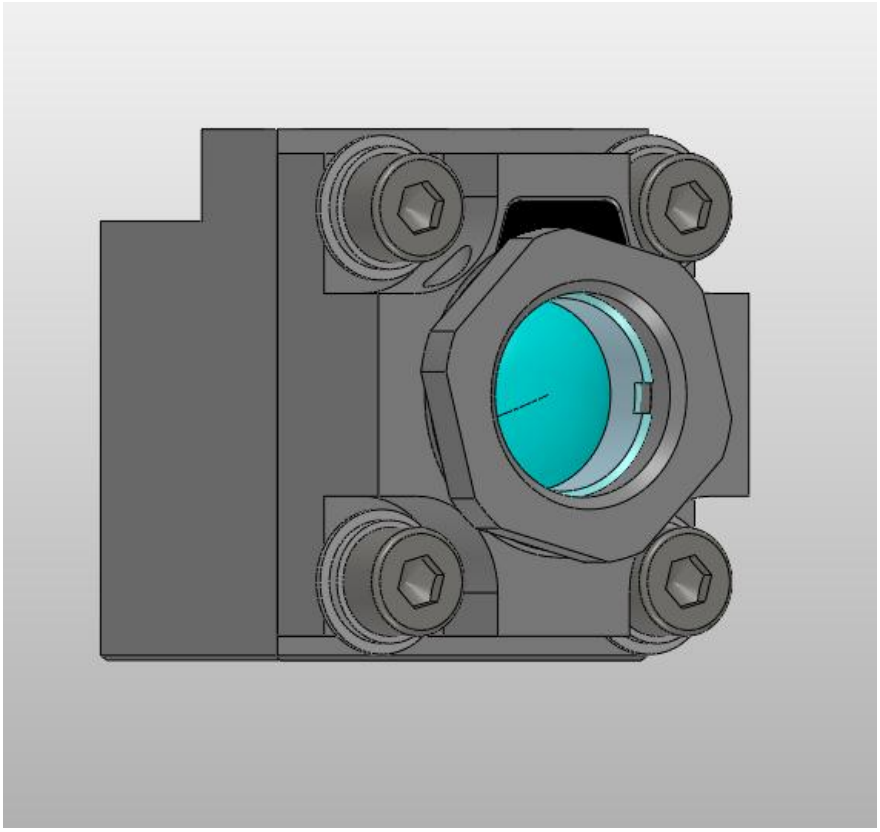
Insert the lens into the LD Mount Lens M13-M9 Adapter.

After seating the lens, secure it with the retaining ring. Tighten the retaining ring so that the lens is held securely in the adapter.

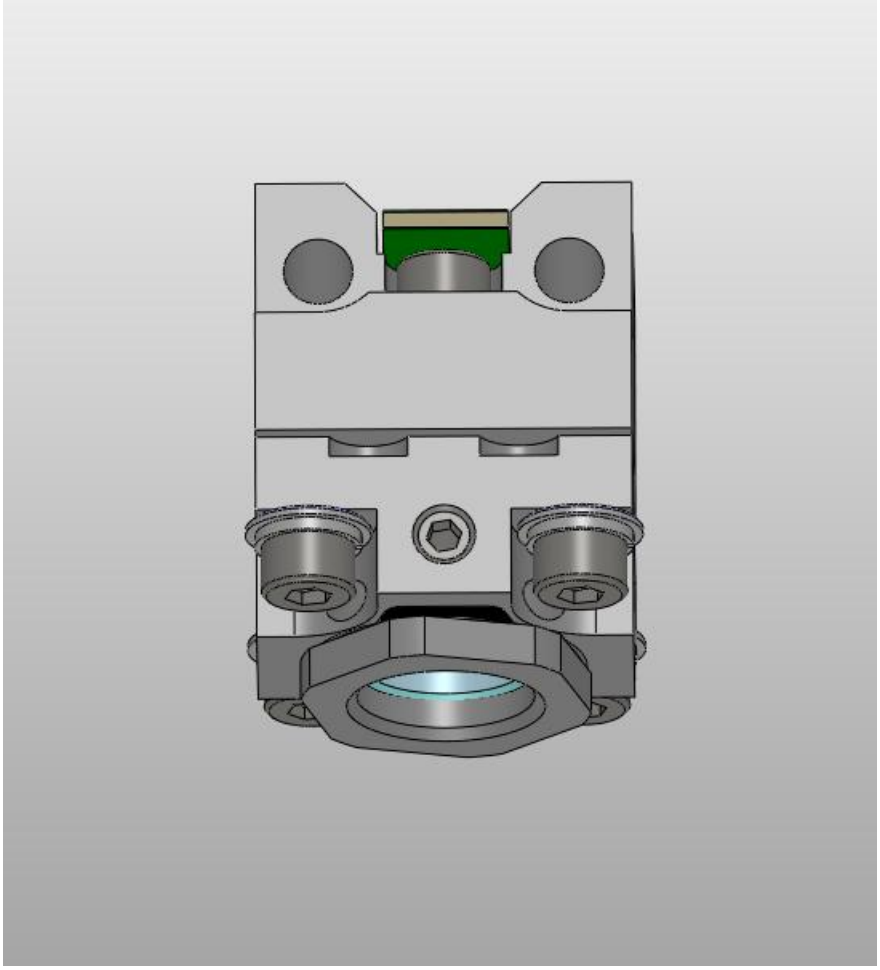


Screw the assembled adapter with the M9 lens into the lens barrel holder in the mount.

During assembly, make sure that the lens is clean.



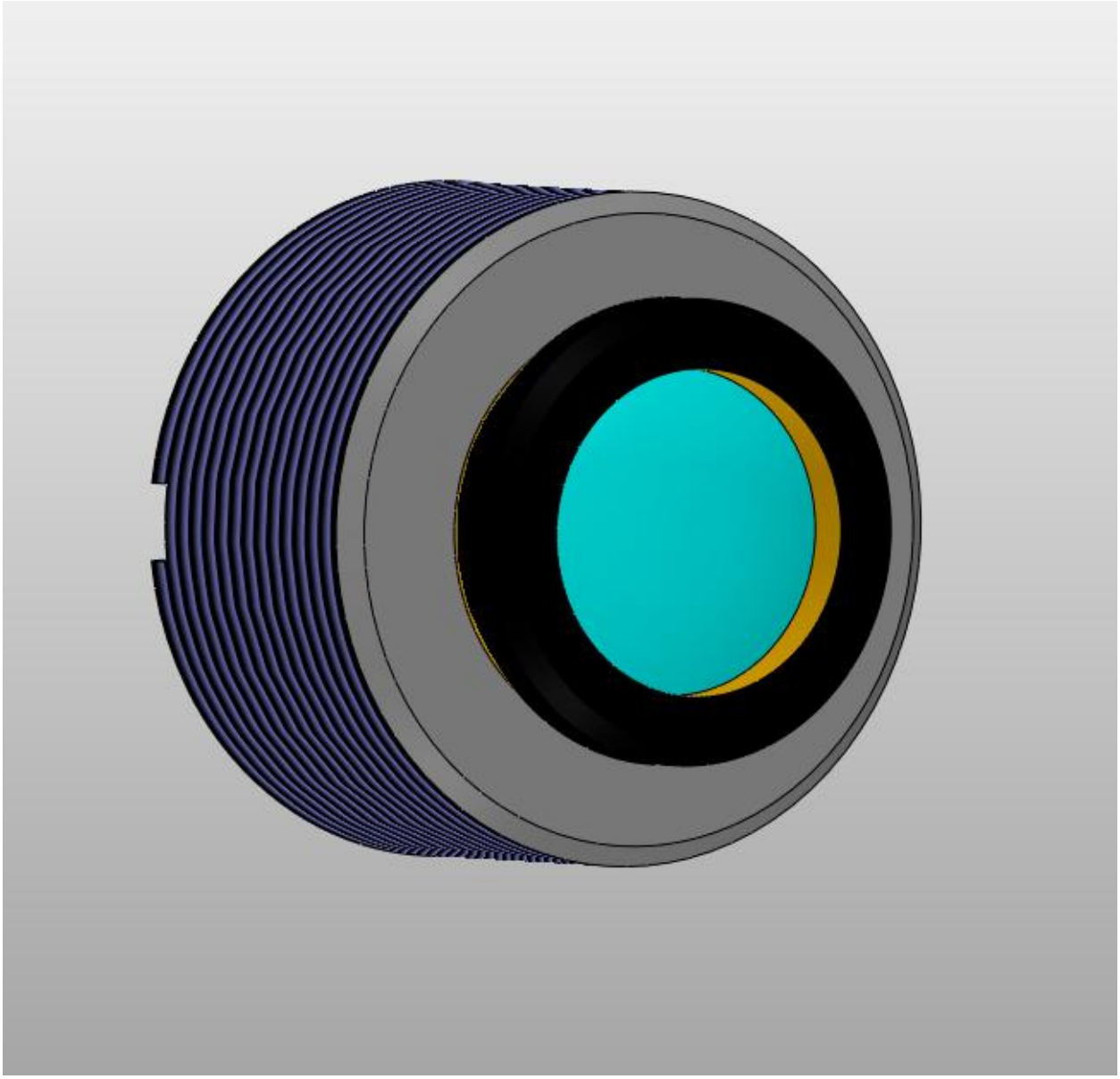
Install the M3 x 3 flat-point set screw from the top. The screw presses the plastic insert against the lens adapter.



Tighten the set screw only lightly to allow fine adjustment of the lens position. Once collimation is complete, tighten the set screw firmly to lock the lens setting. During final tightening, the plastic insert should conform to the thread profile and secure the lens barrel in position.

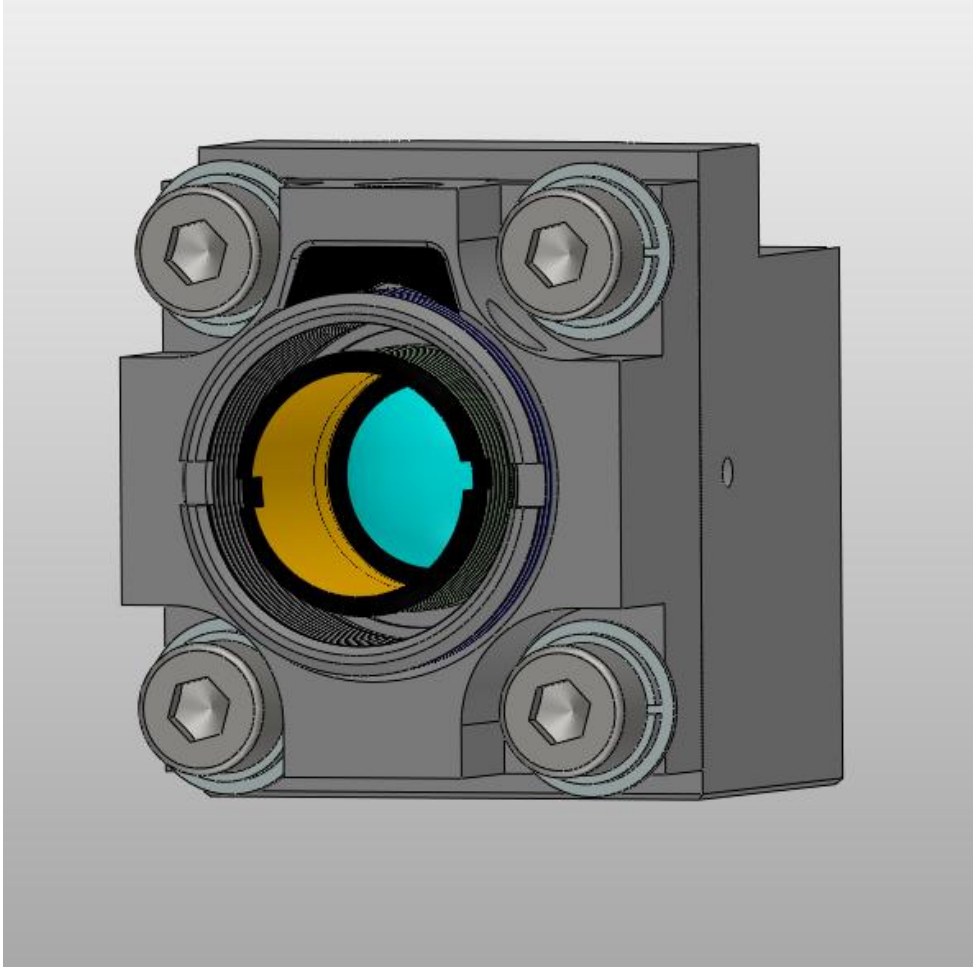
4.2. Installing popular G2 / G8 lenses

Screw the lens into the LD Mount Lens M13 Barrel.

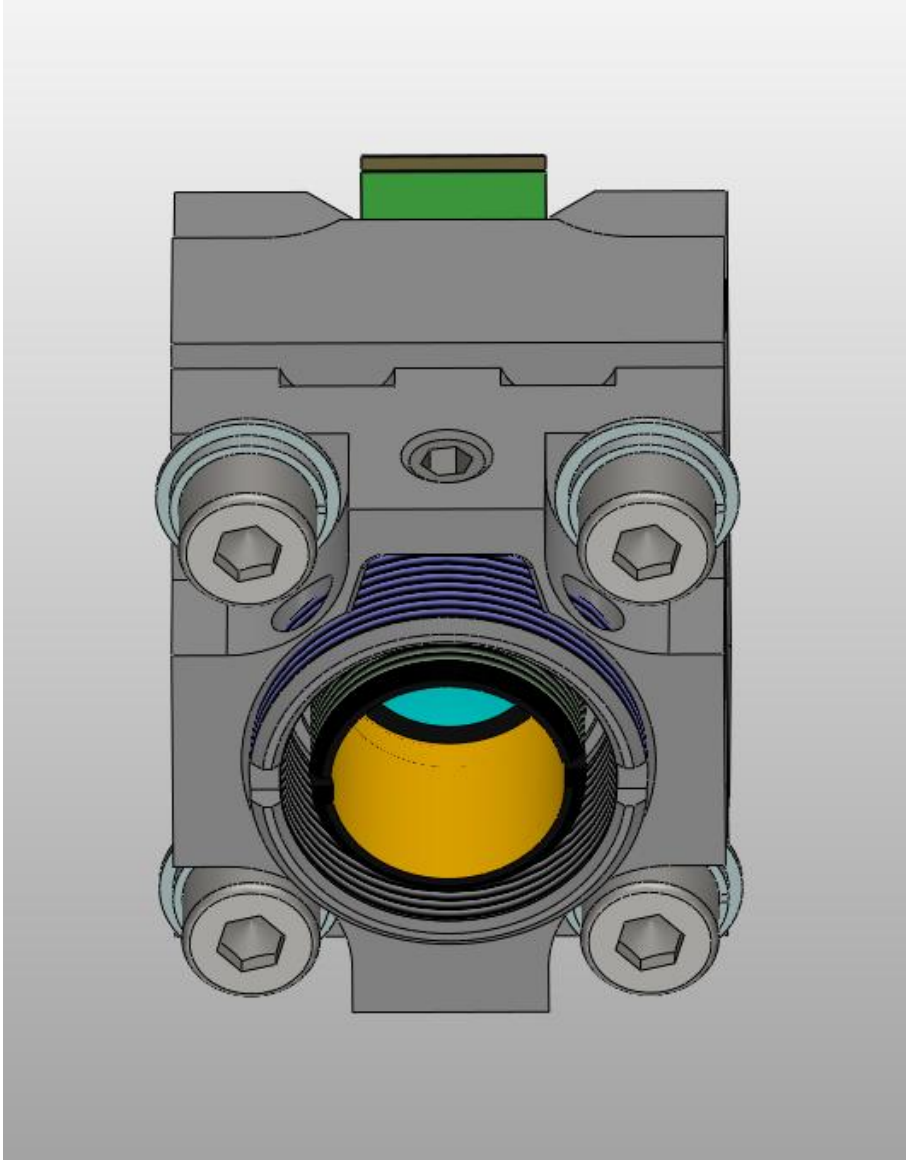


Then screw the M13 barrel with the installed lens into the lens barrel holder in the mount.

During assembly, make sure that the lens is clean.



Install the M3 x 3 flat-point set screw from the top. The screw presses the plastic insert against the M13 barrel.

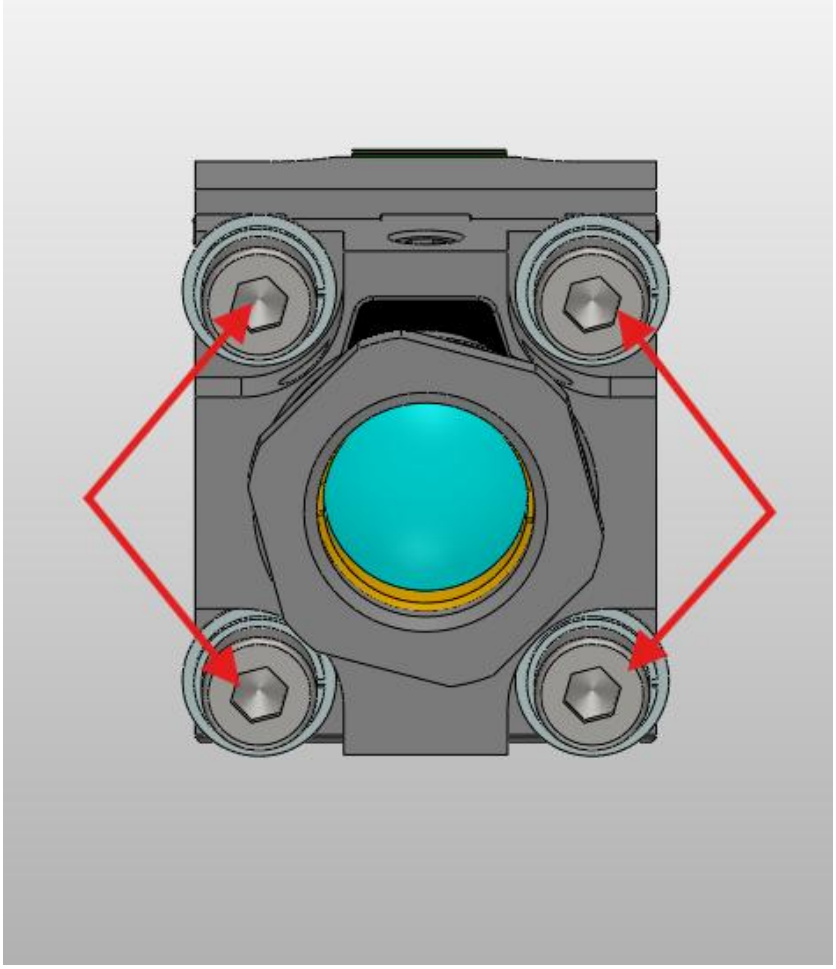


Tighten the set screw only lightly to allow fine adjustment of the lens position. Once collimation is complete, tighten the set screw firmly to lock the lens setting. During final tightening, the plastic insert should conform to the thread profile and secure the lens barrel in position.

5. Features

5.1. Adjustment screws used during collimation

The four screws located on the front of the mount (shown in the image) allow the lens barrel holder to be shifted during collimation. By gradually loosening and tightening these screws, the position of the holder can be adjusted to center the beam relative to the optical axis.



5.2. Thread-locking adhesive application points

After collimation is complete and the correct beam alignment has been confirmed, the mount can be secured with a small amount of thread-locking adhesive. The adhesive application points are shown in the image below.