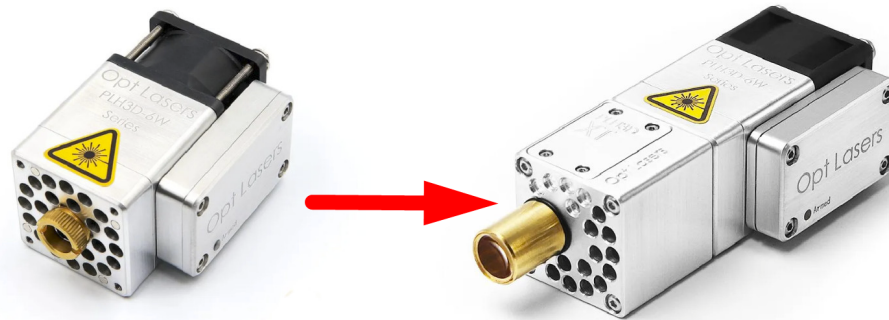


# How to upgrade PLH3D-6W-XF+ to PLH3D-XT-50



## What is required for making this upgrade?

To perform this upgrade you will need:

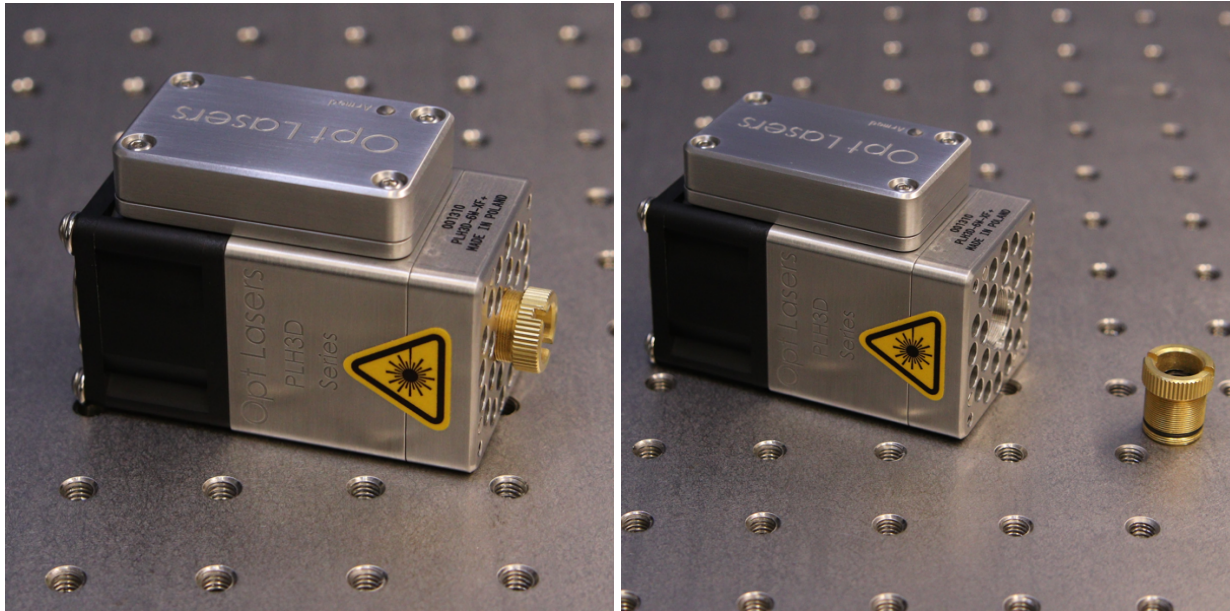
- PLH3D-6W-XF+ Engraving Laser Head (purchased after 2020)
- XF+ to XT-50 Laser upgrade
- Power supply with wiring
- CNC machine controller or signal/function generator.
- Workspace 1.5 - 2 meters (5 - 6.5 ft)

# How to upgrade XF+ to XT? Step by step instruction.

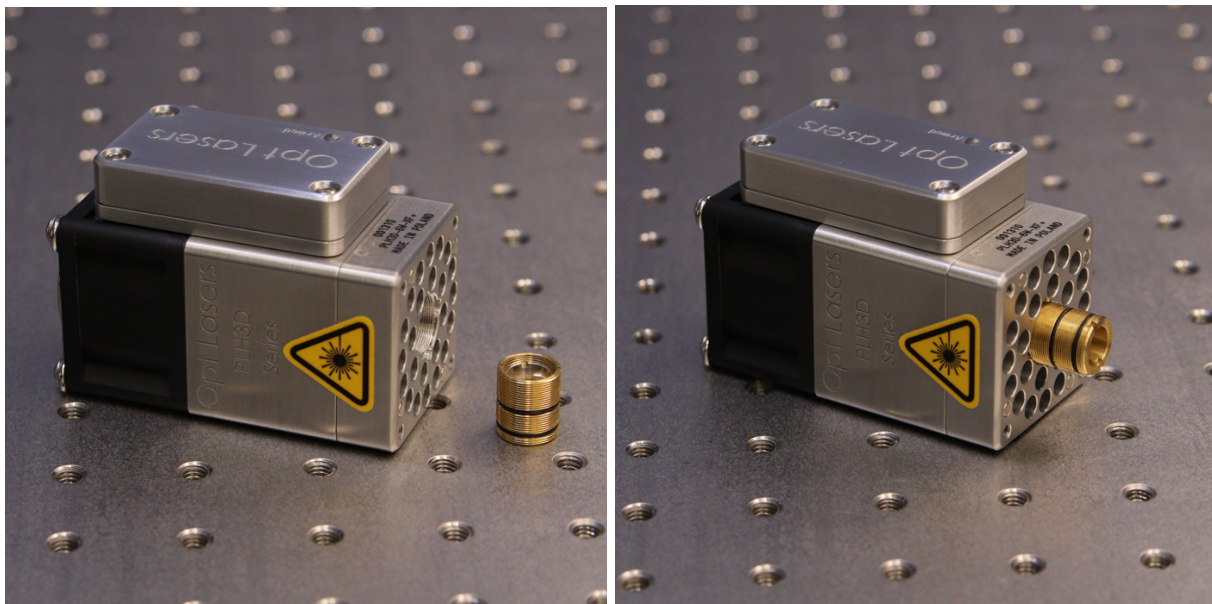


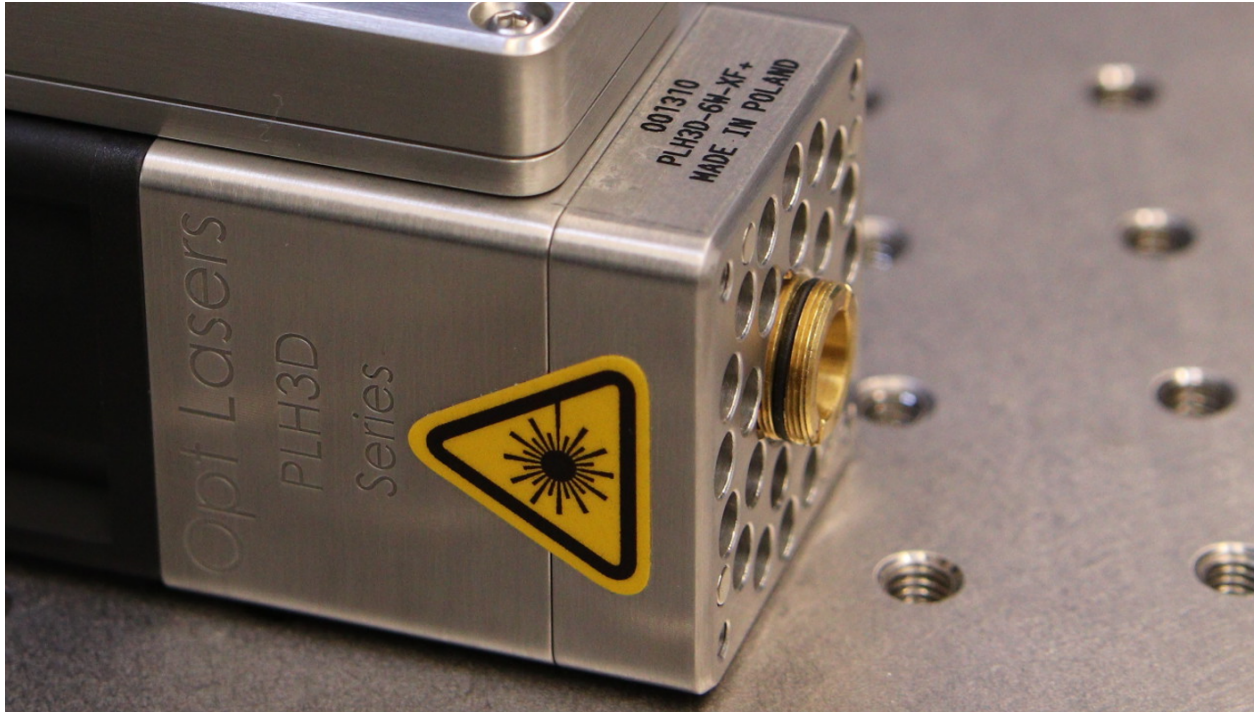
**Important!** Before proceeding make sure that the laser head is physically disconnected from any power source.

**Step 1.** Remove the focusing lens from the laser head.



**Step 2.** Mount the new lens inside the laser head. Please take note of the proper lens tube orientation. Use the attached tool to upgrade. Do not screw the lens tube all the way in, leave about 3 mm of thread outside.

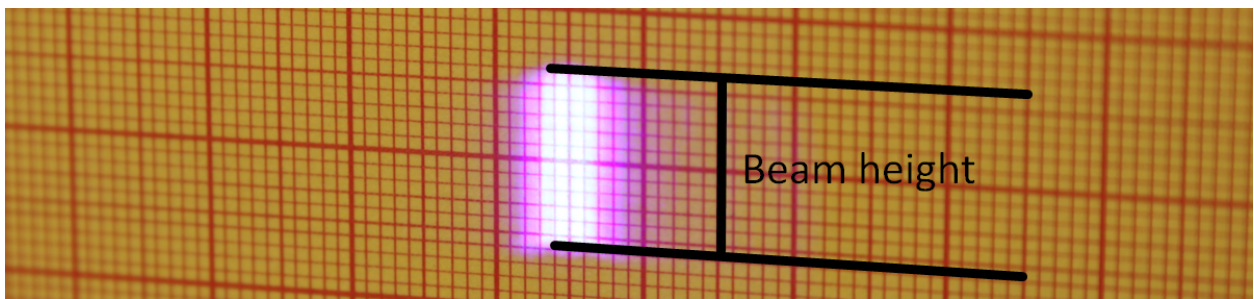


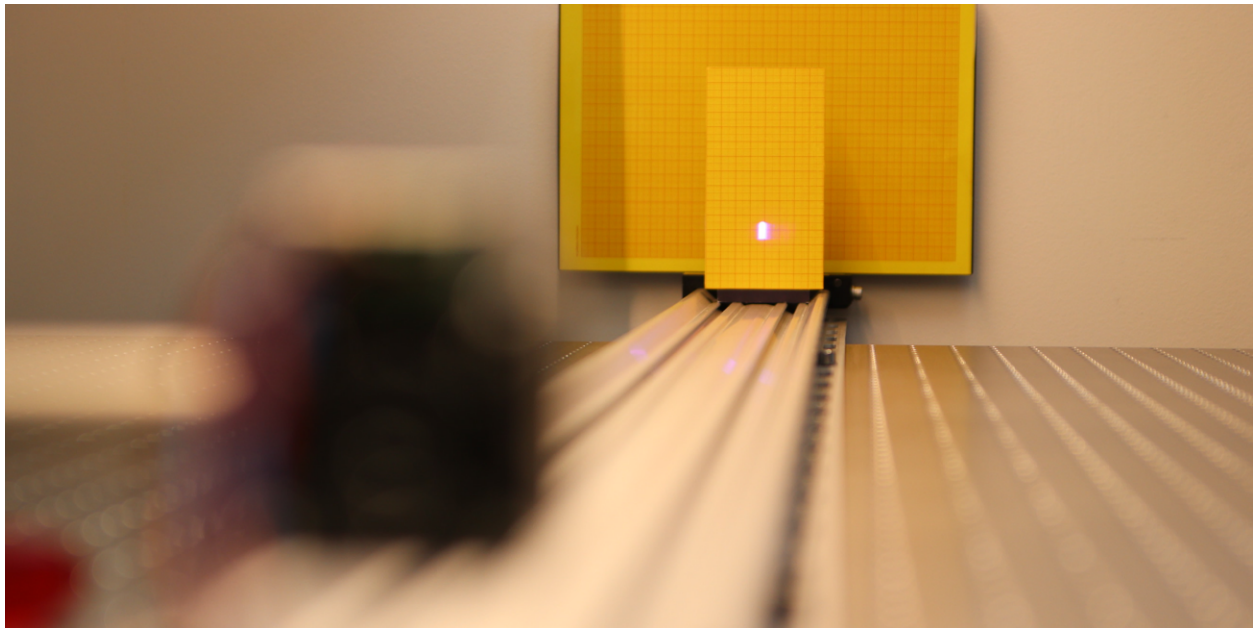
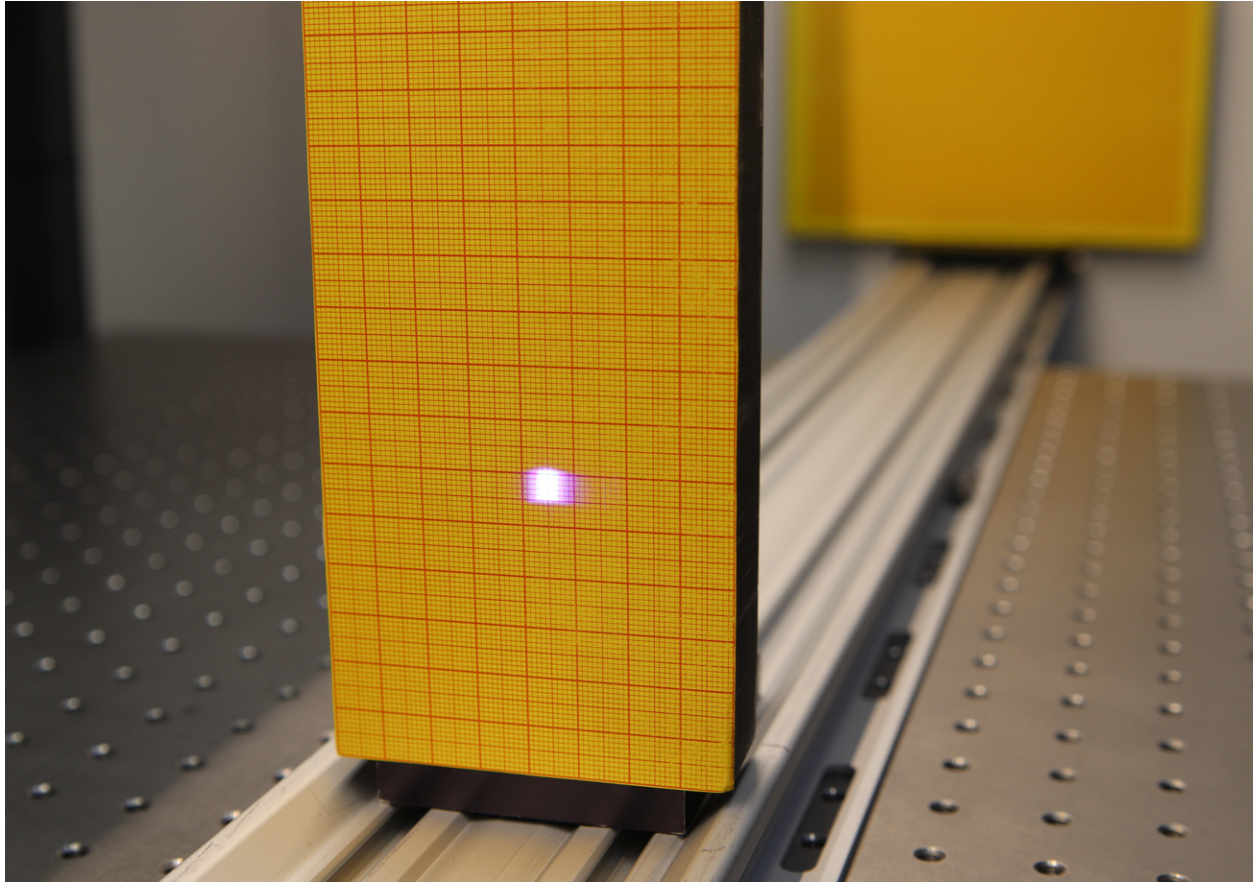


**Step 3.** Mount the laser head firmly and ensure there is about 1.5 - 2 meters (5 - 6.5 ft) of distance in front of the laser head.

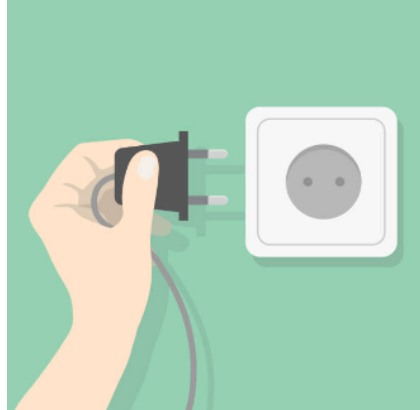
**Step 4.** Connect the laser head to the power supply and CNC controller. Apply low power constant signal to the laser head.

**Step 5.** Adjust the laser beam. The beam should be set in such a way that it does not change its size in the horizontal direction during propagation. The procedure involves gently tightening or loosening the lens and comparing the horizontal size of the beam at close and far distances (at least 3) from the source (see pictures below).

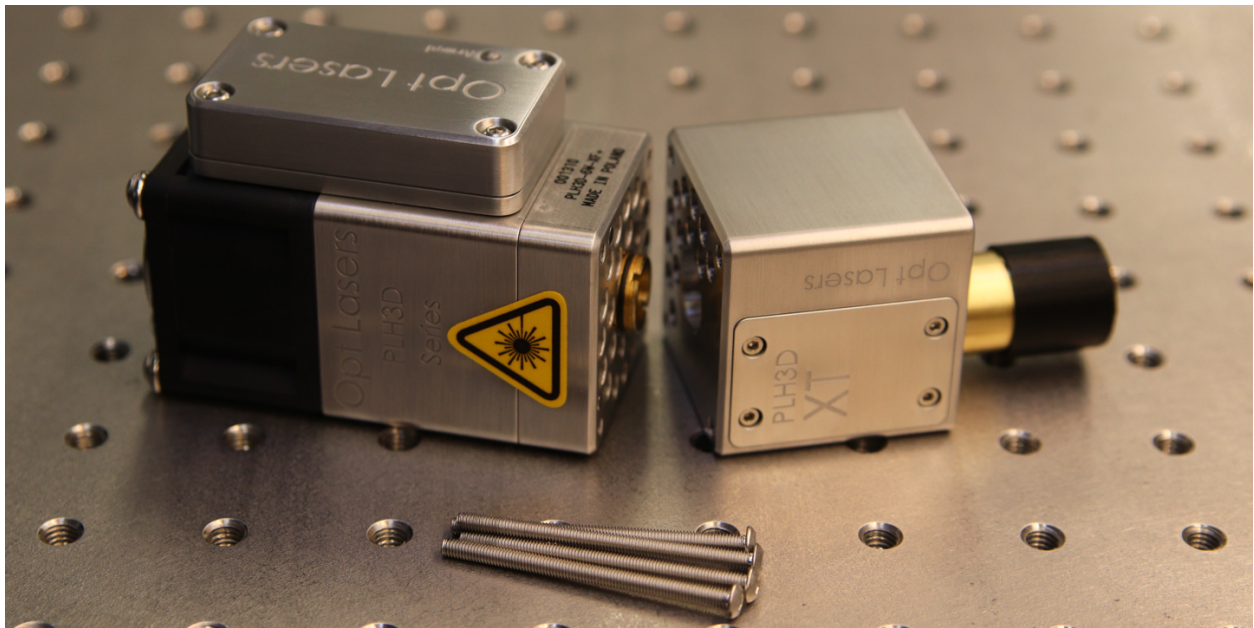




**Step 6.** Disconnect the laser from the power source.



**Step 7.** Mount the beam expander. Use four M3 button screws (45mm length) to attach the beam expander to the laser. Use 2mm Allen Key (Hex Key).





**Step 8.** Check and verify. Mount the laser to the CNC machine and run standard working distance calibration. If the laser beam is focused at 60mm (+/- 1mm) from the front of the laser head the procedure was carried out correctly. If the working distance is in the range of 55 - 59 mm or 61 - 65 mm the spot size might be slightly bigger at the focal plane. For most applications it won't make a significant difference.

If the working distance is less than 55mm or greater than 65mm the beam needs to be readjusted. Please remove the beam expander and go back to step 3.

**Step 9.** You are ready to go.