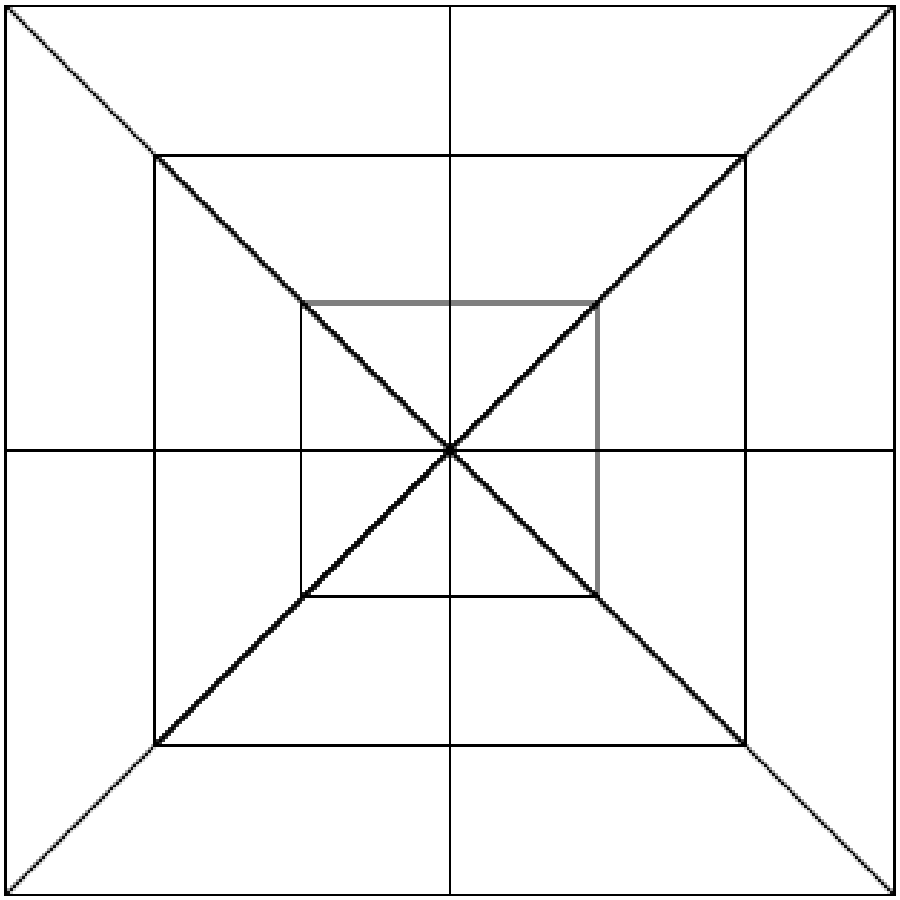
The Sintratec Kit User Manual

Initial Commissioning



Commissioning

This document covers the initial commissioning of the Sintratec Kit. Please use the graphics at the end of this document along with the following explanations to get the most out of this manual.

IC01- Check the Wiring

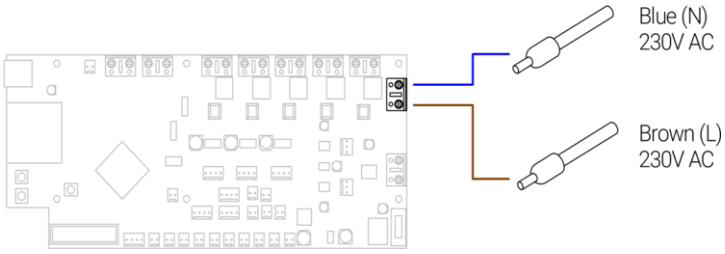
Before you start with the commissioning of the Sintratec Kit, it is important to double check the wiring of your kit.

Faulty wiring can damage or destroy your main board!

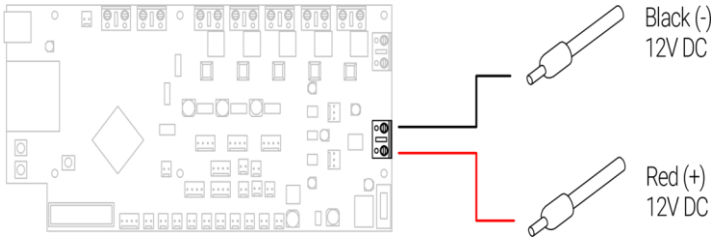
Make sure all wires and cables are connected correctly and the wiring is tidy. Also make sure the limit switch cables are well separated from other cables (especially from the heating element cables and stepper motor cables).

Check, if the electrical contacts of the C14 power entry socket are insulated with electrical tape, to minimize electrical hazard.

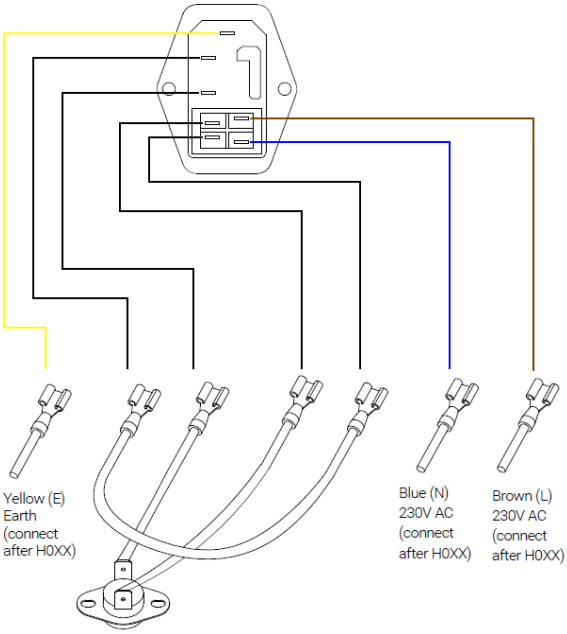
Please check the following wire connections in detail to prevent any damage to your Sintratec Kit:



Power Connection - Detail F
Check the orientation of the blue and brown wires. The blue and brown wires must be in their designated terminals.

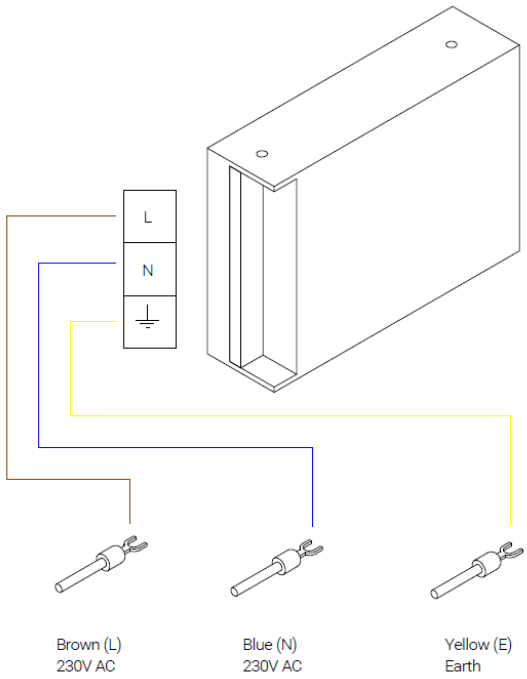


Power Connection - Detail G
Check the orientation of the red and black wires. The red wire must go to the "+" and the black wire to the "-"



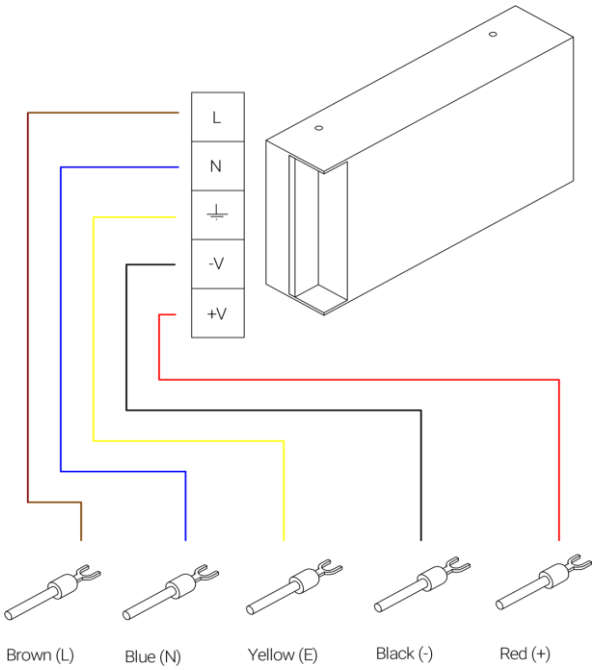
Power Connection - Detail A

Check the wiring of the C14 socket. Each connector has to go in its designated terminal as shown in the diagram. seal everything with the black insulation tape to again, minimize any potential electrical hazards. (166).



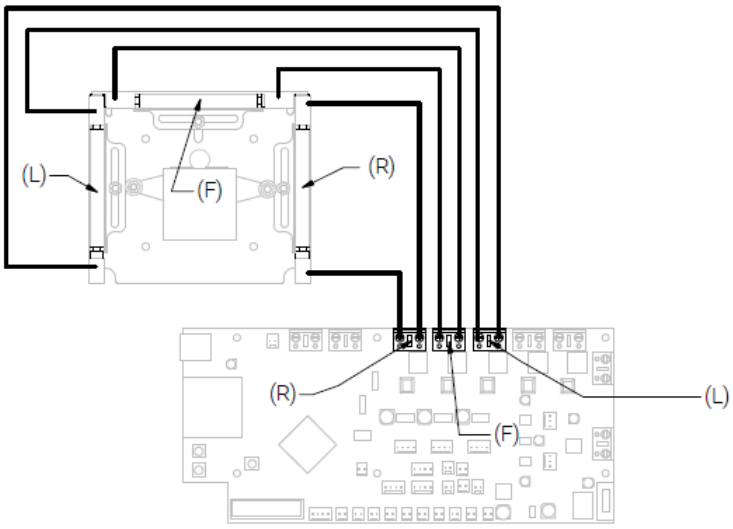
Power Connection - Detail C

Check the orientation of the blue brown and yellow wires. Its again, very important all three cables go to their designated terminal as shown in the diagram.



Power Connection - Detail D

This Power connection has 5 Terminals. Like all other Power connections, make sure all cables go to their designated terminal as shown in the diagram.



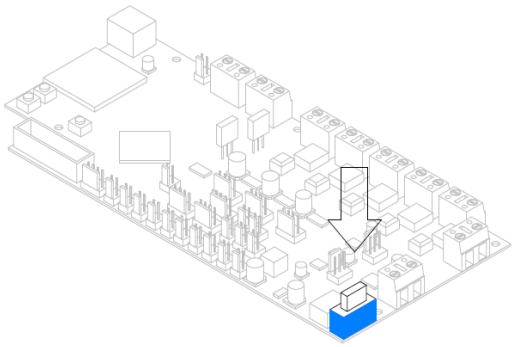
Lamp wiring

It's essential that all lamps are connected in its designated place as shown in the diagram.

If the lamps are not wired correctly, temperature distribution on the print surface will not be even and will in worst case scenario, fail to print anything in the expected quality. So this is like all other wiring checks, very important.

IC02 – Insert Fuse

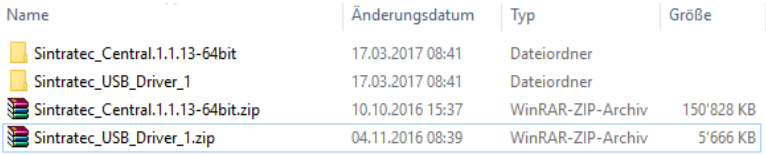
Insert the blue DC 15A fuse into its socket on the mainboard if you haven't done so yet.



IC03 – Download and Install Sintratec Central and USB Driver

Go to our academy website and download the latest software and USB driver:

http://www.sintratec.info/downloads



Name	Änderungsdatum	Typ	Größe
Sintratec_Central.1.1.13-64bit	17.03.2017 08:41	Dateiordner	
Sintratec_USB_Driver_1	17.03.2017 08:41	Dateiordner	
Sintratec_Central.1.1.13-64bit.zip	10.10.2016 15:37	WinRAR-ZIP-Archiv	150'828 KB
Sintratec_USB_Driver_1.zip	04.11.2016 08:39	WinRAR-ZIP-Archiv	5'666 KB

1. Unzip both files

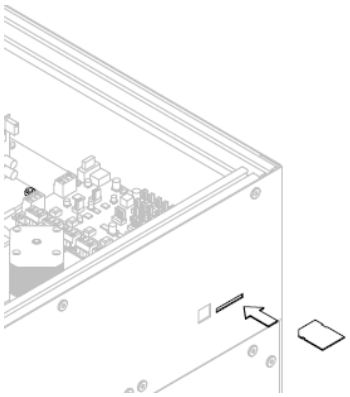
   Do not run the installer or the USB driver from the compressed file

2. Install the USB driver. Doubleklick on Sintratec_ATKIT_USB_Driver_1.exe and follow the instructions

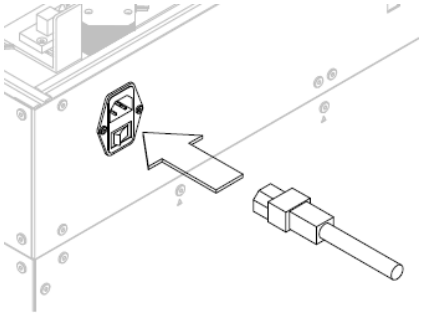
3.Install the Software. Doubleklick on Sintratec_Central1.1.13-64bit.exe and follow the instructions.

IC04 – Start up KIT

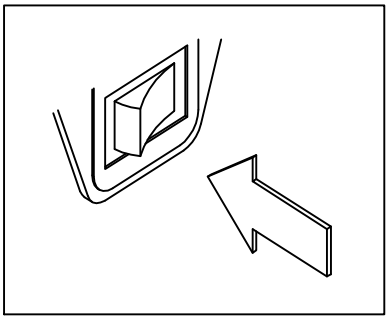
Insert the SD card into its socket at the backside of the Sintratec Kit.

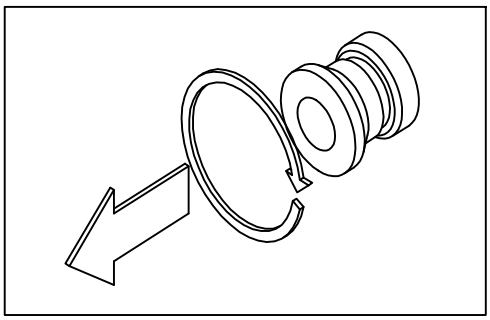


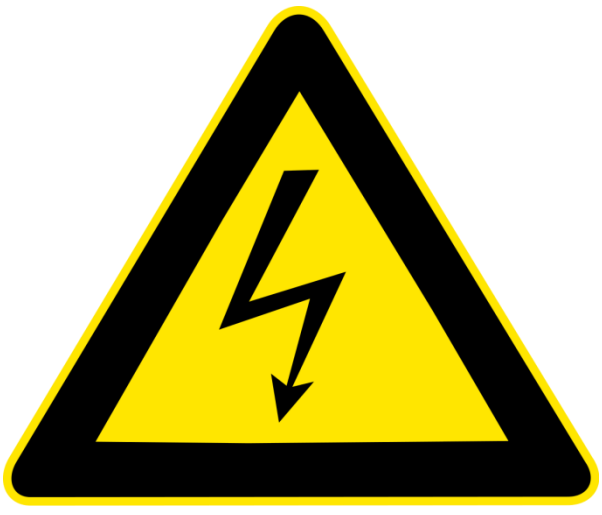
Connect the power cable to your Sintratec Kit and power plug.



Switch on the power entry switch and turn the emergency stop button to release it.





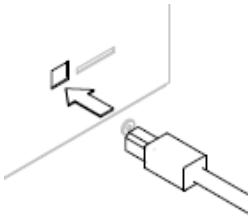


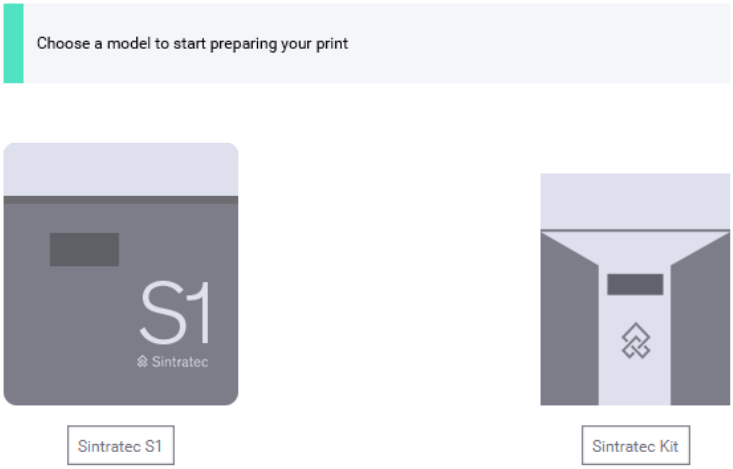
Warning! Never work inside the hat when power is switched on.

Risk of electric shock. Always turn the power off and unplug the power before doing anything inside the hat!

IC05 – Connect USB

Connect the USB Cable to your Sintratec Kit and to your computer.



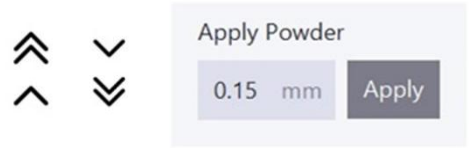


Open Sintratec Central if you haven't done so yet.

The Software will now recognize which Sintratec model is connected and automatically update the Kit's firmware.

IC06 – Test the Components

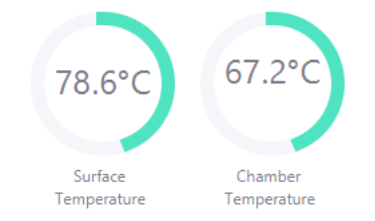
In this step the stepper motors, the heating elements and its temperature sensors of the Sintratec Kit are tested. To control the different components, you have to use Sintratec Central. All functions of the software are described in detail in the Software manual.



First you need to check if the three stepper motors are working properly. Switch to the tab "3. Powder". Move the two platforms using the arrow icons and move the coater using the "Apply" button.

Secondly you need to check if the heating elements and the temperature sensors are working properly. Switch to the tab "4. Print". Click on heat up.

Note: If everything is wired correctly, you will notice that the left lamp is much less bright. This is absolutely normal and essential for an even temperature distribution.



Inspect both, the powder surface temperature and the heating coil temperature (chamber). If the reading gets stuck at 20°C, its most probably a problem with the temperature reading so check the wiring of the Infrared Sensor and Thermistors in the hat.

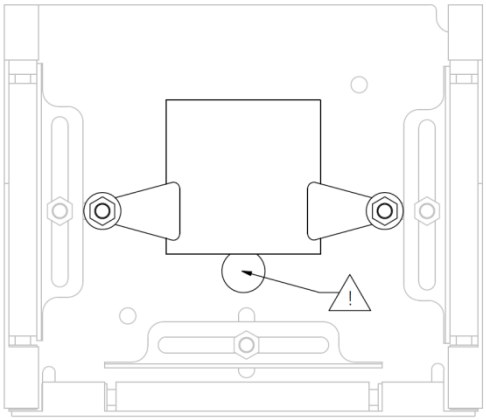
IC07 – Adjust Lamp

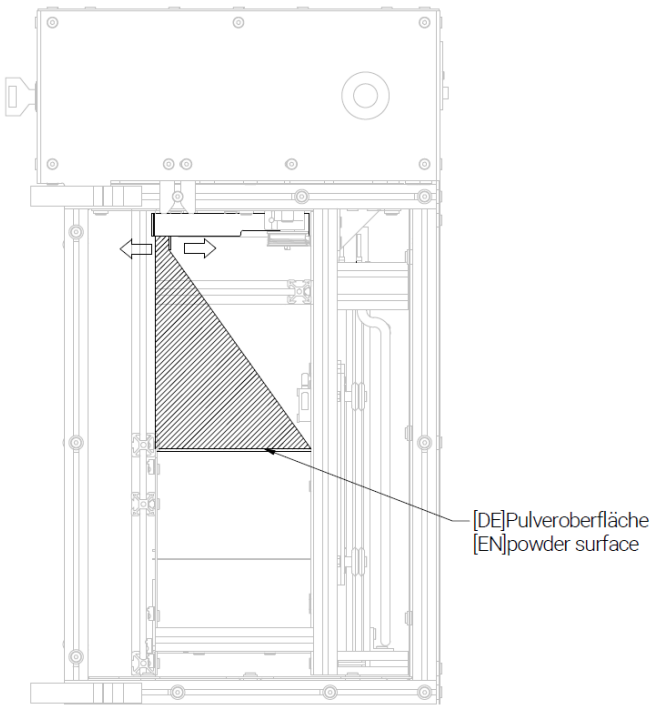
Warning! Hot surface. As soon as the lamps are switched on the lamp and sheet metal gets very hot. Only touch with heat resistant gloves or let it cool down before attempting doing anything!

First pre assemble the blind like shown in the picture. Its important that the side blints cover all of the ligthbulb.

Also check the position of the laser glass it must not cover the vision of the infrared sensor

Inspect the tube holding the infrared sensor. The tube should not touch the sheet metal beneath it! It should have 2-5 mm space in between.





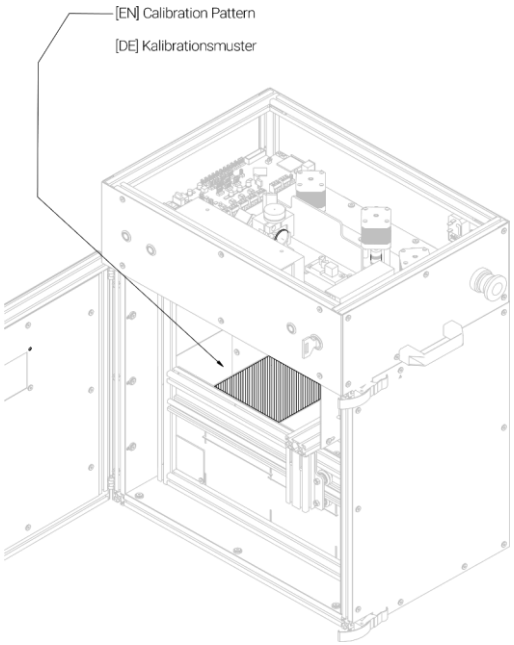
Next, adjust the front blint according to the picture.

You can carefully bend the blint wit some pliers if necessary.

This is essential to guarantee a even temperature distribution.

IC08 – Calibrate the Laser

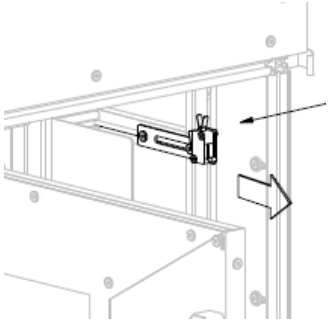
In this step the laser is calibrated and tested. Always make sure you and other people in the same room are wearing the provided laser safety goggles when working with the laser while the Sintratec Kit Hat is open. Abide your countries regulation concerning laser safety.



First, print out the “Laser Calibration Pattern” in the Appendix with a 2D printer. Please print out the pattern unscaled. The Size should be 120x120mm .

Cut out the calibration pattern and place it in the center of the left platform. Make sure you move the platform all the way up for maximum accuracy!

The paper has to lay as flat as possible on the platform to prevent any anomalies occurring whilst calibrating.



Check the Position of the Door switch. It must be triggered in order for the Laser to turn on

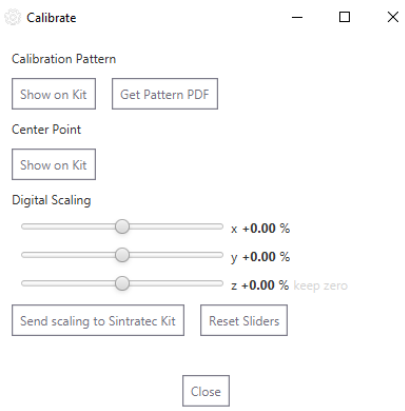
Don't forget to close the door

Warning! Never work inside the hat when power is switched on.

Risk of electric shock. Always turn the power off and unplug the power before doing anything inside the hat!

Ignoring this may harm you and destroy your electronic components!

Go to the calibration menu in the Sintratec Central Software by clicking on "calibrate"- button in the working tab “4. Print”.

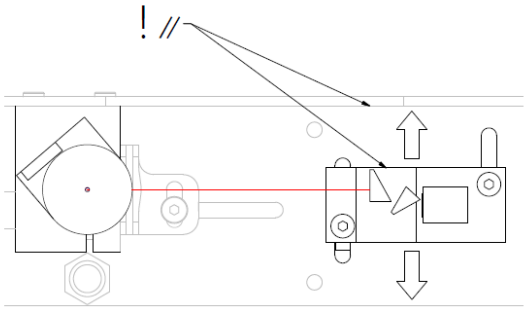


"Hit the Show on Kit" under calibration pattern.

You will now hear the galvos moving. (Quite ticking noise)

Turn the laser key clockwise to activate the laser.

Make sure to wear the laser goggles provided!

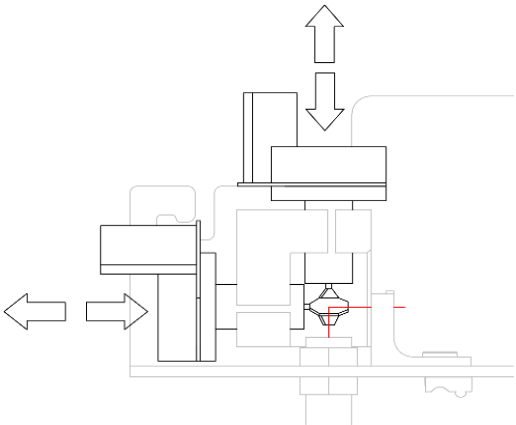


Align the laser roughly with the middle of the x galvo. The laser should be parallel to the sheet metal.

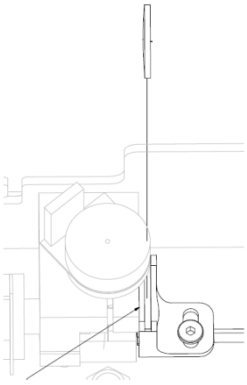
Important! Always turn the power of before doing anything in the hat!

Important! Never touch the mirrors or the electric parts, only touch the galvo motors!

Align both galvos that the laser beam hits both galvo mirrors in the center.



Important! Always turn the power of before doing anything in the hat!

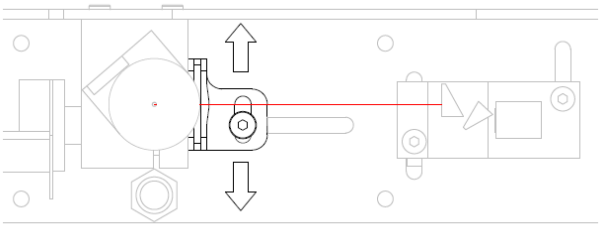


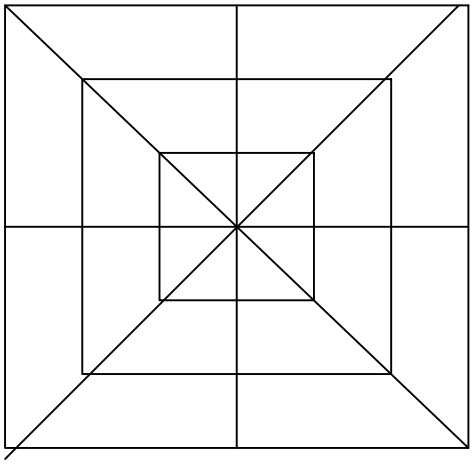
Mount the lens with the convex side facing the galvo system

Important! Always turn the power of before doing anything in the hat!

Adjust the lens holder (Printed by Sintratec) so that the laser beam is in the center of the lens.

Important! Always turn the power of before doing anything in the hat!

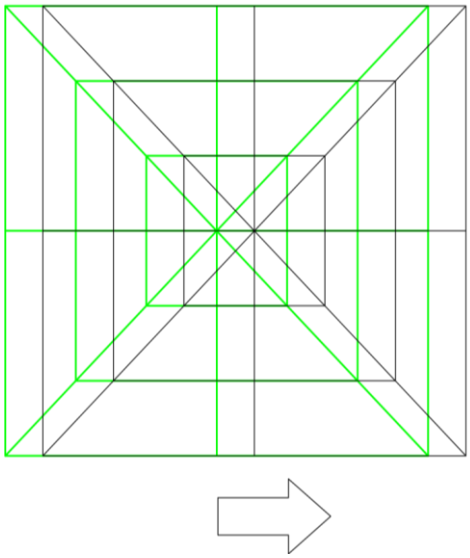


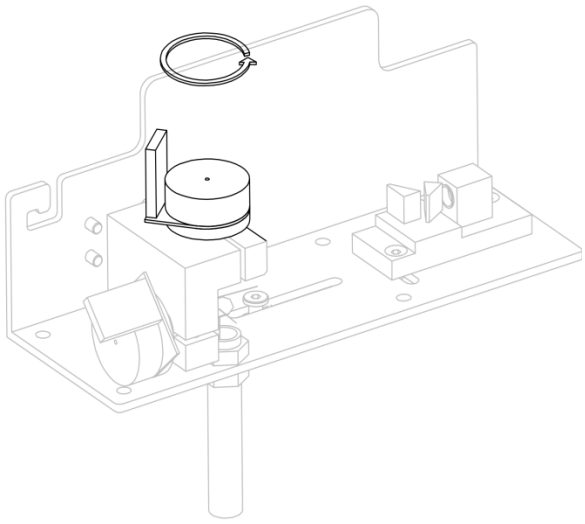


You should now be able to see the laser drawing the pattern (or parts of it) in the build chamber.

Important! Always turn the power of before doing anything in the hat!

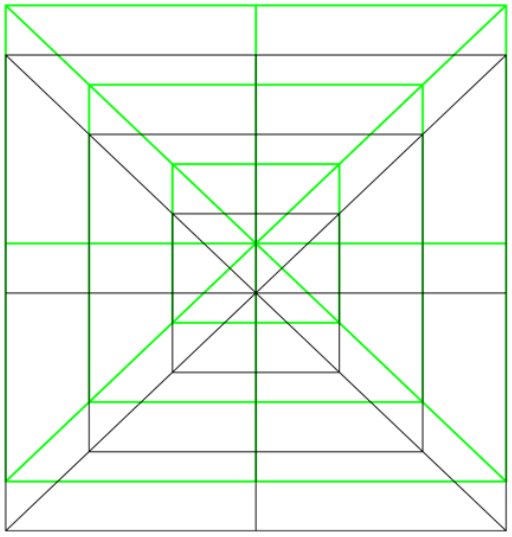
First you have to find the center of the build chamber with the laser. By turning the upper galvo you move the pattern to the left and to the right.

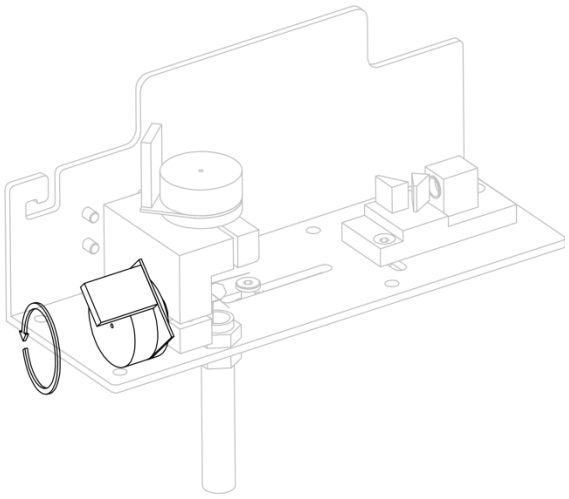




Important! Always turn the power of before doing anything in the hat!

Repeat the same proces with the galvo facing sideways. By turning the galvo you move the pattern up and down



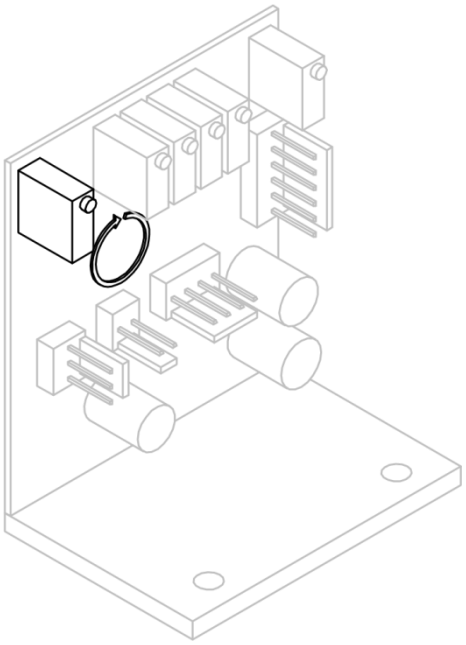


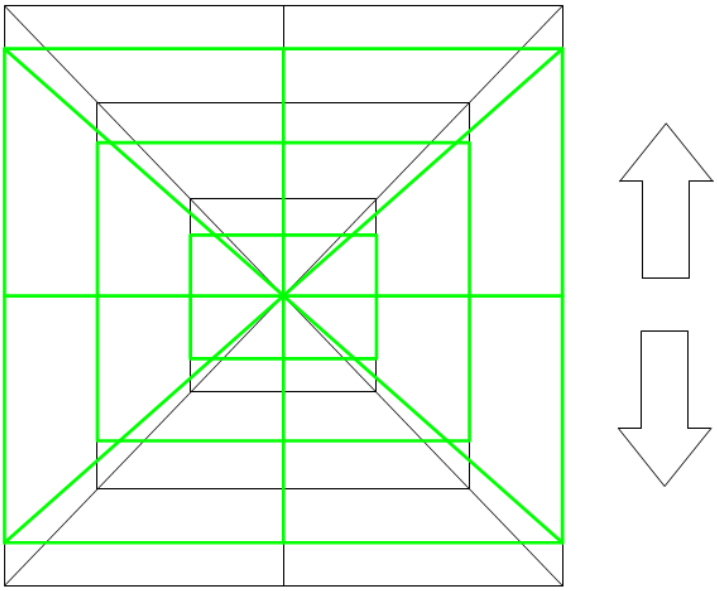
Important! Always turn the power of before doing anything in the hat!

Now you have to adjust the scaling of the galvos. Make sure your platform is at the top and the paper is lying as flat as possible.

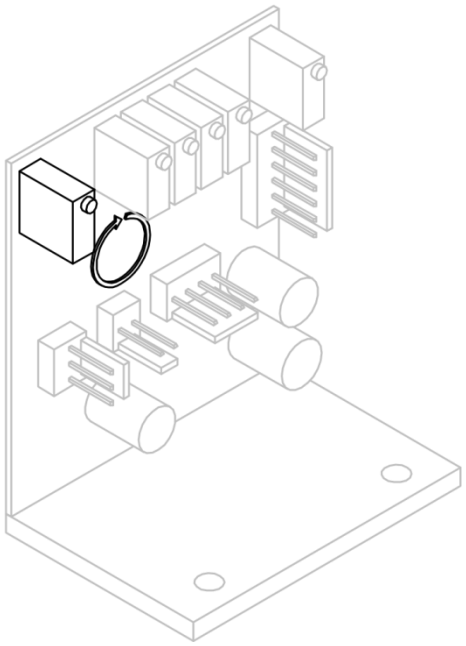
To stretch the calibration pattern in the Y-axis turn the screw of the Y-axis galvo driver clockwise. Turn counterclockwise to compress it

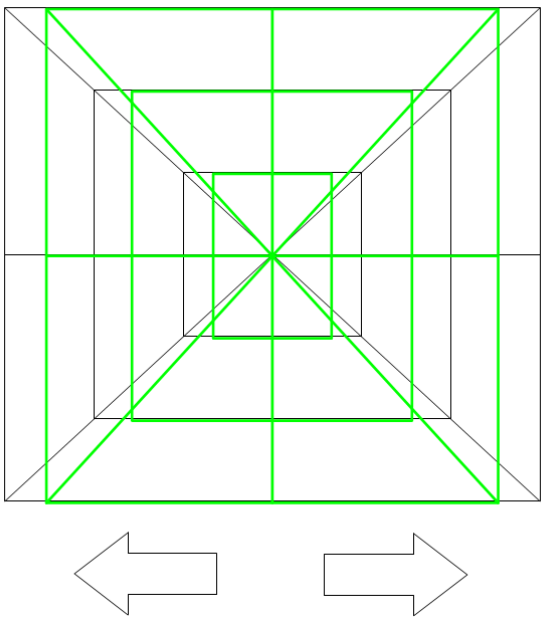
Important! only turn the screw shown in the picture. If you turn the wrong screw you will mess up the controls for the mirrors!





repeat the same process for the x axis





IC08 – Hat Assembly

Proceed to Hat Assembly Guide (H028).