

# [ENG] Instruction manual for laser cutter



Version 1.0

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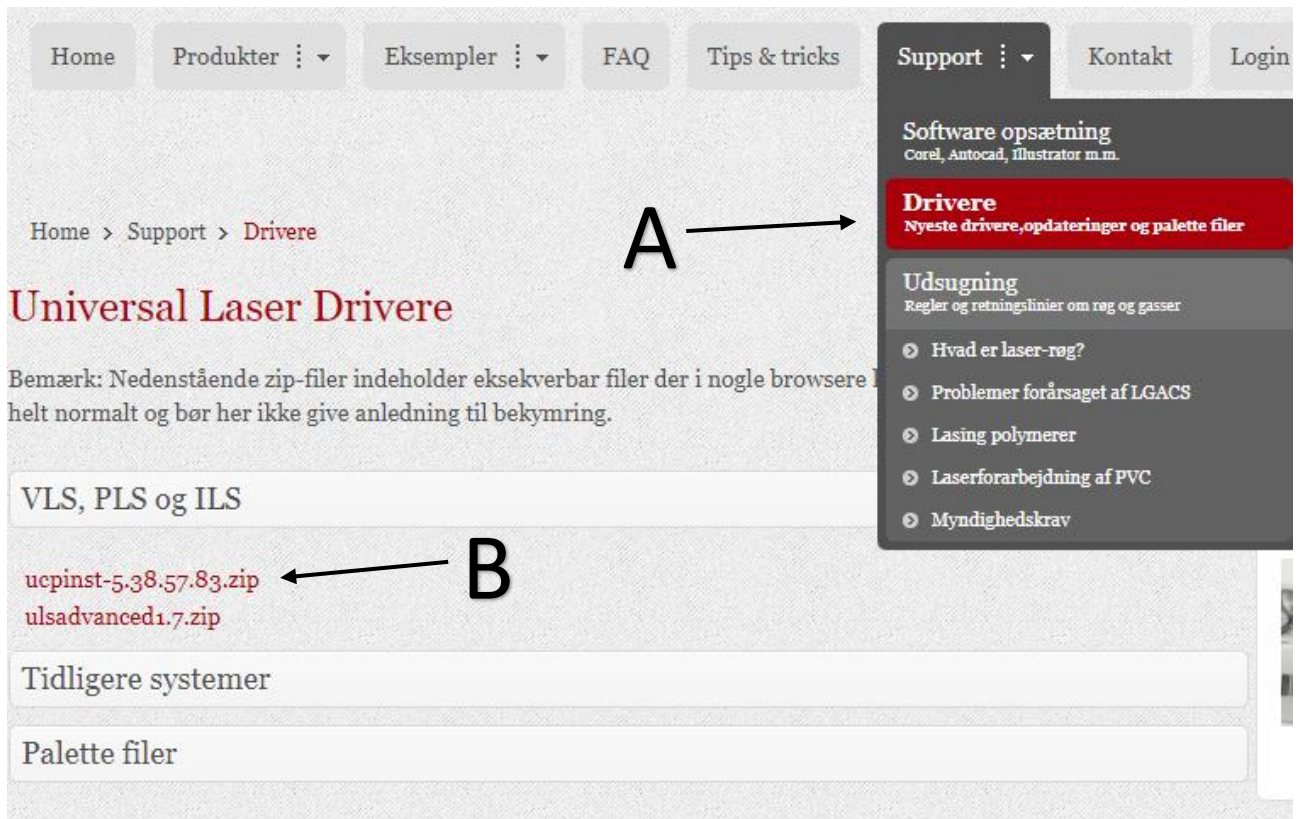
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## Installation of software

Download of drivers for the laser cutter

Go to [www.universallaser.dk](http://www.universallaser.dk) and select the tab "Support" in the tab at the top right.

Under this tab, select "Drivere"



The screenshot shows the website's navigation menu at the top with options: Home, Produkter, Eksempler, FAQ, Tips & tricks, Support, Kontakt, and Login. The 'Support' menu is open, showing sub-items: Software opsætning (Corel, Autocad, Illustrator m.m.), **Drivere** (Nyeste drivere, opdateringer og palette filer), and Udsugning (Regler og retningslinier om røg og gasser). The 'Drivere' item is highlighted in red. Below the navigation, the breadcrumb trail reads 'Home > Support > Drivere'. The main heading is 'Universal Laser Drivere'. A note states: 'Bemærk: Nedenstående zip-filer indeholder eksekverbar filer der i nogle browsere helt normalt og bør her ikke give anledning til bekymring.' Below this, there are three sections: 'VLS, PLS og ILS' containing 'ucpinst-5.38.57.83.zip' and 'ulsadvanced1.7.zip', 'Tidligere systemer', and 'Palette filer'. An arrow labeled 'A' points to the 'Drivere' menu item, and an arrow labeled 'B' points to the 'ucpinst-5.38.57.83.zip' file link.

Download the most recent version of "ucpinst", in this case version 5.38.57.83 (see B above)

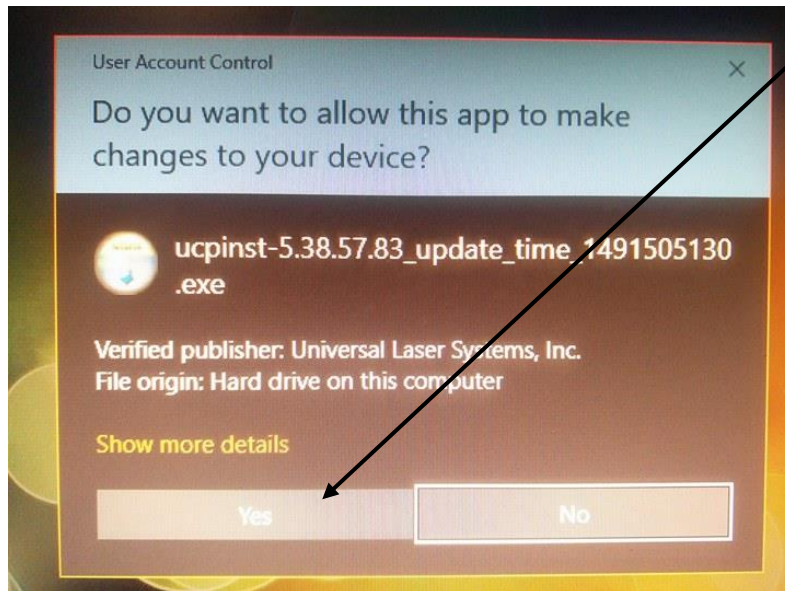
After downloading the file, unzip it to a location of your choice, and you should get the following executable file: (.exe-file)



Install drivers and software for the laser cutter

Run the executable file that you just unzipped. (ucpinst-5.xx.xx.xx.xx.exe)

Should a "User Account Control"-notification show up when running the file, press "Yes"



Then press "I Agree" when facing the licence agreement. You should then see the following screen:



Press "VLS DESKTOP / VLS PLATFORM"

Afterwards make sure "Install Universal Control Panel" and "Install Printer Driver(s)" is checked and then press "Next"



In the next screen, as seen above, check "VLS3.50" and nothing else. Press "Next"

The necessary drivers and software to communicate with the laser cutter will then be installed. When the ULS Software Setup Wizard is finished, press "Finish"



**Take notice:** You'll be asked to restart your computer after the installation and pressing "OK" to the warning will restart your PC **immediately**. Make sure all files are saved beforehand.

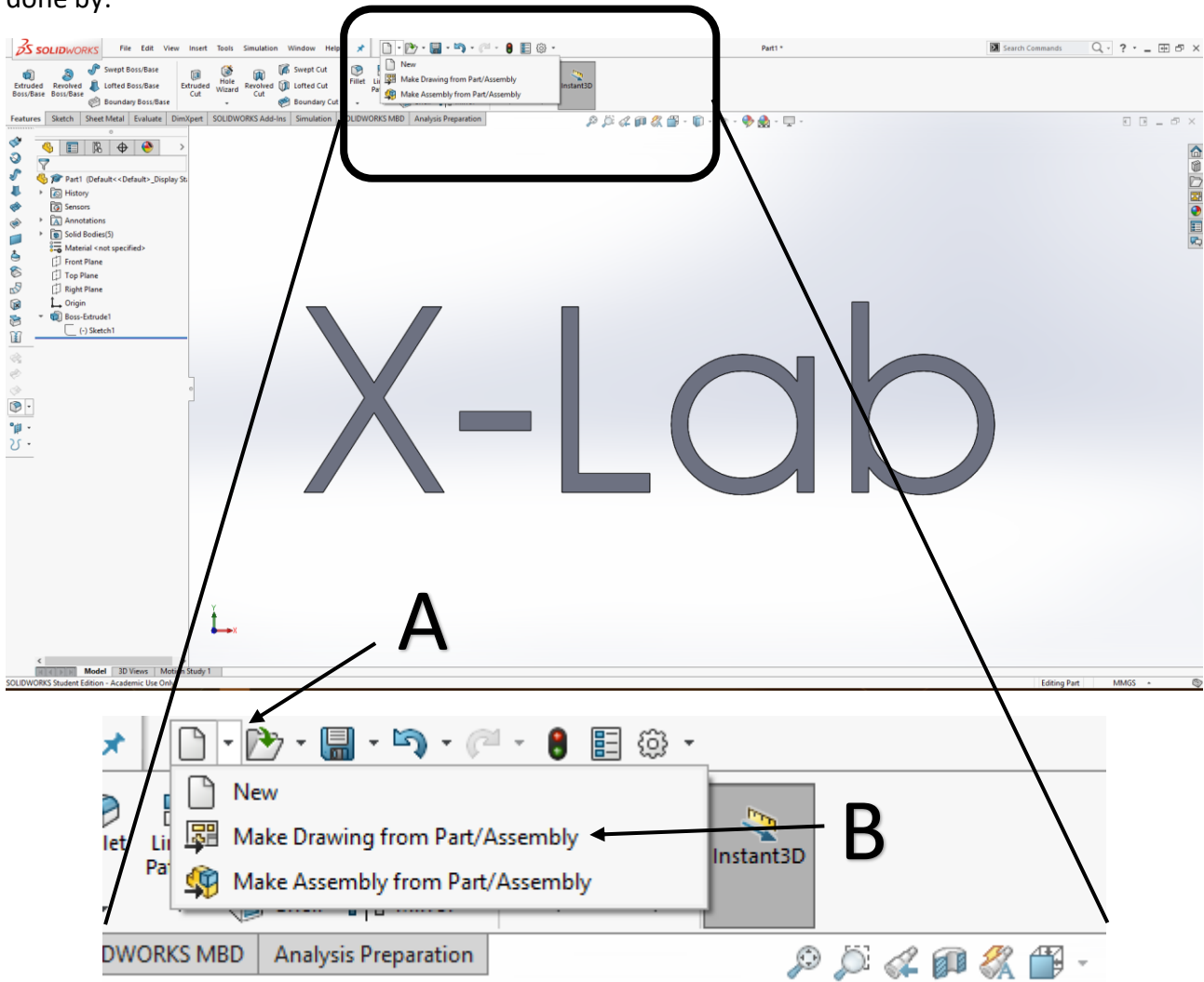
## Preparing file for laser cutting

From SolidWorks part to SolidWorks drawing

Open your existing SolidWorks part (.SLDPRT-file) or draw a new part in SolidWorks.

In a sketch the wanted geometry, that is to be cut, is drawn, and the sketch is extruded. It is necessary for the part to be 3-dimensional. The height of the extrusion doesn't matter.

When the sketch has been drawn and extruded, a drawing must be created from the part. This is done by:

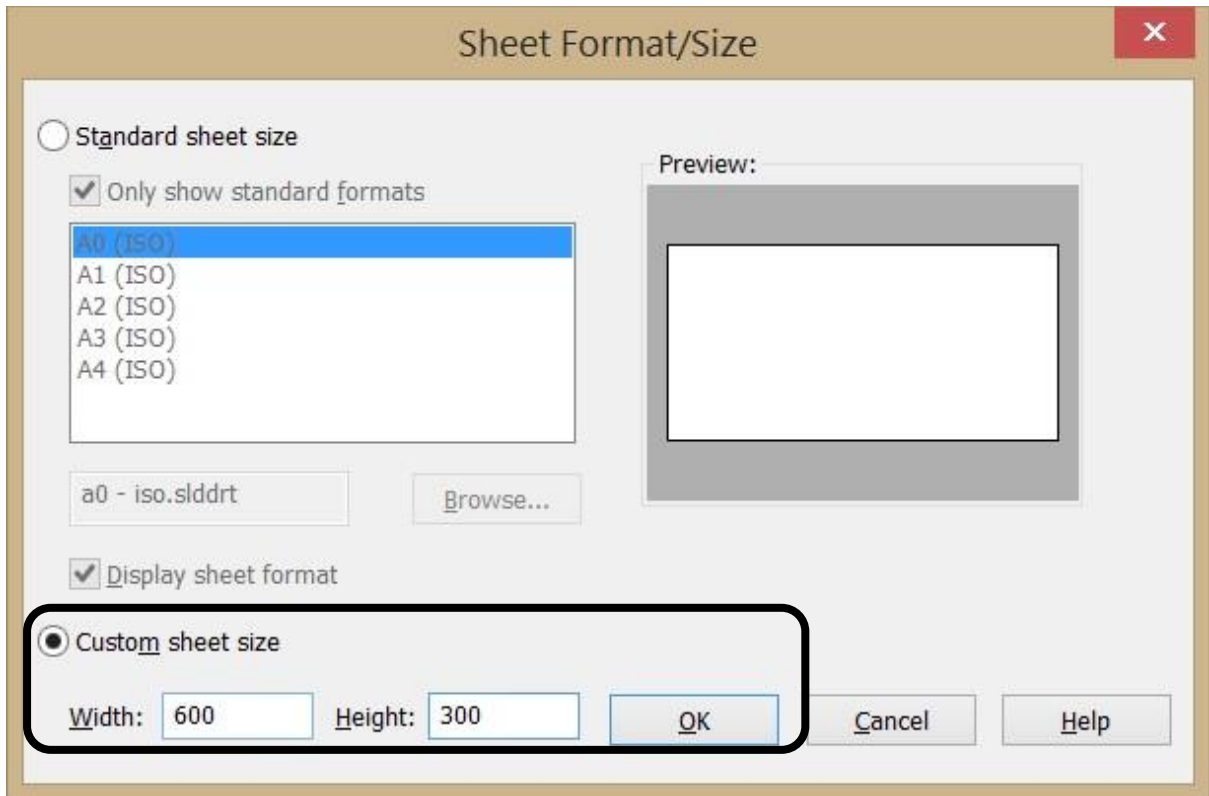


Press the arrow to the right on the "File"-box (A)

Select "Make Drawing from Part/Assembly" (B)

If the part hasn't been saved, SolidWorks will ask you to do so now.

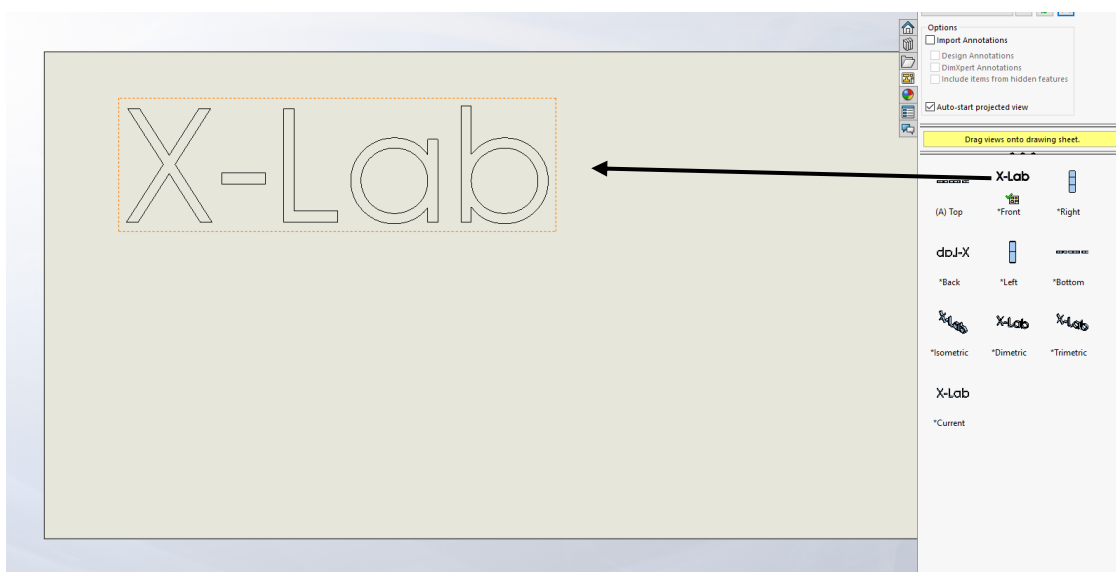
The next thing to do is change the "Sheet Format/Size"



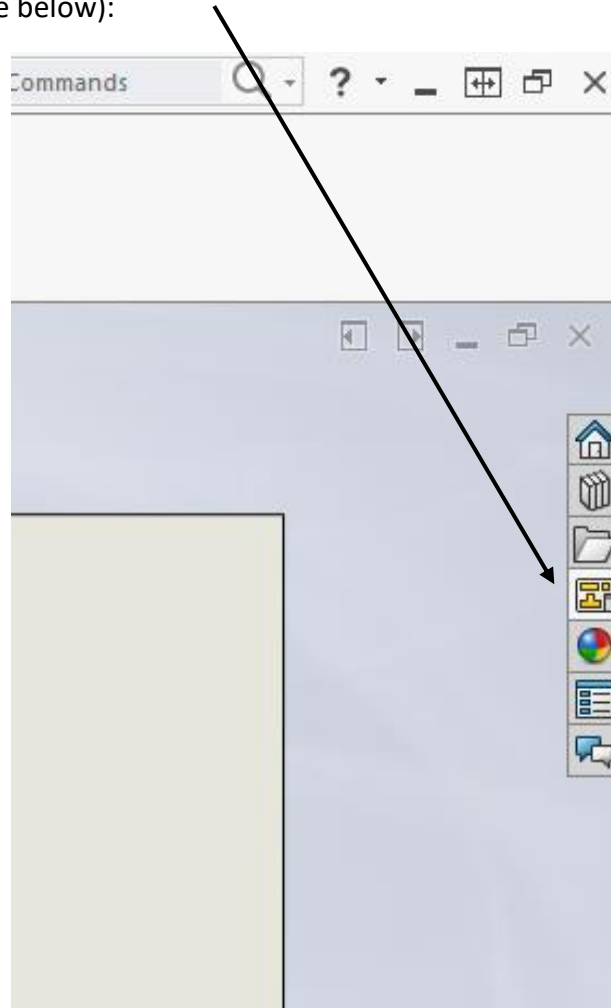
Of the two options, "Custom sheet size" is to be selected. The "Width" and "Height" is to be set at 600 and 300mm respectively. With these settings the sheet size corresponds to the working surface area of the laser cutter. This isn't strictly speaking necessary, but will help you in determining how much you can fit into the laser cutter.

Then, press "OK"

From "View Palette" the views, which are to be laser cut, can be drag-and-dropped.



Should you be unable to see the "View Palette", then you can navigate to it by using the rightmost of bars in SolidWorks (see below):

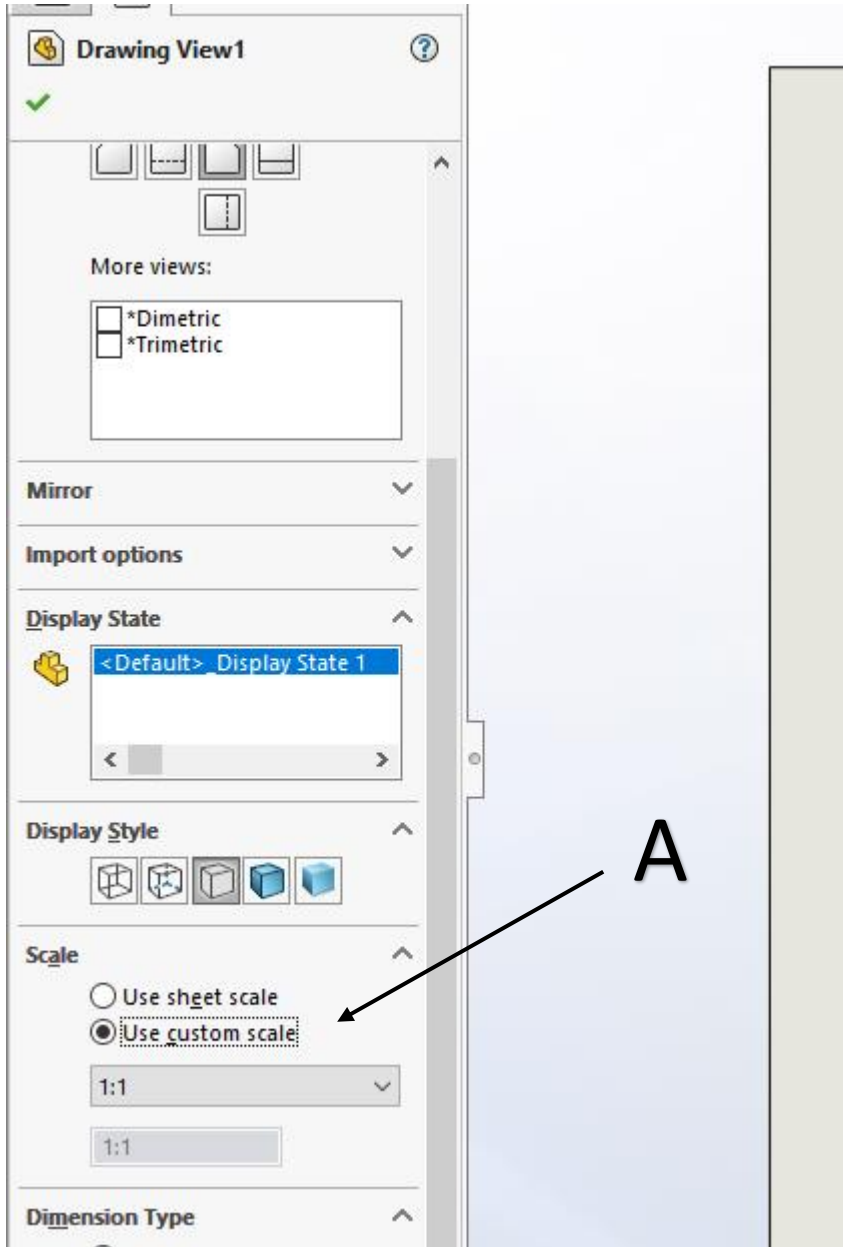


Do not put any dimensions on the drawing, as all lines that are sketched on the drawing will be cut/engraved



## Scale and Line Color

To ensure that the part is cut in the right dimensions, the scale in which the part is shown possibly needs to be adjusted. This is done by:



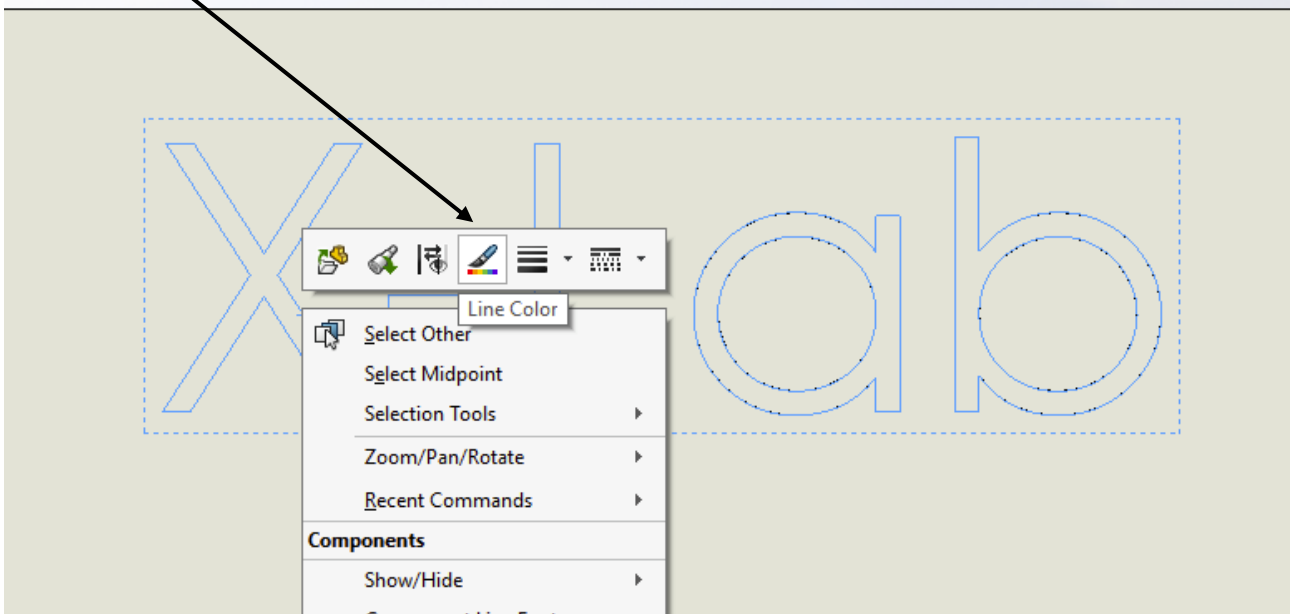
Press the view that is to be scaled. By clicking the “Use custom scale” found under “Scale” it becomes possible to edit the scale manually. Select 1:1 for dimension-accurate scaling of your part. (A)

Now the lines of the sketch need to be colored:

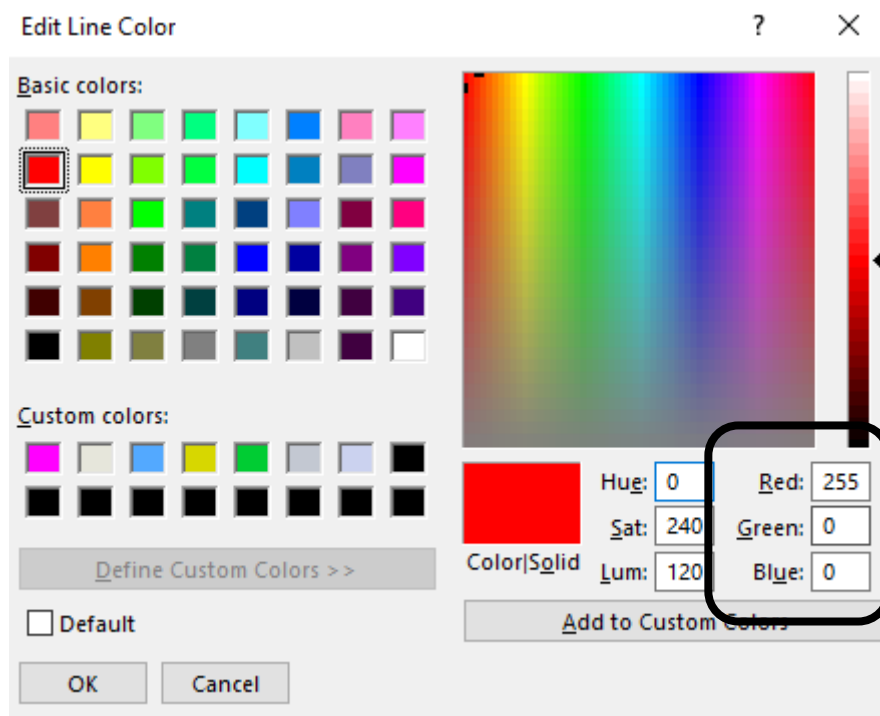
**RED = CUTTING**

**BLUE = ENGRAVING**

Press a line on the sketch. Press CTRL+A to select all lines. Right-click on a selected line and select "Line Color"



A color palette is then shown. Press a color and click "Define Custom Colors" Pick the color red RGB(255,0,0) for cutting or the color blue RGB(0,0,255) for engraving

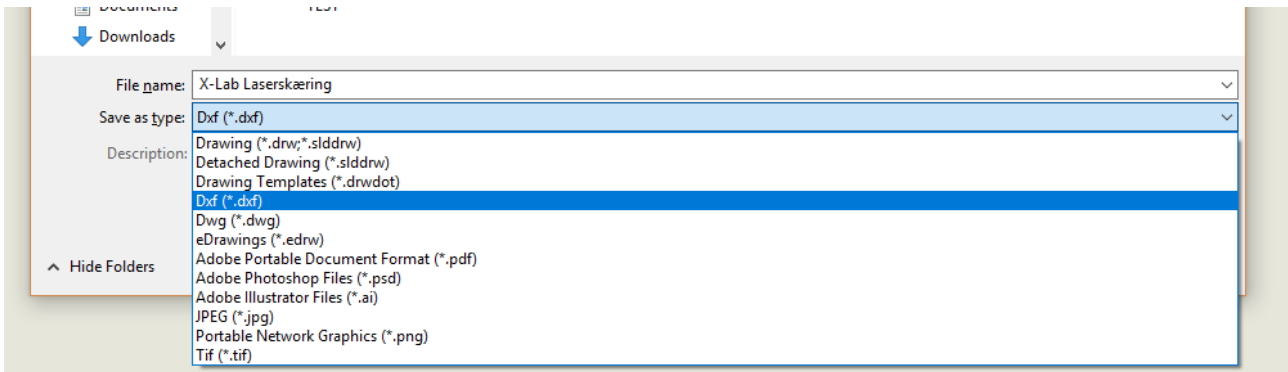


The above image shown the correct color for cutting using the laser cutter

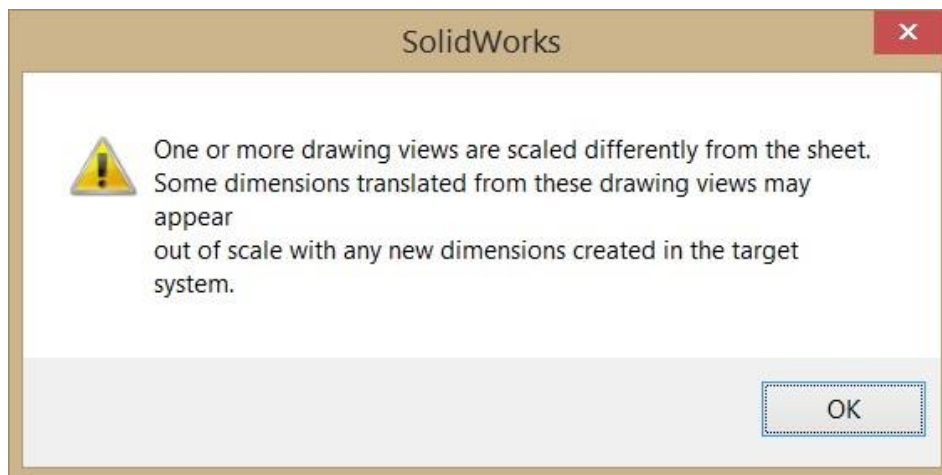
## From SolidWorks drawing to DXF-file

When all lines are colored either red or blue in the correct RBG-combinations, the file is to be saved as a DXF-file. This is done by clicking “File” and then “Save as”

The file is named and then press “Save as type”, navigate to Dxf (\*.dxf) and at last press “Save”



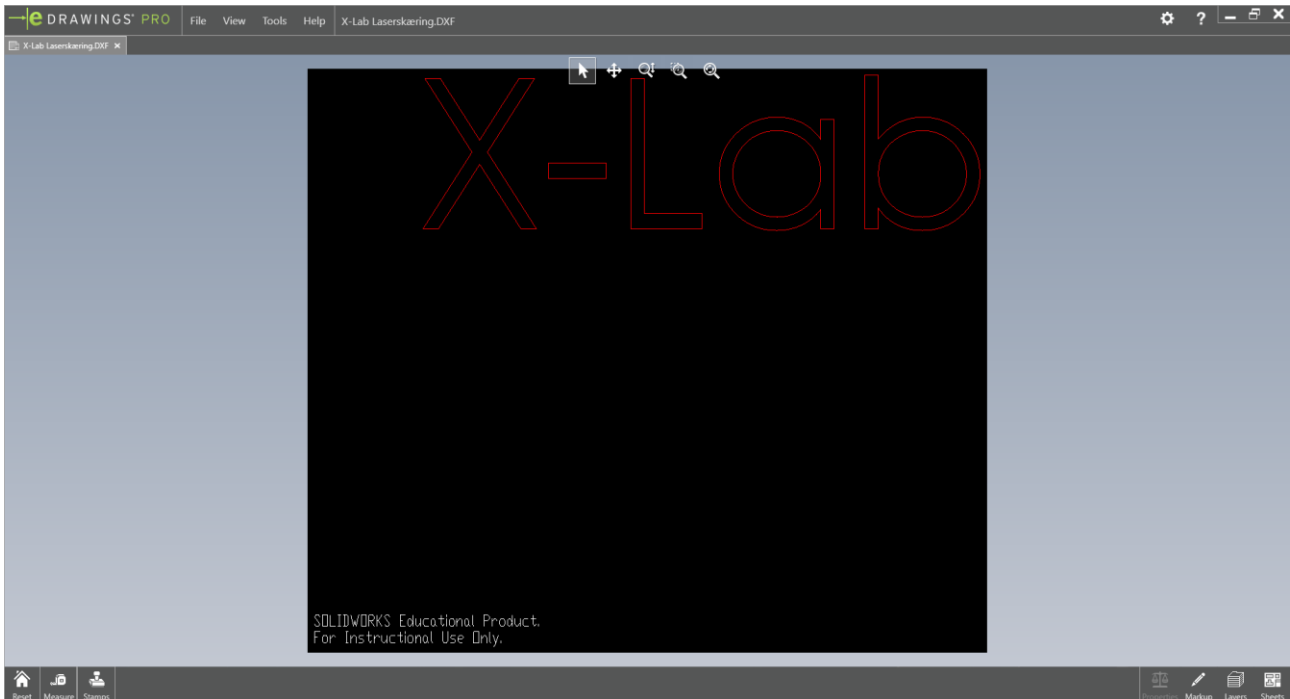
If a warning is showed, press “OK” (This happens if one of your views has been rescaled)



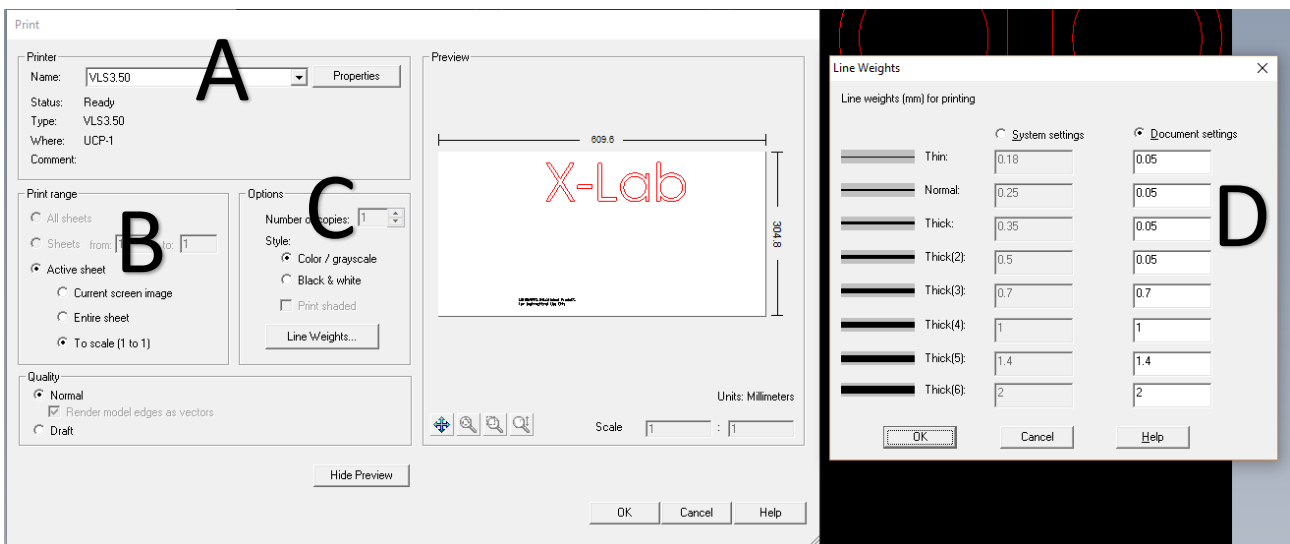
You can now close SolidWorks and open the DXF-file in eDrawings (for most, pressing the file will open eDrawings, as this is the standard program for DXF-files)

## eDrawings

If the above instructions are followed correctly, you should be inspecting something along the lines of what is seen below:



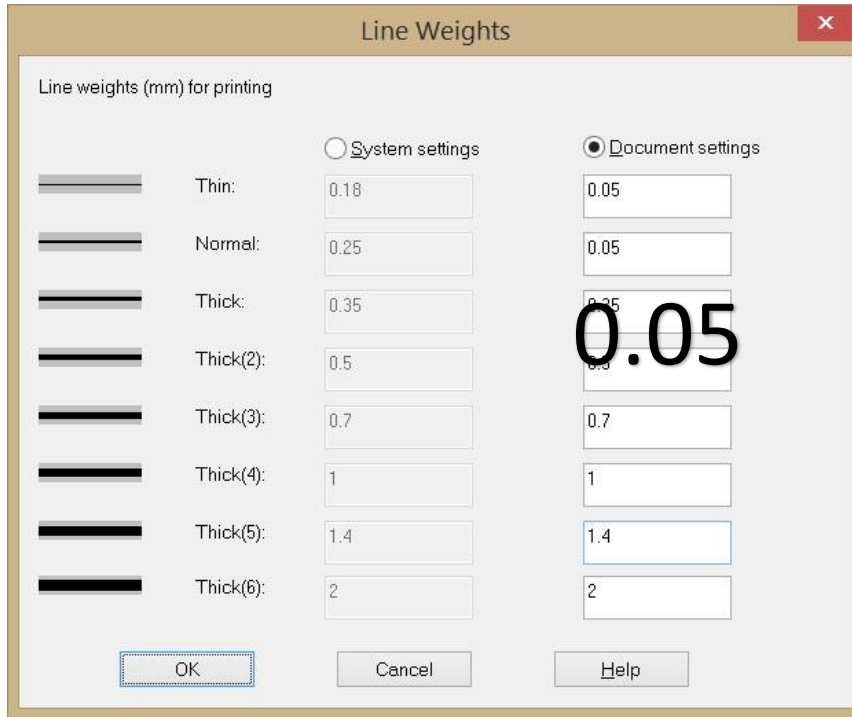
If this is the case, press “File” and then select “Print”



In the following menu there's a couple of things to adjust.

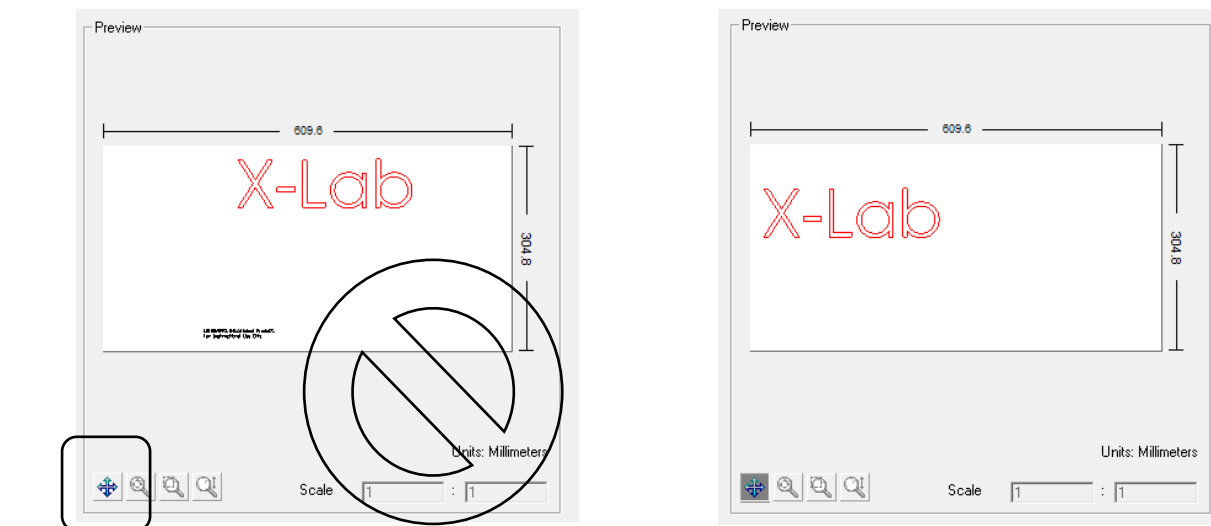
- Firstly, make sure the printer selected is "VLS 3.50" (A)
- Then under "Print Range" make sure "Active Sheet" is selected and moreover "To scale (1 to 1)" is too. (B)
- Thirdly, make sure that "Options", "Style" is "Color / Greyscale" (C)

- Lastly, press "Line Weights" and make sure that "Thin", "Normal", "Thick" and "Thick(2)" is all set to 0.05 under "Document settings" (D)
  - o **Make sure to use dot (.) and not comma (,)**



Then press "OK" in "Line Weights"

Make sure, using the "Pan"-function found in the "Preview", to remove the "SolidWorks Student Edition"-logo, found in the bottom of the drawing.

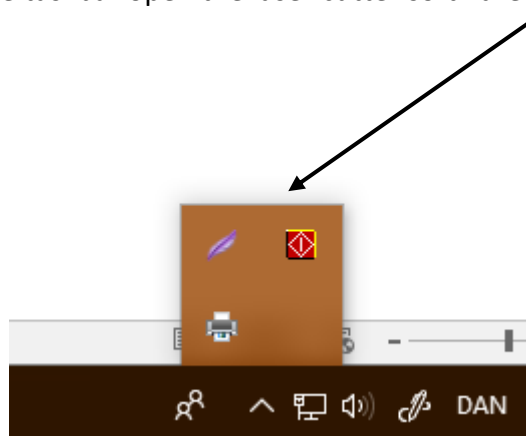


When only your wanted part is shown, press "OK"

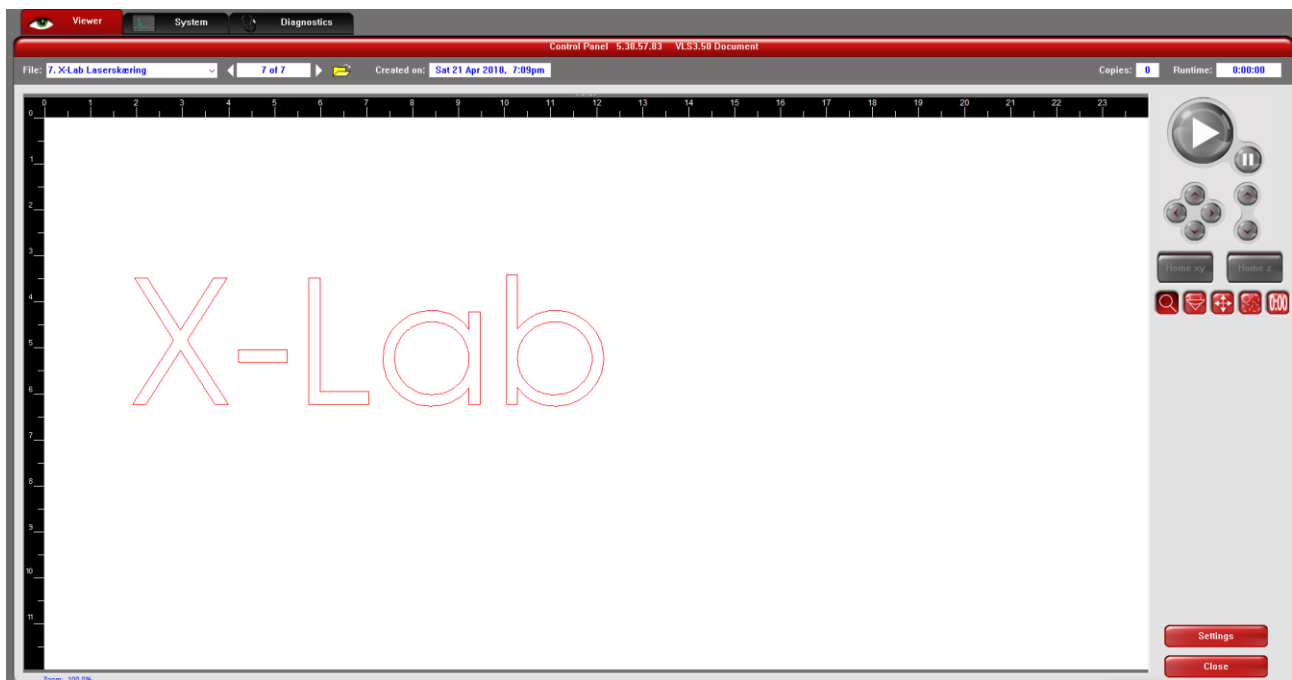
## Laser cutting using UCP

### Creating a job

From the desktop or from the taskbar open the laser cutter software UCP



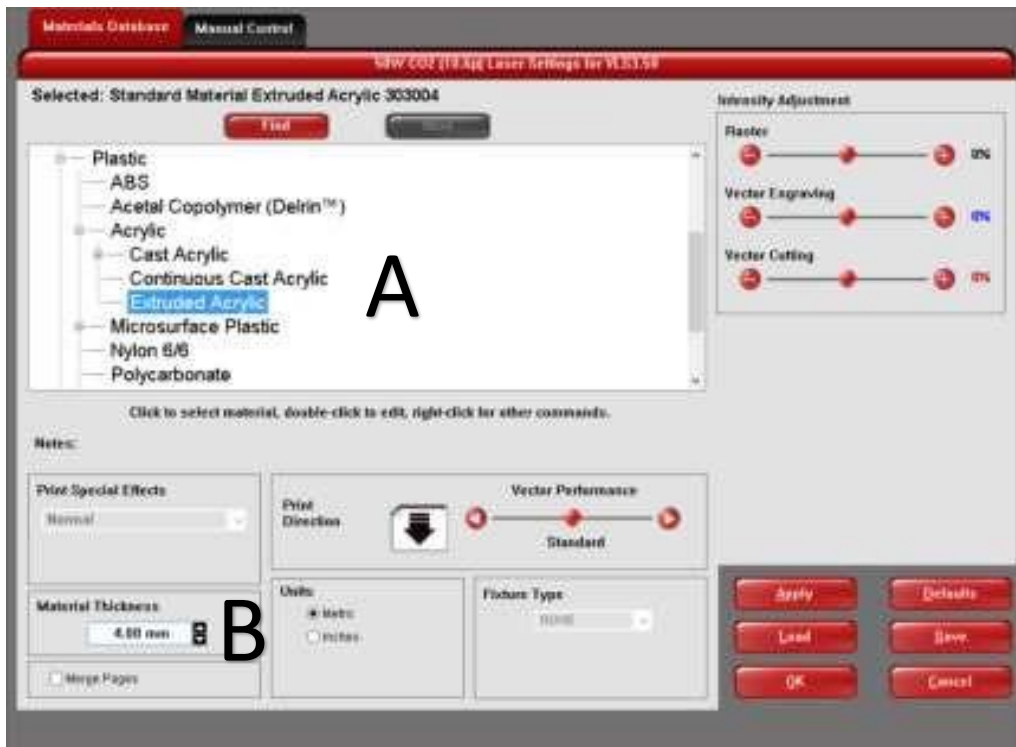
If you pressed print in eDrawings, you should see your part when opening UCP:



Should the part contain black lines or the SolidWorks-logo, repeat the steps above until you're successful.

## Choosing the material

In UCP the material, in which you wish to work, is selected. This is done by pressing "Settings" in the lower right corner and navigating to your material in the Materials Database.



In this example "Extruded Acrylic" is selected (A)

In the lower left corner, the material thickness is entered. In the example above a thickness of 4,00mm is selected (B)

## Placement and cutting

After pressing "OK" in the Materials Database you can move and pack the part as wanted, so the least of the material you're using is spent. Pack as tightly as possible, then the material will last a lot longer.

The coordinate (0,0) is the upper left corner in the laser cutter. If cutting in a sheet/plate less than the dimensions of the laser cutter, place the plate in the corner.

When you have assured that your material is placed correctly in the left top corner, and the plate is sufficiently sized, the USB-cable from the laser cutter is connected to your PC. Then after a while a ON/OFF-button is seen to the right above the play/pause button. Press the button to turn on the laser cutter.

## System setup

In the top of the software, navigate to the “System” tab.

Under “Auto Z” make sure “Enabled” is checked as seen below:



If you then navigate back to the “Viewer” tab and press play **before** closing the lid on the laser cutter, using a red laser, the laser cutter will simulate the path. This is a great opportunity to see if your material is sufficiently sized and placed correctly.

After viewing the simulation and making any final adjustments if necessary, the lid of the laser cutter can be shut. When pressing play the laser will execute the job.

## Finishing up

When the laser is done, the positions of the laser will reset to its initial position. When the viewer (UCP-software) prints out “Idle” in the lower left corner, the part can be removed from the cutter. The ventilation in the printer needs to be activated for as long as there is smoke and/or smell of acrylic or similar, when cutting in these types of materials. The machine is cleaned and if any leftovers not needed for your project or simply unwanted is left, these can be placed next to the laser cutter in a box with this exact purpose. **We ask you to refrain from throwing small unusable pieces and trash in this box, instead use the trashcan located under or close to the box.**

If you have any questions or problems using the device, feel free to contact the Navitas Pilots of X-Lab.