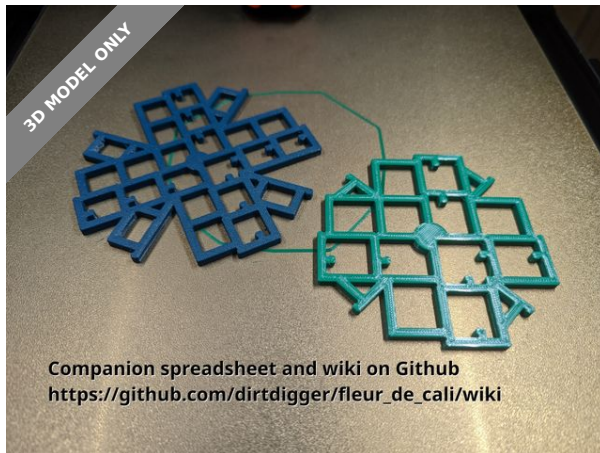




Calistar - Parametric, open source alternative to Califlower

 dirtddigger

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Summary

Parametric skew and dimension correction tool written in Cadquery.

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Tags: [parametric](#) [calibration](#) [fix](#) [skew](#) [alternative](#)
[califlower](#)

2024-10-10 - Improvements to the web-based worksheet, including an improved measurement map, and Plot.ly graphics to help visualize your results.

Check out the [wiki on Github](#)! This companion to the spreadsheet calculator and browser worksheet contains measuring tips, educational materials on how the spreadsheet works, and what you can and can't do with Calistar.

Note: The spreadsheet and source code is hosted on [Github](#). See there for the latest versions of those. Stls will be kept up to date here.

This is a free, open source, parametric tool used for adjusting the dimensional correctness and skew of your printer. This model performs a similar function to other prints such as Califlower, but has no relation to

nor has been derived from any part of those. Turns out that the math behind printer skew calibration has been around since Euclid, and anybody who paid attention in trigonometry can easily figure it out on their own...

Parameters you can control within the Cadquery source code (located on github):

1. Number of measure points for each axis, up to 5 (default is 3)
2. Thickness of the grid separator pieces (default is 4mm)
3. Total width of the print (default 120)
4. Height of the print (default 4mm)

Features:

1. Parametric design. Try this with other calibration prints: scale up the model by 20%. You'll find your print time and material used increase by up to 50% since the thickness of the print also increases. Using this design, load up a different stl to keep the thickness the same. Your print time and material used only increase by about 20%
2. Bigger is better. No calipers are perfect. Printing larger calibration prints decreases the relative error of your measurements. Included is up to 180mm full size, but make sure you've got calipers that can go that large before printing.
3. Multiple measurement points. Measure as many locations as you want up to three times. If you get bored of measuring, stop. If you only want to measure two outermost points since they give the highest signal-to-noise ratio, do that. The spreadsheet is smart enough to figure it out. Just make sure for every outer measurement you have a corresponding inner measurement to offset incorrect flow calibration.
4. Know when to stop. Along with offsets, error estimation based on the variance of your measurements and the error in your calipers are provided. If you're probably fixing noise, the spreadsheet will tell you.

Stl and step files that are included are all 4mm tall and have varying thickness depending on the size of the print. The files are named calistar_{print width}x{number of measurements per axis}.stl. I kept the parameters of the stls such that the measurements you make are whole numbers, but you can do whatever you like in the CadQuery source.

Measurement order is to measure from the outside in. This is described in more detail in the accompanying spreadsheet.

My recommendation is to start with the 120x3 version and go from there. A few additional sizes are available on the github.

Note about Enders (and maybe other similar printers): the movement on the x-axis is non-linear, [see here](#) for discussion on the

matter. Calistar works on the principle that movement in each axis is linear, and therefore cannot be used to calibrate the dimensional accuracy of such printers. However, it can be used to calculate and fix your printer's skew.

2024-10-05: I've been working on a browser-based tool to help with the calibration process, and it is finally in a state that I am comfortable with sharing. Simply unzip calistar_browser.zip and open index.html in your browser. This tool allows for more interactive and tailored feedback than an Excel spreadsheet is capable of. The spreadsheet still works fine, but please consider giving the browser tool a whirl and let me know about issues on the [issue tracker](#)!

2024-04-07: Added smart shrinkage detection and correction to the spreadsheet. Split out dimensional correction and skew into two separate worksheets. Added links to wiki page for measurement and interpretation hints.

2024-03-23: Added some suggestions to the spreadsheet based on interactions on Github issue tracker. Changed pressure advance compensation from semi-circles to chamfers. Fixed bottom chamfer not being generated.

2024-03-22: Added fenrir's suggestion to include the CALC_MEASURED_SKEW line directly. Added a photograph of the radioactive beta.

2024-03-16: Working on a beta version that prints faster and uses less filament. It looks kind of like a radioactive symbol, so I'm calling it the "radioactive_calistar*.stl". One can use the same spreadsheet as the basic Calistar. Check it out and let me know what you think!

2024-03-12: Minor tweaks to Cadquery source and some cleanup. Deleted the 120x4 as it was probably too small to get your calipers in to measure well.

2024-03-08: Added some orientation guides to the central circle (the side with the divot is the top; the quadrant with the missing circular part indicates +x and +y directions).

2024-03-05: Fixed some issues where Google Sheets and LibreOffice are more forgiving than Excel when using SUMPRODUCT.

2024-03-04 (update 2): Fixed a critical issue with generating Klipper skew correction commands, please re-download the spreadsheet .

2024-03-04: Uploaded a 140x4 size, recommend using this over 120x4 if you're printing the four-measurement version.

Model files



radioactive_calistar_120x3.stl



calistar_120x3.stl



calistar_150x3.stl



calistar_180x4.stl



calistar_140x4.stl



calistar_180x5.stl



calistar_150x5.stl



calistar_120x2.stl

calistar_150x5.step

calistar_180x4.step

calistar.py

calistar_120x2.step

calistar_120x3.step

calistar_150x3.step

calistar_140x4.step

calistar_180x5.step

Other files

spreadsheet.txt

parametric-skew-calibration.zip

calistar_browser.zip

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