

USING ASIGA SPS ENCODER SYSTEM FOR TROUBLESHOOTING YOUR MAX:

Check the calibration of the platform directly after Zero Position Calibration.

This can also be used to help troubleshoot when you have one of the following issues:

1. traversed layers / approach failed.

---> platform is tilted or too close to the glas

2. Nothing sticks to the platform / parts fall off easily

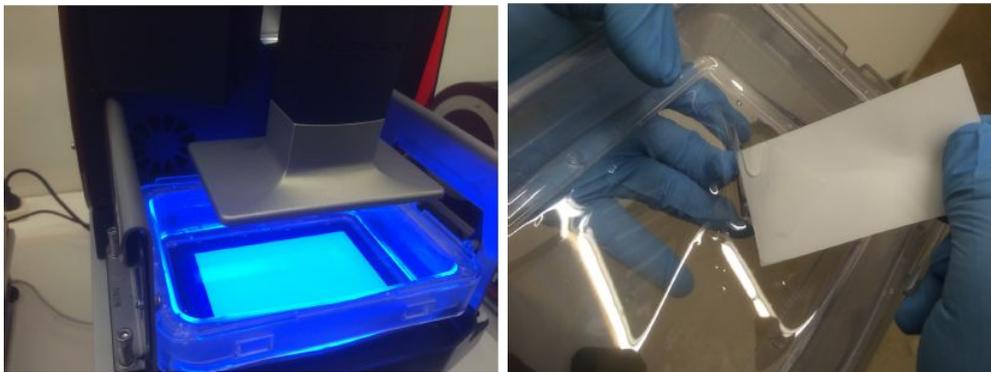
---> platform is tilted or too far away from the glas

Both issues can be analysed by using the SPS (smart positioning system) Encoders. SPS allows you to determine whether the calibration of your Build Platform is responsible for one of the issues.

1. Approach Failed / Traversed Layers happen when there is higher than expected pressure exerted during Approach. This can be an indication of

a) **Debris in the BuildTray** (always ensure the build tray is clean before starting a build)

Note: Refer to Max User Guide Page 23 and the video on this topic included on the USB stick that shipped with your MAX machine and available online in your user account.



b) **Build Platform is misaligned** and one or more corners of the platform is pushing on the glass. The corner of the build platform is below the calibrated zero position.

The Build Platform can tilt during calibration or printing (e.g. through pressure or after collision with debris) and push on the glass with too much force.

The Encoder Screen can help us to show whether the Platform is pushing on the glass when at zero position. The Total Encoder Value should not be influenced by the Platform at 0 mm (your Zero Position, start of each print).

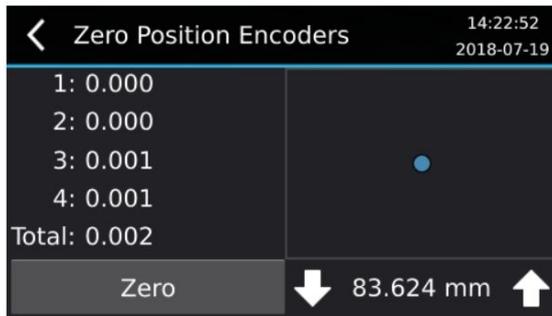
If the reading changes at 0 mm it means the Platform or any object between platform and glass (debris, cured resin, large dust particles) is pushing onto the glass.

Please try following:

-remove build platform from printer, remove objects from build platform, clean build platform thoroughly with IPA, insert build platform and tighten.

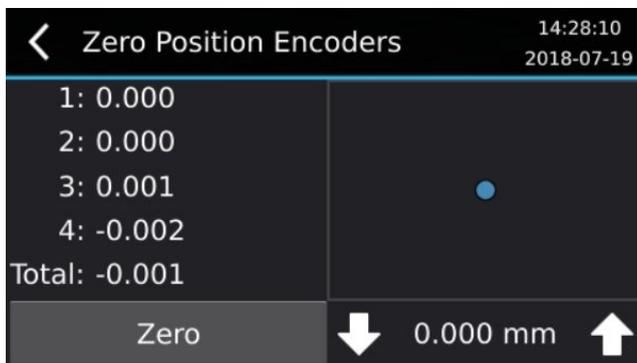
-remove build tray

- go to maintenance / Position Encoders / Zero Position Encoders / and click on "Zero" to zero the encoders (**this is important to do BEFORE you move the platform down**):



--> use arrows to move build platform down to 0.000 mm height

check your value "Total:" (check whether total value shown is out of +- 0.003 fluctuation):



THE ENCODERS 1-4 CAN SHOW NON 0.000 VALUES DUE TO FLUCTUATION (THEY SHOULD FLUCTUATE MAXIMUM BETWEEN +-0.020). IMPORTANT IS THE TOTAL VALUE. IN THIS EXAMPLE THE TOTAL VALUE IS IN TOLERANCE.

If SPS encoder shows a total around 0, then the platform is calibrated correctly. The problem is not the build platform holder / build platform setup in this case!



If the total value is out of range, e.g. showing 0.100 or greater, this will lead to Approach fails or traversed layers. In this instance part of the platform at zero position is touching the glass and the target position for the first layer will not be reached

(Explanation: the encoders will wait for the total value to fall below a certain threshold. This is achieved by squeezing out material from the gap (equal to layer height - Thinner layers, more viscous materials and larger cross sections require more time to squeeze out resin). If the platform itself (maybe a corner of it) or a debris are pushed onto the glass, the total value will not fall below a threshold and the Error shown will be 'Approach failed after 300 seconds' (300 depends on the timeout value and can be different for certain materials)

To resolve, re-calibrate 'Zero Position' and check again. Note: the Build Platform can tilt if over-tightened. The Build Platform can tilt when not tightened sufficiently. *Please refer to the calibration video on this topic included on the USB stick that shipped with your MAX machine and available online in your user account.*

2) Adhesion of Baseplate/Objects to the platform will be lower the larger the gap between Platform and Glas is, up to the point of no adhesion at all when the gap is very large (depending on the material large can mean anything between 0.100 or 0.500 mm).

During Calibration you want to have a gap as small as possible, while not touching the Glas.

Use SPS encoders to validate.

- remove build platform from printer, remove objects from build platform, clean build platform thoroughly with IPA, insert build platform and tighten.

- clean the glas from dust and smudges (check for smudges with a flashlight. Use spirit-based glass cleaner to remove smudges, fingerprints, etc.)

- remove build tray

- go to maintenance / Zero Position Encoders / and click on "Zero" to zero the encoders:



--> use arrows to move Build platform down to 0.000 mm height

- go to maintenance / Position Encoders / Zero Position Encoders / check TOTAL (Important: Total weight should be within a range of +/- 0.002):



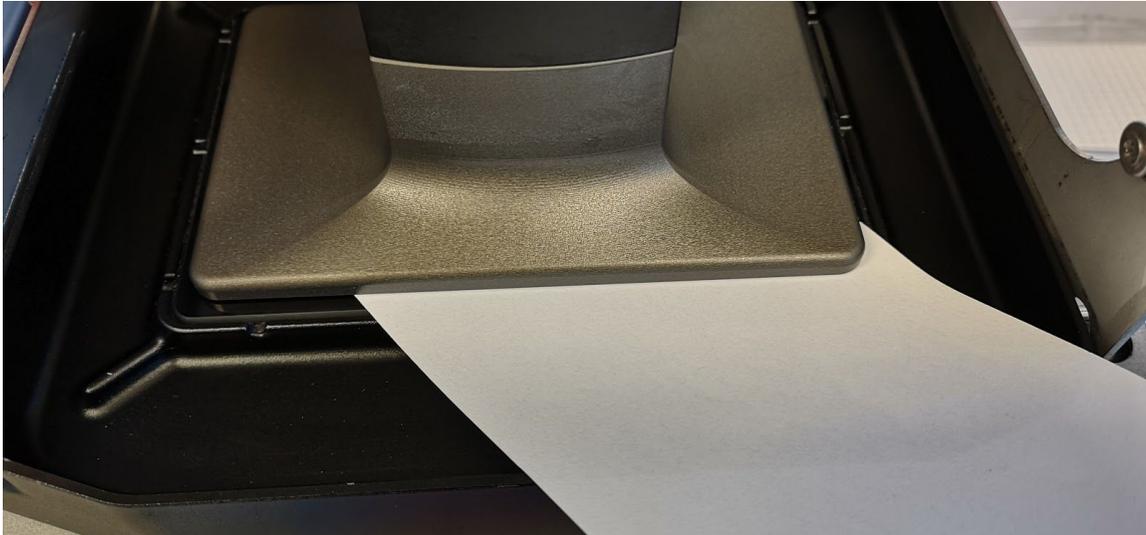
THE ENCODERS 1-4 CAN SHOW NON 0.000 VALUES DUE TO FLUCTUATION (THEY SHOULD FLUCTUATE MAXIMUM BETWEEN +/-0.020). IMPORTANT IS THE TOTAL VALUE. IN THIS EXAMPLE THE TOTAL VALUE IS IN TOLERANCE.

Using a sheet of standard printing paper which has a thickness of 100 micron:

- slide the paper below each of the 4x corners of the Build Platform. You should not be able to slide paper between Build Platform and glass.



- If you can fit it below any of the corners, this means this corner (or the whole Build Platform) is seated at least 100 micron away from the glass.



- Possible reason: the Calibration Screw was not tightened correctly and the Build Platform slipped upwards during approach when contacting the glass. This can occur during "Detect Zero Position", which is the last step in Zero Position Calibration before homing. If it happens please re-do Set Zero Position calibration and follow the calibration video in your user account closely. The platform calibration screw must be tightened following this procedure.

Prior to homing after the Set Zero Position Calibration, you can follow the stages above to confirm the Build Platform is calibrated correctly.