



DIAMOBILE XL™

DIAMOBILE XL-LASER SCAN CALIBRATION

1. Line perpendicularity calibration (Laser Scan)

The purpose of this calibration is to adjust the scan line of the laser to be perpendicular to the horizontal view of the system.

- 1.1. Place the calibration body (Cylinder) on the stage, not in the center but so it will cover the vacuum hole (Image 1.1).



Image 1.1

Note: The Laser will not work while the stage cover is open (safety Magnet interlock).

- 1.2. At XCaliber, go to *Singline and TrueScan Calibration* tag (top red square in image 1.3a).
- 1.3. Adjust the *Laser Power* field to the middle of the scale (~140), and press the *on/off* button of the Laser Scan (bottom red square in image 1.3a). A laser line will appear on the calibration body (Image 1.3b).

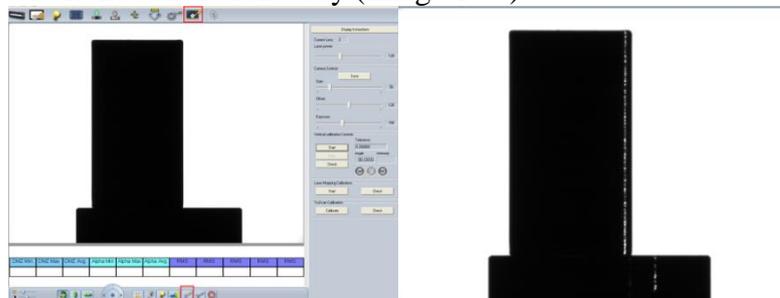


Image 1.3a

Image 1.3b

- 1.4. Press 'Start' in the *Vertical Calibration Control* section. The line angle will be presented in the *Angle* field (Image 1.4).

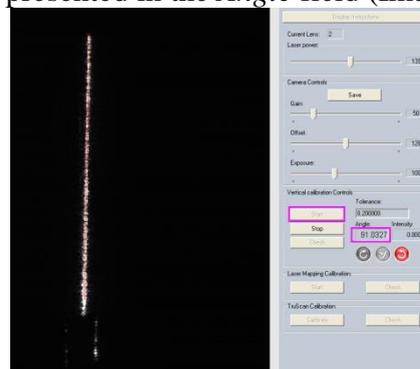


Image 1.4

1.5. The Angle should be $90^{\circ} \pm 0.2^{\circ}$. If it deviates from this range, calibration is required.

Make sure the Holding Laser screw is locked (Image 1.5 Blue square) and open the Locking Screw (Image 1.5 Green Square). Rotate the rotation screws (Image 1.5 Yellow squares. These are the screws which change the Line angle) until the Line angle is at the correct value (as close as possible to 90°) as seen in Image 1.6.

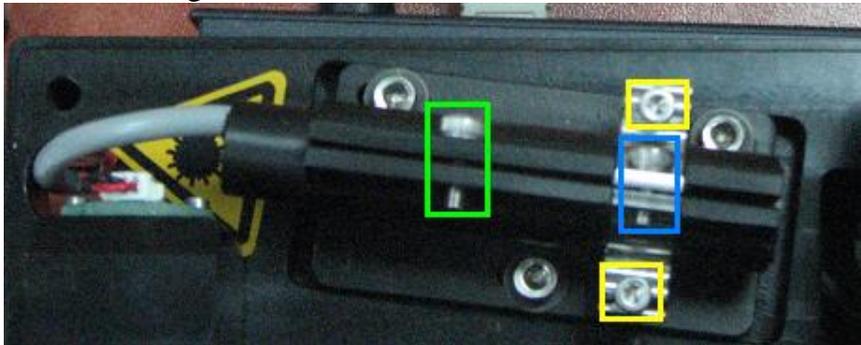


Image 1.5

1.6. Lock the Locking screw and make sure the result remains unchanged, then press 'Stop' (Image 1.6).

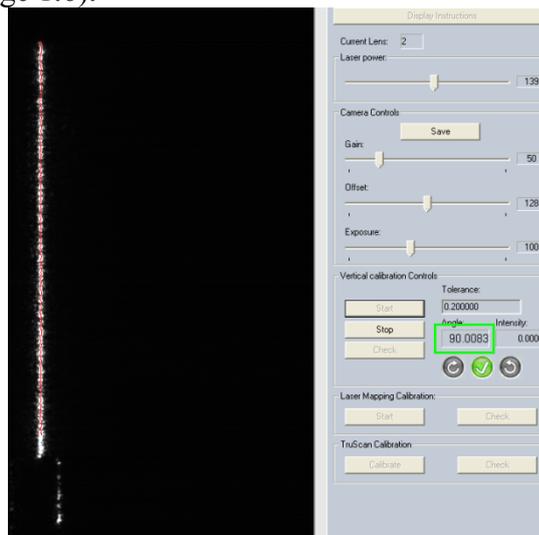


Image 1.6

2. Laser Angle calibration and Scan line accuracy test

The purpose of this operation is to calibrate the Laser angle to the stage center and to match the scanning to the modeling shadow system [v1].

2.1. Make sure the calibration body is clean and repeat stages 1.1-1.3.

2.2. At *Laser Mapping Calibration* section press 'Start', to start the scan line calibration.

2.3. The results should meet the following specs:

X

DMZ Min	DMZ Max	DMZ Avg.
234.52	260.16	251.01

-200<Value<200

✓

Min	DMZ Max	DMZ Avg.
184.78	170.50	

X

RMS	RMS	RMS	RMS
49.54	26.16	30.80	23.28

RMS<30

✓

RMS	RMS	RMS	RMS
29.49	24.47	24.64	28.13

For best performance and in order to achieve the required results, the angle should be around 60°.

2.4. If the results do not meet the specs, the laser mirror should be calibrated (Image 2.4).

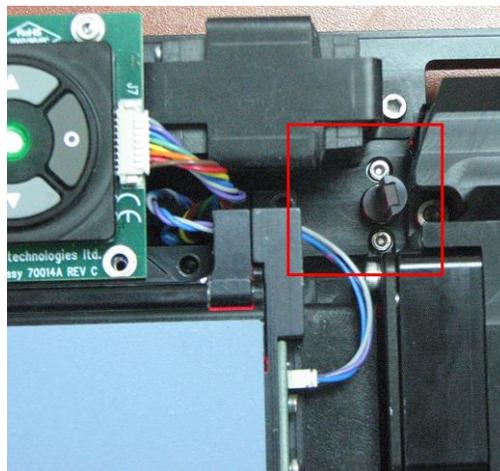


Image 2.4

2.5. In order to calibrate the Mirror, slightly open the 2 locking screws next to the mirror (image 2.5) and change the mirror's angle with the 2 adjusting screws at the side of the tool (see image 2.5). While opening one screw, close the other. Note that calibrating the mirror requires a very fine rotation of the mirror.

2.6. After reaching the required results, lock the locking screws again and make sure the results remain unchanged.

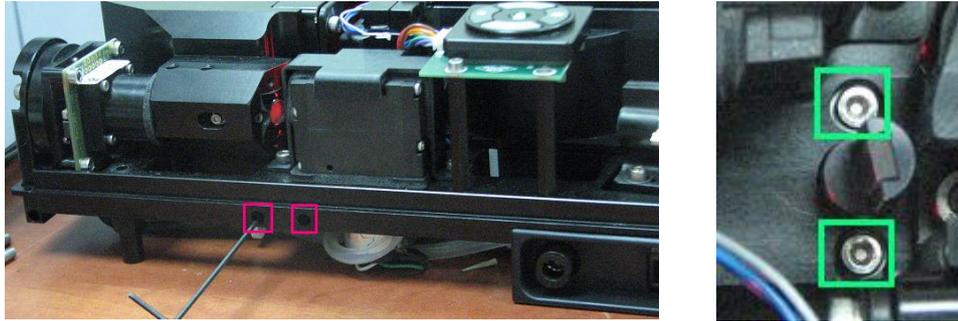


Image 2.5