Faro PowerINSPECT Scanning User Guide

by Delcam plc

Acknowledgements

Contents

About this guide

This guide provides details on:

- Calibrating the laser probe.
- Setting the scanning parameters that control how data is recorded to Faro PowerINSPECT.

Calibration is necessary to allow Faro PowerINSPECT to measure parts accurately, and is carried out by measuring a calibration artefact with the laser probe.

The guide assumes that you have already assembled the particular hardware that you are going to use, and that you have installed the necessary drivers and software.

For all other information on the general use of Faro PowerINSPECT, you should refer to the Faro PowerINSPECT Reference Help.

Calibrating a Faro laser line probe on a Faro arm

This method involves calibrating the Faro laser line probe on the supplied calibration plane:

1. Click the **Change Probe**  button on the **Machine** toolbar (see page 3) to display the **Probes** dialog.
2. Calibrate the rigid probe (see page 4).
3. Calibrate the plane (see page 7).

Machine toolbar

If the **Machine** toolbar is not currently displayed in Faro PowerINSPECT, click the  button on the **Main** toolbar (this button toggles the display of the **Machine** toolbar on and off):

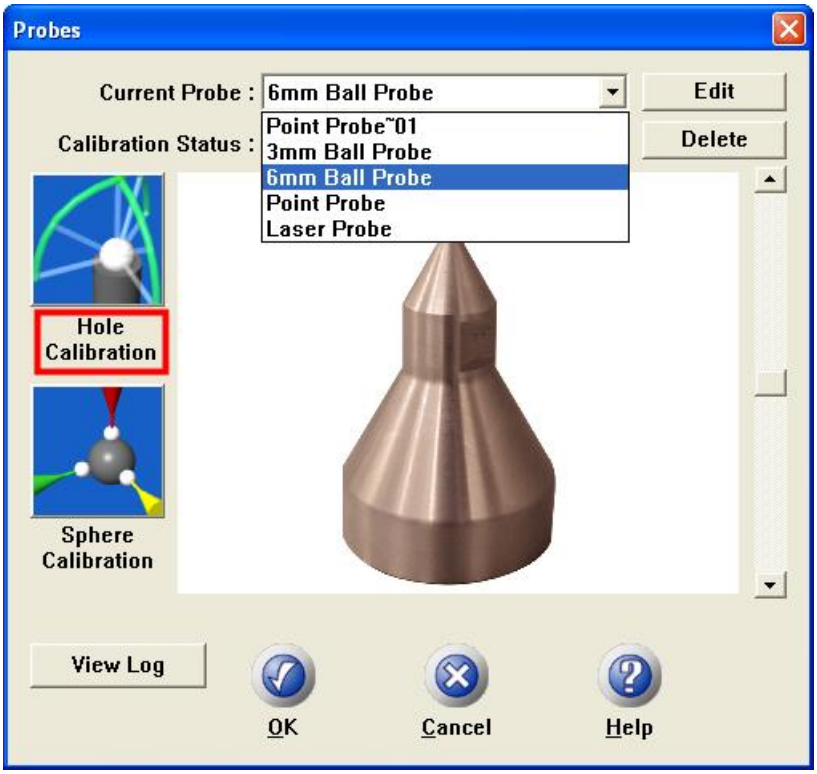
The **Machine Toolbar** buttons allow you to communicate with your measuring device. A brief summary of the buttons available on this toolbar is shown below:

Button	Description
	Connects Faro PowerINSPECT to your measuring device.
	If the measuring device is a CNC/DCC controlled machine, this button moves the probe head to the home position.
	If the measuring device supports it, the **Tracking Box** button (see page 17) displays the current coordinates for the laser probe, and allows you to adjust various parameters.
	Shows the current status of the measuring device.
	Click this button to set the scanning parameters (see page 13) for your measuring device.

Calibrating the rigid probe

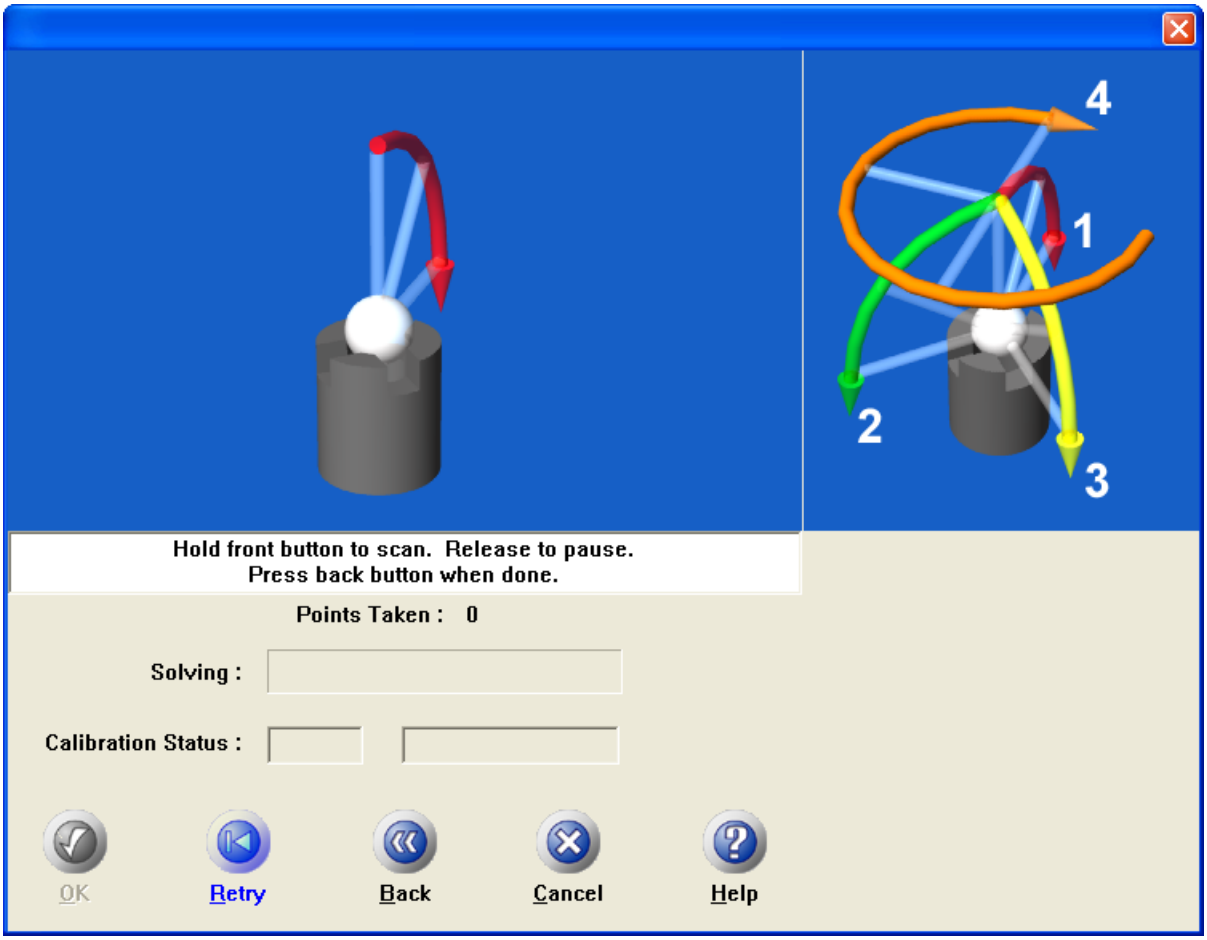
This guide demonstrates the hole calibration method, for which you will need the Faro probe calibration cone:

1. Select the appropriate ball probe from the **Current probe** drop-down list:



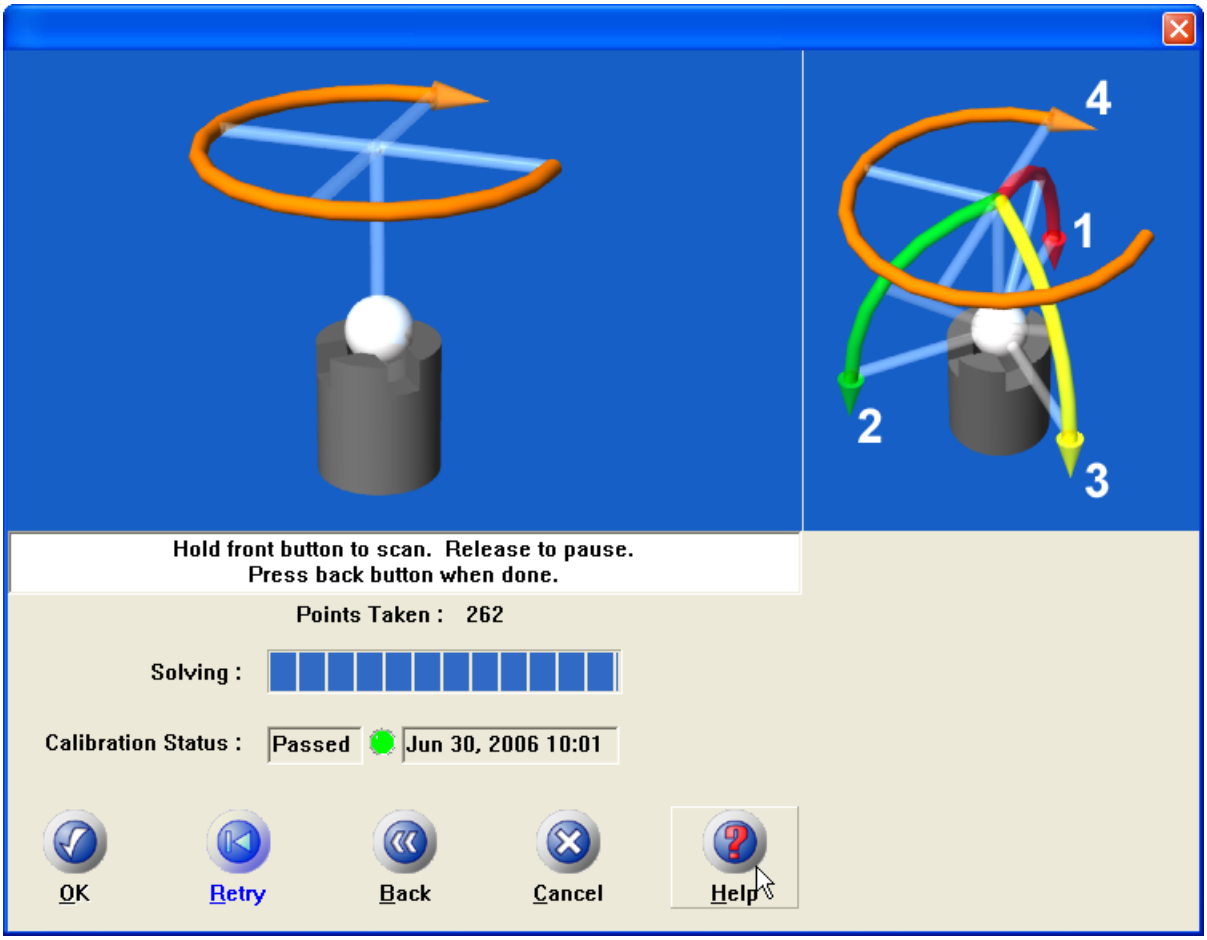
2. Select **Hole Calibration**.

3. Place the probe inside the Faro probe calibration cone, and, while holding the green button, move the arm as shown on the left of the dialog:



4. When the arm is approximately 90 degrees from the starting position, release the green button. Faro PowerINSPECT prompts you to continue to the next stage of the calibration process.
5. Follow the on-screen prompts for each of the remaining three stages of the calibration process, releasing the green button after each stage.

6. When the calibration is complete, press the red button to verify the calibration process and display an image similar to the one shown below:

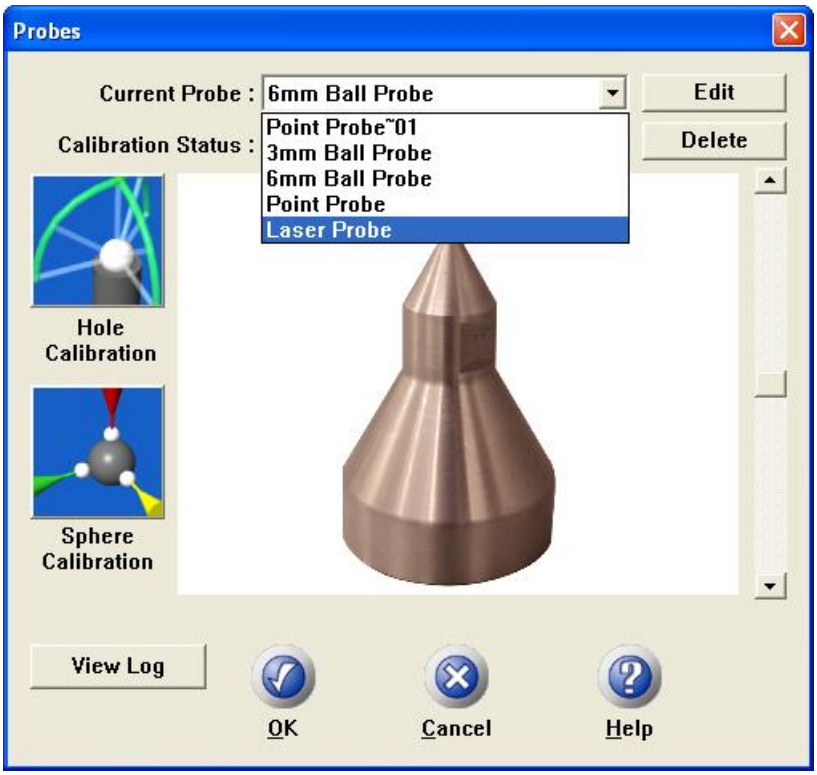


*If the **Calibration Status** is set to **Failed**, click the **Retry** button and follow the prompts until the probe has been calibrated.*

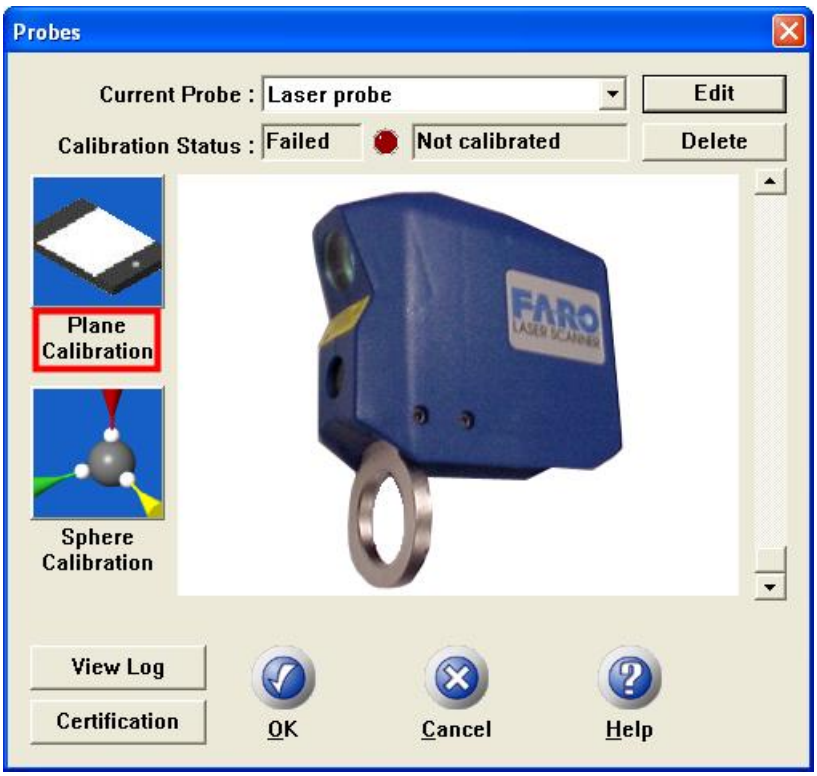
7. Proceed to Calibrating the plane (see page 7).

Calibrating the plane

1. Select **Laser Probe** from the drop-down list box:

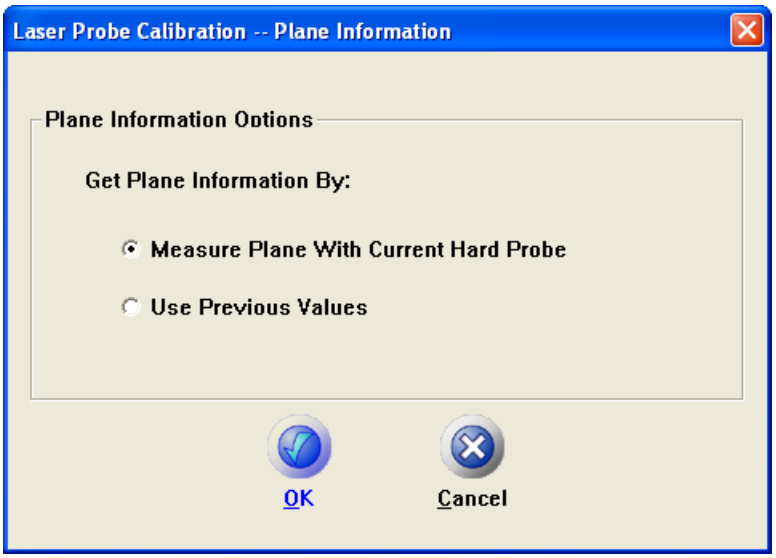


The following dialog is displayed:

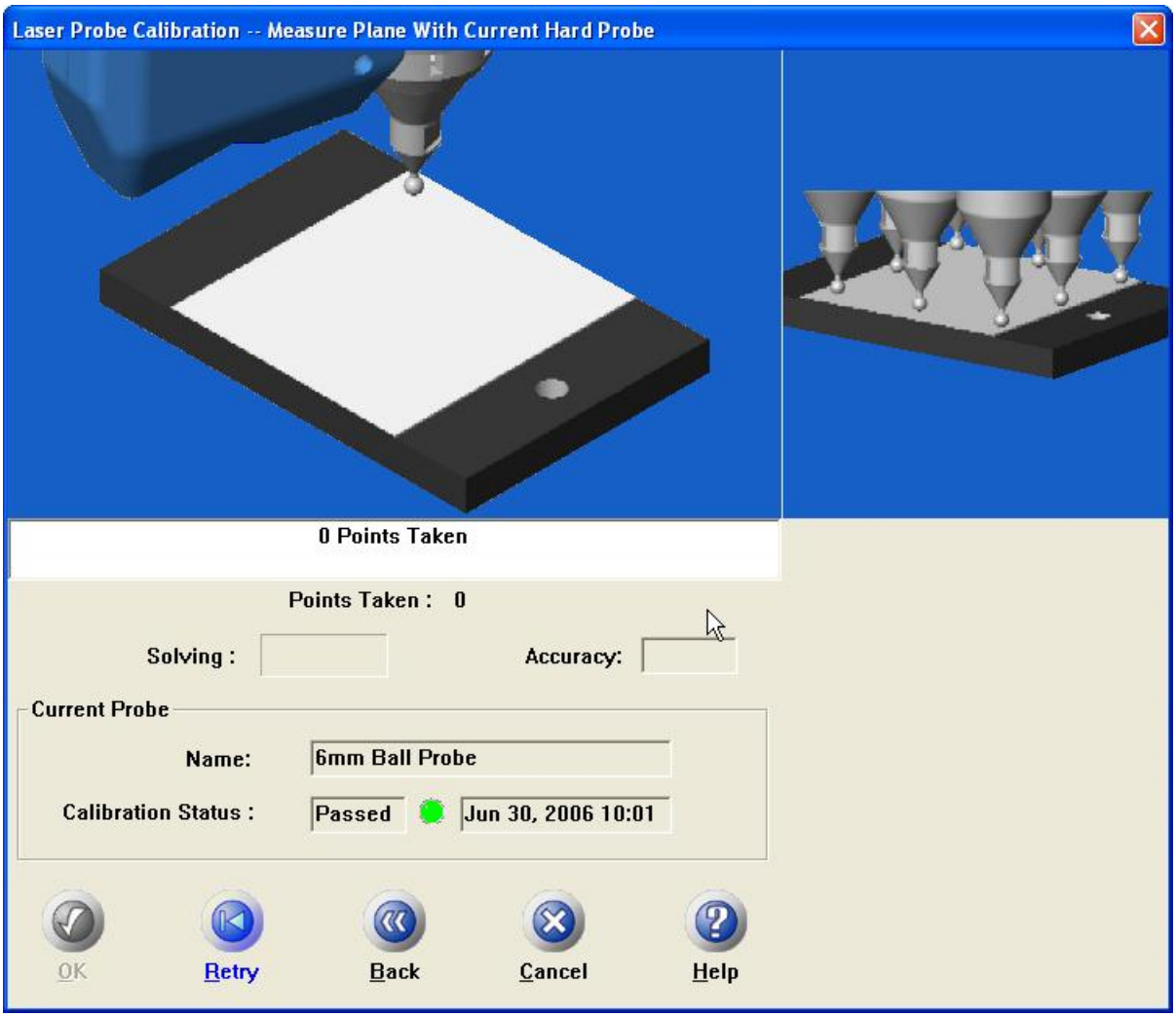


2. Select **Plane Calibration**.

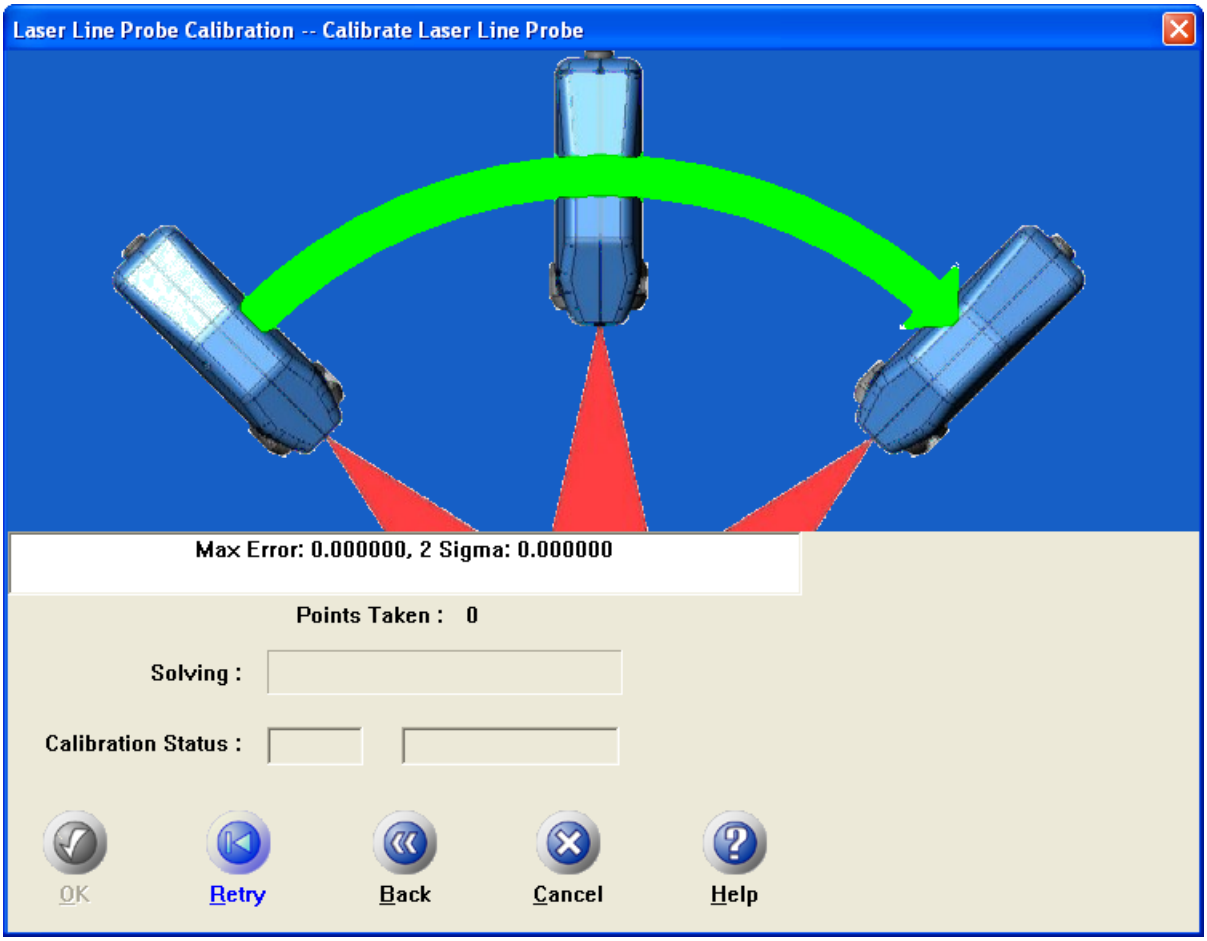
You are prompted to measure a plane:



3. Select the first option and click **OK**.
4. Define the Faro laser calibration plane using the ball probe, making sure to follow the on-screen prompts to measure the eight points needed to define the plane:

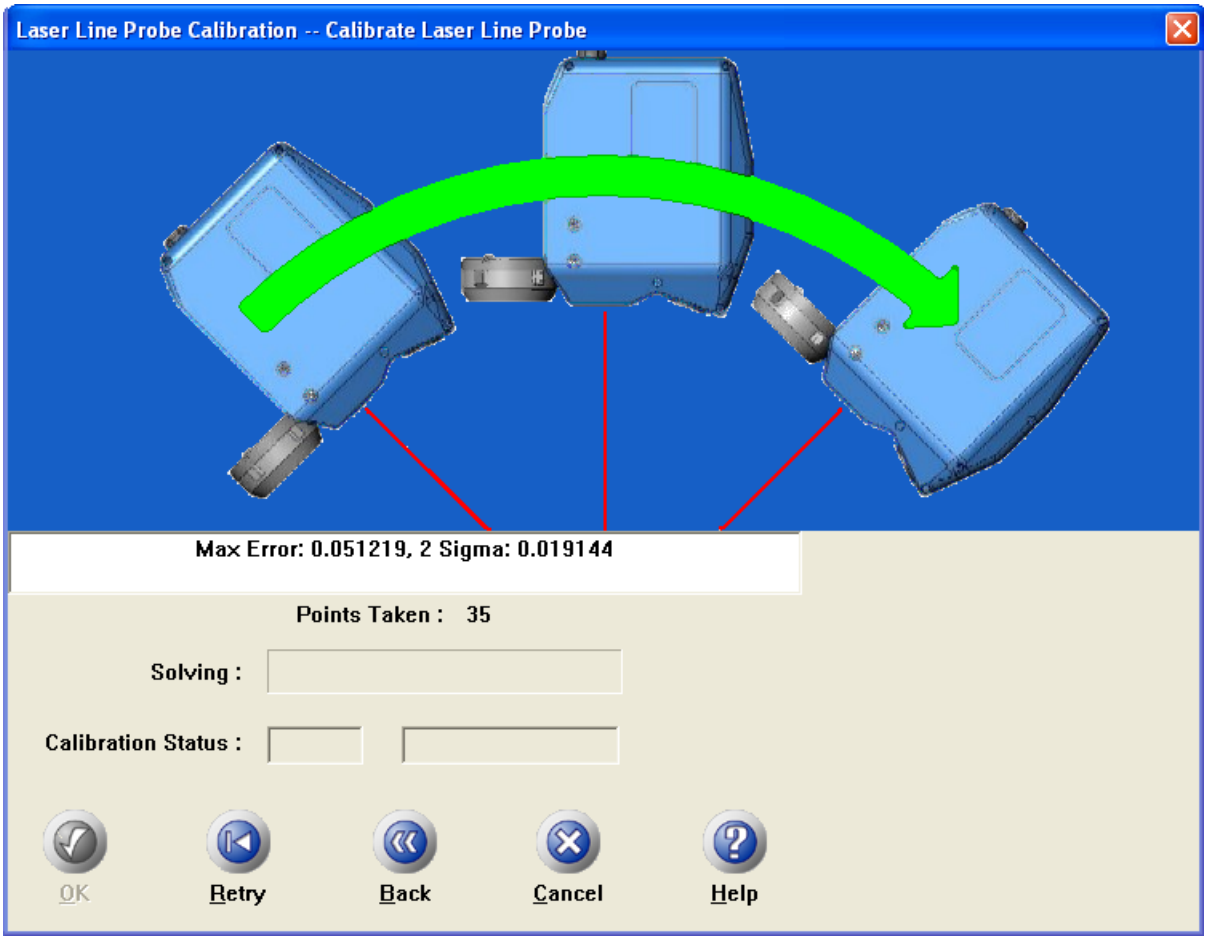


5. Once you have measured the eight points, press the red button on the arm.
6. Now measure the plane by holding the green button while moving the probe in accordance with the on-screen prompts:

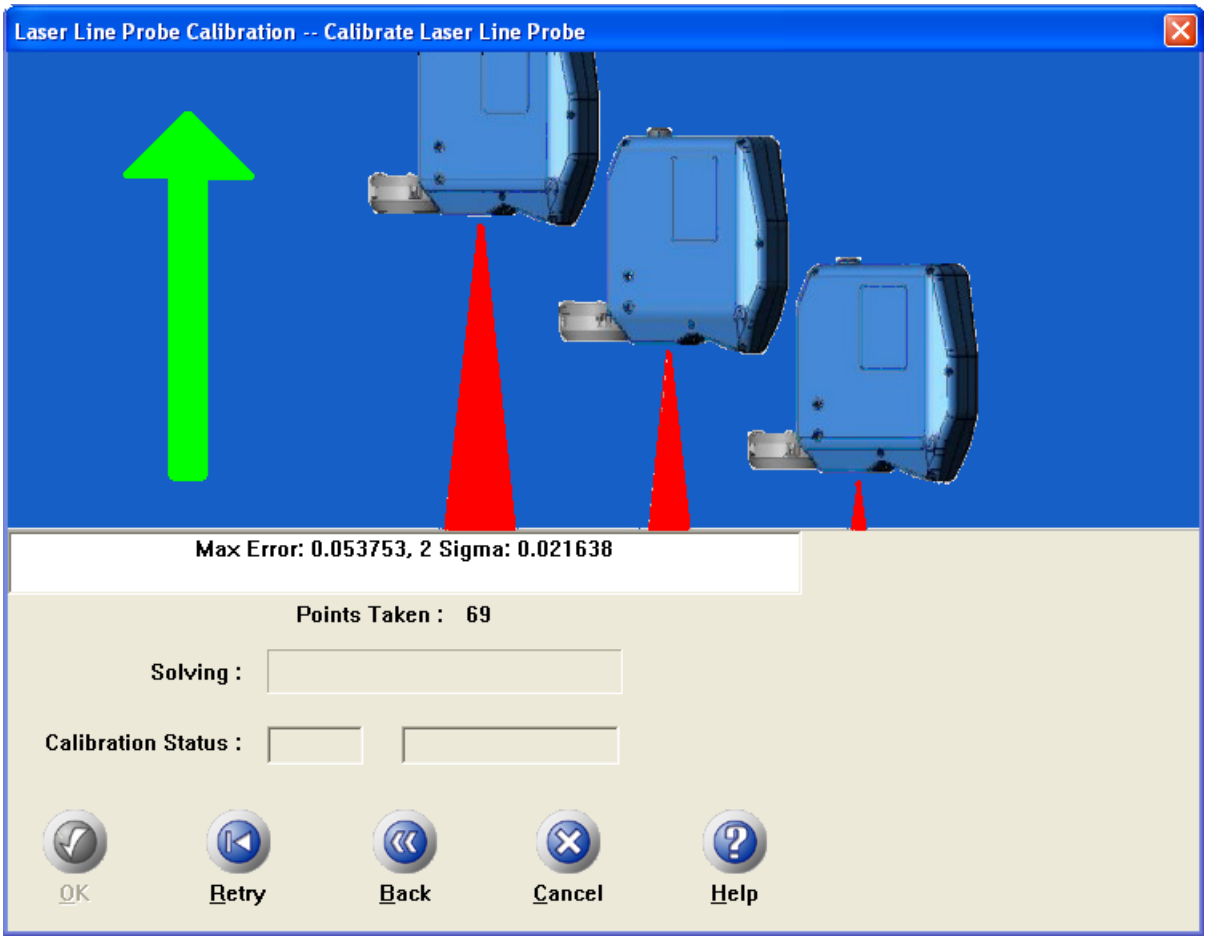


There is no need to press the red button, because, whenever you release the green button, the software will automatically move to the next screen.

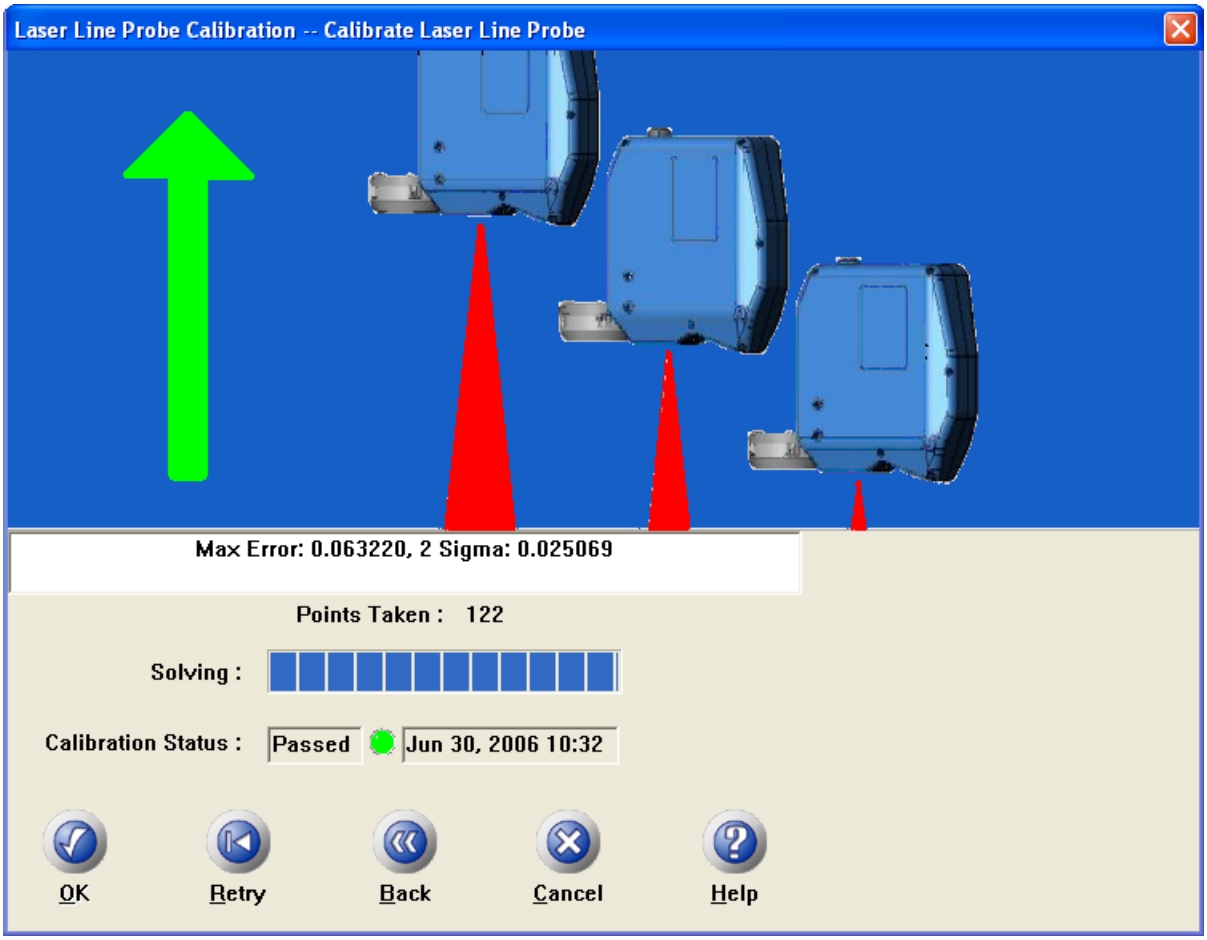
7. Take the initial measurements while you rotate the laser probe:



8. Take the next measurements while you move the laser away from the plane:



9. Once the 'away' movement is complete, click the red button to initiate the calibration:



10. If the calibration is successful, the **Calibration Status** shows as **Passed**, and you can click the **OK** button. If the **Calibration Status** is set to **Failed**, click **Retry** to restart the calibration of the plane.

Setting the scanning parameters

Setting the scanning parameters controls how the laser probe records point cloud data to Faro PowerINSPECT.

To access the parameters for the particular laser probe, you must first ensure that the laser probe is the active probe on the arm.

You set the parameters by clicking  on the **Machine** toolbar (see page 3) and then configuring them according to the type of feature being measured:

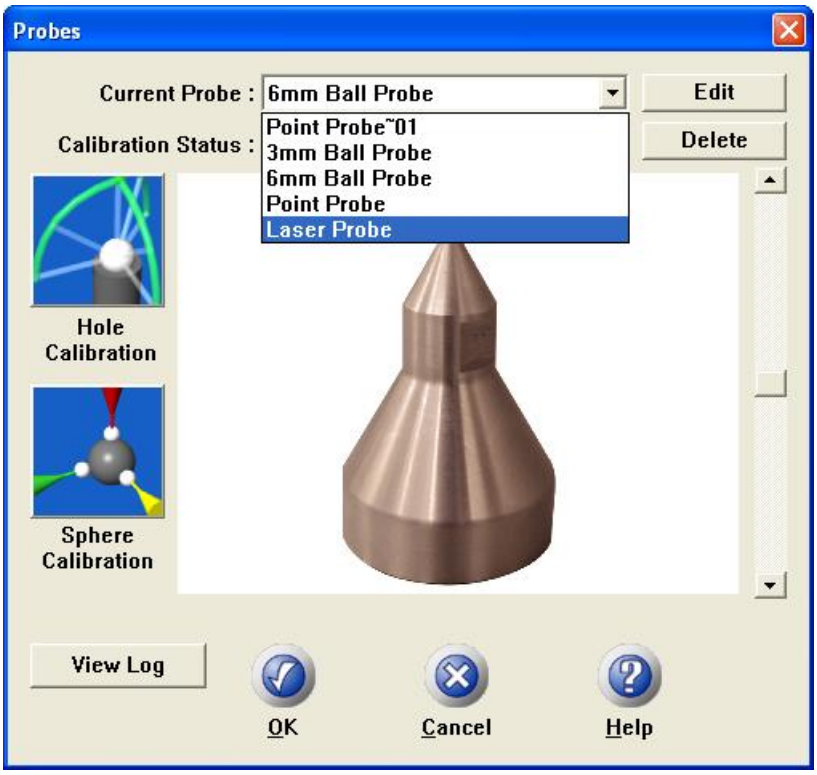
- when inspecting geometric features, you are advised to use unfiltered points (100% density):
- when inspecting surfaces, you are advised to use points filtered to approximately 25%.

 *Experiment with the settings to discover what works best for you.*

Configuring the parameters on a Faro laser line probe

1. Ensure that the laser probe is attached to the arm.

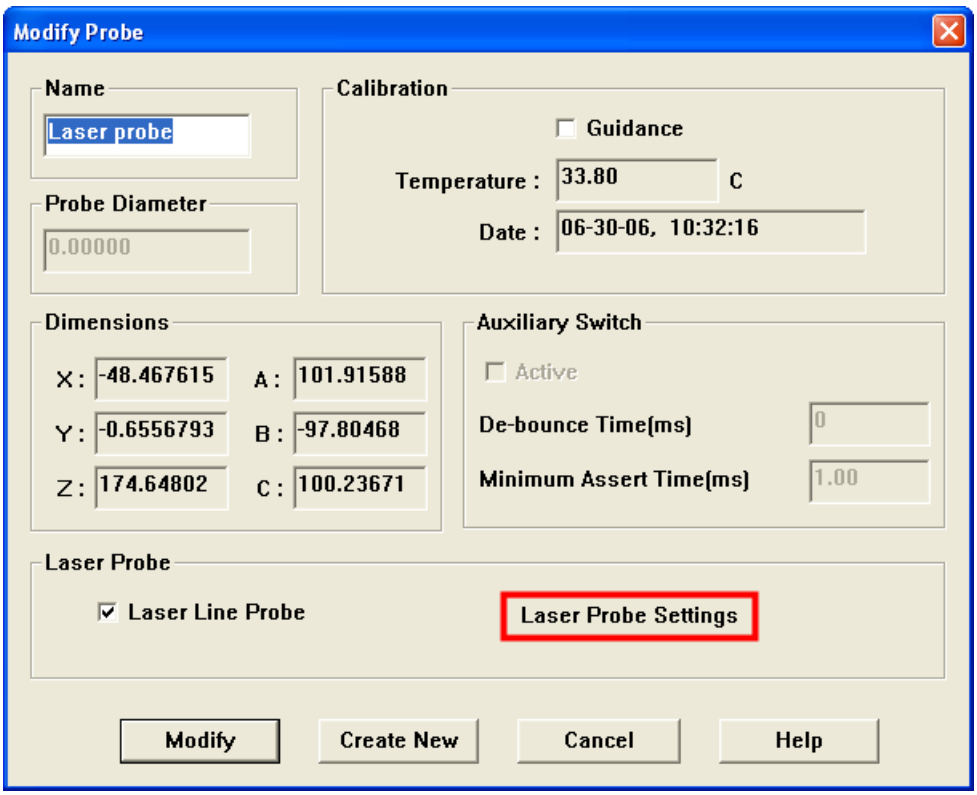
2. Click the **Change Probe**  button on the **Machine** toolbar (see page 3) to display the **Probes** dialog:



3. Select **Laser Probe** from the drop-down list box.

4. Click the **Edit** button in the subsequent **Laser Calibration** dialog:

5. The general settings for the probe are displayed:

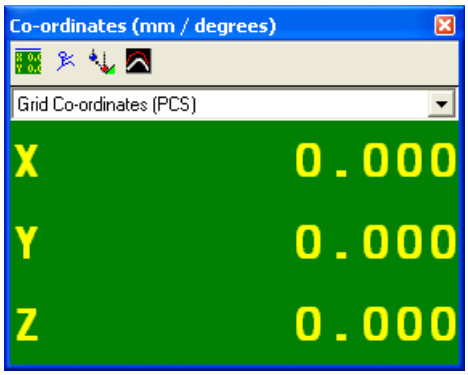


You will find the settings easier to calculate if you leave the ***Guidance*** *check box unticked, although the results will not be so accurate.*

6. Click the **Laser Probe Settings** button to raise the **Laser Line Probe Control** (see page 18) dialog:

Adjusting parameters during an inspection

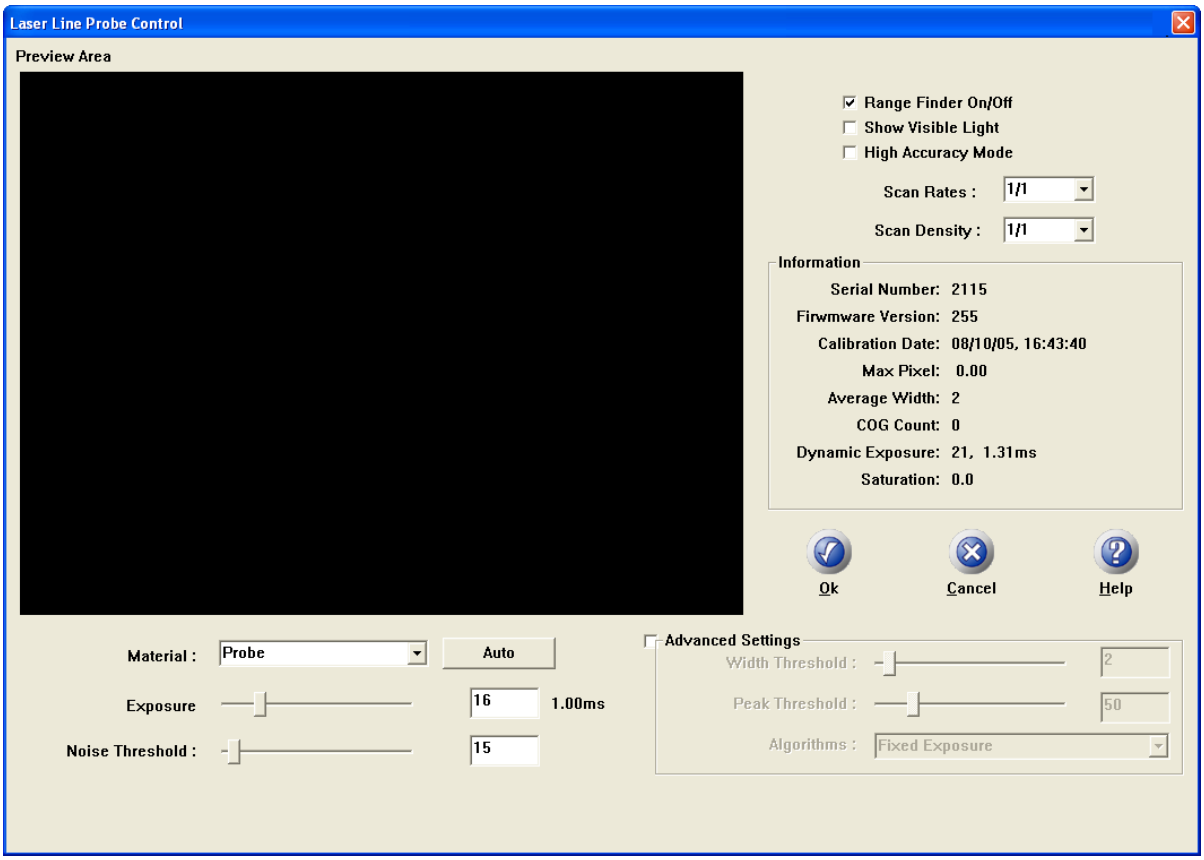
To adjust scanning parameters during an inspection session, click  on the **Machine** toolbar (see page 3) to display the **Co-ordinates** dialog:



Click to adjust the parameters.

Laser Line Probe Control dialog

Clicking the button on the **Co-ordinates** dialog (see page 17) displays the **Laser Line Probe Control** dialog.



*The **Scan Density** allows you to set how much of the data is retained.*

*You can also display the **Laser Line Probe Control** dialog if you right-click the **Delcam CMM Driver** icon in the Windows taskbar and then select **Scanner Control** from the pop-up menu.*