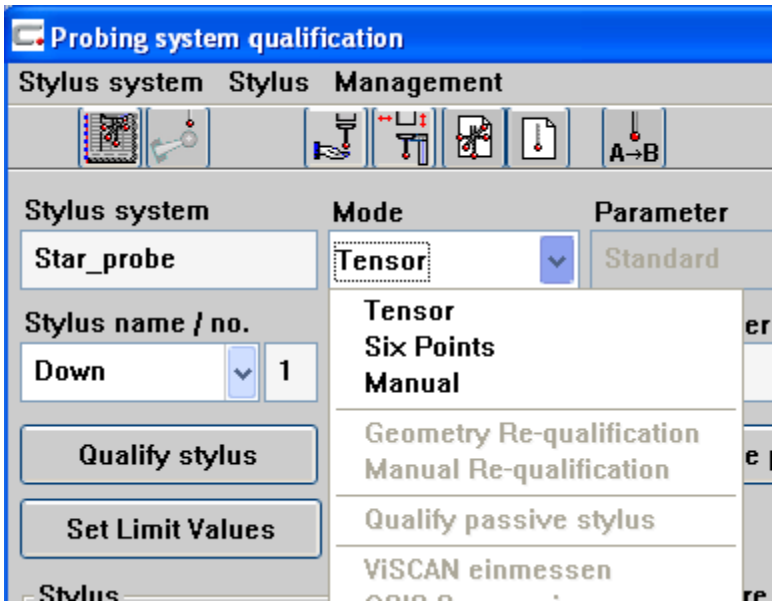
We make it visible.

CALYPSO Tip:
Stylus Qualification Methods (Part 2)

By Phil Adair, Applications Engineer
Download in PDF

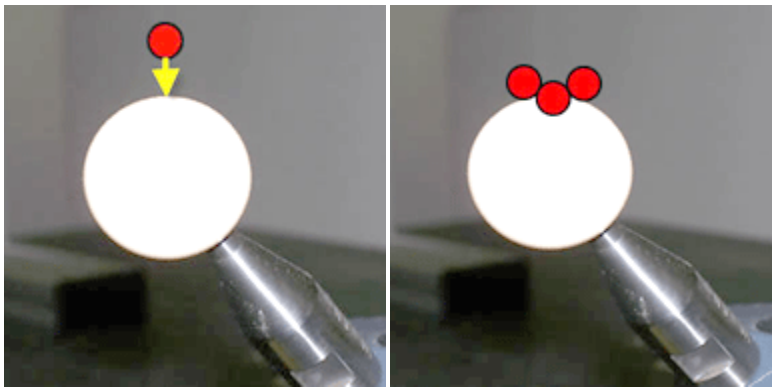
Let's examine some additional parameters available in the stylus system calibration in more detail. Several options for probing systems are available in CALYPSO, but the methods used for qualification can be narrowed to three.



Probing System Qualification

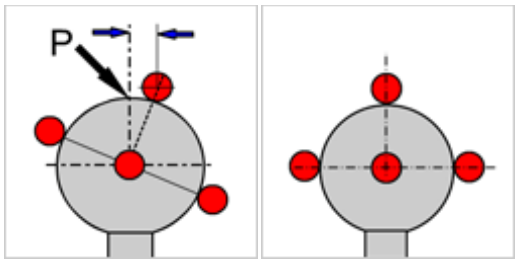
Six Point Method

With this method, the initial probe point is taken in the direction of the shaft. This is important for CALYPSO since it will use the point to define the orientation of the qualification probing pattern. CALYPSO uses it as a reference for the spacing of additional points to calculate the center of the sphere. It then compares the initial point with the center of the sphere. If the two are within an internal value, the measured points are accepted and a full set of measurements is taken.



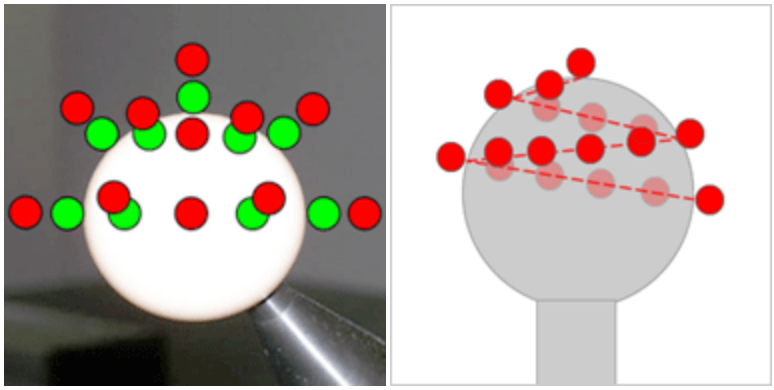
Initial Probe Point Additional Points

However, if the deviation is greater than the internal value, CALYPSO displays the amount of deviation and will want to know if the point should be moved. Leave the values alone (accepting the points "as is"), and the path will be measured at this reported tilt. Set the values to zero and the point will be retaken. If the position is moved, then the point will be retaken at the new position and the whole measurement of the sphere is done at this new location. Using this calculation of center, followed by movement, is more useful when the stylus system is at an angle. It is easier to let CALYPSO indicate how far off center the values are to guarantee accurate results.



Tensor Method

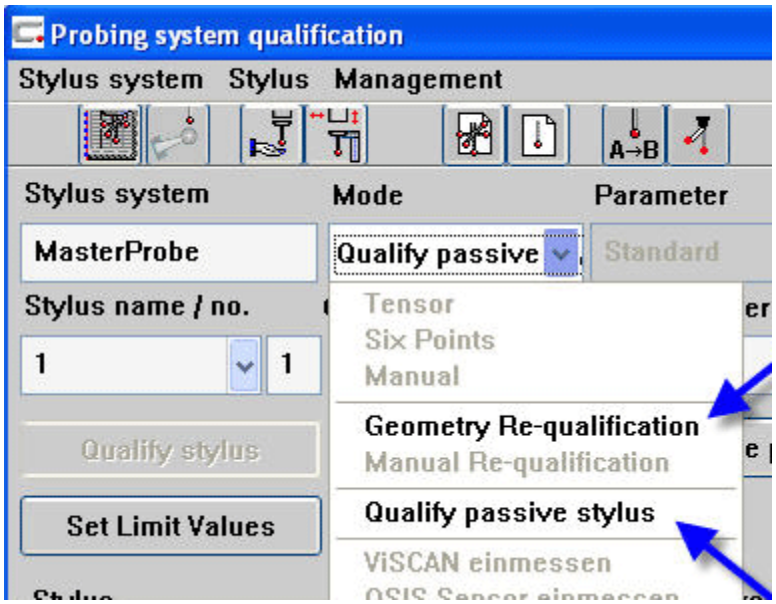
Tensor applies to scanning probe heads such as our VAST and High-speed scanning sensors. Like Six Point, Tensor has the out-of-position warning for the first point. But it measures more than the location of the stylus, it also measures rigidity—how much it deflects when measuring the surface. To calculate deflection, 15 points are measured with the stylus using two different levels of pressure. The tensor value is determined from the differences.



Tensor Method Passive Method

Passive Stylus Method

With the addition of the ZEISS XXT scanning stylus system, a new and enhanced qualification routine was added. It scans the sphere in multiple helical directions, taking thousands of points in order to provide dynamic compensation. Stored in a data file, this qualification is only required once and can be used for any positions added to the probe. Then, the Geometry Requalification function is used to correct for position (taking only six points).



Probing System Qualification