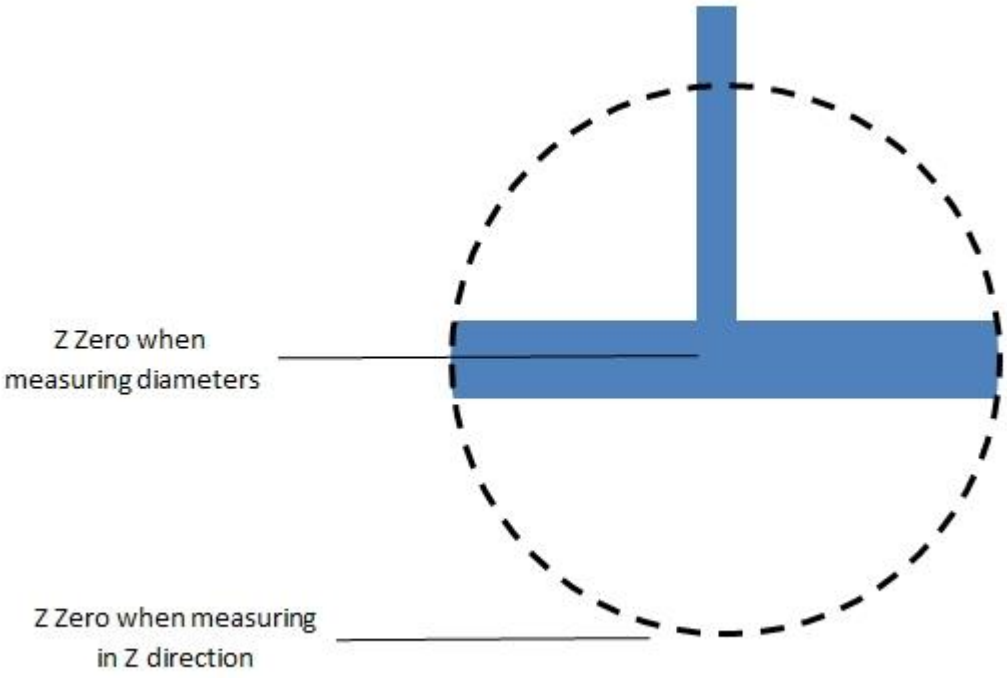
Creating Disc Probe for VAST-XXT

1) Create new Measurement Plan using ring gage on table with a hole larger than disc. Ideally, ring should be close to the size of the feature being measured.
2) Using an existing stylus system, create a new Base Alignment, using a cylinder on ID of ring gage for Spatial and XY origin and a point on top for Z Origin. Create Clearance Plane around ring gage. Run program in CNC mode.
3) Create Disc Stylus System by going into Stylus System Management, select an existing stylus system and clicking the Copy button. Select Geometry under newly created disc probe and edit Radius value to match disc probe. It doesn't need to be exact because adjustment will be made later. Click Apply..
4) Install new disc probe. Create a circle half way down ring gage. Edit circle X and Y nominal to zero. Edit diameter to match ring gage. Tick Tolerance checkboxes for X, Y and Dia. Also, create a Radius and Roundness characteristics. Tolerances should be set to satisfy tolerance of features, i.e. ±0.00005
5) After all characteristics have been created, go into strategy of circle and click Calculate button. This will adjust step width/# of points and speed to match tolerance level of characteristics.
6) Run program in CNC using Current Alignment and generate custom printout.
7) Open Stylus System Management screen, select Geometry under disc stylus system and edit X, Y and Radius values according to reported **deviations**. A common error is to edit value in wrong direction, in which case errors will double. In that case, go back to original qualification data and offset the data other way. It is helpful to document the values before you edit them in case you make an error to a value or delete it.
8) Re-execute Measurement Plan. Repeat process until report is all green. Expect to see variations in tens of millionths (0.0000X). Do not chase millionths (0.00000X).
9) Save program for future qualifications of this disc probe as there is no automatic qualification routines.
10) Additionally, Z origin of Disc probe will still be ball center of original Stylus System. To adjust this, take a point on top of ring gage. Reported Z value should equal disc radius minus ½ of disc thickness. For example, for a 0.500 diameter disc that is .080 thick, Z value of point on Z origin surface should read -0.210 (0.250-0.040=0.210). Note: Z value is negative. Adjust Z value in Stylus System Management screen until desired number is reached.
11) When checking depths with disc probe, it is better to create points and use Cartesian Distance rather than to rely on Z values of points.
12) See page 2


Z Zero when
measuring diameters
Z Zero when measuring
in Z direction