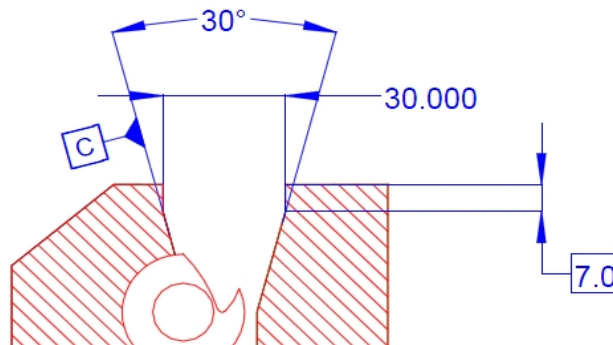
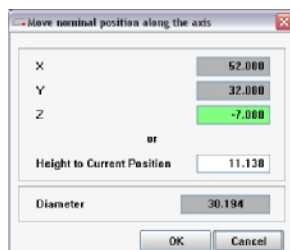
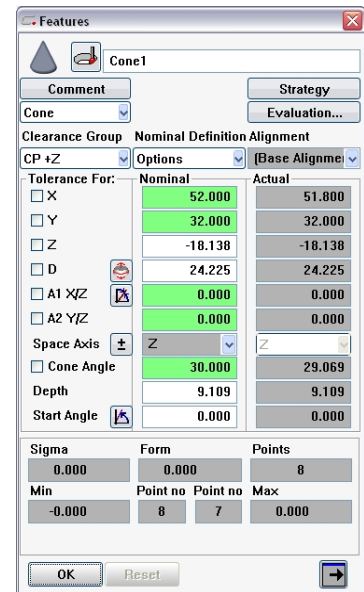


## Defining A Cone without a CAD Model

One difficulty with setting the nominals for a cone in Calypso is that the nominal diameter of the cone is specified at the origin point of the feature. Without a CAD model this origin point is typically arbitrary based on where you want to take measurements. Furthermore the part print usually only specifies the diameter at one location on the cone...which almost never matches the cone origin in Calypso. Luckily Calypso gives us a tool that allows us to use the information from the print to calculate the nominal diameter where we measured our cone. The print must give you at least the cone angle (or half angle) and the diameter at a specific location. The step by step directions below refer to the following print:




1. Select a stylus and take points on the cone. Make sure that Calypso recognized the feature as a cone. Click OK to the feature then re-open the cone. This will give us access to the Reset button without losing much if we make a mistake.
2. Enter all the nominals EXCEPT the diameter and the coordinate that matches the space axis. In this example the cone has a +Z space axis so we skip the Z nominal and enter X, Y, A1, A2, and the Cone Angle (green boxes on the right). The most critical are A1, A2, and the Cone Angle.
3. Write down the current value for the Z-nominal. This value is the location where we want to measure the cone based on our initial set of probing points. In this example the value is -18.138.
4. Click the icon to the left of the diameter (🔄). This brings up a dialog box that allows us to shift the reference point of the cone. Type in the location of the diameter given on the print. It is -7.0 in this example. Click OK. You will see that Calypso shifted the origin of the cone to a z-location of -7.0 and recalculated the diameter at the new location.



- The cone is now located at the same position specified on the print so we can type in the nominal diameter. In this example the value is 30.0.

<input type="checkbox"/> X	32.000	32.000
<input type="checkbox"/> Y	32.000	32.000
<input type="checkbox"/> Z	-7.000	-7.000
<input type="checkbox"/> D	30.000	30.000
<input type="checkbox"/> A1 X/Z	0.000	0.000

- Lastly we have to put the cone back to the original z-nominal (it more than likely cannot be measured where it is currently defined). Click the icon to the left of the diameter () and type in the original z-location that you wrote down in step 3. Click OK and Calypso will again recalculate the diameter for the new nominal z-location.

Move nominal position along the axis

X	52.000
Y	32.000
Z	-18.138

or

Height to Current Position: -11.138

Diameter: 24.031

OK Cancel

- The cone now has the correct nominals. Click OK to the feature and save your work. To report the diameter of the cone at the gage point, use Cone Calculations found in the Constructions menu.

Features

Cone1

Comment Strategy

Cone Evaluation...

Clearance Group Nominal Definition Alignment

CP +Z Options [Base Alignment]

Tolerance For:	Nominal	Actual
<input type="checkbox"/> X	52.000	52.001
<input type="checkbox"/> Y	32.000	31.998
<input type="checkbox"/> Z	-18.138	-18.138
<input type="checkbox"/> D	24.031	24.037
<input type="checkbox"/> A1 X/Z	0.000	-0.007
<input type="checkbox"/> A2 Y/Z	0.000	0.019
Space Axis	Z	Z
<input type="checkbox"/> Cone Angle	30.000	29.953
Depth	9.109	9.109
Start Angle	0.000	0.000

Sigma	Form	Points
0.028	0.106	1162
Min	Point no	Point no
-0.053	866	451
		Max
		0.053

OK Reset

Cone Addition

Cone Addition1 Comment

Alignment [Base Alignment]

Feature

Cone1

Diameter Definition  Position Definition

At L: -7.000

Referenced To

Cone Origin  Part Alignment

Or At:

Feature

Tolerance For:	Nominal	Actual
<input type="checkbox"/> X	52.000	51.999
<input type="checkbox"/> Y	32.000	32.002
<input type="checkbox"/> Z	-7.000	-7.000
<input type="checkbox"/> D	30.000	29.996

OK Reset