The RPS alignment is used with Datum Targets, like with castings. Normally, there would be 6 Datum Targets. 3 of these targets would control the Spatial Rotation and 1 degree of location. 2 of targets would control the Planar rotation and 1 degree of location. And the last point would control the last degree of location.

Assuming the part was prismatic and the Datum Targets were normal to X, Y and Z, you could place 6 Space Points near where Datum Targets belonged. Next, you would edit the nominal X, Y and Z locations per the drawing.
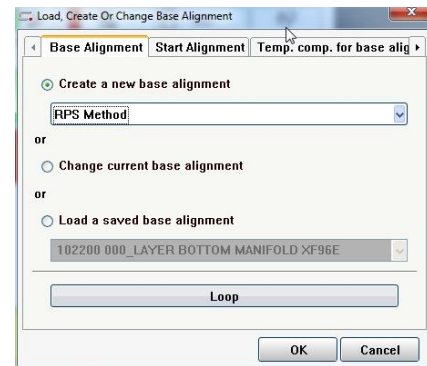
After you've created and defined all of the points, you will create the alignment.
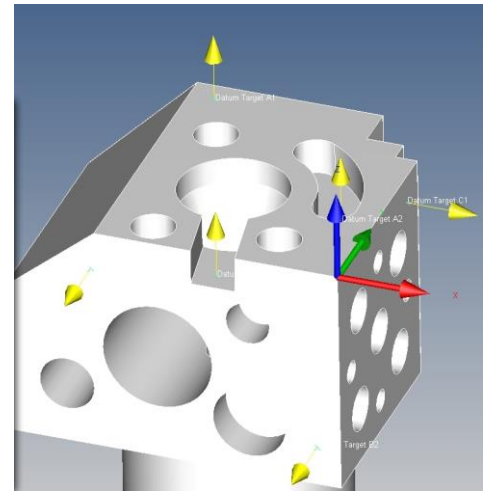
Click **Base/Start Alignment** button

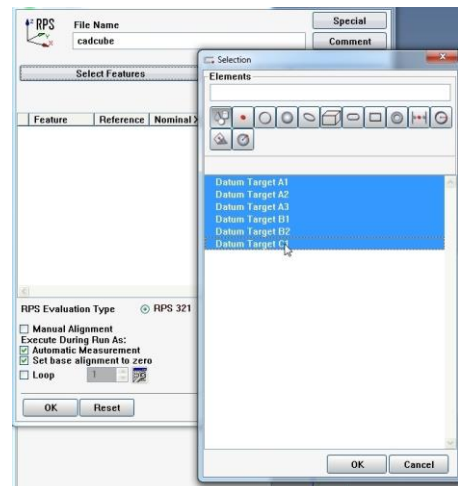Select **RPS Method** under **Create a new base alignment**

Click OK

Click "**Select Features**" button.

Select all 6 points.

Click OK

Tick Axis checkboxes for axis each point will be controlling, i.e. 3 Z, 2 X and 1 Y.

Note: Nominal locations can be edited here, too.

Feature	Reference	Nominal X	Nominal Y	Nominal Z	X	Y	Z
Datum Targe		-58.000000	71.000000	0.000000	☐	☐	☑
Datum Targe		15.000000	40.000000	-10.000000	☐	☐	☑
Datum Targe		-35.000000	5.000000	-10.000000	☐	☐	☑
Datum Targe		-65.000000	0.000000	-10.000000	☐	☑	☐
Datum Targe		-5.000000	0.000000	-50.000000	☐	☑	☐
Datum Targe		-0.000000	50.000000	-10.000000	☑	☐	☐

To create iterative alignment, tick "Loop" checkbox at bottom of alignment window

Select max number of times you want the alignment to loop. I find 3 to 5 is generally adequate but it depends on condition of part.

Click Loop icon
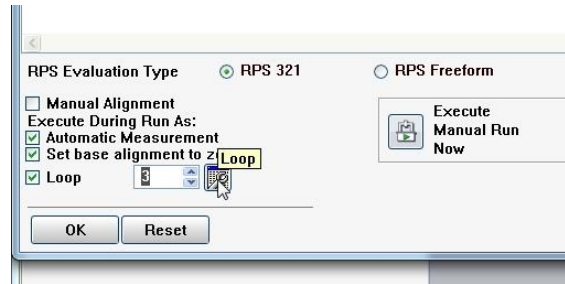
In **Break Condition** field, type following text exactly.
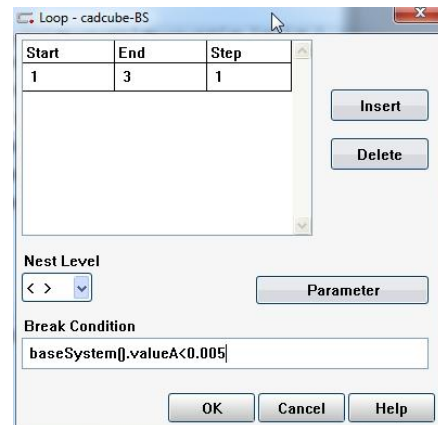
Syntax Matters!

baseSystem().valueA<0.005

or

baseSystem().valueA < 0.005

Spaces between between operands and word ok.

Leading zeroes required.   .005 will fail.

valueA is delta from previous alignment. When delta is less than 0.005, loop will stop and program will run. 0.005 is unit specific from Calypso 5.4 on. 5.2 and earlier, this number is metric. You need to set the value according to your needs. I chose 0.005 because I was thinking in Metric. If you're in Inch, use 0.0002 or whatever number gives you desired repeatability. The smaller the number, the more iterations that may be required.

If delta is not met after 3rd iteration of loop, program will still run.

To view the delta after every iteration of the alignment, turn on the Default Printout. This is done by going to Resources, then Define Printout. Select the Default printout tab and un-tick the Background checkbox. This will allow the default printout to appear during every step of the run and you'll see the Delta Value as it reduces with each iteration. This also provides live data after measuring every feature.

The 3d Best Fit alignment would be used for a part that does not use Datum Targets and allows you to use a number of points to do the Best Fit on the model. You'll want to put enough space points to control all 6 degrees of freedom.

If part contained Datum Targets or specific locations on contoured surfaces, i.e. mouse, airfoil, etc., which I don't think is common, you would have to use a 3d Best Fit Alignment. You could place Space Points but cannot edit nominal values as they will no longer be attached to surface and would no longer have correct vector. Vector would remain from original value, prior to editing.

However, there is a solution. If you go to CAD > Creating Features on the Create tab at the bottom, there a place where you can enter the nominal values of your points and Calypso will put Space Points on the surface at the location and with the vector of the surface. This assumes the model origin and the dimensions of the points were taken from the model. If the points were on the model, or can be added to the model, Calypso could extract these points correctly.

If using 3d Best Fit Alignment, you will be prompted to convert Space Points to Plane Points. This is the correct evaluation for the points.

Loop process is the same.