Adding a comment to display MMC used in a True Position Calculation

Requirement: PCM (optional software from Zeiss)

Objective:
When you report True Position with MMC Calypso adds the MMC allowance to the blueprint tolerance automatically. If you would like to report the blueprint tolerance and the MMC used in your true position characteristic separately follow these steps.

Method:
When MMC is allowed on the blueprint you may add the deviation of a diameter the amount it exceeds its smallest size.

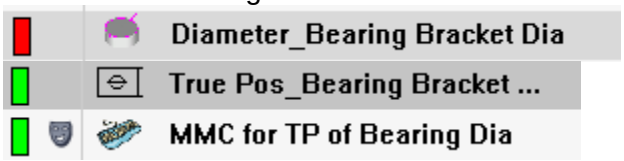
Below is a simple example

Blueprint callout for the Bearing Bracket Diameter 3.875 +/- 0.001
Blueprint True Position of 0.006

Dia at MMC	Allowable MMC	TP Tolerance
3.874	0.000	0.006
3.875	0.001	0.007
3.876	0.002	0.008

Note: If the diameter is undersized and is below 3.874 there is no allowable MMC

Create the following. Your diameter characteristic, the true position, and a Result Element

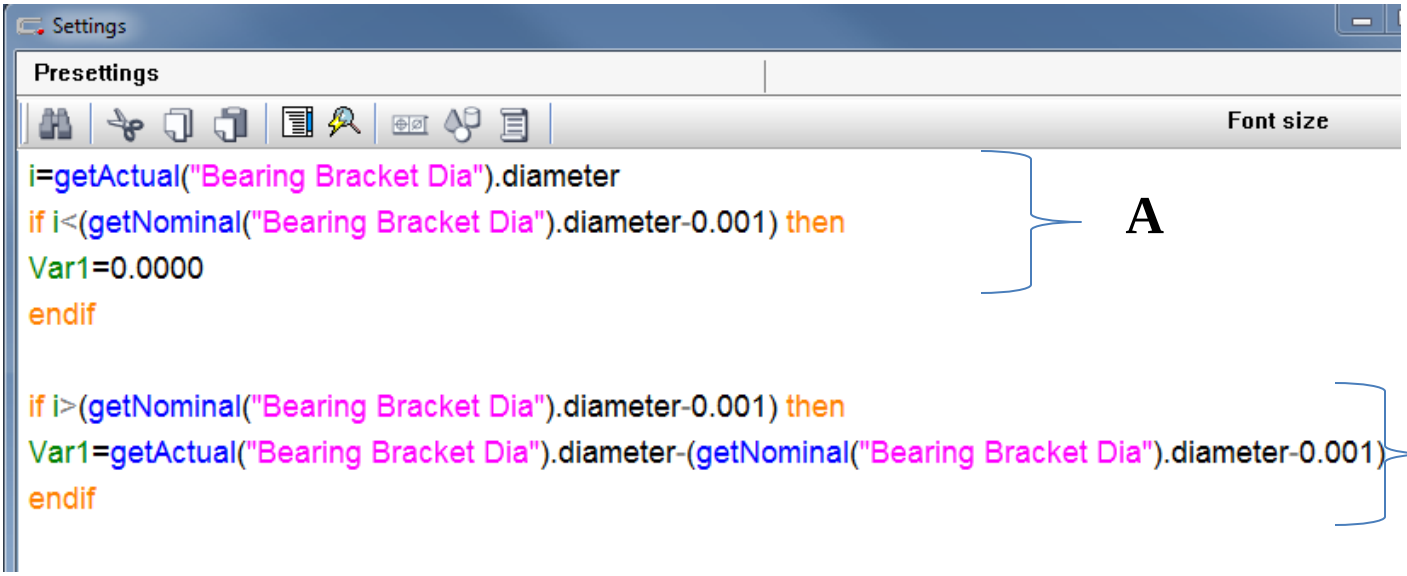


Step 1: Create a Result Element Presetting Parameter

We will make this out so it will not show up on the printout.

Now right click and choose Parameter.

In the presetting type the following



A

First we will determine if we have any allowable MMC. This will test if the actual hole size is below the minimum hole size. We already have a clue with the diameter characteristic being red, it could be undersize or oversize, both being outside the allowable tolerance.

```
i=getActual("Bearing Bracket Dia").diameter
```

Substitute with the name of your Diameter Characteristic

```
if i<(getNominal("Bearing Bracket Dia").diameter-0.001) then
Var1=0.0000
endif
```

This next line takes the result of the line above and names it i

If i is less than the result of the nominal minus the lower tolerance

Then

Var1 = 0.000 (no allowable MMC)

B

```
if i>(getNominal("Bearing Bracket Dia").diameter-0.001) then
Var1=getActual("Bearing Bracket Dia").diameter-
(getNominal("Bearing Bracket Dia").diameter-0.001)
endif
```

This next line takes the result of the first line above and names it i

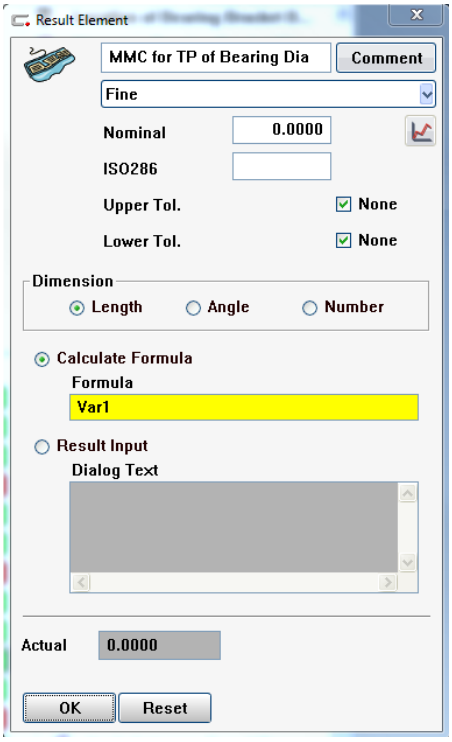
If i is greater than the result of the nominal minus the lower tolerance

Then

Var1 = the actual of the diameter and subtracts the nominal of the diameter at lower limit

The result is your MMC

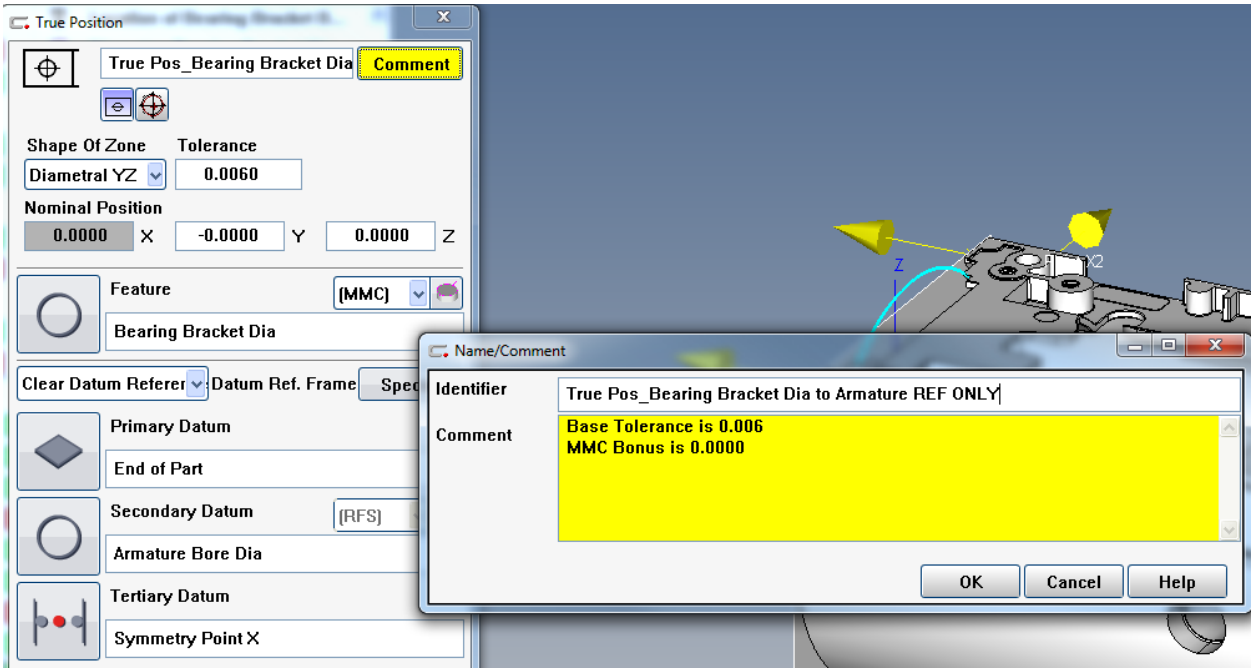
Step 2: Finish with the Result Element



No need to tolerance this result. It is masked and we just need the actual result.

Right click on the Formula bar and select Formula. Type in Var1

Step 3: True Position Characteristic



Be sure to add the MMC on the feature. Click on Comment

Add this to your formula

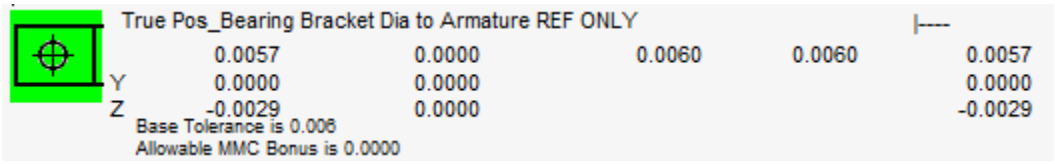
"Base Tolerance is 0.006" +cr()+"Allowable MMC Bonus is " +formatL(getActual("MMC for TP of Bearing Dia").actual,0,4)

The base or blueprint tolerance is 0.006 plus add a cr() or carriage return, starts a new line. Start the new line with MMC Bonus is

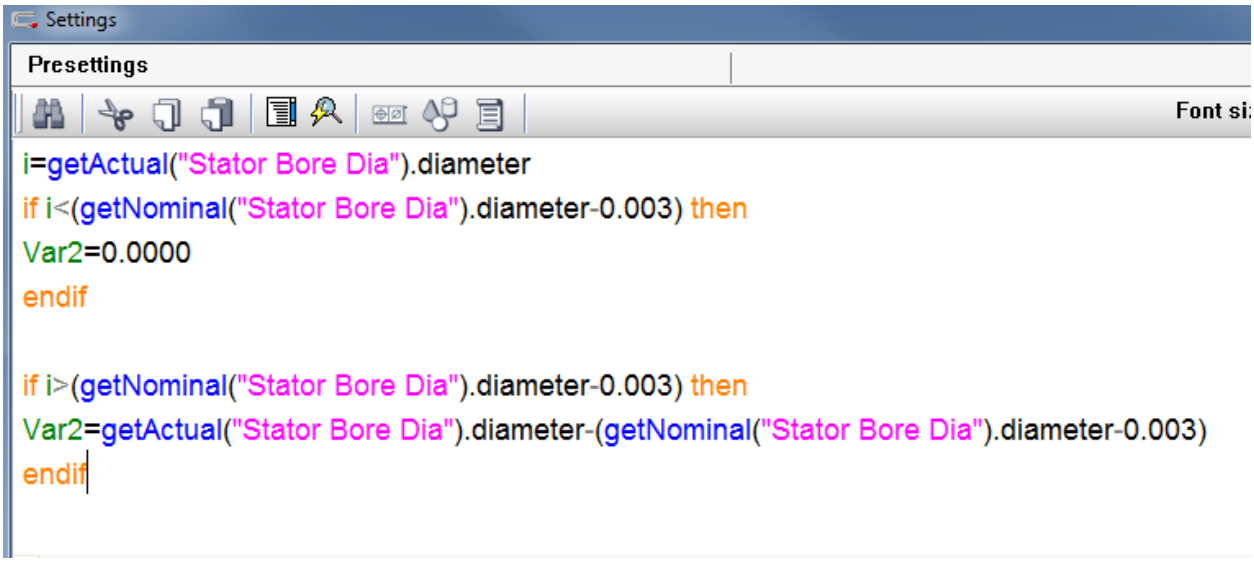
Now the format line justifies the new line to the left hence formatL

Here you will get the actual of the Result element. Make sure you type in the name of your result element correctly. This will get the Var1 of our conditional statement. Next is the amount of decimal places to be displayed.

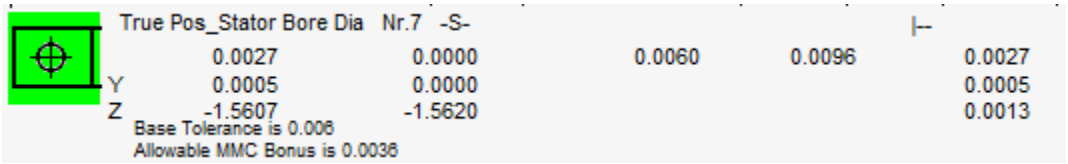
Here is the report. In this example the diameter was undersized and therefore no MMC is allowable.



Here is an example of a diameter that has a 3.199 +/-0.003 diameter callout.



The actual is 3.1996 minus the diameter at low limit (3.196) = 0.0036



Copy to Additional True Position Callouts

Make sure if you copy this to other true positions that you:

1) Change the lower limit tolerance in the parameters for the diameter per the blueprint
2) Change the Var names from Var1 to Var2, Var3, etc. so you won't overwrite the previous variable.