



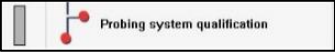
Why create a Probe Qualification program?

- 1) It is easier to set up a regular calibration interval of all Stylus System with a program (**Monday morning at start of shift, clean all Stylus Systems and the Reference Sphere, then run the Probe Qualification Program**).
- 2) Sometimes an RDS Stylus System accumulates many different stylus positions that are used for different programs. To save the time it would take to qualify all stylus positions, when for any given job you may only need a few, you can set up a Probe Qualification Program to address only selected styli.
- 3) If you have an XXT head, the automatic probe qualification  CNC Probing System Qualification that is available in the  Probing System Qualification window, uses the more time-consuming “Qualify passive stylus” (scanning) method. To get a Stylus System qualified with the quicker “Geometry Re-qualification” method, a Probe Qualification Program works well.

Note: Best Practice for increased accuracy for the XXT head is to do Geometry Re-qualification in your Weekly or Daily Calibration programs and at least once a month do a Qualify passive stylus Calibration.

Creating a Probe Qualification Program:

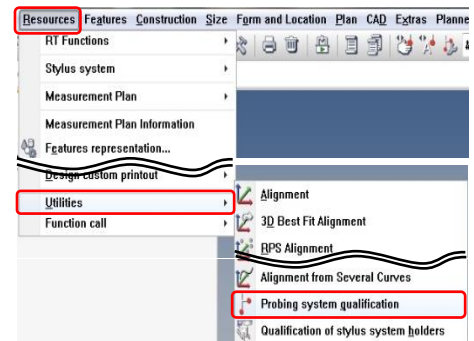
To start, select Create New Measurement Plan (**DO NOT use the Template Program, features turned on in the template program may give you errors.**) then from the drop down menus go to **Resources/Utilities/Probing system**

qualification this will place  into the Characteristic Tab. Repeat until you have enough for all the Stylus Systems you want to calibrate.

Do not forget to save your program. Here are some generic name conventions you may wish to consider.

For a scheduled Probe Qualification Program: **01 Monthly CAL, 01 Weekly CAL, or 01 Daily CAL.**

For a part specific Probe Qualification Program: **Stylus Cal for PN 12345 or Stylus Cal for RGL job.**

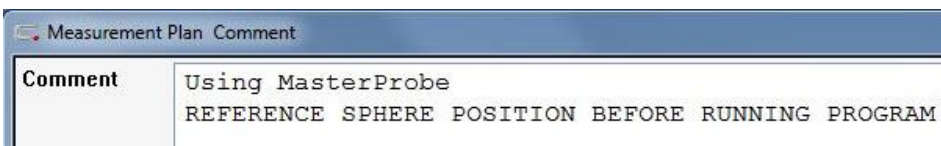


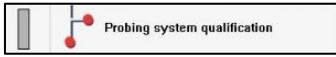
When do you add a Probing System Qualification characteristic for MasterProbe?

If the reference Sphere is in the same rotation (angle) and location every time (the Reference Sphere never moves or there is some kind of Fixture that mounts it in the same location every time). Place a Probing System Qualification characteristic for MasterProbe at the beginning of the program to re-qualify Sphere location.

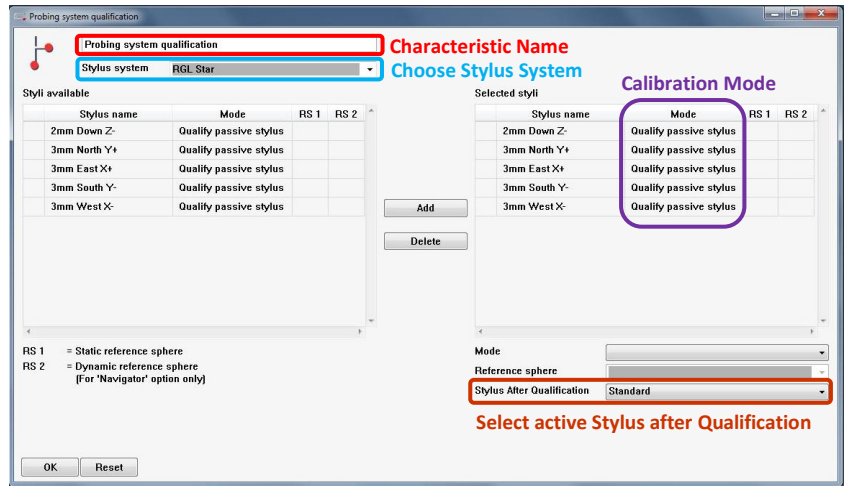
When do you **NOT** add a Probing System Qualification characteristic for MasterProbe?



If the Reference Sphere gets taken on and off the CMM and has no way of getting placed in the same location with the same rotation (angle) every time you need to Reference Sphere Position manually every time. Add a Measurement Plan Comment (**Resources/Measurement Plan Comment**) to the program to remind the operator to reference sphere position before running the program.

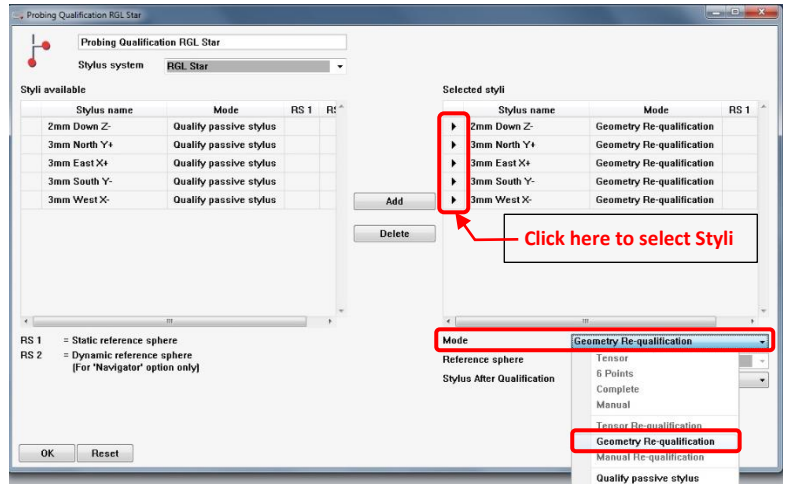




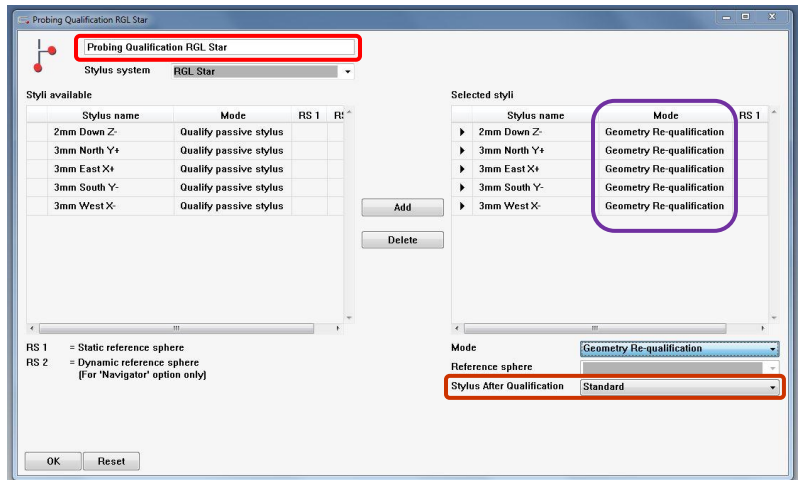
Open the characteristic, the Probing System Qualification window opens up. Notice that whatever Stylus System was attached is the Stylus System that shows up when you open the window. From this window we can rename the characteristic, chose a different Stylus System, add, delete, change the Calibration Mode and even select the active Stylus after qualification.




For this example we are going to change the Calibration Mode from the slower Qualify passive stylus to the faster Geometry Re-qualification. To do this, select all the styli from the **Selected styli** section, (remember that **Shift** selects a group and **Ctrl** chooses one at a time) a  will be placed next to the Stylus name now from the Mode drop down , at the bottom of the window, select Geometry Re-qualification.

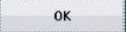


Here is an example of a modified Probing System Qualification. The name has been changed and the calibration Mode has been changed to Geometry Re-qualification. These are the typical settings for an XXT head regular (weekly) calibration. Repeat for all Stylus Systems you wish to calibrate.





Stylus After Qualification drop down : When you select the Stylus After Qualification drop down all the available styli appear. Choosing one of these becomes the tip that is activated after the calibration is finished.


NOTE: The Standard selection is the Stylus that was active when you selected

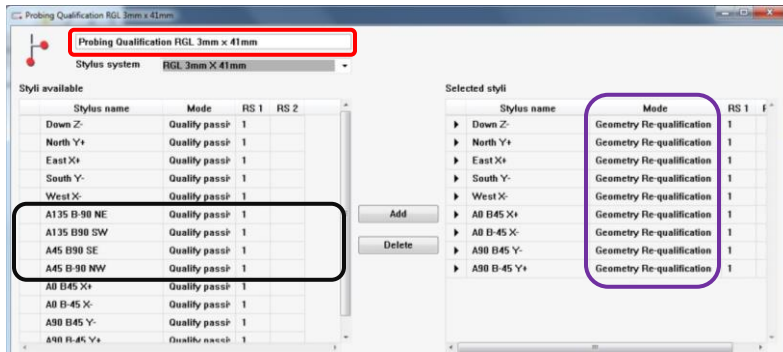
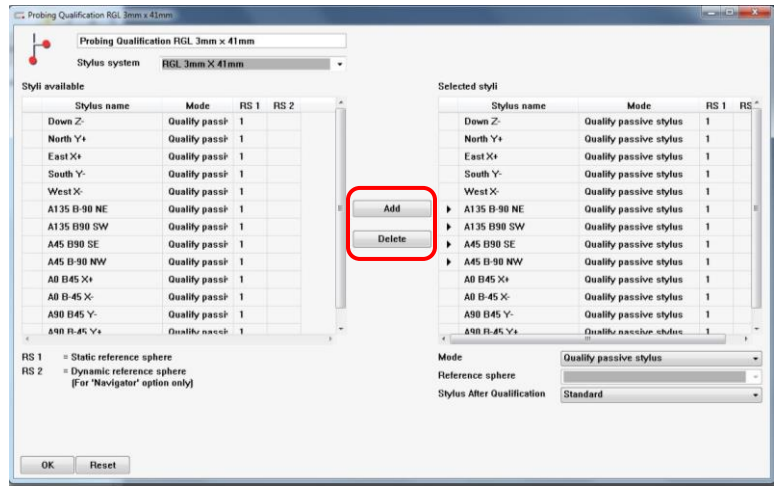
 Accept and Close in the Probing System Qualification Window.

This feature can be very useful if you have a probe qualification inside of a part program, you can leave it at the desired rotation to check the next feature.



To remove styli from the **Selected styli** List, that we may no longer need, select what stylus or styli you want to remove from the **Selected styli** List, (remember that **Shift** selects a group and **Ctrl** chooses one at a time) a  will be placed next to the stylus name now select  to remove it from the **Selected styli** list.

Note: You can add styli back to the **Selected styli** List using the same method, select styli in **Styli available** List and select  to move to **Selected styli** List.



EXAMPLE

Renamed the characteristic



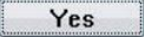
- Removed four styli
- A135 B-90 NE**
- A135 B90 SW**
- A45 B90 SE**
- A45 B-90 NW**

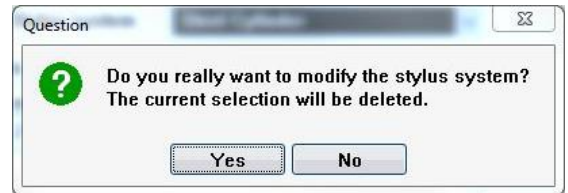
changed the Calibration Mode to Geometry Re-qualification.

NOTE:



just moves styli between **Styli available** and **Selected styli**.

Stylus system drop down : When you select the **Stylus system** drop down  all available Stylus Systems are listed, select the correct Stylus System. When you select the new Stylus System a Question window opens, select  it just deletes the Stylus System from the Probe System Qualification characteristic, not the CMM, and replaces it with the new Stylus System.

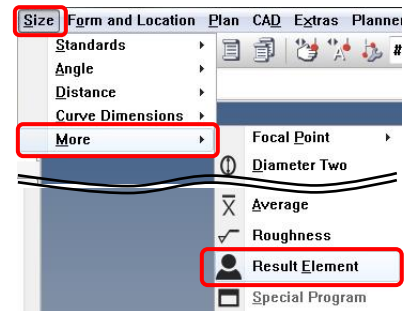


(OPTIONAL) Extra Results for Probe Qualification Program:

If you need your results to go to a table file (or QC Calc) or just want the data to show up on the Printout we need to insert a Result Element for each Styli. From the drop down menu select **Size/More/Result Element** this will insert



into the Characteristic Tab.



Before we continue lets understand the formula.

IMPORTANT: When using formulas you need to be very aware of upper and lower case letters, spaces, parenthesis, quotations and comma locations, and you must use the **EXACT** name of the Stylus and Stylus System.

Here is the standard formula for getting Stylus (Probe) information.

```
getProbe("stylus name","stylus system name").stdProbeDev
```

getProbe is the function

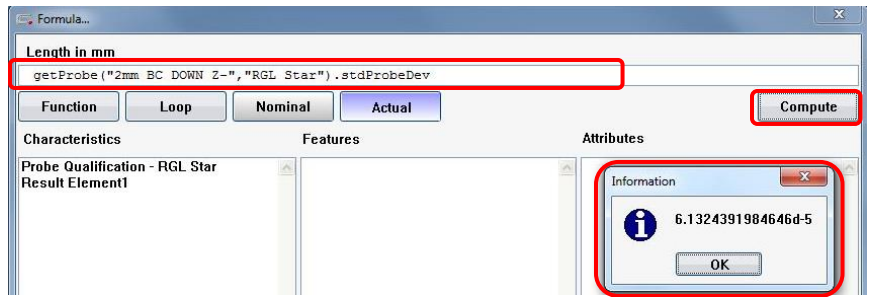
stylus name is the name of the Stylus you want the information about

stylus system name is the name of the Stylus System that contains the **stylus name** you want the information about

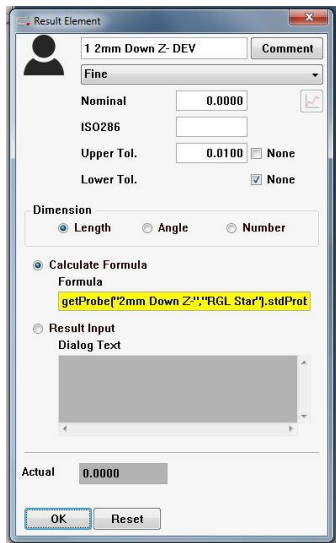
stdProbeDev is what data (deviation of calibration) about the Stylus you will get

Here is an example of the getProbe formula with **Compute** selected to display the formula calculation. **If you get 9999 or nil in the Information window the formula is incorrect.**

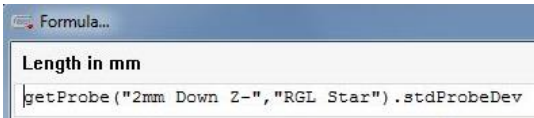
Other information for the probe is available, here is a couple of popular ones.
.diameter – Stylus Diameter
.radius – Stylus Radius



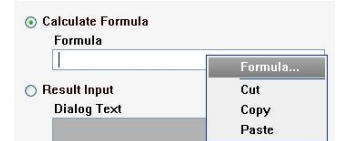
Creating the Results Element for a Probe Qualification Program:



Open the **Result Element1** characteristic, the Result Element window opens up.



Right click in the Formula bar and choose formula.



The Formula window will open up. In the area provided type in your formula, in this example,

`getProbe("2mm Down Z-","RGL Star").stdProbeDev` now select **Compute** to see the result.

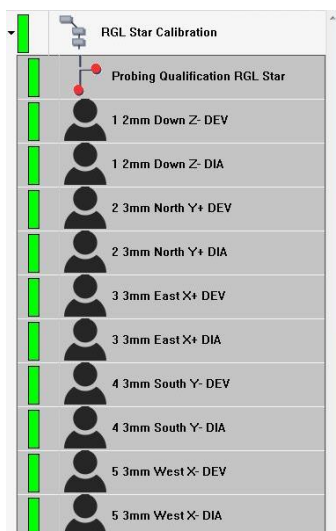
Now select **OK** in the Information window. If the result was not correct fix the formula and compute again until you get the proper result. In the Result Element window do not forget to rename the characteristic, add nominal data (if required), and add tolerances. When the Result element is finished select **OK** to finish creating the characteristic. Repeat this process for all Styli and Stylus Systems and any addition information about the Stylus you may want, like Probe Diameter. The advantage of using the Formula window instead of just typing in the formula in the Result Element is that you

can calculate the result by selecting **Compute** to see if your formula has any errors in it.

NOTE 1: If you want the Program Qualification Program to output in *inches* your formula needs to be:
`(getProbe("2mm Down Z-","RGL Star").stdProbeDev)/25.4`

NOTE 2: If you plan to send the results to a table file, remember to click the table file checkbox in your Run Screen. If it is grayed out, go to **Resources/Results to File** and either turn table file on, or make it selectable at CNC start. **See Optional Template Measurement Plan section in the RGL Calypso Fast Start Guide for additional help.**

Helpful Hint for "cleaning up" a Probe Qualification Program with Result Elements:





A Probe Qualification Program with Result Elements is a great place to use Calypso's Group function. In this example we have all the characteristics for the RGL Star. This program is reporting the deviation of the calibration and the stylus diameter for all five Styli of the RGL Star Stylus System. To "clean up" the characteristic tab we can use the Group function. First highlight the characteristics (**remember that Shift selects a group and Ctrl chooses one at a time**) you want in the group (shown in picture to the left), then

right click and select **Form group** this will create one group for all the characteristics highlighted.

The new Group characteristic (renamed RGL Star Calibration) will look like this , one line containing all eleven

characteristics. Select to expand and to collapse the Group as needed. Repeat for all the Stylus Systems.

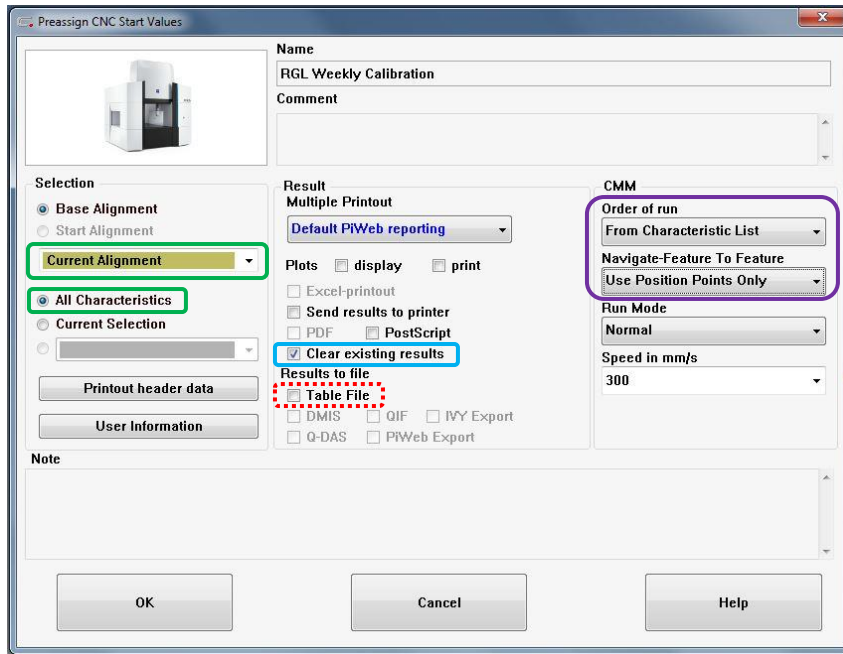
Running a Probe Qualification Program

When the program is finished select  from the Toolbar or  from the bottom of the Feature or Characteristic Tabs to get to the Start Measurement window. With a Probe Qualification Program the settings in this window are different than a normal Part Program.

Selection
select **Current Alignment** and **All Characteristics**

Results
Check **Clear existing results** to get new Stylus System data

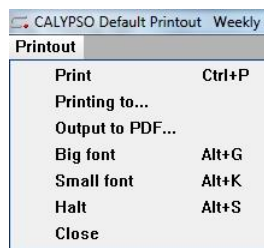
Optional see Extra Results section
select **Table File** if needed and only if you have added Result Elements.



CMM
Order of run change drop down to **From Characteristic List** because there are **NO Features**.
Navigate-Feature To Feature change drop down to **Use Position Points Only**

Viewing results WITHOUT the optional extra results:

After the program has finished running select **View/Default Printout** from the drop down menus to see your data. The printout gives you all the information about the calibration. From here, you can go to the **Printout** drop down and save the results to a file (Output to PDF...) or print if you wish.



Probe Qualification - RGL Star

Stylus qualification result : RGL Star

No.	Stylus	Mode	X,Y,Z	R	S	Date
1	2mm BC DOWN Z-	R	X: 0.0070 Y: 0.0875 Z: -55.4706	0.9999	0.0001	7/7/15 3:33:17 pm
2	3mm x 21mm NORTH Y+	R	X: -0.0365 Y: 35.6411 Z: -21.7587	1.4989	0.0001	7/7/15 3:33:37 pm
3	3mm X 21mm EAST X+	R	X: 35.9897 Y: 0.0572 Z: -21.9529	1.4999	0.0001	7/7/15 3:33:58 pm
4	3mm X 21mm SOUTH Y-	R	X: 0.0964 Y: -35.9813 Z: -22.0140	1.4997	0.0002	7/7/15 3:34:20 pm
5	3mm x 21mm WEST X-	R	X: -36.0101 Y: -0.0276 Z: -21.8662	1.4999	0.0004	7/7/15 3:34:40 pm