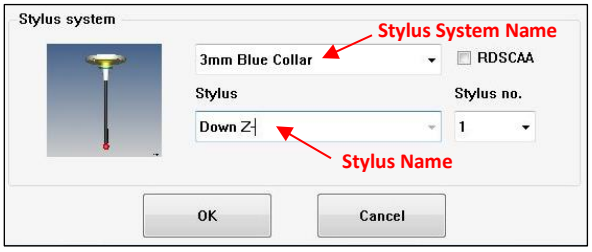
Creating Stylus List for RDS Stylus System

Why create a RDS Stylus System from a list? It is faster and easier to create and calibrate a RDS Stylus System from a list than creating and calibrating each Styli (rotations) individually. With Calypso it is also easy to create and update RDS Stylus Systems that have similar Styli (rotations) to each other.

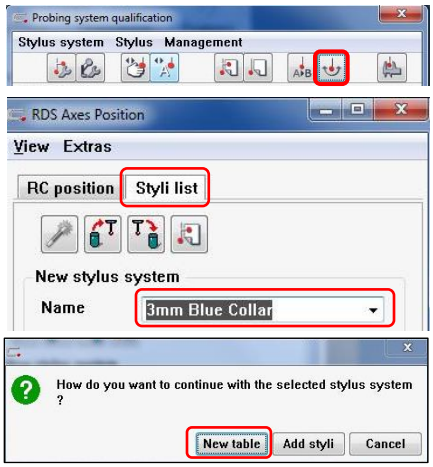
For this guide Reference Sphere Position is assumed to be completed!

New Table: Create all styli from a new table (blank page), all additional styli names and rotations are added to the table.

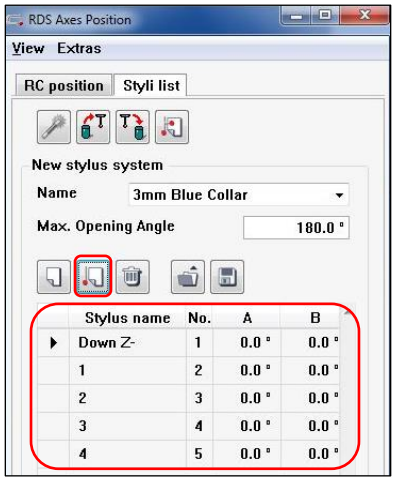
To create a new Stylus System attach a Stylus System (just a Down Z-Stylus, **NO** Star Probes) to the head (at A0 B0) and select Manual Stylus System Change then select Pick Up a Stylus System and select New. Name the Stylus System and Stylus (Down Z-) in the bottom section of the window.



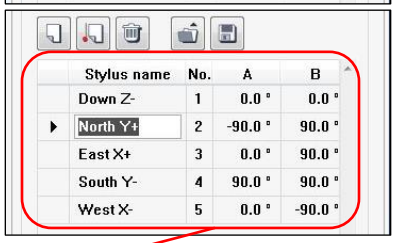
If the Probe System Qualification window is not open, select CMM CMM Tab and then Probe System Qualification to open it.



To create the list select Rotate Stylus to New Position and select the Styli List tab, in the RDS Axes Position window. Make sure the newly created Stylus System name is displayed. If the Stylus System Name needs to be changed use the drop down and select the newly created Stylus System. In the new window that opens, select **New Table**.



This example we will create the five main Styli (Z-, Y+, X+, Y-, and X-). Select Inserts a New Stylus in the List four times to add four more Styli to the list for a total of five. Next add the Stylus Names and A B angles to the list (see chart below).

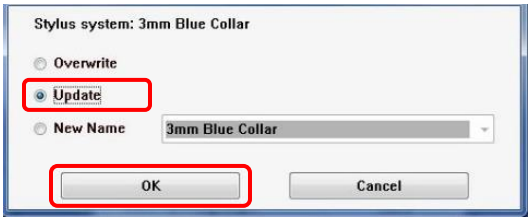


REMINDER

The first 5 Stylus Numbers should ***ALWAYS*** be reserved for (1) **Z-**, (2) **Y+**, (3) **X+**, (4) **Y-**, and (5) **X-**

Stylus Number	Stylus Name	RDS Positions	
Stylus 1 :	DOWN Z-	A: 0°	B: 0°
Stylus 2 :	NORTH Y+	A: -90°	B: 90°
Stylus 3 :	EAST X+	A: 0°	B: 90°
Stylus 4 :	SOUTH Y-	A: 90°	B: 90°
Stylus 5 :	WEST X-	A: 0°	B: -90

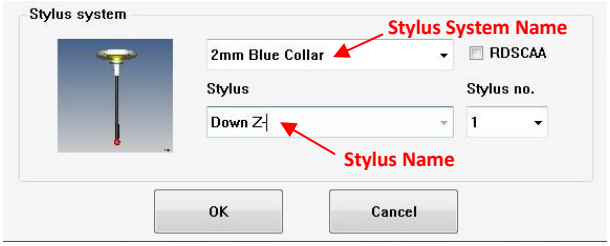
Rev 01A



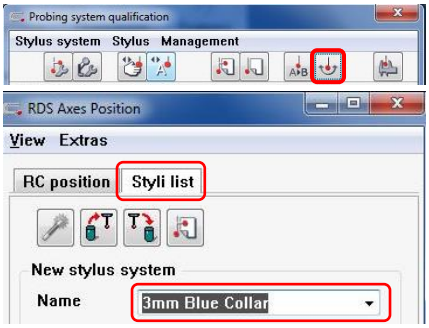
Now select Creates a New Stylus System, in the new window that opens, select **Update**, then OK and finally select Close to close out the RDS Axes Position window.

Now the Stylus System is ready for calibration, using List Qualification (***Page 4***).

Add Styli: Add styli (rotations) from an existing table, adds styli (rotations) from one RDS Stylus System to another RDS Stylus System



To create a new Stylus System attach a Stylus System (just a Down Z- Stylus, **NO** Star Probes) to the head (at A0 B0) and select Manual Stylus System Change then select Pick Up a Stylus System and select New. Name the Stylus System and Stylus (Down Z-) in the bottom section of the window.



If the Probe System Qualification window is not open, select CMM CMM Tab and then Probe System Qualification to open it.

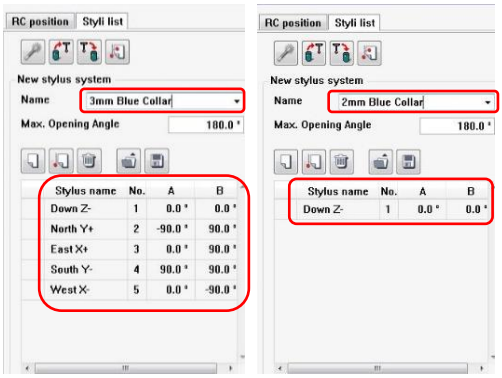
To create the list select Rotate Stylus to New Position and select the Styli List tab, in the RDS Axes Position window. The last Stylus System created is automatically selected in the name is section.

Before moving forward a clear understanding of how New table and Add styli function is required:

New table

The selected Stylus System displays; and **NO** Styli (Stylus Name and A B Angles) from the previous selected Stylus System are added to the table for the selected Stylus System.

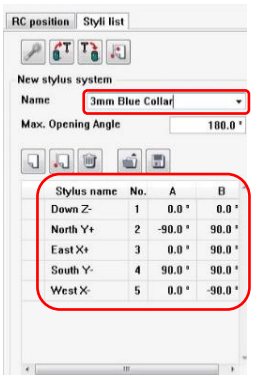
In this Example 3mm Blue Collar was displayed in the Name. The drop down was used to select the 2mm Blue Collar from the list and **New table** was selected from the additional pop up window and **NO** Styli were added to the 2mm Blue Collar table!

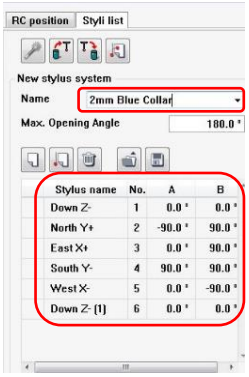


Add styli

The selected Stylus System displays; and **ALL** the Styli (Stylus Name and A B Angles) from the previous selected Stylus System are added to the table of the selected Stylus System.

In this Example 3mm Blue Collar was displayed in the Name. The drop down was used to select the 2mm Blue Collar from the list and Add styli was selected from the additional pop up window and **ALL** Styli were added to the 2mm Blue Collar table!





Now that there is an understanding of New table and Add styli we can continue.

A) If the Stylus System Name displayed has the Styli (Stylus Names and A B Angles) required for the newly created Stylus System procced to the next step.

B) If the Stylus System Name displayed does not have the Styli (Stylus Names and A B Angles) required, select another Stylus System using the drop down that has the correct Styli (Stylus Names and A B Angles) and select New table in the new window.

Now that the Stylus System has the correct Styli for the newly created Stylus System use the drop down to select the newly created Stylus System and select Add styli, to add the Styli from the table to the newly created Stylus System.

Stylus name	No.	A	B
Down Z-	1	0.0 °	0.0 °
North Y+	2	-90.0 °	90.0 °
East X+	3	0.0 °	90.0 °
South Y-	4	90.0 °	90.0 °
West X-	5	0.0 °	-90.0 °
Down Z- (1)	6	0.0 °	0.0 °

When using Add styli an additional **Down Z- (1)** Stylus is created (because Down Z- is already in the table from the initial creation of the Stylus System). That addition styli can be **deleted** or **modified**.

Stylus name	No.	A	B
Down Z-	1	0.0 °	0.0 °
North Y+	2	-90.0 °	90.0 °
East X+	3	0.0 °	90.0 °
South Y-	4	90.0 °	90.0 °
West X-	5	0.0 °	-90.0 °

Delete: To delete the extra styli from the table, select it from the table and it will add ▶ to the left of the Stylus Name section

▶	Down Z- (1)	6	0.0 °	0.0 °

and then select Deletes the Styli Selected to remove the Stylus from the table.

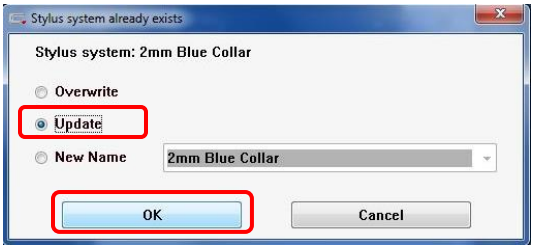
In this Example **Down Z- (1)** has been deleted from the table.

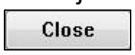
Stylus name	No.	A	B
Down Z-	1	0.0 °	0.0 °
North Y+	2	-90.0 °	90.0 °
East X+	3	0.0 °	90.0 °
South Y-	4	90.0 °	90.0 °
West X-	5	0.0 °	-90.0 °
▶ A0 B55 X+	6	0.0 °	55.0 °

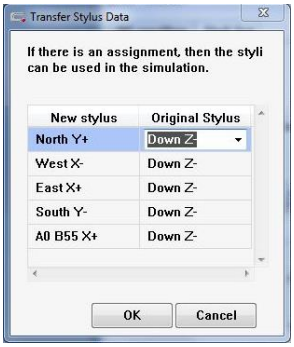
Modified: To modify the extra styli from the table just change the name and add the A and B Angles required for the styli just like New Table (***pages 1 and 2***).

In this Example, **Down Z- (1)** has been changed to **A0 B55 X+** and **B 0** has been changed to **55**.

Add as many additional styli to the list to cover any Styli required by using Inserts a New Stylus in the List and renaming and modifying the A and B angles of each new Styli.



Now select  Creates a New Stylus System, in the new window that opens, select **Update**, then  a new window will open showing the changes to the Stylus Names just select  and finally select  to close out the RDS Axes Position window.

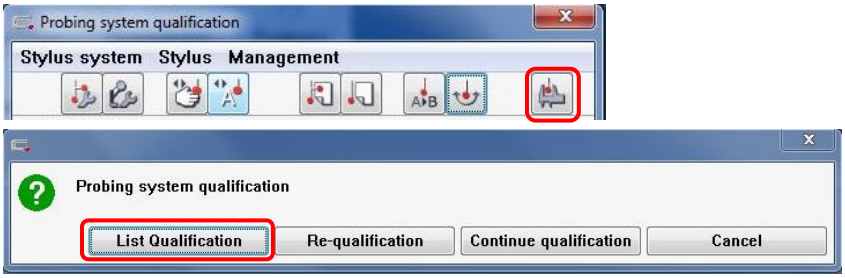


Now the Stylus System is ready for calibration, using List Qualification (***below***).

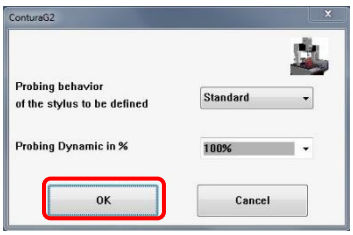
Note: If Probing Dynamic has to be modified (for small Stylus Diameters) **LIST QUALIFIATION CANNOT BE USED**, calibrate each rotation separately to lock in the Probing Dynamic for each Stylus (rotation).

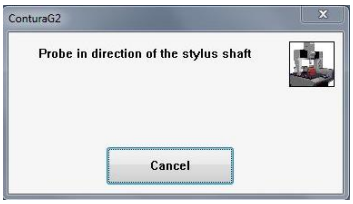
List Qualification:

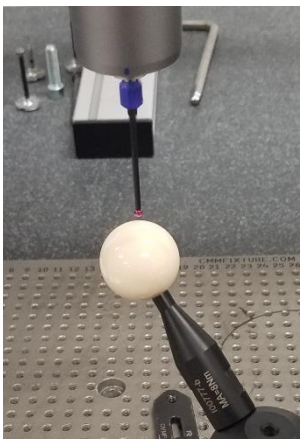
To start the calibration select  CNC Probing System Qualification (upper right corner of the Probe System Qualification window) in the new window select **List Qualification**.



Calypso will guide you through the steps, just like calibrating a single Stylus. The first window is the Probing Behavior and Probing Dynamic window, adjust if required and select  . The next window, Calypso asks you to "Probe in the Direction of the Shaft," take a point on the top center of the Reference Sphere.

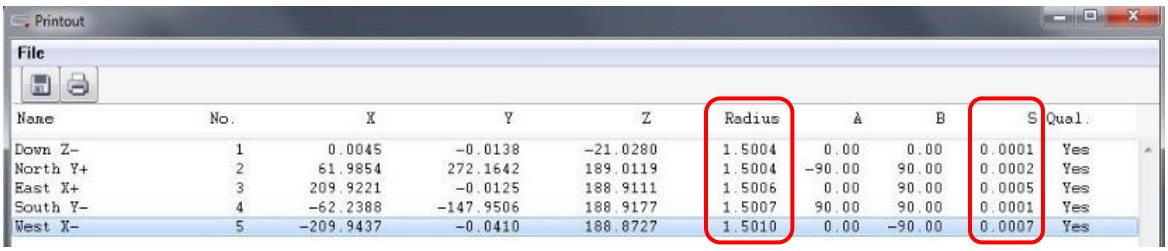






NOTE: When Calypso does the List Qualification for the **FIRST** time it will scan the Reference Sphere twice for the Down Z- Stylus (A0/B0), once for the length of the Stylus from the RDS (rotation center) and once for the actual calibration.

As the List Qualification runs it will generate the values for each of the styli in the Stylus System. Remember to verify the Radius and Sigma (S) values.



Name	No.	X	Y	Z	Radius	A	B	S	Qual.
Down Z-	1	0.0045	-0.0138	-21.0280	1.5004	0.00	0.00	0.0001	Yes
North Y+	2	61.9854	272.1642	189.0119	1.5004	-90.00	90.00	0.0002	Yes
East X+	3	209.9221	-0.0125	188.9111	1.5006	0.00	90.00	0.0005	Yes
South Y-	4	-62.2388	-147.9506	188.9177	1.5007	90.00	90.00	0.0001	Yes
West X-	5	-209.9437	-0.0410	188.8727	1.5010	0.00	-90.00	0.0007	Yes