# Using Planner/Simulation

Calypso programmers can make good use of time and machine resources by taking advantage of offline programming. In addition, simulation of the probe path can help new programmers feel more confident and help reduce collisions on the "first run" of a new program on a CMM (due to simple programming errors).

For purposes of this discussion, let's assume the programming will be done on a separate seat of Calypso that's not actually hooked up to a machine.

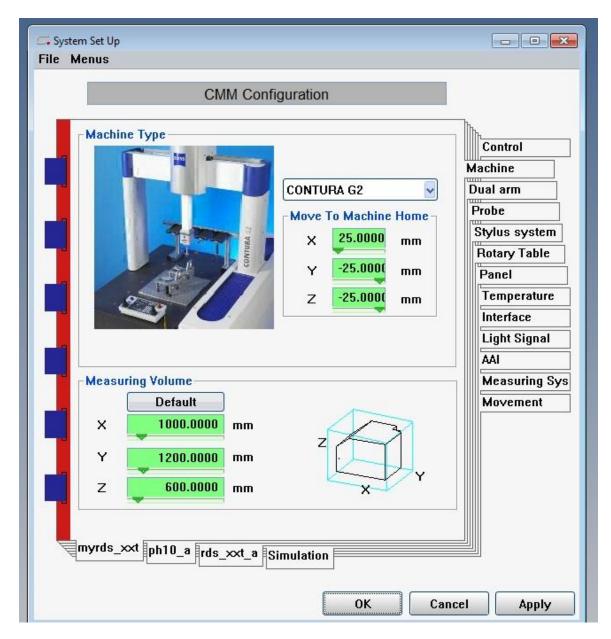
To get started, a machine tab that reflects your actual machine(s) should be set up. Remember that if you have multiple machines, you simply add as many machine tabs as necessary.

To do this, go to CMM SETTINGS tab. Then go to the MEASURING SYS TAB.

Cal	ypso l	Jser De	sk - (C) Ca	rl Zeis	s - 1rglsetup														
File	Edit	⊻iew	<u>R</u> esou	rces	Fe <u>a</u> tures	Construct	ion <u>S</u>	ize	Form and L	ocation	<u>P</u> lan	CAD	Extra	s Pl	anner	Wind	ow <u>?</u>		
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Type in the name of the machine tab you'd like to add, then hit enter. When you hit enter, the ADD button becomes active. Add your new machine tab by hitting the active ADD button.

Once you've added the tab successfully, go up to the MACHINE tab. Put in the appropriate machine type with the blue drop down. (In this example, a Contura G2). Put in appropriate values as shown for movement off the limits after the machine homes. Then put in values that reflect the size of the machine, such as 1000,1200,600. This is the machine travel in MM.



Hit apply, then go to the PROBE tab. Select the appropriate configuration that you're simulating. In this example, it's an RDS head with an XXT probe.

G System				
	CMM	1 C	onfiguration	
	Sensors          RDS         RDS         ST         ST         ST3         VAST         VAST Gold         VAST-DT         VAST-XT         VAST-XTR         HSS         PH FIX         Multiprobe-Carrier			Conti Mact Dual Probe Stylus Rotary Panel Temp Interf: Light AAI Meas Move
	RDS	•	RST	
	DSE	•	Renishaw TPx	
	ISC	•	TP20	
	CSC	۲	TP200	
	PH9	•	🔹 XXT / XDT	
	PH10	+	SP25	
	PHIUM	•	SP600	
	RTP20	۲	VISCAN	
	MIH-S		OTM	Cancel
	MIH		DTS	
	MH8 / MH20i	•	EagleEye	
	Reflector		LineScan (external)	
	1		LineScan (internal)	

Hit apply, then move to the STYLUS SYSTEM tab. Fill in the Xs, Ys, and Zs values, paying careful attention to the corresponding drop down settings. In this example, they are +Xm, -Ym, -Zm. These values change per machine

configuration. You can either copy them from your CMM or call Zeiss for help. The values in this example are good for an RDS head with an XXT sensor.

System Set Up File Menus	
CMM Configuration	
MasterProbe Only for index holder, e.g. RDS, DSE MasterProbe for calculating the navigation In sensor system Machine mapping Xs : 0.0000 +Xm V Ys : 60.0000 -Ym V Zs : 192.9000 -Zm V	Control Machine Dual arm Probe Stylus system Rotary Table Panel Temperature Interface
Default values see User's Guide	Light Signal AAI Measuring Sys Movement
Define and Activate Limit Values	
Stylus check during CNC start myrds_xxt_ph10_a_rds_xxt_a_Simulation	
	el Apply

Hit apply, then move back up to the CONTROL tab and connect your new machine tab. (Hit the big CONNECT button in the center of the screen). Once you've connected, there will be a delay before the following message pops up:

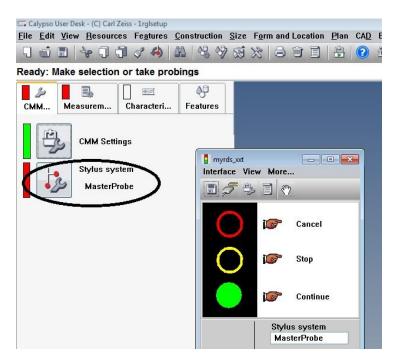
Informat	ion 💌
0	INFORMATION: The MasterProbe will be created by type VAST
_	ОК

Hit OK and allow Calypso to create a Masterprobe for your machine tab. A component selection screen may appear.

Select Possible Components	X
The following stylus system has to be uniquely assigned to a component:	
MasterProbe	
Please Select Correct Component	
XXT_Carrier	
Add	
NOTE: If cancelled, the first entry in the list is applied as selection	
OK Cancel	

Hit OK. No need to fill anything in.

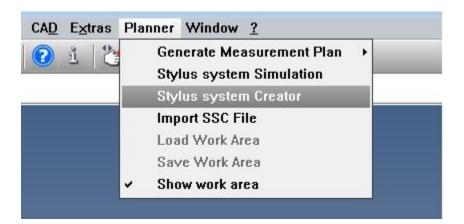
The next step is to do a virtual "Ref Sphere Position". Go to the STYLUS SYSTEMS button.



You can Reference Sphere Position, and if you have an RDS-CAA system, also perform the Fitting Position. This is done only once per new machine tab.

12 00	2	2	I I A→B	1
tylus system		Mode	Paran	neter
MasterProbe		Qualify pas	sive 🗸 Stan	dard
Stylus name / i	no.	Geometry	Spher	re Coverage
1	<b>~</b> 1	Sphere	▼ 180.0	000
Fitting posi	_	Change styl		
		,		
			Reference	sphere
Stylus Name	Da	te	Reference Sphere 1	
Stylus	Da	te 1/10/12		
Stylus Name	Da		Sphere 1	~
Stylus Name 1			Sphere 1 Temp.	20.0000
Stylus Name 1 R:	).0000		Sphere 1 Temp. SNo	20.0000 9999
Stylus Name 1 R:			Sphere 1 Temp. SNo Date	20.0000           9999           10.1.2012
Stylus Name 1 R: ( S: (	).0000		Sphere 1 Temp. SNo Date R:	20.0000 9999 10.1.2012 15.0000
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Stylus         Name           1	).0000 ).0000 ).0000 ).0000	1/10/12	Sphere 1 Temp. SNo Date R: S: X:	20.0000 9999 10.1.2012 15.0000 0.0000 0.0000
Stylus         Name           1	).0000 ).0000 ).0000		Sphere 1 Temp. SNo Date R: S: X: Y:	20.0000       9999       10.1.2012       15.0000       0.0000       0.0000       0.0000

The next step is to build a MasterProbe to be used for on-screen simulation. Go to:



#### New stylus system

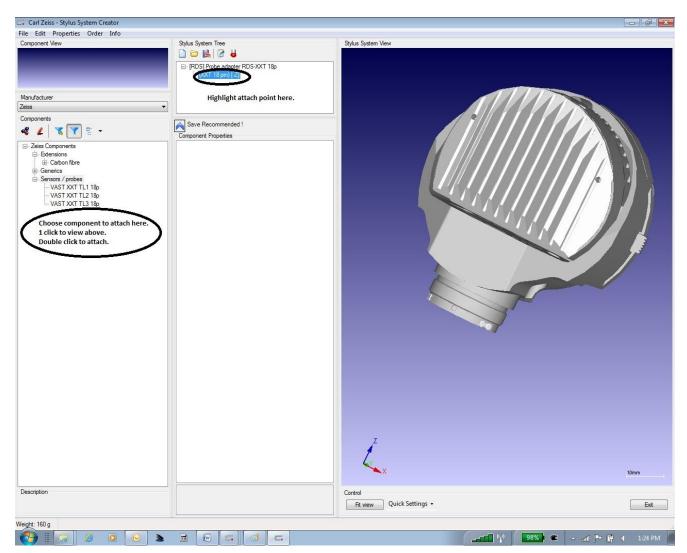


## Select the correct type of probe.

Please select a technol s to be based.	ogy on which	your stylus system
CSC DSE-RST None PH10 RDS RST RDS TP200		
RDS XXT VAST		
Selected Technology:	RDS XXT	

Starting with the Probe adapter, start to build your probe by double clicking the correct component in the list on the left. Then continue to highlight the position

you'd like to add to in the list on the upper middle of the screen. For an easy down tip, just continue to add your components to the z- position. For stars, highlight the node you wish to add to, such as x+, then double click the correct component in place.



Once you're finished selecting components (in this case, MasterProbe buildup), go to the SAVE AS button and name your component. For MasterProbe, it must be named exactly as shown.

Component View		Stylus System Tree	
		D IPD State of other P	DC VVT 10-
		□- [RDS] Probe adapter R □- VAST XXT TL3 18p	
		MasterProbe X	
Manufacturer			
Zeiss		<ul> <li>Main Axis Angle: 0.00</li> </ul>	
Components			
📲 🗶 🕱 🟹 🖭 🗸		Save Recommended !	
		Component Properties	
⊡ · Zeiss Components 		Carl Zeiss Webshop:	Order this component
		Description	
		Category	Master probes
		Collection Name	XXT
		Manufacturer	Zeiss
		Name Name	MasterProbe XXT TL3
		Name Scheme Order Number	Sensors master probe XXT TL3
		Vendor Order Number	Unknown
		E Functional Properties	ORNOWIT
		Load Limit	0
		Material	Unknown
		Weight	5.6
Stylus System Pro Properties         Name:         Serial Number:         Constructor:         Date:         Workpiece:         CMM:         Company:         Department:         Comments:	MasterProbe           01/10/2012	Preview Today	
Compatible with \	/ersion 2.0	2	-

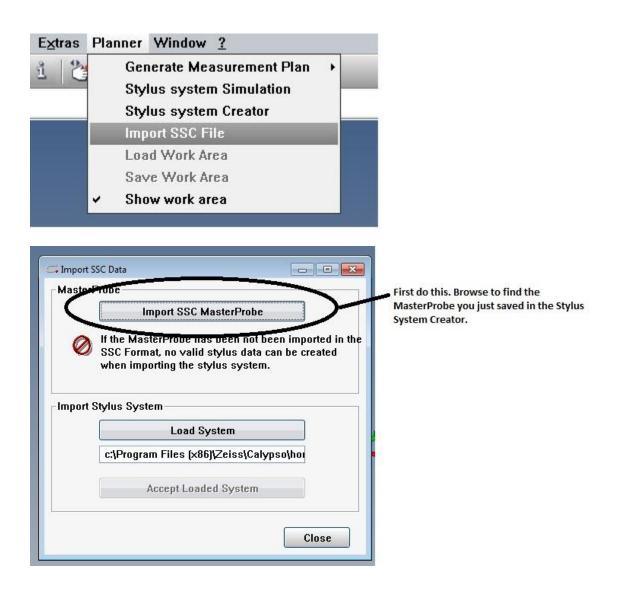
You must name the probe in the screen above, then name it again when the save as screen pops up. PAY ATTENTION TO WHERE YOU'RE PUTTING YOUR SIMULATION PROBES! If you're setting up more than one machine tab for different CMM configurations, you'll want a MasterProbe for each different setup. It's recommended to have a folder for each machine tab.

At this point you may continue to build any other probes you'll need. It's acceptable to use both Zeiss and Renishaw components in the same buildup if necessary. For example, if you're building up a Renishaw star and can't find components you need, you could substitute in a Zeiss M2 cube. The components are close enough in nature that it wouldn't adversely affect simulation and collision detection.

Another quick example for a 2mm by 61mm buildup:

Stylus System Tree		Stylus System View - 2by61
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and the second	DDC VXT 10-	
[RDS] Probe adapte     VAST XXT TL3		
	XT TL3 adapter plate	
	T] Extension L 30 Ø5	
[MJ XX	XXT] DK 2 ML 31 Stylus Silicon nitride	
Ino	verij bite nie er oljide olieorrikide	
4	+ III	
Main Axis Angle: 0.00		
Main Axis Angle: 0.00		
	¢.	
Main Axis Angle: 0.00		
Main Axis Angle: 0.00	pp: Order this component	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshu Catalog Data	op: Order this component	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Websho Catalog Data DG	pp: Order this component	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK	pp: Order this component	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshu Carl Zeiss Webshu Carl Des Des Des	pp: Order this component 5 2 1.5	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK DS L	pp: Order this component 5 2 1.5 40	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK DG L ML	pp: Order this component 5 2 1.5	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK DS L ML DS DS L ML Description	5 2 1.5 40 31	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshu Carl Zeiss Webshu Carl Des DK DS L ML Description Category	5 2 1.5 40 31 DK 2.0 - 2.4	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshu Catalog Data DG DK DS L ML Description Category Collection Name	p: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK DS L ML DS L ML Category Callection Name Manufacturer	p: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss	
Main Axis Angle: 0.00 Component Properties Catalog Data DG DK DG L ML Description Category Collection Name Manufacturer Name	pp: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss Stytus	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Websho Catalog Data DG DK DS L ML DS Category Collection Name Manufacturer Name Name Name Scheme	pp: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss Stytus Stytus Stytus	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshu Catalog Data DG DK DS L ML DS L ML DS Category Collection Name Manufacturer Name Scheme Order Number	pp: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss Stylus Stylus 626113-0203-040	
Main Axis Angle: 0.00 Component Properties Carl Zeiss Webshe Catalog Data DG DK DS L ML Catagory Collection Name Manufacturer Name Name Scheme Order Number Vendor Order Number	5         2           1.5         40           31         0           DK 2.0 - 2.4         M3 XXT           Zeiss         Stylus           Stylus         Stylus           626113-0203-040         0           r         Unknown	
Main Axis Angle: 0.00 Component Properties Catalog Data DG DK DS L ML Cescription Category Collection Name Manufacturer Name Name Scheme Order Number Vendor Order Number Functional Propertie	pp: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss Stylus Stylus Stylus 626113-0203-040 r Unknown	
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Main Axis Angle: 0.00 Component Properties Catalog Data DG DK DS L ML Cescription Category Collection Name Manufacturer Name Name Scheme Order Number Vendor Order Number Functional Propertie	pp: Order this component 5 2 1.5 40 31 DK 2.0 - 2.4 M3 XXT Zeiss Stylus Stylus Stylus 626113-0203-040 r Unknown	

It's best to build up another probe to use besides the MasterProbe. When we go to the next step, which is to import SSC MasterProbe, we like to then have another probe to load in for simulated measurements. Otherwise, you'll need to give MasterProbe another name when you load it in to use for measurements.



Import SSC MasterProbe is only done once for each machine tab you set up. From then on, you load in other simulation probes to use in your on-screen simulation.

Import S	SC Data		
MasterF	Probe		
	Import SSC MasterProbe		
~	No valid stylus data can be created when importing the stylus system.		
Import S	Load System	Now load anothe	r stylus system to use for your
	C:\Users\emicheln\Uesktop\MY SIMULAT		
	Accept Loaded System	Then accept load	led system!
	Close		
	····		

When you accept loaded system, you must name the tip you wish to use. In this example, we named it "down".

robe		
¢хт	~	
Zeiss incremental	probe holder	
	XXT_Carrier	~
		Add
Aodule 🔀		Add
Stylus system	2by61	V 🗆 RDSCAA
	down Name it then hit	Stylus no.
	. /	

If you wish to add additional tip rotations for use with your RDS head, here's how you proceed:

Go to the STYLUS SYSTEM/ROTATE SCREEN as shown below:

СММ	Aeasurem	) 🗐 🔗 Characteri Features	3	
	CMM Settings Stylus system 3×40	n Stylus system S Stylus system Stylus system 3×40 Stylus name / no.	tylus Managemen Mode Qualify pass Geometry 1 Sphere	Parameter sive V Standard V Sphere Coverage V 180.0000

Go to the Styli List tab and select the new tip icon shown below:

-	ion Styli list			tings	
			t) 🚺	T	¥.
New sty	/lus system				
Name	3×40				~
Max.	Opening Angle	1	80.0		legree
s	tylus name	No.	A (degra	B [deg	re 🔼
	down	1	0.0	0.0	

Click the new tip icon to add as many tip rotations you need. In our example we will add the standard north, east, south and west rotations. When you've finished typing in the names and A/B angles you need, hit the CREATE NEW STYLUS SYSTEM button shown below:

CRC Lis					
RC po	sition Styli list			tings	
Nar	stylus system— ne 3×40 <. Opening Angle	1	80.0	de	<b>v</b> egrees
	Stylus name down north	No. 1 2	A [degre 0.0 -90.0	B (degra 0.0 90.0	<u>~</u>
	east south west	3 4 5	0.0 90.0 0.0	90.0 90.0 -90.0	
<	**			>	×
				Clo	se

You will be presented with the following screen. Make sure to select UPDATE!

		2
3×40	_	~
	dists 40	dists 40

Hit OK to accept the new names you've assigned to your additional tips.

New stylus	Original Stylus	1
south	down	
north	down	
west	down	
east	down	
		_

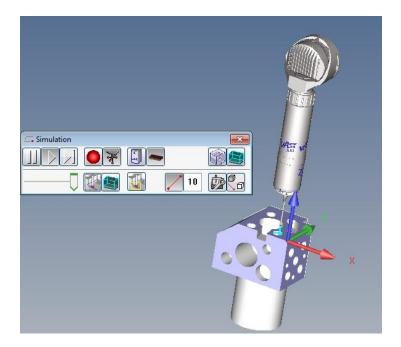
Save your updated stylus system list.

RC Lis					
RC po	sition S	tyli list	Sta	tus Set	tings
			٦Ē	1	7 🔒 🚀
New	stylus sy	-			
Nar		3×40			~
Max	x. Openin	a Angle	1	80.0	degrees
Max	×. Openin	g Angle			
Ma	×. Openin Stylus n				degrees
Max	-				
Max	Stylus n		No	A (degre	B [degr
Max	Stylus n down		No 1	A [degra	B [degrission]
Max	Stylus n down north		No. 1 2	A [degra 0.0 -90.0	B [degr

The additional tip rotations are saved as a .txt file.

To run your program in the SIMULATION MODE:

## PLANNER/STYLUS SYSTEM SIMULATION

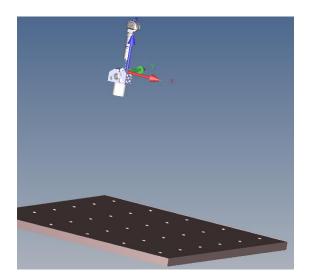


Run your program using the usual Calypso run button on main toolbar. The Simulation toolbar allows you to modify your view of the run as follows:



- 1. Pause playback
- 2. Resume playback
- 3. Step playback
- 4. Show stylus
- 5. Show stylus system
- 6. Show probe
- 7. Show worktable
- 8. Show clearance planes
- 9. Show machine volume
- 10. Playback speed
- 11. Collision detection
- 12. Check machine volume
- 13. Follow stylus
- 14. Alter trailing line
- 15. Machine settings
- 16. Move CAD model

If you wish to move your model onto the machine worktable, use button 16. (Move CAD Model).



Select TARGET ONLY and POINT, as shown below. Then hit the POSITION button. Click a point on the bottom of your CAD model, then click the point on the worktable where you wish to place it. Hit APPLY. Your model is now placed on the worktable for better simulation.

AD-Entity		
Edit body		
Edit Hie	erarchy Transformat	ion Positioning
Translation	1	
×	0.0000	Apply
Y	0.0000	Сору
z	0.0000	
X Y Z		
Rotation		
Space Axis	s Z 🔽	Apply
Angle	0.0000	Сору
Center		
Positioning		Basilian
Positioning Target (		Position
Positioning Target ( Point	Two Points	O Three Points
Positioning Target ( Point		
Positioning Target ( Point	Two Points	O Three Points
Positioning Target ( Point Three F Center	Two Points	O Three Points 0.001
Positioning Target ( Point Three F Center Base Align	Two Points	O Three Points 0.001 Apply
Positioning Target ( Point Three F Center Base Align	Two Points	O Three Points 0.001 Apply Copy
Positioning Target ( Point Three F Center Base Align	Two Points	O Three Points 0.001 Apply

#### ADDENDUM:

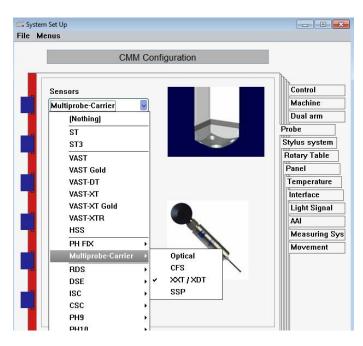
Machine tab setup parameters for other common configurations:

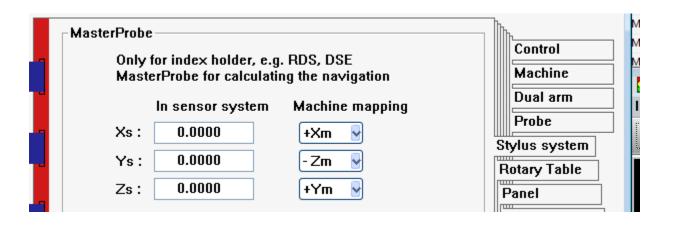
## 1. PH10 with TP20:

CMN	I Conf	guration	
ensors (Nothing) (Nothing) ST ST ST VAST VAST VAST VAST VAST-VT VAST-XT VAST-XT VAST-XT VAST-XT R HSS PH FIX Multiprobe-Carrier RDS DSE ISC CSC PH9 PH10 PH10M RTP20		RST Renishaw TPx TP20	Control Machine Dual arm Probe Stylus system Rotary Table Panel Temperature Interface Light Signal Ääl Measuring Sys Movement
MIH-S MIH	•	TP200 XXT / XDT SP25	Cancel Apply

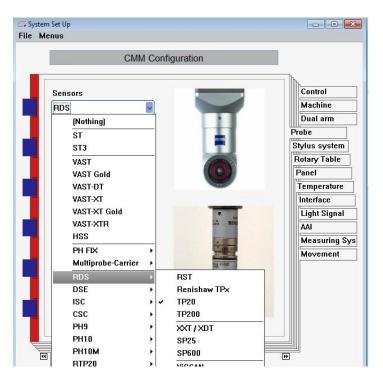
Only for index holder o g		Control
Only for index holder, e.g. F MasterProbe for calculating		Machine
	-	Dual arm
In sensor system Xs : 0.0000	Machine mapping +Xm 😡	Probe
Ys: 0.0000	-Ym V	Stylus syster
		Rotary Table
Zs: 83.0000	- Zm 🖌	Panel

#### 2. Duramax





### 3. RDS-TP20



С	MM Configuration	
	) +Xm ♥ 0 -Ym ♥	Control Machine Dual arm Probe Stylus system Rotary Table Panel