

# **North East SolidWorks User Conference**

# **Configurations & Design Tables**

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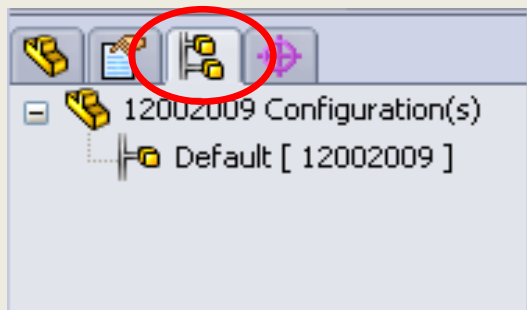
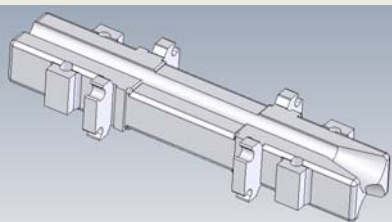


- What are Configurations
  - How to manage configurations without a design table
  - Why use a Configurations or a Derived Configurations
- How to create a Configuration
  - Advanced Options
  - What is a design table
  - With & without a design table, editing in table or as a separate Excel file
  - An easy way to create a design table
  - When & how to use design tables
  - Commands inside a design table
- What are Display States
- Difference between Configuration & Display States.
- When to use one or the other

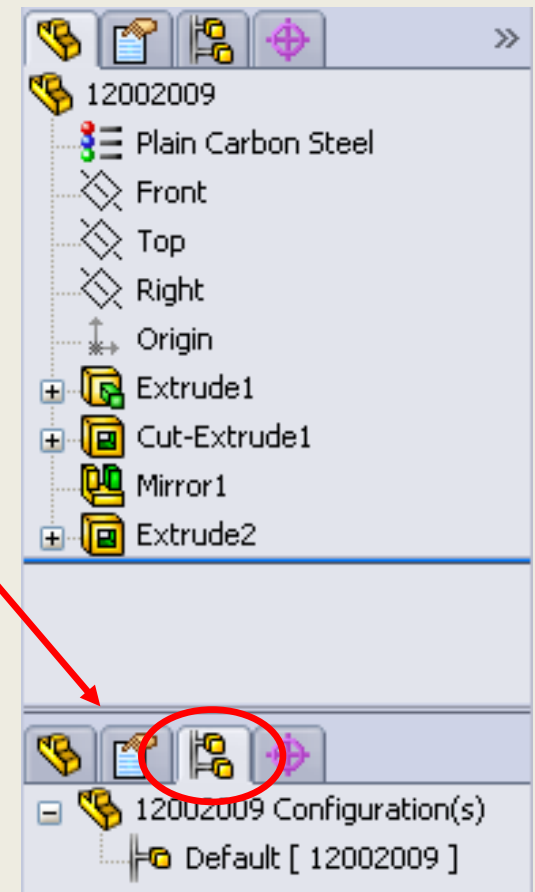
- Configurations allow you to create multiple variations of a part or an assembly model within a single file.
- Configurations provide a convenient way to develop and manage families of models with different dimensions, components, material, properties or other parameters.

- Part level configurations give SolidWorks the flexibility to control:
  - Dimensions & tolerances that change for part variations
  - Define configuration specific Properties
  - Suppress and resolve different features
  - Hide or show different features
  - Assign material
  - Set individual face colors
  - Change the size of Hole Wizard holes

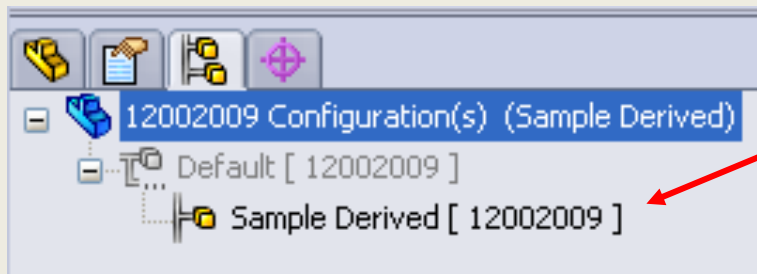
- There are a few ways to view existing configurations.
  - Go to the ConfigurationManager tab
  - Or you can **split** the ConfigurationManager tab by dragging the split bar



Drag the split bar



- Derived configurations allow you to create a parent-child relationship within a configuration. By default, all parameters in the child configuration are linked to the parent configuration. If you change a parameter in the parent configuration, the change automatically propagates to the child.



**Derived Configurations are shown Indented in Configuration list**

- There are several ways to make configurations inside of a part or assembly model.

The image shows a CAD software interface with several windows. On the left, a 'Modify Configurations' dialog box is open, displaying a table with the following data:

	Mirror1	Suppress
Default	<input type="checkbox"/>	<input type="checkbox"/>
Sample for PP	<input type="checkbox"/>	<input type="checkbox"/>
<b>Test Config</b>	<input type="checkbox"/>	<input type="checkbox"/>
< Creates a new configuration. >		

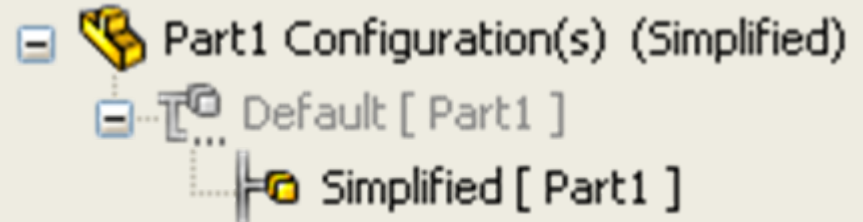
A red arrow points from the '< Creates a new configuration. >' row to the text below. In the center, a context menu is open for 'Part (12002009)', with 'Add Configuration...' selected. On the right, another context menu is open for '12002009 Configuration(s)', with 'Add Derived Configuration...' selected.

**Select "< Creates a new Configuration. >"**

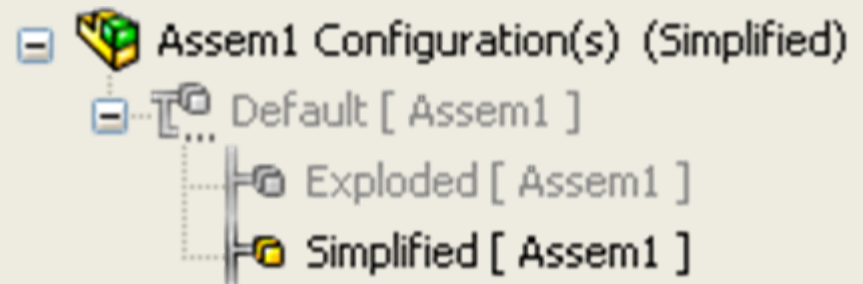
- Or through a Design Table

- You can create standards for configuration names and build them into your templates

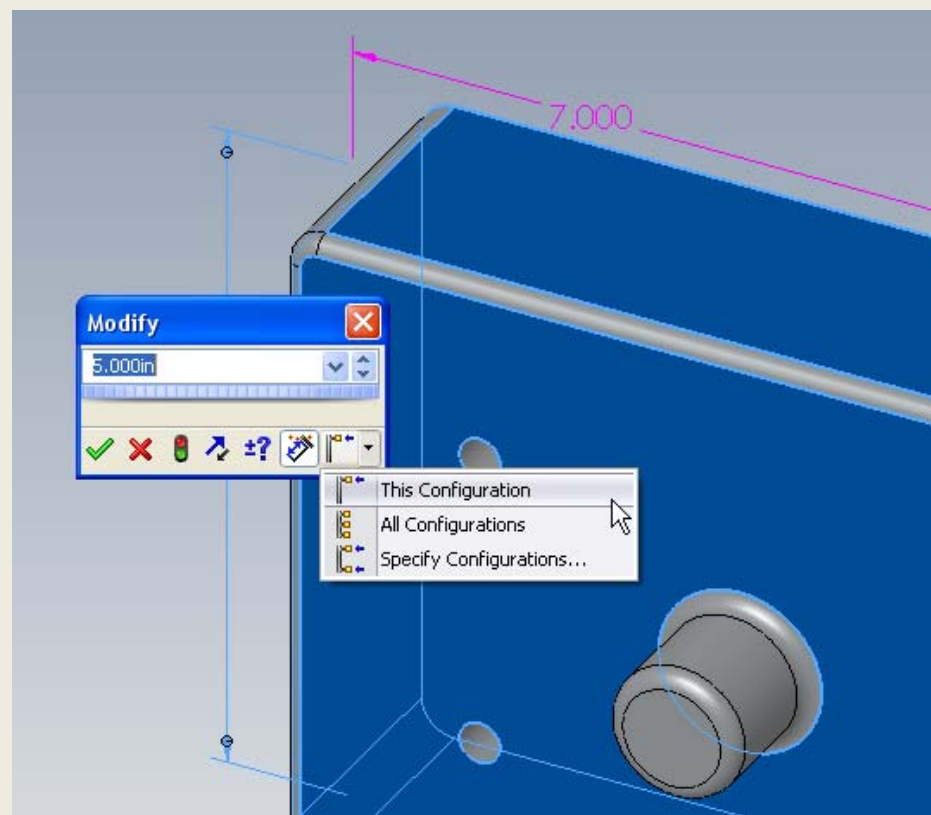
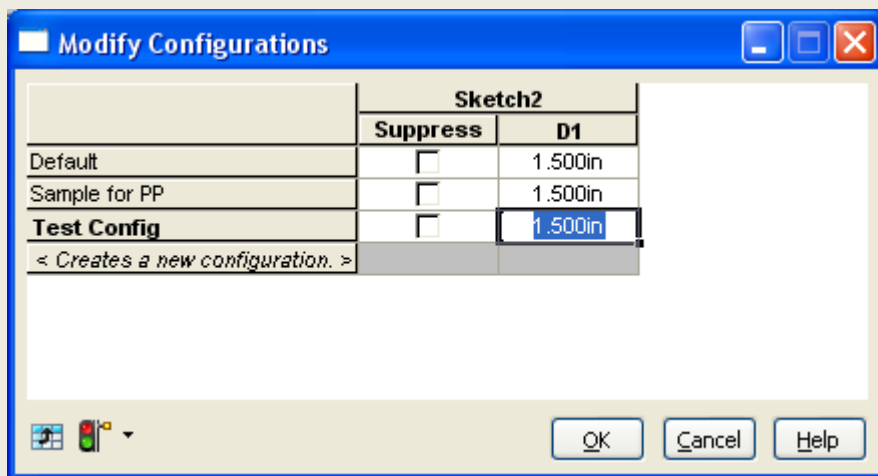
- Standards for parts



- Standards for Assemblies



- Right Mouse Button & Select “Configure”



- Or double mouse button select on the dimension

- SolidWorks does not require you to create a design table.
- You can edit dimensions and features with or without a design table.
- Note: Debugging configuration problems are much more difficult without a design table.

- Design tables allow you to control the variations of the parts and / or assembly models from a single Excel based spread sheet.
- Design tables can be used to create parts and assemblies that are powerful, flexible, and can be used to document design intent.
- Design tables can also be used to create multiple models or versions from the same document, change feature size, or to suppress unwanted features.

- Insert a design table to set multiple configuration specific custom file properties at one time.
  - column headings are \$propname...cells hold property values
  - A Design Table can be deleted and the properties remain set
  - A Design Table can be copied from one part file to another

- Creating a Design Table



- Default design table automatically created by SolidWorks

	A	B	C	D	E	F	G	H	I
1	Design Table for: 10203150								
2		\$DESCRIPTION	\$PARTNUMBER	D2@Sketch19	D3@Sketch19	D1@Sketch21	D1@Sketch22	\$STATE@Fillet16	
3	10203150A	TROUGH, EQUALIZATION (A)	10203150A	7	7	36	36	u	
4	10203150B	TROUGH, EQUALIZATION (B)	10203150B	25	7	54	36	s	
5	10203150C	TROUGH, EQUALIZATION (C)	10203150C	25	25	54	54	u	
6									

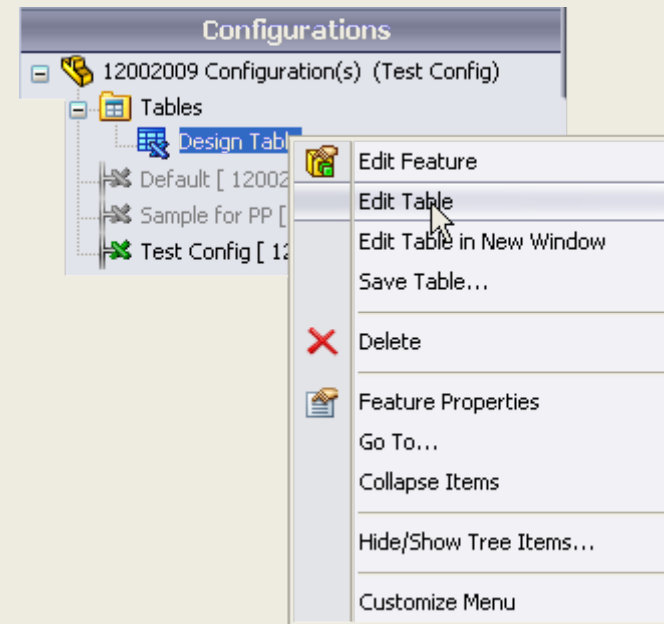
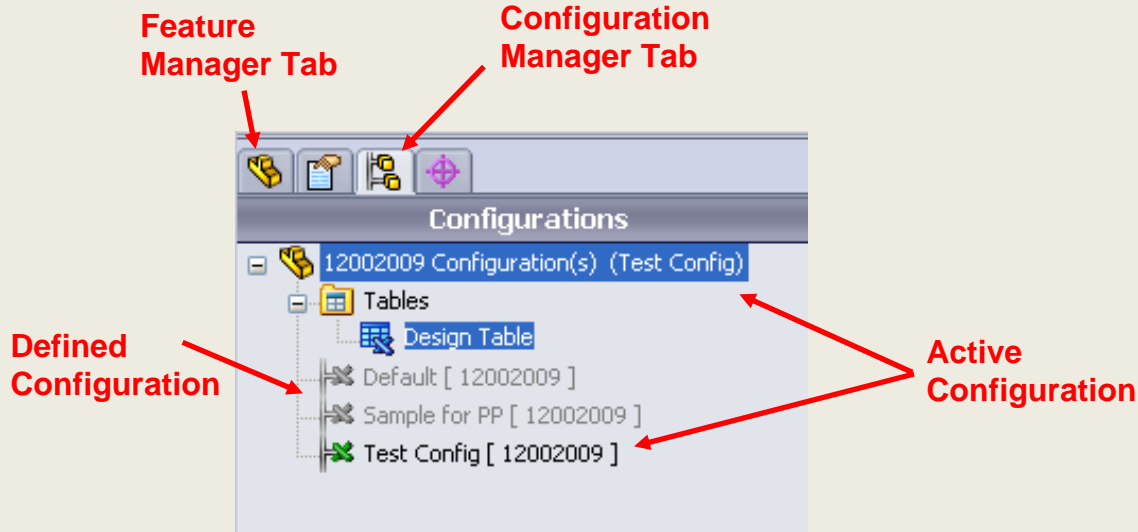
Configuration Name

Dimension Name

Feature Name

Suppression State

Dimension Value

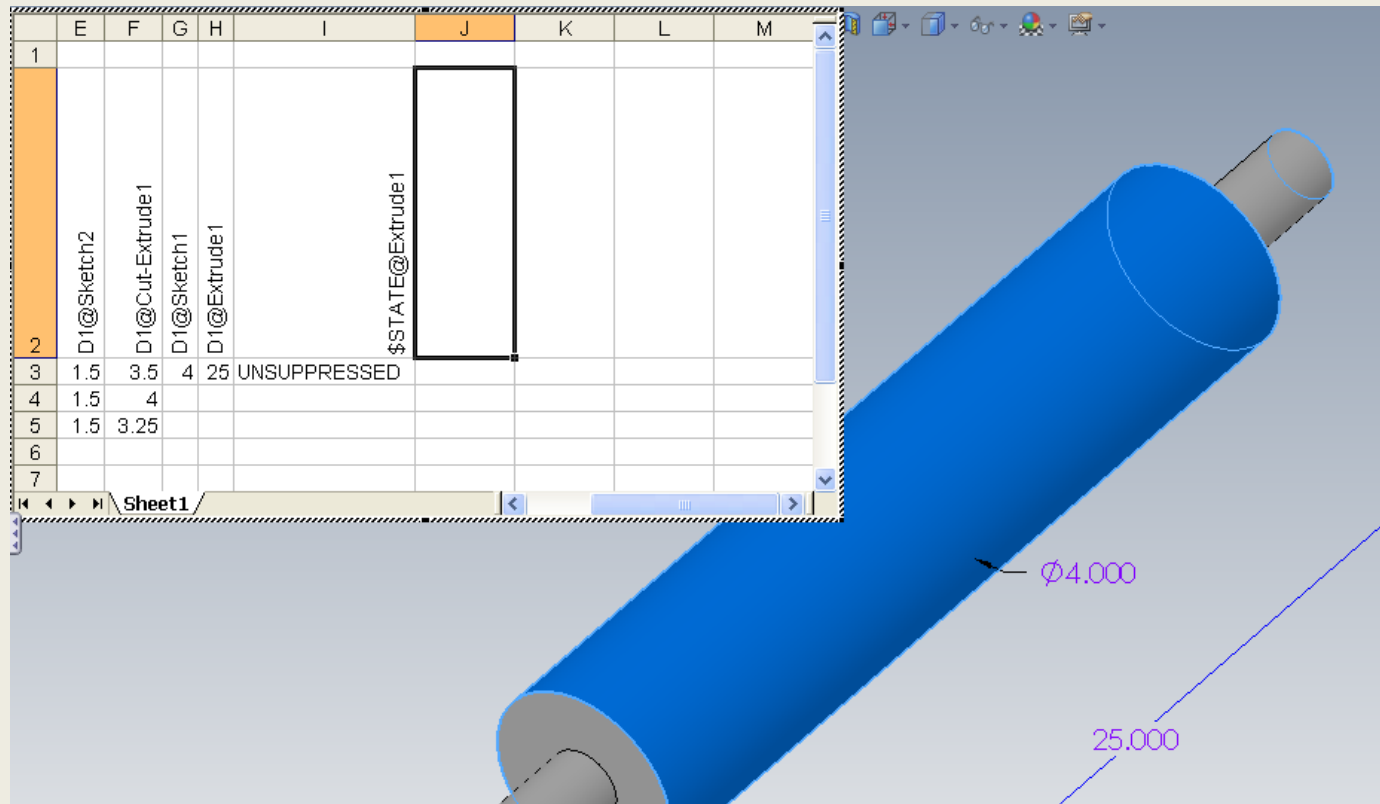


- Adding a new configuration by design table

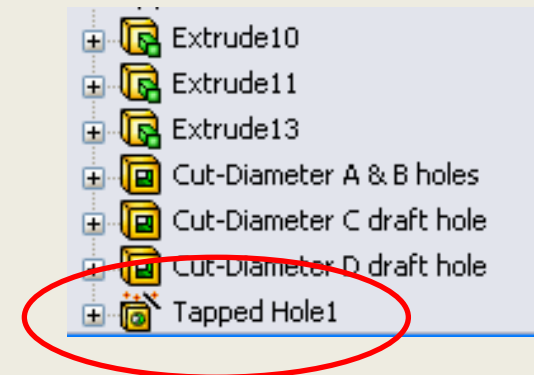
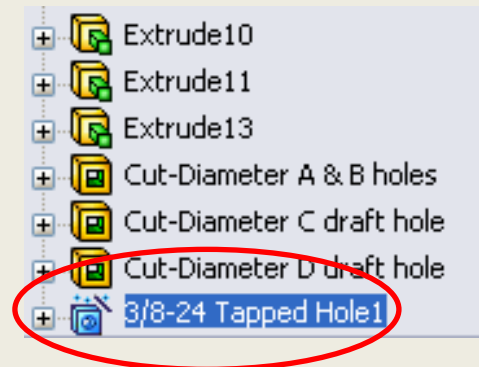
	A	B	C	D	E	F	G
1	Design Table for: 12002009						
2							
		\$DESCRIPTION	\$COLOR	\$TOLERANCE@D1@Sketch2	D1@Sketch2	D1@Cut-Extrude1	
3	Default	Default	12632256	NONE	1.5	3.5	
4	Sample for PP	Sample for PP	12632256	NONE	1.5	4	
5	Test Config	Test Config	12632256		1.5	3.25	
6	New Config	New Config	12121212		1.3	3	
7							



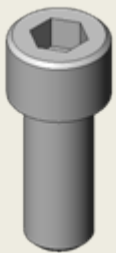
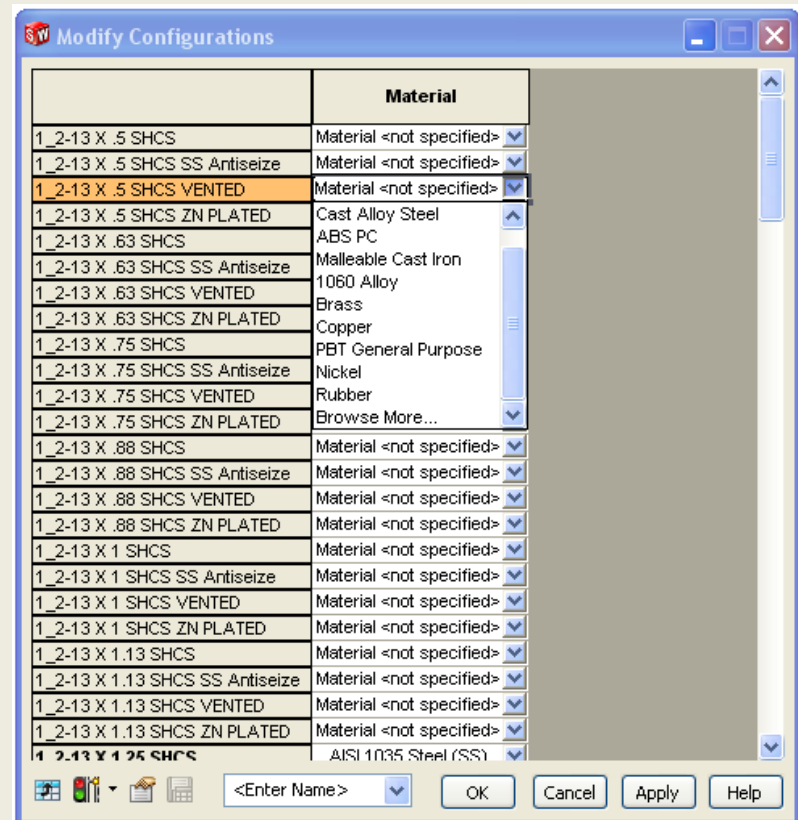
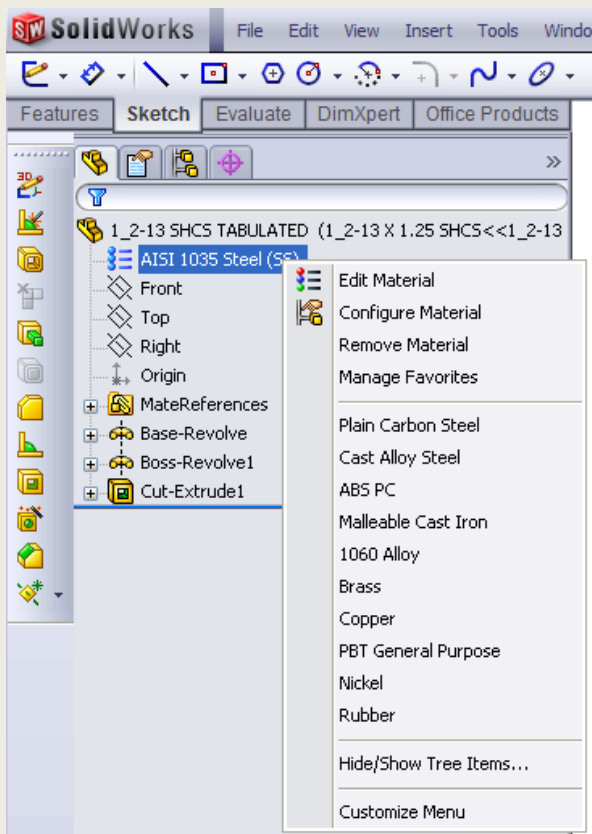
- Double mouse button select on the dimension to add it to the table as a variable



- Changing hole wizard sizes in different configuration:
  - Edit feature, NOT Configure Feature
  - When inserted in a Design Table the name changes from the size to Tapped Hole
  - \$hw-size



- You can change the material of a part configuration but not in a design table.



- Design tables should use named features, sketches, and dimensions. This makes the design table readable. Without comments and named features, a design table can be difficult to understand and / or modify.

# Naming Dim's and Features

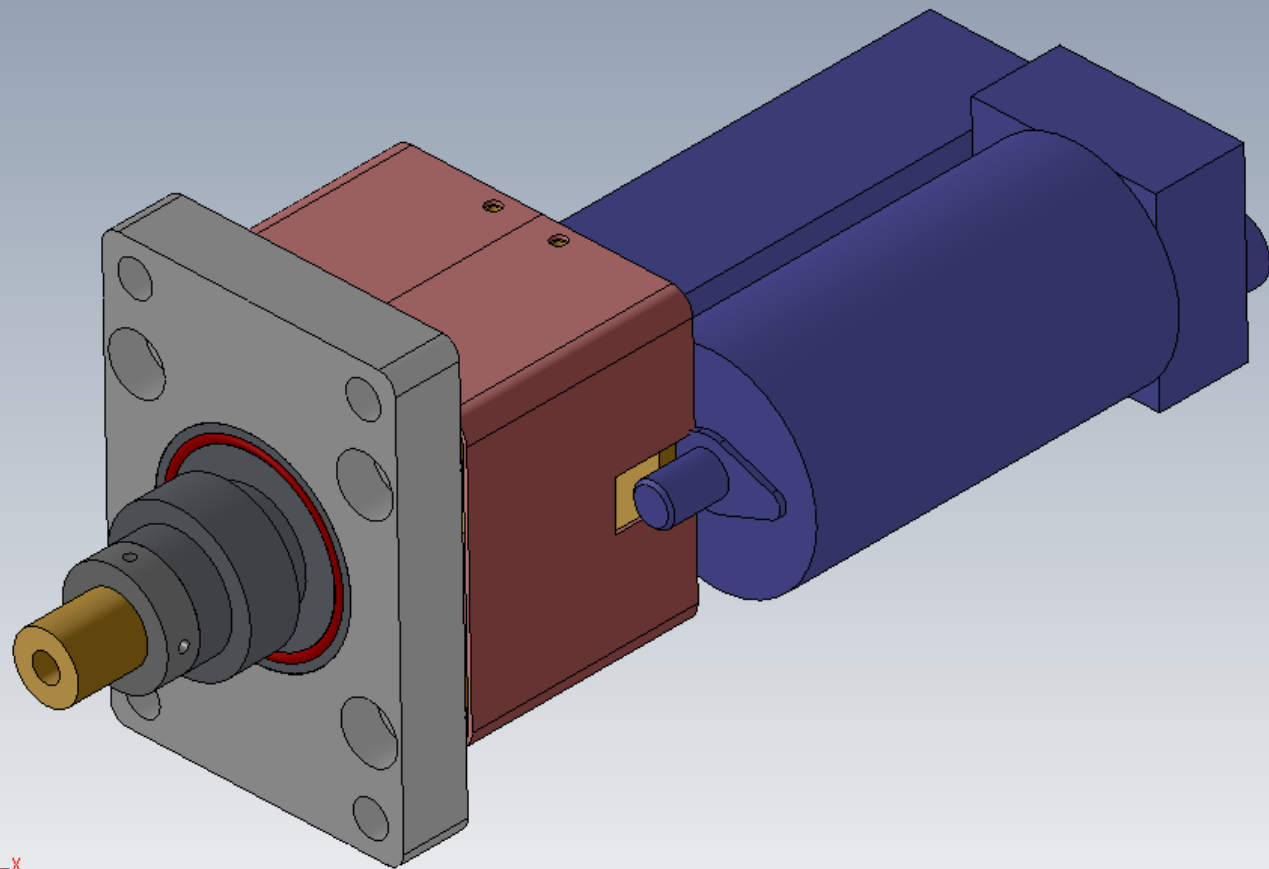
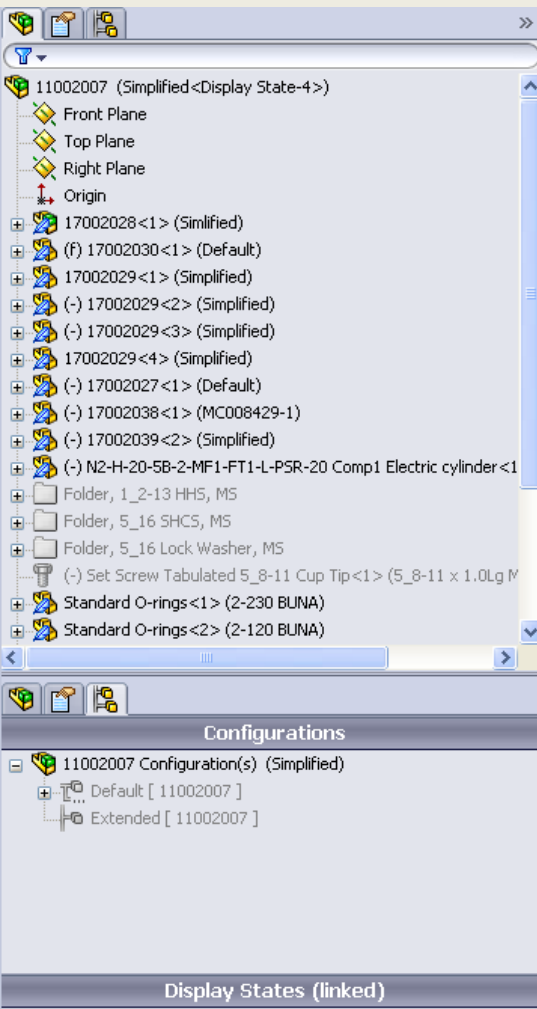
	A	B	C	D	E	F	G	H	I
1	Design Table for: Casting								
2			\$DESCRIPTION	\$PARTNUMBER	\$PRP@Description	D2@Sketch19	D3@Sketch19	D1@Sketch21	D1@Sketch22
3	10203150A	TROUGH, EQUALIZATION (A)	10203150A	A	7	7	36	36	
4	10203150B	TROUGH, EQUALIZATION (B)	10203150B	B	25	7	54	36	
5	10203150C	TROUGH, EQUALIZATION (C)	10203150C	C	25	25	54	54	
6									
7									

	A	B	C	D	E	F	G	H	I
1	Design Table for: Casting with sketch names								
2			\$DESCRIPTION	\$PARTNUMBER	\$PRP@Description	Dim A @A & B Holes	Dim B @A & B Holes	Dim C @C Draft Hole	Dim D @D Draft Hole
3	10203150A	TROUGH, EQUALIZATION (A)	10203150A	A	7	7	36	36	
4	10203150B	TROUGH, EQUALIZATION (B)	10203150B	B	25	7	54	36	
5	10203150C	TROUGH, EQUALIZATION (C)	10203150C	C	25	25	54	54	
6									
7									

- Assembly level configurations give SolidWorks the flexibility to control:
  - Part level configurations
  - Part suppression
  - Part visibility
  - Suppression state of mates
  - Modification of assembly features
  - Configuration specific properties
  - Values of distance & angle mates
  - Use face names to swap parts

- Unsuppress only the parts that you need !!
- Reference only the level of detail you need.
- Make new configurations to suit your needs!

- Use **configurations** to create different versions of a model. Components are different from one configuration to another. For example, you might create:
  - One configuration that uses metal components and another that uses plastic ones.
  - Multiple configurations that use different sizes of similar components.
  - Configurations with the assembly's components in different positions.
  - A simplified configuration of a model shutting off all hardware so that the model opens, rebuilds and saves faster.
  - A simplified configuration of a model for use in analysis.
  - In large assemblies, one configuration with fully resolved components and another with **lightweight** components.



# Design Table in an Ass'y

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U			
1	Design Table for: 11002007																							
2			\$DESCRIPTION		\$DISPLAYSTATE		\$PARTNUMBER		\$PARENT	\$STATE@Parallel2	\$STATE@Parallel3	\$STATE@Parallel4	\$STATE@Folder, 1_2-13 HHS, MS	\$STATE@Folder, 5_16 SHCS, MS	\$STATE@Folder, 5_16 Lock Washer, MS	\$STATE@Folder, 1/2-13 x 1 1/4" SHCS, Non-Vented	\$STATE@Folder, #10-32 X 1_4" SETSCREW	\$STATE@Folder, #10-32 x 5-16" Slotted PHS	\$STATE@Folder, #10" Locking Washer	\$STATE@Folder, 1/2-13 x 1" FHCS	\$CONFIGURATION@17002028<1>	\$CONFIGURATION@17002029<1>	\$CONFIGURATION@17002029<2>	\$CONFIGURATION@17002029<3>
3	Default	Default	Y	Display State-1	\$D													Closed	Default	Default	Default			
4	Simplified	Simplified	Y	Display State-4	\$P	Default	S	S	S	S	S	S	S	S	S	S	S	Simplified	Simplified	Simplified	Simplified			
5	Extended	Extended	Y	Display State-2	\$D													Extended	Default	Default	Default			
6																								

- Folders (suppress & resolve)
- Mates, Change Dim's
- Mates (suppress & resolve)
- Fixed/Float of a part
- Picking different Config's of a part

- There is a chart in the SolidWorks help that shows the parameters available in a design table.

The screenshot shows the SolidWorks Help interface. The left sidebar contains a navigation tree with 'Configurations' expanded to 'Specifying Configuration Parameters' and 'Summary of Design Table Parameters' selected. The main content area is titled 'Summary of Design Table Parameters' and includes a 'NOTES' section and a table of parameter syntax, legal values, and default values.

**NOTES:**

- When you use design tables in the SolidWorks software, it is important to format the tables properly.
- The parameter syntax (header cells) are not case sensitive.

Parameter Syntax (header cell)	Legal Values (body cell)	Default if Value is Left Blank
<b>Parts only</b>		
<code>\$configuration@part_name</code>	configuration name	not evaluated
<code>\$configuration@feature_name</code>	configuration name	not evaluated
<b>Parts and Assemblies</b>		
<code>\$comment</code>	any text string	empty
<code>\$description</code>	any text string	configuration name
<code>\$partnumber</code>	any text string	configuration name
<code>\$state@feature_name</code>	Suppressed, S Unsuppressed, U	Unsuppressed
<code>dimension@feature_name</code> - or - <code>dimension@sketch_name</code>	any legal decimal value for the dimension	not evaluated
<code>\$hw-size</code>	any value listed in <b>Size</b> in the <b>Hole Wizard</b> PropertyManager	smallest hole size available
<code>\$parent</code>	parent configuration name	property is undefined
<code>\$prp@property</code>	any text string	property is undefined
<code>\$state@equation_number@equations</code>	Suppressed, S Unsuppressed, U	Unsuppressed
<code>\$state@lighting_name</code>	Suppressed, S Unsuppressed, U	Unsuppressed
<code>\$state@sketch_relation@sketch_name</code>	Suppressed, S Unsuppressed, U	Unsuppressed
<code>\$user notes</code>	any text string	not evaluated
<code>\$color</code>	32-bit integer specifying RGB (red, green, blue) color	zero (black)
<code>\$sw-mass</code>	any legal decimal value for the mass	The calculated value of mass in the <b>Mass Properties</b> dialog box.
<code>\$sw-cog</code>	any legal decimal value for the coordinates of the center of gravity, in the format <b>x, y, z</b>	The calculated value of mass in the <b>Mass Properties</b> dialog box.
<code>\$tolerance@dimension_name</code>	See <b>Tolerance Keywords and Syntax in Design Tables</b> .	<b>NONE</b> , or for a derived configuration, the tolerance value of its parent.

Questions????



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