

North East SolidWorks User Conference

Configurations & Design Tables

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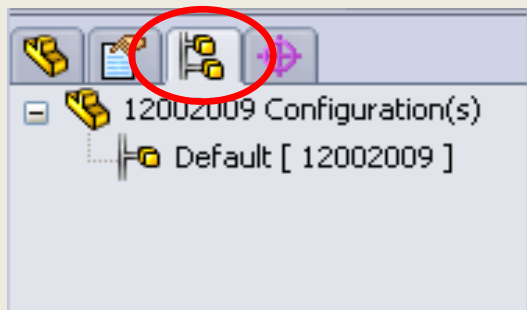
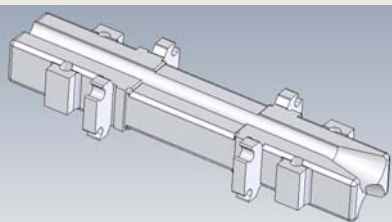


- What are Configurations
 - How to manage configurations without a design table
 - Why use a Configurations or a Derived Configurations
- How to create a Configuration
 - Advanced Options
 - What is a design table
 - With & without a design table, editing in table or as a separate Excel file
 - An easy 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

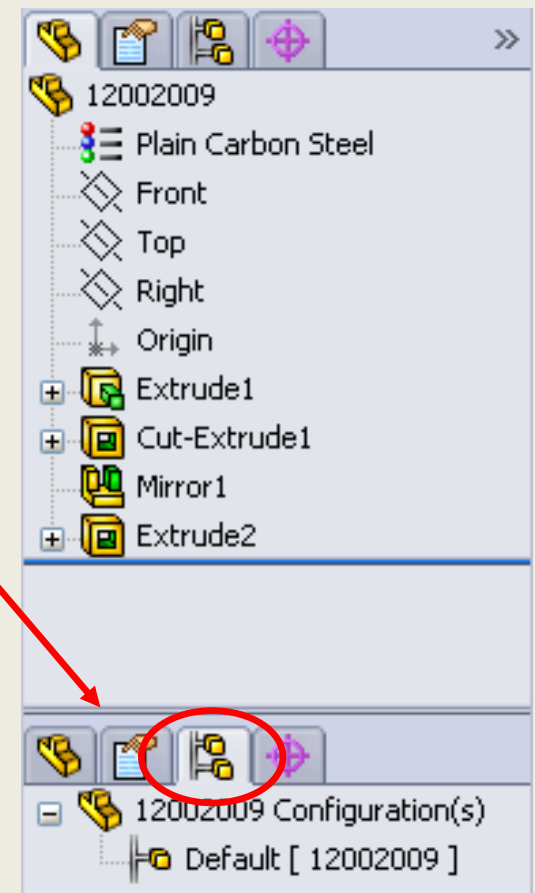
- Configurations allow you to create multiple variations of a part or an assembly model within a single file.
- Configurations provide a convenient way to develop and manage families of models with different dimensions, components, material, properties or other parameters.

- 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

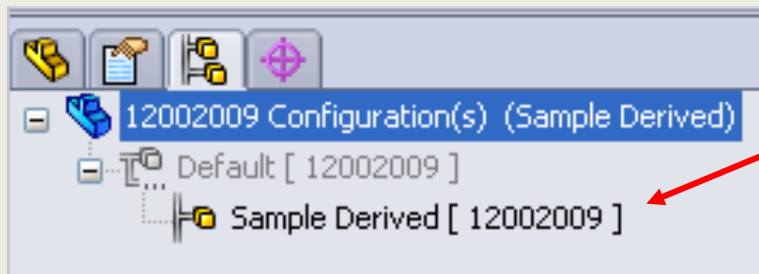
- There are a few ways to view existing configurations.
 - Go to the ConfigurationManager tab
 - Or you can **split** the ConfigurationManager tab by dragging the split bar



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.

Modify Configurations

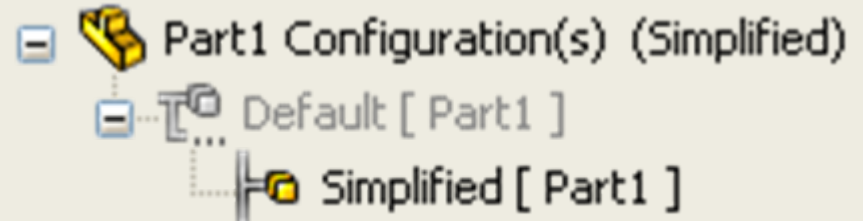
| | Mirror1 |
|----------------------------------|--------------------------|
| | Suppress |
| Default | <input type="checkbox"/> |
| Sample for PP | <input type="checkbox"/> |
| Test Config | <input type="checkbox"/> |
| < Creates a new configuration. > | |

Select "< Creates a new Configuration. >"

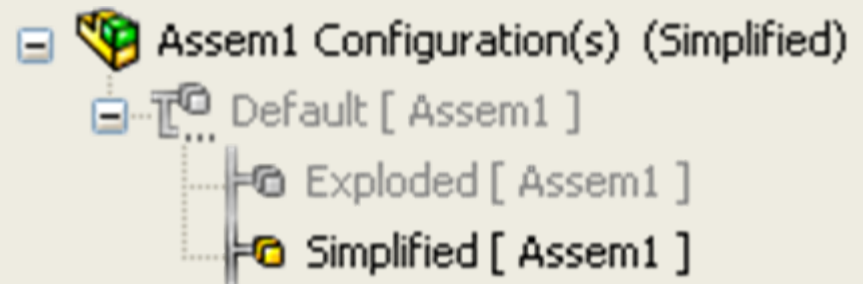
- Or through a Design Table

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

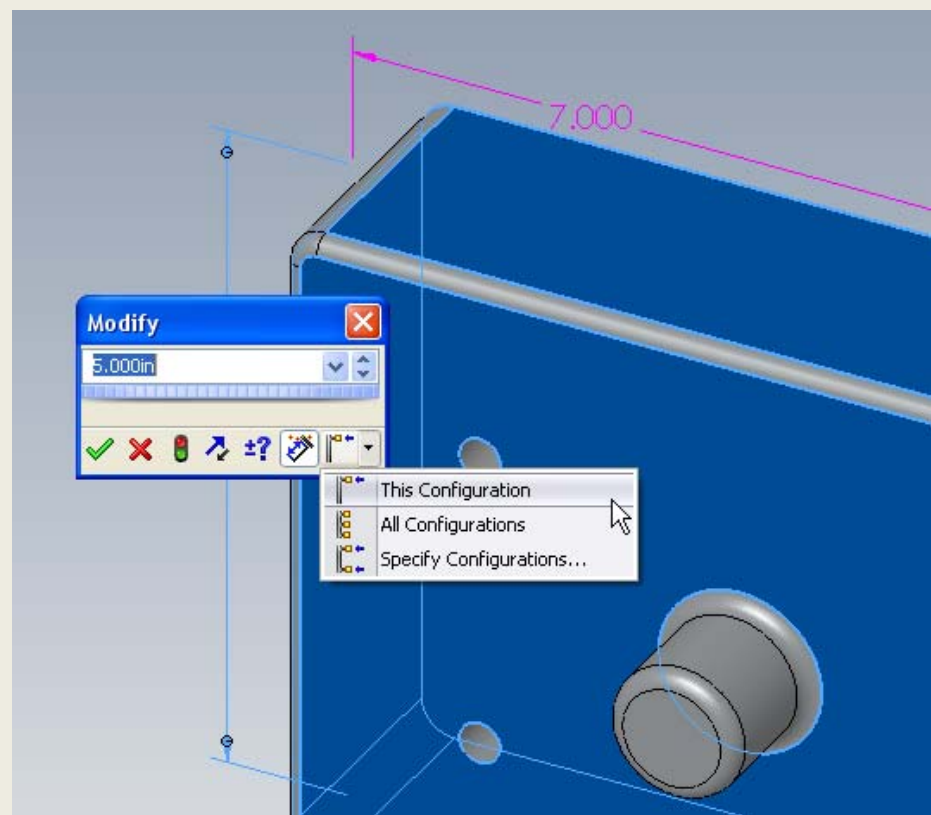
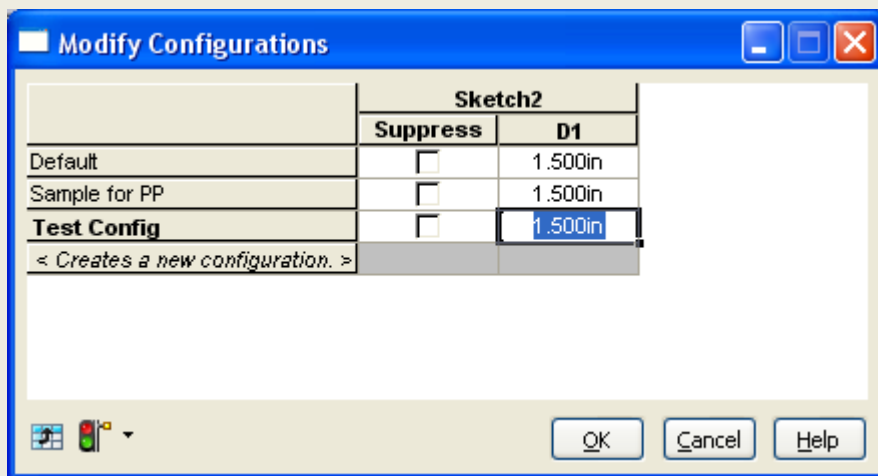
- Standards for parts



- Standards for Assemblies



- Right Mouse Button & Select “Configure”



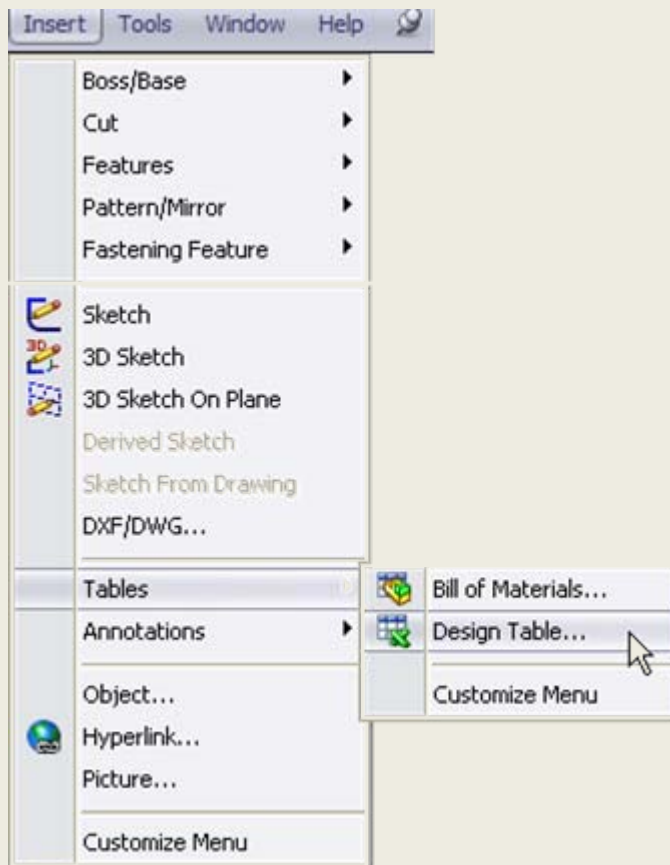
- Or double mouse button select on the dimension

- 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 | | | | | | | | | |

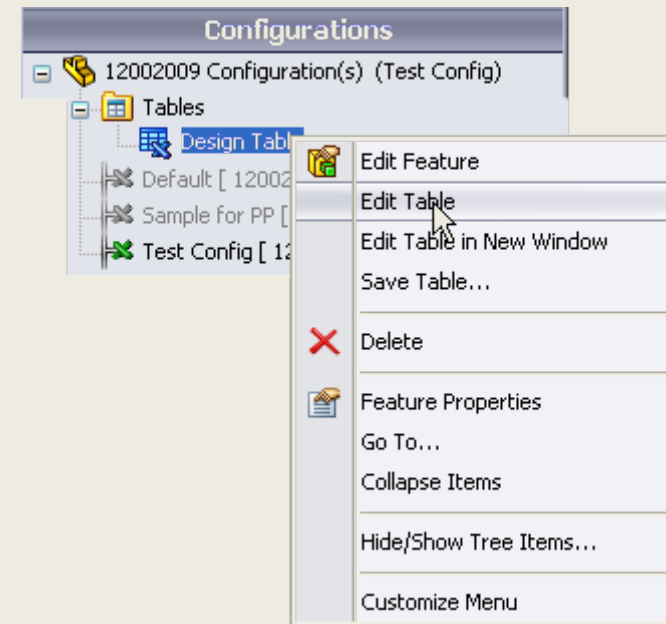
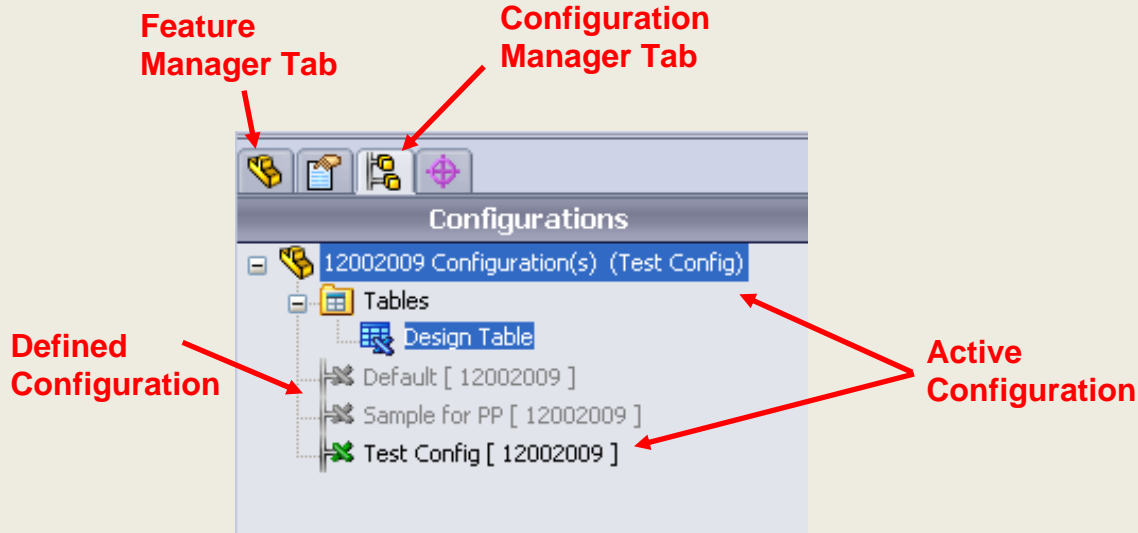
Configuration Name

Dimension Name

Feature Name

Suppression State

Dimension Value

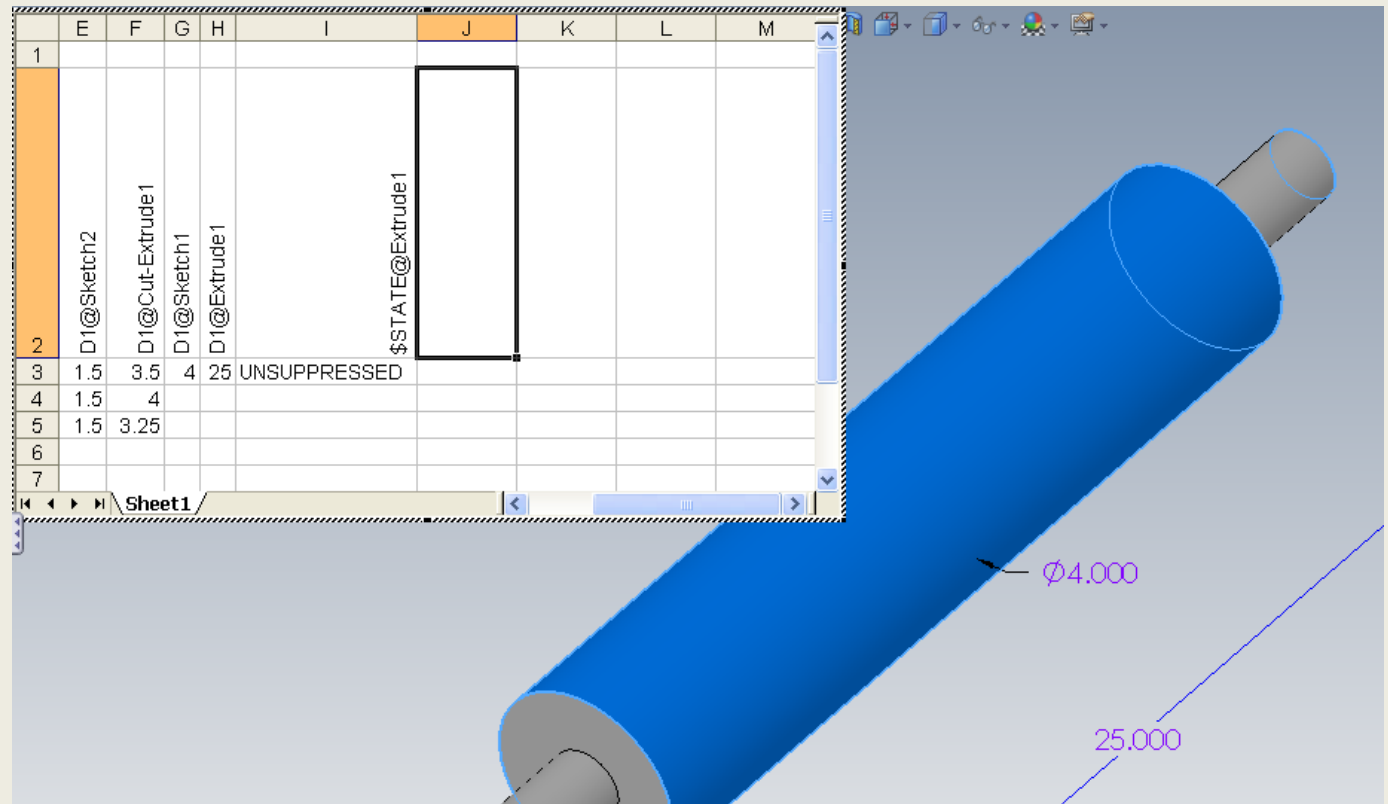


- Adding a new configuration by design table

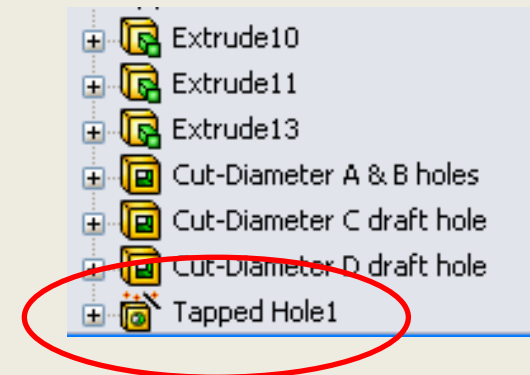
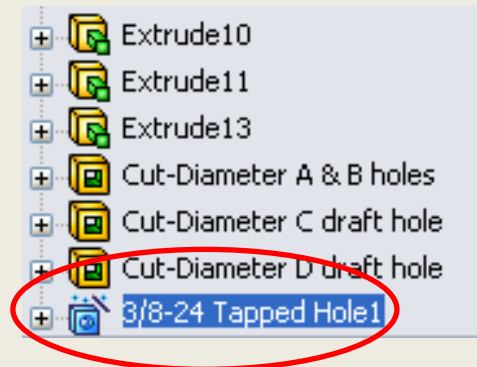
| | A | B | C | D | E | F | G |
|---|----------------------------|---------------|---------------|---------|------------------------|------------|-----------------|
| 1 | Design Table for: 12002009 | | | | | | |
| 2 | | | \$DESCRIPTION | \$COLOR | \$TOLERANCE@D1@Sketch2 | D1@Sketch2 | D1@Cut-Extrude1 |
| 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 | | | | | | | |



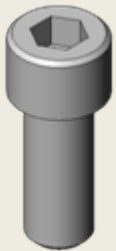
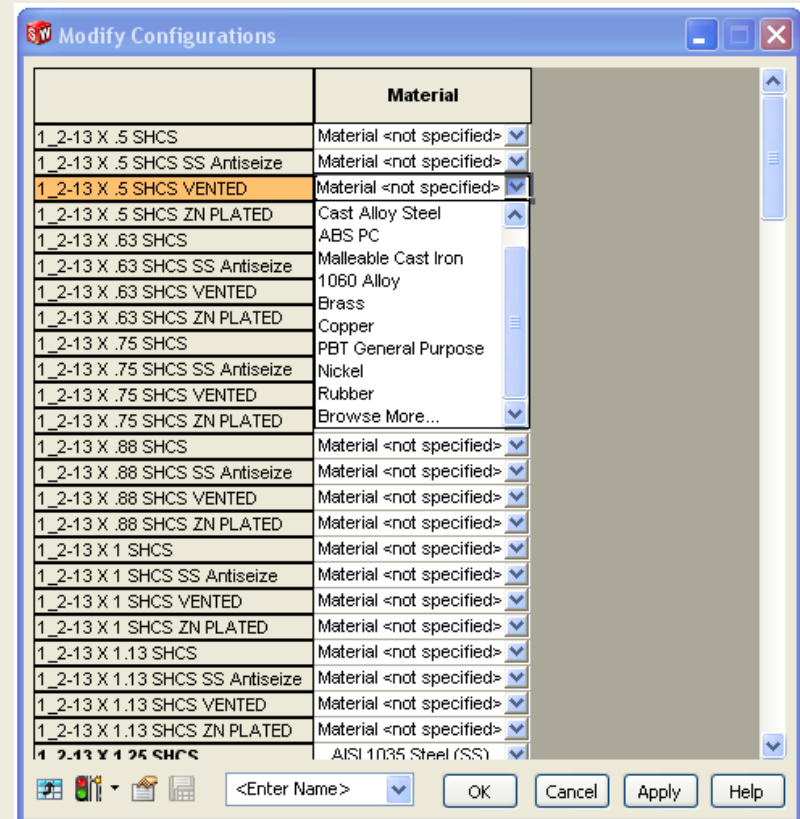
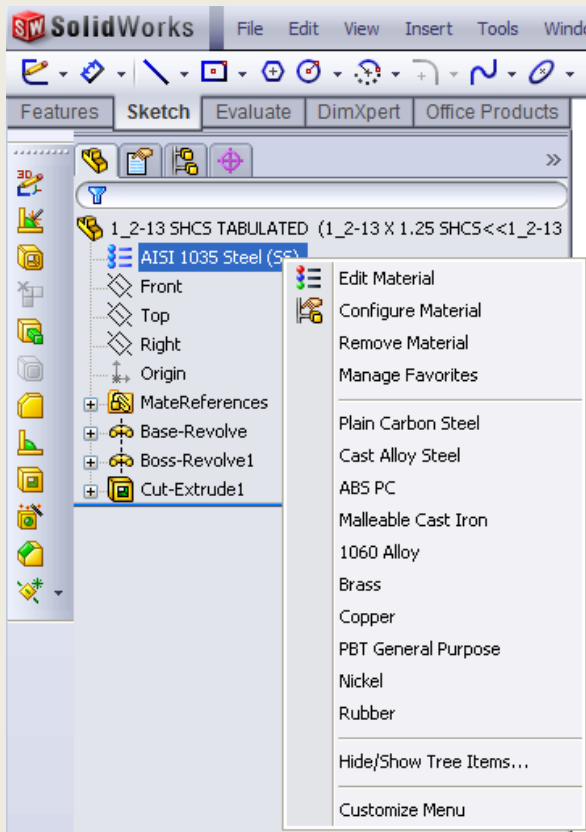
- Double mouse button select on the dimension to add it to the table as a variable



- 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

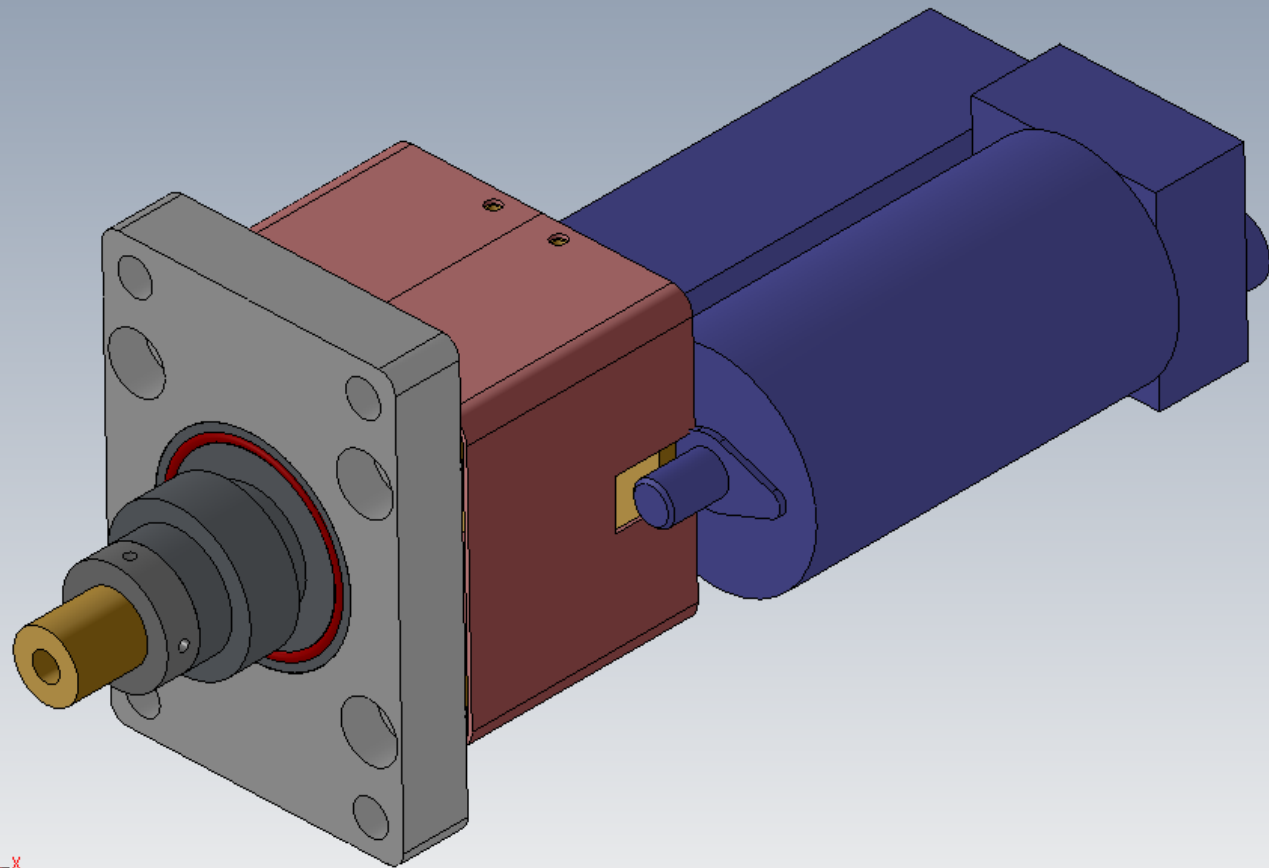
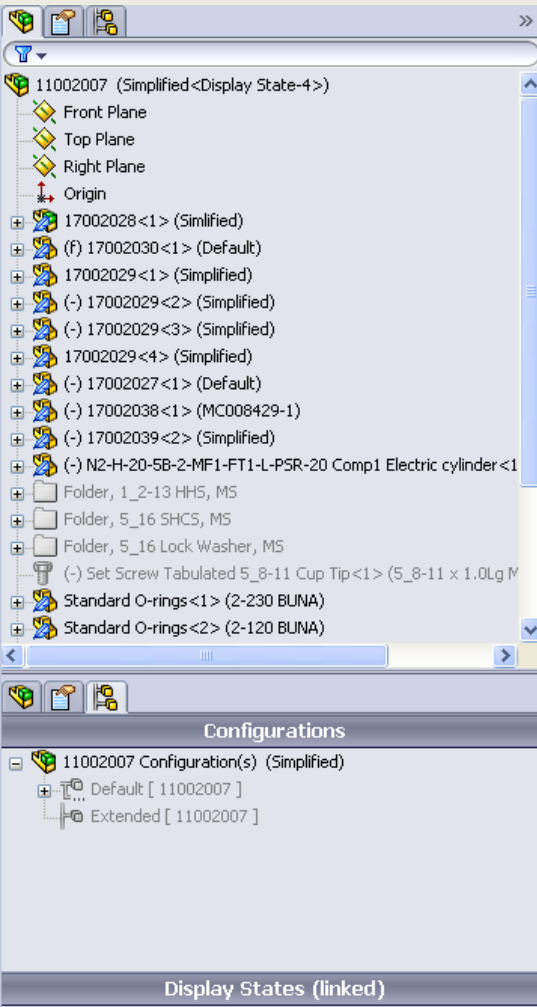
| | A | B | C | D | E | F | G | H | I |
|---|---------------------------|--------------------------|---------------|--------------|-------------------|-------------|-------------|-------------|-------------|
| 1 | Design Table for: Casting | | | | | | | | |
| 2 | | | \$DESCRIPTION | \$PARTNUMBER | \$PRP@Description | 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 'Summary of Design Table Parameters' selected. The main content area has a title bar 'Configurations > Specifying Configuration Parameters > Summary of Design Table Parameters' and a 'Print | Feedback on this topic' link. Below the title is a 'NOTES' section with two bullet points: 'When you use design tables in the SolidWorks software, it is important to format the tables properly.' and 'The parameter syntax (header cells) are not case sensitive.'

| Parameter Syntax (header cell) | Legal Values (body cell) | Default if Value is Left Blank |
|---|--|--|
| Parts only | | |
| <code>\$configuration@part_name</code> | configuration name | not evaluated |
| <code>\$configuration@feature_name</code> | configuration name | not evaluated |
| Parts and Assemblies | | |
| <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 Size in the Hole Wizard 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 Mass Properties dialog box. |
| <code>\$sw-cog</code> | any legal decimal value for the coordinates of the center of gravity, in the format x, y, z | The calculated value of mass in the Mass Properties dialog box. |
| <code>\$tolerance@dimension_name</code> | See Tolerance Keywords and Syntax in Design Tables . | NONE , or for a derived configuration, the tolerance value of its parent. |

Questions????



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