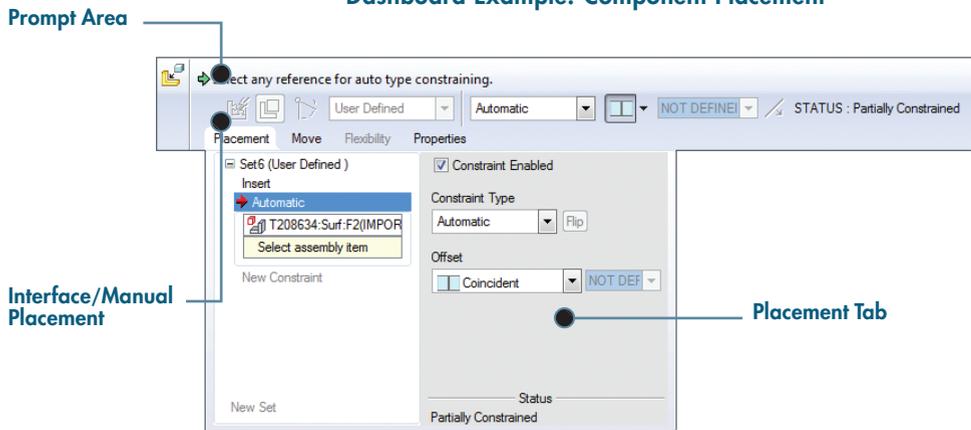
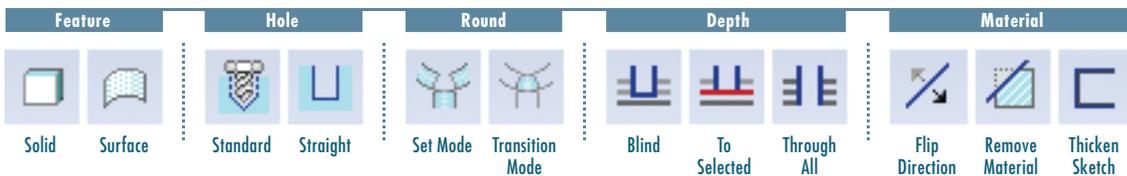


## Dashboard Example: Component Placement



## Common Dashboard Controls



# Pro/ENGINEER ICON GUIDE

## Main Toolbar

Undo Redo	Cut Copy Paste Paste Special	Regenerate Model Regenerative Manager Search Tool Selection Types	Repaint Spin Center Orient Mode	Drag Component Zoom In Zoom Out Refit	Reorient View Saved Views Layers View Manager	Wireframe Hidden line No Hidden Shading	Plane Axis Point Coordinate System Annotations
Edit		View		Model Display		Datum Display	

## Navigator Tabs

Model Tree Folder Browser	Favorites Connections
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## Browser Controls

Back Forward	Stop Refresh	Home Print Save
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## Drawing Toolbar

Set Drawing Model Update Views Drawing View Lock View Movement	Snap Lines Show and Erase Standard Dimension	Align Dimensions Cleanup Dimensions Note
Hyperlink Repeat Formatting Geometric Tolerance	Standard Symbol Custom Symbol Move Special	Table Update Table Cleanup Balloons Change Sheet

## Feature Creation Toolbar

<b>Datum</b>	Sketch	Plane	Axis	Curve	Point Types	Coordinate System	Analysis
	Annotation	AE Propagation					
<b>Assembly</b>	Add Component	Create Component					
<b>Pick/Place</b>	Hole	Draft	Round	Chamfer			
<b>Base</b>	Extrude	Revolve	Variable Section Sweep	Boundary Blend	Style		
<b>Editing</b>	Mirror	Merge	Trim	Pattern			

## Sketcher Toolbar

Select Items	Line Types	Rectangle	Circle Types	Arc Types	Fillet Types	Spline	Point/Csys	Entity from Edge Types	Dimension	Modify Values	Constraints	Text	Sketcher Palette	Trim Types	Mirror/Move-Rotate/Copy	Complete Sketch	Cancel Sketch
--------------	------------	-----------	--------------	-----------	--------------	--------	------------	------------------------	-----------	---------------	-------------	------	------------------	------------	-------------------------	-----------------	---------------

## Sheetmetal Toolbar

Extrude	Conversion	Flat Wall	Flange Wall	Unattached Wall Types	Extended Wall	Bend Types	Unbend/Bend Back	Relief/Punch/Notch/Rip/Merge	Form/Flatten Form/Deform Area	Flat Pattern
---------	------------	-----------	-------------	-----------------------	---------------	------------	------------------	------------------------------	-------------------------------	--------------

## Keyboard Shortcuts

Regenerate	CTRL + G	Copy	CTRL + C
New File	CTRL + N	Paste	CTRL + V
Open File	CTRL + O	Undo	CTRL + Z
Save File	CTRL + S	Redo	CTRL + Y
Find	CTRL + F	Repaint	CTRL + R
Delete	DEL	Standard View	CTRL + D

# MAKING SELECTIONS

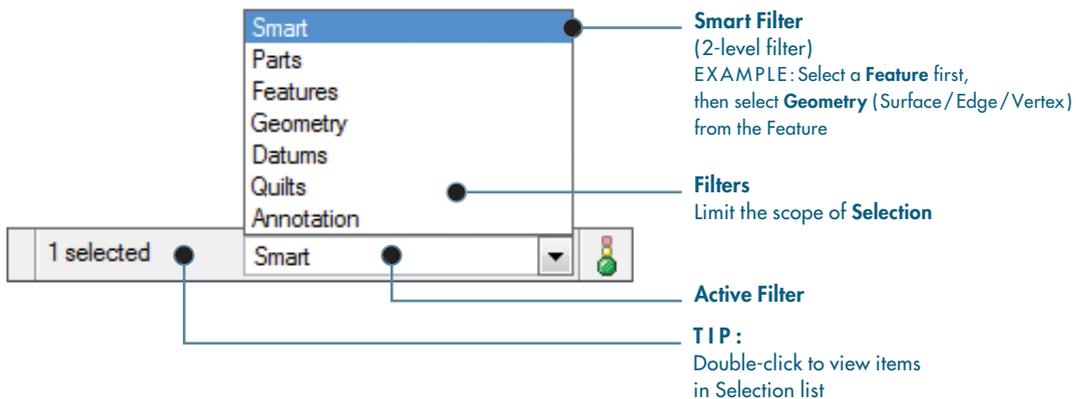
## System Color Assignments

Cyan		<b>Preselection Highlight</b> Item will be added to or removed from the set of selected items
Red		<b>Selected Geometry</b> Items currently selected
Yellow		<b>Preview Geometry</b> Results of the current operation when complete

## Making Selections

Mouse Controls		
Highlight Geometry	>>	 Over Geometry
Query to Next Item	>>	 Until Highlighted
Select Highlighted Geometry	>>	
Add or Remove Items from Selection	>>	<b>CTRL</b> + 
Construct Chains or Surface Sets	>>	<b>SHIFT</b> + 
Clear Selection	>>	 On Background

## USING FILTERS



# ADVANCED SELECTION: Chain and Surface Set Construction

## DEFINITIONS

### General Definitions

#### Chain

A collection of adjacent edges and curves that share common endpoints. Chains can be open-ended or closed-loop, but they are always defined by two ends.

#### Surface Set

A collection of surface patches from solids or quilts. The patches do not need to be adjacent.

### Methods of Construction

#### Individual

Constructed by selecting individual entities (edges, curves, or surface patches) one at a time. This is also called the One-by-One method.

#### Rule-Based

Constructed by first selecting an anchor entity (edge, curve, or surface patch), and then automatically selecting its neighbors (a range of additional edges, curves, or surface patches) based on a rule. This is also called the Anchor/Neighbor method.

## CONSTRUCTING CHAINS

### Individual Chains

#### One-by-One

To select adjacent edges one at a time along a continuous path:

- 1 Select an edge
- 2 Hold down SHIFT
- 3 Select adjacent edges
- 4 Release SHIFT

### Rule-Based Chains

#### Tangent

To select all the edges that are tangent to an anchor edge:

- 1 Select an edge
- 2 Hold down SHIFT
- 3 Highlight **Tangent** chain (Query may be required)
- 4 Select tangent chain
- 5 Release SHIFT

#### Boundary

To select the outermost boundary edges of a quilt:

- 1 Select a one-sided edge of a quilt
- 2 Hold down SHIFT
- 3 Highlight **Boundary** chain (Query may be required)
- 4 Select boundary chain
- 5 Release SHIFT

#### Surface Loop

To select a loop of edges on a surface patch:

- 1 Select an edge
- 2 Hold down SHIFT
- 3 Highlight **Surface** chain (Query may be required)
- 4 Select surface loop
- 5 Release SHIFT

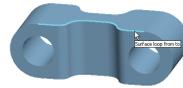
#### From-To

To select a range of edges from a surface patch or a quilt:

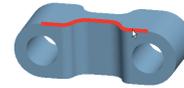


- 1 Select the **From** edge

- 2 Hold down SHIFT



- 3 Query to highlight the desired **From-To** chain



- 4 Select From-To chain

- 5 Release SHIFT

### Multiple Chains

- 1 Construct initial chain
- 2 Hold down CTRL
- 3 Select an edge for new chain
- 4 Release CTRL
- 5 Hold down SHIFT
- 6 Complete new chain from selected edge



### CONSTRUCTING SURFACE SETS

#### Individual Surface Sets

##### Single Surfaces

To select multiple surface patches from solids or quilts one at a time:

- 1 Select a surface patch
- 2 Hold down CTRL
- 3 Select additional patches (Query may be required)
- 4 Release CTRL

#### Rule-Based Surface Sets

##### Solid Surfaces

To select all the surface patches of solid geometry in a model:

- 1 Select a surface patch on solid geometry
- 2 Right-click and select **Solid Surfaces**

##### Quilt Surfaces

To select all the surface patches of a quilt:

- 1 Select a surface feature
- 2 Select the corresponding quilt

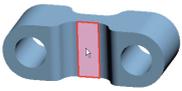
##### Loop Surfaces

To select all the surface patches that are adjacent to the edges of a surface patch:

- 1 Select a surface patch
- 2 Hold down SHIFT
- 3 Place the pointer over an edge of the patch to highlight the **Loop Surfaces**
- 4 Select the Loop Surfaces (The initial surface patch is de-selected)
- 5 Release SHIFT

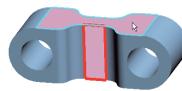
##### Seed and Boundary Surfaces

To select all surface patches, from a **Seed** surface patch up to a set of **Boundary** surface patches:

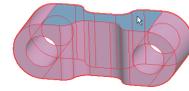


- 1 Select the **Seed** surface patch

- 2 Hold down SHIFT



- 3 Select one or more surface patches to be used as boundaries



- 4 Release SHIFT (All surfaces from the Seed up to the Boundaries are selected)

#### Excluding Surface Patches from Surface Sets

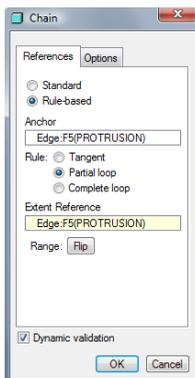
To exclude surface patches during or after construction of a surface set:

- 1 Construct a surface set
- 2 Hold down CTRL
- 3 Highlight a patch from the surface set
- 4 Select the patch to de-select it
- 5 Release CTRL

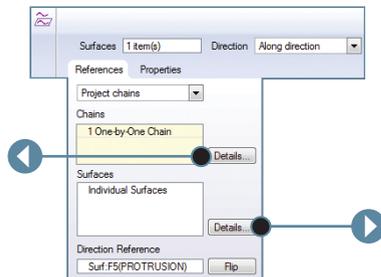
### CONSTRUCTING CHAINS AND SURFACE SETS USING DIALOG BOXES

To explicitly construct and edit Chains and Surface Sets, click **Details** next to a collector:

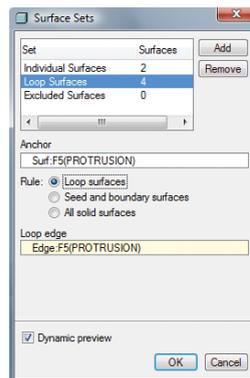
Chain Dialog Box



Dashboard Collector



Surface Set Dialog Box



# ORIENTING THE MODEL

## DYNAMIC VIEWING

3D Mode	
Hold down the key and button. Drag the mouse.	
SPIN	
PAN	SHIFT + 
ZOOM	CTRL + 
TURN	CTRL + 
2D Mode	
PAN	
ZOOM	CTRL + 
2D and 3D Modes	
Hold down the key and roll the mouse wheel.	
ZOOM	
FINE ZOOM	SHIFT + 
COARSE ZOOM	CTRL + 



### Using the Spin Center

Click the icon in the Main Toolbar to enable the Spin Center.

- Enabled – The model spins about the location of the spin center
- Disabled – The model spins about the location of the mouse pointer



### Using Orient Mode

Click the icon in the Main Toolbar to enable Orient mode.

- Provides enhanced Spin/Pan/Zoom Control
- Disables selection and highlighting
- Right-click to access additional orient options
- Use the shortcut: CTRL + SHIFT + Middle-click



### Using Component Drag Mode in an Assembly

Click the icon in the Main Toolbar to enable Component Drag mode.

- Allows movement of components based on their kinematic constraints or connections
- Click a location on a component, move the mouse, click again to stop motion.
- Middle-click to disable Component Drag mode

## COMPONENT PLACEMENT CONTROLS

Allows reorientation of components during placement

COMPONENT DRAG	CTRL + ALT + 
SPIN	CTRL + ALT + 
MOVE	CTRL + ALT + 

### Object Mode

Provides enhanced Spin/Pan/Zoom Control:

- 1 Enable Orient mode
- 2 Right-click to enable Orient Object mode
- 3 Use Dynamic Viewing controls to orient the component
- 4 Right-click and select Exit Orient mode