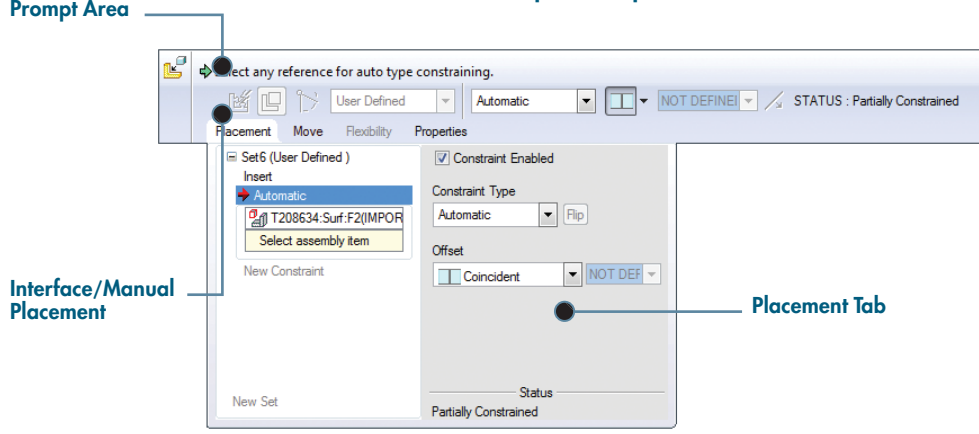
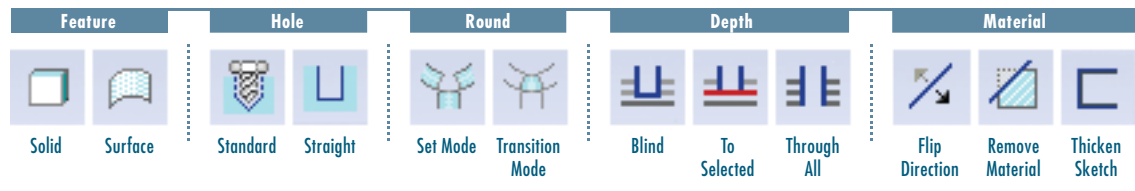


Dashboard Example: Component Placement



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 |

Browser Controls

| | | | | | | |
|------|---------|------|---------|------|-------|------|
| | | | | | | |
| Back | Forward | Stop | Refresh | Home | Print | Save |

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

| | | |
|-------------------|------------------------|--|
| Datum | Sketch | |
| | Plane | |
| | Axis | |
| | Curve | |
| | Point Types | |
| | Coordinate System | |
| | Analysis | |
| | Annotation | |
| | AE Propagation | |
| Assembly | Add Component | |
| | Create Component | |
| Pick/Place | Hole | |
| | Draft | |
| | Round | |
| | Chamfer | |
| Base | Extrude | |
| | Revolve | |
| | Variable Section Sweep | |
| | Boundary Blend | |
| | Style | |
| Editing | 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

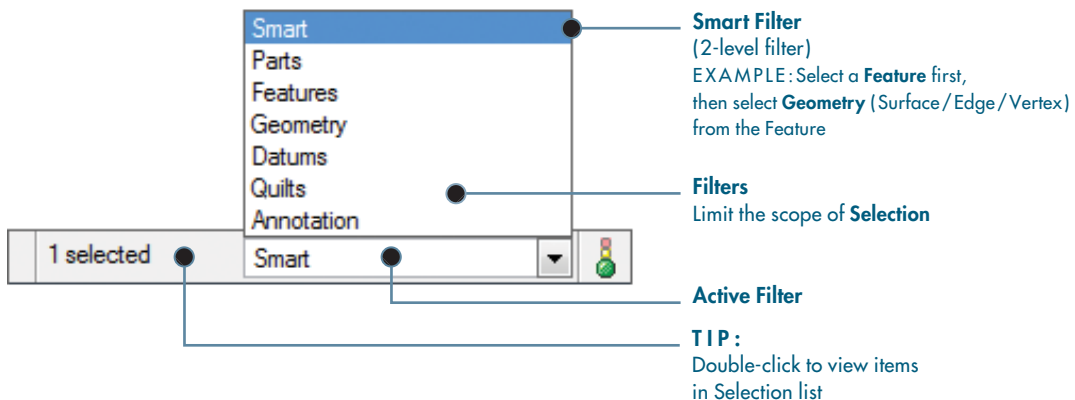
System Color Assignments

| | | |
|--------|---|--|
| Cyan |  | Preselection Highlight Item will be added to or removed from the set of selected items |
| Red |  | Selected Geometry Items currently selected |
| Yellow |  | Preview Geometry 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 |  +  |
| Construct Chains or Surface Sets |  +  |
| 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

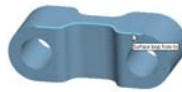
From-To

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

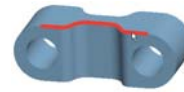


- 1 Select the **From** edge

- 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:

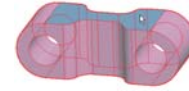


- 1 Select the **Seed** surface patch

- 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

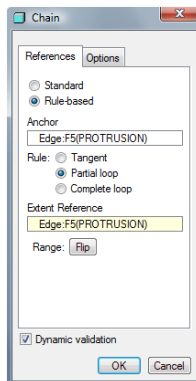
To exclude surface patches during or after construction of a surface set:

- 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

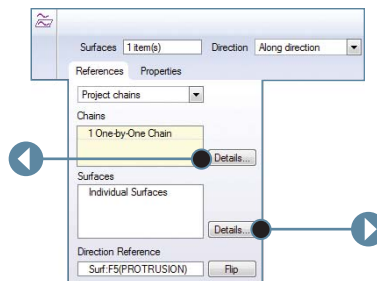
CONSTRUCTING CHAINS AND SURFACE SETS USING DIALOG BOXES

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

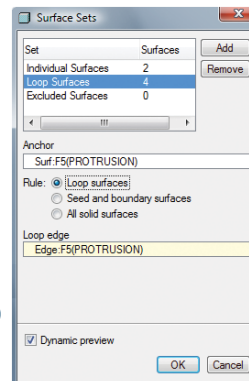
Chain Dialog Box



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