How to Develop Great Mechanical Drawings

Realize innovation.

Muhammad Sajjad

Solid Edge Application Engineer

Mike Ashbaugh

Solid Edge Electrical Design
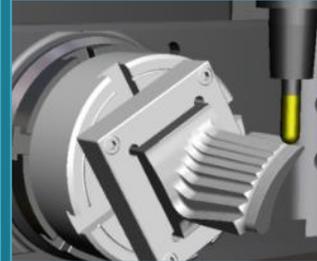
Solid Edge Portfolio

Mechanical Design

Electrical Design

Simulation
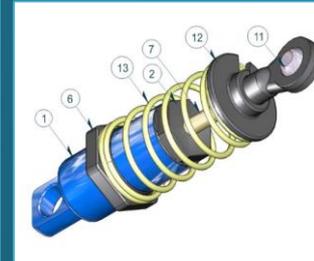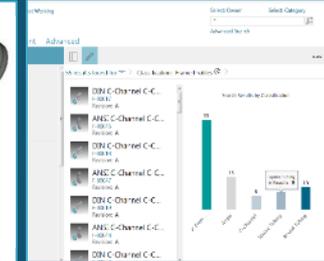
Manufacturing

Technical Publications
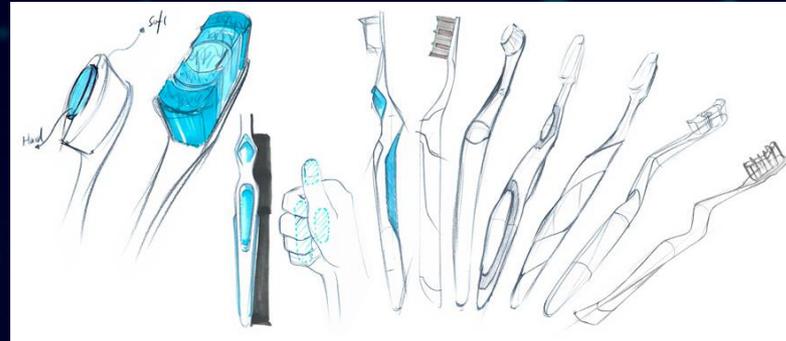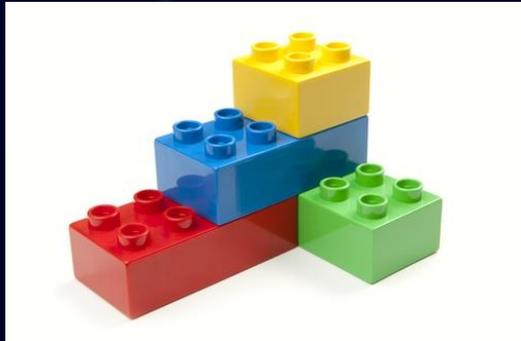
Data Management

Cloud-based Collaboration
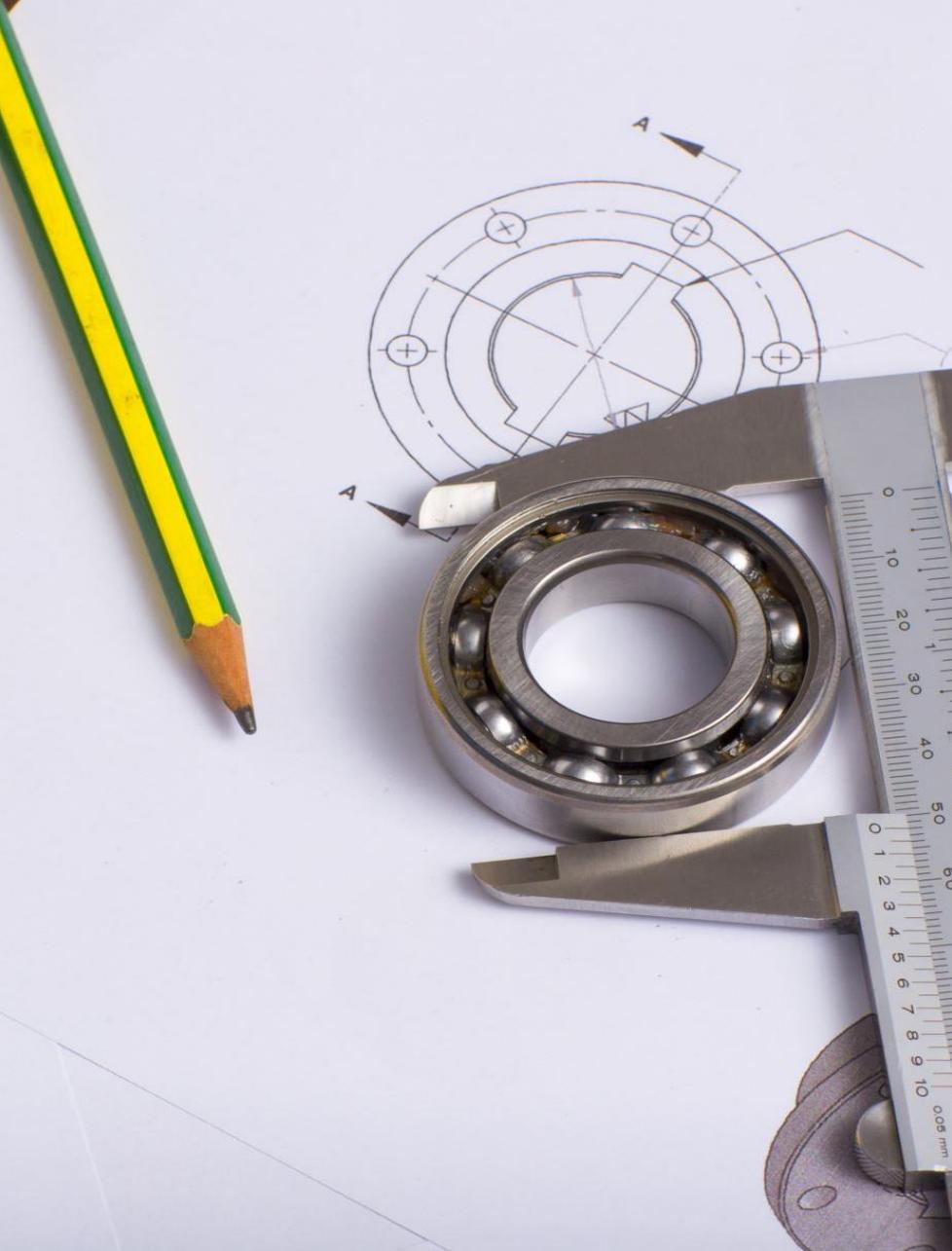
Access the Solid Edge Portfolio and Resources

SIEMENS
Ingenuity for life

www.siemens.com/solid-edge-educator

All Products are Designed

Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | **www.siemens.com/solid-edge-educator**
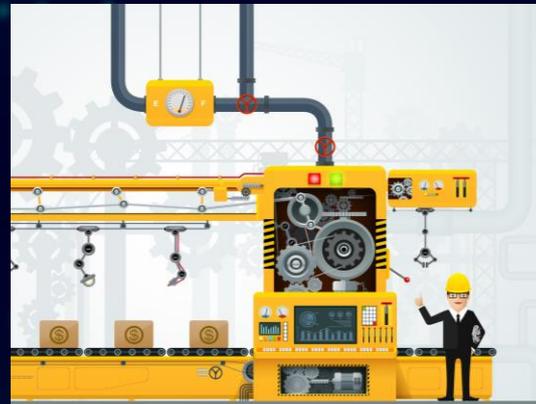
Impact of Mechanical Design and Drafting

- Cost
- Time
- Risk

Basic Mechanical Design

Solid Edge 2D Drafting
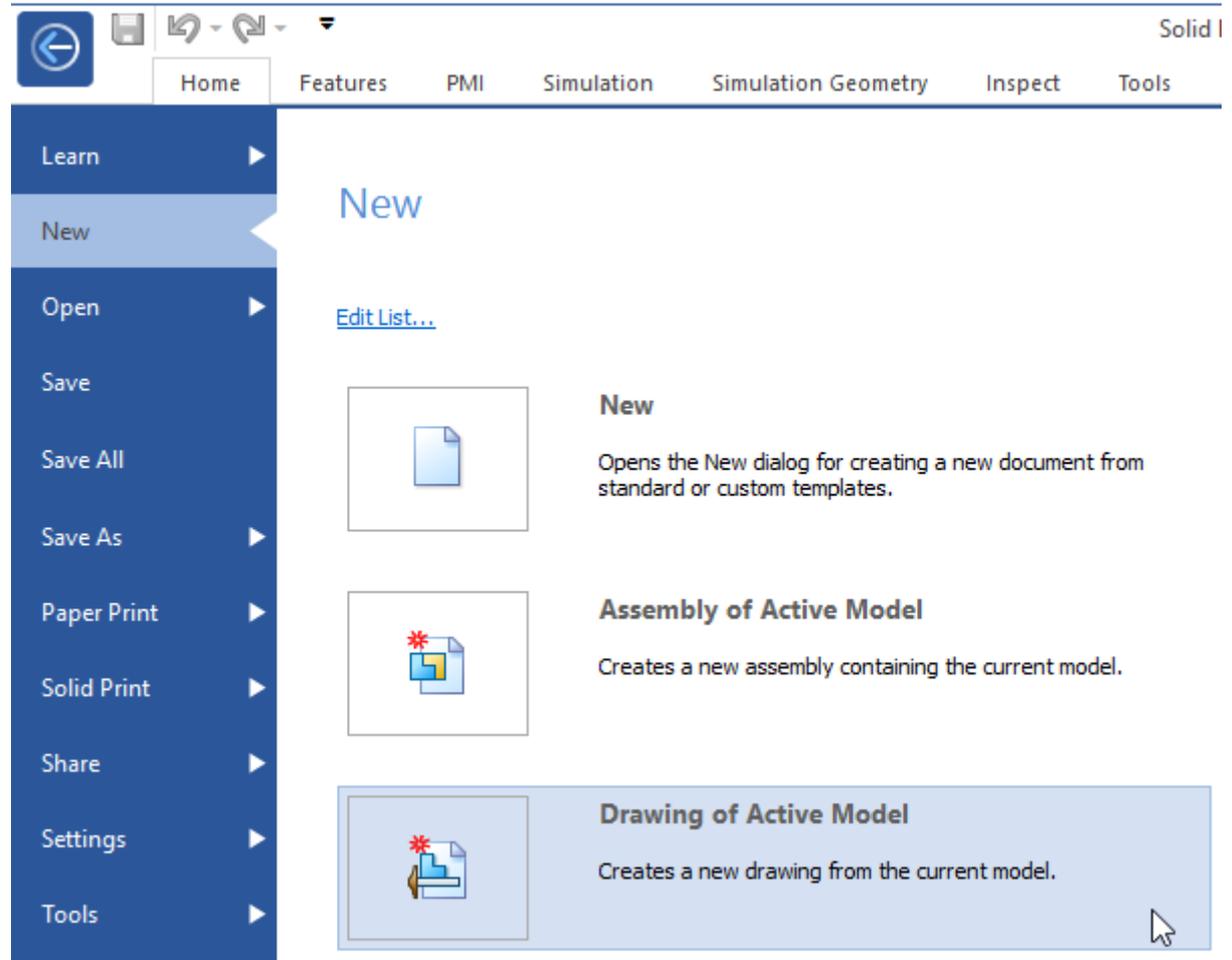
Drawing Creation

- Create a new draft file
- Select from the standard of your choice

Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | **www.siemens.com/solid-edge-educator**
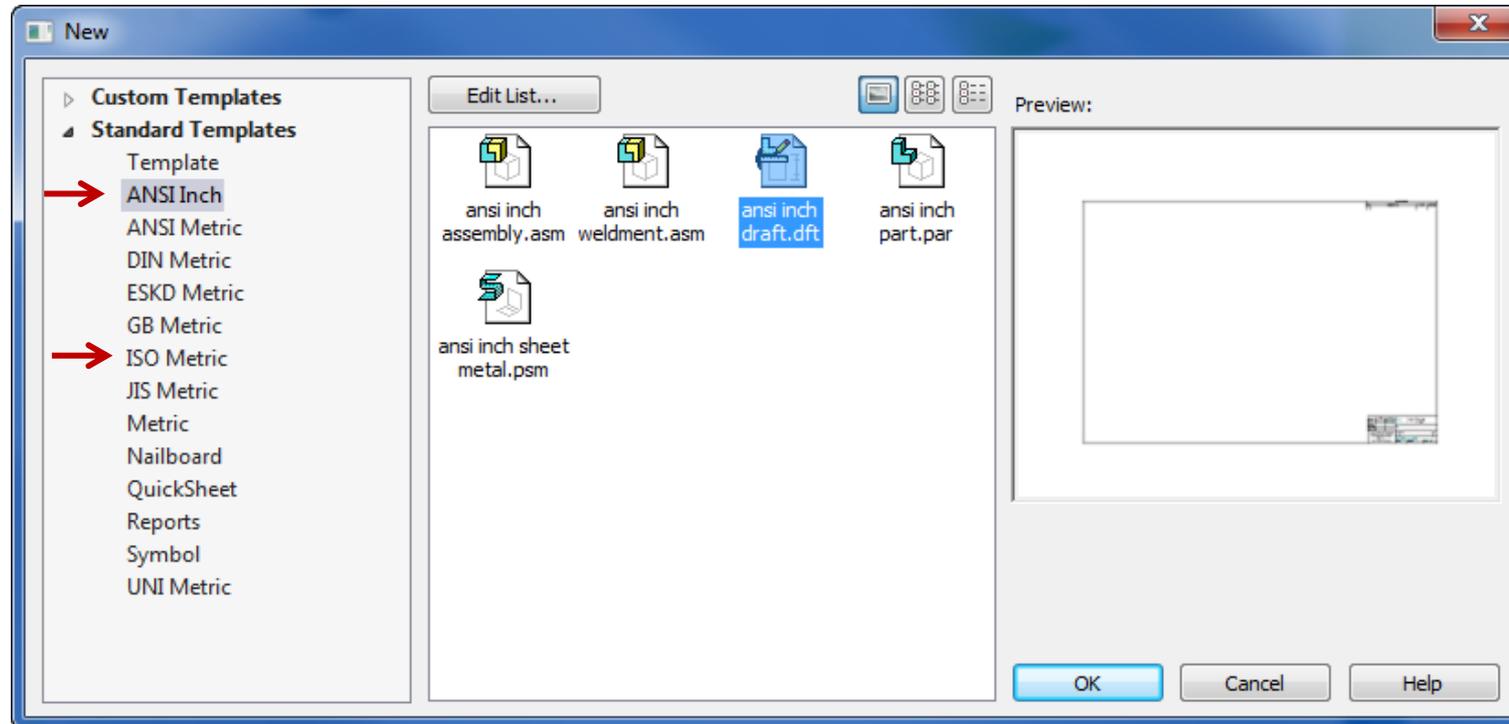
Drawing Creation

- You can create a drawing of the active model you currently have open in Solid Edge
  - Applications Button > New > Drawing of Active Model
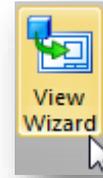
Drawing View Creation Commands

- View Wizard
  - Steps for creating
    standard drawing views
- Principal
  - For dragging off views from an existing view
- Auxiliary View
- Detail View
- Cutting Plane
  - Used in conjunction with creating a Section View
- Broken Section
- Modifying Views

Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | **www.siemens.com/solid-edge-educator**
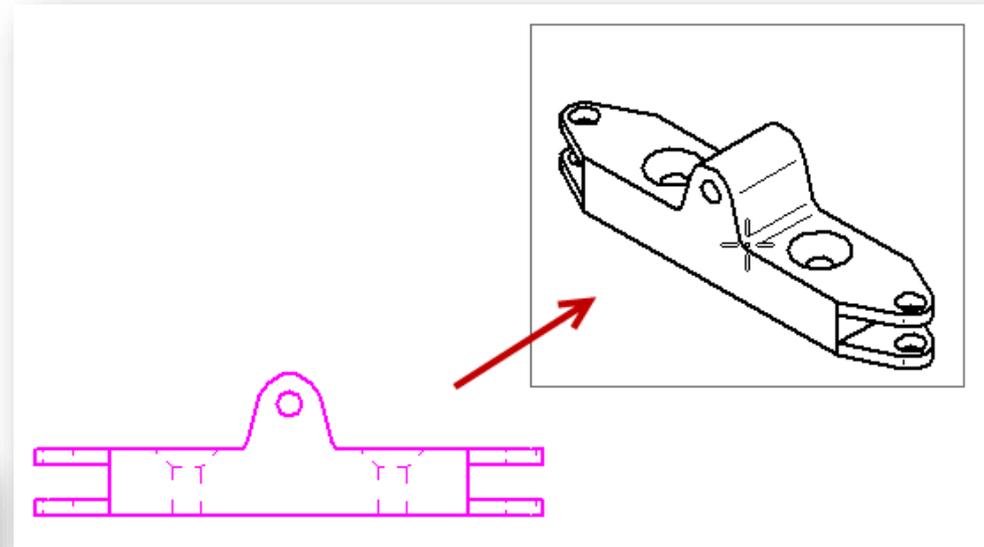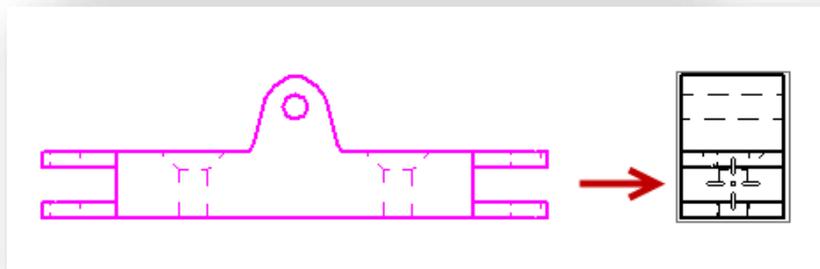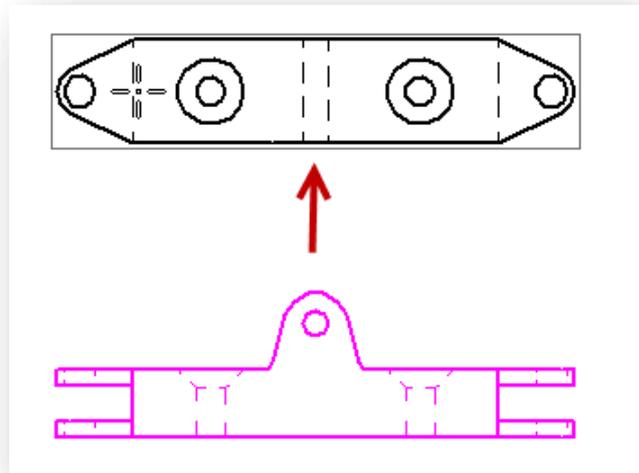
Placing Initial Views

- Drawing View Wizard
  - Pick an individual view or all of the views you would like to place.
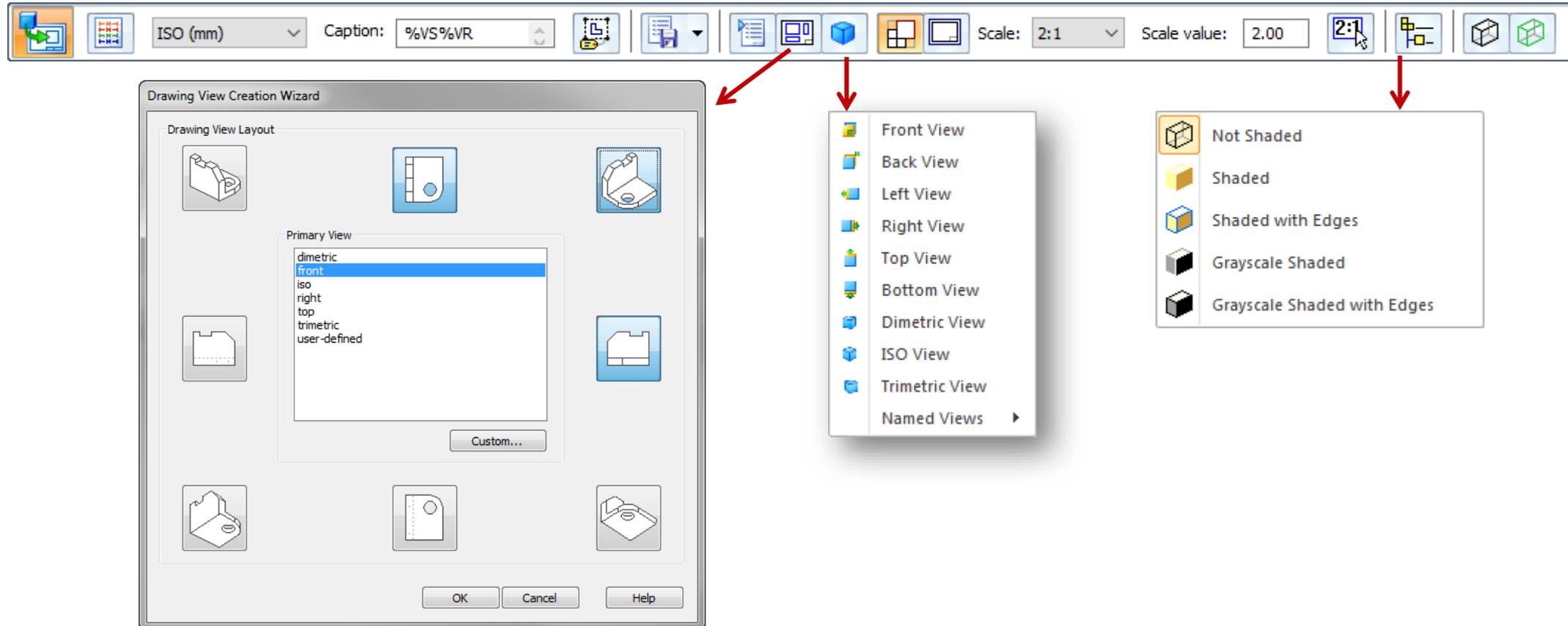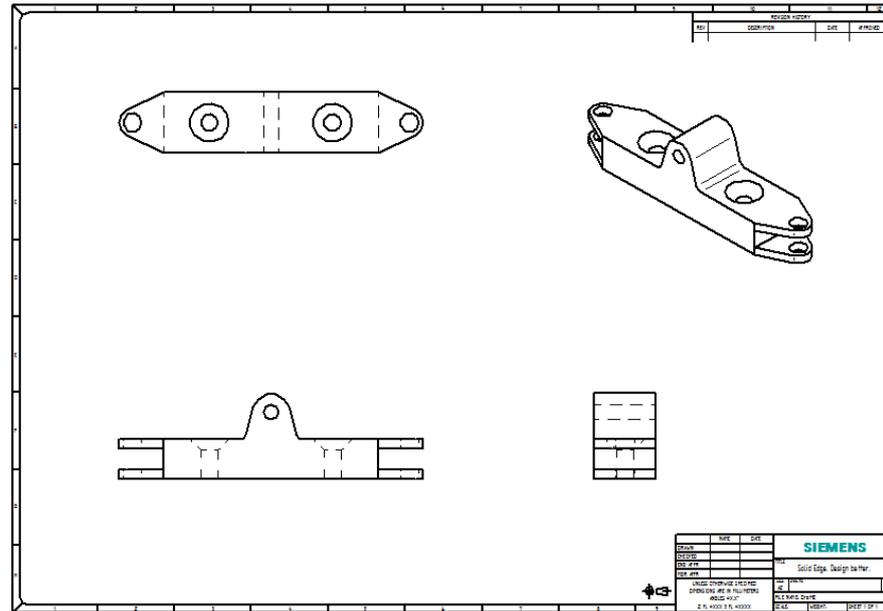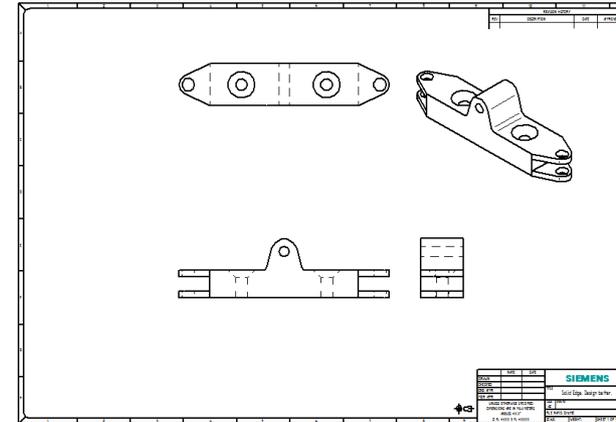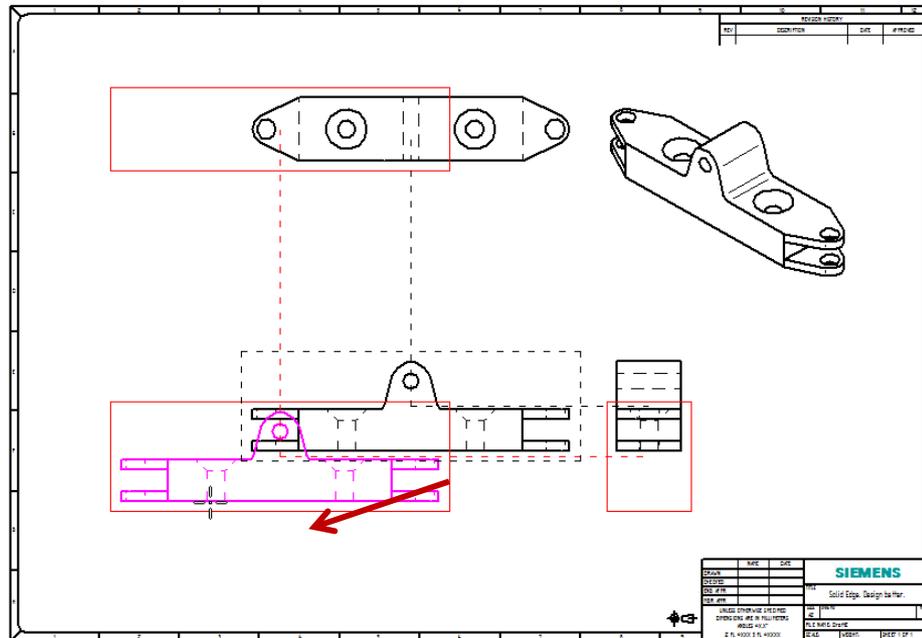
Principal Views

- Click on a view
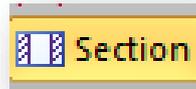 - Cursor position dictates which orthographic view is created

Placing Initial Views

- Manipulate views by click and drag
  - Orthogonal views **remain aligned**

Cutting Plane

Cutting Plane

- Cutting Plane Line for a Section View
  - Select the view to be sectioned
  - Sketch the cutting line
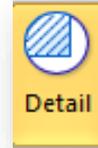 - Cursor position determines cut side

Section View

Section

- Identify the cutting plane line
  - Options for the section type
- Aligned by default

A

A

SECTION A-A

SECTION A-A
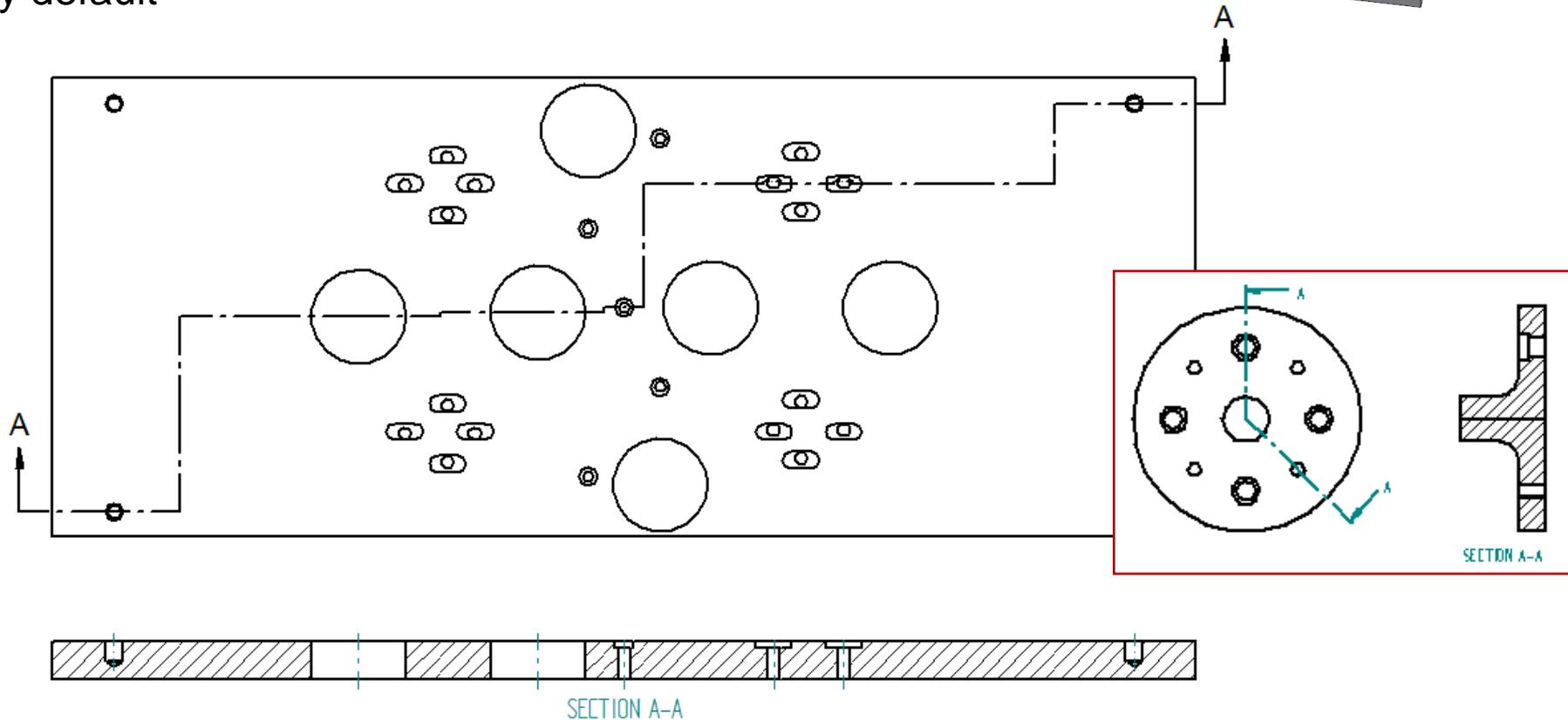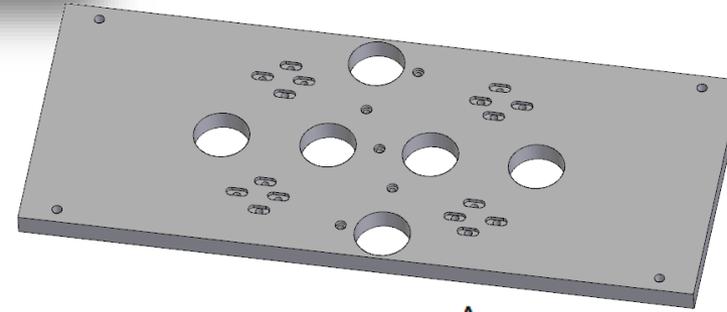
Detail View

- 3 clicks
  - Select the center for the Detail View
  - Define the diameter
  - Place the view

SECTION A-A

DETAIL B

Dimension Commands

SIEMENS
Ingenuity for life
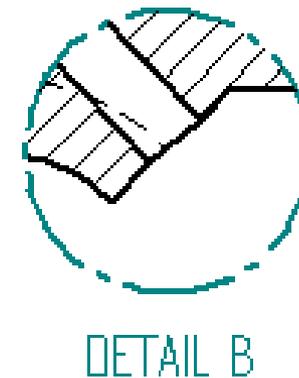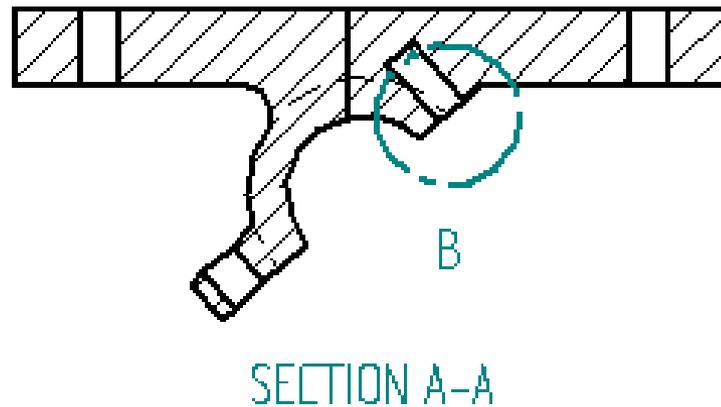
- SmartDimension

- Distance Between
  - Stacked
  - String
  - Axis

- Angle Between

- Coordinate Dimension

- Angular Coordinate Dimension

- Symmetric Diameter

- Chamfer Dimension

- Retrieve Dimensions
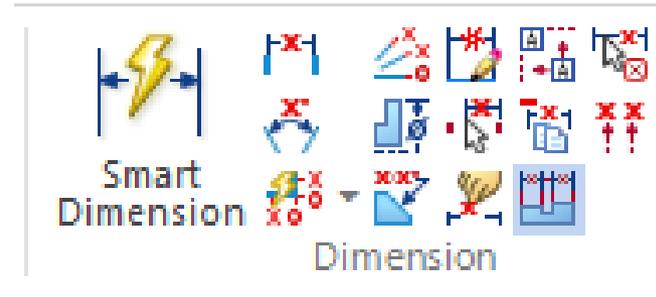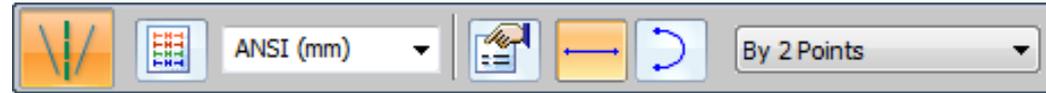

- Retrieve Dimensions

- Line Up Text

- Copy Attributes

- Maintain Alignment Set

- Remove from Alignment Set

- Arrange Dimensions

Annotation Commands

- Centerlines and Center Marks

- Balloons and Callouts

- Surface Texture Symbol

- Weld Symbols

- Feature Control Frames

- Datum Frames and Target

- Annotation Alignment Shape
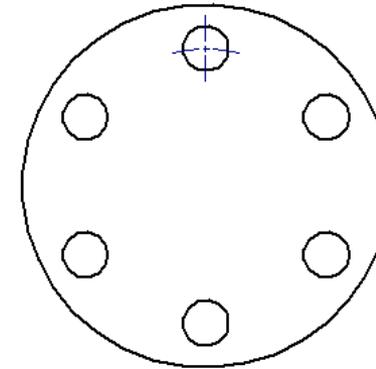
- Show/Hide Annotation Alignment Shape

Centerline
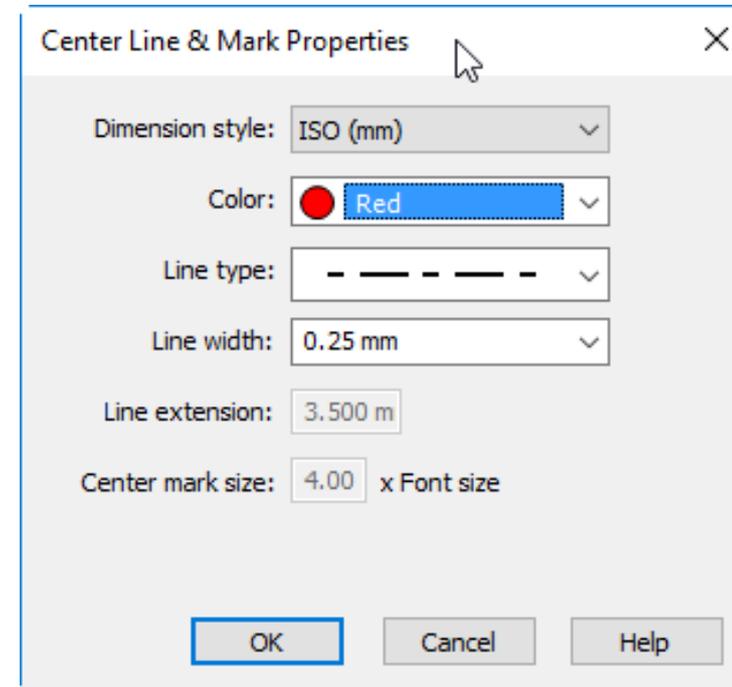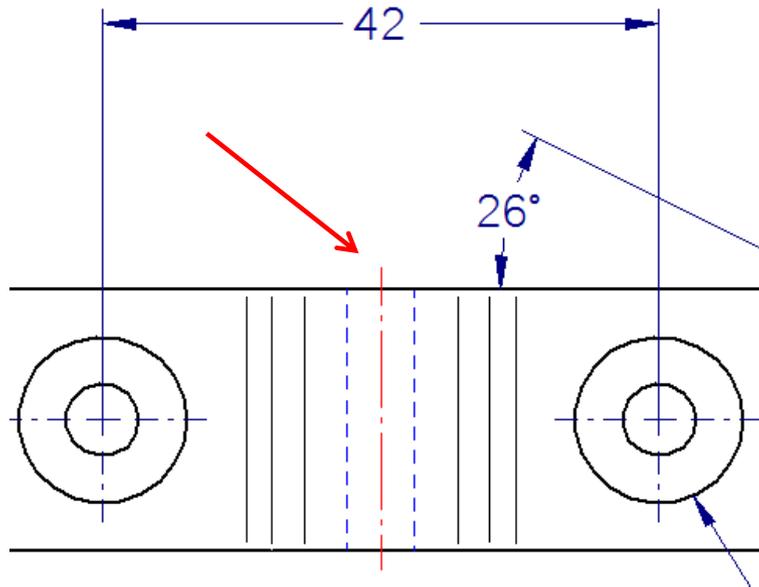
Center Mark
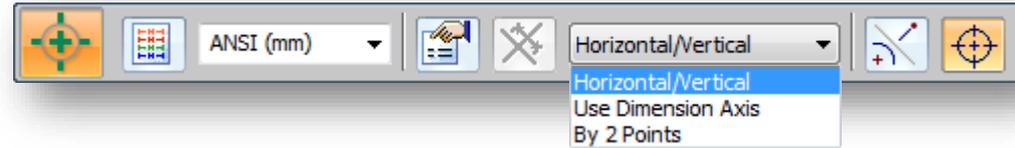
- By 2 Points for single bolt hole in a circular pattern

- You can define a select set by
  dragging a fence around holes

Click on an arc or circle -or- Click+Drag for a rectangular fence.
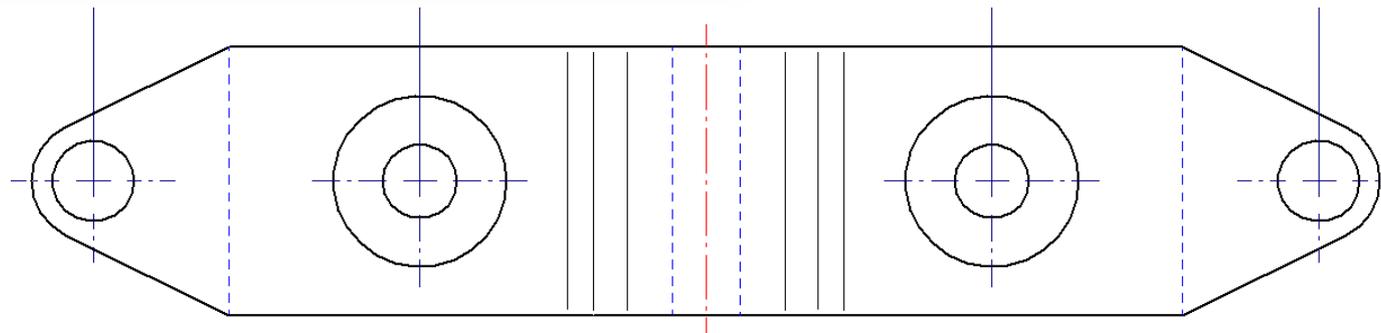
Text and Leaders

- Text Box

- Leaders

- You can place a leader anywhere on the drawing
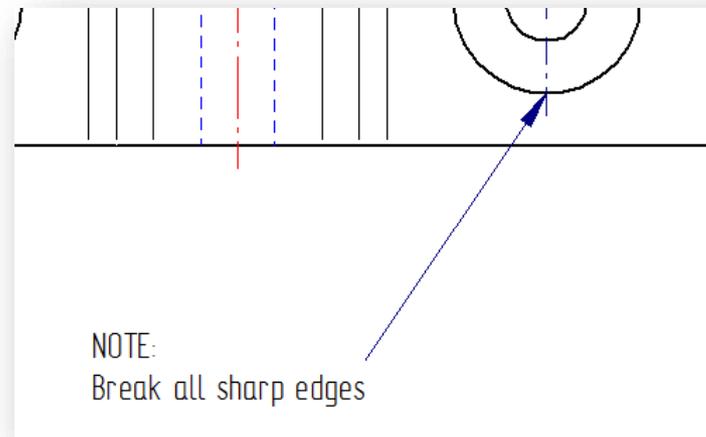
Feature Callout
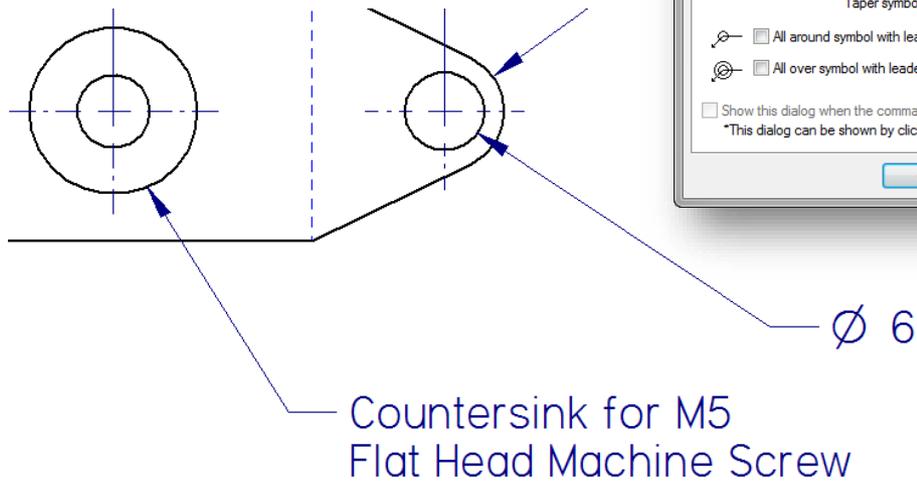
Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | **www.siemens.com/solid-edge-educator**
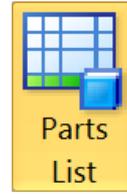
Tables

- Parts List

- Hole Table

- Bend Table
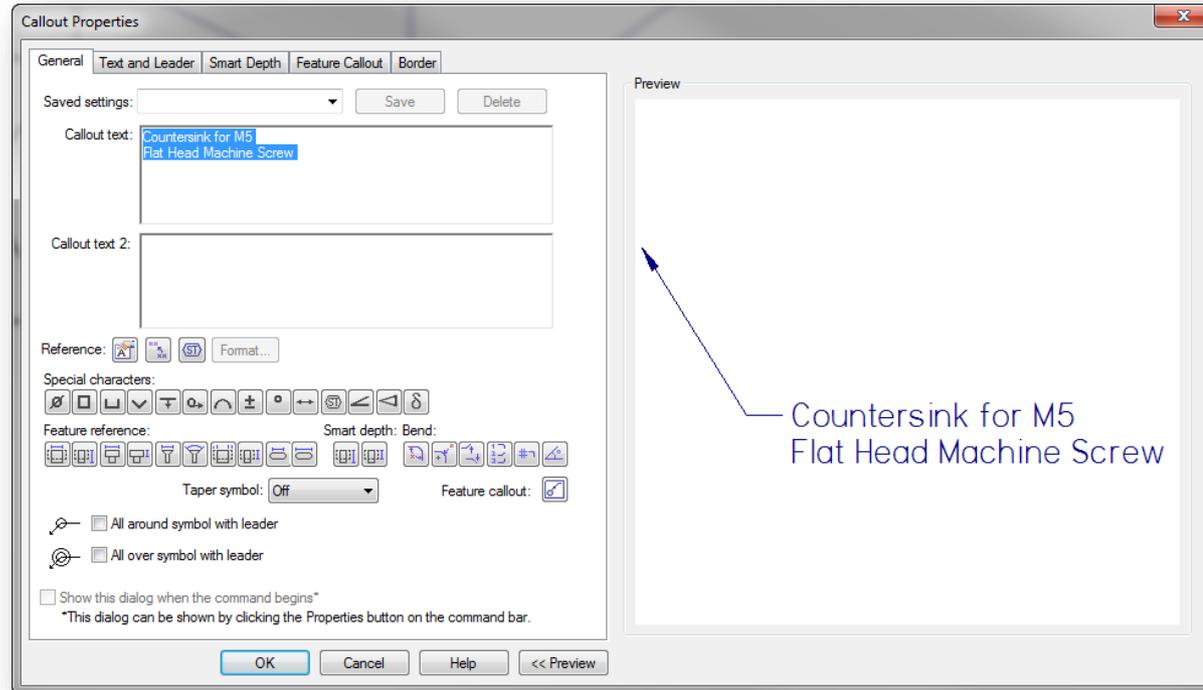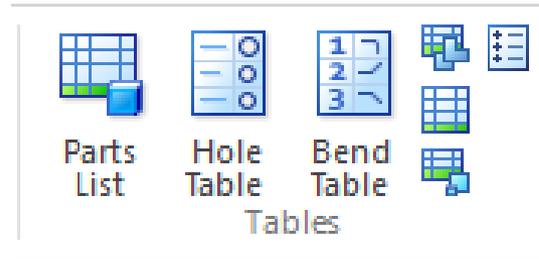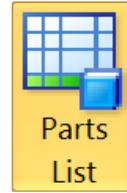
- Family of Parts Table

- Custom Table

- Block Table

Parts List

- The Columns display, titles, an
  format are controlled in the
  Parts List options dialog.

ITEM	NAME	MAT'L	QTY
1	CRANKCASE	Aluminum, 1060	1
2	BEARING_FRONT	Steel	1
3	BEARING_REAR	Steel	1
4	CRANKSHAFT	Stainless steel	1
5	ROD	Steel	1
6	WRIST PIN	Stainless steel	1
7	PISTON	Aluminum, 1060	1
8	RING	Steel	1
9	COLLET	Brass, yellow brass	1
10	DRIVE WASHER	Stainless steel	1
11	COVER	ABS Plastic, high impact	1
12	#6 COVER SCREW	Steel	4
13	HEAD	Aluminum, 1060	1
14	#6 HEAD SCREW	Steel	6
15	GLOW PLUG	Copper	1
16	PISTON SLEEVE	Bronze, 90%	1
17	COVER GASKET	Cork, gasket grade	1

Parts List
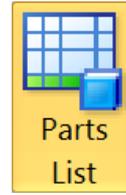
- Balloon positions can be adjusted by the automatic Alignment shape.
  - Display of the alignment shape can be toggled on and off.
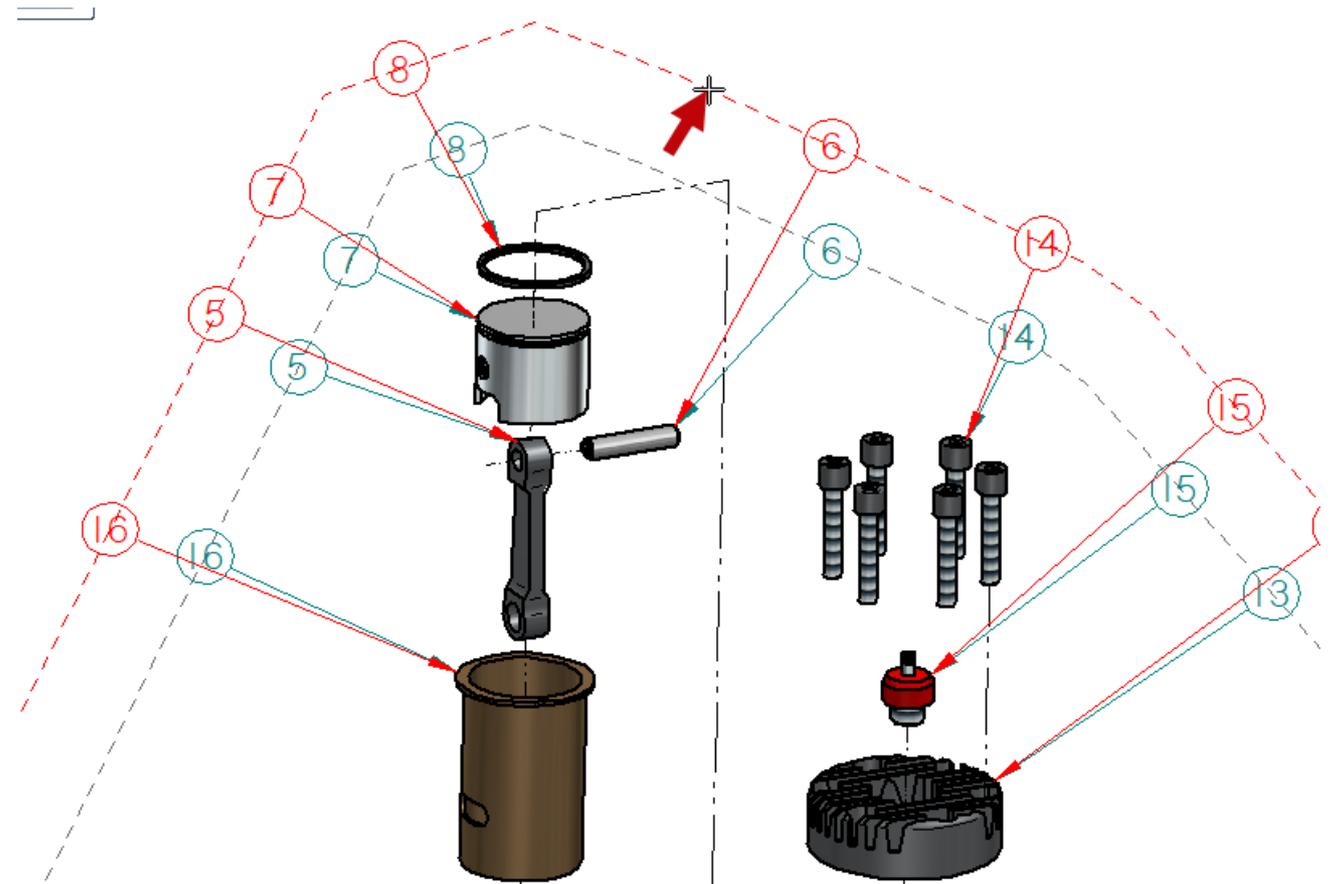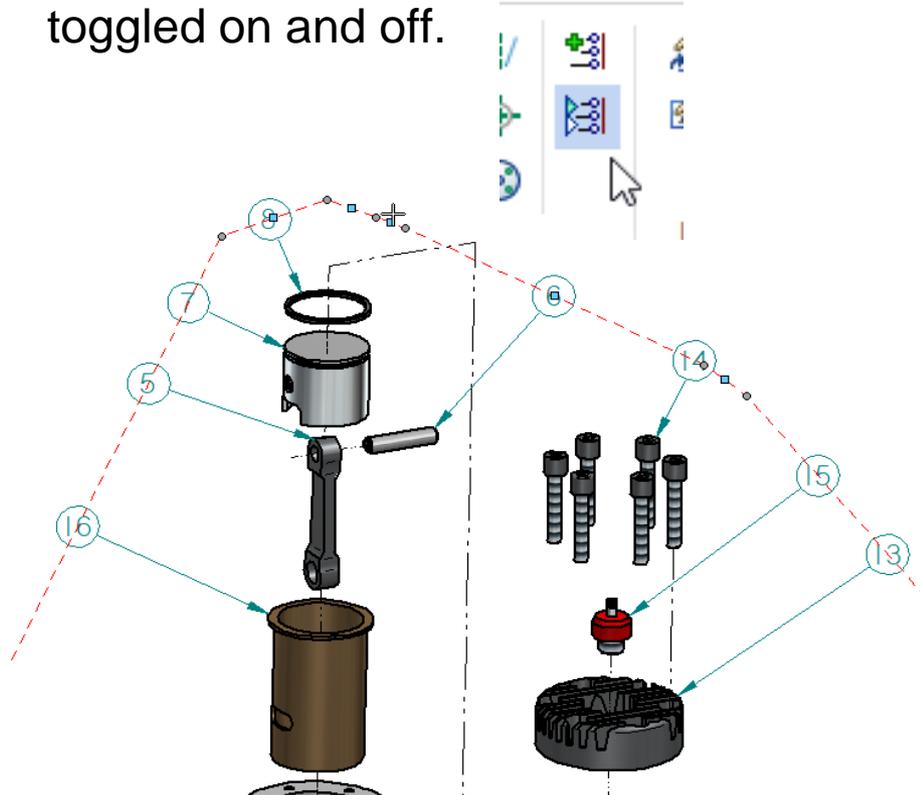
Balloons

- Item reference for parts lists
  - Use Part List command to link

Item Number	Document Number	File Name	Quantity
1	SEVA01	seva01	1
2		Ball Valve	1
3	SEVA05	seva05	1
4	SEVA04	seva04	2
5	16	seva06	12

Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | www.siemens.com/solid-edge-educator
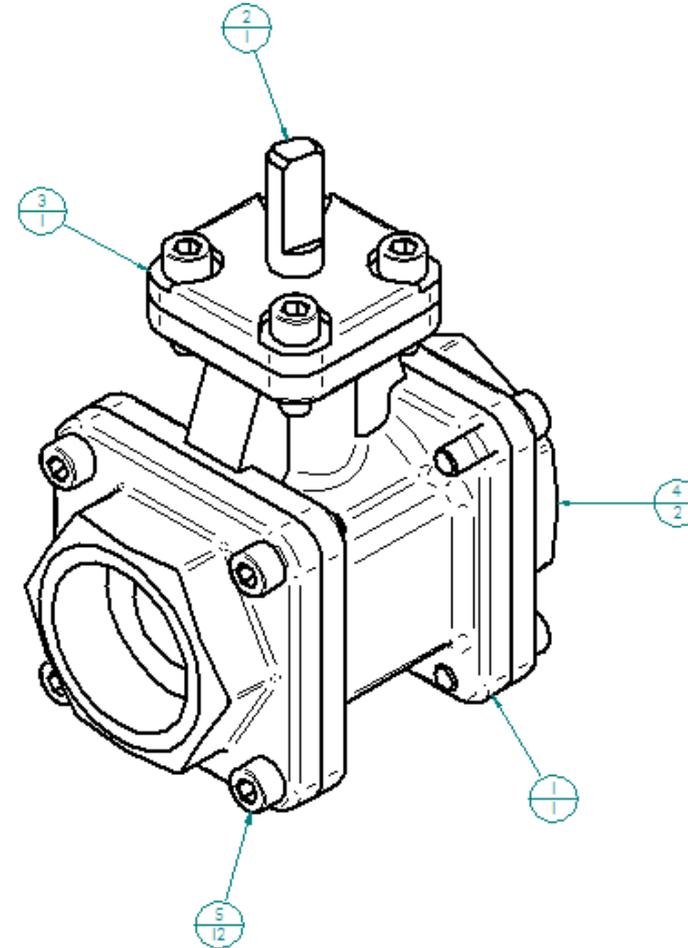
Open Models from Draft to Edit

- To change a drawing view of a part(s) or an assembly from a drawing, the models must be edited.

- Double-click on the draft view within the drawing sheet to activate the part's model file.
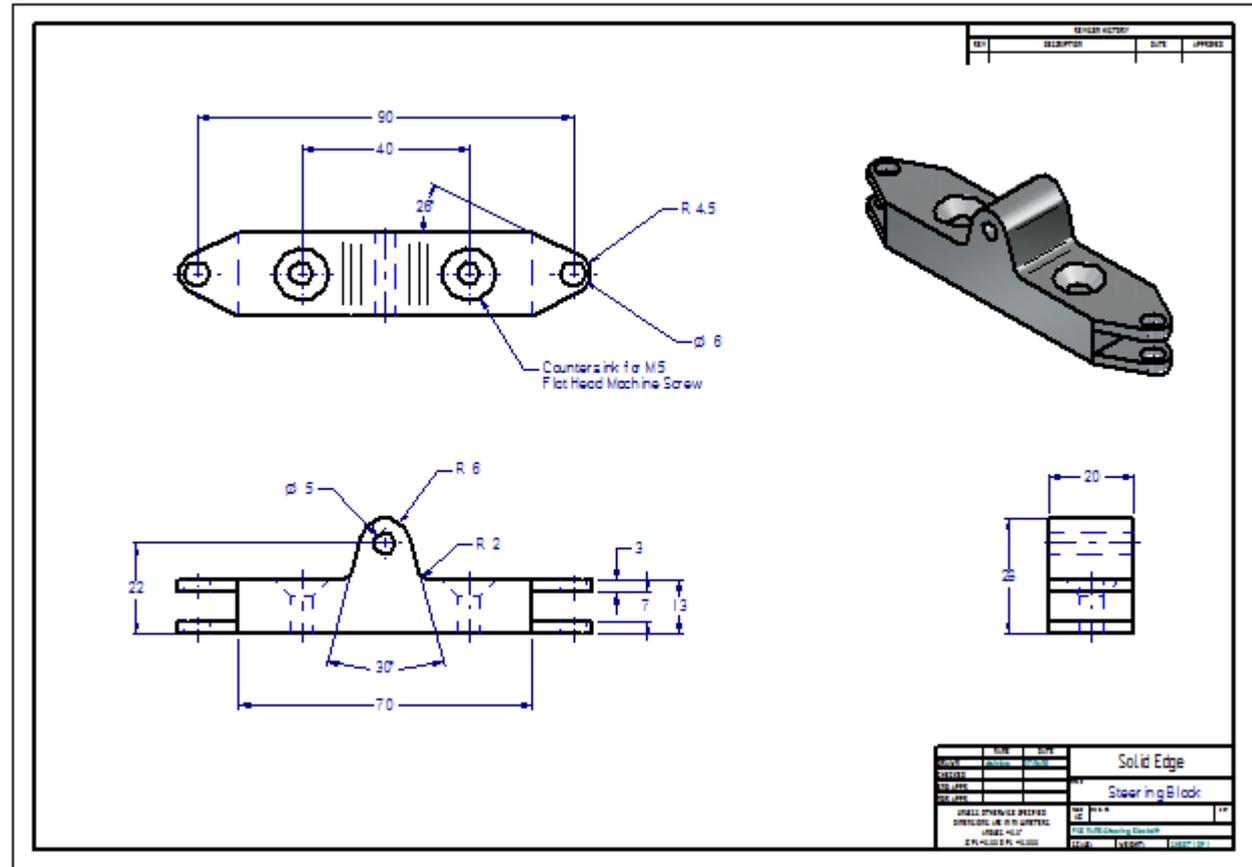
Drawing Revisions

- Once open, the 3D model can be changed and then saved

- Close the model to return to the drawing sheet

- Notice the box around the views indicating out of date

- Select the Update Views ![Update Views icon] command on the main ribbon bar.

Out of date box

2020
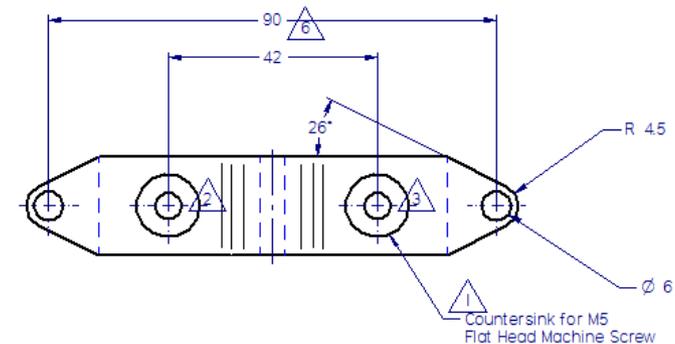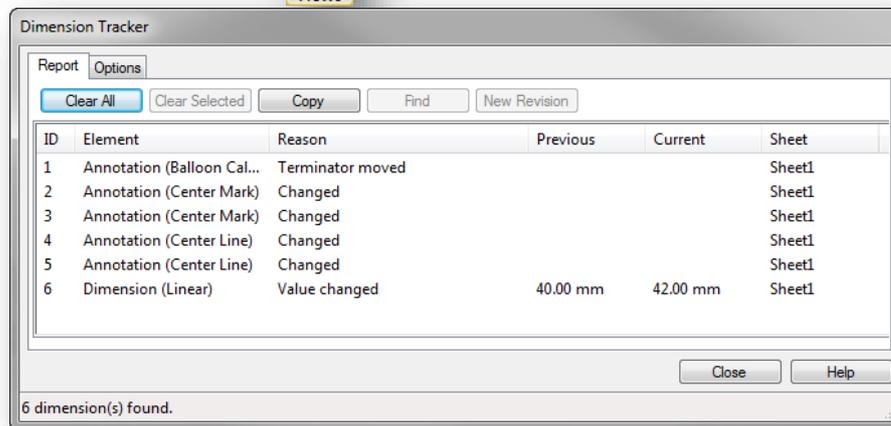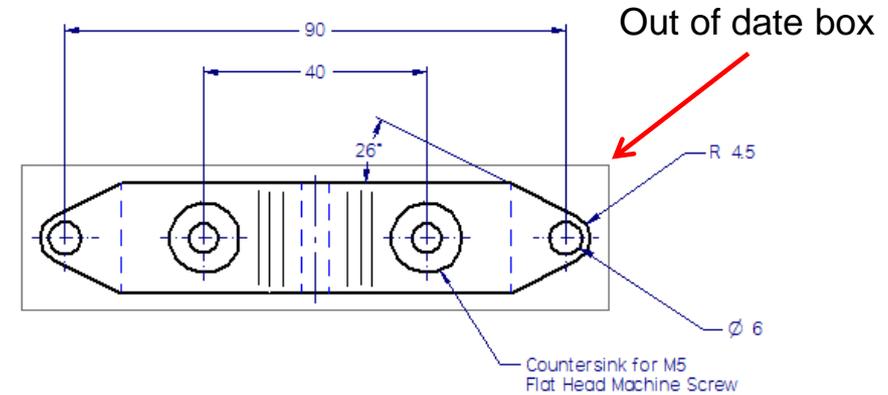
Tracking Changes

- If you select one of the changes you have a few options.
  - "Find" will zoom up on the changed area of the drawing and highlight it.
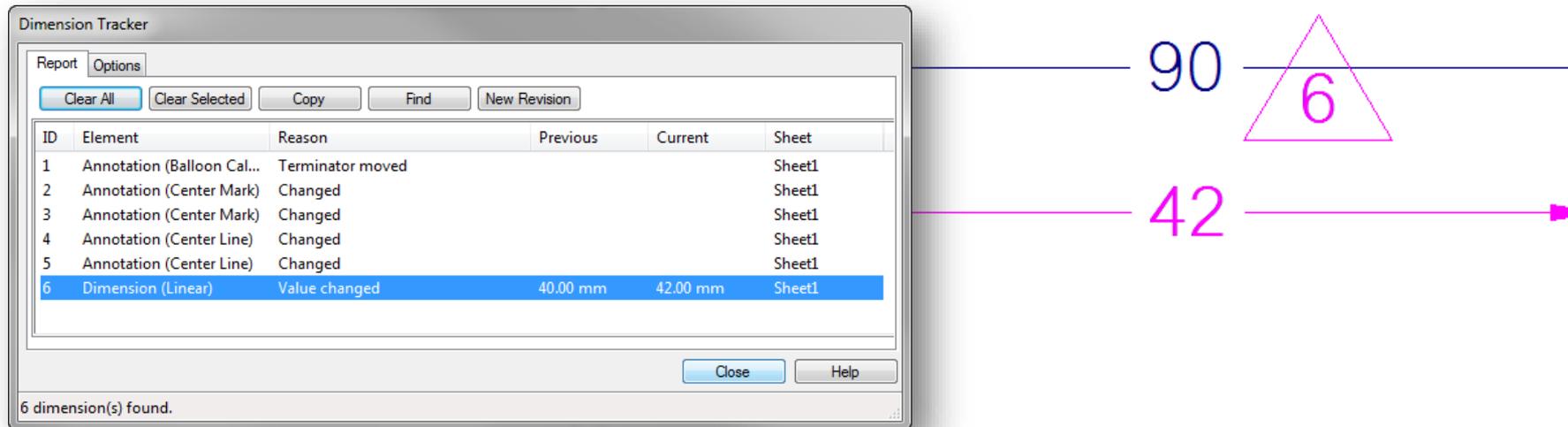
  - If you "Clear All", it will remove the changed annotations from the view, but will reflect model the changes in the drawing.

Open | New | Help Index | Teamcenter | About Solid Edge | Add-Ins | Options | Record

Solid Edge®

Unrestricted | © Siemens 2022 | 2022-01-14 | Siemens Digital Industries Software | Where today meets tomorrow. | www.siemens.com/solid-edge-educator
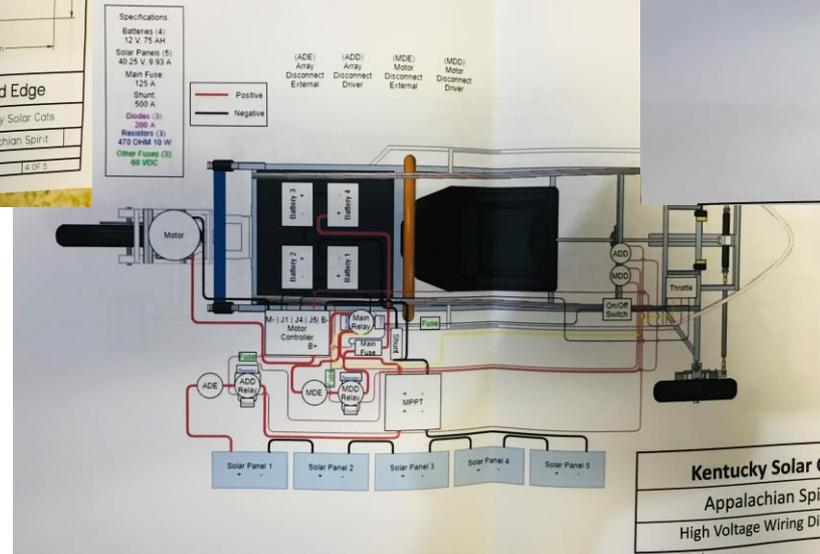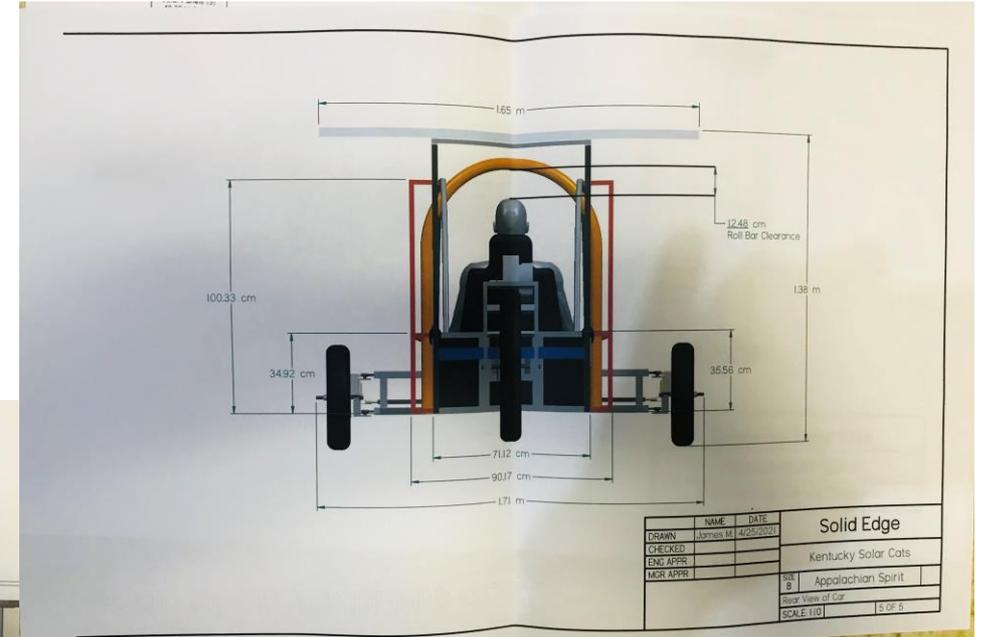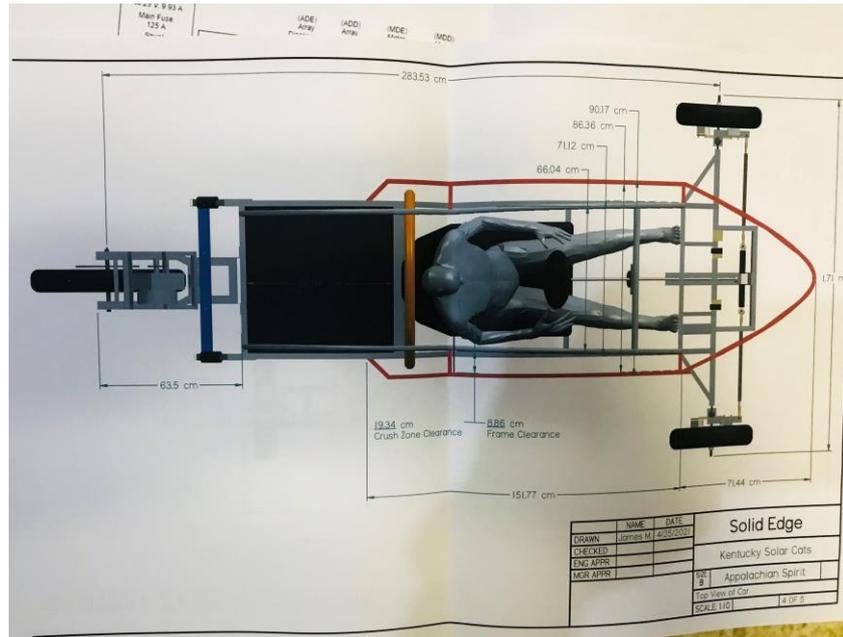
SIEMENS
Ingenuity for life

Solid Edge 2D Drafting

Full suite drawing tools

Annotation

Dimensioning

Diagramming

Compatibility

Solid Edge Academic Portfolio of Products

Mechanical Design	Electrical Design	Simulation	Manufacturing	Technical Publications	Data Management	Cloud Collaboration

- Solid Edge Premium
- Solid Edge Classic
- Solid Edge Foundation
- Solid Edge Design & Drafting
- **Solid Edge 2D Drafting**
- Solid Edge P&ID Design
- Solid Edge Piping Design
- Solid Edge Generative Design Pro
- Solid Edge Model Based Definition
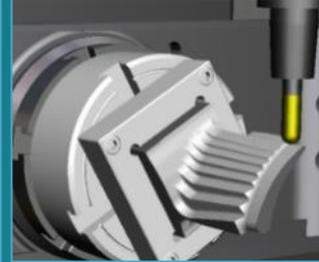
- Solid Edge Electrical Routing
- Solid Edge Wiring Design
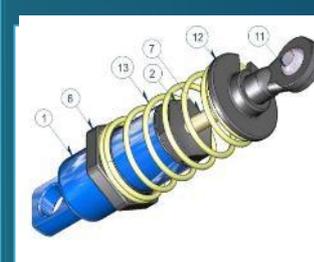- Solid Edge Harness Design
- Solid Edge PCB Collaboration

- Solid Edge Premium
- Solid Edge Simulation - Standard
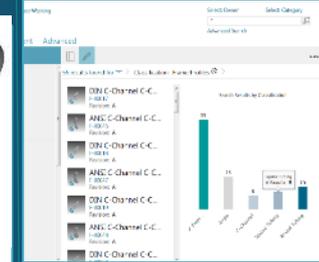- Solid Edge Simulation - Advanced
- Simcenter FLOEFD for Solid Edge

- Solid Edge CAM Pro Foundation
- Solid Edge CAM Pro Total Machining
- Solid Edge CAM Pro 5 Axis Milling
- Solid Edge 2D Nesting

- Solid Edge Illustrations
- Solid Edge 3D Publishing

- Solid Edge data management
- Solid Edge Requirements Management
- Solid Edge Teamcenter Integration

- Cloud-based collaboration

So, What's in it for you as competitors in the Solar Car Challenge

The bundle includes the following Solid Edge products:

- ✓ Mechanical Design

- ✓ Computer Aided Manufacturing (CAM)

- ✓ Advanced Simulation

- ✓ Wiring and Harness Design

- ✓ Generative Design

- ✓ Model Based Definition (MBD)

- ✓ P&ID and Piping Design

- ✓ Technical Documentation

Solid Edge Academic Bundle

Mechanical Design | Electrical Design | Simulation | Manufacturing | Technical Publications | P&ID and Piping Design

Access the Solid Edge Portfolio and Resources

www.siemens.com/solid-edge-educator

Thank you.

Muhammad.Sajjad@siemens.com

SIEMENS