

# Training: SOLIDWORKS Essentials (5 days)

**Prerequisites:** Access to SOLIDWORKS, Completion of SOLIDWORKS Getting Started Tutorials 1-4

**Description:** Topics covered are: sketching; multi-contour sketching; reference geometry creation; design intent; feature creation; shelling; configurations; assemblies; drawings/detailing; editing; parent-child relationships; relations; rudimentary top-down design; advanced mating techniques.

## Introduction

- About This Course

## Lesson 1: SOLIDWORKS Basics and the User Interface

- What is the SOLIDWORKS Software?
- Design Intent 10
- How Features Affect Design Intent
- File References
- Opening Files
- The SOLIDWORKS User Interface
- Welcome Dialog Box
- Pull-down Menus
- Using the Command Manager
- Adding and Removing Command Manager Tabs
- Feature Manager Design Tree
- Property Manager
- Selection Breadcrumbs
- Task Pane
- Heads-up View Toolbar
- Mouse Buttons
- Keyboard Shortcuts
- System Feedback
- Options
- Search

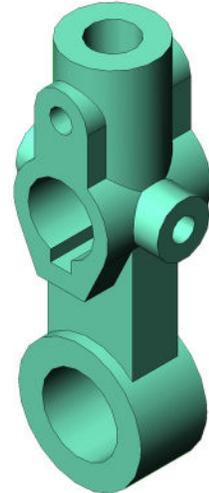
## Lesson 2: Introduction to Sketching

- 2D Sketching
- Saving Files
- Sketching
- Default Planes
- Sketch Entities
- Sketch Geometry
- The Mechanics of Sketching
- Inference Lines (Automatic Relations)
- Sketch Feedback and Status
- Rules That Govern Sketches
- What Controls Design Intent?

- Sketch Relations
- Selecting Multiple Objects
- Dimensions Creation, Selection, Preview
- Angular Dimensions
- Instant 2D
- Extrude Feature
- Sketching Guidelines

## Lesson 3: Basic Part Modeling

- Features
- Plane
- Extrusion
- Sketch
- Boss
- Cut
- Fillets and Rounds
- Choosing the Best Profile
- Choosing the Sketch Plane
- Placement of the Model
- Details of the Part
- Standard Views
- Main Bosses
- Sketching the First Feature
- Extrude Options
- Renaming Features
- Boss Feature
- Sketching on a Planar Face
- Sketching
- Tangent Arc Intent Zones
- Autotransitioning Between Lines and Arcs
- Cut Feature
- View Selector
- Using the Hole Wizard
- Creating a Standard Hole
- Counterbore Hole
- Filleting
- Editing Tools
- Editing a Sketch



- Selecting Multiple Objects
- Editing Features
- Fillet Propagation
- Rollback Bar
- Detailing Basics
- Settings Used in the Template
- Command Manager Tabs
- Creating a New Drawing
- Drawing Views
- Tangent Edges Display
- Moving Views
- Center Marks
- Driving vs Driven Dimensions
- Manipulating Dimensions
- Model and Drawing Associativity
- Changing Parameters
- Rebuilding the Model

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## Lesson 4: Symmetry and Draft

- Boss Feature with Draft
- Symmetry in the Sketch
- Symmetry after Sketching
- Mid Plane Extrusion
- Sketching Inside the Model
- Circular Profile
- Changing the Appearance of Dimensions
- Extruding Up To Next
- View and Display Options
- Middle Mouse Button Functions
- Reference Triad Functions
- Keyboard Shortcuts
- Using Model Edges in a Sketch
- Sketching an Offset
- Trim and Extend
- Modifying Dimensions
- Measuring
- Copy and Paste Features

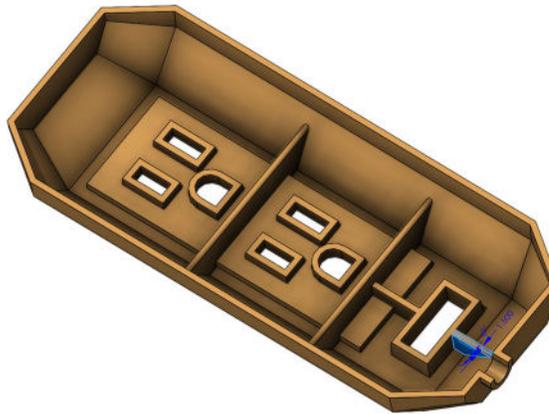
## Lesson 5: Patterning

- Pattern Options
- Linear Pattern
- Skipping Instances
- Geometry Patterns
- Circular Patterns
- Reference Geometry, Axes, Planes
- Mirror Patterns
- Patterning a Solid Body
- Using Pattern Seed Only
- Up To Reference
- Sketch Driven Patterns
- Points
- Automatic Dimensioning of Sketches



## Lesson 6: Revolved Features

- Revolved Features
- Sketch Geometry of the Revolved Feature
- Rules Governing Sketches of Revolved Features
- Special Dimensioning Techniques
- Diameter Dimensions
- Creating the Revolved Feature
- Slots
- Multibody Solids
- Edge Selection
- Chamfers
- Edit Material
- Mass Properties
- File Properties
- SOLIDWORKS SimulationXpress Fixtures, Loads, Material, Results



## Lesson 7: Shelling and Ribs

- Shelling and Ribs
- Analyzing and Adding Draft
- Draft Analysis
- Shelling
- Ribs
- Section View
- Converting Edges
- Full Round Fillets
- Thin Features

## Lesson 8: Editing: Repairs

- Part Editing
- Finding and Repairing Problems
- What's Wrong Dialog
- Where to Begin
- Sketch Issues
- Check Sketch for Feature
- Repairing Sketch Plane Issues

## Lesson 9: Editing: Design Changes

- Design Changes
- Part Reviewer
- Dependencies
- Rebuilding Tools, Rollback to Feature, Freeze Bar
- Feature Suppression
- Reorder
- SketchXpert
- Sketch Contours
- Shared Sketches
- Copying Fillets
- Replace Sketch Entity

## Lesson 10: Configurations

- Using Configurations
- Configuration Manager
- Adding New Configurations
- Defining, Changing and Renaming the Configuration
- Derived Configurations
- Design Tables
- Modeling Strategies for Configurations
- Design Library

## Lesson 11: Global Variables and Equations

- Using Global Variables and Equations
- Renaming Features and Dimensions
- Design Rules Using Global Variables and Equations
- Creating Global Variables
- Equations
- Creating an Equality
- Equation Solve Order
- Direct Input of Equations
- Editing Equations

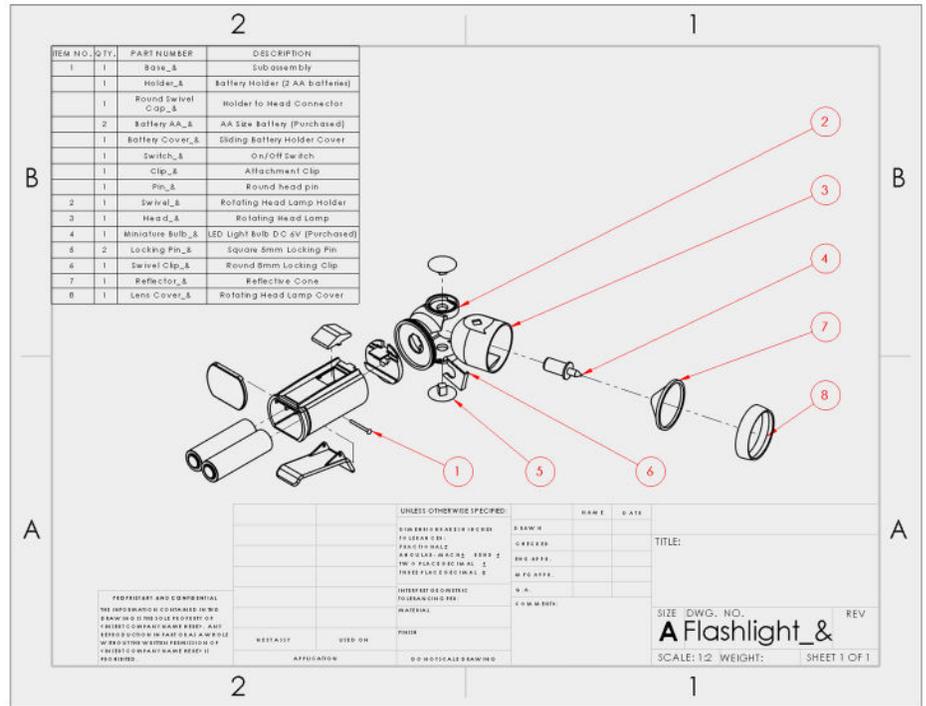
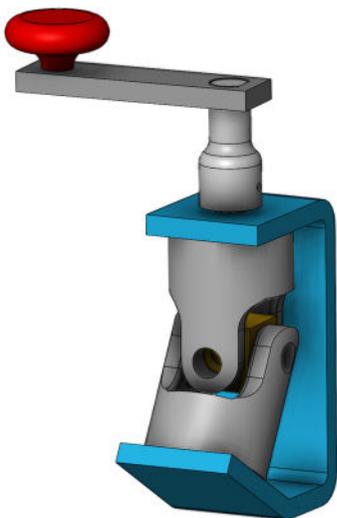
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## Lesson 12: Using Drawings

- Removed Section
- View Alignment
- Detail Views, Drawing Sheets and Sheet Formats
- Adding Drawing Sheets, Model Views, Section Views and Annotations
- Properties in Drawings
- Datum Feature and Surface Finish Symbols
- Centerlines
- Geometric Tolerance Symbols
- Dimension Text

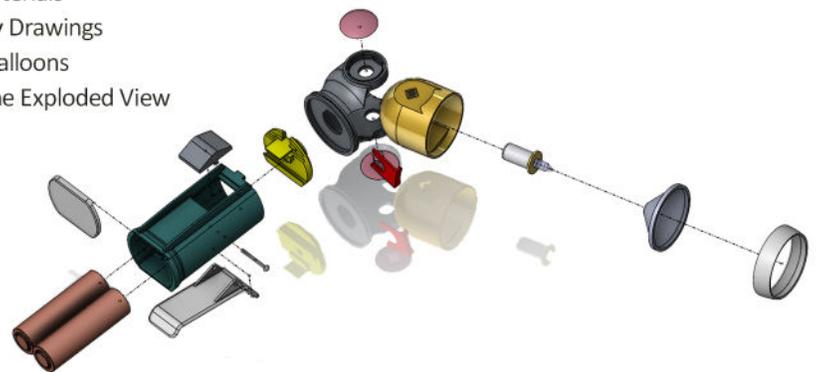
## Lesson 13: Bottom-Up Assembly Modeling

- Creating a New Assembly
- Position of the First Component
- Degrees of Freedom
- Adding Components
- Moving, Rotating, and Mating Components
- Mate Types and Alignment, Concentric, Coincident, Width, Parallel
- Dynamic Assembly Motion
- Using Part Configurations in Assemblies
- Creating Copies of Instances
- Inserting Subassemblies and mating them
- Using Pack and Go



## Lesson 14: Using Assemblies

- Analyzing the Assembly
- Mass Properties Calculations
- Checking for Clearances
- Static vs Dynamic Interference Detection
- Performance Considerations
- Changing the Values of Dimensions
- Exploded Assemblies and Exploded Views
- Reorder, Explode Direction, Explode Line Sketch, Adjusting & Animating
- Bill of Materials
- Assembly Drawings
- Adding Balloons
- Editing the Exploded View



## Appendix A: Templates

- Options Settings
- Changing the Default Options
- Document Templates
- How to Create a Part Template
- Organizing Your Templates
- Drawing Templates and Sheet Formats
- Default Templates