

The Complete Guide to **Mold Making with SOLIDWORKS® 2024**

Basic through Advanced Techniques



Paul Tran CSWE, CSWI

Visit the following websites to learn more about this book:




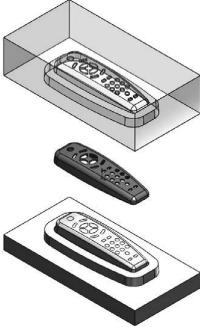

[amazon.com](https://www.amazon.com)

[Google books](https://books.google.com)

[BARNES & NOBLE](https://www.barnesandnoble.com)

TABLE OF CONTENTS

Chapter 1: Plastic Part Design 1-1

	Remote Control	1-1
	Starting a new part document	1-1
	Extruding the main body	1-2
	Making a curved cut	1-2
	Adding fillets	1-3
	Shelling the part	1-4
	Creating the recess cut	1-6
	Copying a sketch	1-7
	Creating the button holes	1-7
	Creating the mounting bosses	1-8
	Adding the support ribs	1-9
	Adding the rib fillets	1-11
	Assigning material	1-12
	Changing colors	1-13
	Calculating the mass	1-14
	Creating the core and cavity molds	1-15
	Applying the scale factor	1-15
	Creating the parting lines	1-15
	Creating the shut-off surfaces	1-16
	Creating the parting surfaces	1-17
	Adding a reference plane	1-18
	Inserting a tooling split	1-19
	Separating the mold blocks	1-20
	Hiding the references	1-21
	Renaming the solid bodies	1-21
	Assigning materials	1-22
	Exercise - Plastic part design 2	1-23

Chapter 2: Surface Repair 2-1

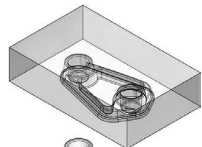


Surface Repair – Mouse 2-1

Opening a parasolid document	2-1
Running Import Diagnostics	2-1
Examining the small surfaces	2-2
Deleting surfaces and holes	2-3
Patching the gaps	2-4
Adding drafts	2-5
Creating a split line feature	2-6
Creating face fillets	2-7
Adding thickness	2-8
Creating a recess cut	2-9
Assigning material	2-10
Exercise: Repair surfaces	2-11

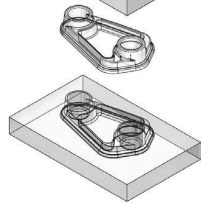


Chapter 3: Core and Cavity Creation 3-1



Core and Cavity – Plastic Tray 3-1

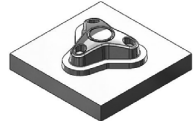
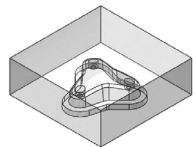
Opening a part document	3-1
Applying the scale factor	3-1
Creating the parting lines	3-2
Making the parting surfaces	3-3
Making the mold block sketch	3-4
Creating a tooling split feature	3-5
Hiding the references	3-6
Assigning materials	3-7
Changing the transparency	3-7
Separating the mold blocks	3-8



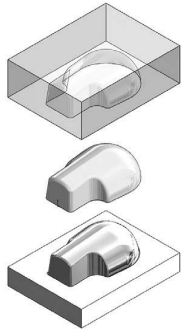
Core and cavity exercise 3-11

Plastic Knob

Applying the scale factor	3-11
Creating the parting lines	3-12
Creating the shut-off surfaces	3-13
Making the parting surfaces	3-14
Adding a new plane	3-15
Sketching the profile of the mold block	3-15
Inserting a tooling split feature	3-16
Separating the mold blocks	3-17

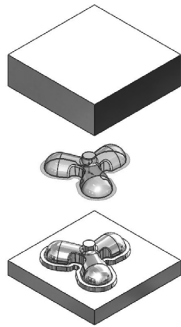


Chapter 4: Planar Parting Lines 4-1



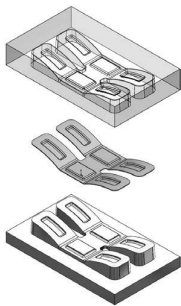
Planar Parting Lines – Drone’s Canopy	4-1
Opening a part document	4-1
Scaling the part	4-1
Creating the parting lines	4-2
Creating the parting surfaces	4-3
Making the sketch of the mold block	4-4
Inserting a tooling split feature	4-4
Adding a command to the toolbar	4-5
Separating the mold block	4-6
Hiding the references	4-7
Renaming the mold blocks	4-8
Assigning material	4-8
Changing to transparency	4-9

Planar Parting Lines Exercise 4-11 Drone Cover Housing

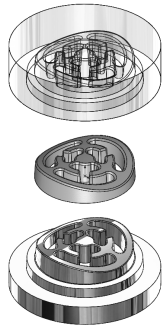


Opening a part document	4-11
Scaling the part	4-11
Creating the parting lines	4-12
Creating the parting surfaces	4-13
Adding a new plane	4-14
Making the mold block sketch	4-15
Inserting a tooling split	4-15
Changing materials	4-16

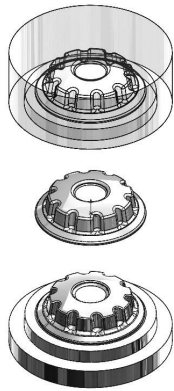
Chapter 5: Interlock Surface 5-1



Interlock Surface 1: Stabilizer	5-1
Opening a part document	5-1
Applying the scale factor	5-1
Creating the parting lines	5-2
Creating the parting surfaces	5-3
Making the mold block sketch	5-4
Inserting a tooling split feature	5-4
Hiding the references	5-5
Changing materials	5-5
Separating the mold block	5-6
Changing the transparency	5-7

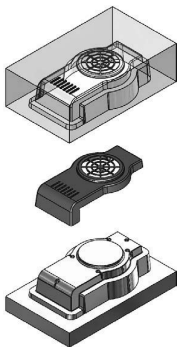


Interlock Surface 2: Plastic Cap	5-9
Opening a part document	5-9
Applying the scale factor	5-9
Creating the parting lines	5-10
Adding the shut-off surfaces	5-11
Creating the parting surfaces	5-12
Adding a new plane	5-13
Making the mold block sketch	5-13
Creating a tooling split feature	5-14
Separating the mold block	5-15
Renaming the solid bodies	5-17
Assigning materials	5-17
Changing the transparency	5-18



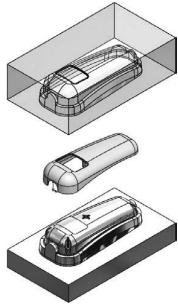
Interlock Surface Exercise Round Knob	5-19
Opening a part document	5-19
Applying the scale factor	5-19
Creating the parting lines	5-20
Creating the parting surfaces	5-21
Adding a new plane	5-22
Making the sketch of the mold block	5-22
Inserting a tooling split feature	5-23
Assigning materials	5-24

Chapter 6: Non-Planar Parting Lines 6-1



Non-Planar parting Lines – Fan Cover	6-1
Opening a part document	6-1
Applying the scale factor	6-1
Creating the parting lines	6-2
Creating the shut-off surfaces	6-3
Creating the parting surfaces	6-4
Adding a new plane	6-4
Sketching the mold block profile	6-5
Splitting the mold blocks	6-5
Hiding the references	6-6
Separating the mold blocks	6-7
Changing the transparency	6-8
Renaming the solid bodies	6-8
Changing the materials	6-9

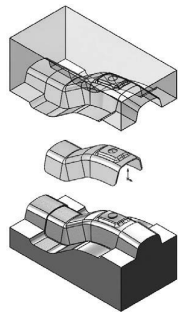
Non-Planar Parting Lines Exercise **6-11**
Meter Reader Upper Housing



Opening a part document	6-11
Applying the scale factor	6-11
Creating the parting lines	6-12
Creating the parting surfaces	6-13
Adding the ruled surfaces	6-14
Making a lofted surface	6-15
Extending a surface	6-15
Trimming the surfaces	6-16
Knitting the surfaces	6-20
Creating the shut-off surfaces	6-21
Adding a new plane	6-21
Inserting a tooling split feature	6-22
Adjusting the block thickness	6-22
Adding an interlock surface	6-22
Separating the mold block	6-23
Hiding the references	6-23
Changing materials	6-24
Renaming the solid bodies	6-24

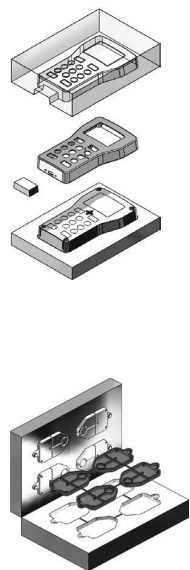
Chapter 7: Manual Parting Lines **7-1**

Manual Parting Lines - Heat Shield **7-1**

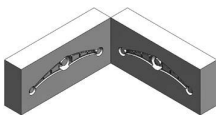


Open a part document	7-1
Applying the scale factor	7-1
Creating the parting lines	7-2
Creating the shut-off surfaces	7-3
Creating the parting surfaces	7-4
Making the ruled surfaces	7-6
Trimming with a sketch	7-7
Making a 3D sketch	7-8
Creating corner patches	7-9
Knitting the surfaces	7-11
Adding a reference plane	7-12
Inserting a tooling split feature	7-13
Separating the mold blocks	7-14
Hiding the references	7-15
Changing the transparency	7-16

Chapter 8: Undercuts and Slide Cores 8-1

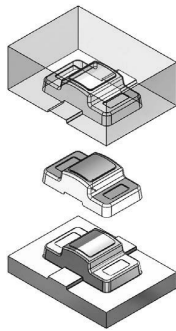
	<p>Stress Gauge Upper Housing 8-1</p> <p>Open a part document 8-1</p> <p>Applying the scale factor 8-1</p> <p>Creating the parting lines 8-2</p> <p>Adding the shut-off surfaces 8-3</p> <p>Making the parting surfaces 8-4</p> <p>Sketching the mold block profile 8-5</p> <p>Splitting the mold blocks 8-5</p> <p>Analyzing the undercuts 8-6</p> <p>Sketching the slide core profile 8-7</p> <p>Extruding the slide core block 8-8</p> <p>Separating the mold blocks 8-9</p> <p>Moving the slide core block 8-10</p> <p>Hiding the references 8-11</p> <p>Changing the transparency 8-12</p> <p>Exercise: Multi-Cavity molds 8-13</p>
---	---

Chapter 9: Alternative Methods 9-1

	<p>Using Combine Subtract – Rocker Arm 9-1</p> <p>Open a part document 9-1</p> <p>Applying the scale factor 9-1</p> <p>Making the sketch of the mold block 9-2</p> <p>Extruding the mold block 9-2</p> <p>Creating a combine subtract feature 9-3</p> <p>Splitting a solid body 9-4</p> <p>Rotating a solid body 9-5</p>
	<p>Using Cut with Surface – Rocker Arm 9-6</p> <p>Isolating a surface body 9-6</p> <p>Making the mold block sketch 9-7</p> <p>Converting to planar surface 9-8</p> <p>Trimming the surfaces 9-9</p> <p>Knitting the surfaces 9-10</p> <p>Creating an extruded boss 9-11</p> <p>Cutting with a surface 9-12</p> <p>Moving a solid body 9-13</p>
	<p>Using Cavity in Assembly – Rocker Arm 9-14</p> <p>Opening an assembly document 9-14</p> <p>Inserting the engineered part 9-14</p>

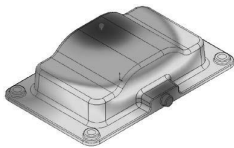
Editing a component	9-15
Inserting a cavity feature	9-15
Creating an exploded view	9-16

Chapter 10: Thickness Analysis 10-1



Thickness Analysis – Medication Upper Case	10-1
Open a part document	10-1
Setting the parameters	10-1
Analyzing the thickness	10-2
Viewing the results	10-2
Creating a section view	10-3
Locating the thick and thin regions	10-3
Re-arranging the shell feature	10-4
Scaling the part	10-5
Creating the parting lines	10-5
Making the parting surfaces	10-6
Adding a new plane	10-7
Sketching the mold block profile	10-7
Inserting a tooling split	10-8
Adjusting the block sizes	10-8
Hiding the references	10-9
Renaming the solid bodies	10-9
Separating the mold blocks	10-10
Changing the transparency	10-11

Chapter 11: Using SOLIDWORKS Plastics 11-1



Plastics Analysis– Basin	11-1
Open a part document	11-1
Enabling SOLIDWORKS Plastics	11-1
The PlasticsManager	11-2
Setting the domains and boundary conditions	11-2
Specifying the injection location	11-4
Creating a shell mesh	11-5
Assigning material	11-5
Running the flow analysis	11-6
Viewing the flow results	11-7
Viewing the reports	11-9

Chapter 12: Using Plastics Flow Analysis

12-1

Plastics – Flow Simulation Analysis

12-1

Open a part document

12-1

Enabling SOLIDWORKS Plastics

12-1

Setting up the mesh properties

12-2

Viewing the PlasticsManager tree

12-2

Adding an injection location

12-4

Creating a mesh

12-5

Selecting a polymer

12-5

Running the flow analysis

12-6

Viewing the fill-time plot

12-7

Animating the results

12-8

Displaying the weld lines

12-9

Viewing the results

12-10



Glossary

Index by chapters

SOLIDWORKS 2024 Quick-Guides:

Quick Reference Guide to SOLIDWORKS 2024 Command Icons and Toolbars.

