

Templating

Introductory Session

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What is Templating?

Templating is a method of pattern creation in which you use one design template to make similar products that vary in size.

One design is defined by it's pattern pieces, which will have the same basic shape from product to product, though they will vary in size.

It is a simple form of automation.

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Why Template?

- Reduce manufacturing time
- Create consistent products
- Minimize plot/cut errors
- Reduce training time

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What types of products can you template?

Anything that you can measure, instead of patterning. Non-complex shapes.

- Boat products: winch covers, boom covers, hatch covers, cushions, sun flys, awnings, boat covers, spray tops
- Bag designs (totes, duffels, etc...)
- Other covers: AC covers, grill covers, outdoor kitchen covers
- Shade sails

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First Step: Standardization

Create the design!

- Do you prefer a single or double hem?
- Do you use a facing?
- How wide are your hems?
- Does the hem width vary by the location of the hem or by the size of the product?
- Do you want any markings on the cut pieces (seam lines, labels, notches)?
- What is the seam size?
- Will you need to compensate for stretch or shrink?

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How do you do it?


- By hand
- Spreadsheet
- Specialized software

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Example: Winch cover

Measurement Form

Customer Name: _____ Date: _____
 Marina & Slip #: _____ Color: _____



H = top of winch to top of deck
 CT = circumference of top
 O = offset = height of inner skirt
 CB = circumference of bottom of winch

Winch:	Winch:
H= _____	H= _____
O= _____	O= _____
CT= _____	CT= _____
CB= _____	CB= _____

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Example: Winch cover

By Hand

Outer skirt: H x CB
 1/2" seam allowance t/l/r
 1" double hem bottom
 Add 1/2" to length (trim)

Inner skirt: O x CB
 1/2" seam allowance t/l/r
 1" single hem bottom
 Add 1" to height (O)
 Add 1/2" to length (trim)

Top: Circle of Radius=CB/2*pi
 1/2" seam allowance

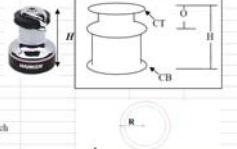


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Example: Winch cover

Worksheet

Winch Cover		
Enter measurements in inches		
H	6	
O	1	
CT	14.5	
CB	14.5	



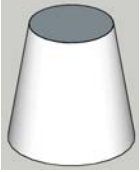

H = top of winch to top of deck
 O = offset = height of inner skirt
 CT = circumference of top
 CB = circumference of bottom of winch

Cut Measurements:		
L	15.75	"=B8+1.25"
H	3.5	"=B6+2.5"
HO	8.5	"=B5+2.5"
R	2.4	"=ROUNDUP(B8/(2*PI),1)"

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Example: Tapered Winch cover

Pattern or measure?

Measure:
 Height
 Top circumference
 Bottom circumference

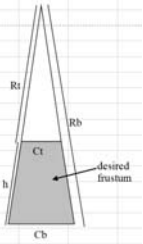
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Example: Tapered Winch cover

Worksheet

Desired Frustum dimensions	Measurements
Height (h)	8
Circumference of top (Ct)	20.41
Circumference of bottom (Cb)	25.12
Top Radius (Rt)	34.7
Bottom Radius (Rb)	42.7

Derived from laws of similar triangles
 Formula: $Rb = (h * Cb) / (Cb - Ct)$
 $Rt = Rb - h$
 Frustum = a cone with the tip chopped off

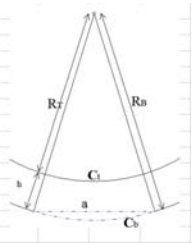


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Example: Tapered Winch cover

Worksheet


Chord length: a	
Arc length: Cb	
Chord length: $a = 2Rb * \sin(.5Cb/Rb)$	24.76
$Rb = 42.67$	
$Rt = 34.67$	
Height (h)	8
Circumference of top (Ct)	20.41
Circumference of bottom (Cb)	25.12



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Example: Shade Sail

Spreadsheet – Triangulate on the floor



	Measured	Compensated 3%	Hollow
A-B	120	116.4	9.6
B-C	120	116.4	9.6
C-D	120	116.4	9.6


Compensate: Reduce size to allow for stretch
(3% is common for HDPE shade cloth)

Add Hollow: Usually a percentage of the curve length
(8% is common for shade sails)

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Example: Shade Sail

Spreadsheet – Triangulate on the floor



	Measured	Compensated 3%	Hollow
A-B	120	116.4	9.6
B-C	120	116.4	9.6
C-D	120	116.4	9.6

Mark all 3 corners
Allow for hardware in corners
Loft hollow in edges with long batten

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Specialized software

- **Autometrix:** PatternSmith, Templates, Slicer, Revolver, Eclipse, Shades
- **UniPDS:** CAD system used mainly in the leather and technical textile processing industry, automotive industry, upholstery industry, and similar applications.
- **MPanel Shade Sail Designer:** MPanel Shade Designer is a stand-alone (no CAD system required) application that assists a user with the design and patterning of shade sail structures
- **MPanel (With Rhino 3D or AutoCAD)**
- **ExactFlat (SolidWorks or Rhino 3D)**
- **Assyst Bullmer**
- **PatternMaker**
- **Lectra**
- **Gerber**
- **TouchCAD**

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Gary Unitt - Autometrix

- Templates
- Slicer
- Eclipse
- Patternsmith Plotting/Cutting



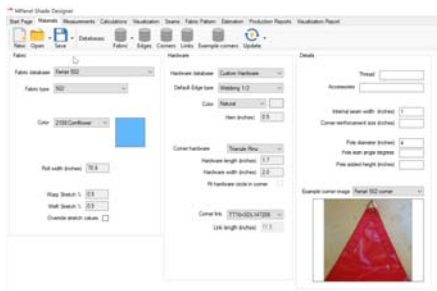
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MPanel Shade Designer

- MPanel Shade Sail Designer
- Data output can be lofted on floor, or cut on cutter.


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MPanel Shade Designer



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• Advanced Templating

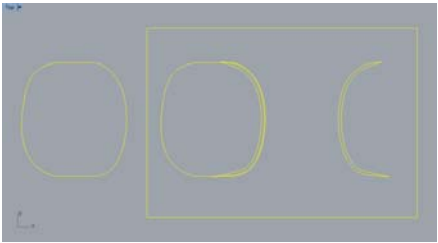


Script Applications


- Saving Time with Code in Rhino3D
Adam Penner
- Infinite possibilities
- Can do anything a computer can do
- Great for more complex, yet still repetitive tasks
- Human input required
- Function like Rhino commands

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• Advanced Templating



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