PLEASE READ BEFOR SUBMITTING REQUEST FORM

We require a **zero-thickness surface model in .step/.iges format** (**.stp file type preferred**) to determine the forming feasibility and panel count.

A Zero-thickness surface model is required to form your part.

If you just send a photo of the part, we cannot definitively determine the forming feasibility or panel count and would only be able to give you a very rough estimate.

- If you cannot 3D scan or create a surface model, there are service providers that can scan + create the surface model file for you.
- You may be able to purchase the scan/surface model on websites like *3DModels.org* or *Cgtrader.com*.
- We also offer this service, you can either send us the scan of the part, and we can create the surface model or you can ship up the part or a template of the part with the dimensions for us to scan/create the file needed. Our price for this is $125hr and paid upfront.
- If you are wanting a mirrored version of the part – we can do that as well.
- Depending on the size and shape of the part, it may need to split up and formed into multiple pieces/panels and then welded together. We do not offer welding as an add on service at this time.
- The **maximum** (formed) panel size is 1450mm x 1050mm (57.1 x 39.4 in) including the skirt around the part, depending on the geometry of the part. Recommended max size (50.0 x 35.0 in). Please review our “Parts Guidelines” page found on our website to review our current forming capabilities.
- If you need a buck, we can create the file needed for buck pieces to be cut out. The surface model .step file is required for this. Once we create the buck file from the surface model, the file is sent to you to have the material cut out.
- Our current estimated lead time is 4-6 weeks from the day the estimate/job is approved.

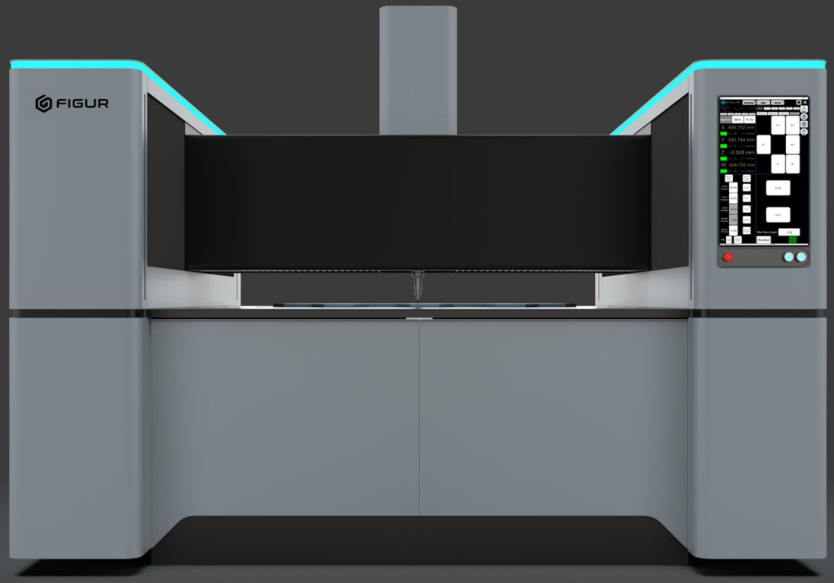
FIGUR – G15

Part Guidelines

FIGUR | Desktop Metal

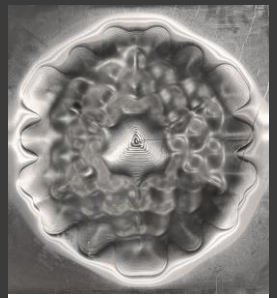
FIGUR G15

Figur G15 Specs	
Technology	Digital Sheet Forming (DSF)
Max Sheet Size	1,600 mm x 1,200 mm (63.0 x 47.2 in)
Forming Area	1,450 mm x 1,050 mm (57.1 x 39.4 in)
Z Travel	400 mm (15.7 in)
Forming Force	2,000 lbs X, Y, & Z
Forming Speed	1 m/sec
Capacity	Aluminum: 3.2 mm Steel: 2 mm
Power	480 V / 3 Phase / 20 kw
Machine Dimensions	2.8 m x 2.2 m x 1.8 m (110.2 x 86.6 x 70.9 in)
Machine Weight	3,600 kg (8,000 lbs)



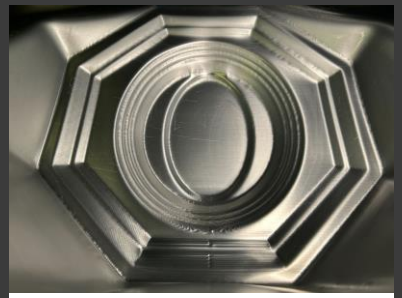
FIGUR | Desktop Metal

Figur Formed Parts – Sample Times



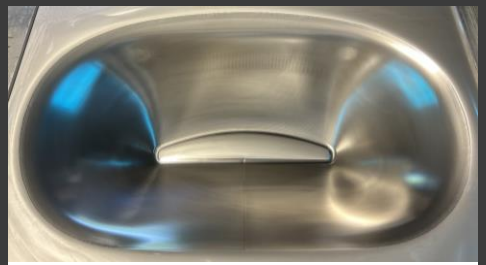
Sine Bowl
6061 – O Aluminum
18” x 18” x 0.063”
36 minutes

Automotive Interior
6061 – O Aluminum
36” x 48” x 0.063”
46 minutes



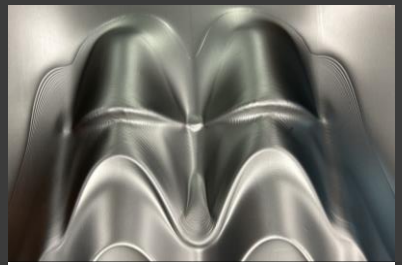
Logo Panel
6061 – O Aluminum
36” x 36” x 0.063”
60 minutes

Automotive Fender Section
6061 – O Aluminum
36” x 48” x 0.063”
60 minutes



Aerospace Panel
Stainless Steel - 301
36” x 48” x 0.063”
65 minutes

Deep Aluminum Part
6061 – O Aluminum
36” x 48” x 0.125”
50 minutes



Roof Shingle
Cold Rolled Steel
24” x 24” x 0.032”
60 minutes

Lighting Fixture
Aluminum 5052
18” Diameter x ??
??

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Sheet Forming - Materials

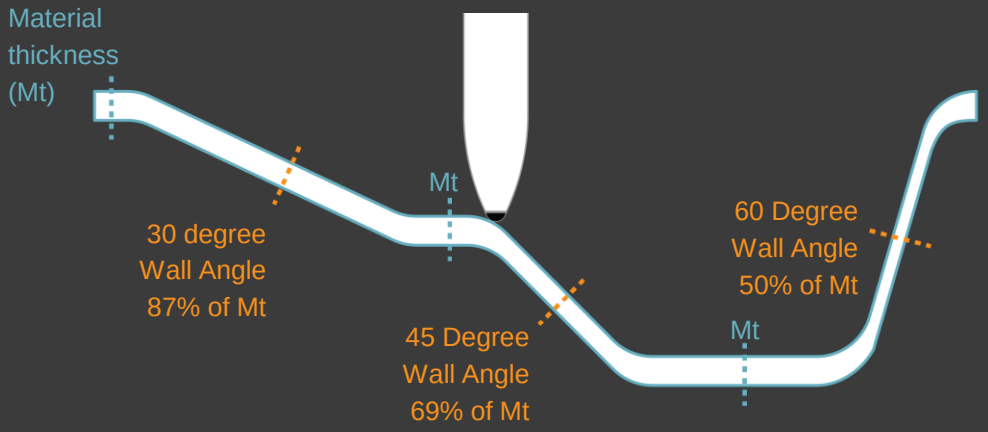
Currently Supported Materials	
Cold Rolled Steel	Up to 2 mm
Aluminum – 6061 O	Up to 3.175 mm
Materials in Development	
Stainless Steel - 301	Up to 2 mm
Stainless Steel - 304	Up to 2 mm
Copper	Up to .55 mm
Aluminum – 1100 O	Up to 1.6 mm
Aluminum – 2024 O	Up to 3.175 mm
Aluminum – 5052 O	Up to 2.1 mm
Future Materials	
Inconel	
Gold	
Titanium	

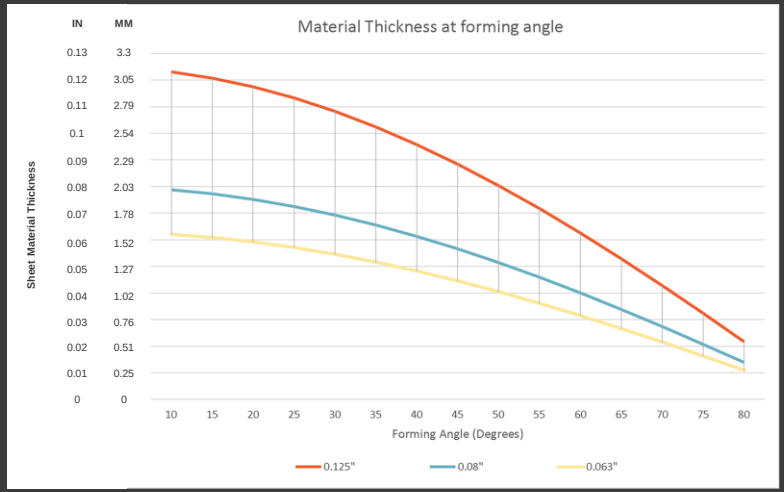
Note* All Aluminum must be formed in O or Annealed condition. No hardened material**

FIGUR | Desktop Metal

Material Thinning

Part Section





The figur progress incrementally thins the material during forming. The material thins based on the wall angle.

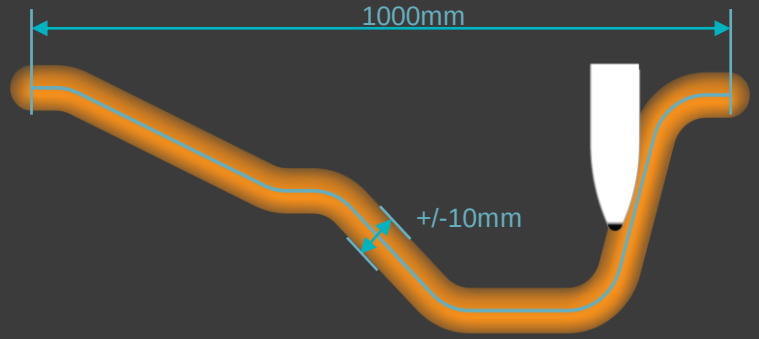
The outcome part will have variable wall thickness based on the geometry. We accomodate this by check the redicted thinness in the Figur software, and selecting an input material based on the minimum requried thickness.

FIGUR | Desktop Metal

Forming Tolerances

Part tolerances depend on several factors – part complexity, material, part orientation and tooling all affect part accuracy. Below are some general guidelines regarding part accuracy.

- General part accuracies are around **0.5% -2%** of the largest dimension of the part.
- Parts that are being cut out from the support skirt may warp / distort due to residual stresses built up in the material. Note sometimes simple shapes with very gentle curvature can warp more severely than complex parts. Heat treating (stress relieving) post forming can reduce or eliminate this effect
- Part detail – Figur tools have ball shaped tips, which can limit inner corner forming. In general, the radius of the surface being formed should be 2-3X the radius of the tool
- Measuring – large parts can be flexible making them difficult to measure as simply lifting or orientating them differently on a scan table will cause large variations in the part. The most accurate way scan a trimmed part is within a jig or fixture.



Tolerance Example:
A 1000mm long part may have a deviation of around 1% which translates to a tolerance band of +-10mm.

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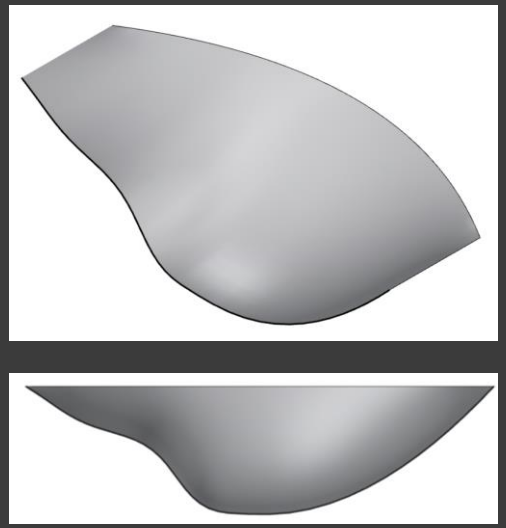
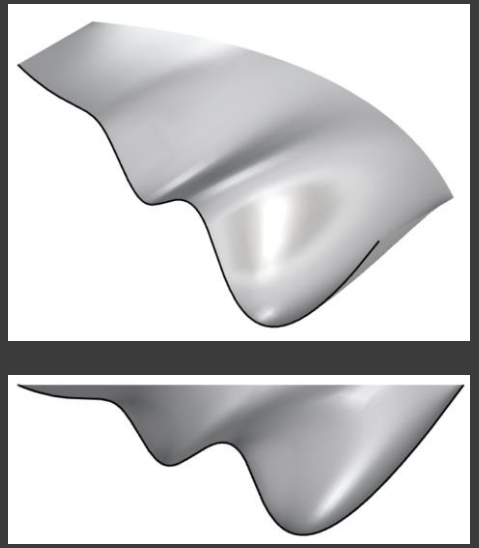
General Part Qualification



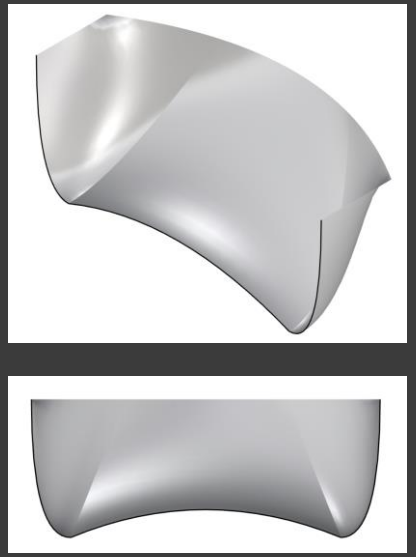
Easy:

- Smooth
- 60 degree draft
- No peaks and valleys
- No large flat areas.



Medium

- Smooth
- Peaks and valleys
- 60-75 degree walls



Difficult

- Steeper wall angles 75 – 90 degrees
- Convex geometry within the part
- Large flat areas

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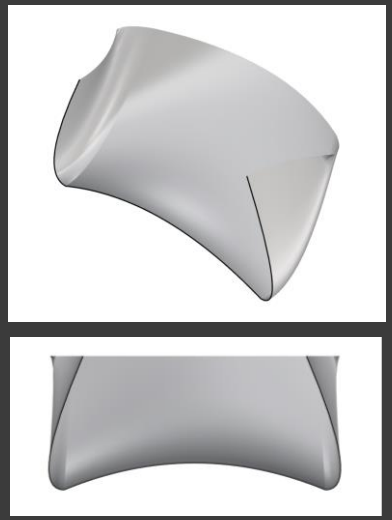
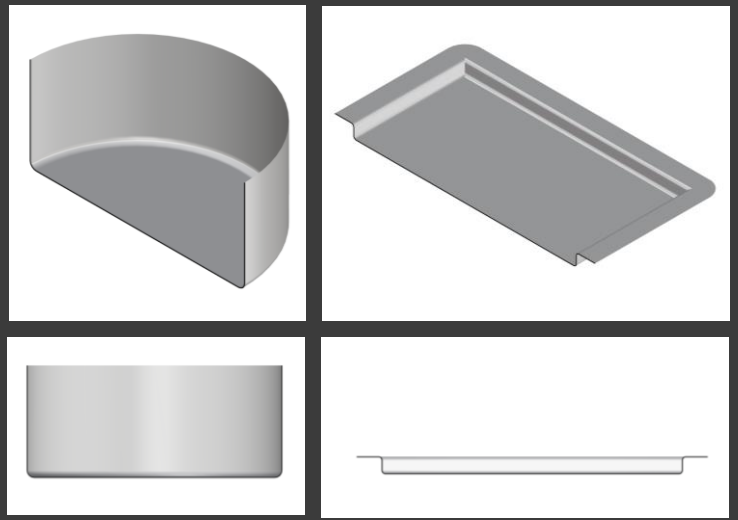
Incompatible parts for Digital Sheet Forming



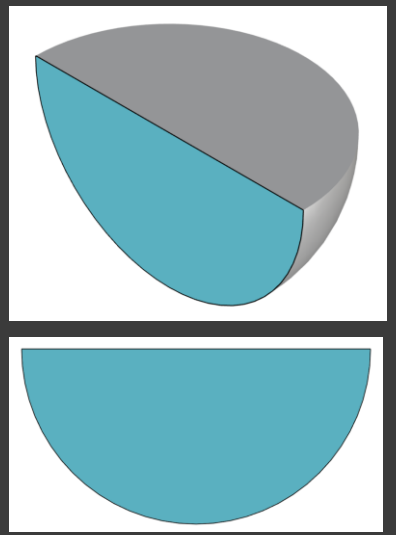
Parts with Overhung Areas

Any overhung part will not be able to be formed as one part. The part will need to be split and formed as separate pieces.



Steep + Flat Parts

“pots and pans” type shapes are not ideal parts. They have 90 degree walls that would need custom toolpathing not currently available in the figur former software.



Solid objects

our process is “sheet forming” which means solid objects are not possible

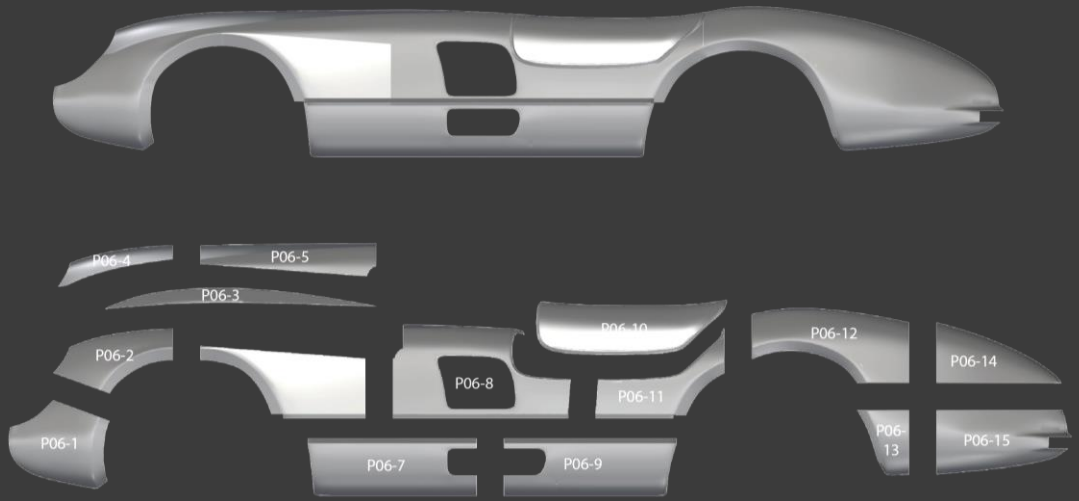
FIGUR | Desktop Metal

Oversized Parts + Splitting

Part Split examples:

- Parts that exceed the max formable area of 1450 x 1050 must be split into separate parts.
- Parts may also be split if the original part is impossible to form as one.
- If a part has 2 parallel walls greater than 60 degrees - part is split between those two walls.
- If one side of the part has smaller features that need to be oriented a different way from the rest of the part.

Car Body Side



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Required Intake Information

- ***Name*** of the company
- ***3D Model file*** – STEP, IGES, RHINO (high quality)
- ***Part Overall Dimensions***
- ***Material Type***
- Minimum ***Material Thickness***
- Desired ***number of parts*** to be formed.
- Intended ***Application / Industry*** of part