WILSON TOOL

Strength. Performance. Innovation.

Finding the Right Fit: Perfecting Your Nesting Process

Webinar Series

Welcome

www.wilsontool.com

Finding the Right Fit: Perfecting Your Nesting Process

Wilson Tool Hosts

Elizabeth Graham

Vanessa Greer

Presenter

Scott Tacheny

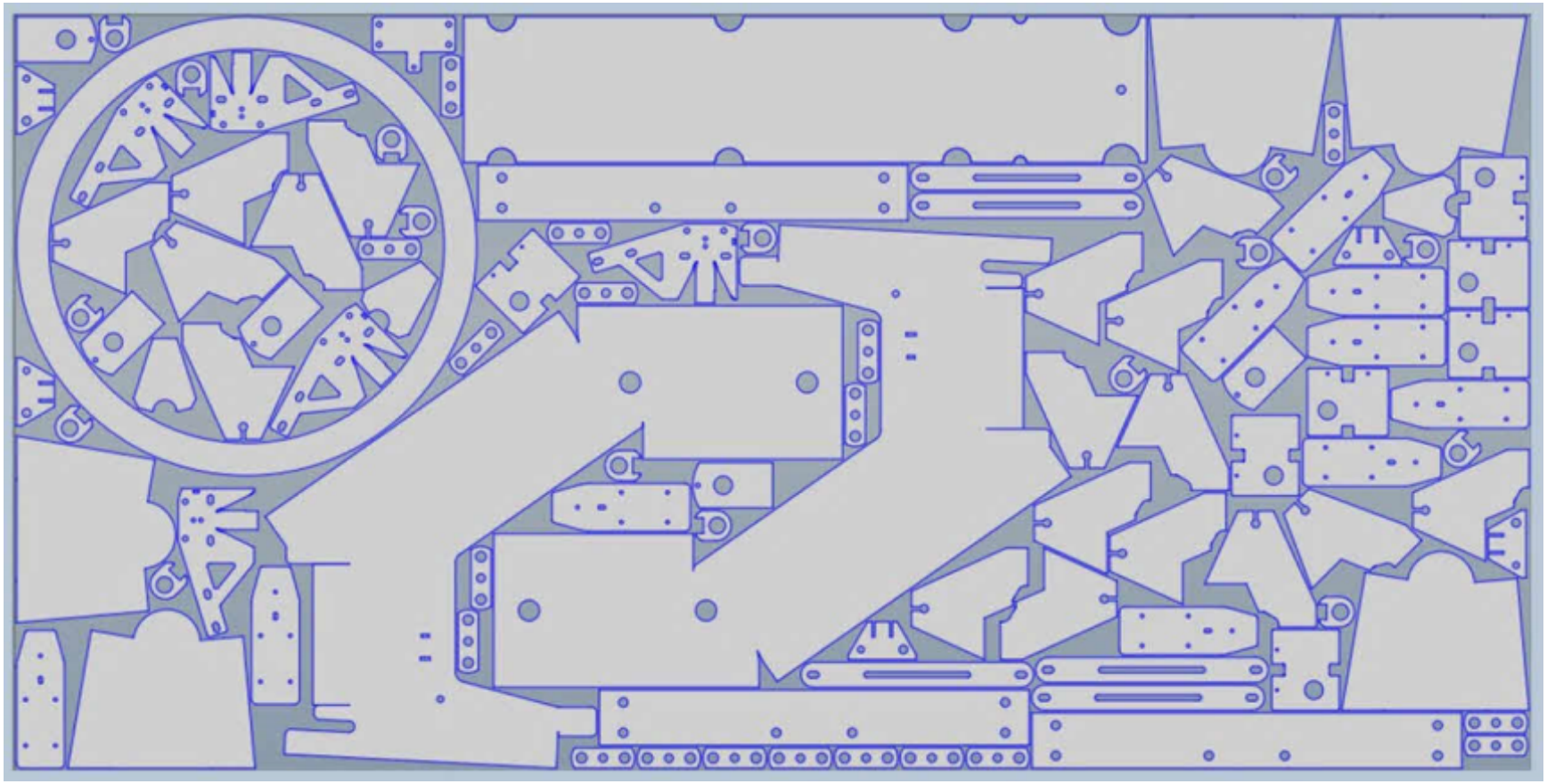
WILSON TOOL

Strength. Performance. Innovation.

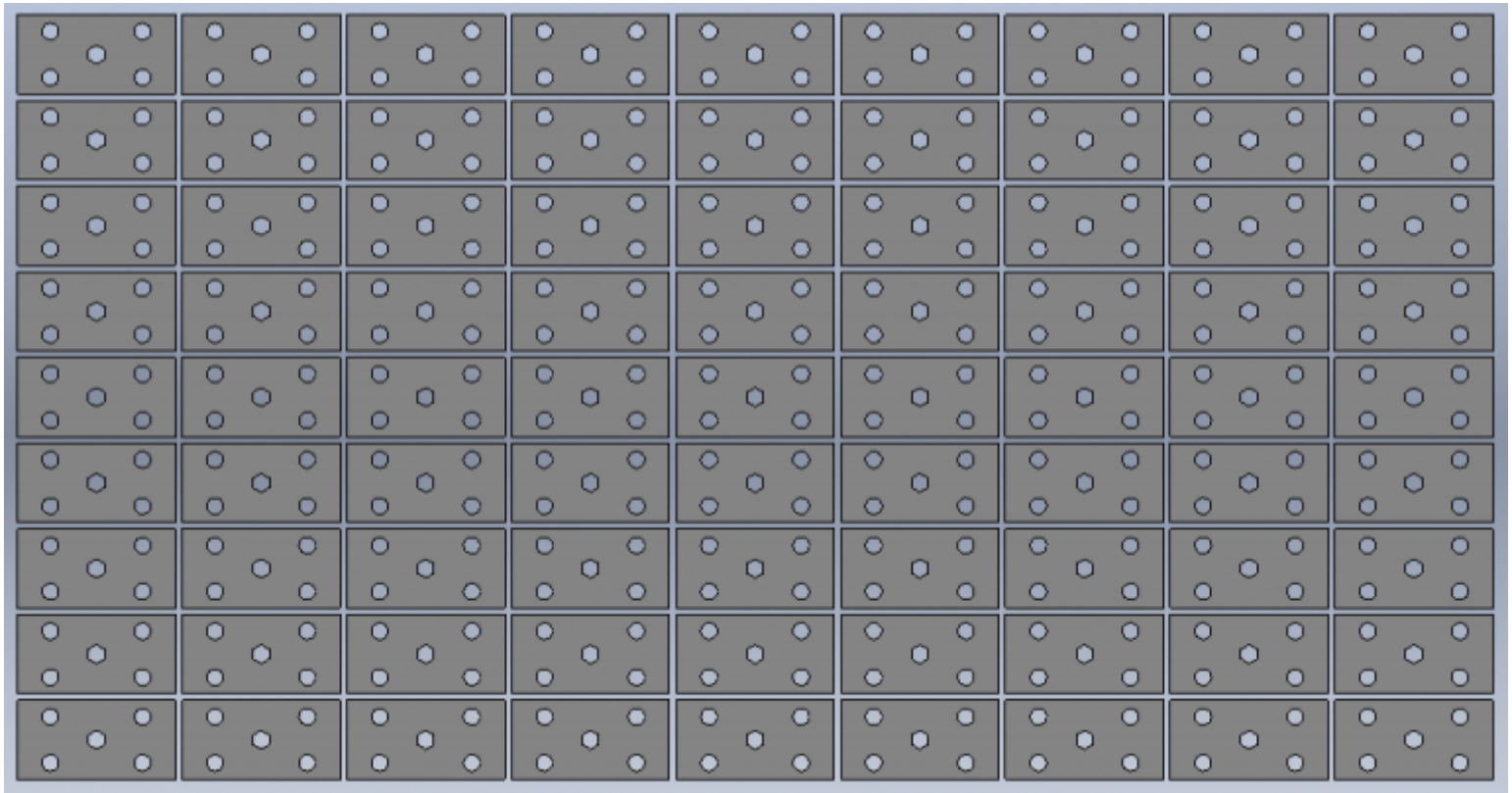
Finding the Right Fit: Perfecting Your Nesting Process

by Glen Shuldes & Scott Tacheny

Not this type of nesting ……..



…….. but rather this type of nesting



Nesting Topics

Problem

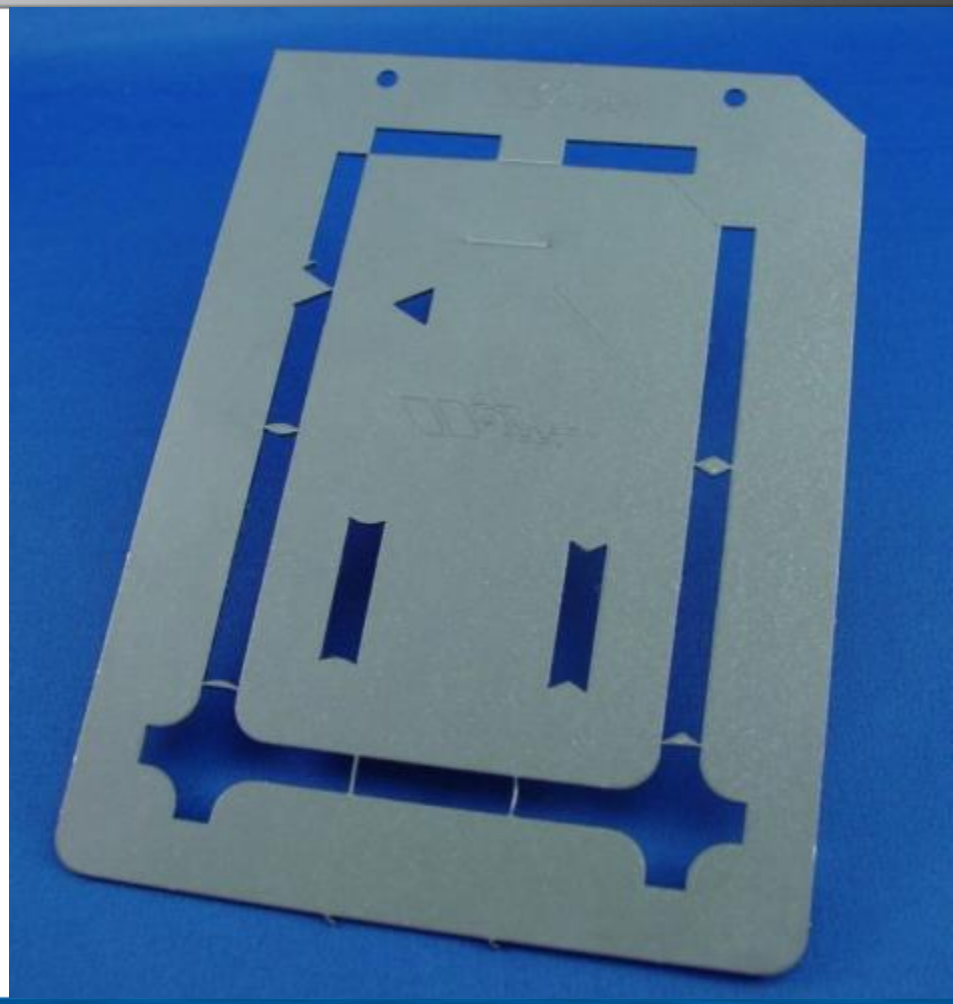
- Parts falling out
  - Weak Joints
  - Sheet Shake
- Pinch Points
- Uneven wear or reduced tool life
  - Even galling

Solution

- Tabbing
  - Options
  - When and where
- Tool solutions
- Programming methods for slitting
  - Straight line nibbling
  - Odd-even nibbling

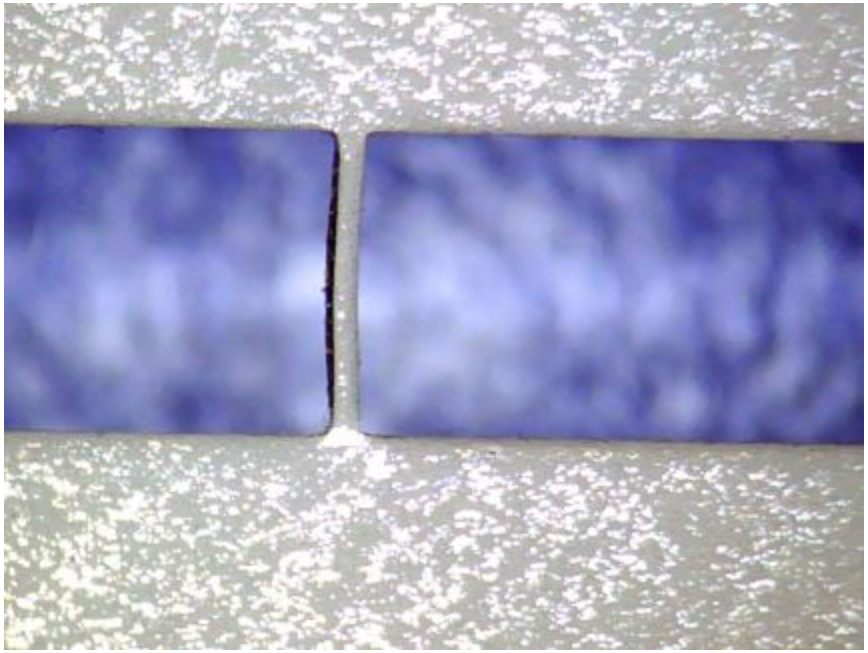
Tabbing

- Tabs
- Shake-a-part
- Microjoints
- Etc.



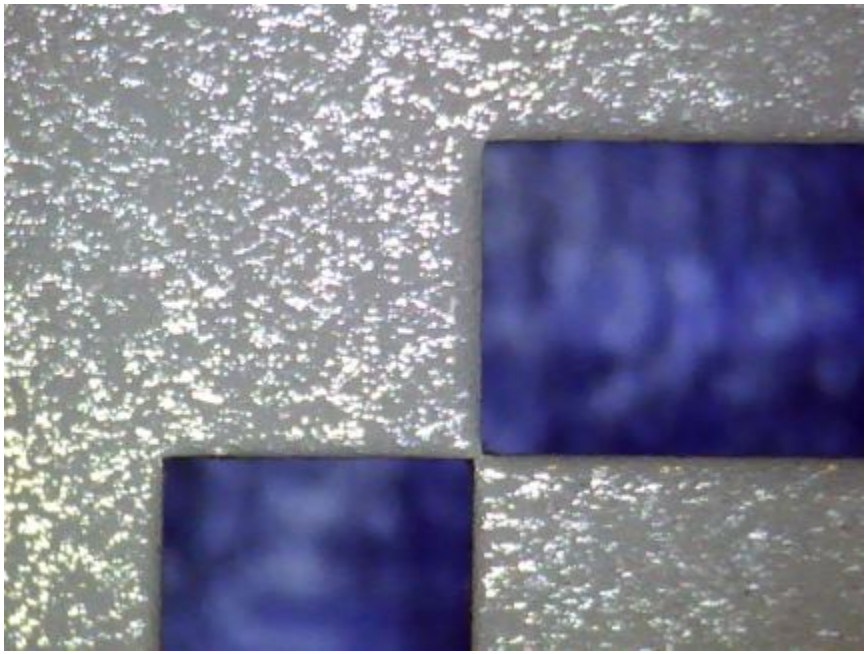
Tabbing

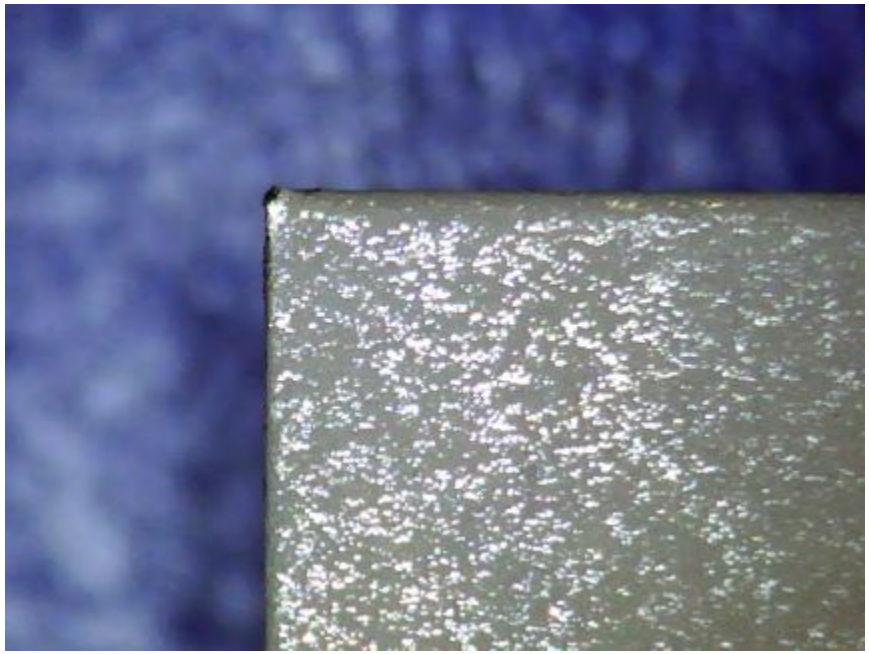
Wire Tab
Weak, unstable and does not break cleanly. Tab width is roughly 33% of the material thickness. Dangerous and should be the last resort.



Tabbing

Corner Tab
Most common shaker tab. Normally created with a rectangle or square punch. Roughly 10% of the material thickness is left in both directions.

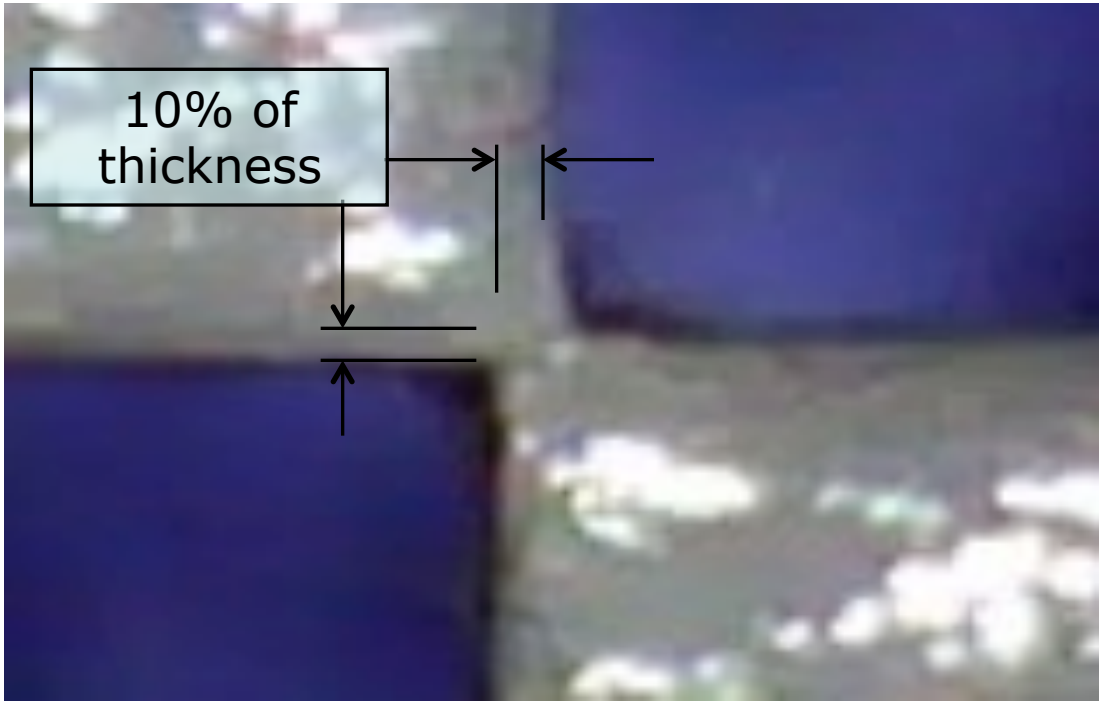




Tabbing

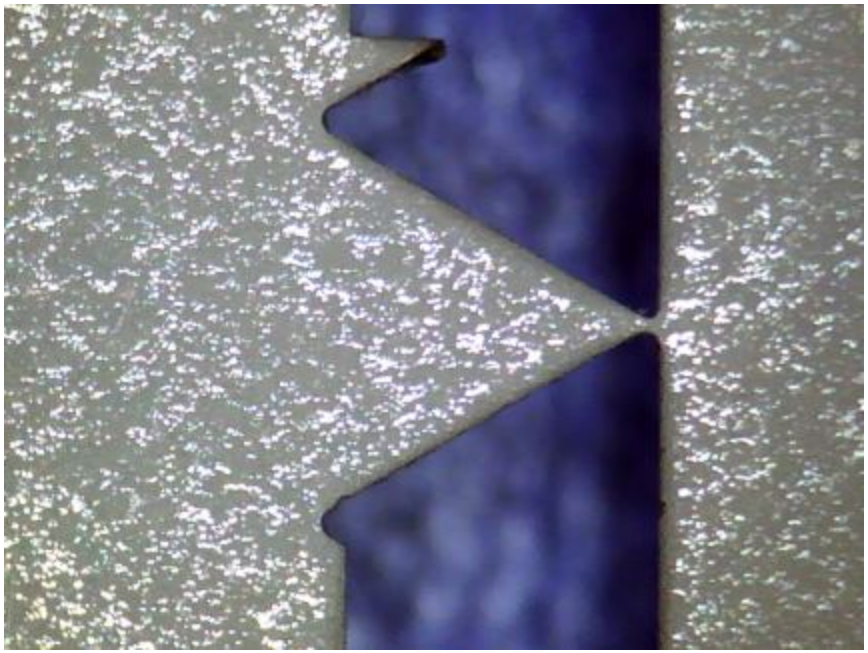
Corner Tab

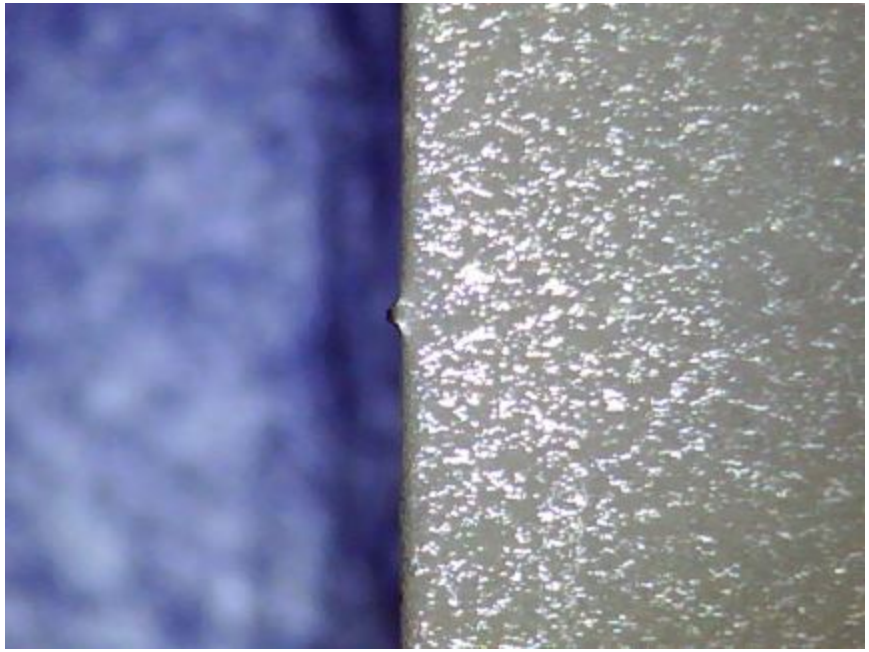
Most common shaker tab. Normally created with a rectangle or square punch. Roughly 10% of the material thickness is left in both directions.



Tabbing

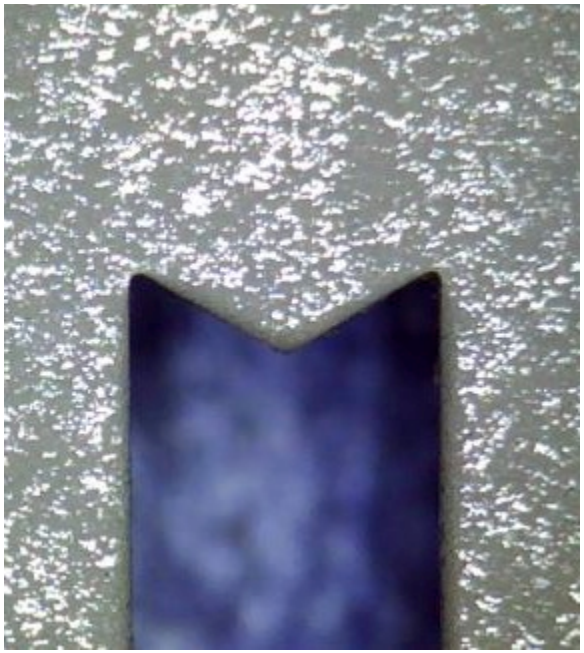
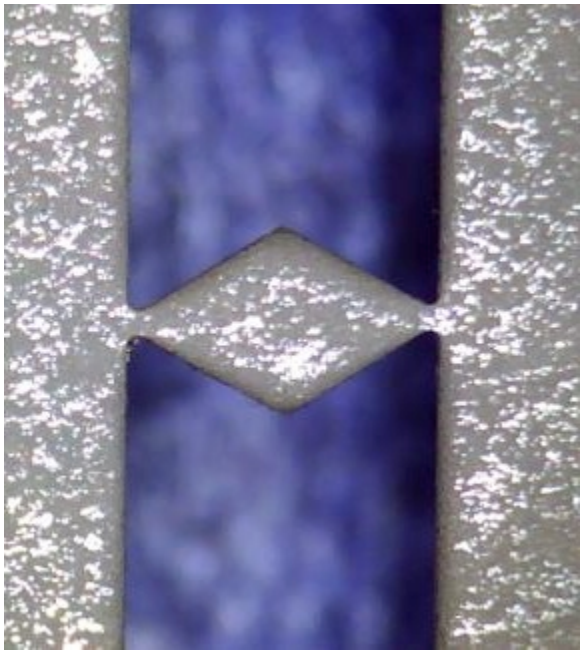
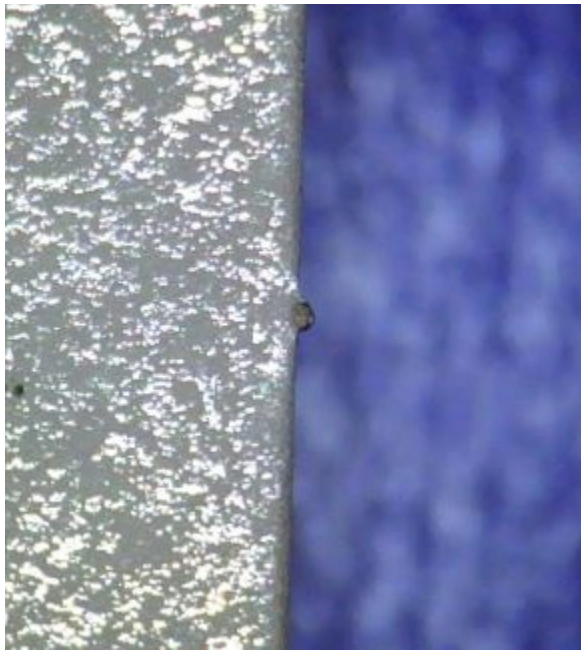
Equilateral Triangle
A standard shape tool. Creates triangular tabs that break cleanly. Tab width is roughly 33% of the material thickness.





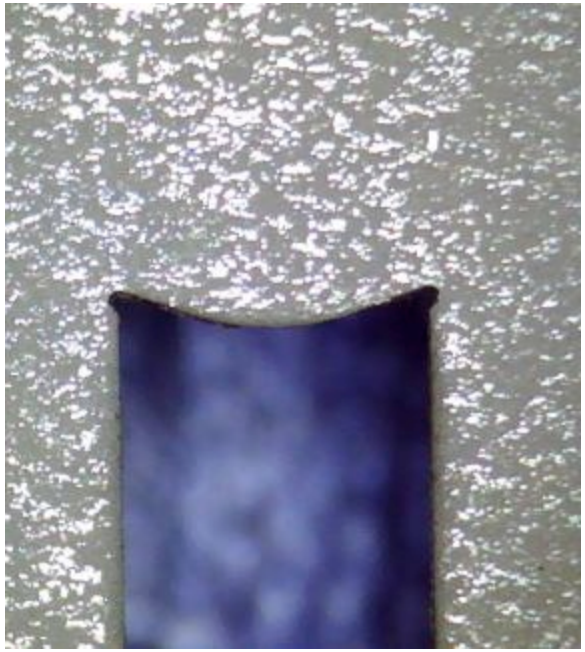
Tabbing

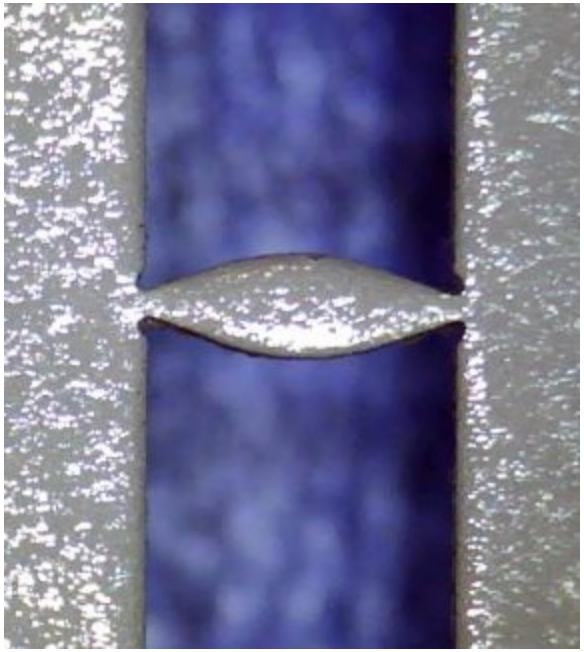
Inverted Diamond Tool
A common special shape tool. Creates diamond shaped tabs that break cleanly. Tab width is roughly 33% of the material thickness.

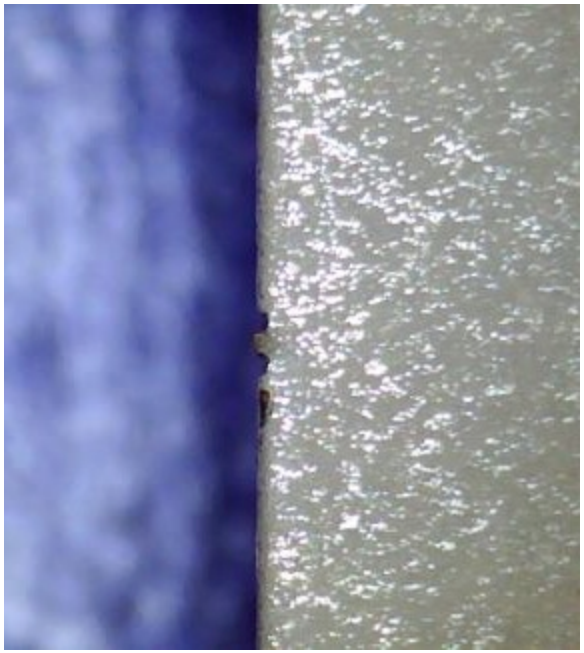




Tabbing

Inverted Diamond Tool with "horns"
A special shape tool similar to the Inverted Diamond. Creates diamond shaped tabs that break slightly below the edge. Tab width is roughly 33% of the material thickness.

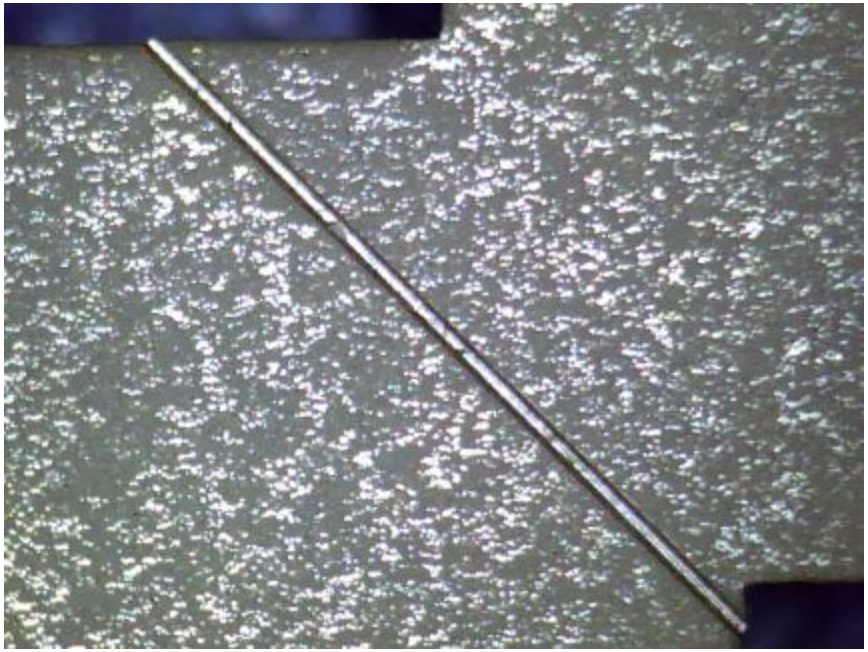


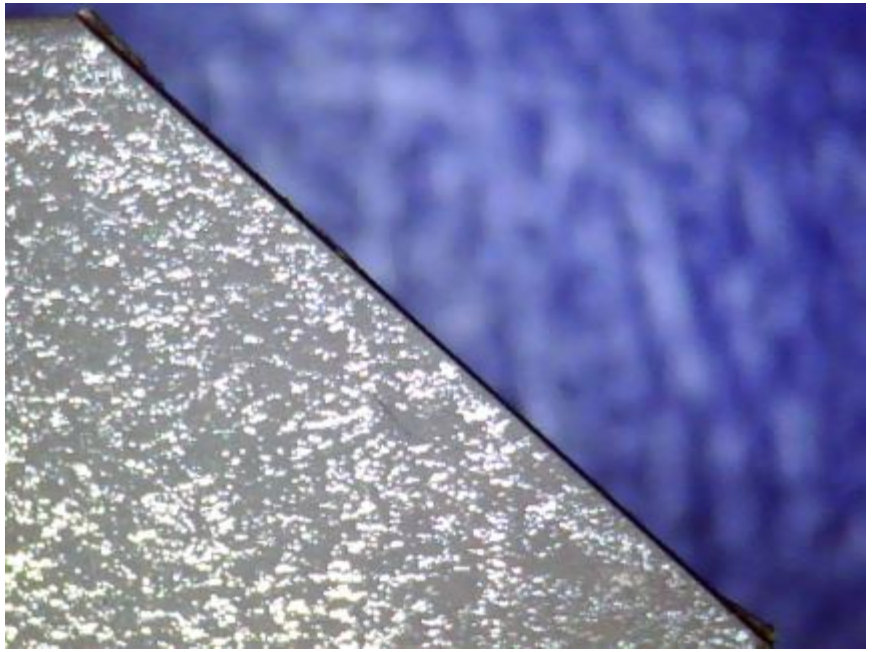




Tabbing

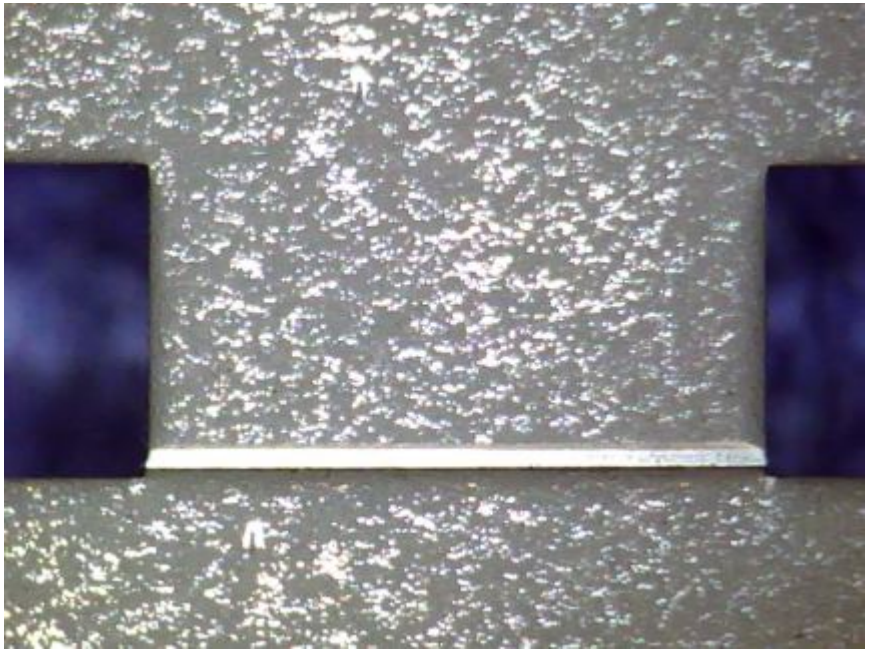
Dash Tool
A form-up / form-down tool that can create any length tab. Normally used on chamfered corners.

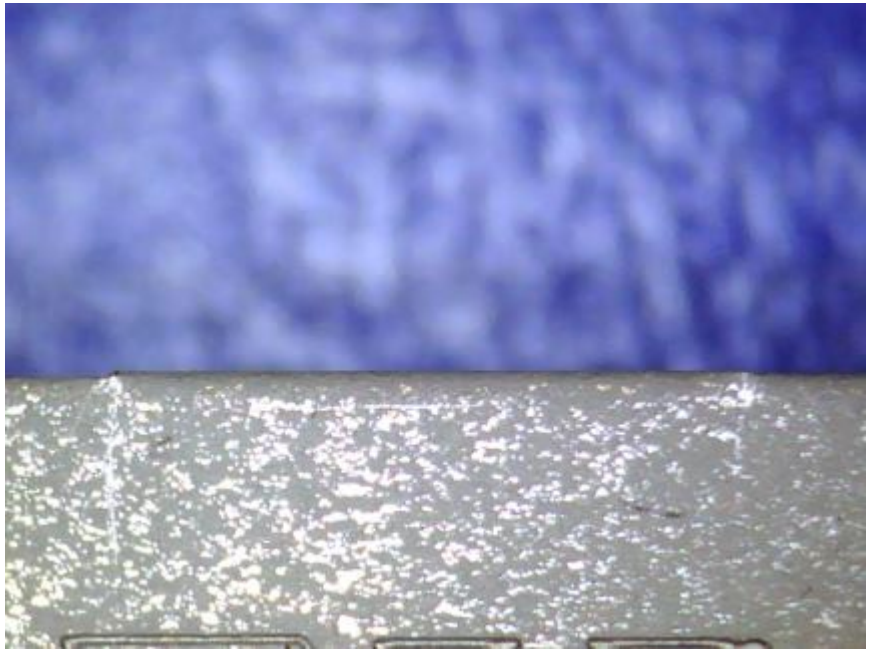




Tabbing

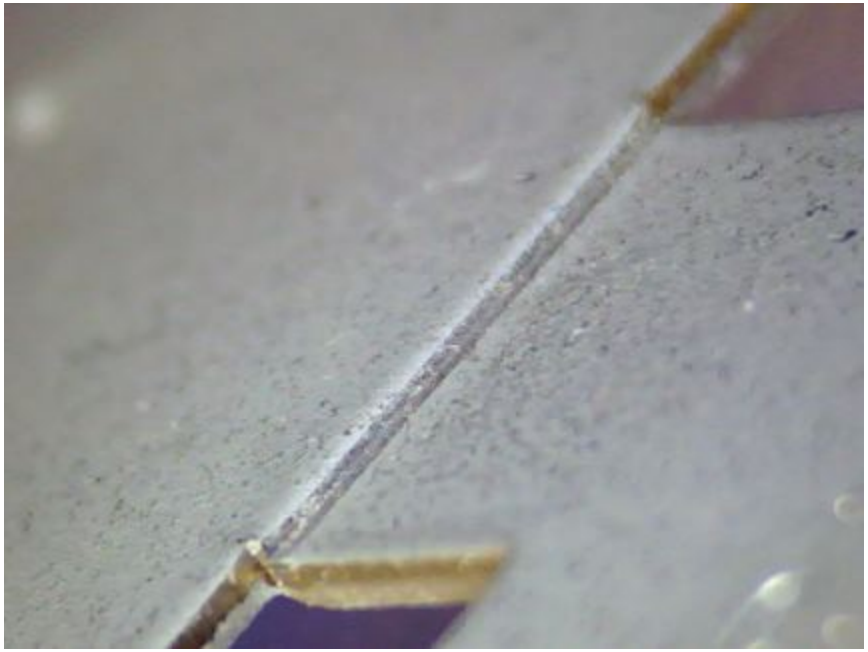
Half Shear tool
A forming tool that can create a relatively long tab that breaks off flush to the edge.

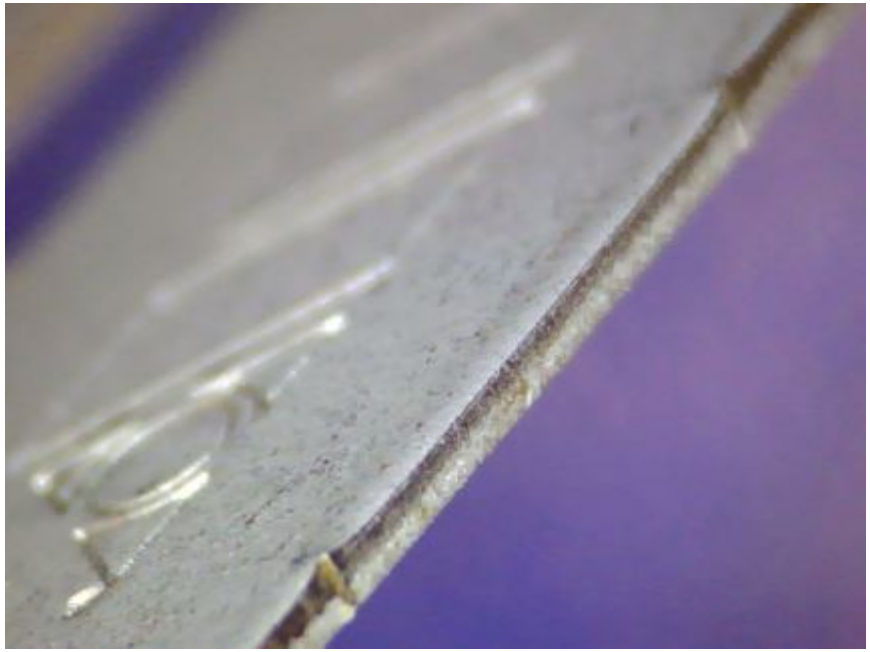




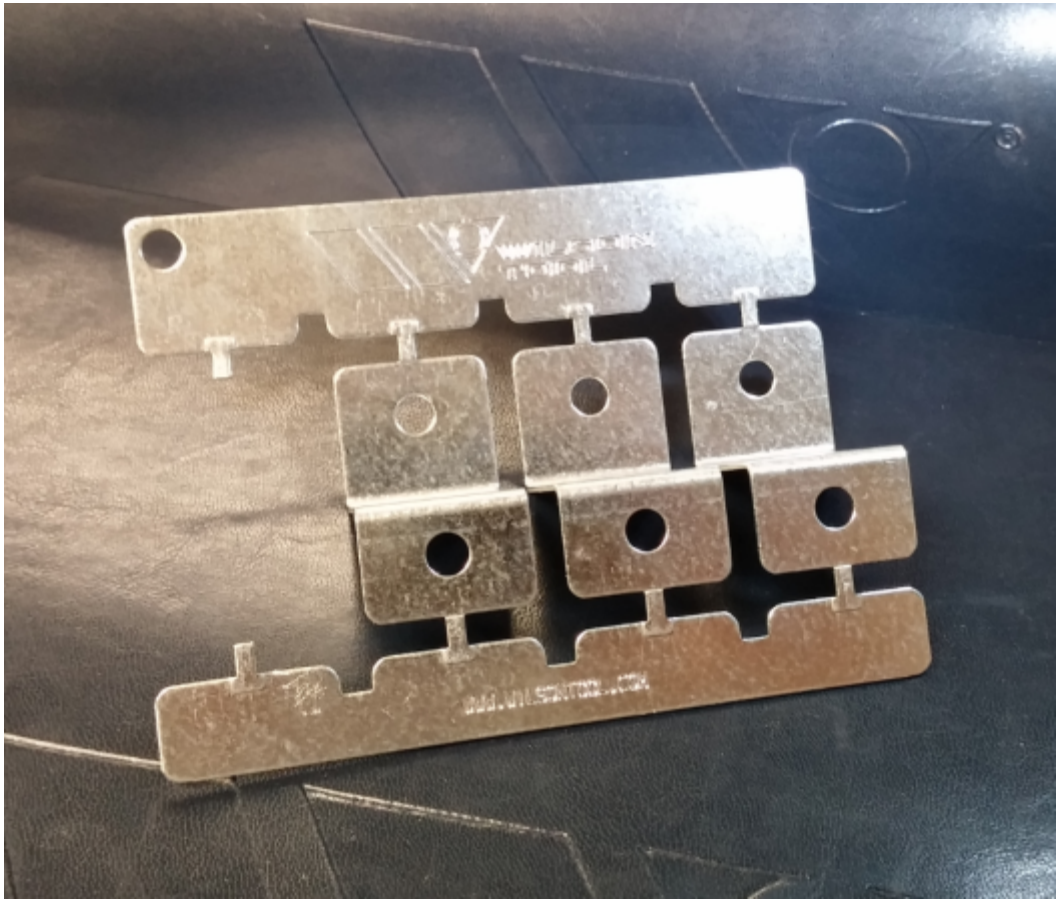
Tabbing

Half Shear tool
A forming tool that can create a relatively long tab that breaks off flush to the edge.

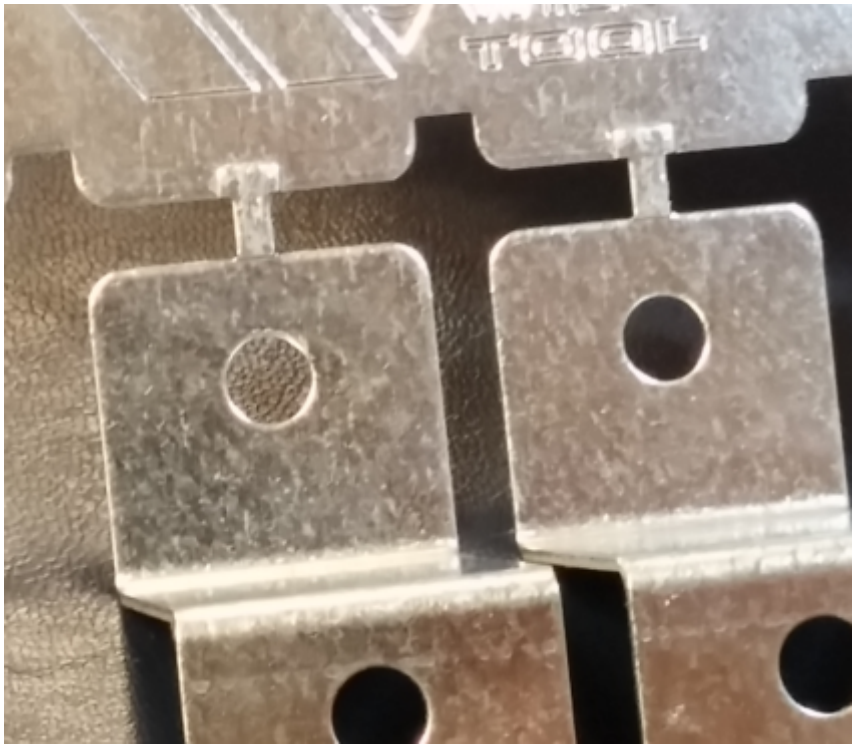




Tabbing – Halfshear
(Ganged & bent on Brake)

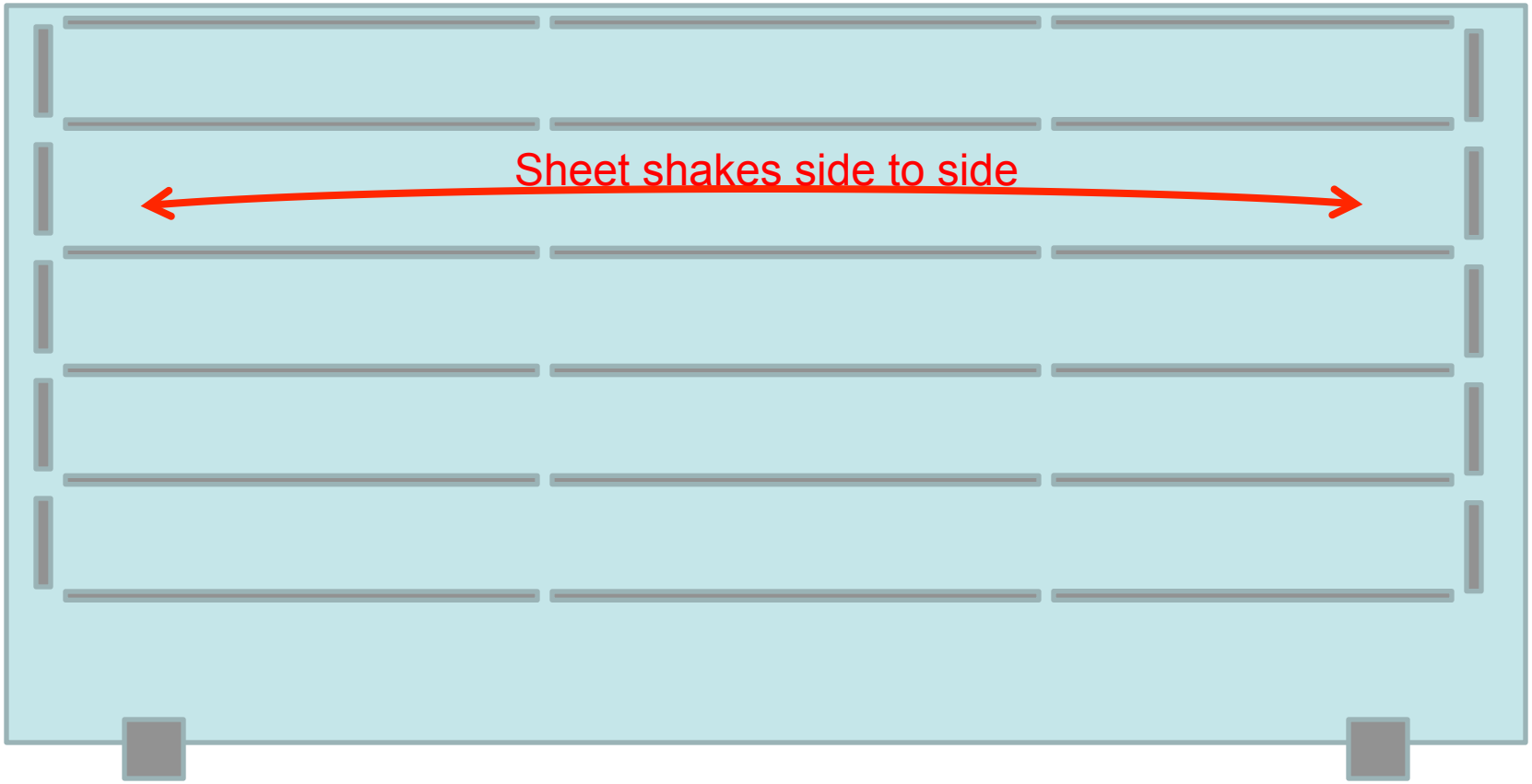


Tabbing – Halfshear
(Ganged & bent on Brake)



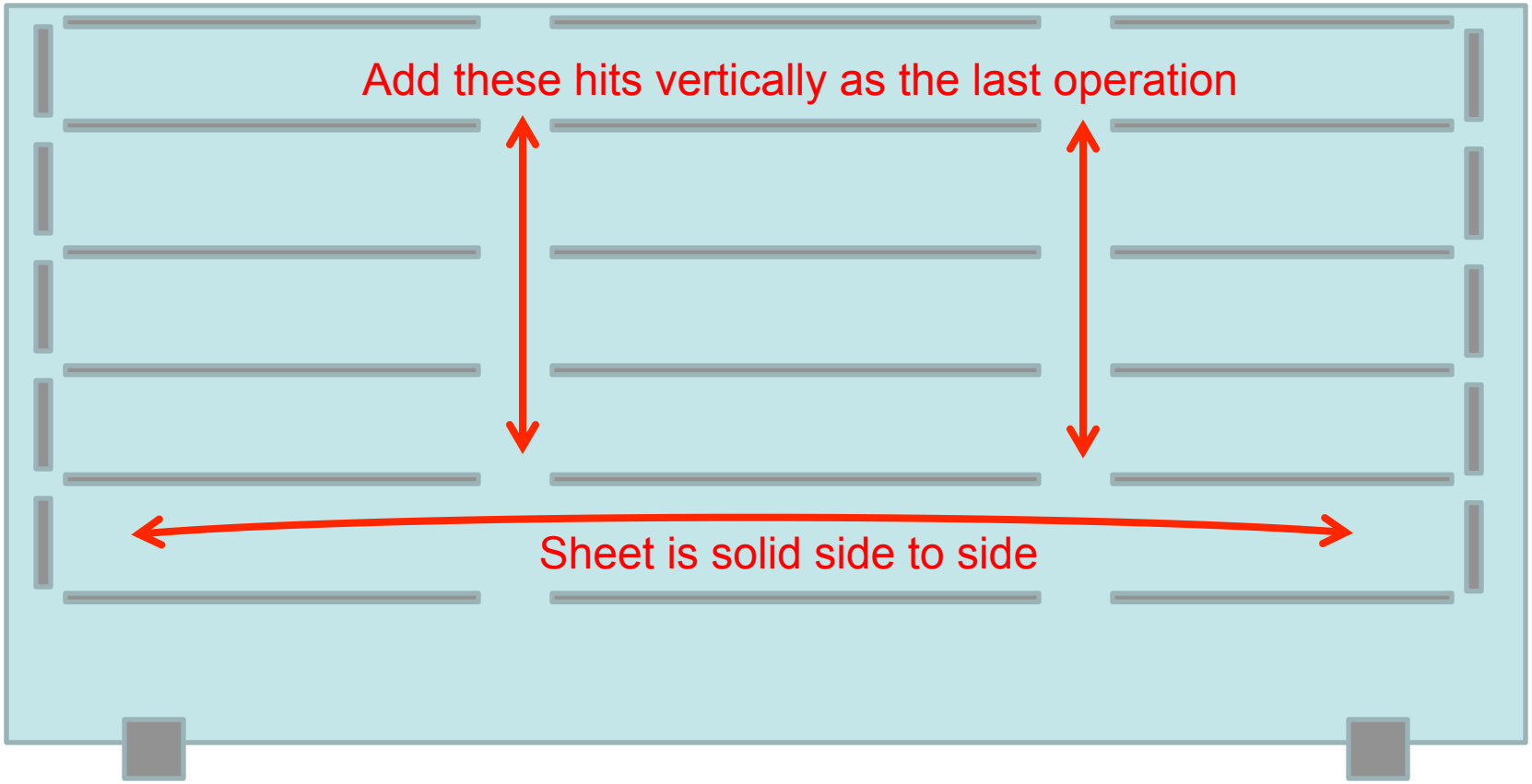
Tabbing – Where and When

How to prevent “sheet shake” at the end of your program

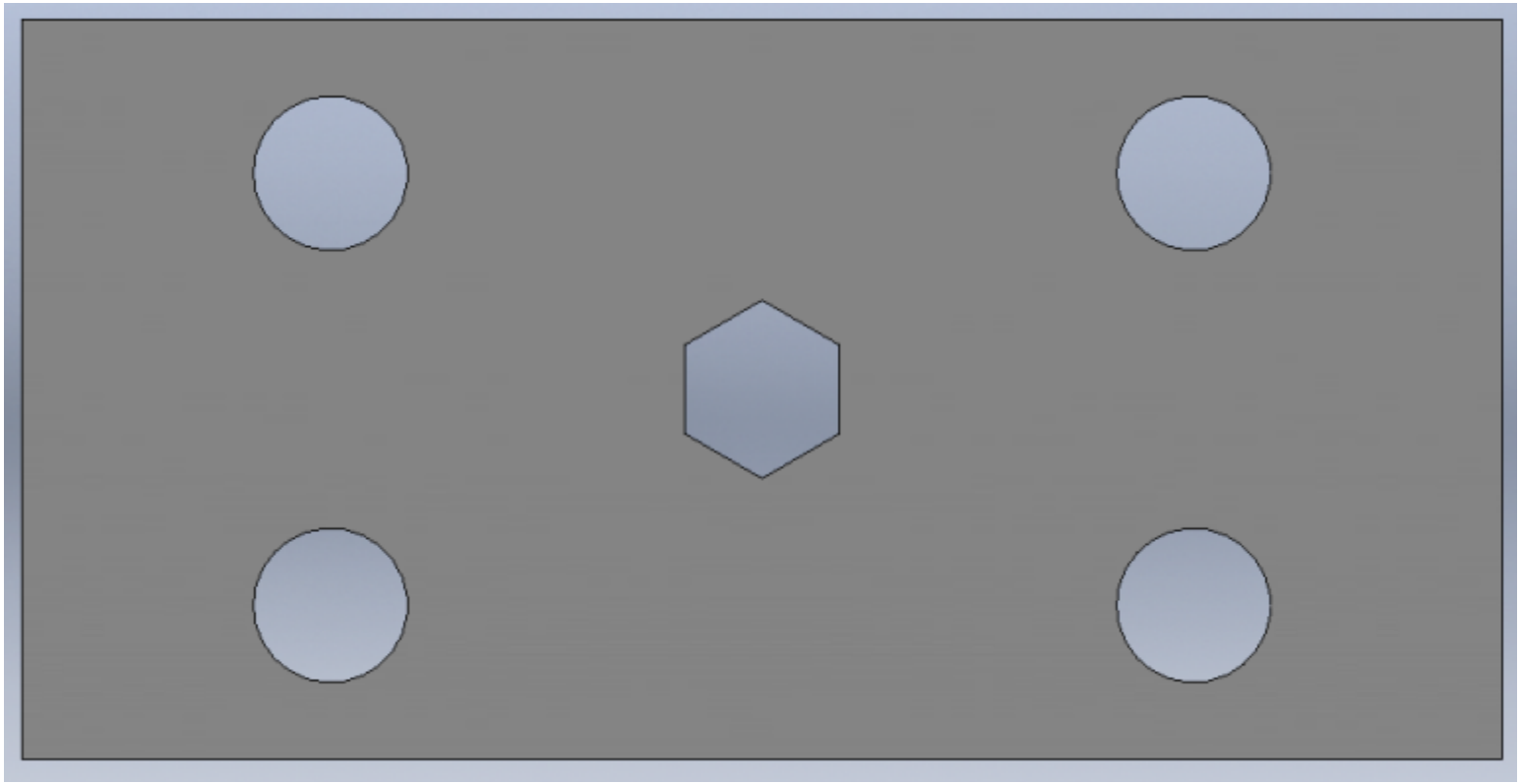


Tabbing – Sheet Shake

How to prevent “Sheet Shake” at the end of your program

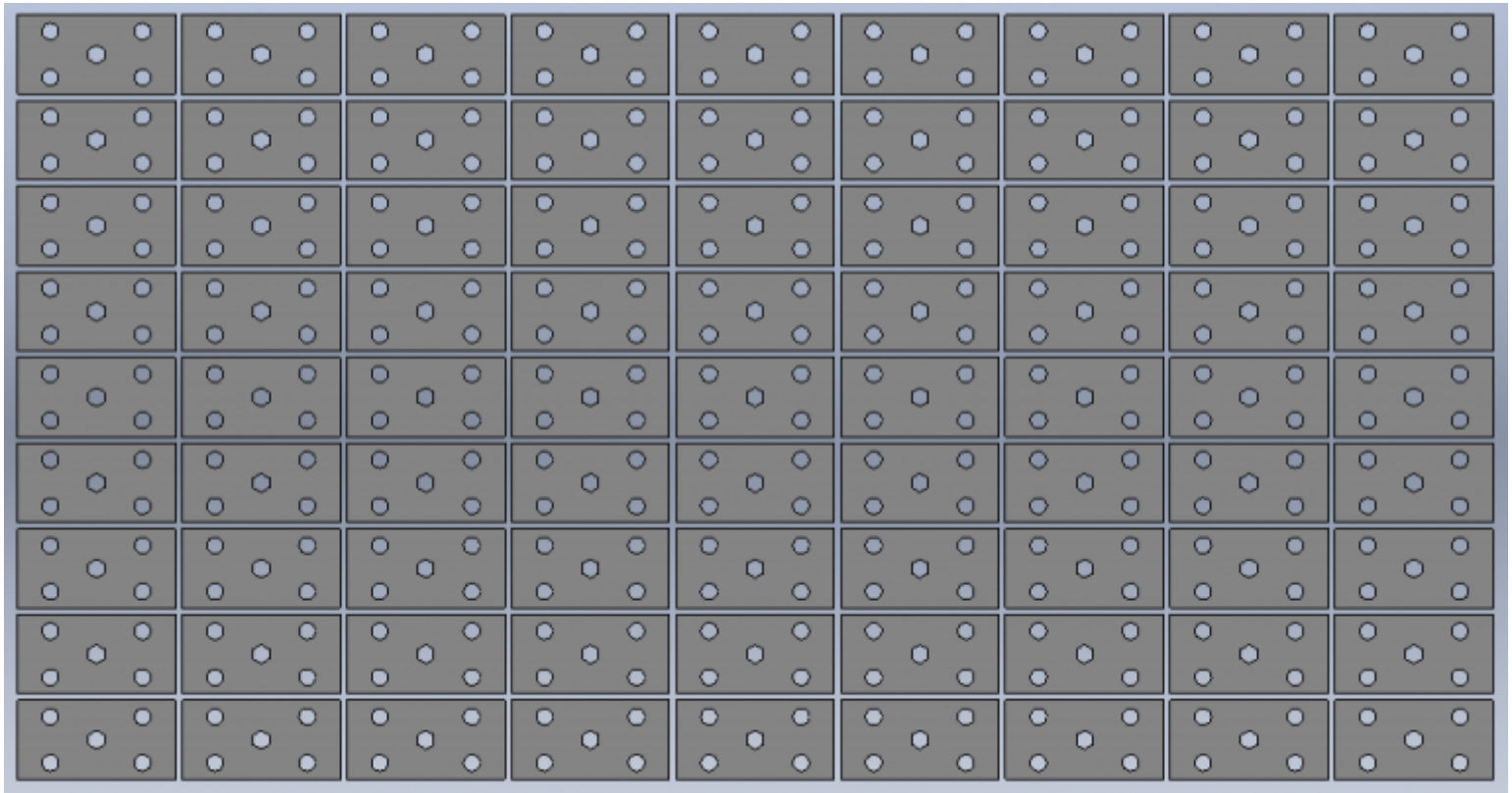


Tabbing – Sheet Shake & Common Line Cutting



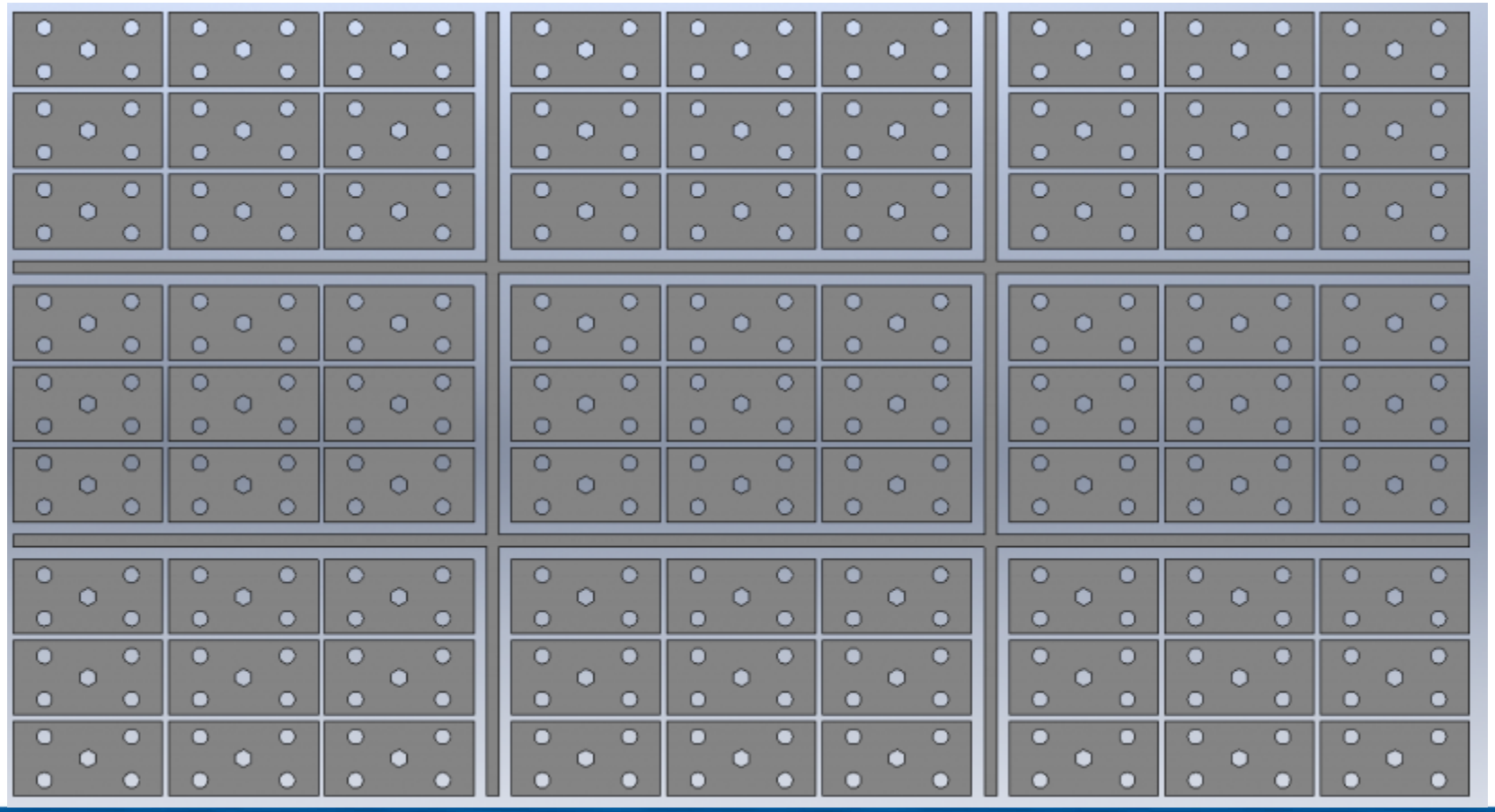
Tabbing – Common Line Cutting

Sheet Shake is inevitable in this situation



Tabbing – Nested Common Line Cutting

Combat Sheet Shake by making islands



Tabbing - Summary

Wire tabs
- Dangerous and should be outlawed

Corner Tabs
- Must have sharp corners to put tabs on
- Good sheet stability depending on tab locations

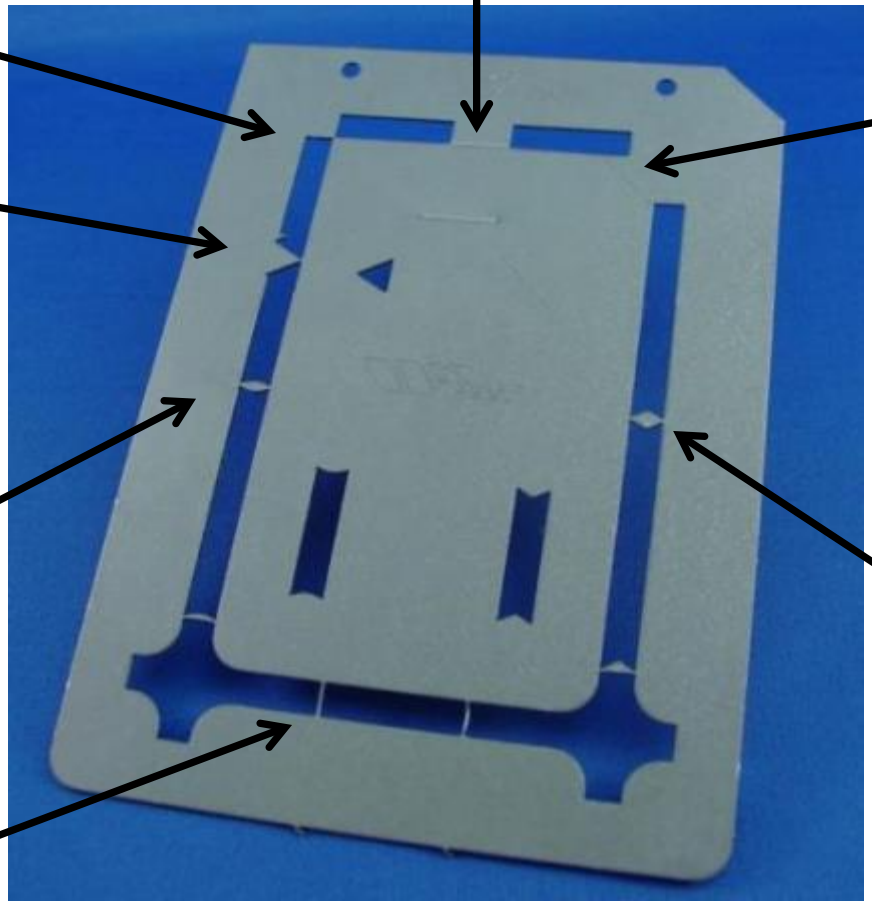
Diamond tabs
- May break on the wrong side
- Poor sheet stability

Triangle tabs
- Require tool rotation
- Better stability than diamond tabs

Dash tool tabs
- Different edge look and feel (used on chamfer corners)
- Good stability and can cure Sheet Shake

Half Shear tabs
- Sheet is formed which can cause programming issues
- Good stability and can cure Sheet Shake

Wilson Tabbing Sample



Pinch Points

Those ugly bumps along a slit-edge

Pinch Points

Solutions

- 2-D Shapes – Mixing and Matching
- Wheel Tools – Rolling to Success

Pinch Points

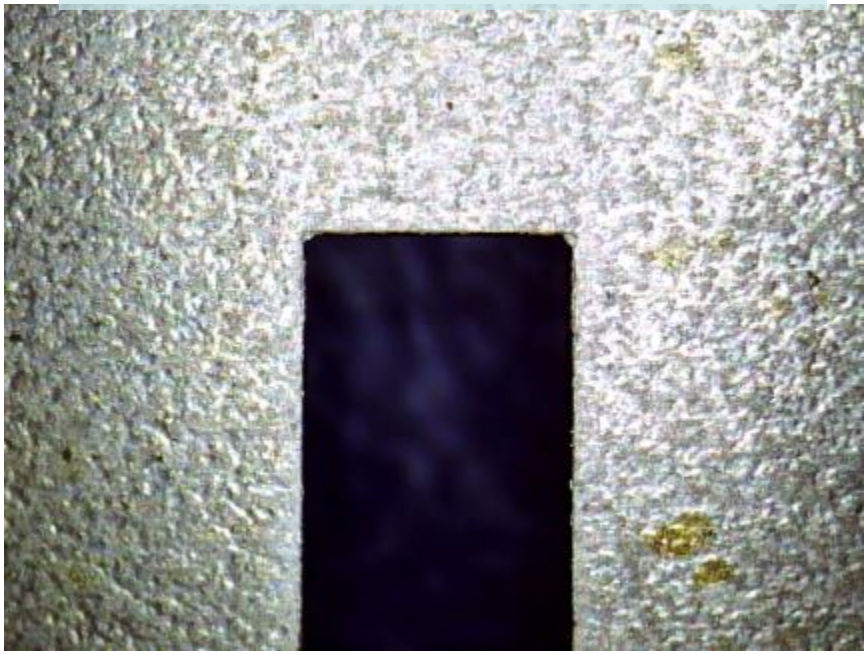
Commonly caused by slitting or nibbling

Pinch points from
standard rectangle

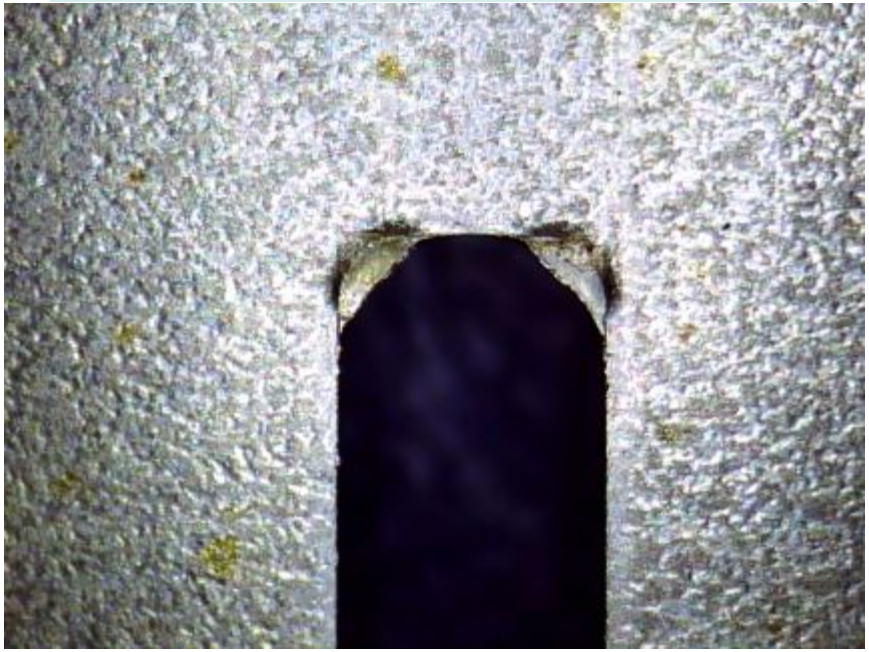
Pinch Points

Resolved with an Obround punch in a Rectangle die

Rectangle punch in Rectangle die



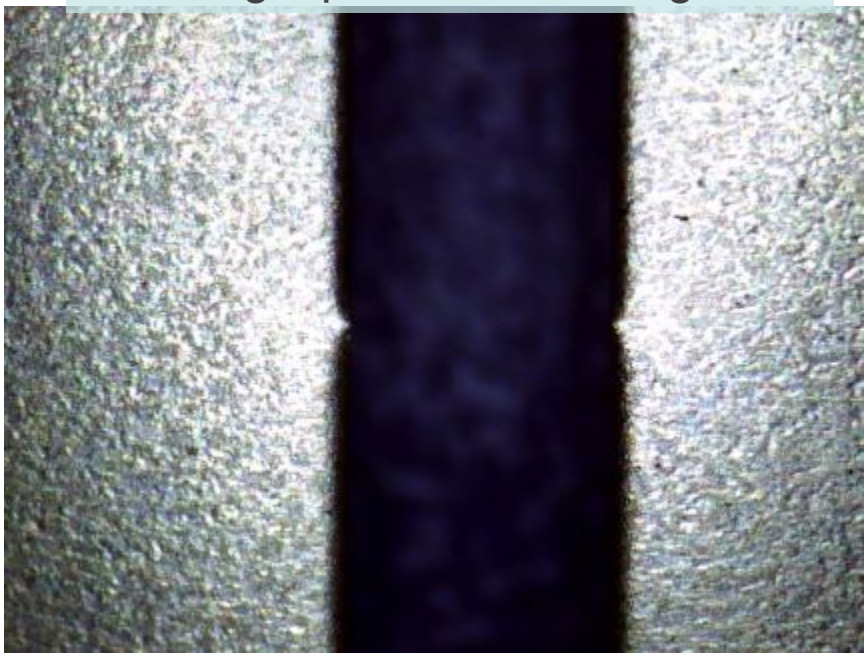
Obround punch in Rectangle die



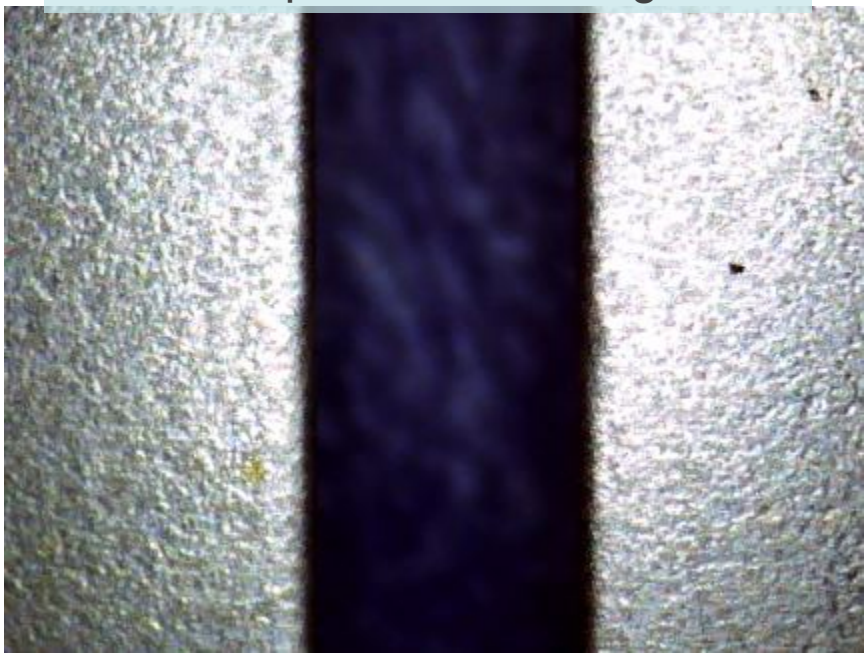
Pinch Points

Resolved with an Obround punch in a Rectangle die

Rectangle punch in Rectangle die



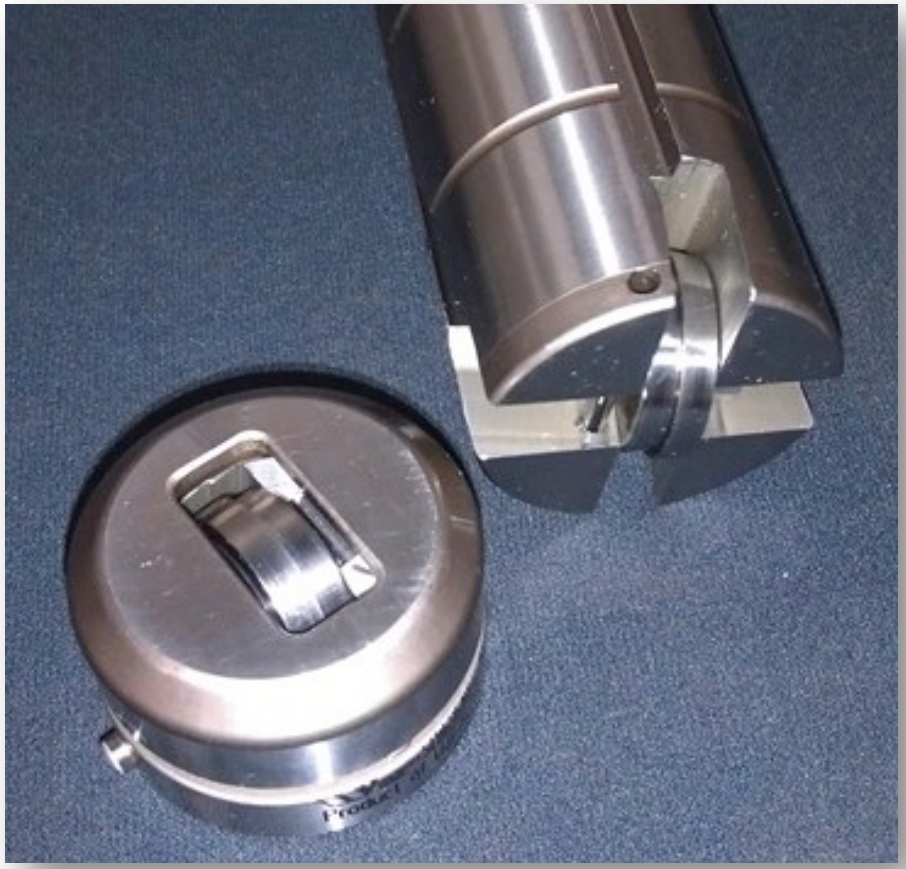
Obround punch in Rectangle die



Pinch Points

Avoided with a Shear Wheel

Perfect for some applications



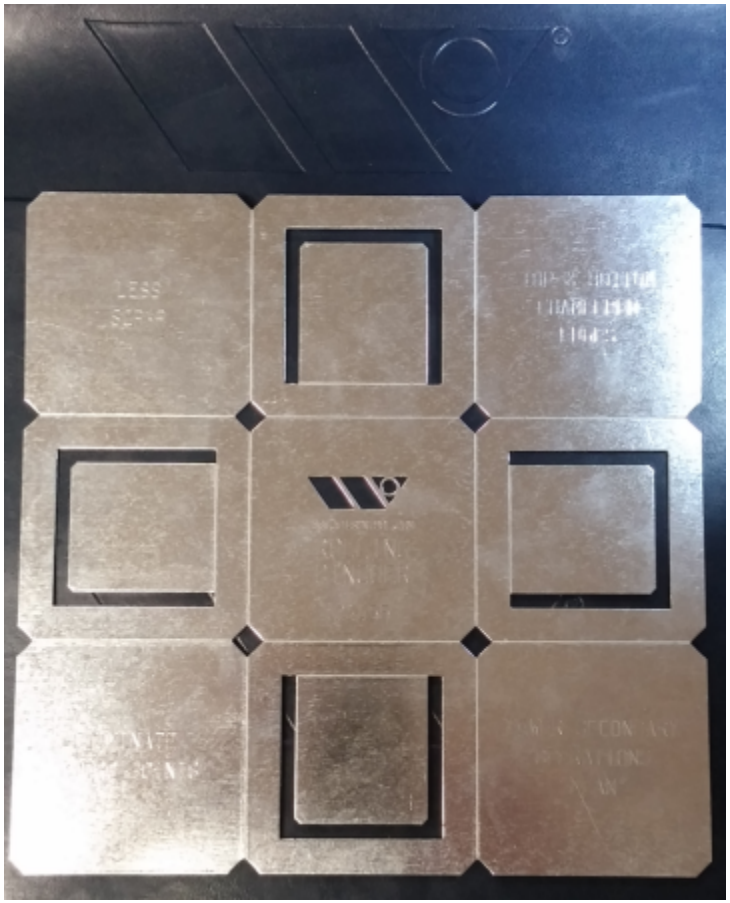
Pinch Points

Resolved with Wheel tool

Apply the Rolling Pincher before punching the edge

Also effective to pre-mask burrs on the bottom of the sheet

Cure Pinch Points & Tabbing Problems



Cure Pinch Points & Tabbing Problems

Pinch Points - Summary

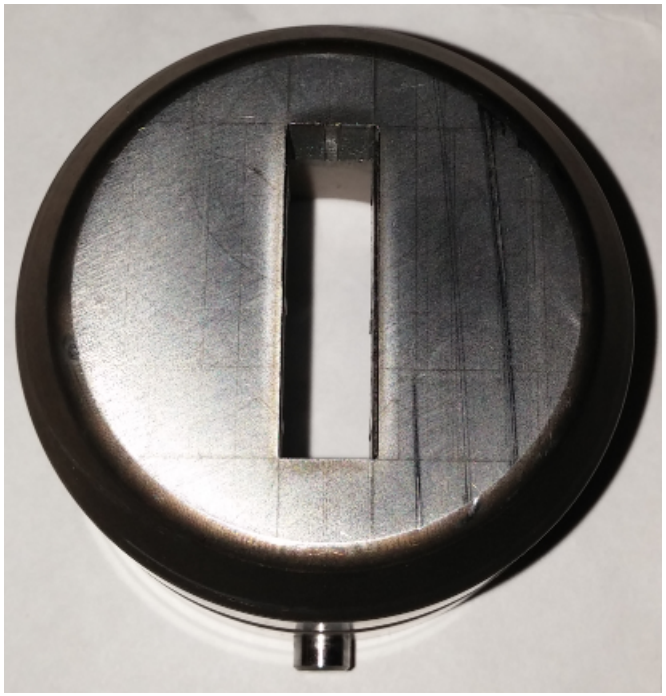
Mixing it Up

- Obround Punch in Rectangle Die
- Long-D Punch in a Rectangle Die

Rolling to Success

- Shear
- Rolling Pincher
  - Top
  - Top & Bottom (hide the burr before it happens)

Uneven Tool Wear or Reduced Tool Life (due to slitting rules & methodology)

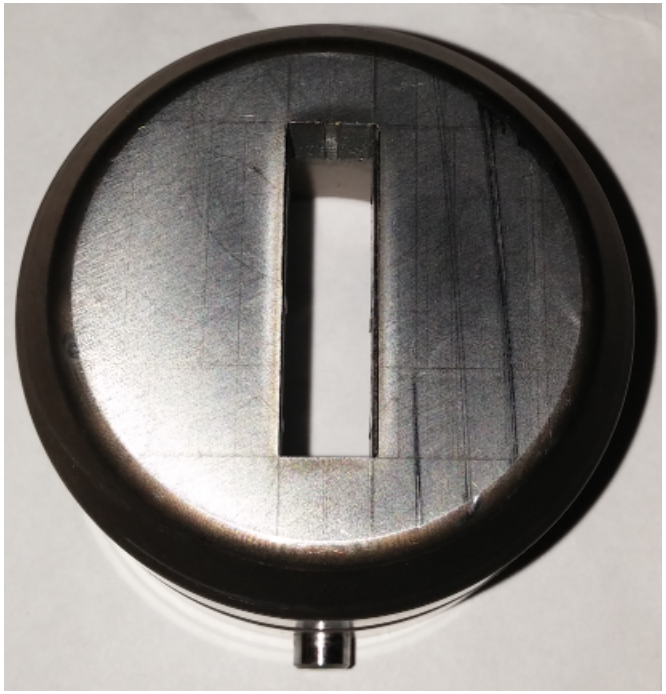


Uneven Tool Wear or Reduced Tool Life

↑

Intended
Progression
Direction

↓



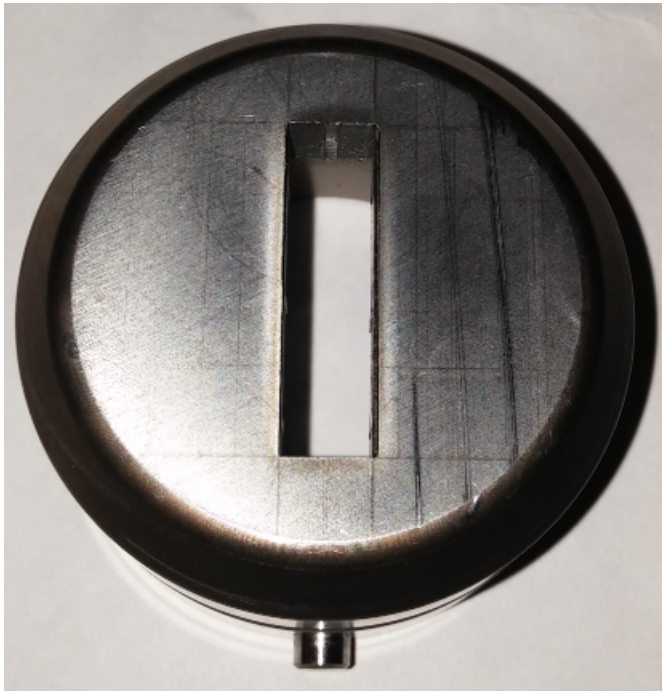
Uneven Tool Wear or Reduced Tool Life

Non-Intended
Progression
Direction

↑

Intended
Progression
Direction

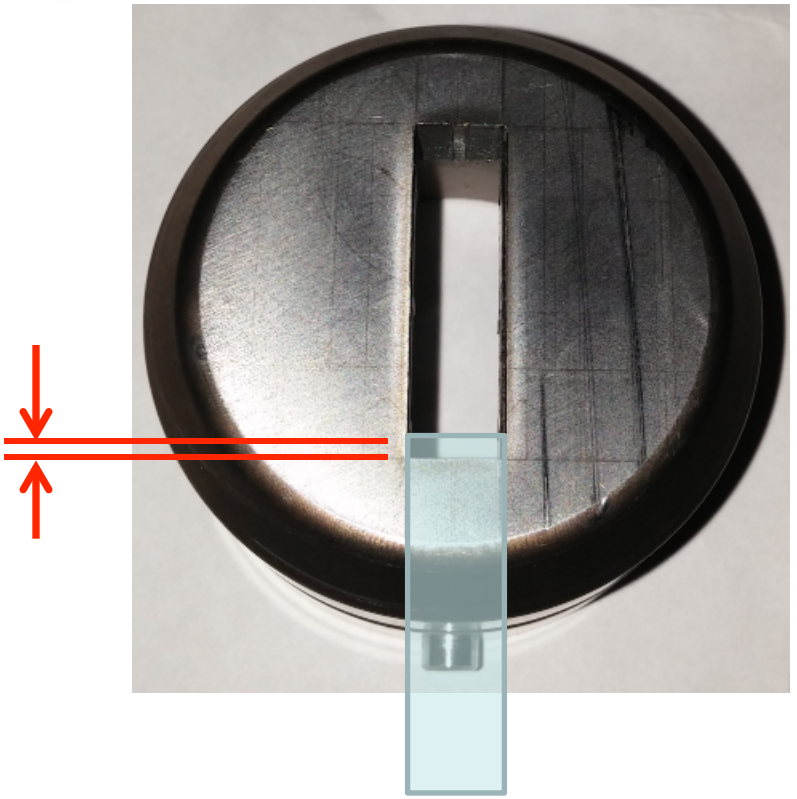
↓



Uneven Tool Wear or Reduced Tool Life

Minimum Overlap
≈ Corner Rad + ½ Mat'l Thk.

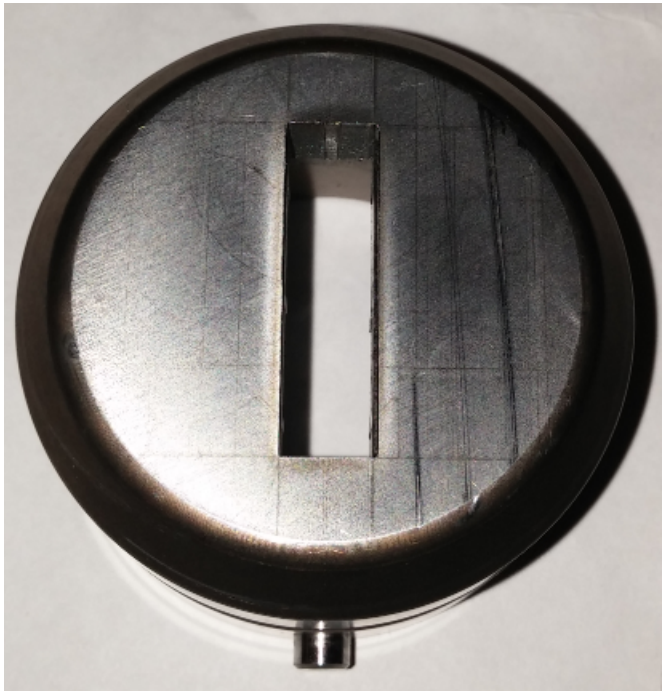
Maximum Overlap
≈ ¼ tool length
(no more than ½ tool length



If you were to progress in this direction

- Use a large "minimum" step values
  (≈ Width - Corner Rad - ½ Mat'l Thk.)
- Small step values are intended only for rounds so that you can minimize the depth of a scallop

Non-Intended
← Progression →
Direction

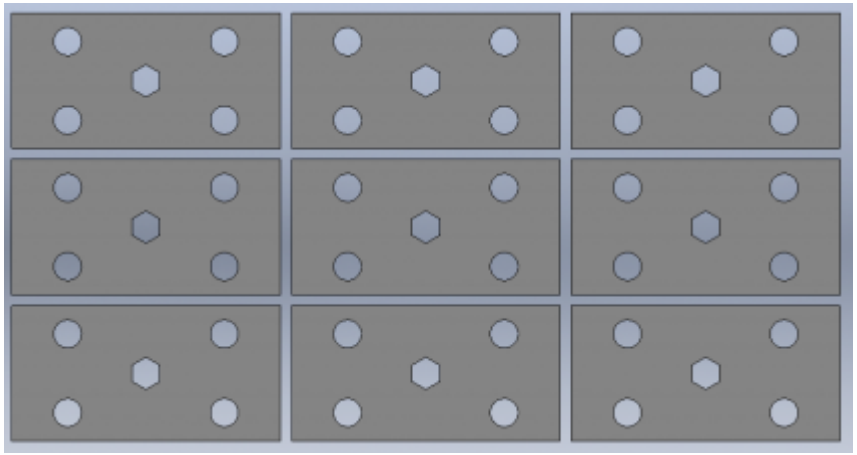


Minimum Progressions

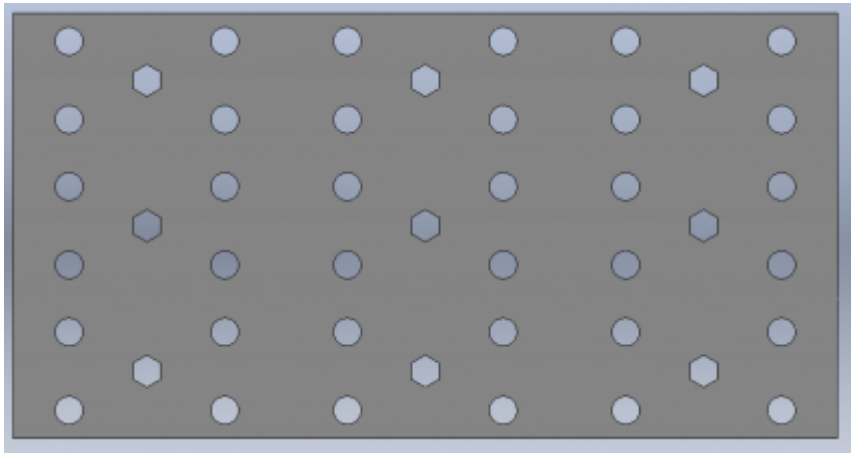
Small step values are intended only for rounds so that you can minimize the depth of a scallop

Slitting – Nested Common Line Cutting

Looking at a Section

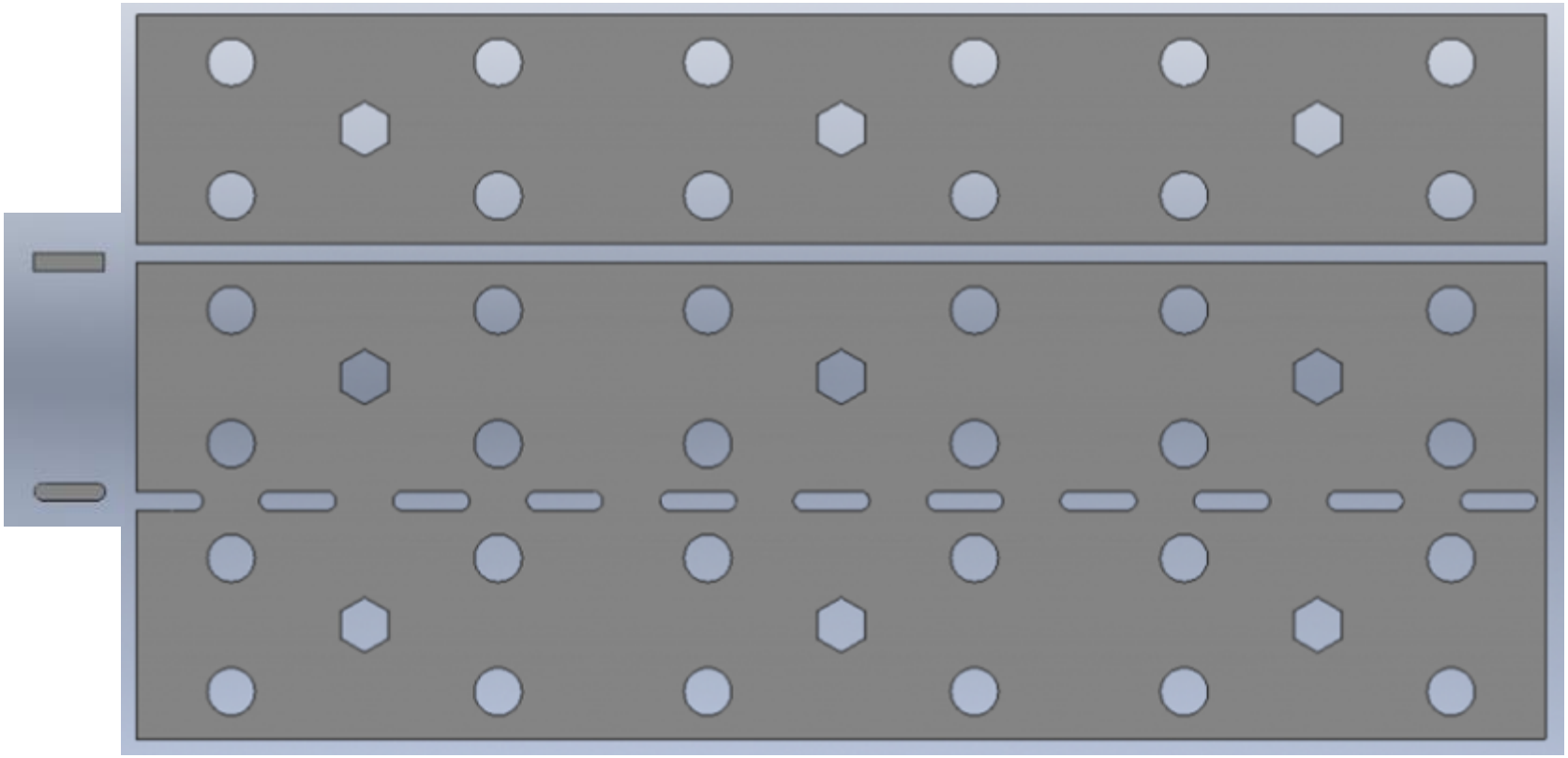


Without the Slitting



Slitting – Nested Common Line Cutting

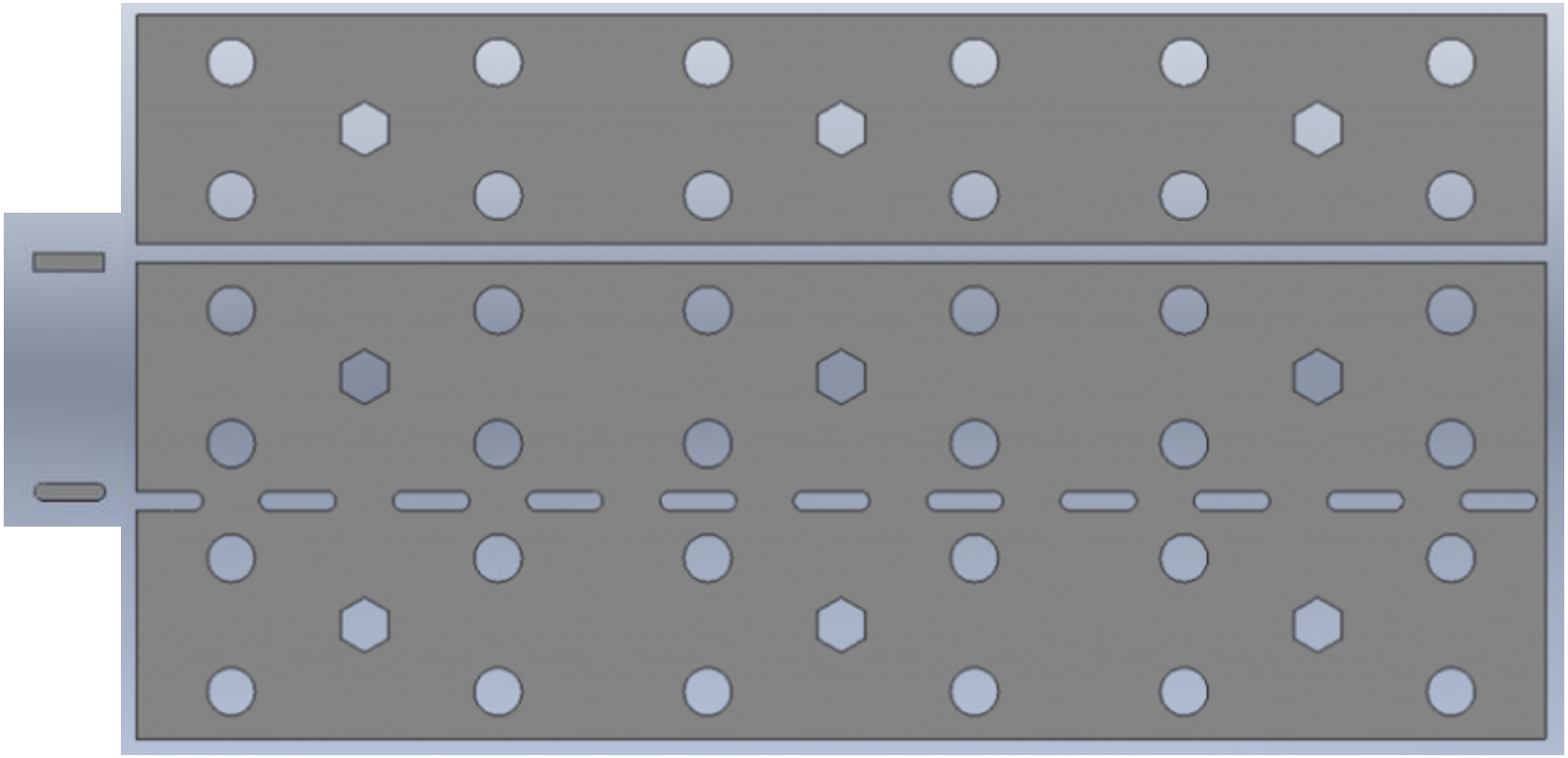
Traditional slitting produces an unbalanced load



Odd-even slitting produces a balanced load

Slitting – Nested Common Line Cutting

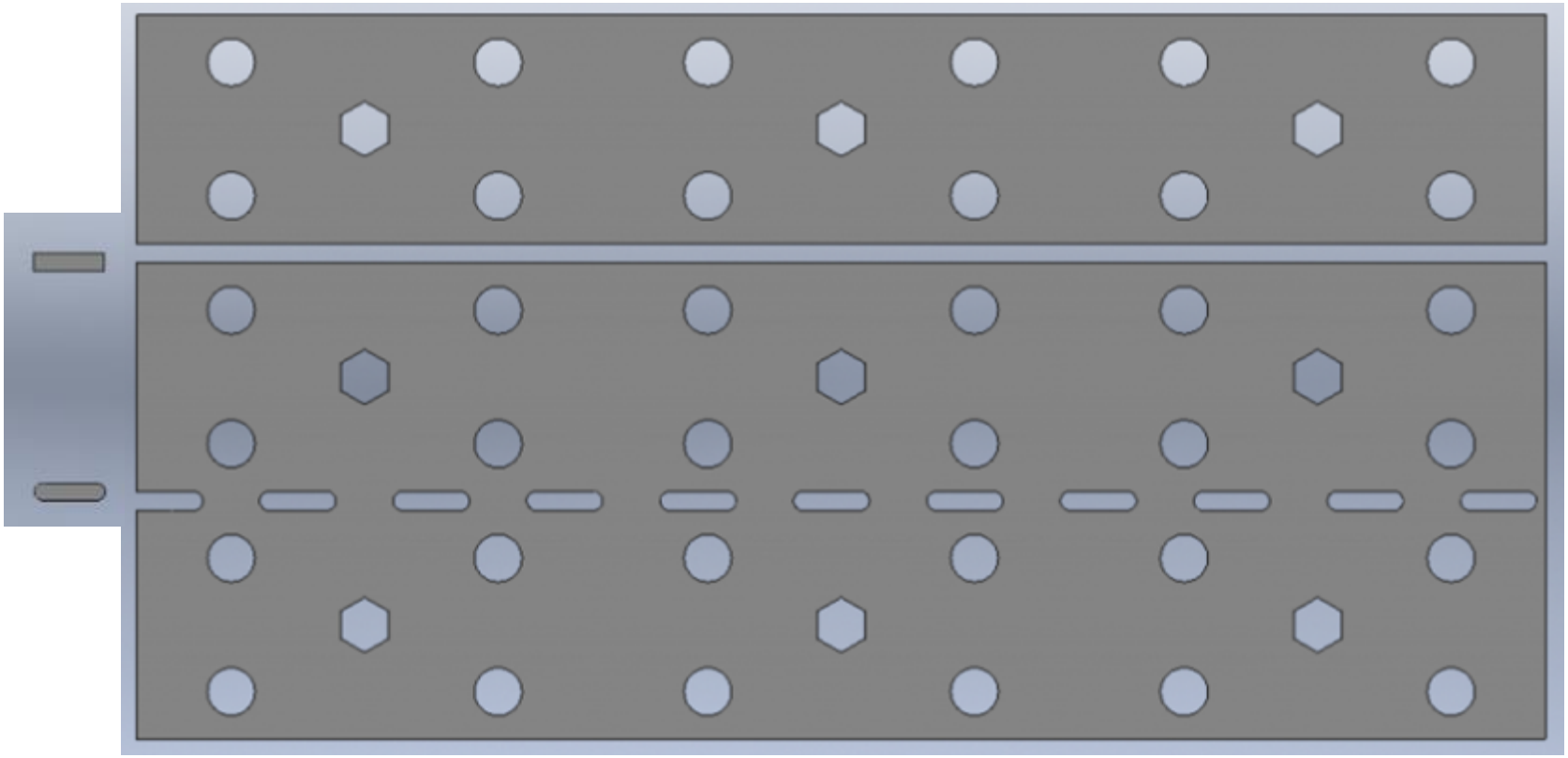
Traditional slitting produces Pinch Points



Obround punch with a rectangle die eliminates Pinch Points

Slitting – Nested Common Line Cutting

Does your programming software look out for your tooling?



If not, why not ask?

Slitting - Summary

Improving Tool Life

- Take your steps in the right direction (lengthwise)
- Don’t follow the crowd (take an odd approach)

Conclusion

Problem

- Parts falling out
- Pinch Points
- Uneven wear or reduced tool life

Solution

- The right tabs
- Tool solutions
- Adjusting your programming rules
  - Ask more from your vendors!

Q & A

Thank You!

Scott can be reached at scott.tacheny@wilsontool.com

General questions: marketing@wilsontool.com