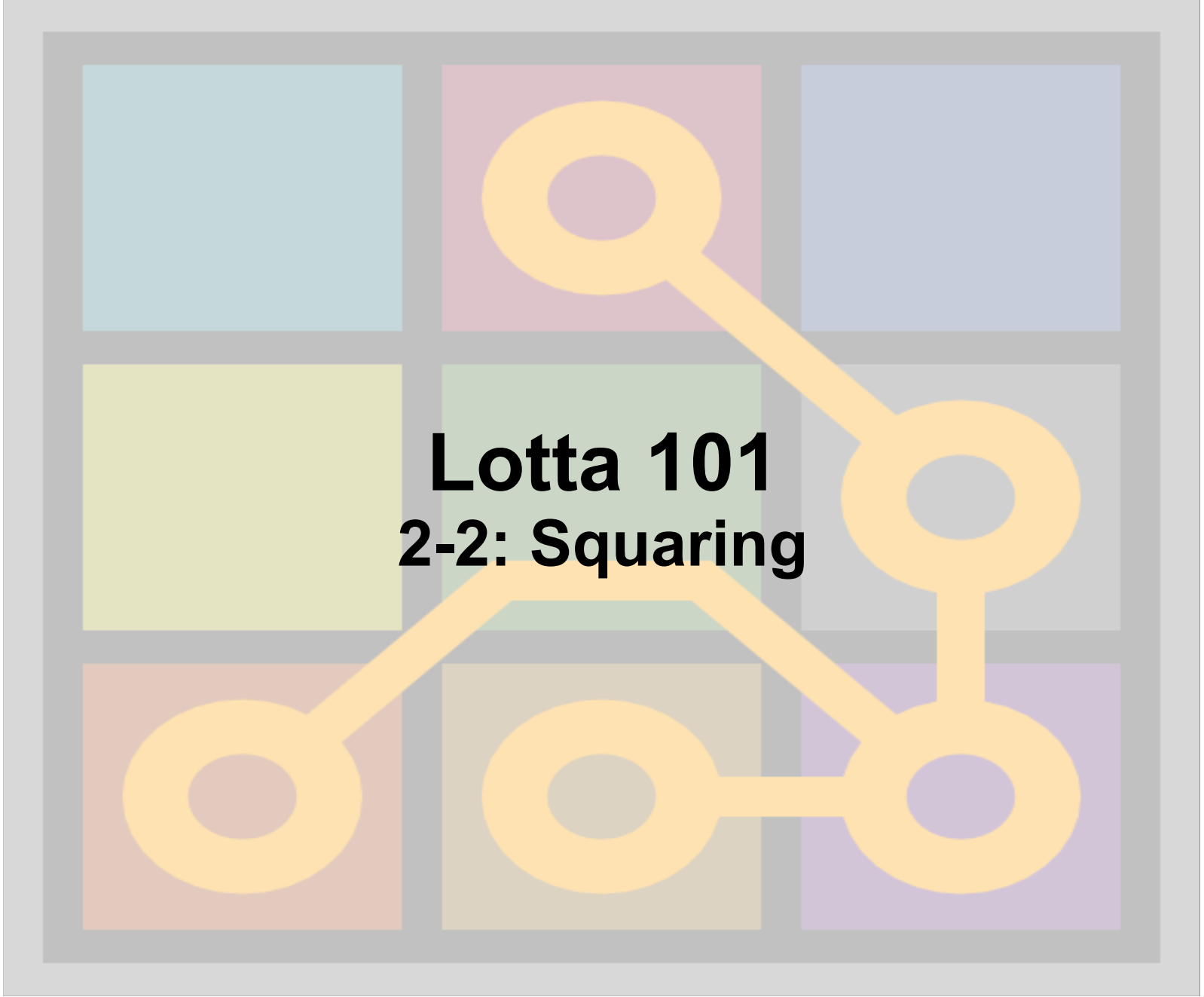
Lotta 101
2-2: Squaring

How to Make an Irregular Workpiece Strictly Rectangular

- Problem: We have a piece of stock to machine, but none of the surfaces are even or parallel with each other.
  How should we proceed to make the stock rectangular (all angles precisely 90 degrees) and opposite faces accurately parallel?

- There is a sequence of steps that lets you do just that using a machine vise, parallel bars, some bedding pieces and a suitable facing tool

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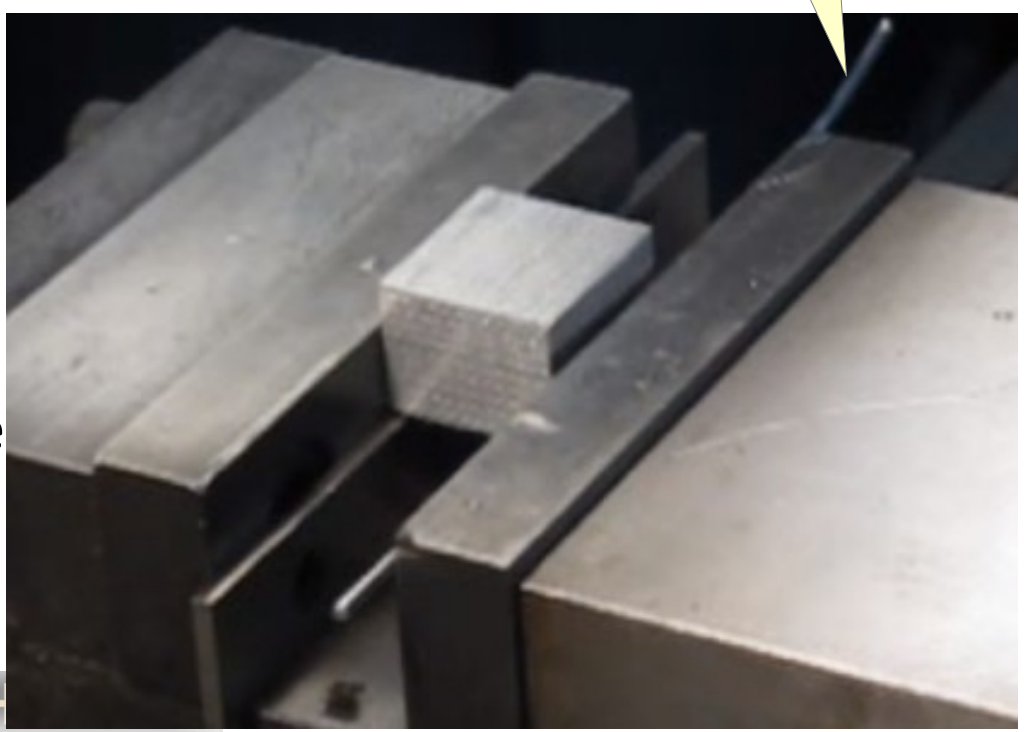
Step 1: Primary Reference Surface

- Inspect the stock piece to find the largest surface
- Check the adjacent sides for least irregularities
- Fix the piece to the vise with the largest surface up and the straightest adjacent ones against the jaws. Use bedding for secure fixing and parallel bar(s) for support
- Face the top surface. Mark this surface as nr 1 (later we refer to it as [1])



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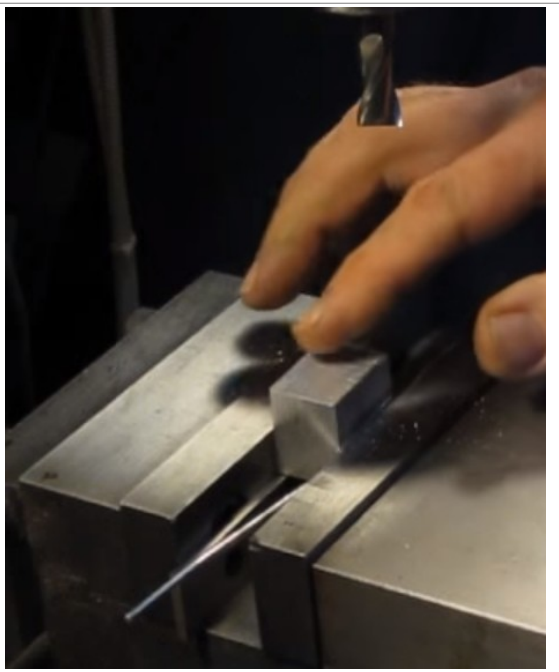
Step 2: First Secondary Surface



- (remove any burrs from previous step using a file)
- Place [1] against the fixed jaw of the vise, again using bedding against the movable jaw
- The 2nd largest surface should now point up
- Face the top surface, creating [2]. Mark the surface for tracking
- Now, [1] and [2] are at mutual 90 degree angle

Step 3: Second Secondary Surface

- (again, break any burrs by filing the corners)
- Place the stock in the vise
  - [1] against the fixed jaw
  - [2] down against the parallel bar(s)
  - Use bedding between movable jaw and stock
  - This time, TAP the stock until the bar(s) are solid while tightening
- Face the top, creating [2b]

Step 4: Surface Opposite Primary Reference

- (deburr)
- Place the stock in the vise:
  - [1] pointing DOWN
  - [2] against the fixed jaw (thus [2b] against the movable jaw)
  - NO BEDDING this time, as *machined surfaces* are against the jaws
  - TAP the stock in until bars are solid
- Face the top creating [1b]

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Step 5: First Tertiary Surface

- (deburr)
- Fix the stock:
  - [1] against the fixed jaw
  - [2] to the right or left, whichever you prefer
  - Using an *engineer's square* or a *1-2-3 block* take a reference from the parallel bar against [2] to set the stock *exactly vertical* and tighten
- Face the top creating [3]

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Step 6: 2nd Tertiary Surface

- (deburr)
- Fix the stock
  - Turn the stock 180 degrees keeping [1] against the fixed jaw
  - [3] is now facing down against the parallel bar(s)
  - TAP the stock in place
- Face the top creating [3b]
- DONE!

Live on TV

- The entire sequence can be seen in YouTube at Tom's Techniques channel: https://www.youtube.com/watch?v=igfqYZPdQ78

Esityksen tuotti

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