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# AHB

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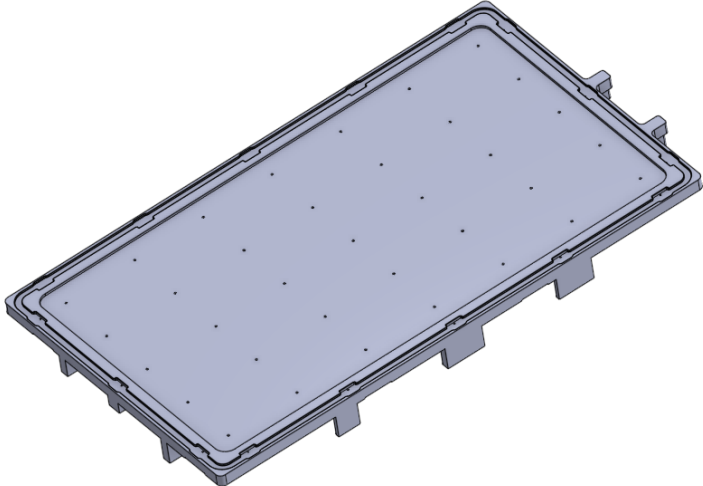
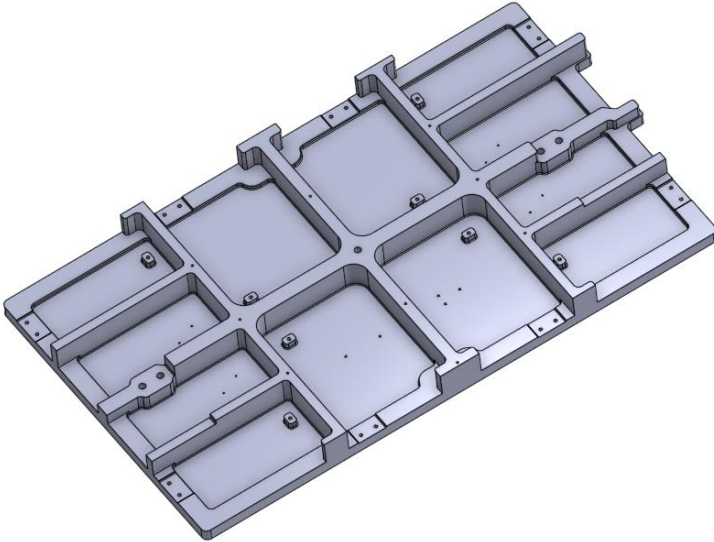
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**WDM Flex – SCHUNK**  
*Free state machining*

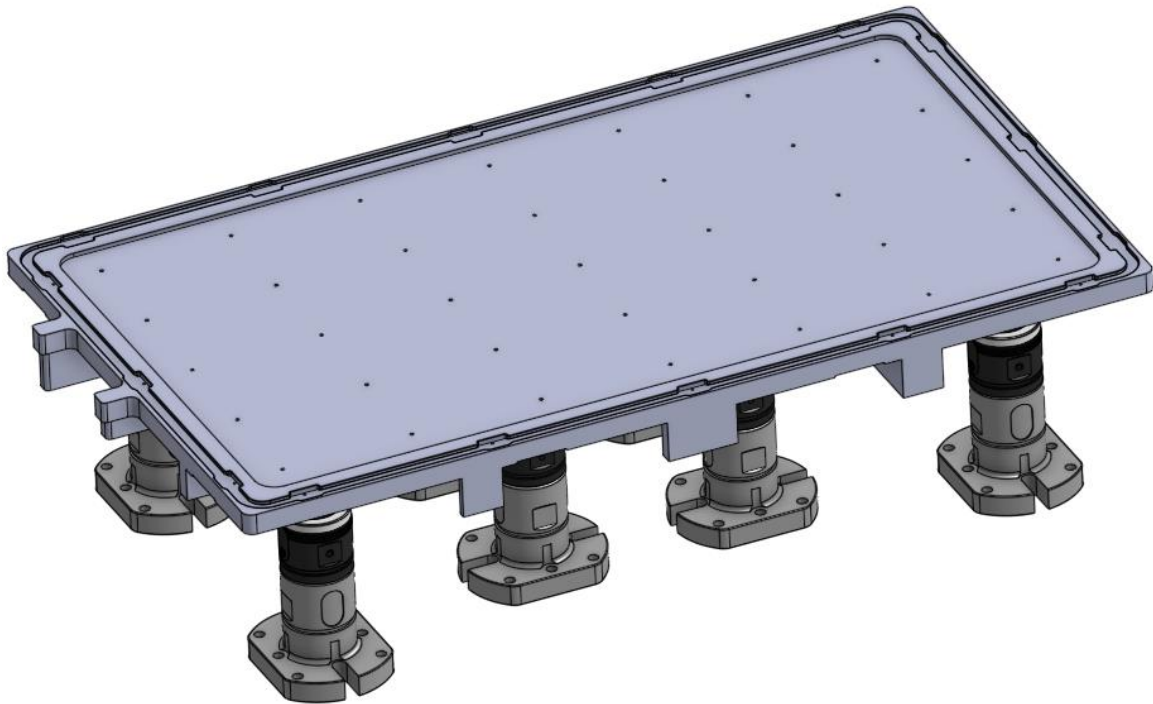
**S. Soltmann**

# Workpiece

- Large plate
- Material: 6061 Alu
- Stock: Billet
- 1100 x 640 x 80 mm
- 150kg
- Non-symmetric internal stress from large material removal



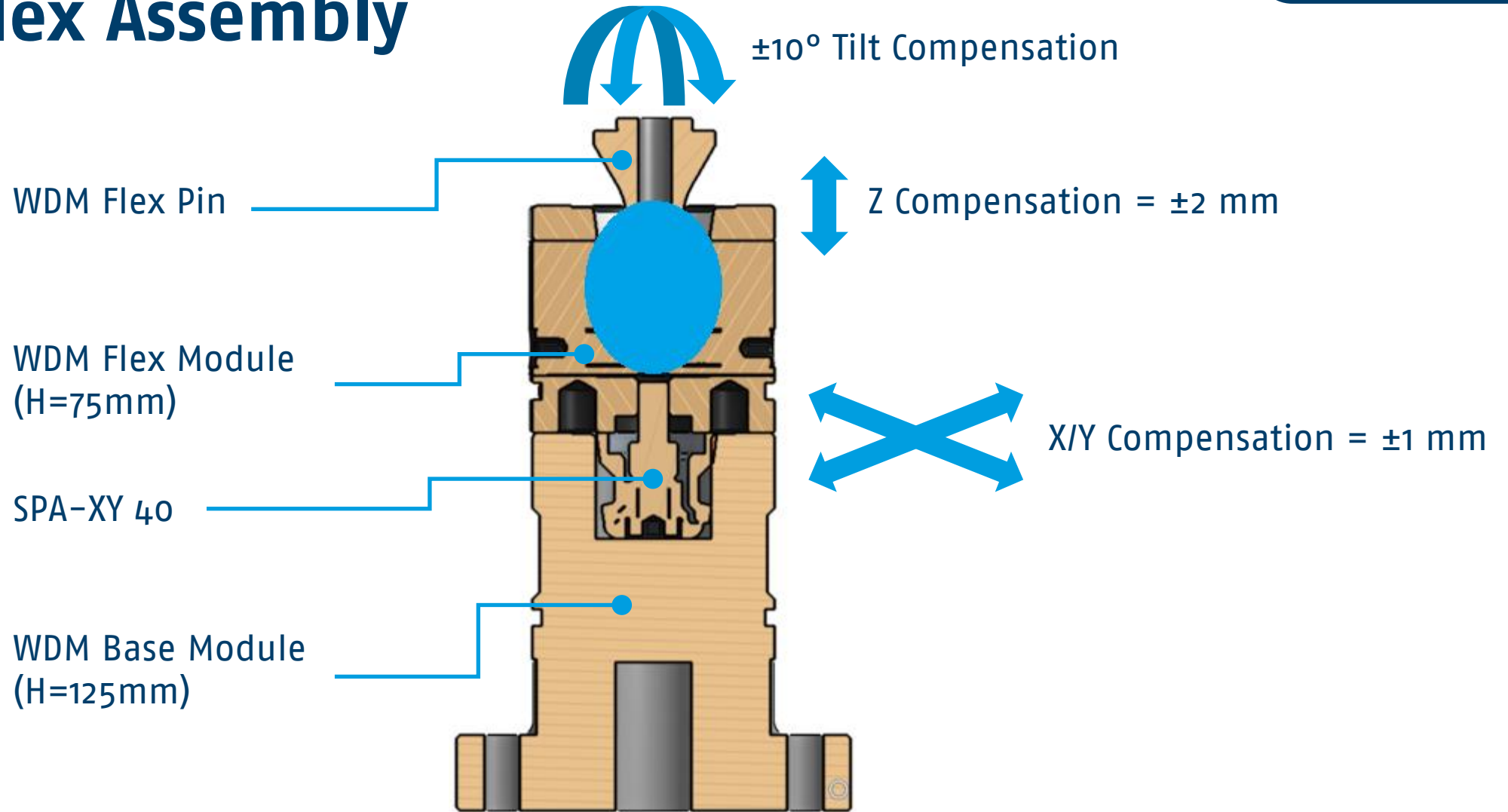
# WDM Flex Solution



## Product features:

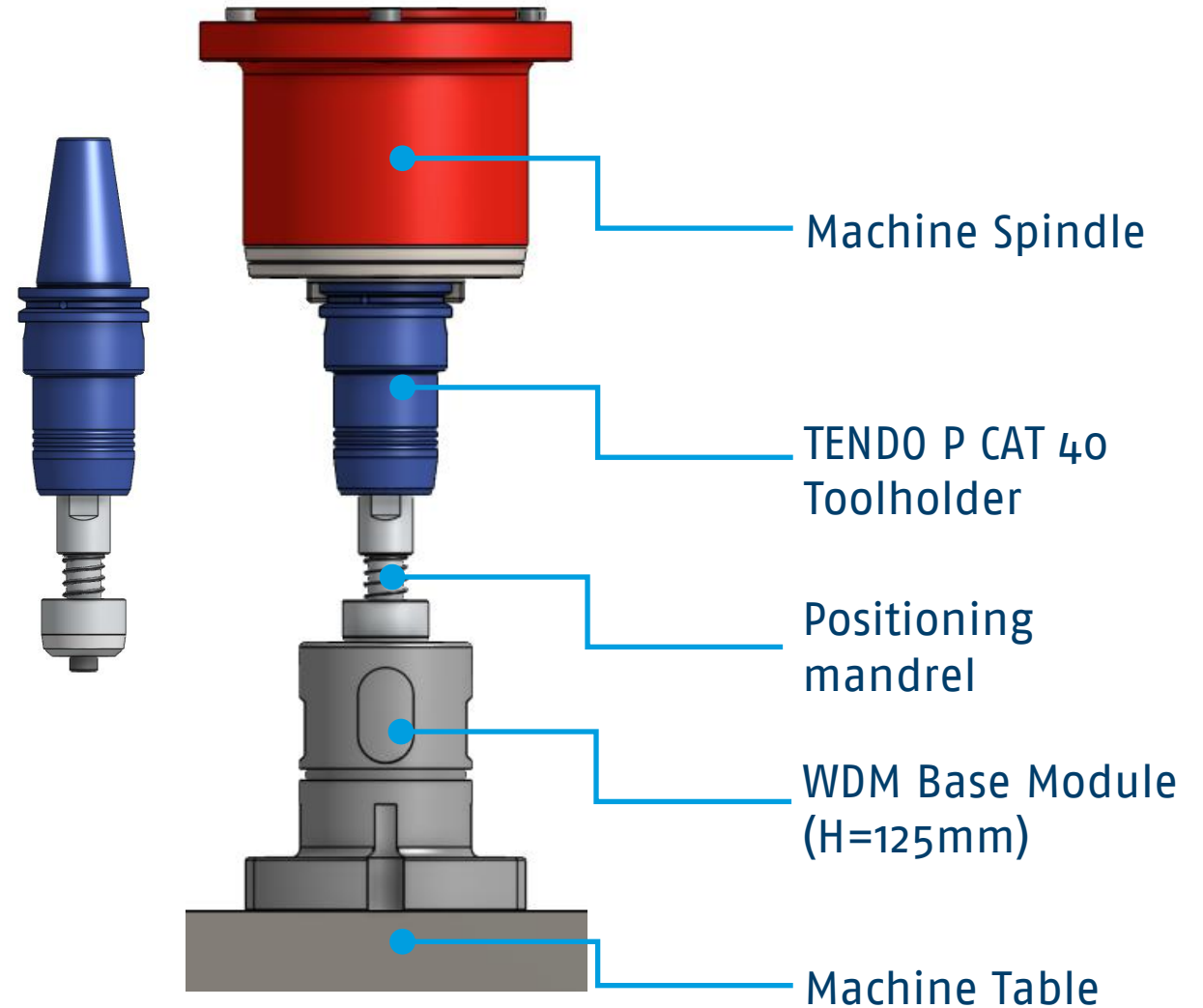
- ❖ WDM Flex
  - ❖ Stress-free machining
- ❖ Reconfigurable for future parts

# WDM Flex Assembly



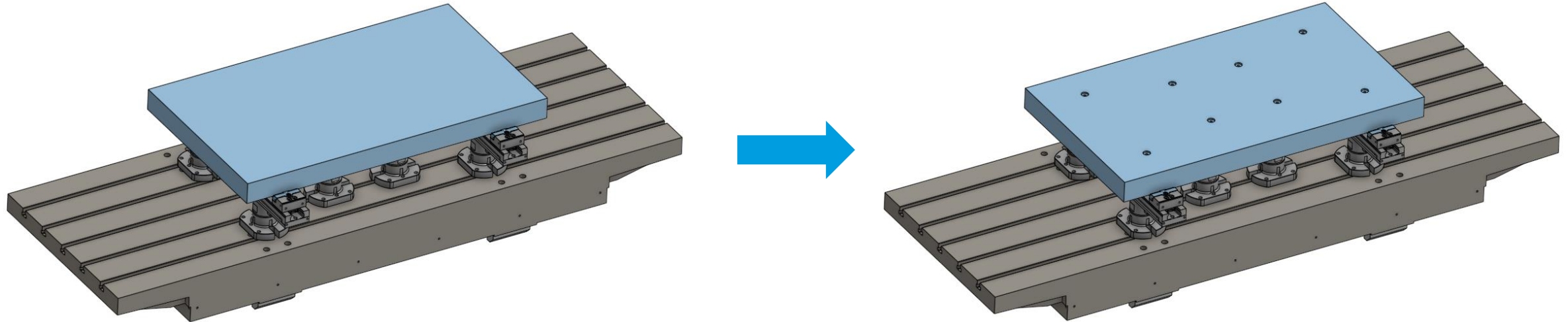
# WDM Setup

- The positioning mandrel can be utilized for easy, precise setup of the WDM modules at exact locations using the CNC machine



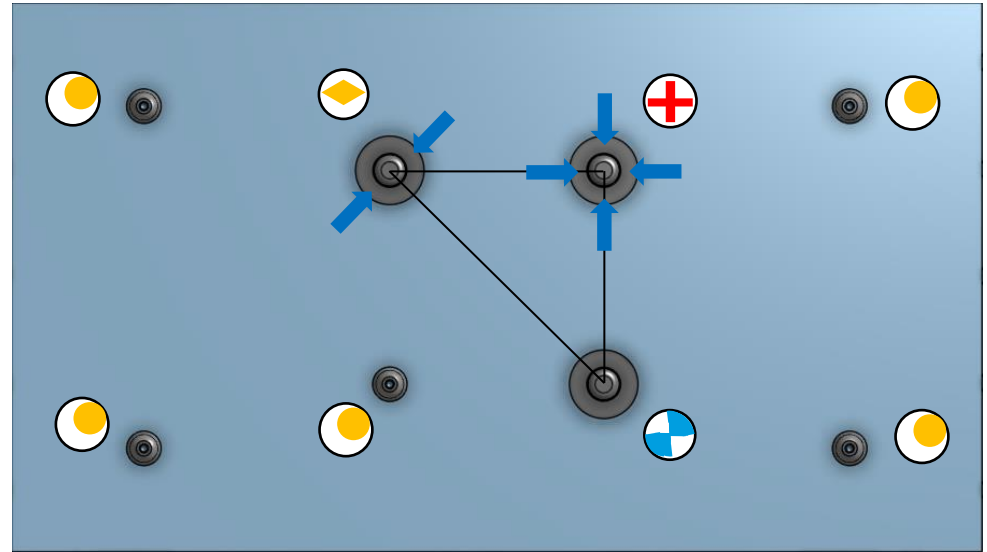
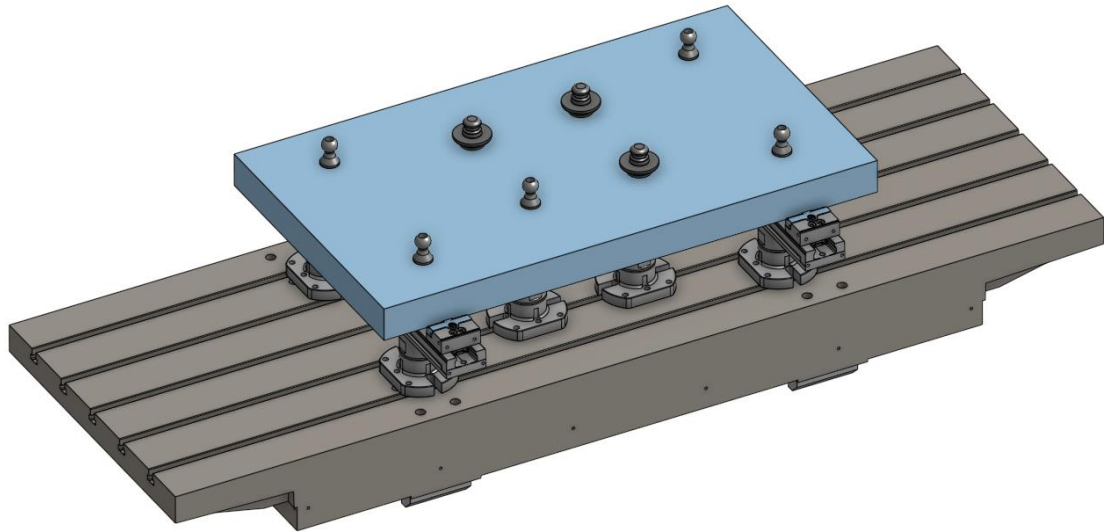


# OP1 – Prep OP



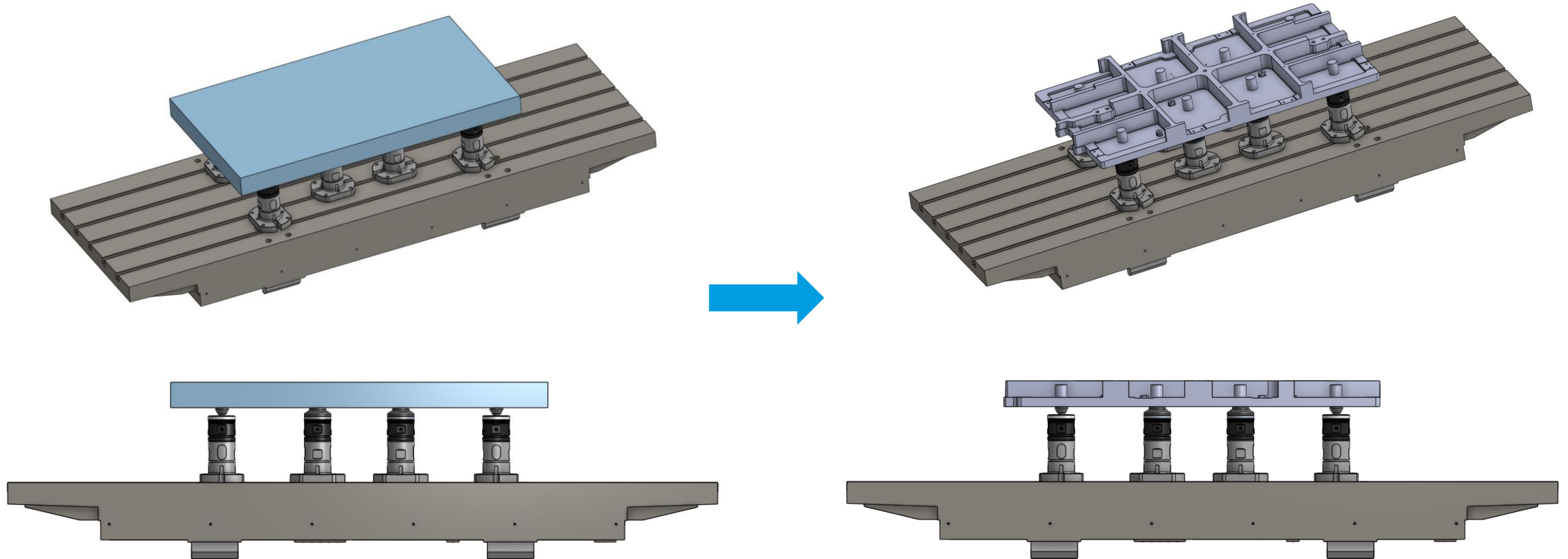
- Holding on to billet via rail vise
- Machining in counter-bores and threads for VERO-S pins

# OP1 – Adding Pins



	Datum pin (0 deg freedom)
	Clamping pin (1 deg freedom)
	Clamping pin (2 deg freedom)
	3D clamping pin (5 deg freedom)

# OP2 – Side 1 Roughing



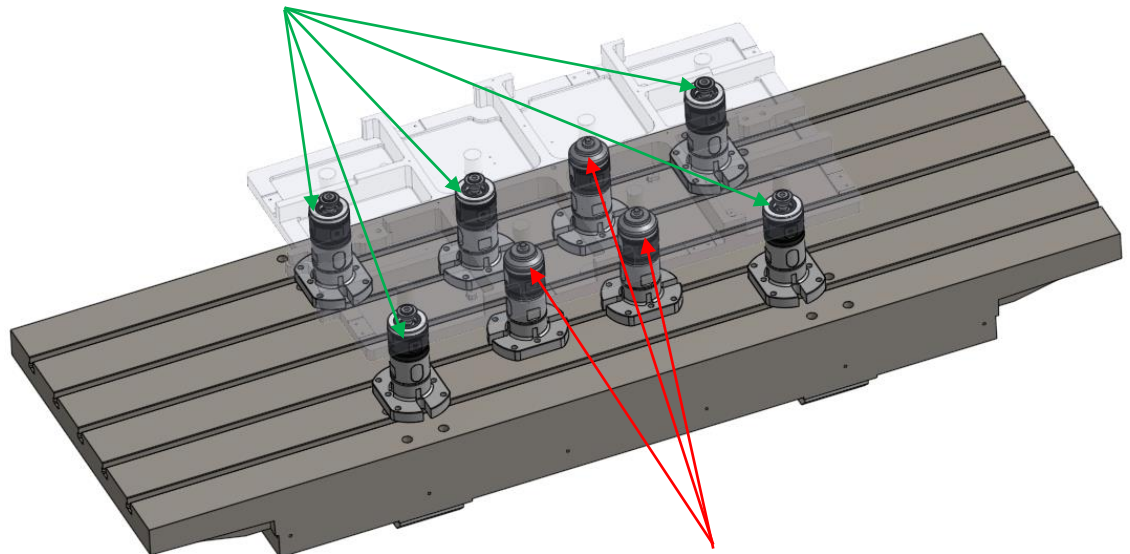
- Leave  $\sim .05''$  material after roughing
- Create "pillars" to attach pins for next operation

*The whole or partial duplication as well as any passing on to third parties is not permitted.*

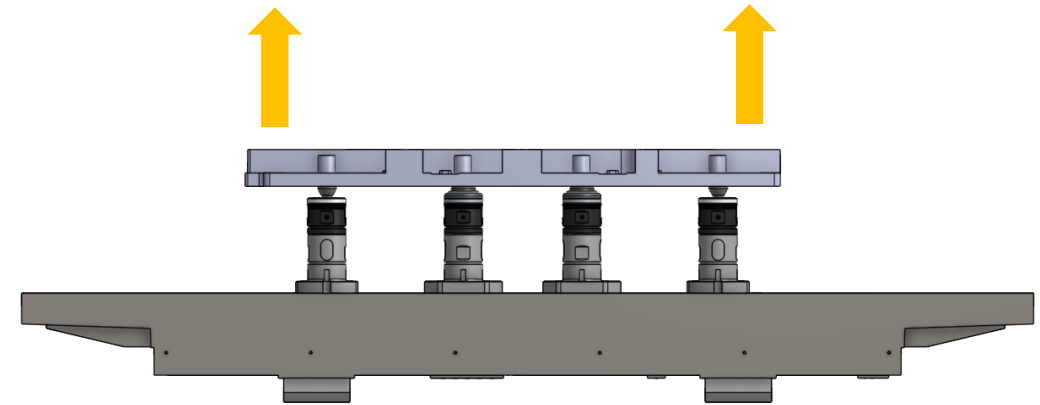


# OP2 – Side 1 Relaxation

Loosen base module and flex module so part can relax into new state

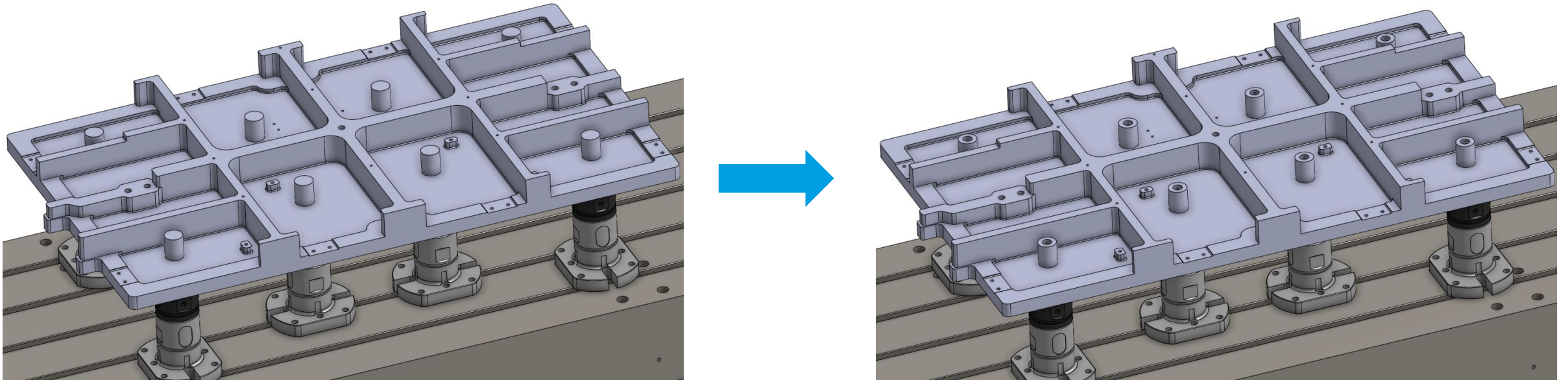


Do not unclamp these



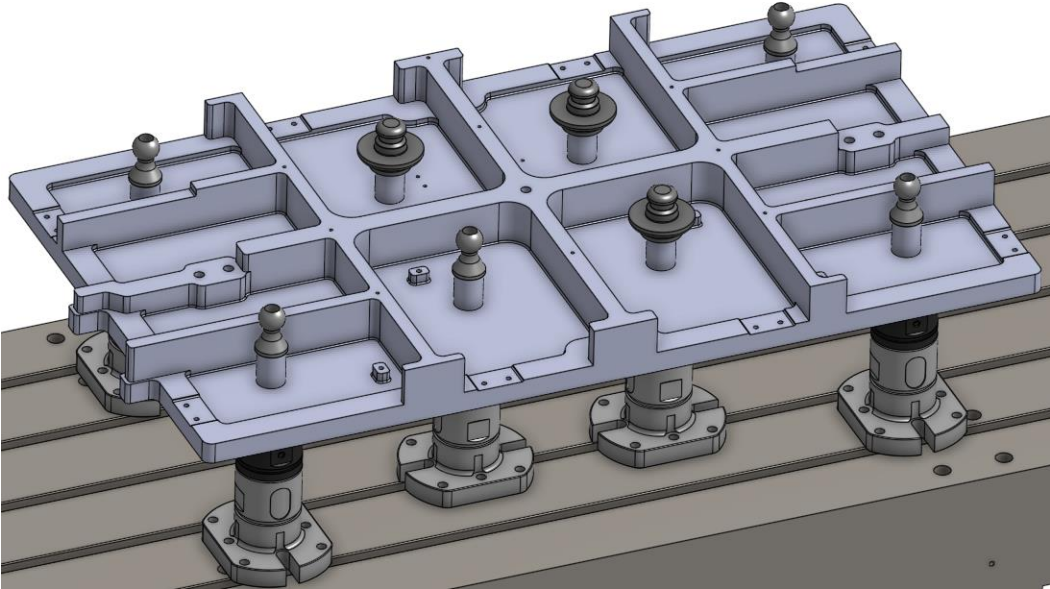
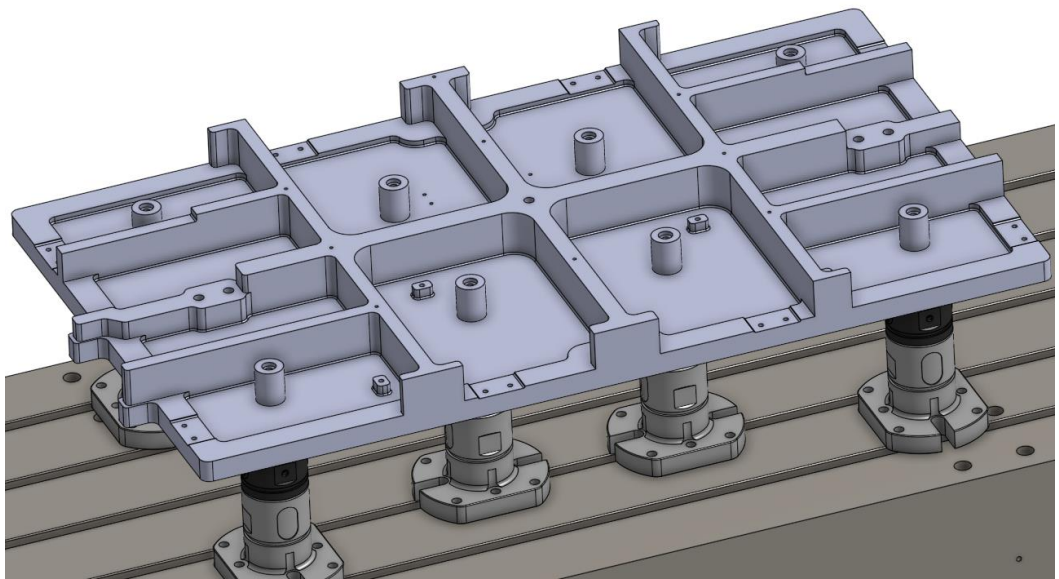
After part "potato chips", re-clamp the 5 modules (base and flex). Part is now clamped in a stress-free state.

# OP2 – Side 1 Requalification



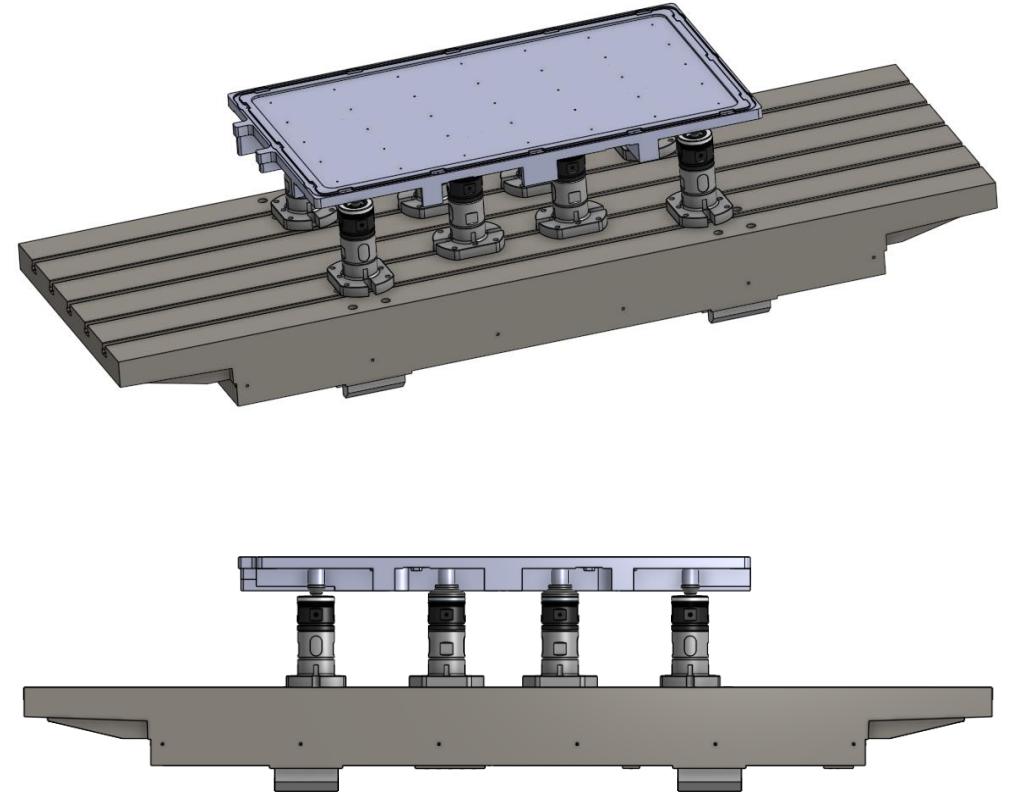
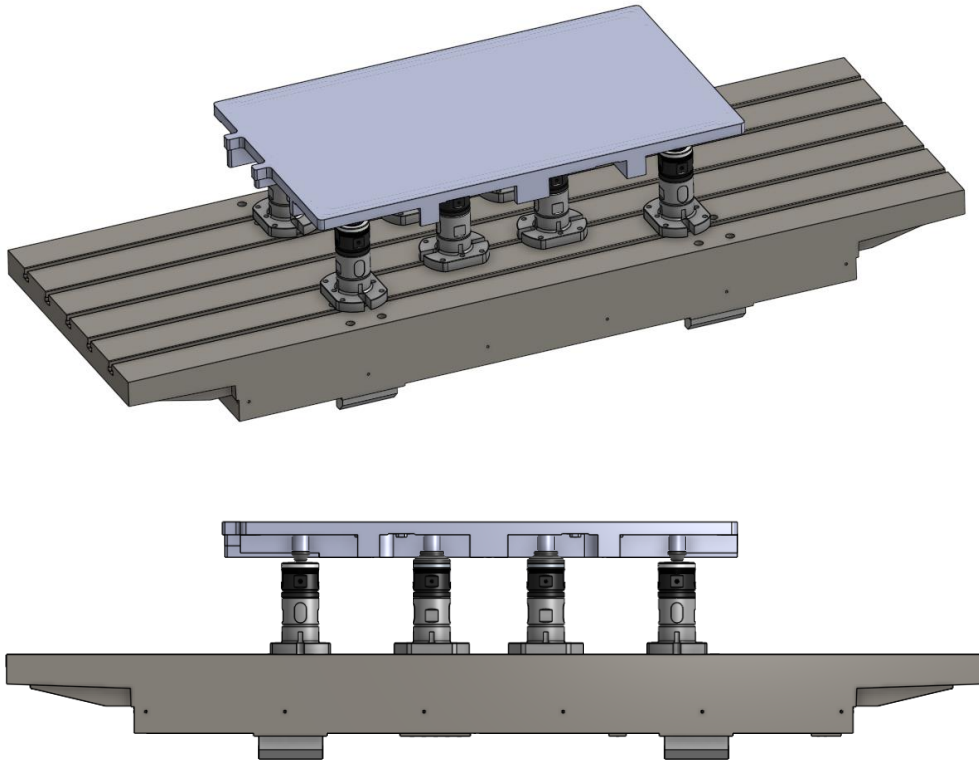
- After the part is clamped in a stress-free state, the pillars left after the roughing operation need to be qualified to the new state by adding the counter-bores and threads for the pins

# OP2 – Side 1 Pins



- Attach VERO-S pins in the same manner and orientation as done for the previous side

# OP3 – Side 2 Roughing

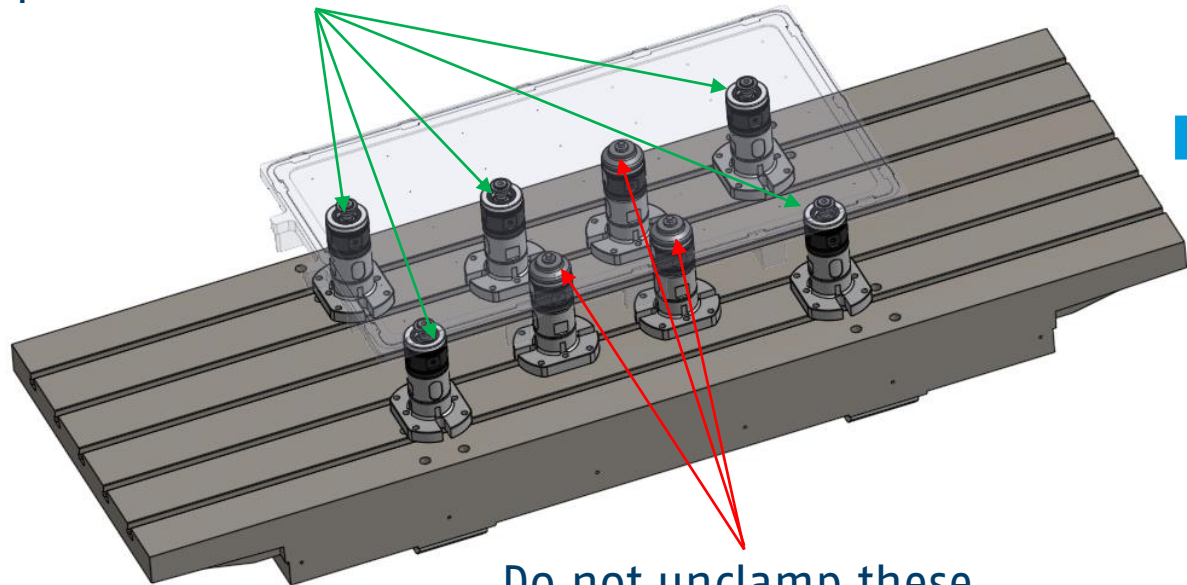


➤ Leave ~.05" material after roughing

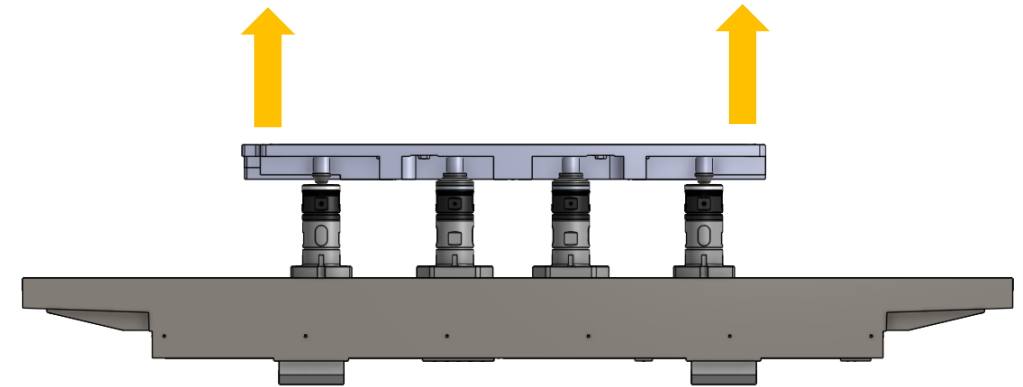


# OP3 – Side 2 Relaxation

Loosen base module and flex module so part can relax into new state



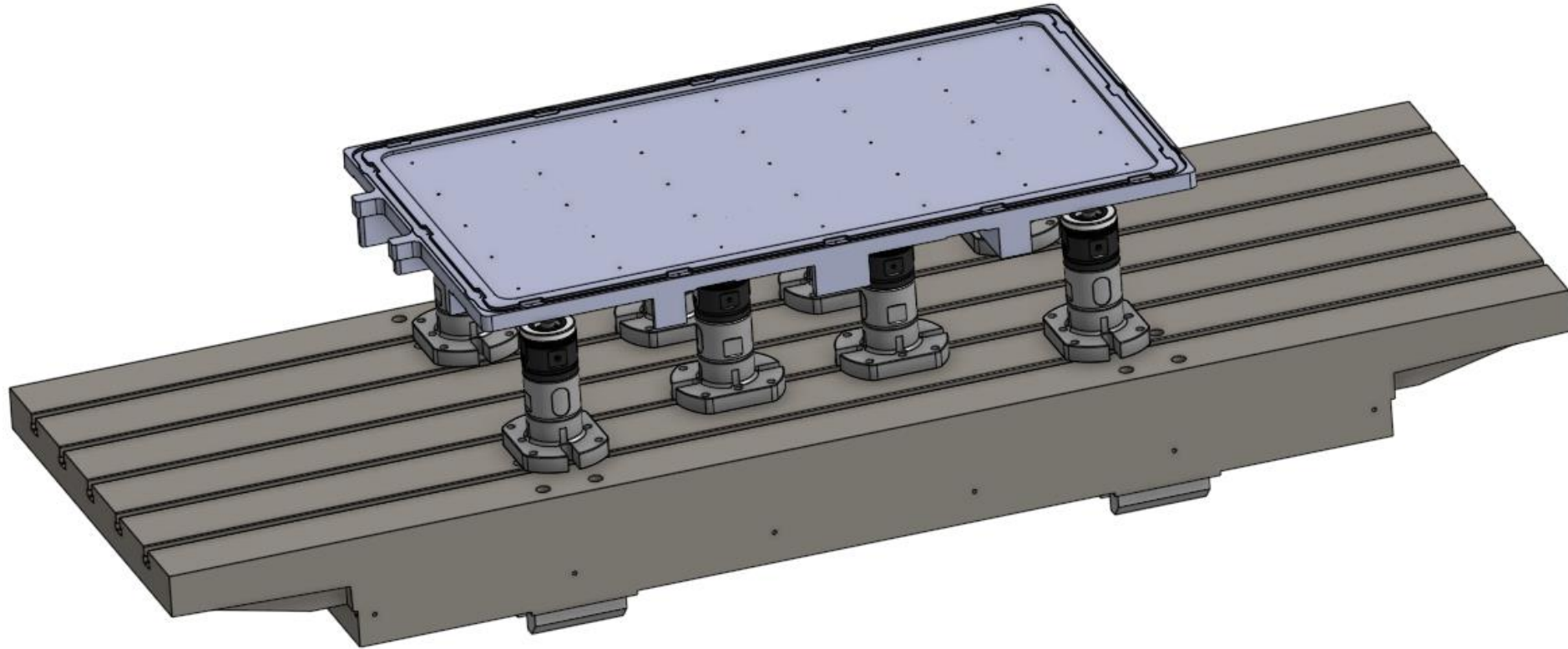
Do not unclamp these



After part "potato chips", re-clamp the 5 modules (base and flex). Part is now clamped in a stress-free state.

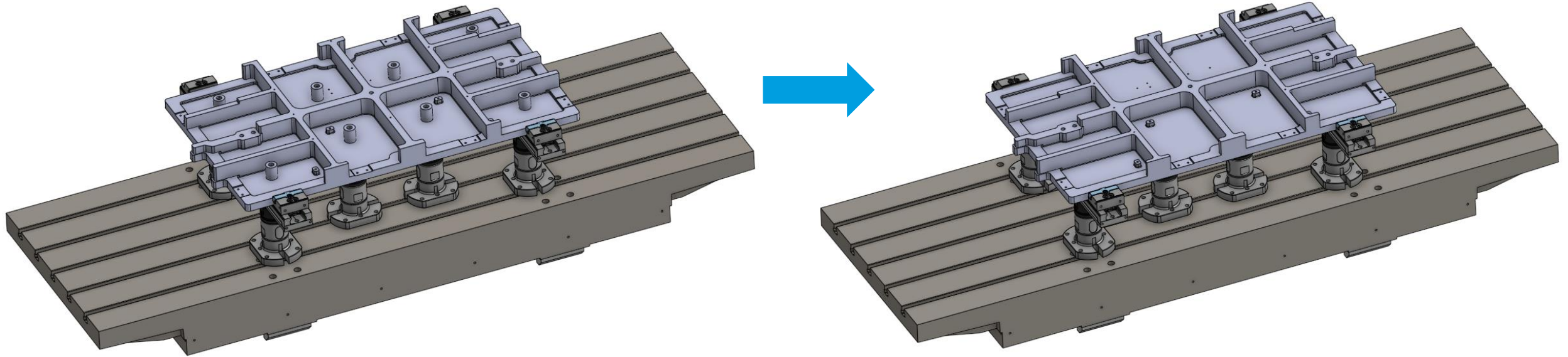


# OP3 – Side 2 Finishing



- Finish machine side 2 of the part

# OP4 – Side 1 Finishing



- Finish machine side 1 of the part in rail vise

# Additional Info

- WDM Flex solution can be utilized in a VMC or HMC application
  - For an HMC, part support must be considered when unclamping the modules/part



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