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Laser Drill Fixture

Purpose:
• Clocks and secures part for laser drilling
Exchangeable Frame Lift Guides

Purpose:
- Used to keep exchangeable frame aligned during lift
- Frame can get wedged if not aligned

Side View of Ex. Frame

0.5mm overhang past plate edge for snug fit

(bottom view)

0.5mm bolt clearance

Mounts to plate using existing M12 bolts
Flow Bench Fixture

Requirements:
• Develop fixture to measure flow characteristics of 3d printed test coupons on-site
• Bypass must be variable and sufficient for low flow rate samples

Considerations:
• Flow Bench instrumentation limits accuracy to ~0.1mm² EFFA
• Flow Bench has been known to be more accurate via intake rather than exhaust

Outcomes:
• Allows for on-site testing of coupons directly after printing for rapid learning opportunities
• ‘Fail Fast’ twice: fixture design & coupon testing
Flow Expansion Adapter Design

Features:

- Nozzle expansion rate lowered to reduce risk of flow separation along walls

- Exponential expansion rate
  - Linear expansion past this point reduces expansion rate, but increases total height

- 3 rows of 8 bypass holes allows for highly variable bypass area
Flow Bench Fixture

Flat Adapter Design Iteration:
- Square shape for easier taping
- Reduced orifice length for L/D < 1.5
- Increased total bypass area

(bypass 60 holes)

(section view)
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