

Customer: [REDACTED]

Machine Used: TensileTurn – Industrial Upgrade Model

Date: [REDACTED]

Prepared By: [REDACTED]

Machined Specimens:

- Standard ASTM 0.350" round bar specimen
- Standard ASTM 0.505" round bar specimen
- Non-Standard ASTM 0.505" round bar specimen

Machining Conditions:

All specimens were machined using Hysol MB10 coolant, with cutting parameters tailored to suit the material properties. A tailstock was used to provide additional support during machining. Specimens were pre-center-drilled prior to the turning operations. Due to their square cross-section, all parts were secured using a 4-jaw independent chuck for proper alignment and stability.

Turning Operations:

Operation 1: Roughing and finishing of the outer diameter

- Tool: SDJCR, Radius: 0.0157"

Operation 2: Finishing of the outer diameter (right side)

- Tool: SDJCL, Radius: 0.0157"

Operation 3: Cut-off operation

Notes:

- Aside from the non-round cross-sectional shape, no major difficulties were encountered during machining.
- The Non-Standard ASTM 0.505" specimen had a long and narrow geometry, making it prone to vibration and chatter, particularly during the finishing stage. To mitigate this, the surface speed was significantly reduced, resulting in a duller (opaque) finish, though dimensional accuracy remained within acceptable limits.
- All specimens were machined under standard testing conditions. Customers performing continuous machining may benefit from optimizing feeds, speeds, and tool selection to improve efficiency and surface quality.
- Machining was performed in alignment with the requirements outlined in ASTM E8.



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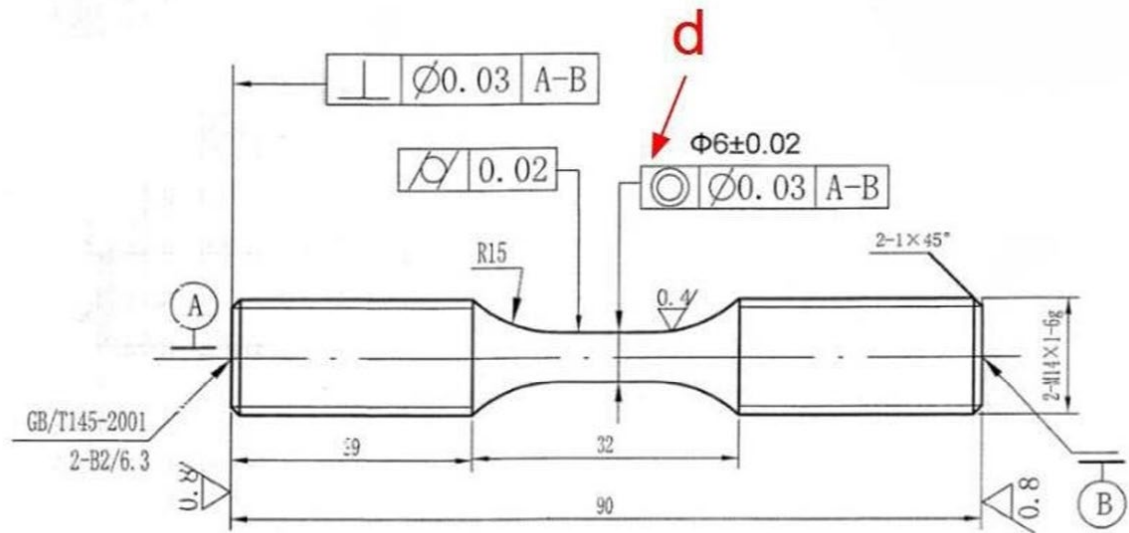
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Cutting Conditions – By Specimen:

Standard ASTM 0.350" Round Bar Specimen:

- Surface Speed (SFM): 600 feet/minute
- Feed per Revolution: 0.004 inches/rev
- Depth of Cut: 0.0035 inches per radial pass
- Cycle Time: 7 minutes
- Video Link: [\[Redacted\]](#)



Standard ASTM 0.505" Round Bar Specimen:

- Surface Speed (SFM): 600 feet/minute
- Feed per Revolution: 0.004 inches/rev
- Depth of Cut: 0.0035 inches per radial pass
- Cycle Time: 7 minutes
- Video Link: [\[Redacted\]](#)



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Non-Standard ASTM 0.505" Round Bar Specimen:

- Surface Speed (SFM): 600 feet/minute (initial); reduced to 100 feet/minute for finishing
- Feed per Revolution: 0.004 inches/rev
- Depth of Cut: 0.0035 inches per radial pass
- Cycle Time: 20 minutes
- Video Link: [REDACTED]



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