

M.I.T Benchmark Test Flexure Full Size

Date: 3/25/2019**Part:** Flexure, 100% scale**Material:** 2024 Aluminum**Machine:** DATRON neo**Workholding:** Masking tape and super glue**Software:** Autodesk Fusion 360

Tool information:

Tool Description	Article Number	Ø	RPM (x1000)	Feed XY (inch/min)	Feed Z (inch/min)	D.O.C. (inch)	W.O.C. (inch)
Double Flute Carbide End Mill	N/A	0.030	38	40	10	0.005	0.030
Single Flute Carbide End Mill	0068430A	0.118	32	60	16	0.030	0.118

Operation	Cycle Time	Workholding	Notes
1	6 min 1 sec	Masking tape and super glue	

Operation 1

Process Notes:

The first operation was a 2d contour used to cut the profile of the internal flexure geometry using a double flute 0.030" end mill with ethanol coolant. Ethyl alcohol, used in minimal quantities, appeared to have no negative effect on the work holding. The last operation was cutting the perimeter with a 3mm single flute end mill.

Opportunities for Improvement / Optimization:

Further optimization of speeds and feeds would reduce cycle time. Also using different tooling could help further reduce cycle times. Cycle time was not the main concern in this run and the focus was completing the part without movement of the part.

