



DATRON DYNAMICS, INC.
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Application Notes

Part: Delrin block with pockets, drilled holes and an 8-32 threaded hole

Material: Delrin

Machine Used: M5 - 4750

Features Utilized: 2kwatt High Frequency Spindle and Automatic Tool Change

Software Used: PrimCam

Total Cycle Time: 229 seconds for one part production (see attached for optimized batch cycle time)



Machining Details:

Tool 1: .070" dia. drill at 12k rpm at 80 i.p.m.
Cycle time: 5 seconds

Tool 2: .120" dia. end mill at 26k rpm at 150 i.p.m.
Cycle time: 22 seconds

Tool 3: .056" dia. drill at 12k rpm at 80 i.p.m.
Cycle time: 22 seconds

Tool 4: .060" dia. end mill at 30k rpm at 100 i.p.m.
Cycle time: 22 seconds

Tool 5: 8-32 thread mill at 18k rpm at 80 i.p.m.
Cycle time: 22 seconds

Tool 6: 6mm(.236") end mill at 20k rpm at 120 i.p.m.
Cycle time: 39 seconds

Summary of the Application:

The intricate nature and small tools required for this part, lend itself well for a Datron system with a high frequency spindle. However, the numerous operations requiring different tooling and the short cycle time per tool, created a lengthy cycle time for a one piece production. A tool change typically takes approximately 20 seconds because of the longer wind-up and wind-down of the high frequency spindle. Therefore, a batch or pallet production would dramatically reduce the part's time by amortizing the six tool changes over numerous parts. For example, (see attached analysis) machining 294 parts on the Datron M5 table in one lot, would take 11 hours and 19 minutes or 138 seconds per part. The M5's large bed size (30" x 40") lends itself well for this style of production.