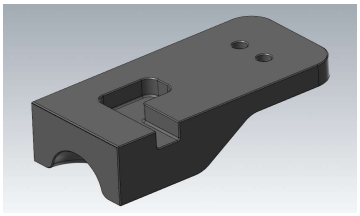
**SkillsUSA 2023 Process Plan_3X Milling_State**

| Part Name: Mill State Competitoin | DRW: | Rev: N/A | Student Name: | Date: |
|---|---|---|---|---|



| | |
|---|---|
| Program # O20001 | |
| Operation: First | |
| WCS: G54 | |
| WCS Location: | Top center of stock |
| Work Holding | 6" Vise |
| Stock | X4.00, Y2.00, Z1.00 |
| Part location: | XYZ Centered |
| Notes: Place stock centered in vise. Use parallels or step cut vise jaw to hold .25 of the stock bottom. WCS is at the top center of stock | |

**Tooling:**

| Tool # | Tool Type | Diameter | # of Flutes | Flute Length | Stickout | Holder Type | Starting Chip Load | Max SFM |
|---|---|---|---|---|---|---|---|---|
| 1 | Face Mill | 2 | 5 | n/a | n/a | CAT 40 - Shell Mill Arbor | 0.0025 | 3000 |
| 2 | Bull Endmill .06R | 0.5 | 3 | 1.25 | 1.5" | CAT 40 - ER 32 | 0.003 | 1000 |
| 3 | Spot Drill 120Deg | 0.5 | 2 | 0.500" | 2" | CAT 40 - ER 32 | 0.007 | 300 |
| 4 | Cobalt Drill 118Deg | 0.201 | 2 | 1.750" | 2" | CAT 40 - ER 32 | 0.005 | 300 |
| 5 | 1/4-20 Tap 2.5 Lead | 0.25 | 1 | .750" | 2" | CAT 40 - ER 32 | 0.05 | 150 |
| 6 | Ball Endmill | 0.25 | 3 | 0.5 | 1.5 | CAT 40 - ER 32 | 0.002 | 1000 |
| 7 | Bull Endmill .03R | 0.25 | 3 | 0.5 | 1.5" | CAT 40 - ER 32 | 0.001 | 1000 |
| 8 | Chamfer Mill 90Deg | 0.25 | 4 | .250" | 1.5" | CAT 40 - ER 32 | 0.0015 | 1000 |

| Operatoin: | Tool # | Radial DOC | Axial DOC | Notes |
|---|---|---|---|---|
| Face Part | 1 | 75% Tool Dia | .175 Max/ .03 Fin | Rough and finish to model top |
| Rough part | 2 | 30% Tool Dia | 3X Tool Dia Max | Rough Part as needed .010 stock to leave |
| Finish floor and walls | 2 | N/A | N/A | Use wear cutter comp |
| Rough and Finish Slot | 7 | 30% Tool Dia | 2X Tool Dia Max | Rough and Finish Slot |
| Spot drill holes | 3 | N/A | N/A | |
| Drill holes | 4 | N/A | N/A | Peck at 2X dia, Hole depth= 3x Pitch past thread depth |
| Tap Holes | 5 | N/A | N/A | Tap full thread past print depth |
| Chamfer part | 8 | N/A | N/A | |

Student notes:

Judge notes: