

Creating Toolpaths

Front Body

2D Contour	[T1]	NECK RELIEF	1/2" Flat Endmill
2D Pocket	[T1]	NECK POCKET	1/2" Flat Endmill
2D Pocket	[T1]	P/U	1/2" Flat Endmill
2D Contour	[T1]	PROFILE	1/2" Flat Endmill
2D Contour	[T2]	ELEC HOLES	1/4" Flat Endmill
Drilling [Rapid Out]	[T3]	P/U HOLES	5/64" Drill
Drilling [Rapid Out]	[T3]	BRIDGE HOLES	5/64" Drill
Drilling [Rapid Out]	[T3]	STRING HOLES	5/64" Drill

Back Body

Drilling [Rapid Out]	[T4]	FERRULE HOLES	1/4" Drill
Drilling [Rapid Out]	[T8]	BODY MOUNT HOLES	3/16" Drill
2D Pocket	[T1]	BEAN POCKET	1/2" Flat Endmill
2D Contour	[T1]	BEAN LIP	1/2" Flat Endmill

Front Body Setup
 Tool Change: 1/2" End Mill

2D CONTOUR : NECK RELIEF

Tool: Select...

#1 - Ø1/2" flat (1/2"...

Coolant: Flood

Feed & Speed

Spindle Speed: 22000 rpm

Surface Speed: 2879.79 ft/min

Ramp Spindle Speed: 22000 rpm

Cutting Feedrate: 150 in/min

Feed per Tooth: 0.00340909 in

Lead-In Feedrate: 92 in/min

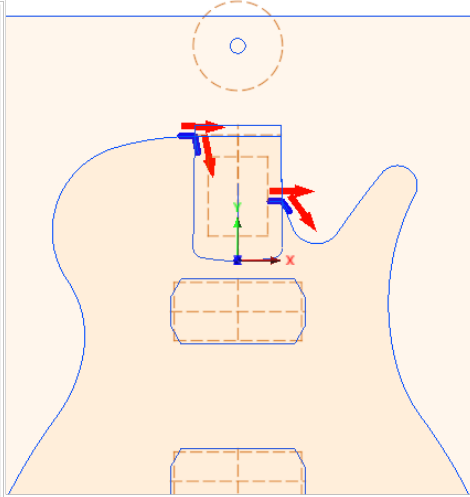
Lead-Out Feedrate: 92 in/min

Ramp Feedrate: 160 in/min

Plunge Feedrate: 30 in/min

Feed per Revolution: 0.00136364 in

OK Cancel



2D CONTOUR : NECK RELIEF

Geometry

Contour Selection: 4 Chains

Tangential Extension Dist...: 0 in

Separate Tangential End...:

Stock Contours

Tabs

Rest Machining

Wrap Toolpath

Tool Orientation

OK Cancel

2D CONTOUR : NECK RELIEF

Clearance Height

From: Retract height

Offset: 0.4 in

Retract Height

From: Stock top

Offset: 0.2 in

Feed Height

From: Top height

Offset: 0.2 in

Top Height

From: Model top

Offset: 0 in

Bottom Height

From: Model top

Offset: -0.74 in

OK Cancel

2D CONTOUR : NECK RELIEF

Passes

Roughing Passes

Multiple Depths

Maximum Roughing Stepdown: 0.2 in

Finishing Stepdowns: 0

Finishing Stepdown: 0.008 in

Wall Taper Angle (deg): 0 deg

Approach Mode: Along...

Finish Only at Final Depth:

Rough Final:

Use Even Stepdowns:

Order by Depth:

Order by islands:

Use Thin Wall:

Stock to Leave

Smoothing

Feed Optimization

OK Cancel

2D CONTOUR : NECK RELIEF

Linking

High Feedrate Mode: Preserve rapid r...

Allow Rapid Retract:

Safe Distance: 0.23937 in

Keep Tool Down:

Lift Height: 0 in

Leads & Transitions

Lead-In (Entry):

Horizontal Lead-In R...: 0.025 in

Lead-In Sweep Angle: 90 deg

Linear Lead-In Distar...: 0.025 in

Perpendicular:

Vertical Lead-In Radi...: 0.025 in

Lead-Out (Exit):

Same as Lead-In:

Ramp

Positions

Predrill Positions: Nothing

Entry Positions: Nothing

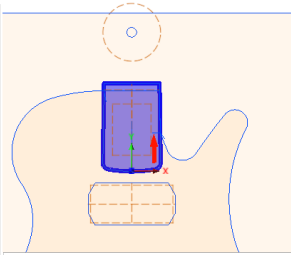
OK Cancel

2D POCKET: NECK POCKET

▼ Tool
 Tool: Select...
 Coolant: Flood

▼ Feed & Speed
 Spindle Speed: 22000 rpm
 Surface Speed: 2879.70 ft/min
 Ramp Spindle Speed: 22000 rpm
 Cutting Feedrate: 180 in/min
 Feed per Tooth: 0.00409091 in
 Lead-In Feedrate: 92 in/min
 Lead-Out Feedrate: 92 in/min
 Ramp Feedrate: 250 in/min
 Plunge Feedrate: 30 in/min
 Feed per Revolution: 0.00136364 in

OK Cancel



2D POCKET: NECK POCKET

▼ Geometry
 Pocket Selections: Chart X

Stock Contours
 Rest Machining
 Wrap Toolpath
 Tool Orientation

OK Cancel

2D POCKET: NECK POCKET

▼ Clearance Height
 From: Retract height
 Offset: 0.4 in

▼ Retract Height
 From: Stock top
 Offset: 0.2 in

▼ Feed Height
 From: Top height
 Offset: 0.2 in

▼ Top Height
 From: Model top
 Offset: 0 in

▼ Bottom Height
 From: Model top
 Offset: -0.74 in

OK Cancel

2D POCKET: NECK POCKET

▼ Passes
 Tolerance: 0.004 in
 Sideways Compens.: Left (climb milling)
 Compensation Type: In computer
 Minimum Cutting Rad.: 0 in

Finishing Passes:
 Number of Finishing: 1
 Stepper: 0.03 in

Leads on all Finishes:
 Finish Feedrate: 180 in/min
 Repeat Finishing Pass:
 Finishing Overlap: 0 in
 Preserve Order:
 Both Ways:
 Maximum Stepper: 0.125 in
 Use Morphed Spiral:
 Allow Stepper Cuts:
 Smoothing Deviation: 0.004 in

▼ Multiple Depths

 Maximum Roughing Stepdown: 0.75 in
 Finishing Stepdowns: 0
 Finishing Stepdown: 0.03 in
 Wall Taper Angle (deg): 0 deg
 Finish Only at Final Depth:
 Rough Final:
 Use Even Stepdowns:
 Order by Depth:
 Order by Step:
 Stock to Leave

Smoothing
 Smoothing Tolerance: 0.0004

Feed Optimization

OK Cancel

2D POCKET: NECK POCKET

▼ Linking
 High Feedrate Mode: Preserve rapid t...
 Allow Rapid Retract:
 Safe Distance: 0.18937 in
 Keep Tool Down:
 Maximum Stay-Down: 2 in
 Lift Height: 0 in

▼ Leads & Transitions
 Lead-In (Entry):
 Horizontal Lead-In Rad.: 0.05 in
 Lead-In Sweep Angle: 90 deg
 Linear Lead-In Distan.: 0.05 in
 Perpendicular:
 Vertical Lead-In Rad.: 0.05 in
 Lead-Out (Exit):
 Same as Lead-In:

▼ Ramp
 Ramp Type: Profile
 Ramping Angle (deg): 5 deg
 Maximum Ramp Step: 1.625 in
 Ramp Clearance Hel.: 0.1 in
 Ramp Radial Clearan.: 0 in
 Helical Ramp Diameter: 0.475 in
 Minimum Ramp Diam.: 0.475 in

▼ Positions
 Predrill Positions: Nothing
 Entry Positions: Nothing

OK Cancel

2D POCKET: P11

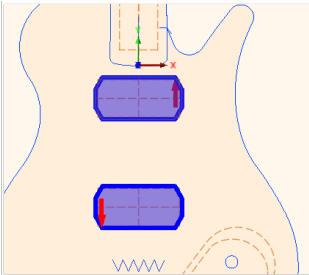
Tool: #1 - Ø1/2" flat (1/2")

Coolant: Flood

Feed & Speed

- Spindle Speed: 22000 rpm
- Surface Speed: 2679.79 ft/min
- Ramp Spindle Speed: 22000 rpm
- Cutting Feedrate: 180 in/min
- Feed per Tooth: 0.00498991 in
- Lead-In Feedrate: 92 in/min
- Lead-Out Feedrate: 92 in/min
- Ramp Feedrate: 250 in/min
- Plunge Feedrate: 30 in/min
- Feed per Revolution: 0.00136364 in

OK Cancel



2D POCKET: P11

Geometry

Pocket Selections: 2 Chains

Stock Contours

Rest Machining

Wrap Toolpath

Tool Orientation

OK Cancel

2D POCKET: P11

Clearance Height

From: Retract height

Offset: 0.4 in

Retract Height

From: Stock top

Offset: 0.2 in

Feed Height

From: Top height

Offset: 0.2 in

Top Height

From: Model top

Offset: 0 in

Bottom Height

From: Model top

Offset: -1 in

OK Cancel

2D POCKET: P11

Passes

Tolerance: 0.004 in

Sideways Compens...: Left (climb milling)

Compensation Type: In computer

Minimum Cutting Rad.: 0 in

Finishing Passes:

Number of Finishing: 1

Stepover: 0.05 in

Leads on all Finishing:

Finish Feedrate: 180 in/min

Repeat Finishing Pass:

Finishing Overlap: 0 in

Preserve Order:

Both Ways:

Maximum Stepover: 0.125 in

Use Morphed Spiral:

Allow Stepover Cus.:

Smoothing Deviation: 0.004 in

Multiple Depths

Maximum Roughing Stepdown: 1 in

Finishing Stepdowns: 0

Finishing Stepdown: 0.03 in

Wall Taper Angle (deg): 0 deg

Finish Only at Final Depth:

Rough Final:

Use Even Stepdowns:

Order by Depth:

Order by Step:

Stock to Leave:

Smoothing:

Feed Optimization:

OK Cancel

2D POCKET: P11

Linking

High Feedrate Mode: Preserve rapid c...

Allow Rapid Retract:

Safe Distance: 0.18837 in

Keep Tool Down:

Maximum Stay-Down: 2 in

Lift Height: 0 in

Leads & Transitions

Lead-In (Entry):

Horizontal Lead-In R...: 0.05 in

Lead-In Sweep Angle: 90 deg

Linear Lead-In Dista...: 0.05 in

Perpendicular:

Vertical Lead-In Rad...: 0.05 in

Lead-Out (Exit):

Same as Lead-In:

Ramp

Ramp Type: Profile

Ramping Angle (deg): 6 deg

Maximum Ramp Step...: 1.625 in

Ramp Clearance Hel...: 0.1 in

Ramp Radial Clearan...: 0 in

Helical Ramp Diameter: 0.475 in

Minimum Ramp Dams...: 0.475 in

2D CONTOUR : PROFILE

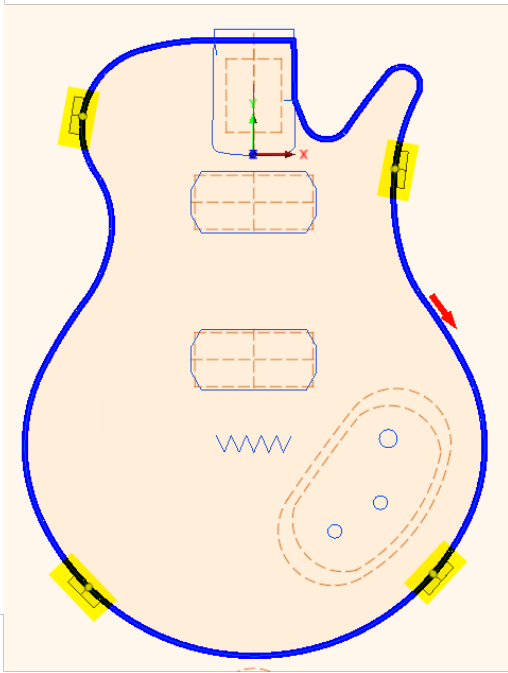
Tool: #1 - Ø1/2" flat (1/2"...

Coolant: Flood

Feed & Speed

- Spindle Speed: 22000 rpm
- Surface Speed: 2879.79 ft/min
- Ramp Spindle Speed: 22000 rpm
- Cutting Feedrate: 150 in/min
- Feed per Tooth: 0.00340909 in
- Lead-In Feedrate: 92 in/min
- Lead-Out Feedrate: 92 in/min
- Ramp Feedrate: 175 in/min
- Plunge Feedrate: 30 in/min
- Feed per Revolution: 0.00136364 in

OK Cancel



2D CONTOUR : PROFILE

Geometry

Contour Selection: Chain

Tangential Extension Dist...: 0 in

Separate Tangential End E...:

Stock Contours:

✓ Tabs

- Tab Shape: Triangular
- Tab Width: 1 in
- Tab Height: 0.75 in
- Tab Positioning: At points
- Tab Positions: 4 Points

Rest Machining:

Wrap Toolpath:

Tool Orientation:

OK Cancel

2D CONTOUR : PROFILE

Clearance Height

From: Retract height

Offset: 0.4 in

Retract Height

From: Stock top

Offset: 0.2 in

Feed Height

From: Top height

Offset: 0.2 in

Top Height

From: Model top

Offset: 0 in

Bottom Height

From: Model top

Offset: -1.77 in

OK Cancel

2D CONTOUR : PROFILE

Passes

✓ Multiple Depths

- Maximum Roughing Stepdown: 0.3 in
- Finishing Stepdowns: 0
- Finishing Stepdown: 0.008 in
- Wall Taper Angle (deg): 0 deg
- Approach Mode: Along ...
- Finish Only at Final Depth:
- Rough Final:
- Use Even Stepdowns:
- Order by Depth:
- Order by Islands:
- Use Thin Wall:

Stock to Leave:

Smoothing:

Feed Optimization:

OK Cancel

2D CONTOUR : PROFILE

Linking

High Feedrate Mode: Preserve rapid r...

Allow Rapid Retract:

Safe Distance: 0.43937 in

Keep Tool Down: - Lift Height: 0 in

Leads & Transitions

- Lead-In (Entry):
- Horizontal Lead-In R...: 0.15 in
- Lead-In Sweep Angle: 10 deg
- Linear Lead-In Dista...: 0 in
- Perpendicular:
- Vertical Lead-In Radi...: 0.15 in
- Lead-Out (Exit):
- Same as Lead-In:

Ramp:

Positions

- Predrill Positions: Nothing
- Entry Positions: Nothing

OK Cancel

Tool Change: 1/4" End Mill

The screenshot displays the '2D CONTOUR : ELEC HOLES' setup in a CAM software. The central model shows a part with a blue contour and three holes, with red arrows indicating the tool path. The tool is set to '#2 - Ø1/4" flat (1/4"...)'. The 'Feed & Speed' panel shows Spindle Speed at 18000 rpm and Surface Speed at 1178.1 ft/min. The 'Geometry' panel shows 'Contour Selection' with '3 Chains' selected. The 'Clearance Height' panel is set to 'Retract height' with an offset of 0.4 in. The 'Retract Height' panel is set to 'Stock top' with an offset of 0.2 in. The 'Feed Height' panel is set to 'Top height' with an offset of 0.2 in. The 'Top Height' panel is set to 'Stock top' with an offset of 0 in. The 'Bottom Height' panel is set to 'Model top' with an offset of -0.3 in. The 'Passes' panel shows Tolerance at 0.0004 in and Sideways Compensation set to 'Left (climb milling)'. The 'Linking' panel shows 'High Feedrate Mode' set to 'Preserve rapid c...'. The 'Leads & Transitions' panel shows 'Lead-In (Entry)' checked and 'Ramp' checked with a 'Ramping Angle (deg)' of 10 deg. The 'Positions' panel shows 'Predrill Positions' set to 'Nothing'.

Tool Change: 5/64" Drill

Entry Positions

DRILL : PU HOLES

Tool #3 - Ø5/64" drill (5/64)

Coolant

Feed & Speed

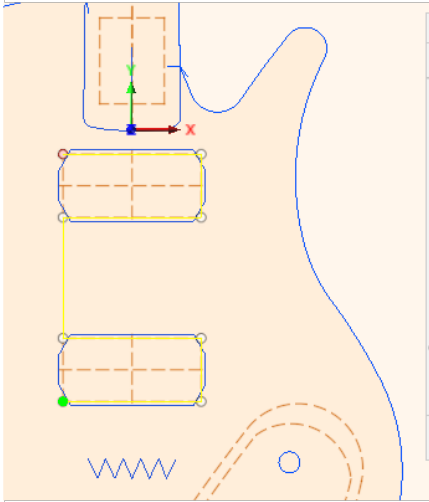
Spindle Speed

Surface Speed

Plunge Feedrate

Feed per Revolution

Retract Feedrate



DRILL : PU HOLES

Geometry

Hole Mode

Hole Points

Select Same Diameter

Order by Depth

Optimize Order

Reverse Order

Tool Orientation

DRILL : PU HOLES

Clearance Height

From

Offset

Retract Height

From

Offset

Feed Height

From

Offset

Top Height

From

Offset

Bottom Height

From

Offset

Drill Tip Through Bott...

DRILL : PU HOLES

Cycle

Cycle Type

● DRILL : BODY MOUNT HOLES

▼ Tool

Tool Select...

#8 - Ø3/16" drill (3/16)

Coolant Disabled

▼ Feed & Speed

Spindle Speed 7000 rpm

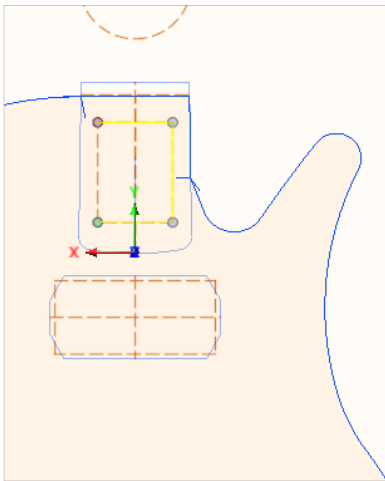
Surface Speed 343.612 ft/min

Plunge Feedrate 50 in/min

Feed per Revolution 0.00714286 in

Retract Feedrate 200 in/min

OK Cancel



● DRILL : BODY MOUNT HOLES

▼ Geometry

Hole Mode Selected points

Hole Points 4 Points

Select Same Diameter

Order by Depth

Optimize Order

Reverse Order

Tool Orientation

OK Cancel

● DRILL : BODY MOUNT HOLES

▼ Clearance Height

From Retract height

Offset 0.4 in

▼ Retract Height

From Stock top

Offset 0.2 in

▼ Feed Height

From Top height

Offset 0.2 in

▼ Top Height

From Model top

Offset 0 in

▼ Bottom Height

From Model top

Offset -1.25 in

Drill Tip Through Bott...

OK Cancel

● DRILL : BODY MOUNT HOLES

▼ Cycle

Cycle Type Drilling - rapid out

OK Cancel

● DRILL : STRING HOLES

▼ Tool

Tool

#3 - Ø5/64" drill (5/64)

Coolant

▼ Feed & Speed

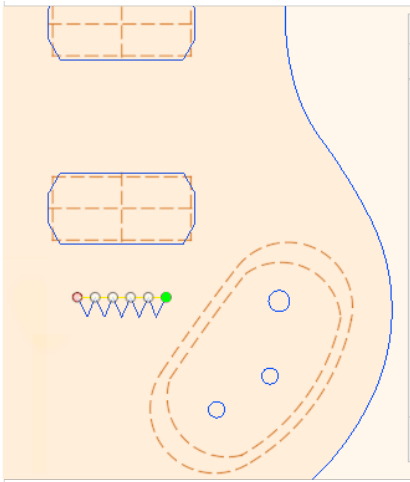
Spindle Speed

Surface Speed

Plunge Feedrate

Feed per Revolution

Retract Feedrate



● DRILL : STRING HOLES

▼ Geometry

Hole Mode

Hole Points

Select Same Diameter

Order by Depth

Optimize Order

Reverse Order

Tool Orientation

● DRILL : STRING HOLES

▼ Clearance Height

From

Offset

▼ Retract Height

From

Offset

▼ Feed Height

From

Offset

▼ Top Height

From

Offset

▼ Bottom Height

From

Offset

Drill Tip Through Bott...

● DRILL : STRING HOLES

▼ Cycle

Cycle Type

BACK

Tool Change: 1/4" Drill

DRILL : FERRULE HOLES

Tool: **Select...**

#4 - Ø1/4" drill (1/4)

Coolant: Disabled

Feed & Speed

Spindle Speed: 7000 rpm

Surface Speed: 458.149 ft/min

Plunge Feedrate: 50 in/min

Feed per Revolution: 0.00714286 in

Retract Feedrate: 200 in/min

DRILL : FERRULE HOLES

Geometry

Hole Mode: Selected points

Hole Points: 6 Points

Select Same Diameter:

Order by Depth:

Optimize Order:

Reverse Order:

Tool Orientation

DRILL : FERRULE HOLES

Clearance Height

From: Retract height

Offset: 0.4 in

Retract Height

From: Stock top

Offset: 0.2 in

Feed Height

From: Top height

Offset: 0.2 in

Top Height

From: Model top

Offset: 0 in

Bottom Height

From: Model top

Offset: -1

Drill Tip Through Bott...

DRILL : FERRULE HOLES

Cycle

Cycle Type: Drilling - rapid out

OK Cancel

Tool Change: 3/16" Drill

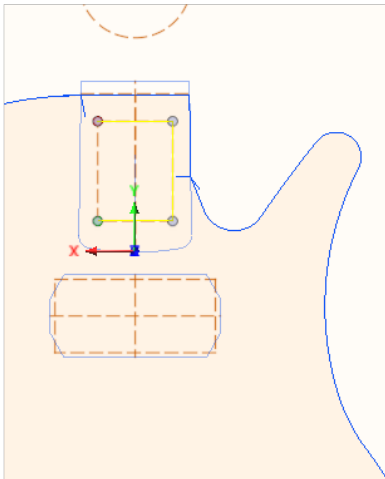
DRILL : BODY MOUNT HOLES

Tool: Select...
#8 - Ø3/16" drill (3/16)
Coolant: Disabled

Feed & Speed

Spindle Speed: 7000 rpm
Surface Speed: 343.612 ft/min
Plunge Feedrate: 50 in/min
Feed per Revolution: 0.00714286 in
Retract Feedrate: 200 in/min

OK Cancel



DRILL : BODY MOUNT HOLES

Geometry

Hole Mode: Selected points
Hole Points: 4 Points X

Select Same Diameter:
Order by Depth:
Optimize Order:
Reverse Order:

Tool Orientation:

OK Cancel

DRILL : BODY MOUNT HOLES

Clearance Height

From: Retract height
Offset: 0.4 in

Retract Height

From: Stock top
Offset: 0.2 in

Feed Height

From: Top height
Offset: 0.2 in

Top Height

From: Model top
Offset: 0 in

Bottom Height

From: Model top
Offset: -1.25 in

Drill Tip Through Bott...

OK Cancel

DRILL : BODY MOUNT HOLES

Cycle

Cycle Type: Drilling - rapid out

OK Cancel

Tool Change: 1/2" End Mill

The image displays a CAD software interface with a central 2D model of a pocket and five overlapping dialog boxes for configuring tool parameters. The dialog boxes are titled "2D POCKET: BEAN POCKET" and contain the following settings:

- Tool:** #1 - Ø1/2" flat (1/2"...
- Coolant:** Flood
- Feed & Speed:** Spindle Speed: 22000 rpm; Surface Speed: 2879.79 ft/min; Ramp Spindle Speed: 22000 rpm; Cutting Feedrate: 180 in/min; Feed per Tooth: 0.0049091 in; Lead-In Feedrate: 92 in/min; Lead-Out Feedrate: 92 in/min; Ramp Feedrate: 250 in/min; Plunge Feedrate: 30 in/min; Feed per Revolution: 0.00136364 in.
- Geometry:** Pocket Selections: Chan
- Clearance Height:** From: Retract height; Offset: 0.4 in.
- Retract Height:** From: Stock top; Offset: 0.3 in.
- Feed Height:** From: Top height; Offset: 0.2 in.
- Top Height:** From: Model top; Offset: 0 in.
- Bottom Height:** From: Model top; Offset: -1.55 in.
- Passes:** Tolerance: 0.004 in; Sidesways Compens...: Left (climb milling); Minimum Cutting Rad...: 0 in; Finishing Passes: 0; Preserve Order: ; Both Ways: ; Maximum Stepmover: 0.125 in; Use Morphed Spiral I...: ; Allow Stepmover Cus...: ; Smoothing Deviation: 0.004 in; Multiple Depths; Maximum Roughing S...: 0.8 in; Finishing Stepdowns: 0; Finishing Stepdown: 0.008 in; Wall Taper Angle (de...): 0 deg; Use Even Stepdowns: ; Order by Depth: ; Order by Step: ; Stock to Leave: ; Smoothing: ; Feed Optimization: .
- Linking:** High Feedrate Mode: Preserve rapid r...; Allow Rapid Retract: ; Safe Distance: 0.13937 in; Keep Tool Down: ; Maximum Stay-Dowr...: 2 in; Lift Height: 0 in.
- Leads & Transitions:** Lead-In (Entry): ; Horizontal Lead-in R...: 0.05 in; Lead-In Sweep Angle: 90 deg; Linear Lead-in Distar...: 0.05 in; Perpendicular: ; Vertical Lead-in Radi...: 0.05 in; Lead-Out (Exit): ; Same as Lead-In: .
- Ramp:** Ramp Type: Profile; Ramping Angle (deg): 6 deg; Maximum Ramp Step...: 1.625 in; Ramp Clearance Hai...: 0.1 in; Ramp Radial Clearan...: 0 in; Helical Ramp Diameter: 0.475 in; Minimum Ramp Diam...: 0.475 in.
- Positions:** Predrill Positions: Nothing; Entry Positions: Nothing.

2D CONTOUR : BEAN LIP

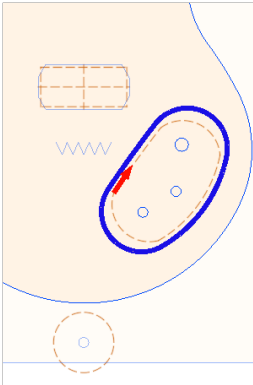
▼ Tool
 Tool Select...
 #1 - Ø1/2" flat (1/2"...

Coolant Flood

▼ Feed & Speed

Spindle Speed 22000 rpm
 Surface Speed 2679.79 ft/min
 Ramp Spindle Speed 22000 rpm
 Cutting Feedrate 180 in/min
 Feed per Tooth 0.00409091 in
 Lead-In Feedrate 92 in/min
 Lead-Out Feedrate 92 in/min
 Ramp Feedrate 250 in/min
 Plunge Feedrate 30 in/min
 Feed per Revolution 0.00136364 in

OK Cancel



2D CONTOUR : BEAN LIP

▼ Geometry

Contour Selection Chain

Tangential Extension Distance 0 in

Separate Tangential End Ext...

Stock Contours

Rest Machining

Wrap Toolpath

Tool Orientation

OK Cancel

2D CONTOUR : BEAN LIP

▼ Clearance Height

From Retract height
 Offset 0.4 in

▼ Retract Height

From Stock top
 Offset 0.2 in

▼ Feed Height

From Top height
 Offset 0.2 in

▼ Top Height

From Model top
 Offset 0 in

▼ Bottom Height

From Model top
 Offset -0.14

OK Cancel

2D CONTOUR : BEAN LIP

▼ Passes

Tolerance 0.0004 in
 Sideways Compens... Left (climb milling)
 Compensation Type In computer
 Minimum Cutting Rad... 0 in
 Finishing Smoothing... 0 in

Multiple Finishing Pas...
 Number of Finishing... 1
 Stepper 0.2 in

Leads on all Finishin...

Finish Feedrate 100 in/min
 Repeat Finishing Pass
 Finishing Overlap 0 in
 Lead End Distance 0 in
 Outer Corner Mode Roll around corn...
 Tangential Fragment... 0 in

Preserve Order
 Both Ways

▼ Roughing Passes

Maximum Stepper 0.25 in
 Smoothing Deviation 0.004 in
 Number of Steppers 1

Multiple Depths

Stock to Leave

Smoothing

Feed Optimization

OK Cancel

2D CONTOUR : BEAN LIP

▼ Linking

High Feedrate Mode Preserve rapid r...
 Allow Rapid Retract
 Safe Distance 0.0393701 in
 Keep Tool Down
 Lift Height 0 in

▼ Leads & Transitions

Lead-In (Entry)
 Horizontal Lead-In R... 0.05 in
 Lead-In Sweep Angle 90 deg
 Linear Lead-In Dista... 0.05 in
 Perpendicular
 Vertical Lead-In Rad... 0.05 in
 Lead-Out (Exit)
 Same as Lead-In

Ramp

▼ Positions

Predrill Positions Nothing
 Entry Positions Nothing

OK Cancel