

PrimeTurning™ Add-On Read Me

This version of the PrimeTurning C-Hook contains several important changes and enhancements which allow greater control over entry motion and feed rate output.

Installation

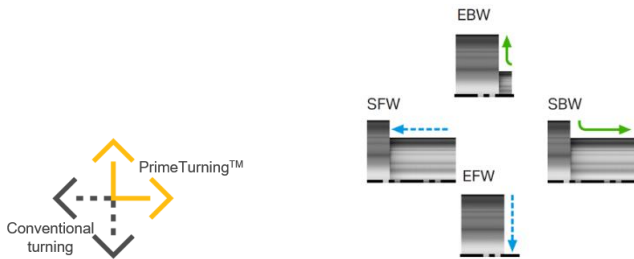
Uninstall any previous version of the PrimeTurning add-on. Manually delete the previously installed .tooldb files from these locations (the installation process will not overwrite previous tooldb files):

- B-axis CoroTurn Prime_mm.tooldb -> C:\Users\Public\Documents\shared Mcam2018\Mill Turn\tools
- B-axis CoroTurn Prime_in.tooldb -> C:\Users\Public\Documents\shared Mcam2018\Mill Turn\tools
- CoroTurn Prime_in.tooldb -> C:\Users\Public\Documents\shared Mcam2018\lathe\Tools, and C:\Users\Public\Documents\shared Mcam2018\Mill Turn\tools
- CoroTurn Prime_mm.tooldb -> C:\Users\Public\Documents\shared Mcam2018\lathe\Tools, and C:\Users\Public\Documents\shared Mcam2018\Mill Turn\tools

What's New

Roughing Feed Rate Dialog

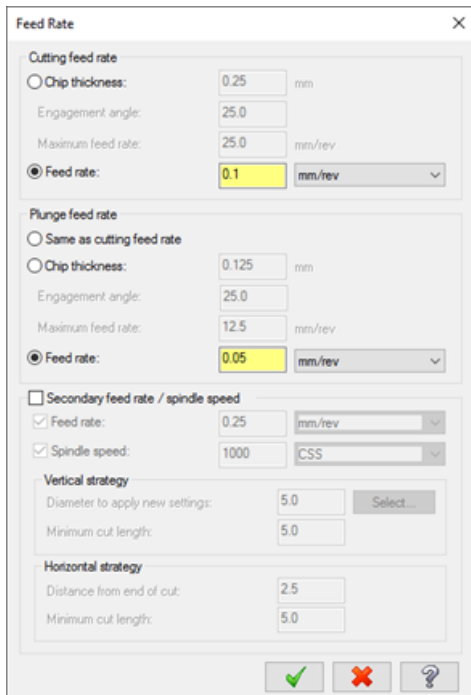
We have modified the Roughing Feed Rate dialog to better support Sandvik Coromant's desired feed rate output. Sandvik Coromant's cutting data materials refer to axial and radial cut directions in terms of PrimeTurning (EBW and SBW, in green below) and Conventional Turning (SFW and EFW, dashed blue):



We have added separate controls for axial and radial cuts and an additional control for a conventional cut percentage, which defaults to 50% on new tool paths and 100% for existing operations, (as this was what the C-Hook did previously). The default value of 50% is common in most cutting data provided by Sandvik, and the field allows you to overriding this value as desired.

These **Axial** and **Radial** controls have been added to the **Cutting feed rate** and **Plunge feed rate** groups:

Previous dialog



Feed Rate

Cutting feed rate

☐ Chip thickness: 0.25 mm

Engagement angle: 25.0

Maximum feed rate: 25.0 mm/rev

☒ Feed rate: 0.1 mm/rev

Plunge feed rate

☐ Same as cutting feed rate

☐ Chip thickness: 0.125 mm

Engagement angle: 25.0

Maximum feed rate: 12.5 mm/rev

☒ Feed rate: 0.05 mm/rev

☐ Secondary feed rate / spindle speed

☒ Feed rate: 0.25 mm/rev

☒ Spindle speed: 1000 CSS

Vertical strategy

Diameter to apply new settings: 5.0 Select...

Minimum cut length: 5.0

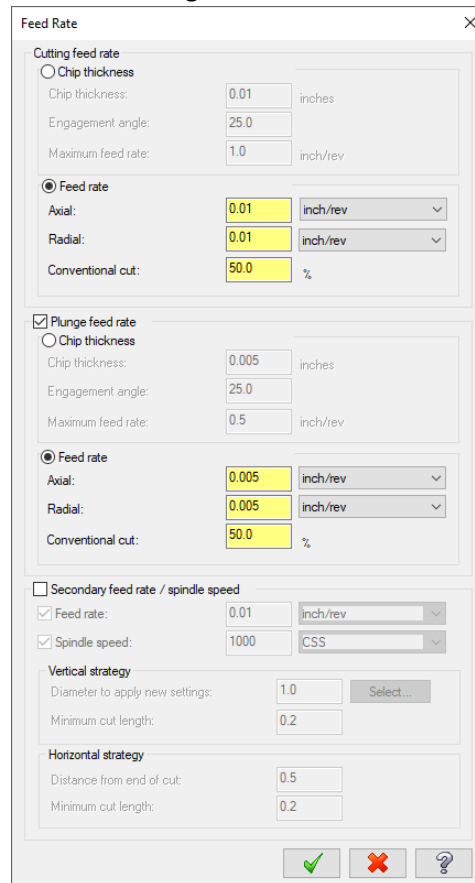
Horizontal strategy

Distance from end of cut: 2.5

Minimum cut length: 5.0

Buttons: [OK] [Cancel] [Help]

Modified dialog



Feed Rate

Cutting feed rate

☐ Chip thickness: 0.01 inches

Engagement angle: 25.0

Maximum feed rate: 1.0 inch/rev

☒ Feed rate: 0.01 inch/rev

Axial: 0.01 inch/rev

Radial: 0.01 inch/rev

Conventional cut: 50.0 %

☒ Plunge feed rate

☐ Chip thickness: 0.005 inches

Engagement angle: 25.0

Maximum feed rate: 0.5 inch/rev

☒ Feed rate: 0.005 inch/rev

Axial: 0.005 inch/rev

Radial: 0.005 inch/rev

Conventional cut: 50.0 %

☐ Secondary feed rate / spindle speed

☒ Feed rate: 0.01 inch/rev

☒ Spindle speed: 1000 CSS

Vertical strategy

Diameter to apply new settings: 1.0 Select...

Minimum cut length: 0.2

Horizontal strategy

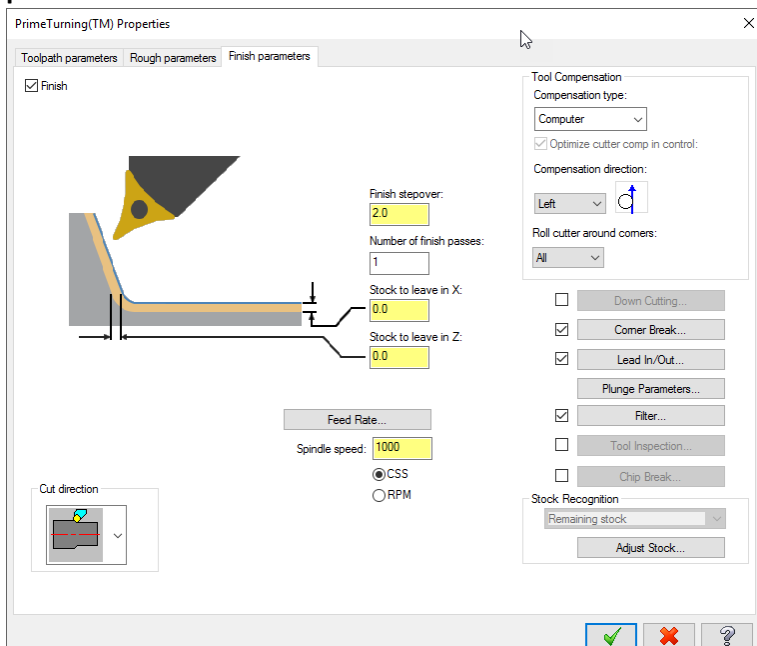
Distance from end of cut: 0.5

Minimum cut length: 0.2

Buttons: [OK] [Cancel] [Help]

Finish Feed Rate

The **Finish** parameters tab has been modified to include a button to open a **Feed Rate** dialog as with the **Rough** parameters tab:



PrimeTurning(TM) Properties

Toolpath parameters | Rough parameters | **Finish parameters**

☒ Finish

Diagram: A schematic showing a tool cutting a part with a finish pass. Labels include: Finish stepover: 2.0, Number of finish passes: 1, Stock to leave in X: 0.0, Stock to leave in Z: 0.0.

Feed Rate... (button)

Spindle speed: 1000

☒ CSS ☐ RPM

Cut direction (dropdown menu)

Tool Compensation

Compensation type: Computer

☒ Optimize cutter comp in control:

Compensation direction: Left

Roll cutter around corners: All

☐ Down Cutting...

☒ Corner Break...

☒ Lead In/Out...

☐ Plunge Parameters...

☒ Filter...

☐ Tool Inspection...

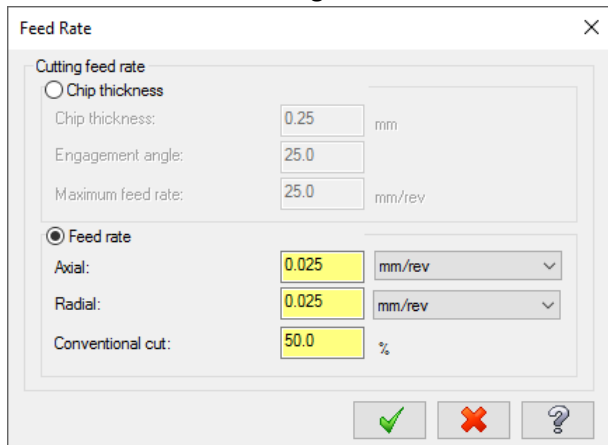
☐ Chip Break...

Stock Recognition

Remaining stock: (dropdown menu)

Buttons: [OK] [Cancel] [Help]

This launches a new dialog which contains the **Cutting feed rate** group that also exists in the Rough Feed Rate dialog:



The 'Feed Rate' dialog box contains two main sections. The first section, 'Cutting feed rate', has a radio button for 'Chip thickness' (which is unselected) and three input fields: 'Chip thickness' (0.25 mm), 'Engagement angle' (25.0), and 'Maximum feed rate' (25.0 mm/rev). The second section, 'Feed rate', has a selected radio button and three input fields: 'Axial' (0.025 mm/rev), 'Radial' (0.025 mm/rev), and 'Conventional cut' (50.0 %). At the bottom are three buttons: a green checkmark, a red X, and a question mark.

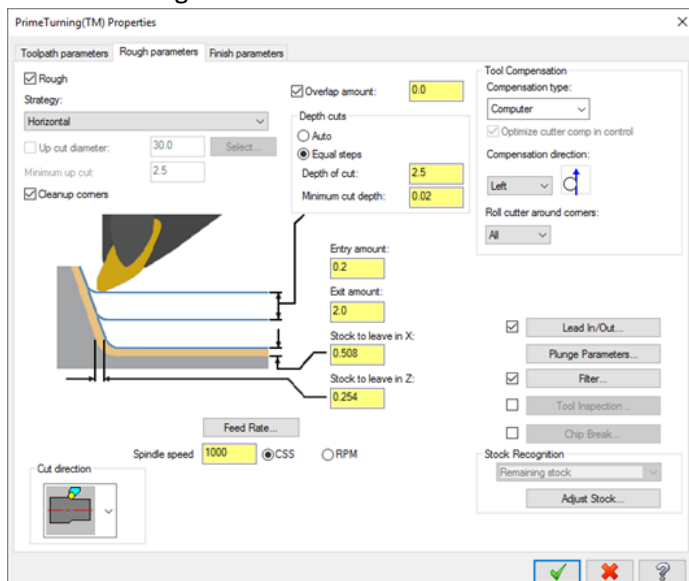
Approach Arc Radius

The Rough tab has been modified to introduce an ability to override the arc radius for the entry motion in cuts.

The previous implementation simply set the radius equal to the depth of cut. This value has proven to be acceptable in many situations so we have kept that as the default option with a new field to set a manual override.

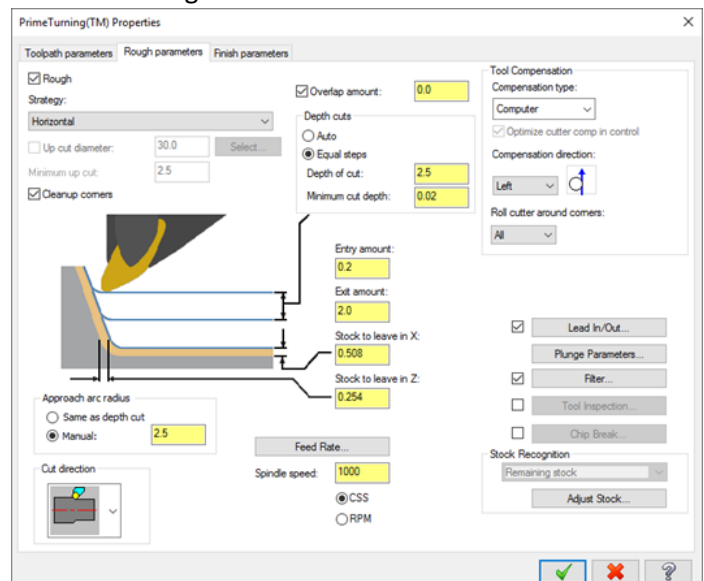
The new **Approach arc radius** group results in a slight layout change for the **Feed Rate** and **Spindle speed** options as shown below.

Previous dialog



The 'Previous dialog' shows the 'PrimeTurning(TM) Properties' window with the 'Rough' tab selected. It features a 'Toolpath parameters' section with 'Strategy' set to 'Horizontal', 'Up cut diameter' (30.0), 'Minimum up cut' (2.5), and 'Cleanup corners' checked. The 'Depth cuts' section has 'Overlap amount' (0.0), 'Depth of cut' (2.5), and 'Minimum cut depth' (0.02). The 'Tool Compensation' section has 'Compensation type' set to 'Computer', 'Optimize cutter comp in control' checked, and 'Compensation direction' set to 'Left'. The 'Roll cutter around corners' is set to 'All'. The 'Entry amount' is 0.2, 'Exit amount' is 2.0, 'Stock to leave in X' is 0.508, and 'Stock to leave in Z' is 0.254. The 'Feed Rate' is set to 1000, and 'Spindle speed' is set to 1000. The 'Cut direction' is set to 'Down'. The 'Stock Recognition' section has 'Remaining stock' set to 'Adjust Stock...'. The 'Approach arc radius' is set to 'Same as depth cut'.

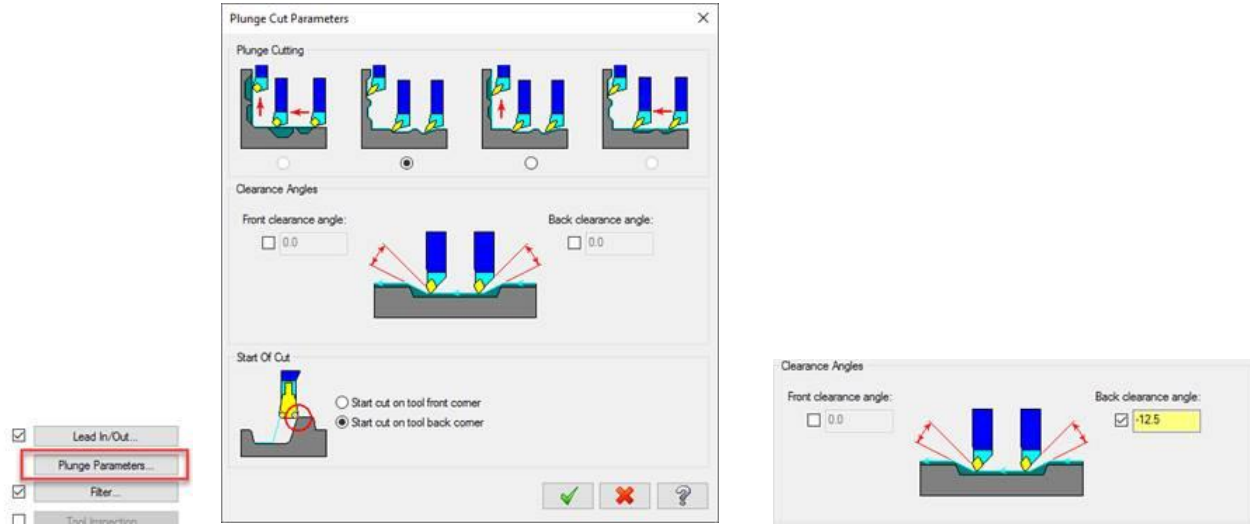
Modified dialog



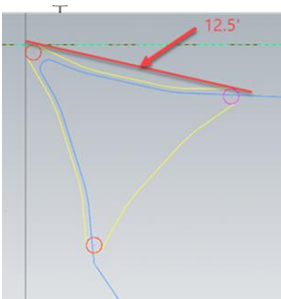
The 'Modified dialog' shows the 'PrimeTurning(TM) Properties' window with the 'Rough' tab selected. It features a 'Toolpath parameters' section with 'Strategy' set to 'Horizontal', 'Up cut diameter' (30.0), 'Minimum up cut' (2.5), and 'Cleanup corners' checked. The 'Depth cuts' section has 'Overlap amount' (0.0), 'Depth of cut' (2.5), and 'Minimum cut depth' (0.02). The 'Tool Compensation' section has 'Compensation type' set to 'Computer', 'Optimize cutter comp in control' checked, and 'Compensation direction' set to 'Left'. The 'Roll cutter around corners' is set to 'All'. The 'Entry amount' is 0.2, 'Exit amount' is 2.0, 'Stock to leave in X' is 0.508, and 'Stock to leave in Z' is 0.254. The 'Feed Rate' is set to 1000, and 'Spindle speed' is set to 1000. The 'Cut direction' is set to 'Down'. The 'Stock Recognition' section has 'Remaining stock' set to 'Adjust Stock...'. The 'Approach arc radius' is set to 'Manual' with a value of 2.5.

Plunge Cut Parameters

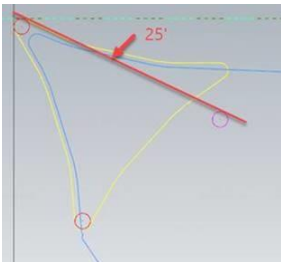
The Plunge Cut Parameters dialog has been modified to accept negative values for the clearance angles allowed in an operation:



Negative values allow the end user to override the default tool clearance angles that have been set to avoid gouging. For example, the **A** style insert has a default clearance angle of **12.5** degrees:



In some cases, the user may wish to change this for a given operation to a larger value such as **25** degrees:



Tool Database Files

We have expanded the tool databases by adding additional copies of the CAPTO tools with extension amounts built in. These include C4 (60 and 80mm), C5 (80 and 100mm), and C6 (100 and 140mm).

