

Siemens PLM Software

Avoiding obstructions when threading

NX CAM 9: How to use Infeed and Angle when engaging, and Local Return moves for roughing and finishing

About NX CAM

NX™ CAM software has helped many of the world's learning manufacturers and job shops produce better parts faster. You can also achieve similar benefits by making use of the unique advantages NX CAM offers.

This is one of many hands-on demonstrations designed to introduce you to the powerful capabilities in NX CAM 9. In order to run this demonstration, you will need access to NX CAM 9.

Visit the [NX Manufacturing Forum](#) to learn more, ask questions, and share comments about NX CAM.

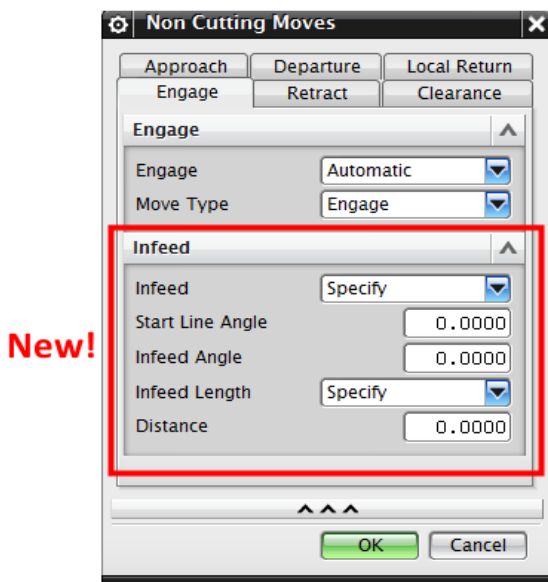
Hands-on Demonstration: Avoiding obstructions when threading

Non Cutting Moves for thread turning operations now has the ability to Infeed at a specific angle and length when engaging. This is sometimes needed to avoid an obstruction at the end of a tapered thread.

Local Return is now available for Roughing and Finishing passes whereas Local Return was previously available only for Chase passes. Three new Return Moves have been added for Chase Passes and Rough/Finish Passes and are most beneficial for ID cutting. These new return moves have also been added to the local returns in other turning operations.

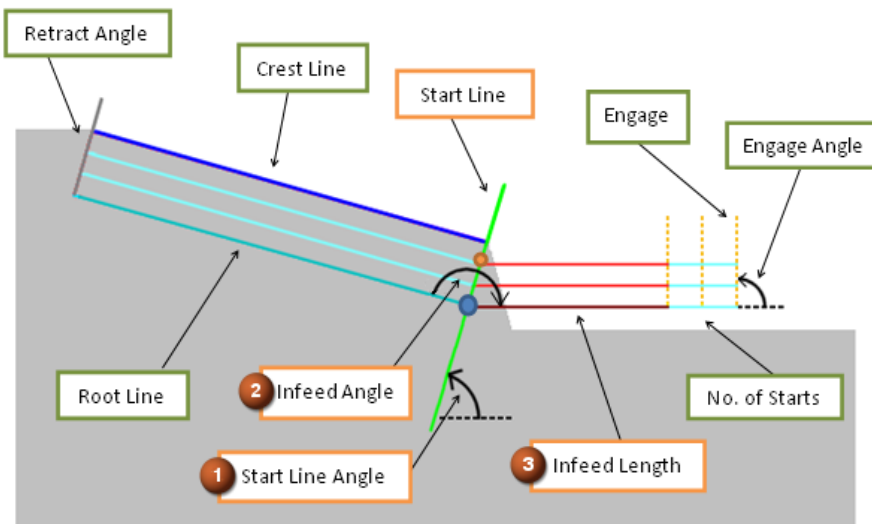
In the UI, all enhancements are found In Threading operations under Non Cutting Moves on the Engage and Local Return tabs.

Infeed:



Here is what the new Infeed parameters do:

1. Start line Angle
2. Infeed Angle
3. Infeed Length



Local Return:

Select **Chase Passes** from the **Local Return Mode** list for existing functionality.

Select **Rough/Finish Passes** from the **Local Return Mode** list for new functionality.

New!

Local Return Mode

Local Return Mode: Rough/Finish Pass

Rough

Local Return: Number of Passes

Number of Passes: 0

Return Move: Clear Radial->Cle

* Specify Point

In Path Events

Start of Path Events

End of Path Events

Finish

Local Return: Number of Passes

Number of Passes: 0

Return Move: Clear Radial->Cle

* Specify Point

In Path Events

Start of Path Events

End of Path Events

Reset from Roughing Parameters

Chase Passes (existing functionality)
Rough/Finish Passes (new functionality)

Clear Radial->Clear Axial->Direct
Clear Radial->Axial->Radial
Clear Radial->Clear Axial) new options

Clear Radial->Clear Axial->Direct
Clear Radial->Axial->Radial
Clear Radial->Clear Axial) new options

OK Cancel

Do you have a question?

Post your questions or comments at the bottom of [this Tech Tip article in the NX Manufacturing Forum](#).

Prerequisites:

1. You will need access to **NX CAM 9** in order to run this demonstration.
2. If you haven't done so already, download and unzip **Threading Non Cutting Moves Enhancements parts.7z**. You will find the .7z file attached directly to [this Tech Tip article in the NX Manufacturing Forum](#).

Demo:

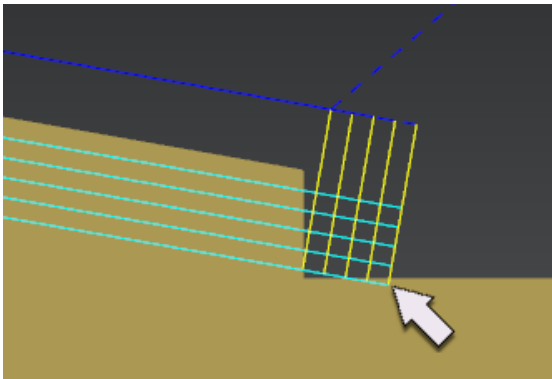
Infeed

1. Open **threading_setup.prt** in NX.
2. Double-click **THREAD_OD** to edit the operation.

This is an OD tapered threading operation with multiple starts. These starts result in extended cutting moves that gouge the part.

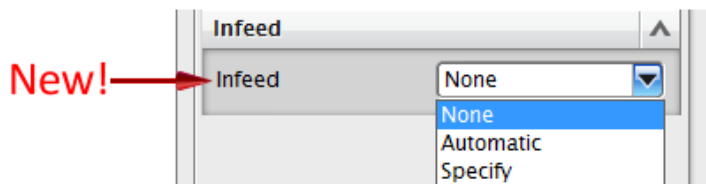
3. Click **Replay**.

Notice that the extended cutting moves gouge the part. The cutting moves cannot be extended tangentially without gouging.



Specifying an infeed angle can fix this.

4. Click **Non Cutting Moves**.
5. Click the **Engage** tab.
6. Expand the **Infeed** list.



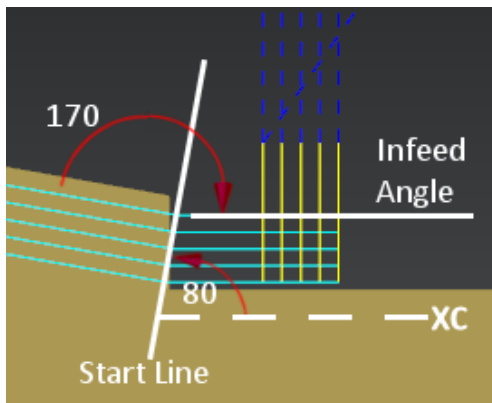
This list and all of the options inside it are new.

7. Select **Specify** from the **Infeed** list.
8. Type **80** in the **Start Line Angle** box.

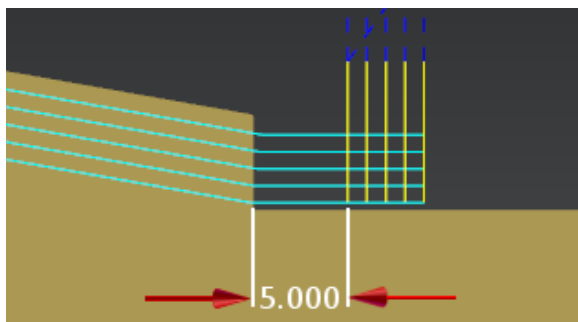
This angle is measured counterclockwise from the +XC axis.

9. Type **170** in the **Infeed Angle** box.

This angle is measured clockwise from the cutting moves.



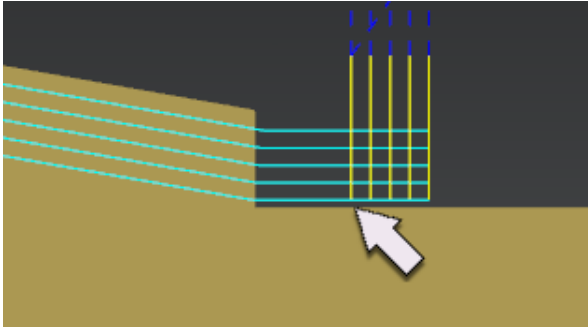
10. Select **Specify** from the **Infeed Length** list.
11. Type **5.000** in the **Distance** box.



The Infeed Length (Distance) is measured from the inner most start position of the last threading pass.

12. Click **OK**.
13. Click **Generate**.

The extended cutting moves no longer gouge the part.

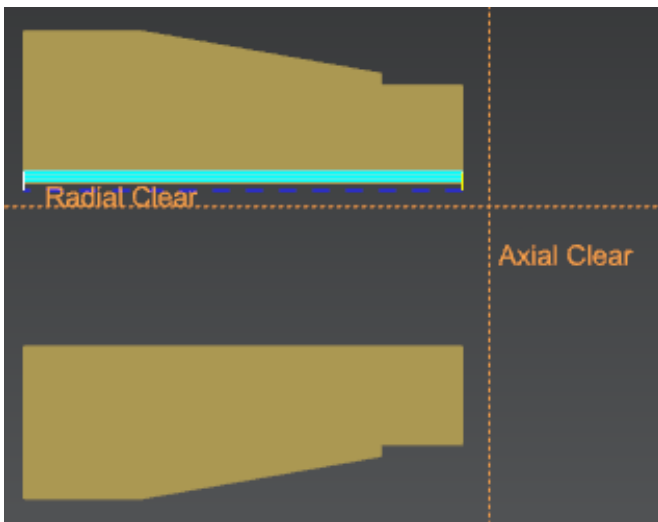


14. Click **OK** to complete the operation.

Local Return

1. Double-click **THREAD_ID** to edit the operation.
2. Click **Non Cutting Moves**.

Notice that radial and axial clearance planes have been defined.



3. Click the **Local Return** tab.
4. Select **Rough/Finish Passes** from the **Local Return Mode** list.

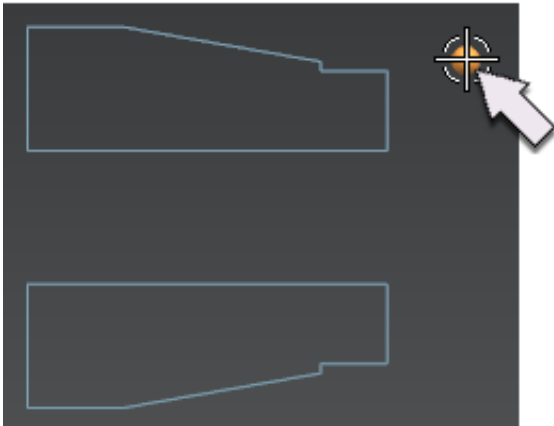
This option is new. All of the options in the Rough and Finish groups are also new.

5. Inside the **Rough** section, select **Number of Passes** from the **Local Return** list.

Note: These same steps may also be performed for Finish passes.

6. Type **2** in the **Number of Passes** box.
7. Select **Clear Radial→Direct** from the **Return Move** list.
8. Select **Specify Point**.

9. Indicate a point at the approximate screen position illustrated below.



10. Click **OK** if necessary in the Point dialog box.

You have specified that the tool will move radially (up & down) to the radial clearance plane and then directly to the Local Return Point you defined.

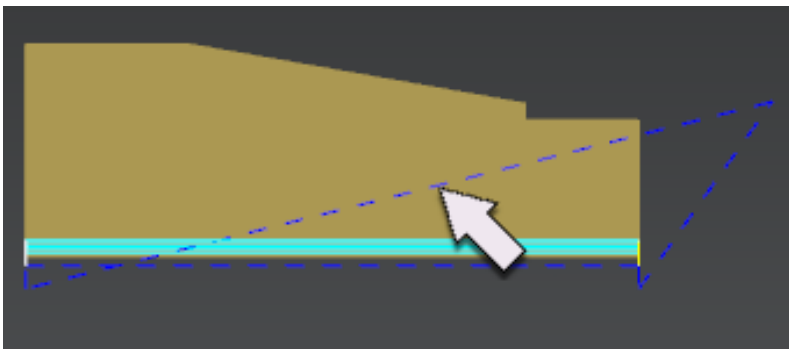
11. Click **OK** in the **Non Cutting Moves** dialog box.

12. Click **Generate**.

13. Select the **Don't display this message again** check box.

14. Click **Direct**.

15. Notice how the tool collides with the part.

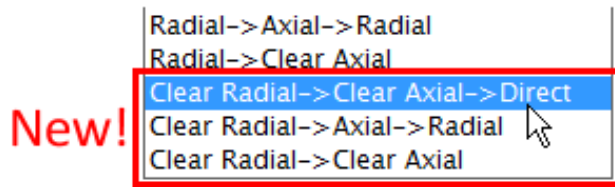


To avoid colliding with the part, the tool must move to both the radial and axial clearance planes before moving directly to the local return point. You will use one of the new local return moves to avoid colliding with the part.

16. Click **Non Cutting Moves**.

17. Click the **Local Return** tab.

18. Select **Clear Radial**→**Clear Axial**→**Direct** from the **Return Move** list.

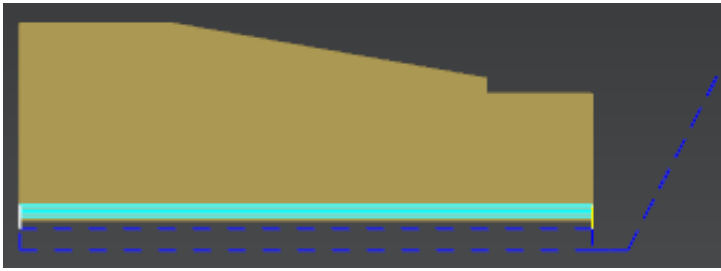


These three new options are most beneficial for ID cutting. **Clear Radial**→**Clear Axial**→**Direct** will cause local returns to first move radially (up & down) to the radial clearance plane, then axially (side to side) to the axial clearance plane, and then directly to the Local Return Point.

19. Click **OK** in the **Non Cutting Moves** dialog box.

20. Click **Generate**.

The tool no longer collides with the part.



15. Click **OK** to complete the operation.

16. Close the part without saving.

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