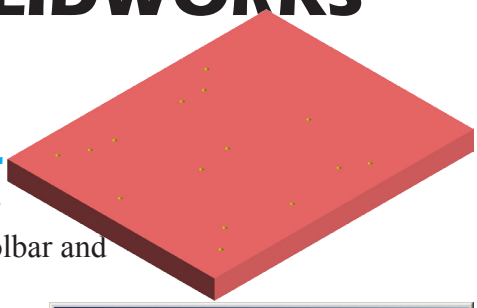
Jewelry Box

Mastercam X9 for SOLIDWORKS

Fixture



A. Enable Mastercam for SOLIDWORKS.

Step 1. If necessary, turn on **Mastercam for SOLIDWORKS**, click the **flyout of Options** on the Standard toolbar and click **Add-Ins**.

Step 2. In the dialog box scroll down to **Mastercam X9 for SOLIDWORKS** and place a check in the check box under **Active Add-Ins** and **Start-Up**, **Fig. 1**. Click OK.

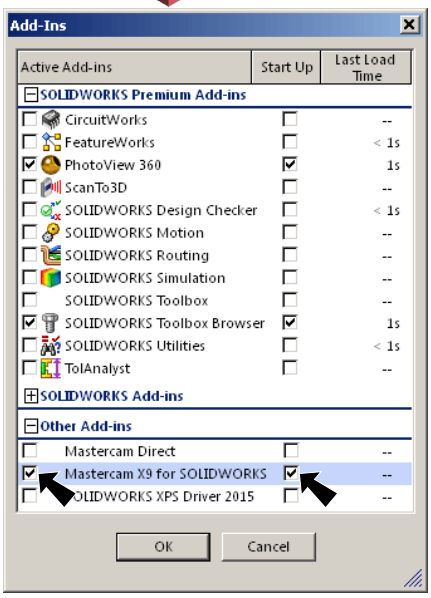


Fig. 1

B. Create TOP CUT WCS.

Step 1. Open you **Fixture** file.

Step 2. Click **Isometric** on the Standard Views toolbar. (**Ctrl-7**)

Step 3. Click **Mastercam X9** MastercamX9 on the Command Manager toolbar.

Step 4. Click **Plane Manager** Plane Manager on the Mastercam toolbar.

Step 5. Click **Mastercam Top** in the list of names and click **Copy** button in the Plane Manager dialog, **Fig. 2**.

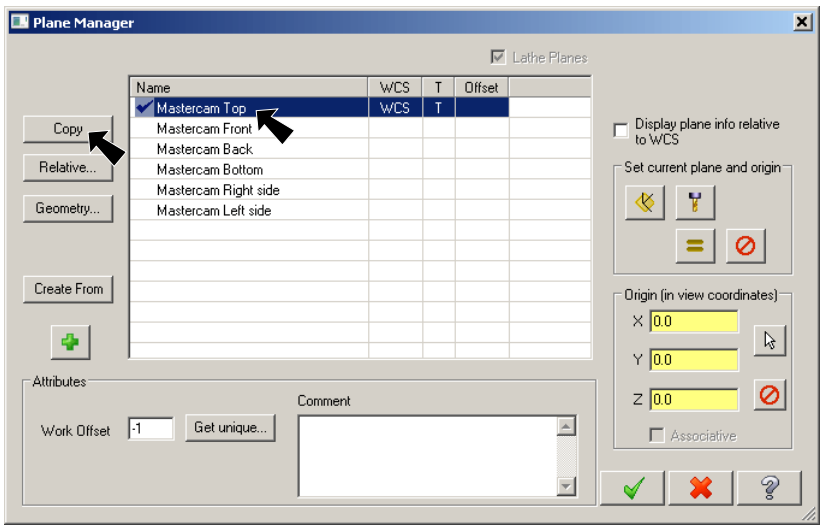


Fig. 2

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Step 6. Rename Mastercam Top-1 to **TOP CUT**. To rename, double click the plane name and key-in the new name, **Fig. 3**.

Step 7. Set:

Origin X 4
Origin Y 4
Origin Z 0
Fig. 4.

Step 8. Click **Set All** button , **Fig. 4**.

Step 9. Confirm the TOP CUT origin, **Fig. 5**.

Don't click OK.

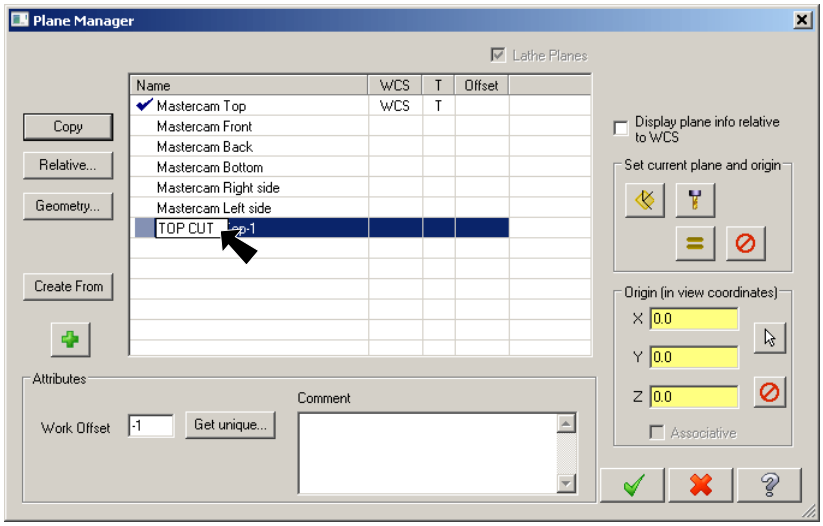


Fig. 3

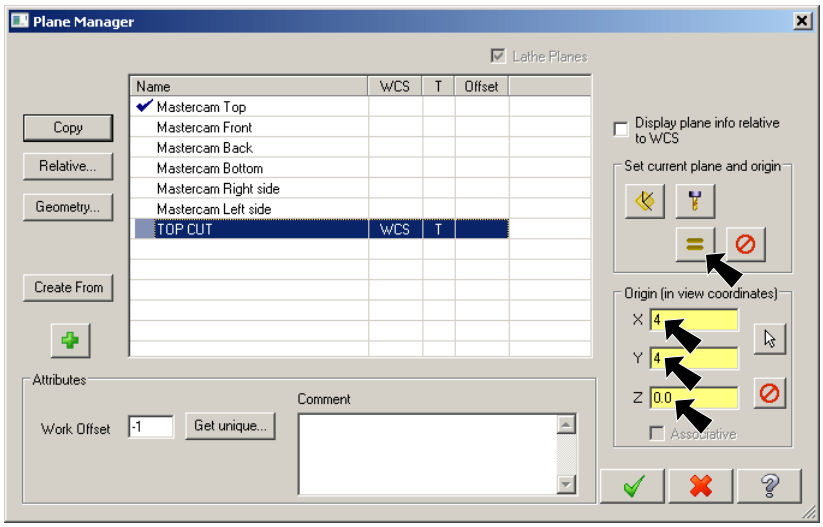


Fig. 4

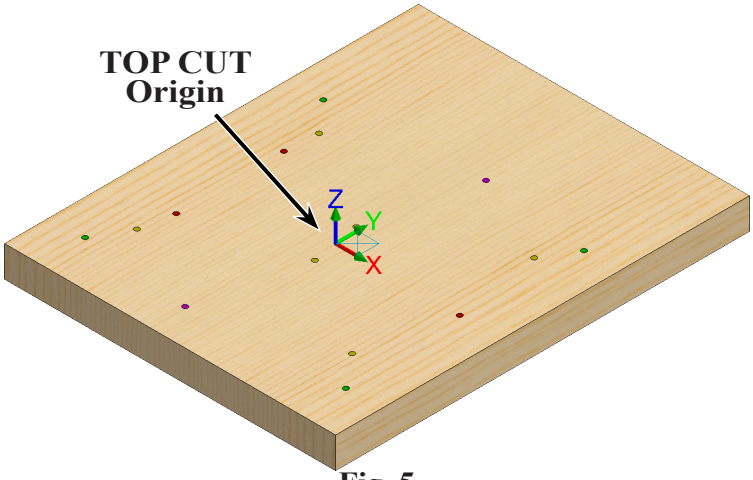


Fig. 5

C. Create BOTTOM CUT WCS.

Step 1. Click **Mastercam Bottom** plane in the list of names and click **Copy** button in the Plane Manager dialog, **Fig. 6**.

Step 2. Rename Mastercam Bottom-1 to **BOTTOM CUT**. To rename, double click the plane name and key-in the new name, **Fig. 7**.

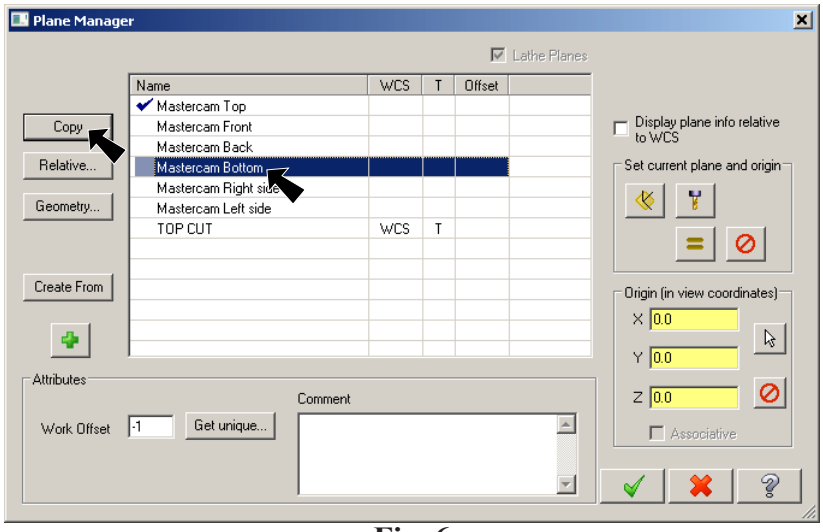


Fig. 6

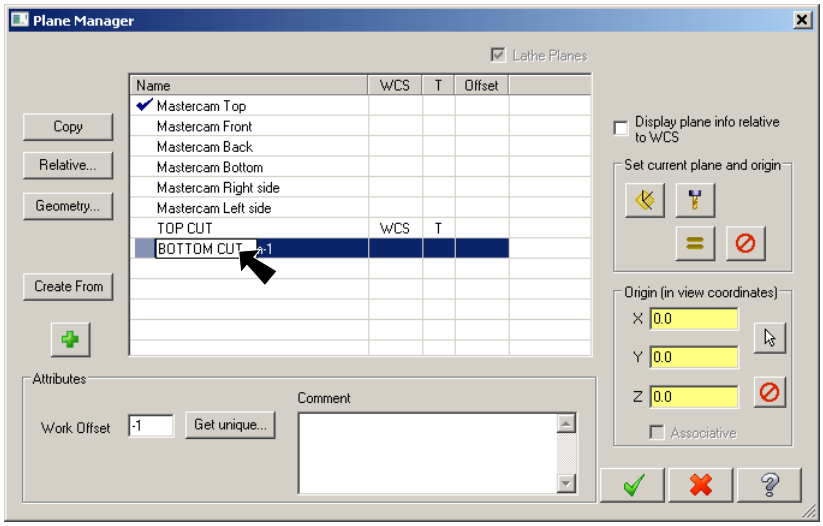


Fig. 7

Step 3. Set:

Origin X -4
Origin Y 4
Origin Z .75
Fig. 8.

Step 4. Click **Set All** button , **Fig. 8**.

Step 5. Click OK .

Step 6. Rotate view to view **bottom**, hold down middle mouse button (wheel) and drag to rotate view, **Fig. 9**.

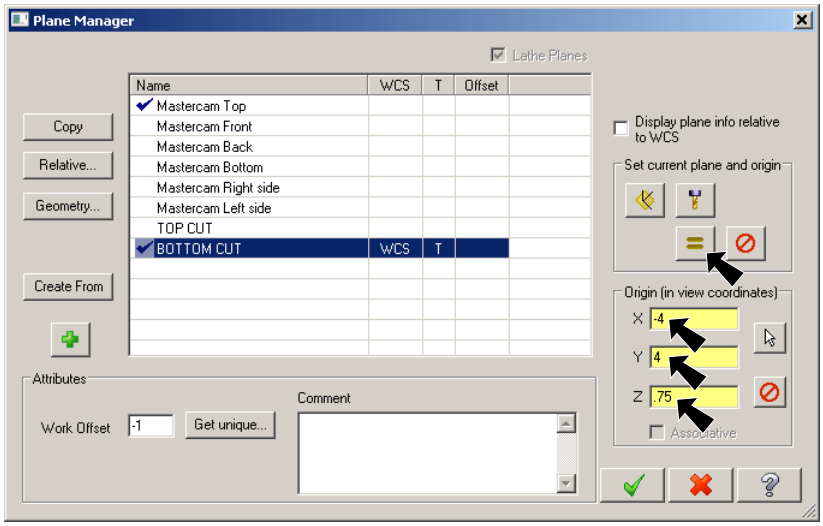


Fig. 8

Tip: Here's how you can make a Iso view with Bottom View on top...

A. Click **Front** on the Standard Views toolbar. (Ctrl-1). Then, use **Alt-Left arrow until rotated 180º**.

B. Click Options on the Standard toolbar and View.

C. Change **Arrow keys to 45º** and click OK.

D. Press **Left arrow key once** to rotate view 45º.

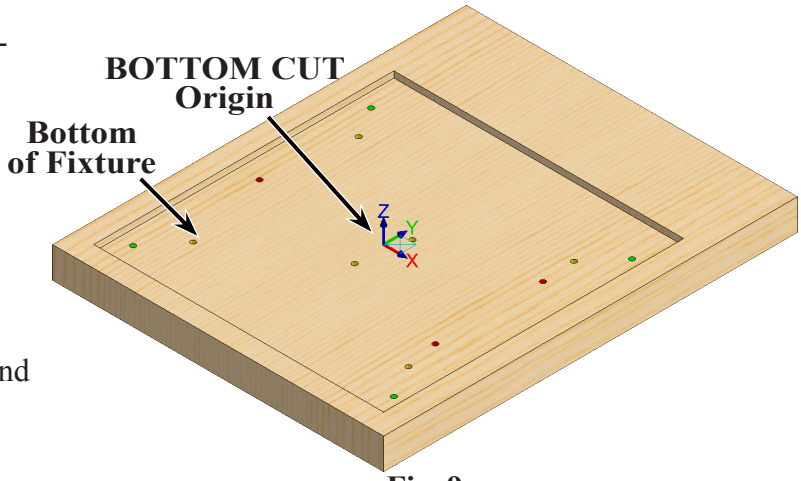


Fig. 9

E. Repeat **Steps 2 and 3**, but instead of 45º, use **35.264º**.

F. Press the **Down arrow key once**.

G. To save View, press **spacebar** and click New View .

Step 7. Confirm the **BOTTOM CUT origin**, **Fig. 9**.

Step 8. Save. Use **Ctrl-S**.

D. Machine Type and Stock Setup.

Step 1. Click Mastercam Toolpath Manager tab in the Property Manager, **Fig. 10**.

Step 2. If a Machine Group is **not** displayed in the Toolpath Manager, **Fig. 10**, click Tools Menu > Mastercam X9 > Mill Machine > Default.

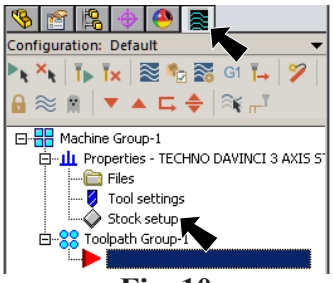


Fig. 10

Step 3. Expand **Properties** (click the +) in the Toolpath Manager and click **Stock Setup** in the Toolpath Manager, **Fig. 10**.

Step 4. Confirm Stock Plane is **Mastercam Top**, **Fig. 11**.

Step 5. Confirm **Display** is checked.

Step 6. Click **All Entities** button in the Stock Setup.

Step 7. Confirm X, Y and Z stock dimensions:

X 8
Y 10
Z .75

Step 8. Confirm Stock Origin coordinates:

X 4
Y 5
Z 0

Step 9. Click OK in the Machine Group Properties.

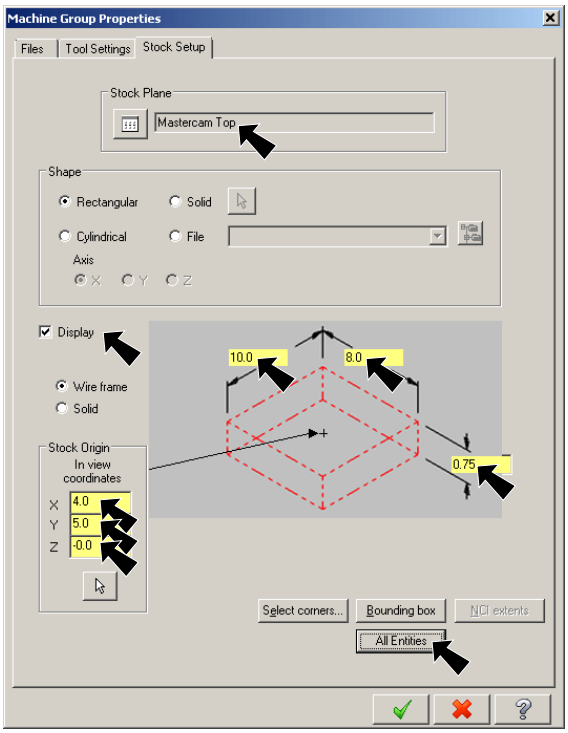
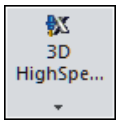


Fig. 11

E. OptiRough Toolpath.

Step 1. Click **3D High Speed Toolpaths** 

on the Mastercam toolbar and **Dynamic OptiRough** from the menu.

Step 2. Click OK in the NC name dialog, **Fig. 12**.

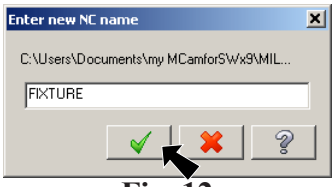


Fig. 12

Step 3. In the Selection Manager set:
under Faces and Bodies, **Fig. 13**

select **Solid body**
click the **solid body**, **Fig. 14**

expand Containment Boundary

select **Edge**
Propagation **Propagate along Tool Plane**
click an **edge of pocket**, **Fig. 14**
click OK .

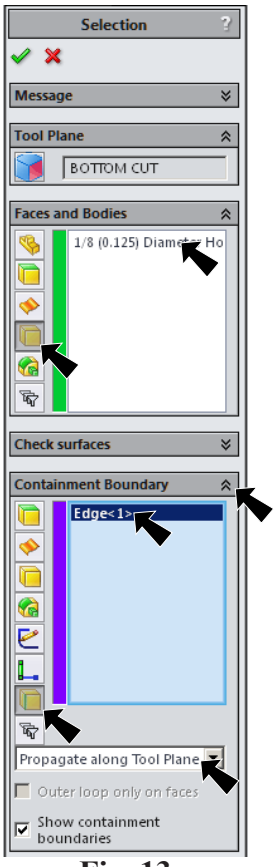


Fig. 13

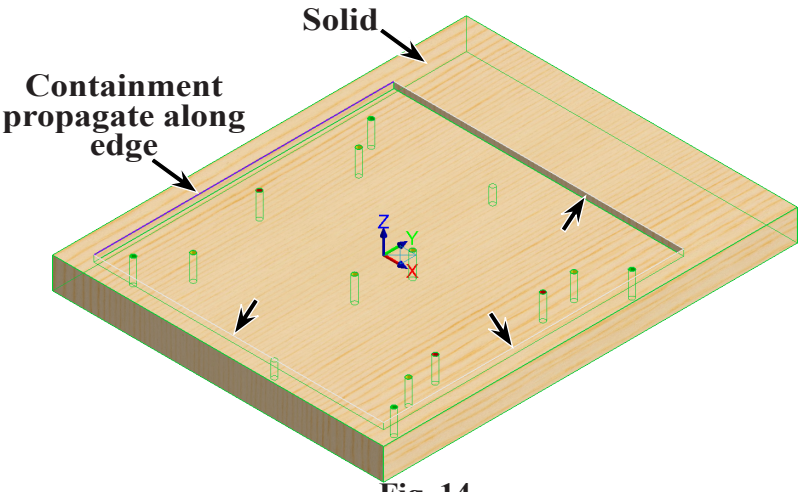


Fig. 14

Step 4. Select **Toolpath Type** from the tree control and confirm:
Dynamic OptiRough toolpath
Drive surfaces
Containment boundary
Fig. 15.

Step 5. Select **Tool** from the tree control and:

Click **Select library tool** button
Fig. 16.

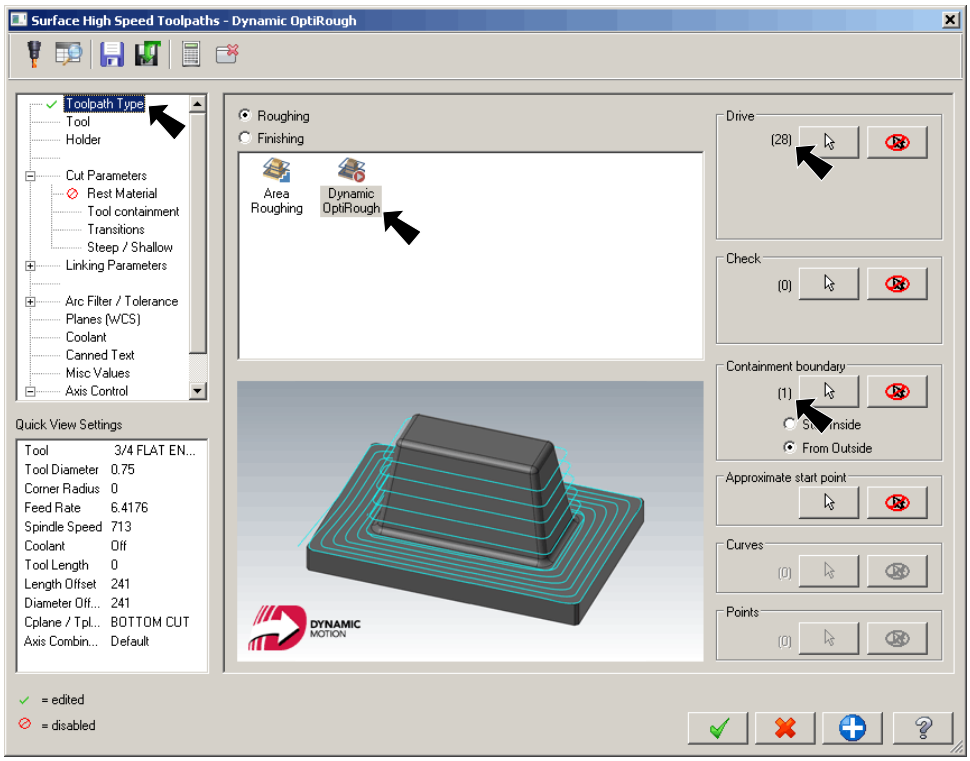


Fig. 15

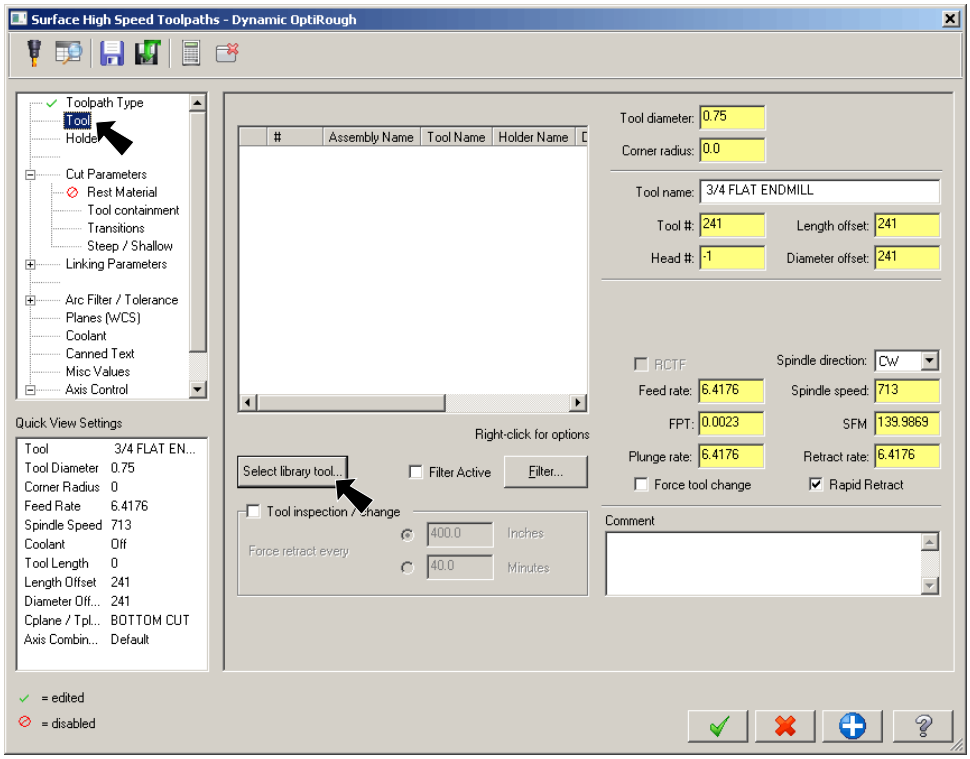


Fig. 16

Step 6. Click **Filter** button **Fig. 17**.

Step 7. Click **None** button under **Tool Types** **Fig. 18**.

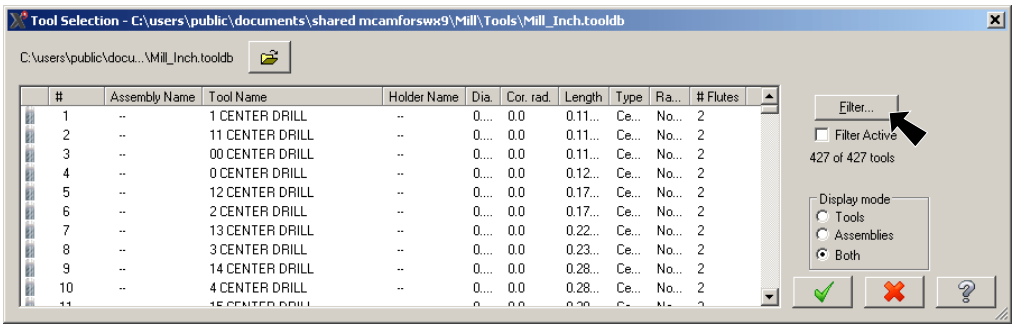


Fig. 17

Step 8. Click **Endmill1 Flat** button (first button top row) and click OK **Fig. 18**.

Step 9. Click **285 1/4 FLAT ENDMILL** and click OK, **Fig. 19**.

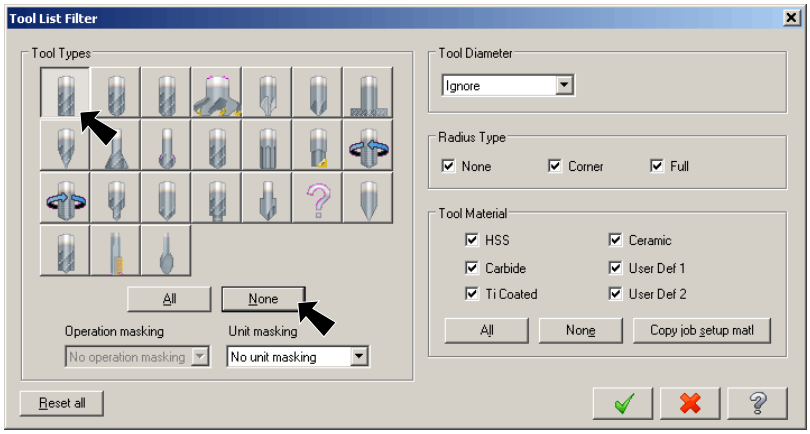


Fig. 18

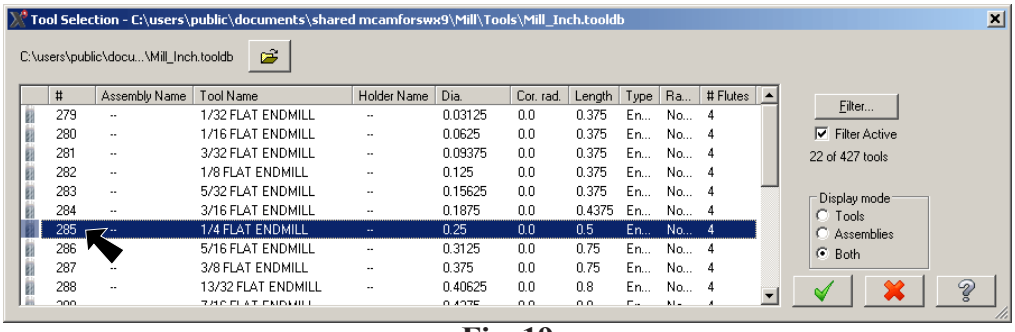


Fig. 19

Step 10. Back in **Tool** page set:

Feed rate 40

Plunge rate 20
Fig. 20.

Step 11. Select **Cut Parameters** from tree control and set:

Stepdown 60

Stock to leave on Walls and Floors 0
Fig. 21.

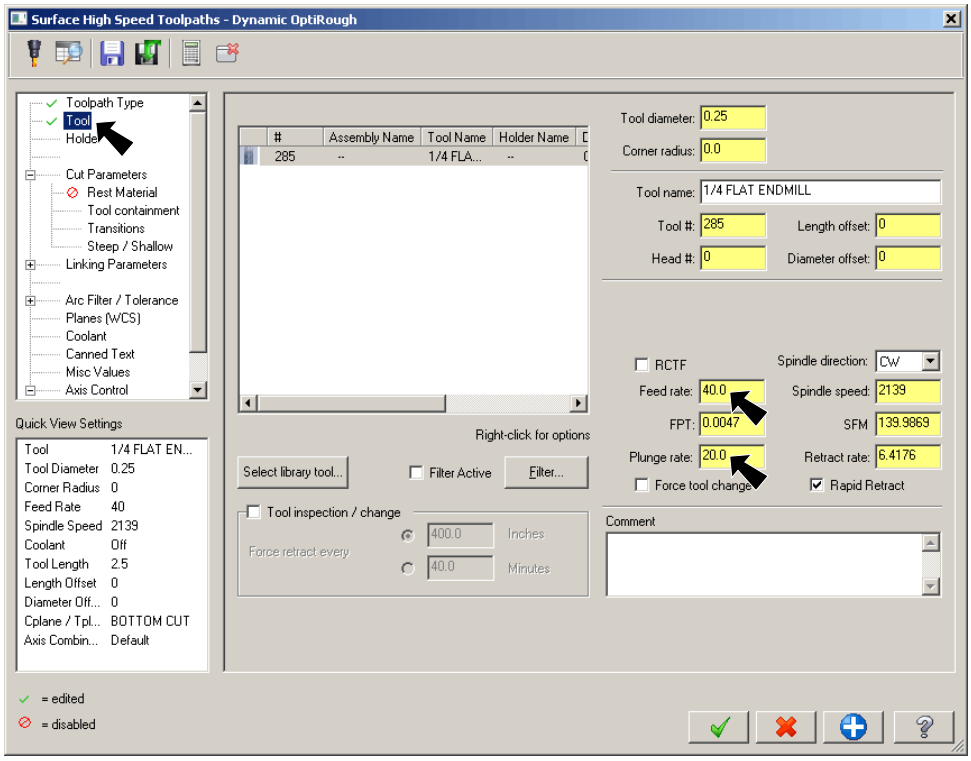


Fig. 20

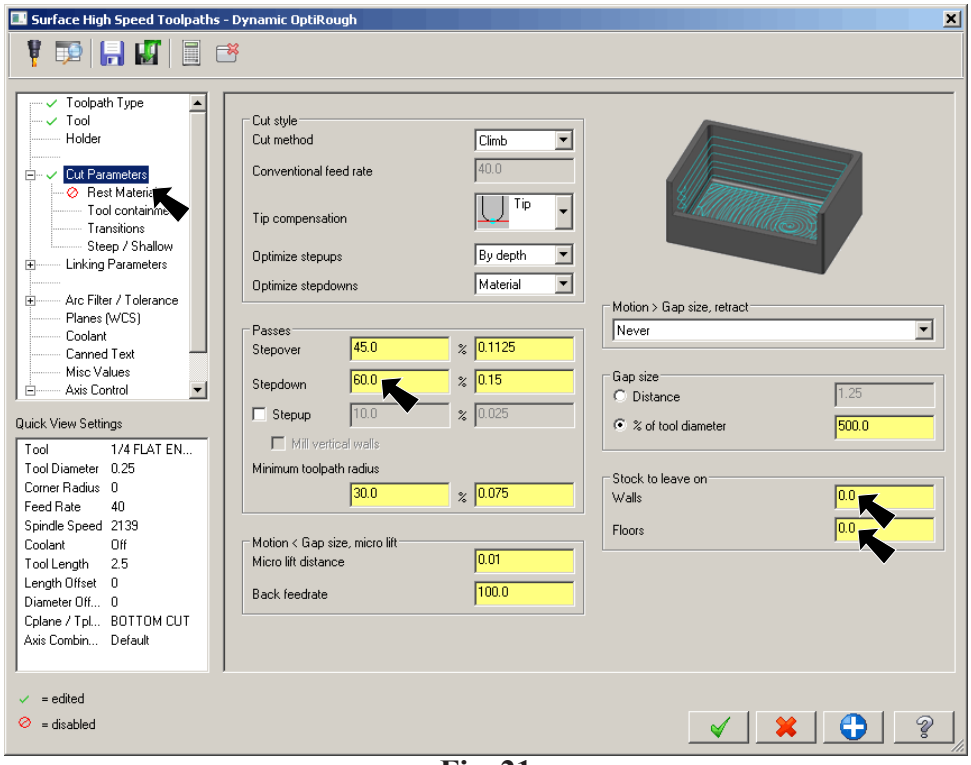


Fig. 21

Step 12. Select **Transitions** from tree control and set:

Plunge angle 10
Fig. 22.

Step 13. Select **Linking Parameters** from tree control and set:

Clearance plane 1

All leads 0
Fig. 23.

Step 14. Click OK in Dynamic OptiRough dialog box.

Step 15. Allow Mastercam to calculate toolpath.

Step 16. Save. Use **Ctrl-S**.

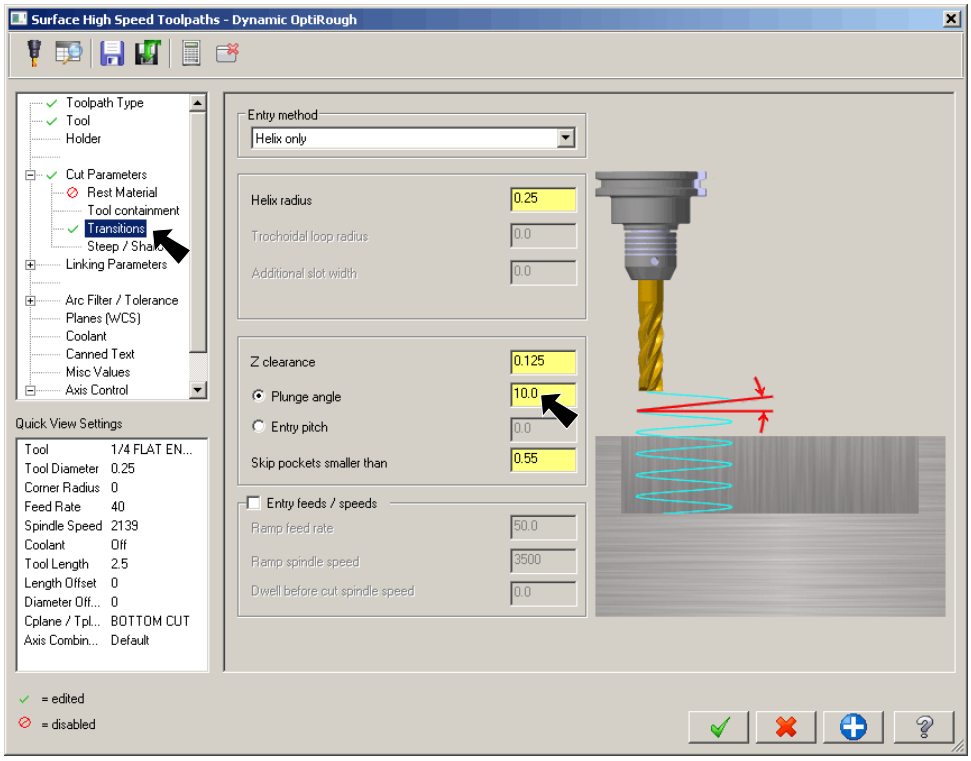


Fig. 22

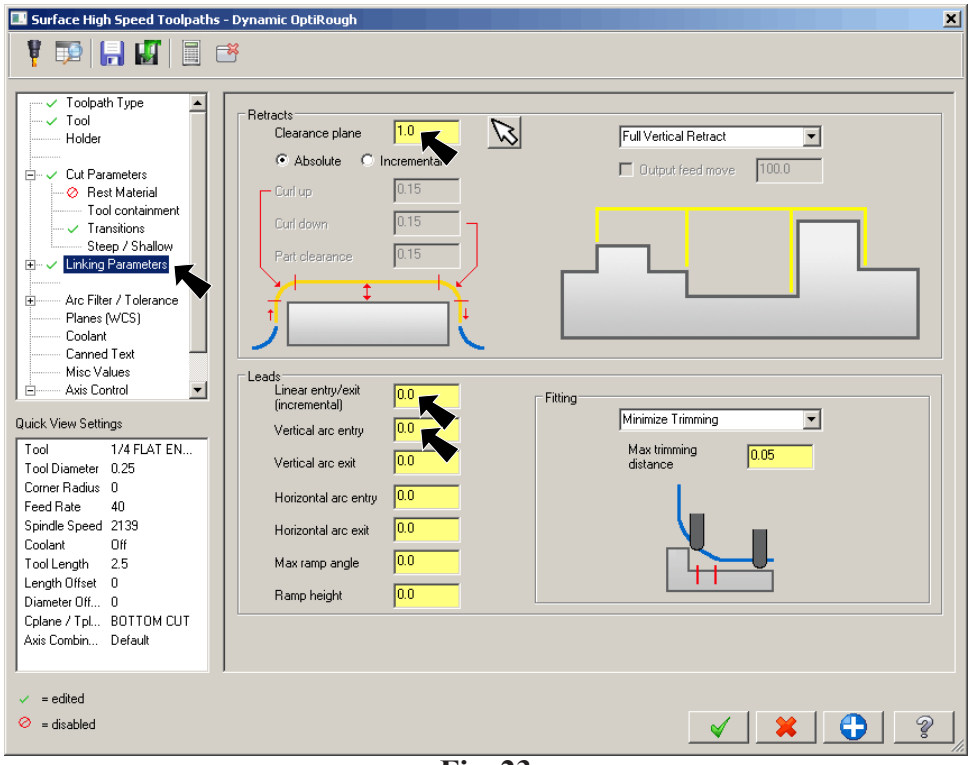


Fig. 23

F. Verify OptiRough Toolpath.

Step 1. In the Toolpath Manager use **Toggle Toolpaths** to hide toolpath, **Fig. 15**.

Step 2. Click **Verify** in the Toolpath Manager, **Fig. 24**.

Step 3. Click **Play** **(R)** in VCR bar along bottom of window.

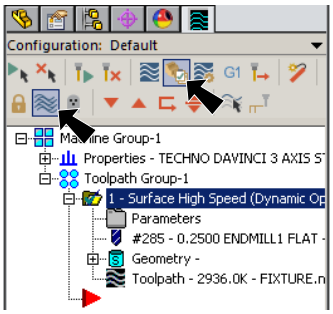


Fig. 24

Step 4. Note **Total Time** to run program under Toolpath Info in the Move List panel (**roughly 13.5 minutes**), **Fig. 25**.

Step 5. Switch back to Mastercam (**Alt-Tab**).

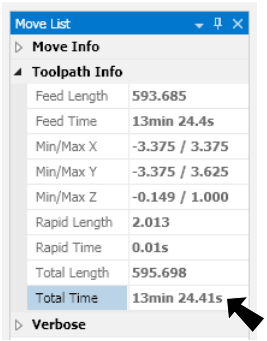


Fig. 25

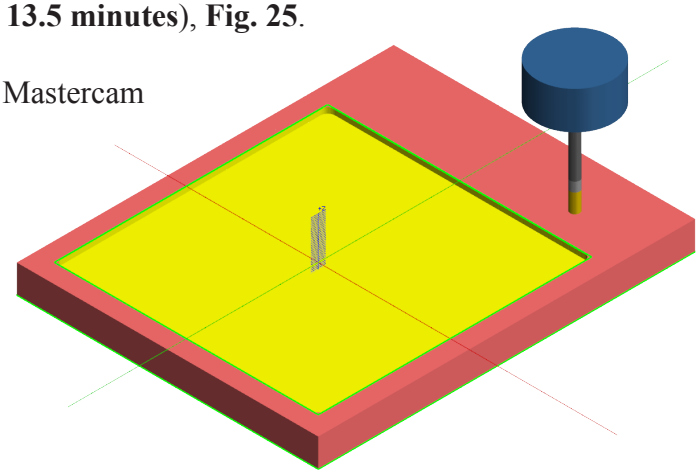


Fig. 26

G. Switch to TOP CUT WCS.

Step 1. Click **Plane Manager** on the Mastercam toolbar.

Step 2. Click **TOP CUT** in the Plane Manager dialog, **Fig. 27**.

Step 3. Click **Set All** button , **Fig. 27**.

Step 4. Click OK .

Step 5. Click **Isometric** on the Standard Views toolbar. (**Ctrl-7**)

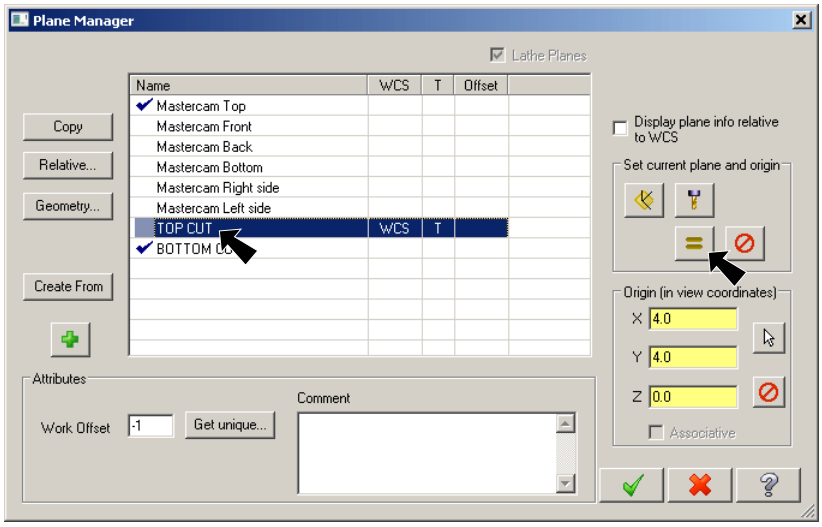
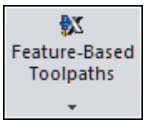


Fig. 27

H. FBM Drill Toolpath.

Step 1. Click **Feature-BasedToolpaths** 

on the Mastercam toolbar and **FBM Drill** from the menu.

Step 2. Select **Hole Detection** from the tree control and set:

Check **Limit search to plane**

and select **TOP CUT** **Fig. 28**.

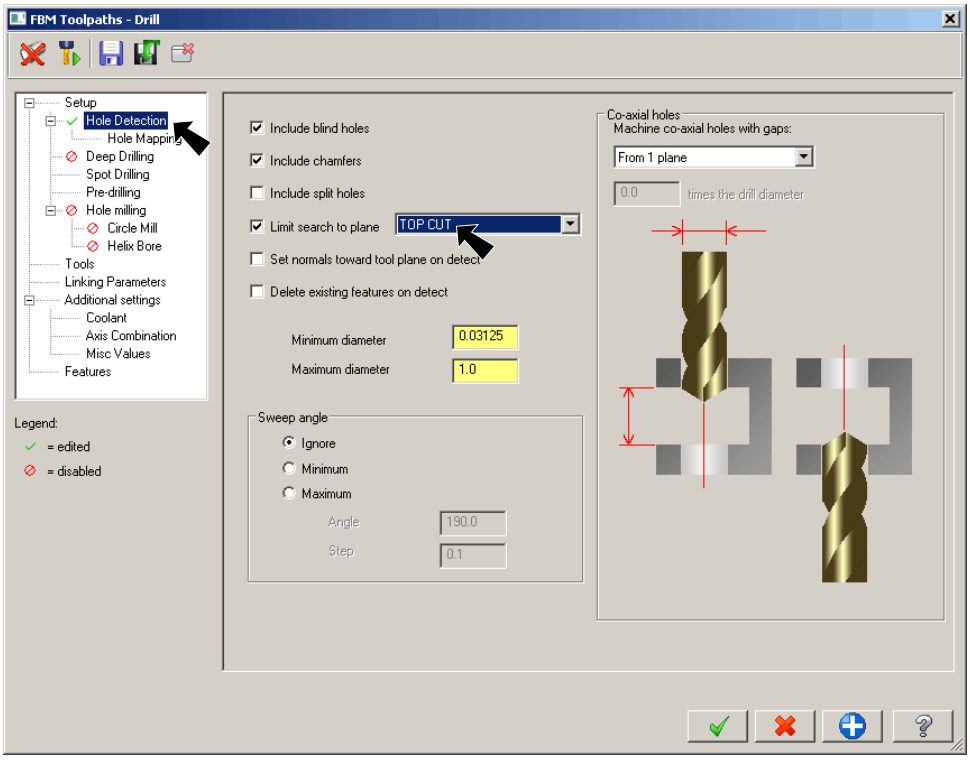


Fig. 28

Step 3. Select **Spot Drilling** from the tree control set:

Uncheck **Spot Drilling** check box **Fig. 29**.

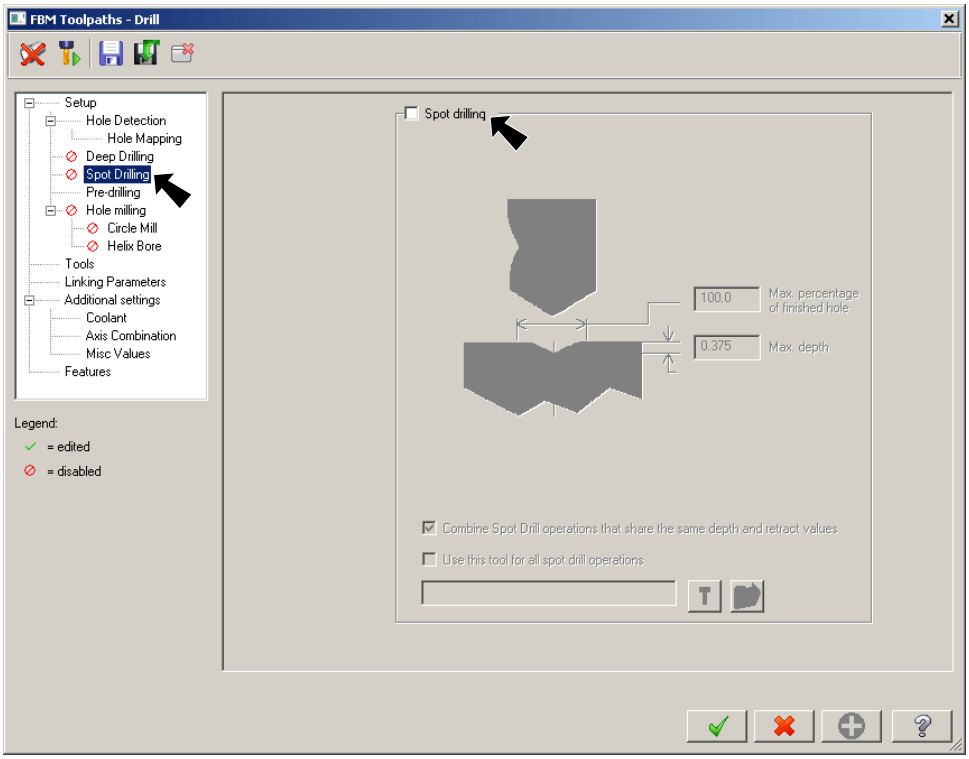


Fig. 29

Step 4. Select **Pre-drilling** from the tree control set:

Uncheck **Pre-drilling** check box
Fig. 30.

Step 5. Click **Detect** button at the top of the dialog box to detect the holes **Fig. 30**.

Step 6. Confirm:
15 holes
2 holes .375 depth
the others **.6 depth**.

Click OK
Fig. 31.

Step 7. Save. Use **Ctrl-S**.

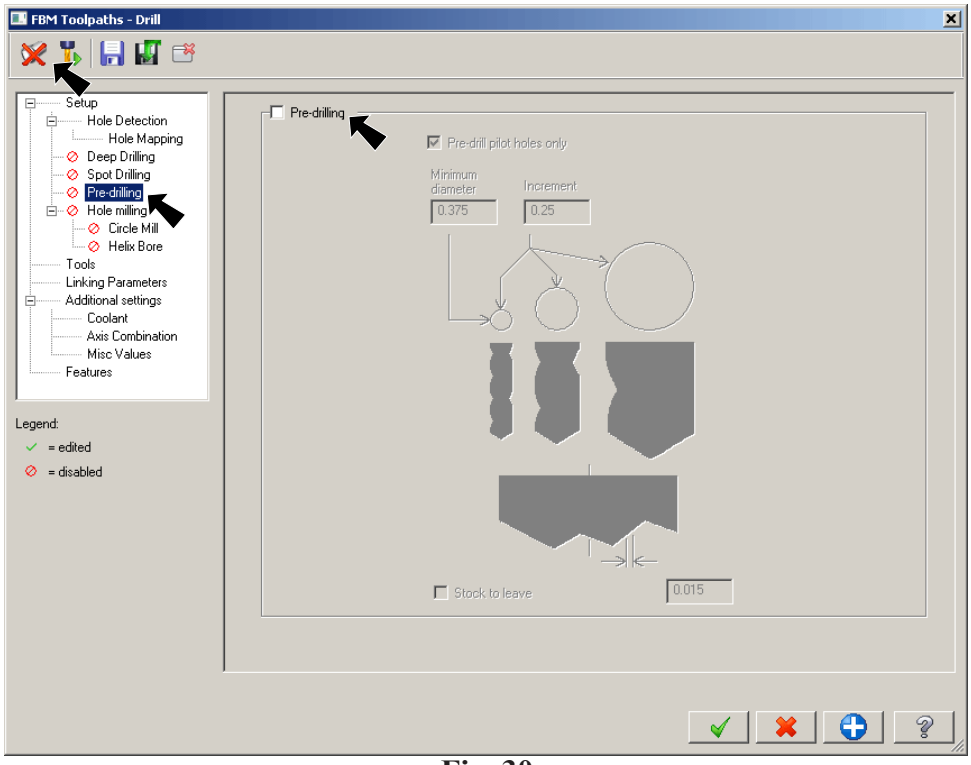


Fig. 30

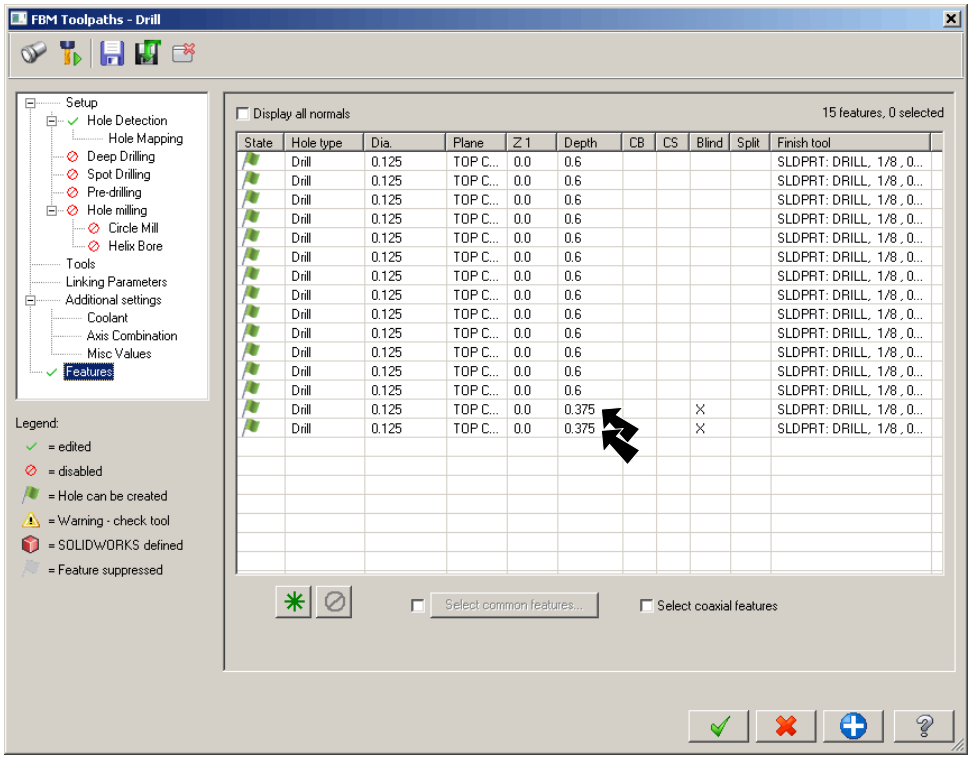


Fig. 31

I. Backplot.

Step 1. Click **Wireframe** on the View toolbar.

Step 2. In Toolpath Manager click **FBM Drill** to select toolpath group, **Fig. 32**.

Step 3. Confirm all Drill toolpaths use the **TOP CUT WCS**, **Fig. 34**.

Step 4. Click **Backplot** in Toolpath Manager, **Fig. 32**.

Step 5. Turn on (button depressed) **Display tool** and **Display rapid moves**, **Fig. 33**.

Step 6. Click **Play** in the Backplot VCR bar.

Step 7. Click OK to close Backplot.

Step 8. Click **Shaded With Edges** on the View toolbar.

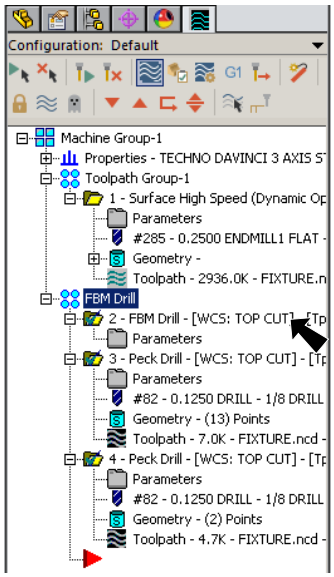


Fig. 32

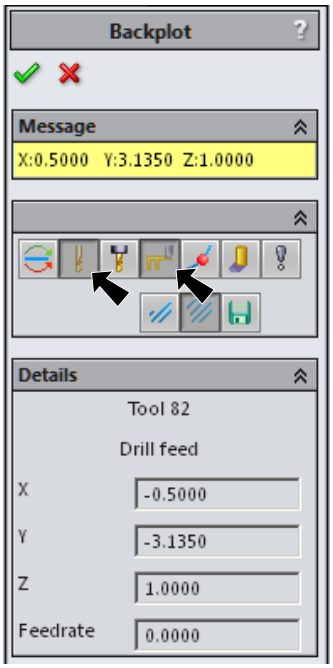


Fig. 33

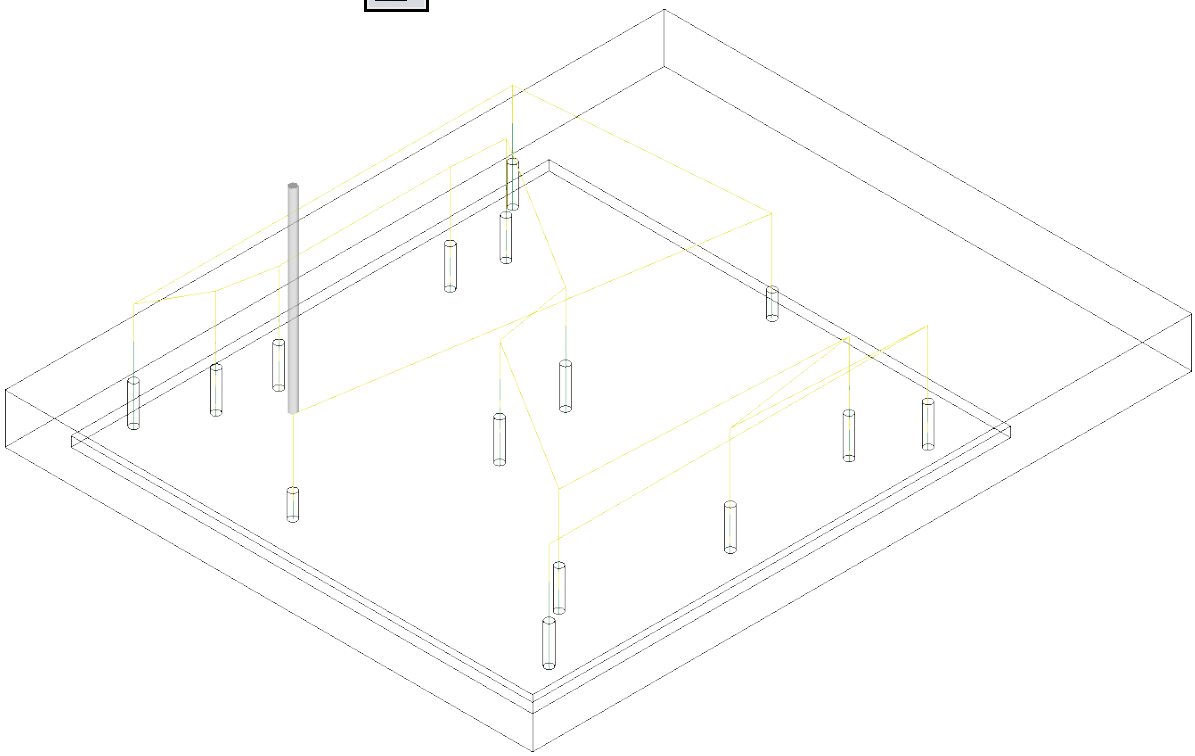


Fig. 34