

Toolpaths for Boat

OptiRough and Finish Waterline

A. Machine Type and Stock Setup.

Step 1. If necessary, open your BOAT ROUND BOTTOM .

Step 2. If necessary, display Toolpaths Manager. On the View tab **VIEW** click **Toolpaths** (Alt-O).

Step 3. If Machine Group is **not** displayed in the Toolpaths Manager,

Fig. 1, on the Machine tab **MACHINE**, click Machine Default from the menu.

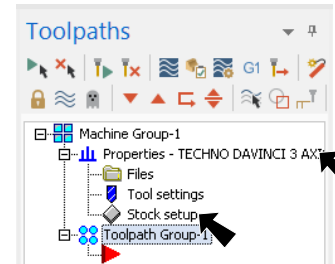
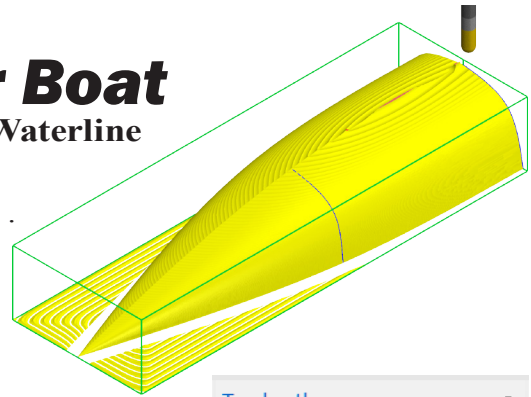


Fig. 1

Step 4. Expand **Properties** (click +) in the Toolpaths Manager, **Fig. 1**.

Step 5. Click **Stock Setup** in the Toolpaths Manager, **Fig. 1**.

Step 6. Click **left front top corner of the stock** to move the origin, **Fig. 2**. After you click corner the arrow will point to corner.

Step 7. Click **All Entities** box button in the Stock Setup dialog box, **Fig. 2**.

Step 8. Click OK  in the Machine Group Properties, **Fig. 2**.

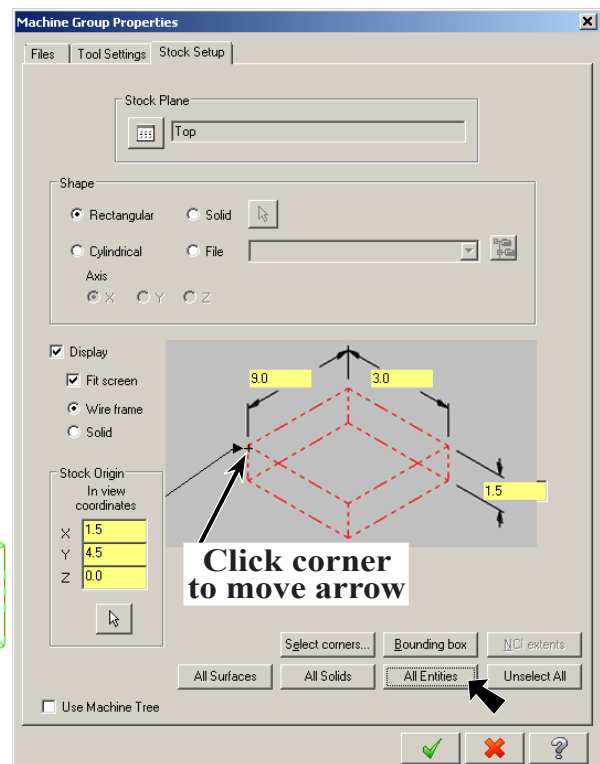


Fig. 2

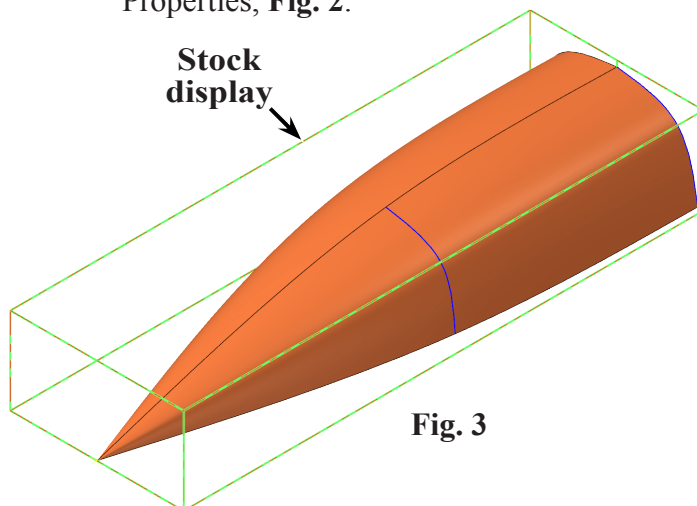


Fig. 3

B. Top CPlane.

Step 1. Click **CPLANE** in Status bar at bottom of the graphics window and click **Top** from the menu, **Fig 4**. This also changes the TPlane.

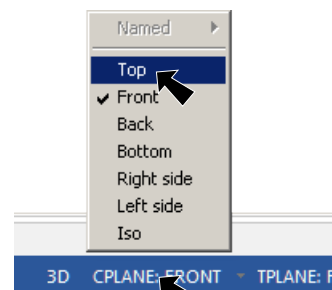


Fig. 4

C. OptiRough Toolpath.

Step 1. On the Toolpaths tab **TOOLPATHS** click **OptiRough**

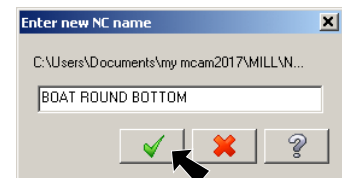
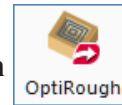


Fig. 5

Step 2. Click OK in the NC name dialog, Fig. 5.

Step 3. Click the **two surfaces** to select as Drive Surfaces and click **End Selection** (ENTER), Fig 6.

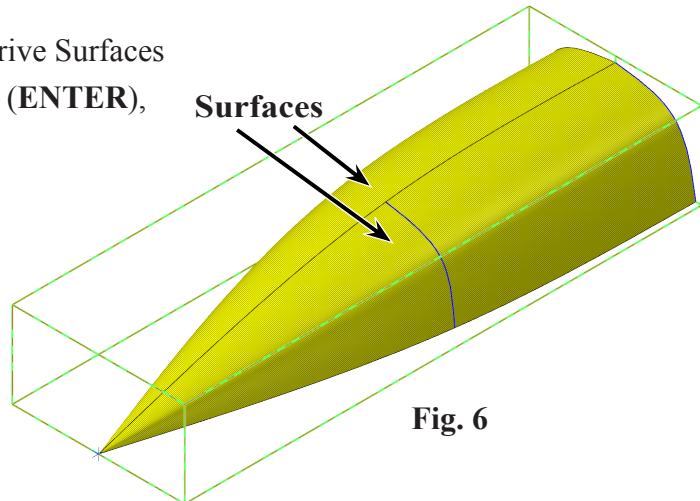


Fig. 6

Step 4. Click **Containment Select** button in the Toolpath/surface selection dialog box, Fig. 7.

Step 5. Select **C-plane** in the Chaining dialog box, Fig. 8.

Step 6. Click **Chain** button in the Chaining dialog box, Fig. 8.

Step 7. Click **a line on top of bounding box** to chain the top rectangle, Fig. 9. Click the OK button in the Chaining dialog box.

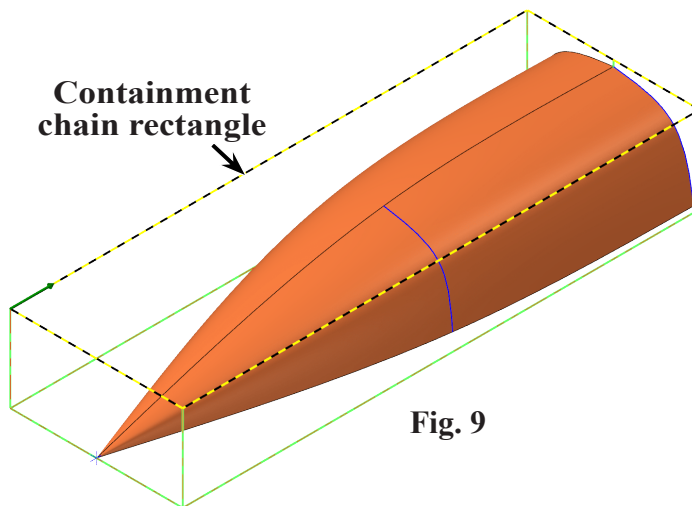


Fig. 9

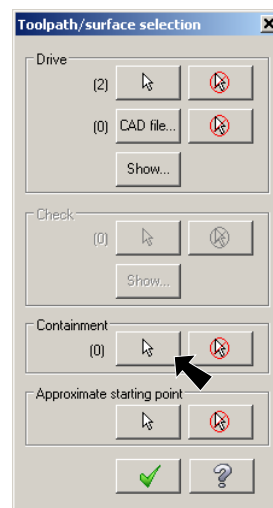


Fig. 7

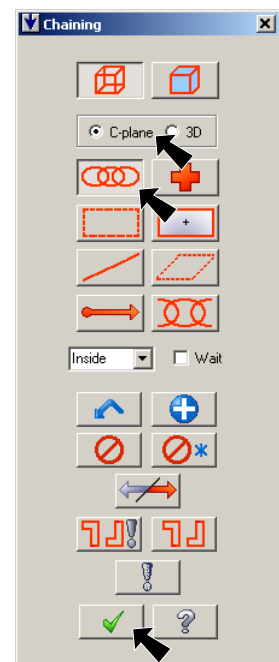


Fig. 8

Step 8. Click OK in the Toolpath/surface selection dialog box, Fig. 10.

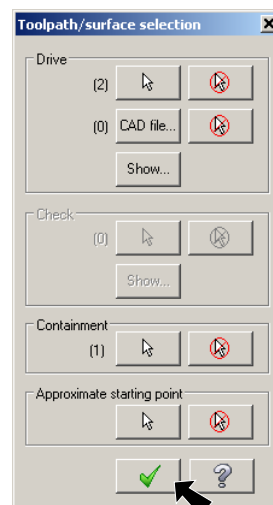


Fig. 10

Step 9. Select
Toolpath Type
from the tree
control and
confirm:

**OptiRough
toolpath**

**Drive surfaces
and
Containment**

**Tplane Top
Fig. 11.**

Step 10. Select **Tool**
from the tree
control and:

click **Select
library tool**
button, **Fig. 12.**

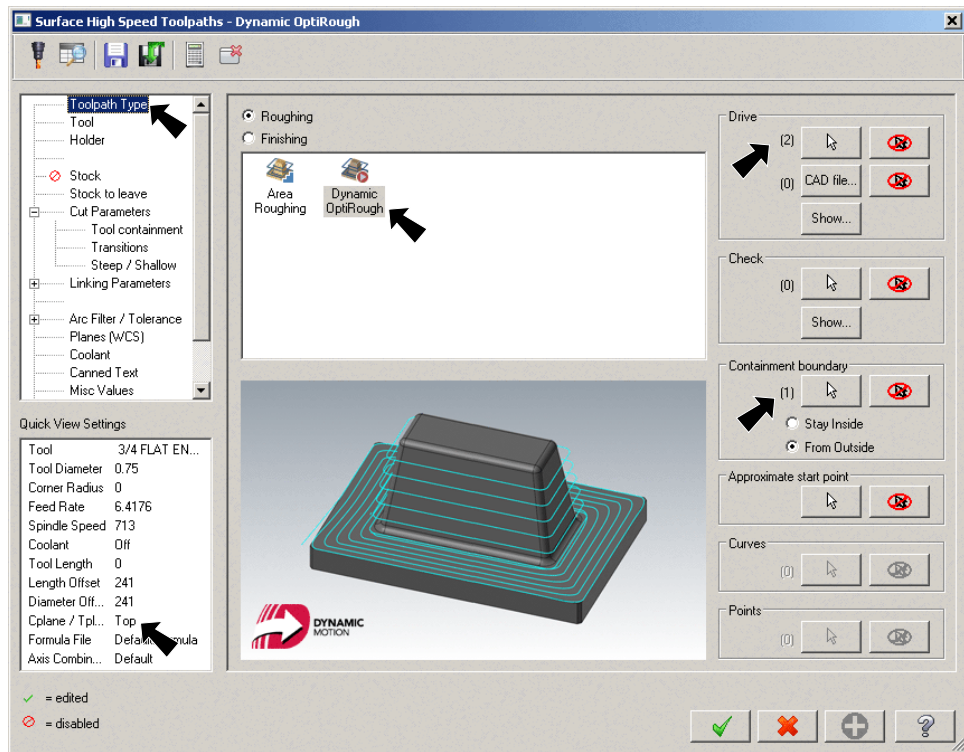


Fig. 11

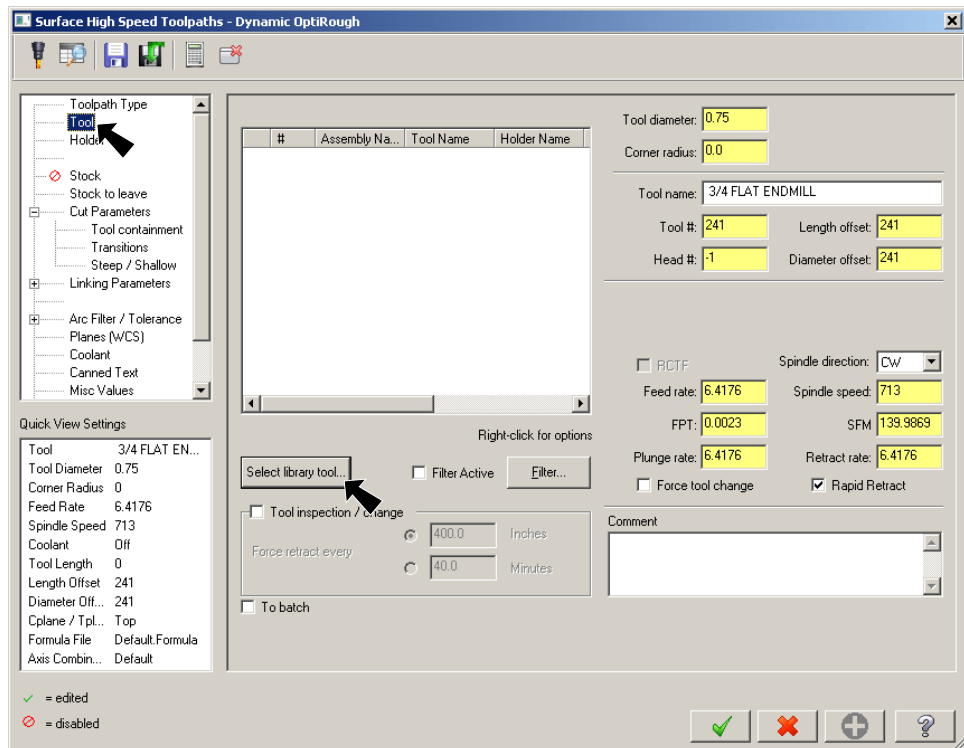


Fig. 12

Step 11. Click the **Filter** button,
Fig. 13.

Step 12. Click **None**
button
under Tool
Types,
Fig. 14.

Step 13. Click **Endmill2 Sphere**
button second button top
row), **Fig. 14** and click OK.

Step 14. Click **307 1/4 Ball End-**
mill, Fig. 15 and click OK.

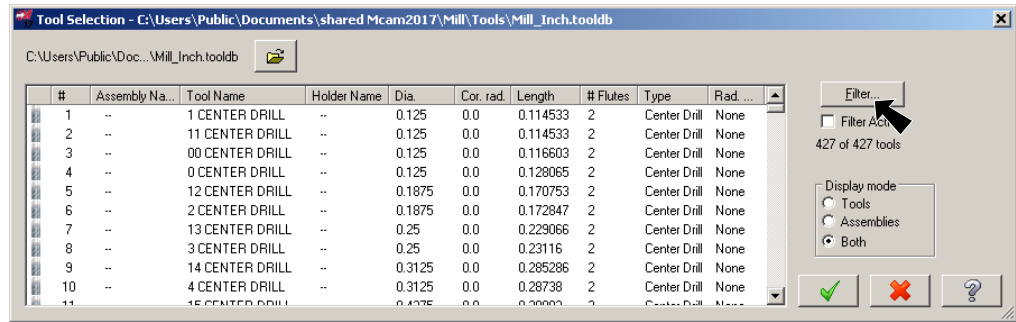


Fig. 13

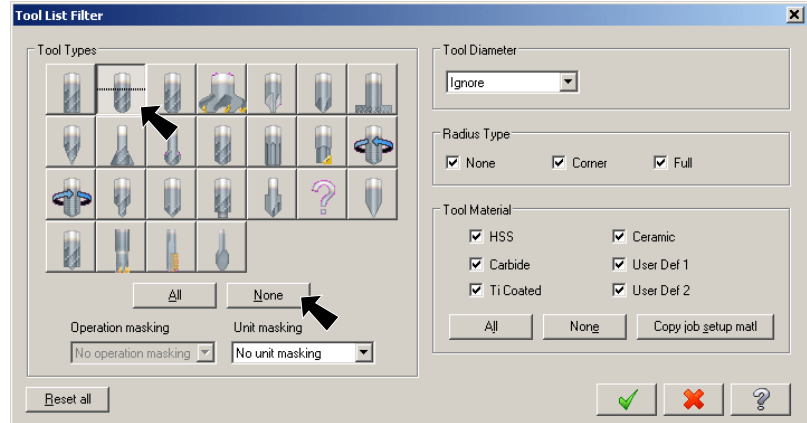


Fig. 14

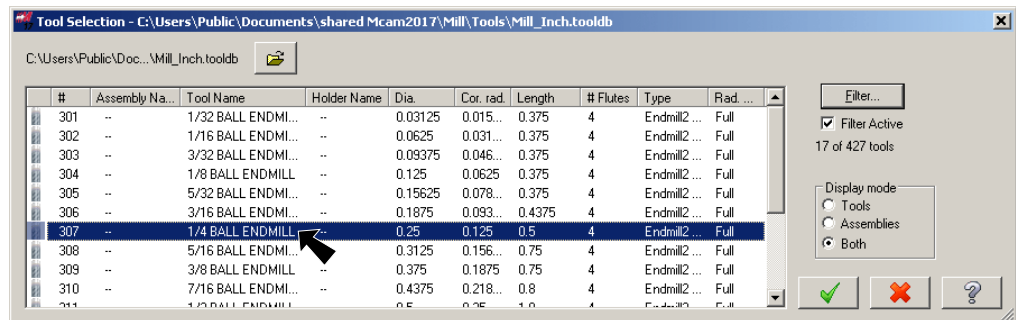


Fig. 15

Step 15. Back in Tool page set:

Feed rate 60
Plunge rate 30
Fig. 16.

Step 16. Select **Cut Parameters** from the tree control and set:

Cutting method Climb

Stepover .12

Stepdown .2
Fig. 17.

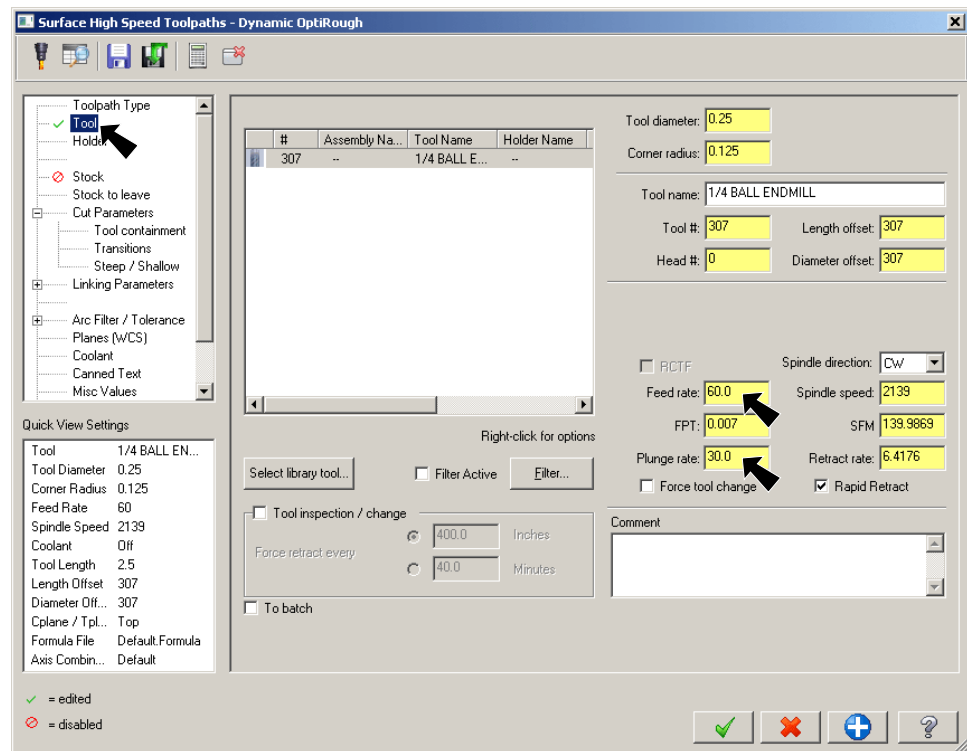


Fig. 16

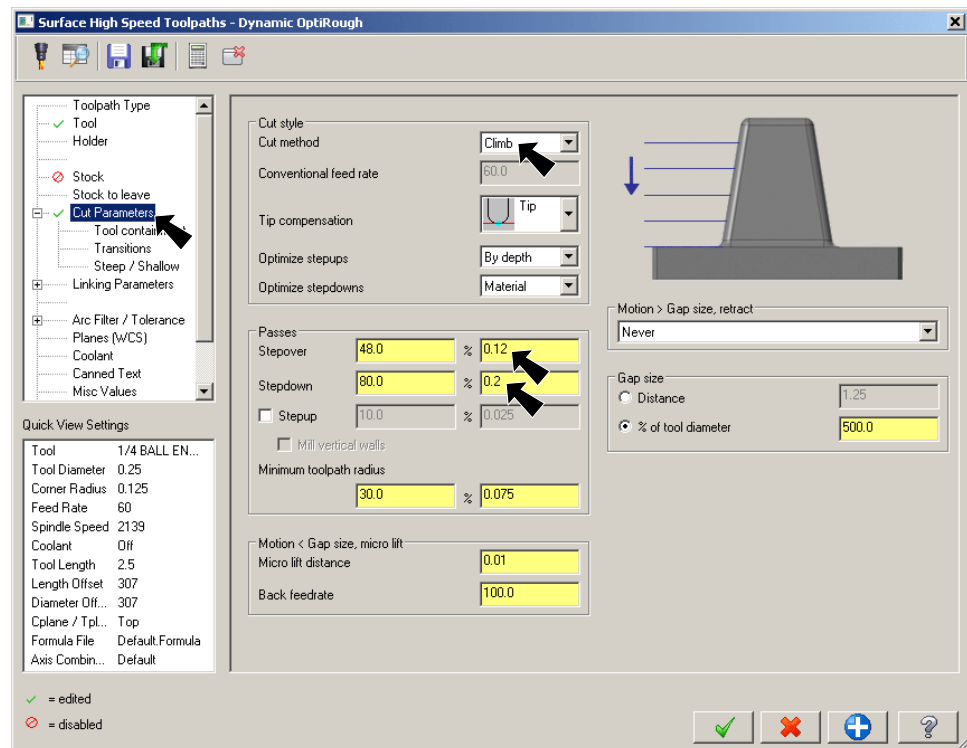


Fig. 17

Step 18. Select **Linking Parameters** from the tree control and set:

Clearance plane .1

All Leads 0
Fig. 18.

Step 19. Select **Arc Filter/Tolerance** from tree control and set:

Total tolerance .003

check **Line/Arc Filtering Settings**

uncheck **Create arcs in XY**

check **One way filtering**

Cut tolerance 25%
Fig. 19.

Step 20. Click OK  in Opti Rough dialog box.

Step 21. Allow Mastercam to calculate the toolpath.

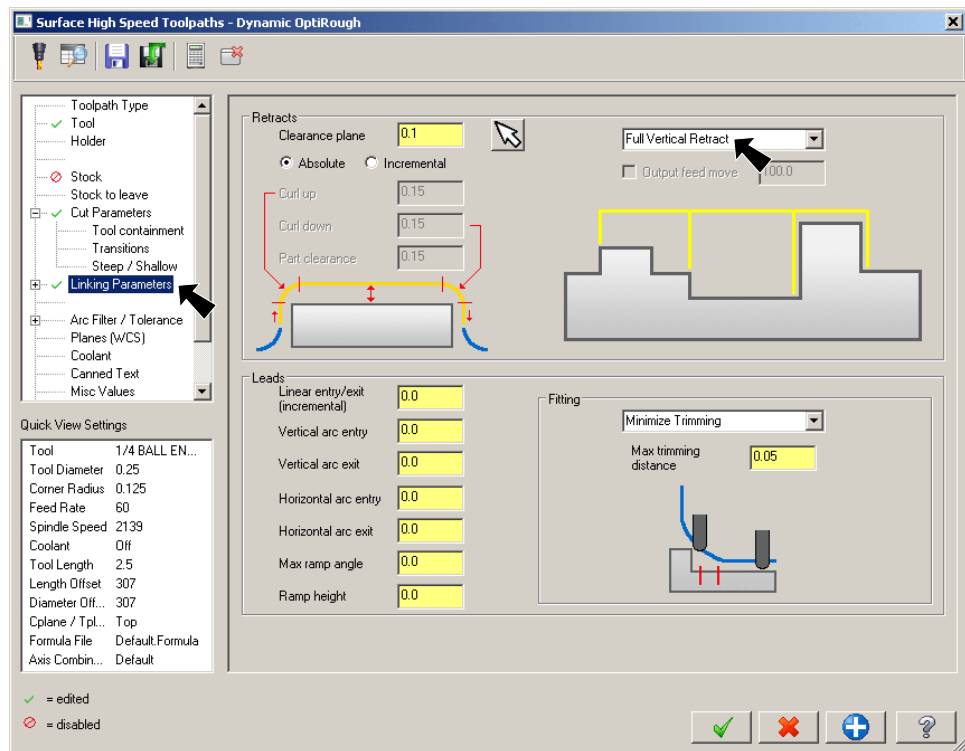


Fig. 18

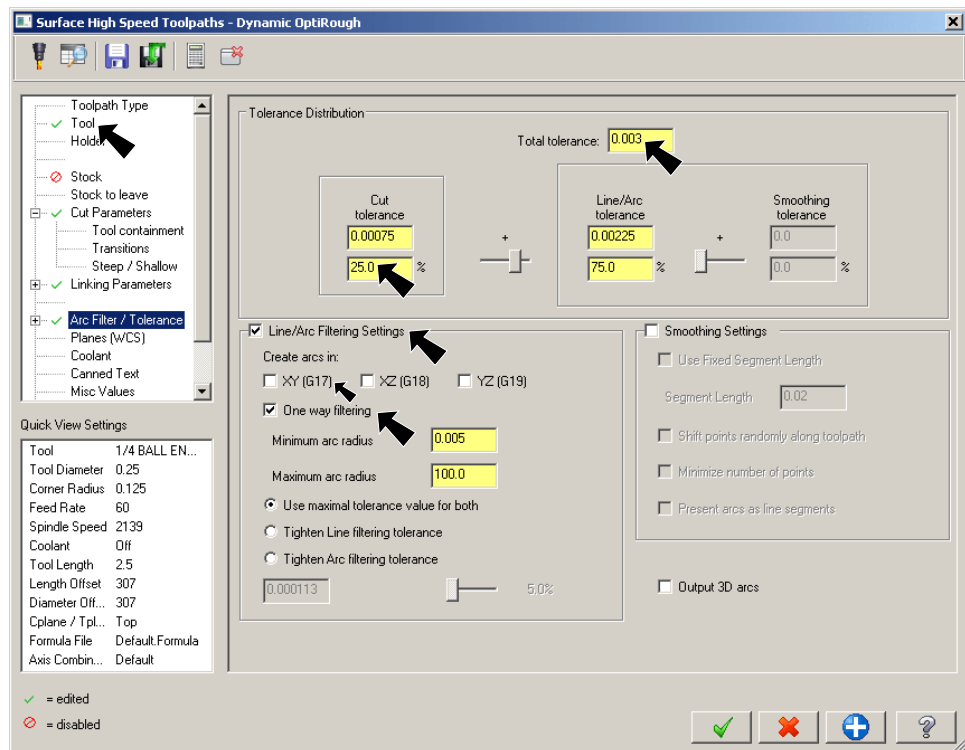


Fig. 19

D. Verify OptiRough Toolpath.

Step 1. In the Toolpaths Manager, click the toolpath to select and click **Verify** , Fig. 20.

Step 2. Click **Play**  (R) in VCR bar, Fig. 21.

Step 3. Note **Total Time** to run program (26min 4.19s), Fig. 22.

Step 4. Switch back to Mastercam (Alt-Tab).

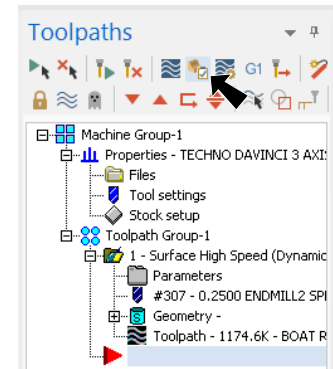


Fig. 20



Fig. 21

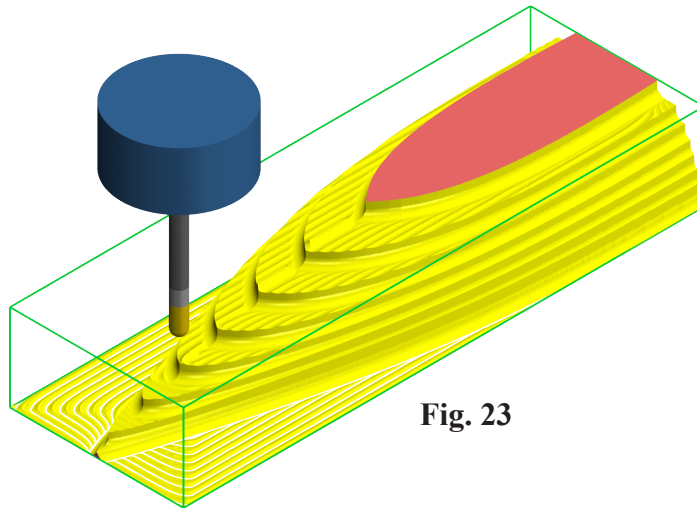
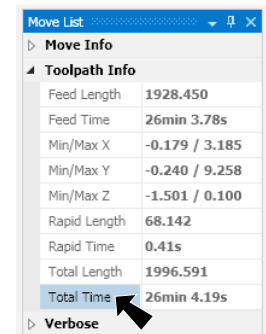


Fig. 23



Move Info	
Toolpath Info	
Feed Length	1928.450
Feed Time	26min 3.78s
Min/Max X	-0.179 / 3.185
Min/Max Y	-0.240 / 9.258
Min/Max Z	-1.501 / 0.100
Rapid Length	68.142
Rapid Time	0.41s
Total Length	1996.591
Total Time	26min 4.19s
Verbose	

Fig. 22

E. Finish Waterline HST Toolpath.

Step 1. Use **Toggle toolpath display**  in Toolpaths Manager to turn off toolpath display (Alt-T), Fig. 24.

Step 2. Copy Roughing toolpath in the Toolpaths Manager. To copy, click to select toolpath, Fig. 26. Then, use **Ctrl-C** and **Ctrl-V**, Fig. 25.

Step 3. Expand **2 - Surface High Speed** and click **Parameters**, Fig. 25.

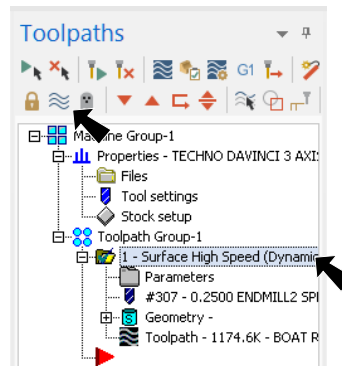


Fig. 24

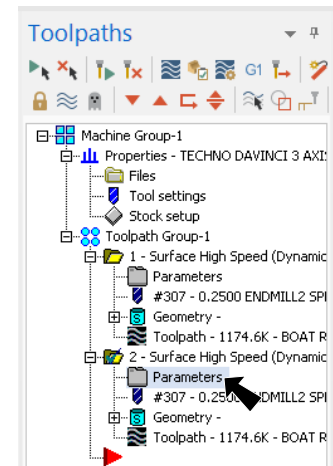


Fig. 25

Step 4. Select
Toolpath Type
from the tree
control and
select:

Finishing

Waterline

Fig. 26.

Step 5. Select **Tool**
from the tree
control and set:
Feed rate 80

Plunge rate 40
Fig. 27.

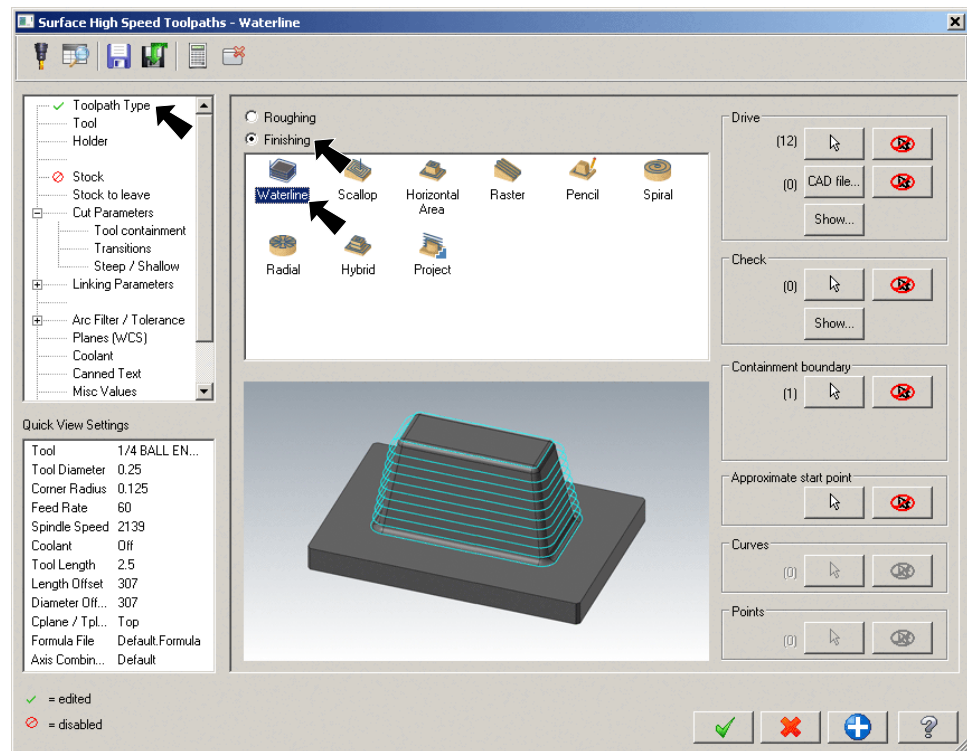


Fig. 26

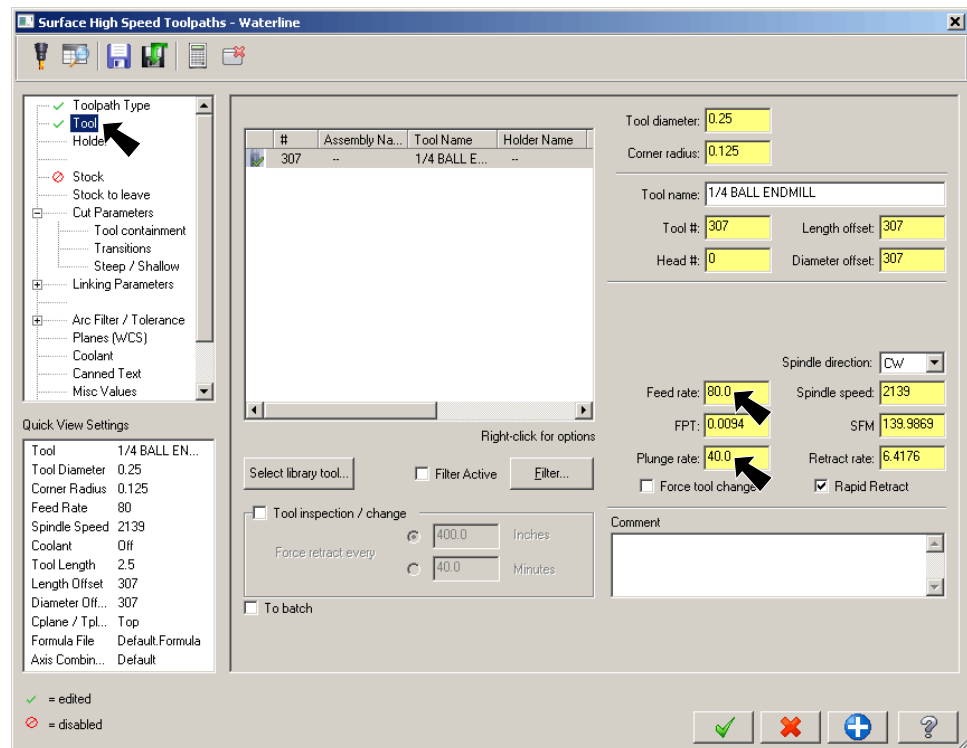


Fig. 27

Step 6. Select **Stock to leave** from the tree control and select:

Drive walls and floors 0
Fig. 28.

Step 7. Select **Cut Parameters** from the tree control and set:

Cutting method Climb

Stepdown .02
Fig. 29.

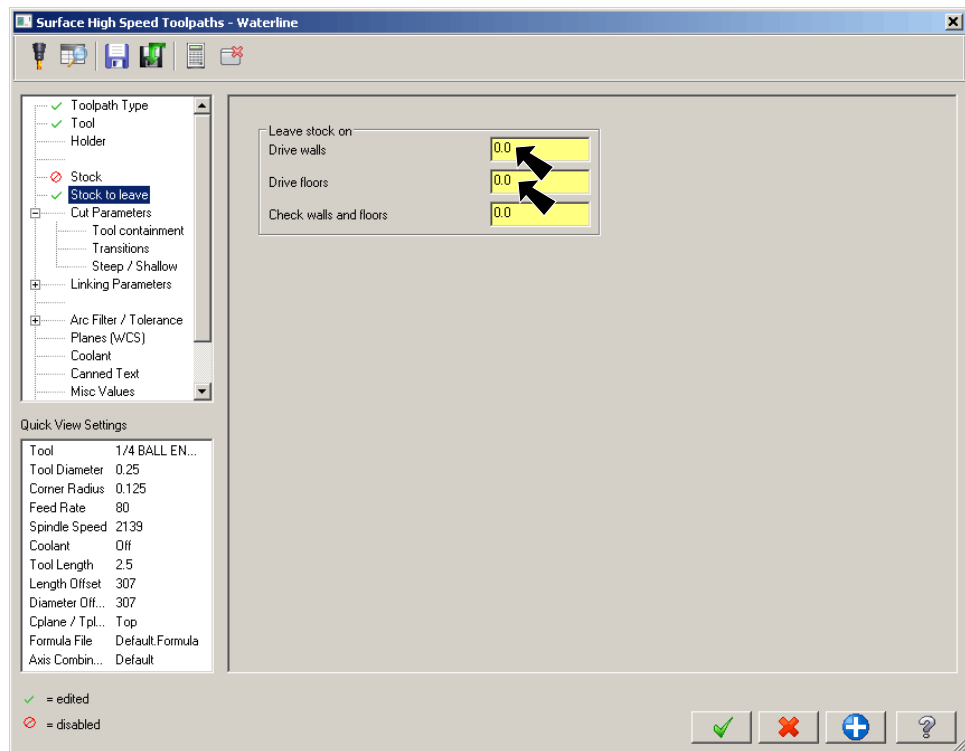


Fig. 28

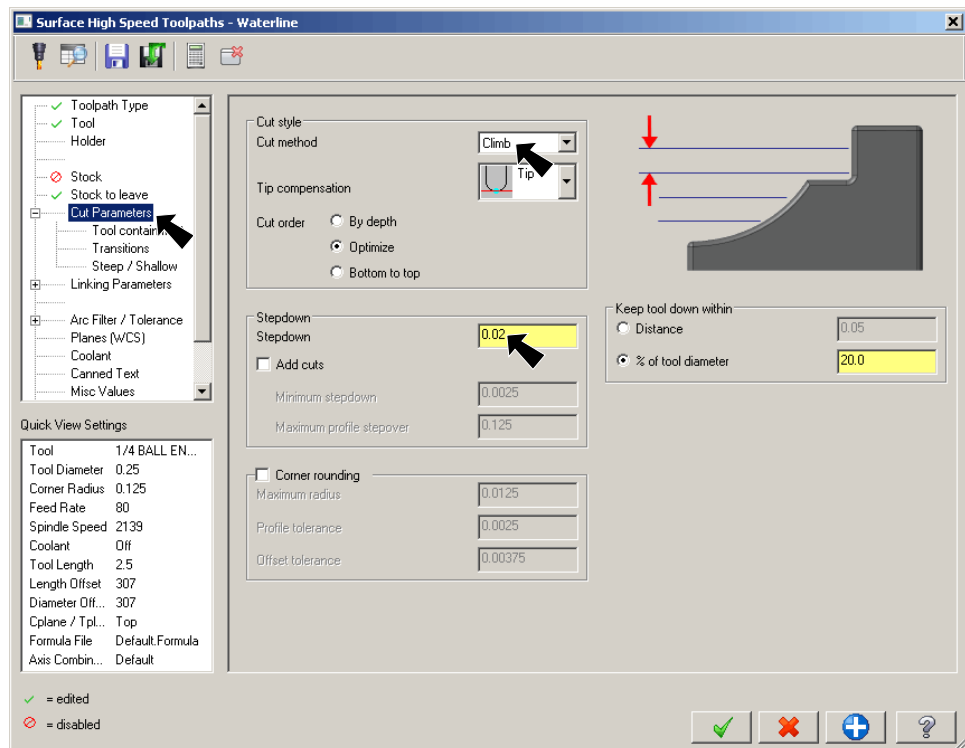


Fig. 29

Step 8. Select **Tool containment** from the tree control and set:

Outside
Fig. 30.

Step 9. Select **Linking Parameters** from the tree control and set:

Clearance plane .1

All Leads 0
Fig. 31.

Step 10. Click OK  in Waterline dialog box.

Step 11. Save  (Ctrl-S).

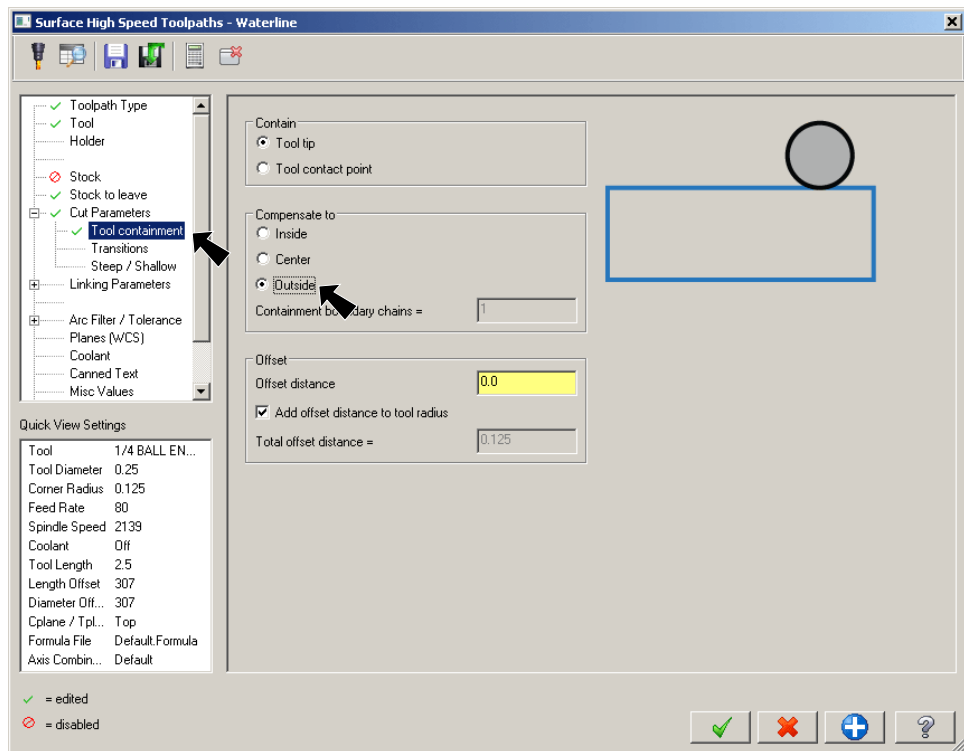


Fig. 30

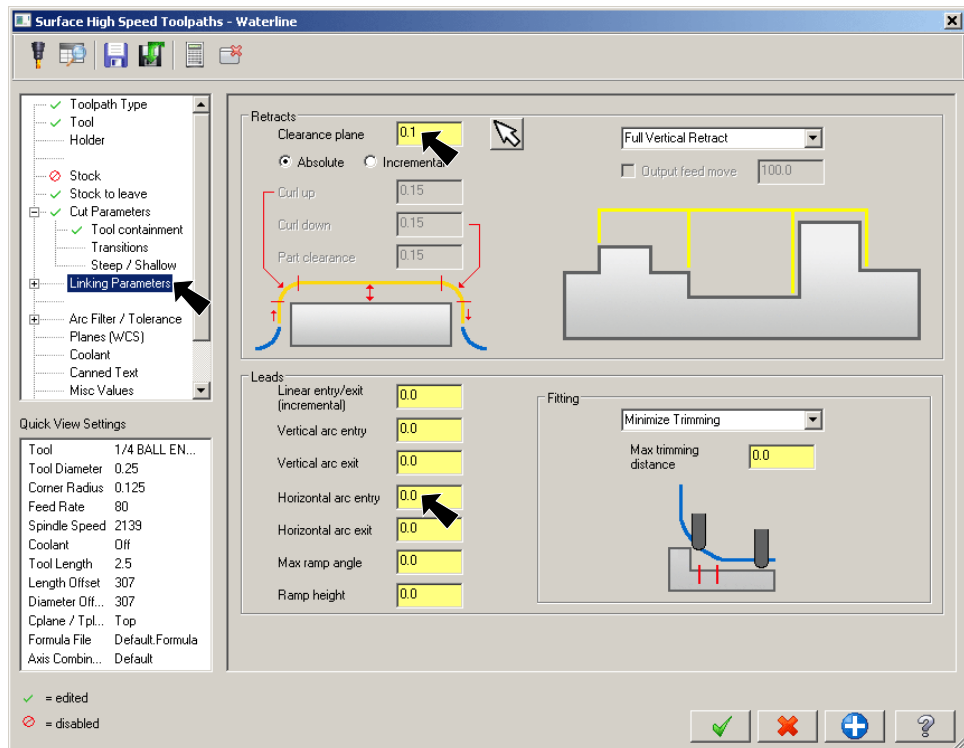


Fig. 31

F. Verify Toolpaths.

Step 1. In the Toolpaths Manager, click **Regenerate all selected operations**



, Fig. 32.

Step 2. Click the **Toolpath Group-1** to select **both** toolpaths, Fig. 33.

Step 3. Click **Verify**  in the Toolpaths Manager, Fig. 33.

Step 4. Click **Play**  (R) in VCR bar.

Step 5. Note **Total Time** to run program (**41min 30.09s**), Fig. 34.

Step 6. Switch back to Mastercam (**Alt-Tab**).

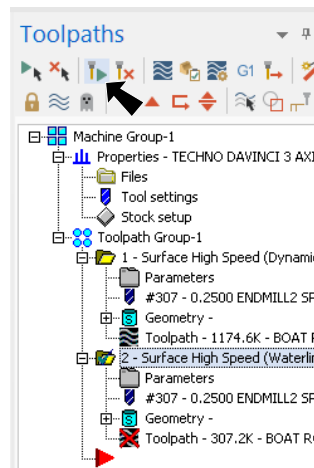


Fig. 32

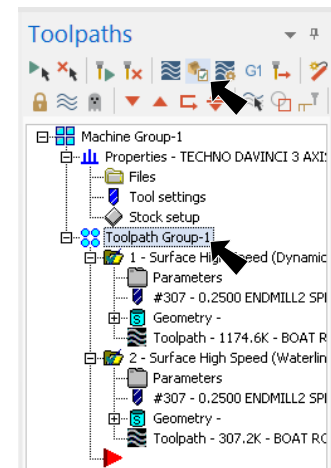


Fig. 33

Move List	
Move Info	
Toolpath Info	
Feed Length	3161.792
Feed Time	41min 28.79s
Min/Max X	-0.179 / 3.185
Min/Max Y	-0.240 / 9.258
Min/Max Z	-1.626 / 0.100
Rapid Length	215.882
Rapid Time	1.3s
Total Length	3377.674
Total Time	41min 30.09s
Verbose	

Fig. 34

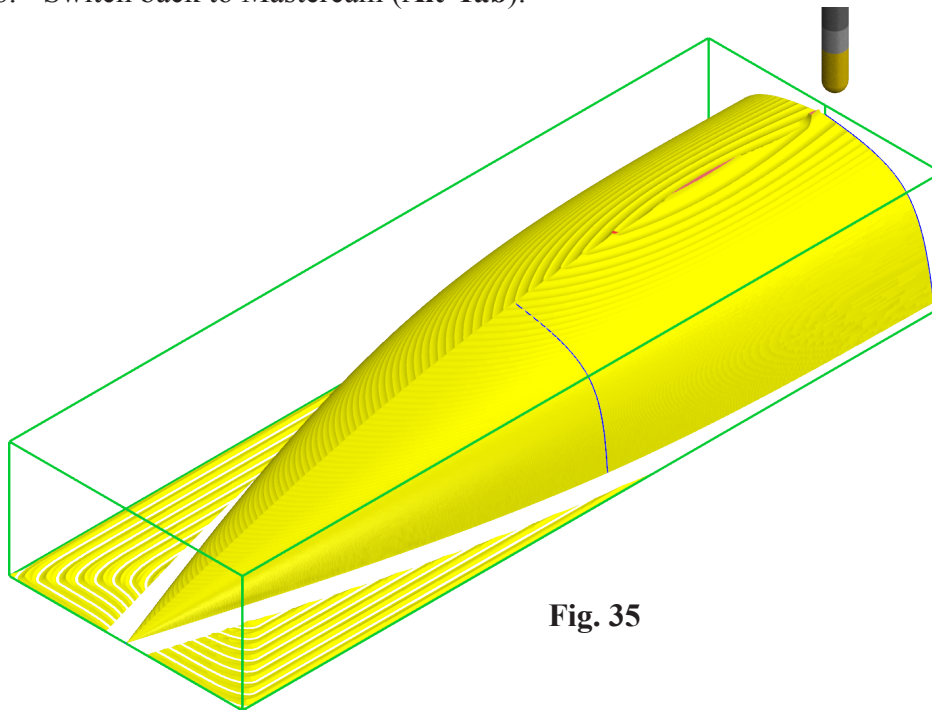


Fig. 35