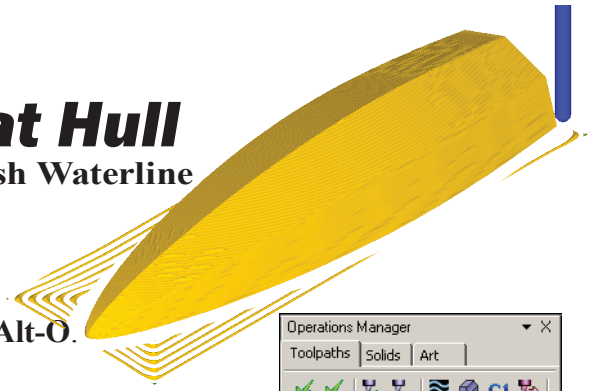
Toolpaths for Boat Hull

Rough OptiCore and Finish Waterline



A. Machine Type and Stock Setup.

Step 1. If necessary, open your file from Chapter 22.

Step 2. If necessary, display Operations Manager. Use **Alt-O**.

Step 3. If Machine Group is **not** displayed in the Operations Manager, **Fig. 1**, click Machine Type Menu > Mill > Default.

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

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

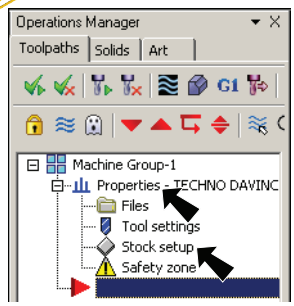


Fig. 1

Step 6. Click the **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**.

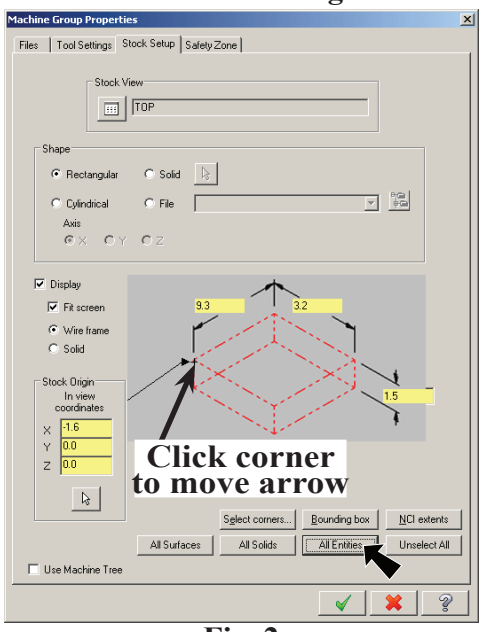


Fig. 2

B. Rough OptiCore HST Toolpath.

Step 1. Click Toolpaths Menu > Surface High Speed > **OptiCore**.

Step 2. Click OK in the NC name dialog, **Fig. 3**.

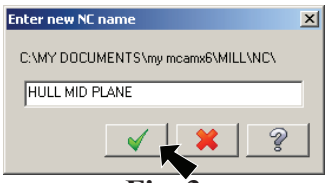


Fig. 3

Step 3. Click the **body solid** to select as Drive surfaces/solid, **Fig. 4**. The solid will highlight when selected.

Step 4. **Press ENTER** to accept solid selection as drives surfaces.

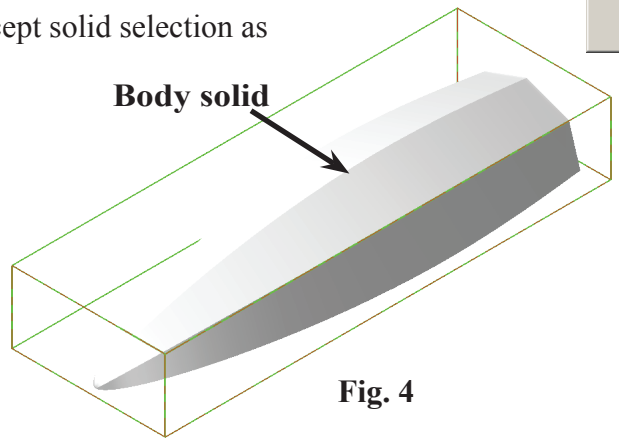


Fig. 4

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Step 5. Click **Containment Select** button in the Toolpath/surface selection dialog box, **Fig. 5**.

Step 6. Select **C-plane** in the Chaining dialog box, **Fig. 6**.

Step 7. Click **Chain** button in the Chaining dialog box, **Fig. 6**.

Step 8. Click a line of the top rectangle bounding box. The top rectangle should be selected, **Fig. 7**. Click the OK button in the Chaining dialog box.

Step 9. Click the OK button in the Toolpath/surface selection dialog box.

Step 10. Select **Tool** from the tree control and: click **Select library tool** button, **Fig. 8**.

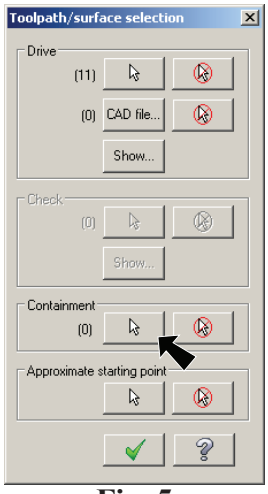

Fig. 5

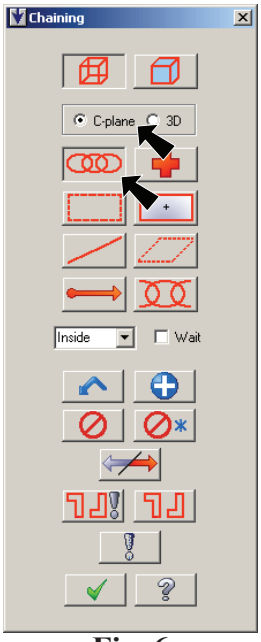

Fig. 6

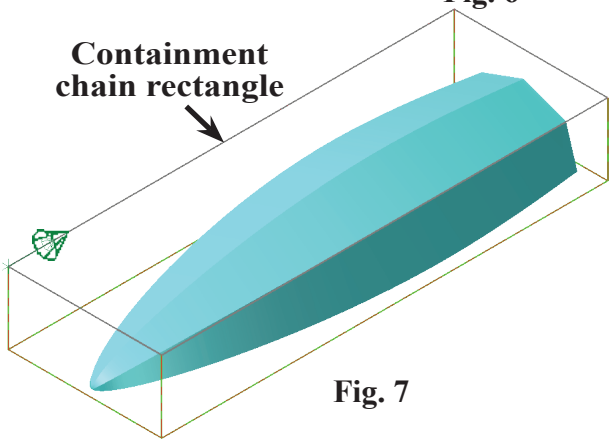

Fig. 7

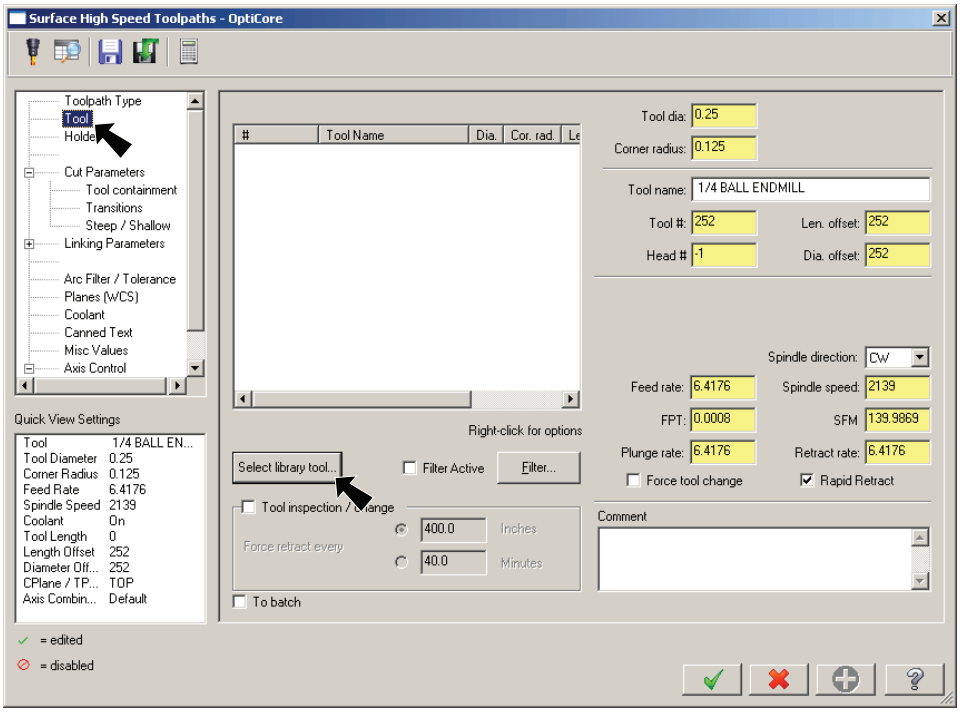

Fig. 8

Step 11. Click the **Filter** button, **Fig. 9**.

Step 12. Click **None button under Tool Types**, **Fig. 10**.

Step 13. Click **Endmill2 Sphere** button second button top row), **Fig. 10** and click OK.

Step 14. Click **252 Ball Endmill 1/4**, **Fig. 11** and click OK.

Step 15. Back in **Tool** page set:

Tool # 1

Head # 1

Feed rate 60

Plunge rate 30
Fig. 12.

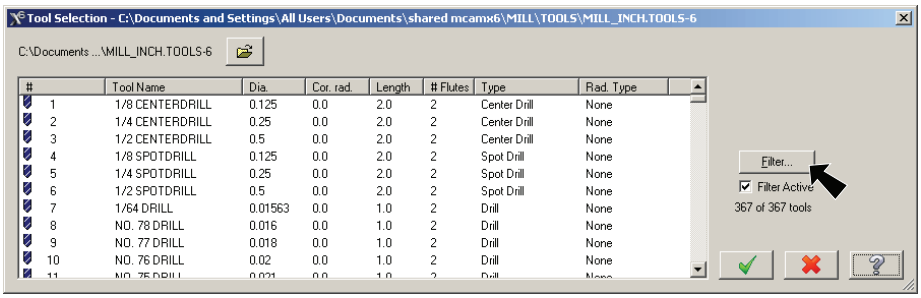

Fig. 9

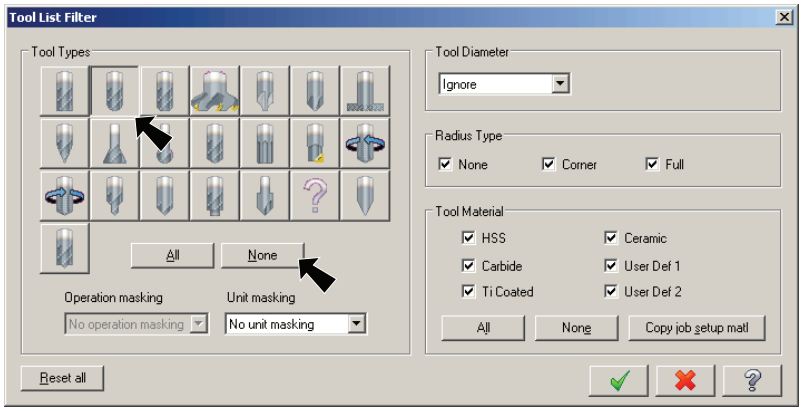

Fig. 10

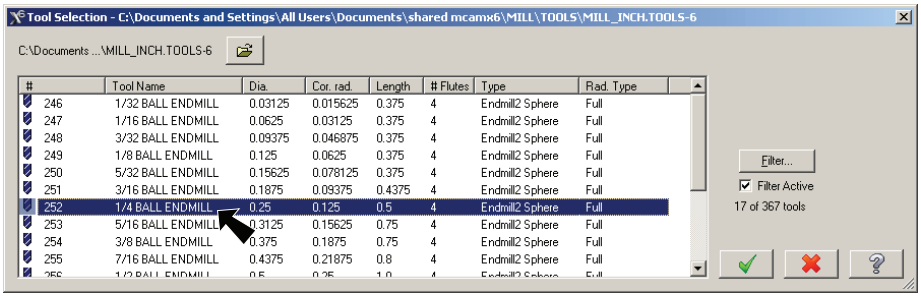

Fig. 11

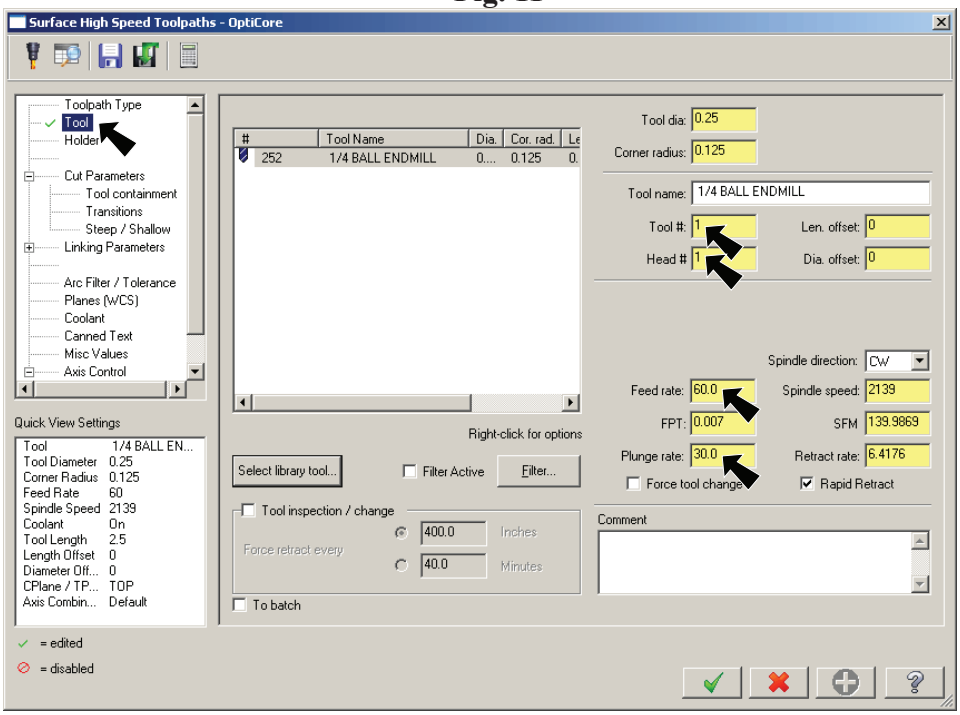

Fig. 12

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

Cutting method Climb

Stepover Absolute Distance .15

Stepdown Absolute Distance .25

Stock to leave on walls and floors .04
Fig. 13.

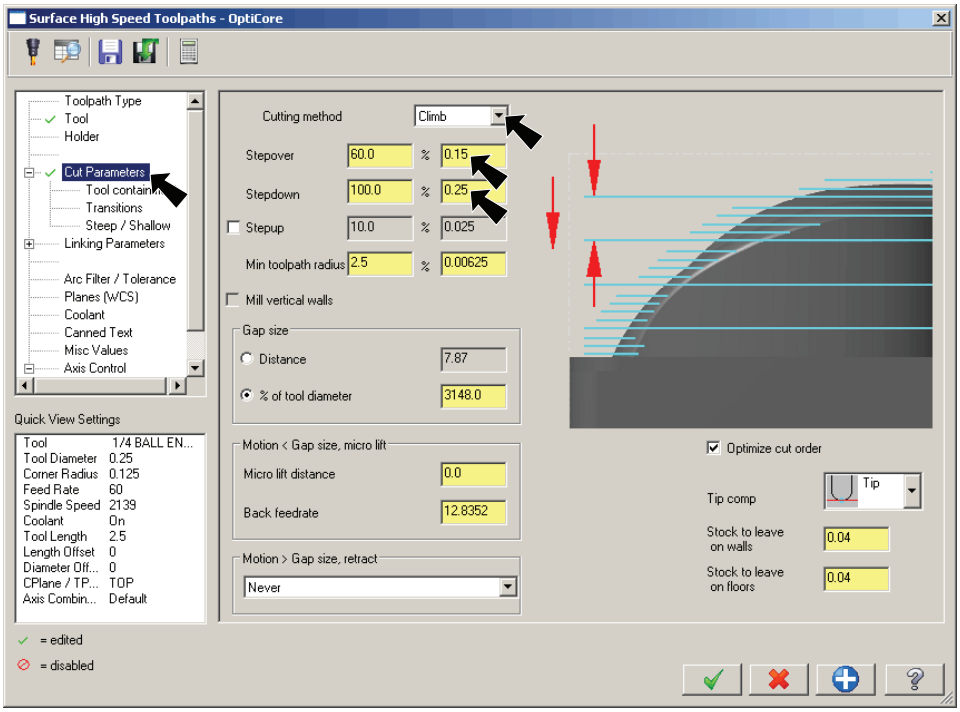

Fig. 13

Step 17. Select **Tool containment** from the tree control and set:

Tool containment Compensate to: Center

Fig. 14.

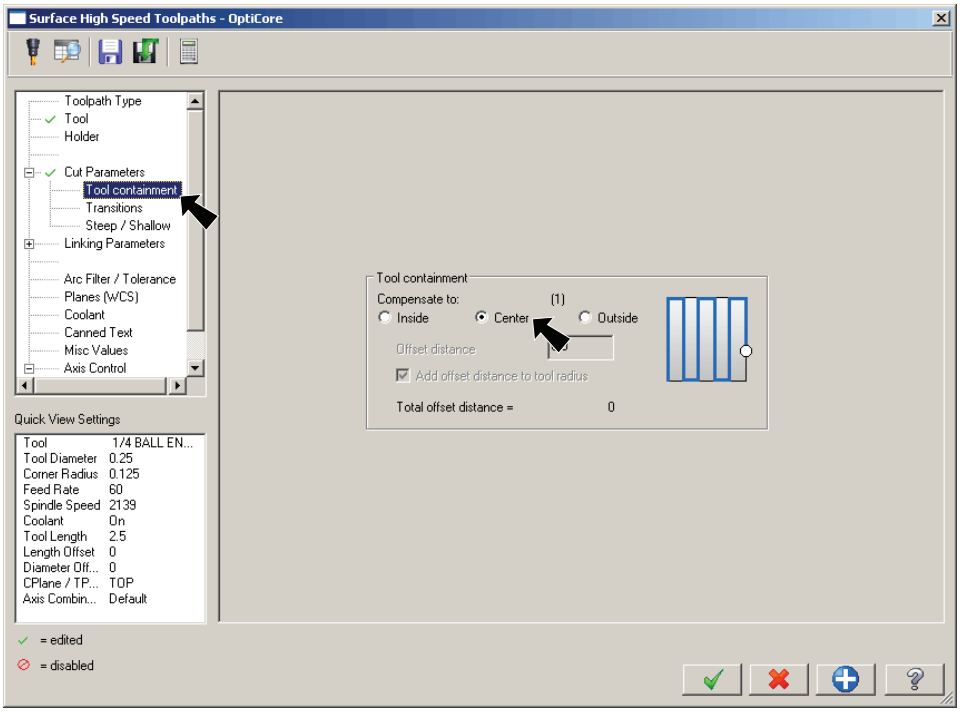

Fig. 14

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

Clearance plane .2

Part clearance .2

All Leads 0
Fig. 15.

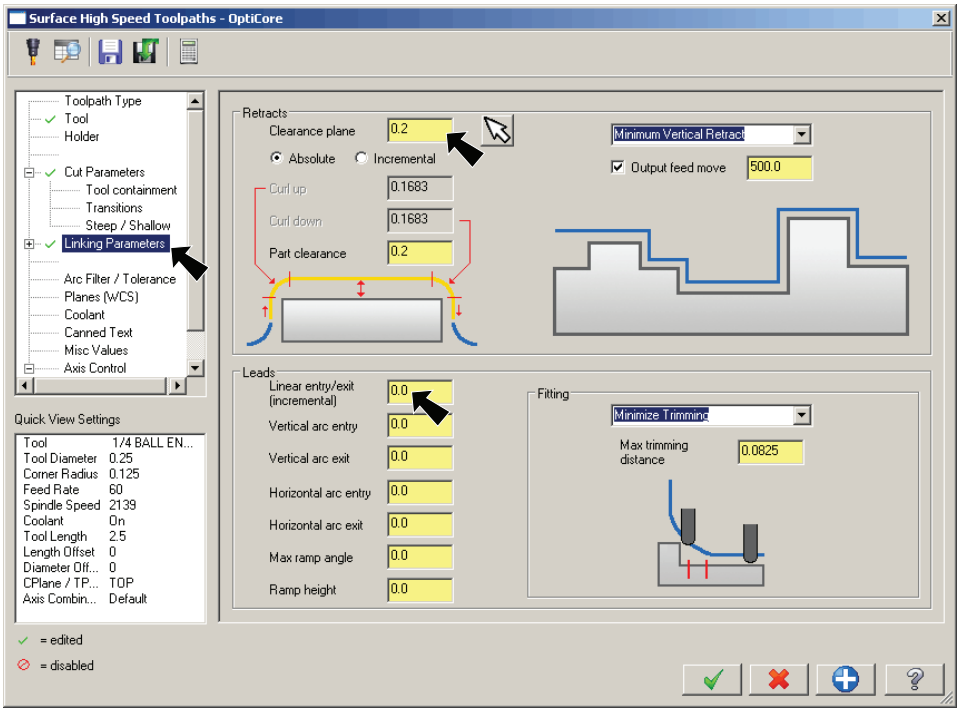

Fig. 15

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

click **Refine toolpath** button, **Fig. 16**.

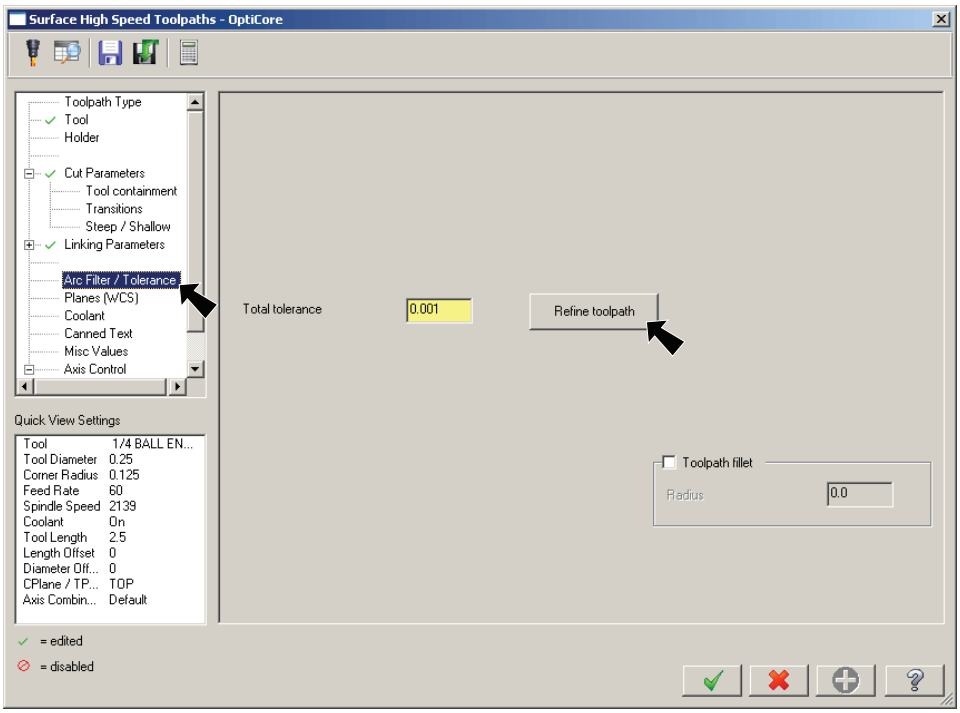

Fig. 16

Step 20. In the **Refine Toolpath** dialog box set:
Fig. 17

slide the **Tolerances Distribution slider to Cut tolerance 25%**

check **Line/Arc Filtering Setting**

uncheck **One way filtering**

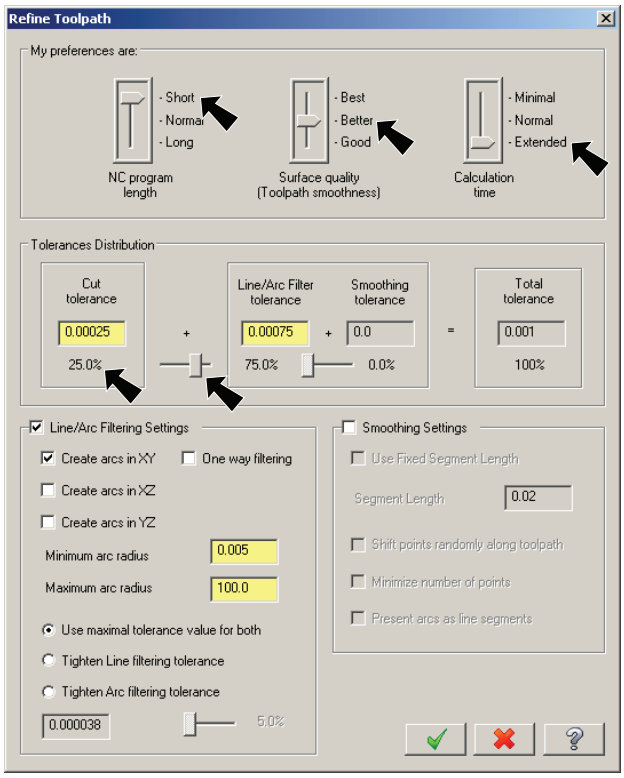

Fig. 17

Step 21. Click OK in Refine Toolpath dialog box.

Step 22. Click OK in OptiCore dialog box.

Step 23. Allow Mastercam to calculate the toolpath.

C. Verify Rough OptiCore HST Toolpath.

Step 1. Click **Verify** in the Toolpaths Manager, **Fig. 18**.

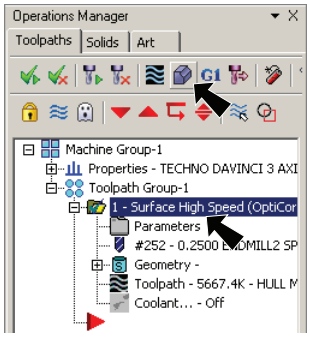

Fig. 18

Step 2. Click **Machine quickly** in Verify dialog box, **Fig. 19**.

Step 3. Turn on (button depressed) **Simulate tool** .

Step 4. Click the **Play** in the Verify dialog box to start the machining.

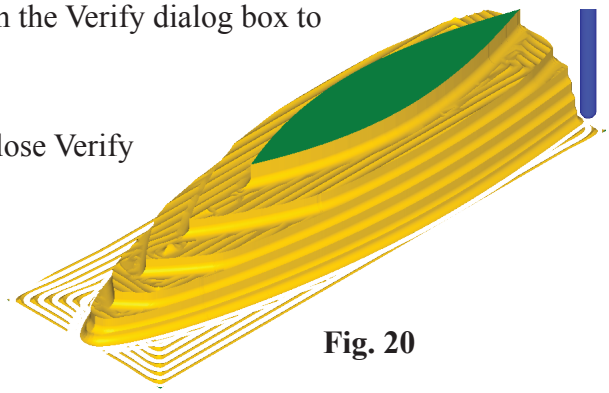

Fig. 20

Step 5. Click OK to close Verify dialog box.

Step 6. Save . Use **Alt-F S**.

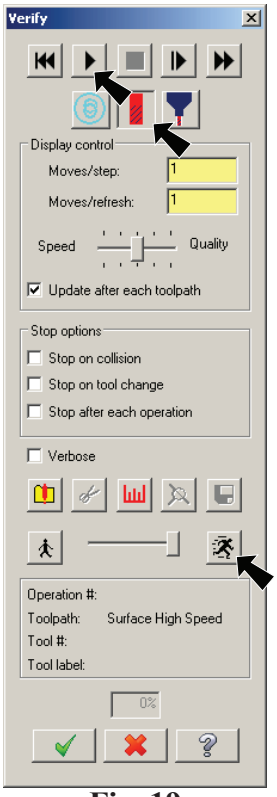

Fig. 19

D. Finish Waterline HST Toolpath.

Step 1. Use **Toggle toolpath display** in Toolpaths Manager or **Alt-T** to turn off toolpath display, **Fig. 21**.

Step 2. Copy Roughing toolpath in the Toolpaths Manager. To copy, **hold right mouse button and drag the Surface High Speed** toolpath down under the operations. Release the mouse button and click **Copy After** from menu, **Fig. 21**.

Step 3. Expand **2 - Surface High Speed** and click **Parameters**, **Fig. 22**.

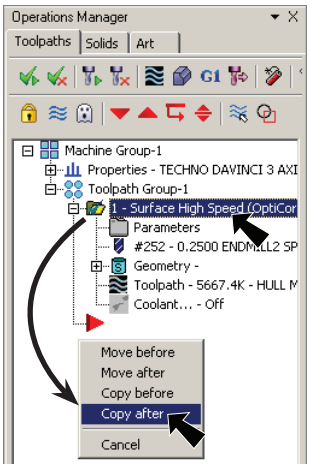

Fig. 21

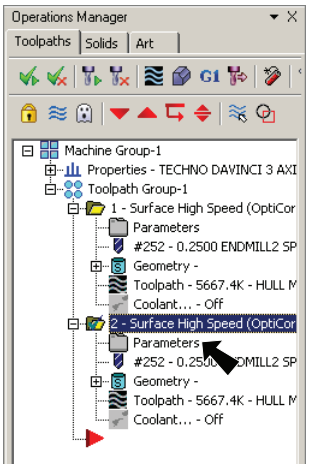

Fig. 22

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

Finishing

Waterline
Fig. 23.

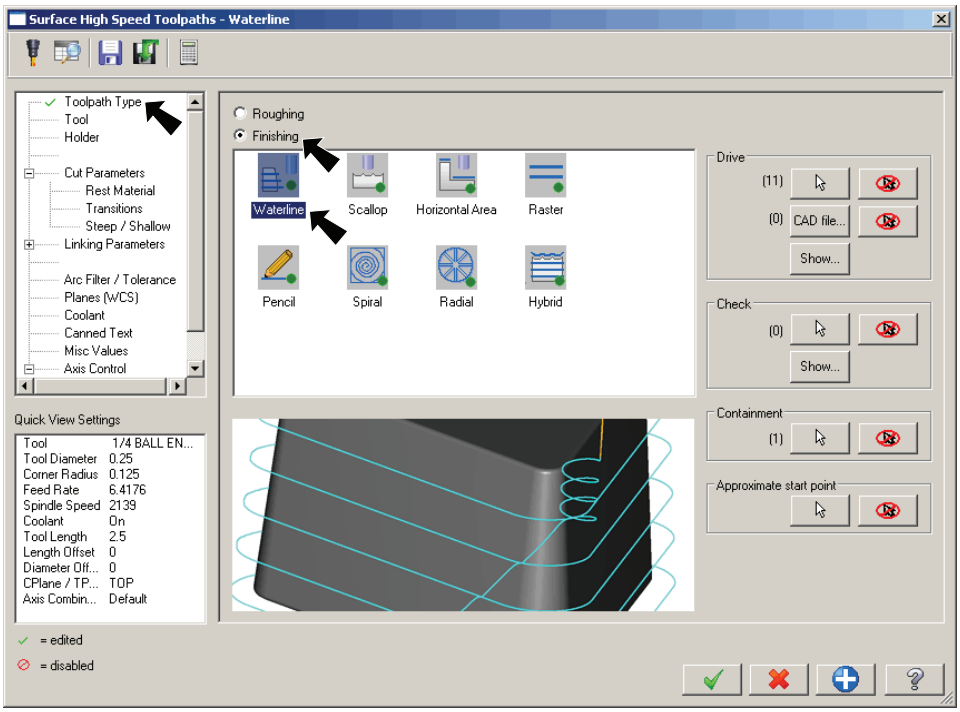

Fig. 23

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

Plunge rate 40
Fig. 24.

Step 6. Select **Cut Parameters** from the tree control and set:

Cutting method Climb

Stepdown .02

Stock to leave on walls and floors 0
Fig. 25.

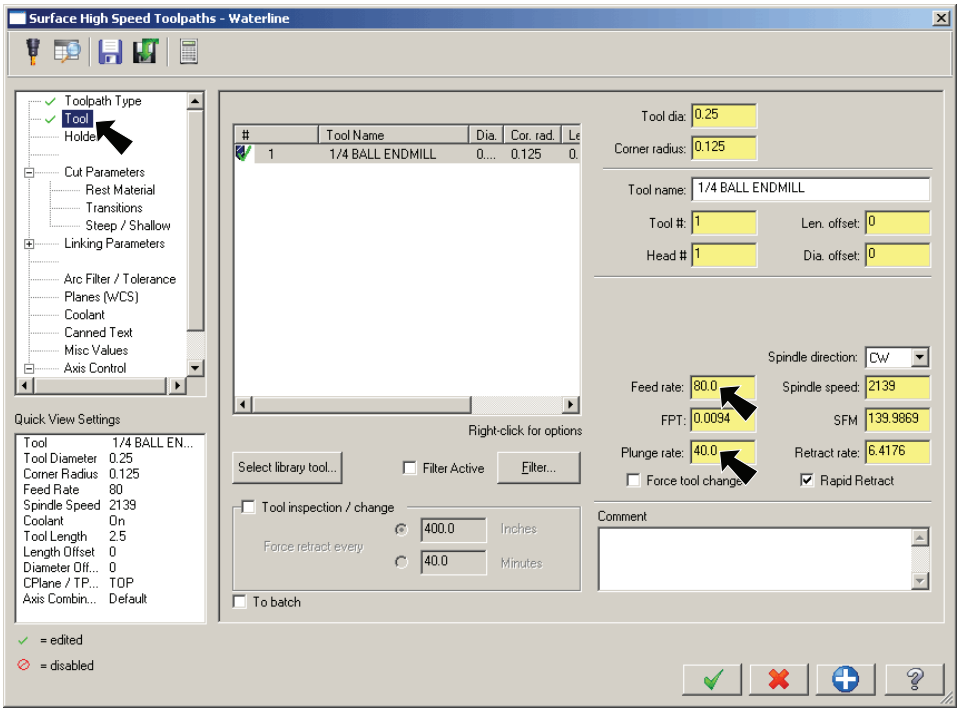

Fig. 24

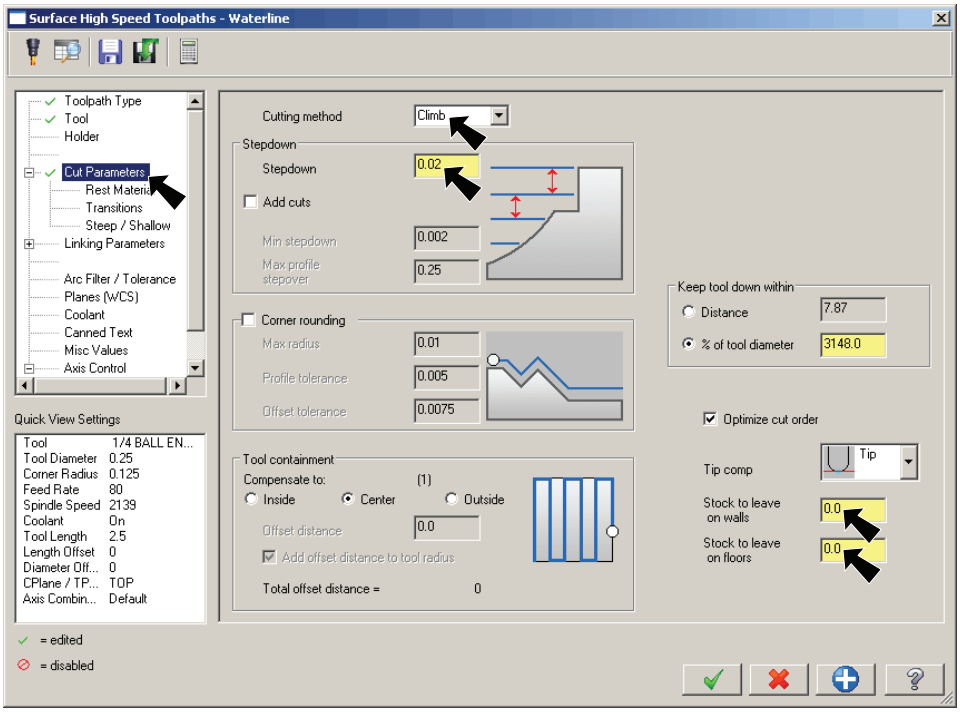

Fig. 25

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

Clearance plane .2

Part clearance .2

All Leads 0 Fig. 26.

Step 8. Click OK in Waterline dialog box.

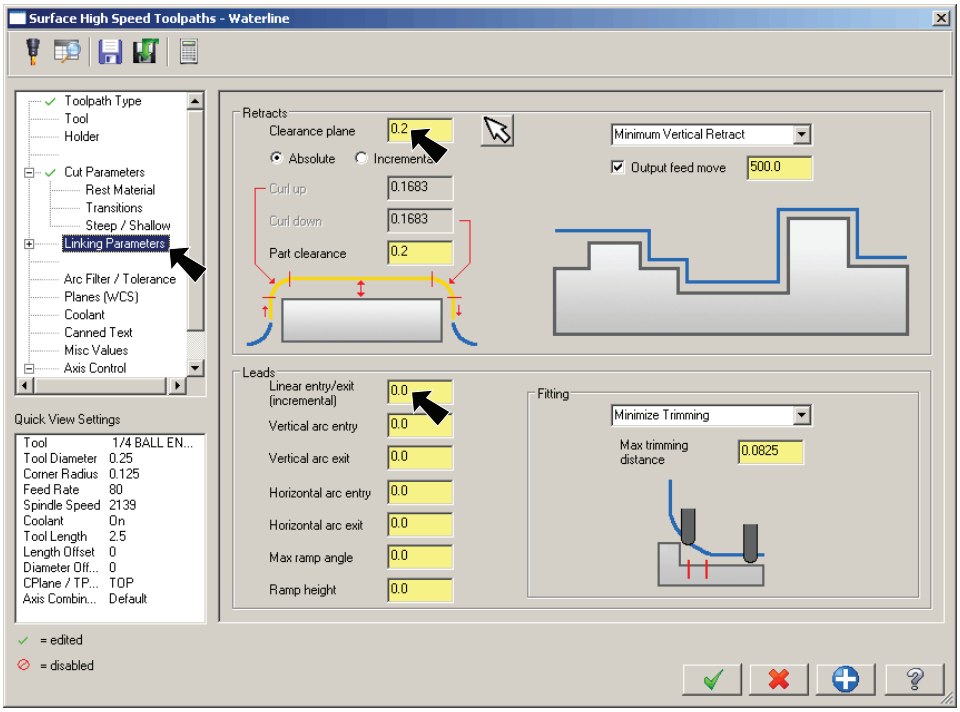

Fig. 26

E. Verify Toolpaths.

Step 1. In the Toolpaths Manager, click **Regenerate all dirty operations** , **Fig. 27**.

Step 2. Click the **Toolpath Group-1** to select **both** toolpaths, **Fig. 27**.

Step 3. Click **Verify** in the Toolpaths Manager, **Fig. 27**.

Step 4. Click the **Play** in the Verify dialog box to start the machining.

Step 5. Click OK to close Verify dialog box.

Step 6. Save . Use **Alt-F S**.

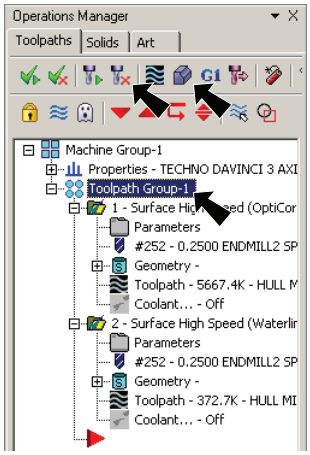

Fig. 27

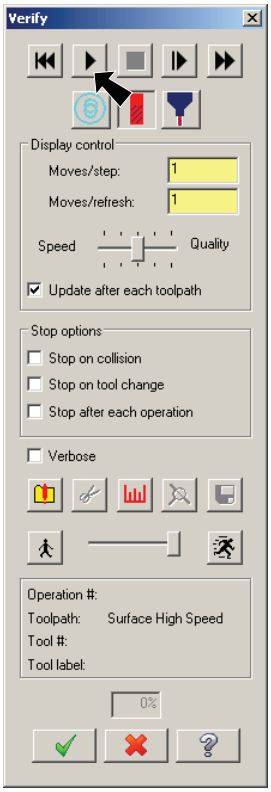

Fig. 28

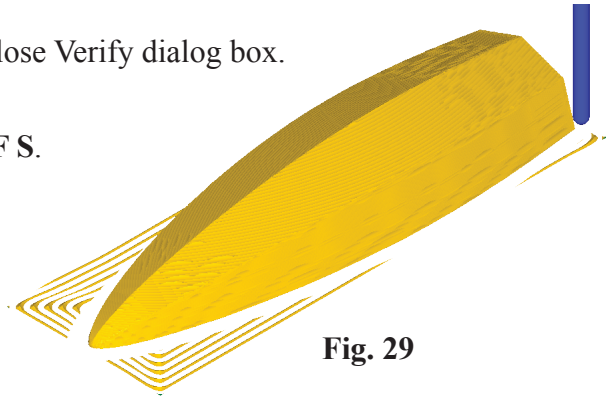

Fig. 29