

A. Machine Type and Stock Setup.

Step 1. If necessary, open your file from Chapter 20.

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**.

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**.

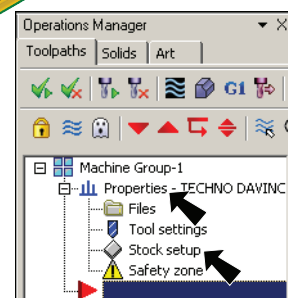
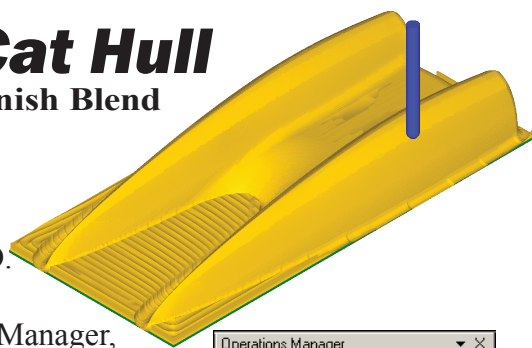


Fig. 1

B. Create Loft Surface for Blend.

Step 1. Draw the surface **green**. Click the color swatch in the Status Bar at the bottom of the screen. Key-in **36** for **green** color number and press ENTER.

Step 2. Click Create Menu > Surface > Ruled/Lofted.

Step 3. Click the Single button  in the Chaining dialog box, **Fig. 3**.

Step 4. Click Chain 1 and Chain 2 at the **bottom** of the bounding box, **Fig. 4**. If the chaining directions arrows are **not** pointing in the same direction - click Reverse .

Step 5. Click OK  in the Chain dialog box, **Fig. 3** and OK  in ribbon bar to fix surface.

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

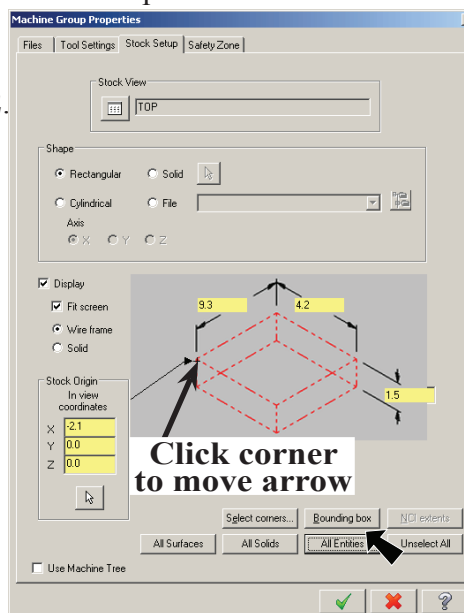


Fig. 2

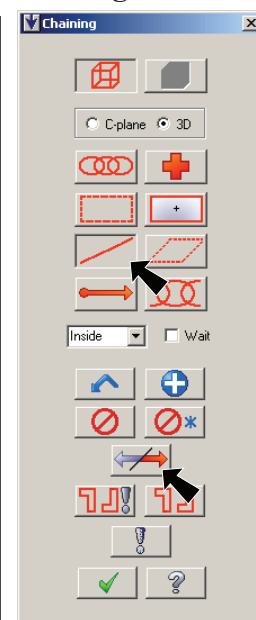


Fig. 3

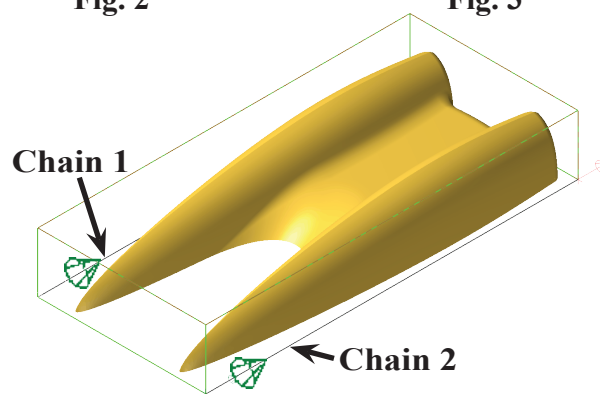


Fig. 4

C. Rough OptiCore HST Toolpath.

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

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

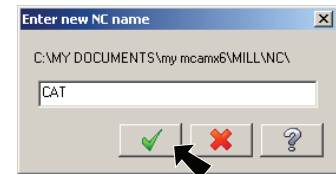


Fig. 5

Step 3. Click the **surface and hull** to select as Drive surfaces/solid, **Fig. 6**.

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

Step 5. Click **Containment Select** button  in the Toolpath/surface selection dialog box, **Fig. 7**.

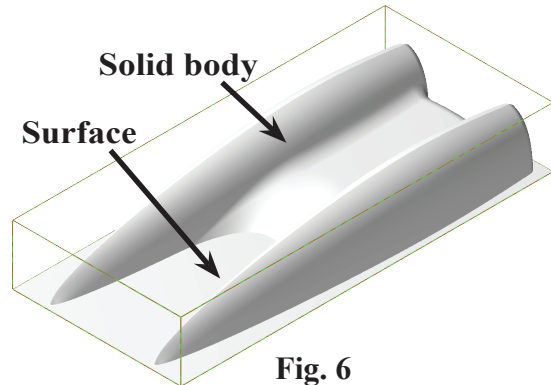


Fig. 6

Step 6. Select **C-plane** in Chaining dialog box, **Fig. 8**.

Step 7. Click **Chain** button  in the Chaining dialog box, **Fig. 8**.

Step 8. Click a line of top rectangle bounding box. The top rectangle will be selected, **Fig. 9**.

Step 9. Click OK  in the Chaining dialog box.

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

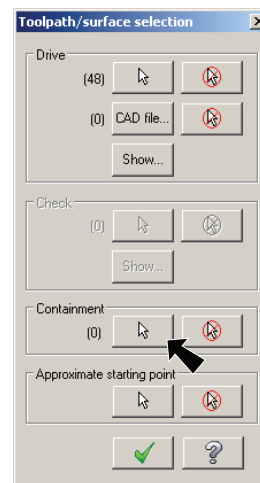


Fig. 7

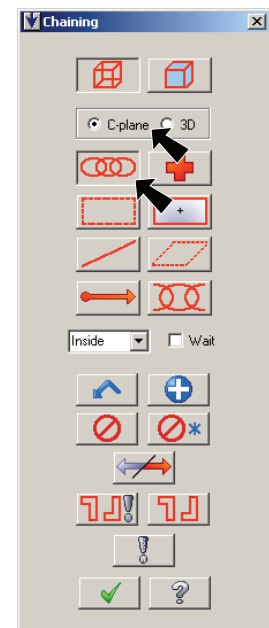


Fig. 8

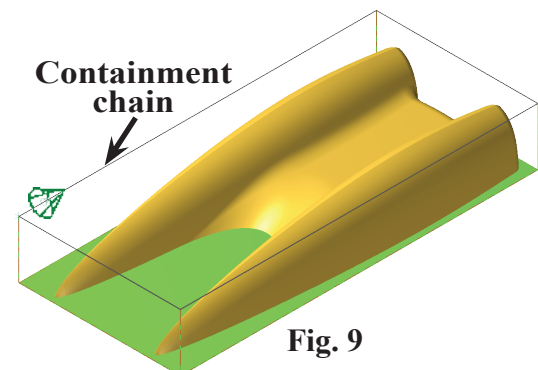


Fig. 9

Step 11. Select **Tool** from the tree control and: click **Select library tool** button, **Fig. 10**.

Step 12. Click the **Filter** button, **Fig. 11**.

Step 13. Click **None** button under **Tool Types**, **Fig. 12**.

Step 14. Click **Endmill2 Sphere** button second button top row), **Fig. 12** and click OK.

Step 15. Click **252 Ball Endmill 1/4**, **Fig. 13** and click OK.

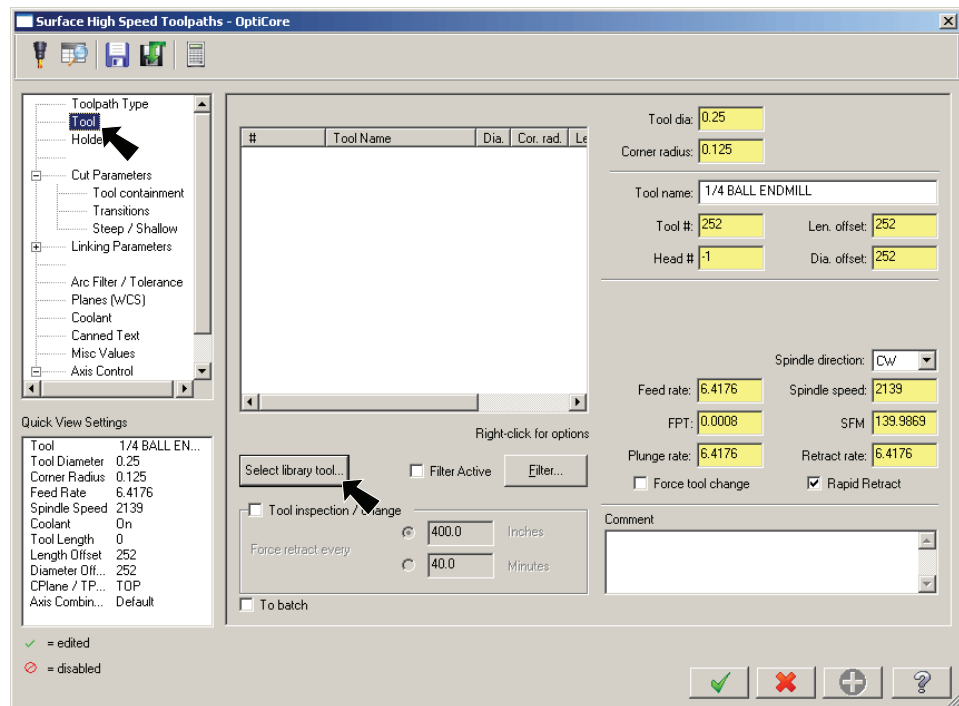


Fig. 10

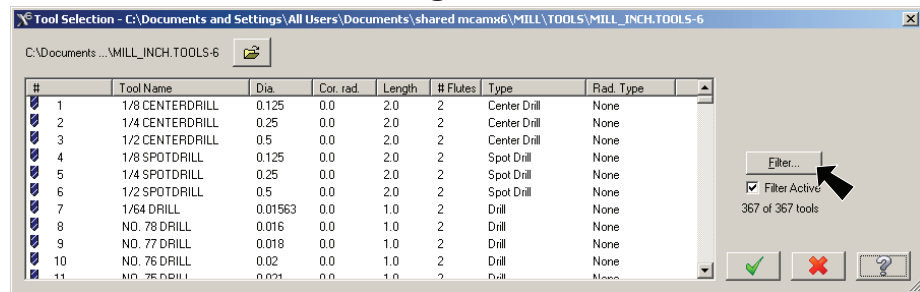


Fig. 11

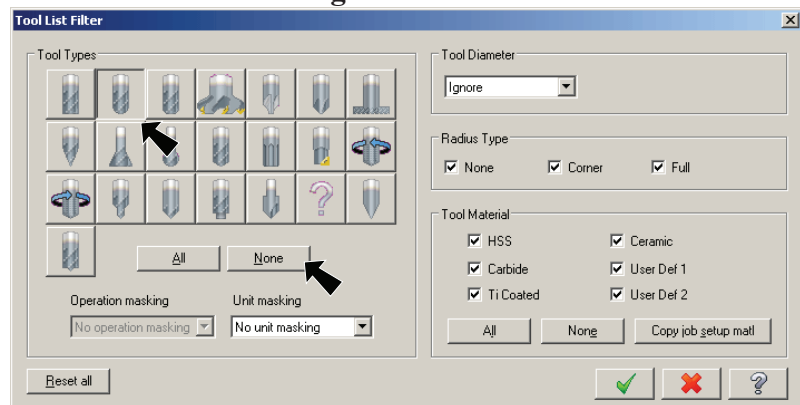


Fig. 12

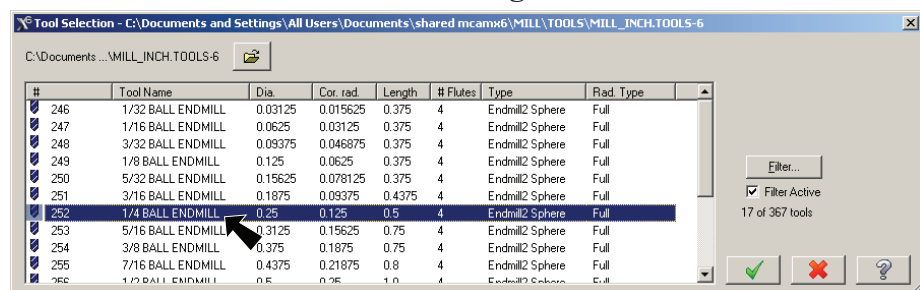


Fig. 13

Step 16. Back in Tool page set:

Tool # 1

Head # 1

Feed rate 60

Plunge rate 30

Fig. 14.

Step 17. 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. 15.

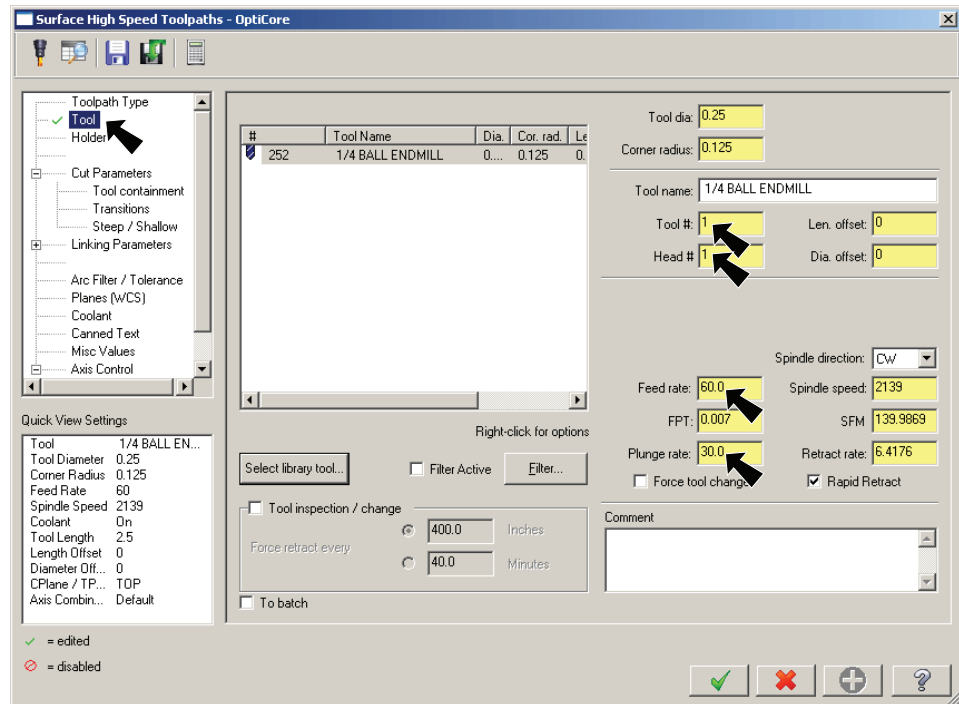


Fig. 14

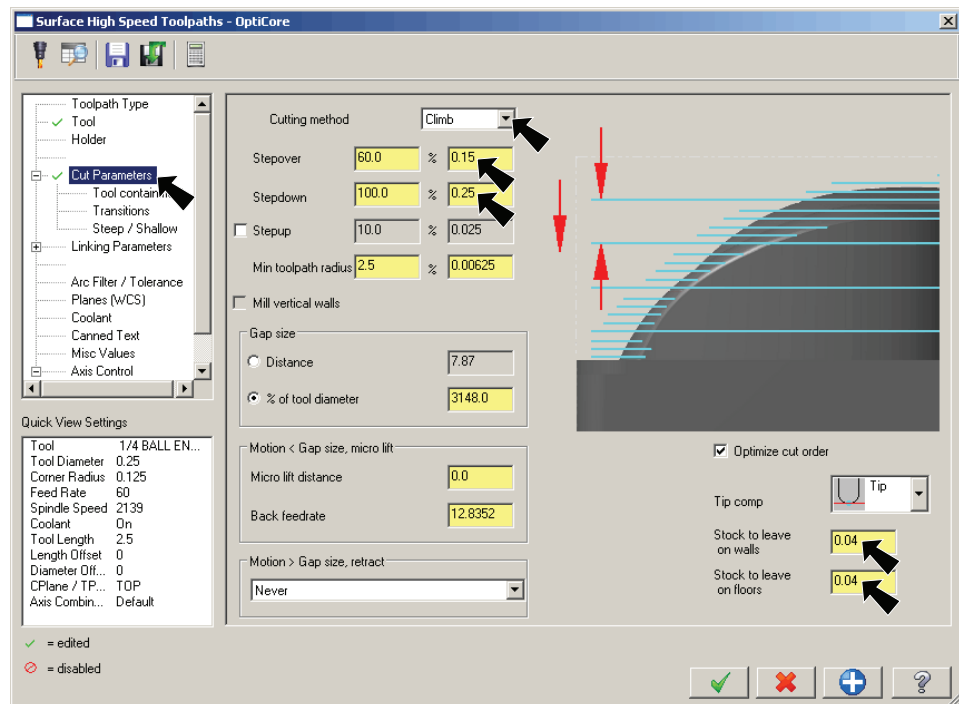


Fig. 15

Step 18. Select
**Tool contain-
ment** from the
tree control and
set:

**Tool contain-
ment
Compensate
to: Center**

Fig. 16.

Step 19. Select **Linking
Parameters**
from the tree
control and set:

**Clearance
plane .2**

**Part clearance
.2**

All Leads 0
Fig. 17.

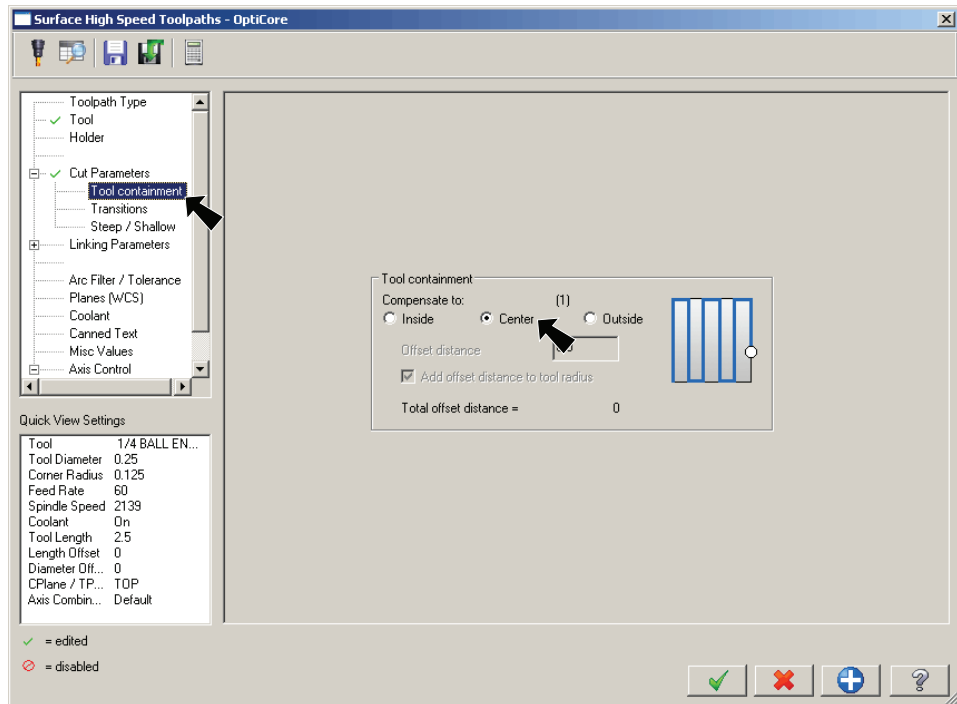


Fig. 16

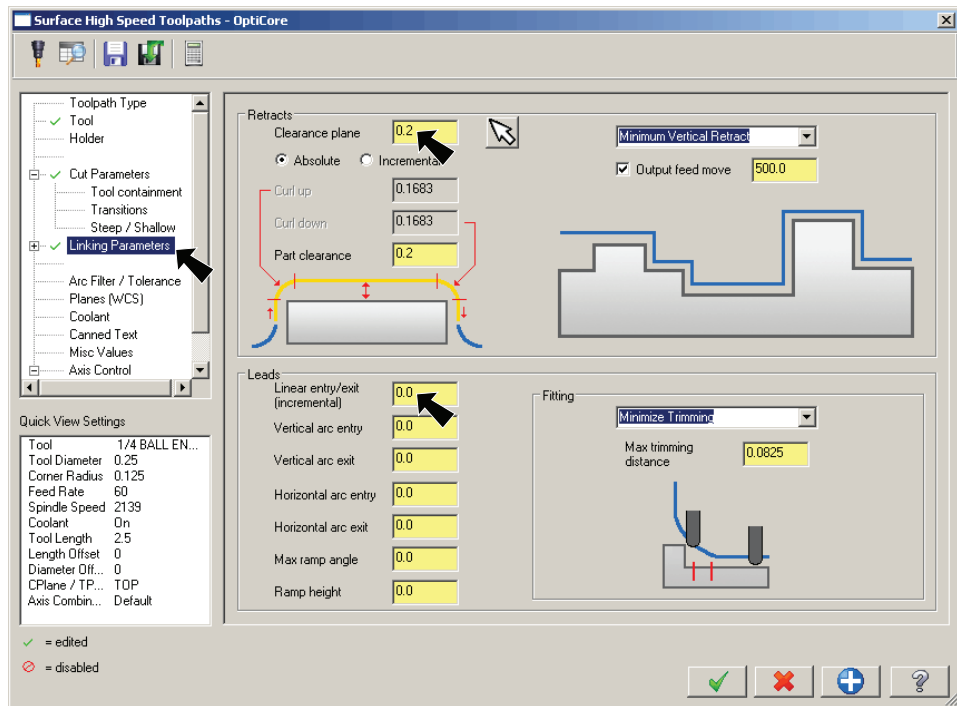


Fig. 17

Step 20. Select **Arc Filter/Tolerance** from the tree control and set:

click **Refine toolpath** button, **Fig. 18**.

Step 21. In the **Refine Toolpath** dialog box set: **Fig. 19**

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

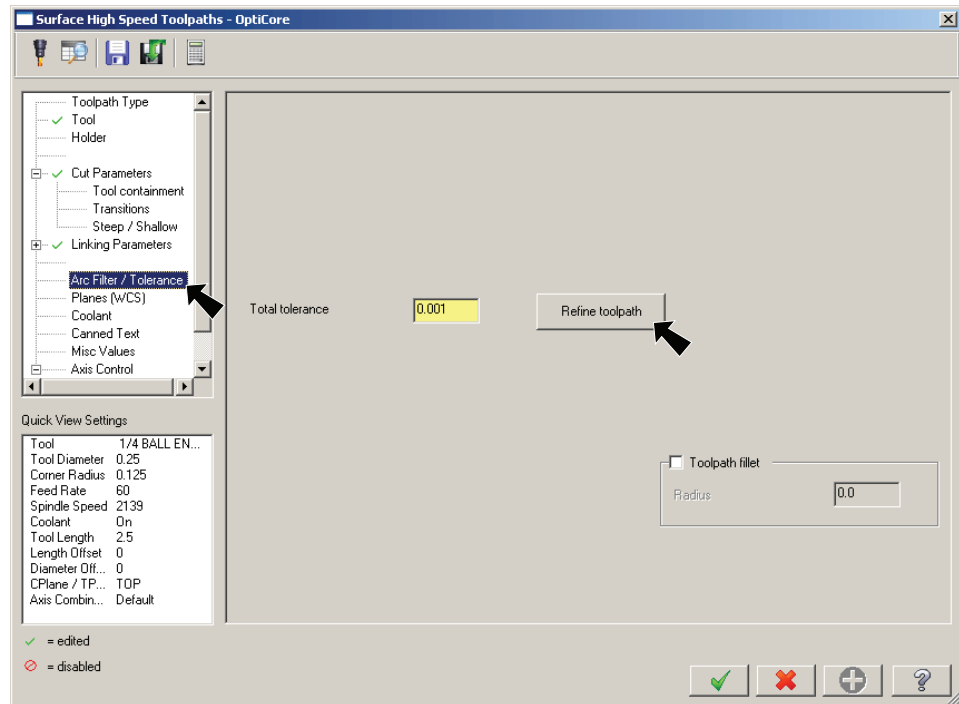


Fig. 18

check **Line/Arc Filtering Setting**

uncheck **One way filtering**

Step 22. Click OK  in Refine Toolpath dialog box.

Step 23. Click OK  in OptiCore dialog box.

Step 24. Allow Mastercam to calculate the toolpath.

Step 25. Click OK  in OptiCore dialog box.

Step 26. Allow Mastercam to calculate the toolpath.

Step 27. Save . Use **Alt-F S**.

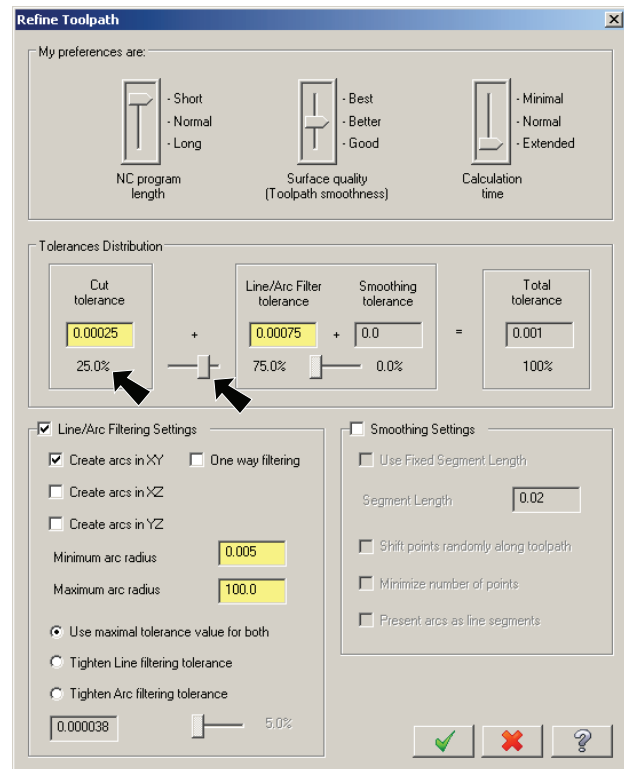


Fig. 19

D. Verify Rough OptiCore HST Toolpath.

- Step 1. Click **Verify**  in the Toolpaths Manager, Fig. 20.
- Step 2. Click **Machine quickly**  in Verify dialog box, Fig. 21.
- Step 3. Turn on (button depressed) **Simulate tool** .
- Step 4. Click the **Play**  in the Verify dialog box to start the machining.
- Step 5. Click **OK**  to close Verify dialog box.

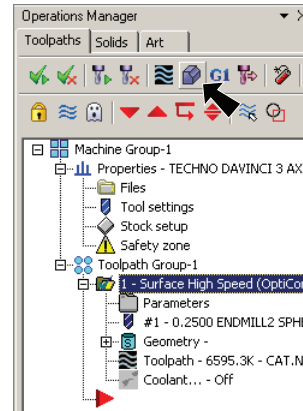


Fig. 20

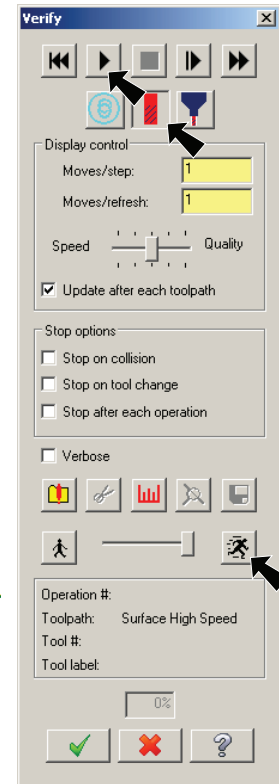


Fig. 21

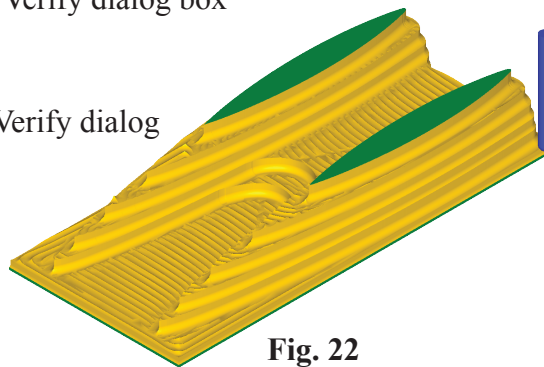


Fig. 22

E. Finish Blend Toolpath.

- Step 1. Use **Alt-T** to turn off toolpath display.
- Step 2. Click Toolpaths Menu > Surface Finish > **Blend**.
- Step 3. Click the **hull solid** to select as Drive surfaces/solid, Fig. 23.
- Step 4. Press **ENTER** to accept solid selection as drives surfaces.
- Step 5. Click **Check Select** button, Fig. 24.
- Step 6. Click the **surface** as Check surfaces/solid, Fig. 25.
- Step 7. Press **ENTER** to accept solid selection as check surfaces.

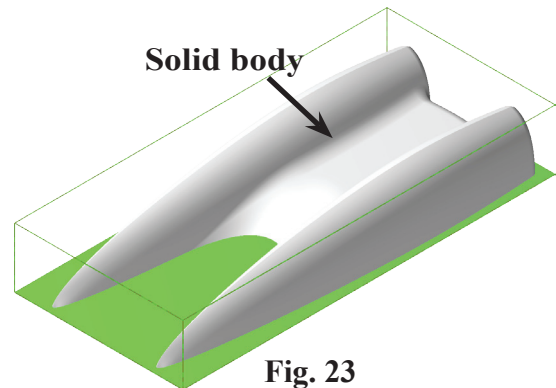


Fig. 23

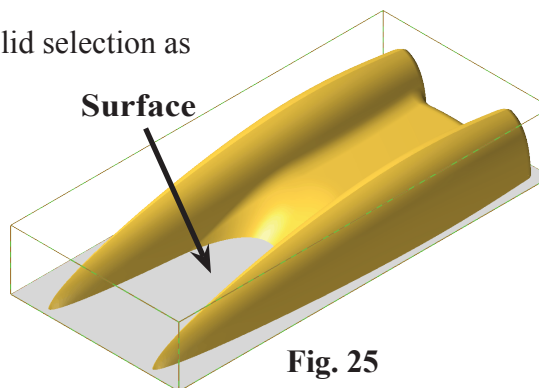


Fig. 25

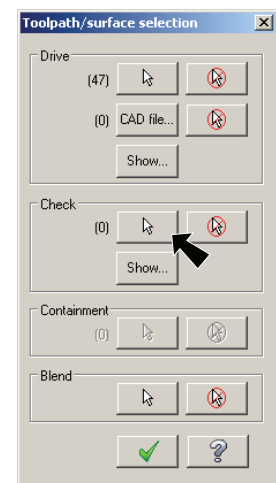
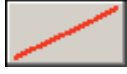


Fig. 24

Step 8. Click **Blend Select** button, **Fig. 26**.

Step 9. Click the Single button  in the Chaining dialog box, **Fig. 27**.

Step 10. Click **Chain 1** and **Chain 2** at the top of the bounding box, **Fig. 28**. If the chaining directions arrows are not pointing in the same direction - click Reverse .

Step 11. Click OK  in the Chain dialog box, **Fig. 27**.

Step 12. Click the OK button  in the Toolpath/surface selection dialog box, **Fig. 26**.

Step 13. Set the **Feed rate 80** **Fig. 29**

Step 14. Set the **Plunge rate 40**

Step 15. Click the **Surface parameters tab** at the top of the dialog box.

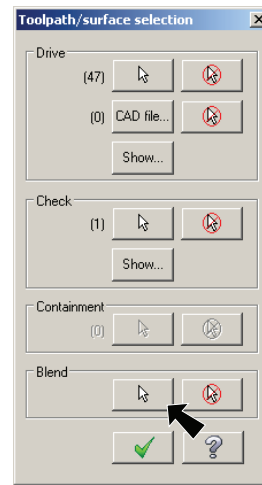


Fig. 26

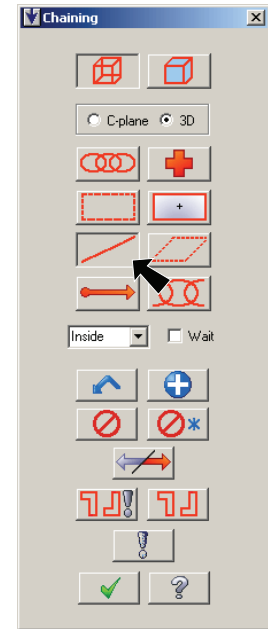


Fig. 27

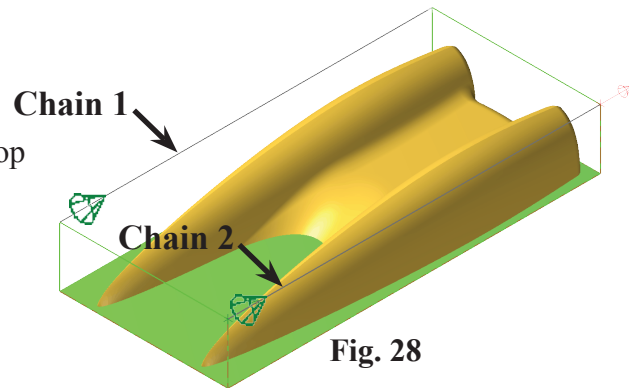


Fig. 28

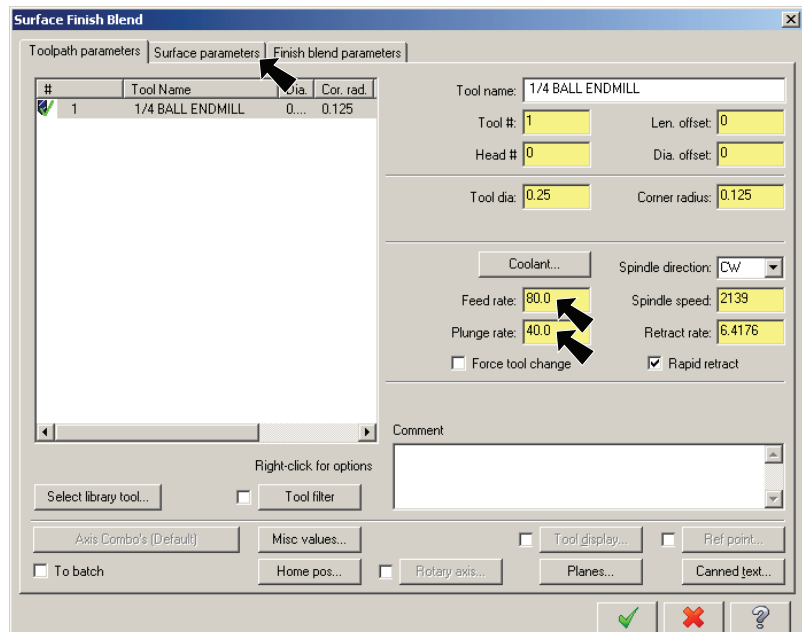


Fig. 29

Step 16. Check **Clearance** and set: **.05** and click **Absolute**, **Fig. 30**.

Step 17. Uncheck **Retract**.

Step 18. Set **Feed plane**: **.1** and click **Incremental**.

Step 19. Click the **Finish blend parameters** tab at the top of the dialog box.

Step 20. Set **Max. stepover**: **.03**, **Fig. 31**.

Step 21. Click the **Total tolerance** button.

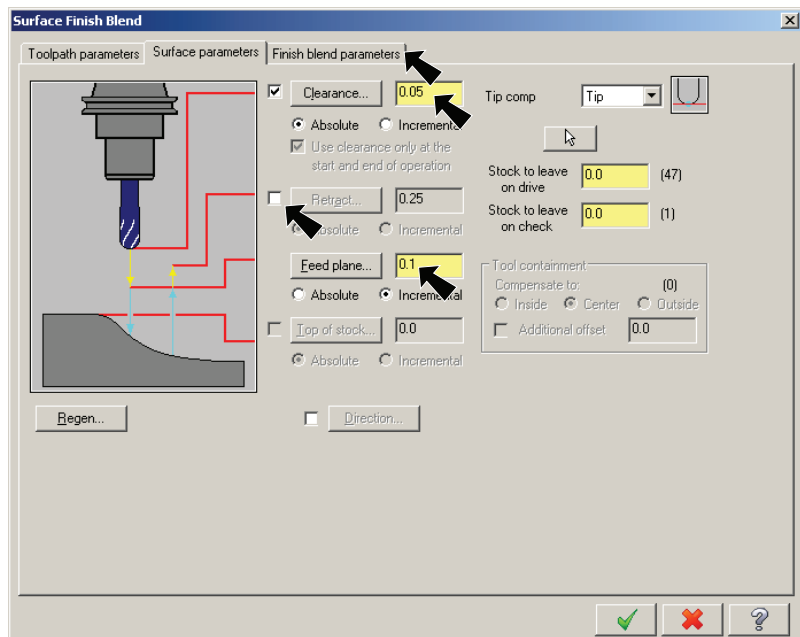


Fig. 30

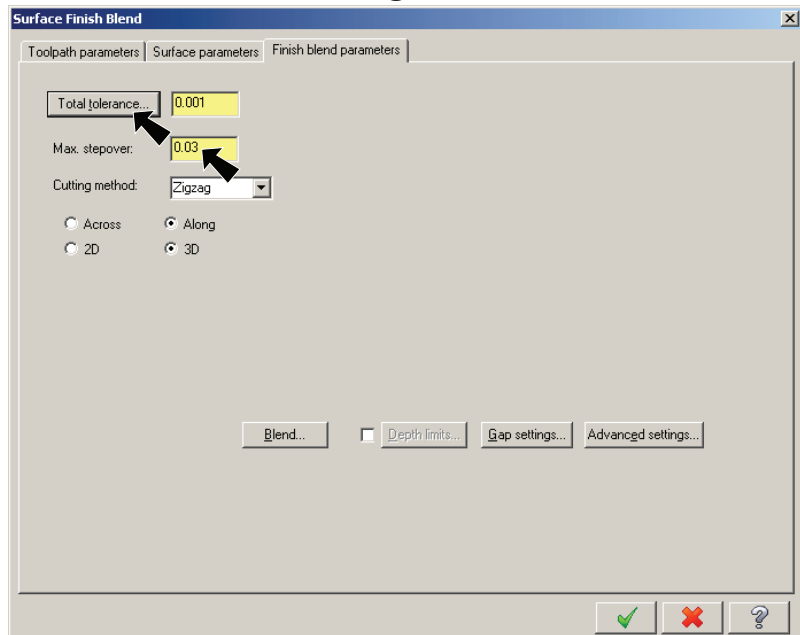


Fig. 31

Step 22. Check **Line/Arc Filtering Setting**,
Fig. 32

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

uncheck **One way filtering**.

Step 23. Click OK .

Step 24. Click **Gap settings** button in the Finish
blend parameters, **Fig. 33**.

Step 25. Under Motion, select **Follow surface(s)**,
Fig. 34.

Step 26. Check **Optimize cut order** and click OK
, **Fig. 34**.

Step 27. Click **Advanced settings** button in the
Finish blend parameters, **Fig. 33**.

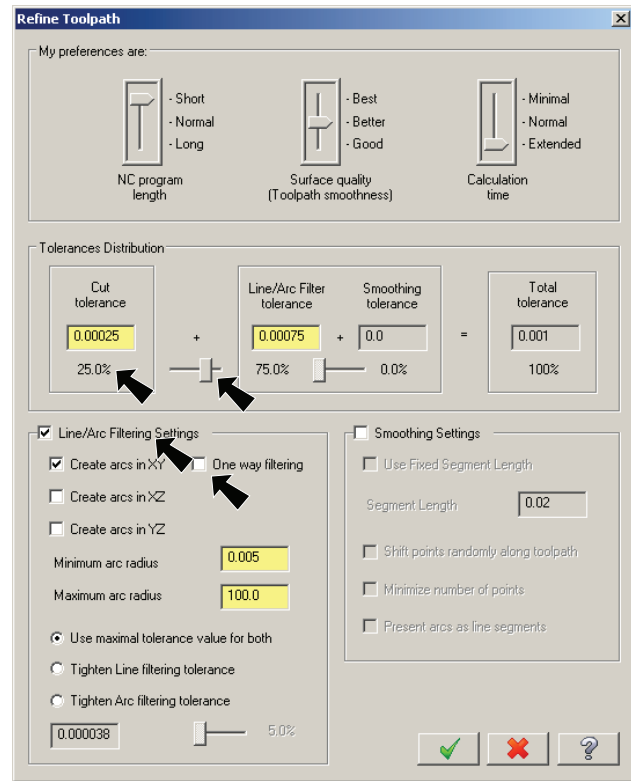


Fig. 32

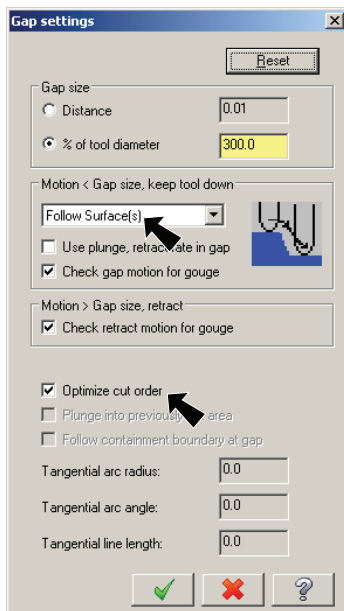


Fig. 34

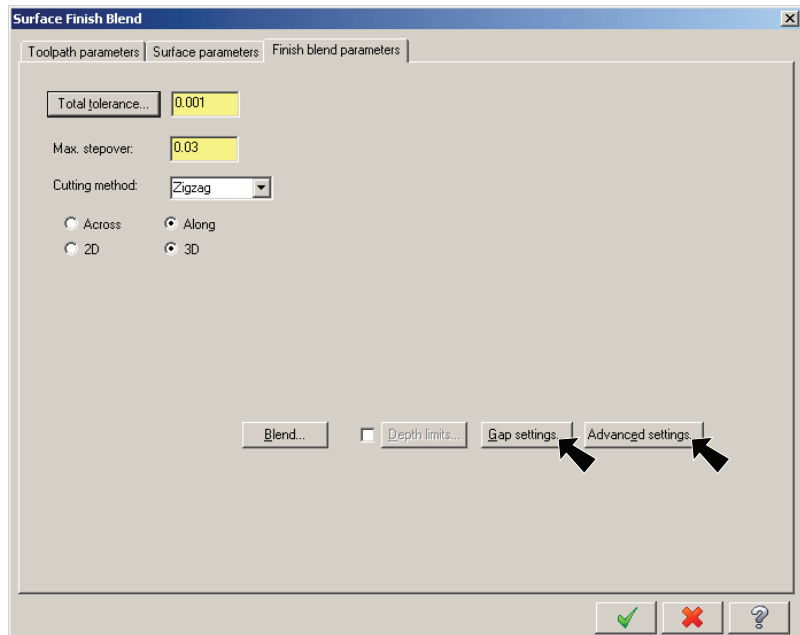


Fig. 33

Step 28. Select **Only between surfaces**, Fig. 35.

Step 29. Check **Skip hidden face test for solid bodies** and click OK , Fig. 35.

Step 30. Click OK  in the Finish blend parameters.

Step 31. Click OK  to Check and Drive stock identical message.

Step 32. Save . Use Alt-F S.

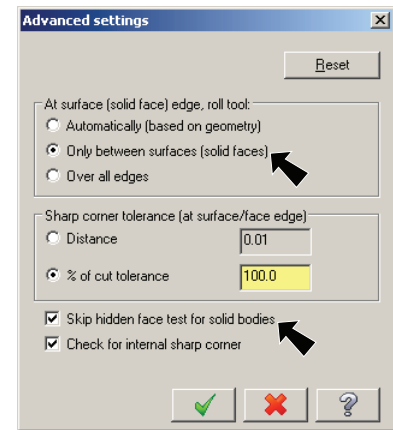


Fig. 35

F. Backplotting.

Step 1. Click **Surface Blend** in the Toolpaths Manager to select **only Blend** toolpath, Fig. 36.

Step 2. Click **Backplot**  in Toolpaths Manager.

Step 3. Click **Expand**  in the top corner of Backplot dialog box, Fig. 37.

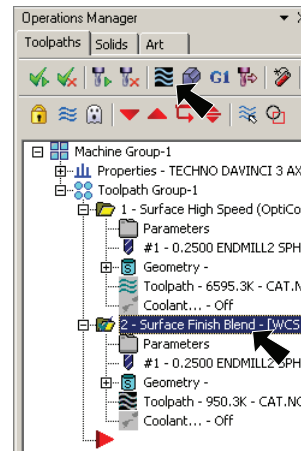


Fig. 36

Step 4. Turn on (button depressed) **Display tool**  and **Display rapid moves** , Fig. 37.



Fig. 38

Step 5. Click **Play** , Fig. 38.

Step 6. Click the **Info** tab in the middle of the Backplot dialog box, Fig. 37. Note the **Total time** to run program (**25 minutes**).

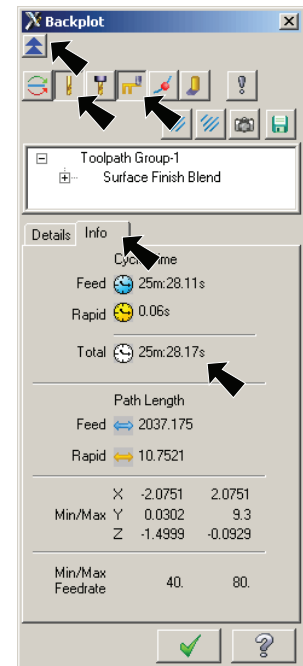


Fig. 37

Step 7. Click OK  to close Backplot.

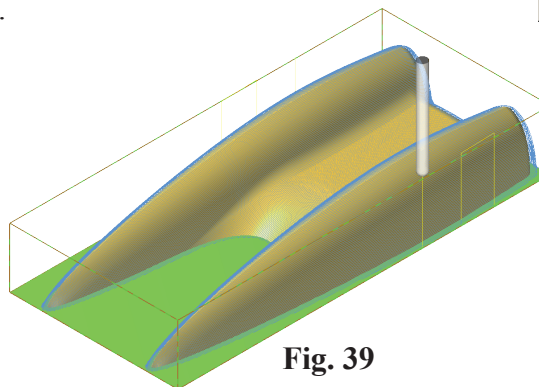


Fig. 39

G. Verify the Program.

Step 1. Click **Toolpath Group1** in the Toolpaths Manager to select **both** toolpaths, **Fig. 40**.

Step 2. Click **Verify**  in the Toolpaths Manager, **Fig. 40**.

Step 3. Click the **Play**  in the Verify dialog box to start the machining, **Fig. 41**.

Step 4. Click **OK**  to close Verify dialog box.

Step 5. Save . Use **Alt-F S**.

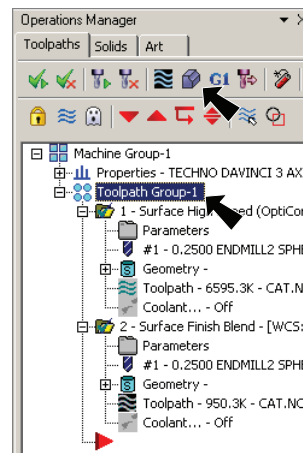


Fig. 40

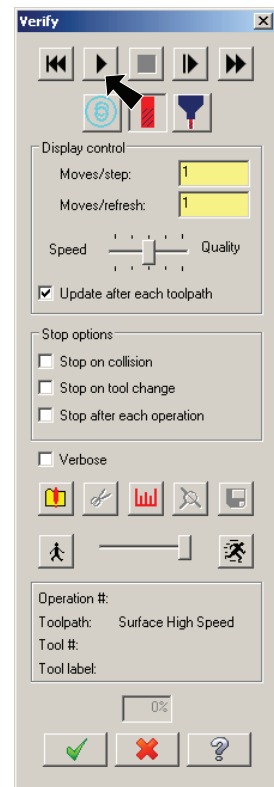


Fig. 41

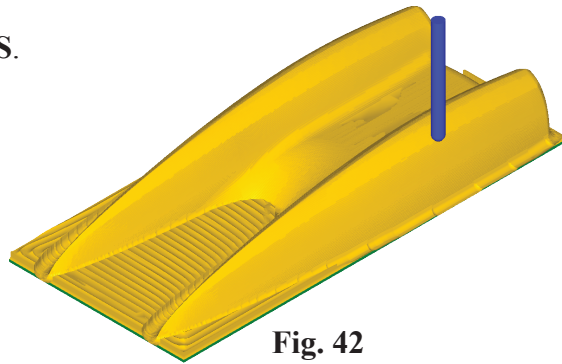


Fig. 42