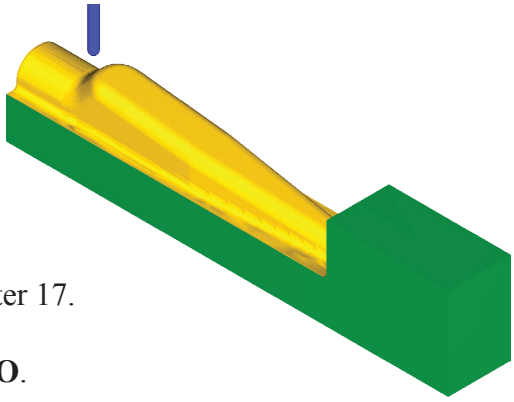
Toolpaths for Fuselage

Finish Blend



A. Machine Type and Stock Setup.

Step 1. If necessary, open your FUSELAGE file from Chapter 17.

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

Step 3. In the Operations Manager, if a Machine Group is **not** displayed, **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**.

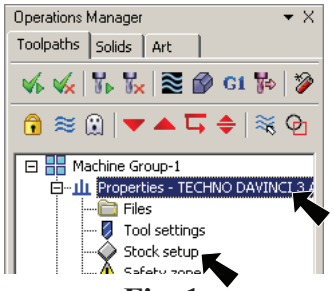


Fig. 1

Step 6. Click **rear left corner** of the red part to set it as the stock origin, **Fig. 2**.

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

Step 8. Set Stock Origin coordinates:
X to 0
Y to -.85
Z to 0, **Fig. 2**.

Step 9. Click OK  in the Machine Group Properties, **Fig. 2**.

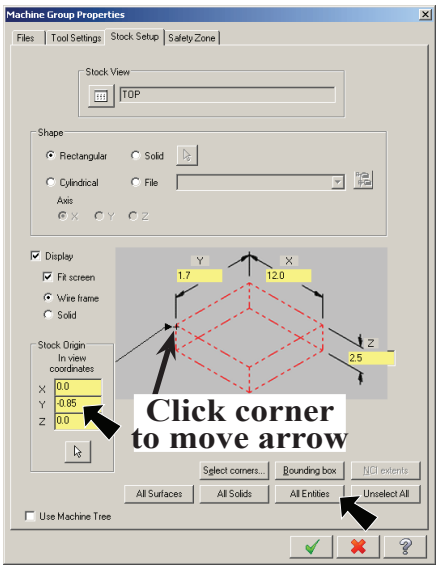


Fig. 2

B. Set WCS to TOP.

Step 1. Click **WCS** in the Status Bar at the bottom of the screen and **Top** from the menu. This changes WCS back to original state (Top), **Fig. 3**.

Step 2. Change to the Isometric View, use  . Check the origin. Use **F9** to show and hide axes.

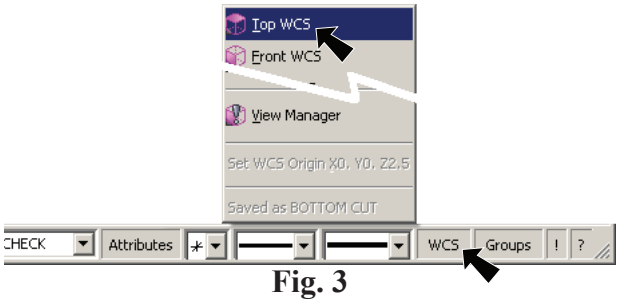


Fig. 3

C. Finish Blend Toolpath.

Step 1. Click Toolpaths Menu > Surface Finish > **Blend**.

Step 2. Click OK  in the NC name dialog, **Fig. 4**.

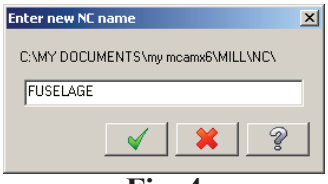


Fig. 4

© Cudacountry.net Tech Ed
http://www.cudacountry.net email:cudacountry@hotmail.com

Step 3. Click the **Top Cut surface**, **Fig. 5**.

Step 4. Click **Activate solid selection** button in the Solids selection ribbon bar and click **Select body** and unselect other buttons, **Fig. 6**.

Step 5. Click the **body solid**, **Fig. 5**. The solid edges will highlight when selected.

Step 6. **Press ENTER twice** to accept surface and solid selection as drives surfaces.

Step 7. Click **Check Select** button, **Fig. 7**.

Step 8. Click **Activate solid selection** button in the Solids selection ribbon bar and click **Select body**, **Fig. 6**.

Step 9. Click **check block solid**, **Fig. 8**.

Step 10. **Press ENTER twice** to accept solid selection as check surfaces.

Step 11. Click **Blend Select** button, **Fig. 7**.

Step 12. Click the Single button in the Chaining dialog box, **Fig. 8**.

Step 13. Click **Chain 1**, **top back line** on the bounding box and **Chain 2, top front line** on the bounding box, **Fig. 9**. If the chaining directions arrows are not pointing in the same direction - click Reverse .

Step 14. Click OK in the Chaining dialog box, **Fig. 8**.

Step 15. Click the OK button in the Toolpath/surface selection dialog box, **Fig. 7**.

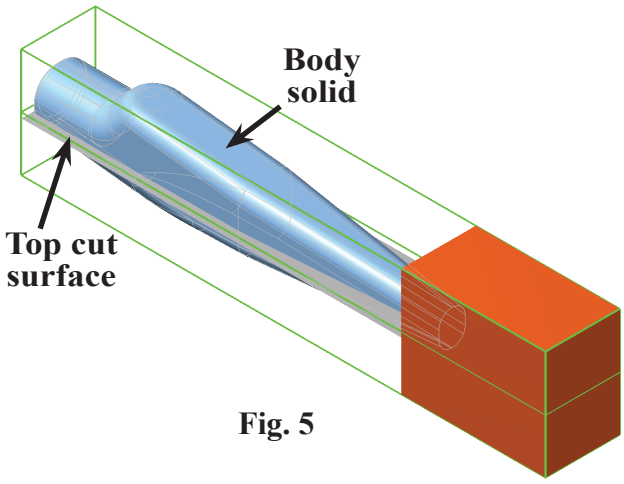


Fig. 5

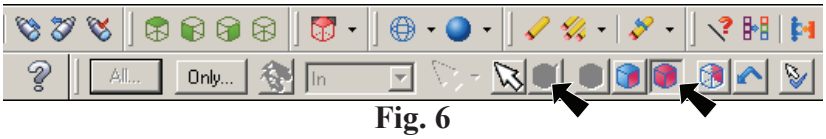


Fig. 6

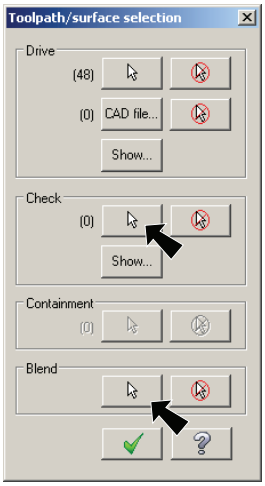


Fig. 7

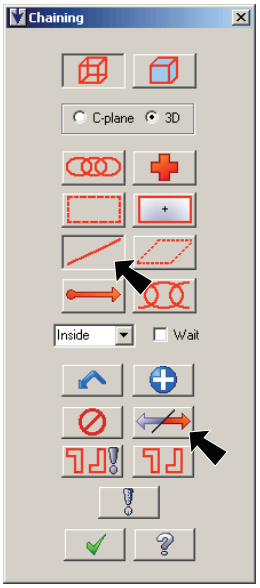


Fig. 8

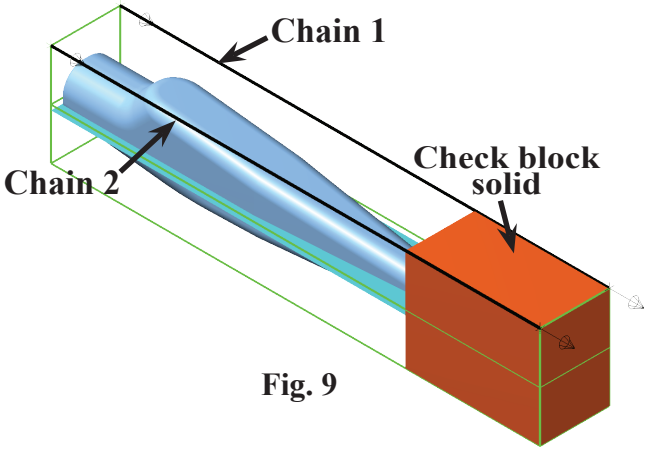


Fig. 9

D. Set Tool and Params.

Step 1. Click **Select library tool** button in the Surface Finish Blend dialog box, **Fig. 10**.

Step 2. Click the **Filter button**, **Fig. 11**.

Step 3. Click **None button under Tool Types**, **Fig. 12**.

Step 4. Click **Endmill2 Sphere** button (second button top row), **Fig. 12** and click OK.

Step 5. Click **252 Ball Endmill 1/4**, **Fig. 13** and click OK.

Step 6. Back in **Toolpath parameters** of Surface Finish Blend dialog box, Set the **Tool #: 1** **Fig. 10**.

Step 7. Set the **Head #: 1**

Step 8. Set the **Feed rate: 90**

Step 9. Set the **Plunge rate: 45**

Step 10. Click the **Surface parameters tab** at the top of the dialog box.

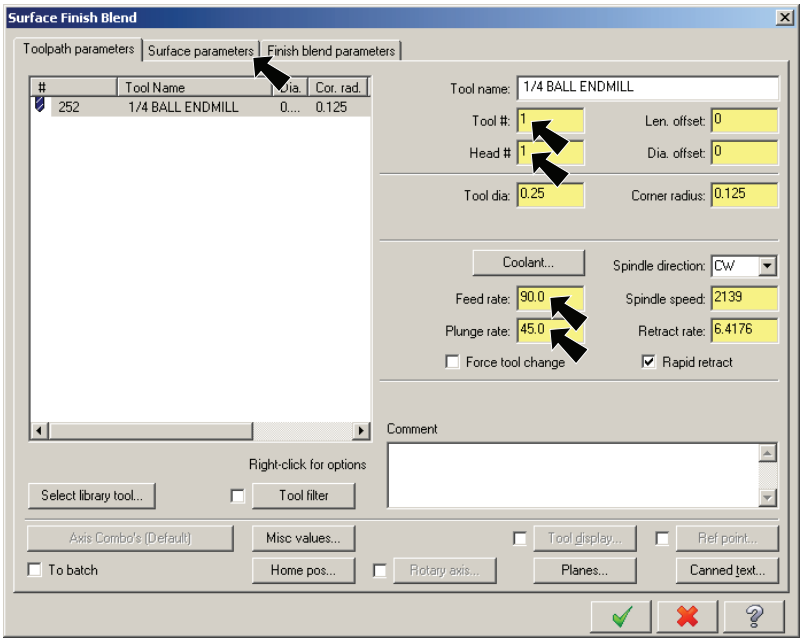


Fig. 10

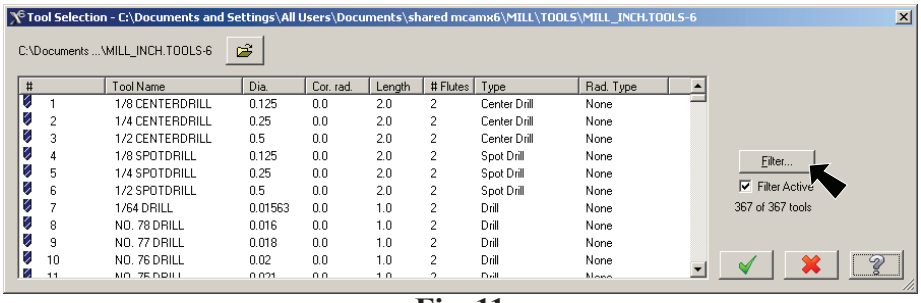


Fig. 11

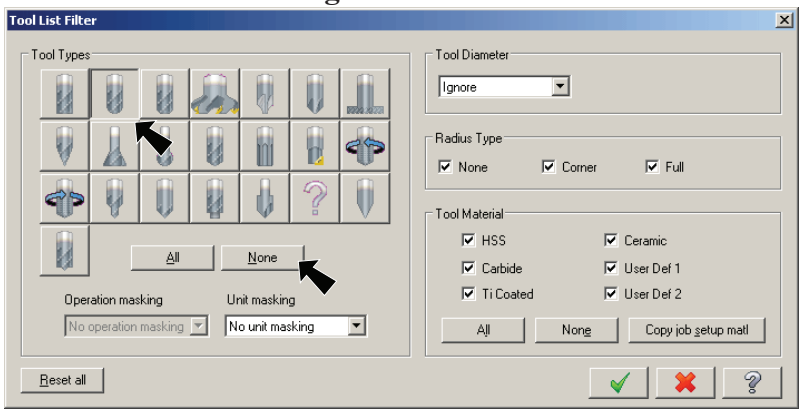


Fig. 12

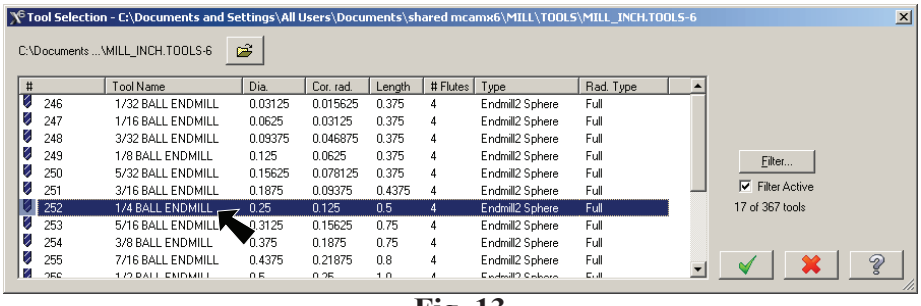


Fig. 13

Step 11. **Uncheck Clearance**, **Fig. 14**.

Step 12. **Uncheck Retract**.

Step 13. Set **Feed plane: 0** and click **Absolute**.

Step 14. Set **Stock to leave on check: .01**

Step 15. Click the **Finish blend parameters tab** at the top of the dialog box, **Fig. 14**.

Step 16. Set **Maximum Stepover**: **.06** **Fig. 15**.

Step 17. Click the **Total tolerance button**.

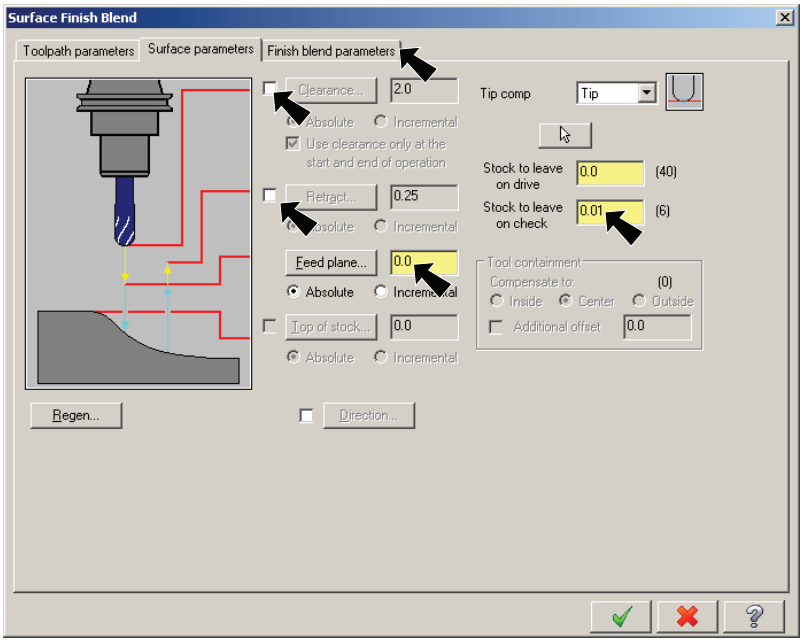


Fig. 14

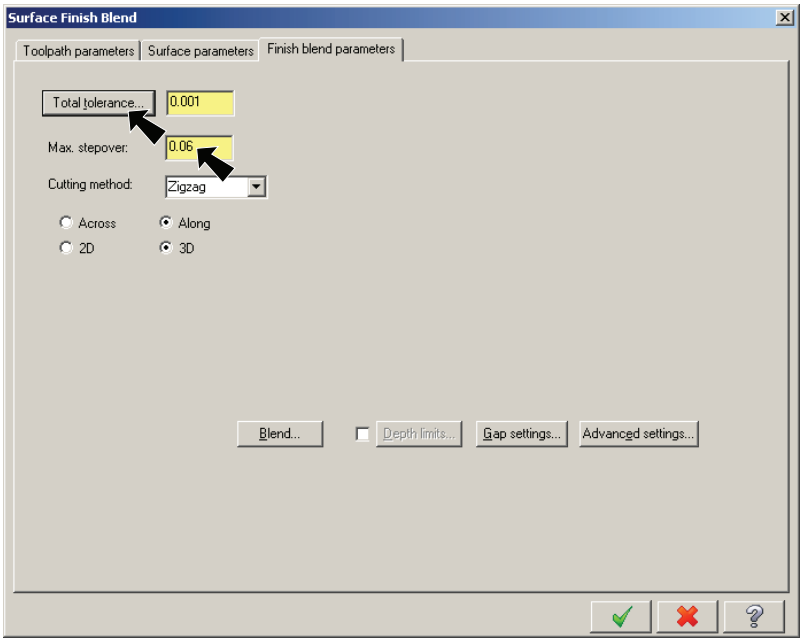


Fig. 15

Step 18. Check **Line/Arc Filtering Setting**, **Fig. 16**

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

uncheck **One way filtering**.

Step 19. Click OK  .

Step 20. Click **Gap settings** button, **Fig. 17**.

Step 21. Under Motion, select **Follow surface(s)**, **Fig. 18**.

Step 22. Check **Optimize cut order** and click OK  , **Fig. 18**.

Step 23. Click **Advanced settings** button, **Fig. 17**.

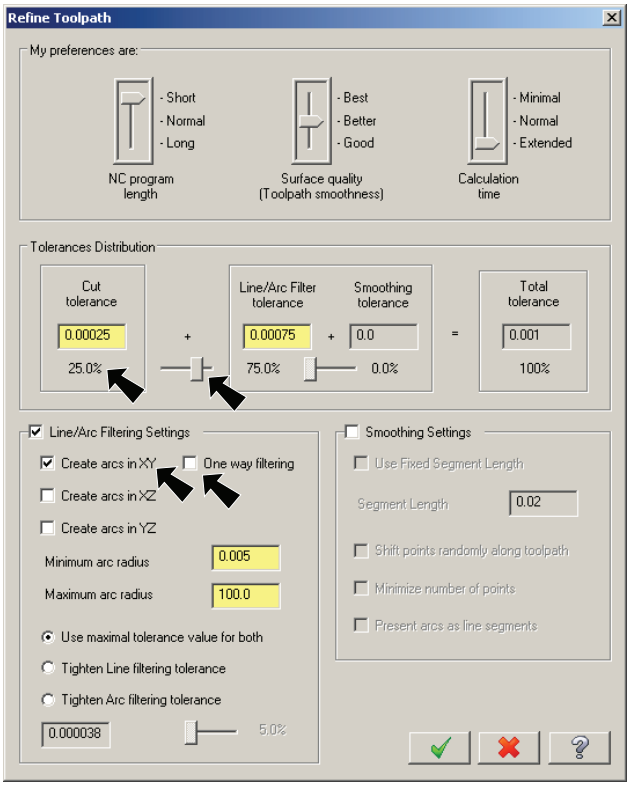


Fig. 16

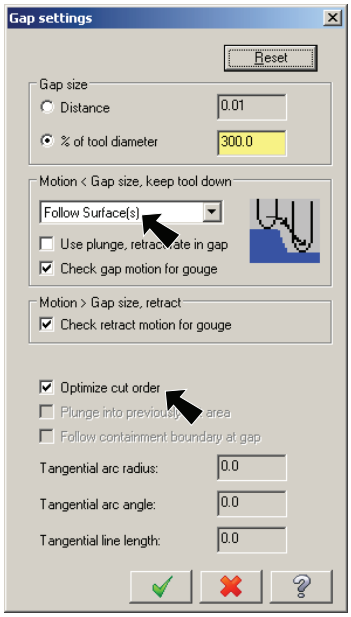


Fig. 18

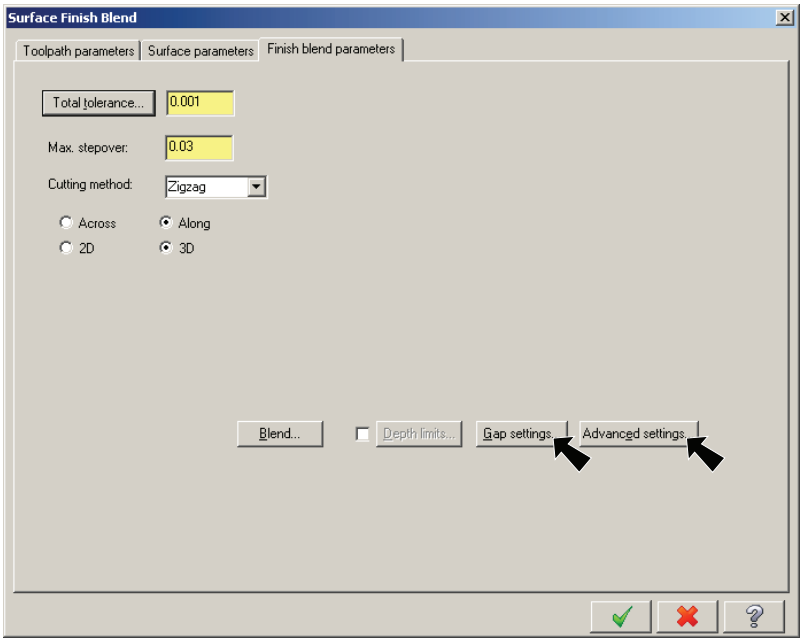


Fig. 17

Step 24. Select **Only between surfaces**, **Fig. 19**.

Step 25. Check **Skip hidden face test for solid bodies** and click OK  , **Fig. 19**.

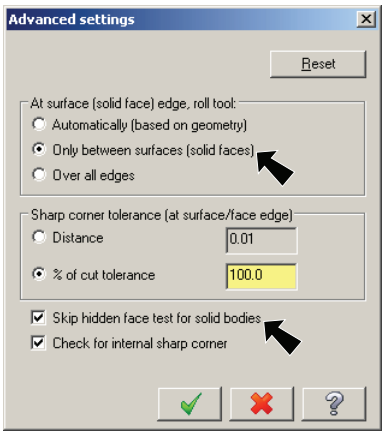


Fig. 19

Step 26. Click OK  to close Surface Finish Blend dialog box.

Step 27. Watch the toolpath progress at the bottom left corner of the display.

E. Verify Top Cut.

Step 1. In the Toolpaths Manager, click the **Surface Finish Blend toolpath** to select toolpath, **Fig. 20**.

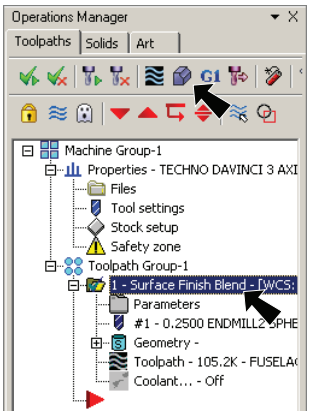


Fig. 20

Step 2. Click **Verify**  in the Toolpaths Manager, **Fig. 20**.

Step 3. Click **Machine quickly**  in Verify dialog box, **Fig. 21**.

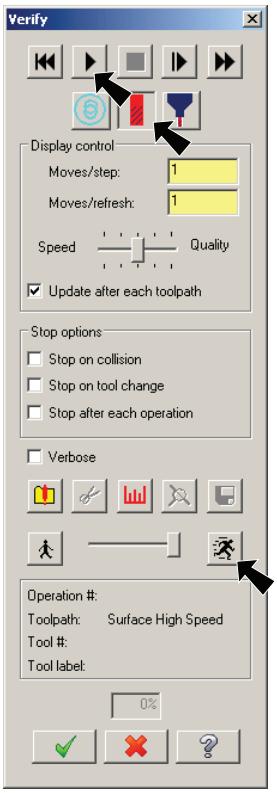


Fig. 21

Step 4. Turn on (button depressed) **Simulate tool**  .

Step 5. Click the **Play**  in the Verify dialog box to start the machining.

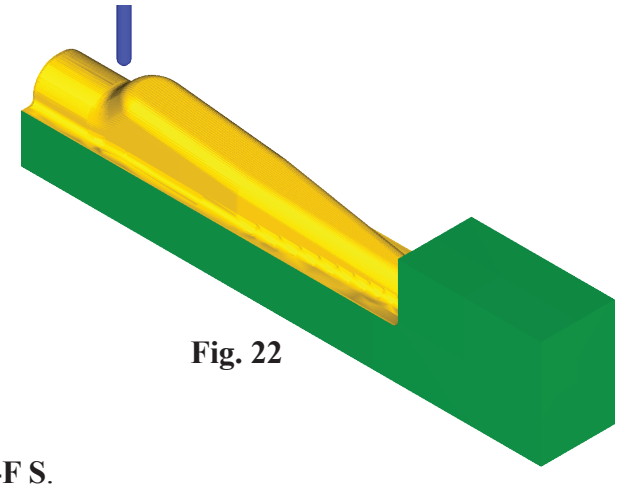


Fig. 22

Step 6. Click OK  to close Verify dialog box.

Step 7. Save  . Use **Alt-F S**.

F. Change to BOTTOM CUT WCS.

Step 1. Use **Alt-T** to turn off toolpath display.

Step 2. Click **WCS** in the Status Bar at the bottom of the screen and **View Manager**, **Fig. 23**.

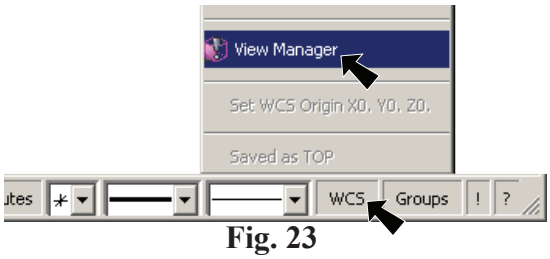


Fig. 23

Step 3. Click the **BOTTOM CUT view** from the list of views in the View Manager, **Fig. 24**.

Step 4. Click the Set All  button, **Fig. 24** and click OK.

Step 5. Change to the Isometric View. Use  .

Step 6. Click Fit  or use **Alt-F1** to fit to the screen.

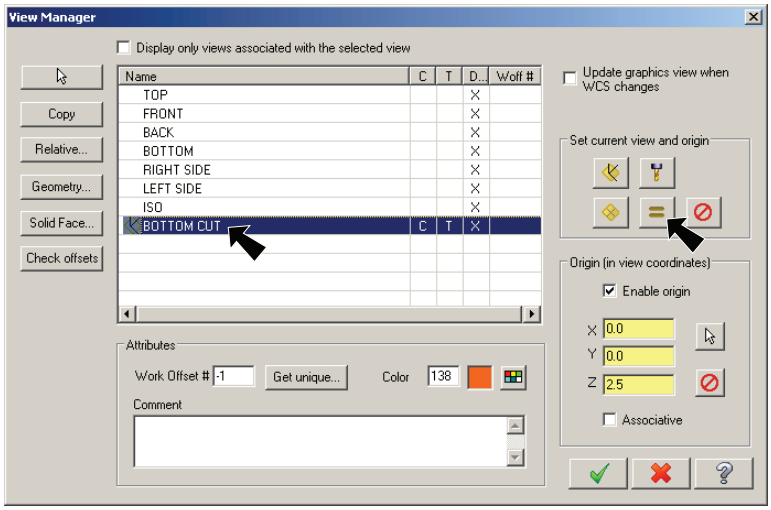


Fig. 24

Step 7. Check Origin, **Fig. 25**. Use **F9** to show and hide axes.

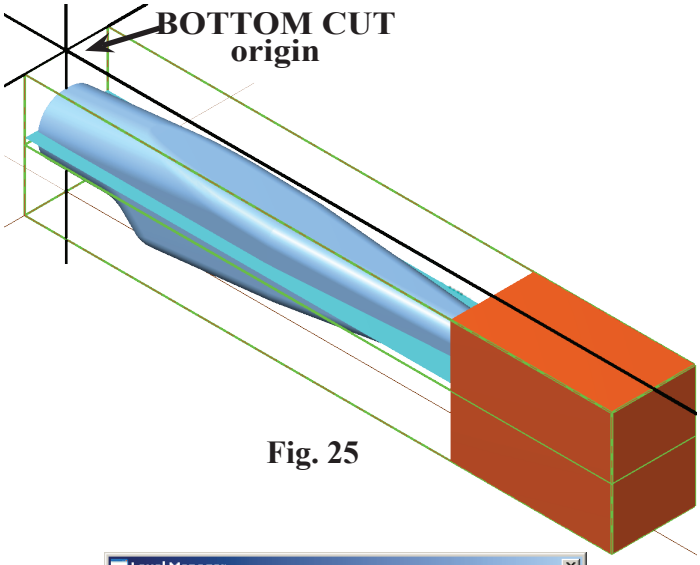


Fig. 25

Step 8. Save  . Use **Alt-F S**.

G. Bottom Cut Level On.

Step 1. Display Level Manager. Use **Alt-Z**.

Step 2. **Turn off TOP CUT surface level and turn on BOTTOM CUT.** To turn off level, click the X in the Visible column to remove X in **TOP CUT**. Click to place X in **BOTTOM CUT** Visible column. Click OK  when done, **Fig. 26**.

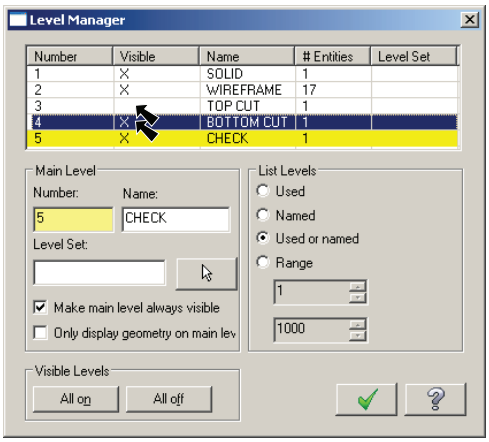


Fig. 26

H. Copy Toolpath.

Step 1. Copy Surface Finish Blend toolpath in the Toolpaths Manager. To copy, **hold right mouse button and drag the Surface Finish Blend** toolpath down under the operations. Release the mouse button and click **Copy After** from menu, **Fig. 27**.

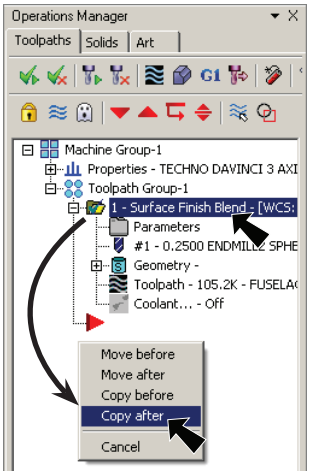


Fig. 27

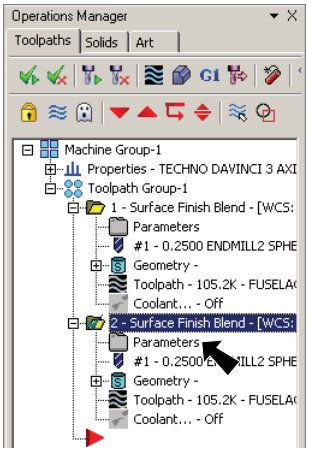


Fig. 28

I. Set Planes.

Step 1. Expand (click +) **2 Surface Finish Blend** and click **Parameters**, **Fig. 28**.

Step 2. Click the **Toolpath parameters tab** at the top of the Surface Finish Blend dialog box, **Fig. 29**.

Step 3. Click **Planes** button in the Surface Finish Blend dialog box, **Fig. 29**.

Step 4. Under **Working Coordinate System**, click **View Selection button** in the Toolpath Coordinates System dialog box, **Fig. 30**.

Step 5. Click **BOTTOM CUT** and click OK to close View Selection dialog box, **Fig. 31**.

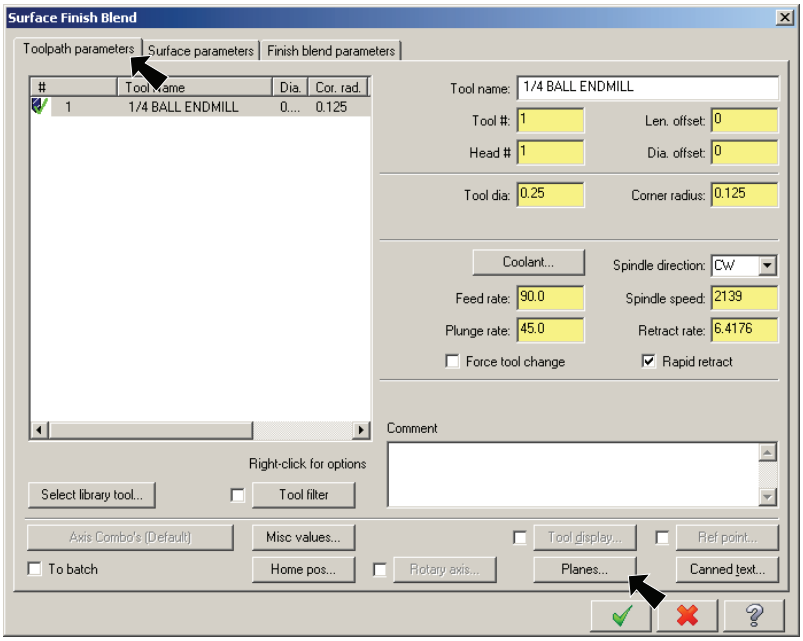


Fig. 29

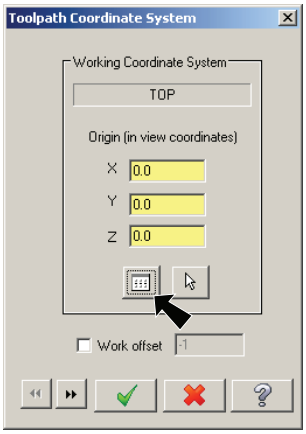


Fig. 30

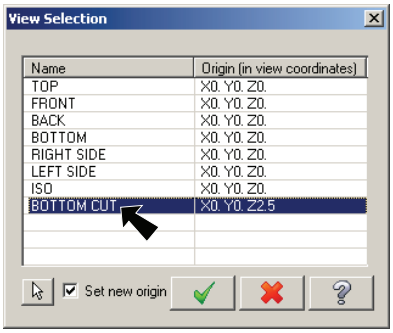


Fig. 31

Step 6. **Click the Expand button**  **twice, Fig. 32.**

Step 7. **Uncheck Display relative to WCS, Fig. 32.**

Step 8. Click **both Copy Settings Right** buttons to copy setting to Tool Plane and Construction Plane, **Fig. 32**. Click OK  to close Toolpath Coordinate System dialog box.

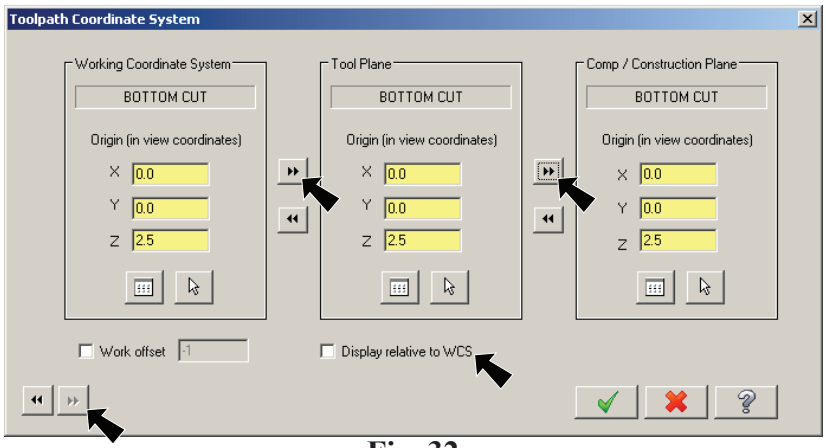


Fig. 32

Step 9. Click OK  to close Surface Finish Blend dialog box.

J. Reselect Surfaces.

Step 1. Expand **2 Surface Finish Blend,** expand Geometry and click **Geometry 40 Drive, Fig. 33.**

Step 2. Click **Deselect All Drive Geometry** button  , **Fig. 34.**

Step 3. Click **Select Drive Geometry** button  , **Fig. 34.**

Step 4. Click the **Bottom cut surface, Fig. 35.**

Step 5. Click Activate solid selection button  in the Solids selection ribbon bar and click **Select body**  and unselect others, **Fig. 36.**

Step 6. Click the **body solid, Fig. 35.** The solid edges will highlight when selected.

Step 7. **Press ENTER** to accept solid selection and press **ENTER again** to accept Drive surfaces.

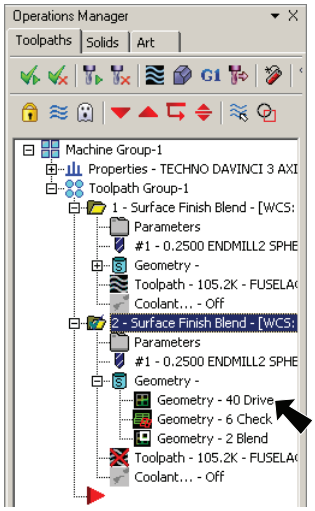


Fig. 33

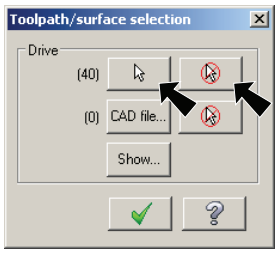


Fig. 34

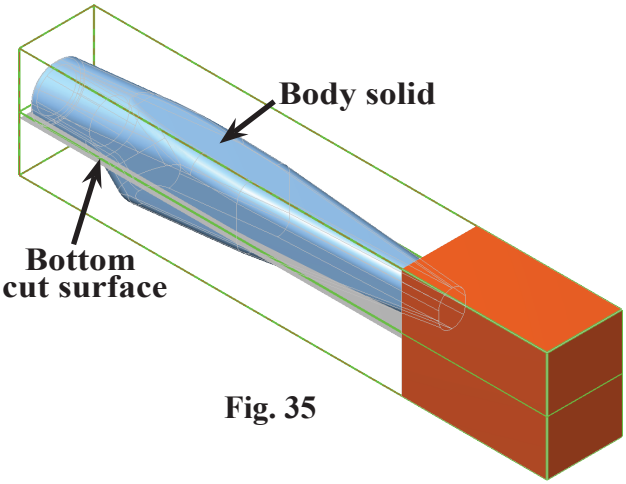


Fig. 35

Fig. 36

Step 8. Click OK  to close the Toolpath/ surface selection dialog box.

K. Verify Right Cut.

Step 1. In the Toolpaths Manager, click **Regenerate all dirty operations**  , **Fig. 38**.

Step 2. Click **Verify**  in the Toolpaths Manager, **Fig. 38**.

Step 3. Click the **Play**  in the Verify dialog box to start the machining, **Fig. 39**.

Step 4. Click OK  to close Verify dialog box.

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

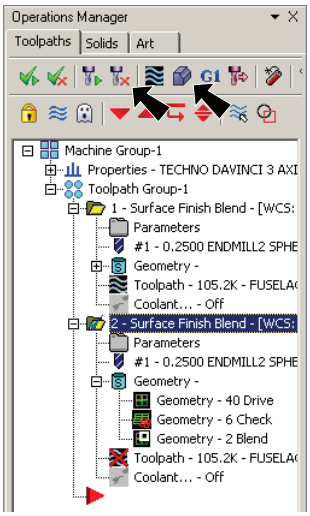


Fig. 37

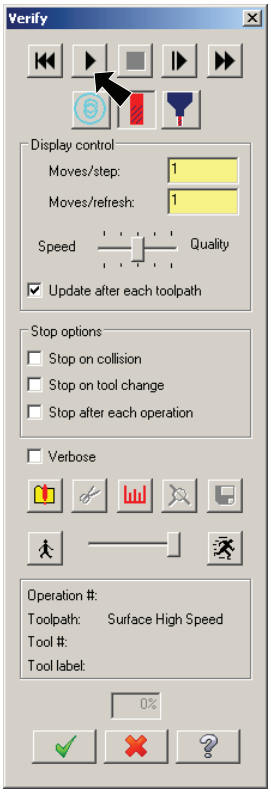


Fig. 38