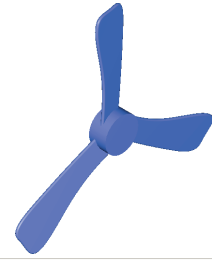


Mastercam Chapter 14 PROPELLER SOLID



A. Change and Name Level.

Step 1. Change the Level. Use **Alt-Z** to display the Level Manager.

Step 2. Key-in **3** in the Number field. Press the Tab key to move to the Name Field and key-in **prop** and click OK, Fig. 1.

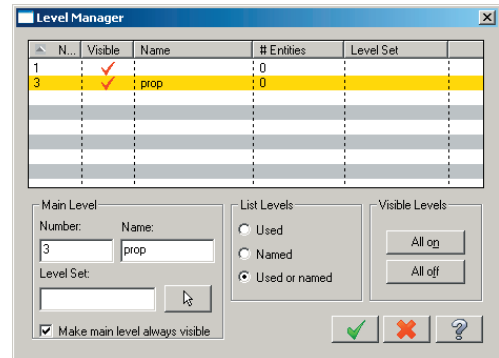


Fig. 1

B. Create Circle For Hub.

Step 1. Change to the Right Side View. Use  or **Alt-5**.

Step 2. Draw the hub blue. Click the color swatch in the Status Bar at the bottom of the screen. Key-in **151** for blue color number and press ENTER.

Step 3. Click Create Menu > Arc > Create Circle Center Point.

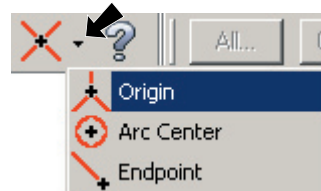


Fig. 2

Step 4. Key-in **.5** for diameter .

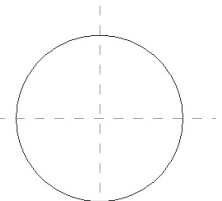



Fig. 3


Step 5. Click the down arrow in the Auto Cursor ribbon bar and click Origin  to place the circle, Fig. 2.

C. Extrude Hub Solid.

Step 1. Change to the Isometric View. Use  or **Alt-7**.

Step 2. Click Fit  or use **Alt-F1**.

Step 3. Click Solids Menu > Solid Extrude.

Step 4. Click the Chain button  in the Chaining dialog box, Fig. 4.

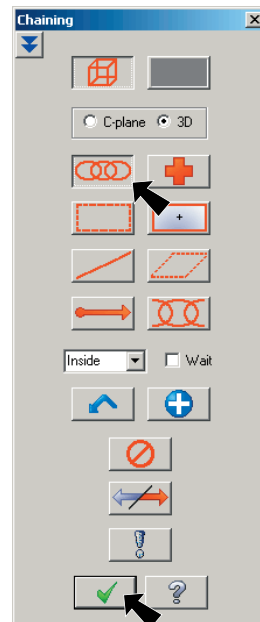



Fig. 4

Step 5. Click the circle and then click the OK button  in the Chaining dialog box, Fig. 4.

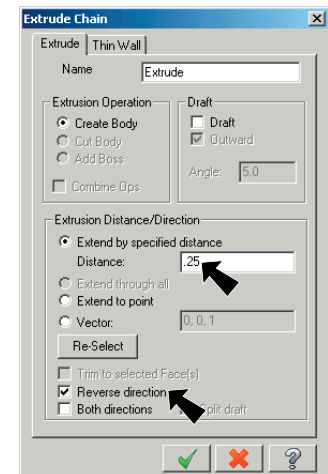


Fig. 5

Step 6. The direction arrow on the chain should **point back to the left**, Fig. 6. If the arrow points in the wrong direction, check Reverse Direction in the Extrude Chain dialog box, Fig. 5.



Fig. 6

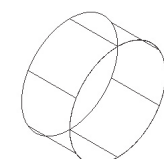
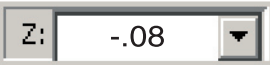


Fig. 7


Step 7. Set **Distance** to **.25** in the Extrude Chain dialog box click the OK button , Fig 5.

D. Draw Blade Spline.

Step 1. Change to the Right Side View. Use  or **Alt-5**.

Step 2. Change the depth of your drawing. Click in the Z field  in the Status bar at the bottom of the screen, key-in **-.08** and press ENTER.

Step 3. Change the **Grid and Snap to .1**. Use **Alt-G**.

Step 4. Set: **X and Y Spacing to .1** and click OK , **Fig. 8**.

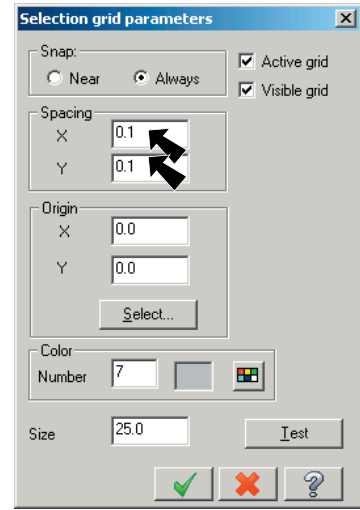


Fig. 8

Step 5. Click Create Menu > Spline > Create Manual Spline.

Step 6. Click the 7 points in **Fig. 9**. Start with **(.1, .1)** up to **(.2, 1.2)** up higher to **(.1, 1.6)** across to **(.0, 1.6)** across again to **(-.2, 1.6)** down to **(-.2, .9)** finish with **(-.2, .1)**. Use the AutoCursor ribbon bar to view the coordinates. Or key-in the coordinates and press ENTER for Z.

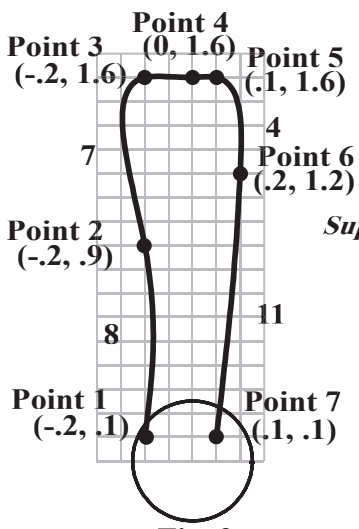



Fig. 9

- Super Fast Spline Points*
- 1) Click Point 1, then
 - 2) Up 8
 - 3) Up 7
 - 4) Over 2
 - 5) Over 1
 - 6) Down 4 and over 1
 - 7) Over 3 from start point

Step 7. Press ENTER to end the spline.

Step 8. Save the drawing. Use File Menu > Save and **prop** for a filename.

E. Create Line Across Bottom Of Blade Spline.

Step 1. Click Create Menu > Line > Create Line Endpoint. Or click the Line Tool  in the toolbar.

Step 2. Draw a line across the bottom of the blade spline, **Fig. 10**.

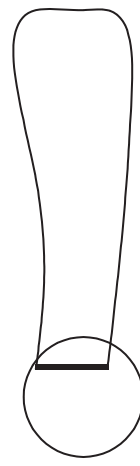




Fig. 10

F. Extrude Blade Solid.

Step 1. Change to the Isometric View. Use  or **Alt-7**.

Step 2. Click Fit  or use **Alt-F1**.

Step 3. Click Solids Menu > Solid Extrude.

- Step 4. Click the Chain button  in the Chaining dialog box, **Fig. 11**.
- Step 5. Click the blade spline, **Fig 13**.
- Step 6. Click the OK button  in the Chaining dialog box, **Fig. 11**.
- Step 7. The direction arrow on the chain should **point back to the left**, **Fig. 13**. If the arrow points in the wrong direction, check Reverse Direction in the Extrude Chain dialog box, **Fig. 12**.

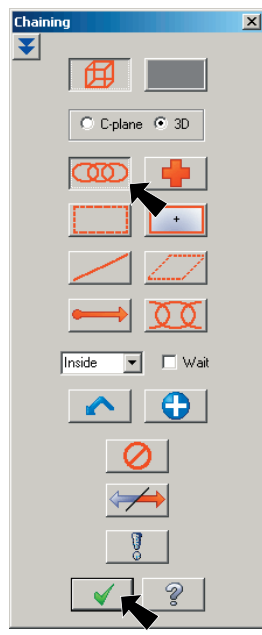


Fig. 11

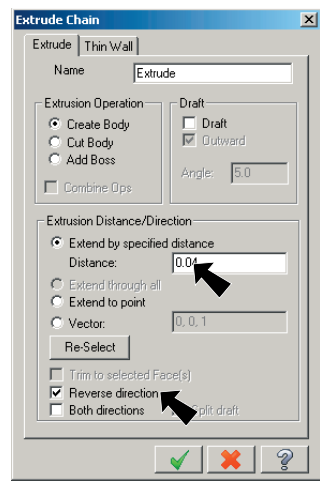



Fig. 12

- Step 8. Set **Distance to .04**, **Fig. 12**.
- Step 9. Click the OK button  in the Extrude Chain dialog box, **Fig. 12**.

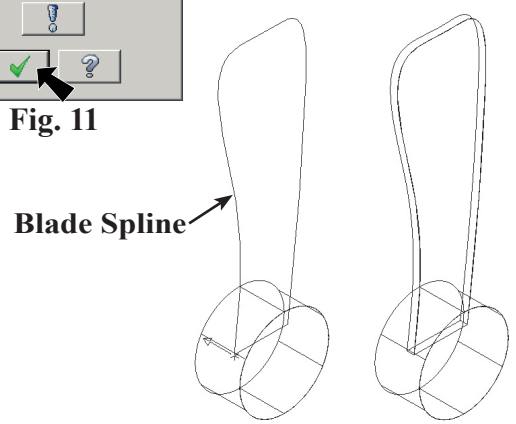


Fig. 13

Fig. 14

G. Fillet Blade Solid.


- Step 1. Turn on the shading, use **Alt-S**.
- Step 2. Click Solids Menu > Fillet > Solid Fillet.
- Step 3. Click Select Body button  (button depress) and unselect other solid select buttons in the Selection ribbon bar, **Fig. 16**.



Fig. 16

- Step 4. Click the blade solid and press **ENTER**, **Fig. 17**.
- Step 5. Set **Radius to .02** in the Fillet Parameters dialog box and click **OK**, **Fig. 18 and Fig. 19**.

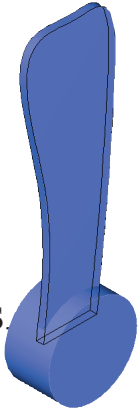


Fig. 17

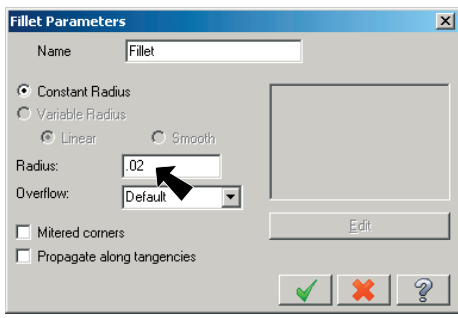


Fig. 18

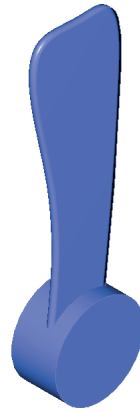


Fig. 19

H. Rotate Blade.

Step 1. Change to the **Top View**. Use  or **Alt-1**.

Step 2. Click Xform Menu > Xform Rotate.

Step 3. Click the blade solid and press ENTER, **Fig. 20**.

Step 4. Set:



1 for Number of Steps **#**

Click the **Define Center Point**  button, **Fig. 21**.



Fig. 20

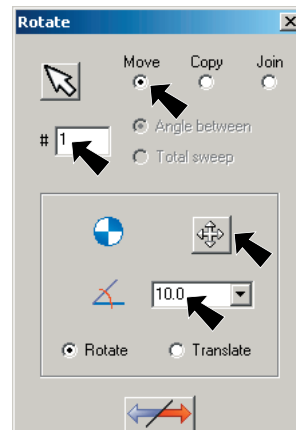


Fig. 21

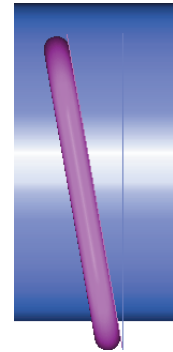


Fig. 22

Step 5. Click the bottom end of the blade, **Fig. 20** for point to rotate about.

Step 6. Set **10** for **Rotation Angle**  and click OK , **Fig. 21**.

Step 7. **Right click** the drawing area and click Clear Colors  from the menu or use **Alt-R C**.

I. Rotate/Copy Blade.

Step 1. Change to the Right Side View. Use  or **Alt-5**.

Step 2. Click Xform Menu > Xform Rotate.

Step 3. Click the blade solid and press ENTER, **Fig. 23**.

Step 4. Set:



2 for Number of Steps **#**

Set **120** for **Rotation Angle** 

and click OK , **Fig. 24**.

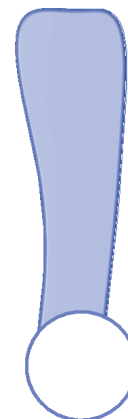


Fig. 23

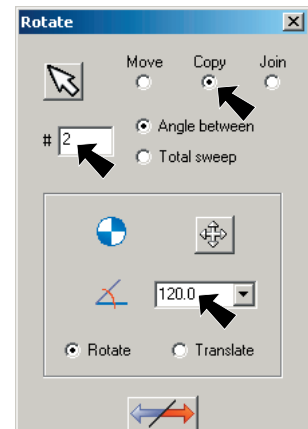



Fig. 24

Step 5. **Right click** the drawing area and click Clear Colors  from the menu or use **Alt-R C**.

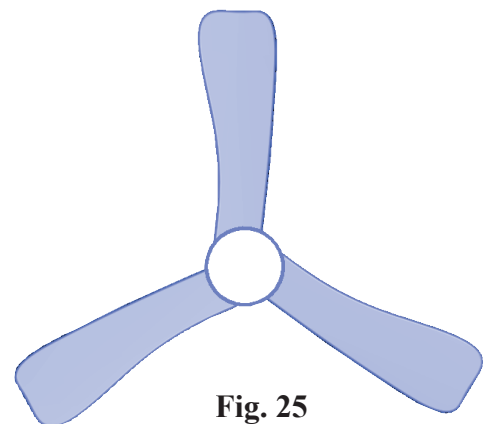


Fig. 25

J. Move Solids To New Level.

Step 1. Change to the Isometric View. Use  or **Alt-7**.

Step 2. **Right click** on Level in the Status Bar at the bottom of the screen, **Fig. 26**



Fig. 26


Step 3. Click the All button  in the General Selection ribbon bar, **Fig. 27**.



Fig. 27

Step 4. Click to place a check in Solids check box in the Select All dialog box and click OK, **Fig. 28**.

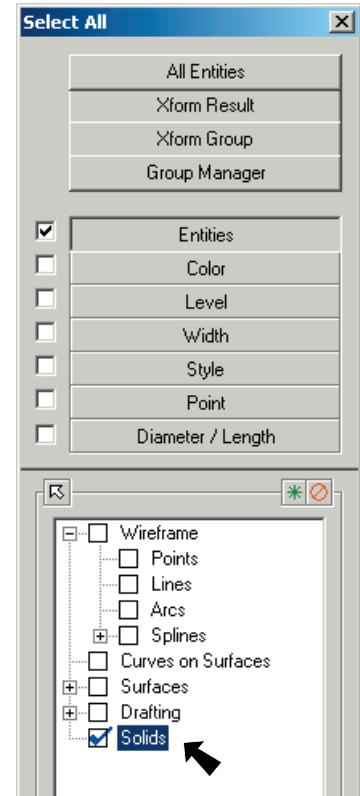


Fig. 28

Step 5. Press ENTER.

Step 6. **Uncheck Use Main Level** in the Change Levels dialog box, **Fig. 29**.

Step 7. Key-in **4** for Level Number and click OK, **Fig. 29**.

Step 8. Change levels and hide geometry level. Use **Alt-Z** to display Level Manager.

Step 9. Click the **4** in the Number column to make **Level 4 active**, **Fig. 30**.

Step 10. **Uncheck Level 3** in the Visible column to hide the geometry, **Fig. 30**.

Step 11. Key-in **prop solids** for level 4 Name and click OK, **Fig. 30**.

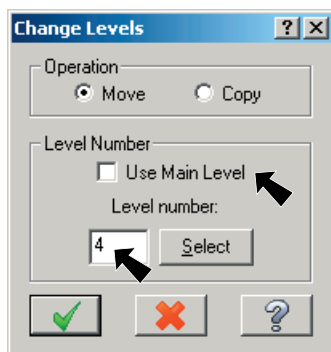


Fig. 29

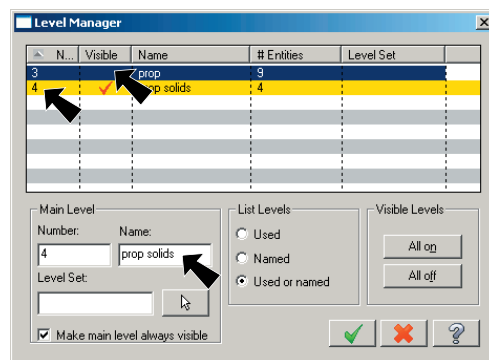


Fig. 30

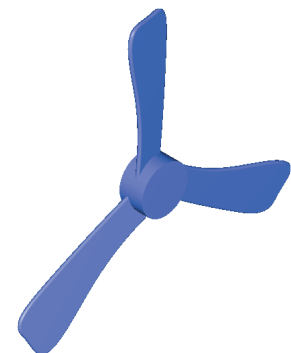


Fig. 31