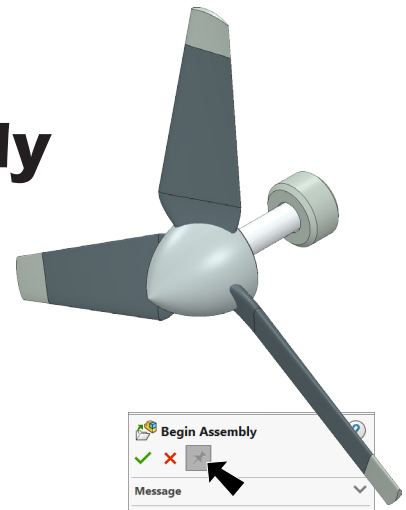




# Airmaster Propeller Assembly





## A. Insert Hub and Blade 4412.

Step 1. Click File Menu > New, click **Assembly Metric** and OK.

Step 2. Select your **HUB** file and click Open from the Open dialog box.

Step 3. In the Begin Assembly Property Manager set:

click **Keep Visible** , **Fig. 1**

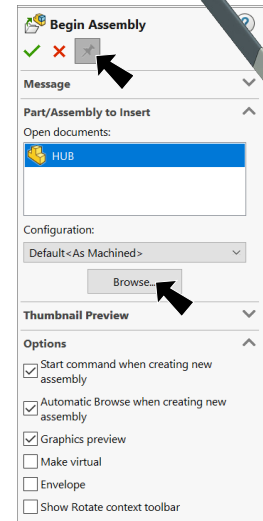
Click OK  in the Property Manager. This will place Hub origin at the assembly origin and fix the position so Hub cannot move. This fixed component should have a **(f)** before its name in the Feature Manager  (f) HUB<1> .

Step 4. Click **Browse** in the Property Manager, **Fig. 1**.

Step 5. Select your **BLADE 4412** file and click Open.

Step 6. Click approximately where Blade is positioned in **Fig. 2**.

Step 7. Click OK  in the Property Manager when done.

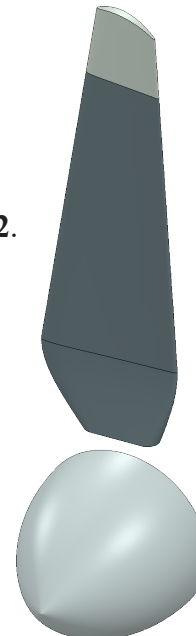


**Fig. 1**

## B. Save as "PROPELLER ASSEMBLY".

Step 1. Click File Menu > Save As.



Step 2. Key-in **PROPELLER ASSEMBLY** for the filename and press ENTER.







**Fig. 2**


## C. Mate: Blade.




Step 1. Click **Right**  on the Standard Views toolbar. (Ctrl-4)

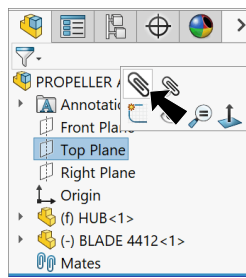
Step 2. Click **Top Plane**  in the Feature Manager and **Mate**  on the context toolbar, **Fig. 3**.

Step 3. Expand the flyout Feature Manager design tree, expand **BLADE** and click **Top Plane** , **Fig. 4**.

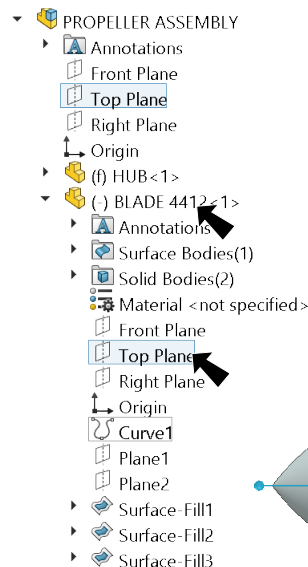
Step 4. Click **Distance**  in Mate pop-up, **Fig. 5**. Set **distance 7.8** and press ENTER. The Blade should be above assembly Top Plane, **Fig. 6**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click Add/Finish Mate  to add Distance mate.

Step 5. Expand the flyout Feature Manager design tree, click **Front Plane**  and expand **BLADE** and click **Axis1**, **Fig. 7**.

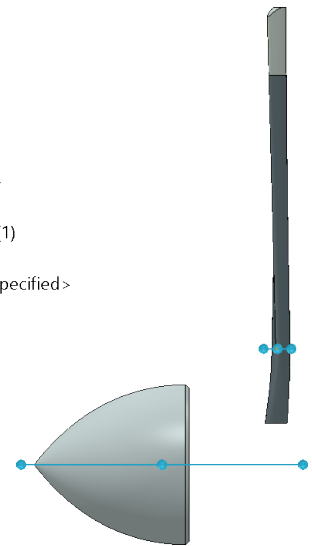
Step 6. Click **Distance**  in Mate pop-up, **Fig. 8**. Set **distance 2** and press ENTER. The **Blade** should be in the Hub, **Fig. 9**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click Add/Finish Mate  to add Distance mate.



**Fig. 3**



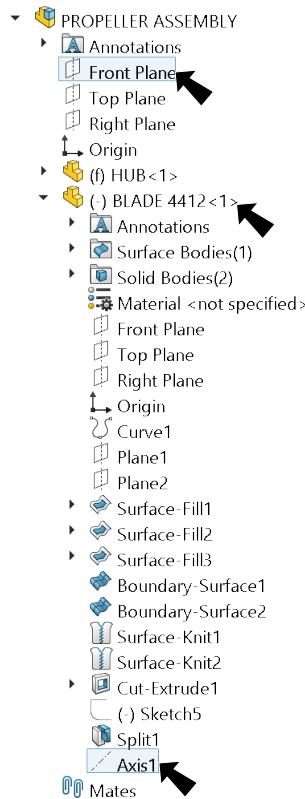
**Fig. 4**



**Fig. 6**



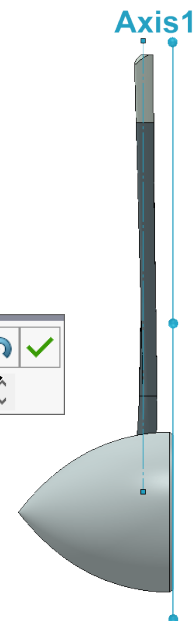
**Fig. 5**




**Fig. 7**



**Fig. 8**








**Fig. 9**


Step 7. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 8. Expand the flyout Feature Manager design tree, click **Right Plane**  and expand **BLADE** and click **Axis1**, **Fig. 10**.

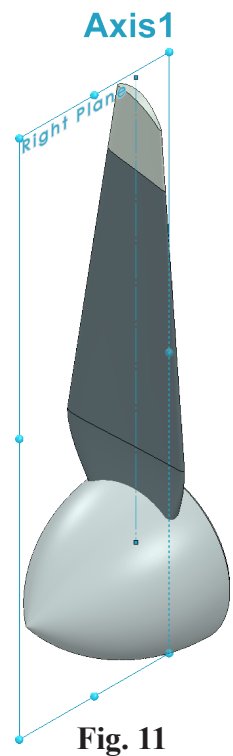
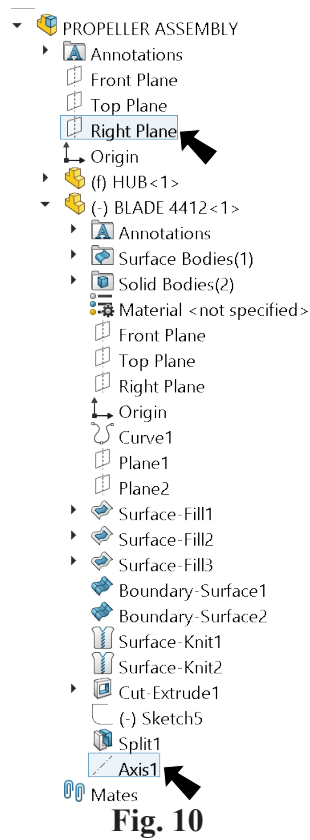
Step 9. Click Add/Finish Mate  to add **Coincident** mate.

Step 10. Expand the flyout Feature Manager design tree, click **Right Plane**  and expand **BLADE** and click **Right Plane** , **Fig. 12**.

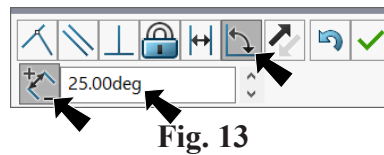
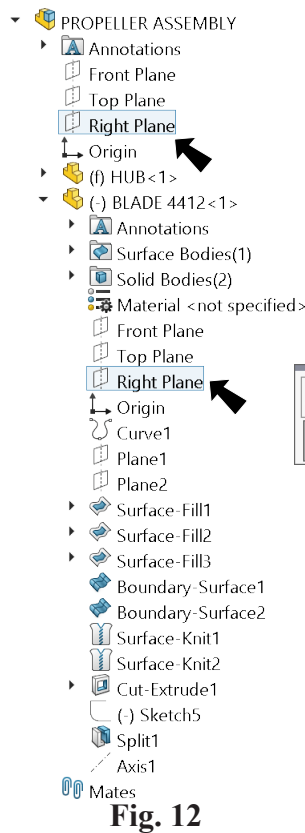
Step 11. Click **Angle**  in Mate pop-up, **Fig. 13**. Set **angle 25°** and press ENTER. The **Blade** should positioned with leading edge in front of trailing edge, **Fig. 14**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click Add/Finish Mate  to add Angle mate.

Step 12. Click OK  in the Property Manager.

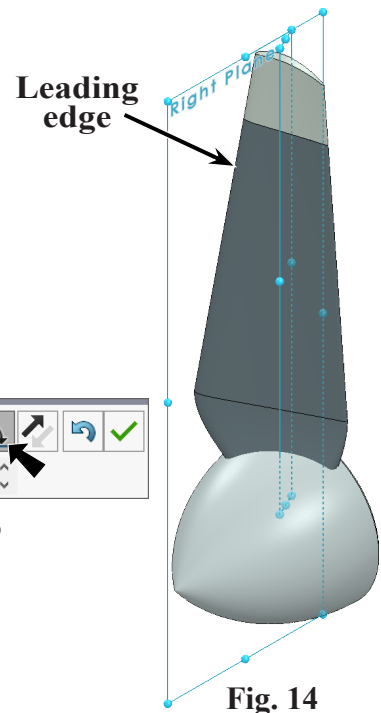
Step 13. Save  (Ctrl-S).



**Fig. 11**



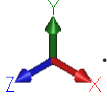
**Fig. 13**



**Fig. 14**

## D. Insert Shaft and Collar.


Step 1. Rotate view to view rear, **Fig. 16**. To rotate view, **Shift click the Y axis of the Reference Triad**




Step 2. Click **Insert Components**  on the Assembly toolbar.

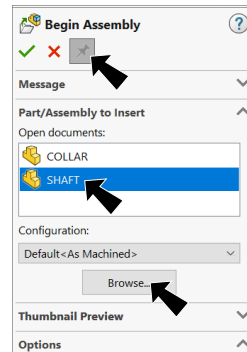
Step 3. In the Open dialog box, **Ctrl click** to select both **SHAFT and COLLAR** files and click Open.

Step 4. In the Assembly Property Manager set:

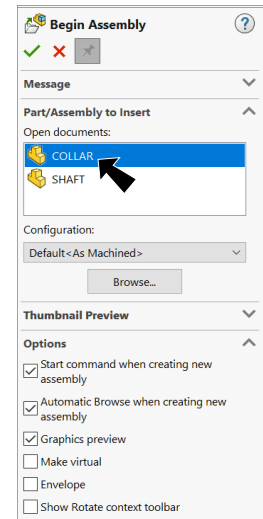
click **Keep Visible** , **Fig. 15**  
 Select **SHAFT** in the Property Manager.  
 Place the Shaft, **Fig. 16**.

Step 5. In the Assembly Property Manager set:

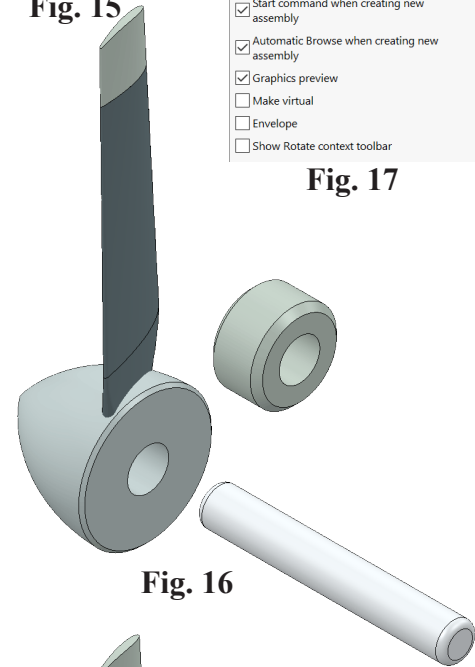
Select **COLLAR** in the Property Manager, **Fig. 17**.  
 Place COLLAR, **Fig. 16**.  
 Click OK  in the Property Manager.



**Fig. 15**




**Fig. 17**




**Fig. 16**

## E. Mate: Shaft and Collar.

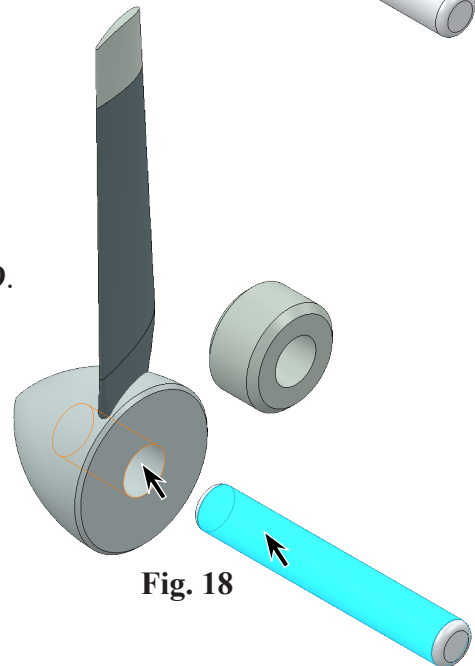
Step 1. Click **Mate**  on the Assembly toolbar.

Step 2. Click **cylindrical face of Shaft** and a **cylindrical face of hole in Hub**, **Fig. 18**.

Step 3. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 19**.

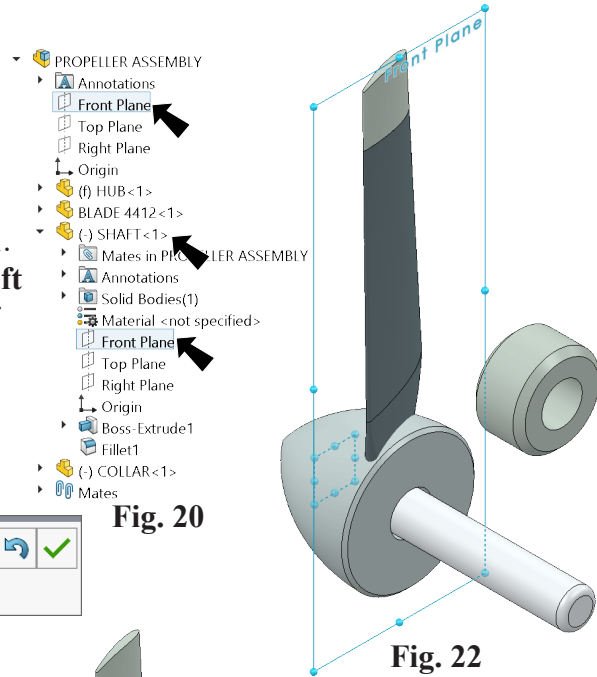





**Fig. 19**

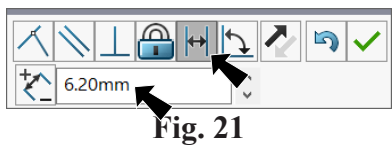


**Fig. 18**

Step 4. Expand the flyout Feature Manager design tree, click **Front Plane** , expand **SHAFT** and click **Front Plane** , **Fig. 20**.




Step 5. Click **Distance**  in Mate pop-up, **Fig. 21**. Set distance **6.2** and press ENTER. The Shaft should be forward of Front Plane, **Fig. 22**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click **Add/Finish Mate**  to add Distance mate.

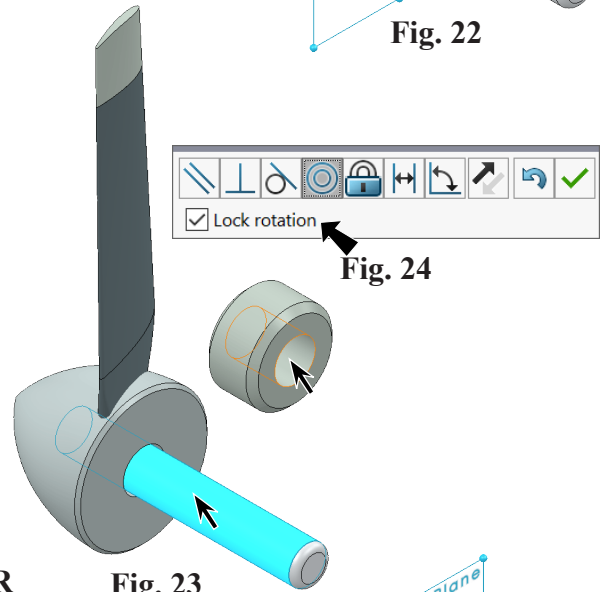


**Fig. 20**

**Fig. 22**


Step 6. Click **cylindrical face of Shaft** and a **cylindrical face of Collar**, **Fig. 23**.

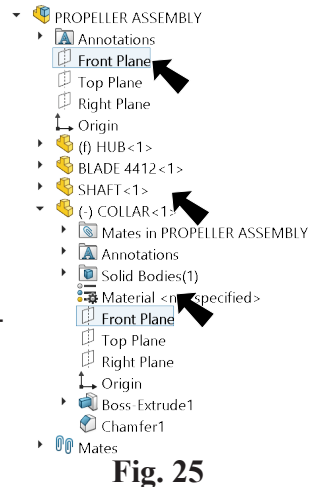
Step 7. Check **Lock Rotation** and **Add/Finish Mate**  in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 24**.






**Fig. 23**

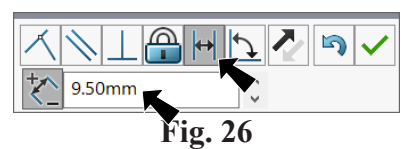
**Fig. 24**

Step 8. Expand the flyout Feature Manager design tree, click **Front Plane** , expand **COLLAR** and click **Front Plane** , **Fig. 25**.



**Fig. 25**

Step 9. Click **Distance**  in Mate pop-up, **Fig. 26**. Set distance **9.5** and press ENTER. The Collar should be positioned at end of Shaft, **Fig. 27**. If positioned in opposite direction, click **Flip Dimension**  in the Mate pop-up. Click **Add/Finish Mate**  to add Distance mate.



**Fig. 26**

**Fig. 27**




Step 10. Click **OK**  in the Property Manager.

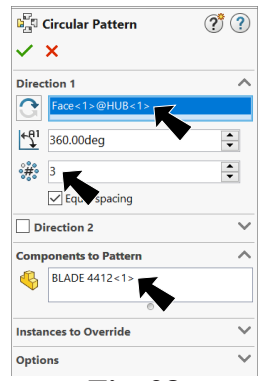
Step 11. Save  (**Ctrl-S**).

## F. Blade Circular Pattern.

Step 1. Click **Circular Component Pattern**  in the **Linear Component**

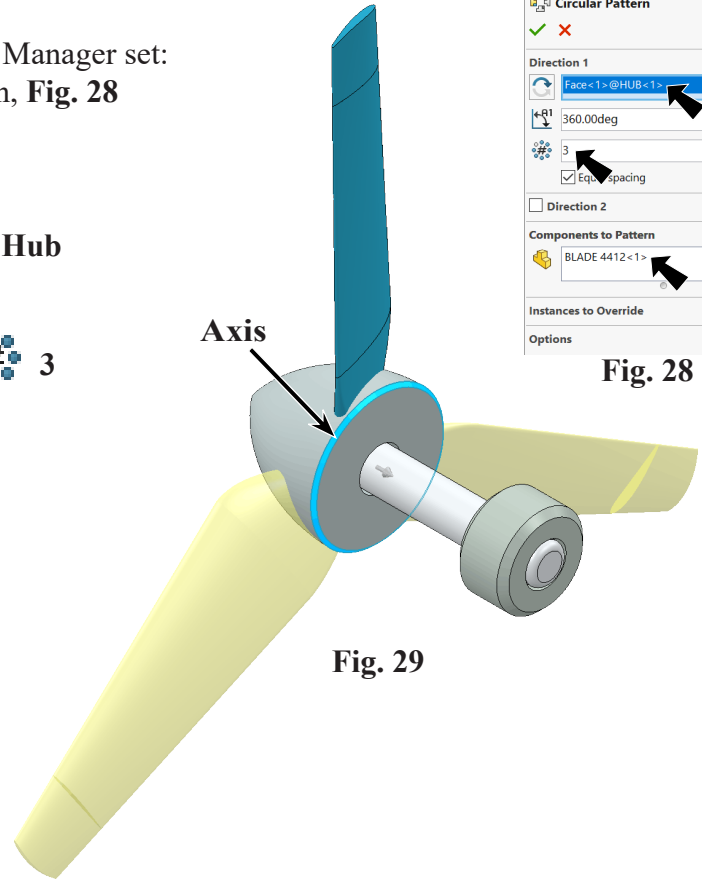
**Pattern flyout**  on the Features toolbar.

Step 2. In the Circular Pattern Property Manager set:  
 under Components to Pattern, **Fig. 28**  
 click **Blade**, **Fig. 29**  
 under Direction 1  
 click in Pattern Axis box  
 click **chamfer surface of Hub**  
**Angle**  **360**  
**Number of Instances**  **3**  
 check **Equal spacing**  
 click OK .



**Fig. 28**

Step 3. Save  (Ctrl-S).



**Fig. 29**