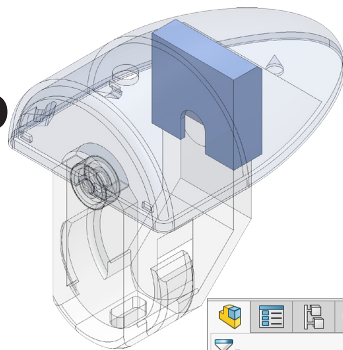
Chapter 14

HAWT
Bearing Cap



A. New Component Part.

Step 1. Open your **Turbine Assembly** file.

Step 2. **Isolate Bearing Housing** and **first Bearing** parts, **Fig. 1**. To Isolate, Ctrl click the two components in the Feature Manager to select both. **Right click one of the components** and click **Isolate** from the menu.

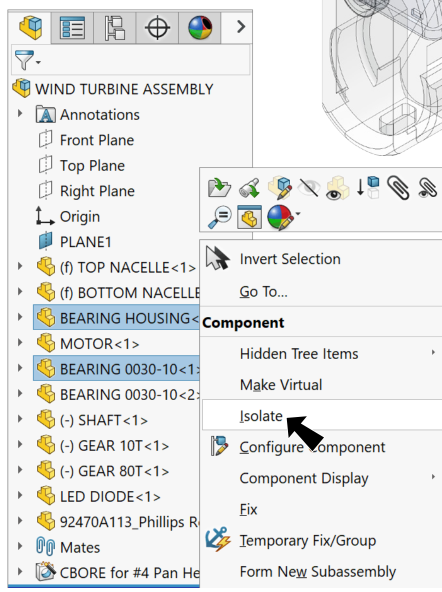


Fig. 1

Step 3. Click **New Part** [New Part] in the **Insert Components flyout** [Insert Components] on the Assembly toolbar.

Step 4. Click **Front Plane** in the Feature Manager, **Fig. 2**.

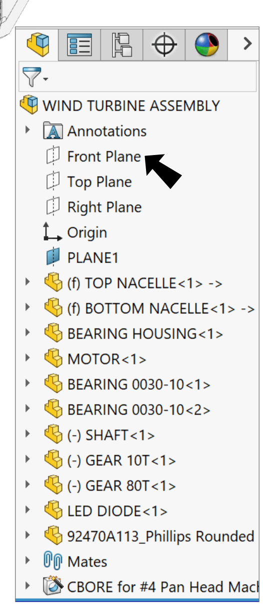


Fig. 2

Step 5. Confirm **No External References** [No External References] on the Sketch toolbar should not be on (button should not be depressed).

Step 6. Set **document units to Millimeters**, **Fig. 3**. To set units, in the status bar at bottom right corner of the display, click Unit System, then select **MMGS** (millimeter, gram, second). Note that this will exit the sketch.

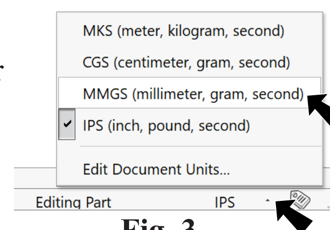


Fig. 3

Step 7. Click **Exit Sketch** [Exit Sketch] on the Sketch toolbar.

B. Save as "BEARING CAP".

Step 1. Click File Menu > Save As.

Step 2. Key-in **BEARING CAP** for filename and press ENTER.

C. Create Plane1.

Step 1. Click **Isometric** on the Standard Views toolbar. **(Ctrl-7)**

Step 2. Expand **Bearing Cap** part in the Feature Manager, click **Front Plane** to display Plane is graphics area, **Fig. 4**.

Step 3. In graphics area **Ctrl drag Front plane to rear** and release, **Fig. 5**.

Step 4. In the Plane Property Manager set:
under First Reference, **Fig. 6**
Front plane was preselected
under Second Reference
click **midpoint** of edge at **rear bearing housing, Fig. 5**
click OK .

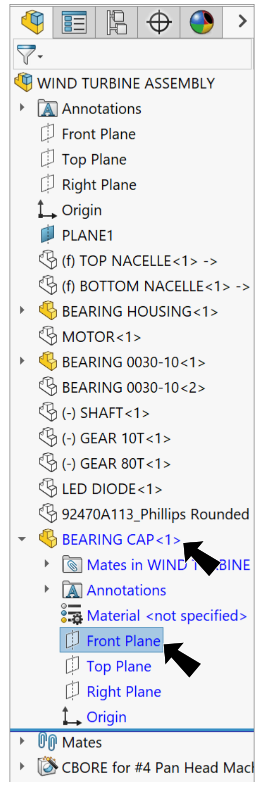


Fig. 4

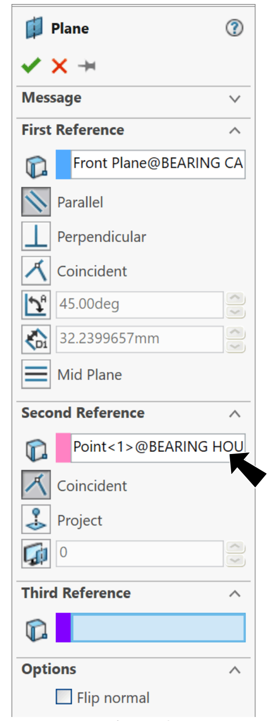


Fig. 6

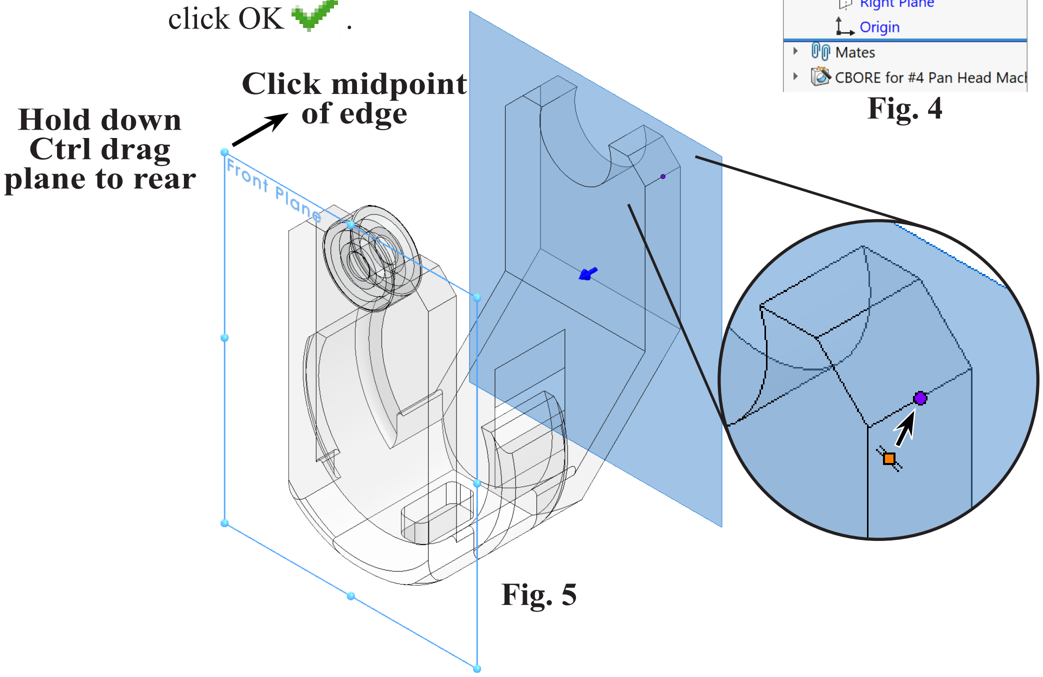


Fig. 5

D. Boss-Extrude1.

Step 1. Expand **Bearing Cap** part in the Feature Manager, click **Plane1** and click **Sketch** on the context toolbar, **Fig.** 7.

Step 2. Click **Normal To** on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Click **Corner Rectangle** in the **Rectangle flyout** on the Sketch toolbar.

Step 4. Sketch corner rectangle, **Fig. 8**.

Step 5. **Unselect Rectangle tool**. To unselect, **right click graphics area and click Select** from menu to unselect Rectangle tool.

Step 6. **Ctrl click midpoint of a horizontal line** and **Origin** to select both. Release Ctrl key and click **Make Vertical** on the context toolbar, **Fig. 9**.

Step 7. Click **Smart Dimension** (**S**) on the Sketch toolbar.

Step 8. Add dimensions, **Fig. 10**.

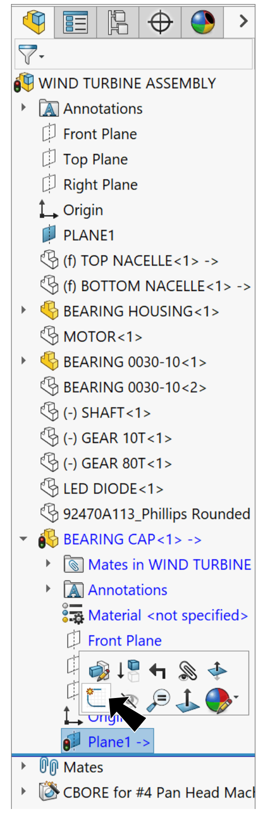


Fig. 7

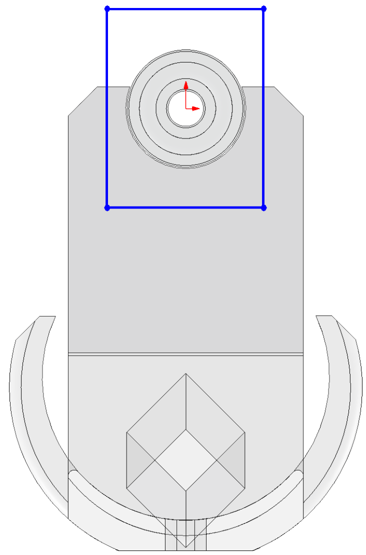


Fig. 8

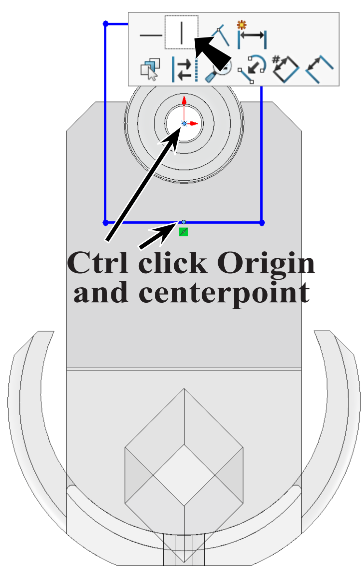


Fig. 9

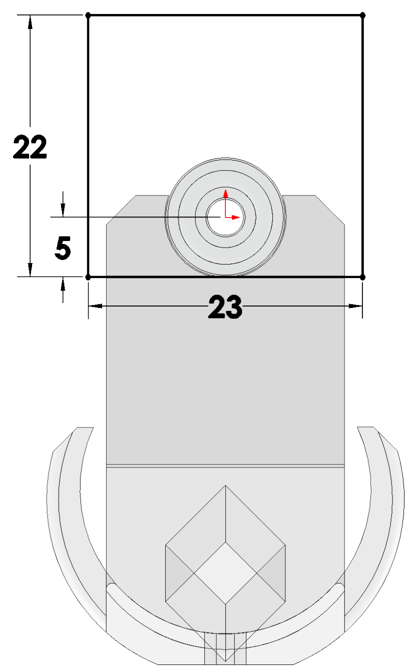


Fig. 9

Step 9. Click **Isometric** on the Standard Views toolbar. **(Ctrl-7)**

Step 10. Click **Features** on the Command Manager toolbar.

Step 11. Click **Extruded Boss/Base** on the Features toolbar.

Step 12. In Boss-Extrude Property Manager:
under Direction 1, **Fig. 11**
End Condition **Mid Plane**

Depth **8**

click OK .

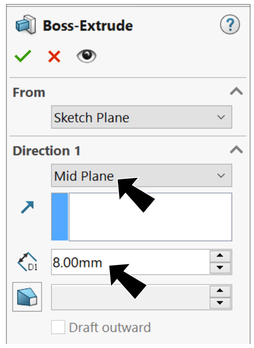


Fig. 11

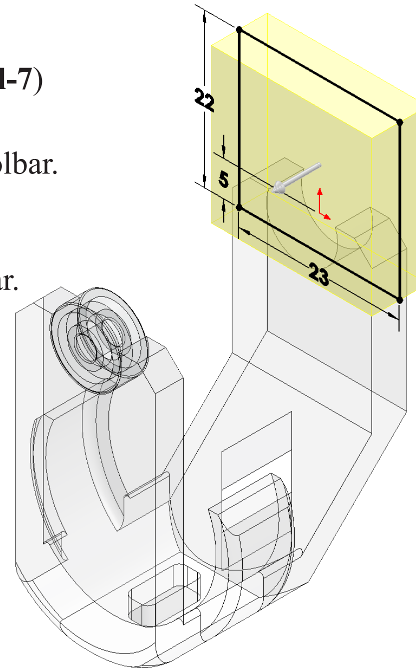


Fig. 12

E. Cut-Extrude1.

Step 1. Click **Plane1** in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 13**.

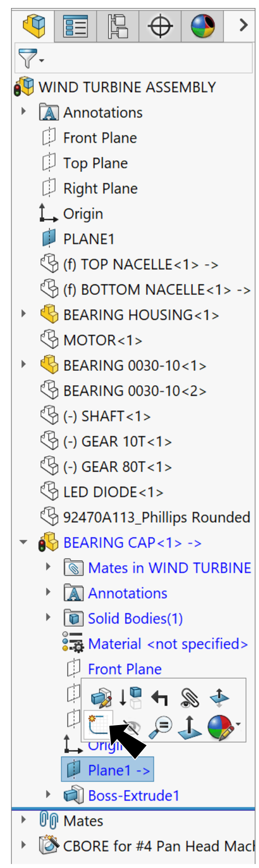


Fig. 13

Step 2. Click **Normal To** on the Standard Views toolbar. **(Ctrl-8)**

Step 3. Click **Offset Entities** on the Sketch toolbar.

Step 4. In the Offset Entities Property Manager set:
under Parameters, **Fig. 14**

Distance **.3 (clearance for Bearing)**
uncheck **Reverse**
uncheck **Bi-directional**
click **Bearing Housing, Fig. 15**
Yellow offset on outside

Click **Keep Visible** and OK . The Push Pin on allows selection of another offset.

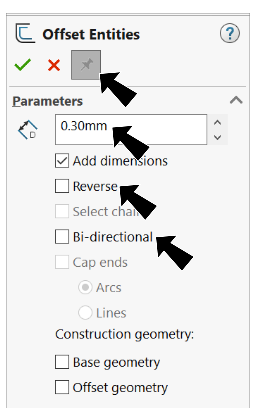
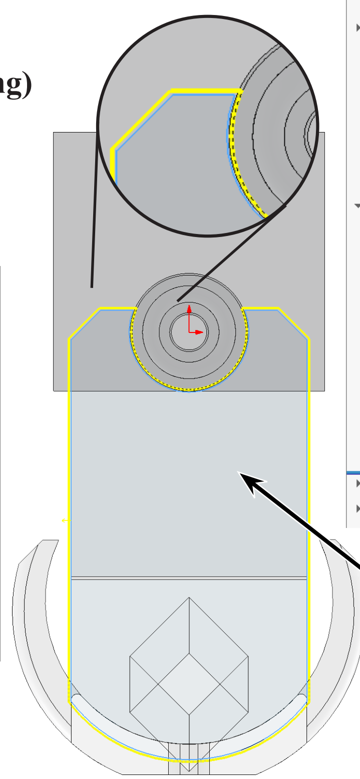


Fig. 14



Bearing Housing

Fig. 15

Step 5. In the Offset Entities Property Manager set:
under Parameters, **Fig. 16**

Distance .3
Rotate view to **view Bearing, Fig. 17**.

Use **Right Arrow key twice.**

Click **circular outer edge of Bearing, Fig. 17**
Yellow offset on outside
Rotate view back to previous view, **Fig. 18**.

Use **Left Arrow key twice**.

click OK **twice**.

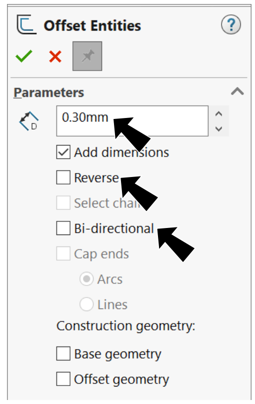


Fig. 16

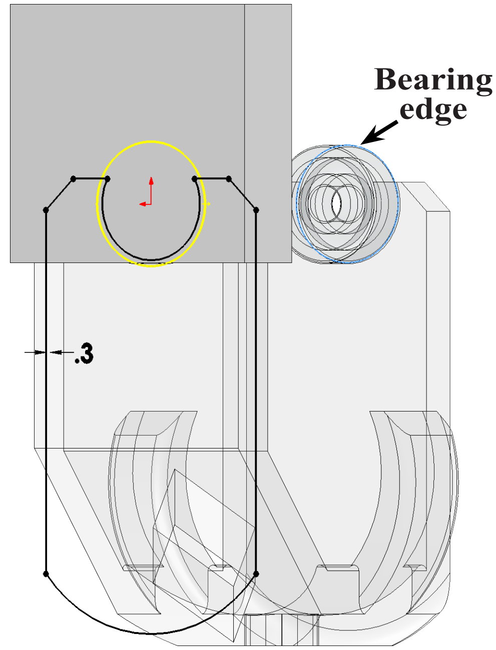


Fig. 17

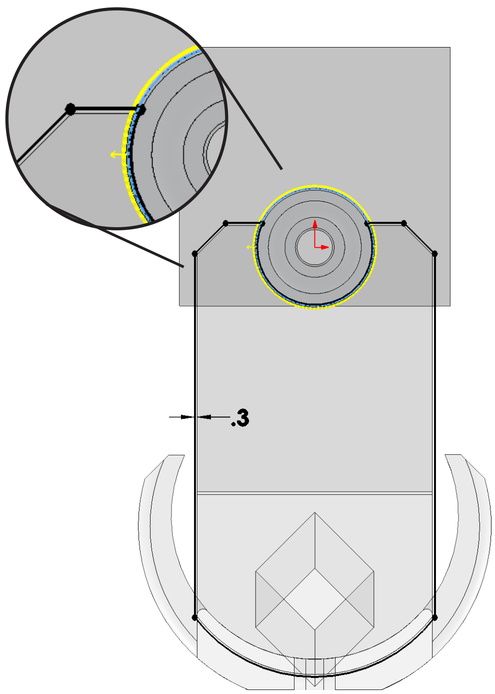


Fig. 18

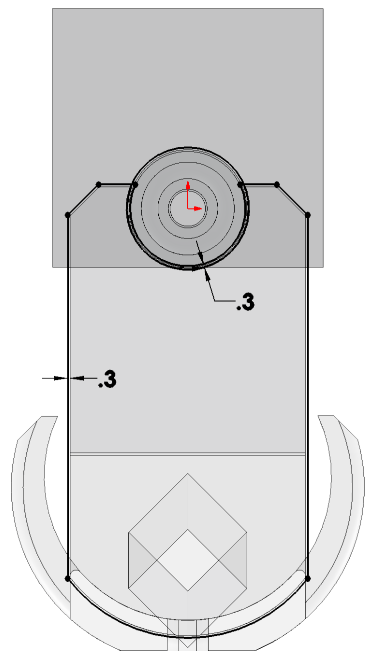


Fig. 19

Step 6. Click **Isometric** on the Standard Views toolbar. **(Ctrl-7)**

Step 7. Click **Features** Features on the Command Manager toolbar.

Step 8. Click **Extruded Cut** Extruded Cut on the Features toolbar.

Step 9. In the Cut-Extrude Property Manager set:

under Direction 1, **Fig. 20**

End Condition **Midplane**

Depth D1 **5.4**

under Selected Contours

click the **2 contours**, **Fig. 21**

click OK .

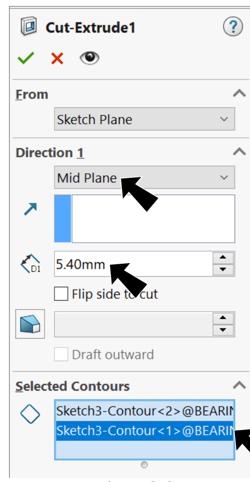


Fig. 20

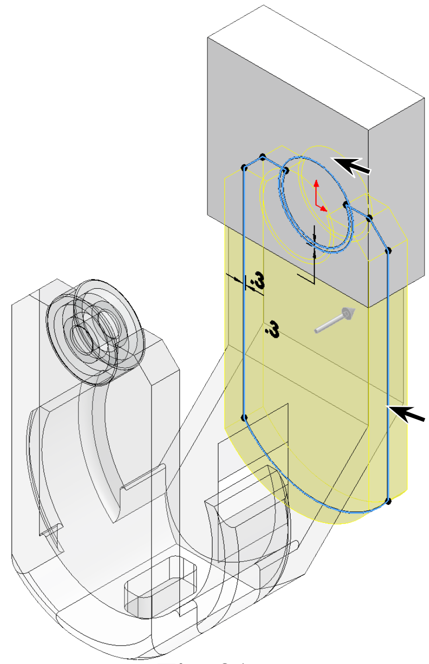


Fig. 21

Transparent Bearing Cap

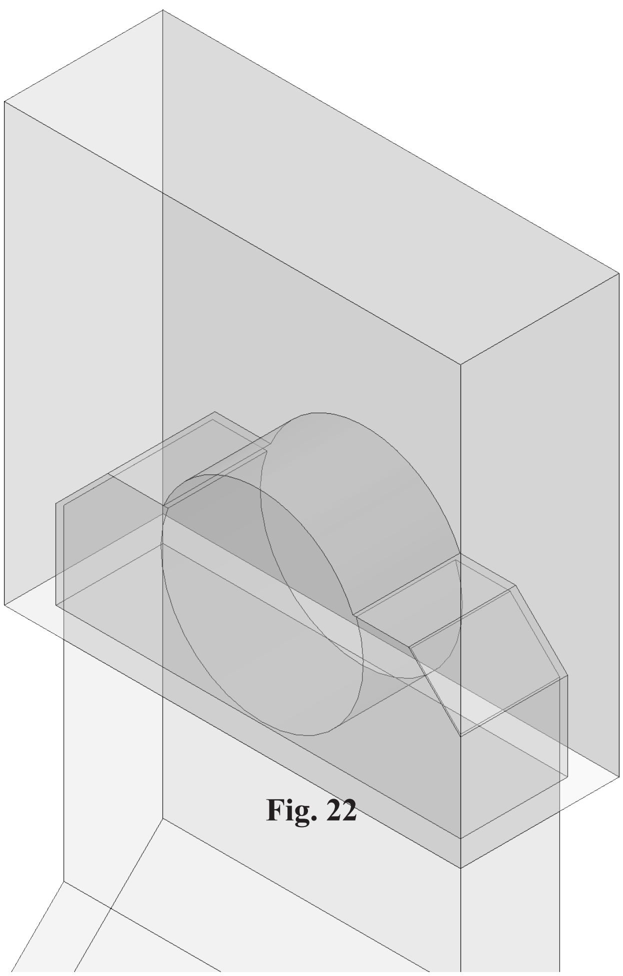


Fig. 22

Hidden Bearing Housing

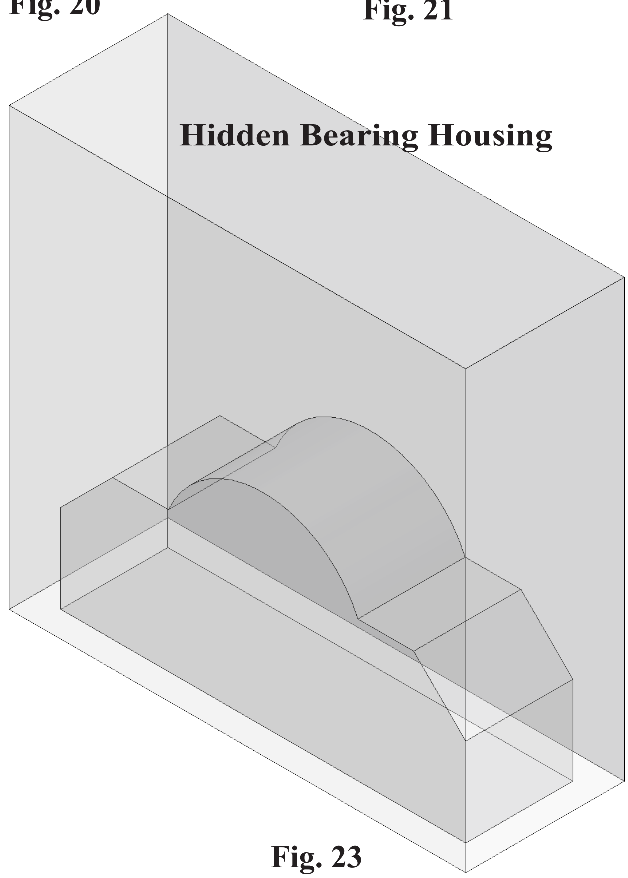


Fig. 23

F. Cut-Extrude2.

Step 1. Click **Plane1** in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 24**.

Step 2. Click **Normal To** on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Click **Circle** (**S**) on the Sketch toolbar.

Step 4. Sketch circle at Origin , **Fig. 25**.

Step 5. Click **Smart Dimension** (**S**) on the Sketch toolbar.

Step 6. Dimension **diameter 7**, **Fig. 25**.

Step 7. Click **Line** (**L**) on the Sketch toolbar.

Step 8. Sketch the **3 lines**, **Fig. 26**.

Step 9. Click **Isometric** on the Standard Views toolbar. (**Ctrl-7**)

Step 10. Click **Features** on the Command Manager toolbar.

Step 11. Click **Extruded Cut** on the Features toolbar.

Step 12. In the Cut-Extrude Property Manager set:
under Direction 1, **Fig. 27**
End Condition **Through All - Both**
under Selected Contours
click the **2 contours**, **Fig. 28**
click OK .

Step 13. Save (**Ctrl-S**).

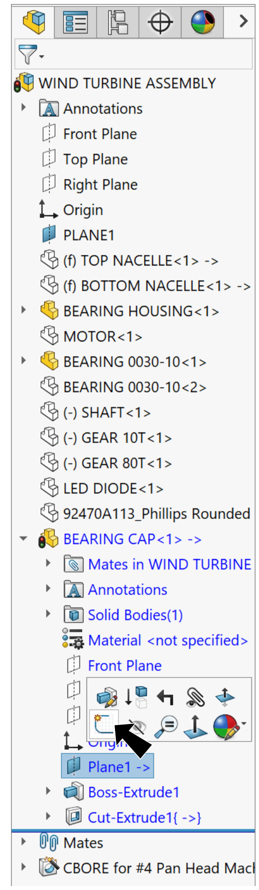


Fig. 24

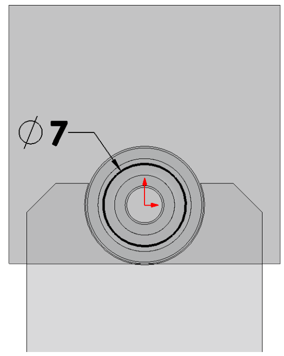


Fig. 25

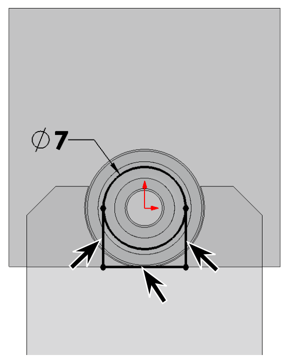


Fig. 26

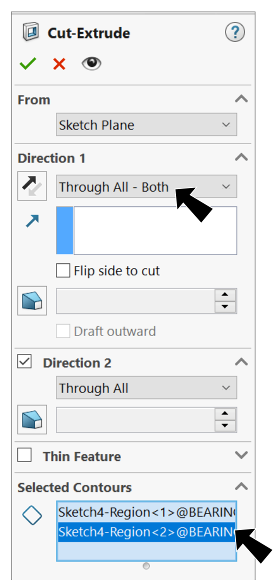


Fig. 27

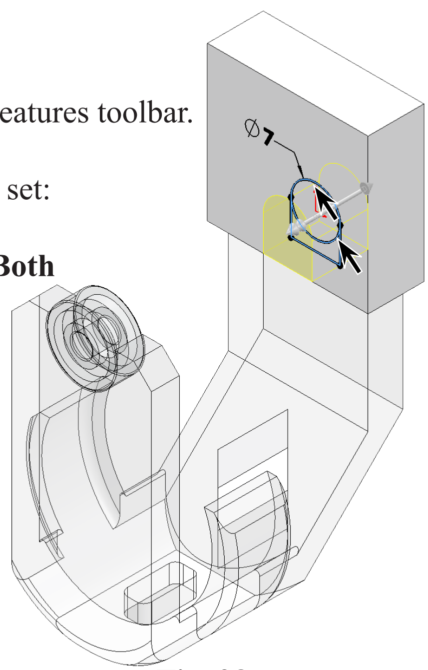


Fig. 28

G. Cut-Extrude3.

Step 1. **Show Top Nacelle** part, **Fig. 29**. To show, move cursor over the component in graphics area and press **Shift - Tab**.

Step 2. Expand **Bearing Cap** part in the Feature Manager, click **Right Plane** and click **Sketch** on the context toolbar, **Fig. 30**.

Step 3 Click **Normal To** on the Standard Views toolbar. (**Ctrl-8**)

Step 4. Click **Offset Entities** on the Sketch toolbar.

Step 5. In the Offset Entities Property Manager set:
under Parameters, **Fig. 31**

Distance .3 (clearance for Bearing Cap)
uncheck **Reverse**
click **inside angled edge of Nacelle Fig. 32**
Yellow offset down

click OK .

Step 6. Click **Isometric** on the Standard Views toolbar. (**Ctrl-7**)

Step 7. Click **Features** on the Command Manager toolbar.

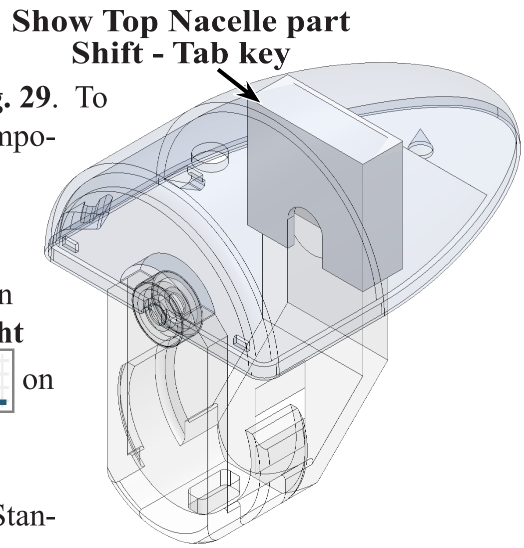


Fig. 29

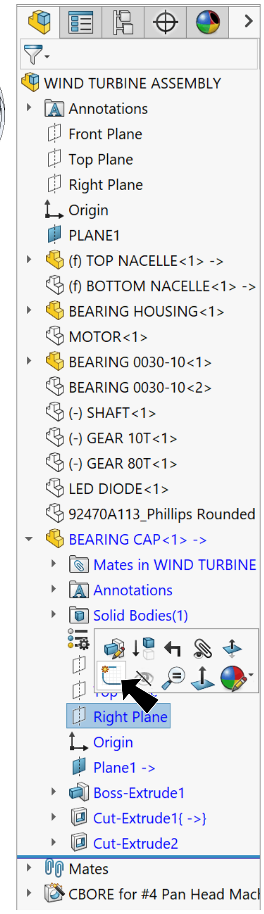


Fig. 30

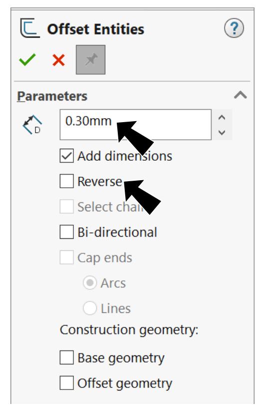


Fig. 31

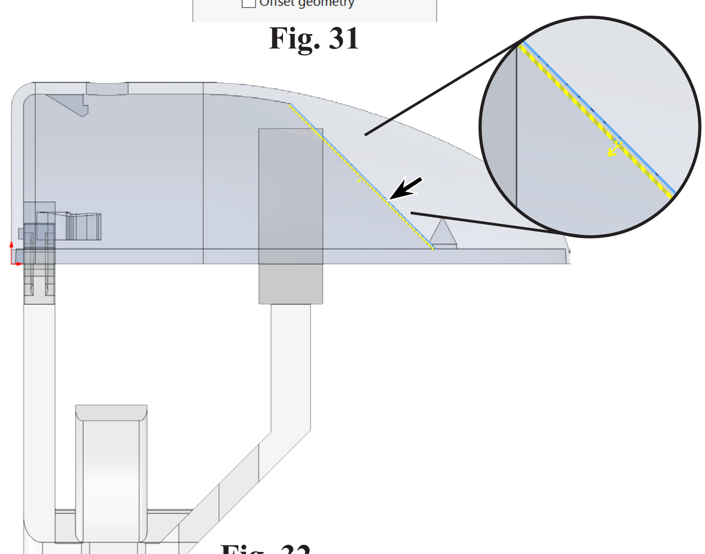


Fig. 32

Step 8. Click **Extruded Cut** 

on the Features toolbar.

Step 9. In the Cut-Extrude Property Manager set:
under Direction 1, **Fig. 33**
End Condition **Through All - Both**
Direction arrow should point to cut off the top rear corner, **Fig. 34**
click OK.

Direction arrow

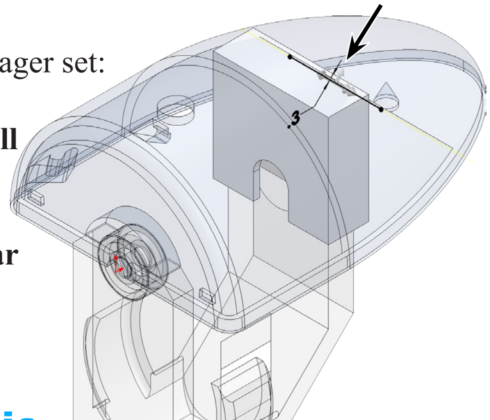


Fig. 34

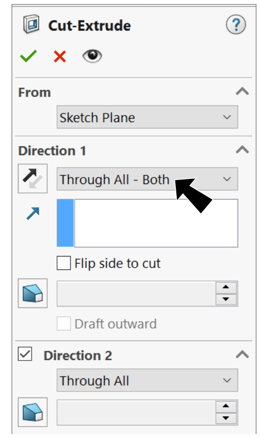


Fig. 33

H. Appearance: Blue Plastic.

Step 1. Click part, click **Appearance Callout** on the context toolbar and click **BEARING CAP**, **Fig. 35**.

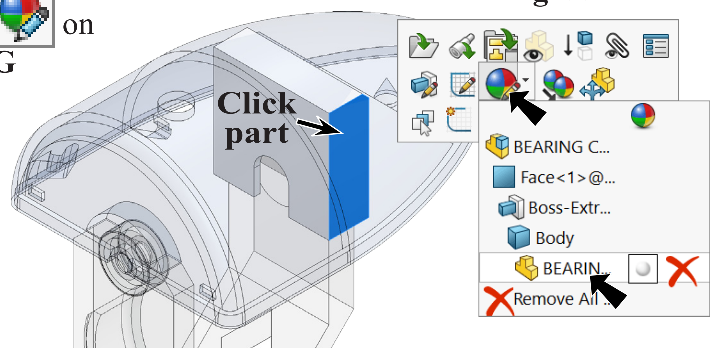


Fig. 35

Step 2. In the Appearances Task pane, expand **Plastic**, click **High Gloss** and in the lower pane select **blue high gloss plastic**, **Fig. 36**.

Step 3. In the Appearances Property Manager set:
under Color, **Fig. 37**
set **RGB values**
R 144
G 166
B 209
click OK.

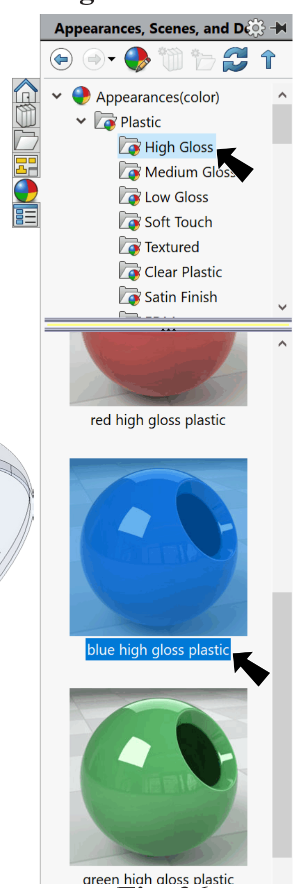


Fig. 36

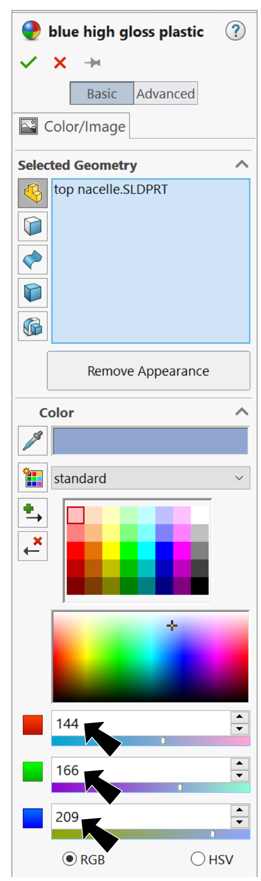
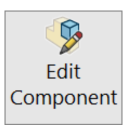
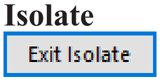


Fig. 37

Step 4. Click **Edit Component** 

on the Features toolbar to **exit**.

Step 5. Exit Isolate. To Exit, click **Exit Isolate** 

on the Isolate pop-up toolbar.

Step 6. Save All (**Alt-F L**). File Menu > Save All.

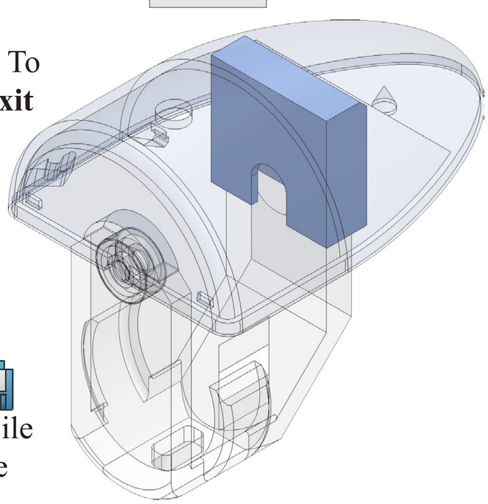


Fig. 38