

CO2 Rail Car E Front Wheel

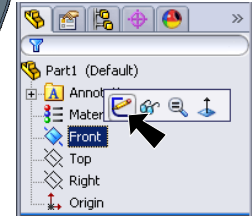
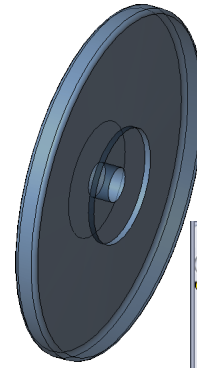







Fig. 1

A. Sketch.

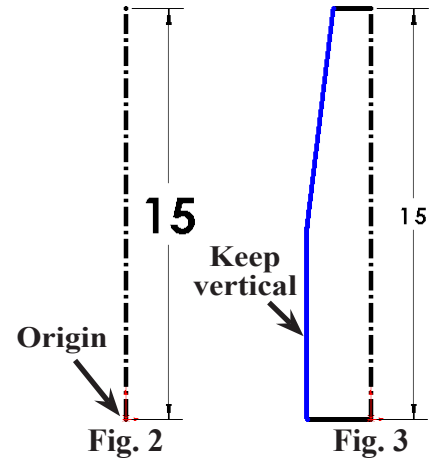
- Step 1. Click File Menu > New, click **Part Metric** and OK.
- Step 2. Click **Front**  (plane) in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 1**.


- Step 3. Click **Centerline**  in the **Line flyout**  (S) on the Sketch toolbar.

- Step 4. Draw a centerline up from the Origin , **Fig. 2**.

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

- Step 6. Dimension the centerline **15**, **Fig. 2**.



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

- Step 8. Draw the **four lines** as shown in **Fig. 3**.

- Step 9. Click **Smart Dimension**  (S) on the Sketch toolbar.

- Step 10. Add dimensions as shown in **Fig. 4**. First, dimension the vertical line **5** and across the width **1**. Dimension the angle **181° degrees** between the vertical line and angled line. To Smart dimension the angle, click both lines, then move the cursor outside the angle and click. Key-in **181** for the dimension and press ENTER.

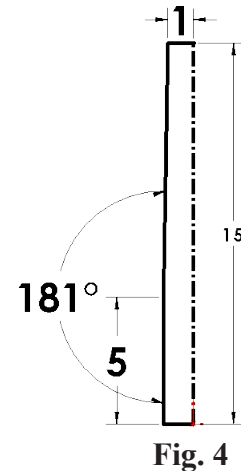


Fig. 4

B. Save as "FRONT WHEEL".

- Step 1. Click File Menu > Save As.
- Step 2. Key-in **FRONT WHEEL** for the filename and press ENTER.

C. Mirror Sketch.

Step 1. **Drag selection around the sketch** to select all entities (lines and dimensions), **Fig. 5**. To drag selection, click above and to left of sketch and drag down and to right to drag around all.

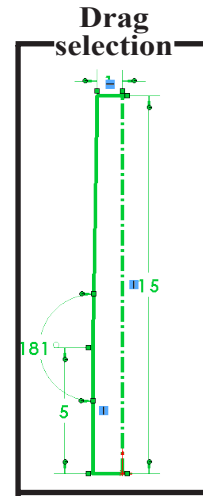


Fig. 5

Step 2. Click **Mirror Entities**  **Mirror Entities** on the Sketch toolbar, **Fig. 6**.

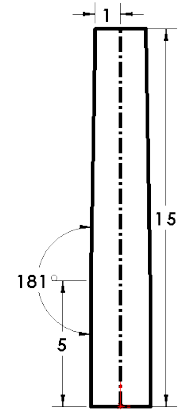
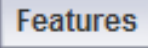


Fig. 6

Step 3. Click **Features**  on the Command Manager toolbar.

Step 4. Click **Revolved Boss/Base**  on the Features toolbar.



Step 5. For the **Axis** , **Fig. 7**, click the **bottom line of the sketch**, **Fig. 8**. Click **OK** .



Fig. 7

Step 6. Click **Zoom to Fit**  **(F)** on the View toolbar.

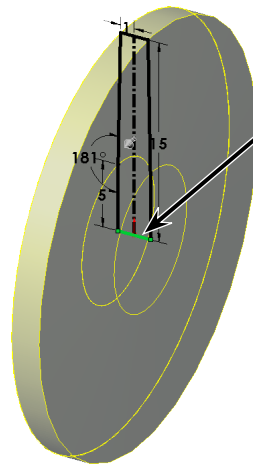


Fig. 8

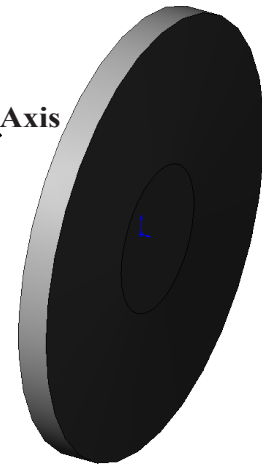


Fig. 9

Step 7. Save. Use **Ctrl-S**.

D. Axle Hole Wizard.

Step 1. Click the **vertical side face of wheel**, Fig. 10.

Step 2. Click **Hole Wizard**  on the Features toolbar.

Step 3. In the Property Manager on the Type tab set: under Hole Type

Click **Counterbore** , Fig. 11

under Standard:

select **Ansi Metric**

under Type:

Hex Bolt ANSI B18.2

under Size:

select **M5**

check Show custom sizing

set **Through Hole Diameter**  to **3**

set **Counterbore Diameter**  to **10**

set **Counterbore Depth**  to **.5**

under End Condition:

set **Through All**

Click **Positions** tab  at the top of the Property Manager.

Click **Point**  on the Sketch toolbar to **turn off** Point tool.

Grab the Point and move it to the Origin , Fig. 12 and Fig. 13.

Click OK  in the Point Property Manager.

Click OK  in the Hole Wizard Property Manager.

Step 4. Save. Use **Ctrl-S**.

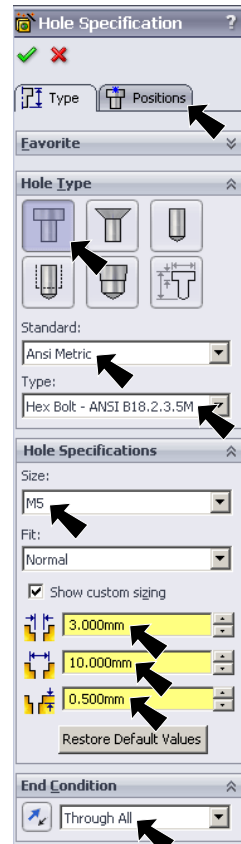


Fig. 11

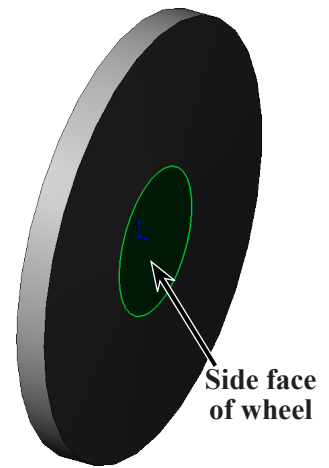


Fig. 10

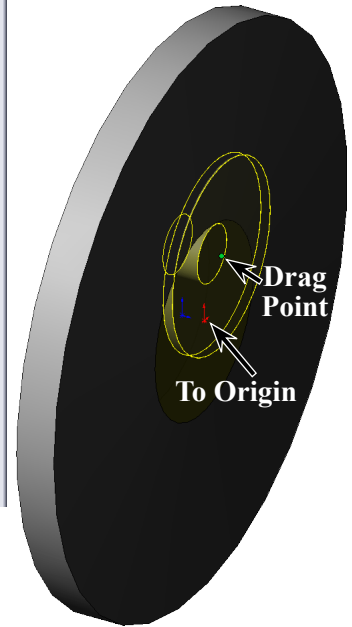


Fig. 12

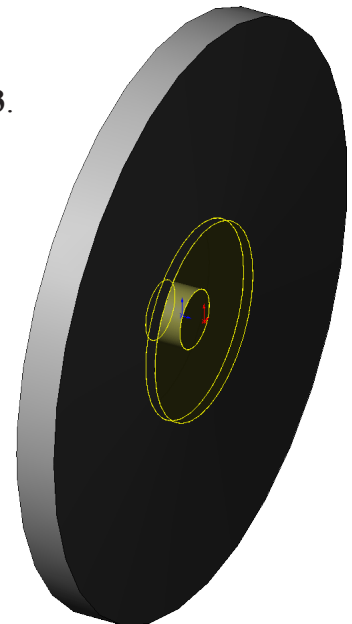


Fig. 13

E. Fillet Face.

Step 1. Click **Fillet**  on the Features toolbar.

Step 2. In the Fillet Property Manager:

select **FilletXpert**, **Fig. 14**.

set **Radius**  to **.4**

select **Full preview**

click the **outside cylindrical face** of wheel, **Fig. 15**.

click **OK** , **Fig. 16**.

Step 3. Save. Use **Ctrl-S**.

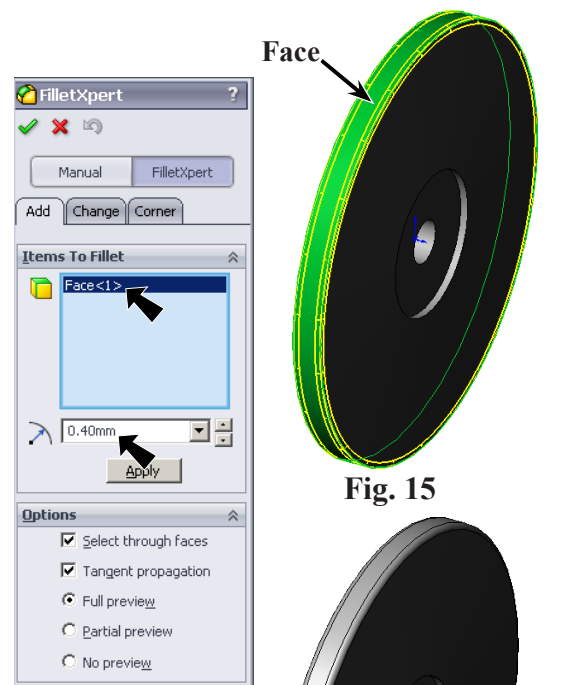
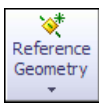


Fig. 14

Fig. 15

F. Mate Reference.

Step 1. Click the **inside cylindrical face of axle hole** to select it, **Fig. 16**.

Step 2. Click **Reference Geometry**  on the Features toolbar and **Mate Reference** from the menu.

Step 3. In the Mate Reference Property Manager click **OK** , **Fig. 17**.

G. Material POM Acetal Copolymer.

Step 1. **Right click Material**  in the Feature Manager and click **Edit Material**, **Fig. 18**.

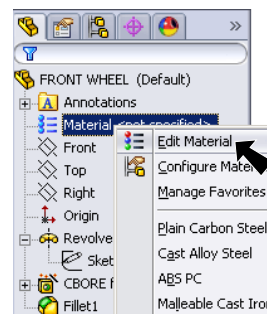


Fig. 18

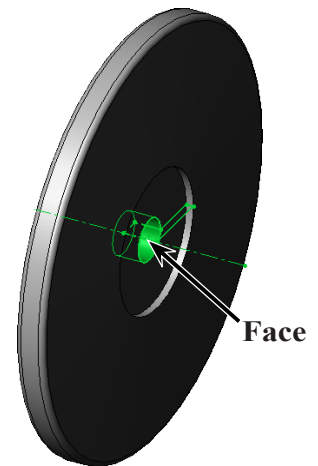


Fig. 16

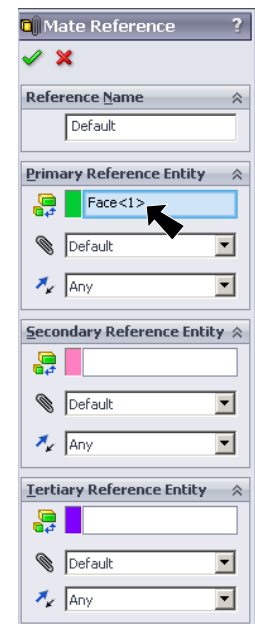


Fig. 17

Step 2. **Expand Plastics** in the material tree and select **POM Acetal Copolymer**, **Fig. 19**. Click **Apply** and **Close**.

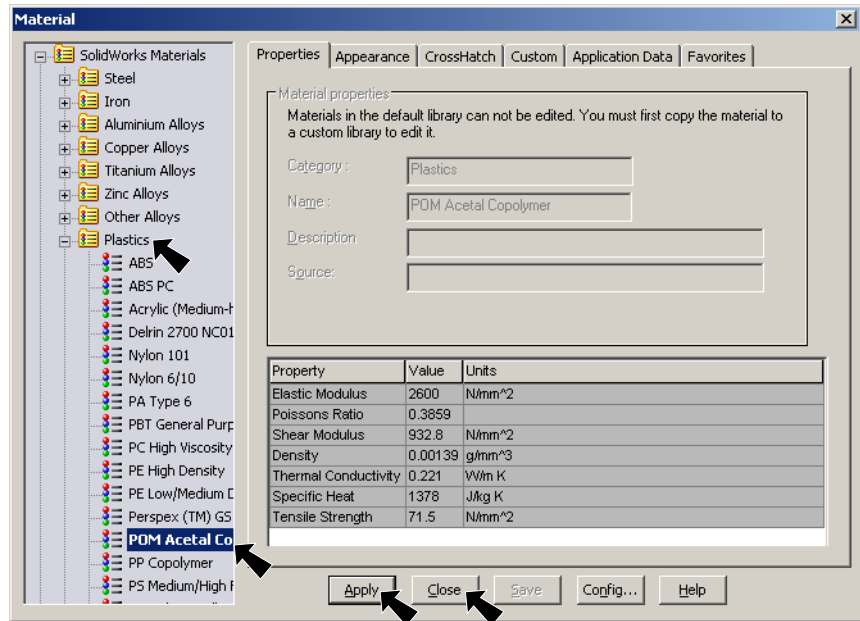




Fig. 19

H. Appearance.

Step 1. Click the wheel to select the part, click **Appearances Call-out**  on the Content menu and click **FRONT W...** , **Fig. 20**.

Step 2. In the Appearances Task pane, expand **Plastic**, click **Clear Plastic** and in the lower pane select **polypropylene plastic**, **Fig. 21**.


Step 3. In the Appearances Property Manager, **Fig. 22** under **Color** set **RGB** values to:

R 135

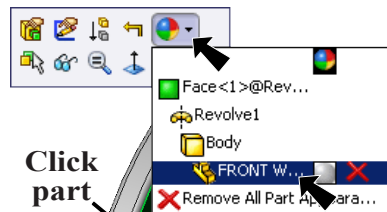
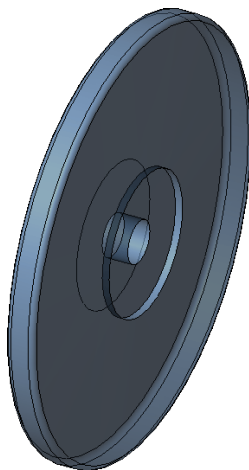
G 192

B 255

Click

OK  in the Property Manager.

Step 4. Save. Use **Ctrl-S**.



Click part

Fig. 20

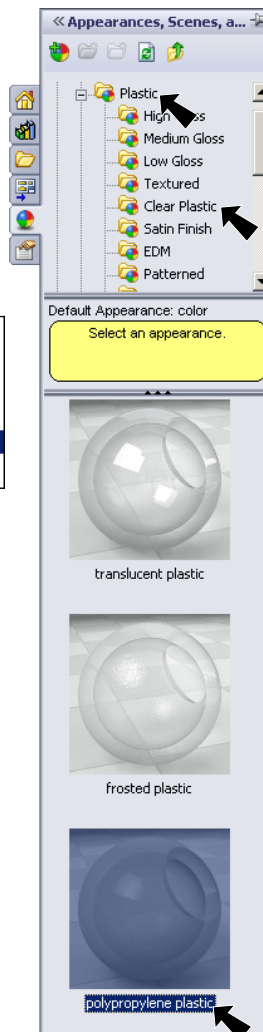


Fig. 21

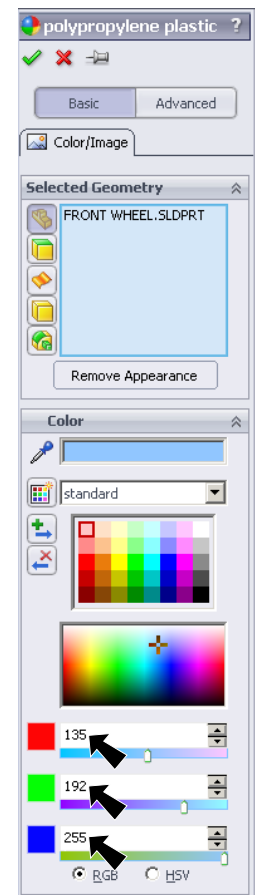


Fig. 22