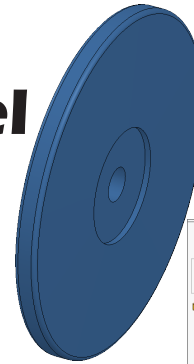


# CO2 Rail Car E Front Wheel



## A. Revolve.

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

Step 2. Click **Front Plane** in the Feature Manager and click **Sketch** on the context toolbar, **Fig. 1**.

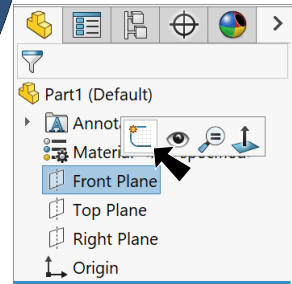


Fig. 1

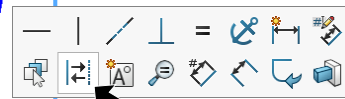
Step 3. Click **Line** (L) on the Sketch toolbar.

Step 4. Sketch **5 lines** starting with a horizontal

line out left from the **Origin**. After sketching the last line, the **vertical centerline at Origin**, before moving cursor ways from line click

**Construction Geometry** on context toolbar, **Fig. 2**.

**Construction Geometry** on context toolbar, **Fig. 2**.



Sketch line last

Keep vertical

Origin

Fig. 2

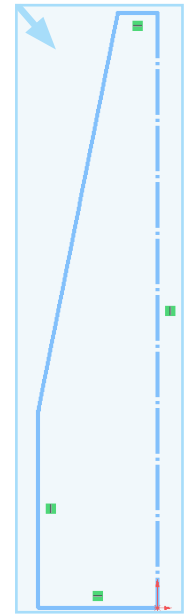


Fig. 3

Step 5. **Drag selection around the sketch** to select all lines, **Fig. 3**. To drag selection, click above and to left of sketch and drag down and to right to drag around all.

Step 6. Click **Mirror Entities** on the Sketch toolbar, **Fig. 4**.

**Mirror Entities** on the Sketch toolbar, **Fig. 4**.



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

Step 8. Add dimensions, **Fig. 5**. 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.

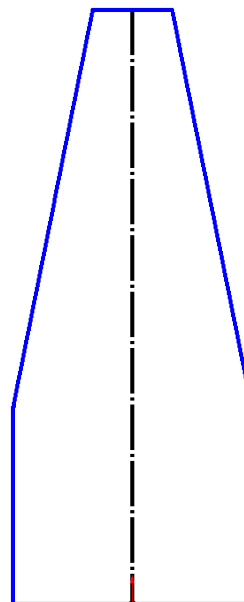


Fig. 4

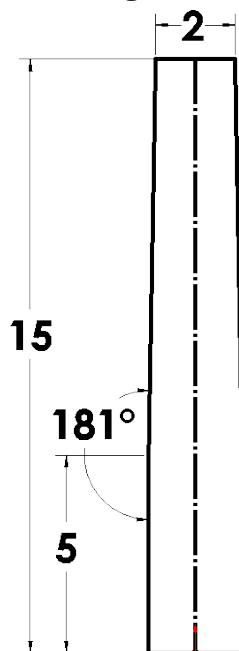

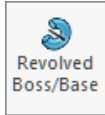


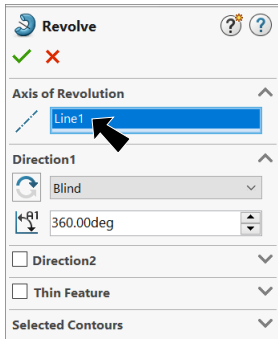


Fig. 5  
4/25/24

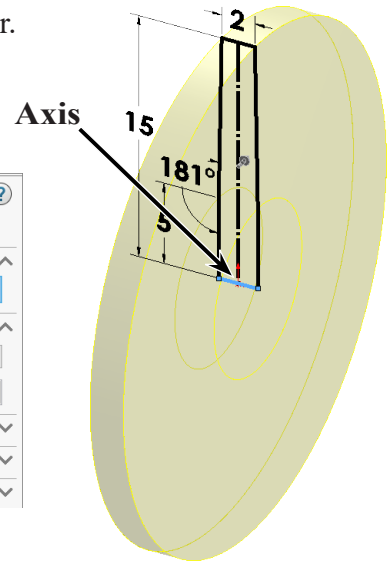
Step 9. Click **Features**  on the Command Manager toolbar.

Step 10. Click **Revolved Boss/Base**  on the Features toolbar.

Step 11. In the Revolve Property Manger set:  
 for Axis of Revolution   
 click **bottom line of sketch**, **Fig. 7**  
 click OK .



**Fig. 6**



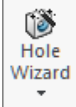
**Fig. 7**

**B. Save as "FRONT WHEEL".**





Step 1. Click File Menu > Save As.

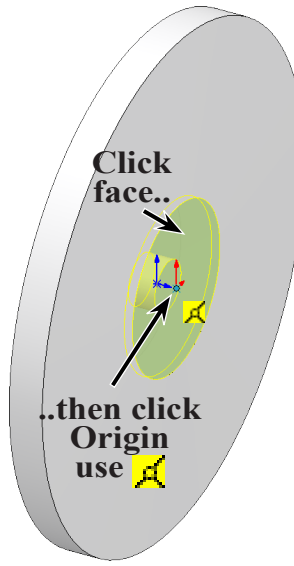
Step 2. Key-in **FRONT WHEEL** for the filename and press ENTER.

**C. Axle Hole Wizard.**

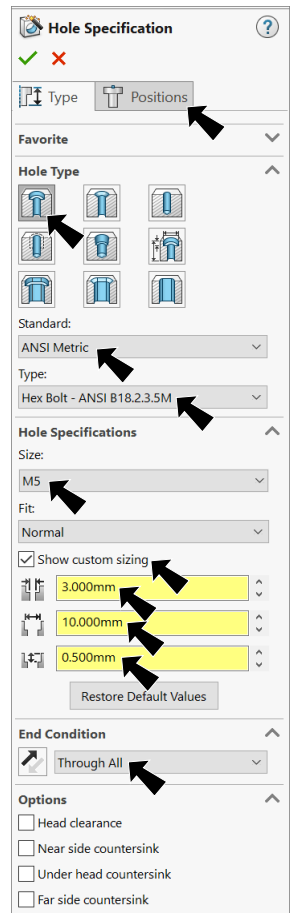
Step 1. Click **Hole Wizard**  on the Features toolbar.

Step 2. In the Hole Wizard Property Manager set:  
 under Hole Type, **Fig. 8**

click **Counterbore**   
 under Standard:  
 select **ANSI Metric**  
 under Type:  
**Hex Bolt ANSI B18.2.3.5M**  
 under Size:  
 select **M5**  
 check **Show custom sizing**  
**Through Hole Diameter**  **3**  
**Counterbore Diameter**  **10**  
**Counterbore Depth**  **.5**  
 under End Condition  
 set **Through All**.





**Fig. 9**



**Fig. 8**

Step 3. Click **Positions tab**  at the top of the Property Manager.

Step 4. Click the **vertical side face of wheel** one time as face for holes, then click Origin . Use coincident relation  to locate Origin., **Fig. 9**.

Step 5. Click OK  in the Hole Wizard Property Manager.

## D. Fillet Face.

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

Step 2. In the Fillet Property Manager set:  
select **FilletXpert**, **Fig. 10**

**Radius**  .4

click **outside cylindrical face**, **Fig. 11**

click OK .

Step 3. Save  (Ctrl-S).

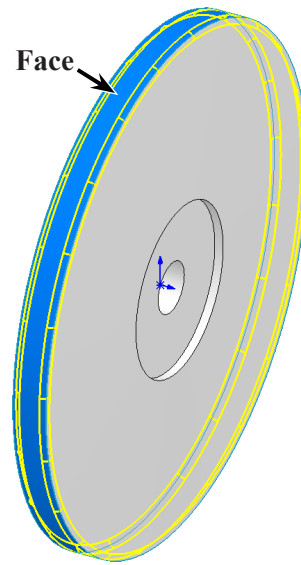


Fig. 11

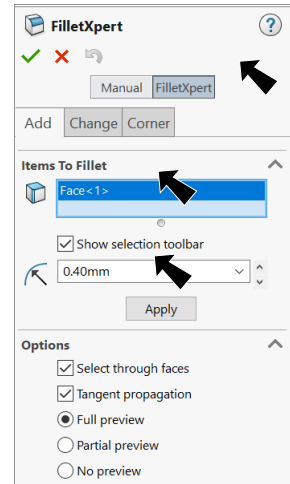
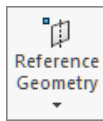


Fig. 10

## E. Mate Reference.

Step 1. Click a **cylindrical face** to select it, **Fig. 12**.

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. 13**.

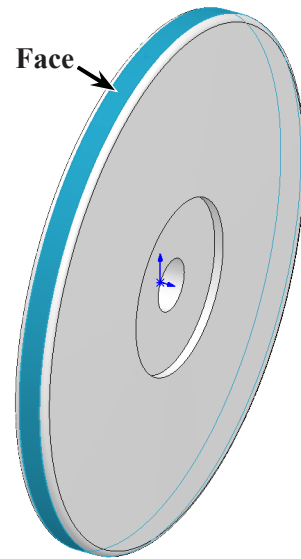


Fig. 12

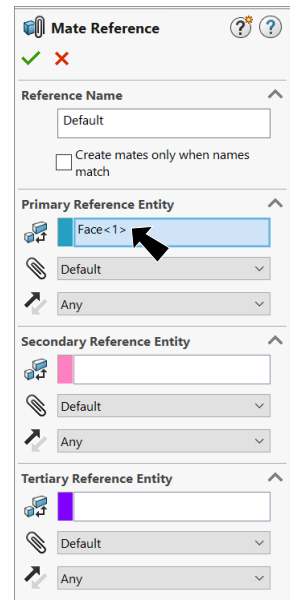


Fig. 13

## F. Material POM Acetal Copolymer.

Step 1. Right click Material in the Feature Manager and click Edit Material, Fig. 14.

Step 2. Expand Plastics in the material tree and select POM Acetal Copolymer, Fig. 15. Click Apply and Close.

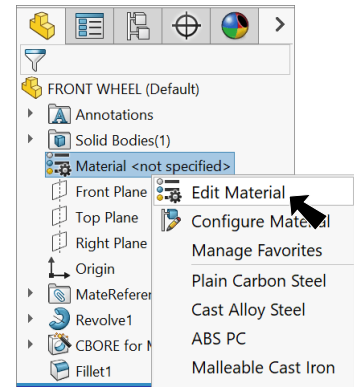


Fig. 14

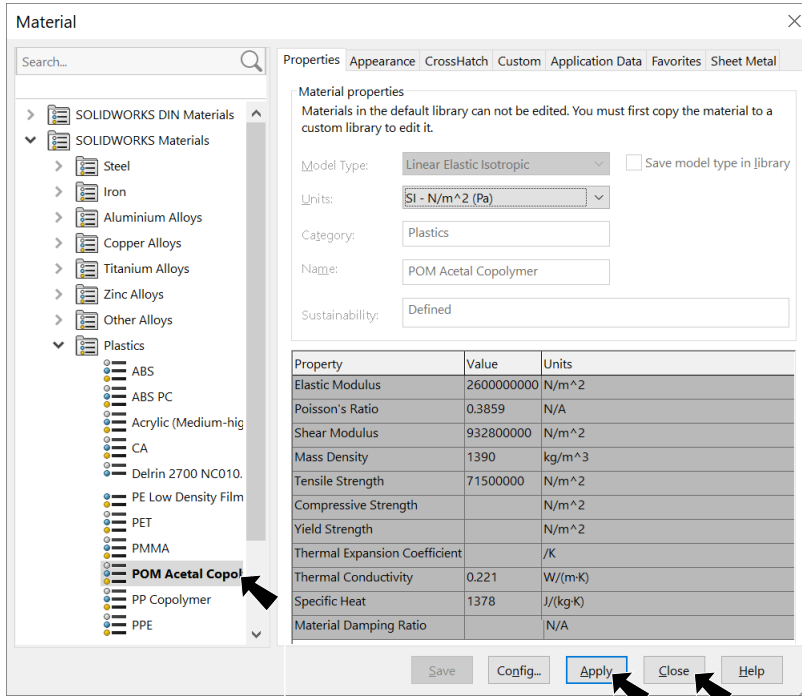


Fig. 15

## G. Appearance.

Step 1. Click the Wheel to select the part, click **Appearances Callout**



on the context toolbar and click **FRONT W...**, Fig. 16.

Step 2. In the Appearances Task pane, expand **Plastic**, click **Clear Plastic** and in the lower pane select **plue high gloss plastic**, Fig. 17.

Step 3. In the Appearances Property Manager under **Color**, Fig. 18

set **RGB values:**

**R 49**

**G 85**

**B 126**

click **OK** ✓.

Step 4. Save (Ctrl-S).

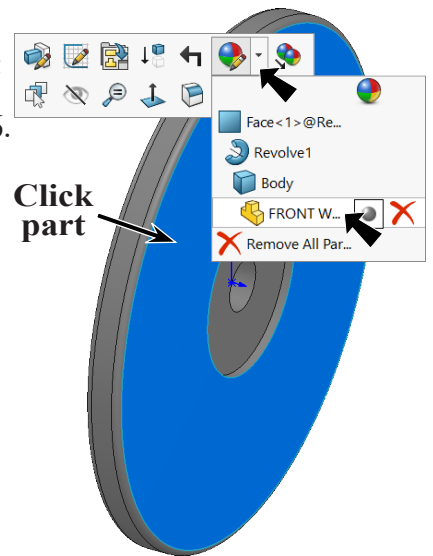


Fig. 16

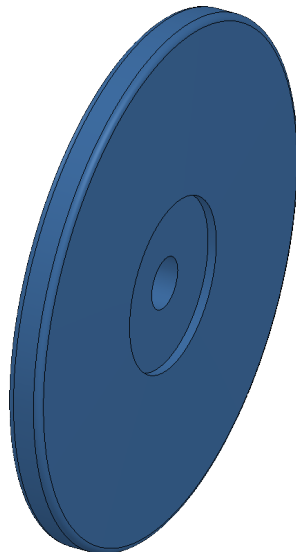


Fig. 19

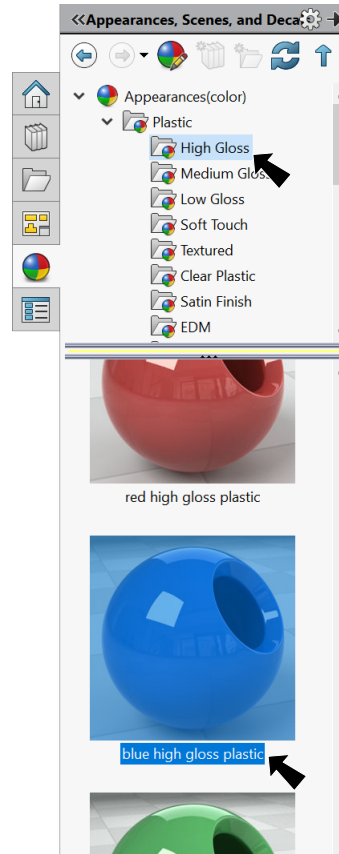


Fig. 17

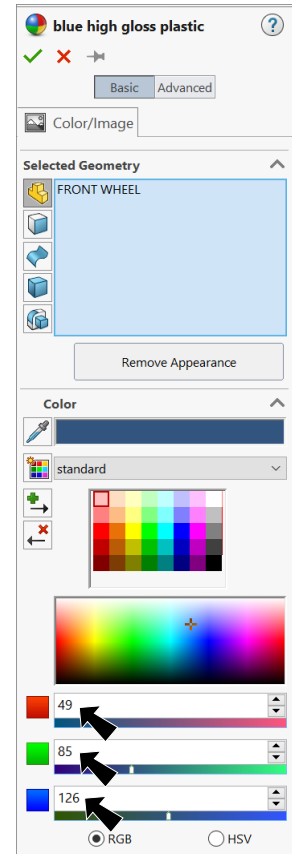


Fig. 18