



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**  on the context toolbar, **Fig. 1**.

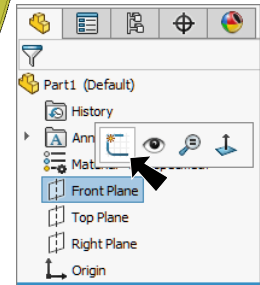




Fig. 1

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**.

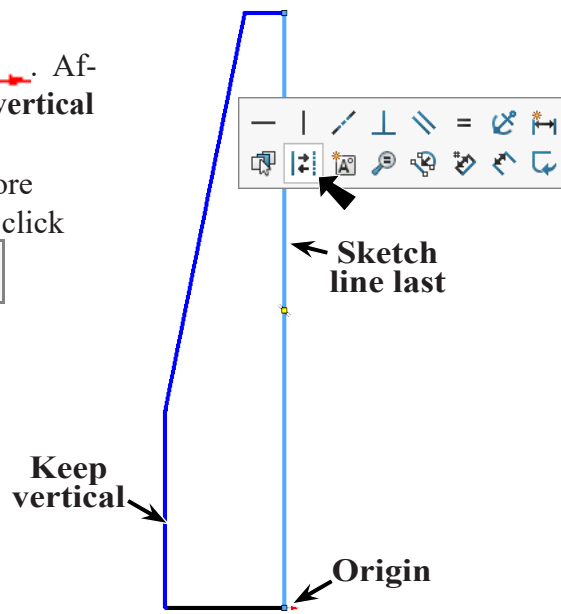


Fig. 2

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.

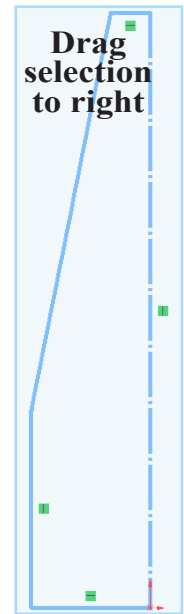
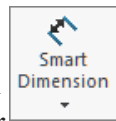


Fig. 3

Step 6. Click **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.

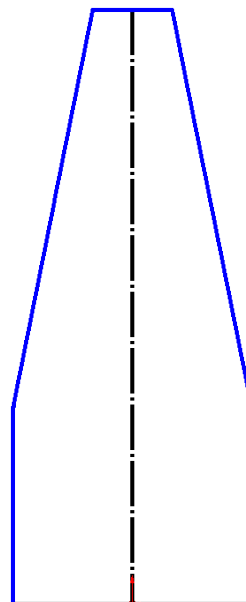


Fig. 4

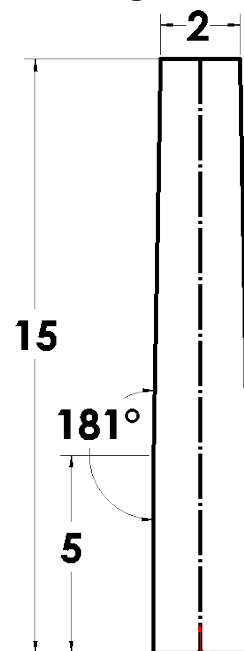
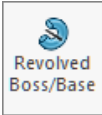




Fig. 5
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Step 9. Click **Features**  on the Command Manager toolbar.

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  .

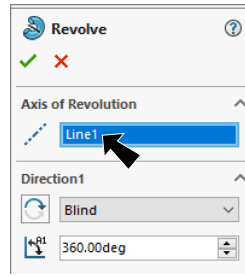


Fig. 6

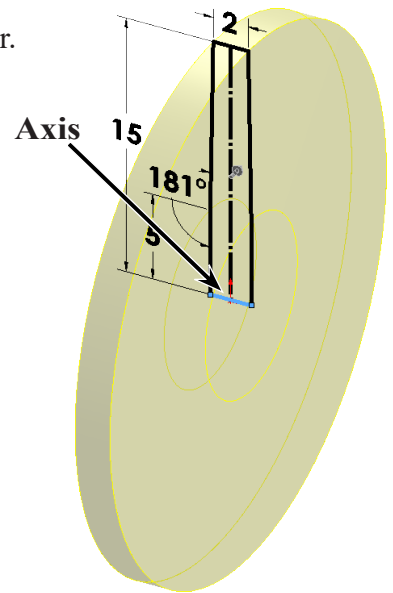


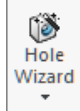
Fig. 7

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**.

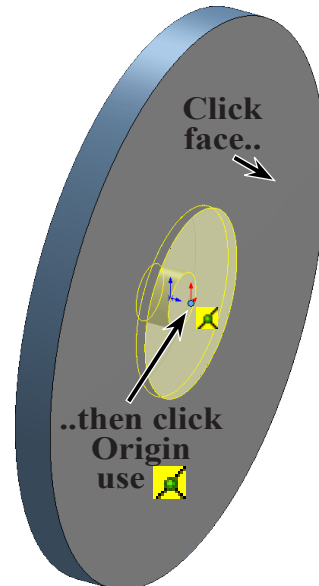


Fig. 9

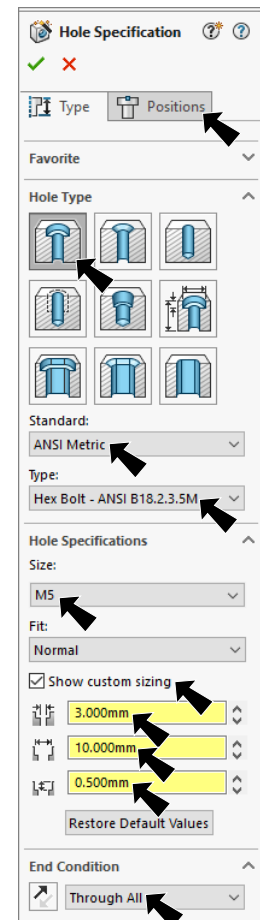




Fig. 8

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** of wheel, **Fig. 11**

click OK .

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

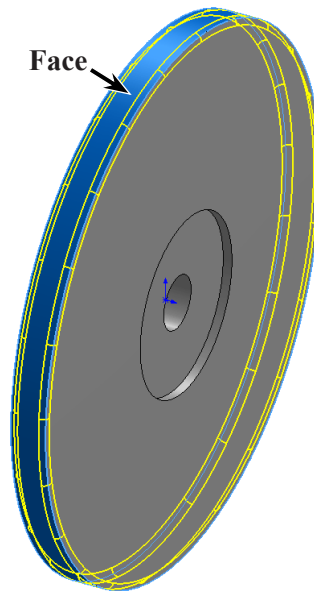


Fig. 11

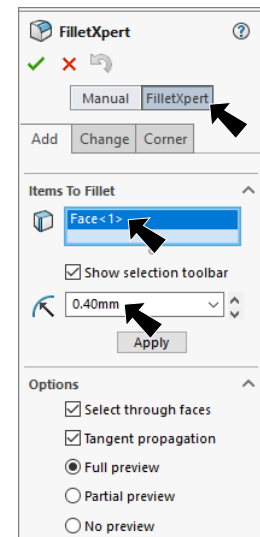
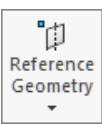


Fig. 10

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**.

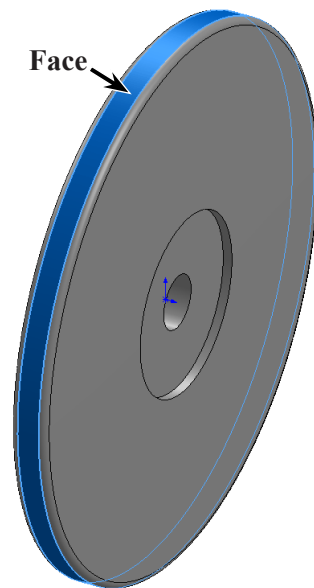


Fig. 12

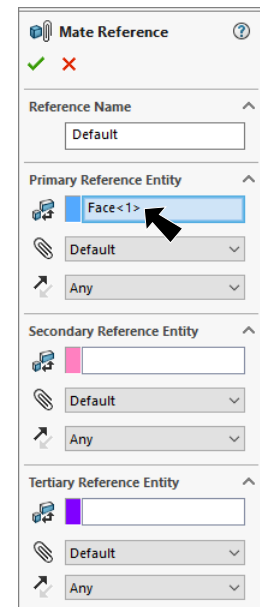



Fig. 13

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**.

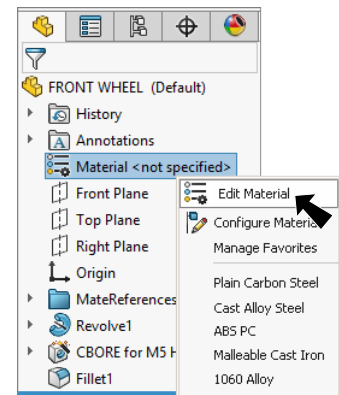


Fig. 14

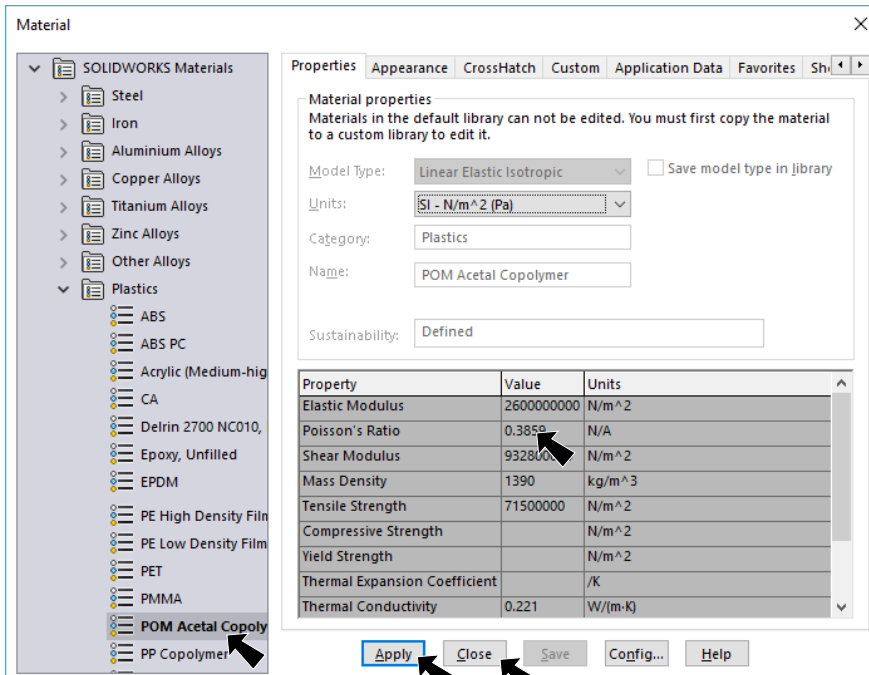





Fig. 15

G. Appearance.

Step 1. Click the Wheel to select the part, click **Appearances Call-out**  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 **polypropylene plastic**, **Fig. 17.**

Step 3. In the Appearances Property Manager under **Color**, **Fig. 18** click the **3rd yellow swatch** click **OK** .

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

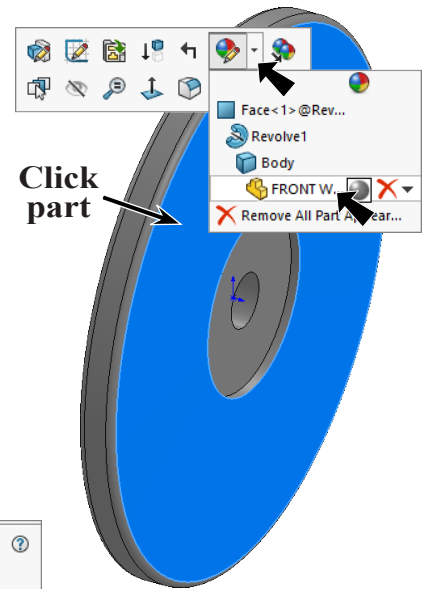


Fig. 16

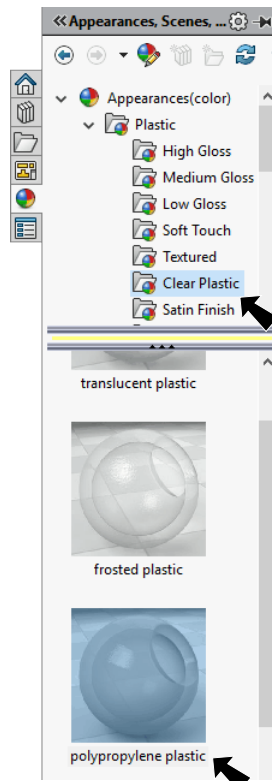


Fig. 17

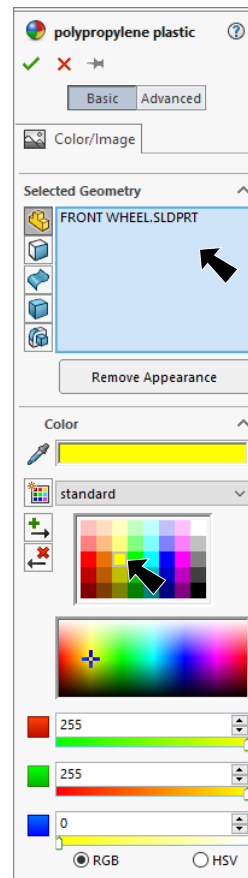


Fig. 18

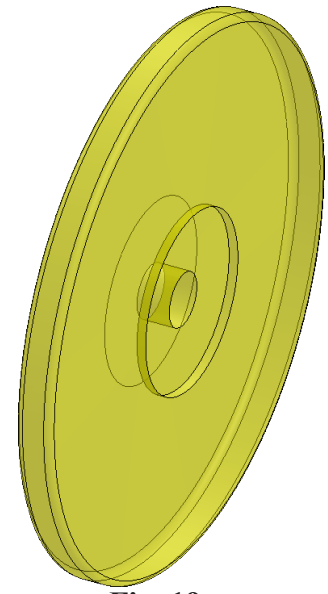


Fig. 19