

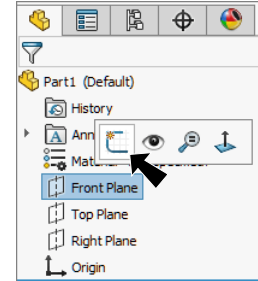


A. Sketch.

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
Drag selection**

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

Step 4. Sketch the 6 lines and sketch the **vertical centerline up from**

the Origin  **last, Fig. 2**. Before moving cursor ways from line click **Construction Geometry**  on context toolbar.

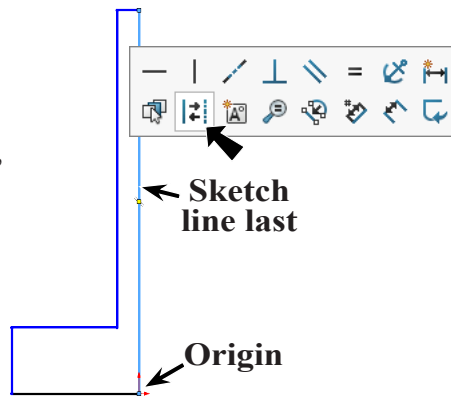


Fig. 2

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

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

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

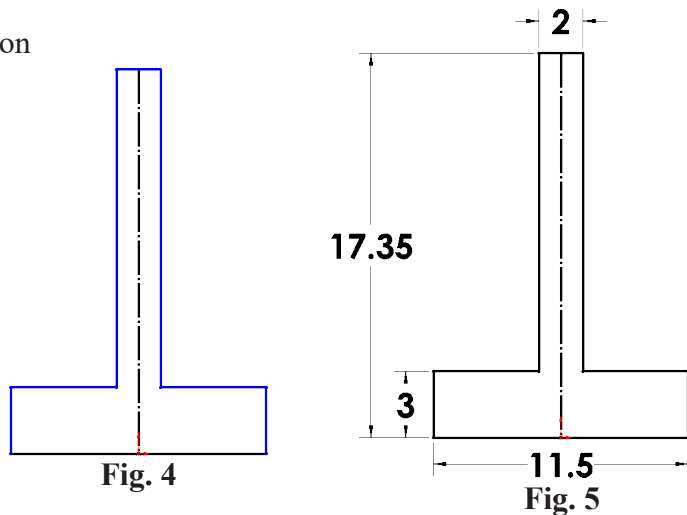


Fig. 4

Fig. 5

B. Save as "WHEEL GT-F".



Step 1. Click File Menu > Save As.

Step 2. Key-in **WHEEL GT-F** for the file-name and press ENTER.

C. Revolve.

Step 1. Click **Features**  on the Command Manager toolbar.

Step 2. Click **Revolved Boss/Base**  on the Features toolbar.

Step 3. In the Revolve Property Manger:
 for Axis of Revolution ,
 click **bottom line of sketch**, Fig. 7
 click OK .

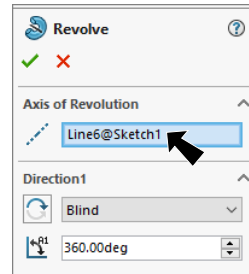


Fig. 6

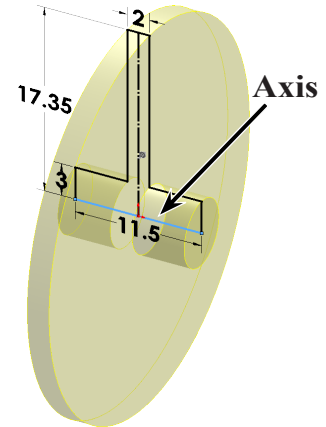





Fig. 7

D. Hole for Axle.

Step 1. Click the **side face of hub** and click **Sketch**  on the context toolbar, Fig. 8.

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

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


Step 4. Sketch a circle for the hole at Origin , Fig. 9.

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

Step 6. Dimension axle hole **diameter 3.5**, Fig. 9.

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

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

Step 9. In the Cut-Extrude Property Manager set:
 under Direction 1, Fig. 10
 End Condition **Through All**
 click OK .

Step 10. Save. Use **Ctrl-S**.

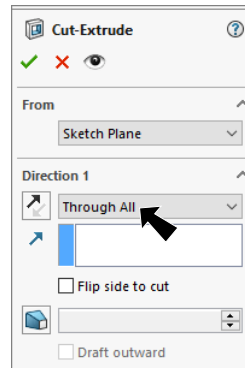


Fig. 10

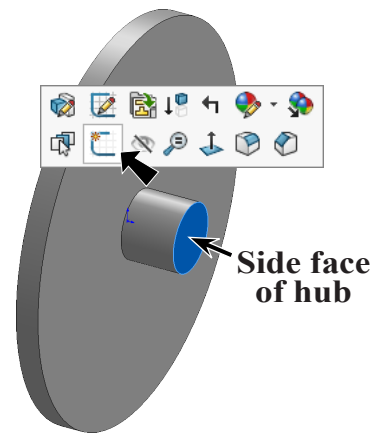


Fig. 8

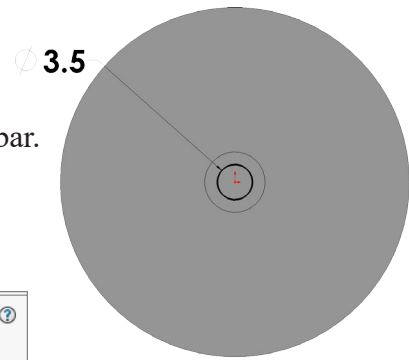


Fig. 9

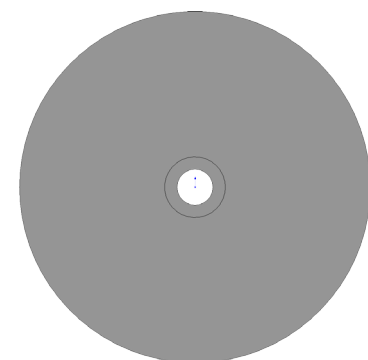



Fig. 11

E. Hole in Rim.

Step 1. Click the **side face of wheel** and click **Sketch**  on the context toolbar, **Fig. 12**.

Step 2. Click **Circle**  (S) on the Sketch toolbar.

Side face of wheel

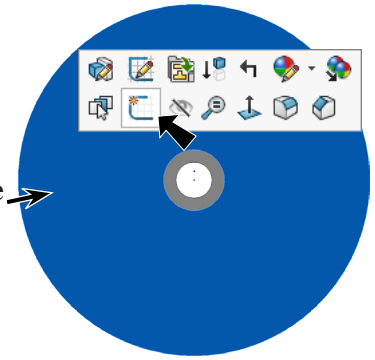





Fig. 12

Step 3. Sketch a circle for the hole above the Origin , **Fig. 13**.

Step 4. **Right click graphics area and click Select** from menu to unselect Circle tool.

Step 5. **Ctrl click centerpoint of circle and Origin**  to select both. Release Ctrl key and click **Make Vertical**  on the context toolbar, **Fig. 14**.

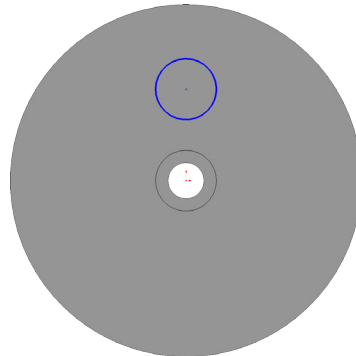


Fig. 13

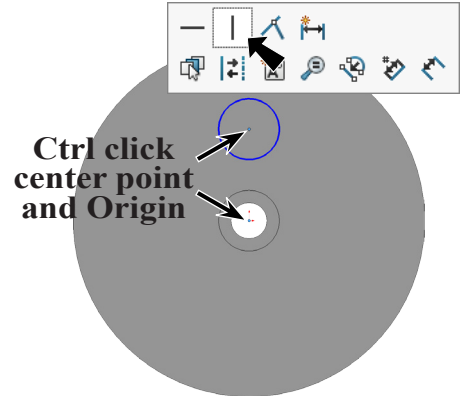




Fig. 14

Step 6. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 7. Add dimensions, **Fig. 15**.

Step 8. Click **Features**  on the Command Manager toolbar.

Step 9. Click **Extruded Cut**  on the Features toolbar.

Step 10. In the Cut-Extrude Property Manager set:
 under Direction 1, **Fig. 16**
 End Condition **Through All**
 click OK .

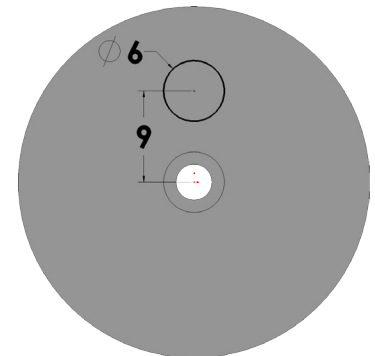


Fig. 15

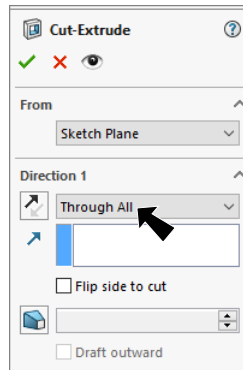


Fig. 16

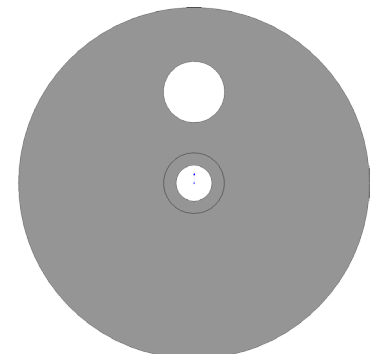

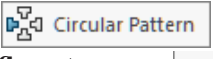




Fig. 17

F. Circular Pattern for Hole.

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

Step 2. Click **Circular Pattern**  in the **Linear Pattern** flyout  on the Features toolbar. Click the **flyout arrow**  to select Circular Pattern.

Step 3. In the Circular Pattern Property Manager set:
under Features and Faces, **Fig. 18**

click **Cut-Extrude2** in graphics area, **Fig. 17** **Cut-Extrude2**

under Direction 1

click in **Pattern Axes** box

click **cylindrical face of hub**, **Fig. 19**

check **Equal spacing**

Number of Instances  **4**

click OK .

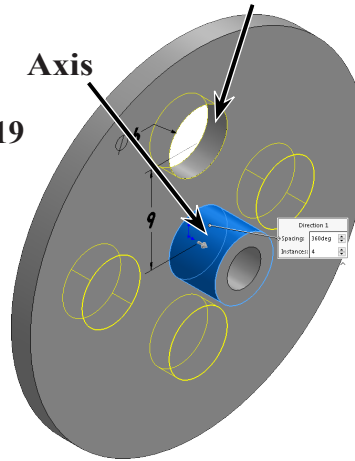


Fig. 19

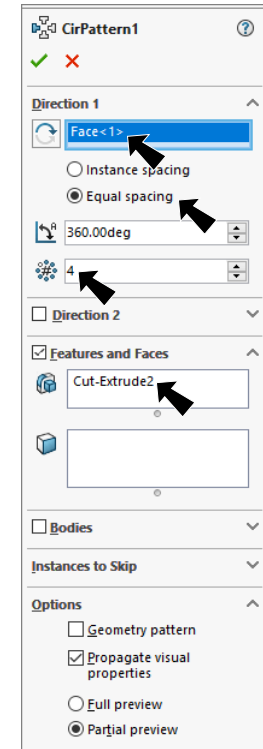
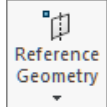


Fig. 18

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

G. Mate Reference.

Step 1. Click the **inside cylindrical face of axle hole** to select it, **Fig. 20**.

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. 21**.

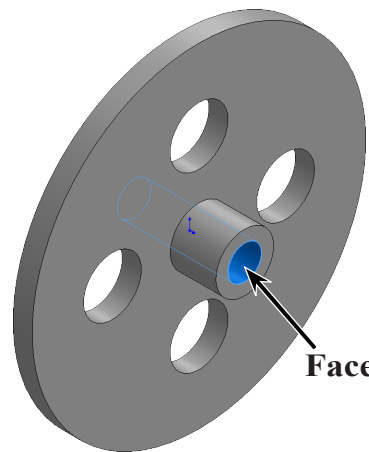


Fig. 20

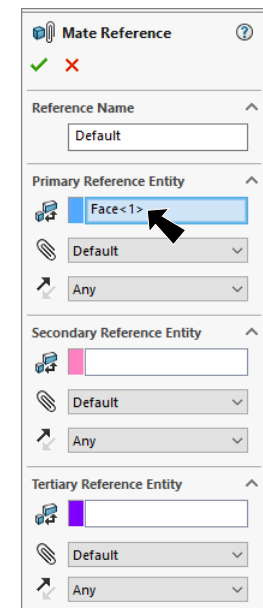


Fig. 21

H. Material POM Acetal Copolymer.

- Step 1. Right click **Material** in the Feature Manager and click **Edit Material**, Fig. 22.
- Step 2. Expand **Plastics** in the material tree and select **POM Acetal Copolymer**, Fig. 23. Click **Apply** and **Close**.

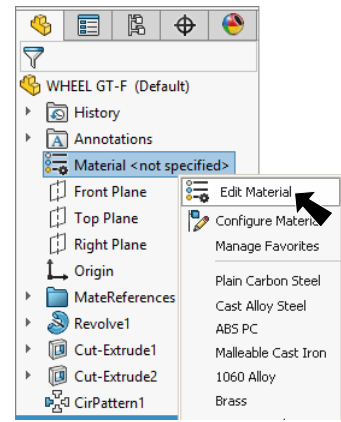


Fig. 22

I. Appearance Dark Gray.

- Step 1. Click the part, click **Appearance Callout** on the context toolbar and click **WHEEL GT-F**, Fig. 24.



- Step 2. In the Appearances Task Pane expand **Plastic**, click **High Gloss** and in the lower pane click **dark grey high gloss plastic**, Fig. 26.

- Step 3. Click **OK** in the Property Manager.

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

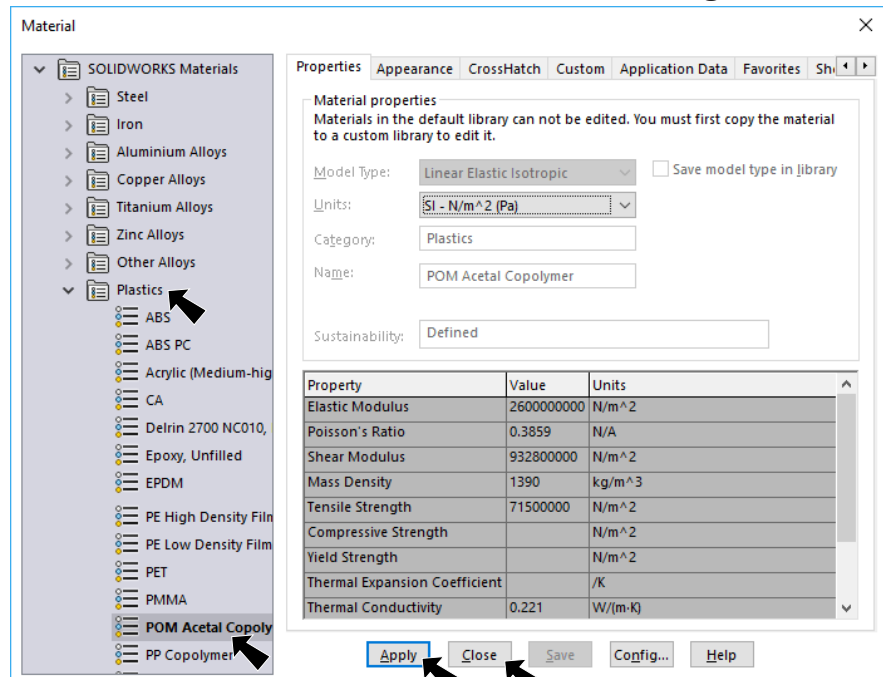


Fig. 23

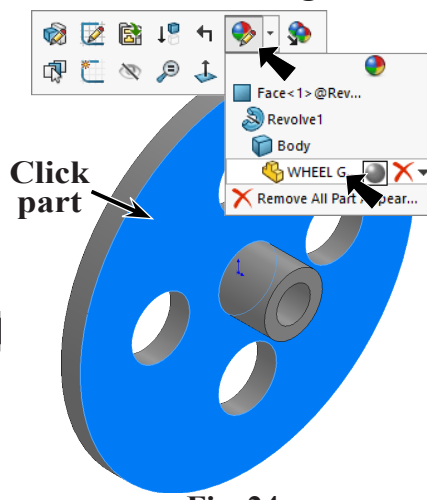


Fig. 24

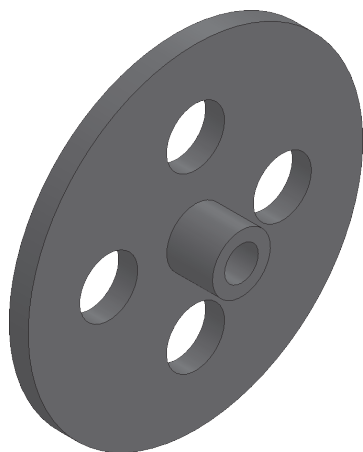


Fig. 26

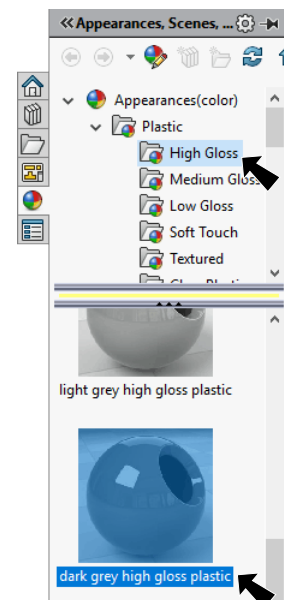


Fig. 25