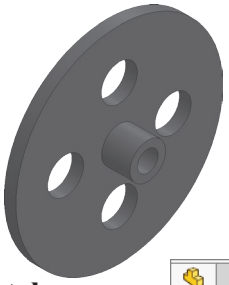
Chapter 5

CO2 Shell Car
Wheel GT-F



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**.

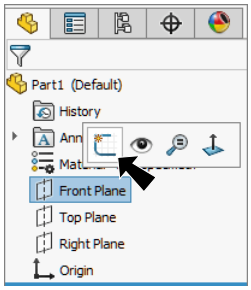


Fig. 1

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

Step 4. Sketch 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.

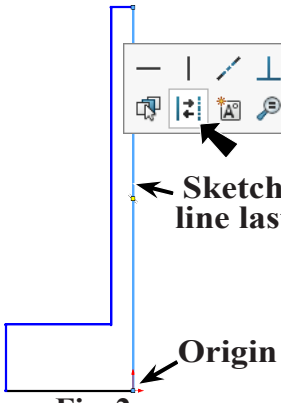


Fig. 2

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.

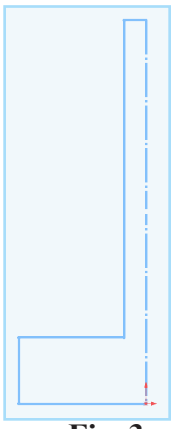


Fig. 3

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

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

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

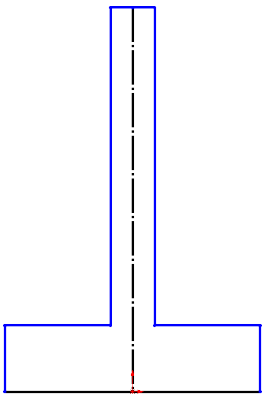


Fig. 4

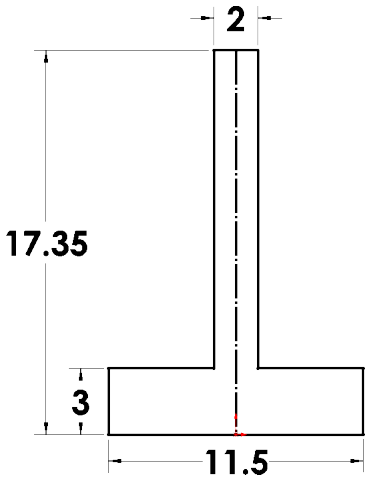


Fig. 5

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** Features on the Command Manager toolbar.

Step 2. Click **Revolved Boss/Base** 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 .

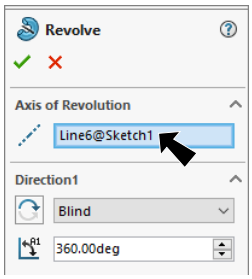


Fig. 6

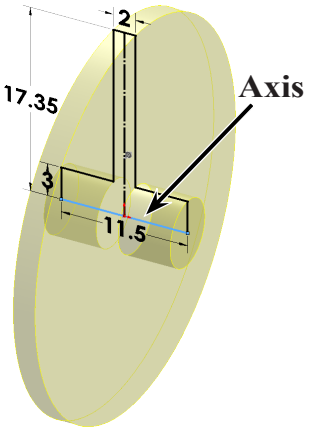


Fig. 7

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** Smart Dimension (**S**) on the Sketch toolbar.

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

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. 10**

End Condition **Through All**

click OK .

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

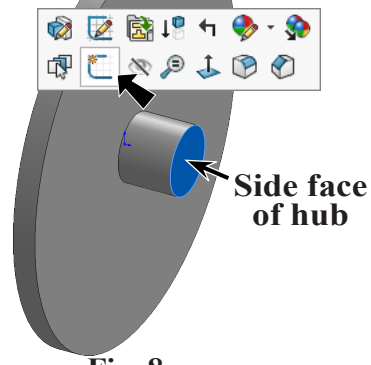


Fig. 8

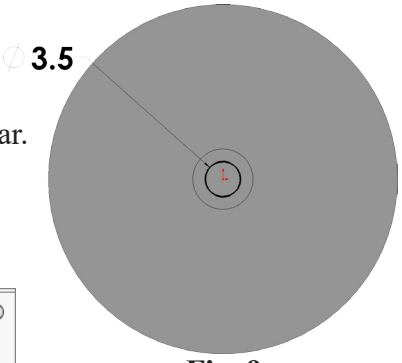


Fig. 9

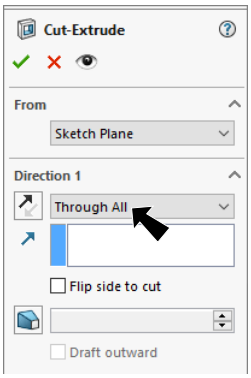


Fig. 10

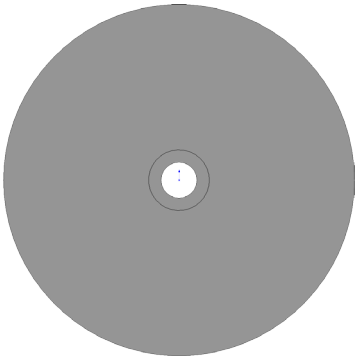


Fig. 11

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.

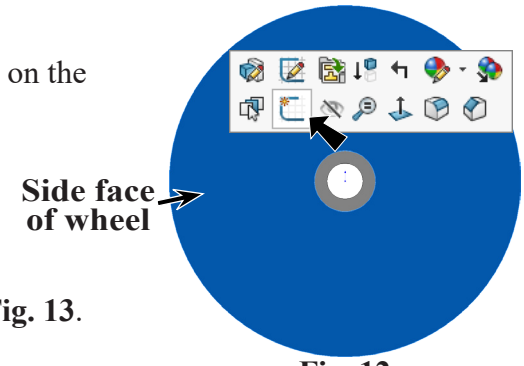


Fig. 12

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**.

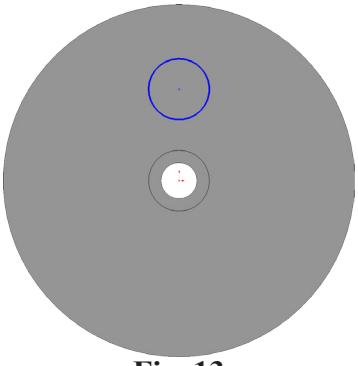


Fig. 13

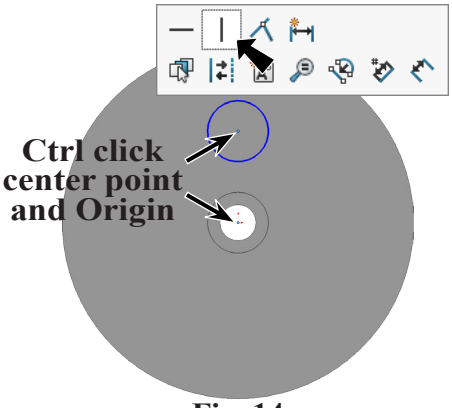


Fig. 14

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.

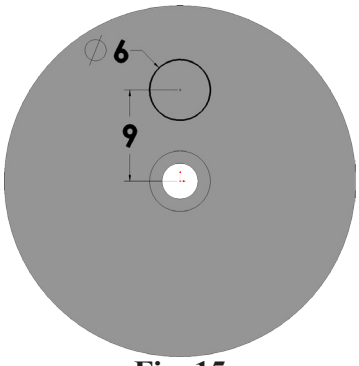


Fig. 15

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

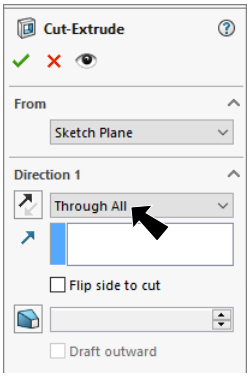


Fig. 16

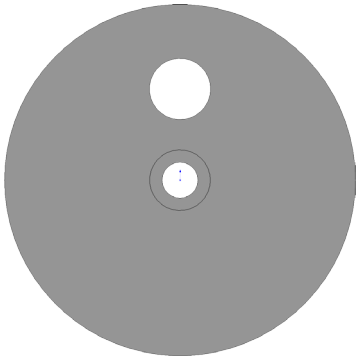


Fig. 17

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. 19**

under Direction 1
click in **Pattern Axes** box
click **cylindrical face of hub**
check **Equal spacing**
Number of Instances **4**
click OK .

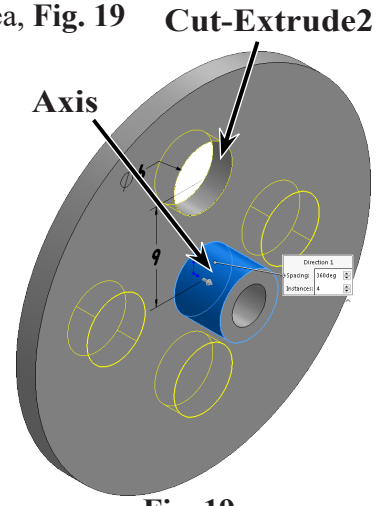


Fig. 19

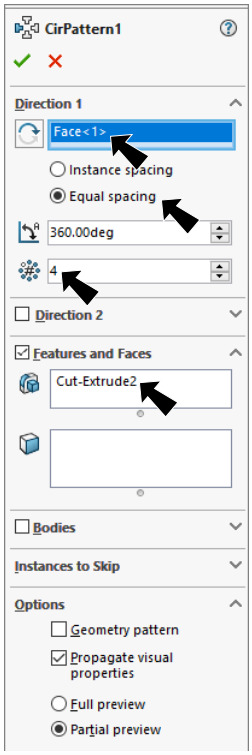


Fig. 18

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**.

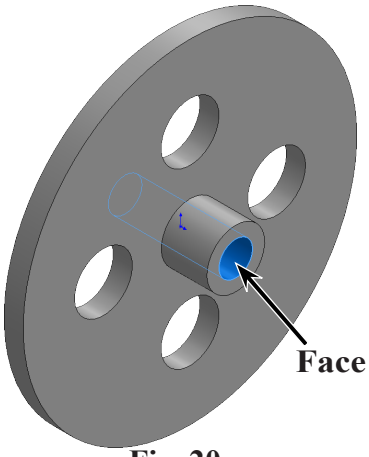


Fig. 20

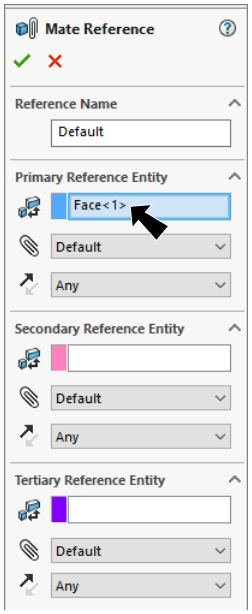


Fig. 21

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**.

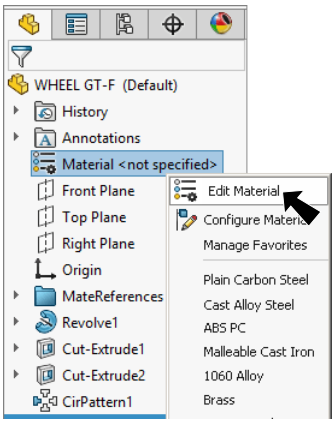


Fig. 22

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 gray high gloss plastic**, **Fig. 26.**

Step 3. Click OK in the Property Manager.

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

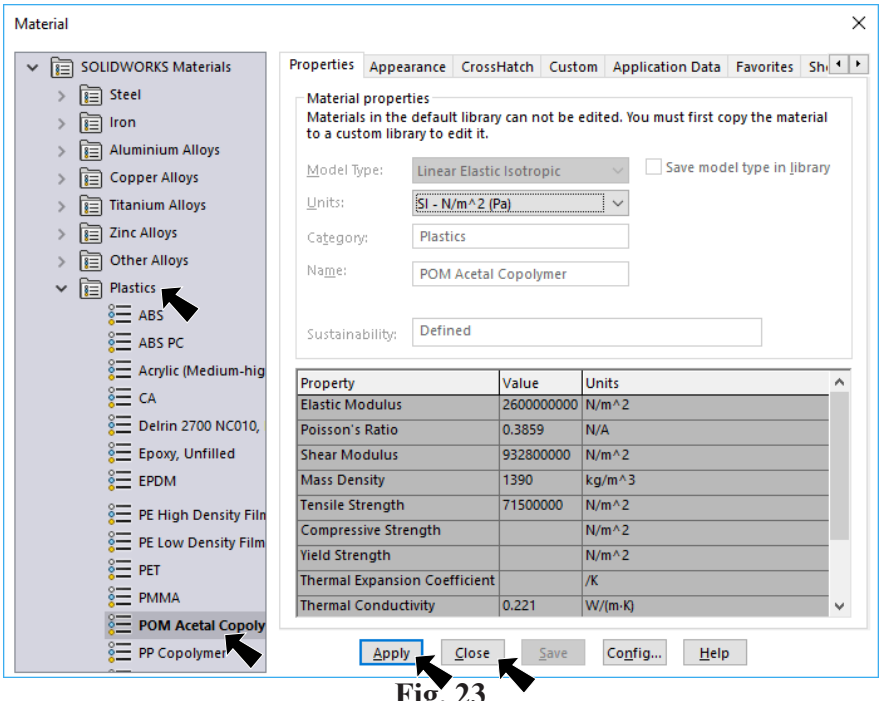


Fig. 23

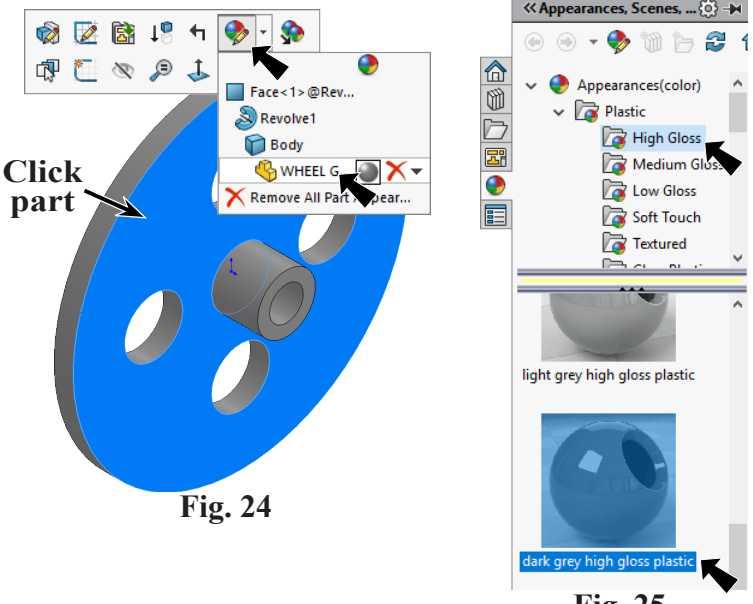


Fig. 24

Fig. 25

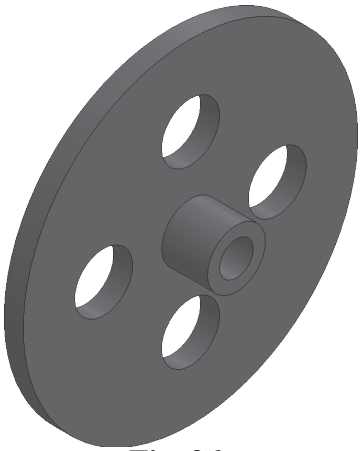


Fig. 26