



A. Wheel.

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

Step 2. Click **Right Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 1**.

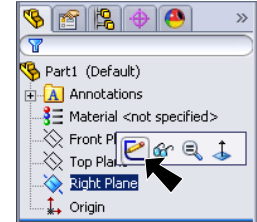


Fig. 1

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

Step 4. Draw **two circles** starting at the Origin , **Fig. 2**.

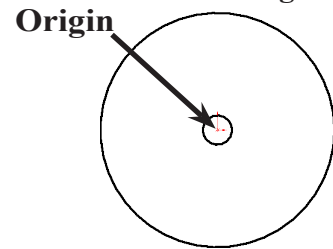


Fig. 2

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

Step 6. Dimension the circles as shown in **Fig. 3**.

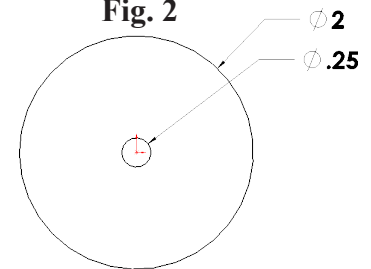
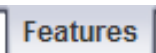


Fig. 3

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

Step 8. Click **Extruded Boss/Base**  on the Features toolbar.

Step 9. In the Property Manager set:
under Direction 1, **Fig. 4**
End Condition **Mid Plane**

Depth  **D1** **.2**
click OK , **Fig. 5**.

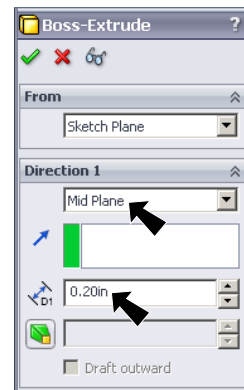


Fig. 4

Step 10. Click Zoom to Fit  (F) on the View toolbar.

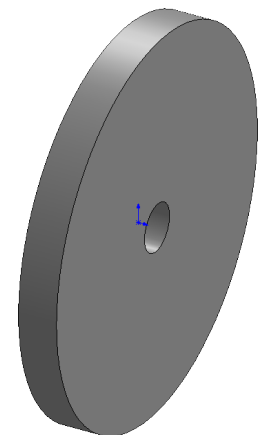


Fig. 5

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. Fillet.

Step 1. Click the cylindrical face of the wheel to select it, **Fig. 6**.


Step 2. Click **Fillet**  on the Features toolbar.


Step 3. In the Fillet Property Manager set:
select **FilletXpert**, **Fig. 7**

Radius  **.05**
select **Full preview**
click **OK** , **Fig. 8**.

D. Mate Reference.

Step 1. Click the **inside cylindrical face of axle hole** to select it, **Fig. 8**.

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. 9**.

E. Material PS HI (Polystyrene).

Step 1. **Right click Material**  in the Feature Manager and click **Edit Material** , **Fig. 10**.

Step 2. **Expand Plastics** (click +) in the material tree and select **PS HI**. Click **Apply** and **Close**, **Fig. 11**.

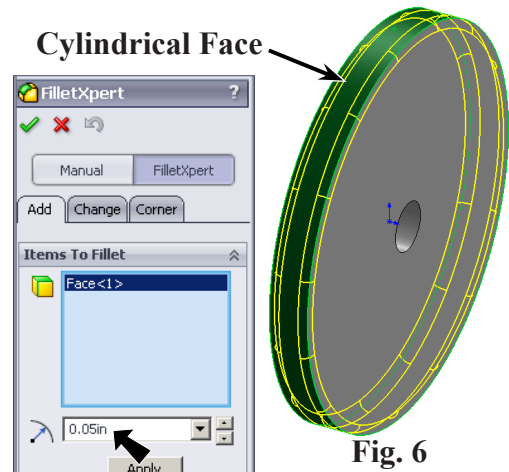


Fig. 6

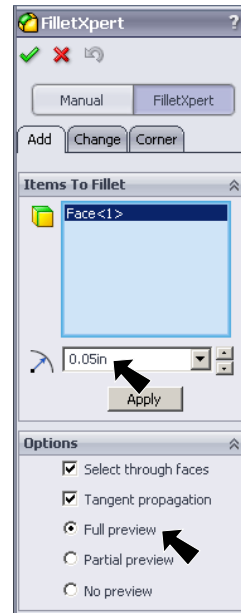


Fig. 7

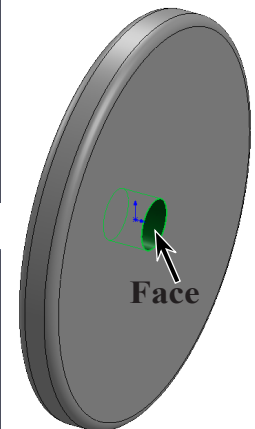


Fig. 8

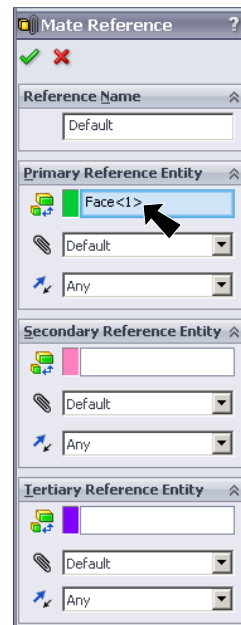


Fig. 9

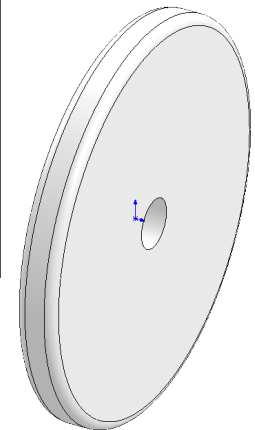


Fig. 11

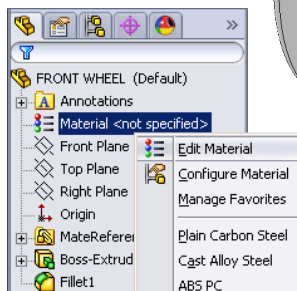


Fig. 10

F. Appearance Color.

Step 1. Click the Front Wheel, click **Appearance Callout**  on the Content toolbar and click **FRONT WHEEL** , Fig. 12.

Step 2. In the Appearances Property Manager, Fig. 13

under Color:
set RGB values

R 180

G 212

B 255

click OK .

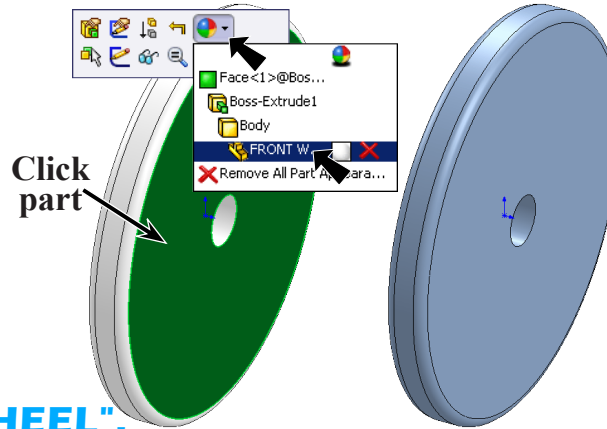


Fig. 12

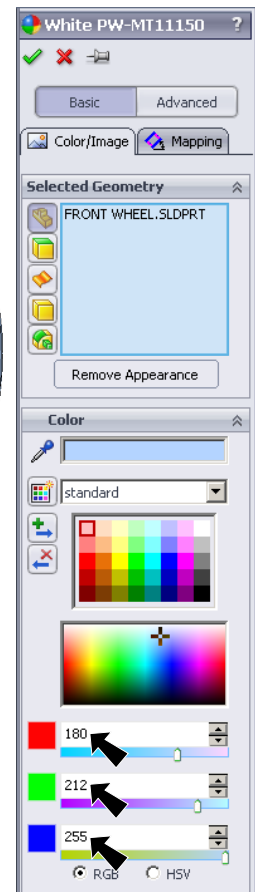


Fig. 13

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

G. Save as "REAR WHEEL".

Step 1. Save Front Wheel. Very important to save now. Use **Ctrl-S**.

Step 2. Click File Menu > Save As.

Step 3. Key-in **REAR WHEEL** for the filename and press ENTER.

Fig. 14

H. Change Wheel Thickness.

Step 1. Click **Boss-Extrude1** in the Feature Manager and click **Edit Feature**  in the menu, Fig. 15.

Step 2. In the Property Manager set:

Depth  **D1 .4**

click , Fig. 16 and Fig. 17.

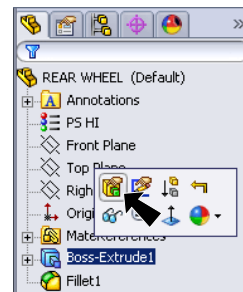


Fig. 15

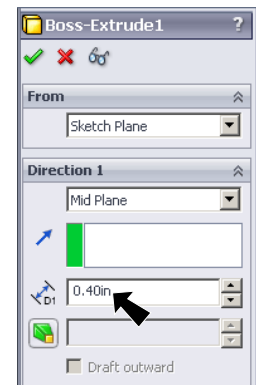


Fig. 16

I. Save as "REAR WHEEL GROOVE".

Step 1. Save Rear Wheel. Very important to save now. Use **Ctrl-S**.

Step 2. Click File Menu > Save As.

Step 3. Key-in **REAR WHEEL GROOVE** for the file-name and press ENTER.

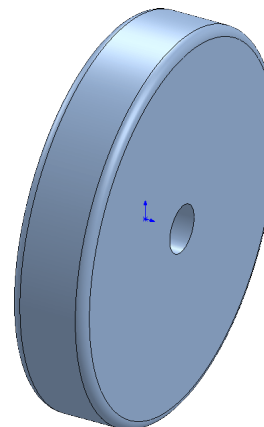




Fig. 17

J. Sketch Groove.

Step 1. Click **Front Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 18**.

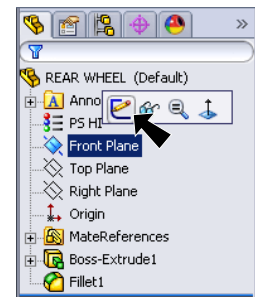


Fig. 18

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

Step 3. Click **Corner Rectangle**  (S) in the **Rectangle flyout**  on the Sketch toolbar.

Step 4. Draw a rectangle along the top edge of the wheel. Keep rectangle away from the fillet, **Fig. 19**.

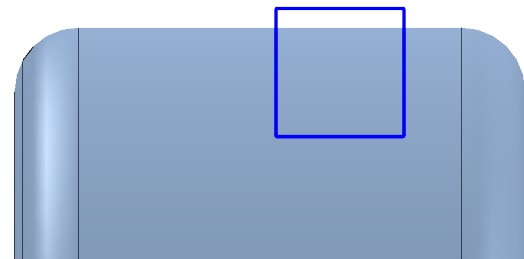



Fig. 19

Step 6. **Ctrl click the top edge of wheel and the top line of rectangle** to select both. Release Ctrl key and click **Make Collinear**  from the Content menu, **Fig. 20**.

Ctrl click top edge of wheel and top line of rectangle

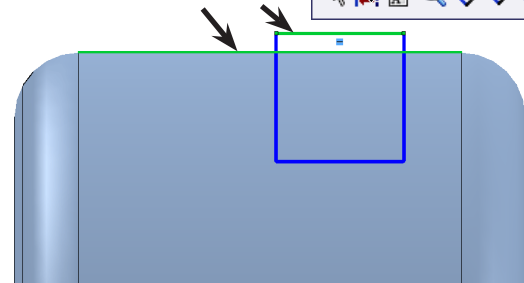
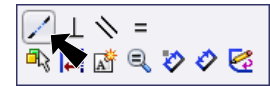



Fig. 20

Step 7. **Ctrl click a vertical line and horizontal line** of rectangle to select both, **Fig. 21**. Release Ctrl key and click **Make Equal**  on the Content menu.

Ctrl click top and side lines of rectangle

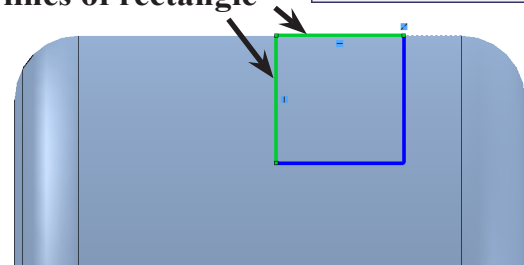
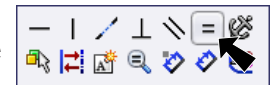


Fig. 21

Step 8. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 9. Dimension rectangle as shown in **Fig. 22**.

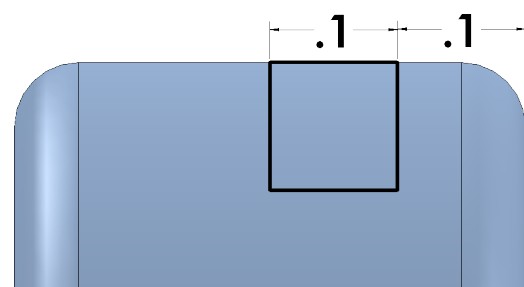





Fig. 22

Step 10. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.

Step 11. Starting from the Origin , draw a centerline through wheel, **Fig. 23**.

Step 12. Click **Features**  on the Command Manager toolbar.

Step 13. Click **Revolved Cut**  on the Features toolbar and OK  in the Cut-Revolve Property Manager.

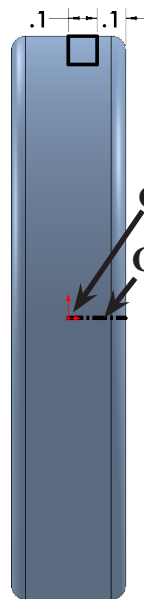


Fig. 23



Fig. 24

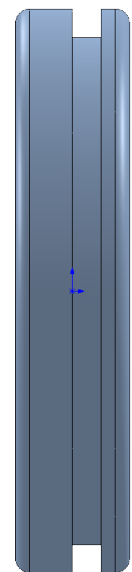
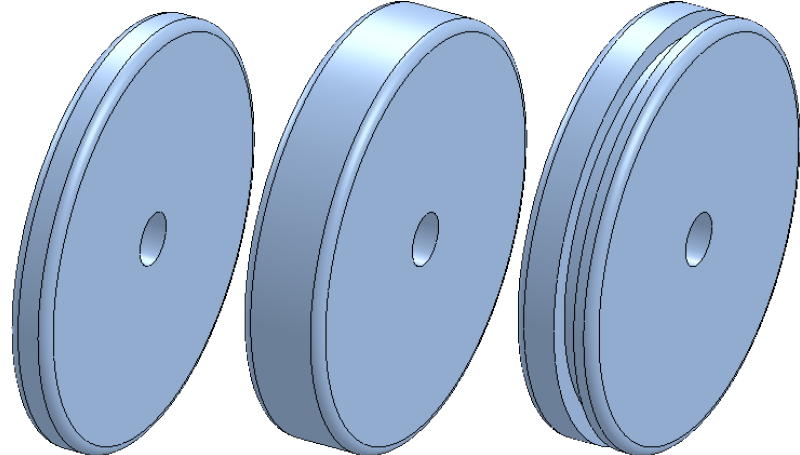


Fig. 25

Step 14. Save. Use **Ctrl-S**.

Step 15. You should have 3 Wheel files saved:



Front Wheel

Rear Wheel

Rear Wheel Groove