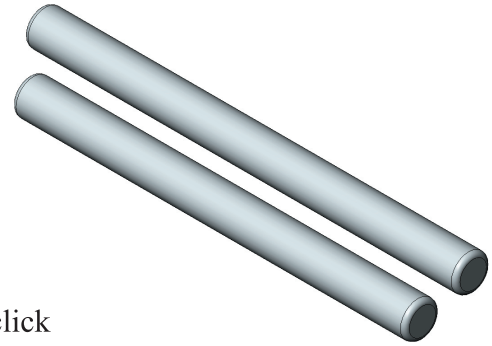
Chapter 7

CO2 Shell Car
Axles



A. Axle.

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

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

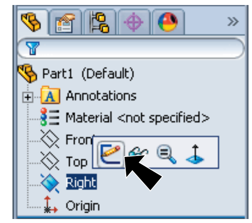


Fig. 1

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

Step 4. Draw a circle starting at the Origin , **Fig. 2**.

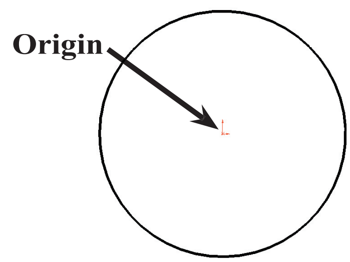


Fig. 2

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

Step 6. Dimension circle **diameter 3.18**, **Fig. 3**.

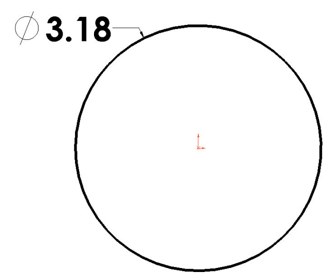


Fig. 3

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, under **Direction 1** set:

End Condition to **Mid Plane**

Depth to **35.5**

click OK , **Fig. 4**
and **Fig. 5**.

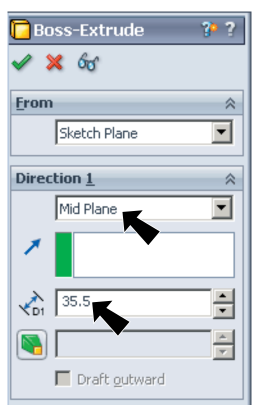


Fig. 4

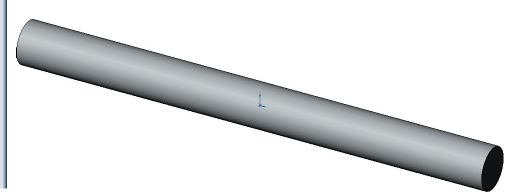


Fig. 5

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

B. Save as "FRONT AXLE".

Step 1. Click File Menu > Save As.

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

C. Fillet Edges.

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

Step 2. In the Fillet Property Manager:

set **Radius** to **.4**

select **Full preview**

click **cylindrical axle face, Fig. 7**

click OK, **Fig. 8**.

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

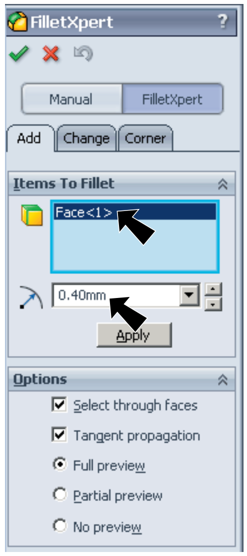


Fig. 6

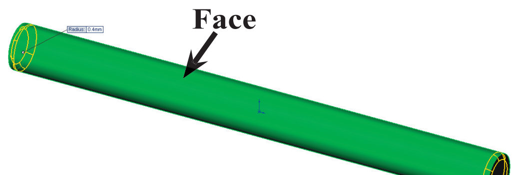


Fig. 7

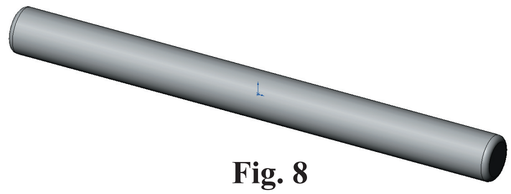


Fig. 8

D. Mate References.

Step 1. Click **Right** (plane) in the Feature Manager to select Plane, **Fig. 9**.

Step 2. Click **Reference Geometry** on the Features toolbar and **Mate Reference** from the menu.

Step 3. In the Mate Reference Manager:

under **Primary** Reference Entity, **Fig. 10**

set **Mate Reference Type** **to Coincident**

under **Secondary** Reference Entity

click in Entity box

and click **cylindrical face of axle, Fig. 11**

click OK.

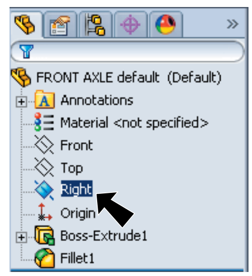


Fig. 9

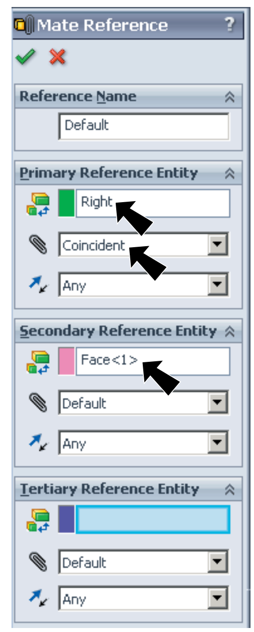


Fig. 10

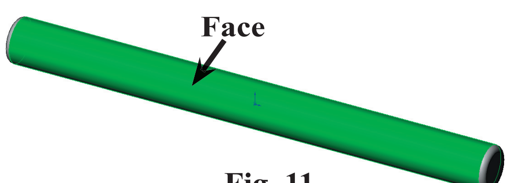


Fig. 11

E. Material Aluminum.

Step 1. **Right click Material**  in the Feature Manager and click **Edit Material**, **Fig. 12**.

Step 2. **Expand Aluminum Alloys** in the material tree and select **1060 Alloy**, **Fig. 13**. Click **Apply** and **Close**.

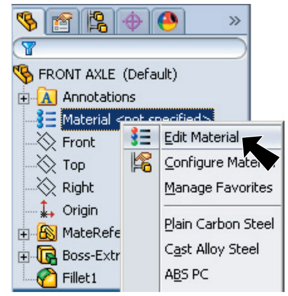


Fig. 12

F. Save as "REAR AXLE".

Step 1. Save.
Use **Ctrl-S** to save FRONT AXLE.

Step 2. Click File Menu > Save As.

Step 3. Key-in **REAR AXLE** for the filename.
You now have two axle files, FRONT and REAR. Next, we change length of REAR axle.

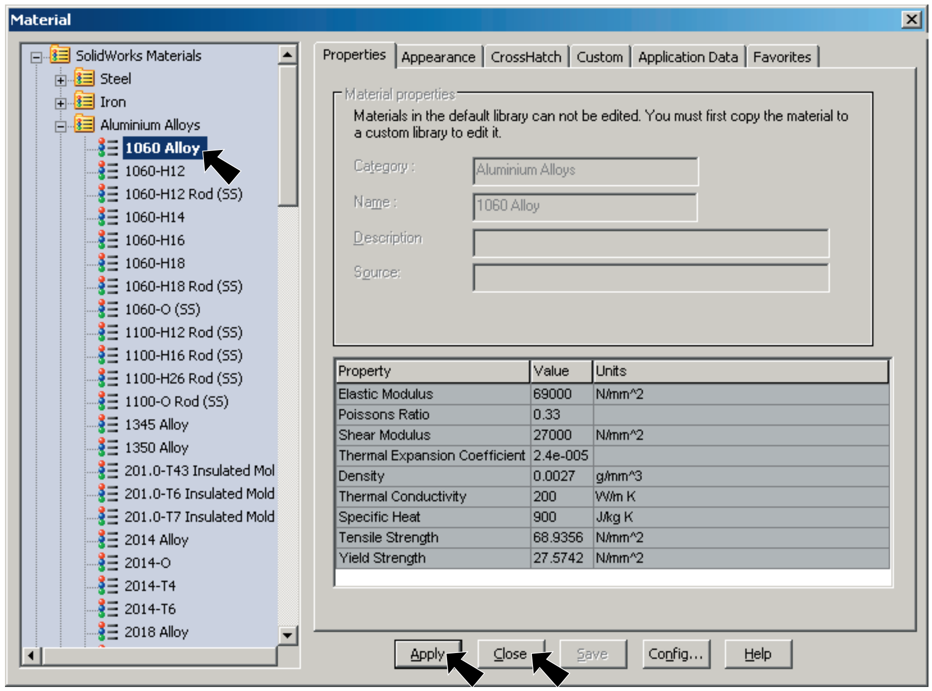
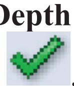


Fig. 13

G. Change Extrude Depth.

Step 1. Click **Boss-Extrude1** in the Feature Manager and click **Edit Feature**  in the menu, **Fig. 14**.

Step 2. Change **Depth**  to **39**
click OK , **Fig. 15**.

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

You should have 2 axles:
FRONT 35.5
REAR 39

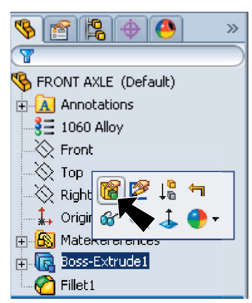


Fig. 14

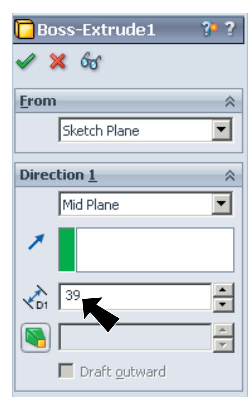
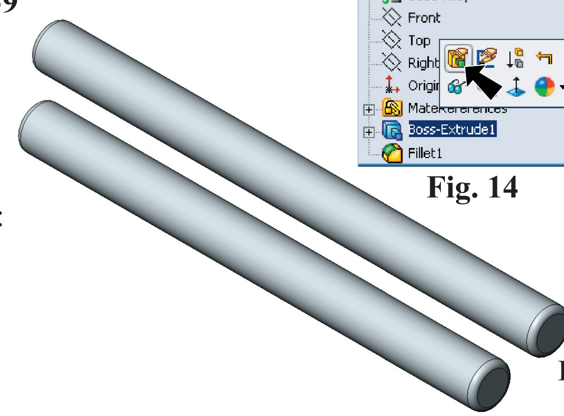


Fig. 15



Rear 39 mm

Front 35.5 mm