





# CO<sub>2</sub> Rail Car Front Tire




## A. Sketch Construction Lines.

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

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

Step 3. Click **Centerline**  (S) in the **Line flyout**  on the Sketch toolbar.

Step 4. Starting at the Origin , draw a vertical centerline up from the Origin, **Fig. 2**.

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

Step 6. Dimension the centerline **17**, **Fig. 2**.

Step 7. Click **Zoom to Fit**  (F) on the View toolbar.

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

Step 9. Draw construction lines as shown in **Fig. 3**. **Right click drawing and click End chain** from menu to restart construction line. Don't forget the horizontal construction line out from the Origin. Use the inferencing line, the dotted line that appears when you draw.

Step 10. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 11. Add the dimensions, **Fig. 4**.

## B. Save as "FRONT TIRE".

Step 1. Click File Menu > Save As.

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

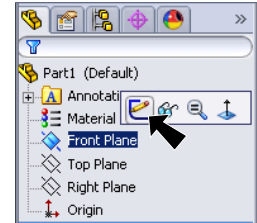


Fig. 1

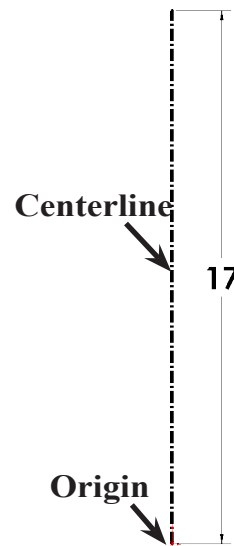


Fig. 2

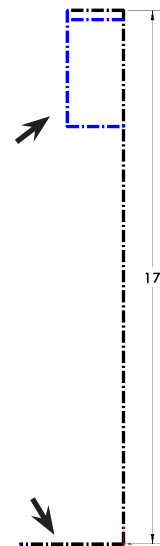


Fig. 3



Fig. 4

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### C. 3 Point Arc.

Step 1. Zoom in around **top construction lines**, **Fig. 5**. To **zoom**, hold down **Shift** key and drag with middle mouse button (wheel). To **pan**, hold down **Ctrl** key and drag with middle mouse button (wheel).

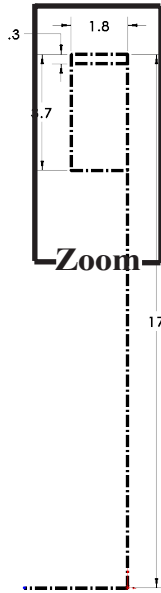


Fig. 5

Step 2. Click **3 Point Arc**  (S) in the **Arc** flyout  on the Sketch toolbar.

Step 3. Draw an arc between the Position 1, Position 2 and Position 3 in **Fig. 6**. To draw the arc, first click Position 1, then Position 2. Swing the arc out to Position 3 and click.

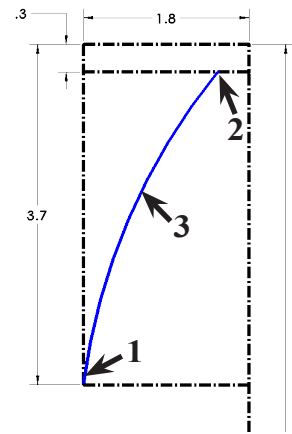


Fig. 6

Step 4. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 5. Dimension arc **7** and **1** between top arc endpoint and vertical centerline, **Fig. 7**.

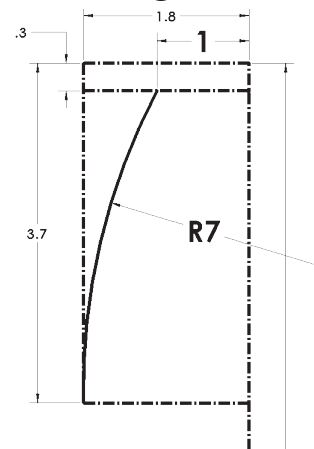


Fig. 7

### D. Mirror Sketch.

Step 1. **Right click drawing and click Select** from menu to unselect Smart Dimension.

Step 2. **Ctrl click arc and vertical centerline**, **Fig. 8**. To Ctrl click, click arc, then hold down Ctrl key and click vertical centerline.

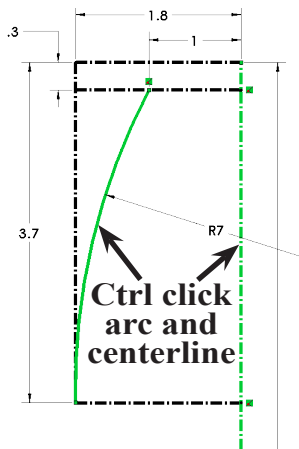



Fig. 8

Step 3. Click **Mirror Entities**  on the Sketch toolbar, **Fig. 9**.

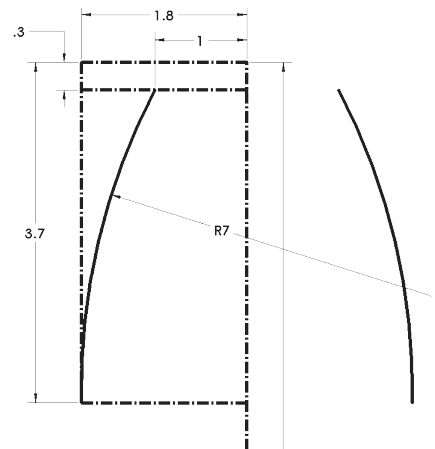


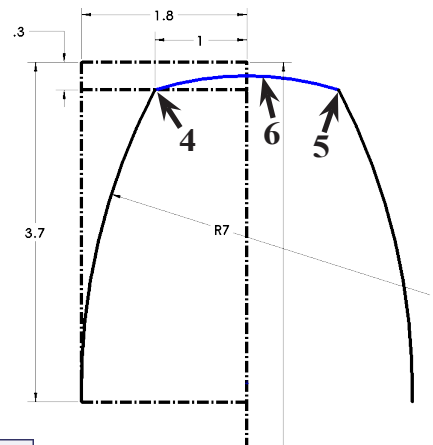


Fig. 9


## E. 3 Point Arcs.

Step 1. Click **3 Point Arc**  (S) in the **Arc flyout**  on the Sketch toolbar.

Step 2. Draw an arc between the Position 4, Position 5 and Position 6 in **Fig. 10**. To draw the arc, first click Position 4, then Position 5. Swing the arc up to Position 6 and click.



Step 3. **Right click drawing and click Select** from menu to unselect Arc Tool.

Step 4. **Ctrl click arc and top construction line** to select both. Release Ctrl key and click **Make Tangent**  on the Content menu, **Fig. 11**.

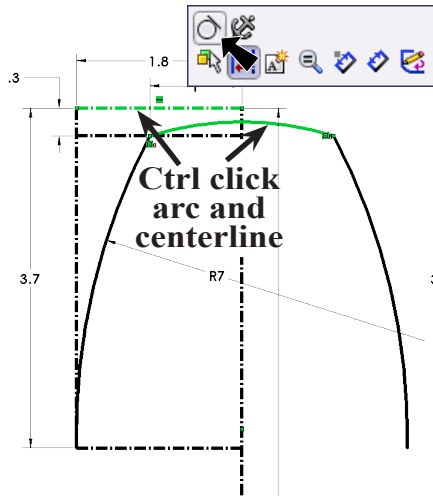




Fig. 11

Step 5. Click **3 Point Arc**  (S) in the **Arc flyout**  on the Sketch toolbar.

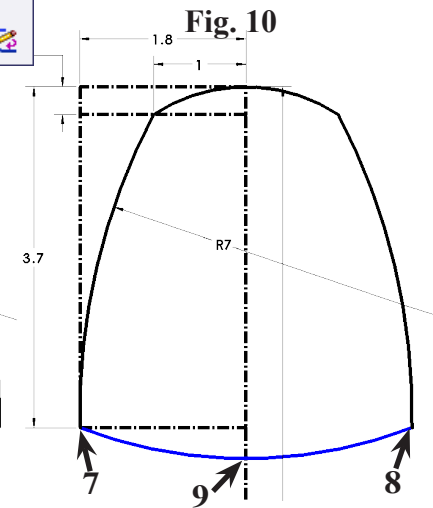


Fig. 12

Step 6. Draw an arc between the Position 7, Position 8 and Position 9 in **Fig. 12**.

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

Step 8. Dimension arc 5 as shown in **Fig. 13**.

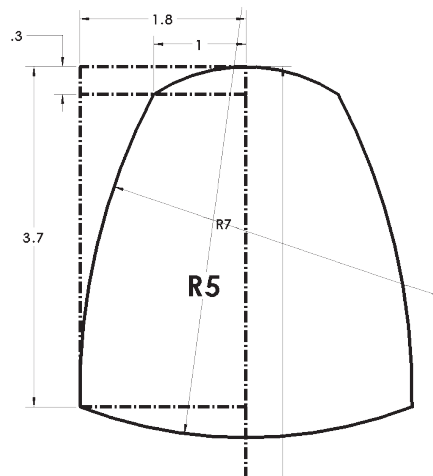
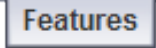


Fig. 13

## F. Revolved Boss/Base.

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

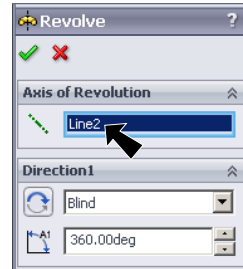
Step 2. Click **Revolved Boss/Base**  on the Features toolbar.

Step 3. In the Revolve Property Manger:

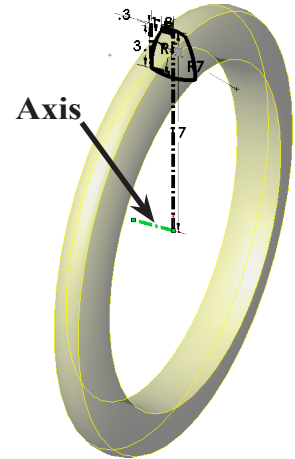
for Axis of Revolution ,  
click **bottom construction line of sketch**,  
**Fig. 15.**

Your bottom line of sketch does not have to  
show in Property Manager as Line2.

Click OK .



**Fig. 14**



**Fig. 15**

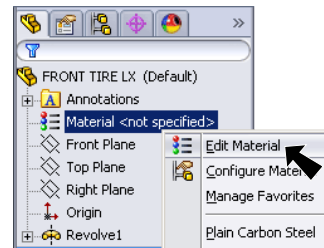
Step 4. Click Zoom to Fit  (F) on the View toolbar.

Step 5. Save. Use **Ctrl-S**.

## G. Material Rubber.

Step 1. **Right click Material**  in the Feature Manager and click **Edit Material**, **Fig. 17.**

Step 2. **Expand Rubber** in the material tree and select **EPDM 60 Durometer**. Click **Apply** and **Close**.



**Fig. 17**



**Fig. 16**

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