



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




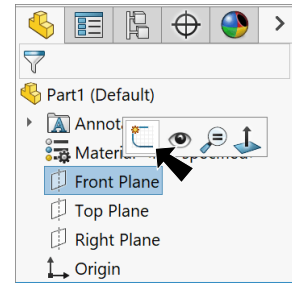
## A. Sketch Lines.

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**.

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

Step 4. Starting away from Origin  sketch lines, **Fig. 2**. Use the inferencing line, the dotted line that appears when you sketch to keep lines vertical or horizontal.

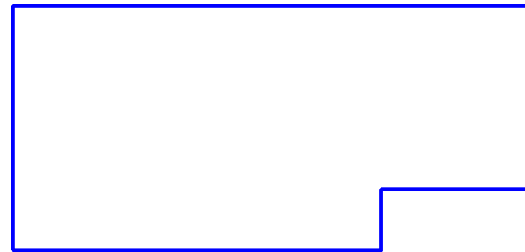


**Fig. 1**

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

Step 6. Add dimensions, **Fig. 3**.

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



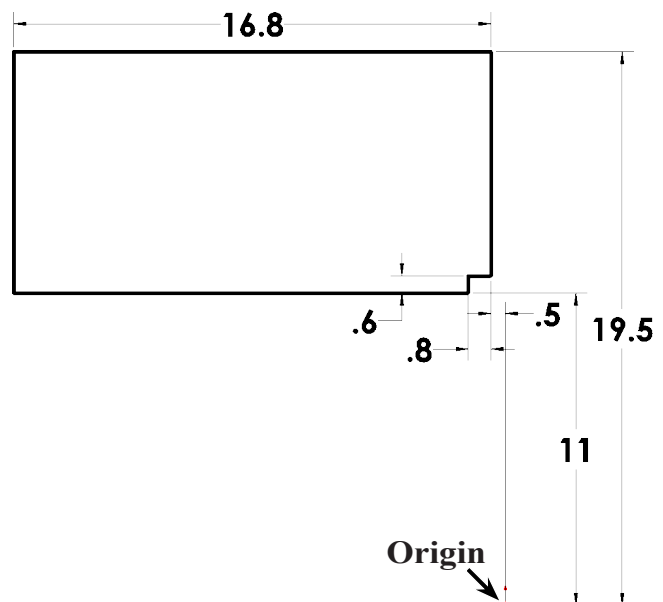
Origin 

**Fig. 2**

## B. Save as "REAR TIRE".

Step 1. Click File Menu > Save As.

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



**Fig. 3**

### C. 3 Point Arc.

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

Step 2. Sketch an arc between the Position 1, Position 2 and Position 3 in **Fig. 64**. To sketch the arc, first click Position 1, then Position 2. Swing the arc out to Position 3 and click. Position 1 is the inside construction line endpoint.

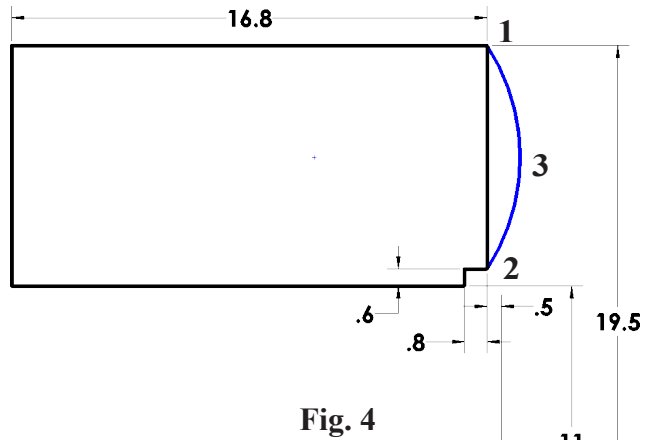


Fig. 4

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

Step 4. Add dimensions, **Fig. 5**. To dimension, click the midpoint  of arc and vertical line.

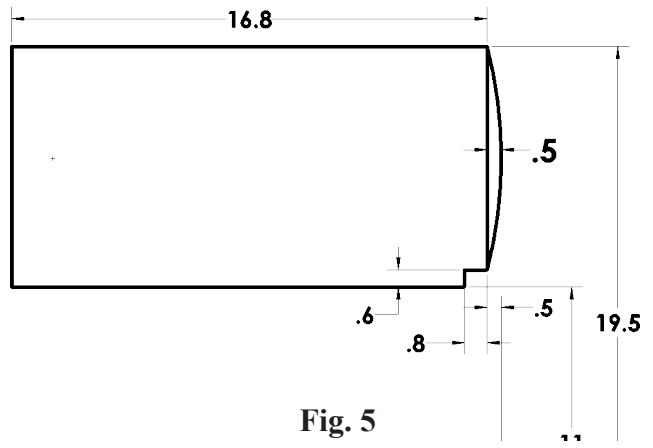



Fig. 5

Step 5. Save  (Ctrl-S).

### D. Centerline.

Step 1. Click **Centerline**  (S) in the **Line flyout**  on the Sketch toolbar.

Step 2. Sketch a horizontal centerline out from **Origin**  , **Fig. 6**.

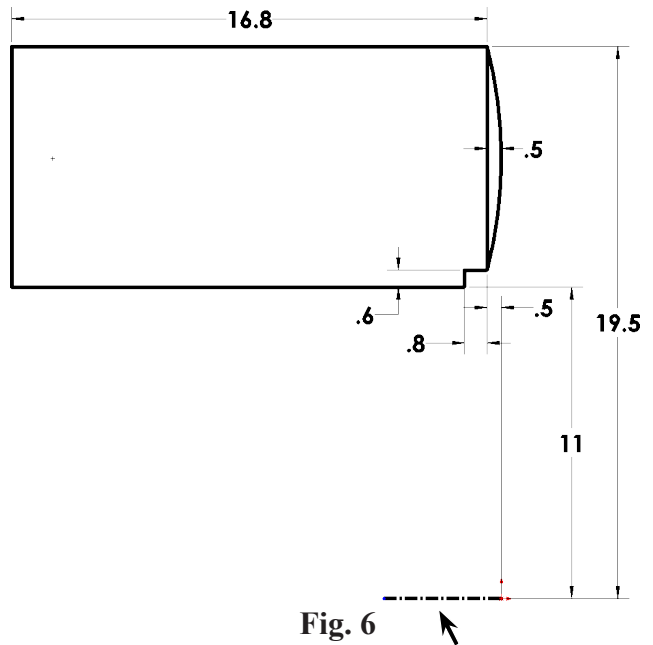



Fig. 6

## E. 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 set:  
 under Selected Contours, **Fig. 7**  
 click in the Selected Contours box  
 and click the **two contours**, **Fig. 8**  
 click OK .

Step 4. Save  (Ctrl-S).

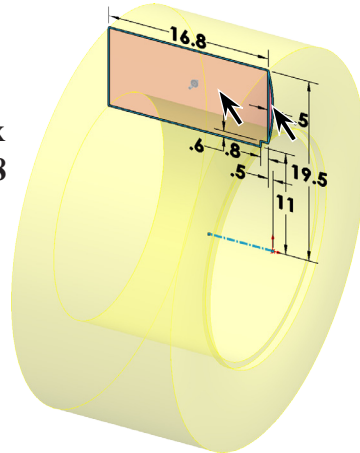


Fig. 8

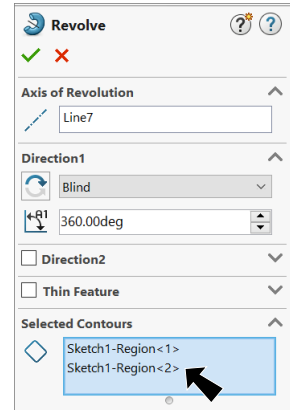







Fig. 7

## F. Sketch Construction Circle.

Step 1. Click **Right Plane**  in the Feature Manager and click **Sketch**  on the context toolbar, **Fig. 9**.

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 starting at the Origin , **right click circle** and click **Construction Geometry**  on the context toolbar, **Fig. 10**.

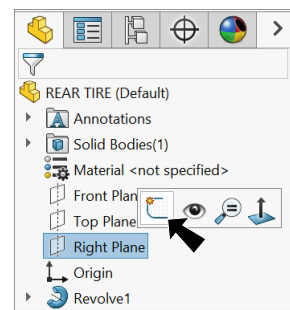


Fig. 9

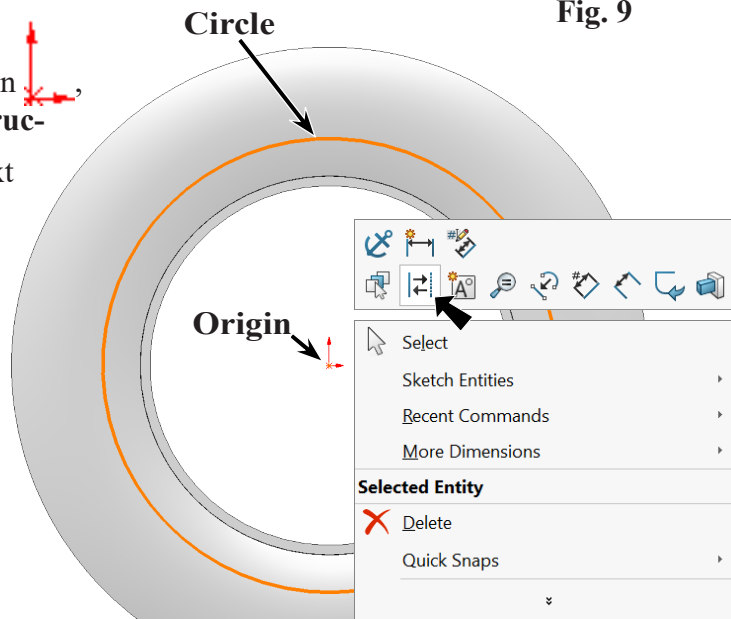


Fig. 10

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



Step 6. Dimension **diameter 25.6**, Fig. 11.

Step 7. Save  (Ctrl-S).

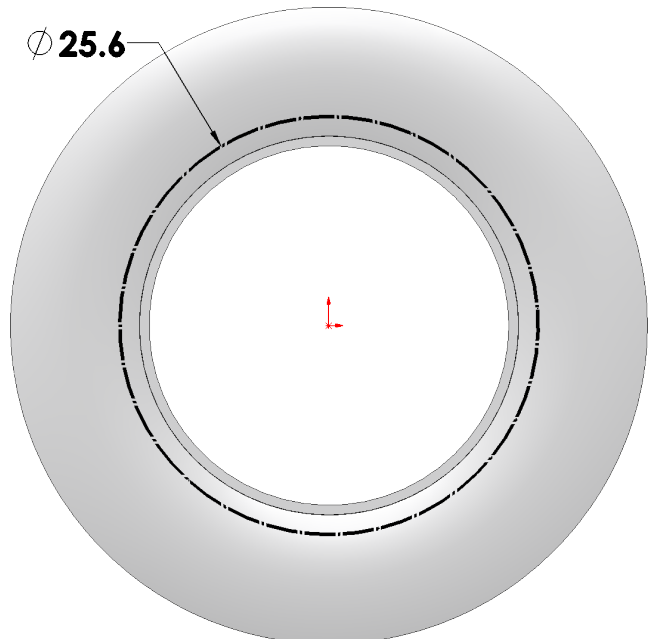




Fig. 11

### G. Split Circle into Arcs.

Step 1. Click Tools Menu > Sketch Tools > Split Entities. (Alt-T then T I)

Step 2. In the Split Entities Property Manger:  
Click **left quadrant point**  of **circle** to split at that point, Fig. 12. The point should be directly to the left of the Origin.

Click **right quadrant point**  of circle to split at that point, Fig. 12. The point should be directly to the right of the Origin.

The circle is now split into two arcs.  
Click Cancel , Fig. 13.

Step 3. Save  (Ctrl-S).

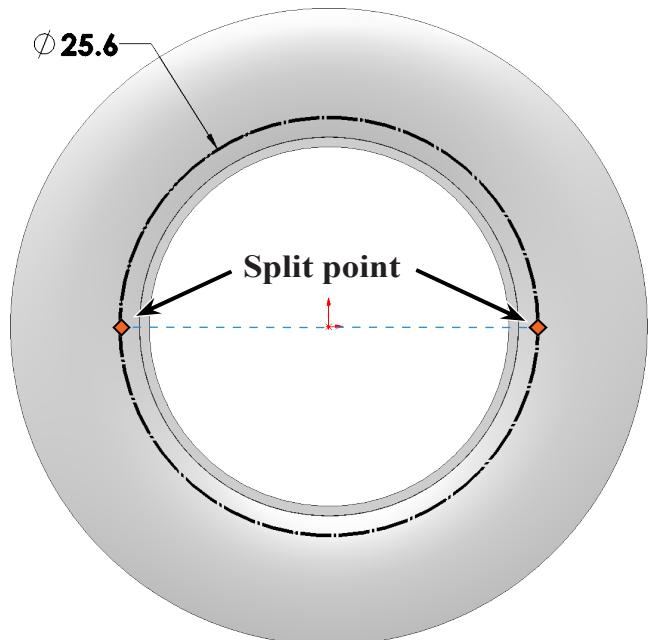


Fig. 12

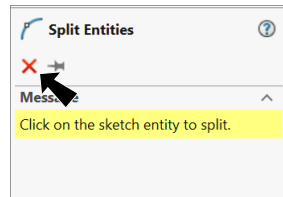
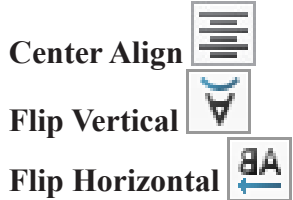


Fig. 13


## H. Text on Top Arc.

Step 1. Click Text Tool  on the Sketch toolbar.

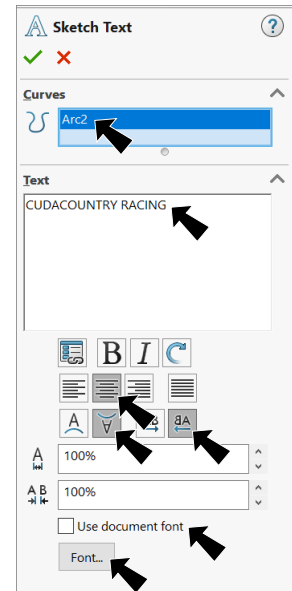
Step 2. In the Sketch Text Property Manager set:  
 under Curves, **Fig. 14**  
 click the **top arc** in sketch, **Fig. 15**  
 under Text  
 click in the box and lock Caps Lock on keyboard key-in  
**CUDACOUNTRY RACING**



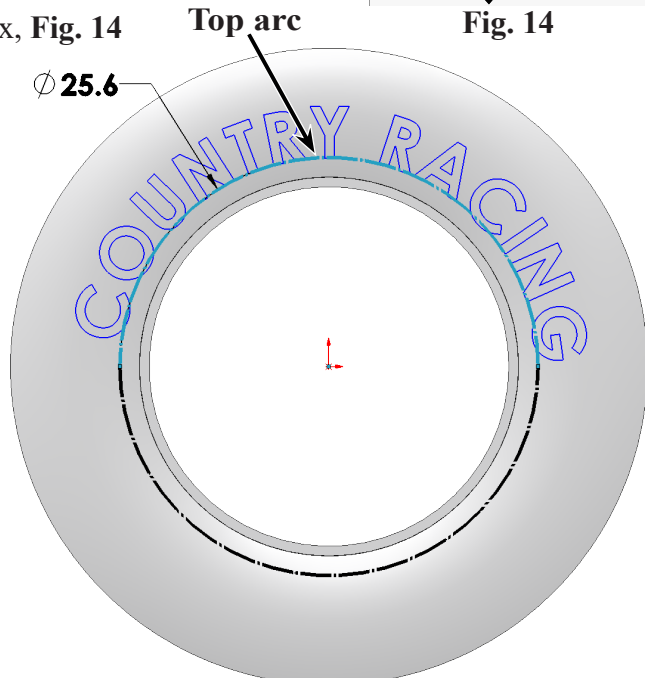
uncheck Use document font checkbox, **Fig. 14**  
 click Font  button.

Step 3. In the Choose Font dialog box select:  
 under Font, **Fig. 16**  
**Univers Black**  
 under Font Style:  
**Oblique**  
 under Height:  
 select **Units 2**  
 click OK button and  
 click OK .

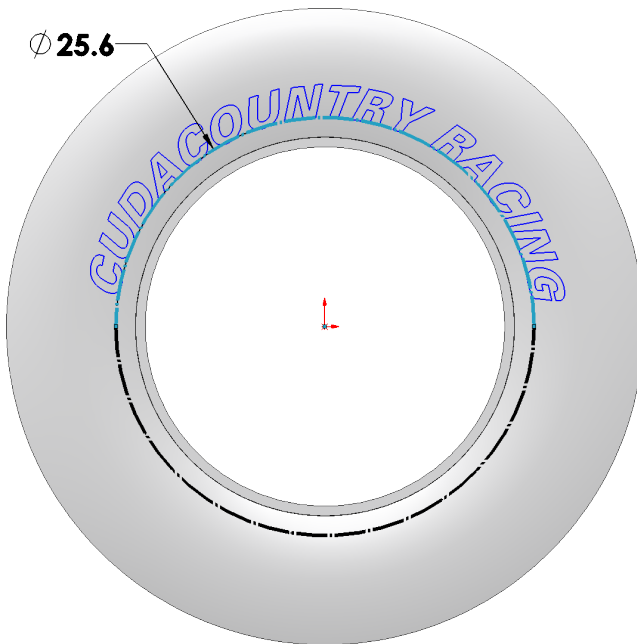
**Tip:** Click in  
 Font box and  
 press U key.



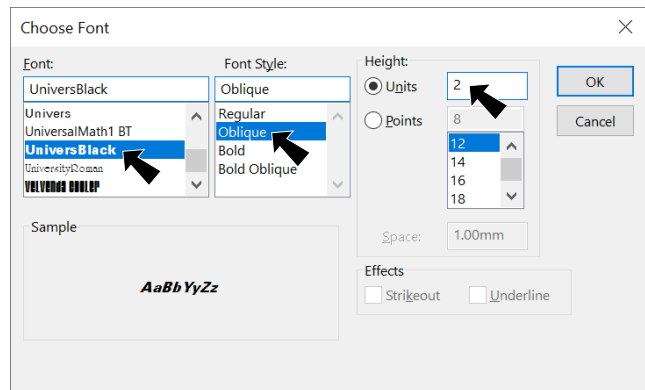
**Fig. 14**



**Fig. 15**



**Fig. 17**



**Fig. 16**

# I. Text on Bottom Arc.

Step 1. Click Text Tool  on the Sketch toolbar.

Step 2. In the Sketch Text Property Manager set:  
 under Curves, **Fig. 18**  
 click the **bottom arc**, **Fig. 19**  
 under Text  
 click in the box and key-in **CUDACOUNTRY RACING**



uncheck **Use document font** checkbox, **Fig. 18**  
 click **Font**  button.

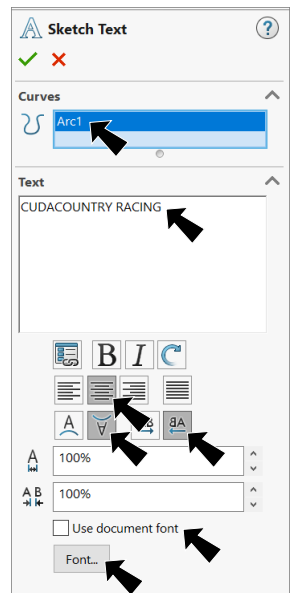



Fig. 18

Step 3. In the Choose Font dialog box select:  
 under Font, **Fig. 20**  
**Univers Black**  
 under Font Style:  
**Oblique**  
 under Height:  
 select **Units 2**  
 click OK button and  
 click OK .

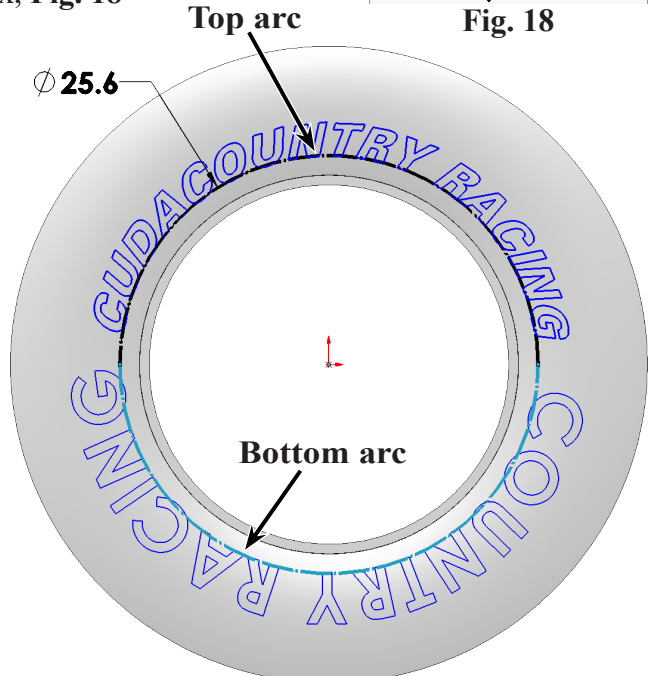


Fig. 19

Step 4. Save  (Ctrl-S).

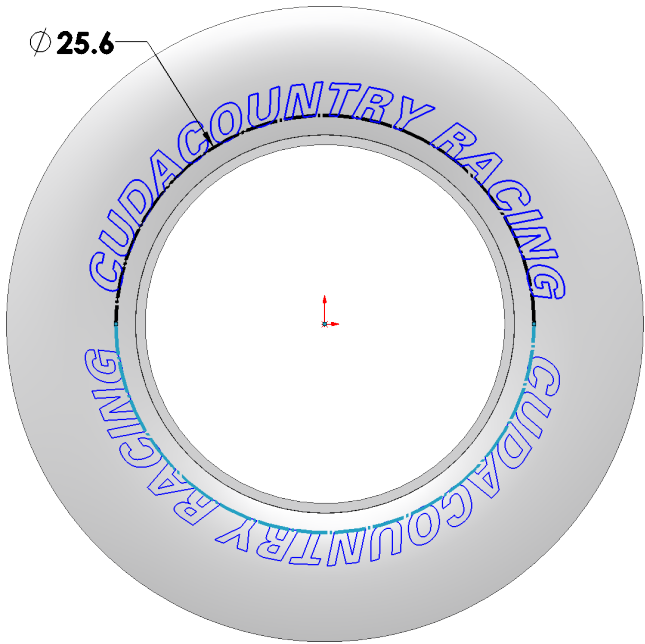


Fig. 21

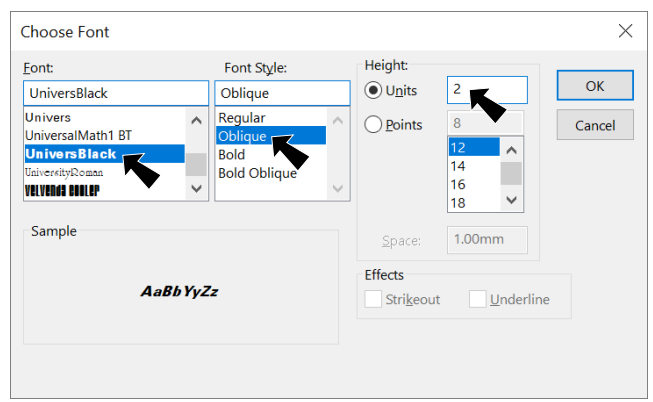


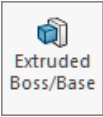




Fig. 20

## J. Extrude Letters.

- Step 1. Click **Front**  on the Standard Views toolbar. (Ctrl-1)
- Step 2. Zoom in around **top letters**, Fig. 22.
- Step 3. Click **Features**  on the Command Manager toolbar.
- Step 4. Click **Extruded Boss/Base**  on the Features toolbar.
- Step 5. In the Boss-Extrude Property Manager set:  
 under From, Fig. 23  
 Start Condition **Surface/Face/Plane**  
 for Face,  
 click **outside face of tire**, Fig. 24  
 under Direction 1  
**Depth**  **.3**  
 click OK .

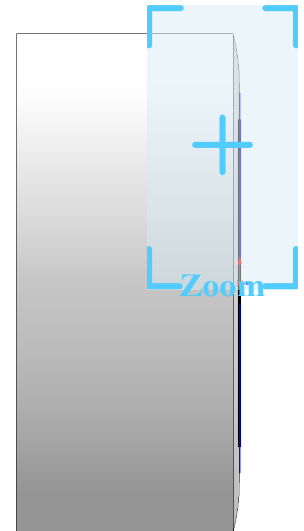


Fig. 22

- Step 6. Save  (Ctrl-S).

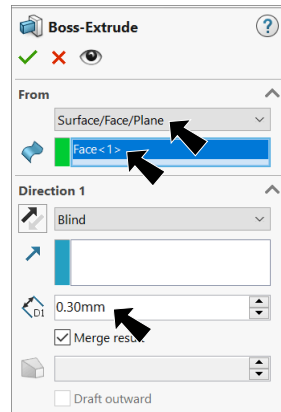


Fig. 23

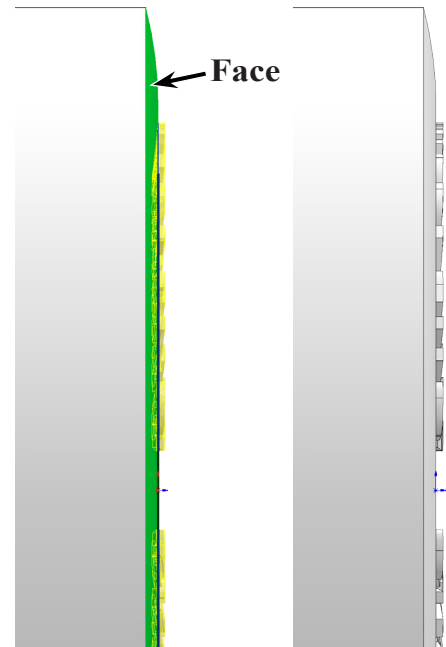




Fig. 24

Fig. 25

## K. Material Rubber.

- Step 1. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)
- Step 2. **Right click** **Material**  in the Feature Manager and click **Edit Material**, Fig. 31.
- Step 3. **Expand Rubber** in the material tree and select **EPDM 60 Durometer**. Click **Apply** and **Close**.

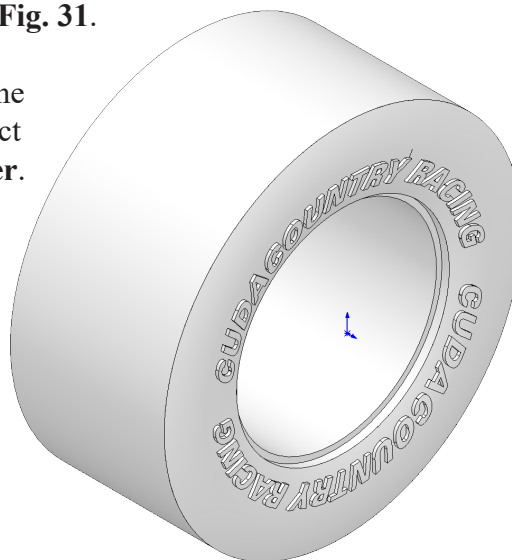


Fig. 26

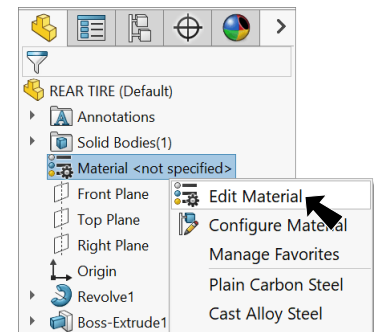





Fig. 27

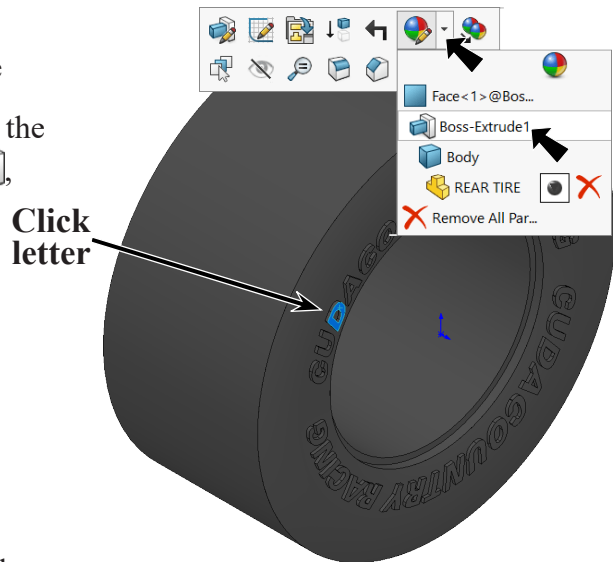
## L. Letters Appearance.

Step 1. Click an extruded letter to select the extrude feature, click **Appearance Callout**  on the context toolbar and click **Boss-Extrude1** , **Fig. 28.**

Step 2. In the Color Property Manager, under Color, **Fig. 29** click **White** swatch and OK .

Step 3. Save  (Ctrl-S).

Step 4. Use **Chapter 5 Wheel Assembly** to assemble Rear Rim Px and Rear Tire, **Fig. 31.**



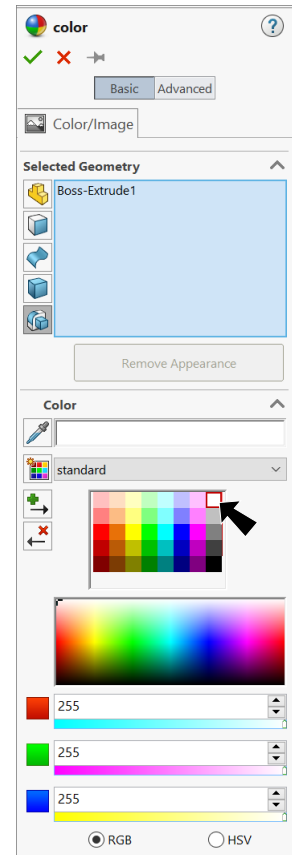
**Fig. 28**



**Fig. 30**



**Fig. 31**



**Fig. 29**