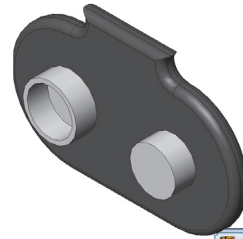


# E-Car Battery Clip



## A. Sketch Arc.

Step 1. Click File Menu > New.

Step 2. Click **Part** from the list and click OK.

Step 3. Click **Front** (plane) in the Feature Manager and click **Sketch** from the Content toolbar, **Fig. 1**.

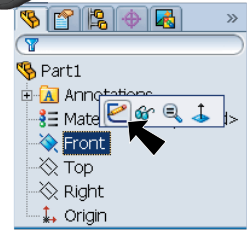


Fig. 1

Step 4. Click **Centerpoint Arc** in the **Arc flyout** on the Sketch toolbar.



Step 5. Click the Origin to start the arc and move the cursor directly above the origin. Click to place the first end point, then move cursor counterclockwise 180 degrees to directly below the Origin. Click to place the second end point, **Fig. 2**.

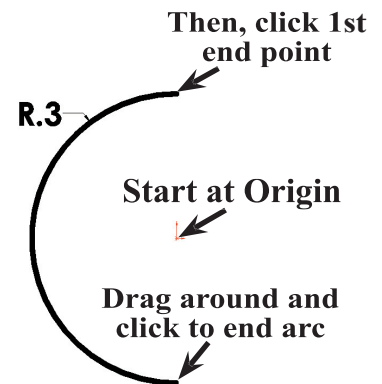


Fig. 2

Step 6. Click **Fully Defined Sketch** on the Sketch toolbar and OK in the Property Manager. **Dimension the arc radius .3 radius** as shown in **Fig. 2**.



Step 7. Click Zoom to Fit on the View toolbar.



## B. Sketch Line Across Bottom.

Step 1. Click **Line** on the Sketch toolbar.



Step 2. Draw line from bottom end point of arc across sketch as shown in **Fig. 3**. Keep the line horizontal. As a guide, use the inferencing line, the dotted line that appears when you draw.

Step 3. Click **Smart Dimension** on the Sketch toolbar.



Step 4. Dimension the line **.25** as shown in **Fig. 3**. To Smart dimension click the line, then move the cursor down below the line and click. Key-in **.25** for the dimension and press ENTER.

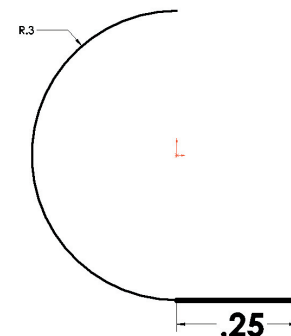




Fig. 3

## C. Save as "BATTERY CLIP".

Step 1. Click File Menu > Save As.

Step 2. Key-in **BATTERY CLIP** for the filename and press ENTER.

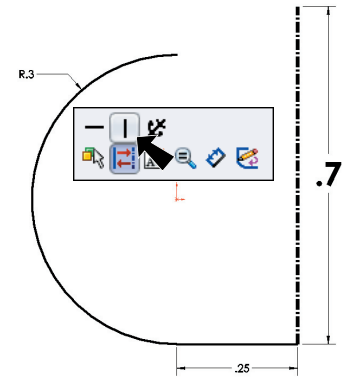
## D. Centerline for Mirror.

- Step 1. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.
- Step 2. Draw a vertical centerline starting from the end of the line. Draw the centerline up past the top of the arc, **Fig. 4**.
- Step 3. Press Escape key on keyboard to unselect Centerline tool.

- Step 4. Click the centerline and click **Make Vertical**  on the Content menu, **Fig. 4**.


- Step 5. Click **Smart Dimension**  on the Sketch toolbar.

- Step 6. Dimension the line **.7** as shown in **Fig. 4**. To Smart dimension click the line, then move the cursor down below the line and click. Key-in **.7** for the dimension and press ENTER.



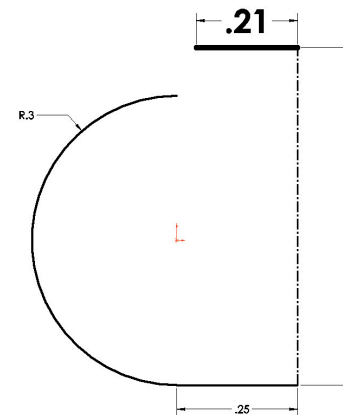
**Fig. 4**

## E. Sketch Line Across Top.

- Step 1. Click **Line**  (L) on the Sketch toolbar.
- Step 2. Draw line from end of centerline across the top of sketch as shown in **Fig. 5**. Keep the line horizontal. As a guide use the inferencing line, the dotted line that appears when you draw.



- Step 3. Click **Smart Dimension**  on the Sketch toolbar.

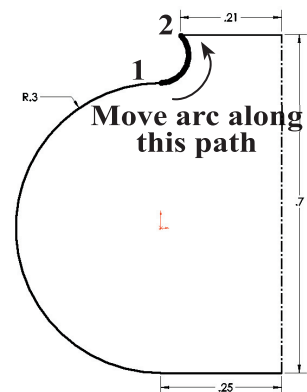
- Step 4. Dimension the line **.21** as shown in **Fig. 5**.



**Fig. 5**

## F. Tangent Arc.

- Step 1. Click **Tangent Arc**  in the **Arc flyout**  on the Sketch toolbar.
- Step 2. Draw an arc between the Position 1 and Position 2 in **Fig. 6**.
- Step 3. Save. Use **Ctrl-S**.



**Fig. 6**

## G. Mirror Sketch.

Step 1. Click **Mirror Entities**  on the Sketch toolbar.

Step 2. In the Mirror Property Manager, click in **Entities to mirror box** **drag selection around the sketch** to select all entities (lines and arcs), **Fig. 8**, to drag selection, click above and to left of sketch and drag down and to right to drag around all

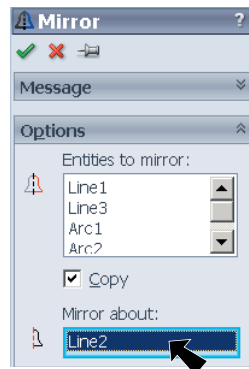


Fig. 7

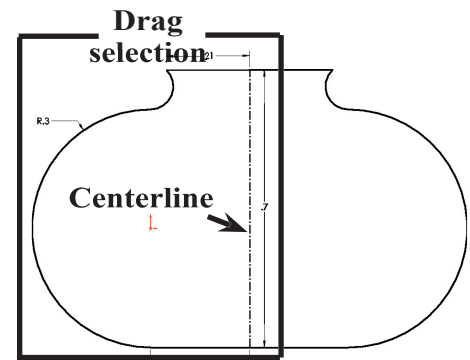



Fig. 8

click in **Mirror about box**, **Fig. 7**

click **centerline**, **Fig. 8** and OK 

Step 3. Click **Features**  on the Command Manager toolbar.

Step 4. Click **Extruded Boss/Base**  on the Features toolbar.

Step 5. In the Property Manager, under **Direction 1** set:

End Condition to **Mid Plane**

**Depth**  to **.08**

click OK , **Fig. 9** and **Fig. 10**.

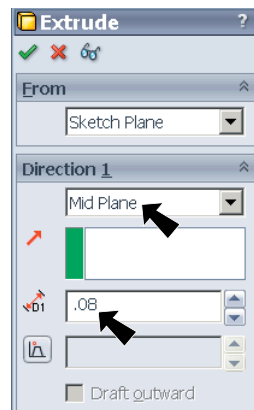


Fig. 9

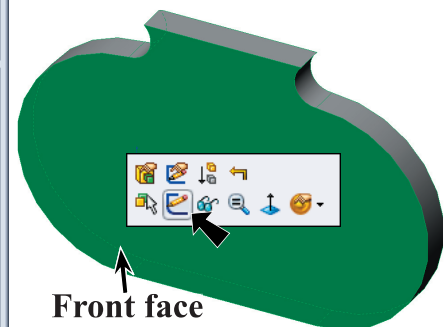


Fig. 10

## H. Clips.

Step 1. Click the **front face** and click **Sketch**  on the Content menu, **Fig. 10**.

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

Step 3. Click **Circle**  on the Sketch toolbar.

Step 4. **Draw two circles** for the clips, **Fig. 11**. Start the first circle at the origin. Align the second circle with the first. As a guide use the inferencing line, the dotted line that appears when you draw.

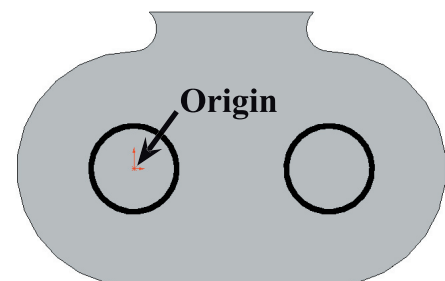
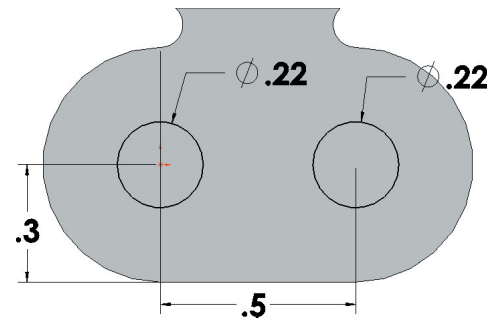


Fig. 11

Step 5. Click **Fully Defined Sketch**  (D) on the Sketch toolbar and OK  in the Property Manager.

Step 6. Dimension as shown in **Fig. 12**.

Step 7. Save. Use **Ctrl-S**.




**Fig. 12**

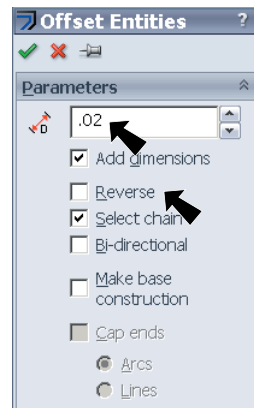
## I. Offset Entities.

Step 1. Click **Offset Entities**  on the Sketch toolbar.

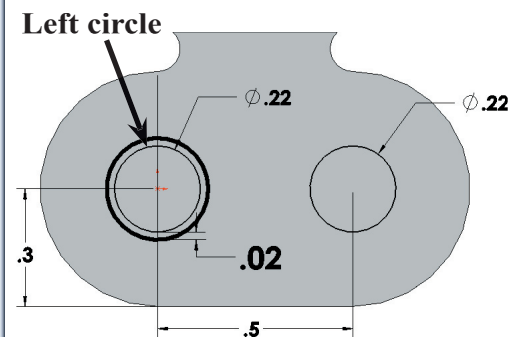
Step 2. In the Offset Entities Property Manager set:

**Distance**  to **.02** **Fig. 13**.  
Click the **left circle**, **Fig. 14**.

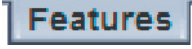
Step 3. The yellow offset should be outside the original green circle, **Fig. 14**. If it is not, click **Reverse**. Click OK  when done.

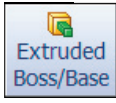


**Fig. 13**





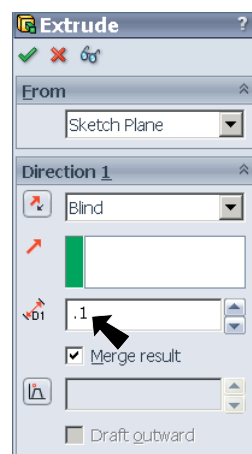
**Fig. 14**

Step 4. Click **Features**  on the Command Manager toolbar.

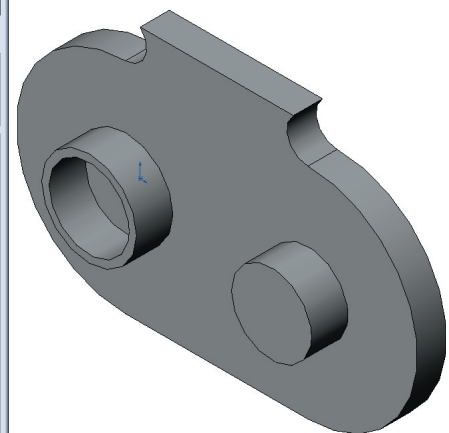
Step 5. Click **Extruded Boss/Base**  on the Features toolbar.

Step 6. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

Step 7. Set **Depth**  to **.1** in the Extrude Property Manager and click OK , **Fig. 15** and **Fig. 16**.



**Fig. 15**



**Fig. 16**

Step 8. Save. Use **Ctrl-S**.

## J. Fillets.

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

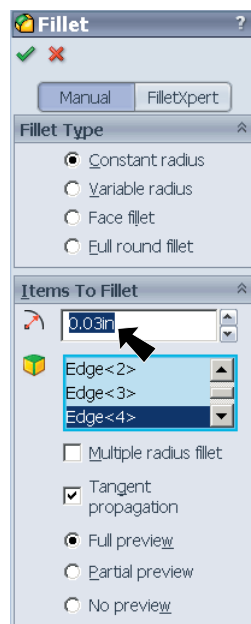
Step 2. In the Fillet Property Manager,

under Items To Fillet set:

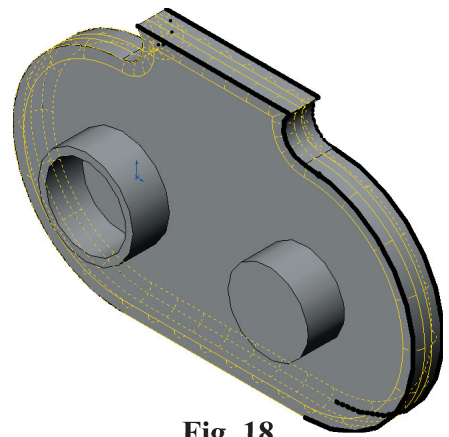
**Radius**  to **.03**, **Fig. 17**.

in the drawing click the **4 edges**, **Fig. 18**

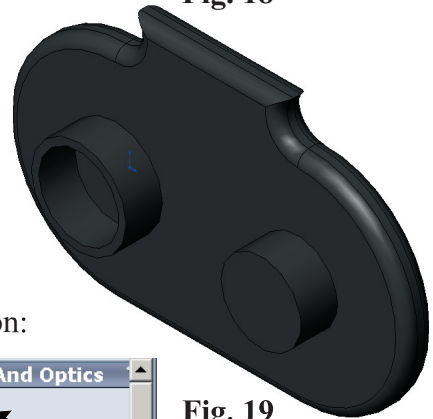
and click **OK** , **Fig. 19**.



**Fig. 17**



**Fig. 18**




**Fig. 19**

## K. Color Body and Clips.

Step 1. Click **Edit Color**  on the Standard toolbar.

Step 2. In the Color and Optics Property Manager, under Selection:

click **Select Bodies**  and unselect others, **Fig. 20**.



Step 3. Under Favorite:

click **dark gray swatch above black**, **Fig. 20**.

Step 4. Click the battery clip, **Fig. 19**.

Step 5. Click **Keep Visible**  and **OK**  in the Property Manager, **Fig. 20**.

Step 6. In Property Manager, under Selection:

click **Select Faces**  and **unselect Select Bodies** , **Fig. 21**.

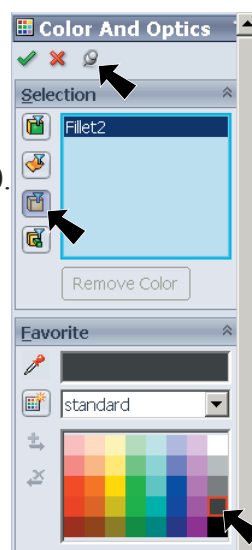
Step 7. Under Favorite:

click **white swatch**, **Fig. 21**.

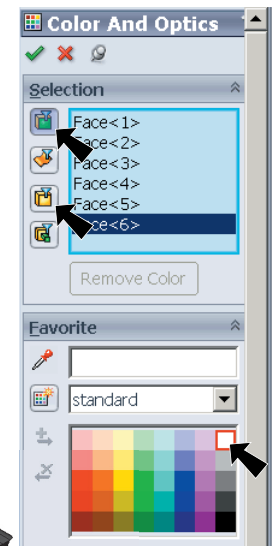
Step 8. Click the **six faces** of the clips, **Fig. 22**.

Step 9. Click **OK**  **twice** in the Property Manager, **Fig. 15**.

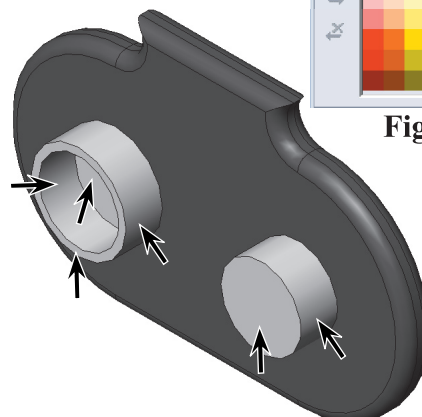
Step 10. Save. Use **Ctrl-S**.



**Fig. 20**



**Fig. 21**



**Fig. 22**