





## Solar Car Battery Clip



### A. Sketch Arc.

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

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

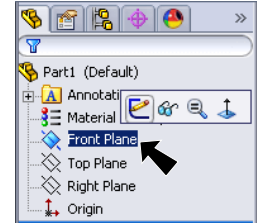



Fig. 1

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

Step 4. 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**.

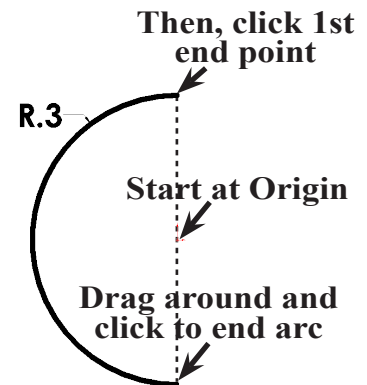


Fig. 2

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

Step 6. Dimension the arc **radius .3**, **Fig. 2**.

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

### B. Sketch Line Across Bottom.

Step 1. Click **Line**  (L) 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.

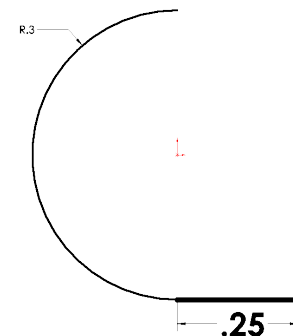


Fig. 3

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





Step 4. Dimension **line .25**, **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**  (S) 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. **Right click drawing and click Select** from menu to unselect Centerline Tool.
- Step 4. Click the centerline and click **Make Vertical**  on the Content menu, **Fig. 4**.
- Step 5. Click **Smart Dimension**  (S) on the Sketch toolbar.
- Step 6. Dimension the centerline **.7** as shown in **Fig. 4**. To Smart dimension click the centerline, then move the cursor down out to the right of drawing and click. Key-in **.7** for the dimension and press ENTER.

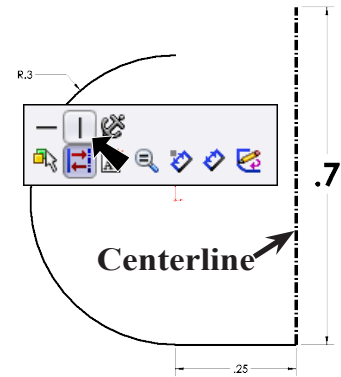




Fig. 4

## 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**  (S) on the Sketch toolbar.
- Step 4. Dimension the line **.21** as shown in **Fig. 5**.

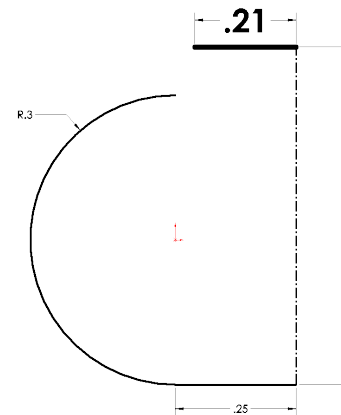




Fig. 5

## F. Tangent Arc.

- Step 1. Click **Tangent Arc**  (S) 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**.

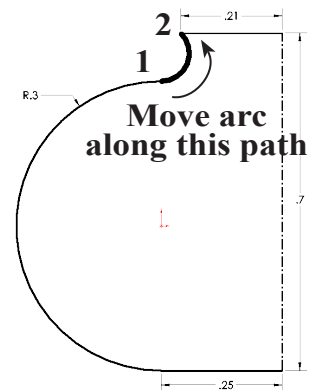



Fig. 6

## 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

click in **Mirror about box**, **Fig. 7** click **centerline**, **Fig. 8** and OK .

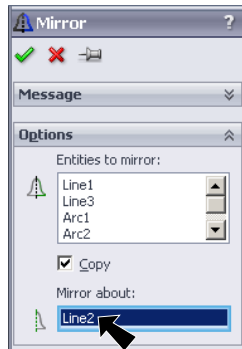


Fig. 7

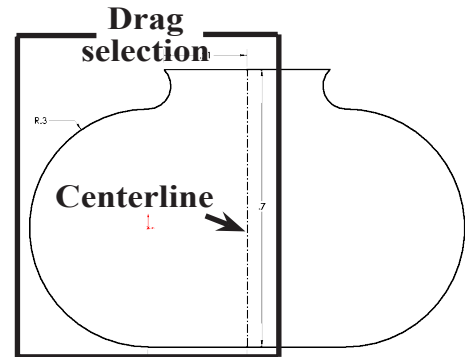
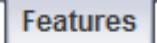


Fig. 8

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 set: under Direction 1, **Fig. 9** End Condition **Mid Plane**

**Depth**  D1 **.08**

click OK , **Fig. 10**.

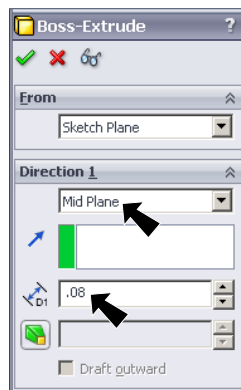


Fig. 9

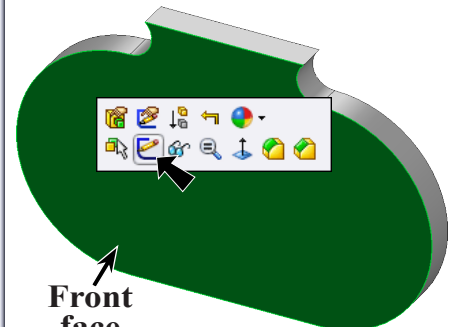


Fig. 10

## 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**  (S) 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.

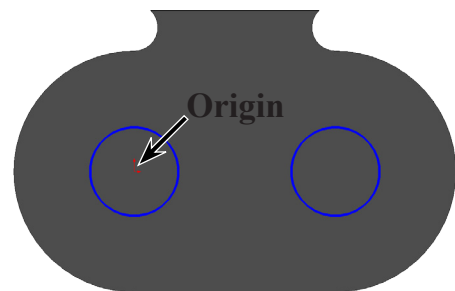
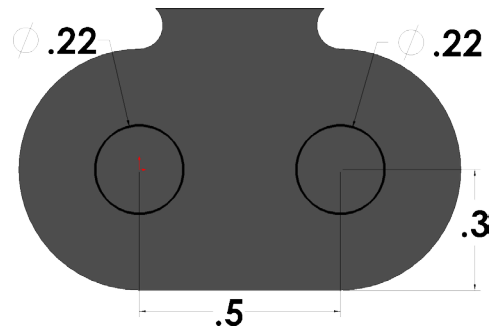


Fig. 11

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

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.

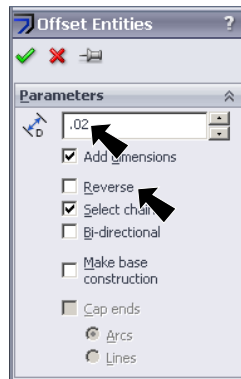
Step 2. In the Offset Entities Property Manager set:

**Distance**  **.02** **Fig. 13**

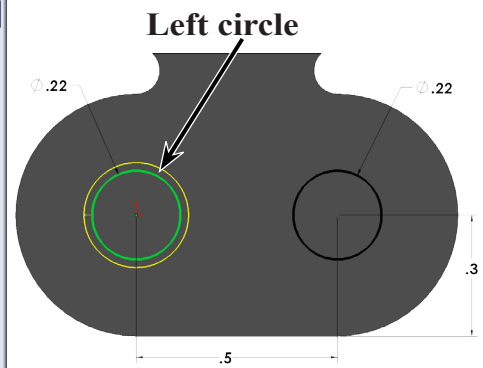
Click **left circle** in sketch, **Fig. 14**.

The yellow offset should be outside the original green circle, **Fig. 14**. If it is not, check **Reverse**.

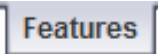
Click **OK** .



**Fig. 13**



**Fig. 14**

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

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

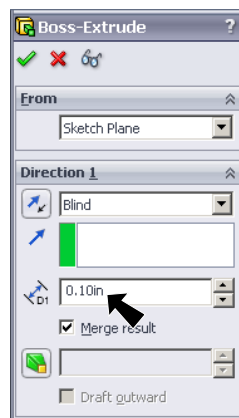
Step 5. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

Step 6. In the Property Manager set:

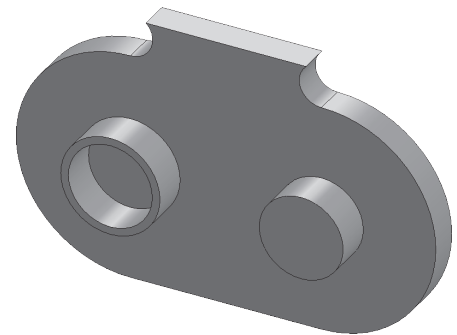
**Depth**  **.1**

click **OK** , **Fig. 15** and **Fig. 16**.

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



**Fig. 15**



**Fig. 16**

## J. Fillets.

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

Step 2. In the Fillet Property Manager set:

**Radius**  .03, Fig. 17

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

click **OK** , Fig. 19.

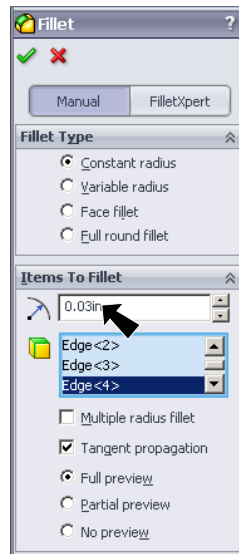


Fig. 17

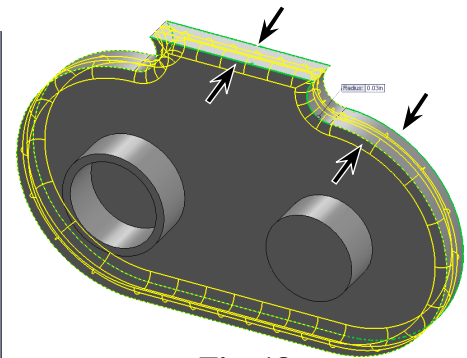





Fig. 18

## K. Appearance.

Step 1. Click the part (not the extruded clips to select the part, click **Ap-**

**pearance Callout**  on the Content menu and click **BATTERY...** , Fig. 19.

Step 2. In the Appearances Task pane, expand **Plastic**, click **High Gloss** and in the lower pane select **dark gray high gloss plastic**, Fig. 20 and Fig. 21.

Step 3. Back over in the Appearances Property Manager, click **Keep Visible**  and **OK** , Fig. 22. The Push Pin  on allows selection of other material for terminals.

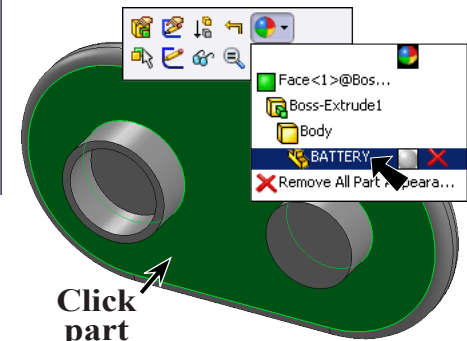


Fig. 19

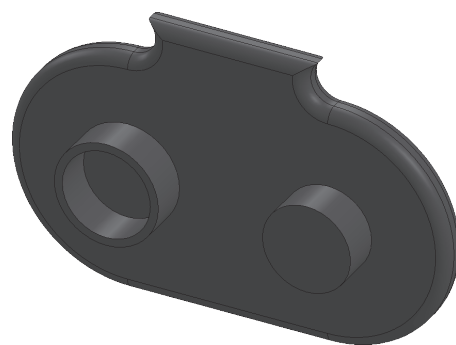


Fig. 21

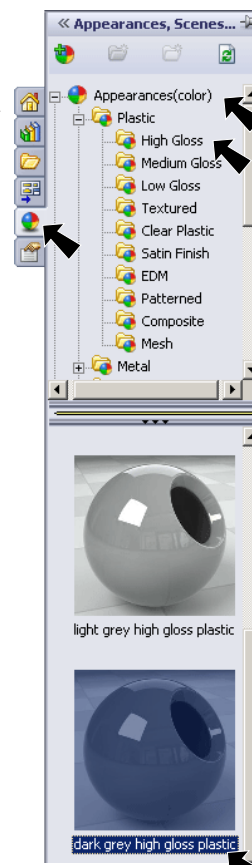


Fig. 20

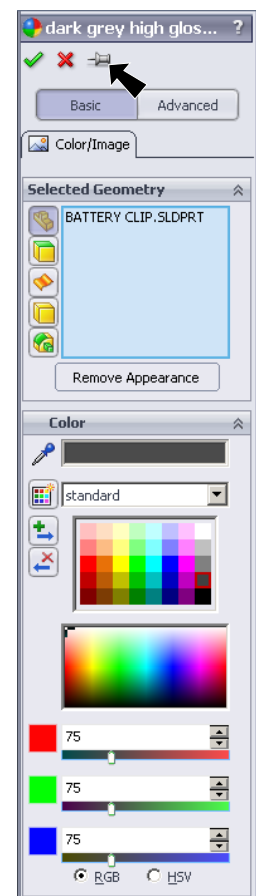





Fig. 22

Step 4. In the Appearances Property Manager, under Selected Geometry click **Select Features**  **Fig. 19**

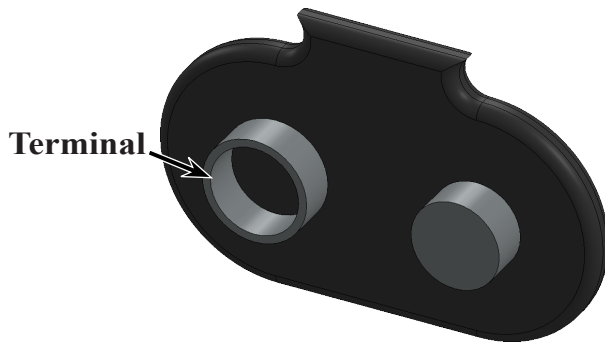
click **one of the terminals**, **Fig. 20**.

Step 5. Click **Appearances, Scenes, and Decals**  tab to display the Task pane, **Fig. 21**.

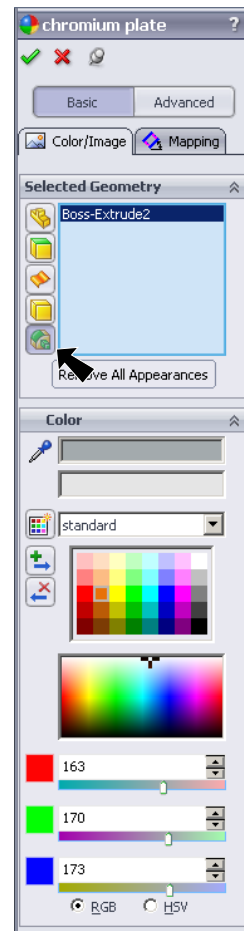
Step 6. In the Appearances Task pane, expand **Metal** and click **Chrome** and in the lower pane select **chromium plate**, **Fig. 21**

click **OK**  and click **Cancel** .

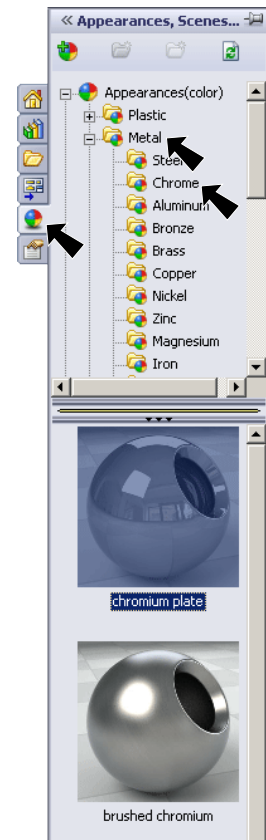
Step 7. Save. Use **Ctrl-S**.



**Fig. 24**



**Fig. 23**



**Fig. 25**