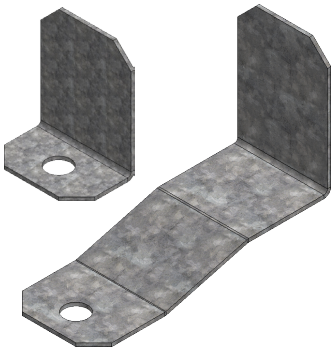
Chapter 6

Solar Car

L-Bracket & Switch



A. Sheet Metal.

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

Step 2. Click **Right 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 from the Origin sketch two lines in **Fig. 2**.

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

Step 6. Dimension the lines, **Fig. 3**.

Step 7. Click Insert Menu > Sheet Metal > Base Flange.

Step 8. In the Property Manager set:
- under Direction 1, **Fig. 4**
  - select **Mid Plane**
  - **Depth** .5
- under Sheet Metal Gauges
  - check **Use gauge table**
  - select **Sample Table - Aluminum**
- under Sheet Metal Parameters
  - select **Gauge 26**
- click OK .

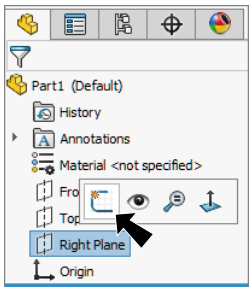


Fig. 1

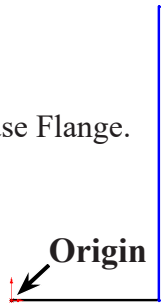


Fig. 2

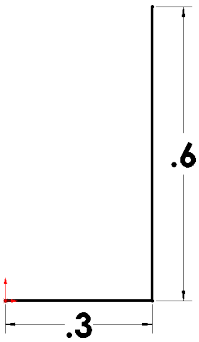


Fig. 3

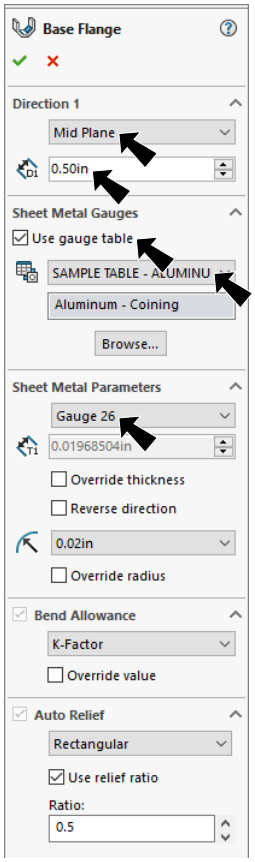


Fig. 4

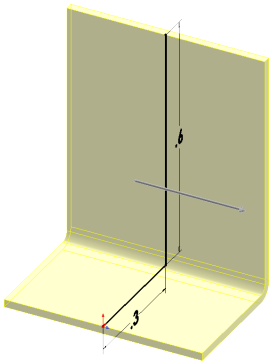


Fig. 5

B. Save as "L-BRACKET".

Step 1. Click File Menu > Save As.

Step 2. Key-in **L-BRACKET** for the filename and press ENTER.

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C. Hole.

Step 1. Click the **top face** and click **Sketch** on the context toolbar, **Fig. 6**.

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

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

Step 4. Sketch circle for hole, **Fig. 7**.

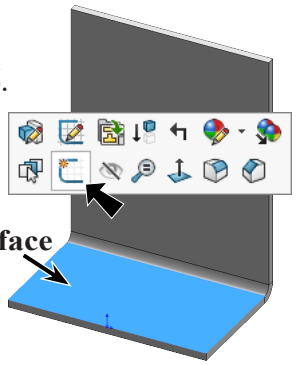


Fig. 6

Step 5. **Right click graphics area and click Select** from menu to unselect Circle tool.

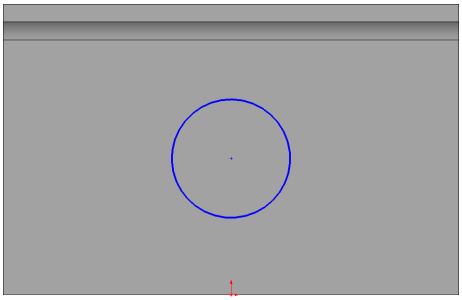


Fig. 7

Step 6. **Ctrl click centerpoint of circle** and **Origin** to select both. Release Ctrl key and click **Make Vertical** on the context toolbar, **Fig. 8**.

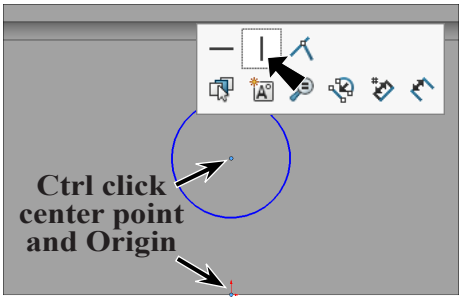


Fig. 8

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

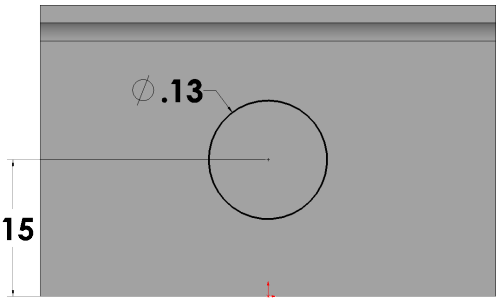


Fig. 9

Step 8. Add dimensions, **Fig. 9**.

Step 9. Click **Trimetric** on the Standard Views toolbar.

Step 10. Click **Features** on the Command Manager toolbar.

Step 11. Click **Extruded Cut** on the Features toolbar.

Step 12. In the Cut-Extrude Property Manager set:
under Direction 1, **Fig. 10**
End Condition **Through All**
click OK .

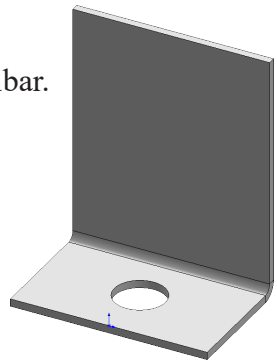


Fig. 11

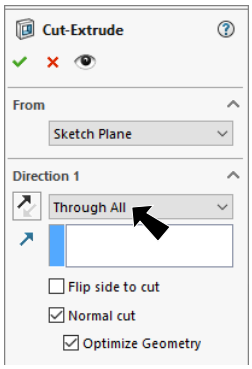
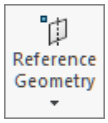


Fig. 10

D. Mate Reference.

Step 1. Click the **bottom circular edge of hole** to select edge, **Fig. 12**.

Step 2. Click **Reference Geometry** 

on the Features toolbar and **Mate Reference** from the menu.

Step 3. In the Mate Reference Property Manager click OK ✔, **Fig. 13**.

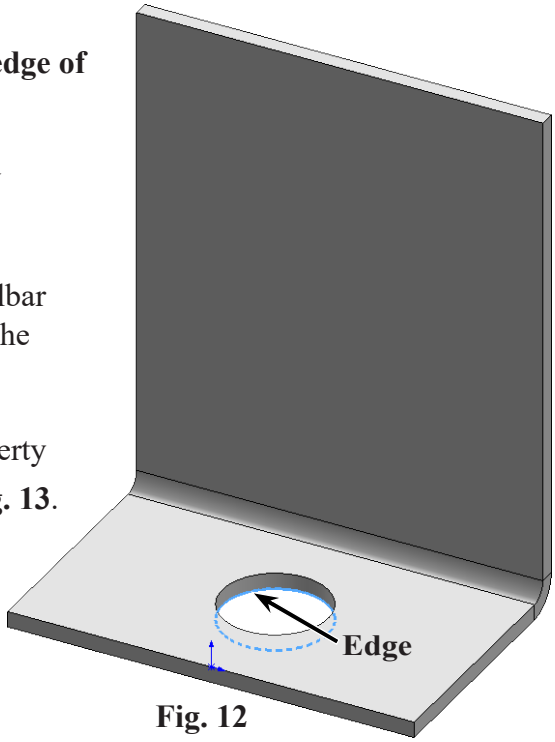


Fig. 12

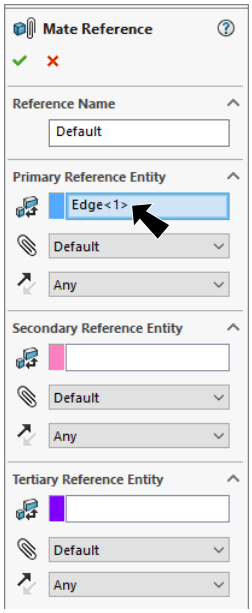


Fig. 13

E. Chamfers.

Step 1. Click **Chamfer**

on the Features toolbar.

Step 2. In the Chamfer Property Manager set:
under Chamfer Type, **Fig. 14**
select **Angle Distance**
under Chamfer Parameters
Distance D **.1**
Angle A **45º**
Drag a selection around each corner to select the corner vertical edge, **Fig. 15**.
click OK ✔.

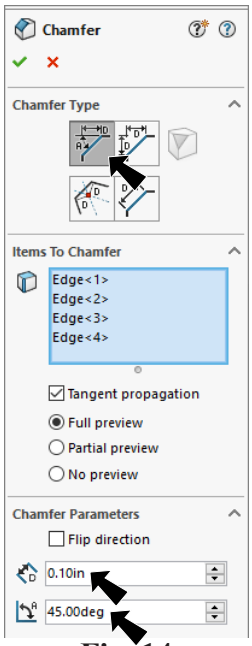


Fig. 14

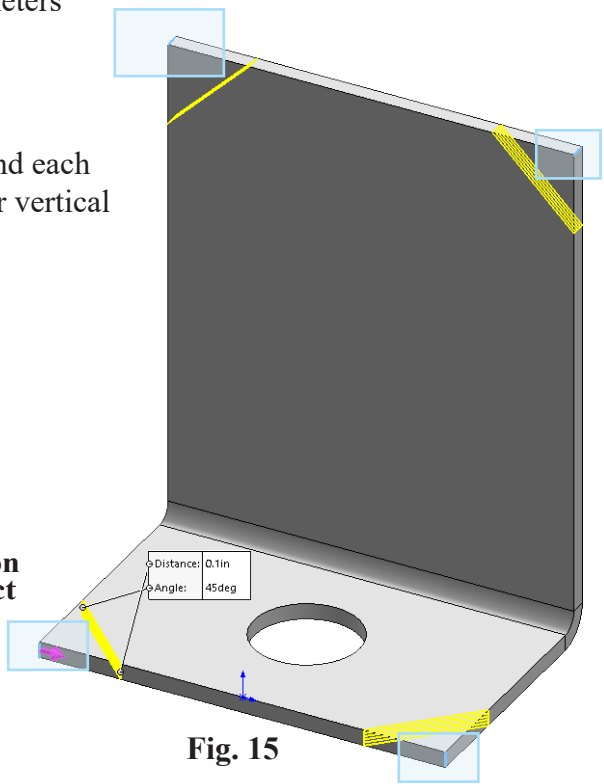


Fig. 15

F. Material Galvanized Steel.

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

Step 2. Expand **Steel** in the material tree and click **Galvanized Steel**. Click **Apply** and **Close**.

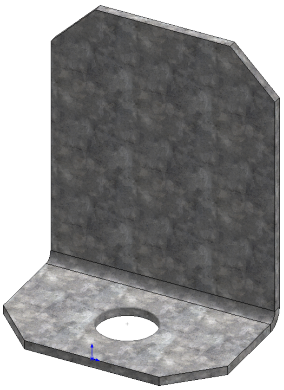


Fig. 16

G. Save as "SWITCH".

Step 1. **Save L-Bracket.** Use **Ctrl-S**.

Step 2. Click File Menu > Save As.

Step 3. Key-in **SWITCH** for the filename and press ENTER.

H. Change Sketch.

Step 1. Click **Base-Flange1** in the Feature Manager and click **Edit Sketch** on the context toolbar, **Fig. 17**.

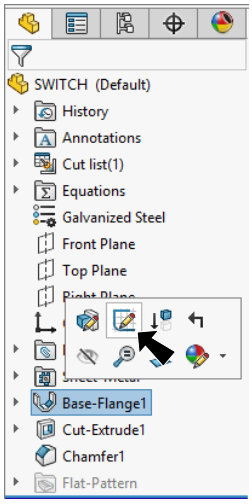


Fig. 17

Step 2. Change **.6 dimension to .7**, **Fig. 18**.

Step 3. Change **.3 dimension to 1.3**, **Fig. 18**.

Step 4. Click **Exit Sketch** on the Sketch toolbar.

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

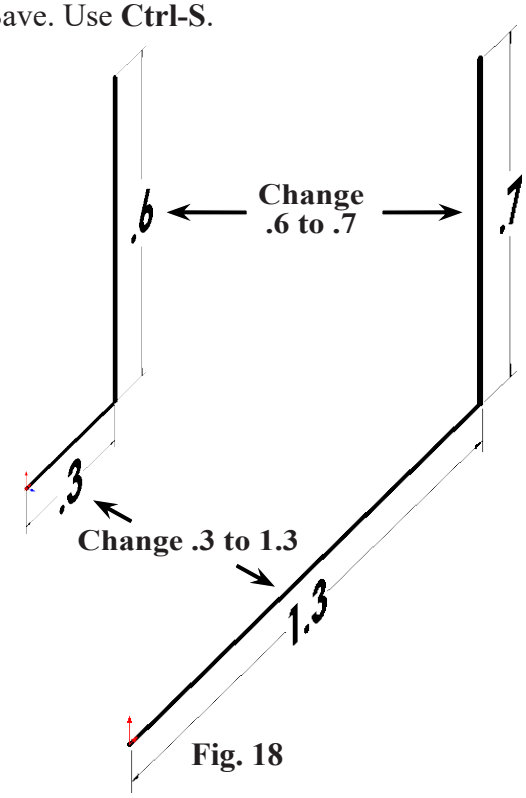


Fig. 18

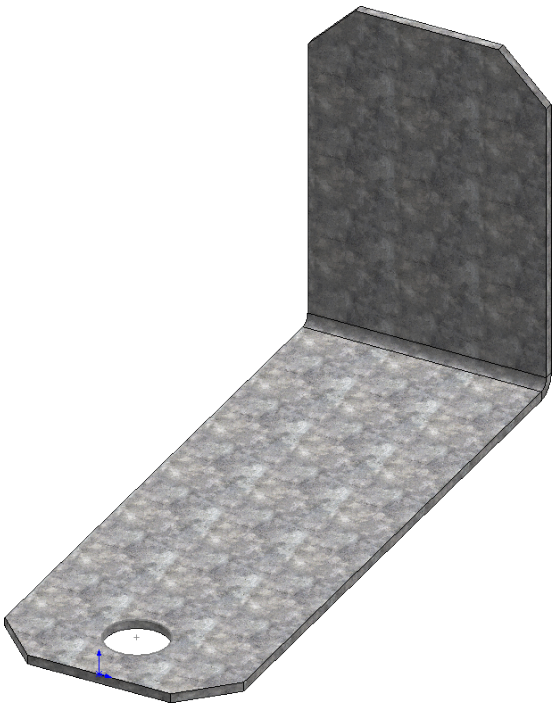


Fig. 19

I. Jog.

Step 1. Rotate view to view **bottom face**, hold down middle mouse button (wheel) and drag to **rotate view**, **Fig. 20**.

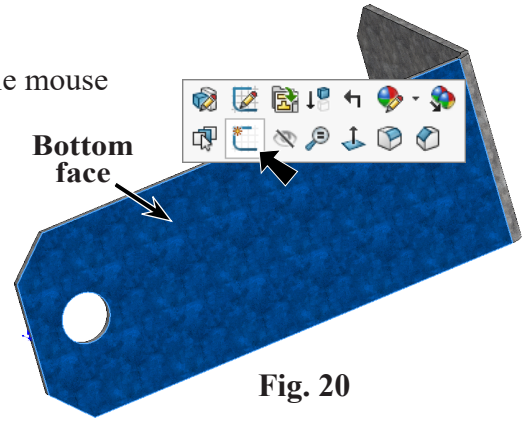


Fig. 20

Step 2. Click the **bottom face** and click **Sketch** on the context toolbar, **Fig. 20**.

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

Step 4. Sketch line across sheet metal, **Fig. 21**. Keep line perpendicular to the edge of sheet metal.

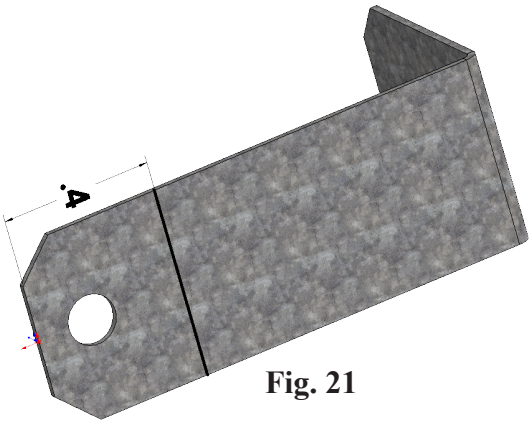


Fig. 21

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

Step 6. Add **.4** dimension, **Fig. 21**.

Step 7. Click Insert Menu > Sheet Metal > Jog.

Step 8. In the Jog Property Manager
under **Fixed Face** , **Fig. 22**
click **bottom face next to hole**, **Fig. 23**
Depth **.1225**
Jog Angle **15°**
under **Jog Offset**
sheet metal should jog up away from fixed face, **Fig. 23**, if jogs in opposite direction click **Reverse Direction** click OK , **Fig. 22**.

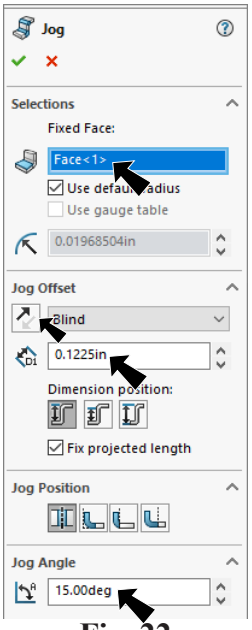


Fig. 22

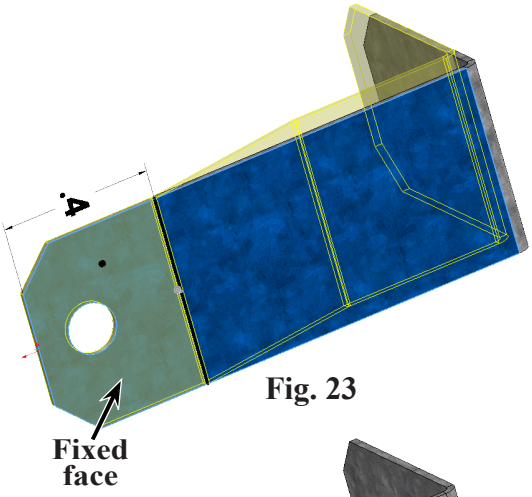


Fig. 23

Step 9. Save. Use **Ctrl-S**.

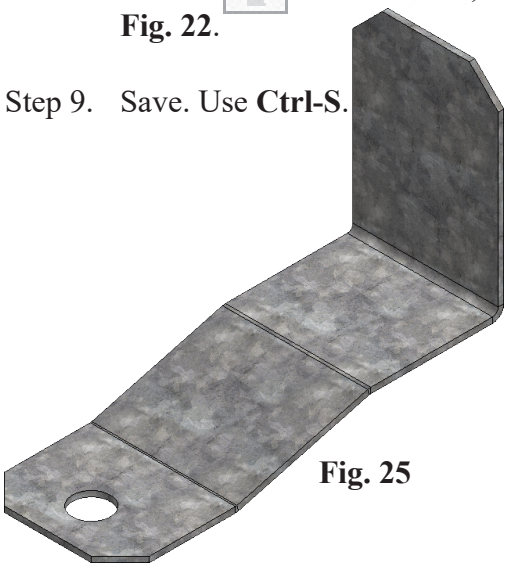


Fig. 25

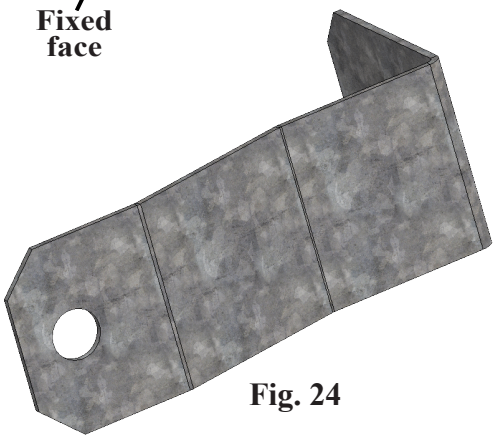


Fig. 24