

Solar Car Cross Support

A. Sketch.

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

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

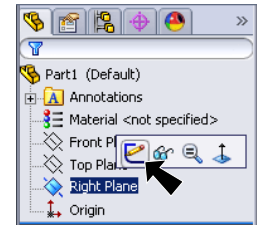
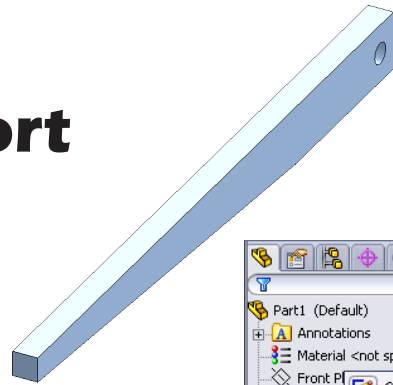


Fig. 1

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



Fig. 2

Step 4. Starting from the Origin  draw lines in **Fig. 2**.

Origin

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

Step 6. Dimension as shown in **Fig. 3**.

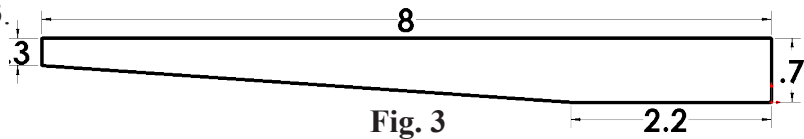


Fig. 3

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

Step 8. Draw circle for hole, **Fig. 4**.

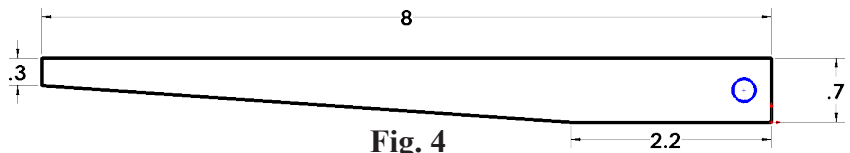



Fig. 4

Step 9. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 10. Dimension circle **diameter .25** as shown in **Fig. 5**.

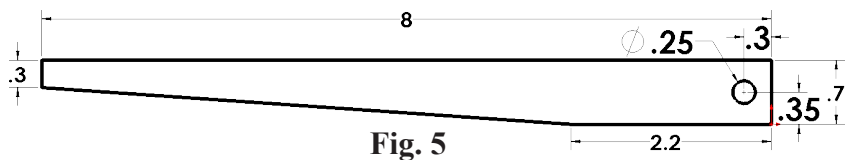
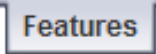


Fig. 5

Step 11. Click **Features**  on the Command Manager toolbar.

Step 12. Click **Extruded Boss/Base**  on the Features toolbar.

Step 13. In the Property Manager set:
under Direction 1, **Fig. 6**
End Condition **Mid Plane**

Depth  **D1** **.3**

click OK , **Fig. 7**.

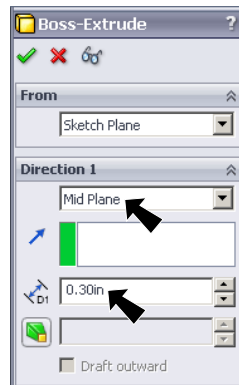


Fig. 6

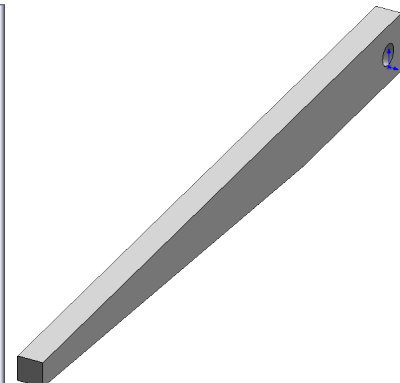




Fig. 7

B. Save as "CROSS SUPPORT".

Step 1. Click File Menu > Save As.

Step 2. Key-in **CROSS SUPPORT** for the filename and press ENTER.

C. Material PS HI (Polystyrene).

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

Step 2. Expand **Plastics** (click +) in the material tree and select **PS HI**. Click **Apply** and **Close**.

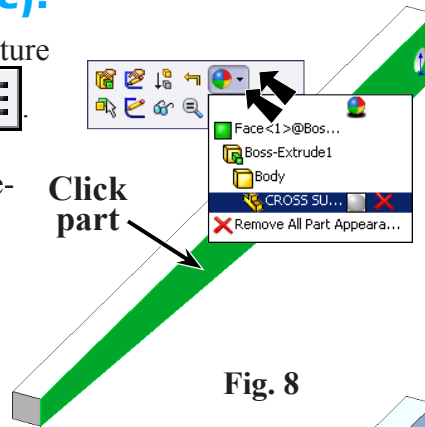


Fig. 8

D. Appearance Color.

Step 1. Click the Arm, click **Appearance Callout**  on the Content toolbar and click **CROSS SUPPORT** , Fig. 8.

Step 2. In the Appearances Property Manager, Fig. 9 under Color:

set **RGB values**

R 180

G 212

B 255 click OK .

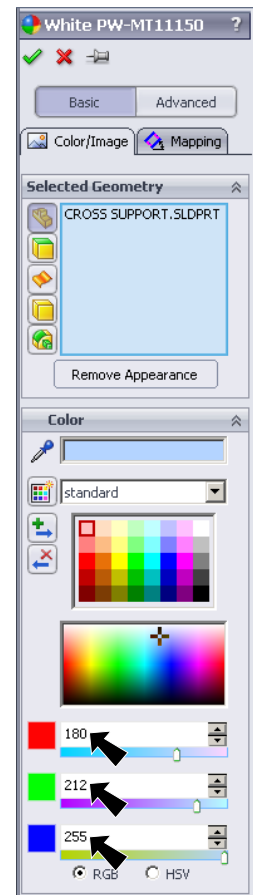


Fig. 9

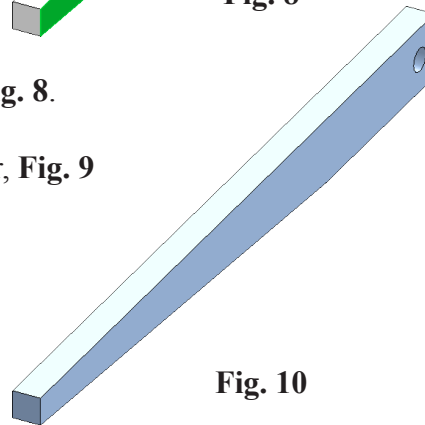


Fig. 10

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

E. Insert Front Axle and Cross Support into Assembly.

Step 1. Open your **SOLAR CAR ASSEMBLY** file.


Step 2. Click **Isometric**  on the View toolbar. (**Ctrl-7**)

Step 3. Click **Insert Components**  on the Assembly toolbar.

Step 4. Click **Keep Visible**  in the Property Manager.

Step 5. Click **Browse** in the Property Manager.

Step 6. Select **Front Axle** file and click Open.

Step 7. Place Front Axle as positioned in **Fig. 11**. **Browse and insert Cross Support**. Click OK  in the Property Manager when done.

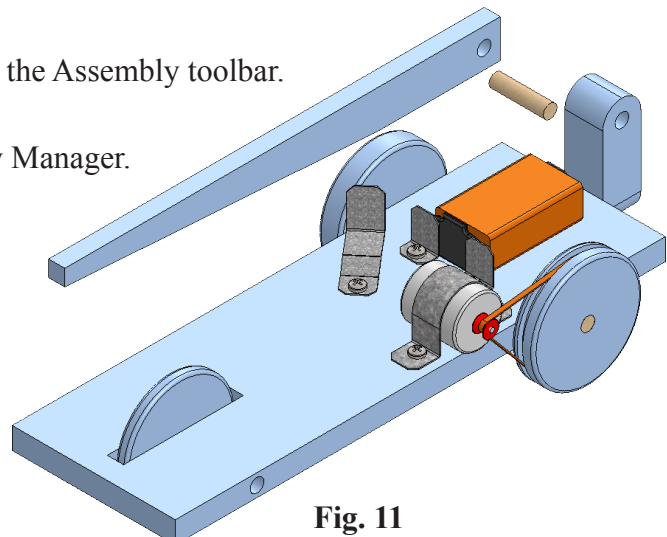


Fig. 11

F. Mate: Axle and Arm and Cross Support.

Step 1. Click **Mate**  on the Assembly toolbar.

Step 2. Click **end face of the Axle** and **side face of Arm**, Fig. 12.

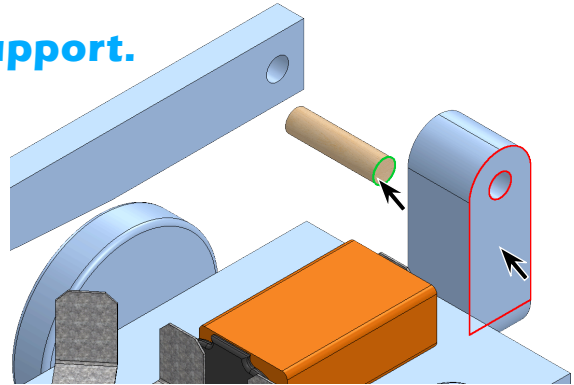


Fig. 12

Step 3. Click Add/Finish Mate  in Mate pop-up toolbar to add a **Coincident** mate.

Step 4. Click **cylindrical face of Axle** and **cylindrical face of hole in Arm**, Fig. 13.

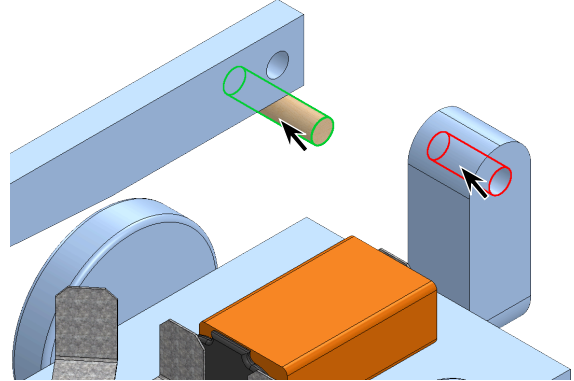


Fig. 13

Step 5. Click Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric** mate.

Step 6. Click **cylindrical inside face of hole in Cross Support** and **cylindrical face of Axle**, Fig. 14.

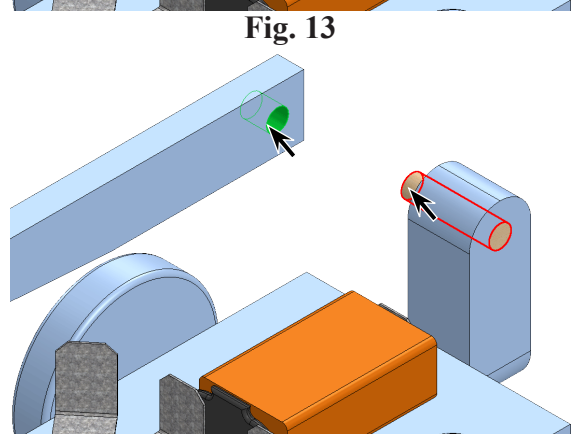


Fig. 14

Step 7. Click Add/Finish Mate  to add a **Concentric** mate.

Step 8. Click **side face Arm**, Fig. 15.

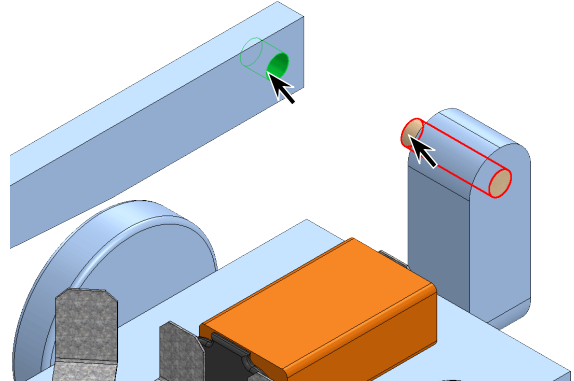



Fig. 15

Step 9. Rotate view to view **side face of Cross Support** as shown in Fig. 16. To rotate, hold down middle mouse button (wheel) and drag.

Step 10. Click **side face Cross Support**, Fig. 16.

Step 11. Click Add/Finish Mate  in Mate pop-up toolbar to add a **Coincident** mate.

Step 12. Click OK  in the Property Manager and Save.

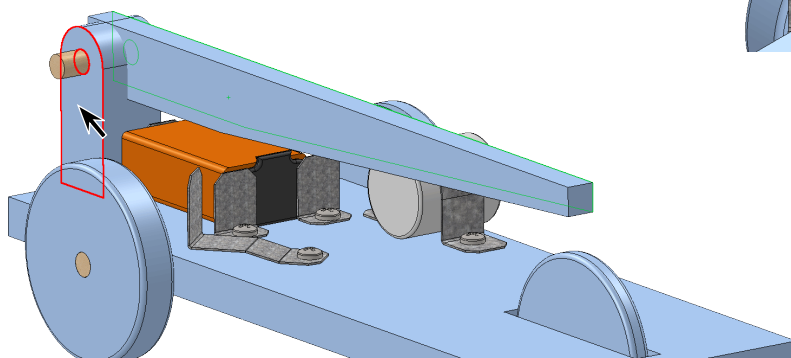


Fig. 16

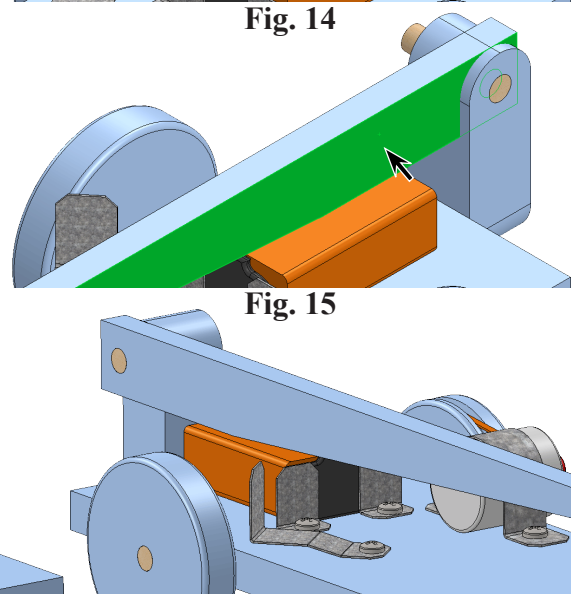


Fig. 17