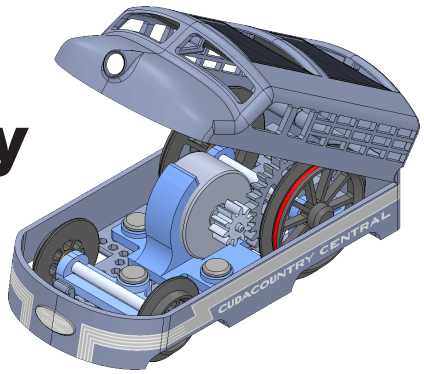
Solar Train

Loco Assembly



A. Float Hatch.

Step 1. Open your **Locomotive Assembly** file.

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

Step 3. **Right click Hatch** in the Feature Manager and click **Float** on the context toolbar, **Fig. 1**.

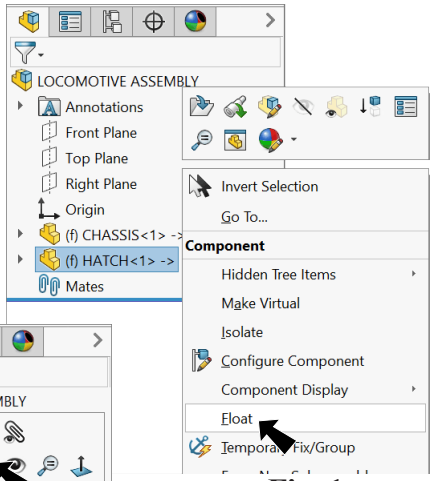


Fig. 1

B. Mate: Hatch.

Step 1. Click **Right Plane** in the Feature Manager and **Mate** on the context toolbar, **Fig. 2**.

Step 2. Expand the flyout Feature Manager design tree in the top left corner of the graphics area, expand **Hatch** and click **Right Plane**, **Fig. 3**.

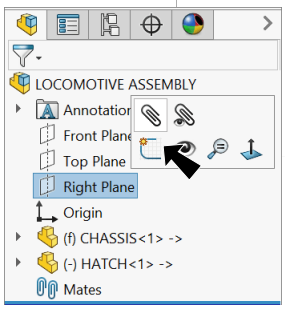


Fig. 2

Step 3. Click Add/Finish Mate to add **Coincident** mate.

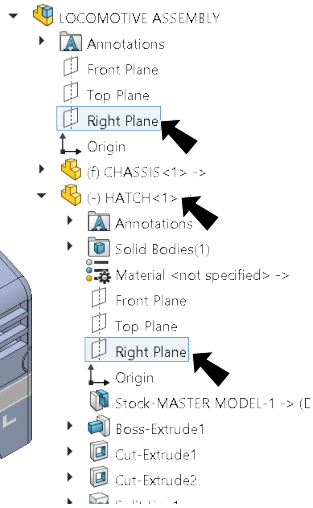


Fig. 3

Step 4. Click **cylindrical face of hinge on Hatch** and **cylindrical face of hinge on Chassis**, **Fig. 5**.

Step 5. Click Add/Finish Mate to add a **Concentric** mate.

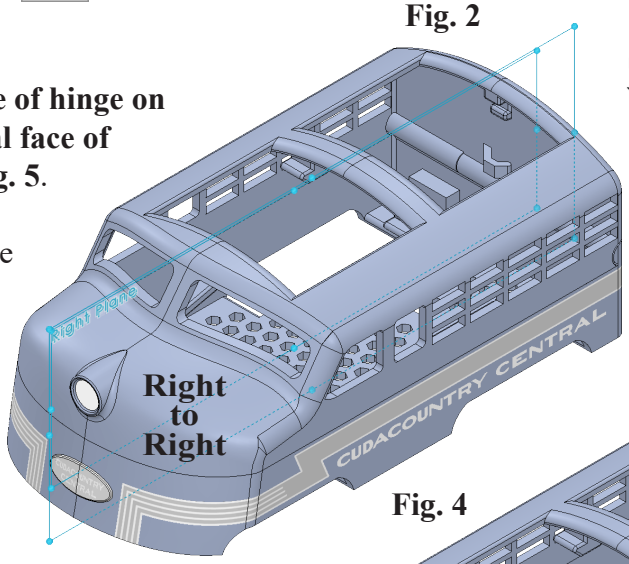


Fig. 4

Step 6. Click OK in the Property Manager.

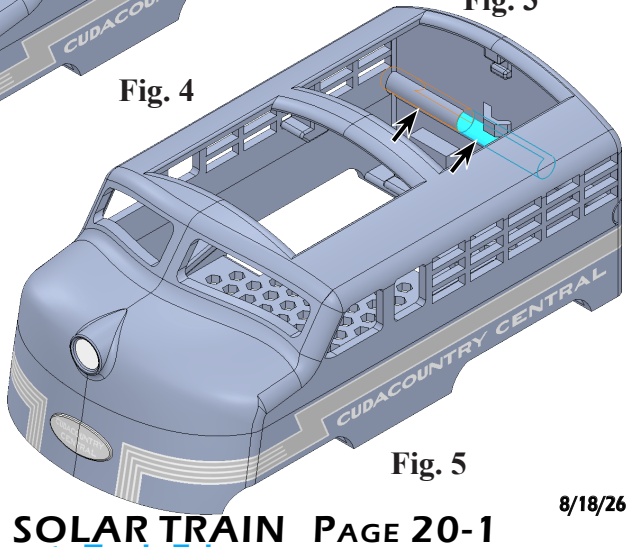
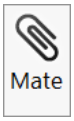


Fig. 5

Step 7. Grab the **Hatch and rotate** around to view inside side of both Hatch and Chassis, **Fig. 6**.

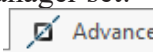
Step 8. Click **Mate** 

on the Assembly toolbar.

Tip: Toggle filter Face selection with **X key**.

Fig. 6

Step 9. In the Mate Property Manager set:

click **Advanced tab** 

, **Fig. 7**

under Mate Types

select **Angle** 

click **inside top/bottom faces of Chassis and Hatch**, **Fig. 6**

Angle 0

check **Flip dimension**

Maximum Valve  **108**

Minimum Valve  **0**

Mate alignment **Anti-Aligned** 

click OK **twice**  .

Tip: Select **Chassis** first check Flip dimension.

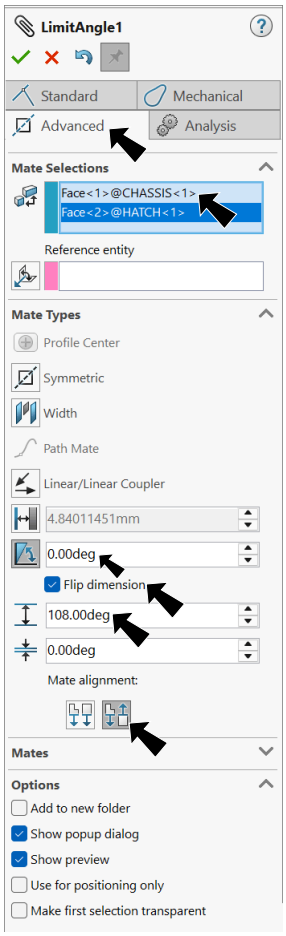


Fig. 7

Step 10. Now hinge HATCH.

Step 11. Save  **(Ctrl-S)**.

Fig. 8

C. Insert Solar Panel.

Step 1. **Hide Chassis** component, **Fig. 9**. To hide, move cursor over the component in graphics area and press **Tab** key. To show **Shift - Tab**.

Step 2. Click **Insert Components** on the Assembly toolbar.

Step 3. Select your **Solar Panel** click Open from the Open dialog box.

Step 4. Place as positioned in **Fig. 10**.

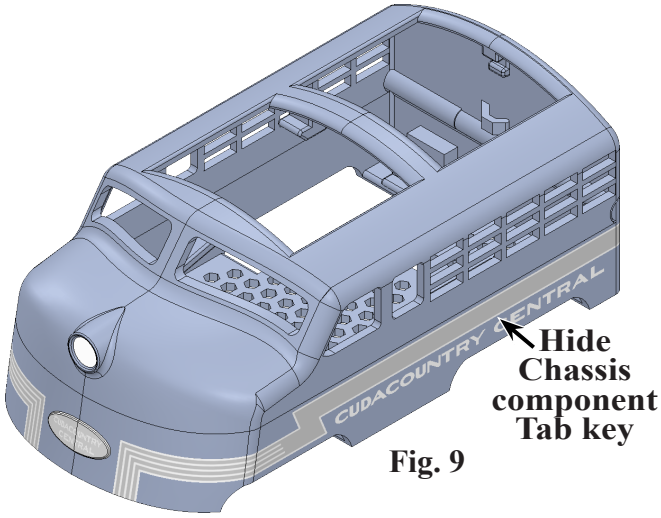


Fig. 9

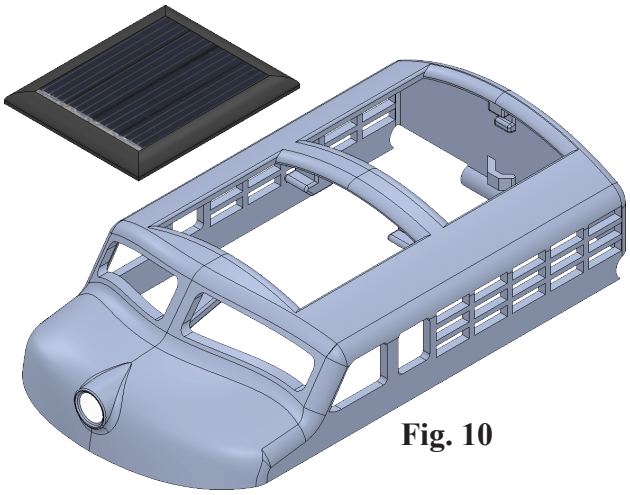


Fig. 10

D. Mate: Solar Panel.

Step 1. Click **Right Plane** in the Feature Manager and **Mate** on the context toolbar, **Fig. 11**.

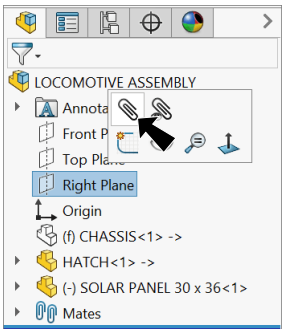


Fig. 11

Step 2. In the flyout Feature Manager design tree, expand **Solar Panel** and click **Front Plane**, **Fig. 12**.

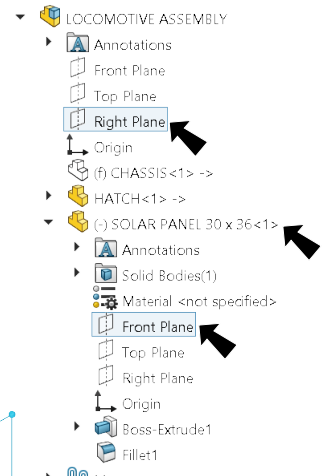


Fig. 12

Step 3. Click Add/Finish Mate to add **Coincident** mate.

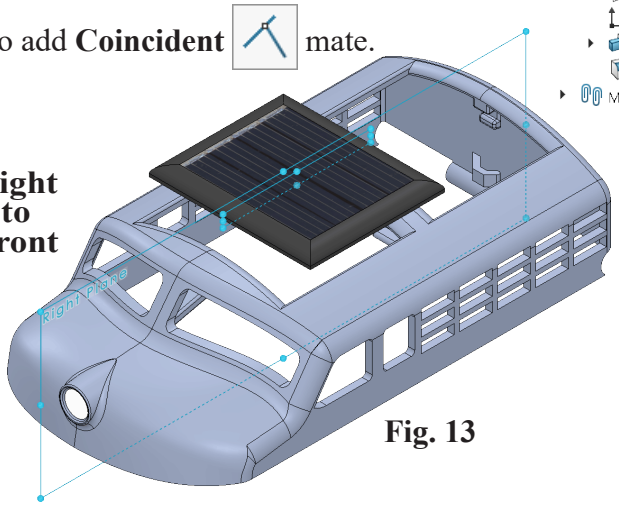


Fig. 13

Step 4. In the flyout Feature Manager design tree, expand **Hatch** and click **Top Plane** and expand **Solar Panel** and click **Top Plane**, **Fig. 14**.

Step 5. Click **Distance** in Mate pop-up, **Fig. 15**. Set **distance 31.7** and press ENTER. The Panel should positioned over Hatch, **Fig. 16**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up. Click Add/Finish Mate to add Distance mate.

Fig. 15

Top to Top Distance 31.7

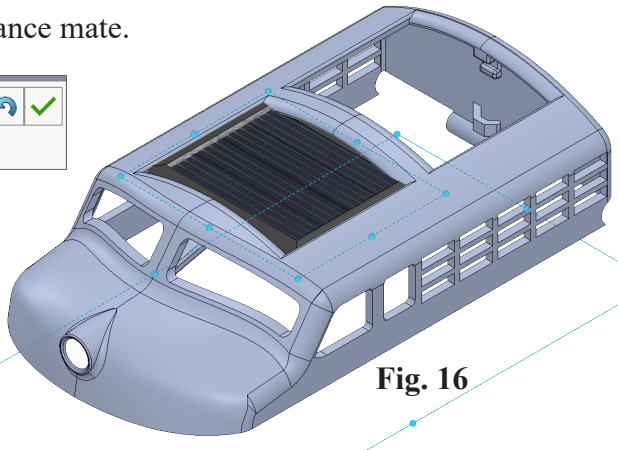


Fig. 16

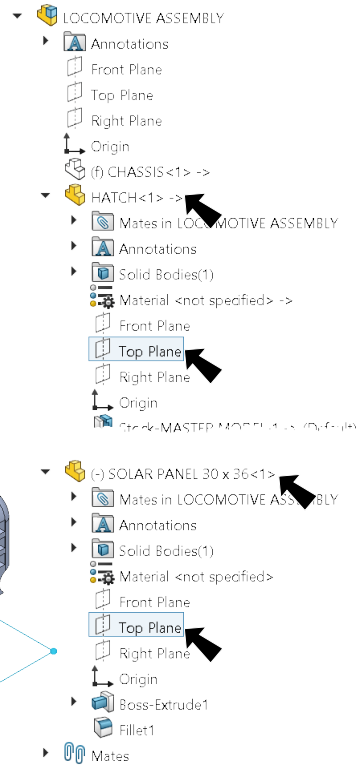


Fig. 14

Step 6. In the flyout Feature Manager design tree, expand **Hatch** click **Front Plane** and expand **Solar Panel** and click **Right Plane**, **Fig. 17**.

Step 7. Click **Distance** in Mate pop-up, **Fig. 18**. Set **distance 47.2** and press ENTER. The Panel should positioned over Hatch, **Fig. 19**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up. Click Add/Finish Mate to add Distance mate.

Fig. 18

Step 8. Click OK in the Property Manager.

Step 9. Save (**Ctrl-S**).

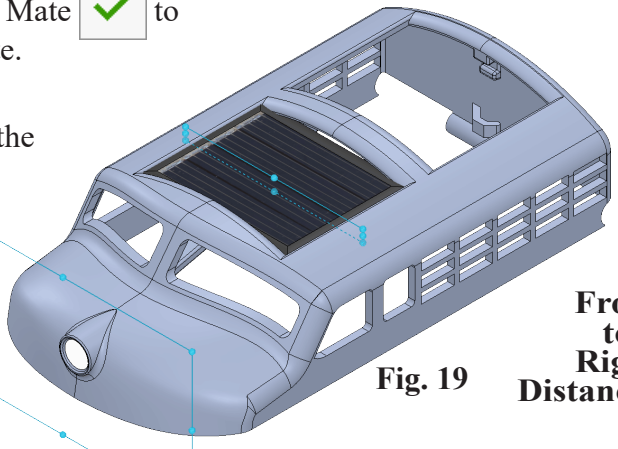


Fig. 19

Front to Right Distance 47.2

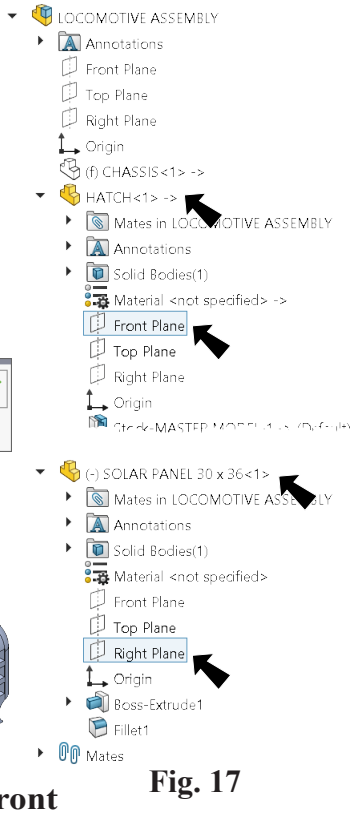


Fig. 17

E. Copy with Mates Solar Panel.

Step 1. **Right click Solar Panel** component in the Feature Manager and click **Copy with Mates** on menu, **Fig. 20**.

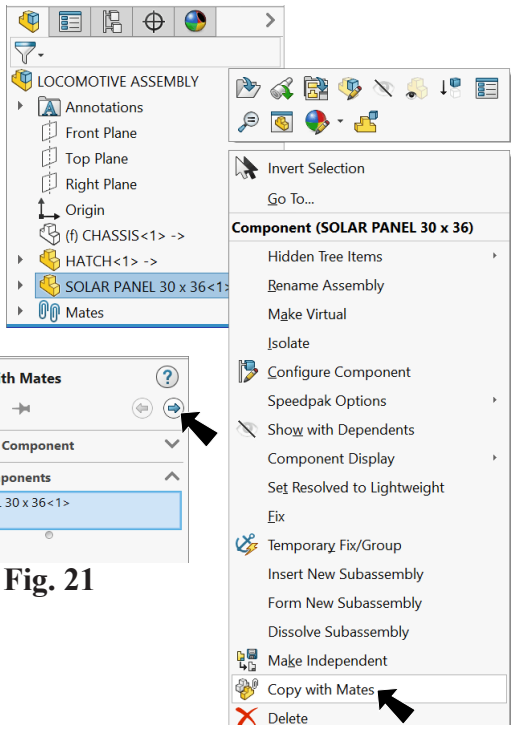


Fig. 20

Step 2. In the Copy with Mates Property Manager:

Step 1: Select Component, **Fig. 21**

Preselected

click **Next**

Fig. 21

Step 3. Still in Copy with Mates Property Manager:

Step 2: Mates, **Fig. 22**

under Mates

Concentric (Right plane)
check **Repeat**, **Fig. 23**

Distance (Top plane)
check **Repeat**, **Fig. 24**

Distance (Front plane)
check **Repeat**, **Fig. 25**
set distance 80.2

click OK and click Cancel.

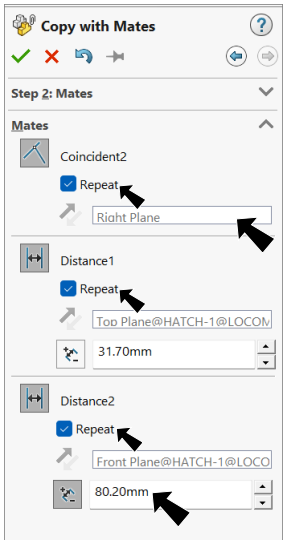


Fig. 22

Step 4. Save (**Ctrl-S**).

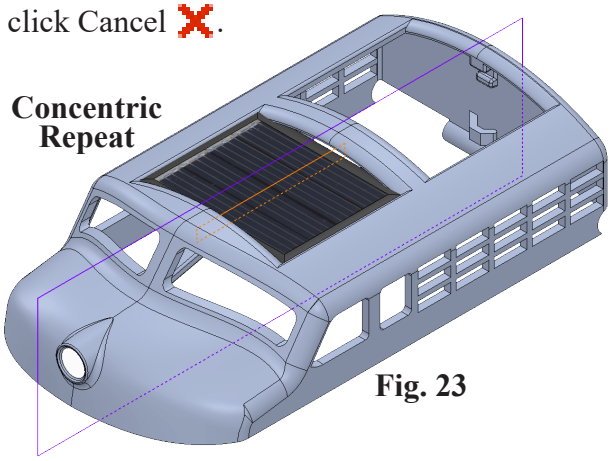


Fig. 23

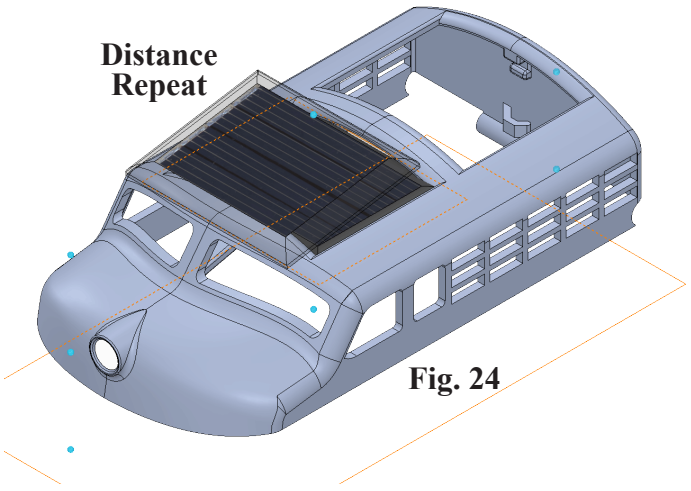


Fig. 24

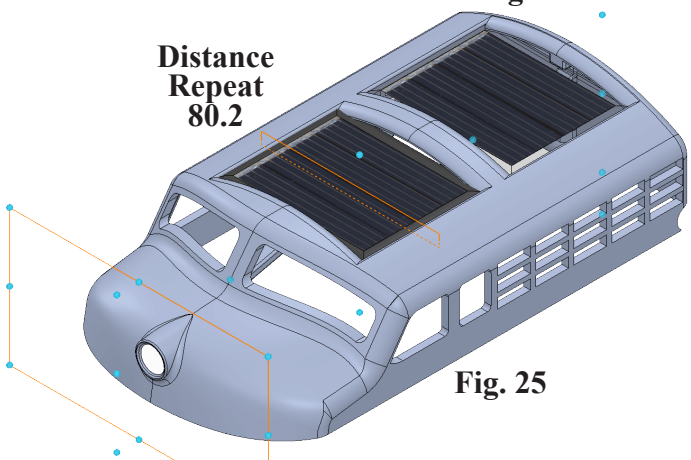


Fig. 25

F. Indent Solar Panels into Hatch.

Step 1. Click **Hatch** component in the Feature Manager and click **Edit Part** on the context toolbar, **Fig. 26**.

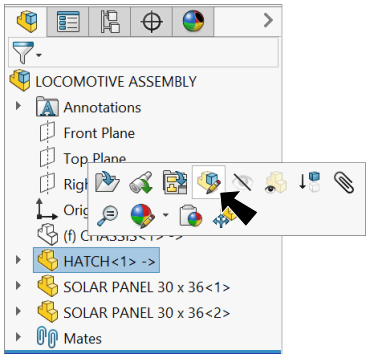


Fig. 26

Step 2. Click Insert Menu > Features > Indent.

Step 3. In the Indent Property Manager:
under Selections, **Fig. 27**
Target body:
click **Hatch**, **Fig. 28**
Tool body region:
click **Solar Panel <1>**
check **Cut**
under Parameters
Clearance .1
click OK ✔ .

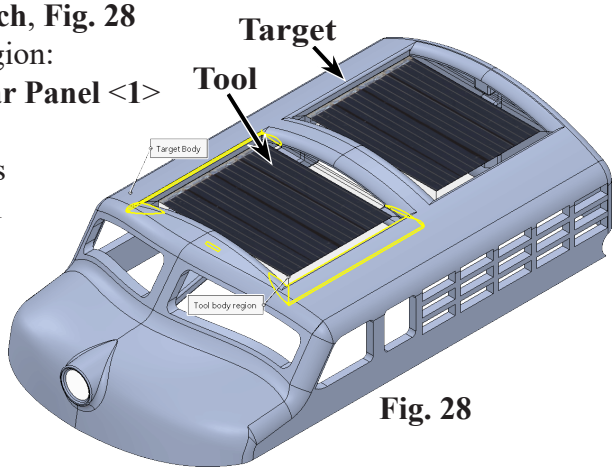


Fig. 28

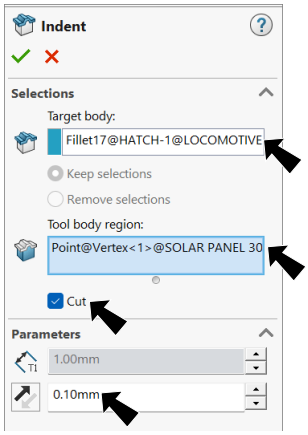


Fig. 27

Step 4. **Repeat** with other panel:
Click Insert Menu > Features > Indent.

Step 5. In the Indent Property Manager:
under Selections, **Fig. 29**
Target body:
click **Hatch**, **Fig. 30**
Tool body region:
click **Solar Panel <2>**
check **Cut**
under Parameters
Clearance .1
click OK ✔ .

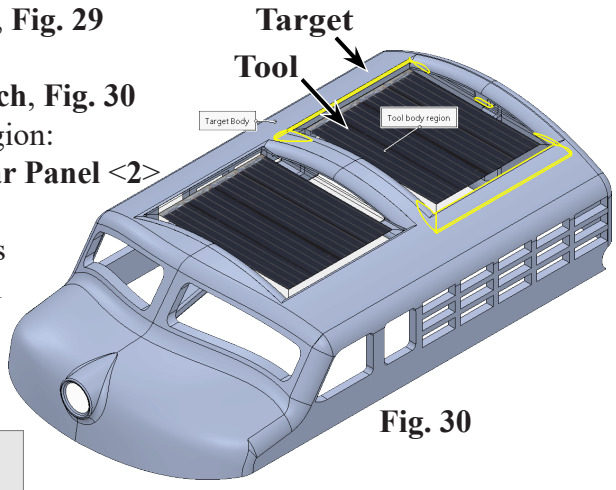


Fig. 30

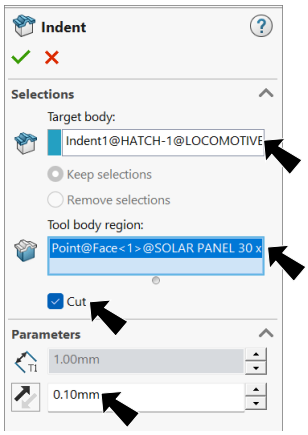


Fig. 29

Step 6. Click **Edit Component** on the Features toolbar to exit.

Step 7. Save All (**Alt-F L**).

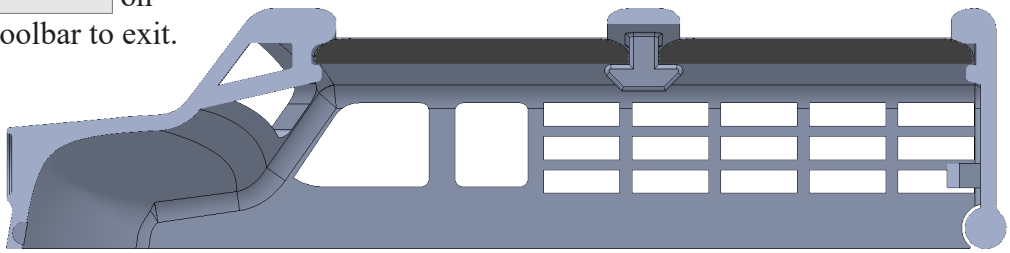


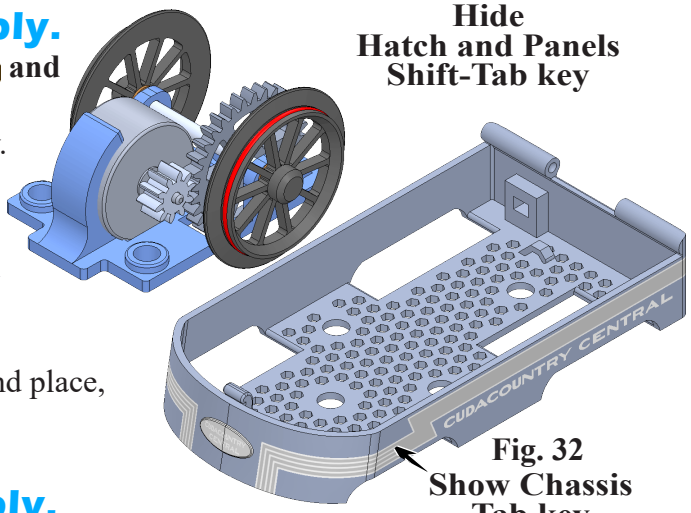
Fig. 31

G. Insert Motor Bogie Assembly.

Step 1. Show **Chassis** and **Hide Hatch** and **Solar Panels** components, **Fig. 32**. To show **Shift - Tab**. To hide **Tab** key.

Step 2. Click **Insert Components** on the Assembly toolbar.

Step 3. Select your **Motor Bogie Assembly** and place, **Fig. 32**.



H. Mate: Motor Bogie Assembly.

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

Step 2. Click a **cylindrical face of pin hole in Chassis** and **cylindrical face corresponding match up with hole in Motor Bracket**, **Fig. 33**.

Step 3. Check **Lock Rotation** and Add/Finish Mate in Mate pop-up toolbar to add a **Concentric** mate, **Fig. 34**.

Fig. 34

Fig. 33

Step 4. Click **bottom face of Chassis** and **hide top face of Motor Bracket**, click **bottom face**, **Fig. 35**. To hide face, hover cursor over face and press **Alt key**.

Step 5. Click Add/Finish Mate to add **Coincident** mate.

Step 6. Click OK in the Property Manager.

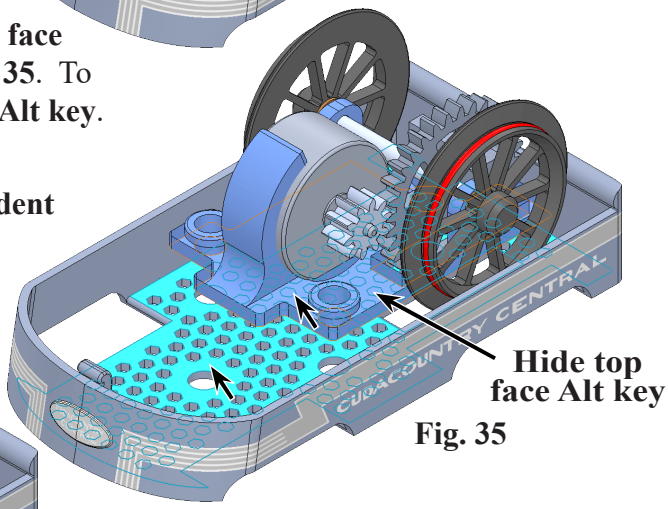


Fig. 35

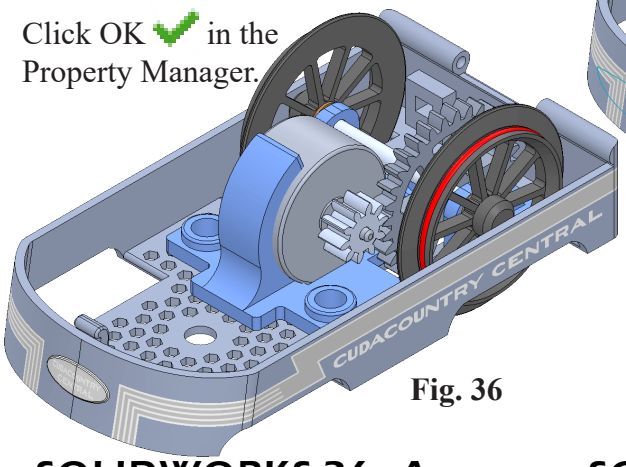
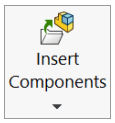


Fig. 36

I. Insert Bogie Assembly.

Step 1. Click **Insert Components** 

on the Assembly toolbar.

Step 2. Select your **Bogie Assembly** file and Open.

Step 3. Place Bogie Assembly, **Fig. 37**.

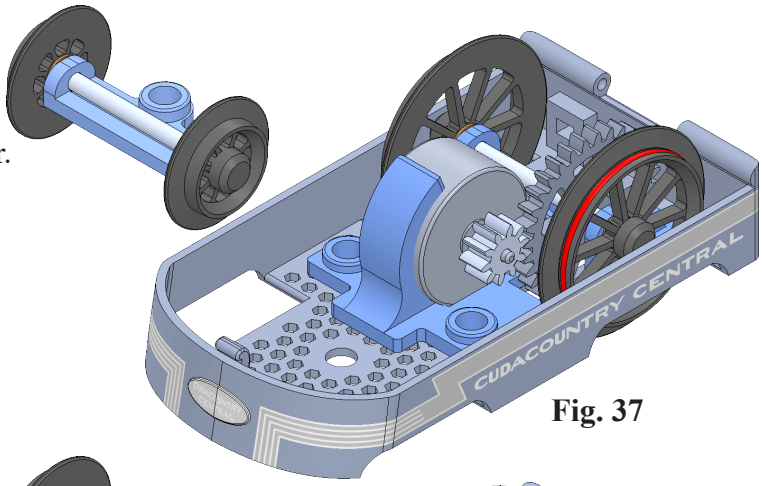
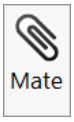


Fig. 37

J. Mate: Bogie Assembly.

Step 1. Click **Mate** 

on the Assembly toolbar.

Step 2. Click a **cylindrical face of pin hole in Chassis** and **cylindrical face corresponding hole in Bogie Bracket**, **Fig. 38**.

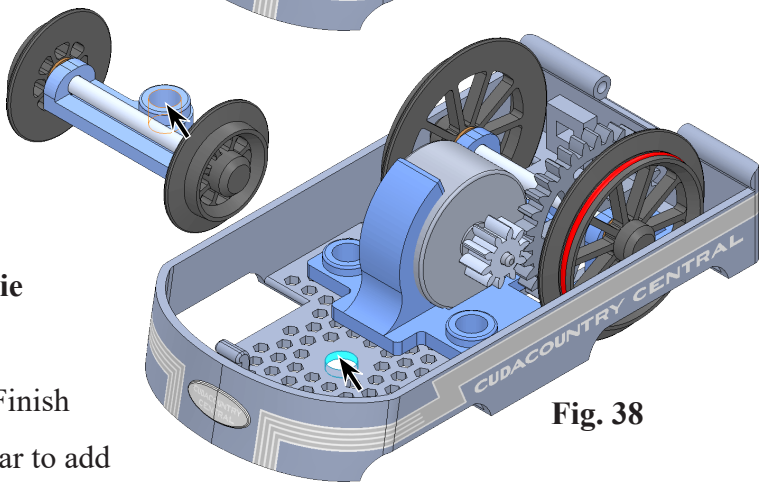


Fig. 38

Step 3. Check **Lock Rotation** and Add/Finish Mate  in Mate pop-up toolbar to add a **Concentric**  mate, **Fig. 39**.

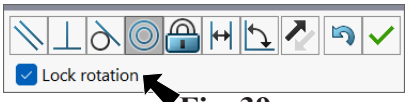


Fig. 39

Step 4. Click **bottom face of Chassis** and **hide top face of Bogie Bracket**, click **bottom face**, **Fig. 40**.
To hide face, hover cursor over face and press **Alt key**.

Fig. 40

Step 5. Click Add/Finish Mate  to add **Coincident**  mate.

Step 6. Click OK  in the Property Manager.

Step 7. Save  (**Ctrl-S**).

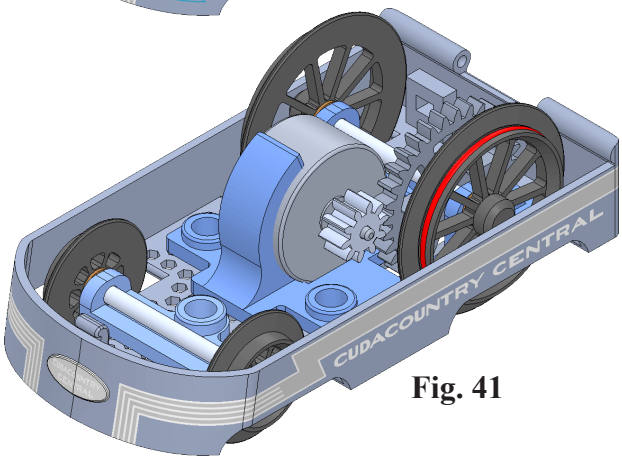


Fig. 41