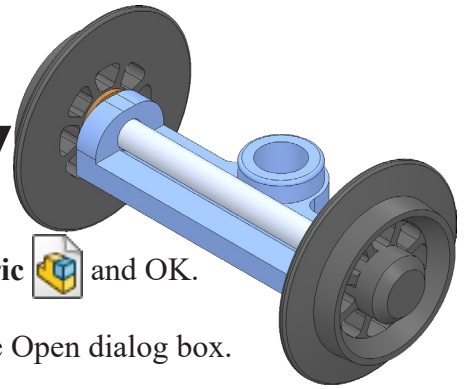




## Chapter 13

# Solar Train Bogie Assembly



### A. Insert Bogie Bracket and Axle.

Step 1. Click **New**  on the Standard toolbar, click **Assembly Metric**  and OK.

Step 2. Select your **BOGIE BRACKET** file and click Open from the Open dialog box.

Step 3. In the Begin Assembly Property Manager set:

click **Keep Visible** , **Fig. 1**  
under Options

**Only fix first component**

Click OK  in the Property Manager. This will place Bracket origin at the assembly origin and fix the position so Bracket cannot move. This fixed component should have a **(f)** before its name in the Feature Manager  (f) BOGIE BRACKET<1>.

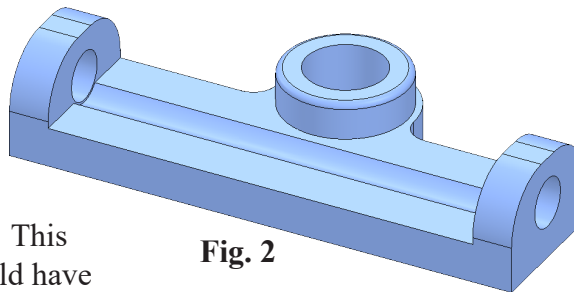


Fig. 2

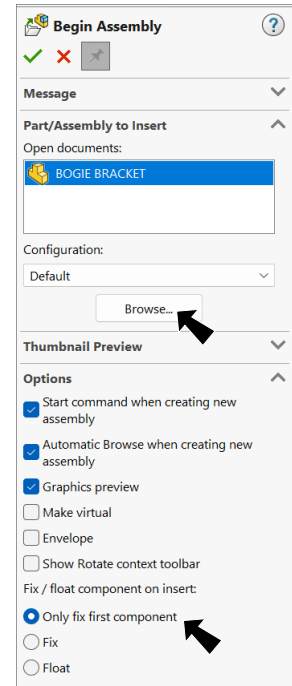
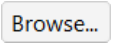


Fig. 1

Step 4. Click **Browse**  in the Property Manager, **Fig. 1**.

Step 5. Select your **AXLE** file and click Open.

Step 6. Back in the Begin Assembly Property Manager:  
under Part/Assembly in Insert, **Fig. 3**  
select **AXLE** to highlight it.

Step 7. Position **Axle near Axle hole**, **Fig. 4**. When Axle snaps to Axle hole and cursor changes to indicate a Concentric mate , click to release Axle.

**Release part when cursor changes to**

Step 8. Check **Add/Finish Mate**  in Mate pop-up toolbar to add a **Concentric**  mate.

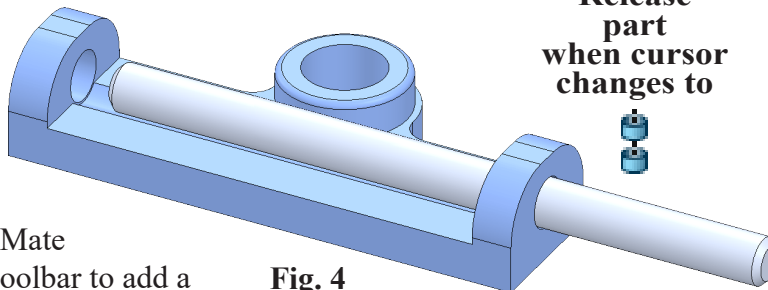


Fig. 4

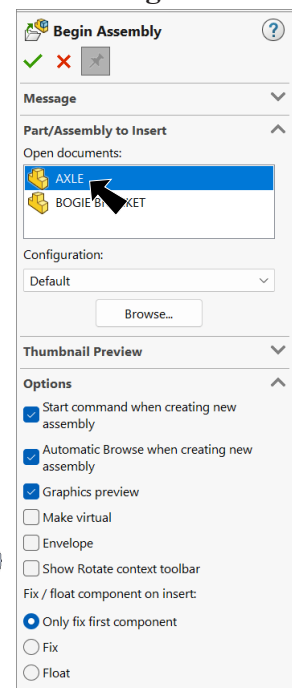


Fig. 3

Step 9. Click OK  in the Property Manager.

## B. Save as "BOGIE ASSEMBLY".

Step 1. Click File Menu > Save As.

Step 2. Key-in **BOGIE ASSEMBLY** for the filename and press ENTER.

## C. Mate: Axle.

Step 1. Click **Right Plane**  in the Feature Manager and **Mate**  on the context toolbar, **Fig. 5**.

Step 2. Expand the flyout Feature Manager design tree in the top left corner of the graphics area, expand **Axle** and click **Right Plane** , **Fig. 6**.

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

Step 4. Click OK  in the Property Manager.

Step 5. Save  (Ctrl-S).

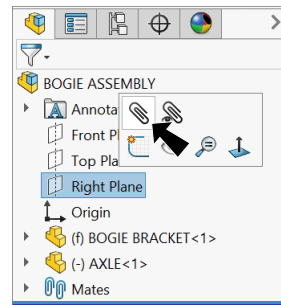


Fig. 5

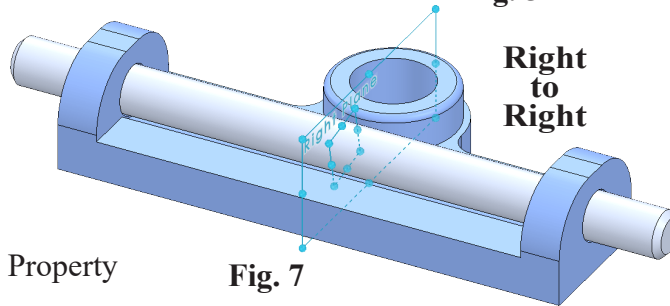


Fig. 7

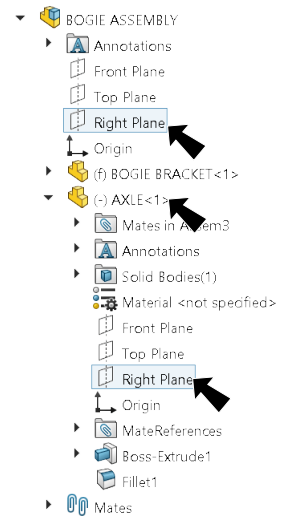
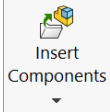


Fig. 6

## D. Insert Washer and Front Wheel.

Step 1. Click **Insert Components**  on the Assembly toolbar.

Step 2. **Ctrl click both WASHER and FRONT WHEEL** files and click Open from the Open dialog box.

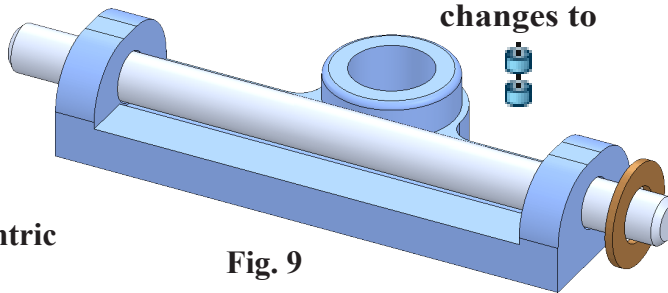
Step 3. In the Begin Assembly Property Manager set:

click **Keep Visible** , **Fig. 8**  
under Part/Assembly in Insert  
select **WASHER** to highlight it  
under Options  
select **Only fix first component**.

Step 4. Position **Washer near Axle, Fig. 9**. When Washer snaps into place and cursor changes to indicate a Concentric mate , click to release Assembly.

**Release part  
when cursor  
changes to**

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



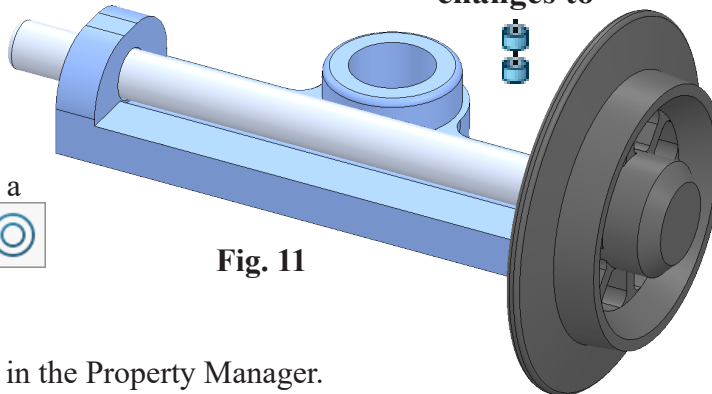
**Fig. 9**

Step 6. Back in Begin Assembly Property Manager:  
select **FRONT WHEEL** to highlight it, **Fig. 10**.

Step 7. Position **Wheel near Axle**. Click when Wheel snaps into place with Concentric mate , **Fig. 11**.

**Release part  
when cursor  
changes to**

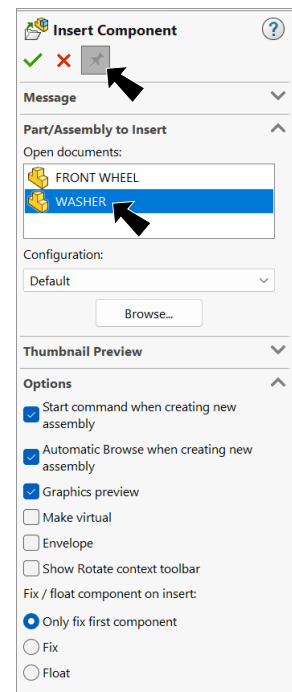
Step 8. Check Add/  
Finish Mate  in  
Mate pop-up  
toolbar to add a  
**Concentric**   
mate.



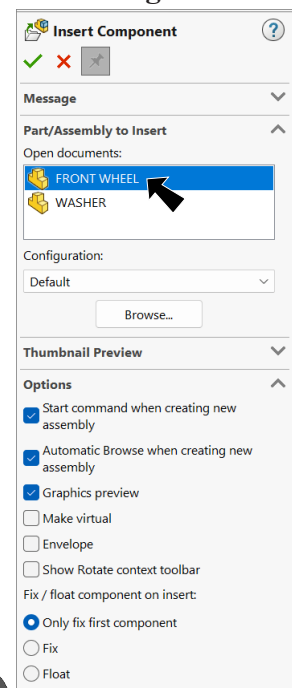
**Fig. 11**

Step 9. Click OK  in the Property Manager.

Step 10. Save  (Ctrl-S).



**Fig. 8**



**Fig. 10**

## E. Mate: Washer.

Step 1. Drag Wheel out off of Axle to view end of Axle, Fig. 15.

Step 2. Click **Right Plane**  in the Feature Manager and **Mate**  on the context toolbar, Fig. 12.

Step 3. Expand the flyout Feature Manager design tree in the top left corner of the graphics area, expand **Washer** and click **Right Plane** , Fig. 13.

Step 4. Click **Distance**  in Mate pop-up, Fig. 14. Set **distance 17.13** and press ENTER. The Washer should be positioned just outside Bracket leg, Fig. 15. If positioned in opposite direction, click **Flip**

**Dimension**  in the Mate pop-up. Click Add/Finish Mate  to add Distance  mate.

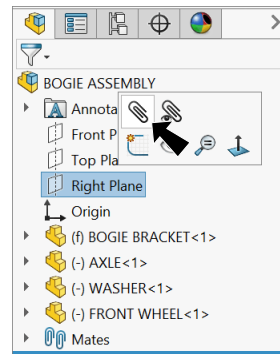


Fig. 12

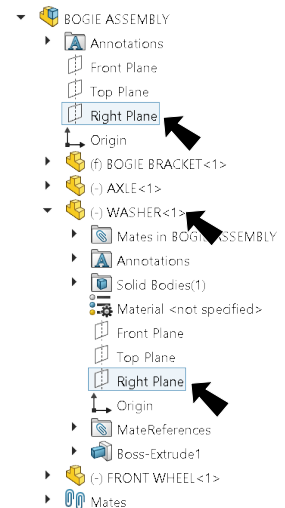


Fig. 13



Fig. 14

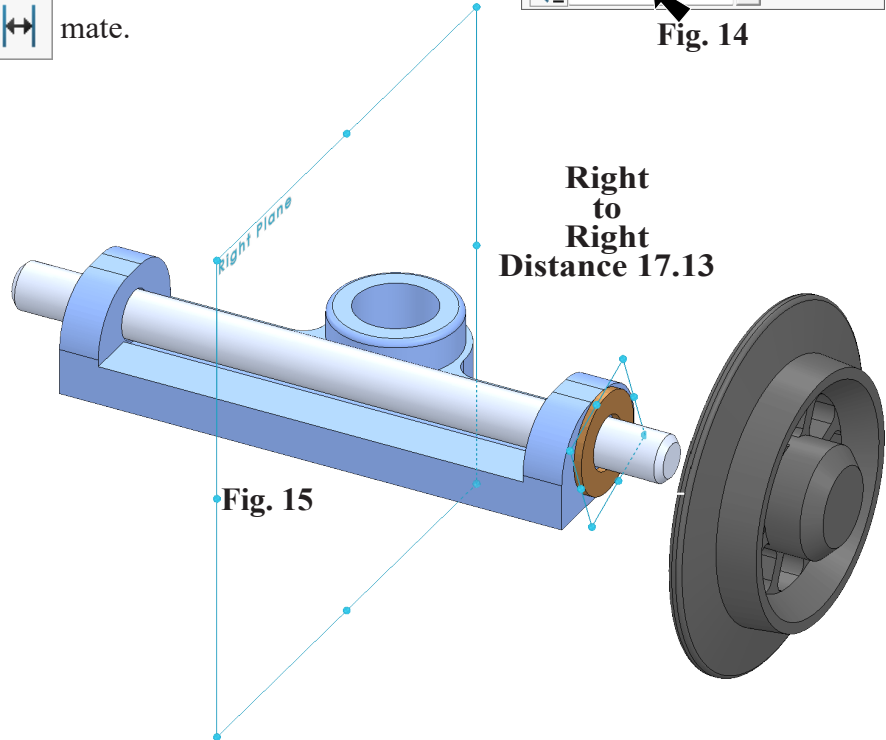


Fig. 15

## F. Mate: Wheel.

Step 1. Click **chamfer** at **end of Axle** and **hide chamfer face** of **Wheel hub**, click **chamfer** at **end of hole in Wheel**, Fig. 16. To hide face, hover cursor over face and press **Alt** key.

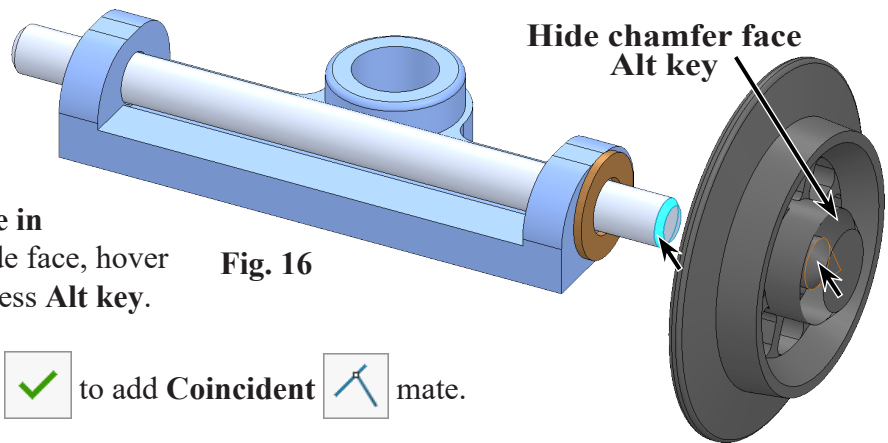


Fig. 16

Step 2. Click Add/Finish Mate  to add **Coincident**  mate.

Step 3. Click OK  in the Property Manager.

## G. Mirror Washer and Wheel Right Plane.

Step 1. **Ctrl** click **Right Plane** , **Washer**  and **Front Wheel**  components in the Feature Manager to select plane and components, Fig. 17.

Step 2. Click **Mirror Components**  in the **Linear Component Pattern** flyout on the Assembly toolbar.

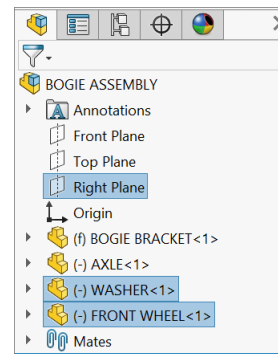


Fig. 17

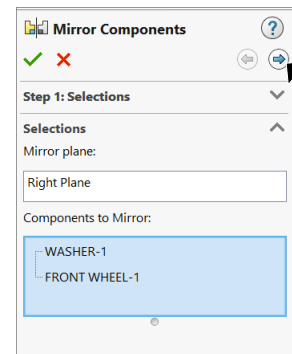


Fig. 18

Step 3. In the Mirror Property Manager:  
Step 1: Selections all were preselected  
click **Next**  **Fig. 18.**

Step 4. In the Mirror Components Property Manager click **OK** .

Step 5. Save  (**Ctrl-S**).

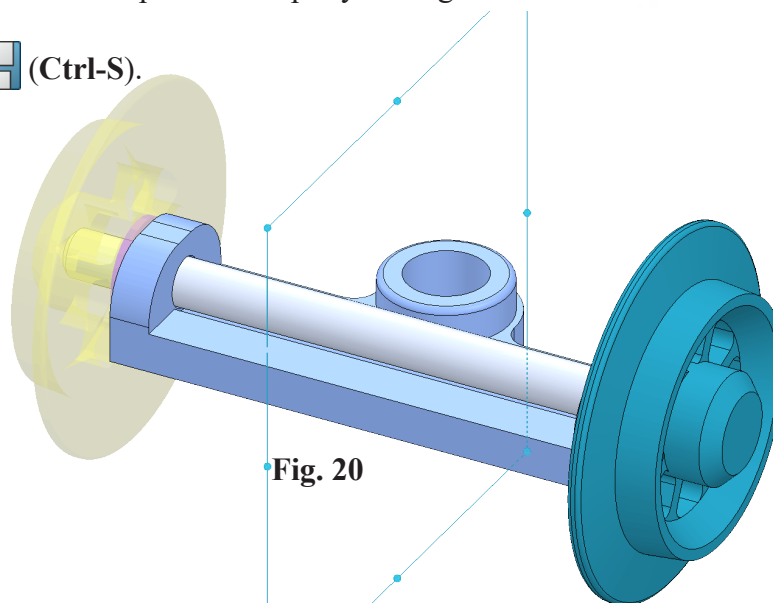


Fig. 20

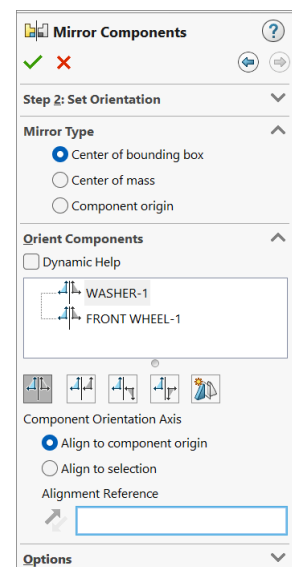


Fig. 19