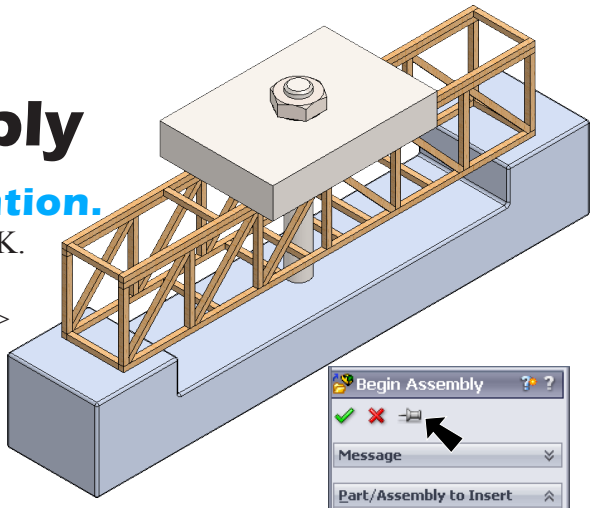
Chapter 16

Beam
Assembly



A. Insert Base and Beam Same Location.

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

Step 2. If necessary, turn on Origins. Use View Menu > Origins.

Step 3. Click **Keep Visible** in the Property Manager, **Fig. 1**.

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

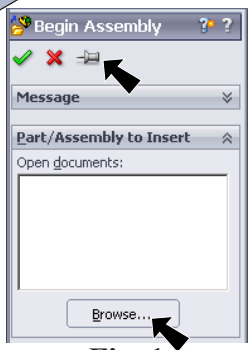


Fig. 1

Step 5. **Ctrl click** your **BASE** and **BEAM DOUBLE** files to select both and click Open, **Fig. 2**.

Step 6. **Double click** the Origin in the graphic area, **Fig. 3**. This will place both parts at Origin and fix components.

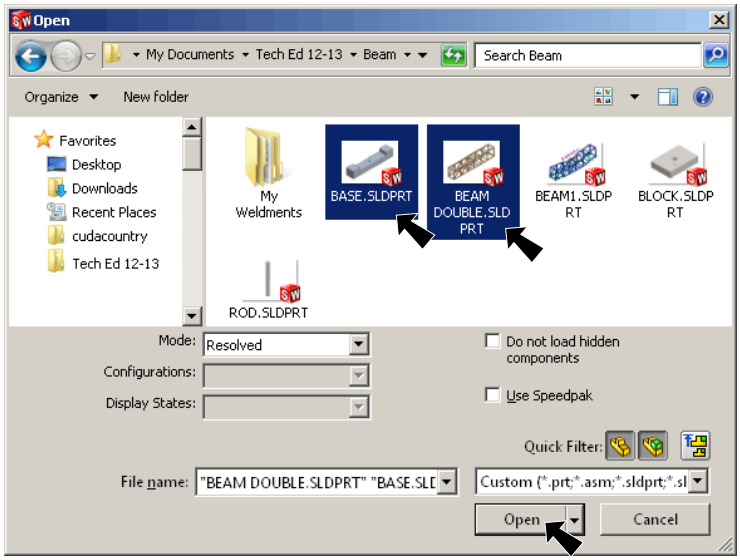


Fig. 2

Step 7. Click OK in the Property Manager. Both parts should have a **(f)** before its name in the Feature Manager, **Fig. 4**.

Step 8. Turn **off** Origins. Use View Menu > Origins.

B. Save as "BEAM ASSEMBLY".

Step 1. Click File Menu > Save As.

Step 2. Key-in **BEAM ASSEMBLY** for the file-name and press ENTER.

C. Activate Configuration.

Step 1. Click **Beam Double** in the Feature Manager and click **Component Properties** from the Content toolbar, **Fig. 4**.

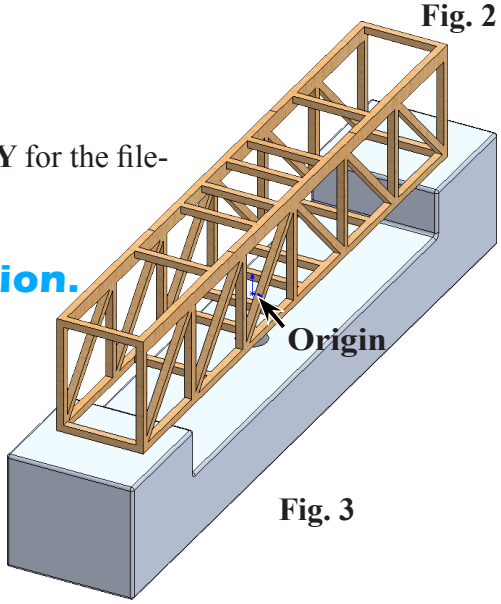


Fig. 3

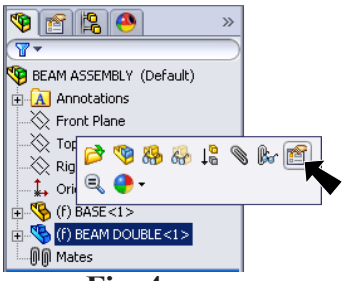


Fig. 4

Step 2. Select **BEAM JOINTS** in the Component Properties dialog box and click OK, **Fig. 5**.

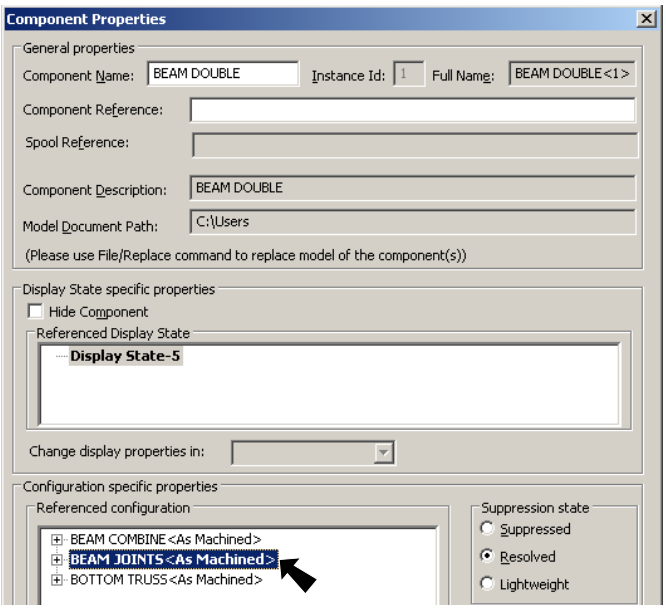
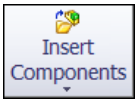


Fig. 5

D. Insert Rod.

Step 1. Click **Insert Components** 

on the Assembly toolbar.

Step 2. Click **Browse** in the Property Manager.

Step 3. Select **ROD** file and click Open.

Step 4. Place Rod as positioned in **Fig. 6**.

E. Mate: Rod.

Step 1. Click **Mate** 

on the Assembly toolbar.

Step 2. Rotate view to view **under side of Base** as shown in **Fig. 7**. To rotate, hold down middle mouse button (wheel) and drag.

Step 3. Click **bottom face of Base and bottom face of Rod**, **Fig. 7**.

Step 4. Click Add/Finish Mate  in Mate pop-up toolbar to add a **Coincident** mate.

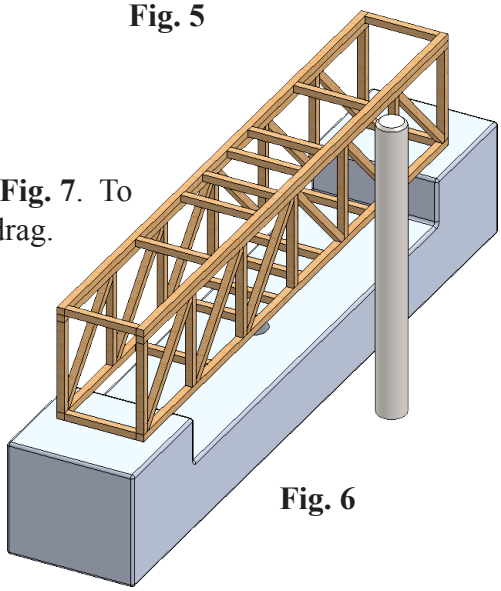


Fig. 6

Step 5. Click **Trimetric**  on the Standard Views toolbar.

Step 6. Click **inside cylindrical face hole in Base** and **cylindrical face of Rod**, **Fig. 8**.

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

Step 8. Click OK  in the Property Manager.

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

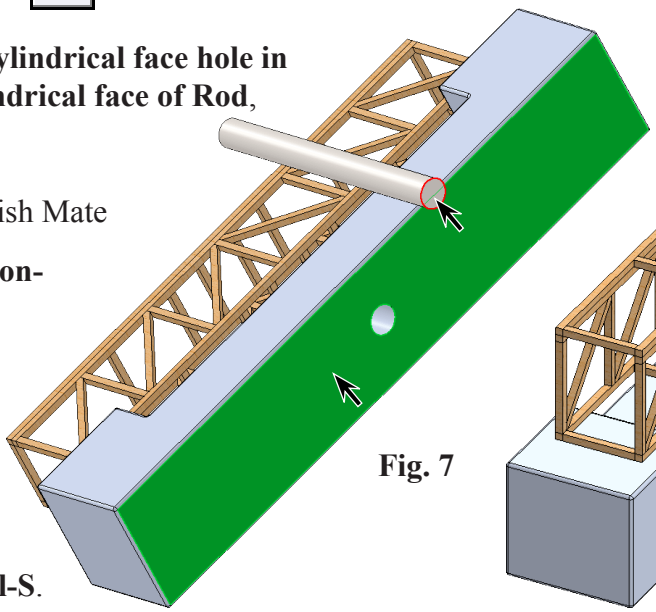


Fig. 7

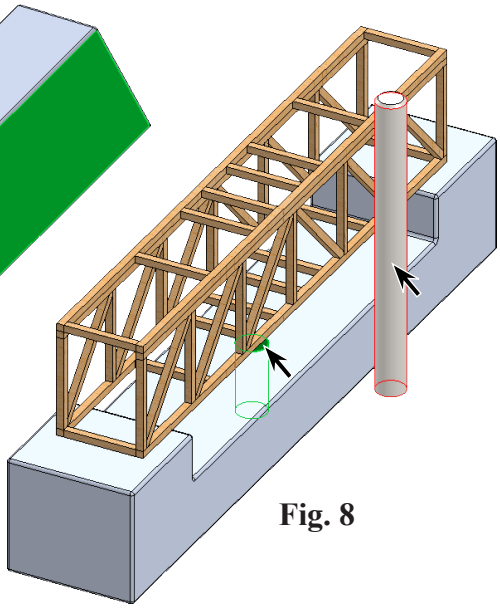
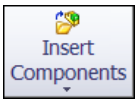


Fig. 8

F. Insert Block.

Step 1. Click **Insert Components** 

on the Assembly toolbar.

Step 2. Click **Browse** in the Property Manager.

Step 3. Select **BLOCK** file and click Open.

Step 4. Place Block as positioned in **Fig. 9**.

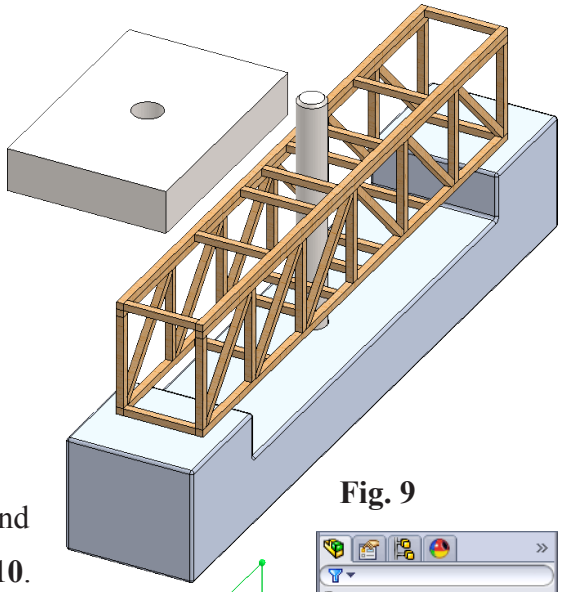


Fig. 9

G. Mate: Block.

Step 1. Click **Right Plane** in the Feature Manager and click **Mate** from the Content toolbar, **Fig. 10**.

Step 2. Expand the Design Tree, expand **Block** and click **Right Plane**, **Fig. 11** and **Fig. 12**.

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

Step 4. Click **inside cylindrical face hole in Block** and **cylindrical face of Rod**, **Fig. 13**.

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

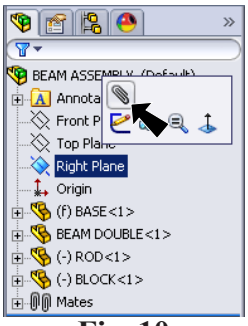


Fig. 10

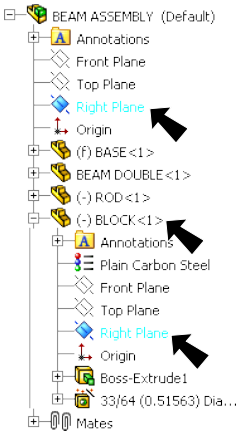


Fig. 11

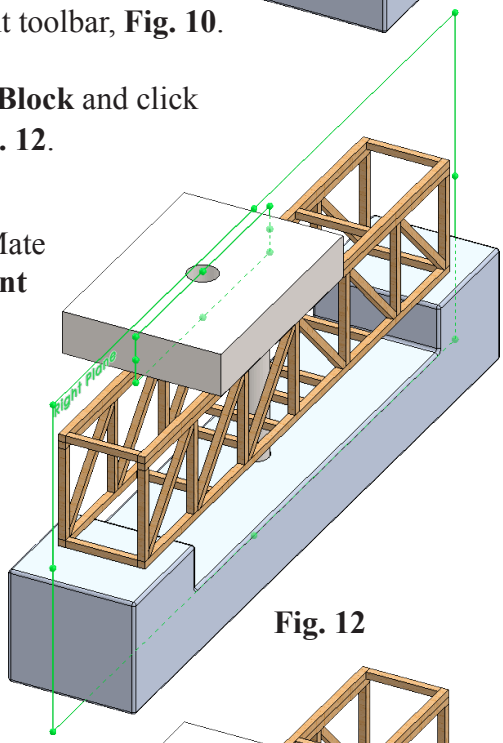


Fig. 12

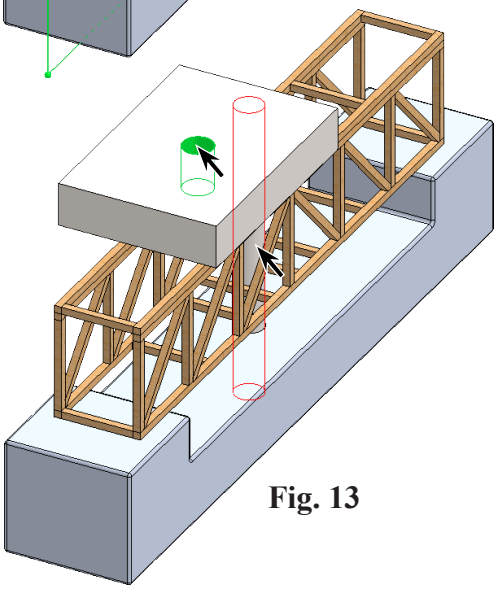


Fig. 13

Step 6. Click **Top Plane**, **Fig. 14**.

Step 7. Expand **Block** and click **Top Plane**, **Fig. 14**.

Step 8. Click **Distance** in Mate pop-up, **Fig. 15**. Set **distance 2**. The Block should be positioned on Beam, **Fig. 16**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up. Click Add/Finish Mate to add Distance mate.

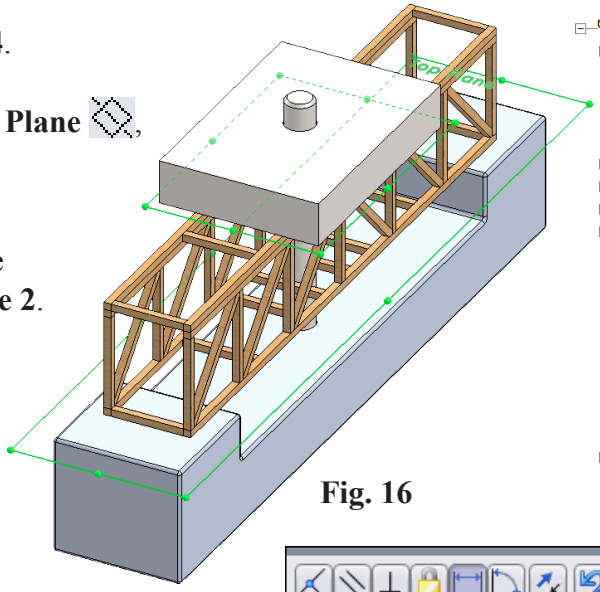


Fig. 16

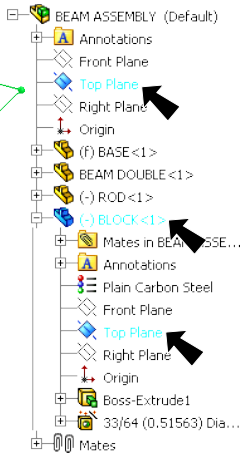


Fig. 14

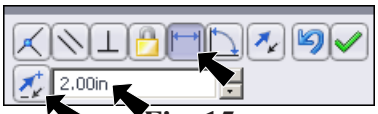


Fig. 15

Step 9. Click OK in the Property Manager.

Step 10. Save. Use **Ctrl-S**.

H. Enable Toolbox Browser.

Step 1. If necessary, enable Toolbox Browser. Click Tools Menu > Add-Ins.

Step 2. Check **SolidWorks Toolbox Browser** to place a check in the both check boxes, then click OK, **Fig. 17**.

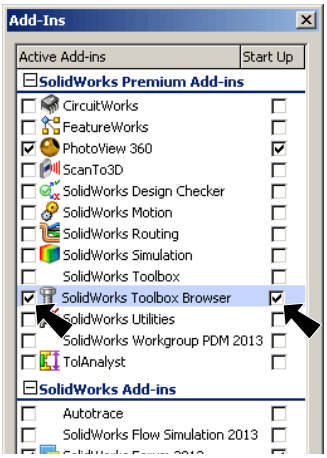


Fig. 17

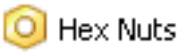
I. Toolbox Nut.

Step 1. Click the **Design Library** tab  in the Task Pane, **Fig. 18**.

Step 2. In the **Toolbox** 

Expand **ANSI Inch** folder 

Expand **Nuts** folder 

Click **Hex Nuts** folder 

Step 3. In the lower pane, **right click Heavy Hex Jam Nut** and click **Create Part**, **Fig. 18**.

Step 4. In the Property Manager set:
under Properties, **Fig. 19**
Size #9/16-12
click OK  .

Step 5. Switch to the new Part. Use Window Menu > **HHJNUT 0.5625**.

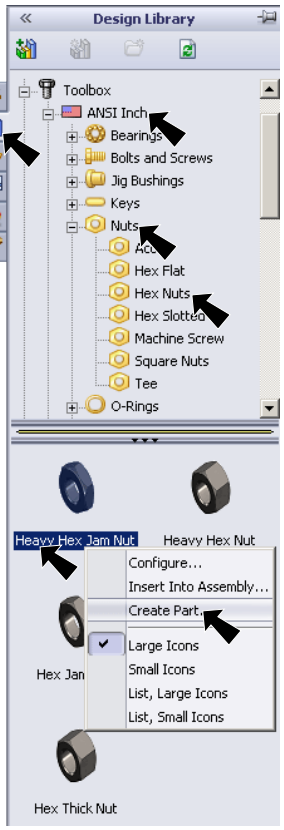


Fig. 18

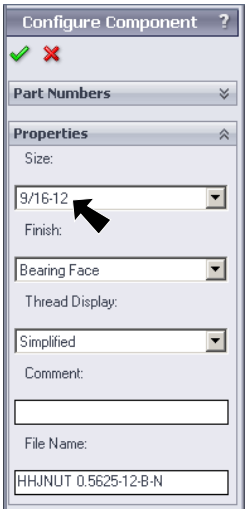


Fig. 19

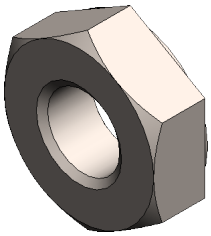


Fig. 20

Step 6. Click **Feature Manager design tree tab**  at the top of the Configuration Manager to display Feature Manager, **Fig. 21**.

Step 7. **Right click Material**  in the Feature Manager and click **Edit Material**, **Fig. 21**.

Step 8. **Expand Steel** in the material tree and select **Plain Carbon Steel**. Click **Apply** and **Close**.

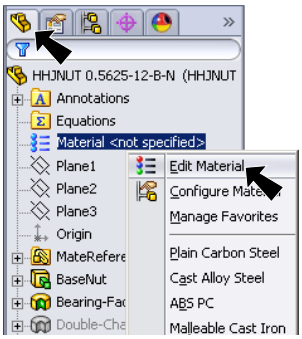


Fig. 21

Step 9. Save. Use **Ctrl-S**. Redirect file path to your Beam folder and click Save, **Fig. 22**.

Step 10. Switch back to the Assembly. Use Window Menu > BEAM ASSEMBLY.

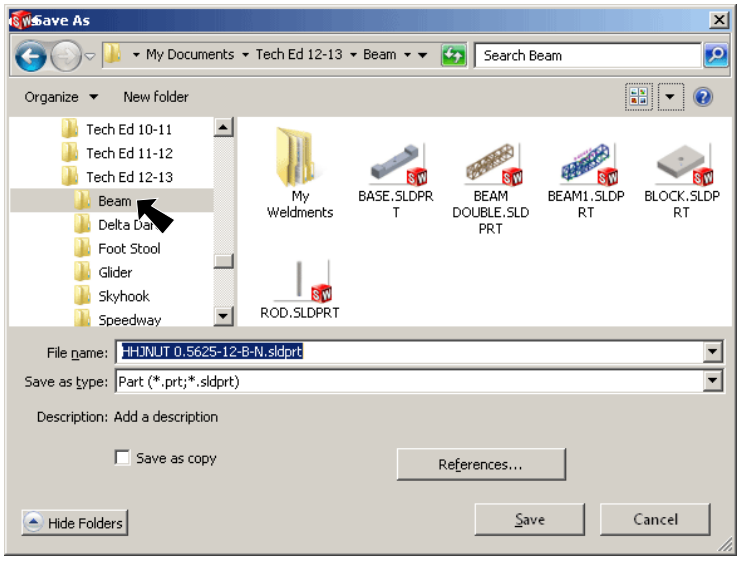
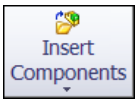


Fig. 22

Step 11. Click **Insert Components** 

on the Assembly toolbar.

Step 12. Select the HHJNUT from the Insert Component Property Manager, **Fig. 23**. Position your cursor on the edge of hole in Block, **Fig. 24**. When Nut snaps into place and cursor changes to indicate a Concentric and Coincident mate  , click to release Nut.

Step 13. Save. Use **Ctrl-S**.

Fig. 23

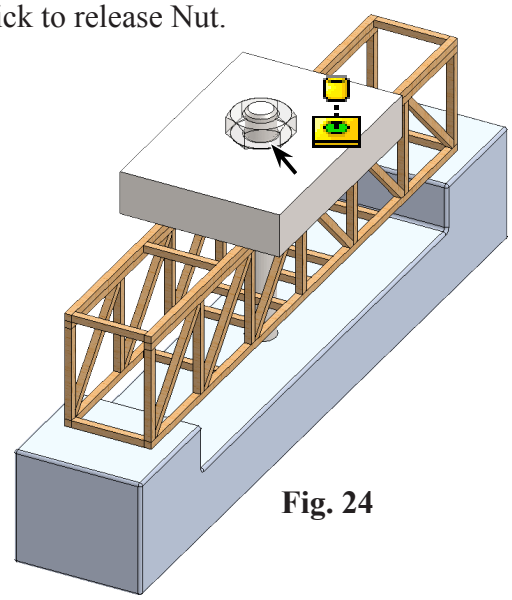


Fig. 24