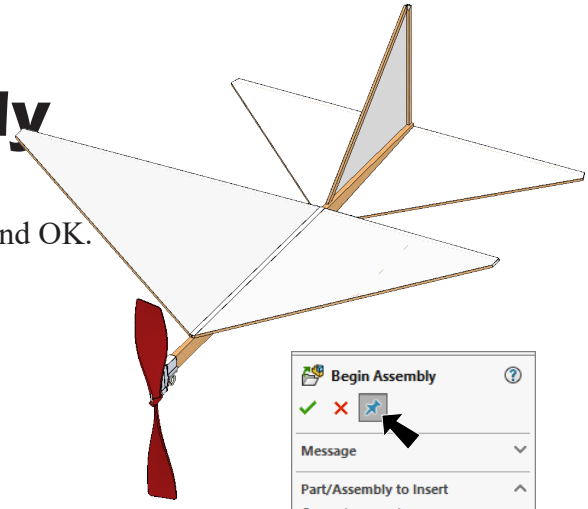
Chapter 10

Delta Dart Assembly



A. Insert Fuselage and Wing.

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

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

Step 3. In the Begin Assembly Property Manager set:

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

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

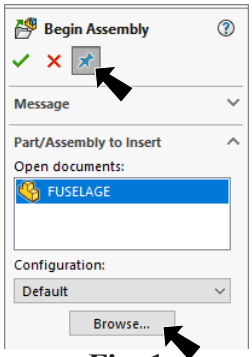


Fig. 1

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

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

Step 6. Click approximately where the Wing is positioned in **Fig. 2**.

Step 7. Click OK in the Property Manager when done.

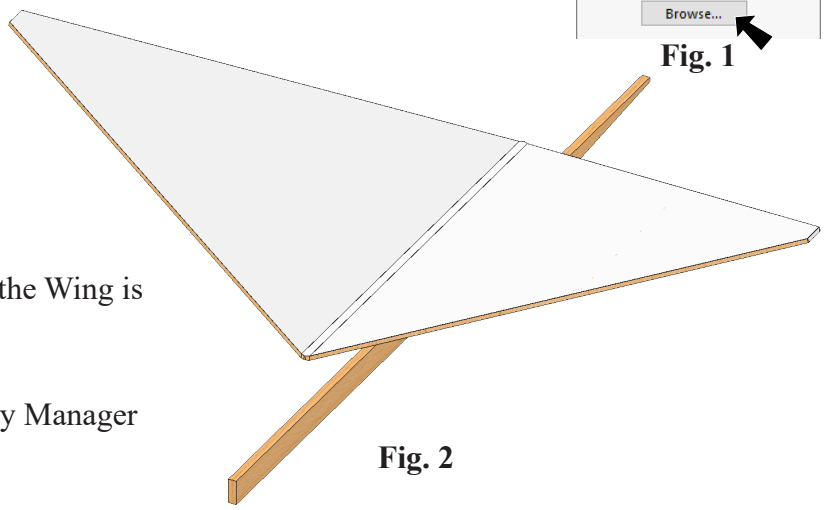


Fig. 2

B. Save as "DELTA DART ASSEMBLY".

Step 1. Click File Menu > Save As.

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

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C. Mate: Fuselage and Wing.

Step 1. Click **Filter Faces** (**X**) on the **Selection Filter toolbar** at the bottom of the display, **Fig. 3**. If necessary, use **F5** key to display the toolbar.

Fig. 3

Step 2. Click **Mate**

on the Assembly toolbar.

Step 3. Click **top face of Fuselage**, **Fig. 4**.

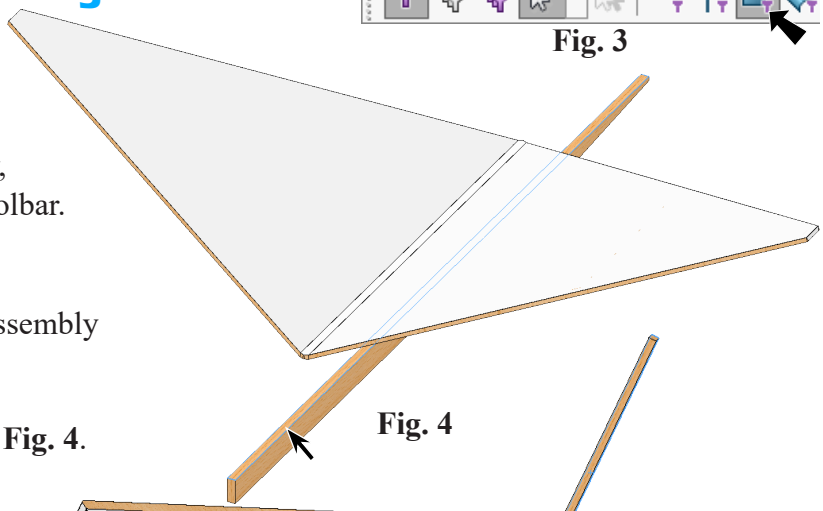


Fig. 4

Step 4. Rotate view to view **under side of Wing center member** as shown in **Fig. 5**. To rotate, hold down middle mouse button (wheel) and drag.

Step 5. Click **bottom face of Wing center member**, **Fig. 5**.

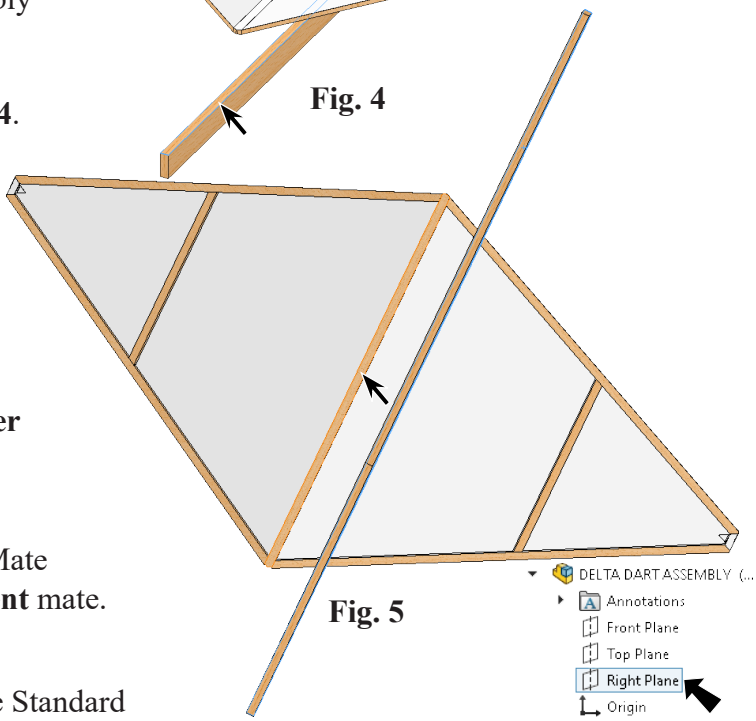


Fig. 5

Step 6. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate.

Step 7. Click **Previous View** on the Standard Views toolbar. (**Ctrl-Shift-Z**)

Step 8. Expand the flyout Feature Manager design tree (click ▸) in the top left corner of the graphics area and click **Right Plane**, **Fig. 6**.

Step 9. Expand **Wing** and click **Right Plane**, **Fig. 7**.

Step 10. Click Add/ Finish Mate to add **Coincident** mate.

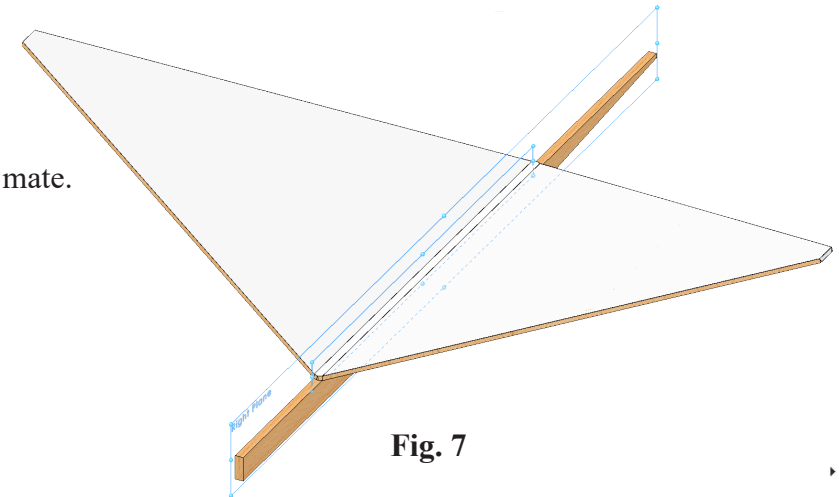


Fig. 7

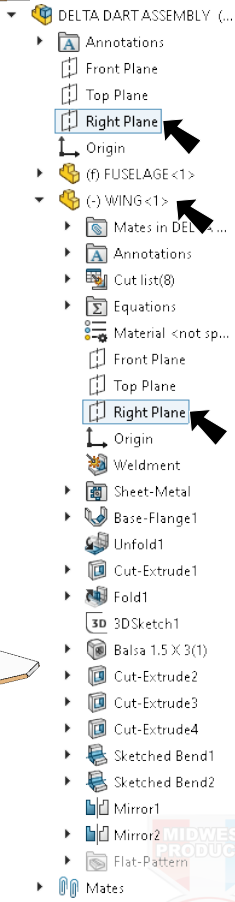


Fig. 6

Step 11. Click **Front Plane**, **Fig. 8**.

Step 12. Expand **Wing** and click **Front Plane**, **Fig. 8**.

Fig. 9

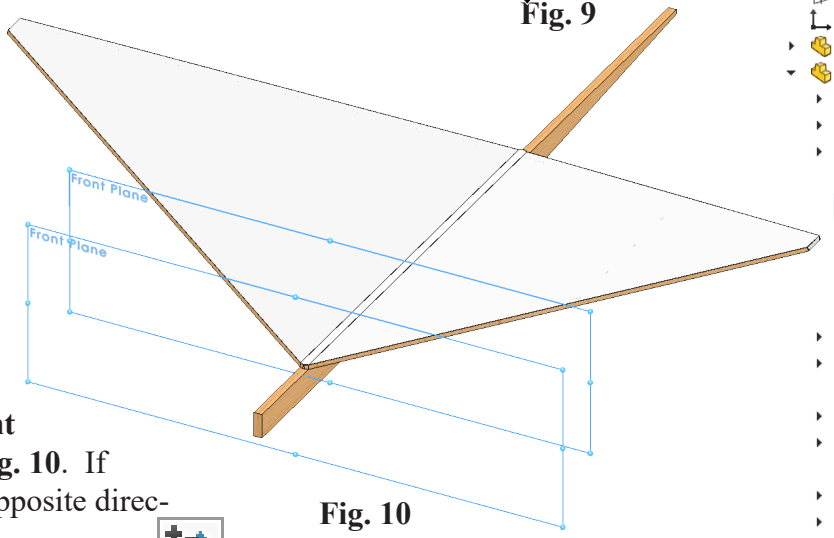


Fig. 10

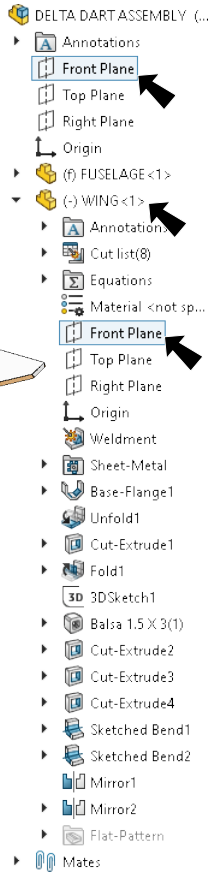


Fig. 8

Step 13. Click **Distance** in Mate pop-up, **Fig. 9**. Set **distance to 32** and press ENTER. The Wing should **be behind front** of Fuselage, **Fig. 10**. If positioned in opposite direction, click **Flip Dimension** in the Mate pop-up, **Fig. 9**. Click Add/Finish Mate to add Distance mate.

Step 14. Click OK in the Property Manager.

Step 15. Save. Use **Ctrl-S**.

D. Insert H Stab.

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

Step 2. Select **H STAB** file and click Open.

Step 3. Place H Stab as positioned in **Fig. 11**.

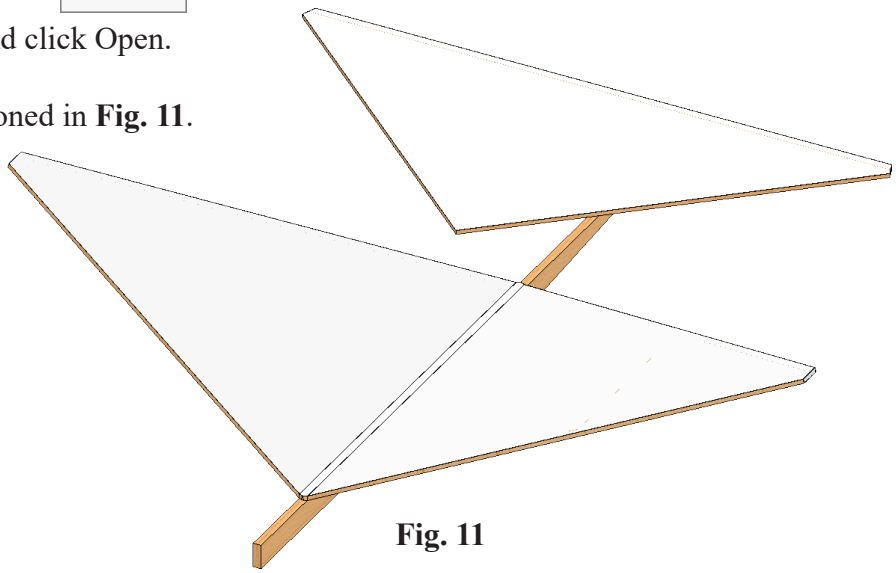


Fig. 11

E. Mate: H Stab.

Step 1. Click **Mate**

on the Assembly toolbar.

Step 2. Expand the flyout Feature Manager design tree and click **Right Plane**, **Fig. 12**.

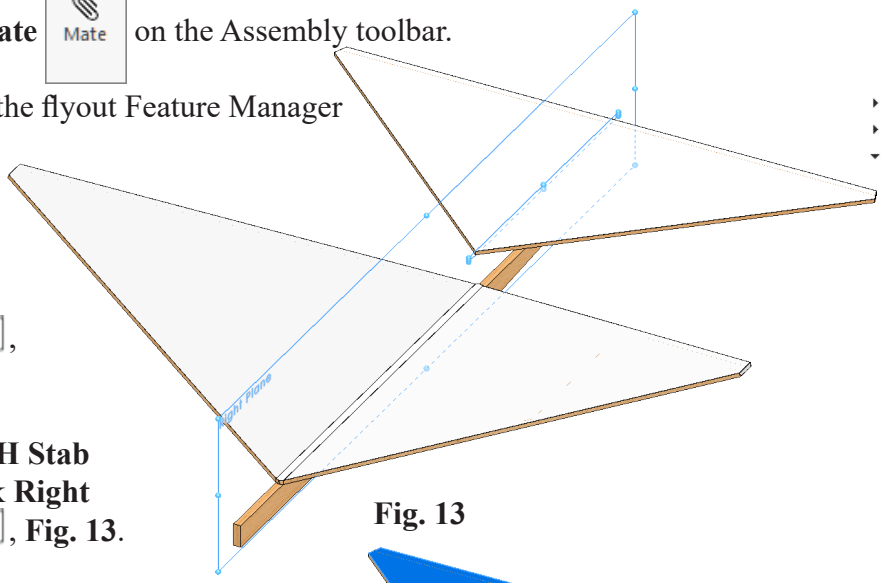


Fig. 13

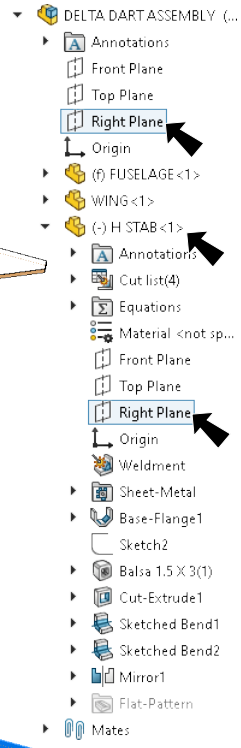


Fig. 12

Step 3. Expand **H Stab** and click **Right Plane**, **Fig. 13**.

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

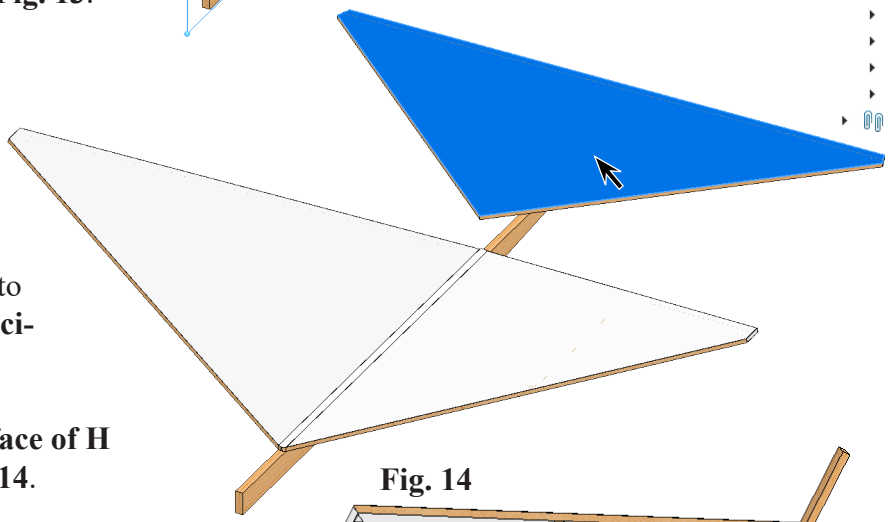


Fig. 14

Step 5. Click **top face of H Stab**, **Fig. 14**.

Step 6. Rotate view to view **underside of Fuselage at rear** as shown in **Fig. 15**. To rotate, hold down middle mouse button (wheel) and drag.

Step 7. Click **angled face of Fuselage**, **Fig. 15**.

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

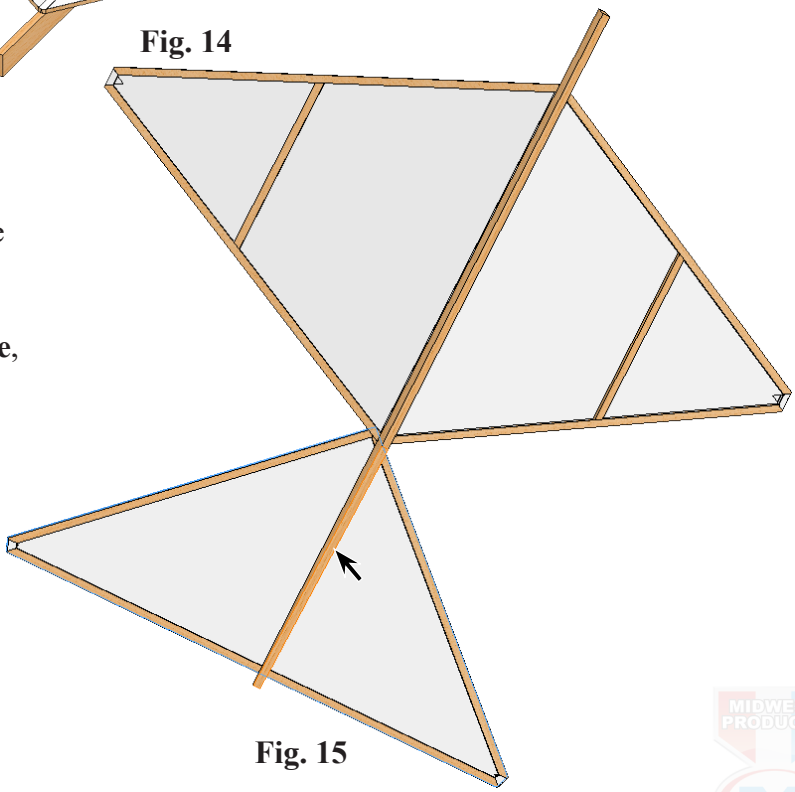


Fig. 15

Step 9. Rotate view to view **rear of H Stab**, **Fig. 16**. To rotate, hold down middle mouse button (wheel) and drag.

Step 10. Zoom in on **rear of Fuselage and H Stab**, **Fig. 16**. To zoom, place the cursor over the Fuselage and H Stab area and spin the wheel on mouse back.

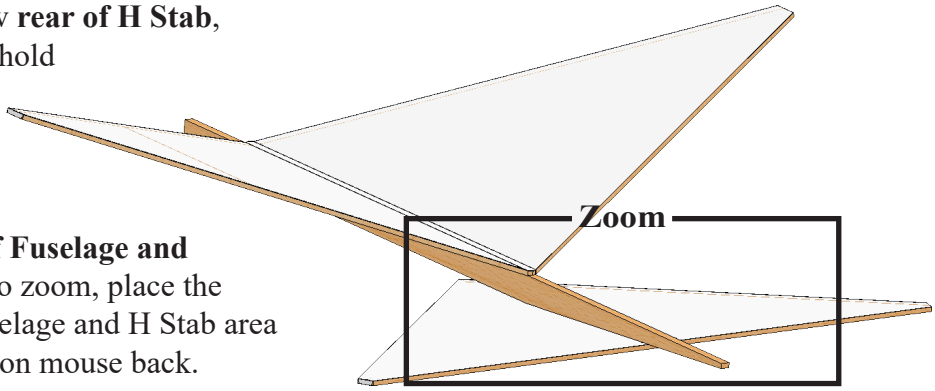


Fig. 16

Step 11. Click **rear face of Fuselage**, **Fig. 17**.

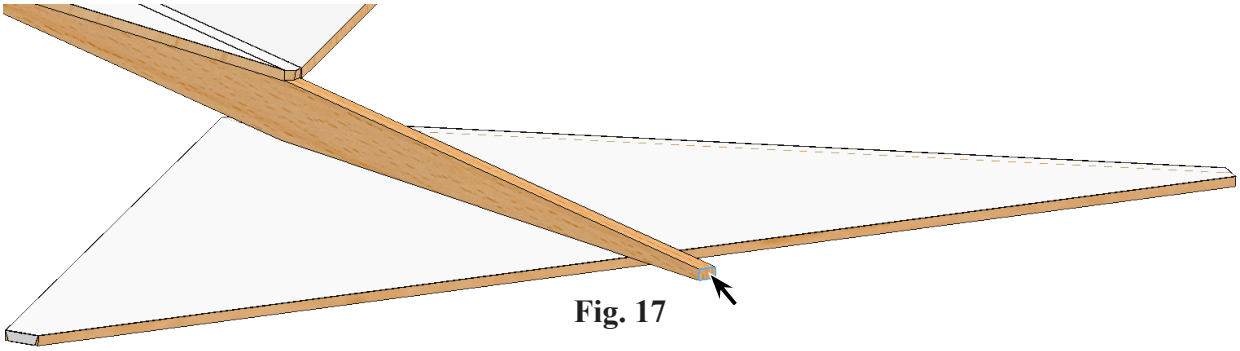


Fig. 17

Step 12. Click **Filter Edges** (**E**) on the **Selection Filter toolbar** at the bottom of the display, **Fig. 18**. If necessary, use **F5** key to display the toolbar.

Step 13. Click **top rear horizontal edge of H Stab** and Add/Finish Mate , **Fig. 19**.

Step 14. Click OK in the Property Manager.

Fig. 18

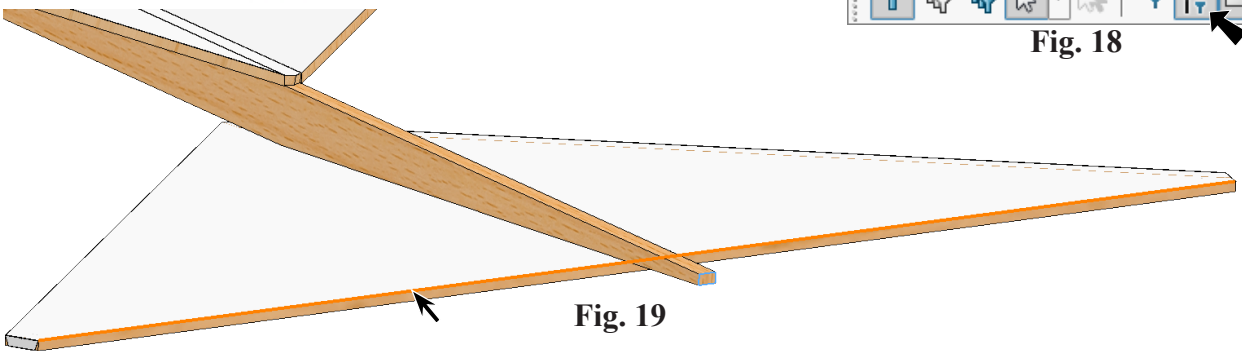


Fig. 19

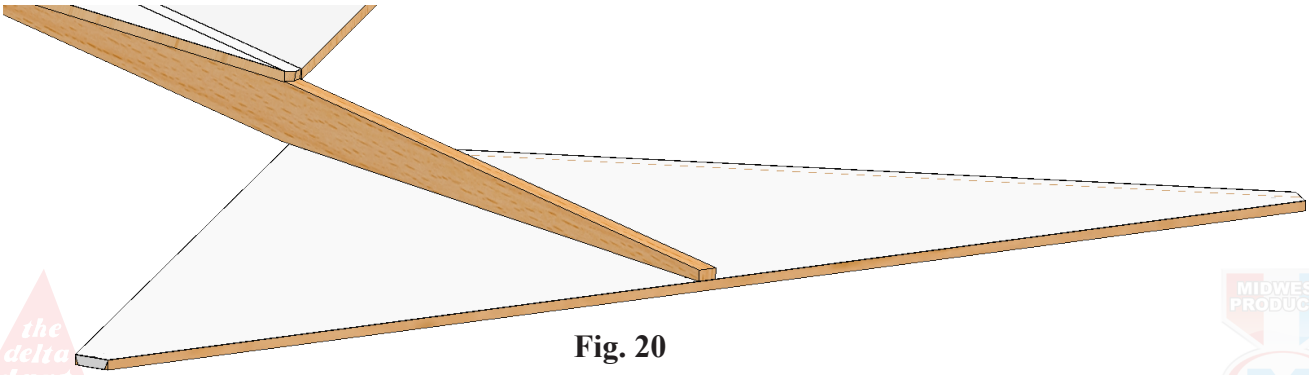


Fig. 20

F. Insert V Stab.

Step 1. Click **Trimetric** on the Standard Views toolbar.

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

Step 3. Select **V STAB** file and click Open.

Step 4. Place V Stab as positioned in **Fig. 21**.

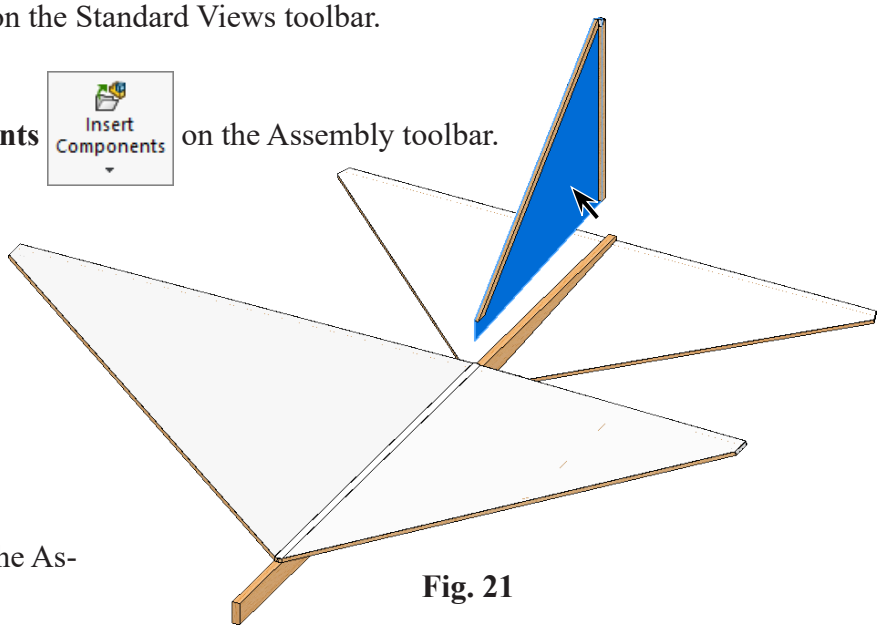


Fig. 21

G. Mate: V Stab.

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

Step 2. Click **side face of V Stab**, **Fig. 21**.

Step 3. Rotate view to view **right side of Fuselage at rear** as shown in **Fig. 22**. To rotate, hold down middle mouse button (wheel) and drag.

Step 4. Click **right side face of Fuselage**, **Fig. 22**.

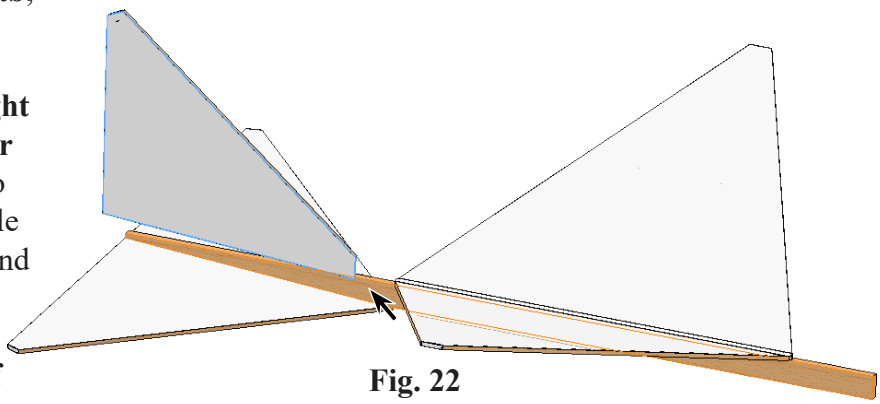


Fig. 22

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

Step 6. Click **Filter Edges** **(E)** on the Selection Filter toolbar to **turn off Filter Edges**, **Fig. 23**. **Filter Faces** **(X)** should still be on. If necessary, use **F5** key to display the toolbar.

Fig. 23

Step 7. Rotate view to view **rear of H Stab and Fuselage**, **Fig. 24**. To rotate, hold down middle mouse button (wheel) and drag.

Step 8. Click **rear end face of Fuselage** and **rear face of V Stab member**, **Fig. 24**.

Step 9. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate.

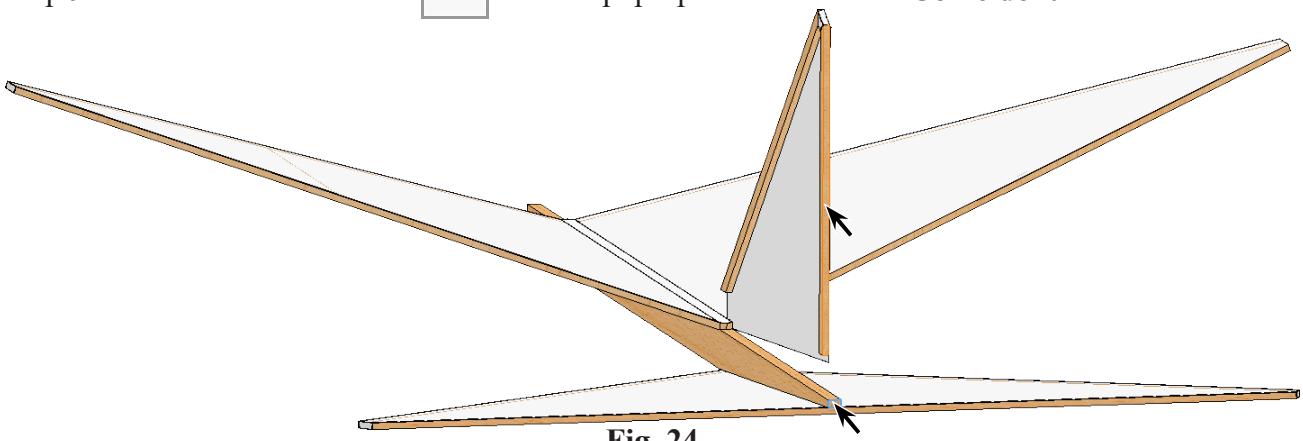


Fig. 24

Step 10. Click **top face of Fuselage**, **Fig. 25**.

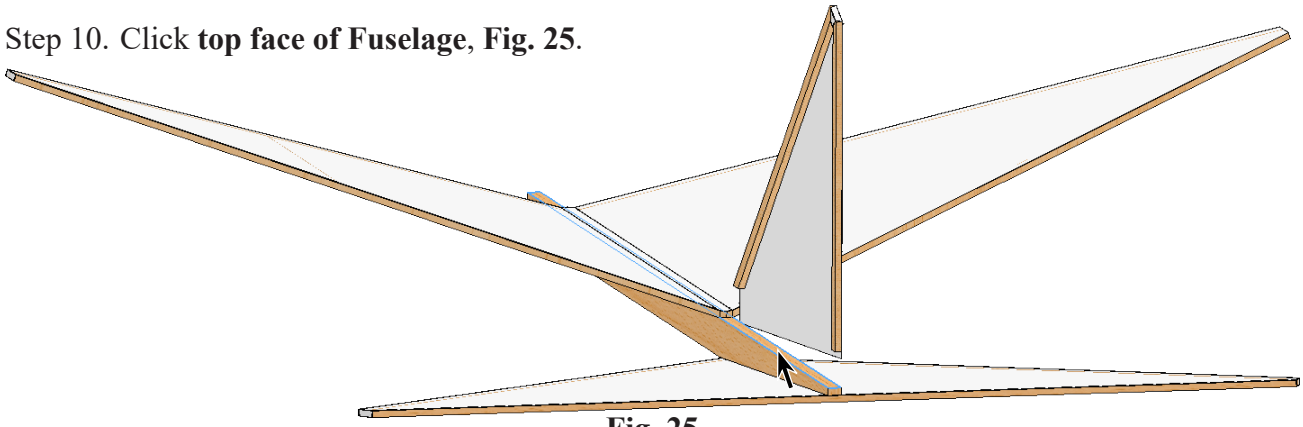


Fig. 25

Step 11. Rotate view to view **bottom of H Stab rear member** as shown in **Fig. 26**. To rotate, hold down middle mouse button (wheel) and drag.

Step 12. Click **bottom face of H Stab rear member**, **Fig. 26**.

Step 13. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate.

Step 14. Click OK in the Property Manager.

Step 15. Save. Use **Ctrl-S**.

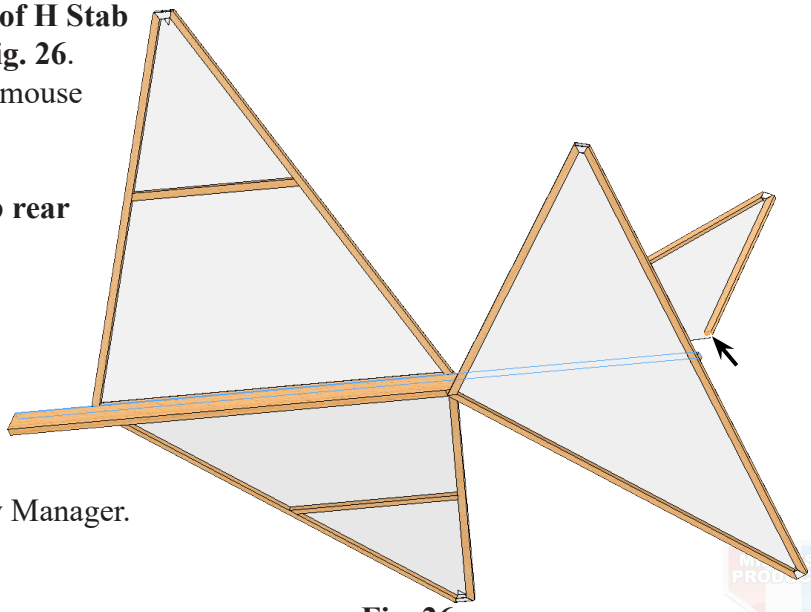
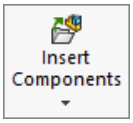


Fig. 26

H. Insert Propeller Assembly.

Step 1. Click **Trimetric** on the Standard Views toolbar.

Step 2. Click **Insert Components** 

on the Assembly toolbar.

Step 3. Select **Propeller Assembly** file and click Open.

Step 4. Place Propeller Assembly as positioned in **Fig. 27**.

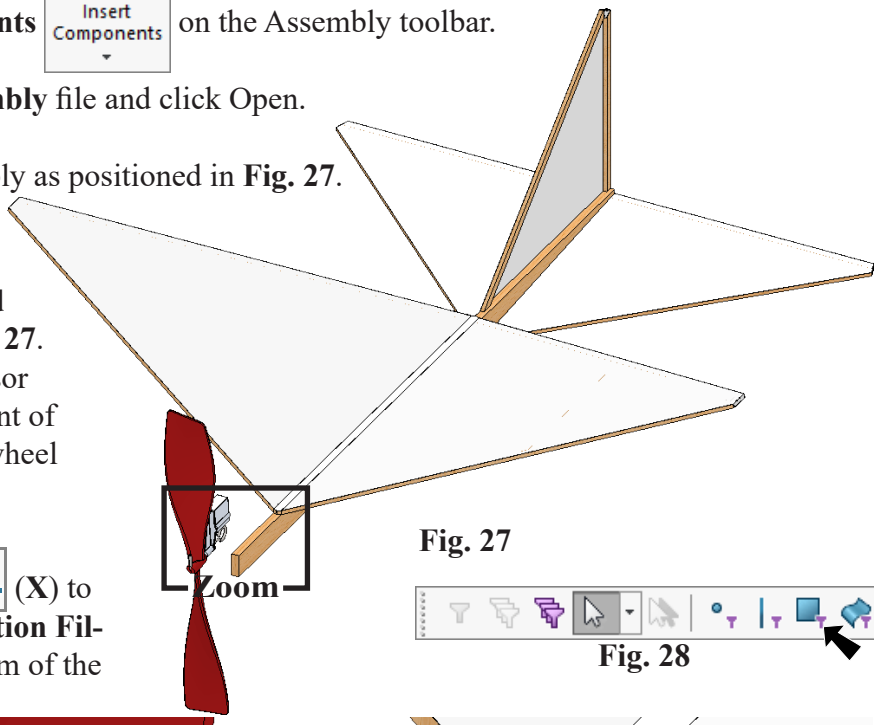


Fig. 27

I. Mate: Socket.

Step 1. Zoom in on **Socket and front of Fuselage**, **Fig. 27**. To zoom, place the cursor over the Socket and front of Fuselage and spin the wheel on mouse back.

Step 2. Click **Filter Faces** (**X**) to **turn OFF** on the **Selection Filter toolbar** at the bottom of the display, **Fig. 28**. If necessary, use **F5** key to display the toolbar.

Fig. 28

Step 3. Click **Mate**

on the Assembly toolbar.

Step 4. Click **bottom front edge of Fuselage**, **Fig. 29**.

Step 5. Rotate view to view **inside rear face of Socket** as shown in **Fig. 30**. To rotate, hold down middle mouse button (wheel) and drag.

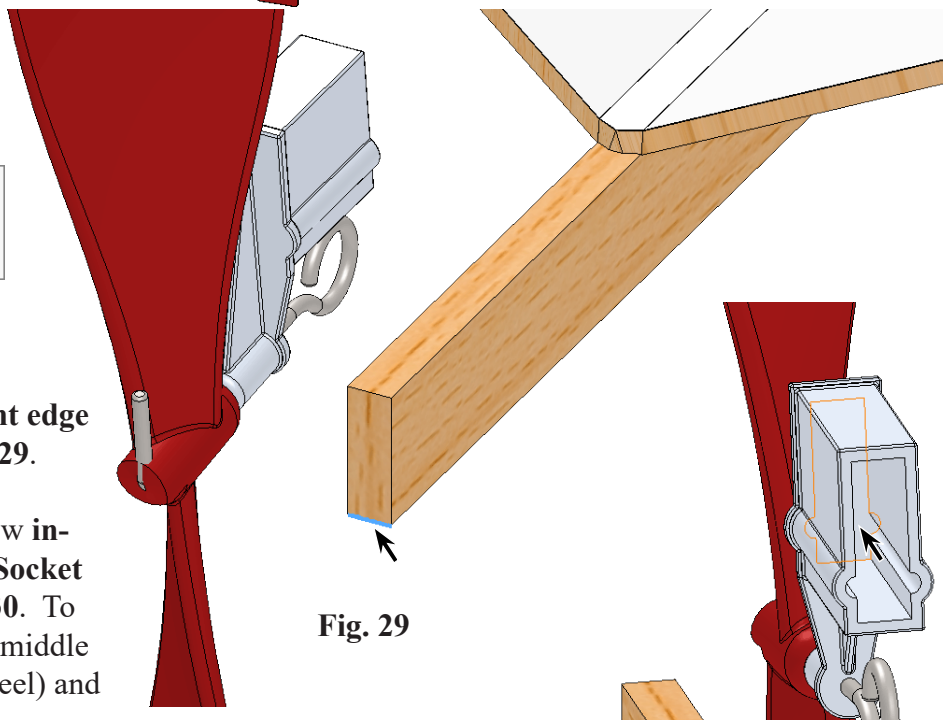


Fig. 29

Step 6. Click **inside rear face of Socket**, **Fig. 30**.

Step 7. Click Add/Finish Mate in Mate pop-up toolbar to add a **Coincident** mate.

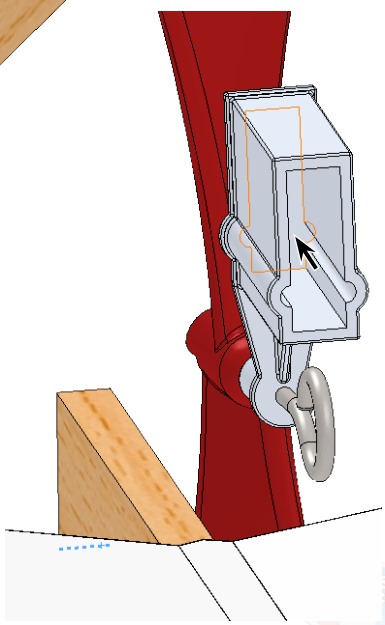


Fig. 30

Step 8. Click **bottom inside face of Socket**, **Fig. 31**.

Step 9. Rotate view to view **bottom face of Fuselage** as shown in **Fig. 32**.

Step 10. Click **bottom face of Fuselage**, **Fig. 32**.

Step 11. Click Add/Finish Mate to add **Co-incident** mate.

Step 12. Click **Trimetric** on the Standard Views toolbar.

Step 13. Expand the flyout Feature Manager design tree and click **Right Plane**, **Fig. 33**.

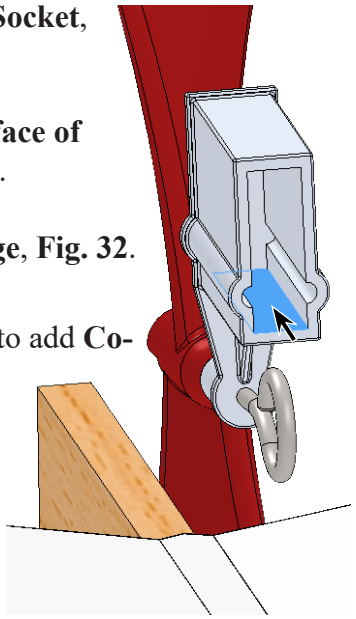


Fig. 31

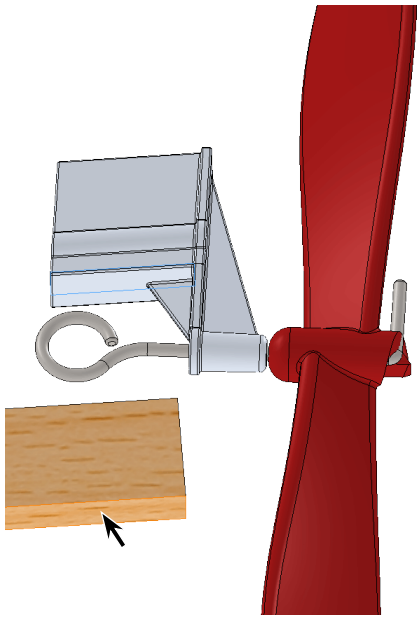


Fig. 32

Step 14. Expand **Propeller Assembly** and click **Right Plane**, **Fig. 33**.

Step 15. Click Add/Finish Mate to add **Coincident** mate.

Step 16. Click OK in the Property Manager.

Step 17. Save. Use **Ctrl-S**.

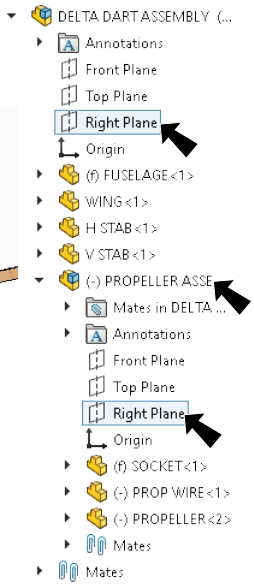


Fig. 33

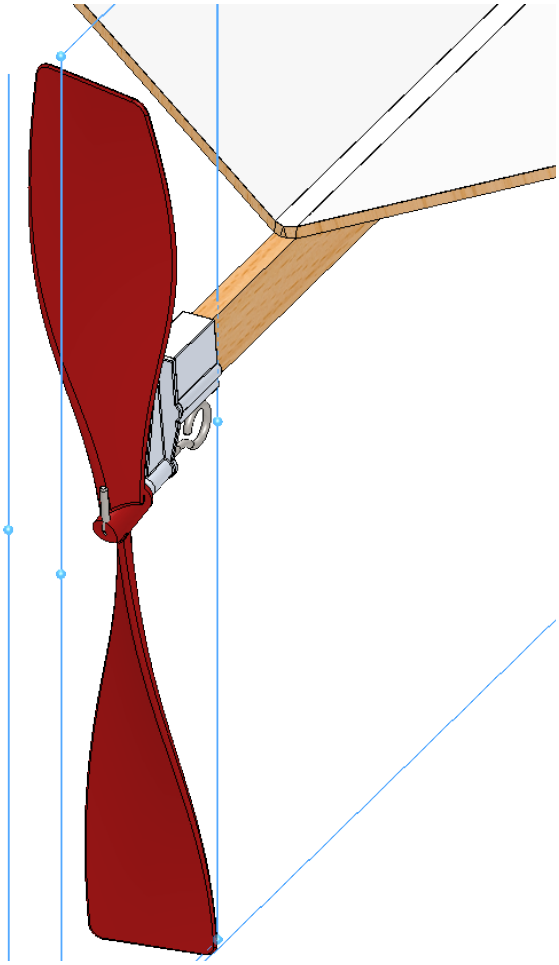


Fig. 34