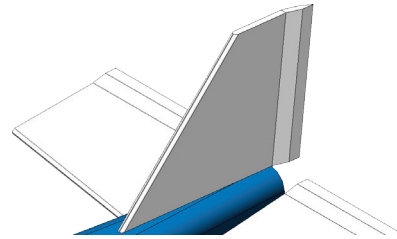




Chapter 12

Airplane Rudder



A. Construction Rectangle.

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

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

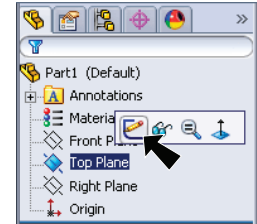




Fig. 1

Step 3. Click **Rectangle**  on the Sketch toolbar.

Step 4. Draw a rectangle starting at the Origin

 and before you move the cursor away from the rectangle, **right click a line** and click **Construction Geometry**  on the Content menu, **Fig. 2**.

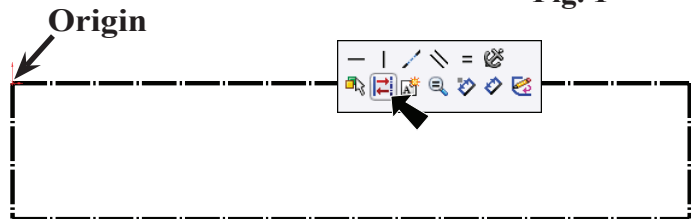



Fig. 2

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

Step 6. Set the dimensions as shown in **Fig. 3**.

Step 7. Click **Zoom to Fit**  (F) on the View toolbar.

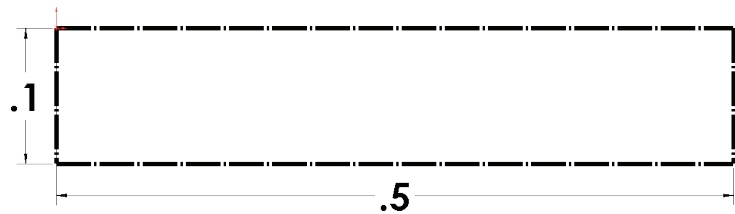


Fig. 3

B. Save as "RUDDER".

Step 1. Click File Menu > Save As.

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

C. Top View Sketch.

Step 1. Click **Line**  (L) on the Sketch toolbar.

Step 2. Draw lines in **Fig. 4**. Draw the bottom end of left side outside the construction rectangle. Snap the lines to midpoint on right side.

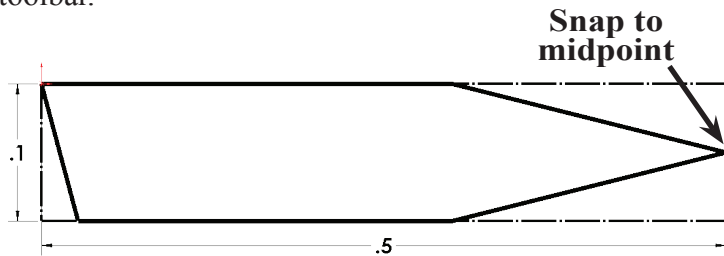


Fig. 4

Step 3. Click **Smart Dimension**  on the Sketch toolbar.

Step 4. Add dimensions as shown in **Fig. 5**. Dimension the angle between left side of construction rectangle and left side line **15 degrees** as shown in **Fig. 5**. To **Smart dimension angle**, click both lines then move the cursor between lines and click. Key-in **15** for the dimension and press ENTER. This is angle of Rudder to V Stab.

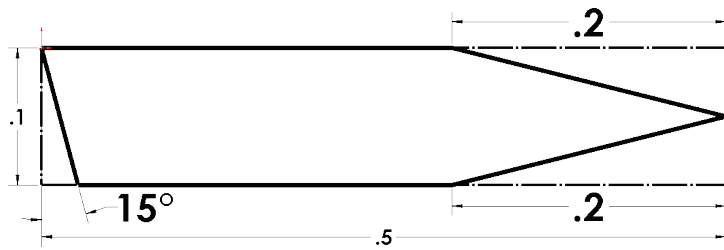
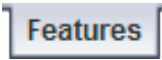


Fig. 5

D. Extrude.

Step 1. Click **Features**  on the Command Manager toolbar.

Step 2. Click **Extruded Boss/Base**  on the Features toolbar.

Step 3. In the Property Manager,

Depth  D1 to 2.5

click OK 

Fig. 6 and **Fig. 7**.

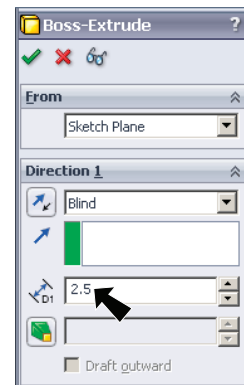


Fig. 6

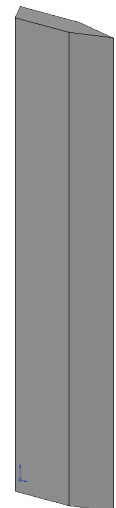


Fig. 7

E. Material PS HI (Polystyrene).

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

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

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

F. Insert Rudder into Assembly.

Step 1. Open your ASSEMBLY file.

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

Step 3. **Browse** and place **RUDDER** as positioned in **Fig. 8**.

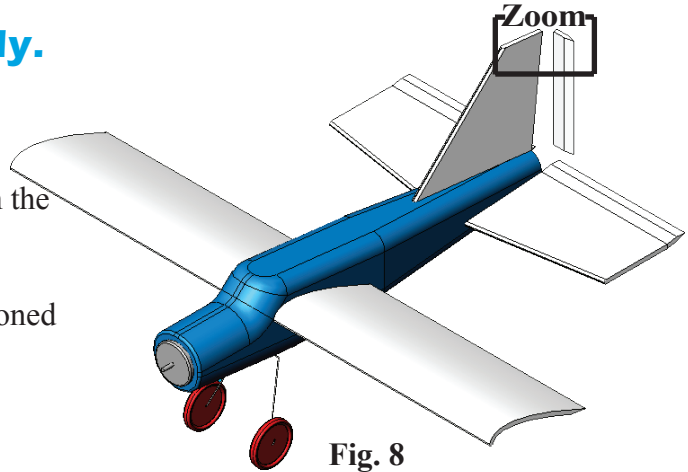


Fig. 8

G. Mate: V Stab and Rudder.

Step 1. Zoom in on the **top end of V stab and Rudder**, **Fig. 8**. To **zoom**, hold down **Shift** key and drag middle mouse button (wheel). To **pan**, hold down **Ctrl** key and drag middle mouse button (wheel).

Step 2. Click **Mate**  on the Assembly toolbar.

Step 3. Click **edge of V Stab** and **edge of Rudder**, **Fig. 9**.

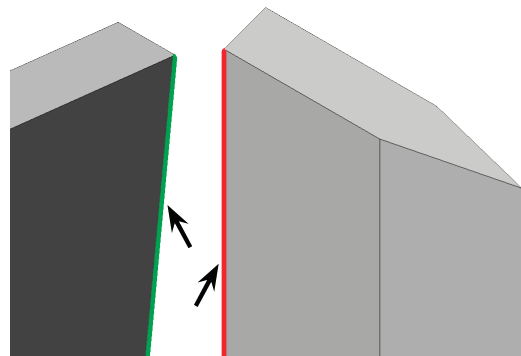


Fig. 9

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

Step 5. Click **top edge V Stab** and **top edge of Rudder**, **Fig. 10**.

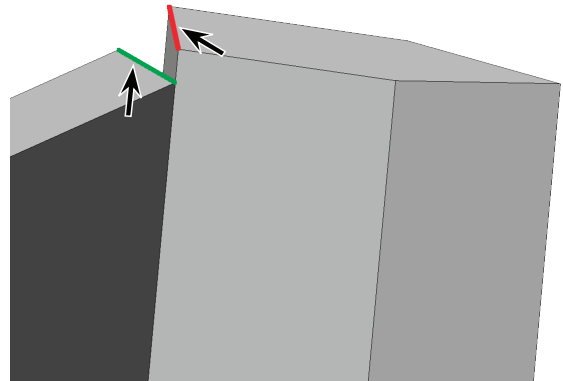


Fig. 10

Step 6. Click **Add/Finish Mate**  in Mate pop-up toolbar to add a **Coincident** mate, **Fig. 11**.

Click **OK**  in the Property Manager.

Step 7. Save. Use **Ctrl-S**.

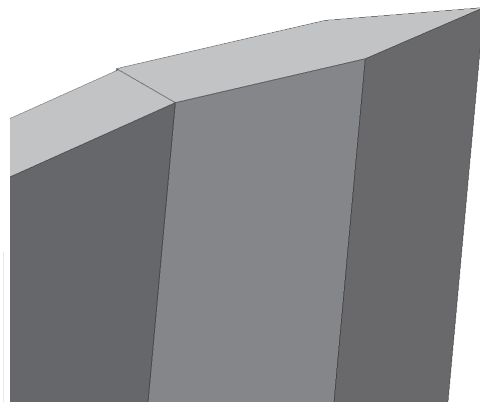
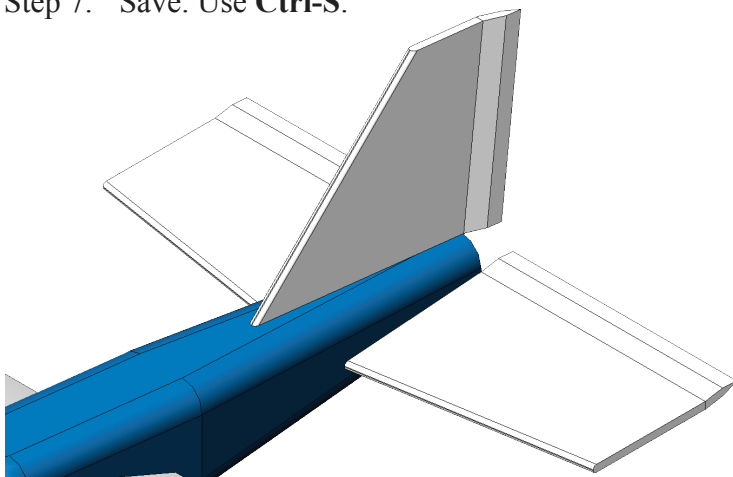


Fig. 11