





# Chapter 14

# Airplane Tail Hook



## A. Construction Rectangle.

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

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

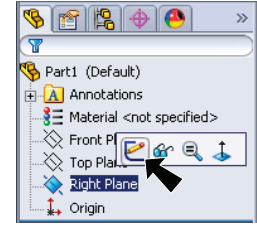






Fig. 1

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**.

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.

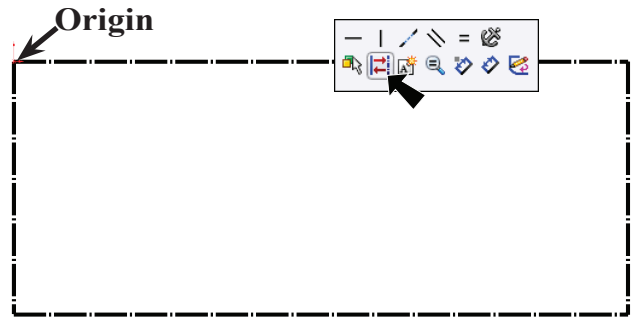


Fig. 2

## B. Save as "TAIL HOOK".

Step 1. Click File Menu > Save As.

Step 2. Key-in **TAIL HOOK** for the file-name and press ENTER.

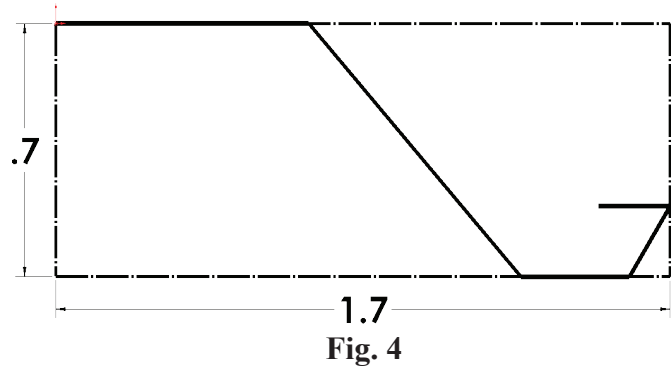



Fig. 3

### C. Sketch Sweep Path.

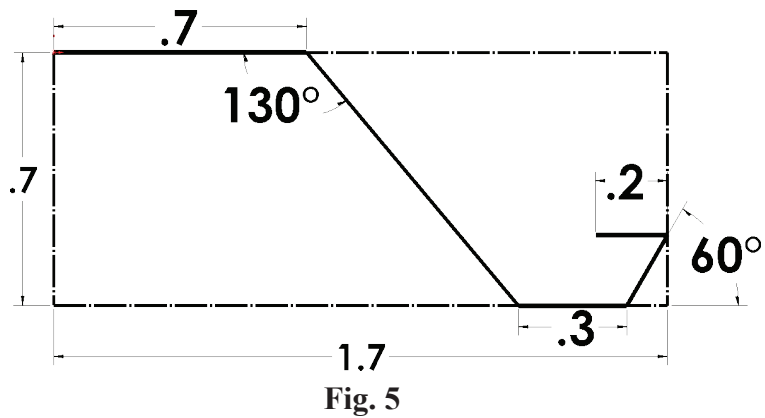
Step 1. Click **Line**  (L) on the Sketch toolbar.

Step 2. Starting at Origin , draw lines in **Fig. 4**.



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

Step 4. Add dimensions as shown in **Fig. 5**.



### D. Sketch Fillet.

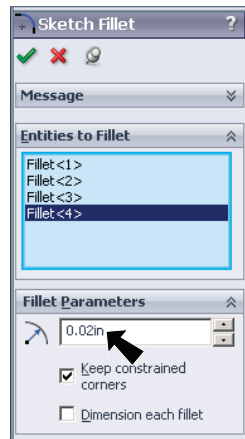
Step 1. Click **Sketch Fillet**  on the Sketch toolbar.


Step 2. In the Property Manager set:

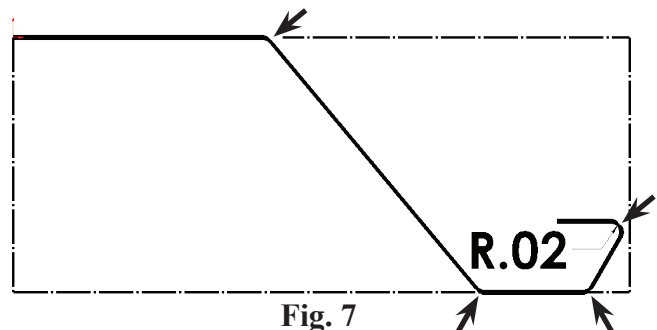
**Radius**  .02,  
**Fig. 6**

click each bend in wire, the **4 corners**, **Fig. 7**

click OK .





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

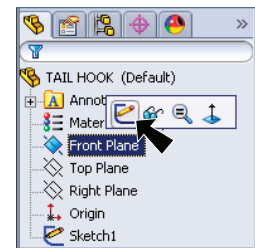


Step 4. Save. Use **Ctrl-S**.

### E. Sketch Sweep Profile.

Step 1. Click **Isometric**  on the Standard Views toolbar. (Ctrl-7)

Step 2. Click **Front Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 8**.




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

Step 4. Draw a circle starting at end of line in Sketch1 (Origin), **Fig. 9**.

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

Step 6. Dimension circle **diameter .02**, **Fig. 10**.

Step 7. Click **Exit Sketch**  on the Sketch toolbar.

Step 8. Save. Use **Ctrl-S**.

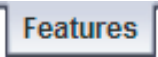
Start circle at end of line

**Fig. 9**

.02

**Fig. 10**


## F. Sweep.

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

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

Step 3. In the Swept Boss/Base Property Manager set:

**Profile**  field, **Fig. 11**  
click **circle** in Sketch2,  
**Fig. 12**

**Path**  field,  
click any geometry in  
**Sketch2 (lines or fillets)**,  
**Fig. 12**

click OK .



**Fig. 11**

Profile (circle)

Path

Profile (circle)

**Fig. 12**



**Fig. 13**

Step 4. Save. Use **Ctrl-S**.

## G. Material Steel 304.

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

Step 2. Expand **Steel** in the material tree and select **Steel AISI 304**. Click **Apply** and **Close**.

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

## H. Insert Tail Hook into Assembly.

- Step 1. Open your ASSEMBLY file.
- Step 2. Rotate view to view **bottom of Fuselage** as shown in **Fig. 14**. Hold down middle mouse button (wheel) and drag.

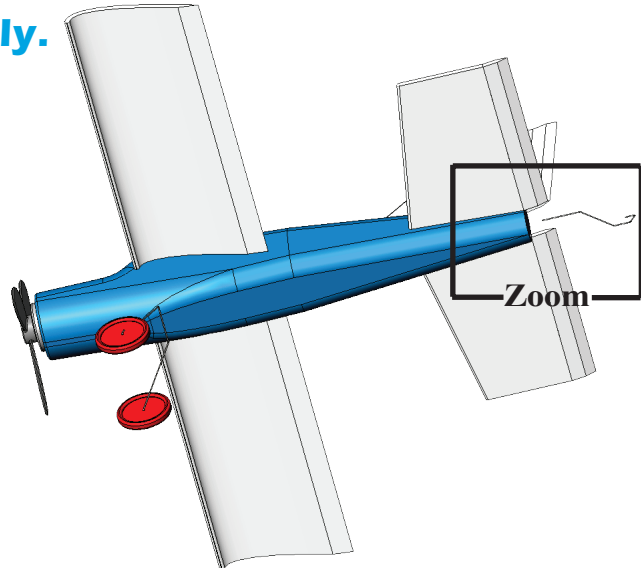



Fig. 14

- Step 3. Click **Insert Components**  on the Assembly toolbar.

- Step 4. **Browse** and place **TAIL HOOK** as positioned in **Fig. 14**.

## I. Mate: Tail Hook.

- Step 1. Zoom in around the **Tail Hook and rear of Fuselage**, **Fig. 14**. To **zoom**, hold down **Shift** key and drag with middle mouse button (wheel). To **pan**, hold down **Ctrl** key and drag with middle mouse button (wheel).

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

- Step 3. Expand the Design Tree (click +) in the top left corner of the drawing area, **Fig. 15**.

- Step 4. Click **Right Plane** , **Fig. 15**.

- Step 5. Expand **TAIL HOOK** and click **Right Plane** , **Fig. 15**.

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

- Step 7. Click the **cylindrical top horizontal face of the Tail Hook** and **bottom face of Fuselage**, **Fig. 16**. **DO NOT CLICK OK.**

- Step 8. Click **Right**  on the View toolbar. (**Ctrl-4**)

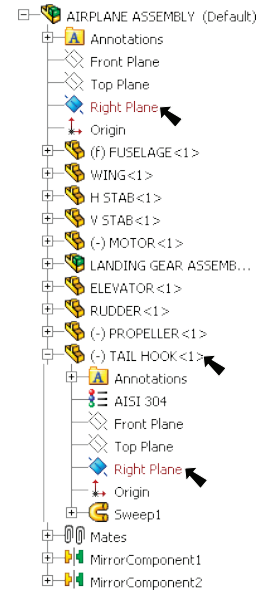


Fig. 15

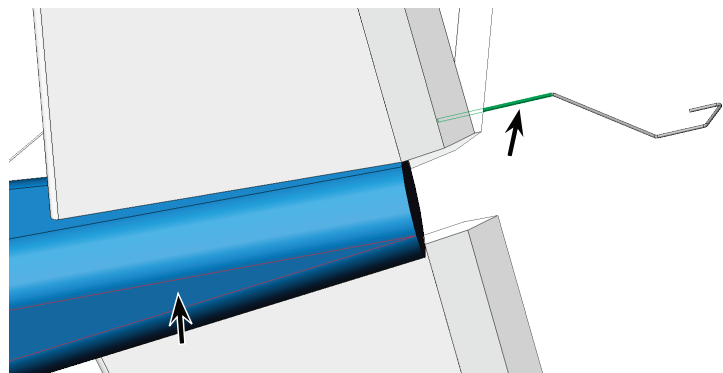
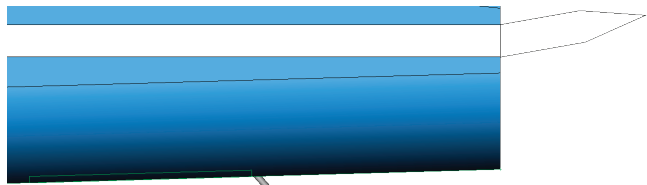



Fig. 16

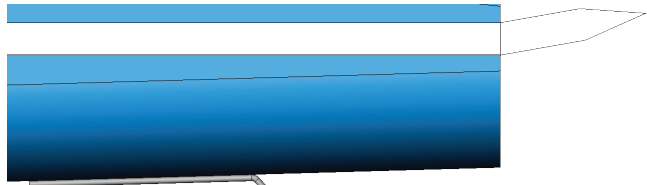
Step 9. Zoom in around the **Tail Hook and rear of Fuselage**, **Fig. 17**. To **zoom**, hold down **Shift key** and drag with middle mouse button (wheel).



Step 10. Slide the Wire Hook onto the Fuselage, **Fig. 17**.

Step 11. The Tail Hook should be **inside bottom of Fuselage**, **Fig. 17** and **Fig. 19**. If in opposite direction, click **Flip Mate**

**Alignment**  in the Mate pop-up, **Fig. 18**. If Tail Hook is outside fuselage, Flow Sim will not detect fluid volume and rebuild error will occur (??).




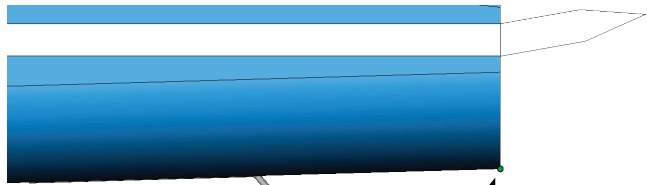
Step 12. Click Add/Finish Mate  to add the **Tangent** mate.



Step 13. Click **bottom Vertex of Fuselage** and **cylindrical face of rear section of Tail Hook**, **Fig. 20**.

Fig. 19

Step 14. Click Add/Finish Mate  to add **Coincident** mate.



Step 15. Click OK  in the Property Manager.

Step 16. Save. Use **Ctrl-S**.

Fig. 20

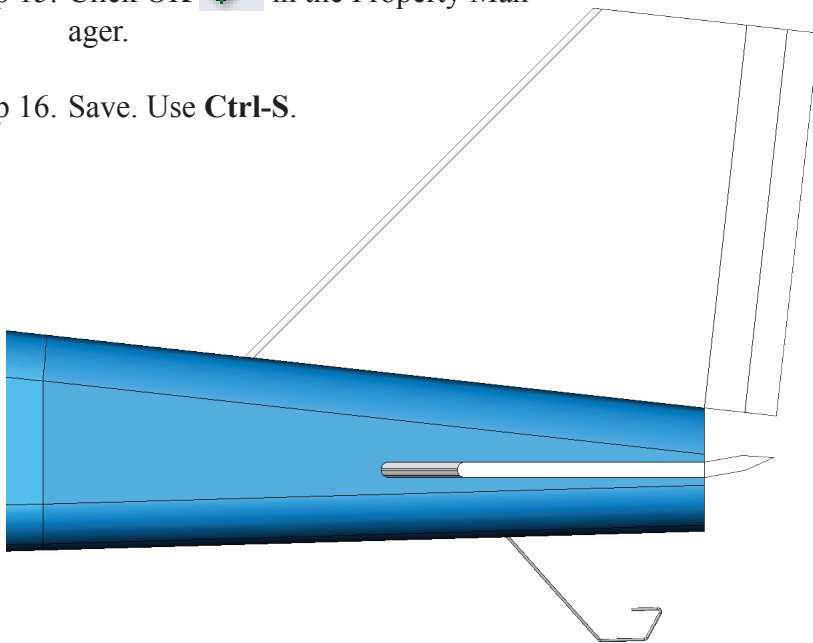


Fig. 21