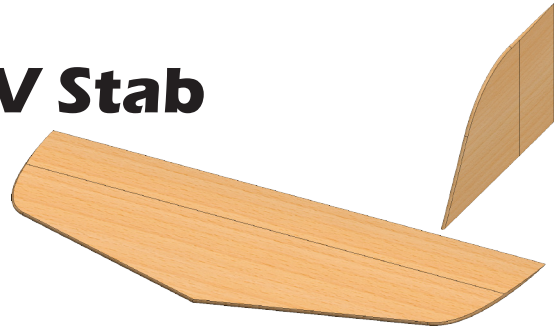


# H Stab and V Stab

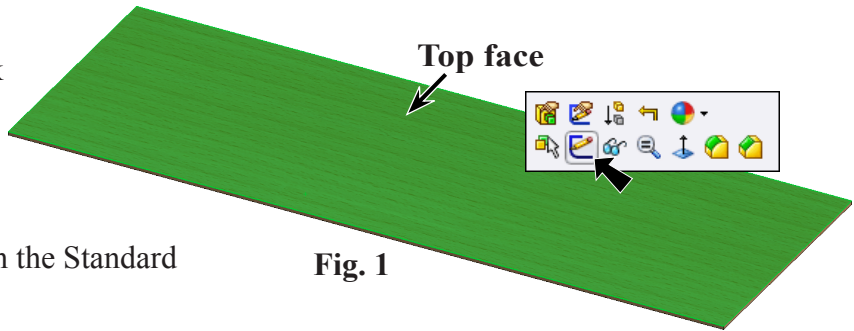



## A. Open and Save as "H STAB".

- Step 1. Open your STABILIZER BLANK file.
- Step 2. Click File Menu > Save As.
- Step 3. Key-in H STAB for the filename and press ENTER.

## B. Sketch H Stab.


- Step 1. Click the **top face** of the Stabilizer Blank and click **Sketch**  on the Content menu, **Fig. 1**.



- Step 2. Click **Normal To**  on the Standard Views toolbar. (Ctrl-8)

## C. Lines.

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

- Step 2. Sketch the **3 Lines** in **Fig. 2**. Starting from the top left corner, draw a horizontal part way across the Stabilizer Blank. **Right click** and click End-chain from menu. Draw vertical line from the Midpoint  of line part way down and draw line back up at angle.

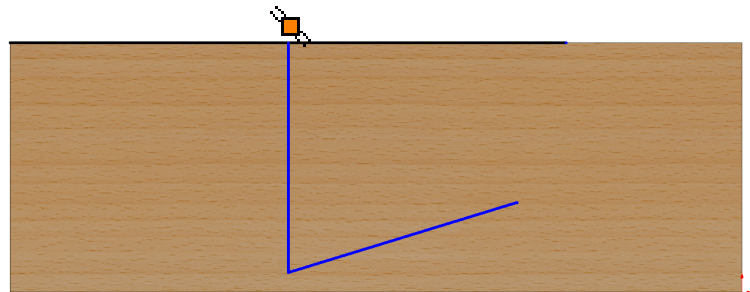



Fig. 2

- Step 3. **Right click drawing and click Select** from menu to unselect Line tool.

- Step 4. Click **vertical line** and click **Construction Geometry**  on the Content menu, **Fig. 3**.

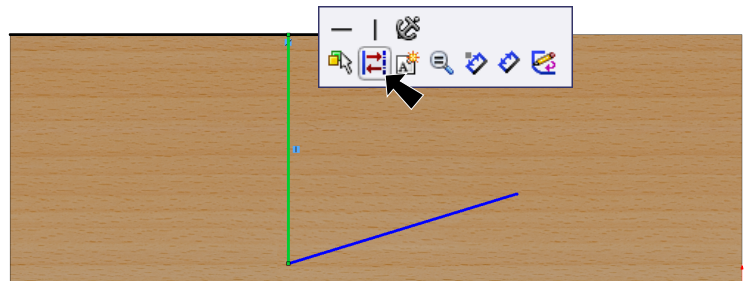


Fig. 3

Step 5. Click **Smart Dimension**



(S) on the Sketch toolbar.

Step 6. Add the Dimensions as shown in **Fig. 4**.

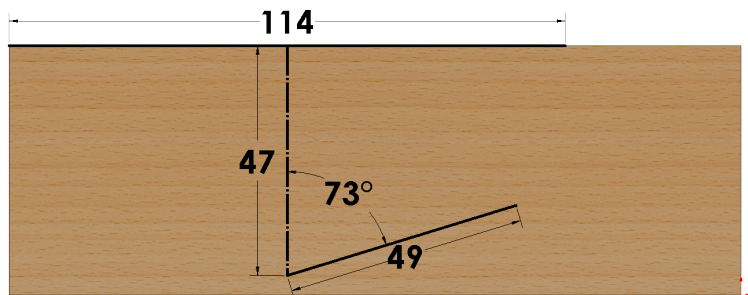


Fig. 4

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

## D. 2 Point Spline.

Step 1. Click **Spline**  (S) on the Sketch toolbar.

Step 2. Draw a **2 Point Spline** from endpoint of angled line to right endpoint of horizontal line, **Fig. 5**. Press Escape to end spline.

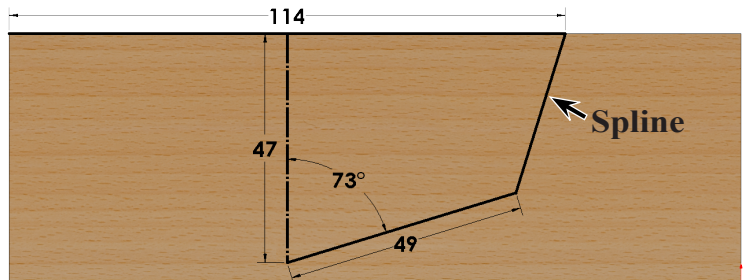




Fig. 5

Step 3. **Ctrl click line and spline** to select both. Release Ctrl key and click **Make Tangent**  on the Content menu, **Fig. 6**.

Step 4. Click **Smart Dimension**  (S) on the Sketch toolbar.

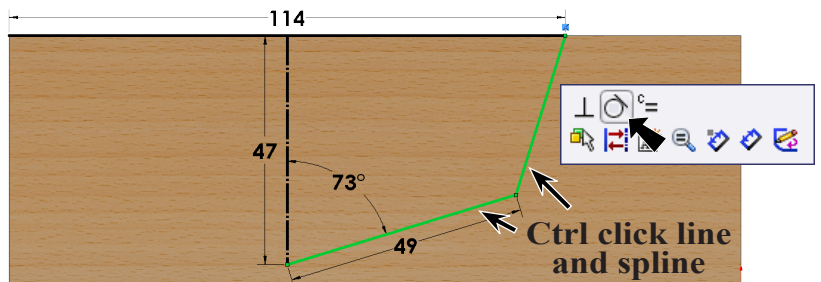



Fig. 6

Step 5. Dimension Spline Point 1 **Tangent Weighting 2 19**, **Fig. 7** and **Fig. 8**. To dimension Tangent Weighting, click the **Circular Spline handle** , then move the cursor out away from spline and click. Key-in 19 and press ENTER.

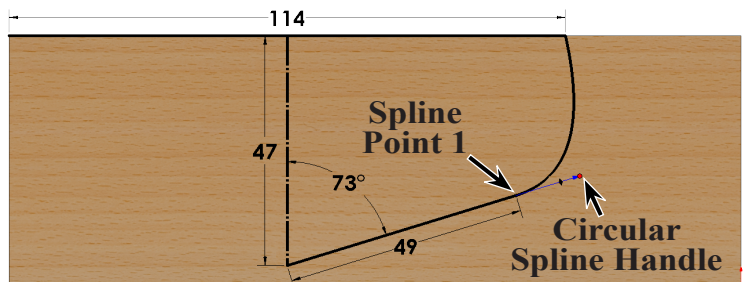


Fig. 7

Step 6. Save. Use **Ctrl-S**.

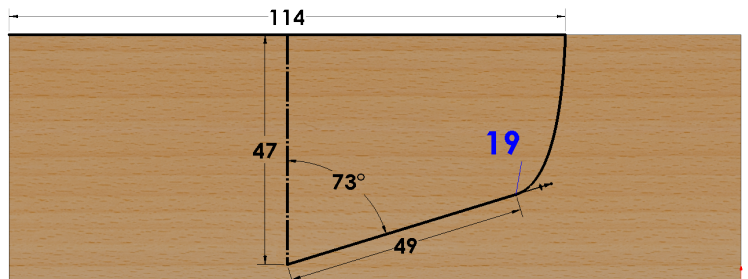


Fig. 8

## E. Mirror Entities.

Step 1. **Right click drawing and click Select** from menu to unselect Smart Dimension.

Step 2. **Drag selection around all entities except horizontal line, Fig. 9.** To drag selection, click above and to left of sketch and drag down and to right to drag all.

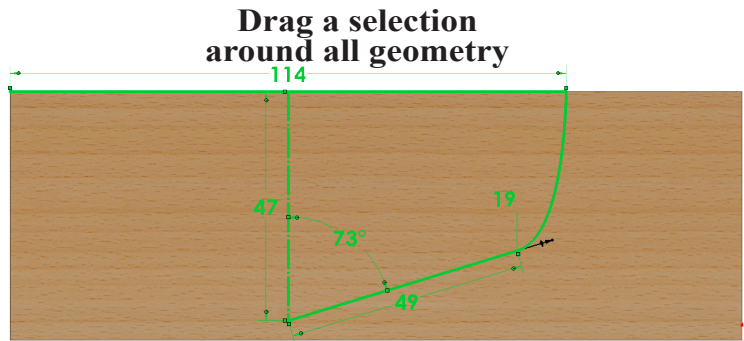



Fig. 9


Step 3. Click **Mirror Entities**  on the Sketch toolbar.

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

## F. Lines for VSTAB.

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

Step 2. Draws the 4 Lines in Fig. 10.

Step 3. Click **Smart Dimension**  (S) on the Sketch toolbar.

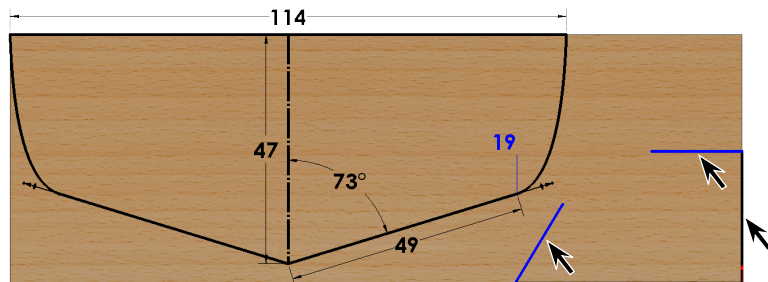


Fig. 10

Step 4. Add the Dimensions as shown in Fig. 11.

Step 5. Save. Use **Ctrl-S**.

## G. Tangent Arc.

Step 1. Click **Tangent Arc**  in the **Arc flyout**  on the Sketch toolbar.

Step 2. Draw an arc between the Position 1 and Position 2 in Fig. 12. Draw along path as shown.

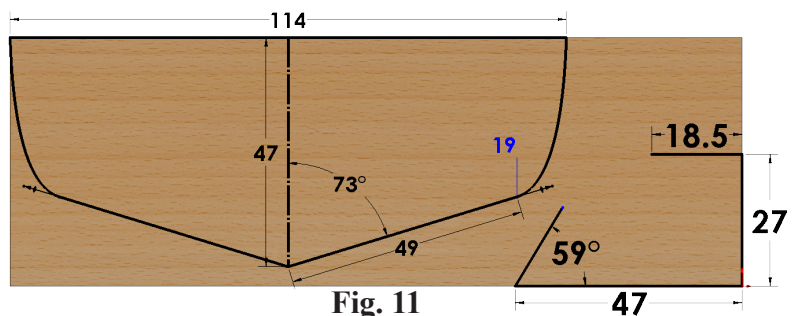


Fig. 11

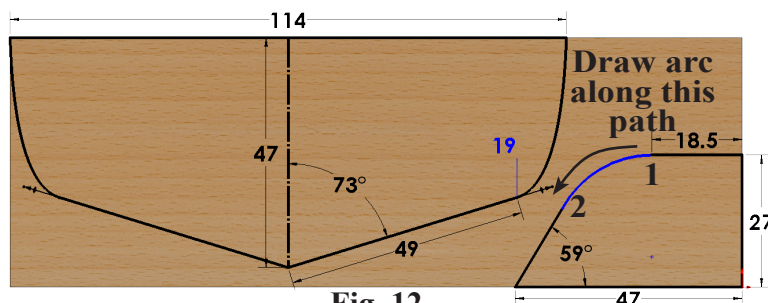

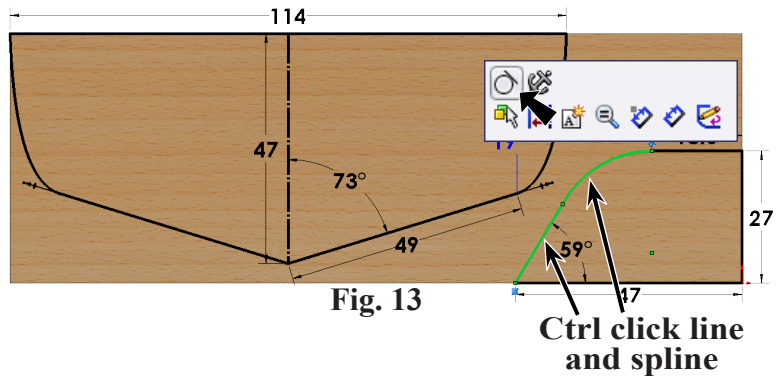


Fig. 12

Step 3. **Right click drawing and click Select** from menu to unselect Arc tool.

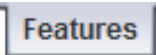
Step 4. **Ctrl click the arc and angled line** to select both. Release Ctrl key and click **Make**

**Tangent**  on the Content menu, **Fig. 13**.



Step 5. Save. Use **Ctrl-S**.

## H. Extruded Cut H STAB.

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

Step 2. Click **Extruded Cut**  on the Features toolbar.

Step 3. In the Cut-Extrude Property Manager set:

under Direction1, **Fig. 14**

End Condition **Through All**

check **Flip side to cut**

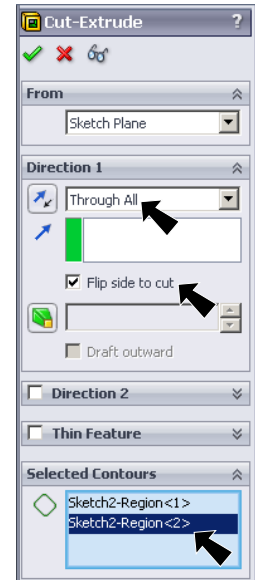
uncheck **Direction 2**

under Selected Contours

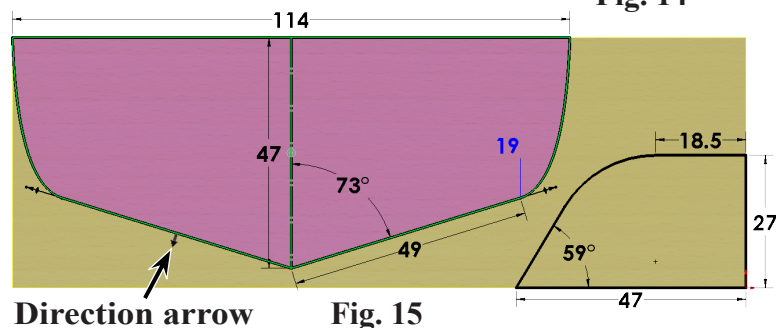
click **both H Stab shaped contour** in graphics area, **Fig. 15**.

The Direction arrow should point towards area to be cut away, **Fig. 15**. If arrow is pointing in wrong direction, uncheck **Flip side to cut**, **Fig. 14**.

click OK .



**Fig. 14**



**Direction arrow** **Fig. 15**

## I. Fillet Full Round Left Side.


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

Step 2. Click **Fillet**  on the Features toolbar.

Step 3. In the Fillet Property Manager,  
select **Manual**, **Fig. 16**  
under **Fillet Type**  
select **Full round fillet**

click in the **Face Set 1**  box  
click **top face**, **Fig. 17**

click in the **Center Face Set 1**  box, **Fig. 16**  
click **both front faces on left side**, **Fig. 17**

click in the **Face Set 2**  box, **Fig. 16**  
rotate view to view **bottom face**, hold down middle mouse button  
(wheel) and drag to rotate view, **Fig. 18**

click **bottom face**, **Fig. 18**  
click **OK** , **Fig. 19**.

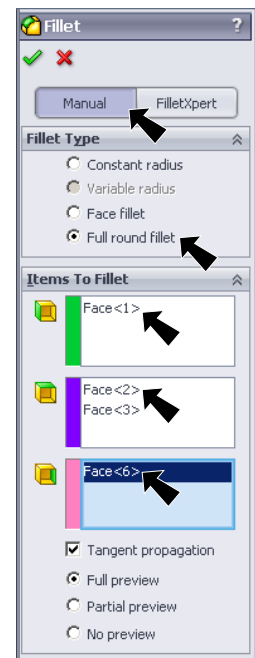


Fig. 16

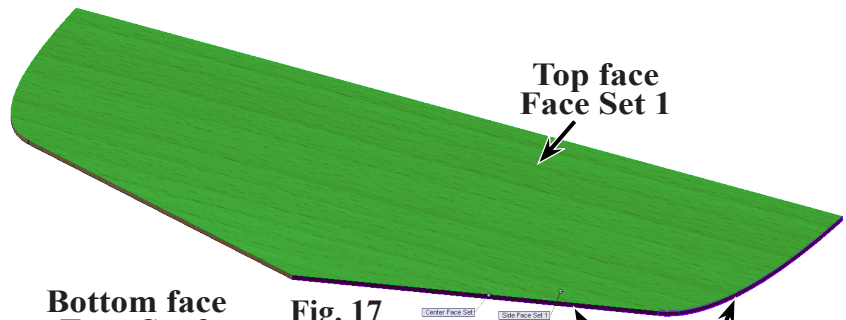


Fig. 17

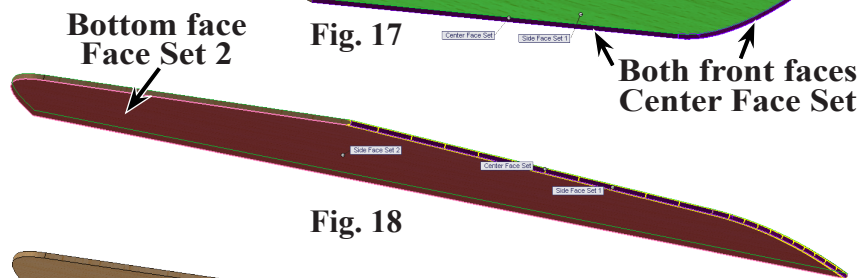


Fig. 18

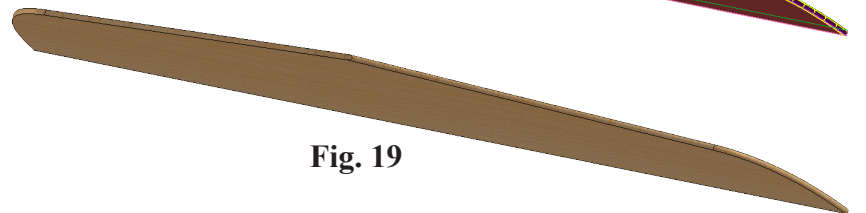


Fig. 19

## J. Fillet Full Round Right Side.


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

Step 2. In the Fillet Property Manager, under **Fillet Type**, Fig. 20 select **Full round fillet**

click in the **Face Set 1**  box  
click **bottom face**, Fig. 21

click in the **Center Face Set 1**  box, Fig. 20  
click **both front faces on right side**, Fig. 22

click in the **Face Set 2**  box, Fig. 20  
**uncheck Tangent propagation**

click **Previous View**  on the Standard Views toolbar (Ctrl-Shift-Z), Fig. 23

click **top face**, Fig. 22

click **OK** , Fig. 23.

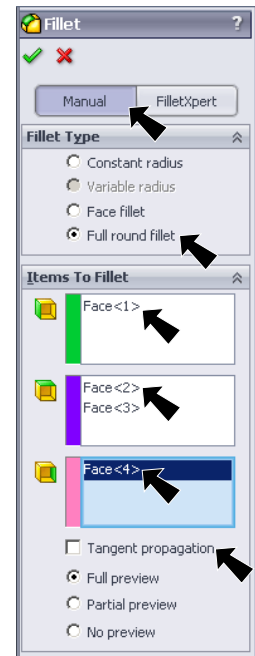


Fig. 20

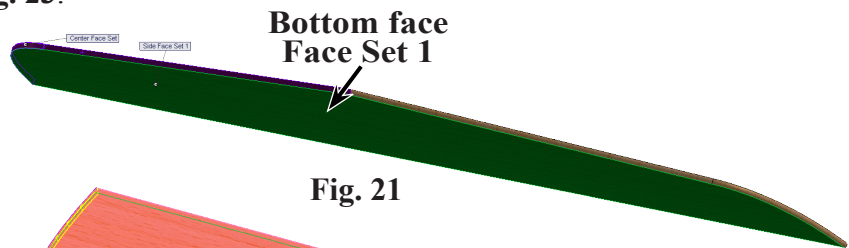


Fig. 21

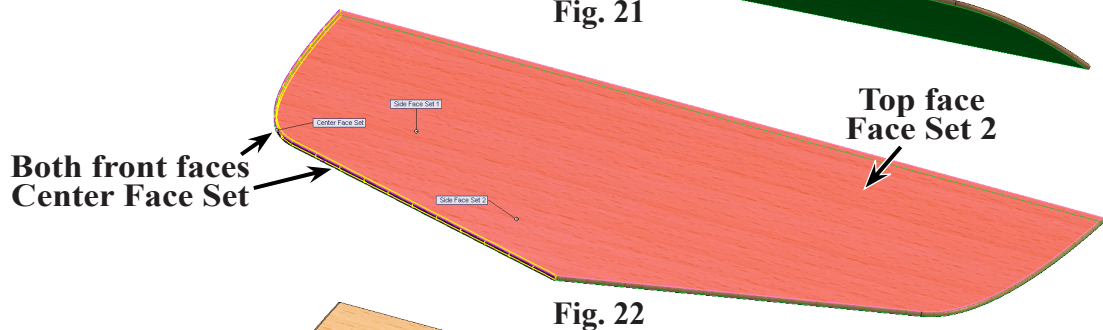


Fig. 22

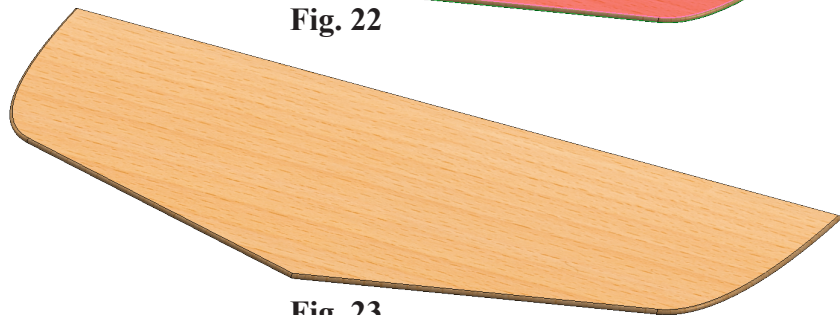


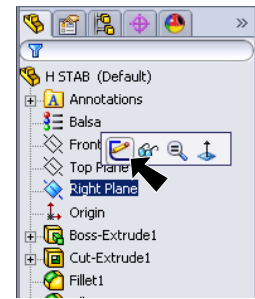



Fig. 23

## K. Air Foil Cut H Stab.

Step 1. Click **Right Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 24**.



**Fig. 24**

Step 2. Click **Normal To**  on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Click **Centerline**  in the **Line flyout**  (S) on the Sketch toolbar.

Step 4. Draw a centerline part way across the sketch, **Fig. 25**. Start from **Midpoint**  of rear edge.




**Fig. 25**

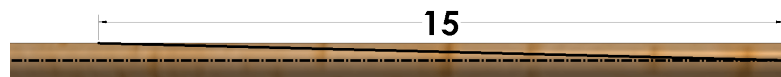
Step 5. Click **Spline**  (S) on the Sketch toolbar.

Step 6. Draw a **2 Point Spline** from right endpoint of centerline to top edge of Wing, **Fig. 26**. Press Escape to end spline.





**Fig. 26**

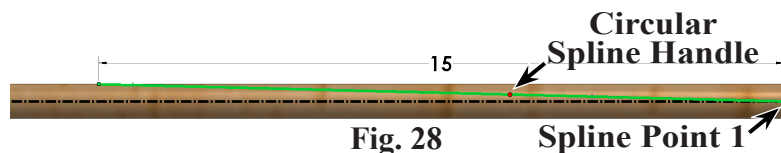
Step 7. Click **Smart Dimension**  (S) on the Sketch toolbar.



**Fig. 27**

Step 8. Add the **15** dimension as shown in **Fig. 27**.


Step 9. Click the Spline to select it and locate the **Circular Spline handle**  (small gray dot) of **Spline Point 1**, **Fig. 28**. To find the Circular spline handle, start your cursor at the bottom Spline Point, Spline Point 1 and move cursor up along the spline. The Spline Point the Circular Spline handle will highlight as a red circle .



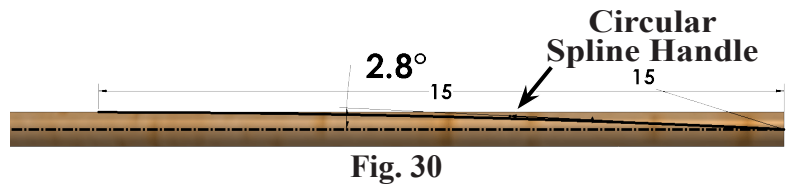
**Fig. 28**



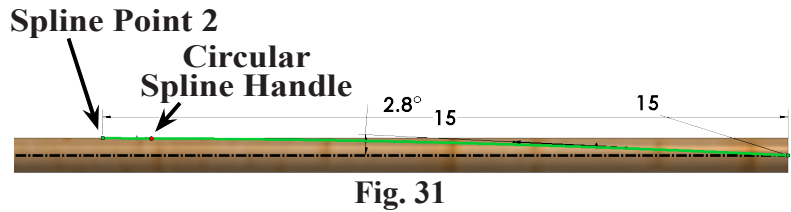
**Fig. 29**

Step 10. Dimension Spline Point 1 **Tangent Weighting2 15**, **Fig. 29**. To dimension Tangent Weighting, click the **Circular Spline handle** , then move the cursor out away from spline and click. Key-in 15 and press ENTER.

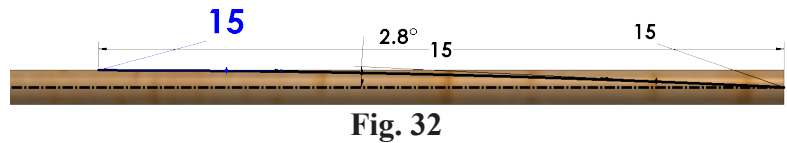
Step 11. Dimension Spline Point 1 **Tangent Radial Direction 2.8 degrees, Fig. 30.** To dimension Tangent Radial Direction, click the **Circular Spline handle** and center-line, then move cursor between and click. Key-in 2.8 and press ENTER.



Step 12. Click Spline to display the Circular Spline handle and locate the **Circular Spline handle** of **Spline Point 2, Fig. 31.**

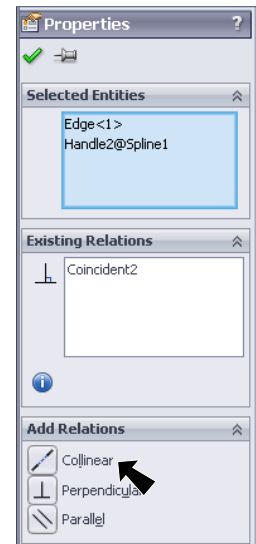
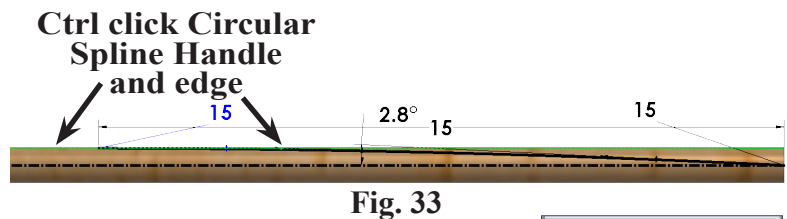


Step 13. Dimension Spline Point 2 **Tangent Weighting1 15, Fig. 32.** To dimension Tangent Weighting, click the **Circular Spline handle**, then move the cursor out away from spline and click. Key-in 15 and press ENTER.



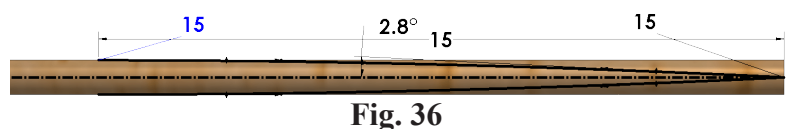
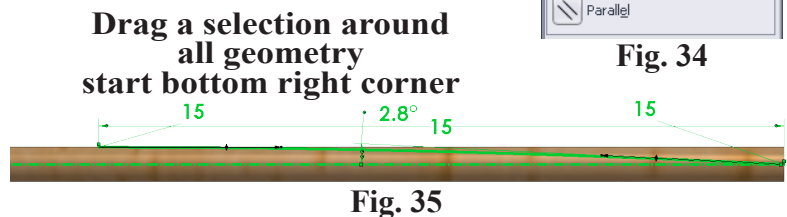
Step 14. **Right click drawing and click Select from menu to unselect Smart Dimension.**

Step 15. **Ctrl click the Circular Spline handle** of **Spline Point 2** and the **top edge of Wing** to select both, **Fig. 33.** Click **Make Collinear** on the Property Manager, **Fig. 34.**

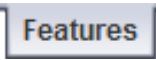


Step 16. **Drag selection around the sketch** to select all entities, **Fig. 35.** To drag selection, click **below** and to right of sketch and drag up and to left to drag around all.

Step 17. Click **Mirror Entities** on the Sketch toolbar.

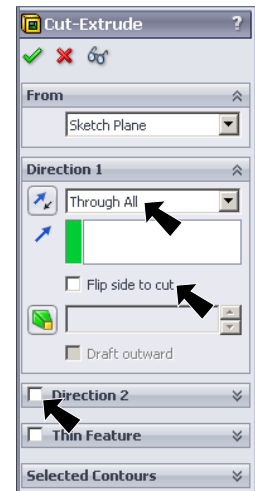


Step 18. Click **Trimetric**  on the Standard Views toolbar.


Step 19. Click **Features**  on the Command Manager toolbar.

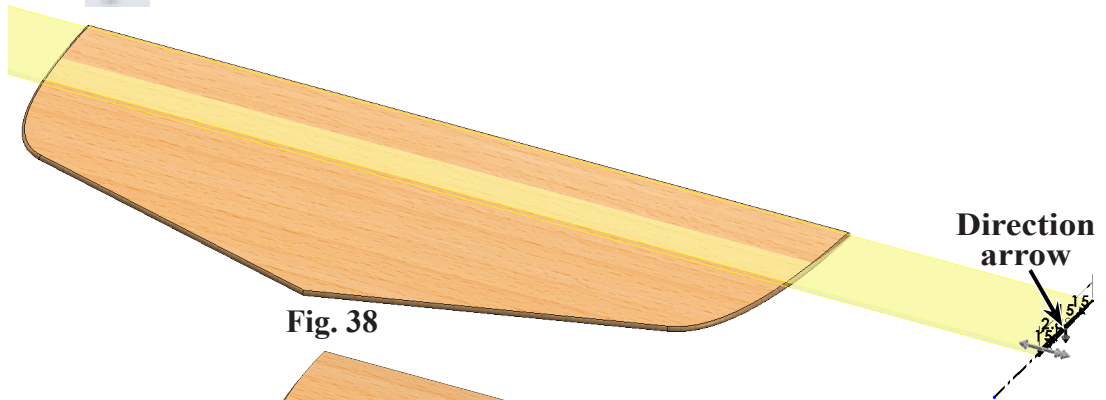
Step 20. Click **Extruded Cut**  on the Features toolbar.

Step 21. In the Cut-Extrude Property Manager:  
under Direction1, **Fig. 37**  
End Condition **Through All**  
uncheck **Flip side to cut**  
uncheck **Direction 2**.



**Fig. 37**

The Direction arrow should point towards area to be cut away, **Fig. 38**.  
If arrow is pointing in wrong direction, check **Flip side to cut**, **Fig. 37**.  
click OK .



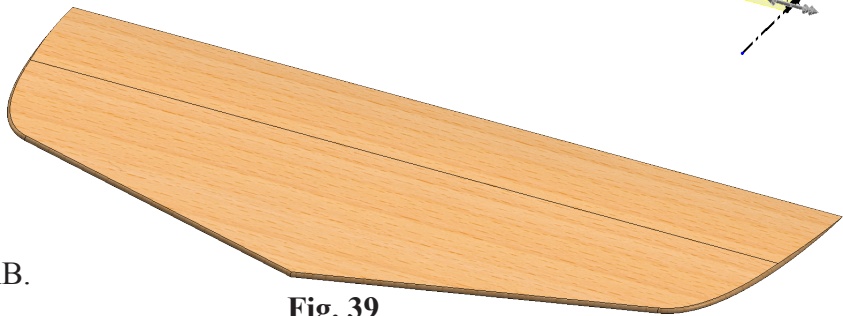
**Fig. 38**

## L. Save, then Save As "V STAB".

Step 1. Save. **Very important to save** at this time.  
Use **Ctrl-S** to save H STAB.

Step 2. Click File Menu > Save As.

Step 3. Key-in **V STAB** for the filename and press ENTER.  
Next, we change contour for V STAB.



**Fig. 39**

## M. Change Cut Extrude1 Contour.

Step 1. Click **Cut-Extrude1** in the Feature Manager and click **Edit Feature**



in the menu, Fig. 40.

Step 2. In the Property Manager:

**right click** in the Select Contours box and click **Clear Selections** from menu, Fig. 41

click **V Stab contour** in graphics area, Fig. 42

click OK

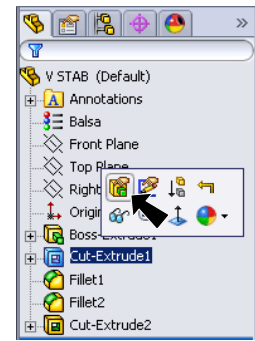


Fig. 40

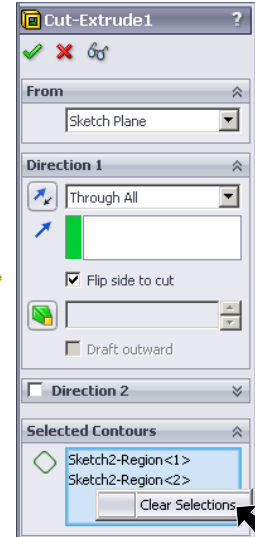


Fig. 41

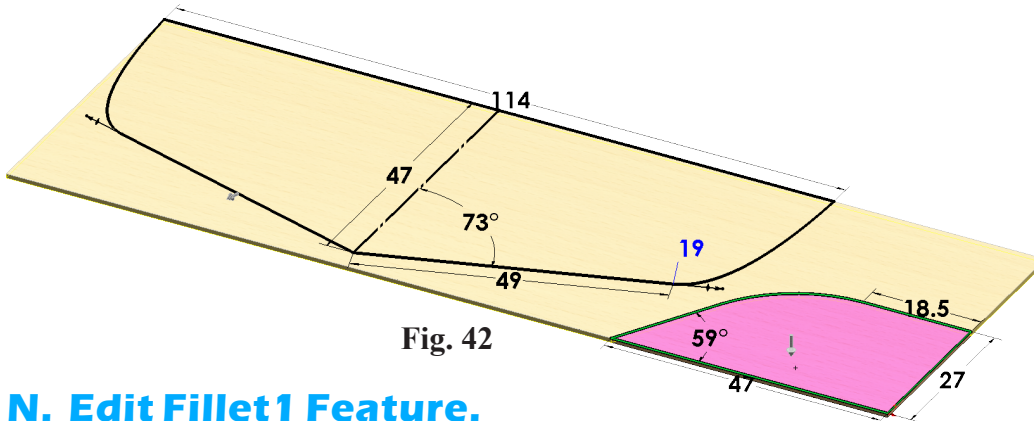


Fig. 42

## N. Edit Fillet1 Feature.

Step 1. Click **Fillet1** in the Feature Manager and click

**Edit Feature** in the menu, Fig. 43.

Step 2. In the Property Manager:

**right click** in the **Center Face Set 1** box and click **Clear Selections**, Fig. 44

rotate view to view **front face**, hold down middle mouse button (wheel) and drag to rotate view, Fig. 45

click **front face**, Fig. 45

click OK , Fig. 46.

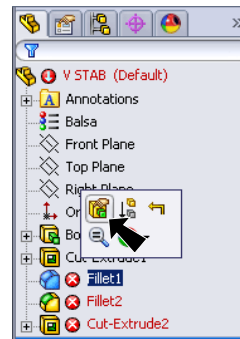


Fig. 43

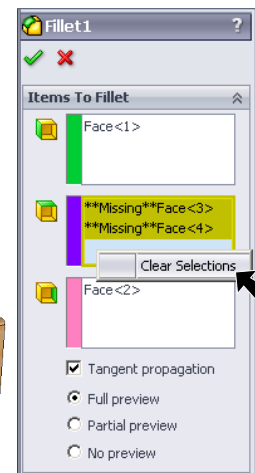


Fig. 44

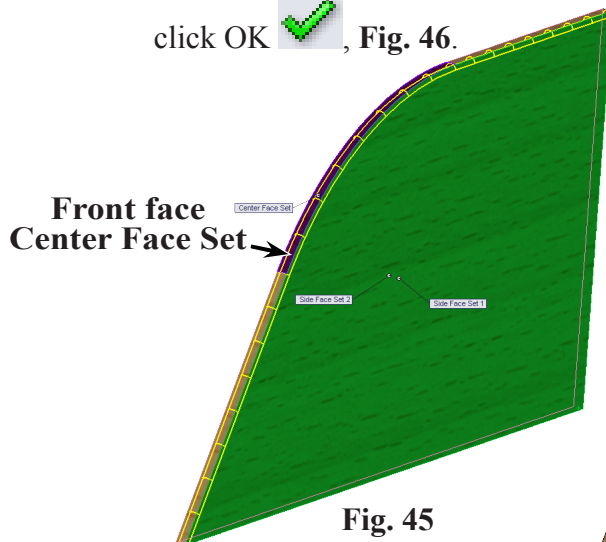


Fig. 45



Fig. 46

## O. Delete 2 Features Errors and Sketch.

Step 1. Delete **Fillet2**, **Cut-Extrude2** and **Sketch 3** in the Feature Manager. To delete, expand Cut-Extrude2, Click all three and press Delete key on keyboard, **Fig. 47**.

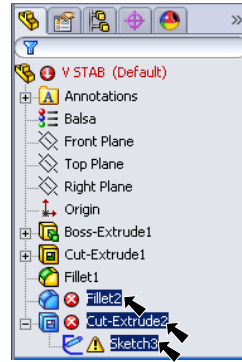


Fig. 47

## P. Air Foil Cut V Stab.

Step 1. Click **Front Plane**  in the Feature Manager and click **Sketch**  from the Content toolbar, **Fig. 48**.

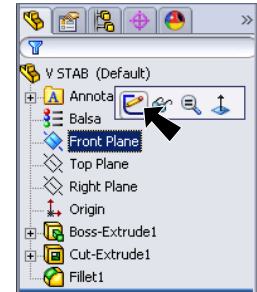



Fig. 48

Step 2. Click **Normal To**  on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Click **Centerline**  in the **Line flyout**  (S) on the Sketch toolbar.

Step 4. Draw a centerline across the sketch, **Fig. 49**. Start from Midpoint  of rear edge.



Fig. 49

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

Step 6. Draw a **2 Point Spline** from right endpoint of centerline to top edge of Wing, **Fig. 50**. Press Escape to end spline.

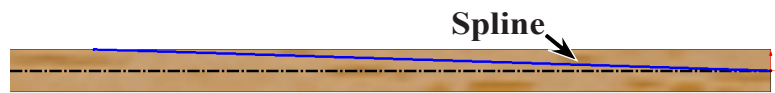



Fig. 50

Step 7. Click **Smart Dimension**  (S) on the Sketch toolbar. **Fig. 29**

Step 8. Add the **12** dimension as shown in **Fig. 51**.



Fig. 51

Step 9. Click the Spline and locate the **Circular Spline handle**  (small gray dot) of **Spline Point 1**, **Fig. 28**. Dimension Spline Point 1 **Tangent Weighting2 15**, **Fig. 52**.

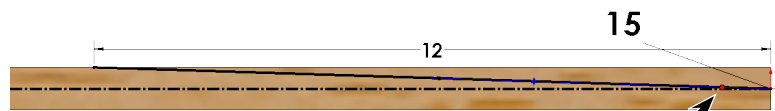



Fig. 52

Step 10. Dimension Spline Point 1 **Tangent Radial Direction 2.8 degrees**, **Fig. 53**. To dimension Tangent Radial Direction, click the **Circular Spline handle**  and centerline.

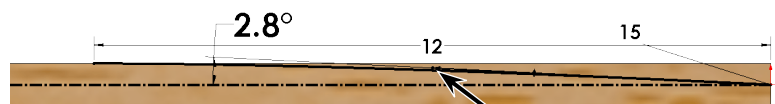


Fig. 53

Step 11. Click Spline and locate the **Circular Spline handle** of **Spline Point 2**. Dimension Spline Point 2 **Tangent Weighting1 15**, Fig. 54.

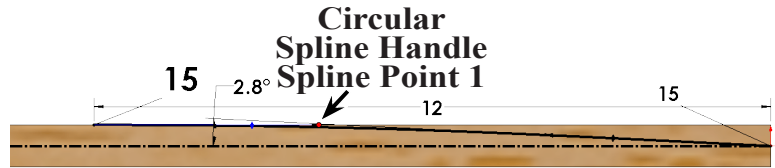


Fig. 54

Step 12. **Right click drawing and click Select** from menu to unselect Smart Dimension.

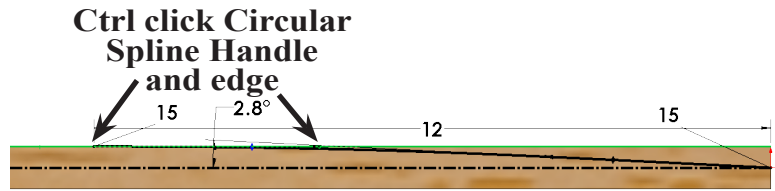


Fig. 55

Step 13. **Ctrl click the Circular Spline handle** of **Spline Point 2** and the **top edge of Wing** to select both, Fig. 55. Click **Make Collinear** on the Property Manager, Fig. 56.

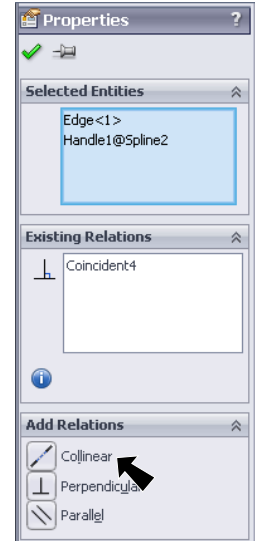


Fig. 56

Step 14. **Drag selection around the sketch** to select all entities, Fig. 57. To drag selection, click **below** and to right of sketch and drag up and to left to drag around all.

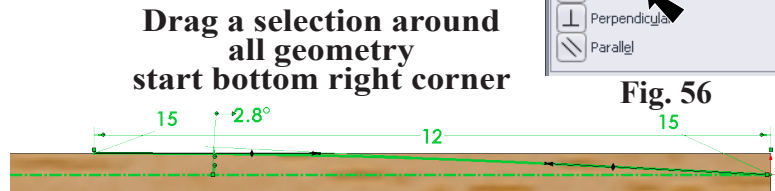


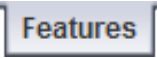
Fig. 57

Step 15. Click **Mirror Entities** on the Sketch toolbar.



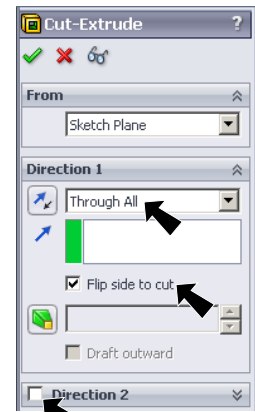
Fig. 58

Step 16. Rotate view to view as shown in **Fig. 60**, hold down middle mouse button (wheel) and drag to rotate view.

Step 17. Click **Features**  on the Command Manager toolbar.

Step 18. Click **Extruded Cut**  on the Features toolbar.

Step 19. In the Cut-Extrude Property Manager:  
under Direction1, **Fig. 59**  
End Condition **Through All**  
check **Flip side to cut**  
uncheck **Direction 2**.



**Fig. 59**

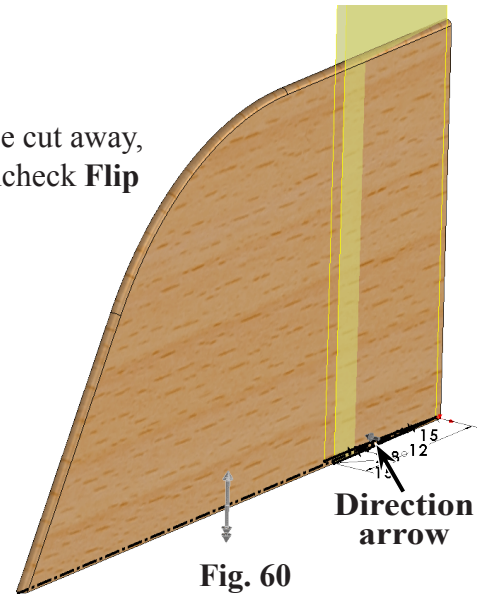
The Direction arrow should point towards area to be cut away, **Fig. 60**. If arrow is pointing in wrong direction, uncheck **Flip side to cut**, **Fig. 59**.

click OK .

Step 20. Save. Use **Ctrl-S**.



**Fig. 61**



**Fig. 60**