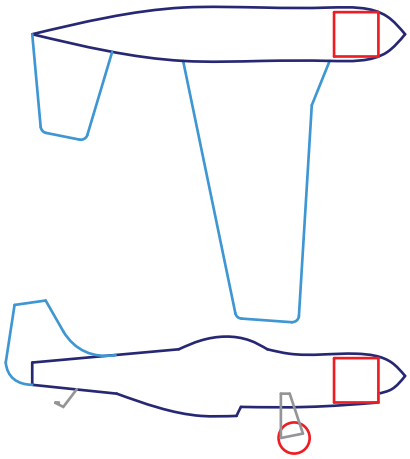
P-51 Mustang



A. Create Rectangle.

Step 1. If necessary start a new Mastercam file, click New on the Quick Access Toolbar QAT (**Ctrl-N**). **Units inches.**

Step 2. On the Wireframe tab Wireframe click **Rectangle** Rectangle.

Step 3. In the Rectangle function panel:
under Dimensions, **Fig. 1**
Width 9
Height 1.8 and press ENTER
Press **O key** on keyboard to select AutoCursor Origin override
Click OK .

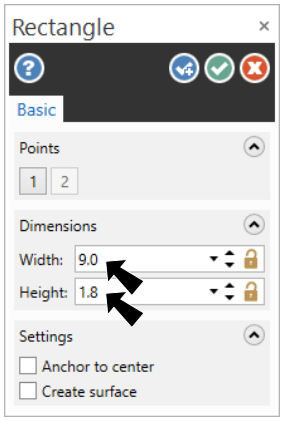


Fig. 1

Step 4. **Right click** the graphics window and click Fit **(Alt-F1)**.

B. Save As "P-51"

Step 1. Click **Save As** **(Ctrl-Shift-S)** on the Quick Access Toolbar QAT.

Step 2. Key-in **P-51** for the filename and press ENTER.

Fig. 2

C. Set Grid and Snap .2.

Step 1. On the View tab View click **Show Grid** Show Grid and **Snap to Grid** Snap to Grid.

Step 2. Click the **Dialog Box Launcher** **(Alt-G)**, **Fig. 3**.

Step 3. In the Grid Settings dialog box:
under Spacing, **Fig. 4**.
X and Y Spacing .1
Click OK .

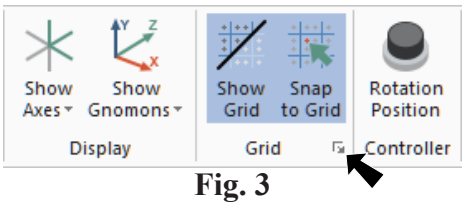


Fig. 3

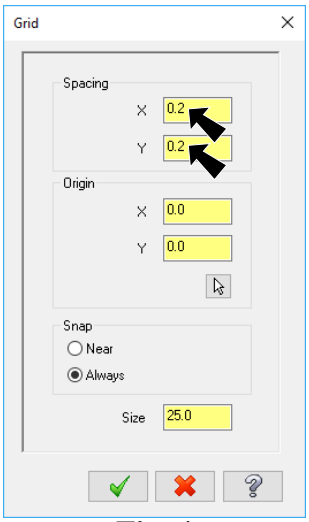
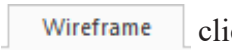
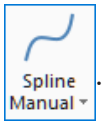


Fig. 4

D. Sketch Splines for Fuselage in Side View.

Step 1. On the Wireframe tab 

click **Spline Manual** 

.

Step 2. In the Spline Manual function panel:
Sketch the 3 point spline, **Fig. 5**.
Use tracking in Status Bar to view coordinates.
Press ENTER to end spline.
You can also use FastPoint to key-in coordinates.
To you FastPoint, key-in coordinates and press ENTER twice.

Step 3. Continue sketching splines in **Figures 7 through 10.** Remember, click points in **each** Figure, then press ENTER**. Repeat for each Figure.**

Click OK  when done.

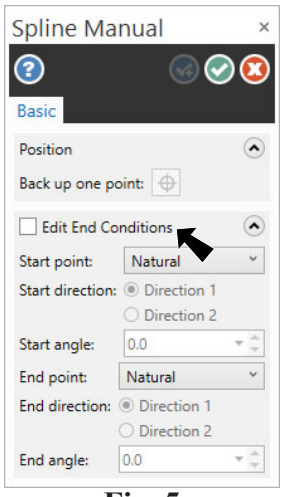


Fig. 5

Fig. 6

Fig. 7

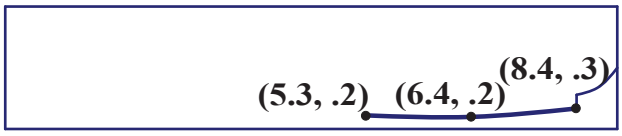


Fig. 8

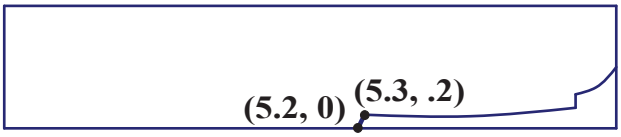


Fig. 9

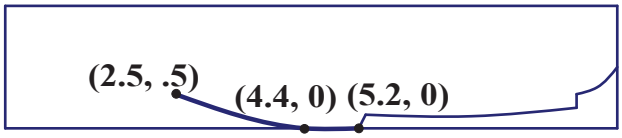
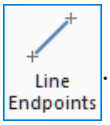


Fig. 10

E. Sketch Line For Fuselage In Side View.

Step 1. On the Wireframe tab 

click **Line Endpoints** 

.

Step 2. In the Line Endpoints function panel:
under Type, **Fig. 11**.
select **Multi-line**
Sketch lines between the 4 points, **Fig. 12**
Use tracking in Status Bar to view coordinates
Click OK  when done.

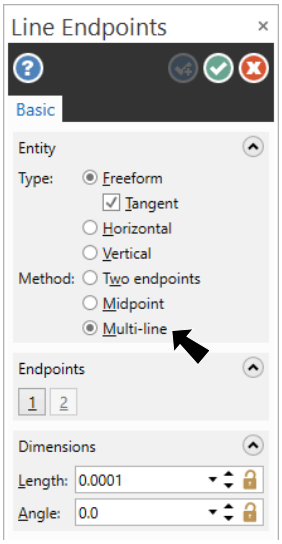


Fig. 11

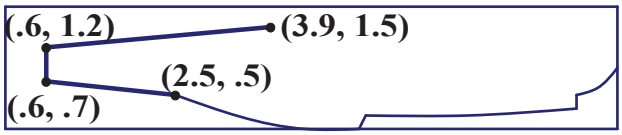
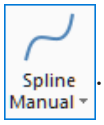


Fig. 12

F. Finish Splines For Fuselage.

Step 1. On the Wireframe tab 

click **Spline Manual** 

.

Step 2. In the Spline Manual function panel:
Sketch splines in **Fig. 13** and **Fig. 14**.
Press ENTER to end spline
Click OK  when done.

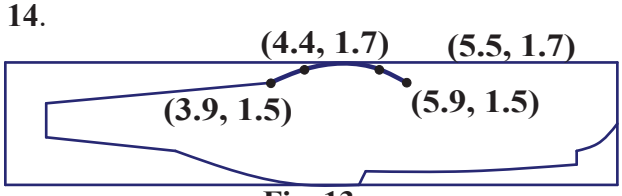


Fig. 13

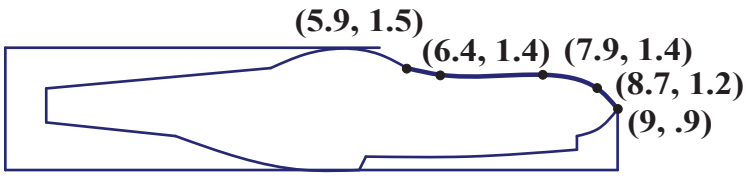


Fig. 14

G. Create a Rectangle for Fuselage in Top View.

Step 1. On the Wireframe tab click **Rectangle** .

Step 2. In the Rectangle function panel:
under Dimensions, **Fig. 15**.
Width 9
Height 1.2 and press ENTER

Press **spacebar** to activate Fast Point
Key-in **0, 8** **and** press ENTER **twice**
Click OK .

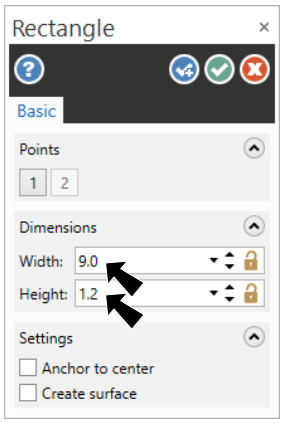


Fig. 15

Step 3. **Right click** the graphics window and click **Fit** (**Alt-F1**).

H. Sketch Spline For Fuselage In Top View.

Step 1. On the Wireframe tab click **Spline Manual** .

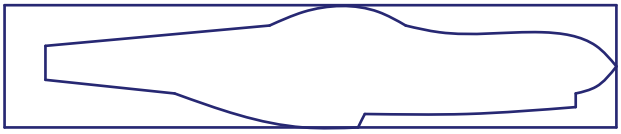


Fig. 16

Step 2. In the Spline Manual function panel:
Sketch spline using points in **Fig. 17**.
Click OK when done.

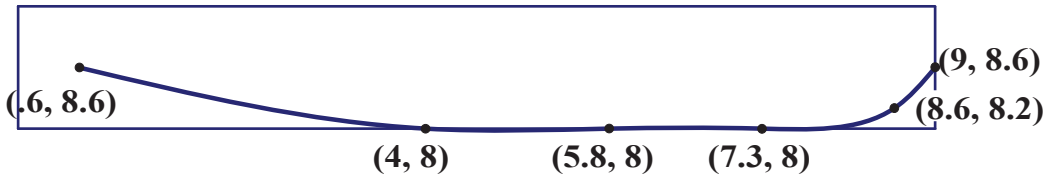
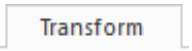


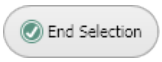
Fig. 17

I. Mirror Fuselage Spline.

Step 1. On the Transform tab 

click **Mirror** 

.

Step 2. Click **spline** and click **End Selection** 

(ENTER), Fig. 18.

Step 3. In the Mirror function panel set:
under Method, **Fig. 19**
select **Copy**
under Axis
click Select **Y axis** 
click **endpoint of spline**, **Fig. 18.**
Click OK  .

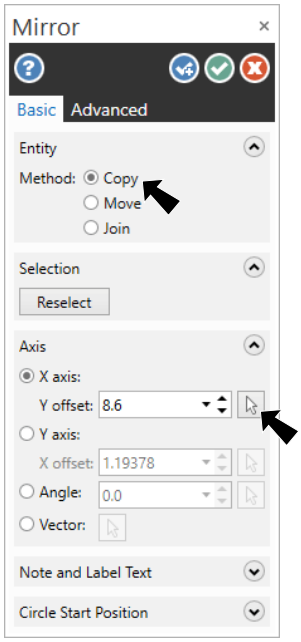


Fig. 19

Step 4. **Right click** the graphics window and click **Clear Colors**  .

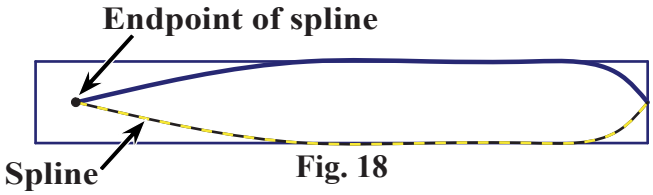


Fig. 18

J. Sketch Lines For Wing In Top View.

Step 1. Sketch wing **blue**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select the **4th blue**, **Fig. 20**.

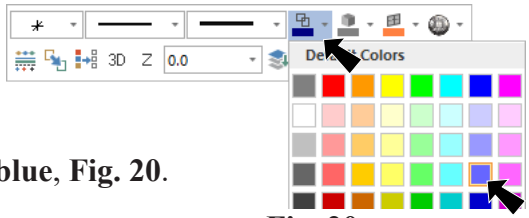
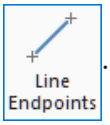


Fig. 20

Step 2. On the Wireframe tab 

click **Line Endpoints** 

.

Step 3. In the Line Endpoints function panel:
select **Multi-line**
Sketch lines between the 5 points in **Fig. 21**.
Use the tracking in Status Bar to view coordinates
Click OK  when done.

Step 4. Save  **(Ctrl-S)**.

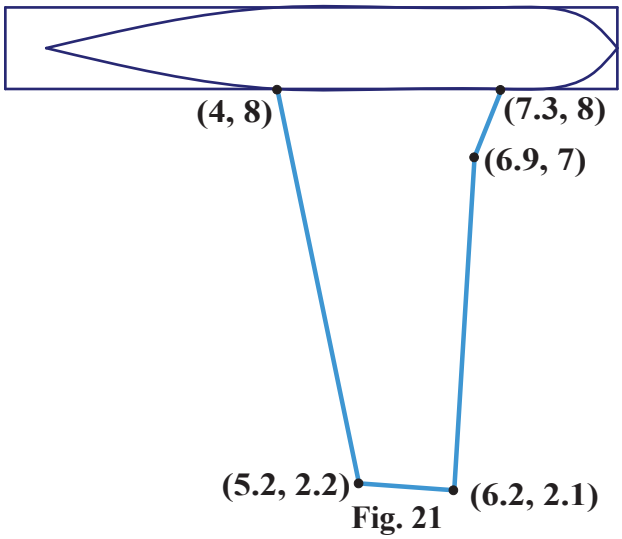


Fig. 21

K. Horizontal Stabilizer.

Step 1. Zoom-in on rear end of fuselage in Top View. Use **F1** and make a zoom window, **Fig. 22**.

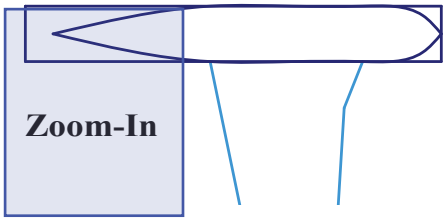
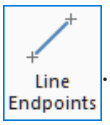


Fig. 22

Step 2. On the Wireframe tab | Wireframe | click **Line Endpoints** 

.

Step 3. In the Line Endpoints function panel:
select **Multi-line**
Sketch the 3 lines, **Fig. 23**.
Click OK when done.

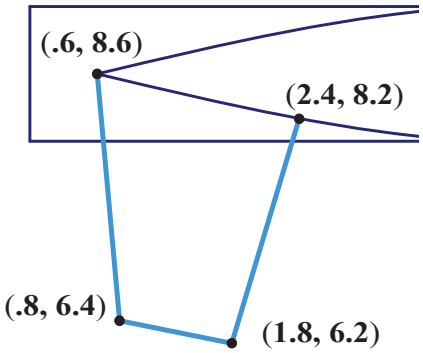


Fig. 23

Step 4. Save (**Ctrl-S**).

L. Fillet Corners.

Step 1. **Fit** (Alt-F1).

Step 2. On the Wireframe tab | Wireframe | click **Fillet Entities** 

.

Step 3. In the Fillet Entities function panel:
under Radius, **Fig. 24**
Radius .15
Click Position 1 and Position 2 at corner of Wind and H Stab, **Fig. 25**.
Click **OK and Create New Operation** or press ENTER.
Add fillets to the 3 other corners.
Click OK when done.

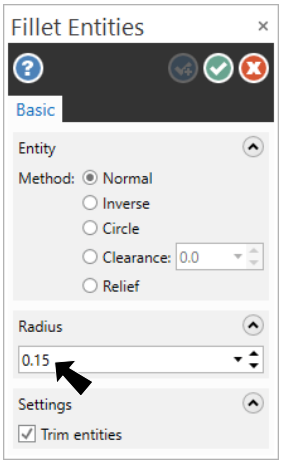


Fig. 24

Step 4. Save (**Ctrl-S**).

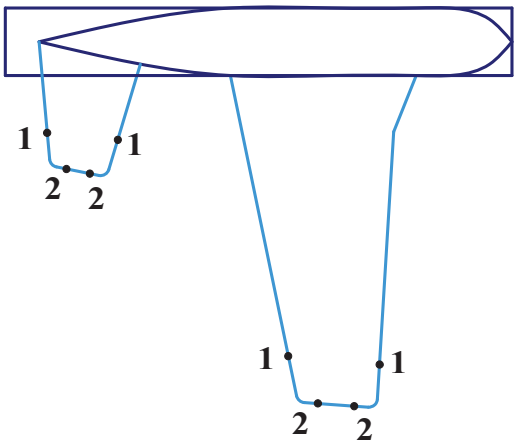


Fig. 25

M. Sketch Lines For Vertical Stabilizer.

Step 1. Zoom-in on rear end of fuselage in Side View. Use **F1** and make a zoom window, **Fig. 27**.

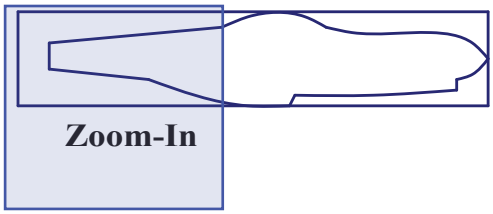


Fig. 26

Step 2. On the Wireframe tab Wireframe click **Line Endpoints** Line Endpoints.

Step 3. In the Line Endpoints function panel:
select **Multi-line**
Sketch the 3 lines, **Fig. 27**.
Click OK.

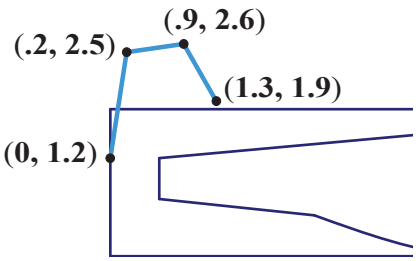


Fig. 27

Step 4. Save (**Ctrl-S**).

N. Sketch Blended Spline For Vertical Stabilizer.

Step 1. On the Wireframe tab Wireframe click **Spline Blended** Spline Blended on **Spline Manual** Spline Manual drop down.

Step 2. In the Spline Blended function panel:
under Entity 1, **Fig. 28**.
Magnitude 1.5
under Method:
select **Both**
Click **Position 1** for curve 1
Slide arrow to **left end of line** and click, **Fig. 29**.

Click Position 2 for curve 2
Slide arrow to **bottom end of line** and click, **Fig. 30**.
Click **OK and Create New Operation**.

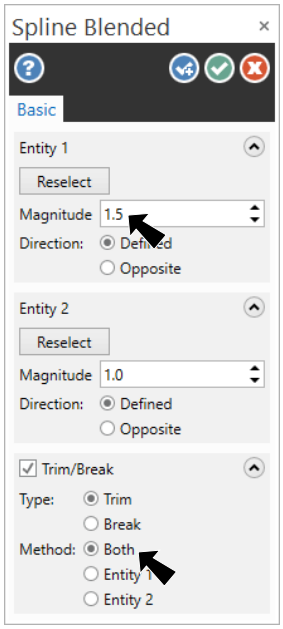


Fig. 28

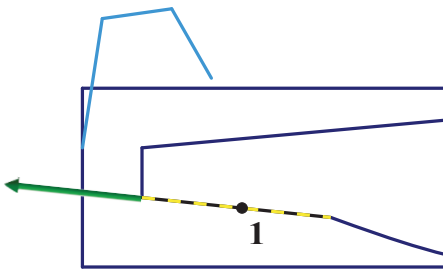


Fig. 29

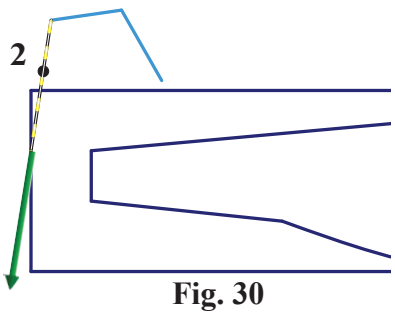


Fig. 30

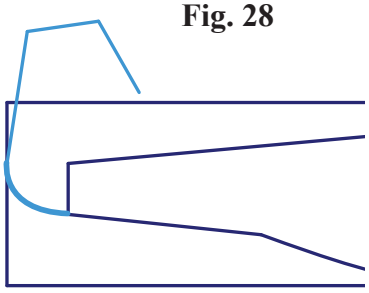


Fig. 31

Step 3. In the Spline Blended function panel:
under Entity 1, **Fig. 32**.
Magnitude 1.5
under Method:
select **Entity 2**
Click Position 1 for curve 1
Slide arrow to **right** and click, **Fig. 32**.

Click Position 2 for curve 2
Slide arrow to **bottom end of line** and click, **Fig. 34**.
Click OK .

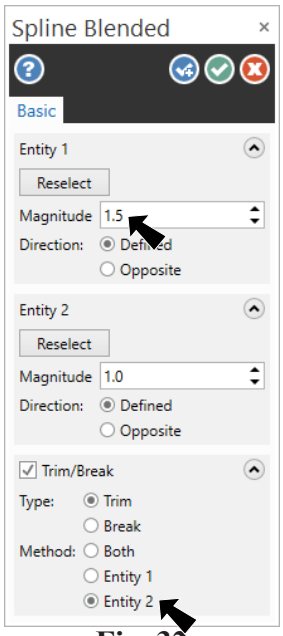


Fig. 32

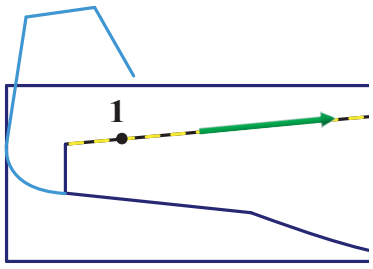


Fig. 33

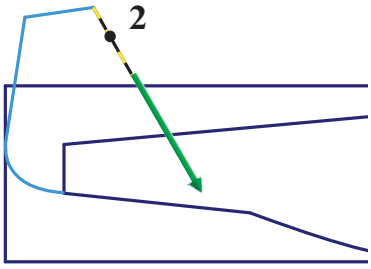


Fig. 34

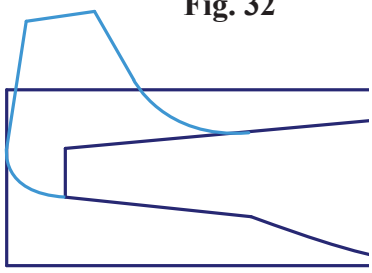


Fig. 35

O. Motor.

Step 1. **Right click** the graphics window and click **Fit** (**Alt-F1**).

Step 2. Sketch the motor **red**. Right click in the graphics window and on the Mini Toolbar click Wireframe **Color** drop down arrow and select **red**, **Fig. 36**.

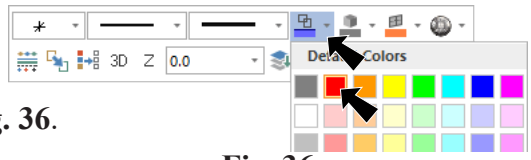


Fig. 36

Step 3. On the Wireframe tab Wireframe click **Rectangle** Rectangle.

Step 4. In the Rectangle function panel:
under Dimensions, **Fig. 37**.
Lock both Width and Height
Width 1
Height 1 and press ENTER

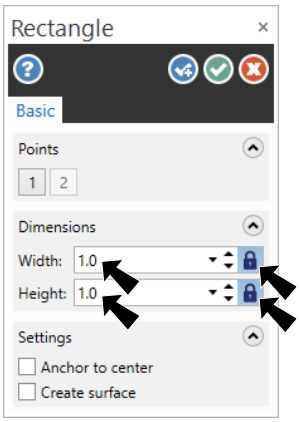


Fig. 37

Press **spacebar** to activate AutoCursor Fast Point

Key-in **7.4, 8.1** 7.4, 8.1 and press ENTER **twice**

Press **spacebar** to activate Fast Point

Key-in **7.4, .3** 7.4, .3 and press ENTER **twice**

Click OK .

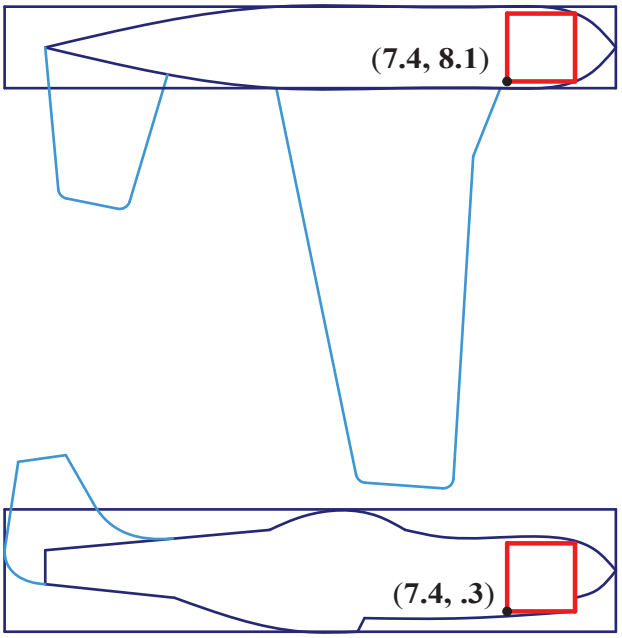
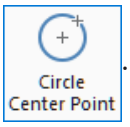


Fig. 38

P. Wheel.

Step 1. On the Wireframe tab 

click **Circle Center Point** 

.

Step 2. In the Circle Center Point function panel:
under Size, **Fig. 39**.
Diameter **.7** and press ENTER

Press **spacebar** to activate AutoCursor **Fast Point** 

Key-in **6.5**, **-.5** 

and press ENTER

Fit  **(Alt-F1)**.

Click OK  .

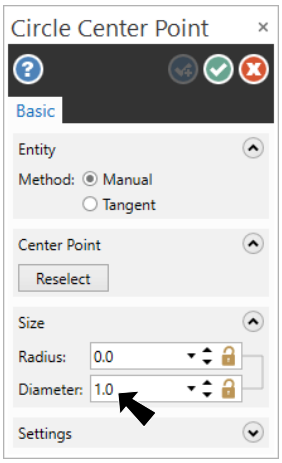


Fig. 39

Step 3. Save  **(Ctrl-S)**.

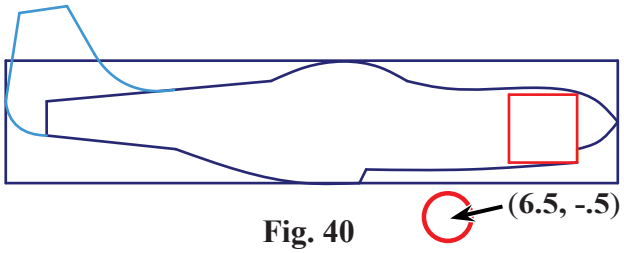


Fig. 40

Q. Sketch Landing Gear.

Step 1. Zoom-in on lower front end of fuselage in Side View.
Use **F1** and make a zoom window, **Fig. 41**.

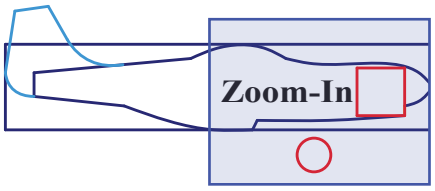


Fig. 41

Step 2. Sketch landing gear **light gray**. **Right click** in the graphics window and on the Mini Toolbar click Wireframe **Color**  drop down arrow and select **light gray**, **Fig. 42**.

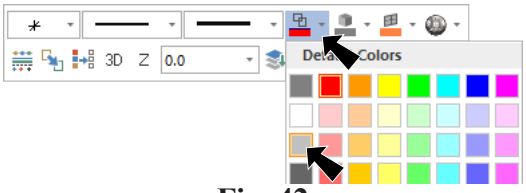
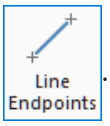


Fig. 42

Step 3. On the Wireframe tab 

click **Line Endpoints** 

.

Step 4. In the Line Endpoints function panel:
select **Multi-line**
In the Side View sketch lines between points, **Fig. 43**.

Click OK  .

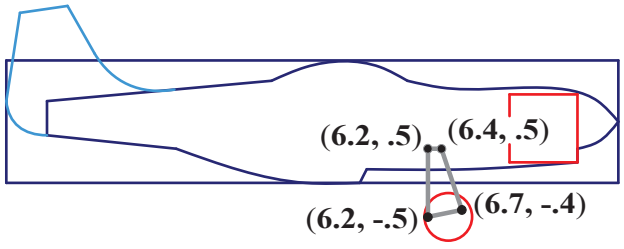
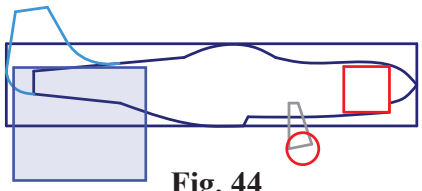


Fig. 43

R. Sketch Spline For Tail Hook.

Step 1. **Fit** (**Alt-F1**).

Step 2. Zoom-in on lower rear of fuselage in Side View. Use **F1** and make a zoom window, **Fig. 44**.



Zoom-In **Fig. 44**

Step 3. On the Wireframe tab Wireframe click **Spline Manual** Spline Manual.

Step 4. In the Spline Manual function panel:

Press **spacebar** to activate AutoCursor

Fast Point

Key-in coordinates. Spacebar for next set of coordinates. ENTER to end spline.

Or use the tracking in Status Bar to view coordinates.

Click OK when done.

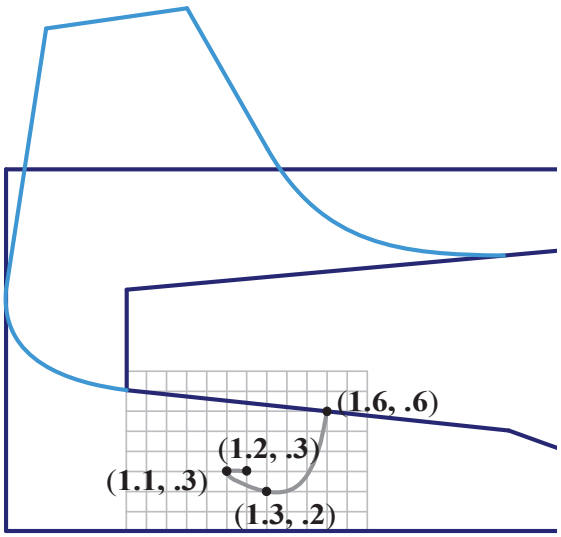


Fig. 45

Line Points using Grid

1) **Click Point 1 (1.6, .6) then**
2) **Down 4 and left 3**
3) **Left 2 and up 1**
4) **Right 1**

S. Delete Rectangle Lines.

Step 1. **Fit** (**Alt-F1**).

Step 2. **Delete rectangle lines**, **Fig. 46**. **Shift click** a line of each rectangle to chain select both rectangles. Press Delete key.

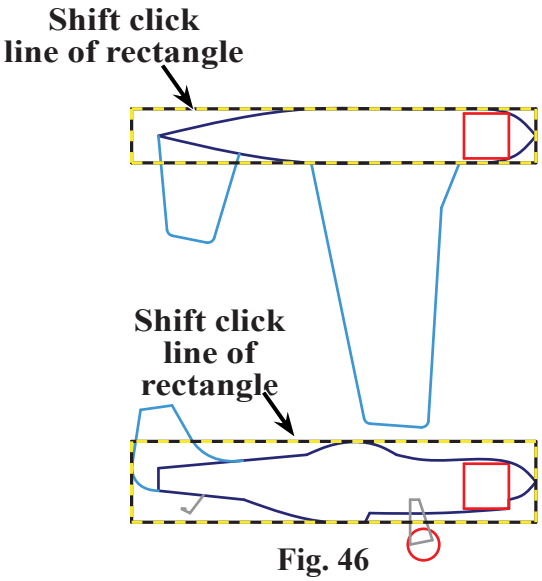
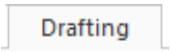
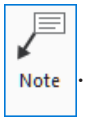


Fig. 46

T. Add Leading Edge, V Stab, H Stab Text.

Step 1. On the Drafting tab 

click **Note** 

.

Step 2. In the Note function panel set:
under Entity, **Fig. 47**.
select **Note**
under Note
Lock the Caps and key-in:
LEADING EDGE
Click **inside leading edge of Wing in top view**, **Fig. 48**.
Click **OK and Create New Operation** .

Step 3. In the Note function panel key-in:
V STAB
Click to **place note near the leading edge of the V Stab in the side view**, **Fig. 48**.
Click **OK and Create New Operation** .

Step 4. Repeat and add **H STAB** note **near the leading edge of the H Stab in the top view**, **Fig. 48**.
Click OK when done.

Step 5. Save (Ctrl-S).

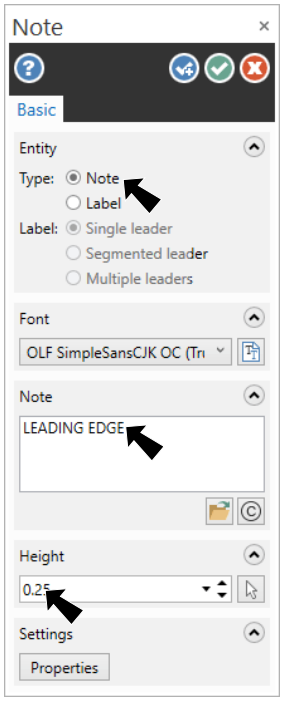


Fig. 47

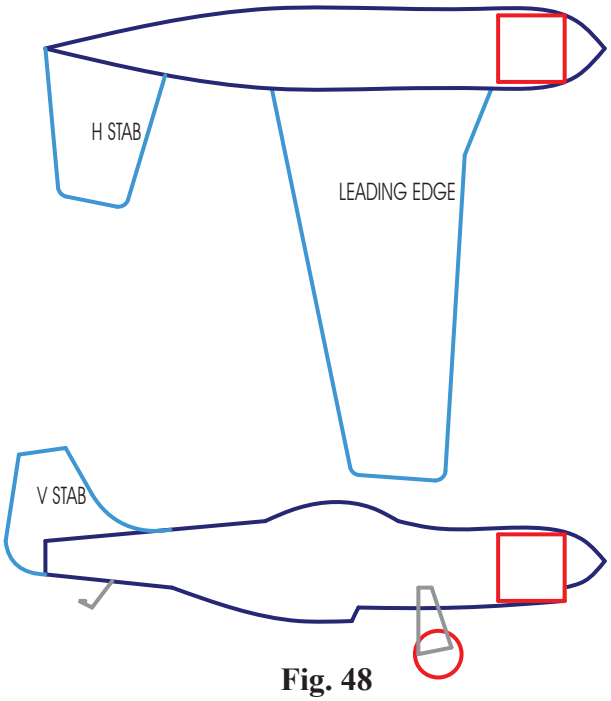


Fig. 48