

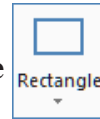
Airplane

A. Create Rectangle.

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



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

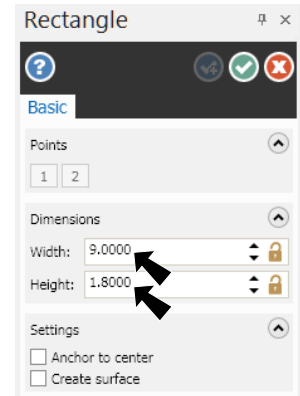


Fig. 1

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

B. Save As "AIRPLANE"

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

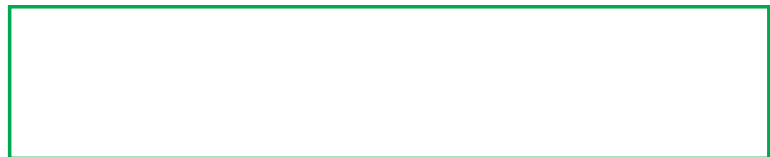


Fig. 2

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

C. Set Grid and Snap .2.

Step 1. On the View tab **VIEW** click **Show Grid** and **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 .2

Click OK

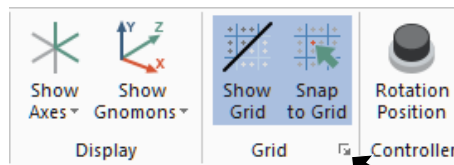


Fig. 3

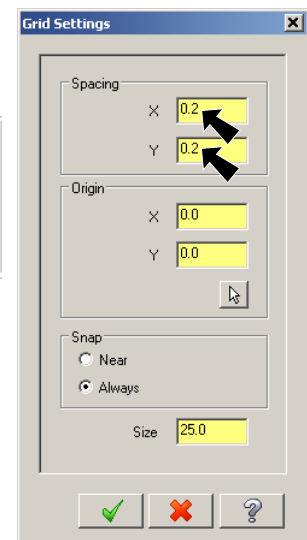


Fig. 4

D. Sketch Fuselage.

Step 1. Sketch the next lines **magenta**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow, then click **magenta**, Fig. 5.

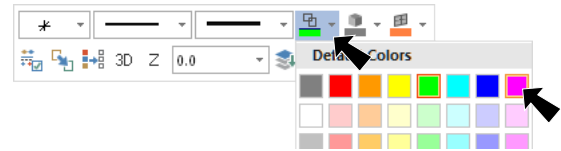
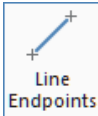


Fig. 5

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

Step 3. In the Line Endpoints function panel:
under Type, **Fig. 6**
select **Multi-line**
Sketch lines, **Fig 7**
Use tracking in Status Bar to view coordinates
Click OK  when done.

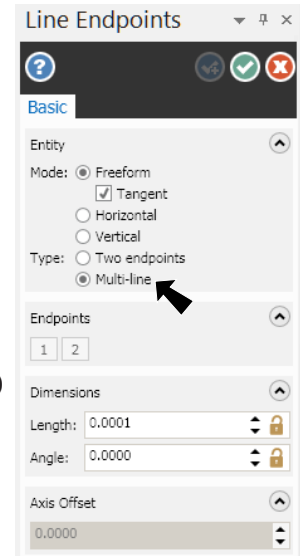
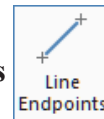


Fig. 6

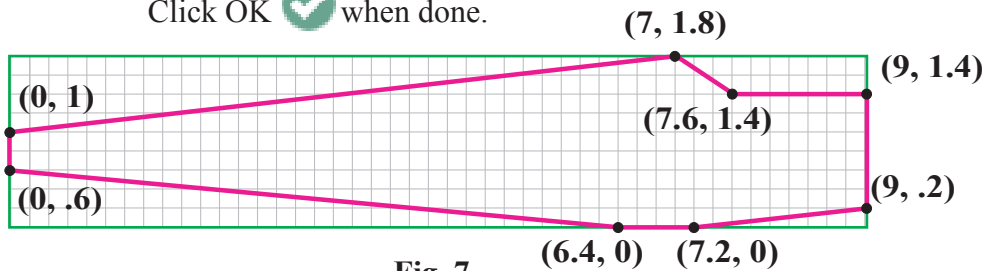
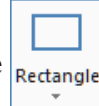


Fig. 7

E. Create a Rectangle for Fuselage in Top View.

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

Step 2. In the Rectangle function panel:
under Dimensions, **Fig. 8**
Width 9
Height 1.2 and press ENTER

Press **spacebar** to activate **Fast Point** .

Key-in 0, 9  and press ENTER twice

Click OK .

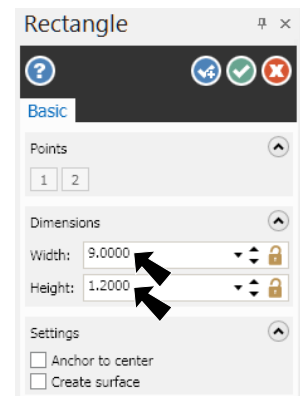


Fig. 8

Step 3. **Right click** the graphics window and click **Fit**



(Alt-F1).

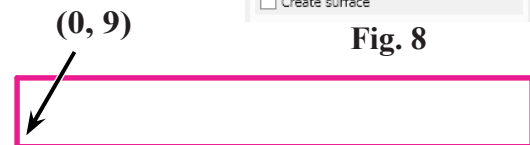
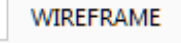
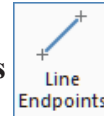


Fig. 9

F. Sketch Fuselage in Top View.

Step 1. On the Wireframe tab  click **Line Endpoints**

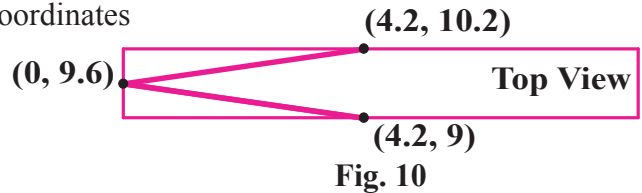


Step 2. In the Line Endpoints function panel:

Sketch lines, **Fig 10**

Use tracing in the Status Bar to view coordinates

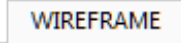
Click OK  when done.

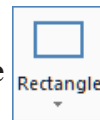


Step 3. Save  (Ctrl-S).

G. Wing.

Step 1. Set color back to **your wireframe default color**. Use **Alt-X**, then click a line of Side View rectangle.

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



Step 3. In the Rectangle function panel:

Sketch two rectangles for wing, **Fig. 11**

First, sketch a rectangle in Top View from (4.2, 9) to (7, 2)

Click **OK and Create New Operation** .

Then, sketch 2nd rectangle in Side View from (4.2, 1.6) to (7, 1.2)

Click OK .

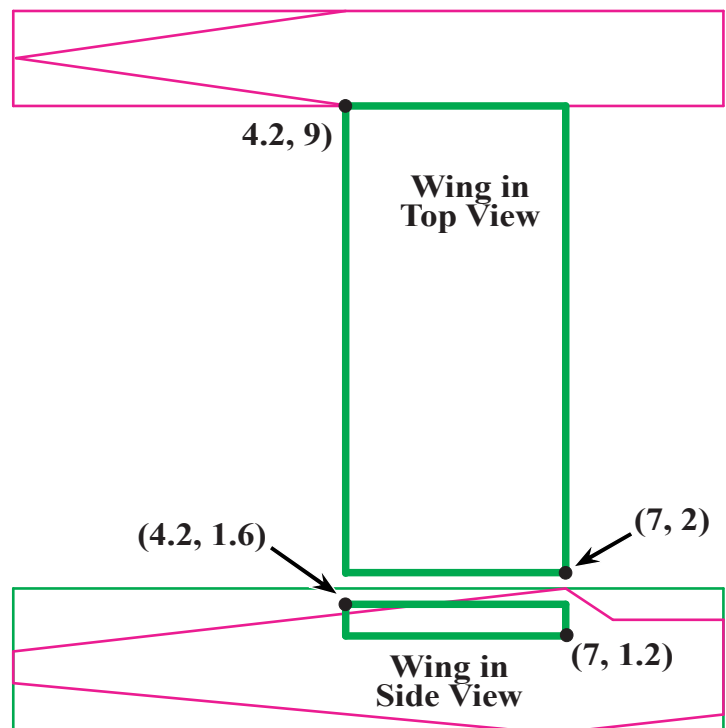
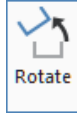
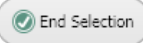


Fig. 11

H. Rotate Angle of Attack.

Step 1. On the Transform tab **TRANSFORM** click **Rotate** .

Step 2. **Shift click** a line of wing rectangle in the Side View to chain rectangle and click **End Selection**  (ENTER).

Step 3. In the Rotate dialog box:

Select **Move**  **Fig. 12**

Number of Steps # 1

Rotation Angle  7

Click **Define Center Point** 

Click **bottom right corner** for point to rotate about, **Fig. 13**.

Click OK .

Shift click line to chain rectangle

Rotate

Fig. 13

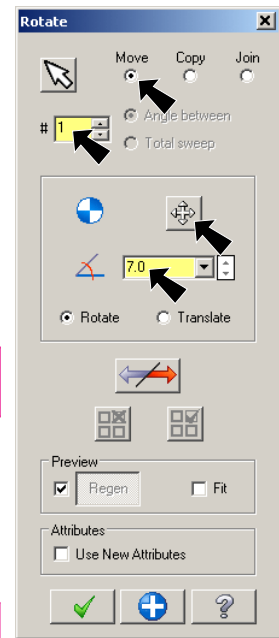


Fig. 12

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

Fig. 14

I. Delete Lines.

Step 1. Delete the 5 Lines, **Fig. 15**. To delete, Shift click rectangle in Side View and click rear line in Top View and press **Delete** key on keyboard.

Step 2. Save  (Ctrl-S).

Shift click line to chain rectangle

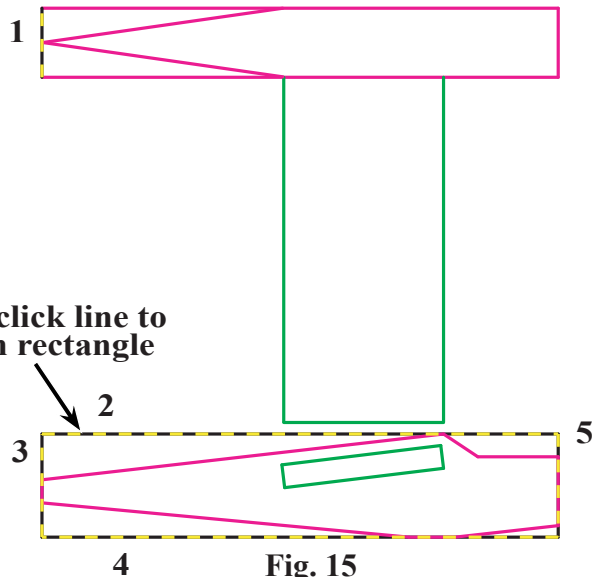
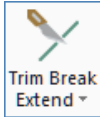


Fig. 15

J. Trim Lines.

Step 1. On the Wireframe tab **WIREFRAME** click **Trim Break Extend**



Step 2. In the Trim Break Extend function panel:

under Type, **Fig. 16**

select **Trim 1 entity**

Trim two lines. Click line to trim at Position 1, then trim to line at Position 2, **Fig. 17**. Repeat at the other line. That is, click the part of line you are keeping, Position 1, then click Position 2.

Click OK  when done.

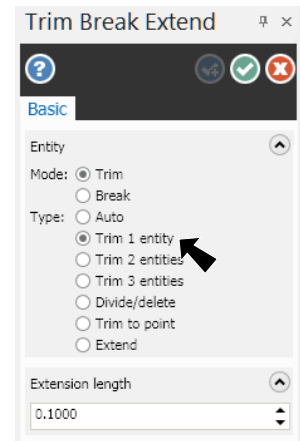


Fig. 16

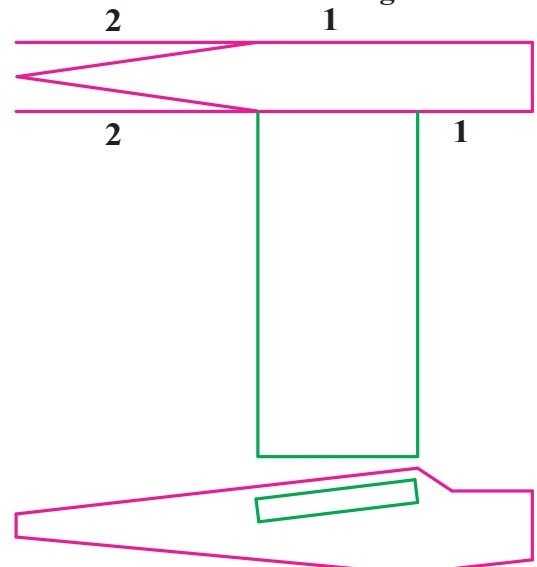


Fig. 17

K. Horizontal Stabilizer.

Step 1. Zoom-in on rear end of fuselage in Top View.
Use **F1** and make a zoom window, **Fig. 18**.

Step 2. Sketch horizontal stab **cyan**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select **cyan**, **Fig. 19**.

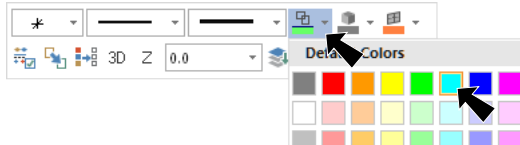


Fig. 19

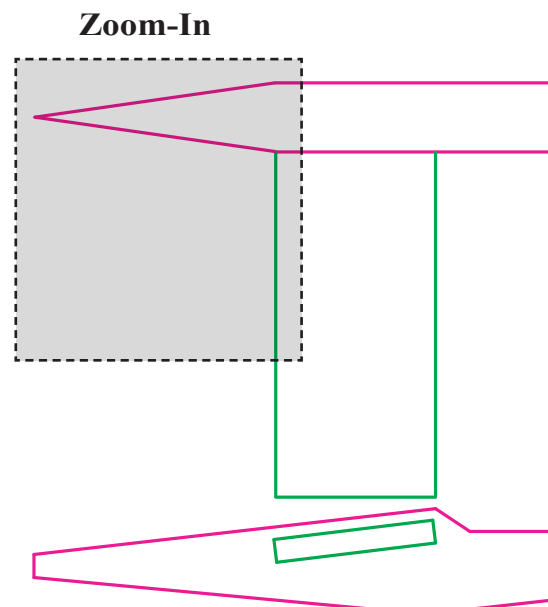
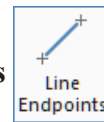


Fig. 18

Step 3. On the Wireframe tab **WIREFRAME** click **Line Endpoints**



Step 4. In the Line Endpoints function panel:

under Type

select **Multi-line**

Sketch the 3 lines, **Fig. 20**

Press **Escape** key to restart multi-line

Pan down to Side View, use **Down Arrow** key

Sketch the lines to make rectangle **Fig. 21**

Use **M** key Midpoint AutoCursor override

Click **OK**  when done.

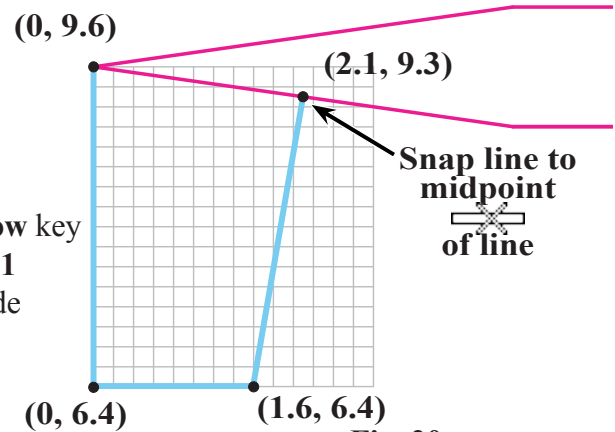


Fig. 20

L. Vertical Stabilizer.

Step 1. Sketch vertical stab **yellow**. **Right click** in the graphics window and on the Mini Toolbar click

Wireframe Color  drop down arrow and select **yellow**, **Fig. 22**.

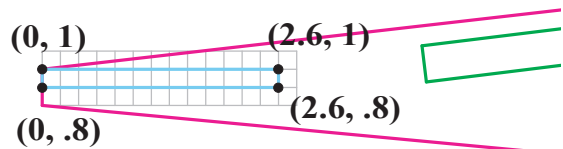


Fig. 21

Step 3. On the Wireframe tab **WIREFRAME** click **Line**



Step 4. In the Line Endpoints function panel:

under Type

select **Multi-line**

Sketch the 3 lines, **Fig. 23**

Use **M** key Midpoint AutoCursor override

Press **Escape** key to restart multi-line

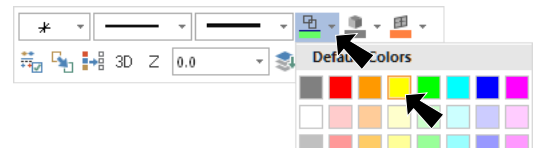


Fig. 22

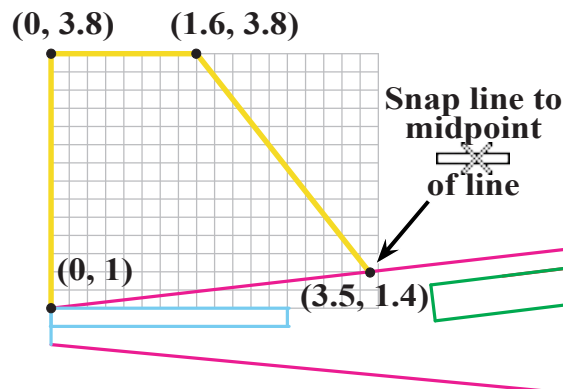


Fig. 23

Pan up to Top View, use **Up Arrow** key

Change **Grid and Snap** to **.1**. Use **Alt-G**. Set **X and Y Spacing .1** and click OK, **Fig. 24**.

Sketch the 4 lines in **Fig. 25**

Click OK  when done.

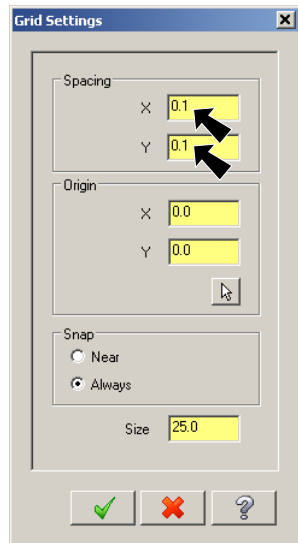


Fig. 24

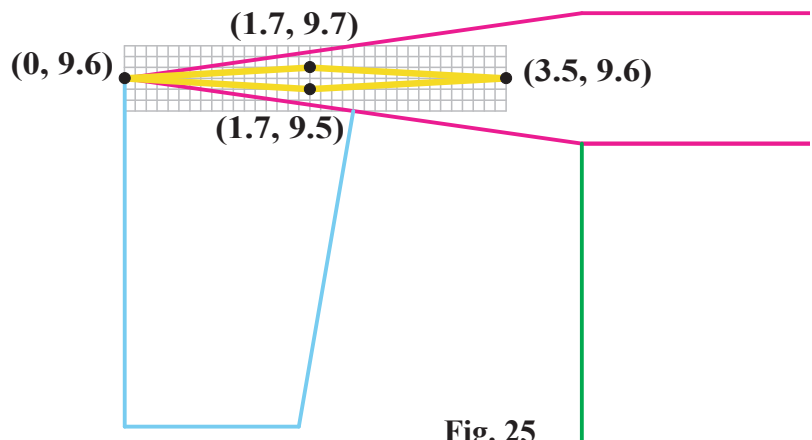


Fig. 25

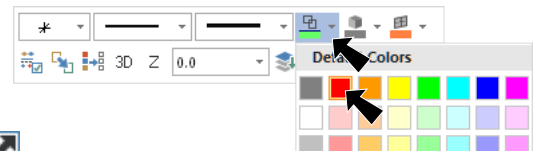
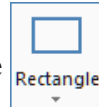


Fig. 26

M. 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. 26**.

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

Step 4. In the Rectangle function panel:
under Dimensions, **Fig. 27**

Lock  **both Width and Height**

Width 1

Height 1 and press **ENTER**

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

Key-in **8, 9.1**  and press **ENTER** **twice**

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

Key-in **8, .3**  and press **ENTER** **twice**

Click OK .

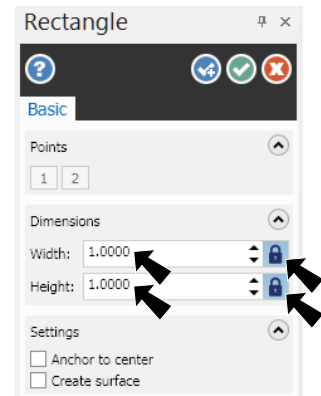


Fig. 27

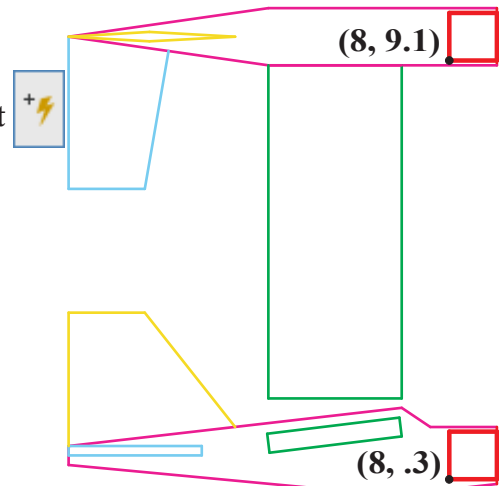
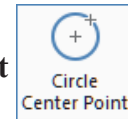


Fig. 28

N. Wheel.

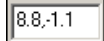
Step 1. On the Wireframe tab **WIREFRAME** click **Circle Center Point**



Step 2. In the Circle Center Point function panel:
under Size, **Fig. 29**

Diameter 1 and press **ENTER**

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

Key-in **8.3, -1.1**  and press **ENTER** twice

Click OK 

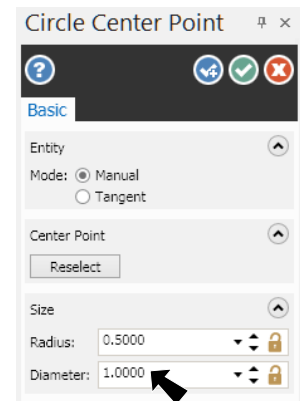


Fig. 29

Step 3. **Fit**  (Alt-F1) to see circle.

Step 4. Save  (Ctrl-S).

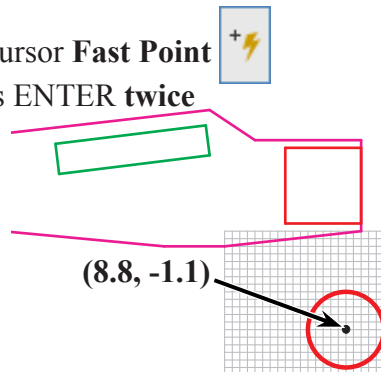
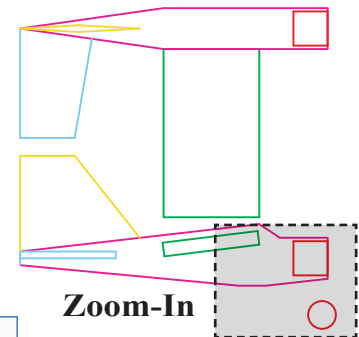


Fig. 30

O. Sketch Landing Gear in Side View.

Step 1. Zoom-in on lower front end of fuselage in Side View. Use **F1** and make a zoom window, **Fig. 31**.

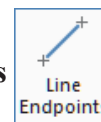
Step 2. Sketch landing gear **light gray**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select **light gray**, **Fig. 32**.



Zoom-In

Fig. 31

Step 3. On the Wireframe tab **WIREFRAME** click **Line Endpoints**



Step 4. In the Line Endpoints function panel:
Sketch the line, **Fig. 33**

Click OK  when done.

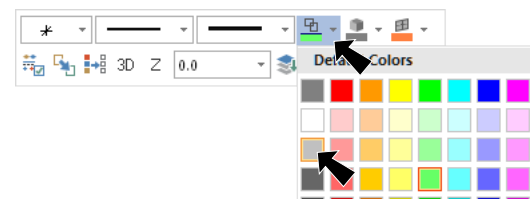


Fig. 32

Tip: Mr. PK will give you extra credit if you trim line.

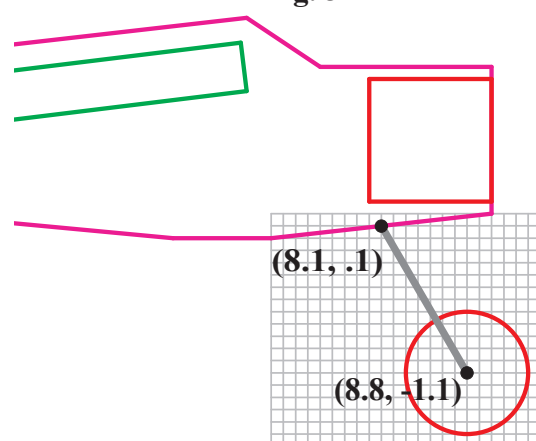
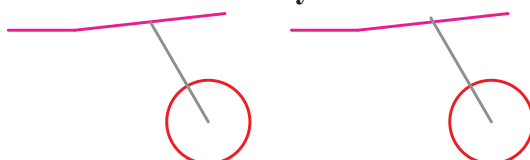
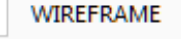


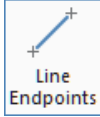
Fig. 33

P. Sketch Lines for Tail Hook.

Step 1. Fit  (Alt-F1).

Step 2. Zoom-in on lower rear end of fuselage in Side View. Use F1 and make a zoom window, **Fig. 34**.

Step 3. On the Wireframe tab  click **Line Endpoints**



Step 4. In the Line Endpoints function panel:
under Type
select **Multi-line**

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

 on the Selection Bar, **Fig. 35**

Key-in the line coordinates and press ENTER. Then spacebar for next set of coordinates.

Click OK  when done.



Fig. 35

Step 5. Save  (Ctrl-S).

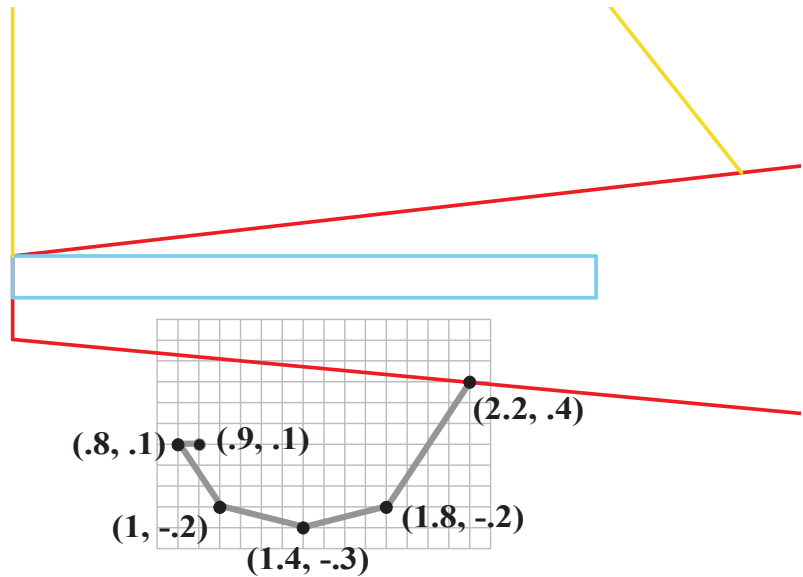


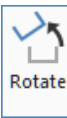
Fig. 36

Line Points using Grid

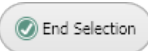
- 1) Click Point 1 (2.2, .4) then
- 2) Down 6 and over 4
- 3) Over 4 and down 1
- 4) Over 4 and up 1
- 5) Over 2 and up 3
- 6) Right 1

Q. Rotate Top View for Printing.

Step 1. Fit  (Alt-F1).

Step 2. On the Transform tab **TRANSFORM** click **Rotate** .

Step 3. Select all Top View entities. To select, first drag a selection around V stab and fuselage, then Shift click wing lines, **Fig. 37**.

Step 4. Click **End Selection**  (ENTER).

Step 5. In the Rotate dialog box:

Select **Move**  **Fig. 38**

Number of Steps # 1

Rotation Angle  90

Click **Define Center Point** 

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

Key-in 3.3, 3  and press ENTER for point to rotate about

Click OK .

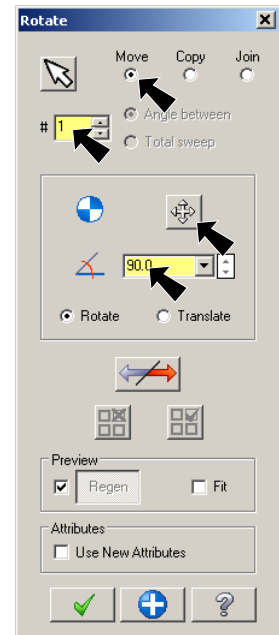


Fig. 38

Step 6. **Right click** the graphics window and click **Fit**  (Alt-F1).

Step 7. **Right click** the graphics window and click **Clear Colors** .

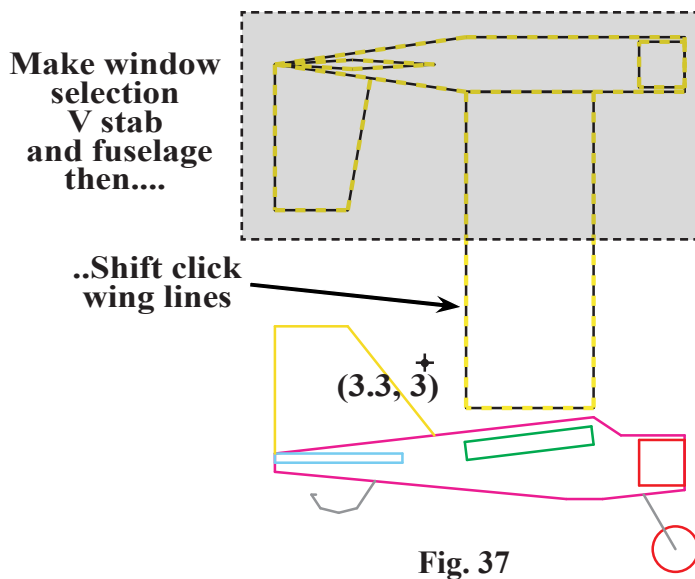


Fig. 37

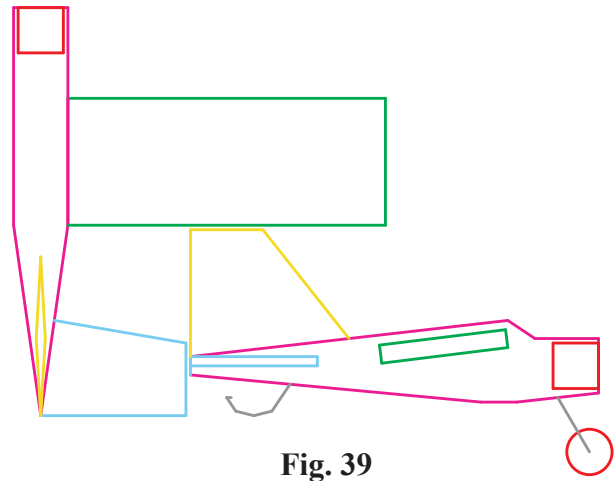
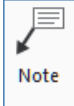


Fig. 39

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

Step 1. On the Drafting tab **DRAFTING** click **Note** .

Step 2. In the Note dialog box:
Lock the Caps, key-in: **LEADING EDGE**
Select **Multiple Notes**
Click OK, **Fig. 40**.

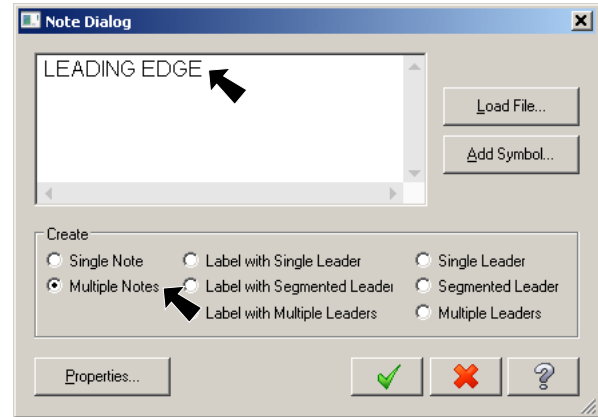


Fig. 40

Step 3. Click inside Leading Edge of Wing in Top View, **Fig. 41**.

Click **OK and Create New Operation**  in the Drafting function panel.

Step 4. Add **H STAB** and **V STAB**
Click Cancel  when done.

Step 5. Save  (**Ctrl-S**).

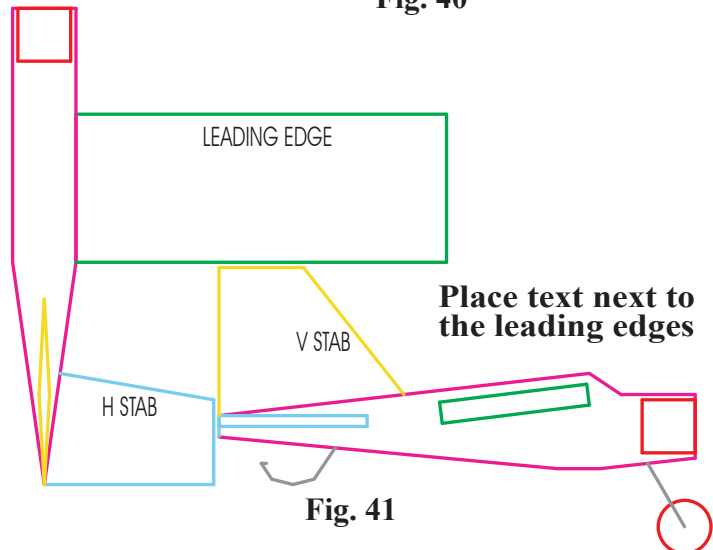


Fig. 41