
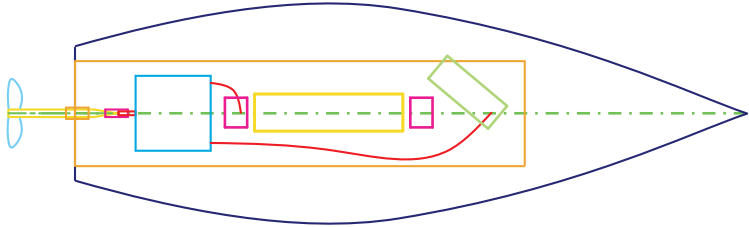


Motor Boat

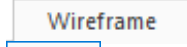
A. Create Rectangle.

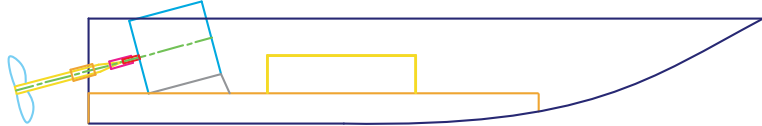
Step 1. If necessary start a new

Mastercam file, click New  on the Quick Access Toolbar QAT (Ctrl-N). Units **inches**.



Step 2. On the Wireframe tab

 click **Rectangle** 



Step 3. In the Rectangle function panel:
under Dimensions, **Fig. 1**

Width 9

Height 3 and press ENTER

Press **O** key on keyboard to select Auto Cursor Origin override

Click OK .

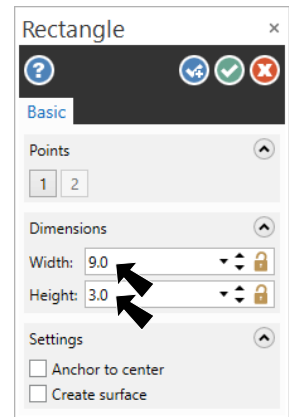


Fig. 1

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

B. Save As "MOTOR BOAT"

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

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



Fig. 2

C. Set Line Attributes Centerline.

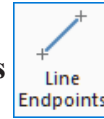
Step 1. Change **line style to center**. **Right click** in the graphics window and on the Mini Toolbar click **Line Style** drop down arrow and select **centerline**, **Fig. 3**.



Fig. 3

D. Create Horizontal Centerline.

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



Step 2. In the Line Endpoints function panel:
Sketch a horizontal line across rectangle from midpoint of line,
Fig 5

Click OK

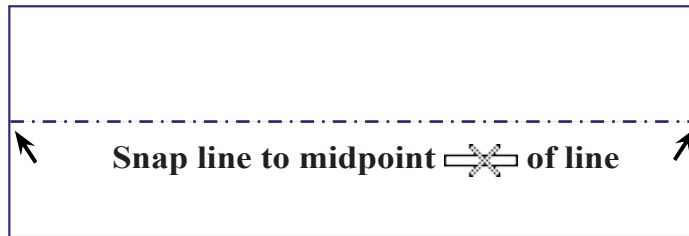


Fig. 5

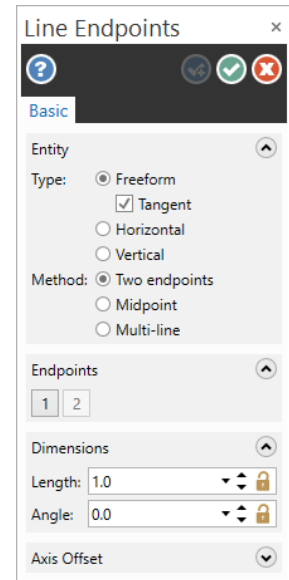
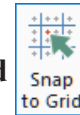
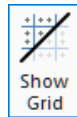


Fig. 4

E. 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. 6**.

Step 3. In the Grid Settings dialog box:
under Spacing, **Fig. 7**

X and Y Spacing .2

Click OK

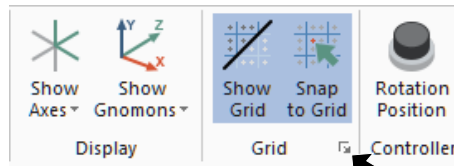


Fig. 6

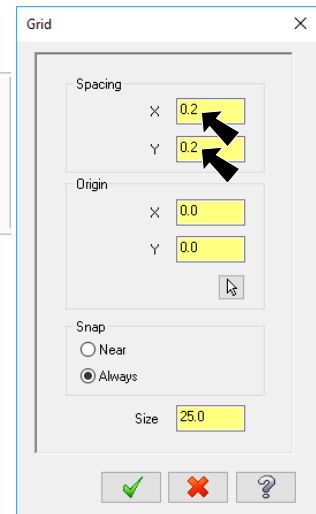


Fig. 7

F. Set Attributes Solid Line.

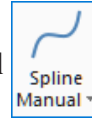
Step 1. Change **line style back to solid**. **Right click** in the graphics window and on the Mini Toolbar click **Line Style** drop down arrow and select **solid style**, **Fig. 8**.



Fig. 8

G. Sketch Top View Hull Spline.

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



Step 2. In the Spline function panel:

Press **spacebar** to activate Fast Point



Key-in coordinates in **Fig. 9**

Press ENTER after each coordinate

Or use tracking in Status Bar to determine spline points

Click OK

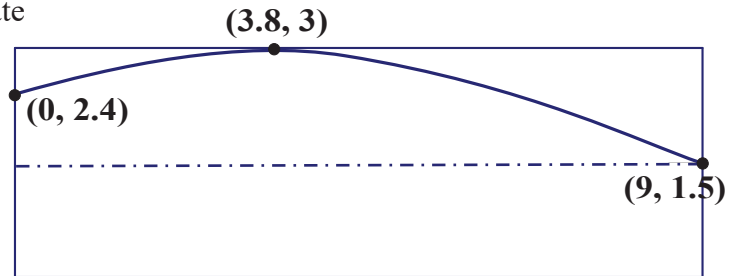
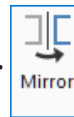


Fig. 9

Step 3. Save (Ctrl-S).

H. Mirror Starboard Hull Spline.

Step 1. On the Transform tab **Transform** click **Mirror**



Step 2. Click **spline** and click **End Selection** (ENTER), Fig. 10.

Step 3. In the Mirror function panel set:
under Method, **Fig. 11**

select **Copy**

under Axis

select **X axis**

Y offset 1.5

(1/2 of height of rectangle)

Click OK

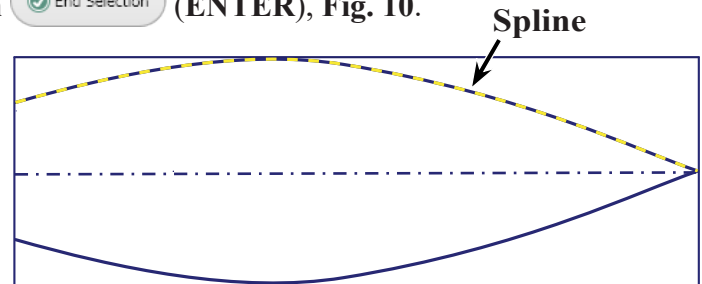


Fig. 10

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

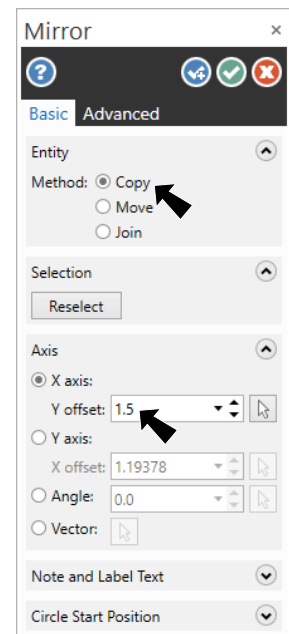


Fig. 11


I. Create Rectangle For Side View.

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

Step 2. In the Rectangle function panel:
under Dimensions, **Fig. 12**

Width 9

Height 1.4 and press ENTER

Press **spacebar** to activate Fast Point 

Key-in **0, -3**  and press ENTER **twice**

Click OK 

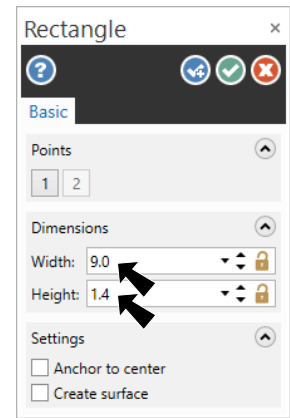


Fig. 12

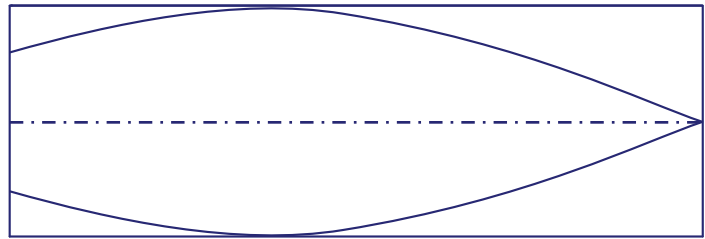
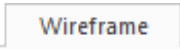
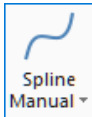



Fig. 13

J. Sketch Side View Hull Spline.

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

Step 2. In the Spline function panel:

Press **spacebar** to activate Fast Point 

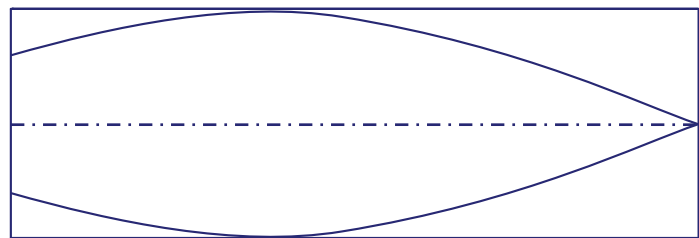
Key-in coordinates, **Fig. 14**

Press ENTER after each coordinate

Or use the tracking in Status Bar
to determine spline points.

Use **Page Up** key to zoom in

Click OK 



Step 3. Save  (Ctrl-S).



Fig. 14

K. Delete Rectangle Lines.

Step 1. Lines 1, 2, 3 and 4 are no longer needed, **Fig. 15**. Click to select lines to delete and press Delete key.

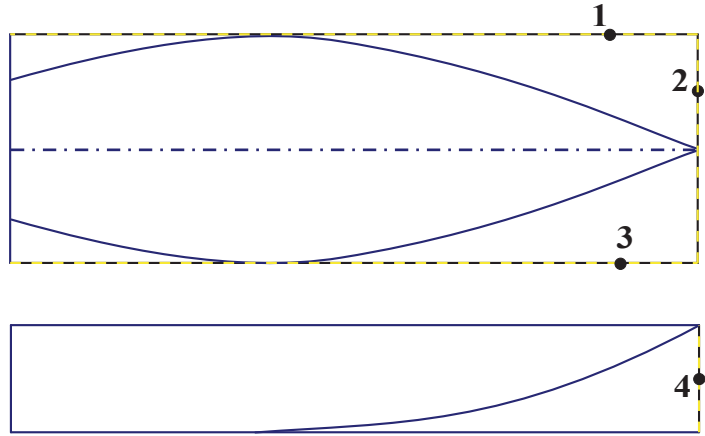
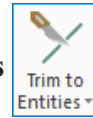


Fig. 15

L. Trim Hull Lines.

Step 1. On the Wireframe tab **Wireframe** click **Trim to Entities**



Step 2. In the Trim to Entities function panel:
under Type, **Fig. 16**

select **Trim 1 entity**

Trim three lines, **Fig. 17**. Click the line to trim at Position 1, then trim to the spline at Position 2. Repeat at the other two lines.

Click OK  when done.

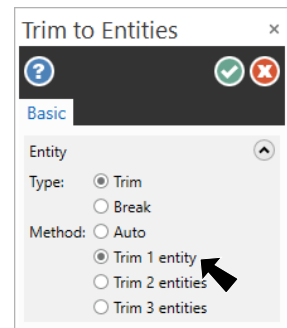


Fig. 16

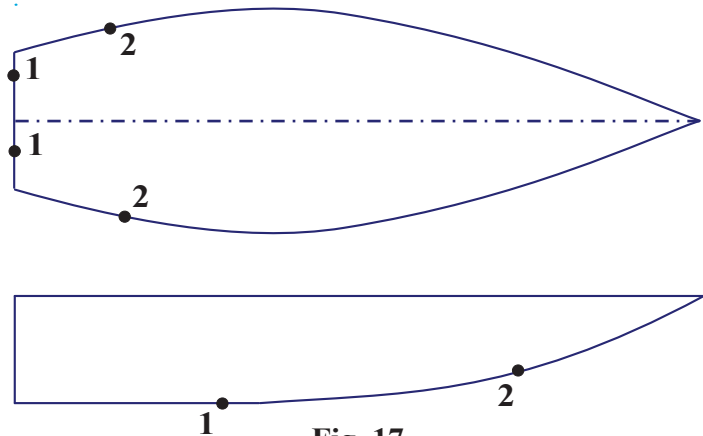



Fig. 17

M. Wood Base.

Step 1. Sketch wood base **tangerine**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select **tangerine**, **Fig. 18**.

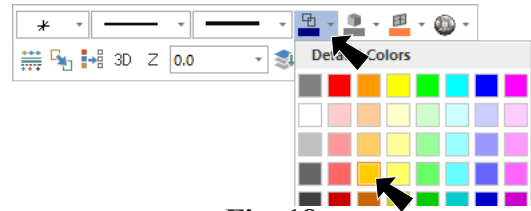



Fig. 18

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

Step 3. In the Rectangle function panel:
under Dimensions, **Fig. 19**
Lock  **both Width and Height**
Width 6
Height 1.4 and press ENTER

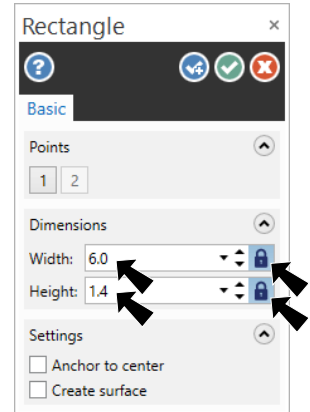



Fig. 19

Press **spacebar** to activate AutoCursor Fast Point 

Key-in **0, .8**  and press ENTER **twice**

under Dimensions, **Fig. 20**

Width 6
Height .4 and press ENTER

Press **spacebar** to activate Fast Point 

Key-in **0, -3**  and press ENTER **twice**

Click OK .

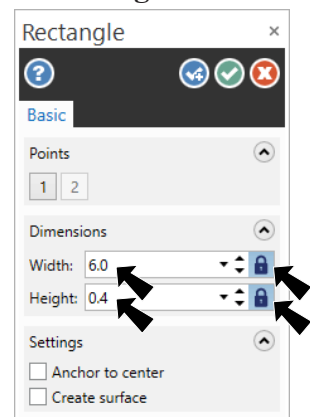


Fig. 20

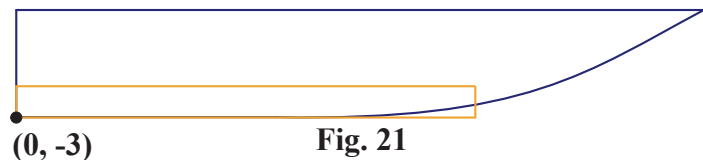
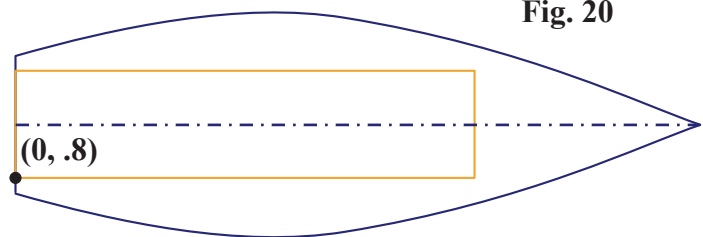

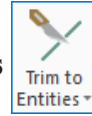


Fig. 21

N. Trim Wood Base and Delete Line.

Step 1. On the Wireframe tab  click **Trim to Entities**



Step 2. In the In the Trim to Entities function panel:
under Type, **Fig. 22**

select **Trim 1 entity**

Trim Line 1 in Side View, **Fig. 23**

To trim, click line to trim at Position 1, then trim to spline 2.

Click OK  when done.

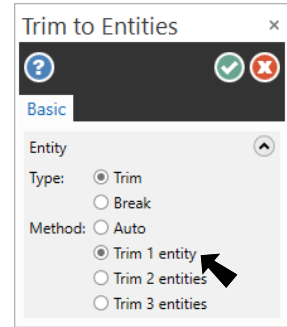


Fig. 22

Step 3. Delete **Line 3**. Click Line 3 and press **Delete** key, **Fig. 23**.

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

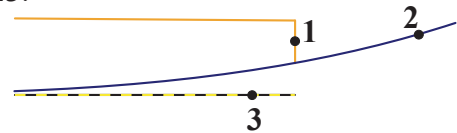


Fig. 23

O. Merge Power Train.

Step 1. Click File Menu > Merge.


Step 2. In the Open dialog box:

Select **POWER TRAIN** file and click Open.

Step 3. In the Merge Pattern function panel:

under Position, **Fig. 24**

click **Select** button

Press **spacebar** to activate Fast Point 

Key-in **.8, 1**  and press **ENTER** twice or

click **OK** and **Create New Operation** .

Step 4. Open the **POWER TRAIN** file again.

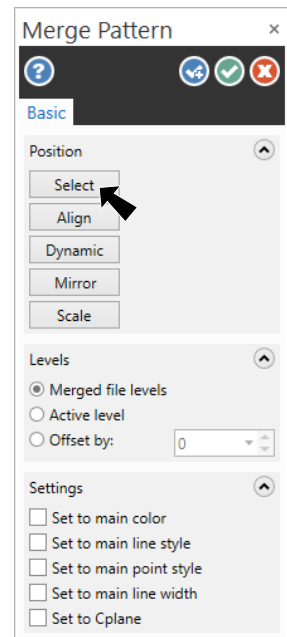
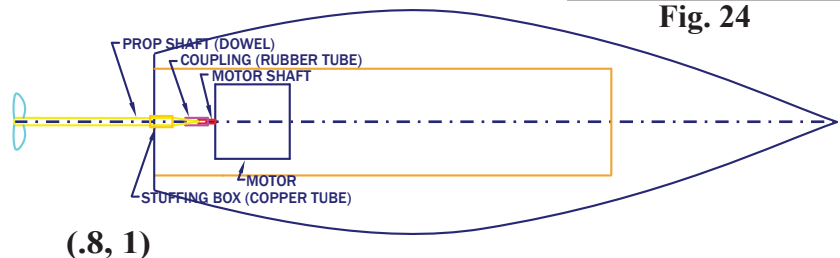


Fig. 24



(.8, 1)

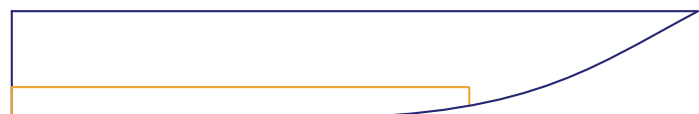




Fig. 25

Step 5. In the Merge Pattern function panel:
 under Position, **Fig. 26**
 click **Select** button

Press **spacebar** to activate Fast Point 
 Key-in **.8, -2.6**  and press ENTER.

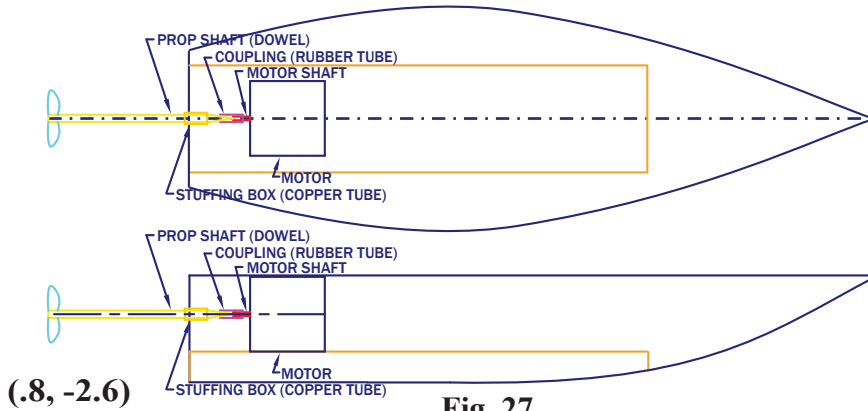


Fig. 27

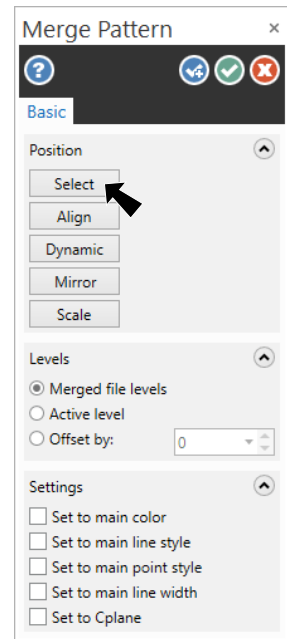





Fig. 26

Step 6. In the Merge Pattern function panel:
 under Position, **Fig. 28**
 click **Dynamic** button

Click **Select all result entities**  Quick Mask button on the right edge of graphics window to reselect the all merged entities and click **End Selection**  (ENTER).

Click the **bottom left corner of Motor rectangle** to place Gnomon  on corner and click a **segment of the curved control (green)** on the Gnomon , **Fig. 29**.

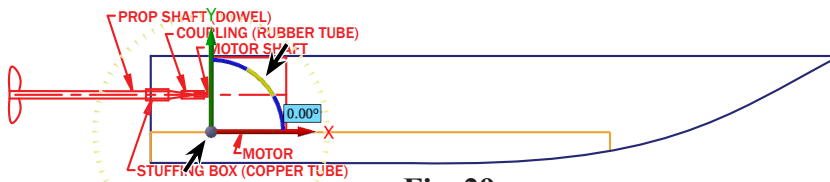


Fig. 29

Key-in **-15** into the input box and press **ENTER** twice, **Fig. 30**.

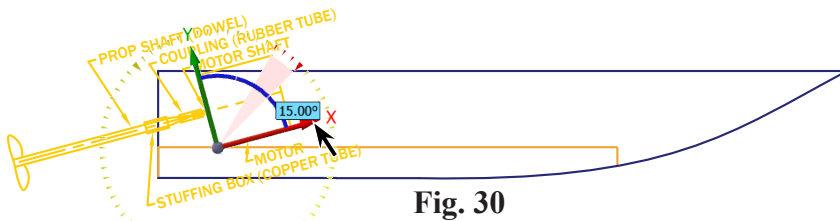


Fig. 30

Click OK .

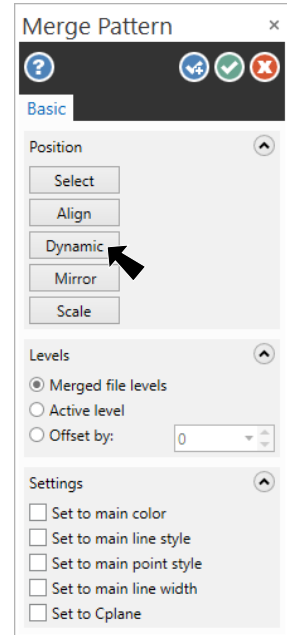

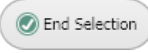


Fig. 28

P. Delete Labels.

Step 1. Delete all drafting labels. To delete, click **Select all drafting entities**  the left half of Quick Mask button on the right edge of graphics window and click **End Selection**  (ENTER). Press Delete key, **Fig. 31**.

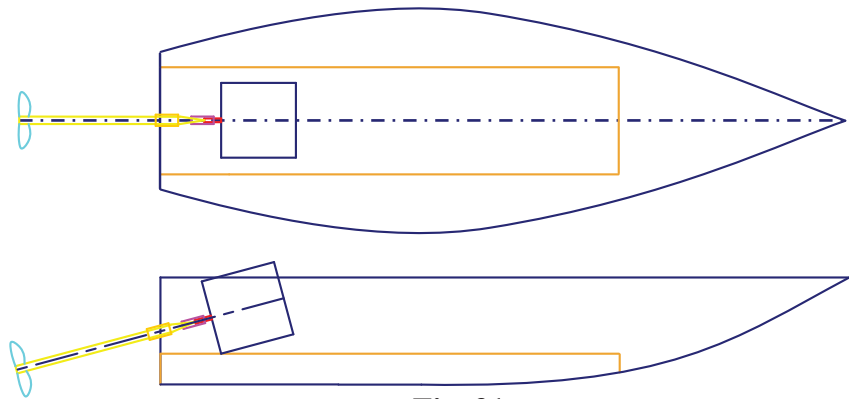



Fig. 31

Q. Battery.

Step 1. Sketch battery yellow. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select yellow, **Fig. 32**.

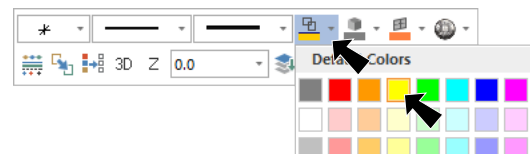





Fig. 32

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

Step 3. In the Rectangle function panel:
 under Dimensions, **Fig. 33**
Lock  both **Width and Height**
Width 2
Height .5 and press ENTER

Press **spacebar** to activate AutoCursor Fast Point 

Key-in **2.4, 1.25**  and press ENTER **twice**

Press **spacebar** to activate Fast Point 

Key-in **2.4, -2.6**  and press ENTER **twice**

Click OK .

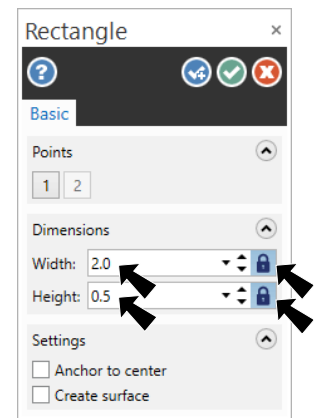


Fig. 33

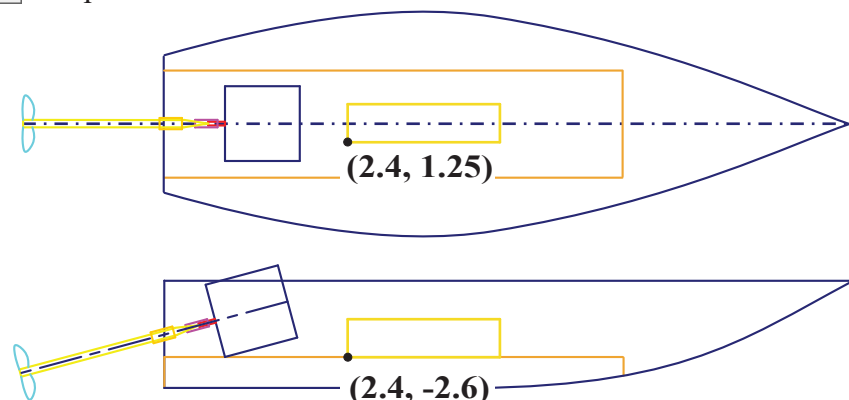


Fig. 34

R. Set Grid and Snap .1.

Step 1. Use **Alt-G** to display Grid dialog box, Fig. 35

Set **X and Y Spacing .1**

Click OK .

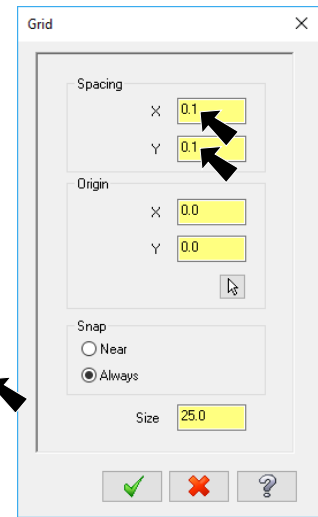



Fig. 35

S. L-Brackets.

Step 1. Sketch **L-Brackets**

magenta. Right click in the graphics window and on the Mini Toolbar click **Wireframe Color**

 drop down arrow and select **magenta**, Fig. 36.

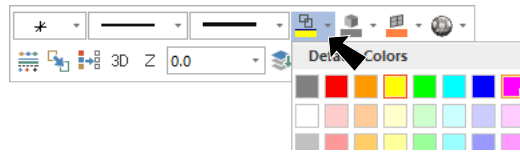
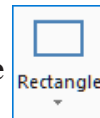


Fig. 36

Step 2. Use **Page Up** key several times to zoom-in around base wood in Top View.

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



Step 4. In the Rectangle function panel:

Sketch the **two rectangles** in Fig. 37

Use grid to determine location of rectangles

Click **OK and Create New Operation**  after each rectangle.

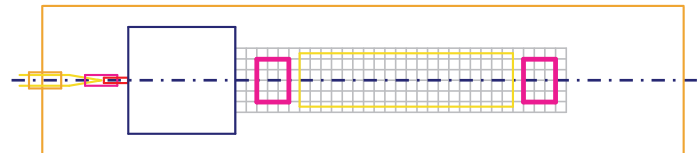


Fig. 37

T. Switch.

Step 1. Sketch **switch light green. Right**

click in the graphics window and on the Mini

Toolbar click **Wireframe Color**  drop down arrow and select **light green**, Fig. 38.

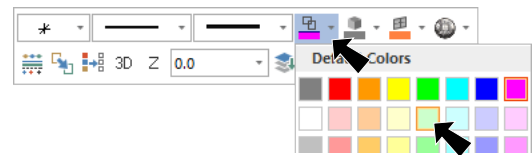


Fig. 38

Step 2. In the Rectangle function panel:

Sketch rectangle in Fig. 39. Use grid to determine location of rectangle

Click OK .

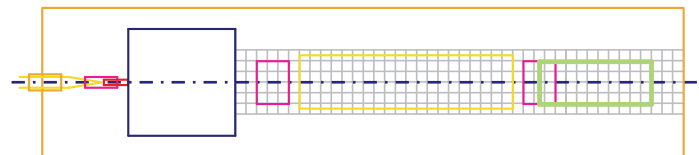
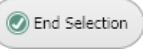


Fig. 39

U. Rotate Switch.

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

Step 2. **Shift click** a line of switch rectangle to chain select rectangle and click End Selection  (ENTER), **Fig. 40.**

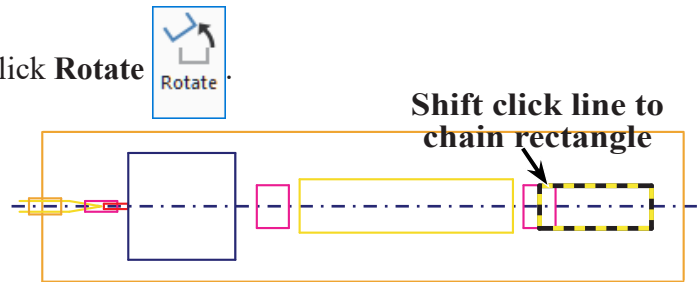




Fig. 40

Step 3. In the Rotate function panel set:
 under Method, **Fig. 41**
 select **Move**
 under Instances
Number 1
Angle -40
 under Rotation Center Point
 click **Reselect**

Press **spacebar** to activate AutoCursor Fast Point 
 Key-in **5.6, 1.5**  and press ENTER
 Or use the tracking in Status Bar to locate coordinates **(5.6, 1.5)**
 for the point to rotate about, **Fig. 37.**

Click OK .

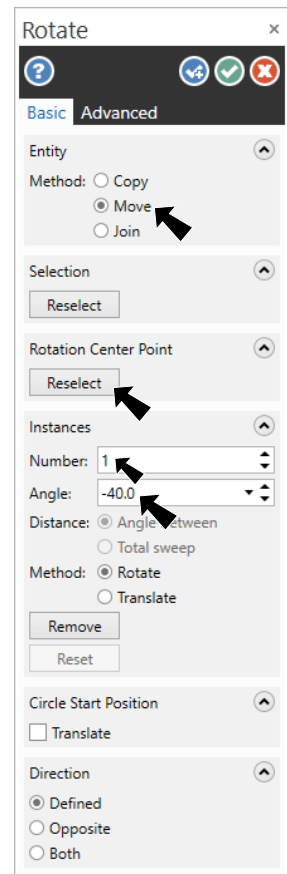


Fig. 41

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

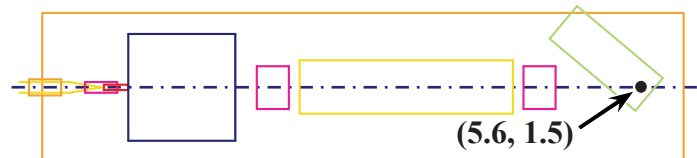


Fig. 42

V. Sketch Wire Using Spline.

Step 1. Sketch wire **red**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe**

Color  drop down arrow and select **red**, Fig. 43.

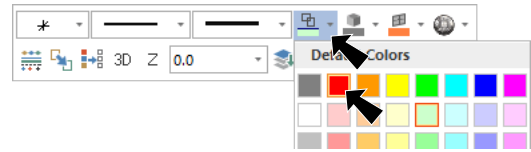
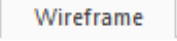
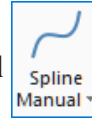


Fig. 43

Step 2. On the Wireframe tab  click **Spline Manual**



Step 3. In the Spline function panel:

Click the 3 points to sketch a spline from motor to battery terminal, **Fig. 44**

Click **OK and Create New Operation** 

Sketch second spline for another wire from motor to switch, **Fig. 45**.

Click OK .

W. Wedge For Motor.

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

Step 2. Sketch the wedge **light gray**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**

 drop down arrow and select **light gray**, Fig. 46.

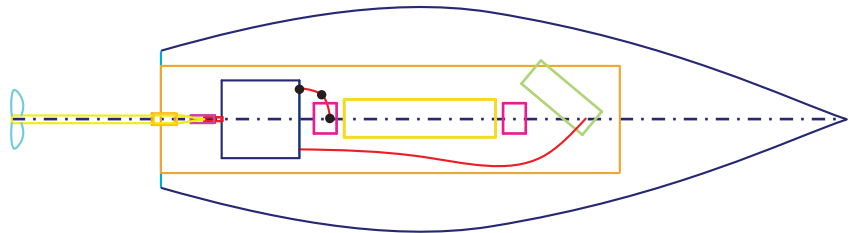


Fig. 44

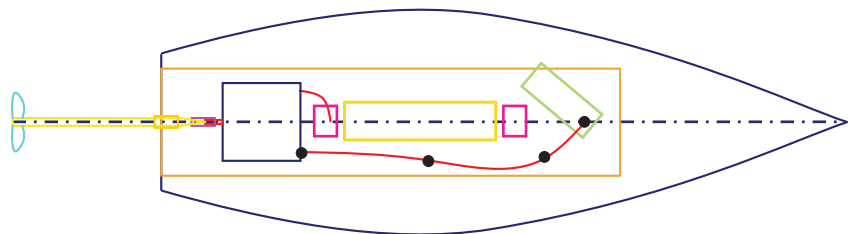


Fig. 45

Step 3. On the Wireframe tab  click

Line Endpoints 

Step 4. In the Line Endpoints function panel:

select **Multi-line**

Sketch lines, **Fig 47**

Click OK  when done.

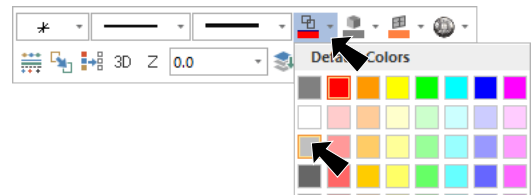


Fig. 46

Step 5. Save  (Ctrl-S).

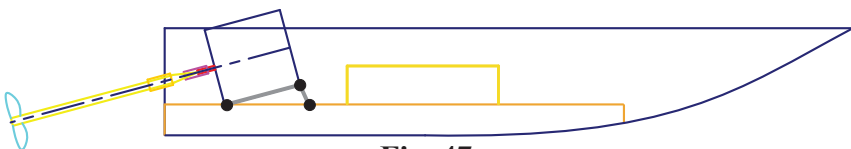


Fig. 47