

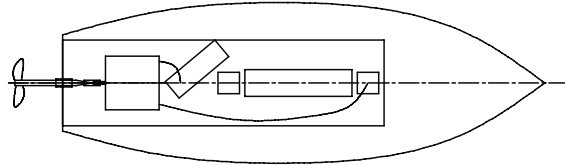
# MOTOR BOAT

## A. OPEN B FILE.

Step 1. When you start a new drawing away start with the B file. If you started this drawing as the B file go directly to Steps B. If your did not start as the B file complete these Steps: Click **Open** from the File Menu. Click **F1 No** to save current part. Key in **a:b** for the filename and press ENTER.

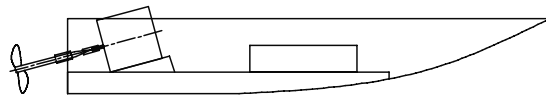
## B. CREATE A RECTANGLE.

Step 1. ESC to Main Menu.



Step 2. F1 CREATE.

Step 3. F1 LINE.



Step 4. F7 RECTANGLE.

Step 5. F2 WIDTH/HEIGHT.

Step 6. Key in **9** for width and press ENTER.

Step 7. Key in **3** for height and press ENTER.

Step 8. F9 KEY IN.

Step 9. Key in:  
Zero (0) for coordinate X and press ENTER.  
0 for Y and press ENTER.  
0 for Z and press ENTER.

Step 10. Use **ALT-A** to center the rectangle on the screen. Hold down ALT and press A.

## C. CREATE HORIZONTAL CENTER LINE.

Step 1. Draw the center line **green**. Change the color to green. Click the color swatch in the side Tool Bar. Click green, number 1.

Step 2. Change the line type to Center Lines. Use **ALT-T**. Hold down ALT and press T. Click the Center Line, line number 3. Click OK.

Step 3. ESC to Main Menu.

Step 4. F1 CREATE.

Step 5. F1 LINE.

Step 6. F5 HORIZONTAL/ VERTICAL.

Step 7. F1 HORIZONTAL.

Step 8. F4 CENTER.



FIG. 1

Step 9. Click the vertical line of the rectangle, Line 1, **Fig. 1**.

Step 10. At this time it is a good idea to save the drawing. Click **Save As** from the File Menu. Key **a:motor boat** filename and press ENTER. Press ESC for Part Description.

#### **D. DRAW TOP VIEW HULL SPLINE.**

Step 1. Draw the hull spline **blue**. Change the color to blue. Click the color swatch in the side Tool Bar. Click blue, number 5.

Step 2. Change the line type back to Object Lines. Use **ALT-T**. Hold down ALT and press T. Click the Object line, Line number 1. Click OK.

Step 3. **Set the Snap to .1**. Use **CTRL-G**. Hold down CTRL and press G. Change the **Snap Properties Increment to X = .1 and Y = .1** Click OK.

Step 4. Reduce the drawing down to see the grid, use **ALT-S**. Key in **1.3** and **press ENTER two times**.

Step 5. ESC to Main Menu.

Step 6. F1 CREATE.

Step 7. F9 SPLINE.

Step 8. F2 3D CUBI.

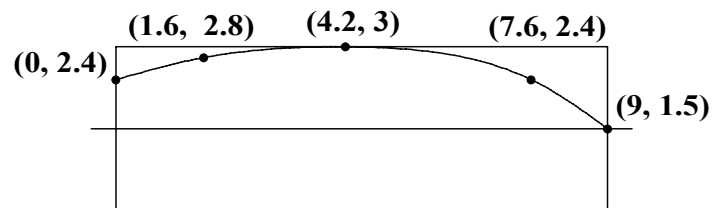


FIG. 2

Step 9. Move cursor to coordinates **(0, 2.4)** and click for Point 1, **Fig. 2**. Use the Cursor Tracking Window located in the lower-left corner of the display to view the coordinates.

Step 10. Move cursor to coordinates **(1.6, 2.8)** and click for Point 2, **Fig. 2**.

Step 11. Move cursor to coordinates **(4.2, 3)** and click for Point 3, **Fig. 2**.

Step 12. Move cursor to coordinates **(7.6, 2.4)** and click for Point 4, **Fig. 2**.

Step 13. Move cursor to coordinates **(9, 1.5)** and click for Point 5, **Fig. 2**.

Step 14. Press ENTER **three times**.

Step 15. Save the drawing. Use **CTRL-S**.

### E. MIRROR STARBOARD HULL.

Step 1. ESC to Main Menu.

Step 2. F4 X-FORM.

Step 3. F5 MIRROR.

Step 4. F2 COPY.

Step 5. F1 SINGLE.

Step 6. Select the hull spline, Line 2, **Fig. 3**, with a click and press ENTER.

Step 7. F1 1 POINT HORIZONTAL.

Step 8. F4 CENTER.

Step 9. To indicate position on the plane, click the stern line (back) of the boat, Line 1, **Fig. 3**.

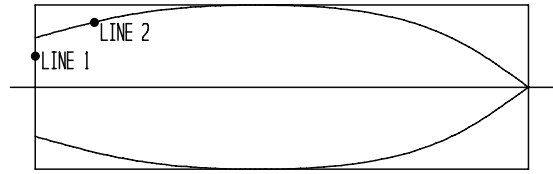


FIG. 3

### F. CREATE A RECTANGLE FOR SIDE VIEW.

Step 1. Use **Alt-H** to reduce the drawing half size twice. Hold down ALT and press H.

Step 2. ESC to Main Menu.

Step 3. F1 CREATE.

Step 4. F1 LINE.

Step 5. F7 RECTANGLE.

Step 6. F2 WIDTH/HEIGHT.

Step 7. Key in **9** for width and press ENTER.

Step 8. Key in **1.4** for height and press ENTER.

Step 9. F9 KEY IN.

Step 10. Key in:  
0 for X and press ENTER.  
-3 for Y and press ENTER.  
0 for Z and press ENTER.

Step 11. ESC to Main Menu.

Step 12. Use **ALT-A** to center the views on the screen. Hold down ALT and press A.

## G. DRAW SIDE VIEW HULL SPLINE.

Step 1. Reduce the drawing down to see the grid, use **ALT-S**. Key in **1.3** and press **ENTER** two times.

Step 2. **ESC** to Main Menu.

Step 3. **F1** CREATE.

Step 4. **F9** SPLINE.

Step 5. **F2** 3D CUBI.

Step 6. Move cursor to coordinates **(3.3, -3)** and click for Point 1, **Fig. 4**.

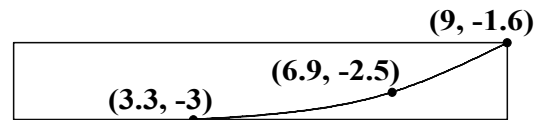
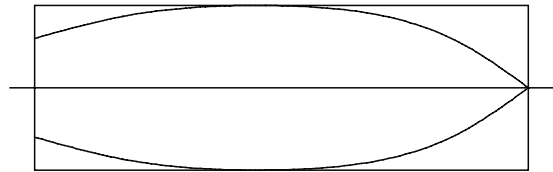


FIG. 4

Step 7. Move cursor to coordinates **(6.9, -2.5)** and click for Point 2, **Fig. 4**.

Step 8. Move cursor to coordinates **(9, -1.6)** and click for Point 3, **Fig. 4**.

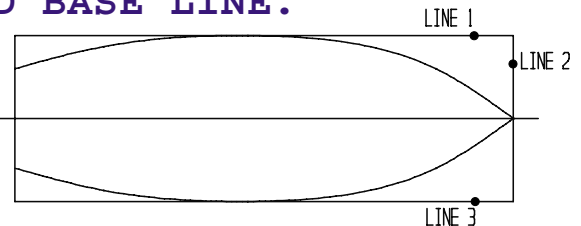
Step 9. Press **ENTER** three times.

Step 10. Save the drawing. Use **CTRL-S**.

## H. DELETE LINES AND TRIM WOOD BASE LINE.

Step 1. **ESC** to Main Menu.

Step 2. Delete Lines 1 through 4, **Fig. 5**. Use **CTRL-Q** to delete the line.



Step 3. Use **CTRL-R** to redraw the display. Hold down **CTRL** and press **R**.

Step 4. **ESC** to Main Menu.

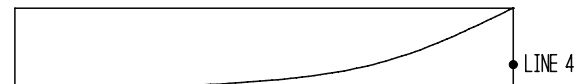


FIG. 5

Step 5. **F2** EDIT.

Step 6. **F1** TRIM/EXTEND.

Step 7. **F1** FIRST.

Step 8. Trim three lines. To trim part of a line, click the line you are to keep, Line 1, **Fig. 6**. Move cursor close to the intersection with Line 2 and click. Trim the other lines. First click Line 1, then click Line 2.

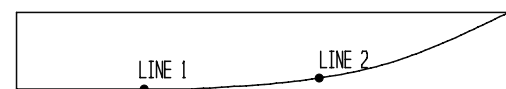
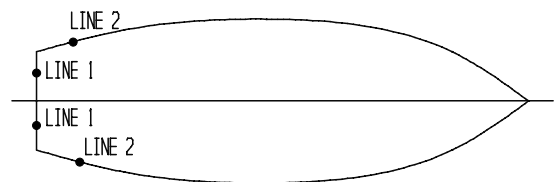


FIG. 6

## I. WOOD BASE.

Step 1. Draw the wood base **peach**. Change the color to peach. Click the color swatch in the side Tool Bar. Click peach, number 12.

Step 2. ESC to Main Menu.

Step 3. F1 CREATE.

Step 4. F1 LINE.

Step 5. F7 RECTANGLE.

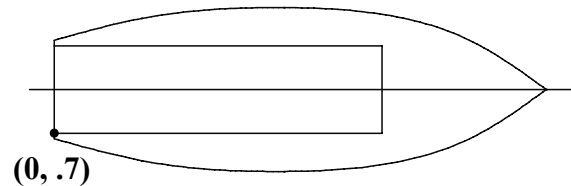
Step 6. F2 WIDTH/HEIGHT.

Step 7. Key in **6** for width and press ENTER.

Step 8. Key in **1.6** for height and press ENTER.

Step 9. F1 CURSOR.

Step 10. To indicate the position of the rectangle in the Top View click point **(0, .7)**, **Fig. 7**.



Step 11. F10 BACKUP to enter a new height.

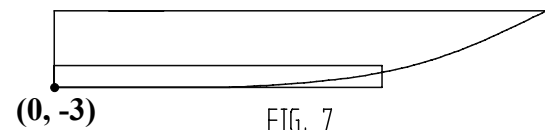


FIG. 7

Step 12. Key in **.4** for height and press ENTER.

Step 13. To indicate the position of the rectangle in the Side View click point **(0, -3)**, **Fig. 7**.

## J. TRIM WOOD BASE and DELETE LINE.

Step 1. Use **ALT-W** to zoom in on the forward end of the wood base. Hold down ALT and press W. Move the cursor to just above and to the left of the front end of the wood base, **Fig. 8**. Click to start 1ST WINDOW CORNER. Move the mouse to surround the front end of the wood base. Click to set 2ND WINDOW CORNER.

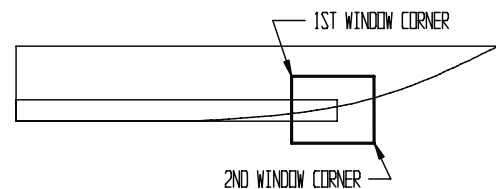


FIG. 8

Step 2. ESC to Main Menu.

Step 3. F2 EDIT.

Step 4. F1 TRIM/EXTEND.

Step 5. F1 FIRST.

Step 6. Trim one line, to trim part of a line, click the line you are to keep, Line 1, **Fig. 9**. Move cursor close to the intersection with Line 2 and click. Trim the other lines. First click Line 1, then click Line 2.

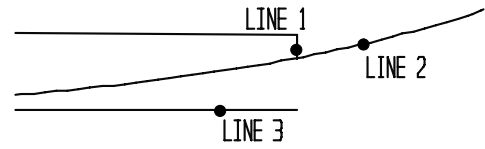


FIG. 9

Step 7. Delete Line 3, **Fig. 9**. Use **CTRL-Q** to delete the line. Hold down CTRL and press Q. Move the cursor over the line, select with a click and press ENTER.

Step 8. Use **CTRL-R** to redraw the display. Hold down CTRL and press R.

Step 9. Save the drawing. Use **CTRL-S**.

### **K. RETRIEVE DRIVE SHAFT PATTERN FILE.**

Step 1. Use **ALT-A** to center the drawing on the screen. Hold down ALT and press A.

Step 2. ESC to Main Menu.

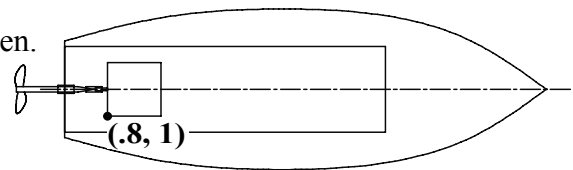
Step 3. F5 FILES.

Step 4. F2 PATTERN.

Step 5. F2 RETRIEVE.

Step 6. Click on your **drive train.ptn** file and click Open.

Step 7. F1 NO.



Step 8. F1 CURRENT LEVEL.

Step 9. Press ENTER to use 1 as scale factor.

Step 10. Press ENTER to use 0 as rotate angle.

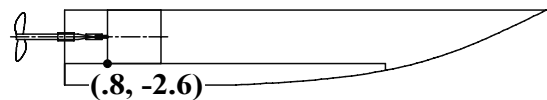


FIG. 10

Step 11. To indicate the position of the rectangle in the Top View click point **(.8, 1)**, **Fig. 10**.

Step 12. To indicate the position of the rectangle in the Side View click point **(.8, -2.6)**, **Fig. 10**.

Step 13. Use **ALT-A** to center the drawing on the screen. Hold down ALT and press A.

Step 14. Save the drawing. Use **CTRL-S**.

## L. ROTATE MOTOR SO PROPELLER IS IN WATER.

Step 1. ESC to Main Menu.

Step 2. F4 X-FORM.

Step 3. F3 ROTATE.

Step 4. F1 MOVE.

Step 5. F3 WINDOW.

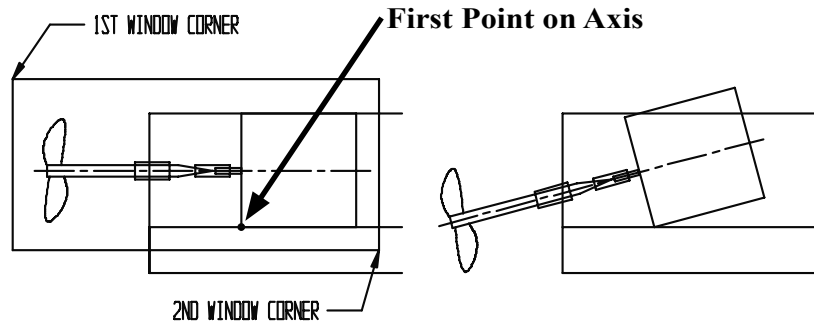


FIG. 11

Step 6. In the Side View, window around the lines that make up the motor and propeller. To window, move the cursor to just outside the top left corner of the prop and click to start the 1ST WINDOW CORNER, **Fig. 11**. Stretch the window to surround the propeller and motor. Click to set the 2ND WINDOW CORNER.

Step 7. To indicate first point on axis, click the bottom rear corner of the motor, coordinates **(.8, -2.6)**, **Fig. 11**.

Step 8. Press ENTER to accept 2nd point on axis.

Step 9. Key in **15 degrees** for rotation angle and press ENTER.

## M. BATTERY.

Step 1. Draw the battery **yellow**. Change the color to yellow. Click the color swatch in the side Tool Bar. Click yellow, number 4.

Step 2. **Set the Snap to .05**. Use **CTRL-G**. Hold down CTRL and press G. Change the **Snap Properties Increment** to **X = .05** and **Y = .05** Click OK.

Step 3. ESC to Main Menu.

Step 4. F1 CREATE.

Step 5. F1 LINE.

Step 6. F7 RECTANGLE.

Step 7. F2 WIDTH/HEIGHT.

Step 8. Key in **2** for width and press ENTER.

Step 9. Key in **.5** for height and press ENTER.

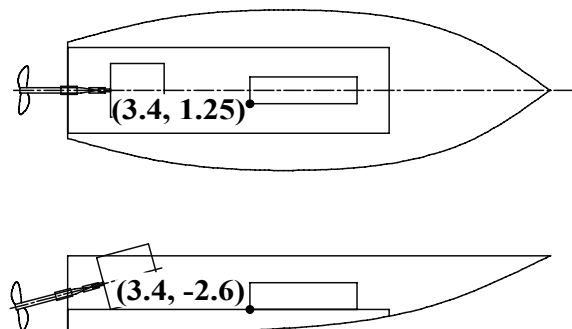


FIG. 12

Step 10. To indicate the position of the rectangle in the Top View click point **(3.4, 1.25)**, **Fig. 12**.

Step 11. To indicate the position of the rectangle in the Side View click point **(3.4, -2.6)**, **Fig. 12**.

## N. BATTERY TERMINALS.

Step 1. Draw the battery terminals **pink**. Change the color to pink. Click the color swatch in the side Tool Bar. Click pink, number 13.

Step 2. ESC to Main Menu.

Step 3. F1 CREATE.

Step 4. F1 LINE.

Step 5. F7 RECTANGLE.

Step 6. F1 CORNERS.

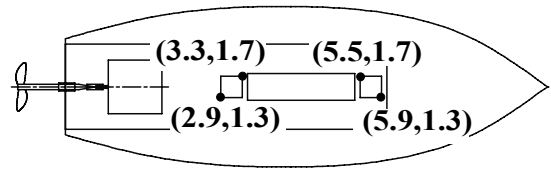


FIG. 13

Step 7. In the Top View, draw the first battery terminal, **Fig. 13**. Start the rectangle with a click at coordinates **(3.3, 1.7)** and move the cursor to stretch the rectangle to coordinates **(2.9, 1.3)** and click.

Step 8. Draw the second battery terminal, **Fig. 13**. Start the rectangle with a click at coordinates **(5.5, 1.7)** and move the cursor to stretch the rectangle to coordinates **(5.9, 1.3)** and click.

Step 9. Save the drawing. Use **CTRL-S**.

## O. SWITCH.

Step 1. ESC to Main Menu.

Step 2. F1 CREATE.

Step 3. F1 LINE.

Step 4. F7 RECTANGLE.

Step 5. F1 CORNERS.

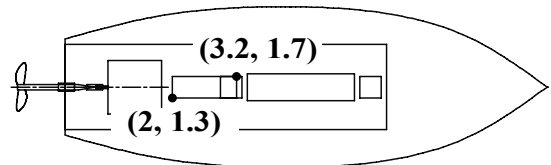


FIG. 14

Step 6. In the Top View, draw the switch, **Fig. 14**. Start the rectangle with a click at coordinates **(3.2, 1.7)** and move the cursor to stretch the rectangle to coordinates **(2, 1.3)** and click

Step 7. Save the drawing. Use **CTRL-S**.

## P. ROTATE SWITCH.

Step 1. ESC to Main Menu.

Step 2. F4 X-FORM.

Step 3. F3 ROTATE.

Step 4. F1 MOVE.

Step 5. F1 SINGLE.

Step 6. In the Top View, click the line of the first part of the switch, Lines 1, 2, 3 and 4 and press ENTER, **Fig. 15**.

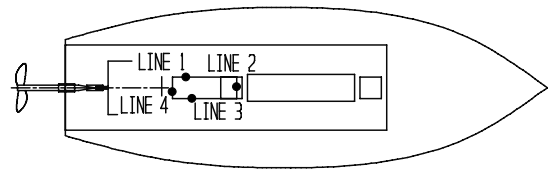


FIG. 15

Step 7. For the first point on axis, move the cursor to the left end of the switch, coordinates (2.2, 1.5), **Fig. 16**, and click.

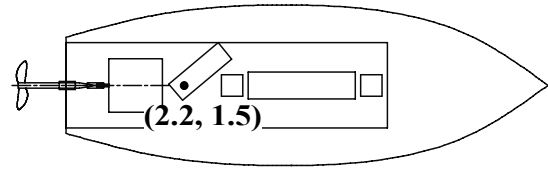


FIG. 16

Step 8. Press ENTER to accept 2nd point on axis.

Step 9. Key in **40 degrees** for rotation angle and press ENTER.

Step 10. Use **CTRL-R** to redraw the display. Hold down CTRL and press R.

### Q. DRAW IN WIRE USING SPLINE.

Step 1. Draw the wire **gray**. Change the color to gray. Click the color swatch in the side Tool Bar. Click gray, number 14.

Step 2. ESC to Main Menu.

Step 3. F1 CREATE.

Step 4. F9 SPLINE.

Step 5. F2 3D CUBI.

Step 6. Click points to draw a spline from the motor to the battery, Spline 1, **Fig. 17**. Use your judgement for the coordinates.

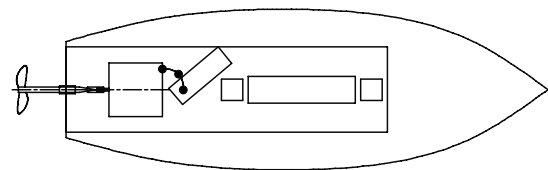


FIG. 17

Step 7. Press ENTER **three times**.

Step 8. Repeat above spline procedure and draw the other wire. That is, draw a spline from the motor to the battery terminal, **Fig. 18**.

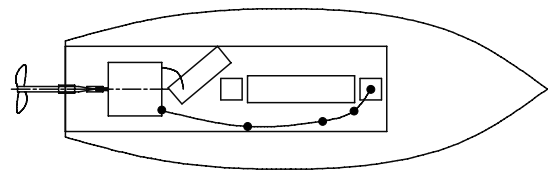


FIG. 18

Step 9. Save the drawing. Use **CTRL-S** to save.

## R. DRAW IN WEDGE FOR MOTOR.

Step 1. ESC to Main Menu.

Step 2. F1 CREATE.

Step 3. F1 LINE.

Step 4. F1 ENDPOINTS.

Step 5. Draw lines to create a wedge between the 3 Points, **Fig. 19.**

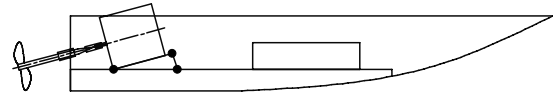
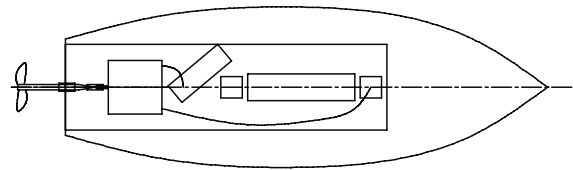


FIG. 19

## S. ADD YOUR NAME AND THE PERIOD TO DRAWING.

Step 1. Use **Alt-H** to reduce the drawing half size. Hold down ALT and press H. Use: **Detail, Note, Key-In** commands to add text.

Step 2. Save the drawing. Use **CTRL-S**.