



Mastercam 2020 Chapter 23 Power Train For Boat

A. Create Rectangle.

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

Step 2. On the Wireframe tab  click



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

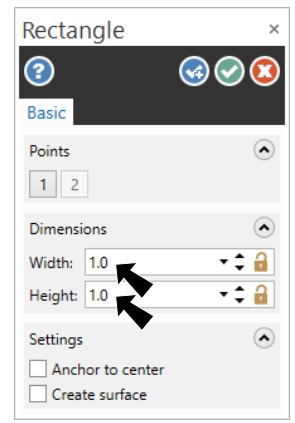
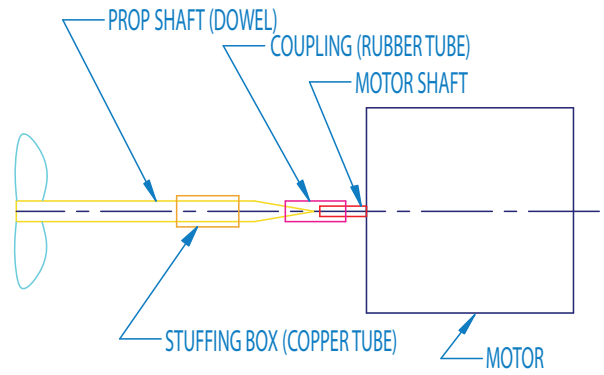



Fig. 1

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

B. Save As "POWER TRAIN"

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

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

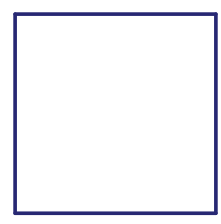



Fig. 2

C. Set Grid and Snap .2.

Step 1. On the View tab  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 .025
 Click OK .

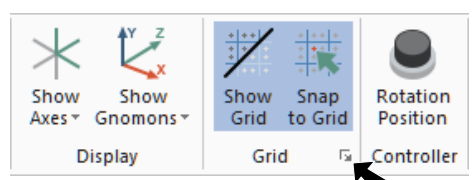


Fig. 3

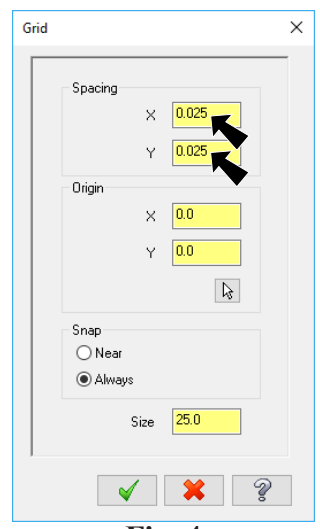


Fig. 4

D. Set Line Attributes Center Line.

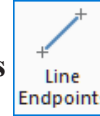
Step 1. Change **line style to center**. **Right click** in the graphics window and on the Mini Toolbar click **Line Style** drop down arrow and select **center line**, **Fig. 5**.



Fig. 5

E. Create Horizontal Center Line.

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 7**

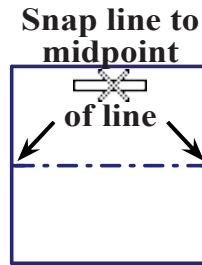


Fig. 7

Click OK .

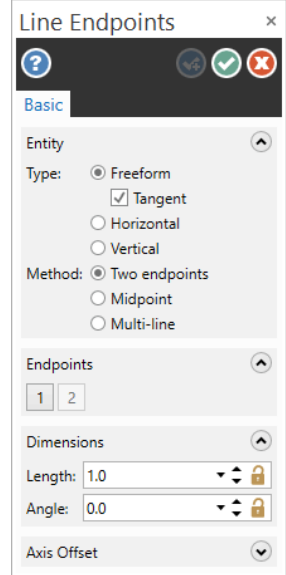


Fig. 6

F. Set Attributes-Red/Solid Line.

Step 1. Sketch **motor shaft lines red** and 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** and click **Wireframe Color** drop down arrow and select **red**, **Fig. 8**.

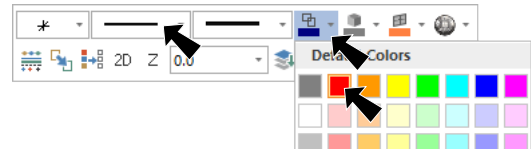
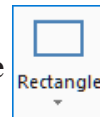


Fig. 8


G. Sketch Motor Shaft.

Step 1. Pan sketch to left to make room for motor shaft.
Use **left arrow key 5 times**.

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



Step 3. In the Rectangle function panel:

Press **spacebar** to activate Fast Point 
Key-in **-.225, .525** and press ENTER
Key-in **0, .475** and press ENTER **twice**

Or use grid to determine location of rectangle.
If necessary,

Click **OK and Create New Operation** .

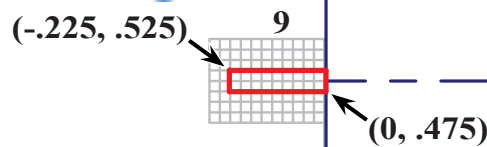



Fig. 9

H. Sketch Coupling (rubber tube).

Step 1. Sketch coupling magenta. Right click in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select **magenta**, Fig. 10.

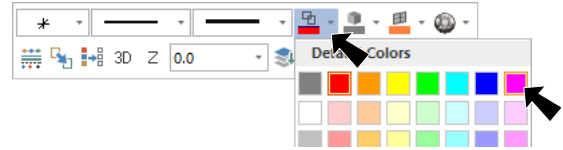



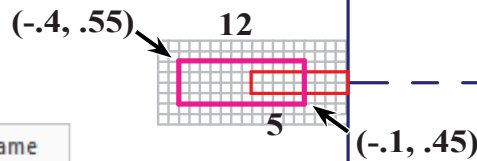
Fig. 10

Step 2. In the Rectangle function panel:

Press **spacebar** to activate Fast Point 
Key-in **-.4, .55** and press ENTER
Key-in **-.1, .45** and press ENTER twice

Or use grid to determine location of rectangle.

Click OK .



I. Extend Center Line.

Step 1. On the Wireframe tab  click **Modify Length** .

Step 2. In the Modify Length function panel:

under Entity, Fig. 12

select **Lengthen**

Distance **2.7**

Click **centerline towards left end**, Fig. 13.

Fit  (Alt-F1)

Click OK .

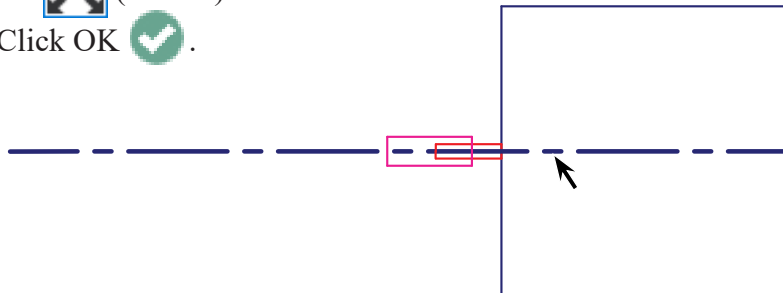


Fig. 13

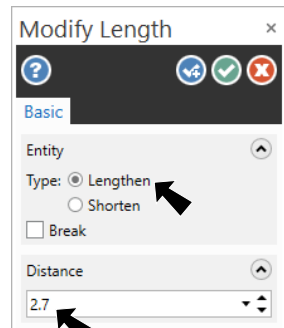



Fig. 12

J. Sketch Propeller Shaft (dowel).

Step 1. Sketch the **propeller shaft yellow**. Right click in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select yellow, Fig. 14.

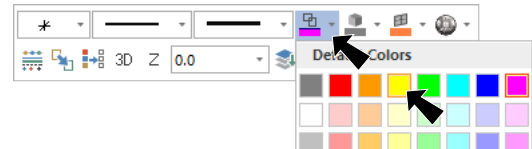
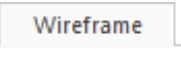


Fig. 14

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

Step 3. In the Line Endpoints function panel:

under Method, Fig. 15

select **Multi-line**

Sketch v shape line in dowel, Fig. 16

Use **Alt-F1** to fit sketch on screen.

Then, sketch dowel as far left as the centerline

Click OK  when done.

Then, sketch lines out to centerline First, sketch V shape

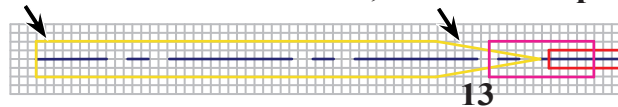


Fig. 16

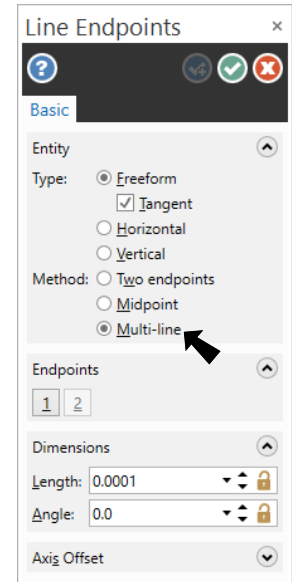



Fig. 15

K. Sketch Stuffing Box (copper tube).

Step 1. Sketch stuffing box **tangerine**. Right click in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select tangerine, Fig. 17.

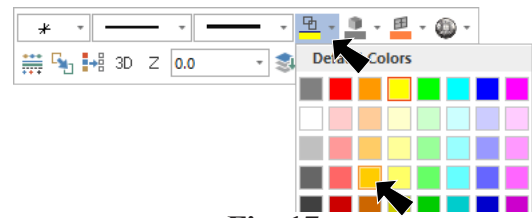



Fig. 17

Step 2. In the Rectangle function panel:

Press **spacebar** to activate Fast Point 

Key-in **-.875, .575** and press ENTER

Key-in **-.575, .425** and press ENTER **twice**

Or use grid to determine location of rectangle

Use **Page Up** key to zoom in

Click OK .

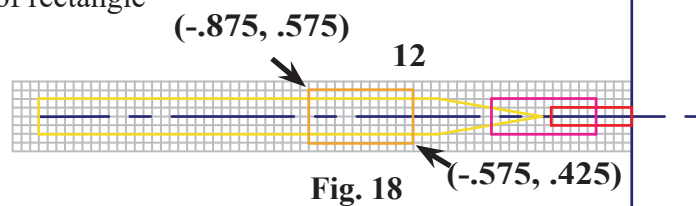



Fig. 18

Step 3. Save  (Ctrl-S).

L. Sketch Propeller Blade.

Step 1. Sketch propeller **cyan**. **Right click** in the graphics window and on the Mini Toolbar click **Wireframe Color**  drop down arrow and select **cyan**, Fig. 19.

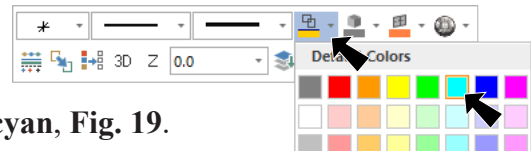
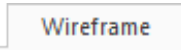
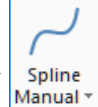




Fig. 19

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

Step 3. In the Spline function panel:

Press **spacebar** to activate Fast Point 
Key-in coordinates in **Fig. 20**
Press **ENTER** after each coordinate

Or use grid to determine location of spline.
Use **Page Up** key to zoom in
Click OK .

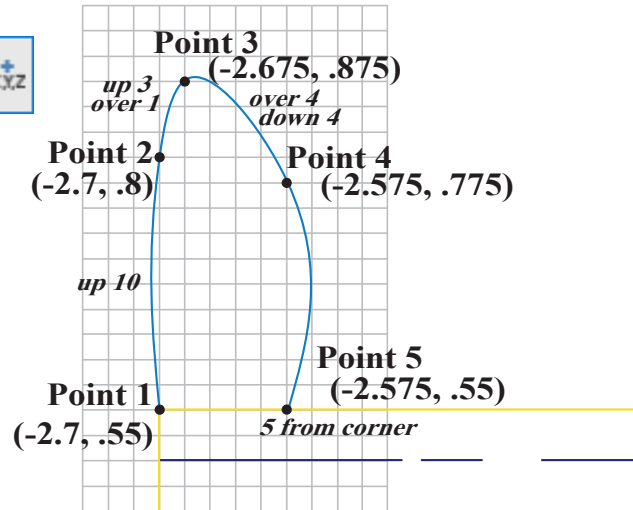



Fig. 20

Step 4. Save  (Ctrl-S).

M. Mirror Copy Propeller Blade.

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

Step 2. Click **spline** and click **End Selection**  (ENTER) Fig. 21.

Step 3. In the Mirror function panel set:
under Method, **Fig. 22**
select **Copy**
under Axis
select **X axis**
Y offset .5
(1/2 of height of rectangle)
Click OK .

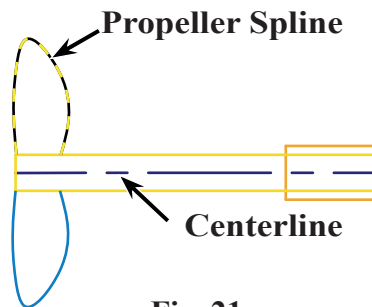


Fig. 21

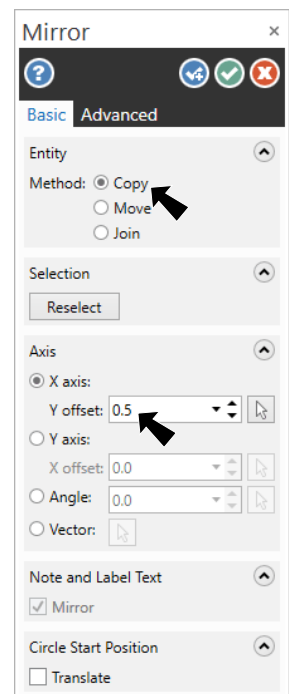


Fig. 22

N. Label Parts.

Step 1. On the Drafting tab **Drafting** and click **Dimension Dialog Box Launcher** (Alt-D), Fig. 23.

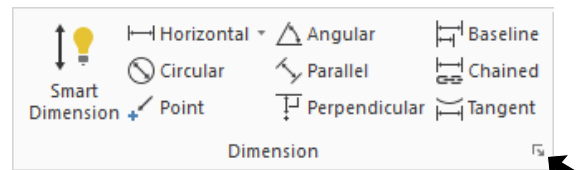


Fig. 23

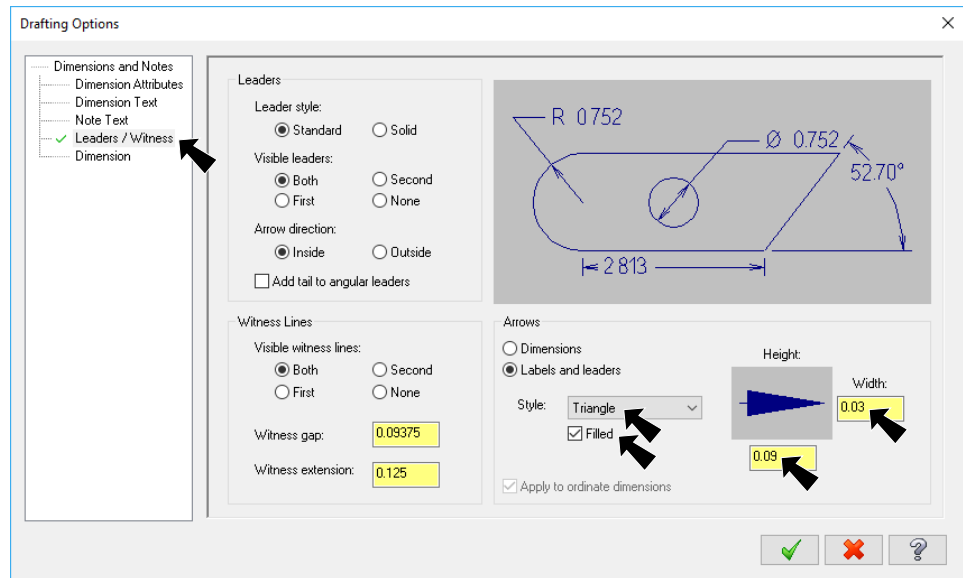


Fig. 24

Step 2. In the Drafting Options dialog box:
 under the Topics list on the left, Fig. 24
 Click Leaders/Witness in the Topics list on the left.
 under Arrows
 Style **Triangle**
 check **Filled**
Width .03
Height .09
 Click OK

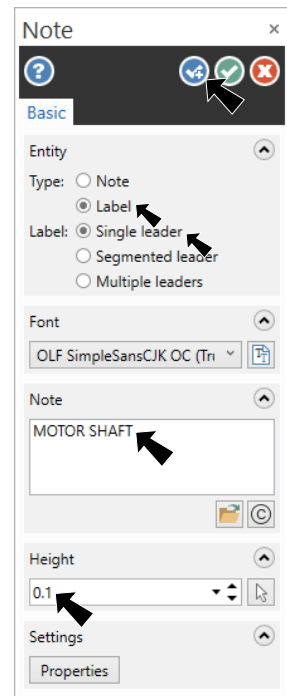


Fig. 25

O. Label Parts.

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

Step 2. In the Note function panel set:
 under Entity, Fig. 25
 select **Label** and **Single leader**
 under Note

Lock the Caps and key-in
MOTOR SHAFT

Click top motor shaft line for **arrowhead position**, Fig. 26.

Click above top left corner of Motor for **text position**.

Click **OK** and **Create New Operation**

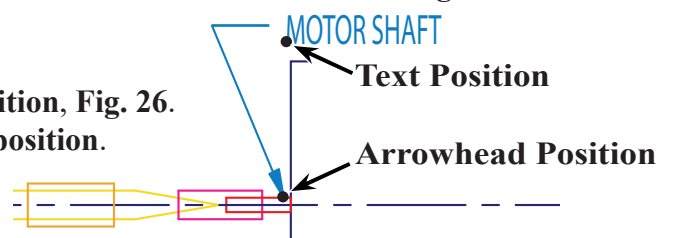


Fig. 26

Step 3. In the Note function panel key-in:

COUPLING (RUBBER TUBE)

Click top line of Coupling to indicate **arrowhead position**, Fig. 27.

Click **above and to left of Motor label** for text position.

Click **OK and Create New Operation** .

Step 4. Repeat label:

PROP SHAFT (DOWEL)

MOTOR

STUFFING BOX (COPPER TUBE)

Fig. 28.

Step 5. Save  (Ctrl-S).

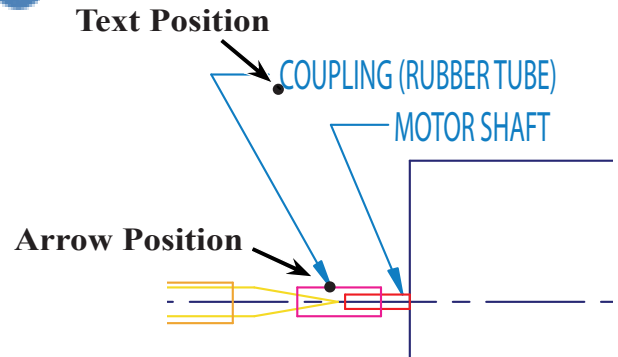


Fig. 27

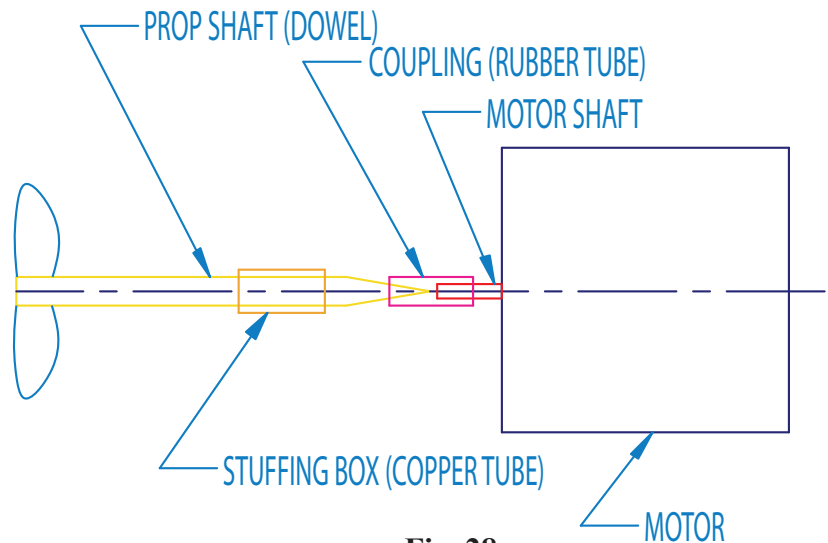


Fig. 28