

Mastercam 2017 Chapter 24 Power Train For Boat

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



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 .

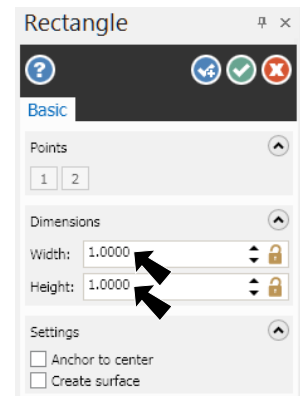
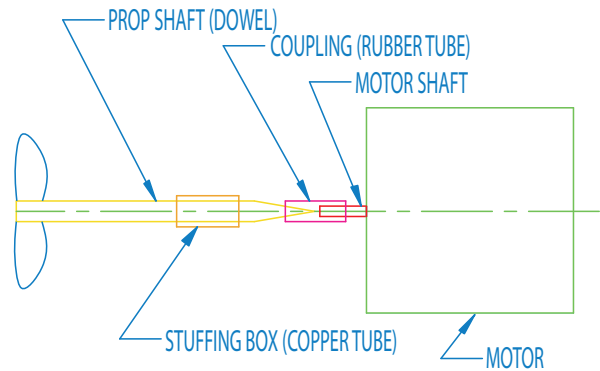


Fig. 1

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

B. Save As "POWER TRAIN"

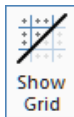
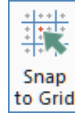
Step 1. Click Save As  (Ctrl-Shift-S) on the Quick Access Toolbar QAT.

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 **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 .025
Click OK .

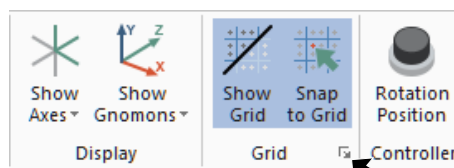


Fig. 3

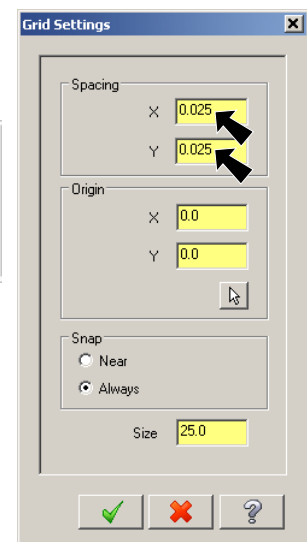


Fig. 4

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.

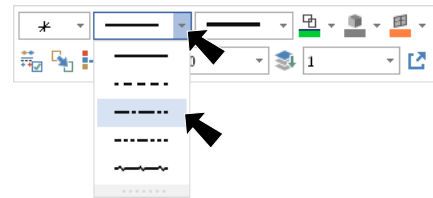
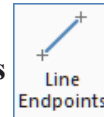


Fig. 5

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

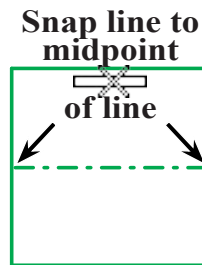


Fig. 7

Click OK

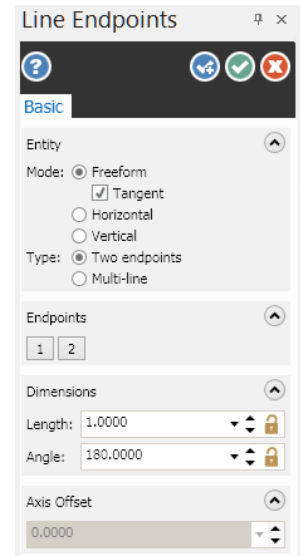


Fig. 6

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.

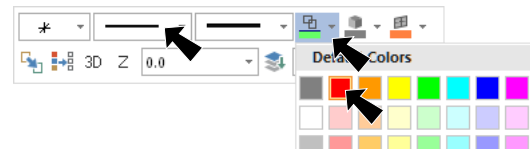
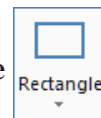


Fig. 8

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**

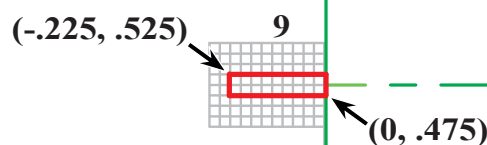


Fig. 9

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.

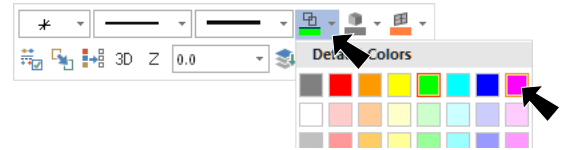


Fig. 10

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 .

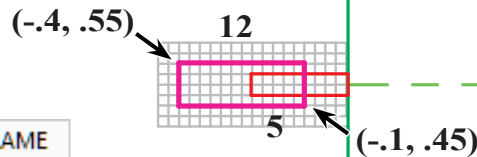
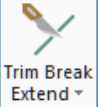


Fig. 11

I. Extend Center Line.

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

Step 2. In the Trim Break Extend function panel:

under Extension length, **Fig. 12**

Extend 2.7

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

Fit  (Alt-F1)

Click OK .

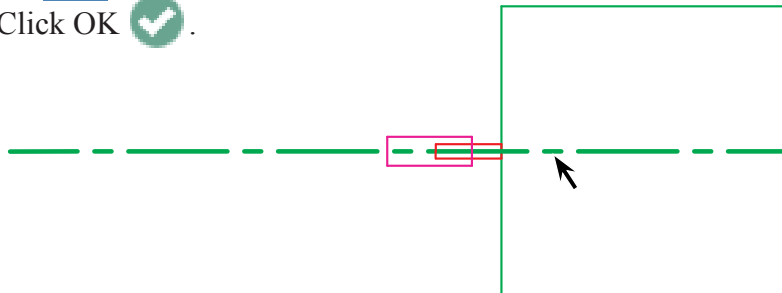


Fig. 13

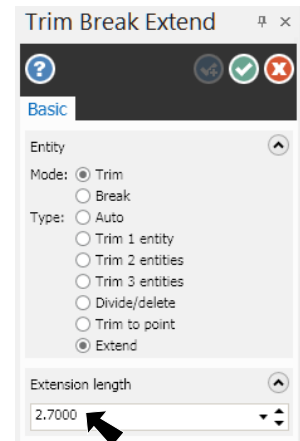
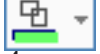


Fig. 12

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.

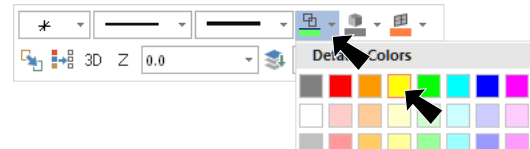
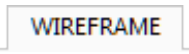
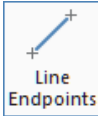


Fig. 14

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

Step 3. In the Line Endpoints function panel:

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.

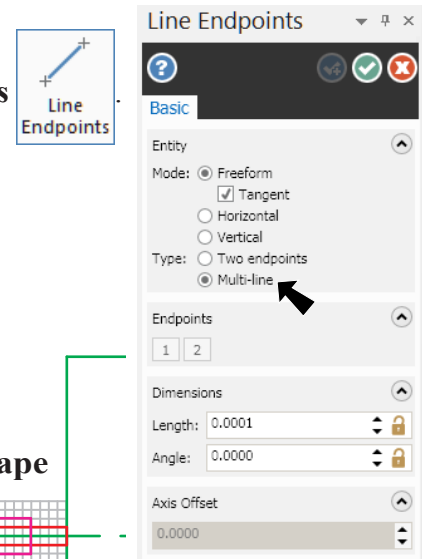


Fig. 15

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

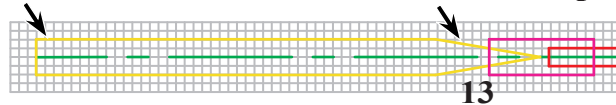
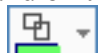


Fig. 16

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.

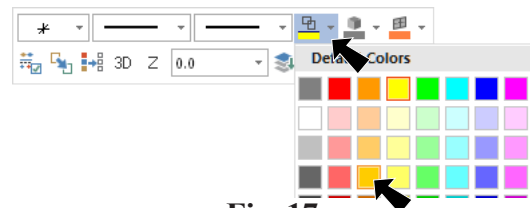


Fig. 17

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 .

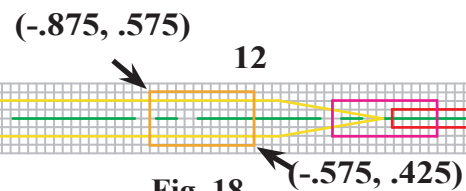


Fig. 18

Step 3. Save  (Ctrl-S).

L. Sketch Propeller Blade.

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

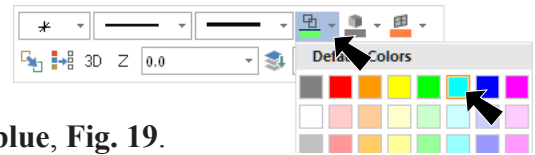
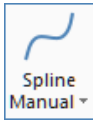


Fig. 19

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

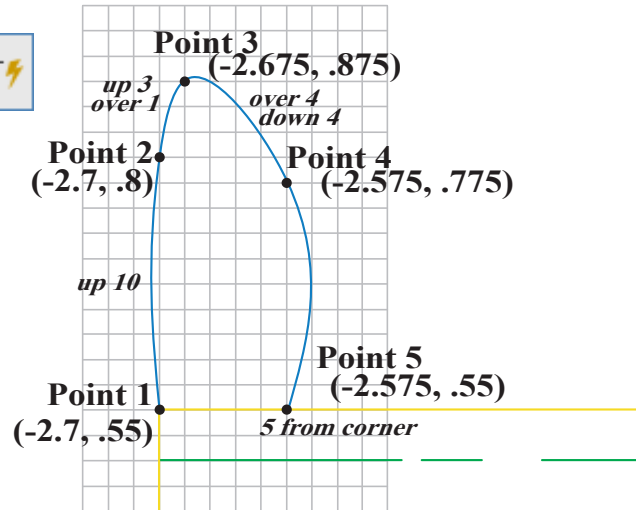
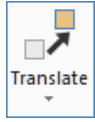
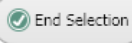


Fig. 20

Step 4. Save  (Ctrl-S).

M. Mirror Copy Propeller Blade.

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

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

Step 3. In Mirror dialog box:

Select **Copy** , Fig. 22

Click **Line** 

Click **centerline**, Fig. 21

Click OK .

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

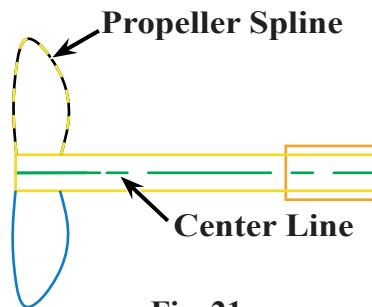


Fig. 21

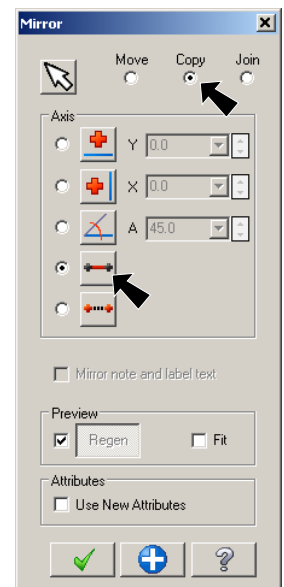
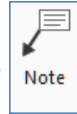


Fig. 22

N. Label Parts.

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



Step 2. In the Note dialog box:

Lock the Caps, key-in: **Fig. 23**

MOTOR SHAFT

Click **Label with Single Leader**

Click **Properties** button

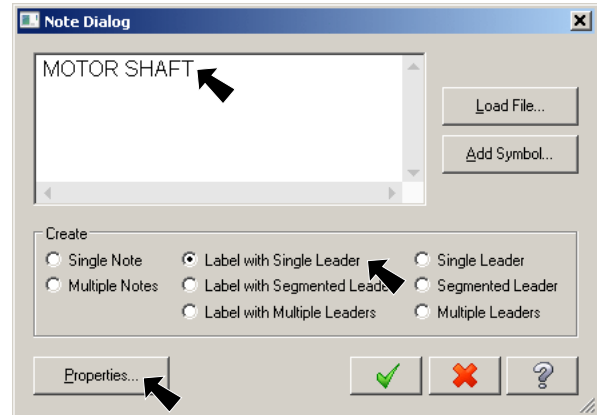


Fig. 23

Step 3. In Drafting Options dialog box set:

Text Height .1

Fig. 24

Click OK .

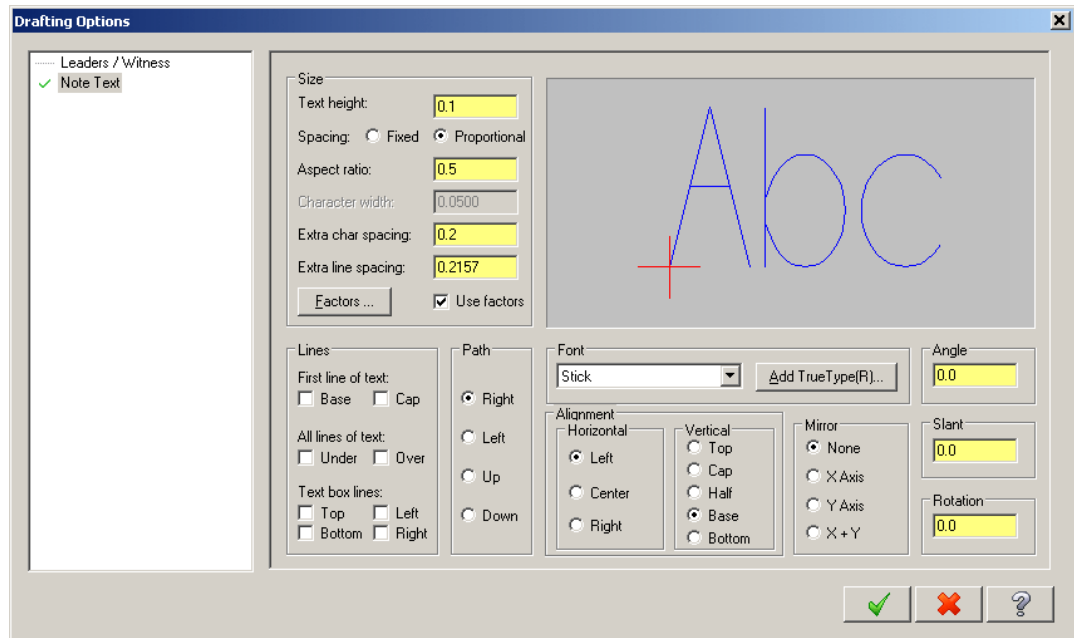


Fig. 24

Step 4. Click top motor shaft line for **arrowhead position**, Fig. 25.

Step 5. Click above top left corner of Motor for **text position**.

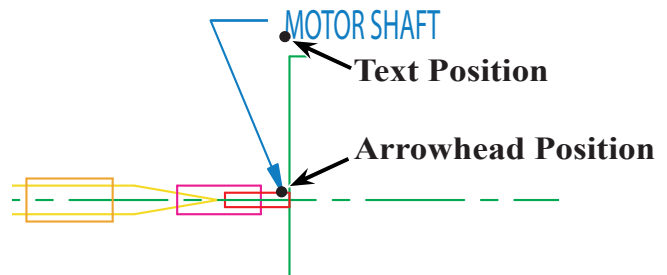
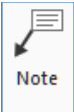
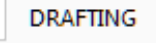


Fig. 25

Step 6. Click **Note**  on the Drafting tab .

Step 7. In the Note dialog box key-in:
COUPLING (RUBBER TUBE)
 Click OK .

Step 8. Click top line of Coupling to indicate **arrowhead position**, Fig. 26.

Step 9. Click **above and to left of Motor label** for **text position**, Fig. 26.

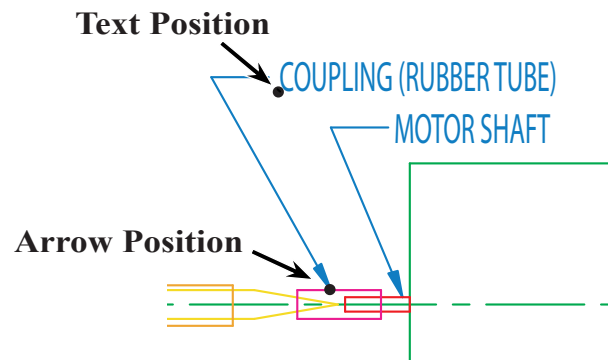
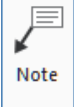


Fig. 26

Step 10. Click **Note** .

Step 11. Repeat label:
PROP SHAFT (DOWEL)
MOTOR
STUFFING BOX (COPPER TUBE)
Fig. 27.

Step 12. Save  (Ctrl-S).

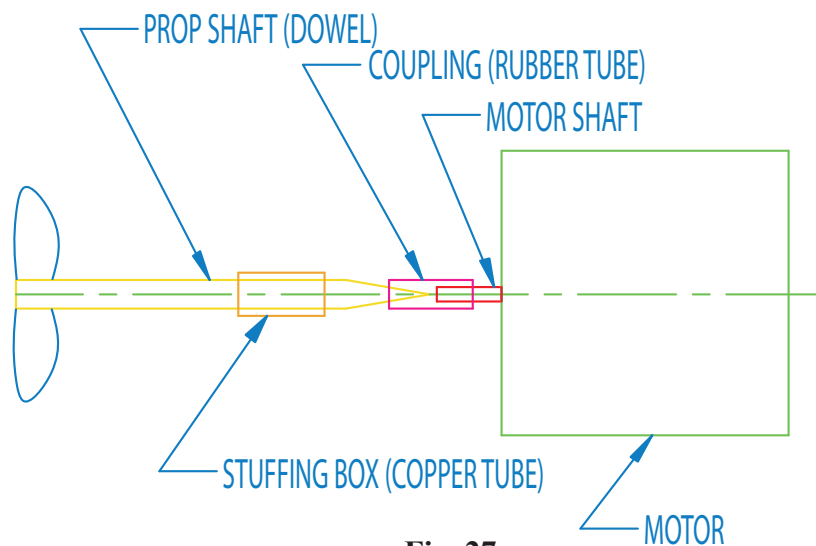


Fig. 27