

CAD to CNC using Layer

By Bob Adams

What's a Layer?

A Layer is an invisible sheet placed over your original drawing.

On this sheet or sheets you can place the parts of your drawing to be machined.

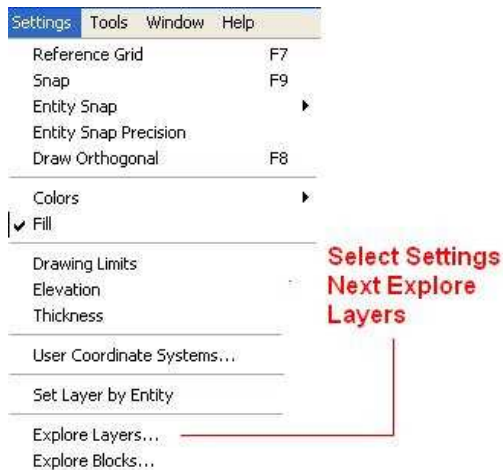
Layers can be used for different machine operations, like Drilling or Milling.

On one Layer the mill operation could be named Cutout and have a Layer color.

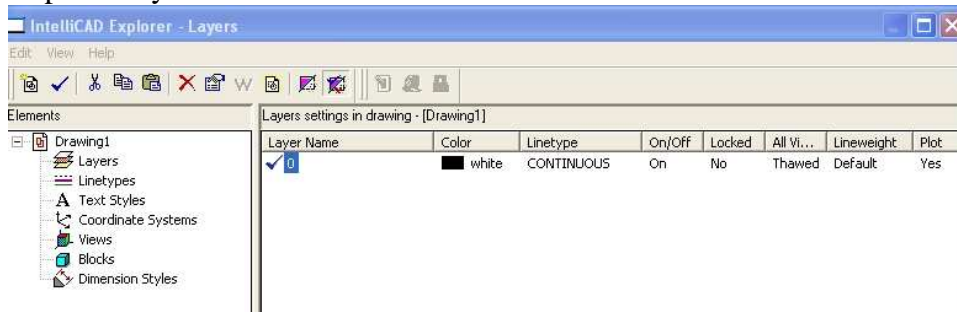
Another Layer the milling operation could be named Outline and have a Layer color.

The following screens will show how to make a new Layer using Intellicad .

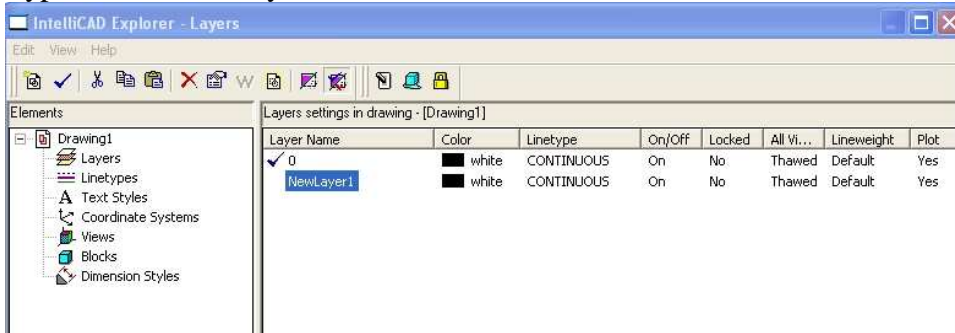
From Intellicad Bar Menu Select Settings



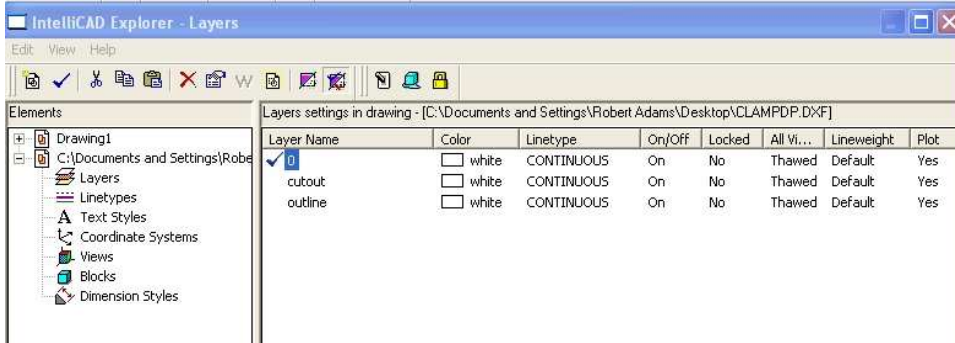
Explore Layers Screen



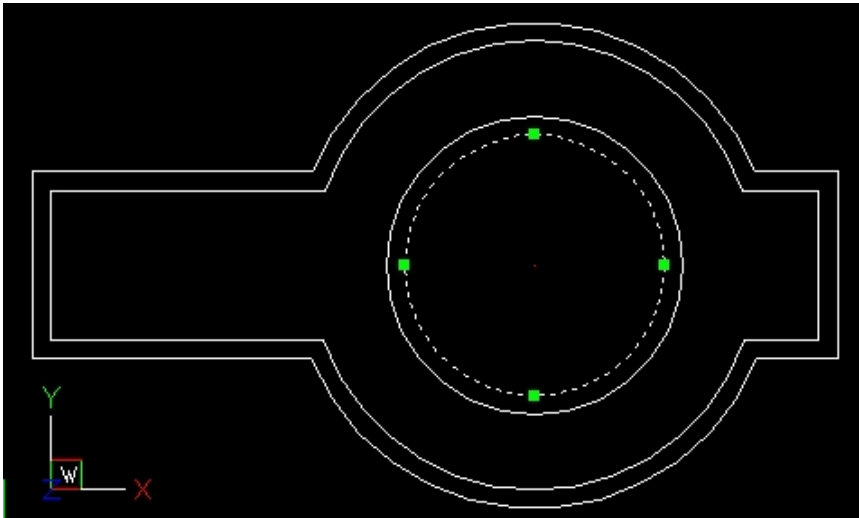
Click on Edit then on Layer to create a New Layer.
Type Cutout NewLayer1



Click on Edit then on Layer to create another New Layer.
Making as many Layers you need for the different operations.



Click on the Entity on your drawing for the Cutout Layer.
Cutter offset to the inside dotted line.



Right click then on Properties for the Entity Properties screen.
Select the Layer cutout > select the Color Red

The Entity Properties dialog box is shown with the following settings:

- All Selected Entities: Layer: 0, Thickness: 0.0000, Linetype: ByBlock
- Color: BYLAYER (with Select Color... button), Lineweight: BYLAYER, Linetype Scale: 1.0000
- Hyperlink: Link Description: None (with Edit Hyperlink... button)
- Lightweight Polyline: Polyline Attributes: Continuous Linetype, Close Polyline
- Polyline Handle: 11B, Polyline Elevation: 0.0000
- Vertex: Location: X: 4.1232, Y: 1.4971 (with Select > button), Starting width: 0.0000, Ending width: 0.0000, 1 of 2, Bulge: 1.0000 (with << Previous and Next >> buttons)

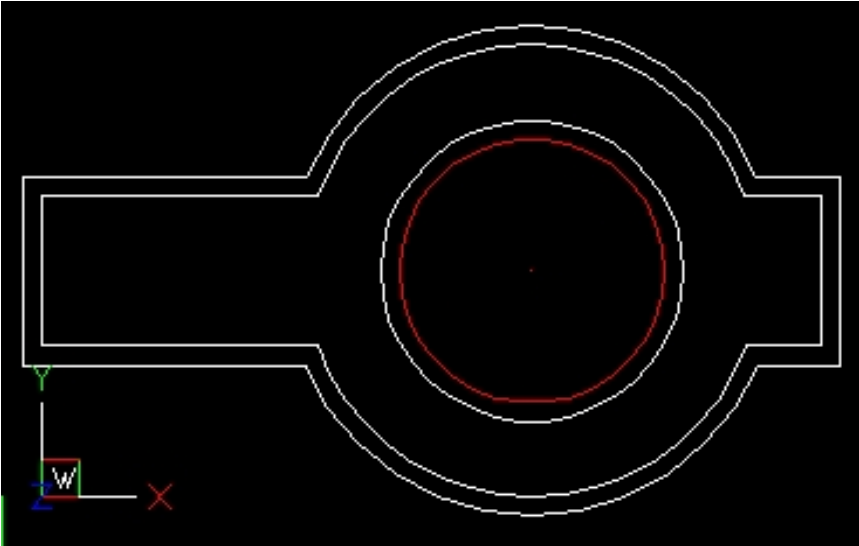
Buttons at the bottom: ? (Help), Explorer..., OK, Cancel

The Entity Properties dialog box is shown with the following settings after changes:

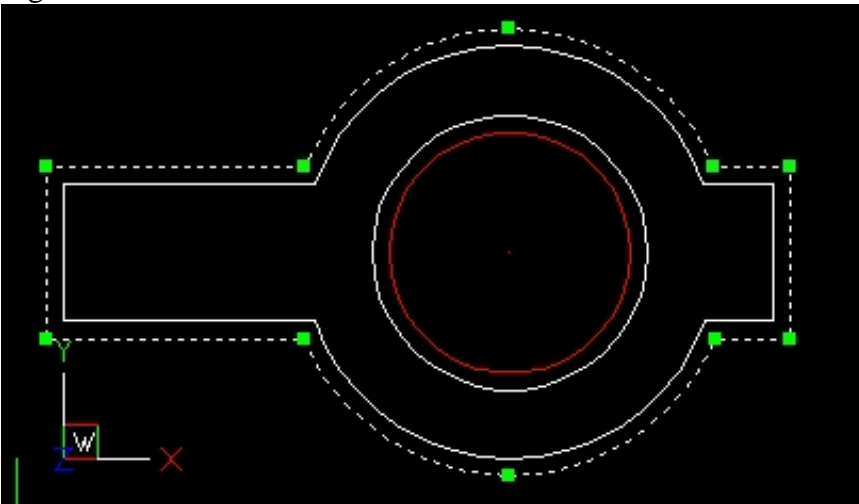
- All Selected Entities: Layer: cutout, Thickness: 0.0000, Linetype: ByBlock
- Color: Red (with Select Color... button), Lineweight: BYLAYER, Linetype Scale: 1.0000
- Hyperlink: Link Description: None (with Edit Hyperlink... button)
- Lightweight Polyline: Polyline Attributes: Continuous Linetype, Close Polyline
- Polyline Handle: 11B, Polyline Elevation: 0.0000
- Vertex: Location: X: 4.1232, Y: 1.4971 (with Select > button), Starting width: 0.0000, Ending width: 0.0000, 1 of 2, Bulge: 1.0000 (with << Previous and Next >> buttons)

Buttons at the bottom: ? (Help), Explorer..., OK, Cancel

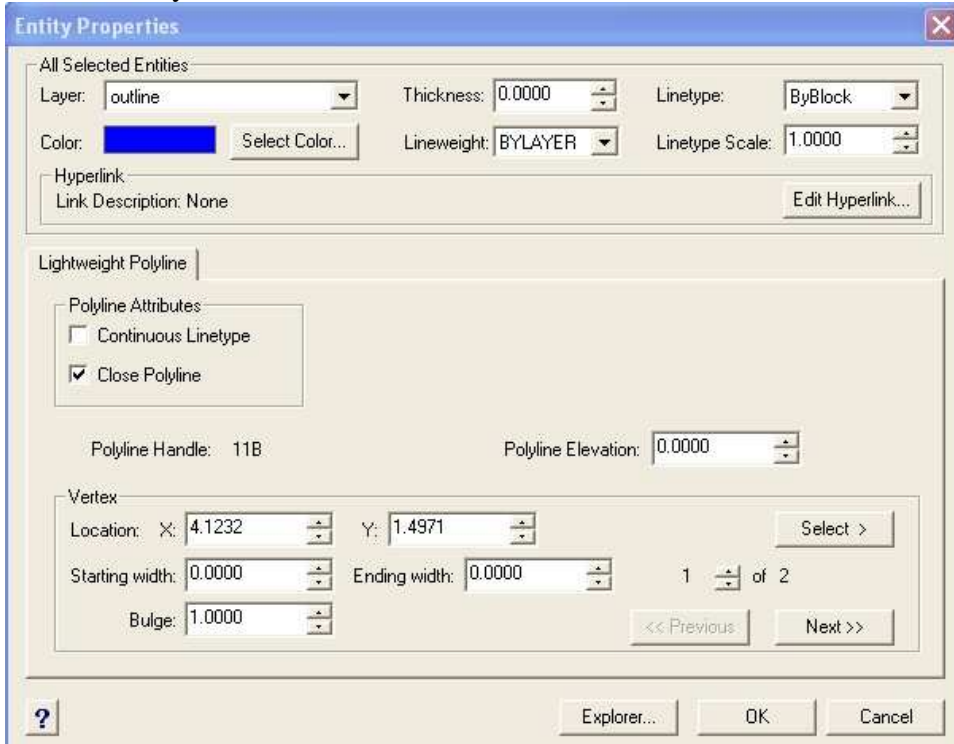
Cutout Layer is Red
Figure 1



Next Outline Layer with cutter offset to the outside.
Figure 2

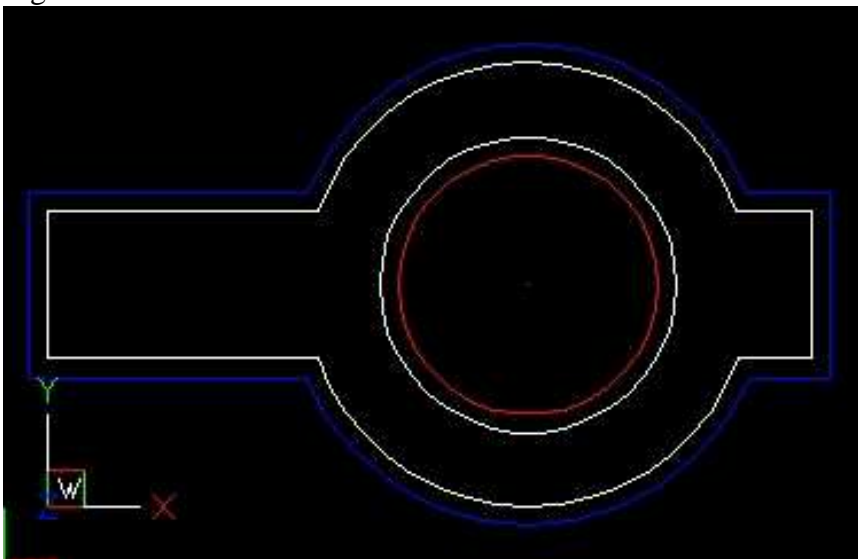


Right click then on Properties for the Entity Properties screen.
Select the Layer Outline select the Color Blue



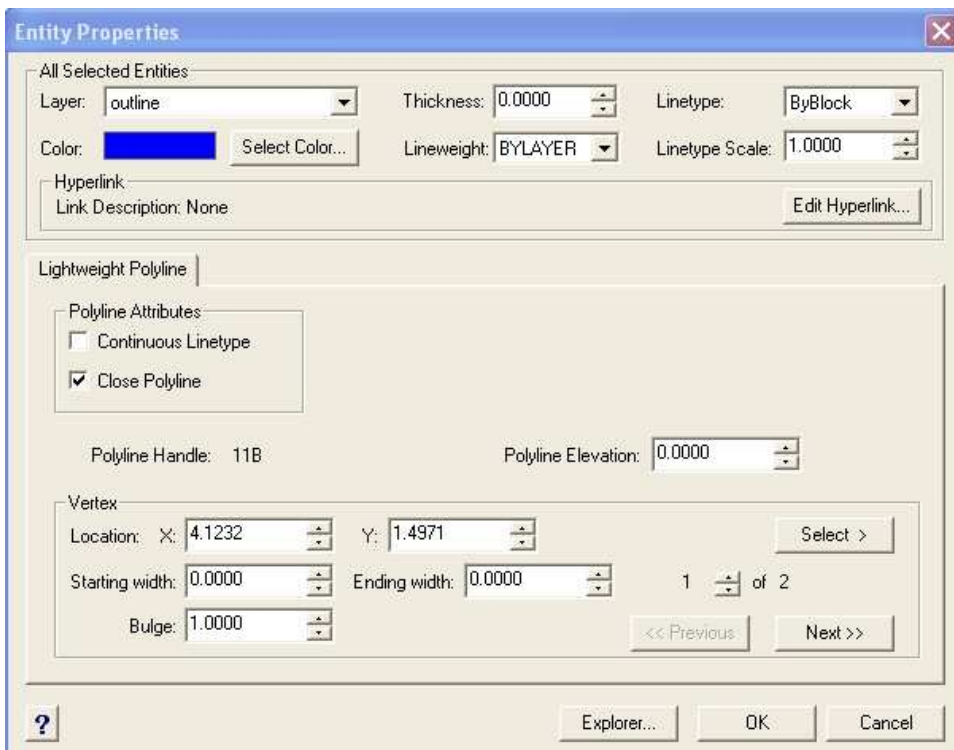
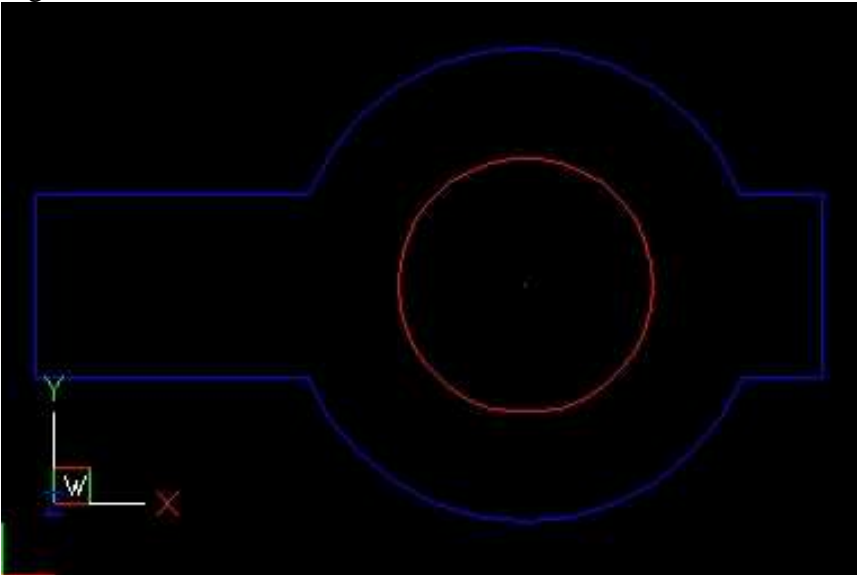
Outline Layer is Blue.

Figure 3



Click on the White Entities Fig.3
Then right click >Then click on Cut.

Save the drawing Fig. 4 as your Filename.dxf in AutoCad (ASCII R12) format.
Figure 4



The Entity Properties are a great way to edit the Vertex. The X and Y location can be change by typing in a new number.

This is the Gcode to Mill the Cutout and the Outline using the DXF2G program.

```
G90
G20
G17
M06 T1 (1/4 Endmill)
M03 S3200
G00 Z.2000
M08


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G00 X4.1232 Y1.4971
G01 Z-.5000 F10.0
G03 X2.3732 Y1.4971 I-.8750 J.0000
G03 X4.1232 Y1.4971 I.8750 J.0000
G00 Z.2000


---


G00 X1.7457 Y.8721
G01 Z-.5000 F10.0
G01 X-.1250 Y.8721
G01 X-.1250 Y2.1219
G01 X1.7519 Y2.1247
G02 X4.7324 Y2.1244 I1.4902 J-.6145
G01 X5.2849 Y2.1214
G01 X5.2849 Y.8721
G01 X4.7457 Y.8721
G02 X1.7457 Y.8721 I-1.5000 J.6250
G00 Z.2000


---


M09
G00 Z.5000
M05
G00 X0.0 Y0.0
M30
```

**You can add to this file by
using cut and paste.
The Red lines separate the Cutout
from the Outline.
Change the Z depth for each cut
and paste you do.**

For more information see my web page at:
<http://stcnc.tripod.com/>