MasterCAM beginner tutorial
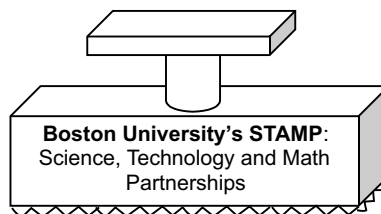
For use with MASTERCAM ver.6.0. An introduction to simple geomtry importing from CORELDRAW and file manipulation to be used with MILL
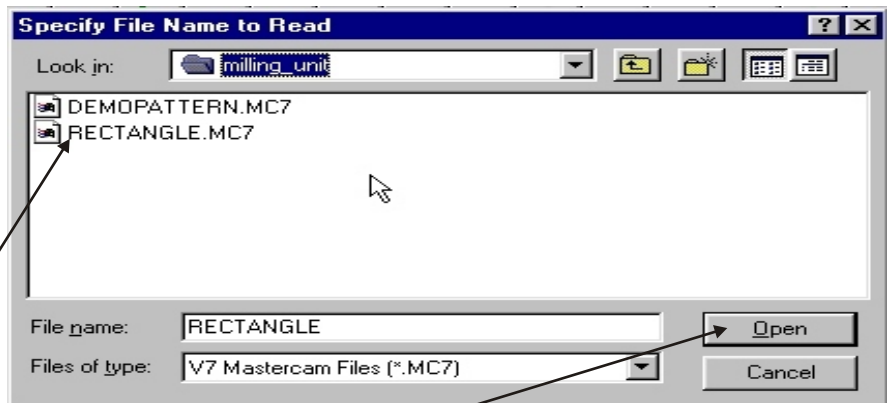
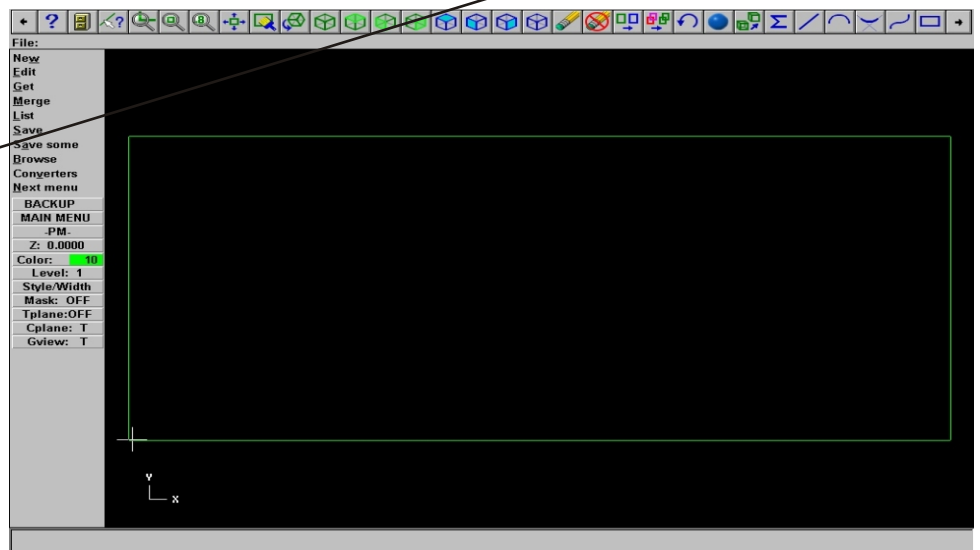**Boston University's STAMP**:
Science, Technology and Math
Partnerships

Alex MacKenzie

Opening a design file into MasterCam

opening the template:

1. double click on the icon labelled "Mastercam Mill7"

   MasterCam Mill7

2. click on "file" on the main menu then "get":

3. In the next window, double click the folder marked "Milling_Unit"

File:
New
Edit
Get
Merge
List
Save
Save some
Browse
Converters
Next menu

Main Menu:
Analyze
Create
File
Modify
Xform
Delete
Screen
Toolpaths
NC utils
Exit
BACKUP
MAIN MENU
-PM-
Z: 0.0000
Color: 10
Level: 1
Style/Width
Mask: OFF
Tplane:OFF
Cplane: T
Gview: T

Specify File Name to Read

Look in: Mc7

milling_unit   ch
Samples   co
3dcntour.mc7   co
6a102.mc7   Co
chairseatloft.mc7   Co
chairwire.mc7   El

File name: rectangle

Specify File Name to Read

Look in: milling_unit

DEMOPATTERN.MC7
RECTANGLE.MC7

File name: RECTANGLE
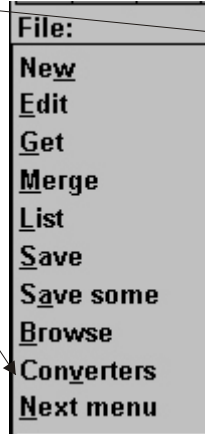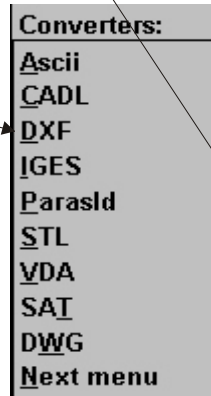Files of type: V7 Mastercam Files (*.MC7)

Open
Cancel

4. finally, select "rectangle.mc7" and select "open". your screen should now have a rectangle template on it.

File:
New
Edit
Get
Merge
List
Save
Save some
Browse
Converters
Next menu
BACKUP
MAIN MENU
-PM-
Z: 0.0000
Color: 10
Level: 1
Style/Width
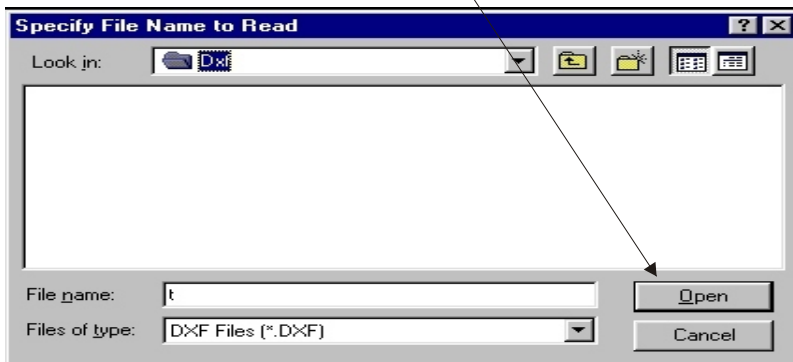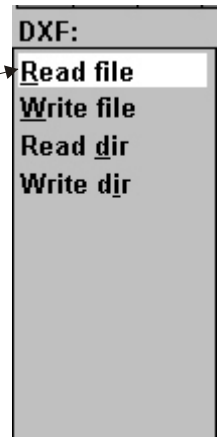Mask: OFF
Tplane:OFF
Cplane: T
Gview: T

Importing CorelDraw Designs:

1. if you have a coreldraw design, first make sure you have saved it in ".dxf" format. If so, proceed by clicking "main menu" on the left side of the screen.

Main Menu:
Analyze
Create
File
Modify
Xform
Delete
Screen
Toolpaths
NC utils
Exit
BACKUP

BACKUP
MAIN MENU
-PM-
Z: 0.0000
Color: 10
Level: 1
Style/Width
Mask: OFF
Tplane:OFF
Cplane: T
Gview: T

2. next, click "file", then "converters", and finally "DXF"

File:
New
Edit
Get
Merge
List
Save
Save some
Browse
Converters
Next menu

Converters:
Ascii
CADL
DXF
IGES
ParasId
STL
VDA
SAT
DWG
Next menu

DXF:
Read file
Write file
Read dir
Write dir

3. On the DXF menu, select "read file". It will then bring up a new menu where you can select your dxf file. Browse to where you saved it (a: or sharing), select it, and select open.

Specify File Name to Read
Look in: DXf
File name: t
Files of type: DXF Files (*.DXF)
Open
Cancel

4. finally, it will ask you "delete the current part?" -click no, and your design will be added on top of your rectangle template.

Delete the current part?
Yes   No

Smile...
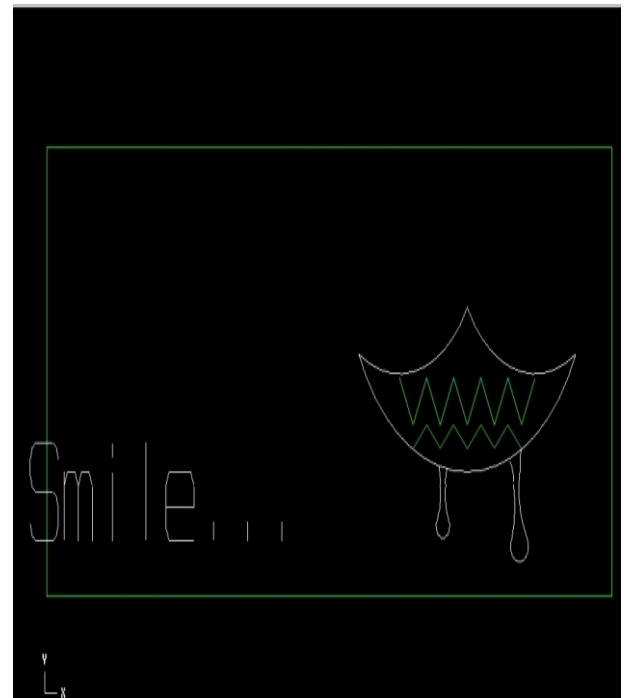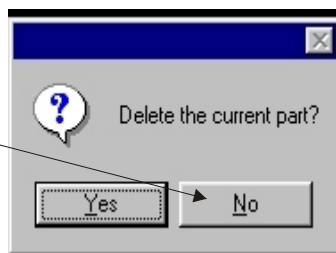
Transforming your design position and size

While looking at your workspace, things may look very jumbled.
your design pattern and rectangle template may be overlapping.
Remember, your design *MUST STAY WITHIN* the rectangle!! However
messy things look, they are really the combination of three different
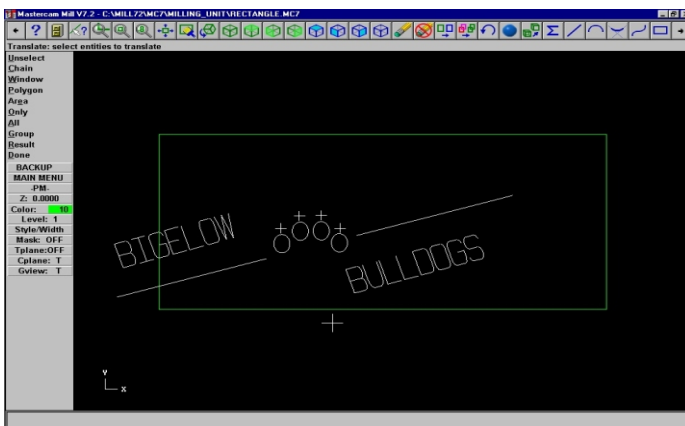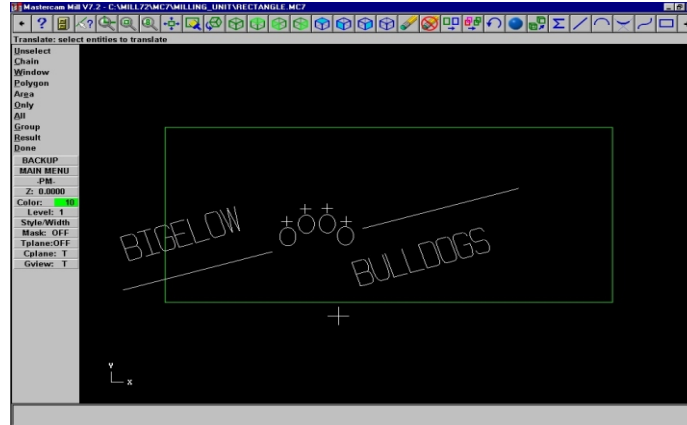possible problems:

1.object too big/small
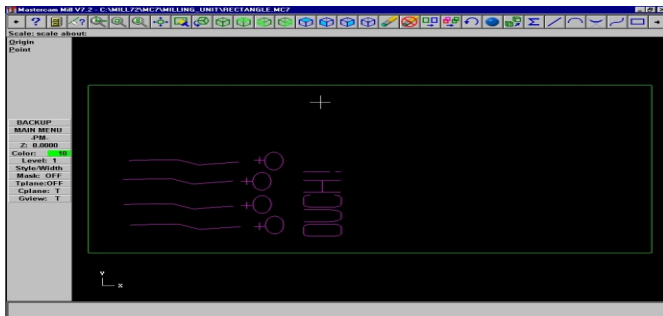
2.object rotated in wrong direction
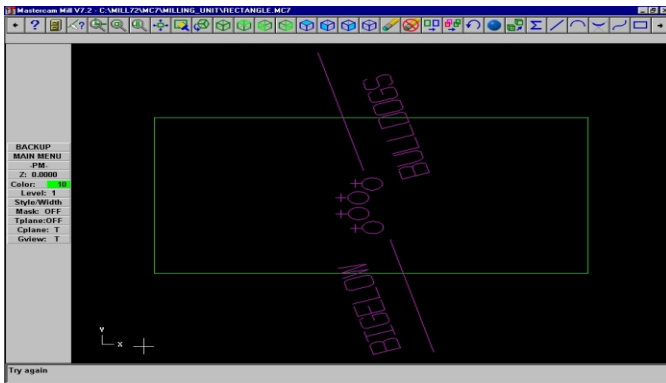
3.object shifted too far in one direction
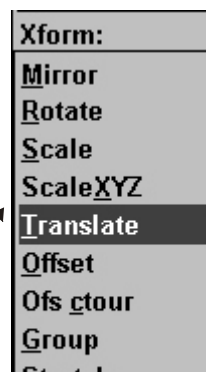
Transforms - translate

when your design or object needs to be shifted in any direction, you will need to use the *translate* tool. Most likely you will do this to get your design into the rectangle template.

1. Your first step is to make sure you can properly view your objects. Press the '*zoom/fit*' button located on the top of your workspace **
(next to it is the unzoom button, both are useful!!)

2. Next, from the main menu on the left select *Xform.*
(if you are not at the main menu, the "*main menu*" icon is on the left)

3. select "*translate*", then "*window*".

Xform:
Mirror
Rotate
Scale
ScaleXYZ
Translate
Offset
Ofs ctour
Group
Stretch

Translate: selec
Unselect
Chain
Window
Polygon
Area
Only
All
Group
Result
Done

Main Menu:
Analyze
Create
File
Modify
Xform
Delete
Screen
Toolpaths
NC utils
Exit
BACKUP
MAIN MENU

Transforms - translate(cont'd)

4. Now take your cursor and position it near the lower left corner of your design you want to move. Click the mouse ONCE and now as you move the mouse a rectangle will appear.
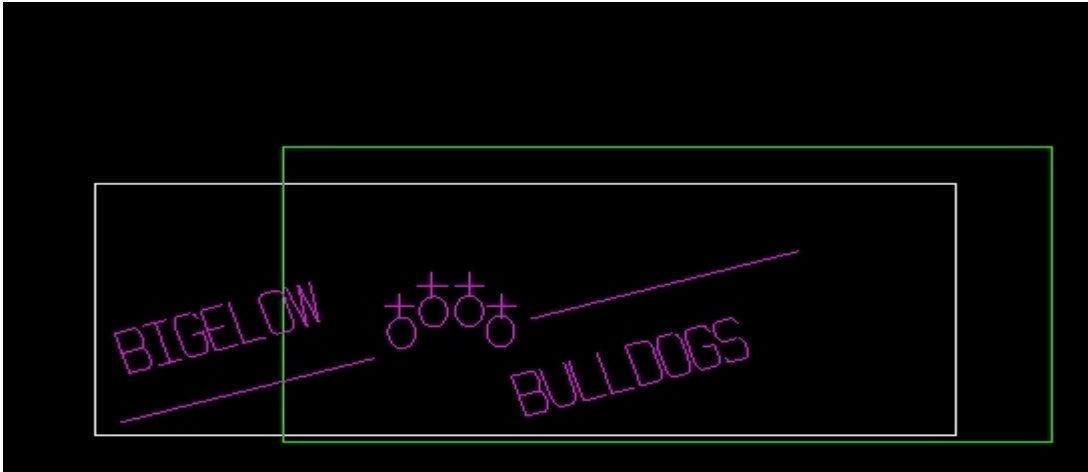

Make your rectangle cover your enitire design (but not the entire template rectangle!!) and click the mouse once more. The area should now be highlighted

5. Click '*done*' from the lefthand menu and then '*between pts*'

6. Now take your cursor and click ONCE on the lower left hand corner of your design. Move your cursor to the right, you will see a line being dragged along. Position the cursor where you want your design to start, somewhere near the lower lefthand corner INSIDE the rectangle.
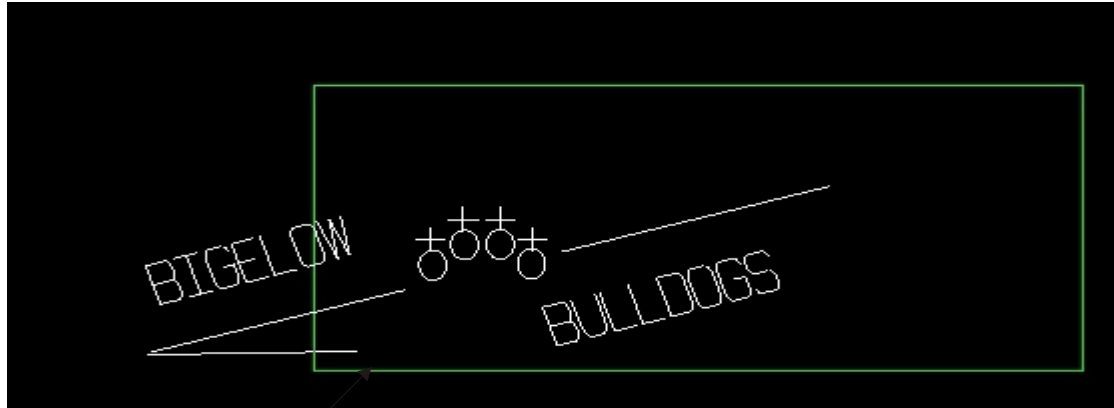
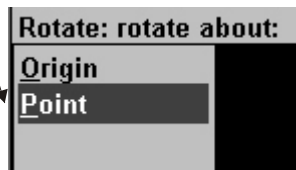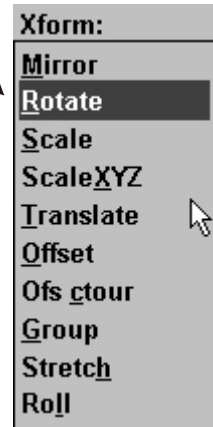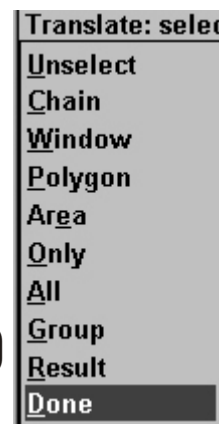7. click once more, and then click *done*. If you've followed the steps carefully, your object should be translated. You may need to translate it again, or perform different types of Xforms for your object to fit. If you need to ever re-select your object for an Xform, you can use the 'result' button on the left. Also, if you need to translate again, just hit 'result' and follow from step 5 !!!
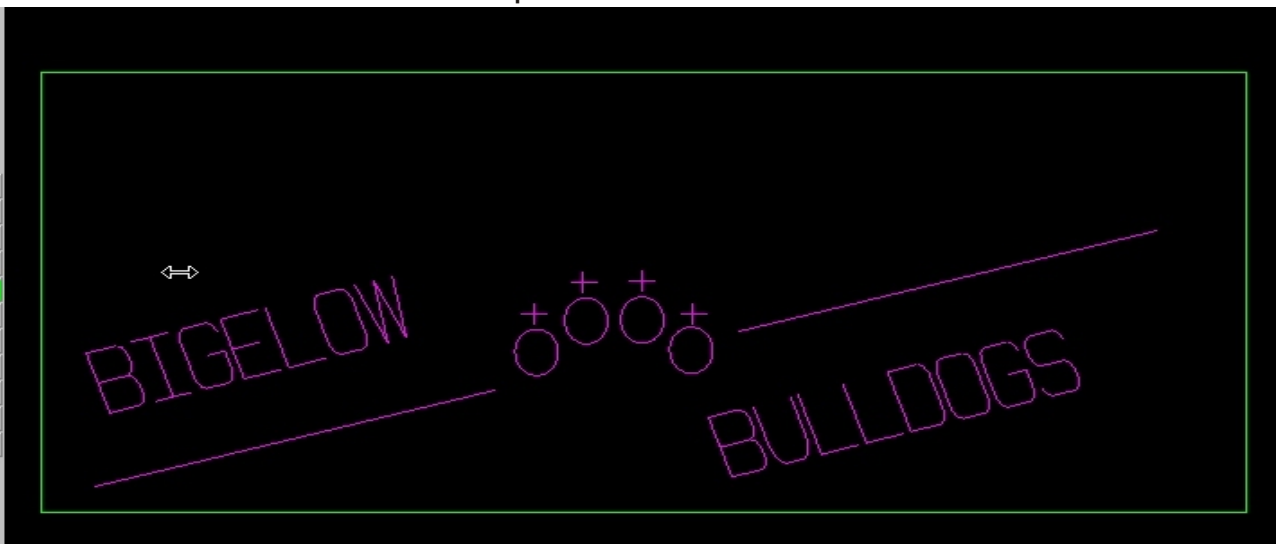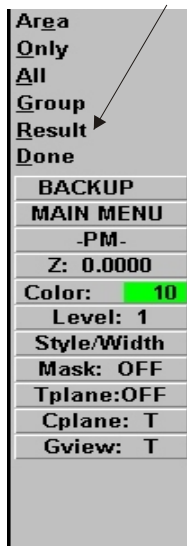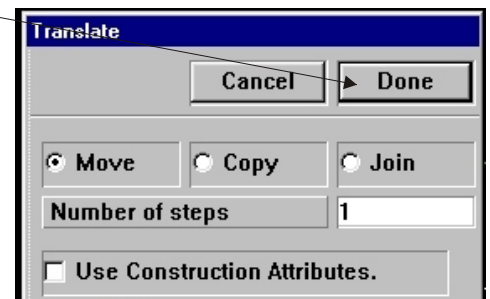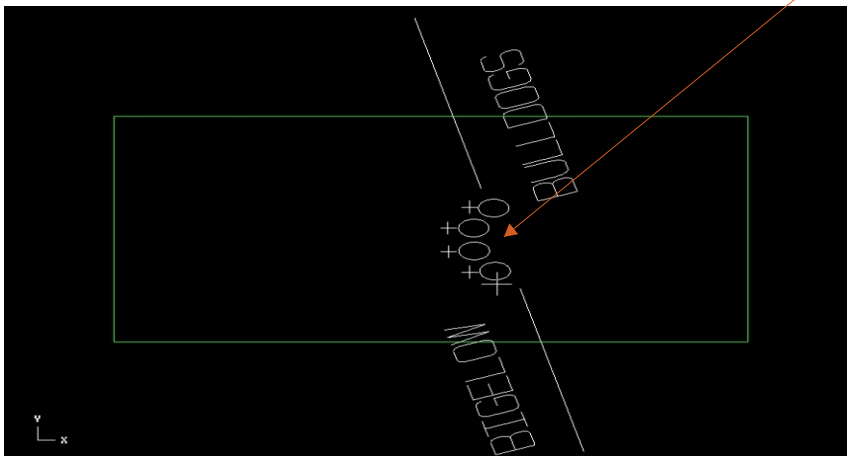
Transforms - rotate

1. if your object is rotated in the wrong direction, you can use the 'rotate' command to fix it. The first thing to do is to properly select your object. To do this, follow steps 2-4 from the 'Transforms-translate' pages. On step number 3, select '*rotate*' from the Xform menu instead of '*translate*'.

Xform:
Mirror
Rotate
Scale
ScaleXYZ
Translate
Offset
Ofs ctour
Group
Stretch
Roll

2. after your object has been selected, click '*done*' from the lefthand menu followed by '*point*' to select what you will rotate around (think of it as spinning your design on a circle, you need to pick where the center will be)

Translate: selec
Unselect
Chain
Window
Polygon
Area
Only
All
Group
Result
Done

Rotate: rotate about:
Origin
Point

3. now take your cursor and try to place it where you wish to rotate around. The 'best' place is usually in the center of your design Click the mouse once you have centered it.

4. The program will now ask how far to rotate. When you choose a value, you can rotate clockwise by using a negative number, positive for counter-clockwise. You will probably need to only rotate 90°
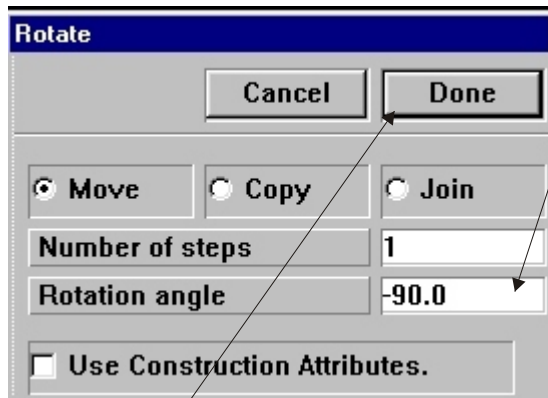
5. Finally, click done. Your object should rotate. If it still needs to be rotated, remember you can use the 'result' button on the left to reselect the object and try again.
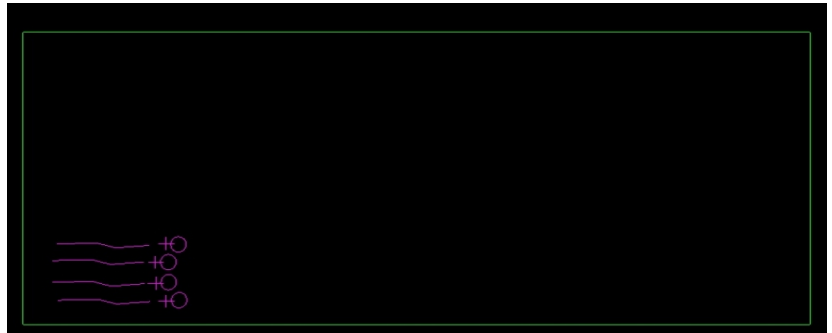

UH OH!! looks like i may need to go back and TRANSLATE my object!!!

Transforms -xyzscale

1. The last Transform you'll need to modify your design to fit the template is 'xyzscale', which lets you change the size of the design.

2. If you need to go from small to large, start out by going from *main menu --> Xform --> ScaleXYZ -->Window*
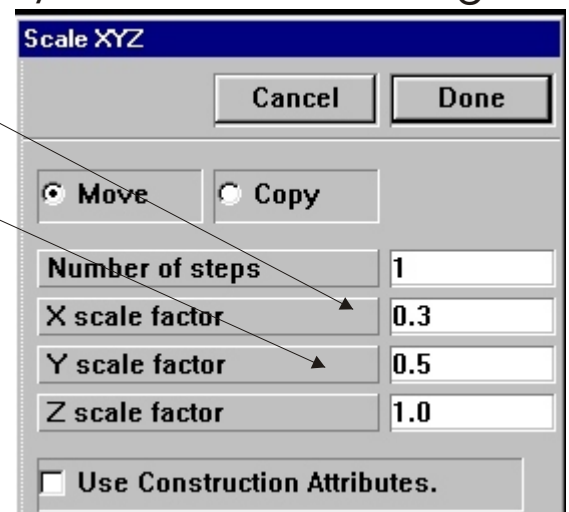
   Then proceed to highlight your design with your rectangle, and select it. (these are similar to steps 2-4 from "Transforms-translate")

3. When finished, select '*done*' from the left hand menu, then select '*origin*'.

   Scale: scale about:
   Origin
   Point

4. A popup menu will now come up to pick how much to scale your design by. This isn't easy and may take a few tries to get right! You only need to use the 'Xscale factor' - for x direction (left-right) and 'Yscale factor' -y direction (up-down) .When trying to figure out scale factors, think multiplication- a factor of '1'xdesign won't change the size at all! Or, if you use '2'xdesign, the design will double in size in the direction you picked.

   Scale XYZ

Cancel	Done

   ◉ Move   ○ Copy

Number of steps	1
X scale factor	0.3
Y scale factor	0.5
Z scale factor	1.0

   ☐ **Use Construction Attributes.**

5. once you have entered values for your scale factors, click '*done*'
If it still needs to be bigger, remember you can always repeat the steps, but using the '*result*' button instead of re-selecting everything. If your object ended up too big, you can also shrink it, by using numbers less than 1! (.5xdesign shrinks it in half)

going from large to small....

If you need to shrink your design to fit into the rectangle template the steps are *almost* the same as before, except for how we select your object. Before, we used the 'window' method and drew a box around the design. If we try to do that now, we'll end up drawing the rectangle around the rectangle template! This means when we shrink our design we'll shrink the rectangle we're trying to fit it in to!! what you need to do is select the design by *chaining*.

1a. Start by selecting *main menu -->xform -->scaleXYZ -->chain*.

2a. Next, go to your design and highlight each 'piece' of it by clicking on it once. You should see it become highlighted and the 'Select Chain #' increase.
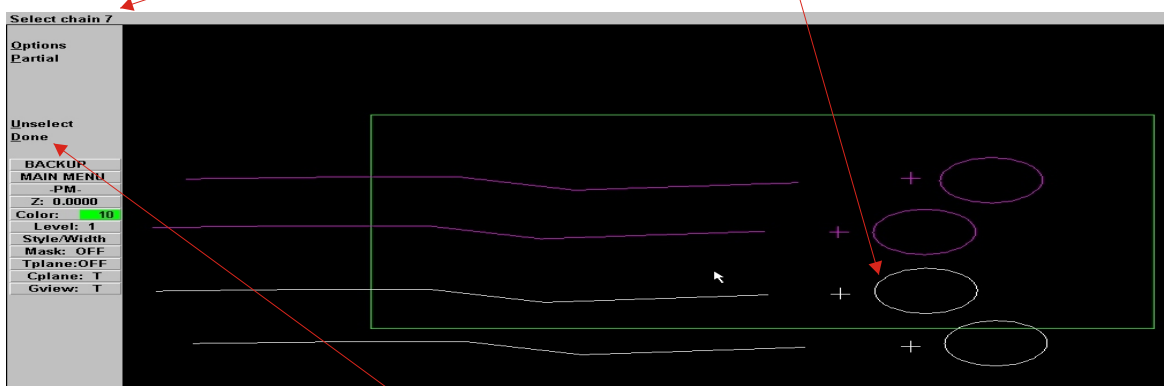
When you have highlighted all segments of your design, (not the rectangle template!), click '*done*'.

3a. you now have to click '*done*' once more and it will ask you
to scale about the origin or point. Click on origin (you can try
'*point*' if you wish to experiment)
and you can now continue by
following from step #4 for scaling
objects!

Scale: scale about:
Origin
Point