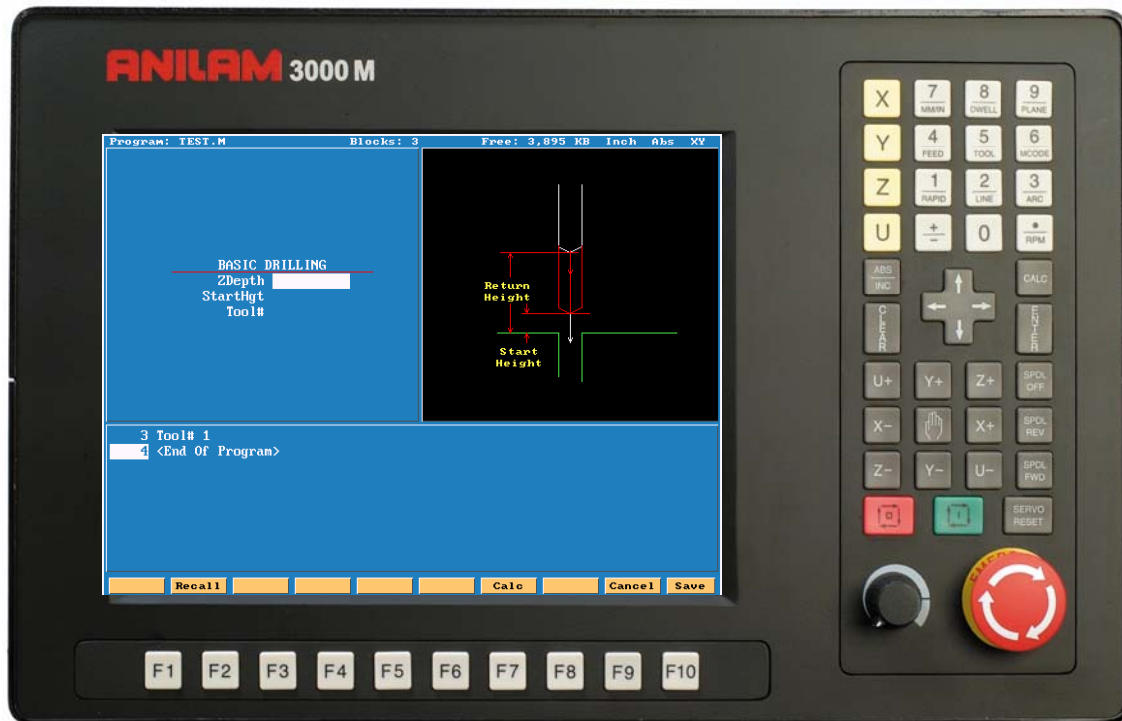


3300M CNC Control Editing , Part Programming and Running simple program



Press **F2** **Edit** to enter editor.



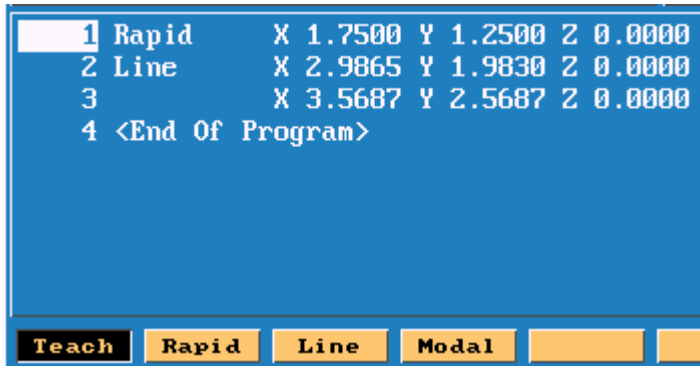
F1	Teach	Dimension can be entered into by F2 Rapid , F3 feed or Modal.
F2	Draw	Simulation draw allows checking program before run in auto.
F3	Drill	Drilling canned cycles.
F4	Pocket	Pocketing canned cycles.
F5	Mill	Mill operations.
F6	Tool	Tool Page.
F7	Calc	Calculators Pocket , Right-angled triangle & Geometry.
F8	Sub	Various auxiliary functions.
F9	Misc	Miscellaneous functions
F10	Exit	Exit to program page

Before entering **Teach Mode** you must create a program.

Press **F1** **Teach** to enter teach mode.



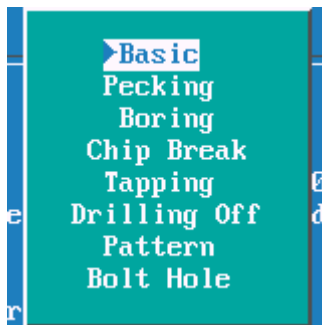
F1	Teach	Exit from Teach Mode .
F2	Rapid	Inputs a Rapid move.
F3	Line	Inputs a Line move.
F4	Modal	Inputs a Modal move.



- 1. Rapid input.
- 2. Line input
- 3. Modal input

Modal meaning it will do this move the same as previous move , in this case Line.

To exit **Teach** press **F1** **Teach**

F3**Drill**

Drilling Cycles

Basic :-	Drills a hole one shot.
Pecking :-	Drills in steps depending on the amount of peck entered.
Boring :-	Feeds in And out of hole.
Chip Break:-	Used for deep holes , peck and then at specified depth retract all the way out of hole.
Tapping:-	Taps hole feeds and speed must be calculated correctly.
Drilling Off:-	Drilling must be turn OFF when done.
Pattern:-	Program a regular pattern of holes giving Number of holes, Distance between holes.
Bolt Hole:-	Full or partial bolt hole may be programmed.

Mill

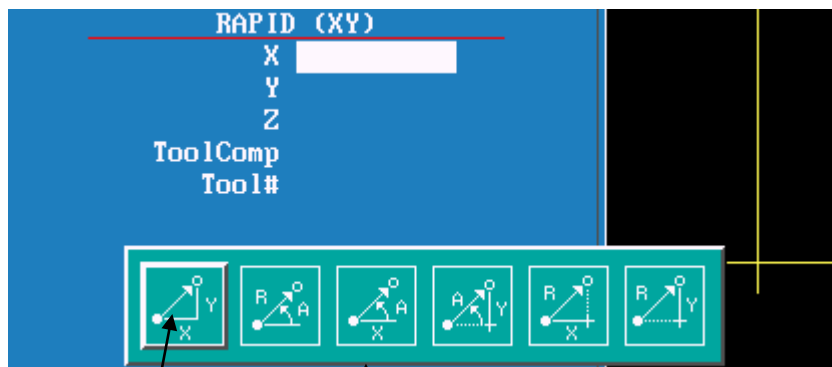
F5

Mill



F2

Rapid



Active one has a border

These are various way of entering a line or rapid move.

F4

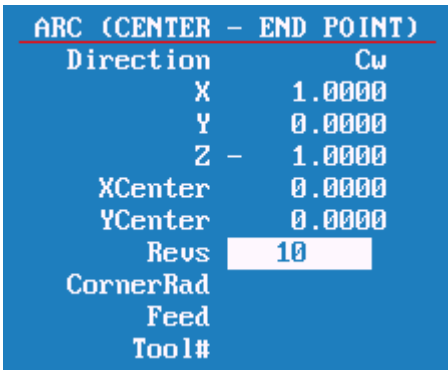
Arc



This is the default for arc's and will always come up looking this way. There two other chooses , end point and center or center and angle.



Note the center icon is high lighted.

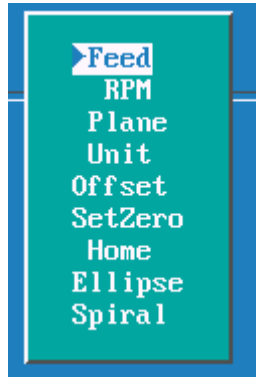


With this arc the machine is capable of milling a thread. It needs an X , Y and Z end point X , Y center point and Rev's. With Z starting at zero the inputs shown on left would cut a 10 TPI thread.

Pressing

F4**More**

this key will bring up following box menu.

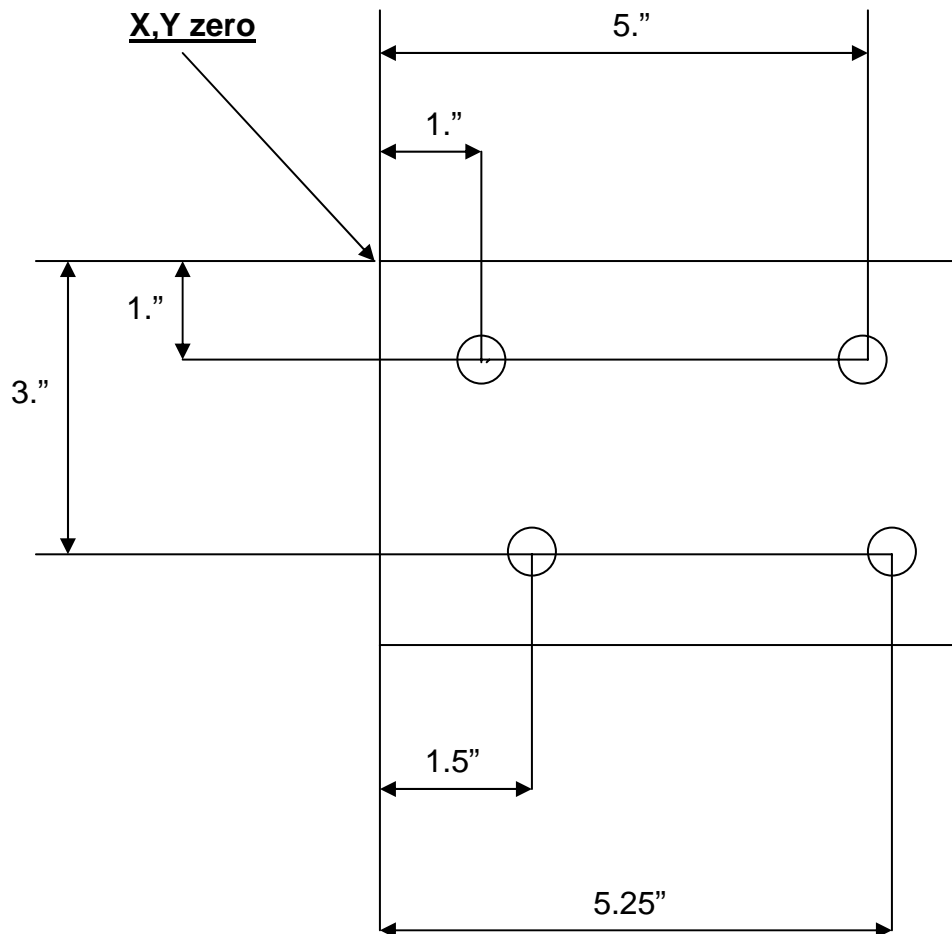


Feed	Enter a feedrate on line by itself.
RPM	Put spindle speed on of it's own.
Plane	Change planes XY,XZ or YZ.
Unit	Inch or MM.
Offset	Enter fixture offset , this is an <u>absolute</u> shift relative to Machine Zero.
SetZero	<u>Incremental</u> Zero shift.
Home	Returns machine to home.
Ellipse	Programs an ellipse with comp inside or outside.
Spiral	Spiral gives the ability to program tapered threads.

Press

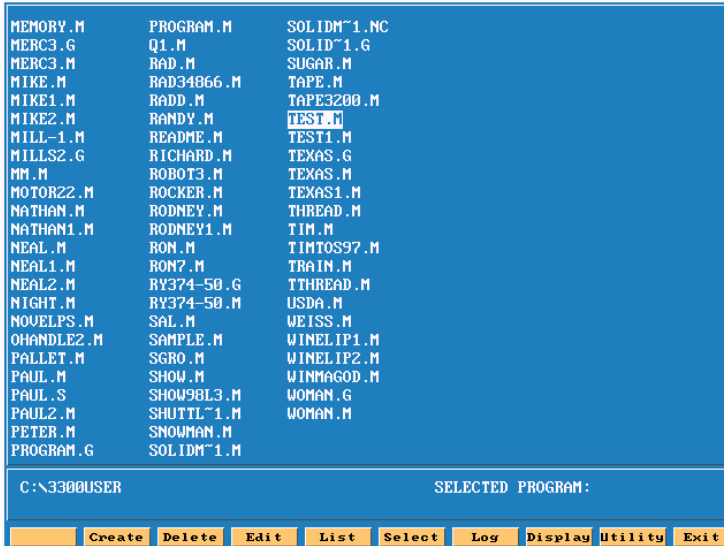
F9**Prev**

to return to previous screen.



We will now write a program to center drill and drill this part, we will use a subroutine in this program because we are going to use the same dimensions twice. A subroutine is a mini program outside of the Main program that will be Called into the Main program.
 Program lines are in **bold** print.

The first thing to do is **Create** a program.



Press **F2** **Create**



Type in a program name 8 letters, numbers or a combination of both. To type in letter use the ASCII (**F2** key) will bring up the chart.


When the name is typed in press



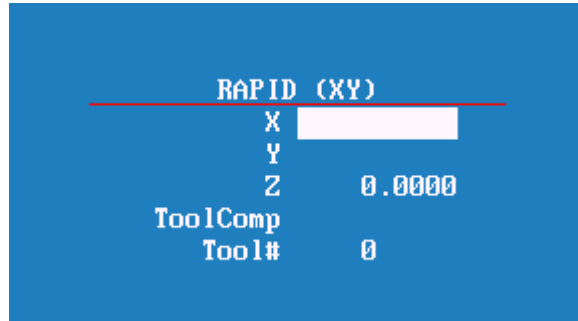
The program name will be entered into program page and an **.M** will be added to it.

Press **ABS INC** Press **ENTER** Set the control in absolute

1. Dim Abs

Use  to toggle between Abs/Inc.

1
Rapid



When !/Rapid key is pressed a box as show on left will appear.

2. Rapid Z0.000 Tool# 0

F10

Save

Rapid to Z home.

Press

1
Rapid

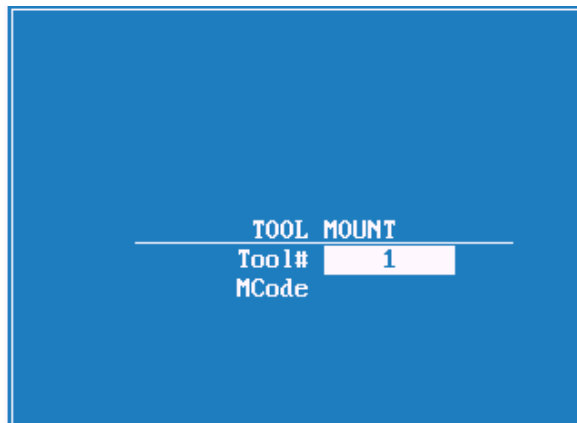
3. Rapid X -4.000 Y 2.0 000

F10

Save

Rapid to tool change position.

5
Tool



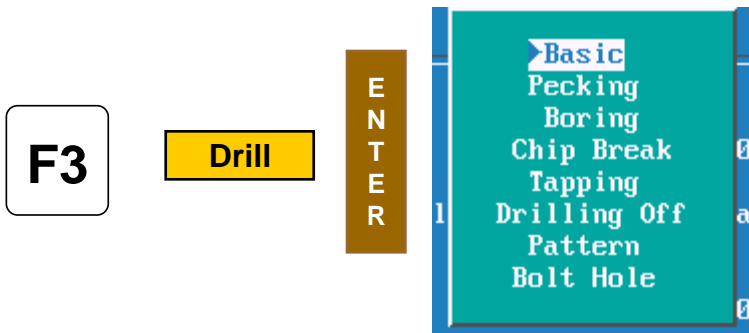
5/Tool key is press screen will look as shown on left. The Mcode would only be necessary if a tool changer is installed.

F10

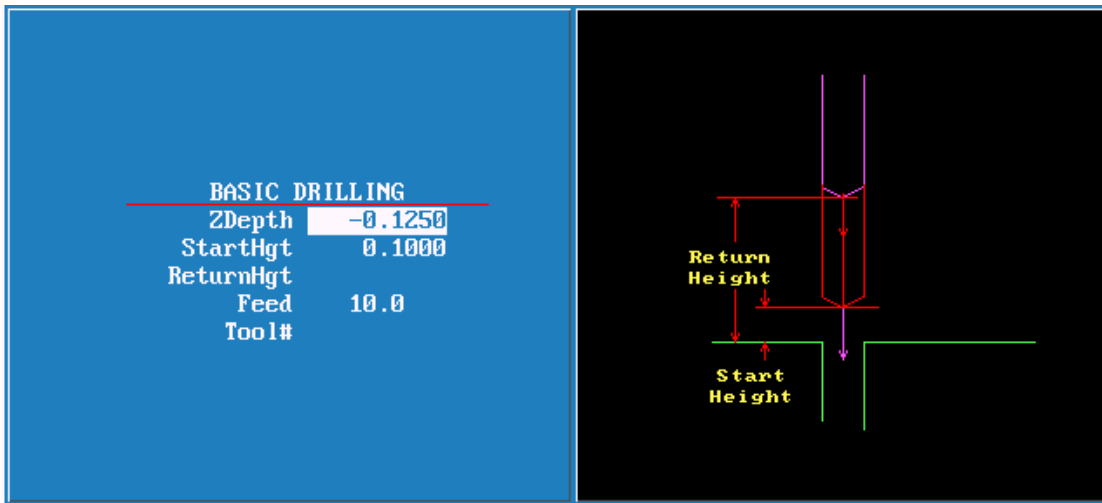
Save

4. Tool# 1

Call tool #1



F3 Drill is selected this box will appear. These are your chose of how you are going to drill the hole , the first time we will use Basic for the center drill , the second time we will use pecking for the drill.



When **ENTER** is pressed the screen will appear as above.

- Zdepth = depth of hole.
- StartHgh = Distance above Surface you are drilling into.
- ReturnHgt = Distance above to retract to before moving to next hole.
- Feed = Feedrate
- Tool# = Tool# may be entered here.



5. BasicDrill Zdepth -0.125 StartHgt 0.1000 Feed 10.0

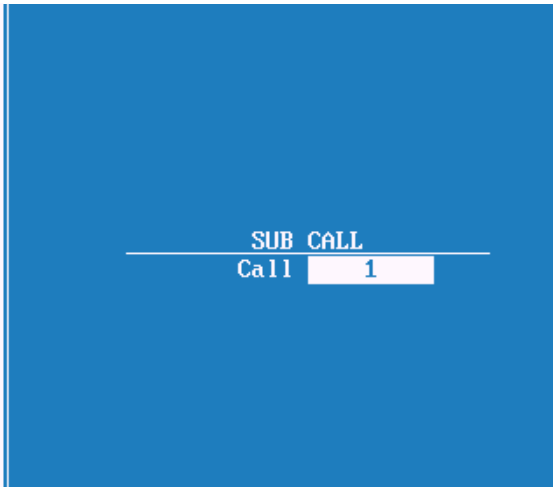


Press **F8** **Sub** **Sub** Function key will change as below.



F1	Sub	Enter subroutine number. A subroutine is a program entered after main program and call into main program using a Call .
F2	EndSub	Entered at the end of a subroutine.
F3	Call	Bring a subroutine into main program.
F4	EndMain	Ends main program.
F5	Loop	Repeats operation desired number of times.
F6	RMS	Allow subroutines to be Rotated , Mirrored or Scaled .
F7	Dwell	Enters Dwell into program , this is also available on a hot key.
F8	MCode	Enters an Mcode into program , also available as a hot key.
F9	Prev	Return to previous screen.
F10		Not used.

Press **F3** **Call**



Press Key number 1



6. Call 1

We have now finished the with the first tool.

Press **1**
Rapid

F10 **Save**

7. Rapid Z0.000 Tool# 0

Rapid to Z home.

Press **1**
Rapid

F10 **Save**

8. Rapid x -4.000 Y 2.0000

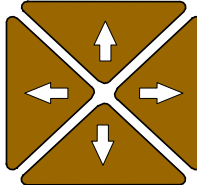
Rapid tool change position.

Press 5
Tool F10 Save

9. Tool# 2 Activate tool #2

Press F3 Drill

Basic
Pecking
 Boring
 Chip Break
 Tapping
 Drilling Off
 Pattern
 Bolt Hole



Press down arrow key to high light **Pecking** , press

E
N
T
E
R

PECK DRILLING

ZDepth	-1.0000
StarHgt	0.1000
ReturnHgt	
Peck	0.2500
Feed	12.0
Tool#	

Input values F10 Save

10. PeckDrill Zdepth -1.0000 StarHgt 0.1000 Peck 0.2500 Feed 12.0

Press **F3** **Call**

Press Key number 1 **ENTER**

11. Call 1

We have now finished the with the second tool.

Press **1**
Rapid

12. Rapid Z0.000 Tool# 0

Rapid to Z home.

F10 **Save**

Press **1**
Rapid

13. Rapid x -4.000 Y 2.0000

Rapid tool change position.

F10 **Save**

Press **F4** **EndMain**

14. EndMain

Press **F1** **Sub** press #1 key Press **F10** **Save**

Sub 1

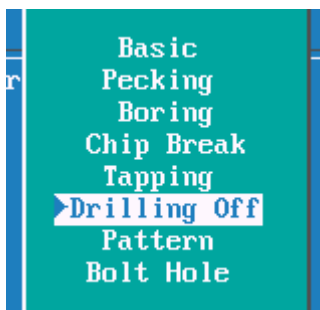
Press **1**
Rapid

Rapid X 1.0000 Y -1.0000 press F10 save
Rapid X 5.0000 press F10 save
Rapid X 5.2500 Y -3.0000 press F10 save
Rapid X 1.5000 press F10 save

Drilling must now be turn off as soon as last hole is drilled

Press **F9** **Prev**

Press **F3** **Drill**



High light Drilling Off press



Press **F2** **EndSub**

EndSub

Program for this part is now complete.

This is above program will look in control.

1. Dim Abs
2. Rapid Z 0.0000 Tool# 0 (See note 2 below)
3. Rapid X -4.0000 Y 2.0000
4. Tool# 1
5. BasicDrill ZDepth -0.1250 StartHgt 0.1000 Feed 10.0
6. Call 1
7. Rapid Z 0.0000 Tool# 0 (See note 3 below)
8. Rapid X -4.0000 Y 2.0000
9. Tool# 2
10. PeckDrill ZDepth -1.0000 StartHgt 0.1000 Peck 0.2500 Feed 12.0
11. Call 1
12. Rapid Z 0.0000 Tool# 0 (See note 3 below)
13. Rapid X -4.0000 Y 2.0000
14. EndMain
15. Sub 1
16. Rapid X 1.0000 Y -1.0000
17. Rapid X 5.0000
18. Rapid X 5.2500 Y -3.0000
19. Rapid X 1.5000
20. Drilling Off
21. EndSub

Note

If running parts on a machine with **Homing** a fixture offset may be added to program at Line #2 or #3 to get to part zero.

With Bed Mill Z0 Tool#0 not required , just move **Z** axis up plus to a convenient height to change Tools.(I.e. Z5.0000.)

Now that the part is programmed , we need to verify that it is correct.
To do this we use **Draw** .

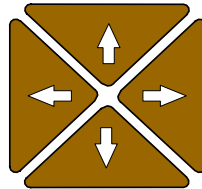
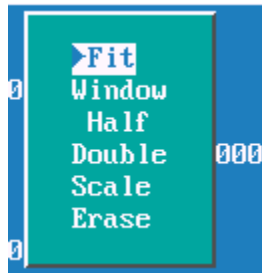
Press **F9** **Prev** to return to main edit screen.

Press **F2** **Draw** to enter **Draw Mode**.



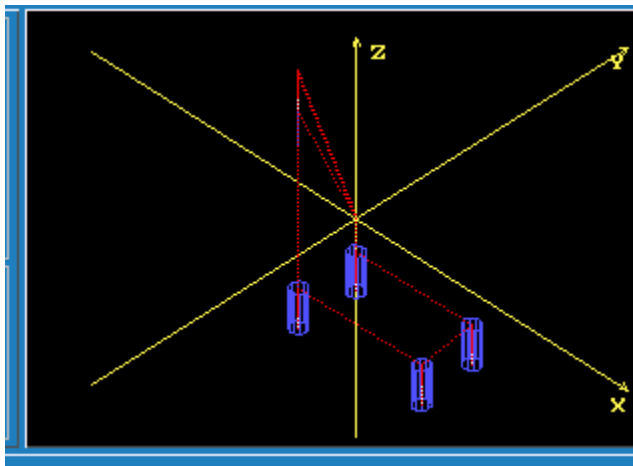
F1		Not used
F2	Draw	Exit draw mode.
F3	Run	Runs program in simulation draw.
F4	View	There are four views available XY,XZ,YZ and Iso.
F5	Display	Calculates the window size to show complete part.
F6		Not used
F7		Not used
F8		Not used
F9	Parms	Draw parameters.
F10	Exit	Exit to main edit screen.

Press **F5** **Display** box will pop-up as shown below high light will be on fit.



Use arrow keys to move high light up and down.

Press **ENTER**



Red lines are **Rapid** moves.
White Lines are **Feed** moves.
Yellow are axis lines.
Blue represent the tools sizes ,In this case tool #1 is center drill with .0000 Diameter and tool #2 is .5000 drill.

When **F3** **Run** or **F5** **Display** is press soft key will change as below.



F1	Auto	Will run program all the way through.
F2	S.Step	Ever time Start is pressed runs one program line.
F3	Motion	Runs a move ever time Start is pressed.
F4	Text	If high lighted will scroll text.
F5	Tool	Will show tools if high lighted.
F6	Rapid	Displays Rapid moves when high lighted.
F7	Start	Starts draw moves one line in S Step or Motion.
F8	Hold	Stop draw until Start is pressed.
F9	Cancel	Cancel current drawing.
F10		Not used

Program has been written and checked on simulation graphics , it is now time to set **Part zero** and **Tool offsets**.

Press **F10** **Exit** twice to return to **Manual** page .

Using **Jog** keys find edge of part or center of hole where you want **X0** and **Y0** are to be located .

If machine does not have homing press **X0** **ENTER** display will change to zero

on X axis , use same procedure on **Y** axis .

If machine has **Home Jog** to **X0** , **Y0** as above then press

F9 **Tool**

Softkeys will change as shown below.



Press **F1** **OFFSET**

No.	Diameter	Length	Spindle RPM	Spindle Direction	Coolant
1	0.1000				NONE
2	0.5000				NONE
3	0.2200				NONE
4	0.2180				NONE
5	0.2500				NONE
6	0.4000				NONE
7	0.1540				NONE
8	1.0000				NONE
9	1.0000				NONE
10	0.7500				NONE
11	1.0000				NONE
12	0.2180				NONE
13	0.0000				NONE
Fixture Offsets					
			X	Y	Z
1.			0.0000	0.0000	0.0000
2.			-20.0000	-6.0000	0.0000
3.			-9.0000	-6.0000	0.0000
4.			-6.0000	-6.0000	0.0000
5.			-3.0000	-6.0000	0.0000
6.			0.0000	-6.0000	0.0000
7.			0.0000	0.0000	0.0000
8.			0.0000	0.0000	0.0000
9.			0.0000	0.0000	0.0000
1	0.1000				NONE

If machine is at **X0** press

F5 **CalibX**

Do the same with **Y**

F6 **CalibY**



Press

F10 **Exit**

You are now back at the tool Page .
The thing to do is set tool length Offsets.
Check to see that Tool #0 is active .
Put tool #1 into spindle jog down to top of part .
Check to see that high light is on Tool #1 .


Now press  

Move spindle up , put in tool #2 and repeat above process , until all tools offsets

are set and press .  

Control is now back at **Manual** and ready to cut part.

Press  

Put **Tool #1** in spindle press 

Machine will stop on **Tool Change** press 

Machine will rapid **X** and **Y** position of first hole and then **Z** rapid to .1000 above part . Next it will then feed to give depth and rapid back out of the hole and rapid to next hole and repeat process until all holes are drilled.

It will now on **Tool Change** and repeat process for tools #2 and #3.