6000 CNC CONTROL
HELP MENU'S

ANILAM

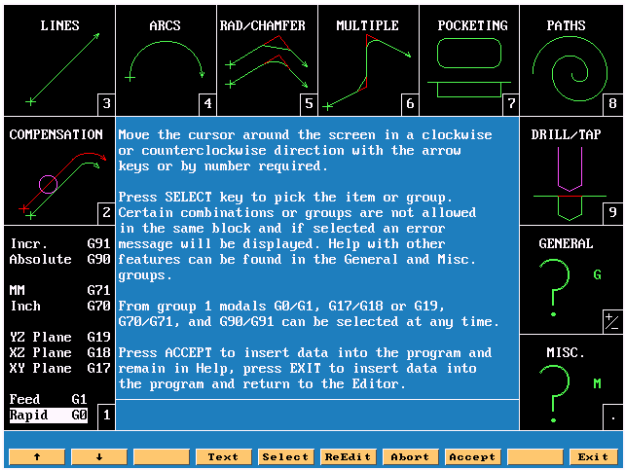
The **HELP MENU'S** are access by pressing. **F1** **HELP**

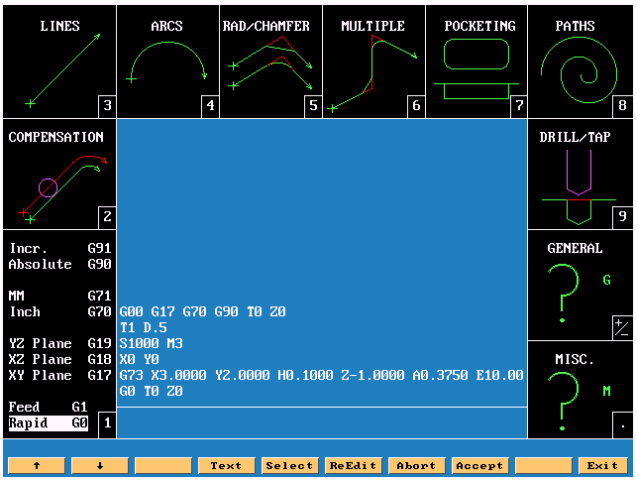
This can be done from either Manual or Edit.

Manual mold soft keys

Edit mold soft keys

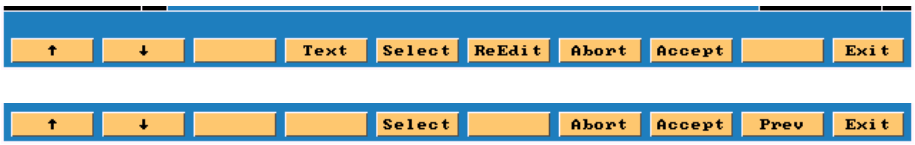
First **Help** screen





Note: The center of the screen. There are two different displays, one has text about **Help** the other shows the program as it is being entered.

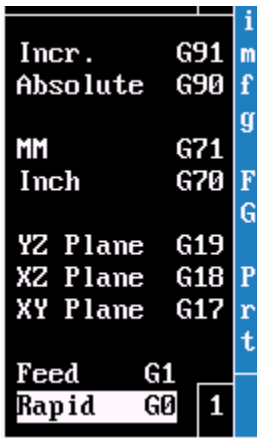
Press **F4** **Text** will toggle these screens.



There are two different set of soft keys , as shown above.

F1	↑	Arrow up and around to desired selection.
F2	↓	Arrow down and around to desired selection.
F3		Not used.
F4	Text	Text changes center of screen to diplay program.
F5	Select	Selects required cycle.Enter will as do this.
F6	ReEdit	ReEdits a cycle after it is already in a program.
F7	Abort	Goes back to edit without saving last set of inputs.
F8	Accept	Accepts inputs and stays in HELP.
F9	Prev	Goes back to previous page in HELP menu.
F10	Exit	Exits to EDIT page and saves inputs.

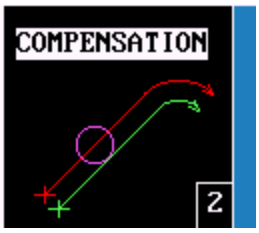
Section as shown below these are the major defaults. Hight lite the required in put and press either **Select** or  enter.



Use up arrow key to move hight to next selection.

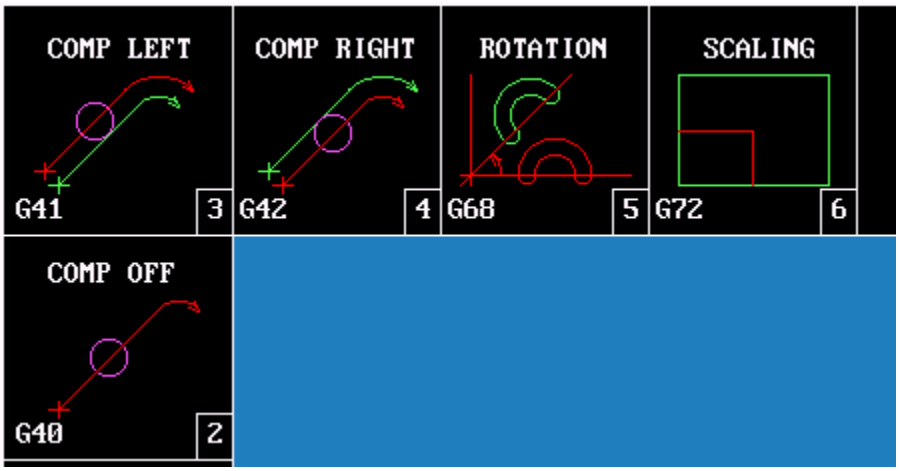
Press the number 2 key or arrow up to number 2 .

Press either **Select** or  enter



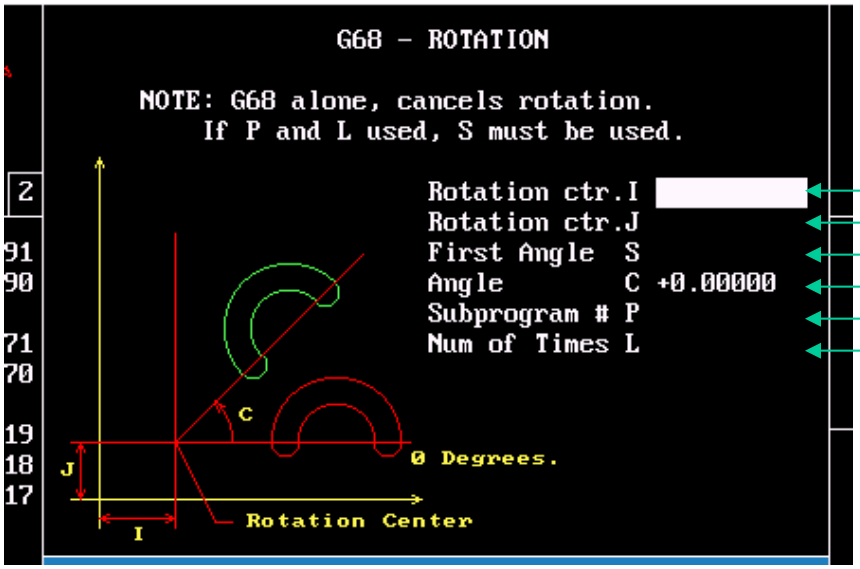
Note:- the reverse color around Compensation.

Press either **Select** or  enter



1. Puts a **G40** into program comp off.
2. Enters **G41** into program cutter comp left.
3. Enters **G42** into program cutter comp right.
4. G68 rotates a shape around a center.
5. G72 scale program to required size.

Rotation G68



Center of rotation **X** axis.
Center of rotation **Y** axis.
Start angle when using loop.
Angle between loops or single shot.
Subroutine #.
Number of repeats.

Note: The only entry that has to be program is **C** because it has 0 (Zero's) next to it.

This cycle can be programmed in main program or in a subroutine. If programmed in the main, the cycle is entered and then the diminsion of the shape and turned off with a **G68**.

```
G00 G17 G70 G90 T0 Z0
T1
S1000 M3
X5 Y4
G68 I5.0000 J4.0000 C45.00000
G0 X7 Y4 Z.1
G1 Z-.2
X9
Z.1
G68
G0 T0 Z0
X-1 Y-1
M2
```

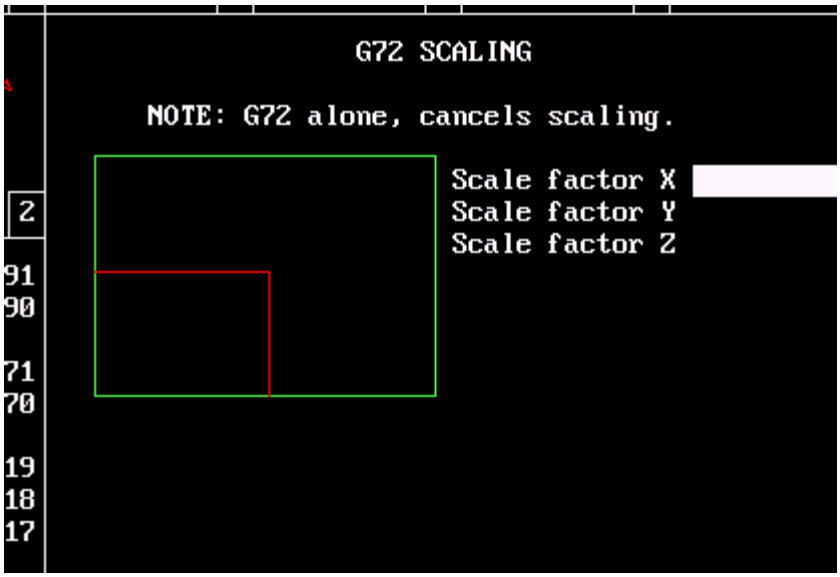
This example is show rotation just one time not using a subroutine,note the G68 to turn off rotation.

```
G00 G17 G70 G90 T0 Z0
T1
S1000 M3
X5 Y4
G68I5.0000J4.0000S0.00000C45.00000P1L8
G0 T0 Z0
X-1 Y-1
M2

O1
G0 X7 Y4 Z.1
G1 Z-.2
X9
Z.1
M99
```

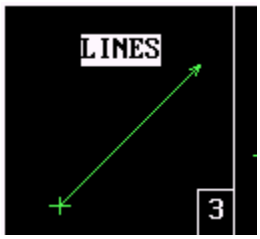
Example on left show rotation using subroutine, note there is no **G68** turning off rotation ,it's not required when programming this way.

Scaling G72



When using scaling if threre are any the axis must be scaled the same on both of these axis.If part is required to be half size .5 would be factor. G72 alone will turn off scaling.

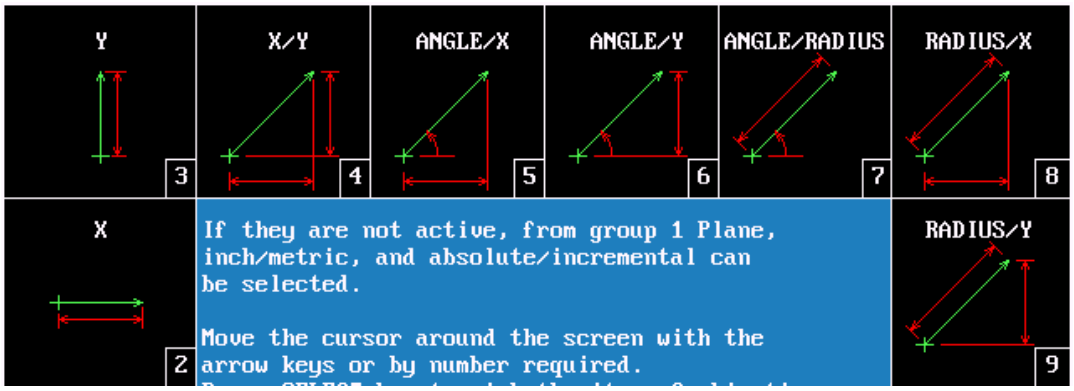
Lines



Press # 3 either **Select** or  enter.

Screen will now appear as below.

Inputs will change according to which plane is active.



2. X axis input only.

3. Y axis input only.

4. X and **Y** axis.

5. Angle and **X** axis.

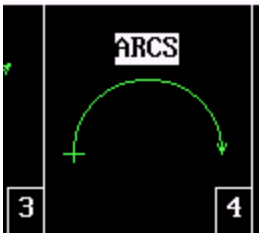
6. Angle and **Y** axis.

7. Angle and **Radius**

8. Radius and **X** axis

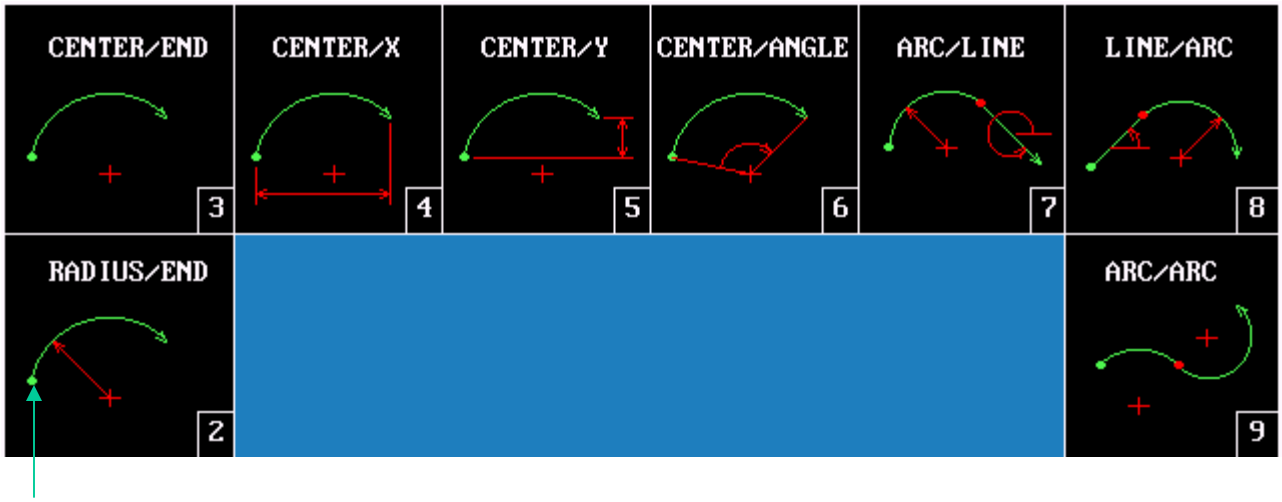
9. Radius and **Y axis**

Arc's



Press # 4 either **Select** or  enter.

Screen will now appear as below.



Tool must be at start point before inputting arc's
Centers of arcs X=I , Y=J and **Z=K**
Inputs will change according active plane.

2. Radius and **End Point.**

3. Center and **End Point.** This can be used for helical interpolation (thead mill.)

4. Center and **X End Point.**

5. Center and **Y End Point.**

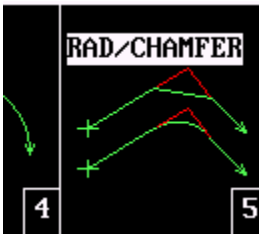
6. Center and **Angle.** Angle is dependant Absolute or increamental.

7. Arc and **Line.** Inputs are Radius, Angle and End Point X and Y

8. Line and **Arc.** Inputs are Angle, Radius and End Point X and Y

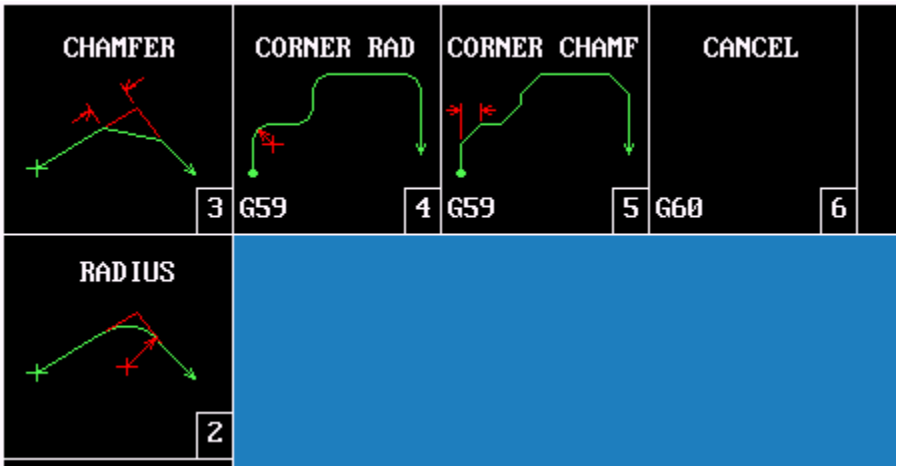
9. Arc and **Arc.** Inputs Center X and Y first arc, Center X and Y second arc and End Point X /Y

Corner Rounding And Chamfering



Press # 5 either **Select** or  enter.

Screen will now appear as below.



2. Radius One shot corner rounding.Inputs mid point X / Y,radius and end point X/Y.

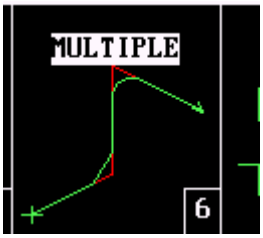
3.Chamfer One shot chamfer. Inputs mid point X/Y, chamfer and end point X/Y.

4.Corner Radius Modal command puts radius on all intersects.

5.Corner Chamfer Modal command puts chamfer on all intersects.

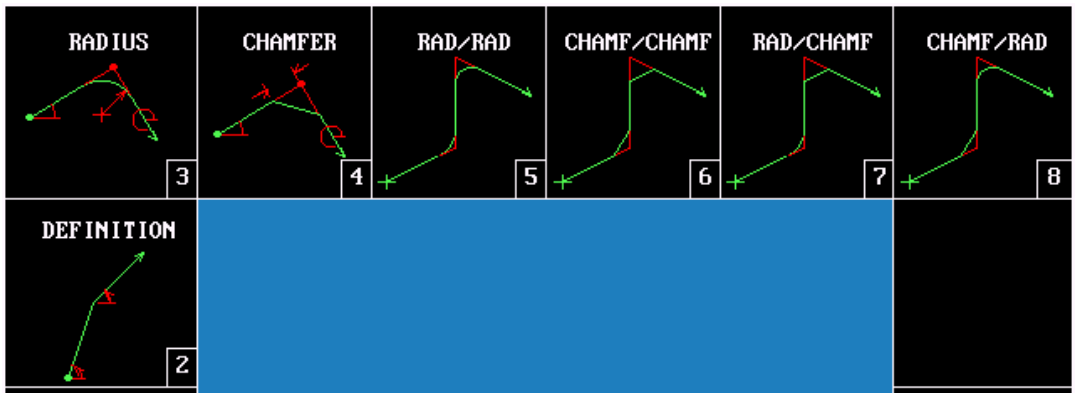
6.Cancel Cancels #4 and #5

Multiple line, arc and chamfer moves.



Press # 6 either **Select** or  enter.

Screen will now appear as below.



Tool must be positioned at start point.
Inputs will change according to active plane.

2. Definition Inputs first angle, second angle and end point.

3.Radius Inputs first angle, radius, second angle and end point.

4.Chamfer Inputs first angle, radius, second angle and end point.

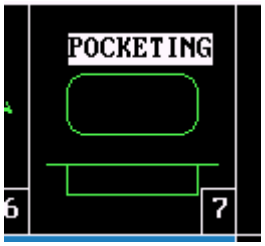
5.Rad/Rad Inputs first angle, first radius, second angle, mid point, second radius and end point.

6.Chamf/Chamf Inputs first angle, first radius, second angle,

7.Rad/Chamf Inputs first angle, radius, second angle, mid point X/Y chamfer and end point.

8.Chamfer/Rad Inputs first angle, chamfer, second angle, mid point X/Y, radius and end point.

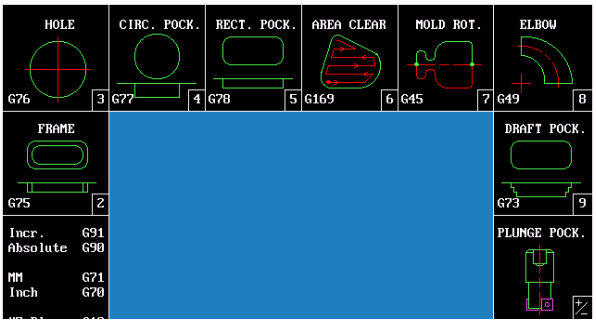
Pockets



Press # 7 either **Select** or  enter.

Screen will now appear as below.

Cutter comp is built into all pocket except Mold Rotation.
X and Y centers are Optional but if not entered will assume it is positioned at center of pocket.

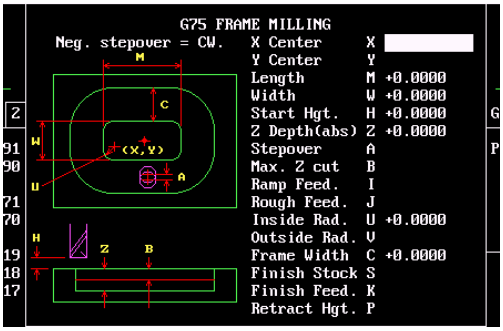


#2. Frame Milling. Leave island in middle of pocket.
#3. Hole Milling. Enlarges existing hole, used on smaller holes.
#4. Circular Pocket. Cuts flat bottom circular pocket.
#5. Rectangular Pocket. Cuts flat bottom rectangular pocket.
#6. Area Clearance. Cuts irregular shape pocket and takes profile cut.
#7. Mold Rotation. Rotates a profile around an axis.
#8. Elbow Milling. Produces a radial groove.
#9. Draft Pocket. Rectangular pocket with angled sides.
+/-. Plunge pockets. Rectangular and circular pocket plunging straight down.

Plunge Pockets
#2. Circular Plunge Pocket Plunges straight into material.
#3. Rectangular Plunge Pocket. Plunges straight into material.

Frame pocket G75

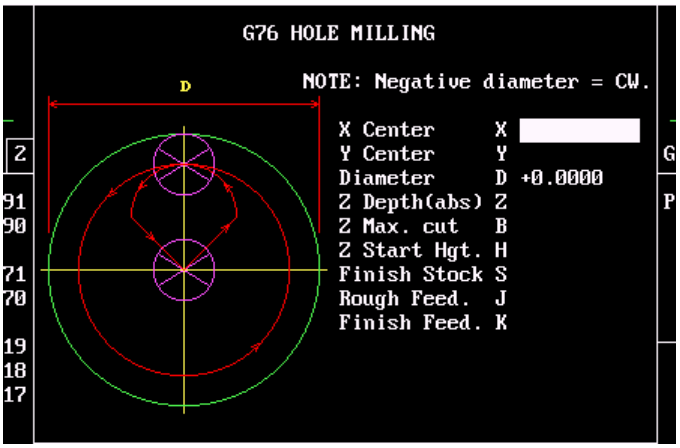
Only the input with in Zeros have to be entered the rest are optional. It will assume being at the center of pocket if no dimension are entered.



X Center	**X**	Center of pocket X axis.If not entered will assume tool is at center of pocket.Optional
Y Center	**Y**	Center of pocket Y axis.If not entered will assume tool is at center of pocket.Optional
Length	**M**	Length of island (X).
Width	**W**	Width of island (Y).
Start Hgt.	**H**	Start height .1inch or 2mm above top surface of pocket.
Z Depth (abs)	**Z**	Absolute depth to bottom of pocket.
Stepover	**A**	Cut per pass, not to exceed 70% of cutter dia. Negative value path will climb mill.
Max. Z cut	**B**	Depth per pass Z axis.Optional
Ramp Feed	**I**	Feedrate when feeding down into pocket. Optional
Rough Feed	**J**	Feedrate roughing pocket.Optional
Inside Rad.	**U**	Radius on corners of island.
Outside Rad.	**V**	Radius on outside, will assume cutter radius if no entry. Optional
Frame Width	**C**	Dimension from island to outside.
Finish Stock	**S**	Amount of material left for finish pass.Optional
Finish Feed	**K**	Feedrate for finish pass.Optional
Retract Hgt.	**P**	High retract allows tool to be move above the surface part when finished. Optional

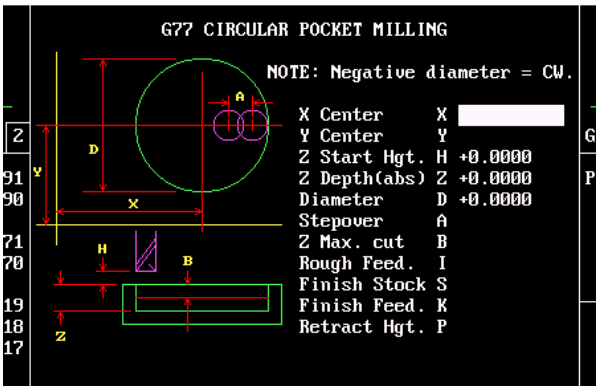
Hole Milling G76

A good use for this cycle to produce small counterbores.



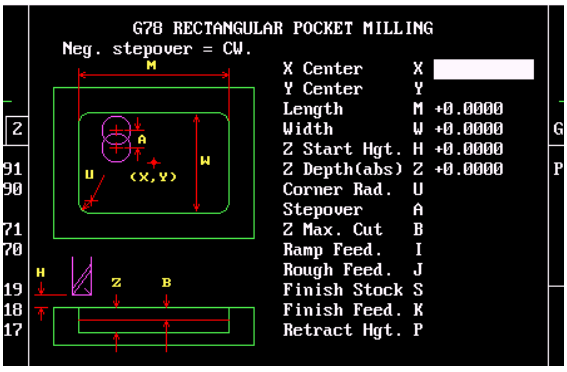
Diameter	**D**	Diameter of pocket.
Rough Feed	**J**	Feedrate roughing.
Finsih Stock	**S**	Finish Stock.
Finish Feed	**K**	Feedrate finish pass.

Circular pocket G77



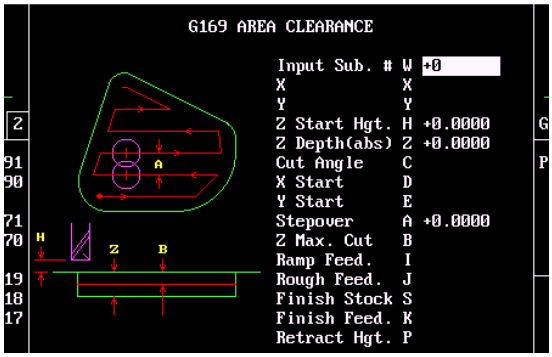
X Center	**X**	Center X axis.	Optional
Y Center	**Y**	Center Y axis.	Optional
Z Start Hgt.	**H**	Start height .1 above surface to be cut into.	
Z Depth (abs)	**Z**	Absolute Z depth.	
Diameter	**D**	Diameter of pocket, comp built in.	
Stepover	**A**	Move over per pass.	Optional
Z Max. cut	**B**	Max. Z depth per pass.	Optional
Rough Feed.	**I**	Feedrate roughing.	Optional
Finish Stock	**S**	Amount of material left for finish pass.	Optional
Finish Feed.	**K**	Finish pass feedrate.	Optional
Retract Hgt.	**P**	High returnwhen finished.	Optional

Rectangular Pocket. G78



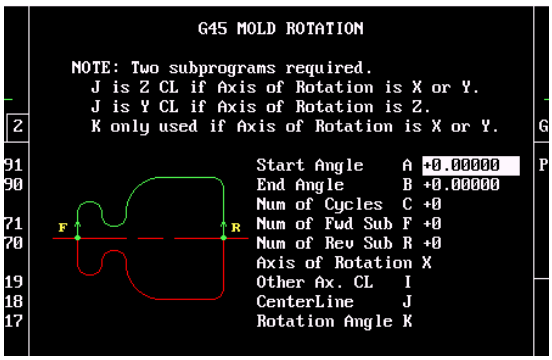
X Center	**X**	Center of pocket X
Y Center	**Y**	Center of pocket Y
Length	**M**	Actual length X axis
Width	**W**	Actual width Y axis
Z Start Hgt.	**H**	.1 above surface to be cut
Z Depth (abs)	**Z**	Absolute depth of pocket
Corner Rad.	**U**	Radius in corners
Stepover	**A**	70% of cutter or less
Z Max. Cut	**B**	Max depth per pass
Ramp Feed	**I**	Feedrate on 3 axis first move
Rough Feed	**J**	Feedrate for roughing
Finish Stock	**S**	Amount of stock for finish cut
Finish Feed	**K**	Finish feedrate
Retract Hgt.	**P**	Retract after finished.

Area Clearance G169.



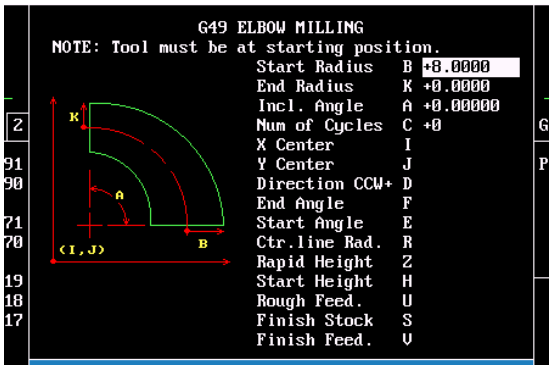
Input Sub #	**W**	Subroutine number.
X	**X**	X position tool will Z down into part
Y	**Y**	Y position tool will Z down into part
Z Start Hgt.	**H**	Start height .1 above top of pocket
Z Depth (abs)	**Z**	Total depth of pocket absolute
Cut Angle	**C**	Used if starting in middle of radius
X Start	**D**	Position of cut at start X axis. Optional
Y Start	**E**	Position of cut at start Y axis. Optional
Stepover	**A**	Cutter stepover each pass
Z Max. Cut	**B**	Max depth of cut per pass.
Ramp Feed	**I**	Ramp feedrate Z down
Rough Feed	**J**	Rough feedrate
Finish Stock	**S**	Stock left for finish pass
Finish Feed	**K**	Finish feedrate
Retract Htg.	**P**	Retract after finished.

Mold Rotation G45



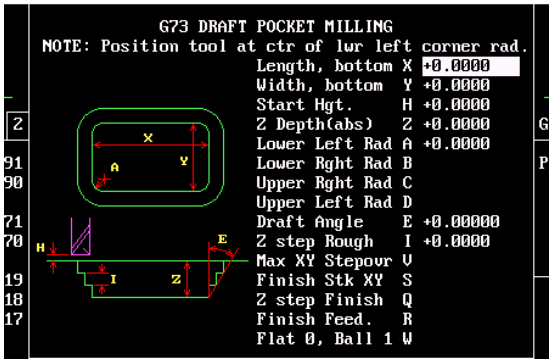
Start Angle	**A**	Angle where rotation is going to start
End Angle	**B**	Angle where rotation is going to end
Num of Cycles	**C**	1 cycle equals 1 Fwd and 1 Rev. Sub.
Num of Fwd Sub	**F**	Sub. Profile forward direction
Num of Rev Sub	**R**	Sub. Profile Reverse direction
Axis of Rotation	**X**	Axis rotation is around X,Y or Z
Other axis CL	**I**	Center line X or Y if not Zero
Centerline	**J**	Center line Z Axis if not Zero
Rotation Angle	**K**	Angle rotation Z axis only

Elbow Milling G49



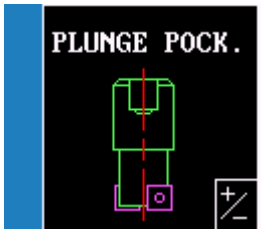
Start Radius	**B**	Radius at start of Elbow
End Radius	**K**	Radius at end of Elbow
Included Angle	**A**	Included angle
Num of Cycles	**C**	Sub. Profile forward direction
X Center	**I**	Sub. Profile Reverse direction
Y Center	**J**	Axis rotation is around X,Y or Z
Direction CCW+	**D**	Center line X or Y if not Zero
End Angle	**F**	Center line Z Axis if not Zero
Start Angle	**E**	Angle rotation Z axis only
Ctr. Line Radius	**R**	Radius at center of elbow
Rapid Height	**Z**	Starting hieght above surface.
Start Height	**H**	Z height to start
Rough Feed	**U**	Rough feedrate
Finish Stock	**S**	Amount of stock for finish pass
Finish Feed	**V**	Feedrate for finish cut

Draft Pocket G73

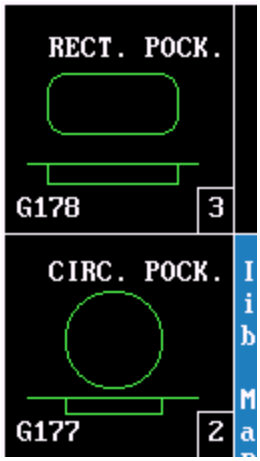


Note: Tool must be positioned at center of radius bottom left corner.
Center of pocket must be cleared before using this cycle.
When using flat endmill will go to programmed depth.
If ball endmill uses will only go to depth minus cutter radius, .5 mill
Absolute depth -1 actual depth it would go to is -.75.

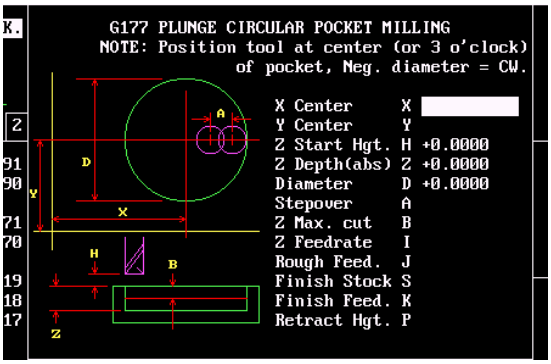
Length, bottom	**X**	Length at bottom of pocket.	required
Width, bottom	**Y**	Width at bottom of pocket.	required
Start Height	**H**	Height above part to rapid.	required
Z Depth (abs)	**Z**	Absolute depth	required
Lower Left Rad.	**A**	Lower left Radius	required
Lower Right Rad.	**B**	Lower right radius	optional
Upper Left Rad.	**C**	Upper left radius	optional
Upper Right Rad.	**D**	Upper right radius	optional
Draft Angle	**E**	Draft angle Degrees	required
Z step Rough	**I**	Depth per pass in Z axis	required
Max XY Stepover	**V**	Maximum stepover XY	optional
Finish Stock XY	**S**	Finish stock XY	optional
Z step Finish	**Q**	Z step finish pass	optional
Finish Feed	**R**	Finish feedrate	optional
Flat 0, Ball 1	**W**	Flat mill = 0 Ball mill = 1	optional



High lite plunge pockets press

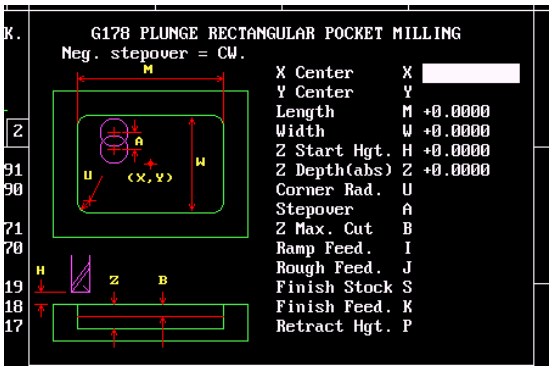


Plunge Circular Pocket G177

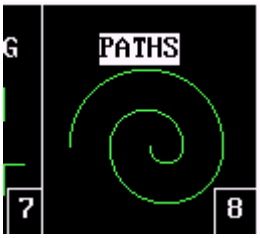


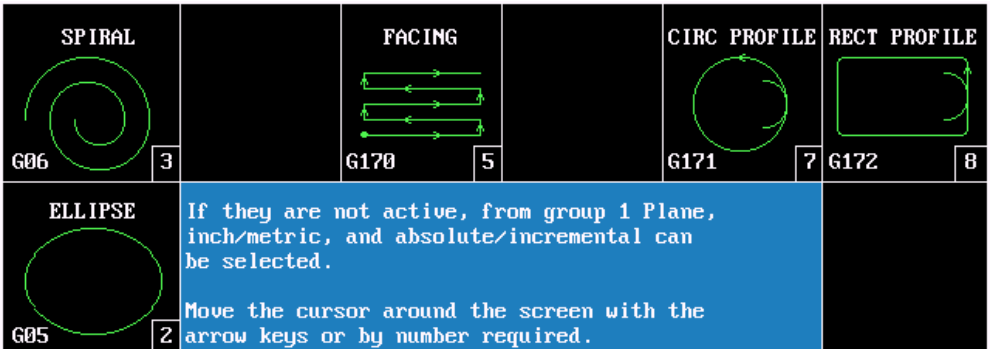
X Center	**X**	Center X axis	Optional
Y Center	**Y**	Center Y axis. Same as above.	Optional
Z Start Hgt.	**H**	Start height .1 above surface to be cut.	
Z Depth (abs)	**Z**	Absolute Z depth.	
Diameter	**D**	Diameter of pocket, comp built in.	
Stepover	**A**	Move over per pass.	Optional
Z Max. cut	**B**	Max. Z depth per pass.	Optional
Z Feedrate	**I**	Feedrate plunging	Optional
Rough Feed.	**J**	Feedrate roughing.	Optional
Finish Stock	**S**	Amount of material left for finish pass.	Optional
Finish Feed.	**K**	Finish pass feedrate.	Optional
Retract Hgt.	**P**	High returnwhen finished.	Optional

Plunge Pocket Pocket G178



X Center	**X**	Center of pocket X
Y Center	**Y**	Center of pocket Y
Length	**M**	Actual length X axis
Width	**W**	Actual width Y axis
Z Start Hgt.	**H**	.1 above surface to be cut
Z Depth (abs)	**Z**	Absolute depth of pocket
Corner Rad.	**U**	Radius in corners
Stepover	**A**	70% of cutter or less
Z Max. Cut	**B**	Max depth per pass
Ramp Feed	**I**	Feedrate on 3 axis first move
Rough Feed	**J**	Feedrate for roughing
Finish Stock	**S**	Amount of stock for finish cut
Finish Feed	**K**	Finish feedrate
Retract Hgt.	**P**	Retract after finished.

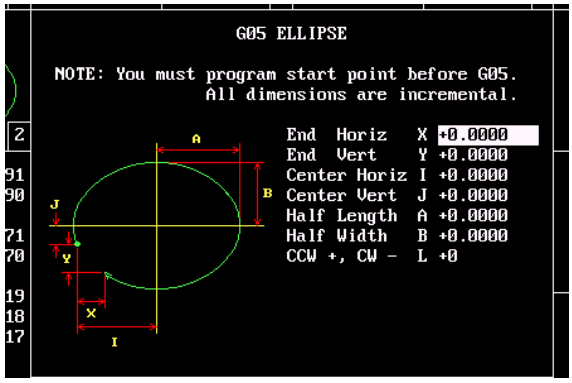




#2. Ellipse. Produces an ellipse, uses special cutter comp.
#3. Spiral. Will cut a tapered thead.
#5. Facing. Faces large surfaces.
#7. Circular Profile Cut circle either inside or outside.
#8. Rectangular Profile. Cut rectangle inside or outside.

Ellipse G05

Note: All dimensions are INCREMENTAL.



End Horizontal	**X**	Distance from start to end X axis.
End vertical.	**Y**	Distance from start to end Y axis.
Center Horizontal	**I**	Distance to center from start.
Center Vertical	**J**	Distance to center from start.
Half lenght	**A**	Half length of ellipse x axis
Half width	**B**	Half width of ellipse Y axis.
CCW +,CW -.	**L**	Direction of cut.

Cutter comp for ellipse uses **M1040** X0 = off, X1 = outside and X2 = inside.
Cutter must be positioned in compensated position before ellipse is programmed.

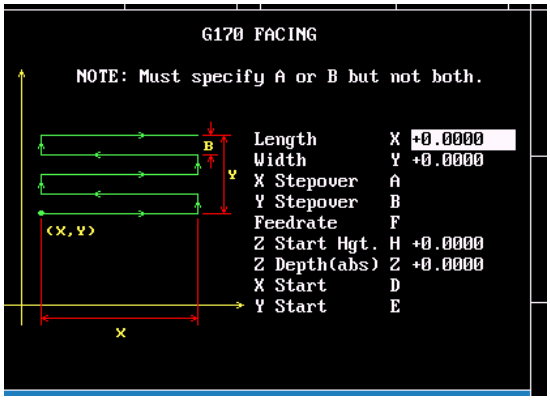
Spiral G06

Note: All dimensions are INCREMENTAL.

End Horizontal	**X**	Distance from start to end X axis.
End vertical.	**Y**	Distance from start to end Y axis.
End Depth Z	**Z**	Distance from start to end Z axis.
Center Horizontal	**I**	Distance to center from start.
Center Vertical	**J**	Distance to center from start.
Number of revolution	**L**	Number of turn it will make.
CCW +,CW -.		Direction of cut.

No compensation available for spiral.

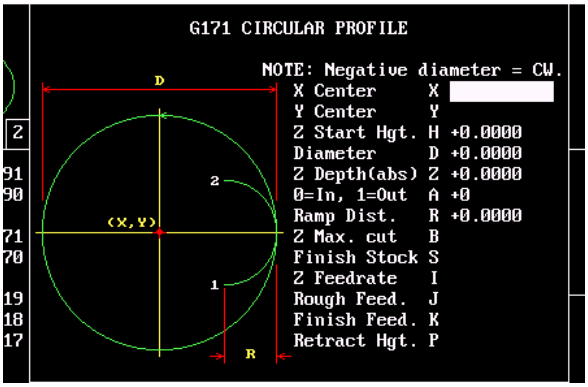
Facing G170



Length	**X**	Increamental length X axis.
Width	**Y**	Increamental width Y axis.
X Stepover	**A**	Stepover X .
Y Stepover	**B**	Stepover Y.
Feedrate	**F**	Feedrate.
Z Start hieght	**H**	Start height .1 above surface.
Z Depth Absolute	**Z**	Finish depth.
X Start	**D**	Start X axis.
Y Start	**E**	Start Y axis.

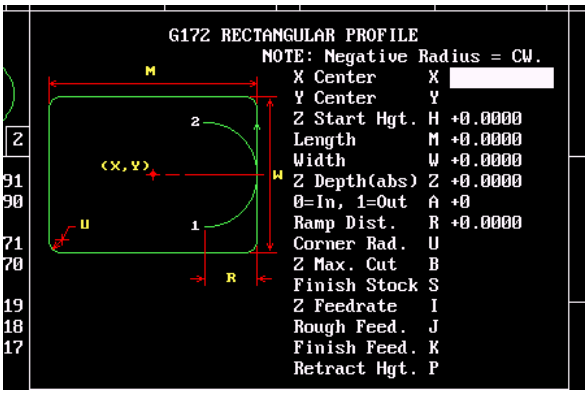
Note: Only A or B not both can be used.
Cutter will step away from start corner
by half the cutter diameter.

Circular profile G171



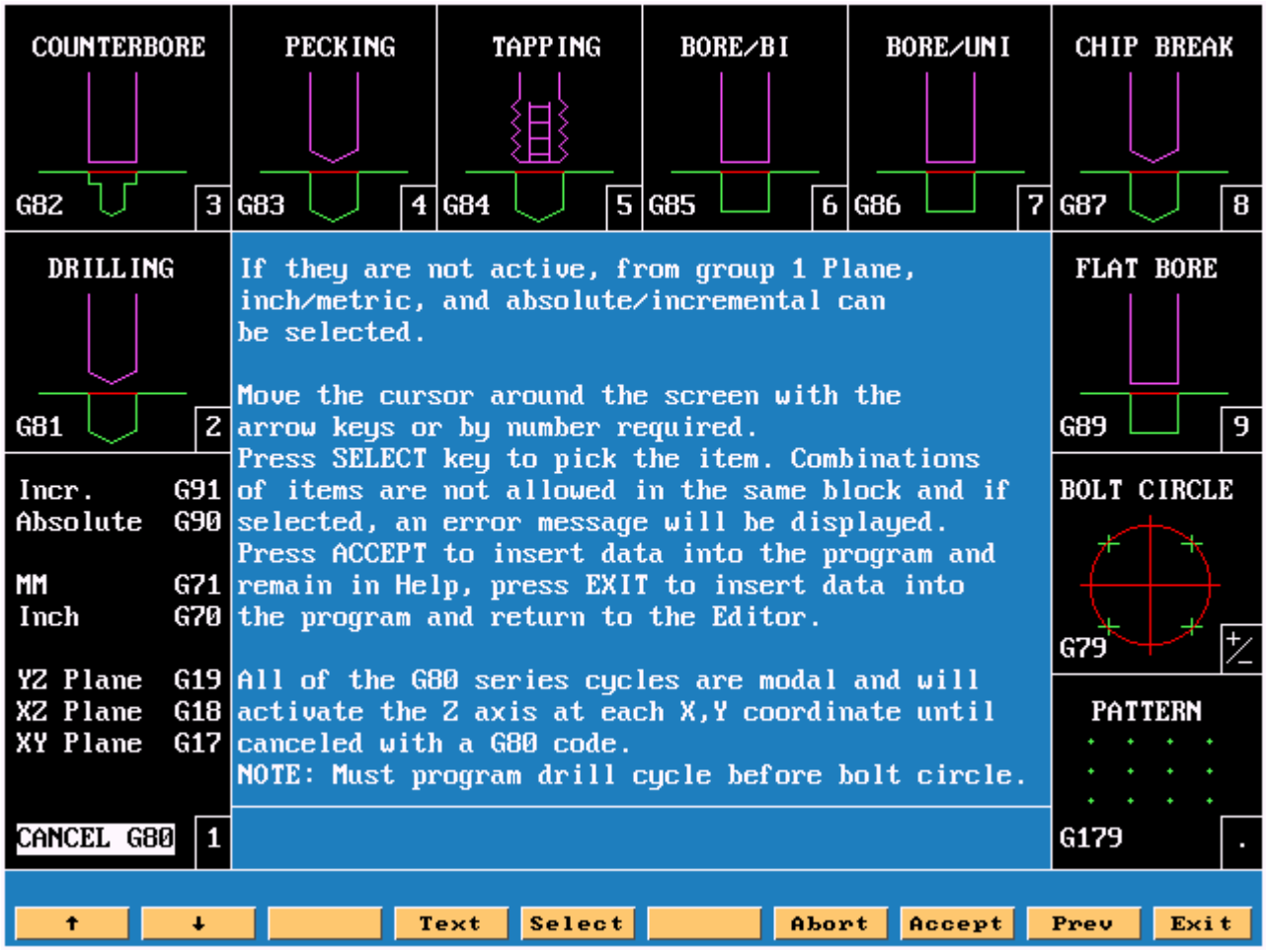
Center X.	**X**	X Center (optional).
Center Y.	**Y**	Y Center (optional).
Start height.	**H**	Start height above surface to be cut.
Diameter.	**D**	Diameter of pocket (actual).
Z depth (absolute).	**Z**	Depth to be cut (absolute).
0 = inside, 1 = outside.	**A**	0 insde ,1 outside of circle.
Ramp Distance.	**R**	Size of ramp on radius.
Z Maximum cut.	**B**	Maximun depth in Z per pass.
Finish Stock.	**S**	Amount of stock left for finish cut.
Z Feedrate.	**I**	Feedrate in Z axis.
Rough feedrate.	**J**	Feedrate for roughing.
Finish Feedrate.	**K**	Feedrate for finishing.
Retract height.	**P**	High retact if higher than H value.

Rectangular Profile G172



Center X.	**X**	X Center (optional).
Center Y.	**Y**	Y Center (optional).
Start height.	**H**	Start height above surface to be cut.
Length	**M**	Length of pocket X axis (actual).
Width..	**W**	Width of pocket Y axis (actual)
Z depth (absolute).	**Z**	Depth to be cut (absolute).
0 = inside, 1 = outside.	**A**	0 insde ,1 outside of circle.
Ramp Distance.	**R**	Size of ramp on radius.
Corner radius	**U**	Radius in corners.
Z Maximum cut.	**B**	Maximun depth in Z per pass.
Finish Stock.	**S**	Amount of stock left for finish cut.
Z Feedrate.	**I**	Feedrate in Z axis.
Rough feedrate.	**J**	Feedrate for roughing.
Finish Feedrate.	**K**	Feedrate for finishing.
Retract height.	**P**	High retact if higher than H value.

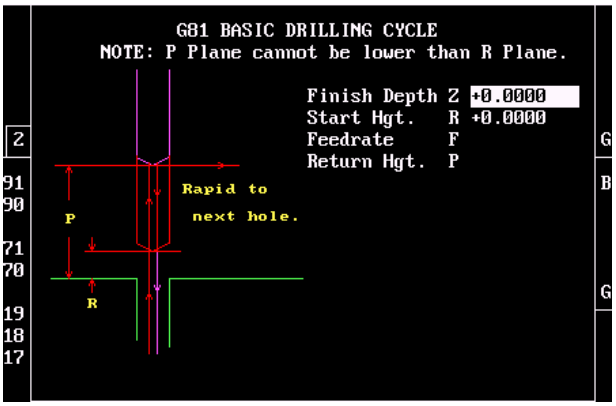
Drilling Cycles G80 Series



Note: That there is now a **G80** in the first box on left.

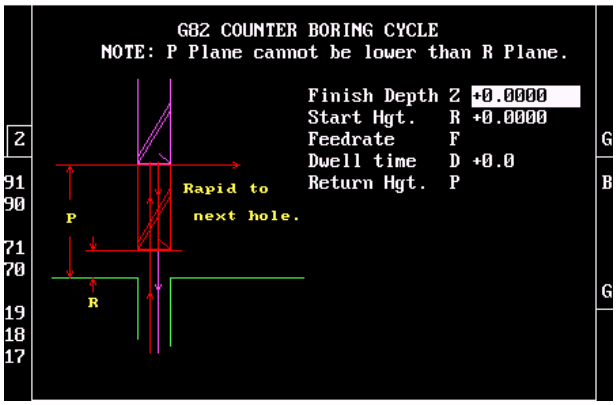
All **G80** cycles must be turn OFF with a **G80** as soon as drill operation is finished.

Basic Drilling Cycles G81



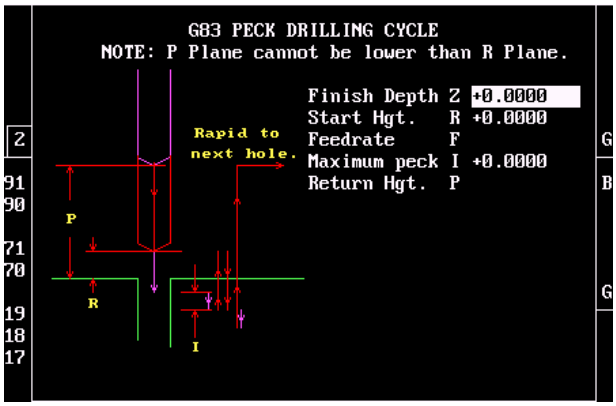
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
Return Hgt.	**P**	Return height if higher than R plane.

Counter Boring Cycles G82



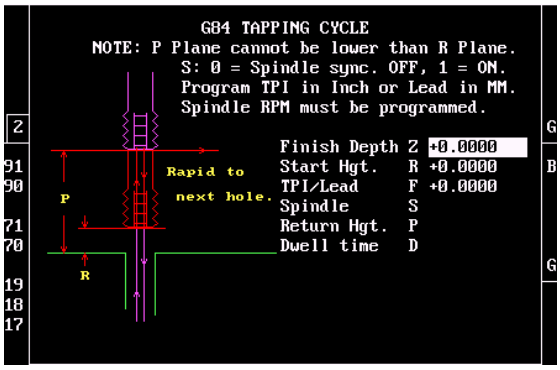
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
Dwell time	**D**	Dwell time qat bottom of hole.
Return Hgt.	**P**	Return height if higher than R plane.

Peck Drilling Cycles G83



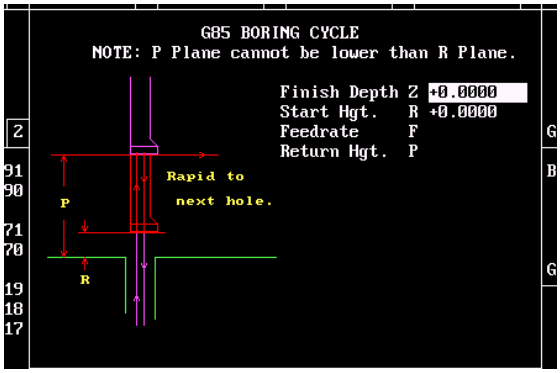
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height .1 above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
Maximun Peck	**I**	Maximun peck before retracting.
Return Hgt.	**P**	Return height if higher than R plane.

Tapping Cycles G84



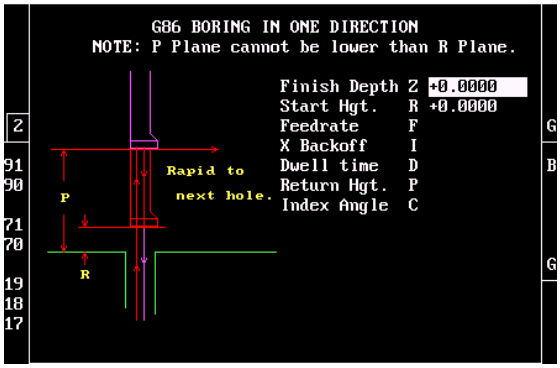
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
TPI/Lead.	**F**	TPI if inch/Lead if MM.
Spindle.	**S**	Spindle sync. 0 = OFF, 1 = ON
Return Hgt.	**P**	Return height if higher than R plane.
Dwell time	**D**	Dwell at bottom if necessary.

Boring Cycles G85



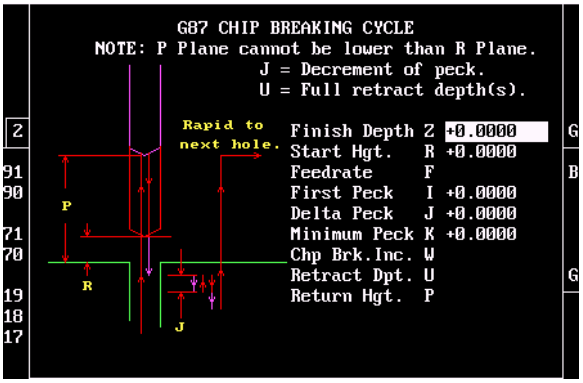
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
Return Hgt.	**P**	Return height if higher than R plane.

Boring Cycles One Direction G86



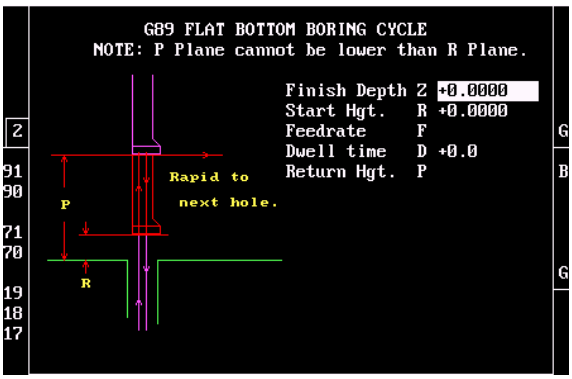
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
X Backoff.	**I**	Backoff before retracting from hole.
Dwell time.	**D**	Dwell to flat bottom hole.
Return Hgt.	**P**	Return height if higher than R plane.
Index Angle.	**C**	Index angle to orient spindle to backoff.

Chip Breaking Cycle G87



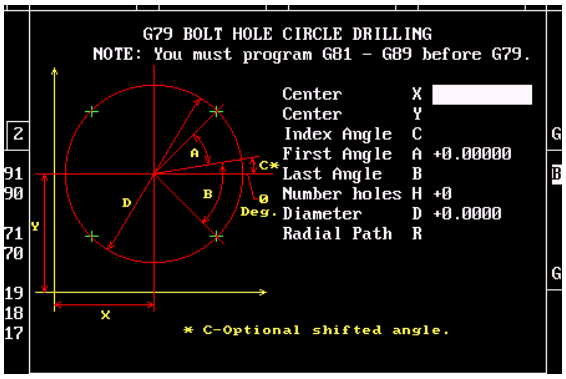
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height .1 above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
First Peck.	**I**	Amount of first peck.
Delta Peck.	**J**	Amount to decrease peck each peck.
Minimum Peck.	**K**	Smallest peck amount.
Chp. Brk. Inc.	**W**	Retract for chip break
Retract Depth.	**U**	Depth full retract accures.
Return Hgt.	**P**	Return height if higher than R plane.

Flat Bottom Boring Cycle G89



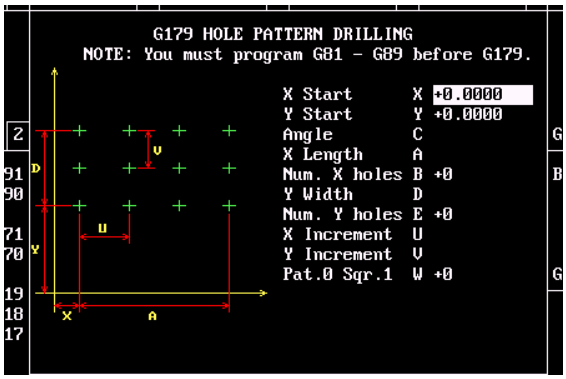
Finish Depth.	**Z**	Finish depth of hole.
Start Hgt.	**R**	Start height above surface to be drilled.
Feedrate.	**F**	Feedrate for drilling.
Dwell.	**D**	Dwell in second at bottom of hole.
Return Hgt.	**P**	Return height if higher than R plane.

Bolt Hole Circle Drilling G79



Center.	**X**	Center X axis.
Center.	**Y**	Center Y axis.
Index Angle.	**C**	Angle to rotate 0 angle from 3 o'cclock.
First Angle.	**A**	Angle of first hole from 0.
Last Angle.	**B**	Angle of last hole, if full pattern not required.
Number Holes.	**H**	Number of holes to drill.
Diameter.	**D**	Diameter of pattern.
Radial Path.	**R**	If 1 is entered will move radially around pattern

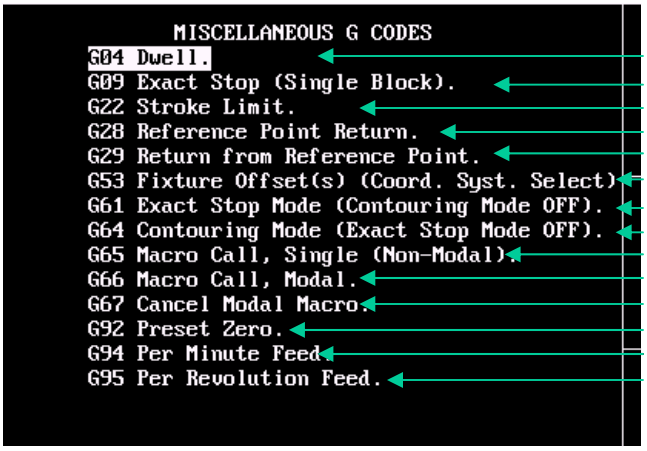
Hole Pattern Dilling G179



X Start.	**X**	Start point X axis.
Y Start.	**Y**	Start point Y axis.
Angle.	**C**	Angle If pattern is rotated.
X Length.	**A**	Distance from first to last hole X axis.
Y Width	**B**	Distance from first to last hole Y axis.
Num. Holes X.	**D**	Number of holes X axis.
Num. Holes Y.	**E**	Number of holes Y axis.
X Increment.	**U**	Distance between holes X axis.
Y Increment.	**V**	Distance between holes Y axis.
Pat.=0 Sqr.=1	**W**	Pattern as shown or square around outside.

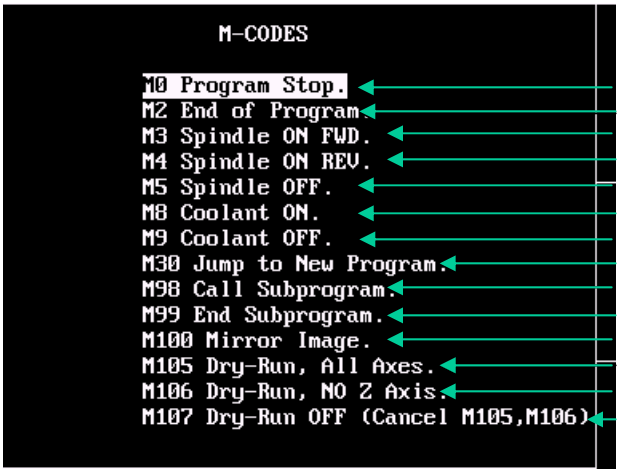
Use D & E or U & W not both.

G-Code without Graphics



Dwell In seconds with **T**n
Exact stop will stop exactly in positiion one shot.
Stroke Limit set a box that tool cannot move outside or inside.
Reference Point Return sends machine home in designated axis.
Reference Point Return
Fixture offset Absolute zero shift from Home.
Exact Stop will stop after each move to get into exact position.
Contouring Mold continuous path no stops between moves.
Macro Call one shot user writen macro.
Macro Call modal macro has to be turned off.
Cancel Macro cancel modal macro.
Preset Zero increamental zero shift canceled by G53 or homing.
Feed Per Minute feed in inches per minute.
Feed Per Revolution feed in inches per revolution.

Miscellaneous M-Codes



Program Stop stop program until START is pressed to to continue.
End of Program end of main program.
Spindle ON Forward turn spindle ON FORWARD.
Spindle ON Reverse turns spindle ON REVERSE.
Spindle OFF turns spindle OFF.
Coolant ON tuns coolant ON.
Coolant OFF turns coolant OFF.
Jump to New Program entered using **P**xxxx.
Call Subroutine call a subroutine using **P**xx.
End Subroutine Last line of subroutine.
Mirror Image axis need to be entered X,Y or Z.M100 turns OFF
Dry Run All Axis display shows motion but no table movement.
Dry Run NO Z Axis X and Y move no Z axis movement.
Dry Run OFF turns OFF dry run.