

6000 CNC CONTROL HELP MENU'S



The HELP MENU'S are access by pressing.

F1 HELP

This can be done from either Manual or Edit.

Manual mold soft	keys							
Help Program	Edi t	Manual	S.Step	Auto	Delete	Insert	Tool	HandW1
Edit mold soft keys	6							
Help Del	Ins	DelBlk	Pgllp	PgDn	Move	Editing	Misc	Exi t

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.





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





Section as shown below these are the major defaults. Hight lite the required in put and



		- ÷ -
Incr. Absolute	691 690	m f
		g
MM	G71	
Inch	G7Ø	F
		G
YZ Plane	619	
XZ Plane	G18	Р
XY Plane	617	r
		t
Feed G	1	_
Rapid G	0 1	

Use up arrow key to move hight to next selection.

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





- 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



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**.



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 G6 I5.000004.0000050.00000C45.000000P1L8 G0 T0 Z0 X-1 Y-1 M2 01 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





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



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.



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.
- #3. Hole Milling.
- #4. Circular Pocket.
- #5. Rectangular Pocket.
- #6. Area Clearance.
- #7. Mold Rotation.
- #8. Elbow Milling.
- **#9. Draft Pocket.**

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+/-. Plunge pockets.

- Leave island in middle of pocket.
- Enlarges existing hole, used on smaller holes.
- Cuts flat bottom circular pocket.
- Cuts flat bottom rectangular pocket.
- Cuts irregular shape pocket and takes profile cut.
- Rotates a profile around an axis.
- Produces a radial groove.
 - Rectangular pocket with angled sides.
 - 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	Х	Center of pocket X axis.If not entered will assume tool is at center of pocket.Optional
Y Center	Υ	Center of pocket Y axis. If not entered will assume tool is at center of pocket. Optional
Length	М	Length of island (X).
Width	W	Width of island (Y).
Start Hgt.	н	Start height .1inch or 2mm above top surface of pocket.
Z Depth (abs)	Z	Absolute depth to bottom of pocket.
Stepover	Α	Cut per pass, not to exceed 70% of cutter dia. Negative value path will climb mill.
Max. Z cut	в	Depth per pass Z axis.Optional
Ramp Feed	I 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	С	Dimension from island to outside.
Finish Stock	S	Amount of material left for finish pass.Optional
Finish Feed	κ	Feedrate for finish pass.Optional
Retract Hgt.	Ρ	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
Rough Feed	J
Finsih Stock	S
Finish Feed	Κ

- Diameter of pocket.
- Feedrate roughing.
- Finish Stock.
- Feedrate finish pass.



Circular pocket G77

	G77 CIRCULAR POCKET MILLING							
				NO A	TE: Negative X Center	dia X	meter =	€₩.
2					Y Center	Y		G
		D			Z Start Hgt.	Н	+0.0000	
91	Y				Z Depth(abs)	Z	+0.0000	P
90			x		Diameter	D	+0.0000	
	4				Stepover	Ĥ		
71		н			Z Max. cut	B		
70			P		Rough Feed.	Ι		
	4		ب		Finish Stock	S		
19	_				Finish Feed.	K		
18		,			Retract Hgt.	Р		
17	_							

X Center	Х	Center X axis.	Optional
Y Center	Υ	Center Y axis.	Optional
Z Start Hgt.	Н	Start height .1 above surface to be cut	into.
Z Depth (abs)	Ζ	Absolute Z depth.	
Diameter	D	Diameter of pocket, comp built in.	
Stepover	Α	Move over per pass.	Optional
Z Max. cut	В	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.	Κ	Finish pass feedrate.	Optional
Retract Hgt.	Ρ	High returnwhen finished.	Optional

Rectangular Pocket. G78

	G78 RECTANGU Neg. stepover = CW.	LAR POCKET MILL	ING	à	
	M N	X Center	х		
		Y Center	Y		
		Length	ř	+0.0000	
2		Width	Ψ	+0.0000	G
	(+);	Z Start Hgt.	Η	+0.0000	
91		Z Depth(abs)	Ζ	+0.0000	P
90		Corner Rad.	U		
		Stepover	Ĥ		
71		Z Max. Cut	В		
70		Ramp Feed.	Ι		
	н	Rough Feed.	\mathbf{J}		
19		Finish Stock	S		
18		Finish Feed.	K		
17		Retract Hyt.	Р		

X Center	Х
Y Center	Υ
Length	Μ
Width	W
Z Start Hgt.	н
Z Depth (abs)	Ζ
Corner Rad.	U
Stepover	Α
Z Max. Cut	В
Ramp Feed	I
Rough Feed	J
Finish Stock	S
Finish Feed	Κ
Retract Hgt.	Ρ

Center of pocket X Center of pocket Y Actual length X	axis
Actual width Y axis	
.1 above surface to be cut	
Absolute depth of pocket	
Radius in corners	
70% of cutter or less	
Max depth per pass	
Feedrate on 3 axis first move	
Feedrate for roughing	
Amount of stock for finish cut	
Finish feedrate	
Retract after finished.	

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Area Clearance G169.



Input Sub # Х Y Z Start Hgt. Z Depth (abs) Cut Angle X Start Y Start Е Stepover Z Max. Cut Ramp Feed **Rough Feed Finish Stock** Finish Feed Retract Htg.

- W Subroutine number.
- Х X position tool will Z down into part Υ
 - Y position tool will Z down into part
- н Start height .1 above top of pocket
- Ζ Total depth of pocket absolute
- С Used if starting in middle of radius
- D Position of cut at start X axis. Optional
 - Position of cut at start Y axis. Optional
- Α Cutter stepover each pass
- В Max depth of cut per pass.
- Ramp feedrate Z down L
- J Rough feedrate
- S Stock left for finish pass
- Κ Finish feedrate

Α

В

С

F

R

J

Ρ Retract after finished.

Mold Rotation G45



- Start Angle **End Angle** Num of Cycles Num of Fwd Sub Num of Rev Sub Axis of Rotation Other axis CL Centerline **Rotation Angle**
- Angle where rotation is going to start
- Angle where rotation is going to end
- 1 cycle equals 1 Fwd and 1 Rev. Sub.
- Sub. Profile forward direction
- Sub. Profile Reverse direction
- Х Axis rotation is around X.Y or Z
- Center line X or Y if not Zero L
- Center line Z Axis if not Zero Κ
 - Angle rotation Z axis only





Elbow Milling G49



Start Radius End Radius Included Angle Num of Cycles X Center Y Center Direction CCW+ End Angle Start Angle Ctr. Line Radius Rapid Height Start Height Rough Feed Finish Stock Finish Feed

- B Radius at start of Elbow
- K Radius at end of Elbow
- A Included angle

D

- **C** Sub. Profile forward direction
- I Sub. Profile Reverse direction
- J Axis rotation is around X,Y or Z
 - Center line X or Y if not Zero
- **F** Center line Z Axis if not Zero
- E Angle rotation Z axis only
- **R** Radius at center of elbow
- Z Starting hieght above surface.
- H Z height to start
- U Rough feedrate
- **S** Amount of stock for finish pass
- 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 Width, bottom Start Height Z Depth (abs) Lower Left Rad. Lower Right Rad. Upper Left Rad. Upper Right Rad. Draft Angle Z step Rough Max XY Stepover Finish Stock XY Z step Finish Finish Feed Flat 0, Ball 1

Х Length at bottom of pocket. required Υ Width at bottom of pocket. required Н Height above part to rapid. required Ζ Absolute depth required Α Lower left Radius required В Lower right radius optional С Upper left radius optional D Upper right radius optional Е Draft angle Degrees required Depth per pass in Z axis н required V Maximum stepover XY optional S Finish stock XY optional Q Z step finish pass optional R Finish feedrate optional w Flat mill = 0 Ball mill = 1 optional



High lite plunge pockets press



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Plunge Circular Pocket G177

K.	G177 PLUNGE CIRC NOTE: Position to of	CULAR POCKET MILLING pol at center (or 3 o'clock) pocket, Neg. diameter = CW.
2 91 90 71 19 18 17		X Center X Y Center Y 2 Start Hgt. H +0.0000 2 Depth(abs) Z +0.0000 Diameter D +0.0000 Stepover A 2 Max. cut B 2 Feedrate I Rough Feed. J Finish Feed. K Retract Hgt. P

X Center	Χ	Center X axis	Optional
Y Center	Υ	Center Y axis. Same as above.	Optional
Z Start Hgt.	н	Start height .1 above surface to be cut.	
Z Depth (abs)	Ζ	Absolute Z depth.	
Diameter	D	Diameter of pocket, comp built in.	
Stepover	Α	Move over per pass.	Optional
Z Max. cut	В	Max. Z depth per pass.	Optional
Z Feedrate	L	Feedrate plunging	Optional
Rough Feed.	J	Feedrate roughing.	Optional
Finish Stock	S	Amount of material left for finish pass.	Optional
Finish Feed.	Κ	Finish pass feedrate.	Optional
Retract Hgt.	Ρ	High returnwhen finished.	Optional

Plunge Pocket Pocket G178



X Center	2
Y Center	
Length	l
Width	
Z Start Hgt.	l
Z Depth (abs)	Ż
Corner Rad.	l
Stepover	4
Z Max. Cut	ļ
Ramp Feed	
Rough Feed	
Finish Stock	9
Finish Feed	
Retract Hgt.	ļ

- Х Center of pocket X Υ Center of pocket Y Μ Actual length X axis W Actual width Y axis н .1 above surface to be cut Ζ Absolute depth of pocket U Radius in corners Α 70% of cutter or less В Max depth per pass Feedrate on 3 axis first move J Feedrate for roughing S Amount of stock for finish cut Κ Finish feedrate Р Retract after finished.





- #2. Ellipse.
- #3. Spiral.
- #5. Facing.

Produces an ellipse, uses special cutter comp.

- Will cut a tapered thead.
- 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.

	GØ5 ELLIPS	E
)	NOTE: You must program start All dimension	point before G05. s are incremental.
2	E A End I	Horiz X +0.0000
	End End	Vert Y +0.0000 🕅
91	. Center	r Horiz I +0.0000
90	B Center	r Vert J +0.0000
	Half	Length A +0.0000
71	Half	Width B +0.0000
70	CCW +	, CW – L +0
19		
18		
17		
-		

End Horizontal End vertical. Center Horizontal I Center Vertical Half lenght Half width CCW +,CW -.

- Distance from start to end X axis.
- Υ Distance from start to end Y axis.
- Distance to center from start.
- Distance to center from start. .1
- A Half length of ellipse x axis
- **B** Half width of ellipse Y axis.
- L Direction of cut.

Х

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.



No compensation available for spiral.

End Horizontal Х End vertical. Υ End Depth Z Ζ **Center Horizontal** L Center Vertical J Number of revolution L CCW +,CW -.

- Distance from start to end X axis.
- Distance from start to end Y axis.
- Distance from start to end Z axis.
- Distance to center from start.
- Distance to center from start.
- Number of turn it will make. Direction of cut.



Facing G170



Width X Stepover Y Stepover Feedrate Z Start hieght Z Depth Absolute X Start Y Start

Length

Х Increamental length X axis.

Υ Increamental width Y axis. Α

Stepover X.

- Stepover Y. В
- F Feedrate. н
 - Start height .1 above surface.
- Ζ Finish depth. D
 - Start X axis.
- Е 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. Center Y. Start height. Diameter. Z depth (absolute). 0 = inside, 1 = outside. Ramp Distance. Z Maximum cut. Finish Stock. Z Feedrate. Rough feedrate. Finish Feedrate. Retract height.

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

Rectangular Profile G172

) 2 90 71 70	м (х, у) ₄	G172 RECTANO	SULAR PROFILE TE: Negative J X Center Z Start Hgt. Length Width Z Depth(abs) Ø=In, 1=Out Ramp Dist. Corner Rad. Z Max. Cut Finish Stock	ad XYHMWZARUBS	+0.0000 +0.0000 +0.0000 +0.0000 +0.0000 +0 +0.0000
19 10			Z Feedrate	I	
10 17			Finish Feed.	K	
			Retract Hgt.	Р	

Center X. Center Y. Start height. Length Width.. Z depth (absolute). 0 = inside, 1 = outside. Ramp Distance. Corner radius Z Maximum cut. Finish Stock. Z Feedrate. Rough feedrate. Finish Feedrate. Retract height.

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

Drilling Cycles G80 Series

	PECKING	TAPP ING	BORE > B I	BORE/UN I	CHIP BREAK
G82 🔾 3	G83 🦯 🛛 🕹	G84 🦵 5	685 🦲 6	G86 🛄 7	687 🦯 🛛 8
DRILLING If they are not active, from group 1 Plane, inch/metric, and absolute/incremental can be selected.				FLAT BORE	
G81 🔰 🛛 🛛	arrow keys or	by number re	equired.	che che	G89 🧾 🦻
Incr.G91 of items are not allowed in the same block and if absoluteMMG71 InchG70G70PressACCEPT to insert data into the program and remain in Help, press EXIT to insert data into the program and return to the Editor.				BOLT CIRCLE	
YZ Plane G19 All of the G80 series cycles are modal and will XZ Plane G18 activate the Z axis at each X,Y coordinate until XY Plane G17 canceled with a G80 code. NOTE: Must program drill cycle before bolt circle.			PATTERN 		
CANCEL G80 1			G179 .		
t +	T	ext Select	Ароз	et Accept	Prev Exit

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



Counter Boring Cycles G82



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

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

Peck Drilling Cycles G83



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

Tapping Cycles G84





Boring Cycles G85

Finish Depth. Start Hgt. TPI/Lead. Spindle. Return Hgt. Dwell time

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



Finish Depth. Start Hgt. Feedrate. Return Hgt.

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

Boring Cycles One Direction G86



Finish Depth. Start Hgt. Feedrate. X Backoff. Dwell time. Return Hgt. Index Angle.

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



Chip Breaking Cycle G87

G87 CHI NOTE: P Plane ca	P BREAKING CYCLE annot be lower than R Plane J = Decrement of peck. U = Full retract depth(s).	Finish Depth. Start Hgt. Feedrate.
$\begin{array}{c c} 2 \\ \hline \\ 90 \\ P \\ \hline \\ 70 \\ \hline \\ 70 \\ \hline \\ 70 \\ \hline \\ 8 \\ 17 \\ \hline \\ 70 \\ \hline \\ 8 \\ 17 \\ \hline \\ 70 \\ \hline \\ 8 \\ \hline \\ 7 \\ \hline \hline \hline \hline$	 Finish Depth Z +0.0000 Start Hgt. R +0.0000 Feedrate F First Peck I +0.0000 Delta Peck J +0.0000 Minimum Peck K +0.0000 Minimum Peck K +0.0000 Chp Brk.Inc. W Retract Dpt. U Return Hgt. P 	G First Peck. Delta Peck. Minimum Peck Chp. Brk. Inc. Retract Depth. G Return Hgt.

Z Finish depth of hole.

- **R** Start height .1 above surface to be drilled.
- F Feedrate for drilling.
- I Amount of first peck.
- J Amount to decrease peck each peck.
- nimum Peck. K Smallest peck amount.
- **p. Brk. Inc.** W Retract for chip break
- tract Depth. U Depth full retract accures.
 - **P** Return height if higher than R plane.

Flat Bottom Boring Cycle G89

2 91 90 71 70 19	G89 FLAT BOTTOM BORING CYCLE NOTE: P Plane cannot be lower than R Plane. Finish Depth Z +0.0000 Start Hgt. R +0.0000 Feedrate F Dwell time D +0.0 Rapid to Return Hgt. P P next hole.	Finish Depth Start Hgt. Feedrate. Dwell. Return Hgt.
19 18 17		

Finish Depth. Start Hgt.

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



Bolt Hole Circle Drilling G79

	G79 BOLT HOLE CIRCLE DRILLING NOTE: You must program G81 - G89 before G79.					
2 91 90 71 70 19 18 17	Y	×	A B B Deg. * C-Option	Center Center Index Angle First Angle Last Angle Number holes Diameter Radial Path	x Y C A +0.00000 B H +0 D +0.0000 R	G

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

Hole Pattern Dilling G179

2 91 90 71 70	G179 HOLE PATTERN DRILLING NOTE: You must program G81 - G89 before G179. X Start X +0.0000 Y Start Y +0.0000 Y Start Y +0.0000 + + + + + Angle C X Length A Y Width D Num. Y holes B +0 Y Width D Num. Y holes E +0 X Increment U Y Increment U Pat.0 Sqr.1 W +0	X Start. Y Start. Angle. X Length. Y Width Num. Hold Num. Hold X Increme Y Increme
19 18 17	Pat.0 Sqr.1 W +0 x → A	Y Increme Pat.=0 Sq

Use D & E or U & W not both.

- X Start.XStart point X axis.Y Start.YStart point Y axis.Angle.CAngle If pattern is rotated.X Length.ADistance from first to last hole X axis.Y WidthBDistance from first to last hole Y axis.Num. Holes X.DNumber 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.

G-Code without Graphics

	MISCELLANEOUS G CODES
GØ4	Dwell.
GØ9	Exact Stop (Single Block).
GZZ	Stroke Limit.
G28	Reference Point Return.
G29	Return from Reference Point.
653	Fixture Offset(s) (Coord. Syst. Select) 🗧
G61	Exact Stop Mode (Contouring Mode OFF). 📥
G64	Contouring Mode (Exact Stop Mode OFF). 📥
G65	Macro Call, Single (Non-Modal)
G66	Macro Call, Modal.
G67	Cancel Modal Macro
692	Preset Zero.
694	Per Minute Feed
695	Per Revolution Feed.

Dwell In seconds with Tn 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

M-CODES
MØ Program Stop. <
M2 End of Program
M3 Spindle ON FWD.
M4 Spindle ON REV.
M5 Spindle OFF.
M8 Coolant ON.
M9 Coolant OFF.
M30 Jump to New Program
M98 Call Subprogram
M99 End Subprogram.
M100 Mirror Image.
M105 Dru-Run, All Axes.
M106 Dru-Bun, NO Z Axis
M107 Dru-Bun OFF (Cancel M105, M106) \leftarrow

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 Pxxxx. Call Subroutine call a subroutine using Pxxx. 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 NOZ Axis X and Y move no Z axis movement. Dry Run OFF turns OFF dry run.