

# Wiedepoint / Geometric Commands

**PUNCHING COMMANDS**

<b>Command</b>	<b>Function</b>	<b>Example</b>
<b>O</b>	Program Number (Must be followed by a four digit number) <b>This is the letter O, not the number 0(zero).</b>	O1234
<b>N</b>	Sequence number (Line number) Not needed or required.	N001
<b>X</b>	X - Axis absolute position designation.	X20.250
<b>Y</b>	Y - Axis absolute position designation.	Y15.375
<b>DX</b>	X – axis incremental position designation.	DX 4.50
<b>DY</b>	Y – axis incremental position designation.	DY 3.125
<b>T</b>	T – axis Turret code command. Four station “T” code denotes use of a VariTool.	T01 or T1 T0106
<b>C</b>	C – axis position designation.	C45.25 or C0.50
<b>M</b>	M – code (Miscellaneous function)	M00, M02 etc.
<b>F</b>	F – code, programmable table feed rate over ride. (F1=100%, F2= 75%, F3=50%, F4=25%)	F1, F2, F3, F4
<b>;</b>	End Of Block statement, commonly called EOB.	X1 Y2 T3;
<b>ARC/</b>	Generates a <b>ARC</b> pattern by stating in order the <b>Radius, Starting Angle of first hole, Degrees between hits, and total Number of hits</b> This command will be preceded by a MOV/ command, to define the center point of the arc. When an Auto Index station is used with this command, a "C"axis command must be given to orient the tool to the desired angle for the first hit of the command.	MOV/X4 Y4 T2; ARC/5 15 10 5;  MOV/X5 Y10 T1; ARC/4 45 18 6 C45;
<b>BHC/</b>	Generates a <b>Bolt Hole Circle</b> pattern by stating in order the <b>Radius, Starting Angle of first hole, and total Number of hits</b> This command will be preceded by a MOV/ command, to define the center point of the circle. When an Auto Index station is used with this command, a "C"axis command must be given to orient the tool to the desired angle for the first hit of the command.	MOV/X10 Y10 T3; BHC/2.5 0 6;  MOV/X15 Y16 T21; BHC/2.5 0 8 C90;
<b>BNX/</b>	Allows for <b>BeNd</b> compensation in the <b>X</b> axis by stating in order; The Amount of compensation, and the locations of up to four (4) bends. This command must be cancelled prior to the end of the program.	BNX/-.04 5 15 21 25; BNX/0;
<b>BNY/</b>	Allows for <b>BeNd</b> compensation in the <b>Y</b> axis by stating in order; The Amount of compensation, and the locations of up to four (4) bends. This command must be cancelled prior to the end of the program.	BNY/-.04 5 15 21 25; BNY/0;
<b>CAA/</b>	The <b>Cut At Angle</b> commang will generate a slot using a round punch by stating in order; The <b>Tool Offset</b> (L-left, R-right, Z-center), <b>Length of cut</b> (center to center), tool <b>Diameter</b> , <b>Angular direction of travel</b> and <b>Pitch</b> (distance between hits). This command will be preceded by a MOV/ command, to define the starting point, and could also have a NBL/ command for continuous nibbling.	MOV/X10 Y20 T3(RND 1.5); NBL/; CAA/Z 5 1.5 45 0.19;
<b>DWL/</b>	Generates a <b>DWELL</b> time, a momentary pause of the machine. In inch mode <b>X1</b> = a ten (10) second delay, in metric mode <b>X1</b> = a one (1) second delay. This command is used for machines equipped with Laser, Plasma, Tapping heads and Small parts chutes.	DWL/X1;
<b>END</b>	The <b>END</b> command only defines the end of a pattern description.	END01;
<b>FRM/</b>	The <b>FRoM</b> command is only used to canecl a reposition. When used properly, it will bring the control register back in line with the machine register. When using the FRM/ command it is strongly recommended that you position the table at it's normal load position, plus the amount of all your repositions with an M03 as illustrated in the example. The conrtol will take the stated position which may be greater than the normal table travel of the machine, and change it to the actual position which should be the load block value for your machine. <b>Caution: When canceling repositions in this manner, your material will be hanging off the operator side of the machine. WARN THE OPERATOR TO STAND CLEAR.</b>	X49.213+15 Y39.37 M03; FRM/X49.213; X49.213 Y39.37 M30; %

**PUNCHING COMMANDS**

<b>Command</b>	<b>Function</b>	<b>Example</b>
<b>GRD/</b>	The <b>GRiD</b> command will generate a series of holes by stating in order; Initial direction of travel, ( <b>Left, Right, Up or Down</b> ), Distance between hits (pitch), number of remaining hits in that direction, Perpendicular direction of travel ( <b>Left, Right, Up or Down</b> ), Distance between hits, and number of remaining hits in that direction. This command will be preceded by a single hit locating the first hit of the grid pattern.	X2 Y3 T4(RND .375); GRD/R 1 4 U 2 3;
<b>HOL/</b>	The <b>HOLe</b> command will generate a round opening by stating in order; The hole <b>Diameter</b> , the <b>Tool diameter</b> , and the <b>Pitch</b> . The center of the hople will remain as a slug if the diameter of the hole is greater than two (2) times the diameter of the tool being used. It will be preceded by a MOV/ command to designate the hole center point, and can have a NBL/ command for continuous nibble mode.	MOV/X15 Y10 T3 (RND 1.25); NBL/; HOL/5 1.25 .15;
<b>INC/</b>	The <b>INCremental</b> command will generate a series of holes in one direction by stating in order; Initial direction of travel, ( <b>Left, Right, Up or Down</b> ), Distance between hits (pitch), number of remaining hits. This command will be preceded by a single hit locating the first hit of the pattern.	X2 Y3 T3(RND .250); INC/U 2.5 9;
<b>LAA/</b>	The <b>Line At Angle</b> command will produce a series of hits at a designated angle by stating in order; the Distance between hits (pitch), Angular direction of travel, and number of remaining hits. This command will be preceded by a single hit locating the first hit of the pattern.	X2 Y3 T3(RND .250); LAA/2 45 4;
<b>MAT/</b>	The <b>MATerial</b> command is used on the Motorum and Vectrum series machines. It is used to describe the material that you are processing. The command format ia as follows; <b>B1-20</b> , this refers to the material type.(See chart in programming manual p18-01). <b>H</b> Denote the material thickness. <b>X</b> = X sheet size, <b>Y</b> = Y sheet size.	MAT/B1 H0.048 X48 Y40;
<b>MOV/</b>	The <b>MOVE</b> command generates a reference point only. It does not produce a table move or a hit. It is typically used prior to commands that require a reference point such as; "ARC, BHC, CAA, HOL, OPN, OBL, PPA, PTP, REC, RRC, SAA, and TGL. If a tool change is required it should be placed on the line with the MOVE command.	MOV/X12 Y13 T2 (RND 0.500);
<b>MGR/</b>	The <b>MacroGRid</b> command is only used for the gridding of previously defined Patterns. The format is as follows; The Pattern # to be repeated, initial Direction of travel, ( <b>Left, Right, Up or Down</b> ), Incremental distance between patterns, Number of remaining patterns in that direction, Perpendicular direction of travel, Incremental distance between patterns in that direction, and remaining number of patterns in that direction. If the pattern only needs to go in one direction, see the following example.	MGR/1 R 8.2 2 U 6.2 3;  MGR/1 R 10.2 4;
<b>NBL/</b>	This is the continuous <b>NibBLE</b> command. It can only be followed by a geometric command. When used in the program, the NBL/ statement will lock out the brake portion of the solenoid, and cause the clutch to stay engaged. The pitch of the following command must not exceed the maximum pitch movement allowed for that specific machine.	MOV/X10 Y10 T4; NBL/; OPN/4 1.5 .197;
<b>OBL/</b>	The <b>OBLong</b> command will generate a rectangular opening by stating in order; the <b>primaryDirection of travel (L, R, U, D)</b> the <b>Length</b> of the opening in that direction, the <b>Tool Size</b> in that direction, the maximum allowable <b>Pitch</b> , <b>secondary Direction of travel (L, R, U, D)</b> the <b>Width</b> of the opening, the Tool Size in that direction, and the maximum allowable pitch in that direction. The OBL/ command will be preceded by a MOV/ command to reference a corner of the rectangular opening. The inside will be processed first, then the perimeter. There will not be a slug at the end of the routine.	MOV/X15 Y10 T1(SQR 2.0); OBL/R 10 2 1.8 U 5 2 1.8;

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<b>Command</b>	<b>Function</b>	<b>Example</b>
<b>OFS/</b>	The <b>OffSet</b> command <b>does not</b> generate axis movement or a punch. The OFS/ command will only change the program zero point(lower left sheet corner) by the amount on the command line. The offset can be absolute X1, or incremental DX1. This command must be removed prior to the end of the program, to prevent over travel alarms and program errors.	OFS/X1 Y2.5; OFS/DX1 DY2.5; OFS/X0 Y0;
<b>OPN/</b>	The <b>OPeN</b> command will generate a round opening by stating in order; The hole <b>Diameter</b> , the <b>Tool diameter</b> , and the <b>Pitch</b> . The center of the hole will be removed first. There will not be a slug at the end of the routine. It will be preceded by a MOV/ command to designate the hole center point, and can have a NBL/ command for continuous nibble mode.	MOV/X15 Y10 T3 (RND 1.25); NBL/; OPN/5 1.25 .15;
<b>PAT/</b>	The <b>PATtern</b> command will allow sequence of hits and commands to be stored in the machine's buffer. This information can then be recalled and repeated where ever required. You can also be Macro-Grid the pattern throughout the sheet. The pattern command must be closed with the END command, or an alarm will occur. <b>NOTE: You should not have tool changes within your patterns, because when you macrogrid your patterns, it will multiply the number of tool changes by the amount of parts being produced.</b>	PAT1/; X1 Y2 T2(RND .25); GRD/R 2 4 U 3 5; END1; MGR/1 R 5 4 U 4 5;  PAT1; (Recalls pattern # 1)
<b>PPA/</b>	The <b>Point to Point Arc</b> will generate a nibbled arc by stating in order; <b>Tool compensation (I = Inside, O = Outside, Z = Center)</b> from the MOV point, this will be the beginning of the arc. <b>Ending X coordinate, Ending Y coordinate, desired Radius, Tool Diameter, Direction of travel</b> (0 = Clockwise, 1 = Counter clockwise), <b>Pitch, Nibble flag</b> (0 = No nibble, 1 = Continuous nibble). This command is designed for use with a round tool only. It can only be used on machines equipped with a Fanuc 16 P control or newer.	MOV/X8 Y8 T3(RND 1.50); PPA/O 12.5 8 4 1.5 0 .15 1; (Clockwise)  MOV/X8 Y8 T3(RND 1.50); PPA/Z 12.5 8 4 1.5 1 .15 1; (CCW)
<b>PTP/</b>	The <b>Point To Point</b> command will generate a rectangular slot, using either a square or rectangle punch, by stating in order; <b>Tool Compensation (L = Left, R = Right, Z = Zero)</b> from the MOV point, this will be the beginning of the slot. <b>Ending X coordinate, Ending Y coordinate, Tool Length, Tool Width, and Joint Width</b> (Tab size) if required. A positive value, generates tool overlap, while a negative value will generate a micro joint. It can only be used on machines equipped with a Fanuc 16 P control or newer. <b>NOTE: The tool should be keyed to the angle that you are attempting to produce. If you are using an auto index station, the control will automatically rotate the tool to the desired angle.</b>	MOV/X10 Y5 T4(REC 1 x 0.5 @ 0); PTP/R 15.0 10.0 1.0 .5 -.015; (Tab)  MOV/X10 Y5 T4(REC 1 x 0.5 @ 0); PTP/R 15.0 10.0 1.0 .5 .1; (Over Lap)
<b>RAD/</b>	The <b>RADius</b> command will generate a nibbled arc by stating in order; <b>Tool compensation (I = Inside, O = Outside), Radius, Tool Diameter, Starting Angle, the Degree of arc, and the Pitch</b> . The NBL command can be used if the pitch is small enough to meet the machine requirements. The degree of arc can be a positive or a negative number (+ = CCW, - = CW direction of travel).	MOV/X9 Y24 T6(RND 1.5); NBL/; RAD/O 9 1.5 90 90 .18;
<b>REC/</b>	The <b>RECTangle</b> command will generate a rectangular opening by stating in order; the primary <b>Direction of travel (L, R, U, D)</b> the <b>Length of the opening in that direction</b> the <b>Tool Length, maximum allowable Pitch</b> secondary <b>Direction of travel (L, R, U, D)</b> the <b>Width of the opening</b> <b>Tool Width</b> and the <b>maximum allowable pitch</b> in that direction. The REC/ command will be preceded by a MOV/ command to reference a corner of the rectangular opening. There will be a slug at the end of the routine. If the length and width of the rectangle is greater than 2x's the length and width of the tool being used. This command can also be used for generating a slot by stating in order <b>Direction of Travel (L, R, U, D)</b> , the <b>Length of the opening in that direction</b> , the <b>Tool Length</b> in that direction, maximum allowable <b>Pitch</b> , and <b>Tool Width</b> .	MOV/X12.5 Y20 T1(SQR 2.00); REC/R 7 2 1.8 U 4 2 1.8;  MOV/X5 Y10 T1(SQR 2.00); REC/U 5 2 1.8 2;

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<b>Command</b>	<b>Function</b>	<b>Example</b>
<b>REP/</b>	<p>This is the geometric command for automatic <b>RE</b>positioning. The REP command will automatically bring the reposition cylinders down, open the workholders, pull away from the sheet by 0.080"(2mm), and move in the commanded direction by the amount stated, pull back into the sheet by 0.040"(1mm), close the workholders, and raise the reposition cylinders. The X axis input on the REP line must be incremental (DX). The program coordinates will then be offset by the amount of the X axis shift. <b>NOTE:</b> You must cancel the reposition by the end of the program or reposition back to the original position.</p>	<p>X18 Y12 M03;            REP/DX5;            X__ Y__ T__;            X__ Y__ ;            X__ Y__ ;            X49.213+5 Y49.213 M03;            FRM/X49.213;            X49.213 Y49.213 M30;            %</p>
<b>RRC/</b>	<p>The <b>Roundable ReCtangle</b> command will generate a rectangular opening and compensate for a radius in the corners. This command requires a MOV command designating the center point of the rectangle. The command structure is as follows; <b>The Length of the opening Tool Length, maximum allowable Pitch, the Width of the opening, Tool Width, maximum allowable Pitch, and then the size of the Radius in the corners.</b> The routine will take one pass around the perimeter of the rectangle, and will not punch the corners. The corners will need to be processed with another operation/command. You will have a slug at the end of the routine if the length and width of the opening is greater than 2x's the length and width of the tool being used.</p>	<p>MOV/X20 Y20 T1(SQR 2.0);            RRC/15 2 1.8 10 2 1.8 .5;</p>
<b>SAA/</b>	<p>The Slot At Angle command will generate a slot with the Auto Index station by defining in order, <b>Tool Compensation (L = Left, R = Right), Length of cut</b> (end to end) from the MOV position, <b>Angle of Travel, Tool Length, Tool Width, C axis Angle of tool.</b> On machines with the Fanuc 16 P or higher, the C angle is not needed, however you now have the option of adding a tab input, like the PTP command. The command will be preceded by a MOV command, however if there is no MOV command, the punching will take place at the machine's current location.</p>	<p>MOV/X0 Y0 T21(REC 2.00 X 0.200);            SAA/L 8 45 2 .2 C45; (Old format)            MOV/X0 Y35 T1(REC 2.00 X 0.200);            SAA/L 48 0 2 .2 0.1; (Over lap)            MOV/X0 Y35 T1(REC 2.00 X 0.200);            SAA/L 48 0 2 .2 -.015; (0.015 Tabs)</p>
<b>SYC/</b>	<p>The <b>SYmmetry Cancel</b> command is only used after the SYM command.</p>	<p>SYC/;</p>
<b>SYM/</b>	<p>This is the <b>SYMMetry</b> command. It is used for making a mirror image of a series of hits or commands described as a pattern. The SYM command can only be used with the auto index stations on machines equipped with Fanuc 16 P or higher. It can be used on earlier machines but the A/I station must be at 0 or 90 degrees.</p>	<p>SYM/X10 Y10;            PAT1;            SYC/;</p>
<b>TGL/</b>	<p>The <b>TrianGLE</b> command is used for generating a V-notch along the edges of your material. It will be preceded by a MOV command. The command structure is as follows; <b>Direction of travel (L = Left, R = Right, U = Up, D = Down), Depth of Notch and Tool Length.</b> This command is designed only for use with a square tool at 45 degrees. A slug could remain if the notch is large enough, if this is the case, you should remove the center prior to using the TGL command.</p>	<p>MOV/X15 Y30 T11(SQR 2.00 @45);            TGL/D 4 2;</p>
<b>ULD/</b>	<p>This is the <b>UnLoad</b> command. It is only used on FM type load / un-loaders and F1 and FF type load / unloaders. The number after the slash represents the ending X axis sheet size. Do not include the letter X in the command.</p>	<p>ULD/48;            M30;            %</p>

## PLASMA COMMANDS

Command	Function	Example
X	X - Axis absolute motion position designation from the program zero point	X20.250
Y	Y - Axis absolute motion position designation from the program zero point	Y15.375
DX	X – axis incremental motion position designation from the current table position.	DX 4.50
DY	Y – axis incremental motion position designation from the current table position.	DY 3.125
F	The <b>F</b> – code, when used during the plasma mode, will control the contouring table speed. This code can be on the line with your PDL, PDR, or the CIR commands. The number after the letter designation represents Inches Per Minute (ipm), or Meters Per Minute (mpm), depending on your mode of operation. If you are programming 150 ipm, your program will have a value of 1500. The control is assuming a one place decimal. Do not add a decimal point to your command. When operating in metric mode, a feed rate of 240, specifies a table speed of 2.4 mpm.	PDL/X25 Y30 F1500; (1500 = 150 ipm) PDL/X635 Y762 F240; (240 = 2.4 mpm)
CIR/	The CIRcle command is used to describe circles and/or arcs where the center of the circle or arc is known. The command format is as follows; The <b>X Center Point</b> , the <b>Y Center Point</b> , and the <b>Degree of Arc</b> . The axis letters do not appear in the command. The control automatically assumes a positive direction of travel (CCW), so if you require a clockwise (CW) direction of travel, you must add a minus (-) sign to the degree of arc statement. The CIR command will develop the radius for the arc or circle, from it's current table position, which will be the line prior to the CIR.	CIR/9 15 90; (Positive direction, CCW) CIR/9 15 -90; (Negative direction, CW)
PED/	The <b>Plasma EnD</b> command will cancel the PDL and/or the PDR commands, thereby raising the torch head, and canceling the offset for the torch center line. The coordinates for this command can be either absolute (X, Y) or incremental (DX, DY).	PED/X1 Y5; PED/DX.1 DY.1;
PDL/	The PDL command will initiate the plasma mode. The PDL specifies, <b>Plasma Down, kerf compensation to the Left</b> of the cutting path by the amount stored in "Offset register # 1", on your Fanuc control. The starting position for your contour, would typically be stated with an absolute position.	PDL/X25 Y30 F1500;
PDR/	The PDR command will initiate the plasma mode. The PDL specifies, <b>Plasma Down, kerf compensation to the Right</b> of the cutting path by the amount stored in "Offset register # 1", on your Fanuc control. The starting position for your contour, would typically be stated with an absolute position.	PDR/X25 Y30 F1500;
	<b>Note:</b> The Plasma commands are also used to control the use of wheel type tools on Motorum and Vectrum machines.	

## LASERCOMMANDS

Command	Function	Example
X	X - Axis absolute motion position designation from the program zero point	X20.250
Y	Y - Axis absolute motion position designation from the program zero point	Y15.375
DX	X – axis incremental motion position designation from the current table position.	DX 4.50
DY	Y – axis incremental motion position designation from the current table position.	DY 3.125
F	The <b>F</b> – code, when used during the laser mode, will control the contouring table speed. This code can be on any of command lines except the LED. The number after the letter designation represents Inches Per Minute (ipm), or Meters Per Minute (mpm), depending on your mode of operation. If you are programming 150 ipm, your program will have a value of 1500. The control is assuming a one place decimal. Do not add a decimal point to your command. When operating in metric mode, a feed rate of 240, specifies a table speed of 2.4 mpm.	LAR/X25 Y30 F1500; (1500 = 150 ipm) LAL/X635 Y762 F240; (240 = 2.4 mpm)
S	The <b>S</b> - code within a laser program designates the laser power setting.	LAR/X25 Y30 F1500 S950; (950 Watts)
CIR/	The <b>CIR</b> cle command is used to describe circles and/or arcs where the center of the circle or arc is known. The command format is as follows; The <b>X Center Point</b> , the <b>Y Center Point</b> , and the <b>Degree of Arc</b> . The axis letters do not appear in the command. The control automatically assumes a positive direction of travel (CCW), so if you require a clockwise (CW) direction of travel, you must add a minus (-) sign to the degree of arc statement. The <b>CIR</b> command will develop the radius for the arc or circle, from it's current table position, which will be the line prior to the <b>CIR</b> .	CIR/9 15 90; (Positive direction, CCW) CIR/9 15 -90; (Negative direction, CW)
DRN/	The <b>Double cut RiNg</b> will produce a double D shape by stating in order; <b>Kerf Offset (I - Inside, O - Outside)</b> , <b>Overall Length</b> of pattern in the X direction, <b>Overall Width of pattern in the Y direction</b> , (the axis designation, X or Y does not appear in the command), the <b>Angle of the pattern</b> , (a positive number will be positive direction of travel, CCW, while a negative will go CW), <b>Approach length</b> (lead in), and <b>Joint width</b> if desired. B93	M28 S950; (Continuous wave, 950 watts) MOV/X25 Y25; DRN/I 4 2.5 0.015;
LAL/	The <b>LAL</b> command will initiate the plasma mode. The <b>LAL</b> specifies, <b>Laser Activated, kerf compensation to the Left</b> of the cutting path by the amount stored in "Offset register # 1", on your Fanuc control. The starting position for your contour, would typically be stated with an absolute position.	LAL/X25 Y30 F1500;
LAR/	The <b>LAR</b> command will initiate the plasma mode. The <b>PDL</b> specifies, <b>Laser Activated, kerf compensation to the Right</b> of the cutting path by the amount stored in "Offset register # 1", on your Fanuc control. The starting position for your contour, would typically be stated with an absolute position.	LAR/X25 Y30 F1500;

## LASERCOMMANDS

Command	Function	Example
LCI/	The <b>Laser Circle</b> command will generate an arc, not a full circle. The command structure is as follows; <b>Direction of travel</b> (L - left (ccw), R - right (cw)), <b>X axis end point, Y axis end point</b> ,and the <b>Radius</b> . If your radius is less than 180° the number will be positive (+). If your radius is greater than 180° the number will be negative (-).	LAR/X20 Y20 F1500; LCI/L 15 20 5;
LED/	The <b>Laser EnD</b> command will cancel the LAL and/or the LAR commands, thereby raising the laser head, and canceling the offset for the laser center line. The coordinates for this command can be either absolute (X, Y) or incremental (DX, DY).	LED/X1 Y5; LED/DX.1 DY.1;
LHE/	<b>Laser Hole End</b> . This command simply cancels the LHS command	LHE/;
LHS/	The <b>Laser Hole Start</b> command will enable the hole mode by stating in order; <b>Hole center point X, Hole center point Y, Radius</b> ,and the <b>Feed Rate</b> . The routine is designed to start with the piercing operation on the inside of the hole. Do not use this command if the slug is your part.	LHS/; X15.748 Y19.685 R1.937 F1000; M56; LHE/;
LLI/	The <b>Laser Line</b> command will generate a line from the table's present position, by stating in order; <b>Length of the line, and the Angle of travel</b> . The angle of travel can be either positive or negative, depending on where you are starting and where you want to finish.	LLI/4.75 45; LLI/4.75 -45;
LRA/	The <b>Laser RADIUS</b> command will generate a radius from the present table position to the end point by stating in order; <b>Cutting Direction (L - left (CW), R - Right (CCW))</b> ,the <b>X end point, Y end point, Arc center X, Arc center Y</b> . You can only use absolute positioning for this command.	LRA/R 7.874 7.874 7.48 5.906;
RDE/	The <b>Round End</b> command is used to generate an obround shape from the machines current position, or by way of a MOV command. The command structure is as follows; <b>Laser Offset (I - Inside, O - Outside), Length, Width, Angle, Approach width (Lead in)</b> ,and <b>Joint width</b> if desired (Optional). When you include the joint information, you will get four tabs equally and four lead in's spaced around your pattern.	MOV/X20 Y10; RDE/I 6 1.5 45 .125;
RNG/	The <b>RiNG</b> command is used to generate a circular shape from the machines current position, or by way of a MOV command. The command structure is as follows; <b>Laser Offset (I - Inside, O - Outside), Circle Diameter, Approach width (Lead in)</b> ,and <b>Joint width</b> if desired (Optional). When you include the joint information, you will get four tabs and four lead in's, equally spaced around your pattern.	MOV/X30 Y25; RNG/O 5 .375 .015;
SET/	The <b>SET</b> command is generally used for pulsing (M27) and piercing (M121) of the material. It is designed to gradually increase the laser power (watts) over a short period of time, in order to prevent heat build up, and large blow holes caused by going to full power immediately. The command structure is as follows; You have <b>four (4) power settings</b> , and <b>four (4) time settings</b> . The time settings simply tell the control how long to keep the power on, for each occurrence. For the example to the right the power starts at 300 watts for zero seconds, then increases to 400 watts for one second, 500 for 2, then 600 for 3 seconds.	SET/300 400 500 600 0 1 2 3; M121; M21; M74; M28 S1000; LAL/X4 Y5.5 F1500;



## LASERCOMMANDS

Command	Function	Example
SQR/	<p>The <b>SQuaRe</b> command is used to generate a square or rectangular shape from the machines current position, or by way of a MOV command. The command structure is as follows;<b>Laser Offset (I - Inside, O - Outside), Length, Width, Angle, Approach width (Lead in)</b>and <b>Joint width</b> if desired (Optional). When you include the joint information, you will get four tabs equally and four lead in's spaced around your pattern.</p>	<p>MOV/X20 Y20; SQR/I 8 3.5 0 .25;</p>
SRN/	<p>The <b>Single cut RiNg</b> will produce a single D shape from the machines current position, or by way of a MOV command. The command structure is as follows; by stating in order;<b>Kerf Offset (I - Inside, O - Outside), Overall Length of pattern in the X direction, Overall Width of pattern in the Y direction</b>, (the axis designation, X or Y does not appear in the command), the <b>Angle of the pattern</b>, (a positive number will be positive direction of travel, CCW, while a negative will go CW)<b>Approach length (lead in)</b> and <b>Joint width</b> if desired</p>	<p>MOV/X25 Y25; SRN/O 4.5 3.125 .25;</p>
SRR/	<p>The <b>SquaRe Round</b> command is used to generate a square or rectangular shape with radiused corners. from the machines current position. The command structure is as follows;<b>Laser Offset (I - Inside, O - Outside), Length, Width, Corner Radius, Angle, Approach width (Lead in)</b>,and <b>Joint width</b> if desired (Optional). When you include the joint information, you will get four tabs equally spaced around your pattern. This command will be preceded by a MOV command.</p>	<p>MOV/X20 Y20; SRR/O 8 3.5 .75 0 .25;</p>